

Introduction

Plans Preparation Manual, Volume 1

PURPOSE:

This *Plans Preparation Manual, Volume 1* sets forth geometric and other design criteria, as well as procedures, for Florida Department of Transportation (FDOT) projects. The information contained herein applies to the preparation of contract plans for roadways and structures.

AUTHORITY:

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

SCOPE:

This procedure impacts anyone preparing roadway and structures construction plans for the Department.

GENERAL INFORMATION:

Chapter 334 of the *Florida Statutes*, as part of the *Florida Transportation Code*, establishes the responsibilities of the State, counties, and municipalities for the planning and development of the transportation systems serving the people of Florida, with the objective of assuring development of an integrated, balanced statewide system. The Code's purpose is to protect the safety and general welfare of the people of the State and to preserve and improve all transportation facilities in Florida. Under **Section 334.048(3)**, the Code sets forth the powers and duties of the Department of Transportation including to adopt rules, procedures and standards for the conduct of its business operations and the implementation of any provisions of law for which the Department is responsible.

PROCEDURE:

The criteria in this manual represent requirements for the State Highway System which must be met for the design of FDOT projects unless approved Design Exceptions or Design Variations are obtained in accordance with procedures outlined in this manual.

Roadway and structures design is primarily a matter of sound application of acceptable engineering criteria and standards. While the criteria contained in this manual provide a basis for uniform design practice for typical roadway design situations, precise standards which would apply to individual situations must rely on good engineering practice and analyses.

Special requirements for Non-Conventional Projects, e.g., Design – Build Projects and Public-Private-Partnership Projects, may be shown in a “Modification for Non-Conventional Projects” box as shown in the following example:

Modification for Non-Conventional Projects:
Delete PPM 7.2.5 and replace with the following:
7.2.5 Signing Project Coordination
The Design-Build firm shall submit a master signing plan with the Technical Proposal. The master signing plan can be on a roll plot.

These boxes are located at the beginning of the chapter or after a section, paragraph or table which is to be modified. The requirements listed within these boxes are only applicable to Non-Conventional Projects.

The Author of a Request for Proposal (RFP) for a Non-Conventional project shall use the standard boilerplate language as a starting point in developing RFPs on all Department Design-Build projects. **Section V** of the **Design-Build Boilerplate** establishes Department, FHWA and AASHTO criteria, procedures, guidelines and design codes that serve as design constraints to be used in the performance of the work. The governing regulations list in **Section V** cannot be modified without the approval of the State Construction Office. The standard boilerplate language is available at the FDOT Construction Office website:

<http://www.dot.state.fl.us/construction/DesignBuild/DBDocuments/DBDocsMain.shtm>

Pre-scoping questions have been developed to aid in the establishment of project constraints and requirements to be included in the RFP. The Pre-scoping questions can be found at:

<http://www.dot.state.fl.us/construction/DesignBuild/DBRules/DBRulesMain.shtm>

Situations will exist where these criteria will not apply. The inappropriate use of and adherence to these criteria does not exempt the engineer from the professional responsibility of developing an appropriate design. The engineer is responsible for identifying those criteria which may not apply to a particular design, and for obtaining the necessary Design Exception or Design Variation to achieve proper design.

1. PLANS PREPARATION MANUAL, VOLUME 1 - MANUAL ORGANIZATION

a. Background

The Florida Department of Transportation *Plans Preparation Manual (PPM)* was published in the current format in January 1998. The criteria in the 1998 PPM were given in metric units.

b. Organization

The *Plans Preparation Manual* is a two-volume manual. *Volume 1* contains the design criteria and process and *Volume 2* contains material concerning plans preparation and assembly.

2. DISTRIBUTION

This document is available electronically on the PPM web page:

<http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm>

PPM users can register to receive notification of updates and *Roadway Design Bulletins* online through the Department's Contact Management Database at:

<http://www2.dot.state.fl.us/contactmanagement/>

For information on updates and *Roadway Design Bulletins*, contact:

Roadway Design Office, Mail Station 32

Telephone (850) 414-4310

FAX Number (850) 414-5261

<http://www.dot.state.fl.us/rddesign/>

3. REVISIONS AND UPDATES

Plans Preparation Manual (PPM) users are encouraged to submit comments and suggestions for changes to the manual to the State Roadway Design Office. When ideas or suggestions are received they will be reviewed by appropriate Roadway and/or Structures Design staff in a timely manner and will be coordinated with other offices affected by the proposed change. Items warranting immediate change will be made with the approval of the State Roadway Design Engineer and/or State Structures Design Engineer in the form of a *Design Bulletin*.

Roadway Design Bulletins are numbered based on the two digit calendar year and bulletin number (YY-##). Notices are sent to all users who are registered to receive notifications for **Roadway Design Bulletins** and updates to the **PPM**. Design Bulletins affecting the **PPM** will remain effective until either:

1. An official manual revision is published; or
2. The **Design Bulletin** is made void.

Roadway Design Bulletins are posted online at:

<http://www.dot.state.fl.us/rddesign/bulletin/>

Structures design issues, which are subject to modification and revision, will be processed in coordination with the State Structures Design Office. See the **Structures Manual** for more information on this process.

Proposed revisions are distributed in draft form to each District's Roadway Design Engineer or Structures Design Engineer. These experienced engineers provide the necessary technical and practical input on how the revision will potentially affect their District's operations and customers. Periodically, these engineers meet collectively with the State Roadway Design Office or the State Structures Design Office to discuss comments on the proposed revisions. Proposed revisions with comments are then presented to the District Design Engineers (DDE) for review and comment. Once the comments are addressed, the Florida FHWA Division Office is given the opportunity to review the revisions as per the Department's Partnership Agreement with FHWA.

The State Roadway Design Office will also coordinate proposed revisions or additions with affected offices within the Central Office. Substantive revisions that result in policy change may be coordinated with the Executive Committee for adoption.

Revisions and updates are adopted or rejected by the State Roadway Design Engineer (for Roadway Design issues) or the State Structures Design Engineer (for Structures Design issues). Requirements mandated by FHWA or State Rules will be coordinated with the DDEs and affected offices within the Central Office and are considered compulsory.

All revisions and updates will be coordinated with the Forms and Procedures Office prior to publishing to ensure conformance with and incorporation into the Department's Standard Operating System.

Notification of the adopted revisions and addenda will be distributed to registered users of the manual through the Department's Contact Management Database.

TRAINING:

None required.

FORMS ACCESS:

Documents marked as ***Exhibits*** provide only a starting point allowing users to change or alter the document as needed to fit specific situations. These Exhibits are not official forms of the Department. Templates for these documents are available online at:

<http://www.dot.state.fl.us/rddesign/PPMManual/NForms/PPMForm.shtm>

GLOSSARY OF TERMS:

In the application of the criteria in this manual, the following definitions are assigned for consistency of understanding and interpretation.

1. **Arterials:** Divided or undivided, relatively continuous routes that primarily serve through traffic, high traffic volumes, and long average trip lengths. Traffic movement is of primary importance, with abutting land access of secondary importance. Arterials include expressways without full control of access, US numbered routes and principal state routes. May be classified as urban or rural.
2. **Auxiliary Lane:** The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic. They may also provide short capacity segments.
3. **Bicycle Lane:** A bicycle lane (bike lane) is a portion of a roadway (either with curb and gutter or a flush shoulder) which has been designated by striping and special pavement markings for the preferential use by bicyclists.
4. **Bicycle Way:** Any road, path or way which by law is open to bicycle travel, regardless of whether such facilities are signed and marked for the preferential use by bicyclists or are to be shared with other transportation modes. Examples include bicycle lanes, paved shoulders, shared use paths, and traffic lanes.
5. **C-D Roads:** Collector-Distributor Roads are limited access roadways provided within a single interchange, or continuously through two or more interchanges on a freeway segment. They provide access to and from the freeway, and reduce and control the number of ingress and egress points on the through freeway. They are similar to continuous frontage roads except that access to abutting property is not permitted.
6. **Collectors:** Divided or undivided routes which serve to link arterial routes with local roads or major traffic generators. They serve as transition link between mobility needs and land use needs. Collectors include minor state routes, major county roads, and major urban and suburban streets.
7. **Conventional Projects:** Projects for which the preparation of the contract documents is a 'stand-alone' effort resulting in Plans, Specifications and Estimates required to advertise a Construction Contract.

8. **Florida Intrastate Highway System (FIHS):** An interconnected statewide system of limited access facilities and controlled access facilities developed and managed by the Department to meet standards and criteria established for the FIHS. It is part of the State Highway System, and is developed for high-speed and high-volume traffic movements. The FIHS also accommodates High-Occupancy Vehicles (HOVs), express bus transit and in some corridors, interregional and high speed intercity passenger rail service. Access to abutting land is subordinate to movement of traffic and such access must be prohibited or highly regulated.
9. **Freeways:** Divided arterial highways, with full control of access. Movement of traffic free of interference and conflicts is of primary importance. Essential elements include medians, grade separations, interchanges, and, in some cases, collector-distributor roads and frontage roads. Freeways include Interstate, toll road and expressway systems. May be classified as urban or rural.
10. **High Speed:** Descriptive term used to summarize all conditions governing the selection of Design Speeds 50 mph and greater.
11. **HOV Lane:** Special designated widths of pavement marked to provide travel lanes for high occupancy vehicles (HOV). They may be directly adjacent to other travel lanes or separated.
12. **Local Roads:** Routes which provide high access to abutting property, low average traffic volumes, short average trip lengths and on which through traffic movements are not of primary importance. Local roads include minor county roads, minor urban and suburban subdivision streets, and graded or unimproved roads.
13. **Low Speed:** Descriptive term used to summarize all conditions governing the selection of Design Speed of less than 50 mph.
14. **Low Volume and High Volume:** Descriptive terms used to describe certain operating characteristics and driver expectancy on highways. Criteria for some elements are selected according to these qualifying controls. Standards for these controls are given in the table following this section.
15. **Match Existing:** This term is used when the existing cross slopes are to remain. This is applicable to constant depth milling and resurfacing.

16. **Paratransit:** Comparable transportation service required by the ADA for individuals with disabilities who are unable to use fixed route transportation systems. The specific requirements and parameters for this service, including eligibility and service requirements, are contained in 49 CFR Part 37, Subpart F.
17. **Pedestrian Access Route:** A continuous and unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian way.
18. **Pedestrian Way:** A space for pedestrian travel separated from traffic lanes. Sidewalks, shared use paths, footpaths and shoulders are considered to be pedestrian ways. However, footpaths and shoulders are not accessible facilities, since they lack specific improvements or provisions to accommodate persons using mobility aids.
19. **Ramp:** A turning roadway that connects two or more legs at an interchange. The components of a ramp are a terminal at each leg and a connecting road. The geometry of the connecting road usually involves some curvature and a grade.
20. **Roadway:** The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.
21. **Rural Areas:** Places outside the boundaries of concentrated populations that accommodate higher speeds, longer trip lengths and freedom of movement, and are relatively free of street and highway networks. Rural environments are surroundings of similar characteristics.
22. **Strategic Intermodal System (SIS):** A transportation system comprised of facilities and services of statewide and interregional significance, including appropriate components of all modes. The highway component includes all designated SIS Highway Corridors, Emerging SIS Highway Corridors, SIS Intermodal Connectors, and Emerging SIS Highway Intermodal Connectors.
23. **Streets:** The local system which provides direct access to residential neighborhoods and business districts, connects these areas to the higher order road systems and offers the highest access to abutting property; sometimes deliberately discouraging through-traffic movement and high speeds.

Note: Local roads and streets are not generally a part of the State Highway System and therefore, may not be governed by the FDOT roadway design criteria, but by the ***Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways*** and/or criteria established by the local government.

24. **Traffic Lane/Traveled Way:** The designated widths of roadway pavement, exclusive of shoulders and bicycle lanes, marked to separate opposing traffic or vehicles traveling in the same direction. Traffic lanes include through travel lanes, auxiliary lanes, turn lanes, weaving, passing, and climbing lanes. They provide space for passenger cars, trucks, buses, recreational vehicles and, in some cases, bicycles.
25. **Travel Lane:** The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other traffic lanes. Generally, travel lanes equate to the basic number of lanes for a facility.
26. **Truck Traffic:** When significant, heavy, substantial, high percent, etc. truck traffic is used as a qualifying control, it shall mean 10% of the AADT or 10% of the daily count (24 hr.)
27. **Urban Area:** A geographic region comprising as a minimum the area inside the United States Bureau of the Census boundary of an urban place with a population of 5,000 or more persons, expanded to include adjacent developed areas as provided for by Federal Highway Administration (FHWA) regulations. The FHWA Urban Boundary maps are available online at:
<http://www.dot.state.fl.us/rddesign/PPMManual/BM/BufferMaps.shtm>
28. **Urbanized Area:** A geographic region comprising as a minimum the area inside an urban place of 50,000 or more persons, as designated by the United States Bureau of the Census, expanded to include adjacent developed areas as provided for by Federal Highway Administration regulations. Urban areas with a population of fewer than 50,000 persons which are located within the expanded boundary of an urbanized area are not separately recognized.

STANDARDS FOR LOW AND HIGH VOLUME HIGHWAYS IN ANNUAL AVERAGE DAILY VOLUMES

HIGHWAY TYPE	LOW VOLUME AADT	HIGH VOLUME AADT
FREEWAY - URBAN		
4-LANE FACILITY	57,000	69,000
6-LANE FACILITY	86,000	103,000
8-LANE FACILITY	114,000	138,000
FREEWAY - RURAL		
4-LANE FACILITY	46,000	56,000
6-LANE FACILITY	69,000	83,000
8-LANE FACILITY	92,000	111,000
ARTERIALS - URBAN		
2-LANE FACILITY	16,000	20,000
4-LANE FACILITY	37,000	43,000
6-LANE FACILITY	55,000	64,000
8-LANE FACILITY	69,000	80,000
ARTERIALS - RURAL		
2-LANE FACILITY	9,000	14,000
4-LANE FACILITY	38,000	47,000
6-LANE FACILITY	58,000	71,000
COLLECTOR - URBAN		
2-LANE FACILITY	11,000	16,000
4-LANE FACILITY	37,000	45,000
COLLECTOR - RURAL		
2-LANE FACILITY	8,000	13,000
4-LANE FACILITY	30,000	38,000

LOW VOLUME FACILITIES ARE HIGHWAY TYPES WITH PROJECTED DESIGN YEAR **AADT** VOLUME EQUAL TO OR LESS THAN THE LOW VOLUME VALUES SHOWN.

HIGH VOLUME FACILITIES ARE HIGHWAY TYPES WITH PROJECTED DESIGN YEAR **AADT** VOLUME EQUAL TO OR GREATER THAN THE HIGH VOLUME VALUES SHOWN.