

HISTORY

Entire Manual	FDOT Traffic Engineering Manual (TEM)
01/23	Modified language for all the “PURPOSE” sections to have a consistent format
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).
Chapter 1	Procedure
01/23	Restructured language and updated section numbering. Added sections 1.10 (Forms) and Section 1.11 (Resources)
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.

Chapter 2 Signs

11/16 Simplified language.

Section 2.1 Use of Slippery When Wet Signs

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

10/99 Section 2.1.2(3), 2nd 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

01/23 Added new subsection 2.6.6 Swing-Style Pedestrian Gate Signs on Movable Bridges

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

10/20 Added guidance for the use of a bicycle passing clearance sign.

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

- 01/23 Restructured language for the entire section. Incorporated the new flip-down sign in Figure 2.14-1 and updated Radio Coverage Map (Figure 2.14-4).
- 10/20 Updated the FTP number in Section 2.14.4(4). Deleted the requirements for continuous hinge and added a link to the Department's Standard Plans to avoid duplication.
- 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

10/21 Updated FTP numbers of FLORIDA LITTER LAW signs to match the latest Department Standard Plans

10/20 Added a reference and linked to the related Florida statute in Section 2.21.2(2).

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

10/21 Updated reference to Turnpike Design Handbook (TDH).

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 DTOEs 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

10/20 Updated the graphic on the Travel Info Call 511 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

10/20 Updated the STOP sign size in Table 2.39-3 to 30 inches for the 20 mph POSTED SPEED.

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

- 10/21 Added guidance on Periods of Operation sign (R3-44).
- 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.

Section 2.44 TURNING VEHICLES STOP FOR PEDESTRIANS Sign

- 01/23 Updated section to clarify the requirements for the use of the R10-15a sign.
- 10/21 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 Evaluation 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

10/20 Added guidance for calculating the yellow change interval and minor editorial updates.

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 Railroad Traffic Signal Preemption Time Calculation

- 10/21 Added language on preempt trap check and vehicle-date interaction check procedures as well as an example of adding a preemption phase to the traffic control system.
- 10/20 Incorporated into TEM.

Section 3.8 Marked Pedestrian Crosswalks at Midblock and Uncontrolled Approach Locations

- 10/20 Rescinded. Information contained in Section 5.2 (Treatments for Pedestrian Crosswalks at Midblock and Unsignalized Intersections).
- 10/19 Updated hyperlinks for Department's 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.
- 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 Installing Signal Backplates on Existing Structures

- 10/21 Updated language clarifying the use of rigid and flexible retroreflective backplates.
- 10/20 Incorporated into TEM.

Section 3.9 Countdown Pedestrian Signal Applications

- 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 Flashing Yellow Arrow Signal Application

- 01/23 Revised language and updated section numbering.
- 10/21 Updated language regarding education materials for flashing yellow arrow and portable changeable message signs.
- 10/20 Updated guidance on yellow left turn trap and referenced bulletin TEOB 20-02.
- 11/18 Incorporated into TEM.

Section 3.11 Signal Timing Applications for Pedestrian Movement

- 01/23 Modified language and updated the Leading Pedestrian Interval (LPI) timing equation.
- 10/21 Changed title to "Signal Timing Applications for Pedestrian Movement". Added signal timing definitions from NCHRP Report 812. Revised

language pertaining to leading pedestrian interval (LPI) implementation and LPI considerations sections.

10/20 Revised criteria for LPI signal applications requiring engineers to consider LPI for all new traffic signal designs. Provided guidance on LPI applications for protected and permissive left-turn movements.

05/19 Incorporated into TEM.

Section 3.12 Traffic Signal Retiming

01/23 Incorporated into TEM.

Chapter 4 Markings

Section 4.1 Crosswalks in Heavy Pedestrian Concentration Areas

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

10/21 Revised the language for route shield pavement markings installation criteria.

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

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

10/21 Added FDM references to the section.

10/20 Section updated to replace “express lanes marker” with “Tubular marker” and some editorial changes.

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 Special Operational Topics

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

10/21 Revised the side street maximum vehicular volume and AM/PM peak hour volume criteria for golf cart crossings at full signalized intersections. Updated language on the operation of golf carts on sidewalks. Added language pertaining to the education of golf cart operations.

10/11 Incorporated into TEM 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.

Section 5.2 Treatments for Pedestrian Crosswalks at Midblock and Unsignalized Intersections

01/23 Revised selection criteria for Yellow Flashing Beacon and Rectangular Rapid Flashing Beacon (RRFB). Updated the language to include the guidance for a Pedestrian Hybrid Beacon (PHB) sequence and modified figure 5.2-4 (Pedestrian and Bicycle Crossing Warning Sign Pavement Marking Details). Created interactive excel tool and updated figure 5.2-13 (Midblock Crosswalk and Unsignalized Intersection Guidance Matrix).

10/21 Updated safety considerations criteria for new marked crosswalks. Revised recommended levels of pedestrian demand threshold criteria and added C3C context classification for pedestrian volume demand exemptions. Added language on nature-based trail crossings and revised language for engineering study.

10/20 Incorporated into TEM by restructuring the rescinded TEM Section 3.8 (Marked Pedestrian Crosswalks at Midblock and Uncontrolled Approach Locations). New guidance has been provided to pavement markings, signs, beacons, signals to improve safety.

Section 5.3 Treatments for Pedestrians and Bicyclists on Movable Bridges

01/23 Incorporated into TEM.

Chapter 6 Safe Mobility for Life Program

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.