



**Bridge Factors Factual Report Attachment 43 – FDOT Local Agency Program (LAP)  
Manual, Chapters 19 and 20, dated March 28, 2008**

**Miami, FL**

**HWY18MH009**

(11 pages)

4/16/09: Pen & Ink to correct *Section 19.5.5* to be in compliance with the *Florida Greenbook*.

## CHAPTER 19 - PRECONSTRUCTION ENGINEERING PROCEDURES

### 19.1 GENERAL

Various FDOT publications contain information on procedures, criteria, and standards for guiding and controlling preconstruction activities. These activities include project development, preliminary engineering analyses, environmental impact documentation, location surveys, right of way mapping, roadway and bridge/structures designs and the development of acceptable plans, specifications and estimates (PS &E). The appropriate technical discipline within the Offices of Planning and Planning and Design develop and control these manuals, guidelines, and standards. Local Agencies must work with these specific disciplines through the District Local Agency Program Administrator for current criteria, procedures, and standards that may impact the design of a project.

### 19.2 PROJECT DEVELOPMENT PHASE

19.2.1 The project development phase consists of the preliminary engineering efforts necessary to establish the need for the project, perform a corridor analysis, establish major design features, develop typical sections, perform alternate design studies, and prepare environmental statements. The phase also documents public involvement and all decisions in an engineering or project concept report.

19.2.2 Each project undertaken by a local agency must be developed in agreement with the appropriate guidelines and with enough detail to accurately determine the economic and environmental impacts. This project development process, must be in accordance with the ***FDOT PROJECT DEVELOPMENT AND ENVIRONMENT MANUAL, PART 1 AND PART 2 (Topic No. 650-000-001)***.

<http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm>

### 19.3 LOCATION SURVEYS AND RIGHT OF WAY MAPPING

19.3.1 Field survey data for engineering and related right of way mapping activities may be required in the project development phase and will almost always be required in the final design of local projects.

19.3.2 Location Survey activities shall be accomplished in agreement with the **Florida Department of Transportation's LOCATION SURVEY MANUAL** and must comply with the **Minimum Technical Standards for Land Surveyors, 21HH-6, F.A.C. to Section 472.027, Florida Statutes**. Where applicable, survey work must obey **Rule Chapter 18-5, F.A.C.** and the State Jurisdiction Boundary Surveys of the Department of Environmental Regulation. Right of Way related mapping activities shall comply with the **Florida Department of Transportation's RIGHT OF WAY MAPPING POLICY (Topic No. 550-030-015-e) AND RIGHT OF WAY MAPPING HANDBOOK** and must comply with the **Minimum Technical Standards, 21HH-6, F.A.C. pursuant to Section 472.027, Florida Statutes**.

## **19.4 ROADWAY AND STRUCTURES DESIGN**

19.4.1 Design criteria are established for transportation projects to ensure that they provide safe, economical, and fully-functional transportation facilities. For situations where specific design standards or criteria cannot be found in the FDOT publications, current approved technical publications, such as "A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials," should be used as design guidelines. Local agencies must ensure that project designs meet or exceed the referenced design criteria and that the standards developed from acceptable guidelines are appropriate for the proposed facility.

19.4.2 Minimum criteria are avoided for the design of new construction or major reconstruction projects. Projects to preserve or extend the service life of a facility, such as Resurfacing, Restoration and Rehabilitation (RRR) projects may have some minimum standard elements left in place. However, all reconstructed elements should meet new construction standards, if practical. With District approval, local streets and highways (not on the State Highway System) may be designed according to the standards published in the **Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways**, commonly known as the **Florida Green Book (625-000-015)**. This manual should not be used for design of State Highway projects.  
<http://www.dot.state.fl.us/rddesign/FloridaGreenbook/FGB.shtm>

19.4.3 The Department and good engineering practice support the use of the highest level of criteria and standards that is practical for all facilities. Local agencies should determine and document which standards apply when preparing the project prospectus and application for federal funds. There are many local, state, and federal laws, rules, and executive orders that may impact the design of a project. These are referenced in the publications, when the Department is aware of them.

19.4.4 The following publications establish the criteria for the critical areas of Roadway and

**Bridge/Structure designs:**

- A. **Roadway Plans Preparation Manual, Volume I - English (Topic No. 625-000-007) and Volume II - English (Topic No. 625-000-008).** Volume I contains criteria for new construction, reconstruction and RRR projects. Volume II provides guidance in plans, preparation, and assembly for these type projects. <http://www.dot.state.fl.us/rddesign/PPMManual/PPM.htm>
- B. Roadway and Traffic Design Standards (Topic No. 625-010-003-g). <http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.htm>
- C. Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Florida Green Book) (625-000-015). <http://www.dot.state.fl.us/rddesign/FloridaGreenbook/FGB.htm>
- D. Florida's Bicycle Facilities Planning and Design Handbook. [http://www.dot.state.fl.us/safety/ped\\_bike/ped\\_bike\\_standards.htm#Florida%20Bike%20Handbook](http://www.dot.state.fl.us/safety/ped_bike/ped_bike_standards.htm#Florida%20Bike%20Handbook)
- E. Florida Pedestrian Facilities Planning and Design Handbook. [http://www.dot.state.fl.us/safety/ped\\_bike/ped\\_bike\\_standards.htm#Florida%20Bike%20Handbook](http://www.dot.state.fl.us/safety/ped_bike/ped_bike_standards.htm#Florida%20Bike%20Handbook)
- F. AASHTO Guide for the Development of Bicycle Facilities [http://www.sccrtc.org/bikes/AASHTO\\_1999\\_BikeBook.pdf](http://www.sccrtc.org/bikes/AASHTO_1999_BikeBook.pdf)
- G. Florida's Quality / Level of Service Handbook for Planning. [http://www.dot.state.fl.us/Planning/systems/sm/los/los\\_sw2.htm](http://www.dot.state.fl.us/Planning/systems/sm/los/los_sw2.htm)
- H. A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO Green Book) (GDHS-5 AASHTO Bookstore).
- I. The Highway Capacity Manual (Transportation Research Board) <http://gulliver.trb.org/bookstore/> (TRB Bookstore 'HCM2KE').
- J. Manual on Uniform Traffic Control Devices for Streets and Highways (U.S. Department of Transportation). <http://mutcd.fhwa.dot.gov/>
- K. FDOT Drainage Manual (Topic No. 625-040-002-b). <http://www.dot.state.fl.us/rddesign/dr/Manualsandhandbooks.htm>

- L. Rigid Pavement Design Manual (Topic No. 625-010-006).  
<http://www.dot.state.fl.us/pavementmanagement/pcs/RigidPavementDesignManual.pdf>
  - M. FDOT Flexible Pavement Design Manual for New Construction and Pavement Rehabilitation (Includes Pavement Type Selection Process) (Topic No. 625-010-002-f).  
<http://www.dot.state.fl.us/pavementmanagement/pcs/FlexiblePavementDesignManual2005.pdf>
  - N. Standard Highway Signs Book (FHWA). [http://mutcd.fhwa.dot.gov/ser-shs\\_millennium.htm](http://mutcd.fhwa.dot.gov/ser-shs_millennium.htm)
  - O. Roadway Lighting Design Guide (AASHTO) (AASHTO Bookstore '4-GL-6').\*
- \*New Title – Replaced 1984 version.
- P. FDOT Standard Specifications for Road and Bridge Construction (with supplemental specifications).**  
<http://www.dot.state.fl.us/Specificationsoffice/2007BK/TOC.htm>
  - Q. FDOT Structures Design Manual (625-020-018).**  
<http://www.dot.state.fl.us/Structures/StructuresManual/CurrentRelease/StructuresManual.htm>
  - R. Facilities Design Manual (Topic No. 625-020-016-a).  
<http://www.dot.state.fl.us/structures/Manuals/2002fdotfacilitiesmanual.pdf>
  - S. AASHTO LRFD Bridge Design Specifications (mandatory beginning 2007) (AASHTO Bookstore '4-LRFDUS-4').**
  - T. Location Survey Manual (Topic No. 550-030-101-b).
  - U. Right of Way Mapping Procedure (Topic No. 550-030-015-e).  
<http://www.dot.state.fl.us/surveyingandmapping/RWMappingHandbook.pdf>
  - V. Project Development and Environmental Manual Part 1 and 2 (Topic No. 650-000-001). <http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman.htm>

- W. Soils and Foundation Manual (New Chapter 2 or Materials Manual 675-000-000). <http://www.dot.state.fl.us/structures/Manuals/SFH.pdf>
- X. Manual on Uniform Traffic Studies (Topic No. 750-020-007).  
<http://www.dot.state.fl.us/TrafficOperations/Operations/Studies/MUTS/MUTS.htm>
- Y. Florida Roundabout Guide  
[http://www.dot.state.fl.us/TrafficOperations/Doc\\_Library/PDF/roundabout\\_guide8\\_07.pdf](http://www.dot.state.fl.us/TrafficOperations/Doc_Library/PDF/roundabout_guide8_07.pdf)
- Z. Florida Intersection Design Guide  
<http://www.dot.state.fl.us/rddesign/FIDG-Manual/FIDG2007.pdf>
- AA. AASHTO 2002, 2003, and 2006 Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals (AASHTO Bookstore '4-LTS-4-M').  
[https://bookstore.transportation.org/item\\_details.aspx?ID=74](https://bookstore.transportation.org/item_details.aspx?ID=74)

## **19.5 DESIGN EXCEPTIONS, UTILITY EXCEPTIONS, AND DESIGN VARIATIONS**

19.5.1 The Florida Department of Transportation establishes highway design criteria and standards which are contained in the "Preparation Manual" – Topic # 625-000-007 & -008 (commonly referred to as the PPM), the "Utility Accommodation Manual" – Topic 710-020-001-b (commonly referred to as the UAM), and the "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways" – Topic # 625-000-015 & 625-000-008 (commonly referred to as the Florida Green Book). The criteria given in these Manuals have been accepted by FHWA and govern design processes.

19.5.2 When it becomes necessary to deviate from the criteria set forth in these manuals, Design Exceptions, Utility Exceptions and Design Variations must be prepared and submitted to the Local Agency for review. If the project is on the State Highway System, the District Design Engineer must obtain approval of the exception and/or variation. If the project is not on the State Highway System, the Local Agency can obtain approval of the exception and/or variation. This approval process applies to all entities involved in planning, design, construction, maintenance, and utility placement. To accelerate the approval and/or final agreement of these deviations, it is important that the Local Agency follows the correct process. It is also important to begin the documentation of the exception or variation as early as possible in the design process.

19.5.3 The criteria in the PPM govern all State Facilities. The designer will use the processes in the PPM for all Design Exceptions and Design Variations with the exception of utilities. For all utilities on State Facilities, the criteria in the UAM govern, and the designer will use the utility Exception Processes inside.

19.5.4 The criteria in the PPM or Florida Green book as specified by the district will apply for all other public facilities

19.5.5 If it becomes necessary to deviate from the PPM so much that the design element is below the PPM's criteria, the Design Exception and Design Variation processes must be used. If the criteria in the Florida Green book are specified by the district, the Design Exception process will be used. ~~and the Department's local District Design Engineer will provide agreement.~~

19.5.6 All deviations should be identified as early in the plans development processes as possible, preferably the PD&E or initial engineering design process. This allows time for designers to research alternatives and to process the request before plans are in the final stages of completion.

## CHAPTER 20 - PLANS, SPECIFICATIONS AND ESTIMATES

### 20.1 GENERAL

20.1.1 The final engineering design process produces contract plans, specifications, and cost estimates (PS&E). These documents contain all the construction details, contract provisions, permits, agreements, and certifications required to advertise, award, and administer a construction contract.

20.1.2 The Local Agency and the District are responsible for the completeness of the contract plans package and the Contract File Index of documentation.

20.1.3 On FHWA oversight projects, the FHWA must review and approve the PS&E before it authorizes federal funds.

### 20.2 CONTRACT PLANS

20.2.1 For Local Agency ad-and-award projects, the Local Agency is responsible for the requirements for plan sheet size, guidelines for preparing contract plans, and review of the PS&E package.

20.2.2 A record set of plans shall carry the seal date and signature of a licensed Professional Engineer consistent with Florida Statutes and Rules.

20.2.3 When there are bridge plans for projects on or over the State Highway System, the FDOT shall submit the following supporting data for checking:

- A. Design calculations
- B. Stream data
- C. Soil or foundation reports
- D. Roadway and Structure plans
- E. Bridge load rating

### 20.3 SPECIFICATIONS

20.3.1 FDOT publishes and distributes the Standard Specifications for Road and Bridge Construction, and approved modifications that change the Standard Specifications. These can be made available as electronic data files through the District Specifications Engineer. <http://www.dot.state.fl.us/specificationsoffice/2007BK/TOC.htm>



20.3.2 The specifications part of the PS&E include all directions, provisions, and requirements contained in the specification book, together with all stipulations contained in the plans or in the contract documents. These stipulations set out or relate to the method and manner of performing the work, or to the quantities and qualities of materials and labor to be supplied under the contract.

20.3.3 The FDOT Standard Specifications should be used on all federal funded projects as much as possible. Project specific Special Provisions may be required:

- A. For the control of work, measurement, payment, and materials of features on a project not covered by the Standard Specifications or other general contract provisions.
- B. Where the FDOT Specifications are being amended or for a deviation from FDOT Specifications with regard to materials, construction details, measurement, and payment.

20.3.4 Technical Special Provisions are a part of the Contract as an attachment to the Specification Package. A Professional Engineer must be prepare, sign, and seal the Technical Special Provisions according to Florida Statutes and Rules.

20.3.5 The following paragraphs discuss some important aspects of special provisions.

- A. All nonstandard pay items shall be covered in the special provisions.
- B. For high cost and major projects, include a Value Engineering incentive clause in the specifications. This clause encourages the contractor to propose changes in contract requirements to accomplish the project's functional requirements at less cost.
- C. A schedule of liquidated damages should be included in the specifications.
- D. Traffic control design must comply with the **Design Standards (Topic No. 625-010-003-g)** and the **MUTCD**. Therefore, the requirements shall not be reduced by Special Provisions. A Special Provision may be prepared outlining traffic control requirements and including any pay items.
- E. Proprietary specifications of national, regional, or local trade associations should not be included in specifications.

- F. Trade names in specifications and on plans shall be avoided. Instead, specifications should be formulated to allow full opportunity for competition among equivalent materials, equipment, and methods. References in specifications and on plans to single trade-name materials will not be approved on federal aid contracts, with exception of weigh-motion-stations.
- G. There are no limitations on warranty provisions for projects that are not on the NHS. Projects that are on the NHS are limited to warranty provisions for specific product or feature. Items of maintenance are not eligible for Federal Aid participation. **Form FHWA-1273**. Each set of specifications shall include **Form FHWA-1273, Required Contract Provisions, Federal Aid Construction Contracts** (Exhibit IV-2-3), and such amendments that modify the **FHWA-1273**. Delete references to Certification Acceptance on **Form FHWA-1273** before using it in a contract (See 20.6.1 Appendices).
- H. Commitments. When applicable, the Local Agency should have a commitment file containing a summary of commitments made during the development of the project. The file should be reviewed to ensure that the commitments are incorporated in the PS&E. These commitments typically involve right of way or environmental considerations.
- I. Notice to Contractors - A Notice to Contractors will be prepared and submitted with the PS&E. (The words underlined in the sample shall be incorporated verbatim in this notice. Those words which are not underlined may be incorporated into the notice or revised as appropriate.)

20.3.6 The Notice to Contractors is made available to contractors qualified for the type of work described in the project documents. Notices will be submitted to the offices of the Florida Transportation Builders Association.

## 20.4 ESTIMATES

20.4.1 The Local Agency includes the engineer's estimate in the PS&E and prepares it using the pay items list and quantities as shown in the plans. The engineer's estimate must be one of the last activities performed. Each component set of construction plans is reviewed along with the applicable specifications.

- A. A pay item list is compiled to cover all proposed contract work.
- B. A computation book form is used for each pay item and a complete, accurate take-off and calculation of the estimated quantities is made.

20.4.2 Multi-funded projects must identify quantities proportionate to the fund participation. In addition, Participating (Federal) and Non-Participating (State) can be split on each pay item with a running total of Participating and Non-Participating funds. The Project Total is located on the last sheet of the Estimate and has a separate total for Participating and Non-Participating.

## **20.5 CONTRACT PROPOSAL REQUIREMENTS**

Upon request, a blank copy of the proposal document is provided to a prospective bidder.

## **20.6 APPENDICES**

FHWA Form-1273, Required Contract Provisions Federal Aid Construction Contract

<http://www.fhwa.dot.gov/programadmin/contracts/1273.htm>