

## HISTORY

<b>Entire Manual</b>	<b>FDOT Traffic Engineering Manual (TEM)</b>
11/17	Changed name of Department's Design Standards to Department's Standard Plans and updated associated references.
11/17	Updated reference to Transportation Statistics Office to reflect name change to Transportation Data and Analytics Office.
11/16	Updated hyperlinks to reflect change in office section name from Operations to Traffic Services.
01/12	Mandatory changes to incorporate adoption of MUTCD 2009.
12/06	Pen and Ink changes (updated references and/or links).
<b>Chapter 1</b>	<b>Traffic Engineering Manual Adoption Procedure</b>
10/11	Added Section 5 (Traffic Engineering Variations) and Section 6 (Traffic Engineering Variation Process)
03/09	Pen and ink changes.
04/05	Changed office name. Removed rule reference for Section 2.16.
08/03	Changed website address.
03/03	Changed rule incorporation reference to 14-15.015. Updated website address.
03/02	Changed website address. Also created links to references and changed office name to Traffic Operations.
10/01	Approved to have TEM available electronically on the internet/infonet only.
<b>Chapter 2</b>	<b>Signs</b>
11/16	Simplified language.
<b>Section 2.1</b>	<b>Use of Slippery When Wet Signs</b>
03/02	Updated references to Millennium MUTCD and included links to all references.
10/99	Section 2.1.2(3), 2 <sup>nd</sup> paragraph. Added, "These signs should be placed in accordance with MUTCD Table II-1 using a 10 mph deceleration factor."

06/91 Former FDOT Topic Number 750-010-018 incorporated into TEM.

## **Section 2.2 Overhead Street Name Signs**

06/09 Clarified sign design requirements for internally illuminated overhead signs versus standard static panel signs.

04/07 Removed references to Advance Street Name Signs (new Section 2.37). Standardized sign sizes for overhead street name signs on State Highway System.

03/02 Updated references to Millennium MUTCD and included links to all references.

05/00 Section 2.2.4(1) and (2) changed to conform with letter height requirements shown in Table 6.3-1 in the Elder Roadway User Program Section of the TEM.

## **Section 2.3 Signs and Markings at Non-Signalized Intersections of Divided Highways and Crossroads**

03/02 All references in this document are now in the 2002 edition of the Design Standards.

07/00 This section updated to include the mandatory implementation plan for Divided Highways and Crossroads issued by the State Highway Engineer.

06/91 Former FDOT Topic Number 750-010-035 incorporated into TEM.

## **Section 2.4 Symbol Signs on the State Highway System**

03/02 Updated references to Millennium MUTCD and included links to all references.

06/91 Former FDOT Topic Number 750-010-026 incorporated into TEM.

## **Section 2.5 Destination Distance Signs at Rural Interstate and Freeway Exit Ramp Terminals**

06/91 Former FDOT Topic Number 750-010-024 incorporated into TEM.

## **Section 2.6 Bridge Signs and Markings**

11/18 Added clarification that placement of W12-2 sign should be at the Stopping Sight Distance

06/18 Added new subsection 2.6.5 Guide Signs on Overpasses

11/12 Mandatory changes to incorporate maximum vehicle height according to Section 316.515, F.S.

04/02 Updated references to Millennium MUTCD and included links to all references. We also standardized lettering size for the cross road signs on overpasses.

07/93 Cross Road Name Signs on Overpasses, added that signs can be installed if requested by law enforcement or emergency rescue organizations.

06/91 Former FDOT Topic Number 750-010-034 incorporated into TEM.

### **Section 2.7 Place Name Signs on the State Highway System**

04/05 Rescinded. Now Part IV of Rule 14-51, F.A.C., Florida's Highway Guide Sign Program.

05/02 Minor editorial changes to make current.

05/00 Editorial comments. Section 2.7.6(2) revised to add that place name signs located off state right-of-way must conform to statute.

06/91 Former FDOT Topic Number 750-010-036 incorporated into TEM.

### **Section 2.8 Move Accident Vehicles from Travel Lanes Signs**

06/04 Updated sign references to the 2004 Design Standards. Added optional graphic panel to limited access sign.

05/02 Updated references to Millennium MUTCD and included links to all references.

06/91 Incorporated into TEM.

### **Section 2.9 No Passing Zone Signs**

07/12 Mandatory changes to incorporate MUTCD references.

05/02 Created a link to the W14-3 sign in the new federal Standard Highway Signs.

06/91 Incorporated into TEM.

### **Section 2.10 Vending Machine Signs**

06/04 Added sign details.

06/91 Incorporated into TEM.

### **Section 2.11 Guidelines for Bicycle Warning Signs**

05/19 Eliminated references to the "Share the Road" sign and updated the section to include references to the "Bicycle May Use Full Lane" sign.

09/02 Updated references to the Millennium MUTCD and the 2002 Standard Highway Signs Manual.

07/00 Editorial comments. Added Section 2.11.4 to include sign design and instructions for Bicycle Sharing Road Sign. Change initiated due to Revision 5 of the MUTCD.

06/91 Incorporated into TEM.

### **Section 2.12 Recycling Collection Center Signs**

09/04 Updated sign references to the 2004 Design Standards.

09/02 Updated sign references to the 2002 Design Standards.

06/91 Incorporated into TEM.

### **Section 2.13 Signing for Safety Belt Use and Child Restraint Laws**

11/04 Updated sign references to the 2004 Design Standards and Sign Library.

01/03 Updated sign references to the 2002 Design Standards. Updated references to Millennium MUTCD.

07/00 Editorial Comments. Added sign details for all signs. Section 2.13.6 changed to add new design for Standard Safety Belt Sign.

03/93 Former FDOT Topic Number 750-010-014 incorporated into TEM.

### **Section 2.14 Signing for Evacuation Routes**

06/18 Section renamed to **Signing for Emergency Management**.

06/18 Section updated to reflect most current practices.

11/16 Section rewritten to simplify language.

11/16 Corrected sign numbers.

11/16 Removed Department of Community Affairs, which has been dissolved into Florida Division of Emergency Management.

11/16 Added the word inch to clarify measurement.

11/16 Corrected phone number.

08/01 Changes were made to incorporate the process for signing for one-way operations and also radio frequency information signs during an evacuation. Also, the "hurricane" reference was removed from the title and throughout the document as this section is applicable to all types of evacuations.

09/99 Changes were made based on new direction of regional evacuation and sheltering plan. The Department's Emergency Coordination Office initiated changes.

08/93 Former Topic Number 750-020-006 incorporated into TEM.

### **Section 2.15 Smoke on Highway Signs**

11/18 Section updated to reflect modified smoke management agreement

03/02 Changes necessary following the Highway Safety Smoke Management Interagency Agreement. Included sign details for Temporary and Prescribed Burn Signs and requirements for the installation and removal of these signs. Also included links to all references.

04/96 Incorporated into TEM.

### **Section 2.16 Signing for Supplemental Guide Signs and Motorist Services on Limited and Non-Limited Access Highways**

04/05 Rescinded. Now Rule 14-51, F.A.C., Florida's Highway Guide Sign Program.

09/99 Formatting changes and converted back to English.

### **Section 2.17 Emergency Highway Traffic Plan**

04/09 Rescinded. Now covered under Topic No. 500-000-104, Emergency Management Program.

06/93 Incorporated into TEM.

### **Section 2.18 \*FHP Highway Assistance Program**

11/04 Updated sign references to the 2004 Design Standards and Sign Library.

01/03 Changed sign detail references to their FTP number in the Design Standards.

04/96 Incorporated into TEM.

### **Section 2.20 Call Box/Mile Marker Signs**

04/14 Rescinded. Call boxes removed from State Highway System.

09/04 Updated sign references to the 2004 Design Standards and Sign Library.

03/99 Section 2.20.2(1) and (2) increased measurement for installation. Also added sign design to include tenth of a mile measurement.

07/97 Incorporated into TEM.

### **Section 2.21 Florida Litter Law Signs**

06/04 Updated sign references to 2004 Design Standards. Minor revisions recommended by Signing Team.

07/97 Incorporated into TEM.

### **Section 2.22 Traffic Control for Toll Collection Facilities**

04/09 Rescinded. Now included in Turnpike's Plans Preparation and Practices Handbook.

07/98 Former FDOT Topic Number 750-010-010 incorporated into TEM.

### **Section 2.23 Florida's Turnpike and Toll Road Numbering and Signing Program**

11/01 Changes made were initiated by Management to include the use of the local road name or logo (to be provided by the local expressway authority) on the toll facility along with our Toll Route Marker. Updated references to Millennium MUTCD and the sign detail for the Toll Route Marker.

04/01      Section 2.23.4(3), last sentence. Allowed possibility of local road names to be used in a guide sign or directional sign. Change initiated by management.

07/98      Incorporated into the TEM.

#### **Section 2.24 Placement of Crime Watch Signs on the State Highway System**

05/04      Pen and Ink changes.

07/98      Former FDOT Instructional Memo Number 750-005 incorporated into TEM.

#### **Section 2.25 Distance Signing for Non-Limited Access Highways**

09/99      Incorporated into TEM. Implements Action Plan 006 from our Evaluation of International Signing Practices Study (1994).

#### **Section 2.26 Advance Guide Signs on Limited Access Highways**

09/99      Incorporated into TEM. Implements Action Plan 007 of our Evaluation of International Signing Practices Study (1994).

#### **Section 2.27 Commuter Assistance Signs**

09/99      Incorporated into TEM. Developed from discussions with Public Transportation Office.

#### **Section 2.28 Reference Location Signs (Mile-Markers)**

09/14      Criteria established for both limited and non-limited access roadways.

04/00      Incorporated into TEM. Recommended by DTOE's during statewide meeting.

#### **Section 2.29 Use of Fluorescent Yellow-Green Sign Sheeting**

11/18      Section rescinded and the language is now included in the FDOT Standard Specifications for Road and Bridge Construction Section 700.

07/00      Incorporated into TEM. Developed to establish guidelines for the use of this innovative sheeting that was approved by the FHWA.

#### **Section 2.30 Signing for One-Stop Career Centers**

08/04      Updated sign references to 2004 Design Standards.

07/00      Incorporated into TEM. Developed from sign request in District Four.

#### **Section 2.31 Unique Transportation Symbol Signs**

08/02      Incorporated into TEM.

#### **Section 2.32 511 Telephone Service Sign**

06/04      Incorporated new FTP references.

06/02      Incorporated into TEM.

#### **Section 2.33 Signing for Nature-based Tourism and Heritage Tourism Trails**

09/02 Incorporated into TEM.

### **Section 2.34 Signing for Florida Scenic Highways Program and the National Scenic Byways Program**

10/04 Incorporated into TEM.

### **Section 2.35 Signing for Memorial Roadway Designations**

07/06 Web address for Sign Library changed.

10/04 Incorporated into TEM.

### **Section 2.36 Wayfinding Signs**

04/07 Incorporated into TEM.

### **Section 2.37 Advance Street Name Signs**

11/16 Added clarification that conditions are recommended and not mandatory.

11/16 Added language addressing lengthy street name legends and limited right-of-way.

11/16 Added language for font size.

06/09 In order to provide consistency with the MUTCD, incorporated standards for advance street name signs not only for signalized intersections but non-signalized and the use of advance street name sign plaques for advance warning and intersection control signs.

04/07 Incorporated into TEM.

### **Section 2.38 Use of Temporary Stop Signs at Non-Functioning Signalized Intersections**

06/18 Section renamed to **Use of Generators and Portable Stop Signs at Non-Functioning Signalized Intersections**

06/18 Section updated to reflect most current practices.

01/16 Editorial change to apply to any emergency event.

05/07 Incorporated into TEM.

### **Section 2.39 Warning, Stop, and Yield Sign Sizes**

10/07 Pen and ink changes made to table for consistency with final research report.

08/07 Incorporated into TEM.

### **Section 2.40 Displaying Messages on Dynamic Message Signs Permanently Mounted on the State Highway System**

11/17 Section modified.

08/15 New approved messages added.

08/08 Incorporated into TEM.

### **Section 2.41 Guidelines for Use of Retroreflective Strips**

10/15 Incorporated into TEM.

### **Section 2.42 Express Lanes Signing**

05/19 Modified 2.42.4 paragraph (1) to allow more flexibility with the signing order.

06/18 Incorporated into TEM.

### **Section 2.43 Ramp Only Signal Panel**

10/19 Incorporated into TEM.

## **Chapter 3 Signals**

### **Section 3.1 Signalized Intersections Flashing Mode Operation and Flashing Beacons**

12/09 Changes made consistent with MUTCD 2003.

10/93 Page III-1 removed provision that accident patterns need to be monitored at flashing yellow/red locations. Page III-2 removed option for flashing signal operations in relation to closing times.

06/91 Former FDOT Topic Number 750-010-023 incorporated into TEM.

### **Section 3.2 Guidelines for Left Turn Treatment**

12/09 Changes made as recommended by DTOEs, figures added.

08/93 Under Left Turn Signal Phasing, changed left turn separation from 10 to 12 feet.

06/91 Incorporated into TEM.

### **Section 3.3 Scheduling Intersection Control and Funding Arrangements**

10/19 Section name changed to "Scheduling Intersection Control Evaluations and Funding Arrangements."

10/19 Hyperlink added for Manual on Intersection Control Evaluations and FDOT Approved Product List Submittal Process.

10/93 Former FDOT Topic Number 750-010-001 incorporated into TEM.

### **Section 3.4 Emergency Traffic Control Signals**

11/18 Updated figure 3.4-1 and eliminated figure 3.4-2 by incorporation to improve legibility.

06/18 Section updated to reflect most current practices.

11/12 Mandatory changes to provide clarity and revise MUTCD reference.

02/10 Added appropriate MUTCD 2003 signs and references.

04/96 Former FDOT Topic Number 750-020-004 incorporated into TEM.



### **Section 3.5 Traffic Signal Mast Arm Support Boundaries**

- 02/10 Section title change, references to PPM added, direct links to pdf versions of District Boundary Maps included.
- 10/98 Incorporated into TEM.

### **Section 3.6 Standardization of Yellow Change and Red Clearance Intervals for Signalized Intersections**

- 10/13 Changes to yellow change and red clearance intervals: (a) Increased perception reaction time to 1.4 seconds; (b) Round up Yellow Change Intervals to the next 0.1 sec; (c) Increased the minimum Yellow Change Interval to 3.4 seconds; (d) Increased the minimum Red Clearance Interval to 2.0 seconds and the maximum Red Clearance Interval to 6.0 seconds.
- 09/12 New language added to clarify and give guidance for determining the all-red clearance interval.
- 07/11 Editorial changes made to clarify the method of determining yellow clearance time.
- 06/10 Changes necessary to have yellow and all-red intervals consist with ITE's Traffic Engineering Handbook.
- 07/05 These are guidelines so we changed title to reflect it. Changed from "Standardization of Yellow and All-Red Intervals for Signalized Intersections."
- 06/02 Incorporated into TEM.

### **Section 3.7 Accessible Pedestrian Signals**

- 11/18 Entire section updated. "Audible" changed to "accessible".
- 02/03 Incorporated into TEM.

### **Section 3.8 Marked Pedestrian Crosswalks at Midblock and Uncontrolled Approach Locations**

- 10/19 Updated hyperlinks for FDOT Standard Plans.
- 05/19 Section modified to include provisions for pedestrian crosswalk treatments that are based on context classifications.
- 11/18 Updated section to reflect MUTCD language consistency and to clarify the 'average day' language in section 3.8.5(3)(b).
- 01/16 Modified to address pedestrian crosswalks at both midblock and uncontrolled approach locations. Added definitions to key terms, revised minimum pedestrian activity thresholds, updated photos, clarified guidance on Pedestrian Hybrid Beacons, and modified guidance on the use of Rectangular Rapid Flashing Beacons on multilane roadways.
- 10/14 Modified to reflect the language for crosswalk illumination to help implement safe crossing of pedestrians at midblock locations.

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|-------|--|
| 06/13 | Changes necessary to refine the criteria for installing and operating mid-block pedestrian crosswalks.                           |
| 01/10 | Substantive changes necessary to expand crossing treatments available with appropriate criteria and selection guidance included. |
| 06/03 | Changes necessary to conform to the MUTCD 2000 standards.  |
| 02/03 | Incorporated into TEM.   |

### **Section 3.9 Countdown Pedestrian Signal Applications**

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|-------|--|
| 11/17 | Section rescinded.   |
| 03/07 | Changes necessary to incorporate Department's policy on this device. |
| 07/06 | Changes necessary to give direction to districts on implementation.  |
| 04/03 | Incorporated into TEM.   |

### **Section 3.10 Left Turn FYA Signal Application**

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|-------|-------------|
| 11/18 | New section |
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### **Section 3.11 Leading Pedestrian Interval Signal Application**

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|-------|-------------|
| 05/19 | New section |
|-------|-------------|

## **Chapter 4 Markings**

### **Section 4.1 Crosswalks in Heavy Pedestrian Concentration Areas**

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|-------|---|
| 11/17 | Changed reference to Design Standard to Speed Zone Manual.  |
| 08/04 | Incorporated latest MUTCD 2003 changes.                     |
| 06/91 | Former FDOT Topic Number 750-020-008 incorporated into TEM. |

### **Section 4.2 Pavement Word, Symbol, and Arrow Markings**

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|-------|---|
| 10/19 | Changed reference to design of elongated shields.   |
| 11/18 | Updated figure 4.2-3 to improve legibility.   |
| 11/17 | Changed reference to Design Standard to Speed Zone Manual.  |
| 02/15 | Added new subsection for Route Shields for Wrong Way Treatment.   |
| 05/14 | Pen and ink changes to update figures.  |
| 10/13 | Changes necessary to bring the proper clarification for pavement markings and route shields into the TEM. |
| 06/91 | Former FDOT Topic Number 750-010-020 incorporated into TEM.   |

### **Section 4.3 Use of Blue Raised Pavement Markers to Identify Fire Hydrants**

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|-------|--|
| 10/19 | Rescinded.   |
| 07/98 | Former FDOT Instructional Memorandum Number 750-004 incorporated into TEM. |

#### **Section 4.4 Roundabout Markings**

07/07 Incorporated into TEM.

#### **Section 4.5 Express Lanes Markings**

11/18 Added new definitions.

06/18 Incorporated into TEM.

#### **Section 4.6 Use of Internally Illuminated Raised Pavement Markers**

11/18 New section.

### **Chapter 5 Specialized Operational Topics**

#### **Section 5.1 Golf Cart Crossings and Operation on the State Highway System**

10/11 New section in new “Specialized Operational Topics” chapter.

#### **Section 5.1 Computer Models for Traffic Engineering and ITS Analysis and Design**

11/10 Rescinded.

06/91 Former FDOT Topic Number 750-030-005 incorporated into TEM.

### **Chapter 6**

11/16 Removed.

#### **Section 6.1 Elder Road User Program**

04/07 Rescinded. Information contained in section provided on Safe Mobility for Life Program (Topic No. 000-750-001) website.

06/98 Incorporated into TEM. Initiated by Elder Road User Program FDOT Topic Number 000-750-001.

#### **Section 6.2 Warning, Stop, and Yield Sign Sizes to Accommodate the Elder Roadway User in Florida**

08/07 Rescinded. Information contained in Section 2.39 (Warning, Stop, and Yield Sign Sizes).

06/98 Incorporated into TEM. Based on research developed from Elder Road User Program.

#### **Section 6.3 Intersection Guide Signs**

04/07 Rescinded. Information contained in Section 2.37 (Advance Street Name Signs).

06/98            Incorporated into TEM. Based on research developed from Elder Road User Program.

**Chapter 7        Approved Product List Certification and Approval Process**

11/16            Removed.

**Section 7.1      Approved Product List Certification and Approval Process**

07/12            Rescinded. Changed into a local procedure and link shown in section.

03/11            Title changed and APL Vendor Qualification Program was added. Changes made to the Product Approval Process, Temporary Permit Process and APL Review Process. Moved remaining APL procedures from MSTCSD specifications to this section.

03/99            Former FDOT Topic Number 750-010-013 incorporated into TEM.