



*Florida Department of Transportation*

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**ROADWAY DESIGN BULLETIN 19-07**

***FHWA Approved:***

***Drainage Manual: 10/10/2019***

***Rigid Pavement Design Manual, Flexible Pavement Design Manual: 10/23/19***

***FDOT Design Manual: 10/30/19***

DATE: October 30, 2019

TO: District Directors of Transportation Operations, District Directors of Transportation Development, District Design Engineers, District Construction Engineers, District Pavement Engineers, District Consultant Project Management Engineers, District Geotechnical Engineers, District Structures Design Engineers, District Maintenance Engineers, District Roadway Design Engineers, District Traffic Operations Engineers, District Program Management Engineers, District Drainage Engineers, District Materials Engineers

FROM: Michael Shepard, P.E., State Roadway Design Engineer

DocuSigned by:  
*Michael Shepard*  
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COPIES: Kevin J. Thibault, Courtney Drummond, Tom Byron, Will Watts, Tim Lattner, Rudy Powell, Trey Tillander, Dan Hurtado, Scott Arnold, Amy Tootle, Stephanie Maxwell, Robert Robertson, Lora Hollingsworth, Kevin Burgess (FHWA), Chad Thompson (FHWA), Bren George (FHWA)

SUBJECT: **2020 Roadway Design Office Manuals**

This bulletin announces the release of the 2020 FDOT Design Manual (FDM), 2020 Drainage Manual, 2020 Rigid Pavement Design Manual, and the 2020 Flexible Pavement Design Manual. These manuals are available on the State Roadway Design Office website at the following links:

<http://fdot.gov/roadway/fdm>

<http://fdot.gov/roadway/Drainage/ManualsandHandbooks.shtm>

<http://fdot.gov/roadway/PM/publications.shtm>

**IMPLEMENTATION**

The manuals listed above are effective on all projects beginning design on or after January 1, 2020 and on projects currently in the design phase where implementation will not adversely impact production schedules.

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Changes implemented via Roadway Design Bulletins issued between December 2018 and November 2019 are incorporated into these manuals. These changes are effective as described in each Bulletin.

### **COMMENTARY**

Roadway Design Bulletins are available on the Office of Design website at the following link:

<http://www.fdot.gov/roadway/Bulletin/default.shtm>

Summaries of the major changes to each manual are included as Attachments to this Bulletin. Webinars providing an overview of the major changes to these manuals are under development and will be available by December 31, 2019.

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**ATTACHMENT 'A'**  
**2020 FDM UPDATES SUMMARY**

## Summary of Updates: 2020 FDOT Design Manual

### FDM 104 (Public Involvement)

- 104.3.1 – (CAP Levels) – Deleted blue box.

### FDM 110 (Engineering Design Process)

- Blue Box deleted from introduction.
- 110.3 (Scope, Objectives, Schedule and Budget) – Deleted Project Management Handbook reference and added link to Project Management site.
- 110.4 (Project Design Controls and Standards) – Updated FDM 201 reference to new number.
- 110.4.1 (Sole Sourced Products or Processes) – Updated language in this section to reflect FHWA repealing their proprietary product rule (23 CFR 635.411 Material or Product Selection).
- 110.5.1 (Project Aviation Requirements) – Title changed from Aviation and Spaceports, removed the 10-nautical mile requirement and made other minor revisions to language for clarification and better coordination efforts.
- 110.5.2.3 (Projects Involving Bridges Over Navigable Water) – Deleted Project Management Handbook reference and added link to Project Management site.
- 110.5.10 – This section was added to address the coordination of projects near a Florida National Scenic Trail.

### FDM 111 (Final Engineering Design Process)

- 111.1 (General) – Minor changes to the blue boxes in this section for clarification.
- 111.7.2.12 (Approvals) – Removed the roundabout design approval memo and updated the Federal Aviation Administration approval.

### FDM 113 (Right of Way Requirements)

- The blue box from this section was removed.

### FDM 114 (Resurfacing, Restoration and Rehabilitation (RRR))

- Blue box deleted from introduction
- 114.2 (Planning and Programming RRR Projects) – Language added from the safety improvements task team.
- 114.3 (RRR Design Process) – updated Design Speed table reference.
- 114.3.3 (Drainage) – Updated desilting language for clarification.

### FDM 116 (Roundabout Evaluation)

- This chapter no longer includes roundabout evaluation information and instead points to the Intersection Control Evaluation Manual for requirements.

### FDM 122 (Design Exceptions and Design Variations)

- 122.2.1 (Design Exceptions) – This sub-section was added for clarity between design exceptions and variations.

*Summary of 2020 FDM Updates and Changes*

- 122.2.2 (Design Variations) – This is also a new sub-section that helps provide clarity on the difference between design variation and exception.
- 122.3 (Justification for Approval) – Clarified and updated the language in this section.
- 122.4 (Documentation for Approval) – Changes were made to help clarify existing language.
- Table 122.5.3 (AASHTO Shoulder Widths (Minimum)) – Added “or Left” to the “Median” column of this table to be consistent with other FDM tables that call out “median or left” side shoulders.
- Table 122.5.10 (AASHTO Grades (Maximum)) – Updated the first note to reflect the changes in the 2016 AASHTO Interstate Guide.
- 122.7.1 (Submittal Package) – The language was updated to clarify that the submittal items listed is for any level of Exception of Variation. The level of detail in the documentation is what differs.
- 122.7.3 (Design Variation Approval) – The language in this section was updated for clarification and to have consistent references with the changes to this chapter.
- Table 122.7.1 (Central Office Approvals) – Added a Design Variation for Fencing on Traffic Railing between pedestrians and travel lanes on LA Facilities to the State Structures Design Engineer approval list. Removed the roundabout designs and design variations for community aesthetic features from the State Roadway Design Engineer approval list.

**FDM 127 (Community Aesthetic Features (CAFs))**

- 127.2 (Requirements) – Added bullet 14 to not allow attachments to fencing on structures.
- 127.3 (Approval Process) – The language was updated to reflect CAFs being approved at the District level and not by Central Office.
- 127.3.1 (Concept Phase) – The language was updated to reflect the approval process for CAFs.
- 127.3.2 – Changed the language to match the approval process for CAFs being approved at the District level.

**FDM 128 (Federal Aid Project Certification)**

- 128.4 (Certification Documentation and Reviews) – Blue box was deleted per the blue box review committee.

**FDM 130 (Signing and Sealing Documents)**

- 130.4 (Signing and Sealing Revisions) – Blue box was added to distinguish between PS&E plans on conventional projects with RFC plans on DB Projects.
- 130.4.3 (Other Design Documents) – Blue box was deleted.
- 130.5 (Support Documents) – Blue box was deleted.

**FDM 131 (Plans Processing)**

- 131.1.1 (Definitions) – Deleted the “Design and Construction Criteria Package” due to it being an old reference not used.
- 131.2.2 (Re-submittal of Withdrawn Projects) – Blue box was added to delete this section for design build projects.

### FDM 132 (Plan Revisions)

- 132.3 (Revisions after Award) – 1<sup>st</sup> and 2<sup>nd</sup> blue boxes deleted per blue box task team. The 3<sup>rd</sup> blue box was revised per blue box task team.

### FDM 200 (Context Based Design)

- 200.4 (Context Classification) – Blue box was deleted and language was added to obtain the appropriate context classification from the District Complete Streets Coordinator.

### FDM 201 (Design Controls)

- 201.2 (Context Classification) – This section was added because context classification is a design control.
- 201.5.3 (RRR Projects) – Language was added to address the specific situation where districts would like to reduce the design speed to match the posted speed without having to process a Variation. Also, there was clarification on If the existing design speed or posted speed meets AASHTO's criteria but is not within the allowable range shown, that a design variation is not required to maintain the existing design or posted speed.

### FDM 202 (Speed Management)

- 202.1 (General) – Minor clarifications made to this section.
- 202.1.1 (Lane Elimination Projects) - Language added for clarification.
- 202.2 (Speed Management Concepts) – Added language for clarification and better guidance.
- 202.2.1 (Target Speed) – This section was added to define what target speed and where to find more information about it.
- 202.3 (Speed Management Strategies) – Verbiage was added to emphasize the use of existing conditions for speed management strategies.
- 202.3.1 (Roundabouts) – Clarification was added to limit drivers from accelerating between roundabouts in series.
- 202.3.2 (On-Street Parking) – Considerations were included for additional strategies to be used in conjunction with on-street parking.
- 202.3.7 (Short Blocks) – Reconstruction language about preserving existing short block networks and a reference to the Traffic Engineering Manual was added.
- 202.3.8 (Vertical Deflection) – Criteria for using raised crosswalks was added.
- 202.3.9 (Speed Feedback Signs) – Removed the restriction for these signs to only be used when other physical design interventions are not feasible or appropriate for the location of site conditions.
- 202.3.10 (Speed Limit Pavement Marking) – Added language for clarification.
- 202.3.11 (Median Islands) – Updated language to clarify what median islands are.
- 202.3.13 (Rectangular Rapid Flashing Beacons and Pedestrian Hybrid Beacons) – Added reference to the Traffic Engineering Manual.
- 202.3.14 (Terminated Vista) – Moved language describing the terminated vista to the beginning to the section for clarification.
- Table 202.3.1 (Strategies to Achieve Desired Operating Speed) – This table was moved to the end of section 202.3 due to the acronyms included, not being defined in the chapter previously.

## FDM 210 (Arterials and Collectors)

- 210.1 (General) – Both blue boxes were deleted from this section.
- 210.2.2 (Transit Facilities) – The blue box was removed from this section.
- 210.2.3.1 (Existing on Street Parking) – This section was added to address how to handle roads with posted speeds >35mph that have existing on-street parking.
- Figure 210.2.1 (Standard Pavement Cross Slope) – Clarified note 2, part c.
- 210.2.4.2 (Hydroplaning Risk Analysis) – The blue box in this section was removed.
- 210.2.5 (Roadway Transitions) – Added a new condition to be met for a striped lane to be considered where there is an abrupt change in roadway typical.
- 210.4 (Shoulders) - Added a definition for shoulders and added a note to Table 210.4.1 to pave the full width of shoulders adjacent to concrete barriers that are offset equal to full shoulder width.
- Table 210.4.1 (Standard Shoulder Widths) – Added note 7 to pave the entire width of the shoulders when adjacent to concrete barriers.
- 210.5.1 (High-Speed Curbed Roadways) – added language to clarify the point from which the offset is measured from.
- 210.8 (Horizontal Alignment) – Minor language clarification.
- 210.8.2 (Horizontal Curves) – Updated the language to clarify the negative impact of combining horizontal and vertical curves.
- 210.9.2 (RRR Criteria for Superelevation) – The section was revised and restructured for clarification.
- 210.11 (Sight Distance) - This section was updated to clearly define intersection sight distance. Language about decision sight distance was added.
- 210.11.1 (Stopping Sight Distance) – Information was added that was inadvertently left out of this section when the FDM was developed. In the PPM, this was stated along with the statement about passing sight distance object height. When the two separate sections were created, this sentence did not move over with the rest of the information on stopping sight distance.
- Table 210.11.2 – Updated table and added text to explain FDOT’s position on the revised PSD values in the 2011 AASHTO Green Book. FDOT has chosen to adopt the 2011 Green Book values for RRR projects, and to maintain the older Green Book values for new construction criteria.
- 210.11.4 (Decision Sight Distance) – This section was added so that the FDM has guidance on this topic.

## FDM 211 (Limited Access Facilities)

- 211.1 (General) – The reference to the FDOT Express Lanes Manual was removed due to that manual not being published yet.
- 211.2.1 (Ramps) – Clarified the language in this section with some minor edits.
- Figure 211.2.1 (Standard Pavement Cross Slopes) – Updated note 2 and clarified part b.
- Table 211.4.1 (Minimum Shoulder Widths) – Added two notes about shoulder width without shoulder gutter. The first note is a consideration for 12ft shoulders when there is a high AADT or greater than 10% trucks. The second note is for paving the full width of the shoulder when a concrete barrier is adjacent to the edge of the shoulder.

*Summary of 2020 FDM Updates and Changes*

- Table 211.9.1 (Maximum Grades) – The note about one-way descending grades was removed due to its ambiguity.
- 211.10 (Sight Distance) – This section was added for clarity. Wanted to acknowledge the need to consider decision sight distance (DSD).
- 211.10.2 (Decision Sight Distance) – This section was added so the FDM had guidance on this topic.
- 211.12 (Interchange and Ramp Spacing) – Updated the criteria for connection spacing to be measured from the “painted nose”, not the “gore nose”.
- 211.13 (Ramp Terminals) – Updated language for clarification and added a reference to the 2011 AASHTO Green Book.
- 211.14 (Express Lanes Access Points and Access Types) – Removed all the FELM references and added more guidance on how to determine the required weave length.
- 211.14.1 (Express Lanes Access Types) – Removed the references to the FELM.

FDM 212 (Intersections)

- 212.1.2 (Intersection Control Evaluation) – Added this section to discuss what the ICE process is and where to find more information on it.
- 212.11.6 (Trees and Vegetation) – Added definitions for Ground Cover and Trunked Plants. These definitions were in Index 546, however, did not get moved over from previous versions of the FDM. Added clarification that trees may not be placed in corners of intersections within the clear sight triangles. Moved Special Areas Limited to Ground Cover figure up to the beginning of this section, and added hatched areas to include corners. Moved the Clear Sight Window Concept info into its own subsection; also added a statement to this subsection to reiterate that trees are not to be in hatched areas shown in Fig 212.11.2.
- 212.11.6.1 (Clear Sight Window Concept) – Added language for clarification on ground cover plant placement within the clear sight triangle.
- Table 212.11.3 (Minimum Tree Spacing) – Added a note from Design Standard 546 that was omitted last year.
- 212.13.3 (Refuge Islands) – Added new figures to this section showing examples of pedestrian refuge islands.

FDM 213 (Modern Roundabouts)

- 213.1.1 (Roundabout Evaluation), 213.1.2 (Central Office Approval) - These sections were deleted because they are now covered by the ICE Procedure.
- 213.2 (Operational Analysis) – This section was updated to clarify how to run the SIDRA and HCS-7 programs.
- 213.2.1 (Stage Construction) – The requirement to have central office review the interim and ultimate designs was removed.
- 213.8.2 (Bicycle Facilities) – Added criteria from RDB 19-05 for the use of directional tactile walking surface indicators.

FDM 215 (Roadside Safety)

- 215.2.3 (Clear Zone Concept) – A new paragraph was added to clarify the difference between roadside slope criteria and clear zone concept



*Summary of 2020 FDM Updates and Changes*

- Figures 215.2.2 & 215.2.3 – The dimensions were removed from these figures to prevent confusion on their intent.
- 215.2.6 (Roadside Slope Criteria) – The blue box in this section was removed and Table 215.2.3 was moved here from section 215.2.6.1 to help clarify that the table is not RRR criteria.
- 215.4.1.2 (Semi-Rigid Barrier) – Since the Modified Thrie-Beam was removed from the Standard Plans, all instances of it have been removed from this section.
- 215.4.1.3 (Rigid Barrier) – This section was updated to provide more clarification on rigid barrier orientation and to prevent any conflicts with the Structures Design Guide.
- 215.4.1.4 (Temporary Barriers) – Added a reference to FDM 240 for pedestrian temporary traffic control.
- 215.4.2.1 (Guardrail End Treatments) – Updated language for MASH compliance criteria.
- 215.4.3 (Crash Cushions) – Added language intended to allow crash cushion use with a curb as a last option, if other barrier options or curb removal isn't feasible.
- 215.4.3.1 (Permanent Crash Cushions) – A reference to Standard Plans, Index 544-001, was added to this section.
- 215.4.4 (Barrier Transitions) – Added language to be consistent with the Standard Plans and Specs. Removed language that was misleading about the Low-Speed guardrail approach connection.
- 215.4.5.1 (Longitudinal Barrier Selection) – Removed all instances of Modified Thrie -Beam because it is no longer part of the Standard Plans.
- Table 215.4.1 (Roadway Barrier Type Selection) – Updated to remove the Modified Thrie-Beam criteria.
- 215.4.6.1 (Barrier Offset) – The first paragraph was updated to show the new offset criteria. Also, language was brought over from the Guardrail Standard Plan Instructions. Added language to answer frequent questions on rigid barrier offset and how to handle surrounding pavement without leaving narrow gaps of soil or sod between pavement and concrete barrier. Added a definition for setback and clarified that applicable hazards are aboveground.
- Table 215. 4.2 (Minimum Barrier Setback) – Removed Modified Thris-Beam criteria and removed conflicting language from the Bridge Traffic Railing criteria.
- 215.4.6.2 (Grading Requirement) – The blue box in this section was removed.
- 215.4.6.3 (Length of Need) – This section was vastly updated and clarified.
- 215.4.7 (Warrants for Roadside Barriers) – Added language that the criteria contained in this section precluded the requirement for RSAP or HSM analysis.
- 215.4.9 (Positive Protection in Work Zones) – The language was simplified in this section to remove redundancies within this chapter.
- 215.6 (Surface Finishes) – The blue box in this section was removed.
- 215.7.1 (Resetting Guardrail) – Clarified the language in this section for consistency with the Standard Plans and Specs.
- 215.7.2 (Existing Longitudinal Roadway Barriers) – Added language to allow all designs of 2013 or newer to remain in place. This new language covers the recent downstream extension of trailing anchorages from 6.25' to 25'.

- 215.7.5 (Existing Guardrail to Bridge Railing Transitions) – Clarified some terminology in this section.
- 215.8 (Non-Standard Roadside Safety Hardware) – The definition of non-standard hardware was added to this section.

### FDM 216 (Earthwork)

- 216.1 (General) – Clarification was added on embankment including existing base/pavement as part of the fill material, per Spec 120-4.2. The definition of original ground line was updated to include the top surface of existing pavement. Also, language was added for clarification on how to compute embankment in the unique situation of constructing over an existing old road.
- 216.4.2 (Earthwork Accuracy) – The reference to borrow excavation (truck measure) was removed because it is only used on projects with limited/no cross sections. This list is for new construction projects, which will have cross sections. Added a note to clarify that the pay items in columns A and B are exclusive of each other and cannot be used in the same project; e.g., embankment and borrow excavation (truck measure) cannot be used in the same project.
- Table 216.5.1 (Guidelines for Selecting Earthwork Pay Items) – A and B were added to column headings to allow for a simple note reference to be included at the bottom of this table instead of referencing the whole title “Column for Projects with Cross Sections”.
- 216.5.6 (Borrow Excavation (Truck Measure)) – Added language to clarify/reiterate that this pay item is only for projects with limited/no cross sections.

### FDM 222 (Pedestrian Facilities)

- 222.2.3.1 (Intersections) – This section has been updated to provide stronger/more encouraging language to mark all approaches to intersections unless there is a very good reason not to. The blue box in this section was removed. Added language for crossings distances exceeding 80ft and the consideration for a two-stage pedestrian crossing with a median refuge island.
- 222.2.3.2 (Midblock) – Added criteria for median crossings through raised medians.
- 222.2.8 (Public Transit Loading Zones) – The blue box from this section was removed.
- 222.4 (Pedestrian Drop-off Hazards and Railings) – The blue box from this section was deleted.
- 222.4.1 (Bridge-Pedestrian Railings and Fences) – Criteria was added for the installation of fencing on traffic railing between pedestrians and travel lanes.

### FDM 223 (Bicycle Facilities)

- Chapter was significantly rewritten and updated.

### FDM 224 (Shared Use Paths)

- 224.1 (General) – Added new language to encourage the development of a bicycle facility plan and in which contexts shared use paths are appropriate. Added the allowance for a shared use path to substitute for a bicycle lane and added language with guidance on shared use paths that are unaltered but not ADA nor FDM compliant
- 224.1.2 (Public Transit Loading Zones) – The blue box from this section was removed.
- 224.1.4 (Conflict Points) and 224.1.5 (Cyclists Enter and Exit Points) – These are new sections to provide better guidance to the design of shared use paths.
- 224.7 (Horizontal Clearance) – Removed the requirement for sign columns to be not less than 2 feet from the edge of pavement for horizontal clearance.

*Summary of 2020 FDM Updates and Changes*

- 224.8 (Vertical Clearance) – The blue box from this section was deleted.
- 224.10.1 (Minimum Radii) – Clarified the language in this section and added a note to Table 224.10.1 to help better define the slope directions.
- 224.12 (Separation from Roadway) – Added language to emphasize the minimum separation when the shared use path cannot be as close to the right-of-way line as possible.
- 224.18 (Shade Consideration) – This is a new section to help with the coordination between designers and landscape architects in order to provide the most shade feasible.

FDM 228 (Landscape Design)

- 228.1 (General) – This section was updated to provide clarity on the purpose of landscape for functional (environmental, structural) benefits. A definition of native plant material was added along with guidance on use. Also, the blue box was removed from this section.
- 228.2 (Landscape Design Requirements) – Added language for landscape design to reflect the following:
  - Florida’s unique identity and ecology,
  - Consist of native plants that are context appropriate.
- 228.2.1 (Landscape Design Considerations) – Considerations were added to help with the coordination between designers and landscape architects for shared use paths.
- 228.2.2 (Department Maintained Landscapes) – This is a new section for the criteria of department maintained landscapes.
- 228.3.1 (Landscape Irrigation Sleeves) – This section was significantly reworded and reorganized.
- 228.4 (Landscape Maintenance Guide) – The title of this section changed to be more accurate in description and the blue box in this section was removed.
- 228.5 (Outdoor Advertising Signs) – The blue box in this section was removed.

FDM 229 (Selective Clearing and Grubbing Design)

- 229.1 (General) – Added a definition and figure for clarification of selective clearing and grubbing.
- 229.1.2 (Tree Protection) – The language was updated to clarify the minimal placement of tree protection barriers.
- Figure 229.3.1 (Tree Relocation and Preservation Determination) – Updated the figure to add “Disease Resistant” to the flow chart.

FDM 230 (Signing and Pavement Marking)

- 230.1 (General) – Updated the language for clarity.
- 230.2.3 (Local Street Names on Guide Signs) – Added language for clarification.
- 230.3 (Pavement Markings) – Clarified language to place emphasis on the MUTCD being the national standard rather than a basic guide.
  - 230.3.1.1 (Standard and Refurbishment Thermoplastic) – Language was added to allow the use of Permanent Tape on concrete pavement for longitudinal lines.
  - 230.3.1.3 (Preformed Thermoplastic) – Added 24” longitudinal bars of Special Emphasis Crosswalks with a black contrast border on both the right and left sides for preformed thermoplastic use on concrete riding surfaces.
  - 230.3.1.5 (Two Reactive Components) – Deleted the blue box from this section.

*Summary of 2020 FDM Updates and Changes*

- 230.4 (Exit Ramp Intersections) – This section was updated for clarification and criteria was added for Highlighted Wrong Way signs.
- 230.4.1 (Diverging Diamond Crossover and Exit Ramp Intersections) – This sub-section was added for the criteria of the Highlighted Wrong Way signs to be used with Diverging Diamond Interchanges.
- Exhibit 230-2 – New Exhibit displaying the Highlighted Wrong Way sign criteria on a Diverging Diamond Interchange.
- 230.5 (Signing and Pavement Marking Coordination) – The blue box in this section was deleted.

**FDM 231 (Lighting)**

- Table 231.2.1 (Lighting Initial Values) – Added criteria for Wildlife Sensitive Conventional Lighting and a note for the illumination uniformity ratios.
- 231.2.1 (Wildlife Sensitive Conventional Lighting) – New section to provide a more consistent approach to handling Wildlife-Sensitive lighting.
- 231.7 (Lighting Design Analysis Report) – This is a new section for the lighting design analysis report criteria.

**FDM 233 (Intelligent Transportation Systems)**

- 233.1 (General) – Removed the references to the FDOT Express Lanes Manual.
- 233.3.2 (Local Backup and Alternative Power Sources) – Added language for clarification and removed the blue box from this section.
- Blue boxes were removed from the following sections:
  - 233.3.3 (Application for Electric Service)
  - 233.3.9.1 (Generator Design Requirements)
  - 233.3.10.8 (Battery Installation)
  - 233.7.3 (Equipment Shelter)
  - 233.8.1 (Managed Field Ethernet Switch (MFES) Network)
  - 233.10 (Closed-Circuit Television Systems)
  - 233.11.3 (Electronic Display Signs)
  - 233.12.1 (Road Weather Information System (RWIS))
  - 233.13 (Maintenance of ITS Devices and Communications)
- 233.8.4 (Wireless Communications System) – Updated the language regarding wireless communication applications for express lanes.
- 233.10 (Closed-Circuit Television Systems) – Clarified the language to have the camera located in accordance to the minimum lateral offset rather than outside the clear zone to help prevent confusion.
- 233.11.1 (Dynamic Message Sign (DMS)) – Clarified the language to have the DMS located in accordance to the minimum lateral offset rather than outside the clear zone to help prevent confusion.
- Table 233.11.1 (DMS Characters) – Updated the table to have the minimum number of characters per line and removed the note due to it being inaccurate.

**FDM 240 (Transportation Management Plan)**

- 240 – This chapter was significantly updated and reorganized.

## FDM 242 (Traffic Pacing Design)

- 242.1 (General) – The language in this section was updated to be more concise.
- 242.3 (Traffic Pacing Symbols and Definitions) – Definitions were removed that were not pertinent to the calculations.
- 242.4 (Traffic Pacing Input Data) – This section was removed.
- 242.5 (Traffic Pacing Calculations Example) – This section was renamed to emphasize that this is an example and not criteria. Formulas were removed that were not pertinent to the calculations.

## FDM 260 (Bridge Structures)

- 260.1.1 (Partial Bridge Sections) – Clarified the language for sections in the approach slab and retaining wall.
- 260.6 (Vertical Clearance) – Updated the language for the minimum vertical clearance to have the distance measured between the lowest bridge superstructure or substructure element and the traveled way or shoulder directly below.
- Table 260.6.1 (Minimum Vertical Clearances for Bridges) – Updated the first note in this table to include the survey note in plans if the existing bridge requires a design variation or exception to remain due to not meeting minimum design vertical clearance.

## FDM 261 (Structural Supports for Signs, Singles, Lighting, and ITS)

- 261.2 (Sign Support Structures) – Removed the blue box in this section and updated instances of “shop drawing” to “working drawing”.
- 261.7.1 (Category 1 Analytical Evaluation) – Made a correction for D/C ratio or CSRs, that it is a design exception and not variation if the D/C ratio or CSRs are greater than 1.05.
- 261.7.2 (Category 2 Analytical Evaluation) – This section was updated per the Structures Design Office for clarity.

## FDM 300 (Production of Plans)

- 300.3 (Base Sheet Format) – Removed the requirement to have the District Design Engineer approve the use of aerials in the plans.

## FDM 301 (Sequence of Plans Preparation)

- 301.1 (General) – Updated the language for clarification and removed the link to the General Tolling Requirements (GTR).
- FDM 301.2 (Phase Submittals) – Added definitions of the descriptions that are vaguely used in Table 301.2.1. Descriptions were based on the structures definitions in FDM 121.14.3.
- Table 301.2.1 (Summary of Phase Submittals) – Changed the Landscape Opportunity Plan to Landscape Opportunity Concept per the Landscape Office in Central Office.
- 301.2.1 (Phase I Submittal) – Changed the Landscape Opportunity Plan to Landscape Opportunity Concept per the Landscape Office in Central Office.
- 301.2.3 (Phase III Submittal) – Requested terminology change from Preliminary Estimates. Changed to Preconstruction from Webgate.
- 301.2.4 (Phase IV Submittal) – Requested terminology change from Preliminary Estimates. Changed to Preconstruction from Webgate.

- 301.2.5 (PS&E Phase Submittals) – Clarified some terminology to be consistent with Preliminary Estimates.
- 301.3.5 (Released for Construction Plans) – Removed conflicting language.
- 301.4 (Alternative Intersection Review) – This section was updated and rewritten to include review package requirements for a Alternative Intersection and Interchange Review, Roundabouts, and Diverging Diamond Interchange.

### FDM 302 (Key Sheet)

- 302.6.1 (Early Works) – Removed project control sheets as an option for Early Works, per OOD 19-01 Bulletin.
- 302.11 (Strung Projects) – Added a note from Form 131-B for clarification.

### FDM 305 (Drainage Map and Bridge Hydraulic Recommendation Sheet)

- 305.2 (Bridge Hydraulic Recommendation Sheet) – Updated the reference to Drainage Design Guide.
- 305.2.4 (Existing Structures Data, Hydraulic Design Data, and Hydraulic Recommendations) – Clarified the definitions of Discharge and Average Velocity.

### FDM 306 (Typical Sections)

- 306.3 (Typical Section Information) – Clarified bullet number 7 to show the limits of both standard and selective clearing and grubbing.
- 306.4 (Required Data) – Included the reference to FDM 120.2.2 for more information.

### FDM 307 (Summary of Quantities)

- 307.1 (Pedestrian Longitudinal Channelizing Devices) – Removed this section and Exhibit 307-2.

### FDM 308 (Summary of Drainage Structures and Optional Materials

#### Tabulation)

- 308.1 (General) – The Optional Materials Tabulation sheet is no longer optional
- 308.3 (Optional Materials Tabulation) – Updated the reference due to the Optional Pipe Material Handbook being merged into the Drainage Design Guide. Removed the flow line information from the Optional Material Tabulation sheet.

### FDM 310 (Project Control)

- Added language for the Engineer of Record to create and sign and seal the Project Control sheet.

### FDM 311 (General Notes)

- 311.1 (General) – Added a reference to Exhibit 311-1.
- 311.2.1 (Required General Notes) – The notes from Exhibit 311-1 are criteria and were added into the text of this section.
- 311.2.2 (Bridge Clearance) – Added language to the FDM to clarify that if a bridge has a proposed (maintain existing) minimum vertical clearance less than 16' via an approved Design Variation/Exception, that the survey note also be included on those plans (e.g., a Design Exception approved for a bridge to maintain a 15'-11" min vertical clearance).

### FDM 312 (Roadway Plan-Profile)

- 312.2.5 (Drainage Structures and Bridges) – Clarified the language for the definition of bridge culverts to match what is in FDM 265.

### FDM 323 (Selective Clearing and Grubbing Plans)

- 323.1 (General) – Added clarifying language to define Selective Clearing and Grubbing as an alternative to Standard Clearing and Grubbing
- 323.2.1 (Sheet Set UP) – The language in this section was updated to clarify how selective clearing and grubbing is shown on the plan sheet.
- 323.3.1 (Work Table) – Added intent (structural, aesthetic, safety, etc.) to root and branch pruning for the Work Table.
- 323.4 (Tree Disposition Sheets) – This section had the following changes:
  - Added language to include an inventory of existing trees and what the inventory will provide,
  - Added guidance on how to utilize a tree or vegetation survey if available,
  - Added a requirement to show the limits of clear sight and horizontal offset.
- 323.5 (Tree Disposition Chart) – Removed the requirement to show approximate tree height and canopy spread, added the requirement to use the International Society of Arboriculture tree rating system, and added a note for designers to optionally provide approximate tree height, canopy spread, and location of the tree.
- 323.6 (Root and Branch Pruning) – This is a new section to give criteria on how to show root branch and pruning in the plans.

### FDM 324 (Miscellaneous Structures Plans)

- 324.4 (Concrete Box Culverts) – Edits in this section are to alleviate confusion over which details for box culverts need to go in the Roadway Component vs Structures Component.

### FDM 329 (Landscape Plans)

- 329.2 (Key Sheet) – Updated the order of the Landscape Plans to be consistent with the Basis of Estimates.
- 329.4 (Tabulation of Quantities and Plant Schedule) – Removed the reference to Exhibit 329-2.
- 329.6.1 (Required Information) – Added mowing limits to the required information of the Landscape Plans along with a legend clearly depicting the symbology used in the irrigation plans sheets.
- 329.7 (Landscape Details Sheet) – Added criteria about providing bracing details when trees or palms are over 30ft in overall height, or within falling distance of a roadway, pedestrian or bicycle route.

**ATTACHMENT 'B'**  
**2020 RIGID PAVEMENT DESIGN MANUAL &  
2020 FLEXIBLE PAVEMENT DESIGN MANUAL  
UPDATES SUMMARY**



## Summary of Updates to 2020 Pavement Design Manuals

### Flexible Pavement Design Manual

- Pavement Only Projects:
  - Chapter 2, Section 2.3 – Added a definition for Pavement Only Projects (POP) to clarify what these projects are, and to support information that is in the Work Program Instructions (WPI).
  - Chapter 7, Section 7.8.5 – Added a new section to clarify when POPs can be done. This is being done in conjunction with addition of term in Chapter 2.
- Design Period updates (Table 3.1):
  - Raising the lower end of the design period range to be a minimum of 15 years. (Pavement Overlay of Rigid Pavement will retain the 8-12 year period.)
- All other updates are for minor editorial changes.

### Rigid Pavement Design Manual

- Chapter 10, Section 10.2 (6<sup>th</sup> paragraph)
  - For concrete slab replacement: correction to the minimum compressive strength required to open concrete pavement back up to traffic. Updating the minimum from 2,200 psi to 1,600 psi to match ***FDOT Standard Specifications, Section 353***.

**ATTACHMENT 'C'**  
**2020 DRAINAGE MANUAL**  
**UPDATES SUMMARY**

## Summary of Updates to 2020 Drainage Design Manual

- Section 1.4: IDF curves have been placed back in the manual in Appendix E. Language also made more directive.
- Section 1.5: Added language to require stormwater routing models at all phase submittals. Reference to ICPR deleted due to preferential perception.
- Section 2.2: Statement was added to address the placement of sidewalk within a channel.
- Section 2.4.6: – Driveways: It was determined that this language was redundant with language already in the **Florida Design Manual (FDM)**.
- Table 3.2: Updated with current numbers.
- Section 3.7.1.1: Language added to ensure there is no conflict with guardrail posts. Additional guidance from Standards section included.
- Section 3.9.1: Clarifying language added for temporary construction. Sections 3.9.1 and 3.9.2 combined for efficiency.
- Section 3.9.3: Trench drain language made more affirmative to prevent unnecessary use when traditional inlets are more appropriate.
- Section 3.10.2: (1) Sentence language strengthened (2) Index 430-001 removed and language added by Rail Administrator as a reminder to coordinate early.
- Section 3.10.4: Language added to require engineers to inspect existing pipes that will remain in service as part of the new drainage system design.
- Section 4.2: Language clarified.
- Table 4.2: Removed and simplified to require a 10-year design for culverts, bridge-culverts and bridges.
- Section 4.9.3.2: Title changed to include retaining and sea wall protection.
- Section 4.9.4.2: A factor of safety for design is included to account for frequent clogging and the sensitive location on bridge decks.
- Section 6.5: Language clarified to included situations where an existing pipe could become part of a walled section.