

**MUTCD 11TH EDITION**  
**SUPPLEMENTAL SUMMARY OF DISPOSITIONS FOR FINAL RULE CHANGES**

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**INSTRUCTIONS AND INFORMATION FOR USERS**

This summary document is provided for informational purposes only and is intended to supplement the dispositions of the major items contained in the *Federal Register* Notice of Final Rule for the 11th Edition of the MUTCD.

For convenience, each disposition is shown in line with its corresponding item number as ordered and described in the Notice of Proposed Amendments (NPA).<sup>1</sup> In certain instances, actions were taken in the Final Rule that were based on public comment, new information, for consistency with other changes being adopted, or for compliance with other regulations. In such instances, the disposition of the action in this Final Rule is ordered in this document in as close a sequence as practical to the to the NPA item and corresponding MUTCD Section number.

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<sup>1</sup> 85 FR 80898 (December 14, 2020).

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NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
1	<p>As part of the reorganization, FHWA proposes to delete the existing Introduction and relocate most of that material into a proposed expanded/restructured Part 1. The purpose of this consolidation is to present more logically the general information about the MUTCD and traffic control devices and to eliminate duplicative material that appears in both the Introduction and sections of Part 1.</p> <p>As a part of this change, FHWA also proposes to remove the existing text and table regarding the historical development of the MUTCD and paragraphs pertaining to the use of metric units, as this material is not needed in the MUTCD or can be instead posted on the MUTCD website for those who are interested in it.</p> <p>In addition to the changes described herein and shown in the proposed text of the MUTCD, FHWA proposes a new format for each specific traffic control device that is consistent with the format currently used in Part 4 of the Manual, which uses all upper-case letters for each type of traffic signal indication (e.g., "CIRCULAR RED signal indication"). For example, the title of a sign would be shown in the MUTCD as "SPEED LIMIT sign" instead of "Speed Limit sign," "CHEVRON ALIGNMENT sign" instead of "Chevron Alignment sign," and "EXIT DIRECTION sign" instead of "Exit Direction sign." (The sign title would not depend on whether any word legend on a sign is displayed in upper-case or upper- and lower-case letters.) A similar format would be used for pavement markings: "NORMAL WIDTH DOTTED WHITE lane line" instead of "normal width dotted white lane line," "WIDE SOLID WHITE line" instead of "wide solid white line" "DOUBLE SOLID YELLOW line" instead of "double solid yellow line," and "CHEVRON HATCH markings" instead of "chevron hatch markings." This proposed change is not shown in the proposed text of the MUTCD but would be incorporated in the new edition of the MUTCD if adopted in the Final Rule. FHWA requests comment on this reformatting proposal for implementation throughout the entire Manual.</p>	<p>The reorganization is adopted as proposed.</p> <p>The removal is adopted as proposed.</p> <p>The proposed new format for traffic control device names in the text is not adopted due to no consensus among commenters.</p>
2	<p>In the proposed consolidated Part 1, FHWA proposes to reorganize the retained material from the existing Introduction and existing Part 1 into four new chapters, to create a more logical flow of information and make it easier for users to find the content they need. The four chapters of the new Part 1 are Chapter 1A (General), Chapter 1B (Legal Requirements for Traffic Control Devices), Chapter 1C (Definitions, Acronyms, and Abbreviations Used In This Manual), and Chapter 1D (Provisions Applicable to Traffic Control Devices in General).</p>	<p>The reorganization is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
3	In Chapter 1A General, FHWA proposes to create Section 1A.01, titled, “Purpose of the MUTCD,” with new text recommended by Item 525 of the 20-Year Vision and Strategic Plan for the MUTCD. ( <a href="http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf">http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf</a> ). FHWA proposes this revision because a clear statement of the MUTCD’s purpose is critical in defining what content should be in the MUTCD and how that content should be used.	The new section is adopted as proposed, with editorial modifications to emphasize safety, inclusion, and mobility for all road users. Also, two Support paragraphs from proposed Section 1D.03 are relocated to this section with some revisions, and consolidated into a single paragraph, because this is a more appropriate location for that text.
4	In Section 1A.02 (existing Section 1A.01), FHWA proposes to retitle the section to “Traffic Control Devices—Definition.” FHWA also proposes to change the Standard (relocated from the Introduction, Paragraph 1) to Support, restating and referring to the definition of “traffic control devices” (as proposed to be revised in Section 1C.02).	The section title is adopted as “Traffic Control Devices—General Description” because the definition is located in Section 1C.02 and not here. The change of P1 from Standard to Support is adopted as proposed.
	FHWA also proposes to add a new Support paragraph about infrastructure elements and certain operational devices, to explain that these are not considered traffic control devices. FHWA proposes these revisions to align proposed content and material being relocated from the Introduction and from other sections within existing Part 1.	The new paragraph is adopted as proposed.
	FHWA also proposes to include a new list item (labeled “F”), stating that messages displayed on changeable message signs for America’s Missing: Broadcast Emergency Response (AMBER) alerts and homeland security information during declared states of emergency are not being considered as traffic control devices and, therefore, provisions regarding their design and use are not included in the MUTCD. FHWA proposes this revision because these two types of messages are specific exceptions to the use of a traffic control device expressly allowed by statute. They are referenced in the MUTCD because the device on which they are displayed is a traffic control device, even though the specific messages are not traffic control device messages.	The proposed addition of Item F is not adopted, because of conflicts with other provisions in the MUTCD that allow this type of message on CMS and prescribe certain requirements or other criteria.
	Lastly, FHWA proposes to relocate the Standard and Support pertaining to advertising to Section 1D.09. FHWA proposes this revision to align proposed content and material in each Section.	The relocation is adopted, but to Section 1D.07 instead of 1D.09.
5	FHWA proposes to add a new Section 1A.03, titled, “Target Road Users,” with new text recommended by Item 526 of the 20-Year Vision and Strategic Plan for the MUTCD ( <a href="http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf">http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf</a> ). The proposed text describes the characteristics of the two groups of target road users for traffic control devices—operators of vehicles	The proposed new Section is adopted but with different text than was proposed to address comments. Many commenters did not support the proposed definitions of target road users, specifically the “reasonable and prudent” and in the definition of vehicle operators and “alert and attentive” users acting “in a lawful manner” in the definition of pedestrians. Commenters argue that

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
5 cont'd	(including bicyclists) and pedestrians. FHWA proposes this revision because proper use of traffic control devices can be optimized by stating the expectations for road users responding to the traffic control devices.	the proposed language failed to acknowledge that human error is inevitable and is thus inconsistent with principles of "Vision Zero" and Safe System Approach. Some commenters stated that the proposed new definition of operators was incompatible with common highway engineering practices that target unlawful, impaired, fatigued, drowsy and inattentive operators. Some commenters stated that the proposed new definition of pedestrians presented an equity concern as it removed the burden of designers to design for road users of all ages and abilities, including children, seniors, people with disabilities, and others. The adopted text addresses these concerns.
6	FHWA proposes to add a new Section 1A.04, titled, "Use of the MUTCD," with two new Standard paragraphs and one new Guidance paragraph consisting of text recommended by items 528 and 529 of the 20-Year Vision and Strategic Plan for the MUTCD, plus additional text relocated from the Introduction. ( <a href="http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf">http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf</a> ). The proposed text establishes minimum qualifications for those responsible for performing traffic control device activities in order to reduce the potential for unqualified individuals performing traffic control device activities, specifically recommending that traffic control device decisions should be made with consideration of multiple factors.	The new Section is adopted as proposed, except that P1 is changed from Standard to Support. Also, P2 is adopted with clarifying revisions and an added second sentence to show how engineering judgment or study is part of the decision, thereby introducing the terms. This is not a new requirement, since all engineering decisions are derived from either engineering judgment or engineering study.
	Lastly, FHWA proposes to change Support paragraphs to provide clarity and to reflect the new use of unnumbered sub-chapter headings.	The changes are adopted as proposed.
7	In Section 1A.05 (existing Section 1A.11) Relation to Other Publications, FHWA proposes to add three additional publications to the list of useful sources of information ("Manual for Assessing Safety Hardware" 2009 Edition, AASHTO, "Equipment and Materials Standards of the Institute of Transportation Engineers" 1988 Edition ITE, and "Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement" 2007 Edition ITE).	The section is adopted, but in consideration of comments, the proposal to add, delete, and revise listed "other publications" in P2 is not adopted. Instead, FHWA deletes all of those existing listed publications. Commenters noted that the list of referenced "other publications" is not an exhaustive list and it is not known whether all the publications listed contain information that is consistent with the MUTCD's provisions. Also, a new P3 is added to clarify that the MUTCD is not a roadway design manual.
	FHWA also proposes to delete four publications from the existing list of useful sources of information ("Roundabouts—An Informational Guide (FHWA—RD-00-067)" 2000 Edition FHWA, "Purchase Specification for Flashing and Steady Burn Warning Lights" 1981 Edition ITE, "Traffic Detector Handbook" 1991 Edition ITE, and "Traffic Signal Lamps" 1980 Edition ITE).	

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
7 cont'd	<p>Lastly, FHWA proposes to update several of the listed publication editions. FHWA proposes these revisions to reflect the most current and applicable supporting publications and to delete any references to publications that are obsolete or have been superseded.</p>	<p>The proposed added Standard and Support paragraphs at the end of the Section are not adopted.</p>
8	<p>FHWA proposes to add a new Section 1A.06, titled, "Uniform Vehicle Code—Rules of the Road," with text relocated from the existing Introduction and from existing Section 1A.02, plus additional new Support text to explain the current status of the Uniform Vehicle Code. FHWA proposes these revisions to provide clear guidance on the application of the Uniform Vehicle Code.</p>	<p>The new Section is adopted as proposed. Some commenters stated that the UVC is out of date and no organization exists to update it. The NCUTCD has agreed to update and take overall responsibility for the Rules of the Road portion of the UVC, but it is premature to change the content of Section 1A.06 to reference the NCUTCD's work until it is published and reviewed by FHWA.</p>
9	<p>FHWA proposes to add a new Section 1B.01, titled, "National Standard," with text relocated from the existing Introduction. As a part of this change, FHWA proposes to revise existing Paragraph 2, Sentence 2, of the Introduction, from a Standard to a Support, as it is a statement of fact rather than a mandate of the MUTCD.</p>	<p>The changes are adopted as proposed.</p>
10	<p>FHWA proposes to add a new Section 1B.02, titled, "State Adoption and Conformance," with text relocated from the existing Introduction and existing Section 1A.07. FHWA proposes this revision to consolidate information about the adoption of the MUTCD by States and other Federal agencies and substantial conformance of State MUTCDs and Supplements.</p>	<p>The new section and relocated text are adopted as proposed, except that Guidance P2 recommending review of State manuals or supplements for applicable provisions is deleted. The Guidance is not needed as Federal regulation already exists on this topic.</p>
	<p>FHWA also proposes a new Standard paragraph to clarify the fact that, in addition to State MUTCDs or Supplements, any policies, directives, or other supplemental documents that a State or other agency might issue to address traffic control devices are considered supplements to the MUTCD and must be in substantial conformance with the national MUTCD. This proposed change is for clarification purposes and does not represent a change to existing requirements.</p>	<p>The proposed new Standard paragraph is adopted, but with revisions to clarify that it only applies to documents that change or modify Standard, Options, or Guidance provisions in the MUTCD.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
10 cont'd	<p>Lastly, FHWA proposes to add Guidance indicating that traffic control devices that have been granted Interim Approval, but which have not yet been adopted into the national MUTCD, should not be included in State MUTCDs or Supplements. FHWA proposes this revision to clarify the process for such cases because the technical conditions or status of an Interim Approval are provisional in nature and can change before adoption into the MUTCD. Adoption into State Manuals or Supplements can create a burden for those States for which a legislative change would be required to comply with any new or revised provisions that FHWA might issue. FHWA proposes this change to ensure that an Interim Approval can accommodate flexibility by responding readily to any changes that might become necessary.</p>	<p>The proposed new Guidance is not adopted, in response to numerous comments and because the Guidance is unneeded in view of other provisions in this Section.</p>
11	<p>FHWA proposes to add a new Section 1B.03, titled, "Compliance of Devices," with text relocated from the existing Introduction and existing Sections 1A.07 and 1A.10. FHWA proposes this revision to consolidate information regarding the compliance of traffic control devices to streamline and improve the usability of the MUTCD.</p> <p>FHWA also proposes to revise an existing Standard relocated from Section 1A.07 to Support. FHWA proposes this revision since the statement is of fact rather than a mandate of the MUTCD.</p> <p>FHWA also proposes to add a new Support paragraph clarifying the status of devices or applications not specifically addressed in the Manual. FHWA proposes this revision to address a common misperception that an application of a device is allowed if it is not explicitly prohibited in the Manual, even if that application is not addressed in the Manual. In those cases in which there might be some question as to whether an application that is not specifically mentioned in the MUTCD might be allowed, an individual is encouraged to seek an official interpretation, in which FHWA can evaluate whether such application is consistent with the provisions for that device and whether it would adversely impact uniformity.</p> <p>FHWA also proposes to combine a Standard paragraph and an Option paragraph regarding the replacement of non-compliant traffic control devices, relocated from the Introduction, into a single Standard. FHWA proposes this revision to streamline existing language.</p>	<p>These changes are adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The new Support paragraph is adopted as proposed, except that the final sentence is changed from Support to Guidance, because FHWA is the official interpreter of the Manual and agencies should contact FHWA when considering a new practice or application not addressed in the MUTCD. Also, an additional Support paragraph is added to inform practitioners of FHWA's as-needed interpretations of the MUTCD which could lead to the issuance of official interpretations or interim approvals.</p> <p>The changes are adopted as proposed, except that the previous Option text is separated from the Standard and restored as an Option and edited for improved clarity.</p> <p>Also, in response to comment, in P4, "resurfacing, restoration, or rehabilitation" of a facility are added to the types of federal-aid projects to which the</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
11 cont'd	<p>FHWA also proposes to remove 12 rows in Table 1B-1 (existing Table I-2), titled, "Target Compliance Dates Established by the FHWA." FHWA proposes this revision since these rows contain requirements with previously established compliance dates that have passed or will have passed by the date of the publication of the Final Rule resulting from this NPA.</p> <p>Related to this proposed change, FHWA proposes to delete additional compliance dates from the table that are in effect at the time this NPA is published but expire prior to the effective date of the Final Rule.</p> <p>FHWA also proposes to add three new compliance dates to Table 1B-1 (existing Table I-2). For Section 2C.25 Low Clearance Signs, the compliance date of five years from the effective date of the final rule for this edition applies to the proposed new Standard requiring that if used, Low Clearance Overhead signs shall indicate the portion of the structure with low clearance if the posted clearance does not apply to the entire structure to indicate the point of applicability. The proposed changes were based on recommendations from the National Transportation Safety Board (NTSB) H-14-11 4 to provide signing indicating the proper lane of travel for over height vehicles traveling under an arched structure. (<a href="https://www.nts.gov/investigations/AccidentReports/Reports/HAR1401.pdf">https://www.nts.gov/investigations/AccidentReports/Reports/HAR1401.pdf</a>.)</p> <p>For Section 8B.16 High-Profile Grading Crossings, the compliance date of five years from the effective date of the final rule for this edition applies to the proposed new Guidance recommending the installation of Low Ground Clearance and/or Vehicle Exclusion and detour signs for vehicles with low ground clearances that might hang up on high-profile grade crossings. The proposed compliance date applies only to those locations with known histories of vehicle hang-ups occurring because sufficient geometric criteria do not currently exist by which agencies could evaluate crossings to determine the specific types of vehicles that could be problematic. The proposed changes were based on recommendation from NTSB H-18-24 to provide signing for high-profile grade crossings. (<a href="https://www.nts.gov/investigations/AccidentReports/Reports/HAR1801.pdf">https://www.nts.gov/investigations/AccidentReports/Reports/HAR1801.pdf</a>).</p> <p>For Section 8D.10 through 8D.13 Highway Traffic Signals at or Near Grading Crossings, the compliance date of ten years from the effective date of the final rule for this edition applies to the determination and</p>	<p>MUTCD applies, for accuracy, to match the current (updated) language of the cited CFR.</p> <p>See Preamble of Federal Register for discussion of Table 1B-1.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
11 cont'd	installation of the appropriate treatment (preemption, movement prohibition, pre-signals, or queue cutter signals) at highway-rail grade crossings in close proximity to signalized intersections. FHWA proposes this compliance date due to the high potential for train-vehicle crashes at locations where a vehicle traveling in a platoon can come to a stop on a crossing unintentionally due to a queue from a downstream signalized intersection.	
12	FHWA proposes to replace existing Section 1A.10 with seven new Sections numbered from 1B.03 through 1B.09. The seven new Sections are Section 1B.03 (Compliance of Devices), Section 1B.04 (Issuance of Official Rulings Related to this Manual), Section 1B.05 (Official Interpretations), Section 1B.06 (Experimentation), Section 1B.07 (Changes to the MUTCD), Section 1B.08 (Interim Approvals), and Section 1B.09 (Requesting Official Interpretations, Experiments, Changes to the MUTCD, or Interim Approvals). FHWA proposes this revision to improve the organization of material regarding official interpretations, experimentations, changes to the MUTCD, interim approvals, and procedures for requesting any of these actions.	The replacement with six of the seven proposed new sections is adopted. New proposed Section 1B.04 is not adopted, as it mostly repeats what is stated in subsequent new sections and is not needed. The subsequent sections are renumbered as a result. Also, the word "official" is deleted from the title of new Section 1B.04.
13	In proposed Section 1B.06 Experimentation, FHWA proposes to revise existing Section 1A.10, Paragraph 11, and change from Guidance to Standard.  In addition, FHWA proposes to add Standards, Support, and Guidance paragraphs further addressing the experimentation process. FHWA proposes these revisions to clarify and streamline the experimentation process for agencies wishing to experiment with novel traffic control devices or applications.	See Preamble of Federal Register for discussion of this item.
14	In proposed Section 1B.08 Interim Approvals, FHWA proposes to revise existing Section 1A.10, Paragraph 18, and change from Guidance to Standard. FHWA proposes this revision to clarify and streamline the interim approval process.	The section is adopted as Section 1B.07. The changes are adopted as proposed with minor editorial revisions. Also, the final Option paragraph is deleted, as it is unnecessary.
15	In proposed Section 1B.09 Requesting Official Interpretations, Experiments, Changes to the MUTCD, or Interim Approvals, FHWA proposes to add Support paragraphs to provide further clarity on official rulings.	The section is adopted as Section 1B.08. The proposed two new Support paragraphs are not adopted, as this information is more suitably placed on the MUTCD website.
16	In proposed new Chapter 1C Definitions, Acronyms, and Abbreviations Used in this Manual, FHWA proposes to replace existing Section 1A.13 with two new Sections. Section 1C.01, titled, "Definitions of Headings Used in this Manual" would cover definitions of the headings used in the MUTCD (such	The reorganization is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
16 cont'd	<p>as Standard, Guidance, etc.). Section 1C.02, titled, "Definitions of Words and Phrases Used in this Manual" would cover definitions of the words and phrases used in the MUTCD. FHWA proposes this revision to provide clarity between definitions of the headings and definitions of words and phrases used throughout the Manual.</p> <p>FHWA also proposes to revise the definition of a Standard in Section 1C.01 to indicate that in limited cases, the results of a documented engineering study might indicate that a deviation from one or more requirements of a Standard provision to be appropriate. FHWA proposes this revision based on Official Ruling No. 1(09)–1(I). (<a href="https://mutcd.fhwa.dot.gov/reqdetails.asp?id=30">https://mutcd.fhwa.dot.gov/reqdetails.asp?id=30</a>).</p>	<p>The revised definition of a Standard is adopted as proposed. The request to require jurisdictions to inform FHWA of deviations from a Standard under this provision is not adopted, as this would be outside the scope of this rulemaking, however it could be considered for a future edition of the MUTCD.</p>
17	<p>In proposed Section 1C.02 Definitions of Words and Phrases Used in this Manual, FHWA proposes to revise the existing definitions for the following: "active grade crossing warning system," "actuated operation," "actuation," "channelizing line markings," "constant warning time train detection," "conventional road," "crashworthy," "delineator," "emergency-vehicle traffic control signal," "engineering judgement," "engineering study," "flashing," "full actuated operation," "highway traffic signal," "in-roadway lights," "intersection," "logo," "median," "minimum track clearance distance," "overhead sign," "parking area," "paved," "pedestrian clearance time," "pedestrian facility," "pictograph," "preemption," "pre-signal," "private road open to public travel," "queue clearance time," "quiet zone," "raised pavement marker," "road user," "semi-actuated operation," "sign," "sign panel," "sequence of indications," "statutory speed limit," "traffic," "traffic control device," "traffic control signal (traffic signal)," and "worker." FHWA proposes these revisions to reflect accepted practice and terminologies, and for consistency in the usage of these terms in the MUTCD. The proposed revision to the definition of "engineering study" is a specific recommendation of Item 531 of the 20-Year Vision and Strategic Plan for the MUTCD.: (<a href="http://ncutcd.org/wpcontent/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf">http://ncutcd.org/wpcontent/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf</a>)</p>	<p>The revised definitions are adopted as proposed, except as follows: for "constant warning time train detection", the word "train is deleted from the term and "trains" is revised to "rail traffic" so as to include light rail transit vehicles; for "crashworthy" only the first sentence is adopted and the remainder of the definition is relocated to new Section 1D.11 as it is mostly Support material; for "engineering judgment" text is added to clarify that the safety and operational efficiency for all road users is to be included in evaluations; for "pedestrian clearance time" the definition is adopted with revisions to replace the first occurrence of "traveled way" with "pavement", for clarity and accuracy; for "pictograph", based on comments, the definition is adopted with revisions to add other types of institutions that can be identified with a pictograph; "private road open to public travel" is not adopted because it is replaced with the new definition for "site roadways open to public travel" to match the term used throughout the MUTCD; and for "traffic control device" only the first sentence is adopted and the remainder of the definition is relocated to Section 1A.02 as it is more appropriately located there. In addition, a number of other definitions are revised for clarity, completeness, and accuracy. In addition, several existing and revised definitions are relocated editorially, with some revisions, to be "nested" under an item that is broadly defined, so that the interrelationships between the broad term and the definitions of the various types of that broad term can be more readily identified by readers. The broad terms under which other more specific terms' definitions are nested include "beacon", "bicycle lane", "highway traffic signal", "hybrid beacon", and "toll collection".</p>
	<p>FHWA also proposes to add definitions for the following: "active grade crossing," "agency,"</p>	<p>The added definitions are adopted as proposed, except as follows: for "general purpose lane,"</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
17 cont'd	<p>“application,” “bicycle signal face,” “bicycle symbol signal indication,” “blank-out sign,” “busway,” “diagnostic team,” “driveway,” “driving aisle,” “dynamic message sign,” “engineer,” “exclusive alignment,” “fail-safe,” “four-quadrant gate system,” “general purpose lane,” “gore area,” “identification marker,” “jughandle turn,” “loading zone,” “low-volume rural road,” “mixed-use alignment,” “on-street parking,” “option lane,” “parking space,” “professional engineer (P.E.),” “queue cutter signal,” “reconstructed,” “rectangular rapid flashing beacon,” “right-of-way, public highway,” “semi-exclusive alignment,” “serviceable,” “shoulder,” “sidewalk grade crossing,” “signal dimming,” “site roadways open to public travel,” “swing gate,” “through train,” “toll road (facility),” “uncontrolled approach,” and “variable message sign.” FHWA proposes these revisions because these terms either are used or are proposed for use in the MUTCD.</p>	<p>managed lane is added as another type of lane that is excluded from this term and other minor revisions are made to match usage of the term in the MUTCD text; for “option lane,” the definition is adopted with revisions to more accurately describe this type of lane; “reconstructed” and “right-of-way, public highway” are not adopted; and for “shoulder,” based on comments a fourth sentence is added to indicate a shoulder might also be used for pedestrian and/or bicycle travel. Some of the other added definitions are adopted with revisions for clarity, accuracy, completeness, and to match usage of the term in the MUTCD. Also, several additional new definitions are added based on comments, because the terms are frequently used in the MUTCD or within other definitions, and these new definitions reflect their meanings based on how the terms are used. The newly added definitions include “electronic tolling” and “manual toll collection” (nested under “toll collection”); “automated vehicle”; “bicycle box,” “counter-flow bicycle lane,” “separated bicycle lane,” and “buffer-separated bicycle lane” (nested under “bicycle lane”); “business identification sign panel,” “dedicated lane”; “detection plate”; “driving automation system”; “lane reduction”; “scanning graphic”; and “two-stage bicycle turn box.”</p>
	<p>In addition, FHWA proposes to delete the existing definitions for the following: “advance preemption,” “advance preemption time,” “average day,” “cantilevered signal structure,” “concurrent flow preferential lane,” “end of roadway marker,” “interval sequence,” “maximum highway traffic signal preemption time,” “minimum warning time,” “right-of-way transfer time,” “simultaneous preemption,” and “wayside equipment.” FHWA proposes these revisions because these terms are either proposed for deletion from the Manual as part of this document or used only once in a specific section of the Manual.</p>	<p>The deletions are adopted as proposed, except based on comments the following definitions are retained because they are used in more than one section of the MUTCD: “advance preemption,” “advance preemption time,” “average day,” “cantilevered signal structure,” “maximum highway traffic signal preemption time,” “separation time,” and “simultaneous preemption.” Also, the following additional definitions are deleted because they conflict with other definitions, usage within the manual, or are no longer needed: “altered speed zone,” “reconstructed,” “right-of-way [assignment],” “right-of-way, public highway,” and “speed measurement markings.”</p>
	<p>FHWA also proposes to delete the definition for “safe-positioned” and relocate this information to Part 6. FHWA proposes this revision because this term is only used in that Part of the MUTCD.</p>	<p>The relocation to Part 6 is adopted as proposed.</p>
	<p>FHWA also proposes to delete the definitions for “average day,” “cantilevered signal structure,” “concurrent flow preferential lane,” and “end-of-roadway marker.” FHWA proposes these revisions because these terms are not used anywhere in the MUTCD.</p>	<p>As noted above, “average day” and “cantilevered signal structure” are retained, and “concurrent flow preferential lane” and “end-of-roadway marker” are deleted as proposed.</p>
		<p>Further, a new Standard is added as P2 of the section to clarify that definitions in this section or</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
17 cont'd		elsewhere in this manual shall govern in cases where such terms have a different definition in another resource or in common use.
18	<p>In Section 1C.03 (existing Section 1A.14), retitled, "Meanings of Acronyms and Abbreviations Used in this Manual," FHWA proposes to delete the acronyms/abbreviations "EPA" and "TDD" and relocate the information to Part 2. FHWA proposes these revisions because these terms are only used in that Part of the MUTCD.</p> <p>FHWA also proposes to delete the acronyms/abbreviations "HOT," "HOTM," "HOTO," "PCMS," and "RRPM." FHWA proposes these revisions because the terms are not used in the MUTCD text.</p> <p>Lastly, FHWA proposes to add the abbreviations "cd/lx/m<sup>2</sup>," "ft," "in," and "mi." FHWA proposes these revisions because these abbreviations for light intensity and distances are used throughout the MUTCD.</p>	<p>Based on comments the acronyms/abbreviations EPA and TDD are retained.</p> <p>These deletions are adopted as proposed, except that PCMS is retained because it is used in the MUTCD text of Parts 2 and 6.</p> <p>These additions are adopted as proposed. In addition, a new acronym is added for RRFB (rectangular rapid-flashing beacon) because it is used in the MUTCD.</p>
19	<p>In Section 1D.01 (existing Section 1A.02), retitled, "Purpose and Principles of Traffic Control Devices," FHWA proposes to revise the title to reflect the content with the proposed relocation of a paragraph from existing Section 1A.01 to this section.</p> <p>Also, FHWA proposes to revise the Guidance about what makes a traffic control device effective by changing "meet five basic requirements" to "be consistent with these principles." FHWA proposes these revisions to clarify that the principles are recommendations rather than requirements, as they are contained within a Guidance provision.</p> <p>In addition, FHWA proposes to add a new Standard indicating that traffic control devices used on site roadways open to the public shall have the same shape, color, and meaning as those required by the MUTCD, unless exceptions are noted in the Manual.</p>	<p>The retitling is adopted as proposed.</p> <p>This change is not adopted. Instead, the phrase "meet five basic requirements" is deleted, as it is unnecessary.</p> <p>The added Standard is adopted as proposed, except that the word "all" at the start of the provision is not adopted, as it is unnecessary.</p> <p>In addition, in response to numerous comments, the phrase "reasonable and prudent" is removed from two places in this Section, because it is subjective and not defined.</p>
20	<p>FHWA proposes to add a new Section 1D.02, titled, "Traffic Control Device Characteristics and Activities," with new text recommended by Item 527 of the 20-Year Vision and Strategic Plan for the MUTCD (<a href="http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf">http://ncutcd.org/wp-content/uploads/MUTCD/MUTCD-20-Year-Vision-NCUTCD-Appvd-1-9-14-FINAL.pdf</a>).</p>	<p>New Section 1D.02 is not adopted, as this information is more appropriately placed on the MUTCD Web site.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
20 cont'd	The proposed text describes seven characteristics and activities associated with traffic control devices. FHWA proposes this revision since clarifying distinctions between types of traffic control device activities would assist agencies in establishing the qualifications needed to perform the selected activities.	
N/A (Sec. 1D.03)	Proposed new Section 1D.03 Uniformity of Traffic Control Devices (not discussed in NPA Preamble)	The proposed new Section 1D.03 is not adopted. Instead, the proposed text of the section is relocated to Section 1A.01, where it is more appropriately placed.
21	FHWA proposes to combine existing Sections 1A.07 and 1A.08 in a single Section 1D.04, titled, "Responsibility and Authority for Traffic Control Devices." With this revision, FHWA proposes to delete the last two sentences of Paragraph 1 as this text is redundant with Section 1B.	The section is adopted as Section 1D.02. These changes are adopted as proposed.
	FHWA also proposes to relocate several existing paragraphs since they better align with content presented in other Sections.	These changes are adopted as proposed.
	FHWA also proposes to delete an existing Support paragraph since all States have a law on the adoption of, and have adopted, the MUTCD.	The deletion is adopted as proposed.
	FHWA also proposes to delete an existing Guidance paragraph since this text is redundant to paragraphs contained in other Sections.	The deletion is adopted as proposed.
	FHWA also proposes to revise an existing Standard paragraph to change the word "advertisements" to "public announcements or notices" because the existing term can be misinterpreted to refer only to announcements of a commercial nature.	The change is adopted as proposed.
	In addition, FHWA proposes to delete an existing Guidance paragraph because the Standard paragraphs in this and other sections define (1) the authorization for placement and, by inference, removal of traffic control devices; and (2) the criteria or warrants for the installation of traffic control devices.	The deletion is adopted as proposed.
	Lastly, FHWA proposes to add two additional Support paragraphs to emphasize further that the highway right-of-way is reserved for highway related purposes in accordance with 23 CFR 1.23(b), and that States may adopt restrictions on outdoor advertising that resembles official traffic control devices, which is required by 23 CFR 750.180 in certain cases.	The first additional proposed Support paragraph is not adopted, based on a comment that the referenced 23 CFR 1.23(b) does not apply to all public right-of-way, especially within local jurisdictions. Also, there are some public highways that are located on easements (such as through National Forests) and not within a right-of-way. Further, the regulation is not related to traffic control

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
21 cont'd		devices and should not be included in the MUTCD. The second additional proposed Support paragraph is adopted as proposed.
22	In Section 1D.05 (existing Section 1A.09) Engineering Study and Engineering Judgment, FHWA proposes to revise existing Support paragraphs. FHWA proposes this revision based on Official Ruling No. 1(09)–1(I) ( <a href="https://mutcd.fhwa.dot.gov/reqdetails.asp?id=30">https://mutcd.fhwa.dot.gov/reqdetails.asp?id=30</a> ), and to emphasize a clear understanding of the application of engineering studies and engineering judgement in this Manual.	See Preamble of Federal Register for discussion of this proposed change.
23	In Section 1D.06 (existing Section 1A.03) Design of Traffic Control Devices, FHWA proposes to revise existing Guidance to clarify that a traffic control device's design should be modified only in unusual circumstances based on an engineering study or engineering judgment.	The section is adopted as Section 1D.04. The change is adopted as proposed.
	FHWA also proposes to add a new Standard requiring that shapes that are exclusive to a particular sign, such as the octagon for the STOP sign, shall not be obscured by another sign mounted on the back of the assembly. This proposed change is consistent with existing provisions in proposed Section 2B.18 (existing Section 2B.10). FHWA proposes this revision to ensure that sign shapes that are of critical importance are easily recognized, because their unique shapes instantly convey a unique message to road users.	The addition of this new Standard in Section 1D.06 is not adopted. Instead, it is relocated to Chapter 2A, where it is more appropriately located, since it deals exclusively with signs.
	Lastly, FHWA also proposes to add a new Standard indicating that colors shall be consistent across the face of a sign or panel, and that color gradients shall not be allowed. FHWA proposes this revision to provide clarification due to the technological capabilities of sign printers, which have entered the market in just the last few years.	The addition of this new Standard is not adopted. Instead, it is relocated to Chapter 2A, where it is more appropriately located, since it deals exclusively with signs.
24	In Section 1D.07 (existing Section 1A.12) Color Code, FHWA proposes to add a Standard indicating that colors shall be used only as prescribed in this Manual for specific devices or applications. FHWA proposes this revision to clarify that the listed color definitions are general designations and do not mean that any color can be applied in any combination or orientation for non-standard signs. This proposed change is for clarification purposes and does not represent a change to existing requirements.	The section is adopted as Section 1D.05. The change is adopted as proposed.
		A comment suggesting clarification that the color code for black or white applies only to background is not adopted, as this color code in Part 1 is for all traffic control devices, not just signs.
25	FHWA proposes to create a new Section 1D.08, titled, "Public Domain, Copyrights, and Patents," with new Standard and Support paragraphs. FHWA proposes this revision to clarify the existing provisions on this topic with respect to traffic control devices, and that	The new Section is renumbered to Section 1D.06 and the text is adopted as proposed. Also, in response to a comment, in the first Support paragraph a sentence is added to clarify and give examples of protected traffic control device

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
25 cont'd	<p>the meaning, appearance, operation, and application of traffic control devices as a road user experiences them shall not be protected by a patent, trademark, or copyright due to its adverse impact on the very uniformity the MUTCD is intended to promote. However, their method of assembly, their method of manufacture, and their component parts can be, and often are, protected. Uniformity in the display of traffic control devices is central to the underlying foundation of the MUTCD. As such, FHWA establishes the criteria therein with uniformity in mind, including a limitation on patents, trademarks, and copyrights associated with traffic control devices. This limited prohibition on intellectual property associated with a traffic control device is stated in the MUTCD to be associated with the device's "design and application provision contained in [the] Manual." (From the Introduction, Paragraph 4, 2009 MUTCD, <a href="https://mutcd.fhwa.dot.gov/">https://mutcd.fhwa.dot.gov/</a>)</p> <p>FHWA occasionally receives requests to approve patented traffic control device concepts for potential open-road experimentation under the MUTCD provisions, with the ultimate intent of having the devices adopted in the provisions of the MUTCD through rulemaking. FHWA believes that those involved in the development of new traffic control devices, as well as highway agencies being requested to experiment with these devices, could benefit from further clarification of the term "design and application provision" of a traffic control device provided for in the MUTCD, to understand better which aspects of devices can be patented, trademarked, or copyrighted.</p> <p>In addition, FHWA continues to receive inquiries related to its recent rulemaking (84 FR 51023 (September 27, 2019)) that rescinded regulations related to the procurement of patented or proprietary products on highway projects, which did not change the patent provisions of the MUTCD. Some stakeholders believed that the removal of restrictions on the procurement of patented or proprietary products either did extend or should have extended to the patent provisions of the MUTCD as well. However, the limitation in the MUTCD is based on uniformity and its purpose is separate and distinct from 23 CFR 635.411, which addresses the procedures for the procurement of proprietary products in highway construction using Federal-aid funds. The MUTCD limitation on proprietary products necessarily excludes proprietary traffic control devices which claim protection on the message conveyed. The purpose of this limitation is to ensure uniformity in the message. However, any other aspects of a device may be patented so long as the</p>	<p>components or parts to which the requirement to be in the public domain does not apply.</p> <p>A number of commenters supported the basic provisions on patented, trademarked, and proprietary devices that have been and continue to be in the MUTCD, stating that it is especially important for local jurisdictions to have easy and available access to the use of traffic control devices that are unburdened by patents or special use requirements and that having them in the public domain immeasurably promotes widespread and consistent application of approved traffic control devices. On the other hand, numerous commenters requested removal of those provisions, citing a belief that including some such devices to be allowed in experimentations and ultimately allowed in the MUTCD could potentially improve highway safety. These requests are not adopted. As explained in the NPA preamble, the added text is clarification of the existing requirements that is necessary for maintaining uniformity.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
25 cont'd	<p>appearance, audible message, or other aspects of the message conveyed remain freely reproducible by all without infringing on any proprietary rights or interests. The proposed MUTCD language, along with this document, provides further clarification and background on this subject matter. The information clarifies what aspects of a traffic control device can and cannot be patented or otherwise protected. In general, the component parts of a traffic control device may be patented or otherwise protected, but how the device is to appear and operate to the observer (i.e., how it would be specified in the MUTCD) must remain in the public domain and must not be covered by any patent that would preclude others from freely producing the traffic control device. As a result, the road user will always experience the same traffic control device for similar conditions in the same way. The purpose of addressing this aspect of traffic control devices is due to the adverse effect that protections on what the road user experiences would have on uniformity in the message to the road user. By virtue of patent or other protections on the message itself, alternate messages would have to be allowed to address the same conditions so as not to include infringement by competitors. Based on the varying views that the public has expressed in the past on this topic, FHWA requests that commenters provide sufficient detail and explanation of how the proposal or alternatives would support both uniformity and cost-effectiveness of traffic control devices and enable their manufacture without infringement on protections enjoyed by patent holders. Specific references should be made to the proposed MUTCD text and to the explanation provided in this document.</p>	
26	<p>FHWA proposes to create a new Section 1D.09 Advertising, with text relocated from existing Section 1A.01. In this Section, FHWA proposes to add Acknowledgment signs to the existing items that are not considered advertising, consistent with existing text in Part 2 for that type of sign.</p>	<p>The section is adopted as Section 1D.07. The changes are adopted as proposed.</p>
27	<p>In Section 1D.10 (existing Section 1A.15) Abbreviations Used on Traffic Control Devices, FHWA proposes to revise an existing Guidance paragraph to be consistent with the notes in Table 1D-2 (existing Table 1A-2).</p>	<p>The section is adopted as Section 1D.08. The revisions to the Guidance paragraph are adopted as proposed.</p>
28	<p>In Section 1D.11 (existing Section 1A.04) Placement and Operation of Traffic Control Devices, FHWA proposes to add a Standard statement that, before any new highway, site roadway open to public travel, detour, or temporary route is opened to public travel, all necessary traffic control devices shall be in place. FHWA proposes this revision to consolidate similar</p>	<p>The section is adopted as Section 1D.09. The added Standard statement is adopted as proposed, except that “necessary” is revised to “necessary for safe operation”, for clarification of intent.</p> <p>Several commenters requested that this Standard be adopted as Guidance instead, stating that</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
28 cont'd	Guidance text in existing Section 3A.01 regarding markings and similar Standard text in existing Section 6B.01 regarding signs, and because it is important that all necessary traffic control devices be in place before new roads, detours, or temporary routes are opened to public travel.	placement of all permanent traffic control devices on a roadway prior to opening to general traffic is not always feasible or necessary. This requested change to Guidance is not adopted. Instead, an Option statement is added to allow temporary traffic control devices per Part 6 to be used in place of permanent devices that have yet to be installed.
N/A (Sec. 1D.10)	New Section 1D.10 Maintenance of Traffic Control Devices (not discussed in NPA Preamble)	A new Section 1D.10 titled Maintenance of Traffic Control Devices is adopted, with existing text that was Section 1A.05 of the 2009 MUTCD and that was proposed in the NPA without any changes as Section 1D.12.
N/A (Sec. 1D.11)	New Section 1D.11 Crashworthiness of Traffic Control Devices and Other Roadside Appurtenances (not discussed in the Preamble)	A new Section 1D.11 titled Crashworthiness of Traffic Control Devices and Other Roadside Appurtenances, with text relocated from Section 6A.04 and 1C.02, is adopted, based on a recommendation from commenters. The Section 1C.02 definition of “crashworthy” extended beyond what would be considered a definition and includes material that warrants discussion in a separate Section. The new Section 1D.11 includes language from Section 6A.04 that has been revised from Support to Standard, and includes a Support statement adapted from the proposed definition of “crashworthy,” but with the word “barricades” deleted from the list of devices that are not traffic control devices, as barricades are traffic control devices.
29	In Section 2A.01 Function and Purpose of Signs, FHWA proposes to delete existing P3 referencing definitions for various roadway types, because the information is repetitive and not necessary.	The change is adopted as proposed.
	FHWA also proposes to revise this Section to expand on the language from existing P1 regarding the use of signs on a frequent basis to confirm rules of the road or statutes.	The changes are adopted as proposed, with a minor clarifying change in the first sentence to refer to “permanent signs” rather than all signs, based on a comment.
	FHWA proposes a new Guidance provision recommending that agencies use temporary signs when determined necessary to advise of new regulations or as part of an educational campaign.	The new Guidance is adopted as proposed.
	FHWA also adds a recommendation on the placement of permanent signs for rules of the road in adjacent jurisdictions. FHWA proposes this new paragraph to limit the amount of signing along a given route to reduce sign clutter and the informational load imposed on the road user and to reduce sign maintenance burdens on the responsible maintaining agency.	The added Guidance is adopted as proposed with minor editorial changes.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
30	<p>In Section 2A.02 (existing Section 2A.03) Standardization of Application, FHWA proposes to add a Support paragraph relocating certain information from existing Part 5 regarding the use of traffic control devices on low-volume rural roads. FHWA proposes to redistribute the provisions of existing Part 5 among the remaining parts.</p> <p>FHWA also proposes to delete the second sentence of the Standard paragraph because the statement is redundant and is implied throughout the Manual.</p>	<p>The changes are adopted as proposed.</p> <p>The deletion is adopted as proposed.</p>
31	<p>In Section 2A.04 (existing Section 2A.06) Design of Signs, FHWA proposes to eliminate the provision in the existing Standard P8 that allows for minor changes to the proportion of symbols. FHWA proposes this change because symbol designs are standardized for recognition based on the specific proportions of the symbol, and this statement contradicts the subsequent standard.</p> <p>FHWA also proposes to delete the existing Option P10 because the subject of orientation is addressed in Section 2A.09 (existing Section 2A.12).</p> <p>FHWA also proposes to add a new Standard to clarify that, except where explicitly allowed, the substitution of a word legend for a symbol legend is prohibited where the standard sign legend uses the specific symbol, as it contravenes uniformity in recognition and messaging to road users. This proposed change is for clarification purposes and does not represent a change to existing requirements and is consistent with changes included in the 2009 MUTCD, which discontinued a number of alternate standard signs with word legends for which the primary standard sign included a symbol legend.</p> <p>FHWA proposes to add a new Standard that prohibits an alternative sign design or dimensions when there is a standard sign provided in the Manual or detailed in the "Standard Highway Signs" publication, except where specifically allowed.</p> <p>FHWA also proposes a related Standard for standardized sign layouts that might have a variable length legend, but otherwise have a standard dimension. FHWA proposes this change because the standardized designs are often of recognizable form as well as message.</p> <p>FHWA also proposes to add a Support paragraph regarding the use of special word legend signs that may be unclear to road users. FHWA proposes this addition to encourage evaluation of such signs to</p>	<p>The change is adopted as proposed. The opposing comments do not provide sufficient justification for retaining the allowance for minor changes in symbol proportions.</p> <p>The deletion is adopted as proposed.</p> <p>The change is adopted as proposed except that, for clarification, "a combination of symbol and words" is added to the prohibition, based on a comment.</p> <p>The added Standard is adopted as proposed. A request to change the Standard to Guidance because of the need for flexibility for multiple field conditions is not adopted, as the Standard is clear and the Option that follows it provides the flexibility the commenter requested.</p> <p>The Standard is adopted as proposed.</p> <p>The added Support is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
31 cont'd	determine comprehension or possible misinterpretation.	
	FHWA proposes to delete Guidance P15 and revise Standard P14 that describes provisions related to the range of allowable information and graphical symbols affixed to the face and back of a sign. FHWA updates this paragraph to reflect similar forms of information to those listed in the existing P14 and proposes to prohibit the following additional items unless otherwise specified for a specific sign: Telephone numbers, metadata tags ("hash-tags"), quick-response (QR) codes, bar codes, or other graphics for optical scanning.	The changes are adopted as proposed, except that, based on several comments, the phrase "quick-response (QR) codes, barcodes, and other graphics for optical scanning" is revised to "scanning graphics", as it simplifies language and avoids specifying a particular technology. This change in terminology is also adopted for wherever else in the text "scanning graphics" is the more appropriate term. In conjunction with this change of terms, a second paragraph is added to the previous Support to explain the intended meaning of "scanning graphics".
	In conjunction with this change, FHWA proposes to revise Option P16 to allow for the use of these items for signs that are intended and oriented for viewing by pedestrians only. FHWA proposes these changes to consolidate like information.	The revised Option is adopted as proposed, except that viewing by "driving automation systems" is added as an allowed use. The request to delete "and not visible to operators of motor vehicles" because it is too restrictive is not adopted, as such displays are too distracting.
	FHWA proposes to revise the Standard regarding pictographs to require that they be devoid of QR codes, bar codes, or other graphics designed for optical scanning for the purpose of obtaining information to be consistent with the Standard language described above.	The change is adopted as proposed, except that the term "scanning graphics" is used, as stated previously, and clarification is provided on pictographs used by jurisdictions. Also, based on a comment, the final sentence of the Standard is revised to clarify that pictographs for colleges or universities shall not include pictorial representations of athletic mascots.
	FHWA proposes to add a Standard to clarify the existing prohibition of Business Identification (formerly Logo) sign panels from being displayed on signs except as specifically provided in the Manual. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement.	The proposed added Standard is not adopted in Section 2A.04, but appropriate information is instead included in Chapter 2J, where it is more appropriately located.
	FHWA proposes to reiterate and expand the existing Standard from Section 2B.10 prohibiting items other than traffic control signs from being mounted on the back of a sign.	The changes are adopted as proposed, except that "manufacturer name" is added to the allowable items on the back of a sign, based on a comment. This is a common practice and was an inadvertent omission from the NPA text. Also, the term "scanning graphics" is used as noted above.
	FHWA proposes to add an Option permitting the display of date of fabrication, sign designation, sign size, and manufacturer name on the front of a sign face, as well as a Standard specifying the location, maximum letter heights, and letter color.	The added Option and Standard are adopted as proposed, except that the term "scanning graphics" is used as noted above.
32	In Section 2A.05 (existing Section 2A.09) Shapes, FHWA proposes to add a new Guidance provision with recommendations for mounting a diamond-	The new Guidance is adopted as proposed, except with revisions based on comments that constrained lateral space affects all signs. Therefore, the

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
32 cont'd	shaped warning sign where lateral space is constrained.	revisions apply the Guidance to any standard sign, not just diamond-shaped warning signs. Also, in item E the guidance against overhanging the roadway is expanded based on comments to include the shoulder or other areas used by bicycles or pedestrians, and item F is not adopted because it could conflict with other provisions regarding maximum sign mounting height.
	FHWA also proposes a new Option to allow a vertically oriented rectangle for the legend of the warning sign when the methods contained in the Guidance are impractical.	The new Option is adopted as proposed, except that additional text is adopted to provide options for when maintaining overhead-mounted warning sign shape is not practical.
	Further, FHWA proposes to add a new Standard prohibiting other modifications to sign shapes, such as cutting off the left and right points of a diamond, resulting in a vertical hexagon. FHWA proposes these changes to ensure consistency and recognition of sign shapes and to clarify that “modifying” a sign to fit into constrained locations cannot result in a new, non-standard shape.	The new Standard is adopted as proposed.
		Also, a Standard from Section 1D.06 and Guidance from Section 2B.18 about signs with exclusive shapes not being obscured when mounted on the back of another sign are relocated and adopted with revisions in this section, where it is more appropriately located. Based on comments, the proposed Standard moved from Section 1D.06 is revised to Guidance for consistency with Guidance moved from Section 2B.18. The Guidance is applied to all signs, not just STOP and YIELD signs, and methods for consideration are added. Finally, an Option is added where the described methods for consideration are impracticable.
N/A (Sec. 2A.06)	Section 2A.06 Colors (not discussed in NPA Preamble)	In Section 2A.06 Colors, a Standard paragraph from Section 1D.06 about consistency of colors across a sign face is relocated to this section, as it only deals with signs and thus is more appropriately located here.
33	In Section 2A.07 (existing 2A.11) “Dimensions,” FHWA proposes to add a Standard to prohibit the use of larger sign sizes where a maximum allowable sign size is prescribed. FHWA proposes this to provide consistency in sign dimensions.	The added Standard is adopted as proposed.
	FHWA also proposes to revise existing Guidance P8 to allow for specific exceptions to the increase in size of supplemental plaques for larger signs. FHWA proposes this change because some plaques are not allowed to be enlarged beyond the size specified.	The changes are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
34	<p>In Section 2A.08 (existing Section 2A.13) Word Messages, FHWA proposes to add a new Standard requiring all word messages to be aligned horizontally across a sign, reading left to right, except as provided otherwise in the Manual. FHWA proposes this change to allow for signs that require a vertically oriented message, such as Reference Location signs and the Depth Gauge sign, and to make explicit that words are prohibited on retroreflective sign post strips for enhanced conspicuity. Though this requirement has always been inherent in the designs of the standardized signs in the MUTCD, the proposed statement clarifies the intent.</p> <p>FHWA also proposes to add a Standard statement that requires distances displayed on signs to be in a fraction format, not decimal, except as provided otherwise in the Manual. FHWA proposes this change to be consistent with language found in other Chapters and standardized signs throughout the Manual.</p>	<p>The added Standard is adopted as proposed.</p> <p>Also, based on comments, an Option is added that allows a secondary language, in addition to English, to be displayed on the face of signs, plaques, sign panels, and changeable message signs that are intended for viewing only by pedestrians and occupants of parked vehicles. The addition of this Option expressly provides the conditions under which such secondary-language messages are allowed, similar to existing provisions that have been retained from the 2009 MUTCD, now in Chapter 4K.</p> <p>The added Standard is adopted as proposed. A number of commenters disagreed with this change and favored the flexibility to use decimals; however, the Standard provides consistency throughout the Manual for displaying fractional distances rather than decimals on signs, except as explicitly provided otherwise.</p> <p>In regard to Paragraph 3 of this section, a request to relocate appropriate text about “Clearview”™ fonts from the Appendix to the main body of Part 2 is not adopted. Series E (Modified) – Alternative to Appendix A1 addresses the operational effect of the Congressional directive in the Consolidated Appropriations Act of 2018 that required FHWA to, “. . . reinstate Interim Approval IA–5, relating to the provisional use of an alternative lettering style on certain highway guide signs, as it existed before its termination, as announced in the Federal Register on January 25, 2016 (81 FR 4083).”</p>
35	<p>In Section 2A.09 (existing Section 2A.12) Symbols, FHWA proposes to clarify the Guidance statement to indicate that new standardized warning or regulatory symbol signs should be accompanied by an educational plaque where engineering judgment determines that the plaque would improve road user comprehension during the transition from word message to symbol signs.</p>	<p>The revisions to the Guidance are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
35 cont'd	<p>FHWA also proposes to change the existing Option regarding the use of mirror images of symbols from a Guidance to an Option to allow the use of mirror images, rather than recommend their use, thereby allowing more flexibility.</p> <p>Finally, FHWA proposes to eliminate the Option to use recreational and cultural interest area guide sign symbols on streets or highways outside of a recreational and cultural interest area. FHWA proposes this change for consistency with other proposed changes in Chapter 2M.</p>	<p>The change is adopted as proposed.</p> <p>The Option is deleted as proposed. The request to retain the Option is not adopted, as word messages are allowable and intended to be used outside of recreational and cultural interest areas, while recreational and cultural interest area symbols are intended for use inside recreational and cultural interest areas. There may have been confusion regarding use of recreational and cultural interest area symbols in the previous Manual; however, the adopted language is intended to clarify the intended use of recreational and cultural interest area symbols and ensure consistency throughout the Manual.</p>
36	<p>In section 2A.10 (existing Section 2A.14) Sign Borders, FHWA proposes to revise the Standard by incorporating language from existing Section 2E.16 requiring the border of a sign be the same color as the legend to outline the shape and ease recognition. FHWA proposes this change to account for the proposed elimination of the Standard in Section 2E.16 and provide more specific justification for the Standard, and because this provision applies to all signs in general.</p> <p>FHWA proposes to revise the Guidance to recommend that, on unusually large signs with oversized letter heights and other legend elements, the border width be 2 1/2 inches wide and not exceed 3 inches in width.</p> <p>FHWA also proposes to add a Support statement that provides reference to Section 2A.20 (existing Section 2A.07) regarding the use of LED units within the border of a sign.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The added Support is adopted as proposed but with reference to Section 2A.12, where the information has been relocated.</p>
37	<p>In Section 2A.11 (existing Section 2A.15) Enhanced Conspicuity for Standard Signs, FHWA proposes to revise Option P1 to add a maximum period of 6 months for the NEW plaque to be displayed, adding DO NOT ENTER and WRONG WAY signs to the signs that are not allowed to be supplemented by a warning beacon, and allow a rectangular rapid-flashing beacon (RRFB) to supplement a Pedestrian or School warning sign at an uncontrolled, midblock crosswalk. FHWA proposes these changes based on common practice and the proposed addition of the RRFB to the Manual (proposed Chapter 4L).</p>	<p>The revisions in Option P1 are adopted as proposed, except that item D is revised, based on comments, to remove the six months maximum period for display of the NEW plaque, and instead a new Guidance is added that the period to display this plaque should be determined by engineering judgment but not more than twelve months.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
37 cont'd	<p>FHWA proposes to delete the existing Standard prohibiting the use of the NEW plaque alone, because plaques by definition may not be used alone. As a result, this text is unnecessary.</p>	<p>The deletion is adopted as proposed.</p>
	<p>FHWA also proposes to revise the Standard to clarify that the display of any legend or other information on the retroreflective strip on a sign support is prohibited. FHWA adds this Standard because some agencies have added vertically arranged supplemental legends in substandard letter sizes on retroreflective strips. The existing Option allowing retroreflective strips does not allow for supplemental legends. FHWA adds this language to clarify the existing provisions.</p>	<p>The change is adopted as proposed.</p>
	<p>FHWA also proposes to add a Standard statement that prohibits the installation of duplicate signs on the same post facing the same direction of traffic. The allowable methods of enhancing conspicuity do not currently allow this practice, and FHWA proposes this addition to clarify that current practices of this type are not appropriate means for enhancing conspicuity.</p>	<p>The added Standard is adopted as proposed, with minor editorial revisions for clarity and accuracy.</p>
		<p>Some commenters requested to change the paragraph specifying the dimensions for placement of retroreflective strips on posts from Standard to Guidance. This request is not adopted as this is 2009 MUTCD text that was not proposed for revision and is therefore outside the scope of this rulemaking.</p>
N/A (Sec. 2A.12)	<p>New Section 2A.12 LEDs Used for Conspicuity Enhancement on Standard Signs (not discussed in NPA Preamble)</p>	<p>A new Section 2A.12 LEDs Used for Conspicuity Enhancement on Standard Signs is inserted and adopted, containing text on this topic relocated from Section 2A.20, including the NPA proposed changes to such text. The four proposed revised Standards and two new Standards are adopted but with revisions. In the fourth Standard paragraph, in response to comment, text is inserted to prohibit the LEDs from protruding outside the sign border or legend, and item F is revised to also allow fluorescent yellow-green as an LED color with school area, bicycle or pedestrian warning signs. These are accepted good practices.</p> <p>Also, a new Standard paragraph that prohibits the use of flashing LED units with a Speed Limit sign to indicate that the speed limit is in effect is relocated from Section 4S.04, as this is the most appropriate location for it. Similarly, a new standard is added to clarify the existing prohibition that LED units are not to be used with a WHEN FLASHING legend for the purpose of indicating when a regulatory or warning message is in effect.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
(Sec. 2A.12) cont'd		<p>A comment requesting to delete the Option that allows LED units to be used individually within the border or legend of a sign to enhance conspicuity is not adopted. As pointed out by another commenter, there are many good reasons to retain the Option, and the request was not adequately justified.</p> <p>A comment requesting to increase the maximum flash rate of LEDs from 60 to 120 times per minute is also not adopted. Although there is a Canadian study supporting allowable uses of 120 times per minute, such a change would be outside the scope of this rulemaking, but it could be considered for a future edition.</p> <p>Comments requesting deletion of the requirement for LEDs used in STOP or YIELD signs to operate continuously and not use actuation are not adopted. STOP and YIELD signs are continuously present so if the increased conspicuity offered by LEDs is needed, their continuous operation is critical.</p>
38	<p>In Section 2A.12 (existing Section 2A.16) Standardization of Location, FHWA proposes to add a new Figure 2A-5 to illustrate the relative locations of Regulatory, Warning, and Guide Signs on an urban signalized intersection approach to help clarify typical signing at these complex situations for practitioners.</p> <p>FHWA proposes to change the second sentence of the existing Standard to a Guidance, because the use of the posted or 85th-percentile speed for determining the appropriate sign spacing is just one factor, and there may be other factors that are more appropriate. Changing this to a Guidance statement provides agencies with more flexibility to use the factors they determine, through engineering judgment or study, to be most appropriate.</p> <p>FHWA also proposes to add a Guidance provision to recommend that where certain signs indicate an action by a road user in the left lane or at the left-hand side of a one-way road, such as Merge signs, the sign should be located on the left-hand side of the roadway. In the case of a divided road, the sign should be located in the median if adequate width is available.</p> <p>FHWA also proposes revising the existing Guidance to recommend that at locations where there are conflicts between the installation of regulatory and warning signs and a guide sign, that the guide sign should be relocated to another appropriate location where it would still be effective.</p>	<p>The section is adopted as Section 2A.13. The added figure is adopted as Figure 2A-4.</p> <p>The change is adopted as proposed.</p> <p>The added Guidance is adopted as proposed, with minor editorial revisions for clarity and accuracy.</p> <p>The changes are adopted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
38 cont'd	FHWA also proposes the recommendation that in other cases, such as at a decision point, the guide sign should take precedence over other signs whose locations are not as critical to an immediate decision or action necessary by the road user. In all cases, careful attention should be given to minimizing sign clutter. FHWA proposes this additional information to reinforce the importance of separating critical regulatory and warning information from guidance information so that road users are not overloaded with important information all at one location.	The added Guidance is adopted as proposed.
39	In Section 2A.14 (existing Section 2A.18) Mounting Height, FHWA proposes to add a new Standard stating that minimum mounting heights prescribed in this Section shall not supersede those necessary for crash performance of sign installations that are required to be crashworthy. FHWA proposes this change to remind users of the importance of crash performance of sign installations that are required to be crashworthy, as stated in existing provisions of the Manual.	<p>The section is adopted as Section 2A.15. In response to comments, the new Standard is not adopted; instead, a new Support is added with informational language on the topic.</p> <p>In addition, a Standard requiring that signs that are post-mounted on a median barrier that overhang any portion of the traveled way shall be mounted with a vertical clearance that complies with that of overhead signs is relocated here from Section 2A.16.</p> <p>A comment recommending to add new Guidance about mounting heights for large signs on cut slopes is not adopted, as it is outside the scope of this rulemaking. The subject can be considered for a future edition.</p>
40	<p>In Section 2A.15 (existing Section 2A.19) Lateral Offset, FHWA proposes to relocate existing P7 to Section 2A.17 (existing Section 2A.21) because the Option statement permitting the use of existing supports is more appropriate in the Posts and Mountings section.</p> <p>In concert with this change, FHWA proposes to delete P8 because the Standard is unrelated to the lateral offset of the sign installation and serves no purpose since the location is prescribed under other provisions in the Manual.</p>	<p>The section is adopted as Section 2A.16. The proposed relocation is adopted but to Section 2A.18 instead.</p> <p>The deletion is adopted as proposed.</p> <p>In addition, based on a comment, an added Guidance is adopted to provide recommended lateral placement for sign mounted laterally behind a longitudinal barrier to account for the barrier deflection distance. This reflects accepted practice based on safety considerations.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
40 cont'd		A comment recommending to exempt sign posts in built-up areas located at a 1-foot lateral offset from crashworthiness requirements is not adopted, as any sign post within the clear zone must be tested for crashworthiness.
41	<p>In Section 2A.17 (existing Section 2A.21) Posts and Mountings, FHWA proposes to add the Option statement relocated from Section 2A.15 (existing Section 2A.19) permitting the use of existing supports. As part of this change, FHWA proposes to add a Support statement referring readers to lateral and height placement criteria for Guidance and Standards contained in this Manual for such signs.</p> <p>FHWA also proposes to delete the Option paragraph regarding adding retroreflective strips to sign posts because it is redundant to Section 2A.11 (existing Section 2A.15). In concert with this change, FHWA proposes to retain a reference and relocate the Standard paragraph to Section 2A.11 (existing Section 2A.15).</p> <p>FHWA also proposes to add a Standard with requirements regarding the placement of equipment for powering electronic components of a sign, including solar panels, when such equipment is mounted to a sign support. FHWA proposes these requirements to retain crashworthiness performance of the sign installation as well as to avoid obscuring the face or shape of the sign.</p>	<p>The section is adopted as Section 2A.18. The changes are adopted as proposed.</p> <p>The changes are adopted as proposed.</p> <p>The added Standard is adopted as proposed, except that, based on a comment, the text about mounting above or below is deleted to simplify the requirement by merely requiring that the equipment is not to obscure the shape of the sign.</p>
42	<p>FHWA proposes to relocate and renumber existing Section 2A.04 Excessive Use of Signs, to Section 2A.19. FHWA proposes clarifications in P1 recommending signs should be used and located judiciously, minimizing their proliferation in order to maintain their effectiveness; that signs should be used conservatively; and that sign clutter be avoided.</p> <p>FHWA also proposes to modify the second sentence to specify that route signs and directional guide signs for primary routes and destinations should be used frequently at strategic locations because their use promotes efficient operations by keeping road users informed of their location.</p> <p>In concert with this change, FHWA proposes a new Support statement describing sign clutter consistent with Official Ruling No. 2–669(l) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/2_669.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/2_669.htm</a>) as well as information regarding vanity signs, which are signs that are requested by an interested party, but are not essential for, or have no relation to, traffic control.</p>	<p>The section is adopted as Section 2A.20. The changes are adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The first paragraph of the new Support is adopted as proposed. The second paragraph, regarding vanity signs, is adopted with revisions based on comments to delete the use of the term “vanity signs” and instead describe the types of signs that display messages unrelated to traffic operation, navigation, or transportation information and thereby contribute to sign clutter. FHWA still refers to these types of signs by the established term,</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
42 cont'd	<p>As part of these changes, FHWA also proposes new Guidance statements recommending that signs and other traffic control devices be installed and maintained from a systematic standpoint rather than individually. FHWA proposes these changes because of the increased proliferation of signs, often installed separately over time, which reduces the effectiveness of signs and distracts road users at decision points and other locations requiring heightened attention.</p>	<p>“vanity signs,” but does not include the term in this final rule.</p> <p>The changes are adopted as proposed.</p>
43	<p>In Section 2A.20 (existing Section 2A.07), retitled, “Retroreflection and Illumination,” FHWA proposes to add a new Standard that requires the use of an opaque or non-retroreflective material for a black legend or background. Under headlamp illumination, retroreflective black appears as white, which creates a conflict with the existing requirement for signs to appear similar under daytime and nighttime conditions. FHWA proposes this addition to resolve this conflict.</p> <p>FHWA also proposes to add two Support statements regarding the use of LED units. In concert with these additions, FHWA also proposes to revise existing Standards P7 through P10 and add two new Standards regarding the pitch and placement along the edge of a sign to incorporate additional provisions for LED units to ensure that adequate legibility would be maintained.</p>	<p>The section is adopted as Section 2A.21. The change is adopted as proposed.</p> <p>The changes are not adopted in but instead all text in Section 2A.21 related to use of LED units in signs, including changes that were proposed, is relocated from Section 2A.21 to new Section 2A.12 (see above), because LEDs do not relate to retroreflection or illumination.</p>
44	<p>In Section 2A.21 (existing Section 2A.08) Maintaining Minimum Retroreflectivity, FHWA proposes to add to Guidance recommendations for the visual inspection and revised assessment or management methods that should be used to maintain sign retroreflectivity at or above the minimum levels in Table 2A–5 (existing Table 2A–3) and that signs that are below the minimum levels should be replaced.</p> <p>In addition, FHWA proposes to add paragraph headings to define which methods are management methods and which are assessment methods, and to include the three procedures that make up the visual assessment method. FHWA proposes these additions to clarify the types of methods and to place information that is currently available in other resources in one location.</p>	<p>The section is adopted as Section 2A.22. The added Guidance is adopted as proposed, with some clarifying editorial revisions.</p> <p>These changes were not included in the proposed MUTCD text published with the NPA, as intended, for consistency with Section 3A.03 Maintaining Minimum Retroreflectivity for pavement. However, the NPA preamble was inadvertently not updated to reflect that this was not being included in the proposal. Additionally, the list of methods for maintaining sign retroreflectivity was removed in the NPA text, but the change was not reflected in the NPA preamble.</p> <p>Requests from several agencies that operate park and recreational roads requested that brown be restored and not removed as a color that may be</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
44 cont'd		exempted from the retroreflectivity maintenance requirements, stating reasons such as brown signs being lower priority signs, the cost of maintenance and replacement for agencies, and roads being closed to the public at night. Those requests are not adopted, as all signs communicate critical information to road users during nighttime, low light, and adverse weather conditions where retroreflectivity is essential for safety on park and recreational roads. Additionally, the language allows agencies sufficient flexibility since signs will be replaced per agency policy taking into account agency budget.
45	<p>In Section 2A.22 (existing Section 2A.23), retitled, "Median Opening Treatments for Divided Highways," FHWA proposes to delete the existing Guidance and add new recommendations for signing a divided highway crossing as separate intersections when specific conditions are present.</p> <p>FHWA also proposes to add a new Figure 2A-6 to illustrate the new recommendations. FHWA proposes these changes to provide additional details for road user safety, based on the results of recently completed research on this topic (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>).</p>	<p>The section is adopted as Section 2A.23. The changes are adopted as proposed.</p> <p>The added figure is adopted as Figure 2A-5.</p>
46	As part of the reorganization to improve usability of the MUTCD, FHWA proposes to include subchapter headings in Chapter 2B to organize sections into related groupings. FHWA proposes the following subchapters in Chapter 2B: General; Signing for Right-of-Way at Intersections; Speed Limit Signs and Plaques; Movement and Lane Control Signs; Passing Keep Right and Slow Traffic Signs; Selective Exclusion Signs; Do Not Enter, Wrong Way; One-Way and Related Signs and Plaques; Parking, Standing, Stopping, and Emergency Signs; Pedestrian Signs; Traffic Signal Signs; Road Closed and Weight Limit Signs; Other Regulatory Signs, and Barricades and Gates.	The reorganization of Chapter 2B with sub-chapter headings is adopted as proposed.
47	In Section 2B.01 Application of Regulatory Signs, FHWA proposes to delete portions of existing Standard P3 and all of P4 requiring signs to be the same shape and similar color by day and by night and restricting street lighting use for sign illumination, because the information is repetitive and covered elsewhere in the Manual.	<p>The text deletions of portions of P3 and P4 are adopted as proposed.</p> <p>A comment recommending addition of a Support statement about regulatory signing on low-volume rural roads is not adopted, as the subject is adequately covered in Section 2A.02.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
48	<p>In Section 2B.02 Design of Regulatory Signs, FHWA proposes to delete existing Option P2 and P3 because they are already covered in existing Section 2A.06.</p> <p>FHWA also proposes to revise P5 from Guidance to Standard. FHWA also proposes to apply the Standard to LED signs for a part-time message and indicate the color scheme of regulatory messages displayed with LEDs.</p> <p>In concert with this change, FHWA also proposes adding an Option and two Standard paragraphs pertaining to the use of LEDs in the border of a sign and the display of regulatory signs in a full matrix changeable message sign, respectively. FHWA proposes these changes to provide uniformity in the application LEDs in traffic control signs and changeable message signs. These changes are necessary to ensure a consistent appearance in the sign legend regardless of the type of display, whether static, illuminated, or changeable.</p>	<p>The deletions of existing P2 and P3 are adopted as proposed.</p> <p>The revision of existing P5 to Standard is adopted with further clarifications as well as the removal of the black symbol on a full matrix white LED background consistent with the provisions of Chapter 2L.</p> <p>The proposed added Option regarding use of LEDs is revised to a Support statement referring to Section 2A.12, to be consistent with Chapter 2C, and the added Standard regarding display of regulatory signs in a full matrix CMS, are both adopted as proposed. The Standard paragraph prohibiting use of blank-out signs for Stop or Yield signs is relocated to Sections 2B.04 and 2B.05, respectively, as those locations are more appropriate.</p>
49	<p>In Section 2B.03 Size of Regulatory Signs, FHWA proposes to add a Standard statement regarding the size of regulatory signs on low-volume roads with operating speeds of 30 mph or less, to capture the language provided in the existing Part 5 text that has been redistributed among the remaining parts.</p> <p>FHWA also proposes to delete P6, requiring the use of 36" x 36" STOP signs on multi-lane approaches, because that requirement already exists in existing P3 and Table 2B-1. FHWA also proposes to delete P7 and P8 requiring the use of 36" x 36" STOP signs on side roads that intersect with multi-lane streets of 45 mph or higher speed limits, even if the side road is not multi-lane, because this may place an undue burden on agencies to change existing 30"x 30" signs at such locations. FHWA proposes to revise existing Guidance P9 and add a new Guidance paragraph to allow the use of single lane or multi-lane conventional road sign sizes on ramps that connect expressways or freeways to intersections with a conventional roadway. FHWA proposes this change, because the operating characteristics of exit ramps connecting expressways or freeways to other expressways or freeways are different from those connecting expressways or freeways to conventional roads. As a result, signs on exit ramps connecting to conventional roads do not require the larger size signs associated with a freeway or an expressway.</p> <p>Finally, FHWA proposes to add a Standard requiring the use of a near side NO TURN ON RED or RIGHT (LEFT) ON RED ARROW AFTER STOP sign, as</p>	<p>The changes are adopted as proposed.</p> <p>The proposed added Standard is relocated to Section 2B.60 because that is where design and placement of NO TURN ON RED signs is discussed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
49 cont'd	applicable, to supplement a far side, single-lane sized R10–11, R10–11a, R10–11b, or R10–17a sign when the distance between the stop line and the far side sign is more than 120 feet. FHWA proposes this to provide additional signing for turning vehicles at the near side of the intersection to supplement the far side sign at an increased distance.	Also, the proposed added Option to allow the single-lane column sizes to be used on a multi-lane approach for certain NO TURN ON RED signs is not adopted, because the single-lane and multilane sizes for these signs are identical.  A comment requesting addition of an Option allowing smaller sizes for most signs on site roadways open to public travel with speeds less than 25 mph is not adopted in this section but is addressed by a Standard in Section 2A.07.
50	FHWA proposes to delete existing Sections 2B.04 (Right-of-Way at Intersections), 2B.06 (STOP Sign Applications), 2B.07 (Multi-Way Stop Applications), and 2B.09 (YIELD Sign Applications) and replace them with new Sections 2B.06 through 2B.18, as described below, to address comprehensively the need for warrants for no control, yield control, stop control, or all-way stop control. FHWA proposes these changes to incorporate the results of a NCHRP Project 03–109, ( <a href="http://www.trb.org/Main/Blurbs/172596.aspx">http://www.trb.org/Main/Blurbs/172596.aspx</a> ) which proposed general considerations, alternatives to changing right-of-way control, and forms of unsignalized control from least restrictive to most restrictive, beginning with no control and concluding with all-way stop control.	The reorganization is adopted as proposed.
51	In Section 2B.04 (existing Section 2B.05) STOP Sign (R1–1) and ALL–WAY Plaque (R1–3P), FHWA proposes to delete P5 regarding the use of the ALL–WAY Plaque because it is redundant with the preceding paragraph.	The deletion of P5 is adopted as proposed.  In addition, a portion of the paragraph relocated from 2B.02 is inserted as new P4. Further, the paragraphs in the Standard statement that specify shape and certain colors for the STOP sign and the ALL-WAY plaque are removed, because the designs of these devices are standardized and do not need to be repeated here.
N/A (Sec. 2B.05)	2B.05 YIELD Sign (not discussed in NPA Preamble)	A portion of the paragraph relocated from 2B.02 is inserted as new P2 in response to comment. Also, the Standard paragraph that specifies shape and certain colors for the YIELD sign is removed, because the design of this sign is standardized and does not need to be repeated here.
52	FHWA proposes to add a new section numbered and titled, “Section 2B.06 General Considerations,” incorporating some paragraphs from existing Section 2B.04 and proposed new general Support and Guidance paragraphs regarding signing for right-of-way at intersections.	The changes are all adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
52 cont'd	<p>FHWA proposes adding the Support regarding the types of right-of-way control that can exist at an unsignalized intersection based on the research results of NCHRP Project 03–109 (<a href="http://www.trb.org/Main/Blurbs/172596.aspx">http://www.trb.org/Main/Blurbs/172596.aspx</a>)</p> <p>FHWA proposes adding Item G, suggesting the presence of a grade crossing near an intersection as a factor to consider when selecting a form of traffic control. FHWA proposes this additional item to address the potential for resultant queues at an intersection that may extend toward a nearby grade crossing.</p>	<p>In addition, the phrase "for all road users" is added to the end of P3 for clarification. Further, in response to a comment, item B of the 2nd Guidance statement is revised to more correctly include all modes of conflicting traffic, including bicycles and pedestrians.</p>
53	<p>FHWA proposes to add a new section numbered and titled, "Section 2B.07 Determining the Minor Road for Unsignalized Intersections," that includes one Guidance paragraph from existing Section 2B.04 and one additional Guidance regarding criteria for selecting the minor road to be controlled by YIELD or STOP signs. FHWA proposes these criteria based on the result of NCHRP Project 03–109 (<a href="http://www.trb.org/Main/Blurbs/172596.aspx">http://www.trb.org/Main/Blurbs/172596.aspx</a>).</p>	<p>The changes are adopted as proposed.</p> <p>An organization requested to add to P2 item A people with disabilities, seniors, and people using bicycles, and routes providing access to a transit stop or station. This change is not adopted, as this section is not about prioritization, it is about selecting the minor road. As guidance, engineering judgment can be used to consider other factors that are not listed.</p>
54	<p>FHWA proposes to add a new section numbered and titled, "Section 2B.08 Right-of-Way Intersection Control Considerations," with proposed new Guidance paragraphs regarding the alternative treatments to consider prior to converting to a more restrictive right-of-way control.</p>	<p>The changes are adopted as proposed with minor editorial changes suggested by commenters.</p>
55	<p>FHWA proposes to add a new section numbered and titled, "Section 2B.09 No Intersection Control," consisting of new Guidance and Option statements regarding factors to consider when making a decision not to use intersection control. FHWA proposes this new section specifically to include information in the MUTCD regarding conditions for consideration when determining the need for intersection control.</p>	<p>The changes are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
56	FHWA proposes to add a new section numbered and titled, "Section 2B.10 Yield Control," consisting of some text relocated from existing Sections 2B.06 and 2B.09, plus new Guidance paragraphs regarding the use of YIELD signs to control an intersection. FHWA proposes this change to combine information regarding yield control in one location.	The changes are adopted as proposed except that, in the last Guidance statement, the parenthetical sentence following the first sentence is removed because it a Support sentence that is not needed. Also, in item F of P2 the phrase "combined vehicular, bicycle, and pedestrian" is inserted before "entering intersection volume" for clarification.
57	FHWA proposes to add a new section numbered and titled, "Section 2B.11 Minor Road Stop Control," consisting of one paragraph relocated from existing Section 2B.06, plus proposed new Guidance paragraphs regarding stop control on the minor road approach only. FHWA proposes this new section to provide information specific to the use of stop control on a minor approach.	The changes are adopted as proposed. It is noted that some commenters opposed the changes in this section to the crash criteria, however, these provisions are adopted, as they were the result of NCHRP Project 03-109. Further, this Section contains guidance that should be considered by practitioners based on engineering judgment. The consideration of other factors at a specific location based on engineering reasons might be appropriate.
58	FHWA proposes to add new section numbered and titled, "Section 2B.12 All-Way Stop Control," consisting of one paragraph relocated from existing Section 2B.07 and proposed new Guidance and Standard paragraphs regarding warrants for all-way stop control. FHWA proposes this new section to clarify the application of all-way stop control and provide an introduction to the proposed new sections (Sections 2B.13 through 2B.17) related to all-way stop control warrants.	<p>The changes are adopted as proposed.</p> <p>Also, an introductory Support statement is added to introduce the topic of all-way Stop control. Further, in response to a comment, an Option paragraph is added to allow the use of engineering judgment in making a decision to use all-way Stop control on site roadways open to public travel, because of the low speeds and unique conditions associated with such roadways.</p> <p>A commenter recommended comprehensive re-examination of warrant criteria for Sections 2B.12 thru 2B.17, as well as criteria for warranting crosswalks and traffic signals in Parts 3 and 4, to update them to more current research and make them more uniform and consistent in approach. Such re-examination will be considered for a future edition.</p>
59	FHWA proposes to add a new section numbered and titled, "Section 2B.13 All-Way Stop Control Warrant A: Crash Experience," consisting of one proposed new Option paragraph regarding the selection considerations for all-way stop control based on crash experience.	<p>The changes are adopted as proposed, except that item C of the Option paragraph is deleted because it is duplicative of Warrant B in Section 2B.14.</p> <p>Many commenters opposed the proposed changes in crash history to warrant Stop control, in this section and also in Section 2B.11. Many of the commenters want there to be no crash history</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
59 cont'd		thresholds at all, for the sake of making it easier to warrant Stop control to aid pedestrian safety. The MUTCD crash criteria are based on research, but further changes in these criteria based on Safe System approach could be considered in the future.
60	FHWA proposes to add a new section numbered and titled, "Section 2B. 14 All-Way Stop Control Warrant B: Sight Distance," consisting of a portion of one Support paragraph relocated from existing Section 2B.07, plus a proposed new Option paragraph regarding the selection considerations for all-way stop control based on sight distance.	The changes are adopted as proposed.
61	FHWA proposes to add a new section numbered and titled, "Section 2B.15 All-Way Stop Control Warrant C: Transition to Signal Control or YIELD Control at a Roundabout," consisting of one proposed Option paragraph regarding the selection considerations for all-way stop control based on a transition plan to convert an intersection to signal control.	The changes are adopted as proposed, except that in the title and text of the section, the word "Roundabout" is replaced with the broader term "Circular Intersection".
62	FHWA proposes to add a new section numbered and titled, "Section 2B.16 All-Way Stop Control Warrant D: 8-Hour Volume (Vehicle, Pedestrians, Bicycles)," consisting of one proposed new Option paragraph regarding the selection considerations for all-way stop control based on the criteria included in Table 2B-2.	<p>The changes are adopted as proposed, except that in item A of P1, the phrase "average day" is revised to "typical day" for clarity.</p> <p>Also, in items A and B of P1 the phrase "combined vehicular, bicycle, and pedestrian" is inserted before "entering intersection volume" for clarification.</p> <p>The FHWA disagrees with a comment suggesting the average delay of 30 seconds per vehicle during the highest hour should remain in this warrant. The provisions are based on research and although the NCHRP study had a warrant that was for peak-hour delay, knowing the average delay per vehicle and not considering the total system delay provides little value because of the potential for a small number of vehicles. A metric of delay per vehicle is not an appropriate one for determining a warrant. Further, an engineering study has to be conducted as described in the Support for these sections where engineering judgment might determine that at a particular location delay is a critical factor.</p>
63	FHWA proposes to add a new section numbered and titled, "Section 2B.17 All-Way Stop Control Warrant E: Other Factors," consisting of portions of an existing Option paragraph relocated from existing Section 2B.07, plus one proposed new Option paragraph regarding the selection considerations for all-way stop control based on other factors.	The changes are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
64	<p>In Section 2B.18 (existing Section 2B.10) STOP Sign or YIELD Sign Placement, FHWA proposes to remove existing Standard P4 through P6 restricting the use of inventory stickers and other items on STOP and YIELD signs, because those restrictions apply to all signs, not just STOP and YIELD signs, and therefor and proposes to relocate this text to Chapter 2A.</p> <p>FHWA proposes to add a Guidance limiting supplemental plaques used in conjunction with a STOP or YIELD sign to those specified in the MUTCD. FHWA proposes this change to ensure consistency in the use of supplemental plaques mounted beneath STOP and YIELD signs. FHWA also proposes to add an Option allowing the use of a TO TRAFFIC IN CIRCLE (R1-2bP) or TO ALL LANES (R1-2cP) plaque, mounted below the YIELD sign, for locations where drivers must yield to traffic in a multi-lane roundabout. FHWA proposes this option to address situations that occur when drivers at a multi-lane roundabout are not anticipating the vehicle in the inside lane to maneuver to exit the roundabout.</p>	<p>The changes are all adopted as proposed.</p> <p>In addition, the existing Guidance paragraph in this Section about signs mounted back-to-back with Stop or Yield signs is deleted because it conflicts with Section 1D.06. Based on comments received on those provisions in Section 1D.06, the Guidance paragraph is relocated to Section 2A.05, as that is the more applicable Section, and a Support statement is added in Section 2B.18 referencing Section 2A.05 for provisions that restrict the protrusion of signs mounted back-to-back.</p> <p>Further, in the third paragraph within the second Guidance statement of this section, the phrase “and channelized right turns” is inserted after “except at roundabouts” for consistency and completeness.</p> <p>Lastly, comments requesting the addition of an exemption to allow installation other than on the right-hand side for very low speed site roadways open to public travel is not adopted. If deviation from a Standard for placement of signs is needed due to unique circumstances, the provisions in Part 1 for such deviation can be followed.</p>
65	<p>In section 2B.19 (existing Section 2B.11) Yield Here to Pedestrians Signs and Stop Here for Pedestrians Signs (R1-5 Series),” FHWA proposes to add a Support statement describing the intent of the R1-5 series signs, which is to mitigate scenarios associated with pedestrian and vehicle visibility. FHWA also proposes to revise the first sentence of Standard P1 to address confusion on the existing limitation of the</p>	<p>The added Support and the changes in Standard P1 are adopted as proposed, except that, in response to comments, two additional signs in the R1-5 series (R1-5d and R1-5e) are added as a Standard for trail crossings. Several comments requesting deletion of “multi-lane” in P1 so as to enable use of R1-5 series signs at single-lane approaches are not adopted. Experimentation with using these signs on single-</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
65 cont'd	<p>R1–5 series signs that are only appropriate for use on multi-lane approaches where there is a multiple threat scenario that can block other drivers' and pedestrians' views of one another.</p> <p>FHWA also proposes to change the last sentence of Standard P1 to correct an oversight in the 2009 Edition, prohibiting, rather than allowing, the use of the STATE LAW legend to be displayed at the top of these signs because the sign applies to the specific location for yielding or stopping in advance of a specific crosswalk that is occupied, rather than to the general requirement to yield or stop at occupied crosswalks.</p> <p>In addition, FHWA proposes to change the advance placement distance portion of Guidance P2 to a Standard, requiring that the R1–5 series signs be placed 20 to 50 feet in advance of the nearest crosswalk line to ensure that they adequately mitigate the multiple threat scenario on a multi-lane approach, which places pedestrians at risk when a second vehicle blocks other drivers' view of pedestrians and the pedestrians' view of the vehicles approaching in the adjacent lanes. FHWA proposes this change to ensure that the placement of the signs does not interfere with signs at the intersection and/or potentially cause misinterpretation as a Stop-controlled intersection either by approaching traffic or traffic on the cross street, as FHWA has observed in practice.</p> <p>FHWA also proposes to add an Option for the R1–5a and R1–5c signs with the schoolchildren symbol in place of the pedestrian symbol, provided that the signs are only used in advance of a marked crosswalk that crosses an uncontrolled multi-lane approach within school zones. FHWA proposes this change to reflect Official Interpretation 2(09)–40(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/2_09_40.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/2_09_40.htm</a>), allowing the use of the schoolchildren symbol in the R1–5 series signs, similar to the R1–6 series In-Street Pedestrian Crossing signs when used at an unsignalized school crossing.</p>	<p>lane approaches has been insufficient. More data from well-designed experiments is needed in order to consider this in the future.</p> <p>The change is adopted as proposed. A comment recommending to remove the prohibition on using the STATE LAW legend with R1-5 series signs is not adopted. The R1-6 sign with the STATE LAW legend reminds drivers of the law that applies regardless of whether the sign is in place at a specific location, whereas the R1-5 sign is specific to a multi-lane location to mandate where to yield or stop and is intended to mitigate the multi-threat scenario; therefore, it would not be appropriate to have the STATE LAW header.</p> <p>The change from Guidance to Standard is not adopted, based on comments citing the need to allow for increased flexibility based on site specific conditions, including sight distance, to further protect against the multiple threat scenario on multi-lane approaches.</p> <p>The proposed Option for the R1–5a and R1–5c signs with the schoolchildren symbol is adopted as a Standard for consistency with Part 7.</p>
66	<p>FHWA proposes to renumber and retitle existing Section 2B.12, "Section 2B.20 In-Street and Overhead Pedestrian and Trail Crossing Signs (R1–6 and R1–9 Series)" to reflect the additional proposed Trail Crossing sign. FHWA also proposes to revise existing Standard P3 through P5 to include the proposed new Trail Crossing sign. FHWA proposes to clarify in Standard P3 that no more than one in-street sign shall be placed in the roadway, on</p>	<p>The clarifications as proposed are not adopted. New clarification is added to the Standard in Paragraph 04 for the allowable placement of these signs, including when it is determined that more than one sign or additional placement on the edge line might be beneficial. Further, a new Support paragraph is added in the final rule referencing new provisions in Section 3I.02 that clarify the flexibilities available for the use of channelizing devices at mid-block</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
66 cont'd	<p>a lane line for a one-way roadway application, or on a median island. FHWA proposes this change to minimize sign proliferation in the roadway and to prevent potential distraction due to an overuse of signs at a single location. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement, in response to an apparent misinterpretation of the existing provisions as evidenced by a number of technical inquiries and observations of noncompliant field deployments.</p>	<p>pedestrian crossings in conjunction with In-Street Pedestrian Crossing (R1-6 Series) Signs. This Support will provide agencies further information on existing treatments that can provide additional emphasis for the pedestrian crossing and provide a channelizing and potentially calming effect on vehicle traffic.</p>
	<p>FHWA proposes to change existing Option P7 to a Standard and add a new Standard to require that if used, the In-Street or Overhead Pedestrian or Trail Crossing sign shall be used as a supplement to a Pedestrian Crossing (W11-2) or Trail Crossing (W11-15) warning sign with a diagonal downward-pointing arrow (W16-7P) plaque at the crosswalk location. FHWA proposes this change to ensure that if an in-street or overhead sign is used, that the appropriate non-vehicular warning sign is in place to ensure uniformity in application at crosswalks. FHWA proposes this change as a conforming edit, which does not change the existing underlying requirement, in response to an apparent misinterpretation of the existing provisions as evidenced by a number of technical inquiries and observations of noncompliant field deployments.</p>	<p>These changes are adopted as proposed.</p>
	<p>FHWA proposes to add an Option allowing In-Street Pedestrian or Trail Crossing signs to be mounted back-to-back in the median or on the centerline of an undivided roadway. FHWA proposes this option to minimize the number of in-street obstructions at the crossing. FHWA also proposes to clarify in Standard P8 that the In-Street Pedestrian or Trail Crossing sign and the Overhead Pedestrian Crossing or Trail sign shall not be used at crosswalks on approaches controlled by a traffic control signal, pedestrian hybrid beacon, or an emergency vehicle hybrid beacon. FHWA proposes this clarification to eliminate conflict between the sign that says STOP or YIELD and a green signal indication on a traffic control signal or hybrid beacon.</p>	<p>These changes are adopted as proposed.</p>
	<p>In concert with this change, FHWA proposes to add an Option statement permitting the use of the In-Street Pedestrian and Overhead Pedestrian and Trail Crossing sign at intersections or midblock pedestrian crossings with flashing beacons, because flashing beacons do not display a green indication, and therefore the use of this sign would not conflict with the signal indication.</p> <p>Finally, FHWA proposes to reword existing Option P15 to clarify that both the in-street and overhead</p>	<p>The added Option is adopted as proposed.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
66 cont'd	mountings of signs may be used together at the same crosswalk.	
67	<p data-bbox="228 363 850 1213">In Section 2B.21 (existing 2B.13) Speed Limit Sign (R2-1), FHWA proposes to reorganize and revise material based on the NTSB's recommendation (<a href="https://www.nts.gov/safety/safety-studies/Documents/SS1701.pdf">https://www.nts.gov/safety/safety-studies/Documents/SS1701.pdf</a>) to review how speed limits are determined. FHWA proposes to move and revise Guidance P10, 12, and 13 and Option P16 to earlier in the section to clarify the factors that should be considered when establishing or reevaluating speed limits within speed zones. FHWA proposes changes to reinforce the stated understanding that other factors, in addition to the 85th-percentile speed, have a role in setting speed limits. FHWA retains reference to 85th-percentile speed as a factor that should be considered, particularly for freeways and expressways, as well as for rural highways, except those in urbanized locations within rural regions. FHWA also retains reference to the setting of speed zones in broad terms, thereby allowing agencies to establish detailed criteria based upon national guidance or based upon research, outside the MUTCD. FHWA also proposes to add Support to this section directing users to FHWA's Engineering Speed Limits web page, which provides information on where to find additional resources on the methods and practices for setting Speed Limits for specific segments of roads as well as tools to assist practitioners, such as USLIMITS2.</p> <p data-bbox="228 1247 850 1734">In addition to providing comment on this proposed change, FHWA also requests comment on the following additional recommendations of the NTSB report: (1) Removal of the 85th-percentile speed as a consideration in setting speed limits regardless of the type of roadway (this recommendation was based in part on the assumption that that the 85thpercentile speed can increase over time as a result of the posted speed limit); and (2) the requirement to use an expert system to validate a speed limit that has been determined through engineering study. Commenters are also requested to address likely outcomes if one or more of the other recommendations in the report, such as increased automated enforcement, were not implemented in conjunction with the speed-setting recommendations outlined in the report.</p> <p data-bbox="228 1768 850 1944">FHWA also proposes to change the second sentence of P4 from Standard to Guidance to recommend, rather than require, that additional Speed Limit signs be installed beyond major intersections and at other locations where it is necessary to remind road users of the applicable speed limit. FHWA proposes this</p>	<p data-bbox="878 363 1500 422">See Preamble of Federal Register for discussion of this section, except as noted below.</p> <p data-bbox="878 1768 1500 1822">This change is adopted as proposed but relocated within the section.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
67 cont'd	<p>change because engineering judgment is involved to determine what constitutes a major intersection.</p> <p>FHWA also proposes to modify existing paragraph 9 to reference the Reduced Variable Speed Zone (W3–5b) and Truck Speed Zone (W3–5c) signs in conjunction with their addition to Chapter 2C.</p> <p>As part of this change, FHWA also proposes to add an Option for the use of an END VARIABLE SPEED LIMIT (R2–13) sign at the downstream end of a variable speed zone to provide notice to road users of the termination of the zone.</p> <p>FHWA also proposes, in conjunction with the above, a Standard statement requiring an END TRUCK SPEED LIMIT (R2–14) sign be installed at the downstream end of the zone. This Standard is necessary to ensure that road users receive notice of the termination of a truck speed zone where trucks are allowed to resume the general regulatory speed limit.</p> <p>In addition, FHWA proposes to revise existing P18 to replace the term “changeable message sign” with “variable speed limit sign” to reflect the sign type more accurately.</p> <p>FHWA also proposes to add a Standard statement requiring the variable speed limit sign legend “SPEED LIMIT” to be a black legend on a white retroreflective background, consistent with the standard legend and background on a Speed Limit sign. FHWA also proposes in this Standard statement to require the variable speed limit legend on a variable speed limit sign to be indicated by white LEDs on an opaque black background. FHWA proposes to add this Standard to clarify the text, as indicated in Official Ruling No. 2(09)–3(I).</p> <p>Finally, FHWA proposes to delete existing Option P19 and Guidance P20 and add a Support statement referencing Section 2C.14 for provisions for the use of a Vehicle Speed Feedback sign, to group that information in Chapter 2C Warning signs.</p>	<p>These changes are adopted as proposed but relocated within the section.</p> <p>This change is adopted as proposed.</p> <p>This change is adopted as proposed.</p> <p>This change is adopted as proposed.</p> <p>This change is adopted as proposed.</p> <p>This change is adopted as proposed but referencing Section 2C.13 instead.</p>
68	<p>FHWA proposes to renumber and retitle existing Section 2B.14 to “Section 2B.22 Vehicle Speed Limit Plaques (R2– 2P Series)” to reflect proposed changes in the section to clarify that a legend similar to TRUCKS XX may be used for other vehicles on a speed limit plaque. FHWA proposes this change to provide agencies with more flexibility in speed limit signing for various vehicle types, and to streamline processes by making it easier for agencies to specify</p>	<p>The changes are adopted with minor revisions to the names of the plaques as follows: Truck Speed Limit (R2-2P) plaque, Bus Speed Limit (R2-2aP) plaque, Truck-Bus Speed Limit (R2-2bP) plaque, and Vehicles over X Tons Speed Limit (R2-2cP).</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
68 cont'd	and fabricate such plaques by standardizing the more common legends.	
69	<p>FHWA proposes to retitle existing Section 2B.16 to "Section 2B.24 Minimum Speed Limit Plaque (R2-4P) and Combined Maximum and Minimum Speed Limits (R2-4a) Sign" to reflect both the plaque and sign that are currently discussed in the existing Section.</p> <p>In concert with this change, FHWA also proposes to add a sentence to the existing Standard to clarify that the R2-4P plaque, if used, must be installed below the R2-1 sign, which is a stated condition of the existing Option paragraph that immediately follows. FHWA proposes this change as a conforming edit, which would not change the existing underlying condition of the Option.</p>	The changes are all adopted as proposed.
70	<p>In Section 2B.25 (existing Section 2B.17) Higher Fines Signs and Plaque (R2-6P, R2-10, and R2-11), FHWA proposes to change the first sentence of existing Standard P1 to Guidance to reflect the recommendation, rather than the requirement, to use a BEGIN HIGHER FINES ZONE (R2-10) sign or a FINES HIGHER (R2-6P) plaque to provide notice to road users. This proposed change would give agencies more flexibility in determining whether to install such signs and plaques, particularly those States that have higher fines by statute in school zones, work zones, and other locations.</p>	<p>The revision of the first sentence of P1 from Standard to Guidance is not adopted. That sentence is reverted back to Standard to be consistent with similar provisions in Chapter 7B. Also, P2 is reverted back to Standard for the same reason. Additionally, an Option is added to allow for the BEGIN HIGHER FINES ZONE signs to be omitted where such a zone is established by statute.</p>
71	<p>In Section 2B.26 (existing Section 2B.18) Movement Prohibition Signs (R3-1 through R3-4, R3-18, and R3-27), FHWA proposes to add a Guidance recommending the use of Movement Prohibition signs only to prohibit a turn or through movement from an entire approach and not to designate movements that are required or permitted from a specific lane or lanes on a multi-lane approach. FHWA proposes this additional language to prevent the use of multiple conflicting movement prohibition signs along an approach where lane use signs and pavement markings would be more appropriate.</p> <p>FHWA proposes to revise the first item under Option P12 to replace the term "changeable message sign" with less specific language describing the operation of the sign.</p> <p>In concert with this change, FHWA proposes to add a Standard statement regarding the use of blank-out LED signs and the allowable LED colors, to reflect current practice.</p>	<p>All of the changes are adopted as proposed., except that in the final paragraph of the section, the reference to use of One-Direction Large Arrow signs in the central island of a roundabout is removed (See items 90 and 118).</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
71 cont'd	<p>FHWA also proposes to add a new Option statement to allow the use of permanently mounted signs incorporating a supplementary legend showing the vehicle class restriction where the movement restriction applies to certain vehicle classes. FHWA proposes to add this language to provide agencies with flexibility in signing movement prohibitions for various vehicle classes without having to mount a plaque.</p> <p>FHWA also proposes to add a Standard statement describing the design of the blank-out part-time electronic display for the Movement Prohibition sign. This Standard is necessary to ensure design consistency and uniformity in appearance with static signs used for the same purpose.</p>	<p>In addition, in response to comments, P8 is revised from an Option to a Guidance, in order to increase uniformity and reduce the number of signs at a given location. Further, in P15 the word “specific” is added to clarify that the legends of the plaques cited are examples and that a specific mode exemption legend can be used as appropriate, and the paragraph is relocated to earlier in the section for better information flow.</p>
72	<p>In Section 2B.27 (existing Section 2B.19) Intersection Lane Control Signs (R3–5 through R3–8), FHWA proposes to change Standard P6 to Guidance to reinforce that the use of an overhead intersection lane control sign on one lane of an approach does not require the use of overhead intersection lane control signs on the other lanes of that same approach, yet such signs can be used.</p> <p>In concert with this change, FHWA proposes a slight modification to Guidance P3 to clarify the independent use of signs. FHWA proposes this change to clarify the application of these signs and eliminate potential confusion with the use of the signs.</p> <p>FHWA also proposes to remove Option P7 as the mounting requirements are specifically outlined in the specific Intersection Lane Control sections that follow.</p>	The changes are all adopted as proposed.
73	<p>In Section 2B.28 (existing Section 2B.20) Mandatory Movement Lane Control Signs (R3–5, R3–5a, R3–7, R3– 19 Series, and R3–20), FHWA proposes to change the second sentence of Standard P1 to Guidance to provide flexibility as to where to place certain Mandatory Movement Lane Control signs.</p>	<p>The change of the second sentence of P1 from a Standard to Guidance is not adopted, because the predictable placement of R3-7 signs is critical for all users, including CAV machine vision, and the placement of such signs well in advance is confusing. As a result, the existing Standard is retained and is further clarified regarding placement location.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
73 cont'd	<p>In concert with this change, FHWA also proposes to revise existing Standard P3 to prohibit explicitly the R3–7 sign from being mounted at the far side of the intersection, incorporating the existing Standard P1 that requires these signs to be located in advance of the intersection. FHWA proposes this change to reinforce the existing requirement, which is intended to avoid confusion with the sign applying to a downstream intersection as has been demonstrated in practice. If a sign at the far side of the intersection is determined to be needed, then the proposed revision to Standard P1 would allow for other signs to be mounted overhead and aligned with each lane adjacent to the signals. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement.</p>	<p>The change to prohibit explicitly the R3–7 sign from being mounted at the far side of the intersection is adopted as proposed.</p>
	<p>FHWA also proposes to delete the first phrase of Standard P4, which specifies the use of the Mandatory Movement Lane Control symbol signs when the number of lanes available to through traffic is three or more. FHWA proposes to remove this requirement to promote uniformity, since there is already an existing post-mounted version of the sign (R3–7). In concert with this change, FHWA proposes to delete existing Guidance P5 in this section.</p>	<p>These changes are adopted as proposed.</p>
	<p>FHWA proposes to add a Guidance statement recommending the use of the EXCEPT BUSES or EXCEPT BICYCLES plaque where the lane restriction does not apply to buses or bicycles.</p>	<p>The added Guidance is adopted as proposed.</p>
	<p>FHWA also proposes to delete existing Option P9 regarding the back-to-back mounting of a Mandatory Movement Lane Control (R3–5) sign for a left-turn lane and Keep Right (R4–7) signs, because the Mandatory Movement Lane Control (R3–5) sign is for overhead mounting and therefore installing a Keep Right (R4–7) sign on the back is not appropriate.</p>	<p>The deletion is adopted as proposed.</p>
	<p>FHWA proposes to add an Option allowing the use of proposed new post mounted LANE FOR LEFT TURN ONLY and LANE FOR U AND LEFT TURNS ONLY (R3–19 series) signs on the median at the start of the taper to be used in situations where a left-turn lane is added at a median location. FHWA proposes these new signs to standardize the message for which a number of States use a variation.</p>	<p>The added Option is adopted as proposed, with editorial adjustments.</p>
	<p>FHWA proposes to revise Option P11 to indicate that the BEGIN RIGHT TURN LANE (R3–20R) and the BEGIN LEFT TURN LANE (R3–20L) signs may be used in situations where the turn lane may not be apparent. FHWA proposes this revision to clarify when it is appropriate to use the sign because other standard signs exist to indicate a mandatory turn lane.</p>	<p>The revised Option paragraph about signs for a shoulder that is open to part-time travel is not adopted in Section 2B.28, but is instead relocated to Section 2G.21, where it is more appropriately located, and adopted there as Guidance.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
73 cont'd	FHWA proposes to add a new Guidance statement describing the recommended use of the DO NOT DRIVE ON SHOULDER (R4-17) sign at locations where the transition from a paved shoulder to a mandatory turn lane might not be apparent and traffic regularly enters the shoulder to access the turn lane. FHWA proposes this language to clarify the method to address this condition. Use of the BEGIN RIGHT TURN LANE sign is not intended for these situations.	<p>The new Guidance about the use of the DO NOT DRIVE ON SHOULDER sign is revised to an Option, to better reflect the intended optional, rather than recommended, use of the sign.</p> <p>A comment requesting that the Standard requiring the R3-5 and R3-5a sign to be mounted overhead be changed to Guidance is not adopted. These signs most clearly show what movements are required from each lane when mounted overhead, and if overhead mounting is not feasible at a specific location, post-mounted R3-8 series signs can be used instead.</p> <p>A comment that use of R3-7 signs be limited to "dropped" lanes only is not adopted, because there are many right (or left)-turn-only lanes that are non-dropped lanes but that can need regulatory signing. The R3-7 fulfills that need. If the R3-7 could not be used for a non-dropped lane, there is no other lane-use control regulatory sign that could take its place. Overhead R3-5 signs would generally not be reasonably practical for most "typical" added turn lanes.</p> <p>Also, a comment requesting addition of an Option paragraph to clarify that signal poles, arms, and span wires are adequate placement, and that post-mounted Advance Intersection Lane Control (R3-8) signs are an acceptable alternative to overhead-mounted R3-5 signs is not adopted because this clarification is not needed and could also possibly cause confusion.</p>
74	<p>In Section 2B.29 (existing Section 2B.21) Optional Movement Lane Control Sign (R3-6 Series), FHWA proposes to change the 2nd sentence of Standard P1 to Guidance to provide flexibility as to where to place the Optional Movement Lane Control signs. FHWA proposes to add a standard U- and Left-Turn symbol Optional Movement Lane Control sign R3-6a and a standard oblique multiple left symbol Optional Movement Lane Control sign R3-6b with specific reference in the Standard P1. FHWA proposes this change to provide for left-turn lanes from which a U-turn is allowed, such as at median left-turn lanes as well as where there are multiple left turn angled movements that can be made from the lane.</p> <p>FHWA proposes to relocate and revise existing Standard P5 to incorporate the requirement that the</p>	The changes are all adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
74 cont'd	<p>Optional Movement Lane Control sign be mounted overhead in Standard P1.</p> <p>In concert with this change, FHWA proposes to delete existing Guidance P6, because Optional Movement Lane Control signs are mounted overhead, not post-mounted. The R3-8 Advance Intersection Lane Controls signs are post-mounted.</p> <p>FHWA proposes to delete existing Option P7 because the arrows on the sign indicate permitted movements and the text "OK" is repetitive and not needed.</p>	<p>A comment that the 2nd sentence of P2 be restored to 2009 language only requiring overhead mounting of R3-6 signs if there are 3 or more approach lanes is not adopted. The R3-6 signs are in the same category as R3-5 signs, which are required to be overhead regardless of number of lanes, so the requirement needs to be consistent.</p> <p>Also, a comment asking that P5 be changed from Standard to Guidance so that an R3-6 sign could be used alone to effect a turn prohibition is not adopted, because R3-1 through R3-4 signs are used to effect a turn prohibition and R3-6 is an inappropriate use.</p>
75	<p>In Section 2B.30 (existing Section 2B.22) Advance Intersection Lane Control Signs (R3-8 Series), FHWA proposes to add TAXI, BUS, BIKE or bicycle symbol to the allowable word messages that may be used within the border in combination with arrow symbols on Advance Intersection Lane Control signs.</p> <p>FHWA proposes to remove OK and ALL from the optional word messages as the lane control arrows are indicating this movement as allowable.</p> <p>In addition, FHWA proposes to add an Option statement allowing the R3-8 sign to be modified to show the bicycle lane with a white legend on a black background where bicycle lane is between two general purpose lanes. FHWA proposes these changes to provide additional options for alerting motor vehicles and bicyclists of appropriate lane usage in advance of an intersection.</p> <p>FHWA also proposes to change existing Guidance P3 to clarify that the Advance Intersection Lane Control sign should be placed either along the lane tapers or at the beginning of the turn lane. FHWA proposes this change because, if used in advance of the lane tapers, the sign and the available lanes would not match; therefore, the sign would not help a driver discern which lanes are added and could result in uncertainty due to its ambiguous message.</p>	The changes are all adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
75 cont'd	<p>FHWA proposes a new Standard statement to prohibit mounting an Advance Intersection Lane Control sign at the far side of an intersection to which it applies. FHWA proposes this statement to reinforce placement in advance of the intersection either along the lane tapers or at the beginning of the turn lane. This Standard is necessary in order to avoid potential confusion with the sign applying to a downstream intersection.</p> <p>FHWA proposes a new Standard statement requiring the R3-5bP and R3- 5fP to be mounted above the R3-8 sign, when the R3-8 sign only shows the two outermost lanes of the roadway. FHWA adds this sign to display a complete message to the road user to comprehend the application when not all of the lanes are being shown on the R3-8 series sign.</p>	
76	<p>FHWA proposes to renumber and retitle existing Section 2B.23 "Section 2B.31 Right (Left) Lane Must Exit Signs (R3-33, R3-33a)" to provide specific reference to and information regarding the use of the proposed new R3-33a sign, a vertical rectangle version of the R3-33 sign for use in limited right-of-way situations.</p>	The changes are adopted as proposed.
77	<p>In Section 2B.33 (existing Section 2B.25) BEGIN and END Plaques (R3- 9cP, R3-9dP), FHWA proposes to delete the Standard statement, and instead proposes to incorporate the proper placement of the plaque into the Option statement, because placement of the plaque does not warrant a Standard statement.</p>	The changes are adopted as proposed.
78	<p>In Section 2B.34 (existing Section 2B.26) Reversible Lane Control Signs (R3-9e through R3-9i), FHWA proposes to add an Option statement indicating that where longitudinal barriers separate opposing directions of traffic, the R3-9g or R3-9h signs may be omitted.</p> <p>FHWA also proposes to add a Guidance statement to provide for consistency between parking signs and reversible lane signs where curb parking is allowed. FHWA proposes this to avoid confusion.</p>	The changes are all adopted as proposed.
79	<p>In section 2B.38 KEEP RIGHT EXCEPT TO PASS Sign (R4-16) and SLOWER TRAFFIC KEEP RIGHT Sign (R4-3), FHWA proposes to make revisions to Option P1 and Guidance P2 to clarify that the KEEP RIGHT EXCEPT TO PASS sign is to be used where there are two lanes in one direction of travel. As currently written, "multi-lane" implies that no matter how many lanes are present, all traffic should be in the right lane. The meaning of this sign is to indicate that the left lane is for passing only; therefore, the</p>	<p>The changes are adopted as proposed, except that Section 2B.38 and 2B.39 are combined into a single section titled Section 2B.38 KEEP RIGHT EXCEPT TO PASS Sign (R4-16), SLOWER TRAFFIC KEEP RIGHT Sign (R4-3), and TRUCKS USE RIGHT LANE Sign (R4-5), incorporating appropriate text from the deleted Section 2B.39.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
79 cont'd	message on the sign is only appropriate for roadways with two-lanes in the same direction of travel.	
N/A (Sec. 2B.39)	Section 2B.39 TRUCKS USE RIGHT LANE Sign (R4-5) (not discussed in NPA Preamble)	<p>Section 2B.39 is deleted, and appropriate text is relocated to Section 2B.38, which combines both sections.</p> <p>Also, the final Support paragraph is deleted as it is not needed. The first guidance statement in the section adequately addresses the installation.</p>
80	<p>In Section 2B.40 (existing Section 2B.32), retitled, "Keep Right and Keep Left Signs (R4-7 Series, R4-8 Series)," FHWA proposes to add a new Guidance statement recommending the word legend (R4-7a, R4-7b, R4-8a, or R4-8b) signs should be used instead of the symbol (R4-7 or R4-8) signs to emphasize the degree of curvature away from the approach direction where the approach end of the island channelizes traffic away from the approach direction, such as on a loop ramp, to define the intended uses of signs that have similar legends better.</p> <p>FHWA also proposes additional Option, Support, and Standard statements regarding the use of the Keep Right sign on medians on divided highways, as the result of recent research (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>), to provide more clarity regarding the proper use and placement of these signs.</p>	<p>The section is adopted as Section 2B.39. The new Guidance is adopted as proposed, except that the proposed phrase "such as on a loop ramp" is not adopted because the text is clear without it and a figure illustrates the condition.</p> <p>These changes are adopted as proposed.</p> <p>A comment requesting that the new Standard about placement of Keep Right signs at median noses be changed to Guidance to provide flexibility is not adopted. This new Standard is necessary, based on NCHRP research that found these aspects of sign location, visibility, and angling provide important safety benefits in reducing wrong-way crashes.</p> <p>In addition, a new Guidance provision is added that if a regulatory sign is used within the central island of a neighborhood traffic circle, the Keep Right with diagonal arrow (R4-7b) sign should be used. This change is for consistency with similar provisions adopted for circular intersections in Chapter 2B.</p>
81	FHWA proposes to add a new section numbered and titled, "2B.45 ALL TRAFFIC Sign (R4-20) and RIGHT (LEFT) TURN ONLY Sign (R4-21)" to include new Options, Guidance, and Standards regarding the use of the subject signs. FHWA proposes to add this section to allow for additional signs at intersections where movement prohibition and One-Way signs do	The section is adopted as Section 2B.44. The changes are adopted as proposed. A comment suggesting the R4-21 sign be deleted "because it seems to be a word version of the symbolic R3-5 sign" is not adopted, because the R4-21 is for an entire approach while the R3-5 is for a specific lane.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
81 cont'd	not adequately convey the allowable direction of travel.	
82	<p>In Section 2B.46 (existing Section 2B.39) Selective Exclusion Signs, FHWA proposes to add provisions for a new No Snowmobiles Symbol sign (R9-15) that may be used where snowmobiles are prohibited on roadways or shared-use paths. FHWA proposes this new symbol sign based on research indicating that this symbol has high recognition value (<a href="https://rosap.nhtl.bts.gov/view/dot/34772/dot_34772_DS1.pdf">https://rosap.nhtl.bts.gov/view/dot/34772/dot_34772_DS1.pdf</a>). FHWA also proposes to include provisions for the NO THRU TRAFFIC, NO THRU TRUCKS, AND EXCEPT LOCAL DELIVERIES plaque as typical exclusion messages to reflect common practice. FHWA also proposes to add a reference to R5-10, which would replace the current R5-10a sign. FHWA proposes to revise the R5-10a to include the legend "ON FREEWAY" below the primary legend.</p> <p>Finally, FHWA proposes to eliminate the word legend version of the NO TRUCKS (R5-2a) as an alternate to the No Trucks (R5-2) symbol sign. FHWA proposes this change for consistency with word message signs where a symbol sign exists.</p>	<p>The section is adopted as Section 2B.45. The changes are adopted as proposed, except that the proposed Option regarding the use of the No Snowmobiles (R9-15) sign is deleted and replaced with a new Option regarding the allowed use of a new R9-19P EXCEPT ON SHOULDER plaque with several different selective exclusion signs when the sign is not applicable to the shoulder. Also, based on a comment, a new No ATVs symbolic sign is added.</p> <p>This change is adopted as proposed. A request that the word message sign NO TRUCKS be retained rather than deleted is not adopted. The commenter justified the request based on the retention of the R2-5b NO THRU TRUCKS word message sign. No comprehensible symbol for a "thru truck" has been developed, so retaining the word message is essential, whereas the symbolic No Trucks sign (R5-2) has been a standard sign for many years, so the word message variant is unnecessary and was removed.</p>
83	<p>In the proposed Sub-Chapter DO NOT ENTER, WRONG WAY, AND ONE-WAY Signs and Related Signs and Plaques, FHWA proposes to reorganize the sections so that signs associated with wrong-way movements are consecutive sections rather than intermixed with Selective Exclusion signs. In concert with these changes, FHWA proposes to provide clarifications and correct inconsistencies between the text and figures related to wrong-way movement signing, as the result of recent research (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>).</p>	<p>The proposed reorganization and clarifications are adopted as proposed. Based on a comment, potential consolidation of all provisions for "Wrong-Way Traffic Control at Divided Highway Crossings" into a single Section will be investigated and considered in the future.</p>
84	<p>In Section 2B.47 (existing 2B.37), "DO NOT ENTER Sign (R5-1)," FHWA proposes, as the result of recent research (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>), to clarify Standard P2 to require DO NOT ENTER signing where a two-way roadway becomes a one-way roadway and near the downstream end of an interchange exit ramp.</p> <p>FHWA proposes to add a Standard paragraph requiring a DO NOT ENTER (R5-1) sign be installed at an intersection with a divided highway where the</p>	<p>The section is adopted as Section 2B.46. The changes are all adopted as proposed, except that the proposed added Option statement regarding the use of white or red LEDs within the border of the DO NOT ENTER sign is not adopted and instead a Support is added to refer to the information on this topic in Section 2A.12, which allows red or white LEDs for this use.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
84 cont'd	<p>crossing functions as two separate intersections, except on low-speed urban streets.</p> <p>In concert with this change, FHWA proposes to add Option statements allowing the use of DO NOT ENTER signs at an intersection with a divided highway where crossing functions as a single intersection, as well as allowing the omission of DO NOT ENTER signs at an intersection with a low-speed urban street that is a divided highway at a crossing that functions as two separate intersections.</p> <p>As part of these changes, FHWA proposes to recommend that if used at an intersection with a divided highway that functions as a single intersection, DO NOT ENTER signs should be placed on the outside edge of the roadway facing traffic that might enter the roadway in the wrong direction.</p> <p>Finally, FHWA proposes to delete existing Option P4, since it is incorporated in the proposed new language in this section. FHWA also to enhance the conspicuity of the sign.</p>	<p>A comment suggesting adding an entirely new Section to consolidate all provisions for wrong-way traffic control is not adopted but will be considered in a future edition of the MUTCD.</p> <p>Also, in response to a comment, P1 from the 2009 MUTCD is deleted because the term “restricted” does not convey enough specificity for practitioners with respect to the proper application of DO NOT ENTER signs. As the NPA proposed new provisions to specify the use, which are further clarified as adopted, this Standard paragraph has been removed.</p> <p>Additionally, in order to clarify use of R5-1 signs at directional diamond interchanges and other unconventional locations, a new Guidance is added for the placement of R5-1 signs at other locations for additional emphasis and at locations where geometric conditions might necessitate their use. Additional figures depicting such conditions will be considered in the future.</p> <p>Also, an Option is added in response to comment asking to specifically allow an EXCEPT BICYCLES (R3-7bP) plaque to be used with a DO NOT ENTER SIGN when counter-flow bicycle traffic is allowed.</p> <p>A request for addition of an Option to allow the DO NOT ENTER sign to be omitted on low-speed site roadways open to public travel, such as in shopping center parking lots, if a Keep Right or ONE WAY</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
84 cont'd		<p>sign is installed is not adopted. The KEEP RIGHT and ONE WAY signs are required for locations that act as a single intersection, which seems to be the example provided by the requester. Further, the Option in this Section provides for the exception to install a DO NOT ENTER on a low-speed urban street.</p> <p>A request that an Option be added to modify P2, to allow DO NOT ENTER signs to be omitted where there is little chance of a driver being able to enter the ramp wrong way, is not adopted. Even at a cloverleaf, some drivers who are lost, disoriented, or distracted may attempt to turn into the off-ramp. Having DO NOT ENTER signs there can prevent serious or fatal wrong-way crashes on the freeway/expressway.</p>
85	<p>In Section 2B.48 (existing Section 2B.38) WRONG WAY Sign (R5-1a), FHWA proposes to add a Guidance statement recommending the WRONG WAY sign be placed on the same side of the road as the DO NOT ENTER sign. FHWA proposes this language, as the result of recent research (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>), to provide additional notification to road users that they are not to enter the roadway and clarify the placement of the WRONG WAY sign as it supplements the DO NOT ENTER sign.</p> <p>FHWA proposes to add an Option statement allowing the use of white or red LEDs within the border to enhance the conspicuity of the sign.</p>	<p>The Section is adopted as Section 2B.47. The added Guidance is adopted as proposed.</p> <p>The proposed added Option statement regarding the use of white or red LEDs within the border of the DO NOT ENTER sign is not adopted and instead a Support is added to refer to the information on this topic in Section 2A.12, which specifies that only red and not white LEDs are allowed for this use.</p>
86	<p>Section 2B.49 (existing 2B.41) Wrong-Way Traffic Control at Interchange Ramps, FHWA proposes to add items F (Lane control or movement prohibition signs) and G (Keep Right signs) as traffic control devices that may be used to supplement the signs and pavement markings at interchange exit ramp terminals where the ramp intersects a crossroad in such a manner that wrong-way entry could inadvertently be made. FHWA proposes this new language, as the result of recent research, to provide additional tools for agencies to use to prevent vehicles from entering interchange exit ramps in the wrong direction.</p> <p>FHWA proposes to add a new Option statement for the use of a NO LEFT TURN (R3-2) sign on the left side of interchange entrance ramps where the ramp merges with the through roadway and the design of the interchange does not clearly make evident the</p>	<p>The section is adopted as Section 2B.48. The changes are all adopted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
86 cont'd	direction of traffic. This text supports the sign shown in existing Figure 2B–19.	
	FHWA also proposes that a supplemental R3– 2 sign may be located on the right side of the entrance ramp at the gore if one is installed on the left to provide agencies with greater flexibilities in signing for wrong-way traffic control.	
	FHWA also proposes a new Option statement and accompanying figure for the use of a ONE-WAY sign and/or a NO TURNS (R3–3) sign on interchange entrance ramps where the ramp merges with the through roadway and the design clearly indicates the direction of flow, to provide agencies with greater flexibilities in signing for wrong-way traffic control.	
	FHWA proposes to delete Option P5 referencing special needs or prohibitive information. FHWA proposes this change because the statement is nonspecific and Chapter 2A already contains language specifying that a decision to use a particular device at a particular location should be made on the basis of either an engineering study or the application of engineering judgment.	A comment requesting to retain the removed Option P5 to allow “other standard warning or prohibitive methods and devices” as a deterrent to the wrong-way movement is not adopted. The removed Option is non-specific and is open to misinterpretation that can result in unproven devices being installed without successful experimentation or research.
	In addition, FHWA revises Option P6 to clarify that the low mounting height for an independent installation of a DO NOT ENTER or WRONG WAY sign is for locations along the exit ramp rather than at the intersection with the crossroad.	
	FHWA also proposes an Option to allow the installation of a low-mounted WRONG WAY sign on the DO NOT ENTER assembly at the intersection with the crossroad, provided that the DO NOT ENTER sign is mounted at a height consistent with the requirements for signs in general. FHWA proposes this change to ensure that the basic signing is at the typical mounting height a road user would expect to see, while still allowing signs at a lower mounting height as a supplement that are intended for a potentially disoriented driver whose vision might be focused at a lower height.	A comment requesting various changes to the Standard Statement and addition of new Guidance is not adopted because such changes would be outside the scope of this rulemaking.
		Lastly, a comment requesting for two additional items to be added to the list in the first Option statement is not adopted because the suggested items do not fit well with the others and are not needed in this Section.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
87	<p>In Section 2B.50 (existing Section 2B.40) ONE WAY Signs (R6–1, R6–2), FHWA proposes, as the result of recent research (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>), to replace all language describing an intersection with a divided highway that has a median width at the intersection itself of 30 feet with proposed new language that describes the crossing of a roadway with a divided highway as an intersection operating as single or separate intersections. FHWA proposes these changes because it is important to base the application of ONE WAY signing on how the intersection functions, rather than the width of the median.</p> <p>FHWA also proposes to revise Option P11 to indicate that a One-Direction Large Arrow sign may be used instead of or in addition to a ONE-WAY sign in the central island of a circular intersection. FHWA proposes this change to reflect the proposed removal of the Roundabout Directional Arrow from the MUTCD.</p> <p>In addition, FHWA proposes to add a Standard statement specifying that when a One-Direction Large Arrow sign is used without a ONE-WAY sign, the R6–5P plaque shall be mounted below the Yield sign on the approach to a roundabout. FHWA proposes this to ensure that when only the One-Direction Large Arrow is used that a regulatory message indicating the direction of movements is provided.</p> <p>FHWA also proposes to delete P10 and 13 because they are duplicative and contradictory, respectively, and therefore not necessary to include in the MUTCD.</p>	<p>The section is adopted as Section 2B.49. The changes are adopted as proposed, except that all provisions in this section referring to use of One-Direction Large Arrow signs in the central island of a roundabout are removed, for consistency with other Sections.</p> <p>A significant number of commenters stated that the One-Direction Large Arrow sign is for horizontal alignment changes and is not appropriate at intersection approaches, including those entering a roundabout under Yield control. Based on the comments, the revision to the Option that allows the use of the One-Direction Large Arrow sign at a roundabout is not adopted. Instead, the use of the ONE-WAY sign for this condition as provided in the 2009 Manual is retained. These changes provide consistency with similar provisions adopted for regulatory signs at circular intersections elsewhere in Chapter 2B.</p> <p>Also, an Option is added in response to comment allowing use of an EXCEPT BICYCLES plaque with ONE WAY signs to accommodate counter-flow bike lanes.</p>
88	<p>In Section 2B.51 (existing 2B.42) Divided Highway Crossing Signs (R6–3, R6–3a), FHWA proposes similar changes as the result of recent research (<a href="http://www.trb.org/Main/Blurbs/178000.aspx">http://www.trb.org/Main/Blurbs/178000.aspx</a>), as described in proposed Section 2A.22, to the text regarding the description of a divided highway at a crossing that functions as separate intersection(s), rather than referring to the median width at the intersection.</p>	<p>The section is adopted as Section 2B.50. The changes are adopted as proposed. A request for change in the thresholds in P2 for omission of Divided Highway Crossing signs is not adopted, because the commenter did not suggest alternative values and because changes to this 2009 text are outside the scope of this rulemaking.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
89	FHWA proposes to relocate and renumber existing Section 2B.44 as "Section 2B.52 Roundabout Circulation Plaque (R6–5P)."	The relocation is adopted as proposed but the section is renumbered to Section 2B.51.
90	FHWA proposes to delete existing Section 2B.43 Roundabout Directional Arrow Signs, because the design of the R6–4 series signs, for which there are 3 versions, confounds a warning sign with a regulation and, as a result, have become prone to misuse. To address the condition for which these signs were intended, this proposed change also includes associated changes to the use of ONE-WAY signs and the Large Arrow sign, as described above.	<p>The deletion of existing Section 2B.43 and the discontinuation of Roundabout Directional Signs discussed therein are adopted as proposed. FHWA received a significant number of comments regarding the current use of these signs and their understanding specific to regulatory movements at roundabouts. Most of the comments had common themes that included (1) the need for a regulatory sign on the central island to indicate the traffic flow in the circulatory roadway and prohibit wrong-way travel; (2) the use of a horizontal alignment sign for this purpose is inappropriate; and, to a lesser extent, (3) recommending deferral of any change pending investigation of international practice and/or that international practice is what dictates the R6-4 series sign. In response to these themes, FHWA's position is that (1) the use of the One Way sign not only satisfies the need for a regulatory sign, but that the express purpose of the One Way sign is to regulate the mandatory direction of travel; (2) the concern about the use of a horizontal alignment sign in this application is valid and that premise would contraindicate not only the use of the One-Direction Large Arrow sign, but also the use of Chevrons and that a change to only one element of the sign (background color) does not substantively refute that premise; and (3) the proposed changes actually more closely align with international practices that generally include the use of the international equivalent of Chevrons in the identical form of those used on horizontal alignment changes, or the use of the international equivalents of either the One Way sign (for roundabouts) or the Keep Right sign (for smaller central islands similar to the neighborhood traffic circle).</p> <p>Some commenters expressed concern about having to replace existing signs to comply with the new provisions. However, there is no compliance date associated with the discontinuation of these signs and, as a result, existing signs can remain as long as they are in serviceable condition. Agencies would have to comply for new installations or replacement of existing signs that are no longer serviceable.</p>
91	As discussed above, FHWA proposes to relocate and renumber existing Section 2B.44 as "Section 2B. 51 Roundabout Circulation Plaque (R6– 5P)."	The relocation and renumbering of existing Section 2B.44 are adopted, except that the reference to use of One-Direction Large Arrow signs in the central islands of roundabouts is removed, for consistency with other Sections. Support information is also added to other Sections that contain regulatory sign

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
91 cont'd		information related to roundabouts and neighborhood traffic circles, and a new figure is added illustrating regulatory signing in a neighborhood traffic circle.
92	FHWA proposes to delete existing Section 2B.45 Examples of Roundabout Signing. Roundabouts have become very common. The figures have been retained in Chapter 2B; however, a separate section dedicated to examples is not needed.	The deletion of existing Section 2B.45 is adopted as proposed.
93	In Section 2B.53 (existing Section 2B.46) Parking, Standing, and Stopping Signs (R7 and R8 Series), FHWA proposes to expand the Support statement to categorize parking signs into two categories: Prohibited parking and permitted parking with restrictions and provide examples of each category.	<p>The section is adopted as Section 2B.52. The changes are adopted as proposed, except that the last sentence of P2 is deleted as it is unneeded. Also, two additional sentences are added to P1 in response to a comment asking for clarification of parking signs using the word "stopping."</p> <p>A request to add an option to use pictographic signs displaying an hourly or weekly schedule as a supplement or replacement for conventional text-only parking schedule information is not adopted, because research is needed to evaluate any new symbols.</p> <p>Also, a request to change "metered" parking to "pay" parking is not adopted because midblock pay stations are often still called meters and pay parking can be confused with parking lots.</p>
94	<p>In Section 2B.54 (existing Section 2B.47) Design of Parking, Standing, and Stopping Signs, FHWA proposes to revise Standard paragraphs 2–4 to incorporate the proposed prohibitive and permissive parking sign classifications and provide additional information on the design of such signs in order to maintain consistency in general sign design, while also allowing flexibility for agencies to modify legends for specific regulations.</p> <p>To improve consistency in the information provided in parking signs, FHWA proposes to expand the list of parking information that should be displayed on signs existing in Guidance P5 to include qualifying or supplementary information, exemptions to the restriction of prohibition, and tow-away message or symbol.</p> <p>FHWA proposes to add a Standard requiring the times and days for which parking regulations are in effect to be displayed on the signs if they are not in effect all times of day or all days of the week. FHWA proposes this to ensure consistent signing methods in order to improve clarity for drivers wanting to park.</p>	<p>The section is adopted as Section 2B.53. The changes are all adopted as proposed, except that one new Option, regarding use of a double-headed arrow on a sign at an intermediate point in a zone, is adopted as Guidance.</p> <p>A comment requesting that the Tow-Away plaque be mounted at the top of an assembly rather than the bottom is not adopted, because the intent is for the plaque to supplement the parking restriction sign. The restriction is the most important message and should be on top, providing for consistency in all applications.</p> <p>In addition, a comment suggesting that Guidance P7 be changed to Option is not adopted, because no specific justification was provided for change in this existing 2009 text, and the arrows are especially important in urban areas.</p> <p>A comment requesting that THIS BLOCK be added in P9 is not adopted because that message can be confusing as to whether or not it applies to both sides of the street.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
94 cont'd	<p>FHWA proposes to modify Option P18 regarding the use of word message plaques with the R8–3 series signs.</p> <p>FHWA proposes to remove the EXCEPT SUNDAYS AND HOLIDAYS (R8–3bP), LOADING ZONE (R8–3gP), and X:XX A.M to X:XX P.M.(R8–3hP) plaques as these are generally in urban conditions and are already covered by the R7 series parking signs.</p> <p>FHWA proposes to modify the ON PAVEMENT (R8–3cP), ON BRIDGE (R8–3dP), ON TRACKS (R8–3eP), and EXCEPT ON SHOULDERS (R8–3fP) by removing the plaque designations and combining the word legends with the standard NO PARKING symbol (R8–3) sign.</p> <p>FHWA proposes to change the legend of the Emergency Snow Route (R7–203) sign to “Snow Emergency Route” to be consistent with the prevailing current practice and the fact that the restrictions apply during a declared snow emergency.</p> <p>FHWA proposes several changes in this section to incorporate electronic payment, change the term “pay parking” to “metered parking” and other editorial changes to reflect current practice and commonly used nomenclature. This includes a proposed Option statement to accompany a proposed new Mobile Parking Payment plaque that may be installed below a Metered Parking sign.</p> <p>FHWA also proposes to add an Option statement to allow the display of maximum time limits that vary by time of day or day of the week on the R7– 20 sign to be omitted and instead displayed on the multi-space parking meter so that they are visible to pedestrians as they make payments.</p> <p>FHWA also proposes to add a Standard statement immediately preceding existing Standard P8, to reiterate the existing requirement that the Accessible Parking (R7–8) sign display only the official International Symbol of Accessibility and not a modification thereof. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement in Chapter 2A.</p> <p>FHWA proposes a new Guidance statement to incorporate provisions for Electronic Vehicle parking. The proposed language is based on FHWA’s Memorandum on Regulatory Signs for Electric Vehicle Charging and Parking Facilities</p>	<p>A comment requesting that the R7-203 SNOW EMERGENCY ROUTE sign be reclassified as an Emergency Restriction sign, moved into the R8 series, and relocated to Section 2B.56 is not adopted. This temporary parking restriction is implemented due to weather conditions, while the R8 Emergency Restriction signs are regarding road users or their vehicles experiencing an emergency.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
94 cont'd	<p>(<a href="https://mutcd.fhwa.dot.gov/resources/policy/rsevcpf_memo/">https://mutcd.fhwa.dot.gov/resources/policy/rsevcpf_memo/</a>).</p> <p>FHWA proposes to delete the second and third sentences of existing Option P14 regarding the color of the bus symbol and the use of transit logos on the R7-107 sign, or alternates, because the text is not necessary and the use of transit logos on a sign may not be practical.</p> <p>In concert with this change, FHWA also proposes to delete the existing R7-7 sign, because the R7-107, as well as the R7-107a sign, are more distinguishable, and there is no need for an additional sign.</p> <p>FHWA proposes to delete P19 and 20 regarding color coding of parking time limits. FHWA proposes this change to streamline the design of parking signs and because the standard colors of the parking signs have specific meanings as prescribed by the manual. In addition, the time limits are adequately displayed by the numbers on the signs.</p> <p>Finally, FHWA proposes new Guidance paragraphs at the end of the section regarding the use of legends other than those on standard parking signs and the letter height of the principal legend. FHWA proposes these new paragraphs to provide agencies flexibility in creating specific signs while maintaining uniformity in design provisions.</p>	
95	<p>In Section 2B.55 (existing Section 2B.48) Placement of Parking, Stopping, and Standing Signs, FHWA proposes to add a Guidance statement recommending signs placed at the head of perpendicular parking stalls to be parallel to the roadway facing the parking stall. FHWA proposes this addition to promote uniformity and clarity in signing parking stalls.</p> <p>FHWA proposes to change P4 from a Standard to a Guidance to recommend, rather than require mounting parking signs back-to-back at the transition point between two parking zones, to provide jurisdictions with flexibility when it might be impractical to mount signs back-to-back.</p> <p>FHWA also proposes to relocate and revise the Option statement regarding the use of signs to display blanket regulations from existing Section 2B.47 to this section, because this section deals specifically with sign placement.</p>	<p>The section is adopted as Section 2B.54. The changes are all adopted as proposed. A comment requesting deletion of the first sentence about jurisdiction-wide parking regulations is not adopted, because it is very common for towns and smaller cities to have parking regulations, such as "No Overnight Parking on any Street", posted at the jurisdiction boundaries and this practice should be specifically allowed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
96	In Section 2B.56 (existing Section 2B.49) Emergency Restriction Signs (R8-4, R8-7, R8-8), FHWA proposes to move existing Standard P3 to the beginning of the section and delete the color red as a legend color, for consistency with non-standard legends, as only black legends are allowed on Emergency Restriction signs.	The section is adopted as Section 2B.55. The changes are adopted as proposed.
97	In Section 2B.57 (existing Section 2B.50), "WALK ON LEFT FACING TRAFFIC and No Hitchhiking Signs (R9-1, R9-4, R9-4a)," FHWA proposes to change Standard P2 to Guidance to allow agencies greater flexibility in the installation of the signs.	<p>The section number is adopted as 2B.56. The change of P2 to Guidance is adopted as proposed.</p> <p>A comment requesting that the R9-1 sign be revised to a black-on-yellow warning sign is not adopted. This sign is regulatory, not warning, because it states what the Rules of the Road and most state laws require, and it is posted as a reminder of the law.</p>
98	<p>In Section 2B.59 (existing Section 2B.52) Traffic Signal Pedestrian and Bicycle Actuation Signs (R10-1 through R10-4, and R10-24 through R10-26), FHWA proposes to revise Standard P1 to clarify that where manual actuation of a traffic signal is required for pedestrians or bicyclists to call a signal phase to cross a roadway, traffic signs related to pushbuttons at those traffic signals are required. FHWA proposes this change to reduce the burden of sign installation on agencies. In addition, FHWA proposes to add a new sign to the Option statement, allowing for the use of a PUSH BUTTON IS FOR AUDIBLE MESSAGE ONLY (R10-3j) sign to provide agencies with the option where a pedestrian pushbutton is only used to activate accessible pedestrian features.</p> <p>Similarly, FHWA proposes to add a new sign to the Option statement allowing for the use of a sign that indicates the pedestrian button can be activated by either pushing or waving.</p> <p>Lastly, FHWA proposes to modify the legend of the R10-25 sign to "PUSH BUTTON FOR WARNING LIGHTS— WAIT FOR GAP IN TRAFFIC." FHWA proposes this change because these signs are used only at uncontrolled crosswalk locations where pedestrian activated warning beacons only alert approaching traffic to the presence of a pedestrian, but do not assign right-of-way to conflicting traffic streams, such as with a traffic signal or hybrid-beacon. In such cases, pedestrians are required to wait for an acceptable gap in vehicular traffic and not enter the roadway in the path of a vehicle which is so close as to constitute an immediate hazard.</p>	The section is adopted as Section 2B.58. The changes are all adopted as proposed, with the exception of the provisions for the R10-3j and R10-3k signs, which are not adopted.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
99	<p>In Section 2B.60 (existing Section 2B.53) Traffic Signal Signs (R10–5 through R10–30), FHWA proposes to add Option and Guidance for the use of a text version of a LEFT TURN YIELD ON FLASHING YELLOW ARROW (R10–12a) sign with Flashing Yellow Arrow signals. FHWA proposes this change to promote uniformity in the use of signing for these signal applications.</p>	<p>The section is adopted as Section 2B.59. The change is adopted as proposed.</p>
	<p>FHWA proposes to add new Standard, Support, Guidance, and Option statements regarding the use of a proposed new LEFT TURN YIELD TO Bicycles (R10–12b) sign to provide agencies with information regarding the use of this sign to notify turning motorists of the possibility for unexpected conflicting bicycle movement at certain locations.</p>	<p>The change is adopted as proposed, with the exception that the second proposed Standard is not adopted, consistent with the provisions for the use of bicycle signal faces in the final rule in Chapter 4H. Additionally, the Support for the R10-12b is not adopted based on comments and because the Standard adequately conveys the use of the sign.</p>
	<p>FHWA also proposes to add provisions for a new WAIT ON STEADY RED—YIELD ON FLASHING RED AFTER STOP (R10–23a) sign as an alternative to the R10–23 sign at pedestrian hybrid beacons. The 2017 Traffic Control Devices Pooled Fund Study (<a href="http://www.pooledfund.org/Document/Download/7559">http://www.pooledfund.org/Document/Download/7559</a>) evaluated the comprehension and legibility of various alternatives for signing at midblock hybrid beacon pedestrian crossings. The results indicated that no significant differences were found between the alternatives; however, they did highlight the need for a sign, at least initially, while drivers are learning what actions to take based on the flashing beacon.</p>	<p>The change is adopted as proposed, except that the legend of the R10-23a sign is revised to STOP ON RED - YIELD ON FLASHING RED AFTER STOP to better indicate what drivers are expected to do. A comment requesting that the R10-23a sign legend be changed to that described in an official interpretation is not adopted, because the sign in the interpretation did not address exactly what the driver is supposed to do in response to the flashing red.</p>
	<p>As a result, FHWA proposes to add a word message sign for jurisdictions that determine the operational need at pedestrian hybrid beacons. FHWA also proposes to add an Option for a STOP HERE ON FLASHING RED (R10–14b) sign to provide extra emphasis at an emergency-vehicle hybrid beacon.</p>	<p>The change is adopted as proposed.</p>
	<p>FHWA also proposes to add a Standard to accompany a proposed new optional Turning Vehicles Stop for Pedestrians (R10–15a) sign to remind drivers who are making turns to stop for pedestrians, which shall be used only in jurisdictions where laws, ordinances, or resolutions specifically require that a driver must stop for a pedestrian.</p>	<p>The change is adopted as proposed but with the addition of new guidance for the placement of the R10-15 series signs to assist practitioners with properly locating the signs at signalized intersections. Many commenters suggested to revise this Section to allow the use of the modified R10-15 sign, which includes the pedestrian and bicycle symbols, adjacent to shared use paths and along roadways with separated bicycle lanes. Due to the complexity of interactions between motor vehicles, bicycles, and pedestrians on separate crossing paths at intersections, and the potential for differences in yielding and stopping requirements in each case, an effective concise sign legend with demonstrated adequate comprehension and recognition is not available for this rulemaking. The evaluation of additional sign concepts in typical geometric conditions where the turning motorist can</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
99 cont'd	<p>Lastly, FHWA proposes to add an Option statement allowing the use of a U TURN SIGNAL (R10–10a) sign adjacent to a signal face that exclusively controls a U turn movement.</p>	<p>see far enough to give approaching cyclists stopping sight distance will be considered in the future.</p> <p>The change is adopted as proposed.</p> <p>Also, several additional commonly used signs associated with signal control are added for optional use, and the use of the R10-16 sign is changed from Option to Guidance, for safety reasons. The assignment of right of way in this circumstance is not clear and it is an unexpected condition for which signing is recommended for safety. Additionally, a Guidance paragraph is added regarding signs used with right turn signals. Further, several paragraphs are relocated within the section to improve the flow of information.</p> <p>A comment requesting deletion of the R10-5 sign is not adopted, because some jurisdictions have not yet upgraded to use of the red arrow signal indication, so it is premature to delete this sign.</p> <p>A comment requesting addition of an Option for use of blank-out signs with some of the traffic signal signs is not adopted because such text here is unneeded.</p>
100	<p>In Section 2B.61 (existing Section 2B.54) No Turn on Red Signs (R10–11 Series, R10–17a, and R10–30), FHWA proposes to change the designations of the No Turn on Red signs such that the word only message signs are designated R10–11 and 10–11a and the NO TURN ON RED with the symbolic circular red sign is designated as R10–11b. FHWA proposes this change to designate consecutively the word only message sign designations.</p> <p>FHWA proposes to relocate existing Option P4 and revise Option P5 to indicate that a blank-out sign is the primary Option for displaying a parttime NO TURN ON RED restriction.</p> <p>In concert with this change, FHWA proposes an Option statement that allows the use of white LEDs in the border, and activated during periods of turn prohibition, to enhance sign conspicuity.</p>	<p>The section is adopted as Section 2B.60. The changes are all adopted as proposed, except that the proposal to change the designation of the version of the No Turn on Red sign with the symbolic circular red to R10-11b is not adopted. However, editorial revisions in P1 requested by commenters to clarify the use of the different varieties of No Turn on Red signs are adopted. Additionally, item C of P3 is revised to also address an exclusive bicycle phase. Further, a Standard paragraph about locations of No Turn on Red signs depending on distance from the stop line is relocated here from Section 2B.02, as this is the more appropriate location for it.</p> <p>A comment requesting removal of the Option paragraph allowing white LEDs in the sign border is not adopted, as no justification was provided by the commenter.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
101	In Section 2B.62 (existing Section 2B.55), retitled, "Photo Enforced Signs and Plaques (R10–18, R10–19P, R10–19aP, R10–18a)," FHWA proposes to add a new optional Traffic Signal Photo Enforced (R10–18a) sign that may be installed on an approach to a signalized location where red-light cameras are present on any approach to the signalized location. FHWA proposes this new sign, and associated Option and Standard provisions, in accordance with Interim Approval (IA–12) issued November 12, 2010 ( <a href="http://mutcd.fhwa.dot.gov/resources/interim_approval/ia12/index.htm">http://mutcd.fhwa.dot.gov/resources/interim_approval/ia12/index.htm</a> ).	The changes are adopted as proposed, but the entire section is relocated to be Section 2B.69, based on a comment, because photo enforcement signs and plaques are more properly located in the subchapter of "Other Regulatory Signs."
N/A (Sec. 2B.65)	Section 2B.65 ROAD CLOSED and LOCAL TRAFFIC ONLY signs (not discussed in the NPA Preamble)	The section is adopted as Section 2B.63. Based on a comment, an Option to allow use of an EXCEPT BICYCLES plaque with the ROAD CLOSED sign where conditions allow is added to this section.
102	In Section 2B.66 (existing Section 2B.59) Weight Limit Signs (R12–1 through R12–7), FHWA proposes to add Guidance statements regarding the use of weight limit signs to indicate a structure has a vehicle weight restriction.	The section is adopted as Section 2B.64.
	FHWA proposes to add a Guidance statement recommending that the term used for units shown on weight limit signs be consistent within a State or region with respect to pounds or tons.	The change is adopted as proposed.
	FHWA also proposes that the vehicle weight restrictions be depicted based on gross vehicle weight, and that weight per axle or empty vehicle weight should only be used when required by local laws to depict weight restrictions in that manner.	The proposed Guidance is not adopted and instead two Option paragraphs are added to allow legends regarding axle weight limits.
	In conjunction with this change, FHWA proposes to delete existing Guidance P2 and P4 regarding axle weight limits. FHWA proposes this change, in concert with the new Option provisions related to Specialized Hauling Vehicles and the proposed R12–6 sign which allows for a more comprehensive posting gross weight based on axle configurations and vehicle types. The proposed sign allows for distinguishing a single-unit vehicle and a combination vehicle while restricting to other vehicle types or reducing the mobility of vehicles that should not be restricted.	As noted above, two new Option paragraphs are added to allow legends regarding axle weight limits.
	FHWA proposes to delete existing Guidance P3 regarding restrictions on trucks in residential areas, because the sign is not conveying a weight restriction, but rather a selective prohibition of trucks in a neighborhood. A new NO THRU TRUCKS sign is being proposed in conjunction with this change in 2B.52 to convey more effectively the intent of the restriction.	This change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
102 cont'd	FHWA also proposes to add Support and Option provisions related to Specialized Hauling Vehicles, which are single-unit trucks with closely spaced axles, for which weight limit signs displaying restrictions based on the number of axles may be used.	These changes are adopted as proposed, with editorial adjustments.
	FHWA proposes to add several Standard statements regarding the symbols shown on the R12–5 and R12–6 Weight Limit signs. The symbols used are required to apply to all trucks of the type shown (single-unit, single-trailer or multi-trailer) regardless of the shape of the vehicle. Symbolic representations of other vehicle shapes or modifications of standard symbols shall not be used in accordance with existing requirements in Chapter 2A.	The new Standard statements are adopted as proposed.
	FHWA also proposes to add a Guidance statement recommending that Weight Limit signs show no more than 3 symbols in order to promote driver comprehension.	The added Guidance is not adopted, since sometimes more than three symbols are required by State laws.
	FHWA proposes to incorporate Guidance P7 into Standard P6 to require, rather than recommend that, if used, the Weight Limit sign, with an advisory distance ahead legend, shall be located in advance of the applicable section of highway or structure so that prohibited vehicles can detour or turn around prior to the limit zone. FHWA proposes this change to give vehicles affected by weight limit restrictions adequate information about the distance to the restricted area so that they can properly change their route and to minimize potential damage to highway infrastructure as a result of an overweight vehicle.	The change to require the advance sign is adopted as proposed, except that a directional legend is added as an alternative to the advisory distance ahead legend. The requirement for advance signing is critical for prohibited vehicles to be able to detour or turn around prior to the restriction, thus minimizing potential damage to highway infrastructure as a result of an overweight vehicle. The single Standard paragraph proposed in the NPA is adopted as two separate paragraphs, with text added to the first paragraph to clarify that a Weight Limit sign shall be posted directly at the applicable section of highway or structure, while the second paragraph requires the advance posting of the sign with advisory distance or directional legend.
FHWA proposes provisions for the use of proposed new Emergency Vehicle Weight limit signs to address conditions where emergency vehicles can create higher load effects compared to legal loads. The R12–7 sign is for independent use and the R12–7aP plaque is for use only in a sign assembly below a primary regulatory Weight Limit sign.	In addition, see Preamble of Federal Register for additional discussion of this item and compliance date.	
103	FHWA proposes to renumber and retitle existing Section 2B.60 to “Section 2B.68 Vehicle Inspection Area Signs (R13–1 Series)” to provide more flexibility in the use of R13–1 signs for various types of inspections.	The section is adopted as Section 2B.65. The changes are adopted as proposed, except that the word “Series” is deleted from the section title, because there is only a single R3-1 sign.
	In concert with this change, FHWA proposes to add an Option statement allowing modification to the legend to match the specific type of inspection conducted at that station.	The proposed added Option is not adopted.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
103 cont'd	FHWA also proposes to delete the existing Option statement allowing the reverse color combinations of the signs in order to support uniformity.	The change is adopted as proposed. A comment requesting the restoration of the ability to use reverse colors (white on black) for the R13-1 sign is not adopted, because, as the NPA preamble clearly states, that option was deleted in order to support uniformity.
104	In Section 2B.68 (existing Section 2B.61) TRUCK ROUTE Sign (R14-1), FHWA proposes to change Option P2 to Support and revise the statement to provide specific reference to existing Section 2D.20 regarding the use of the TRUCK auxiliary sign on numbered alternative routes. FHWA proposes this change so as not to duplicate or conflict with the information contained in Chapter 2D.	The section is adopted as Section 2B.66. The changes are adopted as proposed.
N/A (Sec. 2B.69)	New Section 2B.69, inserted in the Other Regulatory Signs subchapter. (not discussed in the NPA Preamble)	Section 2B.62 as proposed in the NPA is adopted, retitled to "Photo Enforced Signs and Plaques (R10-18, R10-19P, R10-19aP, R10-18a)," and relocated to be Section 2B.69.
105	FHWA proposes to add a new section numbered and titled, "Section 2B.71 Move Over or Reduce Speed Sign (R16-3)" with an Option statement regarding the use of the subject sign to require motorists to change lanes and/or reduce speed when passing stopped emergency vehicles on the shoulder.	The changes are adopted as proposed. Also, a second Option paragraph is added to allow the use of a modified legend to match state law, if needed.
106	FHWA proposes to renumber and retitle existing Section 2B.65 to "Section 2B.72 Minor Crashes Move Vehicles from Travel Lanes Sign (R16-4)" and rephrase the subject sign from "FENDER BENDER" to "MINOR CRASHES." FHWA proposes this change to align better with the various State laws and describe the type of crashes for which the sign is intended.	The section is adopted as Section 2B.70. The changes are adopted as proposed. Also, a second Option paragraph is added to allow the use of a modified legend to match state law, if needed.
107	FHWA proposes to add a new section numbered and titled, "Section 2B.73 No Hand-Held Phones by Driver Signs (R16-15, R16-15a)" with an Option statement regarding the use of the subject sign, as State law applies, to notify drivers that they are prohibited from using hand-held telephones while driving.	The new Section is adopted as Section 2B.72, and the section title and the legend of the signs are changed to "No Hand-Held Phone Use by Driver". Also, a second Option paragraph is added to allow the use of a modified legend to match state law, if needed.
108	In Section 2B.77 (existing Section 2B.68) Gates, FHWA proposes to delete Support P2 through P4 as they are not needed. FHWA also proposes to revise existing Standard P5 to include a minimum width of the reflective sheeting. FHWA proposes this change to be consistent with the information provided in Part 8.  FHWA also proposes to delete existing Standard P9 and 10 and Guidance P12 regarding lateral offset of the gate arm and support, because this is addressed	The section is adopted as Section 2B.76. The changes are all adopted as proposed, except that the three Support paragraphs that were proposed for deletion are restored, based on comments, because they contain very useful information for MUTCD users.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
108 cont'd	in AASHTO design criteria and reflects a design aspect better suited for other design manuals.	
109	As part of the reorganization to improve usability of the MUTCD, FHWA proposes to include subchapter headings in Chapter 2C to organize sections into related groupings. FHWA proposes the following subchapters in Chapter 2C: General, Horizontal Alignment Warning Signs, Vertical Grade Warning Signs and Plaques, Roadway Geometry Warning Signs, Roadway and Weather Condition Signs and Plaques, Traffic Control and Intersection Signs and Plaques, Merging and Passing Signs and Plaques, Miscellaneous Warning Signs, Supplemental Plaques, and Object Markers.	The reorganization of Chapter 2C is adopted as proposed, except that the title of the sixth subchapter is revised to "Merging, Two-Way Traffic, and No Passing Signs and Plaques" to more accurately reflect the content.
110	FHWA proposes to delete existing Section 2C.01 Function of Warning Signs because this information is captured in Chapters 1A and 2A.	The deletion is adopted as proposed.
111	FHWA proposes to renumber and retitle existing Section 2C.02 to "Section 2C.01 Function and Application of Warning Signs."	The renumbering is adopted as proposed. The title is changed to "Application of Warning Signs" because none of the text in this section deals with function, as that information is in Chapters 1A and 2A.
	FHWA also proposes to add a new Standard, referencing the existing requirements in Chapter 2A, requiring that all warning signs shall be retroreflective or illuminated. FHWA proposes this change for consistency with Section 2B.01. FHWA also proposes to delete all the Option and Support statements because they restate information already covered in Chapter 1A.	These changes are adopted as proposed.
112	In Section 2C.02 (existing Section 2C.03) Design of Warning Signs, FHWA proposes to add a Support regarding the use of shapes other than diamond-shaped for freeway overhead installations and a reference to Chapter 2A for information on modifications where lateral space is constrained.	The added Support is adopted as proposed.
	FHWA proposes to revise Option P4 to clarify that word message warning signs other than those provided in this Manual may be developed and installed by State and local highway agencies for conditions not addressed by standard signs. FHWA proposes this additional language to clarify the allowable use of word message warning signs that are not in the MUTCD. FHWA proposes this clarification in response to an apparent misinterpretation of the existing provisions, in which noncompliant field deployments have unnecessarily modified the word legends of standard signs where used for the condition stated in the MUTCD.	The revised Option is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
112 cont'd	Finally, FHWA proposes to add an Option statement allowing the use of static or flashing LEDs within the sign border to enhance the conspicuity of the sign.	<p>The added Option statement is not adopted but is instead revised to Support referencing Section 2A.12, where the same information is located.</p> <p>In addition, in response to comment, an Option is added to specifically allow use of a Warning Beacon in combination with a standard warning sign. This is a restoration of text that the NPA proposed to delete. This information is appropriate and helpful to MUTCD users, and it is consistent with Part 4.</p>
113	<p>In Section 2C.03 (existing Section 2C.04) Size of Warning Signs, FHWA proposes to revise the Guidance paragraph regarding the minimum size of diamond-shaped warning signs to restrict the provision to exit and entrance ramps at major interchanges connecting an expressway or freeway with an expressway or freeway.</p> <p>FHWA also proposes to add a new Guidance statement recommending 36" x 36" as the minimum size for all diamond shaped warning signs facing traffic on exit and entrance ramps at all other interchanges. FHWA proposes these changes because the operating characteristics of a single lane ramp can be closer to that of a single lane conventional roadway than that of a freeway, with the exception of freeway/ expressway to freeway/expressway connections. The proposed language reaffirms the minimum recommended sizes and larger sizes can be used based on engineering judgement, when appropriate.</p> <p>FHWA also proposes to add a Guidance statement regarding the size of warning signs used on low-volume rural roads with operating speeds of 30 mph or less to capture language in existing Part 5 FHWA proposes to redistribute among the remaining parts.</p>	<p>The changes are all adopted as proposed.</p> <p>A request to add a Standard requiring that the minimum sizes be applied to low-speed roadways, sites open to public travel, and low volume roads is not adopted. There are conditions on conventional roads other than those suggested that can sometimes make it necessary or advisable to use the minimum size. Limiting use of the minimum size by a Standard statement provides insufficient flexibility.</p>
114	<p>In Section 2C.04 (existing Section 2C.05) Placement of Warning Signs, FHWA proposes to delete the second sentence of P3 because it is not needed as the preceding guidance discusses placement with respect to perception-reaction time and the use of engineering judgment as well as referencing Section 2A for the placement of warning signs.</p> <p>FHWA also proposes to delete P6 regarding the placement of warning signs that advise road users about conditions that are not related to a specific location, and instead include that information in Table 2C-4.</p>	<p>The deletion of the third sentence of P3 is adopted as proposed (it was incorrectly described as the second sentence in the NPA). Several commenters requested that the sentence be retained, but that request is not adopted because the phrase "not too far in advance" is undefined and makes this sentence lack any usefulness.</p> <p>The changes are adopted as proposed, but the information is added in Table 2C-3.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
114 cont'd	<p>FHWA also proposes updates to Table 2C-4 by referencing the 2018 AASHTO Policy on Geometric Design of Highways and Streets, 7th Edition and providing for advance placement distances at higher speeds.</p> <p>FHWA also proposes to modify Condition B to place the AASHTO Stopping Sight Distance minimum design guidelines in the "0" column for STOP conditions placing Advance Traffic Control signs further in advance of the intersection providing greater advance notice of the critical intersection stop condition, a factor of safety for legibility distance, and more space on the intersection approach for lane control and guide signing.</p>	<p>The updates to the Table, which is actually Table 2C-3, are adopted as proposed.</p> <p>The modifications to Condition B of Table 2C-3 are adopted as proposed.</p> <p>A comment opposing the changes to Table 2C-3 Condition B in the "0 mph" column (pertaining to signal/stop/yield ahead sign placement), stating a concern that the change will result in agencies having thousands of these signs that would need to be relocated in order to comply, is not adopted. The Guidance states the distances should be applied with engineering judgment. If there is a particular location where placing the sign closer than the distance in the table is based on an engineering reason, the provisions allow this.</p>
115	<p>In Section 2C.05 (existing Section 2C.06), retitled, "Horizontal Alignment Warning Signs—General," FHWA proposes to delete the Standard statement regarding use of horizontal alignment warning signs. Instead, FHWA proposes new Option and Guidance statements regarding various treatments, including items other than traffic control devices, and factors to consider for other traffic control devices to warn road users of a change in horizontal alignment or to provide guidance in navigation.</p> <p>FHWA also proposes to delete existing Table 2C-5 and replace it with two tables in proposed Section 2C.06. As part of this change, FHWA proposes to move the portion of the Standard related to speed differential to proposed Section 2C.06 so that it appears in the same section with the referenced tables. FHWA proposes these changes based on a research study (<a href="http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP03-106_FR.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP03-106_FR.pdf</a>) that evaluated advance warning treatments at horizontal curves.</p>	<p>The changes are adopted as proposed, except that a new Support statement is adopted rather than a new Option, and existing Table 2C-5 is replaced with a single new Table 2C-4 incorporating both determination of need and selection of devices.</p>
116	<p>FHWA proposes to add a new section numbered and titled "Section 2C.06 Device Selection for Changes in Horizontal Alignment." This proposed new section contains Standard, Support, and Option statements, as well as new tables, to assist practitioners in determining the type of device to be used in advance</p>	<p>The changes are adopted as proposed, except that P1 Standard is revised in response to a comment suggesting that Chart A of Table 2C-4 shall first be used to determine the need for devices and then Chart B of Table 2C-4 shall be used to determine the type(s) of devices to be applied.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
116 cont'd	of horizontal curves on freeways, expressways, and roadways. FHWA proposes this new section to assist practitioners with the selection of the appropriate device for warning of a change in horizontal alignment.	In addition, the final sentence of P1 is modified to eliminate the “whichever is higher” portion of the standard. FHWA received a number of comments from various agencies noting that in many cases the 85th percentile speed is not available. This change is consistent with other Sections of the Manual where the term “whichever is higher” is not used. This is also consistent with Official Ruling 2(09)-2(I), which stated highway agencies have the flexibility to determine, based on engineering judgment, which speed value to use for the tangent approach to a horizontal curve (posted or statutory speed limit, 85th percentile speed, or prevailing speed). Additionally, when it is determined that a curve warning sign with an advisory speed plaque will be installed for an approach to a curve, the decision as to which speed value to use shall be documented in the engineering study that is required in Section 2C.59 for the determination of the advisory speed.
117	In Section 2C.07 Horizontal Alignment Signs (W1–1 through W1–5, W1–11, W1–15), FHWA proposes to edit and move P2 from a Standard to Guidance. FHWA proposes to recommend the use of a Turn (W1–1) sign instead of a Curve sign in advance of curves where the advisory speed is half or less of the posted speed or a speed differential of 25 mph or more. FHWA proposes these changes to allow engineering judgment if a Turn sign does not fit the field conditions. Also, the proposed change in criteria to a speed differential limits the use of the Turn sign where the sign would otherwise be required on lower speed roadways with small differentials between the posted speed and the advisory speed.	The change of P2 from Standard to Guidance is adopted as proposed, but the text is reverted to the 2009 language indicating that the Turn sign should be used if the horizontal curve has an advisory speed of 30 mph or less. This change simplifies the criteria for determining Turn vs Curve sign use, but also allows engineering judgment to be used when the severity of the curve is not such that the use of the Turn sign would be appropriate, such as on lower speed roadways where the geometric conditions are better portrayed by the use of the curve sign.
118	In Section 2C.08 (existing Section 2C.09) Chevron Alignment Sign (W1–8), FHWA proposes to add Option and Standard statements regarding the use of LEDs when used within Chevron Alignment signs to enhance the conspicuity.	Based on a significant number of comments received, the Standard prohibiting the sequential flashing of chevrons is not adopted and the new Option is adopted with revisions to delete reference to concurrent flashing of LEDs. FHWA notes that previous research (Highways for Life Publication No. FHWA-15-CAI-012 and Indoor Simulator and Field Study Evaluation of Sequential Flashing Chevron Signs on Two-Lane Rural Highways Report No. FHWA-SA-18-075) did not compare the sequential flash pattern to a simultaneous flash at once per second, which is the current MUTCD requirement for flashing LEDs. However, between the simulator and field studies conducted in the research, the treatment showed effectiveness in reducing speeds. FHWA believes that further



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
118 cont'd		<p>research is necessary to determine an optimum flash pattern and rate to ensure that the operation of the chevrons appears synchronized to an approaching driver when the number of chevrons in view can vary by location.</p> <p>In concert with this change, a prohibition on use of the Chevron Alignment sign in the central island of a roundabout is added to be consistent with changes adopted in Section 2C.10 for the One-Direction Large Arrow sign, because this sign is used for curves, turns, and changes of alignment and is not appropriate for direction of traffic entering a roundabout or neighborhood traffic circle where that traffic must yield to traffic in the circulatory roadway. This change is also consistent with other related changes in Chapter 2B.</p>
119	<p>FHWA proposes to delete existing Section 2C.10 Combination Supplemental Horizontal Alignment/Advisory Speed Signs (W1-1a, W1-2a), because there is considerable evidence that the signs are not being used as a supplement in accordance with the Standard, since many take on the form of an Advance Warning sign and are placed in advance, rather than at the location of the hazard. To address the need to remind road users of the advisory speed at a location downstream of the advance warning location, FHWA proposes the Confirmation Advisory Speed Plaque (W13-1aP) described in proposed Section 2C.59.</p>	<p>The deletion of existing Section 2C.10 and the W1-1a and W1-2a signs is adopted as proposed. Comments that the W1-1a and W1-2a signs should not be removed from the MUTCD are not adopted, for the reasons cited in the NPA preamble and for the safety of users on horizontal curves. For changes in horizontal alignment, it is misleading to have an advance warning sign being placed at the point of the hazard and the sign was not being used correctly as a supplement, especially where visibility of the curve is limited.</p>
120	<p>In Section 2C.10 (existing Section 2C.12) One-Direction Large Arrow Sign (W1-6), FHWA proposes to revise Option P1 to allow use of the One-Direction Large Arrow sign either as a supplement or alternative to Chevron Alignment signs or delineators to delineate a change in horizontal alignment. FHWA proposes this change to reflect the results of a recent study on driver response to traffic control devices (<a href="http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NC_HRP03-106_FR.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NC_HRP03-106_FR.pdf</a>) and resulting desire to revise MUTCD language to clarify the use of devices in areas with change in horizontal alignment.</p> <p>FHWA also proposes to delete Standard paragraph 7 prohibiting the use of the One-Direction Large Arrow sign in the central island of a roundabout and instead proposes to allow its use in a new Option. FHWA proposes to allow the use of the sign in conjunction with the proposed changes to remove existing Section 2B.43 for Roundabout Directional Arrow Signs. FHWA proposes these changes to provide agencies with an Option to use a warning sign within the roundabout instead of, or in addition to, a One-Way sign to direct traffic counterclockwise around the central island.</p>	<p>This change is adopted as proposed.</p> <p>The proposed deletion of the prohibition on use of the One-Direction Large Arrow sign in the central island of a roundabout and the proposed new Option to allow such use are both not adopted. The prohibition is restored and the Option is not adopted, because this sign is used for curves, turns, and changes of alignment and is not appropriate for direction of traffic entering a roundabout or neighborhood traffic circle where that traffic must yield to traffic in the circulatory roadway. These changes are consistent with other related changes in Chapter 2B.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
120 cont'd	As part of these changes, FHWA proposes to add a Support statement referencing figures in Chapter 2B that show examples of regulatory and warning signs for roundabouts.	The proposed added Support statement is not adopted.
121	<p>In Section 2C.11 (existing Section 2C.13), retitled, "Truck Rollover Sign (W1-13)," FHWA proposes to revise the existing Option statement to be more specific regarding locations where it may be appropriate to use the sign in lieu of a horizontal alignment warning sign.</p> <p>In addition, FHWA proposes to add a Guidance statement regarding the placement of the Truck Rollover sign.</p> <p>FHWA also proposes to add an Option allowing the use of a Vehicle Speed Feedback (W13-20) sign in conjunction with a Truck Rollover Warning sign.</p>	<p>The changes are adopted as proposed, except that the phrase "in lieu of" is replaced with "as a supplement to", thereby allowing both signs to be used if needed.</p> <p>The added Guidance is adopted, with editorial adjustments for clarity.</p> <p>The proposed added Option is not adopted. Instead, the existing Option that immediately precedes it is revised to more concisely state that conspicuity enhancements may be used.</p>
122	<p>FHWA proposes to combine existing Sections 2C.14 and 2C.15 and renumber and retitle the resulting section as, "Section 2C.12 Advisory Exit and Ramp Speed Signs (W13-2 and W13-3) and Combination Horizontal Alignment/Advisory Exit and Ramp Speed Signs (W13-6 through W13-13)."</p> <p>FHWA proposes to add Standard, Guidance, and Option statements clarifying the use of these signs, including how they are to be used together, where applicable.</p> <p>FHWA also proposes to reference the proposed new tables in Section 2C.06.</p> <p>In the proposed new Standard, FHWA proposes to require that the ramp geometries depicted on the Advisory Exit or Ramp Speed signs be limited to the standard designs of the proposed Combination Horizontal Alignment/ Advisory Exit Speed and Combination Horizontal Alignment/Advisory Ramp Speed signs. While this limitation is implicit in the existing provisions of Section 2A.04 (existing Section 2A.06) that prohibit alternatives to standard signs or other uses of symbols, FHWA believes that a specific</p>	<p>The combination, renumbering, and retitling of the section is adopted as proposed.</p> <p>The added statements are adopted as proposed, except as noted below.</p> <p>The reference in P1 of the new tables is not adopted, because that reference was incorrect. Instead, P1 is revised to state that the W13-2 shall be used where an advisory speed is posted in advance of a freeway or expressway exit and W13-3 signs shall be used where an advisory speed is posted in advance of a conventional road ramp or to another roadway or roadside facility. As the provisions for their use were outlined later in the section, those Standard and Guidance provisions are relocated to the subsequent P3 and P4 to make the provisions for the use of these signs clearer.</p> <p>This new Standard is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
122 cont'd	<p>statement in this proposed Section would help to ensure that the proposed Combination signs are used only for those conditions at exit ramps that are atypical or unexpected. This limitation would minimize overuse of the Combination signs, which could result in a reduction of their effectiveness. Where typical or expected geometry exists at or near the ramp terminal, the Advisory Exit or Ramp Speed (W13-2 or W13-3) signs would continue to be used. FHWA proposes these new signs to provide agencies and practitioners greater flexibility to sign for various unexpected conditions at or near ramp terminals.</p>	<p>The new signs are adopted as proposed.</p>
	<p>In addition to the existing signs in the Manual that display the 270-degree loop arrow (W13-6 and W13-7), FHWA proposes Exit and Ramp Combination signs depicting the following geometric conditions: The 180-degree horseshoe curve arrow, the 90-degree turn arrow, and the truck rollover symbol and arrow.</p>	
	<p>In this new Standard, FHWA also proposes to incorporate an existing requirement previously contained in Table 2C-5 for the use of Advisory Exit Speed and Advisory Ramp Speed signs on turning roadway exits and ramps when the difference between the speed limit and the advisory speed is 20 mph or greater.</p>	<p>The change is adopted as proposed.</p>
	<p>FHWA also proposes to recommend in a new Guidance that the Advisory Exit Speed and Advisory Ramp Speed signs on turning roadway ramps be used when the difference between the speed limit and the advisory speed is 15 mph or greater.</p>	<p>The change is adopted as proposed.</p>
	<p>FHWA also proposes to add that Regulatory Speed Limit signs should not be located in the vicinity of exit ramps or deceleration lanes, particularly where they would conflict with the advisory speed displayed on the Advisory Exit or Ramp Speed signs.</p>	<p>The change is adopted as proposed.</p>
	<p>In a revised Option, where there is a need to remind road users of the recommended advisory speed, FHWA proposes to allow a horizontal alignment warning sign with an advisory speed plaque to be installed at a downstream location along the ramp.</p>	<p>The revised Option is adopted as proposed.</p>
	<p>FHWA proposes new Guidance for the installation of a horizontal alignment warning sign if there are changes to the ramp curvature and the subsequent curves have advisory speeds that are lower than the initial ramp curve speed.</p>	<p>The new Guidance is adopted as proposed.</p>
	<p>FHWA also proposes a new Option for the use of the One-Direction Large Arrow (W1-6) sign beyond the exit gore on the outside of the curve to provide</p>	<p>The new Option is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
122 cont'd	additional warning of an immediate change in curvature. FHWA proposes the changes in this new combined section to clarify the use of these signs and provide additional flexibility for their use on ramps where the speed differential is small, or where road users need reminding of the advisory speed.	
123	FHWA proposes to add a new section numbered and titled, "Section 2C.13 Vehicle Speed Feedback Sign (W13-20, W13-20aP)," that contains Option, Standard, and Guidance paragraphs regarding the use of an LED sign to displays the speed of an approaching vehicle back to the vehicle operator to provide warning to drivers of their speed in relation to either a speed limit or horizontal alignment warning advisory speed sign. FHWA proposes this new section to provide additional information regarding the use of these signs and plaques, as well as references to other portions of the Manual to assist with uniformity in the use of the signs and plaques.	<p>The changes are adopted as proposed, except that P4 is revised to add a requirement that the speed displayed be an integer, based on comments.</p> <p>A comment requesting addition of an Option to allow the color of the numerals to be fluorescent yellow-green in school zones is not adopted. Instead, an exception to the yellow color requirement for numerals is added specifically citing Sections 6H.01 (work zones) and 7B.01 (schools).</p> <p>Another comment requesting that flashing of the numerals for excessive speed be allowed is not adopted, because flashing violates the MUTCD provisions for changeable message signs, can add to the time to read the message, and can be distracting to drivers.</p> <p>A number of comments opposed the new provisions that (1) only allow the sign or plaque with a horizontal alignment warning sign and not other warning signs with advisory speeds, and (2) requiring mounting the sign as a supplement to a horizontal alignment warning sign rather than a plaque beneath as proposed and adopted for the use with a speed limit sign. These comments are not adopted. More than 25 percent of fatal crashes are associated with a horizontal curve, and the vast majority of these crashes are roadway departures. The average crash rate for horizontal curves is about three times that of other types of highway segments. About three-quarters of curve-related fatal crashes involve single vehicles leaving the roadway and striking trees, utility poles, rocks, or other fixed objects—or overturning. Allowing the sign to supplement advisory speeds for other signs has the potential for over-proliferation of the device and further research is needed. Existing research (<a href="https://www.fhwa.dot.gov/publications/research/safety/14020/14020.pdf">https://www.fhwa.dot.gov/publications/research/safety/14020/14020.pdf</a>) on the use and the placement showed most sites had decreases in mean speeds. With respect to mounting the sign supplemental to the advance warning sign and advisory speed plaque, this is also consistent with the cited research for placement of the device and</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
123 cont'd		concerns regarding the amount of information on the assembly if mounted with the sign and advisory speed plaque as well as the resulting mounting heights.
124	In Section 2C.14 (existing Section 2C.16) Hill Signs (W7-1, W7- 1a), FHWA proposes to remove the Standard in P5 requiring that the percent grade supplemental plaque be placed below the Hill (W7-1) sign as the Standard for the placement of a plaque below a sign is contained in Section 2C.57 "Use of Supplemental Warning Plaques." FHWA proposes this change to remove unnecessary or repetitive content and streamline the Manual.	The changes are adopted as proposed, except that, based on a comment, the proposed added phrase "on a freeway, expressway, or conventional road" in Guidance P1 is not adopted and removed, as the words basically include all roads and it is unnecessary to state that.
125	In Section 2C.16 (existing Section 2C.18) HILL BLOCKS VIEW Sign (W7-6), FHWA proposes to revise the Option and to add Guidance to indicate that the HILL BLOCKS VIEW sign may be used on the approach to a crest vertical curve where the vertical curvature provides inadequate stopping sight distance at the posted speed limit, and that where such curve results in a sight distance obstruction to a specific condition beyond the crest of the vertical curve, the sign for the specific condition beyond the vertical crest should be used rather than the HILL BLOCKS VIEW sign. FHWA proposes these changes to provide agencies with options to provide more specific guidance to conditions to road users about conditions ahead.	The changes are adopted as proposed.  A comment suggesting to add a Support statement listing examples of signs that may be used for conditions beyond the crest of the hill is not adopted, as the information is not needed and the list is not all inclusive.
126	In Section 2C.18 (existing Section 2C.20), retitled, "NARROW BRIDGE and NARROW UNDERPASS Signs (W5-2, W5-2a)" and in Section 2C.19 (existing Section 2C.21), retitled, "ONE LANE BRIDGE and ONE LANE UNDERPASS Signs (W5-3, W5-3a)," FHWA proposes to add Option statements that allow for the respective sign to be omitted on low-volume rural roads to capture language from existing Part 5 that FHWA proposes to redistribute among the remaining parts.  In addition, FHWA proposes to add NARROW UNDERPASS and ONE LANE UNDERPASS signs where the same conditions exist for an underpass.	The changes are all adopted as proposed, except that in P1 the phrase "roadway clearance width" is replaced with "roadway horizontal clearance" for accuracy. Also, in P4, the Option is revised to add the phrase "where there is adequate sight distance to the bridge, culvert, or underpass on both approaches" for consistency with similar language in Section 2C.19.
N/A (Sec. 2C.19)	Section 2C.19 (not discussed in the NPA Preamble)	In Section 2C.19 ONE LANE BRIDGE and ONE LANE UNDERPASS Signs (W5-3, W5-3a), based on a comment, items A, B, and C listed in Guidance P1 are revised to replace "clear roadway width" with "roadway horizontal clearance" for accuracy. Also, Option P4 is revised to add "culvert or underpass" and to replace "from either approach" to "on both approaches" for completeness and accuracy.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
127	<p>In Section 2C.24 (existing Section 2C.26), retitled, "DEAD END, NO OUTLET, and ROAD ENDS Signs (W14-1, W14-1a, W14-2, W14-2a, W8-26, W8-26a)," FHWA proposes to change the term "cul-de-sac" to "turnaround" in Option P1 to reflect the roadway geometry more accurately.</p> <p>FHWA proposes to delete Standard P4 prescribing the design of the sign, because sign design details are required to comply with existing requirements in Chapter 2A.</p> <p>Lastly, FHWA proposes to add a new Option for signs for ROAD ENDS and STREET ENDS for use on the approach to the end of a conventional road or street.</p> <p>In concert with these new signs, FHWA also proposes a Guidance paragraph recommending the use of object markers to mark the end of the road or street if the new signs are used, presuming that the need for the sign would be based on low visibility of the end of the road or street.</p> <p>FHWA also proposes a Standard statement prohibiting the use of the proposed new ROAD ENDS and STREET ENDS signs at the entrance to a dead-end road or street as the DEAD END and NO OUTLET signs are designated specifically for that purpose.</p>	<p>The changes in Option P1 are not adopted. Based on comments, the phrase "terminates in a dead end or turnaround" is replaced with "terminates without intersecting another street," to eliminate any misunderstanding of the meanings of the two deleted terms.</p> <p>Deletion of Standard P4 is adopted as proposed.</p> <p>The new Option is adopted as proposed, except that, similar to P1, reference to "dead end or turnaround" is deleted and replaced with the phrase "where the street terminus is not apparent."</p> <p>The proposed new Guidance paragraph is not adopted. Instead, a new Support paragraph is added referring to Section 2C.73 regarding use of object markers.</p> <p>The Standard is adopted as proposed.</p>
128	<p>In existing Section 2C.27, renumbered and retitled, "Section 2C.25 Low Clearance Signs (W12-2, W12-2a, W12-2b)," FHWA proposes several revisions to clarify the signing practice for locations where the clearance is less than 12 inches above the statutory maximum vehicle height. FHWA proposes these changes to provide agencies with additional information for placing signs in advance of and on structures with low clearance. The proposed changes were based on recommendations from NTSB H-14-11 to provide signing indicating the proper lane of travel for over height vehicles traveling under an arched structure (<a href="https://www.nts.gov/investigations/AccidentReports/Reports/HAR1401.pdf">https://www.nts.gov/investigations/AccidentReports/Reports/HAR1401.pdf</a>).</p> <p>As part of these changes, FHWA proposes to designate the existing W12-2 sign as a Low Clearance Ahead sign, and the existing W12-2a and a proposed new W12-2b sign as a Low Clearance Overhead sign, to indicate the portion of the structure with low clearance if the posted clearance does not apply to the entire structure.</p> <p>FHWA proposes a compliance date of 5 years based on the critical nature of the infrastructure.</p>	<p>See Preamble of Federal Register for discussion of Paragraphs 1 and 8 and the associated compliance date.</p> <p>P3 Guidance is adopted with revised language based on an NTSB comment, to clarify more specifically under what conditions the clearances should be evaluated.</p> <p>P5 adds new guidance for the advance warning of low clearances on intersection roads or freeway or expressways exits for the use of a rectangular warning sign with an appropriate word legend and to not use the W12-2 sign. This recommendation is in the interest of safety and ensuring that road users have adequate warning when exiting onto roadways with low clearances and no opportunity to detour.</p> <p>P7 introduces an Option in response to a number of commenters who disagreed with the removal of the ability to place the W12-2 on a structure. FHWA agrees with the commenters and adds the option for when physical conditions on a structure limit the width such that the W12-2a or W12-2b signs are physically unable to fit (such as on wooden or metal trestle</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
128 cont'd		<p>bridges), a W12-2 sign may be installed overhead on the structure or post-mounted in front of the structure, in addition to the required W12-2 sign at the advance location.</p> <p>The Standard in P9 is revised in response to comment to clarify that the sign is to be placed over the lane or shoulder with the low clearance point.</p> <p>New Guidance in P10 is added to recommend that the clearance shown on the W12-2 sign should match the clearance on the overhead versions, and if there are multiple overhead versions, should match the lowest clearance. This recommendation is added to ensure the safety of road users, the integrity of the infrastructure, and to ensure that enough advance warning is provided for the lowest possible clearance ahead.</p>
129	In Section 2C.26 (existing Section 2C.28) BUMP and DIP Signs (W8-1, W8-2), FHWA proposes to change P3 from a Standard to a Guidance statement to discourage, rather than prohibit, the use of the DIP sign at a short stretch of depressed alignment that might hide a vehicle momentarily. FHWA proposes this change to give agencies more flexibility in the placement of the DIP sign.	<p>The change is adopted as proposed.</p> <p>In addition, P1 is revised to replace “to give warning” with “in advance” to clarify the proper location for the signs. This text change is also adopted in P1 of Section 2C.27 SPEED HUMP sign.</p>
130	In Section 2C.28 (existing Section 2C.39) DRAW BRIDGE Sign (W3-6), FHWA proposes to delete the exception for use of a DRAW BRIDGE sign in urban conditions because it is not necessary.	The changes are adopted as proposed, but the entire section is relocated to be Section 2C.36.
131	In Section 2C.30 (existing Section 2C.31) Shoulder Signs (W8-4, W8-9, W8-17, W8-23, and W8-25), FHWA proposes to delete Standard P7 requiring that Shoulder signs be placed in advance of the condition, because that requirement is applicable to almost all warning signs, and therefore is not needed as a separate Standard in this section.	The changes are adopted as proposed and the section is renumbered Section 2C.29.
132	FHWA proposes to add a new section numbered and titled, “Section 2C.34 NO TRAFFIC SIGNS Sign (W18- 1),” that contains an Option statement that captures language from existing Part 5 that FHWA proposes to redistribute among the remaining parts.	The changes are adopted as proposed and the section is renumbered Section 2C.33.
133	In Section 2C.35 Weather Condition Signs (W8-18, W8-19, W8- 21, and W8-22), FHWA proposes to change Standard P2 to a Guidance to provide	The changes are adopted as proposed and the section is renumbered Section 2C.34.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
133 cont'd	agencies with flexibility in the placement of the Depth Gauge sign.	In addition, based on a comment, a Support paragraph is added to refer to Chapter 2L for use of blank-out or changeable message signs activated by detection of applicable condition.
134	In Section 2C.36 Advance Traffic Control Signs (W3–1, W3–2, W3–3, W3–4), FHWA proposes to change the last sentence of Standard P1 related to visibility criteria for traffic control signals based on distances specified in Table 4D–2 to a Guidance to allow agencies more flexibility.  FHWA also proposes to combine and revise existing Option statements to allow for the use of LEDs within the border of the sign to enhance conspicuity.	This section is renumbered Section 2C.35. The change to the Standard in P1 is not adopted as proposed in the NPA. A comment in Section 2C.36 and comments in Part 4 disagreed with the change based on the safety of drivers. FHWA agrees as it is important for the safety of the road user to have the warning sign installed when the view of the signal faces is not sufficient.  The changes are adopted as proposed, except that text that would allow the border LEDs to be flashed is not adopted. LEDs cannot be used with a WHEN FLASHING plaque. LEDs are for sign conspicuity and are only to be used all the time or when actuated but are not to be used with a WHEN FLASHING plaque. A part-time warning beacon indicating that a condition is in effect differs from LEDs used within a sign as a conspicuity enhancement. While a warning beacon can be used for conspicuity, that is not its only function (and is not its function in this case). The WHEN FLASHING message requires a warning beacon for this purpose. This is consistent with Section 4S.03. In addition, a comment requesting to add “or when the 85th-percentile speed or the posted speed limit is 25 mph or lower” to the conditions when engineering judgment should determine the treatment to be implemented is not adopted, because no justification was provided and insufficient visibility of a signal, stop sign, or yield sign is important to address with warning signs even at low speeds. Further, based on a comment, the phrase “or in advance of a section of roadway that regularly experiences traffic congestion” is removed from Option P7 as it is not appropriate to use the BE PREPARED TO STOP sign for congestion that is not related to a traffic signal.
135	FHWA proposes to add a new section numbered and titled, “Section 2C.37 Actuated Advance Intersection Signs (W2–10 through W2–12),” that contains Support, Option, and Standard paragraphs regarding the use of Actuated Advance Intersection Signs to allow agencies flexibility in implementing warning systems in the vicinity of traffic signals or other intersection conflict areas. FHWA proposes these signs, and the associated legends, based on information from a Pooled Fund Study ( <a href="https://www.fhwa.dot.gov/publications/research/safety/16061/16061.pdf">https://www.fhwa.dot.gov/publications/research/safety/16061/16061.pdf</a> ).	The addition of the new section is adopted as proposed (and relocated to become Section 2C.42), but the signs and certain associated text are revised. The WATCH FOR ENTERING TRAFFIC (W2-11) sign is removed because the W2-11 sign is an inappropriate sign for an actuated system that displays real-time warnings, as denoted by the section title. The appropriate sign for use is the W2-10 sign, which includes the legend WHEN FLASHING. The word “uncontrolled” is also added in two of the Option paragraphs, for accuracy.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
135 cont'd		<p>In addition, in the final paragraph Standard, the phrase “an actuated warning system that activates when an approaching vehicle is detected” is replaced with “a warning beacon (see Section 4S.03) that activates when a vehicle on a conflicting approach is detected”, for accuracy.</p> <p>A comment requesting to add a sign with the legend TRAFFIC ENTERING is not adopted because it can be misinterpreted to mean that traffic is always entering rather than just when flashing. This is an inappropriate legend, given the other available existing signs.</p>
136	FHWA proposes to renumber and retitle existing Section 2C.52 as, “Section 2C.39 NEW TRAFFIC PATTERN and SIGNAL OPERATION AHEAD Signs (W23–2, W23–2a)” to add a proposed new optional sign that agencies may use to warn road users of changes in signal phasing.	The changes are adopted as proposed and renumbered Section 2C.38, except that the section title and the W23-2a sign are revised to add the word NEW before SIGNAL OPERATION AHEAD.
137	In Section 2C.40 (existing Section 2C.38) Reduced Speed Limit Ahead Signs, FHWA proposes to add the Variable Speed Zone (W3–5b) and Truck Speed Zone (W3–5c) Ahead signs in the Guidance and Standard paragraphs to provide agencies with standard signs to be used to inform road users in advance of these reduced speed zone types.	<p>The changes are adopted as proposed, except that the Variable Speed Zone (W3-5b) sign is moved to a separate Guidance paragraph specifically about the use of that sign, to clarify that the sign should be used whenever a variable speed limit is established and not dependent on the speed reduction being more than 10 mph. Also, the section title is revised to “Reduced Speed Limit Ahead and Speed Zone Signs” to accurately reflect the section content.</p> <p>A comment requesting additional Guidance recommending advance placement of the sign to enable the motorist to safely decelerate to the new speed is not adopted. This is not different from any deceleration to a listed advisory speed, such as in Table 2C-3, and no different than any other warning sign placement.</p>
138	FHWA proposes to add a new section numbered and titled, “Section 2C.41 WATCH FOR STOPPED TRAFFIC Sign (W23–3).” The new section contains an Option to use a new WATCH FOR STOPPED TRAFFIC Sign (W23–3) to warn road users of the possibility of vehicles stopped unexpectedly in the travel lane. FHWA proposes this change based on Synthesis of Non-MUTCD Signing ( <a href="https://rosap.ntl.bts.gov/view/dot/34772/dot_34772_DS1.pdf">https://rosap.ntl.bts.gov/view/dot/34772/dot_34772_DS1.pdf</a> ), <sup>33</sup> which found that at least 20 State agencies currently use a sign that warns of the possibility of stopped or almost stopped traffic due to turns or other unexpected conditions, and therefore recommends adding the sign to the MUTCD. In accordance with this recommendation, FHWA proposes to add the W23–3 to Figure 2C–4 and Table 2C–1.	The changes are adopted as proposed with the sign designated as the W26-1. The section is relocated to become Section 2C.39.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
139	In Section 2C.42 (existing Section 2C.46) Intersection Warning Signs (W2–1 through W2–8), FHWA proposes to remove Option P5 regarding the design of intersection warning signs to remove language that implies certain classifications of roadways at an intersection may be of lesser importance. FHWA proposes to revise Guidance P8 to exclude Grade Crossing and Intersection Advance Warning (W10–2 and W10–3) signs from Intersection Warning signs that are prohibited on approaches controlled by STOP signs, YIELD signs, or signals. FHWA proposes this change because of the safety importance associated with these signs.	This section as adopted with changes and is renumbered Section 2C.41. The proposed removal of Option P5 is not adopted. Instead, based on a comment, the existing Option is retained but reworded to allow a side road representing a significantly lower volume than other side roads shown on the sign to be depicted with a line that is two-thirds of the width of the line representing the through road, based on engineering judgment. The changes in Guidance P8 are adopted as proposed.
140	In Section 2C.43 (existing Section 2C.47) Two–Direction Large Arrow Sign (W1–7), FHWA proposes to delete Standard P4 prohibiting the use of a Two–Direction Large Arrow Sign in the central island of a roundabout. FHWA proposes this change because the MUTCD provides considerable guidance and numerous examples of proper signing at roundabouts and the use of the sign as described in the statement is contrary to the definition of a roundabout and relevant MUTCD provisions.	The changes are adopted as proposed.
141	FHWA proposes to renumber and retitle existing Section 2C.48 to “2C.44 Traffic Signal Oncoming Extended Green Signs (W25–1, W25–2).” FHWA proposes to delete the last sentence of Standard P1 regarding the sign shape and orientation because the design is standardized.	The changes are adopted as proposed.
142	In Section 2C.45 (existing Section 2C.40) Merge Signs (W4–1, W4– 5), FHWA proposes to add a new Guidance paragraph with recommendations for the orientation and location of the Merge signs.	The change is adopted, but based on comments, the paragraph is revised with corrections for accuracy regarding which portions of the symbol represent which roadways. In addition, the section title is revised to “Merge Signs and Plaque (W4-1, W4-5, and W4-5aP)” for accuracy.
	FHWA also proposes to add a new Figure 2C–11 illustrating the use of Merge signs.	Two new figures are adopted: Figure 2C-12 Examples of Merge and Added Lane Sign Placement for Entering and Converging Roadways and Figure 2C-13 Example Sequences for Lane Ends and Lane Merge Signs.
	Lastly, FHWA proposes to change the existing Guidance P7 to a Standard to prohibit the Merge sign from being used for a lane reduction rather than a merging roadway. FHWA proposes this change to clarify the purpose of the signs because standard	A new paragraph is added to the Guidance to recommend placing Merge signs on each roadway where two roadways of approximately equal importance converging and merging movements are required.
		The change of this paragraph to Standard is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
142 cont'd	signs already exist to sign for the condition of a lane termination and the Merge symbol sign is not intended for any general merging action. Rather, it is intended specifically for the condition in which two roadways merge, such as two ramps or a ramp and main highway.	
143	<p>In Section 2C.46 (existing Section 2C.41), "Added Lane Signs (W4-3, W4-6)," FHWA proposes to add a new Guidance paragraph with recommendations for the orientation and location of the Added Lane signs.</p> <p>FHWA also proposes to illustrate the use of the Added Lane signs on new Figure 2C-12.</p>	<p>The changes are adopted as proposed, except that, based on comments, P2 Guidance is revised with corrections for accuracy regarding which portions of the symbol represent which roadways, similar to Section 2C.45.</p> <p>This figure is adopted as a portion of Figure 2C-12, showing use of both Merge and Added Lane signs.</p>
144	<p>In Section 2C.47 (existing Section 2C.42), retitled "Lane Ends Signs (W4-2, W9-1)," FHWA proposes several changes to reflect the proposed deletion of the LANE ENDS MERGE LEFT (RIGHT) (W9-2) sign. FHWA proposes deleting this sign, and instead adds new Support and Guidance statements to clarify the use of the Lane Ends (W4-2) and RIGHT (LEFT) LANE ENDS (W9-1) signs, including how to use them together, where applicable, to warn road users of the reduction in the number of lanes.</p> <p>FHWA proposes a Guidance statement to clarify the Lane Ends (W4-2) sign should be used to indicate the approximate location of the start of the lane taper. FHWA proposes these changes and the deletion of the W9-2 sign to provide consistency in signing for a reduction in the number of lanes, as the W9-2 sign is a word message for which a symbol sign (W4-2) already exists. In addition, a research study (<a href="https://pooledfund.org/Document/Download/7559">https://pooledfund.org/Document/Download/7559</a>) which examined the use of these signs, as well as new alternatives, showed that the W4-2 and W9-1 had the best recognition, while the W9-2 sign had a greater legibility distance.</p> <p>FHWA proposes a new Option that allows the W9-1 sign to be located at the far-side of the intersection on low-speed roads in urban environments where space is limited at a signalized intersection.</p> <p>FHWA also proposes allowing supplemental RIGHT (LEFT) LANE ENDS (W9-1) signs upstream of the W9-1 that is installed at the advance placement distance.</p> <p>FHWA proposes a new Guidance statement to recommend that if supplemental W9-1 signs are installed, a Distance plaque should be installed below the W9-1 sign.</p>	<p>The W9-2 sign is deleted as proposed.</p> <p>The Guidance regarding locations for placement of the W4-2 Lane End sign is adopted with significant revisions based on comments. Instead of placement at the start of the taper, the sign should be located at the advance placement distance specified by Table 2C-3. This is an advance warning sign, so it should be located in advance of where the lane starts ending. The W9-1 sign provides supplemental advance warning and therefore the proposed Guidance recommending its use is revised to an Option for use and placement upstream of the W4-2 sign.</p> <p>The new Option is adopted but with simplified language that deletes text about low-speed and urban environments and instead refers to when the lane ends a distance beyond an intersection that is less than the Table 2C-3 distance.</p> <p>The Option is not adopted, as there is no need for a second W9-1 sign further upstream from the W9-1 that precedes the W4-2 sign.</p> <p>This new Guidance is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
145	<p>FHWA proposes to add a new Section numbered and titled, “2C.48 Lanes Merge Signs (W9–4, W4–8)” and proposes new LANES MERGE (W9–4) and Single-Lane Transition (W4–8) signs to warn of the reduction of two lanes to one in the same direction of travel.</p> <p>FHWA proposes new Guidance paragraphs for the Lanes Merge (W9–4) sign to be used to warn that the traffic lane is merging with the adjacent lane and a merging maneuver would be required, and for the Single-Lane Transition (W4–8) sign to be used to indicate the approximate location of the start of the lane taper.</p>	<p>The new section is adopted as proposed but with the following revisions: the Support is revised to more clearly describe the conditions for which these signs are intended; the Guidance in P2 is removed and replaced with an Option for the use of the W9-4 sign in advance of a W4-8 sign; and the Guidance in P3 is revised to note the placement in accordance with Table 2C-3, consistent with the changes made to the placement of the Lane Ends signs in Section 2C.47.</p>
146	<p>FHWA proposes to add a new section numbered and titled, “Section 2C.49 HEAVY MERGE FROM LEFT (RIGHT) Sign (W4–7).” The new section contains an Option to use a new HEAVY MERGE FROM LEFT (RIGHT) XX FT Sign (W4–7) to provide supplemental warning to advise road users of congested lanes at interchanges. A sign with the legend THRU TRAFFIC MERGE LEFT (RIGHT) was proposed in the 2008 NPA but was not adopted in the Final Rule. FHWA received a request to include the THRU TRAFFIC sign based on the Synthesis of Non- MUTCD Signing (<a href="https://rosap.ntl.bts.gov/view/dot/34772/dot_34772_DS1.pdf">https://rosap.ntl.bts.gov/view/dot/34772/dot_34772_DS1.pdf</a>), which found that at least 11 State agencies currently use such a sign and it should therefore be added to the MUTCD. FHWA proposes to add the W4–7 with a HEAVY MERGE FROM LEFT (RIGHT) XX FT legend to Figure 2C–8 and Table 2C–2 as this legend depicts the warning to drivers more accurately of the potential for a large volume of entering traffic rather than the THRU TRAFFIC legend, which warns through traffic to vacate those lanes, because it implies that the lane is ending. The MUTCD already contains standard signs to indicate that a lane is either ending or is for exit traffic only.</p>	<p>The new section is adopted as proposed.</p> <p>In addition, the “XX FT” legend is deleted from the sign and instead an Option is added to allow the W4-7 sign to be supplemented with an appropriate distance plaque.</p> <p>FHWA received a number of comments both in support of and opposed to the inclusion of this section. Comments suggesting the new sign and the entire new section be removed are not adopted. The commenters suggested that THRU TRAFFIC KEEP LEFT (RIGHT) would be more advisable for the condition. As noted in the NPA preamble, that sign is not appropriate. The Heavy Merge sign is intended to warn of the merge, not to dictate thru traffic or imply that a lane on the right will be a lane drop.</p>
147	<p>FHWA proposes to renumber and retitle existing Section 2C.43 to “Section 2C.50 RIGHT (LEFT) LANE FOR EXIT ONLY Sign (W9–7).”</p> <p>FHWA also proposes to delete Standard P2 regarding the sign shape and color because the design is standardized.</p> <p>In addition, FHWA proposes to add an Option statement that allows for the addition of a third line of legend that displays the distance to the exit if it is more than 1 mile away.</p>	<p>The section renumbering and retitling is adopted as proposed.</p> <p>The deletion of the Standard P2 is adopted as proposed.</p> <p>The added Option is adopted but with revisions to also allow the distance to be displayed on a plaque.</p> <p>In addition, Option P1 is revised to replace the phrase “on a ramp at the next interchange or intersection” with “at the next exit”, to clarify that the sign is intended for use on freeways and</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
147 cont'd		<p>expressway exits and not in advance of conventional road intersections.</p> <p>A comment requesting the word “FOR” be deleted from the sign legend is not adopted, because the NPA modified this sign from its 2009 legend to ensure that it is clear that the right lane is only for the exit and not that exit traffic just has to use the right lane.</p>
148	<p>FHWA proposes to add a new section numbered and titled, “Section 2C.52 Two-Way Traffic on a Three-Lane Roadway Sign (W6–5, W6–5a)” with an Option and Standard statement associated with the new sign. FHWA proposes this new optional sign to provide agencies with a standardized sign to use in locations where such a sign may be necessary to provide road users with the proper warning for the roadway configuration.</p>	<p>The new section and sign are adopted as proposed, except that the Standard describing the sign design is deleted because the design is standardized and described adequately in the Option.</p>
149	<p>In Section 2C.54 (existing Section 2C.49), “Vehicular Traffic Warning Signs (W8–6, W11–1, W11–5, W11–8, W11–10, W11–11, W11–12P, W11–14, W11–15, and W11–15a),” FHWA proposes eliminating sign W11– 5a because the secondary version of the Farm Machinery sign is isometric and inconsistent with the standard symbol design principles.</p> <p>FHWA also proposes to add the IN STREET and IN ROAD optional supplemental plaques to expand the options available to agencies to indicate that non-motorized users may be in the roadway.</p> <p>FHWA proposes to delete the SHARE THE ROAD supplemental plaque, as discussed below.</p>	<p>The changes are all adopted as proposed. Also, a Standard paragraph and two Option paragraphs are added concerning vehicular traffic warning sign assemblies at intersections controlled by Stop or Yield signs, for consistency with similar provisions for the School Crossing warning sign in Part 7, as these provisions apply to all crossing signs with intersections controlled by Stop or Yield signs.</p> <p>A request to add a bus warning sign with a bus symbol is not adopted because there is no standard symbol for a bus and comprehension/legibility testing is needed in order to develop one. This may be considered in the future.</p>
N/A (Sec. 2C.55)	<p>Section 2C.55 Non-Vehicular Warning Signs (not discussed in the NPA Preamble)</p>	<p>In Section 2C.55, a Standard paragraph and two Option paragraphs are added concerning non-vehicular warning sign assemblies at intersections controlled by Stop or Yield signs, for consistency with similar provisions for the School Crossing Sign warning sign in Part 7, as these provisions apply to all crossing signs with intersections controlled by Stop or Yield signs.</p> <p>A request to add a Shared Street symbolic sign is not adopted, as new symbols require comprehension and legibility testing before they can be considered for inclusion in the MUTCD, but this may be considered in the future.</p>
N/A (Sec. 2C.58)	<p>Section 2C.58 Design of Supplemental Warning Plaques (not discussed in the NPA Preamble)</p>	<p>The request to remove the Standard sentence related to regulatory sign plaques “since that is not appropriate in the chapter on warning signs” is not adopted, as Section 2C.57 clearly states that warning plaques may be used with regulatory signs.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
150	<p>FHWA proposes to renumber and retitle existing Section 2C.08 as, "Section 2C.59 Advisory Speed Plaque (W13-1P) and Confirmation Advisory Speed Plaque (W13-1aP)" to reflect the proposed addition of a new use for the optional plaque to supplement a One- Direction Large Arrow Sign (W1-6) to remind road users of the advisory speed through the curve. The proposed W13- 1aP plaque is redesignated from E13-1P, which is an existing plaque currently allowed beneath Exit Gore signs to confirm the advisory exit speed posted at an upstream location. FHWA proposes to redesignate this plaque and expand its use to the similar application on the outside of the beginning of any alignment change following a Horizontal Alignment Advance Warning sign assembly. The proposed expanded use of this plaque would replace the existing Combination Horizontal Alignment/Advisory Speed signs in existing Section 2C.10.</p> <p>In concert with this change, FHWA proposes a new Standard paragraph limiting the allowable use of the Confirmation Advisory Speed plaque only to supplement a One-Direction Large Arrow (W1-6) or an Exit Gore (E5-1 series) sign and not as a separate sign installation. FHWA proposes this limitation on the use of the plaque because the plaque was designed and intended specifically for these two uses, which are to supplement, near the beginning of the alignment change, an advisory speed that is posted at the advance location in an Advance Warning sign assembly.</p> <p>FHWA also proposes to delete existing Items A through C in Support P7 and all of Support P8, and instead refer to the Traffic Control Devices Handbook for information on established engineering practices for determining advisory speeds for a horizontal curve. As part of this change, FHWA proposes to add items A through E, which list established engineering practices.</p>	<p>The changes are adopted as proposed.</p> <p>In addition, Standard P3 is revised to clarify that the speed differential in Table 2C-6 shall be the difference between the horizontal curve's advisory speed and the roadway's posted speed limit, statutory speed limit, or the 85th percentile speed on the approach to the curve.</p> <p>The proposed new Standard paragraph is adopted as proposed.</p> <p>The changes to the Support regarding established engineering practices are adopted but with revisions based on numerous comments asking that the ball-bank method's three listed criteria not be deleted as the NPA proposed. The criteria are restored, as they do provide useful information for practitioners and eliminate the need to consult another publication.</p> <p>In addition, based on a comment, Guidance is added to clarify that when an Advisory Speed Plaque is used with a warning sign that is also supplemented with another plaque such as the commonly used Advance Street Name sign plaque, the Advisory Speed Plaque should be mounted directly below the primary warning sign, with the additional plaque below the Advisory Speed Plaque. This Guidance provides needed clarity for jurisdictions and reflects common practice.</p>
151	<p>In Section 2C.60 (existing Section 2C.62) NEW Plaque (W16-15P), FHWA proposes to delete Standard P2 prohibiting the NEW plaque from being</p>	<p>The changes are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
151 cont'd	<p>used alone because Section 2C.57 (existing Section 2C.53) already contains a similar Standard.</p> <p>FHWA also proposes to change Standard P3 to Guidance to give agencies more flexibility to retain the NEW plaque longer than 6 months after the regulation has been in effect, if necessary.</p>	<p>A new Section 2C.63 Diagonal Downward-Pointing Arrow Plaques (W16-7P and W16-7aP) is added and inserted after Section 2C.62. The new section includes two Support paragraphs explaining the intended use of the two types of diagonal downward pointing arrow plaques, including the new W16-7aP double-headed downward-pointing arrow plaque that is added to Figure 2C-17. The new W16-7aP has been added to provide practitioners additional flexibility in signing when a single crossing sign is needed on a narrow median separating two roadways with traffic in the same direction where the crossing traverses both roadways.</p>
N/A (Sec. 2C.63)	New Section 2C.63 Diagonal Downward Pointing Arrow Plaques (W16-7P, W16-7aP) (not discussed in the NPA Preamble)	
N/A (Sec. 2C.65)	Section 2C.65 (existing Section 2C.64) Advance Street Name Plaque (W16-8P or W16-8aP) (not discussed in the NPA Preamble.)	In Section 2C.65 Advance Street Name Plaque (W16-8P, W16-8aP), based on comments, the Support referencing advance street name guide signs posted at separate locations in relation to the W1-10 series signs is removed and Option P1 is revised to include the W1-10 series signs.
152	<p>FHWA proposes to delete existing Section 2C.60 SHARE THE ROAD Plaque (W16-1P) and replace it with a new proposed Section 2C.66 IN ROAD and IN STREET Plaques (W16-1P, W16-1aP) that contains Option and Standard statements regarding the use of these optional signs to warn drivers to watch for other forms of slower transportation traveling along the highway, such as bicycles, golf carts, or horse-drawn vehicles. Since its adoption in the 2000 MUTCD, research (<a href="https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0136973#sec013">https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0136973#sec013</a>) has shown that the “share the road” message when applied to bicyclists does not adequately communicate the responsibilities of either user group on the roadway. Road users are unclear whether “share the road” means that drivers should give space when passing or that bicyclists should pull to the side to allow drivers to pass. FHWA is proposing the IN ROAD/IN STREET plaques to replace the SHARE THE ROAD plaque based on this research and for consistency with all in road vehicle types.</p>	<p>The section is adopted as Section 2C.67. The changes are adopted as proposed, except that based on comments, the word “pedestrians” is added to Option P1 as another slower form of transportation, and Option P3 is revised to Support to merely refer to Section 9B.14.</p> <p>A request for deletion of the last phrase in the Standard paragraph, which prohibits mounting these plaques alone, is not adopted, because plaques are never intended to be mounted alone and a general prohibition is stated in Section 2B.67.</p>
153	FHWA proposes to add a new section numbered and titled, “Section 2C.67 Except Bicycles Plaque (W16-20P).” The new section contains an Option to use a new Except Bicycles plaque below a warning sign where it is appropriate to notify bicyclists that the	The section is adopted as Section 2C.68. The changes are adopted as proposed, except the Standard statement is deleted because the plaque is a standardized design and thus the statement is not needed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
153 cont'd	conditions depicted by a warning sign are not applicable to bicycles. An example is a roadway which terminates as a dead end or cul-de-sac but serves as a continuous route for bicycle travel through the use of connecting paths or barrier opening and the plaque would be used to supplement a DEAD END or NO OUTLET warning sign. This section also includes a new Standard statement that if used with a warning sign, the plaque shall be a rectangle with a black legend and border on a yellow background, consistent with similar provisions for the color of supplemental plaques.	A comment suggesting that Option P1 be revised to refer to "bicycles and other micro-mobility users" instead of just bicycles is not adopted. Agencies could decide to change the legend of an otherwise-standard plaque to "Except Bicycles and Scooters" or perhaps three or more types of conveyances, and this could introduce confusion. Instead, agencies can develop their own word-message-only variants of the W16-20P plaque for a given condition.
N/A (Sec. 2C.68)	Section 2C.68 Photo Enforced Plaque (not discussed in the NPA Preamble)	The section is adopted as Section 2C.69. The existing Standard paragraph is deleted because the plaque is a standardized design and thus the statement is not needed.
154	<p>In Section 2C.71 (existing Section 2C.65) Object Markers for Obstructions Adjacent to the Roadway, FHWA proposes to add a new Option permitting the use of Type 2 or Type 3 object markers to mark an obstruction adjacent to the roadway. The existing MUTCD has a Standard that currently implies this optional use of Type 2 and Type 3 object markers. FHWA proposes this change to clarify the intent of the provisions.</p> <p>FHWA also proposes to change existing Standard P2 and P3 to Guidance and revise the language regarding object markers applied to approach ends of guardrail and other roadway appurtenances to specify crash cushion terminals as the other roadway appurtenances. The revision also recommends that the Type 3 object marker should be directly affixed, without a substrate, and generally conform to the size and shape of the approach end of the guardrail or crash cushion. FHWA proposes this change because the term "roadway appurtenances" is not defined in the MUTCD and FHWA wants to eliminate any potential confusion that may occur between this Guidance paragraph and the existing Support statement in this section which lists numerous obstructions where object markers are applied.</p>	The section is adopted as Section 2C.72. The changes are all adopted as proposed.
N/A (Ch. 2D)	Chapter 2D organization (not discussed in the NPA Preamble)	As part of the reorganization to improve usability of the MUTCD, the following subchapter headings in Chapter 2D are adopted to organize sections into related groupings: General Design; Route Signs and Auxiliary Plaques; Sign Assemblies; Destination and Distance Signs; Street Name and Parking Signs; Freeway Interchange Approach Signs; Weigh Station, Crossover, Truck and Passing Lane, and Emergency and Slow Vehicle Passing Lane Signs; Other Guide Signs; and Signing at Airports.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
155	<p>In Section 2D.01 (existing Section 2D.02), retitled, "Scope of Conventional Road Guide Sign Standards and Application," FHWA proposes to relocate existing Guidance and Support statements regarding low volume roads from Chapter 5D. FHWA proposes the change to place all related material regarding guide signs together.</p> <p>FHWA also proposes a new Guidance statement recommending that the primary or control destinations displayed on guide signs be meaningful to road uses in navigation and orientation, and that such destinations be identifiable on official maps. FHWA proposes this change to provide consistency in the use of destinations on guide signs.</p> <p>FHWA also proposes a new Support statement to indicate that guide signs, other than Street Name signs, are generally not used on low-volume rural roads, except as needed to guide road users back to major roadways.</p> <p>FHWA also proposes to add new Support and Guidance statements, along with a new figure, describing signing for airport facility roadways. This information is based on a study by the National Academy of Sciences (<a href="http://www.trb.org/Main/Blurbs/165910.aspx">http://www.trb.org/Main/Blurbs/165910.aspx</a>) that examined airport roadway user informational needs and limitations.</p>	<p>Section 2D.01 title change and relocation of statements from the Part 5 of the previous Edition regarding low volume roads is adopted with a slight rearrangement in the paragraphs from what was proposed in the NPA.</p> <p>The new Guidance is adopted as proposed.</p> <p>The Support is adopted as proposed.</p> <p>Based on comments suggesting this material was better suited for a separate section, this information is adopted as a separate Section 2D.60 Signing at Airports in the final rule. The Guidance statement is revised in the final rule to clarify potential measures to provide road users with adequate time to comprehend and respond to signs at airports and an accompanying Support is added in the final rule.</p>
156	<p>In Section 2D.05 (existing Section 2D.06), FHWA proposes to add a Standard statement that the minimum letter and numeral height of the principal legend on conventional road overhead signs be at least 12 inches in height for upper-case letters and 9 inches in height for lower-case letters. An Option is also proposed to allow 10.67 inches in height for upper case letters and 8 inches in height for lowercase letters for such roadways with posted speed limits of 40 miles per hour or less. FHWA proposes this change to ensure adequate letter height to meet road user legibility needs for conventional roadway overhead guide signs based on speed of travel.</p>	<p>The proposed Standard regarding minimum letter and numeral height of the principal legend on overhead guide signs on conventional roadways is adopted with edits in response to comments in the final rule. To align with proposed Table 2D-2, the minimum letter and numeral heights are revised to 6 inches in height for all upper-case letters, or a combination of 6 inches in height for upper-case letters and 4.5 inches in height for lower-case letters. A qualifier was added to the standard, as existing guidance recommends larger minimum lettering and numeral sizes where conditions indicate a need for greater legibility with specific recommendations in Table 2D-2 and existing guidance specific to overhead Street Name signs in Section 2D.45. Table 2D-2 is adopted with edits in response to comments and for consistency with the adopted provisions, adding minimum and desirable minimum letter and numeral heights in the 35-55 mph column.</p> <p>Commenters also suggested deleting any reference to the lower-case letter loop height as there have been instances in which designers incorrectly reduce the size of the lower-case letters based on an incorrect reference to the rising stroke rather than the</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
156 cont'd		<p>nominal loop height. No change was adopted as this description remains important to understand the letter forms. FHWA will address the potential confusion in electronic sign design and fabrication with additional information in the <i>Standard Highway Signs</i> publication or another potential resource.</p> <p>Commenters also questioned how Table 2D-2 would relate to Table 2D-1 and the associated minimum sizes of conventional road guide signs that have standardized designs. Generally, Table 2D-1 will include the minimum sign and plaque sizes applicable regardless of speed or number of lanes. The recommended increase in letter and numeral sizes included in Table 2D-2 should be applied using engineering judgement.</p> <p>The proposed Option is not adopted, as it is not needed as a result of the other changes adopted in this Section.</p>
157	<p>FHWA proposes to add a new section numbered and titled, "Section 2D.07 Abbreviations." FHWA proposes to relocate information from existing Section 2E.17 to Chapter 2D because it also applies to guide signs for conventional roadways.</p> <p>FHWA also proposes to add a new figure and two new tables that are specific to the use of the types of abbreviations described in this Section.</p> <p>FHWA proposes a new Support statement identifying that the use of commonly recognized abbreviations for certain words can be useful in reducing the complexity of the sign message.</p>	<p>New Section 2D.07 regarding commonly recognized abbreviations for certain roads is adopted with minor edits.</p> <p>The addition of a new figure and two new tables is adopted as proposed.</p> <p>The new Support statement is adopted as proposed.</p>
158	<p>In Section 2D.08 Arrows, FHWA proposes to designate "curved-stem arrows" as "Type E directional arrows" and that they be associated exclusively with circular intersections. FHWA proposes this change to provide consistency in terminology throughout the Manual. In concert with this change, FHWA proposes several revisions within this section to reflect this terminology and to provide additional flexibility for agencies to represent intended driver paths on guide signs for circular intersections.</p>	<p>"Type E directional arrows" are adopted to replace "curved-stem arrows" used exclusively for circular intersections as proposed. Although a commenter suggested that use of these arrows be allowed for innovative intersections, such as jug handles, J-Turns, or Median U-Turns, use of these arrows for such signs is outside the scope of this rulemaking.</p> <p>In the 4th paragraph of the 2nd Option statement, a sentence is added in the final rule indicating that a Type D arrow may be used on a on Street Name Sign (D3-1 Only) displaying two street names to indicate the direction of travel for each street. In concert with this, a Guidance statement is added in Section 2D.45 that pictographs should not be used when an arrow is used as the sign becomes visually complex and can inhibit processing of the information by an observer.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
158 cont'd		<p>A Standard statement is added, which clarifies additional flexibility regarding the angle of the shaft for a Type C advance turn directional arrow and supports an existing Guidance statement which recommends arrows be pointed at the appropriate angle to clearly convey the direction to be taken. The new Standard requires the shaft to be bent at either a 90-degree angle or an oblique angle if a Type C arrow is used.</p> <p>The 2nd paragraph of the 3rd Guidance statement is changed to Support and edited for consistency with Sections 2D.37, 2E.41 and 2D.39 which contain the applicable provisions for arrows used on Overhead Arrow-per Lane signs, Diagrammatic Advance guide signing, and Destination signs on the approaches to circular intersections.</p>
159	<p>In Section 2D.09 Numbered Highway Systems, FHWA proposes to revise the Standard regarding route system order preference to provide an exception to the order because there may be instances where a different prioritization might better accommodate driver expectancy.</p> <p>In concert with the Standard revision, FHWA also proposes to add an Option statement allowing the modification of the prioritization of route systems.</p> <p>FHWA also proposes to add a Standard reflecting the existing requirement that Interstate route numbering be approved by FHWA consistent with 23 CFR 470.115(a).</p>	<p>The revised Standard regarding route system order preference to provide an exception to the order is adopted as proposed.</p> <p>The Option allowing the modification of the route system prioritization is adopted as proposed.</p> <p>The Standard for Interstate route numbering is adopted as proposed.</p>
160	<p>In Section 2D.11 Design of Route Signs, FHWA proposes to revise the first Standard paragraph to clarify the requirement that Interstate Route, Off-Interstate Business Route, U.S. Route, State Route, County Route, and Forest Route sign legends are required to comply with existing requirements in Chapter 2A.</p> <p>FHWA also proposes to revise the Standard paragraph regarding County Route sign dimensions to require a minimum size of 24 x 24 inches for consistency with the minimum sizes for other Route signs.</p>	<p>The first Standard paragraph that clarifies the requirement for sign legends to comply with the Standard Highway Signs publication is adopted.</p> <p>In the final rule, existing text is deleted in the second paragraph of the first and second Standard statements related to the color of the Interstate route shield and Off-Interstate Business Route to be consistent with the removal of such information in other areas of the MUTCD. The standard colors are still applicable and are included in the Standard Highway Signs publication.</p> <p>The revised Standard for County Route sign dimensions is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
160 cont'd	FHWA also proposes to revise Option paragraph 4 to designate the existing optional sign (Interstate Route sign that includes the State name) as M1-1a and to allow the optional use of this sign in place of the M1-1 sign when the Interstate Route sign is used in a Route Sign assembly.	The revised Option paragraph 4 is adopted as proposed.
	In concert with this change, FHWA proposes a new Standard statement limiting the use of the M1-1a sign to Route Sign assemblies to clarify that the allowable optional use does not extend to other types of signs, such as when the Interstate Route sign is used within a guide sign, to limit the informational load imposed on the road user and because the relative scale of the State name to other legend elements displayed on the guide sign would be considerably smaller.	The new Standard limiting the use of the M1-1a sign to Route Sign assemblies is adopted as proposed.
	FHWA also proposes to delete the Option P7 and P16 statements regarding Route Signs used on a green guide sign that allow for the use of a white or yellow background to improve contrast, because FHWA has revised the design of the Off-Interstate Business Route and County Route signs to include a wider border to address contrast.	The Option paragraphs are deleted and new designs for Off-Interstate Business Route and County Route signs are adopted as proposed.
	FHWA also proposes to add a Standard statement to reiterate the existing requirement of the legend on State Route signs to conform to Standard Alphabets, for consistency. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement in Chapter 2A. FHWA proposes to amend the subsequent Guidance paragraph to limit the use of complex graphics to maintain consistency.	The new Standard to reiterate the existing requirement that the legend on State Route signs conform to Standard Alphabets contained in the "Standard Highway Signs" publication is adopted as proposed; however, this new statement does not change the existing requirement in Chapter 2A. The Guidance to restrict the use of complex graphics on State Route signs is adopted as proposed.
	FHWA also proposes to revise the Standard paragraph regarding Route Signs for parks and forest roads to clarify the existing requirement to comply with the existing provisions of Chapter 2A, and to clarify that the provisions for the design of park and forest Route signs apply to non-National Forest routes.	The Standard regarding Route Signs for parks and forest roads and clarifying that the design of park and forest Route signs apply to non-National Forest routes is adopted as proposed.
161	In Section 2D.12, retitled, "Design of Route Sign Auxiliary Plaques," FHWA proposes to delete the Guidance paragraph regarding Route Signs of larger heights because the sizes are standardized based on roadway classification, corresponding to the Route Sign sizes.	The new title for Section 2D.12 and the deletion of Guidance regarding Route Signs of larger heights are adopted as proposed.
	FHWA also proposes to change the existing Guidance paragraph to a Standard regarding the color and design of a combination route sign with auxiliary plaques into a single guide sign, consistent with sign color requirements for guide signs elsewhere in the MUTCD.	The change of existing Guidance to Standard is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
162	In Section 2D.16, retitled, “Auxiliary Plaque for Alternative Routes (M4-1P through M4-4P),” FHWA proposes to modify the section title because the Option and Standard paragraphs contained within this section do not apply to the entire M4 series of signs.	Section 2D.16 is retitled to “Alternative Route Auxiliary Plaques” and modifications to the Option and Standard statements are adopted as proposed.
163	In Section 2D.17, retitled, “ALTERNATE Auxiliary Plaques (M4-1P, M4-1aP),” FHWA proposes to add a Standard paragraph to prohibit the use of the M4-1P Series plaques to sign alternative routing not officially incorporated into the numbered highway system, such as alternative routings for incident management or emergency detours. FHWA proposes this additional paragraph to ensure the M4-1P Series plaques are used in a consistent manner with their stated meaning in this section.	The new title for Section 2D.17 and new Standard are adopted as proposed.
164	<p>In Section 2D.29 Route Sign Assemblies, FHWA proposes to add a Guidance paragraph and new figure recommending that when more than four Route signs are needed in a single Advance Route Turn or Directional assembly, the Route signs should be mounted in a Guide sign. FHWA proposes this guidance as this would reduce the significant informational load on the road user of such assemblies by reducing the repetition of the cardinal direction and directional arrows.</p> <p>FHWA also proposes an Option paragraph allowing Route Signs to be omitted for routes that are part of an agency’s internal numbering system, such as for maintenance or other purposes, and are not publicly mapped or intended to be used for navigational purposes by the general public. FHWA proposes this Option to allow agencies flexibility as to whether to post signs in certain areas.</p>	<p>A new Guidance paragraph in Section 2D.29 and corresponding new figure are adopted as proposed.</p> <p>The new Option paragraph allowing Route Signs to be omitted is adopted as proposed and the paragraph is expanded in response to comments to allow numbered routes that are not maintained during certain times of the year to also be omitted.</p>
165	In Section 2D.34 (existing Section 2D.35) Trailblazer Assembly, FHWA proposes to revise the Option statement to clarify the use of a Cardinal Direction auxiliary plaque only for routes that provide access to one direction of the route.	The revision to the Option statement in renumbered Section 2D.34 is adopted as proposed.
166	In Section 2D.35 (existing Section 2D.36) Destination and Distance Signs, FHWA proposes to relocate a Guidance paragraph previously contained in Section 5D.01 regarding destination names on low-volume roads.	A relocated Guidance paragraph from Section 5D.01 to renumbered Section 2D.36 is adopted as proposed.
167	In Section 2D.36 (existing Section 2D.37) Designation Signs (D1 Series), FHWA proposes to add a new Support paragraph to describe the use of overhead destination guide signs on multi-lane conventional roadways with complex or unusual roadway alignments to help drivers.	The new Support paragraph in renumbered Section 2D.36 is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
167 cont'd	FHWA also proposes to add a new Option paragraph suggesting overhead signs using the Arrow-Per-Lane sign design configuration may be used to provide lane assignments for some or all lane designations at the approach to a multi-lane intersection for clarification.	<p>The new Option paragraph in renumbered Section 2D.36 is adopted as proposed.</p> <p>A new Option paragraph is added which describes the destination information which may be shown, such as cardinal directions, route numbers, street names, and/or place names, and is supported by examples of Overhead Destination signs shown in new and revised adopted Figures.</p>
168	FHWA proposes to add a new section numbered and titled, "Section 2D.37 Overhead Arrow-Per-Lane Destination Guide Signs," to provide information, requirements, guidance, and a figure related to the use of these signs on multi-lane conventional roadway intersections, often associated with complex or unusual roadway alignments using innovative intersection designs to improve traffic flow and safety.	<p>This new section is adopted in the final rule with edits to the Support statement to clarify the types of locations that may be considered complex.</p> <p>To address comments requesting additional detail on Overhead Arrow-Per-Lane signs for conventional roads, new Standard, Guidance, and Option statements are added in the final rule, consistent with the requirements and guidance on use of these signs found in Chapter 2E. As part of these changes, proposed Option statements are deleted about use of these signs on conventional roads where the designated lane is not a mandatory movement lane and for lane assignments for turns that do not include an option lane, because they are unnecessary.</p> <p>A new table is added providing the minimum arrow heights for straight and curved arrows used on Overhead Arrow-Per-Lane signs for conventional roads based on recent research, entitled <i>Evaluation of Additional Alternatives of Arrow Sizes for Overhead Arrow-per-Lane (OAPL) Guide Signs</i>, FHWA Publication FHWA-HRT-23-036, for freeway arrow heights and then applying the appropriate proportion of letter height to arrow height for lower speeds on conventional roads.</p> <p>The last Guidance statement is revised to clarify that when letter heights and other sign legend elements are enlarged there should be a corresponding increase in the arrow size used.</p> <p>An Option statement is added to clarify that curved-stem arrows may be used on Overhead Arrow-Per-Lane Destination Guide Signs on multi-lane approaches to a circular intersection with an option lane.</p>
169	In Section 2D.39 (existing Section 2D.38) Destination Signs at Circular Intersections, FHWA proposes to revise the Support paragraph regarding the use of diagrammatic guide signs for circular intersections to help ensure that the basic principles of limiting the	<p>The revised Support paragraph is adopted as proposed.</p> <p>An Option statement is added which allows the use of Overhead Arrow-per-Lane Destination (D1-4) signs</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
169 cont'd	amount of legend and aligning the arrows with each destination are applied. FHWA proposes this clarification to aid road users in understanding the sign and navigation through the area.	with curved-stem arrows on multi-lane approaches to circular intersections with an option lane. A reference is made to Section 2D.37 as the provisions for Overhead Arrow-per-Lane signs are also applicable.
170	In Section 2D.40 (existing Section 2D.39) Destination Signs at Jughandles, FHWA proposes to delete the Option allowing the use of diagrammatic guide signs depicting the travel path and turns through several intersections, because diagrammatic signs are limited to circular or successive intersections.	The deletion of the Option is adopted as proposed.
171	FHWA proposes to add a new section numbered and titled, "Section 2D.41 Destination Signs at Intersections with Indirect Turning Movements," that contains a Guidance paragraph regarding the use of guide signs and pavement markings to direct traffic, and a new figure illustrating examples of destination signs at intersections with indirect turning movements. FHWA proposes this new section to provide agencies with examples of proper signing for locations with displaced left turn and intercepted crossroad intersections, which are newer intersection designs and becoming more common in practice and provide for consistency.	The addition of a new section numbered and titled Section 2D.41 Destination Signs at Intersections with Indirect Turning Movements with the corresponding Guidance and Support paragraphs and renumbered Figure 2D-13 is adopted as proposed.
172	In Section 2D.45 (existing Section 2D.43), retitled, "Street Name Signs (D3-1, D3-1a)," FHWA proposes to add a Guidance paragraph regarding the use of Street Name signs at intersections of freeway exit ramps with crossroads to help minimize the potential for wrong-way movements onto the freeway ramp.	The Guidance paragraph recommending Street Name signs should not be used at intersections of freeway exit ramps with crossroads is adopted as proposed.
	FHWA also proposes to add Guidance regarding the engineering considerations that should be used to determine the letter heights used on Street Name signs at specific locations.	The Guidance paragraph regarding engineering considerations that should be used to determine letter heights on Street Name signs is adopted in the final rule. In response to comments, the text regarding lettering height is deleted and instead users are referred to Table 2D-6 for lettering heights to be used on street name signs.
	FHWA also proposes to revise the Support paragraph regarding minimum letter heights to clarify that the minimum letter heights apply to the roadway that each sign faces, rather than to the street that has its name displayed on the Street Name sign.	A revised Support paragraph regarding minimum letter heights on Street name signs is adopted as proposed.
	FHWA also proposes to add an Option paragraph to allow different letter heights in a sign assembly based on the speed limit in order to clarify that agencies may use different letter heights on different signs at the same intersection.	The Option paragraph allowing different letter heights in a sign assembly based on speed limit is adopted as proposed.
	FHWA also proposes to revise existing Option in P9 to clarify that the letter height of the street name descriptor, the directional legend, or any other	A revised Option in renumbered P12 clarifying that information on the D3-1 and D3-1a signs may be

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
172 cont'd	<p>supplemental legend on the D3-1 and D3-1a signs may be smaller than that of the street name itself, while maintaining the letter size proportions between the street name and supplemental information on the sign.</p>	<p>smaller than that of the street name itself is adopted as proposed.</p>
	<p>In concert with this Option, FHWA proposes to add Guidance that smaller letter legend should be at least two thirds of the letter height of the street name itself, but not less than 3 inches for the initial upper-case letters and not less than 2.25 inches for the lower-case letters for adequate legibility.</p>	<p>The Guidance paragraph on smaller letter heights for the street name descriptor, the directional legend, or any other supplemental legend on the D3-1 and D3-1a signs is adopted as proposed.</p>
	<p>In addition, FHWA proposes to change the remainder of the first sentence and the second sentence in existing Option in P9 regarding the use of conventional abbreviations for all information on the Street Name sign other than the street name itself to Guidance, and to provide a new table of acceptable street name descriptors and a table of street name descriptors that should not be used. FHWA proposes these changes to provide consistency with guide signs and to encourage the use of conventional abbreviations to reduce the size of the sign and for more rapid recognition.</p>	<p>The change from an Option to Guidance statement regarding the use of conventional abbreviations on the Street Name sign to provide consistency with guide signs is adopted as proposed.</p>
	<p>FHWA also proposes to add a Guidance statement regarding the proportional letter height of a supplemental legend to be consistent with guide signs and the letter heights that are used.</p>	<p>The added Guidance statement is adopted as proposed.</p>
	<p>FHWA also proposes to add Option and Guidance statements allowing the use of block or house numbers as a supplemental legend on Street Name signs and recommending the application of house numbers for the left and right blocks of the cross street.</p>	<p>The Option and Guidance statements for the use of block or house numbers as a supplemental legend on Street Name signs are adopted as proposed.</p>
		<p>The proposed revision to existing P10 is adopted with clarifying revisions.</p>
		<p>In addition, a Guidance paragraph is added in the final rule recommending that pictographs not be used on street name signs with directional arrows, as the sign becomes visually complex and can inhibit processing of the information by an observer.</p>
	<p>FHWA also proposes to delete a sentence in existing P14 regarding requirements for sign color and retroreflectivity because allowable colors for the legend and border are already included in existing P18 of this section and requirements for retroreflectivity are covered in existing Section 2A.07.</p>	<p>The deletion of a sentence in existing P14 regarding requirements for sign color and retroreflectivity is adopted as proposed.</p>
	<p>FHWA also proposes to add a Guidance statement regarding the omission of the border on a post-</p>	



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
172 cont'd	<p>mounted Street Name sign to clarify that the decision to omit the border should be based on factors related to providing for adequate recognition of the sign by road users.</p> <p>FHWA also proposes to add a Guidance statement that recommends that Street Name signs display the street name on both sides of the sign to facilitate navigation for pedestrians.</p> <p>FHWA also proposes to revise the Option regarding the use of arrows where the same road has two different street names. Additional information has been added to clarify that this option is not allowed where arrows would point in a movement direction that is not allowed.</p> <p>FHWA also proposes to add a Guidance paragraph regarding streets or segments thereof that have been memorialized or dedicated. Second Street Name signs should not be used to display the memorial or dedication name. Memorial or Dedication signs should be located to minimize conspicuity the potential for confusion by road users.</p> <p>Finally, FHWA proposes to add a Support statement referring users to Section 2H for information on the identification of streets at overcrossings and undercrossings.</p>	<p>The Guidance statement regarding the omission of the border on a post-mounted Street Name sign is adopted as proposed.</p> <p>The Guidance statement regarding the display of street names on Street Name signs is adopted with a minor editorial change.</p> <p>The revised Option statement regarding the use of arrows where the same road has different street names is adopted with minor edits in the final rule.</p> <p>The Guidance statement regarding streets or segments thereof that have been memorialized or dedicated signs is adopted with a minor editorial change.</p> <p>The Support statement referring the reader to Section 2H.10 is adopted as proposed.</p>
173	<p>In Section 2D.46 (existing Section 2D.44), retitled, "Advance Street Name Signs (D3-2 Series)," FHWA proposes to revise the Standard statement regarding the legend and background color of Advance Street Name signs to clarify that the use of alternative colors is prohibited, repeating an existing Standard statement from Section 2D.43. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement, to clarify that Advance Street Name signs must have green backgrounds.</p>	<p>The Standard statement regarding the prohibition of alternative background colors on Advance Street Name signs is adopted as proposed.</p>
174	<p>In Section 2D.47 (existing Section 2D.45) Parking Area Guide Sign (D4-1), FHWA proposes to revise the Standard paragraph to delete the design and color information for the sign, because design is standardized in accordance with the existing requirements in Chapter 2A.</p>	<p>The Standard statement is adopted as proposed.</p>
175	<p>In Section 2D.49 (existing Section 2D.45) Signing on Conventional Roads on Approaches to Interchanges, FHWA proposes to add a Support statement that provides reference to new figures that offer examples of guide signing for single-point urban intersection and transposed-alignment crossroads, which are becoming more common in practice.</p>	<p>The Support statement is adopted with minor edits.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
176	<p>In Section 2D.51 (existing Section 2D.49), WEIGH STATION Signing (D8 Series), FHWA proposes to add a Support paragraph that defines the areas where certain vehicles might be directed to stop to be weighed or inspected and that such an area can be permanent or a temporary mobile facility. FHWA adds this provision to give agencies more flexibility.</p> <p>FHWA proposes to revise existing Standard P2, and reference the figure, to indicate the appropriate sequence of signs for Weigh Station signing on a conventional highway and revises the sign terminology to match the typical sequence of other types of guide signs. The resulting sign sequence includes Advance Weigh Station Distance, Weigh Station Next Right, and Weigh Station Exit Direction Signs.</p> <p>In concert with this change, FHWA proposes to add a Guidance statement recommending an Exit Gore sign with the same basic legend as the Weigh Station Exit Direction sign be used to emphasize the entrance to the weigh station. FHWA proposes these revisions to provide more clarity on Weigh Station signing.</p> <p>FHWA also proposes to add an Option statement that allows the use of the alternate legend COMMERCIAL VEHICLE INSPECTION AREA for the D8 series Weigh Station signs. FHWA proposes this revision to be consistent with the type of activity being conducted at the station.</p> <p>FHWA also proposes to add a Standard statement indicating when the WEIGH STATION legend of the D8 series signs is replaced with the COMMERCIAL VEHICLE INSPECTION AREA legend, the WEIGH STATION legend of the R13-1 sign shall be replaced with the alternate legend INSPECTION area. FHWA proposes this change for consistency in sign legends.</p>	<p>The Support statement is adopted with minor edits.</p> <p>The Standard statement is adopted with minor edits in the names of the three signs.</p> <p>The Guidance statement is adopted as proposed but with minor changes in the names of the signs.</p> <p>The Option statement is adopted with a minor edit to the sign legend deleting the word AREA to reduce the amount of legend and maintain a reasonable sign size.</p> <p>The Standard statement is adopted with slight revisions in the final rule.</p>
177	<p>FHWA proposes to relocate and renumber existing Section 2D.54 as Section 2D.52 Crossover Signs (D13-1, D13-2). FHWA proposes to delete portions of existing Standard P2 and all Standard P5 pertaining to the design of the Crossover and Advance Crossover signs because the language is unnecessary since the sign designs are standardized in accordance with the existing requirements in Chapter 2A.</p>	<p>Section 2D.52 is adopted as proposed.</p>
178	<p>In Section 2D.53 (existing Section 2D.51), retitled, "Truck and Passing Lane Signs (D17-1, D17-2, D17-3, and D17-4)," FHWA proposes to revise the existing Guidance statement to remove the word "NEXT" from a Truck Lane sign used immediately in advance of a truck lane in order to reserve the use of</p>	<p>The Guidance statement is not adopted, as it is unnecessary.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
178 cont'd	<p>the word “NEXT” for areas where there is a series of extra lanes added along a highway for trucks to use, as proposed in the new Guidance statement.</p> <p>In concert with this change, FHWA proposes to recommend that the sign include a distance of 1/2 mile in the legend. As part of these changes, FHWA clarifies that a truck lane is a lane added to the right of the travel lane to be used by trucks and other slow-moving vehicles. This allows the faster vehicles to pass without leaving the travel lane.</p> <p>FHWA also proposes to add Guidance statements describing the use of Passing Lane and Next Passing Lane signs in a similar manner as Truck Lane signs. As part of these changes, FHWA distinguishes that a passing lane is an added lane to the left of the travel lane to be used by vehicle passing those in the travel lane.</p> <p>FHWA also proposes to delete the existing Option allowing alternate legends, because provisions for the use of Passing Lane signs are proposed in the new Guidance. In addition, because a climbing lane is simply another name for a truck lane, FHWA proposes to remove this option to improve on uniformity in signing.</p> <p>FHWA also proposes a new Support statement to include a new figure that illustrates an example of signing for an intermittent passing lane. FHWA proposes to add this information to provide practitioners with needed guidance on the use of these signs, and their respective locations.</p>	<p>The revised Guidance statement denoting a 1/2 mile truck passing lane distance in the legend on the sign is not adopted, as it would be unnecessarily restrictive. The first Guidance paragraph is revised to refer to a truck lane added on the right.</p> <p>The Guidance statements are adopted as proposed.</p> <p>The Option statement is adopted as proposed.</p> <p>The Support statement to include the new figure for an intermittent passing lane is adopted as proposed.</p>
179	<p>In existing Section 2D.54, renumbered and retitled, “Section 2D.54 Emergency and Slow Vehicle Turn-Out Signs (D17-5 through D17-7),” FHWA proposes to add a Guidance paragraph regarding the recommended use of emergency turn-out advance and directional signs including placement location ranges consistent with advance guide sign placement and deceleration distance for lower speed maneuvers.</p> <p>FHWA also proposes to add a new figure illustrating an example of signing for an emergency turn-out.</p>	<p>The revised Guidance statement is adopted with minor editorial changes in the final rule.</p> <p>The figure for signing an emergency turn-out is adopted as proposed.</p>
180	<p>In Section 2D.55 (existing Section 2D.50) Community Wayfinding Signs, FHWA proposes to add a Guidance paragraph recommending the evaluation of the entire existing system of signs for serviceability and general conformance with the Manual when a community wayfinding guide sign system is being considered. FHWA proposes this new Guidance because the condition and serviceability of existing</p>	<p>The Guidance statement is adopted with revisions to clarify the intent, which is to ensure community wayfinding signs are not being substituted for other guide signs that are missing or otherwise inadequate.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
180 cont'd	<p>higher priority signs, such as regulatory, warning, and major Designation signs, should have priority over the installation of the new community wayfinding signs.</p>	
	<p>FHWA also proposes to change the existing Guidance statement regarding the shape of wayfinding guide signs to a Standard to eliminate conflict with overall sign shape requirements.</p>	<p>The change of an existing Guidance statement to a Standard statement for the shape of wayfinding signs is adopted as proposed. It should be noted that the shape applies to the shape of the sign, not the identification marker.</p>
	<p>FHWA also proposes to add a Guidance statement regarding the letters, numerals, and other characters should be composed of the Standard Alphabet in accordance with the provisions of Chapter 2A to maintain consistency of signs.</p>	<p>The Guidance statement regarding how the characters on a sign should be composed of the Standard Alphabet in accordance with Chapter 2A is adopted as proposed.</p>
	<p>FHWA also proposes to add a Standard paragraph requiring conventional lettering style, prohibiting the use of italic, oblique, script, highly decorative, or other unusual forms. FHWA proposes this new Standard to help identify letter style types that, by their nature, would not meet the letter style requirements provided in this section for maintaining adequate legibility under driving conditions.</p>	<p>The Standard statement requiring the use of conventional lettering style on signs is adopted as proposed.</p>
	<p>FHWA also proposes to revise the Standard paragraph pertaining to internet and email addresses to be consistent with changes made to the same provision in Section 1D.09.</p>	<p>The revised Standard statement is adopted with minor revisions for consistency with other chapters.</p>
181	<p>FHWA proposes to retitle Section 2D.56 (existing Section 2D.53), "Signing of Named Highways for Mapping and Address Purposes," to clarify the intent of the section.</p>	<p>The new title is adopted as proposed.</p>
	<p>FHWA also proposes to add a Support paragraph to provide information that distinguishes between highway names, which are used for navigation and mapping, and memorial, honorary, or secondary names, which are not considered to be highway names. This information is needed for agencies to understand the applicability of the Standard, Guidance, and Option statements in this section.</p>	<p>The Support paragraph is adopted as proposed.</p>
182	<p>In Section 2D.57 (existing Section 2D.55), retitled, "National Scenic Byways Sign and Plaque (D6-4, D6-4aP)," FHWA proposes a new Support statement to indicate that direction along routes and to sites is related to touring maps rather than directional signing and route marking of the byway itself.</p>	<p>The new title for renumbered Section 2D.57 is adopted but the proposed Support paragraph is deleted from the final rule in response to comments.</p>
	<p>FHWA also proposes to add four Guidance paragraphs regarding the placement of signs displaying the name of the byway and associated byway Directional Assemblies. FHWA proposes these guidance statements to encourage uniformity</p>	<p>The Guidance paragraphs regarding the placement of byway signs and Directional Assemblies are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
182 cont'd	<p>and to separate Route Directional Assemblies from byway Directional Assemblies.</p> <p>FHWA also proposes to add a Standard that prohibits the use of the Byway sign or plaque as part of a guide sign assembly, as these signs are intended only for use in independent Directional Assemblies. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement, consistent with the existing Standard requiring that other signs have primary visibility.</p>	The new Standard paragraph is adopted as proposed.
183	FHWA proposes to add a new section numbered and titled, "Section 2D.58 State-Designated Scenic Byway, Historic Trail, and Auto Tour Route Signs," that contains relocated provisions from existing Section 2H.07, Auto Tour Routes, as well as new provisions for State scenic byway and historic trails. FHWA proposes this new Section to address inconsistencies in how these facilities are signed.	<p>Section 2D.58 that contains relocated provisions from existing Section 2H.07 is adopted with minor edits. The first Standard in the final rule is revised to more clearly indicate that Scenic byway, historic trail and auto tours route signs designs shall not have a similar design to or resemble a highway route sign. This change is made to avoid confusion with officially numbered routes on a highway system that are marked by the official route sign.</p> <p>Also, additional Option provisions are added which include applicable sign names and standard sign designations to correspond with the signs proposed in Figure 2D-35.</p>
184	FHWA proposes to add a new section numbered and titled, "Section 2D.59 EMERGENCY ROUTE and EMERGENCY ROUTE TO Signs and Plaques" that contains provisions and accompanying figure for permanently signing emergency routes for the purposes of corridor management. FHWA proposes these changes based on Official Ruling No. 6(09)-42(I) ( <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/6_09_42.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/6_09_42.htm</a> ) "Signing for Rerouting Due to Traffic Incidents."	Section 2D.59 that contains provisions based on Official Ruling No. 6(09)-42(I) is adopted with minor editorial changes. Also, the section is retitled to "Emergency Routing Signs and Plaques".
N/A (Sec. 2D.60)	Section 2D.60 Signing at Airports (not discussed in the NPA Preamble)	Based on comments suggesting this material related to airport signing was better suited for a separate section, a separate Section 2D.60 Signing at Airports is adopted in the final rule. The Guidance statement is revised to clarify potential measures to provide road users with adequate time to comprehend and respond to signs at airports and an accompanying Support is added.
185	As part of the reorganization to improve usability of the MUTCD, FHWA proposes to include subchapter headings in Chapter 2E to organize sections into related groupings. FHWA proposes the following subchapters in Chapter 2E: General, Sign Design, Installation, Guide Signing for Interchanges, Other Guide Signs, Signs for Intersections at Grade, and Interface with Conventional Roadways.	Subchapter headings are adopted with minor edits.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
186	In Section 2E.01 Scope of Freeway and Expressway Guide Sign Standards, FHWA proposes to add Support, Option, Guidance, and Standard statements regarding the application of design provisions for freeway and expressway guide signs in tunnels, which can present unique challenges not encountered elsewhere due to the extended and continuous distances of constrained vertical and horizontal clearances in which to place signs. FHWA proposes these new provisions to provide flexibility to standard sign layouts when needed to accommodate such situations in tunnels.	Based on comments suggesting that the material related to guide signing for tunnels should be in its own section so it is easier to find, a new section titled "Section 2E.45 Guide Signing in Tunnels and Similar Structures" is adopted with minor edits.
187	In Section 2E.06 (existing Section 2E.09) Signing of Named Highways, FHWA proposes to change P1 from Support to Guidance to recommend, not just state, that signing of named highways should comply with provisions of Section 2D.56. FHWA proposes this change to convey more effectively what was intended by the existing Support statement.	The change is adopted as proposed.
188	In Section 2E.07 (existing Section 2E.13) Designation of Destinations, FHWA proposes to add Support and Guidance statements, as well as a new figure, regarding signing for destinations that are accessed from different exits in opposing directions of travel. FHWA proposes these new provisions to provide clarity and flexibility regarding the appropriate signing for destinations based on the local roadway network.	In response to comments suggesting that the content in the first part of this Section is oriented to guide signing on the freeway for destinations that are far downstream, whereas the proposed content relates to guide signing for a destination that can be reached by taking a certain exit, the proposed content is moved to Section 2E.21 in the final rule.
189	In Section 2E.08 (existing Section 2E.04) General, FHWA proposes to delete the Standard statement regarding standard traffic sign shapes and colors because the provisions are already covered in Chapter 2A. FHWA proposes this change to remove unnecessary and repetitive content and streamline the Manual to improve its usability.	The Standard is deleted as proposed.
190	In Section 2E.12 (existing Section 2E.14) Size and Style of Letters and Signs, FHWA proposes to revise the Standard paragraph regarding the minimum numeral and letter sizes to be as shown in the "Overhead" columns of Tables 2E-2 and 2E-4. FHWA proposes this change to clarify the application of the "Overhead" columns when a larger size is specified in the same tables based on interchange classification.	The section title is changed to Section 2E.12 Size of Signs and Letters. In response to a comment, the order of text in the second Standard is revised slightly in the final rule for clarification.  Many commenters suggested that provisions of Interim Approval IA-5, regarding the use of Series E(modified)-Alternate (formerly "Clearview" 5-W) (proposed in the NPA as Appendix A1), should be included as an Option in the Section 2E.12, rather than as an Appendix, or the Appendix should be referenced in this section. FHWA evaluation of this alternate letter style concluding that there was no benefit over standard highway alphabets. FHWA has therefore concluded that Appendix A is the appropriate location in the final rule for this information.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
190 cont'd		<p>One commenter suggested that there needs to be more clarity and consistency throughout the Manual concerning the ratio of capital letter height and lowercase loop height and associated problems that occur using guide sign software. The problem is not specific to MUTCD language that correctly describes the provisions, rather it appears to be a problem with software application, which is outside the purview of the rulemaking.</p> <p>The change proposed to specify minimum numeral and letter sizes to be as shown in the "Overhead" columns of Tables 2E-2 and 2E-4 is adopted as proposed.</p>
191	In Section 2E.14 (existing Section 2E.16) Sign Borders, FHWA proposes to relocate the Standard statement regarding the color of the sign border to Section 2A.14, because that section already contains information about sign borders, while maintaining the recommendations on border width, as that is commonly needed information for the larger size signs on these types of highways. FHWA proposes this change to remove unnecessary or repetitive content and streamline the Manual to improve its usability.	This change is adopted as proposed, except that the Standard is relocated to Section 2A.10 instead of 2A.14. Commenters suggested that "unusually large signs" be defined with a dimension to distinguish a clear range of sizes when considering small guide signs. Because this language is guidance, FHWA believes it is not necessary to be prescriptive as agencies can apply engineering judgment to make such a determination.
192	In Section 2E.15 (existing Section 2E.10), FHWA proposes to add a Support statement to describe the use of street names on Advance guide and Exit Direction signs, based on the number of interchanges that serve a community. FHWA proposes this new statement, including references to other sections with Chapter 2E, to provide users with additional information regarding proper and efficient community interchange signing.	While there were many comments in support of this change, some commenters suggested that there are cases where a given exit is not a numbered route, and therefore street names serve to identify the roadway to drivers, and are navigational guidance as opposed to destinations. The proposed Support was added to explain the rationale to the existing Guidance. The Support is adopted in the final rule with additional clarity that city names are typically displayed on either a Next Exits sign or a Community Interchanges Identification sign.
193	In Section 2E.16 (existing Section 2E.17) Abbreviations, FHWA proposes to delete the Guidance and Standard paragraphs and replace them with a new Standard that requires abbreviations on freeway and expressway guide signs to comply with Section 2D.07. FHWA proposes this change to remove repetitive content and streamline the Manual to improve its usability.	The changes are adopted in the final rule.
194	<p>In Section 2E.17 (existing Section 2E.18) Symbols, FHWA proposes to delete the Standard paragraph regarding symbol designs because it duplicates language in Section 2A.12.</p> <p>FHWA also proposes to delete the Option statement permitting the use of educational plaques below symbol signs where needed. FHWA proposes this</p>	The changes in this section are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
194 cont'd	change because symbols, if used on freeway or expressway signs, are incorporated into the legend of the sign, and the addition of an educational plaque could distort and overly complicate the intended message.	
195	In Section 2E.18 (existing Section 2E.19) Arrows for Interchange Guide Signs, FHWA proposes several editorial changes to attain consistency in the placement of arrows on Exit Direction guide signs, depending on their placement either overhead or post mounted, and position over the exit lane.	Although many commenters agreed with the proposed changes, some opposed the requirement that directional arrows on post-mounted Exit Direction signs be located at the bottom portion of the sign and centered under the legend, citing larger signs, and new posts and foundations. The Standard is adopted to promote consistency in sign design and ensure visibility of roadside installations. Signs not meeting this Standard do not need to be replaced until they reach the end of their service life, and the location of the arrow on the sign should have no appreciable difference in the overall size of the sign when designed in accordance with established sign layout criteria.
	FHWA also proposes a new figure to illustrate the provisions.	The figure is not adopted but will be considered in future editions.
196	In Section 2E.20 (existing Section 2E.26) Lateral Offset, FHWA proposes to add an exception to permit a narrower lateral offset for sign supports when shielded by a rigid barrier. FHWA proposes this change to provide greater design flexibility for agencies.	The change is adopted as proposed.  The final rule also contains editorial changes to P4 to ensure clarity.
197	In Section 2E.21 (existing Section 2E.30) Interchange Guide Signs, FHWA proposes to change P3 from Guidance to Support, to provide references to applicable provisions related to sign descriptions and the order in which they appear at the approach to and beyond an interchange. FHWA makes this change because the provisions for each are contained in the individual sections.	The changes are adopted as proposed.  In addition, in response to comments suggesting that the proposed content in Section 2E.07 related to guide signing for a destination that can be reached by taking a certain exit, would be better located elsewhere, the content is adopted with minor edits in Section 2E.21 in the final rule.
	FHWA also proposes to revise the wording of P4 to clarify the intent that the use of Supplemental Guide signing should be minimized.	
198	In Section 2E.22 (existing Section 2E.31) Interchange Exit Numbering, FHWA proposes to provide specific requirements for exit number suffix assignments and order based on direction of travel and interchange numbering, while deleting a size requirement for the Exit Number plaque that is standardized in existing Table 2E-1. FHWA proposes this change to improve interchange exit numbering consistency in response to driver expectancy, and to reduce unnecessary duplication of information.	The proposed Standard is adopted with editorial changes to clarify that suffix letters shall only be used to supplement exit numbers where there is more than one exit associated with the reference mile points of the freeway. In response to comments, the final rule includes an additional Standard sentence that clarifies that suffix letters shall not be used for an exit ramp for the purpose of identifying a downstream ramp split providing access to multiple highways or different directions on the same highway. This new sentence is intended to positively clarify what is otherwise not allowed. It also addresses comments suggesting potential confusion regarding the terms



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
198 cont'd	<p>FHWA also proposes to change the existing Guidance statement regarding exit number plaques for right-side exits to a Standard for consistency in placement of exit number plaques and consistency with similar provisions for left side exits.</p>	<p>“exit” and “departure point” and the term “exit” can continue to be used without misunderstanding.</p> <p>In response to a comment, the final rule uses the term “exit number” rather than “interchange exit number” in some, but not all, places of the section text. This change is made where it is desirable to clarify that exits, rather than interchanges, are numbered from the mainline. This change should help avoid confusion regarding suffix letters, and particularly the use of different suffix letters for the same interchange in opposite directions.</p> <p>Also in response to comments, the final rule includes editorial changes to the proposed Guidance statement regarding exit numbering to provide clarity, along with references to specific drawings in Figure 2E-3 where appropriate. Since this is a Guidance, agencies are expected to use engineering judgment in difficult or unusual situations.</p> <p>The final rule also includes several edits to the proposed Standard paragraphs regarding exit suffix letters uses where the number of exits is not equal in both directions, and for collector-distributor roadways.</p> <p>The change from Guidance to Standard regarding exit number plaques for right-side exits is adopted in the final rule with a reference to a figure.</p>
199	<p>In Section 2E.23 (existing Section 2E.33) retitled, “Advance Guide Signs (E1 Series),” FHWA proposes to add a new Standard requiring at least one Advance guide sign for all interchange classifications with two exceptions. FHWA proposes this change to clarify the intent of existing language, which confounds the criteria for locating the sign with the criteria for when to use the sign. FHWA believes it is important to provide at least one guide sign in advance of a freeway or expressway interchange because advance notice of exits provides road users the time necessary to change lanes to position themselves to take an exit safely, avoiding last-minute weaving conflicts and erratic maneuvers. This requirement has been implicit in subsequent sections but not as clearly stated for Advance guide signs as it is for Exit Direction signs. FHWA proposes to modify P4 to recommend displaying distances to the nearest 100 feet on Advance guide signs less than 1/4 mile from the exit.</p> <p>FHWA also proposes to change the last sentence from Guidance to Standard requiring, instead of recommending, that fractions of a mile be displayed</p>	<p>The Standard is adopted as proposed.</p> <p>In response to comments, Guidance P7 is revised in the final rule to clarify that where an Advance guide sign is located more than 1000 feet to 1 mile from the exit, the distance displayed should be to the nearest 1/4 mile and where the distance to be displayed on an Advance guide sign is 1000 feet or less, the distance should be displayed in feet, rather than miles, to the nearest 100 feet. This change is intended to clarify the distance to be used on Advance guide signs for exits that are less than 1 mile away from the sign and create consistency in distance posting for exits.</p> <p>This change is adopted in the final rule with clarification that it applies to signs displaying a distance in miles.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
199 cont'd	<p>rather than decimals, for all cases to aid in quick recognition of the sign message. FHWA proposes this change to eliminate conflicts with other provisions of the Manual.</p>	
	<p>In addition, FHWA proposes to add a new Standard requiring that an Exit Number (E1–5P through E1–5eP) plaque be positioned at the top right-hand edge of the sign for numbered exits to the right. FHWA proposes this change clarifying the position of the plaque for consistency with similar provisions for Exit Direction signs.</p>	<p>The Standard is adopted in the final rule. Based on comments, a new Standard sentence is added in the final rule to clarify the position of the Exit Number plaque as being required above and abutting the signs. This is not a new requirement; rather, it is new wording to clarify the existing required position of the Exit Number plaque.</p>
	<p>FHWA also proposes to change P10 regarding omitting the word EXIT(S) from the distance message where interchange numbering is used from Guidance to Standard and incorporate the provision into P9. FHWA proposes this change for consistency in sign legend and to reduce unnecessary legend on signs.</p>	<p>This change is adopted in the final rule.</p>
	<p>FHWA proposes to revise the paragraph regarding the use of Interchange Sequence signs, clarifying that the recommended distance of 800 feet is between the theoretical gores of successive interchange entrance and exit ramps. FHWA proposes this change because the existing language is ambiguous and can imply that the distance is between the interchange crossroads, which is not relevant to the locations of ramps between which signs can be located.</p>	<p>This change is adopted in the final rule. A commenter recommended deleting the recommendation of 800 feet, and instead use “insufficient distance.” This change is not adopted since it is vague. The adopted text is a clarification of what has been in the MUTCD for some time and understood by most.</p>
	<p>Lastly, FHWA proposes to delete the Option statement allowing the W16–16P plaque to be installed below the Advance guide sign. FHWA proposes this change because the current language does not promote uniformity. The provision for locating the W16–16P at the top of sign is Guidance, which provides sufficient flexibility for an agency to decide differently based on engineering factors when necessary. FHWA believes that the presence of an Exit Number plaque is not sufficient justification for a categorical Option.</p>	<p>This change is adopted in the final rule.</p>
200	<p>In Section 2E.24 (existing Section 2E.40) retitled, “Interchange Sequence Signs (E9–1 Series, E9–2 Series),” FHWA proposes to change the existing Option statement regarding signing for closely spaced interchanges to a Support to be consistent with the language provided in existing Sections 2E.33 and 2E.50.</p>	<p>This section is retitled in the final rule to reflect that the E9-1 and E9-2 signs are not part of series signs. The change from an Option statement to a Support is adopted in the final rule.</p>
	<p>FHWA also proposes to switch the order of existing Guidance P3 and P2 and revise the language to match that of Section 2E.23 Advance Guide Signs with respect to the use of Interchange Sequence signs where there is less than 800 feet between the</p>	<p>The change is adopted in the final rule and is consistent with the change adopted in Section 2E.23</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
200 cont'd	theoretical gores of successive interchange entrance or exit ramps.	In response to comments, the last sentence regarding the use of Interchange Sequence signs at a single interchange in Guidance P3 is deleted in the final rule, since the language proposed in the NPA now addresses this issue.
	FHWA also proposes to change P5 from Support to Standard to describe the proper use of Interchange Sequence signs and require the display of the next two or three interchanges by name or route number with distances to the nearest 1/4 mile. FHWA proposes this change because, by definition, these signs are intended for use in a series and to provide consistency in the signing for the sequence of the closely spaced interchanges.	This change is adopted in the final rule.  Based on comments suggesting re-ordering of statements, the Standard requiring distances be placed in Advance guide signs is moved to earlier in the section.
201	In Section 2E.25 (existing Section 2E.36) retitled, "Exit Direction Signs (E4 Series)," FHWA proposes to change the existing Guidance statement regarding placement of the exit number plaque on signs for numbered exits to the right to a Standard. FHWA proposes this change to provide consistent placement of exit number plaques for numbered exits to the left and right. This proposed change is a companion to the existing requirement that exit number plaques for numbered exits to the left are required to be on the left-hand edge of the sign, thereby meeting driver expectation in similar situations.  FHWA also proposes to change P14 from an Option to Guidance to recommend, instead of allowing, the overhead Exit Direction sign for the second exit to be placed either on the overcrossing structure or on a separate structure immediately in front of the overcrossing structure. FHWA proposes this change for consistency with signing provisions for cloverleaf interchanges and to clarify the fact that overhead mounting is recommended in this situation.  In addition, FHWA proposes to add a new Option allowing the use of warning beacons with the E13-2 sign panel. In concert with this change, FHWA also proposes to add a Standard requiring the warning beacons to be placed at least 12 inches from the edges of the E13-2 sign panel, from the edge of the sign, and from any other legend within the guide sign, to provide adequate space around the beacons to reduce glare that can adversely impact the legibility of the sign legend, consistent with existing provisions in Chapter 4L of the MUTCD ( <a href="https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1444-0938.2003.tb03080.x">https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1444-0938.2003.tb03080.x</a> ).	The changes to this section are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
201 cont'd	<p>FHWA proposes these changes because the use of warning beacons is implied by Figure 2E-7 (existing Figure 2E-31), but no provisions previously existed in Chapter 2E that would allow the beacons within the sign face.</p> <p>Similar to the change discussed in the previous item, FHWA proposes to delete the Option statement regarding the placement of the W16-16P plaque because it does not promote uniformity.</p>	
202	<p>In Section 2E.26 (existing Section 2E.37) retitled, "Exit Gore Signs and Plaque (E5-1 Series)," FHWA proposes to clarify that Exit Gore signs are required for each ramp that departs from the main roadway of a freeway or expressway.</p> <p>FHWA also proposes to modify P5 to specify a height of 4 feet above the ground line for installing the optional Type 1 object markers on supports to Exit Gore signs.</p>	<p>The changes in this section are adopted in the final rule. The last Option paragraph and Standard are revised in the final rule to clarify that when the E5-1 sign needs to be replaced the E5-1a sign and E5-1bP plaque is to be used.</p>
203	<p>In Section 2E.27 (existing Section 2E.12) retitled, "Pull-Through Signs (E6-1 Series and E6-2 Series)," FHWA proposes to revise the Guidance statement to indicate that Pull-Through signs should not be used at exits that are signed with Overhead Arrow-Per-Lane or Diagrammatic guide signs. FHWA proposes to add this exception because signing for option lanes is unique, and because either the Overhead Arrow-per-Lane or Diagrammatic guide sign designs are required to be used for all freeway and expressway splits that include an option lane, and both of those sign designs already provide the through roadway direction guidance to road users.</p>	<p>In response to comments, the Guidance in the final rule is revised to specify that Pull-Through signs should not be used at exits with option lanes that use full width Overhead Arrow-per-Lane signs and removes the restriction for use of Diagrammatic guide signs at these exits.</p> <p>In addition, in response to comments, the final rule includes a new Standard statement specifying that Pull-Through signs shall display the route shield and cardinal direction for the through route and a companion Option statement allowing the use of the control city and down arrows on Pull-Through signs. FHWA agrees this is the minimum necessary information to distinguish this sign from and pair it with the Exit direction or Overhead Arrow-per-Lane sign to provide the same level of guidance at that decision point.</p>
204	<p>In Section 2E.28 (existing Section 2E.24) Signing for Interchange Lane Drops, FHWA proposes to add an Option statement allowing the exit arrow to be positioned to the left or right of the words "EXIT ONLY" when the position of the sign panel is constrained. FHWA proposes this change to provide agencies flexibility in sign design where needed due to size constraints.</p> <p>FHWA also proposes to modify Standard P6 to clarify that in retrofit situations where the E11-1a and E11-1b sign panels are used, the references to the white down arrow apply to Advance guide signs.</p>	<p>These changes are adopted in the final rule with minor edits to improve clarity.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
204 cont'd	<p>FHWA also proposes to add a provision regarding placement of the E11-1a and E11-1b sign panels when used on Exit Direction signs. Similarly, FHWA proposes to clarify that the position specified for the E11-1c sign panel requirement for retrofit situations applies to Advance guide signs.</p> <p>FHWA proposes to add a new Guidance provision to accommodate lane drop situations where it is impossible to locate an Advance guide sign either overhead or above the dropped lane for the down arrow to point to the dropped lane. This provision is intended to be used sparingly and only in limited situations. To compensate for this otherwise inconsistent condition, the addition of a post-mounted warning sign is recommended.</p> <p>Lastly, FHWA proposes to add a Guidance statement, and accompanying example figure, recommending the use of overhead and or post-mounted warning signs where a mainline lane is dropped immediately after an exit ramp. FHWA proposes this recommendation to provide additional warning to road users of a lane drop.</p>	
205	<p>In Section 2E.29 (existing Section 2E.43) Signing by Type of Interchange, FHWA proposes to delete the Standard that requires interchange guide signing to be consistent for each type of interchange along a route, because there are instances where the signing for similar interchanges along a route would need to vary due to interchange spacing and other geometric features.</p> <p>In concert with this change, FHWA proposes to revise the Guidance to recommend that the signing layout be similar for interchanges of the same type.</p> <p>FHWA also proposes to add a new Guidance provision recommending that the main roadway major guide signing should be determined by the specific interchange type for that particular direction of travel where a single interchange combines a different type of ramp configuration for each direction of travel.</p> <p>FHWA proposes to add two figures to this section to provide practitioners with examples for interchange signing. Figure 2E-15 shows an example of signing for a complex interchange that combines intermediate interchange ramps within a major interchange, and Figure 2E-16 shows an example of signing for an interchange exit ramp with a downstream split.</p>	<p>These changes are adopted in the final rule.</p>
206	<p>In Section 2E.31 (existing Section 2E.48) Diamond Interchange, FHWA proposes to delete P2 regarding the EXIT message because the requirements are</p>	<p>These changes are adopted in the final rule. There was a comment to add additional figures to depict signing on ramps for Transposed-Alignment</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
206 cont'd	<p>redundant with Section 2E.22 (existing Section 2E.31) and Section 2E.23 (existing Section 2E.33).</p> <p>FHWA also proposes to delete P5 Option regarding the use of Advisory Exit Speed signs based on an engineering study, and revise to refer instead to the provisions contained in Chapter 2C that cover the Advisory Exit Speed signs to determine when they are necessary. FHWA proposes this change to remove redundant and potentially conflicting information, thus streamlining the Manual and improving its ease of use.</p> <p>Lastly, FHWA proposes a new Guidance provision to recommend that a Destination guide sign be placed along the ramp where traffic is allowed to turn in either direction onto the crossroad. FHWA proposes this provision, which reflects common practice, to accommodate the road user's expectancy of positive, continuous guidance in signing to a destination that is displayed on the highway on an approach to an interchange.</p>	<p>Crossroad and Single-Point Urban Diamond Interchanges. This will be considered for a future revision or edition.</p>
207	<p>In Section 2E.32 (existing Section 2E.49) Diamond Interchange in Urban Area, FHWA proposes to revise the existing Option provision regarding closely spaced interchanges to clarify that the distances under consideration are those specified in another Section of Chapter 2E. FHWA proposes this change to improve the usability of the Manual.</p>	<p>This change is adopted. Although there was a comment suggesting this statement should apply to all interchanges in general, the location is retained to address the more common situation where diamond interchanges in urban areas are closely spaced. Because spacing is a key component to advance notice, and the need to make lane changes, it is most appropriate for this option to apply to diamond interchanges.</p>
208	<p>In Section 2E.33 (existing Section 2E.45) Cloverleaf Interchange, FHWA proposes to revise the Standard statement to remove redundant information contained in Section 2E.23 (existing Section 2E.33) and Section 2E.26 (existing Section 2E.37).</p>	<p>This change is adopted in the final rule.</p>
209	<p>In Section 2E.34 (existing Section 2E.46) Cloverleaf Interchange with Collector-Distributor Roadways, FHWA proposes to revise the existing Option provision regarding exit numbering to Guidance. FHWA proposes this change to accommodate driver expectancy by more consistently numbering these types of interchanges and more readily facilitate navigation, in concert with other changes in this Chapter to make exit numbering more consistent. FHWA believes that Guidance should still provide sufficient discretion to States in those limited situations where conditions might warrant.</p>	<p>The change is adopted as proposed.</p>
210	<p>In Section 2E.35 (existing Section 2E.47) Partial Cloverleaf Interchange, FHWA proposes to delete P3 regarding post-mounted Exit Gore signs because the</p>	<p>This change is adopted in the final rule.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
210 cont'd	requirement is redundant with Section 2E.26 (existing Section 2E.37).	
211	FHWA proposes to add a new section numbered and titled, "Section 2E.36 Collector-Distributor Roadways for Successive Interchanges," with Support and Guidance statements, along with a new Figure 2E-21, describing signing for collector-distributor roadways that provide access to multiple interchanges. FHWA proposes this new section to assist agencies with signing these configurations.	This section is adopted in the final rule with changes to reflect comments suggesting that a reference to Section 2J.09 rather than the last paragraph that was proposed in the Guidance.
212	<p>In Section 2E.37 (existing Section 2E.44) Freeway-to-Freeway Interchange, FHWA proposes to change the existing Standard paragraph regarding splits where the off-route movements to the left to a Support statement to refer users to Section 2E.23 for the use of the Left Exit Number plaque.</p> <p>Similarly, FHWA proposes to add a reference to Section 2E.39 and Section 2E.40 for use of Overhead Arrow-per-lane or Diagrammatic guide signs for freeway splits with an option lane and for multilane freeway-to-freeway exits having an option lane.</p> <p>FHWA also proposes to add a Standard requiring the signing for the roadway for the off-route to be signed as an exit from the main route, requiring that signs comply with Section 2E.22 to provide continuity in exit numbering along the route, and that the distance messages on the Advance guide signs comply with Section 2E.23. FHWA proposes this change for signing consistency and continuity in navigational guidance, which reduces potential confusion to road users, thus improving operation and safety.</p> <p>FHWA proposes to delete the Option regarding the omission of the control city on Pull-Through signs because there is no requirement to display the control city on a Pull-Through sign.</p> <p>FHWA proposes to change P8 from an Option to a Guidance statement to recommend that the Advisory Exit Speed (W13-2) be used where an engineering study shows that it is necessary. FHWA proposes this change to be consistent with the same change in Section 2E.31 (existing Section 2E.48).</p> <p>Finally, FHWA proposes to delete the Option regarding extra emphasis of an especially low advisory ramp speed because it is redundant with Section 2E.25 (existing Section 2E.36).</p>	These changes are adopted in the final rule with minor clarifying edits.
213	FHWA proposes to add a section numbered and titled, "Section 2E.38 Freeway Split with Dedicated Lanes," to provide Standard and Guidance	This section is adopted in the final rule.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
213 cont'd	paragraphs regarding freeway splits with dedicated lanes to accompany Figure 2E-24 (existing Figure 2E-34). FHWA proposes this new section to provide important information about guide signing for freeway splits with dedicated lanes that was previously implied by existing 2E.14, but not described in the text.	
N/A (Sec. 2E.39)	Section 2E.39 Signing for Option Lanes at Splits and Multilane Exits (not discussed in the NPA Preamble)	In Section 2E.39, the Standard is revised to delete reference to use of Diagrammatic Advance guide signs for option lanes and splits at multilane exits. Only the Overhead Arrow-per-Lane design shall be used for this condition, for consistency with adopted provisions in Section 2E.40. Section 2E.41 describes the conditions for which Diagrammatic Advance guide signs may be used to supplement conventional or Overhead Arrow-per-Lane guide signs.
214	In Section 2E.40 (existing Section 2E.21) Design of Overhead Arrow-per- Lane Guide Signs for Option Lanes, FHWA revises P2 to clarify the requirement to use Overhead Arrow per- Lane guide signs at “reconstructed” locations on freeways and expressways. In accordance with Official Ruling No. 2(09)–5(l) ( <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/2_09_5.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/2_09_5.htm</a> ), a “reconstructed” location is defined as one where the replacement of an existing sign support structure is necessitated by reconstruction.	This change is adopted in the final rule with a minor edit, in response to a comment, to clarify that the requirement to use Overhead Arrow per- Lane guide signs at “reconstructed” locations on freeways and expressways is for locations where replacement of more than one sign structure is needed. It was not FHWA’s intent to imply that if only one of the several sign structures had to be replaced, an agency had to replace all of them.
	FHWA proposes to add an Option statement and accompanying figure permitting signs indicating destinations to be added along unusually long gore areas with narrow lane marking tapers. FHWA proposes this to allow agencies to add these signs to reinforce positive guidance.	In response to comment, Option P3 is revised to clarify that an overhead Exit Direction sign may continue to be used on the existing sign support structure in conjunction with a replacement of the advance signs using the Overhead Arrow-per-Lane guide sign design at existing or non-reconstructed locations where an overhead Exit Direction sign exists at the theoretical gore, and the existing sign support structure is retained.
		In response to comment, the Option is revised to specify 800 feet or more between the beginning of the lane diverge and the theoretical gore, rather than subjective terminology “unusually long gore areas with narrow lane marking tapers.” The 800-foot dimension is the minimum recommended distance between successive overhead guide signs as provided in Sec. 2E.21.
		In response to comments, the final rule deletes the requirement that arrows on Overhead Arrow-per-Lane guide signs indicate the approximate degree of curvature when the through movement is on a curved alignment (Standard P7, Item C). This qualification is not needed because the designs of the arrows for this type of sign are standardized.
		In response to comments requesting reduced arrow sizes for Overhead Arrow-per-Lane guide signs on



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
214 cont'd	<p>FHWA also proposes to add an Option permitting the use of warning beacons with the E13–2 sign panel when used on an Overhead Arrow-per-Lane guide sign, consistent with similar changes proposed for Exit Direction signs.</p>	<p>freeways and expressways, the final rule includes in a new table the minimum required arrow heights, which are reduced from the required sizes in the 2009 MUTCD. The designs adopted were developed based on the results of a Traffic Control Device Pooled Fund Study summarized in FHWA Publication No. FHWA-HRT-23-036. FHWA believes the new arrow sizes address concerns of excessively large sign sizes while still ensuring adequate recognition of the arrows.</p> <p>This change is adopted in the final rule.</p>
215	<p>In Section 2E.41 (existing Section 2E.22) Design of Freeway and Expressway Diagrammatic Guide Signs for Option Lanes, FHWA proposes to add a Standard statement clarifying that it is not allowed to use a diagrammatic guide sign on the mainline to depict a downstream split of an exit ramp. FHWA proposes this change to clarify the existing provisions, which allow only the depiction of the simplified geometric configuration at the exit departure, but not beyond the bifurcation, to avoid an undue informational load imposed on road users. FHWA proposes to include this clarification to address situations that have been observed in practice.</p> <p>FHWA also proposes to add an Option permitting the use of warning beacons with the E13–2 sign panel when used on a Diagrammatic guide sign, consistent with similar changes proposed for Exit Direction signs.</p> <p>As an alternative to these changes, FHWA proposes to delete in its entirety Section 2E.41 and the concept of Freeway and Expressway diagrammatic guide signs for option lanes. FHWA offers this alternative proposal because most States have now had experience implementing overhead arrow-per-lane signs, which have been shown to be superior to diagrammatic signs at option lanes, especially for older road users; and because FHWA also proposes the Partial-Width Overhead Arrow-per-Lane sign (Section 2E.42), which would allay concerns expressed in response to the NPA for the 2009</p>	<p>This section is adopted with several revisions. Comments suggested that though Diagrammatic Advance guide signs generally do not perform as well as Overhead Arrow-Per-Lane guide signs, they can still provide valuable information in situations where there is complex or unexpected roadway geometry. Based on comments, the section title is changed to “Design of Freeway and Expressway Diagrammatic Advance Guide Signs” and the Support statement revised to clarify the use of these signs is specific to Advance Guide signs with complex or unexpected road geometry or ramp departures, where additional context might be helpful to interpret the primary Advance guide signs. An Option statement is adopted to allow the use of Diagrammatic Advance guide signs in advance of the interchange guide sign sequence, or in lieu of an interchange guide sign located 2 miles in advance of the exit to supplement conventional or Overhead Arrow-per-Lane guide signs used for a downstream interchange. The Standard and following Guidance statements are revised to include additional design criteria to support this revised Diagrammatic Advance guide sign use.</p> <p>The Option is adopted.</p> <p>Section 2E.41 is retained but is revised to limit the use of freeway and expressway diagrammatic signs as described earlier.</p> <p>The proposed partial-width Overhead Arrow-per-Lane sign is adopted in the final rule.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
215 cont'd	MUTCD regarding excessive sign sizes or costs at nonmajor interchange exits with an option lane. This alternative proposal would retain the diagrammatic sign concept for conventional roads and for circular roads to show general or relative direction, but not lane use indicated by lane lines within the diagrammatic arrow, as diagrammatic signs have been shown to be ineffective for that purpose. FHWA seeks comment from the public on this alternative proposal, including the technical merits, advantages and disadvantages, and comparative cost information.	
216	<p>In Section 2E.42 (existing Section 2E.23) Signing for Intermediate and Minor Interchange Multi-Lane Exits with an Option Lane, FHWA proposes to add a Guidance statement as well as recommending the use of a modified form of the Overhead Arrow-per-Lane guide signs at exit locations with an option lane that also carries the through route.</p> <p>FHWA also proposes to add figures to provide examples. FHWA proposes these revisions to provide practitioners with provisions to sign this type of exit, which can often be confusing to road users, in a uniform, consistent manner.</p>	<p>These changes are adopted in the final rule with edits to clarify the language and provide consistency in terminology with other sections, as suggested by commenters.</p> <p>In response to comment, the final rule adds an Option statement allowing conventional signing where full-width Overhead Arrow-per-Lane guide signing is not practical.</p>
N/A (Sec. 2E.45)	Section 2E.45 Guide Signing in Tunnels and Similar Structures (discussed in NPA Preamble Item 186)	Based on comments suggesting it would be appropriate to place information regarding signing in tunnels in a separate section, Section 2E.45 Guide Signing in Tunnels and Similar Structures is adopted with minor edits in the final rule.
217	<p>In Section 2E.45 (existing Section 2E.34), retitled, "Next Exit Plaques (E2– 1P, E2–1aP)," FHWA proposes to delete the Option statement regarding the Next Exit plaque with one or two lines because the designs are standardized.</p> <p>In addition, FHWA proposes to incorporate the Support information regarding the desirable use of the Next Exit plaque designs into a Guidance statement because the language establishes a preferred practice.</p>	The changes in this section are adopted and the Section is renumbered as Section 2E.46.
218	FHWA proposes to add a section numbered and titled, "Section 2E.48 Post-Interchange Travel Time Sign (E7– 4 Series)" with Support and Standard paragraphs regarding a new Post- Interchange Travel Time Sign. FHWA proposes this new sign series because at certain locations on freeways and expressways it may be more meaningful to road users to display the travel time rather than the distance to a destination, and to standardize the sign designs to ensure that an undue informational load is not imposed on the road user.	This new section, numbered Section 2E.49, is adopted with edits to clarify the language.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
219	FHWA proposes to add a section numbered and titled, "Section 2E.49 Distance and Travel Time Sign and Comparative Travel Time Sign (E7-5, E7-6)" with Support, Standard, and Guidance paragraphs regarding the new Distance and Travel Time Sign (E7-5) and the Comparative Travel Time Sign (E7-6). FHWA proposes these new signs because some locations on freeways and expressways might benefit from a travel time message displayed with the distance or comparative travel times for alternative routes to a common destination, and to standardize the sign designs to ensure that an undue informational load is not imposed on the road user.	This new section, numbered Section 2E.50, is adopted in the final rule with edits to clarify the language.
220	In Section 2E.50 (existing Section 2E.35), retitled, "Supplemental Guide Signs (E3 Series)," FHWA proposes to add a new Guidance paragraph recommending limiting Supplemental guide signs to situations where there is a demonstrated need to sign for more than two primary destinations from an interchange. FHWA proposes this change because, consistent with the established guidelines for the use of Supplemental guide signs, most interchanges would not have a need for Supplemental guide signs, and it is important to limit amount of information provided to drivers to that which is necessary for basic navigational purposes.	In response to comments, this change is adopted in the final rule with revisions to clarify that the use of Supplemental guide signs is intended to be limited to situations in which there is a demonstrated need to sign more than two destinations from an interchange. The section is numbered Section 2E.51.
	FHWA also proposes to relocate and revise existing Guidance P5 to earlier in the section, recommending that Supplemental guide signs should not be used unless the destination meets the criteria established by the State or agency policy. FHWA proposes this addition because use of a policy is important to establishing and retaining signing consistency and signing is for justified destination only.	This change is adopted in the final rule.
	FHWA proposes to revise existing Guidance to limit the number of lines of destination information to no more than three, retaining the limit of the number of destinations to two, consistent with other destination guide signs.	This change is adopted in the final rule, with a minor edit to clarify destination names (rather than information).
	FHWA proposes to add a new Guidance recommending that a Supplemental guide sign not be installed in the same location with or where it would detract from guide signs for a different interchange.	This change is adopted in the final rule.
	FHWA proposes to add a Standard that prohibits signing more than four supplemental traffic generator destinations from a single interchange along the main roadway, consistent with the limitation on the number of Supplemental guide signs and the number of destinations allowed on each sign allowed at each interchange.	This change is adopted in the final rule with edits, based on comments, to clarify that no more than two supplemental traffic generator destinations shall be signed from a single interchange approach and four from a single interchange along the main roadway, consisting of one supplemental sign per direction of the main roadway as different interchanges may provide a more direct route to supplemental traffic

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
220 cont'd	<p>FHWA proposes to add a Standard that prohibits the installation of supplemental guide signs at the same location as Advance guide, Exit Direction, or other signs related to the exit. FHWA adds this Standard because the function of a Supplemental guide sign is to supplement the major guide signs at a separate location with nonprimary destination information so as not to increase the informational load displayed on the Advance guide and Exit Direction signs.</p> <p>FHWA also proposes to add a Standard that classifies guide signs for recreational or cultural interest destinations as Supplemental guide signs, except where the interchange provides direct access to such a destination and is therefore displayed on the Advance guide and Exit Direction signs.</p> <p>Finally, FHWA proposes several changes near the end of the section to reflect the results of a human factors evaluation of pictographs ("Sports Logo Evaluation Report," Perez, W. et al., November 2011) that revealed that pictographs are not effective, resulting in longer or additional glances, or both, toward Guide signs on which they are used, and the subsequent termination of Official Ruling No. 2-650(E) (FHWA Official Ruling No. 2-650(E), "Sports Team Logos on Guide Signs."). FHWA proposes to delete the Option statement allowing pictographs on a Supplemental guide sign and add a Standard statement that prohibits the use of pictographs on supplemental guide signs, except for transit system pictographs on the Park—Ride supplemental guide sign, and add a Guidance statement regarding the use and size of transit pictograph and the carpool symbol on the Park-Ride Supplemental guide sign.</p>	<p>generator destinations in opposing directions of the main roadway.</p> <p>This change is adopted in the final rule.</p> <p>This change is adopted in the final rule.</p> <p>This change is adopted with revisions in the final rule. Several commenters requested the Option statement allowing pictographs on a Supplemental guide sign be retained, suggesting that their inclusion has no adverse effect. As Supplemental guide signs are directional in nature, driver informational load and the effectiveness of the traffic control device are key considerations. The results of the human factors evaluation showed longer or additional glances, or both, toward guide signs with pictographs, indicating in certain situations that a clear, simple meaning is not being conveyed and there might not be adequate time for a proper response due to the excessive informational load. In addition, with the exception of the transit pictograph, a word legend for the supplemental destination always accompanies the pictograph, which increases the informational load imposed on the observer. In contrast, the Option to display a pictograph is being retained for a number of other types of signs that are not directional in nature, such as the Jurisdictional Boundary sign (Sec. 2H.05), as they do not contain a directional legend such as an action or distance message, exit number, or a directional arrow. Further, many of the traffic generators displayed on these Supplemental guide signs would qualify for the Attraction service category, which would provide for a graphical representation in the form of a business identification panel, instead of displaying on a Supplemental guide sign. Therefore, the Option statement is retained and revised to limit the use of pictographs on Supplemental guide signs to those of a transit provider. The proposed Standard statement is not adopted, while the proposed Guidance statement is adopted in the final rule.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
220 cont'd	Finally, FHWA proposes to delete existing Standards P8, P10, and P11 regarding the use of pictographs as general conditions on the use of pictographs would be addressed in Chapter 2A. Since there would be no provision explicitly allowing use of a pictograph, such use, therefore, would be prohibited.	This change is adopted in the final rule.
221	In Section 2E.51 (existing Section 2E.41) retitled, "Community Interchanges Identification Signs (E9-4 Series, E9-5 Series)," FHWA proposes to add a Guidance statement recommending that the legend displayed on the Advance Guide and Exit Direction signs for each interchange should be consistent with the interchange names displayed on the Community Interchanges Identification sign, and that the name of the community should not be repeated on the Advance guide and Exit Direction signs. FHWA proposes this new Guidance to maintain uniformity in signing for Community Interchanges.	This change is adopted in the final rule. The section is numbered Section 2E.52 and the word "Series" is deleted in two places in the Section title.
222	In Section 2E.52 (existing Section 2E.42), retitled, "NEXT XX EXITS Sign (E9-3 Series)," FHWA proposes to add a Guidance statement recommending that the legend displayed on the Advance Guide and Exit Direction signs for each interchange should not display the region or area name that is displayed on the NEXT XX Exits sign. FHWA proposes this new Guidance to maintain uniformity in this type of signing and to reduce the informational load within a guide sign sequence.	This change is adopted in the final rule. The section is numbered Section 2E.53 and the section title is changed to "Next Exits Sign (E9-3 and E9-3a)".
223	In Section 2E.53 (existing Section 2E.54) Weigh Station Signing, FHWA proposes to add Support, Standard, Option and Guidance statements, as well as a new figure, to provide provisions for the standard sign sequence for a Weigh Station on an expressway or freeway to align better with typical signing conventions used on these types of roadways and to provide flexibility in the legend to allow an alternate message COMMERCIAL VEHICLE INSPECTION AREA, where appropriate. These changes are in concert with proposed changes in Chapter 2D. As part of these changes, FHWA proposes to delete the existing Standard statement, since the proposed new text replaces the existing standard.	<p>This change is adopted in the final rule with revisions to reflect comments. The section is numbered Section 2E.54. The Standard is revised to include the use of a Weigh Station Advance Direction (D8-2) sign and an Option is added allowing the 1 MILE and ½ MILE distance on the D8-1 sign to be adjusted to match the spacing determined by engineering judgement.</p> <p>A commenter suggested adding an Option to omit the weigh station exit gore sign where overhead signing is provided. FHWA does not add this Option, since Exit Gore signs are required at all other exits and ramp departures.</p> <p>In response to a comment, the final rule includes an Option to allow a plaque with the legend OPEN WHEN FLASHING to be added to one of the Advance Weigh Station Distance signs along with associated flashing beacons, in place of the changeable legend OPEN or CLOSED sign.</p>
224	In Section 2E.54 (existing Section 2E.27) Route Signs and Trailblazer Assemblies, FHWA proposes to delete the Standard statement regarding the color of the route sign shield for the Interstate Highway	This change is adopted in the final rule. The section is numbered Section 2E.55.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
224 cont'd	System sign, as the design is standardized and must comply with the existing provisions of Chapter 2A.	
225	In Section 2E.55 (existing Section 2E.28) Eisenhower Interstate System Signs (M1–10, M1–10a), FHWA proposes to incorporate the existing Guidance into the Standard that follows. This change is consistent with the intent of the design of the M1–10a sign, which uses a letter style designed for facilities that are not part of an Interstate main roadway or ramps. FHWA believes the M1–10 sign provides sufficient opportunity for agencies to sign Interstates and agencies may use this sign in place of the M1–10a sign if they wish to have a single standard, as the M1-10a sign is not required to be used.	This change is adopted in the final rule. The section is numbered Section 2E.56.
226	FHWA proposes a new section numbered and titled, “Section 2E.56 Signs for Route Diversion by Vehicle Class” that includes Support, Guidance, and Option statements and an associated figure showing an example of signing for a route diversion based on vehicle class. FHWA proposes these provisions to create a more uniform approach to diversion signing based on vehicle class.	This section is adopted in the final rule. The section is numbered Section 2E.57.
227	In Section 2E.57 (existing Section 2E.29) Signs for Intersections at Grade, FHWA proposes to replace the existing Option with a paragraph allowing exit numbering to be maintained when a freeway or expressway route is interrupted by a short segment of at grade intersections. FHWA proposes this change because the existing Option is inconsistent with grade-separated roadway signing principles and the new Option allows continuity in navigation and signing along the length of an otherwise grade-separated route.	Based on comments suggesting the proposed Option to allow exit numbers for an at-grade intersection with conventional turning movements is not appropriate and may be counter to driver expectancy, the Option is deleted along with the entire section, in the final rule.
228	As part of the reorganization to improve usability of the MUTCD, FHWA proposes to include subchapter headings in Chapter 2F to organize sections into related groupings. FHWA proposes the following subchapters in Chapter 2F: General, Regulatory Signs, Warning Signs, and Guide Signs. FHWA proposes to include a list at the beginning of the section to assist users in finding the appropriate sections.	The reorganization of Chapter 2F with sub-chapter headings is adopted as proposed.
229	In Section 2F.02, FHWA proposes to retitle the section “Sizes of Toll Road Signs and Electronic Toll Collection (ETC) System Pictographs” to reflect the proposed relocation of material from existing Section 2F.04 to this section.	The change is adopted as proposed.
230	In Section 2F.03, FHWA proposes to retitle the section, “Color” to reflect the content of the section more accurately.	The Section title is revised to “Use of Color on Toll Signs” to be more specific about the section content.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
231	In Section 2F.04 (existing Section 2F.05) Regulatory Signs for Toll Plazas, FHWA proposes to change Option P8 pertaining to speed limit sign placement at toll plazas to Guidance to describe the intent of the provision better.	This change is adopted as proposed.
232	In Section 2F.05 (existing Section 2F.12) retitled, "Electronic Toll Collection (ETC) Account-Only Regulatory Sign and Plaque (R3-31, R3- 32P)," FHWA proposes to change the ETC Account-Only and NO CASH sign designations from auxiliary to regulatory sign and plaque for consistency with a similar change to toll auxiliary signs.	This change is adopted as proposed.
233	In Sections 2F.06 through 2F.09, FHWA proposes to add the Take Ticket (W9-6e) Advance Warning sign, Take Ticket (W9-6bP, W9-6gP) advance warning plaque, Stop Ahead Take Ticket (W9-6f) warning sign, and Stop Ahead Take Ticket (W9-6hP) warning plaque, respectively. FHWA proposes these new signs and plaques to provide practitioners with a standard sign for use on those facilities where tickets are issued to determine the length of travel for assessing toll fees. In Sections 2F.06 through 2F.09, FHWA also proposes to delete the last sentence of the Standard requiring that the legend PAY TOLL shall be replaced with a suitable legend such as TAKE TICKET where road users entering a toll ticket facility are issued a toll ticket. In Sections 2F.06 through 2F.08, FHWA also proposes to add Guidance that a Take Ticket Advance Warning sign should be installed overhead at approximately 1 mile and 1/2 mile in advance of mainline toll plazas to provide sufficient advance warning to road users of this required action.	The changes are adopted with an Option added to Section 2F.07 to describe the use of the Pay Toll (W9-6dP) plaque. In addition, the Standard and associated Option are deleted in Section 2F.09, because they do not apply the plaques being discussed in that section, and instead, clarifying language is added to the existing Option statement in paragraph 1 regarding the use of the Stop Ahead Pay Toll (W9-6cP) plaque. Although one commenter suggested that "Take Ticket" signs are obsolete, FHWA adopts the proposed language because some agencies do still use tickets.
234	In Section 2F.10 retitled, "LAST EXIT BEFORE TOLL Warning Plaques (W16-16P, W16-16aP)," FHWA proposes to add a new W16-16aP plaque as a two-line alternative to the W16-16P plaque. FHWA proposes this change to provide agencies design flexibility where the plaque is used above a narrow-width guide sign. FHWA also proposes to recommend the Exit Number Plaque, if used, to be installed above the LAST EXIT BEFORE TOLL plaque for numbered exits. FHWA proposes this change to reiterate and clarify the existing requirements in Chapter 2E for the position of the Exit Number plaque. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement. FHWA proposes to delete the Standard, since the design of the W16- 16P is standardized and compliance is required in accordance with the existing provisions of Chapter 2A.	The changes are adopted, with slight edits to the Guidance to clarify that the LAST EXIT BEFORE TOLL plaque should be placed below the Exit Number or the LEFT plaque, if used.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
235	<p>In Section 2F.11 retitled, “TOLL Warning Plaque (W16–17P),” FHWA proposes to change the TOLL auxiliary sign from the Marker series (M4–15) to a warning plaque and change the designation of the sign accordingly. FHWA proposes this change because the yellow background with black legend “TOLL” is used to call drivers’ attention to the tolled condition of a highway or highway segment to which they are being guided and is not consistently used in the same manner as an auxiliary sign.</p>	<p>These changes are adopted along with one editorial correction.</p>
236	<p>In Section 2F.12 (existing Section 2F.13) Toll Facility and Toll Plaza Guide Signs—General, FHWA proposes to add an Option to allow a State Toll Route system sign to be used in lieu of the State Route sign in combination with the TOLL warning plaque. FHWA proposes this change to allow those States that have developed a unique Route Sign design for tolled State highways to continue to use those types of signs whose designs conform to the prescribed criteria, rather than requiring a separate auxiliary sign. FHWA also proposes to add a Standard statement requiring State Toll Route signs to incorporate the word TOLL into its design using the same letter height, legend, background colors, and overall plaque dimensions specified for the W16–20P plaque. FHWA proposes this change to maintain uniform legibility criteria for either method. In addition, FHWA proposes to supplement an existing Standard statement prohibiting the modification of Interstate, Off-Interstate, and U.S. Route signs for tolled facilities. FHWA proposes this change to maintain uniformity of these signs because they apply to national systems. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement, as modification of these signs has never been allowed. FHWA also proposes to modify existing Standard P20 to require, rather than allow as an Option, the incorporation of the Toll Taker (M4–17) symbol panel in signs for attended lanes at toll plazas. In concert with this change, FHWA also proposes changing the Standard for word messages such as FULL SERVICE, CASH, CHANGE, or RECEIPTS to an Option to supplement the required symbol panel. FHWA proposes this change to standardize and use symbols in place of word messages where a symbol has been developed that provides at least equivalent levels of comprehension, legibility, and recognition, based on relevant research (<a href="https://www.pooledfund.org/details/study/281">https://www.pooledfund.org/details/study/281</a>).</p>	<p>The changes are adopted as proposed, except Standard P5 is revised in response to comment to indicate that the black legend on yellow background TOLL panel is not required on Exit Gore or destination guide signs (D1 series). The final rule also includes several new figures to illustrate signing to a toll road.</p> <p>Comments were also received recommending the deletion of the Standard statement and associated figures on the use of Overhead Arrow-per-Lane signs with a modified bifurcated arrow design. The sign and new arrow design is for a roadway split with an option lane at a tolling location separating open-road tolling from toll booths. The commenter recommended deletion until such time as research on these signs is complete and evaluated. FHWA retains the standard and figure but has reconsidered the height of the bifurcated arrow on the sign in the figure. FHWA believes the slightly modified bifurcated arrow design better depicts the roadway alignment and the fact that the split in the roadway rejoins past the tolling point and does so without compromising the proven benefits of Overhead Arrow-per-Lanes signs in depicting roadway split situations.</p>
	<p>Lastly, FHWA proposes to add a Standard statement requiring the use of an Overhead-Arrow-Per-Lane Guide sign in advance of a location where the mainline lanes split to separate traffic entering Open-Road ETC lanes from lanes entering a toll plaza</p>	



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
236 cont'd	where other methods of payment are accepted and an option lane is provided at the split. FHWA proposes this standard to be consistent with the use of Overhead- Arrow-Per Lane Guide signs in Chapter 2E where there is a split in the highway with an option lane.	
237	FHWA proposes to add a new section numbered and titled, "Section 2F.13 Electronic Toll Collection (ETC) Signs—General," that contains information from paragraphs 9 through paragraph 17 of existing Section 2F.13. FHWA also proposes to relocate the existing Option statement regarding the use of a toll highway by non-registered toll account program drivers to new Section 2F.18.	These changes are adopted as proposed.
238	In Section 2F.17 Guide Signs for Entrances to ETC Account-Only Facilities, FHWA proposes to relocate and modify an Option statement from existing Section 2F.18 to permit a separate information sign displaying the route number, TOLL warning panel, and the legend NO CASH within the sequence of the advance guide signs on the approach to the entrance to an ETC Account-Only facility, which is already depicted in existing Figure 2F-6. FHWA proposes this change to provide agencies flexibility to use additional advance signing if needed. FHWA also proposes an Option to allow the Exit Gore signs for entrance ramps to ETC Account-Only facilities to incorporate the pictograph of the ETC payment system with the word ONLY in the header panel or plaque. FHWA proposes this change to allow agencies to reinforce that an ETC account is required to use the facility.	Based on comments suggesting that the proposed titles for Sections 2F.17 and 2F.18 were very similar and could lead to confusion, the two sections are combined into one section in the final rule, titled, "Section 2F.17 Guide Signs for Entrances to Electronic Toll Collection (ETC) Only Facilities." The final rule includes an additional Option paragraph allowing the display of ETC account pictographs when more than one ETC account program is acceptable for toll payment. The final rule also includes a revised Standard statement indicating that facilities that do not require registration in an ETC toll account program are to include information on accepted toll payment methods only on separate information guide signs stating TOLL BILLED BY MAIL ONLY or TOLL BILLED BY MAIL OR [ETC Account Pictograph], if the facility also accepts payments from registered users of an ETC account program.
239	FHWA proposes to add two new sections numbered and titled, "Section 2F.18 Guide Signs for Entrances to ETC Only Facilities" and "Section 2F.19 Guide Signs for ETC-Only Entrance Ramps to Non-Toll Highway" that contain provisions related to guide signs on facilities that are electronically tolled but do not require an ETC account. FHWA proposes to add these sections because of the increasing use of ETC Only facilities. The proposed new provisions are intended to provide consistent and uniform signing, much of which is already depicted in existing figures within this Chapter.	Proposed Section 2F.18 is combined with Section 2F.17 as described above.
240	In proposed new Section 2F.18, FHWA proposes to include a new Standard regarding signs used to identify ETC-Only facilities that collect tolls by post-travel billing of registered vehicle owners through postal mail, including if an ETC account program registration is also accepted. In concert with this change, FHWA proposes to add an Option allowing	Proposed Section 2F.18 is combined with proposed Section 2F.17 in the final rule as described above.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
240 cont'd	the addition of a plaque with the legend NO CASH on these signs. FHWA also proposes to include an Option statement providing flexibility to display pictographs for other accepted ETC toll programs on separate information signs if the post-travel billing program also allows payment through those ETC accounts without restriction in the agencies' primary ETC program. FHWA also proposes to add an Option statement for flexibility regarding signs that may be used to let motorist know if a surcharge is added to the toll amount for those not registered in toll account program.	
241	In proposed new Section 2F.19, FHWA proposes to add Standard statement requiring guide signs for these ramps to comply with the provisions of 2F.18 to ensure consistency in signing between toll facilities and ramps. FHWA also proposes to add an Option statement allowing a NO-TOLL panel to be included on the top of the Exit Gore sign for an exit that provides access to the facility without charging a toll to provide clarification to the drivers.	These changes are adopted as proposed and the section is numbered Section 2F.18 in the final rule.
242	In Section 2G.01 Scope, FHWA proposes to add a new Standard statement excluding bike lanes from the provisions of the Chapter unless otherwise provided. FHWA proposes this change because, in general, information specific to bike lanes is included in Part 9.	The changes in this section are adopted as proposed with a minor editorial change replacing "bike lane" with "bicycle lane" for consistency with terminology used throughout the Manual.
N/A (Ch. 2G)	Chapter 2G organization (not discussed in the NPA Preamble)	Chapter 2G is reorganized with adoption of subchapter headings to improve usability of the MUTCD as follows: General; Regulatory Signs; Warning Signs and Plaque; Guide Signs; and Managed Lane Signs, Plaques, and Lane-Use Control Signals.
243	In Section 2G.03 Regulatory Signs for Preferential Lanes—General, FHWA proposes to revise Option P14 to increase the minimum vertical clearance from 14 feet to 17 feet for post-mounted preferential lane regulatory signs on a median barrier where lateral clearance is limited. FHWA proposes this change for consistency with Standard P15 which references a requirement in Section 2A.18 to provide a 17-foot minimum vertical clearance for overhead signs that are over the lane or shoulder. FHWA proposes similar changes in 2G.08, "Warning Signs on Median Barriers for Preferential Lanes," and Section 2G.10, "Preferential Lane Guide Signs—General."	The changes are adopted as proposed. In addition, several cross-reference citations have been updated.
	FHWA also proposes to delete Option P19 and Standard P20 allowing the HOV abbreviation or the diamond symbol on signs because all the standard signs for HOV lanes include the diamond symbol and therefore the option is not needed.	The changes are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
243 cont'd	Lastly, FHWA proposes to relocate paragraphs 23 through 26 from Section 2G.03 to Section 2G.16.	The changes are adopted as proposed.
244	<p>In Section 2G.04 retitled, "Vehicle Occupancy Definition Signs (R3-10 Series and R3-13 Series)," FHWA proposes to remove Guidance paragraphs 4 and 5, because the legend format of these signs is standardized and must comply with existing requirements of Chapter 2A.</p> <p>FHWA also proposes to change the Standards in paragraphs 9 and 10 and add an Option to allow, rather than require, the placement interval of 1/2 mile for R3-11a and R3-10 signs along the length of an HOV lane where access is denied, to provide agencies greater flexibility.</p> <p>Finally, FHWA proposes to revise the last Guidance statement to specify that the Preferential Lane regulatory sign sequence spacing of 800 to 1,000 feet is applicable to freeways and expressways and proposes to recommend that sign spacing on conventional roads should be determined by engineering judgment based on speed, block length, distances from adjacent intersections, and other site-specific considerations. FHWA proposes these changes due to the differences in types and speeds of conventional roads and the need to provide agencies with more flexibility to provide appropriate signing based on site-specific conditions</p>	The changes are adopted as proposed.
245	<p>In Section 2G.05 retitled, "Preferential Lane Operation Signs (R3- 11 Series, R3-14 Series)," FHWA proposes to change the Guidance statement regarding the size of post mounted R3-11 series signs to a Support statement to describe why the sizes are standardized.</p> <p>FHWA also proposes to add a Guidance statement regarding increasing the height of the R3-11 series signs for locations where regulations are in place more than one time period of the day to accommodate additional lines of legend.</p> <p>In addition, FHWA proposes to change the requirement to show 24 HOURS when a preferential lane restriction is in effect on a full-time basis to an Option. FHWA proposes this change because typically traffic regulations are assumed to be in effect on a full-time basis. However, FHWA retains the option to use the 24 HOURS legend because there are situations where it is necessary to reinforce that a restriction is in place at all times as part of a change in operation or where several facilities in the same area have different hours of operation.</p>	The changes in this section are adopted with a minor edit to clarify that full-time is 24-hours a day, seven days a week. Other revisions in the final rule clarify the use of a period of operation legend on Preferential Lane Operation signs.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
245 cont'd	<p>FHWA proposes to add a new Option statement that allows the use of post-mounted Periods of Operation (R3–11 series) signs instead of overhead Periods of Operation (R3–14 series) signs on conventional roads with preferential lane operations. FHWA proposes this option to provide clarity to an existing provision.</p> <p>FHWA proposes to delete existing Guidance P13 recommending the use of overhead or post-mounted Period of Operations signs at periodic intervals along the length of a contiguous or buffer-separated preferential lane where continuous access with the adjacent general-purpose lanes is provided, because the use of these signs is required in the Section 2G.05 Standard.</p> <p>Finally, FHWA proposes to delete existing Option P15 regarding the use of overhead Periods of Operation (R3–14 series) signs at the beginning or entry points and/or at intermediate points along preferential lanes on conventional roads, because stating this as an Option is unnecessary.</p>	
246	<p>In Section 2G.07 retitled, “Preferential Lane Ends Signs (R3–12a, R3–12b, R3–12c, R3–12d, R3–12g, R3–12h, R3–15b, R3–15c, R3–15e),” FHWA proposes to specify that the requirements for installing a Preferential Lane Ends sign 1/2 mile in advance of the termination of the lane or where it becomes a general-purpose lane apply specifically to freeways and expressways.</p> <p>FHWA also proposes to add a new Guidance statement to determine the location of the Preferential Lane Ends sign on conventional roads based on engineering judgment. FHWA proposes these changes due to the differences in types and speeds of conventional roads and to provide agencies with more flexibility to provide appropriate signing based on site-specific conditions.</p>	The changes in this section are adopted as proposed.
247	<p>In Section 2G.11 retitled, “Signing for Initial Entry Points to Preferential Lanes,” FHWA proposes to add a new Standard to require an Advance Guide sign approximately 1 mile in advance of the entry point where a general-purpose lane becomes a preferential lane that does not provide continuous access with the adjacent general-purpose lanes.</p> <p>FHWA also proposes to require a yellow panel with black legend and border displaying a down arrow and the word ONLY on the Advance Guide and Entrance Direction signs and to add a new Figure to illustrate an example of these signs. FHWA proposes this change to provide road users with sufficient advance</p>	The changes in this section are adopted with minor edits to Guidance P3 to clarify the use of Advance Guide signs in advance of the initial entry point to a preferential lane on freeways and expressways that restricts access to the adjacent general-purpose lanes.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
247 cont'd	<p>notice to change lanes if they desire to continue in the general-purpose lanes, consistent with signing for dropped lanes at interchanges.</p> <p>FHWA also proposes to indicate that several of the Standards and Guidance in this section apply to freeways and expressways, because such provisions are not appropriate for conventional roads.</p>	
248	<p>In Section 2G.17 (existing Section 2G.16) Signs for Priced Managed Lanes—General, FHWA proposes to delete the last Standard statement regarding the use of the diamond symbol because it is redundant with the provisions of Section 2G.03.</p>	The changes in this section are adopted as proposed.
N/A (Sec. 2G.18)	<p>Section 2G.18 Regulatory Signs for Priced Managed Lanes (not discussed in the NPA Preamble.)</p>	<p>Although not proposed in the NPA, FHWA revises Standard P3 in Section 2G.18 Regulatory Signs for Priced Managed Lanes to clarify that if a toll varies, the R3-48 and R3-48a signs shall be used to display the actual toll amount in effect at any given time. A commenter suggested that the language in the 2009 MUTCD was not explicitly clear.</p>
249	<p>In Section 2G.19 (existing Section 2G.18) Guide Signs for Priced Managed Lanes, FHWA proposes to add a new Standard statement and accompanying figure prohibiting the use of ETC-account pictographs on the primary guide sign directing traffic to the managed lane when registration in a toll-account program is not required for travel in a managed lane in which tolls are charged. In such cases, FHWA proposes that the purple header panel shall be replaced with a warning header panel with a black legend and border on yellow background displaying the word TOLL. FHWA proposes this change to provide consistency in signing for toll facilities where registration is not required for travel for the purpose of improving traffic efficiency and safety.</p> <p>FHWA also proposes to add an Option provision allowing the legend TOLL BILLED BY MAIL ONLY on a separate information sign within the sequence of primary guide signs in advance of an entrance to the managed lane if the managed lane does not accept toll payments from an ETC account system and collects tolls only by post travel billing of registered vehicle owners.</p> <p>FHWA proposes to add another Option allowing pictographs of the accepted ETC account programs and the legend TOLL BILLED BY MAIL on a separate information sign within the sequence of primary guide signs in advance of an entrance to the managed lane if the managed lane accepts payments from registered ETC accounts but does not require registration to use the lane.</p>	The changes in this section are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
250	<p>In new Section 2G.20, Signs for Part-Time Travel on a Shoulder— General, FHWA proposes to add a Support statement regarding the general applicability of part-time travel on shoulders and factors to consider when planning traffic control for such operations.</p> <p>FHWA also proposes to add a figure showing an example of signing for part-time travel on a shoulder.</p> <p>FHWA proposes a Standard stating that shoulders open to travel on a permanent full-time basis shall be signed and marked as a standard travel lane to be consistent with other travel lanes open on a full-time basis and to accommodate the expectancy of road users.</p>	This section and Figure are adopted as proposed.
251	<p>In new Section 2G.21, Regulatory Signs and Plaques for Part-Time Travel on a Shoulder, FHWA proposes a Standard requiring signs and plaques to notify road users of the periods of operation that travel is allowed on a paved shoulder. FHWA proposes to require the use of a Part-Time Travel on Shoulder Operation (R3–51) sign where traffic is allowed to travel on the shoulder during certain fixed periods of operation and the use of the Part-Time Travel on Shoulder Variable Operation (R3–51d) sign with two flashing beacons mounted above it when the period of operation is variable. FHWA proposes these two signs to provide road users with specific signing that distinguishes between fixed period and variable operation, along with beacons to indicate when use of the shoulders is allowed for variable operation.</p> <p>FHWA also proposes to require the use of Selective Exclusion plaques to convey any restriction on certain types of vehicles.</p> <p>FHWA also proposes an Option to allow an EMERGENCY STOPPING ONLY OTHER TIMES (R3–51cP) plaque to be mounted below the R3–51 sign if the Selective Exclusion plaques are not used.</p> <p>FHWA proposes Guidance recommending the use of the TRAVEL ON SHOULDER BEGINS 1/2 MILE (R3–52c) sign be used in advance of the location where part-time travel on the shoulder first begins followed by the DO NOT DRIVE ON SHOULDER (R4–17) sign appropriately spaced downstream in order to provide road users with additional information regarding the use of the shoulder.</p> <p>FHWA also proposes a Standard requiring use of the TRAVEL ON SHOULDER ENDS (R3–52a), END TRAVEL ON SHOULDER (R3–52), and DO NOT DRIVE ON SHOULDER (R4–17) signs, appropriately</p>	<p>The changes in this section are adopted as proposed. In addition, based on comments submitted in Chapter 2B, FHWA also moves a Guidance statement from Section 2B.28 regarding BEGIN RIGHT (LEFT) TURN LANE regulatory signs to this section, since the signs are only used for part-time travel on a shoulder.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
251 cont'd	<p>sequenced, to indicate the termination of the shoulder travel allowance. FHWA proposes this sequence of signs to provide consistency in signing and improve safety at all locations that allow part-time travel on shoulder by providing a common understanding of when shoulder travel is no longer allowed. FHWA also proposes Guidance regarding the BEGIN EXIT LANE (R3- 56) sign, the EMERGENCY STOPPING ONLY (R8-7) sign, and the TO TRAFFIC ON SHOULDER (R3-57P) plaque used at the beginning of deceleration lanes where traffic is allowed to enter during the periods that travel is prohibited on the shoulder, at turnouts provided for emergency stopping during periods when travel is allowed on the shoulder, and below YIELD signs where traffic on an entrance ramp is required to yield to traffic using the shoulder, respectively. FHWA proposes these recommendations to provide traffic control devices to manage traffic more effectively in these circumstances.</p>	
252	<p>In new Section 2G.22, Warning Signs for Part-Time Travel on a Shoulder, FHWA proposes Guidance to use the TRAFFIC USING SHOULDER (W3-9) sign at entrances to freeways and expressways where part-time shoulder travel is allowed in order to provide adequate warning to entering traffic.</p> <p>FHWA also proposes to add an Option to use the W3-9 sign on conventional roads where traffic that is required to stop for or yield to the through street or highway on which part-time travel is allowed on the shoulder, to provide flexibility for this sign's use.</p>	<p>The changes in this section are adopted as proposed. In addition, the use a second W3-9 sign is included in the Option in the final rule to allow agencies to provide greater visibility of this message to oncoming traffic around the roadway curvature, as illustrated in the associated figure.</p>
253	<p>In new Section 2G.23, Guide Signs for Part-Time Travel on a Shoulder, FHWA proposes a Standard that the Advance and Exit Direction guide signs shall be modified to include a blank-out or changeable EXIT ONLY message if an interchange lane drop is created during the periods when a shoulder is open to travel. This is to ensure adequate warning to road user and create consistency with requirements for such guide signs in similar lane configurations.</p> <p>FHWA also proposes a Standard requiring other Guide signs used in conjunction with these facilities to be compliant with the provision of Chapters 2D and 2E to ensure consistency of all guide signs on the roadway.</p> <p>FHWA also proposes Guidance recommending the use of Emergency Turn-Out directional signs (D17-6) where turnouts are provided for emergency stopping to provide road users with notice of where stopping is allowed in the case of an emergency.</p>	<p>The changes in this section are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
254	<p>In new Section 2G.24, Lane-Use Control Signals for Part-Time Travel on a Shoulder, FHWA proposes an Option to allow the use of overhead lane-use control signals to indicate when a shoulder is open or closed to travel.</p> <p>FHWA also proposes a Standard that when lane-use control signals are used for part-time travel on a shoulder, they shall follow the provisions of Chapter 4T; that lane-use control signals are not required to be used on adjacent travel lanes; and that a steady red X signal indication shall be used to close the shoulder to all travel except emergencies.</p> <p>FHWA also proposes to require that when part-time travel on a shoulder is allowed for variable periods of operation, lane-use control signals shall be used and evenly spaced approximately evenly 1/2 mile or less and centered over the shoulder to indicate the status of the shoulder travel allowance.</p> <p>FHWA proposes the use of the green down arrow during times when travel is allowed on the shoulder, a yellow X just before the shoulder is to be closed to travel, and a red X when shoulder travel is discontinued. As part of this proposal, FHWA proposes to require that during the period when the shoulder is open to travel, a lane-use control signal that continuously displays a yellow X be used approximately 1/2 mile in advance of the location where part-time travel on the shoulder ends, and then displays a red X when the travel on shoulder ends.</p> <p>In addition, FHWA proposes to require the use of a lane-use control signal with a red X display at all times at the location where part-time travel on the shoulder ends.</p> <p>For part-time travel on shoulder with variable periods of operation, FHWA proposes an Option allowing the use of post-mounted TRAVEL ON SHOULDER ALLOWED WHEN FLASHING (R3-51d) signs with flashing beacons be used lieu of the lane-use control signals at the same intervals.</p> <p>FHWA also proposes an Option allowing the use of the TRAVEL ON SHOULDER ON GREEN ARROW ONLY (R3-51e) sign with a lane use control signal. The R3-51e sign may be mounted adjacent to the signal head, elsewhere on the signal support, or post mounted next to, or in advance of, the signal. FHWA proposes these additions to provide consistency with other lane use control signal applications.</p>	<p>The changes in this section are adopted as proposed.</p> <p>Some commenters suggested that the maximum 1/2-mile spacing requirement for lane-use control signals should be Guidance rather than Standard as it is too restrictive by not allowing for placement of devices around roadway features or obstacles. FHWA disagrees that the requirement is too restrictive as it is stated that the spacing be "approximately every 1/2 mile or less". FHWA believes this text provides sufficient flexibility in the spacing of these devices noting that engineering judgment can be used in determining the exact spacing of individual devices in locations where 1/2 mile spacing is impractical.</p>
255	<p>In new Section 2G.25, Lane-Use Control Signals for Active Lane Management on Freeway and</p>	<p>The changes in this section are adopted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
255 cont'd	<p>Expressways, FHWA proposes a Standard that lane-use control signals used in this application shall be compliant with the provisions of Chapter 4T to ensure consistency across all applications to road users.</p> <p>FHWA also proposes an Option to allow a steady yellow X signal indication to be displayed on one or more lane-use control signals in advance of the steady yellow X signal indication required before on the last signal before the point of lane closure. FHWA proposes this to provide flexibility where more advance warning of a lane closure ahead is considered necessary.</p> <p>FHWA also proposes a Standard that lane-use control signals shall be used only to supplement temporary traffic control devices when used during a planned road closure. FHWA proposes this language to clarify the existing requirement for temporary traffic control devices in this application as provided for in Part 6 of the MUTCD.</p> <p>FHWA also proposes Guidance on spacing lane-use control signals at 1/2 mile intervals, or closer spacing when certain geometric conditions exist, or when intervening interchange ramps are not adequately served by 1/2-mile spacing. This is to ensure road users have adequate warning of lane-use restrictions at all times.</p> <p>FHWA also proposes Guidance to minimize the combining of lane-use control signals with overhead sign structures. This is proposed to minimize the informational load on the road user and avoid conflict or incorrect messaging.</p>	
256	<p>In new Section 2G.26, Variable Speed Limits for Active Traffic Management on Freeways and Expressways, FHWA proposes a Standard requiring the regulatory speed display on a changeable speed limit signs comply with Paragraph 2 of Section 2B.22 of the MUTCD. This is proposed to ensure that variable speed limit sign designs are consistent across all roadways to improve recognition, which leads to better traffic operations and increased safety.</p> <p>FHWA also proposes to add Guidance that the location and positioning of Variable Speed Limit signs should associate the speed displayed on them to the lane or lanes intended to be regulated to avoid potential confusion as to the applicability of the speed limit.</p> <p>FHWA also proposes Guidance that variable speed limit signs, in addition to post-interchange placement, should be spaced based on an engineering study</p>	<p>The changes in this section are adopted as proposed, with an addition to the P3 Standard that includes reference to the "Standard Highway Signs" publication in addition to the MUTCD and to the P4 Guidance that includes similar guidance as Section 2E.43 establishing that variable speed limit signs should not be located on overhead guide sign installations.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
256 cont'd	considering multiple factors including known congestion points to adjust the operating speed to minimize the extent of vehicle queuing and improve safety.	
257	In Section 2H.01 (existing Section 2H.02) retitled, "Scope," FHWA proposes to add a Standard indicating there are circumstances where descriptive messages not relevant to navigation and orientation shall not be included in the legends of General Information signs. This clarification is needed to ensure that traffic control devices are employed only for their intended purpose of regulating, warning, and guiding road users.	The section title and Standard are adopted as proposed.
	FHWA proposes to revise existing P3 to provide an exception for the color and shape of State Welcome signs, Acknowledgement signs, and Alternative Fuels Corridor signs, rather than jurisdictional boundary signs.	The Standard is adopted as proposed.
		Based on comments indicating that recycling centers are still used in many communities, the Recycling Center (I4-2) symbol sign is retained and moved to Section 2H.01.
		Based on comments, an Option statement allowing the use of a Passenger Ferry Only Terminal (I3-10) Sign with FERRY (I3-11P) plaque mounted below to provide directional information to passenger only ferry terminals is added.
	FHWA also proposes to re-designate all signs in this Chapter to be consistent with the alphanumeric designations for all other signs in the Manual.	The revised sign designations are adopted as proposed.
258	In Section 2H.02 (existing Section 2H.01) Sizes of General Information Signs, FHWA proposes to revise the Option allowing sign sizes to be larger than those contained in Table 2H-1 to add an exception that larger sizes may not be used where a maximum allowable size is specified. FHWA proposes this change to restrict the use of over-sized signs only to those situations where appropriate.	The Option is adopted as proposed.
	FHWA also proposes to delete the Recycling Collection Center (I-11) symbol sign from the MUTCD because residential and curbside recycling make the need for this sign obsolete and separate Recycling Centers, apart from waste disposal facilities, generally do not exist anymore.	Based on comments indicating that recycling centers are still used in many communities, the Recycling Center (I4-2) symbol sign is retained in Section 2H.01.
	FHWA proposes to relocate existing Standard P14 regarding the height of a pictograph on a political boundary General Information sign to new Section 2H.05 to consolidate information in one location.	The relocation of the Standard is adopted.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
259	<p>FHWA proposes to add a new Section 2H.03 titled, "Airport Signs," which contains portions of existing Section 2H.02.</p> <p>FHWA proposes to add a new Standard prohibiting the use of airport pictographs or other graphical representation of the specific airport with or in place of the specific airport name on guide signs. FHWA proposes this change in concert with similar changes throughout the Manual based on human factors research (FHWA Official Ruling No. 2-650(E), "Sports Team Logos on Guide Signs," and "Sports Logo Evaluation Report," Perez, W. et al., November 2011) that demonstrated observers generally required longer reading times for signs that added pictographs, while the pictographs themselves did not improve comprehension of the sign message.</p> <p>In addition, FHWA proposes to change the provision regarding trailblazer signs from a Standard to Guidance to recommend, and not require, these signs prior to the airport guide signs. FHWA proposes this change to make the provisions more flexible in applying engineering judgment in specific situations.</p>	<p>New Section 2H.03 Airport Signs is adopted with a minor edit for clarity.</p> <p>The new Standard regarding custom airport pictographs is adopted as proposed.</p> <p>The Guidance regarding trailblazer signs is adopted as proposed.</p>
260	<p>In Section 2H.04 (existing Section 2H.03) Traffic Signal Speed Sign (I1-1), FHWA proposes to add a new Standard requiring the electronic display changeable section of the Traffic Signal Speed sign to be a white legend on a black opaque or green background. FHWA proposes this change to provide uniformity for this portion of the sign, consistent with the provisions for changeable message signs that allow the background portion of the sign to match the static sign.</p> <p>FHWA also proposes to remove the Standard describing the minimum size of the Traffic Signal Speed Sign as that information is contained in existing Table 2H-1.</p>	<p>The Standard regarding the electronic display of the changeable section of the Traffic Signal Speed sign is adopted as proposed.</p> <p>The Standard describing the size of the Traffic Signal Speed sign is removed as proposed.</p>
261	<p>FHWA proposes to add a new section numbered and titled, "Section 2H.05 Jurisdictional Boundary (I2-1) Signs," to provide Option, Guidance, Standard and Support statements specifically related to Jurisdictional Boundary signs, which are referred to as Political Boundary signs in the current MUTCD. FHWA proposes this new section in concert with the proposed change in Section 2H.01 (existing Section 2H.02) to differentiate between State Welcome signs and Jurisdictional Boundary signs.</p>	<p>New Section 2H.05 Jurisdictional Boundary Signs (I2-1) is adopted with revisions. The first Option statement is revised in response to comments to include boundaries of Tribal Nations and governmental districts as locations where Jurisdictional Boundary signs may be used and to clarify the use of the signs indicates the legal jurisdiction, road maintenance responsibility, or emergency response obligation changes at the boundary.</p> <p>Based on comments, the first Standard statement is also revised to specify that the name of Tribal Nations is allowable on Jurisdictional Boundary signs. The restriction of the use of names of elected officials or</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
261 cont'd		<p>promotional messages is adopted and to clarify expanded to also restrict such use on supplemental signs and plaques.</p> <p>The proposed Support is changed to Guidance since the language provides guidance regarding boundaries that are not appropriate for the use of Jurisdictional Boundary signs.</p>
262	FHWA proposes to renumber and retitle section 2H.04 Miscellaneous Information Signs (I2-2) to, "Section 2H.06, Geographic Feature (I2-2) Sign," and to make appropriate sign title changes throughout this section to have the sign title better align with the stated intent of these signs, which is to orient road users on the roadway based on geographic features.	Renumbering and retitling of Section 2H.04 to 2H.06 is adopted as proposed. Comments suggesting National Wildlife and Scenic Rivers System and watershed information be allowed on Geographic Feature signs are not incorporated because such information is not relevant to navigational aid.
263	FHWA proposes to add a new section numbered and titled, "Section 2H.07 State Welcome Signs," to provide information regarding the design, placement, and function of State Welcome signs, which have a different purpose from Jurisdictional Boundary signs that identify and mark State lines. The new section contains provisions for the location, display, and size of State Welcome signs.	<p>New Section 2H.07 State Welcome Signs is adopted with revisions. Based on comments, the display of the State flag is added in the Option statement. The first paragraph in the Standard statement is revised to clarify that State Welcome signs shall be located separate from other signs, but the requirement that they be post-mounted is removed.</p> <p>Based on comments, the term "scanning graphics" used in the Standard statement in Section 2H.07 replaces "QR codes, bar codes, or other graphics intended for optical scanning."</p>
264	<p>FHWA proposes to add a new section numbered and titled, "Section 2H.08 Future Interstate Signs (I2-4, I2-4a)," to provide provisions for Future Interstate Route and Future Interstate Corridor signing along an existing route that has been designated to be reconstructed as an Interstate route or along an existing route adjacent to a corridor through which an Interstate route will be constructed. The new section contains provisions for the location, spacing, and legend of Future Interstate and Future Interstate Corridor signs.</p> <p>In concert with this change, FHWA amends 23 CFR part 470, subpart A, appendix C, "Policy for the Signing and Numbering of Future Interstate Corridors Designated by Section 332 of the NHS Designation Act of 1995 or Designated Under 23 U.S.C. 103(c)(4)(B)." Specifically, FHWA proposes to delete the existing text of the section entitled, "Sign Details," and instead refer to the MUTCD for any criteria involving highway signing for this purpose.</p>	New Section 2H.08 Future Interstate Corridor Signs (I2-4, I2-4a) is adopted with minor editorial revisions for clarity.
265	FHWA proposes to add a new Section numbered and titled, "Section 2H.09 Project Information Sign (I2-5)" with Support and Standard statements related to signs that are used to provide limited information	New Section 2H.09 Project Information Sign (I2-5) is adopted with revisions. Revisions were based on several commenters wanting to either eliminate the project information sign altogether, remove allowable

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
265 cont'd	<p>about ongoing highway construction projects. FHWA proposes this section to standardize the design and use of signs provided for in 23 CFR 635.309(o).</p> <p>In concert with this change, FHWA proposes to amend 23 CFR 635.309(o) to refer to the MUTCD for any criteria involving Project Information signs.</p>	<p>information on the signs (such as dollar amounts), and/or limit the information allowed on the signs. Some commenters even stated these signs are neither necessary nor important. One commenter requested to increase the allowable timeframe the signs could be placed in advance of work commencing as the signs provide advance warning to travelers. Based on comments, a Standard is added that provides requirements for the sign legend limiting the information allowable on the sign. Based on a request to allow the signs to be placed prior to work commencing to provide advance warning to travelers, the proposed Standard is revised to specify that such signs shall not be installed more than a month prior to commencement of work, and an Option is added allowing a start date to be included when signs are installed more than one week prior to work commencing. For clarification, a Standard is also added with requirements on sign color and legend and restricting internet, e-mail addresses, and telephone numbers, consistent with existing provisions for signs.</p>
266	<p>FHWA proposes to add a new section numbered and titled, "Section 2H.10 Grade Separation Identification Signs (I2-43, I2-43a)," to provide Option and Guidance on these signs used for identifying a grade separation from another highway or transportation facility such as a railway, bikeway, or pathway.</p>	<p>This new section is adopted with revisions to reflect the proper sign designations, a slight revision to the sign name and section title, and revisions to the Guidance in response to comments to provide more flexibility and consistency.</p>
267	<p>In Section 2H.11 (existing Section 2H.05), retitled, "Reference Location Signs (D10-1 through D10-3) and Intermediate Reference Location Signs (D10-1a through D10-3a)," FHWA proposes to revise the Option to indicate that Intermediate Reference Location (D10-1a to D10-3a) signs may also be installed at two tenths of a mile or one-half mile intervals.</p> <p>FHWA also proposes to delete two Standard Statements in this section describing the sign design requirements as these designs are standardized and must comply with the existing provisions of Chapter 2A.</p>	<p>The Option is adopted as proposed.</p> <p>The Standards are removed as proposed.</p> <p>In response to comments and to provide consistency with existing requirements in Chapter 2E, the existing Guidance statements pertaining to continuity in interchange exit numbering and the terminus points for zero distance are changed to Standard statements.</p>
268	<p>In Section 2H.12 (existing Section 2H.06), retitled, "Enhanced Reference Location Signs (D10-4) and Intermediate Enhanced Reference Location Signs (D10-5)," FHWA proposes to add a Standard statement to clarify that the display of a decimal point</p>	<p>The Standard is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
268 cont'd	<p>and zero numeral is required on Intermediate Enhanced Reference Location (D10–5) signs used at the integer mile point. FHWA proposes this addition to improve recognition of the sign message through the use of a consistent numbering nomenclature and provide consistency with the same requirement in Section 2H.10 for Reference Location Signs (D10–4) and Intermediate Reference Location Signs (D10–5).</p> <p>FHWA also proposes to remove the allowance of blue background enhanced reference location signs, requiring them to be green, to establish uniformity.</p> <p>FHWA also proposes to remove the sign design provisions for these signs as the designs are standardized and are required to comply with the existing provisions of Chapter 2A.</p>	<p>The Standard requiring a green background is adopted. One State requested that blue be retained as an Option for reference location signs located on ramps. FHWA does not believe there is a benefit in distinguishing ramps by color because the reference location signs on ramps would be distinguished by their legend, displaying the ramp name and/or directional description of the connected roadways. Their consistency in color would continue to make them identifiable as reference location signs for emergency reporting purposes.</p> <p>The design provisions are removed, as proposed.</p>
269	<p>FHWA proposes to relocate Section 2H.07, “Auto Tour Route Signs,” to Chapter 2D and combine with Section 2D.57, “State-Designated Scenic Byway, Historic Trail, and Auto Tour Route Signs.”</p>	<p>The relocation of Section 2H.07 “Auto Tour Route Signs” to Chapter 2D is adopted. The material is in Section 2D.58 “State-Designated Scenic Byway, Historic Trail, and Auto Tour Route Signs.”</p>
270	<p>In Section 2H.13 (existing Section 2H.08) retitled, “Acknowledgment Signs and Plaques (I20 Series),” FHWA proposes several revisions to reflect FHWA Order No. 5160.1 A (<a href="https://www.fhwa.dot.gov/legregs/directives/orders/51601a.cfm">https://www.fhwa.dot.gov/legregs/directives/orders/51601a.cfm</a>), that cancels FHWA Order 5160.1 (<a href="https://www.fhwa.dot.gov/legregs/directives/orders/51601.cfm">https://www.fhwa.dot.gov/legregs/directives/orders/51601.cfm</a>), both of which are related to FHWA Policy on Sponsorship Acknowledgement and Agreements within the Public Right-of-Way. FHWA proposes this change to minimize the number of additional signs and informational load imposed on road users.</p> <p>FHWA proposes to change the Guidance related to acknowledgment sign policy provisions to a Standard to ensure sign design and placement of these signs does not conflict with other provisions in the MUTCD.</p> <p>FHWA also proposes to add a Standard requiring that Acknowledgment signs and plaques have a white legend on a blue background and be independent post mounted roadside installations only and not be overhead-mounted. This change is proposed to ensure these signs are consistent with other service</p>	<p>The dispositions for the specific changes are provided below.</p> <p>The Guidance related to policy provisions is adopted as a Standard as proposed.</p> <p>The Standard requiring Acknowledgment signs and plaques to have a white legend on blue background and specifying installation requirements is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
270 cont'd	type signs and maintain their purpose of acknowledging sponsors of services only.	
	FHWA proposes to add an Option allowing new Rest Area and Welcome Center Acknowledgement signs (I20–4 and I20–4a) that provides the name of the rest area and welcome center sponsor.	In response to comments, editorial changes are made in the Option and subsequent Standard statement to clarify what is allowed on an Acknowledgment sign and requirements for sign placement. An additional Option statement is included allowing use of an additional Acknowledgment sign within the rest area.
	In concert with this change, FHWA proposes a new Standard prohibiting the names or representations of specific products or services provided by the sponsor within the rest area to be included on the sign.	The Standard is adopted with a minor edit in terminology.
	FHWA also proposes to add a Standard prohibiting the use of program names or slogans on rest area guide signs or other traffic control devices.	Prohibiting the use of program names or slogans on rest area guide signs or other traffic control devices is adopted as proposed.
	FHWA proposes to revise the Standard paragraph regarding acknowledgment signs and plaque designs to include additional provisions related to orientation, dimension, area of the sign, and sizing the sign based on standard sizes specified in Table 2I–1. FHWA proposes these changes so that the MUTCD provisions for these signs are consistent with FHWA Order 5160.1A ( <a href="https://www.fhwa.dot.gov/legregs/directives/orders/51601a.cfm">https://www.fhwa.dot.gov/legregs/directives/orders/51601a.cfm</a> ) and sign size requirements established earlier in this Chapter.	The majority of the additional Standard items related to acknowledgment signs are adopted as proposed. In response to comments, the requirement in Item D related to horizontal orientation and ratio of width to height are removed to provide flexibility. In concert with this change, proposed Item I, also related to orientation and size, is removed.
	FHWA proposes an Option paragraph allowing for the name of the municipality or neighborhood in which the sponsoring outlet of a business is located if there are multiple locations in the same area. FHWA proposes this change to allow for the acknowledgment of the specific franchisee in cases in which the corporation itself is not the sponsor.	The Option paragraph is adopted as proposed.
	FHWA proposes to add an Option permitting Acknowledgement plaques to be mounted below General Service signs to acknowledge a sponsor of a corridor- or region- based highway related service including Radio-Weather Information (D12–1), Radio-Traffic Information (D12–1a), TRAVEL INFO CALL 511 (D12–5 and D12–5a), and Roadside Assistance (D12–6) signs. In concert with this change,	The Option allowing Acknowledgment plaques to be mounted below General Service signs is adopted as proposed.
	FHWA proposes Standard paragraphs prohibiting the installation of an Acknowledgment plaque in conjunction with other signs or traffic control devices and limiting the legend that can be displayed on an Acknowledgment plaque.	The Standard is adopted as proposed.
271	FHWA proposes to add a new section numbered and titled, “Section 2H.14 Alternative Fuels Corridor Sign” to provide Standard, Option, Guidance, and Support	See Preamble of Federal Register notice for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
271 cont'd	<p>provisions for the use of Alternative Fuels Corridor signs.</p> <p>FHWA also proposes new Figures 2H-9 and 2H-10 to illustrate Alternative Fuels Corridor Sign Assembly examples and an Alternative Fuels Corridor Signing layout example, respectively. This section adds the provisions of FHWA policy memorandum entitled, "MUTCD—Signing for Designated Alternative Fuels Corridors," dated December 21, 2016 (<a href="https://mutcd.fhwa.dot.gov/resources/policy/alt_fuel_corridors/index.htm">https://mutcd.fhwa.dot.gov/resources/policy/alt_fuel_corridors/index.htm</a>).</p>	
272	<p>In Section 2I.02 General Service Signs for Conventional Roads, FHWA proposes a new Standard paragraph limiting the use of the Hospital sign to facilities that operate on a full-time basis. FHWA proposes this change to accommodate the expectation of road users that a hospital operates on a fulltime basis.</p> <p>In concert with this change, FHWA proposes an Option paragraph allowing the Emergency Medical Services sign to be used for medical care facilities that operate only on a parttime basis.</p>	<p>The new Standard is adopted as proposed.</p> <p>The Option is adopted as proposed.</p> <p>In addition, a new Standard regarding eligibility for an EV Charging General Service sign on a conventional road is adopted, for consistency with provisions in Section 2I.03.</p>
273	<p>In Section 2I.03 General Service Signs for Freeways and Expressways, FHWA proposes a new Guidance paragraph recommending the use of D9-18 or D9-18a signs for numbered interchanges.</p> <p>FHWA also proposes new Support and Option statements regarding motorist expectations for</p>	<p>The Guidance is revised in response to comment to clarify that where General Service signs are used along routes with exit numbering, the General Service sign should include the exit number within the sign face below the services.</p> <p>In the Guidance provision listing eligibility criteria for General Services signs a public telephone is removed from items A, B, and C, in response to comments suggesting public telephones are not needed due to the availability of cell phones. While no longer recommended in the MUTCD, agencies may continue to consider policies that include public telephone as a criterion based on the availability of cellular service in particular geographic regions.</p> <p>Comments reflected the increasing shift on alternative fuel vehicles and specifically EVs by requesting additional flexibilities to include EV charging services signs. The FHWA agrees with these comments and added several provisions to ensure adequate flexibility is available to sign for EV charging services.</p> <p>The Support provision is adopted as proposed. To provide consistency with other areas of the Manual,</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
273 cont'd	<p>facilities providing alternative fuels, as well as policy criteria for alternative fuel vehicles to address issues specific to alternative fuel vehicles.</p> <p>FHWA also proposes to change the Standard requiring sign space be left blank for future services to a Guidance to provide agencies with greater flexibility based on the agency's knowledge of local conditions.</p>	<p>the Option statement is changed to Guidance to recommend policy criteria to take into account needs, convenience and safety of alternative fueled vehicle users.</p> <p>The change to Guidance is adopted as proposed.</p>
274	<p>In Section 2I.04 retitled, "Interstate Oasis Signing (D5–12 Series)," FHWA proposes to delete the Guidance recommending that names or logos of businesses designated as Interstate Oasis not be included in the Interstate Oasis sign and instead proposes to add a new Option permitting the name of the business designated as an Interstate Oasis to be provided below the Interstate Oasis legend on the D5–12 sign if Specific Service signing is not used at the interchange. FHWA proposes this change based on experience with signing for the Interstate Oasis areas and recognizing that it may be appropriate to include business names.</p> <p>FHWA proposes to delete Guidance text indicating that Interstate Oasis signs should have a white legend with a letter height of at least 10 inches and a white border on a blue background as the designs of these signs are standardized and must comply with the existing provisions of Chapter 2A.</p> <p>FHWA proposes to delete the Interstate Oasis symbol panel, along with the related Standard, based on poor comprehension of the symbol and the fact that no State currently uses the symbol.</p> <p>Finally, FHWA proposes to add a new Interstate Oasis Directional (D5–12b) sign to provide road users the direction and distance to the Interstate Oasis from an exit ramp.</p>	The changes in Section 2I.04 are adopted as proposed.
275	<p>In Section 2I.08, retitled, "Tourist Information and Welcome Center Signs (D5–7 Series, D5–8)," FHWA proposes to revise the Guidance statement regarding the supplemental signs installed with Tourist Information or Welcome Center signs to suggest limiting the number of supplemental sign panels to three (3). FHWA proposes this change for consistency with other provisions in Part 2 related to the amount of information on a sign legend and driver comprehension, thus minimizing the informational load imposed on drivers.</p>	The changes in Section 2I.08 are adopted as proposed.
276	<p>In Section 2I.09, retitled, "Radio Information Signing (D12–1 Series)," FHWA proposes to add two new</p>	The changes in Section 2I.09 are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
276 cont'd	<p>signs: (1) A Radio-Traffic Information (D12-1a) sign and (2) an Urgent Message When Flashing (D12-1bP) plaque.</p> <p>FHWA also proposes to add an Option statement allowing the Urgent Message When Flashing plaque to be mounted below a D12-1 or D12-1a sign when supplemented by warning beacons that flash only when a message related to adverse travel conditions is being broadcast. FHWA proposes these changes to provide additional signs that may be beneficial to agencies that provide radio services.</p> <p>As discussed in the following two items, FHWA proposes to create two new sections that contain material from existing Section 2I.09 to assist practitioners better in finding information.</p>	
277	FHWA proposes add a new section, numbered and titled, "Section 2I.10 Channel 9 Monitored Sign (D12-3)" containing existing Option and Standard statements from Section 2I.09 pertaining to the Channel 9 Monitored Sign (D12-3).	New Section 2I.10 Channel 9 Monitored Sign (D12-3) is adopted as proposed. Some commenters suggested that use of these signs is inconsistent with the principles in Section 2A.19 and apply only to a segment of the highway users; however, several commenters agreed with retaining this sign. FHWA will consider the need for this sign in a future revision.
278	FHWA proposes a new section, numbered and titled, "Section 2I.11 EMERGENCY CALL XX Sign (D12-4)" containing an existing Option statement from Section 2I.09 pertaining to the EMERGENCY CALL XX Sign (D12-4).	New Section 2I.11 is adopted as proposed but with the title of the section and sign legend as EMERGENCY CALL 911 Sign (D12-4).
279	<p>In Section 2I.12 (existing Section 2I.10), "TRAVEL INFO CALL 511 Signs (D12-5, D12-5a)," FHWA proposes to revise the Option statement to allow a pictograph of the transportation agency, or the travel information service or program to be displayed in place of the TRAVEL INFO CALL 511 legend on the D12-5a sign. This is proposed to provide agencies greater flexibility in program identification.</p> <p>FHWA also proposes to delete the Guidance paragraph related to the maximum pictograph height and add a new Standard establishing the maximum height of the transportation agency or travel information service or program pictograph to be the height of the 511 pictograph that would otherwise be used on the D12-5a sign for the type of roadway it is located. FHWA proposes this change to provide uniformity in the size of travel information signing.</p>	The changes in Section 2I.12 are adopted as proposed with a minor editorial change to correct the Figure designation.
280	FHWA proposes to add a new section numbered and titled, "Section 2I.13 Roadside Assistance Sign (D12-6)," which would permit the use of a new Roadside Assistance sign along a highway that is served by an authorized road assistance program with authorized	New Section 2I.13 Roadside Assistance Sign (D12-6) is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
280 cont'd	service vehicles and personnel that provide roadside vehicle repair assistance to road users free of charge. FHWA proposes this change to provide agencies with a consistent sign that would be recognized by road users.	
281	<p>In Section 2I.14 (existing Section 2I.11), retitled, "Carpool and Ridesharing Signing (D12-2)," FHWA proposes to revise the existing Standard to add a maximum horizontal dimension of 30 inches for consistency with similar applications to maintain primacy of other more critical signs.</p> <p>FHWA also proposes to remove the existing Guidance pertaining to legend, border, and background colors as the design requirements of this sign are standardized and must comply with the existing provisions of Chapter 2A.</p>	The changes to Section 2I.14 are adopted as proposed. One commenter suggested adding an Option to allow use of Web sites and telephone numbers only for account-only electronic tolling program information, especially those associated with HOV lanes, similar to the use of Web sites and phone numbers allowed on Carpool and Ridesharing signing. FHWA will consider this for a future revision.
282	FHWA proposes to add a new section numbered and titled, "Section 2I.15 Signing for Truck Parking Availability (D9-16b through D9-16e)," with Option, Standard, Support, and Guidance statements, as well as two new figures, related to the use of Truck Parking Availability General Service signs that may be used to display the number of available truck parking spaces at roadside areas such as rest areas, welcome centers, and weigh stations, and at facilities off a highway that are open to the public and provide parking for commercial vehicles.	New Section 2I.15 Signing for Truck Parking Availability (D9-16b through D9-16e) is adopted as proposed. Commenters suggest allowing the term "LOW" rather than "FULL" in the Standard for displaying availability on truck parking signs; however, the term "FULL" is retained for a more accurate depiction of the situation. Commenters also suggest revising the Guidance to allow a greater distance than 60 miles between the sign location and parking facilities; however, 60 miles is retained as engineering judgement can be applied where unique conditions warrant deviation from the Guidance.
283	FHWA proposes to replace "logo" with "business identification" signs throughout Chapters 2J and 2K to recognize that a word legend can and often is used in lieu of a logo to identify the business on the Specific Service sign. This generally occurs when the business to be identified does not have a logo, their logo is not widely recognized, or their logo is otherwise unsuitable for display on the sign. The reclassification does not change the allowance for a business or service provider to use a corporate logo on a Specific Service sign.	The change in terminology from "logo" sign panel to "business identification" sign panel is adopted as proposed.
284	In Section 2J.01 Eligibility, FHWA proposes to delete the 24-hour Pharmacy Specific Service category because there has been little demand and most pharmacies that did obtain a logo on a Specific Service sign have since withdrawn from the associated agency program. Instead, the 24-hour pharmacy would remain as General Service only. FHWA also proposes to remove references to 24-hour pharmacies from Section 2J.02.	The 24-hour Pharmacy Specific Service category is removed as proposed.
	FHWA also proposes to remove alternative fuels from the qualifications for a GAS business identification	See Preamble of Federal Register for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
284 cont'd	<p>sign panel to eliminate any potential driver expectancy confusion should a facility offer one or more of the many alternative fuels only and not gasoline.</p> <p>FHWA also proposes to change existing Guidance P10 to Standard, because it is important for States to have a statewide policy for Specific Signing for the program to be successfully implemented in a consistent manner. Such policies already exist in a majority of the States.</p>	P10 is adopted as Standard as proposed.
285	<p>In Section 2J.02 Application, FHWA proposes to delete 24-hour Pharmacy Specific Service category from Standard P2 because there has been little demand and most pharmacies that did obtain a logo on a Specific Service sign have since withdrawn from the associated agency program.</p> <p>FHWA also proposes to revise existing P2 to address the display of distances explicitly to eligible facilities on the Specific Service signs on the approach to the interchange. While this practice has never been allowed, FHWA proposes this language to provide clarification based on the results of official experimentation and studies demonstrating that the display of distances requires too much time to read and reduces the effectiveness of these signs.</p> <p>FHWA also proposes to add a new Standard statement prohibiting the inclusion of business identification sign panels for alternative fuel facilities on GAS Specific Service Signs for those facilities that offer only alternative fuels, but not gasoline. This addition is because driver expectancy for businesses on the GAS sign is that the business sells gasoline, even if one of the several alternative fuels might also be available.</p> <p>In concert with this change, FHWA also proposes to add a Support paragraph identifying the option to sign for alternative fuel facilities with General Service signs and directing users to Chapter 2I for more information on those provisions.</p> <p>FHWA also proposes Standard, Guidance, and Support statements limiting the allowable number of business identification sign panels for each Specific Service to six and recommending that when there are more than six eligible facilities for one or more categories of service, General Service signs for those services should be used instead. The proposed Support statement explains that Specific Service signs are intended for areas primarily rural in character, and that when services at an interchange are abundant, the character of the area is no longer</p>	<p>Reference to 24-hour pharmacies is removed from Section 2J.02. In response to comments, EV Charging is added as a Specific Service sign category. As a result, provisions for EV Charging specific service signs are added throughout this section.</p> <p>Revisions to exclude distances to eligible facilities on Specific Service signs on the approach to an interchange are adopted as proposed.</p> <p>The Standard is adopted as proposed.</p> <p>The Support paragraph is adopted as proposed.</p> <p>The limitation to not more than six business identification sign panels on any one sign is adopted with clarifying edits. The proposed Support statement regarding the intended use of Specific Service signs for primarily rural areas is relocated to Section 2J.01 and revised to indicate that General Service signs would be more appropriate at such time when services at an interchange are abundant, since this is an indication that the character of the area is no longer primarily rural.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
285 cont'd	<p>primarily rural and the need to identify specific types or brands of facilities is generally unnecessary and General Service signs would be more appropriate.</p> <p>FHWA also proposes to add a Guidance statement recommending that the ATTRACTION Specific Service sign should have no more than four business identification sign panels.</p> <p>FHWA proposes to explain in the Support statement that, because of the considerable variation in the types of attractions found on these signs, and the fact that many do not include well known services or national logos, it is generally more difficult and requires significantly more time to decipher between types of attractions shown on an ATTRACTION sign than for other categories of Specific Service signs where the types of facilities are more uniform.</p> <p>FHWA also proposes to revise existing Standard P3 to clarify that configurations or arrangements of logo sign panels other than those listed are not allowed. FHWA proposes to add a new Guidance and a new Option statement recommending that if a service is no longer available from an interchange or intersection, then the legend displaying the service type and direction information should be removed or may only be covered if there is indication that this service may become available in the near future. This is proposed so that the road user does not misinterpret the sign as indicating that this type of service is still available, similar to the message on a General Service sign.</p> <p>Finally, FHWA proposes to add a new Figure 2J–1 to illustrate an example of General Service Signs in Conjunction with Specific Service Signs.</p>	<p>The Guidance is adopted as proposed.</p> <p>The Support is adopted as proposed.</p> <p>Revisions to the Standard and the new Option are adopted as proposed. The new Guidance is adopted with revisions for clarity.</p> <p>The new Figure is adopted as Figure 2J-3.</p>
286	<p>In Section 2J.03 Logos and Business Identification Sign Panels, FHWA proposes to add a Guidance statement recommending that graphic or trademarked logos used on a logo sign panel should be consistent with the on-premise business identification signs at the location of the business that are visible from the roadway. FHWA proposes this recommendation to provide consistency between the logo sign panel and the signing on the business and accommodate driver expectancy and positive guidance.</p>	<p>New Guidance is adopted as proposed.</p> <p>Based on comments, a Standard is added prohibiting the use of scanning graphics that are visible to the road user from the roadway for the purpose of obtaining information on business identification sign panels. This Standard was moved from Section 2A.04. As part of this change, a definition for “business identification panel” is added to Part 1 definitions.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
286 cont'd	<p>FHWA also proposes to delete the Option allowing the border to be omitted where business identification symbols or trademarks are used alone for a logo. FHWA proposes this change to ensure consistent apparent size and visibility of the individual logos.</p>	<p>The Option to omit a border where a business identification symbol or trademark is used alone is deleted as proposed.</p>
	<p>FHWA also proposes to revise the Standard regarding supplemental messages on logo sign panels to prohibit specifically additional amenities or products unrelated to the service category because those items are considered promotional advertising. FHWA proposes this revision to clarify the existing provisions, which do not allow for such messages.</p>	<p>The Standard is adopted as proposed.</p>
	<p>FHWA also proposes to add a new Standard explicitly prohibiting the display of messages related to the promotion or availability of logo space on Specific Service signs.</p>	<p>The Standard is adopted as proposed.</p>
	<p>Further, FHWA proposes to add an Option to clarify that supplemental messages identifying an alternative fuel available may be added only to the business identification sign panels on the GAS Specific Services sign for a gas facility that provides that alternative fuel in addition to, rather than in lieu of, gasoline. FHWA proposes this change as a clarification of the Option provision allowing supplemental messages for essential motorist information and to accommodate driver expectancy of the nature of the services displayed.</p>	<p>The Option to clarify the addition of alternative fuel available on the GAS Specific Service sign is adopted as proposed. In concert with other changes regarding the addition of provisions for EV Charging and based on comments, an Option is added for the use of the supplemental message EV CHARGING for the service categories of gas, food, lodging, or camping, and the Standard is revised to add eligibility criteria for such use.</p>
	<p>FHWA also proposes to revise the Guidance provision regarding the legend and background colors of the supplemental messages, recommending they be a black legend on a yellow background for that portion of the business identification sign panel. FHWA proposes this change to make it easier for motorists to recognize supplemental information that is critical to their decision making.</p>	<p>Revisions to Guidance are adopted as proposed.</p>
	<p>FHWA also proposes to delete the Option and Standard for the alternative circular RV ACCESS supplemental message to standardize the RV ACCESS supplemental message for consistency.</p>	<p>The Option and Standard for the alternative RV ACCESS supplemental message are deleted as proposed.</p>
	<p>Finally, FHWA proposes to revise the Standard regarding business identification sign panel displays to prohibit a panel from displaying more than one name or identification logo/ trademark for the same business and to prohibit marketing slogans. This Standard also does not allow a sign panel to be used to display messages related to the promotion or availability of adding a business identification sign panel. FHWA proposes this change because promotional advertising is not allowed on traffic control devices.</p>	<p>The Standard is revised as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
287	<p>In Section 2J.06 Signs at Interchanges, FHWA proposes a revision to the Standard indicating that Specific Service signs shall not be used at freeway-to-freeway interchanges, except at ramps that also provide access to a conventional road within that interchange. FHWA proposes this to ensure drivers are not confused by indicating a service is available on the freeway itself.</p> <p>To complement the existing Guidance providing recommended minimum spacing between Specific Service ramp signs, FHWA also proposes recommended minimum spacing between Specific Service ramp signs and other signs along the ramp. FHWA proposes this change to ensure that adequate spacing between critical destination, warning, and regulatory signs along the ramp is maintained.</p> <p>Finally, FHWA proposes to add a new Figure 2J-6 to illustrate an example of Specific Services Signing for a Conventional Road Accessed within a Freeway-to-Freeway Interchange.</p>	<p>The Standard is adopted as proposed.</p> <p>The Guidance is adopted as proposed.</p> <p>The new Figure is adopted as Figure 2J-5.</p>
288	<p>In Section 2J.07 Single-Exit Interchanges, FHWA proposes to revise Standard P2 to clarify that the provision applies only to those ramps that allow a traffic to turn in either direction of the crossroad. FHWA proposes this clarification to provide greater flexibility to agencies by not requiring the ramp signs when the ramp requires all traffic to turn in one direction of the crossroad, resulting in cost savings to agencies and participating businesses.</p> <p>FHWA proposes to change the Guidance statement to an Option statement to allow, rather than recommend that Specific Service ramp signs display distances to a facility when not visible from the ramp intersection. FHWA proposes this change to provide agencies greater flexibility in determining whether to display the distance on Specific Service ramp signs.</p> <p>FHWA also proposes to add a Guidance statement that recommends distances of less than 1/4 mile, when displayed, be displayed to the nearest 1/10 mile.</p> <p>Finally, FHWA proposes to delete the Option allowing the use of an exit number plaque on Specific Service signs in advance of an interchange, because the standardized sign already contains the exit number.</p>	<p>The Standard is revised as proposed.</p> <p>The Option is adopted as proposed.</p> <p>The Guidance is adopted as proposed.</p> <p>The Option is deleted as proposed.</p>
289	<p>FHWA proposes to add a new section numbered and titled, "Section 2J.09 Collector-Distributor Roadways for Successive Interchanges," to include Support, Guidance, and Standard statements regarding signing for a collector-distributor roadway that provides access to multiple interchanges. This</p>	<p>Based on comments, new Section 2J.09 Collector-Distributor Roadways for Successive Interchanges, is adopted with revisions to allow Specific Service signs on either the mainline or collector-distributor roadways, and in combination with General Service signs.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
289 cont'd	<p>proposal includes requirements and recommendation on the number and location of signs based on the number of service facilities available at the multiple interchanges. FHWA proposes this new Section to address the application of mainline Specific Service signing when more than one interchange is accessed from the collector-distributor roadway.</p> <p>FHWA proposes to add a new Figure 2J-7 to illustrate an example of Specific Services Signing from Collector- Distributor Road.</p>	<p>An Option statement is added regarding placement of Specific Service signs where services are available at more than one of the interchanges along a collector-distributor roadway. In concert with this change, a Standard is also added to require business identification sign panels on the mainline to match those on the collector-distributor roadway.</p> <p>New Figure 2J-6 is adopted to illustrate Specific Service Sign placement in a collector-distributor roadway as proposed.</p>
290	<p>In Section 2J.11 (existing Section 2J.10) Signs at Intersections, FHWA proposes to delete Standard P1 that requires that the specific service information be incorporated into the tourist-oriented directional signs at intersections on conventional roads or expressways when both tourist-oriented directional signs and Specific Service signs are needed. FHWA proposes removing this requirement to provide agencies the flexibility to provide continuity of information on these sign types as may be expected by road users.</p> <p>FHWA also proposes to add Guidance recommending that sufficient space be provided between these different types of signs used at the same intersection so that the road user is not overloaded with information, and a requirement that if sufficient space is not available to add these signs to the other guide, warning, and regulatory signs that either or both of these service sign types shall not be used.</p> <p>FHWA also proposes to revise the Guidance to remind users that the use of Specific Service signs in non-rural or conventional roadways is subject to an engineering study in compliance with Section 2J.01.</p>	<p>The Standard is deleted as proposed.</p> <p>The Guidance is adopted as proposed.</p> <p>Based on comments, the proposed revisions reminding users that the use of Specific Service signs is subject to an engineering study is not adopted.</p>
291	<p>In renumbered Section 2J.12 Signing Policy, FHWA proposes to change to a Standard the recommendation that each highway agency that elects to use Specific Service signs establish a general signing policy and add a requirement for a Statewide policy on the eligibility of service providers. FHWA proposes this change to ensure that States have a policy on eligible businesses for their Specific Service sign program that provides businesses equitable and consistent qualifications for signs, thereby meeting road user expectations while maintaining the recommendations on minimum sign policy criteria to be considered.</p>	<p>The Guidance is changed to Standard as proposed.</p>
292	<p>In Section 2K.01 Purpose and Application, FHWA proposes to revise the requirement in Standard P4 to</p>	<p>The Standard is adopted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
292 cont'd	<p>clarify that tourist-oriented directional signs shall be limited to use on rural highways.</p> <p>FHWA also proposes to change the terminology from “rural conventional roads” to “rural highways” to match that used for such facilities as provided in Section 1C.02 for clarity.</p> <p>FHWA also proposes to delete the requirement in Standard P5 that the specific service information be incorporated into the tourist-oriented directional signs at intersections on conventional roads or expressways when both tourist-oriented directional signs and Specific Service signs are needed. This is proposed for consistency with the removal of the same requirement in Section 2J.11 (existing Section 2J.10).</p>	<p>The terminology is adopted as proposed.</p> <p>The Standard is deleted as proposed.</p>
293	<p>In Section 2K.02 Design, FHWA proposes to add a new Standard requiring recreational and cultural interest area symbols to be white on a brown background. In addition, business identification sign panels shall not exceed 24 inches in width and 15 inches in height. FHWA proposes these requirements to comply with sign colors as required in Chapter 2A and ensure the business identification sign panels are proportional in size with a tourist-oriented sign.</p>	<p>The Standards are adopted as proposed with a minor edit for clarification.</p>
294	<p>In Section 2K.04 Arrangement and Size of Signs, FHWA proposes to change the Guidance regarding the maximum number of signs installed in each assembly from four to three to be consistent with guidance provided in Section 2E.10 that no more than two destination names or street names should be displayed on any Advance Guide sign or Exit Direction sign, and consistency with research completed by the Quebec Ministry of Transport (<a href="http://conf.tac-atc.ca/english/resourcecentre/readingroom/conference/conf2010/docs/j4/audet.pdf">http://conf.tac-atc.ca/english/resourcecentre/readingroom/conference/conf2010/docs/j4/audet.pdf</a>) that found road users cannot adequately process the information when more than three destination panels are present in a sign assembly.</p>	<p>Guidance adopted as proposed. Although several commenters suggested retaining four signs in a sign assembly, rather than the proposed limit of three signs, FHWA retains the limit of three. FHWA feels it is important to refrain from overloading road users with information that cannot be adequately processed.</p>
295	<p>In Section 2L.01 Description of Changeable Message Signs, FHWA proposes to add a paragraph to the Support statement to clarify that Changeable Message Signs (CMS) are traffic control devices, and therefore fundamental principles for the design and application apply, regardless of the type of message. The statement further explains that Chapter 2L is not a standalone chapter and criteria and use of engineering processes in other areas of the MUTCD also apply to CMS.</p> <p>FHWA proposes to relocate and revise Standard P3 to Section 2L.02, because this language applies to</p>	<p>The Support statement is adopted as proposed with a minor revision to change the reference to “traffic control device” in the second sentence to “conventional sign”. In addition, the proposed Support statement in Section 2L.06 is moved to Section 2L.01.</p> <p>Standard P3 is revised and relocated from Section 2L.01 to Section 2L.02 as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
295 cont'd	<p>the applications of CMS and not the description of them.</p> <p>FHWA proposes to add a new Standard prohibiting information other than inventory or maintenance-related information from being displayed on the front or back of a CMS or portable CMS. This prohibition also includes names or logos of the manufacturer either in the message display or on the exterior housing. FHWA proposes this change to ensure the traffic control messages displayed on these signs are not compromised by other miscellaneous or promotional information, consistent with the provisions for all traffic control devices.</p>	The Standard is adopted as proposed.
296	<p>In Section 2L.02 Applications of Changeable Message Signs, FHWA proposes to relocate and revise Standard P3 from Section 2L.01 because this language applies to the applications of CMS and not the description of them.</p> <p>As part of the revisions, FHWA proposes to clarify that CMS are to display only information as provided for in this chapter and other types of messages not related to traffic control and not provided for in this chapter shall not be displayed on CMS. FHWA proposes this additional language to promote uniformity in the use of CMS and to discourage the use CMS to display messages not provided for in the MUTCD, ensuring that the CMS adhere to the basic principles of an effective traffic control device that are stated in the existing provisions of Part 1.</p> <p>FHWA also proposes to change existing Option P2 to a Guidance and move the statement earlier in this section to clarify the types of messages to be used on CMS in support of the proposed Standard relocated from Section 2L.01.</p> <p>FHWA also proposes to add a new Guidance statement recommending that CMS not be used in place of static guide sign messages except for blank-out type signs used to display regulatory, warning, and guidance information that routinely reoccurs but only on a parttime basis. In addition, only elements of a sign that are subject to change should be in an electronic display. FHWA proposes these changes to help ensure consistency in sign design by controlling the potential variability of information that should not change on a sign.</p> <p>In addition, FHWA proposes to delete Support Item D, messages pertaining to control at crossing situations, from the list of types of messages for which CMS are applicable. FHWA proposes this change, because "control at crossings" is not well understood</p>	<p>Standard P3 is relocated from Section 2L.01 to Section 2L.02 as proposed.</p> <p>See Preamble of Federal Register for discussion of this item.</p> <p>See Preamble of Federal Register for discussion of this item.</p> <p>The Guidance is adopted as proposed with a minor revision for clarity to change the reference to "static guide signs" in the first sentence to "conventional signs".</p> <p>Support item D is deleted as proposed. In addition, item J is edited slightly to "variable destination guidance," and based on comment, new items K and L are added for "supporting temporary traffic control" and "Active Traffic Management", respectively.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
296 cont'd	and such messages would be covered under the other more general categories within the list, such as "Warning situations" or "Traffic regulations."	
	FHWA proposes to change existing Guidance P3 to a Standard to require that agencies that have permanently installed or positioned CMS have a policy regarding their use and the display of all types of messages used on CMS. Such policies shall define the types of messages that would be allowed, the priority of messages, the syntax of messages, the timing of messages, and other important messaging elements to ensure messages displayed meet the basic principles that govern the design and use of traffic control devices in general and traffic signs in particular as provided for in the MUTCD.	Guidance P3 is changed to Standard as proposed.
	In concert with this change, FHWA proposes that State and local agencies that use CMS that are not permanently installed or positioned should develop and establish a similar policy. FHWA proposes these changes in order to ensure urgent and real-time traffic operational and safety messages developed to address varying roadway and traffic conditions are easily understood, timely, and relevant.	The Guidance is adopted as proposed.
	FHWA proposes to include recommendations specific to the display of AMBER alerts, including limiting the length of messages, and details, such as description of persons, vehicles or license plate numbers.	See Preamble of Federal Register for discussion of this item.
	In addition, FHWA proposes to add a new Standard paragraph prohibiting other "alert" messages that are not related to traffic or travel conditions that are not otherwise permitted in P2. FHWA proposes this to emphasize that AMBER alert messages are a result of a statutory requirement and are the only "alert" exception to the statute that requires traffic control devices to be related to traffic control. FHWA also proposes to revise Support P4 to clarify examples of acceptable traffic safety campaign supporting and transportation-related messages.	See Preamble of Federal Register for discussion of this item.
	FHWA also proposes to add new Guidance and Standard paragraphs regarding the appropriate and allowable use of traffic safety campaign messages on CMS displays. FHWA proposes this new language to clarify that safety and transportation-related messages should be clear and direct, and meaningful to the road user on the roadway that the message is displayed.	Based on comments suggesting information related to traffic safety campaign messages all be located in one section, the Guidance and Standard paragraphs pertaining to traffic safety campaign messages on CMS displays are consolidated in new Section 2L.07 Traffic Safety Campaign Messages.
	FHWA recommends that messages with obscure meaning, references to popular culture, that are intended to be humorous, or otherwise use nonstandard syntax, not be displayed because they	See Preamble of Federal Register for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
296 cont'd	<p>can be misunderstood or understood only by a limited segment of road users and, therefore, degrade the overall effectiveness of the sign as an official traffic control device.</p> <p>FHWA proposes in the Standard that only traffic safety campaign messages that are part of an active, coordinated safety campaign that uses other media forms as its primary means of outreach be displayed on CMS. Based on the widely varying views that have been expressed on the topic of uses of CMS and message content, including the use of unconventional syntax and humor, FHWA requests that commenters provide sufficient detail and explanation of how their position would maintain the uniformity and effectiveness of CMS for their intended purpose of displaying real-time traffic regulatory, warning, or guidance information. FHWA requests that commenters address, in particular, the use of CMS for messages outside the scope of traffic-related messages, such as those that are intended only to modify driver behavior, the frequency and extent of use for this purpose, and its overall effect on the efficacy of traffic messages when displayed. Specific references should be made to the proposed MUTCD text and the explanation provided in this document. In addition, FHWA requests that commenters provide supporting objective and empirical data, such as those from human factors evaluations, engineering studies, and similar non-subjective assessments.</p>	See Preamble of Federal Register for discussion of this item.
	<p>FHWA also proposes Support, Standard, and Guidance statements regarding the use of messages related to homeland security and emergencies that affect traffic patterns, movement, or present other situations that are atypical. FHWA proposes these statements to provide provisions for messaging on CMS for such events while maintain the integrity of and respect for CMS as a traffic control device.</p>	The Support, Standard, and Guidance statements are adopted as proposed.
	<p>FHWA also proposes to add Guidance that safety campaigns using CMS should include coordinated enforcement efforts when penalties or enforcement warnings are part of the CMS message displayed to road users. FHWA proposes this to maintain the credibility of these signs and improve safety.</p>	The Guidance is adopted as proposed in Section 2L.07.
297	<p>In Section 2L.03 Legibility and Visibility of Changeable Message Signs, FHWA proposes to add a Guidance statement specifying that changeable message regulatory and warning signs displayed individually or as part of the legend of a larger sign should conform to the minimum size requirements as the static versions of those signs.</p>	The Guidance is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
297 cont'd	FHWA also proposes to add a Figure illustrating an example. FHWA proposes this change to ensure that all components of a sign legend's legibility are maintained for all road users.	The new figure is adopted as Figure 2L-1.
298	FHWA proposes to change the title of existing Section 2L.04 to "Design Characteristics of Messages," to describe better the content of the section.	The title of the section is changed as proposed.
	FHWA proposes to add a new Standard paragraph requiring portable CMS used as an arrow board with flashing or sequential display for a lane closure to conform with provisions in Section 6F.61. FHWA proposes this change for consistency of device operation used for the same application, because a CMS used in this manner is operating as an arrow board, which is allowed to have dynamic display.	The Standard is adopted as proposed and the section references updated.
	FHWA proposes to add a new Standard paragraph requiring all message displays on CMS, whether for regulatory, warning, or guidance information on traffic operations, or for other allowable message types as defined in the section, follow the same design and display principles found in the MUTCD used for other traffic control signs, except as provided elsewhere in this chapter. FHWA proposes this Standard to promote uniformity in the display of CMS and maintaining its effectiveness as a traffic control device.	The Standard is adopted as proposed with minor edits.
	FHWA also proposes to provide Guidance that warning beacons should not be used on CMS for the purpose of drawing attention to certain types of messages over others, but instead should be limited to those messages that are critical to real-time conditions on a more frequent basis. FHWA proposes this provision to ensure that CMS maintain the same level of respect of road users expected of all traffic control devices at all times, regardless of message being displayed.	New Guidance is adopted with revisions to clarify that CMS should be used predominately to display messages that are critical to real-time travel conditions.
	FHWA also proposes to revise Guidance P6 regarding CMS word message lettering heights to clarify what types of CMS the letter heights apply to, and to clarify that the provisions do not apply to blank-out signs.	The Guidance is revised as proposed, and an Option statement added to indicate a CMS used to display a conventional sign may use the character size of the conventional sign being replicated.
		Comments suggesting the width-to height ratio of sign characters should refer to NEMA standards and comments suggesting provisions for pixel pitch are out of scope of this rulemaking and will be considered in a future edition.
	FHWA also proposes to change existing Guidance P15 regarding legend color when there is a black background to a Standard for sign consistency since	The Guidance is changed to Standard as proposed, and based on comment, an exception added for CMS that use only yellow or amber LEDs to allow them to

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
298 cont'd	changeable message signs can accommodate multiple colors.	display a yellow or amber legend that does not match the background color used on a standard sign for that type of legend.
	FHWA also proposes to delete the last sentence of Support P17 regarding newer technologies of CMS and add reference to a new figure that provides a comparative example of the effects of varying pixel densities.	The Support is adopted as proposed.
	FHWA also proposes to revise Guidance P18 to recommend where an LED matrix is used to form the changeable legend, signs with pixel spacing greater than 20mm should display only word legends, and no symbols or route shields. FHWA proposes this change based on a review of manufacturer products and visual inspections of the appearance of legends on these types of signs, which indicate that these signs do not provide adequate resolution to display symbols with sufficient clarity for road user instant recognition and therefore should only be use for word messages.	The Guidance is adopted as proposed.
299	In Section 2L.05 Message Length and Units of Information, FHWA proposes to revise Standard P4 to clarify that when a CMS contains more than one message phase, each phase shall be communicated so that the road user may understand each phase by itself regardless of the sequence in which it is read, and the message shall have the same meaning regardless of the sequence it is read. FHWA proposes this change, because it is important that road users be able to understand the intent of the message if they can only read one of the phases or when the phases are read in different order.	The Standard is revised as proposed with a minor edit. Based on comments, an Option is added to allow variance from the Standard on centered legends on signs such as travel time or variable rate toll displays.
	FHWA proposes to delete Standard P5 since the text is already covered in Section 2L.04.	The Standard is deleted as proposed.
	FHWA proposes to change Guidance P8 to an Option to clarify that adding additional CMS is an option available to agencies for displaying longer messages that would require more than two phases, which is the most number of phases allowed on a CMS.	The Guidance is changed to Option as proposed.
	FHWA proposes to change and relocate Guidance P9 regarding abbreviations within a CMS message to a Standard. FHWA proposes this change because the provisions contained in the referenced Section are Standards.	The Guidance is changed to Standard as proposed.
	FHWA also proposes to add a Support paragraph that provides reference to two proposed new tables that list examples of message construction for CMS. FHWA proposes these tables to ensure that message	The Support is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
299 cont'd	recognition, comprehension, and effectiveness is maintained for all road users.	
300	FHWA proposes a new section numbered and titled, "Section 2L.06 Frequency of Display of Messages." In this new section, FHWA proposes Support and Guidance paragraphs to address the potential for habituation to changeable message signs due to excessive use for the display of messages that are not related to real-time traffic conditions.	Section 2L.06 is not adopted as proposed, because commenters suggested the information is already covered in other sections. Instead, the proposed Support statement is moved to Section 2L.01.
301	FHWA proposes a new Section 2L.07 titled, "Travel Time Messages." In this new Section, FHWA proposes a Guidance paragraph limiting the number of travel times displayed to one when destination and distance are used as the point of reference, also proposing an Option to display up to two travel times when reference-location-based exit numbering is used as the point of reference in place of destination and distance. FHWA proposes this new Section based on the established principles regarding informational load and the road user's ability to process information while operating a vehicle in traffic.	The new section (now Section 2L.06) is adopted as proposed with an additional Option to exclude distances to a destination when comparative travel time displays are based on different routes to the destination.
302	FHWA proposes a new section numbered and titled, "Section 2L.08 Traffic Safety Campaign Messages." In this new section, FHWA proposes Support, Guidance, and Standard paragraphs describing the display of traffic safety campaign messages as an ancillary use of CMS.	New Section is adopted as Section 2L.07 with revisions. Based on comments, this section consolidates all information related to traffic safety campaign messages in this Section. See Preamble of Federal Register for additional discussion of this item.
	FHWA proposes a Guidance paragraph recommending that traffic safety campaign messages be coordinated with the national safety campaigns on NHTSA's communications calendar.	The Guidance is adopted as proposed in new Section (now Section 2L.07).
	Lastly, FHWA proposes a Standard paragraph that requires traffic control messages to have primacy over traffic safety campaign messages. FHWA proposes this new Section to ensure that CMS be used only for their intended purpose and that traffic-related messages take precedence over other types of allowable messages.	The Standard is adopted as proposed with a minor edit in new Section (now Section 2L.07).
303	In Section 2L.09 (existing Section 2L.06) retitled, "Location of Permanent Changeable Message Signs," FHWA proposes to add a Support paragraph that provides reference to factors that should be considered when deciding on proposed locations for CMS. FHWA proposes this change as proper location of signs helps ensure that message recognition, comprehension, and sufficient reaction time is maintained for all road users.	This section (now Section 2L.08) is adopted as proposed with minor edits for clarity. The Section title is changed to "Permanently-Located Changeable Message-Signs."

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
304	<p>In Section 2M.02 Application of Recreational and Cultural Interest Area Signs, FHWA proposes to add a new Standard paragraph requiring that standard symbols prescribed outside of this section within the Manual that are used on a roadway outside of a recreational and cultural interest area shall use the design and size as prescribed. FHWA proposes this change to clarify existing standards that prohibit the use of alternative symbol signs. The legend and color of the sign shall be as prescribed for the standard symbol sign.</p> <p>In concert with that change, FHWA proposes to add a table, referenced in the Support statement, that indicates which symbols are for use only within recreational and cultural interest area facilities.</p>	<p>The proposed Standard is not adopted to retain consistency with provisions in Section 2A.09 that do not allow recreational and cultural interest area guide signs outside of recreational and cultural areas. As part of this change, the Option is revised accordingly.</p> <p>Table 2M-1 is adopted with revisions based on comments. Symbols in table 2M-1 have been removed or retained based on Traffic control Device Pooled Fund Study, "Comprehension and Legibility of Select Symbol signs Phase IV", Final Report (<a href="https://highways.dot.gov/research/publications/safety/FHWA-HRT-22-088">https://highways.dot.gov/research/publications/safety/FHWA-HRT-22-088</a>).</p>
305	<p>In Section 2M.04 General Design Requirements for Recreational and Cultural Interest Area Symbol Guide Signs, FHWA proposes to add two new Standard statements requiring that symbols contained in Chapters 2H and 2I used in conjunction with recreational and cultural interest area signing on roadways outside a recreational and cultural interest facility shall have the legend and background color of the symbol sign as prescribed in those respective chapters. FHWA proposes this change as a clarification that the standard colors for General Information and General Service signs are applicable even when located with a recreational or cultural interest area destination and that brown as a sign background color applies only to recreational and cultural interest destinations or activities.</p>	<p>The Standards are adopted as proposed, with references to Figure 2H-1 and Figure 2I-1 accordingly.</p> <p>In response to comments, an Option is added allowing General Information symbol signs and General Service symbol signs on roadways inside a recreational and cultural interest area to have a brown background.</p>
306	<p>In Section 2M.06 Use of Educational Plaques, FHWA proposes to delete the Guidance recommending that the educational plaque remain in place for at least 3 years after the initial installation. FHWA proposes this deletion to provide agencies with greater flexibility and for consistency with similar provisions elsewhere in the MUTCD.</p>	<p>The Guidance is deleted as proposed.</p>
307	<p>In Section 2M.07, retitled, "Use of Prohibitive Circle and Diagonal for Non-Road Applications," FHWA proposes to revise Standard P1 to provide reference to the existing requirements of Chapter 2A to ensure consistency in sign design.</p>	<p>The Standard is revised to refer to the requirements of the Standard Highway Signs publication.</p>
308	<p>In Section 2M.08 Placement of Recreational and Cultural Interest Area Symbol Signs, FHWA proposes to delete Option P3 regarding the placement of the symbol on the Wildlife Viewing Area sign. FHWA</p>	<p>The Option is deleted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
308 cont'd	proposes this deletion to ensure consistency in sign designs.	
309	<p>In Section 2M.09 Destination Guide Signs, FHWA proposes to change the Guidance paragraph regarding the shape and colors of destination guide signs to a Standard and limit the shape of Supplemental Guide signs to rectangular with an Option to use a trapezoidal shape sign on conventional roadways.</p> <p>In concert with this change, FHWA also proposes to add a Standard describing the required shape of the trapezoidal sign when used with a directional arrow. FHWA proposes these changes to eliminate a conflict with existing standards that define the exclusive uses of sign shapes in Chapter 2A and does not result in a new requirement.</p>	<p>The Guidance is changed to Standard as proposed.</p> <p>The Standard is adopted as proposed.</p>
310	<p>In Section 2M.10 Memorial or Dedication Signing, FHWA proposes to delete the Option language related to the installation of memorial or dedication signing along the mainline if installation off the main roadway is not practical. FHWA proposes this change because an Option is not needed for deviation from a Guidance paragraph based on engineering judgment and the provisions for locating such signs on the highway are provided in the existing Standard provision.</p> <p>FHWA also proposes to revise and expand the existing Guidance statement and change an existing Option to Guidance regarding the design of memorial or dedication signs.</p> <p>FHWA also proposes to add a Guidance paragraph referencing Section 2A.03 for locating memorial or dedication signs to ensure adequate visibility of higher priority signs.</p> <p>Finally, FHWA proposes to add a new Standard prohibiting memorial or dedication signs from displaying a legend that implies that the highway has been officially renamed. FHWA proposes this change to ensure positive guidance, consistency, and minimization of confusion in the information displayed to road users along a particular route.</p>	<p>The Option is deleted as proposed.</p> <p>The existing Guidance is revised as proposed; however, based on comments, the proposed Guidance regarding letter height and oversized signs is removed and will be considered in a future edition. The Option is relocated and changed to Guidance, as proposed.</p> <p>The Guidance is adopted as proposed, with minor edits for consistency with Section 2A.20.</p> <p>The Standard is adopted as proposed.</p>
311	In Chapter 2N, retitled, "Emergency Management Signs," FHWA proposes to revise the designations of all standard signs to conform to the dual-numbering convention used throughout the rest of the MUTCD. For example, EM-1 would be redesignated EM1-1.	The revised name designations are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
311 cont'd	This change would result in each Section's title reflecting a revised sign numbering convention.	
312	<p>In Section 2N.02, retitled, "Design and Use of Emergency Management Signs," FHWA proposes to revise Standard P2 to clarify that signs normally in place that conflict with Emergency Management signs shall be removed or covered until such time as the Emergency Management signs are no longer necessary.</p> <p>FHWA proposes to expand the Standard to indicate that except for Evacuation Route signs, Emergency Management signs that are no longer necessitated by the emergency shall be promptly removed and signs that normally provide guidance, warning, or regulation that were removed or covered during the emergency shall be promptly displayed again. FHWA proposes these changes to provide clarity in the appropriate use of Emergency Management signs.</p> <p>FHWA also proposes to change Standard P3 to a Support statement regarding the Federal Government providing guidance to the States as necessitated by changing circumstances because it is outside the scope of the MUTCD to make such a requirement that does not involve traffic control devices.</p>	<p>In response to comments, the proposed language is changed to Guidance statement to allow flexibility for situations where limited resources cannot support a large number of signs being covered or removed at once, especially under temporary emergency conditions.</p> <p>In concert with the above change, this additional clarification language is changed to Guidance.</p> <p>The revision of the second portion of Standard P3 to a support statement is adopted as proposed.</p>
313	<p>In Section 2N.03, retitled, "Evacuation Route Signs (EM1 Series)," FHWA proposes to delete certain design information provided in Standard P1 because the design is standardized and must comply with the existing provisions of Chapter 2A.</p> <p>FHWA proposes to relocate Option text regarding Advance Turn and Directional Arrow auxiliary plaques to Standard P3. The new Standard text would require that Advance Turn and Directional Arrow auxiliary signs have a white arrow and border on a blue background when used with EM1-2 series signs to provide consistency with similar provisions of Chapter 2D, which requires the colors of auxiliary plaques to be consistent with the route sign in a directional assembly.</p> <p>FHWA also proposes to delete the Option permitting the use of an approved Emergency Management symbol near the bottom of an Evacuation Route sign because the Civil Defense pictograph is no longer used in emergency management applications.</p> <p>FHWA also proposes to change the Standard statement to a Guidance statement regarding placement of the Evacuation Route sign in advance of an approved evacuation route.</p>	<p>The revision is adopted as proposed, and for clarification, text is relocated to consolidate arrow standards on EM1-1 series signs in one location.</p> <p>The deletion of this Option is adopted as proposed.</p> <p>The change from Standard to Guidance is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
313 cont'd	Finally, FHWA proposes to add a Guidance statement recommending the use of the specific Evacuation Route (EM1–2 series) be limited to areas where different evacuation conditions use different evacuation routes to minimize unnecessary use of additional sign legends and associated auxiliary plaques instead of the general Evacuation Route (EM1–1) sign.	The addition of this Guidance is adopted as proposed.  In addition, the proposed Standard stating that EM1 series signs and plaques shall be retroreflective is removed since all signs are required to be retroreflective per Chapter 2A.
314	In Section 2N.04, retitled, “Area Closed Sign (EM2-1),” FHWA proposes to change the Standard to a Guidance to recommend, rather than require, the provisions related to AREA CLOSED sign placement, to provide agencies with flexibility.	The changes in Section 2N.04 are adopted as proposed.
315	In Section 2N.05, retitled, “Traffic Control Point Sign (EM2–2),” FHWA proposes to change the usage provisions of the first three paragraphs in the Standard statement to Guidance to provide agencies with greater flexibility.  FHWA also proposes to delete the Standard describing the design of the TRAFFIC CONTROL POINT sign, because the design is standardized.	The changes from Standard to Guidance are adopted as proposed.  This Standard is removed as proposed.  The proposed Standard stating that the “TRAFFIC CONTROL POINT sign shall be retroreflective” was removed since all signs are required to be retroreflective per Chapter 2A.
316	FHWA proposes to reorganize Part 3 to improve the continuity and flow of information regarding the application of markings in the MUTCD by relocating various paragraphs and sections throughout the part, dividing long sections into several sections each having a clearly understandable title and function, and creating a new Chapter 3C Crosswalks to compile information across multiple chapters into one location. The proposed reorganization is reflected in the descriptions below.	The reorganization of Part 3 is adopted as noted in the dispositions below.
317	In Section 3A.01 (existing Section 3A.02) Standardization of Application, FHWA proposes to relocate existing P2 to Part 1 to make this provision applicable to all traffic control devices. FHWA proposes this change because all traffic control devices, not just markings, should be in place prior to the opening of any new highway or private road open to public travel.	Existing P2 is relocated to Part 1 as proposed.
318	In Section 3A.02 (existing Section 3A.04) Materials, FHWA proposes changing existing P2 from Support to Option because the use of clumps or droplets of	Changing the existing Support in P2 of Section 3A.02 to Option is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
318 cont'd	<p>material is permissible, and the statement is more appropriate as an Option.</p> <p>FHWA also proposes to relocate existing P5 to Section 3G.04 (existing Section 3F.04) because it describes delineator placement.</p>	Existing P5 is moved to Section 3G.04 as proposed.
319	<p>In Section 3A.03 (existing Section 3A.05) Colors, FHWA proposes to clarify that the use of black markings is an Option that can be used to enhance the contrast of markings on a light-colored pavement.</p> <p>FHWA also proposes to relocate information regarding purple markings to Chapter 3F (existing Chapter 3E) Markings for Toll Plazas and Chapter 3H (existing Chapter 3G) Colored Pavement and retain a reference to those locations.</p> <p>In addition, FHWA proposes to change existing P7 from Option to Standard since markings that simulate official route signs, when used, shall have the same colors as those used for the signs. FHWA proposes this change to ensure uniformity in the application that aids in recognition of the message.</p>	<p>The use of black markings is clarified as an Option as proposed. FHWA recognizes the comments received regarding this option being relatively broad, and the request for additional research to determine effective patterns to enhance contrast and whether guidance is needed to establish when black markings to increase contrast should be used.</p> <p>FHWA received comments requesting green to be included in the first standard paragraph which lists the allowable colors for markings. Although green is an allowable color for colored pavement under the provisions of Chapter 3H, there is no other approved marking application for green and therefore green is not added to the standard paragraph. FHWA also received comments requesting the earth tone equivalent colors referenced in Section 3H.03 be included in the first standard paragraph. Again, these colors are only used as a colored pavement, specifically as an aesthetic surface treatment. It is not appropriate to add these colors to the standard in 3A.03.</p> <p>References to Chapter 3F and Chapter 3H with respect to purple markings is added as proposed, with minor edits for consistency and to distinguish between markings and colored pavements.</p> <p>Although not proposed in the NPA, item C is added to clearly state both right-hand and left-hand edge lines shall be white on a reversible roadway. This is not a new requirement, rather a clarification.</p> <p>Existing P7 is changed from Option to Standard as proposed.</p>
320	<p>In Section 3A.04 (existing Section 3A.06) Functions, Widths, and Patterns of Longitudinal Pavement Markings, FHWA proposes to add Item E to the list of general functions of longitudinal lines to clarify the functions of dotted lane lines and dotted lines used as a lane line or edge line extensions.</p> <p>In the list of widths and patterns of longitudinal lines, FHWA proposes to indicate that 6-inch-wide lines are</p>	<p>Item E under the general functions Standard in Section 3A.04 is adopted as proposed.</p> <p>See Preamble of Federal Register for discussion of this item.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
320 cont'd	<p>to be used for freeways, expressways, and ramps as well as for all other roadways with speed limits greater than 40 mph and that 4- to 6-inch-wide lines are to be used for all other roadways. FHWA proposes this change to improve visibility and consistency on “high speed” facilities and based on research showing improved machine vision detectability (<a href="https://s3.amazonaws.com/media.atssa.com/Communications/Booklet_2018PMForMV4vs6in_FinalReport.pdf">https://s3.amazonaws.com/media.atssa.com/Communications/Booklet_2018PMForMV4vs6in_FinalReport.pdf</a> and <a href="https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4004">https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4004</a>).</p> <p>FHWA also proposes to change the definition of a wide line to at least 8 inches in width if 4-inch or 5-inch normal lines are used, and at least 10 inches in width if 6-inch normal lines are used. This change is proposed to clarify the definition based on varying practices for “normal” width lines and to reduce the impact on agencies that use 6-inch lines as their “normal” width.</p> <p>Also, FHWA proposes to expand the definition for a double line to clarify that the pavement surface must be visible between the lines except when contrast markings are used based on FHWA’s Official Ruling No. 3(09)-41(I).</p> <p>In addition, FHWA proposes to add a new Guidance statement regarding the width of the discernible space separating the parallel lines of a double line so that they can be recognized as a double line rather than two, separate disassociated single lines.</p>	<p>See Preamble of Federal Register for discussion of this item.</p> <p>Changing item C under the widths and patterns Standard in Section 3A.04 is adopted as proposed.</p> <p>See Preamble of Federal Register for discussion of this item.</p>
N/A (Sec. 3A.05)	Section 3A.05, Maintaining Minimum Pavement Marking Retroreflectivity, was reserved in the NPA for future content based on an ongoing FHWA rulemaking.	See Preamble of Federal Register for discussion of this item.
321	In Section 3B.01, retitled, “Yellow Center Line Pavement Markings,” FHWA proposes revising P6 to specify that reversible lanes and two-way left turn lanes are exceptions to the requirement for two normal solid yellow lines for undivided roadways with four or more lanes. The proposed provisions explicitly state exceptions that are currently implied in existing Section 3B.03.	<p>Reversible lanes and two-way left turn lanes are specified as exceptions in P6 in Section 3B.01 as proposed.</p> <p>A Guidance statement is added in the final rule to provide a cross reference to 3B.11 for application of pavement markings through intersections or interchanges.</p>
322	FHWA proposes a new section numbered and titled, “Section 3B.02 Warrants for Yellow Center Lines” comprised of existing P9 through P13 from existing Section 3B.01. FHWA proposes this change to make it easier to locate the warrant information.	New Section 3B.02 Warrants for Yellow Center Lines is adopted as proposed with a clarification that the Standard applies to undivided two-way roadways.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
323	<p>In Section 3B.03 (existing Section 3B.02), retitled, “No-Passing Zone Pavement Markings,” FHWA proposes to change the second and third sentences in existing P4 from Standard to Support because they contain design information and not traffic control device requirements and are supported by an NCHRP research report (<a href="http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_605.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_605.pdf</a>).</p> <p>FHWA also proposes to change existing P9 from Option to Support because no-passing zone signing information is contained in Part 2.</p> <p>In addition, FHWA proposes deleting existing P14–P16 since they are redundant with existing provisions contained in Section 3B.12 (existing Section 3B.09).</p>	<p>Changing the second and third sentences in P4 of Section 3B.03 from Standard to Support is adopted as proposed.</p> <p>Changing existing P9 of Section 3B.03 from Option to Support is adopted as proposed.</p> <p>Existing P14 through P16 in Section 3B.03 are deleted as proposed.</p> <p>In response to comments, Item D is added to Standard P2 in the final rule to indicate that no-passing zone markings are to be used on approaches to crosswalks.</p>
324	<p>FHWA proposes to separate existing Section 3B.03 into two new sections, titled, “Section 3B.04 Yellow Pavement Markings for Reversible Lanes” and “Section 3J.03 Islands Designated by Pavement Markings” to separate the content for islands into the chapter devoted to marking and delineation of islands.</p>	<p>Existing Section 3B.03 is separated into two new sections as proposed.</p>
325	<p>FHWA proposes a new section numbered and titled, “Section 3B.05 Pavement Markings for Two-Way Left-Turn Lanes” containing P3 through P5 from existing Section 3B.03 and P28 through P30 from existing Section 3B.20.</p> <p>FHWA also proposes to add a new Guidance paragraph to discourage extending two-way left-turn lane markings to intersections and proposes to add a Support statement indicating that two-way left turn lanes can be transitioned to exclusive left turn lanes.</p> <p>FHWA proposes to modify Figure 3B–7 to correspond to the new recommendations. FHWA proposes this change to improve intersection safety by minimizing conflict between corresponding left-turn movements.</p>	<p>New Section 3B.05 Pavement Markings for Two-Way Left-Turn Lanes is adopted as proposed.</p> <p>The Guidance paragraph is adopted as proposed, adding a reference to the MUTCD definition of intersection. The proposed Support paragraph is adopted as an Option in the final rule for more clarity.</p> <p>Figure 3B-7 is adopted with minor revisions.</p>
326	<p>In Section 3B.06 (existing Section 3B.04), retitled, “White Lane Line Pavement Markings,” FHWA proposes to expand existing P25 by changing existing P26 from Option to Guidance to recommend, rather than just allow, solid white lane lines on approaches to intersections to separate adjacent mandatory turn lanes, and to add a recommended use of solid white lane lines at toll collection points to separate toll lanes, payment methods, channelized movements, or obstructions.</p>	<p>Changing P26 in existing Section 3B.04 from Option to Guidance is adopted in Section 3B.06 as proposed. In addition, Guidance regarding solid line markings at toll collection points is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
326 cont'd	<p>FHWA also proposes to add an Option paragraph allowing solid white lane lines to separate contiguous through traffic lanes on an approach to an intersection, to separate through traffic lanes from auxiliary lanes, and on approaches to crosswalks across multilane roadways, reflecting a common current practice.</p> <p>In addition, FHWA proposes to add new Option and Support paragraphs for providing curved transitions where an edge line, channelizing line, or dotted extension line changes direction. FHWA proposes this change based on the recognition that many agencies currently use curved, rather than angular, transitions for changes in direction.</p>	<p>Options in Section 3B.06 for solid lane line markings are adopted as proposed.</p> <p>Options in Section 3B.06 for curved transitions are adopted as proposed.</p>
327	<p>FHWA proposes a new section numbered and titled, "Section 3B.07 White Lane Line Markings for Non-Continuing Lanes" consisting of P6–P19, and P23 of existing Section 3B.04.</p> <p>FHWA proposes to revise existing Standard P13 to add a new Item C requiring a wide dotted white lane line in advance of freeway route splits with an option lane. FHWA proposes this change to provide consistency with existing requirements for similar situations in which traffic in one of the lanes must depart from the main route.</p> <p>In concert with this change, FHWA proposes to add Drawing E showing an example of a route split with option lane to Figure 3B–10 Examples of Applications of Freeway and Expressway Lane-Drop Markings.</p> <p>FHWA also proposes to change two Options to Standards requiring dotted white line extensions for deceleration lanes at exit ramps and for acceleration lanes at entrance ramps based on recommendations from the National Committee on Uniform Traffic Control Devices' (NCUTCD) CAV Task Force and NCHRP 20–102(06) (<a href="https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4004">https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4004</a>).</p>	<p>New Section 3B.07 White Lane Line Markings for Non-Continuing Lanes is adopted with a few revisions.</p> <p>Item C under the wide dotted white lane line Standard in Section 3B.07 is adopted as proposed.</p> <p>The figure is adopted as Figure 3B-11, and Drawing E is adopted with revisions. The additional sheets in the figure are adopted with revisions for consistency with the provisions.</p> <p>Changing the Option in Section 3B.07 pertaining to dotted white line extensions for deceleration lanes to Standard is adopted as proposed. Duplicate text is removed in the final rule. However, changing the Option in Section 3B.07, pertaining to dotted white line extensions for acceleration lanes, to Standard is not adopted, and is retained as an Option. Comments were received related to the potential for drivers not to merge due to the white line extensions, and additional research is required.</p>
328	<p>In Section 3B.08 (existing Section 3B.05), retitled, "Channelizing Lines," FHWA proposes to change existing P2 from Option to Support because the information about channelizing lines provides general information and does not provide an option.</p> <p>FHWA also proposes to add two new Standard paragraphs requiring channelizing lines on both sides of the neutral area for bifurcations created from open-road tolling lanes that bypass a conventional toll plaza and on both sides of the neutral area formed at</p>	<p>Changing existing P2 from Option to Support is adopted as proposed.</p> <p>Standards in Section 3B.08 pertaining to channelizing lines are adopted with minor editorial changes.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
328 cont'd	<p>access and egress points to and from a managed-lane facility. FHWA proposes this change to guide road users around the neutral area either to general purpose lanes or the tolling and/or managed lanes.</p> <p>In addition, FHWA also proposes to modify existing P3 to change “channelizing lines” to “neutral area” regarding the requirement that other markings in the area be white.</p> <p>In addition, FHWA proposes new Support listing chevron markings, retroreflective raised pavement markers, and internally illuminated raised pavement markers as items within the neutral area, with section references.</p>	<p>Changing existing P3 from “channelizing lines” to “neutral area” is adopted as proposed.</p> <p>Support in Section 3B.08 is adopted as proposed.</p>
329	<p>In Section 3B.09 (existing Section 3B.06), FHWA proposes to add a Guidance recommending that edge lines on two-lane roadways should be at least 6 inches wide, regardless of the width of the normal line used on the roadway.</p> <p>FHWA proposes to modify existing P2 from Standard to Guidance to recommend against, instead of prohibiting, the use of edge line markings through intersections or major driveways. FHWA proposes this change to provide additional practitioner flexibility.</p> <p>FHWA also proposes to add exceptions for dotted edge line extensions and the part of the intersection with no intersection approach (such as the top of a T-intersection) since these are locations where edge lines are commonly used in practice.</p>	<p>In response to comments, a review of the relevant research, and the potential impacts of the recent final rule related to maintenance of pavement marking retroreflectivity, the proposed Guidance in Section 3B.09 is revised as Support. The final rule includes further reorganization of Section 3B.09 and relocates and revises a proposed Support statement from 3A.04 to 3B.09 to further document the safety benefits associated with wider edge lines.</p> <p>Changing existing P2 in Section 3B.09 from Standard to Guidance is adopted as proposed.</p> <p>Exceptions to Guidance in Section 3B.09 are adopted as proposed.</p> <p>The Support statement regarding the visual references that edge line markings provide during adverse weather and visibility conditions is reinstated in the final rule, based on comments suggesting the importance to retain the language from the 2009 Edition.</p>
330	<p>In Section 3B.11 (existing Section 3B.08), retitled, “Application of Pavement Markings Through Intersections or Interchanges,” FHWA proposes to change part of P1 requiring that pavement markings extended into or continued through an intersection or interchange be the same width from Standard to Guidance. FHWA proposes this change because the combination of the provision with the existing Option in P2 is more appropriate as Guidance and the</p>	<p>Changing a portion of P1 in Section 3B.11 from Standard to Guidance is adopted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
330 cont'd	application can be determined using engineering judgment.	
	FHWA also proposes to relocate to this section an existing Standard requiring that extensions of center lines through intersections, if used, shall be dotted lines. This Standard is an existing requirement contained only in a Note on existing Figure 3B–13 (D) Examples of Lane Extensions through Intersections. This Note is proposed for deletion from the figure to avoid duplication.	The Standard requiring that extension lines through intersections be dotted lines is relocated to Section 3B.11 as proposed.
	FHWA proposes to relocate P2 from Section 3B.09 (existing Section 3B.06) and change from Standard to Guidance for restricting the use of edge line extensions through intersections.	Changing P2 from Section 3B.06 from Standard to Guidance and relocating to Section 3B.11 is adopted as proposed.
	FHWA also proposes to relocate and revise P5 from Section 3B.09 (existing Section 3B.06) for maintaining edge lines at driveways that do not meet the definition of an intersection. FHWA proposes the relocations to consolidate provisions regarding markings through intersections.	P5 from Section 3B.06 is relocated to Section 3B.11 as proposed.
	Also, FHWA proposes to modify Standard P6 to provide an exception to allow solid lines to extend edge lines through intersections or major driveway when there is no intersecting approach. FHWA proposes this change based on feedback from designers so markings will send intended effect and not communicate a conflict where none exists, and to provide additional user flexibility for situations like the top of a T-intersection when the prohibition of solid lines through the intersection is not applicable.	Standard P6 is adopted with an edit to provide an exception for solid lines to extend edge lines through intersections where there is no intersecting approach, such as at the far side of a T-intersection.
	In addition, FHWA proposes to add a new Guidance paragraph recommending that solid lines not be used to extend edge lines into or through intersections or major driveways except through that part of the intersection with no intersecting approach (such as at the top of a T-intersection). FHWA proposes this change to provide drivers a visual cue of side street traffic.	The proposed new paragraph is adopted as a Standard, with an exception incorporated into it, as discussed in the previous disposition.
	Further, FHWA proposes to delete existing Guidance P8 because the information is related to design and not traffic control device uniformity.	To reduce potential confusion with merging vehicles, an Option is added in the final rule to allow dotted edge line extensions through intersections.
		Guidance P8 is deleted as proposed.
331	In Section 3B.12 (existing Section 3B.09), retitled, “Lane-Reduction Transitions,” FHWA proposes to revise the Standard P3 to state the criteria for lane-reduction transitions more clearly, rather than referring to the Figure, which contains elements that are required, recommended, and optional.	The revised Standard is adopted as proposed in Section 3B.12 to clearly state the criteria for lane-reduction transitions.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
331 cont'd	FHWA also proposes to add a new Guidance paragraph and list for recommended markings for lane-reduction transitions, comprising information throughout the Section and contained in existing Figure 3B-14.	Guidance for lane-reduction transitions is adopted with minor editorial revisions.
	FHWA also proposes to delete all the notes in Figure 3B-14 and retitle it to "Examples of Applications of Lane Reduction Transitions."	Notes are deleted from Figure 3B-14 with the exception of the definition of "L" as the length of taper in feet, "W" as the offset in feet, and "AP" as the advance placement distance, and the title is revised as proposed. A note referencing Section 2C.47 for information about the signs shown in the figure was added.
	In addition, FHWA proposes to add a new Option paragraph permitting the minimum taper length to be less than 100 feet on roadways where operating speed is less than 25 mph based on common practice and to provide practitioner flexibility on low-speed roadways.	Option is adopted as proposed.  An additional Option is adopted which allows the use of a dotted white line between the point the broken white lane line is terminated to the point where the transition taper begins.
332	In Section 3B.13 (existing Section 3B.10), Approach Markings for Obstructions, FHWA proposes to add a new Option paragraph allowing the minimum taper length to be less than 100 feet on site roadways open to public travel where the operating speed is less than 25 mph based on engineering judgment to provide practitioner flexibility on low-speed roadways.	Option in Section 3B.13 is adopted as proposed
333	In Section 3B.17 (existing Section 3B.14) Raised Pavement Markers Substituting for Pavement Markings, FHWA proposes to upgrade existing Guidance P8 from existing Section 3B.11 to a Standard and relocate it to Section 3B.17, to require that non-retroreflective raised pavement markers shall not be used alone, without supplemental retroreflective or internally illuminated markers, as a substitute for other types of pavement markings due to lack of retroreflectivity and difficulty for machine vision systems.	Changing Guidance P8 in Section 3B.11 to a Standard in Section 3B.17 is adopted as proposed. In response to comments, a Support paragraph is added referencing Section 6J.03 for additional information regarding flexible temporary pavement markers used during surface treatment pavement operations.
334	FHWA proposes to delete existing Section 3B.15 Transverse Markings because transverse markings are already defined in Part 1 and the section does not provide information related to the application or operation of traffic control devices.	Existing Section 3B.15 is deleted as proposed.
335	In Section 3B.18 (existing Section 3B.23), retitled, "Curb Markings for Parking Regulations," FHWA proposes to change P2 related to curb markings for parking regulations from Standard to Guidance to allow engineering judgment to determine if signs should be provided based on site conditions.	Changing P2 in Section 3B.18 from Standard to Guidance is adopted as proposed.
	FHWA also proposes to change P6 from Support to Guidance because yellow and white curb markings	Changing P6 from Support to Guidance is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
335 cont'd	used frequently for curb delineation and visibility of parking regulations should be established through the installation of standard signs and the provision is more appropriate as a recommendation.	
336	In Section 3B.19 (existing Section 3B.16), Stop and Yield Lines, FHWA proposes to change existing P3 from Option to Standard to require, rather than just allow, a Yield (R1–2) sign, Yield Here to Pedestrians (R1–5 or R1–5a), or Bikes Yield to Pedestrians (R9-6) sign, or some other traffic control device that requires vehicles to Yield when installing a yield line. This change clarifies ambiguity in the previous Option statement that the pavement marking cannot be installed without an enforceable regulatory sign.	<p>Changing Option P3 to Standard in Section 3B.19 is adopted with editorial revisions.</p> <p>In the redlined NPA document, the existing Guidance regarding the location of a yield (stop) line at multi-lane uncontrolled approaches being located 20-50 feet in advance of the crosswalk was proposed to be changed to a Standard. FHWA received a number of comments to retain this provision as Guidance to allow for increased flexibility on the marking position based on site-specific conditions, including sight distance to further protect against the “multiple-threat” scenario on multi-lane approaches. FHWA agrees with the comments and retains this provision as Guidance in the final rule.</p>
	FHWA also proposes a new Support paragraph to provide a reference to Section 9B.12 regarding a sign signing applicable to bicycles also subject to a yielding requirement at a crosswalk.	<p>Support paragraph is adopted as proposed.</p> <p>In response to comments, an option was added to allow the use of a Bicycles Yield to Pedestrians (R9-6) sign if a yield line is used on a bicycle facility.</p>
337	In Section 3B.20, retitled, “Word, Symbol, and Arrow Pavement Markings—General,” FHWA proposes to add a new Option paragraph allowing pavement words, symbols, and arrows to be reduced in size no less than 1/4 size, but in relative proportion to the associated full-size word, symbol, or arrow on roadways where the operating speed is less than 25 mph to provide practitioner flexibility on low-speed roadways.	<p>FHWA proposed to delete Support paragraph P1 in Section 3B.20. In response to comments, the Support is retained from the 2009 MUTCD.</p> <p>The Option is adopted with edits for clarity.</p>
	FHWA also proposes to delete existing Standard P3 because it not needed to explain that word, symbol, and arrow markings shall be white, except as otherwise provided.	<p>The Standard is retained in the final rule in response to comments.</p> <p>The NPA proposed to delete the list of word, symbol, and arrow markings that may be used, and the deletion of this list is adopted because it does not contain all markings that may be used.</p>
338	In new Section 3B.21 titled, “Word Pavement Markings” that is comprised of P5, P7, P14, P15, P26, P32, and P33 from existing Section 3B.20, FHWA proposes to delete the existing Standard P14 that allows the word STOP to be used in conjunction with a stop line but does not require a STOP sign. FHWA proposes this change because the MUTCD explicitly does not apply to driving aisles within parking areas	Standard in Section 3B.21 is deleted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
338 cont'd	<p>per Section 1A, and a STOP sign is required with a stop line for all situations that are covered by the MUTCD.</p> <p>Also, FHWA proposes to revise existing Guidance P5 to note that the bicycle detector symbol is not intended to be 6 feet or more in height.</p> <p>In addition, FHWA proposes to delete the second sentence of existing paragraph 26 since this is related to traffic control design and not uniformity of the application.</p> <p>FHWA also proposes to add a new Option paragraph allowing the ONLY word marking to be used or to supplement a preferential lane word or symbol marking based on common practices.</p>	<p>Revised Guidance P5 is adopted with additional revisions in response to comments to clarify the heights of BIKE LANE word pavement markings and WAIT HERE FOR GREEN word markings for bicycle lanes.</p> <p>The second sentence of existing P26 is deleted as proposed.</p> <p>The Option paragraph is adopted as proposed and an additional paragraph is added in the final rule to allow word markings to be proportionally reduced by 25 percent on roadways where the operating speed is less than 25 mph.</p>
339	<p>In new Section 3B.22 titled, "Symbol Pavement Markings" that is comprised of P12, P16, P17, P18, and P19 from existing Section 3B.20, FHWA proposes two Guidance statements related to the use of route shield markings in option lanes based on a TTI study (<a href="https://static.tti.tamu.edu/tti.tamu.edu/documents/0-5890-1.pdf">https://static.tti.tamu.edu/tti.tamu.edu/documents/0-5890-1.pdf</a>).</p> <p>FHWA also proposes to add a new Option paragraph allowing the use of a pedestrian symbol pavement marking that may be used on portions of facilities such as shared-use paths that are reserved exclusively for pedestrian use.</p>	<p>Guidance statements in Section 3B.22 are adopted with minor edits.</p> <p>The Option statement is adopted with clarifications in response to comments. The symbol should not be used on the roadway or shoulder, and instead at locations where shared facilities transition to separate facilities for different types of users.</p>
N/A (Sec. 3B.23)	<p>New Section 3B.23 Lane-Use Arrows, containing paragraphs from existing Section 3B.20. (not discussed in the NPA Preamble)</p>	<p>The new Section is adopted as proposed, except that the proposed removal of a portion of Guidance P1 regarding the use of engineering judgement to determine locations where the use of lane-use arrow markings could be excluded due to physical constraints or the presence of other markings is not adopted. Due to comments suggesting potential cost implications, this phrase is retained.</p>
340	<p>In Section 3B.25 (existing Section 3B.24), retitled, "Chevron and Diagonal Markings," FHWA proposes to delete the term "crosshatch" and instead just use the words "chevron" and "diagonal" to describe the marking better and provide more situations where each can be used.</p> <p>FHWA also proposes to change the existing Option paragraph into separate Guidance paragraphs for chevron and diagonal markings to recommend the intended applications for each. FHWA based this on the NCUTCD CAV Task Force and Automated</p>	<p>The term "crosshatch" in Section 3B.25 is removed as proposed, with the terms "chevron" or "diagonal" used instead. The final rule includes several edits suggested by commenters that clarify the use of chevron and diagonal markings.</p> <p>In response to comments, changing the Option to Guidance is not adopted and the Option is retained in the final rule.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
340 cont'd	<p>Driving Systems Task Force joint recommendations that were approved by the Markings Technical Committee in June 2019.</p> <p>In addition, FHWA proposes to add a new Guidance paragraph recommending white markings for diagonal markings used in on-street no-parking zones and a new Option to allow lines used for diagonal markings in no-parking zones to be 4 inches wide.</p> <p>Further, FHWA proposes to modify a Guidance paragraph to recommend that the lines used for chevron and diagonal markings to be at least 4 inches wide on roadways where the operating speed is less than 25 mph to provide practitioner flexibility on low-speed roadways.</p>	<p>The proposed new Guidance is not adopted. Instead, the Standard requiring white is revised to specifically include no-parking zones. The proposed Option paragraph is adopted with edits to clarify that 4" wide diagonal markings may be used in no-parking zones or on roadways with operating speeds of less than 25 mph.</p> <p>The Guidance is adopted with revisions and the allowance for 4" wide markings is changed to an Option in response to comments.</p>
341	<p>In Section 3B.27 (existing Section 3B.19) Parking Space Markings, FHWA proposes to revise the Standard by adding the phrase "on-street" to describe the parking space markings that shall be white. FHWA proposes this change to clarify that off-street parking space markings, such as those used in shopping center parking lots, are not governed by the MUTCD as provided in Item C of Paragraph 3 in the existing Introduction.</p>	<p>The Standard is revised as proposed.</p>
342	<p>FHWA proposes to delete existing Section 3B.21 Speed Measurement Markings because they are not traffic control devices.</p> <p>In concert with this change, FHWA proposes to remove the optional speed measurement marking shown on Figure 3B-10, "Examples of Applications of Freeway and Expressway Lane-Drop Markings."</p>	<p>Section 3B.21 is deleted as proposed.</p> <p>Optional speed measurement marking in Figure 3B-10 is removed as proposed.</p>
343	<p>In Section 3B.28 (existing Section 3B.22) Speed Reduction Markings, FHWA proposes to change the second sentence in P3 from Standard to Guidance regarding longitudinal spacing between speed reduction markings. FHWA proposes this change to allow engineering judgment to determine the longitudinal pattern of the markings based on the site conditions.</p>	<p>Changing the second sentence in P3 of Section 3B.29 from Standard to Guidance is adopted as proposed, and in response to comments language that previously appeared in the Support P1 is changed to an Option in the final rule to clarify where speed reduction markings may be used.</p>
344	<p>In Section 3B.29 (existing Section 3B.25) Speed Hump Markings, FHWA proposes to add a new Option paragraph allowing discontinuing center line markings, lane line markings, and edge line markings on the profile of the speed hump.</p> <p>FHWA also proposes to add a new Standard paragraph requiring installing crosswalk markings when a speed hump specifically incorporates a</p>	<p>In response to comments, the Section title is changed to "Speed Hump and Speed Table Markings" in the final rule. The Option is adopted as proposed.</p> <p>The Standard is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
344 cont'd	crossing movement for pedestrians, bicycles, or equestrians.	
345	<p>FHWA proposes adding a new section numbered and titled, "Section 3B.31 Markings for Diamond Interchange with Transposed Alignment Crossroad" which contains Standards, Guidance, and Support for markings used at these types of interchanges. FHWA proposes to add this information based on an FHWA research study (<a href="http://www.fhwa.dot.gov/publications/research/safety/09060/">http://www.fhwa.dot.gov/publications/research/safety/09060/</a>) that has shown that there is potential for wrong-way movements, especially at the crossing points, at these unconventional interchanges. The new information contains proposed Standards for edge lines, lane use arrows, and wrong-way arrows as well as a restriction for flush median islands. The section also contains proposed Guidance recommending edge and lane line extensions through the crossing points and a Support paragraph referencing crosswalk and pedestrian movement information in Section 3C.11 and 9G.05.</p> <p>FHWA also proposes to add Figure 3B–29 to illustrate an example of markings at this type of interchange.</p>	<p>New Section 3B.31 is adopted with edits, revising terminology for consistency with other provisions, and the section title is revised to "Markings for a Diamond Interchange with a Transposed-Alignment Crossroad" in the final rule.</p> <p>Figure 3B-29 is adopted.</p>
346	<p>In Section 3C.01 (existing Section 3B.18), retitled, "General," FHWA proposes to change a Support statement to a Standard paragraph requiring crosswalk markings at non-intersection crossing locations to improve safety for pedestrians at locations where vehicles may not expect pedestrian crossings.</p> <p>The previous Support required crosswalk markings to mark the crosswalk legally at non-intersection locations. FHWA proposes to revise this Support into a Standard to identify clearly the requirements of crosswalk markings at non-intersection locations.</p> <p>FHWA also proposes to add a new Standard paragraph requiring that paving materials used to function as transverse lines to establish a marked crosswalk shall be white and retroreflective.</p> <p>FHWA also proposes that the paving materials be required to use a white additive in the mixture to produce a white surface. FHWA proposes this change to improve target value and visibility of the crosswalk for pedestrian safety and to fulfill the retroreflectivity requirement for traffic control devices, when paving materials, instead of pavement markings, are used to define the marked crosswalk.</p>	<p>Changing of Support in Section 3C.01 to Standard is adopted with revision and moved to 3C.02 to provide additional context and clarification based on comments received. In addition, the existing Support statement is retained as it offers separate context.</p> <p>The proposed Standard is adopted, however as this standard is specific to the design of crosswalks and not general information it is relocated to new Section 3C.03.</p> <p>A new Support statement was also proposed to provide cross reference to proposed Section 3H.03 for provisions relating to aesthetic treatments for the interior portion of a legally established crosswalk. The Support statement is adopted as proposed, however as it relates to the design of a crosswalk and not general information it is relocated to new Section 3C.03.</p>
347	FHWA proposes to add a new section numbered and titled, "Section 3C.02 Applications of Crosswalk	See Preamble of Federal Register for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
347 cont'd	<p>Markings,” containing P7–P10 of existing Section 3B.18.</p> <p>FHWA proposes to modify Guidance P8 regarding criteria for engineering studies for crosswalk across uncontrolled roadways to include pedestrian ages, and to change “posted or statutory speed limit” to “speed limit or the 85th-percentile speed.”</p> <p>FHWA also proposes to revise Guidance P9 to discourage the installation of crosswalks across uncontrolled roadways at locations with posted speed limits 40 mph or greater and locations where there is a crash threat due to multiple lane crossings or limited sight distance. FHWA proposes this change to reduce pedestrian crash potential and based on an FHWA study (<a href="https://www.fhwa.dot.gov/publications/research/safety/04100/">https://www.fhwa.dot.gov/publications/research/safety/04100/</a>).</p>	
348	<p>FHWA proposes to add a new section numbered and titled, “Section 3C.03 Design of Crosswalk Markings,” containing P4, P11, P12, and P17 of existing Section 3B.18. FHWA also proposes to add new Standard paragraphs requiring a minimum width of 6 feet for marked crosswalks and a minimum width of 8 feet for crosswalks at non-intersections and where the posted speed limit is 40 mph or greater. FHWA proposes this change to improve the visibility and recognition of pedestrian crosswalks.</p> <p>FHWA also proposes to modify Guidance P11 to recommend using high-visibility crosswalk markings at marked crosswalks at non-intersection locations to reduce pedestrian crash potential.</p> <p>FHWA further proposes to reduce the second Guidance sentence in P11 to an Option regarding improving visibility by parking prohibitions on the approach to marked crosswalks.</p> <p>In addition, FHWA proposes changing P17 from a Guidance to Standard requiring, rather than recommending, crosswalk markings to be located so that the curb ramps are within the extension of the crosswalk markings, where curb ramps are provided. FHWA proposes this change to accommodate users with visual disabilities better.</p> <p>Lastly, FHWA proposes to add a new Guidance paragraph recommending that transverse crosswalk markings extend the full width of the pavement or edge of intersecting crosswalk to discourage diagonal crossing between crosswalks.</p>	<p>New Section 3C.03 Design of Crosswalk Markings with information from existing Section 3B.18 and a new Standard is adopted as proposed.</p> <p>Guidance P11 is modified as proposed.</p> <p>In response to comments, the proposal to change the Guidance regarding improving visibility by parking prohibitions on the approach to marked crosswalks to Option is not adopted because the parking prohibition is a safety benefit for vulnerable users of the crosswalk.</p> <p>The proposal to change the Guidance regarding curb ramps being located within the extension of the crosswalk markings to Standard is adopted as proposed.</p> <p>Guidance regarding transverse crosswalk markings is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
348 cont'd	FHWA proposes these changes to provide consistency in crosswalk applications.	In addition, the Support and Standard paragraphs proposed in Section 3C.01 containing provisions for aesthetic treatments and paving materials used to function as the transverse lines are adopted as proposed and moved to 3C.03 as they pertain to the design of crosswalks.
349	FHWA proposes to add a new section numbered and titled, "Section 3C.04 Basic Crosswalks," with new Support and Option paragraphs to provide information about basic crosswalks, which are comprised of two parallel transverse lines.	New Section 3C.04 is adopted with edits. The title is revised to "Section 3C.04 Transverse Line Crosswalks" in response to comment. The proposed Option is changed to Support, similar to Section 3C.05 Support, and mention of an engineering study is removed, since this is covered in Section 3C.02. In the final rule, Guidance is added to recommend transverse line crosswalk markings be limited to locations controlled by traffic control signals or on approaches controlled by STOP or YIELD signs. This change is adopted due to the effectiveness of high visibility crossings and the importance of pedestrian safety.
	FHWA also proposes to provide a new Figure 3C-1 illustrating basic crosswalks.	New Figure 3C-1 is adopted with minor edits for consistency.
350	FHWA proposes to add a new section numbered and titled, "Section 3C.05 High-Visibility Crosswalks," to provide Support, Option, Standard, and Guidance paragraphs about the various types of high-visibility crosswalks including longitudinal bar, perpendicular, and double-paired designs. FHWA proposes this section to provide agencies with three standard alternatives to improve crosswalk visibility when desired consistent with an FHWA research study ( <a href="http://www.fhwa.dot.gov/publications/research/safety/pedbike/10068/index.cfm">http://www.fhwa.dot.gov/publications/research/safety/pedbike/10068/index.cfm</a> ).	New Section 3C.05 High-Visibility Crosswalks is adopted with several changes from the NPA. The Option to use high-visibility crosswalk markings where additional conspicuity is desired is adopted as proposed.
	FHWA also proposes to illustrate these crosswalk types in Figure 3C-2.	In the final rule, the proposed Standard regarding uniform dimensions of longitudinal elements and lateral spacing is changed to Guidance in response to comments and supplemented by an Option statement to provide greater flexibility in the placement of markings, such as to avoid wheel paths.
351	FHWA proposes to add new sections numbered and titled, "Section 3C.06 Longitudinal Bar Crosswalks," "Section 3C.07 Perpendicular Crosswalks," and "Section 3C.08 Longitudinal Bar Pair Crosswalks," to provide provisions related to the design and spacing for the three new types of high-visibility crosswalks.	New sections are adopted with some minor changes in response to comments. The title of Section 3C.07 is revised to "Ladder Crosswalks" and the title of Section 3C.08 is revised to "Bar Pair Crosswalks" to reflect current terminology.
352	FHWA proposes to create a new Section numbered and titled, "Section 3C.10 Crosswalks for Exclusive Pedestrian Phases that Permit Diagonal Crossings," for crosswalks for exclusive pedestrian phases that permit diagonal crossing, containing P16 of existing Section 3B.18.	New Section 3C.10 is adopted as proposed.
	FHWA also proposes to add a new Guidance paragraph recommending that the segments of the	The proposed Guidance is adopted as proposed.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
352 cont'd	crosswalk markings that facilitate the diagonal crossing should not use high visibility crosswalk markings since diagonal crossings are typically permitted only when all vehicular movements are stopped at a signalized intersection and because high-visibility diagonal markings through the intersection could be confusing to turning vehicles.	<p>Although comments were received requesting an option that the segments of the crosswalk markings which facilitate the diagonal crossing be allowed to use high visibility crosswalk markings, additional study is required to ensure safety or operational benefits would be provided without causing confusion or reducing the efficacy of crosswalk markings as a whole.</p> <p>Additionally, comments were received requesting an additional option to allow the diagonal markings across the full width of the intersection for low speed environments. Additional study is required prior to considering in a future rulemaking effort.</p>
353	<p>FHWA proposes to add a new section numbered and titled, "Section 3C.11 Crosswalks at Diamond Interchanges with a Transposed Alignment Crossroad" to provide Support, Guidance, and Option paragraphs regarding pedestrian movements through these unconventional interchanges. FHWA proposes this new section based on information contained in a research study (<a href="http://www.fhwa.dot.gov/publications/research/safety/09060/09060.pdf">http://www.fhwa.dot.gov/publications/research/safety/09060/09060.pdf</a>) that found that pedestrian movements require special considerations to avoid violating driver expectancy or disorienting pedestrians.</p> <p>FHWA proposes to add a new Figure 3C-3 to illustrate locations of pedestrian crossings at diamond interchanges with a transposed alignment crossroad.</p>	<p>New Section 3C.11 is adopted with changes in response to comments and titled, "Crosswalks at Diamond Interchanges with a Transposed-Alignment Crossroad." In addition to the previous research referenced in the NPA, NCHRP Research Report 959 was published. In concert with the renaming of the section, additional support was added to describe the conditions and considerations at a diverging diamond interchange. The proposed Guidance was refined in order to provide more specific traffic control device recommendations.</p> <p>Figure 3B-29 illustrates pedestrian crossings at diamond interchanges with a transposed-alignment crossroad.</p>
354	FHWA proposes to retitle Chapter 3D (existing Chapter 3C) to "Circular Intersection Markings" because the provisions apply to a variety of circular intersections, not just roundabouts.	The proposal to change the chapter title is adopted as proposed.
355	In Section 3D.01 (existing Section 3C.01) General, FHWA proposes to modify Guidance P3 to recommend that markings should supplement signs to help road users select the proper lane in the approach to the circular roadway to avoid changing lanes through the departure of the circular roadway based on an NCHRP Report ( <a href="http://www.trb.org/Publications/Blurbs/164470.aspx">http://www.trb.org/Publications/Blurbs/164470.aspx</a> ).	Changes to the Guidance are adopted as proposed.
356	In Section 3D.02 (existing Section 3C.02) White Lane Line Pavement Markings for Roundabouts, FHWA proposes two new Option paragraphs related to longer lane lines and striped buffer spaces to help vehicles navigate the roundabout.	The Option related to longer broken lane lines, consisting of 10 foot lines with a reduced gap down to 10 feet, is not adopted. Comments were received requesting an additional option for a broken line, consisting of 6 to 9 foot lines with 3 foot gaps. The requested option, which consists of lines longer than the gap, may be perceived by road users as a more restrictive pattern. Additional research is required.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
356 cont'd		The Option related to a striped buffer space is adopted with revision, as buffer spaces has a different meaning. For consistency the revised Option describes the use of channelizing lines and chevron and diagonal markings.
N/A (Sec. 3D.03)	Section 3D.03 Edge Line Pavement Markings for Roundabout Circulatory Roadways (existing Section 3C.03). (not discussed in NPA Preamble)	Comments were received requesting an Option to allow the use of a wide dotted white edge line extension 18-24 inches wide across the entry lane(s) to roundabouts. The provisions in Section 3A.04 relating to wide lines and dotted lines allow the requested dimensions, as well as other narrower widths and dotted line spacings. As this change to add an Option was not proposed in the NPA, adequate public comment may not have been received, and therefore no changes are adopted.
357	In Section 3D.04 (existing Section 3C.04) Yield Lines for Roundabouts, FHWA proposes to upgrade part of existing Option P1 to a Standard to require that a yield line be used on the entries before entering multi-line roundabouts. For single-lane roundabouts, the Option remains to allow a yield line on the entry before entering the roundabout.	Changing Option P1 to Standard is not adopted as proposed. Additional research is required as comments suggested the dotted edge line extension across the entry lane(s) provide the same benefits as a yield line.
358	FHWA proposes to add a new section numbered and titled, "Section 3D.06 Arrow Pavement Markings for Roundabouts" containing revisions to P1 and P4–P6 from existing Section 3C.06. FHWA proposes new Guidance paragraphs to recommend not using lane-use arrows on single-lane approaches to circular intersections.	New Section 3D.06 Arrow Pavement Markings for Roundabouts is adopted with changes as discussed herein.
	FHWA also proposes to add Guidance for two-lane approaches to circular intersections and for approaches with dual left or dual right turns. FHWA proposes these changes to improve consistency in the application of lane use arrows at circular intersections based on an NCHRP study ( <a href="http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_672.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_672.pdf</a> ).	In response to comments, guidance regarding two-lane approaches is not adopted as proposed, and instead relies on the information contained in Section 3B.23. Guidance for approaches with double left or right turns is adopted with a change in terminology from "dual" to "double."
	In addition, FHWA proposes to add a new Standard paragraph prohibiting lane-use arrow pavement markings between a crosswalk and wide dotted line(s) entering the circular roadway. FHWA proposes this change because road users need adequate advance notification of the permitted movements within each lane and this area of the approach is often obscured by stopped vehicles.	Standard is adopted as proposed.
	Further, FHWA proposes to change the Option P6 to Guidance to recommend, rather than just allow, lane use arrows on the roundabout approaches to match the type of arrows (normal or elongated) used on the corresponding regulatory lane-use signs, to improve	Guidance is adopted with minor editorial edits. FHWA proposed to change fish-hook to elongated in describing the optional arrow designs for use approaching roundabouts. FHWA instead adopts the term curved-stem arrow, as it is more descriptive of

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
358 cont'd	consistency between signing and markings for better driver comprehension.	the design, and is consistent with other Parts of the Manual.
359	FHWA proposes to revise the title of Chapter 3E (existing Chapter 3D) to "Preferential Lane Markings for Motor Vehicles" to exclude bicycles and move all bicycle lane information to Part 9.	Existing Chapter 3D is retitled Chapter 3E Preferential Lane Markings for Motor Vehicles.
360	In Section 3E.02 (existing Section 3D.02), retitled, "Longitudinal Markings," FHWA proposes to revise P3 to reference Table 3E-1 (existing Table 3D-1), create a new Table 3E-2 Standard Edge and Center Line Markings for Counter-Flow Preferential Lanes, revise P9 and P10 to reference new Table 3E-2, and remove redundant text. FHWA proposes to make these changes to clarify the preferential lane marking requirements and improve readability.	Existing Table 3D-1 is revised to be Table 3E-1 and new Table 3E-2 is adopted as proposed with the title Standard Edge Line and Center Line Markings for Counter-Flow Preferential Lanes on Divided Highways.
	FHWA also proposes to add a new Guidance paragraph recommending that buffer space for a conventional road should be designed so that it is not misinterpreted as a bicycle lane or other type of lane.	The Guidance regarding chevron spacing is removed in response to comments received. Guidance on chevron spacing may be found in Section 3B.25.
	In addition, FHWA proposes to add new Figure 3E-4 to illustrate an example of pavement markings used for counter-flow preferential lanes on divided highways.	Guidance is adopted as proposed.  In response to comments and for consistency with the Standard in Section 3B.07, the Guidance regarding the use of dotted white line markings to separate tapered or parallel deceleration lane from the adjacent continuing preferential through lane is changed from a Guidance to a Standard.
361	In Section 3E.03 (existing Section 3D.01) Preferential Lane Word and Symbol Markings, FHWA proposes to change existing P3 regarding preferential lane longitudinal markings, word, and symbol markings at the downstream end of the lane from Standard to Guidance to provide agencies the flexibility to determine the ideal location based on site conditions.	Figure 3E-4 is adopted as proposed.
	FHWA also proposes to revise Standard P6 and combine with P2 and remove Item C. Bicycle Lane since preferential lanes for bicycles are covered in Part 9 and no longer apply in this Chapter and Section.	Changing Standard to Guidance is adopted as proposed.  Standard P6 is combined with P2 as proposed, with item B separated into two items: item B. ETC Account-Only lane and item C. Price-managed lane. Although some comments requested bicycle lanes remain in this standard, other comments were received in support of the proposed change to move all bicycle lane information to Part 9, and the change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
361 cont'd	<p>FHWA also proposes to add BUS STOP and TAXI STAND as required word markings for their respective uses in preferential lanes based on common practices.</p> <p>In addition, FHWA proposes to change P7 regarding preferential lanes with two or more permitted uses in the same lane from Standard to Guidance to remove the requirement for providing both symbols or words and instead allow engineering judgment to prioritize and select either symbols or word markings, or both.</p> <p>Lastly, FHWA proposes new Standard and Support paragraphs restricting the use of word or symbol markings denoting motorcycle and Inherently Low Emission Vehicles (ILEV). FHWA proposes this change because motorcycle and ILEV vehicle use is communicated using regulatory signing to complement high occupancy vehicle regulations and simplifies enforcement functions.</p>	<p>The provisions on BUS STOP and TAXI STAND word markings are adopted as proposed.</p> <p>Changing Standard to Guidance is adopted as proposed, with edits for clarification consistent with the previous standard.</p> <p>In response to comments, an Option is added in the final rule to allow lane-use arrow markings to be placed on the curb lanes on approaches to intersection to signify non-preferential users can use the lane for turning movements. This is added since it may not be immediately clear to road users when the curb lane is converted from a general-purpose lane to a preferential lane.</p> <p>Standard and Support are adopted as proposed.</p>
362	<p>FHWA proposes to add a new section numbered and titled, "Section 3E.04 Markings for Part-Time Travel on a Shoulder" to provide Standard, Guidance, Option, and Support paragraphs for situations where shoulders are designated for use during peak hour conditions to increase roadway capacity. FHWA proposes this change based on a Transit Cooperative Research Program Report (<a href="http://www.trb.org/Publications/Blurbs/166878.aspx">http://www.trb.org/Publications/Blurbs/166878.aspx</a>) as well as to address increasing needs of agencies to add roadway capacity in constrained urban areas.</p> <p>FHWA also proposes to add a new Figures 3E-5 and 3E-6 to illustrate examples of markings for part time travel on a shoulder.</p>	<p>New Section 3E.04 Markings for Part-Time Travel on a Shoulder is adopted with revisions. The proposed Option which would have allowed a yield line pavement marking to be installed on the shoulder unaccompanied by a Yield sign where transit vehicles on the shoulder yield to traffic entering from an on-ramp is not adopted. The orientation of the dotted edge or extension line is intended to indicate whether traffic utilizing a part-time shoulder is required to yield to ramp and/or turning general purpose traffic.</p> <p>New Figures 3E-5 and 3E-6 are adopted with revisions. Additional displays are added to Figure 3E-5 in response to comment. Requested annotations on Figure 3E-5 of merge, diverge, and weave were not included, as general-purpose traffic and part-time travel on shoulder traffic will always weave, unless the part-time travel on shoulder traffic is required to merge back into the general purpose lanes prior to a ramp. Other revisions were completed for consistency with the provisions in Chapter 2G and Section 3E.04.</p>
363	<p>FHWA proposes to add a new section numbered and titled, "Section 3F.02 Longitudinal Markings"</p>	<p>New Section 3F.02 Longitudinal Markings with new Guidance is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
363 cont'd	<p>consisting of P5–P8 from existing Section 3E.01. In this section, FHWA proposes to add two new Guidance paragraphs recommending solid white lane line markings to separate toll lanes, payment methods, or to channelize movements at toll plazas and that the solid lines should begin at the upstream end of the full-width toll lane and continue to the toll plaza.</p> <p>In existing P6 from existing Section 3E.01, FHWA proposes to change part of the Standard paragraph for maximum widths of purple solid longitudinal markings to Guidance to provide additional practitioner flexibility.</p>	Changing a portion of existing P6 from Section 3E.01 from Standard to Guidance is adopted as proposed.
N/A (Sec. 3G.02)	Section 3G.02 Design (not discussed in the NPA Preamble)	In response to comments, a sentence is added to Standard P1 in the final rule that requires delineators to be mounted on crashworthy supports. This requirement is consistent with Part 6. Additional clarification is also added in the Standard P2 regarding the dimensions of the retroreflective element.
364	In Section 3G.03 (existing Section 3F.03), retitled, “Application,” FHWA proposes to add a new Guidance paragraph recommending using delineators of the appropriate color to indicate lane-reduction transitions where either an outside or inside lane merges into an adjacent lane. FHWA proposes this change to provide consistency in the application of delineators proposed in other Sections.	<p>New Guidance is adopted in Section 3G.03 Application as proposed.</p> <p>In response to comments, an additional Option is added to clarify the existing option to use Chevron Alignment (W1-8) signs instead of or in addition to delineators as provided in Section 2C.08.</p>
365	In Section 3H.01 (existing Section 3G.01), retitled, “Standardization of Application,” FHWA proposes to add two new Standard paragraphs limiting the use of colored pavement only where it supplements other markings and prohibiting colors other than those specified in Chapter 3H (existing Chapter 3G) Colored Pavement. FHWA proposes this change to improve upon the previously established widespread system of uniformity in the application of colored pavement.	<p>Section 3H.01 titled “Standardization of Application” is adopted with revisions in response to comments and for consistency throughout Chapter 3H. In response to comments, existing P2 from existing Section 3G.01 which was proposed to be relocated to Section 3H.03 with edits, is moved to Section 3H.01 as to not change the meaning of the existing paragraph. Standard P2 and P3 are edited to clarify the use of colored pavement as a traffic control device.</p> <p>See Preamble of Federal Register for additional discussion of this item.</p>
366	FHWA proposes to add a new section numbered and titled, “Section 3H.02 Materials” to add new Option, Standard, Guidance, and Support paragraphs related to retroreflectivity, minimizing the loss of traction, differentials in skid resistance, and abnormal wear in	See Preamble of Federal Register for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
366 cont'd	colored pavement. FHWA proposes this section to provide agencies with information to assist in the selection of appropriate colored pavement materials to improve road user safety.	
367	<p data-bbox="228 422 850 667">FHWA proposes to add a new section numbered and titled, "Section 3H.03 Aesthetic Treatments in Crosswalks," with P2 and P6 from existing Section 3G.01 and to add new Standard, Guidance, Option, and Support paragraphs describing appropriate use of aesthetic treatments within crosswalks and to provide examples of acceptable materials and patterns.</p> <p data-bbox="228 699 850 1119">FHWA also proposes to add a new Figure 3H-1 to illustrate examples of acceptable materials for interior portions of crosswalks. FHWA proposes these changes to reflect FHWA's Official Ruling No. 3(09)-24(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/3_09_24.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/3_09_24.htm</a>), which was issued in response to a trend by some agencies toward installing aesthetic treatments on roadway pavement that include bright colors, visually complex graphics, images, or words. FHWA believes that this proposed section is necessary because it is important that these treatments not resemble or interfere with the uniform appearance of traffic control devices, which could confuse and distract road users.</p> <p data-bbox="228 1150 850 1396">FHWA's longstanding position is that these treatments, which are intended to draw the attention of the road user, can distract from the task of operating a vehicle or crossing the roadway as a pedestrian, and that many of the goals of an agency installing these treatments can be accomplished through other means that do not alter or compromise the uniform appearance of traffic control devices.</p> <p data-bbox="228 1428 850 1581">Based on the varying views that the public has expressed on this topic, FHWA requests that commenters provide sufficient detail and explanation of how their position would maintain the uniformity and recognition of crosswalk markings.</p> <p data-bbox="228 1612 850 1885">Since these types of aesthetic treatments oftentimes are installed with the stated purpose of improving safety (in addition to establishing community identity or for "placemaking" purposes), FHWA requests comment on how allowing more intricate designs and bright colors around standardized crosswalk markings improves the safety or operations at and around the crosswalk, while maintaining the recognition of the crosswalk.</p> <p data-bbox="228 1917 850 1976">FHWA requests that commenters support their position by providing quantifiable and objective data,</p>	See Preamble of Federal Register for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
367 cont'd	such as from human factors evaluations, about the safety and operation of vehicular and street traffic, safety and navigation of pedestrians, any assessments of the effects of nonstandard designs on pedestrians with low visual acuity or other vision impairments, and the ability of machine vision of autonomous vehicles to detect accurately and react appropriately to the markings as a crosswalk or, if not installed with a crosswalk, other type of marking.	
368	<p>FHWA proposes to add a new section numbered and titled, "Section 3H.04 Yellow-Colored Pavement" to include Standard paragraphs limiting use of yellow-colored pavement to flush or raised median islands separating traffic flow in opposite directions, left-hand shoulders of divided highways, and left-hand shoulders of one-way streets or ramps.</p> <p>FHWA also proposes to add Standard paragraphs restricting yellow-colored pavement from being incorporated into reversible lanes, two-way left-turn lanes, or channelizing islands where traffic travels in the same general direction on both sides to be consistent with other provisions—existing and proposed—in the Manual.</p> <p>In addition, FHWA proposes to add an Option paragraph to indicate where yellow-colored pavement may be applied along a roadway.</p> <p>Further, FHWA proposes to add a new Figure 3H-2 to illustrate an example of the use of yellow-colored pavement.</p>	<p>New Section 3H.04 Yellow-Colored Pavement is adopted as proposed with additional Support to define the use of yellow-colored pavement to separate traffic traveling in opposite directions and the left-hand edge of the roadway.</p> <p>Standards are adopted as proposed.</p> <p>Option is adopted as proposed.</p> <p>Figure 3H-2 is adopted as proposed with a minor revision to the title to be "Example of Yellow-Colored Pavement Application".</p>
369	<p>FHWA proposes to add a new section numbered and titled, "Section 3H.05 White-Colored Pavement" to include Standard paragraphs limiting use of white-colored pavement to flush or raised island where traffic passes on both sides in the same direction, righthand shoulders, exit gore areas, and entrance gore areas.</p> <p>FHWA also proposes to add a Guidance paragraph recommending certain limitations on its use and Option paragraphs stating where it may be applied along a roadway to be consistent with other provisions—existing and proposed—in the Manual.</p> <p>Further, FHWA proposes to provide a new Figure 3H-3 to illustrate an example of the use of white-colored pavement.</p>	<p>New Section 3H.05 White-Colored Pavement is adopted with additional Support to define the use of white-colored pavement to separate traffic traveling in the same direction and the right-hand edge of the roadway.</p> <p>The added Guidance and Option paragraphs are adopted as proposed.</p> <p>Figure 3H-3 is adopted as proposed with a minor revision to the title to be "Example of White-Colored Pavement Application".</p>
370	FHWA proposes to add a new section numbered and titled, "Section 3H.06 Green-Colored Pavement for Bicycle Facilities" to include Standard paragraphs establishing the use of green colored pavement for a	New Section 3H.06 Green-Colored Pavement for Bicycle Facilities is adopted with modifications based on comments received and in conformance with the language include in Interim Approval 14.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
370 cont'd	variety of bicycle facilities and prohibiting its use on shared-use paths, shared-lane markings, crosswalks, and on separated bicycle lanes on an independent alignment.	<p>Additional Guidance is adopted to recommend limiting the application of green-colored pavement on separated bicycle lanes on an independent alignment only to the entrances to the separated facility or at conflict, weaving, or crossing locations. Another Guidance paragraph is adopted to recommend limiting the application of green-colored pavement on shared use paths to only those locations where different travel modes (e.g. bicyclists and pedestrians) are separated, rather than shared. The addition of these Guidance paragraphs aims to provide flexibility to utilize increased conspicuity of bicycle facilities where appropriate, while also ensuring colored pavement is not overused which may diminish its efficacy overall.</p>
	FHWA also proposes Option paragraphs stating where green-colored pavement may be applied and Guidance recommending installation of regulatory and guide signing with green-colored pavement.	The Option and Guidance are adopted as proposed with minor clarifying changes and additions.
		The proposed Standard sentence requiring the pattern of green-colored pavement to match the pattern of dotted lines is adopted in the final rule. As green-colored pavement supplements other required markings it is appropriate to consistently match the marking patterns used.
	Further, FHWA proposes to provide a new Figure 3H-4 and revise Figures in Part 9 to illustrate examples of green colored pavement. FHWA proposes these changes based on Interim Approval No. 14 and Official Ruling #9(09)-86 (I) on Chromaticity Requirements for Green-Colored Pavement ( <a href="http://mutcd.fhwa.dot.gov/resources/interim_approval/ia14/index.htm">http://mutcd.fhwa.dot.gov/resources/interim_approval/ia14/index.htm</a> ).	Figure 3H-4 is adopted with a minor revision to the title to be "Example of Green-Colored Pavement Application"
371	FHWA proposes to add a new section numbered and titled, "Section 3H.07 Red-Colored Pavement for Public Transit Systems" to include Standard paragraphs establishing the use of red colored pavement for lanes where general purpose traffic is not allowed and requiring regulatory signs establishing the allowable use of the lane.	This section is adopted with several revisions. Taxis are excluded from the list of public transit vehicles since they are generally not considered as such.
	FHWA also proposes Option paragraphs stating where red-colored pavement can be applied and a Guidance paragraph recommending red colored pavement not be used on public transit facilities separated from the roadway or on exclusive alignments.	In response to comments, the use of red-colored pavement may be determined by engineering judgement, rather than engineering study to allow more flexibility, and the expected result of the use of red-colored pavement is to improve transit reliability and reduce overall travel time.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
371 cont'd	<p>In addition, FHWA proposes to provide a new Figure 3H-5 to illustrate an example of the use of red-colored pavement. FHWA proposes these changes based on Interim Approval 22 (<a href="https://mutcd.fhwa.dot.gov/resources/interim_approval/ia22/index.htm">https://mutcd.fhwa.dot.gov/resources/interim_approval/ia22/index.htm</a>) and the results of multiple experimentations across the country, including in the following jurisdictions: City of Chicago, IL; the City of New York, NY; the District of Columbia; the City of Santa Rosa, CA; and San Diego County, CA.</p>	<p>Comments requested the proposed Standard paragraph be revised to Guidance as there may be reasons for exceptions where general-purpose traffic is intended to be precluded. The proposed Option statements intend to provide those exceptions and the proposed Standard is adopted as proposed. Figure 3H-5 is adopted with minor revisions.</p>
372	<p>FHWA proposes to add a new section numbered and titled, "Section 3H.08 Purple-Colored Pavement for Electronic Toll Collection (ETC) Account-Only Preferential Lanes" to include Standard paragraphs limiting use of purple-colored pavement to lanes approaching toll plazas that are restricted to registered ETC accounts and lanes approaching an Open Road Tolling (ORT) collection facility and prohibiting its use on an approach that also facilitates other payment methods downstream.</p> <p>FHWA also proposes Standard paragraphs regarding the use of longitudinal and edge lines to flank the purple-colored pavement.</p> <p>In addition, FHWA proposes an Option paragraph allowing its use for the entire length of the toll lane or ORT collection facility or for only a portion (or portions).</p> <p>Further, FHWA proposes to provide a new Figure 3H-6 to illustrate an example of the use of purple-colored pavement.</p>	<p>New Section 3H.08 is adopted with new Standards and Option as proposed.</p> <p>Figure 3H-6 is adopted with minor revisions for consistency.</p>
373	<p>In Section 3I.01 (existing Section 3H.01) Channelizing Devices, FHWA proposes to add an Option paragraph to clarify that orange-colored channelizing devices are allowed to emphasize pavement markings outside of temporary traffic control zones, as long as the devices are not permanent.</p> <p>FHWA proposes to add this Option to facilitate use of channelizing devices in emergency incidents and planned special events, because it is usually not practical for police officers or other authorized personnel to obtain and deploy channelizing devices that match the color of the existing pavement markings.</p> <p>FHWA also proposes to delete P5 since this information is related to maintenance and not related to traffic control device uniformity.</p>	<p>New Section 3I.01 Channelizing Devices is adopted with the new Option and Support as proposed.</p> <p>Existing Guidance regarding maintenance is deleted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
374	FHWA proposes to add a new section numbered and titled, "Section 3I.02 Tubular Markers" to include Standard, Guidance, and Option paragraphs to provide size requirements and recommended spacing. FHWA proposes this change because the use of tubular markers have become more common and to enhance uniformity.	New Section 3I.02 Tubular Markers is adopted with minor revisions. The requirement that tubular markers shall be made with a material that can be struck without causing damage to a vehicle is not adopted, since it is ambiguous.
375	FHWA proposes to revise the title of Chapter 3J (existing Chapter 3I) to "Marking and Delineation of Islands and Curb Extensions" to be more descriptive on the content regarding islands in this Chapter.	Chapter 3J is retitled as proposed.
376	<p>In Section 3J.02 (existing Section 3I.02) Approach-End Treatment, FHWA proposes modifying existing P1 to recommend either an approach-end treatment, or curb markings, or both at the ends of islands first approached by traffic. FHWA proposes this change to improve operations and safety at islands and decision points, and to meet driver expectation when encountering these facilities.</p> <p>FHWA also proposes to revise P3 to add a recommendation for raised bars or buttons that project more than 1 inch above the pavement surface to be marked with retroreflective materials. FHWA proposes this change to enhance conspicuity.</p>	Support P1 and Guidance P3 are adopted as proposed.
377	<p>FHWA proposes to add a new section numbered and titled, "Section 3J.03 Islands Designated by Pavement Markings" to include new Standard paragraphs for pavement marking color requirements for islands and to clarify criteria for islands previously located throughout Part 3.</p> <p>FHWA also proposes a new Option paragraph allowing both chevron and diagonal markings of the same color within the same island.</p> <p>FHWA proposes these changes to improve consistency in the application of islands designated by pavement markings.</p>	New Section 3J.03 Islands Designated by Pavement Markings is adopted as proposed and an Option is added in response to comments that allows the area within the flush island delineated by pavement markings to use colored pavement in accordance with the provisions of Chapter 3H
378	<p>FHWA proposes to add a new section numbered and titled, "Section 3J.04 Curb Markings for Raised Island" to include existing P7–P12 from existing Section 3B.23 and P2 of existing Section 3I.04.</p> <p>FHWA also proposes to change P10 from Support to Option to allow curb markings to be discontinued where the curbs of the islands become parallel to the direction of traffic flow or where the island is illuminated or marked with delineators, based on engineering judgment or study.</p>	New Section 3J.04 is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
378 cont'd	In addition, FHWA proposes to change P11 from Support to Option to allow curb markings to be omitted at openings in a continuous median island based on engineering judgment or study.	
379	<p>FHWA proposes to add a new section numbered and titled, "Section 3J.05 Pavement Markings for Raised Islands" to include a Standard, Options, Guidance, and Support paragraphs for the application of approach-end treatments, channelizing lines, edge lines, and chevron or diagonal markings for raised islands. FHWA proposes these changes to improve consistency in the application of markings for raised islands, to improve operations and safety at islands and decision points, and to meet driver expectation when encountering these facilities.</p> <p>FHWA also proposes to provide a new Figure 3J-3 to illustrate an example of the use of diagonal markings in buffer areas between the channelizing line and the raised island.</p>	<p>New Section 3J.05 Pavement Markings for Raised Islands is adopted with minor editorial changes.</p> <p>Figure 3J-4 and Figure 3J-5 are adopted as proposed. Figure 3J-3 is included in Section 3J.04 Curb Markings for Raised Islands.</p>
380	FHWA proposes to add a new section numbered and titled, "Section 3J.07 Curb Extensions Designated by Pavement Markings" to include Support, Standard, Guidance, and Option paragraphs for the application of curb extension pavement markings. FHWA proposes these changes to improve consistency in the application of markings for curb extensions and uniformity when the application of pavement markings is to be used.	See Preamble of Federal Register for discussion of this item.
381	FHWA proposes to delete existing Section 3I.03 Island Marking Application and existing Section 3I.04 Island Marking Colors since the paragraphs were either relocated to other sections, are redundant with other MUTCD provisions, or are not related to uniformity.	Existing Section 3I.03 and Section 3I.04 deleted as proposed.
382	<p>FHWA proposes to reorganize Part 4 by dividing some existing long chapters and sections into several chapters and/or several sections, each having a clearly understandable title, and by moving certain material to new locations within Part 4 to consolidate similar information in one place. In some cases, this involves the proposed creation of new chapters and sections that do not exist in the 2009 MUTCD. FHWA believes this proposed reorganization would create a more logical flow of information and make it easier for users to find the content they need.</p> <p>In addition, FHWA proposes to delete text from various sections where such material duplicates or is very similar to existing text in other sections within Part 4 or elsewhere in the MUTCD. These reorganizations and elimination of redundancies are</p>	<p>The reorganization of Part 4 is adopted as proposed.</p> <p>The editorial revisions of Part 4 are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
382 cont'd	editorial in nature and do not significantly change the technical content or meaning, except as otherwise discussed below.	
383	<p>FHWA proposes to allow the optional use of three-section signal faces using flashing yellow arrow (FYA) signal indications that use the middle section to show both the FYA and the steady yellow arrow in Section 4F.08 (existing Section 4D.02) retitled, "Signal Indications for Protected/Permissive Mode Right-Turn Movements in a Shared Signal Face" and Section 4F.15 (existing Section 4D.24) retitled, "Signal Indications for Protected/Permissive Mode Right-Turn Movements in a Separate Signal Face." This change would allow agencies to convert existing three-section protected-only left- and right-turn signal faces to three section FYA signal faces and provide more opportunities to implement variable mode left- and right-turn phasing.</p> <p>Similarly, FHWA also proposes to allow the option of displaying both the FYA and the steady yellow arrow in the same section for five-section shared left-turn/right-turn signal faces operating in protected/permissive mode in Section 4F.02 (existing Section 4D.17) Signal Indications for Left-Turn Movements—General, 4F.09 (existing Section 4E.21) Signal Indications for Right-Turn Movements—General, and Section 4F.16 (existing Section 4D.25) retitled, "Signal Indications for Approaches with Shared Left-Turn/Right-Turn Lanes and No Through Movement." FHWA proposes these changes based on Interim Approval 17 (<a href="http://mutcd.fhwa.dot.gov/resources/interim_approval/ia17/index.htm">http://mutcd.fhwa.dot.gov/resources/interim_approval/ia17/index.htm</a>), FHWA's Official Ruling No. 4(09)-15(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_15.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_15.htm</a>), and supporting research (<a href="http://www.trb.org/Main/Blurbs/171653.aspx">http://www.trb.org/Main/Blurbs/171653.aspx</a>). FHWA also proposes revisions to various paragraphs and sections throughout the part to reflect these proposed changes.</p>	<p>The changes are generally adopted as proposed but revised to encourage the use of the three-section bimodal signal indication with flashing yellow arrow and steady yellow arrow in the same section in the middle section instead of the having the flashing yellow arrow and green arrow in the same section. The three-section bimodal signal indication with flashing yellow arrow and steady yellow arrow in the same section showed better driver comprehension based on the supporting research.</p> <p>The changes are generally adopted as proposed. In Section 4F.02, the Option in P9 is modified from the NPA to include all situations with a combined left-and-through lane and not only when there is also an exclusive left-turn lane. This revision was based on comments that noted the benefit of using this variable mode left-turning phasing operation on approaches without an exclusive left-turn lane, especially in urban areas.</p>
384	FHWA proposes to add a new section numbered and titled, "Section 4A.05 Meanings of Bicycle Symbol Signal Indications." This section defines the meaning of the proposed bicycle traffic signal indications for bicyclists, described in proposed Chapter 4H, based on Interim Approval 16 ( <a href="http://mutcd.fhwa.dot.gov/resources/interim_approval/ia16/index.htm">http://mutcd.fhwa.dot.gov/resources/interim_approval/ia16/index.htm</a> ).	The change is adopted as proposed.
385	In Section 4A.08 (existing Section 4D.34) Use of Signs at Signalized Locations, FHWA proposes to change P5 from Standard to Guidance to provide agencies flexibility, based on engineering judgement, to achieve an appropriate balance in visibility for both traffic signal signs and traffic signal faces. The	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
385 cont'd	proposed text maintains priority for the visibility of the traffic signal faces.	
386	In Section 4B.02, retitled, "Basis of Installation of Traffic Control Signals," FHWA proposes to add a Guidance paragraph recommending against using traffic control signals to penalize drivers who are speeding. FHWA proposes this change because speeding issues should be addressed through a programmatic approach and through roadway design features, rather than through traffic control signals.	The change is not adopted, based on the comments received. The commenters wanted to preserve the "rest-in-red" operation and to maintain existing flexibility for implementing traffic control signal operation strategies consistent with "Vision Zero" and a Safe System approach to enhance safety for vulnerable road users.  This Section is also renumbered to 4B.04 based on other revisions.
387	FHWA proposes to delete existing Section 4B.05 Adequate Roadway Capacity because the information does not relate to traffic control uniformity and instead discusses roadway design philosophy and therefore is not appropriate in the MUTCD.	The change is adopted as proposed.
388	In Section 4B.05 (existing Section 4B.04) Alternatives to Traffic Control Signals, FHWA proposes to clarify in Option Item M that to reduce vehicular conflicts, a roundabout is an alternative to a traffic control signal.	This Section is renumbered to 4B.03 and the change is adopted as proposed but edited to place "installing a roundabout" as item B and remove "to reduce vehicular conflicts" since there may be other reasons for installing a roundabout. Also, item B is further revised to highlight other alternatives that can be considered if pedestrian safety is the major concern at the location.
	In addition, FHWA proposes to add a Support statement referencing Part 8 regarding installation of roundabouts in proximity to grade crossings. FHWA proposes these changes to reflect Official Change Request 4(09)–76(C).	The change is adopted as proposed.
389	In Section 4C.01 Studies and Factors for Justifying Traffic Control Signals, FHWA proposes to add an exception for temporary traffic signals to the Standard paragraph requiring an engineering study to justify a traffic control signal.	The change is adopted as proposed but edited to clarify that the exemption is for the use of temporary traffic control signals as part of a temporary traffic control zone.
	FHWA also proposes to clarify in Guidance P10 that if a minor street approach has an exclusive left turn lane, the approach should either be analyzed as a two-lane approach based on the sum of the traffic volumes using both lanes or as a one-lane approach based on only the traffic volume in the approach lane with the highest volume.	The change is adopted as proposed with editorial revisions.
	FHWA also proposes to change P12 from Guidance to Option to allow agencies to determine whether a location with a wide median is considered as one or two intersections for a signal warrant analysis based on the site-specific conditions. FHWA proposes these changes to allow additional flexibility.	The change is adopted as proposed and a reference to Section 2A.23 was added.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
389 cont'd	In addition, FHWA proposes to add a Guidance statement referring to the alternatives to traffic control signals listed in Section 4B.05. FHWA proposes this change to reflect Official Change Request 4(09)–76(C) and to remind users of the Manual that there are several alternatives to traffic control signals.	The change is adopted as proposed.
		In addition, FHWA received comments regarding existing P07 that says a traffic control signal should not be installed if it will seriously disrupt progressive traffic flow. The commenters noted that the existing language prioritizes motor vehicle traffic and does not provide equal consideration of pedestrians. Based on these comments, this existing paragraph is deleted to encourage full consideration of all travel modes, especially vulnerable road users, not just vehicles.
390	In Section 4C.02 Warrant 1, Eight-Hour Vehicular Volume, Section 4C.03 Warrant 2, Four-Hour Vehicular Volume, Section 4C.04 Warrant 3, Peak Hour, Section 4C.05 Warrant 4, Pedestrian Volume, Section 4C.06 Warrant 5, School Crossing, Section 4C.07 Warrant 6, Coordinated Signal System, Section 4C.08 Warrant 7, Crash Experience, Section 4C.09 Warrant 8, Roadway Network, and Section 4C.10 Warrant 9, Intersection Near a Grade Crossing, FHWA proposes to change all paragraphs describing the application of the signal warrant criterion to be considered in an engineering study for installing a new traffic control signal from Standard to Guidance. FHWA proposes this change to provide agencies flexibility in performing signal warrant analyses.	See Preamble of Federal Register for discussion of this item.
391	In Section 4C.02 Warrant 1, Eight-Hour Vehicular Volume, Section 4C.03 Warrant 2, Four-Hour Vehicular Volume, Section 4C.04 Warrant 3, Peak Hour, and Section 4C.08 Warrant 7, Crash Experience, FHWA proposes to change the description of minor-street approaches from higher volume to more critical based on FHWA's Official Ruling No. 4(09)–59(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/4_09_59.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/4_09_59.htm</a> ).	The change is adopted as proposed.
392	In Section 4C.05 Warrant 4, Pedestrian Volume, FHWA proposes to add an Option allowing the criteria to be applied separately to each direction of vehicular traffic where there is a divided street having a median of sufficient width for pedestrians to wait. This option is a variation of the second sentence of Item B in Paragraph 2 of Section 4C.05 in the 2003 MUTCD and is proposed by FHWA based on Official Ruling No. 4(09)–25(I) ( <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_25.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_25.htm</a> ).	The change is adopted as proposed.
	FHWA also proposes to change P4 prohibiting the application of the Pedestrian Volume warrant if the	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
392 cont'd	distance to the nearest traffic control signal or Stop sign is within 300 feet from Standard to Guidance. FHWA proposes this change to provide more flexibility for agencies when considering installation of traffic signals for pedestrian crossings.	
393	<p>In Section 4C.08 Warrant 7, Crash Experience, FHWA proposes to revise Item B in P2 to include updated signal warrant criteria for 1-year and 3- year periods, crash type, and severity, as well as major street speed and intersection location.</p> <p>In conjunction with this change, FHWA proposes to add additional Support language regarding the critical minor-street volume, and a new Option paragraph that accompanies new tables related to criteria for considering traffic control signals in rural areas. FHWA proposes these changes based on Interim Approval 19 (<a href="https://mutcd.fhwa.dot.gov/resources/interim_approval/ia19/index.htm">https://mutcd.fhwa.dot.gov/resources/interim_approval/ia19/index.htm</a>) and findings contained in a research study (<a href="http://www.trb.org/Main/Blurbs/171359.aspx">http://www.trb.org/Main/Blurbs/171359.aspx</a>).</p>	<p>See Preamble of Federal Register for discussion of this item.</p> <p>The change is adopted as proposed.</p>
394	<p>In Section 4D.01 General, add a new Standard paragraph requiring the design and operation of traffic control signals to take into consideration the needs of all modes of traffic to enhance mobility and safety for all modes of travel.</p> <p>FHWA proposes to add a new Guidance paragraph recommending that covers placed over traffic control signal faces not in operation include the backplate if it has a yellow retroreflective strip. The new paragraph also recommends that if a traffic signal with a retroreflective backplate is turned away it should not be oriented such that the backplate border will reflect light back to road users on any approaches to the intersection. FHWA proposes this change based on Official Ruling No. 4(09)–1(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_001.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_001.htm</a>).</p> <p>FHWA also proposes to change P7 restricting signaling midblock crosswalks if they are located within 300 feet of the nearest traffic control signal from Standard to Guidance. FHWA proposes this change to provide more flexibility for agencies when considering placement of midblock crosswalks.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed and the second part of the sentence regarding restricting the progressive movement of traffic is revised, consistent with revisions to Section 4C.01 to enhance safety of vulnerable users and based on comments received.</p> <p>In addition, FHWA received comments regarding existing P09 that recommends not signaling midblock crosswalks if they are located within 100 feet from side streets or driveways that are controlled by STOP or YIELD signs. The commenters noted concerns about situations where signaling midblock crossings would be beneficial for pedestrian crossings in an urban area. Based on these</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
394 cont'd		comments, the Guidance is revised to allow signalization if an engineering study or engineering judgment supports restricting turning movements from the side street or driveway to eliminate conflicts with pedestrian and bicycle movements. This change is made to provide more flexibility for agencies when considering midblock traffic control signals for vulnerable road users.
395	<p>In Section 4D.02 (existing Section 4D.03) Provisions for Pedestrians, FHWA proposes to delete P2 in concert with the new Standard added in Section 4D.01 and relocate and revise P1 and relocate P3 from existing Section 4E.03 to this Section.</p> <p>FHWA also proposes to delete Standard P3 and add a new Guidance paragraph recommending pedestrian signal heads at each marked crosswalk at a location controlled by a traffic control signal.</p> <p>Finally, FHWA proposes to revise existing Guidance in P4 to align better with the recommendation for an engineering study with specific factors for consideration as outlined in Section 4K.01.</p>	<p>The change is adopted as proposed.</p> <p>See Preamble of Federal Register for discussion of this item.</p> <p>See Preamble of Federal Register for discussion of this item.</p> <p>In addition, FHWA received comments regarding existing P6 for restricting pedestrian movements at a traffic control signal location where it is desirable or necessary. The commenters noted concern about agencies using this recommendation to restrict pedestrian movements to prioritize vehicle operations. Based on the comments, the text is revised to remove language that implies pedestrian movements can be eliminated because it is desirable. This change is made to discourage the prioritization of vehicle operations and enhance mobility of vulnerable road users.</p>
396	<p>FHWA proposes to add a new section numbered and titled, "Section 4D.03 Provisions for Bicyclists," with an Option to allow bicycle signal faces to be used where it is desired to provide separate signal indications to control bicycle movements at a traffic control signal, and a reference to new Chapter 4H Bicycle Signal Faces. FHWA proposes this change due to the increasing bicycle activity and bicycle infrastructure deployment throughout the Country and based on Interim Approval 16 (<a href="http://mutcd.fhwa.dot.gov/resources/interim_approval/ia16/index.htm">http://mutcd.fhwa.dot.gov/resources/interim_approval/ia16/index.htm</a>).</p>	<p>The change is adopted as proposed. Based on comments received, a new Support is added that references several sections in Part 9 that relate to bicycle movements and actuation at traffic control signals.</p>
N/A (Sec. 4D.04)	<p>New Section 4D.04 Provisions for Transit Vehicles (not discussed in the NPA Preamble)</p>	<p>FHWA received comments that suggested adding a new Section on Provisions for Transit Vehicles. Based on these comments, a new Section 4D.04 is added that includes an Option for providing LRT</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
(Sec. 4D.04) cont'd		signal indications to control transit vehicles at a traffic control signal and reference to Section 8D.15. Subsequent sections are renumbered accordingly.
397	<p>In Section 4D.05 (existing Section 4D.12) Visibility, Aiming, and Shielding of Signal Faces, FHWA proposes to change P1, P2, P3, P7, and P13 from Standard to Guidance to provide agencies flexibility in locating signal faces.</p> <p>FHWA also proposes to add a new Standard prohibiting the use of ancillary legends on signal face backplates. FHWA proposes this change because backplates are used to improve the contrast between the traffic signal and its surroundings, and adding a legend reduces the contrast and could reduce driver comprehension. Section 2B.60 (existing Section 2B.53) allows the installation of signs adjacent to signal faces to provide the purpose or operation, as needed.</p>	<p>This Section is renumbered 4D.06 and the change is adopted as proposed. P1 was editorially revised to be more consistent with MUTCD Guidance.</p> <p>The change is adopted as proposed.</p>
398	<p>In Section 4D.06 (existing Section 4D.13) Lateral Positioning of Signal Faces, FHWA proposes to add a new Guidance paragraph recommending locating separate turn signal faces at least 3 feet, horizontally and vertically, from the nearest traffic signal face for a different movement on the same approach. FHWA proposes this change to minimize driver confusion and enhance signal visibility.</p> <p>FHWA proposes to change P7 from Standard to Guidance to provide agencies flexibility in locating signal faces.</p> <p>FHWA also proposes to revise Standard P10 for supplemental post mounted signal faces to clarify that the intent is to prohibit the display of left-turn arrows to the right of adjacent through and right-turn lanes, and not to prohibit such a display if an opportunity is available to post-mount a signal face that is to the immediate right of the left-turn lanes.</p> <p>FHWA proposes a similar change for the display of right-turn arrows.</p>	<p>FHWA received comments that noted concerns about the 3-foot spacing and how this may create safety issues when visibility is low or under snow conditions. The commenters suggested a larger separation, similar to the 8-foot distance requirement between through signal faces. Based on these comments, the Guidance is revised to recommend 8-foot separation between a separate turn signal face from the nearest traffic signal face for a different movement and renumbers this Section to 4D.07. Further, clarification is made that this provision applies only to signal faces located over the roadway since it is not feasible to provide this separation for post mounted signal faces. A new Option is added, permitting a 3-foot separation between a separate turn signal face and the nearest traffic signal face for a different movement for modifications to existing traffic signals to provide flexibility for agencies to utilize existing signal mast arms when making operational changes.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
399	<p>In Section 4D.07 (existing Section 4D.14) Longitudinal Positioning of Signal Faces, FHWA proposes to delete Item A.3 of P1 because it redundant with information contained in Section 4D.06 (existing Section 4D.13).</p> <p>FHWA also proposes to change the existing Item B of P1 from Standard to Guidance to provide agencies flexibility when deciding where to install supplemental near-side signal faces.</p>	<p>The change is adopted as proposed and the Section is renumbered to 4D.08.</p> <p>The change is adopted as proposed.</p>
400	<p>In Section 4D.08 (existing Section 4D.15) Mounting Height of Signal Faces, FHWA proposes to change all Standards related to the maximum height for vehicular signal faces from Standard to Guidance. FHWA proposes this change because increasing maximum heights does not impact the safety of road and sidewalk users and therefore agencies should have the flexibility to do so where they deem it advisable to meet site conditions.</p>	<p>The change is adopted as proposed and the Section is renumbered to 4D.09.</p>
401	<p>In Section 4D.09 (existing Section 4D.16) Lateral Offset (Clearance) of Signal Faces, FHWA proposes to change the Standard paragraph to Guidance to provide agencies flexibility when designing signal face placement.</p>	<p>The change is adopted as proposed with editorial revisions and the Section is renumbered to 4D.10.</p>
402	<p>In Section 4D.10 (existing Section 4D.32) Temporary and Portable Traffic Control Signals, FHWA proposes to delete Item C in P4 because existing Item D supersedes it, and to provide agencies more flexibility in temporary traffic signal control operations.</p> <p>In concert with this change, FHWA proposes to add a new Option permitting temporary traffic signals to operate in semi-actuated mode instead of being placed in flashing mode.</p>	<p>The change is adopted as proposed and the Section is renumbered as 4D.11.</p> <p>The change is adopted as proposed.</p>
403	<p>In Section 4E.01 (existing Section 4D.06) Signal Indications—Design, Illumination, Color, and Shape, FHWA proposes to revise P9 to require that displays meet the minimum requirements of “Equipment and Materials Standards of the Institute of Transportation Engineers” for signal optical units that use incandescent lamps within optical assemblies that include lenses.</p> <p>FHWA also proposes to add the requirements of the publications entitled, “Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement” and “Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement” that pertain to the aspects of the signal head design that affect the display of the signal indications shall be met for light emitting diode (LED) traffic signal modules, except during nighttime</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
403 cont'd	<p>conditions, which is addressed in the revised paragraph 11. FHWA proposes this change based on Official Ruling No. 4(09)–28(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/4_09_28.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/4_09_28.htm</a>).</p> <p>In addition, FHWA proposes to change P11 from Standard to Support and combine with P12 because it contains general information about signal lenses and is not a requirement for traffic control signals.</p>	<p>The change is adopted as proposed.</p> <p>FHWA received comments that noted concerns regarding the proposed NPA deletion of the exception for preemption confirmation lights in P4. Based on these comments, the proposed deletion is not adopted and the exception for emergency vehicle preemption indications is retained.</p> <p>FHWA also received comments that noted concerns with the bimodal signal section that alternatively displays a GREEN ARROW and YELLOW ARROW due to colorblind drivers not being able to distinguish between the colors. Based on these comments, the Standard is changed to an Option to continue to permit this bimodal signal section but encourage the use of the bimodal signal section that has the steady YELLOW ARROW and flashing YELLOW ARROW based on research that showed better driver comprehension.</p>
404	<p>In Section 4E.02 (existing Section 4D.07) Size of Vehicular Signal Indications, FHWA proposes to require all arrow signal indications to be twelve-inch to enhance safety and conspicuity of the arrow legend.</p> <p>FHWA also proposes to modify the existing Option to allow 8-inch circular indications in a flashing beacon based on Official Ruling No. 4(09)–7(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_7.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_7.htm</a>).</p> <p>FHWA also proposes to add a new Option allowing the use of different sizes of signal indications in the same face or signal head. This option is a variation of P5 of Section 4D.15 in the 2003 MUTCD. Even though this was implied in the 2009 MUTCD, this new Option would provide agencies explicit flexibility to install twelve-inch arrows with eight-inch circular displays if the conditions permit eight-inch circular displays.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>In addition, FHWA received comments that noted P1 did not include four-inch signal indications as proposed in Chapter 4H. Based on these comments and for consistency, P1 is revised to include four-inch signal indications and also adds a new Standard</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
404 cont'd		<p>limiting the use of four-inch signal indications only to bicycle signal faces.</p> <p>Further, Item F in P4 is deleted, since circular indications are no longer permitted for signal faces controlling bicycle movements with the addition of the bicycle signal faces with bicycle symbol indications.</p>
405	<p>In Section 4F.01 (existing Section 4D.05), retitled, "Application of Steady and Flashing Signal Indications during Steady (Stop-and-Go) Operation," FHWA proposes to add items E and G to Standard P3 to include provisions for flashing red arrow and flashing yellow arrow signal indications for steady (stop-and-go) mode of operation. FHWA proposes this change to clarify the application of flashing signal indications in steady (stop-and-go) mode based on their addition to the 2009 MUTCD.</p> <p>FHWA also proposes to clarify in Item H that except for under certain circumstances, a steady green arrow signal indication shall be displayed only to allow vehicular movements in the direction indicated, that are not in conflict with other vehicles moving on a green or yellow signal indication, even if the other vehicles are required to yield the right-of-way to the traffic moving on the GREEN ARROW signal indication. FHWA proposes this clarification to reflect Official Change Request 4(09)–75 (<a href="https://mutcd.fhwa.dot.gov/orsearch.asp">https://mutcd.fhwa.dot.gov/orsearch.asp</a>).</p> <p>FHWA proposes to expand existing Option P5 to include conditions where a steady straight-through green arrow may be used to discourage wrong-way turns. FHWA proposes this clarification to reflect Official Change Request 4(09)–75 (C) (<a href="https://mutcd.fhwa.dot.gov/orsearch.asp">https://mutcd.fhwa.dot.gov/orsearch.asp</a>).</p> <p>FHWA also proposes to add a new Standard, prior to existing Standard P13, for signal displays on separate signal faces at pre-signals for left-turn and/or right-turn lanes that extend from the downstream signalized intersection back to and across a grade crossing. FHWA proposes this change to permit agencies to display straight-through green arrow with circular red or circular yellow on the same approach to the pre-signal to improve safety by discouraging road users from inadvertently turning onto railroad or light rail transit (LRT) tracks.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The change is generally adopted as proposed. A new Item D is added to allow a steady straight-through GREEN ARROW signal indication on an approach with pre-signals and adjacent lanes are controlled separately based on revisions in Sections 8D.11 and 8D.12.</p> <p>The change is generally adopted as proposed. Based on comments received, queue cutter signals are also included.</p>
406	<p>In Section 4F.02 (existing Section 4D.17) Signal Indications for Left-Turn Movements—General, FHWA proposes to change P1 from Standard to Support because the paragraph provides information regarding the applicability of signal indications for U-turns to the</p>	<p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
406 cont'd	<p>left and is more appropriate as a Support statement.</p> <p>FHWA also proposes to revise Standard P5 to prohibit explicitly the simultaneous display of a protected left-turn movement with opposing right-turn green arrow or yellow arrow signal indication unless there are separate departure lanes available and there are pavement markings or a channelizing island clearly indicating which departure lane to use. This prohibition has been implicit in the description of what constitutes conflicting movements elsewhere in Part 4, but FHWA proposes this change to be specific about conflicting movements between left-turns and opposing right-turns.</p> <p>In addition, FHWA proposes to modify Standard P6 to clarify which signal displays are prohibited when a combined left-turn/through lane exists on an approach.</p> <p>FHWA proposes similar changes in Section 4F.09 (existing Section 4D.21) for right-turn movements.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>
N/A (Sec. 4F.02)	Section 4F.02 Signal Indications for Left-Turn Movements—General (not discussed in the NPA Preamble)	<p>In Section 4F.02 (existing Section 4D.17) Signal Indications for Left-Turn Movements—General, comments were received regarding P04 where the NPA proposed to add a requirement for the opposing approach right-turning traffic to display green or steady yellow signal indications during a permissive left-turn movement. The commenters were concerned that the proposed change will prohibit a right-turn flashing YELLOW or RED ARROW. Based on these comments, the proposed change is not adopted.</p> <p>In addition, Option P9 is revised as described in item 383.</p>
407	<p>In new “Section 4F.04 Signal Indications for Permissive Only Mode Left-Turn Movements in a Separate Signal Face,” new “Section 4F.06 Signal Indications for Protected Only Mode Left-Turn Movements in a Separate Signal Face,” new “Section 4F.08 Signal Indications for Protected/Permissive Mode Left-Turn Movements in a Separate Signal Face,” new “Section 4F.11 Signal Indications for Permissive Only Mode Right-Turn Movements in a Separate Signal Face,” new “Section 4F.13 Signal Indications for Protected Only Mode Right-Turn Movements in a Separate Signal Face,” and new “Section 4F.15 Signal Indications for Protected/Permissive Mode Right-Turn Movements in a Separate Signal Face,” FHWA proposes to add a new Standard in each section prohibiting the use of a separate turn signal face on an approach that does not include an exclusive turn lane. FHWA proposes</p>	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
407 cont'd	this change because if an exclusive lane does not exist, then a separate turn signal face should not be provided because both the turning and through vehicles share the same lane and a separate turn signal face can be confusing to road users in this situation.	In addition, in new “Section 4F.04 Signal Indications for Permissive Only Mode Left-Turn Movements in a Separate Signal Face,” proposed NPA P03, Item E is revised to clarify the operation of bimodal signal sections consistent with item 383. A similar change is also made to new “Section 4F.11 Signal Indications for Permissive Only Mode Right-Turn Movements in a Separate Signal Face”.
408	In new “Section 4F.06 Signal Indications for Protected Only Mode Left-Turn Movements in a Separate Signal Face” which consists of P3 of existing Section 4D.19, FHWA proposes to delete the reference to signal instruction sign and requirement for the LEFT ON GREEN ARROW ONLY (R10–5) sign. FHWA proposes this change to remove the undefined term “signal instruction sign” and to provide additional flexibility for the use of traffic signal signs for separate left-turn signal faces operating in a protected only mode.	The change is adopted as proposed.
	FHWA proposes a similar revision to new “Section 4F.13 Signal Indications for Protected Only Mode Right-Turn Movements in a Separate Signal Face” which consists of P3 of existing Section 4D.23 to delete the reference to signal instruction sign and requirement for the RIGHT ON GREEN ARROW ONLY (R10–5a) sign.	The deletion of P3 in Section 4F.13 is adopted as proposed.
409	In new “Section 4F.08 Signal Indications for Protected/Permissive Mode Left-Turn Movements in a Separate Signal Face” which consists of P3–P6 of existing Section 4D.20, FHWA proposes to modify the Standard (P1 in existing Section 4D.20) to allow the display of a steady left-turn red arrow immediately following the steady left-turn yellow arrow signal indication to provide a red clearance interval, enabling the opposing traffic to start up before releasing the permissive left-turn movement.	The change is adopted as proposed.
410	In Section 4F.09 (existing Section 4D.21), Signal Indications for Right-Turn Movements—General, FHWA proposes to delete P6 to allow, when needed, a yellow change interval for the right-turn movement when the status of the right-turn operation is changing from permissive to protected within any given signal sequence. FHWA proposes this change because this yellow change interval is frequently needed when a right-turn overlap is the next phase in order to allow	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
410 cont'd	opposing permissive left-turn traffic to clear the intersection.	Also, the Option in P7 is revised consistent with revisions in Section 4F.02 as noted above in item 383.
411	<p>In new "Section 4F.15 Signal Indications for Protected/Permissive Mode Right-Turn Movements in a Separate Signal Face," which is comprised of existing P2–P6 of existing Section 4D.24, FHWA proposes to allow the display of a steady right-turn red arrow signal indication immediately following the steady right-turn yellow arrow signal indication to provide a red clearance interval, enabling the opposing traffic to start up before releasing the permissive right-turn movement.</p> <p>FHWA also proposes to add a new requirement to display a steady right-turn yellow arrow and if needed, steady right-turn red arrow following the flashing right-turn yellow arrow for permissive right-turn movements changing to protected right-turn movements when there is an opposing permissive left-turn movement that is being terminated simultaneously. FHWA proposes this change because a yellow change interval and red clearance interval might be needed during a right-turn overlap to allow opposing permissive left-turn traffic to clear the intersection.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed with editorial revisions.</p> <p>in addition, P4 is revised to an Option consistent with changes noted in item 383.</p>
412	<p>In Section 4F.16 (existing Section 4D.25), retitled, "Signal Indications for Approaches with No Through Movement," FHWA proposes to expand information regarding signal displays in situations where all traffic on an approach must turn onto the intersecting roadway. Existing Section 4D.25 does not address situations for approaches where there is no through movement and there is not a shared left-turn/right-turn lane or the lanes operate with variable lane-use regulations.</p> <p>FHWA also proposes to add an Option to allow the continuous display of a steady circular red signal indication during time when the traffic control signal is being operated in steady (stop-and-go) mode.</p> <p>FHWA proposes to add a new Standard prohibiting the display of circular green and circular yellow signal indications to an approach with no through movement and an approach speed 35 mph or greater, to an approach where the one-way roadway that opposes the approach is an exit ramp from a freeway or expressway, or to an approach where the one-way roadway that opposes the approach has a speed limit of 35 mph or greater.</p>	<p>The change is generally adopted as proposed with revisions noted below.</p> <p>The change is generally adopted as proposed but the Option is revised to clarify that the CIRCULAR RED signal indication can be displayed while steady or flashing YELLOW ARROW and steady GREEN ARROW signal indications are displayed.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
412 cont'd	FHWA proposes the new Option and Standards to improve safety by minimizing the potential for road users driving straight through in the wrong direction onto a one-way roadway or exit ramp.	In response to comments, P2 is revised to exempt single-lane approaches from the requirement of a minimum of two primary signal faces for the turning movement that is considered to be the major movement from the approach. This exemption allows two signal faces on a single-lane approach instead of three signal faces that was proposed to be required based on the NPA. A similar revision is made to P1 in NPA Section 4D.04, renumbered Section 4D.05.
413	In Section 4F.17 (existing Section 4D.26) Yellow Change and Red Clearance Intervals, FHWA proposes to change P2 from Standard to Support because the paragraph describes the function of a yellow change interval, rather than specific requirements.	The change is adopted as proposed.
	FHWA also proposes to revise Support P7 to reference "Guidelines for Determining Traffic Signal Change and Clearance Intervals: A Recommended Practice of the Institute of Transportation Engineers," which contains the current practices for determining the duration of yellow change and red clearance intervals.	This change is not adopted based on the comments received. Significant research is underway to evaluate the state of the practice nationally and to recommend an updated methodology to determine change and clearance intervals. The Support paragraph is deleted. This issue will be revisited in a future edition based on the outcome of that research.
	In addition, FHWA proposes to revise Guidance P14 to recommend the maximum duration of yellow change interval for through movements should be 6 seconds and for turning movements should be 7 seconds. As part of this change, FHWA proposes to delete the second sentence of Guidance P14 and Guidance P15. FHWA proposes these changes to reflect new guidance in the new ITE publication.	This change is not adopted based on the comments received. The 2009 MUTCD text is retained since the reference to "Guidelines for Determining Traffic Signal Change and Clearance Intervals: A Recommended Practice of the Institute of Transportation Engineers" is not adopted.
414	In new "Section 4F.19 Preemption Control of Traffic Control Signals" consisting of paragraphs from existing Section 4D.27, FHWA proposes to revise the Standard regarding preemption control transitions to permit the shortening or omission of any pedestrian change interval only when the traffic control signal is being preempted because a boat is approaching a movable bridge or because rail traffic is approaching a grade crossing. FHWA proposes this change to improve pedestrian safety. The existing MUTCD allows the shortening or omission of the pedestrian change interval regardless of the reason. Unlike boats and trains, emergency vehicles and buses generally have the ability to slow, stop, or alter their course if necessary to avoid a collision.	See Preamble of Federal Register for discussion of this item.
	FHWA also proposes to add a new Option permitting the display of a distinctive indication to inform law enforcement personnel who are escorting traffic that the traffic control signal has changed because it has been preempted. FHWA proposes this change based on an NTSB recommendation from the results of their	The change is adopted as proposed.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
414 cont'd	<p>investigation into the causes of the fatal truck/train crash that occurred in Midland, Texas, when law enforcement officers were escorting a parade (<a href="https://www.nts.gov/investigations/AccidentReports/Reports/HAR1302.pdf">https://www.nts.gov/investigations/AccidentReports/Reports/HAR1302.pdf</a>).</p> <p>In addition, FHWA proposes to modify P11 to recommend that backup power supply for traffic control signals with railroad preemption or coordinated with flashing-light signal systems should provide a minimum operating period sufficient to allow the implementation of alternative traffic control during a power outage. FHWA proposes this change to provide agencies with more guidance on the duration for backup power supplies.</p>	<p>The change is adopted as proposed but the second sentence regarding the minimum operating period was deleted to allow engineering judgment.</p>
415	<p>In Section 4G.02 (existing 4D.29) Flashing Operation—Transition into Flash Mode, FHWA proposes to change P1 from Standard to Option because the language does not provide a requirement and is more appropriate as an Option.</p>	<p>The change is adopted as proposed.</p>
416	<p>In Section 4G.04 (existing Section 4D.31) Flashing Operation—Transition Out of Flashing Mode, FHWA proposes to add a new Guidance paragraph providing two recommended display sequences for transitioning out of yellow-red flashing mode where there is a common major-street green interval.</p> <p>FHWA also proposes to revise the existing recommendation for display sequences for transitioning out of yellow-red flashing mode where there is not a common major-street green interval to provide a steady yellow signal indication followed by a steady red clearance interval on the major traffic movement on the major street.</p> <p>FHWA proposes these changes for safety and consistency in signal operations.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>
417	<p>FHWA proposes to add a new Chapter, numbered and titled, Chapter 4H Bicycle Signals, that includes provisions for the application, design, and operation of bicycle signals. This chapter contains twelve sections and provisions related to the use, warrants, application, size, placement, mounting height, intensity and light distribution, and yellow change and red clearance intervals for Bicycle Signal Faces. These sections and provisions are generally consistent with provisions for traffic control signals. A bicycle signal face consists of RED BICYCLE, YELLOW BICYCLE, and GREEN BICYCLE symbol signal indications that controls bicycle movements from a designated bicycle lane or from a separate facility, such as a shared use path. The proposed provisions are based on the Interim Approval 16</p>	<p>The new Chapter 4H is generally adopted as proposed but with some revisions based on comments received. A few notable changes include relocating text from NPA proposed Section 9F.03 to this Chapter and adding a new Section for bicycle push buttons. See Preamble of Federal Register for additional discussion of use of bicycle signal faces at Pedestrian Hybrid Beacons.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
417 cont'd	(http://mutcd.fhwa.dot.gov/resources/interim_approval/ia16/index.htm) and multiple experimentations across the Country. One notable change from IA-16 is the removal of the green arrow signal indication requirement when there are conflicts with motor vehicles moving concurrently from an adjacent lane. FHWA proposes this change to provide agencies with an option to control bikeways or bicycle lanes at signalized intersections.	
418	In existing Section 4E.03 Application of Pedestrian Signal Heads, FHWA proposes to delete the section and relocate P1 and P3 to Section 4D.02.	The change is adopted as proposed.
	FHWA proposes to delete P2 in concert with the proposed new Guidance in Section 4D.02 that provides additional flexibility to use pedestrian signals.	The change is adopted as proposed.
419	In Section 4I.01 (existing Section 4E.01) Pedestrian Signal Heads, FHWA proposes to modify P2 to align better with the recommendation for an engineering study with specific factors for consideration as outlined in Section 4K.01.	See Preamble of Federal Register for discussion of this item.
420	In Section 4I.02 (existing Section 4E.04) Size, Design, and Illumination of Pedestrian Signal Head Indications, FHWA proposes to revise P3 and add new Standard and Guidance paragraphs to provide more accurate references to the ITE standards for pedestrian signal heads.	The change is adopted as proposed.
	FHWA also proposes to change P5 from Standard to Guidance. FHWA proposes this change for clarification and because the Walking Person and Upraised Hand symbols could be slightly visible to pedestrians at the far end of a crosswalk when not illuminated, due to sun phantom and other visual phenomena.	The change is adopted as proposed.
421	In Section 4I.03 (existing Section 4E.05) Location and Height of Pedestrian Signal Heads, FHWA proposes to change Standard P2 to Guidance to provide agencies with flexibility in the location of pedestrian signal heads with respect to vehicular signal heads when mounted on the same support.	The change is adopted as proposed.
422	In Section 4I.04 (existing Section 4E.07) Countdown Pedestrian Signals, FHWA proposes to clarify Standard P6 that countdown displays shall not be used during the red clearance interval of a concurrent vehicular phase that is ending simultaneously with or after the end of the pedestrian phase because countdown displays sometimes overlap across more than one vehicular phase and are used during the red clearance interval of the first overlapped phase.	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
423	<p>In Section 4I.05 (existing Section 4E.08) Pedestrian Detectors, FHWA proposes adding an Option to address the need for “touch-free” pedestrian push buttons.</p>	The change is not adopted as proposed.
	<p>FHWA also proposes in Guidance P4 to clarify “easy activation” of pedestrian push buttons as no more than 5 pounds of force to activate to reflect accessibility requirements contained in the Americans with Disabilities Act Accessibility Guidelines (ADAAG), 309.4 Operable Parts.</p>	The change is adopted as proposed.
	<p>FHWA also proposes several additional criteria for pushbutton locations to provide practitioners with additional guidance related to the placement of pedestrian push buttons in relation to curb ramps, crosswalks, shoulders, and the edge of pavement, as well as recommending a minimum 4-foot continuous clear width for a pedestrian access route. These proposed changes reflect Official Change Request 4(09)–77(C) (<a href="https://mutcd.fhwa.dot.gov/orsearch.asp">https://mutcd.fhwa.dot.gov/orsearch.asp</a>).</p>	The change is adopted as proposed.
	<p>FHWA also proposes to delete P17 since this is a repeat of P23 in existing 4E.11.</p>	The change is adopted as proposed.
424	<p>In Section 4I.06 (existing Section 4E.06) Pedestrian Intervals and Signal Phases, FHWA proposes to add a new Standard requiring the display of a flashing red signal indication when the pedestrian signal heads at a pedestrian hybrid beacon are displaying a flashing Upraised Hand signal indication. FHWA proposes this change to be consistent with the specified operation of pedestrian hybrid beacons in new Section 4J.03 (existing Section 4F.03).</p>	In response to comments received that noted that the proposed Standard was redundant with provisions in Section 4J.03, the proposed change is not adopted.
	<p>FHWA also proposes to revise existing P4 to reduce the minimum buffer interval from 3 seconds to 2 seconds. FHWA proposes this change based on the results of an official experiment that was performed by the Delaware DOT (<a href="http://sites.udel.edu/dct/files/2013/10/Rpt.-211-Pedestrian-Signals-2d65hei.pdf">http://sites.udel.edu/dct/files/2013/10/Rpt.-211-Pedestrian-Signals-2d65hei.pdf</a>). The experiment concluded there was no statistically significant difference from a safety perspective when the minimum buffer interval was reduced from 3 seconds to 2 seconds. FHWA proposes this change to provide additional flexibility to agencies in optimizing the timing of traffic signals.</p>	The change is adopted as proposed.
	<p>In addition, FHWA proposes to revise existing P7 to recommend calculating pedestrian clearance time based on crossing distance measured from the edge of the pavement and not from the shoulder or edge of the traveled way. FHWA proposes this change because pedestrians who are waiting for a walk indication typically do not feel safe waiting on a paved</p>	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
424 cont'd	<p>shoulder and instead wait at the edge of the pavement.</p> <p>Lastly, FHWA proposes to add a Standard requiring the minimum required time for the Walk interval be displayed in addition to the time provided for the leading pedestrian interval at locations where leading pedestrian intervals are being utilized without accessible pedestrian signals. FHWA proposes this change to align with accessible pedestrian signal guidance throughout Part 4.</p>	<p>In response to comments received that noted this proposed requirement may discourage the use of pedestrian leading intervals, the proposed change is adopted but reduced to Guidance to provide agencies more flexibility. Clarification is also made that the WALKING PERSON indication should be the time provided for the leading pedestrian interval plus 7 seconds.</p>
425	<p>In Section 4J.01 (existing Section 4F.01) Application of Pedestrian Hybrid Beacons, FHWA proposes to add a new Option to allow the reduction of the signal warrant criteria for pedestrian volume crossing the major street by as much as 50 percent if the 15th percentile crossing speed of pedestrians is less than 3.5 feet per second. FHWA proposes this change for consistency with traffic control signal Warrant 4, Pedestrian Volume.</p> <p>FHWA also proposes to add an Option to allow the separate application of the major-street traffic volumes criteria in each direction when there is a divided street having a median of sufficient width for pedestrians to wait in accordance with Official Ruling No. 4(09)–25(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_25.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_25.htm</a>) and for consistency with the proposed change in Section 4C.05.</p>	<p>See Preamble of Federal Register for discussion of this item.</p> <p>The new Option is adopted as proposed.</p>
426	<p>In Section 4J.02 (existing Section 4F.02) Design of Pedestrian Hybrid Beacons, FHWA proposes to add Item E in Standard P1 requiring a Stop sign for the minor-street approach when a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection.</p> <p>FHWA also proposes to delete existing items A and C of Guidance P4 regarding placement of pedestrian hybrid beacons with respect to side streets and driveways and the installation of signs and pavement markings. FHWA proposes these changes based on an FHWA evaluation study of field implementations (<a href="http://www.fhwa.dot.gov/publications/research/safety/10042/10042.pdf">http://www.fhwa.dot.gov/publications/research/safety/10042/10042.pdf</a>) of pedestrian hybrid beacons installed at or near intersections, which found that there were no significant safety or operational problems with such locations.</p> <p>FHWA proposes to add a Guidance statement recommending accessible pedestrian signals be installed in conjunction with a pedestrian hybrid beacon in response to Official Change Request 4(09)–42(C).</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
426 cont'd	<p>FHWA also proposes to change the first sentence of Standard P8 to an Option, allowing the CROSSWALK STOP ON RED or STOP ON RED-PROCEED ON FLASHING RED WHEN CLEAR signs to be installed facing each major street approach to provide agencies flexibility on where to locate these signs. FHWA proposes these changes based on the field experience of agencies that have extensively used pedestrian hybrid beacons. The 2017 Traffic Control Devices Pooled Fund Study—"Comprehension and Legibility of Selected Symbol Signs Phase IV" (<a href="https://pooledfund.org/Document/Download/7559">https://pooledfund.org/Document/Download/7559</a>) evaluated the comprehension and legibility of various alternatives for signing at midblock hybrid beacon pedestrian crossings. The results indicated that no significant differences were found between the alternatives; however, they did highlight the need for a sign, at least initially, while drivers are learning what actions to take based on the flashing beacon. As a result, FHWA proposes to add a word message sign for jurisdictions that determine the operational need at pedestrian hybrid beacons.</p> <p>FHWA also proposes a new Standard prohibiting the use of bicycle signal faces at a pedestrian hybrid beacon. FHWA proposes this because the speed at which bicyclists are able to enter and traverse the crosswalk would make it unsafe to allow a green or yellow bicycle symbol signal indication to be shown at the same time that a flashing red signal indication is shown to motorists. If the motorists are shown a steady red signal indication for the entire length of time that the bicycle signal face is showing a green or yellow bicycle symbol signal indication and a red clearance interval, the hybrid beacon would essentially be functioning as a traffic control signal, and not as a pedestrian hybrid beacon.</p>	<p>The change is adopted as proposed but with revisions to the sign legend based on comments received in Section 2B.60.</p>
427	<p>In Section 4J.03 (existing Section 4F.03) Operation of Pedestrian Hybrid Beacons, FHWA proposes to add a new Guidance paragraph recommending that pedestrian hybrid beacons operated as part of a coordinated signal system should not have a variable flashing yellow interval duration on a cycle-by-cycle basis.</p> <p>FHWA also proposes new Guidance that the pedestrian hybrid beacon should remain in the dark condition after a pedestrian actuation has been received until the point in the background cycle when the flashing yellow interval needs to begin to maintain the system coordination. FHWA proposes this change in accordance with Official Ruling No. 4(09)–32(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_32.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_32.htm</a>).</p>	<p>The change is adopted as proposed but revised to be a separate paragraph so that the duration of yellow interval should not vary, even if it is not part of a signal system.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
427 cont'd	Further, FHWA proposes to add a new Option allowing the pedestrian hybrid beacon to remain in dark condition after a pedestrian actuation until the minimum dark time has been provided, if the minimum dark time has been set on the controller.	The change is adopted as proposed. FHWA received comments that the minimum dark time was not defined and to provide more information in this section since this is the only place it is mentioned in the MUTCD. Based on the comments, a Support is added to describe the minimum dark time.
	FHWA also proposes to add a new Option allowing the use of a steady red clearance interval after the steady yellow change interval.	The change is adopted as proposed.
	FHWA also proposes to add an Option allowing the alternating flashing CIRCULAR RED signal indications to continue for a short period after the pedestrian change interval has terminated to provide a buffer interval for pedestrians. FHWA proposes these two new Options to increase safety and in accordance with Official Ruling No. 4(09)–14(I) ( <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_14.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_14.htm</a> ).	The change is adopted as proposed.
	In addition, FHWA proposes to add an Option to allow a pedestrian hybrid beacon in close proximity to an active grade crossing to be preempted.	The change is adopted as a Guidance rather than an Option, recommending rather than merely allowing preemption.
	Lastly, FHWA proposes to add a Standard requiring a pedestrian hybrid beacon to flash circular yellow signal indications to each major street approach and requiring the pedestrian signal heads to revert to the dark condition when placed into a flashing mode by a conflict monitor or manual switch. The proper signal and pedestrian displays for pedestrian hybrid beacons placed into flashing mode are not addressed in the current MUTCD and this new standard is intended to provide uniformity and consistency for road users.	The change is adopted as proposed.
428	In Section 4K.01, General, FHWA proposes to change existing Option P9 to Guidance and revise the text to recommend pedestrian push buttons be used to activate the accessible pedestrian signals at locations where it is not necessary for pedestrians to push a push button detector to receive a WALKING PERSON signal indication, and to provide information in non-visual formats. FHWA proposes this revision to align with accessible pedestrian signal guidance throughout Part 4.	The proposed change is not adopted based on equity concerns since activation of the accessible pedestrian features would require a button push while visual pedestrian signal indications would not.  See also the Preamble of Federal Register for additional discussion of Accessible Pedestrian Signals.
429	In Section 4K.03 (existing Section 4E.11), retitled, "Walk Indications," FHWA proposes to revise Standard P7 to clarify the existing requirements for a percussive tone for the audible walk indications. The only exception is for locations with two accessible pedestrian signals on the same corner, or on a median, that are associated with different phases and are located less than 10 feet apart, in which case a	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
429 cont'd	<p>speech message is required for the audible walk indication. FHWA proposes this change in accordance with Official Ruling No. 4(09)–3(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_3.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_3.htm</a>).</p>	
	<p>FHWA proposes to delete the second sentence in Support P14 allowing the use of transmitted speech messages, because there is no assurance that all impacted pedestrians would have a transmitter.</p>	The change is adopted as proposed.
	<p>FHWA proposes to remove the second sentence of Standard P17 limiting the use of speech walk messages to specific locations. FHWA proposes this revision to avoid redundancy, since this is addressed in greater detail, in P8.</p>	The change is adopted as proposed.
	<p>FHWA also proposes to change P17 through P20 from Standard to Guidance to provide agencies flexibility in developing speech walk messages.</p>	The change of P18 through P20 is adopted as proposed. P17 is retained as Standard for pedestrian safety reasons.
	<p>FHWA also proposes a new Standard requiring accessible pedestrian signal speech messages in a language other than English to follow the message first stated in English. FHWA proposes this change to establish consistency in the order of such messages when an optional secondary message in a language other than English is used, thereby meeting the expectancy of pedestrians.</p>	The change is adopted as proposed.
430	<p>In Section 4K.04 (existing Section 4E.12), retitled, “Vibrotactile Arrows and Locator Tones,” FHWA proposes to revise P1 and P2 to clarify the requirements for vibrotactile arrows and locator tones to improve safety for pedestrians with visual disabilities.</p>	The change is generally adopted as proposed. Based on comments received, the requirement for the vibrotactile arrow to be located on the push button is removed from the last sentence in P1 regarding locations without push buttons since push buttons are always provided with accessible pedestrian signals.
	<p>FHWA also proposes a new Option to allow the pushbutton locator tone to default to deactivated mode during periods when the steady UPRAISED HAND is displayed for the associated crosswalk if a passive pedestrian detection system is implemented that activates the locator tone when a pedestrian is present within a 12-foot radius from the push button location, in accordance with Official Ruling No. 4(09)-26(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_26.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_26.htm</a>).</p>	The change is adopted as proposed.
	<p>In addition, FHWA proposes to change the second portion of P6 from Standard to Guidance to recommend, rather than require, that pushbutton locator tones to be audible 6 to 12 feet from the pushbutton, or to the building line, whichever is less. FHWA proposes this change to provide agencies additional flexibility in locating pushbutton locator tones and pushbuttons.</p>	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
431	<p>In Section 4K.05 (existing Section 4E.13), retitled, “Extended Push Button Press Features,” FHWA proposes to change P7 from Option to Guidance to recommend that audible beaconing be initiated by an extended pushbutton press. FHWA makes this change to provide more consistent applications of audible beaconing.</p> <p>FHWA also proposes to add a value of 100 dBA for the maximum volume of the pushbutton locator tone during the pedestrian change interval and to require that the loudspeaker be mounted at the far end of the crosswalk at a height of 7 to 10 feet above the pavement. FHWA proposes this change to be consistent with existing provisions for accessible pedestrian signals in Section 4E.11, which are based on “NCHRP 3–62 Accessible Pedestrian Signals: A Guide to Best Practices” (<a href="http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w117a.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w117a.pdf</a>).</p> <p>Further, FHWA proposes to add a new Guidance paragraph recommending that the audible beaconing loudspeaker at the far end of the crosswalk should be within the width of the crosswalk.</p> <p>In addition, FHWA proposes to add an Option to permit the sound level of the accessible pedestrian signal walk indication and subsequent pushbutton locator tone to be increased by an extended pushbutton press.</p> <p>FHWA proposes these changes to improve accessible pedestrian signals for pedestrians with vision disabilities.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed with an editorial revision based on comments that the word “up” was inadvertently left out of the sentence. FHWA intended to propose to add a value up to 100 dBA for the maximum volume.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p> <p>In addition, a Standard is added requiring a PUSH BUTTON FOR 2 SECONDS FOR EXTRA CROSSING TIME (R10-32P) plaque adjacent to the pedestrian push button detector if additional crossing time is provided by means of an extended push button press. This is the same requirement that is included in Section 4I.05 but repeated here.</p>
432	<p>FHWA proposes to add a new Chapter numbered and titled, “Chapter 4L Rectangular Rapid-Flashing Beacons” (RRFBs) that includes three new sections and provisions for the application, design, and operation of rectangular rapid flashing beacons used to supplement pedestrian warning signs.</p> <p>RRFBs consist of two rapidly-flashed rectangular-shaped yellow indications, each with an LED-array based pulsing light source. The proposed provisions are based on the Interim Approval 21 (<a href="https://mutcd.fhwa.dot.gov/resources/interim_approval/ia21/index.htm">https://mutcd.fhwa.dot.gov/resources/interim_approval/ia21/index.htm</a>), a research study</p>	<p>The changes are adopted as proposed with minor edits based on comments received.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
432 cont'd	<p>(<a href="http://tti.tamu.edu/2014/06/18/new-rapid-flash-beacon/">http://tti.tamu.edu/2014/06/18/new-rapid-flash-beacon/</a> and <a href="https://static.tti.tamu.edu/tti.tamu.edu/documents/TTI-2014-5.pdf">https://static.tti.tamu.edu/tti.tamu.edu/documents/TTI-2014-5.pdf</a>) performed on the effectiveness of various flash patterns, and FHWA official interpretations (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_376.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_376.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_5.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_5.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_17.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_17.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_21.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_21.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_22.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_22.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_24.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_24.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_37.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_37.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_38.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_38.htm</a>, <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_41.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_41.htm</a>) and experimentations. One notable revision from the IA-22 is a new Standard requiring the design of the RRFBs to conform to the requirements for post-mounted or overhead placement described in paragraph 3 of Section 4L.02 if used at intersections. RRFBs have been shown to achieve high rates of compliance at a low relative cost in comparison to other more restrictive devices that provide comparable results, and they have been shown to provide an enhanced level of pedestrian safety at uncontrolled crosswalks that has been previously unattainable without costly and delay-producing full traffic signalization.</p> <p>FHWA proposes to add a Guidance statement in Section 4L.02 to recommend the use of audible information devices with RRFBs to assist pedestrians with vision disabilities. FHWA proposes this revision to provide additional assistance due to the lack of audible traffic cues.</p>	<p>The change is adopted as proposed except the speech message is changed to "Warning lights are flashing" based on comments received.</p>
433	<p>In Section 4M.03 (existing Section 4G.03) Operation of Emergency- Vehicle Traffic Control Signals, FHWA proposes to change P3 and P4 from Standard to Guidance to provide agencies additional flexibility in the operation of emergency-vehicle traffic control signals and warning beacons.</p>	<p>The changes are adopted as proposed.</p>
434	<p>In new "Section 4N.03 Operation of Emergency-Vehicle Hybrid Beacons," consisting of paragraphs from existing Section 4G.04, FHWA proposes to add a Standard requiring the beacon faces to display flashing yellow signal indications to each approach on the major street if placed into flashing mode by a conflict monitor or manual switch. FHWA proposes this change for consistency with requirements for traffic control signals.</p> <p>In addition, FHWA proposes to add an Option to allow an emergency vehicle hybrid beacon in close</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as a Guidance rather than an Option.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
434 cont'd	proximity to an active grade crossing to be preempted.	
N/A (Sec. 4O.03)	Section 4O.03 Operation of Traffic Control Signals for One-Lane, Two-Way Facilities (not discussed in the NPA Preamble)	In Section 4O.03, Operation of Traffic Control Signals for One-Lane, Two-Way Facilities, FHWA received comments that P1 should be changed from Standard to Guidance since the language regarding traffic requirements is vague and not appropriate for a Standard. Based on these comments, P1 is changed from a Standard to Guidance.
435	<p>In Section 4P.02 (existing Section 4I.02) Design of Freeway Entrance Ramp Control Signals, FHWA proposes to reorder the paragraphs and revise existing P3 to clarify that a minimum of two signal faces shall be provided on ramps that have one controlled lane as well as ramps that have more than one controlled lane and the ramp control signals are operated such that green signal indications are always displayed simultaneously to all of the controlled lanes on the ramp.</p> <p>For locations where there is more than one lane on an entrance ramp and the ramp control signals are not operated such that the green signal indications are always displayed simultaneously, FHWA proposes to split the requirements between two-lane entrance ramps and entrance ramps with three or more lanes. For two-lane entrance ramps that are separately controlled, at least two ramp control signals shall be provided for each lane. For three or more entrance ramp lanes that are separately controlled, one ramp control signal shall be provided over the approximate center of each lane. FHWA proposes these changes in accordance with Official Ruling No. 4(09)–6(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_6.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_6.htm</a>).</p> <p>FHWA also proposes a new Option to expand the existing exception to the requirement of 8-foot minimum lateral separation of signal faces for one-lane entrance ramps to apply to entrance ramps with two or more controlled lanes. FHWA proposes this change for consistency with single-lane ramps.</p> <p>Further, FHWA proposes to change P6 from Standard to Guidance to provide agencies additional flexibility in the location and design of ramp control signals.</p>	<p>The change is adopted as proposed.</p> <p>FHWA received comments that noted concerns with the additional signal faces the proposed NPA would require. Further, the commenters noted the safety risk is minimal if a signal indication was burnt out because the ramp would operate as they typically do without ramp control signals. Based on these comments, the proposed NPA revisions for two controlled lanes entrance ramps is not adopted, but the new Standard for three or more controlled lane entrance ramps is adopted.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>
436	In Section 4P.03 (existing 4I.03) Operation of Freeway Entrance Ramp Control Signals, FHWA proposes to revise Standard P3 to prohibit the use of flashing light emitting diode (LED) units within the legend or border of signs to inform road users that ramp control signal is in operation.	The change is adopted as proposed with editorial revisions.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
436 cont'd	<p>FHWA also proposes similar revisions to Section 4S.03 (existing Section 4L.03) Warning Beacon and Section 4S.04 (existing Section 4L.04) Speed Limit Sign Beacon to prohibit the use of flashing LED units within the legend or border of signs to inform road users that a regulation is in effect or that a condition is present.</p> <p>FHWA believes that warning beacons should be used to inform road users that a regulation is in effect and that flashing LED lights within the border or legend of the sign should only provide added conspicuity to sign legends.</p>	<p>FHWA adopts the prohibition of LED units in Speed Limit signs to inform road users that a speed limit is in effect. However, the prohibition was added as a Standard in Section 2A.12 rather than including it as a Standard in Section 4S.04 as proposed in the NPA. FHWA inadvertently left out a similar Standard for 4S.03 but did address this issue in a Support statement. The Support provision is adopted with editorial revisions.</p>
437	<p>In Section 4Q.02 (existing Section 4J.02) Design and Location of Movable Bridge Signals and Gates, FHWA proposes to change P9, the last sentence of P13, P16, and P20 from Standard to Guidance and change P12 from Standard to Support to provide agencies with more flexibility in the design of movable bridge signals, gates, and signs.</p>	<p>The changes are adopted as proposed.</p>
N/A (Sec. 4Q.03)	<p>Section 4Q.03, Operation of Movable Bridge Signals and Gates (not discussed in the NPA Preamble)</p>	<p>In Section 4Q.03, Operation of Movable Bridge Signals and Gates, FHWA received comments that P4 should reference Section 4F.17 for yellow change intervals. Based on the comments, P4 is deleted since P2 already contains a reference to Section 4F.17 for yellow change intervals.</p>
438	<p>In Section 4S.01 (existing Section 4L.01) General Design and Operation of Flashing Beacons, FHWA proposes to revise Standard P4 to discontinue the existing allowance of a beacon within the border of a sign for School Speed Limit Sign Beacons. FHWA proposes this change because under certain light and weather conditions, the flashing beacon causes irradiation that can obscure the sign message if the beacon is within the sign or too close to the sign legend. This proposal is consistent with research demonstrating the phenomenon of irradiation or disability glare (<a href="https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1444-0938.2003.tb03080.x">https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1444-0938.2003.tb03080.x</a>). FHWA also proposes a corresponding revision to Section 4S.04 (existing Section 4L.04) Speed Limit Sign Beacon.</p> <p>FHWA also proposes to add Interchange Exit Direction signs with advisory speed panels as an exception to the Standard prohibiting flashing beacons within the border of the sign. FHWA proposes this revision to clarify the existing practice and for consistency with Figure 2E–27.</p> <p>FHWA also proposes to add a new Standard establishing eight-inch and twelve-inch as the two nominal diameter sizes for flashing beacon signal</p>	<p>The change is adopted as proposed. The corresponding revision to Section 4S.04 is moved to Section 2A.12 since it was more related to the appropriate use of LED units in the border of a sign.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
438 cont'd	indications in accordance with Official Ruling No. 4(09)–7(I) ( <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_7.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/4_09_7.htm</a> ).	
439	In Section 4S.02 (existing Section 4L.02) Intersection Control Beacon, FHWA proposes to add a new Standard requiring twelve-inch signal indications for Intersection Control Beacons facing approaches where road users view both flashing beacon indications and lane use control signal indications simultaneously or where the nearest flashing beacon signal face is more than 120 feet beyond the stop line, unless a supplemental near-side flashing beacon signal face is provided.	The change is adopted as proposed with editorial revisions.
	FHWA also proposes a new Guidance recommending twelve-inch signal indications for Intersection Control Beacons facing approaches where the speed is 40 mph or higher or where post-mounted flashing beacon signal faces are used. FHWA proposes these changes to increase the signal indication visibility for the road users and for consistency with provisions for traffic control signals.	The change is adopted as proposed.
440	In Section 4S.03 (existing Section 4L.03) Warning Beacon, FHWA proposes to delete P5 requiring a minimum of 15 feet and a maximum of 19 feet clearance above the pavement for warning beacons suspended over the roadway. FHWA proposes this change because P2 in new Section 4S.01 adequately addresses clearances and in accordance with Official Ruling No. 4(09)–11(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/4_09_11.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/4_09_11.htm</a> ).	The change is adopted as proposed.
	FHWA also proposes to modify P11 to specify that the BE PREPARED TO STOP (W3–4) sign and a WHEN FLASHING (W16–13P) plaque is the traffic signal warning sign assembly that may be used with the Warning Beacon interconnected with a traffic signal controller.	The change is adopted as proposed.
	FHWA also proposes to add a Guidance statement to recommend the use of audible information devices with pedestrian-actuated Warning Beacons to assist pedestrians with visual disabilities. FHWA proposes this revision to provide additional assistance due to the potential lack of audible traffic cues.	The change is adopted as proposed.
	FHWA proposes adding a new Standard prohibiting the use of vibrotactile and percussive indications in conjunction with audible information devices at pedestrian-actuated Warning Beacons at a pedestrian crossing.	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
440 cont'd	FHWA also proposes a new Guidance recommending that, if used, the audible message should be a speech message that says, "Yellow lights are flashing" and should be spoken twice. FHWA proposes these changes because the vibrotactile and percussive indications are reserved for the Walk indication.	The change is adopted as proposed except the speech message was changed to "Warning lights are flashing" based on comments received.
441	In Section 4S.04 (existing Section 4L.04) Speed Limit Sign Beacon, FHWA proposes to delete the second sentence of P2 to provide agencies more flexibility in arranging two or more indications.	The change is adopted as proposed.
	FHWA also proposes to modify P3 to expand the provision beyond two signal indications to address situations where four signal indications are used.	The change in P3 is adopted as proposed. Also, P4 is deleted, to reflect Official Change Request 4(09)-30 (C).
442	In Section 4S.05 (existing Section 4L.05) Stop Beacon, FHWA proposes to change P3 from Standard to Guidance to provide agencies flexibility in designing and installing the Stop Beacon with the Stop, Do Not Enter, and Wrong Way signs.	The change is adopted as proposed.
443	In Section 4T.01 (existing Section 4M.01) Application of Lane-Use Control Signals, FHWA proposes to add a new Option allowing the use of a USE LANE(S) WITH GREEN ARROW (R10-8) sign in conjunction with lane-use control signals, for consistency with Section 2B.62 (existing Section 2B.53).	The change is adopted as proposed.
444	In Section 4T.03 (existing Section 4M.03) Design of Lane-Use Control Signals, FHWA proposes to change P6 through P10 from Standard to Guidance to provide agencies flexibility in the design of lane-use control signals.	The change is adopted as proposed.
445	In Section 4T.04 (existing Section 4M.04) Operation of Lane-Use Control Signals, FHWA proposes to change the second sentence of P3 from Standard to Guidance to allow agencies flexibility in the duration of the Red X signal indication display.	FHWA received comments that noted concern about changing the Standard to Guidance due to safety risks if sufficient clearance time is not provided. Based on the comments, this paragraph is retained as a Standard and revised to require the RED X signal indication to be an appropriate duration to allow traffic to vacate the lane before any moving condition is allowed in the opposing direction.
446	In Section 4U.01 (existing Section 4N.01), retitled, "Application of In-Roadway Warning Lights," FHWA proposes to relocate and change P3 from Standard to Guidance to provide agencies additional flexibility in designing the height above the roadway surface of in-roadway warning lights.	The change is adopted as proposed.
447	In Section 4U.02 (existing Section 4N.02) In-Roadway Warning Lights at Crosswalks, FHWA proposes to add a Guidance statement recommending audible information devices be used with In-Roadway Warning Lights to provide	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
447 cont'd	<p>assistance for pedestrians with visual disabilities. FHWA proposes this revision to provide additional assistance due to the potential lack of audible traffic cues.</p> <p>FHWA also proposes a new Standard prohibiting the use of vibrotactile and percussive indications in conjunction with audible information devices at In-Roadway Warning Lights.</p> <p>FHWA also proposes new Guidance recommending that, if used, the audible message should be a speech message that says, "Yellow lights are flashing" and should be spoken twice. FHWA proposes these changes because the vibrotactile and percussive indications are reserved for the Walk indication and pedestrians with vision disabilities could misinterpret the device as an accessible pedestrian signal.</p>	<p>The change is adopted as proposed.</p> <p>The change is adopted as proposed except the speech message is changed to "Warning lights are flashing" based on comments received.</p>
448	<p>As part of the relocation of material related to low-volume roads to other parts within the Manual, FHWA proposes to provide content and retitle Part 5 Automated Vehicles. FHWA proposes all new content for this part.</p> <p>The purpose of this new part is to provide agencies with general considerations for vehicle automation as they assess their infrastructure needs, prepare their roadways for automated vehicle (AV) technologies, and to support the safe deployment of AVs.</p>	<p>Part 5 is retitled "Traffic Control Device Considerations for Automated Vehicles" in the final rule. The title change emphasizes that this part provides general considerations for agencies in relation to preparing for automated vehicle technology.</p> <p>See Preamble of Federal Register for discussion of this new Part.</p>
449	<p>FHWA proposes a new "Section 5A.01 Purpose and Scope" which contains a Support statement with general information about AV technologies, the MUTCD, and the purpose of the new part.</p>	<p>New Section 5A.01 is adopted but retitled as "Scope and Purpose" and with revised and expanded Support provisions based on comments.</p>
450	<p>In new "Section 5A.02 Overview of Connected and Automated Vehicles," FHWA proposes to include a Support statement describing various types of AV technology and sensors used by AVs.</p>	<p>New Section 5A.02 is adopted but with revised and expanded Support provisions based on comments.</p>
451	<p>In new "Section 5A.03 Definition of Terms," FHWA proposes to include a Support statement with several definitions for terms used extensively in AV technology. The definitions proposed are summarized from those found in the Society of Automotive Engineers Standard SAE J3016 (<a href="https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic">https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic</a>). The proposed terms include: Automated Driving Systems, Advanced Driver Assistance Systems, Automation Levels, Cooperative Automation, Driving Automation Systems (DAS), Dynamic Driving Task, and Operational Design Domain.</p>	<p>New Section 5A.03 is adopted but with revised and expanded Support provisions based on comments.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
452	<p>In new “Section 5A.04 Traffic Control Device and Use Considerations,” FHWA proposes a Support statement that describes the challenges related to the interaction between traffic control devices and DAS.</p> <p>FHWA also proposes to include a Guidance statement recommending agencies adopt maintenance policies or practices that consider both the human vehicle operator and DAS technology needs, and to use engineering judgment to determine traffic control device selection and placement with similar consideration.</p> <p>FHWA also proposes Support and Guidance statements regarding the fundamental principles and considerations to be applied in evaluating traffic control devices and other maintenance to support of AV technologies during maintenance and infrastructure improvements.</p>	<p>New Section 5A.04 is adopted but with revised and updated Support and Guidance provisions based on comments.</p>
453	<p>FHWA proposes a new chapter titled, “Chapter 5B Provisions for Traffic Control Devices” with sections regarding signs, markings, traffic signals, and temporary traffic control, as well as provisions for traffic control at railroad and light rail transit grade crossings, and traffic control for bicycle facilities.</p>	<p>See Preamble of Federal Register for discussion of this item.</p>
454	<p>In new “Section 5B.01 Signs,” FHWA proposes to include Support and Guidance statements regarding signs. In the Guidance statement, FHWA recommends that signs be clearly associated to the specific lane/road to which they apply, such as parallel roads with different speed limits and that information spreading practices be employed to minimize informational load.</p> <p>FHWA also proposes that standard sign designs be retained as much as possible.</p> <p>Finally, FHWA proposes that the illuminated portion of electronic signs should have a standard refresh/flicker rate, greater than 200 Hz. FHWA proposes this language to accommodate machine vision technology, while also helping human drivers.</p>	<p>See Preamble of Federal Register for discussion of this item.</p>
455	<p>In new “Section 5B.02 Markings,” FHWA proposes to include Support and Guidance statements with a list of considerations that should be used to accommodate machine vision used to support the automation of vehicles and benefit the performance of the human vehicle operator. Most of these considerations are addressed in more detail in Part 3 and references are provided to the primary Sections. These considerations include uniform line widths, the use of dotted edge line extensions along all entrance and exit ramps, along all auxiliary lanes, and along all</p>	<p>See Preamble of Federal Register for discussion of this item.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
455 cont'd	<p>tapers where a deceleration or auxiliary lane is added, use of chevron markings in exit gore areas, continuous markings in work zones and in all lane transitions, and minimum dimensions for dashed lines.</p> <p>FHWA also proposes to recommend that raised pavement markers not be used as a substitute for markings and that decorative elements in crosswalks be avoided to minimize any potential confusion for automated systems.</p>	
456	<p>In new "Section 5B.03 Highway Traffic Signals," FHWA proposes to include a Guidance statement with a list of considerations that should be used to accommodate machine vision used to support the automation of vehicles and benefit the performance of the human vehicle operator. The list includes consistency along a corridor of traffic signal design and placement with respect to approach lanes, and consistent LED refresh rates greater than 200 Hz.</p> <p>In concert with this change, FHWA proposes a Support statement describing the challenges in achieving corridor-based consistency necessary for machine vision. Information is provided on the benefits of using vehicle-to-infrastructure (V2I) technology for traffic signal systems to address inconsistencies in a corridor.</p>	See Preamble of Federal Register for discussion of this item.
457	<p>In new "Section 5B.04 Temporary Traffic Control," FHWA proposes Guidance and Standard statements regarding the use of signs and pavement markings to accommodate machine vision better and benefit the performance of the human vehicle operator in and through work zones. FHWA proposes that type of signs, spacing, and mounting height should follow the requirements in Part 6 and that the END ROAD WORK sign should be used to establish the end of the work zone.</p> <p>In the Standard, FHWA proposes existing pavement markings be maintained in all long-term stationary temporary traffic control zones in accordance with other referenced areas of the Manual. FHWA also proposes pavement markings match the alignment of the markings in place at both ends of the Temporary Traffic Control (TTC) zone and that they be placed along the entire length of any paved detour or temporary roadway prior to the detour or roadway being opened to road users. FHWA also proposes pavement markings in the temporary traveled way that are no longer applicable be removed or obliterated as soon as practical. As part of this requirement, FHWA proposes that pavement marking obliteration remove the non-applicable pavement</p>	See Preamble of Federal Register for discussion of this item.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
457 cont'd	<p>marking material, the obliteration method minimize pavement scarring, and painting over existing pavement markings with black paint or spraying with asphalt shall not be accepted as a substitute for removal or obliteration. FHWA proposes these changes to accommodate machine vision of AVs, which might not have the capabilities to distinguish between markings that appear to conflict with one another in the same way that a human road user can.</p> <p>Finally, FHWA proposes a Guidance statement to recommend provisions to enhance the visibility of vertical panels, tubes, and other channelizing devices, as well as markings, to accommodate machine vision as well as human vehicle operators.</p>	
458	<p>In new "Section 5B.05 Traffic Control for Railroad and Light Rail Transit Grade Crossings," FHWA proposes a Guidance statement recommending that placement of signs and markings be consistent within a corridor at both passive and active highway-rail grade crossings.</p> <p>In addition, FHWA proposes Guidance recommending that V2I communication be employed at a highway-rail grade crossing. Finally, FHWA proposes a Guidance statement recommending signs and pavement marking associated with railroad crossings and tracks that are no longer active be removed. FHWA proposes this language to accommodate machine vision better and benefit the performance of the human vehicle operator.</p>	New Section 5B.05 is adopted but with revised and updated Support and Guidance provisions based on comments.
459	<p>In new "Section 5B.06 Traffic Control for Bicycle Facilities," FHWA proposes a Guidance statement recommending that bicycle facilities be segregated from other vehicle traffic using physical barriers where practicable and that road markings are needed to denote the end of a bike lane that is merged with traffic. FHWA proposes this language to accommodate machine vision better and benefit the performance of the human vehicle operator.</p>	New Section 5B.06 is adopted but with revised and updated Support and Guidance provisions based on comments.
460	FHWA proposes to reserve Chapter 5C for potential future provisions.	The proposed "Reserved" Chapter 5C is not adopted. However, it is possible that potential future provisions could be considered for a new Chapter 5C in the future.
461	FHWA proposes to reorganize Part 6 by dividing some existing long chapters and sections into several chapters and/or several sections, each having a clearly understandable title, and by moving certain material to new locations within Part 6 to consolidate similar information in one place. In some cases, this involves the proposed creation of new Chapters and Sections that do not exist in the 2009 MUTCD.	The reorganization of Part 6 is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
461 cont'd	<p>FHWA believes this proposed reorganization would create a more logical flow of information and make it easier for users to find the content they need.</p> <p>In addition, FHWA proposes to delete text from various sections where such material duplicates or is very similar to existing text in other sections within Part 6 or elsewhere in the MUTCD. These reorganizations and elimination of redundancies are editorial in nature and do not significantly change the technical content or meaning, except as otherwise discussed below.</p>	
462	<p>Throughout Part 6, FHWA proposes to make various editorial revisions to eliminate the use of unacceptably vague and undefined terms, such as “reasonably safe,” replacing such phrases with more appropriate language.</p>	These editorial revisions throughout Part 6 are adopted as proposed.
463	<p>FHWA is proposing to revise several Guidance statements related to sidewalk closure during construction and accessible pedestrian access. Under Title II of the Americans with Disabilities Act (ADA), all State and local governments are required to take appropriate steps to ensure that their communications with people with disabilities are as effective as communications with others. [28 CFR 35.160(a)]. Effective communication means that whatever information is conveyed by or on behalf of a public entity must be as clear and understandable to people with disabilities as it is for people who do not have disabilities. The ADA requires public entities to furnish auxiliary aids and services—which include the acquisition or modification of equipment or devices—where necessary to afford individuals with disabilities an equal opportunity to participate in, and enjoy the benefits of, a service, program, or activity of a public entity. [28 CFR 35.160(b)(1)]. The provision of pedestrian facilities in the public right-of-way is generally recognized as a service provided by the public entity that owns such facilities. See, e.g., <i>Barden v. City of Sacramento</i>, 292 F.3d 1073 (9th Cir. 2002). When sidewalks are closed temporarily due to construction, it is important for the closure to be communicated to pedestrians in a manner that is accessible to pedestrians with vision loss.</p> <p>FHWA proposes to strengthen the language in Part 6 to address this need.</p> <p>Under Title II of the ADA, all State and local governments must operate services, programs, and activities, including pedestrian facilities in public street rights-of-way, such that, when viewed in their entirety, they are readily accessible to and usable by individuals with disabilities. The ADA requires that a public entity's newly constructed facilities be made</p>	See Preamble of Federal Register for discussion of this item.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
463 cont'd	<p>accessible to and usable by individuals with disabilities to the extent that it is not structurally impracticable to do so. The ADA also requires that, when an existing facility is altered, the altered facility be made accessible and usable by individuals with disabilities to the maximum extent feasible. Section 504 of the Rehabilitation Act of 1973, generally referred to as Section 504, includes similar requirements for public entities that receive Federal financial assistance.</p> <p>FHWA proposes to eliminate text that refers to a level of usage by pedestrians with disabilities as a basis for taking certain accessibility-related actions because the need to comply with the ADA does not depend on the frequency with which the facility is used by pedestrians with disabilities. FHWA also proposes to eliminate text suggesting that the accommodation of pedestrians with disabilities is sometimes unnecessary.</p>	
464	<p>In conjunction with the elimination of existing Part 5 Low- Volume Rural Roads, FHWA proposes to add a new Support paragraph in Section 6A.01 General regarding temporary traffic controls on low volume rural roads.</p> <p>FHWA also proposes to change the last two sentences of existing P10 from Standard to Guidance, to make this information regarding statutory authority to be consistent with similar information in Part 1.</p>	<p>The new Support paragraph is adopted as proposed, except the word "rural" is deleted in response to a comment, and other revisions are made to the first sentence in response to a comment from a municipality. The changes to existing Paragraph 10 are adopted as proposed.</p> <p>The changes are adopted as proposed.</p>
465	<p>In Section 6A.02 (existing Section 6B.01) Fundamental Principles of Temporary Traffic Control, FHWA proposes to add information on the spacing and number of signs in the advance warning area in order to address excessive queue lengths based on the findings of NTSB/HAR-15/02 Multivehicle Work Zone Crash I-95 Cranbury, New Jersey (<a href="https://ntsb.gov/investigations/AccidentReports/Pages/har1502.aspx">https://ntsb.gov/investigations/AccidentReports/Pages/har1502.aspx</a>).</p> <p>FHWA proposes to clarify the language in the Guidance statement of paragraph 7 parts 3A and 3B pertaining to pedestrian accessibility in accordance with 28 CFR 35.160(a)(1), which requires a public entity to take appropriate steps to ensure that communications with applicants, participants, members of the public, and companions with disabilities are as effective as communications with others.</p>	<p>The added information regarding the spacing and number of signs that was proposed to be added to this section is deleted because the same wording is being added in Section 6N.13 where it is more appropriate.</p> <p>The changes are adopted as proposed, except that the numbering of items in Paragraph 7 is restructured. The revised items are adopted as items C.1 and C.2</p>
466	FHWA proposes to divide existing Section 6F.01 Types of TTC Devices into two new sections, 6A.03 "TTC	

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
466 cont'd	<p>Devices” and 6A.04 “Crashworthiness of TTC Devices.”</p> <p>FHWA proposes to revise the Standard paragraph in new Section 6A.03 defining “traffic control devices” and the Support paragraph in Section 6A.04 regarding crashworthiness to be consistent with the revised definitions proposed for these terms in Part 1.</p>	<p>The second Standard in Section 6A.03 is clarified to include TTC devices on pedestrian facilities, bikeways, and pathways as a result of comments received. The remaining changes are adopted as proposed, except that a cross reference to the definition of “crashworthy” in Section 1C.02 is added in Section 6A.04.</p>
467	<p>In Section 6B.01 (existing Section 6C.01) Temporary Traffic Control Plans, FHWA proposes to add a Guidance statement recommending the development of a TTC plan for any activity, either planned or unplanned, that will affect road users, because TTC plans for such activities are an important element of roadway safety. In addition,</p> <p>FHWA proposes to delete the last three sentences of the Guidance paragraph about pedestrians with disabilities because this information is covered elsewhere in Part 6.</p>	<p>The new Guidance statement is adopted, but with modifications suggested in a comment.</p> <p>The change is adopted as proposed.</p> <p>In addition, in response to comments, the phrase “road user mix (motorist, bicyclists, and pedestrians)” is added to the list of variables affecting the needs of each zone. The final Option statement is also split up to avoid potential confusion.</p>
468	<p>In Section 6B.04 (existing Section 6C.04) Advance Warning Area, FHWA proposes to change the second sentence in P4 from Guidance to Option to clarify the intent of the language. FHWA proposes this change to provide flexibility for cases such as low-speed residential streets.</p>	<p>This change from Guidance to Option is adopted as proposed.</p>
469	<p>In Section 6B.05 (existing Section 6C.05) Transition Area, FHWA proposes to clarify the intent of the Standard Statement by adding that signs, arrow boards, and/or channelizing devices are the appropriate devices for directing road users from the normal path to a new path, except in the case of short-term mobile operations.</p>	<p>The revisions to the Standard statement are adopted, but with modifications suggested in a comment.</p>
470	<p>In Section 6B.08 (existing Section 6C.08) Tapers, FHWA proposes to delete the first sentence of Guidance P15, because the use of flaggers or temporary traffic control signals is covered elsewhere.</p>	<p>This sentence is deleted as proposed.</p>
471	<p>In Section 6C.02 (existing Section 6D.01) Pedestrian Considerations, FHWA proposes to edit and change existing P3 from Standard to Guidance because advance notification of a sidewalk closing is not always possible, especially in emergencies, therefore it is not appropriate to require advance notification.</p>	<p>Existing Paragraph 3 is changed to Guidance as proposed, but a modification is made to the paragraph based on comment to include other pedestrian facilities.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
471 cont'd	<p>FHWA also proposes to delete the second sentence of existing P4 regarding adequate pedestrian access in TTC zones to eliminate repetition with Section 6B.03 (existing Section 6C.03). In addition,</p> <p>FHWA proposes to add an Option statement about accommodating pedestrians if a short-term work zone is attended by project personnel, in order to provide more flexibility while maintaining pedestrian safety and convenience. FHWA also proposes to add a Guidance statement to recommend designing TTC zones to minimize conflicts between vehicular and pedestrian movements due to the likelihood of high pedestrian presence in roadways open to public travel to enhance pedestrian safety.</p> <p>FHWA further proposes to delete the existing second sentence of P22 about the upstream leading ends of temporary traffic barrier because this information is adequately covered in Section 6M.02 (existing Section 6F.85).</p>	<p>The second sentence of Paragraph 4 is deleted as proposed.</p> <p>The Option statement is adopted with editorial changes that were suggested by comment. The new Guidance statement is adopted, but the first half of the sentence is deleted, and the second half is incorporated into the previous paragraph based on comment.</p> <p>The second sentence of existing Paragraph 22 is deleted as proposed. Further, the first and third sentences of that paragraph are relocated to Section 6M.02.</p>
472	<p>In Section 6C.03 (existing Section 6D.02) Accessibility Consideration, FHWA proposes to eliminate the first portion of the second sentence in existing paragraph 3 that refers to a level of usage by pedestrians with disabilities as a basis for taking certain accessibility-related actions because the need to comply with the Americans with Disabilities Act does not depend on the frequency with which the facility is used by pedestrians with disabilities.</p>	<p>The first portion of the second sentence in existing paragraph 3 is deleted as proposed.</p>
473	<p>In Section 6C.05 (existing Section 6E.02) High-Visibility Safety Apparel, FHWA proposes to update the text to reflect the latest ANSI Standard 107 dated 2015, per Official Ruling Nos. 6(09)–2(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_002.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_002.htm</a>), 6(09)–4(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_004.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_004.htm</a>), 6(09)–12(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_12.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_12.htm</a>), and 6(09)–37(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_37.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_37.htm</a>), and in concert with these changes proposes to delete repetitive information covered by the ANSI standard.</p>	<p>These changes are adopted as proposed.</p>
474	<p>In Section 6D.02 STOP/SLOW Paddle for Hand-Signaling, FHWA proposes to delete the second, third, and fourth sentences of the Standard regarding the design details of this device, because those details are standardized and must comply with the existing provisions of Chapter 2A.</p> <p>FHWA also proposes to add an Option to allow the use of a STOP/STOP or SLOW/SLOW paddle in certain situations where appropriate, to provide additional flexibility.</p>	<p>These changes are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
475	In proposed Section 6D.03 Flag for Hand-Signaling, FHWA proposes to incorporate information about the color of flags to allow an alternate color of fluorescent orange-red based on Official Ruling No. 6(09)–1(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_001.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_001.htm</a> ) to provide flexibility during emergency situations.	This change is adopted as proposed except with an editorial modification suggested by comment.
476	<p>In Section 6D.05 (existing Section 6E.07) Flagger Procedures, FHWA proposes to revise P2 to reflect Official Ruling No. 6(09)–16(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_16.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_16.htm</a>) related to the use of hand movements alone by uniformed law enforcement officers to control road users approaching a TTC zone.</p> <p>FHWA also proposes further revisions to P2 that are intended to allow hand movements alone by uniformed law enforcement officers when directing traffic at special events.</p> <p>FHWA proposes to add an Option to allow the use of a STOP/STOP or SLOW/SLOW paddle in certain situations where appropriate, consistent with a similar proposed Option in Section 6D.02.</p>	These changes are adopted as proposed.
477	In Section 6D.06 (existing Section 6E.08) Flagger Stations, FHWA proposes to change P1 from Standard to Guidance, since the required flagger station location may not be achievable in some geometric conditions and signing would have to be relied upon.	Based on comment, Paragraph 1 is retained as a Standard and a new Option paragraph is added to address the special conditions.
478	<p>In Section 6E.04 (existing Section 6C.13) Pilot Car Method, FHWA proposes to revise the Standard statement to allow mounting of the sign on top of the pilot vehicle as well as on the rear, and to clarify that pilot car operations shall be coordinated with flagging or other control methods, as this is necessary for safety.</p> <p>FHWA also proposes to add a new Standard to require a flagger to operate an Automated Flagger Assistance Device (AFAD) in pilot car operations based on Official Ruling No. 6(09)–15(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_15.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_15.htm</a>) to clarify that an AFAD is not a temporary traffic control signal and should not be operated in an automatic manner.</p>	These changes are adopted as proposed, except that based on comment, clarification is added that the flagger operating the AFAD cannot be in the pilot vehicle, and a recommendation is added that signing should be considered if temporary traffic control signals are used and wait times might be long.
479	In conjunction with the elimination of existing Part 5 Low- Volume Rural Roads, FHWA proposes to revise P9 of Section 6F.01 (existing Section 6F.02) General Characteristics of TTC Zone Signs, to integrate information about low-volume rural roads and to	These changes are adopted as proposed with minor editorial changes recommended by commenters.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
479 cont'd	<p>reduce the speed below which minimum sign sizes can be used from 35 mph to 30 mph.</p> <p>FHWA proposes to change P10 of this Section from Standard to Guidance because there may be cases where it is necessary to deviate from standard sign sizes in increments other than in 6-inches.</p> <p>FHWA proposes to remove the requirement in P14 for sign material to have a smooth, sealed outer surface, since such requirement is not appropriate for the MUTCD.</p>	
480	In Section 6F.02 (existing Section 6F.03) Sign Placement, FHWA proposes to remove the support statement of existing paragraph 18 because NCHRP Report 350 is no longer a valid method of determining crashworthiness.	This change is adopted as proposed.
481	In Section 6G.07 (existing Section 6F.11) STAY IN LANE Signs (R4-9, R4-9a), FHWA proposes the STAY IN LANE TO MERGE POINT (R4-9a) sign to support the Late Merge option in Section 6N.19.	This sign is adopted as with editorial changes to the text of the new paragraph in response to comment.
482	In Section 6G.10 (existing Section 6F.14) SIDEWALK CLOSED Signs (R9-9, R9-10, R9-11, R9-11a), FHWA proposes to delete the last sentence in the support statement of existing paragraph 6 because it contradicts the Standard in 6C.03 Accessibility Considerations.	This sentence is deleted as proposed.
483	FHWA proposes to add a new Section 6G.11 Turn Off 2-Way Radio and Cellphone (R22-2) Sign and relocate the information about this sign (which is currently numbered W22-2) from existing Section 6F.42 to this new section, because the sign conveys a regulatory message rather than a warning message.	This new section is adopted as proposed, except that the R22-2 sign designation is added to the title and the text.
484	In Section 6H.01 (existing Section 6F.16) Warning Sign Function, Design, and Application, FHWA proposes to change the last phrase of existing P2 (new P3) regarding fluorescent yellow-green backgrounds from Standard to Option to be consistent with Part 2.	This change is adopted as proposed.
485	In Section 6H.03 (existing Section 6F.18) ROAD (STREET) WORK Sign (W20-1), FHWA proposes to change P3 from Standard to Option because the primary legend is specified in the "Standard Highway Signs" publication, and the allowable alternate legends are covered by the new Option.	This change is adopted as proposed.
486	In Section 6H.04 (existing Section 6F.19) DETOUR Sign (W20-2), FHWA proposes to change P2 from Standard to Option because the primary legend is	This change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
486 cont'd	specified in the "Standard Highway Signs" publication, and the allowable alternate legends are covered by the new Option.	
487	In Section 6H.05 (existing Section 6F.20) ROAD (STREET) CLOSED Sign (W20-3), FHWA proposes to change P2 from Standard to Option because the primary legend is specified in the "Standard Highway Signs" publication, and the allowable alternate legends are covered by the new Option.	This change is adopted as proposed.
488	In Section 6H.06 (existing Section 6F.21) ONE LANE ROAD Sign (W20-4), FHWA proposes to change the second sentence of P2 from Standard to Option because the primary legend is specified in the "Standard Highway Signs" publication, and the allowable alternate legends are covered by the new Option.	This change is adopted as proposed.
489	In Section 6H.07, retitled, (existing Section 6F.22) "Lane(s) Closed Signs (W20-5, W20-5a, and W9-3)," FHWA proposes to change part of P2 from Standard to Option because the allowable alternate legends are covered by the new Option.  FHWA also proposes to combine existing Section 6F.23 The CENTER LANE CLOSED AHEAD (W9-3) sign into this section since Section 6H.07 includes all the other lane closure signs.	These changes are adopted as proposed, except with editorial changes to the text from existing Section 6F.23. Also, a new phrase referring to the use of a shifting taper is added based on comment.
490	In Section 6H.08 (existing Section 6F.24) Lane Ends (W4-2, W9-2a) signs, FHWA proposes the Merge Here Take Turns (W9-2a) sign to identify the merge point and to take turns merging during Late Merge applications.	This new sign is adopted with editorial changes to the text based on comment.
N/A (Sec. 6H.17)	Section 6H.17, Narrow Two-Way Traffic sign (not discussed in the NPA Preamble)	Based on comments in Chapter 2C, the Opposing Lane Traffic Divider (W6-4) sign name is changed to Narrow Two-Way Traffic Sign in Section 6H.17.
491	In Section 6H.24 (existing Section 6F.39) UTILITY WORK Sign (W21-7), FHWA proposes to change P3 from Standard to Option because the primary legend is specified in the "Standard Highway Signs" publication, and the allowable alternate legends are covered by the new Option.	This change is adopted as proposed.
492  432 cont'd	In Section 6H.25 (existing Section 6F.40) Signs for Blasting Areas, FHWA proposes to consolidate existing Sections 6F.40 thru 6F.43 since they all relate to signs in blasting areas.  FHWA also proposes to revise P2 to reflect the change of the W22-2 sign to a regulatory sign because the sign is requiring an action and not warning about a hazard.	These changes are adopted as proposed, except that the R22-2 sign designation is added to the text.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
493	In Section 6J.01 (existing Section 6F.77) Pavement Markings in TTC Zones, FHWA proposes to change the first two sentences of P4 from Standard to Guidance, because “as soon as practical” is not defined and obliteration of pavement markings cannot always be complete and without significant scarring.	This change is adopted as proposed.
494	In Section 6J.03 (existing Section 6F.79) Temporary Raised Pavement Markers, FHWA proposes to revise the required spacing for temporary raised pavement markers in P3 and P4 to simplify layout in the field by providing specific distances rather than equations.	This change is adopted as proposed.
495	In Section 6K.01 (existing Section 6F.63) Channelizing Devices— General, FHWA proposes to add P10 and revise P12 to reflect changes associated with Official Ruling No. 6(09)–11(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_11.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_11.htm</a> ).  Also, FHWA proposes to change existing P18 from a Standard to a Guidance statement because “significant amount” is not defined.	The change to the first Option statement in Paragraph 6 is not adopted, in response to comment. The changes to Paragraphs 10 and 12 are adopted as proposed.  The proposed change from Standard to Guidance for Paragraph 18 is not adopted. Instead, based on comment, the sentence is modified to eliminate “significant amount” and to replace it with “no longer serviceable”, which is defined in Section 1C.02.
496	FHWA proposes to create a new section numbered and titled, “Section 6K.02 Pedestrian Channeling Devices” that contains information relocated from existing Section 6F.63 plus new Standard, Guidance, Option, and Support information specific to pedestrian channelizing devices.  Within this new section, FHWA proposes to add a new figure, Figure 6K–2, illustrating an example of a pedestrian channelizing device, including hand trailing for visually-disabled pedestrians.	The new section and new figure are adopted as proposed, except with several editorial modifications to make the text more consistent and clear.  Also, a new paragraph is added to the text about a 2-inch gap between the hand-trailing edge and its support to make the text consistent with the figure in response to comment.
497	In Section 6K.07 (existing Section 6F.68) Type 1, 2, or 3 Barricades, FHWA proposes to change the second sentence of P22 from Standard to Guidance, because “adequate” is not defined and cannot be achieved in all geometric conditions.	This change is adopted as proposed.
498	FHWA proposes to revise Section 6K.11 (existing Section 6F.72) Temporary Lane Separators, to reflect the intended use of these devices more accurately.  FHWA proposes to revise the two Standard statements and to add a new Guidance statement to clarify the design of these devices and to indicate that temporary lane separators should not be used to shield obstacles or provide positive protection for workers or pedestrians.	These changes are adopted as proposed, except with a couple of editorial modifications to the text.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
498 cont'd	FHWA also proposes to revise P5 to reflect the intentional movement of temporary lane separators in a TTC zone per Official Ruling No. 6(09)–14(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_014.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_014.htm</a> ).	
499	FHWA proposes to revise Section 6L.01 (existing Section 6F.84) Temporary Traffic Control Signals to conform to proposed changes in Section 4K.01.	This change is adopted as proposed.
500	In Section 6L.03 (existing Section 6E.05) STOP/SLOW Automated Flagging Assistance Devices, FHWA proposes to add an Option for use of a new WAIT ON STOP–GO ON SLOW sign combining the messages of the two existing signs, to provide additional flexibility.	This change is adopted as proposed.
501	In Section 6L.05 (existing Section 6F.60) Portable Changeable Message Signs, FHWA proposes to revise P19 regarding the use of portable changeable message signs to simulate an Arrow Board display, per Official Ruling No. 6(09)–18(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_18.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_18.htm</a> ).	This change is adopted as proposed.
502	In Section 6L.07 (existing Section 6F.83), retitled, “Flashing Beacons and Warning Lights,” FHWA proposes to relocate a portion of Standard P11 from existing Section 6F.63 pertaining to the use of flashing warning lights in order to place this information in the appropriate section.  FHWA also proposes to revise existing P9 to clarify that the only allowable use of a series of sequential flashing warning lights is on channelized devices that form a merging taper.	These changes are adopted as proposed.
503	FHWA proposes to add a new Section 6M.01 General, consisting of a Support statement to introduce the proposed new Chapter 6M, in which is grouped the existing information concerning TTC zone design features and devices that are not traffic control devices.	This new section is adopted as proposed.
504	In Section 6M.02 (existing Section 6F.85) Positive Protection and Temporary Traffic Barriers, FHWA proposes to change P4 from Guidance to Standard to improve worker safety within the work zone. FHWA also proposes to revise existing P8 and delete P9 and P10 to broaden the description of movable barriers.	These changes are adopted as proposed, except with editorial changes to the text of Paragraph 8 to eliminate two uses of the word “may” in a Support paragraph.
505	In Section 6M.04 (existing Section 6F.74) Detectable Edging for Pedestrians, FHWA proposes to eliminate the first portion of the first sentence in P2 that refers to a level of usage by pedestrians with disabilities as	These changes are adopted as proposed, except that an editorial change is made to the text of Paragraph 2 to replace “protrude” with “extend”.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
505 cont'd	a basis for taking certain accessibility related actions because the need to comply with the Americans with Disabilities Act does not depend on the frequency with which the facility is used by pedestrians with disabilities and to correct the edging distance in the second sentence of existing P2 from 6 inches to 8 inches to be consistent with new Section 6K.02.	
506	In Section 6M.05 (existing Section 6F.86) Crash Cushions, FHWA proposes to delete the last existing Guidance paragraph about use of these devices in accordance with manufacturer's specifications and instead insert this into P5 as part of the Standard statement, to consolidate information about design and use.	This change is adopted as proposed.
507	FHWA proposes to delete existing Section 6F.81 Lighting Devices because such devices are not defined.  As part of this change, FHWA proposes to relocate two of the existing paragraphs to Sections 6L.07 and 6N.01.	These changes are adopted as proposed.
508	In Section 6M.08 (existing Section 6F.82) retitled, "Lighting for Night Work," FHWA proposes to change existing P4 from a Standard to a Guidance statement to reflect the intent to minimize glare caused by floodlighting.  FHWA proposes to add two new sentences to existing P5 to recommend that lighting should be sufficient so as to identify a worker clearly as a person and care should be taken to minimize the potential for shadows to conceal workers within the work area.	These changes are adopted as proposed, except with a modification to the first new sentence added to Paragraph 5 based on comment.
509	In Section 6N.01 (existing Section 6G.02) Work Duration, FHWA proposes to change P2 from Standard to Guidance to allow flexibility in the definition of the five categories of work duration at a location.  FHWA also proposes to add a new Support to describe the rolling roadblock method for temporary traffic control based on findings from the NTSB H-17-2 Bus Crash-US 101 San Jose, California ( <a href="https://www.nts.gov/investigations/AccidentReports/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=H-17-002">https://www.nts.gov/investigations/AccidentReports/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=H-17-002</a> ).	The proposed change from Standard to Guidance for Paragraph 2 is not adopted, based on comment.  The new Support paragraph is adopted as proposed, except with a few editorial modifications.
510	In Section 6N.04 (existing Section 6G.05) Work Affecting Pedestrian and Bicycle Facilities, FHWA proposes to add new Guidance, Support, and Standard statements, to provide additional information for accommodating bicycles through TTC zones.	These new paragraphs are adopted as proposed, except with some editorial modifications, and in P18, 17 feet is changed to 14 feet to make the text consistent with new typical applications figures in Chapter 6P in response to comment.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
511	In Section 6N.05 (existing Section 6G.06) Work Outside of the Shoulder, FHWA proposes to revise from Option to Guidance a sentence about the use of a SHOULDER WORK sign if work vehicles are on the shoulder, for enhanced safety.	This change is adopted as proposed.
512	In Section 6N.13 (existing Section 6G.14) Work Within the Traveled Way of a Freeway or Expressway, FHWA proposes to add a new Support on the spacing and number of signs in the advance warning area due to excessive queue lengths based on the findings of NTSB/HAR-15/02 Multivehicle Work Zone Crash I-95 Cranbury, New Jersey.	These changes are adopted as proposed, except with editorial modifications, and part of the new Support text is changed to Guidance based on comment and consistent with the use of the term "should" in the NPA language.
513	In Section 6N.14 (existing Section 6G.15) Two-Lane, Two-Way Traffic on One Roadway of a Normally Divided Highway, FHWA proposes to revise P2 to clarify that Opposing Lane Traffic Divider (W6-4) signs on flexible supports are one of the types of devices that can be used to separate opposing vehicular traffic.	This change is adopted with an editorial modification.
514	FHWA proposes to add Section 6N.19 Late Merge to provide Guidance and Option statements to provide consistency when utilizing the Late Merge concept with lane closures.	These changes are adopted as proposed, except with a significant number of editorial changes as a result of comments to make the language clearer and more accurate.
515	<p>In Section 6O.01 (existing Section 6I.01) General, FHWA proposes to include an explanation to incorporate estimated time durations in the planning and training initial incident estimate.</p> <p>FHWA also proposes to revise P8 to include an explanation of safe positioning of emergency vehicles arriving at an incident. This information is currently included in Part 1 in the definition of the term "safe-positioned" but, as noted previously, the definition is being deleted since the term is only used in Section 6O.01.</p>	These changes are adopted as proposed, except with several editorial changes to eliminate the use of the word "may" in a Guidance statement.
516	<p>In Section 6P.01 (existing Section 6H.01) Typical Applications, FHWA proposes to add eight new Typical Application figures along with notes to accompany them. New Figures 6P-47 through 6P-51 illustrate and describe five different situations involving work impacting bicycle facilities, to supplement proposed new text information in Section 6N.04 (existing Section 6G.05). New Figures 6P-52 through 6P-54 illustrate and describe procedures for work at a roundabout.</p> <p>In addition, FHWA proposes to revise the existing drawings and/or notes for the following existing figures in Chapter 6P (existing Chapter 6H).</p>	Figures 6P-47 through 6P-54 are added as proposed except with a number of editorial revisions in response to comments.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
516a	Notes for Figure 6P–3 (existing Figure 6H–3) Work on Shoulders: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516b	Notes for Figure 6P–4 (existing Figure 6H–4) Short Duration or Mobile Operation on a Shoulder: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516c	Notes for Figure 6P–6 (existing Figure 6H–6) Shoulder Work with Minor Encroachment: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516d	Notes for Figure 6P–7 (existing Figure 6H–7) Road Closure with a Diversion: FHWA proposes to revise existing note 10 from Option to Guidance, to recommend rather than merely allow the use of delineators along the diversion.	This change is adopted as proposed.
516e	Notes for Figure 6P–10 (existing Figure 6H–10) Lane Closure on a Two Lane Road Using Flaggers: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient. In response to comment, a new Option and cross reference to Automated Flagger Assistance Devices is added.
516f	Notes for Figure 6P–11 (existing Figure 6H–11) Lane Closure on a Two Lane Road with Low Traffic Volumes: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516g	Notes for Figure 6P–12 (existing Figure 6H–12) Lane Closure on a Two Lane Road Using Traffic Control Signals: FHWA proposes to revise Standard note 4 by deleting the requirement to use stop lines for intermediate-term closures, to provide additional flexibility.  FHWA also proposes to add a new Option note regarding the use of positive protection devices.	The change to Note 4 is adopted as proposed.  The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516h	Notes for Figure 6P–13 (existing Figure 6H–13) Temporary Road Closure: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient. In response to comment, a new Option and

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
516h cont'd		cross reference to Automated Flagger Assistance Devices is added.
516i	Notes for Figure 6P–14 (existing Figure 6H–14) Haul Road Crossing: FHWA proposes to revise Standard note 7a for completeness and clarity, and to add new Standard note 7b and Guidance note 11 pertaining to the use of actuated signal operation per Official Ruling No. 6(09)–7(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_7.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/6_09_7.htm</a> ).	These changes are adopted as proposed. In response to comment, a new Option and cross reference to Automated Flagger Assistance Devices is added.
516j	Notes for Figure 6P–15 (existing Figure 6H–15) Work in the Center of a Road with Low Traffic Volumes: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516k	Notes for Figure 6P–17 (existing Figure 6H–17) Mobile Operations on a Two-Lane Road: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516l	Notes for Figure 6P–18 (existing Figure 6H–18) Lane Closure on a Minor Street: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516m	Notes for Figure 6P–21 (existing Figure 6H–21) Lane Closure on the Near Side of an Intersection: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516n	Figure 6P–22 (existing Figure 6H–22) Right-Hand Lane Closure on the Far Side of an Intersection: FHWA proposes to revise the drawing in this figure to correspond with proposed changes in the notes for the figure as follows.  In Option note 2, FHWA proposes to relocate the third sentence to Support for consistency with the notes for other similar figures.  FHWA also proposes to add a new Option note regarding the use of continuous channelizers and a new Option note regarding the use of positive protection devices.	These changes are adopted as proposed, except with editorial changes.  This relocation is adopted as proposed.  The new Option note regarding the use of positive protection devices is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516o	Notes for Figure 6P–23 (existing Figure 6H–23) Left-Hand Lane Closure on the Far Side of an Intersection: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
516o cont'd		with the Option note in the text and the Option note is sufficient.
516p	Figure 6P–24 (existing Figure 6H–24) Half Road Closure on the Far Side of an Intersection: FHWA proposes to revise the drawing in this figure to remove the optional temporary markings and also to correspond with the proposed addition of a new Option note regarding the use of continuous channelizers and a new Option note regarding the use of positive protection devices.	These changes are adopted as proposed. The new Option note regarding the use of positive protection devices is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516q	<p>Figure 6P–25 (existing Figure 6H–25) Multiple Lane Closures at an Intersection: FHWA proposes to revise the drawing in this figure to correspond with proposed changes in the notes for the figure as follows.</p> <p>FHWA proposes to delete Guidance note 1 regarding placement of a LEFT LANE MUST TURN LEFT sign.</p> <p>FHWA also proposes to add a new Option note regarding the use of positive protection devices.</p>	<p>These changes are adopted as proposed.</p> <p>The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.</p>
516r	Notes for Figure 6P–27 (existing Figure 6H–27) Closure at the Side of an Intersection: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516s	<p>Figure 6P–28 (existing Figure 6H–28) Sidewalk Detour or Diversion: FHWA proposes to revise the drawing in this figure to correspond with the proposed changes in the notes for the figure as follows, to correspond with text changes in new Section 6N.04 (existing Section 6G.05).</p> <p>FHWA proposes to delete existing Standard note 1 and replace it with five new Standard notes.</p> <p>In addition, FHWA proposes to delete existing Guidance note 2 and replace it with two new Guidance notes, and to add one new Option note.</p> <p>FHWA also proposes to change the existing Guidance note 3 to a Standard in order to comply with 28 CFR 35.160(a)(1). These proposed changes are to correct discrepancies between the figure for Sidewalk Diversion and other sections in Part 6.</p>	The revisions are adopted as proposed with minor editorial changes.
516t	Figure 6P–29 (existing Figure 6H–29) Crosswalk Closures and Pedestrian Detours: FHWA proposes to add two new Standard statements and move the	The revisions are adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
516t cont'd	existing Guidance statement 3 to a Standard in order to comply with 28 CFR 35.160(a)(1).	
516u	Notes for Figure 6P-30 (existing Figure 6H-30) Interior Lane Closure on a Multi-Lane Street: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516v	Notes for Figure 6P-31 (existing Figure 6H-31) Lane Closure on a Street with Uneven Directional Volumes: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516w	Notes for Figure 6P-32 (existing Figure 6H-32) Half Road Closure on a Multi-Lane, High-Speed Highway: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516x	Notes for Figure 6P-33 (existing Figure 6H-33) Stationary Lane Closure on a Divided Highway: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516y	Notes for Figure 6P-35 (existing Figure 6H-35) Mobile Operation on a Multi-Lane Road: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516z	Notes for Figure 6P-37 (existing Figure 6H-37) Double Lane Closure on a Freeway: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516aa	<p>Notes for Figure 6P-38 (existing Figure 6H-38) Interior Lane Closure on a Freeway: FHWA proposes to delete two Guidance statements regarding visibility of the arrow boards because the statements are not needed and not consistent with the notes of other similar figures.</p> <p>FHWA proposes to add an Option Statement to allow the use of a truck mounted attenuator to improve worker safety.</p> <p>FHWA also proposes to add a new Option note regarding the use of positive protection devices.</p>	The revisions are adopted as proposed except that the CENTER LANE CLOSED AHEAD word message sign is replaced with a W9-3L symbol sign.
516bb	Notes for Figure 6P-40 (existing Figure 6H-40) Median Crossover for an Entrance Ramp: FHWA	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
516bb cont'd	proposes to add a new Option note regarding the use of positive protection devices.	with the Option note in the text and the Option note is sufficient.
516cc	Notes for Figure 6P–41 (existing Figure 6H–41) Median Crossover for an Exit Ramp: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516dd	Notes for Figure 6P–42 (existing Figure 6H–42) Work in the Vicinity of an Exit Ramp: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516ee	Notes for Figure 6P–43 (existing Figure 6H–43) Partial Exit Ramp Closure: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516ff	Notes for Figure 6P–44 (existing Figure 6H–44) Work in the Vicinity of an Entrance Ramp: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient.
516gg	Notes for Figure 6P–46 (existing Figure 6H–46) Work in the Vicinity of a Grade Crossing: FHWA proposes to add a new Option note regarding the use of positive protection devices.	The new Option note is adopted as proposed. However, a similar note that was proposed to be added to the figure is not adopted, as it is inconsistent with the Option note in the text and the Option note is sufficient. In response to comment, a new Option and cross reference to Automated Flagger Assistance Devices is added.
517	As part of the reorganization, FHWA proposes to consolidate Chapter 7A into two sections numbered and titled, “Section 7A.01 Introduction” and “Section 7A.02 School Route Plans and School Crossings.” The two sections consist of provisions from existing Section 7A.01 through Section 7A.04.	The consolidation of Chapter 7A into two sections is adopted as proposed.
518	<p data-bbox="228 1560 850 1707">520. In Section 7A.01 “Introduction,” FHWA proposes to change existing P1 in Section 7A.04 from a Standard to Support because the general information in this paragraph describing the scope of Part 7 is more appropriate as a Support statement.</p> <p data-bbox="228 1801 850 1980">FHWA also proposes to delete existing Support P2-4 and the first sentence of P5 that contain references to other sections, chapters, and parts in the Manual, because this text is unnecessary. The MUTCD users are accustomed to knowing that other areas of the Manual should be consulted when working in Part 7,</p>	The changes are adopted as proposed, except that P2 is deleted and instead the reference to the School Crossing signal warrant in Part 4 is relocated to Section 7A.02. A comment suggesting an additional reference, to Section 2B.17 for the all-way stop warrants, is not adopted because all-way stops are not specific to school areas, while the school crossing signal warrant is specific to school areas.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
518 cont'd	because school areas include signs, pavement markings, and traffic signals. FHWA retains the reference to the School Crossing signal warrant, because it is specific to school areas.	
N/A (Sec. 7A.02)	Section 7A.02 School Route Plans and School Crossings (not discussed in the NPA Preamble)	<p>The changes in this section are adopted as proposed, except that Support P1 in existing Section 7A.03, which was proposed for deletion (see below), is instead retained, and placed into Section 7A.02, as suggested by comments, as it is relevant information for consideration during the planning of school walk routes.</p> <p>The reference to Section 4C.06 for the School Crossing signal warrant is relocated to this section from Section 7A.01 as noted previously.</p> <p>In addition, in response to a commenter suggestion, a new Guidance paragraph is added stating "Bicycle use as a mode of transportation, as applicable, should also be considered if students biking to and from school are not allowed to use the sidewalks along the pedestrian route." This guidance is added to address students bicycling to and from school.</p> <p>A comment recommending deletion of "law enforcement" from the list in P1 of those who develop the school route plan is not adopted, as law enforcement would be aware of crashes that are occurring as well as operational issues or traffic violations in the area that are reoccurring, and thus should be involved.</p>
519	FHWA proposes to delete existing Section 7A.03 School Crossing Criteria. FHWA proposes to delete Support P1, because the information is not needed in the MUTCD, and relocate P2 to Section 7D.01 in order to place information about gaps in traffic with similar information in new Section 7D.01 (existing Section 7D.03).	Existing Section 7A.03 is deleted as proposed, except that Support P1 is retained in Section 7A.02 as noted above.
520	FHWA proposes to consolidate and combine information from existing Sections 7B.01 through 7B.07 into one section numbered and titled, "Section 7B.01 Design of School Signs." FHWA proposes to delete Standards and Guidance that are covered in Section 2A.11 as the information is redundant.	<p>The consolidation of seven existing sections into a single Section 7B.01 is adopted as proposed. Provisions covered in Section 2A.11 are deleted as proposed, however, the Standard requiring sizes in the Oversized column in Table 7B-1 to be used on expressways in school areas is retained because it refers to a table in Part 7 and not to Section 2A.11.</p> <p>In addition, the Guidance recommending the sizes in the Oversized column should be used on roadways that have four or more lanes with posted speed limits of 40 mph or higher is retained because this is specific guidance for school areas, not covered in Part 2, and it is important for the safety of school children on such wide high-speed roads.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
521	<p>FHWA also proposes to create a new section numbered and titled, "Section 7B.02 School Area Signs and Plaques" using information from existing Sections 7B.08 through Section 7B.10.</p> <p>FHWA proposes to change Standard P1 in existing Section 7B.10 to Guidance because many States have higher fines by statute in school zones, work zones, and other locations. Retaining this as a Standard may have an unintended consequence of placing a financial burden on States and municipalities to sign for every location where there are increased fines; therefore, FHWA believes that the use of engineering judgment is more appropriate.</p> <p>FHWA also proposes to add new Guidance, Standard, and Option paragraphs to clarify the application of Higher Fines Signs and Plaques in school areas based on Official Ruling No. 7(09)–3(I) (<a href="https://mutcd.fhwa.dot.gov/reqdetails.asp?id=1150">https://mutcd.fhwa.dot.gov/reqdetails.asp?id=1150</a>).</p>	<p>New Section 7B.02 is adopted as proposed, except that all text regarding higher fines signs and plaques is relocated to a new Section 7B.06 that deals solely with that topic. This change is made to simplify and make easier to understand the basic signing for school areas, without the complicating language regarding higher fines zones. See Disposition of new Section 7B.06 regarding disposition of proposals in the NPA regarding higher fines zones.</p>
522	<p>FHWA proposes to create a new section numbered and titled, "Section 7B.03 School Crossing Signs" by combining information from existing Sections 7B.11 and Section 7B.12.</p> <p>FHWA also proposes to change a portion of Standard P3 in existing Section 7B.12 prohibiting the use of School Crossing assemblies on approaches controlled by a YIELD sign to Guidance. FHWA proposes this change to revert back to the language in the 2003 MUTCD. NCUTCD suggested this change because the language in the 2009 Edition that prohibited the use of School Crossing assemblies on approaches controlled by a STOP or a YIELD sign was too restrictive. An NCUTCD task force working on this issue cited that the School Crossing assembly provides beneficial guidance to road users on approaches where vehicles are not required to stop; therefore, prohibiting their use where YIELD signs are placed could have a negative effect on the safety of school children. In conjunction with this change, FHWA proposes two new Options allowing a School Crossing Assembly on Yield approaches to roundabouts and channelized right turn lanes controlled by a Yield sign. Also, FHWA proposes to allow a Yield Here To (Stop Here For) Pedestrians (R1–5a or R1–5c) sign in advance of a marked crosswalk on a multi-lane approach in a school zone in accordance with the provisions in Section 2B.20.</p> <p>FHWA proposes to change existing Options P4, P5, P6, and existing Standard P8 in existing Section 7B.12 to clarify the application of In-Street Pedestrian Crossing (R1–6 or R1–6a) sign, In-Street School Crossing (R1–6b or R1–6c) sign, Overhead</p>	<p>New Section 7B.03 is adopted as with additional modifications described herein.</p> <p>Regarding prohibited use of School Crossing assemblies on approaches controlled by a YIELD sign, the proposal to change that from a Standard to a Guidance is not adopted, because with the adopted addition of the two new Options allowing use on certain types of yield-controlled approaches, the Standard clarifies the intent for most cases.</p> <p>The Standard text is modified to add "except as provided in Paragraphs 9 and 10 of this Section" to specifically refer to those Options.</p> <p>Also, in both of the two new Options, "at least one car length" is changed to "at least 20 feet" in response to a comment requesting more clarity.</p> <p>For consistency with requirements in Chapter 2B adopted in this final rule, a corresponding new Standard is added requiring in-street or overhead Pedestrian Crossing signs to be used only as a supplement to a School Crossing assembly with a diagonal downward-pointing arrow (W16-7P or W16-7aP) plaque at the crosswalk location.</p> <p>A comment recommending deletion of "multi-lane" so as to allow use of R1-5a or R1-5c signs on single-lane approaches to uncontrolled school crosswalks is not adopted, consistent with similar text in Section 2B.19.</p> <p>Lastly, FHWA received a comment requesting the MUTCD clarify if the School Crossing sign can or cannot be installed on an approach controlled by a</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
522 cont'd	<p>Pedestrian Crossing (R1–9 or R1–9a) sign, and 12-inch reduced size in-street School (S1–1) sign may be used at school crossings on approaches that are not controlled by a traffic control signal, a pedestrian hybrid beacon, or emergency vehicle hybrid beacon. FHWA proposes these changes to eliminate any potential confusion whether the various types of beacons are considered unsignalized intersections.</p> <p>FHWA proposes to modify the name of the In-Street Schoolchildren Crossing sign to In-Street School Crossing sign to be more consistent with other signs that it supplements and more accurately describe the use of the sign.</p> <p>Lastly, FHWA proposes to add an Option to allow an In-Street Pedestrian Crossing or In-Street School Crossing sign at intersections or midblock crossings with flashing beacons.</p>	<p>traffic signal. FHWA believes that the purpose of these signs is clear and for unexpected conditions. Pedestrians crossing at a signal would not be unexpected. FHWA will consider the need for further clarification in Part 7 and Chapter 2C in a future revision.</p>
523	<p>FHWA proposes to retitle Section 7B.04 (existing Section 7B.13) “School Bus Stop Signs” and incorporate information from existing Section 7B.14.</p>	<p>New Section 7B.04 is adopted as proposed.</p>
524	<p>FHWA proposed to add a new Section 7B.05 “School Bus Stop When Flashing Signs.” In this section FHWA proposes a new sign, “STOP FOR SCHOOL BUS WHEN RED LIGHTS FLASH” to remind drivers of the requirement to stop for school buses when the flashing red lights on the school bus are in operation. FHWA proposes this new sign in response to a recommendation from the NCUTCD as many States currently use variations of regulatory word messages for this purpose. The new sign would standardize the message for drivers.</p>	<p>The proposed new section 7B.05 and the proposed new sign it discusses are not adopted, in view of a significant number of comments opposing the new sign because it states a universally known rule of the road and because the addition of the sign to the MUTCD could lead to sign clutter. Jurisdictions are already able to post a word message sign to remind road users of a specific school bus law and action, especially in areas where there are multiple bus stops, geometric conditions such as multi-lane roadways, or where there has been a particularly high incidence of drivers not stopping for school buses when the red lights are flashing. As a result of removal of this section, the two subsequent sections (7A.06 and 7A.07) are renumbered to 7B.05 and 7B.06, respectively.</p>
525	<p>FHWA proposes to retitle Section 7B.06 (existing Section 7B.15) “School Speed Limit Signs and Plaques” and incorporate information from existing Section 7B.16.</p> <p>FHWA proposes to change Standard P3 in existing Section 7B.15 to Guidance to allow flexibility on required signing for fines in school zones based on engineering judgment. Many States have higher fines by statute in school zones, work zones, and other locations; therefore, requiring the use of the FINES HIGHER, FINES DOUBLE, or \$XX FINE plaques could place an undue burden on States and municipalities to sign for every location where there are increased fines.</p>	<p>The proposed retitling and incorporation of information from existing Section 7B.15 is adopted as proposed, except for the following: 1) the section number is changed to 7B.05 because of removal of what had been proposed as Section 7B.05 (see above), and 2) all text regarding higher fines signs and plaques is relocated to a new Section 7B.06 that deals solely with that topic. This change is made to simplify and make easier to understand the basic signing for school speed limit signing, without the complex language regarding higher fines zones.</p> <p>See Disposition of new Section 7B.06 regarding disposition of proposals in the NPA regarding higher fines zones.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
525 cont'd	<p>Also, FHWA proposes to revise existing Guidance P7 to recommend that the maximum beginning point of a reduced school speed limit zone in advance of school grounds is 500 feet. The recommendation was suggested by the NCUTCD and based on the results of research conducted on Speeds in School Zones (<a href="http://tti.tamu.edu/documents/0-5470-1.pdf">http://tti.tamu.edu/documents/0-5470-1.pdf</a>).</p> <p>Lastly, FHWA proposes to add a new Guidance paragraph to clarify that duplicate plaques for fines should be omitted if other traffic violations in addition to exceeding the speed limit are subject to higher fines based on Official Ruling No. 7(09)–3(1).</p>	<p>In addition, the S5-1 sign is renamed to “School Speed Limit When Flashing” to accurately match the legend of the sign.</p> <p>Several commenters opposed the proposed Guidance sentence recommending a maximum distance of 500 feet from the beginning point of a reduced school speed limit zone, suggesting Support language be used instead. The Guidance sentence is adopted with clarification that the 500 feet distance is in advance of the school grounds or a school crossing. The 500 feet maximum was based on research findings that longer school zones resulted in greater variability of speed within the zone. If there is a specific reason why a longer reduced school speed limit zone is necessary at a specific location, deviation can be based on engineering judgment.</p> <p>Further, in response to comments “fixed message” is replaced with “static”, and “blank-out” is added for accuracy and completeness, and a reference to Chapter 2L is added. Based on the added reference to Chapter 2L the immediately following Option and Guidance paragraphs are removed, as they are not needed.</p> <p>In the first Option paragraph, the phrase “a combination of an END HIGHER FINES ZONE (R2-11) sign and” is deleted, for accuracy and consistency.</p> <p>The Guidance paragraph about confirmation lights is removed because it is not a traffic control device and is not needed in Part 7.</p> <p>Lastly, the paragraph about use of a Speed Limit Sign Beacon is changed from Option to Standard because if a speed limit sign or plaque with the legend WHEN FLASHING is used it is necessary to accompany it with a flashing yellow beacon that flashes during the times the school speed limit is in effect. The use of such and assembly is still optional, but this Standard clarifies that if a WHEN FLASHING plaque is used, the beacons are required.</p> <p>In response to a comment, a Guidance paragraph is added to recommend that the Vehicle Speed Feedback plaque only be used during the time period when the school speed limit is in effect.</p>
N/A (Sec. 7B.06)	New Section 7B.06 "Higher Fines Zone Signs and Plaques in School Areas " (not discussed in the NPA Preamble)	A new Section, numbered and titled "Section 7B.06 Higher Fines Zones and Plaques in School Areas" is adopted, with appropriate text relocated from Sections 7B.02 and 7B.05 (see above) and consolidated into a single new section.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
(Sec, 7B.06) cont'd		<p>In response to comment, the Standard that was P1 in existing Section 7B.10 is retained as a Standard instead of being changed to Guidance as had been proposed, and an Option has been added to allow an exception to the Standard for higher fines zones that are established by statute, to better clarify the intent.</p> <p>Similarly, and also in response to comment, the proposed Guidance paragraph about placing a BEGIN HIGHER FINES ZONE sign at the point where the higher fines zone begins if that is a different location than where the S1-1 School Zone sign is placed is changed to a Standard, because it is important that road users be notified of the point where higher fines begin.</p> <p>Lastly, a second sentence is added to the second Standard paragraph to clarify that if speeding is the only violation subject to higher fines, the supplemental plaques, if used, shall instead be posted with the School Speed Limit (S5-1) sign.</p>
526	In Section 7D.01 (existing Section 7D.03) "Qualifications of Adult Crossing Guards," FHWA proposes to incorporate the existing Option from existing Section 7D.02.	<p>The proposed changes are adopted as proposed, except for the following:</p> <p>A new Support paragraph is added about the additional conspicuity adult crossing guards can add to a school crossing.</p> <p>Also, based on numerous comments questioning the appropriateness of including specific minimum qualifications for adult crossing guards in the MUTCD, the existing Guidance text on minimum qualifications is removed and, in its place, a new Guidance paragraph is added that jurisdictions should have policies and procedures for the selection, qualifications, and training of adult crossing guards.</p> <p>Lastly, because of the removal specific qualifications from this section, the section title is changed to "Adult Crossing Guards".</p>
527	<p>In Section 7D.02 (existing Section 7D.05) "Operating Procedures for Adult Crossing Guards," FHWA proposes to incorporate the existing Standard from existing Section 7D.04.</p> <p>Also, FHWA proposes to add a Standard requiring that the STOP paddle comply with the provisions for a STOP/SLOW paddle and provide a reference to Section 6D.02 for information. FHWA also adds a reference to STOP paddles in Section 6D.02. Note: this proposed new language is intended to state an existing requirement specifically regarding the provisions of the STOP paddle and is not a new requirement.</p>	The changes are adopted as proposed, except in P1 the ANSI standard for apparel is updated to the latest (2020) edition, consistent with updates in Section 1A.05.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
527 cont'd	Lastly, FHWA proposes to delete existing Options P4 and P5 and Standard P6 regarding the flashing lights because it is redundant information that is contained in Section 6E.03.	A suggestion by a commenter that the existing text in P2 should be revised to indicate how adult crossing guards are to operate at a signalized intersection is not adopted, because the existing text adequately describes that a crossing guard creates gaps in traffic flow. At a signal, the guard typically creates gaps in the flow of turning movements on green to enable school children to cross without conflicts.
528	In Section 8A.01 Introduction, FHWA proposes a new Support statement that the highway agency or authority with jurisdiction, the regulatory agency with statutory authority, and the railroad company or transit agency jointly perform the engineering study of grade crossings and the traffic control devices that are associated with them. FHWA proposes this new language to encourage coordination and cooperation between the appropriate knowledgeable parties of interest.  FHWA also proposes new Support statements regarding grade crossing warning systems, which complement the existing support statement about traffic control systems at grade crossings.	See Preamble of Federal Register for disposition of the topic of Diagnostic Team.  The new Support statements are adopted as proposed.  An additional Support provision is added to clarify the applicability of the Manual at private grade crossings.
529	FHWA proposes a new section numbered and titled, "Section 8A.02 Highway-LRT Grade Crossings," which is comprised of existing P8 through 12 of Section 8A.01. FHWA proposes to revise Item B to highlight that LRT has the right-of-way over other road users at grade crossings and intersections in a semi-exclusive alignment, and to revise Item C to highlight that LRT does not have the right-of-way over other road users at grade crossings and intersections in a mixed-use alignment. FHWA proposes this change to provide clarity regarding right-of-way at semi-exclusive and mixed-use alignments.  FHWA also proposes a revised Guidance statement to recommend that if a highway-LRT grade crossing is equipped with a flashing-light signal system and is located within 200 feet of an intersection or midblock controlled by a traffic control signal, a pedestrian hybrid beacon, or an emergency-vehicle hybrid beacon, the highway traffic signal should be provided with preemption. FHWA proposes this change to encourage use of preemption in such locations.  Finally, FHWA proposes a new Option statement allowing the use of traffic signal priority or preemption	The new section is adopted as proposed, with editorial changes for clarity.  The revised Guidance statement regarding preemption of a traffic control signal within 200 feet of a highway-LRT grade crossing is adopted as proposed, with editorial changes for clarity.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
529 cont'd	if determined to be appropriate by a Diagnostic Team when LRT vehicles are operating in a mixed-use alignment. FHWA proposes this change because there might be locations where traffic signal priority or preemption is appropriate.	The new Option statement regarding the Diagnostic Team and traffic signal priority or preemption is adopted as proposed.
530	In Section 8A.03 (existing Section 8A.02), retitled, "Use of Standard Devices, Systems, and Practices at Grade Crossings," FHWA proposes new Standard paragraphs to require that the Diagnostic Team shall reach a determination through consensus, documented in an engineering study, on new grade crossing traffic control systems and on proposed changes to an existing grade crossing traffic control system. FHWA proposes this change, consistent with 49 CFR part 222, appendix F, because there are a large number of significant variables to be considered and no single standard system of traffic control devices is universally applicable for all grade crossings.	The title of the Section is revised to be more consistent with the contents of the section.  See Preamble of Federal Register for additional discussion regarding Diagnostic Team.
	FHWA also proposes a new Option statement that general maintenance activities or minor operational changes to the grade crossing traffic control system that do not have a negative impact on the overall operation of the traffic control system can be made without a Diagnostic Team. FHWA proposes this change to provide agencies with more flexibility and to reduce the burden on Diagnostic Team members for minor changes.	The new Option statement regarding maintenance activities is adopted as proposed.
	Lastly, FHWA proposes to add a new Guidance paragraph to recommend that the Diagnostic Team distributes the determination made regarding traffic control system at a grade crossing to the Diagnostic Team members. FHWA proposes this change to encourage documentation of the decisions made regarding traffic control systems at grade crossings.	The new Guidance statement regarding distribution of the Diagnostic Team's recommendation was not included in the NPA and is deleted.
531	In Section 8A.04 (existing Section 8A.03) Use of Standard Devices, Systems, and Practices at Highway-LRT Grade Crossings, FHWA proposes to delete several Support, Standard, Guidance, and Option paragraphs, because most of this text is now proposed to be incorporated into Sections 8A.02 and 8A.03.	The Section title is revised to be more consistent with the contents of the section. The Section contents are adopted as proposed.
532	FHWA proposes a new section numbered and titled, "Section 8A.05 Engineering Studies at Grade Crossings" comprised of P2 through P4 of existing Section 8A.02 and P5 of existing Section 8A.03 as part of the reorganization to group similar information together.	The new Section is adopted with revisions as described herein.  In response to comments, FHWA also proposes a new Option statement to clarify the role of regulatory agencies with statutory authority in determining traffic control at grade crossings.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
532 cont'd	FHWA also proposes a new Guidance statement recommending the factors to be considered in the determining which traffic control devices are appropriate to install at a grade crossing.	The new Guidance statement is adopted with editorial revisions to list additional relevant factors to be considered by the Diagnostic Team.  See Preamble of Federal Register for additional discussion of Diagnostic Team.
533	<p>In Section 8A.06 (existing Section 8A.04) Uniform Provisions, FHWA proposes a new Guidance paragraph regarding raised median islands installed supplemental to an automatic gate to discourage road users from driving around a lowered gate.</p> <p>FHWA also proposes to add a Guidance statement discouraging the use of two-way center left turn lanes in the immediate vicinity of grade crossings and recommending other treatments. FHWA proposes this change because two-way left turn lanes at grade crossings are problematic, especially when automatic gates are or may be installed. Only extending gates to the center of the two-way left turn lane on both sides of the crossing insufficiently discourages road users in that lane from circumventing the gates and is in conflict with 49 CFR 234.223. This practice is consistent with the American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (MRE), (<a href="https://www.arema.org/AREMA_MBRR/AREMAStore/MRE.aspx">https://www.arema.org/AREMA_MBRR/AREMAStore/MRE.aspx</a>) current edition and the AREMA Communication &amp; Signals Manual (<a href="https://www.arema.org/AREMA_MBRR/AREMAStore/Communications_Signals_2019.aspx">https://www.arema.org/AREMA_MBRR/AREMAStore/Communications_Signals_2019.aspx</a>).</p>	<p>The new Guidance paragraph is adopted as proposed.</p> <p>The new Guidance statement is adopted as proposed.</p> <p>In addition, a new Option is added in response to comments to allow agencies to extend the automatic gate across a discontinued lane where yellow diagonal markings are used.</p>
534	FHWA proposes a new section numbered and titled, "Section 8A.07 Minimum Track Clearance Distance" to provide Support statements regarding the minimum track clearance distance at a grade crossing. FHWA proposes this new section to describe more fully the applications of Minimum Track Clearance Distance that are too lengthy and complex to be included with the definition in Part 1. All uses of the term within other sections of Part 8 include a cross reference to Section 8A.07 so that readers would know where to go to find out how this term is applied.	The new Section is adopted as proposed with a revised title and editorial revisions to improve clarity. A new Support statement is also added to refer to an illustration of minimum track clearance distance and clear storage distance, which is included in the <i>Highway-Rail Crossing Handbook</i> .
535	FHWA proposes a new section numbered and titled, "Section 8A.08 Adjacent Grade Crossings" to provide Support and Guidance statements for adjacent grade crossings. FHWA proposes this new section, because it is important to treat closely spaced grade crossings properly, which sometimes result from separate railroads or a railroad and an LRT alignment operating in parallel corridors.	The new Section is adopted as proposed, with editorial revisions to clarify the measurements between adjacent grade crossings in response to comments.
	FHWA also includes a reference to Part 3.1.11 of the "AREMA Communications & Signals Manual"	The Support statement is revised to eliminate the reference to a specific part of the AREMA

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
535 cont'd	(https://www.arena.org/AREMA_MBRR/AREMAStore/Communications_Signals_2019.aspx) for more information about adjacent grade crossings that are located within 200 feet of each other.	<i>Communications &amp; Signals Manual</i> to avoid conflicts with future editions of the AREMA Manual.
536	<p>In Section 8A.09 (existing Section 8A.05) Grade Crossing Elimination, FHWA proposes a new Option statement permitting an engineering study to determine the costs and benefits of eliminating a crossing that appears to be redundant or unnecessary.</p> <p>In concert with this change, FHWA proposes to add Guidance paragraphs recommending the engineering study and subsequent steps for eliminating the grade crossing if it is determined to be appropriate. This replaces the existing Guidance statement about eliminating grade crossings that cannot be justified. FHWA proposes this new material to provide practitioners with information to assist with eliminating grade crossings, which are a potential source of crashes and congestion.</p> <p>FHWA also proposes to delete a Guidance paragraph that seemed to recommend that engineering studies regarding potential grade crossing elimination should be conducted for every grade crossing.</p>	<p>The Option statement is adopted with revisions to clarify that vehicle, pedestrian, and bicycle traffic at the grade crossing may be considered.</p> <p>The Guidance paragraphs are adopted with editorial changes to improve clarity.</p> <p>In addition, in response to comments the Guidance in proposed P4 regarding removal of traffic control devices at a grade crossing that has been eliminated is retained as a Standard statement, consistent with the 2009 MUTCD, to be consistent with Standard statements in Section 2A.02 and Section 3A.01 regarding removal of traffic control devices that are no longer applicable.</p> <p>The deletion of the Guidance paragraph is adopted as proposed.</p>
537	In Section 8A.12 (existing Section 8C.12) Grade Crossings Within or In Close Proximity to Circular Intersections, FHWA proposes to change the Standard regarding an engineering study to determine queuing impacts to a Guidance statement to provide agencies with more flexibility in the engineering study and design of grade crossings near circular intersection.	In response to comments the proposed Guidance statement in proposed P2 regarding an engineering study where a circular intersection is within 200 feet of a grade crossing is retained as a Standard statement, consistent with the 2009 MUTCD, to be consistent with other Standard statements in Section 8A.03 and 8A.05 that require an engineering study to determine the appropriate traffic control devices at a grade crossing.
538	FHWA proposes a new section numbered and titled, "Section 8A.13 Busway Grade Crossings" to provide Standards, Guidance, Support, and Option statements for busway grade warning and crossing systems. FHWA proposes this new section to provide standardization of traffic control devices for grade crossings of highways with busways.	The new Section is not adopted based on insufficient research on this application and comments that pointed out the significant differences between buses with rubber tires with the ability to stop/swerve versus rail/transit vehicles and their limited stopping ability. FHWA will consider additional experiments and research to reconsider this Section in a future edition.
539	<p>In Section 8A.14 (existing Section 8A.08) Temporary Traffic Control Zones, FHWA proposes a new Guidance paragraph regarding temporary traffic control zones that extend over grade crossings equipped with automatic gates and either one-lane two-way or reversible lane operation is used.</p> <p>FHWA also proposes to add a new Guidance paragraph recommending the preparation of a traffic</p>	<p>The section is renumbered to 8A.13. In response to comments, the Guidance statement in proposed P3 is deleted because it conflicts with an existing Standard statement in Section 6N.17.</p> <p>The Guidance statements in proposed P4 are adopted with revisions suggested by commenters to</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
539 cont'd	control plan when traffic is detoured over an existing grade crossing with passive warning devices. FHWA proposes this change because it is important to analyze traffic safety during detours.	clarify the situations when a uniformed law enforcement officer should be used and to involve the railroad company or transit agency in the traffic control planning process.  Existing P9 and P10 are deleted in response to comments because they are ambiguous and unnecessary.
540	In Section 8B.02 Sizes of Grade Crossing Signs, FHWA proposes to clarify that the sizes shown in Table 8B-1 are minimum sizes. FHWA also proposes to change the minimum required size of a Yield sign at multilane conventional road grade crossings from 48"× 48" to 36"× 36." FHWA proposes this change to provide clarity regarding the requirements of the sign size and based on Official Ruling No. 8(09)-7(I) ( <a href="http://mutcd.fhwa.dot.gov/resources/interpretations/8_09_7.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/8_09_7.htm</a> ).	The Section is adopted as proposed.
541	In Section 8B.03 Grade Crossing (Crossbuck) Sign (R15-1) and Number of Tracks Plaque (R15-2P) at Active and Passive Grade Crossings, FHWA proposes to upgrade an existing Option to a Standard to require a minimum of one Crossbuck sign on each highway approach to a gated highway-LRT grade crossing on a semi-exclusive alignment. FHWA proposes this change to make sure that road users understand why a gate is present.	The Standard statement, and the Option statement that follows it, are adopted with editorial changes to clarify where Crossbuck signs are required at highway-LRT grade crossings.
	FHWA proposes to revise existing Paragraph 5 to require the Number of Tracks plaque below the Crossbuck sign where there are two or more tracks at a grade crossing, regardless of the presence of automatic gates. This revision is necessary because the presence of two or more tracks at a crossing adds complexity for road users and additional risks, such as in situations in which trains occupy both tracks, where the tracks are spaced such that a vehicle could become stuck between the tracks, or where the visibility of the second track is limited. This revision would improve safety by providing uniformity for multitrack crossings that would accommodate the expectancy of the road user.	The Standard paragraph is adopted as proposed.
	FHWA also proposes to revise existing Paragraph 7 to reduce the requirement for retroreflective white material on the back of the Crossbuck sign to apply only to passive grade crossings. FHWA proposes this change because active grade crossings have signals or warning lights for traffic control device conspicuity.	The Standard paragraph is adopted as proposed. A new Option statement regarding the use of retroreflective white material on the back of Crossbuck signs at active grade crossings is added in response to comments because the white retroreflective material may improve visibility of the grade crossing during power outages.
	FHWA also proposes new Standard paragraphs regarding minimum lateral clearance between the	The new Standard paragraphs regarding minimum lateral clearance are not adopted, as they are unneeded since the topic is covered in Chapter 2A.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
541 cont'd	<p>edge of the Crossbuck sign and the face of a vertical curb, edge of traveled way, and/or edge of paved or surfaced shoulder. FHWA proposes this change to be consistent with the dimensions shown in Figure 8B-3 for Crossbuck Assemblies and to be consistent with Paragraphs 6, 7, and 8 of existing Section 8C.01.</p> <p>FHWA also proposes a new Guidance statement recommending the Crossbuck sign to be at least 12 feet from the center of the nearest track. FHWA proposes this change to formalize the dimensions shown on Figure 8D-2.</p> <p>FHWA also proposes a new Guidance paragraph recommending the mounting height to the center of Crossbuck signs to be approximately 9 feet and an Option to adjust the height based on local conditions and to accommodate signs below the Crossbuck sign. FHWA proposes this change to clarify the dimension shown on Figure 8B-2.</p>	<p>The new Guidance statement is revised to refer to the standards of the railroad company, transit agency and regulatory agency with statutory authority to be consistent with the Standard statement in Section 8D.01 regarding clearance between traffic control devices and the nearest rail.</p> <p>The new Guidance and Option statements are adopted as proposed.</p> <p>FHWA adopts editorial revisions to Figures 8B-2 and 8B-3 to correctly show the mounting height measurements consistent with the text in Section 8B.03.</p>
542	<p>In Section 8B.04 Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings, FHWA proposes a new Guidance paragraph recommending the use of a STOP sign at the Crossbuck Assembly where a passive grade crossing is located at the stem of a T-intersection with inadequate clear storage area between the tracks and the parallel roadway. FHWA also proposes that if a STOP sign is installed, consideration should also be given to installing a YIELD sign at the highway intersection. FHWA proposes this new text to provide practitioners with additional information for crossings with this geometry.</p> <p>FHWA also proposes a new Standard paragraph requiring a Yield sign and TO TRAINS (R15-9P) supplemental plaque when Crossbuck Assemblies are used within the limits of a highway-highway intersection controlled by a traffic control signal not interconnected with the grade crossing and not preempted by the approach of rail traffic.</p> <p>FHWA also proposes to prohibit the use of a Stop sign with the Crossbuck Assembly in this situation. FHWA proposes this change for consistency with Section 4A.08 (existing Section 4D.34) regarding the use of stop signs with traffic control signals.</p> <p>FHWA proposes to revise existing Paragraph 10 regarding YIELD and STOP sign mounting heights on Crossbuck Assemblies to require at least 5 feet in rural areas and at least 7 feet in areas where parking or pedestrian movements are likely to occur. FHWA proposes this change to provide consistency</p>	<p>The Guidance paragraph is adopted with editorial changes made in response to comments to refer to the Diagnostic Team, consistent with the Standards in Sections 8A.03 and 8A.05, and to provide flexibility to the agencies and Diagnostic Team to determine the appropriate traffic control devices for each location.</p> <p>The Standard paragraph is adopted with editorial changes to refer to the Diagnostic Team, consistent with the Standards in Sections 8A.03 and 8A.05, and to provide flexibility to the agencies and Diagnostic Team to determine the appropriate traffic control devices for each location.</p> <p>The Standard statement is adopted as proposed.</p> <p>The Standard paragraph is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
542 cont'd	<p>throughout the Manual regarding vertical mounting height.</p> <p>FHWA also proposes to revise the existing Guidance paragraph regarding a Crossbuck Assembly on a separate support than the Crossbuck sign, to clarify the recommended location of YIELD or STOP sign in relationship to the Crossbuck sign and to clarify the lateral clearances from a curb or edge of traveled way. FHWA proposes this change to provide consistency throughout the Manual regarding lateral offset.</p> <p>FHWA also proposes to revise the existing Standards regarding the vertical strip of retroreflective white material on a Crossbuck support to clarify that a white retroreflective strip wrapped around a round support satisfies the requirement as long as the round support has an outside diameter of at least 2 inches. FHWA proposes this change to provide clarity regarding the requirements of the white retroreflective strip and based on Official Ruling No. 8(09)–1(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/8_09_001.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/8_09_001.htm</a>).</p>	<p>The proposed revision to this Guidance paragraph regarding location of the YIELD or STOP sign in relation to the Crossbuck sign is adopted. The proposed revision to clarify lateral clearances is not adopted, as it is unneeded because this is covered in Chapter 2A.</p> <p>The Standard paragraphs are adopted with editorial revisions in response to comments to clarify the use of retroreflective material wrapped around a round sign support.</p>
543	<p>In Section 8B.05 Use of STOP (R1–1) or YIELD (R1-2) Signs without Crossbuck Signs at Highway-LRT Grade Crossings, FHWA proposes to eliminate the Guidance statement regarding LRT speed and replace it with a Guidance statement in Section 8D.04 (Use of Active Traffic control Systems at LRT Grade Crossings) with recommendations for active traffic control systems where LRT operating speeds are less than 25 mph unless an engineering study determines that passive devices would provide adequate control. FHWA proposes this change based on the stopping distance of LRT vehicles at speeds less than 25 mph and consistent with industry practice.</p>	<p>The Section is adopted as proposed with editorial revisions to reference the Diagnostic Team consistent with the rest of Part 8.</p>
544	<p>In Section 8B.06 Grade Crossing Advance Warning Signs (W10–1 through W10–4), FHWA proposes to modify the Standard statement to remove the requirement at all highway-LRT grade crossing in semi-exclusive alignments and add a condition that the warning signs are not required where Crossbuck signs are not used. FHWA proposes these changes to reduce the number of locations where Grade Crossing Advance Warning Signs are required at highway-LRT grade crossings.</p>	<p>The Section is adopted as proposed with editorial revisions to clarify the measurement of the referenced distances.</p>
545	<p>In Section 8B.07 (existing Section 8B.09) DO NOT STOP ON TRACKS Sign (R8–8), FHWA proposes a new Guidance paragraph recommending the use of a DO NOT STOP ON TRACKS (R8–8) sign if a traffic control signal is installed within 200 feet downstream</p>	<p>The Guidance statements in proposed P1-P3 are not adopted and are replaced with a Guidance statement that a DO NOT STOP ON TRACKS sign should be used at any locations where vehicle queues are likely</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
545 cont'd	<p>from a grade crossing such that highway vehicle queues are likely to extend onto the tracks except where a pre-signal is installed. FHWA proposes this change to improve safety at grade crossings near signalized intersections.</p> <p>FHWA also proposes to revise existing Paragraph 1 to separate the provision into two paragraphs and to delete the text regarding an engineering study. FHWA proposes this change to provide agencies more latitude in installing the R8-8 sign based on engineering judgment.</p>	<p>to extend onto the tracks. The change is made to simplify the Guidance about when to use the sign. A new Support statement is added to list the types of conditions that could result in vehicles queuing onto the tracks.</p> <p>The first Guidance statement from existing P1 is deleted to consolidate the three Guidance statements into one Guidance statement, as described above. The second Guidance statement from existing P1 is adopted as proposed.</p>
546	<p>In Section 8B.08 (existing Section 8B.10) TRACKS OUT OF SERVICE Sign (R8-9), FHWA proposes a new Option statement allowing warning signs such as Low Ground Clearance Crossing (W10-5) and Skewed Crossing (W10-12) to be left in place after tracks are taken out of service to warn road users about physical roadway conditions that are still present. FHWA proposes this change to provide agencies with flexibility to retain signs for a longer period than other traffic control devices at the crossing.</p> <p>FHWA also proposes two new Standards requiring that Emergency Notification System (I-13) signs be retained at grade crossings that are out of service until the tracks are removed or covered. Emergency Notification System signs provide emergency contact information for the railroad responsible for the crossing. Retaining the existing signs until the tracks are removed would ensure a contact number is available for road users to reach if there is a safety concern or another issue that requires the railroad to be contacted.</p>	<p>The Option statement is revised to a Guidance statement because multiple comments pointed out that the signs continue to be needed while the physical roadway condition exists. Editorial changes are also made to clarify when the signs should be removed.</p> <p>The Standard statements are adopted as proposed.</p>
547	<p>FHWA proposes new Option and Support statements in Section 8B.16 (existing Section 8B.23) to address warning, selective exclusion, and detour signing for additional vehicle types and combinations that may encounter hang-up situations at low ground clearance crossings. The proposed changes are in response to NTSB recommendation H-18-24 (<a href="https://www.nts.gov/investigations/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=H-18-024">https://www.nts.gov/investigations/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=H-18-024</a>).</p>	<p>See Preamble of Federal Register for discussion of this item.</p>
548	<p>FHWA proposes to relocate existing Section 8B.17 LOOK Sign (R15-8) to Section 9B.21 to allow the use of a LOOK sign on a shared-use path or separated bikeway at a grade crossing. FHWA proposes this change because these signs are no longer to be installed to communicate with drivers, as the YIELD or STOP sign on the Crossbuck Assemblies at passive crossings imply that motorists should look for</p>	<p>The deletion of this Section is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
548 cont'd	rail traffic. An Option was also added in Section 8E.03 for using LOOK signs for pathways and sidewalks.	
N/A (Sec. 8B.18)	Section 8B.18 Another Train Coming (W10-16) (not discussed in the NPA Preamble)	A new Section 8B.18 Another Train Coming (W10-16) is added, with text relocated from proposed Section 8D.07.
549	In Section 8B.20 (existing Section 8B.24) Storage Space Signs (W10-11, W10-11a, W10-11b), FHWA proposes a new Standard paragraph that clarifies that the Storage Space sign shall not be used as a replacement for the Advanced Warning (W10-1) sign and that the signs shall be mounted on separate posts. FHWA proposes this change because it is important that the Advance Warning sign have priority over the Storage Space sign.	The section is renumbered to 8B.21. The Standard is adopted as proposed.
550	FHWA proposes a new section numbered and titled, "Section 8B.23 Next Crossing Plaques (W10-14P and W10-14aP)" to provide Option statements describing where the NEXT CROSSING (W10-12P) plaque and USE NEXT CROSSING (W10-14aP) plaque may be mounted.	The Section is adopted as Section 8B.24, with editorial revisions to add a reference to the Diagnostic Team, consistent with the Standard statements in Sections 8A.03 and 8A.05.
551	FHWA proposes a new section numbered and titled, "Section 8B.24 ROUGH CROSSING Plaque (W10-15P)" to provide an Option statement for the installation of the ROUGH CROSSING (W10-15P) plaque.	The Section is adopted as proposed and renumbered to Section 8B.25.
552	In Section 8B.26 (existing Section 8B.18) Emergency Notification System Sign (I-13), FHWA proposes changing P1 from Guidance to Standard to require installing Emergency Notification signs for all highway-rail grade crossings and all highway-LRT grade crossings on semi-exclusive alignments. FHWA proposes this change to be consistent with regulations promulgated by the FRA (49 CFR 234.311).	The section is renumbered to Section 8B.27. The Standard is adopted with editorial revisions in response to comments to clarify when the ENS signs are required at highway-LRT grade crossings.
	FHWA also proposes a new Standard paragraph requiring minimum width and height dimensions, as well as number and letter heights for the Emergency Notification sign to be consistent with new requirements promulgated by the Federal Railroad Administration (FRA). FHWA also proposes changing the provision for the sign to be retroreflective from Guidance to a Standard to be consistent with requirements promulgated by the FRA (49 CFR 234.309).	The Standard paragraph is adopted as proposed.
	FHWA proposes an Option statement allowing the seven-character grade crossing inventory number to be shown on the sign as a black legend on a white rectangular background. FHWA proposes this	The Option statement is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
552 cont'd	<p>change to allow additional flexibility.</p> <p>FHWA also proposes a new Guidance statement recommending Emergency Notification signs be attached to the Crossbuck Assemblies or grade crossing signal masts on the right-hand side of each roadway approach to the grade crossing. FHWA proposes this recommendation to provide uniformity in sign placement.</p> <p>Finally, FHWA proposes an Option statement to allow Emergency Notification signs to be located on a separate post and permitting additional Emergency Notification signs to be installed at a grade crossing.</p>	<p>The Guidance statement is adopted with revisions to recommend either parallel or perpendicular sign orientation. The revision is made in response to FRA comments. An additional Guidance statement is added to clarify that the sign should be visible when automatic gates are in the vertical or horizontal position.</p> <p>The Option statement is adopted as proposed. An Option statement is added to permit larger Emergency Notification System signs for improved visibility.</p> <p>A new Option statement is added to allow the use of a NOTICE header panel on the Emergency Notification System sign to increase conspicuity. FHWA adopts the change based on comment as a specific exception to Section 2A.15 which allows the use of the NOTICE header panel only for regulatory, warning, and guide signs.</p>
553	<p>FHWA proposes relocating the pavement markings sections from Chapter 8B and placing them in a new Chapter 8C to make it easier for the reader to find text in the MUTCD.</p> <p>FHWA proposes a new section numbered and titled, "Section 8C.01 Purpose and Application" to provide Support statements to describe the purpose and application of markings at grade crossings to provide context for the remainder of new Chapter 8C.</p>	<p>The reorganization is adopted as proposed.</p> <p>The new Section is adopted as proposed.</p>
554	<p>In Section 8C.02 (existing Section 8B.27) Pavement Markings, FHWA proposes a Standard statement incorporating an existing requirement that pavement markings be placed in each approach lane on all paved approaches to highway-LRT grade crossings where a Crossbuck sign is placed at the grade crossing. FHWA proposes this change in conjunction with making the first three paragraphs of this section applicable only to highway-rail grade crossings. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement.</p> <p>FHWA also proposes a new Standard statement that if pavement markings are used on a multi-lane approach to a grade crossing, identical markings shall be placed in each approach lane that crosses the tracks. FHWA proposes this change because pavement markings serve an important function to warn road users of the presence of a grade crossing and drivers will always be able to see the full message even when traffic is stopped in adjacent lanes by</p>	<p>The order of the Standard paragraphs is revised to improve clarity.</p> <p>The Standard statement is adopted with editorial revisions to clarify the statement applies to grade crossing pavement markings and not to other roadway pavement markings.</p> <p>The Standard statement in proposed P3 is also revised to refer to the Diagnostic Team, consistent with the Standards in Sections 8A.03 and 8A.05.</p> <p>The Standard statement is adopted with editorial revisions to clarify the statement applies to grade crossing pavement markings and not to other roadway pavement markings.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
554 cont'd	<p>having the entire symbol placed in their own lane.</p> <p>FHWA also proposes to delete a portion of P5 recommending that the X symbol and letters at grade crossings to be elongated. FHWA proposes this change because the standard layout for the symbol is already elongated.</p> <p>Finally, FHWA proposes a new Guidance statement recommending that if supplemental pavement marking symbols are placed between the Grade Crossing Advance Warning sign and the grade crossing, then the downstream transverse line should be at least 50 feet in advance of the stop or yield line at the grade crossing. FHWA proposes this change to provide uniform placement of the supplemental pavement marking symbols and to avoid the appearance that the downstream transverse line is the stop line or that the downstream transverse line and the stop line form a crosswalk.</p>	<p>The deletion is adopted as proposed.</p> <p>The Guidance statement is adopted as proposed.</p> <p>Editorial revisions to Figure 8C-1 are adopted to be consistent with the text in Section 8C.01.</p>
555	<p>In Section 8C.03 (existing section 8B.28) Stop and Yield Lines, FHWA proposes to modify the last Guidance and Standard statements in this section to clarify the location of stop lines where active traffic control devices are used.</p>	<p>The Guidance and Standard statements are adopted as proposed.</p>
556	<p>FHWA proposes a new section numbered and titled, "Section 8C.04 Lane-Use Arrow Markings" to provide a Standard and Guidance on the placement of lane-use arrow markings. FHWA proposes this change to address recent train-auto crashes in which a roadway user made an improper turn and turned onto the railroad tracks rather than at an adjacent intersection immediately beyond the grade crossing. In these crashes, an arrow pavement marking denoting an exclusive lane was located on the roadway between the stop line for the grade crossing and the track area.</p> <p>FHWA proposes a new section numbered and titled, "Section 8C.05 Edge Lines, Lane Lines, Raised Pavement Markers, and Tubular Markers" to provide Guidance, Option, and Standard statements regarding the use of edge lines, lane lines, raised pavement markers, and tubular markers on an approach to a grade crossing.</p> <p>FHWA proposes this addition to address recent train-auto crashes in which a roadway user made an improper turn and turned onto the railroad tracks rather than at an adjacent intersection immediately beyond the grade crossing. In these crashes, the</p>	<p>The Section is adopted as proposed.</p> <p>The Section is adopted with editorial revisions to the section title and text to clarify that edge lines, lane lines, and center lines are included in this section.</p> <p>Also, a new Guidance statement is added in response to comments to address consistency when maintenance activities alter the markings, and new Option statements are added to address situations</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
556 cont'd	roadway edge line stopped near the stop line for the grade crossing and did not continue across the track area.	where pavement markings between the rails may not be feasible.
557	<p>In Section 8C.06 (existing Section 8B.29) Dynamic Envelope Markings, FHWA proposes to delete the Support statement describing dynamic envelope markings because the definition is covered in Part 1.</p> <p>FHWA also proposes to revise the existing Standard statement to allow dynamic envelope markings to be up to 24 inches wide. This change is proposed to provide agencies with more flexibility to improve visibility and to provide easier maintenance of the markings.</p> <p>FHWA also proposes to add a new Option paragraph allowing white crosshatching lines to be placed on the highway pavement within the dynamic envelope as a supplement to the 4-inch normal solid white lines and in areas adjacent to the dynamic envelope where vehicles are not intended to stop or stand. FHWA proposes this addition, as well as a figure with examples, to provide agencies with additional options to emphasize the dynamic envelope and discourage vehicles from stopping in the approach to the dynamic envelope.</p>	<p>The Section title is revised to add “and Do Not Block” to be more consistent with the contents of the section. Deletion of the Support statement is adopted as proposed.</p> <p>The Standard statement is revised to move the pavement color and pavement texture to a new Option statement, since the use of these treatments do not have Standards associated with them.</p> <p>The Option paragraph is adopted as proposed.</p> <p>Editorial revisions to Figure 8C-3 are adopted to be consistent with the text in Section 8C.06.</p>
558	<p>In Section 8D.01 (existing Section 8C.01) Introduction, FHWA proposes to add a Guidance statement recommending that when the automatic gate is in its upright position, no portion of the physical features of flashing-light signals and gates should be closer than 12 feet from the center of the nearest track. FHWA proposes this language to provide adequate vertical clearance in the vicinity of the tracks and to formalize the dimensions shown in Figure 8D-2 (existing Figure 8C-2).</p> <p>FHWA also proposes to eliminate the Support statement in existing Paragraph 15 regarding LRT typical speeds through semi-exclusive and mixed-use alignment because the statement does not add useful information.</p> <p>In concert with this change, FHWA proposes to relocate existing Paragraph 16 to the beginning of the Section with the other Support statements.</p>	<p>The proposed Guidance statement is not adopted because it could conflict with the Standard statement that precedes this where the railroad company, transit agency, or regulatory agency permit automatic gates to be closer than 12 feet from the rail. The 12-foot dimension is also deleted in Figure 8D-2.</p> <p>The deletion is adopted as proposed.</p> <p>The relocation is adopted as proposed.</p> <p>Editorial changes are also adopted to replace references to an engineering study with references to the Diagnostic Team, consistent with the Standards in Section 8A.03 and 8A.05.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
558 cont'd		Editorial revisions are adopted to Figure 8D-1 to be consistent with the text edits in Section 8D.01.
559	<p>In Section 8D.02 (existing Section 8C.02) Flashing-Light Signals, FHWA proposes to add a Guidance statement, and an accompanying Support statement regarding the placement of the Number of Tracks plaque with respect to the flashing-light backgrounds, as well as the Crossbuck sign.</p> <p>FHWA also proposes adding a Guidance paragraph recommending that if flashing-light signals are used, at least one pair of flashing lights should be provided for each approach lane of the roadway. FHWA proposes this Guidance to provide uniform flashing light signals across the roadway.</p> <p>FHWA proposes three Guidance paragraphs to provide text that supports the dimensions for placement and mounting shown in Figure 8D-1 (existing Figure 8C-1).</p> <p>FHWA also proposes Guidance paragraphs recommending that where the storage distance for vehicles approaching a grade crossing is less than a design vehicle length, the Diagnostic Team should consider providing additional flashing-light signals aligned toward the movement turning toward the grade crossing.</p> <p>FHWA also recommends that the Diagnostic Team consider the use of additional flashing-light signals to provide supplemental warning to pedestrians. FHWA proposes these changes to provide additional warning of the grade crossing.</p> <p>Finally, FHWA proposes to delete the last Standard statement in this section, because the provisions are covered elsewhere.</p>	<p>The Guidance and Support statements are adopted as proposed.</p> <p>The Guidance statement is adopted as proposed.</p> <p>The Guidance paragraphs are adopted as proposed with an editorial revision clarifying that the mounting height should be measured from the center of the flashing light.</p> <p>The Guidance paragraph is adopted as proposed.</p> <p>The Guidance paragraph is adopted as proposed.</p> <p>The deletion is adopted as proposed.</p>
560	<p>In Section 8D.03 (existing Section 8C.04) Automatic Gates, FHWA proposes a Standard requiring the width of the retroreflective sheeting on the front of the gate arm to be at least 4 inches. FHWA proposes this addition to provide an adequate width of material for visibility.</p> <p>FHWA also proposes a Standard statement requiring that except for the continuously illuminated light at the tip of the gate, the left-most flashing gate light in each additional pair of lights flashes simultaneously with the left hand light of the flashing-light signals and the right-most flashing gate light in each additional pair of</p>	<p>The Standard is adopted with revisions to clarify that the 4-inch dimension is applicable for the first 32 feet of the gate arm. An additional Standard is added for gate arms longer than 32 feet, which shall have sheeting that is a minimum of 2 inches. This additional Standard is in response to comments to address gates that are tapered beyond 32 feet, which is done to reduce wind loads.</p> <p>The Standard is adopted as proposed. The proposed Guidance statement is deleted in response to comments because it could conflict with the Standard statement in Section 8D.01 where the railroad company, transit agency, or regulatory agency permit automatic gates to be closer than 10 feet from the rail. The 10-foot dimension is also deleted in Figure 8D-2.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
560 cont'd	<p>lights flashes simultaneously with the right-hand light of the flashing-light signals. FHWA proposes this addition to provide uniformity in flashing patterns between the flashing-light signals and the flashing lights on the gate.</p> <p>FHWA proposes a Guidance paragraph with recommendations for the location of the tip of the automatic gate arm when it is in the down position relative to the center of the nearest track. FHWA proposes this addition to support the dimensions shown in Figure 8D-2 (existing Figure 8C-2).</p> <p>Finally, FHWA proposes Guidance paragraphs with recommendations for the length, height, and position of the automatic gate arm. FHWA proposes these additions to support the dimensions shown in Figure 8D-1 (existing Figure 8C-1).</p>	<p>The Guidance paragraph is adopted with revisions that delete dimensions that are not relevant to the traffic control device. These dimensions are also deleted in Figure 8D-1.</p> <p>A Guidance statement is also adopted regarding median length because this is a factor in the effectiveness of automatic gates and a similar Guidance statement is contained in Section 8D.05.</p>
561	<p>FHWA proposes a new section numbered and titled, "Section 8D.04 Use of Active Traffic Control Systems at LRT Grade Crossings" that replaces existing Sections 8C.03 and 8C.05.</p> <p>FHWA also proposes active traffic control system Standards for highway-LRT grade crossings based on the maximum operating speed of the LRT vehicles. Where the maximum LRT operating speed exceeds 40 mph, active traffic control systems with automatic gates would be required. Where the maximum LRT operating speed is greater than 25 mph but is less than 40 mph, active traffic control systems would be required and automatic gates would be optional. FHWA proposes this change based on the safety experience of modern LRT systems and to replace paragraphs that were previously in existing Section 8C.03.</p> <p>FHWA also proposes a Guidance statement with recommendations for active traffic control systems where LRT operating speeds are less than 25 mph unless an engineering study determines that passive devices would provide adequate control.</p> <p>FHWA also proposes a Guidance statement with a recommendation not to use a traffic control signal alone at locations that are not intersections and LRT speeds are above 20 mph.</p>	<p>The new section is adopted with reordered paragraphs to improve the understanding of the section. Editorial revisions are adopted to delete references to LRT operating speed consistent with the Support statement regarding LRT speed in Section 8D.01.</p> <p>The Standard statements are adopted with editorial revisions to improve the clarity of the statements.</p> <p>A new Option statement is adopted to clarify that the Diagnostic Team may still recommend automatic gates at LRT grade crossings where LRT speeds do not exceed 40 mph.</p> <p>The Guidance statement is adopted with an editorial revision to replace the reference to an engineering study with a reference to the Diagnostic Team, consistent with the Standards in Section 8A.03 and 8A.05.</p> <p>The Guidance statement is adopted with revisions to clarify the intent of the statement is to disallow the use of traffic control signals instead of automatic gates for LRT grade crossings that are not at an intersection and where LRT speeds exceed 20 mph.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
562	<p>In Section 8D.05 (existing Section 8C.06), retitled, "Exit Gate and Four-Quadrant Gate Systems," FHWA proposes to add Support paragraphs to clarify the difference between Exit Gate systems and Four-Quadrant Systems.</p> <p>FHWA also proposes a Standard statement to require the queue clearance time be long enough to permit the exit gate arm to lower after a design vehicle of maximum length is clear of the minimum track clearance distance where a Four-Quadrant Gate system is present. This proposed Standard is necessary to ensure that vehicles can clear the tracks safely without becoming entrapped between the gates on the tracks while a train is approaching.</p> <p>In addition, FHWA proposes to add a Guidance statement recommending that exit gates be independently controlled for each direction of roadway traffic. FHWA proposes these additions to provide consistency with industry practice.</p> <p>Lastly, FHWA proposes to delete existing Paragraph 17 because this recommendation resulted in exit gates being located significantly further from the grade crossing than the entrance gates.</p>	<p>The Support paragraphs are adopted as proposed.</p> <p>The Standard is adopted as proposed.</p> <p>The Guidance statement is adopted as proposed.</p> <p>The deletion is adopted as proposed.</p> <p>Editorial revisions are adopted to proposed P1, P10, and P18 to replace the references to an engineering study with references to the Diagnostic Team, consistent with the Standards in Section 8A.03 and 8A.05.</p> <p>In response to comments, a Support statement is also adopted to define Minimum Warning Time. This definition was deleted from Part 1 in the NPA and this term is only used in Part 8, therefore the definition is appropriate to include in Part 8.</p> <p>Finally, Editorial revisions are adopted to Figure 8D-2 to be consistent with the text edits in Chapter 8D.</p>
563	<p>FHWA proposes a new section numbered and titled, "Section 8D.07 Another Train Coming" to provide Guidance and Support for a new traffic control device to provide warning of another train approaching a grade crossing. FHWA proposes this addition to provide practitioners with information for uniform application.</p>	<p>The section is adopted as proposed but is relocated to Section 8B.18.</p>
564	<p>In Section 8D.09 (containing portions of existing Section 8C.09), retitled, "Use of Traffic Control Signals at Grade Crossings," FHWA proposes an edit to the Option that allows traffic control signals be used instead of flashing-light signals to control road users</p>	<p>The 235 section is renumbered to Section 8D.08. The Option statement is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
564 cont'd	at industrial highway-rail grade crossings and other places where the maximum speed of trains is 10 mph or less. FHWA proposes this change to include a specific train speed to improve clarity and to be consistent with FRA track classifications.	
565	<p data-bbox="228 457 854 604">FHWA proposes a new section numbered and titled, "Section 8D.10 Preemption of Highway Traffic Signals at or Near Grade Crossings." Several of the paragraphs in the proposed new section are from existing Section 8C.09.</p> <p data-bbox="228 636 854 884">FHWA also proposes new Standards, Guidance, Options, and Support statements regarding traffic signal preemption at grade crossings. FHWA proposes this new material to provide consistency with the changes in the industry resulting from the investigation into the causes of the fatal train/school bus crash in Fox River Grove, Illinois (<a href="https://www.nts.gov/investigations/AccidentReports/Reports/HAR9602.pdf">https://www.nts.gov/investigations/AccidentReports/Reports/HAR9602.pdf</a>).</p> <p data-bbox="228 915 854 1035">FHWA proposes new Support statements about the systems that are involved in preemption. FHWA proposes the change to provide agencies with additional background information about preemption.</p> <p data-bbox="228 1066 854 1247">FHWA also proposes changes to Guidance to include additional measures for situations where the traffic signal is located farther than 200 feet from the grade crossing. FHWA proposes the change to provide additional information to agencies to improve safety at grade crossing that do not have preemption.</p> <p data-bbox="228 1278 854 1526">FHWA also proposes new Guidance paragraphs to provide additional recommendations for the use of active grade crossing warning systems near traffic signals, the use of automatic gates at traffic signals with preemption, and the annual inspection of the preemption operation. FHWA proposes the changes to reflect industry practices resulting from investigation of train/vehicle crashes.</p> <p data-bbox="228 1612 854 1797">FHWA proposes a new Standard paragraph that requires preemption where traffic signal faces are located within 50 feet of a grade crossing that has flashing-light signals. FHWA proposes this change to avoid display of traffic signal indications that conflict with the flashing-light signal system.</p>	<p data-bbox="878 457 1503 516">The new section is renumbered to Section 8D.09 and is adopted with revisions as described below.</p> <p data-bbox="878 636 1503 665">The changes are adopted with clarifying revisions.</p> <p data-bbox="878 915 1503 945">The Support statements are adopted as proposed.</p> <p data-bbox="878 1066 1503 1186">The Guidance statements in P4 are adopted with revisions to clarify that they are applicable to traffic control signals, pedestrian hybrid beacons, and emergency vehicle hybrid beacons.</p> <p data-bbox="878 1278 1503 1337">The Guidance statements in proposed P5 and P7 are adopted as proposed.</p> <p data-bbox="878 1369 1503 1581">The Guidance statement in proposed P6 is adopted with revisions to provide clearer language regarding the distance when an active grade crossing warning system should be installed. The 200-foot dimension is also consistent with Standards and Guidance statements regarding preemption in the rest of Chapter 8D.</p> <p data-bbox="878 1612 1503 1764">The Guidance statement in proposed P8 is revised to a Support statement because inspection of the grade crossing system is a best practice and there is not a regulatory basis for a specified frequency of inspections.</p> <p data-bbox="878 1795 1503 1948">In response to comments, the Standard paragraph is adopted with revisions for the signal displays to be determined by the Diagnostic Team rather than permitting only RED indications. The reference to the Diagnostic Team is more consistent with the rest of</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
565 cont'd	<p>FHWA also proposes new Support and Option statements to provide additional information about double break and supervised circuits. FHWA proposes this change to provide practitioners with information to make the preemption fail-safe.</p> <p>FHWA also proposes new Guidance statements to provide recommendations for locations with track detection circuits at passive grade crossings and left turn movements at a preempted traffic signal downstream from a grade crossing. FHWA proposes the changes to provide agencies with recommendations for situations that are not addressed in the existing MUTCD.</p> <p>FHWA also proposes new Guidance and Support statements to describe the considerations and recommendations for application of simultaneous and advance preemption. FHWA proposes these changes to provide practitioners with more information to improve consistency in the application of preemption.</p> <p>FHWA also proposes new Standard statements regarding the end of the track clearance interval. FHWA proposes these changes to prohibit the track clearance interval from being terminated too early in situations when there is variability in train approach times.</p> <p>FHWA also proposes a new Guidance statement recommending the use of advanced preemption with exit gates. FHWA proposes this change because additional preemption time is needed for the safe operation of the exit gate system.</p> <p>FHWA also proposes new Guidance statements recommending the ability of traffic signal equipment to restart or reservice preemption requests. FHWA proposes this change to provide consistent preemption operation where train movements may stop or start on the approach to the grade crossing.</p> <p>FHWA also proposes a new Standard statement to prohibit the flashing mode of a traffic signal from beginning until rail traffic has entered the grade crossing. FHWA proposes this change to prevent road user confusion that could result in stopping on the tracks.</p> <p>Finally, FHWA proposes a new Standard paragraph to require evaluation of the priority of preemption calls when both boats and trains operate at a grade crossing. FHWA proposes this change to require agencies to resolve competing preemption requests.</p>	<p>Part 8 and avoids potential misapplication of the Standard.</p> <p>The Support and Option statements are adopted with a revision to delete the reference to busway. This change is proposed because NPA Section 8A.13 regarding busways is deleted.</p> <p>The Guidance statements are adopted as proposed.</p> <p>The Guidance statements are adopted with editorial revisions to clarify the intended meaning. The Support statement is not adopted because it is unnecessary and does not improve practitioners' understanding of the Guidance statements.</p> <p>The Standard statement is adopted as proposed. FHWA also adopts a new Support statement to identify additional resources regarding preemption time variability.</p> <p>The Guidance statement is adopted as proposed.</p> <p>The Guidance statements are adopted as proposed.</p> <p>The Standard statement is adopted as proposed.</p> <p>The Standard is adopted with editorial revisions to clarify what the Diagnostic Team is intended to determine when there are multiple conflicting preemption calls.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
565 cont'd		Finally, a new Option statement in proposed P12 is adopted to provide flexibility for the Diagnostic Team to determine the preemption time where train switching or restarts occur close to a grade crossing with preemption.
566	<p>In Section 8D.11 (existing Section 8B.08), retitled, "Movements Prohibited During Preemption," FHWA proposes new Guidance and Option statements that prohibit movements towards a grade crossing using traffic signal indications and blank-out signs. FHWA proposes this change to provide more detailed recommendations and information to agencies for the prohibition of permissive-only turn movements, protected-only turn movements and straight-through movements towards a grade crossing.</p> <p>FHWA also proposes new Guidance statements for the recommended use of LRT-activated blank-out signs. FHWA proposes this change to improve consistency in the application of the signs.</p> <p>Finally, FHWA proposes a revised Standard that requires blank-out signs used in preemption be activated only when the preemption is active. FHWA proposes this change to improve the consistent operation of the signs.</p>	<p>The section is renumbered to Section 8D.10. The Guidance statements are adopted with revisions to differentiate the recommendations for permissive-only, protected/permissive and protected-only turn movements. The recommendation to use R3-1a or R3-2a blank-out signs is adopted because it addresses the issue of right-turn vehicles stopped in a through lane when the signal is green. The intent of the Guidance is to address or reduce undesirable driver behavior when this occurs, and the guidance is consistent with NTSB recommendation H-13-041. Agencies still have the ability to use R3-1, R3-2, or R3-27 if they document the engineering reasons to not follow the Guidance.</p> <p>The Guidance statements are adopted with editorial revisions to improve to improve the clarity of the statements.</p> <p>The revised Standard is adopted with editorial revisions for clarity and accuracy.</p>
567	<p>FHWA proposes a new section numbered and titled, "Section 8D.12 Pre-Signals at or Near Grade Crossings." Several of the paragraphs in this proposed new section are from existing Section 8C.09.</p> <p>FHWA proposes revised and new Standards that require red signal indications to be displayed during preemption. FHWA proposes the change to prevent conflicting indications between the pre-signal and the grade crossing flashing-light signal system.</p> <p>FHWA also proposes a new Guidance paragraph to recommend measures at downstream traffic signals. FHWA proposes this change to reduce vehicles queuing from a downstream signal through a grade crossing.</p> <p>FHWA also proposes revised and new Options for the green interval. FHWA proposes this change to provide agencies with additional information and flexibility in the operation of a pre-signal.</p>	<p>The section is renumbered to Section 8D.11 and is adopted with revisions as described below.</p> <p>The proposed first sentence of the Support statement in P3 is relocated from proposed Section 8D.13 to Section 8D.11 because the statement is applicable to pre-signals rather than queue cutter signals.</p> <p>The changes are adopted as proposed.</p> <p>The proposed new Guidance paragraph P6 is revised to a Support statement in P4 because commentors noted that the list of conditions is not all inclusive and the Guidance statement does not improve consistency.</p> <p>The Option statements are adopted as proposed.</p>



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
567 cont'd	<p>FHWA also proposes a new Standard statement to define the calculation of the queue clearance time. FHWA proposes the change to improve safety of road users by ensuring the queue clearance time is long enough to clear vehicles out of the grade crossing after the pre-signal indications turn red.</p> <p>FHWA also proposes new Guidance paragraphs to provide recommendations for indications overturn lanes that extend from a downstream intersection through a pre-signal. FHWA proposes the change to avoid road user confusion between indications at a pre-signal and a downstream traffic signal and based on Official Ruling No. 8(09)–19(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/8_09_19.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/8_09_19.htm</a>).</p> <p>FHWA also proposes new Standards and Support paragraphs that require agencies to use specific indications at a pre-signal. FHWA proposes the change to improve safety by discouraging road users from inadvertently turning onto railroad or LRT tracks.</p> <p>Finally, FHWA proposes new Option statements for the location of pre-signal indications and additional signing.</p> <p>FHWA proposes the changes to provide agencies with flexibility to install indications where they will be most visible and effective.</p>	<p>In response to comments, the Standard statement is revised to Guidance because it addresses operations and there could be situations where the Standard could not be met.</p> <p>The Guidance is adopted as proposed.</p> <p>Based on comments, proposed Paragraph 6 is not adopted because it was determined the guidance was not clear, it could be applied to all movements, and it was not inclusive of all options that could be considered.</p> <p>The Standard statements are adopted with revisions to clarify the signal indications to be used where lanes are controlled separately versus where lanes are controlled together. A new Option statement is also adopted to permit CIRCULAR GREEN signal indications where all adjacent lanes at the pre-signal are controlled together to address commentors that identified existing pre-signals that are operating safely with circular indications.</p> <p>The Option statements are adopted as proposed.</p>
568	<p>FHWA proposes a new section numbered and titled, "Section 8D.13 Queue Cutter Signals at or Near Grade Crossings" for the placement and implementation of queue cutter signals near grade crossings.</p> <p>FHWA proposes new Support and Option statements to provide information about the application, and operation of queue cutter signals. FHWA proposes the change to allow agencies explicitly to install queue cutter signals which are not addressed in the existing MUTCD.</p> <p>FHWA also proposes a new Standard paragraph that requires agencies to use specific indications at a queue cutter signal. FHWA proposes the change to improve safety by discouraging road users from inadvertently turning onto railroad or LRT tracks.</p>	<p>The section is renumbered to Section 8D.12 and is adopted with revisions as described below.</p> <p>The Support statement in the first sentence of P4 is relocated to Section 8D.12 because the statement is applicable to pre-signals rather than queue cutter signals.</p> <p>The Standard statements are adopted with revisions to clarify the signal indications to be used where lanes are controlled separately versus where lanes are controlled together. Also, a new Option statement is adopted to permit CIRCULAR GREEN signal indications where all adjacent lanes at the pre-signal are controlled together to address commentors that</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
568 cont'd	<p>identified existing pre-signals that are operating safely with circular indications.</p> <p>FHWA also proposes new Options for the locations of queue cutter indications. FHWA proposes the changes to provide agencies with flexibility to install indications where they will be most visible and effective.</p> <p>FHWA also proposes new Guidance and Options for signing associated with the queue cutter. FHWA proposes the changes to provide agencies with flexibility to install signing that discourages road users from stopping in the grade crossing.</p> <p>FHWA also proposes new Guidance and Options for the operation of queue cutter signals. FHWA proposes the change to provide recommendations for the safe and effective operation of the signal.</p> <p>FHWA also proposes new Standards that require interconnection and preemption of a queue cutter signal. FHWA proposes the change to require uniform application and to prevent conflicting or confusing displays by the queue cutter signal and flashing-light signal system.</p> <p>FHWA also proposes new Guidance and Support paragraphs to provide recommendations and information for indications overturn lanes that extend from a downstream intersection through a queue cutter. FHWA proposes the change to avoid road user confusion between indications at a pre-signal and a downstream traffic signal.</p> <p>FHWA also proposes new Standards and Support statements to require additional measures for situations where a turn lane from a downstream intersection is controlled separately from through movements at a queue cutter signal. FHWA proposes the change to avoid road user confusion when different indications are displayed in adjacent lanes at a queue cutter signal and based on Official Ruling No. 8(09)–19(I) (<a href="https://mutcd.fhwa.dot.gov/resources/interpretations/8_09_19.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/8_09_19.htm</a>).</p> <p>Finally, FHWA proposes new Support statements that provides information differentiating a queue cutter signal and a queue jump signal. FHWA proposes the change to prevent confusion by users of the MUTCD.</p>	<p>The Option statements are adopted as proposed.</p> <p>The Guidance and Option statements are adopted as proposed.</p> <p>The Guidance in proposed P14 is revised to an Option because the statement does not contain a recommendation and the intent of the statement is consistent with an Option. The Guidance in proposed P15 is revised to improve the clarity of the recommendation.</p> <p>See Preamble of Federal Register for discussion of this item.</p> <p>The Guidance and Support statements are adopted as proposed.</p> <p>The Standard statements are adopted with revisions to clarify the signal indications to be used where lanes are controlled separately versus where lanes are controlled together. A new Option statement is adopted to permit CIRCULAR GREEN signal indications where all adjacent lanes at the pre-signal are controlled together to address commentors that identified existing pre-signals that are operating safely with circular indications.</p> <p>The Support statements are adopted as proposed.</p>
569	FHWA proposes a new section numbered and titled, "Section 8D.14 Warning Beacons or LED-Enhanced Warning Signs at Grade Crossings" for the utilization,	The new section is renumbered to Section 8D.13 and is adopted with revisions as described below.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
569 cont'd	<p>activation, and operation of warning beacons and LED-enhanced warning signs at grade crossings.</p> <p>FHWA proposes new Option and Support paragraphs to provide information about the considerations and application of warning beacons and enhanced signs. FHWA proposes the change to provide consistency in the use of these devices.</p> <p>FHWA also proposes new Standard and Support statements to require preemption interconnection to control the activation of warning beacons and enhanced signs at grade crossings. FHWA proposes the change to improve safety through the consistent and failsafe operation of the devices.</p> <p>FHWA also proposes new Option and Guidance statements to recommend the timing of warning beacon and sign activation. FHWA proposes the change to provide for consistent operation of the devices.</p> <p>Finally, FHWA proposes a new Guidance paragraph that recommends the use of back-up power for warning beacons and enhanced signs. FHWA proposes the change to reflect best practices for devices at grade crossings.</p>	<p>The Option and Support statements are adopted as proposed.</p> <p>The Standard and Support statements are adopted as proposed.</p> <p>The Option and Guidance statements are adopted as proposed.</p> <p>The Guidance statement is adopted with revisions in response to comments to simplify the recommendation and eliminate ambiguity regarding the minimum operating period for the back-up power system.</p>
570	<p>In Section 8D.15 (existing Section 8C.10) Traffic Control Signals at or Near Highway-LRT Grade Crossings, FHWA proposes to delete existing P16 that recommends that all existing turning movements toward the highway-LRT grade crossing be prohibited when a signalized intersection is preempted and located within 200 feet of a highway-LRT grade crossing. FHWA proposes the change because the Guidance is redundant with new Section 8D.10.</p>	<p>The section is renumbered to Section 8D.14. The Guidance paragraph is deleted as proposed.</p> <p>Editorial revisions are adopted to the Option statement permitting vehicle, pedestrian, and bicycle indications that do not conflict with LRT movements to clarify the intent of the statement.</p> <p>Editorial revisions are also adopted to the Option statement regarding control of LRT grade crossings that are not at an intersection, consistent with the Option statement in Section 8D.04.</p>
571	<p>In Section 8D.16 (existing Section 8C.11), retitled, "Use of LRT Signals for Control of LRT Vehicles at Highway-LRT Grade Crossings," FHWA proposes to delete Paragraph 1 recommending special LRT signal indications for LRT movements in semi-exclusive alignments at non-gated grade crossings that are equipped with traffic control signals. FHWA proposes this change to be consistent with the updated</p>	<p>The section is renumbered to Section 8D.15. The Guidance statements are deleted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
571 cont'd	<p>definition of a semi-exclusive LRT alignment.</p> <p>FHWA also proposes to delete the LRT traffic signal configurations in Figure 8D-3 (existing Figure 8C-3). FHWA proposes this change to provide agencies with more flexibility in the design of LRT signal configurations.</p> <p>FHWA proposes to add Guidance, Standard, and Option statements regarding the positioning of signal faces used to control LRT movements, requiring special LRT signal indications to be white, and providing the option to allow individual LRT signal sections to be displayed to form clustered signal faces, or for multiple LRT signal indications to be displayed using a single housing. FHWA proposes these changes to improve consistency in the use of LRT signal indications.</p>	<p>Figure 8D-3 is adopted as proposed.</p> <p>The Guidance, Standard, and Option statements are adopted as proposed.</p> <p>A new Option statement is adopted to permit LRT signal indications to be used for bus movements because NPA Section 8A.13 regarding busways is deleted.</p>
572	<p>In Section 8E.01 (existing Section 8D.01) Purpose, FHWA proposes to include sidewalks in the provisions in Chapter 8E (existing Chapter 8D).</p> <p>FHWA also proposes a new Figure 8E-1 and accompanying text to illustrate and describe the difference between a pathway grade crossing and a sidewalk grade crossing. FHWA proposes these changes, as well as the following proposed changes in Chapter 8E, because additional focus has been placed on accessibility for all modes of travel at grade crossings, and as ridership has increased on light rail, commuter rail, and passenger rail facilities, pedestrian interaction with trains has led to an increasing trend in pedestrian and rail incidents.</p>	<p>The section is adopted as proposed.</p> <p>The figure is adopted with revisions to the figure title to clarify its purpose. The figure is also revised to show detectable warnings consistent with all the other figures in Chapter 8E.</p>
573	<p>In Section 8E.02 (existing Section 8D.02) Use of Standard Devices, Systems, and Practices, FHWA proposes a new Guidance statement recommending that the pathway or sidewalk user's ability to detect the presence of approaching rail traffic should be considered in determining the type and placement of traffic control devices at grade crossings, and that a Diagnostic Team should design and develop the traffic control devices.</p> <p>FHWA also proposes a Support statement and accompanying new figures describing the pathway and sidewalk design that best enhances pedestrian safety at grade crossings.</p>	<p>The Guidance statements are adopted with revisions to clarify that the Diagnostic Team determines the traffic control treatments but does not design them, which is consistent with the Standard statements in Sections 8A.03 and 8A.05.</p> <p>The Support statements are adopted with revisions in response to comments to clarify the desired angle of pathway and sidewalk grade crossings and to eliminate the 12-foot dimension consistent with the revisions in Chapter 8D.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
574	<p>In Section 8E.03 (existing Section 8D.03), retitled, "Pathway and Sidewalk Grade Crossing Signs and Markings," FHWA proposes a new Guidance statement to recommend a 10-foot vertical clearance between overhead traffic control devices and the pathway surface directly under the sign or device on pathways used by equestrians.</p> <p>FHWA also proposes Standard statements requiring that if overhead traffic control devices are placed above sidewalks, the clearance from the bottom edge of the device to the sidewalk surface directly under the sign or device to be at least 7 feet, and traffic control devices mounted adjacent to sidewalks that are mounted at a height of less than 7 feet must be at least 2 feet laterally offset from the sidewalk. FHWA proposes this change to incorporate existing provisions of Parts 2 and 4, which require a minimum mounting height of 7 feet when a traffic control device extends above the sidewalk. Restatement of these provisions within Part 8 is necessary to minimize situations where pedestrians may hit their heads and become injured while walking under a sign, signal, or other device.</p> <p>FHWA also proposes Guidance and Option statements for utilizing and mounting the LOOK (R15-8) sign and the Skewed Crossing (W10-12) sign.</p> <p>FHWA also proposes accompanying revised and new figures to illustrate the application of signing and pavement markings for pathways and sidewalk grade crossings.</p> <p>FHWA proposes all of the changes in this section to be consistent with other areas of the MUTCD.</p>	<p>The Guidance statement is adopted as proposed.</p> <p>The first proposed new Standard statement is adopted as proposed. The second proposed new Standard statement is adopted as Guidance to be consistent with Guidance statements regarding sign mounting height and lateral offset in Sections 2A.14 and 2A.15.</p> <p>The Guidance and Option statements are adopted as proposed.</p> <p>The figures are adopted with revisions to clarify the arrangement of detectable warning, stop line, and other traffic control devices, and to delete references to 12-foot clearance, consistent with the text edits in Part 8.</p>
575	<p>In Section 8E.04 (existing Section 8D.04) Stop Lines, Edge Lines, and Detectable Warnings, FHWA proposes a new Guidance statement and accompanying new figure recommending that pavement markings be installed in advance of the pathway grade crossing if pathway users include those who travel faster than pedestrians and that a stop line be provided at a pathway grade crossing if the surface where the marking is to be applied is capable of retaining the application of the marking. FHWA also proposes an Option that allows a stop line to be provided at a sidewalk grade crossing if the surface where the marking is to be applied is capable of retaining the marking.</p> <p>FHWA also proposes Standard and Guidance statements, consistent with existing provisions in Part 3, regarding the design, implementation, and</p>	<p>The Guidance statement is adopted with revisions in response to comments to clarify that pathway markings are not recommended where the surface cannot retain the markings.</p> <p>The Option statement is adopted as proposed.</p> <p>The Standard and Guidance statements are adopted with revisions to clarify the orientation of the dimensions.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
575 cont'd	utilization of detectable warnings based on ADAAG criteria and to provide clarity for the new figures that address this issue. These provisions are restatements of the existing requirements of Part 3, which were previously referenced only in a Support statement. FHWA proposes these changes as conforming edits, which would not change the existing underlying provisions.	In response to comments, new Option and Guidance statements are adopted to permit detectable warnings to be installed closer than 12 feet from the nearest rail at LRT crossings because increased flexibility is needed at some LRT grade crossings in constrained urban conditions.
576	In Section 8E.05 (existing Section 8D.05), retitled, "Passive Traffic Control Devices—Crossbuck Assemblies," FHWA proposes changes to the Standard paragraph, requiring a Crossbuck Assembly to be installed on each approach to the pathway or sidewalk grade crossing when the nearest edge of a pathway or sidewalk grade crossing is located more than 25 feet from the center of the nearest traffic control warning device at a grade crossing.	The Standard statements are adopted as proposed.
	FHWA also proposes a new Option statement allowing the retroreflective strip on the back of the support to be omitted on the Crossbuck support at a pathway or sidewalk grade crossing.	The Option statement is adopted as proposed.
	Finally, FHWA proposes a new Standard statement and accompanying new figure requiring the minimum height of Crossbuck Assemblies installed on pathways or sidewalks to be 4 feet where the lateral offset to the nearest edge of the sign is at least 2 feet and 7 feet where the lateral offset to the nearest edge of the sign is less than 2 feet. The proposed Standard also requires the minimum lateral offset to be 0 feet for sidewalks and 2 feet for pathways.	The Standard statement is adopted as proposed.
		Editorial revisions to Figure 8E-7 are adopted to be consistent with the text in Section 8E.05 and to renumber the figure as Figure 8E-5 be consistent with where it is referenced in the text.
577	FHWA proposes a new section numbered and titled, "Section 8E.06 Passive Traffic Control Devices—Swing Gates, Fencing, and Pedestrian Barriers" for designing and implementing swing gates, fencing, and pedestrian barriers.	The title of the new section is revised to clarify the purpose and content of the section. The section is adopted with revisions as described herein.
		In response to comments, the Guidance statement in proposed P1 is revised to a Support statement to be more consistent with the intent of the statement.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
577 cont'd	<p>FHWA proposes new Support and Option statements for the application of automatic gates and swing gates for sidewalk or pathway grade crossings. FHWA proposes the change to provide agencies with more information for the consistent and safe application of these measures.</p> <p>FHWA also proposes a new Guidance statement for the signing recommended on swing gates. FHWA proposes the change to provide pedestrians with clear messages about the use of the swing gate.</p> <p>Finally, FHWA also proposes a new Support paragraph and accompanying revised figure for the application of fencing near sidewalk or pathway grade crossings. FHWA proposes the change to provide agencies with information about measures that improve the effectiveness of automatic and swing gates at sidewalk and pathway grade crossings.</p>	<p>The Support statements are adopted as proposed. The Option statements are revised to Support statements because they address design elements that are not traffic control devices.</p> <p>The Guidance statement is adopted as proposed.</p> <p>The Support paragraph is adopted as proposed.</p> <p>Editorial revisions to Figure 8E-5 are adopted to be consistent with the text in Chapter 8E and to renumber the figure as Figure 8E-6 to be consistent with where it is referenced in the text.</p>
578	<p>In Section 8E.07 (existing Section 8D.06), retitled, "Active Traffic Control Systems," FHWA proposes new Standard paragraphs and accompanying revised figure requiring an active traffic control system at pathway-LRT and sidewalk-LRT grade crossings where LRT operating speeds on a semi-exclusive alignment exceed 25 mph.</p> <p>FHWA also proposes to add a new Standard requiring an active traffic control system, including automatic gates at pathway-LRT and sidewalk-LRT grade crossings where LRT operating speeds on a semi-exclusive alignment exceed 40 mph. Both proposed new Standards include an exception to omit flashing-light signals, bells, and other audible warning devices when the pathway or sidewalk grade crossing is located within 25 feet of an active warning device that is equipped with those devices.</p> <p>FHWA also proposes a new Option statement that allows additional pairs of flashing-light signals, bells, or other audible warning devices to be installed on the active traffic control devices at a grade crossing for pathway or sidewalk users approaching the grade crossing from the back side of those devices.</p> <p>Lastly, FHWA proposes a new Guidance statement recommending that if there is space, a pedestrian refuge area or island should be provided between the</p>	<p>The Standard statement is adopted with revisions to reorder the paragraphs to improve the clarity of the requirements. The Standard regarding audible devices is revised to a Guidance statement to be consistent with other statements regarding audible devices in Part 4 and Part 8.</p> <p>The Standard statements are adopted as proposed.</p> <p>The Option statement is adopted as proposed.</p> <p>The Guidance statement is adopted with editorial revisions to clarify the applicability of the statement.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
578 cont'd	tracks and the roadway where railroad or LRT tracks in a semi-exclusive alignment are immediately adjacent to a roadway.	
579	<p data-bbox="228 394 850 667">FHWA proposes a new section numbered and titled, "Section 8E.08 Active Traffic Control Devices—Signals," for pedestrian signal heads, flashing red lights, and other active traffic control devices at pathway and sidewalk grade crossings. Some of the material in this section was relocated from existing Section 8C.13 and has been reorganized to provide all relevant information for flashing-light signals at pathway and sidewalk grade crossings in one section.</p> <p data-bbox="228 699 850 852">FHWA proposes new Standard and Support paragraphs that prohibit the use of pedestrian signal heads at pathway and sidewalk grade crossings. FHWA proposes the change to improve pedestrian safety and prevent user confusion at grade crossings.</p> <p data-bbox="228 884 850 1062">FHWA also proposes a new Option statement that allows the use of pedestrian signal heads at pathway and sidewalk grade crossings with LRT. FHWA proposes the change to provide agencies with flexibility where the LRT movements are controlled by a traffic signal.</p> <p data-bbox="228 1094 850 1213">FHWA also proposes new Standards for flashing-light signals at pathway and sidewalk grade crossings. FHWA proposes the changes to provide uniformity in the design and operation of flashing-light signals.</p> <p data-bbox="228 1245 850 1398">FHWA also proposes a new Guidance statement for use of pedestrian gates in situations where flashing-light signals have not been effective. FHWA proposes the change to improve pedestrian safety at pathway and sidewalk grade crossings.</p> <p data-bbox="228 1430 850 1640">Finally, FHWA also proposes changes to an existing Guidance statement to clarify that flashing-light signals are recommended along semi-exclusive LRT alignments. FHWA proposes the change to improve pedestrian safety at LRT grade crossings which typically have much higher volumes of pedestrians and rail traffic.</p>	<p data-bbox="878 394 1507 453">The section is adopted with revisions as described below.</p> <p data-bbox="878 699 1507 758">The Standard and Support statements are adopted as proposed.</p> <p data-bbox="878 884 1507 911">The Option statement is adopted as proposed.</p> <p data-bbox="878 1094 1507 1121">The Standard statements are adopted as proposed.</p> <p data-bbox="878 1245 1507 1367">The Guidance statement is revised to replace references to an engineering study with references to the Diagnostic Team, consistent with the Standards in Section 8A.03 and 8A.05.</p> <p data-bbox="878 1430 1507 1549">The Guidance statement is revised to replace references to an engineering study with references to the Diagnostic Team, consistent with the Standards in Section 8A.03 and 8A.05.</p>
580	FHWA proposes a new section numbered and titled, "Section 8E.09 Active Traffic Control Devices—Automatic Pedestrian Gates," for the design, utilization, and implementation of automatic pedestrian gates including accompanying figures. Some of the material in this section was relocated from existing Section 8D.06 and has been reorganized to provide all relevant information for automatic gates at pathway and sidewalk grade crossings in one section.	The section is adopted with revisions as described herein.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
580 cont'd	FHWA proposes a new Standard statement to require automatic pedestrian gates, swing gates and fencing for pathway and sidewalk grade crossings where trains are permitted to travel 80 miles per hour and higher. FHWA proposes this change for pedestrian safety at grade crossings where higher speed trains operate.	The Standard statement is revised to replace references to an engineering study with references to the Diagnostic Team, consistent with the Standards in Section 8A.03 and 8A.05.
	FHWA also proposes a new Guidance statement to recommend an emergency escape route at automatic pedestrian gates. FHWA proposes this change to reflect industry best practices in the design of automatic pedestrian gates.	The Guidance statement is adopted as proposed.
	FHWA also proposes new Standards to require at least one red light on the automatic pedestrian gate arm and if there is more than one red light, they must be flashed in an alternating pattern.	The Standard statements are adopted as proposed.
	FHWA also proposes a new Option to omit the red light if the pathway or sidewalk crossing is within 25 feet of the roadway grade crossing. FHWA proposes this change for consistency with Section 8D.03, while providing agencies flexibility where the pathway or sidewalk grade crossing is in close proximity to automatic gates for the roadway grade crossing.	The Option statement is adopted as proposed.
	FHWA also proposes a new Option statement to clarify that a separate pedestrian gate is not required if the vehicular gate mechanism does not allow it to be raised by a pedestrian raising the pedestrian gate arm based on Official Ruling No. 8(09)–3(I) ( <a href="https://mutcd.fhwa.dot.gov/resources/interpretations/8_09_3.htm">https://mutcd.fhwa.dot.gov/resources/interpretations/8_09_3.htm</a> ).	The Option statement is adopted as proposed.
	Finally, FHWA proposes new Option and Guidance statements to provide information about the use of horizontal hanging bars from a pedestrian gate arm.	The Option statement is adopted as proposed. The Guidance statement is revised to specify 26 inches as the maximum height of the horizontal hanging bar based on the research completed to date and input from the U.S. Access Board. This revision to the maximum height has also been incorporated in Figure 8E-12.
581	FHWA proposes a new section numbered and titled, “Section 8E.10 Active Traffic Control Devices—Multiple-Track Pathway or Sidewalk Grade Crossing” that contains the first sentence of P1 in existing Section 8C.13.	The section is adopted as proposed.
582	FHWA proposes to consolidate existing Sections 9A.02 through 9A.04 into one section numbered and retitled, “Section 9A.01 General.” This section provides an overview of traffic control devices on bicycle facilities and describes some of the benefits and limitations thereof.	The consolidation of sections to become new Section 9A.01 is adopted. See also the Preamble of Federal Register for discussion of a Support statement in this section.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
583	FHWA proposes to remove existing Sections 9A.01, 9A.05, 9A.06, 9A.07, and 9A.08 because they are not needed.	Section 9A.01 and Sections 9A.05 through 9A.08 are deleted as proposed.
584	FHWA proposes to replace and retitle Section 9A.02 "Standardization of Application for Signing," which includes Standard, Guidance, and Option statements from existing Sections 9B.01 and 9B.02.	Section 9A.02 is adopted as proposed, consolidating statements from Sections 9B.01 and 9B.02, and retitled.
	FHWA proposes to change P4 and P5 in existing Section 9B.01 from Standard to Guidance to provide agencies the discretion in placement of sign supports to accommodate field conditions that may require modifications during design or sign installation.	P4 and P5 from existing Section 9B.01 changing to Guidance is adopted as proposed.
	Lastly, FHWA also proposes to add an Option statement allowing 18" x 18" warning signs that are only applicable to bicyclists and pedestrians. FHWA proposes this change to allow agencies to use smaller signs where appropriate.	The Option to use 18"x18" warning signs is adopted as proposed.
585	FHWA proposes to relocate and consolidate existing Sections 9C.01 and 9C.02 into a replaced and retitled, Section 9A.03 "Standardization of Application for Markings." FHWA also proposes to remove Guidance about using bikeway design guides because the sentence did not provide any specific information.	Section 9A.03 is adopted as proposed, consolidating existing Sections 9C.01 and 9C.02 and retitled.
	FHWA also proposes to modify the existing Standard in Section 9C.02 requiring reflectorized markings on bikeways to require that pavement markings on bicycle facilities that must be visible at night be retroreflective unless the pavement markings are visible under provided lighting. FHWA proposes this change to clarify when retroreflectivity is required.	Existing Standard moved from Section 9C.02 is adopted as proposed with an additional clarification for "low light conditions" as recommended by comments.
	FHWA also proposes to add new Guidance paragraphs discouraging raised pavement markers with bicycle lanes or shared-use paths and also recommending that if raised pavement markers are used around bicycle facilities that they are not immediately adjacent to the travel path of bicycles. FHWA proposes this Guidance because raised pavement markers create collision potential for bicyclists by placing fixed objects immediately adjacent to the travel path of the bicyclist.	The new Guidance for raised pavement markers is adopted as proposed, with the addition of a new Support statement detailing the importance of the issue for bicycle safety.
586	FHWA proposes to separate existing Chapter 9B Signs into three chapters—retitle Chapter 9B to "Regulatory Signs," add a new Chapter 9C "Warning Signs and Object Markers," and add a new Chapter 9D "Guide and Service Signs."	Existing Chapter 9B is separated into three new chapters and adopted as proposed.
	In addition, FHWA proposes to separate Table 9B-1 Bicycle Facility Sign and Plaque Minimum Sizes into	The three proposed tables are consolidated into a single table and adopted as Table 9B-1.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
586 cont'd	three tables—Table 9B–1 for regulatory signs, Table 9C–1 for warning signs and object markers, and Table 9D–1 for guide and service signs. These changes are for consistency with how signs are organized in Part 2 and to make it easier to locate bicycle related signs by sign type.	
587	In Section 9B.01 (existing Section 9B.03) STOP and YIELD Signs (R1–1, R1–2), FHWA proposes adding a Standard that prohibits a STOP sign or a YIELD sign from being installed in conjunction with a bicycle signal face. FHWA proposes this restriction to provide uniformity in the application of signals and to avoid conflicts between bicycle signal indications and signs.	The new Standard is adopted as proposed.
588	<p>FHWA proposes to add a new section numbered and titled, “Section 9B.02 Except Bicycles Plaque (R3-7bP).” This section describes the use of this plaque for circumstances where bicycles are exempt from regulatory restrictions that apply to other traffic.</p> <p>FHWA proposes new Standard paragraphs to prevent Except Bicycles Plaques from conflicting with STOP signs or YIELD signs and requires the plaques to be placed below the regulatory sign that it supplements.</p> <p>FHWA also proposes new Figure 9B–1 to show examples of how the Except Bicycles Plaque can be applied. FHWA proposes this new section because there are circumstances where it is appropriate to exempt bicyclists from regulatory restrictions applied to other traffic.</p>	New Section 9B.02 "EXCEPT BICYCLES Plaque (R3-7bP)" and the proposed Standard describing the use of the plaque are adopted as proposed, except that the figure of examples is numbered 9B-2.
589	FHWA proposes to add a new section numbered and titled, “Section 9B.03 Advance Intersection Lane Control Signs for Bicycle Lanes (R3–8 Series)” to provide Standard, Guidance, Option, and Support statements for accommodating bicycle lanes on the R3–8 series of signing where determined to be appropriate. FHWA proposes this new section because improper dissemination of this information can result in unwieldy sign designs or legends. The amount of information that can be legibly displayed and comprehended by road users on signs or in signing sequence on the same approach to an intersection is limited. The number and combination of permissible movements by both the motor vehicle and the bicycle may be numerous, thereby complicating the cognitive task of the road user at a decision point.	The new Section is adopted with minor changes suggested by commenters for clarity.
590	In Section 9B.04, retitled, “Bike Lane Signs and Plaques (R3–17, R3–17aP, R3–5hP),” FHWA proposes changing a portion of the existing Guidance regarding the placement of Bike Lane signs and	The change is adopted as proposed.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
590 cont'd	<p>plaques periodically along the bicycle lane to an Option in order to give agencies the discretion of sign placement when developing a policy for the use of Bike Lane signs. As part of this change, FHWA also proposes to allow the use of other regulatory plaques such as BEGIN (M4-14) and END (M4-6) with Bike Lane signs.</p> <p>FHWA also proposes adding Option statements allowing the use of a BIKE LANE plaque to supplement Mandatory Movement Lane Control signs in places where only a single bicycle movement is permitted from the bicycle lane and to supplement Optional Movement Lane Control signs where two or more movements from a bicycle lane are permitted in order to prevent operational problems. FHWA proposes these additional statements to provide uniformity in signing.</p>	The new Option is adopted as proposed.
591	In Section 9B.08 (existing Section 9B.09) Selective Exclusion Signs, FHWA proposes the deletion of the Standard requiring that Selective Exclusion signs clearly indicate the type of traffic that is excluded. FHWA proposes this change, because the Selective Exclusion signs specify the user type, therefore a separate Standard statement is not necessary.	The existing Standard is deleted as proposed.
592	FHWA proposes to add a new section numbered and titled, "Section 9B.10 Back-In Parking Sign (R7-10)." This section provides Option and Support statements and a figure regarding the application of the proposed new R7-10 sign, which may be used where back-in angle parking is required by motor vehicles due to the presence of a bike lane.	New Section 9B.10 "Back-In Parking Sign (R7-10)" with Option and Support statements is adopted as proposed.
593	<p>In Section 9B.11, retitled, "Bicycles Use Ped Signal (R9-5)," FHWA proposes a new Option to remind drivers making turns that a Turning Vehicles Yield to Pedestrians (R10-15) or Left Turns Yield to Bicycles (R10-12b) sign may be used.</p> <p>Also, to increase uniformity in placement location, FHWA proposes new Guidance for the location and installation of the R9-5 sign to recommend placement where bicyclists cross the street.</p>	The changes are adopted with minor edits for clarity.
594	FHWA proposes to add a new section numbered and titled, "Section 9B.12 Bicycles Yield to Peds Sign (R9-6)." While this sign exists in Section 9B.11 of the 2009 MUTCD, FHWA proposes to add additional Standard paragraphs regarding the application and use of this sign, along with a new figure, to provide practitioners with additional information and to promote uniformity in its use.	<p>The new Section is adopted as proposed.</p> <p>The proposed figure is not adopted.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
595	<p>In Section 9B.14 (existing Section 9B.06), FHWA proposes to change the legend of the existing R4–11 (Bicycles May Use Full Lane) sign to “Bicycles Allowed Use of Full Lane.” The standardized sizes of the sign would not change, and the proposed legend would continue to be of commensurate size for its application, ensuring adequate levels of legibility and recognition. FHWA proposes this change because the legend of the existing sign, which was introduced in the 2009 edition of the MUTCD, conveys a warning message on a regulatory sign while the proposed legend would be consistent with regulatory signs that display notification of vehicle codes governing rules of the road.</p> <p>In addition to this change, FHWA proposes to redesignate this sign from R4–11 to R9–20. FHWA proposes this change to group this sign with several other proposed bicycle-related signs with the R9 series designations.</p>	The sign legend and designation are adopted as proposed.
596	FHWA proposes to add a new section numbered and titled, “Section 9B.15 Bicycle Passing Clearance Sign (R4–19)” to describe the use of this proposed new sign. Option and Guidance paragraphs are added to provide details on the use and restrictions of this sign that is only allowed in jurisdictions that have passed a law or ordinance specifying a specific passing clearance.	The new Section is adopted as proposed.
597	<p>FHWA proposes to add a new section numbered and titled, “Section 9B.16 Bicycles Use Shoulder Only Sign (R9–21)” to describe the use of this proposed new sign that is an option to use on freeways or expressways.</p> <p>Also, FHWA proposes a new plaque R5–10dP that is an option to use on freeways to prohibit bicycles on ramps leading to an adjacent or parallel freeway. The Guidance provided in this section proposes that the Bicycles Use Shoulder Only sign (R9–21) only be placed adjacent to the on-ramp or entrance to the freeway at or near the location where the full-width should resume beyond the entrance ramp taper. FHWA proposes this sign because there are places where bicycles are permitted on a freeway but are required to travel on an available and usable shoulder.</p>	<p>The new Section is adopted, except as described herein.</p> <p>The new “On Freeway” plaque (R5-10dP) is adopted as proposed but moved to Section 9B.17.</p>
598	FHWA proposes to add a new section numbered and titled, “Section 9B.17 Signing for Bicycles on Freeways and Expressways” to provide Standard, Option, and Support paragraphs along with a new figure, for bicycle signing on freeways and expressways. FHWA proposes to add a new Bicycles Must Exit (R9–22) sign that is required in advance of	The new Section is adopted with edits as described herein.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
598 cont'd	a location where a freeway or expressway becomes prohibited to bicycle travel.	<p>The requirement to place the No Bicycling Sign (R5-6) downstream from the ramp departure point where the prohibited segment of freeway or expressway begins is adopted as the second Standard statement, rather than the first.</p> <p>The "On Freeway" (R5-10dP) plaque is adopted as proposed in Section 9B.16, but is instead included in this section.</p>
599	<p>FHWA proposes to add a new section numbered and titled, "Section 9B.18 Two-Stage Bicycle Turn Box Regulatory Signing (R9-23 series)."</p> <p>FHWA proposes Standard, Option, and Support for the new sign as well as a new Figure 9B-5 that illustrates required signing for two-stage turn boxes that are used to simplify the turning task for bicyclists at certain intersections.</p>	See Preamble of Federal Register for discussion of this item.
600	FHWA proposes to add a new section numbered and titled, "Section 9B.19 Bicycle Jughandle Signs (R9-24, R9-25, R9-26, and R9-27 Series)." FHWA proposes the new section to define a bicycle jughandle turn and provide Guidance, Option, and Support, as well as a new Figure 9B-6, that illustrates signing for such locations.	<p>The new Section is adopted with a minor edit that moves the support statement regarding bicycle jughandle signs for turns initially made to the left to become part of the last Option paragraph.</p> <p>In addition, an Option is added to allow the use of an R9-23 sign in advance of where bicycles are required to use the bicycle jughandle to turn in order to facilitate all turns.</p>
601	<p>FHWA proposes to add a new section numbered and titled, "Section 9B.20 Bicycle Actuation Signs (R10-4, R10-22, R10-24, R10-25, and R10-26)," created from paragraphs in existing Section 9B.11 and Section 9B.13.</p> <p>FHWA proposes to rename sign R10-22 from "Bicycle Signal Actuation" to "Bicycle Detector."</p> <p>Also, FHWA proposes to add a Guidance statement giving recommendations on where to place Bicycle Detector signs.</p>	New Section 9B.20 "Bicycle Actuation Signs (R10-4, R10-22, R10-24, R10-25, and R10-26)" is adopted as proposed.
602	FHWA proposes to add a new section numbered and titled, "Section 9B.21 LEFT TURN YIELD TO Bicycles Sign (R10-12b)" to provide information regarding the proposed new R10-12b sign and refers the user to Section 2B.53. FHWA proposes this change because road users approaching a signalized intersection with	The new Section is adopted with minor changes proposed by commenters for clarity.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
602 cont'd	opposing counter-flow bicycle lanes may not expect to yield to oncoming bicycles.	
603	FHWA proposes to add a new section numbered and titled, "Section 9B.22 Bicycle SIGNAL Signs (R10–40, R10–40a, R10–41, R10–41a, R10–41b)." FHWA proposes this new section in concert with the addition of bicycle signal faces in the MUTCD. The proposed Standard in this section requires that a Bicycle Signal sign be installed immediately adjacent to every bicycle signal face to inform road users that the specialized signal control face is intended only for bicyclists. FHWA proposes this new section to be consistent with past FHWA action and proposed changes to Part 4 to establish uniform signal control indications for bicycles on a national basis, which would improve bicyclist safety, especially at locations where separate signal phases are provided for motor vehicle and bicycle traffic.	The new Section is adopted with minor changes proposed by commenters for clarity.
604	In Section 9B.23 (existing Section 8.17) LOOK Sign (R15–8), FHWA proposes to relocate this section from Part 8 and allow the use of a LOOK sign on a shared-use path or separated bikeway at a railroad or LRT grade crossing.	The change is adopted as proposed.
605	FHWA proposes to add a new section numbered and titled, "Section 9B.25 General Service Signing for Bikeways" to provide information regarding General Service signs and their applicability for bicycles as referenced in Chapter 2I.	The new Section is adopted as proposed.
N/A (Sec. 9C.04)	Section 9C.04 (existing Section 9B.18) (not discussed in the NPA Preamble)	<p>The title of Section 9C.04 and text referencing the W11-5 sign are revised to reflect the change of the sign name from combined Bicycle/Pedestrian sign to Trail Crossing sign.</p> <p>In the final rule, the existing Option statement regarding the use of supplemental plaques with the legend AHEAD or XX FEET is changed to a Guidance to indicate that when used in advance of a trail crossing, a W11-15 or W11-15a sign should be supplemented with an AHEAD (W16-9P) or XX FEET (W16-2P, W16-2aP) to inform road users that they are approaching a point where crossing activity might occur. This change is adopted to be consistent with Guidance in Chapter 2C.</p>
606	FHWA proposes to add a new section numbered and titled, "Section 9C.05 Except Bicycles Plaque (W16-20P)" to provide information regarding a proposed new plaque that can be used to notify bicyclists that a warning sign is not applicable to them.	The new Section is adopted as proposed.
607	FHWA proposes to add a new section numbered and titled, "Section 9C.06 Bicycle Cross Traffic Warning	FHWA adopts the section with modifications in response to comments including: changing the

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
607 cont'd	Plaques (W16–21P, W21–16aP)” to provide information regarding a proposed new plaque recommended for use below a STOP sign in isolated locations to alert motor vehicles of unexpected bicycle traffic.	section title to, "Two-Way Bicycle Cross Traffic Warning Plaque (W16-21P)," expanding the application to either STOP or YIELD signs, and deleting the proposed second Guidance paragraph to provide flexibility in the use of the sign.
608	FHWA proposes to add a new section numbered and titled, “Section 9C.07 Bicycle Lane Ends Warning Sign (W9–5) and Bicycle Merging Sign (W9–5a)” to provide Support, Option, and Guidance for two new signs, W9–5 and W9–5a that can be used to alert road users when a bicycle lane is ending or a bicycle merge is occurring.	The new Section is adopted as proposed.
609	In Section 9C.08 (existing Section 9B.19) Other Bicycle Warning Signs, FHWA proposes an Option to use a plaque displaying the legend IN ROAD (W16-1P and W16–1aP) with the Bicycle Warning Sign (W11-1) to communicate to bicycles and motor vehicles that bicycles are in the road. The SHARE THE ROAD plaque has been removed from the MUTCD based on research indicating that road users do not understand the intended message.	The changes are adopted as proposed.
610	In Section 9C.09 (existing Section 9B.26) Object Markers, FHWA proposes to delete existing P3 and P4 regarding how markers are striped and instead reference Section 2C.69.	The change is adopted with one editorial change deleting the term “traveled way” in the Standard, since it is unnecessary.
611	In Section 9D.01 (part of existing Section 9B.20), retitled, “Bicycle Destination Signs (D1–1b, D1–1c, D1–2b, D1–2c, D1–3b, D1–3c),” FHWA proposes to change the Guidance regarding the substitution of Bicycle Destination signs for vehicular destination signs to a Standard to be consistent with existing provisions in existing Section 9B.02. FHWA proposes this change to prohibit the use of smaller size Bicycle Destination signs when the message is also intended to be applicable to motorists as well as address an existing conflict in the MUTCD.	The change is adopted as proposed.
	FHWA also proposes to add a new Support paragraph regarding the purpose of Bicycle Destination signs and example locations for placement.	The change is adopted with editorial modifications for clarity.
	FHWA also proposes to add an Option statement to permit Destination signs and Street Name signs to be installed instead of or in addition to Bicycle Destination signs if the Destination or Street Name sign applies to motorists and bicyclists.	The change is adopted as proposed.
	In addition, FHWA proposes to add an Option statement to permit the use of an oversized bicycle symbol as the top line of a Bicycle Destination sign instead of individual bicycle symbols for each of the destination/distance lines. FHWA proposes this	The change is adopted as proposed.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
611 cont'd	<p>option to facilitate legibility on these signs and in accordance with FHWA's Official Ruling No. 9(09)-20 (I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/9_09_20.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/9_09_20.htm</a>).</p> <p>Also, FHWA proposes Guidance to clarify that the bicycle symbol should be to the left of the destination legend where the arrow is located at the extreme right.</p> <p>Finally, FHWA proposes to add a Guidance statement to discourage displaying travel times on Bicycle Destination signs. FHWA proposes this recommendation because travel times vary greatly by bicycle user speed and experience. Further, in terms of bike travel, the travel time does not provide any useful information that a distance would not already provide.</p>	<p>The change is adopted as proposed.</p> <p>An additional Guidance provision is adopted to clarify that Bicycle Destination signs located less than <math>\frac{1}{2}</math> mile from the destination should have the distance displayed to the nearest <math>\frac{1}{4}</math> mile, consistent with general principles for guide signs. Further, where destinations are closer than <math>\frac{1}{4}</math> mile, the distance should be displayed in feet, rather than miles, to the nearest 50 feet.</p> <p>An additional Option is adopted that allows fractions to be displayed in increments of <math>\frac{1}{10}</math> mile where distances are desired to be more precise than <math>\frac{1}{4}</math> mile increments.</p> <p>A new Support statement references Section 2A.08 which contains the provisions for the display of fractions on guide signs.</p> <p>The changes are adopted as proposed.</p>
612	<p>FHWA proposes to create a new section numbered and titled, "Section 9D.02 BIKE ROUTE Guide Signs (D11-1, D11-1c, D11-1d, D11-1e, D11-1f, D11-1g)" that contains relocated paragraphs from existing Section 9B.20 and new D11-1d, D11-1e, D11-1f, and D11-1g signs. FHWA proposes to add these new signs to provide alternative layouts and eliminate the potential need for an additional, separate sign on the same post.</p> <p>FHWA also proposes to add a Guidance statement to discourage displaying travel times on BIKE ROUTE Guide signs or Alternative BIKE ROUTE guide signs in concert with the proposed change in Section 9D.01 (existing Section 9B.20).</p>	<p>The new Section is adopted with an additional Option provision clarifying that M4-14P and M4-6P plaques may be used with BIKE ROUTE guide signs.</p> <p>The change is adopted as proposed.</p>
613	<p>FHWA proposes to add a new section numbered and titled, "Section 9D.03 BIKE ROUTE Plaque (D11-1bP)" to provide two new Options for installing the D11-1bP plaque to supplement the Alternative</p>	<p>The new Section is adopted as proposed.</p> <p>A number of commenters requested flexibility for placing the bicycle symbol on street name signs.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
613 cont'd	<p>BIKE ROUTE Guide (D11-1c) sign and a Street Name (D3-1) sign, in addition to the Option contained in P3 of existing Section 9B.25 to supplement the Bicycle Directional (D11-11) sign.</p> <p>FHWA also proposes to add three new Standards regarding the use of the proposed new sign.</p>	<p>FHWA has reviewed this matter and, consistent with the agency's longstanding position, believes that adding a bicycle symbol to street name signs can be misinterpreted as the street being open only to bicycles or the intersection of a shared-use path; that the display of the bicycle on the street name sign is ambiguous and unduly contributes to the informational load in a single sign; and that the symbol would not be of sufficient size to provide adequate recognition and legibility. The MUTCD contains many allowable means to make clear a roadway is also a bicycle route without altering the street name sign.</p>
614	<p>FHWA proposes to add a new section numbered and titled, "Section 9D.04 Numbered Bikeway Systems" to provide Support, Guidance, Standard, and Option statements, as well as a new Figure 9D-3, describing the proper signing for numbered bicycle routes. FHWA proposes this new section to provide uniformity in the numbering and signing of bicycle route systems.</p>	<p>The new Section is adopted with several edits for clarity.</p> <p>Based on comments, a Support paragraph is added providing flexibility for bicycle route guidance methods, and changes the proposed Standard requiring signing for all numbered routes to Guidance that recommends this practice, since such a Standard may result in agencies choosing not to designate such routes due to cost and other impacts, resulting in disconnected or incomplete signing of numbered routes.</p>
615	<p>In Section 9D.05 (existing Section 9B.21), retitled, "Numbered Bicycle Route Signs (M1-8, M1-8a)," FHWA proposes a new Standard to require a bicycle symbol when the Numbered Bicycle Route (M1-8, M1-8a) sign is used on a roadway so that the bicycle route can be distinguished from other numbered route systems.</p> <p>FHWA also proposes new Guidance to clarify the dimensions and placement of use of a pictograph, if used, on these signs.</p> <p>FHWA also proposes to relocate text related to U.S. Bicycle Route (M1-9) signs to new Sections 9D.02, 9D.04, and 9D.07.</p>	<p>The changes are adopted as proposed.</p> <p>The proposed Guidance regarding the use of a pictograph or legend on a Numbered Bicycle Route (M1-8a) sign is not adopted in the final rule, because it contradicts the adopted Standard.</p> <p>The change regarding the dimensions of the pictograph is adopted as proposed.</p> <p>The change is adopted as proposed.</p>
616	<p>FHWA proposes to add a new section numbered and titled, "Section 9D.06 Non-Numbered Bicycle Route Sign (M1-8b, M1-8c)" to provide Support, Option, Standard, and Guidance statements on the use and design of the Non-Numbered Bicycle Route (M1-8b, M1-8c) sign. FHWA proposes this new section to provide information for signing bicycle routes that are designated specifically by name or established using</p>	<p>The new Section is adopted with minor edits and, based on comments, includes a new Option allowing the green background or white border to be omitted on Non-Numbered Bicycle Route (M1-8b, M1-8c) signs used on shared-use paths to provide flexibility for agencies in signing shared-use paths. A number of commenters requested the proposed Standard to be Guidance, however FHWA believes in the</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
616 cont'd	a distinctive route identity but are excluded from a numbered route system.	importance of uniformity and that the new Option paragraph provides additional flexibility that addresses commenters concerns.
617	FHWA proposes to add a new section numbered and titled, "Section 9D.07 U.S. Bicycle Route Sign (M1-9)" containing paragraphs from existing Section 9B.21. FHWA also proposes to change the M1–9 sign layout in accordance with FHWA Interim Approval IA-15 ( <a href="http://mutcd.fhwa.dot.gov/resources/interim_approval/ia15/index.htm">http://mutcd.fhwa.dot.gov/resources/interim_approval/ia15/index.htm</a> ).	The new Section is adopted with a minor editorial change for consistency.
618	<p>In Section 9D.08 (existing Section 9B.22) Bicycle Route Sign Auxiliary Plaques, FHWA proposes a new Standard to require the route sign and auxiliary plaques for bikeways to be installed on independent assemblies if a designated or numbered bicycle route is concurrent with a numbered highway. FHWA proposes this change to minimize road user confusion in route signing.</p> <p>FHWA also proposes to add a Standard prohibiting installing route signs for bikeways on guide signs or overhead because these signs are typically intended for motorists and bicyclists may not expect or be able to view the legends.</p> <p>In addition, FHWA proposes to add an Option permitting route assemblies for a designated or numbered bicycle route to be installed at locations and distances other than those prescribed in Chapter 2B based on FHWA's Official Ruling No. 9(09)–39(I) (<a href="http://mutcd.fhwa.dot.gov/resources/interpretations/9_09_39.htm">http://mutcd.fhwa.dot.gov/resources/interpretations/9_09_39.htm</a>).</p> <p>Also, FHWA proposes adding clarification to the Guidance paragraph regarding the M4–8 plaque and that the sign color should match the color combination of the route for uniformity.</p> <p>FHWA proposes a new Guidance paragraph regarding minimum route sign sizes to improve visibility.</p> <p>FHWA also proposes a new Standard to require the Junction, Cardinal Direction, or Alternative Route auxiliary plaque be installed above the Bicycle Route sign, and the Advance Turn Arrow or Directional Arrow auxiliary plaque be installed below the Bicycle Route sign where both are used on the same sign assembly. FHWA proposes this new section to provide uniformity in placement of auxiliary plaques on sign assemblies.</p> <p>Also, FHWA proposes to delete the Option statement regarding destination sign mounting because it is</p>	<p>The changes are adopted, except as described herein.</p> <p>In response to comment, the proposed Standard is changed to Guidance in the final rule to accommodate conditions where bicycle routes are particularly integrated into the roadway network.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
618 cont'd	<p>redundant with Paragraph 4 of existing Section 9D.20.</p> <p>FHWA proposes a new Standard regarding the usage of Bicycle Route Sign assembly that shall consist of a route sign and auxiliary sign. FHWA proposes this new Standard to improve uniformity and for consistency with provisions for other Route Sign assemblies, which provide positive direction to road users.</p> <p>Also, FHWA proposes Guidance to clarify that Bicycle Route Sign assemblies should be installed on all approaches where bicycle routes meet other bicycle routes. This Guidance would improve bicycle network wayfinding.</p> <p>In addition, FHWA proposes new a Standard regarding the arrangement of information displayed on groups of assemblies for bicycle routes to improve uniformity and consistency with existing provisions for other types of assemblies, which facilitates recognition by the road user.</p> <p>FHWA proposes a new Option allowing Bicycle Route Sign assemblies to be installed on common supports with numbered highway routes to reduce sign clutter.</p> <p>Also, FHWA proposes new Standard and Option statements for the required signing of the Junction assembly and the optional placement in advance of an intersection to improvement uniformity and wayfinding for bicyclists.</p> <p>Finally, FHWA proposes new Standard, Guidance, Option, and Support statements for bicycle route signs regarding the use and layout of Directional signs or Directional assemblies to improve uniformity and wayfinding for bicyclists.</p> <p>Remove Support for an agency or jurisdiction to use several methods for route guidance. This is included in Section 9D.04.</p>	<p>The Option regarding assembly supports is not adopted. This Option was in contradiction with the NPA proposed Standard which would have prohibited mounting Bicycle Route sign assemblies on common supports with numbered Highway routes for general traffic. That Standard is changed in the final rule to Guidance to allow engineering judgment to be used to determine when it might be necessary or acceptable to co-locate Bicycle Route signs with numbered highway routes signs. The Option serves no purpose and therefore is removed.</p>
619	<p>In Section 9D.09 (existing Section 9B.23), retitled, "Bicycle Parking Signs (D4-3, D4-4)," FHWA proposes to delete the Standard regarding the color of the legend and border because the color for guide</p>	<p>The change is adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
619 cont'd	<p>signs is covered elsewhere.</p> <p>FHWA also proposes to add an Option permitting a new Bicycle-Sharing Station (D4-4) sign to be installed to provide directional information to a designated bicycle sharing system. FHWA proposes to add a Guidance recommending that, if used, the Bicycle-Sharing Station sign should be used in conjunction with a regulated bicycle-sharing system. FHWA proposes these changes to establish uniformity with signing for these new bicycle facilities.</p> <p>In addition, FHWA proposes to add a new Standard reiterating existing prohibitions on promotional advertising, business logos, or other identification that would convey the involvement of a public-private partnership, in accordance with the existing provisions of Section 1A.02 that prohibit promotional advertising on traffic control devices.</p>	<p>The Option regarding Bicycle-Sharing Stations is adopted as proposed.</p> <p>An additional Option provision is adopted that allows the D4-4 sign to be modified with two lines, for use in constrained areas.</p> <p>The change is adopted as proposed.</p>
620	<p>In Section 9D.10 (existing Section 9B.24) Reference Location Signs (D10-1 through D10-3) and Intermediate Reference Location Signs (D10-1a through D10-3a), FHWA proposes to delete existing Standard P5 regarding the design of reference location signs because minimum sign sizes are specified in the existing table and sign designs are standardized and must comply with the existing provisions of Chapter 2A.</p> <p>FHWA also proposes to change existing P4 and P6 regarding the use of decimal points and a zero numeral on the integer mile point on intermediate reference location signs and the placement of reference location signs from a Standard to a Guidance to provide agencies flexibility in mile point displays and sign placement.</p>	<p>The changes are adopted as proposed.</p>
621	<p>FHWA proposes to add a new section numbered and titled, "Section 9D.12 Destination Guide Signs for Shared-Use Paths (D11-10a, D11-10b, D11-10c)" to provide Support, Standard, Guidance, and Option statements regarding the application of Destination Guide signs for shared-use paths.</p> <p>FHWA proposes new Standards that require the destination guide signs on shared-use paths, when used, to be symbols to allowable modes on the path. FHWA also proposes new Standards related to sign content and layout requirements, including arrows, lettering, and pictographs. FHWA proposes this new section to provide practitioners information for shared-use path signing, the need for which has increased in recent years, as evidenced by an increasing number of technical inquiries that FHWA has answered regarding this type of signing.</p>	<p>The new Section is adopted with minor editorial changes.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
622	<p>FHWA proposes to add a new section numbered and titled, "Section 9D.13 Two-Stage Bicycle Turn Box Guide Signing (D11–20 series)" with Standard, Option, and Support statements related to the use of the guide signs for two-stage bicycle turn boxes. FHWA also proposes a new Figure 9D–6 that illustrates the guide signing for two-stage turn boxes that are used to simplify the turning task for bicyclists at certain intersections.</p>	<p>The new Section is adopted, with changes as described herein. The new figure is adopted as Figure 9D-7.</p> <p>The proposed Standard requiring the use of Two-Stage Bicycle Turn Box Guide signs is adopted instead as an Option provision based on comments received, to provide agencies with additional flexibility and minimize the potential for sign clutter with other signs that might be present.</p>
623	<p>In Section 9E.01 (part of existing Section 9C.04), retitled, "Bicycle Lanes," FHWA proposes to revise the Standard to require the use of bicycle lane symbol or word markings, in addition to longitudinal pavement markings, to define bicycle lanes.</p> <p>FHWA proposes these changes to inform road users of the bicycle lane and to reduce wrong-way bicycling.</p> <p>In addition, FHWA proposes adding clarification to the Guidance regarding the placement of the first symbol or word denoting a bicycle lane. This proposed change makes the bicycle markings consistent with preferential lane word and symbol markings.</p> <p>FHWA also proposes a new Option allowing the use of arrow markings in conjunction with the bicycle lane symbol or word markings.</p> <p>FHWA proposes a revision to Figure 9E-1 to include a single symbol for bicycle symbol pavement markings to enable a single symbol used for bicycle signs and pavement markings thereby enhancing uniformity and recognition of bicycle symbols.</p> <p>Finally, FHWA proposes to add a Standard prohibiting the bicycle symbol or BIKE LANE pavement word marking and the pavement marking arrow in a shoulder.</p>	<p>The changes are adopted with edits as described herein.</p> <p>The change is adopted with edits.</p>
624	<p>FHWA proposes a new section numbered and titled, "Section 9E.02 Bicycle Lanes at Intersection Approaches," which contains material from existing Section 9C.04.</p> <p>FHWA proposes a new Option statement to allow a bicycle lane to be located on the outside of a turn lane</p>	<p>The new Section is adopted with edits as described herein.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
624 cont'd	<p data-bbox="228 268 850 327">if a bicycle signal face is used and the signal phasing and signing eliminates potential conflicts.</p> <p data-bbox="228 363 850 512">FHWA also proposes a new Standard that requires bicycle lanes located at an intersection approach between contiguous lanes for motor vehicle movements be marked with a bicycle symbol and arrow pavement markings.</p> <p data-bbox="228 548 850 726">FHWA also proposes a Standard to prohibit bicycle lanes from being marked as contiguous with a general-purpose turn lane, either with dotted or any other line markings. FHWA proposes these additions to alert motor vehicles of the presence of bicyclists and prevent potential conflicts.</p> <p data-bbox="228 972 850 1150">In addition, FHWA proposes Option, Guidance, and Support statements for shifting over of buffer separated or separated bike lanes at intersections to improve visibility for motor vehicles and bicycles to account for developments in bicycle facility design since 2009 edition of the MUTCD.</p> <p data-bbox="228 1186 850 1335">Finally, FHWA proposes new Option, Standard, and Support statements and a new figure to provide an option and requirements for the use of mixing zones, which are when general purpose and bike lanes must share the same space through an intersection.</p>	<p data-bbox="878 758 1507 936">Based on comment, a new Standard is adopted that through bicycle movements shall not be accommodated in a general-purpose turn lane controlled by a traffic signal unless the turning movement is always permitted to proceed simultaneously with the adjacent through movement.</p> <p data-bbox="878 972 1507 1031">See Preamble of Federal Register for discussion of this item.</p> <p data-bbox="878 1186 1507 1245">The changes are adopted with edits to clarify the use of markings in mixing zones with a yielding area.</p>
625	<p data-bbox="228 1371 850 1520">FHWA proposes a new section numbered and titled, "Section 9E.03 Extensions of Bicycle Lanes through Intersections" to provide Support, Standard, Guidance, and Option statements on the application of bicycle lane extensions.</p> <p data-bbox="228 1556 850 1944">In this section, FHWA proposes to clarify that shared-lane markings and chevrons shall not be used through intersections. This is not a new Standard, rather a clarification of the Standard in existing Section 9C.07 and of the use of chevrons. FHWA proposes new Standard statements requiring only dotted lane lines for extensions of bike lanes through intersections and requiring lane extension markings to extend buffer separated or separated bicycle lanes through intersections and driveways. As part of these changes, FHWA proposes Support and Guidance statements regarding pavement markings for bicycle lanes through intersections.</p>	<p data-bbox="878 1371 1507 1430">The new Section is adopted with changes as described herein.</p> <p data-bbox="878 1556 1507 1755">A commenter suggested that use of chevron markings be allowed, due to their lower cost and durability; however, FHWA retains this restriction, because the chevron markings in bicycle applications have a designated use and meaning, and the use of chevrons alone has not been demonstrated to be effective.</p> <p data-bbox="878 1791 1507 1976">The Standard to use dotted lane patterns for extensions of bike lanes through intersections, when marked, is adopted as proposed. Based on comments, the provisions on the use of lane extension markings to extend buffer-separated or separated bicycle lanes through intersections and</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
625 cont'd	<p>FHWA also adds a Standard requiring the lateral limits of bicycle lane extensions through intersections when the bicycle lane is contiguous to a crosswalk.</p> <p>FHWA proposes this new section because the uniform application of extensions of bicycle lanes through intersections assists all users of the intersection in identifying where bicyclists are expected to operate.</p>	<p>driveways are adopted as Guidance rather than Standard, since engineering judgement should be used to determine where lane extension markings are needed.</p> <p>This Standard is adopted as proposed. A commenter suggested deleting this Standard because it restricts the ability to align green bicycle lane extensions with ladder bar crosswalks. FHWA notes that the dotted line establishes the bicycle lane extension, and the green-colored pavement supplements the extension markings; the optional broken green-colored pattern is not intended to align with crosswalk marking patterns, as the two markings and areas are for completely separate uses.</p>
626	FHWA proposes a new section numbered and titled, "Section 9E.04 Bicycle Lanes at Driveways" to provide options for bicycle lanes at or through driveways. FHWA proposes this new section to provide practitioners with options for marking bicycle lanes in the vicinity of driveways and to promote the uniform application of these treatments.	The new Section is adopted with a minor editorial change.
627	<p>FHWA proposes a new section numbered and titled, "Section 9E.05 Bicycle Lanes at Circular Intersections," which contains material relocated from existing section 9C.04.</p> <p>FHWA proposes additional Support statements related to the use of shared-lane markings and bicycles on the sidewalk at circular intersections, since bicycle lanes are already prohibited through circular intersections.</p>	<p>The new Section is adopted with several changes.</p> <p>The Standard is revised, based on comments, to clarify that bicycle lanes shall not be provided on the circulatory roadway of an unsignalized circular intersection with conflicts at the entry and exit points (rather than in any circular intersection as proposed in the NPA). In addition, a new Option provision is adopted that explicitly allows the use of separated bike lanes in circular intersections (rather than any type of bike lane as proposed in the NPA).</p> <p>The change is adopted with an added paragraph describing the benefit of using of separated bicycle lanes at multi-lane and higher-speed circular intersections.</p>
628	FHWA proposes a new section numbered and titled, "Section 9E.06 Buffer-Separated Bicycle Lanes" to provide practitioners with Support, Standard, Guidance, and Option statements and a new figure to provide information on the application of buffer separated bicycle lanes.	The new Section is adopted with revisions as described herein.



NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
628 cont'd	<p>FHWA proposes new Standards that provide requirements on the buffer-separated bicycle lines, including line types, markings in the buffer, width, location, and color.</p> <p>FHWA proposes this new section and associated figure, because providing a buffer space between a bicycle lane and a travel lane can reduce vehicle encroachment into the bicycle lane and reduce crashes between a bicyclist and open vehicle doors in a parking lane. In addition, the provisions of this Section would promote uniformity in the use of this treatment in accordance with existing traffic control devices in Section 3B.25 (existing Section 3B.24) and Chapter 3E (existing Chapter 3D).</p>	<p>The Standards are revised to better align with pavement marking principles, and to indicate that a buffer space shall be marked with a solid white line along both edges of the buffer space where crossing is discouraged.</p> <p>In addition, a Guidance provision is adopted recommending the use of chevron or diagonal markings in a buffer space that is two to three feet wide.</p>
629	<p>FHWA proposes a new section numbered and titled, "Section 9E.07 Separated Bicycle Lanes" to provide Support, Standard, Option, and Guidance statements, along with a new figure, for the application of separated bicycle lanes.</p> <p>FHWA proposes Standard statements requiring a buffer space between parking spaces and separated bicycle lanes, buffer space markings, restrictions for edge line and lane line colors, and requiring directional arrows.</p> <p>FHWA also proposes Standards related to requirements for signalization with two-way separated bicycle lanes and prohibiting right turns on red across separated bicycle lanes when bicycle traffic is allowed to proceed through the intersection.</p> <p>FHWA proposes this new section to provide practitioners information for uniformity in application to promote the safe and efficient operation of the bicycle lanes by reducing conflicts between bicycles and pedestrians accessing parked vehicles, and between bicycles and motor vehicles turning across their path on separate traffic signal phases.</p>	<p>The new Section is adopted with a modifications as described herein.</p> <p>Based on comments suggesting that more flexibility is needed, the proposed Standard is adopted as Guidance to recommend, rather than require, a buffer space between a parking lane and bicycle lane when the parking lane serves as a separation between a general-purpose lane and a separated bicycle lane.</p> <p>The turn-on-red prohibition Standard is adopted with modifications, and the signalization requirements content is moved to Chapter to 4H, with clarifying reference to Section 4H.</p>
630	<p>FHWA proposes a new section numbered and titled, "Section 9E.08 Counter-Flow Bicycle Lanes" to provide Support, Standard, and Guidance statements, along with a new figure, for the application of counter-flow bicycle lanes, which is when one direction bicycle lanes travel the opposite direction of the general traffic that is also traveling in one direction.</p> <p>FHWA proposes Guidance to recommend that a counter-flow bicycle lane be placed on the right-hand</p>	<p>The new Section is adopted with modifications.</p> <p>See Preamble of Federal Register for discussion of the proposed Standard requiring counterflow bicycle lanes not to be placed between parking lanes and general-purpose lanes.</p> <p>The changes are adopted as proposed.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
630 cont'd	<p>side of the road with opposing traffic on the left.</p> <p>FHWA also proposes a Standard requiring double yellow line markings, a painted median island, raised median island, or some form of physical separation to define the counter-flow bicycle lane where the speed limit is 30 mph or less.</p> <p>When the speed limit is 35 mph or greater, FHWA proposes a Standard requiring a buffer, a painted median, raised median island, or another form of physical separation to ensure safe operation through adequate separation between opposing flows of bicycles and motor vehicles.</p> <p>Lastly, FHWA proposes new Standards and Guidance for required and recommended signing and signalization for counter-flow bicycle lanes. FHWA proposes this new section to provide practitioners information for uniformity in application.</p>	
631	<p>In Section 9E.09 (existing Section 9C.07) Shared-Lane Marking, FHWA proposes to revise the Guidance to recommend that shared-lane markings not be used on roadways with a posted speed limit of 40 mph or above, instead of above 35 mph per the 2009 version of the Manual.</p> <p>FHWA also proposes to revise the Standard to expand the listing of locations where shared-lane markings are prohibited. FHWA proposes this change to include some of the new applications that are proposed in this NPA but are not in the 2009 Edition of the Manual, and to address field experience with this marking since it was adopted in the 2009 MUTCD.</p> <p>In addition, FHWA provides new Guidance statements on the placement of shared-lane markings and the use of Bicycles Allowed Use of Full Lane (R9-20, redesignated from R4-11) signs.</p> <p>Lastly, FHWA proposes new Options and an associated figure, for implementation of shared-lane markings in places where the width of the roadway is insufficient to continue a bike lane or separate bikeway on approach to the intersection.</p>	<p>The change is adopted as proposed.</p> <p>Based on comments, the list of Options where shared-lane markings may be used is expanded to clarify they may be used to assist bicyclists with lateral positioning in mixing zones.</p> <p>The Standard is adopted as proposed. Comments suggested deleting the restriction for use of green-colored pavement as a background to shared-lane markings. In accordance with Part 3, green-colored pavement is used only to enhance conspicuity of bicycle lanes. It is not used in shared facilities, including shared-lane markings. To address concerns expressed by commenters about contrast, an Option consistent with Part 3 is added for black-colored markings, which may be used to improve contrast.</p> <p>The change is adopted as proposed.</p> <p>The change is adopted with minor editorial changes.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
631 cont'd	FHWA proposes this new section to provide practitioners discretion when developing a policy for the use of the shared-lane markings on intersection approaches.	
632	FHWA proposes a new section numbered and titled, "Section 9E.10 Shared-Lane Markings for Circular Intersections" to provide Guidance and Support statements recommending that shared-lane markings not be used in the circulatory roadway of multi-lane circular intersections. FHWA proposes this new section to assist practitioners with providing uniform treatments of shared-use paths in the vicinity of circular intersections based on an NCHRP study ( <a href="http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_672.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_672.pdf</a> ).	Based on comments, the Guidance is adopted as an Option that shared-lane markings may be used in circular intersections, with new Guidance that if used, the shared-lane markings should be located within the center of the lane when used in circular intersections.
633	<p>FHWA proposes a new section numbered and titled, "Section 9E.11 Two-Stage Bicycle Turn Boxes" to provide Support, Standard, Option, and Guidance statements, as well as two new figures, to describe the application of two-stage bicycle turn boxes.</p> <p>FHWA proposes Standards to provide requirements on location, pavement markings, arrows, and passive detection of bicycles at traffic signals. As two stage bicycle turn boxes are intended to be positioned within an intersection for bicyclists to queue safely, these Standards define what is required to make those spaces both safe and operationally effective for bicyclists at traffic signals.</p> <p>In addition, FHWA proposes Guidance to consider the peak hour bicycle demand and adjacent land uses for the size of the bicycle turn box.</p> <p>FHWA also proposes an Option to use green colored pavement with an associated Standard that requires the entire turn box to be green colored pavement when used.</p> <p>Lastly, FHWA proposes a Standard that requires a full-time turns-on-red prohibition where the path of vehicles lawfully turning right on red would pass through the bicycle turn box.</p> <p>FHWA proposes this section to describe the proper use of this new application that simplifies the turning task for bicyclists.</p>	The new Section is adopted as proposed with a minor editorial change.
634	FHWA proposes a new section numbered and titled, "Section 9E.12 Bicycle Box" to provide Option, Standard, Guidance, and Support statements and a new figure, to describe the application of a bicycle box.	The new Section is adopted with editorial changes for clarity.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
634 cont'd	<p>FHWA also proposes Guidance recommending consideration of motor vehicle and bicycle conflicts for when the bicycle box should be used, recommending that a bicycle lane be used on the approach to a bicycle box, and recommending that a bicycle box not be contiguous with a crosswalk.</p> <p>In addition, FHWA proposes Standards requiring locations, markings, signal yellow change and red clearance intervals, and countdown pedestrian signals when the bicycle box extends across more than one approach lane of motor vehicles. FHWA proposes these changes to mitigate the potential conflict between bicyclists crossing a bicycle box across multiple lanes while motor vehicle traffic is given a green indication to move into the intersection.</p> <p>Lastly, FHWA also proposes an Option to use green colored pavement with an associated Standard that requires the entire bicycle box to be green colored pavement when used.</p> <p>FHWA proposes this addition to describe the proper use of this new application that increases the visibility of stopped bicyclists on the approach to a signalized intersection when the signal is red.</p>	
635	<p>In Section 9E.13 (existing Section 9C.03), retitled, "Shared-Use Paths," FHWA proposes a new Option and Standard, and accompanying figure, to provide additional design options for pavement markings.</p> <p>FHWA also proposes a new Guidance that the crossing areas for bicyclists should use green-colored pavement in order to distinguish between the crosswalk for pedestrians and the crossing area for bicyclists. FHWA proposes this new Guidance in concert with the proposal to add green-colored pavement for bicycle facilities.</p>	The changes are adopted as proposed.
636	<p>FHWA proposes a new section numbered and titled, "Section 9E.14 Bicycle Route Pavement Markings" to provide Option, Standard, and Guidance statements, as well as a new figure, for the application of pavement markings to simulate route auxiliary plaques and Bicycle Route Guide signs to provide navigational guidance for bicyclists and pedestrians on shared-use paths, separated bikeways on independent alignment, and on improved trails.</p> <p>Also, FHWA proposes Standards to limit the use of route markers on bicycle lanes, separated bikeways in the roadway, or on roadways where the shared-use path runs contiguous or concurrent with a street or highway.</p>	<p>The new Section is adopted with changes as described herein.</p> <p>In response to comments, the Standard is modified to allow bicycle route pavement markings in shared-use paths, separated bicycle lanes, and buffer-separated bicycle lanes and restricted from use in other types of bicycle lanes or in shared lanes.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
636 cont'd	<p>Lastly, FHWA also proposes a Standard to require that pavement markings simulating official guide signs for bicycle routes be supplemental to the sign(s) and shall not be a substitute for the sign(s), with an associated Guidance that recommends a systematic methodology of locating signs and bicycle route pavement markings.</p> <p>FHWA proposes this new section to provide uniformity for this new practice.</p>	<p>This Standard provision is not adopted.</p> <p>The Guidance provision is adopted.</p>
637	<p>In Section 9E.15 (existing Section 9C.05) Bicycle Detector Symbol, FHWA proposes the addition of an Option statement that allows WAIT HERE FOR GREEN word markings to be placed on the pavement immediately below the bicycle detector symbol to help bicyclists know to stop on the bicycle detector symbol.</p>	<p>The change is adopted as proposed.</p>
638	<p>FHWA proposes a new section numbered and titled, "Section 9E.17 Raised Devices" to provide Support, Option, Standard, and Guidance statements for the application of raised devices in coordination with bicycle facilities.</p> <p>FHWA proposes a Standard that channelizing devices shall not incorporate the color green, consistent with an existing requirement in Part 3 that the color of channelizing devices shall match the color of the pavement markings they supplement. FHWA proposes this requirement to reiterate the existing requirement because some bicycle facilities utilize optional green colored pavement to supplement the required white or yellow markings and the existing requirement could imply that the color of the channelizing devices are allowed to match the color of the pavement (green, in this case) rather than the color of the pavement marking. FHWA proposes this change as a conforming edit, which would not change the existing underlying requirement.</p> <p>FHWA also proposes Guidance statements that the channelizing devices should be tubular markers, and that the selection of a raised device consider the collision potential of both the post and the base.</p> <p>Lastly, FHWA proposes Guidance to recommend that if used in buffer separated bicycle lanes, channelizing devices should be placed in the buffer space and at least one foot from the longitudinal bicycle lane pavement marking.</p> <p>FHWA proposes this new section because the purpose of channelizing devices is to emphasize pavement marking patterns associated with bicycle facilities.</p>	<p>The new Section is adopted with an added Support provision, in response to comment, describing measures to reduce the likelihood of a road user striking a channelizing device.</p>

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
639	FHWA proposes a new section numbered and titled, "Section 9F.02 Bicycle Signal Face" to provide a reference to Chapter 4H on the design and application of bicycle signal faces and Section 9B.22 for the Bicycle SIGNAL sign.	The new Section is adopted as proposed.
N/A (Sec. 9F.03)	Section 9F.03 Signal Operations for Bicycles (not discussed in the NPA Preamble)	Based on comments, existing Section 9F.03 Signal Operations for Bicycles is relocated to Part 4 so that practitioners can easily find information related to signals in one location.
640	<p>FHWA proposes a new chapter numbered and titled, "Chapter 9G Bicycle Accommodations at Alternative Intersections." This new chapter contains six proposed new sections numbered and titled as follows: "Section 9G.01 General," "Section 9G.02 Displaced Left-Turn Intersection," "Section 9G.03 Median U-turn Intersection," "Section 9G.04 Intercepted Crossroad Intersection," "Section 9G.05 Restricted Crossing Intersection," and "Section 9G.06 Diamond Interchange with Transposed-Alignment Crossroad" to provide practitioners with information on how to accommodate bicyclists through these various types of alternate intersections.</p> <p>FHWA also proposes four new figures demonstrating examples of the bicycle accommodations at alternative intersections. The information in these proposed sections, along with the accompanying figures, are based on supporting research (<a href="http://www.fhwa.dot.gov/publications/research/safety/09060/09060.pdf">http://www.fhwa.dot.gov/publications/research/safety/09060/09060.pdf</a>).</p>	Proposed Chapter 9G, described in the NPA Preamble, is not adopted in this final rule. FHWA will consider this information for a future rulemaking as appropriate.
641	In proposed Section 9G.01 General, FHWA proposes a Support that clarifies that the Chapter describes examples for the application and accommodation of bicycle traffic at alternative intersections but is not a requirement to provide the bicycle traffic control herein.	See Item 640.
642	In proposed Section 9G.02 Displaced Left Turn Intersection, FHWA proposes Guidance to recommend that a left-turning bicycle movement should transition to an independent alignment that facilitates the bicycle to a two-stage turn box where bicycle lanes or shared lane markings are used on the major street approaching a displaced left-turn intersection.	See Item 640.
643	In proposed Section 9G.03 Median U-turn Intersection, FHWA recommends Guidance that a two-stage bicycle turn box should be used where left-turning bicycles need to be accommodated at median U-Turn intersections.	See Item 640.

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
644	In proposed Section 9G.04 Intercepted Crossroad Intersection, FHWA recommends Guidance that shared-lane markings should be discontinued on a single lane intersection approach on cross streets and the bicycle movement should be transitioned to a bicycle lane contiguous to the exclusive right or left turn lane for motor vehicles.	See Item 640.
645	In proposed Section 9G.05 Restricted Crossing Intersection, FHWA proposes Guidance to recommend that bicycle destination or bicycle route guide signs should be used at restricted crossing intersections where it is demonstrated that it would be difficult for bicycle movements.	See Item 640.
646	In proposed Section 9G.06 Diamond Interchange with Transposed-Alignment Crossroad, FHWA proposes Guidance to recommend destination guide signs for shared-use paths to transition pedestrian and bicycle travel to and from the median of the transposed alignment where a shared use path is used.	See Item 640.
647	<p>In Appendix A1, FHWA proposes to retitle the section to “Congressional Actions” and add a new option to allow an alternative letter style for destination legends on freeway and expressway guide signs. For clarity in application, FHWA designates this letter style, commonly referred to as “Clearview 5–W,” as “Series E (modified)—Alternative.” In concert with this change, FHWA proposes a Standard provision to define the applicability and scope of this letter style because the design criteria differ from those of the Standard Alphabets.</p> <p>FHWA proposes these provisions to address the operational effect of the Consolidated Appropriations Act of 2018 that required FHWA to, “. . . reinstate Interim Approval IA–5, relating to the provisional use of an alternative lettering style on certain highway guide signs, as it existed before its termination, as announced in the Federal Register on January 25, 2016 (81 FR 4083).” FHWA requests comments on the proposed revisions to Appendix A1 as well as the proposal to add “Series E (modified)—Alternative” to Appendix A1.</p> <p>FHWA granted Interim Approval (IA–5) to use Clearview 5–W in certain applications on September 2, 2004, based on early research that suggested improvements in sign legibility. FHWA rescinded this Interim Approval on January 25, 2016, (<a href="https://www.govinfo.gov/content/pkg/FR-2016-01-25/html/2016-01383.htm">https://www.govinfo.gov/content/pkg/FR-2016-01-25/html/2016-01383.htm</a>) after subsequent research and a more thorough review of the early research finding showed no discernable improvement. In addition, it became apparent that having a separate optional</p>	Change adopted as proposed (see Item 190).

NPA Item No.	NPA Proposal Description or Final Rule Section Reference	Disposition for Final Rule
647 cont'd	<p>letter style with different design criteria caused confusion in sign design and layouts resulting in inappropriate and sometime ineffective signs. However, the Omnibus Appropriations Act, 2018 (section 125 of Division L) required FHWA to reinstate Interim Approval IA-5 for that fiscal year. In addition, the Joint Explanatory Statement House Report 115-237 (<a href="https://www.congress.gov/115/crpt/hrpt237/CRPT-115hrpt237.pdf">https://www.congress.gov/115/crpt/hrpt237/CRPT-115hrpt237.pdf</a>) directed FHWA to conduct a comprehensive review of the research on this alternative font and report on the safety and cost implications of the decision while fully addressing the comments submitted by affected States during the December 13, 2016, Request for Information (<a href="https://www.govinfo.gov/content/pkg/FR-2016-12-13/html/2016-29819.htm">https://www.govinfo.gov/content/pkg/FR-2016-12-13/html/2016-29819.htm</a>) related to the alternative font. FHWA reviewed the comments submitted and conducted a comprehensive analysis of all research identified as being associated with the alternative font and submitted the Report on Highway Guide Sign Fonts, (<a href="https://mutcd.fhwa.dot.gov/resources/interim_approval/ia5rptcongress/ia5rptcongress.pdf">https://mutcd.fhwa.dot.gov/resources/interim_approval/ia5rptcongress/ia5rptcongress.pdf</a>) to Congress with the findings of these reviews. As a result of this Congressional action, FHWA reinstated Interim Approval IA-5 on March 18, 2018 (<a href="https://mutcd.fhwa.dot.gov/res-interim_approvals.htm">https://mutcd.fhwa.dot.gov/res-interim_approvals.htm</a>). Though not required, Interim Approval IA-5 has been allowed to continue past the end of that fiscal year so that FHWA could request comments on potential inclusion of this alternative letter style as part of the MUTCD.</p>	