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MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PART 1: FUNDAMENTALS

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TRA-114 EXAM PREVIEW

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Exam Preview:

1. The Manual on Uniform Traffic control Devices (MUTCD) is incorporated by reference in 23 Code of Federal Regulations (CFR), Part 655, Subpart F and shall be recognized as the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel (see definition in Section 1A.13) in accordance with 23 U.S.C. 109(d) and 402(a).
    a. True
    b. False

2. Uniformity assists public highway officials through efficiency in manufacture, installation, maintenance, & administration. Uniformity means treating similar situations in a similar way. The use of a uniform traffic control devices in itself constitutes uniformity.
    a. True
    b. False

3. 23 CFR 655.603 also states that traffic control devices on all streets, highways, bikeways, and private roads open to public travel in each State shall be in substantial conformance with standards issued or endorsed by the ___
    a. Local official
    b. State official
    c. Local inspector
    d. Federal Highway Administrator

4. The responsibility for the design, placement, operation, maintenance, and uniformity of traffic control devices shall rest with the public agency or the official having jurisdiction, or, in the case of private roads open to public travel, with the private owner or private official having jurisdiction.
    a. True
    b. False

5. Design, application, and placement of traffic control devices other than those adopted in this the Uniform Traffic control Devices (MUTCD) manual shall be allowed under state jurisdiction.
    a. True
    b. False

6. A jurisdiction, toll facility operator, or owner of a ___ road open to public travel that desires to use a traffic control device for which FHWA has issued an interim approval shall request permission from FHWA.
    a. Private
    b. Public
    c. Government
    d. Military

7. The MUTCD color code established meanings based on color. Orange is used for:
    a. Regulation
    b. Temporary traffic control
    c. Regulation
    d. Warning

8. Center Line Markings—the yellow pavement marking line(s) that delineates the separation of traffic lanes that have opposite directions of travel on a roadway. These markings need not be at the geometrical center of the pavement.
    a. True
    b. False

9. Circulatory Intersection—the roadway within a circular intersection on which traffic ravels in a counterclockwise direction around an island in the center of the circular intersection.
    a. True
    b. False

10. Abbreviations Used on Traffic Control Devices – CNG stands for:
    a. CB Radio
    b. Center
    c. Circle
    d. Compressed Natural Gas

Manual on Uniform Traffic Control Devices

for Streets and Highways

2009 Edition

PART 1: FUNDAMENTALS

U.S.Department of Transportation
Federal Highway Administration

The Manual on Uniform Traffic Control Devices (MUTCD) is approved by the Federal Highway Administrator as the National Standard in accordance with Title 23 U.S. Code, Sections 109(d), 114(a), 217, 315, and 402(a), 23 CFR 655, and 49 CFR 1.48(b)(8), 1.48(b)(33), and 1.48(c)(2).

Addresses for Publications Referenced in the MUTCD

American Automobile Association (AAA)
1000 AAA Drive
Heathrow, FL 32746
www.aaa.com
800-222-4357

American Association of State Highway and Transportation Officials (AASHTO)
444 North Capitol Street, NW, Suite 249
Washington, DC 20001
www.transportation.org
202-624-5800

American National Standards Institute (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
www.ansi.org
202-293-8020

American Railway Engineering and Maintenance-of-Way Association (AREMA)
10003 Derekwood Lane, Suite 210
Lanham, MD 20706
www.arema.org
301-459-3200

Federal Highway Administration Report Center
Facsimile number: 814-239-2156
report.center@fhwa.dot.gov

Illuminating Engineering Society (IES)
120 Wall Street, Floor 17
New York, NY 10005
www.iesna.org
212-248-5000

Institute of Makers of Explosives
1120 19th Street, NW, Suite 310
Washington, DC 20036-3605
www.ime.org
202-429-9280

Institute of Transportation Engineers (ITE)
1099 14th Street, NW, Suite 300 West
Washington, DC 20005-3438
www.ite.org
202-289-0222

International Organization for Standardization
1, ch. de la Voie-Creuse
Case Postale 56
CH-1211
Geneva 20, Switzerland
www.iso.ch
011-41-22-749-0111

International Safety Equipment Association (ISEA)
1901 North Moore Street, Suite 808
Arlington, VA 22209
www.safetyequipment.org
703-525-1695

National Committee on Uniform Traffic Laws and Ordinances (NCUTLO)
107 South West Street, Suite 110
Alexandria, VA 22314
www.ncutlo.org
800-807-5290

National Electrical Manufacturers Association (NEMA)
1300 North 17th Street, Suite 1752
Rosslyn, VA 22209
www.nema.org
703-841-3200

Occupational Safety and Health Administration (OSHA)
U.S. Department of Labor
200 Constitution Avenue, NW
Washington, DC 20210
www.osha.gov
800-321-6742

Transportation Research Board (TRB)
The National Academies
500 Fifth Street, NW
Washington, DC 20001
www.nas.edu/trb
202-334-3072

U.S. Architectural and Transportation Barriers Compliance Board (The U.S. Access Board)
1331 F Street, NW, Suite 1000
Washington, DC 20004-1111
www.access-board.gov
202-272-0080

Acknowledgments

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MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
INTRODUCTION

Standard:

01 **Traffic ontrol devices shall be defined as all signs, signals, markings, and other devices used to regulate, warn, or guide traffi , placed on, over, or adjacent to a street, highway, pedestrian facility, bikeway, or private road open to public travel (see definition in Section 1A.13) by authority of a public agency or offi ial having jurisdiction, or, in the case of a private road, by authority of the private owner or private offi ial having jurisdiction.**

02 **The Manual on Uniform Traffic ontrol Devices (MUTCD) is incorporated by reference in 23 Code of Federal Regulations (CFR), Part 655, Subpart F and shall be recognized as the national standard for all traffic ontrol devices installed on any street, highway, bikeway, or private road open to public travel (see definition in Section 1A.13) in accordance with 23 U.S.C. 109(d) and 402(a). The policies and procedures of the Federal Highway Administration (FHWA) to obtain basic uniformity of traffic ontrol devices shall be as described in 23 CFR 655, Subpart F.**

03 **In accordance with 23 CFR 655.603(a), for the purposes of applicability of the MUTCD:**

- **A. Toll roads under the jurisdiction of public agencies or authorities or public-private partnerships shall be considered to be public highways;**
- **B. Private roads open to public travel shall be as defined in Section 1A.13; and**
- **C. Parking areas, including the driving aisles within those parking areas, that are either publicly or privately owned shall not be considered to be "open to public travel" for purposes of MUTCD applicability.**

04 **Any traffic ontrol device design or application provision contained in this Manual shall be considered to be in the public domain. Traffic ontrol devices contained in this Manual shall not be protected by a patent, trademark, or copyright, except for the Interstate Shield and any items owned by FHWA.**

Support:

05 Pictographs, as defined in Section 1A.13, are embedded in traffic control devices but the pictographs themselves are not considered traffic control devices for the purposes of Paragraph 4.

06 The need for uniform standards was recognized long ago. The American Association of State Highway Officials (AASHO), now known as the American Association of State Highway and Transportation Officials (AASHTO), published a manual for rural highways in 1927, and the National Conference on Street and Highway Safety (NCSHS) published a manual for urban streets in 1930. In the early years, the necessity for unification of the standards applicable to the different classes of road and street systems was obvious. To meet this need, a joint committee of AASHO and NCSHS developed and published the original edition of this Manual on Uniform Traffic Control Devices (MUTCD) in 1935. That committee, now called the National Committee on Uniform Traffic Control Devices (NCUTCD), though changed from time to time in name, organization, and personnel, has been in continuous existence and has contributed to periodic revisions of this Manual. The FHWA has administered the MUTCD since the 1971 edition. The FHWA and its predecessor organizations have participated in the development and publishing of the previous editions. There were nine previous editions of the MUTCD, and several of those editions were revised one or more times. Table I-1 traces the evolution of the MUTCD, including the two manuals developed by AASHO and NCSHS.

Standard:

07 **The U.S. Secretary of Transportation, under authority granted by the Highway Safety Act of 1966, decreed that traffic ontrol devices on all streets and highways open to public travel in accordance with 23 U.S.C. 109(d) and 402(a) in each State shall be in substantial conformance with the Standards issued or endorsed by the FHWA.**

Support:

08 The "Uniform Vehicle Code (UVC)" is one of the publications referenced in the MUTCD. The UVC contains a model set of motor vehicle codes and traffic laws for use throughout the United States.

Guidance:

09 *The States should adopt Section 15-116 of the UVC, which states that, "No person shall install or maintain in any area of private property used by the public any sign, signal, marking, or other device intended to regulate, warn, or guide traffic unless it conforms with the State manual and specifications adopted under Section 15-104."*

Table I-1. Evolution of the MUTCD

Year	Name	Month / Year Revised
1927	Manual and Specifications for the Manufacture, Display, and Erection of U.S. Standard Road Markers and Signs (for rural roads)	4/29, 12/31
1930	Manual on Street Traffic Signs, Signals, and Markings (for urban streets)	No revisions
1935	Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)	2/39
1942	Manual on Uniform Traffic Control Devices for Streets and Highways — War Emergency Edition	No revisions
1948	Manual on Uniform Traffic Control Devices for Streets and Highways	9/54
1961	Manual on Uniform Traffic Control Devices for Streets and Highways	No revisions
1971	Manual on Uniform Traffic Control Devices for Streets and Highways	11/71, 4/72, 3/73, 10/73, 6/74, 6/75, 9/76, 12/77
1978	Manual on Uniform Traffic Control Devices for Streets and Highways	12/79, 12/83, 9/84, 3/86
1988	Manual on Uniform Traffic Control Devices for Streets and Highways	1/90, 3/92, 9/93, 11/94, 12/96, 6/98, 1/00
2000	Manual on Uniform Traffic Control Devices for Streets and Highways — Millennium Edition	7/02
2003	Manual on Uniform Traffic Control Devices for Streets and Highways	11/04, 12/07
2009	Manual on Uniform Traffic Control Devices for Streets and Highways	

Support:

10 The Standard, Guidance, Option, and Support material described in this edition of the MUTCD provide the transportation professional with the information needed to make appropriate decisions regarding the use of traffic control devices on streets, highways, bikeways, and private roads open to public travel (see definition in Section 1A.13).

11 Throughout this Manual the headings Standard, Guidance, Option, and Support are used to classify the nature of the text that follows. Figures and tables, including the notes contained therein, supplement the text and might constitute a Standard, Guidance, Option, or Support. The user needs to refer to the appropriate text to classify the nature of the figure, table, or note contained therein.

Standard:

12 **When used in this Manual, the text headings of Standard, Guidance, Option, and Support shall be as defined in Paragraph 1 of Section 1A.13.**

Support:

13 Throughout this Manual all dimensions and distances are provided in English units. Appendix A2 contains tables for converting each of the English unit numerical values that are used in this Manual to the equivalent Metric (International System of Units) values.

Guidance:

14 *If Metric units are to be used in laying out distances or determining sizes of devices, such units should be specified on plan drawings and made known to those responsible for designing, installing, or maintaining traffic control devices.*

15 *Except when a specific numeral is required or recommended by the text of a Section of this Manual, numerals displayed on the images of devices in the figures that specify quantities such as times, distances, speed limits, and weights should be regarded as examples only. When installing any of these devices, the numerals should be appropriately altered to fit the specific situation.*

Support:

16 The following information will be useful when reference is being made to a specific portion of text in this Manual.

17 There are nine Parts in this Manual and each Part is comprised of one or more Chapters. Each Chapter is comprised of one or more Sections. Parts are given a numerical identification, such as Part 2 – Signs. Chapters are identified by the Part number and a letter, such as Chapter 2B – Regulatory Signs, Barricades, and Gates. Sections are identified by the Chapter number and letter followed by a decimal point and a number, such as Section 2B.03 – Size of Regulatory Signs.

18 Each Section is comprised of one or more paragraphs. The paragraphs are indented and are identified by a number. Paragraphs are counted from the beginning of each Section without regard to the intervening text headings (Standard, Guidance, Option, or Support). Some paragraphs have lettered or numbered items. As an example of how to cite this Manual, the phrase "Not less than 40 feet beyond the stop line" that appears in Section 4D.14 of this Manual would be referenced in writing as "Section 4D.14, P1, A.1," and would be verbally referenced as "Item A.1 of Paragraph 1 of Section 4D.14."

Standard:

19 **In accordance with 23 CFR 655.603(b)(3), States or other Federal agencies that have their own MUTCDs or Supplements shall revise these MUTCDs or Supplements to be in substantial conformance with changes to the National MUTCD within 2 years of the effective date of the Final Rule for the changes. Substantial conformance of such State or other Federal agency MUTCDs or Supplements shall be as defined in 23 CFR 655.603(b)(1).**

20 **After the effective date of a new edition of the MUTCD or a revision thereto, or after the adoption thereof by the State, whichever occurs later, new or reconstructed devices installed shall be in compliance with the new edition or revision.**

21 **In cases involving Federal-aid projects for new highway or bikeway construction or reconstruction, the traffic ontrol devices installed (temporary or permanent) shall be in conformance with the most recent edition of the National MUTCD before that highway is opened or re-opened to the public for unrestricted travel [23 CFR 655.603(d)(2) and (d)(3)].**

22 **Unless a particular device is no longer serviceable, non-compliant devices on existing highways and bikeways shall be brought into compliance with the current edition of the National MUTCD as part of the systematic upgrading of substandard traffic ontrol devices (and installation of new required traffic control devices) required pursuant to the Highway Safety Program, 23 U.S.C. §402(a). The FHWA has the authority to establish other target compliance dates for implementation of particular changes to the MUTCD [23 CFR 655.603(d)(1)]. These target compliance dates established by the FHWA shall be as shown in Table I-2.**

23 **Except as provided in Paragraph 24, when a non-compliant traffic ontrol device is being replaced or refurbished because it is damaged, missing, or no longer serviceable for any reason, it shall be replaced with a compliant device.**

Option:

24 A damaged, missing, or otherwise non-serviceable device that is non-compliant may be replaced in kind if engineering judgment indicates that:

A. One compliant device in the midst of a series of adjacent non-compliant devices would be confusing to road users; and/or
B. The schedule for replacement of the whole series of non-compliant devices will result in achieving timely compliance with the MUTCD.

Table I-2. Target Compliance Dates Established by the FHWA (Sheet 1 of 3)

2009 MUTCD Section Number(s)	2009 MUTCD Section Title	Specific Provision	Compliance Date
2A.08	Minimum Retroreflectivity Levels	Implementation and continued use of an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the established minimum levels	January 22, 2012 (c)
2A.08	Minimum Retroreflectivity Levels	Replacement of regulatory, warning, and post-mounted guide (except street name) signs that are identified using the assessment or management method as failing to meet the established minimum levels	January 22, 2015 (c)
2A.08	Minimum Retroreflectivity Levels	Replacement of street name signs and overhead guide signs that are identified using the assessment or management method as failing to meet the established minimum levels.	January 22, 2018 (c)
2A.19	Lateral Offset	Crashworthiness of sign supports on roads with posted speed limit of 50 mph or higher	January 17, 2013 (a)
2B.03	Size of Regulatory Signs	Increased sign sizes and other 2003 MUTCD revisions to Table 2B-1 (*)	December 22, 2013 (b)
2B.09	YIELD Sign Applications	Changes in YIELD sign application criteria from the 1988 MUTCD to the 2003 MUTCD (*)	January 17, 2011 (a)
2B.10	STOP Sign or YIELD Sign Placement	Signs mounted on the back of STOP or YIELD signs should not obscure shape of STOP sign, with exception for DO NOT ENTER signs (2003 MUTCD Sections 2B.06 and 2B.10) (*)	December 22, 2013 (b)
2B.11	Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5 Series)	New Section 2B.11 in the 2003 MUTCD (*)	December 22, 2013 (b)
2B.13	Speed Limit Sign (R2-1)	Color of changeable message legend of YOUR SPEED legend	December 22, 2013 (b)
2B.26	Reversible Lane Control Signs (R3-9e through R3-9i)	Removal of the R3-9c and R3-9e signs that had been included in the 2000 MUTCD (2003 MUTCD Section 2B.25)	December 22, 2013 (b)
2B.40	ONE WAY Signs (R6-1, R6-2)	New requirement in the 2009 MUTCD for the number and locations of ONE WAY signs	December 31, 2019
2B.55	Photo Enforced Signs and Plaques (R10-18, R10-19P, R10-19aP)	New signs (2003 MUTCD Section 2B.46) (*)	December 22, 2013 (b)
2C.04	Size of Warning Signs	New sizes in the 2003 MUTCD for the W1 Series arrow signs, the W12-2a low clearance signs, the W7 Series runaway truck signs, and the W10-1 advance grade crossing sign (*)	December 22, 2013 (b)
2C.06 thru 2C.14	Horizontal Alignment Warning Signs	Revised requirements in the 2009 MUTCD regarding the use of various horizontal alignment signs	December 31, 2019
2C.13	Truck Rollover Warning Sign (W1-13)	New W1-13 sign (2003 MUTCD Section 2C.11)	December 22, 2013 (b)
2C.20	NARROW BRIDGE Sign (W5-2)	Elimination of symbol sign (2003 MUTCD Section 2C.16)	December 22, 2013 (b)
2C.30	PAVEMENT ENDS Sign (W8-3)	Removal of symbol sign (2000 MUTCD Section 2C.23)	January 17, 2011 (a)
2C.38	Reduced Speed Limit Ahead Signs (W3-5, W3-5a)	Removal of R2-5 Series Reduced Speed Ahead signs and use of W3-5 or W3-5a warning signs instead (2003 MUTCD Section 2C.30)	December 22, 2018 (b)
2C.40	Merge Signs (W4-1, W4-5)	New Entering Roadway Merge sign (W4-5) (2003 MUTCD Section 2C.31)	December 22, 2013 (b)
2C.41	Added Lane Signs (W4-3, W4-6)	New Entering Roadway Added Lane sign (W4-6) (2003 MUTCD Section 2C.32)	December 22, 2013 (b)
2C.42	Lane Ends Signs (W4-2, W9-1, W9-2)	New design of W4-2 sign (2003 MUTCD Section 2C.33)	December 22, 2013 (b)
2C.46	Intersection Warning Signs (W2-1 through W2-8)	New design of Circular Intersection (W2-6) sign (2003 MUTCD Section 2C.37)	December 22, 2013 (b)
2C.49	Vehicular Traffic Warning Signs	New symbol signs W11-1, W11-5, W11-5a, W11-6, W11-11, and W11-14 (2003 MUTCD Section 2C.40)	December 22, 2013 (b)

Table I-2. Target Compliance Dates Established by the FHWA (Sheet 2 of 3)

2009 MUTCD Section Number(s)	2009 MUTCD Section Title	Specific Provision	Compliance Date
2C.50	Non-Vehicular Warning Signs	Elimination of crosswalk lines from crossing signs and use of diagonal downward pointing arrow (W16-7P) supplemental plaque if at the crossing (2003 MUTCD Section 2C.41)	January 17, 2011 (a)(b)
2C.61	PHOTO ENFORCED Plaque (W16-10P)	New plaque (2003 MUTCD Section 2C.53) (*)	December 22, 2013 (b)
2C.63	Object Marker Design and Placement Height	Width of stripes on Type 3 striped marker (2003 MUTCD Section 3C.01)	December 22, 2013 (b)
2D.43	Street Name Signs (D3-1 or D3-1a)	6-inch letter height for lettering on post-mounted Street Name signs (except on multi-lane streets with speed limits greater than 40 mph) (2000 MUTCD Section 2D.38)	January 9, 2012 (a)
2D.43	Street Name Signs (D3-1 or D3-1a)	8-inch letter height on post-mounted signs on multi-lane streets with speed limits greater than 40 mph and 12-inch letter height on overhead signs (2003 MUTCD Section 2D.38)	December 22, 2018 (b)
2D.44	Advance Street Name Signs (D3-2)	Requirements of new Section 2D.39 in the 2003 MUTCD	December 22, 2018 (b)
2D.45	Signing on Conventional Roads on Approaches to Interchanges	New requirement in the 2009 MUTCD for multi-lane approaches to interchanges to have guide signs to identify which direction of turn is to be made for access to each direction of the freeway or expressway	December 31, 2019
2E.31, 2E.33, and 2E.36	Plaques for Left-Hand Exits	New requirement in the 2009 MUTCD to use E1-5aP and E1-5bP plaques for left-hand exits	December 31, 2014
2G.01 through 2G.07	Regulatory Signs for Preferential Lanes	Requirements for regulatory signs for preferential lanes (2003 MUTCD Sections 2B.26 through 2B.28) (*)	December 22, 2013 (b)
2G.11 through 2G.15	Preferential Lane Guide Signs	New Section 2E.59 in the 2003 MUTCD (*)	December 22, 2013 (b)
2H.02, 2H.03	Reference Location Signs, Intermediate Reference Location Signs, and Enhanced Reference Location Signs	Location and spacing of Reference Location signs and design of Intermediate Reference Location signs (2003 MUTCD Sections 2D.46 and 2E.54)	December 22, 2013 (b)
2I.07	Radio Information Signing	New Channel 9 Monitored (D12-3) sign (2003 MUTCD Section 2D.45)	December 22, 2013 (b)
2I.08	TRAVEL INFO CALL 511 Signs (D12-5 and D12-5a)	New TRAVEL INFO CALL 511 Sign (D12-5) (2003 MUTCD Section 2D.45)	December 22, 2013 (b)
2J.05	Size of Lettering	Minimum height of letters and numerals on Specific Service signs (2000 MUTCD Section 2F.05)	January 17, 2011 (a)
2N.03	Evacuation Route Signs (EM-1 and EM-1a)	New design and size of EM-1 sign (2003 MUTCD Section 2I.03)	December 22, 2018 (b)
3B.04, 3B.05	White Longitudinal Pavement Markings	New requirement in the 2009 MUTCD for dotted lane lines for dropped lanes and for acceleration, deceleration, and auxiliary lanes	December 31, 2016 or resurfacing, whichever occurs first
3B.18	Crosswalk Markings	Gap between transverse lines of a crosswalk (2003 MUTCD Section 3B.17)	December 22, 2013 (b)
4D.01	General	Location of signalized midblock crosswalks	December 22, 2013 (b)
4D.26	Yellow Change and Red Clearance Intervals	New requirement in the 2009 MUTCD that durations of yellow change and red clearance intervals shall be determined using engineering practices	December 31, 2014, or when timing adjustments are made to the individual intersection and/or corridor, whichever occurs first
4D.31	Flashing Operation—Transition Out of Flashing Mode	Duration of steady red clearance interval in change from red-red flashing mode to steady (stop-and-go) mode (2003 MUTCD Section 4D.12)	December 22, 2013 (b)
4E.06	Pedestrian Intervals and Signal Phases	New requirement in the 2009 MUTCD that the pedestrian change interval shall not extend into the red clearance interval and shall be followed by a buffer interval of at least 3 seconds	December 31, 2014, or when timing adjustments are made to the individual intersection and/or corridor, whichever occurs first
4E.07	Countdown Pedestrian Signals	Pedestrian countdown hardware requirements	December 22, 2013 (b)

Table I-2. Target Compliance Dates Established by the FHWA (Sheet 3 of 3)

2009 MUTCD Section Number(s)	2009 MUTCD Section Title	Specific Provision	Compliance Date
5C.05	NARROW BRIDGE Sign (W5-2)	Elimination of symbol sign	December 22, 2013 (b)
6D.03	Worker Safety Considerations	New requirement in the 2009 MUTCD that all workers within the right-of-way shall wear high-visibility apparel	December 31, 2011
6E.02	High-Visibility Safety Apparel	New requirement in the 2009 MUTCD that all flaggers within the right-of-way shall wear high-visibility apparel	December 31, 2011
7B.11	School Advance Crossing Assembly	Use of AHEAD (W16-9P) plaque or distance plaque (W16-2P or W16-2aP) (2000 MUTCD Section 7B.08)	January 17, 2011 (a)
7B.12	School Crossing Assembly	Elimination of crosswalk lines from crossing signs and use of diagonal downward pointing arrow (W16-7P) supplemental plaque (2000 MUTCD Sections 7B.08 and 7B.09)	January 17, 2011 (a)
7B.16	Reduced Schoool Speed Limit Ahead Sign (S4-5, S4-5a)	Removal of R2-5 Series Reduced Speed Ahead signs and use of S4-5 or S4-5a warning signs instead (2003 MUTCD Section 7B.12)	December 22, 2018 (b)
7D.04	Uniform of Adult Crossing Guards	New requirement in the 2009 MUTCD for high-visibility apparel for adult crossing guards	December 31, 2011
8B.03	Grade Crossing (Crossbuck) Sign (R15-1) and Number of Tracks Plaque (R15-2P) at Active and Passive Grade Crossings	Retroreflective strip on crossbuck support (2000 MUTCD Section 8B.02) (*)	January 17, 2011 (a)
8B.04	Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings	New requirement in the 2009 MUTCD for the use of STOP or YIELD signs with Crossbuck signs at passive grade crossings	December 31, 2019
8B.19 and 8C.02 through 8C.05	LRT Approaching-Activated Blank-Out Warning Sign, Flashing Light Signals, and Automatic Gates	Automatic gates, flashing-light signals, and blank-out signs at highway-LRT crossings per Part 10 of the 2000 MUTCD (*)	January 17, 2011 (a)
8C.09	Traffic Control Signals at or Near Highway-Rail Grade Crossings	Pre-signals (2003 MUTCD Section 8D.07)	December 22, 2013 (b)
8C.12	Grade Crossings Within or In Close Proximity to Circular Intersections	New requirement in the 2009 MUTCD for study of grade crossings near roundabouts	December 31, 2014
9B.18	Bicycle Warning and Combined Bicycle/ Pedestrian Signs (W11-1 and W11-15)	Elimination of crosswalk lines from crossing signs and use of diagonal downward pointing arrow (W16-7P) supplemental plaque if at the crossing (2000 MUTCD Section 9B.15)	January 17, 2011 (a)

Notes: Unless otherwise noted, dates are as established in the Final Rule for the 2009 MUTCD.
(a) Date established in the Final Rule for the 2000 MUTCD
(b) Date established in the Final Rule for the 2003 MUTCD
(c) Date established in the Final Rule for Revision 2 of the 2003 MUTCD
(*) Provisions may have been revised in the 2009 MUTCD

PART 1
GENERAL

CHAPTER 1A. GENERAL

Section 1A.01 Purpose of Traffic Control Devices

Support:

01 The purpose of traffic control devices, as well as the principles for their use, is to promote highway safety and efficiency by providing for the orderly movement of all road users on streets, highways, bikeways, and private roads open to public travel throughout the Nation.

02 Traffic control devices notify road users of regulations and provide warning and guidance needed for the uniform and efficient operation of all elements of the traffic stream in a manner intended to minimize the occurrences of crashes.

Standard:

03 **Traffic ontrol devices or their supports shall not bear any advertising message or any other message that is not related to traffic ontrol.**

Support:

04 Tourist-oriented directional signs and Specific Service signs are not considered advertising; rather, they are classified as motorist service signs.

Section 1A.02 Principles of Traffic Control Devices

Support:

01 This Manual contains the basic principles that govern the design and use of traffic control devices for all streets, highways, bikeways, and private roads open to public travel (see definition in Section 1A.13) regardless of type or class or the public agency, official, or owner having jurisdiction. This Manual's text specifies the restriction on the use of a device if it is intended for limited application or for a specific system. It is important that these principles be given primary consideration in the selection and application of each device.

Guidance:

02 *To be effective, a traffic control device should meet five basic requirements:*

A. Fulfill a need;
B. Command attention;
C. Convey a clear, simple meaning;
D. Command respect from road users; and
E. Give adequate time for proper response.

03 *Design, placement, operation, maintenance, and uniformity are aspects that should be carefully considered in order to maximize the ability of a traffic control device to meet the five requirements listed in the previous paragraph. Vehicle speed should be carefully considered as an element that governs the design, operation, placement, and location of various traffic control devices.*

Support:

04 The definition of the word "speed" varies depending on its use. The definitions of specific speed terms are contained in Section 1A.13.

Guidance:

05 *The actions required of road users to obey regulatory devices should be specified by State statute, or in cases not covered by State statute, by local ordinance or resolution. Such statutes, ordinances, and resolutions should be consistent with the "Uniform Vehicle Code" (see Section 1A.11).*

06 *The proper use of traffic control devices should provide the reasonable and prudent road user with the information necessary to efficiently and lawfully use the streets, highways, pedestrian facilities, and bikeways.*

Support:

07 Uniformity of the meaning of traffic control devices is vital to their effectiveness. The meanings ascribed to devices in this Manual are in general accord with the publications mentioned in Section 1A.11.

Section 1A.03 Design of Traffic Control Devices

Guidance:

01 *Devices should be designed so that features such as size, shape, color, composition, lighting or retroreflection, and contrast are combined to draw attention to the devices; that size, shape, color, and simplicity of message combine to produce a clear meaning; that legibility and size combine with placement to permit adequate time for response; and that uniformity, size, legibility, and reasonableness of the message combine to command respect.*

02 *Aspects of a device's standard design should be modified only if there is a demonstrated need.*

Support:

03 An example of modifying a device's design would be to modify the Combination Horizontal Alignment/Intersection (W1-10) sign to show intersecting side roads on both sides rather than on just one side of the major road within the curve.

Option:

04 With the exception of symbols and colors, minor modifications in the specific design elements of a device may be made provided the essential appearance characteristics are preserved.

Section 1A.04 Placement and Operation of Traffic Control Devices

Guidance:

01 *Placement of a traffic control device should be within the road user's view so that adequate visibility is provided. To aid in conveying the proper meaning, the traffic control device should be appropriately positioned with respect to the location, object, or situation to which it applies. The location and legibility of the traffic control device should be such that a road user has adequate time to make the proper response in both day and night conditions.*

02 *Traffic control devices should be placed and operated in a uniform and consistent manner.*

03 *Unnecessary traffic control devices should be removed. The fact that a device is in good physical condition should not be a basis for deferring needed removal or change.*

Section 1A.05 Maintenance of Traffic Control Devices

Guidance:

01 *Functional maintenance of traffic control devices should be used to determine if certain devices need to be changed to meet current traffic conditions.*

02 *Physical maintenance of traffic control devices should be performed to retain the legibility and visibility of the device, and to retain the proper functioning of the device.*

Support:

03 Clean, legible, properly mounted devices in good working condition command the respect of road users.

Section 1A.06 Uniformity of Traffic Control Devices

Support:

01 Uniformity of devices simplifies the task of the road user because it aids in recognition and understanding, thereby reducing perception/reaction time. Uniformity assists road users, law enforcement officers, and traffic courts by giving everyone the same interpretation. Uniformity assists public highway officials through efficiency in manufacture, installation, maintenance, and administration. Uniformity means treating similar situations in a similar way. The use of uniform traffic control devices does not, in itself, constitute uniformity. A standard device used where it is not appropriate is as objectionable as a non-standard device; in fact, this might be worse, because such misuse might result in disrespect at those locations where the device is needed and appropriate.

Section 1A.07 Responsibility for Traffic Control Devices

Standard:

01 **The responsibility for the design, placement, operation, maintenance, and uniformity of traffic ontrol devices shall rest with the public agency or the offi ial having jurisdiction, or, in the case of private roads open to public travel, with the private owner or private offi ial having jurisdiction. 23 CFR 655.603 adopts the MUTCD as the national standard for all traffic ontrol devices installed on any street, highway, bikeway, or private road open to public travel (see definition in Section 1A.13). When a State or other Federal agency manual or supplement is required, that manual or supplement shall be in substantial conformance with the National MUTCD.**

02 **23 CFR 655.603 also states that traffic ontrol devices on all streets, highways, bikeways, and private roads open to public travel in each State shall be in substantial conformance with standards issued or endorsed by the Federal Highway Administrator.**

Support:

03 The Introduction of this Manual contains information regarding the meaning of substantial conformance and the applicability of the MUTCD to private roads open to public travel.

04 The "Uniform Vehicle Code" (see Section 1A.11) has the following provision in Section 15-104 for the adoption of a uniform manual:

"(a) The [State Highway Agency] shall adopt a manual and specification for a uniform system of traffic control devices consistent with the provisions of this code for use upon highways within this State. Such uniform system shall correlate with and so far as possible conform to the system set forth in the most recent edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, and other standards issued or endorsed by the Federal Highway Administrator."

"(b) The Manual adopted pursuant to subsection (a) shall have the force and effect of law."

05 All States have officially adopted the National MUTCD either in its entirety, with supplemental provisions, or as a separate published document.

Guidance:

06 *These individual State manuals or supplements should be reviewed for specific provisions relating to that State.*

Support:

07 The National MUTCD has also been adopted by the National Park Service, the U.S. Forest Service, the U.S. Military Command, the Bureau of Indian Affairs, the Bureau of Land Management, and the U.S. Fish and Wildlife Service.

Guidance:

08 *States should adopt Section 15-116 of the "Uniform Vehicle Code," which states that, "No person shall install or maintain in any area of private property used by the public any sign, signal, marking, or other device intended to regulate, warn, or guide traffic unless it conforms with the State manual and specifications adopted under Section 15-104."*

Section 1A.08 Authority for Placement of Traffic Control Devices

Standard:

01 **Traffic control devices, advertisements, announcements, and other signs or messages within the highway right-of-way shall be placed only as authorized by a public authority or the offi ial having jurisdiction, or, in the case of private roads open to public travel, by the private owner or private offi ial having jurisdiction, for the purpose of regulating, warning, or guiding traffi .**

02 **When the public agency or the offi ial having jurisdiction over a street or highway or, in the case of private roads open to public travel, the private owner or private offi ial having jurisdiction, has granted proper authority, others such as contractors and public utility companies shall be permitted to install temporary traffic ontrol devices in temporary traffic ontrol zones. Such traffic ontrol devices shall conform with the Standards of this Manual.**

03 **All regulatory traffic ontrol devices shall be supported by laws, ordinances, or regulations.**

Support:

04 Provisions of this Manual are based upon the concept that effective traffic control depends upon both appropriate application of the devices and reasonable enforcement of the regulations.

05 Although some highway design features, such as curbs, median barriers, guardrails, speed humps or tables, and textured pavement, have a significant impact on traffic operations and safety, they are not considered to be traffic control devices and provisions regarding their design and use are generally not included in this Manual.

06 Certain types of signs and other devices that do not have any traffic control purpose are sometimes placed within the highway right-of-way by or with the permission of the public agency or the official having jurisdiction over the street or highway. Most of these signs and other devices are not intended for use by road users in general, and their message is only important to individuals who have been instructed in their meanings. These signs and other devices are not considered to be traffic control devices and provisions regarding their design and use are not included in this Manual. Among these signs and other devices are the following:

A. Devices whose purpose is to assist highway maintenance personnel. Examples include markers to guide snowplow operators, devices that identify culvert and drop inlet locations, and devices that precisely identify highway locations for maintenance or mowing purposes.
B. Devices whose purpose is to assist fire or law enforcement personnel. Examples include markers that identify fire hydrant locations, signs that identify fire or water district boundaries, speed measurement pavement markings, small indicator lights to assist in enforcement of red light violations, and photo enforcement systems.
C. Devices whose purpose is to assist utility company personnel and highway contractors, such as markers that identify underground utility locations.
D. Signs posting local non-traffic ordinances.
E. Signs giving civic organization meeting information.

Standard:

07 **Signs and other devices that do not have any traffic ontrol purpose that are placed within the highway right-of-way shall not be located where they will interfere with, or detract from, traffic ontrol devices.**

Guidance:

08 *Any unauthorized traffic control device or other sign or message placed on the highway right-of-way by a private organization or individual constitutes a public nuisance and should be removed. All unofficial or non-essential traffic control devices, signs, or messages should be removed.*

Section 1A.09 Engineering Study and Engineering Judgment

Support:

01 Definitions of an engineering study and engineering judgment are contained in Section 1A.13.

Standard:

02 **This Manual describes the application of traffic ontrol devices, but shall not be a legal requirement for their installation.**

Guidance:

03 *Early in the processes of location and design of roads and streets, engineers should coordinate such location and design with the design and placement of the traffic control devices to be used with such roads and streets.*

04 *Jurisdictions, or owners of private roads open to public travel, with responsibility for traffic control that do not have engineers on their staffs who are trained and/or experienced in traffic control devices should seek engineering assistance from others, such as the State transportation agency, their county, a nearby large city, or a traffic engineering consultant.*

Support:

05 As part of the Federal-aid Program, each State is required to have a Local Technology Assistance Program (LTAP) and to provide technical assistance to local highway agencies. Requisite technical training in the application of the principles of the MUTCD is available from the State's Local Technology Assistance Program for needed engineering guidance and assistance.

Section 1A.10 Interpretations, Experimentations, Changes, and Interim Approvals

Standard:

01 **Design, application, and placement of traffic ontrol devices other than those adopted in this Manual shall be prohibited unless the provisions of this Section are followed.**

Support:

02 Continuing advances in technology will produce changes in the highway, vehicle, and road user proficiency; therefore, portions of the system of traffic control devices in this Manual will require updating. In addition, unique situations often arise for device applications that might require interpretation or clarification of this Manual. It is important to have a procedure for recognizing these developments and for introducing new ideas and modifications into the system.

Standard:

03 **Except as provided in Paragraph 4, requests for any interpretation, permission to experiment, interim approval, or change shall be submitted electronically to the Federal Highway Administration (FHWA), Offi e of Transportation Operations, MUTCD team, at the following e-mail address: MUTCDoffi ialrequest@dot.gov.**

Option:

04 If electronic submittal is not possible, requests for interpretations, permission to experiment, interim approvals, or changes may instead be mailed to the Office of Transportation Operations, HOTO-1, Federal Highway Administration, 1200 New Jersey Avenue, SE, Washington, DC 20590.

Support:

05 Communications regarding other MUTCD matters that are not related to official requests will receive quicker attention if they are submitted electronically to the MUTCD Team Leader or to the appropriate individual MUTCD team member. Their e-mail addresses are available through the links contained on the "Who's Who" page on the MUTCD website at http://mutcd.fhwa.dot.gov/team.htm.

06 An interpretation includes a consideration of the application and operation of standard traffic control devices, official meanings of standard traffic control devices, or the variations from standard device designs.

Guidance:

07 *Requests for an interpretation of this Manual should contain the following information:*

A. A concise statement of the interpretation being sought;
B. A description of the condition that provoked the need for an interpretation;
C. Any illustration that would be helpful to understand the request; and
D. Any supporting research data that is pertinent to the item to be interpreted.

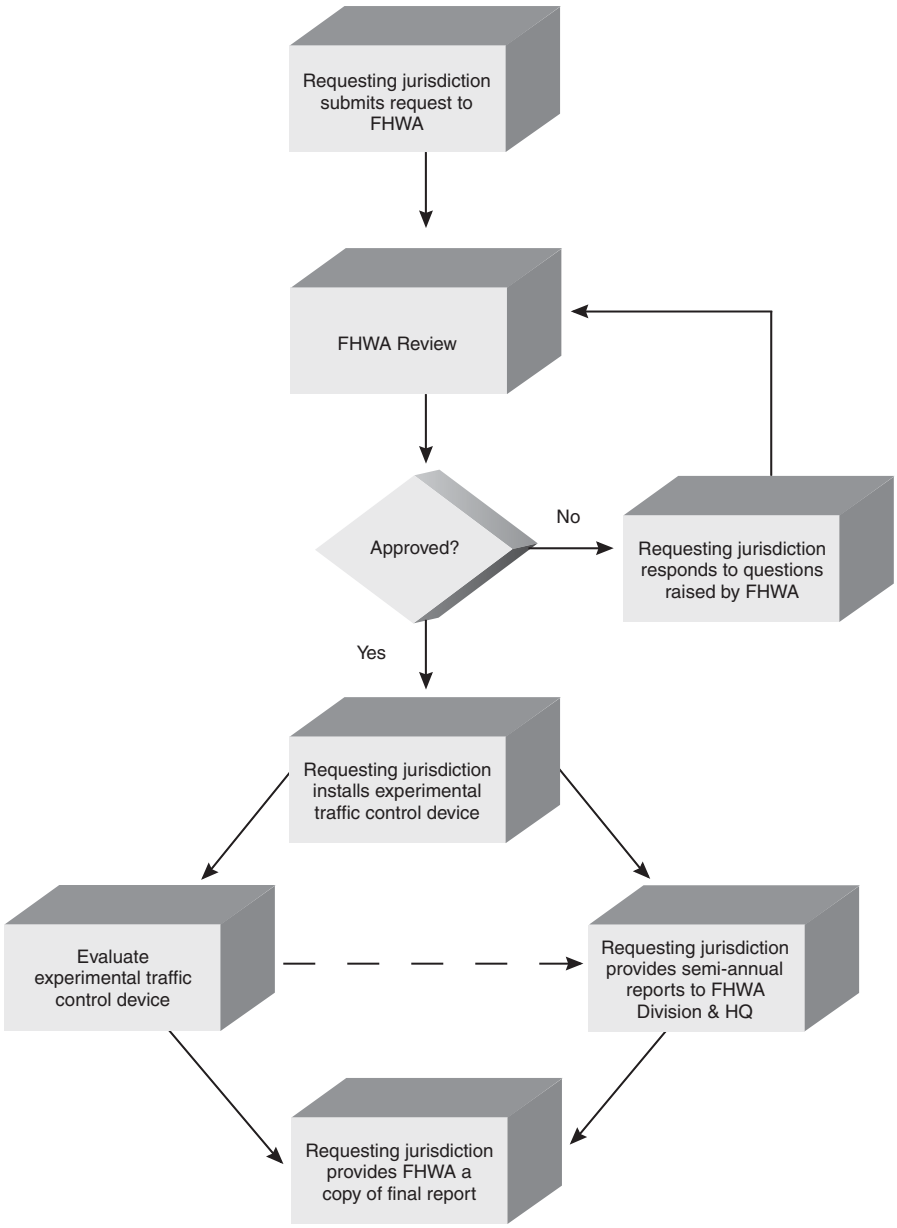
Support:

08 Requests to experiment include consideration of field deployment for the purpose of testing or evaluating a new traffic control device, its application or manner of use, or a provision not specifically described in this Manual.

09 A request for permission to experiment will be considered only when submitted by the public agency or toll facility operator responsible for the operation of the road or street on which the experiment is to take place. For a private road open to public travel, the request will be considered only if it is submitted by the private owner or private official having jurisdiction.

10 A diagram indicating the process for experimenting with traffic control devices is shown in Figure 1A-1.

Figure 1A-1. Process for Requesting and Conducting Experimentations for New Traffic Control Devices



Guidance:

11 *The request for permission to experiment should contain the following:*

A. A statement indicating the nature of the problem.
B. A description of the proposed change to the traffic control device or application of the traffic control device, how it was developed, the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.
C. Any illustration that would be helpful to understand the traffic control device or use of the traffic control device.
D. Any supporting data explaining how the traffic control device was developed, if it has been tried, in what ways it was found to be adequate or inadequate, and how this choice of device or application was derived.
E. A legally binding statement certifying that the concept of the traffic control device is not protected by a patent or copyright. (An example of a traffic control device concept would be countdown pedestrian signals in general. Ordinarily an entire general concept would not be patented or copyrighted, but if it were it would not be acceptable for experimentation unless the patent or copyright owner signs a waiver of rights acceptable to the FHWA. An example of a patented or copyrighted specific device within the general concept of countdown pedestrian signals would be a manufacturer's design for its specific brand of countdown signal, including the design details of the housing or electronics that are unique to that manufacturer's product. As long as the general concept is not patented or copyrighted, it is acceptable for experimentation to incorporate the use of one or more patented devices of one or several manufacturers.)
F. The time period and location(s) of the experiment.
G. A detailed research or evaluation plan that must provide for close monitoring of the experimentation, especially in the early stages of its field implementation. The evaluation plan should include before and after studies as well as quantitative data describing the performance of the experimental device.
H. An agreement to restore the site of the experiment to a condition that complies with the provisions of this Manual within 3 months following the end of the time period of the experiment. This agreement must also provide that the agency sponsoring the experimentation will terminate the experimentation at any time that it determines significant safety concerns are directly or indirectly attributable to the experimentation. The FHWA's Office of Transportation Operations has the right to terminate approval of the experimentation at any time if there is an indication of safety concerns. If, as a result of the experimentation, a request is made that this Manual be changed to include the device or application being experimented with, the device or application will be permitted to remain in place until an official rulemaking action has occurred.
I. An agreement to provide semi-annual progress reports for the duration of the experimentation, and an agreement to provide a copy of the final results of the experimentation to the FHWA's Office of Transportation Operations within 3 months following completion of the experimentation. The FHWA's Office of Transportation Operations has the right to terminate approval of the experimentation if reports are not provided in accordance with this schedule.

Support:

12 A change includes consideration of a new device to replace a present standard device, an additional device to be added to the list of standard devices, or a revision to a traffic control device application or placement criteria.

Guidance:

13 *Requests for a change to this Manual should contain the following information:*

A. A statement indicating what change is proposed;
B. Any illustration that would be helpful to understand the request; and
C. Any supporting research data that is pertinent to the item to be reviewed.

Support:

14 Interim approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in this Manual. The FHWA issues an Interim Approval by official memorandum signed by the Associate Administrator for Operations and posts this memorandum on the MUTCD website. the issuance by FHWA of an interim approval will typically result in the traffic control device or application being placed into the next scheduled rulemaking process for revisions to this Manual.

15 Interim approval is considered based on the results of successful experimentation, results of analytical or laboratory studies, and/or review of non-U.S. experience with a traffic control device or application. Interim approval considerations include an assessment of relative risks, benefits, costs, impacts, and other factors.

16 Interim approval allows for optional use of a traffic control device or application and does not create a new mandate or recommendation for use. Interim approval includes conditions that jurisdictions agree to comply with in order to use the traffic control device or application until an official rulemaking action has occurred.

Standard:

17 **A jurisdiction, toll facility operator, or owner of a private road open to public travel that desires to use a traffic ontrol device for which FHWA has issued an interim approval shall request permission from FHWA.**

Guidance:

18 *The request for permission to place a traffic control device under an interim approval should contain the following:*

- *A. A description of where the device will be used, such as a list of specific locations or highway segments or types of situations, or a statement of the intent to use the device jurisdiction-wide;*
- *B. An agreement to abide by the specific conditions for use of the device as contained in the FHWA's interim approval document;*
- *C. An agreement to maintain and continually update a list of locations where the device has been installed; and*
- *D. An agreement to:*
  1. *Restore the site(s) of the interim approval to a condition that complies with the provisions in this Manual within 3 months following the issuance of a Final Rule on this traffic control device; and*
  2. *Terminate use of the device or application installed under the interim approval at any time that it determines significant safety concerns are directly or indirectly attributable to the device or application. The FHWA's Office of Transportation Operations has the right to terminate the interim approval at any time if there is an indication of safety concerns.*

Option:

19 A State may submit a request for the use of a device under interim approval for all jurisdictions in that State, as long as the request contains the information listed in Paragraph 18.

Guidance:

20 *A local jurisdiction, toll facility operator, or owner of a private road open to public travel using a traffic control device or application under an interim approval that was granted by FHWA either directly or on a statewide basis based on the State's request should inform the State of the locations of such use.*

21 *A local jurisdiction, toll facility operator, or owner of a private road open to public travel that is requesting permission to experiment or permission to use a device or application under an interim approval should first check for any State laws and/or directives covering the application of the MUTCD provisions that might exist in their State.*

Option:

22 A device or application installed under an interim approval may remain in place, under the conditions established in the interim approval, until an official rulemaking action has occurred.

Support:

23 A diagram indicating the process for incorporating new traffic control devices into this Manual is shown in Figure 1A-2.

24 For additional information concerning interpretations, experimentation, changes, or interim approvals, visit the MUTCD website at http://mutcd.fhwa.dot.gov.

Section 1A.11 Relation to Other Publications

Standard:

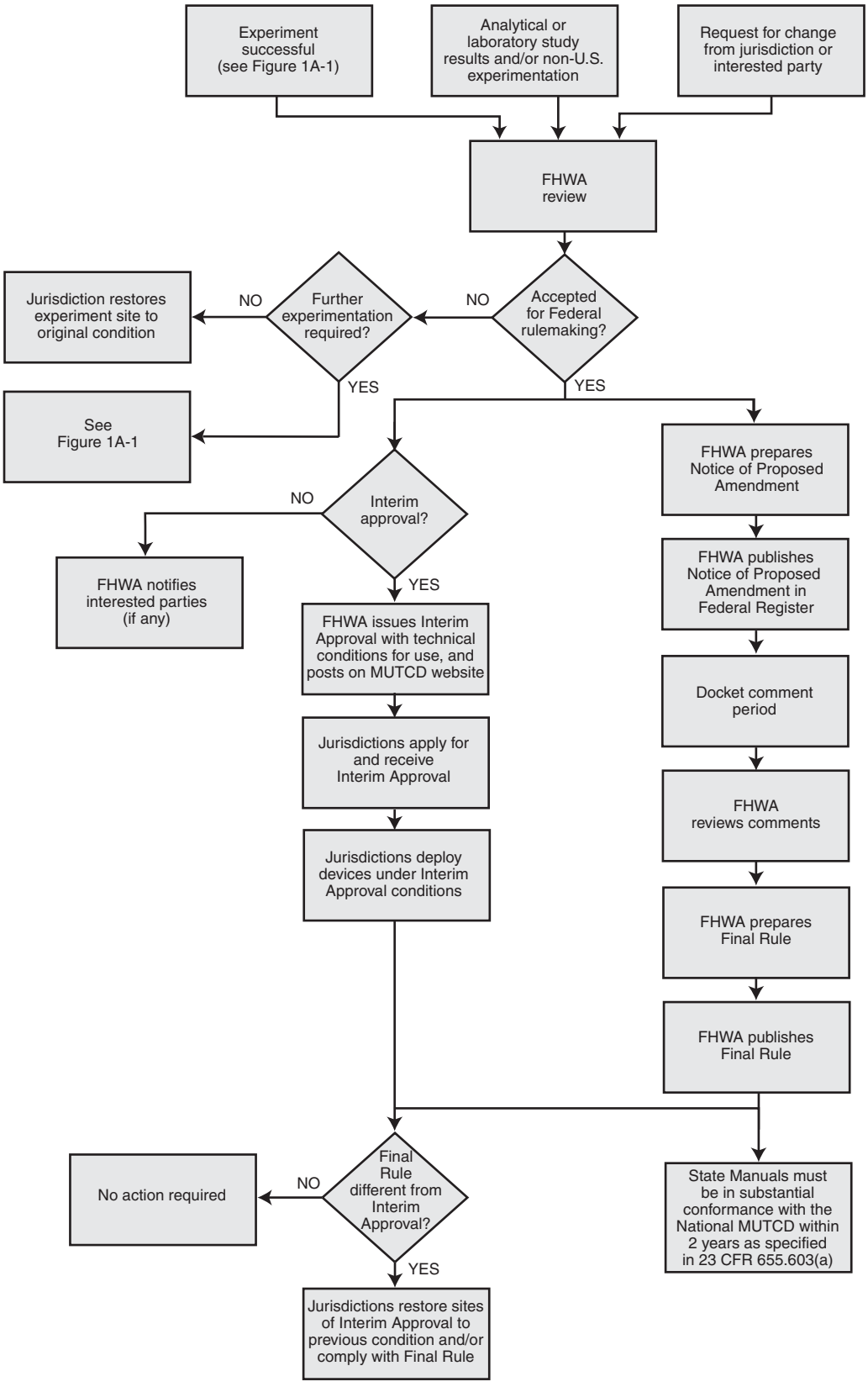
01 **To the extent that they are incorporated by specific eference, the latest editions of the following publications, or those editions specifi ally noted, shall be a part of this Manual: "Standard Highway Signs and Markings" book (FHWA); and "Color Specifi ations for Retroreflective Sign and Pavement Marking Materials" (appendix to subpart F of Part 655 of Title 23 of the Code of Federal Regulations).**

Support:

02 The "Standard Highway Signs and Markings" book includes standard alphabets and symbols and arrows for signs and pavement markings.

03 For information about the publications mentioned in Paragraph 1, visit the Federal Highway Administration's MUTCD website at http://mutcd.fhwa.dot.gov, or write to the FHWA, 1200 New Jersey Avenue, SE, HOTO, Washington, DC 20590.

Figure 1A-2. Process for Incorporating New Traffic Control Devices into the MUTCD



04 Other publications that are useful sources of information with respect to the use of this Manual are listed in this paragraph. See Page i of this Manual for ordering information for the following publications (later editions might also be available as useful sources of information):

1. "AAA School Safety Patrol Operations Manual," 2006 Edition (American Automobile Association—AAA)
2. "A Policy on Geometric Design of Highways and Streets," 2004 Edition (American Association of State Highway and Transportation Officials—AASHTO)
3. "Guide for the Development of Bicycle Facilities," 1999 Edition (AASHTO)
4. "Guide for the Planning, Design, and Operation of Pedestrian Facilities," 2004 Edition (AASHTO)
5. "Guide to Metric Conversion," 1993 Edition (AASHTO)
6. "Guidelines for the Selection of Supplemental Guide Signs for Traffic Generators Adjacent to Freeways," 4th Edition/Guide Signs, Part II: Guidelines for Airport Guide Signing/Guide Signs, Part III: List of Control Cities for Use in Guide Signs on Interstate Highways," Item Code: GSGLC-4, 2001 Edition (AASHTO)
7. "Roadside Design Guide," 2006 Edition (AASHTO)
8. "Standard Specifications for Movable Highway Bridges," 1988 Edition (AASHTO)
9. "Traffic Engineering Metric Conversion Folders—Addendum to the Guide to Metric Conversion," 1993 Edition (AASHTO)
10. "2009 AREMA Communications & Signals Manual," (American Railway Engineering & Maintenance-of-Way Association—AREMA)
11. "Changeable Message Sign Operation and Messaging Handbook (FHWA-OP-03-070)," 2004 Edition (Federal Highway Administration—FHWA)
12. "Designing Sidewalks and Trails for Access—Part 2—Best Practices Design Guide (FHWA-EP-01-027)," 2001 Edition (FHWA)
13. "Federal-Aid Highway Program Guidance on High Occupancy Vehicle (HOV) Lanes," 2001 (FHWA)
14. "Maintaining Traffic Sign Retroreflectivity," 2007 Edition (FHWA)
15. "Railroad-Highway Grade Crossing Handbook—Revised Second Edition (FHWA-SA-07-010)," 2007 Edition (FHWA)
16. "Ramp Management and Control Handbook (FHWA-HOP-06-001)," 2006 Edition (FHWA)
17. "Roundabouts-An Informational Guide (FHWA-RD-00-067)," 2000 Edition (FHWA)
18. "Signal Timing Manual (FHWA-HOP-08-024)," 2008 Edition (FHWA)
19. "Signalized Intersections: an Informational Guide (FHWA-HRT-04-091)," 2004 Edition (FHWA)
20. "Travel Better, Travel Longer: A Pocket Guide to Improving Traffic Control and Mobility for Our Older Population (FHWA-OP-03-098)," 2003 Edition (FHWA)
21. "Practice for Roadway Lighting," RP-8, 2001 (Illuminating Engineering Society—IES)
22. "Safety Guide for the Prevention of Radio Frequency Radiation Hazards in the Use of Commercial Electric Detonators (Blasting Caps)," Safety Library Publication No. 20, July 2001 Edition (Institute of Makers of Explosives)
23. "American National Standard for High-Visibility Public Safety Vests," (ANSI/ISEA 207-2006), 2006 Edition (International Safety Equipment Association—ISEA)
24. "American National Standard for High-Visibility Safety Apparel and Headwear," (ANSI/ISEA 107-2004), 2004 Edition (ISEA)
25. "Manual of Traffic Signal Design," 1998 Edition (Institute of Transportation Engineers—ITE)
26. "Manual of Transportation Engineering Studies," 1994 Edition (ITE)
27. "Pedestrian Traffic Control Signal Indications," Part 1—1985 Edition; Part 2 (LED Pedestrian Traffic Signal Modules)—2004 Edition (ITE)
28. "Preemption of Traffic Signals Near Railroad Crossings," 2006 Edition (ITE)
29. "Purchase Specification for Flashing and Steady Burn Warning Lights," 1981 Edition (ITE)
30. "Traffic Control Devices Handbook," 2001 Edition (ITE)
31. "Traffic Detector Handbook," 1991 Edition (ITE)
32. "Traffic Engineering Handbook," 2009 Edition (ITE)
33. "Traffic Signal Lamps," 1980 Edition (ITE)
34. "Vehicle Traffic Control Signal Heads," Part 1—1985 Edition; Part 2 (LED Circular Signal Supplement)—2005 Edition; Part 3 (LED Vehicular Arrow Traffic Signal Supplement)—2004 Edition (ITE)
35. "Uniform Vehicle Code (UVC) and Model Traffic Ordinance," 2000 Edition (National Committee on Uniform Traffic Laws and Ordinances—NCUTLO)
36. "NEMA Standards Publication TS 4-2005 Hardware Standards for Dynamic Message Signs (DMS) With NTCIP Requirements," 2005 Edition (National Electrical Manufacturers Association—NEMA)
37. "Occupational Safety and Health Administration Regulations (Standards - 29 CFR), General Safety and Health Provisions - 1926.20," amended June 30, 1993 (Occupational Safety and Health Administration—OSHA)
38. "Accessible Pedestrian Signals—A Guide to Best Practices (NCHRP Web-Only Document 117A)," 2008 Edition (Transportation Research Board—TRB)

39. "Guidelines for Accessible Pedestrian Signals (NCHRP Web-Only Document 117B)," 2008 Edition (TRB)
40. "Highway Capacity Manual," 2000 Edition (TRB)
41. "Recommended Procedures for the Safety Performance Evaluation of Highway Features," (NCHRP Report 350), 1993 Edition (TRB)
42. "The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)," July 1998 Edition (The U.S. Access Board)

Section 1A.12 Color Code

Support:

01 The following color code establishes general meanings for 11 colors of a total of 13 colors that have been identified as being appropriate for use in conveying traffic control information. tolerance limits for each color are contained in 23 CFR Part 655, Appendix to Subpart F and are available at the Federal Highway Administration's MUTCD website at http://mutcd.fhwa.dot.gov or by writing to the FHWA, Office of Safety Research and Development (HRD-T-301), 6300 Georgetown Pike, McLean, VA 22101.

02 The two colors for which general meanings have not yet been assigned are being reserved for future applications that will be determined only by FHWA after consultation with the States, the engineering community, and the general public. The meanings described in this Section are of a general nature. More specific assignments of colors are given in the individual Parts of this Manual relating to each class of devices.

Standard:

03 **The general meaning of the 13 colors shall be as follows:**

- **A. Black—regulation**
- **B. Blue—road user services guidance, tourist information, and evacuation route**
- **C. Brown—recreational and cultural interest area guidance**
- **D. Coral—unassigned**
- **E. Fluorescent Pink—incident management**
- **F. Fluorescent Yellow-Green—pedestrian warning, bicycle warning, playground warning, school bus and school warning**
- **G. Green—indicated movements permitted, direction guidance**
- **H. Light Blue—unassigned**
- **I. Orange—temporary traffic ontrol**
- **J. Purple—lanes restricted to use only by vehicles with registered electronic toll collection (ETC) accounts**
- **K. Red—stop or prohibition**
- **L. White—regulation**
- **M. Yellow—warning**

Section 1A.13 Definitions of Headings, Words, and Phrases in this Manual

Standard:

01 **When used in this Manual, the text headings of Standard, Guidance, Option, and Support shall be defined as follows:**

- **A. Standard—a statement of required, mandatory, or specifi ally prohibitive practice regarding a traffic ontrol device. All Standard statements are labeled, and the text appears in bold type. The verb "shall" is typically used. The verbs "should" and "may" are not used in Standard statements. Standard statements are sometimes modified by Options. Standard statements shall not be modified or compromised based on engineering judgment or engineering study.**
- **B. Guidance—a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements are labeled, and the text appears in unbold type. The verb "should" is typically used. The verbs "shall" and "may" are not used in Guidance statements. Guidance statements are sometimes modified by Options.**
- **C. Option—a statement of practice that is a permissive condition and carries no requirement or recommendation. Option statements sometime contain allowable modifi ations to a Standard or Guidance statement. All Option statements are labeled, and the text appears in unbold type. The verb "may" is typically used. The verbs "shall" and "should" are not used in Option statements.**
- **D. Support—an informational statement that does not convey any degree of mandate, recommendation, authorization, prohibition, or enforceable condition. Support statements are labeled, and the text appears in unbold type. The verbs "shall," "should," and "may" are not used in Support statements.**

02 **Unless otherwise defined in this Section, or in other Parts of this Manual, words or phrases shall have the meaning(s) as defined in the most recent editions of the "Uniform Vehicle Code," "AASHTO Transportation Glossary (Highway Definitions)," and other publications mentioned in Section 1A.11.**

03 **The following words and phrases, when used in this Manual, shall have the following meanings:**

1. **Accessible Pedestrian Signal—a device that communicates information about pedestrian signal timing in non-visual format such as audible tones, speech messages, and/or vibrating surfaces.**
2. **Accessible Pedestrian Signal Detector—a device designated to assist the pedestrian who has visual or physical disabilities in activating the pedestrian phase.**
3. **Active Grade Crossing Warning System—the flashing-light signals, with or without warning gates, together with the necessary control equipment used to inform road users of the approach or presence of rail traffic t grade crossings.**
4. **Actuated Operation—a type of traffic ontrol signal operation in which some or all signal phases are operated on the basis of actuation.**
5. **Actuation—initiation of a change in or extension of a traffic ignal phase through the operation of any type of detector.**
6. **Advance Preemption—the notifi ation of approaching rail traffic hat is forwarded to the highway traffic ignal controller unit or assembly by the railroad or light rail transit equipment in advance of the activation of the railroad or light rail transit warning devices.**
7. **Advance Preemption Time—the period of time that is the difference between the required maximum highway traffic ignal preemption time and the activation of the railroad or light rail transit warning devices.**
8. **Advisory Speed—a recommended speed for all vehicles operating on a section of highway and based on the highway design, operating characteristics, and conditions.**
9. **Alley—a street or highway intended to provide access to the rear or side of lots or buildings in urban areas and not intended for the purpose of through vehicular traffi .**
10. **Altered Speed Zone—a speed limit, other than a statutory speed limit, that is based upon an engineering study.**
11. **Approach—all lanes of traffic oving toward an intersection or a midblock location from one direction, including any adjacent parking lane(s).**
12. **Arterial Highway (Street)—a general term denoting a highway primarily used by through traffi , usually on a continuous route or a highway designated as part of an arterial system.**
13. **Attended Lane (Manual Lane)—a toll lane adjacent to a toll booth occupied by a human toll collector who makes change, issues receipts, and perform other toll-related functions. Attended lanes at toll plazas typically require vehicles to stop to pay the toll.**
14. **Automatic Lane—see Exact Change Lane.**
15. **Average Annual Daily Traffic AADT)—the total volume of traffic assing a point or segment of a highway facility in both directions for one year divided by the number of days in the year. Normally, periodic daily traffic olumes are adjusted for hours of the day counted, days of the week, and seasons of the year to arrive at average annual daily traffi .**
16. **Average Daily Traffic ADT)—the average 24 hour volume, being the total volume during a stated period divided by the number of days in that period. Normally, this would be periodic daily traffic volumes over several days, not adjusted for days of the week or seasons of the year.**
17. **Average Day—a day representing traffic olumes normally and repeatedly found at a location, typically a weekday when volumes are influenced by employment or a weekend day when volumes are influenced by entertainment or recreation.**
18. **Backplate—see Signal Backplate.**
19. **Barrier-Separated Lane—a preferential lane or other special purpose lane that is separated from the adjacent general-purpose lane(s) by a physical barrier.**
20. **Beacon—a highway traffic ignal with one or more signal sections that operates in a flashing mode.**
21. **Bicycle—a pedal-powered vehicle upon which the human operator sits.**
22. **Bicycle Facilities—a general term denoting improvements and provisions that accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifi ally defined for bicycle use.**
23. **Bicycle Lane—a portion of a roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs.**
24. **Bikeway—a generic term for any road, street, path, or way that in some manner is specifi ally designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.**

25. **Buffer-Separated Lane—a preferential lane or other special purpose lane that is separated from the adjacent general-purpose lane(s) by a pattern of standard longitudinal pavement markings that is wider than a normal or wide lane line marking. The buffer area might include rumble strips, textured pavement, or channelizing devices such as tubular markers or traversable curbs, but does not include a physical barrier.**
26. **Cantilevered Signal Structure—a structure, also referred to as a mast arm, that is rigidly attached to a vertical pole and is used to provide overhead support of highway traffic ignal faces or grade crossing signal units.**
27. **Center Line Markings—the yellow pavement marking line(s) that delineates the separation of traffic anes that have opposite directions of travel on a roadway. These markings need not be at the geometrical center of the pavement.**
28. **Changeable Message Sign—a sign that is capable of displaying more than one message (one of which might be a "blank" display), changeable manually, by remote control, or by automatic control. Electronic-display changeable message signs are referred to as Dynamic Message Signs in the National Intelligent Transportation Systems (ITS) Architecture and are referred to as Variable Message Signs in the National Electrical Manufacturers Association (NEMA) standards publication.**
29. **Channelizing Line Markings—a wide or double solid white line used to form islands where traffic in the same direction of travel is permitted on both sides of the island.**
30. **Circular Intersection—an intersection that has an island, generally circular in design, located in the center of the intersection where traffic asses to the right of the island. Circular intersections include roundabouts, rotaries, and traffic ircles.**
31. **Circulatory Roadway—the roadway within a circular intersection on which traffic ravels in a counterclockwise direction around an island in the center of the circular intersection.**
32. **Clear Storage Distance—when used in Part 8, the distance available for vehicle storage measured between 6 feet from the rail nearest the intersection to the intersection stop line or the normal stopping point on the highway. At skewed grade crossings and intersections, the 6-foot distance shall be measured perpendicular to the nearest rail either along the center line or edge line of the highway, as appropriate, to obtain the shorter distance. Where exit gates are used, the distance available for vehicle storage is measured from the point where the rear of the vehicle would be clear of the exit gate arm. In cases where the exit gate arm is parallel to the track(s) and is not perpendicular to the highway, the distance is measured either along the center line or edge line of the highway, as appropriate, to obtain the shorter distance.**
33. **Clear Zone—the total roadside border area, starting at the edge of the traveled way, that is available for an errant driver to stop or regain control of a vehicle. This area might consist of a shoulder, a recoverable slope, and/or a non-recoverable, traversable slope with a clear run-out area at its toe.**
34. **Collector Highway—a term denoting a highway that in rural areas connects small towns and local highways to arterial highways, and in urban areas provides land access and traffic circulation within residential, commercial, and business areas and connects local highways to the arterial highways.**
35. **Concurrent Flow Preferential Lane—a preferential lane that is operated in the same direction as the adjacent mixed flow lanes, separated from the adjacent general-purpose freeway lanes by a standard lane stripe, painted buffer, or barrier.**
36. **Conflict Monitor—a device used to detect and respond to improper or conflicting signal indications and improper operating voltages in a traffic ontroller assembly.**
37. **Constant Warning Time Detection—a means of detecting rail traffic hat provides relatively uniform warning time for the approach of trains or light rail transit traffic hat are not accelerating or decelerating after being detected.**
38. **Contiguous Lane—a lane, preferential or otherwise, that is separated from the adjacent lane(s) only by a normal or wide lane line marking.**
39. **Controller Assembly—a complete electrical device mounted in a cabinet for controlling the operation of a highway traffic ignal.**
40. **Controller Unit—that part of a controller assembly that is devoted to the selection and timing of the display of signal indications.**
41. **Conventional Road—a street or highway other than a low-volume road (as defined in Section 5A.01), expressway, or freeway.**
42. **Counter-Flow Lane—a lane operating in a direction opposite to the normal flow of traffic designated for peak direction of travel during at least a portion of the day. Counter-flow lanes are usually separated from the off-peak direction lanes by tubular markers or other flexible channelizing devices, temporary lane separators, or movable or permanent barrier.**

43. **Crashworthy—a characteristic of a roadside appurtenance that has been successfully crash tested in accordance with a national standard such as the National Cooperative Highway Research Program Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features."**
44. **Crosswalk—(a) that part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or in the absence of curbs, from the edges of the traversable roadway, and in the absence of a sidewalk on one side of the roadway, the part of a roadway included within the extension of the lateral lines of the sidewalk at right angles to the center line; (b) any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by pavement marking lines on the surface, which might be supplemented by contrasting pavement texture, style, or color.**
45. **Crosswalk Lines—white pavement marking lines that identify a crosswalk.**
46. **Cycle Length—the time required for one complete sequence of signal indications.**
47. **Dark Mode—the lack of all signal indications at a signalized location. (The dark mode is most commonly associated with power failures, ramp meters, hybrid beacons, beacons, and some movable bridge signals.)**
48. **Delineator—a retroreflective device mounted on the roadway surface or at the side of the roadway in a series to indicate the alignment of the roadway, especially at night or in adverse weather.**
49. **Design Vehicle—the longest vehicle permitted by statute of the road authority (State or other) on that roadway.**
50. **Designated Bicycle Route—a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route signs, with or without specific icycle route numbers.**
51. **Detectable—having a continuous edge within 6 inches of the surface so that pedestrians who have visual disabilities can sense its presence and receive usable guidance information.**
52. **Detector—a device used for determining the presence or passage of vehicles or pedestrians.**
53. **Downstream—a term that refers to a location that is encountered by traffic ubsequent to an upstream location as it flows in an "upstream to downstream" direction. For example, "the downstream end of a lane line separating the turn lane from a through lane on the approach to an intersection" is the end of the lane line that is closest to the intersection.**
54. **Dropped Lane—a through lane that becomes a mandatory turn lane on a conventional roadway, or a through lane that becomes a mandatory exit lane on a freeway or expressway. The end of an acceleration lane and reductions in the number of through lanes that do not involve a mandatory turn or exit are not considered dropped lanes.**
55. **Dual-Arrow Signal Section—a type of signal section designed to include both a yellow arrow and a green arrow.**
56. **Dynamic Envelope—the clearance required for light rail transit traffic r a train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure (see Figure 8B-8).**
57. **Dynamic Exit Gate Operating Mode—a mode of operation where the exit gate operation is based on the presence of vehicles within the minimum track clearance distance.**
58. **Edge Line Markings—white or yellow pavement marking lines that delineate the right or left edge(s) of a traveled way.**
59. **Electronic Toll Collection (ETC)—a system for automated collection of tolls from moving or stopped vehicles through wireless technologies such as radio-frequency communication or optical scanning. ETC systems are classified as one of the following: (1) systems that require users to have registered toll accounts, with the use of equipment inside or on the exterior of vehicles, such as a transponder or barcode decal, that communicates with or is detected by roadside or overhead receiving equipment, or with the use of license plate optical scanning, to automatically deduct the toll from the registered user account, or (2) systems that do not require users to have registered toll accounts because vehicle license plates are optically scanned and invoices for the toll amount are sent through postal mail to the address of the vehicle owner.**
60. **Electronic Toll Collection (ETC) Account-Only Lane—a non-attended toll lane that is restricted to use only by vehicles with a registered toll payment account.**
61. **Emergency-Vehicle Hybrid Beacon—a special type of hybrid beacon used to warn and control traffic t an unsignalized location to assist authorized emergency vehicles in entering or crossing a street or highway.**
62. **Emergency-Vehicle Traffic ontrol Signal—a special traffic ontrol signal that assigns the right-of-way to an authorized emergency vehicle.**
63. **End-of-Roadway Marker—a device used to warn and alert road users of the end of a roadway in other than temporary traffic ontrol zones.**

64. **Engineering Judgment—the evaluation of available pertinent information, and the application of appropriate principles, provisions, and practices as contained in this Manual and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of a traffic ontrol device. Engineering judgment shall be exercised by an engineer, or by an individual working under the supervision of an engineer, through the application of procedures and criteria established by the engineer. Documentation of engineering judgment is not required.**
65. **Engineering Study—the comprehensive analysis and evaluation of available pertinent information, and the application of appropriate principles, provisions, and practices as contained in this Manual and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of a traffic ontrol device. An engineering study shall be performed by an engineer, or by an individual working under the supervision of an engineer, through the application of procedures and criteria established by the engineer. An engineering study shall be documented.**
66. **Entrance Gate—an automatic gate that can be lowered across the lanes approaching a grade crossing to block road users from entering the grade crossing.**
67. **Exact Change Lane (Automatic Lane)—a non-attended toll lane that has a receptacle into which road users deposit coins totaling the exact amount of the toll. Exact Change lanes at toll plazas typically require vehicles to stop to pay the toll.**
68. **Exit Gate—an automatic gate that can be lowered across the lanes departing a grade crossing to block road users from entering the grade crossing by driving in the opposing traffic anes.**
69. **Exit Gate Clearance Time—for Four-Quadrant Gate systems at grade crossings, the amount of time provided to delay the descent of the exit gate arm(s) after entrance gate arm(s) begin to descend.**
70. **Exit Gate Operating Mode—for Four-Quadrant Gate systems at grade crossings, the mode of control used to govern the operation of the exit gate arms.**
71. **Expressway—a divided highway with partial control of access.**
72. **Flagger—a person who actively controls the flow of vehicular traffic nto and/or through a temporary traffic ontrol zone using hand-signaling devices or an Automated Flagger Assistance Device (AFAD).**
73. **Flasher—a device used to turn highway traffic ignal indications on and off at a repetitive rate of approximately once per second.**
74. **Flashing—an operation in which a light source, such as a traffic ignal indication, is turned on and off repetitively.**
75. **Flashing-Light Signals—a warning device consisting of two red signal indications arranged horizontally that are activated to flash alternately when rail traffic s approaching or present at a grade crossing.**
76. **Flashing Mode—a mode of operation in which at least one traffic ignal indication in each vehicular signal face of a highway traffic ignal is turned on and off repetitively.**
77. **Freeway—a divided highway with full control of access.**
78. **Full-Actuated Operation—a type of traffic ontrol signal operation in which all signal phases function on the basis of actuation.**
79. **Gate—an automatically-operated or manually-operated traffic ontrol device that is used to physically obstruct road users such that they are discouraged from proceeding past a particular point on a roadway or pathway, or such that they are discouraged from entering a particular grade crossing, ramp, lane, roadway, or facility.**
80. **Grade Crossing—the general area where a highway and a railroad and/or light rail transit route cross at the same level, within which are included the tracks, highway, and traffic ontrol devices for traffic raversing that area.**
81. **Guide Sign—a sign that shows route designations, destinations, directions, distances, services, points of interest, or other geographical, recreational, or cultural information.**
82. **High-Occupancy Vehicle (HOV)—a motor vehicle carrying at least two or more persons, including carpools, vanpools, and buses.**
83. **Highway—a general term for denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.**
84. **Highway-Light Rail Transit Grade Crossing—the general area where a highway and a light rail transit route cross at the same level, within which are included the light rail transit tracks, highway, and traffic ontrol devices for traffic raversing that area.**
85. **Highway-Rail Grade Crossing—the general area where a highway and a railroad cross at the same level, within which are included the railroad tracks, highway, and traffic control devices for highway traffic raversing that area.**

86. **Highway Traffic ignal—a power-operated traffic ontrol device by which traffic s warned or directed to take some specific ction. These devices do not include power-operated signs, steadily-illuminated pavement markers, warning lights (see Section 6F.83), or steady burning electric lamps.**
87. **HOV Lane—any preferential lane designated for exclusive use by high-occupancy vehicles for all or part of a day—including a designated lane on a freeway, other highway, street, or independent roadway on a separate right-of-way.**
88. **Hybrid Beacon—a special type of beacon that is intentionally placed in a dark mode (no indications displayed) between periods of operation and, when operated, displays both steady and flashing traffic ontrol signal indications.**
89. **Inherently Low Emission Vehicle (ILEV)—any kind of vehicle that, because of inherent properties of the fuel system design, will not have signifi ant evaporative emissions, even if its evaporative emission control system has failed.**
90. **In-Roadway Lights—a special type of highway traffic ignal installed in the roadway surface to warn road users that they are approaching a condition on or adjacent to the roadway that might not be readily apparent and might require the road users to slow down and/or come to a stop.**
91. **Interchange—a system of interconnecting roadways providing for traffic ovement between two or more highways that do not intersect at grade.**
92. **Interconnection—when used in Part 8, the electrical connection between the railroad or light rail transit active warning system and the highway traffic ignal controller assembly for the purpose of preemption.**
93. **Intermediate Interchange—an interchange with an urban or rural route that is not a major or minor interchange as defined in this Section.**
94. **Intersection—intersection is defined as follows:**
    - (a) **The area embraced within the prolongation or connection of the lateral curb lines, or if none, the lateral boundary lines of the roadways of two highways that join one another at, or approximately at, right angles, or the area within which vehicles traveling on different highways that join at any other angle might come into conflict.**
    - (b) **The junction of an alley or driveway with a roadway or highway shall not constitute an intersection, unless the roadway or highway at said junction is controlled by a traffic control device.**
    - (c) **If a highway includes two roadways that are 30 feet or more apart (see definition of Median), then every crossing of each roadway of such divided highway by an intersecting highway shall be a separate intersection.**
    - (d) **If both intersecting highways include two roadways that are 30 feet or more apart, then every crossing of any two roadways of such highways shall be a separate intersection.**
    - (e) **At a location controlled by a traffic ontrol signal, regardless of the distance between the separate intersections as defined in (c) and (d) above:**
        - (1) **If a stop line, yield line, or crosswalk has not been designated on the roadway (within the median) between the separate intersections, the two intersections and the roadway (median) between them shall be considered as one intersection;**
        - (2) **Where a stop line, yield line, or crosswalk is designated on the roadway on the intersection approach, the area within the crosswalk and/or beyond the designated stop line or yield line shall be part of the intersection; and**
        - (3) **Where a crosswalk is designated on a roadway on the departure from the intersection, the intersection shall include the area extending to the far side of such crosswalk.**
95. **Intersection Control Beacon—a beacon used only at an intersection to control two or more directions of travel.**
96. **Interval—the part of a signal cycle during which signal indications do not change.**
97. **Interval Sequence—the order of appearance of signal indications during successive intervals of a signal cycle.**
98. **Island—a defined area between traffic anes for control of vehicular movements, for toll collection, or for pedestrian refuge. It includes all end protection and approach treatments. Within an intersection area, a median or an outer separation is considered to be an island.**
99. **Lane Drop—see Dropped Lane.**
100. **Lane Line Markings—white pavement marking lines that delineate the separation of traffic anes that have the same direction of travel on a roadway.**
101. **Lane-Use Control Signal—a signal face displaying indications to permit or prohibit the use of specific anes of a roadway or to indicate the impending prohibition of such use.**

102. Legend—see Sign Legend.
103. Lens—see Signal Lens.
104. Light Rail Transit Traffic Light Rail Transit Equipment)—every device in, upon, or by which any person or property can be transported on light rail transit tracks, including single-unit light rail transit cars (such at streetcars and trolleys) and assemblies of multiple light rail transit cars coupled together.
105. Locomotive Horn—an air horn, steam whistle, or similar audible warning device (see 49 CFR Part 229.129) mounted on a locomotive or control cab car. The terms "locomotive horn," "train whistle," "locomotive whistle," and "train horn" are used interchangeably in the railroad industry.
106. Logo—a distinctive emblem or trademark that identifies a commercial business and/or the product or service offered by the business.
107. Longitudinal Markings—pavement markings that are generally placed parallel and adjacent to the flow of traffic uch as lane lines, center lines, edge lines, channelizing lines, and others.
108. Louver—see Signal Louver.
109. Major Interchange—an interchange with another freeway or expressway, or an interchange with a high-volume multi-lane highway, principal urban arterial, or major rural route where the interchanging traffic s heavy or includes many road users unfamiliar with the area.
110. Major Street—the street normally carrying the higher volume of vehicular traffi .
111. Malfunction Management Unit—same as Conflict Monitor.
112. Managed Lane—a highway lane or set of lanes, or a highway facility, for which variable operational strategies such as direction of travel, tolling, pricing, and/or vehicle type or occupancy requirements are implemented and managed in real-time in response to changing conditions. Managed lanes are typically buffer- or barrier-separated lanes parallel to the general-purpose lanes of a highway in which access is restricted to designated locations. There are also some highways on which all lanes are managed.
113. Manual Lane—see Attended Lane.
114. Maximum Highway Traffic ignal Preemption Time—the maximum amount of time needed following initiation of the preemption sequence for the highway traffic ignals to complete the timing of the right-of-way transfer time, queue clearance time, and separation time.
115. Median—the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges, and at opposite approaches of the same intersection.
116. Minimum Track Clearance Distance—for standard two-quadrant warning devices, the minimum track clearance distance is the length along a highway at one or more railroad or light rail transit tracks, measured from the highway stop line, warning device, or 12 feet perpendicular to the track center line, to 6 feet beyond the track(s) measured perpendicular to the far rail, along the center line or edge line of the highway, as appropriate, to obtain the longer distance. For Four-Quadrant Gate systems, the minimum track clearance distance is the length along a highway at one or more railroad or light rail transit tracks, measured either from the highway stop line or entrance warning device, to the point where the rear of the vehicle would be clear of the exit gate arm. In cases where the exit gate arm is parallel to the track(s) and is not perpendicular to the highway, the distance is measured either along the center line or edge line of the highway, as appropriate, to obtain the longer distance.
117. Minimum Warning Time—when used in Part 8, the least amount of time active warning devices shall operate prior to the arrival of rail traffic t a grade crossing.
118. Minor Interchange—an interchange where traffic s local and very light, such as interchanges with land service access roads. Where the sum of the exit volumes is estimated to be lower than 100 vehicles per day in the design year, the interchange is classified as local.
119. Minor Street—the street normally carrying the lower volume of vehicular traffi .
120. Movable Bridge Resistance Gate—a type of traffic gate, which is located downstream of the movable bridge warning gate, that provides a physical deterrent to vehicle and/or pedestrian traffic hen placed in the appropriate position.
121. Movable Bridge Signal—a highway traffic ignal installed at a movable bridge to notify traffic o stop during periods when the roadway is closed to allow the bridge to open.
122. Movable Bridge Warning Gate—a type of traffic ate designed to warn, but not primarily to block, vehicle and/or pedestrian traffic hen placed in the appropriate position.
123. Multi-Lane—more than one lane moving in the same direction. A multi-lane street, highway, or roadway has a basic cross-section comprised of two or more through lanes in one or both directions. A multi-lane approach has two or more lanes moving toward the intersection, including turning lanes.

124. Neutral Area—the paved area between the channelizing lines separating an entrance or exit ramp or a channelized turn lane or channelized entering lane from the adjacent through lane(s).
125. Object Marker—a device used to mark obstructions within or adjacent to the roadway.
126. Occupancy Requirement—any restriction that regulates the use of a facility or one or more lanes of a facility for any period of the day based on a specified number of persons in a vehicle.
127. Occupant—a person driving or riding in a car, truck, bus, or other vehicle.
128. Open-Road ETC Lane—a non-attended lane that is designed to allow toll payments to be electronically collected from vehicles traveling at normal highway speeds. Open-Road ETC lanes are typically physically separated from the toll plaza, often following the alignment of the mainline lanes, with toll plaza lanes for cash toll payments being on a different alignment after diverging from the mainline lanes or a subset thereof.
129. Open-Road Tolling—a system designed to allow electronic toll collection (ETC) from vehicles traveling at normal highway speeds. Open-Road Tolling might be used on toll roads or toll facilities in conjunction with toll plazas. Open-Road Tolling is also typically used on managed lanes and on toll facilities that only accept payment by ETC.
130. Open-Road Tolling Point—the location along an Open-Road ETC lane at which roadside or overhead detection and receiving equipment are placed and vehicles are electronically assessed a toll.
131. Opposing Traffi —vehicles that are traveling in the opposite direction. At an intersection, vehicles entering from an approach that is approximately straight ahead would be considered to be opposing traffi , but vehicles entering from approaches on the left or right would not be considered to be opposing traffi .
132. Overhead Sign—a sign that is placed such that a portion or the entirety of the sign or its support is directly above the roadway or shoulder such that vehicles travel below it. Typical installations include signs placed on cantilever arms that extend over the roadway or shoulder, on sign support structures that span the entire width of the pavement, on mast arms or span wires that also support traffic ontrol signals, and on highway bridges that cross over the roadway.
133. Parking Area—a parking lot or parking garage that is separated from a roadway. Parallel or angle parking spaces along a roadway are not considered a parking area.
134. Passive Grade Crossing—a grade crossing where none of the automatic traffic ontrol devices associated with an Active Grade Crossing Warning System are present and at which the traffic control devices consist entirely of signs and/or markings.
135. Pathway—a general term denoting a public way for purposes of travel by authorized users outside the traveled way and physically separated from the roadway by an open space or barrier and either within the highway right-of-way or within an independent alignment. Pathways include shared-use paths, but do not include sidewalks.
136. Pathway Grade Crossing—the general area where a pathway and railroad or light rail transit tracks cross at the same level, within which are included the tracks, pathway, and traffic ontrol devices for pathway traffic raversing that area.
137. Paved—a bituminous surface treatment, mixed bituminous concrete, or Portland cement concrete roadway surface that has both a structural (weight bearing) and a sealing purpose for the roadway.
138. Pedestrian—a person on foot, in a wheelchair, on skates, or on a skateboard.
139. Pedestrian Change Interval—an interval during which the flashing UPRAISED HAND (symbolizing DONT WALK) signal indication is displayed.
140. Pedestrian Clearance Time—the time provided for a pedestrian crossing in a crosswalk, after leaving the curb or shoulder, to travel to the far side of the traveled way or to a median.
141. Pedestrian Facilities—a general term denoting improvements and provisions made to accommodate or encourage walking.
142. Pedestrian Hybrid Beacon— a special type of hybrid beacon used to warn and control traffic t an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk.
143. Pedestrian Signal Head—a signal head, which contains the symbols WALKING PERSON (symbolizing WALK) and UPRAISED HAND (symbolizing DONT WALK), that is installed to direct pedestrian traffic t a traffic ontrol signal.
144. Permissive Mode—a mode of traffic ontrol signal operation in which left or right turns are permitted to be made after yielding to pedestrians, if any, and/or opposing traffi , if any. When a CIRCULAR GREEN signal indication is displayed, both left and right turns are permitted unless otherwise prohibited by another traffic ontrol device. When a flashing YELLOW ARROW or flashing RED ARROW signal indication is displayed, the turn indicated by the arrow is permitted.

145. Physical Gore—a longitudinal point where a physical barrier or the lack of a paved surface inhibits road users from crossing from a ramp or channelized turn lane or channelized entering lane to the adjacent through lane(s) or vice versa.
146. Pictograph—a pictorial representation used to identify a governmental jurisdiction, an area of jurisdiction, a governmental agency, a military base or branch of service, a governmental-approved university or college, a toll payment system, or a government-approved institution.
147. Plaque—a traffic ontrol device intended to communicate specific nformation to road users through a word, symbol, or arrow legend that is placed immediately adjacent to a sign to supplement the message on the sign. The difference between a plaque and a sign is that a plaque cannot be used alone. The designation for a plaque includes a "P" suffix.
148. Platoon—a group of vehicles or pedestrians traveling together as a group, either voluntarily or involuntarily, because of traffic ignal controls, geometrics, or other factors.
149. Portable Traffic ontrol Signal—a temporary traffic ontrol signal that is designed so that it can be easily transported and reused at different locations.
150. Post-Mounted Sign—a sign that is placed to the side of the roadway such that no portion of the sign or its support is directly above the roadway or shoulder.
151. Posted Speed Limit—a speed limit determined by law or regulation and displayed on Speed Limit signs.
152. Preemption—the transfer of normal operation of a traffic ontrol signal to a special control mode of operation.
153. Preferential Lane—a highway lane reserved for the exclusive use of one or more specific ypes of vehicles or vehicles with at least a specific umber of occupants.
154. Pre-Signal—traffic ontrol signal faces that control traffic pproaching a grade crossing in conjunction with the traffic ontrol signal faces that control traffic pproaching a highway-highway intersection beyond the tracks. Supplemental near-side traffic ontrol signal faces for the highway-highway intersection are not considered pre-signals. Pre-signals are typically used where the clear storage distance is insuffi ient to store one or more design vehicles.
155. Pretimed Operation—a type of traffic ontrol signal operation in which none of the signal phases function on the basis of actuation.
156. Primary Signal Face—one of the required or recommended minimum number of signal faces for a given approach or separate turning movement, but not including near-side signal faces required as a result of the far-side signal faces exceeding the maximum distance from the stop line.
157. Principal Legend—place names, street names, and route numbers placed on guide signs.
158. Priority Control—a means by which the assignment of right-of-way is obtained or modified.
159. Private Road Open to Public Travel—private toll roads and roads (including any adjacent sidewalks that generally run parallel to the road) within shopping centers, airports, sports arenas, and other similar business and/or recreation facilities that are privately owned, but where the public is allowed to travel without access restrictions. Roads within private gated properties (except for gated toll roads) where access is restricted at all times, parking areas, driving aisles within parking areas, and private grade crossings shall not be included in this definition.
160. Protected Mode—a mode of traffic ontrol signal operation in which left or right turns are permitted to be made when a left or right GREEN ARROW signal indication is displayed.
161. Public Road—any road, street, or similar facility under the jurisdiction of and maintained by a public agency and open to public travel.
162. Pushbutton—a button to activate a device or signal timing for pedestrians, bicyclists, or other road users.
163. Pushbutton Information Message—a recorded message that can be actuated by pressing a pushbutton when the walk interval is not timing and that provides the name of the street that the crosswalk associated with that particular pushbutton crosses and can also provide other information about the intersection signalization or geometry.
164. Pushbutton Locator Tone—a repeating sound that informs approaching pedestrians that a pushbutton exists to actuate pedestrian timing or receive additional information and that enables pedestrians who have visual disabilities to locate the pushbutton.
165. Queue Clearance Time—when used in Part 8, the time required for the design vehicle of maximum length stopped just inside the minimum track clearance distance to start up and move through and clear the entire minimum track clearance distance. If pre-signals are present, this time shall be long enough to allow the vehicle to move through the intersection, or to clear the tracks if there is suffi ient clear storage distance. If a Four-Quadrant Gate system is present, this time shall be long enough to permit the exit gate arm to lower after the design vehicle is clear of the minimum track clearance distance.

166. Quiet Zone—a segment of a rail line, with one or a number of consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded per 49 CFR Part 222.
167. Rail Traffi —every device in, upon, or by which any person or property can be transported on rails or tracks and to which all other traffic ust yield the right-of-way by law at grade crossings, including trains, one or more locomotives coupled (with or without cars), other railroad equipment, and light rail transit operating in exclusive or semi-exclusive alignments. Light rail transit operating in a mixed-use alignment, to which other traffic s not required to yield the right-of-way by law, is a vehicle and is not considered to be rail traffi .
168. Raised Pavement Marker—a device mounted on or in a road surface that has a height generally not exceeding approximately 1 inch above the road surface for a permanent marker, or not exceeding approximately 2 inches above the road surface for a temporary flexible marker, and that is intended to be used as a positioning guide and/or to supplement or substitute for pavement markings.
169. Ramp Control Signal—a highway traffic ignal installed to control the flow of traffic nto a freeway at an entrance ramp or at a freeway-to-freeway ramp connection.
170. Ramp Meter—see Ramp Control Signal.
171. Red Clearance Interval—an interval that follows a yellow change interval and precedes the next conflicting green interval.
172. Regulatory Sign—a sign that gives notice to road users of traffic aws or regulations.
173. Retroreflectivity—a property of a surface that allows a large portion of the light coming from a point source to be returned directly back to a point near its origin.
174. Right-of-Way [Assignment]—the permitting of vehicles and/or pedestrians to proceed in a lawful manner in preference to other vehicles or pedestrians by the display of a sign or signal indications.
175. Right-of-Way Transfer Time—when used in Part 8, the maximum amount of time needed for the worst case condition, prior to display of the track clearance green interval. This includes any railroad or light rail transit or highway traffic ignal control equipment time to react to a preemption call, and any traffic ontrol signal green, pedestrian walk and clearance, yellow change, and red clearance intervals for conflicting traffi .
176. Road—see Roadway.
177. Road User—a vehicle operator, bicyclist, or pedestrian, including persons with disabilities, within the highway or on a private road open to public travel.
178. Roadway—that portion of a highway improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm, or shoulder is used by persons riding bicycles or other human-powered vehicles. In the event a highway includes two or more separate roadways, the term roadway as used in this Manual shall refer to any such roadway separately, but not to all such roadways collectively.
179. Roadway Network—a geographical arrangement of intersecting roadways.
180. Roundabout—a circular intersection with yield control at entry, which permits a vehicle on the circulatory roadway to proceed, and with deflection of the approaching vehicle counter-clockwise around a central island.
181. Rumble Strip—a series of intermittent, narrow, transverse areas of rough-textured, slightly raised, or depressed road surface that extend across the travel lane to alert road users to unusual traffic conditions or are located along the shoulder, along the roadway center line, or within islands formed by pavement markings to alert road users that they are leaving the travel lanes.
182. Rural Highway—a type of roadway normally characterized by lower volumes, higher speeds, fewer turning conflicts, and less conflict with pedestrians.
183. Safe-Positioned—the positioning of emergency vehicles at an incident in a manner that attempts to protect both the responders performing their duties and road users traveling through the incident scene, while minimizing, to the extent practical, disruption of the adjacent traffic ow.
184. School—a public or private educational institution recognized by the State education authority for one or more grades K through 12 or as otherwise defined by the State.
185. School Zone—a designated roadway segment approaching, adjacent to, and beyond school buildings or grounds, or along which school related activities occur.
186. Semi-Actuated Operation—a type of traffic ontrol signal operation in which at least one, but not all, signal phases function on the basis of actuation.
187. Separate Turn Signal Face—a signal face that exclusively controls a turn movement and that displays signal indications that are applicable only to the turn movement.
188. Separation Time—the component of maximum highway traffic ignal preemption time during which the minimum track clearance distance is clear of vehicular traffic rior to the arrival of rail traffi .

189. Shared Roadway—a roadway that is offi ially designated and marked as a bicycle route, but which is open to motor vehicle travel and upon which no bicycle lane is designated.
190. Shared Turn Signal Face—a signal face, for controlling both a turn movement and the adjacent through movement, that always displays the same color of circular signal indication that the adjacent through signal face or faces display.
191. Shared-Use Path—a bikeway outside the traveled way and physically separated from motorized vehicular traffic y an open space or barrier and either within the highway right-of-way or within an independent alignment. Shared-use paths are also used by pedestrians (including skaters, users of manual and motorized wheelchairs, and joggers) and other authorized motorized and non-motorized users.
192. Sidewalk—that portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.
193. Sign—any traffic ontrol device that is intended to communicate specific nformation to road users through a word, symbol, and/or arrow legend. Signs do not include highway traffic ignals, pavement markings, delineators, or channelization devices.
194. Sign Assembly—a group of signs, located on the same support(s), that supplement one another in conveying information to road users.
195. Sign Illumination—either internal or external lighting that shows similar color by day or night. Street or highway lighting shall not be considered as meeting this definition.
196. Sign Legend—all word messages, logos, pictographs, and symbol and arrow designs that are intended to convey specific eanings. The border, if any, on a sign is not considered to be a part of the legend.
197. Sign Panel—a separate panel or piece of material containing a word, symbol, and/or arrow legend that is affixed to the face of a sign.
198. Signal Backplate—a thin strip of material that extends outward from and parallel to a signal face on all sides of a signal housing to provide a background for improved visibility of the signal indications.
199. Signal Coordination—the establishment of timed relationships between adjacent traffic control signals.
200. Signal Face—an assembly of one or more signal sections that is provided for controlling one or more traffic ovements on a single approach.
201. Signal Head—an assembly of one or more signal faces that is provided for controlling traffic movements on one or more approaches.
202. Signal Housing—that part of a signal section that protects the light source and other required components.
203. Signal Indication—the illumination of a signal lens or equivalent device.
204. Signal Lens—that part of the signal section that redirects the light coming directly from the light source and its reflector, if any.
205. Signal Louver—a device that can be mounted inside a signal visor to restrict visibility of a signal indication from the side or to limit the visibility of the signal indication to a certain lane or lanes, or to a certain distance from the stop line.
206. Signal Phase—the right-of-way, yellow change, and red clearance intervals in a cycle that are assigned to an independent traffic ovement or combination of movements.
207. Signal Section—the assembly of a signal housing, signal lens, if any, and light source with necessary components to be used for displaying one signal indication.
208. Signal System—two or more traffic ontrol signals operating in signal coordination.
209. Signal Timing—the amount of time allocated for the display of a signal indication.
210. Signal Visor—that part of a signal section that directs the signal indication specifi ally to approaching traffic nd reduces the effect of direct external light entering the signal lens.
211. Signing—individual signs or a group of signs, not necessarily on the same support(s), that supplement one another in conveying information to road users.
212. Simultaneous Preemption—notifi ation of approaching rail traffic s forwarded to the highway traffic ignal controller unit or assembly and railroad or light rail transit active warning devices at the same time.
213. Special Purpose Road—a low-volume, low-speed road that serves recreational areas or resource development activities.

214. Speed—speed is defined based on the following classifi ations:
    (a) Average Speed—the summation of the instantaneous or spot-measured speeds at a specific location of vehicles divided by the number of vehicles observed.
    (b) Design Speed—a selected speed used to determine the various geometric design features of a roadway.
    (c) 85th-Percentile Speed—the speed at or below which 85 percent of the motor vehicles travel.
    (d) Operating Speed—a speed at which a typical vehicle or the overall traffic perates. Operating speed might be defined with speed values such as the average, pace, or 85th-percentile speeds.
    (e) Pace—the 10 mph speed range representing the speeds of the largest percentage of vehicles in the traffic tream.
215. Speed Limit—the maximum (or minimum) speed applicable to a section of highway as established by law or regulation.
216. Speed Limit Sign Beacon—a beacon used to supplement a SPEED LIMIT sign.
217. Speed Measurement Markings—a white transverse pavement marking placed on the roadway to assist the enforcement of speed regulations.
218. Speed Zone—a section of highway with a speed limit that is established by law or regulation, but which might be different from a legislatively specified statutory speed limit.
219. Splitter Island—a median island used to separate opposing directions of traffic ntering and exiting a roundabout.
220. Station Crossing—a pathway grade crossing that is associated with a station platform.
221. Statutory Speed Limit—a speed limit established by legislative action that typically is applicable for a particular class of highways with specified design, functional, jurisdictional and/or location characteristics and that is not necessarily displayed on Speed Limit signs.
222. Steady (Steady Mode)—the continuous display of a signal indication for the duration of an interval, signal phase, or consecutive signal phases.
223. Stop Beacon—a beacon used to supplement a STOP sign, a DO NOT ENTER sign, or a WRONG WAY sign.
224. Stop Line—a solid white pavement marking line extending across approach lanes to indicate the point at which a stop is intended or required to be made.
225. Street—see Highway.
226. Supplemental Signal Face—a signal face that is not a primary signal face but which is provided for a given approach or separate turning movement to enhance visibility or conspicuity.
227. Symbol—the approved design of a pictorial representation of a specific raffic ontrol message for signs, pavement markings, traffic ontrol signals, or other traffic ontrol devices, as shown in the MUTCD.
228. Temporary Traffic ontrol Signal—a traffic ontrol signal that is installed for a limited time period.
229. Temporary Traffic ontrol Zone—an area of a highway where road user conditions are changed because of a work zone or incident by the use of temporary traffic ontrol devices, flaggers, uniformed law enforcement offi ers, or other authorized personnel.
230. Theoretical Gore—a longitudinal point at the upstream end of a neutral area at an exit ramp or channelized turn lane where the channelizing lines that separate the ramp or channelized turn lane from the adjacent through lane(s) begin to diverge, or a longitudinal point at the downstream end of a neutral area at an entrance ramp or channelized entering lane where the channelizing lines that separate the ramp or channelized entering lane from the adjacent through lane(s) intersect each other.
231. Timed Exit Gate Operating Mode—a mode of operation where the exit gate descent at a grade crossing is based on a predetermined time interval.
232. Toll Booth—a shelter where a toll attendant is stationed to collect tolls or issue toll tickets. A toll booth is located adjacent to a toll lane and is typically set on a toll island.
233. Toll Island—a raised island on which a toll booth or other toll collection and related equipment are located.
234. Toll Lane—an individual lane located within a toll plaza in which a toll payment is collected or, for toll-ticket systems, a toll ticket is issued.
235. Toll Plaza—the location at which tolls are collected consisting of a grouping of toll booths, toll islands, toll lanes, and, typically, a canopy. Toll plazas might be located on highway mainlines or on interchange ramps. A mainline toll plaza is sometimes referred to as a barrier toll plaza because it interrupts the traffic ow.

236. Toll-Ticket System—a system in which the user of a toll road receives a ticket from a machine or toll booth attendant upon entering a toll system. The ticket denotes the user's point of entry and, upon exiting the toll system, the user surrenders the ticket and is charged a toll based on the distance traveled between the points of entry and exit.
237. Traffi —pedestrians, bicyclists, ridden or herded animals, vehicles, streetcars, and other conveyances either singularly or together while using for purposes of travel any highway or private road open to public travel.
238. Traffic ontrol Device—a sign, signal, marking, or other device used to regulate, warn, or guide traffi , placed on, over, or adjacent to a street, highway, private road open to public travel, pedestrian facility, or shared-use path by authority of a public agency or offi ial having jurisdiction, or, in the case of a private road open to public travel, by authority of the private owner or private offi ial having jurisdiction.
239. Traffic ontrol Signal (Traffic ignal)—any highway traffic ignal by which traffic s alternately directed to stop and permitted to proceed.
240. Train—one or more locomotives coupled, with or without cars, that operates on rails or tracks and to which all other traffic ust yield the right-of-way by law at highway-rail grade crossings.
241. Transverse Markings—pavement markings that are generally placed perpendicular and across the flow of traffic uch as shoulder markings; word, symbol, and arrow markings; stop lines; crosswalk lines; speed measurement markings; parking space markings; and others.
242. Traveled Way—the portion of the roadway for the movement of vehicles, exclusive of the shoulders, berms, sidewalks, and parking lanes.
243. Turn Bay—a lane for the exclusive use of turning vehicles that is formed on the approach to the location where the turn is to be made. In most cases where turn bays are provided, drivers who desire to turn must move out of a through lane into the newly formed turn bay in order to turn. A through lane that becomes a turn lane is considered to be a dropped lane rather than a turn bay.
244. Upstream—a term that refers to a location that is encountered by traffic rior to a downstream location as it flows in an "upstream to downstream" direction. For example, "the upstream end of a lane line separating the turn lane from a through lane on the approach to an intersection" is the end of the line that is furthest from the intersection.
245. Urban Street—a type of street normally characterized by relatively low speeds, wide ranges of traffic olumes, narrower lanes, frequent intersections and driveways, signifi ant pedestrian traffi , and more businesses and houses.
246. Vehicle—every device in, upon, or by which any person or property can be transported or drawn upon a highway, except trains and light rail transit operating in exclusive or semi-exclusive alignments. Light rail transit equipment operating in a mixed-use alignment, to which other traffic is not required to yield the right-of-way by law, is a vehicle.
247. Vibrotactile Pedestrian Device—an accessible pedestrian signal feature that communicates, by touch, information about pedestrian timing using a vibrating surface.
248. Visibility-Limited Signal Face or Visibility-Limited Signal Section—a type of signal face or signal section designed (or shielded, hooded, or louvered) to restrict the visibility of a signal indication from the side, to a certain lane or lanes, or to a certain distance from the stop line.
249. Walk Interval—an interval during which the WALKING PERSON (symbolizing WALK) signal indication is displayed.
250. Warning Beacon—a beacon used only to supplement an appropriate warning or regulatory sign or marker.
251. Warning Light—a portable, powered, yellow, lens-directed, enclosed light that is used in a temporary traffic ontrol zone in either a steady burn or a flashing mode.
252. Warning Sign—a sign that gives notice to road users of a situation that might not be readily apparent.
253. Warrant—a warrant describes a threshold condition based upon average or normal conditions that, if found to be satisfied as part of an engineering study, shall result in analysis of other traffic conditions or factors to determine whether a traffic ontrol device or other improvement is justified. Warrants are not a substitute for engineering judgment. The fact that a warrant for a particular traffic ontrol device is met is not conclusive justifi ation for the installation of the device.
254. Wayside Equipment—the signals, switches, and/or control devices for railroad or light rail transit operations housed within one or more enclosures located along the railroad or light rail transit right-of-way and/or on railroad or light rail transit property.
255. Wayside Horn System—a stationary horn (or series of horns) located at a grade crossing that is used in conjunction with train-activated or light rail transit-activated warning systems to provide audible warning of approaching rail traffic o road users on the highway or pathway approaches to a grade crossing, either as a supplement or alternative to the sounding of a locomotive horn.

256. Worker—a person on foot whose duties place him or her within the right-of-way of a street, highway, or pathway, such as street, highway, or pathway construction and maintenance forces, survey crews, utility crews, responders to incidents within the street, highway, or pathway right-of-way, and law enforcement personnel when directing traffi , investigating crashes, and handling lane closures, obstructed roadways, and disasters within the right-of-way of a street, highway, or pathway.
257. Wrong-Way Arrow—a slender, elongated, white pavement marking arrow placed upstream from the ramp terminus to indicate the correct direction of traffic fl . Wrong-way arrows are intended primarily to warn wrong-way road users that they are going in the wrong direction.
258. Yellow Change Interval—the first interval following the green or flashing arrow interval during which the steady yellow signal indication is displayed.
259. Yield Line—a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made.

Section 1A.14 Meanings of Acronyms and Abbreviations in this Manual

Standard:

01 The following acronyms and abbreviations, when used in this Manual, shall have the following meanings:

1. AADT—annual average daily traffi
2. AASHTO—American Association of State Highway and Transportation Offi ials
3. ADA—Americans with Disabilities Act
4. ADAAG—Americans with Disabilities Accessibility Guidelines
5. ADT—average daily traffi
6. AFAD—Automated Flagger Assistance Device
7. ANSI—American National Standards Institute
8. CFR—Code of Federal Regulations
9. CMS—changeable message sign
10. dBA—A-weighted decibels
11. EPA—Environmental Protection Agency
12. ETC—electronic toll collection
13. EV—electric vehicle
14. FHWA—Federal Highway Administration
15. FRA—Federal Railroad Administration
16. FTA—Federal Transit Administration
17. HOT—high occupancy tolls
18. HOTM—FHWA's Offi e of Transportation Management
19. HOTO—FHWA's Offi e of Transportation Operations
20. HOV—high-occupancy vehicle
21. ILEV—inherently low emission vehicle
22. ISEA—International Safety Equipment Association
23. ITE—Institute of Transportation Engineers
24. ITS—intelligent transportation systems
25. LED—light emitting diode
26. LP—liquid petroleum
27. MPH or mph—miles per hour
28. MUTCD—Manual on Uniform Traffic ontrol Devices
29. NCHRP—National Cooperative Highway Research Program
30. ORT—open-road tolling
31. PCMS—portable changeable message sign
32. PRT—perception-response time
33. RPM—raised pavement marker
34. RRPM—raised retroreflective pavement marker
35. RV—recreational vehicle
36. TDD—telecommunication devices for the deaf
37. TRB—Transportation Research Board
38. TTC—temporary traffic ontrol
39. U.S.—United States
40. U.S.C.—United States Code
41. USDOT—United States Department of Transportation
42. UVC—Uniform Vehicle Code
43. VPH or vph—vehicles per hour

Section 1A.15 Abbreviations Used on Traffic Control Devices

Standard:

01 **When the word messages shown in Table 1A-1 need to be abbreviated in connection with traffic ontrol devices, the abbreviations shown in Table 1A-1 shall be used.**

02 **When the word messages shown in Table 1A-2 need to be abbreviated on a portable changeable message sign, the abbreviations shown in Table 1A-2 shall be used. Unless indicated by an asterisk, these abbreviations shall only be used on portable changeable message signs.**

Guidance:

03 *The abbreviations for the words listed in Table 1A-2 that also show a prompt word should not be used on a portable changeable message sign unless the prompt word shown in Table 1A-2 either precedes or follows the abbreviation, as applicable.*

Standard:

04 **The abbreviations shown in Table 1A-3 shall not be used in connection with traffic ontrol devices because of their potential to be misinterpreted by road users.**

Guidance:

05 *If multiple abbreviations are permitted in Table 1A-1 or 1A-2, the same abbreviation should be used throughout a single jurisdiction.*

06 *Except as otherwise provided in Table 1A-1 or 1A-2 or unless necessary to avoid confusion, periods, commas, apostrophes, question marks, ampersands, and other punctuation marks or characters that are not letters or numerals should not be used in any abbreviation.*

Table 1A-1. Acceptable Abbreviations

Word Message	Standard Abbreviation
Afternoon / Evening	PM
Alternate	ALT
AM Radio	AM
Avenue	AVE, AV
Bicycle	BIKE
Boulevard	BLVD*
Bridge	(See Table 1A-2)
CB Radio	CB
Center (as part of a place name)	CTR
Circle	CIR*
Civil Defense	CD
Compressed Natural Gas	CNG
Court	CT*
Crossing (other than highway-rail)	X-ING
Drive	DR*
East	E
Electric Vehicle	EV
Expressway	EXPWY*
Feet	FT
FM Radio	FM
Freeway	FRWY, FWY*
Friday	FRI
Hazardous Material	HAZMAT
High Occupancy Vehicle	HOV

Word Message	Standard Abbreviation
Highway	HWY*
Hospital	HOSP
Hour(s)	HR, HRS
Information	INFO
Inherently Low Emission Vehicle	ILEV
International	INTL
Interstate	(See Table 1A-2)
Junction / Intersection	JCT
Lane	(See Table 1A-2)
Liquid Propane Gas	LP-GAS
Maximum	MAX
Mile(s)	MI
Miles Per Hour	MPH
Minimum	MIN
Minute(s)	MIN
Monday	MON
Morning / Late Night	AM
Mount	MT
Mountain	MTN
National	NATL
North	N
Parkway	PKWY*
Pedestrian	PED
Place	PL*

Word Message	Standard Abbreviation
Pounds	LBS
Road	RD*
Saint	ST
Saturday	SAT
South	S
State, county, or other non-US or non-Interstate numbered route	(See Table 1A-2)
Street	ST*
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Terrace	TER*
Thursday	THURS
Thruway	THWY*
Tons of Weight	T
Trail	TR*
Tuesday	TUES
Turnpike	TPK*
Two-Way Intersection	2-WAY
US Numbered Route	US
Wednesday	WED
West	W

*This abbreviation shall not be used for any application other than the name of a roadway.

Table 1A-2. Abbreviations That Shall be Used Only on Portable Changeable Message Signs

Word Message	Standard Abbreviation	Prompt Word That Should Precede the Abbreviation	Prompt Word That Should Follow the Abbreviation
Access	ACCS	—	Road
Ahead	AHD	Fog	—
Blocked	BLKD	Lane	—
Bridge	BR*	[Name]	—
Cannot	CANT	—	—
Center	CNTR	—	Lane
Chemical	CHEM	—	Spill
Condition	COND	Traffic	—
Congested	CONG	Traffic	—
Construction	CONST	—	Ahead
Crossing	XING	—	—
Do Not	DONT	—	—
Downtown	DWNTN	—	Traffic
Eastbound	E-BND	—	—
Emergency	EMER	—	—
Entrance, Enter	ENT	—	—
Exit	EX	Next	—
Express	EXP	—	Lane
Frontage	FRNTG	—	Road
Hazardous	HAZ	—	Driving
Highway-Rail Grade Crossing	RR XING	—	—
Interstate	I-*	—	[Number]
It Is	ITS	—	—
Lane	LN	[Roadway Name]*,Right, Left, Center	—
Left	LFT	—	—
Local	LOC	—	Traffic
Lower	LWR	—	Level
Maintenance	MAINT	—	—
Major	MAJ	—	Accident
Minor	MNR	—	Accident
Normal	NORM	—	—
Northbound	N-BND	—	—
Oversized	OVRSZ	—	Load
Parking	PKING	—	—
Pavement	PVMT	Wet	—
Prepare	PREP	—	To Stop
Quality	QLTY	Air	—
Right	RT	Keep, Next	—
Right	RT	—	Lane
Roadwork	RDWK	—	Ahead, [Distance]
Route	RT, RTE	Best	—
Service	SERV	—	—
Shoulder	SHLDR	—	—
Slippery	SLIP	—	—
Southbound	S-BND	—	—
Speed	SPD	—	—
State, county, or other non-US or non-Interstate numbered route	[Route Abbreviation determined by highway agency]**	—	[Number]
Tires With Lugs	LUGS	—	—
Traffic	TRAF	—	—
Travelers	TRVLRS	—	—
Two-Wheeled Vehicles	CYCLES	—	—
Upper	UPR	—	Level
Vehicle(s)	VEH, VEHS	—	—
Warning	WARN	—	—
Westbound	W-BND	—	—
Will Not	WONT	—	—

* This abbreviation, when accompanied by the prompt word, may be used on traffic control devices other than portable changeable message signs.

** A space and no dash shall be placed between the abbreviation and the number of the route.

Table 1A-3. Unacceptable Abbreviations

Abbreviation	Intended Word	Common Misinterpretation
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong