FY 2018-19 Standard Plans
Update Training

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Standard Plans – Primary Index Updates:

1) ***Index 536-001*** **– Guardrail**
   - Miscellaneous Updates

2) ***Index 521-001*** **– Concrete Barrier**
   - Complete Redevelopment – **Single-Slope Barrier**

3) ***Index 521-002*** **– Pier Protection Barrier**
   - Extensive Redevelopment – **Single-Slope Barrier**

4) ***Index 425-030*** **– Median Barrier Inlets Types 1 & 2**
   - Modified – **Single-Slope Barrier**
   - Removed Approach and Trailing “Throats”

5) ***Index 425-031*** **– Shoulder Barrier Inlet**
   - Modified – **Single-Slope Barrier**

6) ***Index 425-032*** **– Curb & Gutter Barrier Inlet**
   - Modified – **Single-Slope Barrier**
   - New PVC Drainage Pipes from Sidewalk

7) ***Index 715-002*** **– Standard Aluminum Lighting**
   - Modified – **Single-Slope Barrier**

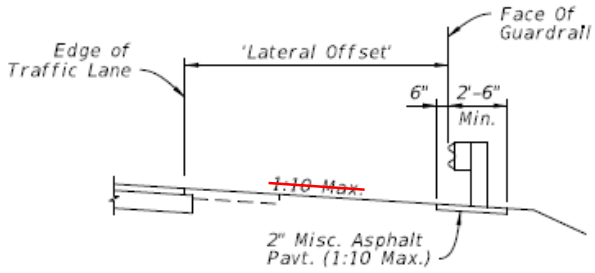
Standard Plans – Primary Index Updates:

1) ***Index 536-001*** **– Guardrail**
   - Miscellaneous Updates

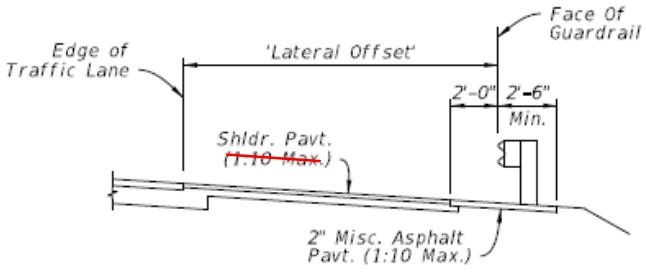
Guardrail -
Summary of Changes:

- Single-Slope Barriers – updated all connecting barrier and offset blocks details throughout
- Miscellaneous updates for constructability and clarity
- Today's presentation covers select items of interest for designers
- For complete red lines of all changes, see the Office of Design - Industry Review website at: http://www.fdot.gov/design/standardplans/IRR/Default.shtm

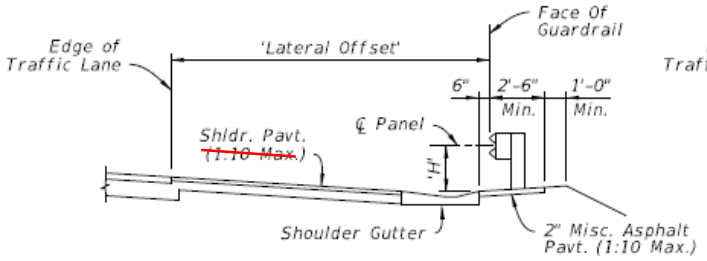
Sheets 6, 7, & 8;
Example Sections Throughout:



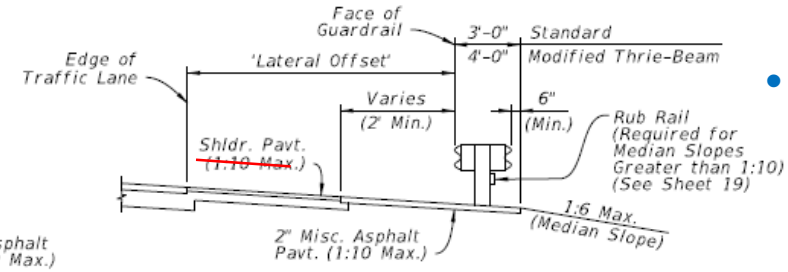
UNPAVED OR PARTIALLY PAVED SHOULDER



FULLY PAVED SHOULDER



SHOULDER GUTTER

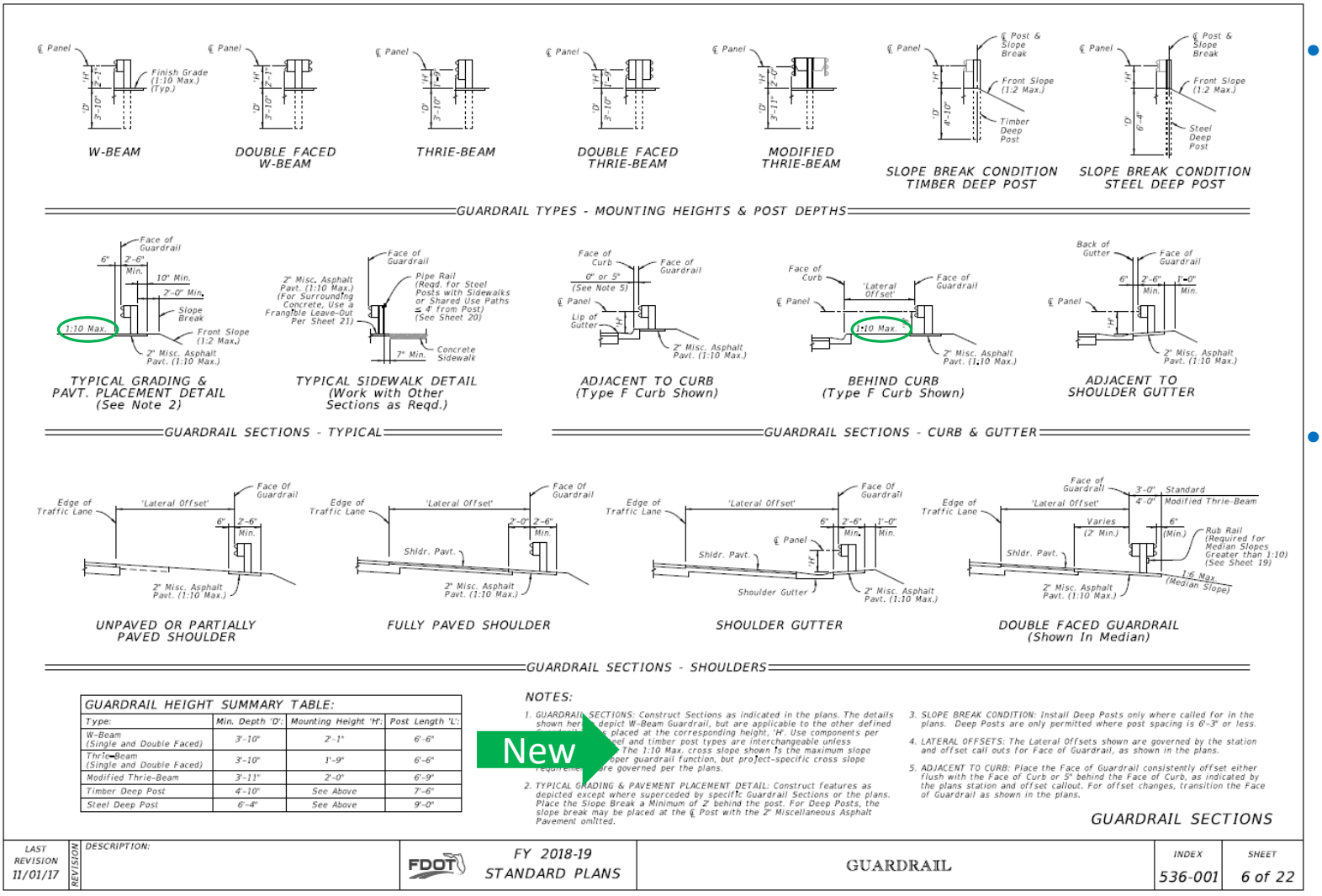


DOUBLE FACED GUARDRAIL (Shown In Median)

- Removed “1:10 Max.” cross-slope on Shoulder Depictions
- “1:10 Max.” does not conflict with FDM requirements, but…
- Removal avoids misconception that “1:10 Max.” supersedes Plans and FDM requirements

Index 536-001 - Guardrail

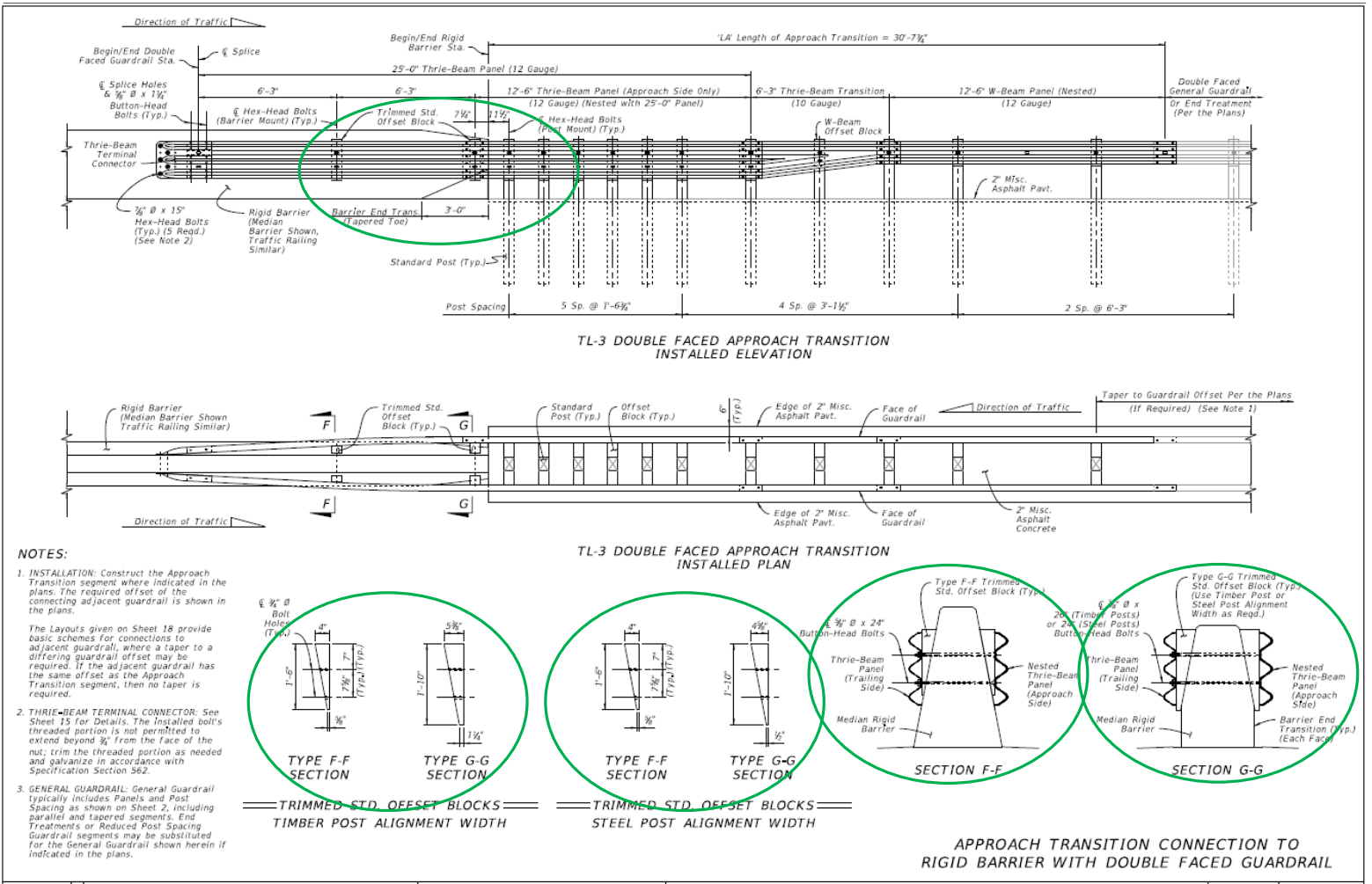
Sheet 6:



- "1:10 Max." label remains on generic approach, sidewalk, and misc. asphalt details
- Added new note explaining "1:10 Max." is for guardrail function only; the slope shown in Plans governs (FDM requirements)

Index 536-001 - Guardrail

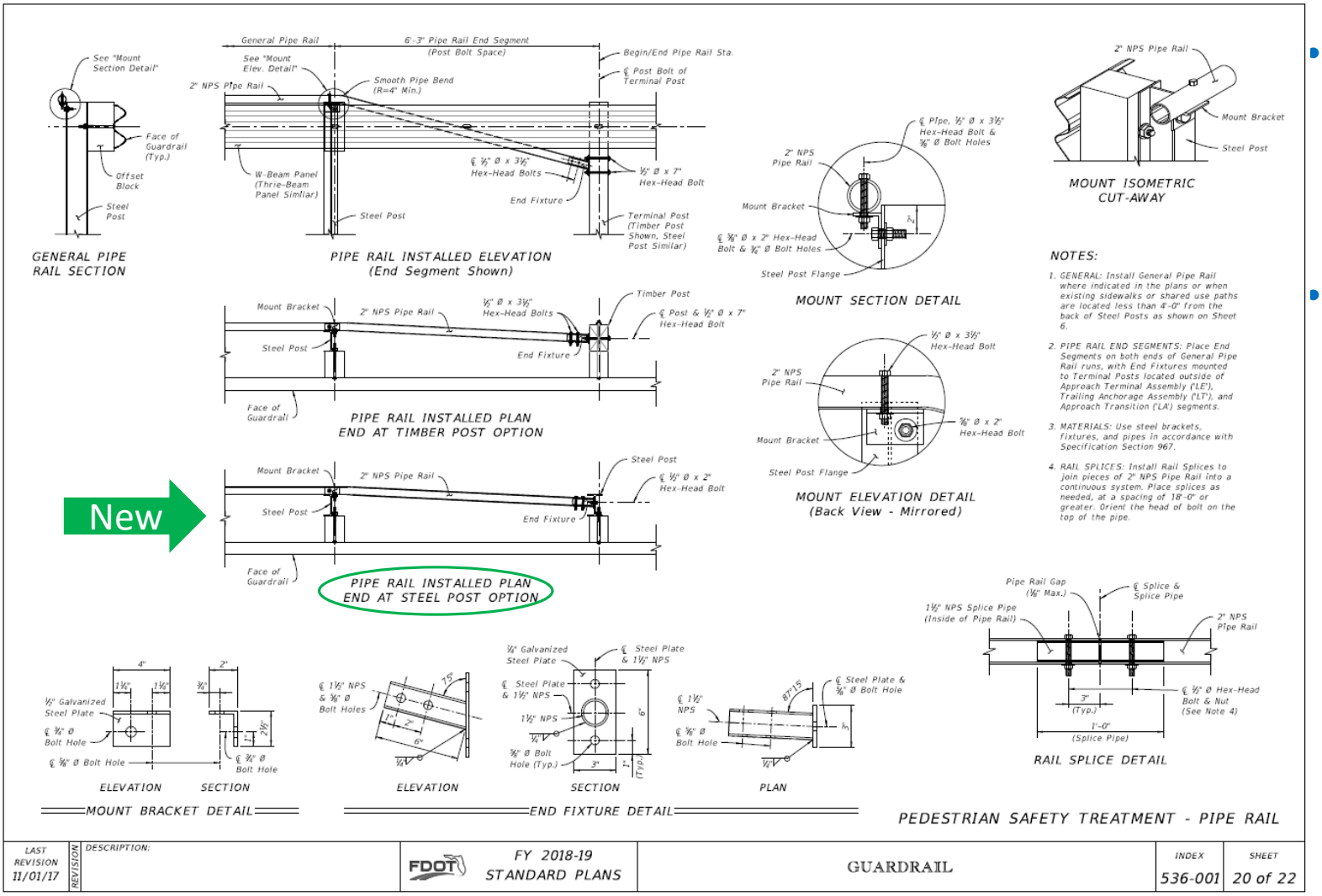
Sheet 16:



- Example of Changes for Single-Slope Barrier (which show up on numerous other Sheets)
- Barrier Height now Tapers Down for GR Connection
- Offset Blocks Revised
- Overall Guardrail System Width Unchanged!

Index 536-001 - Guardrail

Sheet 20:



LAST REVISION	DESCRIPTION:				
11/01/17		FY 2018-19 STANDARD PLANS	GUARDRAIL	INDEX 536-001	SHEET 20 of 22

- Added Option to Terminate Pipe Rail on Steel Post
- If Pipe Rail is no longer needed because a sidewalk veers greater than 4 feet from guardrail, a timber post is no longer required within the steel post run.

Standard Plans – Primary Index Updates:

1) ***Index 536-001*** **– Guardrail**
   - Miscellaneous Updates

2) ***Index 521-001*** **– Concrete Barrier**
   - Complete Redevelopment – **Single-Slope Barrier**

Concrete Barrier - Summary of Changes:

- All barriers upgraded to **Single-Slope** sections to accommodate larger vehicles for MASH compliance
- "Standard Plans" sheets were completely redrawn, rewritten, and reorganized to improve clarity of notes and details for designers and contractors
- ***New*** "Standard Plans Instructions (SPIs)" for improved clarity of process for designers
- ***New*** "Length of Need (LON) Design Tool" to assist designers with learning the *AASHTO Roadside Design Guide* barrier length process
- Today's presentation covers select items of interest for designers

Index 521-001 – Concrete Barrier

Sheet 1: All new!

SHEET NO.	CONTENTS
1	Index Contents; General Notes
2	Median Barrier
3	Median Barrier – Reinforcing Details
4	Median Barrier – Sloped End Treatment
5	Median Barrier – Grade Separated
6	Median Barrier – 56" Height Section for Barrier-Mounted Sign Support Shielding – Symmetrical
7	Median Barrier – 56" Height Section for Barrier-Mounted Sign Support Shielding – Asymmetrical
8	Median Barrier – 38" Height Split Section for Stand-Alone Sign Support Shielding
9	Median Barrier – 44" Height Split Section for Pier Shielding
10	Median Barrier – 44" Height Split Section for Pier Shielding – Details
11	Median Barrier – Connection to F-Shape
12	Shoulder Barrier
13	Shoulder Barrier – Reinforcing Details
14	Shoulder Barrier – Section Options
15	Shoulder Barrier – Section Options (Continued)
16	Shoulder Barrier – 38" Height Rear-Flush Section for Reduced Setback Pier Shielding (Low-Speed)
17	Shoulder Barrier – 44" Height Rear-Flush Section for Reduced Setback Pier Shielding
18	Shoulder Barrier – Connection to F-Shape
19	Curb and Gutter Barrier
20	Curb and Gutter Barrier – Reinforcing Details
21	Curb and Gutter Barrier – Sloped End Treatment
22	Reinforcing Bar Bending Diagrams

GENERAL NOTES:

1. CONCRETE: Use Class II concrete for all barriers constructed in slightly aggressive environments, and use Class IV Concrete for all barriers constructed in moderately or extremely aggressive environments. On all exposed surfaces, apply a Class 3 surface finish in accordance with Specification 400.

2. STEEL BAR REINFORCEMENT: Where required to maintain continuity, provide lap splices of at least 18 inches for No. 4 bars and 20 inches for No. 5 bars, unless otherwise shown herein (including shorter splices as provided by the default bar bending diagrams).

   The default reinforcing details shown herein, including bar shapes and lap splice positions, are intended to show required steel locations and provide for a constructible design. However, with the approval of the Engineer, alternate steel configurations may be used in the same locations shown herein, given that the equivalent strength reinforcing is provided and the cover, maximum spacing, and continuity requirements are maintained.

3. OPTIONAL WELDED WIRE REINFORCEMENT: With the approval of the Engineer, steel welded wire reinforcement in accordance with Specification 415 may be substituted for the steel bars shown herein. Place the welded wire in the same locations specified for the steel bars, and maintain the equivalent strength, cover, maximum spacing, and continuity requirements.

4. TOP FACE LONGITUDINAL REINFORCEMENT: Unless otherwise specified, the longitudinal reinforcement shown closest to the top face of the barrier has a maximum cover of 4½", measured from the top face of the barrier.

5. MINIMUM BARRIER LENGTH: Unless otherwise shown in the Plans, the minimum Concrete Barrier length is 40 feet.

6. CONSTRUCTION JOINTS: Install Construction Joints only as needed for discontinuous concrete casting or cold joints. Maintain continuity of steel reinforcement across Construction Joints. Construction Joints are classified herein as Transverse Joints or Longitudinal Joints.

   Transverse Joints are permitted at 20-foot or greater intervals along the barrier. For Tall Grade-Separated Sections, see Sheet 5 for additional Transverse Joint requirements.

   Longitudinal Joints are only permitted where indicated in the following details and notes, with a vertical position tolerance of ± 1½" from the locations shown.

7. DOWELED JOINTS: As shown in the Dowel Details on Sheets 2 & 12, install ¾" Doweled Joints for Concrete Barrier connections to Pier Protection Barrier and Traffic Railings. Doweled Joints are also required for expansion mitigation in Median Barrier as defined per Sheets 2 & 5. Doweled Joints are not permitted within Grade-Separated Median Barrier.

8. CRACK CONTROL V-GROOVES: At 20-foot intervals, place ⅜" depth V-grooves that run vertically and/or transversely in the front, top, and back faces of barriers. The V-grooves can be either molded or scored while the concrete is still plastic.

9. SUBGRADE: Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).

10. FOOTING BOTTOM CONCRETE COVER: At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.

11. FINISH GRADE ELEVATION: At the barrier face location, the finish grade pavement has a vertical position tolerance of ± ½" from the locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.

12. DRAINAGE INLETS: Where called for in the Plans, install corresponding inlets per Indexes 425-030 thru 425-032.

13. LIGHT POLE MOUNTING: Where called for in the Plans, install aluminum light poles per Index 715-002.

14. OPAQUE VISUAL BARRIER: Where called for in the Plans, install Opaque Visual Barrier per Index 521-010.

15. BARRIER END MARKERS: For all free ends of concrete barriers that are not shielded with an end treatment or connection to another barrier or traffic railing type, install a Type 3 Object Marker on the end face per Specification 705.

16. BARRIER DELINEATORS: Install Barrier Delineators in accordance with Specification 705. For median barriers, mount the delineator on the top of the barrier, at the centerline of barrier, with reflective sheeting facing traffic on both approaches. For shoulder barriers and split sections, mount the delineators on the top of the barrier, with the roadway side of the delineator located 2" from the front face of the barrier and the reflective sheeting facing traffic of the nearest approach.

LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 1 of 22

- New Table of Contents
- Three Distinct Barrier Types
- Re-written notes throughout– Concise active voice with headings
- New welded-wire reinforcement option

Index 521-001 – Concrete Barrier

Sheet 1: All new!

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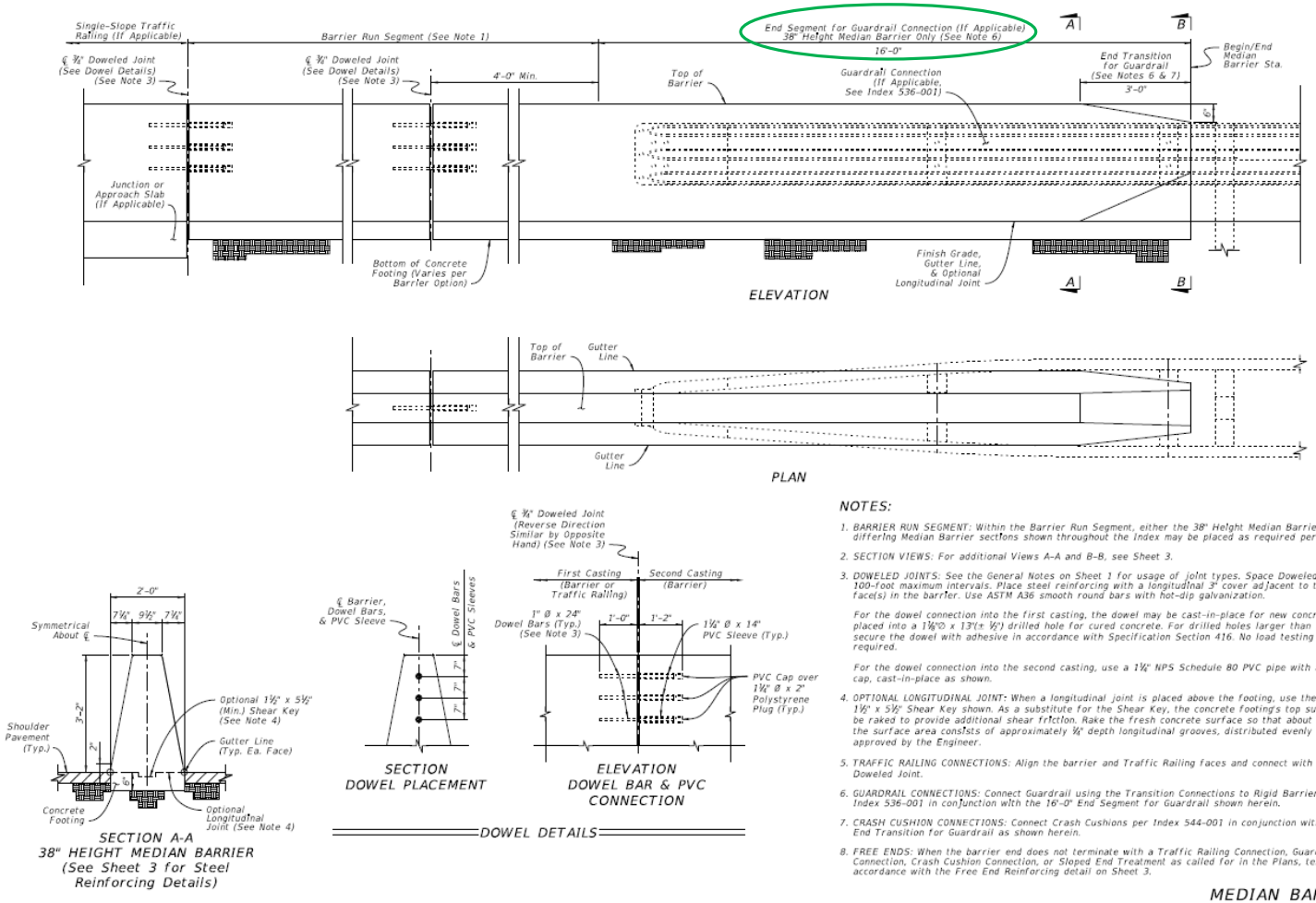
LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 1 of 22

- Minimum Barrier Length is 40 feet (dead load required to resist barrier overturn)
- Other miscellaneous details for contractors

Index 521-001 – Concrete Barrier

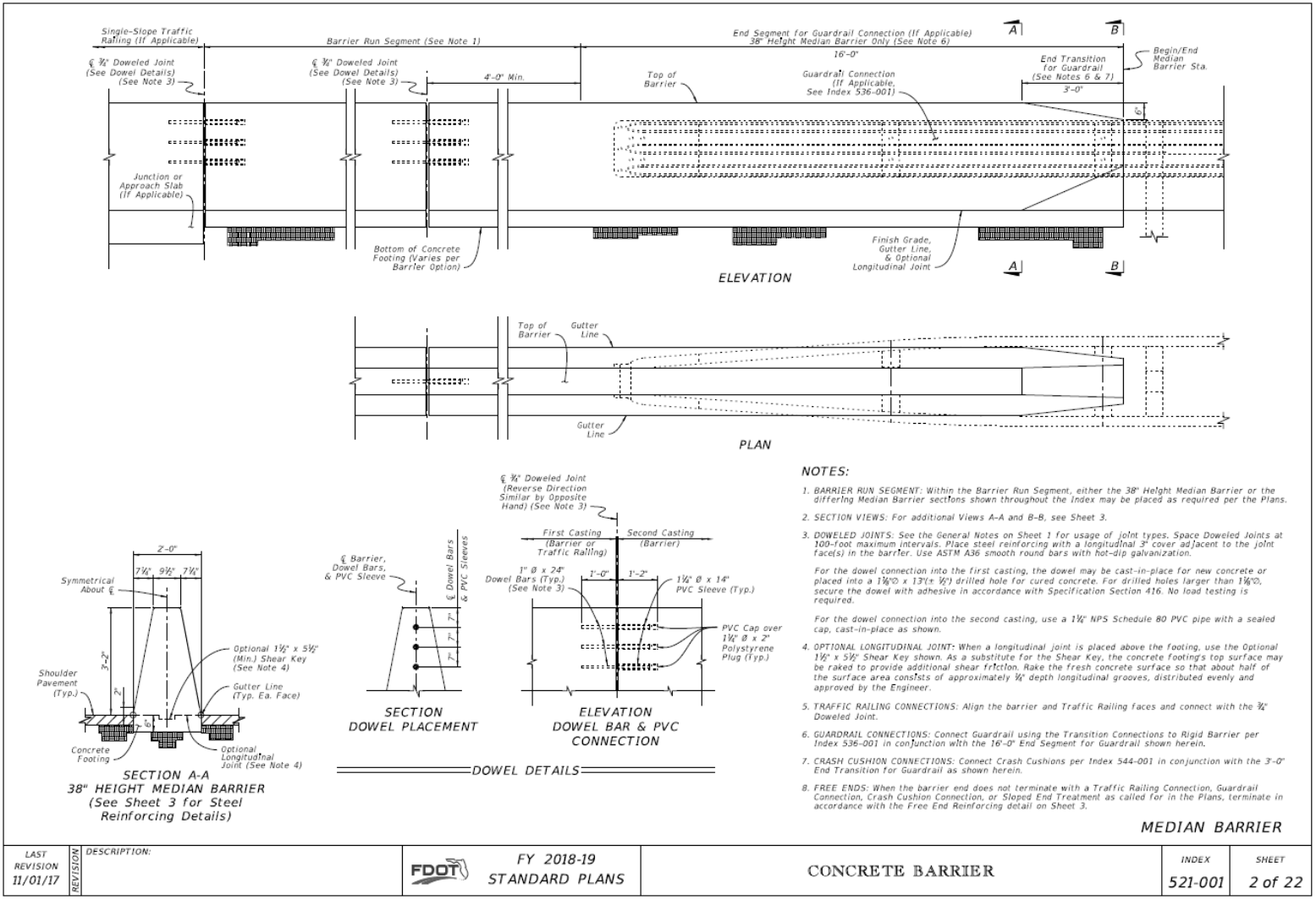
Sheet 2: All new!



- Shows a basic Plan, Elevation, & Section at the start of each barrier type grouping
- Shows connection to guardrail and bridge Traffic Railing as applicable
- 16'-0" end segment for guardrail connection

Index 521-001 – Concrete Barrier

Sheet 2: All new!



NOTES:

1. BARRIER RUN SEGMENT: Within the Barrier Run Segment, either the 38" Height Median Barrier or the differing Median Barrier sections shown throughout the Index may be placed as required per the Plans.
2. SECTION VIEWS: For additional Views A-A and B-B, see Sheet 3.
3. DOWELED JOINTS: See the General Notes on Sheet 1 for usage of joint types. Space Doweled Joints at 100-foot maximum intervals. Place steel reinforcing with a longitudinal 3" cover adjacent to the joint face(s) in the barrier. Use ASTM A36 smooth round bars with hot-dip galvanization.

   For the dowel connection into the first casting, the dowel may be cast-in-place for new concrete or placed into a 1⅛"Ø x 13"(± ½") drilled hole for cured concrete. For drilled holes larger than 1⅛"Ø, secure the dowel with adhesive in accordance with Specification Section 416. No load testing is required.

   For the dowel connection into the second casting, use a 1½" NPS Schedule 80 PVC pipe with a sealed cap, cast-in-place as shown.
4. OPTIONAL LONGITUDINAL JOINT: When a longitudinal joint is placed above the footing, use the Optional 1½" x 5½" Shear Key shown. As a substitute for the Shear Key, the concrete footing's top surface may be raked to provide additional shear friction. Rake the fresh concrete surface so that about half of the surface area consists of approximately ¼" depth longitudinal grooves, distributed evenly and approved by the Engineer.
5. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the ¾" Doweled Joint.
6. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with the 16'-0" End Segment for Guardrail shown herein.
7. CRASH CUSHION CONNECTIONS: Connect Crash Cushions per Index 544-001 in conjunction with the 3'-0" End Transition for Guardrail as shown herein.
8. FREE ENDS: When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, Crash Cushion Connection, or Sloped End Treatment as called for in the Plans, terminate in accordance with the Free End Reinforcing detail on Sheet 3.

MEDIAN BARRIER

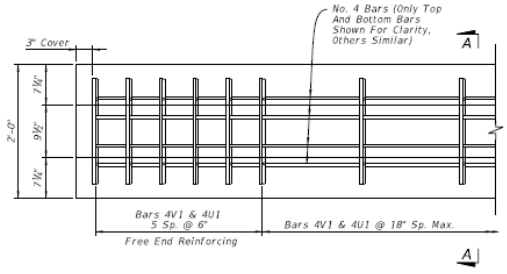
LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 2 of 22

4 Pay Items for Median Barrier:

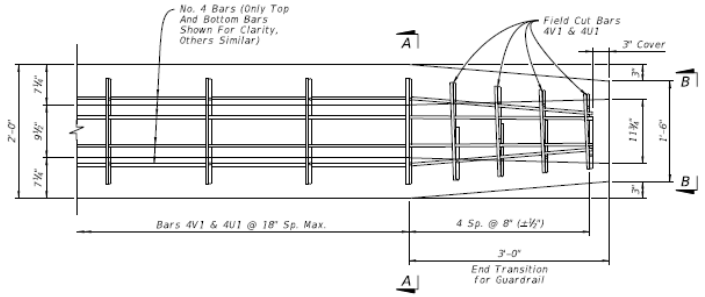
- 38" Height Symmetrical (Shown here)
- Short Grade-Separated (Upcoming Slides)
- Tall Grade-Separated (Upcoming Slides)
- Variable Section for Sign or Pier Shielding (Upcoming Slides)

Index 521-001 – Concrete Barrier

Sheet 3: All new!



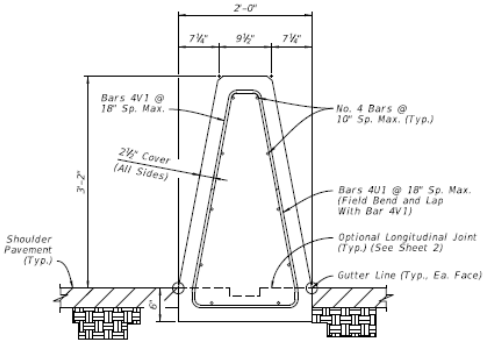
PLAN VIEW - 38" HEIGHT MEDIAN BARRIER
FREE END REINFORCING (See Note 3)



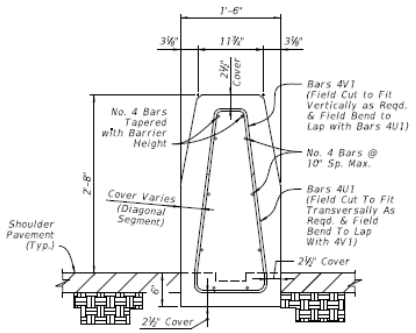
PLAN VIEW - END SEGMENT FOR
GUARDRAIL CONNECTION (See Note 3)

NOTES:

1. GENERAL: Work with the Plan and Elevation Views on Sheet 2.
2. BAR BENDING DIAGRAMS: For additional information on Bars 4V1 and 4U1, see the details on Sheet 22.
3. PLAN VIEWS: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal steel locations, see the section views.



SECTION A-A
38" HEIGHT
MEDIAN BARRIER
Concrete Qty. = 0.20 CY/FT
Steel Qty. = 11.8 LB/FT



VIEW B-B
REDUCED SECTION
OF END TRANSITION
FOR GUARDRAIL
(End of Barrier)

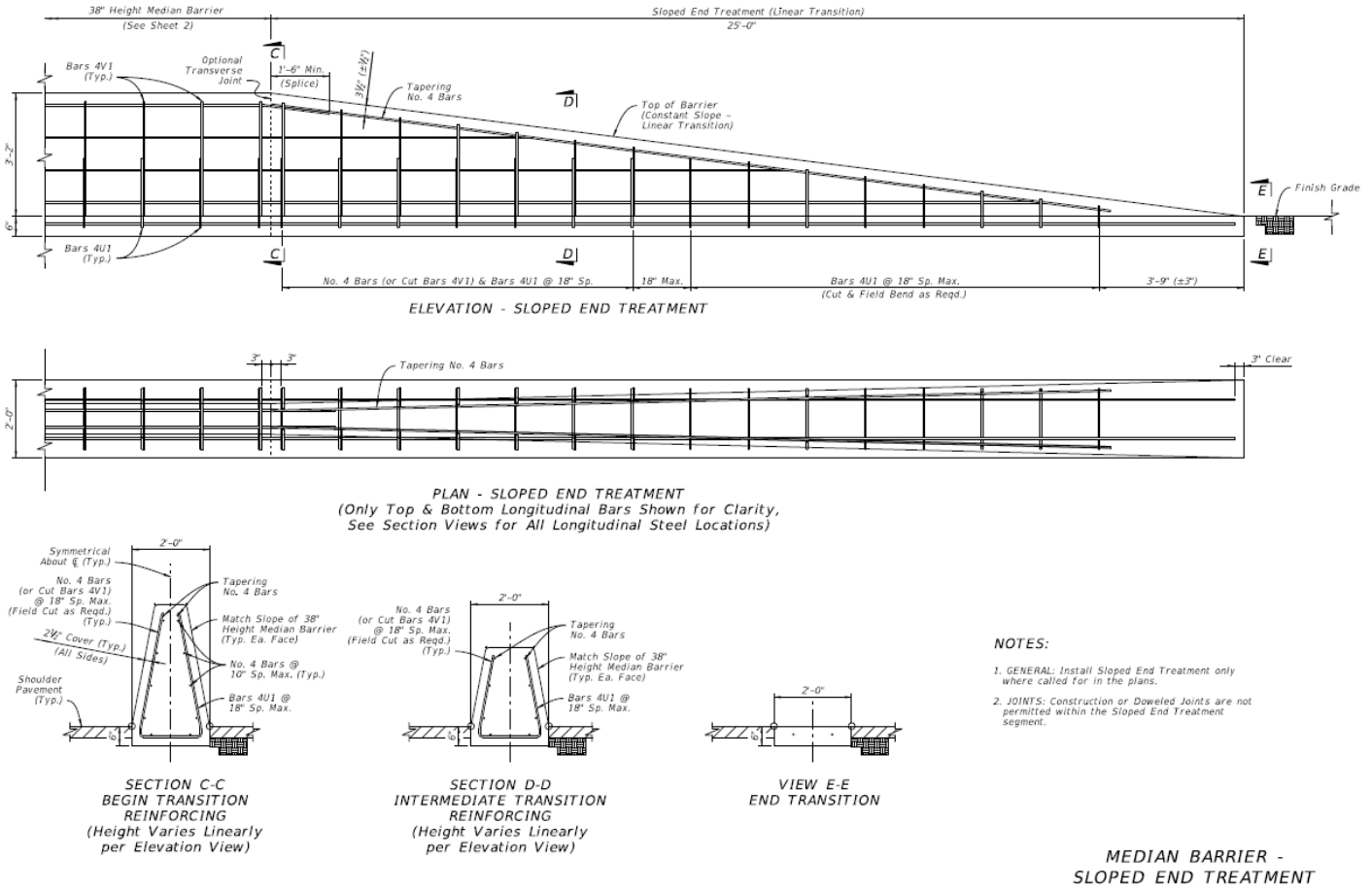
MEDIAN BARRIER - REINFORCING DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
11/01/17						521-001	3 of 22

- New reinforcing details for normal run and connection to guardrail
- Provides minimum reinforcing required for slip-forming

Index 521-001 – Concrete Barrier

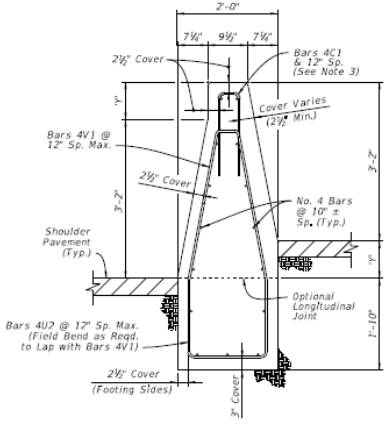
Sheet 4: All new!



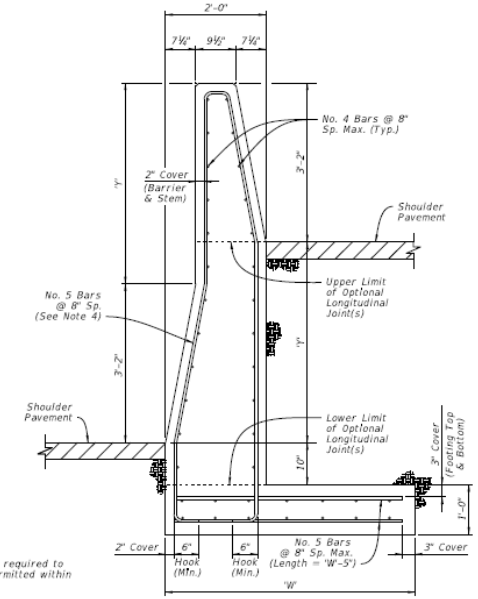
- Permitted for Median Barriers on the Trailing End or outside of any approaching lane's Clear Zone.
- Usage explained in the Standard Plans Instructions (SPI) table

Index 521-001 – Concrete Barrier

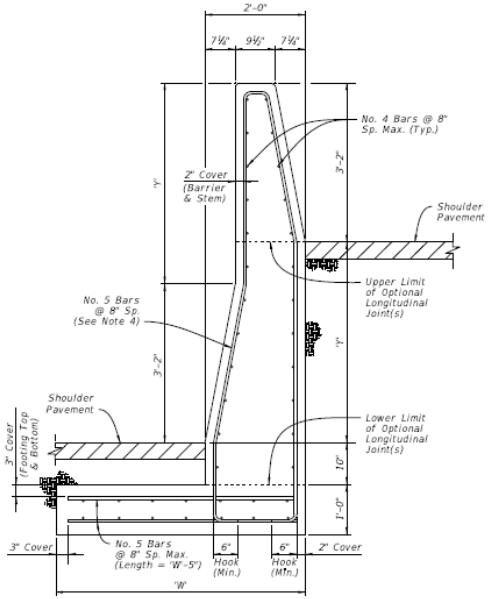
Sheet 5: All new!



SHORT GRADE-SEPARATED SECTION FOR Y ≤ 9"



TALL GRADE-SEPARATED HEEL FOOTING SECTION FOR Y ≤ 4'-0"



TALL GRADE-SEPARATED TOE FOOTING SECTION FOR Y ≤ 4'-0"

NOTES:

1. GENERAL: Install the Grade-Separated sections where shown in the Plans and as required to accommodate vertical offsets in pavement of Height Y. Doweled Joints are not permitted within Grade-Separated sections.
2. CONNECTIONS BETWEEN DIFFERENT SECTIONS: Connect Short Grade-Separated sections and Tall Grade-Separated sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections or has a full lap splice with the adjacent section's longitudinal steel. Connect Short Grade-Separated sections and 38" Height Median Barrier sections of Sheet 2 using a ¾" Doweled Joint.
3. SHORT GRADE-SEPARATED SECTIONS: Bars 4C1 and the two uppermost longitudinal bars may be omitted for segments where Y < 2".
4. TALL GRADE-SEPARATED SECTIONS: For the vertical and transverse steel reinforcement shown in the Tall Grade-Separated Sections, bar bending diagrams are not provided due to varying section dimensions and Longitudinal Joint locations. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

   Longitudinal Joints are permitted between the vertical limits shown, and must remain level and at a consistent height per each continuous casting of concrete. Longitudinal Joints may change elevations at Transverse Joint locations. Field bending of bars is permitted at Longitudinal Joint locations.

   Transverse Joints between Tall Grade-Separated Sections do not require continuous steel across the joint if the following conditions are met:
   i. The barrier length on both sides is at least 40 feet, where each segment has continuous steel reinforcement.
   ii. The barrier's vertical steel spacing is reduced to 4" O.C. for a total of 12 spaces on both sides of the joint.

   Grade separation Heights of Y ≤ 9" are permitted on a limited basis using the Tall Grade-Separated section; this is to accommodate cases where maintaining the spread footing through lower height segments is more practical than changing to the Short Grade-Separated section.

TALL GRADE-SEPARATED SECTIONS DIMENSION TABLE

Max. Height, Y	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"
Footing Width, W	3'-3"	3'-6"	3'-9"	4'-0"	4'-3"	4'-6"	4'-6"

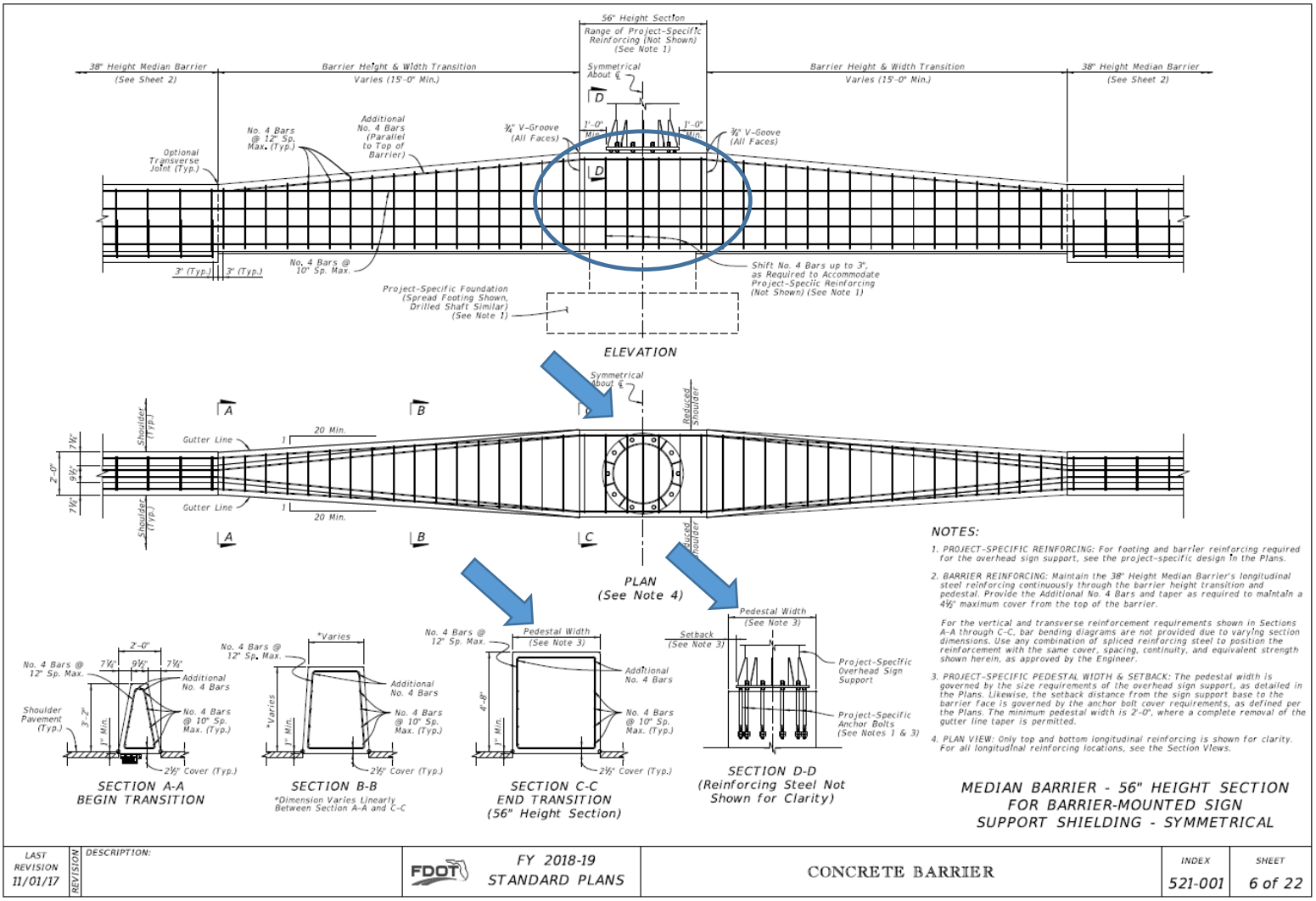
MEDIAN BARRIER - GRADE-SEPARATED

LAST REVISION	DESCRIPTION:	FDOT	FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
11/01/17	REVISION				521-001	5 of 22

- Similar to Previous Standard from Design Standpoint
- Larger foundations and footings for MASH

Index 521-001 – Concrete Barrier

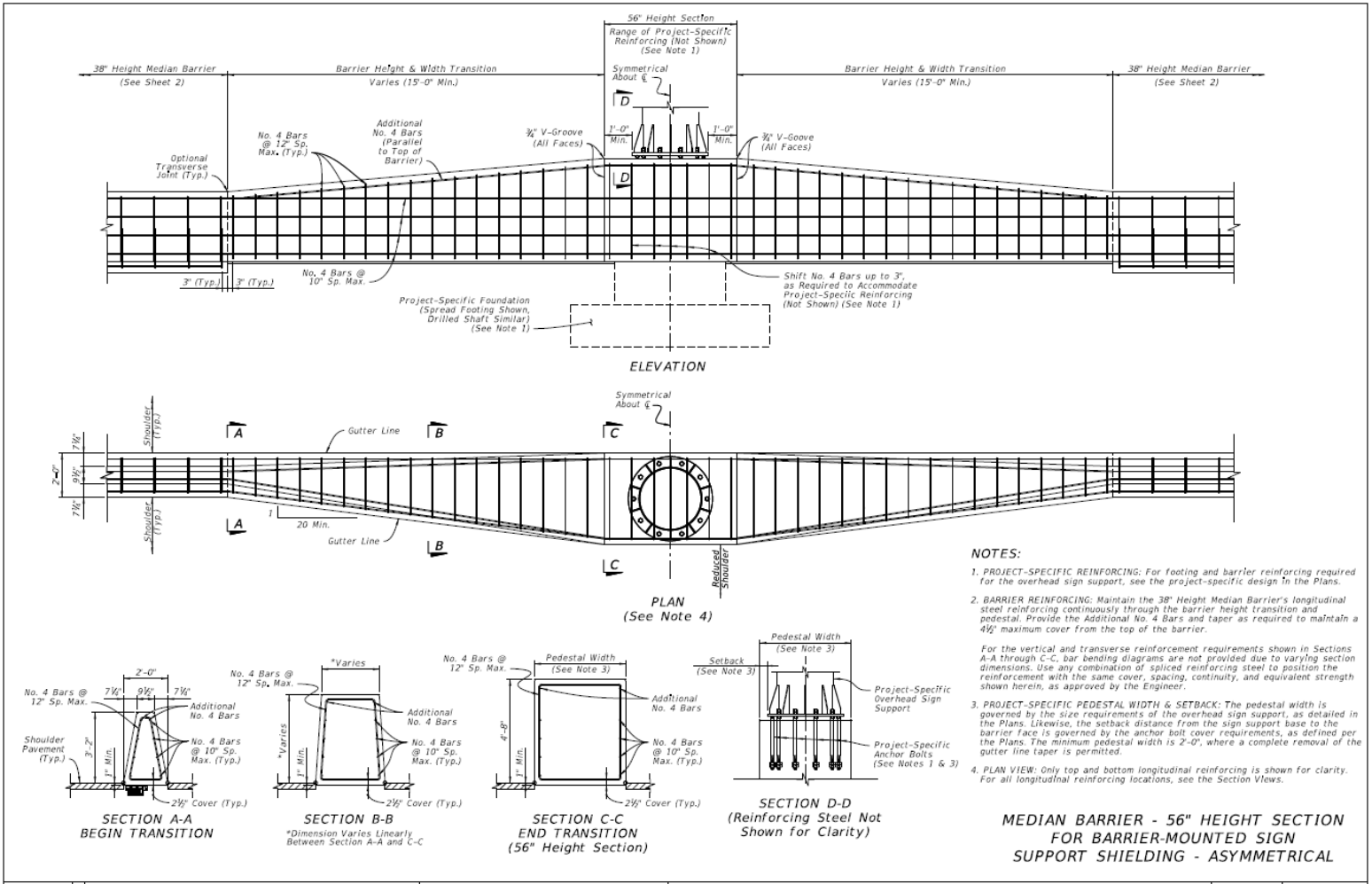
Sheet 6: All new!



- Clarified where project-specific steel design is required for connection to sign support foundation
- Pedestal Width varies as required
- May be used at 2'-0" wide Pedestal Width (zero taper)

Index 521-001 – Concrete Barrier

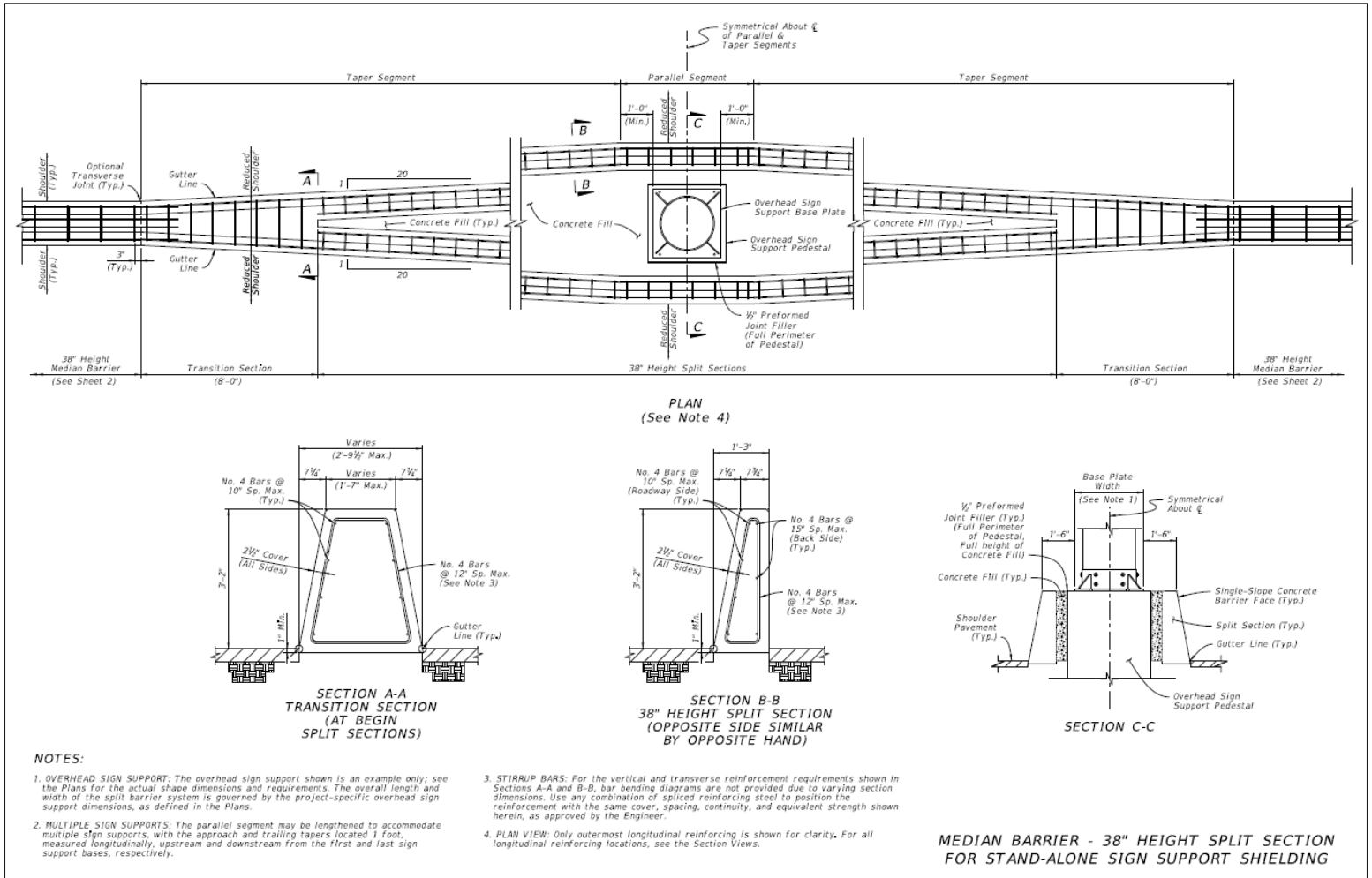
Sheet 7: All new!



- Similar to previous sheet, but asymmetrical – shoulder reduction only on one side

Index 521-001 – Concrete Barrier

Sheet 8: All new!



NOTES:

1. OVERHEAD SIGN SUPPORT: The overhead sign support shown is an example only; see the Plans for the actual shape dimensions and requirements. The overall length and width of the split barrier system is governed by the project-specific overhead sign support dimensions, as defined in the Plans.
2. MULTIPLE SIGN SUPPORTS: The parallel segment may be lengthened to accommodate multiple sign supports, with the approach and trailing tapers located 1 foot, measured longitudinally, upstream and downstream from the first and last sign support bases, respectively.
3. STIRRUP BARS: For the vertical and transverse reinforcement requirements shown in Sections A-A and B-B, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.
4. PLAN VIEW: Only outermost longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

MEDIAN BARRIER - 38" HEIGHT SPLIT SECTION FOR STAND-ALONE SIGN SUPPORT SHIELDING

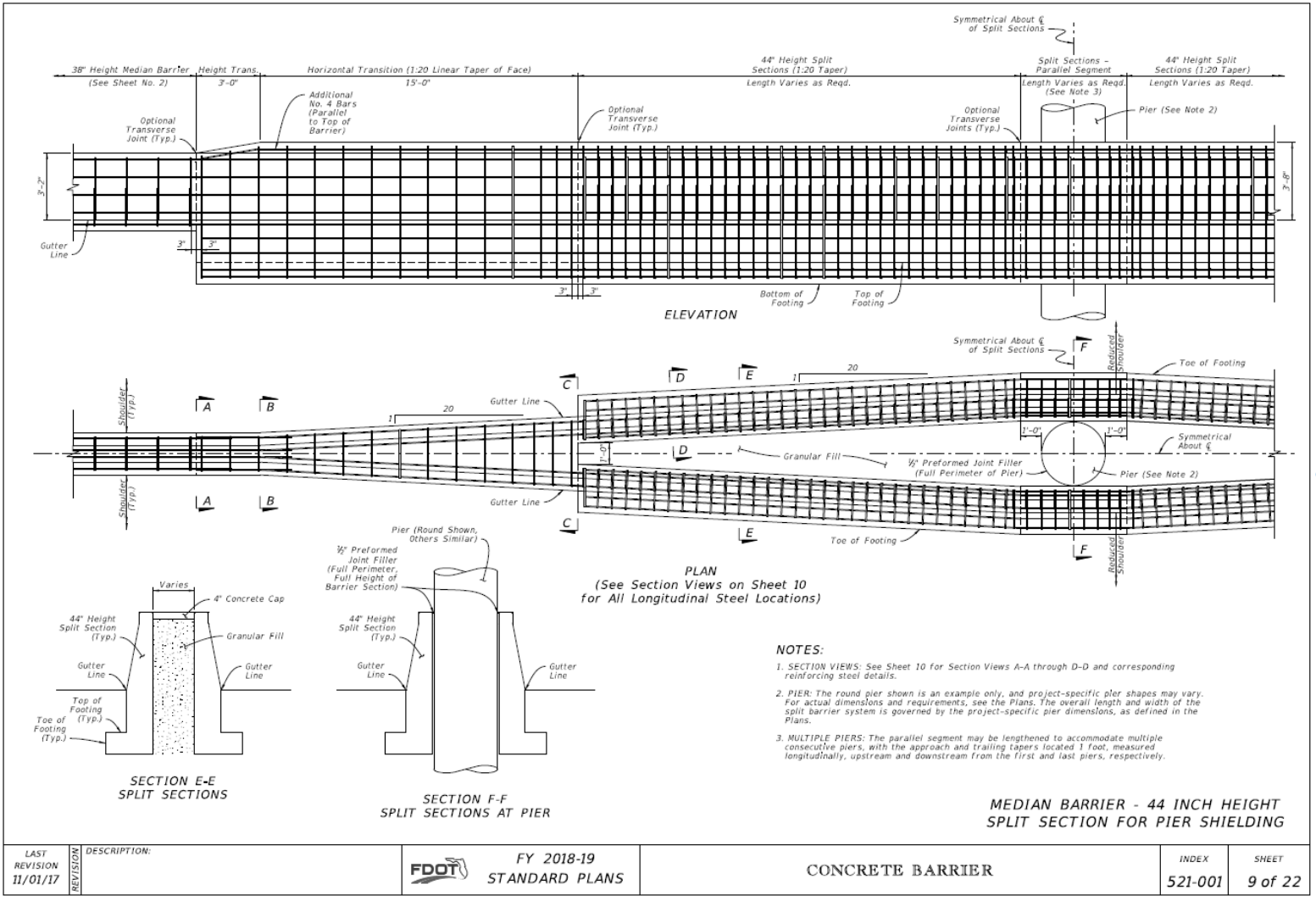
LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 8 of 22

An alternative for sign support shielding where…

- Shielding an existing sign support, or…
- Designer prefers independent foundation for sign support
- Lateral space is available

Index 521-001 – Concrete Barrier

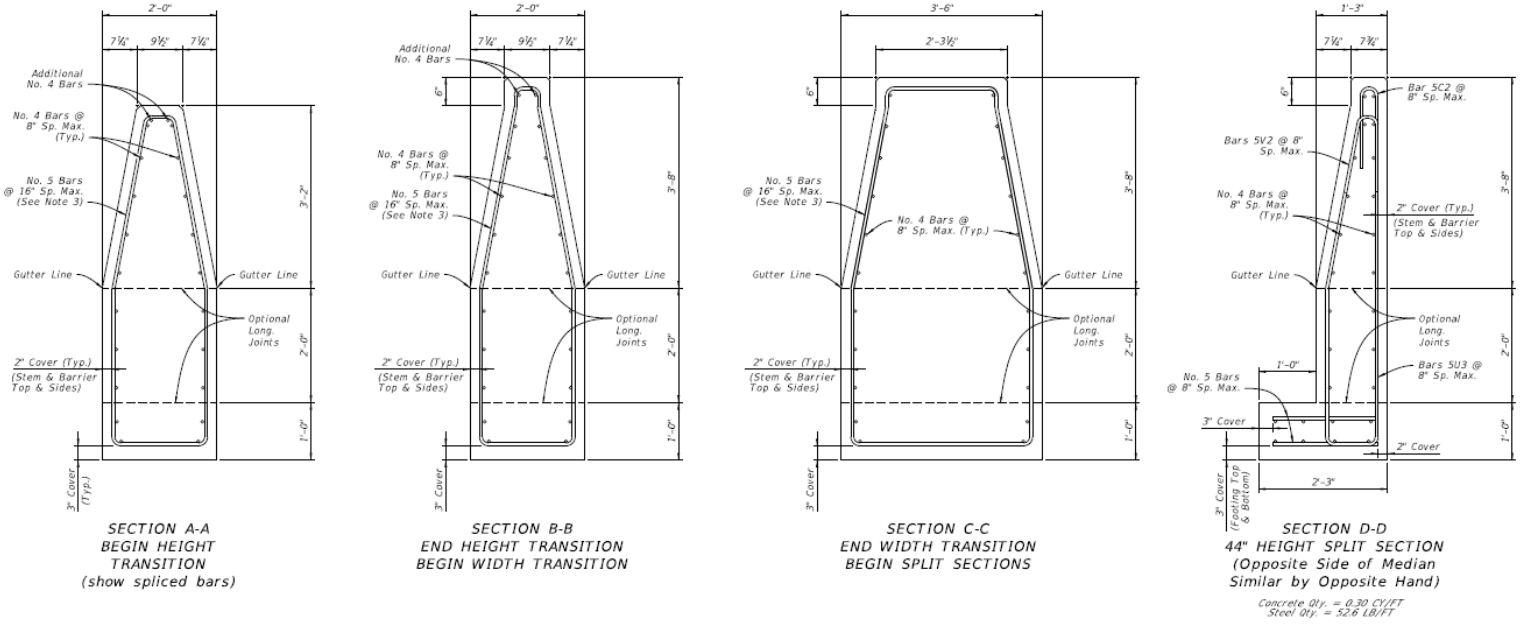
Sheet 9: All new!



- For shielding pier for crash-worthiness benefit to vehicle only **(assumes pier is designed to withstand impact)**
- Where a pier is not designed to withstand impacts, use "Pier Protection Barrier" per 521-002 (See SPI & FDM for Guidance)

Index 521-001 – Concrete Barrier

Sheet 10: All new!



NOTES:

1. GENERAL: Work with the Plan and Elevation views on Sheet 9.
2. LONGITUDINAL REINFORCING CONTINUITY: Maintain all longitudinal steel reinforcing shown in Section C-C continuously into Section D-D (spliced where required). The additional longitudinal reinforcing shown in Section D-D does not require continuity into Section C-C, and it starts 3" from the construction joint or edge of concrete per the details on Sheet 9.
3. STIRRUP BARS: For the vertical and transverse reinforcement requirement shown, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

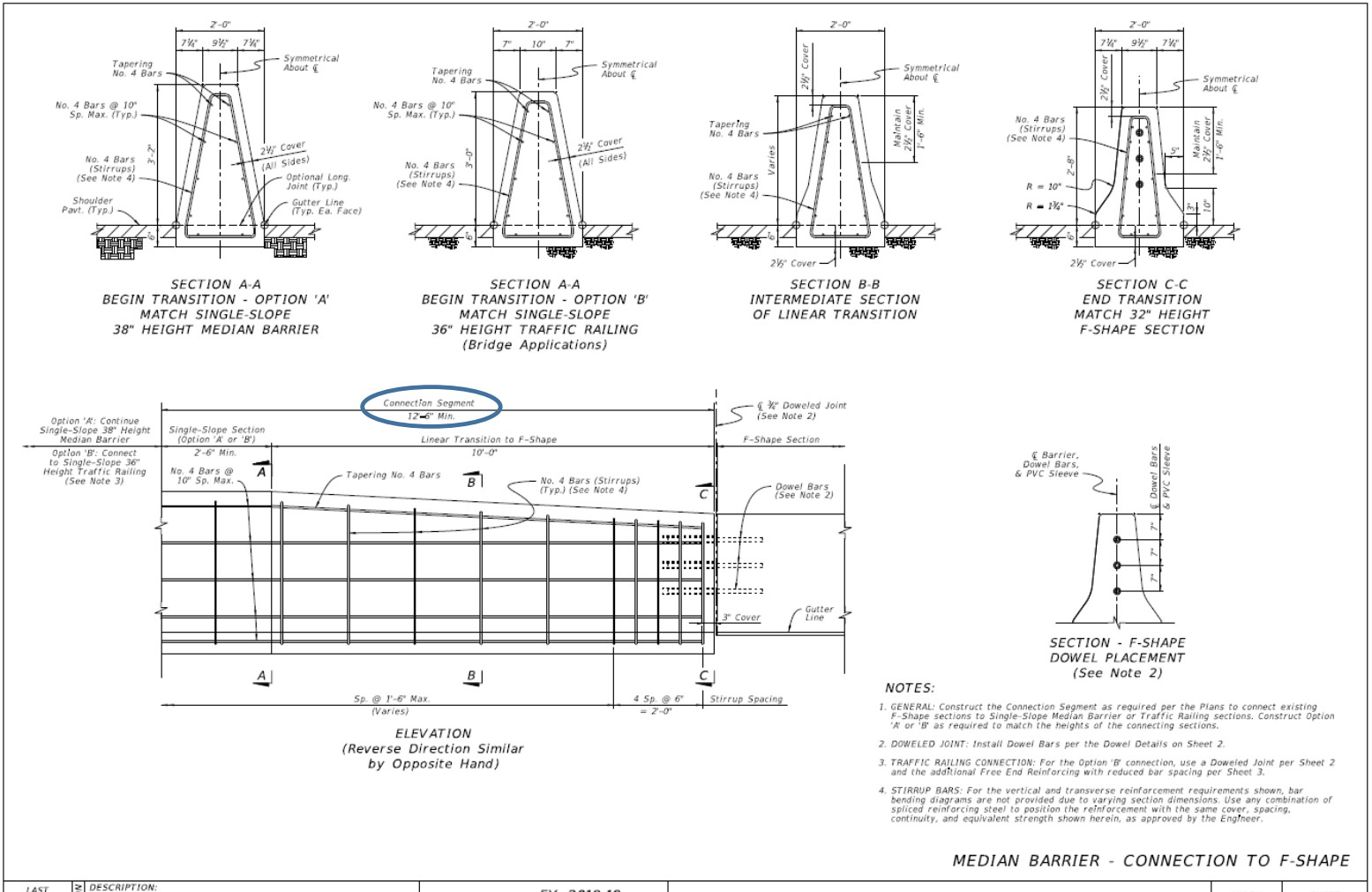
MEDIAN BARRIER - 44 INCH HEIGHT
SPLIT SECTION PIER SHIELDING - DETAILS

LAST REVISION	DESCRIPTION:	FDOT		INDEX	SHEET
11/01/17		FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	521-001	10 of 22

- Required Section dimensions and reinforcing details for the previous sheet

Index 521-001 – Concrete Barrier

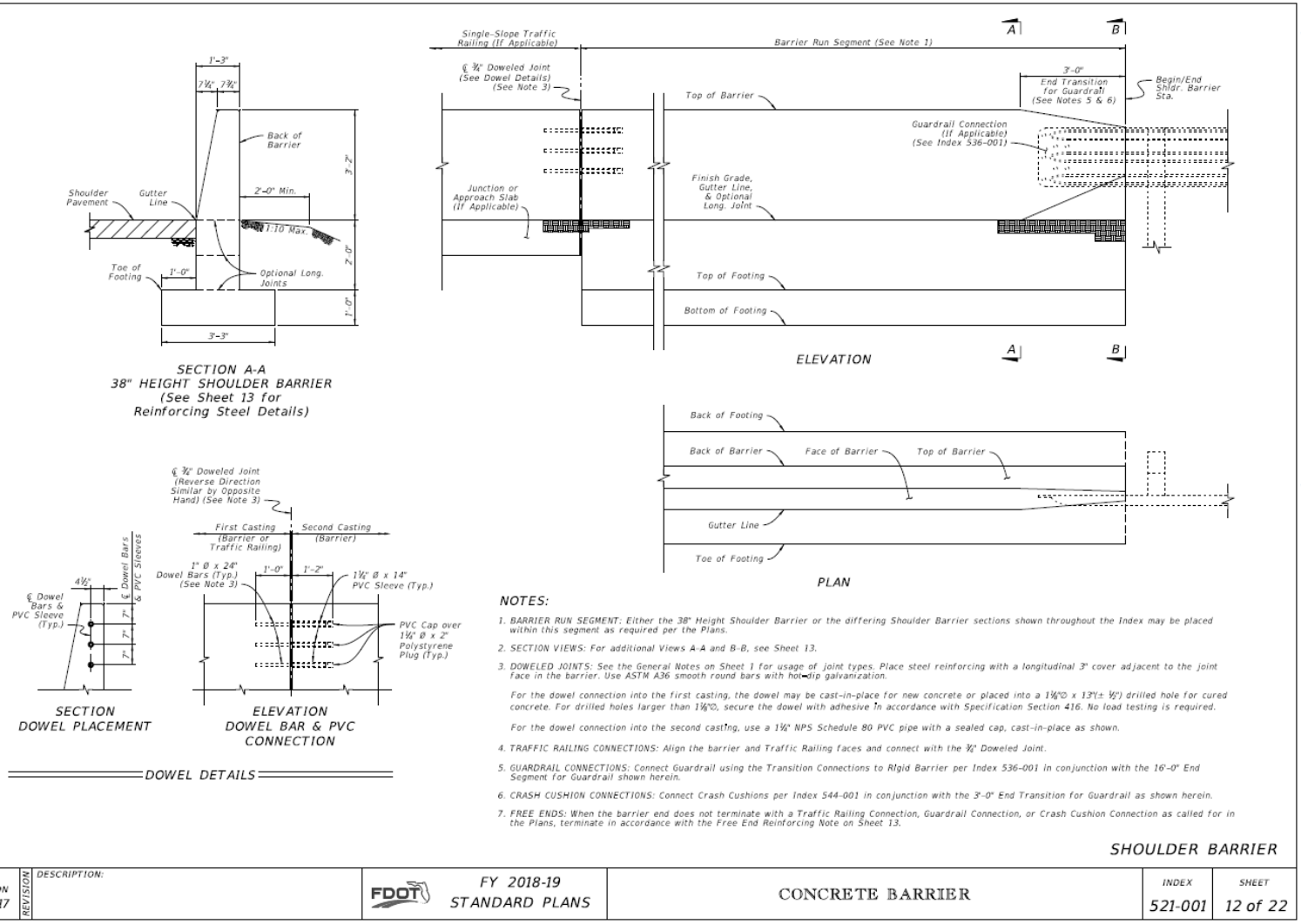
Sheet 11: All new!



- For transitioning any existing F-Shape to Single-Slope Section
- Requires 12'-6" minimum length between connecting section types

Index 521-001 – Concrete Barrier

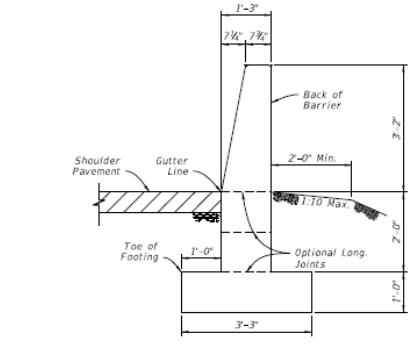
Sheet 12: All new!



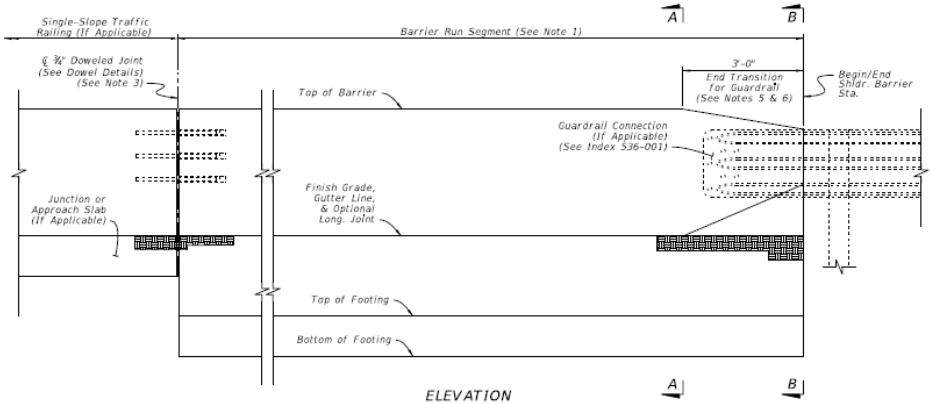
- This sheet begins the "Shoulder Barrier" grouping with basic Plan, Elevation, & Section
- Typically used on "outside" shoulders (where Median Barrier or Curb & Gutter Barrier is not used)

Index 521-001 – Concrete Barrier

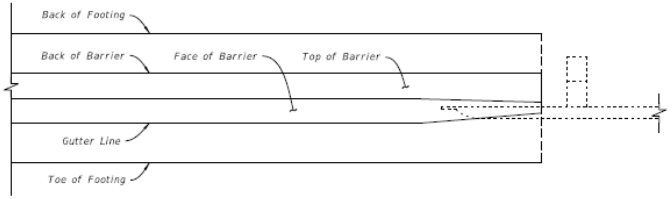
Sheet 12: All new!



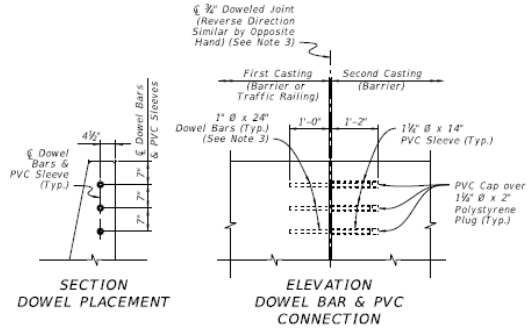
SECTION A-A
38" HEIGHT SHOULDER BARRIER
(See Sheet 13 for Reinforcing Steel Details)



ELEVATION



PLAN



SECTION DOWEL PLACEMENT

ELEVATION DOWEL BAR & PVC CONNECTION

DOWEL DETAILS

NOTES:

1. BARRIER RUN SEGMENT: Either the 38" Height Shoulder Barrier or the differing Shoulder Barrier sections shown throughout the Index may be placed within this segment as required per the Plans.
2. SECTION VIEWS: For additional Views A-A and B-B, see Sheet 13.
3. DOWELED JOINTS: See the General Notes on Sheet 1 for usage of joint types. Place steel reinforcing with a longitudinal 3" cover adjacent to the joint face in the barrier. Use ASTM A36 smooth round bars with hot-dip galvanization.

   For the dowel connection into the first casting, the dowel may be cast-in-place for new concrete or placed into a 1⅛"Ø x 13"(± ½") drilled hole for cured concrete. For drilled holes larger than 1⅛"Ø, secure the dowel with adhesive in accordance with Specification Section 416. No load testing is required.

   For the dowel connection into the second casting, use a 1½" NPS Schedule 80 PVC pipe with a sealed cap, cast-in-place as shown.
4. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the ¾" Doweled Joint.
5. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with the 16'-0" End Segment for Guardrail shown herein.
6. CRASH CUSHION CONNECTIONS: Connect Crash Cushions per Index 544-001 in conjunction with the 3'-0" End Transition for Guardrail as shown herein.
7. FREE ENDS: When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, or Crash Cushion Connection as called for in the Plans, terminate in accordance with the Free End Reinforcing Note on Sheet 13.

SHOULDER BARRIER

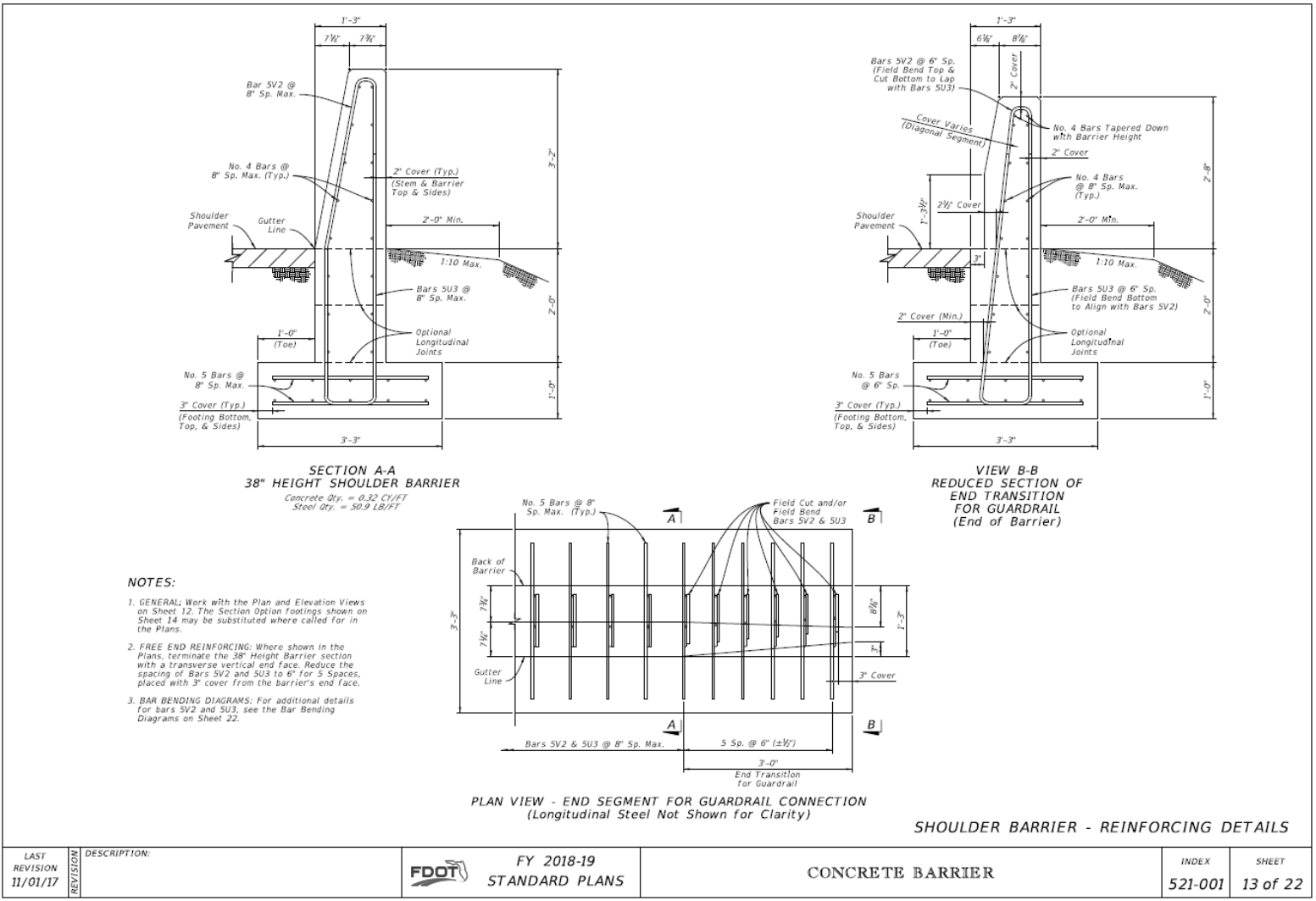
LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 12 of 22

3 Pay Items for Shoulder Barrier:

- 38" or 44" Height (Shown here)
- Retaining Section (Upcoming Slides)
- Trench Footing Section (Upcoming Slides)

Index 521-001 – Concrete Barrier

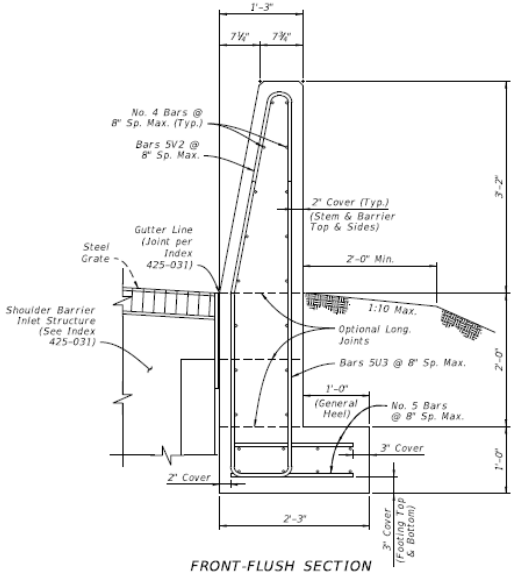
Sheet 13: All new!



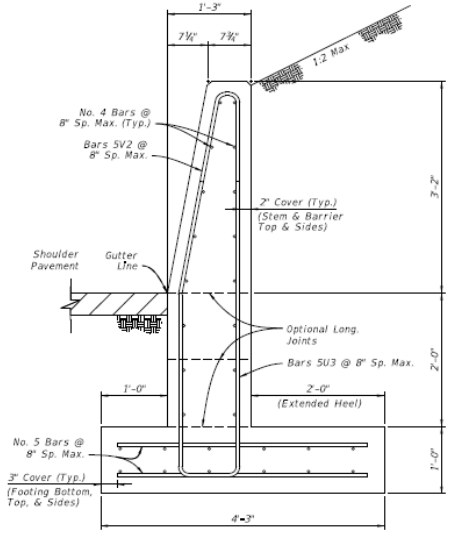
- Sheet shows reinforcing details, both in a normal run and as required to taper down for a guardrail connection

Index 521-001 – Concrete Barrier

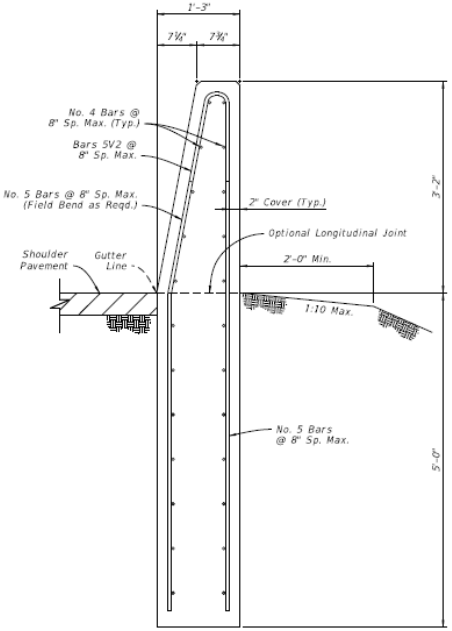
Sheet 14: All new!



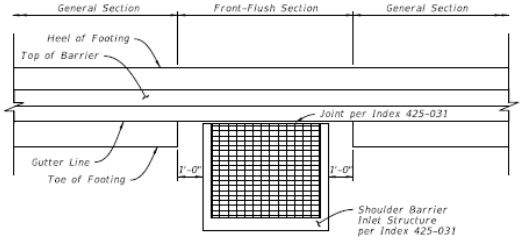
FRONT-FLUSH SECTION
(Where Required For Barrier Inlet Locations)
Concrete Qty. = 0.29 CY/FT
Steel Qty. = 46.6 LB/FT



RETAINING SECTION
Concrete Qty. = 0.36 CY/FT
Steel Qty. = 55.3 LB/FT



TRENCH FOOTING SECTION
Concrete Qty. = 0.35 CY/FT
Steel Qty. = 46.2 LB/FT



FRONT-FLUSH SECTION - PLAN VIEW
(Not Applicable for Trench Footing Sections)

NOTES:

1. GENERAL: Install the differing Section Options as required per the Plans.
2. CONNECTIONS BETWEEN DIFFERENT SECTIONS: Connect differing Shoulder Barrier sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections. Alternatively, a Doweled Joint may be used as shown on Sheet 12.
3. FLUSH RETAINING SECTION COMBINATION: Where Barrier Inlets are required in retaining segments, install the Flush Section, except replace the 1'-0" General Heel with the 2'-0" Extended Heel as shown in the Retaining Section. Use longer lateral reinforcing bars of 2'-10" length to maintain the cover shown.

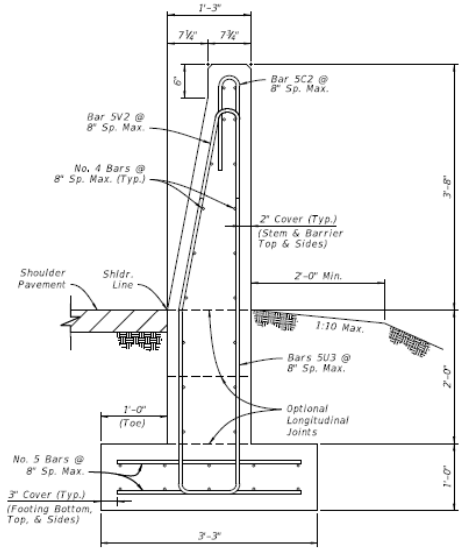
SHOULDER BARRIER - SECTION OPTIONS

LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 14 of 22

- Section alternatives as required
- Retaining Section Heel larger than previous
- New Trench footing option

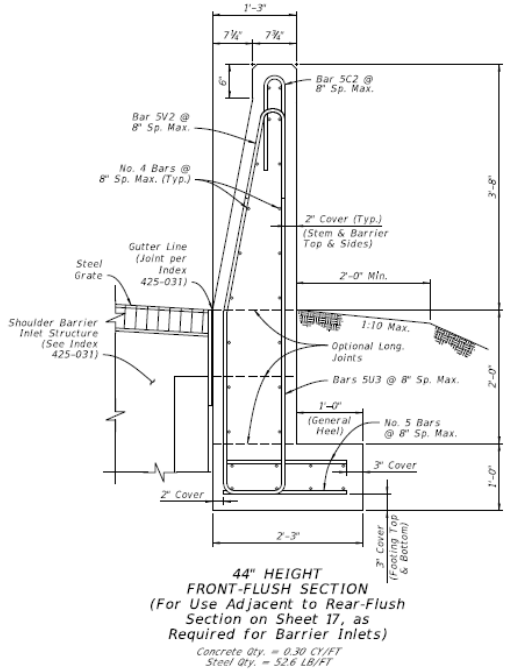
Index 521-001 – Concrete Barrier

Sheet 15: All new!



44" HEIGHT SECTION
(For Use Adjacent to Rear-Flush Section on Sheet 17)

Concrete Qty. = 0.34 CY/FT
Steel Qty. = 56.8 LB/FT



44" HEIGHT
FRONT-FLUSH SECTION
(For Use Adjacent to Rear-Flush Section on Sheet 17, as Required for Barrier Inlets)

Concrete Qty. = 0.30 CY/FT
Steel Qty. = 52.6 LB/FT

NOTE:

1. GENERAL: See the applicable Notes on Sheet 14.

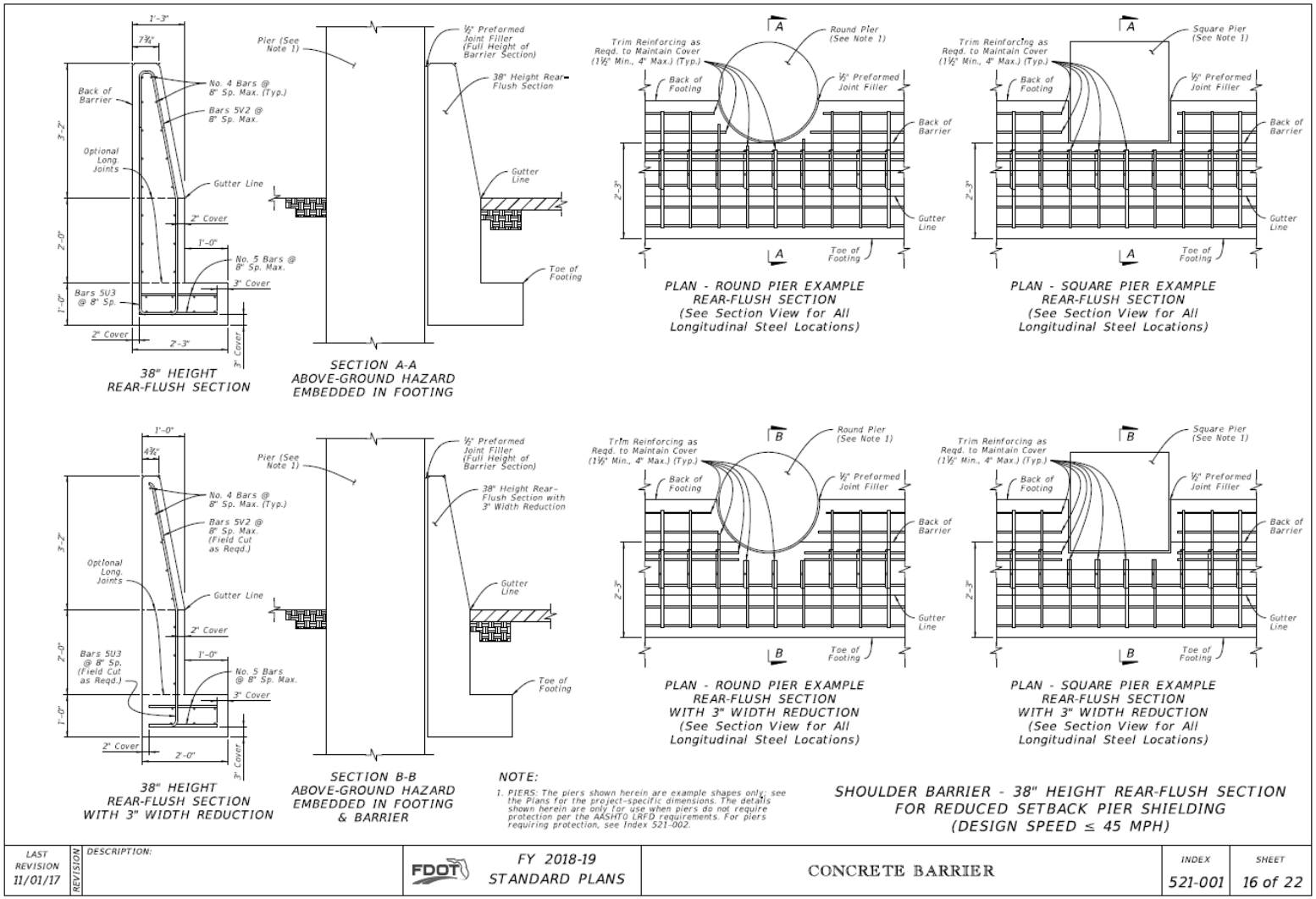
SHOULDER BARRIER - SECTION OPTIONS (CONTINUED)

LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 15 of 22

- A few more sections as they work with pier shielding on following sheets
- 44” Height Section has same Pay Item as “regular” 38” Height Section (named: *38” or 44” Height Shoulder Barrier* in BOE)

Index 521-001 – Concrete Barrier

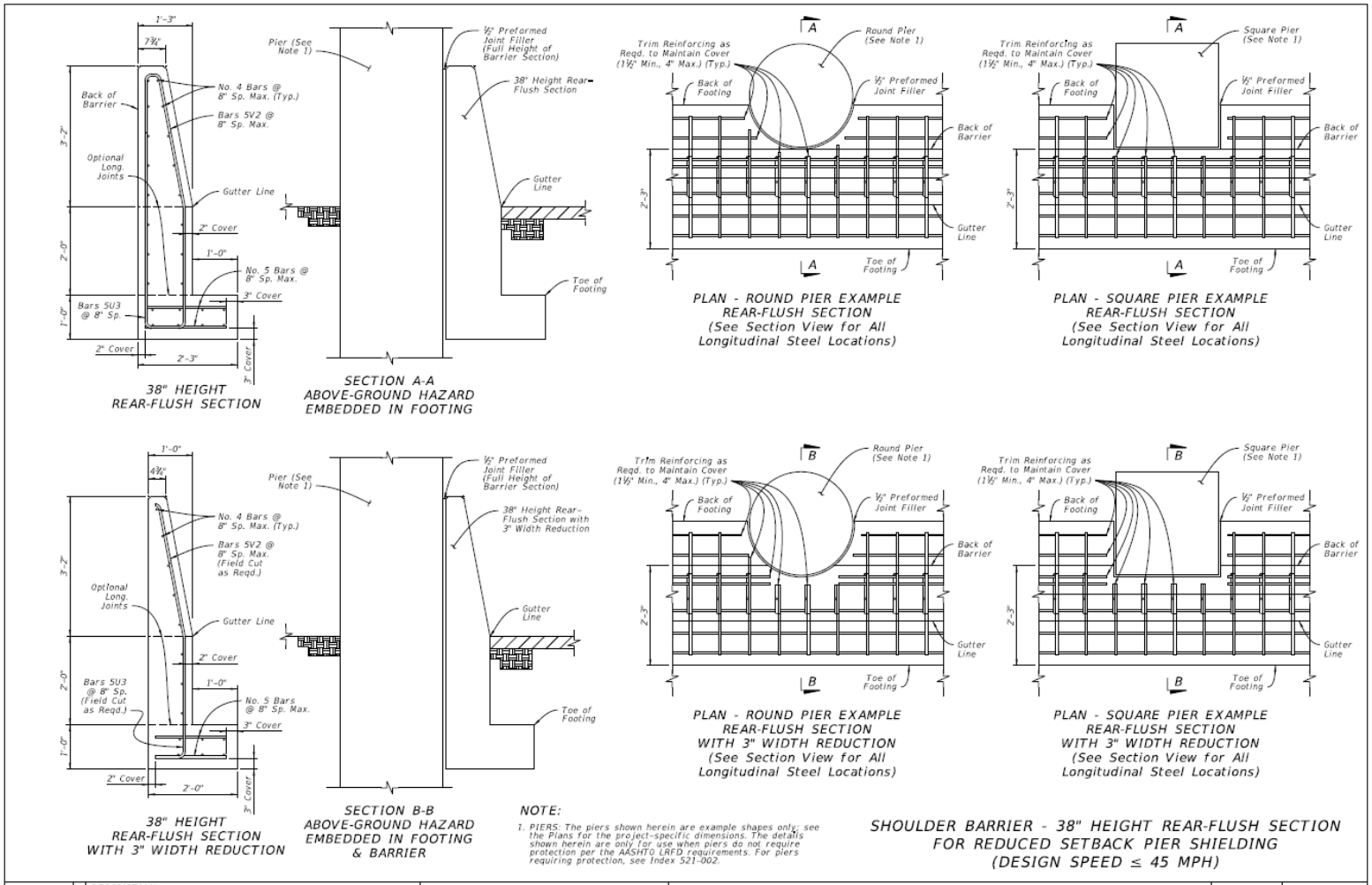
Sheet 16: All new!



- For shielding pier for crash-worthiness benefit to vehicle only **(assumes pier is designed to withstand impact)**
- Where a pier is not designed to withstand impacts, use “Pier Protection Barrier” per 521-002 (See SPI & FDM for Guidance)

Index 521-001 – Concrete Barrier

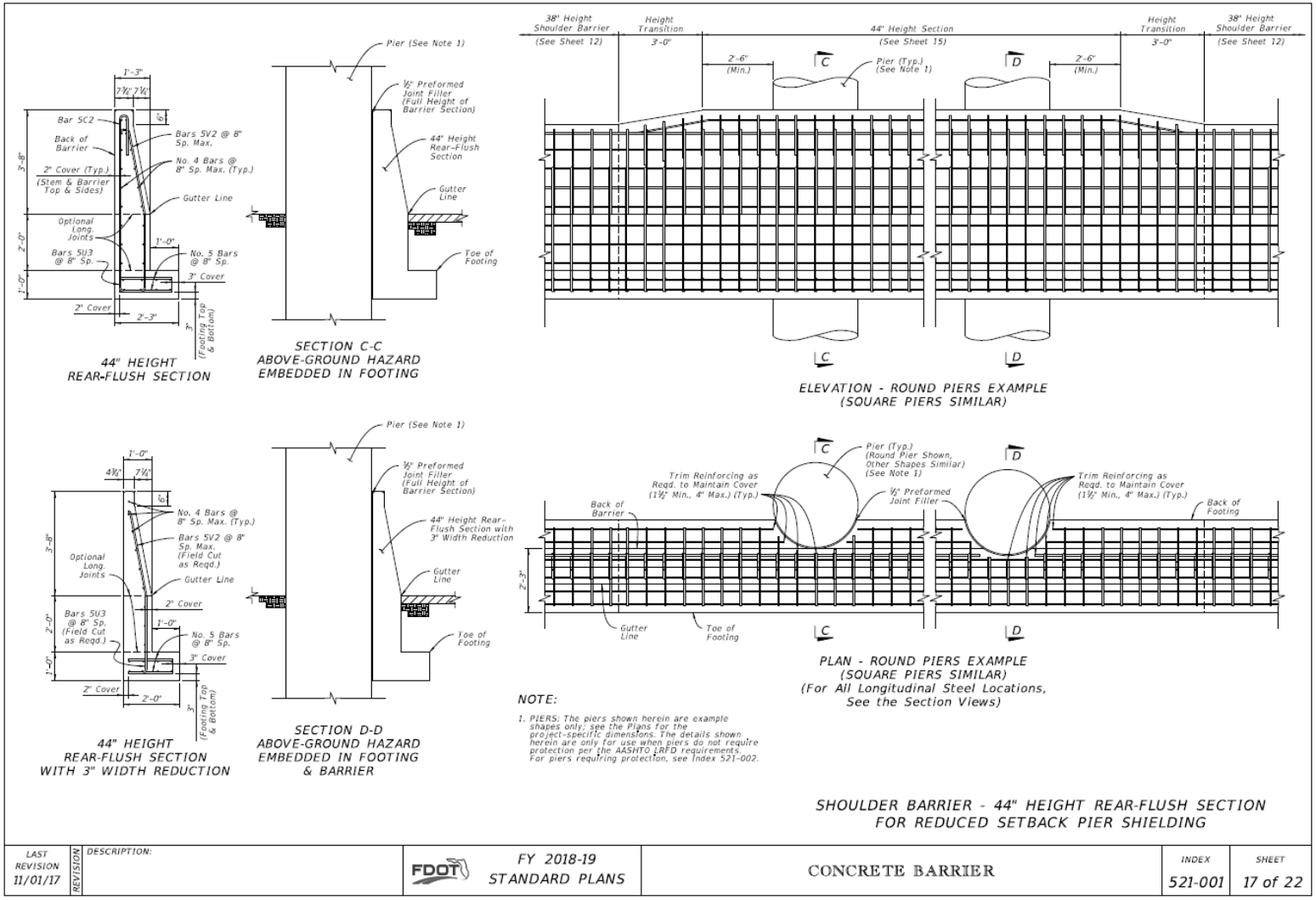
Sheet 16: All new!



- For “Low Speed” Pier Shielding (≤45 mph)
- Setback requirement is 0 feet for “Low-Speed”, so height maintained at 38”
- Two options: Full Barrier Width (when space permits) or 3” width reduction.

Index 521-001 – Concrete Barrier

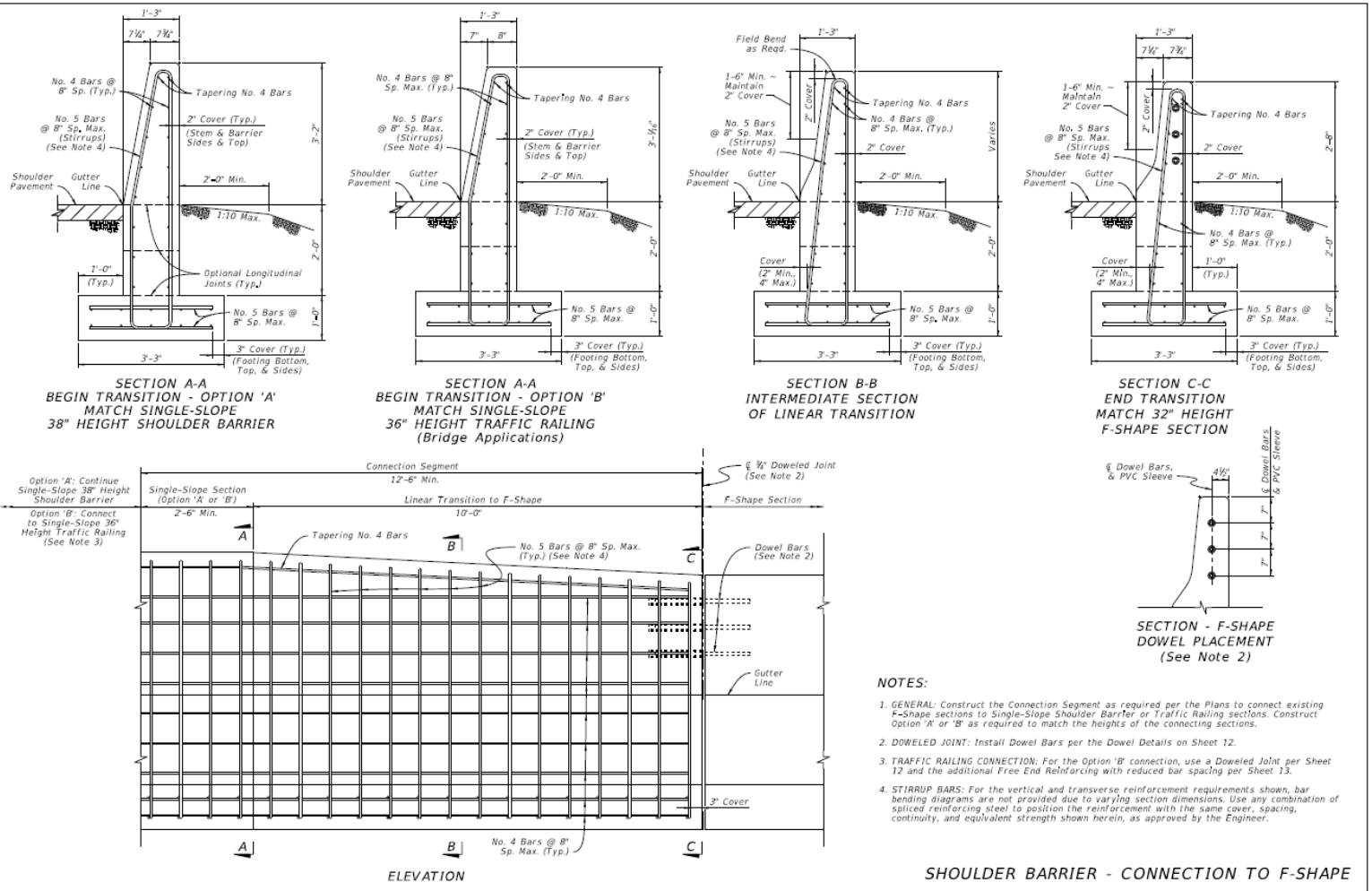
Sheet 17: All new!



- Same width options as previous
- Used for all design speeds.
- Difference from previous… The Barrier height is raised to reduce setback requirement for Zone of Intrusion (ZOI) per FDM Table 215.4.2

Index 521-001 – Concrete Barrier

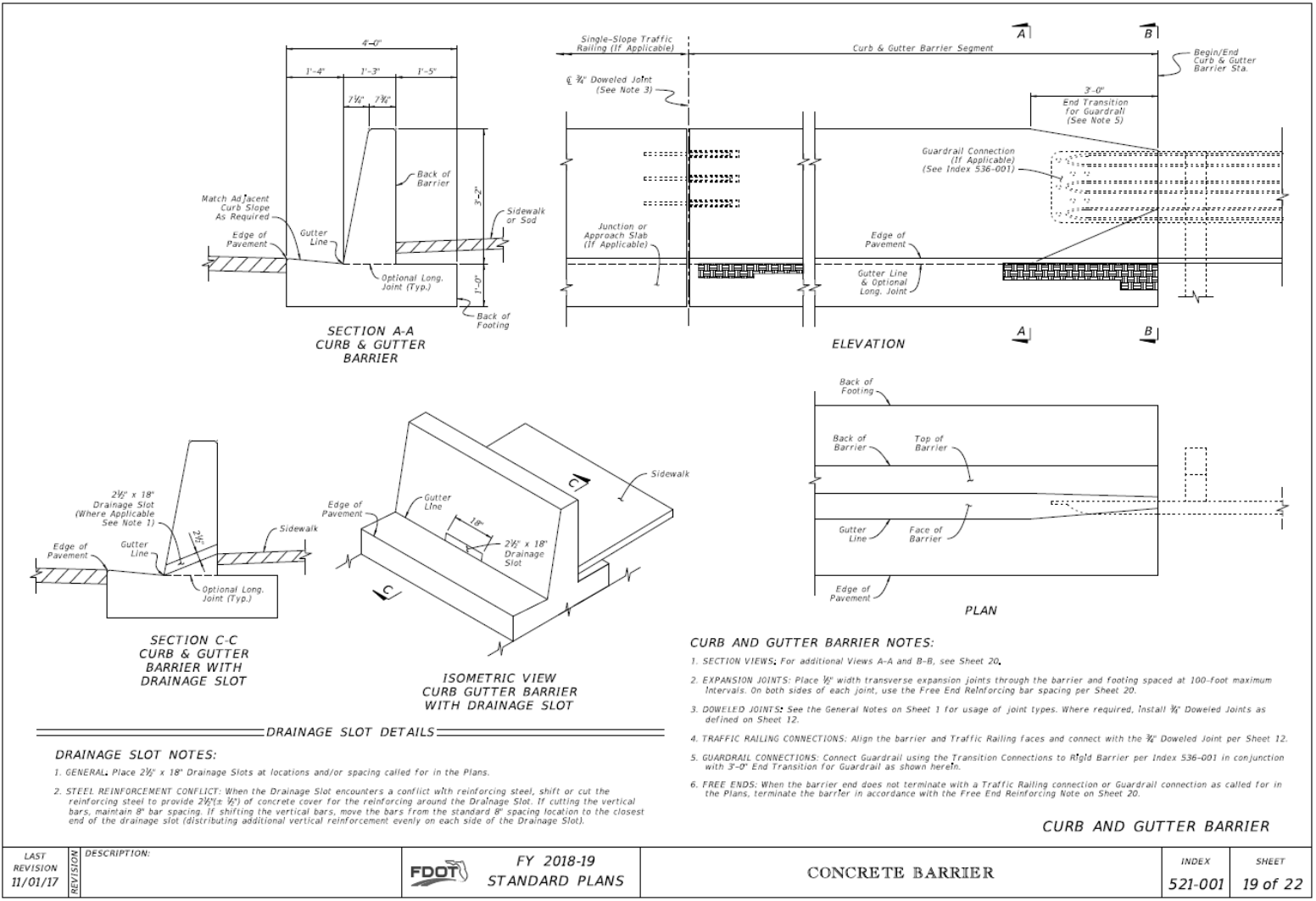
Sheet 18: All new!



- Transition to F-Shape for Single-Faced Barrier
- Similar concept to double-faced Median Barrier already seen on Sheet 11!

Index 521-001 – Concrete Barrier

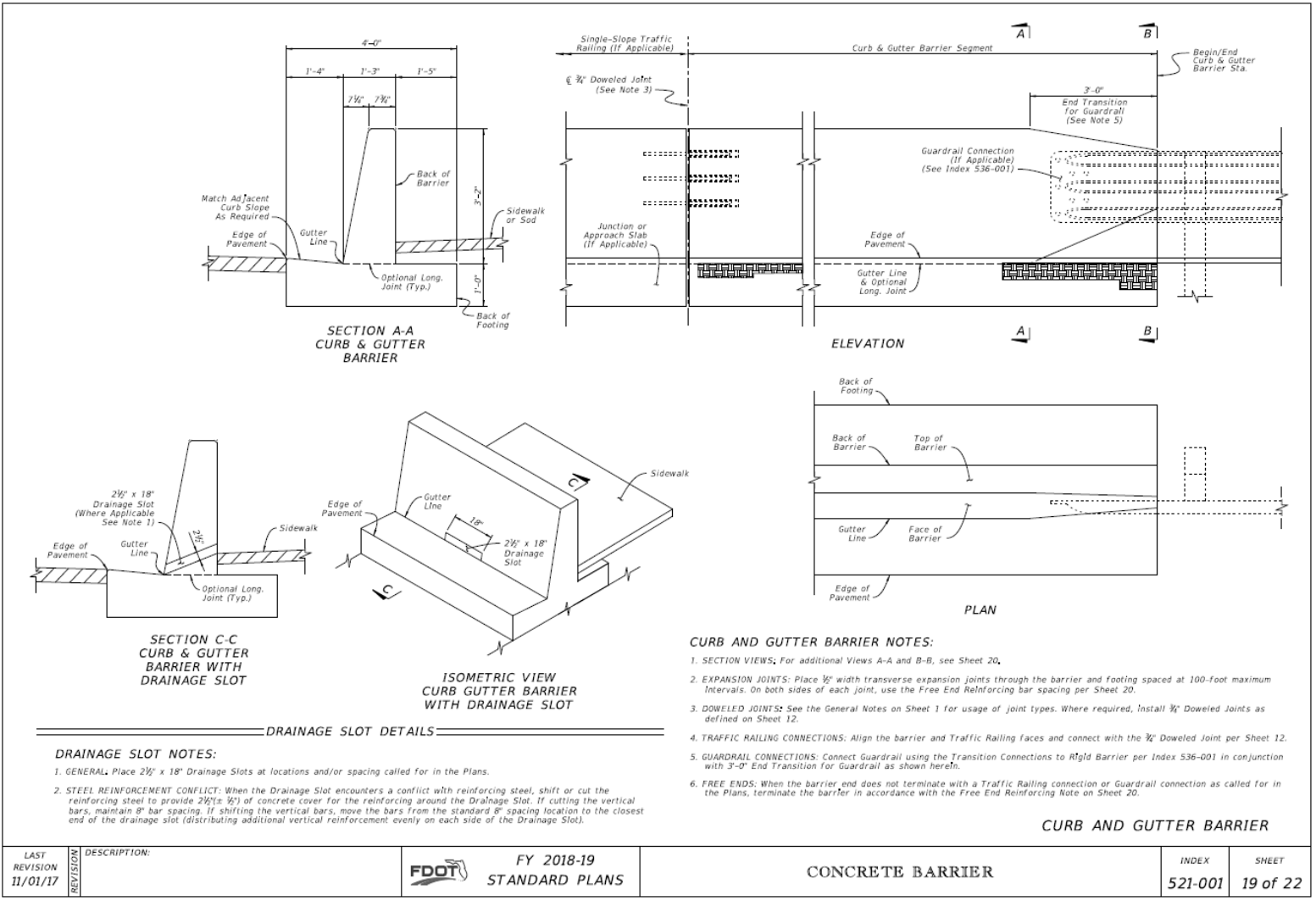
Sheet 19: All new!



- "Curb & Gutter Barrier" is the third category of concrete barrier.
- Typically used in urban areas
- Design Speed (≤45 mph)
- Aligns with "Type F" curb for water conveyance

Index 521-001 – Concrete Barrier

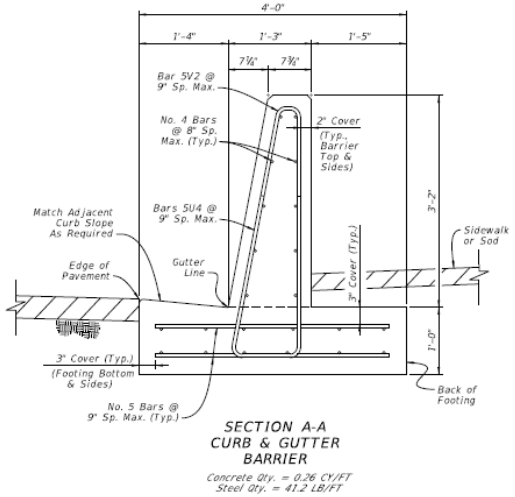
Sheet 19: All new!



- Has its own "Curb and Gutter Barrier" Pay Item
- New Guardrail connection details
- **Guardrail Approach Terminal is primary "first-choice" End Treatment (where space permits)**

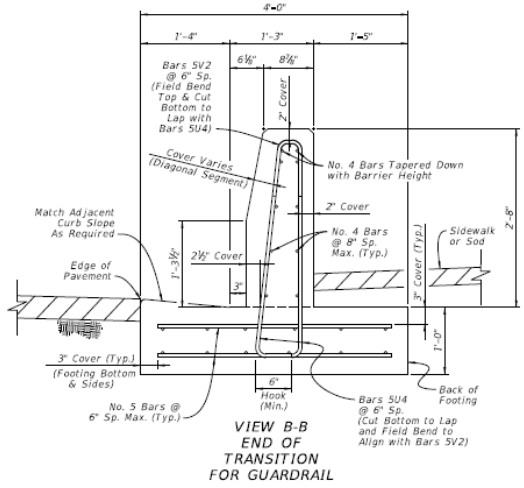
Index 521-001 – Concrete Barrier

Sheet 20: All new!

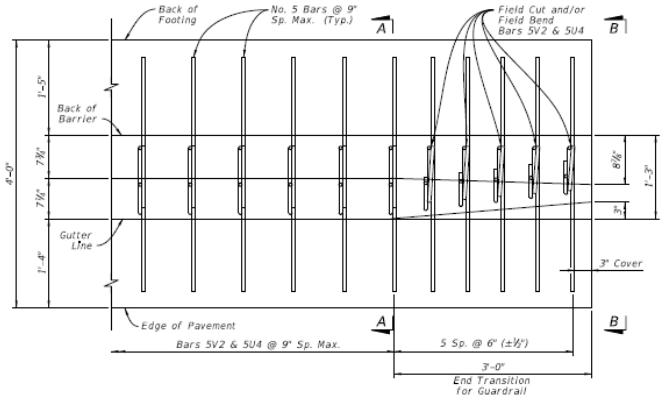


SECTION A-A
CURB & GUTTER
BARRIER

Concrete Qty. = 0.26 CY/FT
Steel Qty. = 41.2 LB/FT



VIEW B-B
END OF
TRANSITION
FOR GUARDRAIL



PLAN VIEW - END SEGMENT FOR GUARDRAIL CONNECTION
(Longitudinal Steel Not Shown for Clarity)

NOTES:

1. GENERAL: Work with the Plan and Elevation Views on Sheet 19.
2. FREE END REINFORCING: Where shown in the Plans, terminate the 38" Curb & Gutter Barrier section with a transverse vertical end face. Reduce the spacing of Bars 5V2 and 5U4 to 6" for 5 Spaces, placed with 3" cover from the barrier's end face.
3. BAR BENDING DIAGRAMS: For additional details for bars 5V2 and 5U4, see the Bar Bending Diagrams on Sheet 22.

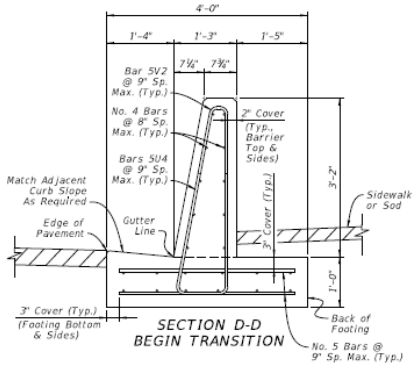
CURB AND GUTTER BARRIER -
REINFORCING DETAILS

LAST REVISION	DESCRIPTION:				
11/01/17		FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 20 of 22

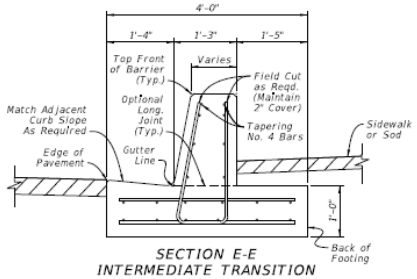
- Reinforcing details for general run and connection to guardrail

Index 521-001 – Concrete Barrier

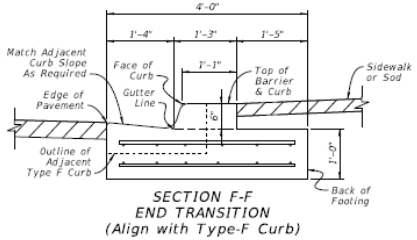
Sheet 21: All new!



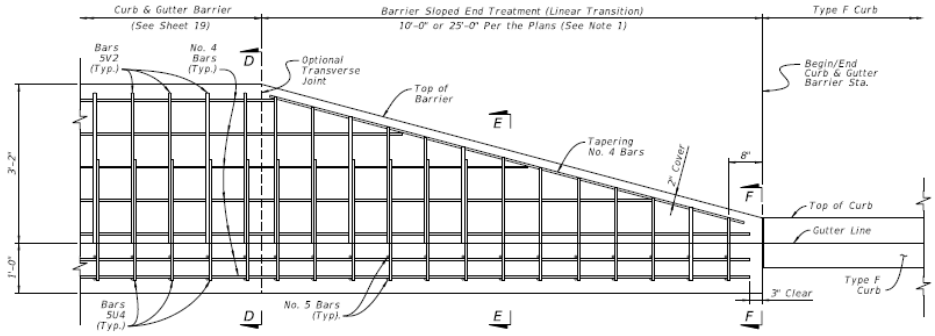
SECTION D-D
BEGIN TRANSITION



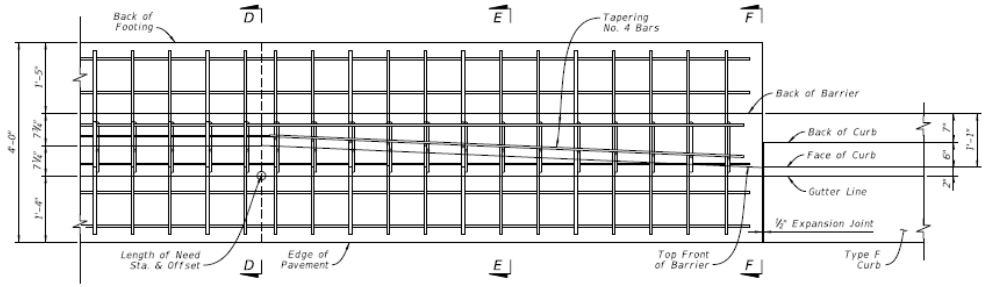
SECTION E-E
INTERMEDIATE TRANSITION
(Height Varies Linearly
Per Elevation View)



SECTION F-F
END TRANSITION
(Align with Type-F Curb)



ELEVATION - CURB AND GUTTER BARRIER
SHOWING SLOPED END TREATMENT
(Approach and Trailing
End Similar by Opposite Hand)



PLAN - CURB AND GUTTER BARRIER
SHOWING SLOPED END TREATMENT
(Approach and Trailing End
Similar by Opposite Hand;
See Sections for All
Longitudinal Steel Locations)

NOTES:

1. GENERAL: Install a Sloped End Treatment only where called for in the Plans, using either a 10'-0" length or 25'-0" length treatment as specified in the Plans. The 10'-0" length option is shown herein, while the 25'-0" length option requires additional trimmed Bars SU4 & SV2 at the same 9" longitudinal spacing.
2. BAR BENDING DIAGRAMS: For additional details on Bars SV2 & SU4, see the Bar Bending Diagrams on Sheet 22.

CURB AND GUTTER BARRIER -
SLOPED END TREATMENT

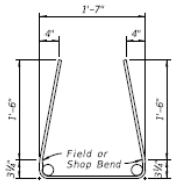
LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 21 of 22

- Use Sloped End Treatment only where Guardrail Approach Terminal will not fit
- Design Speed (≤35 mph)
- Requires DDE approval per FDM 215
- Requirements explained in SPI

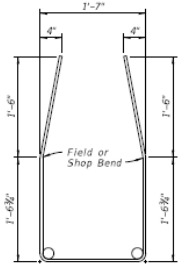
Index 521-001 – Concrete Barrier

Sheet 22: All new!

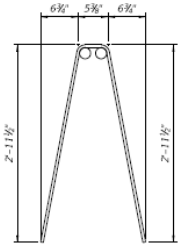
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
C1	4	3'-8"
C2	5	3'-0"
U1	4	5'-1"
U2	4	7'-8"
U3	5	9'-7"
U4	5	5'-9"
V1	4	6'-4"
V2	5	6'-3"



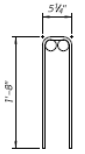
BARS 4U1



BAR 4U2



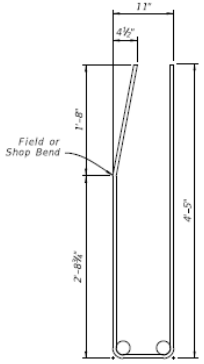
BAR 4V1



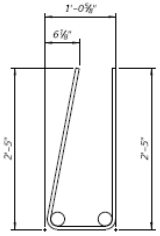
BAR 4C1

NOTES:

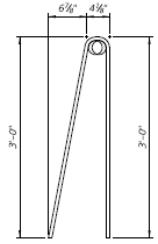
1. Work with the Standard Bar Bending Details per Index 415-001.
2. All bar dimensions in the bending diagrams are out to out.



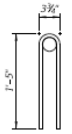
BAR 5U3



BAR 5U4



BAR 5V2



BAR 5C2

REINFORCING BAR BENDING DIAGRAMS

LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 22 of 22

- Reinforcing details for contractors!

Index 521-001 – Concrete Barrier

STANDARD PLANS INSTRUCTIONS: All new!

Standard Plans Website: http://www.fdot.gov/design/standardplans/current/default.shtm

New

		Concrete Barriers, Traffic Railings, and Parapets				
521-001		Concrete Barrier	410	SPI	XLS	Roadway
521-002		Pier Protection Barrier	411	SPI	XLS	
521-010		Opaque Visual Barrier	461			

http://www.fdot.gov/design/standardplans/current/SPI/SPI-521-001.pdf

Index 521-001 – Concrete Barrier

DESIGN TOOL – 'Length of Need' (Excel): All new!

Standard Plans Website: http://www.fdot.gov/design/standardplans/current/default.shtm

New

		Concrete Barriers, Traffic Railings, and Parapets				
521-001		Concrete Barrier	410	SPI	XLS	Roadway
521-002		Pier Protection Barrier	411	SPI	XLS	
521-010		Opaque Visual Barrier	461			

http://www.fdot.gov/design/standardplans/current/XLS/ConcreteBarrier-LON.XLSM

Standard Plans – Primary Index Updates:

✓ ***1)*** ***Index 536-001*** **– Guardrail**
- Miscellaneous Updates

✓ ***2)*** ***Index 521-001*** **– Concrete Barrier**
- Complete Redevelopment – **Single-Slope Barrier**

➡ ***3)*** ***Index 521-002*** **– Pier Protection Barrier**
- Extensive Redevelopment – **Single-Slope Barrier**

Index 521-002 – Pier Protection Barrier

Sheet 1: Revised!

SHEET NO.	CONTENTS
1	Index Contents; General Notes
2	Example Layouts – Footing Placement and Connections
3	Barrier Plan and Elevation – Connection to Concrete Barrier – Connection to Guardrail
4	Barrier Details – Connection to Concrete Barrier
5	Barrier Details – Connection to Guardrail
6	Barrier Footing Options
7	Crash Wall Details
8	Reinforcing Bar Bending Diagrams

GENERAL NOTES:

1. CONCRETE: Use Class III or IV concrete unless otherwise called for in the Plans.

2. CONSTRUCTION JOINTS: Maintain continuity of reinforcement steel across Construction Joints; reinforcement lap splices are permitted immediately adjacent to joints. Construct all Pier Protection Barrier continuously, with no expansion or contraction joints. Construction Joints are classified herein as Transverse Joints or Longitudinal Joints.

   Transverse Joints are permitted at 40 foot or greater intervals along the barrier.

   Longitudinal Joints may only be installed where indicated in the following details and notes, with a location tolerance of ± 1" from the locations shown.

3. SUBGRADE: Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).

4. DRAINAGE INLETS: See Index 425-001 for Shoulder Barrier Inlets, and isolate these structures from Pier Protection Barriers and Footings with 1" Preformed Joint Filler.

5. BARRIER END MARKERS: For all free ends of barriers that are not connected to guardrail or concrete barrier, install a Type 3 Object Marker on the end face per Specification 705.

6. BARRIER DELINEATORS: Install Barrier Delineators in accordance with Specification Section 705. Mount the delineators on the top face of the barrier, with the roadway side of the delineator located 2" from the front face of the barrier and the reflective sheeting facing traffic of the nearest approach.

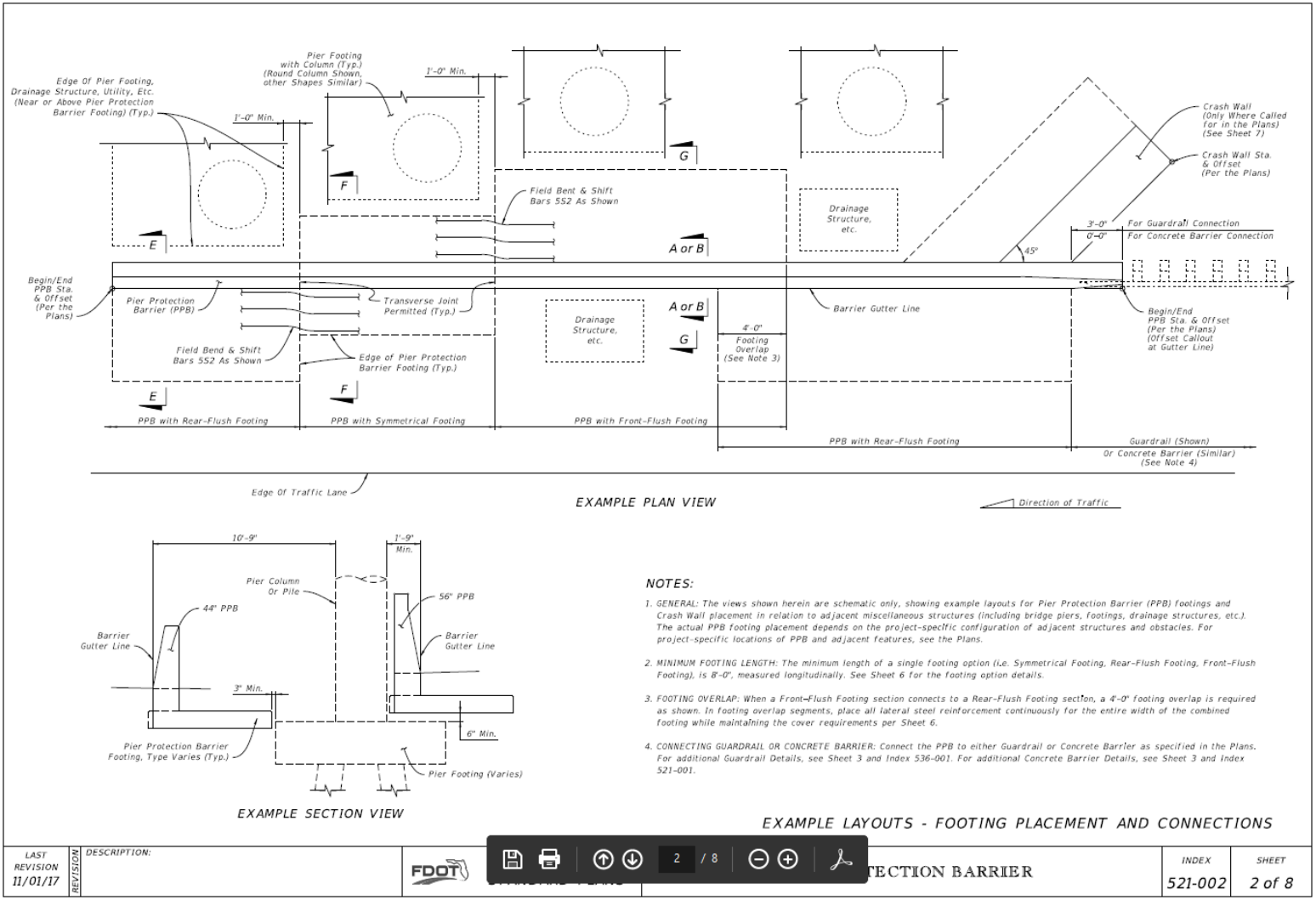
7. CRACK CONTROL: Provide ½" depth crack control V-Grooves at 15' to 30' spacing. Locate V-Grooves above any joint or discontinuity in the barrier footing. Align V-Grooves perpendicular to the longitudinal axis of the Pier Protection Barrier and make continuous across the top surface and both side faces. For slip formed barriers, score ½" V-Grooves while the concrete is still plastic, otherwise pre-form the joints when stationary forms are utilized.

LAST REVISION	REVISION	DESCRIPTION:		INDEX	SHEET
11/01/17			TECTION BARRIER	521-002	1 of 8

- New Table of Contents
- Revised some notes for clarity.
- Added note headings

Index 521-002 – Pier Protection Barrier

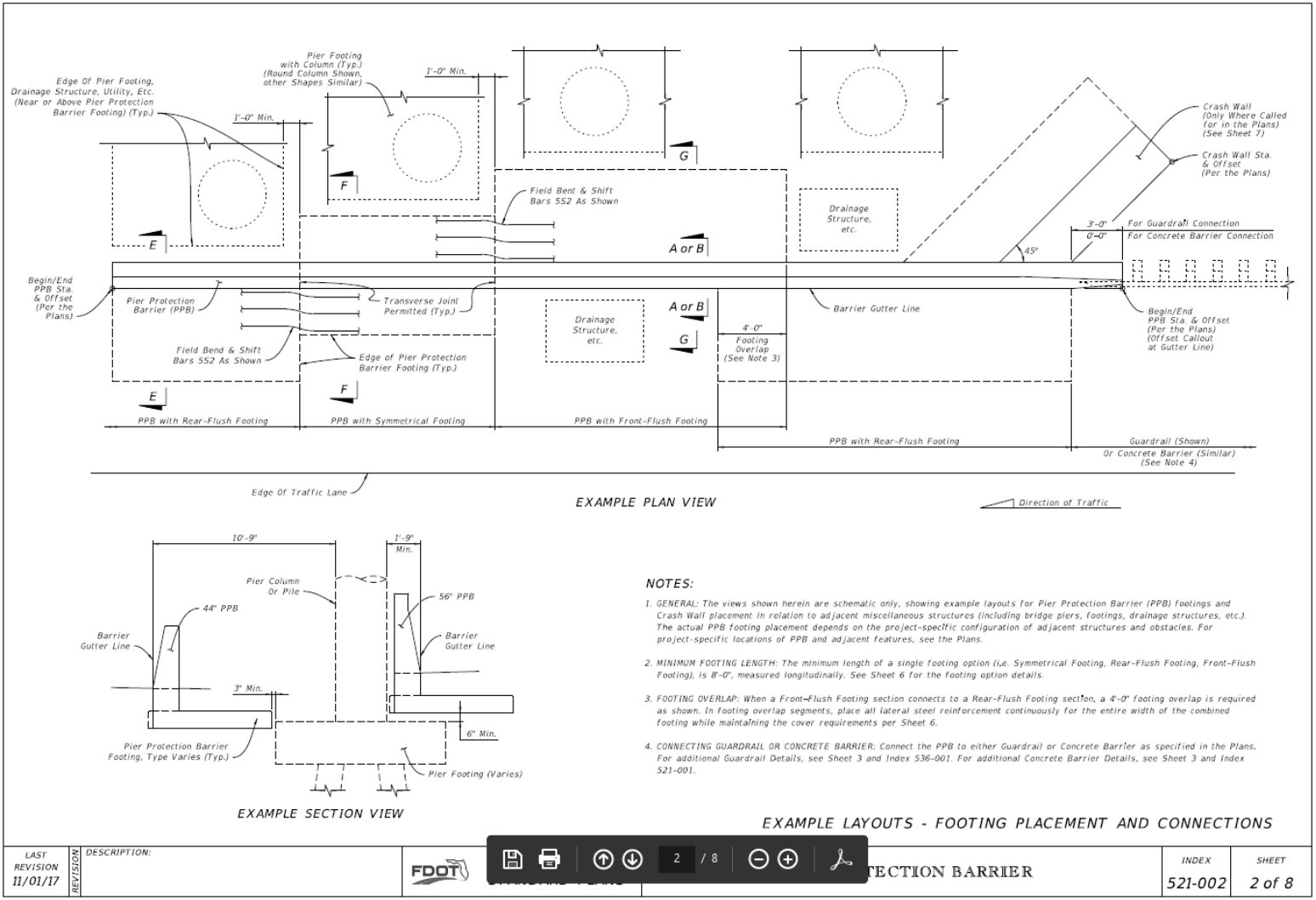
Sheet 2: Revised!



- More detail added to example layouts
- Now shows Station & Offset Points to correspond with Plans
- Now shows optional Crash Wall

Index 521-002 – Pier Protection Barrier

Sheet 2: Revised!

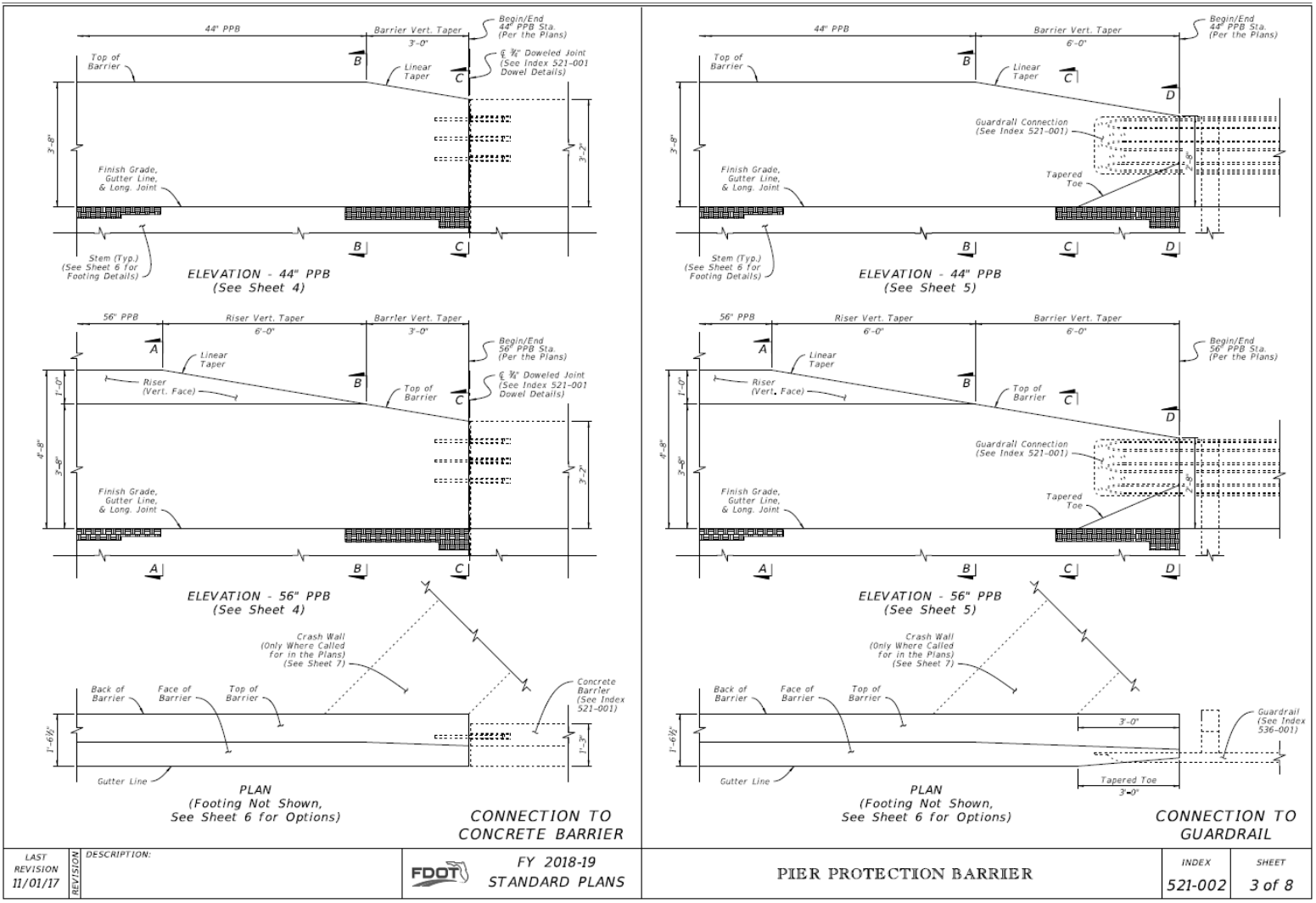


Crash Wall connection to PPB location differs per Guardrail or Concrete Barrier connection:

- Guardrail Connection: 3 Ft. Offset
- Concrete Barrier Connection: Zero Offset

Index 521-002 – Pier Protection Barrier

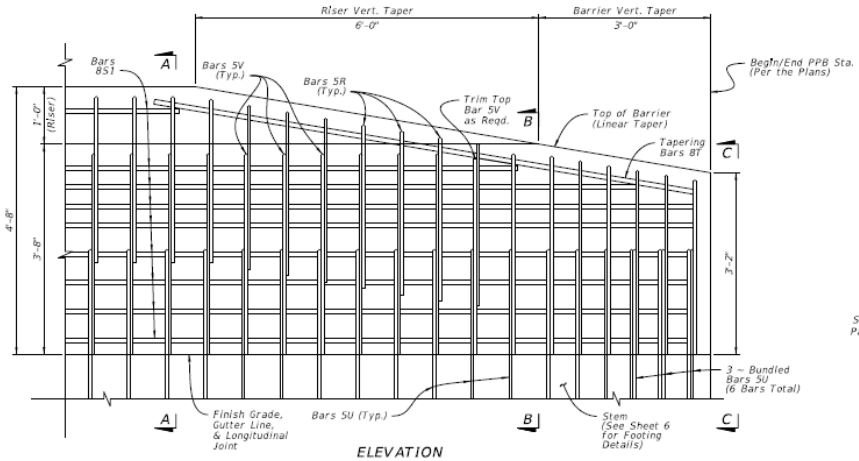
Sheet 3: All new!

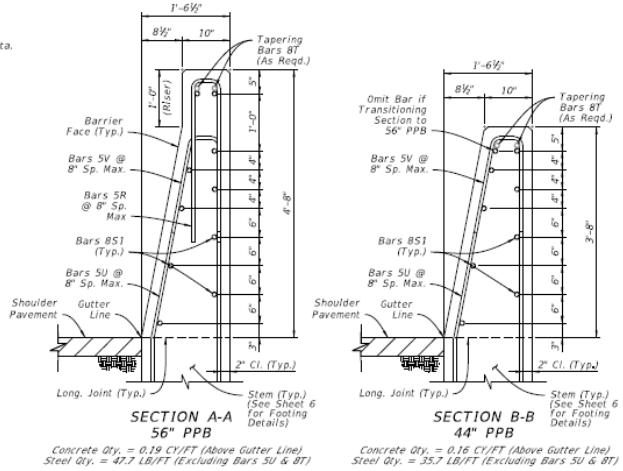


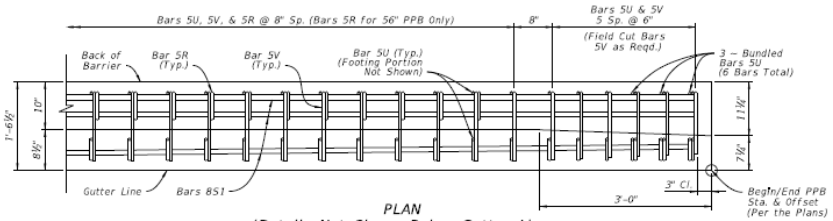
- New plan and elevations show all height and end connection configurations
- Heights Required:
  ~56” for pier within 10’-0” of PPB
  ~44” for pier beyond 10’-0” from PPB
- Guidance per SPI and LRFD

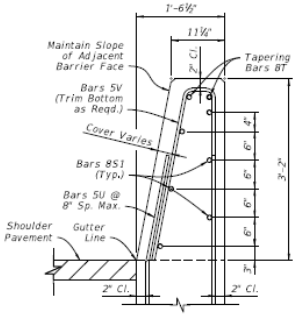
Index 521-002 – Pier Protection Barrier

Sheet 4: All new!









NOTES:

1. GENERAL: Construct either the 56" PPB or the 44" PPB height as called for in the Plans. See Sheets 2 & 3 for additional plan and elevation details.
2. FOOTING OPTIONS: See Sheet 6 for the supporting stem and footing details.

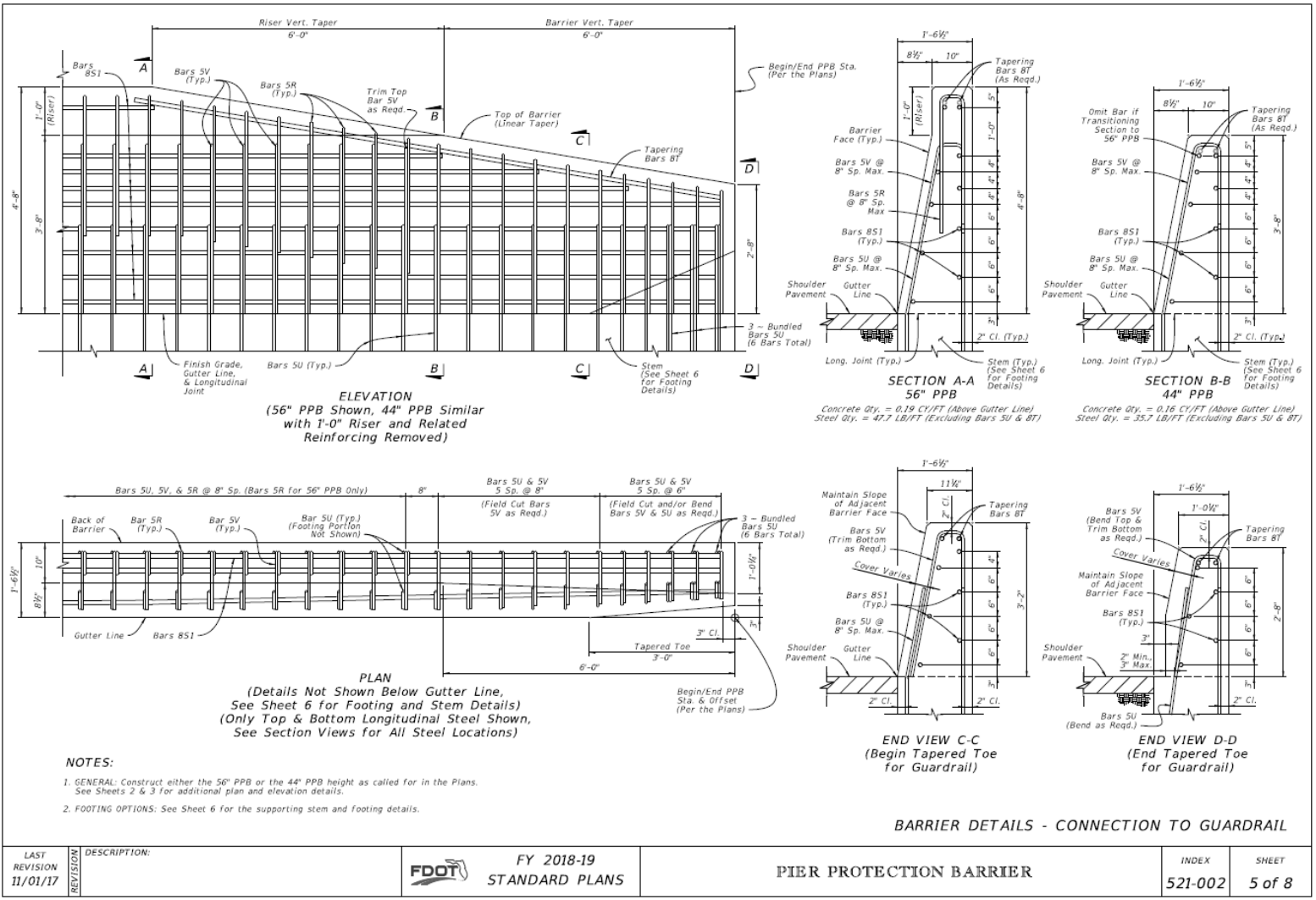
BARRIER DETAILS - CONNECTION TO CONCRETE BARRIER

LAST REVISION	DESCRIPTION:	FDOT		INDEX	SHEET
11/01/17		FY 2018-19 STANDARD PLANS	PIER PROTECTION BARRIER	521-002	4 of 8

- Reinforcing details when connecting to Concrete Barrier (38” height at end)

Index 521-002 – Pier Protection Barrier

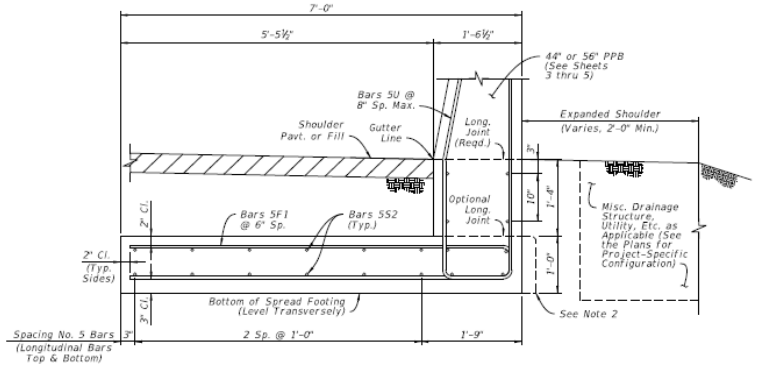
Sheet 5: All new!



- Reinforcing details when connecting to Guardrail (32” Height at end)

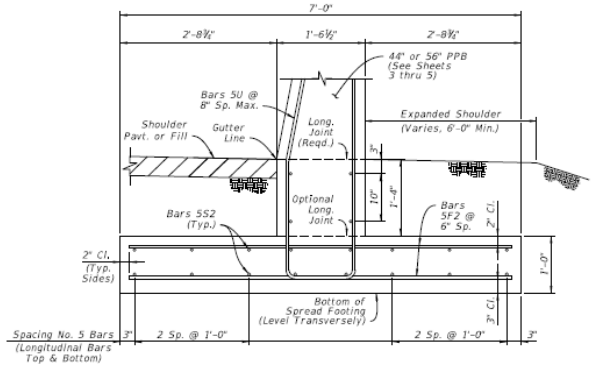
Index 521-002 – Pier Protection Barrier

Sheet 6: Revised!



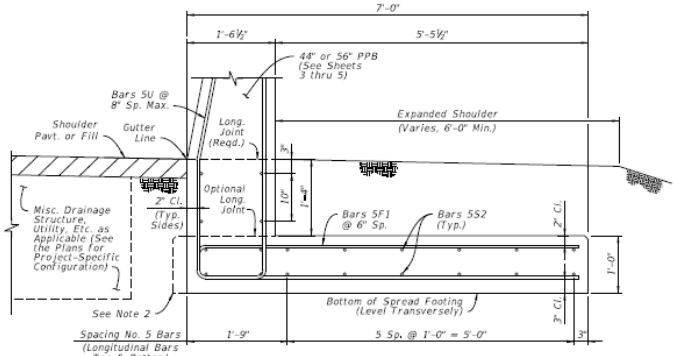
SECTION E-E
FRONT-FLUSH FOOTING OPTION

Concrete Qty. = 0.34 CY/FT (Below Gutter Line)
Steel Qty. = 63.5 LB/FT (Including Bars 5U)



SECTION F-F
SYMMETRICAL FOOTING OPTION

Concrete Qty. = 0.34 CY/FT (Below Gutter Line)
Steel Qty. = 62.6 LB/FT (Including Bars 5U)



SECTION G-G
REAR-FLUSH FOOTING OPTION

Concrete Qty. = 0.34 CY/FT (Below Gutter Line)
Steel Qty. = 63.5 LB/FT (Including Bars 5U)

NOTES:

1. GENERAL: Install the footing options per project-specific requirements, as defined on Sheet 2 and specified per the Plans.

   Work with the supported 44" PPB and 56" PPB as shown on Sheets 3, 4, & 5.

2. OPTIONAL SLIP FORMING SUPPORT: The 1'-0" depth spread footing may be extended by 3" laterally beyond the face of the stem to provide support for a subsequent slip forming operation above. Do not adjust the steel reinforcement location for the additional concrete.

3. GUARDRAIL CONNECTION TAPERED TOE: For tapering the barrier as shown on Sheet 5, View D-D, bend Bars U away from the stem face as required. For this case, the cover requirement is variable for one side of the stem (only at the tapered toe locations).

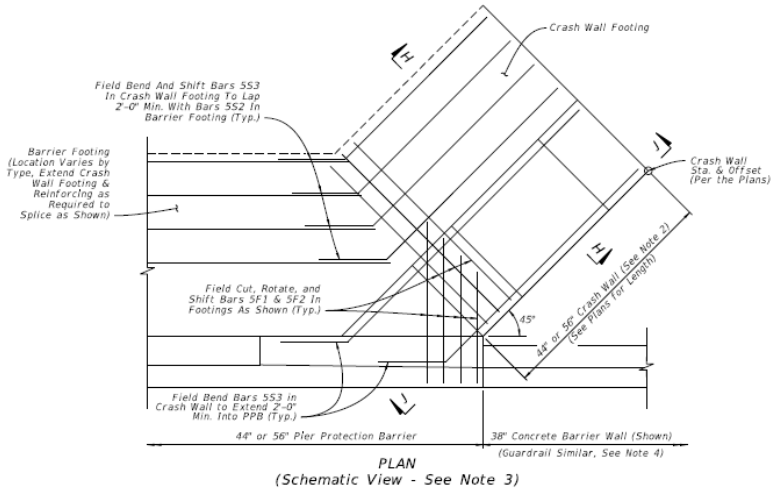
BARRIER FOOTING OPTIONS

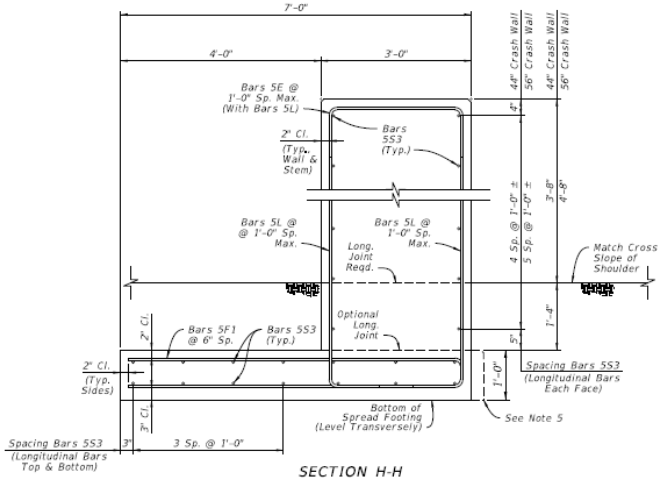
LAST REVISION 11/01/17	REVISION DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	PIER PROTECTION BARRIER	INDEX 521-002	SHEET 6 of 8

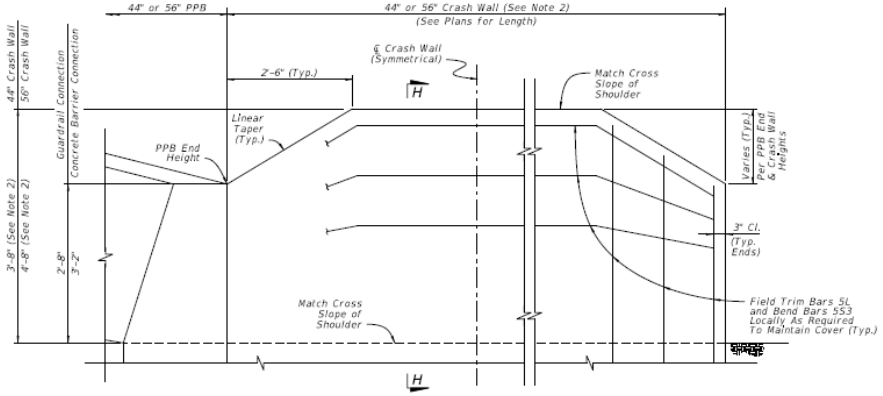
- Differing footing options for fitting around piers, drainage, utilities, etc…
- Same dimensions as FY 2017-18 Standard

Index 521-002 – Pier Protection Barrier

Sheet 7:







NOTES:

1. GENERAL: Only where called for in the Plans, install the Crash Wall as a supplement for PPB. If applicable, see the Plans for the corresponding Station and Offset required.

   For additional layout details, see Sheets 2 & 3.

2. CRASH WALL HEIGHT: Install the Crash Wall at a height which matches the adjacent PPB (either 44" or 56").

3. SCHEMATIC VIEWS: Only partial reinforcing is shown in the Schematic Views to establish a trend while keeping clarity. For all reinforcing steel locations and spacing requirements, see Section H-H.

4. GUARDRAIL CONNECTIONS: To facilitate guardrail connections, shift the Crash Wall 3 feet from the end of the PPB as shown on Sheets 2 & 3.

5. OPTIONAL SLIP FORMING SUPPORT: The 1'-0" depth spread footing may be extended by 3" laterally beyond the face of the wall to provide support for a subsequent slip forming operation above. Do not adjust the steel reinforcement location for the additional concrete.

CRASH WALL DETAILS

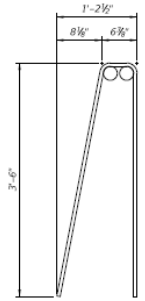
LAST REVISION 11/01/17	DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	PIER PROTECTION BARRIER	INDEX 521-002	SHEET 7 of 8

- Crash Wall used to reduce Length of Need and overall system length of barrier
- Same design dimensions as FY 2017-18 Standard
- New Crash Wall Sta. and Offset Point to corresponds to Plans

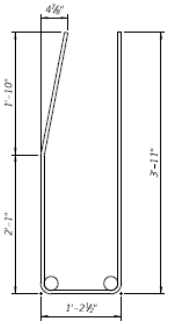
Index 521-002 – Pier Protection Barrier

Sheet 8: All new!

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
V	5	7'-5"
U	5	8'-11"
R	5	6'-0"
F1	5	13'-9"
F2	5	Varies (Straight)
L	5	6'-5" / 7'-5"
E	5	4'-6"
S1	8	Varies (Straight)
S2, S3	5	Varies (Straight)



BARS 5V

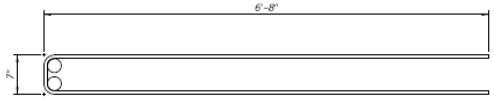


BARS 5U

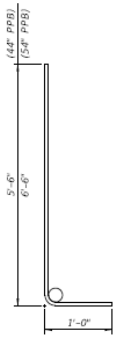
BARS 5R

NOTES:

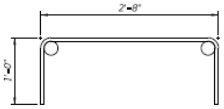
1. Work with the Standard Bar Bending Details per Index 415-001.
2. All bar dimensions in the bending diagrams are out to out.



BARS 5F1



BARS 5L



BARS 5E

BAR BENDING DIAGRAMS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2018-19 STANDARD PLANS	PIER PROTECTION BARRIER	INDEX	SHEET
11/01/17						521-002	8 of 8

- Reinforcing details for contractors!

Index 521-002 – Pier Protection Barrier

STANDARD PLANS INSTRUCTIONS: Redeveloped!

Standard Plans Website: http://www.fdot.gov/design/standardplans/current/default.shtm

Revised

		Concrete Barriers, Traffic Railings, and Parapets				
521-001		Concrete Barrier	410	PI	XLS	Roadway
521-002		Pier Protection Barrier	411	SPI	XLS	
521-010		Opaque Visual Barrier	461			

http://www.fdot.gov/design/standardplans/current/SPI/SPI-521-002.pdf

Index 521-002 – Pier Protection Barrier

DESIGN TOOL – 'Length of Need' (Excel): All new!

Standard Plans Website: http://www.fdot.gov/design/standardplans/current/default.shtm

		Concrete Barriers, Traffic Railings, and Parapets				
521-001		Concrete Barrier	410	SPI	XLS	Roadway
521-002		Pier Protection Barrier	411	SPI	XLS	
521-010		Opaque Visual Barrier	461			

New

http://www.fdot.gov/design/standardplans/current/XLS/PierProtectionBarrier-LON.XLSM

Standard Plans – Primary Index Updates:

1) ***Index 536-001*** **– Guardrail**
   - Miscellaneous Updates

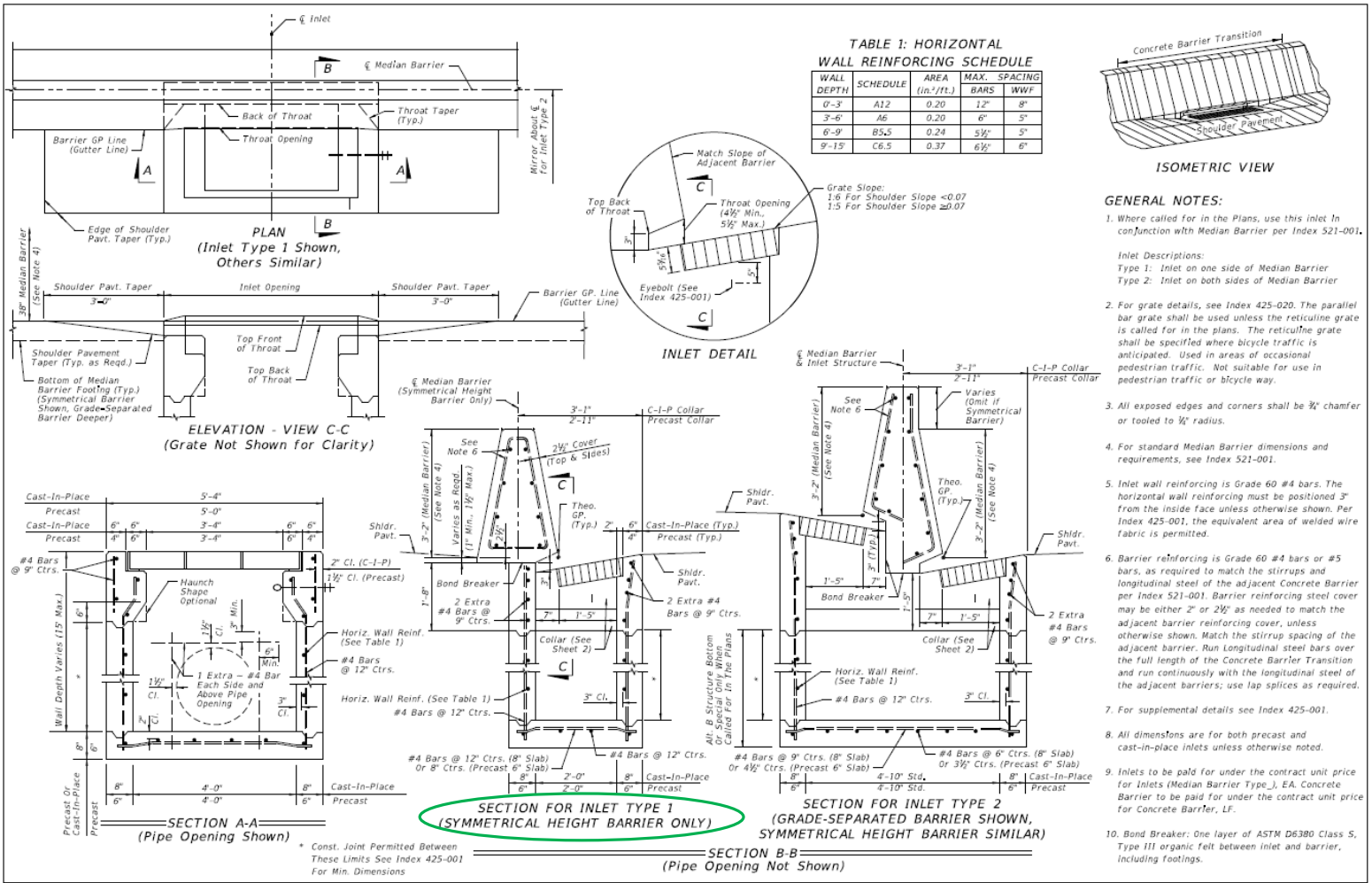
2) ***Index 521-001*** **– Concrete Barrier**
   - Complete Redevelopment – **Single-Slope Barrier**

3) ***Index 521-002*** **– Pier Protection Barrier**
   - Extensive Redevelopment – **Single-Slope Barrier**

4) ***Index 425-030*** **– Median Barrier Inlets Types 1 & 2**
   - Modified – **Single-Slope Barrier**
   - Removed Approach and Trailing “Throats”

Index 425-030 – Median Barrier Inlets Type 1 & 2

Sheet 1: Revisions for Single-Slope



- Clarified Usage Note, Plan, Elevation, and Section Views
- Removed upstream "throat" indentation
- Reduced inlet Type quantity from 5 to 2
- Clarified Label: Type 1 inlet for symmetrical barrier only

Standard Plans – Primary Index Updates:

1) ***Index 536-001*** **– Guardrail**
   - Miscellaneous Updates

2) ***Index 521-001*** **– Concrete Barrier**
   - Complete Redevelopment – **Single-Slope Barrier**

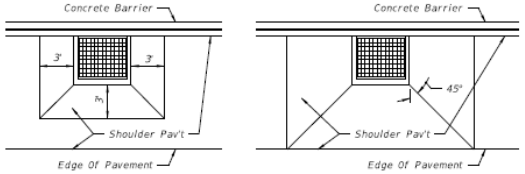
3) ***Index 521-002*** **– Pier Protection Barrier**
   - Extensive Redevelopment – **Single-Slope Barrier**

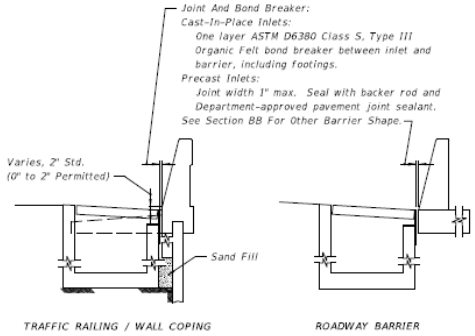
4) ***Index 425-030*** **– Median Barrier Inlets Types 1 & 2**
   - Modified – **Single-Slope Barrier**
   - Removed Approach and Trailing “Throats”

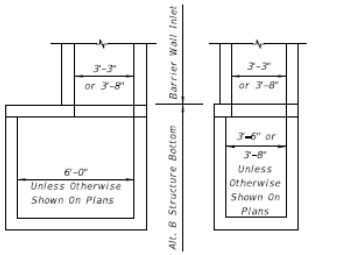
5) ***Index 425-031*** **– Shoulder Barrier Inlet**
   - Modified – **Single-Slope Barrier**

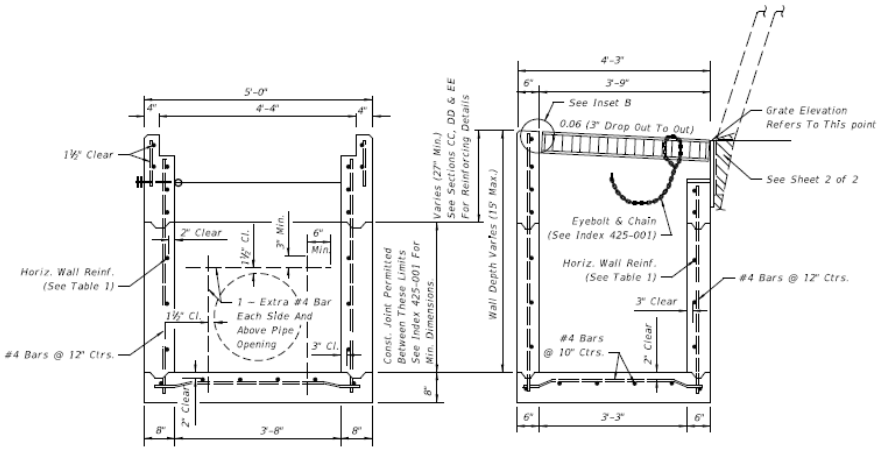
Index 425-031 – Shoulder Barrier Inlet

Sheet 1: Revisions for Single-Slope









GENERAL NOTES:

1. Where called for in the Plans, use this inlet in conjunction with Shoulder Barrier per Index 521-001 or a Wall Coping with Traffic Railing/Junction Slab per Index 521-610. Use of the inlet adjacent to other Concrete Barrier or Traffic Railing types requires approval of the Drainage Engineer. The inlet is suitable for bicycle and occasional pedestrian traffic, with roller bar installation (see INSET B), but should not be placed in a designated pedestrian travel way.
2. Inlets located in embankments constructed with earth anchored retaining wall shall be designed with minimum depths to reduce adverse impact on the anchorage system. Runs of pipe parallel to and near anchored wall shall be avoided wherever practical. Special coordination must be exercised during the design and construction of storm water systems within anchored wall systems.
3. Inlet bottoms and/or tops may be either precast or cast-in-place. Whether cast as a single unit or as multiple segments, and whether precast or cast-in-place, the upper 2'-3" of the inlet shall be reinforced in accordance with sections CC, DD and EE.
4. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
5. When Alternate G grate is specified in the plans, the grate is to be hot-dip galvanized after fabrication. Field installation of the filler bar called for in Inset B will not be permitted, thereby requiring tolerance adjustment during fabrication and/or casting, or, matching grate to structure prior to galvanizing.
6. All reinforcing is Grade 60 bars. See Index 425-001 for equivalent area of welded wire fabric.
7. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
8. For supplemental details see Indexes 425-001 and 425-010.
9. Inlets to be paid for under the contract unit for Inlets (Concrete Barrier), Ea.

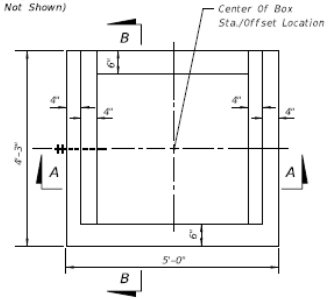


TABLE 1: HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-5'	A12	0.20	12"	8"
5'-10'	A6	0.20	6"	5"
10'-15'	A4	0.20	4"	3"
10'-15'	B5.5	0.24	5½"	5"

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2018-19 STANDARD PLANS	SHOULDER BARRIER INLET	INDEX	SHEET
11/01/17						425-031	1 of 2

- Clarified usage with specific Index numbers in Note 1.
- Previously, this Index was named "Barrier Wall Inlet"… similar sounding to other inlet Index titles

Standard Plans – Primary Index Updates:

1) ***Index 536-001*** **– Guardrail**
   - Miscellaneous Updates

2) ***Index 521-001*** **– Concrete Barrier**
   - Complete Redevelopment – **Single-Slope Barrier**

3) ***Index 521-002*** **– Pier Protection Barrier**
   - Extensive Redevelopment – **Single-Slope Barrier**

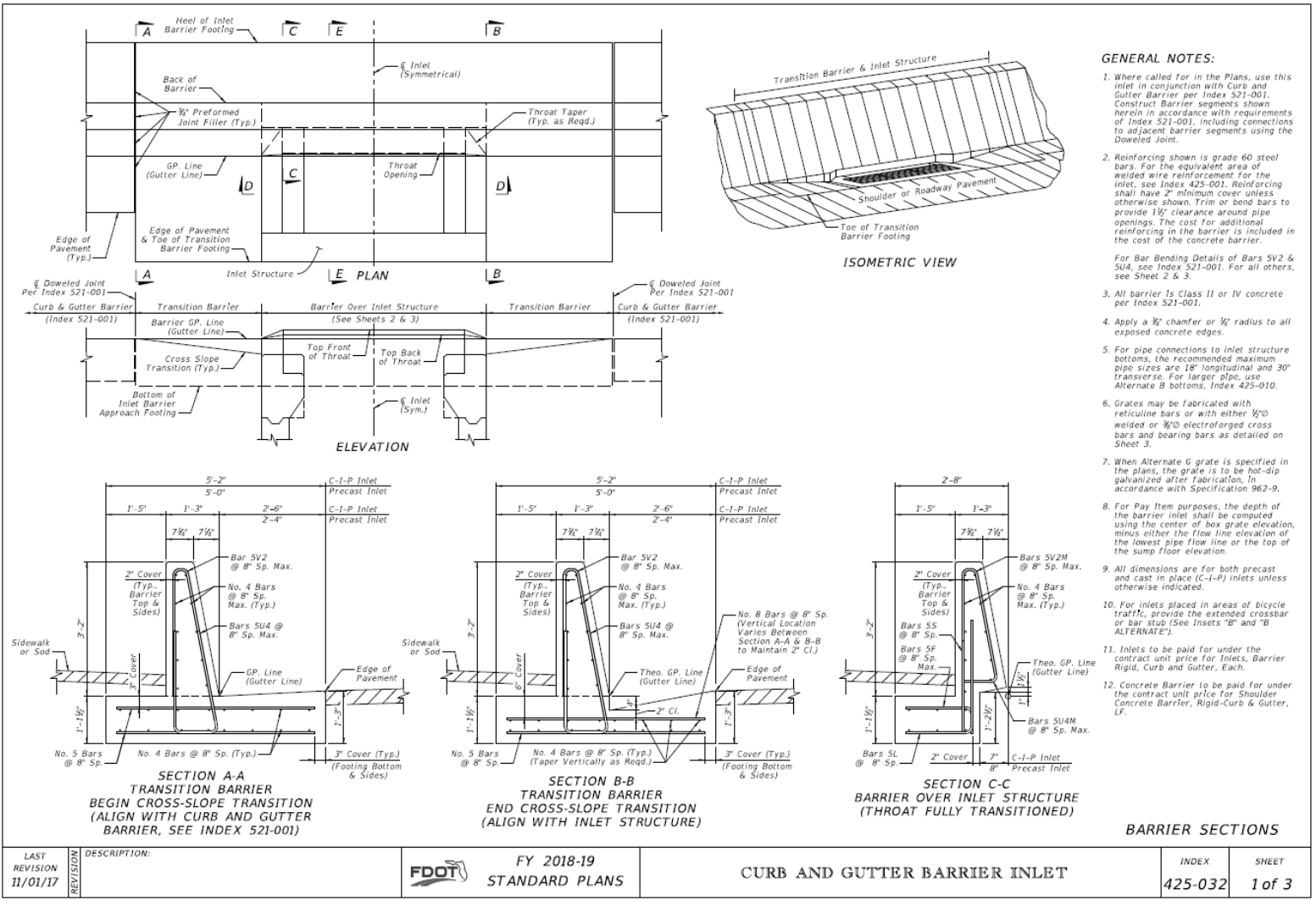
4) ***Index 425-030*** **– Median Barrier Inlets Types 1 & 2**
   - Modified – **Single-Slope Barrier**
   - Removed Approach and Trailing “Throats”

5) ***Index 425-031*** **– Shoulder Barrier Inlet**
   - Modified – **Single-Slope Barrier**

6) ***Index 425-032*** **– Curb & Gutter Barrier Inlet**
   - Modified – **Single-Slope Barrier**
   - New PVC Drainage Pipes from Sidewalk

Index 425-032 – Curb & Gutter Barrier Inlet

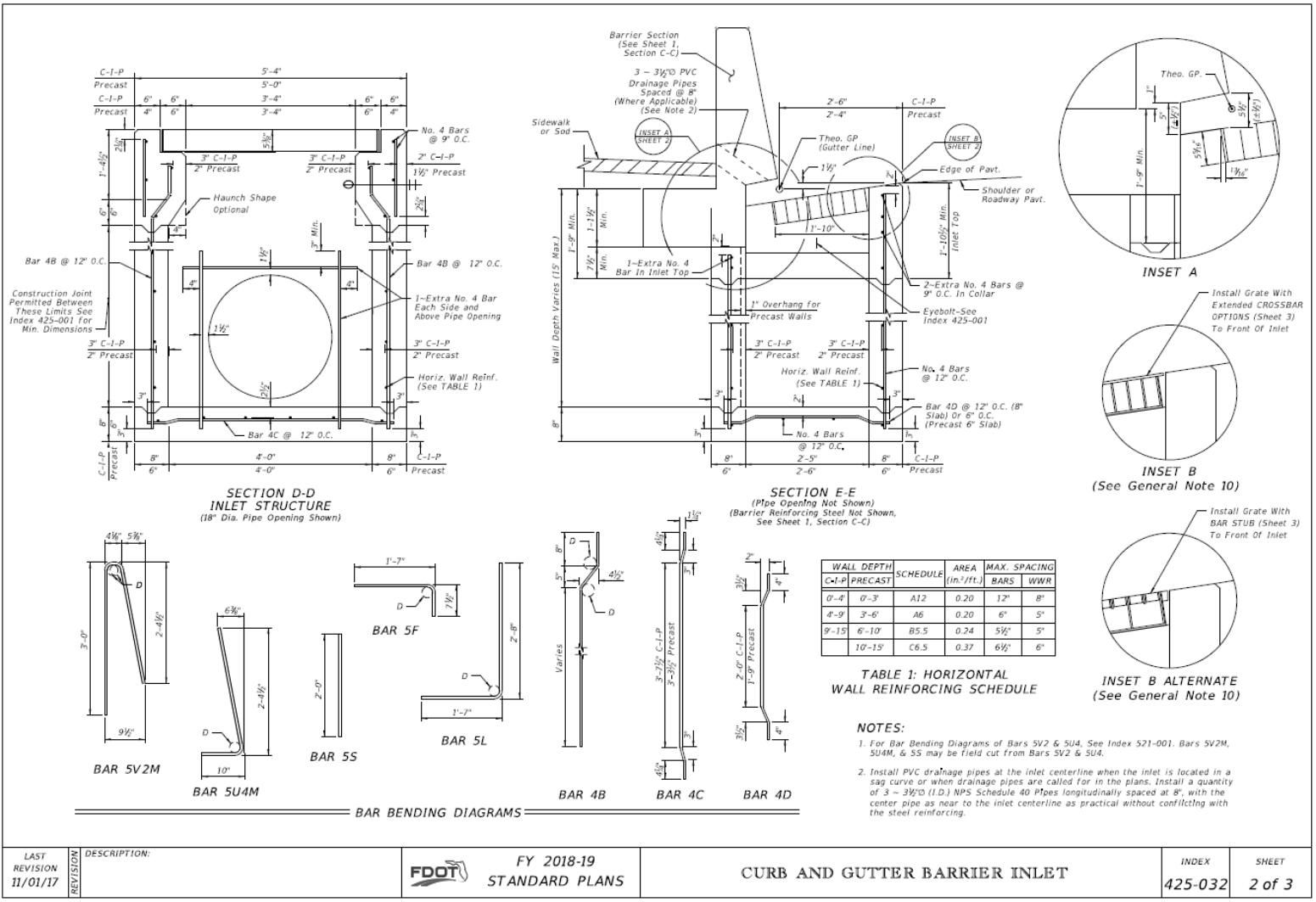
Sheet 1: Revised for Single-Slope



- Clarified Usage Note 1, Plan, Elevation, and Section Views
- Removed upstream "throat" indentation

Index 425-032 – Curb & Gutter Barrier Inlet

Sheet 2: Revised for Single-Slope



- Replaced 18" drainage slot with 3 ~ 3.5" PVC pipes (improved construct-ability, less interference with rebar)
- Revised reinforcing

Standard Plans – Primary Index Updates:

✓ 1) ***Index 536-001*** **– Guardrail**
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✓ 2) ***Index 521-001*** **– Concrete Barrier**
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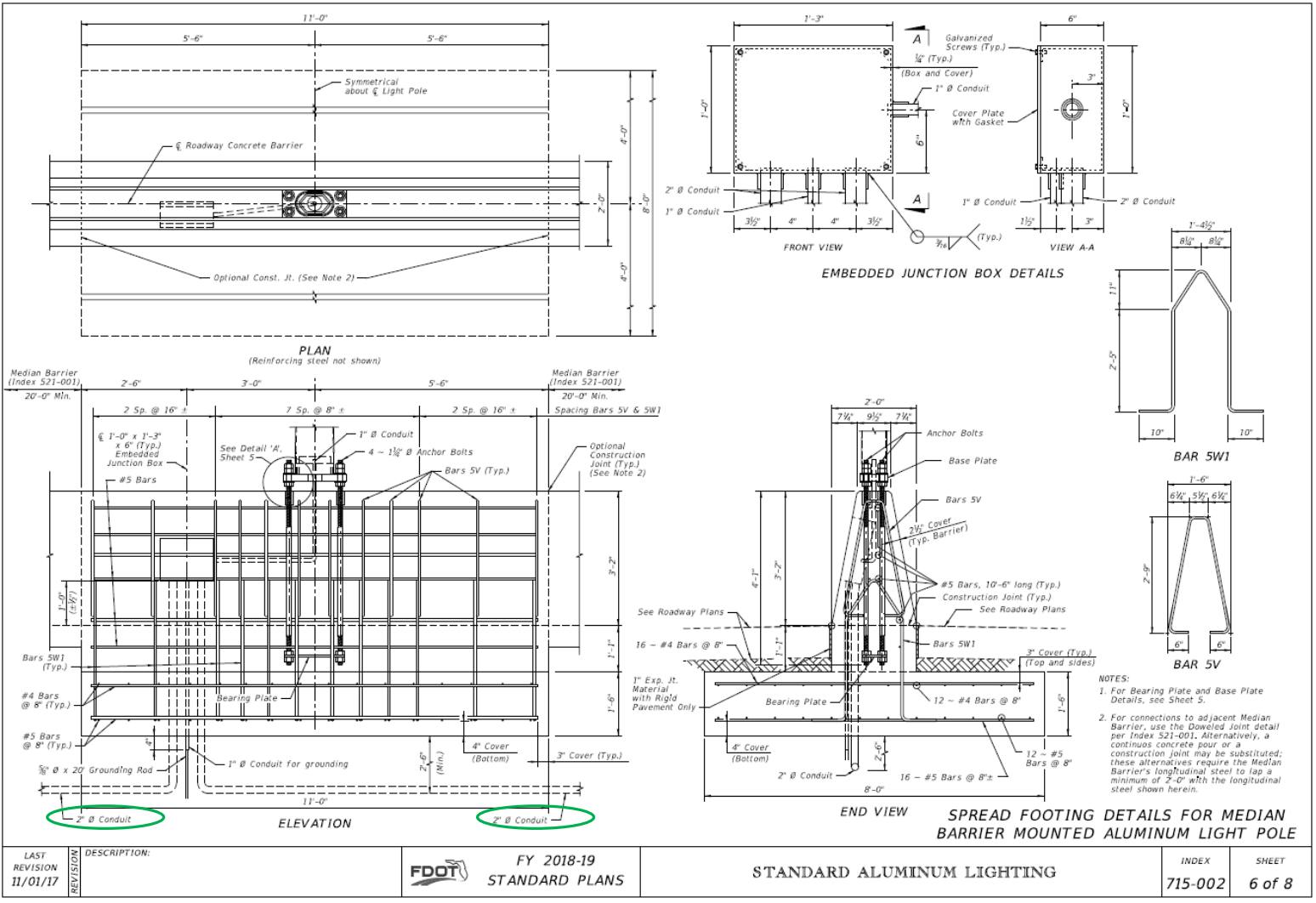
✓ 6) ***Index 425-032*** **– Curb & Gutter Barrier Inlet**
- Modified – **Single-Slope Barrier**
- New PVC Drainage Pipes from Sidewalk

→ 7) ***Index 715-002*** **– Standard Aluminum Lighting**
- Modified – **Single-Slope Barrier**

Index 715-002 – Standard Aluminum Lighting

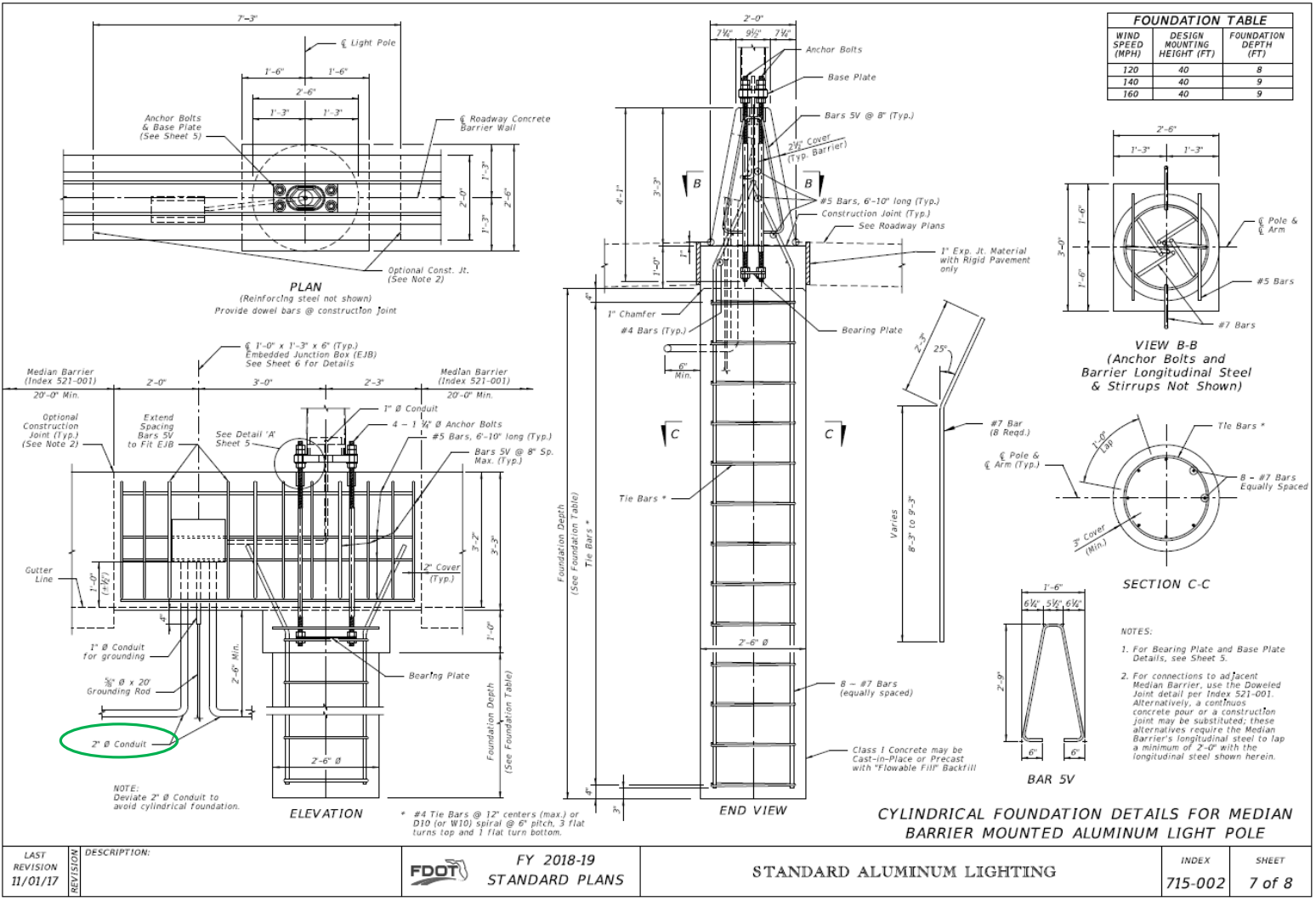
Sheet 6: Revised for Single-Slope



- Updated reinforcing: vertical bars now throughout
- Reminder: For roadside Concrete Barrier, longitudinal conduit runs underground (not in the barrier itself!)

Index 715-002 – Standard Aluminum Lighting

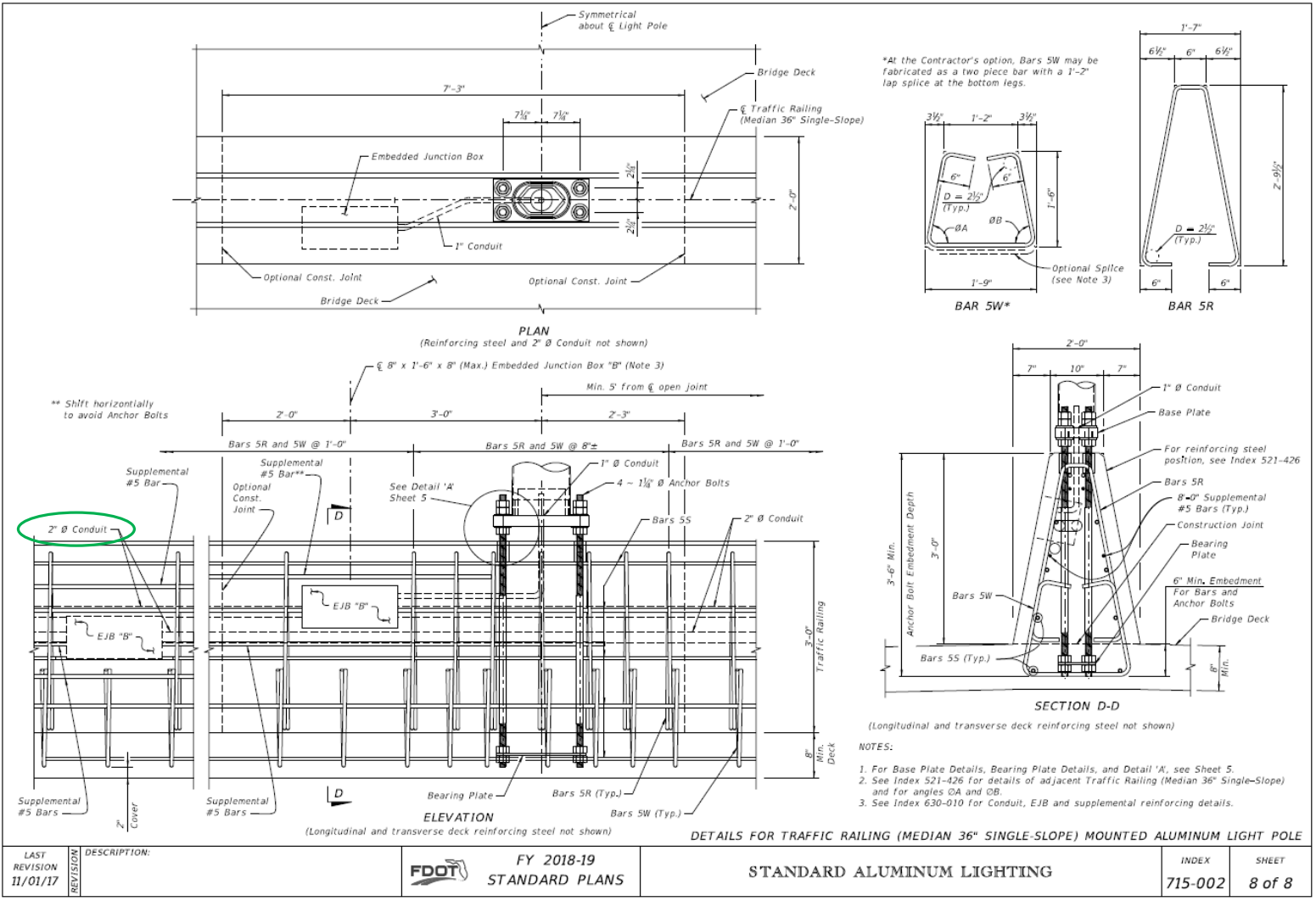
Sheet 7: Revised for Single-Slope



- Updated reinforcing: vertical bars now throughout
- Reminder: For roadside Concrete Barrier, longitudinal conduit runs underground (not in the barrier itself!)

Index 715-002 – Standard Aluminum Lighting

Sheet 8: Revised for Single-Slope



- Updated reinforcing
- Reminder: For bridge deck Traffic Railing, longitudinal conduit runs within the Traffic Railing

Standard Plans – Primary Index Updates:

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   - Modified – **Single-Slope Barrier**

Questions?

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