October 28-29, 2025
Orlando, FL

TRANSPORTATION SYMPOSIUM

MUTCD Updates

October 29th, 2025

Chris Lewis, P.E.
Director, Office of Forecasting and Performance

Shae Gibbs
Standard Plans Specialist, Roadway Design Office

Mariano Amicarelli, P.E., CPM, CQC
Traffic Services Program Engineer, District 4

Transportation Symposium Website
SCAN ME

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October 28-29, 2025
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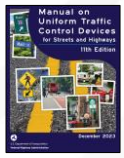
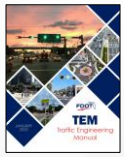
TRANSPORTATION SYMPOSIUM

Agenda



General MUTCD Overview

RDO Criteria Updates



TEM Updates

Transportation Symposium Website
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Session Objectives:

- Provide an understanding of the timeline for compliance to the new 11th edition MUTCD.
- Show revisions made to the Standard Plans and FDOT Design Manual based on the new 11th edition MUTCD.
- Show revisions made to the Traffic Engineering Manual based on the new 11th edition MUTCD.

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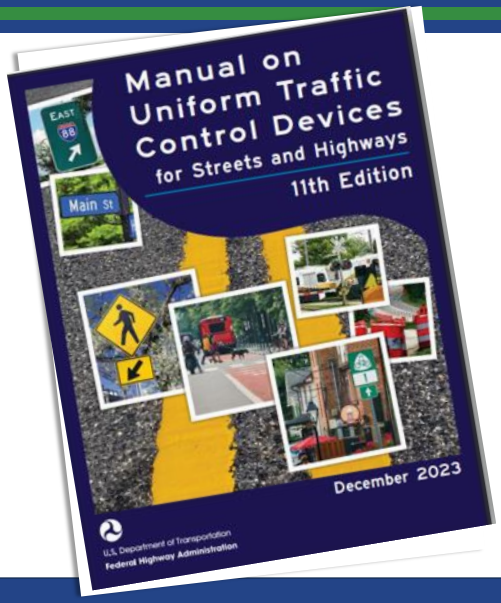

General MUTCD Overview

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General Updates - Outline

- Overview
- Timeline
- Impacted FDOT Rules, Procedures, and Manuals
  - Florida Administrative Code
- FHWA Compliance Dates and Process
  - Notice of Proposed Amendments (NPA)
- FDOT Progress Tracker
  - FDOT Publication Release Dates

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Overview

EACH STATE HAS ITS OWN ADOPTION DATE

States can choose when to adopt the policy, ranging from immediately to 2 years from release.

12/19/2023 – Release Date

01/18/2024 – Effective Date

PROPOSED ADOPTION DATE

January 2026

RAPID RULE ADOPTIONS, F.S. 120.54

Florida adopts via rule change. Accelerates the adoption of the latest Federal compliance.

BI-WEEKLY MEETINGS

Met with FHWA every other week to discuss project status and next steps.

Participating FDOT Offices

- Traffic Operations
- Roadway Design
- Safety
- Systems Implementation
- Construction
- Maintenance
- Specifications
- Legal

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Adoption Process and Rulemaking

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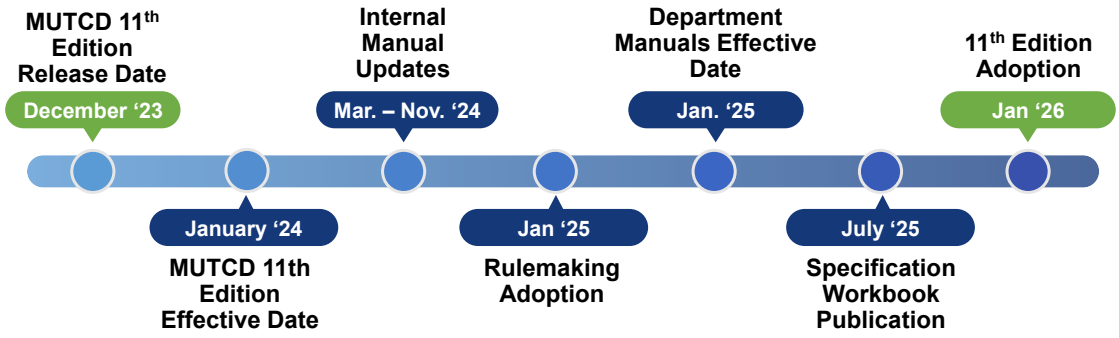
Timeline



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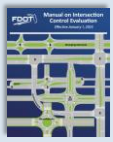
Impacted FDOT Procedures and Manuals

TEM
(Traffic Engineering Manual)
163 References to the MUTCD

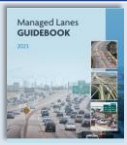


ICE
(Manual on Intersection Control Evaluation)
10 References to the MUTCD

MUTS
(Manual on Uniform Traffic Studies)
43 References to the MUTCD

FDM
(FDOT Design Manual)
71 References to the MUTCD

SZM
(Speed Zoning Manual)
45 References to the MUTCD



Managed Lanes Guidebook
10 References to the MUTCD

PD&E
(Project Development and Environment Manual)
1 References to the MUTCD

Florida Greenbook
74 References to the MUTCD

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Impacted FDOT Procedures and Manuals

FDOT Website

167 webpages with references to the MUTCD

FDOT Standard Specifications for Road and Bridge Construction

53 references to the MUTCD

FDOT Standard Plans for Road and Bridge Construction

(along with the Standard Plans Instructions)

9 references to the MUTCD

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F.A.C. Update

Rule 14-15. 010

Manual on Uniform Traffic Control Devices (MUTCD)
- Final Rule (Adoption) Effective from 01/28/2025

Rule 14-15. 012

Manual on Speed Zoning
- Notice of Development of Rulemaking – Published on 02/26/2025
- Notice of proposed rule stage
- Publish Rule

Rule 14-51

Florida's Highway Guide Sign Program
- Filed Rule Development Language
- Notice of proposed rule stage
- Publish Rule

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NPA and Statewide Reviews

Transportation Symposium Website

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MUTCD Target Compliance Dates

Table 1B-1. Target Compliance Dates Established by the FHWA			
MUTCD Section(s)	Subject Area	Specific Provision	Compliance Date
2B.64	Weight Limit Signs	Paragraph 14 - requirement for additional Weight Limit sign with the advisory distance or directional legend in advance of applicable section of highway or structure	5 years from the effective date of this edition of the MUTCD
2C.25	Low Clearance Signs (W12-2)	Paragraph 1 - Required posting of the Low Clearance Advance (W12-2) sign in advance of the structure	5 years from the effective date of this edition of the MUTCD
2C.25	Low Clearance Signs (W12-2a, W12-2b)	Paragraph 8 - Recommended posting of Low Clearance Overhead (W12-2a or 12-2b) signs on an arch or other structure under which the clearance varies greatly	5 years from the effective date of this edition of the MUTCD
3A.05	Maintaining Minimum Retro reflectivity	Implementation and continued use of a method that is designed to maintain retro reflectivity of longitudinal pavement markings (see Paragraph 1 of Section 3A.05)	September 6, 2026
8B.16	High-Profile Grade Crossings	Paragraphs 3 and 7 - Recommended installation of Low Ground Clearance and/or Vehicle Exclusion signs and detour signs for vehicles with low ground clearances that might hang up on high-profile grade crossings at locations with a known history	5 years from the effective date of this edition of the MUTCD
8D.09 through 8 D.12	Highway Traffic Signals at or Near Grade Crossings	Assessment and determination of appropriate treatment to achieve compliance (preemption, movement prohibition, pre-signals, queue cutter signals)	10 years from the effective date of this edition of the MUTCD

FHWA identified that State DOTs will need time to address

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FDOT Notice of Proposed Amendments (NPA) Disagreements

Section 1B.05 Experimentation	Section 4F.17 Yellow Change and Red Clearance Intervals
Section 2A.18 Signs, Posts and Mounting	Section 4S.01 and 4S.04 Use of LEDs within Sign Legend or Border
Section 2B.20 In-Street and Overhead Pedestrian and Trail Crossing Signs (R1-6 and R1-9 Series)	Section 6K.01 Suggest Changes to Channelizing Devices
Section 2B.50 Divided Highway Crossing Signs (R6-3 and R6-3a)	Section 6K.02 Suggest Changes to Pedestrian Channelizing Devices
Section 2C.06 Device Selection for Changes in Horizontal Alignment	Section 6L.01 Temporary Traffic Control Signals
Section 2C.10 One-Direction Large Arrow Sign (W1-6)	Figure 6P-28 Suggest Changes to MOT Sidewalk Closure
Section 2J.01 Specific Service Sign Eligibility	Figure 6P-29 Suggest Changes to Crosswalk Closures
Section 2L.02 Applications of Changeable Message Signs	Section 8B.16 Low Ground Clearance Rail Crossing Warning Sign (Compliance Date 5 Years)
Section 3C.05 through 3C.08 High-Visibility Crosswalks	Section 9E.02 Suggest Changes to Yield Makings at Bicycle Lane Intersection Approaches
Section 3D.01 Roundabout Fishhook Pavement Markings	Section 9E.09 Suggest Changes to Shared-Lane Markings
Section 3D.04 Yield Lines for Roundabouts	

10 Sections were not addressed based on FDOT comments

3 Sections partially addressed in the MUTCD 11 Edition

8 Sections were addressed in the MUTCD 11 Edition

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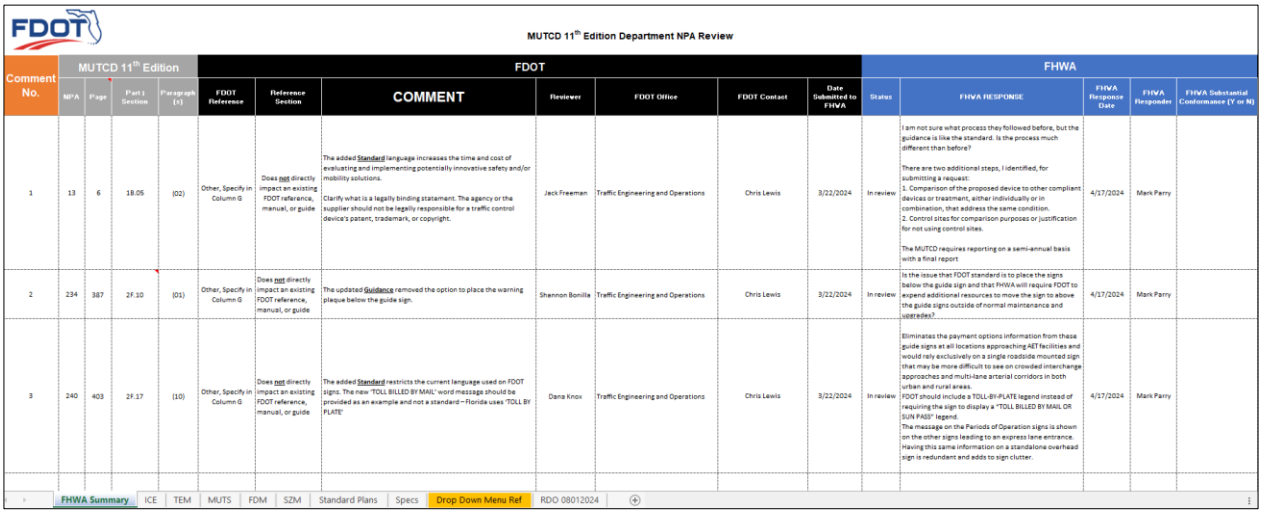
MUTCD Progress Tracker



MUTCD 11th Edition Department NPA Review

Comment No.	MUTCD 11th Edition				FDOT							FHWA			
	NPA	Page	Part	Section	Paragraph (s)	FDOT Reference	Reference Section	COMMENT	Reviewer	FDOT Office	FDOT Contact	Date Submitted to FHWA	Status	FHWA RESPONSE	FHWA Response Date	FHWA Responder	FHWA Substantial Conformance (Y or N)
1	13	6	1B.05		(02)	Other, Specify in Column G	Does not directly impact an existing FDOT reference, manual, or guide	The added Standard language increases the time and cost of evaluating and implementing potentially innovative safety and/or mobility solutions. Clarify what is a legally binding statement. The agency or the supplier should not be legally responsible for a traffic control device's patent, trademark, or copyright.	Jack Freeman	Traffic Engineering and Operations	Chris Lewis	3/22/2024	In review	I am not sure what process they followed before, but the guidance is like the standard. Is the process much different than before? There are two additional steps, I identified, for submitting a request: 1. Comparison of the proposed device to other compliant devices or treatment, either individually or in combination, that address the same condition. 2. Control sites for comparison purposes or justification for not using control sites. The MUTCD requires reporting on a semi-annual basis with a final report	4/17/2024	Mark Parry	
2	234	387	2F.10		(01)	Other, Specify in Column G	Does not directly impact an existing FDOT reference, manual, or guide	The updated Guidance removed the option to place the warning plaque below the guide sign.	Shannon Bonilla	Traffic Engineering and Operations	Chris Lewis	3/22/2024	In review	Is the issue that FDOT standard is to place the signs below the guide sign and that FHWA will require FDOT to expend additional resources to move the sign to above the guide signs outside of normal maintenance and upgrades?	4/17/2024	Mark Parry	
3	240	403	2F.17		(10)	Other, Specify in Column G	Does not directly impact an existing FDOT reference, manual, or guide	The added Standard restricts the current language used on FDOT signs. The new 'TOLL BILLED BY MAIL' word message should be provided as an example and not a standard – Florida uses 'TOLL BY PLATE'	Dana Knox	Traffic Engineering and Operations	Chris Lewis	3/22/2024	In review	Eliminates the payment options information from these guide signs at all locations approaching AET facilities and would rely exclusively on a single roadside mounted sign that may be more difficult to see on crowded interchange approaches and multi-lane arterial corridors in both urban and rural areas. FDOT should include a TOLL-BY-PLATE legend instead of requiring the sign to display a "TOLL BILLED BY MAIL OR SUN PASS" legend. The message on the Periods of Operation signs is shown on the other signs leading to an express lane entrance. Having this same information on a standalone overhead sign is redundant and adds to sign clutter.	4/17/2024	Mark Parry	

FHWA Summary | ICE | TEM | MUTS | FDM | SZM | Standard Plans | Specs | Drop Down Menu Ref | RDO 08012024

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Release Dates

Current Manuals/Bulletins Release

Design Office

- ✓FY 2025-26 Standard Plans for Road and Bridge Construction Bulletin – 11/01/2024
- ✓2025 FDOT Design Manual Bulletin – 11/01/2024
- ✓FY 2025-26 Standard Specifications for Road and Bridge Construction Bulletin – 11/04/2024
- ✓2023 Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Florida Greenbook) – 03/13/2025
- ✓FY 2026-27 Standard Specifications for Road and Bridge Construction Bulletin – **TBD, 2025**

Traffic Engineering and Operations Office

- ✓ICE Manual Bulletin – 11/15/2024
- ✓TEM Bulletin – 11/22/2024
- ✓MUTS – **TBD, 2025**
- ✓Speed Zoning Manual - **TBD, 2025**

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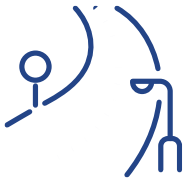
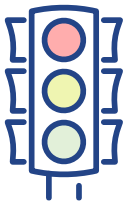
FDM & TEM: Critical Manuals for FDOT Project Design



FDM

- Roadway design standards
- Drainage design
- Roadside safety features



TEM

- Traffic signal design and operation
- Signage and pavement markings
- Traffic management strategies

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RDO Criteria Updates

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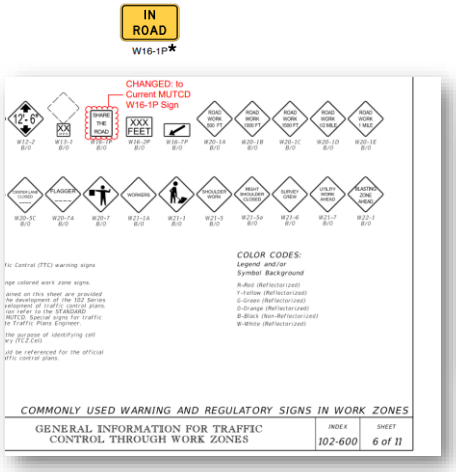
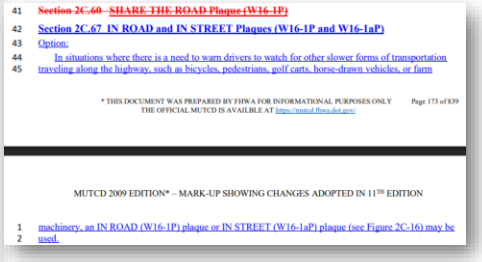
Standard Plans Updates

- Updated TTC Indexes
- Matched sign names and details to MUTCD




41 ~~Section 2C.60 SHARE THE ROAD Plaque (W16-1P)~~
42 **Section 2C.67 IN ROAD and IN STREET Plaques (W16-1P and W16-1aP)**
43 Option:
44 In situations where there is a need to warn drivers to watch for other slower forms of transportation
45 traveling along the highway, such as bicycles, pedestrians, golf carts, horse-drawn vehicles, or farm

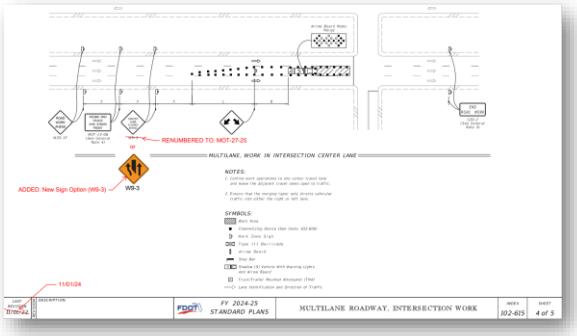
* THIS DOCUMENT WAS PREPARED BY FHWA FOR INFORMATIONAL PURPOSES ONLY Page 173 of 839
THE OFFICIAL MUTCD IS AVAILBLE AT https://mutcd.fhwa.dot.gov/

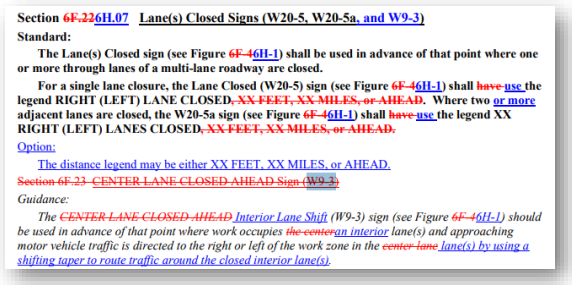
MUTCD 2009 EDITION* – MARK-UP SHOWING CHANGES ADOPTED IN 11TH EDITION

1 machinery, an IN ROAD (W16-1P) plaque or IN STREET (W16-1aP) plaque (see Figure 2C-16) may be
2 used.

TRANSPORTATION SYMPOSIUM

Standard Plans Index 102-615 (FY 2025-26)




Section ~~6F.22~~6H.07 Lane(s) Closed Signs (W20-5, W20-5a, and W9-3)

Standard:

The Lane(s) Closed sign (see Figure ~~6F-4~~6H-1) shall be used in advance of that point where one or more through lanes of a multi-lane roadway are closed.

For a single lane closure, the Lane Closed (W20-5) sign (see Figure ~~6F-4~~6H-1) shall ~~have~~ use the legend RIGHT (LEFT) LANE CLOSED~~, XX FEET, XX MILES, or AHEAD~~. Where two or more adjacent lanes are closed, the W20-5a sign (see Figure ~~6F-4~~6H-1) shall ~~have~~ use the legend XX RIGHT (LEFT) LANES CLOSED~~, XX FEET, XX MILES, or AHEAD.~~

Option:

The distance legend may be either XX FEET, XX MILES, or AHEAD.

~~Section 6F.23 CENTER LANE CLOSED AHEAD Sign (W9-3)~~

Guidance:

The ~~CENTER LANE CLOSED AHEAD~~ Interior Lane Shift (W9-3) sign (see Figure ~~6F-4~~6H-1) should be used in advance of that point where work occupies ~~the center~~an interior lane(s) and approaching motor vehicle traffic is directed to the right or left of the work zone in the ~~center lane~~ lane(s) by using a shifting taper to route traffic around the closed interior lane(s).

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Standard Plans Index 102-661 (FY 2025-26)

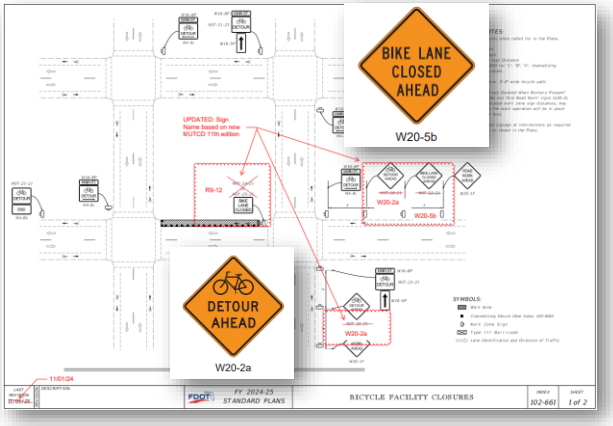


Table 6G-1. Temporary Traffic Control Zone Regulatory Sign and Plaque Sizes

Sign or Plaque	Sign Designation	Section	Conventional Road	Freeway or Expressway	Minimum
Sidewalk Closed, Cross Here	R9-11a	6G.10	24 x 12	–	–
Bike Lane Closed	R9-12	6P.01	24 x 12	–	–

Section ~~6F.19~~6H.04 DETOUR Sign (W20-2)

Guidance:

The DETOUR (W20-2) sign (see Figure ~~6F-4~~6H-1) should be used in advance of a road user detour over a different roadway or route.

~~**Standard:**~~

~~**The DETOUR sign shall have the legend DETOUR, XX FEET, XX MILES, or AHEAD.**~~

Option:

The distance legend may be either XX FEET, XX MILES, or AHEAD.

CHAPTER ~~6H~~6P. TYPICAL APPLICATIONS

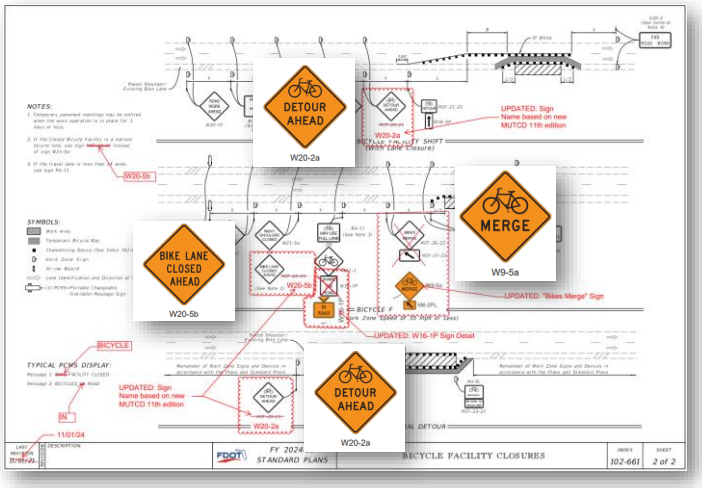
Section ~~6H.01~~6P.01 Typical Applications

Support:

Chapter ~~6C.~~ 6N contains discussions of typical TTC activities. Section 6A.02 contains discussions on development of TTC plans for the various activities. This Chapter presents typical applications for a variety of situations commonly encountered. While not every situation is addressed, the information illustrated can generally be adapted to a broad range of conditions. In many instances, an appropriate TTC plan is achieved by combining features from various typical applications. For example, work at an intersection might present a near-side ~~work~~TTC zone for one street and a far-side ~~work~~TTC zone for the other street. These treatments are found in two different typical applications, while a third typical application shows how to handle pedestrian crosswalk closures. ~~For convenience in using the typical application diagrams, Tables 6C-1 and 6C-4 are reproduced in this Chapter as Tables 6H-3 and 6H-4, respectively.~~

TRANSPORTATION SYMPOSIUM

Standard Plans Index 102-661 (FY 2025-26)



Section 9C.07 Bicycle Lane Ends Warning Sign (W9-5) and Bicycles Merging Sign (W9-5a)

Support:

Where a warning sign is appropriate, the Bicycle Lane Ends (W9-5) warning sign (see Figure 9C-1) is intended to alert road users that a bicycle lane is ending and that bicycles will share or occupy the travel lane after merging.

Option:

MUTCD 2009 EDITION* – MARK-UP SHOWING CHANGES ADOPTED IN 11TH EDITION

The Bicycle Lane Ends warning sign may be used in advance of the end of a bicycle lane to warn that a bicycle lane will be ending.

The Bicycles Merging (W9-5a) sign (see Figure 9C-1) may be used where a bicycle merging maneuver might occur. The Bicycles Merging sign may be used in addition to the Bicycle Lane Ends (W9-5) warning sign.

Section ~~6F.19~~6H.04 DETOUR Sign (W20-2)

Guidance:

The DETOUR (W20-2) sign (see Figure ~~6F-4~~6H-1) should be used in advance of a road user detour over a different roadway or route.

~~**Standard:**~~

~~**The DETOUR sign shall have the legend DETOUR, XX FEET, XX MILES, or AHEAD.**~~

Option:

The distance legend may be either XX FEET, XX MILES, or AHEAD.

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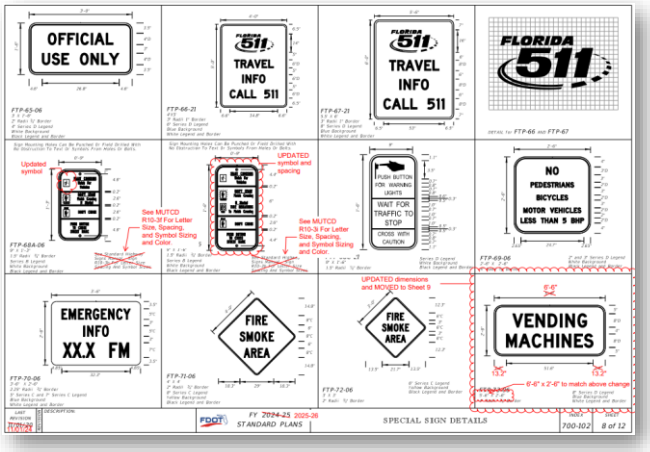
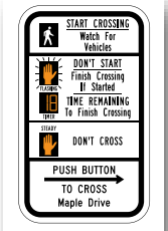
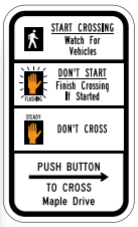
Standard Plans Index 700-102 (FY 2025-26)



- FDOT
- MUTCD



R10-3i



R10-3f

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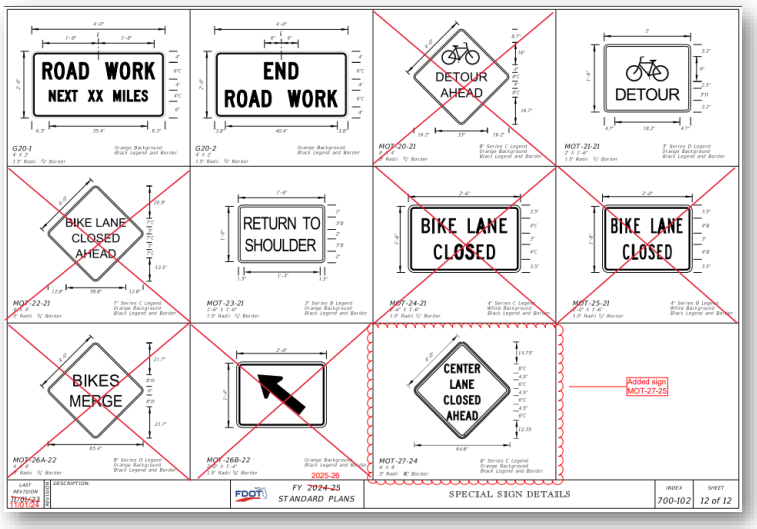
Standard Plans Index 700-102 (FY 2025-26)



W20-5b

W20-2a

Section ~~6F.22~~6I.07 Lane(s) Closed Signs (W20-5, W20-5a, and W9-3)

Standard:

The Lane(s) Closed sign (see Figure ~~6F-4~~6I-1) shall be used in advance of that point where one or more through lanes of a multi-lane roadway are closed.

For a single lane closure, the Lane Closed (W20-5) sign (see Figure ~~6F-4~~6I-1) shall ~~have~~ use the legend RIGHT (LEFT) LANE CLOSED ~~XX FEET, XX MILES, or AHEAD~~. Where two or more adjacent lanes are closed, the W20-5a sign (see Figure ~~6F-4~~6I-1) shall ~~have~~ use the legend XX RIGHT (LEFT) LANES CLOSED ~~XX FEET, XX MILES, or AHEAD~~.

Option:

The distance legend may be either XX FEET, XX MILES, or AHEAD.

~~Section 6F.23 CENTER LANE CLOSED AHEAD Sign (W9-3)~~

Guidance:

The ~~CENTER LANE CLOSED AHEAD~~ Interior Lane Shift (W9-3) sign (see Figure ~~6F-4~~6I-1) should be used in advance of that point where work occupies ~~the center~~ an interior lane(s) and approaching motor vehicle traffic is directed to the right or left of the work zone in the ~~center lane~~ lane(s) by using a shifting taper to route traffic around the closed interior lane(s).

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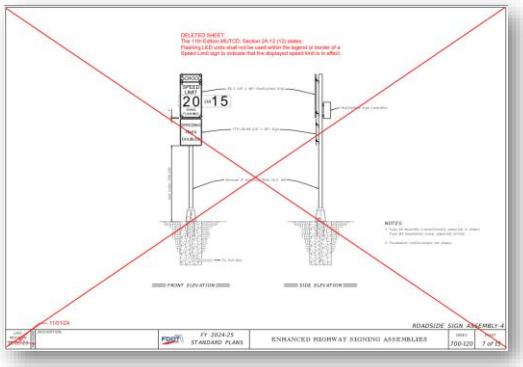
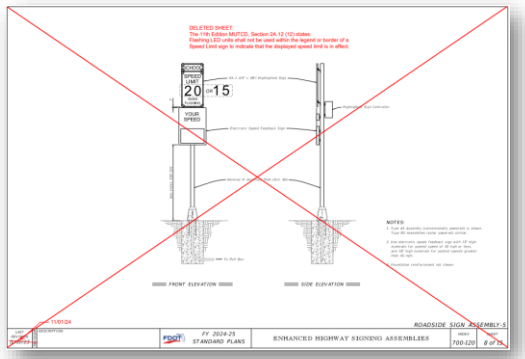
Standard Plans Index 700-120 (FY 2025-26)

11 Flashing LED units shall not be used within the legend or border of a Speed Limit sign to
12 indicate that the displayed speed limit is in effect.





TRANSPORTATION SYMPOSIUM

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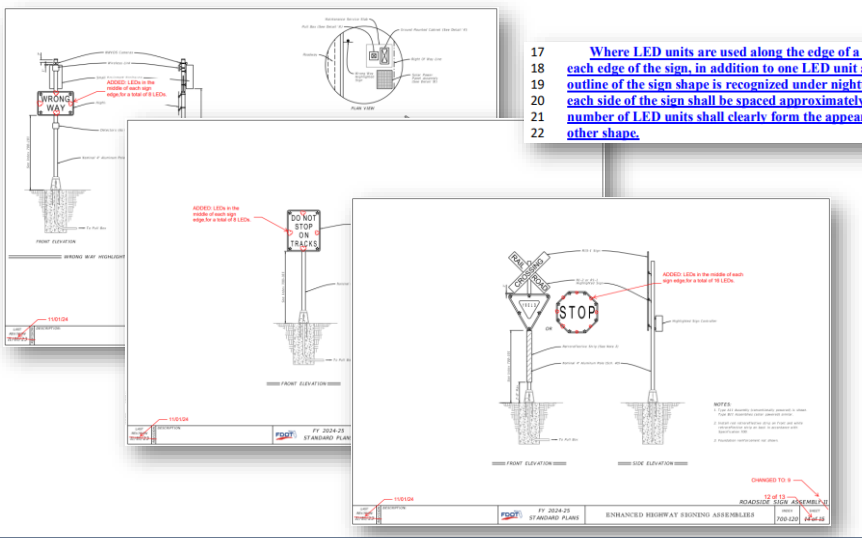
Standard Plans Index 700-120 (FY 2025-26)



17 Where LED units are used along the edge of a sign, at least one LED unit shall be placed along
18 each edge of the sign, in addition to one LED unit at each corner of the sign, so that the distinct
19 outline of the sign shape is recognized under nighttime viewing conditions. The LED units along
20 each side of the sign shall be spaced approximately equidistantly. For a circular sign shape, the
21 number of LED units shall clearly form the appearance of a circle and not be perceived as some
22 other shape.

TRANSPORTATION SYMPOSIUM

26

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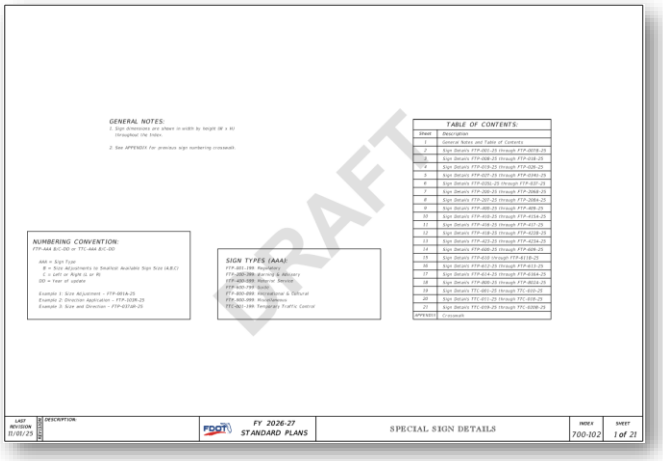
Standard Plans Index 700-102 (FY 2026-27)

MAJOR REDEVELOPMENT

RENUMBERING

MOT -> TTC



TRANSPORTATION SYMPOSIUM

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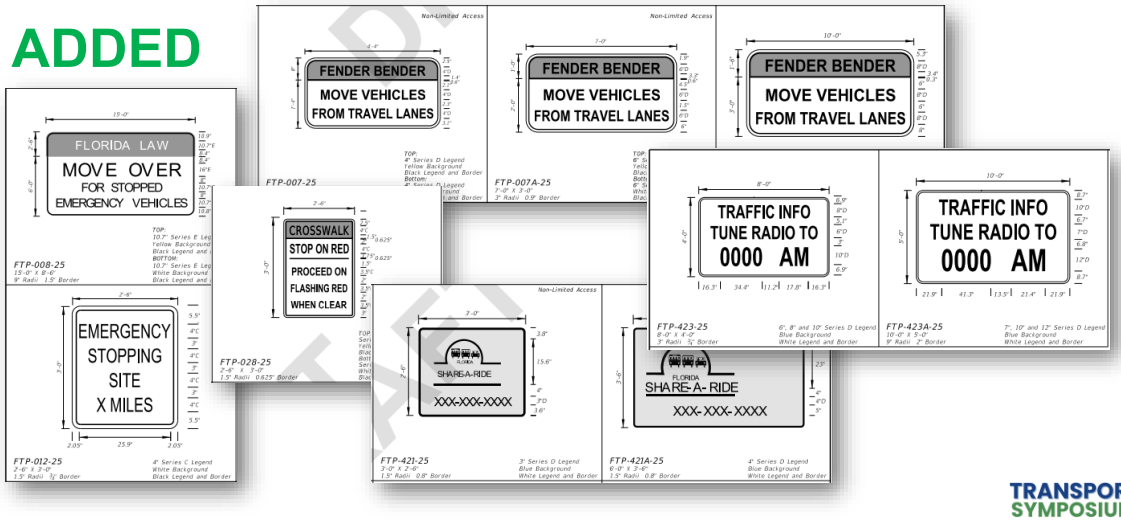
Standard Plans Index 700-102 (FY 2026-27)

ADDED



TRANSPORTATION SYMPOSIUM

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Standard Plans Index 700-102 (FY 2026-27)

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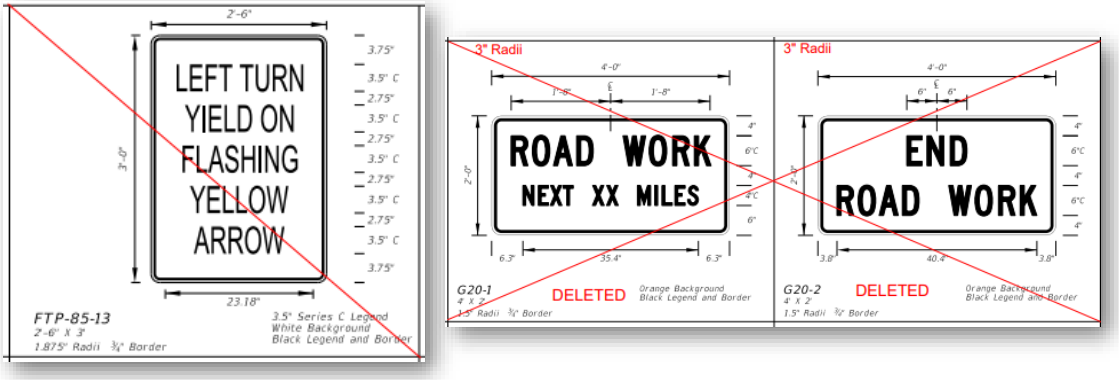

TRANSPORTATION SYMPOSIUM

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ALL Standard Plans Updates

WELCOME TO STANDARD PLANS

Administrator: Rick A. Jenkins, P.E. - State Standard Plans Engineer

Standard Plans

Current Standard Plans

Standard Plans (FY 2018-19 Thru Current)

Developmental Standard Plans

CADD-DGN and Cell Libraries

Supporting Documents

Training

Revision Submittal Process

Roadway Design Bulletins

Standard Plans Technical Expert List

Review and Responses

Submit a Revision

Industry Review

Track the Status of Revisions

Review Archives

TRANSPORTATION SYMPOSIUM

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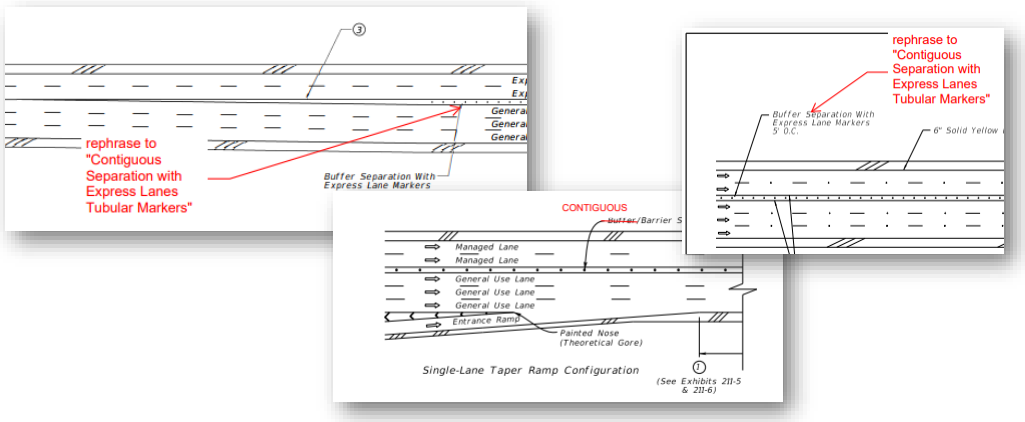
FDOT Design Manual Updates

MUTCD

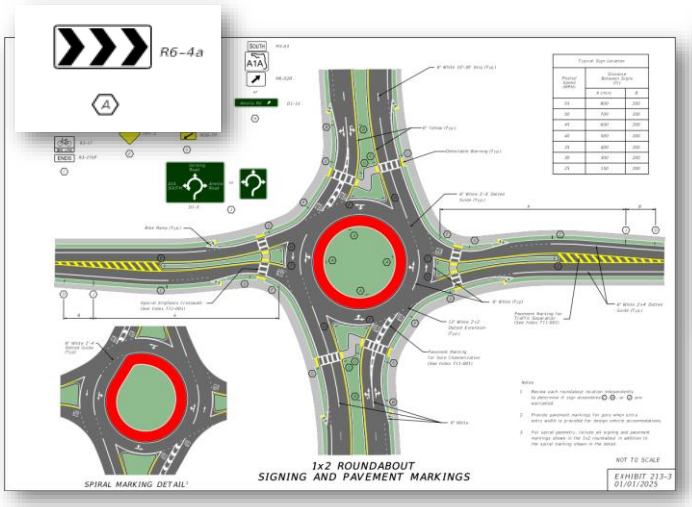
TRANSPORTATION SYMPOSIUM

FDM 211



TRANSPORTATION SYMPOSIUM

FDM 213



Section 2B.40 2B.49 ONE WAY Signs (R6-1 and R6-2)

Standard:

Except as provided in Paragraph 6 of this Section, the ONE WAY (R6-1 or R6-2) sign (see Figure 2B-13) shall be used to indicate streets or roadways upon which vehicular traffic is allowed to travel in one direction only.

ONE WAY signs shall be placed parallel to the one-way street at all alleys and roadways that intersect one-way roadways as shown in Figure 2B-14 2B-18.

At the crossing of a roadway with a divided highway that functions as two separate intersections, ~~At an intersection with a divided highway that has a median width at the intersection itself of 30 feet or more,~~ ONE WAY signs shall be placed, visible to each crossroad approach, on the near right and far left corners of each intersection with the directional roadways (see Figure 2B-15 2B-19).

* THIS DOCUMENT WAS PREPARED BY FHWA FOR INFORMATIONAL PURPOSES ONLY Page 113 of 839
THE OFFICIAL MUTCD IS AVAILBLE AT https://mutcd.fhwa.dot.gov/

Section 2B.44 2B.51 Roundabout Circulation Plaque (R6-5P)

Guidance:

Where the central island of a roundabout or neighborhood traffic circle does not provide a reasonable place to install a sign as provided elsewhere in this Chapter, Roundabout Circulation (R6-5P) plaques (see Figure 2B-13) should be placed below the YIELD signs on each approach.

Support:

Paragraph 6 of Section 2B.39 contains information about the use of a Keep Right (R4-7b) sign in the central island of a neighborhood traffic circle.

Paragraph 12 of Section 2B.49 contains information about the use of a ONE WAY (R6-1 or R6-2) sign in the central island of a roundabout.

Option:

At roundabouts where ~~Roundabout Directional Arrow signs and/or~~ ONE WAY signs have been installed in the central island, Roundabout Circulation plaques may be placed below the YIELD signs on approaches to roundabouts to supplement the central island signs.

The Roundabout Circulation plaque may be used at any type of circular intersection.

Support:

Examples of regulatory and warning signs for roundabouts and neighborhood traffic circles are shown in Figures 2B-21 through 2B-24.

TRANSPORTATION SYMPOSIUM

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FDM 223

FDM

Bicycle lanes may be provided on flush shoulder roadways ~~Mark paved shoulders as bicycle lanes~~ when all the following are met:

(1) Design speed ≤ 45 mph,

(2) Shoulder width ≥ 5-foot (≥ 4-foot on RRR projects),

(3) Within C2T, C4, C5, C6, C3C context classification, or within C3R when demand is demonstrated, and

(4) Shared use path or separated bicycle lanes are not present along corridor.

MUTCD

Standard:

The bicycle symbol or BIKE LANE pavement word marking and the pavement marking arrow shall not be used in a shoulder.

A portion of the roadway shall not be established as both a shoulder and a bicycle lane.

Support:

Where a shoulder is provided or is of sufficient width to meet the expectation of a highway user in that it can function as a space for emergency, enforcement or maintenance activities, avoidance or recovery maneuvers, Section 9B.16 contains information regarding the Bicycles Use Shoulder Only sign that can be used to denote locations on a freeway or expressway where bicycles are permitted on an available and usable shoulder.

TRANSPORTATION SYMPOSIUM

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FDM 223

FDM

~~Projects using green-colored pavement markings, the EOR must submit either a GIS (a.k.a., shapefile or geodatabase) or CADD (e.g., dsgnsp.dgn, dsgnsp.dwg) file(s) depicting the location(s) of these markings. Submit the required files via email to **CO-CIMGIS@dot.state.fl.us** and copy the State Bicycle Pedestrian Coordinator.~~

Additional details on tracking~~he file format~~ can be found in the ***CADD Manual*** and at the following website: ***https://www.fdot.gov/gis/bim/green-pavement***.

MUTCD

Section 3H.06 Green-Colored Pavement for Bicycle Facilities

Support:

01 Green-colored pavement is used to enhance the conspicuity of locations where bicyclists are expected to operate, and areas where bicyclists and other traffic might have potentially conflicting, weaving, or crossing movements. Green-colored pavement is also used to enhance the conspicuity of word, symbol, and/or arrow pavement markings when these markings are used in certain bicycle facilities.

Standard:

02 **If used, green-colored pavement shall be limited to:**

- **A. Bicycle lanes (see Sections 9E.01, 9E.06, 9E.07, and 9E.08),**
- **B. Extensions of bicycle lanes through intersections (see Section 9E.03),**
- **C. Extensions of bicycle lanes through areas where motor vehicles enter a mandatory turn lane in which motor vehicles must weave across bicyclists in bicycle lanes (see Section 9E.02),**
- **D. Two-stage bicycle turn boxes (see Section 9E.11),**
- **E. Bicycle Boxes (see Section 9E.12), and**
- **F. As a background for bicycle detector symbols (see Section 9E.15).**

TRANSPORTATION SYMPOSIUM

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FDM 223

FDM

223.3 Shared Lane Markings (Sharrows)

Shared lane markings, or "Sharrows", are optional pavement markings used to indicate a shared environment for bicycles and motor vehicles. Sharrows are used where it is not practical to provide a bicycle facility, and any of the following conditions exist:

(1) With on-street parallel parking in order to reduce the chance of a bicyclist impacting the open door of a parked vehicle.

(2) To fill a gap in an otherwise continuous bicycle facility, generally for a short distance.

(3) As part of an approved temporary traffic control plan, see ***FDM 240***.

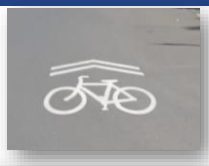
Streets with low traffic volumes and low traffic speeds are better suited to ~~a travel environment where~~ support mixed bicycle and motor vehicle traffic ~~are mixed~~. Do not use Sharrows on roadways with a posted speed greater than 35 mph or ~~on shared use paths. in the following conditions:~~

~~Roadways with a posted speed greater than 35 mph~~

~~On shared use paths~~

~~Within a right turn lane~~

Place Sharrows in the center of the travel lane. This placement provides guidance to bicyclists to "command the lane", which discourages motorists from passing too closely. This placement also informs drivers that cyclists are entitled to ride in the center of the lane for their safety. To effectively convey this message, place Sharrows immediately after intersections and at a maximum spacing of 250 feet. Refer to ***MUTCD*** Section 9E.02 when considering the use of sharrows within a right–turn lane.



MUTCD

Section ~~9C.07~~9E.09 Shared-Lane Marking

Support:

The "Standard Highway Signs" publication (see Section 1A.05) contains details on the shared-lane marking symbol.

Option:

The ~~S~~shared-~~L~~lane ~~M~~marking shown in Figure ~~9C-9~~9E-9 may be used to:

A. Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist~~'s~~ impacting the open door of a parked vehicle,

B. Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side–by–side within the same traffic lane,

C. Alert road users of the lateral location ~~bicyclist~~bicycles are likely to occupy within the traveled way,

D. Encourage safe passing of ~~bicyclist~~bicycles by ~~motorist~~motor vehicles, ~~and~~

E. Reduce the incidence of wrong-way bicycling in the roadway~~.~~, and

F. Assist bicyclists with lateral positioning in mixing zones.

Guidance:

The ~~S~~shared-~~L~~lane ~~M~~marking should not be placed on roadways that have a speed limit ~~above 35 mph~~ of 40 mph or greater.

TRANSPORTATION SYMPOSIUM

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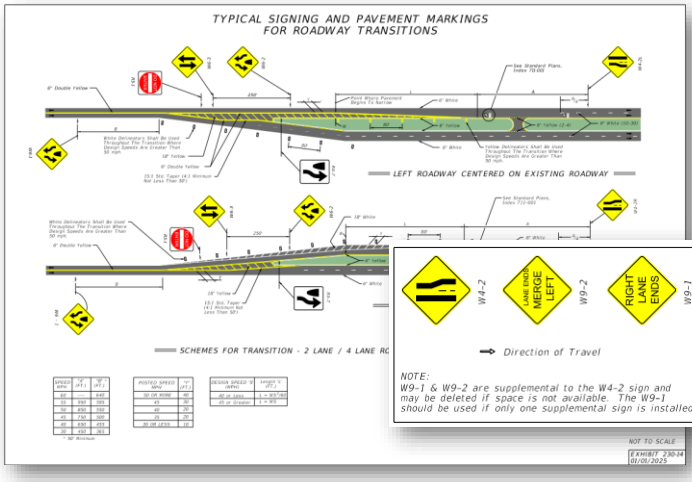
FDM 230



Section ~~2C.42~~ 2C.47 Lane Ends Signs (W4-2, and W9-1, ~~W9-2~~)

~~Guidance:~~ Support:

The ~~LANE ENDS MERGE LEFT (RIGHT) (W9-2) sign or the~~ Lane Ends (W4-2) and RIGHT (LEFT) LANE ENDS (W9-1) signs (see Figure 2C-11) ~~should be~~ are used to warn of the reduction in the number of traffic lanes in the direction of travel ~~on a multi-lane highway~~.

The sequence of the W4-2 and W9-1 signs is illustrated in Figure 2C-13.

Guidance:

The Lane Ends (W4-2) sign should be installed at the advance placement distance in accordance with Table 2C-3.

Option:

The ~~A~~ RIGHT (LEFT) LANE ENDS (W9-1) sign ~~(see Figure 2C-8)~~ may be ~~used~~installed in advance of the ~~LANE ENDS (W4-2)~~ Lane Ends sign ~~or the LANE ENDS MERGE LEFT (RIGHT) (W9-2) sign as additional warning or to emphasize~~ to provide additional warning that ~~the traffic~~ a lane is ending and that a merging maneuver will be required.

Guidance:

~~If used, the RIGHT (LEFT) LANE ENDS (W9-1) sign should be installed adjacent to the Lane Reduction Arrow pavement marking.~~

If a W9-1 sign is installed, a Distance (W16-2P series or W16-3P series) plaque (see Figure 2C-16) should be installed below the W9-1 sign.

~~Option:~~

On one-way streets or on divided highways where the left-hand lane is ending and the width of the median will permit, ~~two~~ the ~~Lane Ends~~ W9-1 and W4-2 signs ~~may~~ should be placed facing approaching traffic, ~~one on the right-hand side and the other~~ on the left-hand side or median.

Option:

Where a lane ends a distance beyond the intersection that is less than the advance placement distance indicated in Table 2C-3, the W4-2 sign may be located at the far side of the intersection (see Sheet 4 of Figure 2C-13).

Guidance:

TRANSPORTATION SYMPOSIUM

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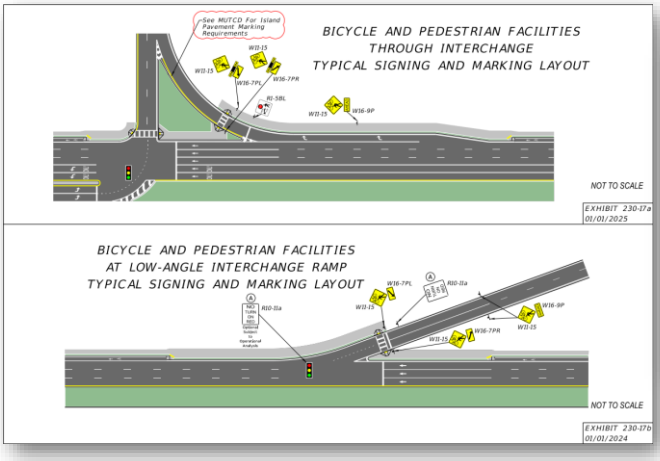
FDM 230



Standard:

Solid lines shall not be used to extend edge lines into or through intersections ~~or major driveways~~ except through that part of an intersection with no intersecting approach (such as at the far side of a T-intersection).

Guidance:

Edge line markings should be discontinued across intersecting approaches at intersections or interchanges.

Driveways that do not meet the definition of an intersection (see Section 1C.02) should have edge line markings maintained across the intersecting approach of the driveway.

Option:

Dotted edge line extensions may be placed through intersections ~~or major driveways.~~

Support:

Section 3B.31 contains information about edge lines through diverging diamond interchanges with a transposed alignment crossroad.

Section 3D.03 provides information for edge lines through roundabouts.

Section 5B.02 contains information on edge line extensions for driving automation system considerations.

Section 8C.05 contains information about the extension of edge lines through grade crossing areas.

Section 9E.03 contains information for the extensions of bicycle lanes through intersections.

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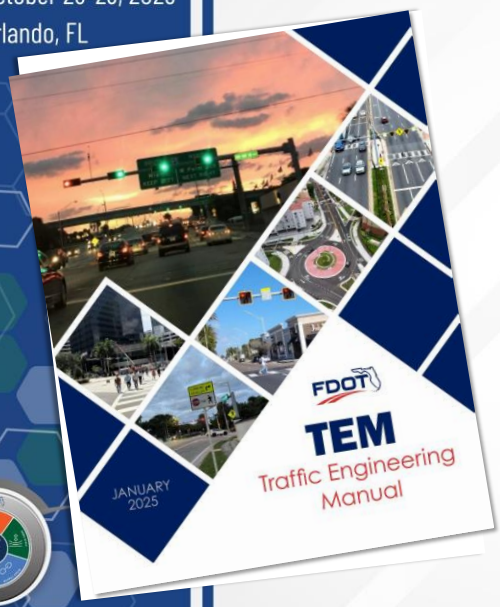
October 28-29, 2025
Orlando, FL

TRANSPORTATION SYMPOSIUM



2025 TEM Updates

Transportation Symposium Website

SCAN ME

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TEM Essentials

TEM Adoption

Sections 20.23(4)(a) and 334.048(3), Florida Statutes (F.S.)

Purpose

Develop & adopt uniform minimum standards and criteria for the design, construction, maintenance, and operation of public roads

Manual Review Committee

STOE, DTOEs, District Traffic Service Engineers

TRANSPORTATION SYMPOSIUM

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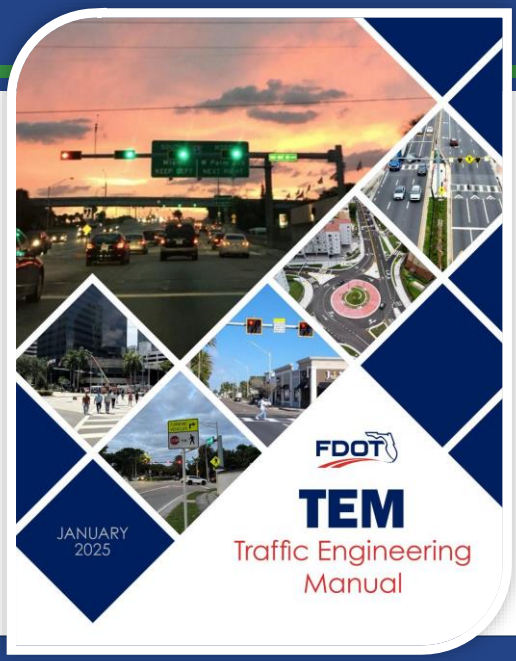

TEM Essentials

- Aligns with MUTCD while addressing Florida-specific applications
- Provides guidance, standards, procedures, and best practices for traffic engineering
- Required on the State Highway System (SHS); local agencies may use it as a go-to resource
- Updates published November 1st

TRANSPORTATION SYMPOSIUM

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TEM Target Audience

Planners, Engineers, & Designers

Consultants and Contractors

Local Agencies

Academia and Researchers

Consistency

Compliance

Safety and Efficiency

TRANSPORTATION SYMPOSIUM

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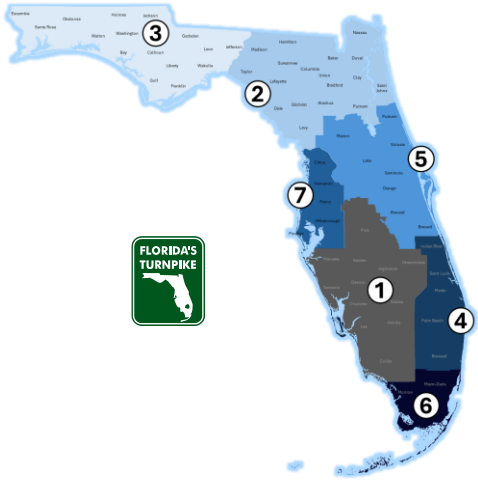
From Policy to Practice: Who's Involved?

- **Traffic Engineering & Operations Office**
- **Office of Maintenance**
- **Office of Construction**
- **Systems Implementation Office**
- **State Safety Office**
- **Office of Design**



FLORIDA'S TURNPIKE

TRANSPORTATION SYMPOSIUM

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2025 TEM Bulletin | General Updates

- Updated language and references to be consistent with the *MUTCD 11th Edition*.
- Updated Florida Transportation Plans (FTP) sign numbering to match the *Standard Plans - FY 2025-26*.
- Standardized the sections' structure, developed and applied a uniform writing style.
- Cross-referenced tables and figures.

FDOT
Florida Department of Transportation
605 Suwannee Street
Tallahassee, FL 32399-0450
RON DESANTIS GOVERNOR
JARED PERDUE, P.E. SECRETARY

TRAFFIC ENGINEERING AND OPERATIONS BULLETIN 24-03

DATE: November 22, 2024

TO: District Traffic Operations Engineers, District Design Engineers, District Maintenance Engineers, District Program Management Engineers and Administrators, District Safety Administrators

FROM: Rudy Powell, Jr., P.E. Chief Engineer of Operations

COPIES: Will Watts, Trey Tillander, Dan Hurtado, Tim Lattner, Lance Grace, Lora Hollingsworth, Derwood Sheppard, Daniel Strickland, State Traffic Engineering and Operations Office, David Hawk (FHWA), Mark Parry (FHWA), Bren George (FHWA)

SUBJECT: **2025 Traffic Engineering Manual**

This bulletin announces the release of the ***2025 Traffic Engineering Manual (TEM)***, which is available on the State Traffic Engineering and Operations website: https://www.fdot.gov/traffic/trafficservices/trafficstudies.shtm/traffic-engineering-manual

TRANSPORTATION SYMPOSIUM

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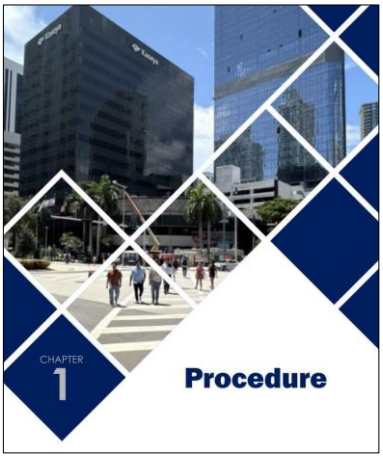
Chapter 1 | Adoption Procedure

Purpose

- Establishes the adoption, revision, and variation processes for TEM content.
- Covers how to document the requests that deviate from standard criteria.

2025 Updates

- Updated Traffic Engineering Variation Documentation Process for clarity.



TRANSPORTATION SYMPOSIUM

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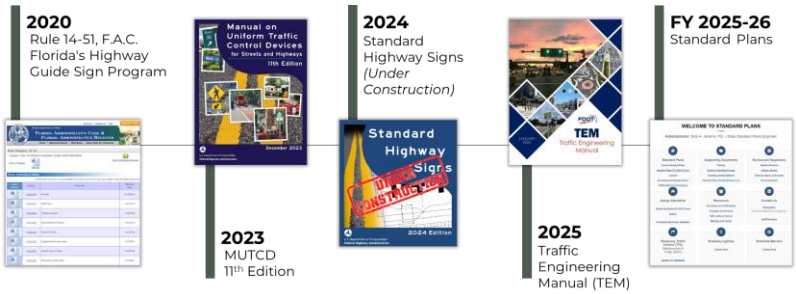
Chapter 2 | Signs

Purpose

- Details standards and applications for regulatory, warning, guide, and temporary emergency signs.
- Addresses proper placement, sizing, and visibility.



TRANSPORTATION SYMPOSIUM

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Chapter 2 | Signs

2025 Updates | Added guidance for

- Intersection Lane Control Sign on Minor Street Approaches

Section 2B.28 Mandatory Movement Lane Control Signs (R3-5, R3-5a, R3-7, R3-19 Series, and R3-20) and Plaques

Standard:

01 **Mandatory Movement Lane Control (R3-5, R3-5a, and R3-7) signs (see Figure 2B-4), if used, shall indicate only the single vehicle movement that is required from the lane.**

02 **The Mandatory Movement Lane Control (R3-5 and R3-5a) symbol signs shall include the legend ONLY and shall be mounted overhead over the specific lanes to which they apply (see Section 2B.27). The R3-7 sign shall be for post-mounting only. The R3-7 sign shall not be mounted at the far side of the intersection.**

03 **When the mandatory movement applies to lanes exclusively designated for HOV traffic, the HOV 2+ (R3-5cP) supplemental plaque shall be used. When the mandatory movement applies to lanes that are not HOV facilities, but are lanes exclusively designated for buses and/or taxis, the TAXI LANE (R3-5dP) and/ or BUS LANE (R3-5gP) supplemental plaques shall be used.**

TRANSPORTATION SYMPOSIUM

Chapter 2 | Signs

2025 Updates | Added guidance for

- Intersection Lane Control Sign on Minor Street Approaches
- Bridge Signs
- Move Vehicles from Travel Lane Sign
- Rest Area Plaques
- Bicycle Passing Clearance Sign
- Turning Vehicles Stop for Pedestrians Sign

Section 2.3

SIGNS AND MARKINGS AT UNSIGNALIZED INTERSECTIONS ON DIVIDED HIGHWAYS

2.3.1 PURPOSE

This section offers guidance on the placement of *MOVEMENT LANE CONTROL* signs (***FTP-55-06*** and ***FTP-54-06***) and *MANDATORY MOVEMENT LANE CONTROL* signs (***R3-7***) at unsignalized intersections.

FDOT's standards for signs and markings at unsignalized intersections on divided highways are shown in the *FDOT Design Manual (FDM) 230* and the *Standard Plans, Index 711-001*.

2.3.2 MINOR STREET SINGLE LANE APPROACH

Install a post-mounted *INTERSECTION LANE CONTROL* sign (***FTP-55-06***) below the stop sign at driveways and side street connections where only a turning movement is mandatory. Install the *INTERSECTION LANE CONTROL* sign (***FTP-54-06***) at intersections where increased emphasis, improved recognition, or increased legibility is needed, as determined by engineering judgment or study (speed, volume, crash frequency, or other factors).

2.3.3 MINOR STREET MULTILANE APPROACH

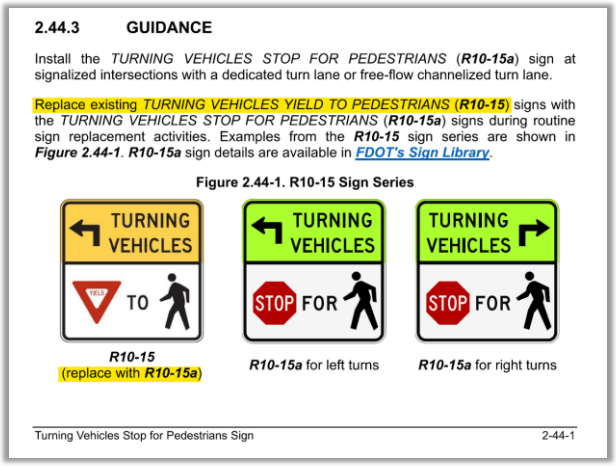
Install a post-mounted *MANDATORY MOVEMENT LANE CONTROL* sign (***R3-7***) at driveways and side streets that have multilane approaches with a dedicated turn lane. The sign can be post mounted below the stop sign or in advance of the intersection. See *MUTCD Section 2B.28* for additional information.

TRANSPORTATION SYMPOSIUM

Chapter 2 | Signs

2025 Updates | Added guidance for

- Intersection Lane Control Sign on Minor Street Approaches
- Bridge Signs
- Move Vehicles from Travel Lane Sign
- Rest Area Plaques
- Bicycle Passing Clearance Sign
- Turning Vehicles Stop for Pedestrians Sign



2.44.3 GUIDANCE

Install the *TURNING VEHICLES STOP FOR PEDESTRIANS* (***R10-15a***) sign at signalized intersections with a dedicated turn lane or free-flow channelized turn lane.

Replace existing *TURNING VEHICLES YIELD TO PEDESTRIANS* (***R10-15***) signs with the *TURNING VEHICLES STOP FOR PEDESTRIANS* (***R10-15a***) signs during routine sign replacement activities. Examples from the ***R10-15*** sign series are shown in ***Figure 2.44-1***. ***R10-15a*** sign details are available in FDOT's Sign Library.

Figure 2.44-1. R10-15 Sign Series

Turning Vehicles Stop for Pedestrians Sign 2-44-1

TRANSPORTATION SYMPOSIUM

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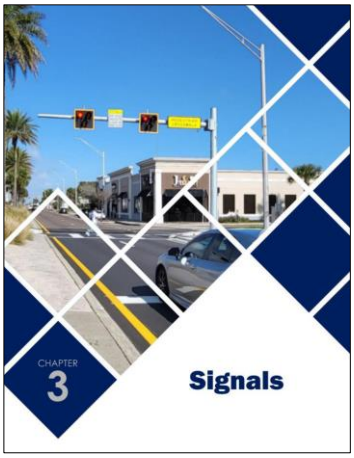
Chapter 3 | Signals

Purpose

- Covers traffic signal operations, including warrant criteria, flashing modes (programmed vs malfunction), and flashing beacons.
- Provides guidance on Left Turn Treatments, Emergency Traffic Control Signals, Yellow Change and Red Clearance Intervals, Accessible Pedestrian Signals, and Railroad Signal Preemption.

2025 Updates

- Flashing Yellow Arrow - Updated references to the Safe Mobility for Life educational materials.



TRANSPORTATION SYMPOSIUM

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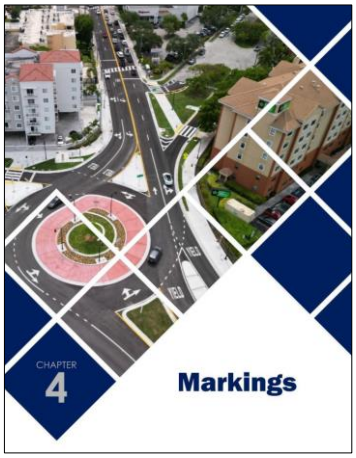
Chapter 4 | Markings

Purpose

- Covers standards for pavement markings, including crosswalks in heavy pedestrian areas, pavement words, symbols, arrows, bicycle facilities, route shields, and managed lanes.

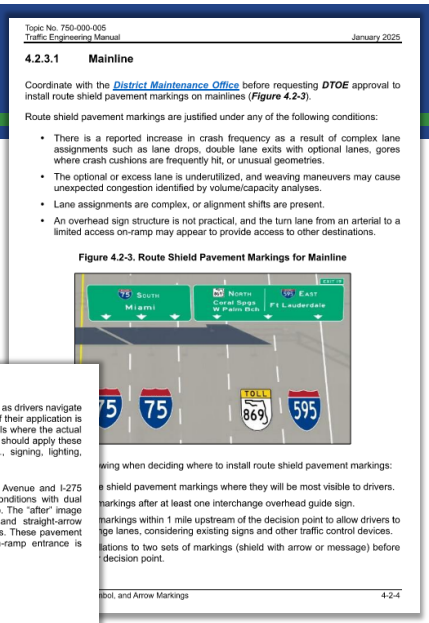


TRANSPORTATION SYMPOSIUM

Chapter 4 | Markings

2025 Updates

- Added guidance on the application of Route Shield Pavement Markings.
- Consolidated guidance on the application of Internally-Illuminated Raised Pavement Markers (IIRPMs).
- Updated definition and schematic for Managed Lanes Markings.



Topic No. 750-000-005
Traffic Engineering Manual — January 2025

4.2.3.1 Mainline

Coordinate with the *District Maintenance Office* before requesting ***DTOE*** approval to install route shield pavement markings on mainlines (***Figure 4.2-3***).

Route shield pavement markings are justified under any of the following conditions:

- There is a reported increase in crash frequency as a result of complex lane assignments such as lane drops, double lane exits with optional lanes, gores where crash cushions are frequently hit, or unusual geometries.
- The optional or excess lane is underutilized, and weaving maneuvers may cause unexpected congestion identified by volume/capacity analyses.
- Lane assignments are complex, or alignment shifts are present.
- An overhead sign structure is not practical, and the turn lane from an arterial to a limited access on-ramp may appear to provide access to other destinations.

Figure 4.2-3. Route Shield Pavement Markings for Mainline

...wing when deciding where to install route shield pavement markings:

...e shield pavement markings where they will be most visible to drivers.

...markings after at least one interchange overhead guide sign.

...markings within 1 mile upstream of the decision point to allow drivers to ...ge lanes, considering existing signs and other traffic control devices.

...lations to two sets of markings (shield with arrow or message) before ... decision point.

...bol, and Arrow Markings 4-2-4

4.2.3.2 Interchange Access

Route shield pavement markings can help prevent wrong-way driving as drivers navigate arterials connected to limited-access facilities. A common example of their application is diamond interchanges, or where turn lane(s) are developed at signals where the actual turning movement is to be made at a downstream signal. Engineers should apply these treatments in conjunction with appropriate geometric design (e.g., signing, lighting, supplemental channelization) to prevent potential wrong-way driving.

Figure 4.2-5 shows before and after plan views at the E Bearss Avenue and I-275 diverging diamond interchange. The "before" image shows the conditions with dual westbound left-turn arrow markings east of the northbound off-ramp. The "after" image shows the conditions with interstate shield, cardinal direction, and straight-arrow pavement markings on the eastbound and westbound left-turn lanes. These pavement marking improvements inform drivers that the limited access on-ramp entrance is available at the downstream signal.

Pavement Word, Symbol, and Arrow Markings 4-2-5

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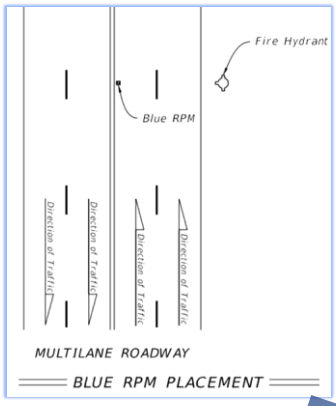
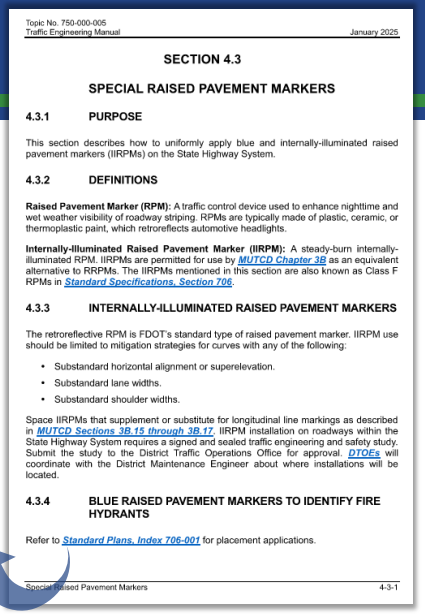
Chapter 4 | Markings

2025 Updates

- Added guidance on the application of Route Shield Pavement Markings.
- Consolidated guidance on the application of Internally-Illuminated Raised Pavement Markers (IIRPMs).
- Updated definition and schematic for Managed Lanes Markings.





Topic No. 750-000-005
Traffic Engineering Manual
January 2025

SECTION 4.3

SPECIAL RAISED PAVEMENT MARKERS

4.3.1 PURPOSE

This section describes how to uniformly apply blue and internally-illuminated raised pavement markers (IIRPMs) on the State Highway System.

4.3.2 DEFINITIONS

Raised Pavement Marker (RPM): A traffic control device used to enhance nighttime and wet weather visibility of roadway striping. RPMs are typically made of plastic, ceramic, or thermoplastic paint, which retroreflects automotive headlights.

Internally-Illuminated Raised Pavement Marker (IIRPM): A steady-burn internally-illuminated RPM. IIRPMs are permitted for use by *MUTCD Chapter 3B* as an equivalent alternative to RRPMs. The IIRPMs mentioned in this section are also known as Class F RPMs in *Standard Specifications, Section 706*.

4.3.3 INTERNALLY-ILLUMINATED RAISED PAVEMENT MARKERS

The retroreflective RPM is FDOT's standard type of raised pavement marker. IIRPM use should be limited to mitigation strategies for curves with any of the following:

- Substandard horizontal alignment or superelevation.
- Substandard lane widths.
- Substandard shoulder widths.

Space IIRPMs that supplement or substitute for longitudinal line markings as described in *MUTCD Sections 3B.15 through 3B.17*. IIRPM installation on roadways within the State Highway System requires a signed and sealed traffic engineering and safety study. Submit the study to the District Traffic Operations Office for approval. *DTOEs* will coordinate with the District Maintenance Engineer about where installations will be located.

4.3.4 BLUE RAISED PAVEMENT MARKERS TO IDENTIFY FIRE HYDRANTS

Refer to *Standard Plans, Index 706-001* for placement applications.

Special Raised Pavement Markers 4-3-1

TRANSPORTATION SYMPOSIUM

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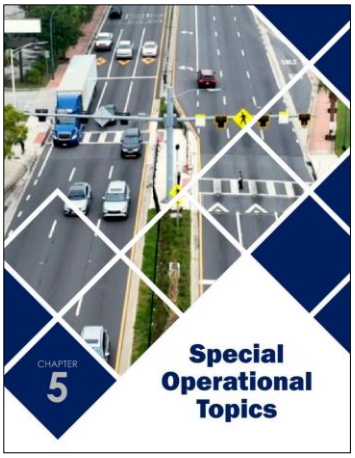
Chapter 5 | Special Operational Topics

Purpose

- Addresses niche operational applications.
- Includes design criteria for Golf Cart Crossings, Crosswalk Treatments (markings & traffic control selection), and Movable Bridges.



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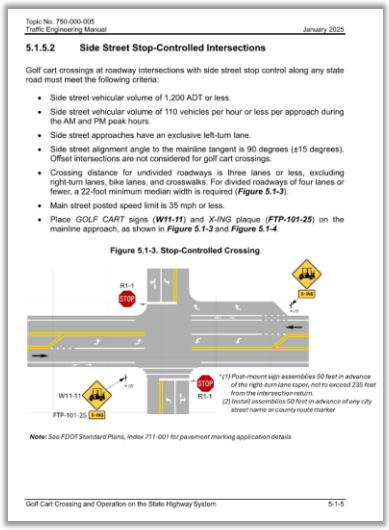
Chapter 5 | Special Operational Topics

2025 Updates

- Expanded signage guidance for golf cart operation.
- Clarified language on Crosswalk Treatments at Midblock and Unsignalized Locations and extended crash history review requirement to 5 years.
- Added guidance on Midblock Pedestrian Signals.



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5.1.5.2 Side Street Stop-Controlled Intersections

Golf cart crossings at roadway intersections with side street stop control along any state road must meet the following criteria:

- Side street vehicular volume of 1,200 ADT or less.
- Side street vehicular volume of 110 vehicles per hour or less per approach during the AM and PM peak hours.
- Side street approaches have an exclusive left-turn lane.
- Side street alignment angle to the mainline tangent is 90 degrees (±15 degrees). Offset intersections are not considered for golf cart crossings.
- Crossing distance for undivided roadways is three lanes or less, excluding right-turn lanes, bike lanes, and crosswalks. For divided roadways of four lanes or fewer, a 22-foot minimum median width is required (***Figure 5.1-3***).
- Main street posted speed limit is 35 mph or less.
- Place *GOLF CART* signs (***W11-1***) and *X-ING* plaque (***FTP-101-25***) on the mainline approach, as shown in ***Figure 5.1-3*** and ***Figure 5.1-4***.

Figure 5.1-3. Stop-Controlled Crossing

Note: *See FDOT Standard Plans, Index 711-001 for pavement marking application details*

Golf Cart Crossing and Operation on the State Highway System — 5-1-5

TRANSPORTATION SYMPOSIUM

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Resources

TEM (Traffic Engineering Manual)

ICE (Manual on Intersection Control Evaluation)

MUTS (Manual on Uniform Traffic Studies)

SZM (Speed Zoning Manual)

MUTCD (Manual on Uniform Traffic Control Devices)

FDOT Website

TRANSPORTATION SYMPOSIUM

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Resources

FDM (FDOT Design Manual)

Managed Lanes Guidebook

PD&E (Project Development and Environment Manual)

Florida Greenbook

FDOT Standard Plans for Road and Bridge Construction

FDOT Standard Specifications for Road and Bridge Construction

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Traffic Engineering & Operations Office

would like to recognize/thank:

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Safety Systems Implementation

Specifications Maintenance

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Contact Us

Chris Lewis, P.E.
Director, Office of Forecasting and Performance
Chris.Lewis@dot.state.fl.us

Shae Gibbs
Standard Plans Specialist, Roadway Design Office
Shae.Gibbs@dot.state.fl.us

Mariano Amicarelli, P.E., CPM, CQC
Traffic Services Program Engineer, District 4
Mariano.Amicarelli@dot.state.fl.us

For General Queries
FDOT-StateTrafficServicesSection@dot.state.fl.us

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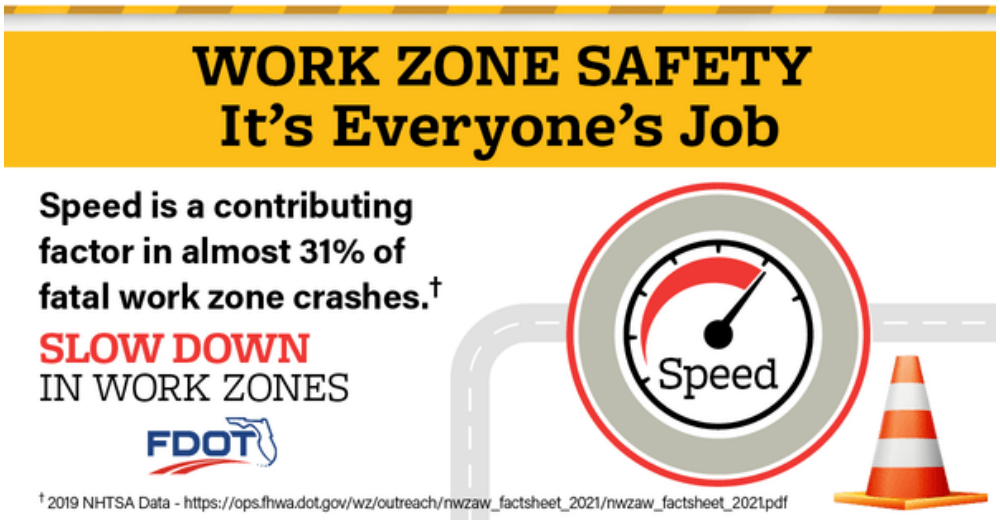

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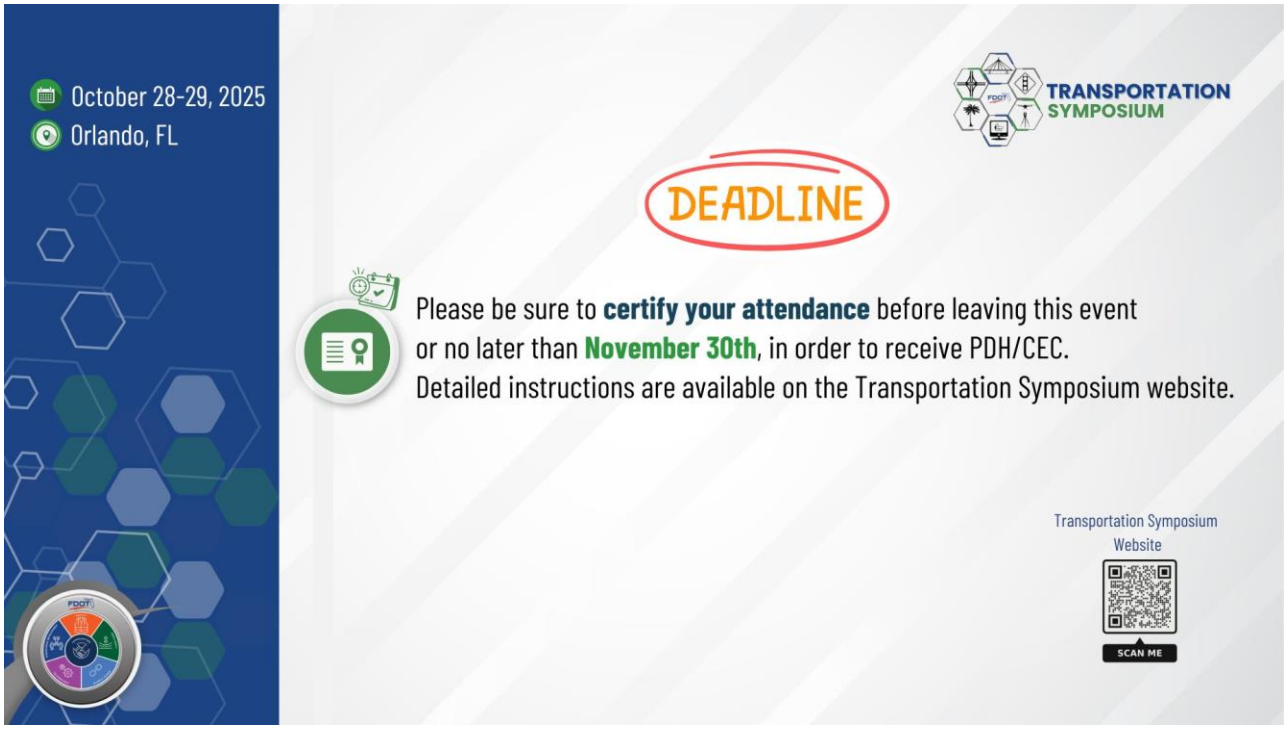
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