FY 2019-20 Standard Plans Update Training

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Update Training Agenda

- **General Overview**
  - Website
  - Errata
  - Revision History Log
  - FDOT Design Manual (FDM) Updates

- **Standard Plans Updates**
  - **Derwood Sheppard**
    - Misc. Indexes – Earthwork Details, Superelevation, Turnouts/Driveways, Sidewalk, & Curb Ramps
    - Misc. Traffic Control Signals and Devices
  - **Richard Stepp**
    - Guardrail and Single-Slope Concrete Barrier
    - Opaque Visual Barrier
    - Crash Cushions
  - **Ed Cashman**
    - Temporary Traffic Control
    - Signing, Signal & Pavement Marking
    - Lighting
  - **Cheryl Hudson**
    - Structures Related Indexes
http://www.fdot.gov/design/standardplans/
Standard Plans – New Website

http://www.fdot.gov/design/standardplans/

### Standard Plans for Road and Bridge Construction

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard Plans</th>
<th>Support</th>
<th>Interim Revisions</th>
<th>Implementation Bulletin</th>
<th>Effective Date</th>
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<tr>
<td>FY 2019-20</td>
<td>Road Construction</td>
<td>CADD/CEL</td>
<td>Interim</td>
<td>RDB13-10</td>
<td>07/01/19</td>
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http://www.fdot.gov/design/standardplans/

<table>
<thead>
<tr>
<th>Standard Plans Index</th>
<th>Interim Revision or Errata</th>
<th>Index Title</th>
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<th>Design Tools</th>
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**Support Detail**

- eBook: Standards for Road Construction - Complete eBook
- Cover: Cover Sheet
- Abbrev: Abbreviations Sheet
- TOC Road: Table of Contents - Road Construction
- Crosswalk: Crosswalk of Design Standards Index to Standard Plans
- Revisions: Revision History Log

**Miscellaneous**

- 900-510: Superelavation Transitions - High Speed Roadways
- 900-511: Superelavation Transitions - Low Speed Roadways
- 800-520: Ramp Terminals
### Revision Log:

**STANDARD PLANS**  
FY 2019-20 REVISIONS LOG

<table>
<thead>
<tr>
<th>Standard Plans Index</th>
<th>Description</th>
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<tbody>
<tr>
<td>000-506</td>
<td>Changed to Index 160-001.</td>
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</table>
| 000-510              | **All Sheets:** Changed Title.  
Sheet 1: Deleted "DESIGN SPEED" table and "RADIUS OF CURVE" table; Deleted subtitle.  
Sheet 2: Added Concrete Pavement note to clarify shoulder slope transitions. |
| 000-511              | **All Sheets:** Changed Title, Subtitles, and Renumbered.  
Sheet 1: Deleted Superelevations Rates Tabulated and Charted Values (information can be found in FDM); combined General Notes with Old Sheet 2; Deleted all callouts for "CHARTED VALUES" on Old Sheet 2.  
Sheet 2: Updated Subtitle.                                                                 |
| 000-515              | Deleted Index; Criteria information moved to New FDM Chapter 214. Construction details moved to New Indexes 522-003 or 330-001.            |
| 000-516              | Deleted Index and moved information to Index 330-001.                                                                                     |
| 102-200              | **Sheet 1:** "STORAGE FACILITY" Note; Changed phone number to 407-278-2727.                                                                 |
| 102-600              | **Sheet 3:** Updated "LENGTH OF LANE CLOSURES" Note.  
**Sheet 9:** Changed "DROP-OFF CONDITION NOTES" Note 5.                                                                 |
| 102-655              | **Sheet 1:** Changed Notes to remove limitations to Limited Access Facilities and Overhead work. Clarified "TRAFFIC PACING GUIDE" notes for the requirements of site specific traffic control plans. Added Note 6 to the "TRAFFIC PACING GENERAL NOTES" for short duration operations. |
Individual Chapter Webinars

- Coming Soon!!
- Announcement will be sent out

2019 FDOT Design Manual Updates

www.fdot.gov/roadway/fdm

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Bulletin</th>
<th>Description</th>
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<td>Initial Engineering Design Process</td>
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<td>111</td>
<td>Final Engineering Design Process</td>
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<td>112</td>
<td>Update Engineering Design Process</td>
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<td>Right of Way Requirements</td>
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<td>Resurfacing, Restoration, and Rehabilitation (RRR)</td>
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<td>115</td>
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<td>Plans Submission, Review, and Processing</td>
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<td>121</td>
<td>Design Submittals</td>
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</tr>
<tr>
<td>122</td>
<td>Submittals, Review, and Processing</td>
<td></td>
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FDM 115
Standard Plans – Primary Updates:

1) General Overview and Website

2) Misc. Indexes
   a) Index 000-506 - Miscellaneous Earthwork Details (Including: Indexes 160-001 & 120-001)
   b) Index 000-510 - Superelevation - High Speed Roadways
   c) Index 000-511 - Superelevation - Low Speed Roadways
   d) Index 000-515 - Turnouts and Driveways (Including: Indexes 522-003 & 330-001)
      • Index 000-516 - Turnouts - Resurfacing Projects
   e) Index 350-001 - Concrete Pavement Joints
   f) Index 522-001 - Concrete Sidewalk
   g) Index 522-002 - Detectable Warnings and Sidewalk Curb Ramps
   h) Misc. Traffic Control Signals and Devices (Including: Indexes 630-001, 634-002, 635-001, 659-010, 660-001, and 676-010
New Index 160-001:  
Median Stabilizing Details

Specification 160 (Stabilizing)
Removal of Excess Base Material
Removal of Treated Permeable Base Option

Departments Preference now:

- Asphalt Base
- Special Select Soils

Refer to:

* Rigid Pavement Design Manual
Standard Plans – Primary Updates:

1) **General Overview and Website**

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   b) **Index 000-510 - Superelevation - High Speed Roadways**

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   d) **Index 000-515 - Turnouts and Driveways (Including: Indexes 522-003 & 330-001)**

      • **Index 000-516 - Turnouts - Resurfacing Projects**

   e) **Index 350-001 - Concrete Pavement Joints**

   f) **Index 522-001 - Concrete Sidewalk**

   g) **Index 522-002 - Detectable Warnings and Sidewalk Curb Ramps**

   h) **Misc. Traffic Control Signals and Devices (Including: Indexes 630-001, 634-002, 635-001, 659-010, 660-001, and 676-010)**
Added Note for Location of Shoulder Break for Concrete Pavement
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Superelevations – Low Speed Roadways, Index 000-511

There is a table showing superelevation rates for urban highways and high speed urban streets. The table includes columns for degree of curve (θ), superelevation rates (e), and design speed (mph). The charted values show the relationship between degree of curve and superelevation rates.

The diagram includes notes for the application of superelevations, such as:

- When the speed curve and the degree of curve are equal, the pavement is to be super-elevated (positive slope) at the rate indicated in the chart.
- When the speed curve and the degree of curve are unequal, the pavement is to be super-elevated as the ratio of the design speed to the rate of superelevation.
- When the speed curve and the degree of curve are less than the rate, the pavement is to be normal crown (0.05% and 0.10% below this rate).

There are also notes about transitions and the application of superelevations for low speed urban streets.

The diagram and table are accompanied by guidelines for the design and application of superelevations, emphasizing the importance of maintaining safe and smooth driving conditions.
Standard Plans – Primary Updates:

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Redevelopment Effort:

- **Criteria vs Construction Information**
  - e.g.: Geometric Requirements
    - Connection Width
    - Flare Distance
    - Radial Return Radius
    - Setback
  - Definitions (i.e., Connection Categories)
  - Florida Administrative Code (F.A.C.), Rule 14-96
    - Maintenance vs. Permittee Responsibilities
    - Minimum Requirements

### TABLE: CURBED ROADWAYS vs FLUSH SHOULDER ROADWAYS

<table>
<thead>
<tr>
<th>ELEMENT DESCRIPTION</th>
<th>CURBED ROADWAYS</th>
<th>FLUSH SHOULDER ROADWAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-20 Trips/Day</td>
<td>21-500 Trips/Day</td>
</tr>
<tr>
<td></td>
<td>1 Trips/Hour</td>
<td>6-40 Trips/Hour</td>
</tr>
</tbody>
</table>

### Index 522-003 (Concrete Driveways)
- Category A – Uses to 20 VTPD
- Category B – Uses with 21 - 600 VTPD
- Category C – Uses with 601 - 1,200 VTPD
- Category D – Uses with 1,201 - 4,000 VTPD
- Category E – Uses with 4,001 - 10,000 VTPD
- Category F – Uses with 10,001 - 30,000 VTPD
- Category G – Uses with 30,001 + VTPD

### Index 330-001 (Paved and Graded Driveways)
Material Types and Thicknesses in Driving Areas for All Connections

<table>
<thead>
<tr>
<th>Course</th>
<th>Structural</th>
<th>Roadway</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Thickness (in.)</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Notes:
1. Material layers shall be approved by the Department prior to being placed.
2. Connection structure other than traffic lanes. See Notes 1 and 2 below.
3. Intermediate layers (hypotenuse lanes), auxiliary lanes serving more than a single connection, and all medians crossovers including their auxiliary lanes and/or transition ramps. See Notes 1 and 2 below.

NOTES
1. The pavement should be structurally adequate to meet the expected traffic loads and should not be less than those shown above except as approved by the Department for special conditions. Other Department-approved equivalent pavements may be used at the discretion of the Engineer.
2. Auxiliary lanes and their transition ramps shall be the same structure as the adjoining travel way pavement thickness or any of the roadway structures tabulated above, whichever is thicker.
3. If an asphalt base course is used for a turn, its thickness may be increased to match the edge of travel way pavement thickness in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.
4. A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.
5. Connections paved with Portland cement concrete shall be Class A5 concrete at least 6" thick. The Department may require greater thickness when called for in the plans or stipulated by permit. Materials and construction shall conform with FDOT Standard Specifications Sections 345, 390, and 592.
6. The Department may require other pavement criteria when local conditions warrant.

Pavement Structure for Turnouts and Auxiliary Lanes

| TABLE 3.1 | SF 1801-1809 |

Limitations of Construction and Maintenance for Flush Shoulder Roadway Connections

<table>
<thead>
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<th>Turnouts and Driveways</th>
<th>INDEX SHEET</th>
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<tbody>
<tr>
<td>000-515 6 of 7</td>
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</tbody>
</table>
Old SHEET 7 of 7:

Content Moved to FDM 214
NEW - Concrete Flared Driveways, Index 522-003

SHEET 1 of 4:

Formatted to Resemble Index 522-002 for Curb Ramps

Construction Information from Sheet 2 of Old Index 000-515

Added Nomenclature Drawings to Define Components
NEW - Concrete Flared Driveways, Index 522-003
NEW - Concrete Flared Driveways, Index 522-003

SHEET 3 of 4:

Typical Driveway Profiles: Alpha-Numeric Identifications

Details from Old Index 000-515

Sheet 4 of 4 Similar
NEW - Paved and Graded Driveways, Index 330-001

SHEET 1 of 2:

Relocated Information Relating to Paved and Graded Driveways From Indexes 000-515 and 000-516

Construction Information from Sheet 5 of Old Index 000-515

Updated Notes to Remove Construction Phase Discussion Making
NEW - Paved and Graded Driveways, Index 330-001

SHEET 2 of 2:

Construction
Information from
Old Index 000-516

Updated Material
Requirements to Work
for New Construction
and Resurfacing Projects

Updated Cross-Sections

Added NEW Friction
Course Transition Detail
(DETAIL ‘A’)
Standard Plans – Primary Updates:

1) General Overview and Website

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   h) Misc. Traffic Control Signals and Devices (Including: Indexes 630-001, 634-002, 635-001, 659-010, 660-001, and 676-010
Concrete Pavement Joints, Index 350-001

Deleted Keyed Joint

ALTERNATE KEYWAY AND HOOK BOLT

STEEL HOOK BOLT ASSEMBLY

JOINT ARRANGEMENT

NOTES
1. Longitudinal joints will not be required for single lane pavement 14 ft or less in width. For entrance and exit ramp joint details, see Sheet 4.
2. Arrangement of longitudinal joints are to be as directed by the Engineer.
3. All movements, motor boxes and other projections into the pavement shall be boxed-in with 3” preformed expansion joint material.

CONTRACTION ASSEMBLY

EXPANSION ASSEMBLY

Note: Proprietary contraction and expansion assembly may be used. Products shall be introduced to the State Contractor Office in accordance with section 03 of the Product Evaluation Procedure.
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Concrete Sidewalk, Index 522-001

Added Curb Inlets to Examples

Clarified Intent of Expansion Joint Locations

Revised: Specification 522
Concrete Sidewalk, Index 522-001

Added Curb Inlets to Examples

Clarified Intent of Expansion Joint Locations

LEGEND:
A- ½" Expansion Joints (Preformed Joint Filler) between the sidewalk and driveways, sidewalk-intersections, and all other fixed objects (e.g. drainage inlets and utility poles).
Standard Plans – Primary Updates:

1) **General Overview and Website**

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   e) **Index 350-001 - Concrete Pavement Joints**
   
   f) **Index 522-001 - Concrete Sidewalk**
   
   g) **Index 522-002 - Detectable Warnings and Sidewalk Curb Ramps**
   
   h) **Misc. Traffic Control Signals and Devices (Including: Indexes 630-001, 634-002, 635-001, 659-010, 660-001, and 676-010**
Old Language

C. Install ramp slopes along a single linear plane (i.e. no warps or varying slope). Ramp slopes are not required to exceed 15 feet in length.

D. Joints permitted at the location of Slope Breaks. Otherwise locate joints in accordance with Index 522-001. No joints are permitted within the ramp portion of the Curb Ramp.

New Language

C. Maintain a single longitudinal slope along each side of the curb ramp. Ramp slopes are not required to exceed 15 feet in length.

D. Joints permitted at the location of Slope Breaks. Otherwise locate joints in accordance with Index 522-001. No joints are permitted within the ramp portion of the Curb Ramp.
Updated CR-A and CR-B Plan View to Work With Current Sidewalk Width Requirements
See FDM 222
Detectable Warnings and Sidewalk Curb Ramps, Index 522-002

SHEET 4 of 8:

Added Option B for Parallel Sidewalk
Re-Indexed 160-001: Stabilization Details
SHEET 8 of 8:

Detectable Warnings and Sidewalk Curb Ramps, Index 522-002

Added Curb Transition Details from Old Index 000-515
Standard Plans – Primary Updates:

1) General Overview and Website

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Miscellaneous 600 Series Indexes:

- Updated Layout
- Consolidated Notes
- Detailed to Current CADD Standards
- Included:
  - Index 630-001 (*Conduit Installation Details*)
  - Index 634-002 (*Aerial Interconnect*)
  - Index 635-001 (*Pull and Splice Boxes*)
  - Index 659-010 (*Span Wire Mounted Sign Details*)
  - Index 660-001 (*Vehicle Loop Installation Details*)
  - Index 676-010 (*Cabinet Installation Details*)
Questions?

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FY 2019-20 Standard Plans Update Training

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Central Office, Roadway Design
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Standard Plans – Primary Index Updates:

1) **Index 536-001 – Guardrail**
   - New “Trailing Anchorage”
     - Updated Downstream Placement Policy

2) **Index 521-001 – Concrete Barrier**
   - New Barrier-Mounted Sign Support Option – Dual Supports
   - New Callouts for “Variable Section Width” Start/Stop Points
   - New “Wall Shielding Barrier” & General “Max. Taper Rates”

3) **Index 521-010 – Opaque Visual Barrier (OVB)**
   - Redeveloped Index Sheets for Clarity
     - Durability Improvements
     - Varying Barrier Heights
   - New SPI and FDM Section

4) **Index 544-001 – Crash Cushion Details**
   - Redeveloped Index Sheets and SPI for Clarity
   - Redeveloped Summary of Permanent Crash Cushion Table
   - New Pay Items
Standard Plans – Primary Index Updates:

1) Index 536-001 – Guardrail
   • New “Trailing Anchorage”
   • Updated Downstream Placement Policy
Sheet 9: No More “Type II”!

- Soil Plate System Removed
- Rectangular Washers Removed
Sheet 9: New Trailing Anchorage!

- New Strut System Added
  - 2 Struts Total (1 Each Side)

- New Short Timber Breakaway Post & Steel Tube Foundation at Post 2

- Changes follow latest designs for MASH, following discussions with MwRSF
Sheet 10: **New Trailing Anchorage!**

- **New Strut System Added**
- **Steel Tube Foundations lengthened by 1 foot**

NOTES:

1. **INSTALLATION** Use components as shown on Sheet 8 & 11.
2. **ASSEMBLY** Use shear plates, channels, and Cable Assemblies in accordance with specification MB
   Use Short Timber Breakaway Posts and Steel Tube Foundations in accordance with specification XMB
   Use Hex Bolt, Hex Jam Bolt, and Washers in accordance with the 2007-032-00000 Guide to Standardized Bolt Systems with English units excepting of components FSC4 and FSC5
   respectively. Two half nuts may be used for the Hex Jam Bolt System.
3. **FRAME STRUTS** To prevent rotation of the Bearing Plate, use steel 2x2 Type A2 rails with
   ASTM A533 Net-tight galvanization
4. **CABLE ANCHOR PLATE ASSEMBLY INSTALLATION** Mount to the pre-fabricated Cable Anchor Plate Bolt
   Plates as the W-Mount Plate as shown on Sheet 8 These panel notes are only permitted for this
   Cable Anchor Plate Assembly Application.
5. **SOIL PLATE MINIMUM** For Trailing anchorage installations as shown on Sheet 8 the face bolt
   nuts shown may be substituted with a single 5/16 hex head bolt at the top corner.
BOE - DQE: **New Trailing Anchorage!**

536- 85- AA Guardrail End Treatment, EA

AA = Type

**Single Face**

20 (Trailing Anchorage) effective July 2019 lettings
22 (Flared Approach Terminal) valid through June 2019 lettings
24 (Parallel Approach Terminal)
25 (Type II Trailing Anchorage) valid through June 2019 lettings; see AA-20 for replacement
26 (CRT End Treatment)
PENDING: ?? (Flared Approach Terminal- NCHRP 350 TL-3) For Maintenance Use ONLY

**Double Face**

27 (Double Face Approach Terminal)
28 (Double Face Type II Trailing Anchorage) valid through June 2019 lettings; see AA-20 for replacement
29 (Double Face Trailing Anchorage) effective July 2019 lettings

- New Pay Items in Basis of Estimates (BOE – DQE):
  - 536-85-20
  - 536-85-29
SPI, Part C: **New Trailing Anchorage!**

- Extend Trailing Anchorage to **25 feet** downstream of hazard being shielded
- Based on latest MASH crash testing report
Standard Plans – Primary Index Updates:

1) **Index 536-001 – Guardrail**
   - *New “Trailing Anchorage”*
     - Updated Downstream Placement Policy

2) **Index 521-001 – Concrete Barrier**
   - *New Barrier-Mounted Sign Support Option – Dual Supports*
   - *New Callouts for “Variable Section Width” Start/Stop Points*
   - *New “Wall Shielding Barrier” & General “Max. Taper Rates”*
This is an alternative to larger sign supports with barrier widening

Design is for least use of space

No shoulder reduction: Barrier Gutter Lines remain at 2 foot barrier width
BOE - DQE: Variable Section Width Callouts

***********************************************
521-1- A Median Concrete Barrier, LF

A= Type, Single Slope, effective July 2018
11 (38” Height) Symmetrical
12 (Short Grade-Separated)
13 (Tall Grade-Separated)
14 (Variable Section Width for Sign or Pier Shielding)
   Segments included under -14 pay item:
   Median Barrier – 56” Height Section” (with transitions)
   Median Barrier – 38” Height Split Section” (with transitions)
   Median Barrier – 44” Height Split Section” (with transitions)

• Existing Pay Item – Descriptions now added
• Median Concrete Barrier 521-1-14 is for double-faced application
BOE - DQE: Variable Section Width Callouts

• **New Pay Item** for single-faced Wall Shielding Barrier

• **Shoulder Concrete Barrier** 521-72-61 is for *single-faced* application
• Example of...
Variable Section Width Pay Item (Double-Faced)
Sheet 8: Variable Section Width Callouts

- Example of... Variable Section Width Pay Item (Double-Faced)

**NOTE:** Even though gutter line width doesn’t change, the barrier face width changes, so the concept still applies.
Sheet 9: Variable Section Width Callouts

• **Example of...**
  Variable Section Width Pay Item (Double-Faced)

**NOTE:**
Measurement is along centerline of entire Variable Section Width system per the SPI and Specifications.
- **Example of...**
  Variable Section Width Pay Item (Double-Faced)

**NOTE:**
Measurement is along centerline of entire Variable Section Width system per the SPI and Specifications.
Sheet 25: Variable Section Width Callouts

- **Example of...** Variable Section Width Pay Item (Single-Faced)
- **Sneak Peak of** Wall Shielding Barrier
Wall Shielding Barrier – Past Examples (Non-Standard)
• **Usage:** Decision is project-specific per the SPI, Part B (District-level decision)

• **Space Needed:** Requires 1’-3½” from retaining wall to gutter line (Barrier Section plus half-inch joint filler)
Wall Shielding Barrier – Past Examples (Non-Standard) Approach and Trailing Taper (For Overhead Sign Support)
Sheet 23: Wall Shielding Barrier – Approach & Trailing Taper

- **Tapers**: Requires project-specific approach and trailing taper rates based on Design Speed (upcoming slides)

- **Overhead Sign Support**: Project-specific Design, similar to Median Version, (Sheets 9-10)
Wall Shielding Barrier – Past Examples (Non-Standard)
Guardrail Connection
Sheet 24: Wall Shielding Barrier – Guardrail Connection

- **Space Needed**: Requires 5’-3½” from retaining wall to gutter line (for proper Guardrail setback)

- **Overhead Sign Support**: Project-specific design, similar to median version, (Sheets 9-10)
Sheet 25: Wall Shielding Barrier – Barrier-mounted Sign Support

- **Space Needed:** Requires minimal space for a sign support that is governed by project-specific width of Overhead Sign Support.

- **Overhead Sign Support:** Project-specific design, similar to median version, (Sheets 6-8)
Sheet 25: Wall Shielding Barrier – Barrier-mounted Sign Support

- **Tapers:** Requires project-specific approach and trailing taper rates based on Design Speed (upcoming slides).
SPI: **New General Barrier Taper Rates**

G. Barrier Taper Rates:

Where conditions require the face of barrier to deviate from running parallel to the roadway, the shift in lateral offset must not exceed the taper rates provided below.

<table>
<thead>
<tr>
<th>Barrier Type:</th>
<th>Design Speed (mph):</th>
<th>Approach End *Maximum Taper Rate:</th>
<th>Trailing End *Maximum Taper Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Barrier</td>
<td>All</td>
<td>1:20</td>
<td>1:20</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>1:20</td>
<td>1:5</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>1:18</td>
<td>1:5</td>
</tr>
<tr>
<td>Shoulder Barrier, Curb &amp; Gutter Barrier, and Wall Shielding Barrier</td>
<td>55</td>
<td>1:16</td>
<td>1:5</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>1:14</td>
<td>1:5</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>1:12</td>
<td>1:5</td>
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<tr>
<td></td>
<td>40</td>
<td>1:10</td>
<td>1:5</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>1:8</td>
<td>1:5</td>
</tr>
</tbody>
</table>

*Taper Rate is measured relative to the roadway centerline (lateral offset : length)*

- **Median Barrier**: (double faced) is a consistent 1:20

- **Shoulder Barrier**: (single-faced) varies by Design Speed and approach direction to assist with minimizing space requirements
SPI: **New General Barrier Taper Rates**

- **Taper Example** – Wall Shielding Barrier

### Table 2: Maximum Barrier Taper Rates

<table>
<thead>
<tr>
<th>Barrier Type</th>
<th>Design Speed (mph)</th>
<th>Approach End Maximum Taper Rate</th>
<th>Trailing End Maximum Taper Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Barrier</td>
<td>All</td>
<td>1:20</td>
<td>1:20</td>
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<tr>
<td></td>
<td>60</td>
<td>1:18</td>
<td>1:5</td>
</tr>
<tr>
<td>Shoulder Barrier, Curb &amp; Gutter Barrier, and Wall Shielding Barrier</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoulder Barrier</td>
<td>55</td>
<td>1:16</td>
<td>1:5</td>
</tr>
<tr>
<td>Shoulder Barrier</td>
<td>50</td>
<td>1:14</td>
<td>1:5</td>
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<tr>
<td>Shoulder Barrier</td>
<td>45</td>
<td>1:12</td>
<td>1:5</td>
</tr>
<tr>
<td>Shoulder Barrier</td>
<td>40</td>
<td>1:10</td>
<td>1:5</td>
</tr>
<tr>
<td>Shoulder Barrier</td>
<td>30</td>
<td>1:8</td>
<td>1:5</td>
</tr>
</tbody>
</table>

**NOTES:**

1. **TAPER SEGMENTS AND OFFSET SEGMENT:** The plan view shown is an example only, showing general geometry for the taper segments and offset segments. For the actual geometry and longitudinal profile, see the plans for the project’s specific dimensions and requirements, if applicable.

2. **DETAILS:** See the plans for project-specific dimensions and requirements, if applicable.

3. **CONNECTION TO WALL SHIELDING BARRIER:** Carefully connect the barrier segments using a continuous joint or truncate joint, where longitudinal joint that din't match the adjacent sections in the construction drawings between sections or joints, if applicable, with the adjacent section's longitudinal joint.
Standard Plans – Primary Index Updates:

1) **Index 536-001 – Guardrail**
   - New “Trailing Anchorage”
     - Updated Downstream Placement Policy

2) **Index 521-001 – Concrete Barrier**
   - New Barrier-Mounted Sign Support Option – Dual Supports
   - New Callouts for “Variable Section Width” Start/Stop Points
   - New “Wall Shielding Barrier” & General “Max. Taper Rates”

3) **Index 521-010 – Opaque Visual Barrier (OVB)**
   - Redeveloped Index Sheets for Clarity
     - Durability Improvements
     - Varying Barrier Heights
   - New SPI and FDM Section
Opaque Visual Barrier – Past Examples (Previous-Standard)
215.5.1.2 Opaque Visual Barrier

Opaque Visual Barrier is used on top of median concrete barrier and traffic railing to reduce headlight glare from opposing traffic lanes. Opaque Visual Barrier may be considered on LA Facilities that have glare issues when the facility has high-traffic volumes and a separation between opposing traffic lanes of 26 feet or less.

When Opaque Visual Barrier is used, a minimum shoulder width of 4 feet is required on both sides of the median concrete barrier or traffic railing.

Standard Plans, Index 521-010 and the associated Standard Plans Instructions provide additional information.

• **Usage Considerations:**
  • Remains a project-specific, District level decision

• **Guideline for LA Facilities...**
  (see highlighted)

• **Usage Limitations:**
  Median Barrier use only with min. 4 feet shoulder either side
  (Further explanation in SPI)
**Sheet 1: Redeveloped OVB – New Heights and Features**

- **Notes rewritten for clarity with new headings**
- **New OVB Heights:**
  - Now accommodates multiple cases:
    - **New Single-Slope Concrete Barrier & Bridge Traffic Railing**
    - **Old F-Shape Barrier** (Existing)
Sheet 1: Redeveloped OVB – New Heights and Features

- **Tighter Reinforcing:** web now 6” spacing
- **Longer Panel Lengths:** minimum joint spacing of 20 feet
• Large Sign Support with 56” Height Barrier (per Index 521-001)
**“Leave-Out” Example:**

Per General Note 7, “Leave-Outs” of up to 15 feet are permitted with one continuous Pay Item measurement (to accommodate barrier-mounted signs and light poles).
Sheet 2: **New Sheet – “Leave-Out” & Variable Height Details**

- **Variable Heights:**
  Detail for OVB Panels over raised barrier height sections (Uses same Pay Item)

- Example here shows 44” Height Barrier with height transition (other heights and transitions similar)
SPI: New Standard Plans Instructions

Index 521-010 Opaque Visual Barrier (OVB)

Design Criteria

Design Assumptions and Limitations
For usage information, see FDM 215.

OVB is only intended for use as a visual screen; it is designed to withstand wind loading, light debris, and minor contact from errant vehicles.

OVB is not intended to resist or shield against errant vehicle impact loads; it is designed to yield upon large vehicle strikes.

A. Placement:

Per Index 521-010, align the centerline of the OVB with the centerline of the top face of the supporting Concrete Barrier or Traffic Railing.

Covers:

- Crash-worthiness design limitations
- General placement practices
- Callout locations (corresponds to Index drawing’s Begin/End OVB Sta.)
- Pay Item information
Standard Plans – Primary Index Updates:

1) **Index 536-001 – Guardrail**
   - *New “Trailing Anchorage”*
     - Updated Downstream Placement Policy

2) **Index 521-001 – Concrete Barrier**
   - *New Barrier-Mounted Sign Support Option – Dual Supports*
   - *New Callouts for “Variable Section Width” Start/Stop Points*
   - *New “Wall Shielding Barrier” & General “Max. Taper Rates”*

3) **Index 521-010 – Opaque Visual Barrier (OVB)**
   - *Redeveloped Index Sheets for Clarity*
     - Durability Improvements
     - Varying Barrier Heights
   - *New SPI and FDM Section*

4) **Index 544-001 – Crash Cushion Details**
   - *Redeveloped Index Sheets and SPI for Clarity*
   - *Redeveloped Summary of Permanent Crash Cushion Table*
   - *New Pay Items*
544-001 is for “Permanent Crash Cushions” on the APL...
1. GENERAL: Work this Index in accordance with Specifications 3rd and the
   Summary of Permanent Crash Cushion Table in the Plan.

2. TRANSITION PANEL: Where crash cushions are placed between two-way
   traffic or adjacent to normally traveled traffic, place a Transition Panel
   from the concrete barrier to the Crash Cushion on the downstream side
   of the barrier end as shown. Follow the requirements of the A/A Plan.

3. MANUFACTURER'S TRANSITION: Construct the proprietary quadrant transition
   only if shown in the applicable A/A Plan. See Note 4 below.

4. STANDARD GUARDRAIL TRANSITION: If the A/A Plan does not provide a
   quadrant transition to an existing guardrail, construct the Standard Guardrail
   Transition segment from this detail as shown per Sheet 7. This 21-190" segment
   must remain parallel to the roadway.

5. LENGTH OF END TREATMENT: For Crash Cushions, the length of the end
   treatment includes all proprietary elements of the design shown in the
   A/A Plan, including the manufacturer's transition of quadrant if applicable.

6. END TREATMENT: In Summary of Permanent Crash Cushion Table, the
   length of End Treatment is calculated as shown per the Plan to provide
   sufficient space for the Contractor's option of different Crash Cushion types.

7. CRASH CUSHION STAFFER: The Crash Cushion Staffer point shown herein
   corresponds to the detail provided in the Summary of Permanent Crash
   Cushion Table in the Plan.
Sheet 1:

First Concept:

Crash Cushion Callout Point is the same as the:

- ‘Length of Need’ Location
- Begin/End Guardrail Station or...
- Begin/End Concrete Barrier Station
Concrete Barrier LON Design Tool (Excel):

First Concept:

Crash Cushion Callout
Point is the same as the:

- ‘Length of Need’ Location
- Begin/End Guardrail Station or...
- Begin/End Concrete Barrier Station
Second Concept:

‘Length of End Treatment’ – Segment upstream of the connecting Concrete Barrier or Guardrail...

- Includes all proprietary elements required per the APL drawings
- For Guardrail, this includes the “Manufacturer’s Transition”
Second Concept:

‘Length of End Treatment’ – Segment upstream of the connecting Concrete Barrier or Guardrail...

- Length varies by type and manufacturer
- **Default length** for designers is **27’-6”** (to accommodate contractor’s choice)

See SPI Part D
Redeveloped – Standard Guardrail Transition

Third Concept:

‘Standard Guardrail Transition’

- Always a required parallel segment that is 21’-10½” Long
- This post and panel configuration may change depending on Manufacturer’s needs, but for Designer’s planning, the segment is always parallel to roadway and 21’-10½”.
‘LON’ Design Tool (Excel): **Redeveloped – Standard Guardrail Transition**

**Third Concept:**

‘Standard Guardrail Transition’

- $L_{p2} = ‘Length of Standard Guardrail Transition’$ by Default!

---

**PART C: Crossover Guardrail with 'Crash Cushion' - Shielding Concrete Railing Across Median (Within Clear Zone)**

- $L_{p2}$

---

<table>
<thead>
<tr>
<th>Parallel C.C. Trans. Length, $L_{p2}$ (Ft.)</th>
<th>21.9</th>
</tr>
</thead>
</table>

The length of the parallel segment required for Guardrail Transition, just beyond the taper. This is the length between Post (1) and Post (10) per Index 544-001 (21.9 Ft.)
Reminders!:

- ‘Standard Guardrail Transition’ is downstream of ‘LON’ point
- ‘Begin/End Guardrail Station’, ‘Crash Cushion Station,’ and ‘LON’ point
- The ‘Length of End Treatment’ Treatment is upstream of the ‘LON’ point (27’-6” default)
Topics Covered:

A. ‘Location’ of callout station
B. ‘Length of Need’ process
C. ‘Test Level’ selection
D. ‘System Width’ selection
E. ‘Length of End Treatment’ (default value 27’-6”)
F. ‘Constrained Conditions’ (Methods for Reducing Space Needed for Crash Cushions)
G. ‘Temporary Crash Cushions’ (where to look for more info)
H. ‘Alternative Crash Cushion Usage’ (not barrier ends)
SPI: Redeveloped Standard Plans Instructions

Old Pay Item:

544-75- AA Crash Cushion, EA

AA= Type
1 (Optional) PENDING: Valid through 6-30-2019 lettings; replaced by 544-2- or 544-3- items.

New Pay Items:

544-2- Crash Cushion, TL-2, EA (45 mph or less)
A= Width
1 (Narrow)
2 (Wide)

544-3- Crash Cushion, TL-3, EA (Over 45 mph)
A= Width
1 (Narrow)
2 (Wide)

Per SPI, Part D:

- "Narrow" system: connects to barriers (or objects)... 24” width or less
- "Wide" system: connects to barriers (or objects)... Over 24” width
SPI: Redeveloped Standard Plans Instructions

Plan Content Requirements

Summary Boxes:

Summarize the following information in the *Summary of Permanent Crash Cushions* table per the *BOE*, Chapter 8 (include “N/A” for categories that are not applicable):

1. *Location (Station and Side)*, See the Crash Cushion Station in *Index 544-001*
2. *Crash Cushion System Width (Narrow or Wide)*
3. *Crash Test Level (TL-2 or TL-3)*
4. *Barrier Width (Inches)*
5. **Length Restriction (Based on site specific space constraints)**

---

<table>
<thead>
<tr>
<th>SUMMARY OF PERMANENT CRASH CUSHIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAY ITEM NO.</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td></td>
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</tr>
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</table>
SPI: Redeveloped Standard Plans Instructions

Plan Content Requirements

Summary Boxes:

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1. *Location (Station and Side), See the Crash Cushion Station in Index 544-001
2. *Crash Cushion System Width (Narrow or Wide)
3. *Crash Test Level (TL-2 or TL-3)
4. *Barrier Width (Inches)
5. **Length Restriction (Based on site specific space constraints)

“SYSTEM WIDTH”:
Defined in SPI, Part D

Added to Pay Item Description Automatically When Pay Item Selected (D&C Manager CADD Tool)
**SPI:** Redveloped Standard Plans Instructions

**Plan Content Requirements**

Summary Boxes:

Summarize the following information in the *Summary of Permanent Crash Cushions* table per the *BOE*, Chapter 8 (include “N/A” for categories that are not applicable):

1. *Location* (Station and Side), See the Crash Cushion Station in *Index 544-001*
2. *Crash Cushion System Width* (Narrow or Wide)
3. *Crash Test Level* (TL-2 or TL-3)
4. *Barrier Width* (Inches)
5. **Length Restriction** (Based on site specific space constraints)

---

### SUMMARY OF PERMANENT CRASH CUSHIONS

<table>
<thead>
<tr>
<th>PAY ITEM NO.</th>
<th>PAY ITEM DESCRIPTION</th>
<th>LOCATION</th>
<th>BARRIER WIDTH</th>
<th>LENGTH RESTRICTION</th>
<th>QUANTITY (EA)</th>
<th>TOTAL</th>
<th>DESIGN NOTES</th>
<th>CONSTRUCTION REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>STATION</td>
<td>IN</td>
<td>FT</td>
<td>P</td>
<td>F</td>
<td>P</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIDE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SPI:**  **Redeveloped Standard Plans Instructions**

**Plan Content Requirements**

Summary Boxes:

Summarize the following information in the *Summary of Permanent Crash Cushions* table per the *BOE*, Chapter 8 (include “N/A” for categories that are not applicable):

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2. *Crash Cushion System Width (Narrow or Wide)*
3. *Crash Test Level (TL-2 or TL-3)*
4. *Barrier Width (Inches)*
5. **Length Restriction (Based on site specific space constraints)**

---

**SUMMARY OF PERMANENT CRASH CUSHIONS**

<table>
<thead>
<tr>
<th>PAY ITEM NO.</th>
<th>PAY ITEM DESCRIPTION</th>
<th>LOCATION</th>
<th>BARRIER WIDTH</th>
<th>LENGTH RESTRICTION</th>
<th>QUANTITY (EA)</th>
<th>TOTAL</th>
<th>DESIGN NOTES</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>STATION</td>
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<td>FT</td>
<td>P</td>
<td>F</td>
<td></td>
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<td>SIDE</td>
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<td></td>
</tr>
</tbody>
</table>

"**BARRIER WIDTH**: Defined in SPI, Part D

For example: 24” for Concrete Median Barrier
SPI: Redeveloped Standard Plans Instructions

Plan Content Requirements

Summary Boxes:

Summarize the following information in the Summary of Permanent Crash Cushions table per the BOE, Chapter 8 (include “N/A” for categories that are not applicable):

1. *Location (Station and Side), See the Crash Cushion Station in Index 544-001
2. *Crash Cushion System Width (Narrow or Wide)
3. *Crash Test Level (TL-2 or TL-3)
4. *Barrier Width (Inches)
5. **Length Restriction (Based on site specific space constraints)

“LENGTH RESTRICTION”: Defined in SPI, Part F

If default crash cushion length of 27’-6” does not fit project, then contractors choice may be limited with a “Length Restriction”
FY 2019-20 Standard Plans Update Training

Ed Cashman, P.E.
Standard Plans Engineer
State Roadway Design Office
(850) 414-4314
edward.cashman@dot.state.fl.us
Standard Plans – Primary Updates

1) Temporary Traffic Control Indexes
   a) Index 102-600 – General Information for Traffic Control Through Work Zones
   b) Index 102-655 – Traffic Pacing

2) Signal, Signing & Pavement Marking Indexes

3) Lighting Indexes
Changed the maximum lane closure length to three miles for high-speed facilities
Old:

5. For Conditions 1 and 3 provided in Table 1, any drop-off condition that is created and restored within the same work period will not be subject to the use of temporary barriers; however, channelizing devices will be required.

New:

5. For Conditions 1 and 3 provided in Table 1, an isolated drop-off condition less than 100 feet in length that is created and restored within the same work period will not be subject to the use of temporary barriers; however, channelizing devices will be required.
Traffic Pacing Guide

Traffic pacing is a traffic control technique to slow or stop traffic to facilitate short duration work operations without an elaborate and difficult delivery or diversion. Traffic officers may use flagging to operate approximately 20-30 minutes to perform the work operation. Flag熊med officers are frequently used by contractors for holding traffic lights, marking signs, and removing temporary signs.

CHANGEABLE MESSAGE SIGNS

(Typical Placement and Messages)

Symbols

- Changeable Message (box style index #05-100)
- Marked Pave / Vehicle with Flashing Light
- Panel Replacement Changeable Message Sign
- To be placed on the day of paving operation
- Lane Identification and Directions of Traffic

ONE HOUR PRIOR TO PAVING OPERATION

<table>
<thead>
<tr>
<th>SYMBOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGEABLE MESSAGE</td>
</tr>
<tr>
<td>PANEL REPLACEMENT</td>
</tr>
<tr>
<td>MARKED PAVE / VEHICLE WITH FLASHING LIGHT</td>
</tr>
<tr>
<td>LANE IDENTIFICATION</td>
</tr>
</tbody>
</table>

NOTICE

This index outlines the minimum requirements for traffic pacing operations on the state highway system. Review the specific traffic control plans for each pacing operation location.

TRAFFIC PACING GENERAL NOTES

1. The MCD Resident Inspector (R.I.) as an R.I. and/or the pacing control officer, may require traffic officers to perform traffic control modifications to improve traffic movements between the contractor and/or the project administration, and/or the public works involved in this paving operation.

2. Prior to requesting that the traffic control officer supervise the paving operation, the contractor shall ensure that the necessary equipment is properly positioned (off the roadway), the construction activity requiring the traffic control operation, and the area to be paved are clear of obstructions that could create hazards for drivers and the public works involved in the paving operation. The contractor shall be responsible for maintaining clear, unobstructed areas in which the traffic officers are operating.

3. Traffic officers shall be responsible for ensuring that all traffic signs and equipment are placed in a safe location during the paving operation (at or in the area to be paved). The contractor shall be responsible for ensuring that all traffic signs, equipment, and materials are properly positioned for the operation.

4. A traffic control officer will assist in the traffic control of the operation and will be available to coordinate any changes in the traffic control plan that may be necessary to ensure the safety of the public works involved in the paving operation. The contractor shall be responsible for ensuring that all traffic signs, equipment, and materials are properly positioned for the operation.

TRAFFIC CONTROL PLANS OR TECHNICAL SPECIFICATION

The specific procedures and techniques, with appropriate limits of day and duration of the work, when paving will be allowed, shall be clearly defined in the traffic control plans or technical specifications. If there are any specific procedures and techniques, with appropriate limits of day and duration of the work, when paving will be allowed, they shall be clearly defined in the traffic control plans or technical specifications.

TRAFFIC PACING GUIDELINES

1. The contractor shall ensure that all traffic signs and equipment are properly positioned for the operation.

2. Prior to the start of the paving operation, the contractor shall ensure that all traffic signs, equipment, and materials are properly positioned for the operation.

3. Traffic officers shall be responsible for ensuring that all traffic signs and equipment are placed in a safe location during the paving operation.

4. Traffic officers shall coordinate with the contractor to ensure that all traffic signs, equipment, and materials are properly positioned for the operation.

New

1. The contractor shall ensure that all traffic signs and equipment are properly positioned for the operation.

2. Prior to the start of the paving operation, the contractor shall ensure that all traffic signs, equipment, and materials are properly positioned for the operation.

3. Traffic officers shall be responsible for ensuring that all traffic signs and equipment are placed in a safe location during the paving operation.

4. Traffic officers shall coordinate with the contractor to ensure that all traffic signs, equipment, and materials are properly positioned for the operation.
1) Temporary Traffic Control Indexes

2) Signal, Signing & Pavement Marking Indexes
   a) Index 654-001 – Rectangular Rapid Flashing Beacon Assembly
   b) Index 700-102 – Special Sign Details
   c) Index 700-103 – Tourist Oriented Directional Signs
   d) Index 700-109 – Traffic Controls for Street Terminations
   e) Index 700-120 – Enhanced Highway Signing Assemblies
   f) Index 706-001 – Typical Placement of Raised Pavement Markers
   g) Index 711-001 – Pavement Markings

3) Lighting Indexes
Deleted Index and moved the details into FDM 230.2.10.
In addition to the highlighted changes to right, revised some sign locations.
There are Index-wide changes. The primary revisions are the following:

- **Changed title to “Enhanced Highway Signing Assemblies”**
- The removal of RRFBs to separate Index 654-001
- An alpha-numerical system for easy identification
- The addition of highlighted signs
- The use of pedestals for all roadside signs
Revised RPM and Reflective Yellow Paint placement.
New!

Added sheet showing the placement of RPMs at Limited Access crossovers. This information was previously in FDM 211.3.2.
New!

Added sheet showing the placement of blue RPMs. This information is currently in TEM Section 4.3.
Significant changes on Sheet 1 are the following:

- Added standard details for route shields
- Added pavement message spacing table
Sheet 10 of 13

Revised sheet to show only basic crosswalk pavement marking details.

Moved to sheet 7 of 13
**Pavement Markings, Index 711-001**

Sheet 11 of 13

---

**SINGLE LEFT TURNS**

- "L" distance is measured from the curb. For traffic light direction, use the "L" distance from the curb.

**DOUBLE LEFT TURNS**

- Through lanes on opposite direction.

**ARROW SPACING**

- Arrow should be placed according to the lane direction.

**NOTES:**

1. This lane should be used by left-turners only.
2. Where possible, marking should be kept in the outermost lane.
3. See Sheet 4 for "X" marks.

---

**TURN LANE MARKINGS**

- Urban conditions
- Arrow conditions

| Design Lane Width | L | H | T | H | L | H | T | H | L | H | T | H | L | H | T | H | L | H | T | H |
| 39                | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 41                | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 45                | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 50                | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 55                | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

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**Turn Lane - Curved and Uncurved Sections**

- Urban conditions
- Arrow conditions

| Design Lane Width | L | H | T | H | L | H | T | H | L | H | T | H | L | H | T | H | L | H | T | H | L | H | T | H |
| 39                | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 41                | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 45                | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 50                | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 55                | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
This sheet has been deleted. See Index 509-070 for pavement markings at at-grade railroad crossings.
Standard Plans – Primary Updates

1) Temporary Traffic Control Indexes
2) Signal, Signing & Pavement Marking Indexes
3) Lighting Indexes
   a) Index 715-002 – Standard Aluminum Lighting
There are many revisions to this Index, but the changes are mostly formatting and for clarity.

Note: The values of tables that have changed or disappeared have been reworked, when possible, into the details to which the tables applied (see sheets 3-5 of 8).
Pole wall thicknesses have been revised!
Questions?

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Standard Plans Engineer
State Roadway Design Office
(850) 414-4314
edward.cashman@dot.state.fl.us
FY 2019-20 Standard Plans Update Training

Structures Design Office Updates
(December, 2018)

Cheryl Hudson, P.E.
Structures Design Standards Group
Cheryl.hudson@dot.state.fl.us
(850) 414-5332
• General Review
• Standard Plans Packager
• Editorial Changes
• Minor *Standard Plans* Revisions
• Major *Standard Plans* Revisions
• *SPI* Revisions
• *Cell* Revisions (Data Tables)
• *Developmental Design Standards/Standard Plans*
• Looking Ahead
Standard Plan Index Numbers are consecutive within each Section (Roadway, Bridge).

Standard Plans in the Bridge section must be included in the Structures Plan Set if utilized.

Walls: all walls are in the Roadway section
Box Culverts: all are located in the Bridge section

http://www.fdot.gov/design/standardplans/Current/default.shtm
Revision Logs: A table of revisions is created for each release and changes are combined (Roadway & Bridge) and are listed in numerical order and is available at the same location as the Standard Plans: http://www.fdot.gov/design/standardplans/Current/default.shtm

### Standard Plans for Road Construction

<table>
<thead>
<tr>
<th>Standard Plans Index</th>
<th>Interim Revision or Errata</th>
<th>Index Title</th>
<th>Design Standards Index</th>
<th>Standard Plans Instructions</th>
<th>Design Tools</th>
<th>Contact</th>
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<tbody>
<tr>
<td>eBook</td>
<td></td>
<td>Standard Plans for Road Construction - Complete eBook</td>
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<tr>
<td>Cover</td>
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<td>TOC Road</td>
<td></td>
<td>Table of Contents - Road Construction</td>
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<tr>
<td>Crosswalk</td>
<td></td>
<td>Crosswalk of Design Standards Index to Standard Plans</td>
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<td></td>
<td>Revision History Log</td>
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<td>SPI</td>
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</table>

See the FDOT Design Manual (FDM), Chapter 115, for additional information on the use of Standard Plans within FDOT Contract Plans.

Skip to Standard Plans for Bridge Construction

_Last updated: 11/02/2018_
Numerically: no separation for roadway/structures.

<table>
<thead>
<tr>
<th>Standard Plan Index</th>
<th>Description</th>
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</table>
| 521-010             | Redeveloped Standard
|                     | **New Sheet 1**: Updated designs for all variations of single-slope and existing F-Shape barriers; Updated spacing of vertical and horizontal reinforcing steel, Added a minimum transverse joint spacing, Added leave-out concept for measurement; Added accommodation for welded wire reinforcing and variable barrier heights. **New Sheet 2**: Added detail for terminating at 36” height barrier sections; Added detail for continuing over 48” height barrier sections. |
| 521-422             | **Sheet 1**: Changed Barrier Delineator Note. **Sheet 2**: Editorial, sidewalk hook bars. |
| 521-423             | **Sheet 1**: Changed Barrier Delineator Note. **Sheet 2**: Editorial “RAILING END DETAIL” and “VIEW A-A AND B-B”. |
| 521-426             | **Sheet 1**: Changed Barrier Delineator Note. |
| 521-427             | **Sheet 1**: Changed Barrier Delineator Note. |
| 521-428             | **Sheet 1**: Changed Barrier Delineator Note. **Sheet 2**: Editorial. |
| 521-509             | All reorganized sheets and renumbered; Updated sheet # references. **Sheet 1**: Added notes moved from other sheets; Added Note 6. **Sheet 2**: Changed reinforcing. **Sheet 3**: Changed reinforcing. **Sheet 4**: Changed reinforcing. **Sheet 5**: Changed Note references to new reinforcing bars. |
| 521-510             | All reorganized sheets and renumbered; Updated sheet # references. **Sheet 1**: Added notes moved from other sheets; Added Note 6. **Sheet 2**: Changed reinforcing. **Sheet 3**: Changed reinforcing. **Sheet 4**: Changed reinforcing. **Sheet 5**: Changed Note references to new reinforcing bars. |
| 521-511             | **Sheet 1**: Updated Notes. **Sheet 2**: Added Bar SR3; Changed reinforcing. | **Sheet 3**: Added Bar SR3; Changed reinforcing. |
| 521-512             | **Sheet 1**: Updated Notes. **Sheet 2**: Added Note 6; Changed asphalt description in SECTION B-B. |
Standards Plans Packager Program (Tool):

For compiling Structures Standard Plans (Indexes) for the Structures Component Plans

http://www.fdot.gov/structures/CADD/standards/CurrentStandards/MicrostationDrawings.shtm

PLEASE READ THE FOLLOWING BEFORE DOWNLOADING MICROSTATION DRAWINGS

The official Design Standards are available at the Roadway Office website:
Design Standards webpage
Design Standards depict common structural components or elements suitable for standardization. Their use is by reference in the Contract Plans to the official Design Standards as specified in the Plans Preparation Manual (Volume II, Section 3.8). Some "Structures" Design Standards require the designer to complete a Data Table(s) and include in the Contract Plans. These Data Tables should be available on the FDOT Structures bar menu within the TTF_V8semi-standards.col cell library. If a Data Table is not included in the FDOT Structures bar menu, the latest cell library can be downloaded from the link provided below or individual cells can be downloaded from the Standard Plans webpage for FY2012/2013 and later.

1.) Structures Related Design Standards Details:
(see Standard Plans website for FY 2012/2013 and later Design Standards Details & Revisions)
(see Archived Drawings for 2010/2011 and earlier Design Standards Details & Interims)

Structures Standard Plans Packager Program (used to bundle Bridge Standard Plans into a PDF file for Structures Component)
Standards Plans Packager Tool:

Added a selection tool to choose the let date which selects the correct Standard Plans Book.
Continuing our work towards consistency - Indexes, Instructions, and Specifications.

**Editorial:** Insignificant changes such as spelling and grammar correction, font style and size. Revision date is not changed.

Railings vs. Barriers: (Editorial) Made changes to correct some references, in regard to the joint effort in cooperation with Roadway and Specifications - the following rule of thumb:

- If located on a Bridge or Approach Slab = *Traffic Railing*
- If located on a wall or shoulder = *Concrete Barrier*
Minor Revisions to Standard Plans

- **Index 102-200: Detour Bridge**
  - Changed Storage Facility phone number

- **Index 450 Series: 450-036 thru 450-096 Florida I Beams**
  - Corrected Note # references in END VIEW

- **450-010 & 450-120: I Beam Notes**
  - Added Note 13 (holes in web)

- **455-400: Precast Concrete Sheet Pile Walls**
  - Changed Table: Added Initial Jacking Force and moved Section Modulus and Prestress after Losses to SPI

- **455-440: Precast Concrete Sheet Pile Walls (corrosion resistant)**
  - Changed Table: Added Initial Jacking Force and moved Section Modulus and Prestress after Losses to SPI
  - Changed Dimension A for S4 thru S7 Bars

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13. Holes in the beam web for temporary bracing or shipping devices must be formed prior to casting. Fill holes not meeting all the following criteria in accordance with Specification Section 450:
A. The superstructure environmental classification is slightly or moderately aggressive
B. Clear cover to adjacent steel reinforcing is 1" or greater
C. Hole inside diameter is 2" maximum
D. Non-metallic, non-water absorbing forming materials such as PVC, may be left in place permanently.

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<table>
<thead>
<tr>
<th>Strand Material</th>
<th>Wall Thickness</th>
<th>STRAND DIA. (in.)</th>
<th>MAXIMUM L (in.)</th>
<th>n</th>
<th>D (in.)</th>
<th>TOTAL # OF STRANDS</th>
<th>Initial (Jacking) FORCE (Kip)</th>
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<tbody>
<tr>
<td>CFRP Strand</td>
<td>T=10 in.</td>
<td>0.49 (12.3mm)</td>
<td>26'-0&quot;</td>
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<td>4</td>
<td>10</td>
<td>28.7</td>
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<td></td>
<td></td>
<td>0.5 (12.7mm)</td>
<td>27'-0&quot;</td>
<td>3</td>
<td>5½ (1)</td>
<td>8</td>
<td>41.3</td>
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<td></td>
<td>0.6 (15.2mm)</td>
<td>28'-0&quot;</td>
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<td>5½ (1)</td>
<td>8</td>
<td>42.7</td>
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<td></td>
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<td>0.49 (12.3mm)</td>
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<td>5</td>
<td>3½ (1)</td>
<td>12</td>
<td>29.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 (12.7mm)</td>
<td>31'-0&quot;</td>
<td>3</td>
<td>5½ (1)</td>
<td>8</td>
<td>41.3</td>
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<td>3</td>
<td>5½ (1)</td>
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</tr>
<tr>
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<td>27'-0&quot;</td>
<td>5</td>
<td>3½ (1)</td>
<td>12</td>
<td>29.7</td>
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<td>5½ (1)</td>
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<td>36.5</td>
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<tr>
<td></td>
<td>T=12 in.</td>
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<td>4</td>
<td>4</td>
<td>10</td>
<td>36.5</td>
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</table>

Concrete Sheet Pile Table was Changed
• **521-512**: Concrete Barrier/Noise Wall
  - Reorganized Notes *(read notes carefully – some have changed)*
  - Sheet 2: Added Note 6 *(Clarification on asphalt type)*

• **Index 521-610**: Concrete Barrier/Junction Slab
  - Same change as 521-512 to clarify asphalt.
• **Index 515-052 & 515-062: Pedestrian/Bicycle Railings**
  - Corrected specification reference.

• **Index 521-400 & 500 Series: Traffic Railings**
  - Added color information back into the Barrier Delineator note

  BARRIER DELINEATORS: Install Barrier Delineators on top of the Traffic Railing 2" from the face on the traffic side in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.

• **Index 521-620: Concrete Barrier/Raised Sidewalk – Wall Coping**
  - Sheet 2: Added Notes 7 & 8 +

  7. For Bullet Railings, see Index 515-821 and 515-822.
  8. Begin placing Railing Bars 5T and 5X at the railing end and proceed toward Retaining Wall to avoid conflict with guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5T and 5X shall be made immediately adjacent to Begin or End Bridge. Cut, shift and rotate Bars 5T and 5X as required to maintain cover in End Transition.

• **Index 521-630: Parapet with C-I-P Sidewalk – Wall Coping**
  - Sheet 2: Corrected Bar 5U dimension
**Index 521-820: 27” Concrete Parapet**

- Added a Sheet to declutter.
- Added an optional 4P2 bar shape;
  - Flips Bars 4P1 bar upside down
  - Eliminates the need for protective rebar caps during construction.
• **Index 534-250: Perimeter Walls**
  • Changed the Grout strength for ACP to match the Noise Walls
  • Issued as an ERRATA earlier this year

• **Index 630-010: Conduit Details – Embedded**
  • Clarified that EJB “A” is for double or triple conduit.
Major Revisions to Standard Plans

MAJOR REVISIONS
Major Revisions to Standard Plans

- **Index 462-002 & 462-003: Post Tensioning Details**
  - Added Pockets around Plugs for constructability
  - Added polyurethane top coating to drawings (specification requirement)
• **521-509, 510, 511: Traffic Railing/Concrete Barrier/Noise Walls**
  - Reorganized Sheets & Notes (Moved Notes to Sheet 1)
    - Read notes carefully, too many small changes to note.

• **521-509, 510, 511: Traffic Railing/Concrete Barrier/Noise Walls**
  - Added Slip forming information
  - Reinforcing re-designed for constructability (three pours).

5. Install Barrier Delineators 2'-4" above the riding surface in accordance with Specification Section 705. Match the Barrier Delineators color (White or Yellow) to the near edgeline.

6. Slip forming of the barrier portion is permitted.
   A. Stem walls may be widened, at no additional cost, to accommodate slip forming.
**Index 521-660:** Light Pole Pedestal - Bridge

Added Options for forming pedestal when deck thickness is less than 1’-5”

- Option 1 is old design with bottom of deck and bottom of pedestal at the same level
- Option 2 is new (added sheet). The top of the pedestal is at the same level as the deck with the bottom of the pedestal below the bottom of the deck level
**Index 548-020: MSE Retaining Wall Systems - Permanent**

Added **Durability Requirements for FRP Reinforcing** to Table

<table>
<thead>
<tr>
<th>Applicable FDOT Wall Type*</th>
<th>Durability Requirements (Carbon-Steel Reinforcing)</th>
<th>Durability Requirements (FRP Reinforcing)</th>
<th>Soil Reinforcement Type</th>
<th>Other Allowable FDOT Wall Types</th>
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<tbody>
<tr>
<td></td>
<td>Concrete Cover (in.)</td>
<td>Concrete Class for Panels</td>
<td>Pozzolan Additions**</td>
<td>Concrete Cover (in.)</td>
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<td>Type 2B</td>
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<td>1.5</td>
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<tr>
<td>Type 2C</td>
<td>3</td>
<td>IV</td>
<td>No</td>
<td>1.5</td>
</tr>
<tr>
<td>Type 2D</td>
<td>3</td>
<td>IV</td>
<td>Yes</td>
<td>2</td>
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<tr>
<td>Type 2F</td>
<td>3</td>
<td>IV</td>
<td>Yes</td>
<td>2</td>
</tr>
</tbody>
</table>

* See Data Table in Contract Plans.

** Silica fume, metakaolin or ultrafine fly ash.
Standard Plan Instructions (SPI)

• **102-200 Temporary Detour Bridge Series**
  ✓ Updated wind pressure coefficients to AASHTO LRFD 8th Edition

• **400-289 Concrete Box Culverts**
  ✓ Removed references to Roadway Plan Set (must be in Structures Plan Set)
  ✓ Added references to FDM & SDM sections with more details on what to include in the plan set and where to place the information.

• **450-010 Florida-I Beam**
  ✓ Noted that beam cambers in the example graphs may not meet SDG camber requirements

• **455-400 & 455-440 Precast Concrete Sheet Pile Walls**
  ✓ Added Section Modulus and prestress after losses
  ✓ Information came from SP Index

• **521-509, 510, 513, 514 & 515 Concrete Barrier/Noise Walls**
  ✓ Changed to allow up to 3 conduits
  ✓ Added slip forming information
Standard Plan Instructions (SPI)

- **521-660 Light Pole Pedestal – Bridge**
  - Clarified Anchor Bolt requirements
  - Clarified pedestal loads.

- **534-200 Noise Walls**
  - Added information/requirements for Alternate Technical Proposals
Structures Cell Library/Data Tables
http://www.fdot.gov/design/StandardPlans/Current/DGNs.shtm

• Only 2 Updates:
  • “Prestressed I-Beam Temporary Bracing Minimum Requirements” (450-010 & 450-120): Changed Note 2b – some information moved to SP Indexes.
  • “Standard Mast Arm Assembly Data Table” (Index 649-030): Deleted Notes 3 & 4 from the cell.

2) FDOT Structures Menu Data Table Cell Libraries:
   (in Microstation format. PDF examples are available in the Standard Plans Instructions (SPI).)
   TTF-V8semi-standards.cel v2016.3 (Jan 2016 - For use with FY 2016-17 Design Standards. Included in FDOTSS4 MR1 CADD Software Releases)
     (0.9MB zip)
   TTF-V8semi-standards.cel v2016.4 (Nov 2016 - For use with FY 2017-18 Design Standards. Included in FDOTSS4 MR2 CADD Software Releases, plus missing Data Table 17743 and updated Data Tables 21800B & 21800T)
     (0.9MB zip)
   TTF-StdDataTables.cel v2017.1 (Nov 2017 - For use with FY 2018-19 Standard Plans. Included in FDOTSS4 MR4 CADD Software Releases, plus updated Data Tables 450-199 & 450-299)
     (0.9MB zip)
Updates on other Developmental Standards:

- **All**– Updating to new numbering plan as Developmental Designs are refined.

- **D20450 series** – Florida Slab Beam:
  - May be added to Standard Plans Next Year.
  - Developing details for attaching exterior beam form work and
  - Details for a Link Slab

Structures Innovation Web-Site - Updates

Ultra-High Performance Concrete just added!
http://alpha.dot.state.fl.us/structures/innovation/UHPC.shtm
We are here to assist you with your questions and concerns. Please contact us:

• If you have a suggestion:
  • for a new standard or
  • for an improvement to an existing standard
  • Find an error (of any type).

• If you have any issues during design or construction:
  • Fully explain the issue (photos/drawings help);
  • Provide suggestions (if you have any);
  • Provide any documentation that might support a proposed change.

• Anytime you have questions or concerns (but, we recommend always thoroughly reviewing the SPI first).

• Remember there is a long lead time to publishing
Contact Information:
Cheryl Hudson, P.E.
State Structures Design Office
Cheryl.Hudson@dot.state.fl.us
(850) 414-5332
• Who do you call?
  - Andre Pavlov – Supervisor: Design Technology
  - Ge Wan – Structures Programs
  - Cheryl Hudson – Standards
  - Tharu Koshy – Programs & Standards