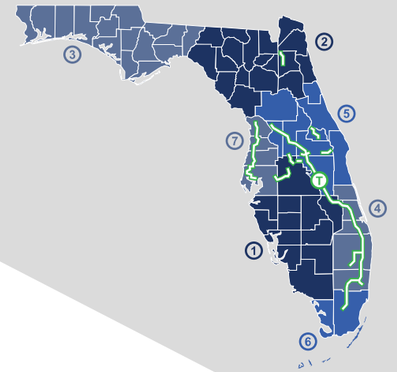
FDOT Roadway Design Office
Topic No: 625-010-003



2025-26 STANDARD PLANS
FOR BRIDGE CONSTRUCTION

Effective for Projects with Lettings in the Fiscal Year (FY) from July 1, 2025 through June 30, 2026

State of Florida Department of Transportation
Office of Design
Mail Station 32
605 Suwannee Street
Tallahassee, Florida 32399-0450

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	Fencing - Type R
550-010	Bridge Fencing (Vertical)
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630-010	Conduit Details - Embedded
	Signing, Pavement Markings and Lighting
715-240	Maintenance Lighting for Box Girders

STANDARD PLANS
FY 2025-26 REVISIONS LOG

Standard Plans Index	Description
102-201	**Sheet 2:** Added Paved Surface to Thrie Beam to Bridge Guardrail Transition detail and updated dimensions to accommodate; Added additional callouts to Guardrail End Transition detail; Lengthened the plate size in the 1/4" Guardrail Back Plate Detail, clarified the dimensions and added notes.
102-600	**Sheet 3:** Updated HIGH-VISIBILITY SAFETY APPAREL note to refer to "ANSI/ISEA 107-2015". **Sheet 4:** Updated flag color in the Hand-Signaling Devices note to "red or fluorescent orange-red in color". **Sheet 6:** Changed the color code of sign W3-5 from "B/O" to "BW/O". Changed W16-1P sign to match MUTCD.
102-615	**Sheet 4:** Added new sign option (W9-3) under "Center Lane Closed Ahead" sign and renumbered "Center Lane Closed Ahead" sign to MOT-7-25.
102-661	**Sheet 1:** Updated sign names based on new MUTCD 11th edition **Sheet 2:** Updated sign names based on new MUTCD 11th edition; Updated signs W16-1P detail. Updated "Bikes Merge" sign: Updated the PCMS Display notes.
400-011	**Sheet 1:** Updated Bill of Reinforcing Bar B to extend hook leg. Added note to KEYWAY & WALL JOINT DETAIL to skew bars as required to maintain cover.
400-289	**Sheet 3:** Updated reinforcing in the PARTIAL PLAN TOP SLAB of SINGLE BARREL BOX CULVERT so it does not appear to extend into the footer below. **Sheet 5:** Added some clarity to Note 2 and DETAIL "C" about the proper work point location (WP).
415-001	**Sheet 1:** Updated Type 14 and 15 to remove radii.
415-010	**Sheet 1:** Updated Type 14 and 15 to remove radii.
455-101	**Sheet 1:** Added a note to General Note 4 indicating that all the strand diameters are nominal.
455-112	**Sheet 2:** Adjusted Strand Pattern diameter decimal places.
455-114	**Sheet 2:** Adjusted Strand Pattern diameter decimal places.

Standard Plans Index	Description
455-118	**Sheet 2:** Adjusted Strand Pattern diameter decimal places.
455-124	**Sheet 2:** Adjusted Strand Pattern diameter decimal places.
455-130	**Sheet 2:** Adjusted Strand Pattern diameter decimal places.
460-470	**Sheet 1:** Added screw anchor details to the notes. **Sheet 3:** Added screw anchor option details to SECTION B-B.
460-472	**Sheets 1-4:** Added Note to detail descriptions indicating that what is shown is an option using adhesive anchors and a screw anchor is an alternative.
460-473	**Sheet 2:** Added a note to SECTION B-B caption that what is shown is the Adhesive anchor option and screw anchor are also an option. **Sheet 4:** Added a note to Plan title in Schemes 5 and 6 caption that what is shown is the Adhesive anchor option and screw anchor are also an option. Adjusted the column location to correct for missing blocks.
460-474	**Sheets 1-4:** Added a note to the details captioning that what is shown is the Adhesive anchor option.
460-475	**Sheets 1-4:** Added a note to the details captioning what is shown is the Adhesive anchor option.
471-030	**Sheet 1:** Updated the FENDER SYSTEM ENERGY CAPACITY for 30 ft-kip to a Maximum of 50 ft-kip.
521-001	**Sheet 2:** In the Elevation view, added "Begin/End Median Barrier Sta." callout at the Traffic Railing connection **Sheet 11:** Changed Bar 5C2 to Bar 4C2 **Sheet 13:** In the Elevation view, added "Begin/End Shldr. Barrier Sta." callout at the Traffic Railing connection **Sheet 16:** Changed Bar 5C2 to Bar 4C2 **Sheet 18:** Changed Bar 5C2 to Bar 4C2

STANDARD PLANS
FY 2025-26 REVISIONS LOG

Standard Plans Index	Description
521-001 (Cont.)	**Sheet 20:** In Section A-A, added a 7" Max (Typ.) dimension between the top of the "Sidewalk or Sod" and the top of the footing; In the Elevation View, added "Begin/End Curb & Gutter Barrier Sta." callout at the Traffic Railing connection. **Sheet 26:** Reduced bar 5C2 to a number 4 bar and relabeled as 4C2; Updated Bill of Reinforcing Steel Table accordingly; Added new Note 4, which reads "Bar 4C2 may be substituted with a number 5 bar with the minimum practical inner diameter. If needed for final placement, skew bars about the vertical axis to ensure concrete cover requirements are met."
521-002	**Sheet 2:** Added "Min." to 10'-9" dim. on EXAMPLE SECTION VIEW.
521-005	New Standard Plans Index.
521-428	**Sheet 4:** Added a missing dimension to Bar 5V in the STEEL BENDING DIAGRAM.
521-610	**Sheet 1:** Updated ASTM reference for GFRP dowel transfer devices.
521-611	**Sheet 1:** Updated ASTM reference for GFRP dowel load transfer devices.
521-650	**Sheet 1:** Removed anchor bolt table; Revised note 1 to now include maximum deck height, pole height, and pole arm length. **Sheet 3:** Added labeling to the Anchor bolt nuts in DETAIL "A".
521-660	**Sheet 2:** Revised conduit path for the TYPICAL SECTIONS. **Sheet 4:** Labeled the anchor bolt nuts in DETAIL "A"; Added a note for DETAIL "A" regarding minimum anchor bolt embedment and bottom concrete cover; Removed anchor bolt table; Revised Note 4 to now include maximum deck height, pole height, and pole arm length.
536-002	**Sheet 1:** Added a note explaining required rectangular washer usage to General Note 2. **Sheet 27:** Changed guardrail's longitudinal alignment measurement from the end of concrete from 5 1/4" to 7 1/4" (+/- 2"). **Sheet 28:** Changed guardrail's longitudinal alignment measurement from the end of concrete from 5 1/4" to 7 1/4" (+/- 2").
546-001	**Sheet 2:** Updated rumble strip height dimensions in all details to 1/4" - 1/2".

Standard Plans Index	Description
546-020	**Sheet 2:** Deleted Outside Shoulder with Buffered Bike Lane detail.
550-010	**Sheet 2:** Added shim info to the TABLE OF POST ATTACHMENT COMPONENTS.
550-011	**Sheet 3:** Added shim info to the TABLE OF POST ATTACHMENT COMPONENTS.
550-012	**Sheet 2:** Added shim info to the TABLE OF POST ATTACHMENT COMPONENTS.
550-013	**Sheet 2:** Added shim info to the TABLE OF POST ATTACHMENT COMPONENTS.
630-010	**Sheet 3:** Added a detail to show how to space the rebar around EJB's.
635-005	New Standard Plans Index.
649-010	**Sheet 2:** Section A-A - Revised the label order of the anchor bolt nuts. DETAIL "A" - removed welding hatches, Modified wall thickness from text to symbol. Removed "Pole Wall Thickness + 7/16" dimension from Joint Weld Detail. Added welding callout to Joint Weld Detail. **Sheet 3:** Removed welding hatches on HANDHOLE details. Added "Handhole" to frame detail label.
649-020	**Sheet 3:** Section A-A - Corrected the label order of the anchor bolt nuts; SECTION B-B - Modified wall thickness from text to symbol. DETAIL A - Removed weld hatches and modified weld symbol. Removed "Pole Wall Thickness + 7/16" dimension from Joint Weld Detail. Added welding callout to Joint Weld Detail. **Sheet 4:** FRAME DETAIL - Modified weld detailing and modified title; SECTION C-C - Modified weld detailing; Updated callouts and added dimensions to Rod and Eye Bolt Options.
649-031	**Sheet 2:** Section A-A -- Corrected the label order of the anchor nut bolts. DETAIL "A" -- Removed welding hatches, Modified wall thickness from text to symbol. Removed "Pole Wall Thickness + 7/16" dimension from Joint Weld Detail. Added welding callout to Joint Weld Detail. **Sheet 6:** Removed weld hatches, Clarified Handhole labels
695-001	**Sheet 11:** Increase spacing between the sensors. **Sheet 14:** Changed dimension from "Varies 5'0" max" to 7'6" max". **Sheet 15:** Changed dimension from "Varies 8'0" to 15'0" to 7'6" to 15'0".

STANDARD PLANS
FY 2025-26 REVISIONS LOG

Standard Plans Index	Description
700-010	**Sheet 1:** Updated Table of Contents **Sheet 7:** Updated the flip sign to allow for multiple sign panels; Removed the diamond sign panel; Updated Note 1 to "Install sign with the ESU sign panel in the undeployed (up) position."; Added Note 5 "Multi sign panel assembly only use one of the following approved signs, actual sign may need to be scaled: FTP 43-06, FTP 47-06, and FTP 66-21."; Added ESU to sheet title.
700-020	**Sheet 2:** Adding casting hole option in the stub column to allow for horizontal precast casting. Modifying foundation detail to show the holes.
700-040	**Sheet 2:** Added anchor bolt nut labels in BASE PLATE CONNECTION.
700-041	**Sheet 2:** Added labeling to the Anchor bolt nuts in BASE PLATE CONNECTION - ELEVATION.
700-102	**Sheet 6:** Added FTP-45-25. **Sheet 8:** Updated the width of FTP-73-06 to 6'-6" and moved to Sheet 9; Updated FTP-68A-06 and FTP-68B-06 symbology, spacing, and MUTCD reference. **Sheet 9:** Updated the width of FTP-74-06, FTP-75-06, and FTP 76-06 to 6'-6" **Sheet 10:** Added FTP-100-25. **Sheet 12:** Deleted MOT-20-21, MOT-22-21, MOT-24-21, MOT-25-21, MOT-26A-22, and MOT-26B-22; Added MOT-27-25. **Sheet 6-12:** Shifted Signs to accommodate new signs.
700-120	**All Sheets:** Renumbered Sheets **Sheets 9-14:** Renumbered Roadside Sign Assembly. **Sheet 7:** Deleted Sheet per 11th Edition MUTCD, Section 2A.12. **Sheet 8:** Deleted Sheet per 11th Edition MUTCD, Section 2A.12. **Sheet 10:** Added LEDs in the middle of each sign edge, for a total of 8 LEDs. **Sheet 13:** Added LEDs in the middle of each sign edge, for a total of 8 LEDs. **Sheet 14:** Added LEDs in the middle of each sign edge, for a total of 16 LEDs.

Standard Plans Index	Description
711-001	**Sheet 4:** Updated Buffered Express Lane Striping Detail to replace "Express" with "Managed" in title and callouts; Deleted "Buffered" in detail title and callout; Replaced "Buffer" with "Separation" in callout; Deleted extraneous lines from the detail; Updated Note 3 to replace "Express Lane" with "Tubular".
715-002	**All Sheets:** General redevelopment to use the latest CADD standards, with all details drawn to scale. **Sheet 1:** Added Table of Contents. **Sheet 2:** Replaced High Pressure Sodium light fixture graphic with an LED light fixture; Added single-arm and pole top mounted option for Median Barrier Mounted Light Poles (in text under Elevation view label). **Sheet 3:** Replaced High Pressure Sodium light fixture graphic with an LED light fixture. **Sheet 4:** Removed unneeded "Arm Lengths" text from the Top Mount Pole Table. **Sheet 5:** Added "Type II Concrete" label to Section A-A Spread Footing. **Sheet 6:** Updated anchor bolt labels in Detail A; Updated Note 2 language and corrected which nut may be half height.
715-003	**Sheet 1:** In the Light Pole Elevation, updated labeling to account for both options of foundation (Shaft and Spread Footing); Replaced High Pressure Sodium light fixture graphic with an LED light fixture. **Sheet 2:** Replaced High Pressure Sodium light fixture graphic with an LED light fixture. **Sheet 3:** Updated sheet title to "SHAFT FOUNDATION OPTION AND BASE DETAILS"; Update Elevation view title to "SHAFT FOUNDATION ELEVATION". **Sheet 4 (New):** Added new sheet for "SPREAD FOOTING FOUNDATION OPTION".
715-010	**Sheet 3:** SECTION A-A - Corrected weld detailing; HANDHOLE RING DETAIL - Removed superfluous CJP symbol. SECTION C-C - Removed weld hatching and updated weld symbol. Corrected order of anchor bolt nut labels. Corrected which nut may be half height and added thread extension min. SECTION D-D - Update wall thickness dimension and weld symbol.

GENERAL NOTES:

This Index is only applicable to the current FDOT inventory of temporary bridge components which are manufactured in accordance with Acrow Series 300, Triple Single design.

Work this Index with Index 102-210, 102-220, 102-230 and 102-240.

STRUCTURAL STEEL:
Steel Plates and Rolled Sections shall be ASTM A709 Grade 36.
Pipe piles shall be ASTM A252 Grade 2, Fy = 35 ksi.

BOLTS, LAG SCREWS AND THREADED BOLT STOCK:
Furnish high strength bolts in accordance with ASTM F3125 Grade A325 Type 1. Furnish Threaded Stock in accordance with ASTM A36. Furnish Lag Screws in accordance with ASTM A307.
Furnish steel washers and nuts compatible with Bolts, Threaded Stock and Lag Screws.

TIMBER AND LAGGING:
Timber and Lagging shall be No. 1 Southern Yellow Pine.

BACKWALL BENT PILES:
Timber Piles:
10' Minimum Embedment into compacted backfill or into soil having a blow count greater than 6 (N>6).
Ultimate Capacity greater than 18 tons.
Splices are not allowed on any timber piles.

H-Piles:
12' Minimum Embedment into compacted backfill or into soil having a blow count greater than 6 (N>6).
Ultimate Capacity greater than 18 tons.

Shims admissible between backwall pile and cap.
Test piles are not required for backwall piles.

EXPANSION BEARINGS:
Inspect the PTFE (Teflon) layer and stainless steel plate prior to installation.
Do not use bearings that have a severely damaged or unbonded PTFE layer.
Clean PTFE of all grit and grime prior to installation.
Clean Stainless steel plate of all grit and grime prior to installation and finish to a smooth buffed surface.

DISTRIBUTING BEAMS:
Longitudinal stops restraining the distributing beams may be lengthened or shortened to center the distributing beam bearing on the cap beam.
The longitudinal stops are to bear on the distributing beam end frame.

EXPANSION JOINT SETTINGS:
Install the expansion joint considering the total continuous bridge length, location of fixed bearings and ambient temperature at the time of installation, assume a 1" expansion joint opening at 70 degrees F.

STORAGE FACILITY:
Contact
FDOT Statewide Aluminum Shop
2590 Camp Rd.
Oviedo, Fl.
407-278-2727
For shipping weights and dimensions of Temporary Bridge elements.

SHIPPING WEIGHTS AND DIMENSIONS:

Decking Sizes:

Type	Length	Width	Weight (lbs.)
Curb	5'	6'-9"	800
Curb	10'	6'-9"	1420
Curb	15'	6'-9"	2200
Curb	20'	6'-9"	2800
NonCurb	5'	5'-3"	650
NonCurb	10'	5'-3"	1000
NonCurb	15'	5'-3"	1600
NonCurb	20'	5'-3"	2100

Shipping weights and dimensions of other bridge components can be referenced in "Acrow Panel Bridging, Series 300, Technical Handbook".

TRAFFIC RAILING NOTES:
See Index 536-001 for component details, geometric layouts and associated notes not fully detailed herein.

CONCRETE: Concrete for Transition Blocks shall be Class II (Bridge Deck).

THRIE-BEAM PANEL: Steel Thrie-Beam Elements shall meet the requirements of AASHTO M180, Type II (Zinc coated).

BOLTS, NUTS AND WASHERS: Bolts, nuts and round washers shall be in accordance with AASHTO M180. Plate Washers shall be in accordance with ASTM A36 or ASTM A709 Grade 36. Do not drill Temporary Bridge components to attach Guardrail. Guardrail Bolts shall be placed between Truss members as shown in Index 102-240.

COATINGS: All Nuts, Bolts, Anchors, Washers and Backer Plates shall be hot-dip galvanized in accordance with the Specifications.

WOOD BLOCKS: All wood blocks, including required wedge shaped blocks shall be Pressure Treated Lumber in accordance with Specifications Section 955. Bolt holes in blocks to be centered (±1/4").

PAYMENT:
Temporary Detour Bridge is to be paid for under Contract Unit Price for Special Detour. If a temporary bridge system other than that shown herein is used, the Contractor is responsible for renting or purchasing their own system. Payment for Temporary Guardrail work and Transition Block will be made under Pay Item Temporary Guardrail, LF.

Furnish and install Bridge Thrie-Beam Panels and all associated hardware as shown. Payment will be made with the Temporary Detour Bridge under the Pay Item Special Detour, LS. Turn over Bridge Thrie-Beam Panels and all associated hardware to the Department with the Detour Bridge components per Specifications Section 102-6.

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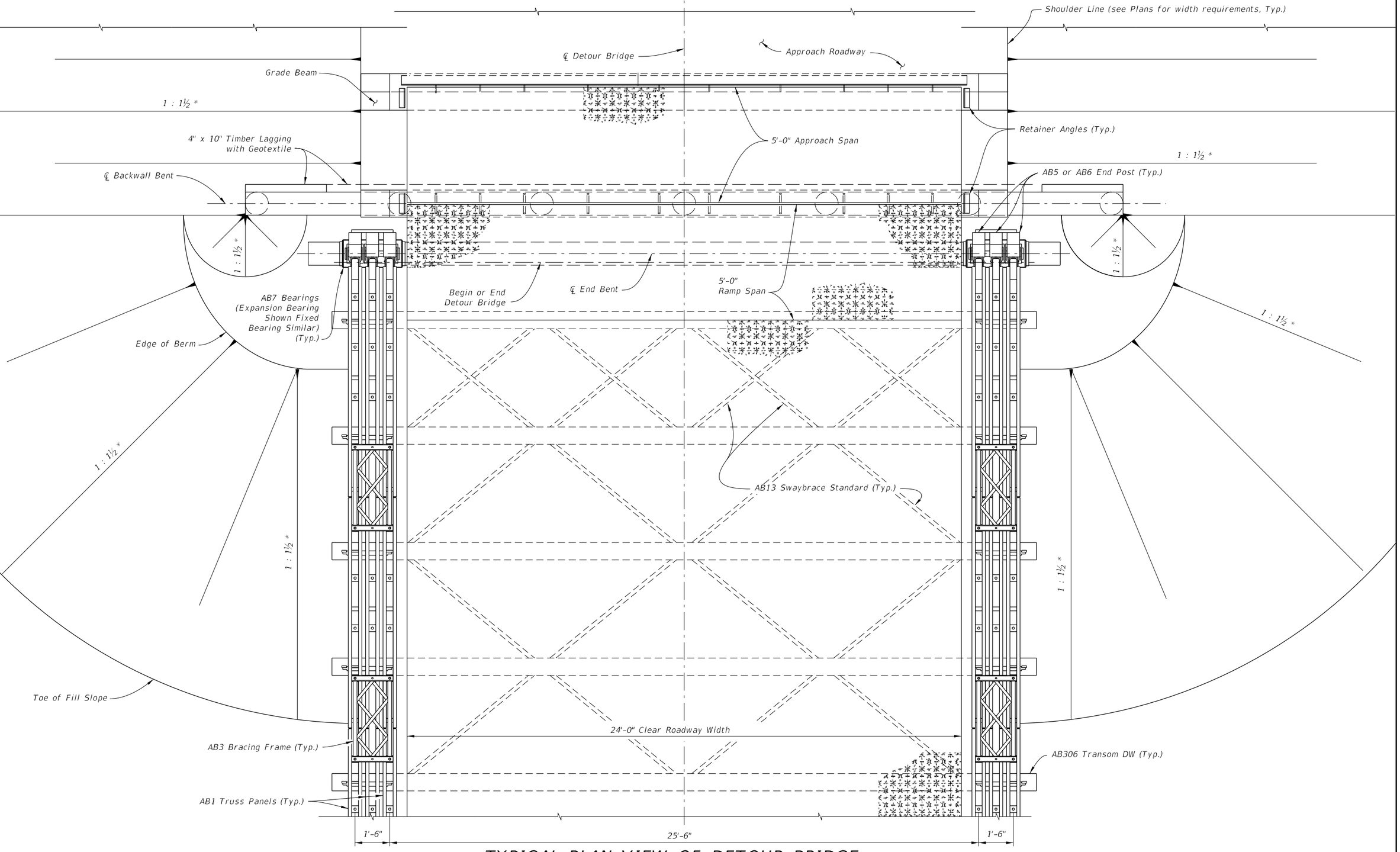


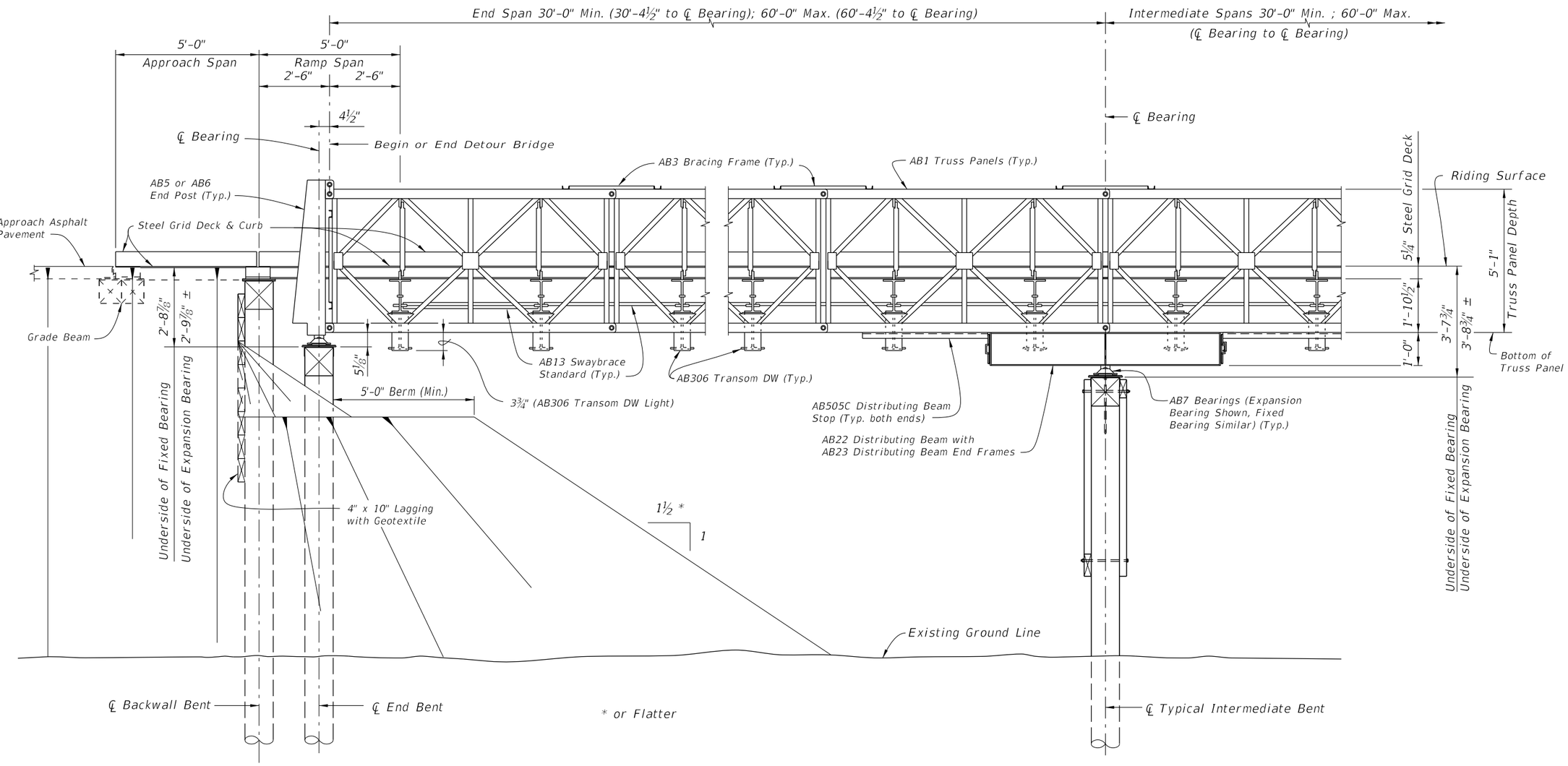
TYPICAL PLAN VIEW OF DETOUR BRIDGE
(TIMBER PILES SHOWN, STEEL H PILES AND STEEL PIPE PILES SIMILAR)

(Thrie-Beam Panel not shown for clarity, See Index 102-240)

* or Flatter

10/17/2024 10:44:54 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/23			FDOT FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 300 SERIES DETOUR BRIDGE GENERAL NOTES AND DETAILS	INDEX 102-200	SHEET 2 of 7



ELEVATION VIEW
(TIMBER PILES SHOWN, STEEL H PILES AND STEEL PIPE PILES SIMILAR)

(Thrie-Beam Panel not shown for clarity, See Index 102-240)

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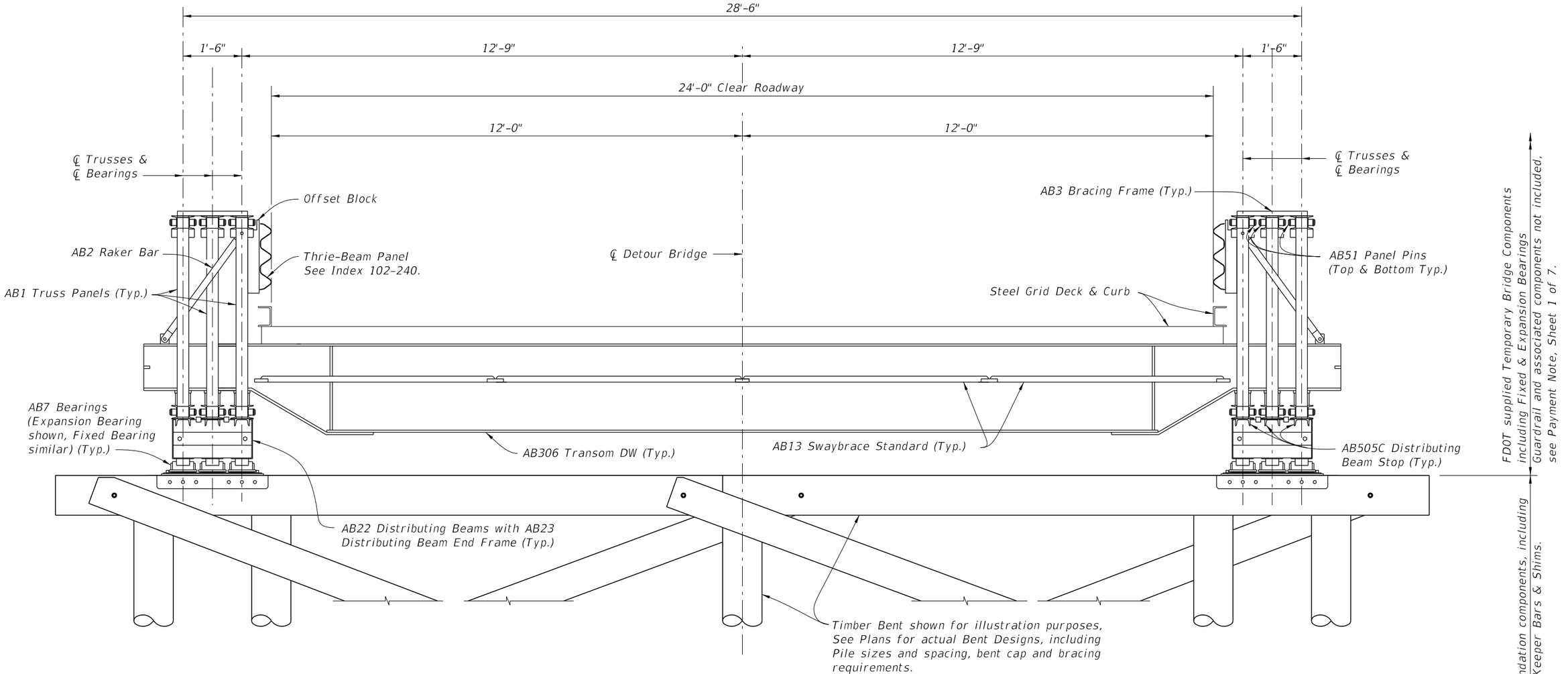
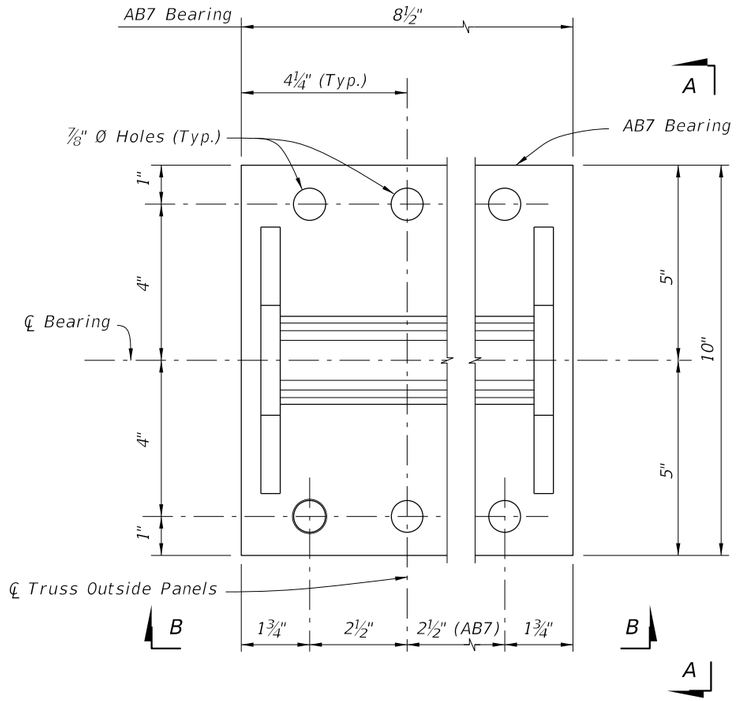
LAST REVISION	REVISION	DESCRIPTION:				
11/01/23			FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 300 SERIES DETOUR BRIDGE GENERAL NOTES AND DETAILS	INDEX 102-200	SHEET 3 of 7



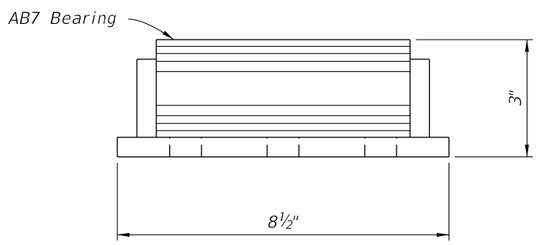
TYPICAL SECTION THRU DETOUR BRIDGE AT INTERIOR BENTS (TYPICAL SECTION AT END BENTS SIMILAR WITHOUT DISTRIBUTING BEAMS)
(TIMBER PILES SHOWN, STEEL H PILES AND STEEL PIPE PILES SIMILAR)

10/17/2024 10:45:44 AM

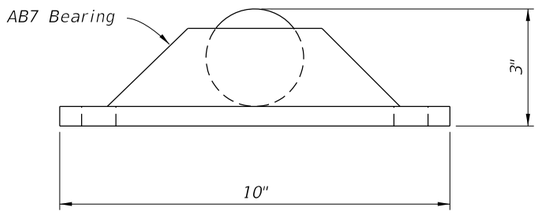
LAST REVISION	REVISION	DESCRIPTION:				
11/01/22			FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 300 SERIES DETOUR BRIDGE GENERAL NOTES AND DETAILS	INDEX 102-200	SHEET 4 of 7



PLAN VIEW

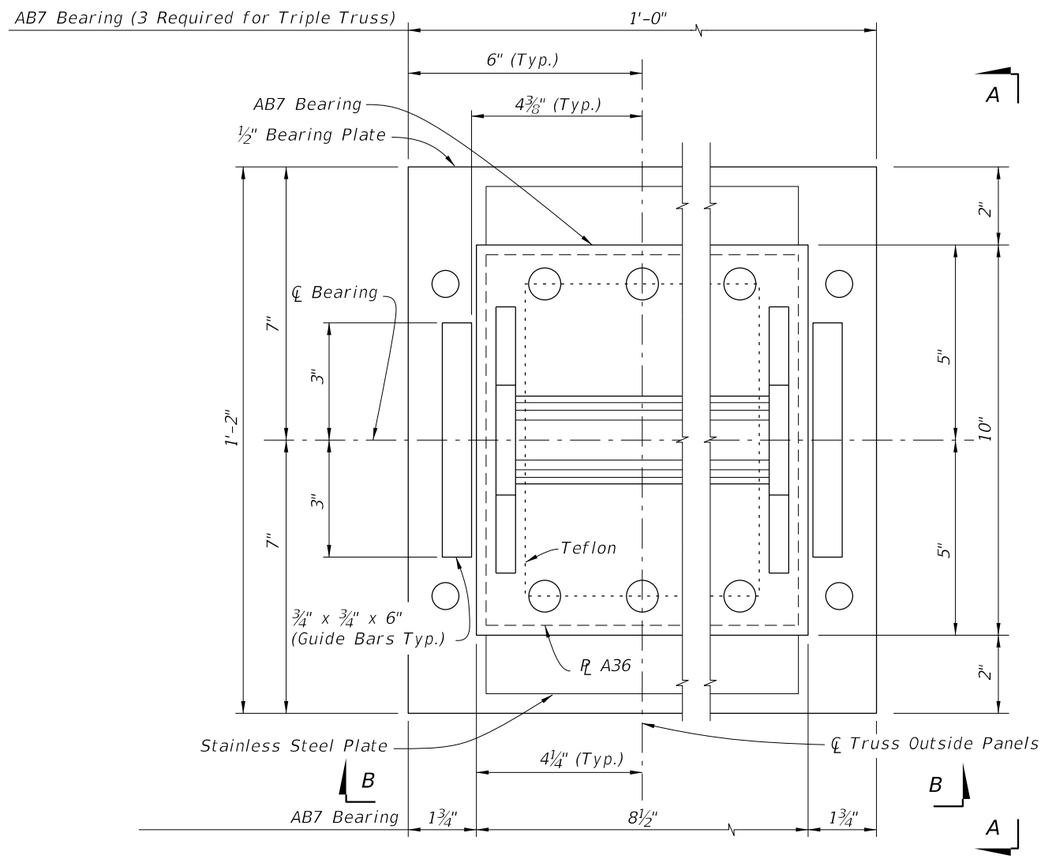


VIEW B-B

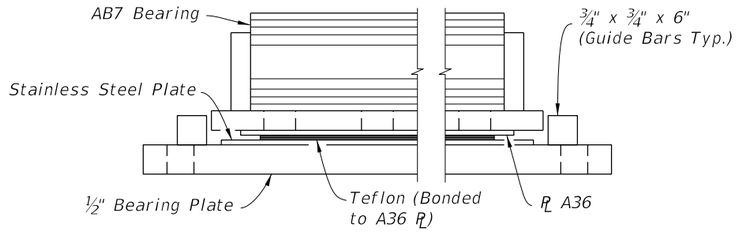


VIEW A-A

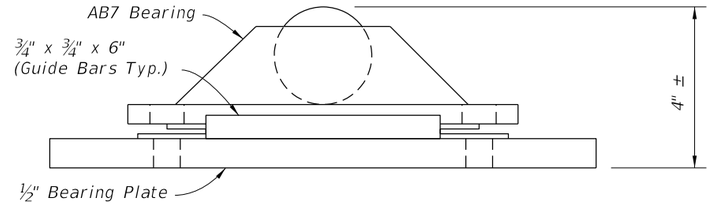
DETAILS FOR FDOT SUPPLIED FIXED BEARINGS



PLAN VIEW



VIEW B-B

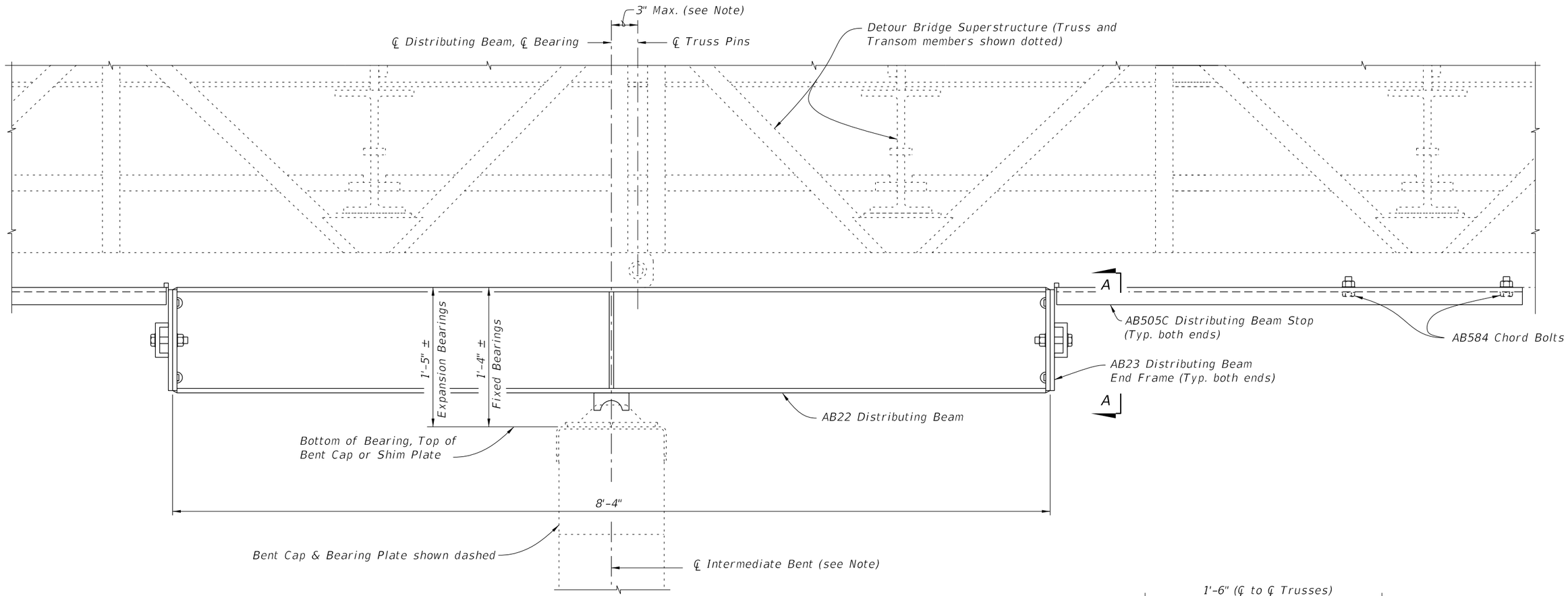


VIEW A-A

DETAILS FOR FDOT SUPPLIED EXPANSION BEARINGS

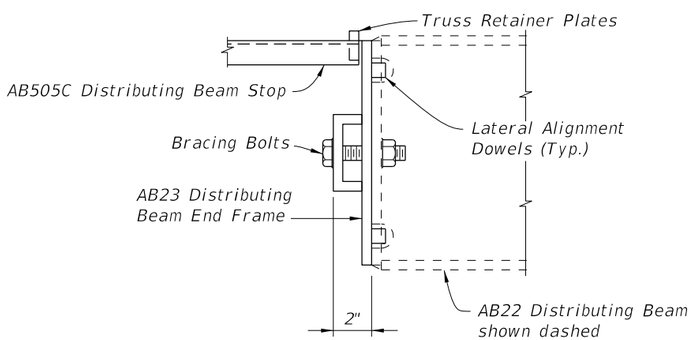
10:45:53 AM
10/17/2024

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 300 SERIES DETOUR BRIDGE GENERAL NOTES AND DETAILS	INDEX	SHEET
11/01/22						102-200	5 of 7

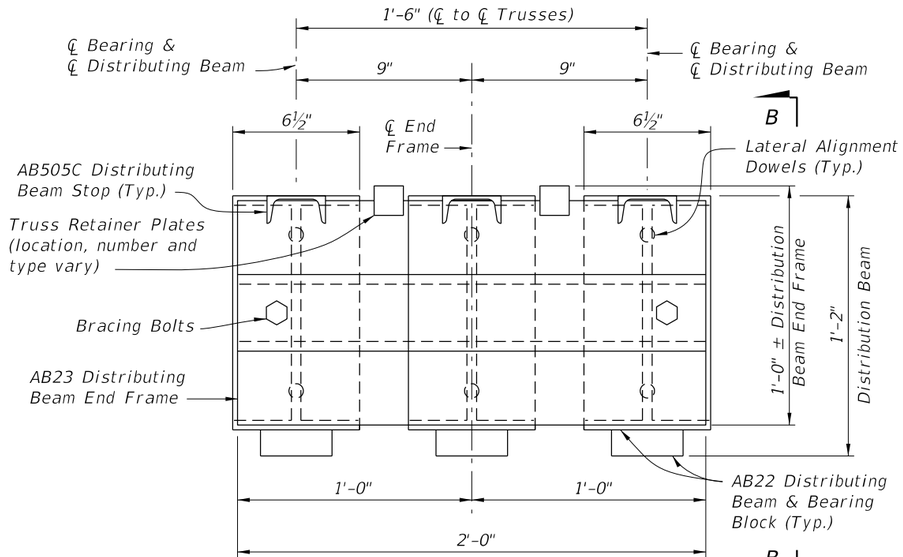


ELEVATION VIEW OF DISTRIBUTING BEAM
(FIXED BEARING SHOWN, EXPANSION BEARING SIMILAR)
(Timber Intermediate Bent shown, Steel Intermediate Bents similar)

Note:
℄ Bearing may be shifted from ℄ Truss Pins as shown, ℄ Intermediate Bent may be shifted from ℄ Bearing an additional 3" to allow for pile placement tolerances.



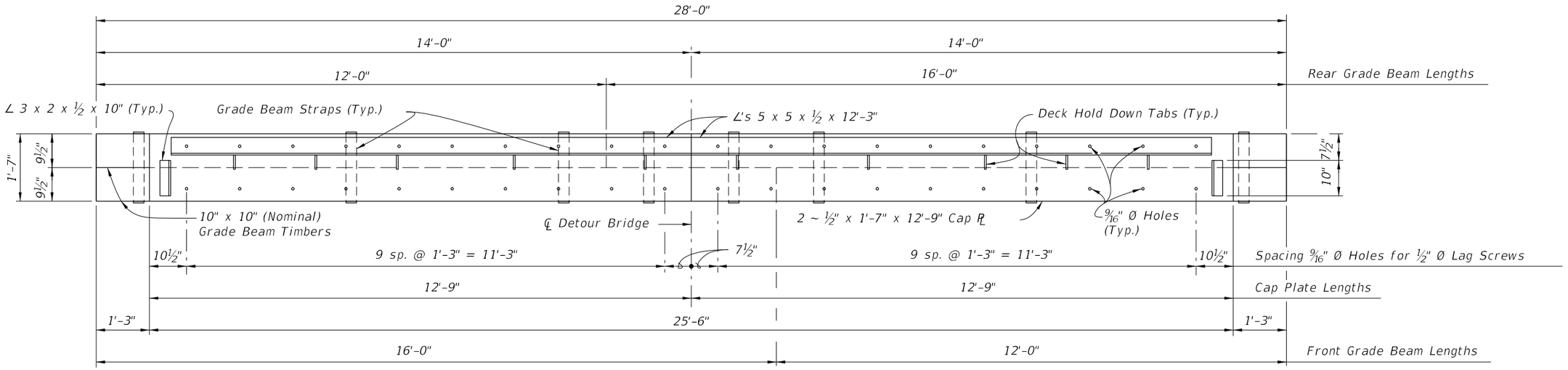
VIEW B-B



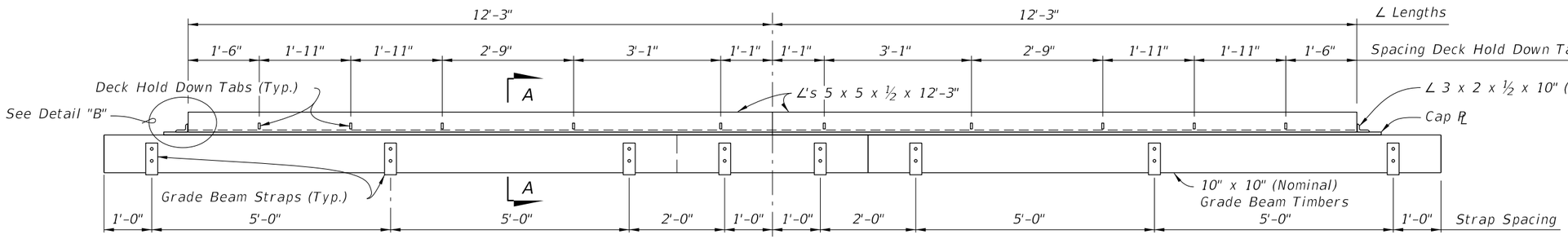
END VIEW A-A
DISTRIBUTING BEAM END FRAME DETAIL

10/17/2024 10:45:59 AM

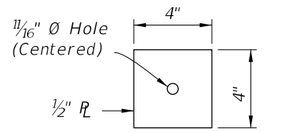
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 300 SERIES DETOUR BRIDGE GENERAL NOTES AND DETAILS	INDEX	SHEET
11/01/22						102-200	6 of 7



PLAN VIEW

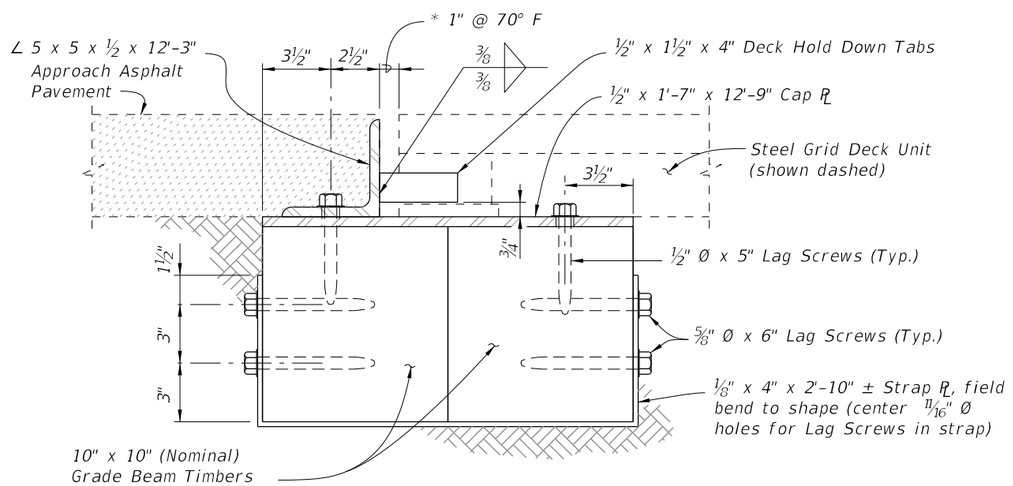


ELEVATION VIEW

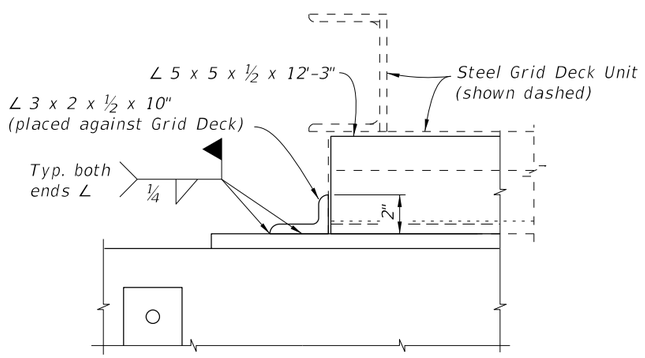


ANCHOR PLATE DETAIL

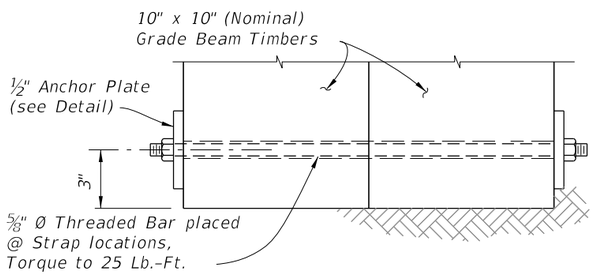
* See General Notes for setting widths other than 70° F.



SECTION A-A



DETAIL "B"



OPTIONAL THROUGH BOLT DETAIL
(MAY BE USED IN LIEU OF STRAPS)

GRADE BEAM DETAILS

10/17/2024 10:46:06 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20			FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 300 SERIES DETOUR BRIDGE GENERAL NOTES AND DETAILS	102-200	7 of 7

GENERAL NOTES:

This Index is only applicable to the current FDOT inventory of temporary bridge components which are manufactured in accordance with Acrow Series 700XS three Lane 24',36', and 42' widths. Asphalt Overlay is required on the Bridge deck, see Sheet 2 for details.

Work this Index with Index 102-210, 102-220 and 102-230.

STRUCTURAL STEEL:
Steel Plates shall be ASTM A709 Grade 36.

EXPANSION BEARINGS:
Inspect the PTFE (Teflon) layer and stainless steel plate prior to installation.
Do not use bearings that have a severely damaged or unbonded PTFE layer.
Clean PTFE of all grit and grime prior to installation.
Clean Stainless steel plate of all grit and grime prior to installation and finish to a smooth buffed surface.

DISTRIBUTION BEAMS:
Distribution beam stops restraining the distribution beams may be lengthened or shortened to center the distributing beam bearing on the cap beam.
The longitudinal stops are to bear on the distributing beam end frame.

EXPANSION JOINT SETTINGS:
Install the expansion joint considering the total continuous bridge length, location of fixed bearings and ambient temperature at the time of installation, assume a 2" expansion joint opening at 70 degrees F, (Expansion joint depends on span/bridge length and configuration).

STORAGE FACILITY:
Contact
FDOT Statewide Aluminum Shop
2590 Camp Rd.
Oviedo, Fl.
407-278-2727
For shipping weights and dimensions of Temporary Bridge elements.
Contractor to coordinate with Storage Facility and Acrow to obtain required parts list.
Shipping weights and dimensions of other bridge components can be referenced in "Acrow Panel Bridging, Series 700XS, Technical Handbook".

APPROACH TRAFFIC RAILING NOTES:
See Index 536-001 for component details, geometric layouts and associated notes not fully detailed herein.

CONCRETE: Concrete for Transition Blocks shall be Class II (Bridge Deck).

THRIE-BEAM PANEL: Steel Thrie-Beam Elements shall meet the requirements of AASHTO M180, Type II (Zinc coated).

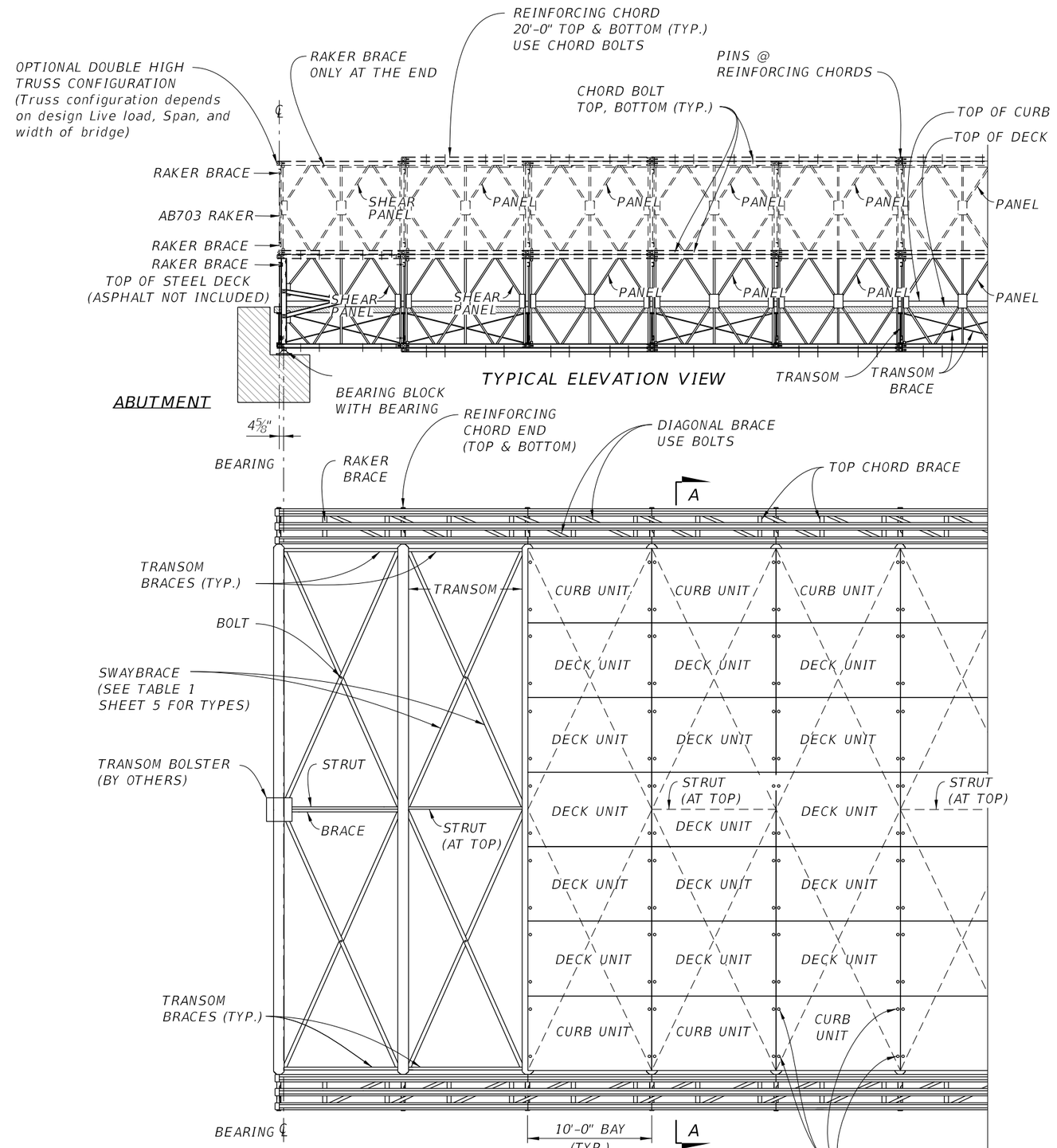
BOLTS, NUTS AND WASHERS:
Bolts, nuts and round washers shall be in accordance with AASHTO M180. Plate Washers shall be in accordance with ASTM A36 or ASTM A709 Grade 36. Do not drill Temporary Bridge components to attach Guardrail. Guardrail Bolts shall be placed between Truss members as shown in Index 102-240.

COATINGS: All Nuts, Bolts, Anchors, Washers and Backer Plates shall be hot-dip galvanized in accordance with the Specifications.

WOOD BLOCKS: All wood blocks, including required wedge shaped blocks shall be Pressure Treated Lumber in accordance with Specifications Section 955. Bolt holes in blocks to be centered (±1/4").

PAYMENT:
Temporary Detour Bridge is to be paid for under Contract Unit Price for Special Detour.
If a temporary bridge system other than that shown herein is used, the Contractor is responsible for renting or purchasing their own system. Payment for Temporary Guardrail work and Transition Block will be made under Pay Item Temporary Guardrail, LF.

Furnish and install Bridge Thrie-Beam Panels and all associated hardware as shown. Payment will be made with the Temporary Detour Bridge under the Pay Item Special Detour, LS. Turn over Bridge Thrie-Beam Panels and all associated hardware to the Department with the Detour Bridge components per Specifications Section 102-6.



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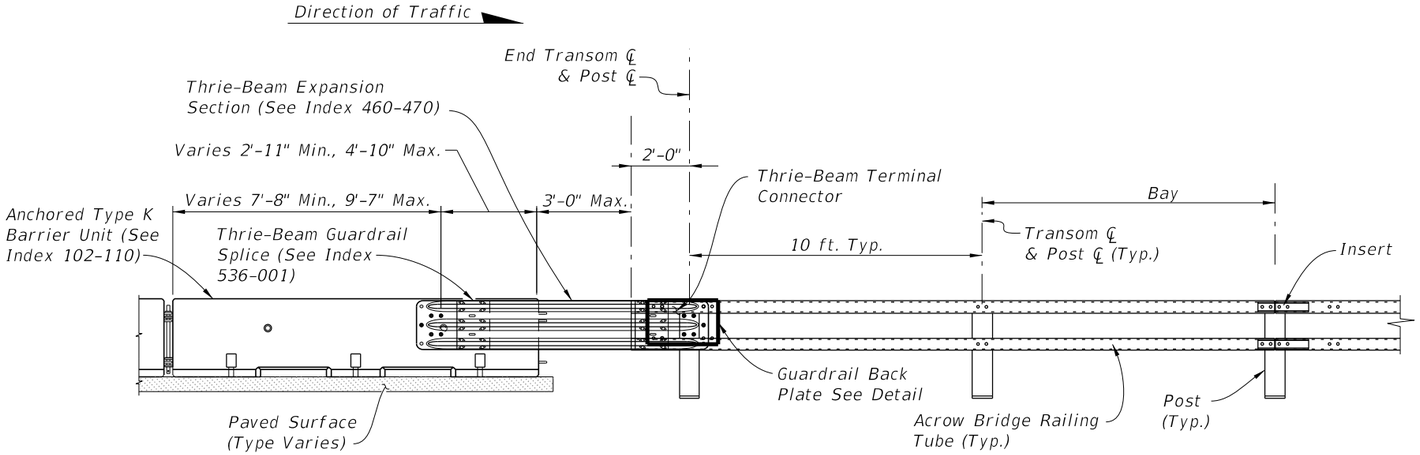
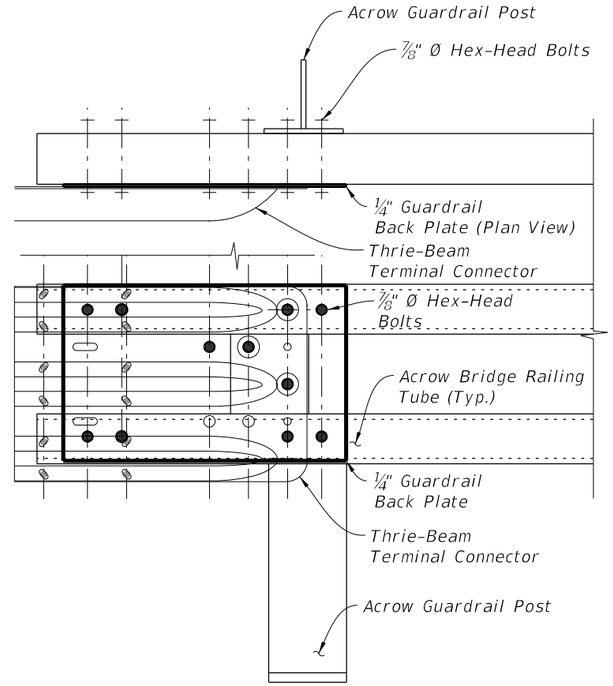
10/17/2024

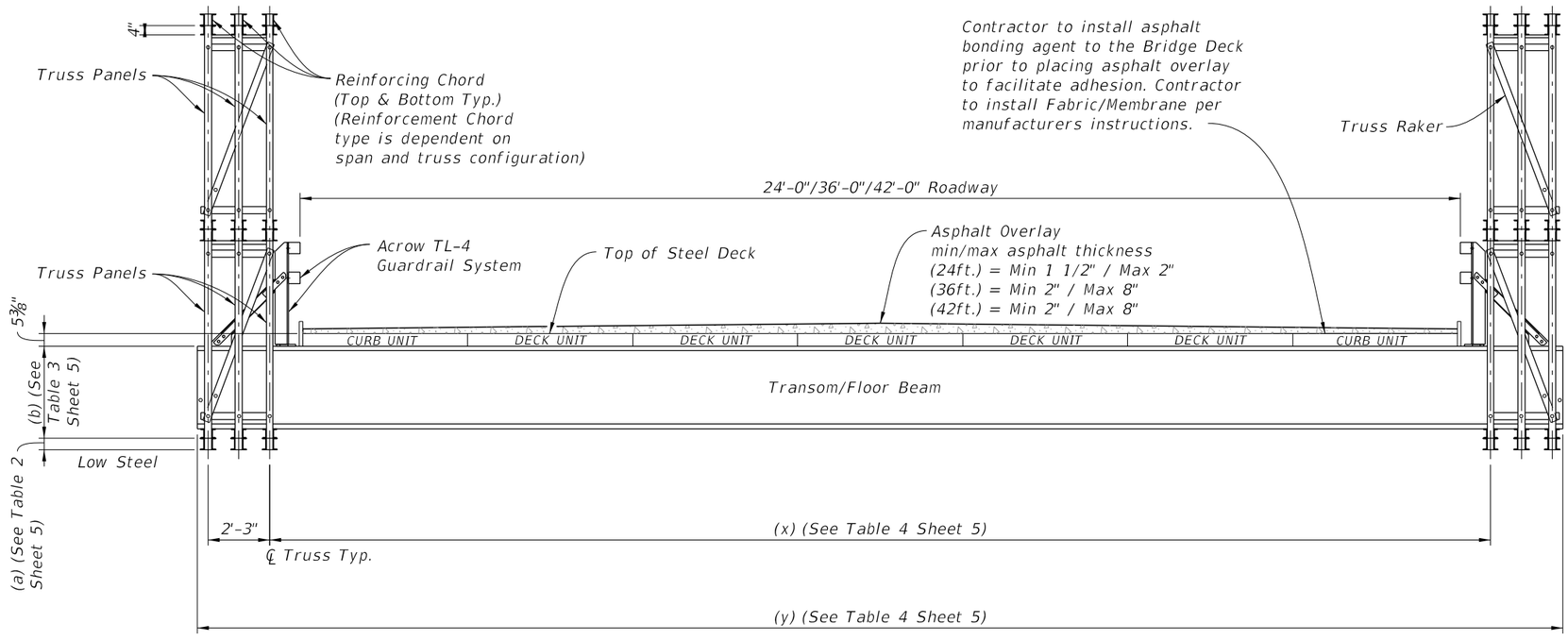
LAST REVISION	REVISION	DESCRIPTION:			
11/01/20			FY 2025-26 STANDARD PLANS	TEMPORARY ACROW 700XS SERIES DETOUR BRIDGE GENERAL NOTE AND DETAILS	INDEX 102-201 / SHEET 1 of 5



THRIE BEAM TO BRIDGE GUARDRAIL TRANSITION

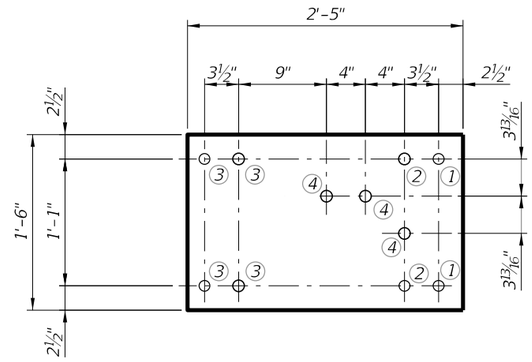


GUARDRAIL END TRANSITION DETAIL



SECTION A-A
(Double High Truss shown, Single High Truss Similar)

NOTE: See Acrow Technical Handbook and parts list for item number details.



¼" GUARDRAIL BACK PLATE DETAIL

CONNECTION NOTES:

At the numbered locations, align bolt holes and thru-bolt the folowing:

① Post - Tube - Plate
② Post - Tube - Plate - Thrie-Beam
③ Tube - Plate
④ Plate - Thrie-Beam

Back Plate is ASTM A36.
Use plate washers for all Thrie-Beam to plate connections.
Use ⅞" Ø Hex Head Bolts.
Drill, ream, or slot holes in Thrie-Beam connector as required for fit up.

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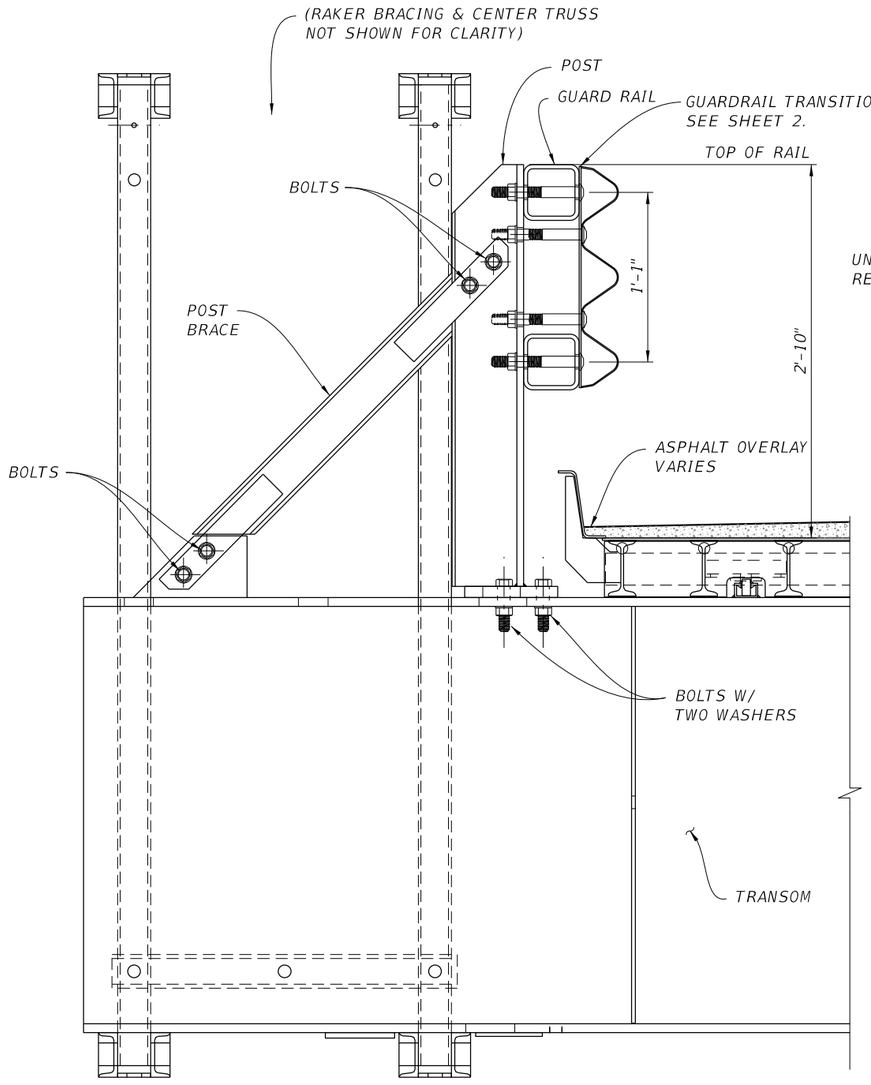
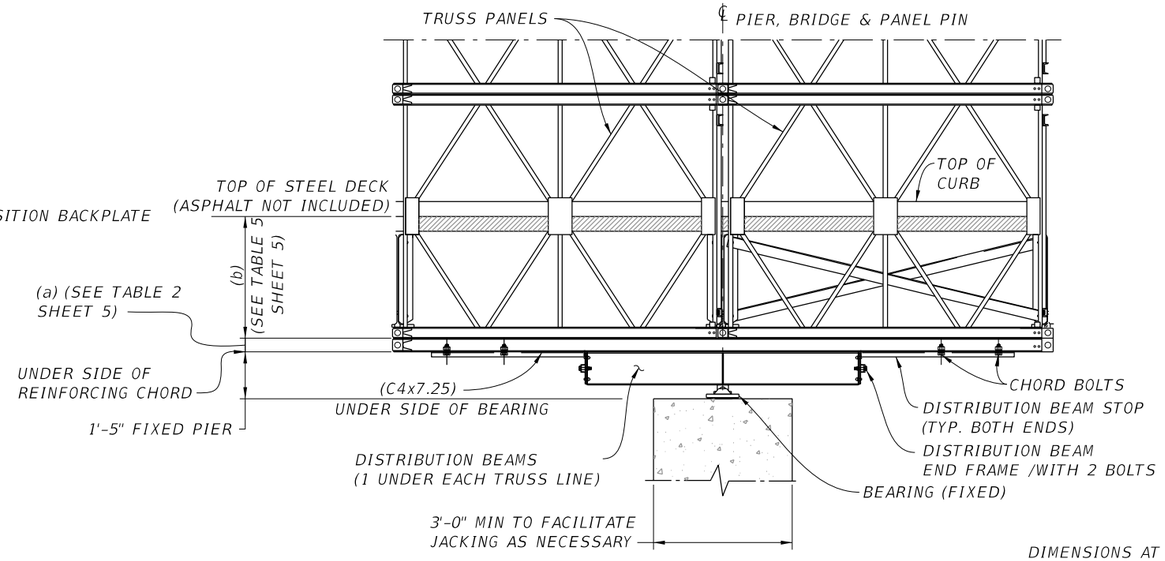
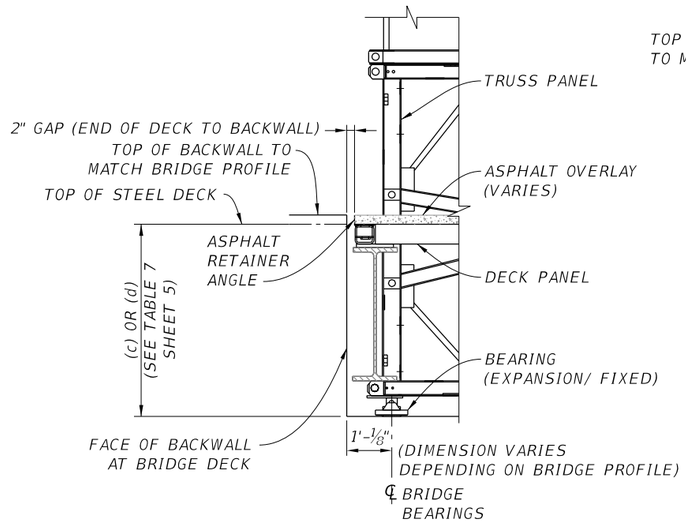
LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT FY 2025-26 STANDARD PLANS	TEMPORARY ACROW SERIES 700XS DETOUR BRIDGE BEAM AND GUARDRAIL DETAILS	INDEX 102-201	SHEET 2 of 5



TYPICAL RAILING POST CONNECTION DETAIL

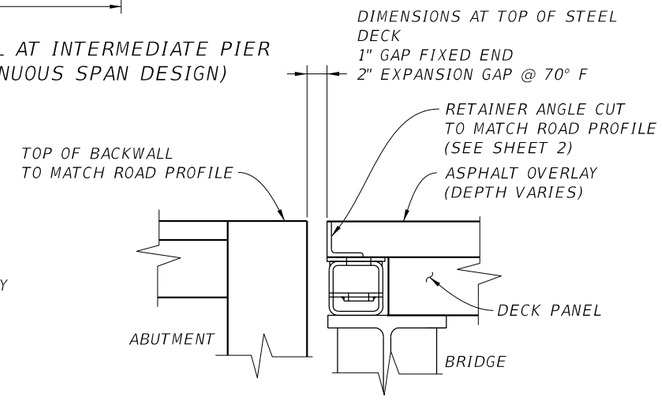


TYPICAL DETAIL AT INTERMEDIATE PIER
(FOR CONTINUOUS SPAN DESIGN)

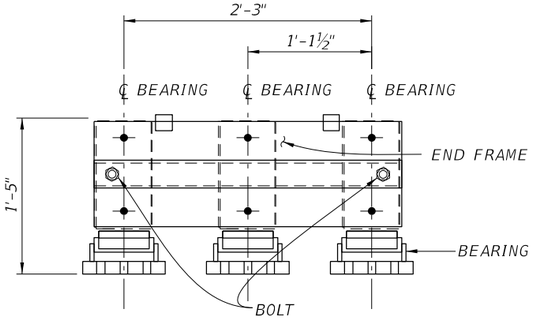


TYPICAL DETAIL AT ABUTMENTS
(Note: Expansion joint depends on span/bridge length and configuration)

NOTE: SEE ACROW TECHNICAL HANDBOOK AND PARTS LIST FOR ITEM NUMBER DETAILS.



EOB AT DECK DETAIL
(Note: Expansion joint depends on span/bridge length and configuration)



DISTRIBUTION BEAM DETAIL – END VIEW
(Triple Truss Shown)

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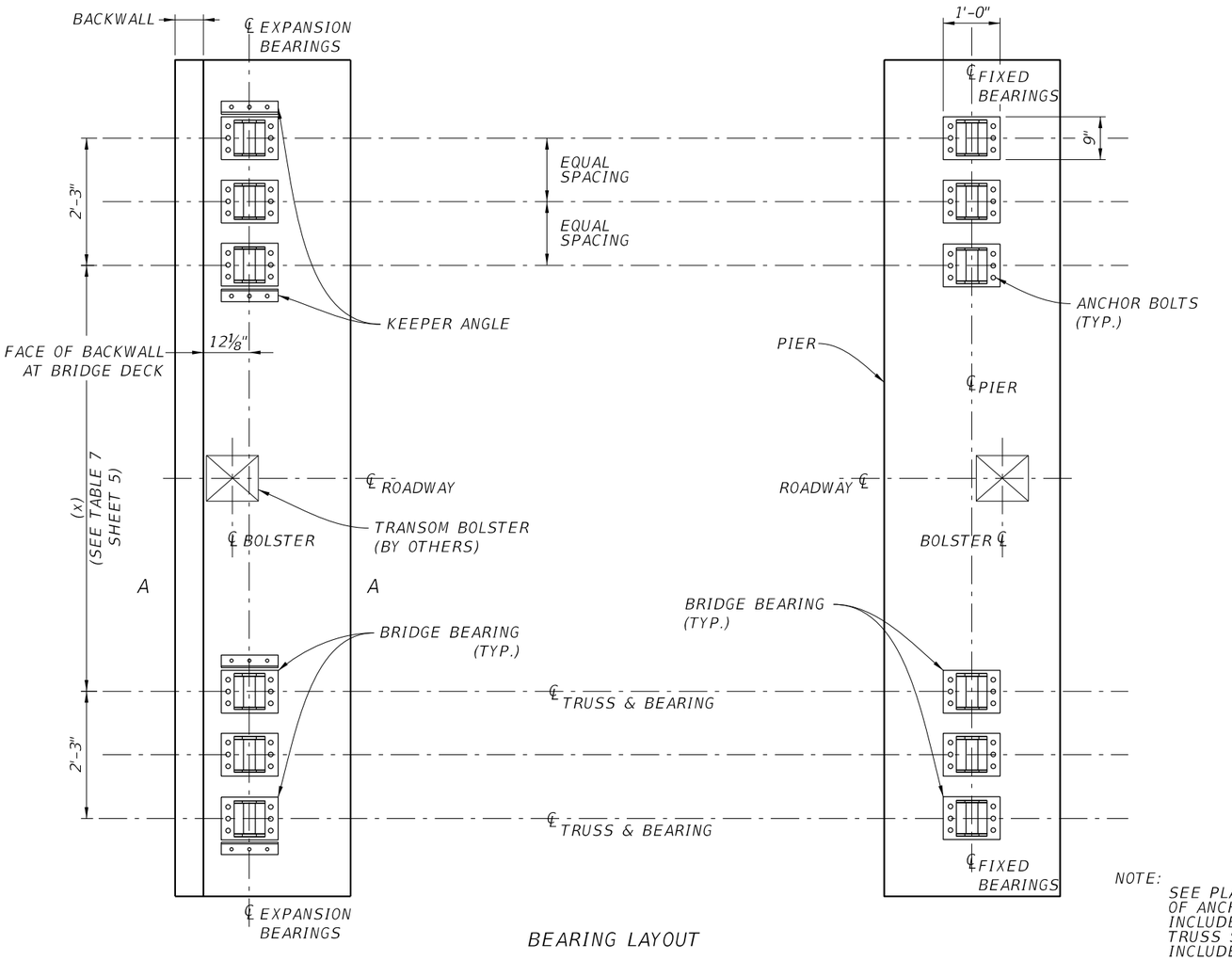
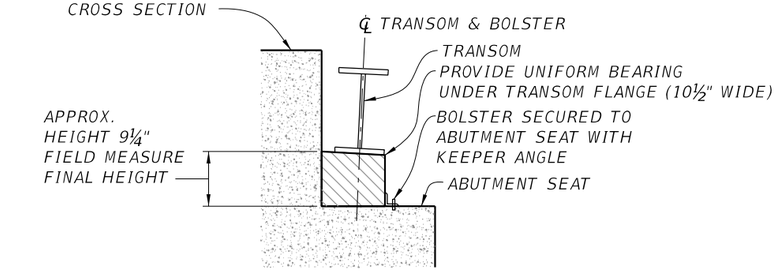
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20			FY 2025-26 STANDARD PLANS	TEMPORARY ACROW SERIES 700XS DETOUR BRIDGE TYPICAL DETAILS	102-201	3 of 5



BEARING LAYOUT

NOTE: BACKWALL TO MATCH ROADWAY PROFILE & CROSS SECTION

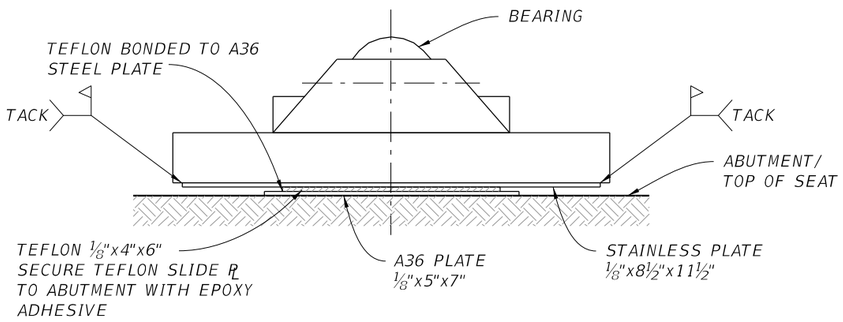


BOLSTER DETAIL SECTION A-A

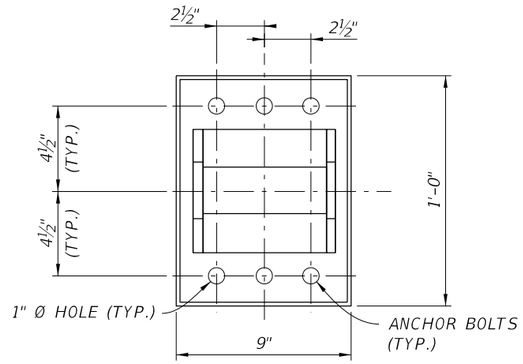
NOTE:

- HARDWOOD BLOCKING IS RECOMMENDED; SEE PLAN FOR FINAL BOLSTER DESIGN.
- INSTALL BOLSTER TO A TIGHT FIT AFTER BRIDGE & DECK ARE IN PLACE.
- BOLSTER HEIGHT WILL VARY BASED ON TRANSOM TYPE/ DEAD LOADS.
- BOLSTER TO BE SECURED FROM MOVEMENT AFTER INSTALLATION.
- BOLSTER TO MATCH SLOPE OR TRANSOM FLANGE.

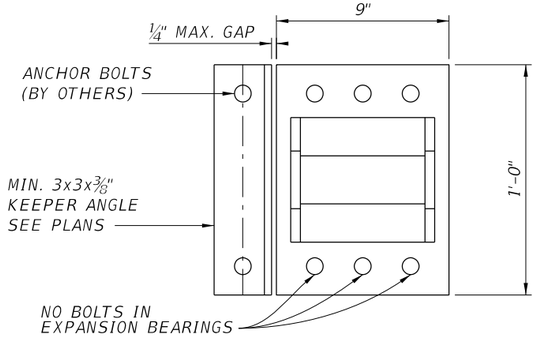
NOTE:
SEE PLANS FOR SIZE, GRADE AND QUANTITY OF ANCHOR BOLTS AND KEEPER ANGLES NOT INCLUDED WITH BRIDGE PARTS. TRIPLE TRUSS SHOWN. DOUBLE TRUSS WOULD NOT INCLUDE CENTER BEARING.



EXPANSION BEARING ELEVATION VIEW A-A
(ANGLE & BACKWALL NOT SHOWN FOR CLARITY)



FIXED END - BEARING DETAIL



EXPANSION END - BEARING DETAIL

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/20			FDOT	FY 2025-26 STANDARD PLANS	TEMPORARY ACROW SERIES 700XS DETOUR BRIDGE BEARING LAYOUT AND DETAILS	INDEX 102-201 / SHEET 4 of 5

TABLE 1				
Swaybrace / Transom Brace				
Bridge Roadway width (ft)	Transom	Swaybrace Part # (Single)	Swaybrace Part # (Double)	Transom Brace Part #
24	SC0017	AB590	AB515	AB519
36	AB957	AB891	AB891	AB519
42	AB978	AB979	AB979	AB519

TABLE 2		
(a) Reinforcing Chord Thickness		
Regular Reinforcing Chord Thickness	Heavy Reinforcing Chord Thickness	SuperHeavy Reinforcing Chord Thickness
4"	5"	6"

TABLE 3		
Bridge Roadway width (ft)	Transom Part #	(b) Height Bottom of Truss Chord to top of Transom
24	SC0017	28 5/16"
36	AB957	40 3/16"
42	AB978	43"

TABLE 4			
Bridge Roadway width (ft)	Transom Part #	(x) ℄ to inner truss to ℄ inner truss	(y) Transom Beam Length
24	SC0017	26'-1"	31'-4"
36	AB957	38'-4 13/16"	43'-7 13/16"
42	AB978	44'-4 3/8"	49'-7 3/8"

TABLE 5		
Bridge Roadway width (ft)	Transom Part #	(b) Height Bottom of Truss Chord to top of Deck
24	SC0017	33 11/16"
36	AB957	45 9/16"
42	AB978	48 3/8"

TABLE 6			
Bridge Roadway width (ft)	Transom Part #	(c) Height Bottom of fixed bearing to top of Deck	(d) Height Bottom of expansion bearing to top of Deck
24	SC0017	39 1/16"	39 7/16"
36	AB957	50 15/16"	51 5/16"
42	AB978	53 3/4"	54 1/8"

TABLE 7		
Bridge Roadway width (ft)	Transom Part #	(x) ℄ to inner truss to ℄ inner truss
24	SC0017	26'-1"
36	AB957	38'-4 13/16"
42	AB978	44'-4 3/8"

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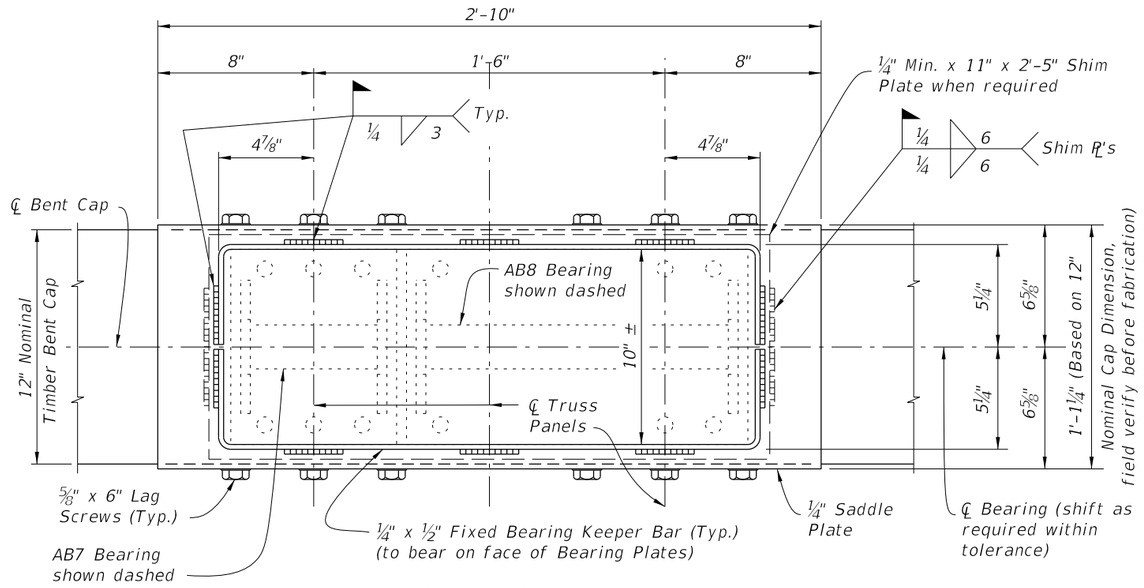
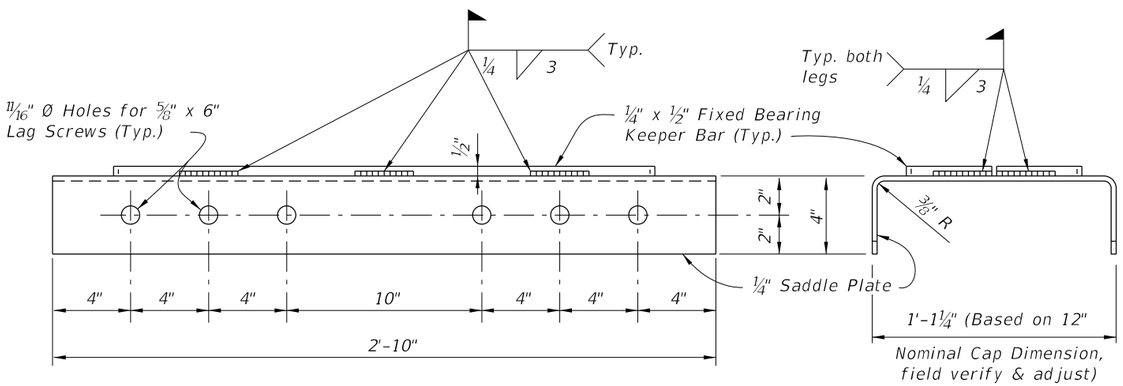
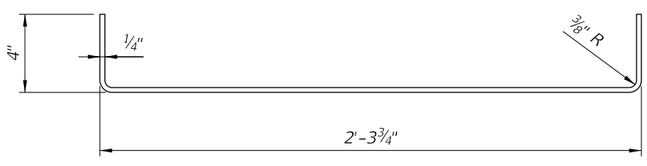


PLAN VIEW



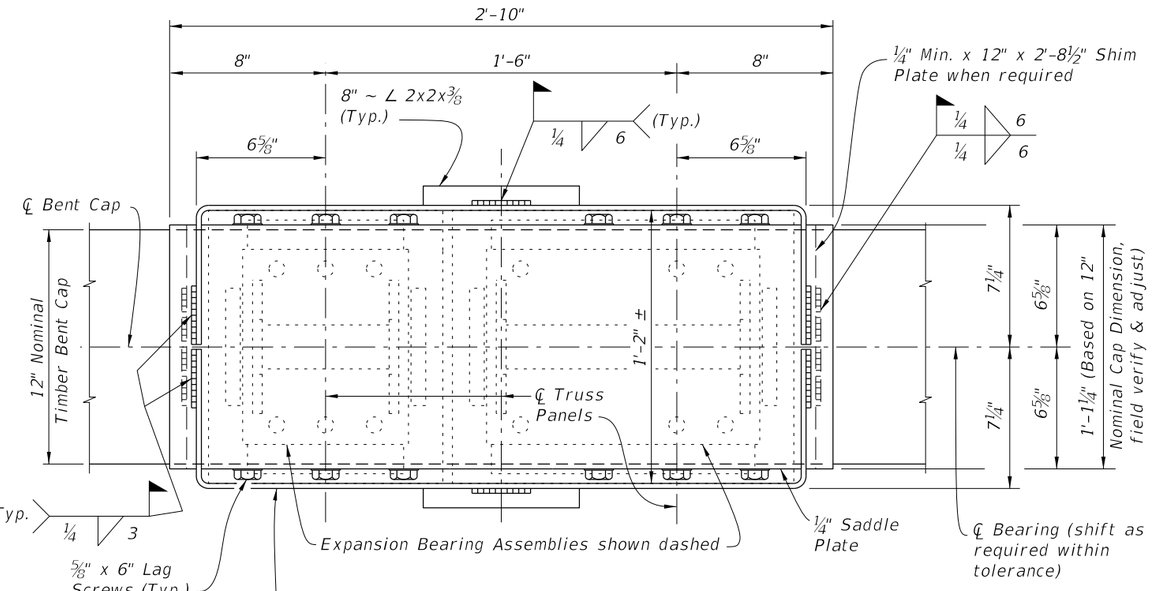
ELEVATION VIEW OF SADDLE PLATE

END VIEW

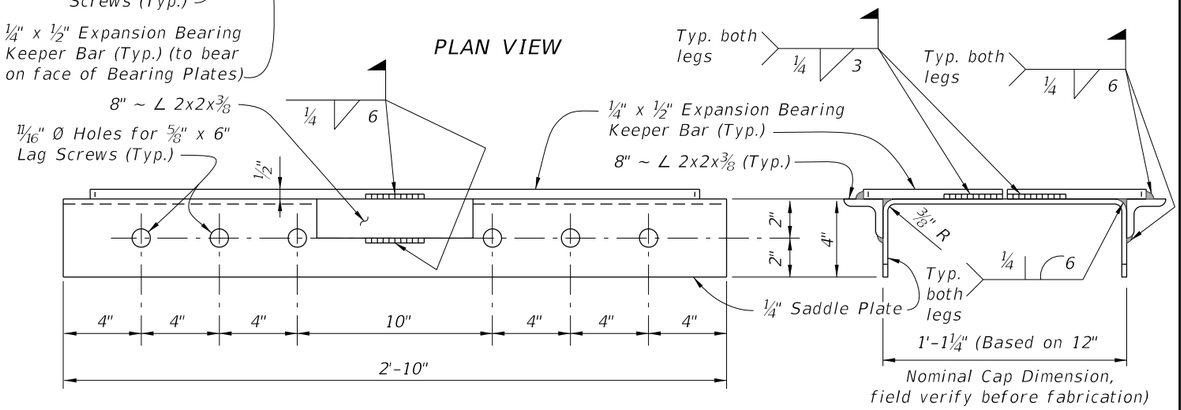


FIXED BEARING KEEPER BAR DETAIL

FIXED BEARING DETAILS

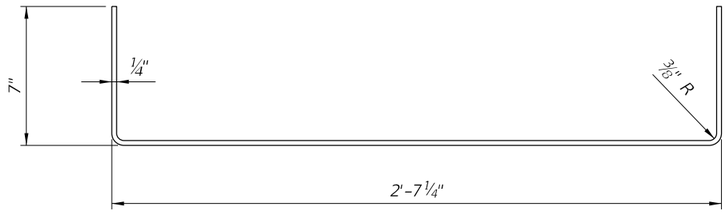


PLAN VIEW



ELEVATION VIEW OF SADDLE PLATE

END VIEW

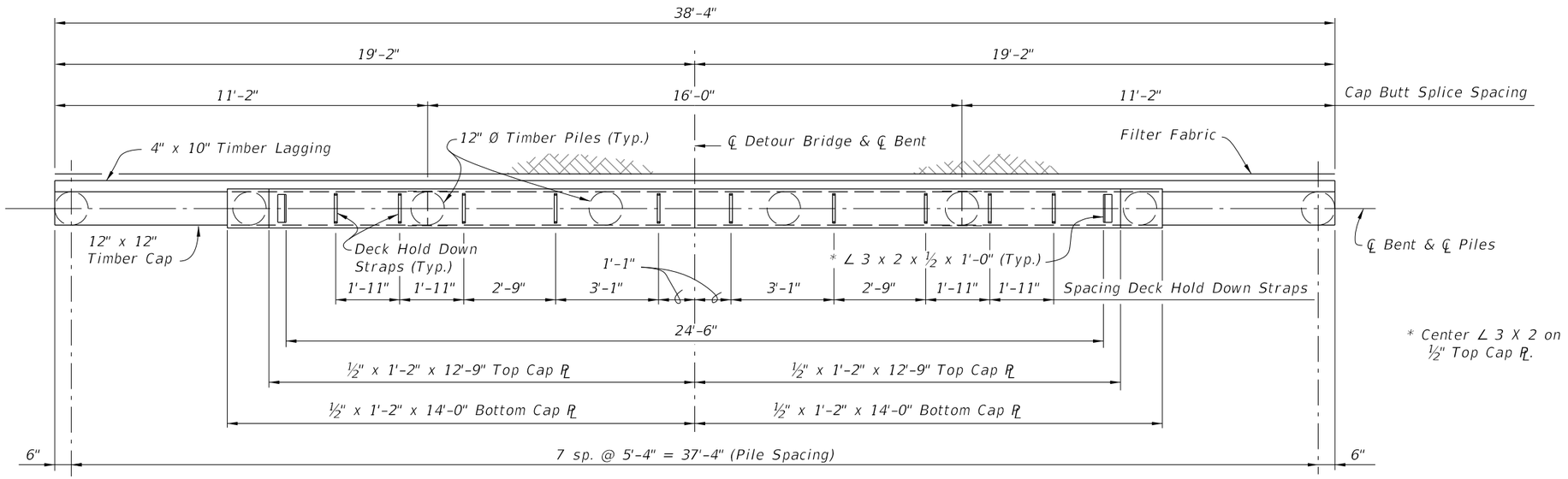


EXPANSION BEARING KEEPER BAR DETAIL

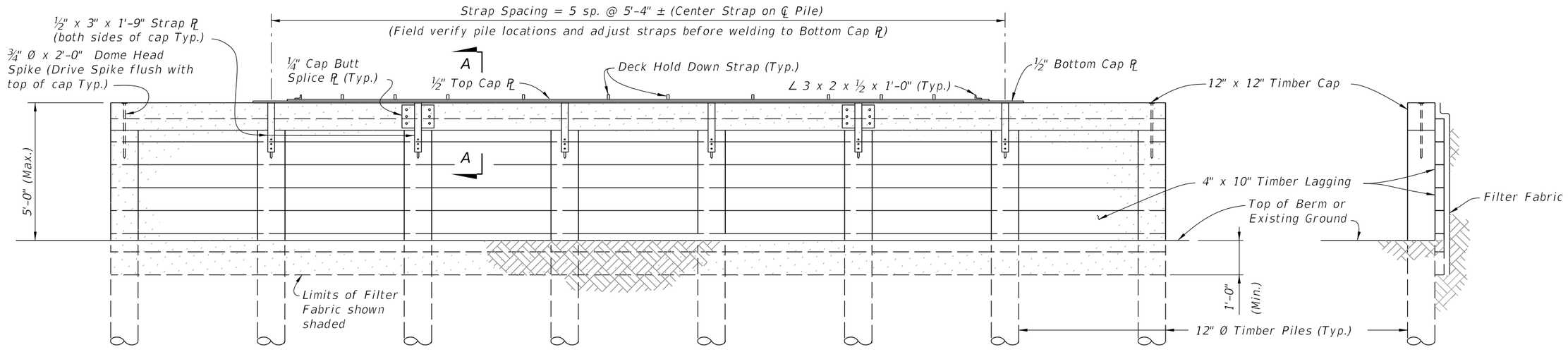
EXPANSION BEARING DETAILS

10/17/2024 10:46:46 AM

LAST REVISION	REVISION	DESCRIPTION:				
01/01/16			FDOT	FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE TIMBER PILE FOUNDATIONS	INDEX 102-210 / SHEET 1 of 3



PLAN VIEW



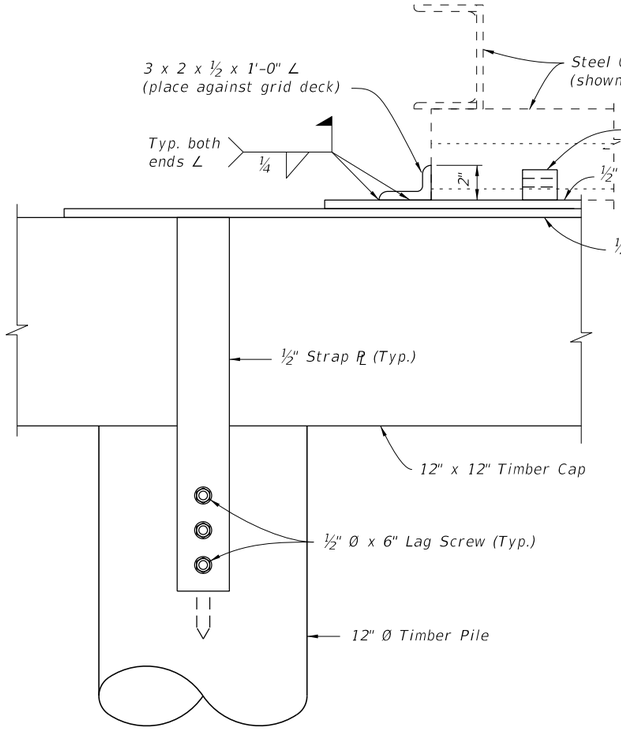
ELEVATION VIEW

END VIEW

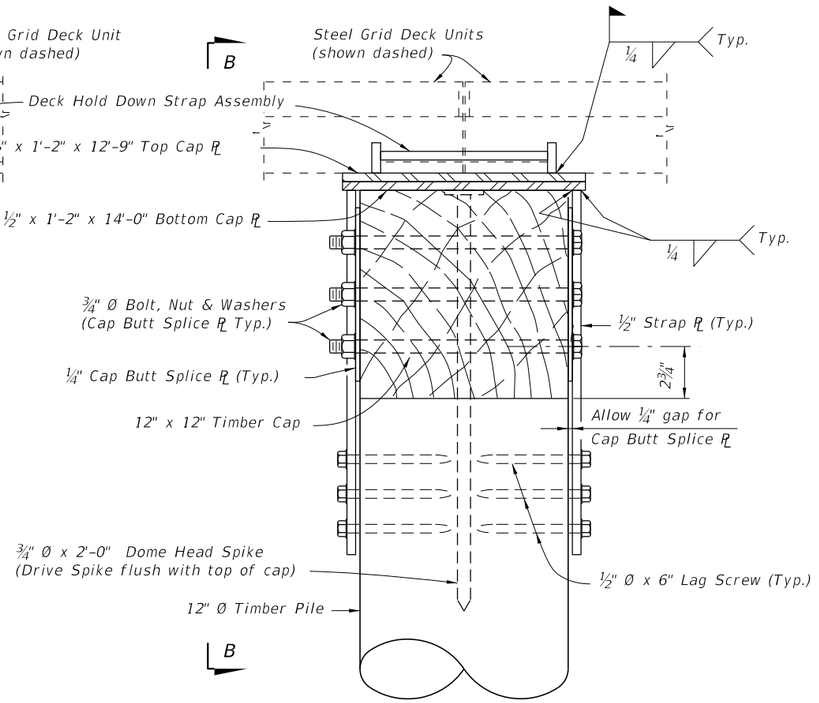
BACKWALL BENT DETAILS

10/17/2024 10:46:53 AM

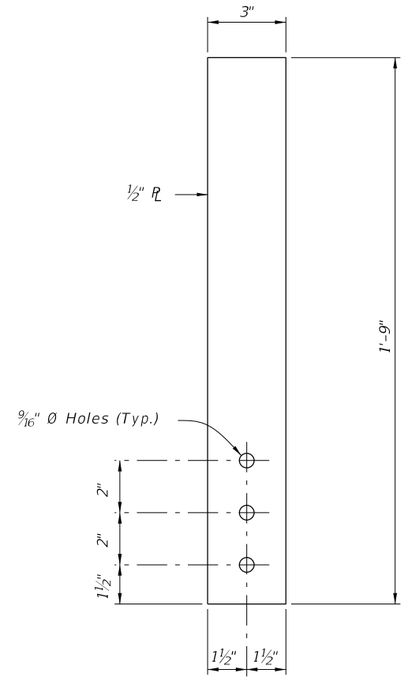
LAST REVISION	REVISION	DESCRIPTION:				
07/01/06			FDOT FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE TIMBER PILE FOUNDATIONS	INDEX 102-210	SHEET 2 of 3



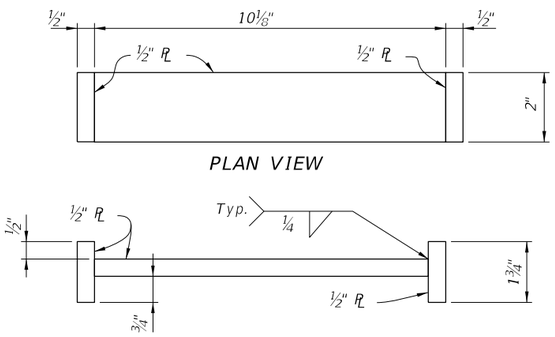
VIEW B-B
(SHOWING END OF CAP PLATES)



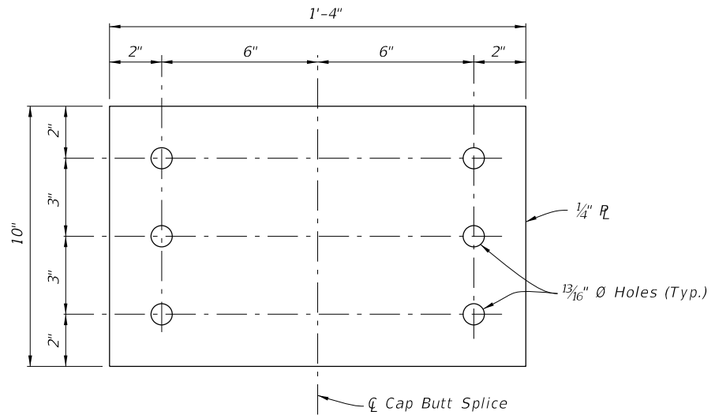
SECTION A-A



STRAP PLATE DETAIL



HOLD DOWN STRAP ASSEMBLY DETAIL

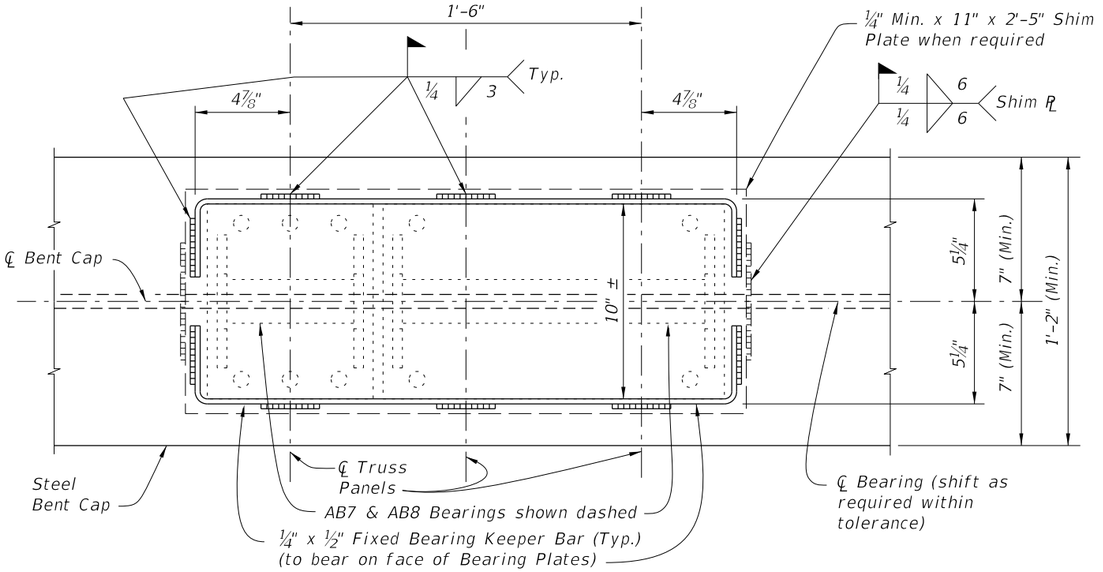


CAP BUTT SPLICE PLATE DETAIL

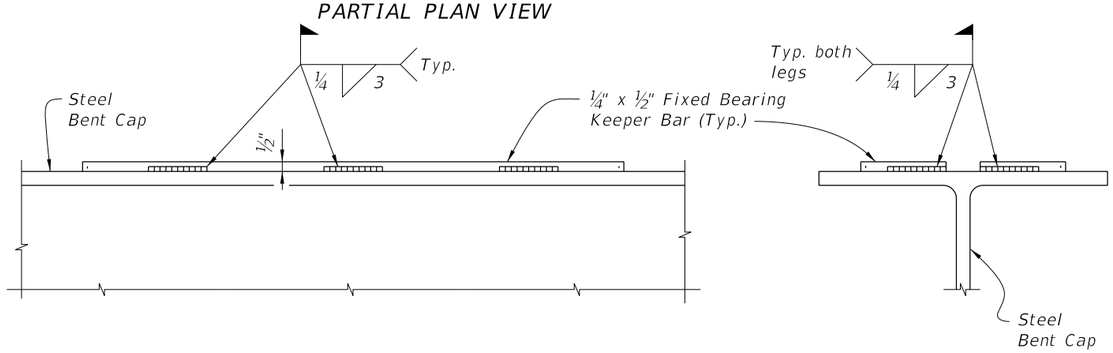
BACKWALL BENT DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/06			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE TIMBER PILE FOUNDATIONS	102-210	3 of 3

10/17/2024 10:46:59 AM

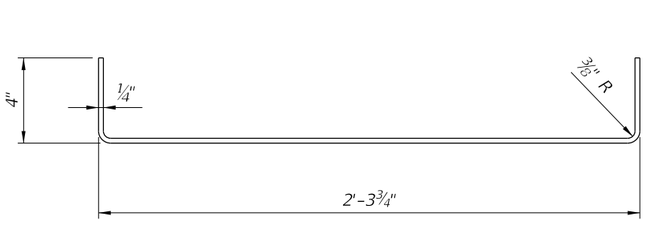


PARTIAL PLAN VIEW



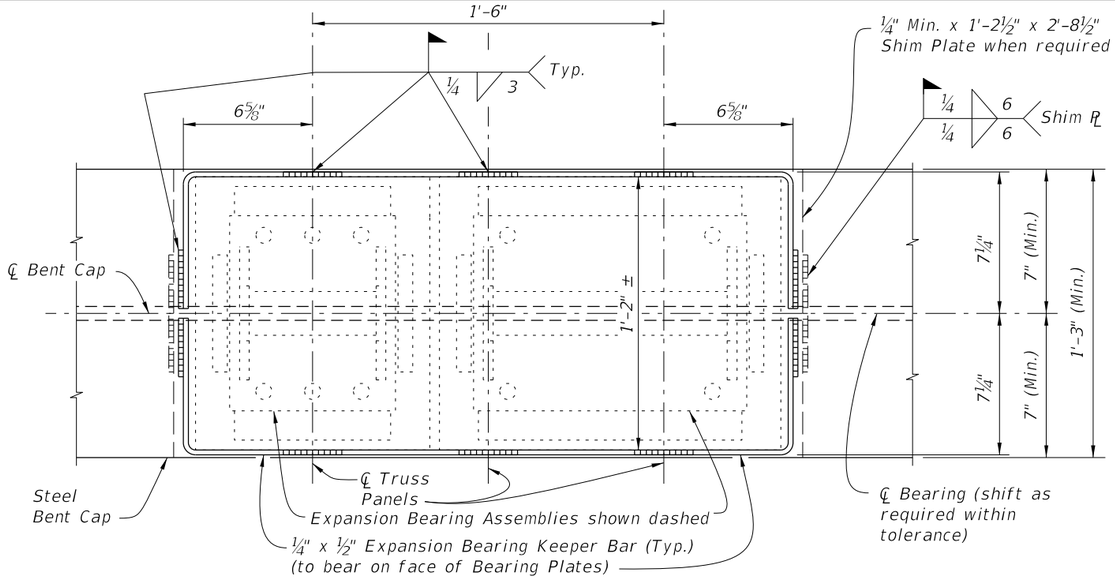
PARTIAL ELEVATION VIEW

END VIEW

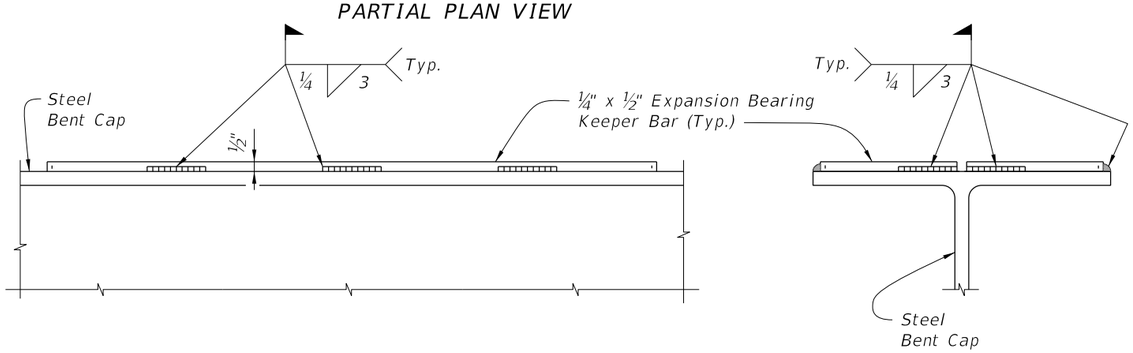


FIXED BEARING KEEPER BAR DETAIL

FIXED BEARING DETAILS

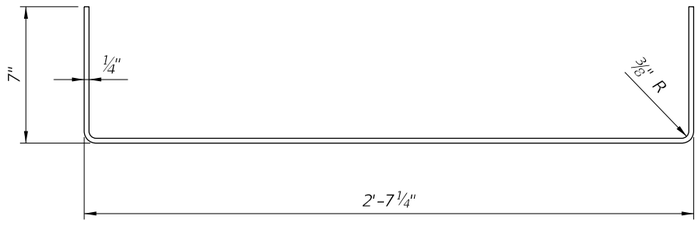


PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

END VIEW

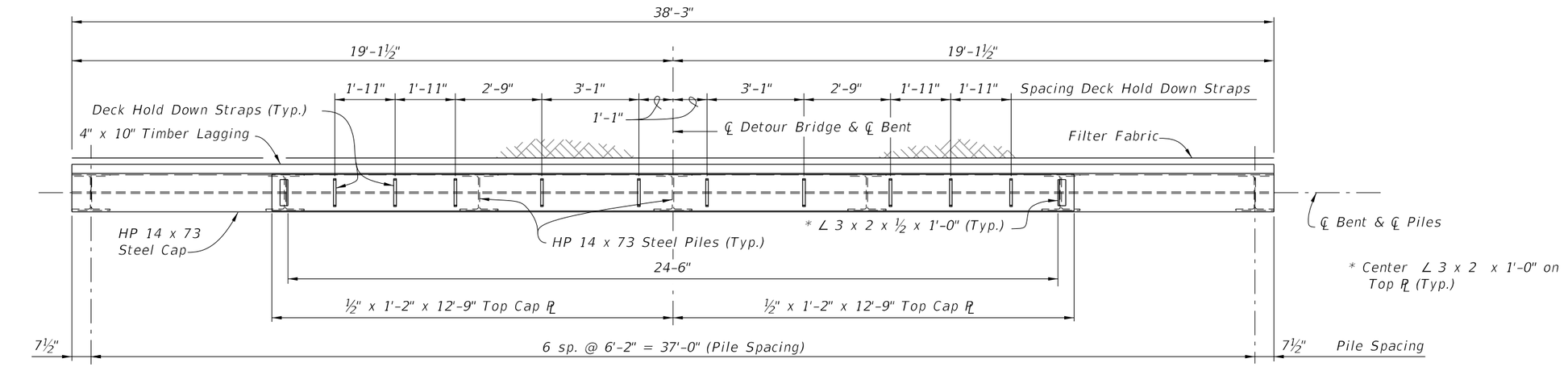


EXPANSION BEARING KEEPER BAR DETAIL

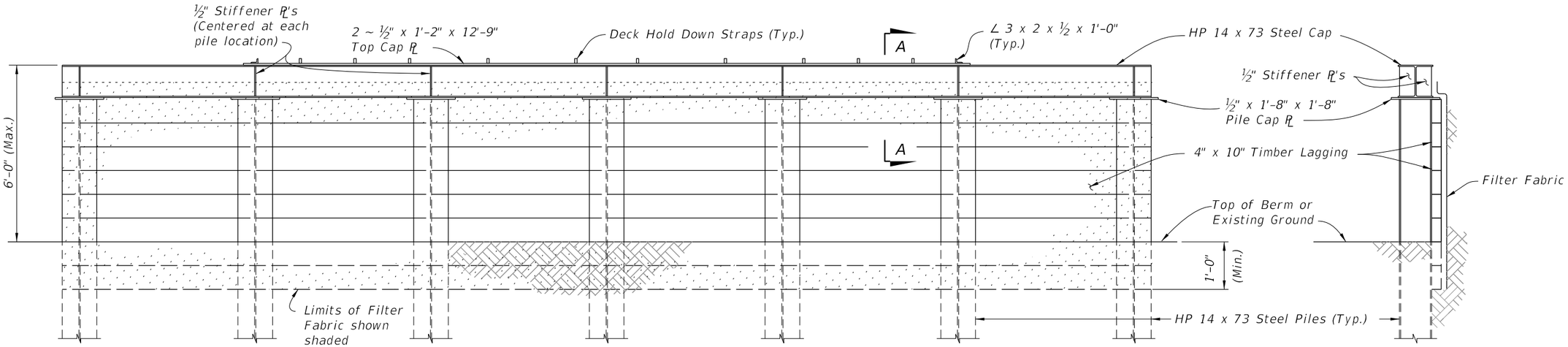
EXPANSION BEARING DETAILS

10/17/2024 10:47:06 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/16			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE DETAILS STEEL H PILE FOUNDATIONS	102-220	1 of 2

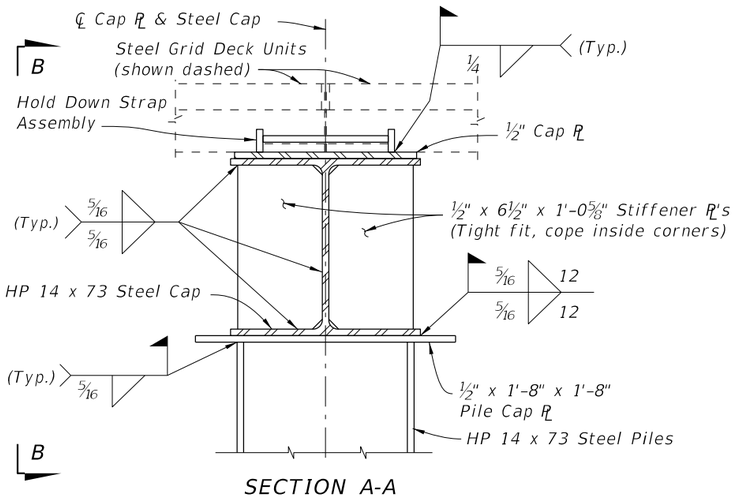


PLAN VIEW

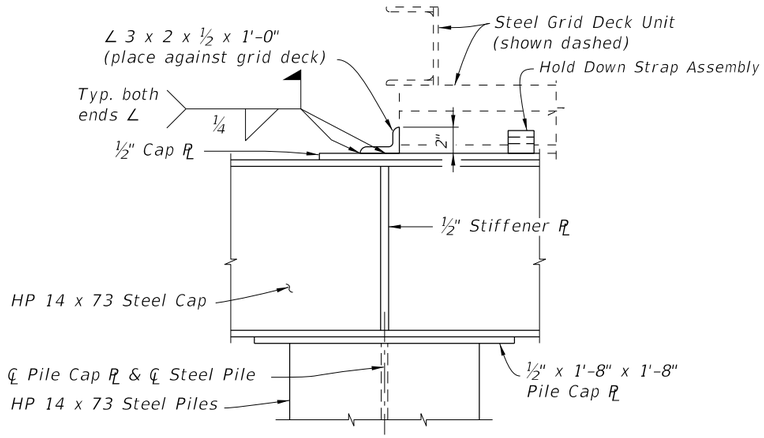


ELEVATION VIEW

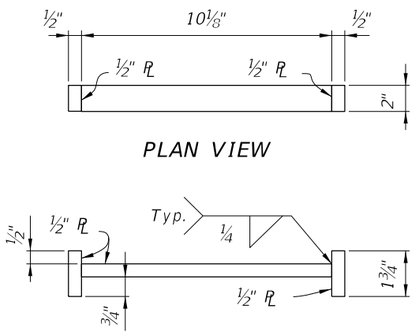
END VIEW



SECTION A-A
(LAGGING NOT SHOWN FOR CLARITY)



VIEW B-B



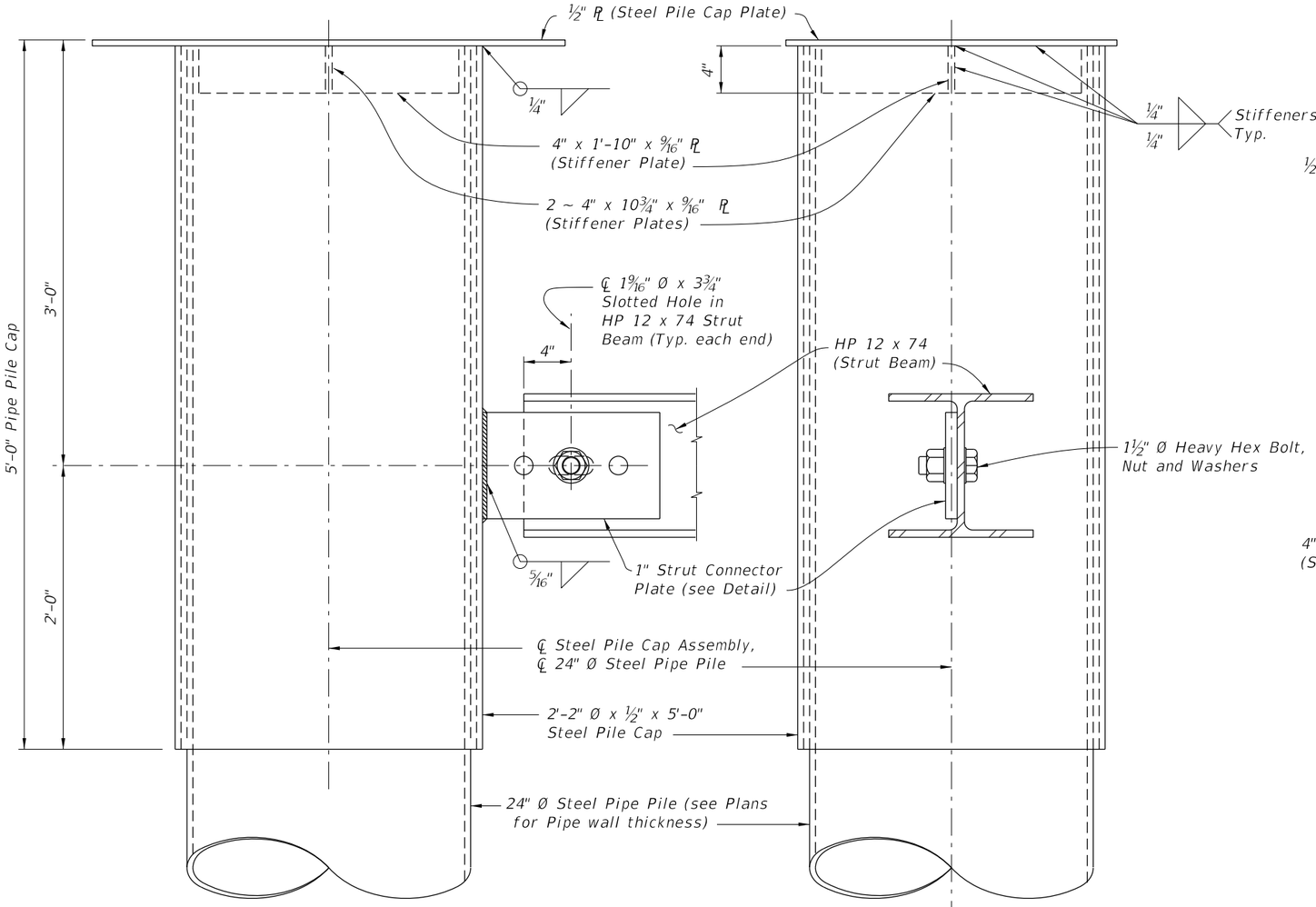
PLAN VIEW

ELEVATION VIEW
HOLD DOWN STRAP ASSEMBLY DETAIL

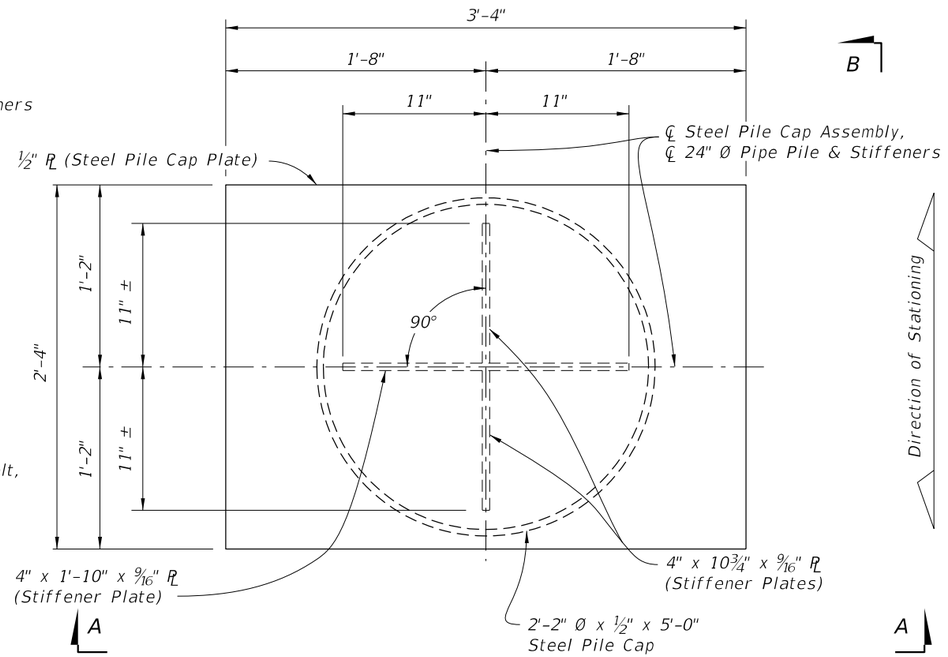
BACKWALL BENT DETAILS

10/17/2024 10:47:13 AM

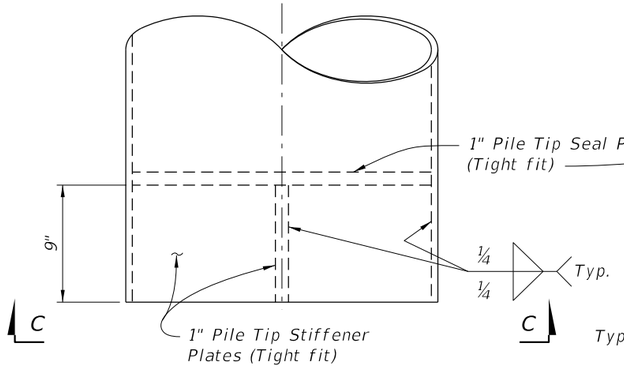
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE DETAILS STEEL H PILE FOUNDATIONS	INDEX	SHEET
07/01/06						102-220	2 of 2



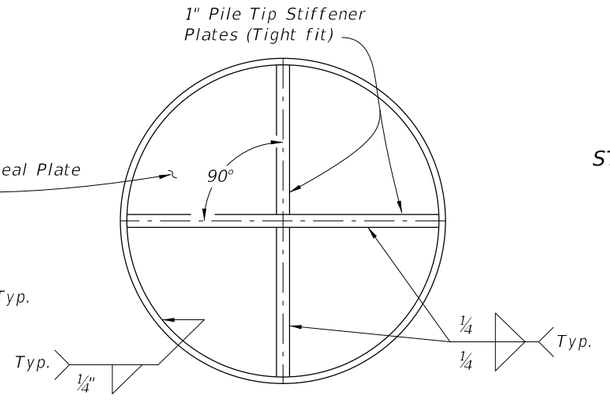
PARTIAL VIEW A-A



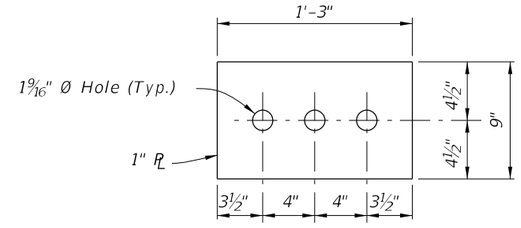
PLAN VIEW STEEL PILE CAP ASSEMBLY
(Bearing Plates and Bearing Keeper Bars not show for clarity)



VIEW B-B



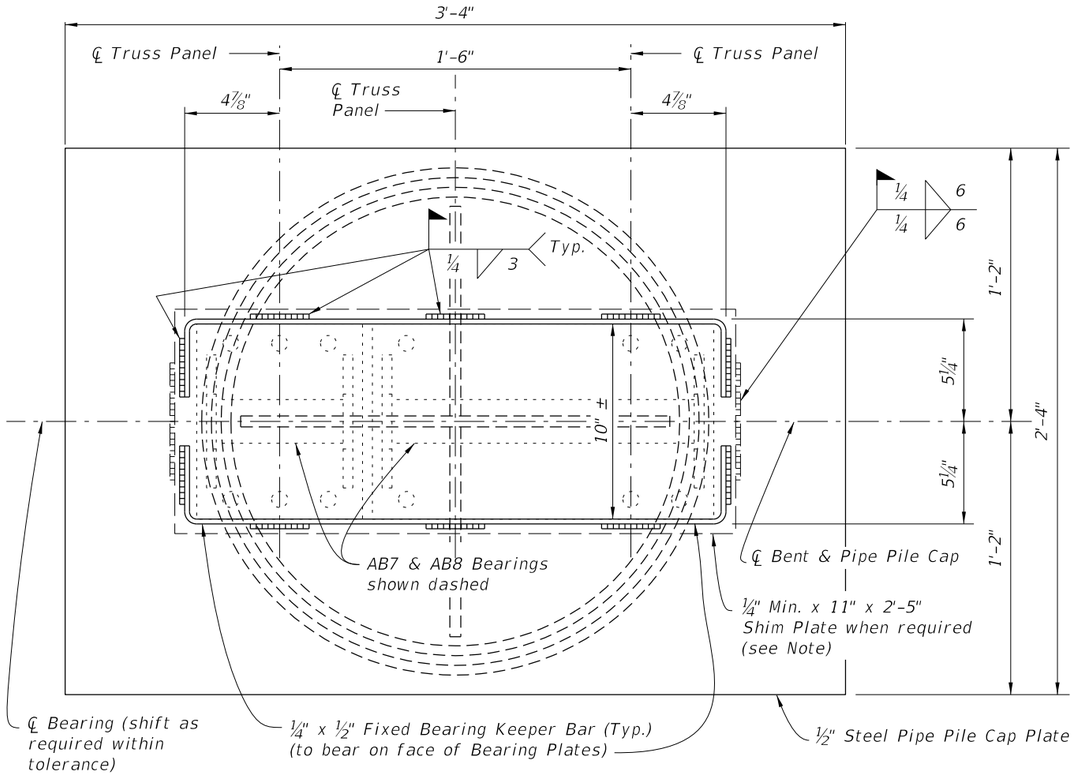
VIEW C-C
PILE TIP DETAIL



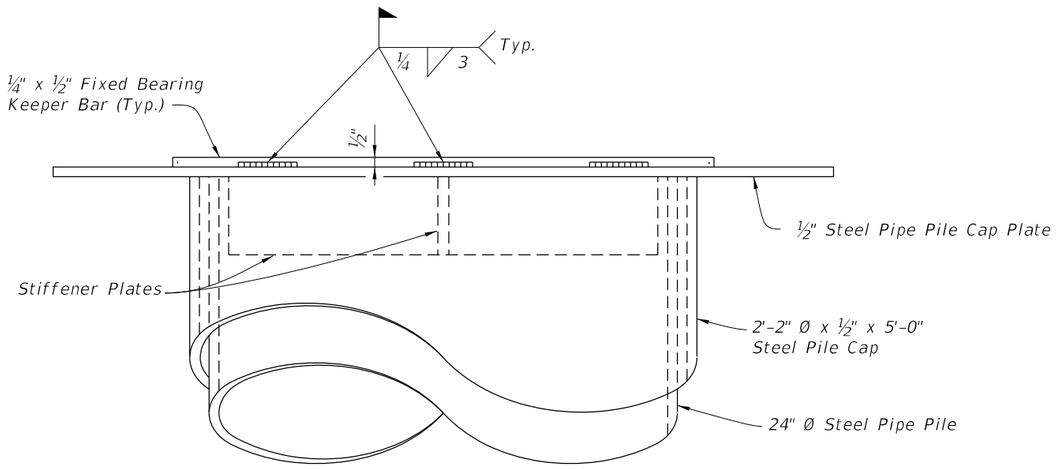
STRUT CONNECTOR PLATE DETAIL

10/17/2024 10:47:19 AM

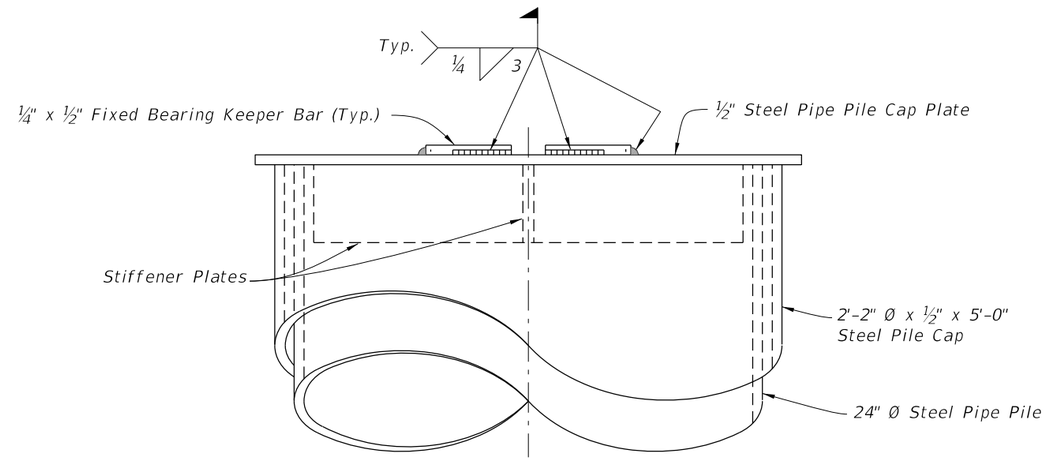
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/15			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE DETAILS STEEL PIPE PILE FOUNDATIONS	102-230	1 of 3



PARTIAL PLAN VIEW

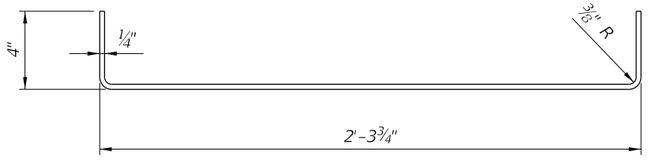


PARTIAL ELEVATION VIEW



END VIEW

Note:
Use Shim Plates as required to provide equal bearing seat elevations across the bent. Vary thickness of Shim Plate across the pile cap plate to provide a level bearing area in the transverse direction.

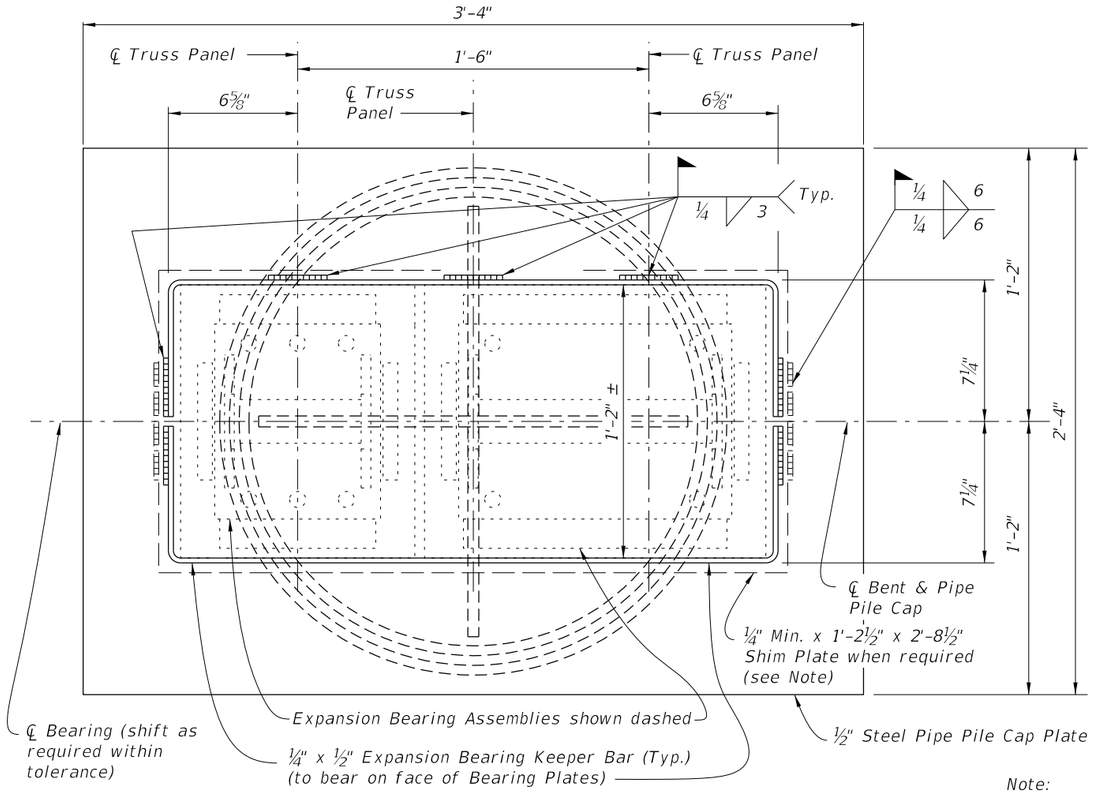


FIXED BEARING KEEPER BAR DETAIL

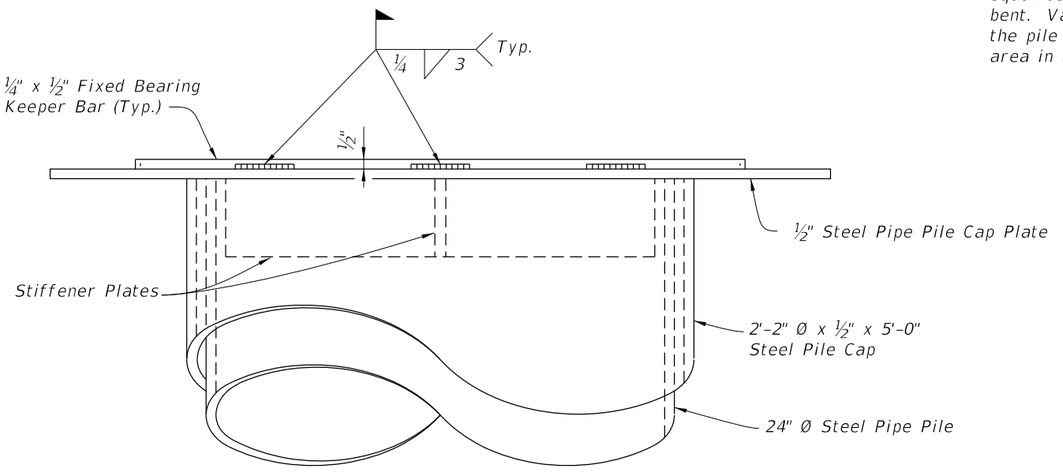
10/17/2024 10:47:26 AM

FIXED BEARING DETAILS

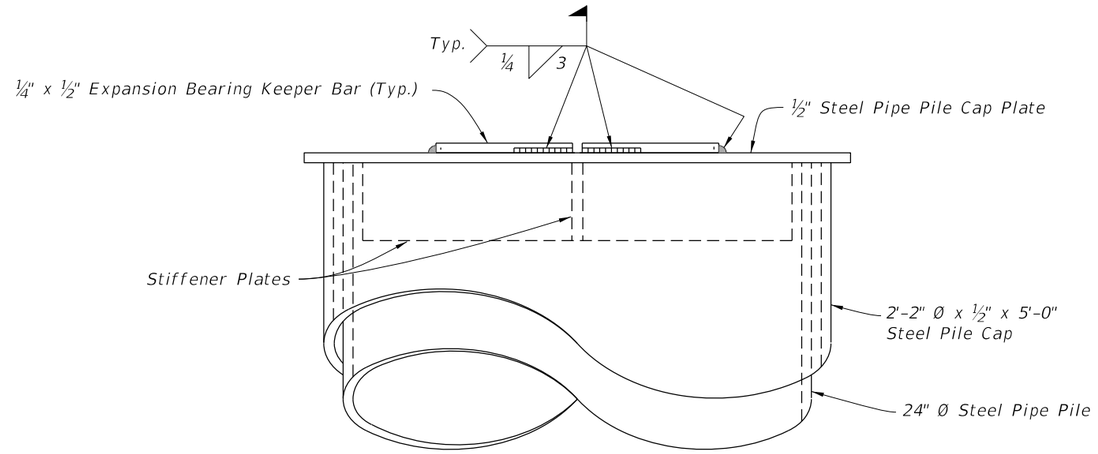
LAST REVISION	REVISION	DESCRIPTION:				
01/01/16			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE DETAILS STEEL PIPE PILE FOUNDATIONS	INDEX 102-230	SHEET 2 of 3



PARTIAL PLAN VIEW

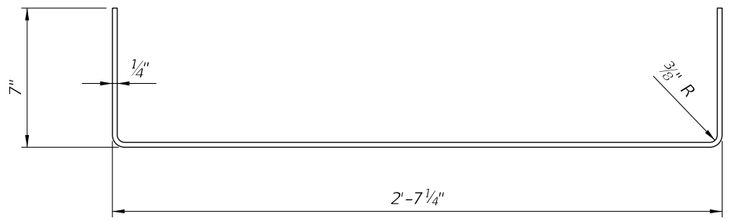


PARTIAL ELEVATION VIEW



END VIEW

Note:
Use Shim Plates as required to provide equal bearing seat elevations across the bent. Vary thickness of Shim Plate across the pile cap plate to provide a level bearing area in the transverse direction.

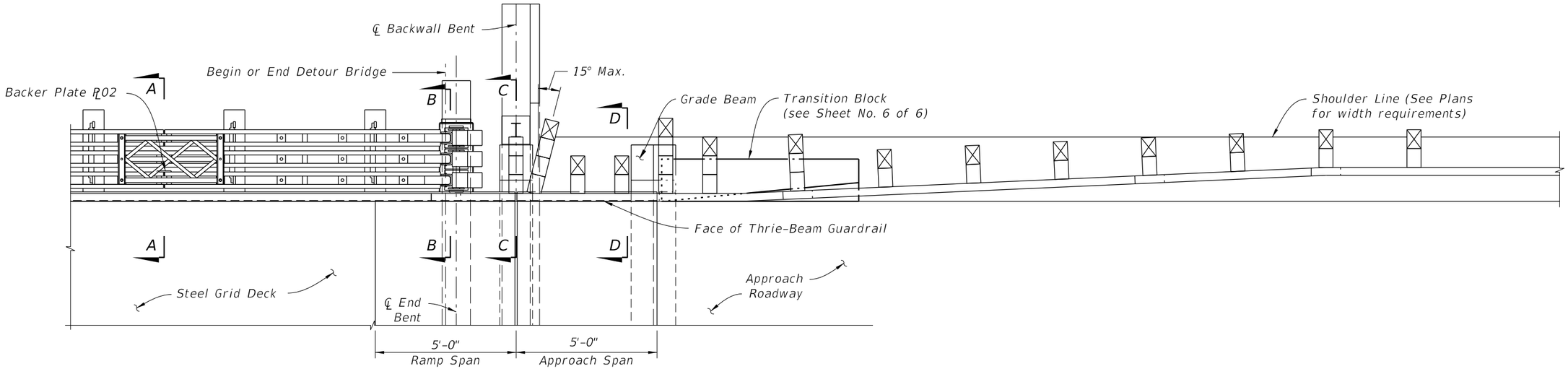


EXPANSION BEARING KEEPER BAR DETAIL

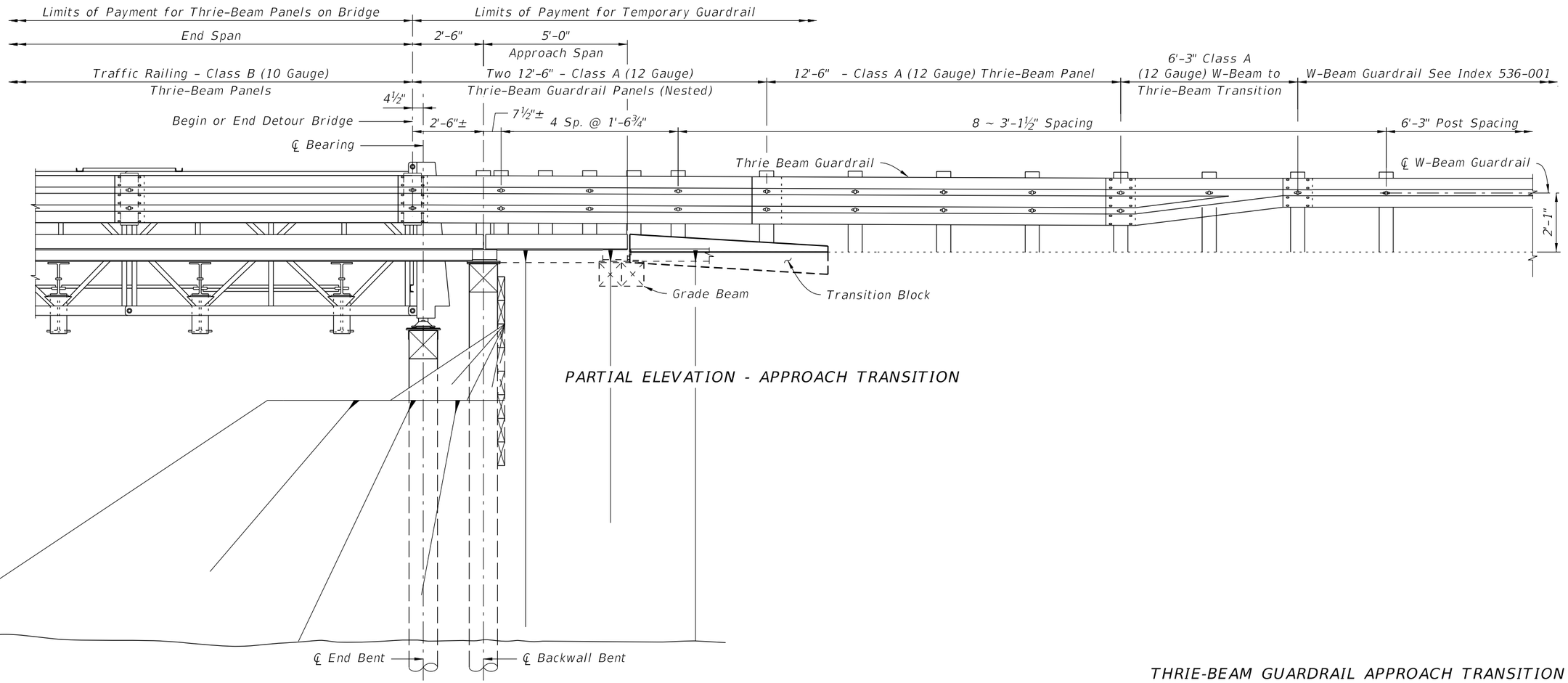
10/17/2024 10:47:32 AM

ABUTMENT AND INTERMEDIATE EXPANSION BEARING DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/16			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE DETAILS STEEL PIPE PILE FOUNDATIONS	102-230	3 of 3



PARTIAL PLAN - APPROACH TRANSITION

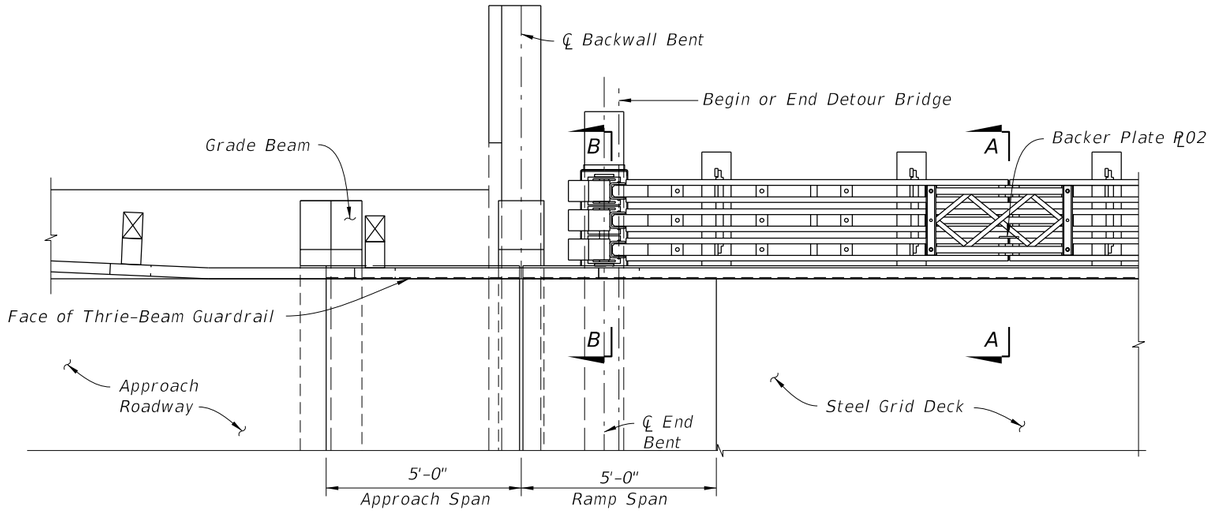


PARTIAL ELEVATION - APPROACH TRANSITION

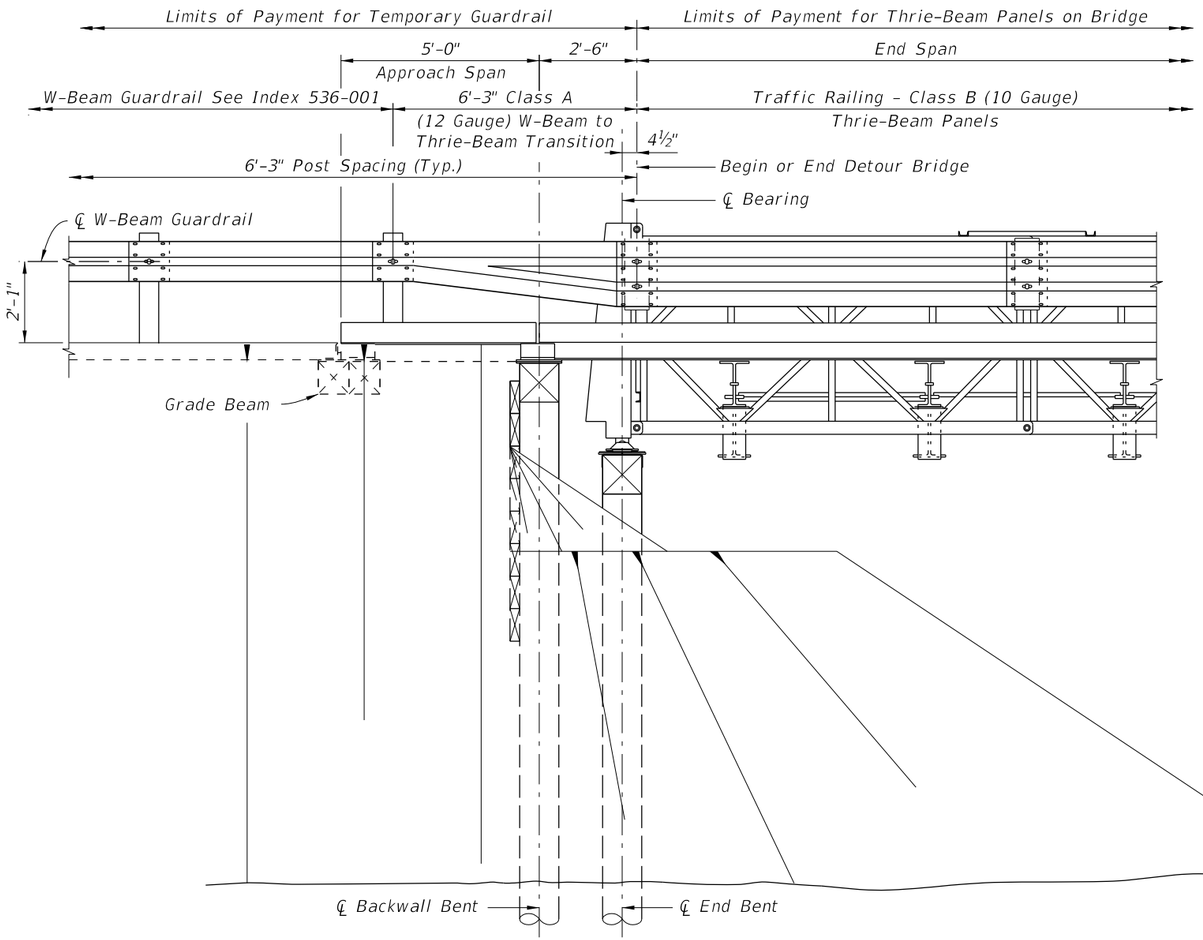
THRIE-BEAM GUARDRAIL APPROACH TRANSITION

10/17/2024 10:47:39 AM

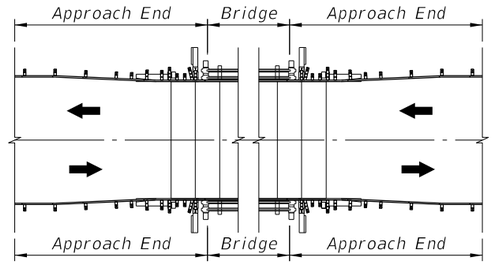
LAST REVISION	REVISION	DESCRIPTION:			
07/01/15			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE THRIE-BEAM GUARDRAIL	INDEX 102-240 / SHEET 1 of 6



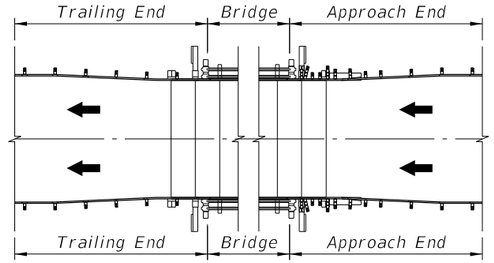
PARTIAL PLAN - TRAILING END



PARTIAL ELEVATION - TRAILING END



TWO-WAY TRAFFIC



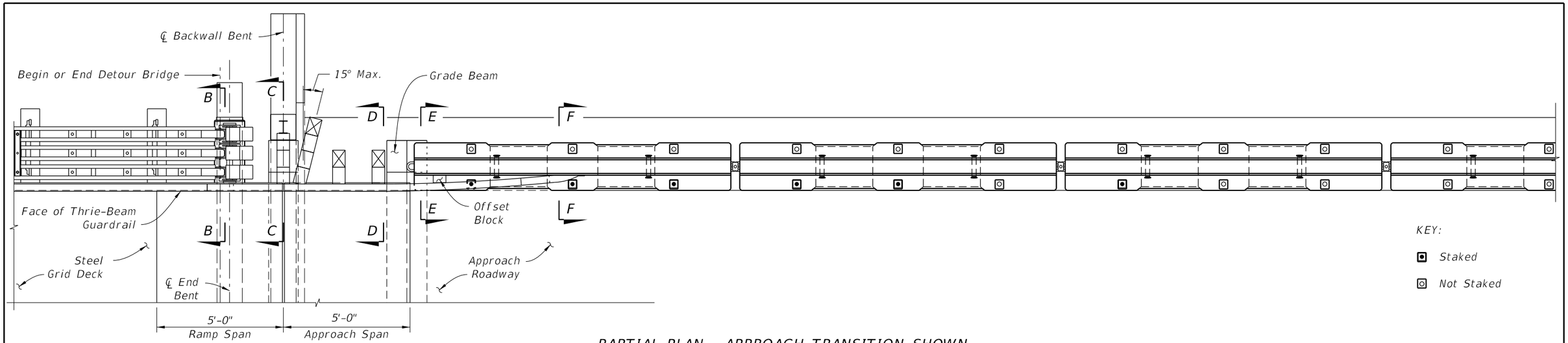
ONE-WAY TRAFFIC

END TRANSITION APPLICATION DETAILS

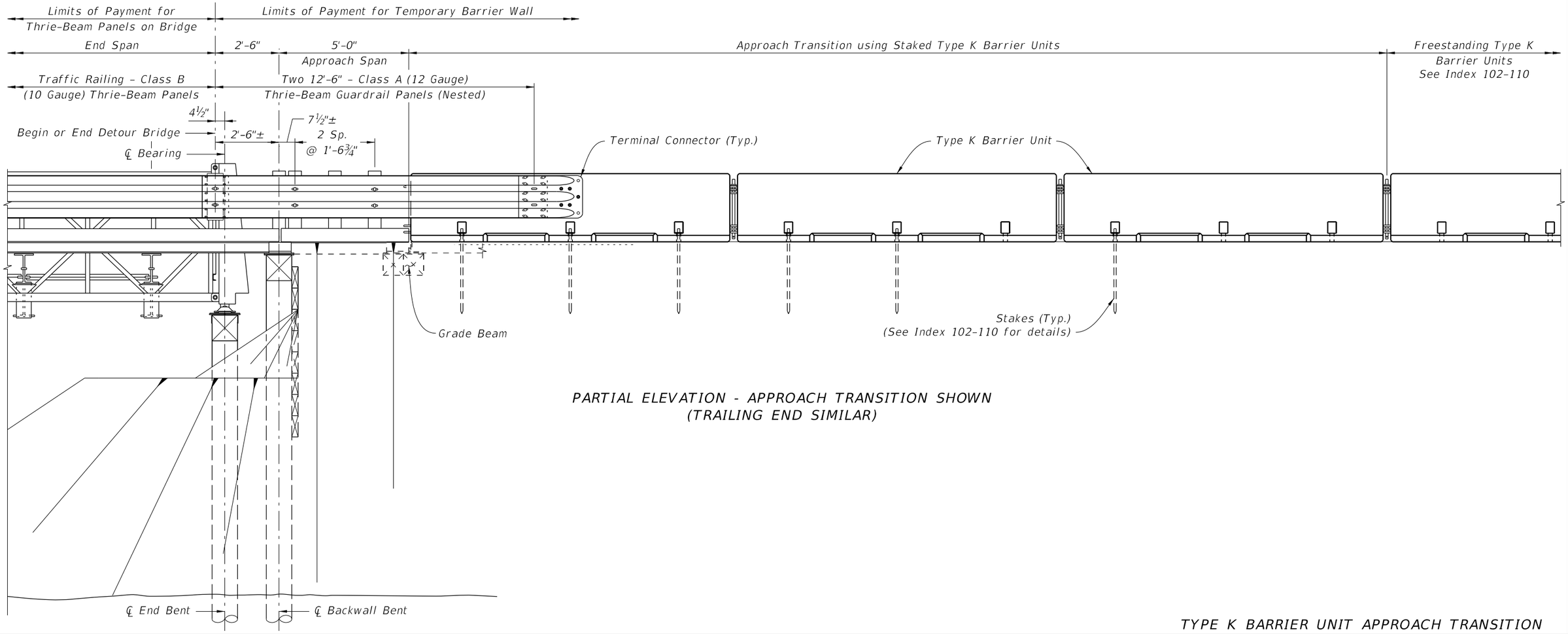
THRIE-BEAM GUARDRAIL TRAILING END TRANSITION

10/17/2024 10:47:45 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE THRIE-BEAM GUARDRAIL	INDEX	SHEET
07/01/15						102-240	2 of 6



PARTIAL PLAN - APPROACH TRANSITION SHOWN
(TRAILING END SIMILAR)

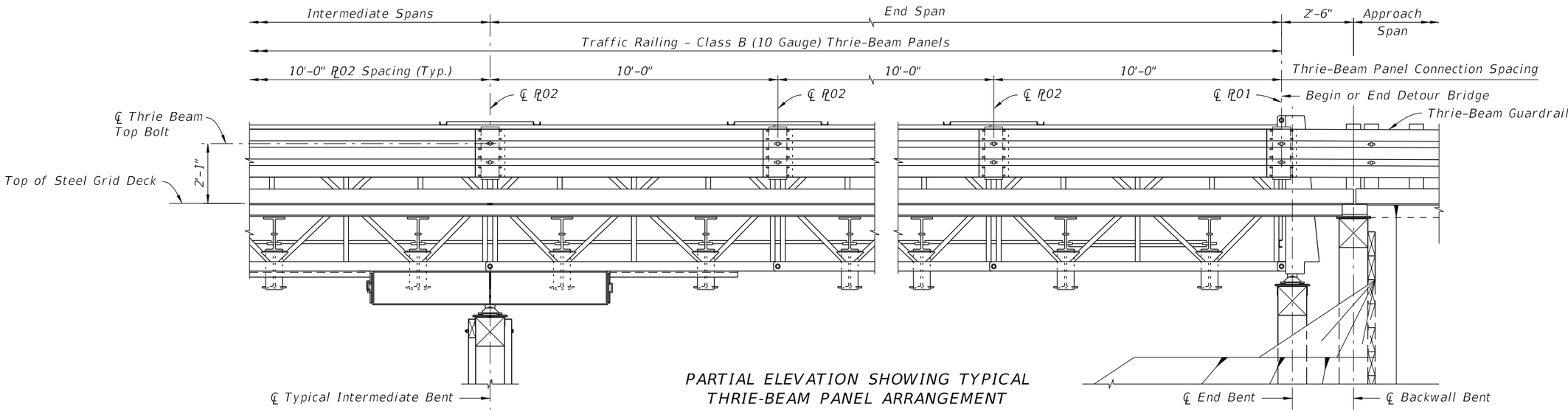


PARTIAL ELEVATION - APPROACH TRANSITION SHOWN
(TRAILING END SIMILAR)

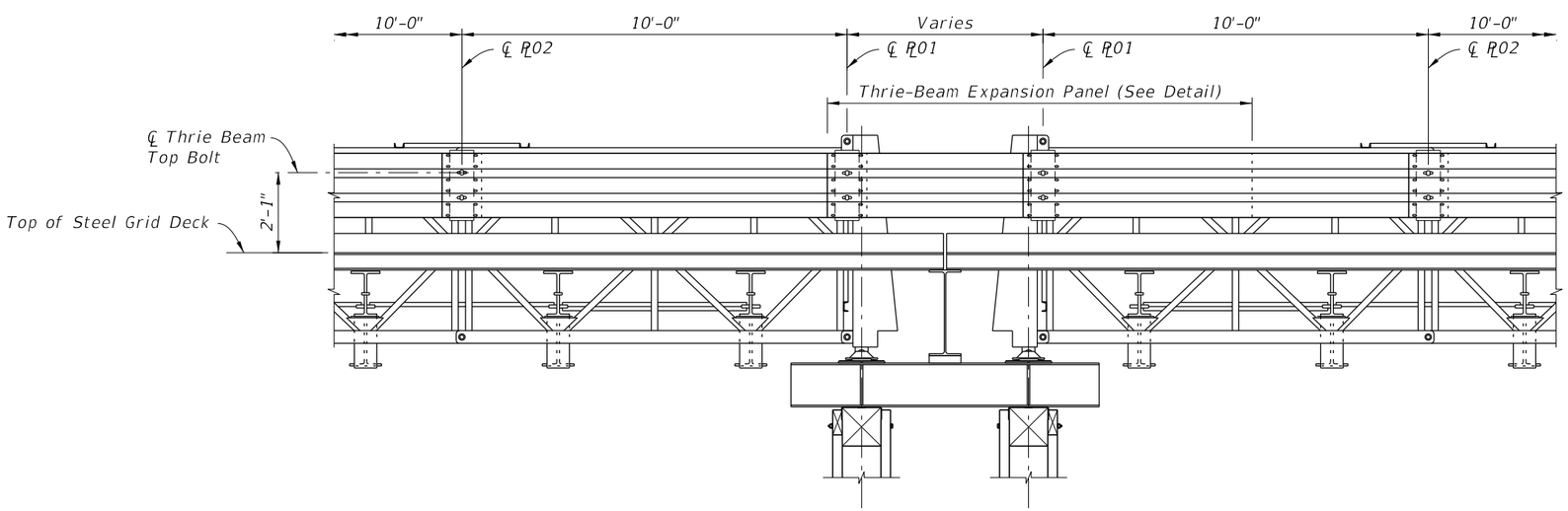
TYPE K BARRIER UNIT APPROACH TRANSITION

10/17/2024 10:47:52 AM

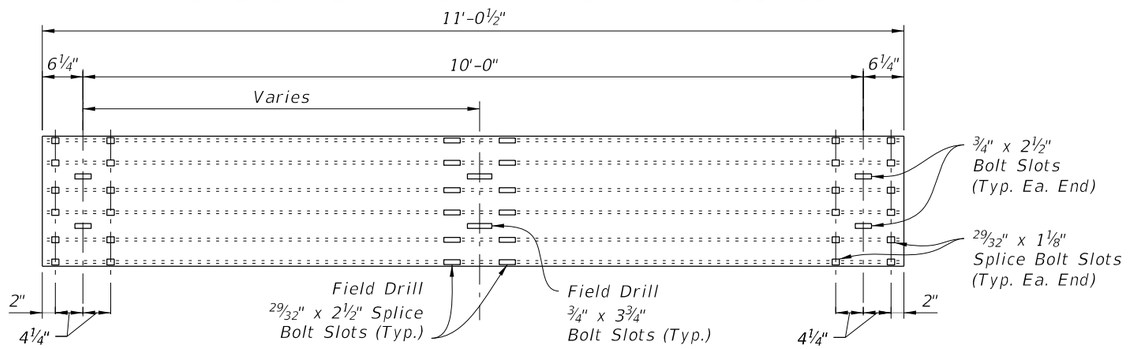
LAST REVISION	REVISION	DESCRIPTION:				
07/01/15			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE THRIE-BEAM GUARDRAIL	INDEX 102-240	SHEET 3 of 6



PARTIAL ELEVATION SHOWING TYPICAL THRIE-BEAM PANEL ARRANGEMENT



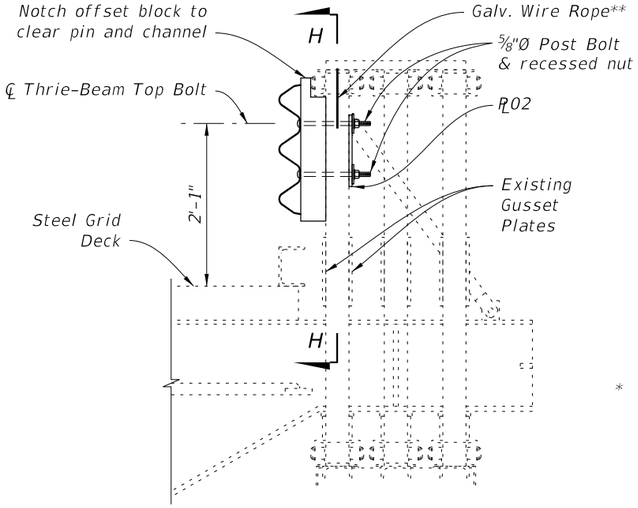
PARTIAL ELEVATION SHOWING THRIE-BEAM PANELS AT EXPANSION JOINT



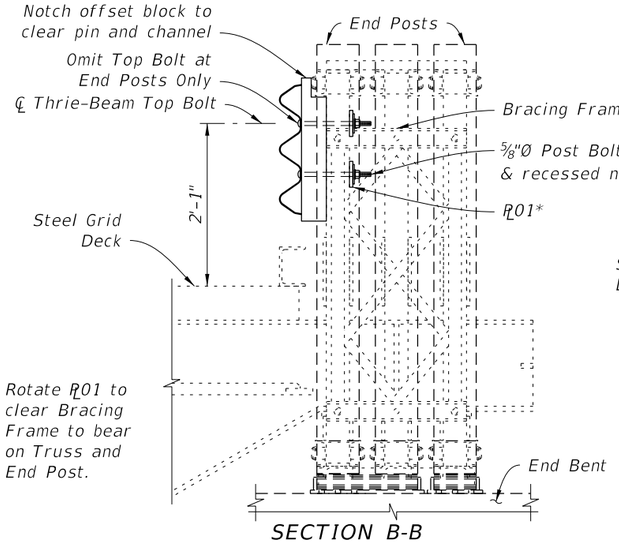
THRIE-BEAM EXPANSION PANEL DETAIL

10/17/2024 10:47:59 AM

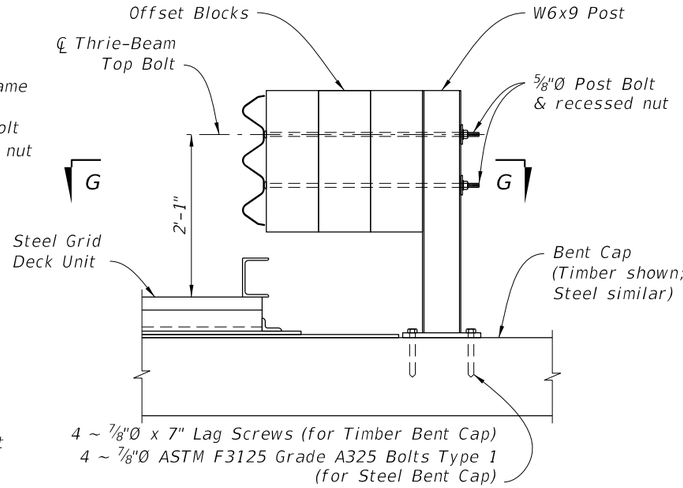
LAST REVISION	REVISION	DESCRIPTION:				
07/01/15			FDOT FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE THRIE-BEAM GUARDRAIL	INDEX 102-240	SHEET 4 of 6



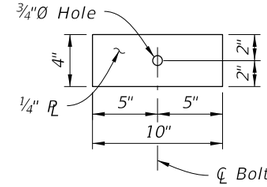
SECTION A-A



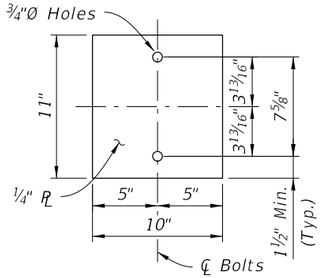
SECTION B-B



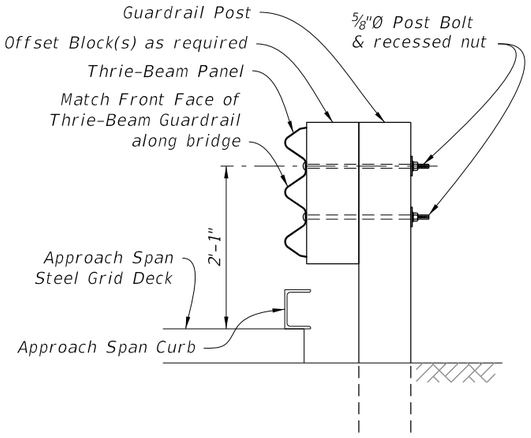
SECTION C-C



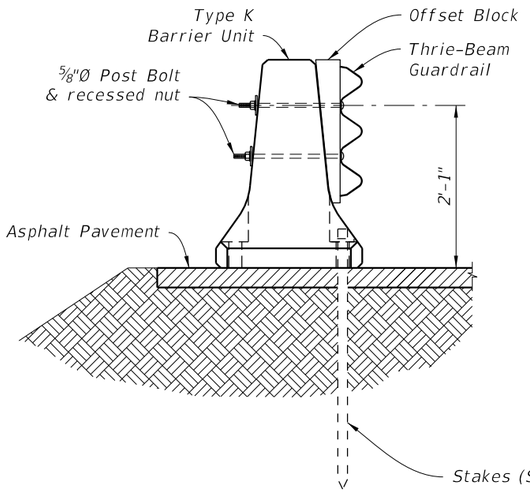
BACKER PLATE PL01 DETAIL



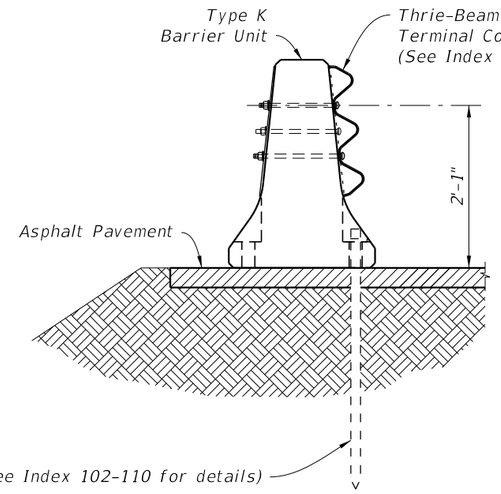
BACKER PLATE PL02 DETAIL



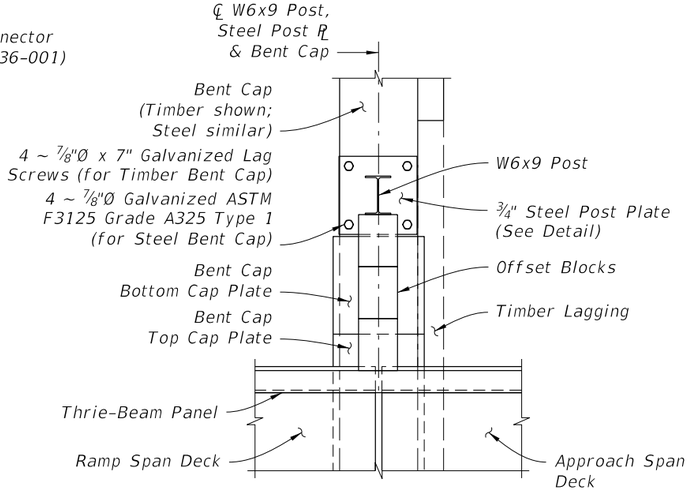
SECTION D-D



SECTION E-E

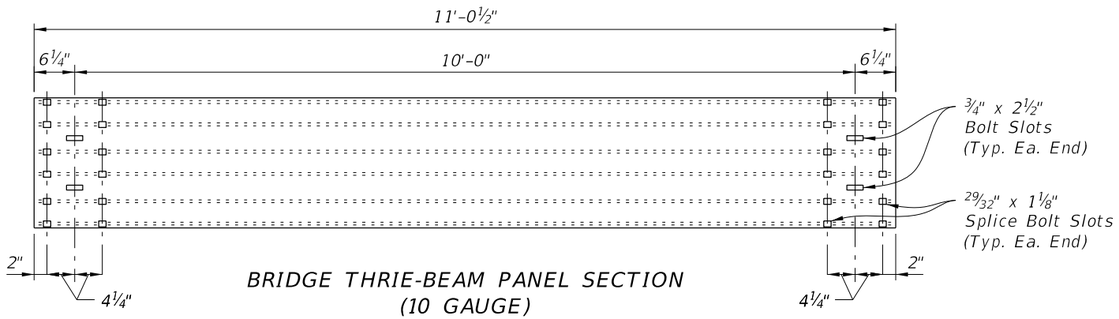


SECTION F-F

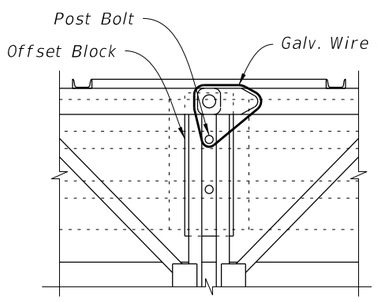


VIEW G-G

(Adjacent Post and Offset Blocks not shown for clarity)

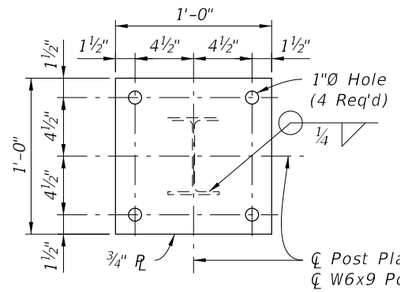


BRIDGE THRIE-BEAM PANEL SECTION (10 GAUGE)



SECTION H-H

** As directed by the Engineer in order to limit vibration induced vertical displacement of the Thrie-Beam Panels, provide Contractor supplied, one time use, commercially available 3/16"Ø (Min.) Galvanized Wire Rope w/ Ferrules (or other approved wire type) positioned and tensioned as required to secure the Panels.

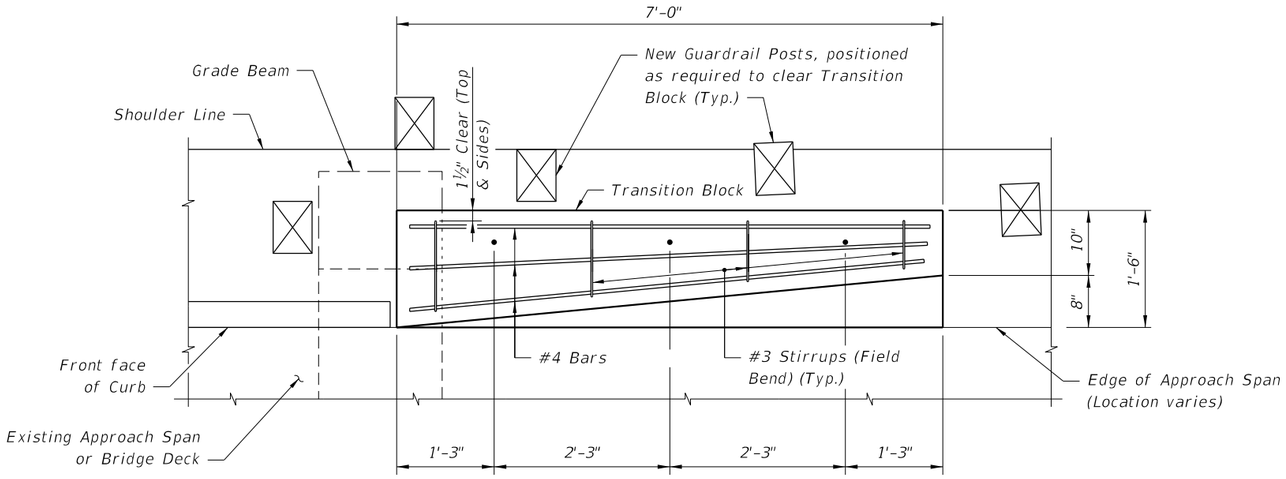


STEEL POST PLATE DETAIL

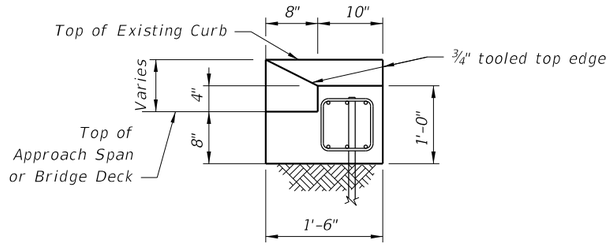
SECTIONS AND DETAILS

LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	TEMPORARY DETOUR BRIDGE THRIE-BEAM GUARDRAIL	INDEX 102-240	SHEET 5 of 6

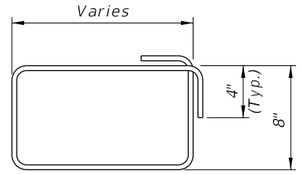
10/17/2024 10:48:06 AM



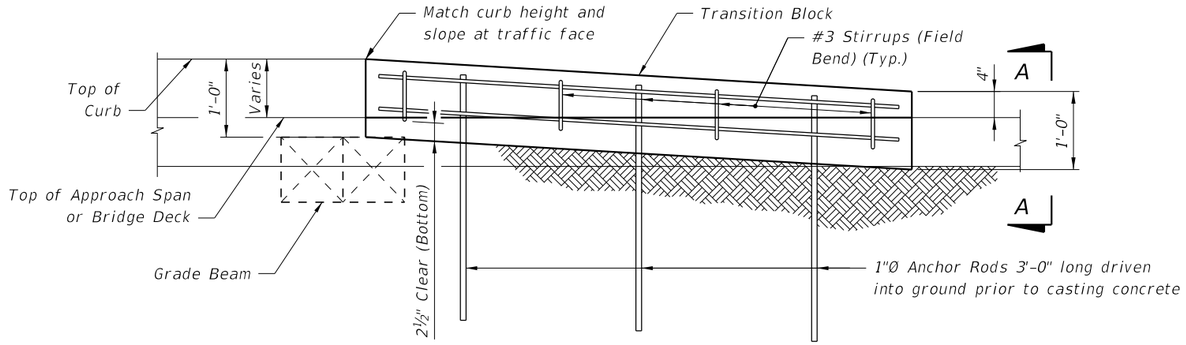
PLAN VIEW OF TRANSITION BLOCK
(GUARDRAIL NOT SHOWN FOR CLARITY)



END VIEW A-A



#3 STIRRUP (FIELD BEND)



ELEVATION OF TRANSITION BLOCK
(GUARDRAIL AND POSTS NOT
SHOWN FOR CLARITY)

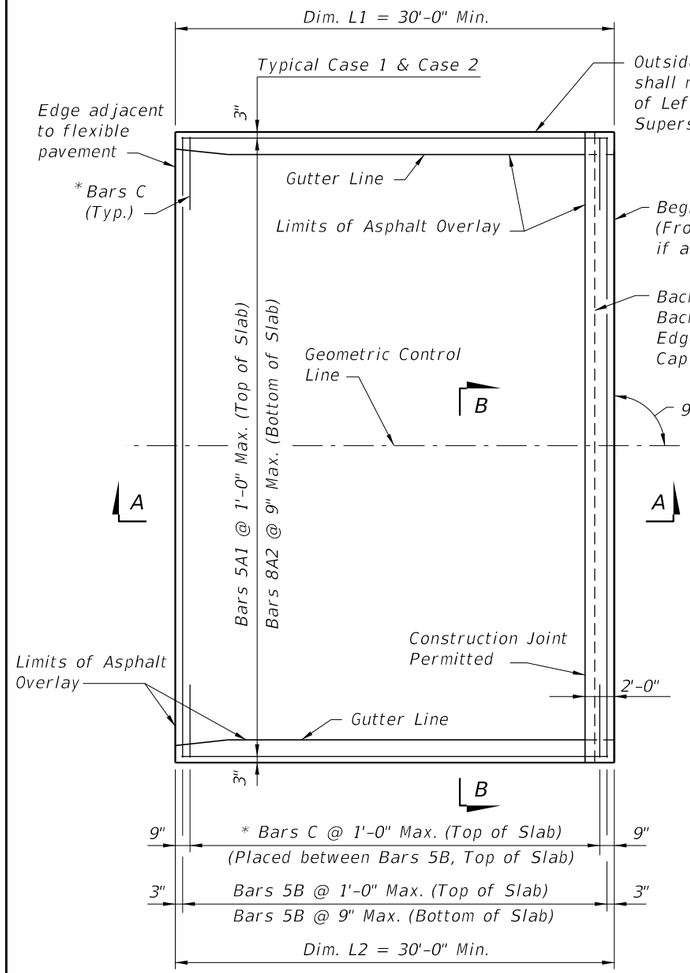
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Class NS	CY	0.4
Reinforcing Steel	LB	61
Guardrail (Reset)	LF	12.5

NOTES:

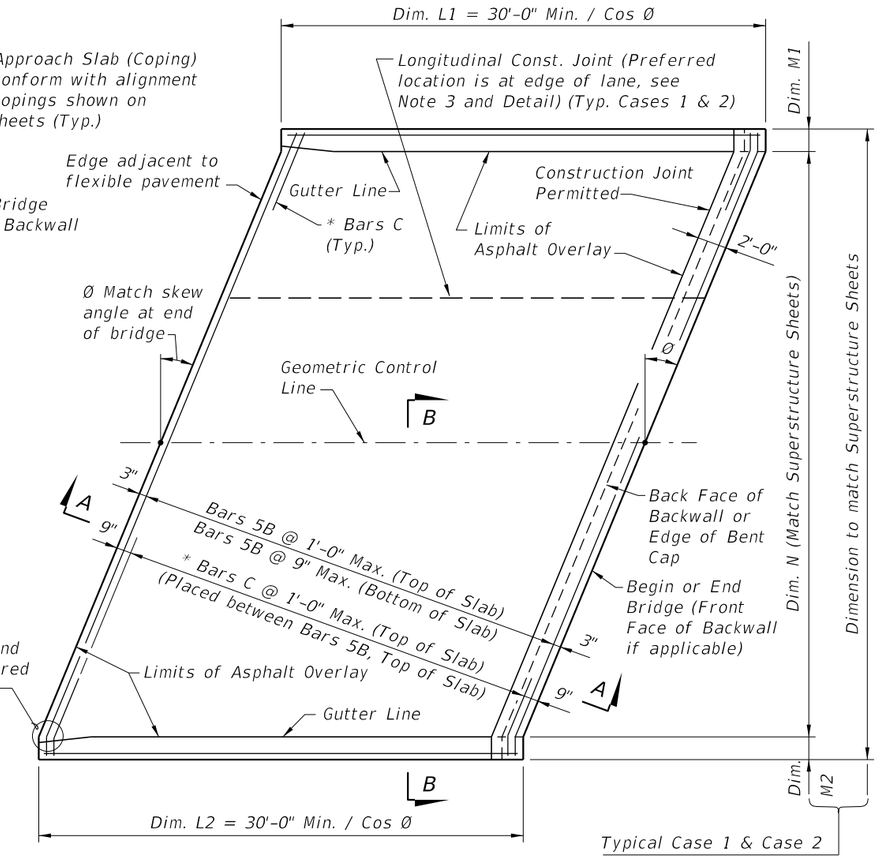
REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60.

ANCHOR RODS: Steel Anchor Rods shall be ASTM A36, ASTM A709 Grade 36 or ASTM A615 Grade 60 hot-dip galvanized in accordance with Specification Section 962.

10/17/2024 10:48:14 AM

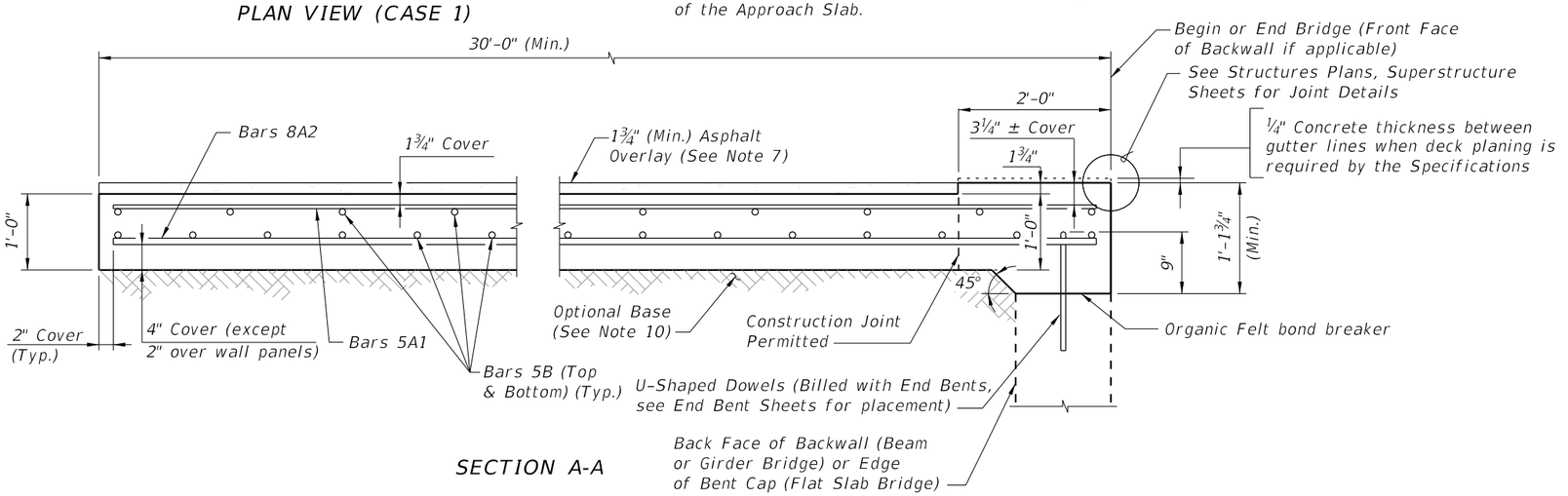


PLAN VIEW (CASE 1)



PLAN VIEW (CASE 2)

* NOTE: Bars C are required as shown when the 36" or 42" Single-Slope Traffic Railings, or the Traffic Railing/Noise Wall, are used at the edge of the Approach Slab.



SECTION A-A

GENERAL NOTES

1. SURFACE TREATMENT: As an option to Class 4 Floor Finish (Bridge Floor Grooving) per Section 400 a hand tined or heavy broomed finish may be permitted on the concrete portion of the riding surface. Sidewalk areas shall receive a broomed finish. The top surface of the concrete beneath the asphalt overlay shall be raked.
2. CONDUIT: If required, see Structures Plans for Conduit Details.
3. When a longitudinal construction joint is necessary or allowed by the Engineer, the transverse steel shall be extended as shown in the Longitudinal Construction Joint Detail.
4. The plan view for CASE 1 applies when the skew angle (Ø) = 0°. Relevant details also apply to CASE 2.
5. The plan view for CASE 2 applies where the skew angle (Ø) is > 0°. The slab shown represents a skew to the right for an approach slab at begin bridge; approach slab at the end of bridge or a left skew shall be treated similarly.
6. Deformed WWR must meet the requirements of Specification Section 931.
7. Continue the asphalt pavement over the approach slab and match the friction course type used on the roadway.
8. Approach slabs shown in Plan View Cases 1 and 2 represent a typical approach slab with edge barriers and no sidewalks. Provide railings, parapets and raised sidewalks as detailed in the Contract Plans.
9. PAYMENT: Deformed WWR for the edge of Approach Slabs on retaining walls is not included in the estimated quantity for reinforcing steel and is considered incidental to the work.
10. See Roadway Plans for Asphalt Overlay and Optional Base details and quantities.

CROSS REFERENCES:

For Section B-B, Longitudinal Construction Joint Detail and Approach Slab Details see Sheet 2.

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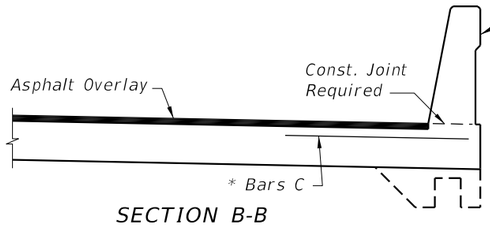
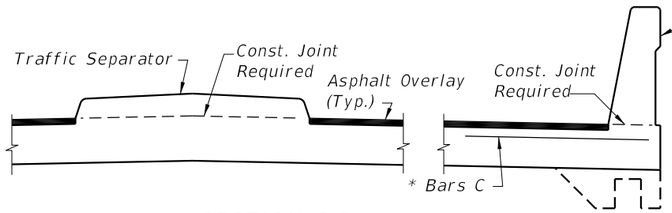
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	APPROACH SLABS (30 FT.) (FLEXIBLE PAVEMENT APPROACHES)	INDEX	SHEET
11/01/22					400-090	1 of 2



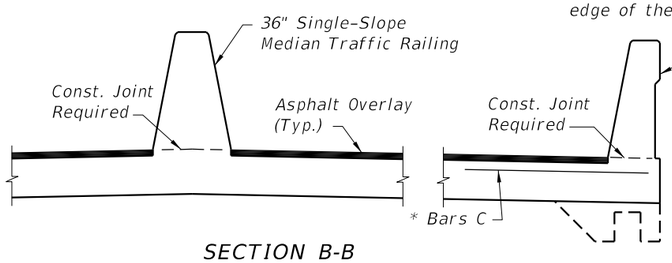
SECTION B-B
STANDARD APPROACH SLAB

NOTE:
Geometry of Traffic Railings, Pedestrian/Bicycle Railings, Traffic Separators and Sidewalks to match those on adjoining bridge.

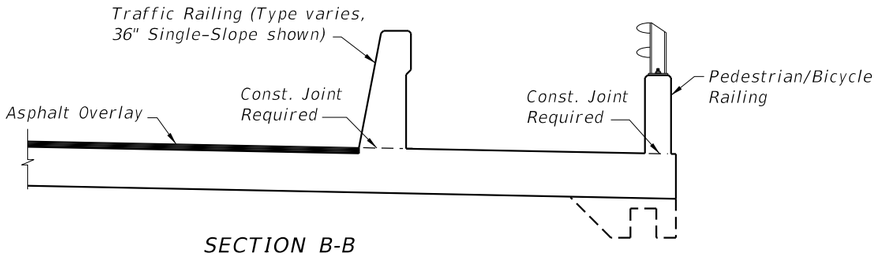


SECTION B-B
APPROACH SLAB WITH TRAFFIC SEPARATOR

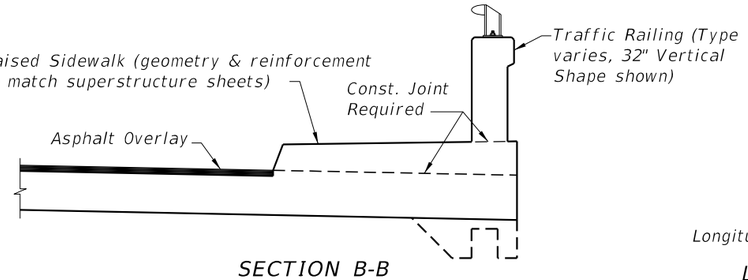
*NOTE: Bars C are required as shown when the 36" or 42" Single-Slope Traffic Railing, or the Traffic Railing/Noise Wall, are used at the edge of the Approach Slab.



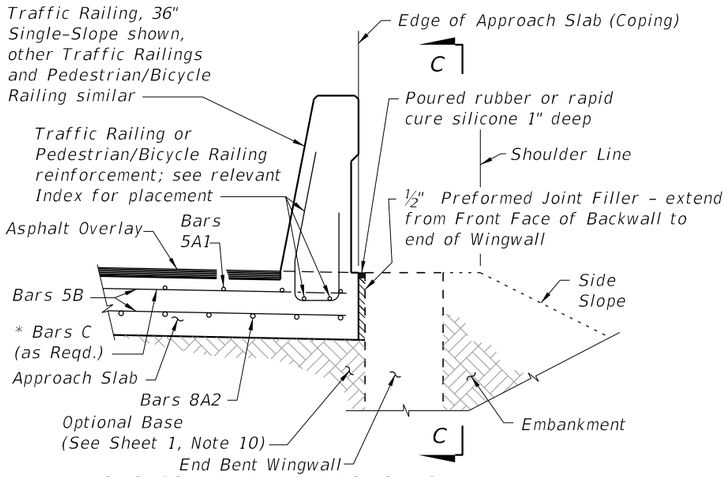
SECTION B-B
APPROACH SLAB WITH MEDIAN TRAFFIC RAILING



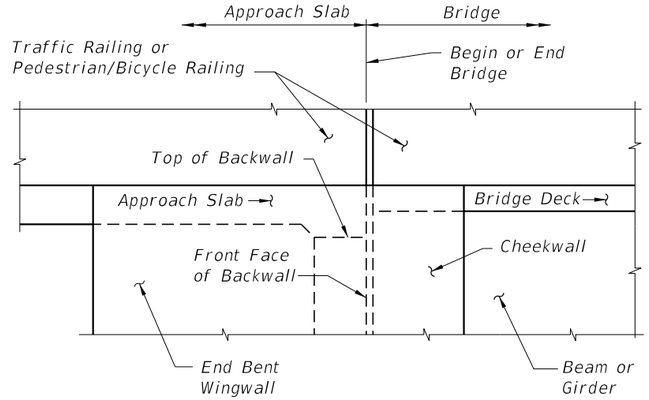
SECTION B-B
APPROACH SLAB WITH SIDEWALK



SECTION B-B
APPROACH SLAB WITH RAISED SIDEWALK

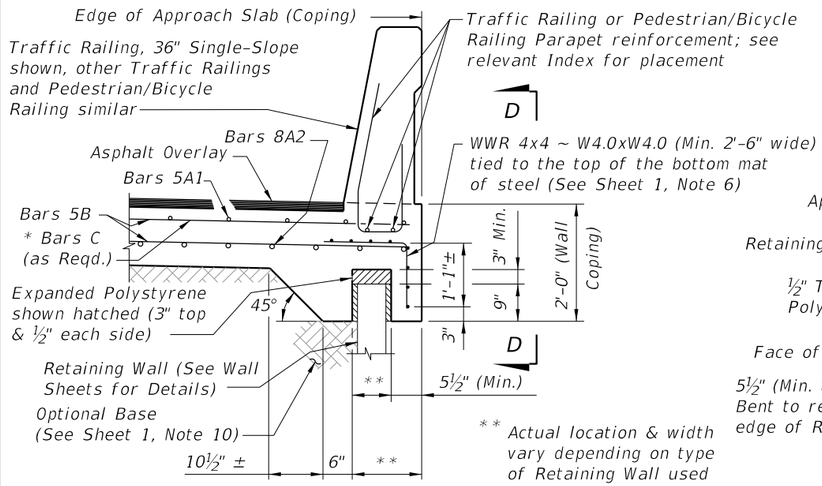


SECTION THRU APPROACH SLAB
AND END BENT WINGWALL

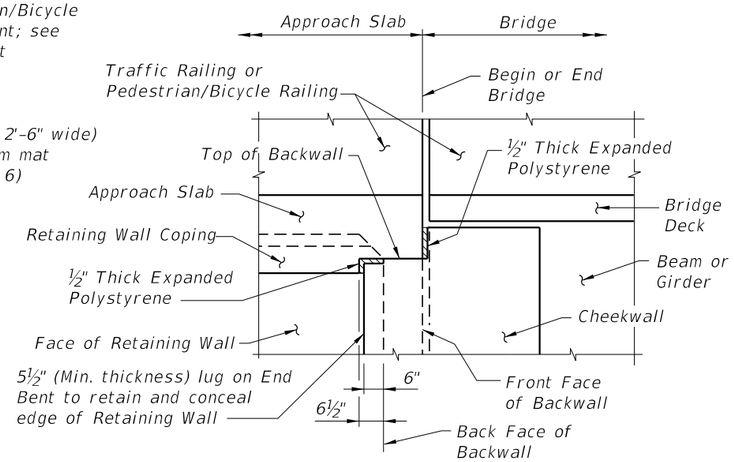


VIEW C-C AT BEGIN OR END BRIDGE (BEAM
BRIDGE SHOWN, FLAT SLAB BRIDGE SIMILAR)

APPROACH SLAB WITH WINGWALL DETAILS

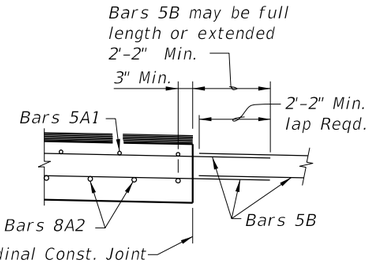


SECTION THRU APPROACH SLAB
AND RETAINING WALL

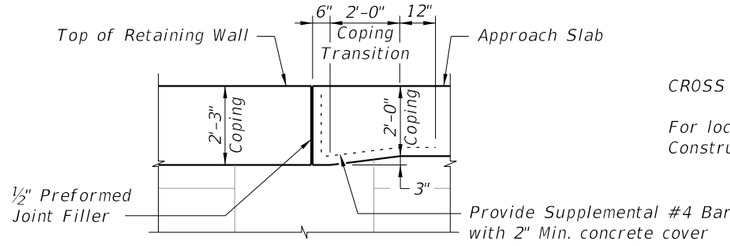


VIEW D-D AT BEGIN OR END BRIDGE (BEAM
BRIDGE SHOWN, FLAT SLAB BRIDGE SIMILAR)

APPROACH SLAB WITH RETAINING WALL DETAILS



LONGITUDINAL CONSTRUCTION
JOINT DETAIL



COPING TRANSITION DETAIL FOR
RETAINING WALLS WITH 2'-3" COPING HEIGHT
(Railing Not Shown For Clarity)

CROSS REFERENCES:

For location of Section B-B and Longitudinal Construction Joint see Sheet 1.

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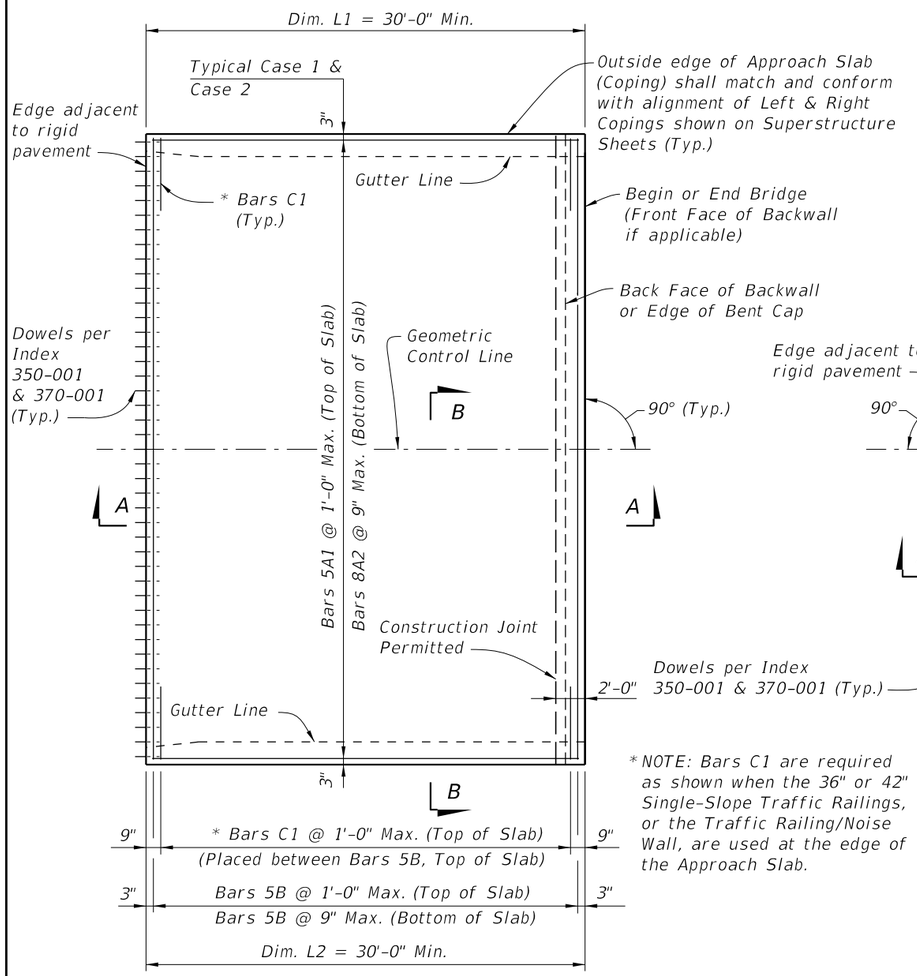
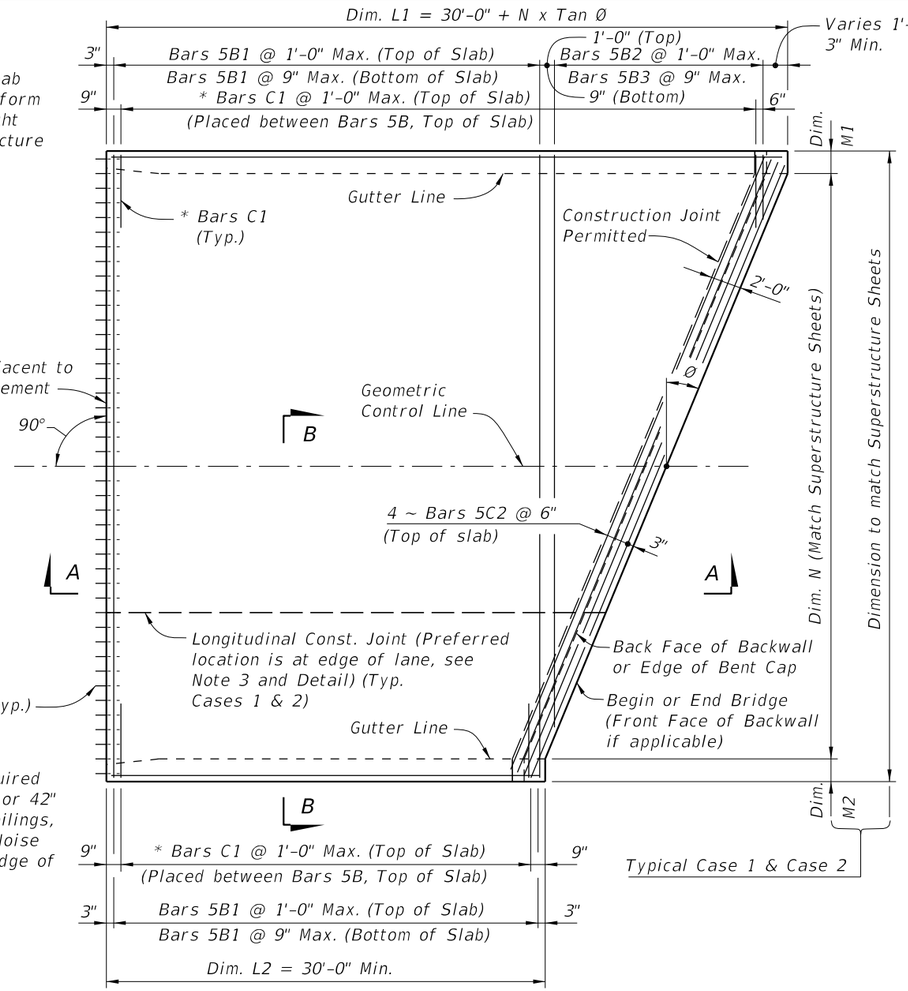
LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT FY 2025-26 STANDARD PLANS	APPROACH SLABS (30 FT.) (FLEXIBLE PAVEMENT APPROACHES)	INDEX 400-090	SHEET 2 of 2

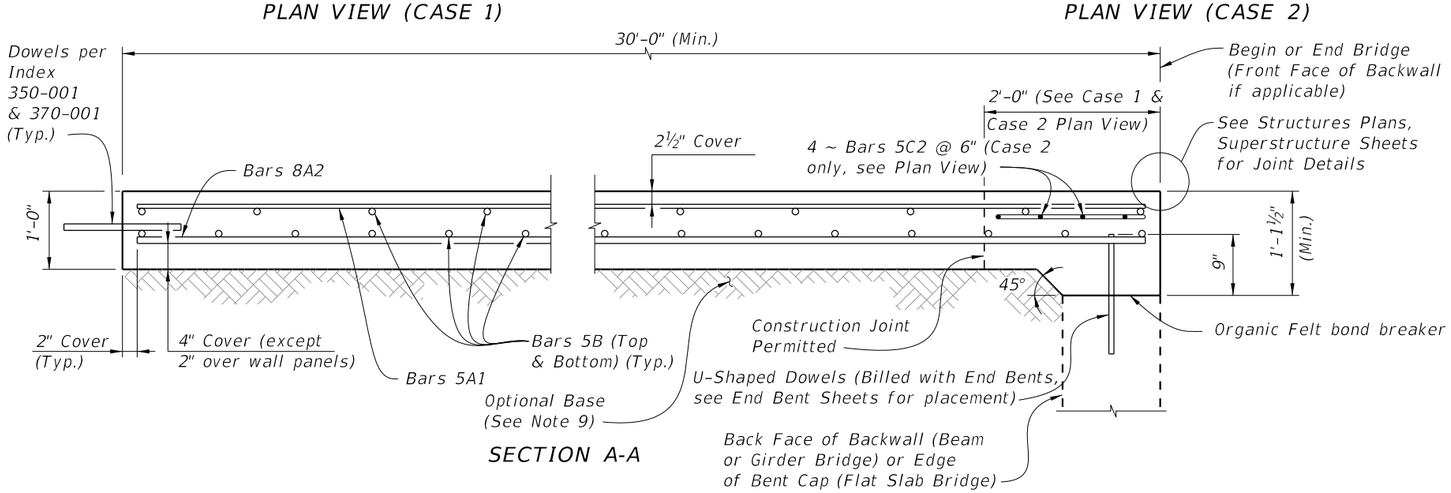


* NOTE: Bars C1 are required as shown when the 36" or 42" Single-Slope Traffic Railings, or the Traffic Railing/Noise Wall, are used at the edge of the Approach Slab.



PLAN VIEW (CASE 1)

PLAN VIEW (CASE 2)



SECTION A-A

GENERAL NOTES

1. SURFACE TREATMENT: Apply a Class 4 Floor Finish (Grooved) to the riding surface from begin or end approach slab joint to begin or end bridge. See Bid Item Notes. Apply a broomed finish to sidewalk areas.
2. CONDUIT: If required, see Structures Plans for Conduit details.
3. When a longitudinal construction joint is necessary or allowed by the Engineer, the transverse steel shall be extended as shown in the Longitudinal Construction Joint Detail.
4. The plan view for CASE 1 applies when the skew angle (Ø) = 0°. Relevant details also apply to CASE 2.
5. The plan view for CASE 2 applies where the skew angle (Ø) is > 0°. The slab shown represents a skew to the right for an approach slab at begin bridge; approach slab at the end of bridge or a left skew shall be treated similarly. The shown reinforcement shall be utilized, and Dowels provided in accordance with Index 350-001 and 370-001.
6. Deformed WWR must meet the requirements of Specification Section 931.
7. PROFILOGRAPH: If profilograph requirements apply, planing may be required. The permitted construction joint shown in Section A-A will facilitate the placement of the expansion joint.
8. Approach slabs shown in Plan View Cases 1 and 2 represent a typical approach slab with edge barriers and no sidewalks. Provide railings, parapets, traffic separators and sidewalks as detailed on the additional approach slab sheets.
9. PAYMENT: Deformed WWR for the edge of Approach Slabs on retaining walls is not included in the estimated quantity for reinforcing steel and is considered incidental to the work. See Roadway Plans for Optional Base details and quantities.

CROSS REFERENCES:

For Section B-B, Longitudinal Construction Joint Detail and Approach Slab Details see Sheet 2.

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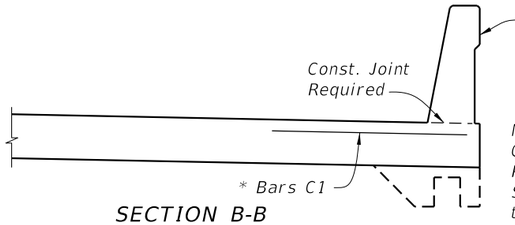
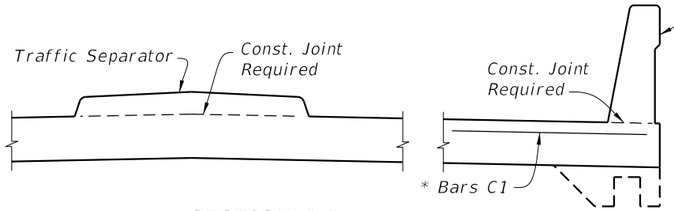
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	APPROACH SLABS (30 FT.) (RIGID PAVEMENT APPROACHES)	INDEX	SHEET
11/01/17					400-091	1 of 2



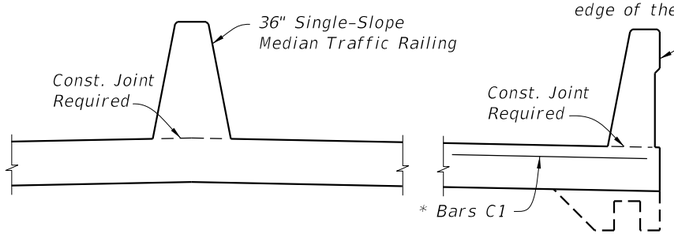
NOTE:
Geometry of Traffic Railings, Pedestrian/Bicycle Railings, Traffic Separators and Sidewalks to match those on adjoining bridge.

SECTION B-B
STANDARD APPROACH SLAB

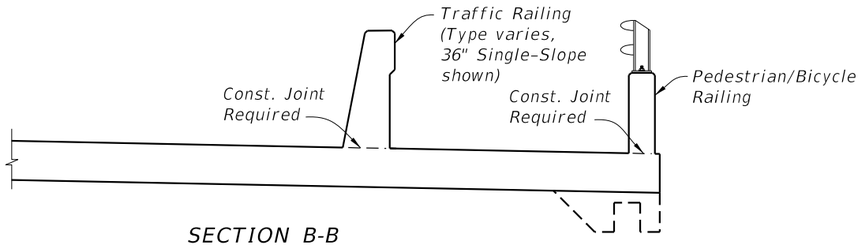


SECTION B-B
APPROACH SLAB WITH TRAFFIC SEPARATOR

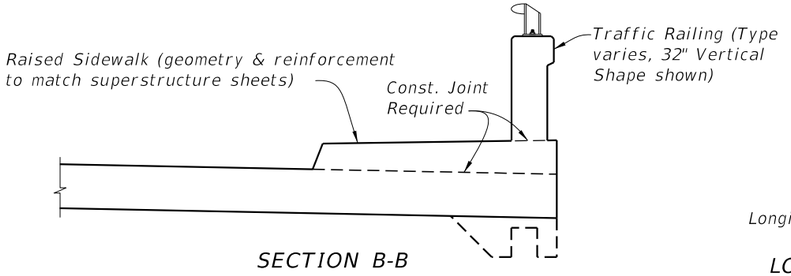
* NOTE: Bars C1 are required as shown when the 36" or 42" Single-Slope Traffic Railing, or the Traffic Railing/Noise Wall, are used at the edge of the Approach Slab.



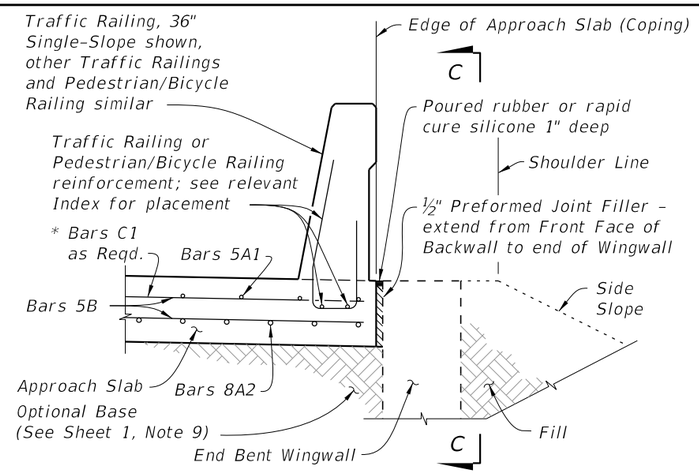
SECTION B-B
APPROACH SLAB WITH MEDIAN TRAFFIC RAILING



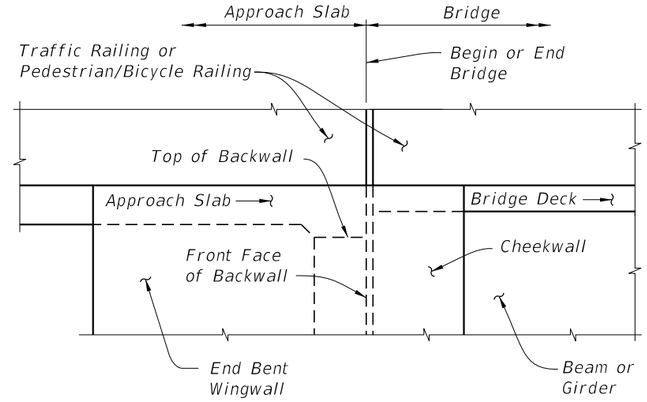
SECTION B-B
APPROACH SLAB WITH SIDEWALK



SECTION B-B
APPROACH SLAB WITH RAISED SIDEWALK

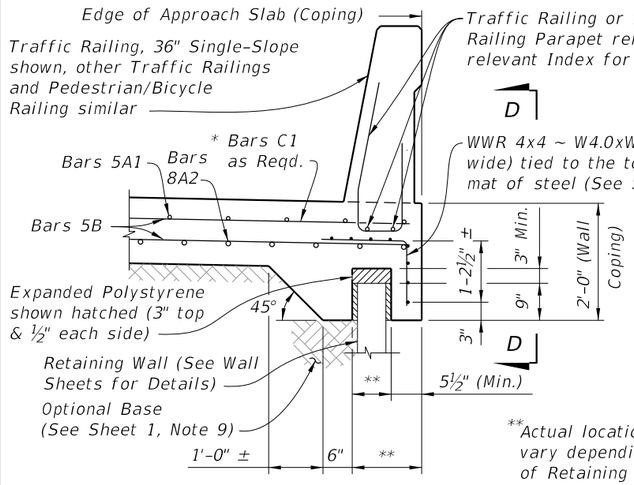


SECTION THRU APPROACH SLAB
AND END BENT WINGWALL



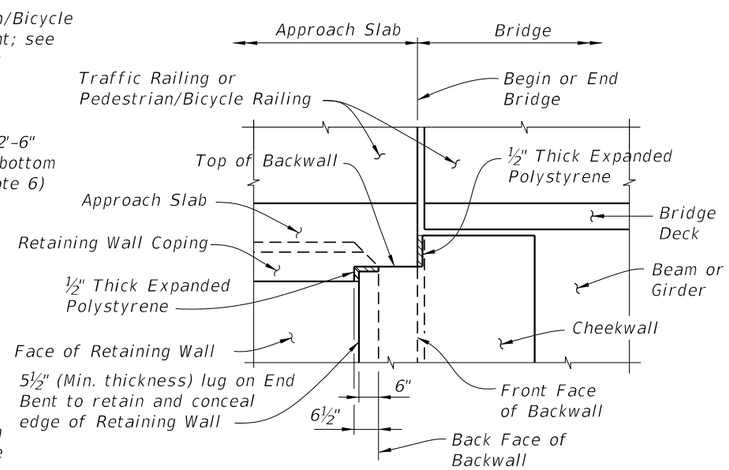
VIEW C-C AT BEGIN OR END BRIDGE (BEAM
BRIDGE SHOWN, FLAT SLAB BRIDGE SIMILAR)

APPROACH SLAB WITH WINGWALL DETAILS



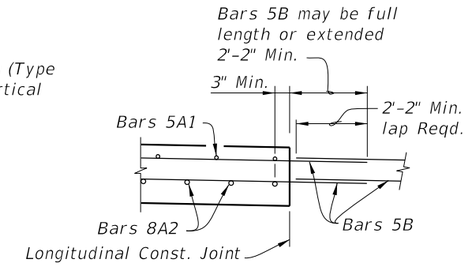
** Actual location & width vary depending on type of Retaining Wall used

SECTION THRU APPROACH SLAB
AND RETAINING WALL

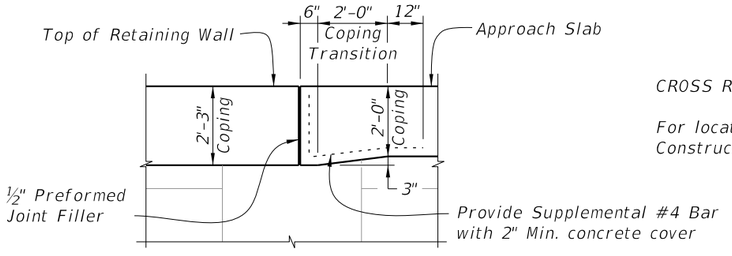


VIEW D-D AT BEGIN OR END BRIDGE (BEAM
BRIDGE SHOWN, FLAT SLAB BRIDGE SIMILAR)

APPROACH SLAB WITH RETAINING WALL DETAILS



LONGITUDINAL CONSTRUCTION
JOINT DETAIL



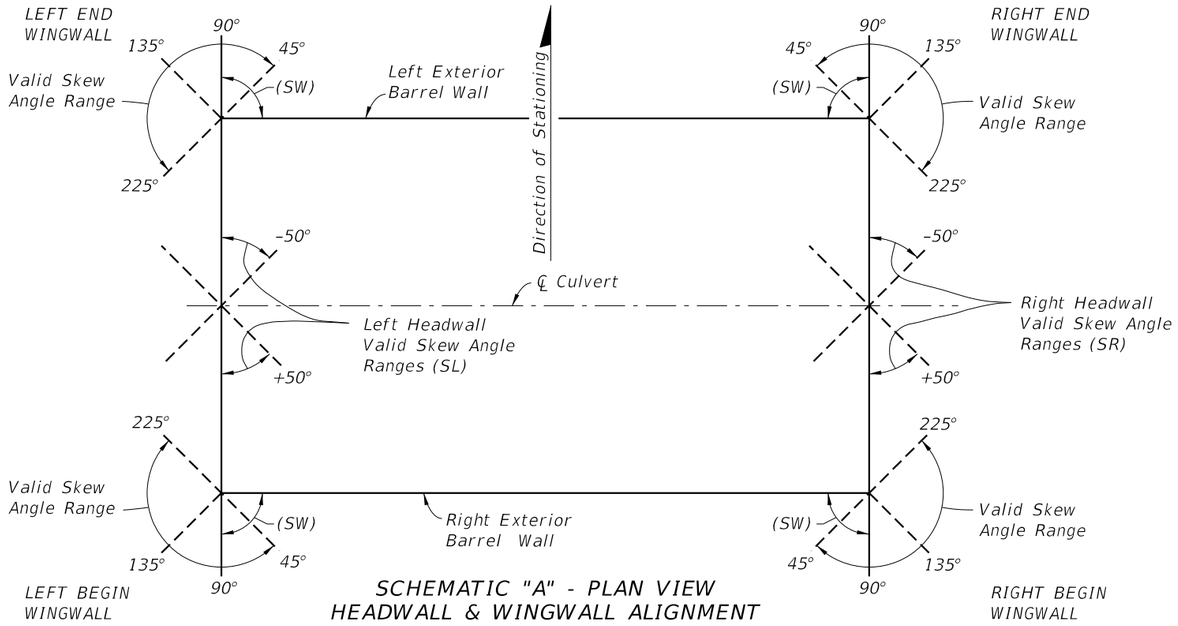
COPING TRANSITION DETAIL FOR
RETAINING WALLS WITH 2'-3" COPING HEIGHT
(Railing Not Shown For Clarity)

CROSS REFERENCES:

For location of Section B-B and Longitudinal Construction Joint see Sheet 1.

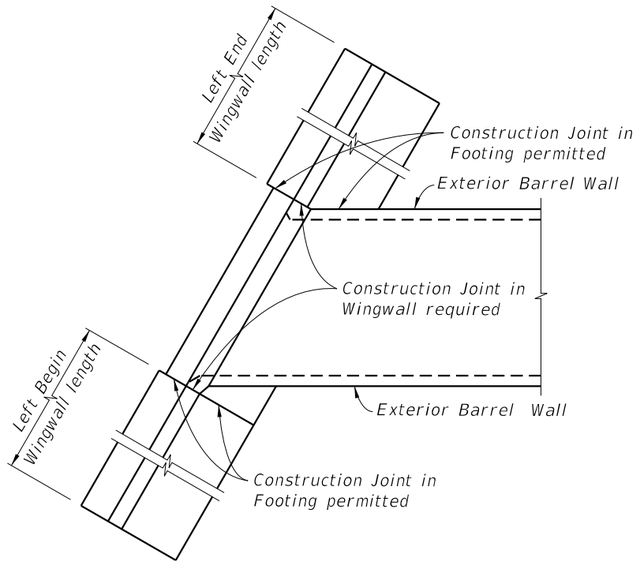
10/17/2024 10:48:44 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2025-26 STANDARD PLANS	APPROACH SLABS (30 FT.) (RIGID PAVEMENT APPROACHES)	INDEX 400-091	SHEET 2 of 2



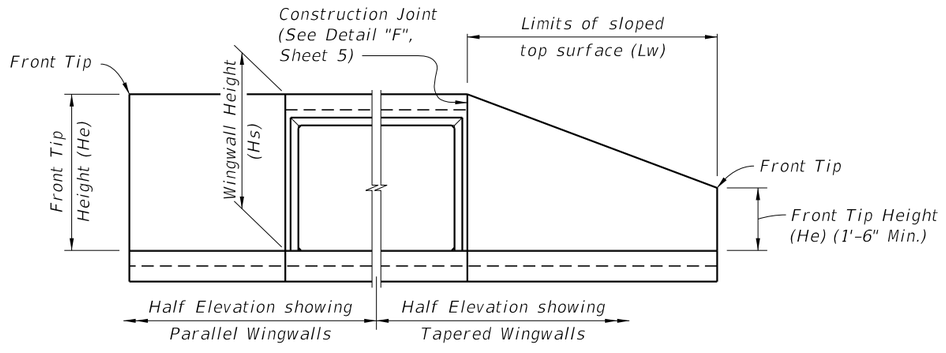
SCHEMATIC "A" - PLAN VIEW
HEADWALL & WINGWALL ALIGNMENT

NOTE: All headwall and culvert skew angles are measured in degrees from a line perpendicular to the centerline of culvert (counter-clockwise positive), see Schematic "B".



PART PLAN SHOWING PARALLEL WINGWALLS
AND LOCATION OF CONSTRUCTION JOINTS

NOTE:
Construction Joints in wingwalls and footings are located as follows: For non-skewed wingwalls they are located adjacent to the exterior face of the exterior barrel wall; when the ℄ of wingwall and ℄ of exterior barrel wall results in an acute angle see Left End Wingwall above, and when the angle is obtuse see Left Begin Wingwall above and Detail C (Sheet 5).



END ELEVATION
OF CULVERT

GENERAL NOTES:

LIVE LOAD: HL-93.

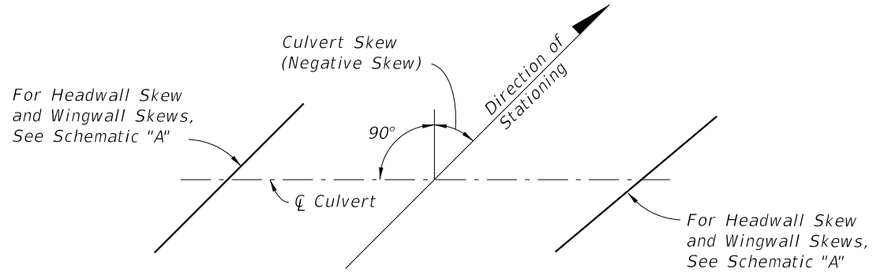
CONSTRUCTION LOADING: It is the construction Contractor's responsibility to provide for supporting construction loads that exceed AASHTO HL-93, and any construction load applied prior to 2 feet of compacted fill placed above the top slab.

SURFACE FINISH: All concrete surfaces shall receive a general surface finish.

SKEWED CONSTRUCTION JOINTS: Construction joints in barrels of culverts with skewed wingwalls may be placed parallel to the headwalls and the reinforcing steel, and the slabs may be cut provided that the cut reinforcing steel extends beyond the construction joint enough for splices to be made in accordance with Table 1 on this sheet. The cost of construction joints and additional reinforcing shall be at the expense of the Contractor.

CULVERT EXTENSIONS: For cut backs and ties into existing concrete box culverts see Sheet 6 of 8.

REINFORCING STEEL: See the "Box Culvert Data Tables" in the Contract Plans for grade and bar spacing. See the Reinforcing Bar List in the Contract Plans for bar sizes and bar bending details.



SCHEMATIC "B" - PLAN VIEW
CULVERT ALIGNMENT

NOTE: For Culvert Skew see Contract Plans.

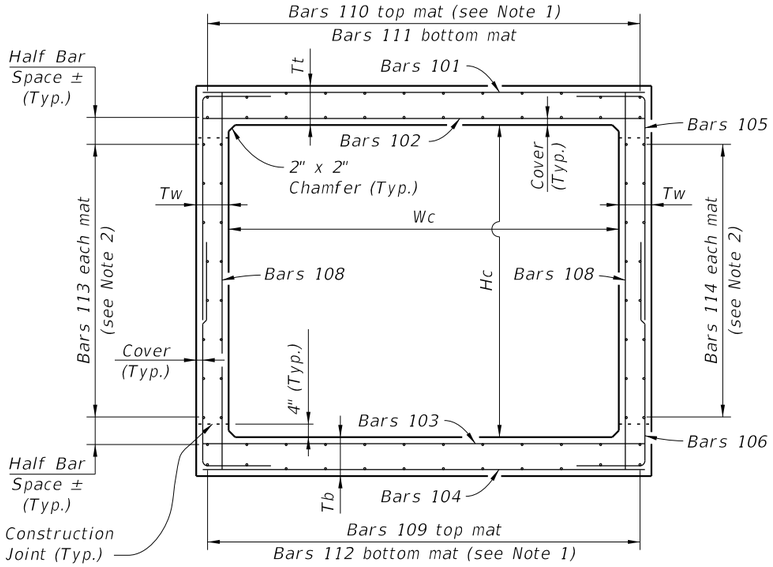
TABLE 1 - MINIMUM BAR SPLICE LENGTHS FOR LONGITUDINAL REINFORCING

BAR SIZE	SPLICE (CLASS B)		BAR SIZE	SPLICE (CLASS B)	
	CLASS II (3400 psi)	CLASS IV (5500 psi)		CLASS II (3400 psi)	CLASS IV (5500 psi)
#3	1'-4"	1'-0"	#8	3'-5"	2'-8"
#4	1'-9"	1'-4"	#9	4'-3"	3'-4"
#5	2'-2"	1'-8"			
#6	2'-7"	2'-0"			
#7	3'-0"	2'-4"			

TABLE 1 NOTE: Splice lengths are based on an AASHTO Class B tension lap splice for the Specification Section 346 concrete class shown.

10/17/2024 10:48:51 AM

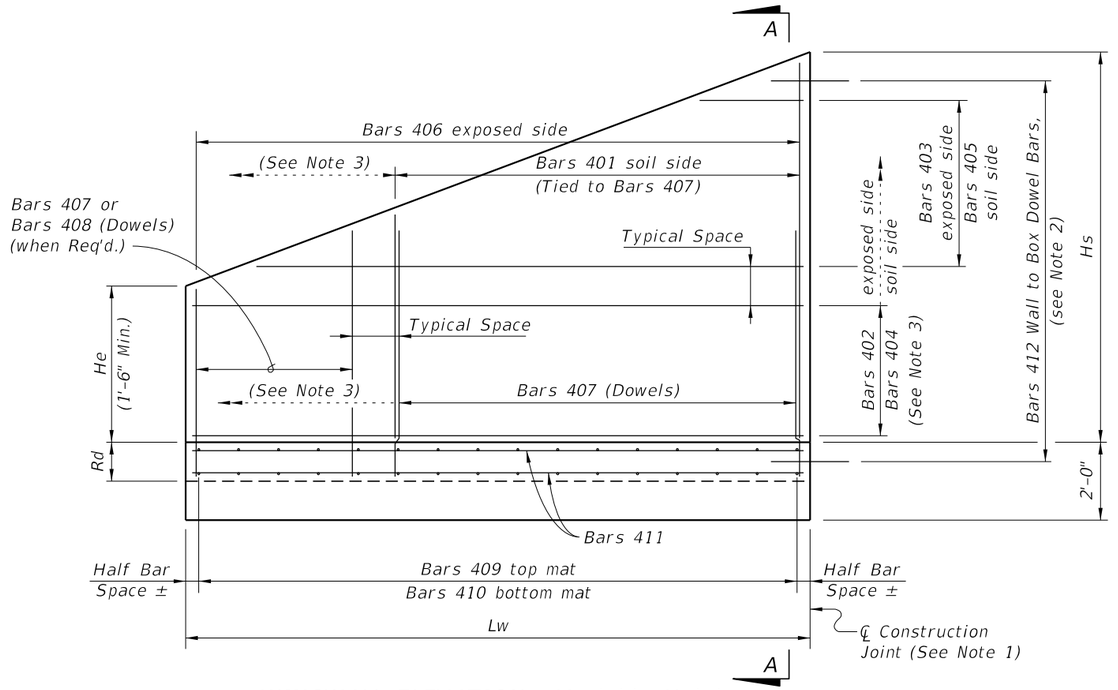
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	400-289	1 of 8



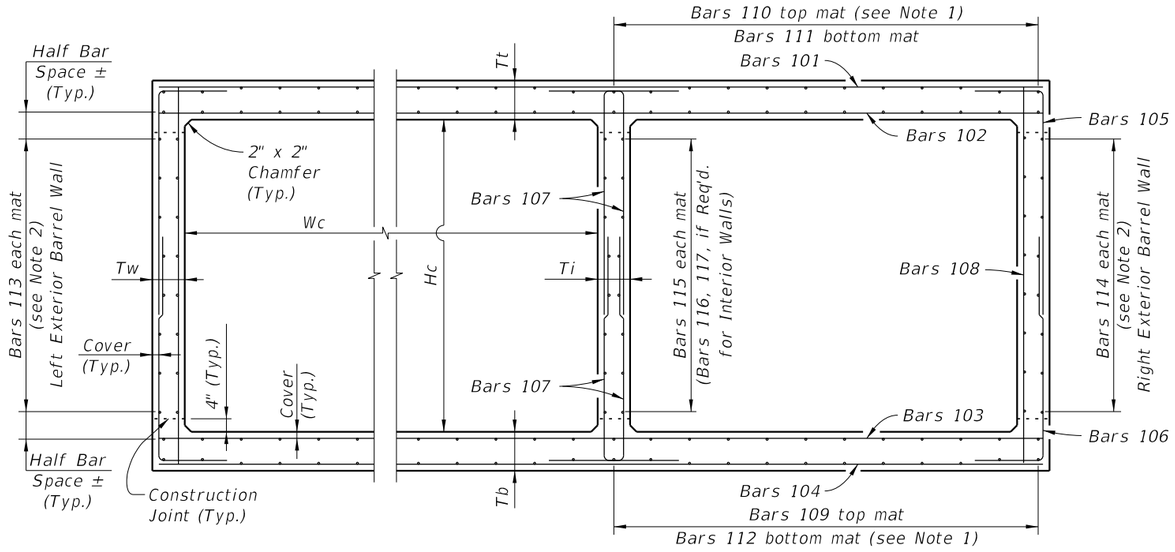
TYPICAL SECTION THRU SINGLE BARREL CULVERT

CULVERT BARREL NOTES:

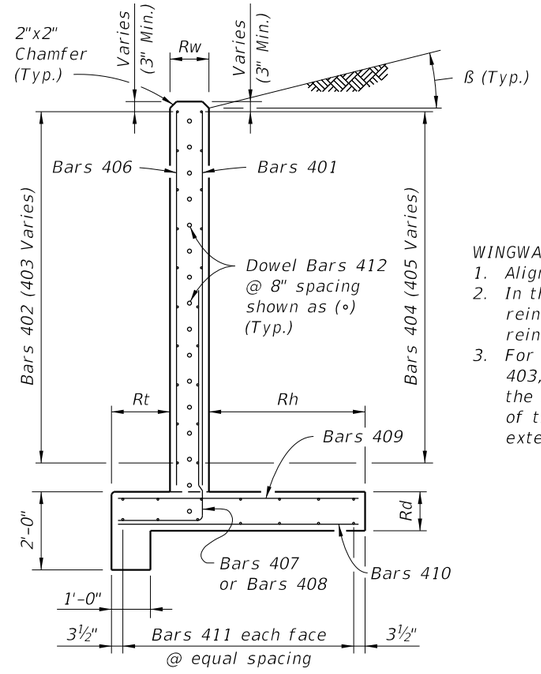
1. *Space Bars 110 and 112 with a bar in each corner, and at the ℄ of interior walls (for multiple barrel culverts only), and the remaining bars placed at equal spacing shown in the Contract Plans. Adjust last bar spacing when required.*
2. *Place Bars 113 and 114 at spacing shown in the Contract Plans evenly between Bars 109 and 111.*
3. *Locate the first transverse bar from the ends of the culvert at one half the bar spacing, but provide the minimum reinforcement cover and not greater than 4" clear.*



WINGWALL ELEVATION - Variable Height
(Left End shown - other corners similar)



TYPICAL SECTION THRU MULTIPLE BARREL CULVERT



WINGWALL SECTION A-A

WINGWALL NOTES:

1. *Align construction joint perpendicular to wingwall.*
2. *In the vicinity of the construction joint, field bend reinforcement as necessary to maintain minimum reinforcement cover.*
3. *For constant height wingwalls, variable length Bars 403, 405 & 408 are not required, and as such the limits of Bars 401 & 407 extend the full length of the wingwall, and the limits of Bars 402 & 404 extend to the full height of the wingwall.*

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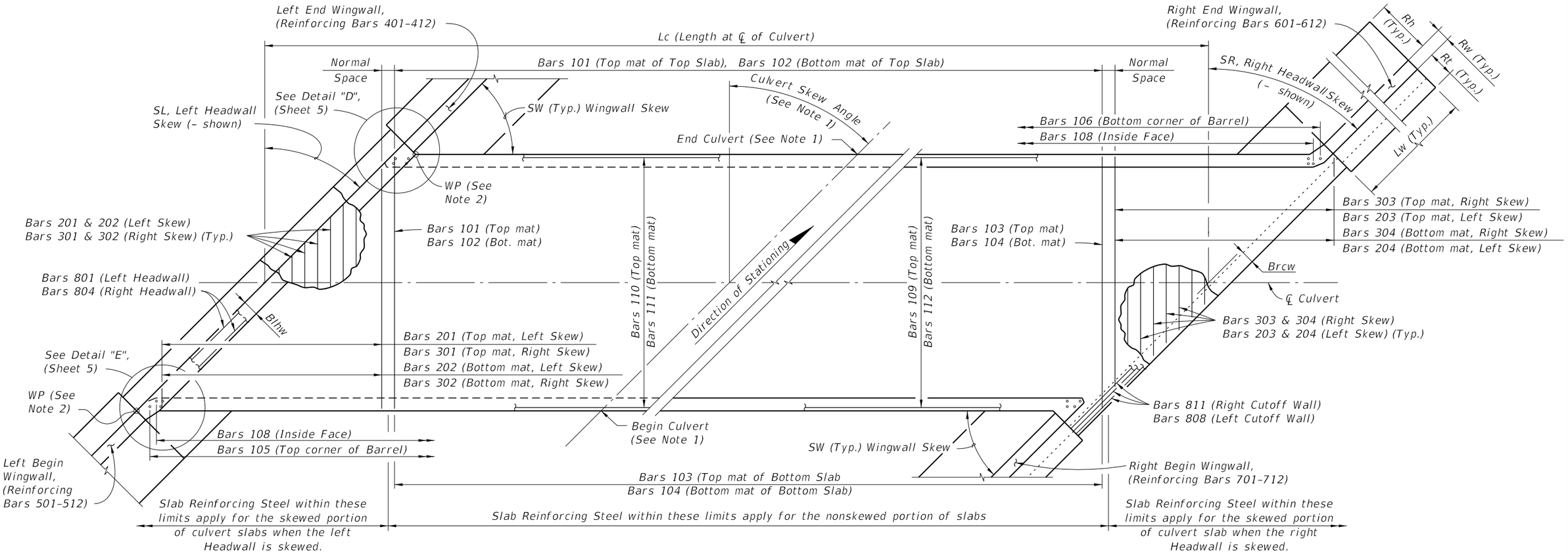
LAST REVISION	REVISION	DESCRIPTION:				
07/01/13			FDOT FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 2 of 8

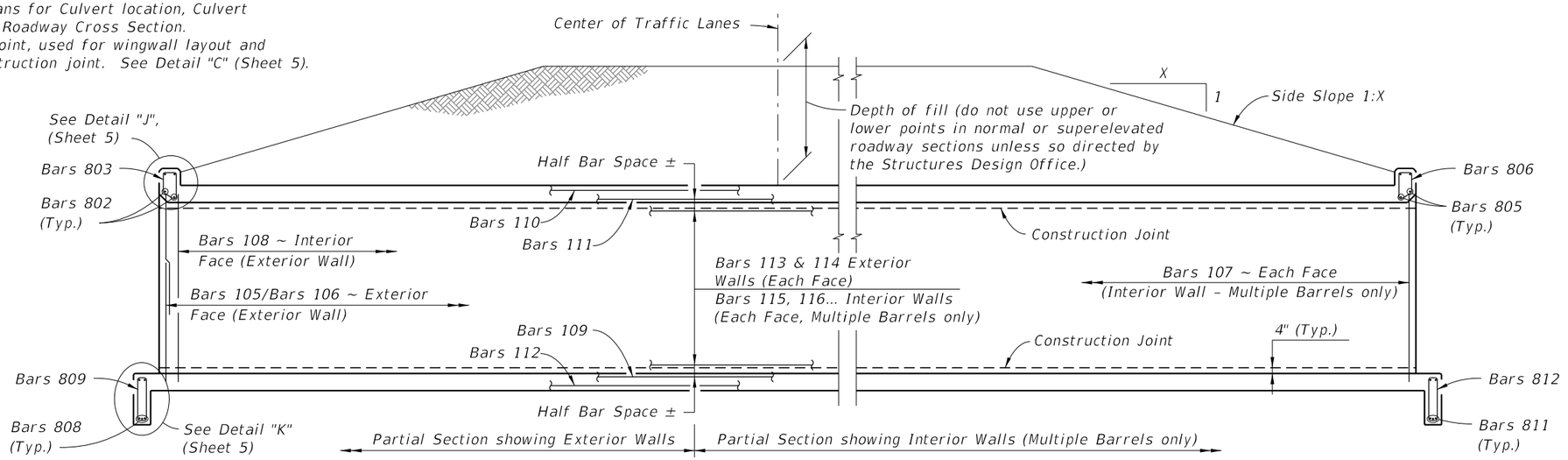


PARTIAL PLAN TOP SLAB
(Left Side, Left Skew)

PARTIAL PLAN BOTTOM SLAB
(Right Side, Right Skew)

NOTES:
1. See Contract Plans for Culvert location, Culvert Skew Angle and Roadway Cross Section.
2. WP = Working Point, used for wingwall layout and location of construction joint. See Detail "C" (Sheet 5).

SINGLE BARREL BOX CULVERT
(Skewed Culvert With Parallel Wingwalls Shown)



LONGITUDINAL SECTION THRU CULVERT
(Transverse Top & Bottom Slab Reinforcing Not Shown For Clarity)

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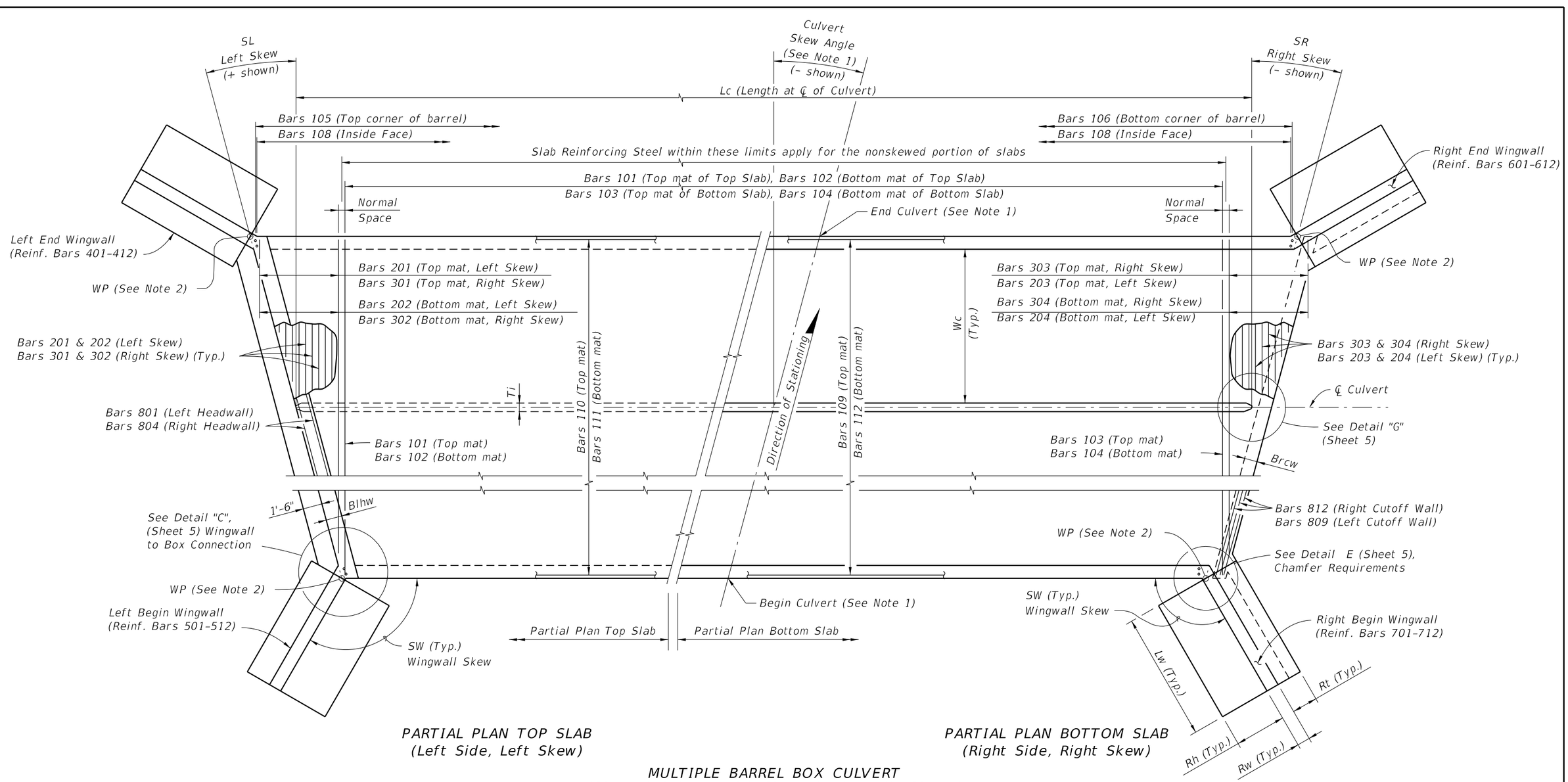
LAST REVISION	REVISION	DESCRIPTION:				
01/01/07			FDOT FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 3 of 8



PARTIAL PLAN TOP SLAB
(Left Side, Left Skew)

PARTIAL PLAN BOTTOM SLAB
(Right Side, Right Skew)

MULTIPLE BARREL BOX CULVERT
(Skewed Culvert With Skewed Wingwalls Shown)

NOTES:
1. See Contract Plans for Culvert Location, Culvert Skew Angle and Roadway Cross Section.
2. WP = Working Point, used for wingwall layout and location of construction joint. See Detail C (Sheet 5).

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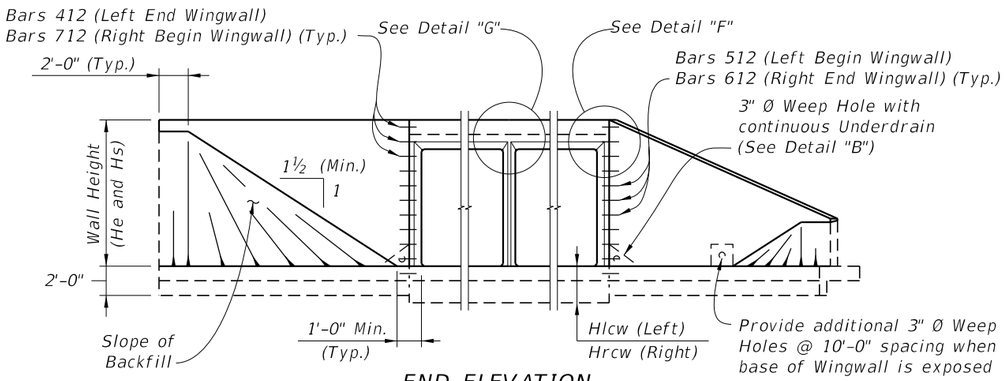
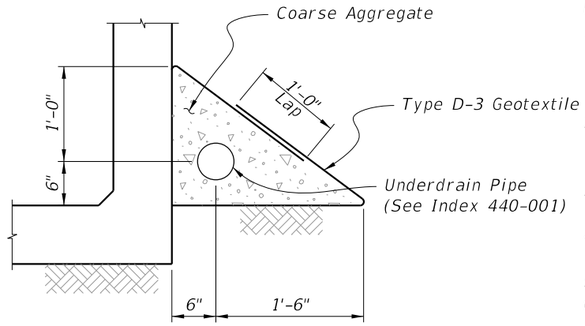
LAST REVISION	REVISION	DESCRIPTION:				
01/01/07			FDOT FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 4 of 8



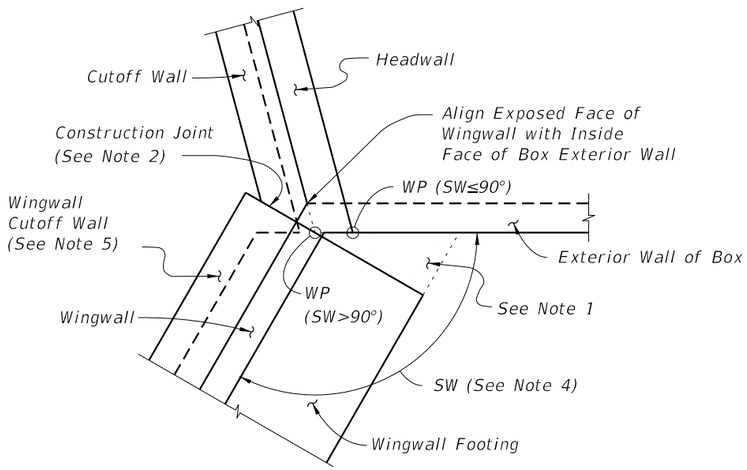
END ELEVATION
(Showing Constant Height And Variable Height Wingwalls)



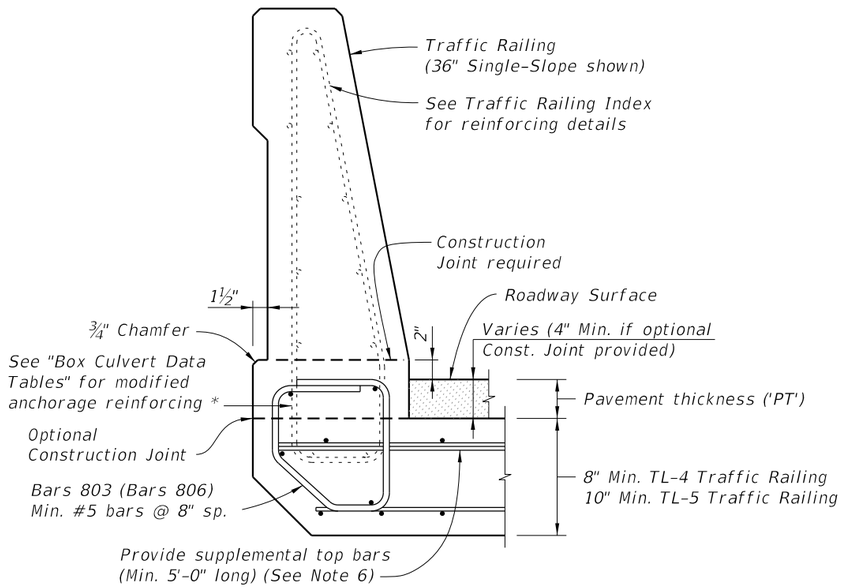
DETAIL "B"
UNDERDRAIN DETAIL
(Similar to Type II ~ Index 440-001)

NOTES:
1. For small angles, the Contractor may elect to fill the area between the box and the wingwall footing with unreinforced concrete. For wingwall skew angles less then 90 degrees, field bend wingwall reinforcement as necessary while maintaining cover. No additional payment will be made for this work.
2. Location of Construction Joint determined by WP at theoretical intersection of:
   - Soil side face of Headwall and outside face of Box Exterior Wall, for SW≤90°;
   - Outside face of Headwall and outside face of Box Exterior Wall, for SW>90°.
3. Provide 6" chamfer when angle 'A' is greater than 45°. Maintain minimum wall thickness. Field adjust reinforcing to maintain cover.
4. Wingwall Skew Angles (SW) are measured from the adjacent box exterior wall to the wingwall.
5. Turn or extend Wingwall Cutoff Wall as necessary to meet Box Cutoff Wall.
6. Provide additional reinforcement in the top of the top slab below traffic railings to ensure a minimum area of 0.80 sq. in./ft. transverse reinforcing.

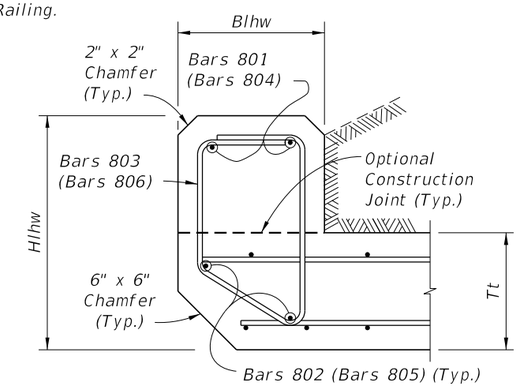
* Included in the cost of the Traffic Railing.



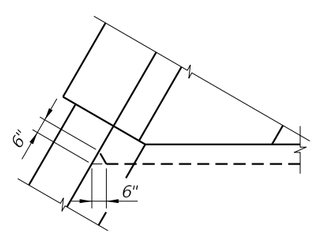
DETAIL "C" - PLAN VIEW
WINGWALL TO BOX CONNECTION
(Left Begin Corner Shown, Other Corners Similar)



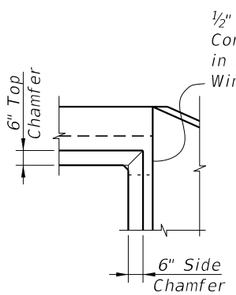
DETAIL "I"
TRAFFIC RAILING ATTACHMENT TO HEADWALL



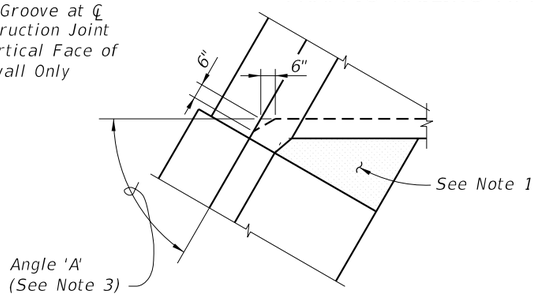
DETAIL "J"
LEFT HEADWALL SECTION
(Right Headwall similar)



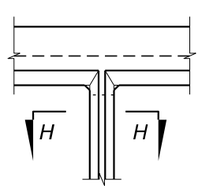
DETAIL "D"



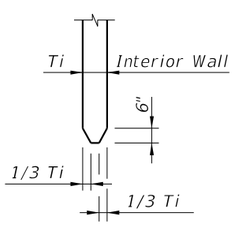
DETAIL "F"



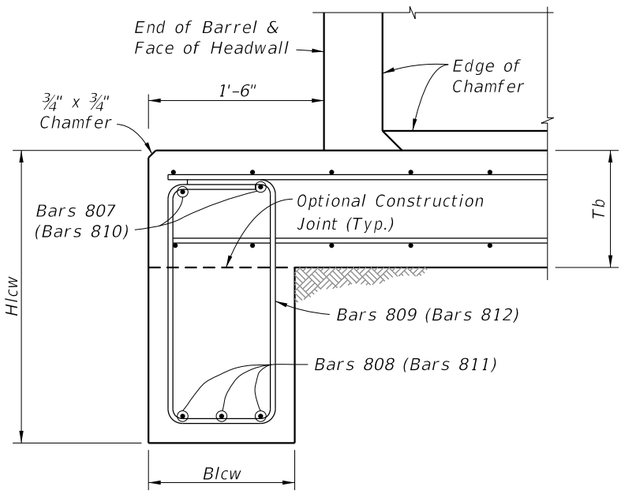
DETAIL "E"



DETAIL "G"



SECTION H-H



DETAIL "K"
LEFT CUTOFF WALL SECTION
(Right Cutoff Wall similar)

CROSS REFERENCE:
See Sheet 3 for locations of Details "D", "E", "J" & "K".
See Sheet 4 for locations of Detail "C".

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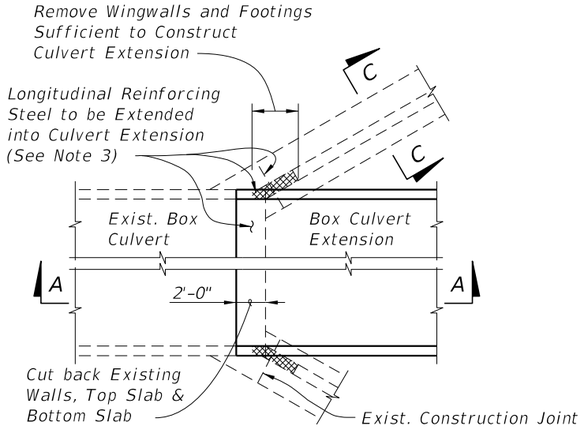
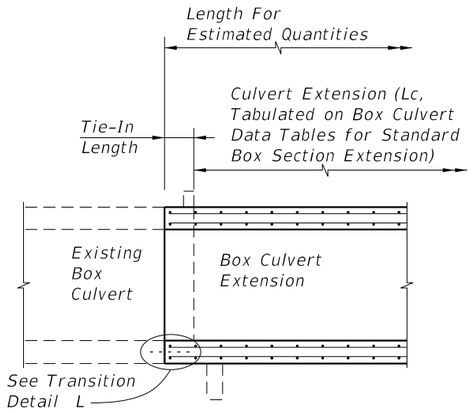
11/01/23			FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 5 of 8

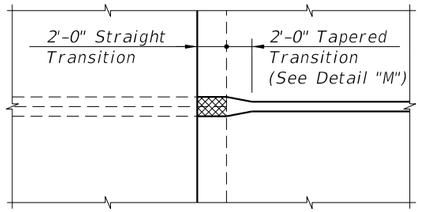


OUTSIDE WALLS OF BOXES

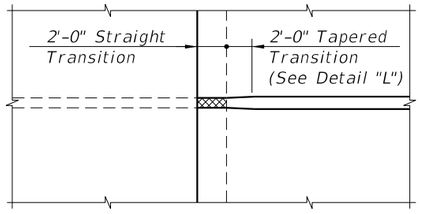


SECTION A-A

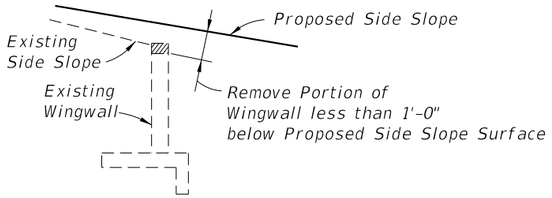
FLARED WINGWALL



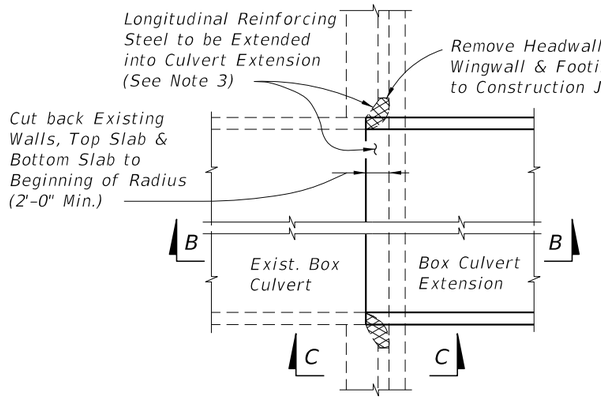
INTERIOR DOUBLE WALLS OF BOXES



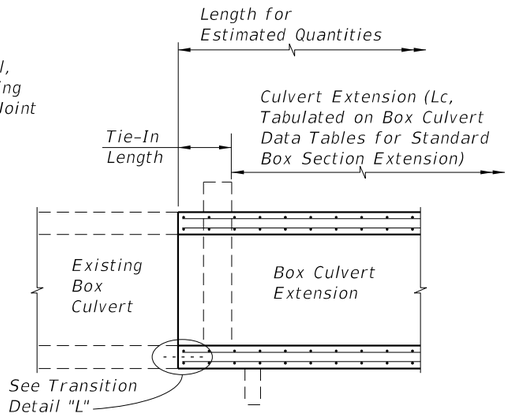
INTERIOR SINGLE WALLS OF BOXES



SECTION C-C



OUTSIDE WALLS OF BOXES



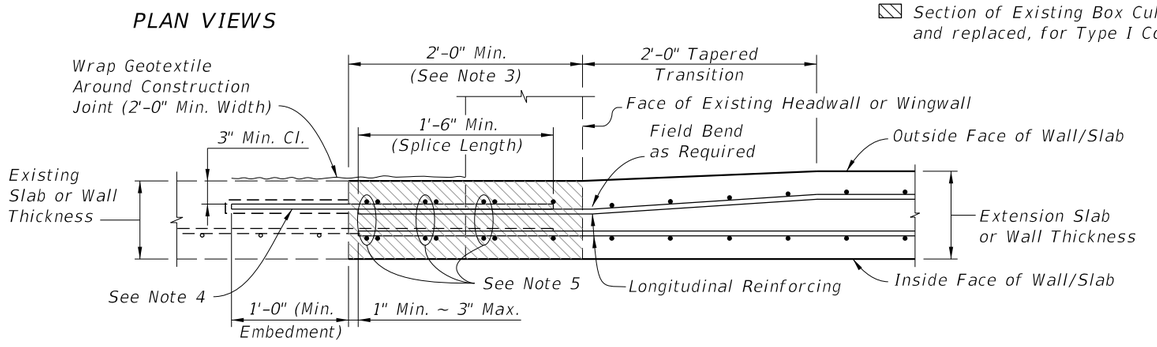
SECTION B-B

STRAIGHT WINGWALL

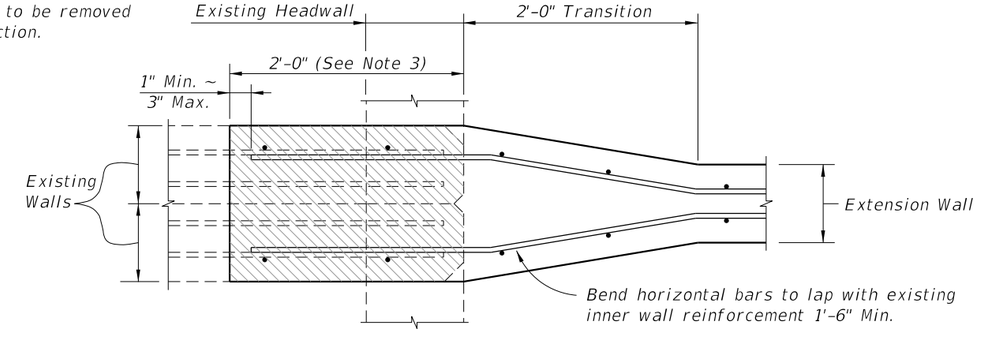
NOTES:

1. The Box Culvert Data Tables and Reinforcing Bar List do not include the additional quantities needed for dowel connections or transitions from double walls of existing concrete box culverts; the cost for additional reinforcement and the thickened concrete wall in the transitional area shall be included in the costs for concrete and steel in the culvert extension.
2. Cost for removal and disposal of material from existing headwalls, wingwalls and box, and cost of cleaning, straightening and extending or doweling longitudinal reinforcing steel shall be included in the cost for concrete and steel of the culvert extension.
3. Remove existing concrete while avoiding damage to existing reinforcement. Clean and straighten existing reinforcement, lap and tie onto extension reinforcement.
4. Dowel in #4 Bars @ 1'-0" max. spacing into wall/slab when there is a single mat of existing reinforcing steel, otherwise splice 1'-6" as shown for inside reinforcement. Use an Adhesive Bonding Material System in accordance with Specifications Section 416 & 937.
5. Provide additional transverse bars for top and bottom slab, parallel and full width of any skewed joint connection when shown in the Plans.
6. See Box Culvert Data Table notes in Plans for Connection Types allowed.

PLAN VIEWS



DETAIL "L" - TRANSITION FOR EXTERIOR WALL/SLAB EXTENSION
(Interior Single Walls Similar)



DETAIL "M" - TRANSITION FOR INTERIOR DOUBLE WALLS OF BOX CULVERTS

TYPE I CONNECTION DETAILS FOR CONCRETE BOX CULVERT EXTENSIONS (CUT BACK EXISTING CONCRETE)

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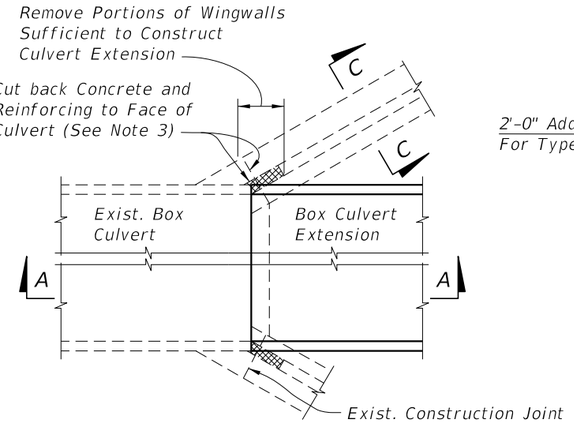
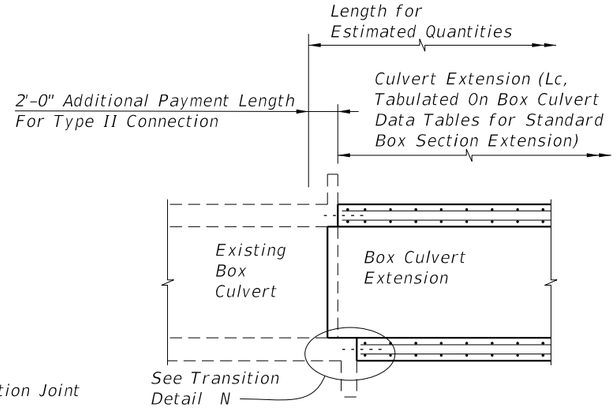
11/01/23			FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	400-289	6 of 8

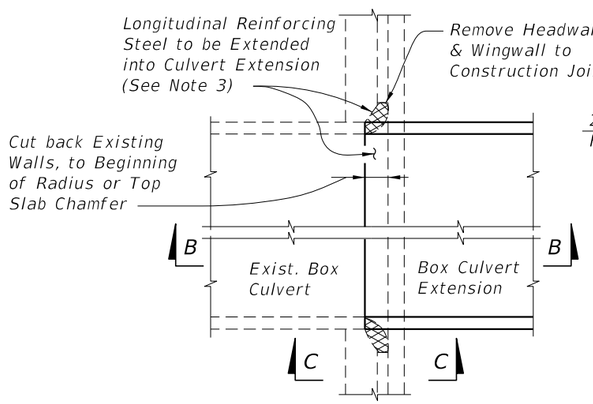


OUTSIDE WALLS OF BOXES

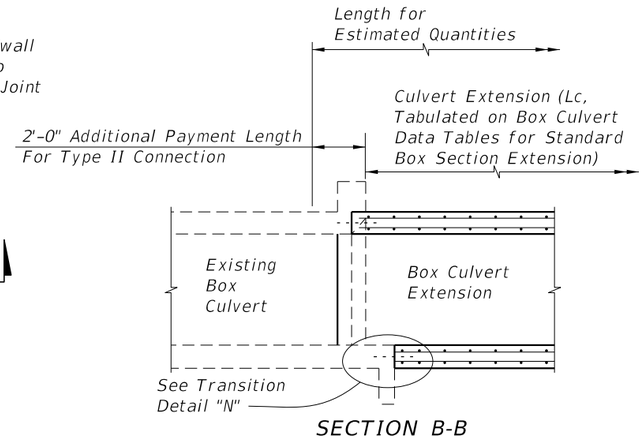


SECTION A-A

FLARED WINGWALL

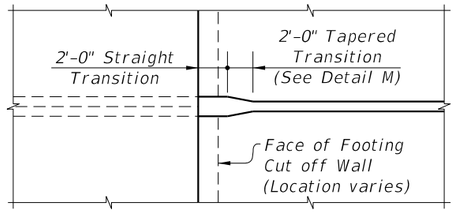


OUTSIDE WALLS OF BOXES

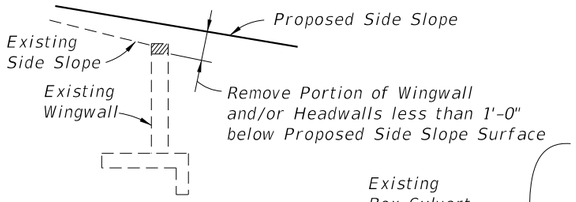


SECTION B-B

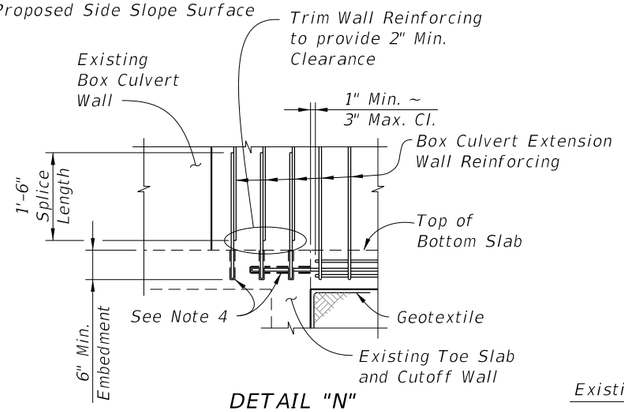
STRAIGHT WINGWALL



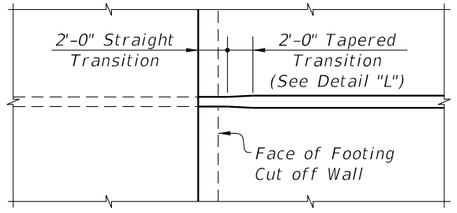
INTERIOR DOUBLE WALLS OF BOXES



SECTION C-C

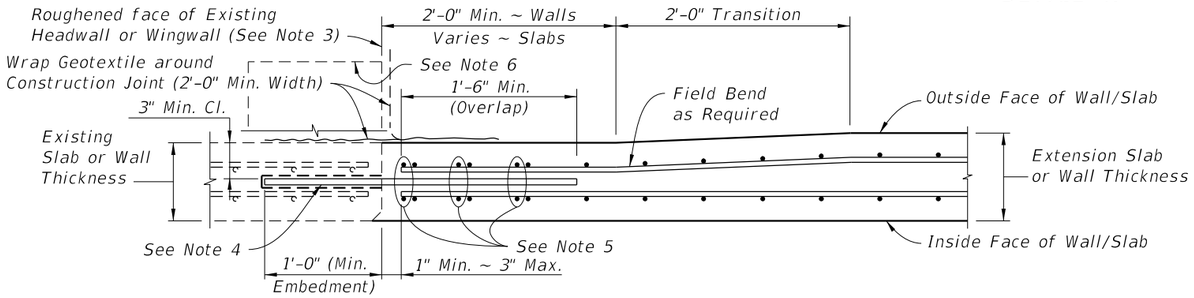


DETAIL "N"

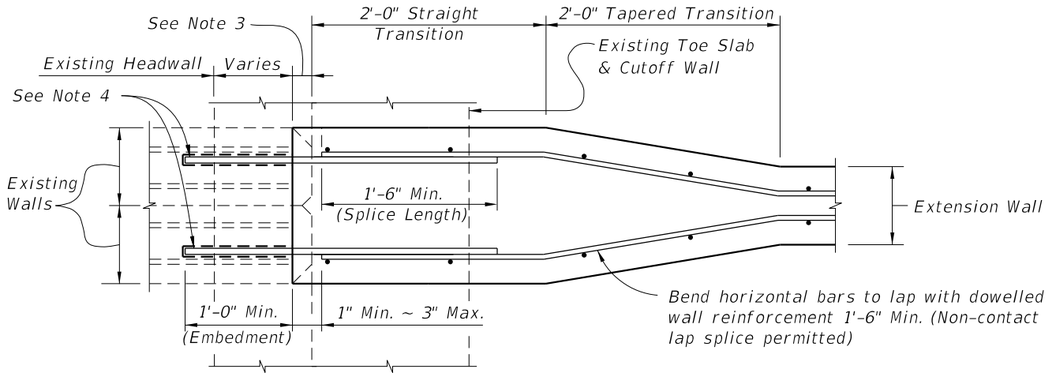


INTERIOR SINGLE WALLS OF BOXES

PLAN VIEWS



DETAIL "L" - TRANSITION FOR EXTERIOR WALL/SLAB EXTENSION
(Interior Single Walls Similar)



DETAIL "M" - TRANSITION FOR INTERIOR DOUBLE WALLS OF BOX CULVERTS

NOTES:

1. The Box Culvert Data Tables and Reinforcing Bar List do not include the additional quantities needed for dowel connections or transitions from double walls of existing concrete box culverts; the cost for additional reinforcement and the thickened concrete wall in the transitional area shall be included in the costs for concrete and steel in the culvert extension.
2. Cost for roughening and cleaning existing headwalls, wingwalls and box, and cost of doweling longitudinal reinforcing steel shall be included in the cost for concrete and steel of the culvert extension.
3. Remove existing concrete and reinforcing back to edge of any chamfers exceeding 1". Roughen and clean existing or exposed surface and coat with a Type A epoxy bonding compound in accordance with the manufacturer's recommendations.
4. Dowel in #5 Bars @ 1'-0" max. spacing horizontally into center of wall/slab. Provide vertical dowels in footing to match size, alignment and spacing of outside vertical wall reinforcing. Use an Adhesive Bonding Material System in accordance with Specifications Section 416 & 937.
5. Provide additional transverse bars for top and bottom slab, parallel and full width of any skewed joint connection when shown in the Plans.
6. Remove top of existing headwall when necessary to provide 1'-0" clearance below finished grade. Saw cut full width and seal with Type F-2 epoxy compound to protect exposed reinforcing.
7. See Box Culvert Data Table notes in Plans for Connection Types allowed.

TYPE II CONNECTION DETAILS FOR CONCRETE BOX CULVERT EXTENSIONS
(ADHESIVE DOWEL TO EXISTING CONCRETE)

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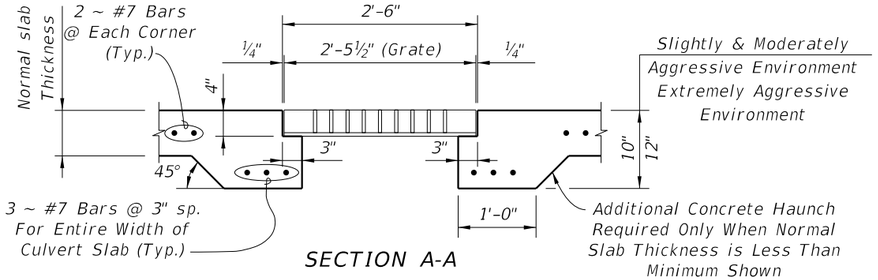
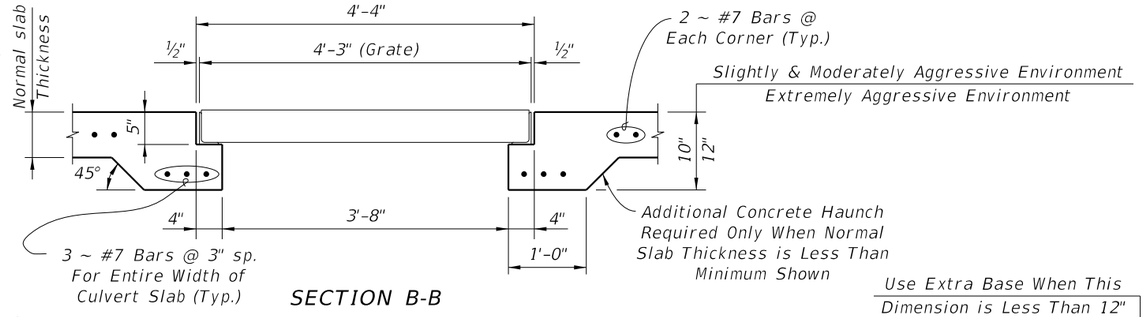
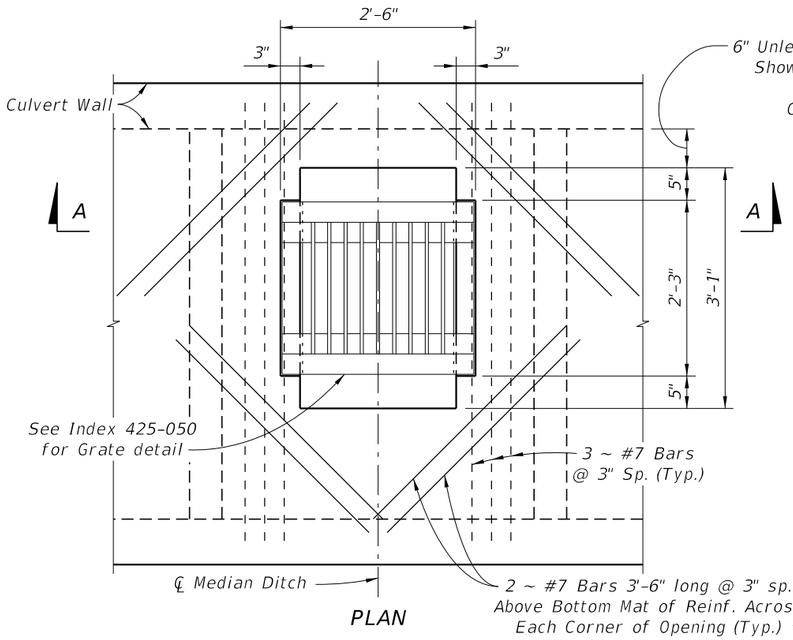
11/01/23			FY 2025-26 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	400-289	7 of 8



SECTION A-A

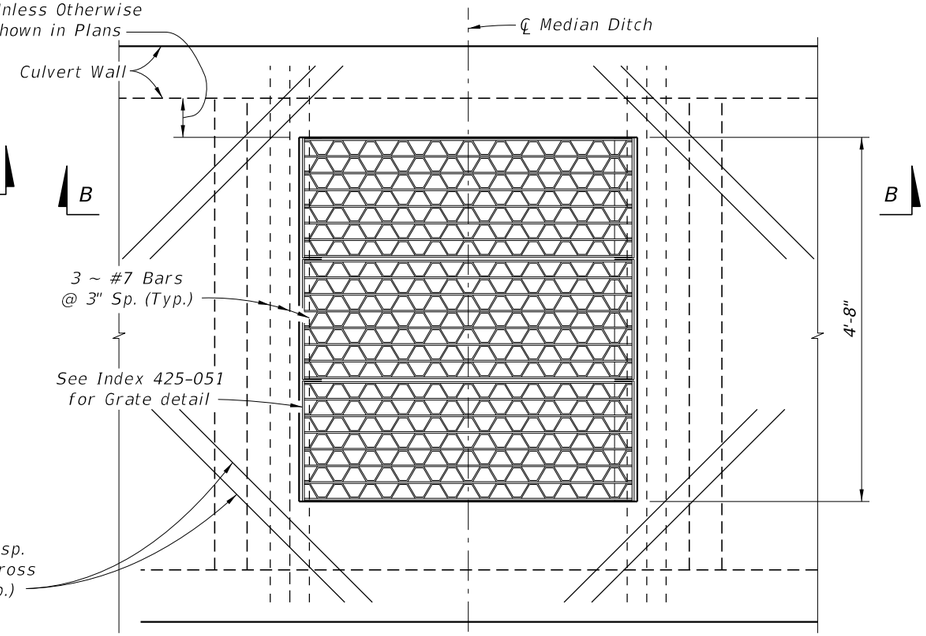


SECTION B-B



PLAN

INLET TYPE A GRATE



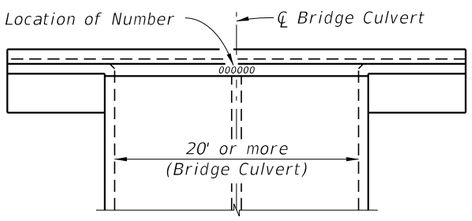
PLAN

INLET TYPE B GRATE

NOTES:

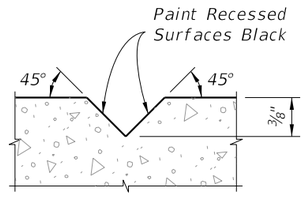
1. Cost of Steel Grating to be included in cost of Box Culvert.
2. All reinforcing shall be 2" clear for Slightly and Moderately Aggressive Environments, and 3" clear for Extremely Aggressive Environments.

INLET IN TOP OF BOX CULVERT



The number is to be placed in the center of the top surface of all bridge culvert headwalls. For Bridge Number see Plan-Profile sheet(s).

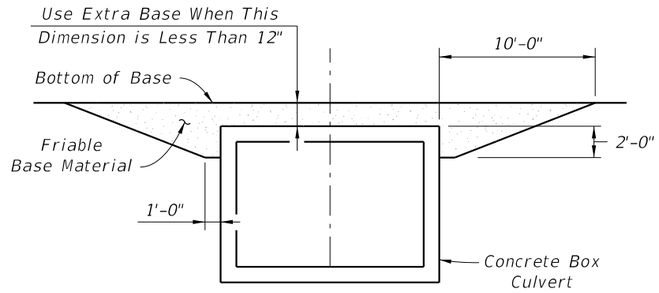
TOP VIEW OF HEADWALL



SECTION THRU RECESSED V-GROOVE TO FORM INSCRIBED FIGURES

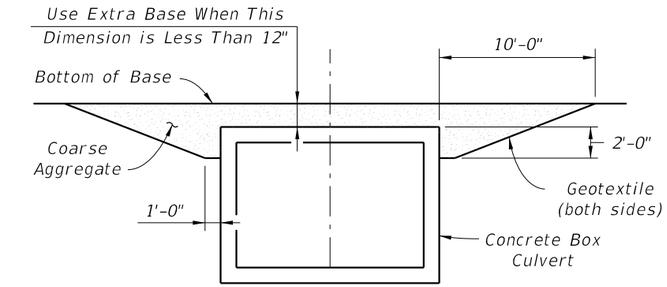
Black Plastic Figures 3" in height as approved by the Engineer may be used in lieu of numbers formed by ⅜" V-Grooves. V-Grooves shall be formed by preformed figures.

BRIDGE CULVERT NUMBER LOCATION



The cost of furnishing and installing extra friable base material shall be included in the cost of the Box Culvert.

FRIABLE BASE



Place coarse aggregate in 6 inch lifts and compact sufficiently as to be firm and unyielding. Provide coarse aggregate gravel or stone meeting the requirements of Specification Section 901-2 or 901-3 respectively. Meet the gradation requirements of Specification Section 901-6, Grades 4, 467, 5, 56 or 57 unless restricted in the plans. Provide Type D-3 Geotextile (see Specification Section 514). The cost of furnishing and installing the coarse aggregate and geotextile shall be included in the cost of the Box Culvert.

ASPHALTIC CONCRETE BASE

NOTE: Extra base is required when cross box culverts are located on facilities subject to high speed traffic (>45 mph) or high traffic volumes (>1600 ADT) and the cover is within the range specified in the notation above.

EXTRA BASE FOR BOX CULVERTS CROSSING UNDER FLEXIBLE PAVEMENT

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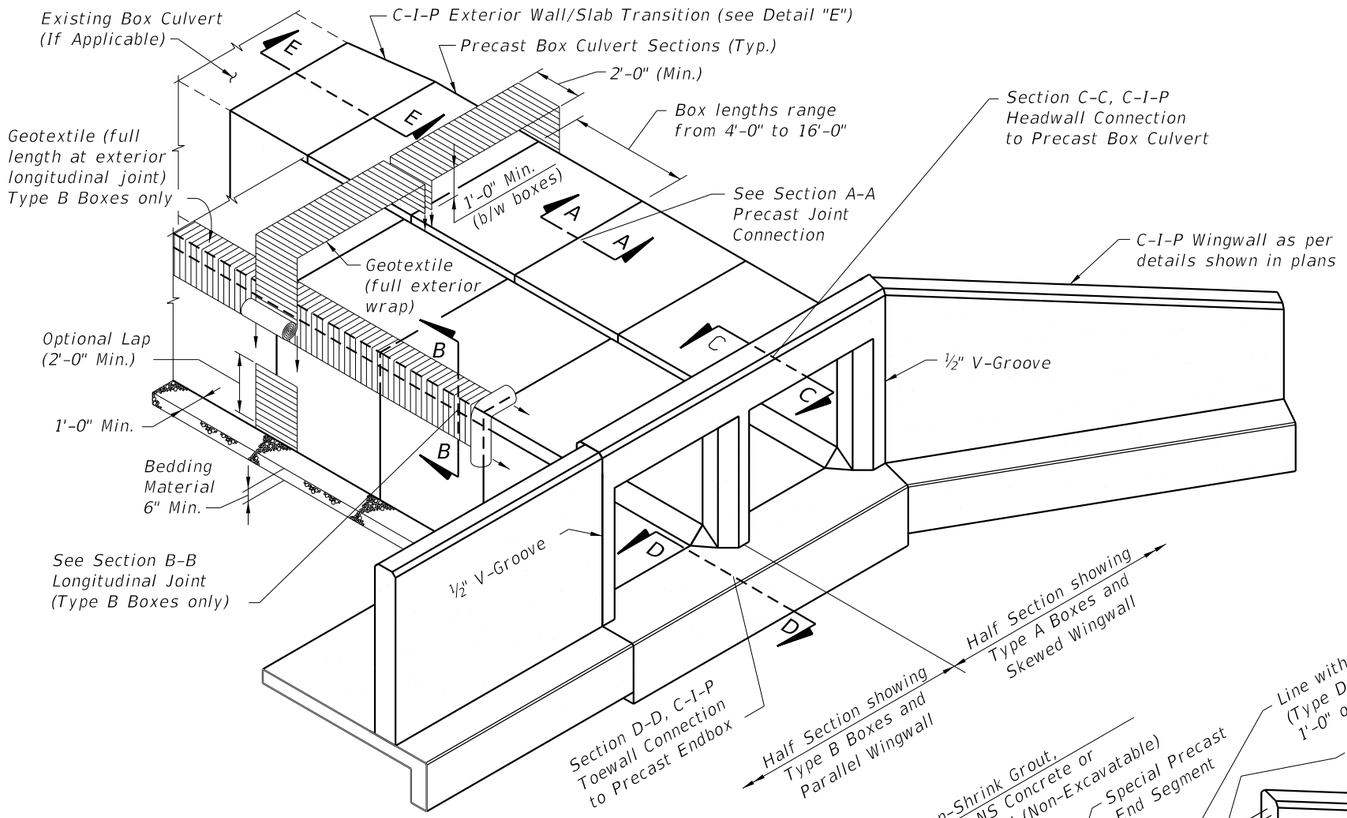
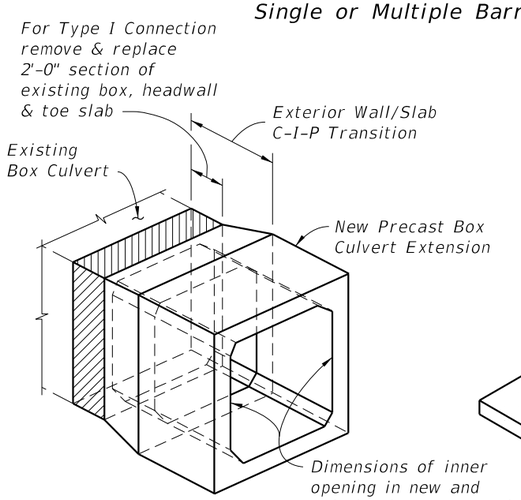
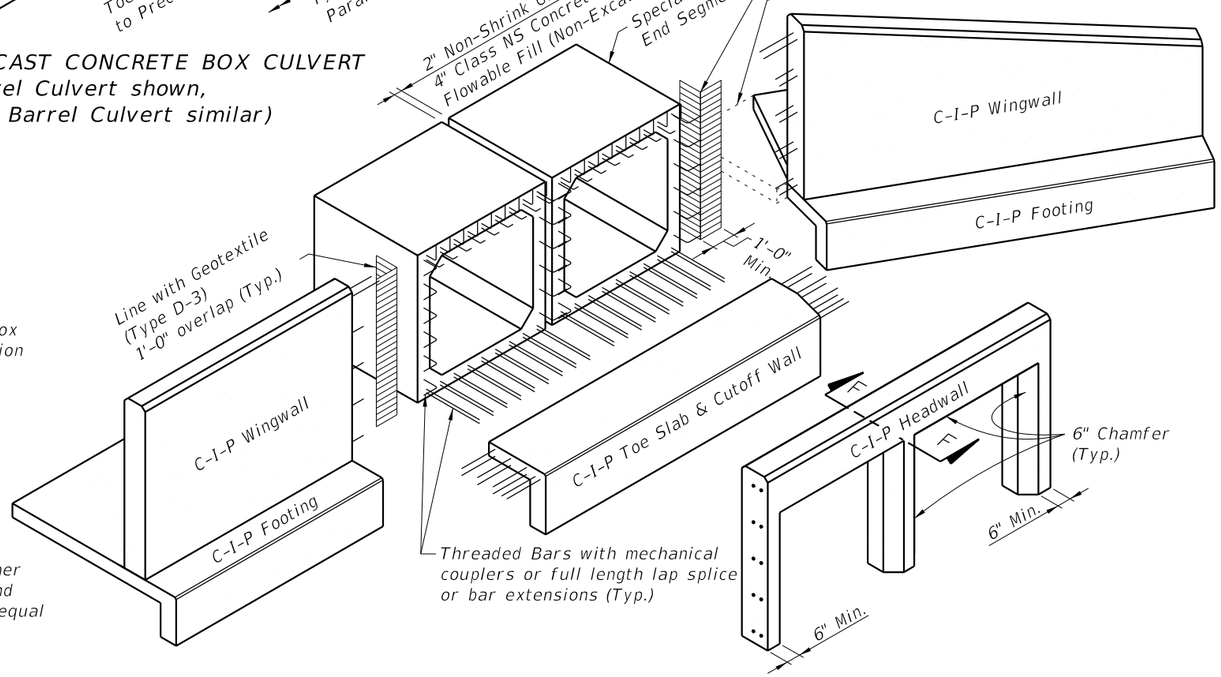


ISOMETRIC VIEW OF PRECAST CONCRETE BOX CULVERT
(Double Barrel Culvert shown, Single or Multiple Barrel Culvert similar)

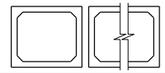
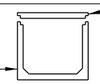
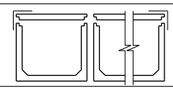
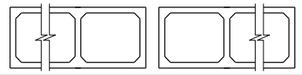


DETAIL E
PICTORIAL VIEW OF EXTERIOR WALL/SLAB TRANSITION



EXPLODED VIEW OF CONNECTIONS AT END OF CULVERT
(Double Barrel Culvert shown, Single or Multiple Barrel Culvert similar)

PERMITTED PRECAST ALTERNATE BOX SECTIONS

TYPE	DESCRIPTION	SINGLE BARREL	MULTIPLE BARRELS	DESIGN NOTES
A	Single Cell Monolithic (Four Sided)			Index 400-292 or Contractor Design
B	Single Cell Two-Piece (Four Sided)			Contractor Design
C	Multicell Monolithic	Not Applicable		Contractor Design

GENERAL NOTES:

1. Specifications:
   - General:
     - FDOT Standard Specifications for Road and Bridge Construction, Section 410 (current edition, and supplements thereto).
   - Concrete (Precast):
     - Class III or Class II Modified (5,000 psi) for slightly aggressive environments.
     - Class IV (5,500 psi) for moderately to extremely aggressive environments.
   - Concrete (Cast-In-Place):
     - Class II (3,400 psi) for slightly aggressive environments.
     - Class IV (5,500 psi) for moderately to extremely aggressive environments.
   - Reinforcing Steel:
     - Maintain minimum clearance of 2" for slightly and moderately aggressive environments or 3" for extremely aggressive environments, unless otherwise shown. Equal area substitution of welded wire (WWR) reinforcement is permitted.
2. Work this Index with the Cast-In-Place Concrete Box Culvert Details and Data Tables shown in the plans, Index 400-289 and the Precast Concrete Box Culverts shown in the shop drawings.
3. All joints between precast sections must be tongue & groove with joint sealant. Joints between cast-in-place & precast sections shall have longitudinal reinforcing extending from top, bottom & both side slabs of the precast box tied to the cast-in-place reinforcement. Single barrel culverts may have precast headwalls cast integrally with the end segment when approved by the Engineer.
4. Extension of existing multiple barrel box culverts with multiple single cell precast box culverts is not permitted unless approved by the District Structures Engineer. Full transition details must be shown in the shop drawings when approved.
5. Culverts larger than the specified size may be substituted with no additional payment to the Contractor. Substitution must be approved by the Engineer, minimum earth cover and invert elevations shown in the Contract Documents must be maintained.

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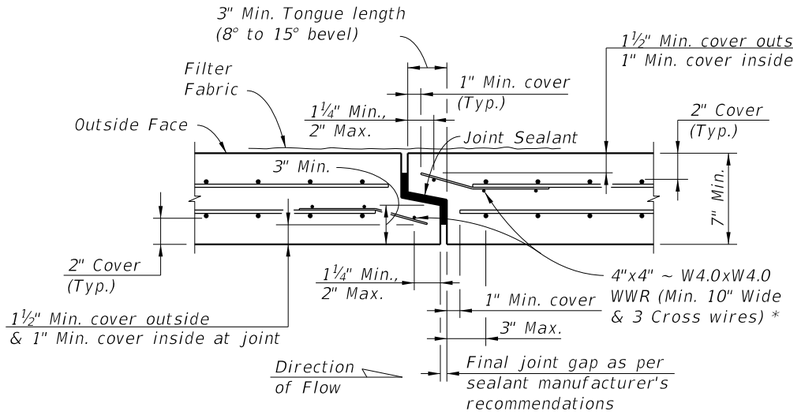
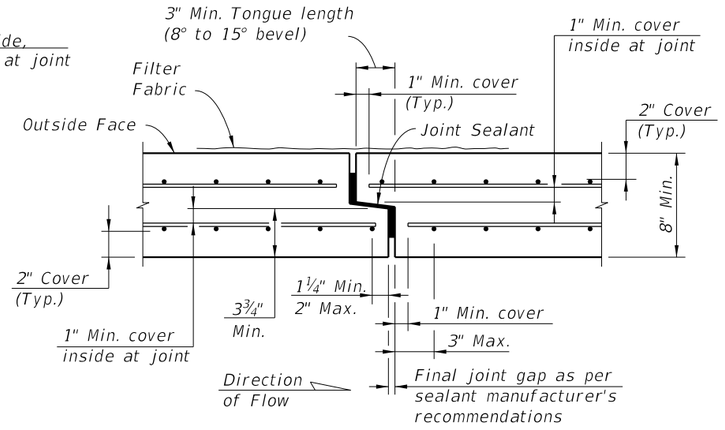
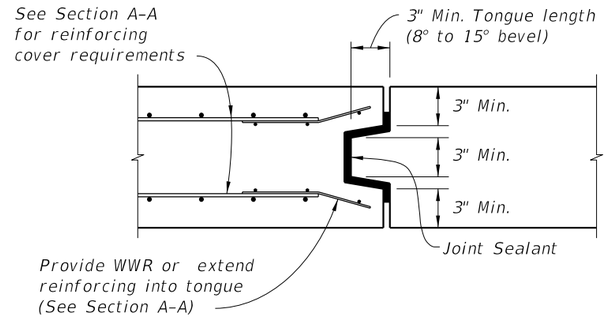


SECTION A-A
(2" Cover - Thin Wall Detail)

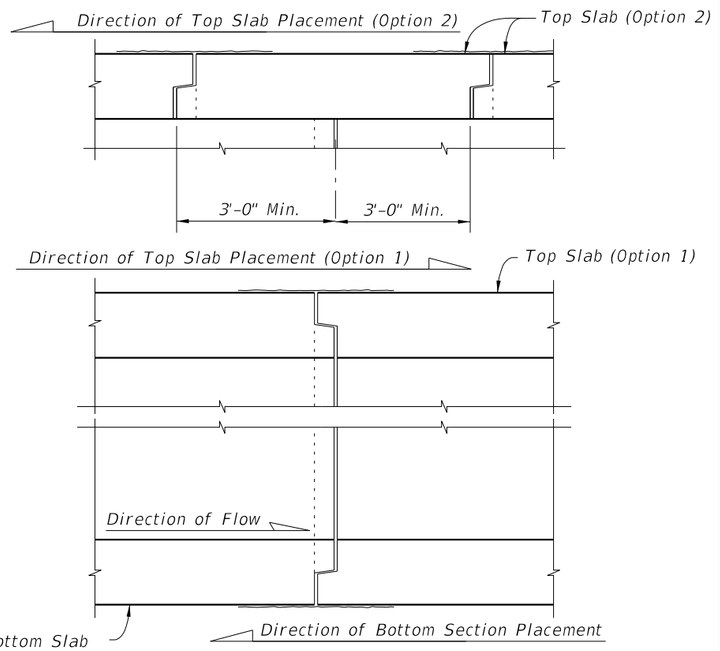


SECTION A-A
(2" Cover - Thick Wall Detail)

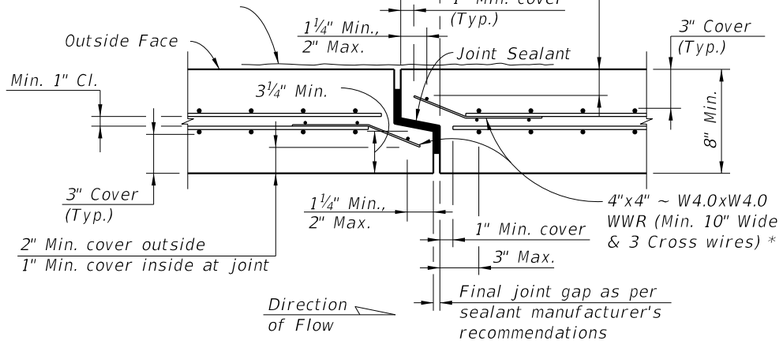


ALTERNATE BOTTOM SLAB TRANSVERSE JOINT
TYPICAL SECTION
(DOUBLE-SIDED TONGUE & GROOVE JOINT)
(All reinforcing not shown for clarity)

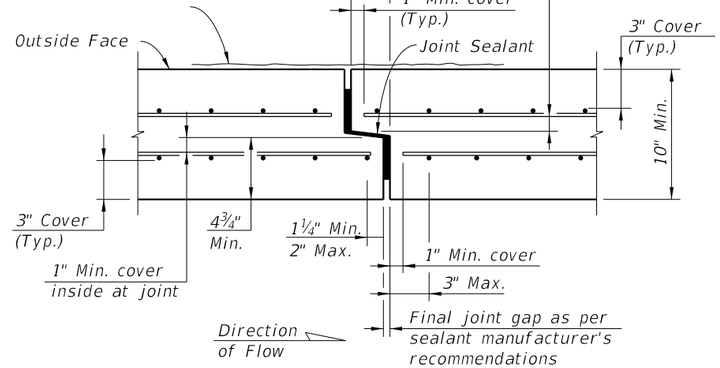
NOTE:
Bottom Slab Joints in Type B Boxes may be single tongue & groove joints as shown in Section A-A when the Top Slab Joints are oriented as shown in Schematic "A".



SCHEMATIC "A"
TYPE B BOX SECTION PLACEMENT
FOR SINGLE TONGUE & GROOVE JOINTS



SECTION A-A
(3" Cover - Thin Wall Detail)



SECTION A-A
(3" Cover - Thick Wall Detail)

* *At the Contractor's option when the box culvert reinforcing utilizes WWR, extend wall and slab reinforcing into the joint and bend to maintain cover in lieu of 4"x4" ~ W4.0xW4.0 WWR at joint. Transverse wire in tongue may be cut at corners of box to allow bending of the WWR.*

PRECAST SEGMENT TO SEGMENT TONGUE & GROOVE TRANSVERSE JOINTS

TWO-PIECE PRECAST SEGMENT ADDITIONAL JOINT DETAILS (TYPE B BOX)

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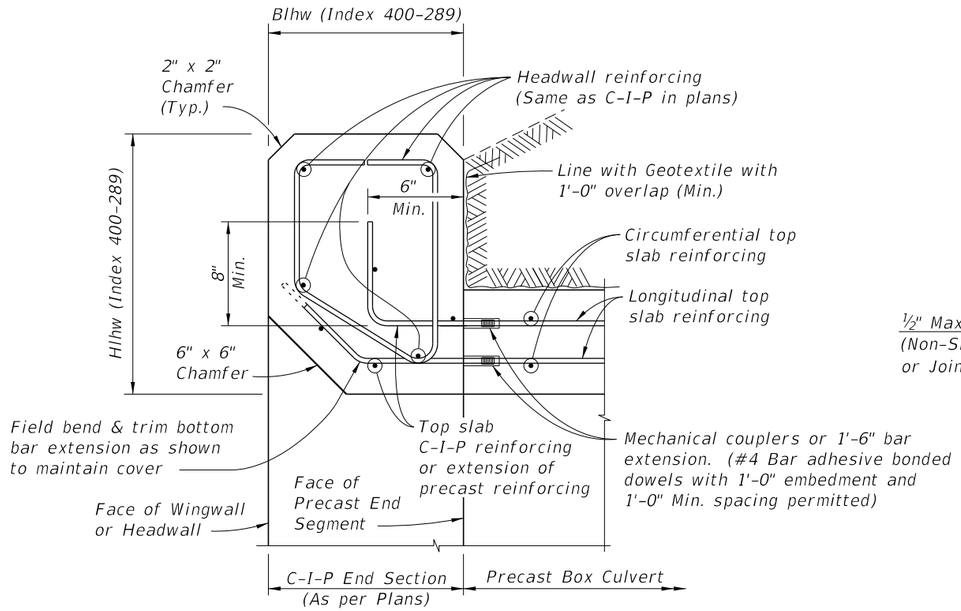
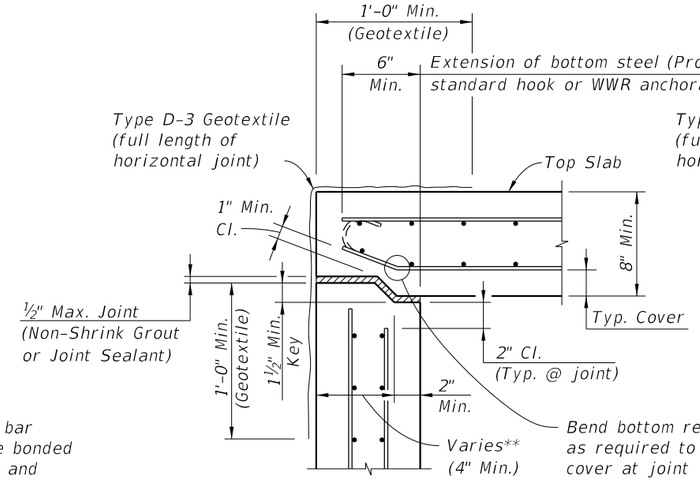
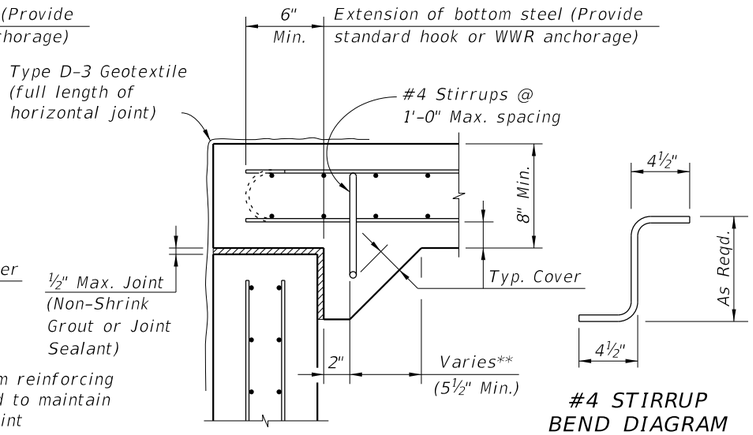


SECTION C-C
C-I-P HEADWALL DETAILS AND CONNECTION TO PRECAST BOX



SECTION B-B
TOP SLAB TO WALL JOINT
(KEYED JOINT)

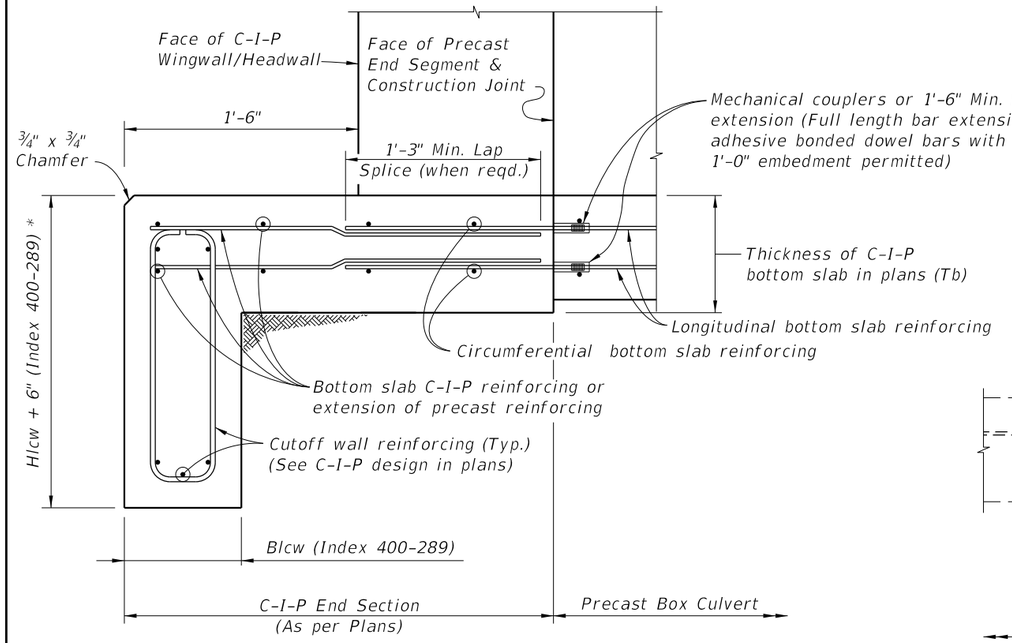


SECTION B-B
TOP SLAB TO WALL JOINT
(HAUNCHED JOINT)

#4 STIRRUP
BEND DIAGRAM

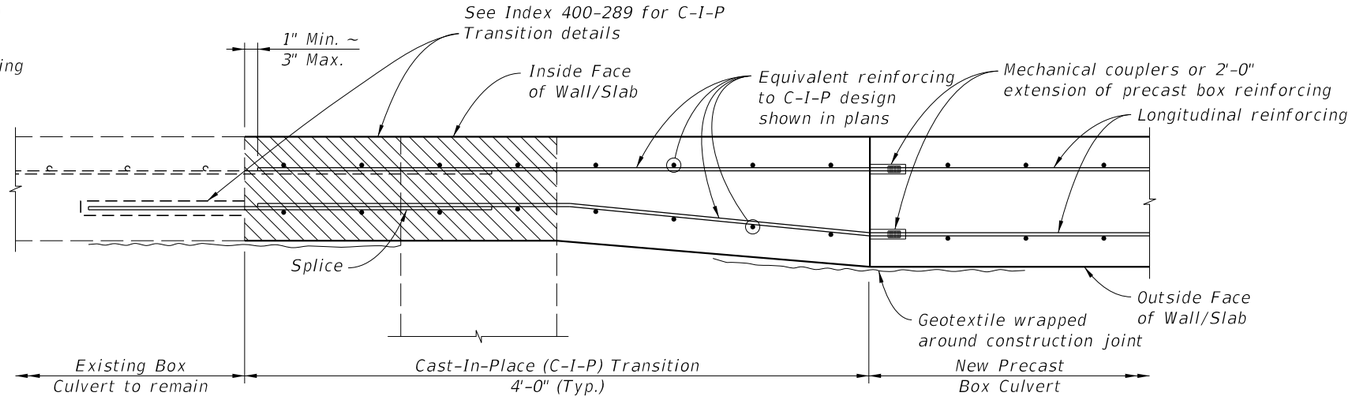
** Provide adequate width to satisfy shear strength requirements at joint

TYPE B BOX LONGITUDINAL JOINTS



SECTION D-D
C-I-P TOE SLAB & CUTOFF WALL DETAILS
AND CONNECTION TO PRECAST BOX

* Provide additional 6" depth of cutoff wall at no additional cost.



Section of Existing Box Culvert to be removed and replaced, for Type I Connection.

SECTION E-E
EXTERIOR WALL/SLAB TRANSITION DETAIL FOR PRECAST EXTENSION
(Type I Connection shown, Type II Connection similar)

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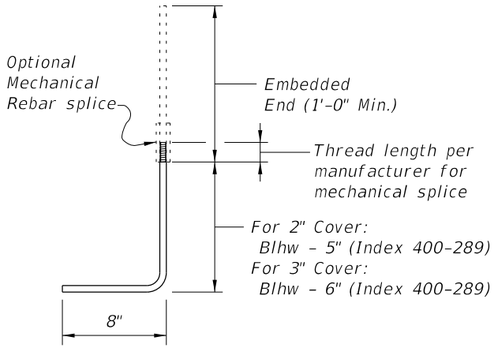
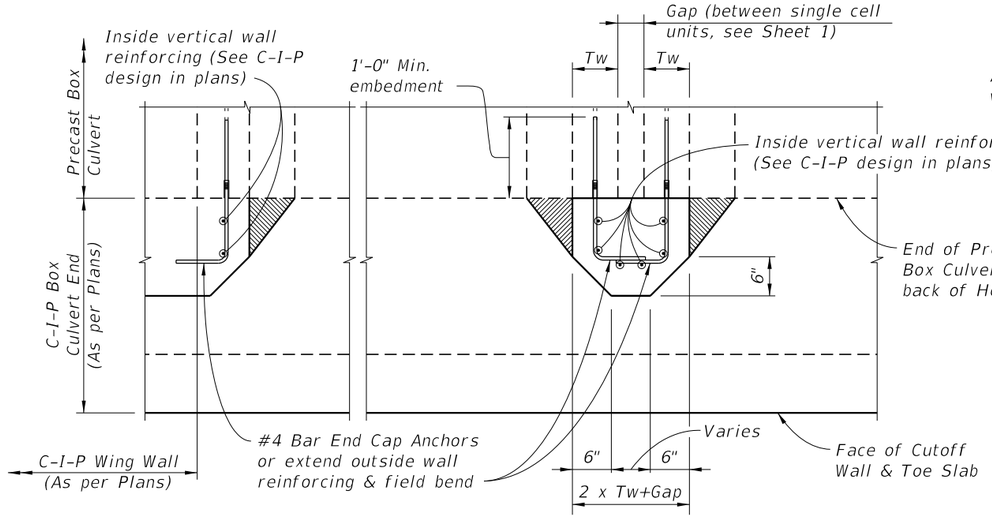
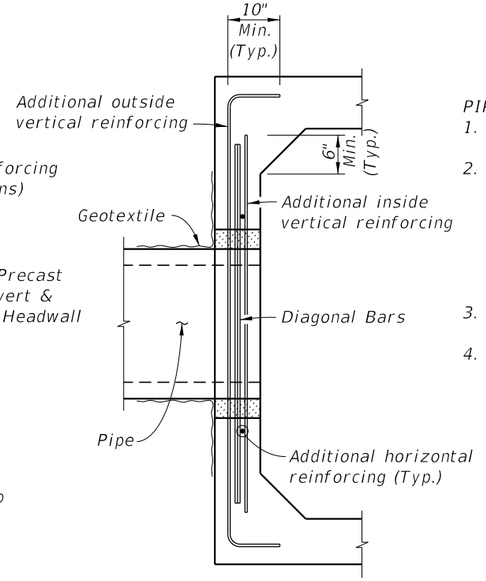


#4 BAR END CAP ANCHOR BAR BEND DIAGRAM



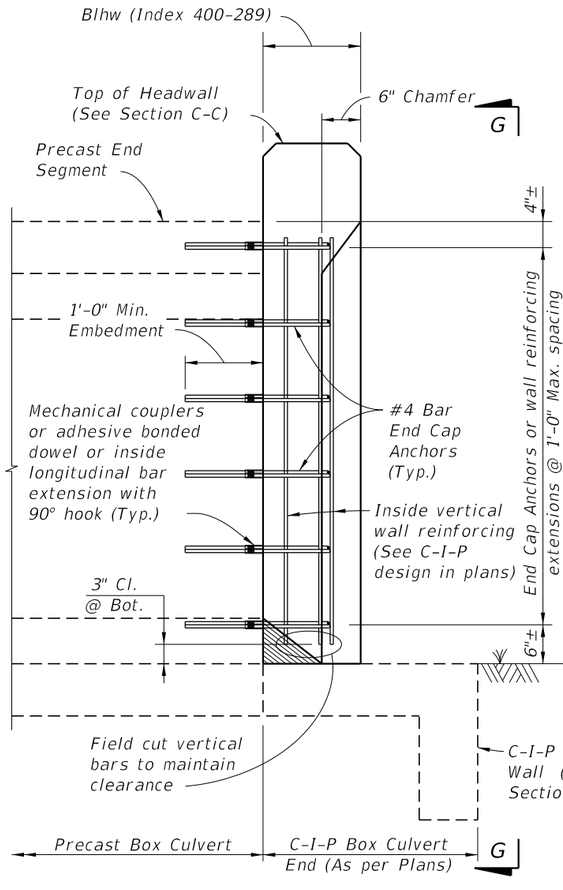
SECTION H-H



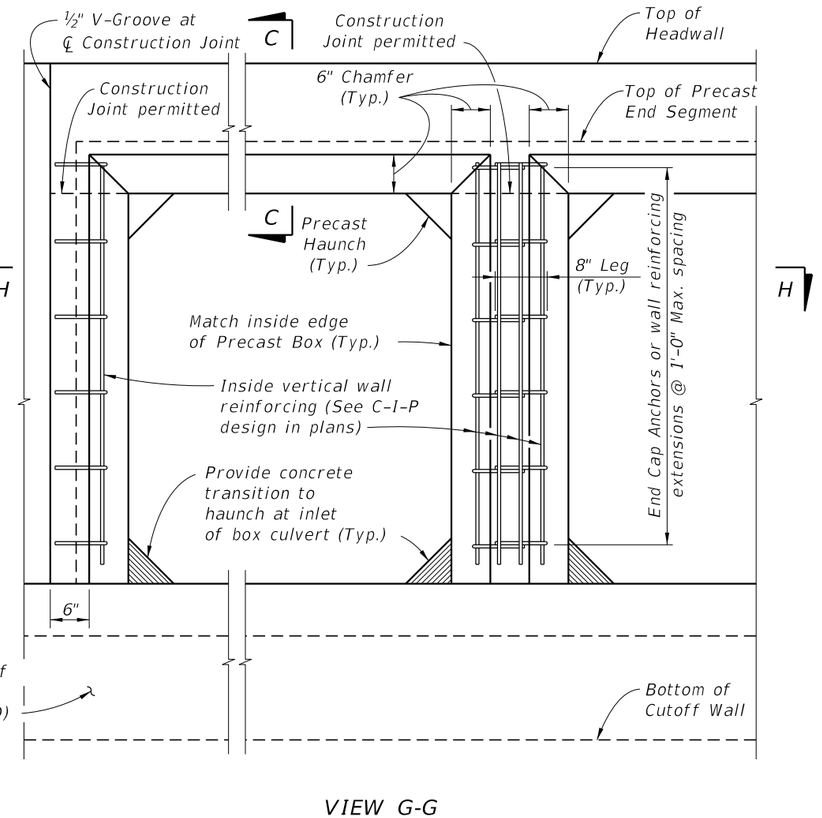
SECTION I-I
(Showing additional blockout reinforcing only)

PIPE BLOCKOUT NOTES:

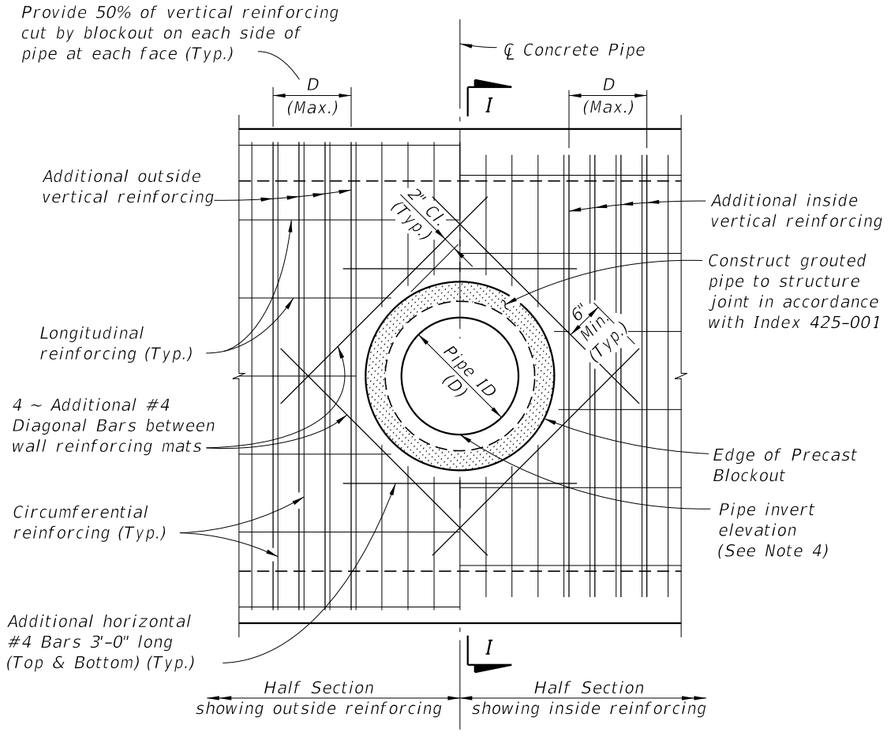
1. Cut box culvert reinforcement as required to maintain 2" cover.
2. For Precast Sections construct opening a minimum of 1'-6" away from any box to box joint, except opening may be a minimum of 1'-0" away from joint when at least 2'-0" of clearance to the box to box joint is provided on the opposite side of the pipe opening.
3. Pipe blockout diameter to be 6" greater than pipe outside diameter.
4. See Drainage Plans for size, placement, and invert elevation.



SECTION F-F



VIEW G-G
(Headwall, Toe Slab and Cutoff Wall Reinforcing not shown for clarity)



ELEVATION VIEW

C-I-P END CAP DETAILS AND CONNECTION TO PRECAST BOX

PIPE BLOCKOUT DETAILS

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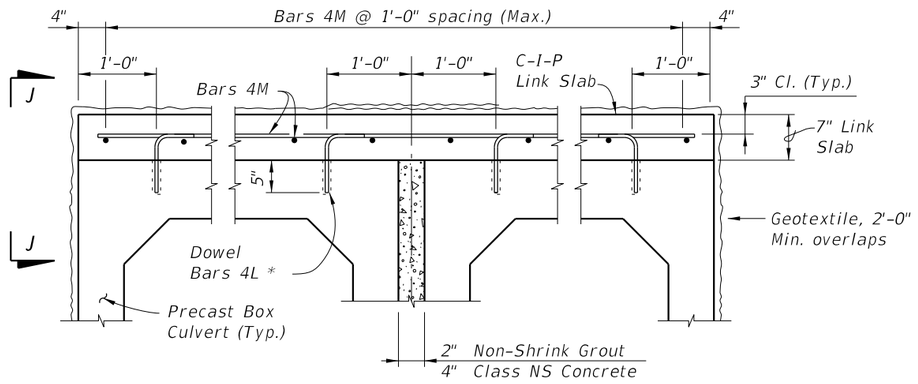


LINK SLAB TYPICAL SECTION
(Multiple Barrel Culvert shown, Single Barrel Culvert similar)

* *Install dowels with an Adhesive Bonding Material System in accordance with Specification Section 416. The Contractor may substitute mechanical couplers in lieu of adhesive bonded dowels. Shift dowels to clear box culvert reinforcing.*

LINK SLAB NOTES:

1. *Provide a Cast-In-Place Link Slab to ensure uniform joint opening of precast box culverts when the differential settlement shown in the plans exceeds the following limits, except that a Link Slab is not required for differential settlements less than ½".*

$$\Delta Y \leq \frac{(L)^2}{760 \times R \times W}$$

Where:
ΔY = Maximum Long-Term Differential Settlement (ft.)
R = Exterior height of Box Culvert (ft.)
W = Length of Box Culvert Segments (ft.)
L = Effective length for single curvature deflection (ft.)

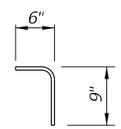
2. *Extend Link Slab to back face of headwalls and to limits of existing box culverts for extensions.*

ESTIMATED LINK SLAB QUANTITIES		
ITEM	UNIT	QUANTITY
Class II or IV Concrete (Culvert)	CY/SF	0.0216
Reinforcing Steel (Roadway)	Lb./SF	1.52

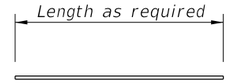
NOTE: Estimated quantities are based the plan area of precast box slabs, and are provided for information only. No additional payment will be made for Link Slabs where these are required for the precast box culverts.

BILL OF REINFORCING STEEL			
MARK	SIZE	NO. REQ'D	LENGTH
L	4	2 per Barrel/Ft.	1'-3"
M	4	As Reqd.	As Reqd.

REINFORCING STEEL BENDING DIAGRAMS



DOWEL BARS 4L

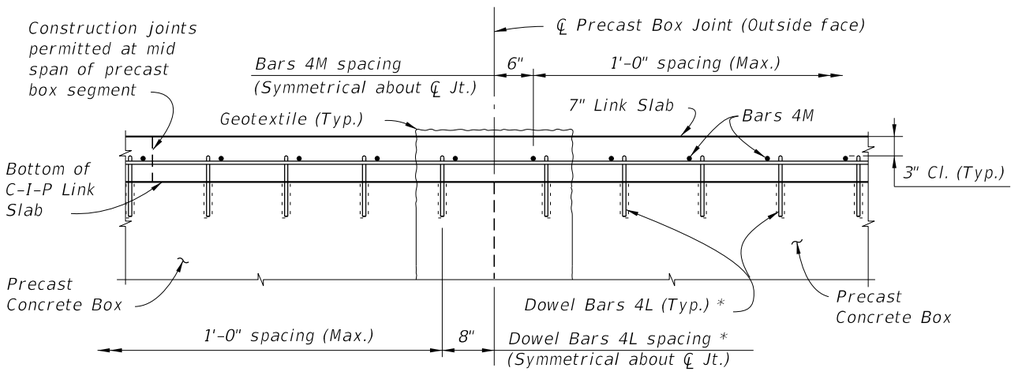


BAR 4M

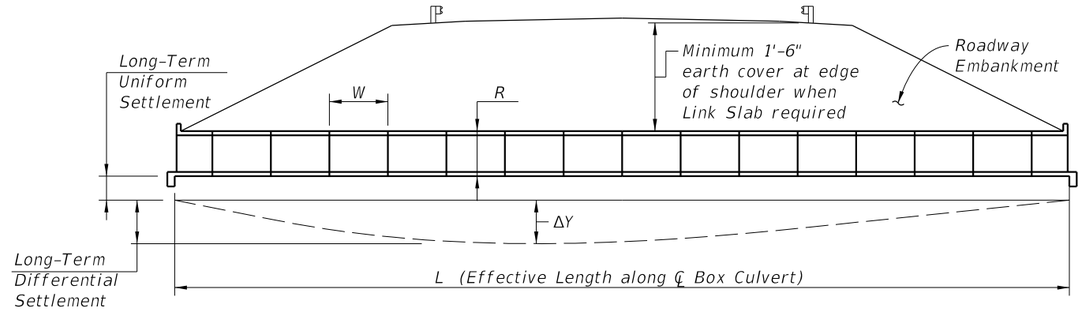
NOTES:
1. All bar dimensions are out to out.
2. Lap splice length for Bars 4M is 1'-4" minimum.

DESIGN NOTE:

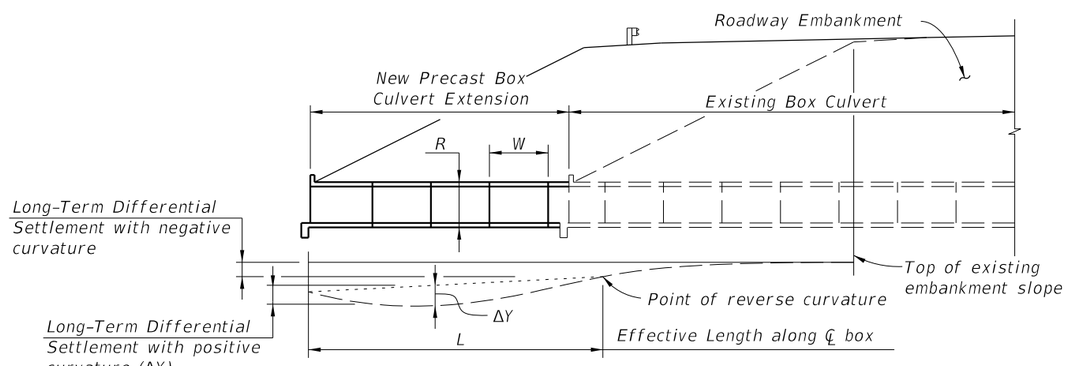
1. Link Slab required when joint openings from differential settlement exceed ⅛" as determined in Link Slab Note 1.



VIEW J-J



SCHEMATIC LONGITUDINAL SECTION (NEW CONSTRUCTION)



SCHEMATIC LONGITUDINAL SECTION (WIDENING)

DIFFERENTIAL SETTLEMENT COUNTERMEASURES FOR PRECAST BOX CULVERTS

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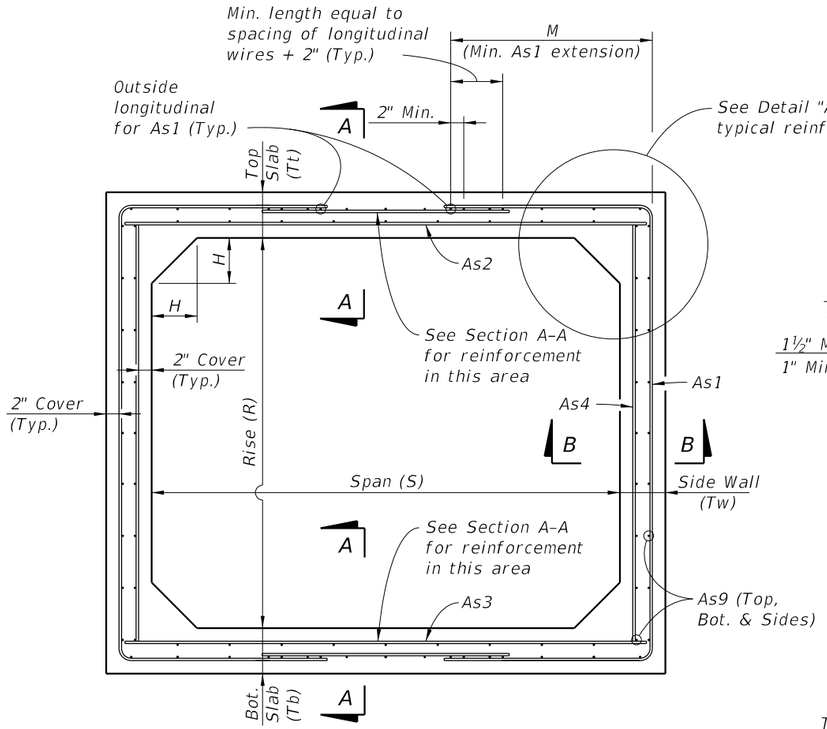
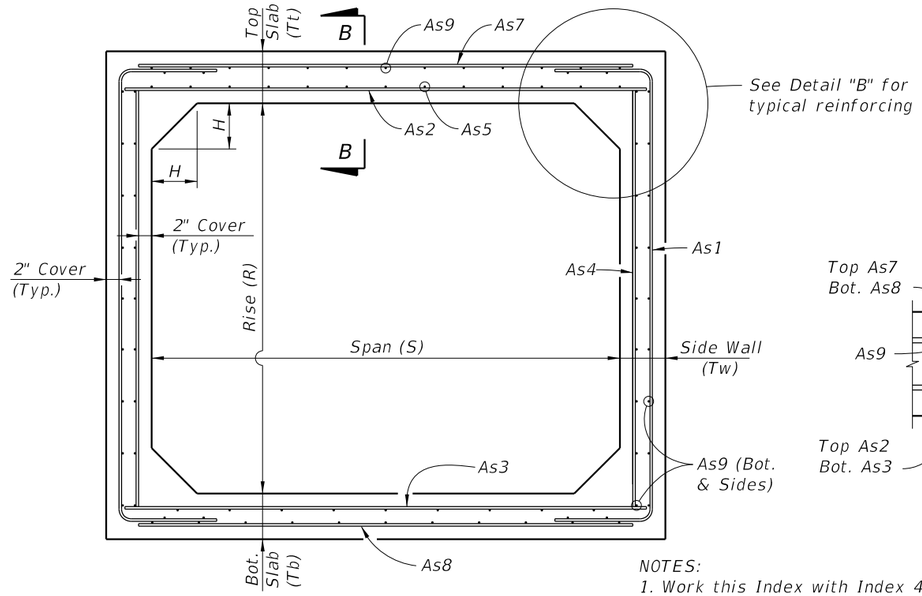
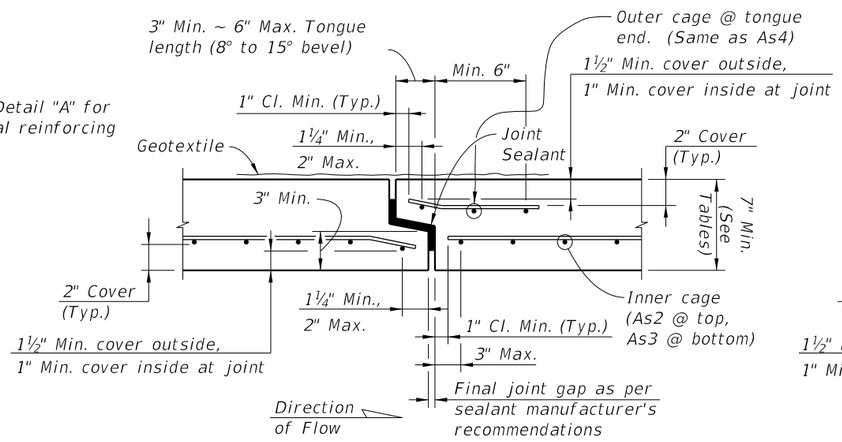


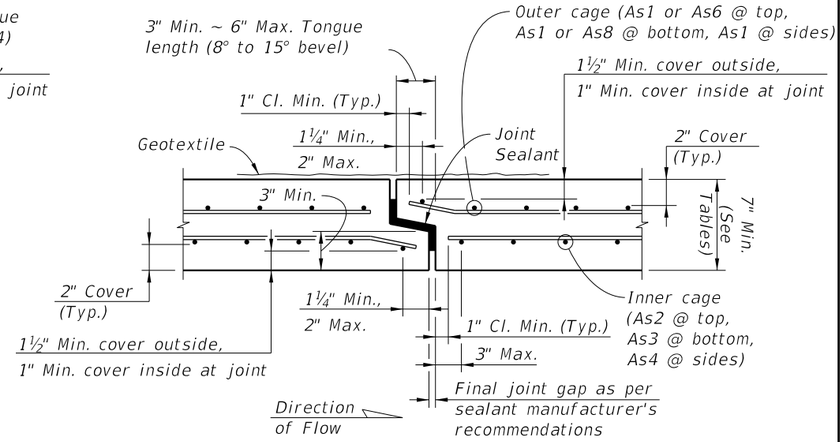
TYPICAL BOX SECTION (TYPE 2)
DESIGN EARTH COVER 2' OR GREATER
(Option 1 Reinforcing Configuration Shown)



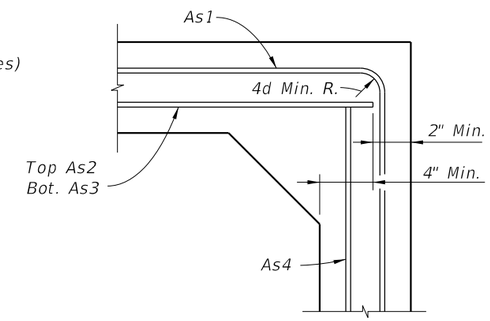
TYPICAL BOX SECTION (TYPE 1)
DESIGN EARTH COVER LESS THAN 2'
(Option 1 Reinforcing Configuration Shown)



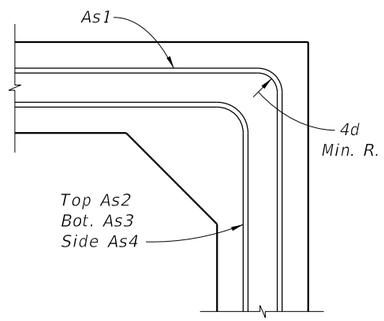
SECTION A-A



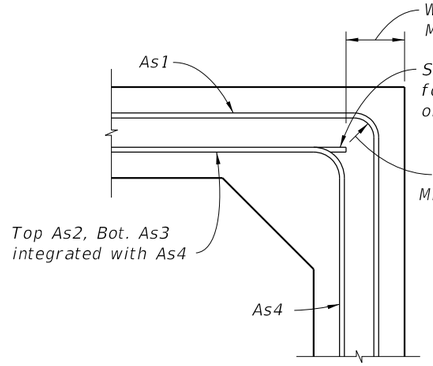
SECTION B-B
TYPICAL SECTION THRU JOINT



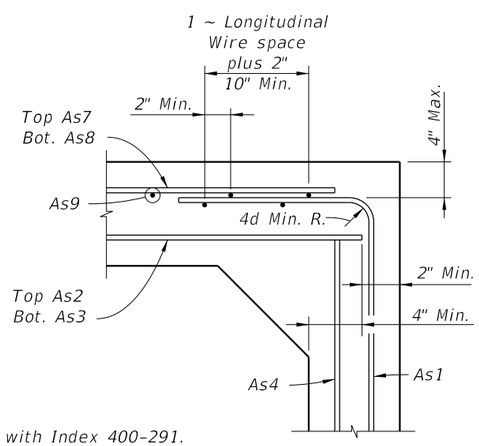
DETAIL "A"
(OPTION 1)



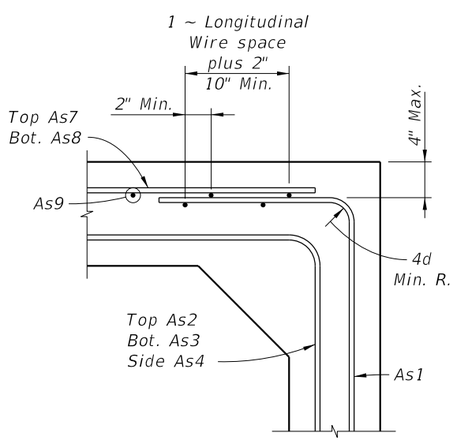
DETAIL "A"
(OPTION 2)



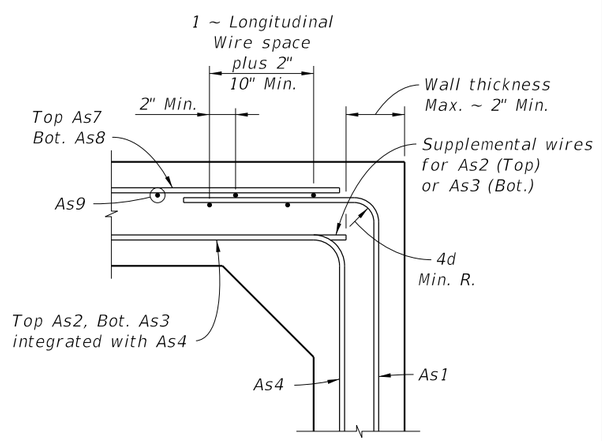
DETAIL "A"
(OPTION 3)



DETAIL "B"
(OPTION 1)



DETAIL "B"
(OPTION 2)



DETAIL "B"
(OPTION 3)

NOTES:
1. Work this Index with Index 400-291.
2. See sheets 2 thru 5 for dimensions and areas of reinforcement.

STANDARD PRECAST BOX CULVERT WITH 2" CONCRETE COVER

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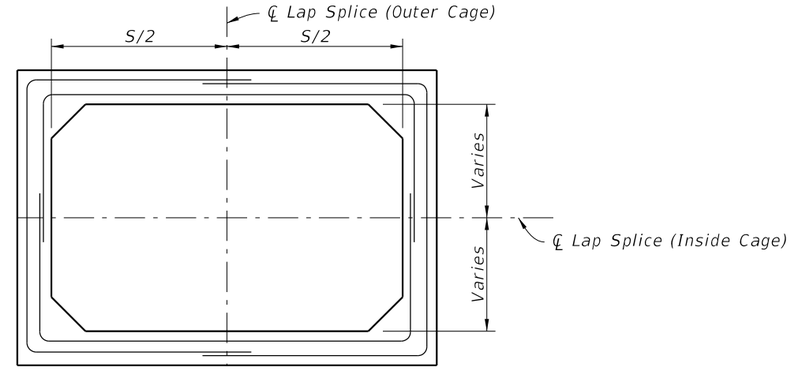
GENERAL NOTES:

1. These precast designs may be substituted for cast-in-place box culverts designed to AASHTO LRFD Bridge Design Specifications, 4th Edition. Designs are based on the design criteria shown in FDOT Structures Design Guidelines.
2. Loading: HL-93 & any fill heights between the minimum & maximum shown.
3. Only one design of precast box culvert is to be used for any installation.
4. Reinforcing steel must consist of smooth or deformed welded wire reinforcement (WWR) meeting the requirements of Specification Section 931. Longitudinal reinforcement may consist of reinforcing bars meeting the requirements of Specification Section 931. Minimum cover must be 2" for slightly or moderately aggressive environments or 3" for extremely aggressive environments, unless otherwise shown. The spacing of circumferential wires must not be less than 2" nor more than 4". The spacing of longitudinal wires or bars must not be more than 8".
5. As9 longitudinal wires must have a minimum cross-sectional area of 40% of the circumferential wires, but not less than a W2.5 or D4.0 for WWR, or #3 bars for deformed bars.
6. Welding of reinforcement must be limited to the locations shown in ASTM C1577 and in accordance with ANSI/AWS D1.4 "Structural Welding Code – Reinforcing Steel".
7. For alternate reinforcing configuration Options 2 and 3 shown in Detail "A" and "B" (Sheet 1), As1 may be extended to the middle of either slab and lap spliced with As7 and As8. As4 may be lap spliced at any location or connected to As2 or As3 at corners by welding.
8. Haunch dimensions may vary between the minimum and maximum dimensions shown in the Design Tables but only one haunch dimension must be used within the full length of the box culvert installation.
9. Submittal of redesign calculations are not required for any increase to the slab and/or wall thickness when the minimum reinforcement areas shown in the Design Tables are provided.
10. For Design Earth Cover greater than 10 feet, the Contractor may interpolate the required areas of reinforcement and slab or wall thickness. Interpolated areas of reinforcement, slab or wall thickness must be approved by the Engineer.
11. Minimum length of precast box segments is 4 feet and maximum length is 16 feet.
12. See Index 400-291 for connections to wingwalls, headwalls and other general details.



SCHEMATIC OF LAP SPLICE LOCATIONS
FOR OPTION 2 & 3 REINFORCING CONFIGURATIONS

TABLE 1A - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 3' & 4' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
3' x 3'	7	7	7	4 to 8	0.33' - <2'	0.17	0.29	0.21	0.17	0.17	0.17	0.17	See General Note 5	–
					2' - <3'	0.13	0.28	0.21	0.09	–	–	–		31
					3' - <5'	0.09	0.17	0.17	0.09	–	–	–		31
					5' - 10'	0.09	0.17	0.17	0.09	–	–	–		31
					15'	0.09	0.17	0.17	0.09	–	–	–		31
					20'	0.12	0.17	0.17	0.09	–	–	–		31
					25'	0.14	0.18	0.18	0.09	–	–	–		31
					30'	0.17	0.21	0.22	0.09	–	–	–		31
					35'	0.19	0.25	0.25	0.09	–	–	–		31
4' x 3'	7	7	7	4 to 8	0.33' - <2'	0.19	0.38	0.26	0.17	0.19	0.17	0.19		–
					2' - <3'	0.19	0.38	0.26	0.09	–	–	–		38
					3' - <5'	0.14	0.20	0.22	0.09	–	–	–		38
					5' - 10'	0.11	0.17	0.17	0.09	–	–	–		38
					15'	0.15	0.17	0.18	0.09	–	–	–		38
					20'	0.20	0.23	0.23	0.09	–	–	–		38
					25'	0.24	0.28	0.29	0.09	–	–	–		38
					30'	0.29	0.34	0.35	0.09	–	–	–		38
4' x 4'	7	7	7	4 to 8	0.33' - <2'	0.19	0.41	0.28	0.17	0.21	0.17	0.19		–
					2' - <3'	0.19	0.41	0.28	0.09	–	–	–		38
					3' - <5'	0.14	0.21	0.24	0.09	–	–	–		38
					5' - 10'	0.12	0.17	0.17	0.09	–	–	–		38
					15'	0.16	0.19	0.20	0.09	–	–	–		38
					20'	0.21	0.25	0.25	0.09	–	–	–		38
					25'	0.26	0.31	0.32	0.09	–	–	–		38
					30'	0.31	0.37	0.38	0.09	–	–	–		38

TABLE 1B - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 3' & 4' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
3' x 3'	8	8	8	4 to 8	0.33' - <2'	0.20	0.26	0.32	0.20	0.20	0.20	0.20	See General Note 5	–
					2' - <3'	0.16	0.25	0.31	0.10	–	–	–		31
					3' - <5'	0.10	0.20	0.20	0.10	–	–	–		31
					5' - 10'	0.10	0.20	0.20	0.10	–	–	–		31
					15'	0.10	0.20	0.20	0.10	–	–	–		31
					20'	0.10	0.20	0.20	0.10	–	–	–		31
					25'	0.11	0.20	0.20	0.10	–	–	–		31
					30'	0.13	0.20	0.20	0.10	–	–	–		31
					35'	0.15	0.21	0.21	0.10	–	–	–		31
4' x 3'	8	8	8	4 to 8	0.33' - <2'	0.20	0.31	0.22	0.20	0.20	0.20	0.20		–
					2' - <3'	0.12	0.31	0.22	0.10	–	–	–		38
					3' - <5'	0.12	0.20	0.20	0.10	–	–	–		38
					5' - 10'	0.10	0.20	0.20	0.10	–	–	–		38
					15'	0.12	0.20	0.20	0.10	–	–	–		38
					20'	0.16	0.20	0.20	0.10	–	–	–		38
					25'	0.19	0.24	0.24	0.10	–	–	–		38
					30'	0.22	0.28	0.29	0.10	–	–	–		38
4' x 4'	8	8	8	4 to 8	0.33' - <2'	0.20	0.33	0.24	0.20	0.20	0.20	0.20		–
					2' - <3'	0.17	0.33	0.24	0.10	–	–	–		38
					3' - <5'	0.12	0.20	0.20	0.10	–	–	–		38
					5' - 10'	0.10	0.20	0.20	0.10	–	–	–		38
					15'	0.13	0.20	0.20	0.10	–	–	–		38
					20'	0.16	0.21	0.22	0.10	–	–	–		38
					25'	0.20	0.26	0.27	0.10	–	–	–		38
					30'	0.23	0.31	0.32	0.10	–	–	–		38

NOTES: 1. See Sheet 1 for Reinforcing Details and dimension locations.
2. See Sheet 14 for WWR Reading Diagram.

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TABLE 2A - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 5' & 6' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
5' x 3'	7	7	7	4 to 8	0.33' - <2'	0.31	0.48	0.42	0.17	0.21	0.23	0.31	See General Note 5	–
					2' - <3'	0.31	0.48	0.42	0.09	–	–	–		45
					3' - <5'	0.20	0.27	0.27	0.09	–	–	–		36
					5' - 10'	0.17	0.19	0.21	0.09	–	–	–		36
					15'	0.24	0.25	0.25	0.09	–	–	–		35
					20'	0.32	0.33	0.33	0.09	–	–	–		35
					25'	0.39	0.41	0.42	0.09	–	–	–		35
					30'	0.47	0.50	0.50	0.09	–	–	–		35
5' x 4'	7	7	7	4 to 8	0.33' - <2'	0.30	0.51	0.45	0.17	0.23	0.21	0.30		–
					2' - <3'	0.30	0.51	0.45	0.09	–	–	–		45
					3' - <5'	0.18	0.30	0.29	0.09	–	–	–		45
					5' - 10'	0.17	0.21	0.23	0.09	–	–	–		36
					15'	0.24	0.27	0.28	0.09	–	–	–		35
					20'	0.31	0.36	0.37	0.09	–	–	–		35
					25'	0.39	0.45	0.46	0.09	–	–	–		35
					30'	0.46	0.55	0.56	0.09	–	–	–		35
5' x 5'	7	7	7	4 to 8	0.33' - <2'	0.30	0.53	0.48	0.17	0.24	0.21	0.30		–
					2' - <3'	0.29	0.53	0.48	0.09	–	–	–		45
					3' - <5'	0.19	0.31	0.31	0.09	–	–	–		45
					5' - 10'	0.19	0.22	0.25	0.09	–	–	–		45
					15'	0.26	0.29	0.31	0.09	–	–	–		36
					20'	0.34	0.39	0.40	0.09	–	–	–		35
					25'	0.41	0.49	0.50	0.09	–	–	–		35
					30'	0.49	0.59	0.61	0.09	–	–	–		35
6' x 3'	7.5	7	7	4 to 12	0.33' - <2'	0.39	0.54	0.48	0.17	0.22	0.25	0.39		–
	7	7	7		2' - <3'	0.39	0.58	0.49	0.09	–	–	–		43
					3' - <5'	0.28	0.36	0.36	0.09	–	–	–		39
					5' - 10'	0.25	0.26	0.28	0.09	–	–	–		39
					15'	0.36	0.34	0.34	0.09	–	–	–		38
					20'	0.47	0.46	0.46	0.09	–	–	–		38
	7	7.5	7		25'	0.59	0.57	0.55	0.09	–	–	–		38
	8	8	7		30'	0.60	0.64	0.64	0.09	–	–	–		38
6' x 4'	7.5	7	7	4 to 12	0.33' - <2'	0.37	0.58	0.52	0.17	0.24	0.23	0.37		–
	7	7	7		2' - <3'	0.37	0.61	0.53	0.09	–	–	–		43
					3' - <5'	0.26	0.39	0.39	0.09	–	–	–		39
					5' - 10'	0.24	0.28	0.31	0.09	–	–	–		39
					15'	0.35	0.37	0.38	0.09	–	–	–		38
					20'	0.46	0.50	0.50	0.09	–	–	–		38
	7	7.5	7		25'	0.56	0.63	0.60	0.09	–	–	–		38
	8	8	7		30'	0.58	0.69	0.69	0.09	–	–	–		38
6' x 5'	7.5	7	7	4 to 12	0.33' - <2'	0.36	0.60	0.56	0.17	0.25	0.22	0.36		–
	7	7	7		2' - <3'	0.36	0.64	0.56	0.09	–	–	–		43
					3' - <5'	0.26	0.410	0.42	0.09	–	–	–		43
					5' - 10'	0.25	0.30	0.33	0.09	–	–	–		39
					15'	0.34	0.40	0.41	0.09	–	–	–		38
					20'	0.46	0.54	0.54	0.09	–	–	–		38
	7	7.5	7		25'	0.56	0.67	0.65	0.09	–	–	–		38
	8	8	8		30'	0.60	0.74	0.74	0.09	–	–	–		38
6' x 6'	7.5	7	7	4 to 12	0.33' - <2'	0.36	0.63	0.59	0.17	0.26	0.22	.036		–
	7	7	7		2' - <3'	0.35	0.67	0.59	0.09	–	–	–		52
					3' - <5'	0.27	0.43	0.44	0.09	–	–	–		52
					5' - 10'	0.27	0.32	0.35	0.09	–	–	–		43
					15'	0.38	0.43	0.44	0.09	–	–	–		39
					20'	0.50	0.57	0.59	0.09	–	–	–		39
	7	7.5	7		25'	0.60	0.72	0.70	0.09	–	–	–		38
	8	8	7		30'	0.67	0.78	0.79	0.09	–	–	–		38

TABLE 2B - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 5' & 6' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
5' x 3'	8	8	8	4 to 8	0.33' - <2'	0.26	0.39	0.36	0.20	0.20	0.20	0.26	See General Note 5	–
					2' - <3'	0.26	0.39	0.36	0.10	–	–	–		45
					3' - <5'	0.16	0.23	0.24	0.10	–	–	–		36
					5' - 10'	0.13	0.20	0.20	0.10	–	–	–		36
					15'	0.19	0.21	0.22	0.10	–	–	–		35
					20'	0.24	0.28	0.28	0.10	–	–	–		35
					25'	0.30	0.34	0.35	0.10	–	–	–		35
					30'	0.36	0.41	0.41	0.10	–	–	–		35
5' x 4'	8	8	8	4 to 8	0.33' - <2'	0.25	0.42	0.38	0.20	0.20	0.20	0.25		–
					2' - <3'	0.25	0.42	0.38	0.10	–	–	–		45
					3' - <5'	0.16	0.25	0.25	0.10	–	–	–		45
					5' - 10'	0.13	0.20	0.20	0.10	–	–	–		36
					15'	0.19	0.23	0.24	0.10	–	–	–		35
					20'	0.24	0.30	0.31	0.10	–	–	–		35
					25'	0.30	0.37	0.38	0.10	–	–	–		35
					30'	0.35	0.45	0.46	0.10	–	–	–		35
5' x 5'	8	8	8	4 to 8	0.33' - <2'	0.25	0.44	0.41	0.20	0.20	0.20	0.25		–
					2' - <3'	0.25	0.44	0.41	0.10	–	–	–		45
					3' - <5'	0.16	0.26	0.27	0.10	–	–	–		45
					5' - 10'	0.15	0.20	0.22	0.10	–	–	–		45
					15'	0.20	0.25	0.26	0.10	–	–	–		36
					20'	0.26	0.32	0.33	0.10	–	–	–		35
					25'	0.32	0.40	0.41	0.10	–	–	–		35
					30'	0.37	0.48	0.49	0.10	–	–	–		35
6' x 3'	8	8	8	4 to 12	0.33' - <2'	0.32	0.47	0.41	0.20	0.20	0.25	0.32		–
					2' - <3'	0.32	0.47	0.41	0.10	–	–	–		43
					3' - <5'	0.23	0.30	0.31	0.10	–	–	–		39
					5' - 10'	0.19	0.22	0.24	0.10	–	–	–		39
					15'	0.28	0.29	0.29	0.10	–	–	–		38
					20'	0.36	0.38	0.38	0.10	–	–	–		38
					25'	0.45	0.47	0.47	0.10	–	–	–		38
					30'	0.54	0.57	0.57	0.10	–	–	–		38
6' x 4'	8	8	8	4 to 12	0.33' - <2'	0.31	0.50	0.44	0.20	0.21	0.23	0.31		–
					2' - <3'	0.31	0.50	0.44	0.10	–	–	–		43
					3' - <5'	0.23	0.32	0.34	0.10	–	–	–		39
					5' - 10'	0.19	0.24	0.26	0.10	–	–	–		39
					15'	0.27	0.31	0.32	0.10	–	–	–		38
					20'	0.35	0.41	0.41	0.10	–	–	–		38
					25'	0.43	0.51	0.51	0.10	–	–	–		38
					30'	0.52	0.62	0.62	0.10	–	–	–		38
6' x 5'	8	8	8	4 to 12	0.33' - <2'	0.30	0.52	0.47	0.20	0.22	0.22	0.30		–
					2' - <3'	0.30	0.52	0.47	0.10	–	–	–		43
					3' - <5'	0.22	0.34	0.36	0.10	–	–	–		43
					5' - 10'	0.20	0.26	0.28	0.10	–	–	–		39
					15'	0.27	0.33	0.34	0.10	–	–	–		38
					20'	0.36	0.44	0.45	0.10	–	–	–		38
					25'	0.44	0.55	0.55	0.10	–	–	–		38
					30'	0.52	0.66	0.67	0.10	–	–	–		38
6' x 6'	8	8	8	4 to 12	0.33' - <2'	0.30	0.54	0.50	0.20	0.22	0.22	0.30		–
					2' - <3'	0.30	0.54	0.50	0.10	–	–	–		52
					3' - <5'	0.23	0.36	0.38	0.10	–	–	–		52
					5' - 10'	0.21	0.27	0.30	0.10	–	–	–		43
					15'	0.29	0.35	0.37	0.10	–	–	–		39
					20'	0.38	0.47	0.48	0.10	–	–	–		39
					25'	0.47	0.59	0.60	0.10	–	–	–		38
					30'	0.55	0.70	0.71	0.10	–	–	–		38

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TABLE 3 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 7' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
7' x 4'	8	8	8	4 to 12	0.33' – <2'	0.37	0.58	0.49	0.20	0.22	0.29	0.37	See General Note 5	–
					2' – <3'	0.37	0.58	0.49	0.10	–	–	–		43
					3' – <5'	0.30	0.40	0.42	0.10	–	–	–		43
					5' – 10'	0.26	0.30	0.33	0.10	–	–	–		43
					15'	0.37	0.40	0.40	0.10	–	–	–		41
					20'	0.49	0.53	0.53	0.10	–	–	–		41
	8	8	8	7 to 12	25'	0.60	0.67	0.66	0.10	–	–	–		41
	8.5	8.5	8		30'	0.68	0.79	0.78	0.10	–	–	–		41
7' x 5'	8	8	8	4 to 12	0.33' – <2'	0.36	0.60	0.53	0.20	0.23	0.28	0.36		–
					2' – <3'	0.36	0.60	0.53	0.10	–	–	–		47
					3' – <5'	0.30	0.42	0.45	0.10	–	–	–		43
					5' – 10'	0.26	0.32	0.35	0.10	–	–	–		43
					15'	0.37	0.43	0.44	0.10	–	–	–		41
					20'	0.48	0.57	0.57	0.10	–	–	–		41
	8	8	8	7 to 12	25'	0.60	0.72	0.72	0.10	–	–	–		41
	8.5	8.5	8		30'	0.67	0.84	0.84	0.10	–	–	–		41
7' x 6'	8	8	8	4 to 12	0.33' – <2'	0.36	0.63	0.56	0.20	0.24	0.27	0.36		–
					2' – <3'	0.36	0.63	0.56	0.10	–	–	–		59
					3' – <5'	0.29	0.44	0.47	0.10	–	–	–		47
					5' – 10'	0.27	0.34	0.37	0.10	–	–	–		43
					15'	0.38	0.46	0.46	0.10	–	–	–		41
					20'	0.49	0.60	0.61	0.10	–	–	–		41
	8	8	8	7 to 12	25'	0.61	0.76	0.76	0.10	–	–	–		41
	8.5	8.5	8		30'	0.69	0.89	0.89	0.10	–	–	–		41
7' x 7'	8	8	8	4 to 12	0.33' – <2'	0.36	0.65	0.58	0.20	0.25	0.27	0.36		–
					2' – <3'	0.36	0.65	0.58	0.10	–	–	–		59
					3' – <5'	0.30	0.46	0.50	0.10	–	–	–		59
					5' – 10'	0.30	0.35	0.50	0.10	–	–	–		47
					15'	0.41	0.48	0.50	0.10	–	–	–		43
					20'	0.53	0.64	0.65	0.10	–	–	–		43
	8	8	8	7 to 12	25'	0.65	0.80	0.81	0.10	–	–	–		43
	8.5	9	8		30'	0.72	0.92	0.91	0.10	–	–	–		41

TABLE 4 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 8' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
8' x 4'	9	8.5	8	4 to 12	0.33' – <2'	0.40	0.60	0.52	0.20	0.22	0.28	0.39	See General Note 5	–
	8	8	8		2' – <3'	0.45	0.66	0.54	0.10	–	–	–		50
					3' – <5'	0.39	0.48	0.50	0.10	–	–	–		50
					5' – 10'	0.34	0.38	0.40	0.10	–	–	–		45
					15'	0.49	0.51	0.50	0.10	–	–	–		41
					20'	0.65	0.68	0.66	0.10	–	–	–		41
	8.5	8.5	8	8 to 12	25'	0.76	0.83	0.80	0.10	–	–	–		41
	9.5	9.5	8		30'	0.79	0.94	0.92	0.10	–	–	–		41
8' x 5'	9	8.5	8	4 to 12	0.33' – <2'	0.38	0.65	0.59	0.20	0.22	0.30	0.37		–
	8	8	8		2' – <3'	0.43	0.69	0.58	0.10	–	–	–		50
					3' – <5'	0.37	0.51	0.53	0.10	–	–	–		45
					5' – 10'	0.33	0.41	0.42	0.10	–	–	–		45
					15'	0.48	0.54	0.53	0.10	–	–	–		41
					20'	0.63	0.73	0.70	0.10	–	–	–		41
	8.5	8.5	8	8 to 12	25'	0.74	0.88	0.86	0.10	–	–	–		41
	9.5	9.5	8		30'	0.77	1.00	0.98	0.10	–	–	–		41
8' x 6'	9	9	8	4 to 12	0.33' – <2'	0.32	0.65	0.58	0.20	0.23	0.25	0.31		–
	8	8	8		2' – <3'	0.42	0.71	0.61	0.10	–	–	–		50
					3' – <5'	0.37	0.54	0.56	0.10	–	–	–		50
					5' – 10'	0.34	0.43	0.45	0.10	–	–	–		45
					15'	0.49	0.57	0.57	0.10	–	–	–		41
					20'	0.64	0.77	0.76	0.10	–	–	–		41
	8.5	8.5	8	8 to 12	25'	0.74	0.94	0.92	0.10	–	–	–		41
	9.5	9.5	8		30'	0.78	1.05	1.04	0.10	–	–	–		41
8' x 7'	9	9	8	4 to 12	0.33' – <2'	0.31	0.67	0.60	0.20	0.24	0.24	0.31		–
	8	8	8		2' – <3'	0.42	0.74	0.64	0.10	–	–	–		55
					3' – <5'	0.37	0.56	0.59	0.10	–	–	–		55
					5' – 10'	0.36	0.45	0.47	0.10	–	–	–		50
					15'	0.51	0.61	0.61	0.10	–	–	–		45
					20'	0.66	0.81	0.80	0.10	–	–	–		41
	8.5	8.5	8	8 to 12	25'	0.78	0.98	0.97	0.10	–	–	–		41
	9.5	9.5	8		30'	0.84	1.10	1.09	0.10	–	–	–		41
8' x 8'	9	9	8	4 to 12	0.33' – <2'	0.32	0.68	0.62	0.20	0.24	0.25	0.32		–
	8	8	8		2' – <3'	0.43	0.76	0.67	0.14	–	–	–		65
					3' – <5'	0.38	0.58	0.61	0.14	–	–	–		65
					5' – 10'	0.39	0.46	0.50	0.13	–	–	–		55
					15'	0.55	0.64	0.65	0.10	–	–	–		45
					20'	0.71	0.86	0.85	0.10	–	–	–		45
	8.5	8.5	8	8 to 12	25'	0.84	1.03	1.02	0.10	–	–	–		41
	9.5	9.5	8		30'	0.93	1.15	1.15	0.10	–	–	–		41

NOTES:
1. See Sheet 1 for Reinforcing Details and dimension locations.
2. See Sheet 2 for General Notes.
3. See Sheet 14 for Welded Wire Reinforcement Bending Diagram.

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TABLE 5 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 9' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
9' x 5'	9.5	9.5	9	4	0.33' - <2'	0.41	0.62	0.53	0.22	0.23	0.34	0.38	See General Note 5	-
	9	9	9	to 12	2' - <3'	0.44	0.65	0.54	0.11	-	-	-		54
					3' - <5'	0.39	0.53	0.51	0.11	-	-	-		49
					5' - 10'	0.35	0.42	0.44	0.11	-	-	-		49
					15'	0.50	0.56	0.55	0.11	-	-	-		44
					20'	0.65	0.75	0.73	0.11	-	-	-		44
	9.5	9.5	9	8 to 12	25'	0.77	0.92	0.90	0.11	-	-	-		44
	10.5	11	9		30'	0.81	1.05	1.02	0.11	-	-	-		44
9' x 6'	9.5	9.5	9	4	0.33' - <2'	0.38	0.64	0.56	0.23	0.23	0.33	0.37		-
	9	9	9	to 12	2' - <3'	0.43	0.67	0.57	0.11	-	-	-		54
					3' - <5'	0.37	0.55	0.54	0.11	-	-	-		49
					5' - 10'	0.35	0.45	0.47	0.11	-	-	-		49
					15'	0.49	0.60	0.59	0.11	-	-	-		44
					20'	0.65	0.80	0.78	0.11	-	-	-		44
	9.5	9.5	9	8 to 12	25'	0.76	0.98	0.95	0.11	-	-	-		44
	10.5	11	9		30'	0.80	1.10	1.08	0.11	-	-	-		44
9' x 7'	9.5	9.5	9	4	0.33' - <2'	0.37	0.67	0.59	0.22	0.23	0.32	0.37		-
	9	9	9	to 12	2' - <3'	0.42	0.69	0.60	0.11	-	-	-		59
					3' - <5'	0.37	0.58	0.56	0.11	-	-	-		54
					5' - 10'	0.36	0.47	0.49	0.11	-	-	-		49
					15'	0.50	0.63	0.63	0.11	-	-	-		44
					20'	0.66	0.84	0.80	0.11	-	-	-		44
	9.5	9.5	9	8 to 12	25'	0.77	1.02	1.00	0.11	-	-	-		44
	10.5	11	9		30'	0.81	1.15	1.13	0.11	-	-	-		44
9' x 8'	9.5	9.5	9	4	0.33' - <2'	0.37	0.68	0.61	0.22	0.23	0.31	0.37		-
	9	9	9	to 12	2' - <3'	0.42	0.71	0.62	0.11	-	-	-		59
					3' - <5'	0.37	0.60	0.59	0.11	-	-	-		59
					5' - 10'	0.38	0.49	0.51	0.11	-	-	-		54
					15'	0.53	0.66	0.66	0.11	-	-	-		44
					20'	0.68	0.88	0.87	0.11	-	-	-		44
	9.5	9.5	9	8 to 12	25'	0.81	1.07	1.05	0.11	-	-	-		44
	10.5	11	9		30'	0.86	1.20	1.18	0.11	-	-	-		44
9' x 9'	9.5	9.5	9	4	0.33' - <2'	0.38	0.70	0.63	0.22	0.23	0.32	0.38		-
	9	9	9	to 12	2' - <3'	0.43	0.73	0.65	0.15	-	-	-		72
					3' - <5'	0.38	0.62	0.61	0.15	-	-	-		72
					5' - 10'	0.41	0.50	0.53	0.14	-	-	-		59
					15'	0.57	0.69	0.70	0.12	-	-	-		49
					20'	0.73	0.92	0.91	0.11	-	-	-		49
	9.5	10	9	8 to 12	25'	0.83	1.11	1.09	0.11	-	-	-		44
	10.5	11	9		30'	0.93	1.25	1.23	0.11	-	-	-		44

TABLE 6 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 10' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
10' x 5'	10	10	10	4	0.33' - <2'	0.46	0.62	0.52	0.24	0.24	0.41	0.45	See General Note 5	-
				to 12	2' - <3'	0.46	0.62	0.52	0.12	-	-	-		58
					3' - <5'	0.42	0.54	0.50	0.12	-	-	-		53
					5' - 10'	0.38	0.46	0.49	0.12	-	-	-		52
					15'	0.52	0.59	0.58	0.12	-	-	-		47
					20'	0.69	0.78	0.76	0.12	-	-	-		47
	10.5	10.5	10	8 to 12	25'	0.81	0.97	0.93	0.12	-	-	-		47
	11.5	12	10		30'	0.87	1.11	1.11	0.12	-	-	-		47
10' x 6'	10	10	10	4	0.33' - <2'	0.44	0.64	0.54	0.24	0.24	0.39	0.44		-
				to 12	2' - <3'	0.44	0.64	0.54	0.12	-	-	-		58
					3' - <5'	0.39	0.57	0.52	0.12	-	-	-		52
					5' - 10'	0.37	0.48	0.52	0.12	-	-	-		52
					15'	0.51	0.62	0.61	0.12	-	-	-		47
					20'	0.67	0.83	0.80	0.12	-	-	-		47
	10.5	10.5	10	8 to 12	25'	0.79	1.02	0.99	0.12	-	-	-		47
	11.5	12	10		30'	0.85	1.17	1.14	0.12	-	-	-		47
10' x 7'	10	10	10	4	0.33' - <2'	0.43	0.66	0.57	0.24	0.24	0.38	0.43		-
				to 12	2' - <3'	0.43	0.66	0.57	0.12	-	-	-		58
					3' - <5'	0.38	0.59	0.55	0.12	-	-	-		58
					5' - 10'	0.37	0.50	0.54	0.12	-	-	-		52
					15'	0.52	0.66	0.65	0.12	-	-	-		47
					20'	0.67	0.87	0.85	0.12	-	-	-		47
	10.5	10.5	10	8 to 12	25'	0.79	1.07	1.04	0.12	-	-	-		47
	11.5	12	10		30'	0.84	1.22	1.19	0.12	-	-	-		47
10' x 8'	10	10	10	4	0.33' - <2'	0.43	0.68	0.60	0.24	0.24	0.38	0.43		-
				to 12	2' - <3'	0.43	0.68	0.60	0.12	-	-	-		64
					3' - <5'	0.38	0.62	0.57	0.12	-	-	-		58
					5' - 10'	0.38	0.52	0.57	0.12	-	-	-		52
					15'	0.53	0.69	0.68	0.12	-	-	-		47
					20'	0.68	0.91	0.89	0.12	-	-	-		47
	10.5	10.5	10	8 to 12	25'	0.81	1.12	1.09	0.12	-	-	-		47
	11.5	12	10		30'	0.86	1.27	1.25	0.12	-	-	-		47
10' x 9'	10	10	10	4	0.33' - <2'	0.43	0.70	0.62	0.24	0.24	0.38	0.43		-
				to 12	2' - <3'	0.43	0.70	0.62	0.12	-	-	-		70
					3' - <5'	0.39	0.64	0.60	0.12	-	-	-		64
					5' - 10'	0.40	0.54	0.59	0.12	-	-	-		58
					15'	0.56	0.72	0.72	0.12	-	-	-		52
					20'	0.71	0.95	0.94	0.12	-	-	-		47
	10.5	11	10	8 to 12	25'	0.82	1.15	1.13	0.12	-	-	-		47
	11.5	12	10		30'	0.90	1.32	1.30	0.12	-	-	-		47
10' x 10'	10	10	10	4	0.33' - <2'	0.44	0.71	0.64	0.24	0.24	0.38	0.44		-
				to 12	2' - <3'	0.44	0.71	0.64	0.17	-	-	-		79
					3' - <5'	0.40	0.65	0.62	0.16	-	-	-		70
					5' - 10'	0.44	0.56	0.61	0.15	-	-	-		64
					15'	0.60	0.75	0.76	0.12	-	-	-		52
					20'	0.76	0.99	0.99	0.12	-	-	-		52
	10.5	11	10	8 to 12	25'	0.86	1.20	1.18	0.12	-	-	-		47
	11.5	12	10		30'	0.97	1.36	1.35	0.13	-	-	-		47

NOTES:
1. See Sheet 1 for Reinforcing Details and dimension locations.
2. See Sheet 2 for General Notes.
3. See Sheet 14 for WWR Bending Diagram.

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TABLE 7 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 11' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
11' x 4'	11	11	11	4	0.33' - <2'	0.51	0.57	0.47	0.27	0.27	0.45	0.48	See General Note 5	–
				to	2' - <3'	0.51	0.57	0.47	0.14	–	–	–		62
					3' - <5'	0.48	0.57	0.46	0.14	–	–	–		62
					5' - 10'	0.47	0.50	0.50	0.14	–	–	–		55
				12	15'	0.59	0.58	0.56	0.14	–	–	–		55
					20'	0.77	0.77	0.74	0.14	–	–	–		55
	11.5	11.5	11	8 to	25'	0.92	0.95	0.91	0.14	–	–	–		55
	13	13	11	12	30'	0.94	1.09	1.06	0.14	–	–	–		55
11' x 6'	11	11	11	4	0.33' - <2'	0.45	0.62	0.52	0.27	0.27	0.41	0.45		–
				to	2' - <3'	0.45	0.62	0.52	0.14	–	–	–		62
					3' - <5'	0.42	0.58	0.51	0.14	–	–	–		55
					5' - 10'	0.43	0.56	0.56	0.14	–	–	–		55
				12	15'	0.54	0.65	0.64	0.14	–	–	–		50
					20'	0.70	0.86	0.83	0.14	–	–	–		50
	11.5	11.5	11	8 to	25'	0.83	1.07	1.03	0.14	–	–	–		50
	13	13	11	12	30'	0.85	1.22	1.19	0.14	–	–	–		50
11' x 8'	11	11	11	4	0.33' - <2'	0.42	0.67	0.57	0.27	0.27	0.39	0.43		–
				to	2' - <3'	0.43	0.67	0.57	0.14	–	–	–		62
					3' - <5'	0.39	0.63	0.56	0.14	–	–	–		62
					5' - 10'	0.43	0.60	0.61	0.14	–	–	–		55
				12	15'	0.54	0.72	0.71	0.14	–	–	–		50
					20'	0.70	0.94	0.92	0.14	–	–	–		50
	11.5	11.5	11	8 to	25'	0.82	1.16	1.13	0.14	–	–	–		50
	13	13	11	12	30'	0.86	1.32	1.30	0.14	–	–	–		50
11' x 10'	11	11	11	4	0.33' - <2'	0.44	0.71	0.62	0.27	0.27	0.38	0.44		–
				to	2' - <3'	0.44	0.71	0.62	0.14	–	–	–		75
					3' - <5'	0.41	0.67	0.61	0.14	–	–	–		69
					5' - 10'	0.47	0.64	0.66	0.14	–	–	–		62
				12	15'	0.59	0.78	0.78	0.14	–	–	–		55
					20'	0.75	1.03	1.01	0.14	–	–	–		50
	11.5	12	11	8 to	25'	0.85	1.24	1.22	0.14	–	–	–		50
	13	13.5	11	12	30'	0.91	1.40	1.39	0.14	–	–	–		50
11' x 11'	11	11	11	4	0.33' - <2'	0.45	0.72	0.64	0.27	0.27	0.39	0.45		–
				to	2' - <3'	0.45	0.72	0.64	0.18	–	–	–		86
					3' - <5'	0.42	0.69	0.63	0.18	–	–	–		75
					5' - 10'	0.51	0.66	0.69	0.16	–	–	–		69
				12	15'	0.63	0.81	0.82	0.14	–	–	–		55
					20'	0.80	1.07	1.06	0.14	–	–	–		55
	11.5	12	11	8 to	25'	0.91	1.29	1.27	0.14	–	–	–		50
	13	13.5	11	12	30'	0.99	1.44	1.44	0.14	–	–	–		50

TABLE 8 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 12' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
12' x 4'	12	12	12	4	0.33' - <2'	0.52	0.57	0.45	0.29	0.29	0.47	0.49	See General Note 5	–
				to	2' - <3'	0.52	0.57	0.45	0.15	–	–	–		73
					3' - <5'	0.50	0.54	0.45	0.15	–	–	–		66
					5' - 10'	0.50	0.52	0.52	0.15	–	–	–		66
				12	15'	0.63	0.61	0.59	0.15	–	–	–		59
					20'	0.82	0.81	0.77	0.15	–	–	–		59
	12.5	12.5	12	8 to	25'	0.99	0.99	0.95	0.15	–	–	–		59
	14	14	12	12	30'	1.03	1.15	1.11	0.15	–	–	–		59
12' x 6'	12	12	12	4	0.33' - <2'	0.47	0.62	0.51	0.29	0.29	0.42	0.46		–
				to	2' - <3'	0.47	0.62	0.51	0.15	–	–	–		66
					3' - <5'	0.45	0.60	0.51	0.15	–	–	–		59
					5' - 10'	0.47	0.59	0.59	0.15	–	–	–		59
				12	15'	0.57	0.68	0.66	0.15	–	–	–		53
					20'	0.74	0.90	0.86	0.15	–	–	–		53
	12.5	12.5	12	8 to	25'	0.88	1.11	1.06	0.15	–	–	–		53
	14	14.5	12	12	30'	0.92	1.27	1.24	0.15	–	–	–		53
12' x 8'	12	12	12	4	0.33' - <2'	0.44	0.67	0.56	0.29	0.29	0.40	0.44		–
				to	2' - <3'	0.44	0.67	0.56	0.15	–	–	–		66
					3' - <5'	0.41	0.64	0.56	0.15	–	–	–		59
					5' - 10'	0.45	0.63	0.64	0.15	–	–	–		59
				12	15'	0.56	0.75	0.73	0.15	–	–	–		53
					20'	0.72	0.98	0.95	0.15	–	–	–		53
	12.5	13	12	8 to	25'	0.85	1.20	1.16	0.15	–	–	–		53
	14	14.5	12	12	30'	0.89	1.38	1.35	0.15	–	–	–		53
12' x 10'	12	12	12	4	0.33' - <2'	0.44	0.71	0.60	0.29	0.29	0.39	0.44		–
				to	2' - <3'	0.44	0.71	0.60	0.15	–	–	–		73
					3' - <5'	0.42	0.68	0.60	0.15	–	–	–		66
					5' - 10'	0.47	0.67	0.69	0.15	–	–	–		59
				12	15'	0.59	0.81	0.81	0.15	–	–	–		53
					20'	0.75	1.06	1.04	0.15	–	–	–		53
	12.5	13	12	8 to	25'	0.87	1.30	1.26	0.15	–	–	–		53
	14	14.5	12	12	30'	0.92	1.47	1.45	0.15	–	–	–		53
12' x 12'	12	12	12	4	0.33' - <2'	0.46	0.74	0.64	0.29	0.29	0.40	0.46		–
				to	2' - <3'	0.46	0.74	0.64	0.20	–	–	–		93
					3' - <5'	0.42	0.72	0.64	0.20	–	–	–		80
					5' - 10'	0.54	0.71	0.74	0.18	–	–	–		73
				12	15'	0.66	0.87	0.89	0.15	–	–	–		59
					20'	0.83	1.14	1.13	0.15	–	–	–		59
	12.5	13	12	8 to	25'	0.96	1.39	1.37	0.15	–	–	–		53
	14	14.5	12.5	12	30'	1.05	1.56	1.56	0.15	–	–	–		53

NOTES:

1. See Sheet 1 for Reinforcing Details and dimension locations.
2. See Sheet 2 for General Notes.
3. See Sheet 14 for Welded Wire Reinforcement Bending Diagram.

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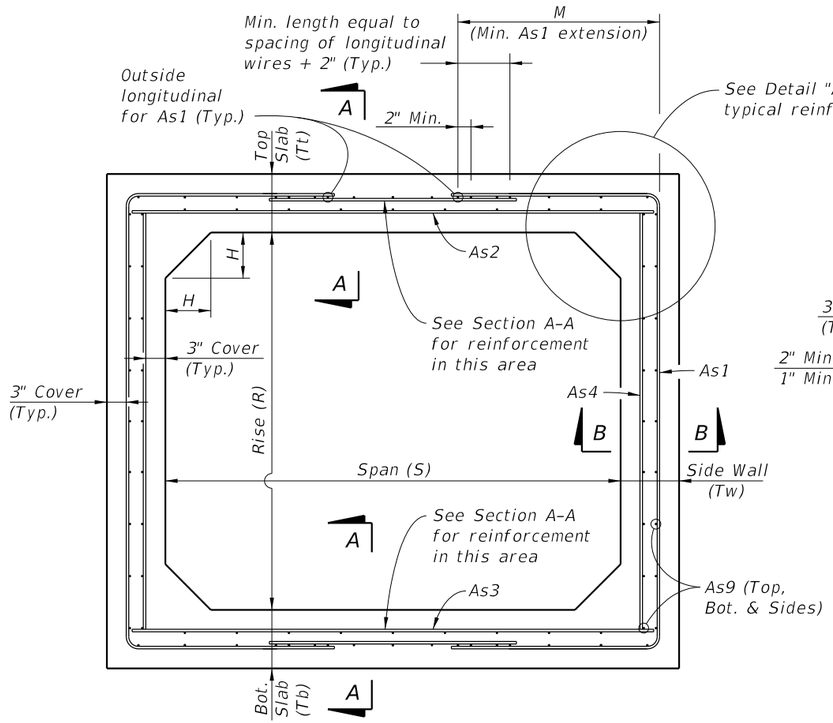
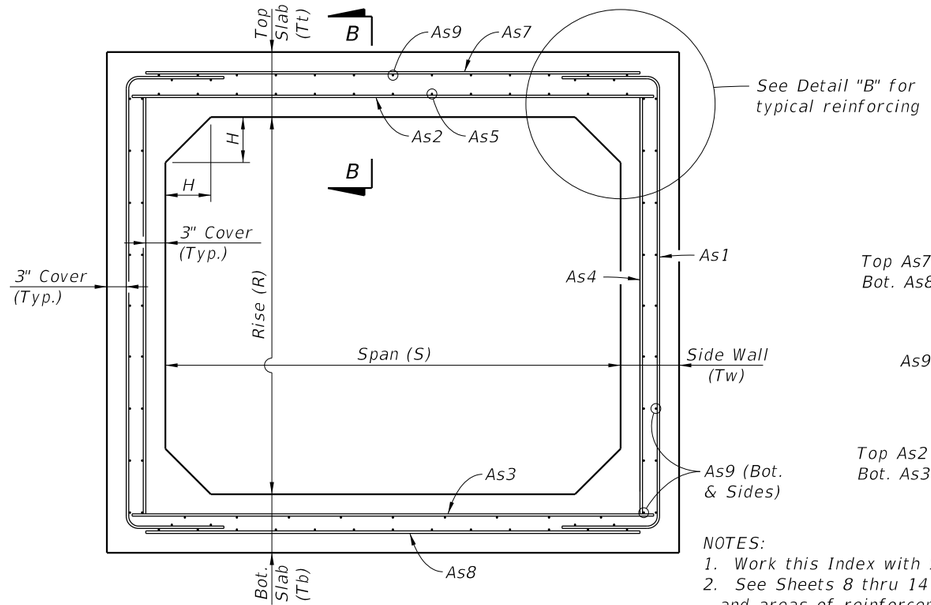
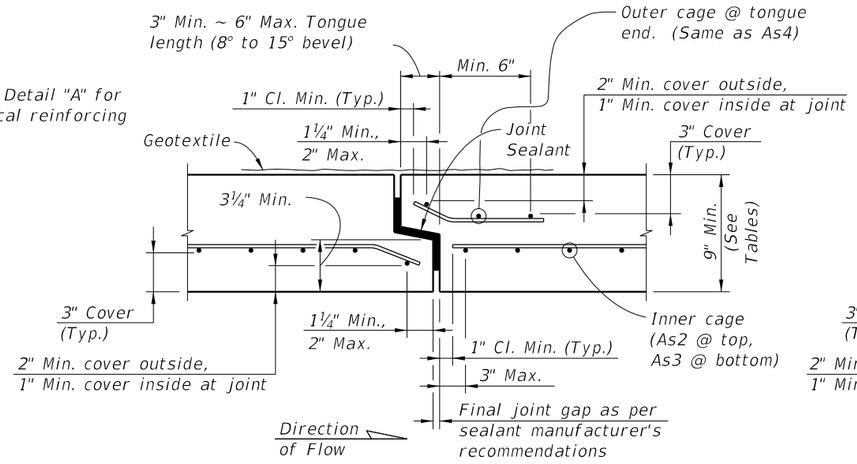
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/13			FY 2025-26 STANDARD PLANS	STANDARD PRECAST CONCRETE BOX CULVERTS	400-292	6 of 14



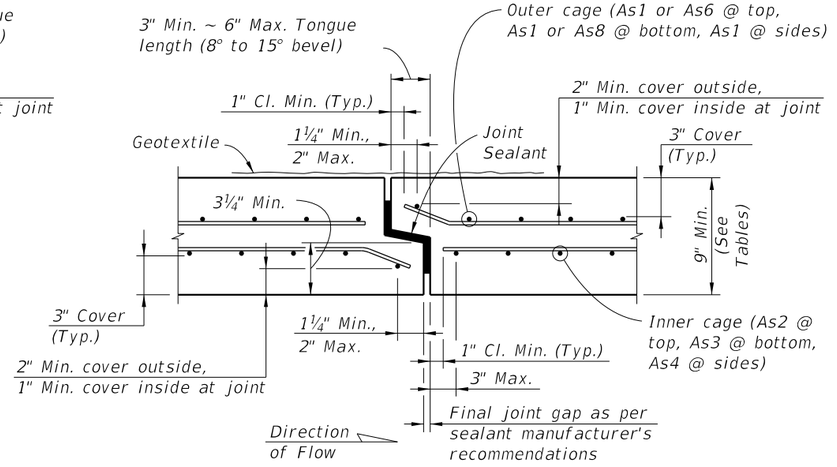
TYPICAL BOX SECTION (TYPE 2)
DESIGN EARTH COVER 2' OR GREATER
(Option 1 Reinforcing Configuration Shown)



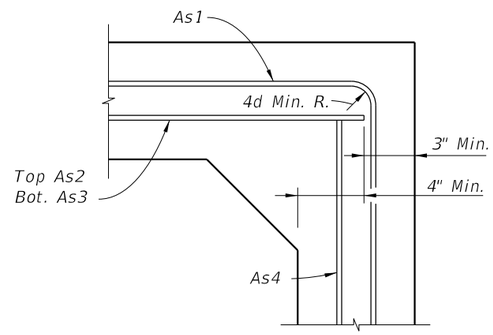
TYPICAL BOX SECTION (TYPE 1)
DESIGN EARTH COVER LESS THAN 2'
(Option 1 Reinforcing Configuration Shown)



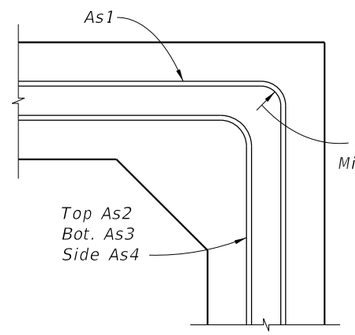
SECTION A-A



SECTION B-B
TYPICAL SECTION THRU JOINT



DETAIL "A"
(OPTION 1)



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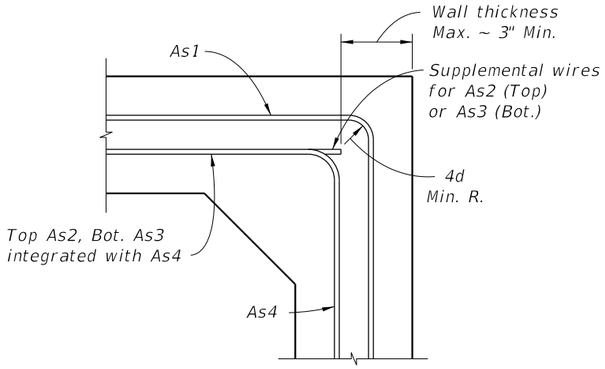

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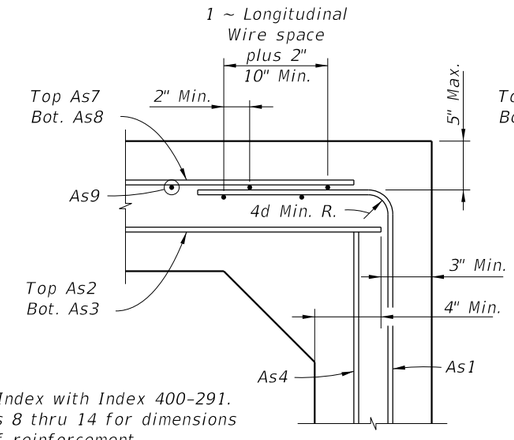

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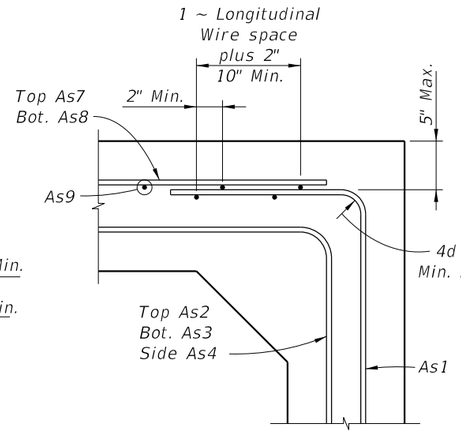

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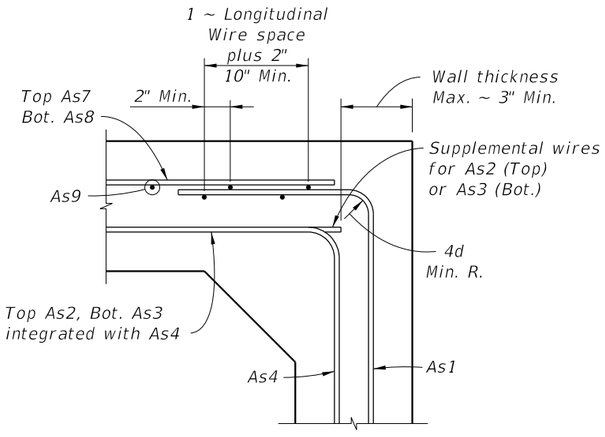

DETAIL "B"
(OPTION 3)

NOTES:
1. Work this Index with Index 400-291.
2. See Sheets 8 thru 14 for dimensions and areas of reinforcement.

STANDARD PRECAST BOX CULVERT WITH 3" CONCRETE COVER

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	STANDARD PRECAST CONCRETE BOX CULVERTS	INDEX	SHEET
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TABLE 9A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 3' & 4' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
3' x 3'	9	9	9	4 to 8	0.33' - <2'	0.22	0.24	0.22	0.22	0.22	0.22	0.22	See General Note 5	-
					2' - <3'	0.11	0.23	0.22	0.11	-	-	-		31
					3' - <5'	0.11	0.22	0.22	0.11	-	-	-		31
					5' - 10'	0.11	0.22	0.22	0.11	-	-	-		31
					15'	0.11	0.22	0.22	0.11	-	-	-		31
					20'	0.13	0.22	0.22	0.11	-	-	-		31
					25'	0.16	0.22	0.22	0.11	-	-	-		31
					30'	0.19	0.24	0.25	0.11	-	-	-		31
					35'	0.22	0.28	0.29	0.11	-	-	-		31
4' x 3'	9	9	9	4 to 8	0.33' - <2'	0.22	0.32	0.24	0.22	0.22	0.22	0.22		-
					2' - <3'	0.17	0.31	0.24	0.11	-	-	-		38
					3' - <5'	0.13	0.22	0.22	0.11	-	-	-		38
					5' - 10'	0.13	0.22	0.22	0.11	-	-	-		38
					15'	0.17	0.22	0.22	0.11	-	-	-		38
					20'	0.23	0.26	0.27	0.11	-	-	-		38
					25'	0.28	0.32	0.34	0.11	-	-	-		38
					30'	0.33	0.39	0.40	0.11	-	-	-		38
4' x 4'	9	9	9	4 to 8	0.33' - <2'	0.22	0.34	0.26	022	0.22	0.22	0.22		-
					2' - <3'	0.17	0.33	0.26	0.11	-	-	-		38
					3' - <5'	0.13	0.22	0.22	0.11	-	-	-		38
					5' - 10'	0.14	0.22	0.22	0.11	-	-	-		38
					15'	0.19	0.22	0.23	0.11	-	-	-		38
					20'	0.24	0.28	0.30	0.11	-	-	-		38
					25'	0.29	0.36	0.37	0.11	-	-	-		38
					30'	0.34	0.43	0.45	0.11	-	-	-		38

TABLE 9B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 3' & 4' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
3' x 3'	10	10	10	4 to 8	0.33' - <2'	0.24	0.24	0.24	0.24	0.24	0.24	0.24	See General Note 5	-
					2' - <3'	0.12	0.24	0.24	0.24	-	-	-		31
					3' - <5'	0.12	0.24	0.24	0.24	-	-	-		31
					5' - 10'	0.12	0.24	0.24	0.24	-	-	-		31
					15'	0.12	0.24	0.24	0.24	-	-	-		31
					20'	0.12	0.24	0.24	0.24	-	-	-		31
					25'	0.13	0.24	0.24	0.24	-	-	-		31
					30'	0.15	0.24	0.24	0.12	-	-	-		31
					35'	0.18	0.24	0.24	0.12	-	-	-		31
4' x 3'	10	10	10	4 to 8	0.33' - <2'	0.24	0.26	0.24	0.24	0.24	0.24	0.24		-
					2' - <3'	0.14	0.26	0.24	0.12	-	-	-		38
					3' - <5'	0.12	0.24	0.24	0.12	-	-	-		38
					5' - 10'	0.12	0.24	0.24	0.12	-	-	-		38
					15'	0.14	0.24	0.24	0.12	-	-	-		38
					20'	0.18	0.24	0.24	0.12	-	-	-		38
					25'	0.22	0.26	0.27	0.12	-	-	-		38
					30'	0.26	0.31	0.32	0.12	-	-	-		38
4' x 4'	10	10	10	4 to 8	0.33' - <2'	0.24	0.28	0.24	0.24	0.24	0.24	0.24		-
					2' - <3'	0.14	0.28	0.24	0.12	-	-	-		38
					3' - <5'	0.12	0.24	0.24	0.12	-	-	-		38
					5' - 10'	0.12	0.24	0.24	0.12	-	-	-		38
					15'	0.15	0.24	0.24	0.12	-	-	-		38
					20'	0.19	0.24	0.24	0.12	-	-	-		38
					25'	0.23	0.28	0.30	0.12	-	-	-		38
					30'	0.27	0.34	0.35	0.12	-	-	-		38

NOTES:
1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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TABLE 10A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 5' & 6' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
5' x 3'	9	9	9	4 to 8	0.33' - <2'	0.27	0.39	0.37	0.22	0.22	0.22	0.27	See General Note 5	–
					2' - <3'	0.26	0.39	0.37	0.11	–	–	–		45
					3' - <5'	0.19	0.24	0.25	0.11	–	–	–		36
					5' - 10'	0.20	0.22	0.22	0.11	–	–	–		36
					15'	0.28	0.28	0.30	0.11	–	–	–		35
					20'	0.37	0.38	0.39	0.11	–	–	–		35
					25'	0.45	0.48	0.49	0.11	–	–	–		35
					30'	0.54	0.58	0.59	0.11	–	–	–		35
5' x 4'	9	9	9	4 to 8	0.33' - <2'	0.26	0.42	0.39	0.22	0.22	0.22	0.26		–
					2' - <3'	0.26	0.42	0.39	0.11	–	–	–		45
					3' - <5'	0.19	0.26	0.27	0.11	–	–	–		45
					5' - 10'	0.20	0.22	0.23	0.11	–	–	–		36
					15'	0.27	0.31	0.33	0.11	–	–	–		35
					20'	0.36	0.42	0.43	0.11	–	–	–		35
					25'	0.44	0.52	0.54	0.11	–	–	–		35
					30'	0.53	0.63	0.65	0.11	–	–	–		35
5' x 5'	9	9	9	4 to 8	0.33' - <2'	0.27	0.44	0.42	0.22	0.22	0.22	0.27		–
					2' - <3'	0.27	0.44	0.42	0.11	–	–	–		45
					3' - <5'	0.20	0.27	0.28	0.11	–	–	–		45
					5' - 10'	0.22	0.23	0.26	0.11	–	–	–		45
					15'	0.30	0.34	0.36	0.11	–	–	–		36
					20'	0.38	0.45	0.47	0.11	–	–	–		35
					25'	0.47	0.56	0.59	0.11	–	–	–		35
					30'	0.55	0.68	0.71	0.11	–	–	–		35
6' x 3'	9	9	9	4 to 12	0.33' - <2'	0.34	0.47	0.42	0.22	0.22	0.25	0.34		–
					2' - <3'	0.34	0.47	0.42	0.11	–	–	–		43
					3' - <5'	0.27	0.31	0.32	0.11	–	–	–		39
					5' - 10'	0.29	0.26	0.28	0.11	–	–	–		39
					15'	0.42	0.39	0.40	0.11	–	–	–		38
					20'	0.55	0.52	0.53	0.11	–	–	–		38
					25'	0.68	0.66	0.67	0.11	–	–	–		38
					30'	0.82	0.81	0.82	0.11	–	–	–		38
6' x 4'	9	9	9	4 to 12	0.33' - <2'	0.33	0.50	0.46	0.22	0.22	0.23	0.33		–
					2' - <3'	0.33	0.50	0.46	0.11	–	–	–		43
					3' - <5'	0.27	0.33	0.35	0.11	–	–	–		39
					5' - 10'	0.28	0.29	0.31	0.11	–	–	–		39
					15'	0.40	0.43	0.45	0.11	–	–	–		38
					20'	0.52	0.57	0.59	0.11	–	–	–		38
					25'	0.65	0.73	0.74	0.11	–	–	–		38
					30'	0.78	0.88	0.90	0.11	–	–	–		38
6' x 5'	9	9	9	4 to 12	0.33' - <2'	0.33	0.52	0.49	0.22	0.22	0.23	0.33		–
					2' - <3'	0.33	0.52	0.49	0.11	–	–	–		43
					3' - <5'	0.27	0.35	0.37	0.11	–	–	–		43
					5' - 10'	0.29	0.31	0.34	0.11	–	–	–		39
					15'	0.41	0.46	0.49	0.11	–	–	–		38
					20'	0.53	0.62	0.64	0.11	–	–	–		38
					25'	0.66	0.78	0.80	0.11	–	–	–		38
					30'	0.78	0.95	0.97	0.11	–	–	–		38
6' x 6'	9	9	9	4 to 12	0.33' - <2'	0.34	0.55	0.51	0.22	0.22	0.24	0.34		–
					2' - <3'	0.34	0.54	0.51	0.11	–	–	–		52
					3' - <5'	0.29	0.37	0.39	0.11	–	–	–		52
					5' - 10'	0.32	0.34	0.37	0.11	–	–	–		43
					15'	0.44	0.50	0.53	0.11	–	–	–		39
					20'	0.57	0.66	0.70	0.11	–	–	–		39
					25'	0.70	0.84	0.87	0.11	–	–	–		38
					30'	0.83	1.02	1.05	0.11	–	–	–		38

TABLE 10B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 5' & 6' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
5' x 3'	10	10	10	4 to 12	0.33' - <2'	0.24	0.33	0.32	0.24	0.24	0.24	0.24	See General Note 5	–
					2' - <3'	0.22	0.33	0.32	0.12	–	–	–		45
					3' - <5'	0.16	0.24	0.24	0.12	–	–	–		36
					5' - 10'	0.16	0.24	0.24	0.12	–	–	–		36
					15'	0.23	0.24	0.24	0.12	–	–	–		35
					20'	0.29	0.30	0.31	0.12	–	–	–		35
					25'	0.36	0.38	0.39	0.12	–	–	–		35
					30'	0.43	0.46	0.47	0.12	–	–	–		35
5' x 4'	10	10	10	4 to 12	0.33' - <2'	0.24	0.35	0.34	0.24	0.24	0.24	0.24		–
					2' - <3'	0.22	0.35	0.34	0.12	–	–	–		45
					3' - <5'	0.15	0.24	0.24	0.12	–	–	–		45
					5' - 10'	0.16	0.24	0.24	0.12	–	–	–		36
					15'	0.22	0.25	0.27	0.12	–	–	–		35
					20'	0.29	0.33	0.34	0.12	–	–	–		35
					25'	0.36	0.41	0.43	0.12	–	–	–		35
					30'	0.42	0.50	0.51	0.12	–	–	–		35
5' x 5'	10	10	10	4 to 12	0.33' - <2'	0.24	0.37	0.36	0.24	0.24	0.24	0.24		–
					2' - <3'	0.21	0.37	0.36	0.12	–	–	–		45
					3' - <5'	0.16	0.24	0.25	0.12	–	–	–		45
					5' - 10'	0.17	0.24	0.24	0.12	–	–	–		45
					15'	0.24	0.27	0.29	0.12	–	–	–		36
					20'	0.30	0.36	0.38	0.12	–	–	–		35
					25'	0.37	0.44	0.47	0.12	–	–	–		35
					30'	0.44	0.53	0.56	0.12	–	–	–		35
6' x 3'	10	10	10	4 to 12	0.33' - <2'	0.28	0.40	0.36	0.24	0.24	0.24	0.28		–
					2' - <3'	0.28	0.40	0.36	0.12	–	–	–		43
					3' - <5'	0.22	0.26	0.28	0.12	–	–	–		39
					5' - 10'	0.24	0.24	0.24	0.12	–	–	–		39
					15'	0.34	0.31	0.32	0.12	–	–	–		38
					20'	0.44	0.41	0.42	0.12	–	–	–		38
					25'	0.54	0.52	0.53	0.12	–	–	–		38
					30'	0.64	0.63	0.64	0.12	–	–	–		38
6' x 4'	10	10	10	4 to 12	0.33' - <2'	0.27	0.42	0.39	0.24	0.24	0.24	0.27		–
					2' - <3'	0.27	0.42	0.39	0.12	–	–	–		43
					3' - <5'	0.21	0.28	0.30	0.12	–	–	–		39
					5' - 10'	0.23	0.24	0.25	0.12	–	–	–		39
					15'	0.32	0.34	0.35	0.12	–	–	–		38
					20'	0.42	0.45	0.47	0.12	–	–	–		38
					25'	0.51	0.56	0.58	0.12	–	–	–		38
					30'	0.61	0.68	0.70	0.12	–	–	–		38
6' x 5'	10	10	10	4 to 12	0.33' - <2'	0.26	0.44	0.42	0.24	0.24	0.24	0.26		–
					2' - <3'	0.26	0.44	0.42	0.12	–	–	–		43
					3' - <5'	0.22	0.30	0.33	0.12	–	–	–		43
					5' - 10'	0.24	0.25	0.27	0.12	–	–	–		39
					15'	0.33	0.36	0.39	0.12	–	–	–		38
					20'	0.42	0.48	0.51	0.12	–	–	–		38
					25'	0.52	0.61	0.63	0.12	–	–	–		38
					30'	0.61	0.74	0.76	0.12	–	–	–		38
6' x 6'	10	10	10	4 to 12	0.33' - <2'	0.27	0.46	0.44	0.24	0.24	0.24	0.27		–
					2' - <3'	0.27	0.46	0.44	0.12	–	–	–		52
					3' - <5'	0.23	0.31	0.34	0.12	–	–	–		52
					5' - 10'	0.25	0.27	0.30	0.12	–	–	–		43
					15'	0.35	0.39	0.42	0.12	–	–	–		39
					20'	0.45	0.52	0.55	0.12	–	–	–		39
					25'	0.54	0.65	0.68	0.12	–	–	–		38
					30'	0.64	0.78	0.81	0.12	–	–	–		38

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	STANDARD PRECAST CONCRETE BOX CULVERTS	INDEX	SHEET
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TABLE 11A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 7' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
7' x 4'	9	9	9	4 to 12	0.33' - <2'	0.42	0.58	0.52	0.22	0.22	0.31	0.42	See General Note 5	–
					2' - <3'	0.42	0.58	0.51	0.11	–	–	–		43
					3' - <5'	0.36	0.41	0.44	0.11	–	–	–		43
					5' - 10'	0.39	0.40	0.39	0.11	–	–	–		43
					15'	0.56	0.56	0.58	0.11	–	–	–		41
					20'	0.74	0.76	0.77	0.11	–	–	–		41
					25'	0.92	0.97	0.97	0.11	–	–	–		41
	9	9.5	9	7 to 12	30'	1.09	1.18	1.10	0.11	–	–	–		41
7' x 5'	9	9	9	4 to 12	0.33' - <2'	0.41	0.61	0.55	0.22	0.23	0.30	0.41		–
					2' - <3'	0.41	0.61	0.55	0.11	–	–	–		47
					3' - <5'	0.37	0.43	0.47	0.11	–	–	–		43
					5' - 10'	0.39	0.41	0.43	0.11	–	–	–		43
					15'	0.56	0.61	0.63	0.11	–	–	–		41
					20'	0.73	0.82	0.83	0.11	–	–	–		41
					25'	0.90	1.04	1.06	0.11	–	–	–		41
	9	9.5	9	7 to 12	30'	1.06	1.26	1.19	0.11	–	–	–		41
7' x 6'	9	9	9	4 to 12	0.33' - <2'	0.42	0.63	0.58	0.22	0.24	0.30	0.42		–
					2' - <3'	0.42	0.63	0.58	0.11	–	–	–		59
					3' - <5'	0.38	0.45	0.50	0.11	–	–	–		47
					5' - 10'	0.41	0.44	0.47	0.11	–	–	–		43
					15'	0.57	0.65	0.68	0.11	–	–	–		41
					20'	0.75	0.87	0.90	0.11	–	–	–		41
					25'	0.93	1.11	1.13	0.11	–	–	–		41
	9	9.5	9	7 to 12	30'	1.07	1.35	1.27	0.11	–	–	–		41
7' x 7'	9	9	9	4 to 12	0.33' - <2'	0.44	0.66	0.61	0.22	0.25	0.31	0.44		–
					2' - <3'	0.44	0.65	0.61	0.11	–	–	–		59
					3' - <5'	0.41	0.47	0.52	0.11	–	–	–		59
					5' - 10'	0.44	0.47	0.52	0.11	–	–	–		47
					15'	0.62	0.69	0.74	0.11	–	–	–		43
					20'	0.80	0.93	0.97	0.11	–	–	–		43
					25'	0.99	1.18	1.22	0.11	–	–	–		43
	9	9.5	9	7 to 12	30'	1.12	1.43	1.36	0.11	–	–	–		41

TABLE 11B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 7' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
7' x 4'	10	10	10	4 to 12	0.33' - <2'	0.33	0.49	0.44	0.24	0.24	0.24	0.33	See General Note 5	–
					2' - <3'	0.33	0.49	0.44	0.12	–	–	–		43
					3' - <5'	0.29	0.35	0.38	0.12	–	–	–		43
					5' - 10'	0.31	0.30	0.31	0.12	–	–	–		43
					15'	0.44	0.44	0.45	0.12	–	–	–		41
					20'	0.58	0.59	0.60	0.12	–	–	–		41
					25'	0.71	0.74	0.75	0.12	–	–	–		41
					30'	0.85	0.91	0.91	0.12	–	–	–		41
7' x 5'	10	10	10	4 to 12	0.33' - <2'	0.32	0.51	0.47	0.24	0.24	0.24	0.32		–
					2' - <3'	0.32	0.51	0.47	0.12	–	–	–		47
					3' - <5'	0.29	0.37	0.41	0.12	–	–	–		43
					5' - 10'	0.31	0.32	0.35	0.12	–	–	–		43
					15'	0.44	0.47	0.50	0.12	–	–	–		41
					20'	0.57	0.63	0.65	0.12	–	–	–		41
					25'	0.70	0.80	0.82	0.12	–	–	–		41
					30'	0.84	0.97	0.99	0.12	–	–	–		41
7' x 6'	10	10	10	4 to 12	0.33' - <2'	0.33	0.53	0.50	0.24	0.24	0.24	0.33		–
					2' - <3'	0.33	0.53	0.50	0.12	–	–	–		59
					3' - <5'	0.30	0.38	0.43	0.12	–	–	–		47
					5' - 10'	0.33	0.35	0.38	0.12	–	–	–		43
					15'	0.45	0.51	0.54	0.12	–	–	–		41
					20'	0.58	0.68	0.70	0.12	–	–	–		41
					25'	0.72	0.85	0.88	0.12	–	–	–		41
					30'	0.85	1.04	1.06	0.12	–	–	–		41
7' x 7'	10	10	10	4 to 12	0.33' - <2'	0.35	0.55	0.52	0.24	0.24	0.24	0.35		–
					2' - <3'	0.35	0.55	0.52	0.12	–	–	–		59
					3' - <5'	0.32	0.40	0.46	0.12	–	–	–		59
					5' - 10'	0.35	0.37	0.41	0.12	–	–	–		47
					15'	0.48	0.54	0.58	0.12	–	–	–		43
					20'	0.62	0.72	0.76	0.12	–	–	–		43
					25'	0.76	0.90	0.94	0.12	–	–	–		43
					30'	0.90	1.10	1.13	0.12	–	–	–		41

NOTES:
1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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TABLE 12A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 8' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
8' x 4'	9	9	9	4	0.33' - <2'	0.52	0.66	0.57	0.22	0.24	0.42	0.52	See General Note 5	–
				to	2' - <3'	0.52	0.66	0.57	0.11	–	–	–		50
					3' - <5'	0.48	0.49	0.52	0.11	–	–	–		50
				12	5' - 10'	0.52	0.48	0.49	0.11	–	–	–		45
					15'	0.75	0.72	0.72	0.11	–	–	–		41
					20'	1.00	0.98	0.97	0.11	–	–	–		41
	9	9.5	9	8 to	25'	1.25	1.24	1.14	0.11	–	–	–		41
	10	10.5	9	12	30'	1.31	1.29	1.21	0.11	–	–	–		41
8' x 5'	9	9	9	4	0.33' - <2'	0.51	0.69	0.60	0.22	0.25	0.40	0.51		–
				to	2' - <3'	0.51	0.69	0.60	0.11	–	–	–		50
					3' - <5'	0.46	0.52	0.56	0.11	–	–	–		45
				12	5' - 10'	0.51	0.51	0.53	0.11	–	–	–		45
					15'	0.74	0.77	0.78	0.11	–	–	–		41
					20'	0.97	1.05	1.05	0.11	–	–	–		41
	9	9.5	9	8 to	25'	1.20	1.33	1.23	0.11	–	–	–		41
	10	10.5	9	12	30'	1.26	1.38	1.30	0.11	–	–	–		41
8' x 6'	9	9	9	4	0.33' - <2'	0.51	0.72	0.64	0.22	0.26	0.39	0.51		–
				to	2' - <3'	0.51	0.72	0.64	0.11	–	–	–		50
					3' - <5'	0.47	0.55	0.59	0.11	–	–	–		50
				12	5' - 10'	0.52	0.55	0.58	0.11	–	–	–		45
					15'	0.74	0.83	0.85	0.11	–	–	–		41
					20'	0.97	1.12	1.13	0.11	–	–	–		41
	9	9.5	9	8 to	25'	1.18	1.42	1.32	0.11	–	–	–		41
	10	10.5	9	12	30'	1.26	1.46	1.39	0.11	–	–	–		41
8' x 7'	9	9	9	4	0.33' - <2'	0.52	0.74	0.67	0.22	0.26	0.40	0.52		–
				to	2' - <3'	0.52	0.74	0.67	0.11	–	–	–		55
					3' - <5'	0.49	0.57	0.62	0.11	–	–	–		55
				12	5' - 10'	0.55	0.59	0.63	0.11	–	–	–		50
					15'	0.77	0.88	0.91	0.11	–	–	–		41
					20'	1.01	1.19	1.21	0.11	–	–	–		41
	9	9.5	9	8 to	25'	1.21	1.51	1.41	0.11	–	–	–		41
	10	10.5	9	12	30'	1.31	1.53	1.47	0.11	–	–	–		41
8' x 8'	9	9	9	4	0.33' - <2'	0.55	0.77	0.70	0.22	0.27	0.41	0.55		–
				to	2' - <3'	0.55	0.77	0.70	0.13	–	–	–		65
					3' - <5'	0.53	0.59	0.64	0.12	–	–	–		65
				12	5' - 10'	0.60	0.63	0.68	0.11	–	–	–		55
					15'	0.83	0.93	0.98	0.11	–	–	–		45
					20'	1.08	1.26	1.29	0.11	–	–	–		45
	9	9.5	9	8 to	25'	1.28	1.59	1.50	0.11	–	–	–		41
	10	10.5	9	12	30'	1.41	1.61	1.55	0.11	–	–	–		41

TABLE 12B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 8' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
8' x 4'	10	10	10	4	0.33' - <2'	0.42	0.56	0.49	0.24	0.24	0.32	0.41	See General Note 5	–
				to	2' - <3'	0.42	0.56	0.49	0.12	–	–	–		50
					3' - <5'	0.38	0.42	0.46	0.12	–	–	–		50
				12	5' - 10'	0.41	0.38	0.39	0.12	–	–	–		45
					15'	0.59	0.56	0.57	0.12	–	–	–		41
					20'	0.78	0.75	0.76	0.12	–	–	–		41
					25'	0.97	0.96	0.96	0.12	–	–	–		41
	10	10.5	10	8 to 12	30'	1.15	1.16	1.10	0.12	–	–	–		41
8' x 5'	10	10	10	4	0.33' - <2'	0.40	0.58	0.52	0.24	.034	0.31	0.40		–
				to	2' - <3'	0.40	0.58	0.52	0.12	–	–	–		50
					3' - <5'	0.37	0.45	0.48	0.12	–	–	–		45
				12	5' - 10'	0.41	0.41	0.43	0.12	–	–	–		45
					15'	0.58	0.60	0.62	0.12	–	–	–		41
					20'	0.76	0.81	0.81	0.12	–	–	–		41
					25'	0.94	1.03	1.03	0.12	–	–	–		41
	10	10.5	10	8 to 12	30'	1.10	1.24	1.24	0.12	–	–	–		41
8' x 6'	10	10	10	4	0.33' - <2'	0.40	0.60	0.55	0.24	0.24	0.30	0.40		–
				to	2' - <3'	0.40	0.60	0.55	0.12	–	–	–		50
					3' - <5'	0.37	0.47	0.51	0.12	–	–	–		50
				12	5' - 10'	0.42	0.43	0.46	0.12	–	–	–		45
					15'	0.58	0.64	0.67	0.12	–	–	–		41
					20'	0.76	0.86	0.88	0.12	–	–	–		41
					25'	0.94	1.09	1.11	0.12	–	–	–		41
	10	10.5	10	8 to 12	30'	1.09	1.32	1.26	0.12	–	–	–		41
8' x 7'	10	10	10	4	0.33' - <2'	0.41	0.63	0.58	0.24	0.24	0.30	0.41		–
				to	2' - <3'	0.41	0.63	0.58	0.12	–	–	–		55
					3' - <5'	0.39	0.49	0.53	0.12	–	–	–		55
				12	5' - 10'	0.44	0.46	0.50	0.12	–	–	–		50
					15'	0.61	0.68	0.72	0.12	–	–	–		45
					20'	0.78	0.91	0.94	0.12	–	–	–		41
					25'	0.97	1.16	1.18	0.12	–	–	–		41
	10	10.5	10	8 to 12	30'	1.11	1.40	1.34	0.12	–	–	–		41
8' x 8'	10	10	10	4	0.33' - <2'	0.44	0.64	0.60	0.24	0.24	0.31	0.44		–
				to	2' - <3'	0.44	0.64	0.60	0.12	–	–	–		65
					3' - <5'	0.42	0.51	0.56	0.12	–	–	–		65
				12	5' - 10'	0.47	0.50	0.55	0.12	–	–	–		55
					15'	0.65	0.72	0.77	0.12	–	–	–		45
					20'	0.84	0.96	1.01	0.12	–	–	–		45
					25'	1.03	1.22	1.26	0.12	–	–	–		41
	10	10.5	10	8 to 12	30'	1.16	1.47	1.42	0.12	–	–	–		41

NOTES:
1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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TABLE 13A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 9' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
9' x 5'	9	9	9	4 to 12	0.33' - <2'	0.62	0.78	0.65	0.22	0.26	0.52	0.61	See General Note 5	-
					2' - <3'	0.62	0.78	0.65	0.11	-	-	-		54
					3' - <5'	0.58	0.63	0.61	0.11	-	-	-		49
					5' - 10'	0.65	0.63	0.64	0.11	-	-	-		49
					15'	0.95	0.96	0.95	0.11	-	-	-		44
	9	9	9	8 to 12	20'	1.26	1.32	1.28	0.11	-	-	-		44
	10	10.5	9		25'	1.39	1.41	1.32	0.11	-	-	-		44
	11	11.5	9		30'	1.46	1.50	1.42	0.11	-	-	-		44
9' x 6'	9	9	9	4 to 12	0.33' - <2'	0.60	0.81	0.69	0.22	0.27	0.51	0.60		-
					2' - <3'	0.60	0.81	0.69	0.11	-	-	-		54
					3' - <5'	0.56	0.66	0.65	0.11	-	-	-		49
					5' - 10'	0.65	0.68	0.69	0.11	-	-	-		49
					15'	0.94	1.03	1.02	0.11	-	-	-		44
	9	9	9	8 to 12	20'	1.25	1.40	1.38	0.11	-	-	-		44
	10	10.5	9		25'	1.37	1.49	1.40	0.11	-	-	-		44
	11	11.5	9		30'	1.44	1.58	1.50	0.11	-	-	-		44
9' x 7'	9	9	9	4 to 12	0.33' - <2'	0.61	0.84	0.72	0.22	0.28	0.51	0.61		-
					2' - <3'	0.61	0.83	0.72	0.11	-	-	-		59
					3' - <5'	0.58	0.69	0.68	0.11	-	-	-		54
					5' - 10'	0.67	0.73	0.75	0.11	-	-	-		49
					15'	0.96	1.09	1.10	0.11	-	-	-		44
	9	9	9	8 to 12	20'	1.27	1.49	1.47	0.11	-	-	-		44
	10	10.5	9		25'	1.38	1.57	1.48	0.11	-	-	-		44
	11	11.5	9		30'	1.49	1.70	1.58	0.11	-	-	-		44
9' x 8'	9	9.5	9	4 to 12	0.33' - <2'	0.60	0.85	0.73	0.22	0.29	0.52	0.53		-
					2' - <3'	0.64	0.86	0.76	0.12	-	-	-		59
					3' - <5'	0.62	0.72	0.72	0.11	-	-	-		59
					5' - 10'	0.71	0.77	0.81	0.11	-	-	-		54
					15'	1.01	1.16	1.17	0.11	-	-	-		44
	9	9.5	9	8 to 12	20'	1.27	1.56	1.45	0.11	-	-	-		44
	10	10.5	9		25'	1.45	1.65	1.57	0.11	-	-	-		44
	11	11.5	9		30'	1.59	1.72	1.66	0.11	-	-	-		44
9' x 9'	9	9.5	9	4 to 12	0.33' - <2'	0.68	0.88	0.76	0.22	0.29	0.55	0.57		-
					2' - <3'	0.68	0.88	0.78	0.18	-	-	-		72
					3' - <5'	0.68	0.75	0.78	0.18	-	-	-		72
					5' - 10'	0.79	0.82	0.88	0.17	-	-	-		59
					15'	1.11	1.22	1.26	0.13	-	-	-		49
	9	9.5	9	8 to 12	20'	1.37	1.64	1.54	0.13	-	-	-		49
	10	10.5	9		25'	1.56	1.73	1.65	0.13	-	-	-		44
	11	11.5	9.5		30'	1.56	1.73	1.68	0.12	-	-	-		44

TABLE 13B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 9' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
9' x 5'	10	10	10	4 to 12	0.33' - <2'	0.49	0.65	0.57	0.24	0.24	0.40	0.48	See General Note 5	-
					2' - <3'	0.49	0.65	0.57	0.12	-	-	-		54
					3' - <5'	0.46	0.54	0.53	0.12	-	-	-		49
					5' - 10'	0.52	0.50	0.51	0.12	-	-	-		49
					15'	0.75	0.74	0.75	0.12	-	-	-		44
					20'	0.98	1.01	1.00	0.12	-	-	-		44
	10	10.5	10	8 to 12	25'	1.21	1.27	1.19	0.12	-	-	-		44
	11	11.5	10		30'	1.30	1.36	1.30	0.12	-	-	-		44
9' x 6'	10	10	10	4 to 12	0.33' - <2'	0.48	0.68	0.60	0.24	0.24	0.39	0.48		-
					2' - <3'	0.48	0.68	0.60	0.12	-	-	-		54
					3' - <5'	0.45	0.57	0.56	0.12	-	-	-		49
					5' - 10'	0.52	0.53	0.56	0.12	-	-	-		49
					15'	0.74	0.79	0.81	0.12	-	-	-		44
					20'	0.97	1.07	1.07	0.12	-	-	-		44
	10	10.5	10	8 to 12	25'	1.18	1.35	1.28	0.12	-	-	-		44
	11	11.5	10		30'	1.27	1.44	1.38	0.12	-	-	-		44
9' x 7'	10	10	10	4 to 12	0.33' - <2'	0.49	0.70	0.63	0.24	0.24	0.39	0.49		-
					2' - <3'	0.49	0.70	0.63	0.12	-	-	-		59
					3' - <5'	0.46	0.59	0.59	0.12	-	-	-		54
					5' - 10'	0.54	0.57	0.60	0.12	-	-	-		49
					15'	0.75	0.84	0.86	0.12	-	-	-		44
					20'	0.98	1.13	1.14	0.12	-	-	-		44
	10	10.5	10	8 to 12	25'	1.18	1.43	1.36	0.12	-	-	-		44
	11	11.5	10		30'	1.28	1.52	1.46	0.12	-	-	-		44
9' x 8'	10	10	10	4 to 12	0.33' - <2'	0.51	0.72	0.65	0.24	0.24	0.39	0.51		-
					2' - <3'	0.51	0.72	0.65	0.12	-	-	-		59
					3' - <5'	0.49	0.61	0.62	0.12	-	-	-		59
					5' - 10'	0.57	0.60	0.65	0.12	-	-	-		54
					15'	0.79	0.89	0.92	0.12	-	-	-		44
					20'	1.02	1.20	1.22	0.12	-	-	-		44
	10	10.5	10	8 to 12	25'	1.21	1.50	1.44	0.12	-	-	-		44
	11	11.5	10		30'	1.33	1.59	1.54	0.12	-	-	-		44
9' x 9'	10	10	10	4 to 12	0.33' - <2'	0.54	0.74	0.68	0.24	0.24	0.41	0.54		-
					2' - <3'	0.54	0.74	0.68	0.15	-	-	-		72
					3' - <5'	0.53	0.63	0.64	0.13	-	-	-		72
					5' - 10'	0.62	0.64	0.70	0.12	-	-	-		59
					15'	0.85	0.94	0.99	0.12	-	-	-		49
					20'	1.09	1.26	1.29	0.12	-	-	-		49
	10	10.5	10	8 to 12	25'	1.28	1.56	1.52	0.12	-	-	-		44
	11	11.5	10		30'	1.42	1.66	1.66	0.12	-	-	-		44

NOTES:
1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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TABLE 14 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 10' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
10' x 5'	10	10	10	4 to 12	0.33' - <2'	0.60	0.73	0.61	0.24	0.24	0.50	0.57	See General Note 5	–
					2' - <3'	0.60	0.73	0.61	0.12	–	–	–		58
					3' - <5'	0.57	0.64	0.58	0.12	–	–	–		53
					5' - 10'	0.65	0.60	0.60	0.12	–	–	–		52
					15'	0.94	0.90	0.89	0.12	–	–	–		47
	10	10	10	8 to 12	20'	1.24	1.23	1.19	0.12	–	–	–		47
	11	11.5	10		25'	1.39	1.37	1.28	0.12	–	–	–		47
	12.5	12.5	10		30'	1.38	1.43	1.41	0.12	–	–	–		47
10' x 6'	10	10	10	4 to 12	0.33' - <2'	0.58	0.75	0.64	0.24	0.24	0.48	0.56		–
					2' - <3'	0.58	0.75	0.64	0.12	–	–	–		58
					3' - <5'	0.56	0.67	0.62	0.12	–	–	–		52
					5' - 10'	0.64	0.64	0.65	0.12	–	–	–		52
					15'	0.92	0.96	0.95	0.12	–	–	–		47
	10	10	10	8 to 12	20'	1.21	1.31	1.27	0.12	–	–	–		47
	11	11.5	10		25'	1.35	1.44	1.36	0.12	–	–	–		47
	12.5	12.5	10		30'	1.35	1.51	1.49	0.12	–	–	–		47
10' x 7'	10	10	10	4 to 12	0.33' - <2'	0.57	0.78	0.67	0.24	0.24	0.48	0.57		–
					2' - <3'	0.57	0.78	0.67	0.12	–	–	–		58
					3' - <5'	0.58	0.70	0.65	0.12	–	–	–		58
					5' - 10'	0.65	0.68	0.70	0.12	–	–	–		52
					15'	0.92	1.02	1.02	0.12	–	–	–		47
	10	10	10	8 to 12	20'	1.21	1.38	1.35	0.12	–	–	–		47
	11	11.5	10		25'	1.33	1.52	1.44	0.12	–	–	–		47
	12.5	12.5	10		30'	1.38	1.58	1.57	0.12	–	–	–		47
10' x 8'	10	10	10	4 to 12	0.33' - <2'	0.58	0.80	0.70	0.24	0.26	0.48	0.58		–
					2' - <3'	0.58	0.80	0.70	0.12	–	–	–		64
					3' - <5'	0.60	0.72	0.68	0.12	–	–	–		58
					5' - 10'	0.67	0.72	0.75	0.12	–	–	–		52
					15'	0.95	1.08	1.08	0.12	–	–	–		47
	10	10	10	8 to 12	20'	1.24	1.45	1.44	0.12	–	–	–		47
	11	11.5	10		25'	1.36	1.59	1.52	0.12	–	–	–		47
	12.5	12.5	10		30'	1.45	1.64	1.64	0.12	–	–	–		47
10' x 9'	10	10	10	4 to 12	0.33' - <2'	0.61	0.82	0.73	0.24	0.26	0.50	0.61		–
					2' - <3'	0.61	0.82	0.73	0.14	–	–	–		70
					3' - <5'	0.64	0.75	0.73	0.13	–	–	–		64
					5' - 10'	0.72	0.77	0.80	0.12	–	–	–		58
					15'	1.00	1.13	1.15	0.12	–	–	–		52
	10	10	10	8 to 12	20'	1.30	1.53	1.52	0.12	–	–	–		47
	11	11.5	10		25'	1.42	1.66	1.60	0.12	–	–	–		47
	12.5	12.5	10		30'	1.57	1.70	1.72	0.12	–	–	–		47
10' x 10'	10	10	10	4 to 12	0.33' - <2'	0.66	0.84	0.75	0.24	0.27	0.52	0.65		–
					2' - <3'	0.66	0.84	0.75	0.20	–	–	–		79
					3' - <5'	0.70	0.77	0.79	0.19	–	–	–		70
					5' - 10'	0.79	0.81	0.87	0.18	–	–	–		64
					15'	1.09	1.19	1.23	0.15	–	–	–		52
	10	10	10	8 to 12	20'	1.40	1.61	1.61	0.14	–	–	–		52
	11	11.5	10		25'	1.53	1.74	1.68	0.14	–	–	–		47
	12.5	12.5	10.5		30'	1.60	1.71	1.74	0.14	–	–	–		47

TABLE 15 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 11' SPANS

SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
11' x 4'	11	11	11	4 to 12	0.33' - <2'	0.60	0.66	0.54	0.27	0.27	0.52	0.56	See General Note 5	–
					2' - <3'	0.60	0.66	0.54	0.14	–	–	–		62
					3' - <5'	0.60	0.61	0.53	0.14	–	–	–		62
					5' - 10'	0.79	0.63	0.62	0.14	–	–	–		55
					15'	1.01	0.82	0.79	0.14	–	–	–		55
	12	12	11	8 to 12	20'	1.34	1.11	1.06	0.14	–	–	–		55
	13.5	13.5	11		25'	1.52	1.27	1.23	0.14	–	–	–		55
					30'	1.54	1.37	1.34	0.14	–	–	–		50
11' x 6'	11	11	11	4 to 12	0.33' - <2'	0.57	0.71	0.60	0.27	0.27	0.47	0.53		–
					2' - <3'	0.56	0.71	0.60	0.14	–	–	–		62
					3' - <5'	0.56	0.67	0.59	0.14	–	–	–		55
					5' - 10'	0.73	0.71	0.72	0.14	–	–	–		55
					15'	0.92	0.92	0.91	0.14	–	–	–		50
	11	11	11	8 to 12	20'	1.21	1.25	1.21	0.14	–	–	–		50
	12	12	11		25'	1.37	1.43	1.39	0.14	–	–	–		50
	13.5	13.5	11		30'	1.39	1.53	1.50	0.14	–	–	–		50
11' x 8'	11	11	11	4 to 12	0.33' - <2'	0.55	0.76	0.66	0.27	0.27	0.46	0.55		–
					2' - <3'	0.55	0.76	0.66	0.14	–	–	–		62
					3' - <5'	0.54	0.72	0.65	0.14	–	–	–		62
					5' - 10'	0.73	0.79	0.82	0.14	–	–	–		55
					15'	0.93	1.03	1.03	0.14	–	–	–		50
	11	11	11	8 to 12	20'	1.21	1.39	1.36	0.14	–	–	–		50
	12	12.5	11		25'	1.34	1.56	1.50	0.14	–	–	–		50
	13.5	13.5	11		30'	1.41	1.66	1.65	0.14	–	–	–		50
11' x 10'	11	11	11	4 to 12	0.33' - <2'	0.60	0.81	0.71	0.27	0.27	0.48	0.60		–
					2' - <3'	0.60	0.81	0.71	0.15	–	–	–		75
					3' - <5'	0.61	0.77	0.70	0.14	–	–	–		69
					5' - 10'	0.80	0.88	0.93	0.14	–	–	–		62
					15'	1.01	1.13	1.15	0.14	–	–	–		55
	11	11	11	8 to 12	20'	1.30	1.52	1.52	0.14	–	–	–		50
	12	12.5	11		25'	1.42	1.70	1.65	0.14	–	–	–		50
	13.5	14	11		30'	1.53	1.77	1.74	0.14	–	–	–		50
11' x 11'	11	11	11	4 to 12	0.33' - <2'	0.64	0.83	0.74	0.27	0.27	0.51	0.64		–
					2' - <3'	0.64	0.83	0.74	0.21	–	–	–		86
					3' - <5'	0.67	0.79	0.75	0.21	–	–	–		75
					5' - 10'	0.88	0.93	0.99	0.19	–	–	–		69
					15'	1.09	1.19	1.23	0.16	–	–	–		55
	11	11	11	8 to 12	20'	1.40	1.59	1.60	0.15	–	–	–		55
	12	12.5	11		25'	1.54	1.77	1.73	0.15	–	–	–		50
	13.5	14	11.5		30'	1.57	1.77	1.76	0.14	–	–	–		50

NOTES:
1. See Sheet 2 for General Notes.
2. See Sheet 7 for Reinforcing Details and dimension locations.
3. See Sheet 14 for WWR Bending Diagrams.

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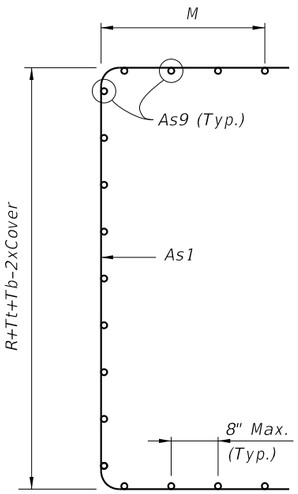
TABLE 16 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 12' SPANS

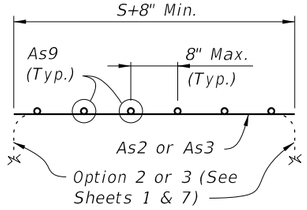
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)	DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.) As1	As2	As3	As4	As5	As7	As8	As9	As1 EXT. LENGTH (M) (in.)
12' x 4'	12	12	12	4 to 12	0.33' – <2'	0.59	0.64	0.51	0.29	0.29	0.52	0.55	See General Note 5	–
					2' – <3'	0.60	0.64	0.51	0.15	–	–	–		73
					3' – <5'	0.60	0.61	0.51	0.15	–	–	–		66
					5' – 10'	0.81	0.61	0.61	0.15	–	–	–		66
					15'	1.04	0.80	0.77	0.15	–	–	–		59
					20'	1.37	1.08	1.03	0.15	–	–	–		59
	13	13	12	8 to 12	25'	1.58	1.26	1.21	0.15	–	–	–		59
	14.5	14.5	12		30'	1.63	1.38	1.34	0.15	–	–	–		53
12' x 6'	12	12	12	4 to 12	0.33' – <2'	0.56	0.70	0.57	0..29	0.29	0.47	0.52		–
					2' – <3'	0.56	0.70	0.57	0.15	–	–	–		66
					3' – <5'	0.56	0.67	0.57	0.15	–	–	–		59
					5' – 10'	0.74	0.69	0.70	0.15	–	–	–		59
					15'	0.94	0.90	0.88	0.15	–	–	–		53
					20'	1.23	1.22	1.17	0.15	–	–	–		53
	13	13	12	8 to 12	25'	1.40	1.42	1.37	0.15	–	–	–		53
	14.5	15	12		30'	1.44	1.54	1.48	0.15	–	–	–		53
12' x 8'	12	12	12	4 to 12	0.33' – <2'	0.55	0.75	0.63	0.29	0.29	0.45	0.53		–
					2' – <3'	0.55	0.75	0.63	0.15	–	–	–		66
					3' – <5'	0.55	0.73	0.63	0.15	–	–	–		59
					5' – 10'	0.73	0.77	0.79	0.15	–	–	–		59
					15'	0.93	1.00	0.99	0.15	–	–	–		53
	12	12	12	8 to 12	20'	1.21	1.35	1.31	0.15	–	–	–		53
	13	13.5	12		25'	1.35	1.55	1.48	0.15	–	–	–		53
	14.5	15	12		30'	1.40	1.67	1.62	0.15	–	–	–		53
12' x 10'	12	12	12	4 to 12	0.33' – <2'	0.57	0.80	0.68	0.29	0.29	0.46	0.57		–
					2' – <3'	0.57	0.80	0.68	0.15	–	–	–		73
					3' – <5'	0.59	0.77	0.68	0.15	–	–	–		66
					5' – 10'	0.78	0.85	0.89	0.15	–	–	–		59
					15'	0.98	1.10	1.11	0.15	–	–	–		53
	12	12	12	8 to 12	20'	1.26	1.47	1.45	0.15	–	–	–		53
	13	13.5	12		25'	1.39	1.68	1.63	0.15	–	–	–		53
	14.5	15	12		30'	1.48	1.79	1.76	0.15	–	–	–		53
12' x 12'	12	12	12	4 to 12	0.33' – <2'	0.65	0.84	0.73	0.29	0.29	0.50	0.65		–
					2' – <3'	0.65	0.84	0.73	0.23	–	–	–		93
					3' – <5'	0.68	0.81	0.75	0.22	–	–	–		80
					5' – 10'	0.90	0.94	1.01	0.21	–	–	–		73
					15'	1.12	1.20	1.24	0.18	–	–	–		59
	12	12	12	8 to 12	20'	1.42	1.60	1.61	0.16	–	–	–		59
	13	13.5	12		25'	1.57	1.81	1.78	0.16	–	–	–		53
	14.5	15	12.5		30'	1.63	1.86	1.85	0.15	–	–	–		53

NOTES:
1. See Sheet 2 of 14 for General Notes.
2. See Sheet 7 of 14 for Reinforcing Details and dimension locations.

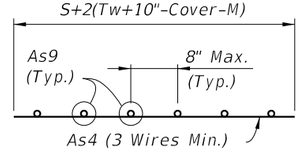
WELDED WIRE REINFORCEMENT BENDING DIAGRAM



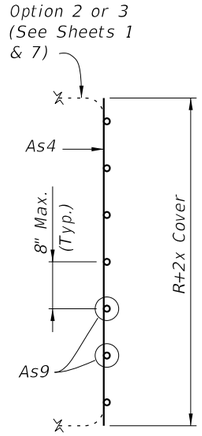
WWR PIECE NO. 1
(2 Reqd. per segment)



WWR PIECE NO. 2
(2 Reqd. per segment)

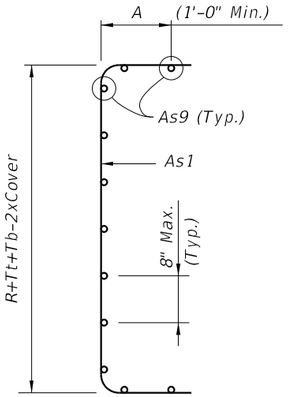


WWR PIECE NO. 4
(Tongue Reinforcement)
(4 Reqd. per segment)

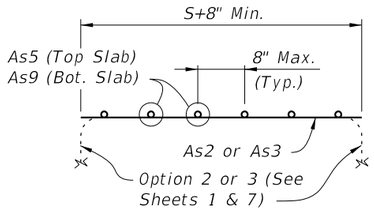


WWR PIECE NO. 3
(2 Reqd. per segment)

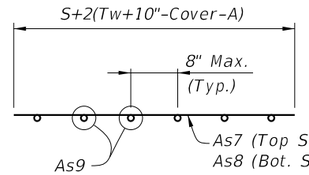
TYPE 2 BOX SECTION (DESIGN EARTH COVER 2' OR GREATER)



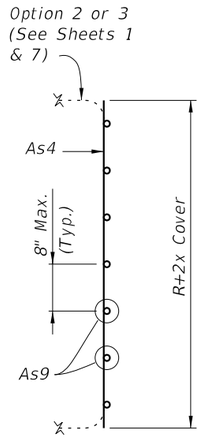
WWR PIECE NO. 1
(2 Reqd. per segment)



WWR PIECE NO. 2
(2 Reqd. per segment)



WWR PIECE NO. 4
(2 Reqd. per segment)



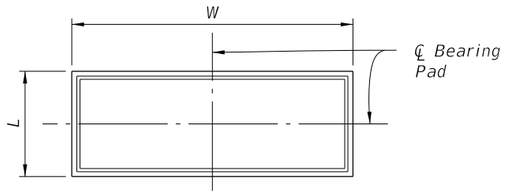
WWR PIECE NO. 3
(2 Reqd. per segment)

TYPE 1 BOX SECTION (DESIGN EARTH COVER LESS THAN 2')

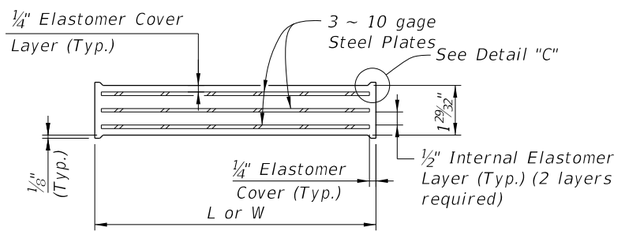
REINFORCEMENT NOTES:
1. Reinforcement bending dimensions are out-to-out.
2. See General Notes 4, 5 and 6 on Sheet 2.
3. See Tables 1 thru 16 for dimensions M, R, S, Tb, Tt and Tw.
4. Dimension "A" is determined by the Manufacturer in accordance with the requirements of Detail "B" on Sheets 1 and 7.

10/17/2024 10:51:48 AM

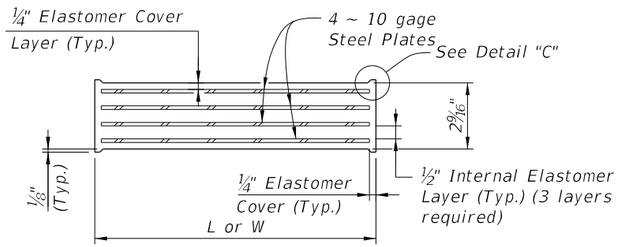
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	STANDARD PRECAST CONCRETE BOX CULVERTS	INDEX	SHEET
07/01/13					400-292	14 of 14



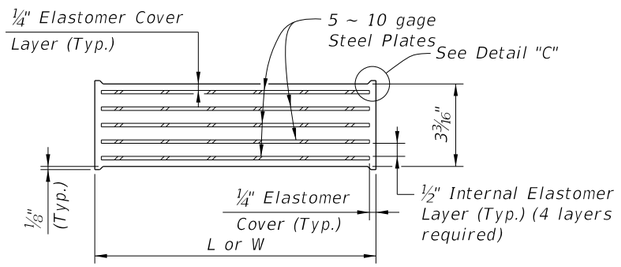
PLAN



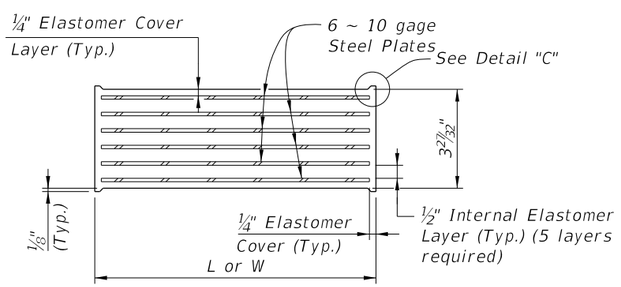
TYPICAL SECTION TYPE D, E & AA PAD



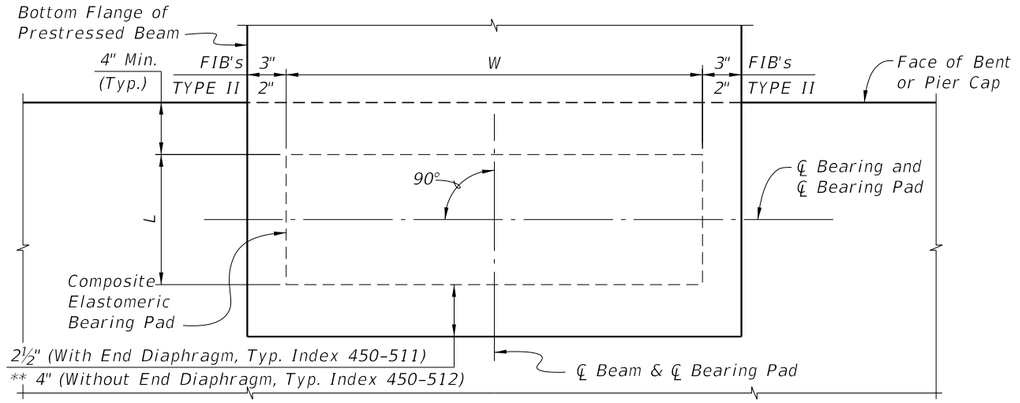
TYPICAL SECTION TYPE F, G & AB PAD



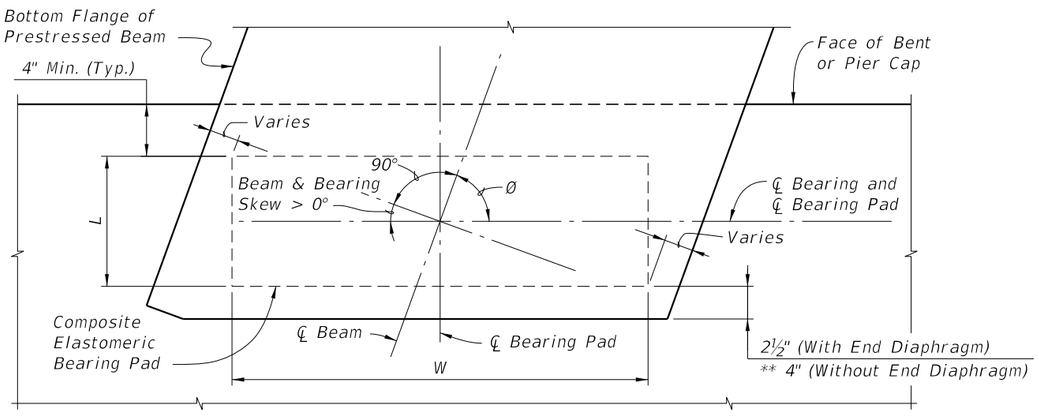
TYPICAL SECTION TYPE H PAD



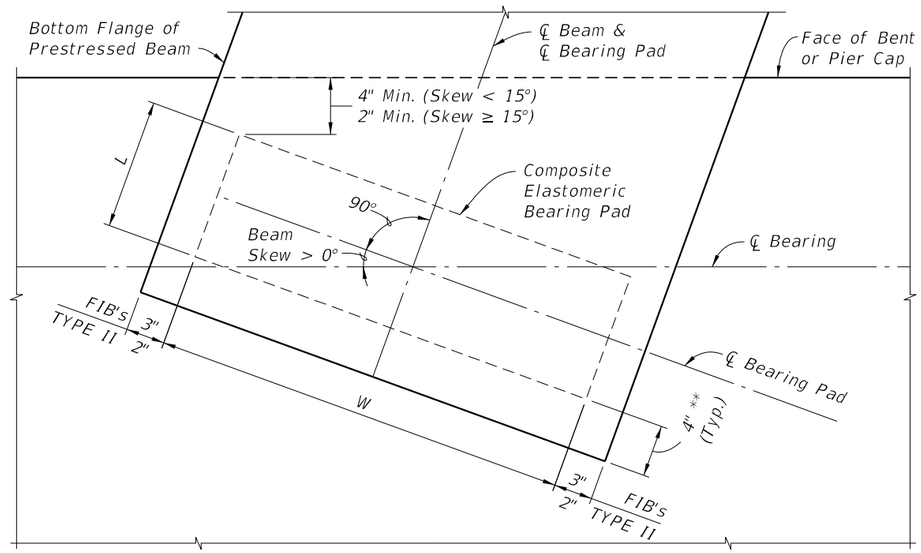
TYPICAL SECTION TYPE J & K PAD



PARTIAL PLAN (Beam & Bearing Skew = 0°)



PARTIAL PLAN (Beam & Bearing Skew > 0°) (Use Index 450-511)

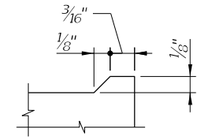


PARTIAL PLAN WITH SQUARED END BEAM (Use Index 450-512)
(Beam Skew > 0°; Bearing Skew = 0°)

	BEAM TYPE	BEARING PAD DIMENSIONS		*BEVELED BEARING PLATE DIMENSIONS	
PAD TYPE (See Note 1)		L	W	C	D
D (G=110psi)	FLORIDA I-BEAM	8"	2'-8"	1'-0"	3'-0"
E (G=110psi)		10"	2'-8"	1'-0"	3'-0"
F (G=110psi)		10"	2'-8"	1'-0"	3'-0"
G (G=150psi)		10"	2'-8"	1'-0"	3'-0"
H (G=150psi)		10"	2'-8"	1'-0"	3'-0"
J (G=150psi)		10"	2'-8"	1'-0"	3'-0"
K (G=150psi)		1'-0"	2'-8"	1'-1½"	3'-0"
AA (G=110psi)	AASHTO TYPE II	10"	1'-2"	1'-0"	1'-4"
AB (G=150psi)		10"	1'-2"	1'-0"	1'-4"

* Work this sheet with the appropriate type Bearing Plate Detail (See Bearing Plate Data Table) and BEARING PAD DATA TABLE in the Structures Plans. See TABLE OF BEAM VARIABLES and BEARING PLATE DATA TABLE in the Structures Plans for locations where beveled bearing plates are required.

** Offset to End of Beam is reduced to 2" for Type K Pad.



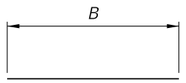
DETAIL "C"

BEARING PAD NOTES:

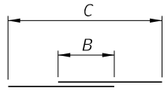
1. Neoprene in Type D, E, F & AA bearing pads shall have a shear modulus (G) of 110 psi. Neoprene in Type G, H, J, K & AB bearing pads shall have a shear modulus (G) of 150 psi.
2. Steel Plates in bearing pads shall conform to ASTM A1011 Grade 36, Type 1.
3. See Bearing Pad Data Table in Structures Plans for quantities of Type D, E, F, G, H, J, K, AA and/or AB Bearing Pads.

10/17/2024 10:51:54 AM

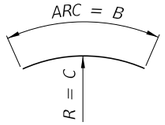
LAST REVISION	REVISION	DESCRIPTION:				
07/01/15			FDOT FY 2025-26 STANDARD PLANS	COMPOSITE ELASTOMERIC BEARING PADS - PRESTRESSED FLORIDA-I & AASHTO TYPE II BEAM	INDEX 400-510	SHEET 1 of 1



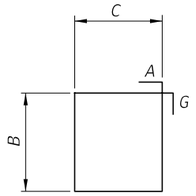
TYPE 1



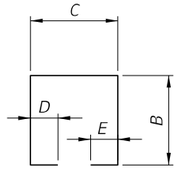
TYPE 2



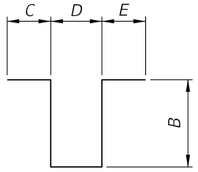
TYPE 3



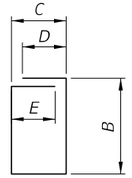
TYPE 4



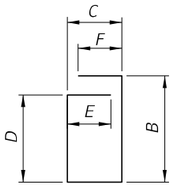
TYPE 5



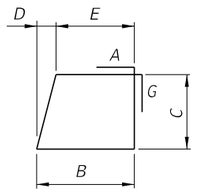
TYPE 6



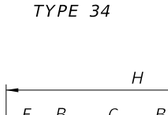
TYPE 7



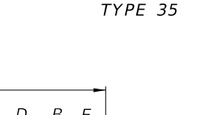
TYPE 8



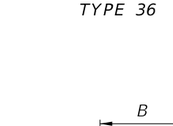
TYPE 9



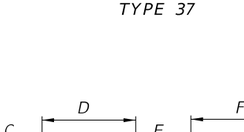
TYPE 10



TYPE 1 1



TYPE 12



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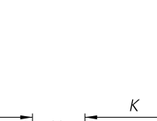
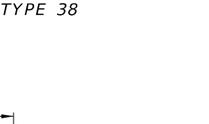


TYPE 14



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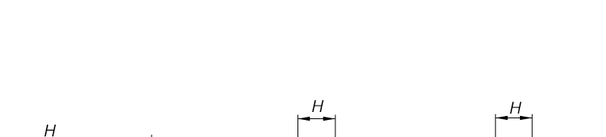
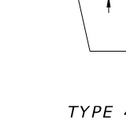
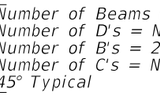


TYPE 16

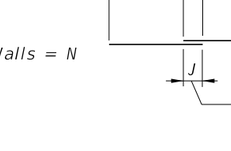
Number of Beams or Walls = N
Number of D's = N-1
Number of B's = 2N-2
Number of C's = N-2
45° Typical



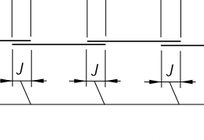
TYPE 17



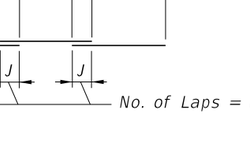
TYPE 18



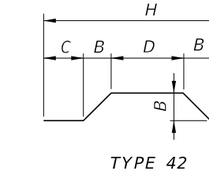
TYPE 19



TYPE 20

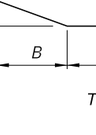


TYPE 21



TYPE 22

TYPE 23



TYPE 24

TYPE 25

TYPE 26

TYPE 27

TYPE 28

TYPE 29

TYPE 30

TYPE 31

TYPE 32

Style 6 = No Hook

TYPE 33

TYPE 34

TYPE 35

TYPE 36

TYPE 37

TYPE 38

TYPE 39

C = Pitch
B = Overall Height
N = Total number of closed turns at Top and Bottom of columns

Splices may be accomplished by lapping 1.5 turns. Cost of Channel Spacers and Splices shall be included in the Contract Unit Price for Reinf. Steel (Substructure)

Number of Beams or Walls = N
Number of D's = N-1
Number of B's = 2N-1
Number of C's = N-1
45° Typical

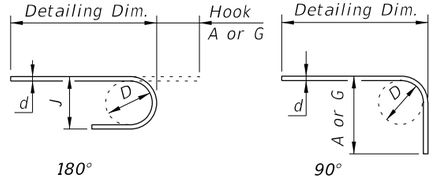
TYPE 40

TYPE 41

TYPE 42

TYPE 43

HOOK DETAILS



180° 90°

BAR SIZE	D	180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	1'-0"
#7	5¼"	10"	7"	1'-2"
#8	6"	11"	8"	1'-4"
#9	9½"	1'-3"	11¾"	1'-7"
#10	10¾"	1'-5"	1'-1¼"	1'-10"
#11	12"	1'-7"	1'-2¾"	2'-0"
#14	18¼"	2'-3"	1'-9¾"	2'-7"
#18	24"	3'-0"	2'-4½"	3'-5"
STYLE		1		3

STIRRUPS (TIES SIMILAR)

STIRRUP & TIE HOOK DIMENSIONS

BAR SIZE	D	90° HOOKS A or G	135° HOOKS A or G	135° HOOKS H *
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	1'-0"	8"	4½"
#7	5¼"	1'-2"	9"	5¼"
#8	6"	1'-4"	10½"	6"
STYLE		4	5	

STYLE 6 = NO HOOK

* Dimension is approximate.

Hook Styles Detailed on this sheet are for Illustration Only.

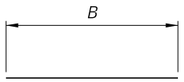
Actual Hook Style for any particular bar will be shown under A or G Heading on REINFORCING BAR LIST sheet(s) in Structures Plans.

All Dimensions are out-to-out.

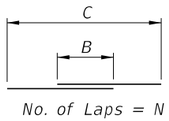
NOTE: For Bar Dimensions See REINFORCING BAR LIST Sheet(s) in Structures Plans.

10/17/2024 10:52:01 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/24			FDOT FY 2025-26 STANDARD PLANS	BAR BENDING DETAILS (STEEL)	415-001	1 of 1



TYPE 1



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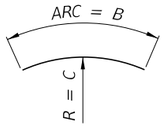

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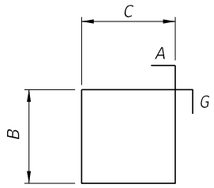

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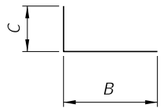

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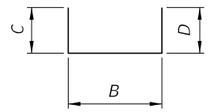

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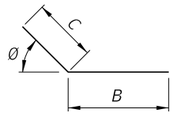

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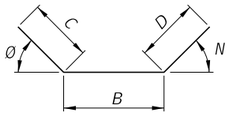

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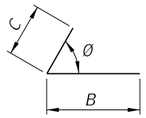

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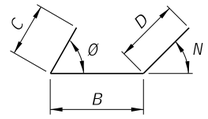

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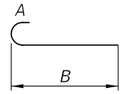

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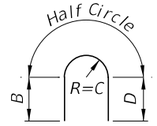

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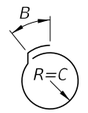

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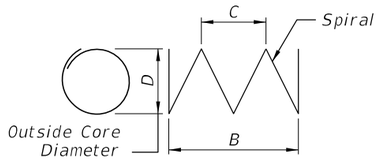
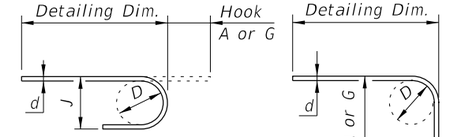


TYPE 39

SINGLE BAR BENDING DETAILS

HOOK DETAILS



BAR SIZE	D	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	1'-0"
#7	5¼"	10"	7"	1'-2"
#8	6"	11"	8"	1'-4"
STYLE		1		3

NOTES

GENERAL
All dimensions are out-to-out.
For Bar dimensions See REINFORCING BAR LIST Sheet(s) in Structures Plans.

SPIRALS (TYPE 39 BARS)

C = Pitch
B = Overall Height
N = Total number of closed turns at Top and Bottom of columns
Spirals = 1.5 turns

Include spiral splice in Contract Unit Price for FRP Reinforcing.

HOOKS
All Dimensions are approximate.
Hook Styles Detailed on this sheet are for Illustration Only.
Actual Hook Style for any particular bar will be shown under A or G Heading on REINFORCING BAR LIST sheet(s) in Structures Plans.

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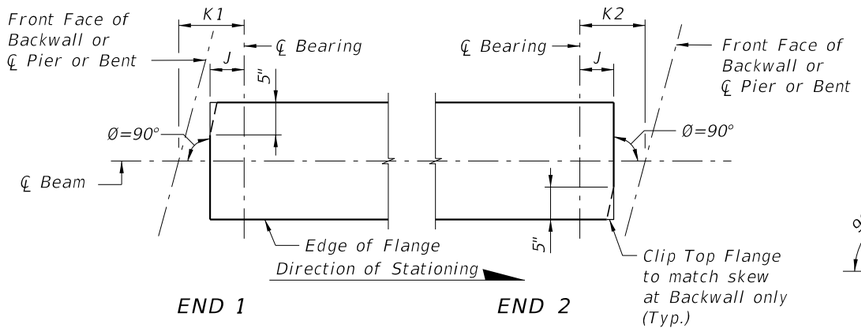
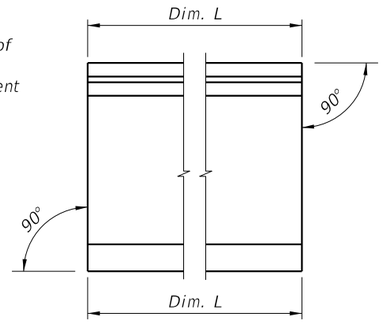
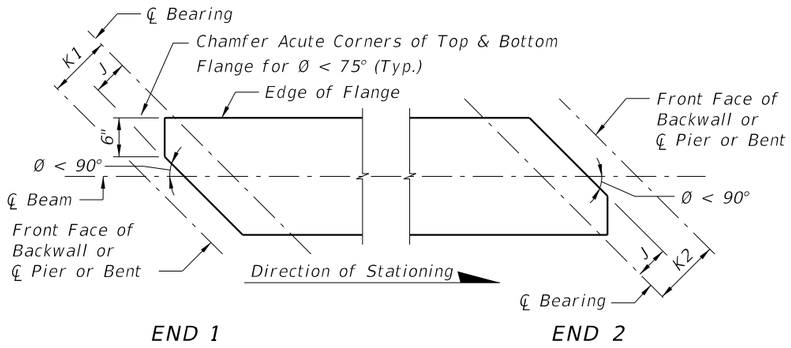
LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT FY 2025-26 STANDARD PLANS	BAR BENDING DETAILS (FRP)	INDEX 415-010	SHEET 1 of 1



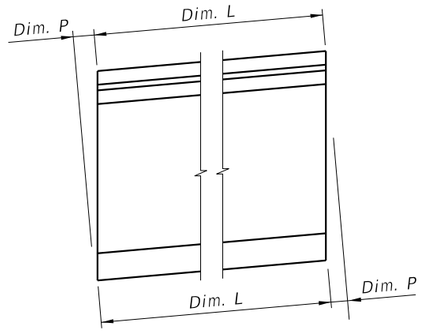
CASE 1
(Standard Orientation for New Construction)



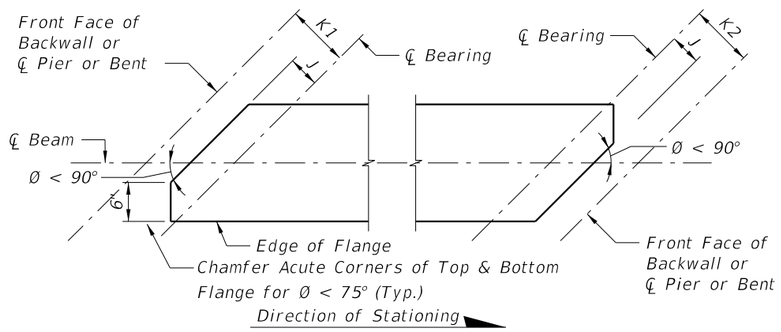
CONDITION 1
(Dim P = 0.0)



CASE 2
(Special Orientation for Widenings)

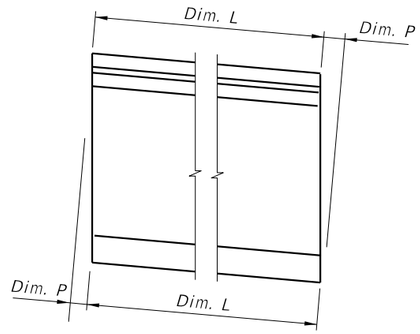


CONDITION 2



CASE 3
(Special Orientation for Widenings)

SCHEMATIC PLAN VIEWS AT BEAM ENDS



CONDITION 3

SCHEMATIC END ELEVATIONS OF BEAMS
(Showing Vertical Bevel of Beam End)

BEAM NOTES

1. Work this Index with the Florida-I Beam Standard Details (Index 450-036 thru 450-096) and the Table of Beam Variables in Structures Plans.
2. All bar bend dimensions are out-to-out.
3. Concrete cover: 2 inches minimum.
4. Stress Strands N to 10 kips each.
5. Place one (1) Bar 5K or 5Z at each location. Alternate the direction of the ends for each bar (see "ELEVATION AT END OF BEAM" in Standard Details.
6. Tie Bars 5K and 5Z to the fully bonded strands in the bottom or center row (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).
   A. At the Contractor's option, the length of the bottom legs of Bars 5K and 5Z may be extended to facilitate tying to the exterior strands.
   B. For deformed WWR, supplemental transverse #4 bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands.
7. Place Bars 3C1, 3D1 and 4M1 in beam END 1, and Bars 3C2, 3D2 and 4M2 in beam END 2. END 1 and END 2 are shown on the Standard Details "ELEVATION".
8. For Beams with vertically beveled end conditions: Place first row of Bars 3C1, 3C2, 3D1, 3D2, 5K, 5Y and 5Z parallel to the end of the beam. Progressively rotate remaining bars within the limits of Bars 5Z until vertical by adjusting the spacing at the top of beam up to a maximum of 1". For deformed WWR, cut top cross wire and rotate bars as required or reduce end cover at top of the beam to 1" minimum.
9. For beams with skewed end conditions:
   A. Place end reinforcement parallel to the skewed end of the beam. End reinforcement is defined as Bars 3C1, 3C2, 3D1, 3D2, 5K, 4M1, 4M2, 5Y and 5Z placed within the limits of the spacing for Bars 3C in "ELEVATION AT END OF BEAM".
   B. Beyond the limits of the spacing for Bars 3C, place Bars 3D3, 5K and 4M3 perpendicular to the longitudinal axis of the beam. Fan Bars as needed to avoid overlapping bars at the transition to Bars 3D3 and 4M3, and field cut to maintain minimum cover. Provide additional Bars 4M1, 4M2, 3D1 and 3D2 as required; additional bars are not included in the "BILL OF REINFORCING STEEL". For placement locations see Skewed Beam End Details for Widening Existing Bridges.
   C. Adjust the dimensions of Bars 3C1, 3C2, 3D1, 3D2, 4M1 and 4M2 as shown on the Bending Diagram.
   D. WWR is not permitted for end reinforcement Bars 3D1, 3D2, 4M1 and 4M2; use bar reinforcement.
10. Contractor Options:
   A. Deformed WWR may be used in lieu of Bars 3D, 5K, 4M, and 5Z as shown on the Standard Details; except at skewed ends (see Note 9).
   B. Bars 3D1, 3D2 and 3D3 may be fabricated as a single bar with a 1'-0" minimum lap splice of the top legs, or the length of the bottom legs may be extended to facilitate tying to the exterior strands.
11. Embedment of Safety Line Anchorage Devices are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of any required anchorage devices.
12. For beams with ends that will not be permanently encased in concrete diaphragms, cut wedges and recess Prestressing strands at the end of the beam without damaging the surrounding concrete. See "STRAND CUTTING AND PROTECTING DETAIL" on Sheet 2. Protect end of wedged recessed strands in accordance with Specification Section 450.
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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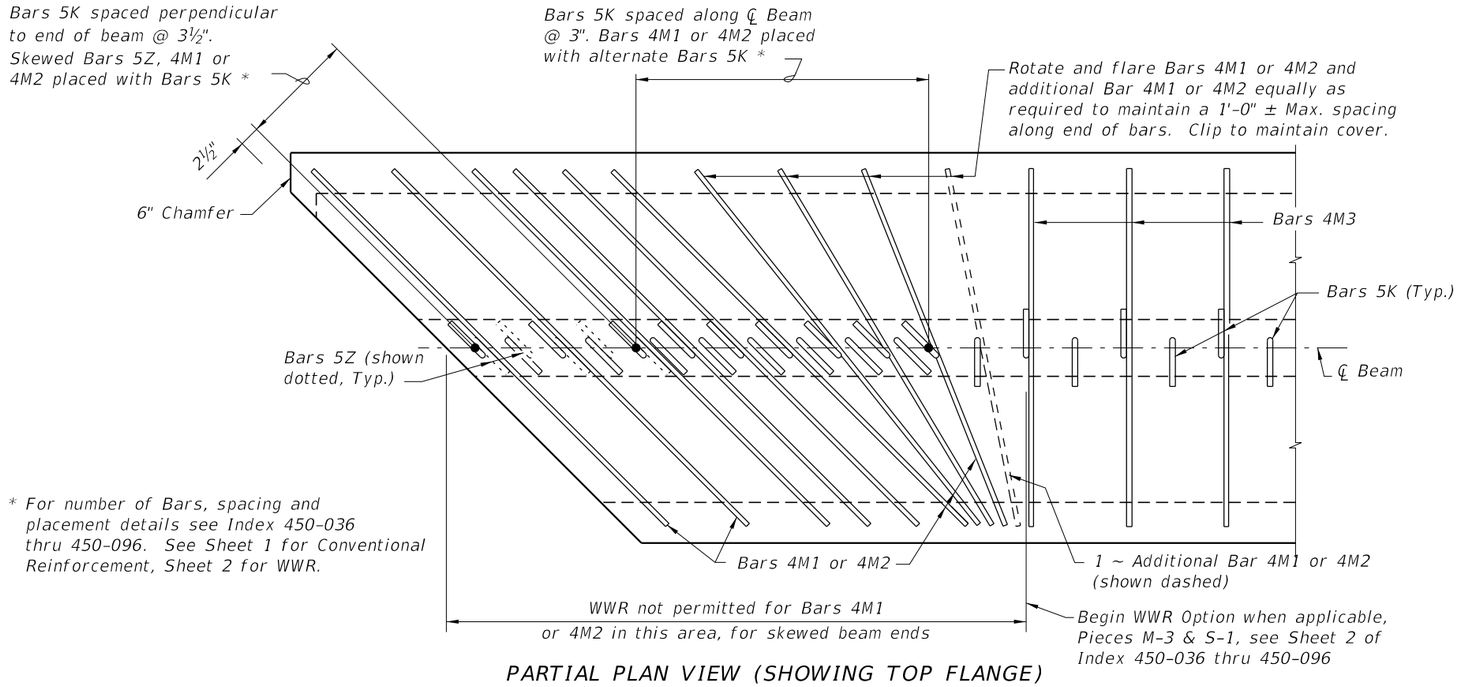
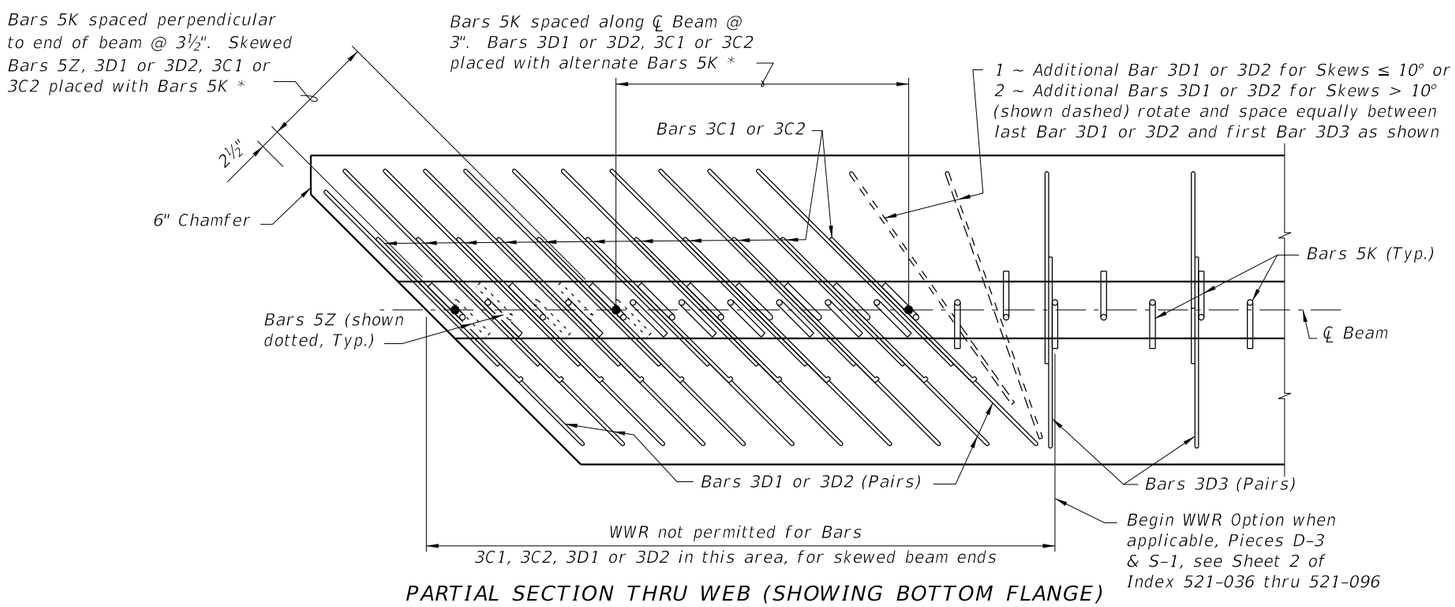
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	FLORIDA-I BEAM - TYPICAL DETAILS & NOTES	INDEX	SHEET
11/01/21						450-010	1 of 2



* For number of Bars, spacing and placement details see Index 450-036 thru 450-096. See Sheet 1 for Conventional Reinforcement, Sheet 2 for WWR.

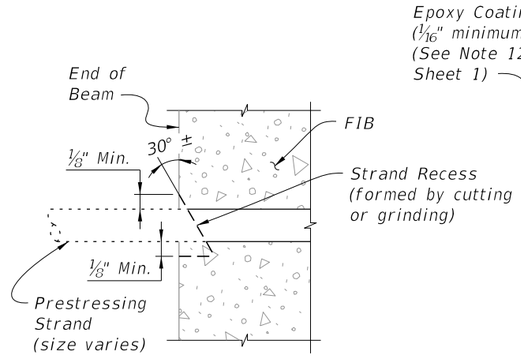
PARTIAL PLAN VIEW (SHOWING TOP FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 5A, 5Y & Strands N not shown for clarity)



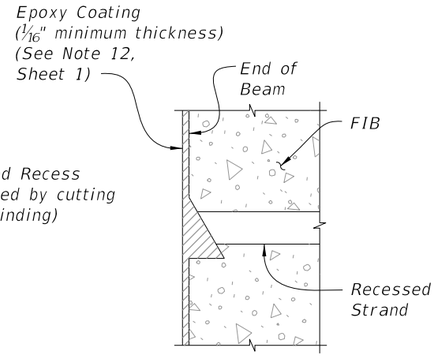
PARTIAL SECTION THRU WEB (SHOWING BOTTOM FLANGE)
(END 1 Shown, END 2 Similar)
(Bars 5Y, Strands, and Embedded Bearing Plate "A" not shown for clarity)

SKEWED BEAM END DETAILS FOR WIDENING EXISTING BRIDGES

(Florida-I 36 Beam shown, others similar)



TYPICAL SECTION
SHOWING CUT STRAND RECESS LIMITS



TYPICAL SECTION
AFTER PROTECTING

STRAND CUTTING AND PROTECTING DETAIL

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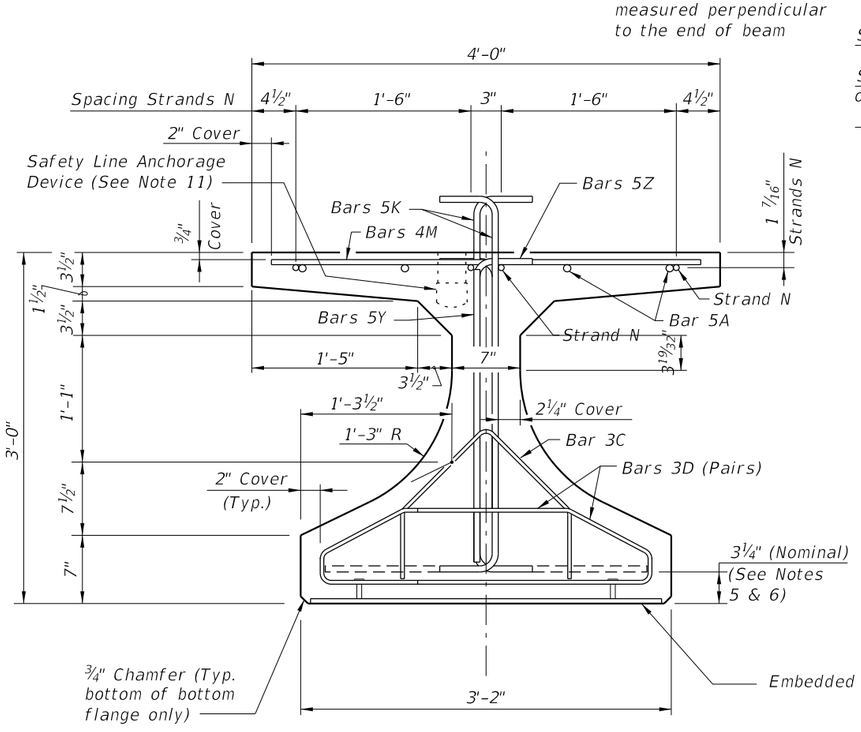
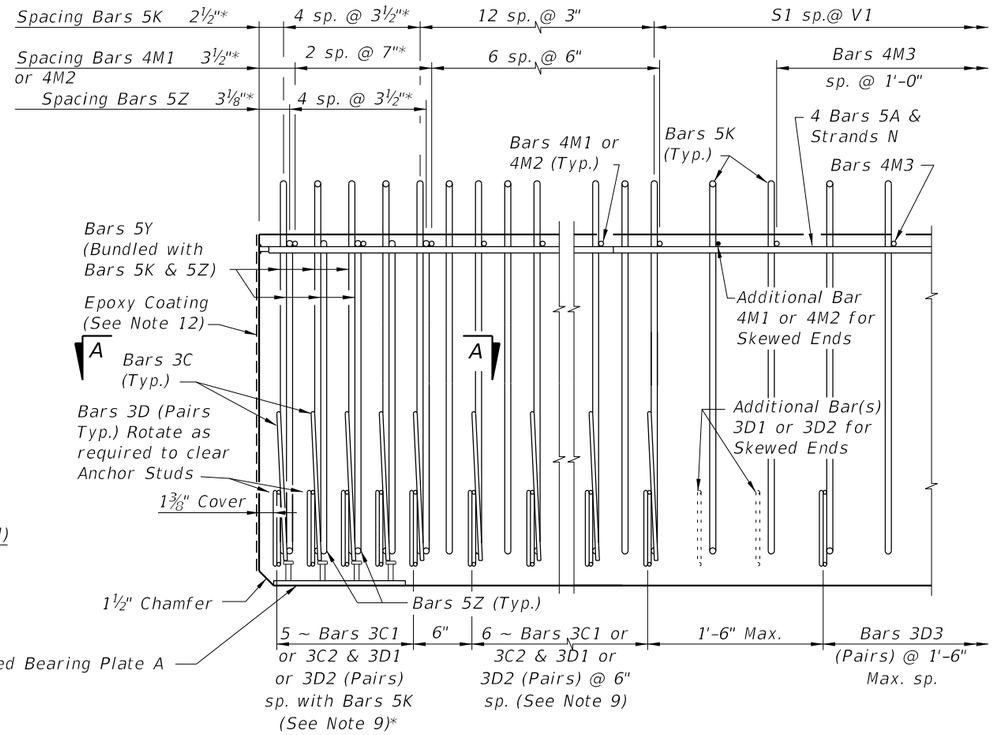
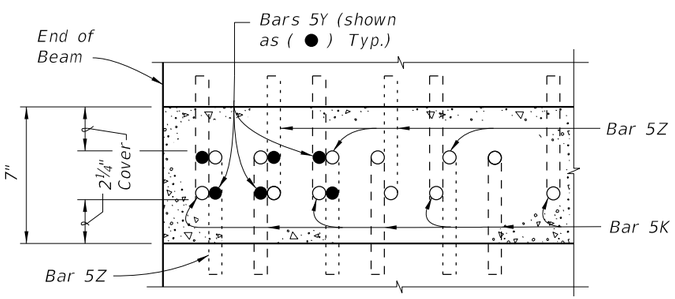
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I BEAM - TYPICAL DETAILS & NOTES	INDEX 450-010	SHEET 2 of 2



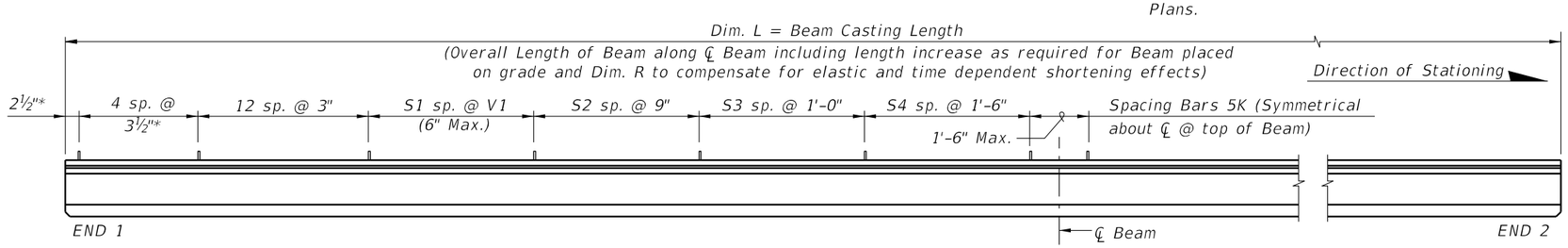
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



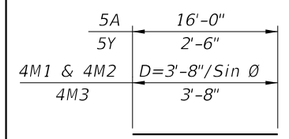
ELEVATION

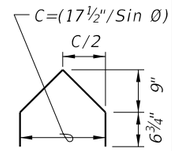
CONVENTIONAL REINFORCING BAR BENDING DETAILS

BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	5	8	16'-0"
C1	7, 8 & 9	3	11 (End 1)	Varies
C2	7, 8 & 9	3	11 (End 2)	Varies
D1	7, 8, 9 & 10	3	22 (End 1)	Varies
D2	7, 8, 9 & 10	3	22 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	4'-2"
M1	7 & 9	4	9 (End 1)	Varies
M2	7 & 9	4	9 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	⅜" Ø Strand	4	Dim. L
Y	8 & 9	5	12	2'-6"
Z	5, 6, 8, 9 & 10	5	10	3'-8"

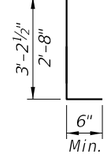
BENDING DIAGRAMS (See Note 2)



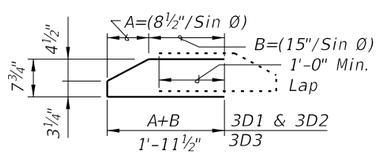


BARS 5A, 4M1, 4M2, 4M3 & 5Y

BARS 3C1 & 3C2



BARS 5K & 5Z



BARS 3D1, 3D2 & 3D3

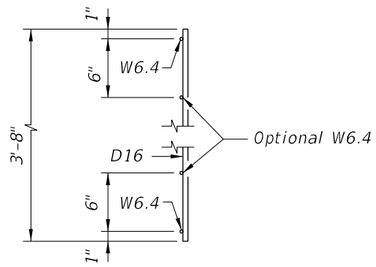
NOTES:

A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.

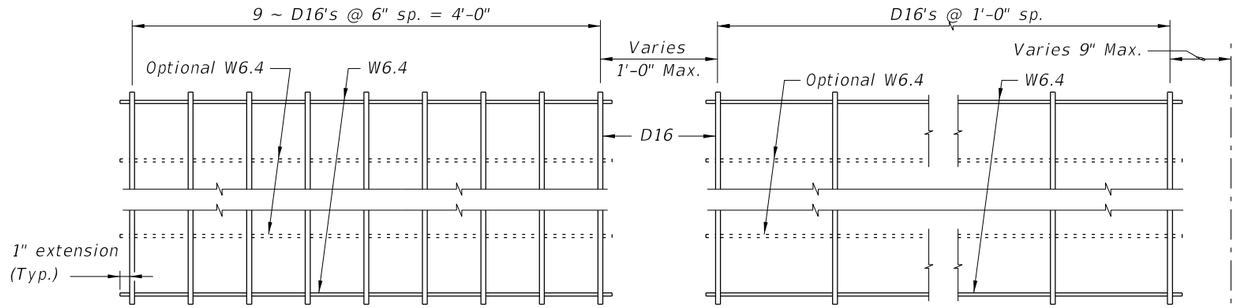
10:52:30 AM
10/17/2024

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 36 BEAM - STANDARD DETAILS	INDEX 450-036	SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

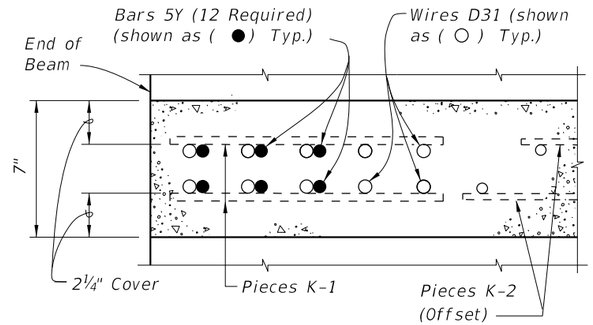


PIECES M
END VIEW

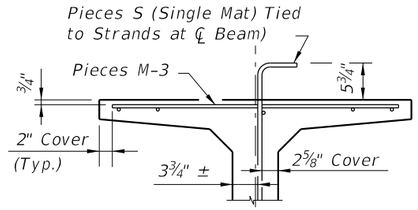


PLAN VIEW
PIECE M-1
(2 Required)

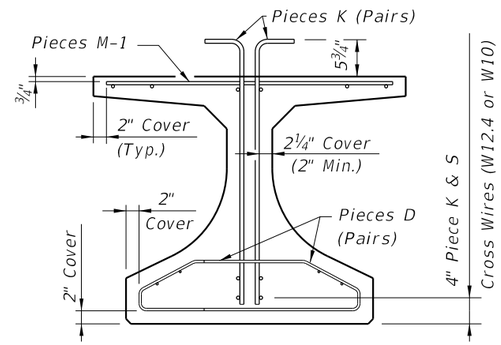
PLAN VIEW
PIECE M-3
(2 Required)



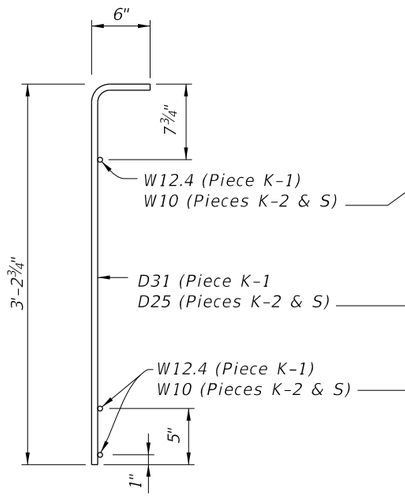
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



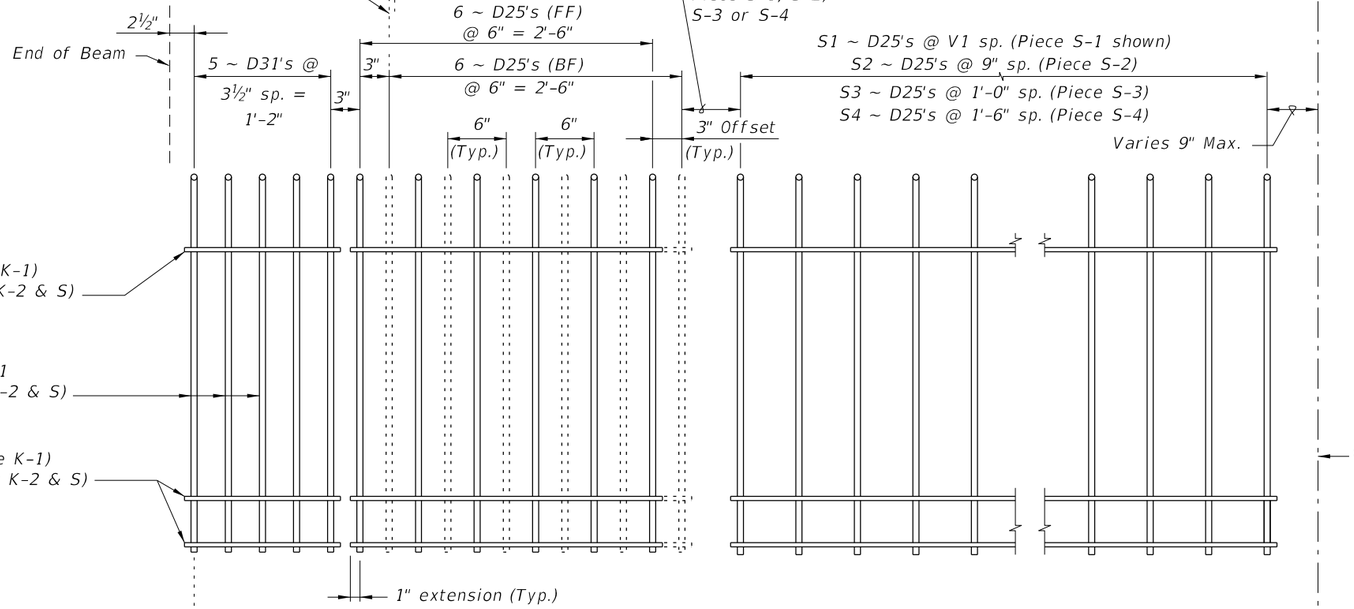
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands not Shown for Clarity)



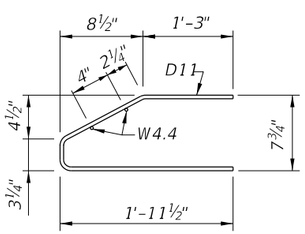
PIECES K & S
END VIEW



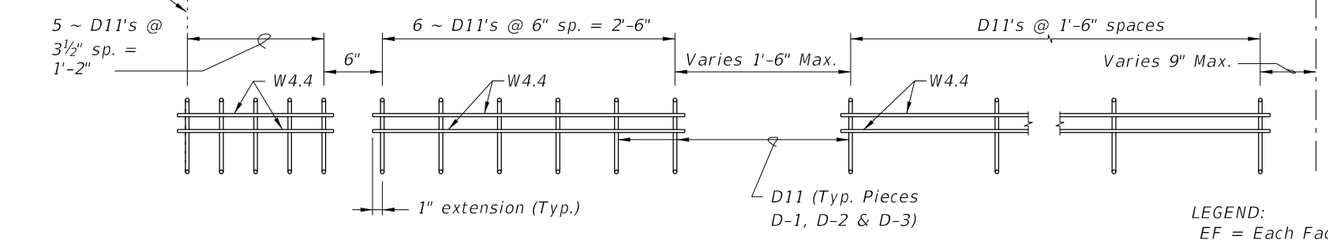
PIECE K-1
(Aligned EF)
(4 Required ~
2 Pairs)

PIECE K-2
(FF Shown Solid,
BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.

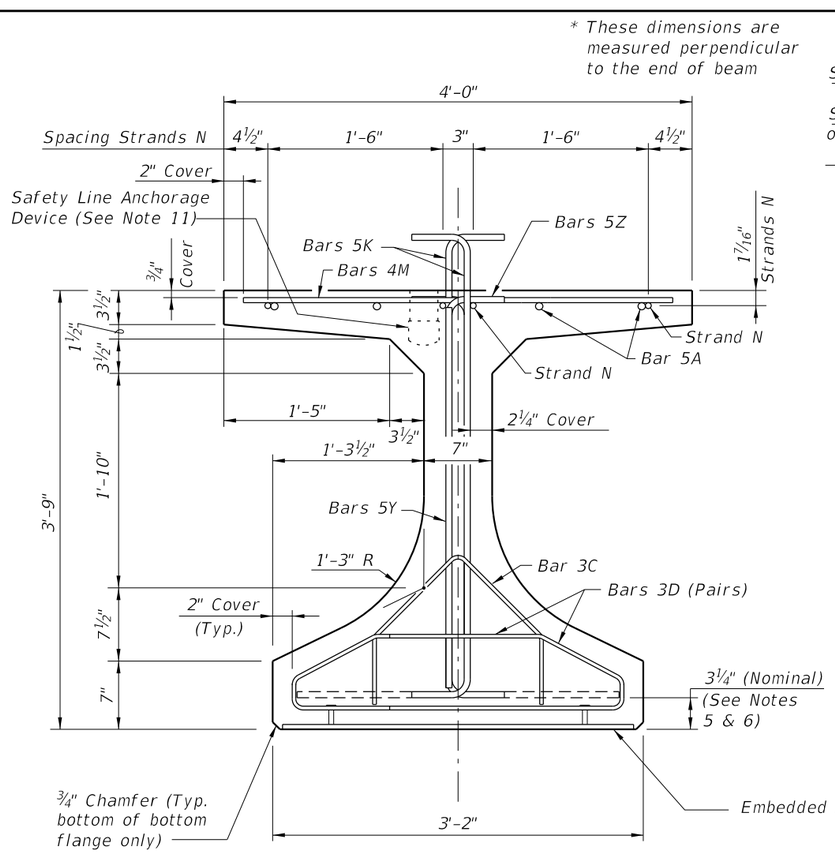
b. Place Conventional Reinforcement Bars 5A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.

c. Pieces may be fabricated in multiple length sections.

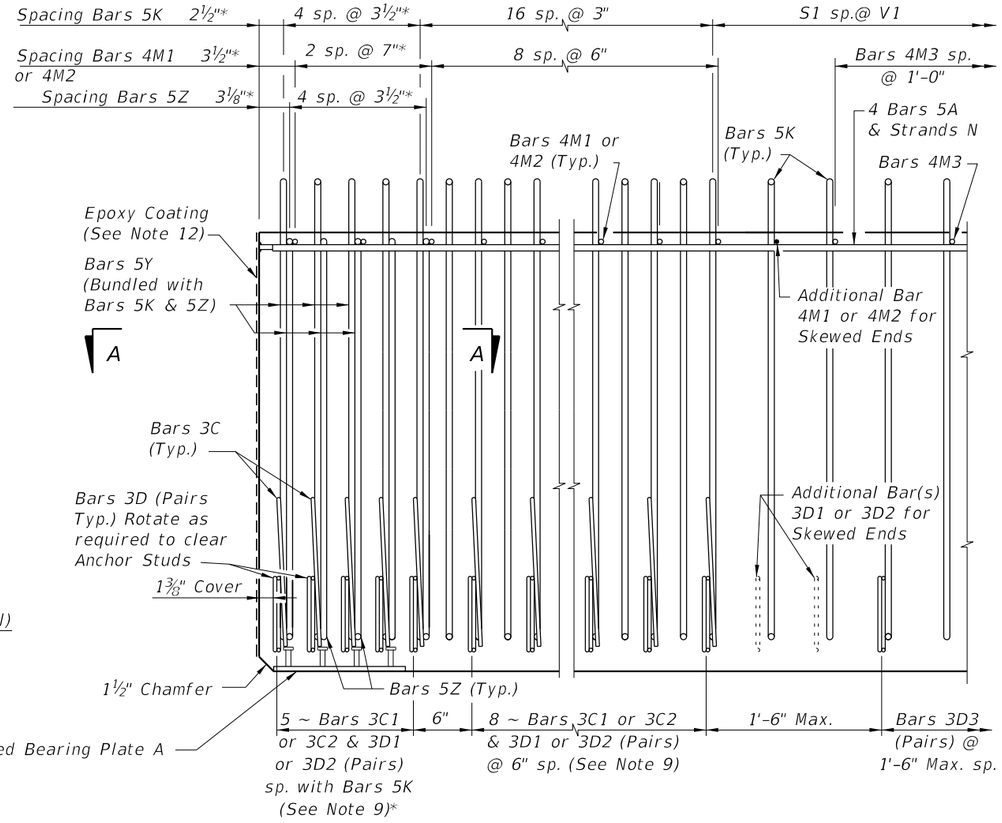
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

10/17/2024 10:52:37 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-I 36 BEAM - STANDARD DETAILS	INDEX 450-036	SHEET 2 of 2



END VIEW



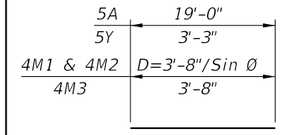
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

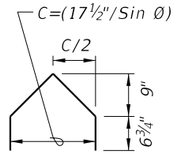
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	5	8	19'-0"
C1	7, 8 & 9	3	13 (End 1)	Varies
C2	7, 8 & 9	3	13 (End 2)	Varies
D1	7, 8, 9 &10	3	26 (End 1)	Varies
D2	7, 8, 9 &10	3	26 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	4'-11"
M1	7 & 9	4	11 (End 1)	Varies
M2	7 & 9	4	11 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	⅜" Ø Strand	4	Dim. L
Y	8 & 9	5	12	3'-3"
Z	5, 6, 8, 9 & 10	5	10	4'-5"

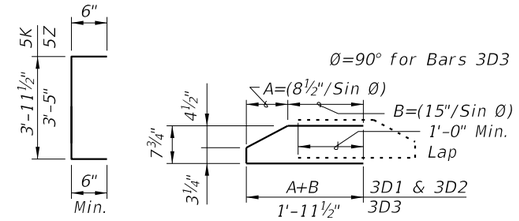
BENDING DIAGRAMS (See Note 2)



BARS 5A, 4M1, 4M2, 4M3 & 5Y

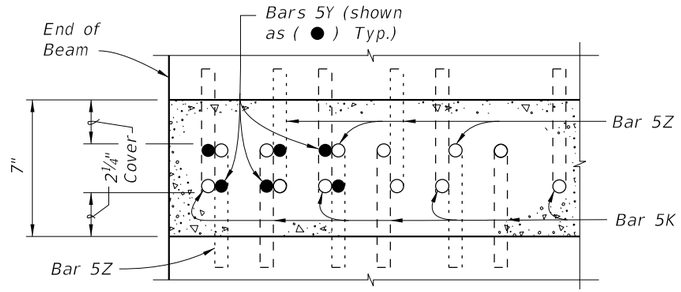


BARS 3C1 & 3C2

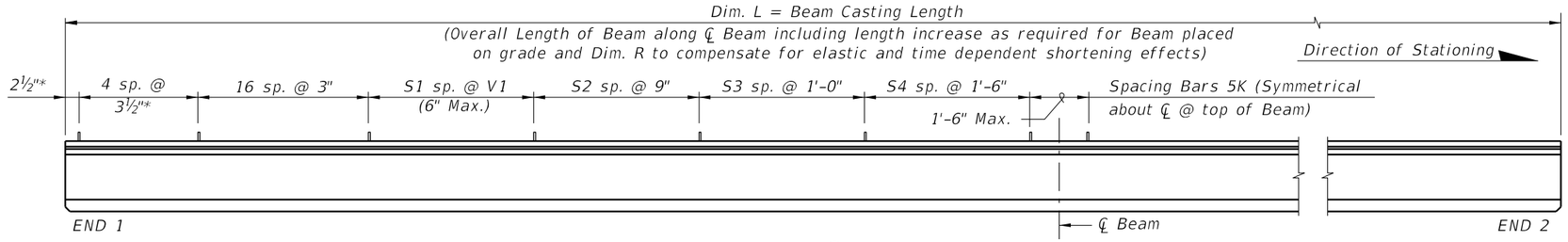


BARS 5K & 5Z BARS 3D1, 3D2 & 3D3

NOTES:
A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)

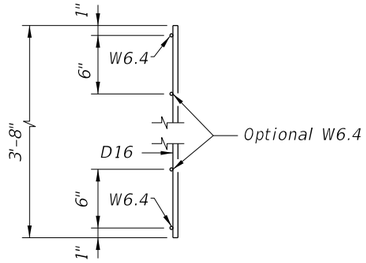


ELEVATION

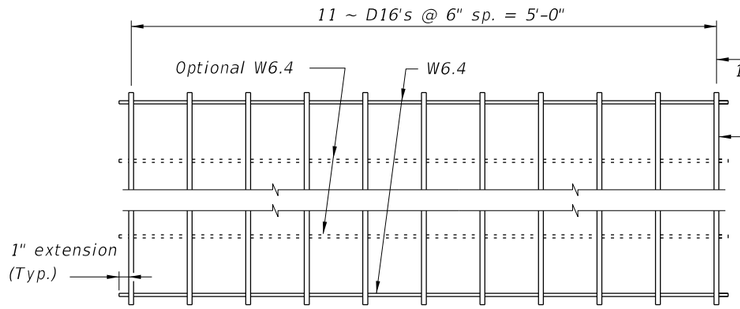
10/17/2024 10:52:44 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 45 BEAM - STANDARD DETAILS	INDEX 450-045	SHEET 1 of 2

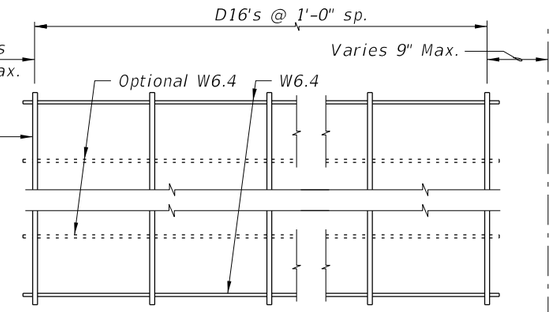
ALTERNATE REINFORCING STEEL (WWR) DETAILS



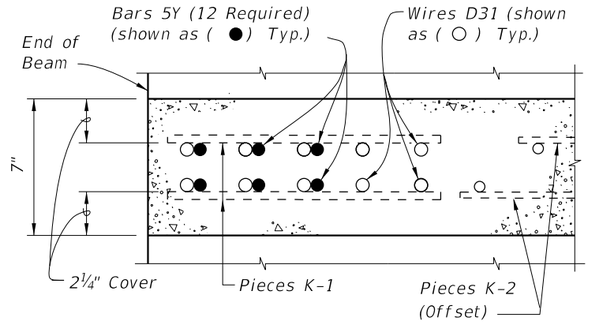
PIECES M
END VIEW



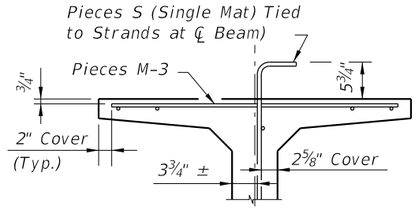
PLAN VIEW
PIECE M-1
(2 Required)



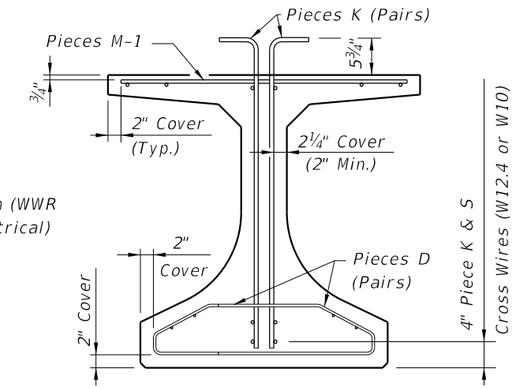
PLAN VIEW
PIECE M-3
(2 Required)



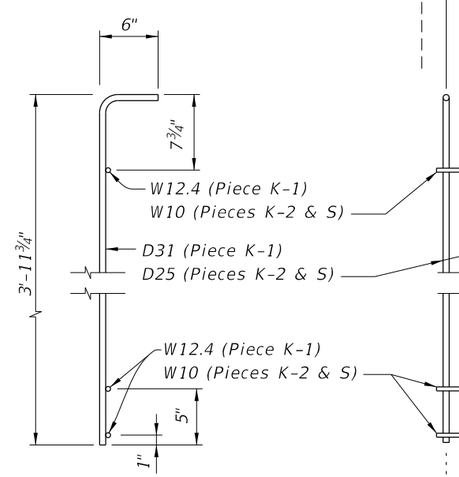
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



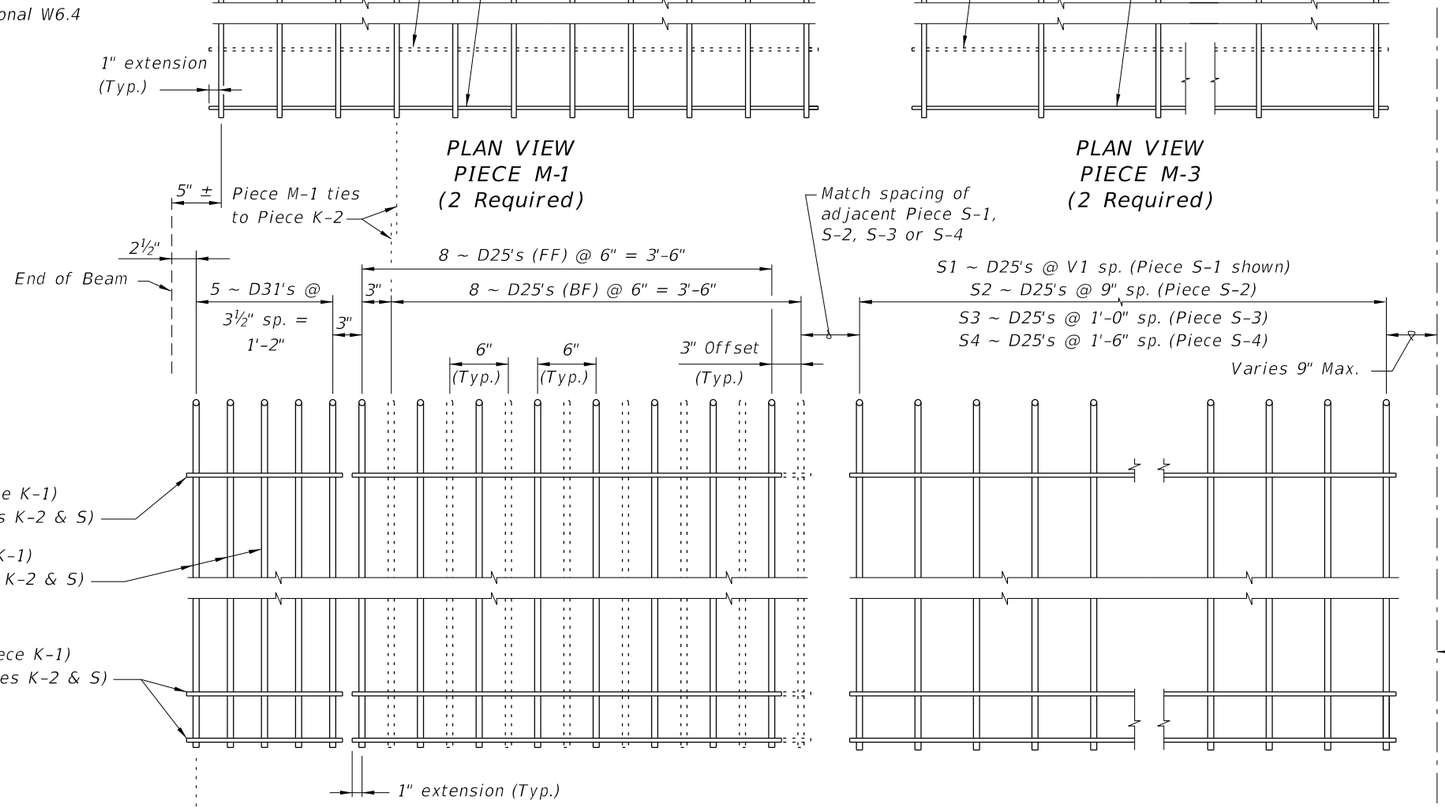
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands not Shown for Clarity)



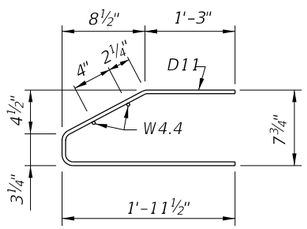
PIECES K & S
END VIEW



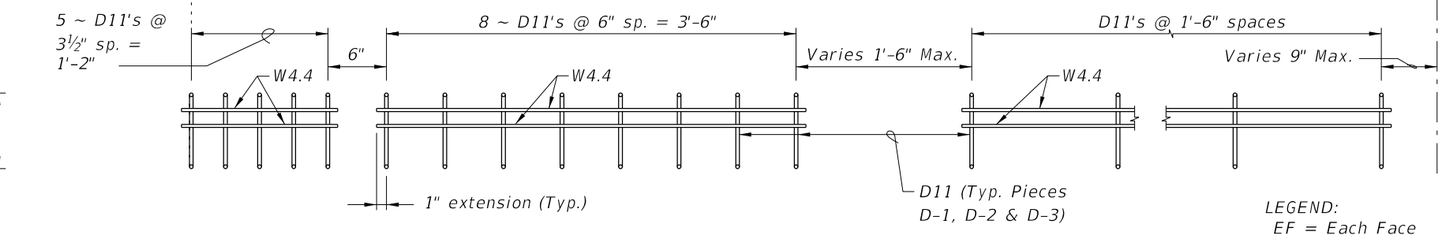
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

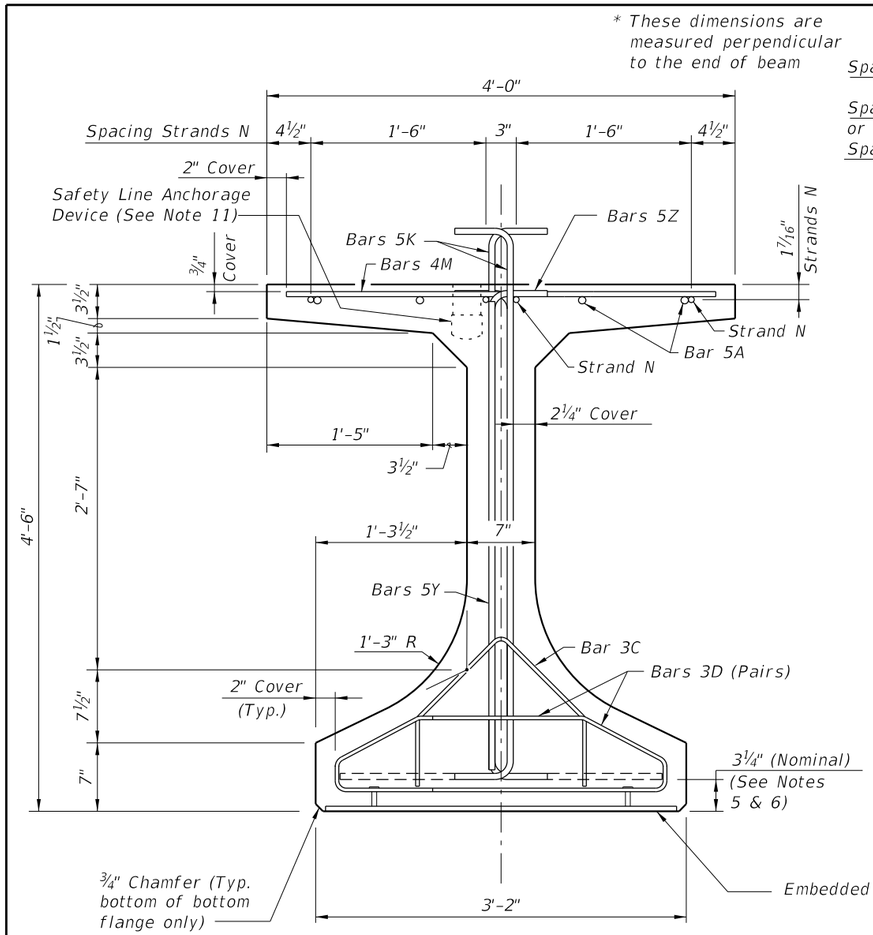
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

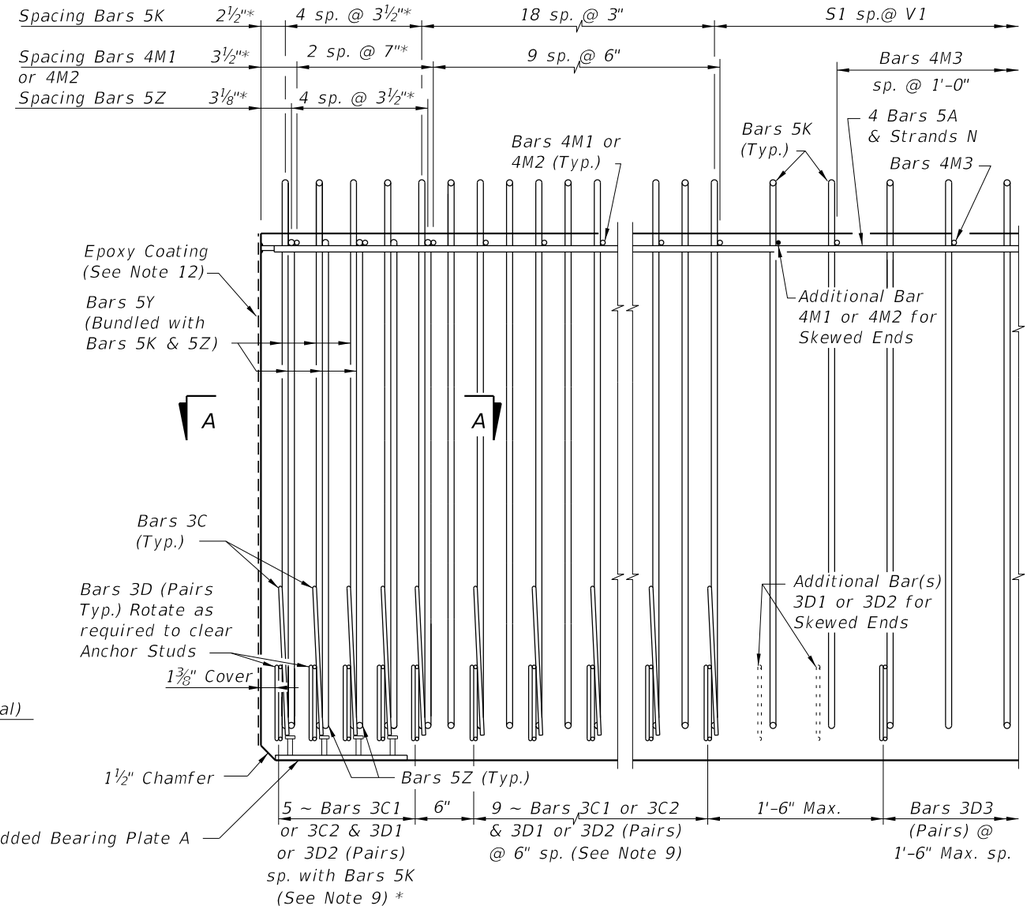
a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

10/17/2024 10:52:51 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT FY 2025-26 STANDARD PLANS	FLORIDA-I 45 BEAM - STANDARD DETAILS	INDEX 450-045	SHEET 2 of 2



END VIEW



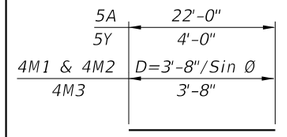
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

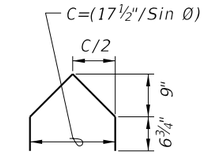
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	5	8	22'-0"
C1	7, 8 & 9	3	14 (End 1)	Varies
C2	7, 8 & 9	3	14 (End 2)	Varies
D1	7, 8, 9 & 10	3	28 (End 1)	Varies
D2	7, 8, 9 & 10	3	28 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	5'-8"
M1	7 & 9	4	12 (End 1)	Varies
M2	7 & 9	4	12 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	⅜" Ø Strand	4	Dim. L
Y	8 & 9	5	12	4'-0"
Z	5, 6, 8, 9 & 10	5	10	5'-2"

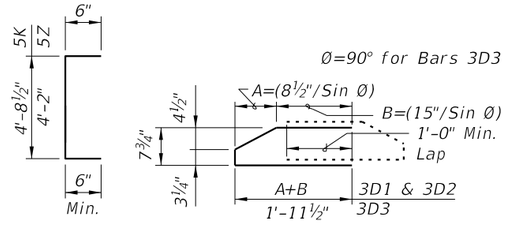
BENDING DIAGRAMS (See Note 2)



BARS 5A, 4M1, 4M2, 4M3 & 5Y

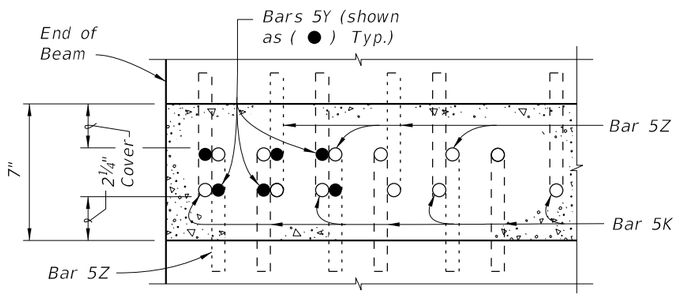


BARS 3C1 & 3C2

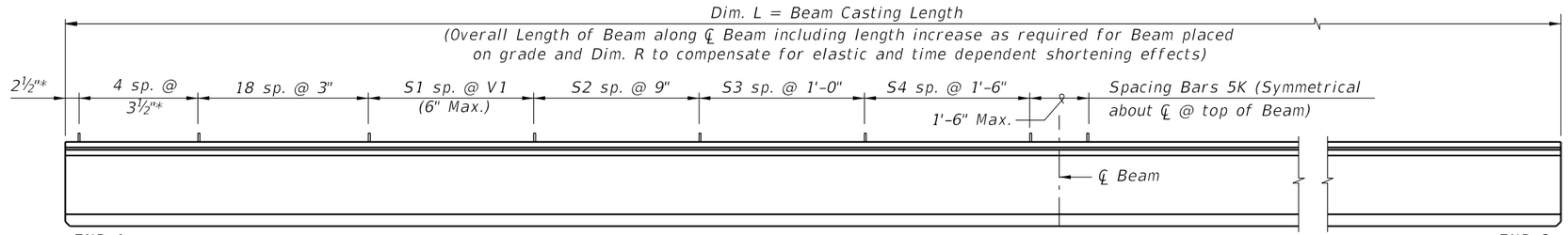


BARS 5K & 5Z BARS 3D1, 3D2 & 3D3

NOTES:
A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)

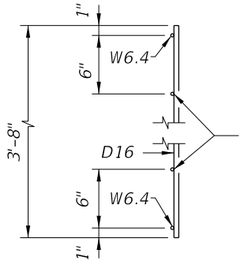


ELEVATION

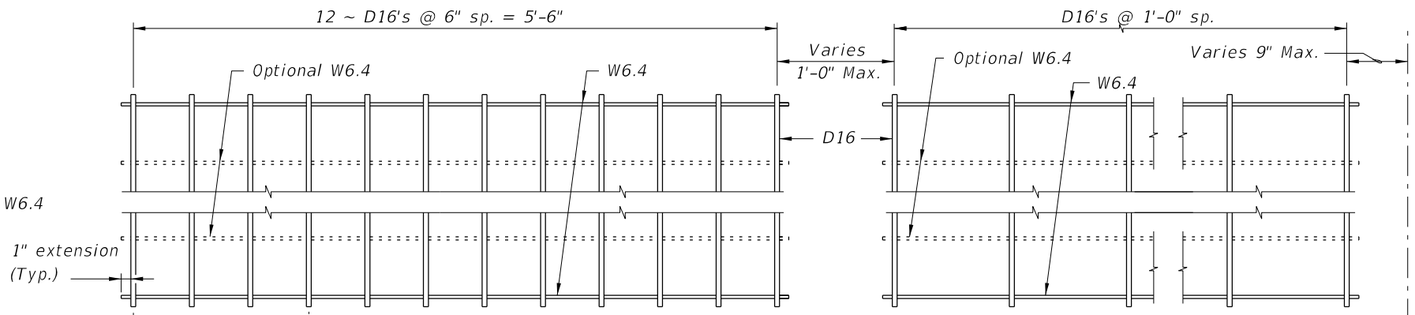
10/17/2024 10:52:59 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 54 BEAM - STANDARD DETAILS	INDEX 450-054	SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

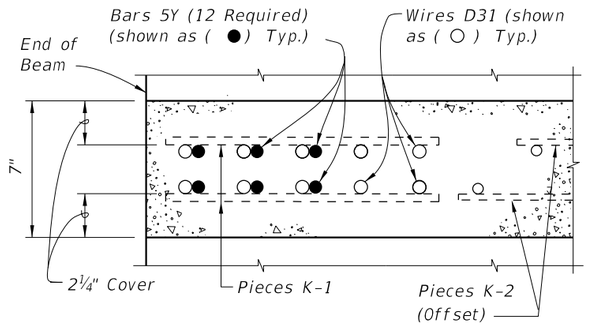


PIECES M
END VIEW

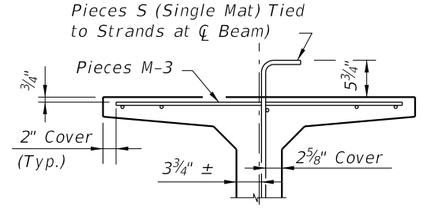


PLAN VIEW
PIECE M-1
(2 Required)

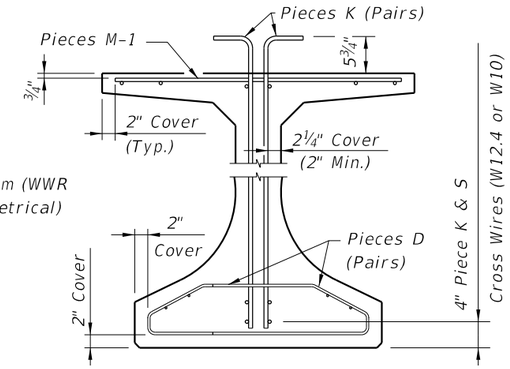
PLAN VIEW
PIECE M-3
(2 Required)



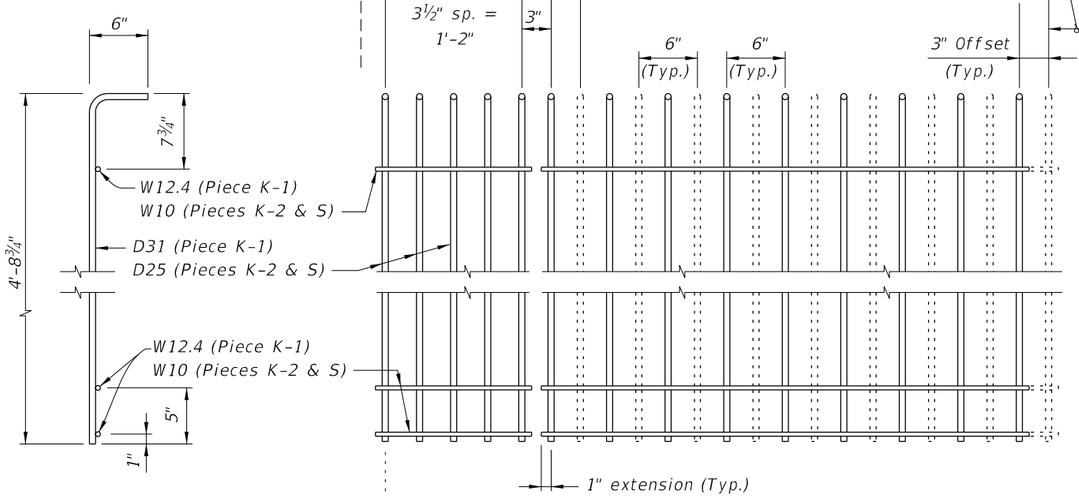
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands not Shown for Clarity)

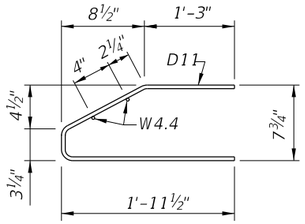


PIECES K & S
END VIEW

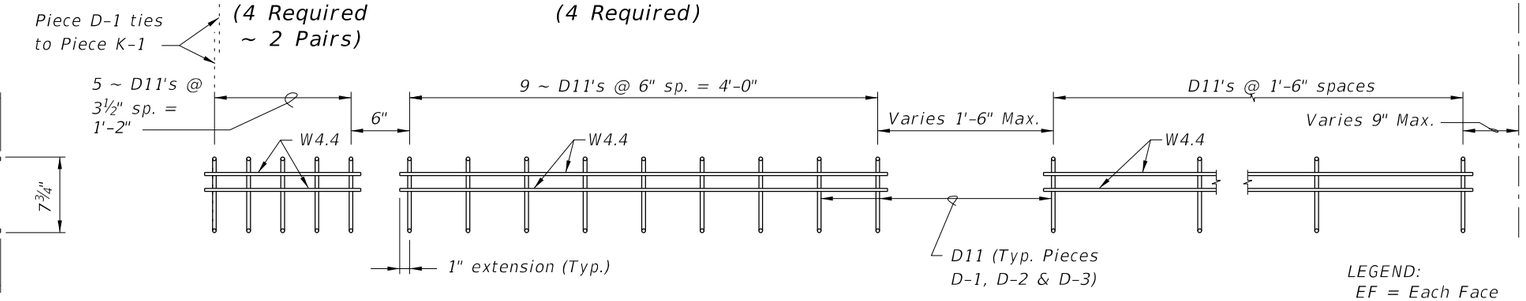
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

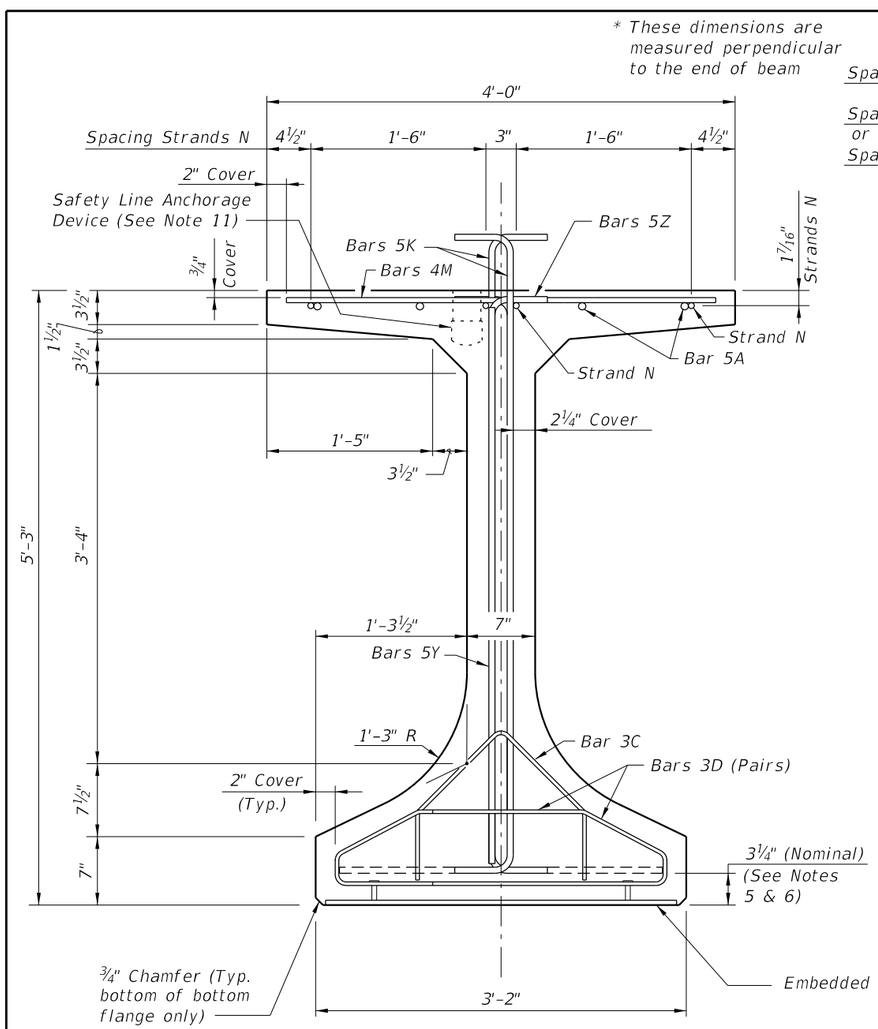
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

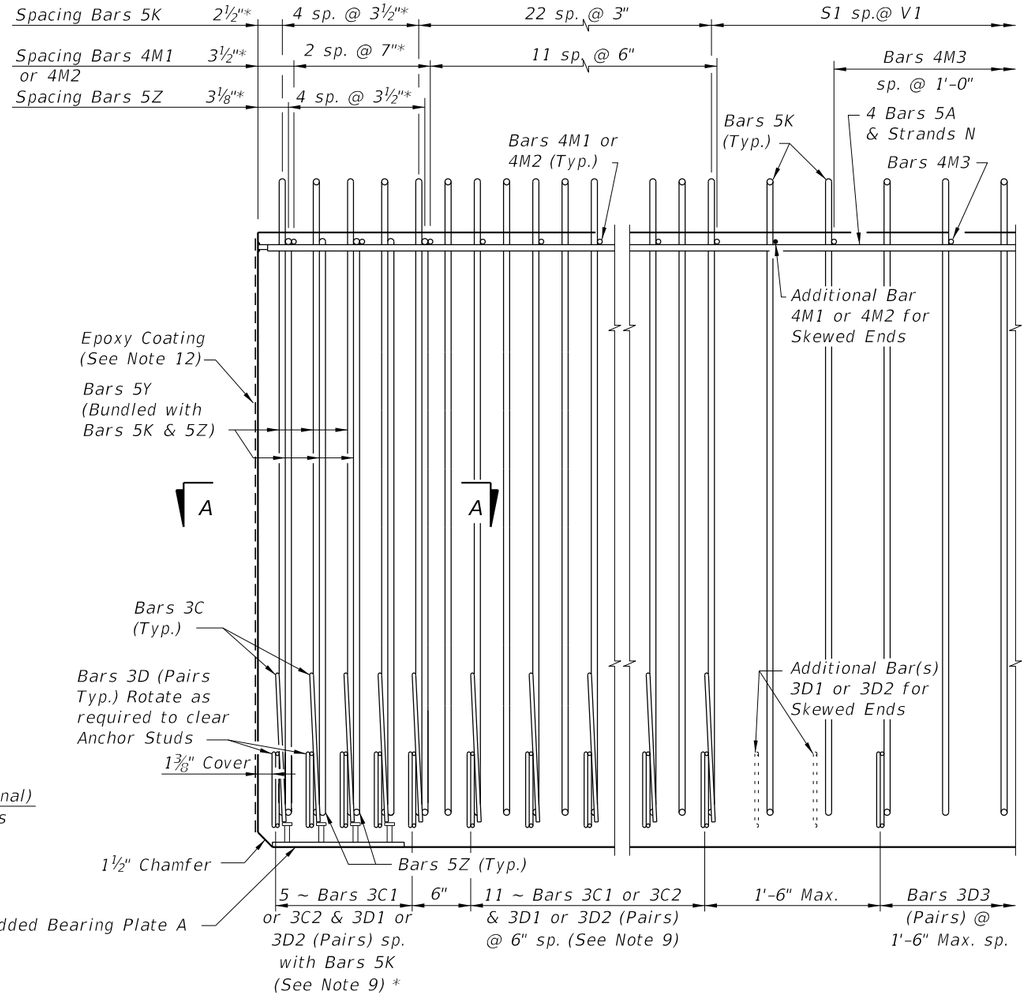
a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

10/17/2024 10:53:06 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-I 54 BEAM - STANDARD DETAILS	450-054	2 of 2



END VIEW



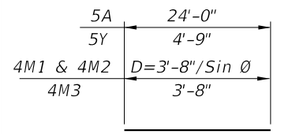
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

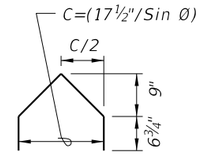
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	5	8	24'-0"
C1	7, 8 & 9	3	16 (End 1)	Varies
C2	7, 8 & 9	3	16 (End 2)	Varies
D1	7, 8, 9 & 10	3	32 (End 1)	Varies
D2	7, 8, 9 & 10	3	32 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	6'-5"
M1	7 & 9	4	14 (End 1)	Varies
M2	7 & 9	4	14 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	⅜" Ø Strand	4	Dim. L
Y	8 & 9	5	12	4'-9"
Z	5, 6, 8, 9 & 10	5	10	5'-11"

BENDING DIAGRAMS (See Note 2)

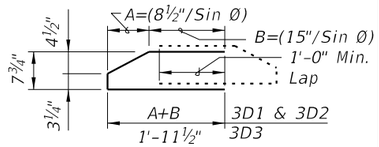


BARS 5A, 4M1, 4M2, 4M3 & 5Y



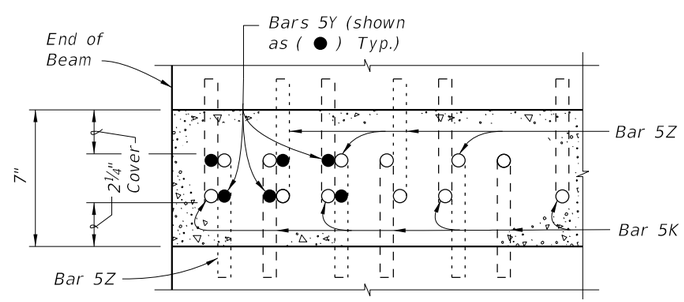
BARS 3C1 & 3C2

BARS 5K & 5Z

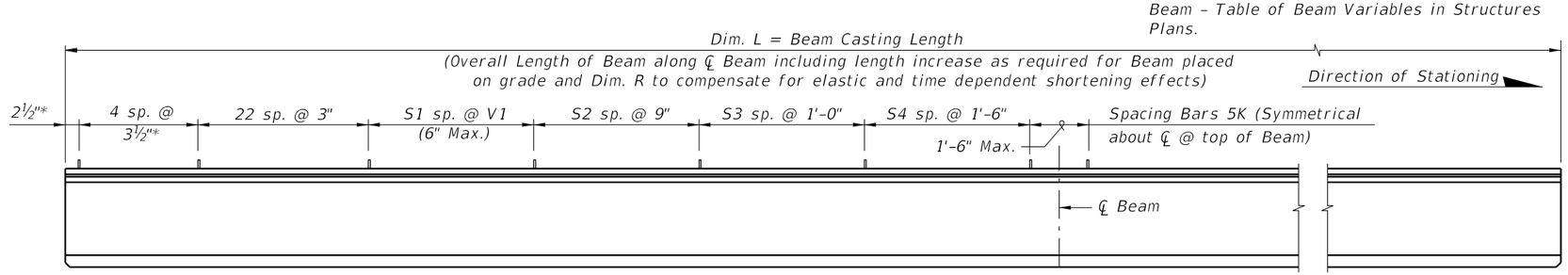


BARS 3D1, 3D2 & 3D3

NOTES:
A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



ELEVATION

10/17/2024 10:53:13 AM

LAST REVISION	REVISION	DESCRIPTION:
11/01/19		

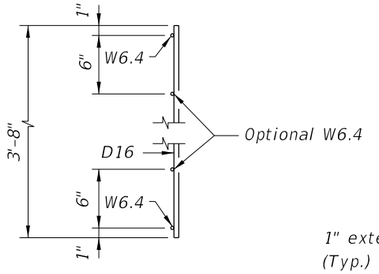
FY 2025-26 STANDARD PLANS

FLORIDA-I 63 BEAM - STANDARD DETAILS

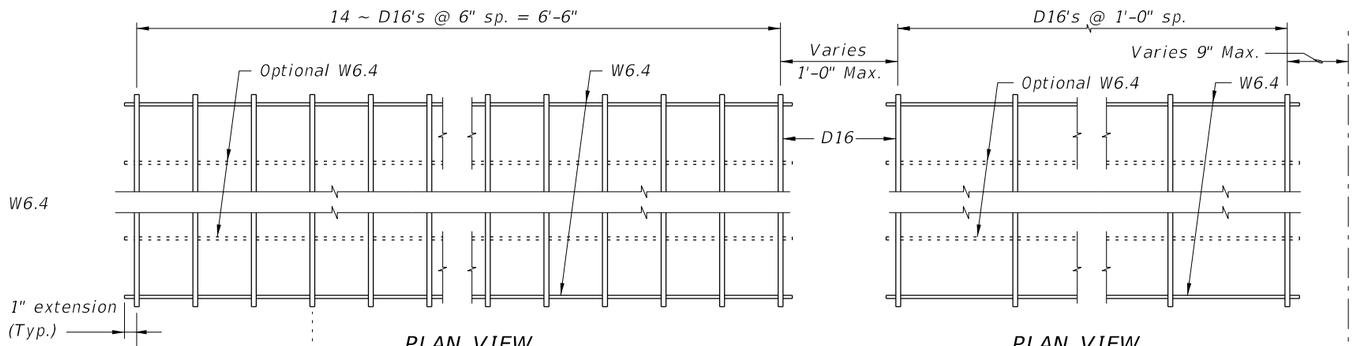
INDEX 450-063

SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

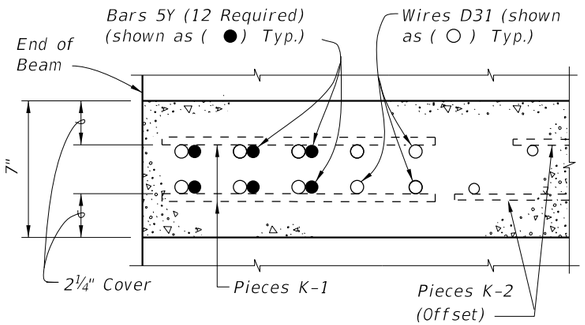


PIECES M
END VIEW

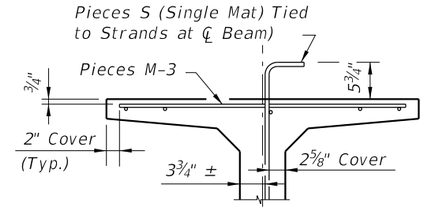


PLAN VIEW
PIECE M-1
(2 Required)

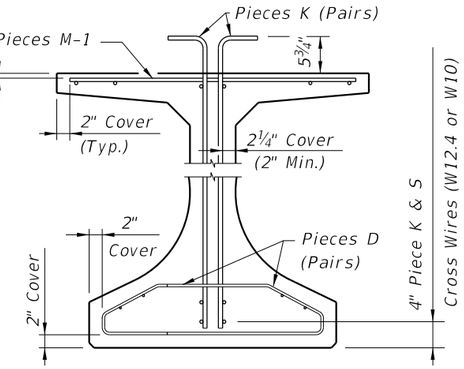
PLAN VIEW
PIECE M-3
(2 Required)



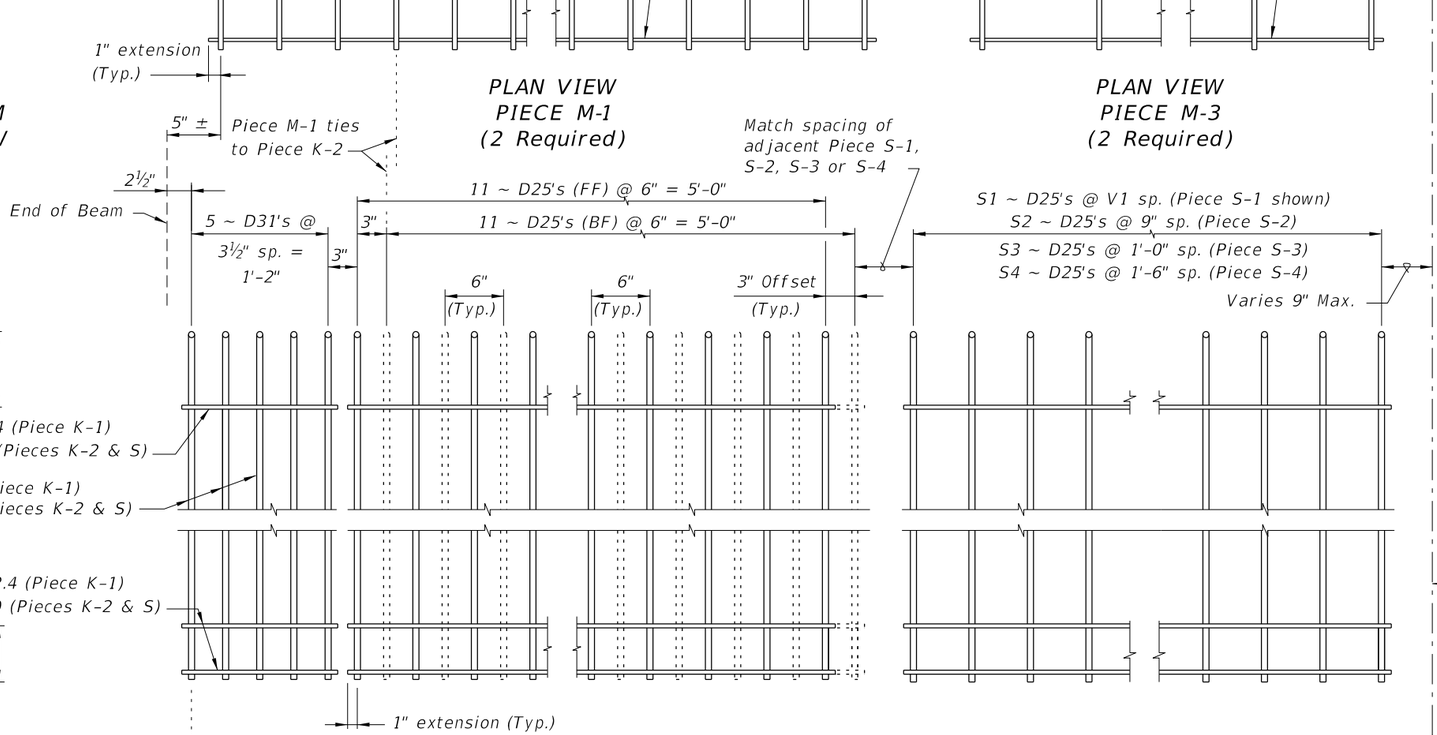
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands not Shown for Clarity)

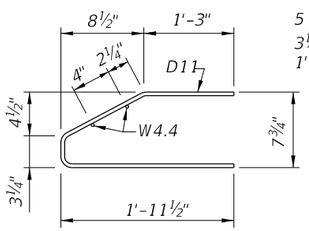


PIECES K & S
END VIEW

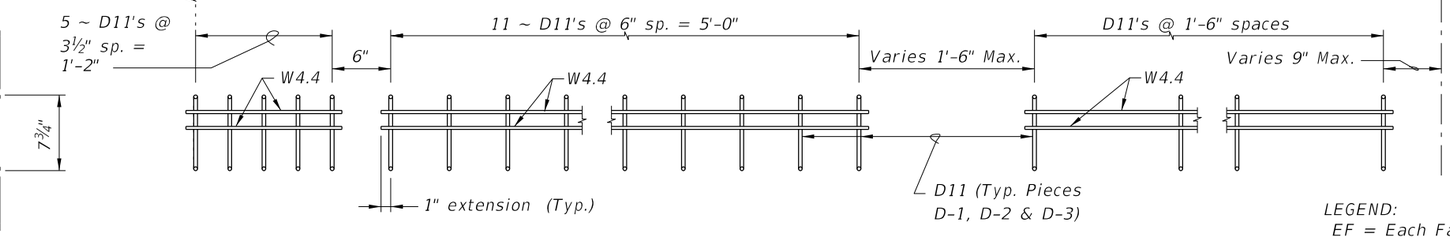
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

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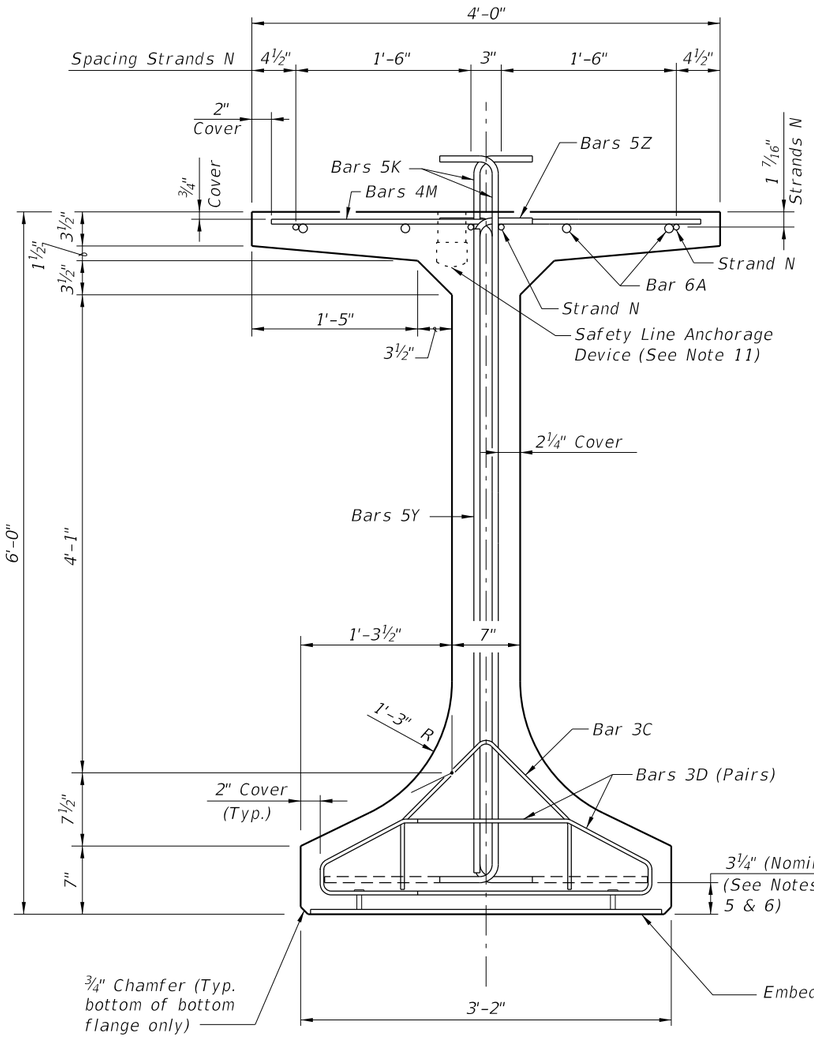
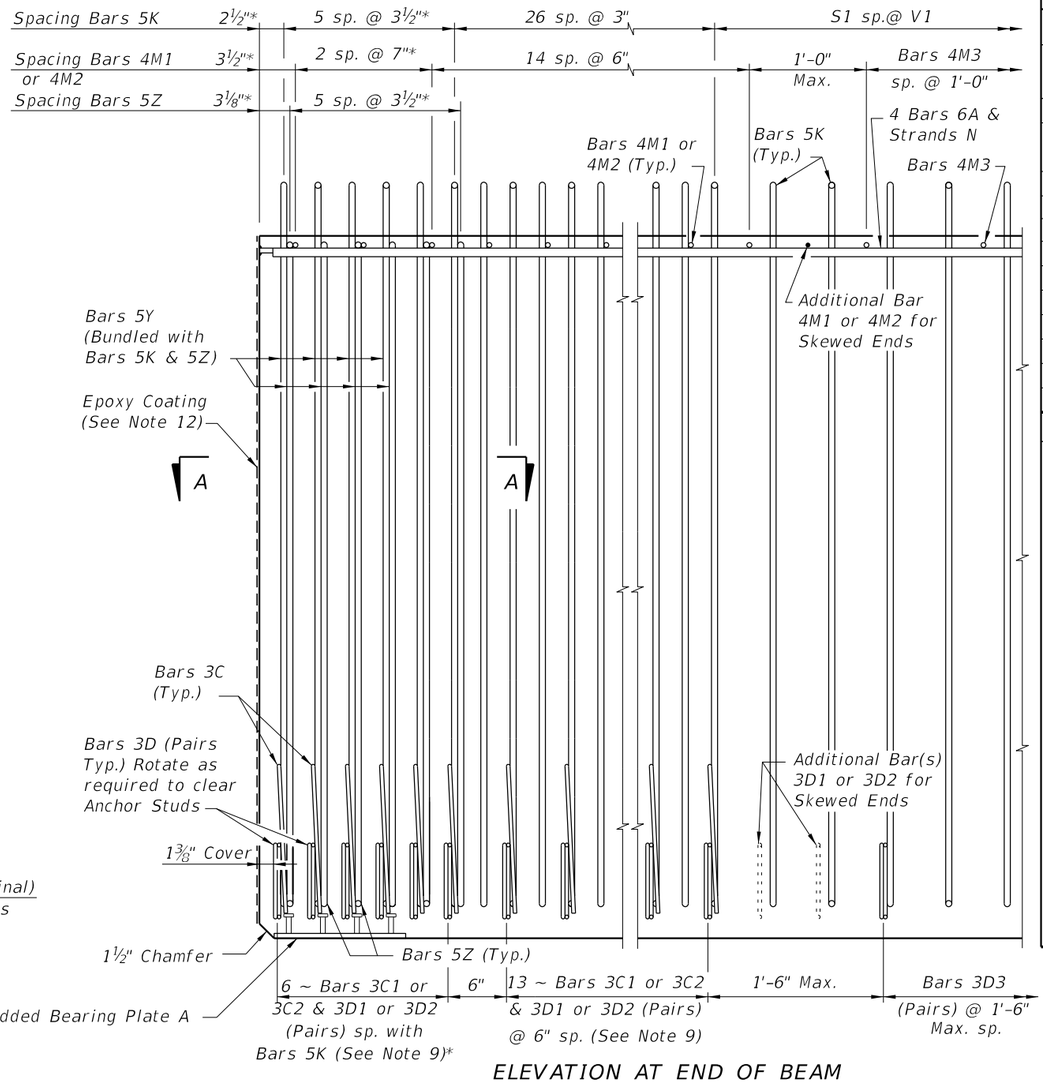
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT FY 2025-26 STANDARD PLANS	FLORIDA-I 63 BEAM - STANDARD DETAILS	INDEX 450-063	SHEET 2 of 2

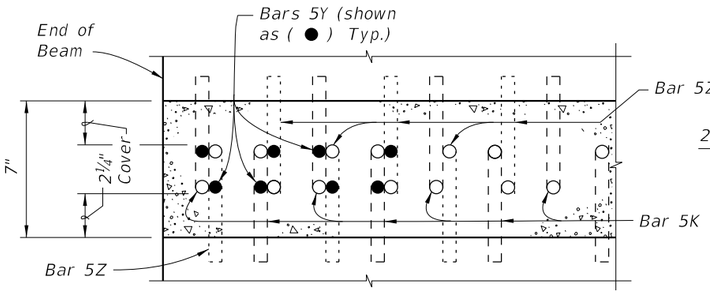
* These dimensions are measured perpendicular to the end of beam



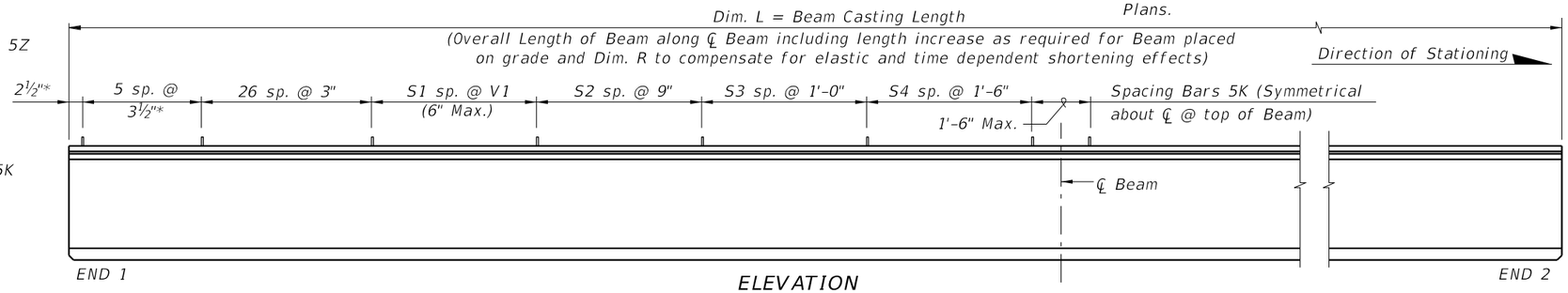
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



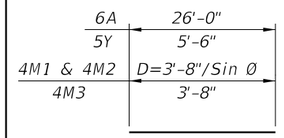
ELEVATION

CONVENTIONAL REINFORCING BAR BENDING DETAILS

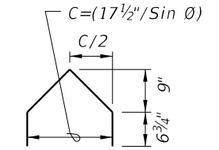
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	6	8	26'-0"
C1	7, 8 & 9	3	19 (End 1)	Varies
C2	7, 8 & 9	3	19 (End 2)	Varies
D1	7, 8, 9 & 10	3	38 (End 1)	Varies
D2	7, 8, 9 & 10	3	38 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	7'-2"
M1	7 & 9	4	17 (End 1)	Varies
M2	7 & 9	4	17 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	⅜" Ø Strand	4	Dim. L
Y	8 & 9	5	16	5'-6"
Z	5, 6, 8, 9 & 10	5	12	6'-8"

BENDING DIAGRAMS (See Note 2)



BARS 6A, 4M1, 4M2, 4M3 & 5Y



BARS 3C1 & 3C2

BARS 5K & 5Z

Ø=90° for Bars 3D3

BARS 3D1, 3D2 & 3D3

NOTES:

A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.

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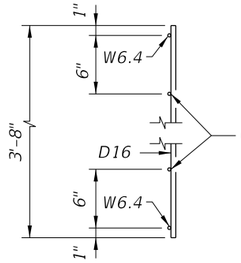
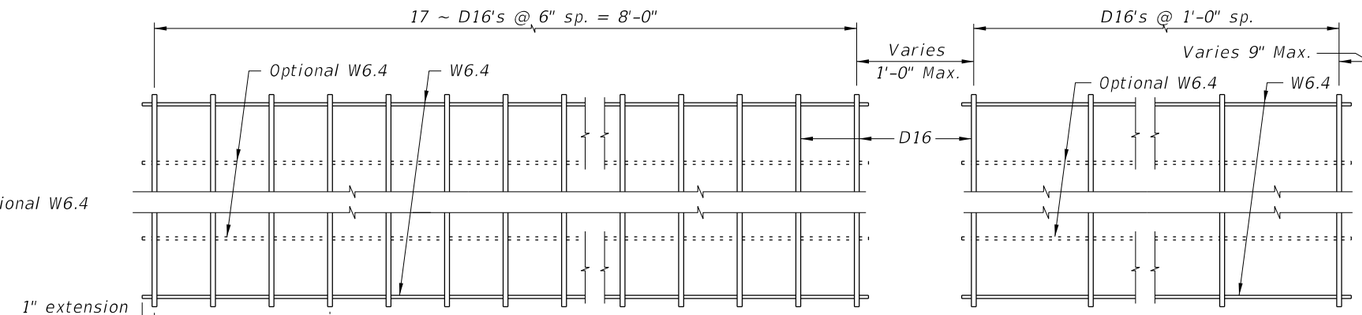
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 72 BEAM - STANDARD DETAILS	INDEX 450-072	SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

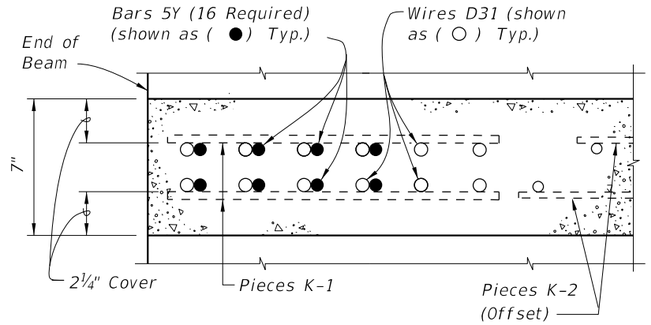


PIECES M
END VIEW

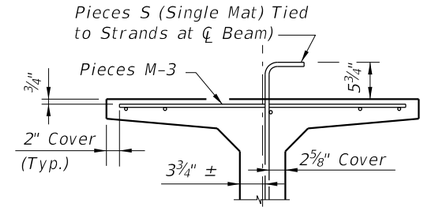


PLAN VIEW
PIECE M-1
(2 Required)

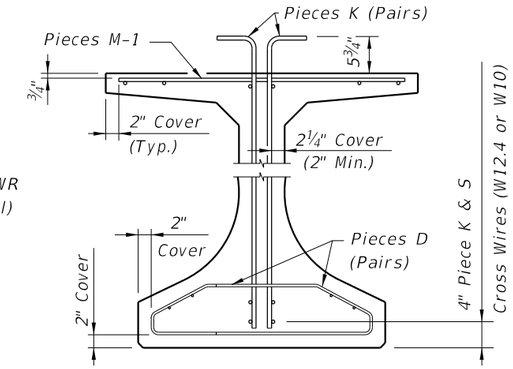
PLAN VIEW
PIECE M-3
(2 Required)



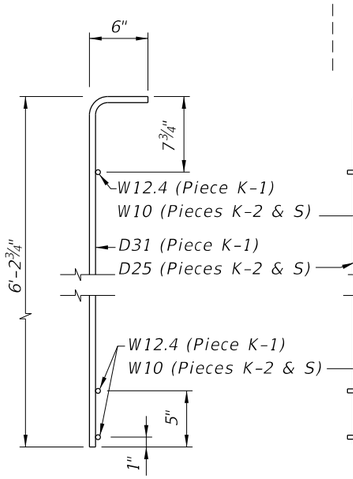
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



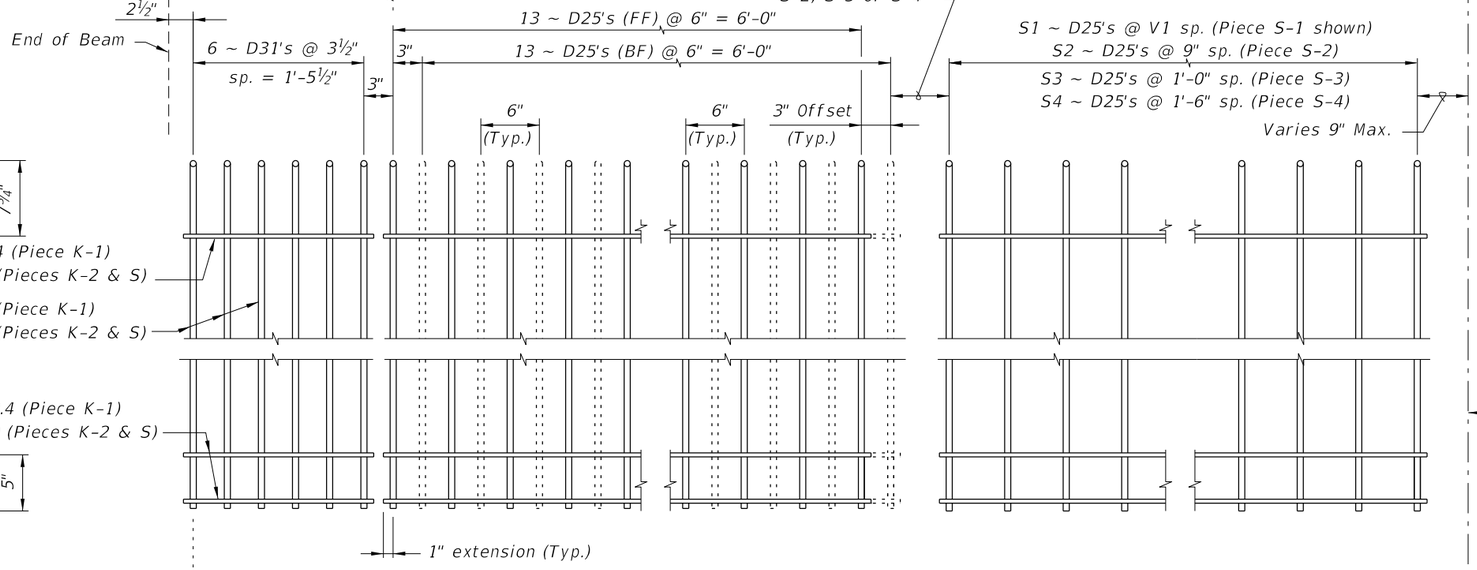
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands not Shown for Clarity)



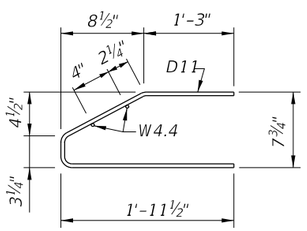
PIECES K & S
END VIEW



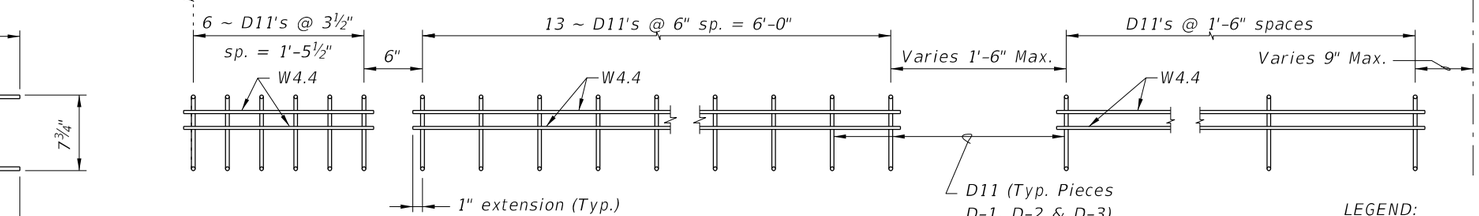
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required ~ Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 6A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

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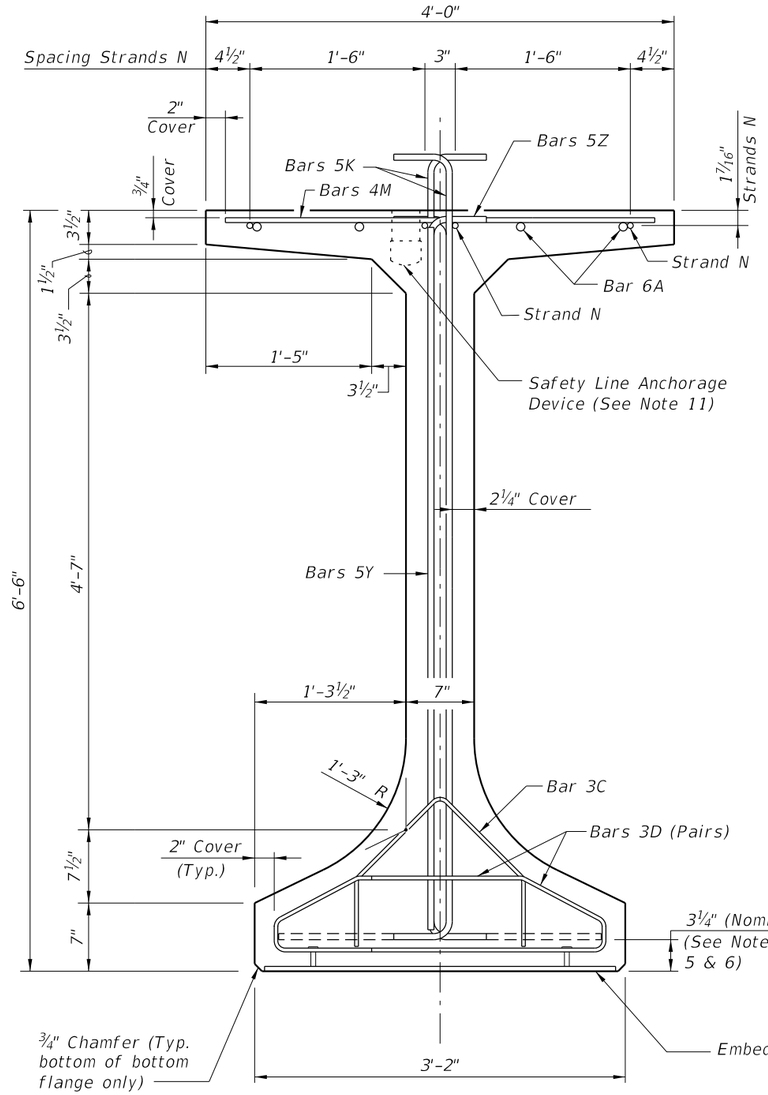
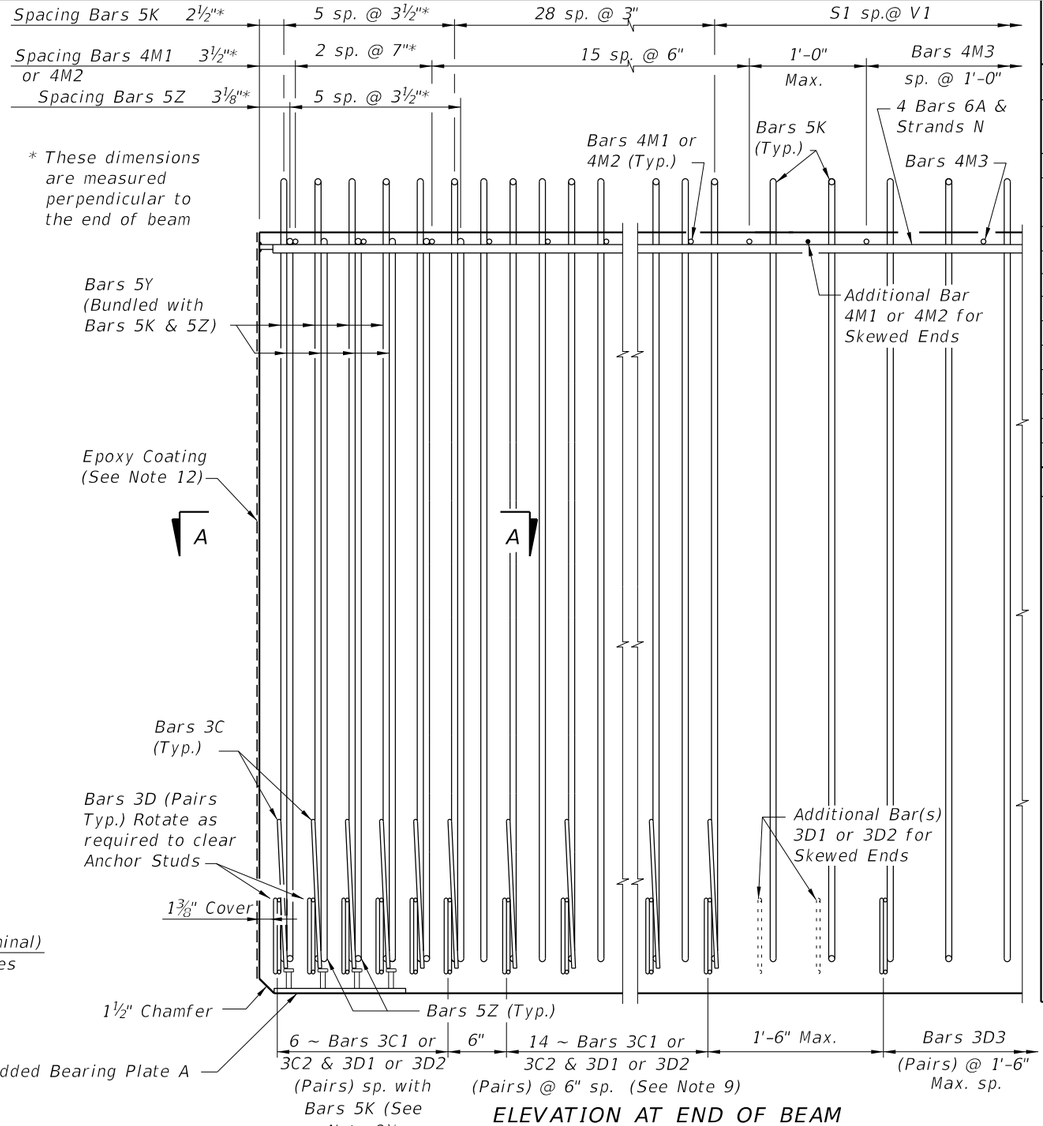
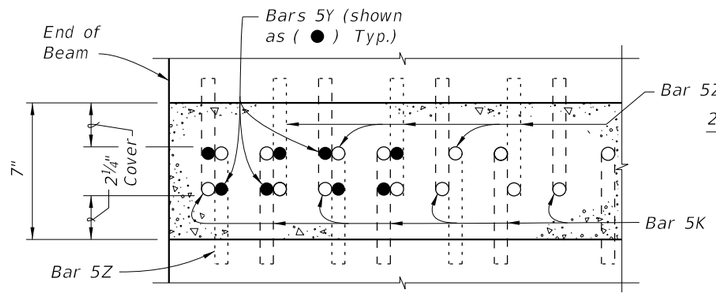
LAST REVISION	REVISION	DESCRIPTION:			
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-I 72 BEAM - STANDARD DETAILS	INDEX 450-072 / SHEET 2 of 2



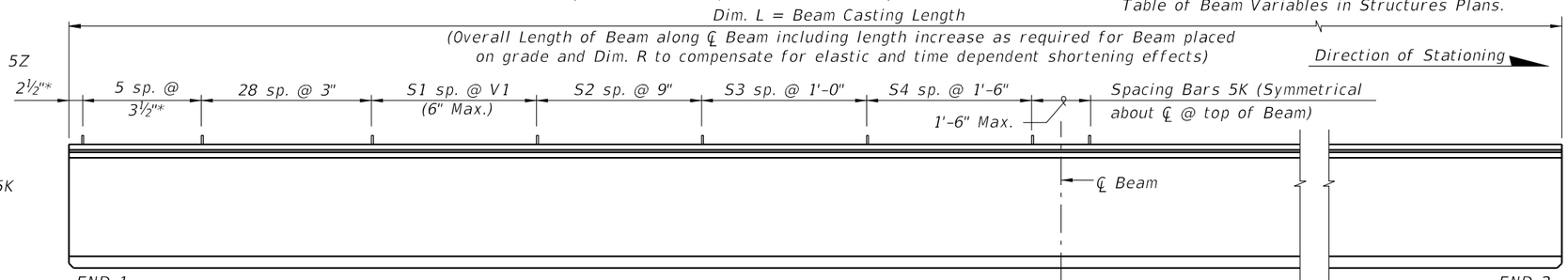
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



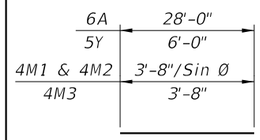
ELEVATION

CONVENTIONAL REINFORCING BAR BENDING DETAILS

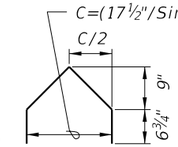
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	6	8	28'-0"
C1	7, 8 & 9	3	20 (End 1)	Varies
C2	7, 8 & 9	3	20 (End 2)	Varies
D1	7, 8, 9 & 10	3	40 (End 1)	Varies
D2	7, 8, 9 & 10	3	40 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	7'-8"
M1	7 & 9	4	18 (End 1)	Varies
M2	7 & 9	4	18 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	⅜" Ø Strand	4	Dim. L
Y	8 & 9	5	16	6'-0"
Z	5, 6, 8, 9 & 10	5	12	7'-2"

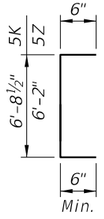
BENDING DIAGRAMS (See Note 2)



BARS 6A, 4M1, 4M2, 4M3 & 5Y

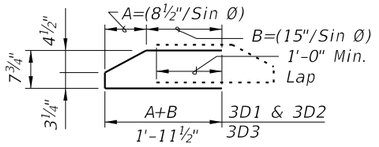


BARS 3C1 & 3C2



BARS 5K & 5Z

Ø=90° for Bars 3D3



BARS 3D1, 3D2 & 3D3

NOTES:

A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.

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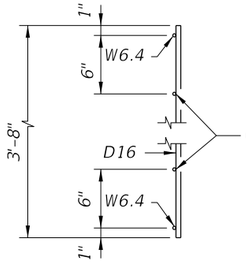
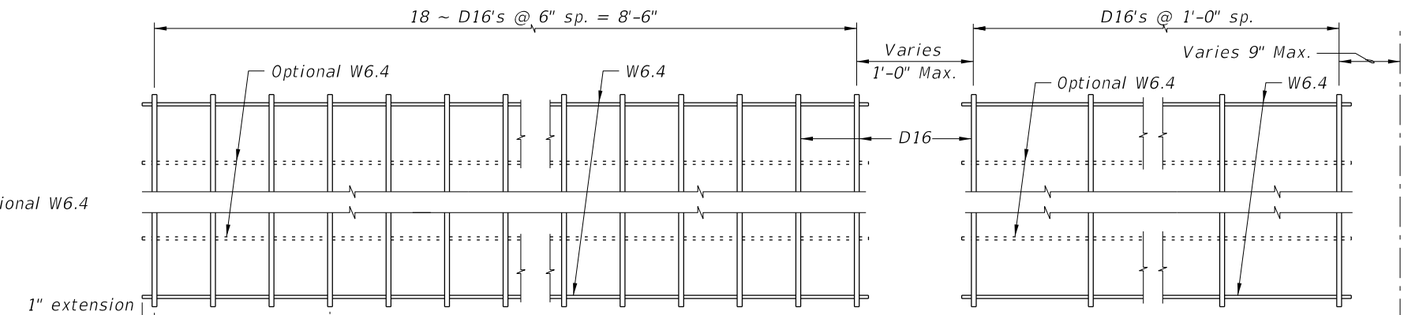
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 78 BEAM - STANDARD DETAILS	INDEX 450-078	SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

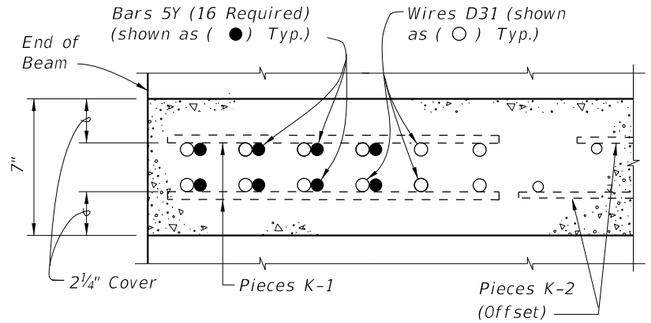


PIECES M
END VIEW

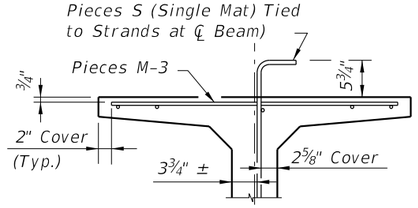


PLAN VIEW
PIECE M-1
(2 Required)

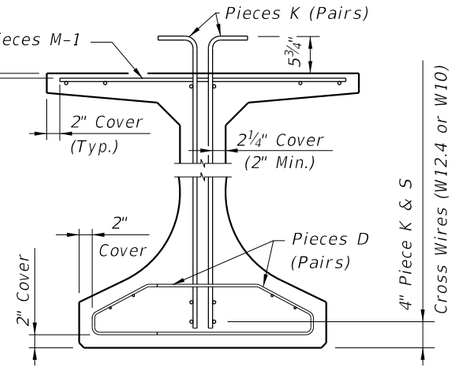
PLAN VIEW
PIECE M-3
(2 Required)



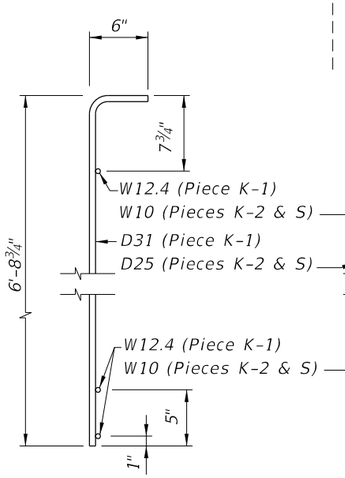
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



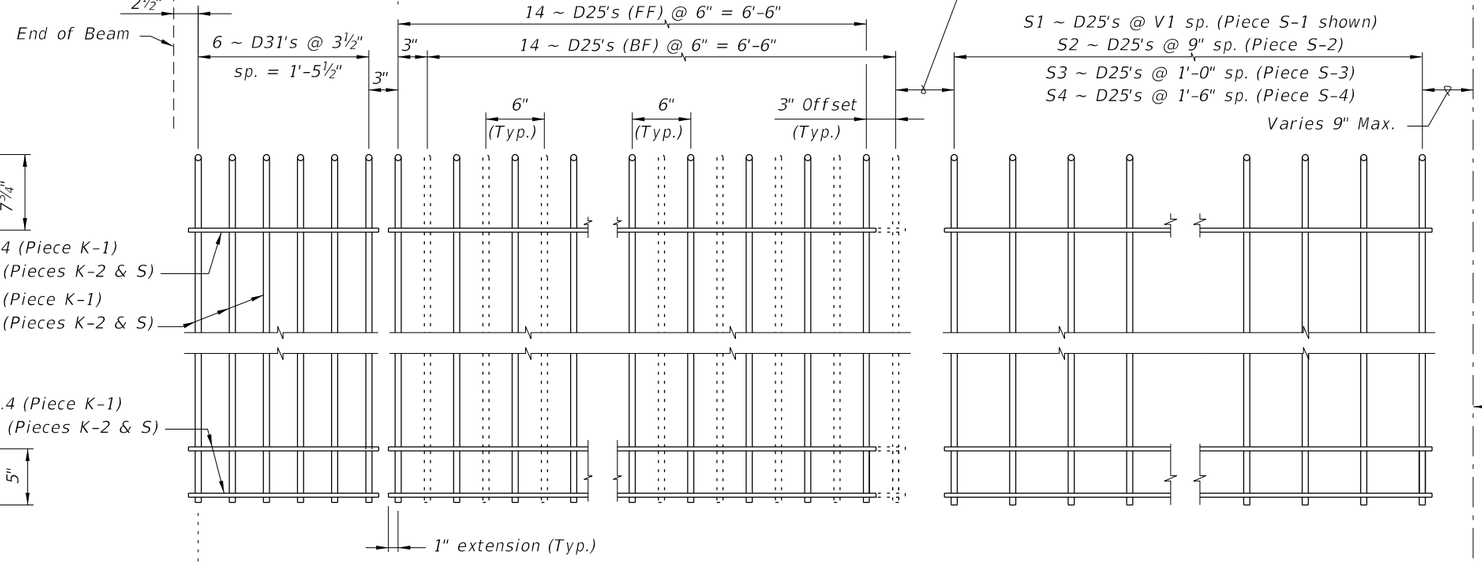
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands N not Shown for Clarity)



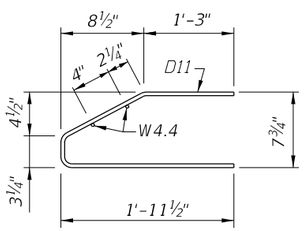
PIECES K & S
END VIEW



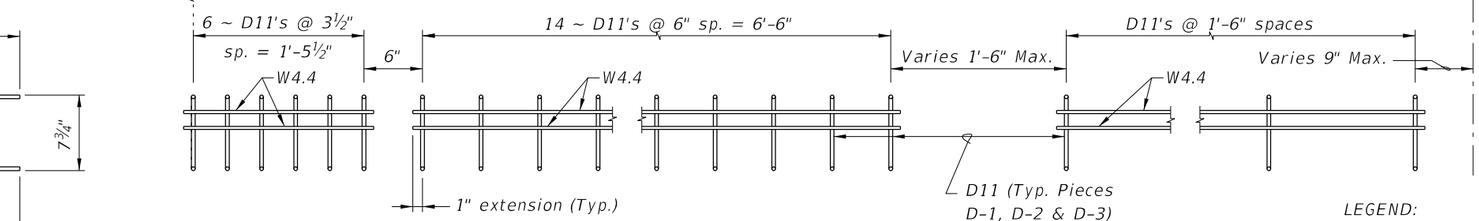
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required ~ Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 6A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

10/17/2024 10:53:48 AM

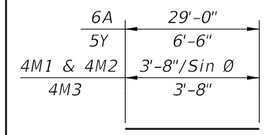
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-I 78 BEAM - STANDARD DETAILS	INDEX 450-078	SHEET 2 of 2

CONVENTIONAL REINFORCING BAR BENDING DETAILS

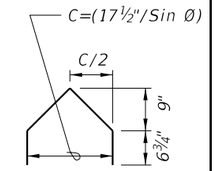
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	6	8	29'-0"
C1	7, 8 & 9	3	21 (End 1)	Varies
C2	7, 8 & 9	3	21 (End 2)	Varies
D1	7, 8, 9 & 10	3	42 (End 1)	Varies
D2	7, 8, 9 & 10	3	42 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	8'-2"
M1	7 & 9	4	19 (End 1)	Varies
M2	7 & 9	4	19 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	½" Ø Strand	4	Dim. L
Y	8 & 9	5	16	6'-6"
Z	5, 6, 8, 9 & 10	5	12	7'-8"

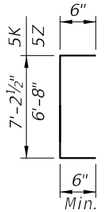
BENDING DIAGRAMS (See Note 2)



BARS 6A, 4M1, 4M2, 4M3 & 5Y

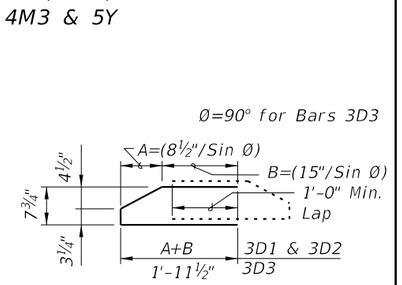


BARS 3C1 & 3C2

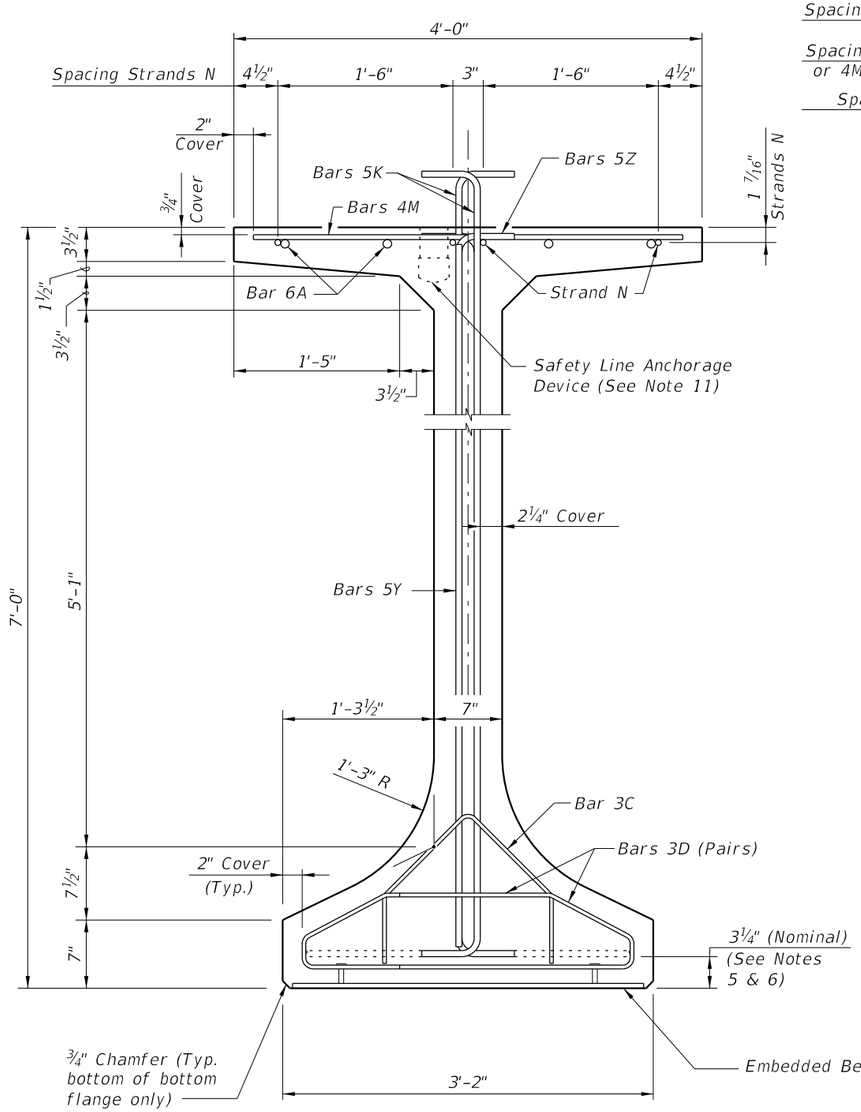


BARS 5K & 5Z

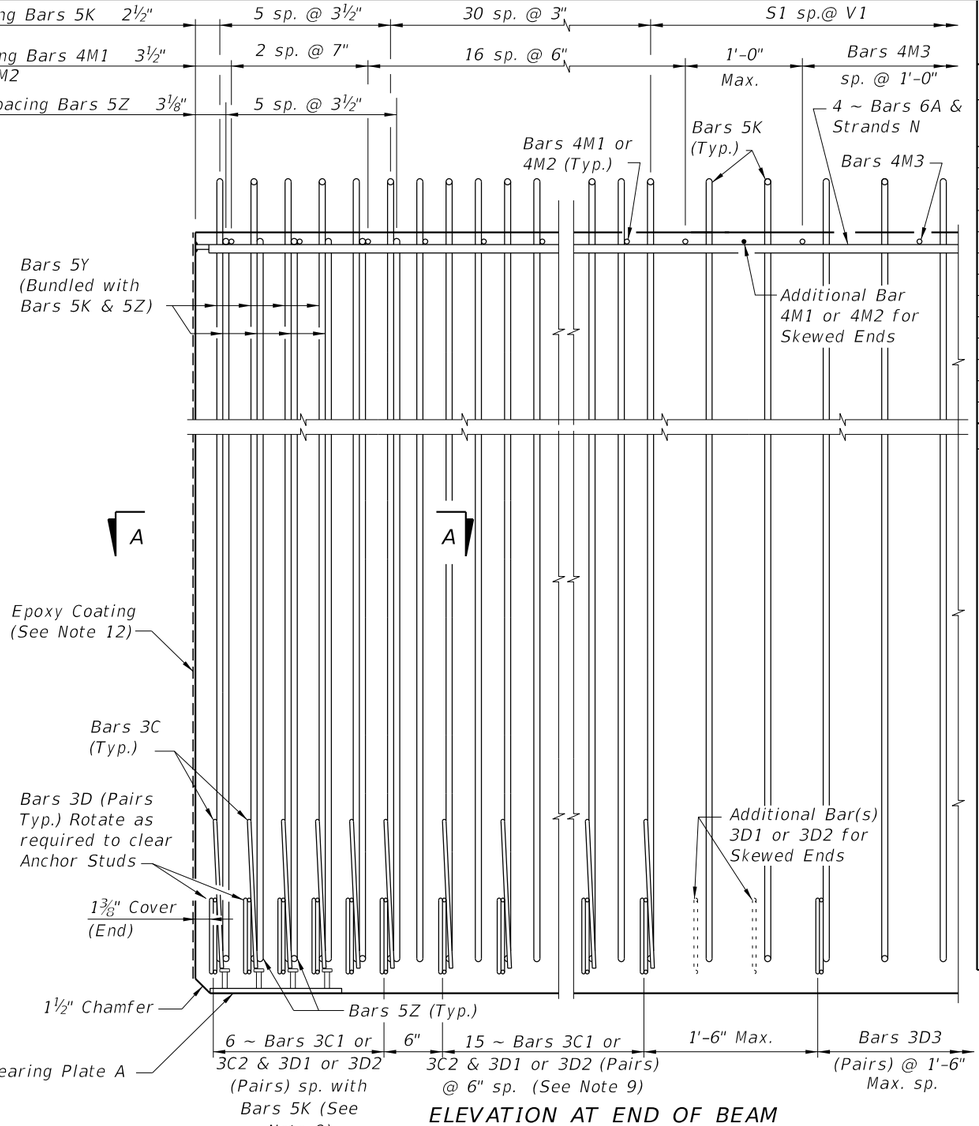
Ø=90° for Bars 3D3



BARS 3D1, 3D2 & 3D3



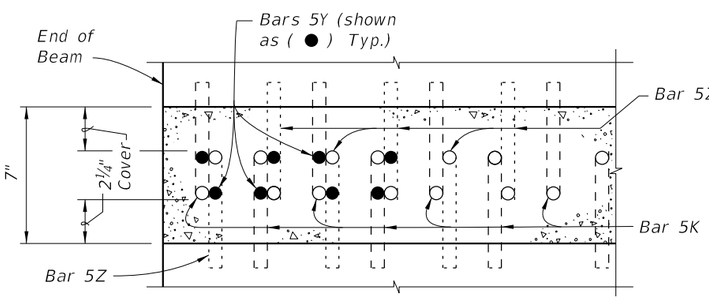
END VIEW



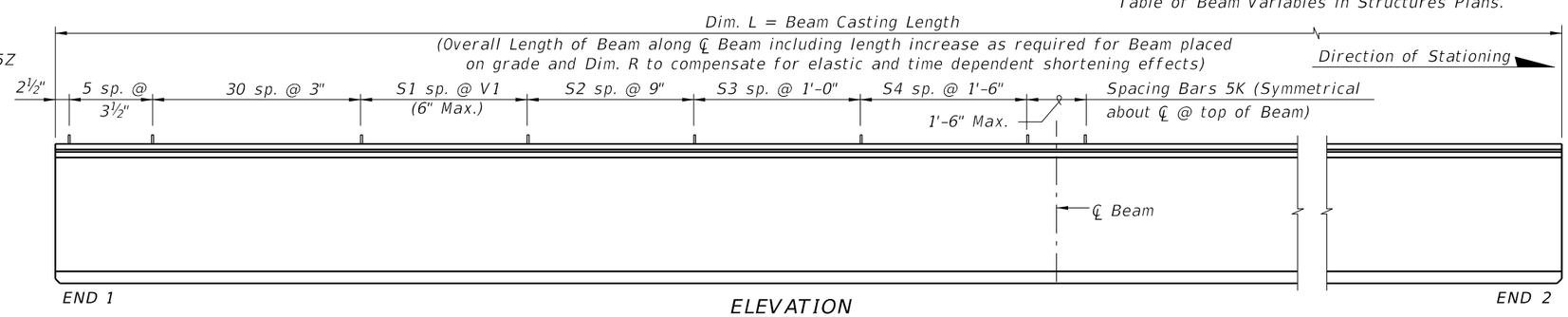
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

NOTES:

A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)

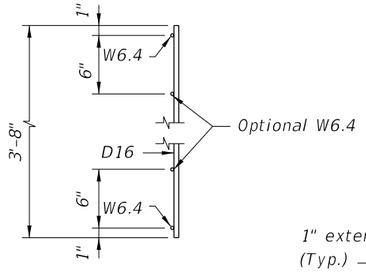


ELEVATION

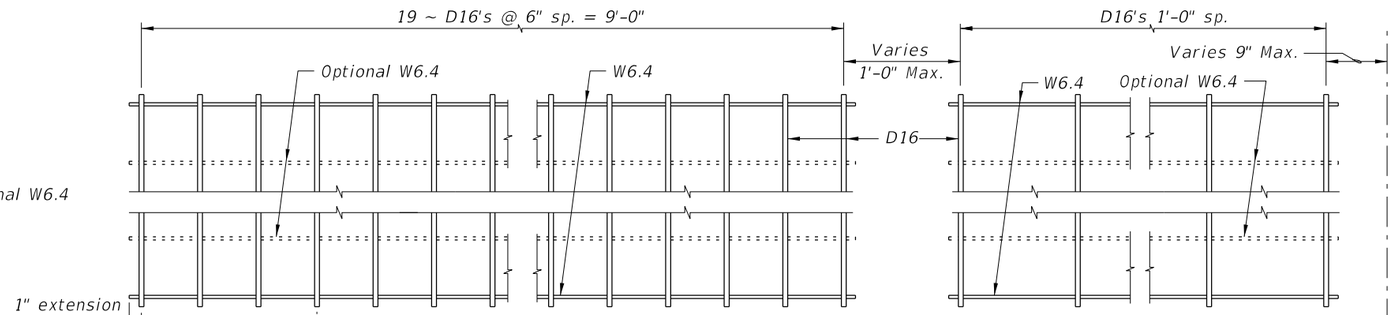
10:53:55 AM
10/17/2024

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 84 BEAM - STANDARD DETAILS	INDEX 450-084	SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

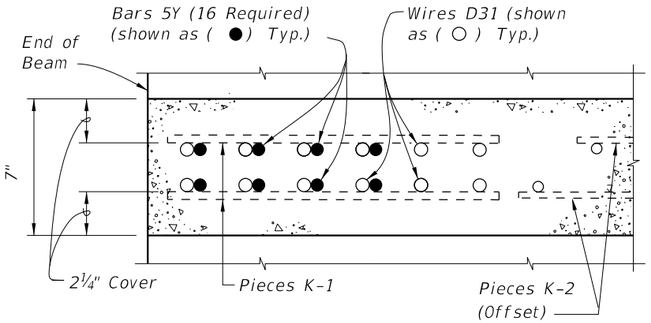


PIECES M
END VIEW

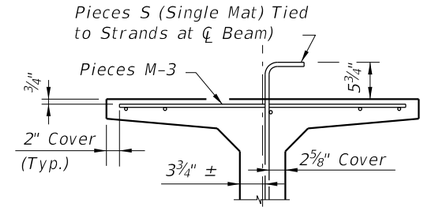


PLAN VIEW
PIECE M-1
(2 Required)

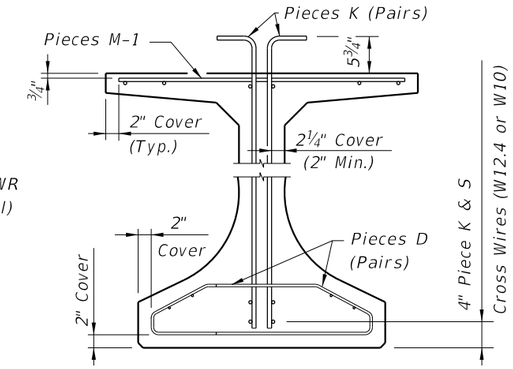
PLAN VIEW
PIECE M-3
(2 Required)



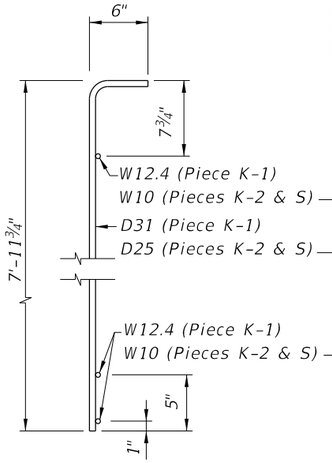
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



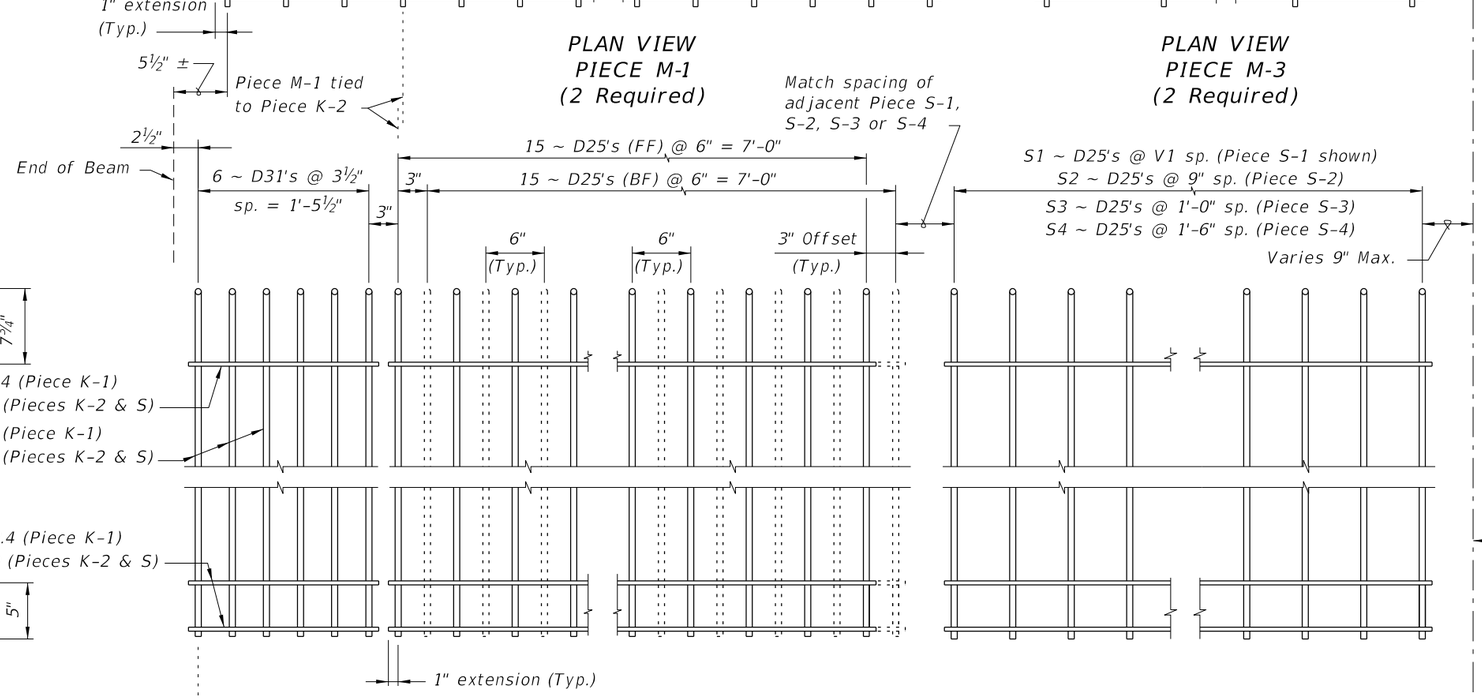
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands N not Shown for Clarity)



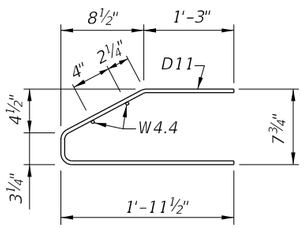
PIECES K & S
END VIEW



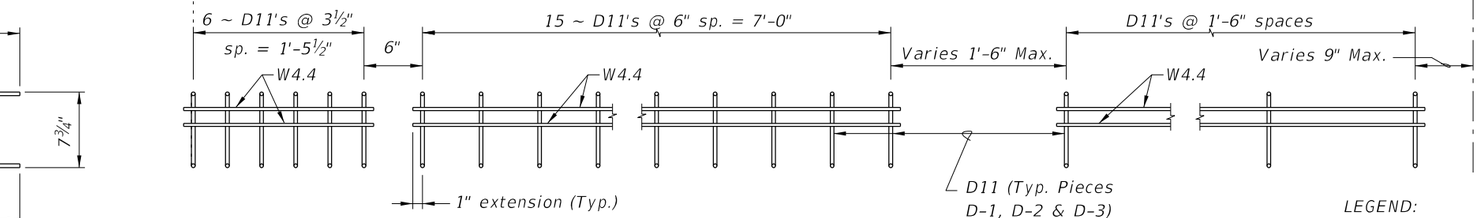
PIECE K-1
(Aligned EF)
(4 Required ~
2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required ~ Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

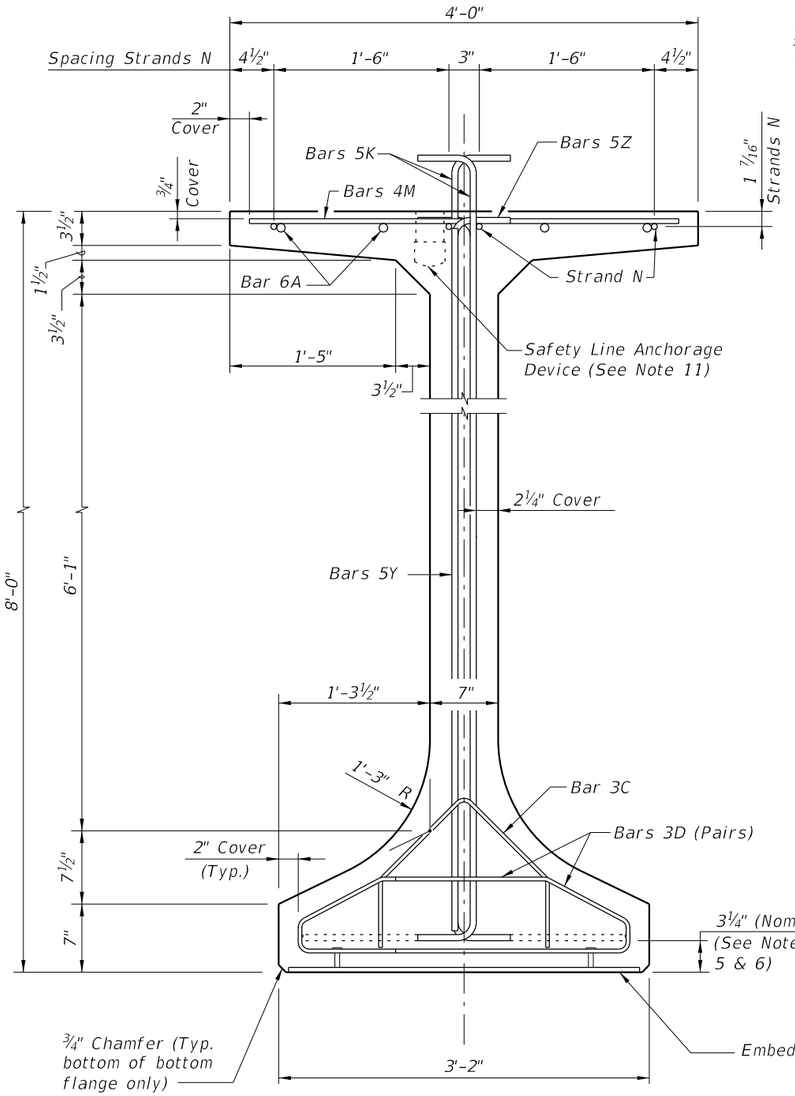
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

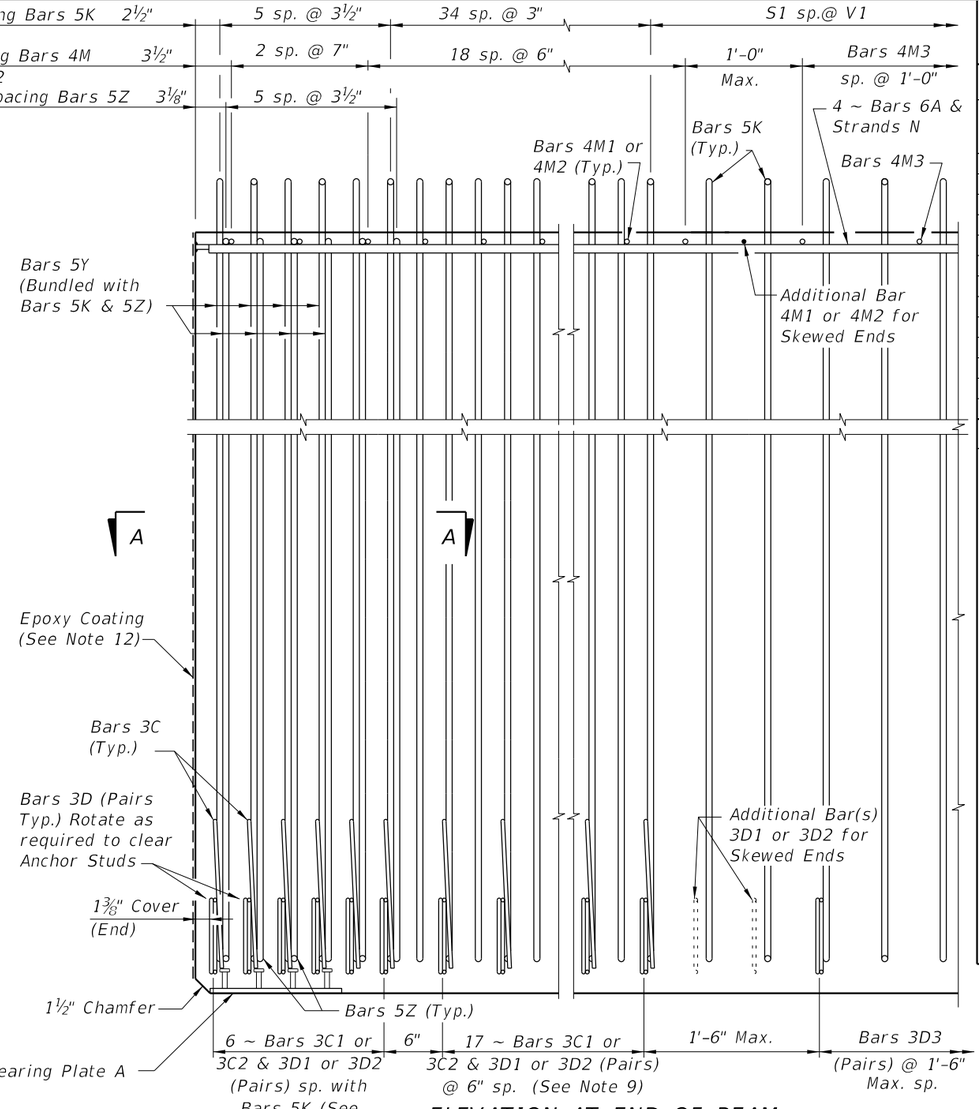
a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 6A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

10/17/2024 10:54:03 AM

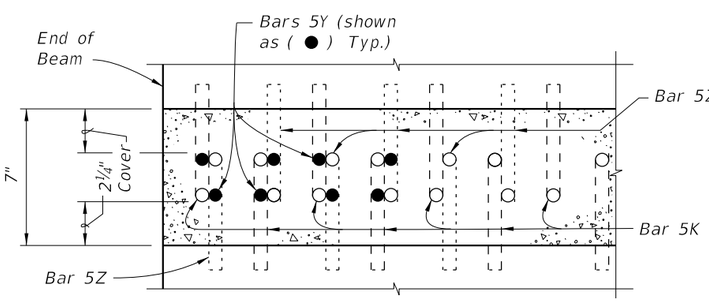
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-I 84 BEAM - STANDARD DETAILS	INDEX 450-084	SHEET 2 of 2



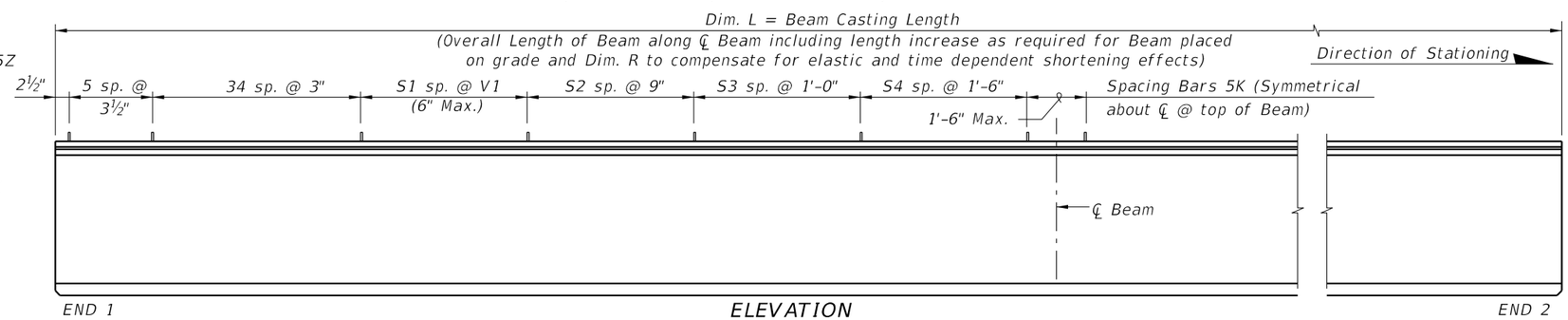
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



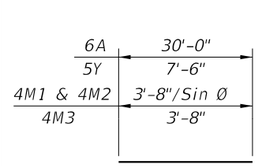
END 1 ELEVATION END 2

CONVENTIONAL REINFORCING BAR BENDING DETAILS

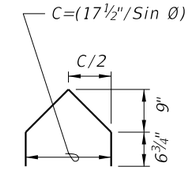
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 2)
A	—	6	8	30'-0"
C1	7, 8 & 9	3	23 (End 1)	Varies
C2	7, 8 & 9	3	23 (End 2)	Varies
D1	7, 8, 9 & 10	3	46 (End 1)	Varies
D2	7, 8, 9 & 10	3	46 (End 2)	Varies
D3	9 & 10	3	See Table	4'-3"
K	5, 6, 8, 9 & 10	5	See Table	9'-2"
M1	7 & 9	4	21 (End 1)	Varies
M2	7 & 9	4	21 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	4 & 12	½" Ø Strand	4	Dim. L
Y	8 & 9	5	16	7'-6"
Z	5, 6, 8, 9 & 10	5	12	8'-8"

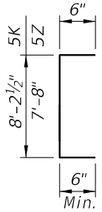
BENDING DIAGRAMS (See Note 2)



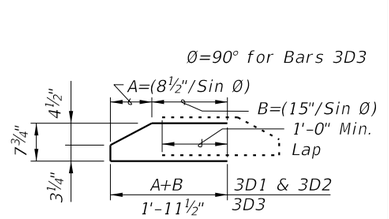
BARS 6A, 4M1, 4M2, 4M3 & 5Y



BARS 3C1 & 3C2



BARS 5K & 5Z



BARS 3D1, 3D2 & 3D3

NOTES:
A. Work this Index with Index 450-010 – Typical Florida-I Beam Details and Notes and the Florida-I Beam – Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 450-010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam – Table of Beam Variables in Structures Plans.

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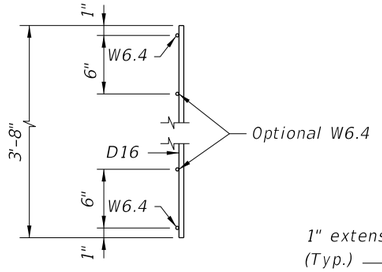
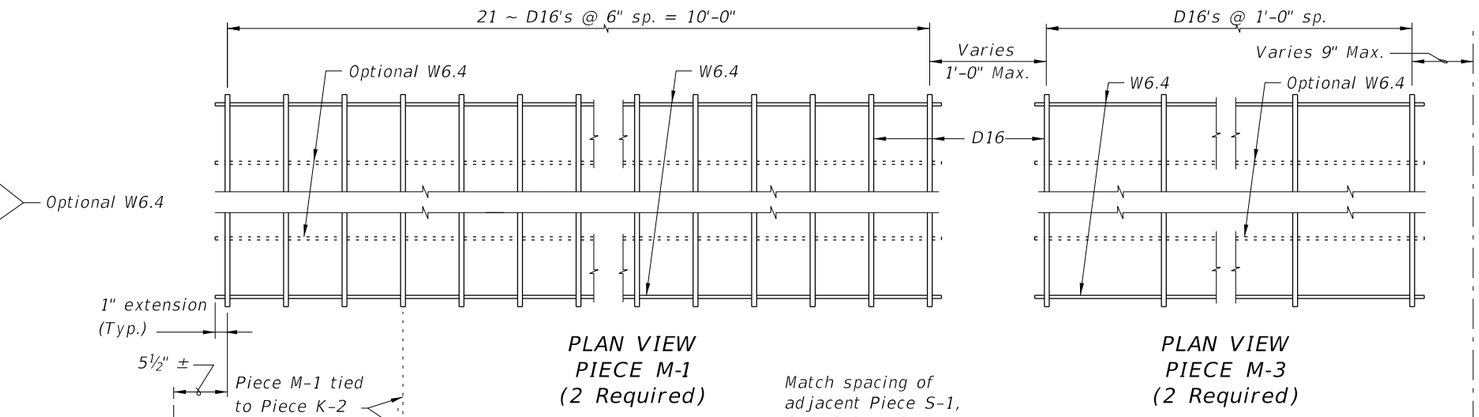
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2025-26 STANDARD PLANS	FLORIDA-I 96 BEAM - STANDARD DETAILS	INDEX 450-096	SHEET 1 of 2

ALTERNATE REINFORCING STEEL (WWR) DETAILS

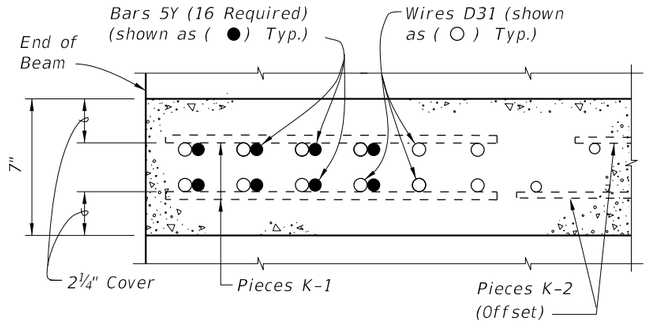


PIECES M
END VIEW

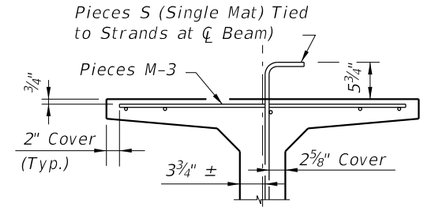


PLAN VIEW
PIECE M-1
(2 Required)

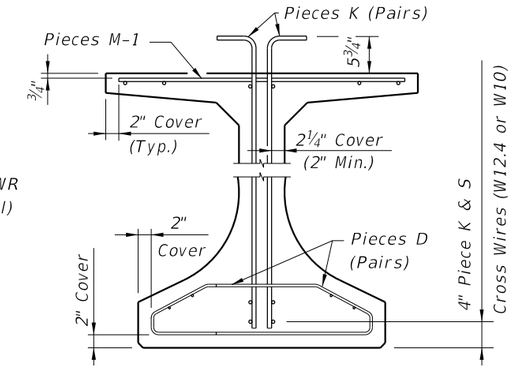
PLAN VIEW
PIECE M-3
(2 Required)



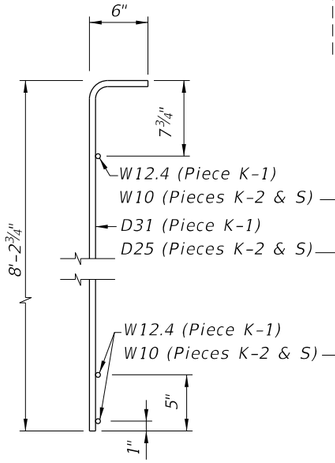
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



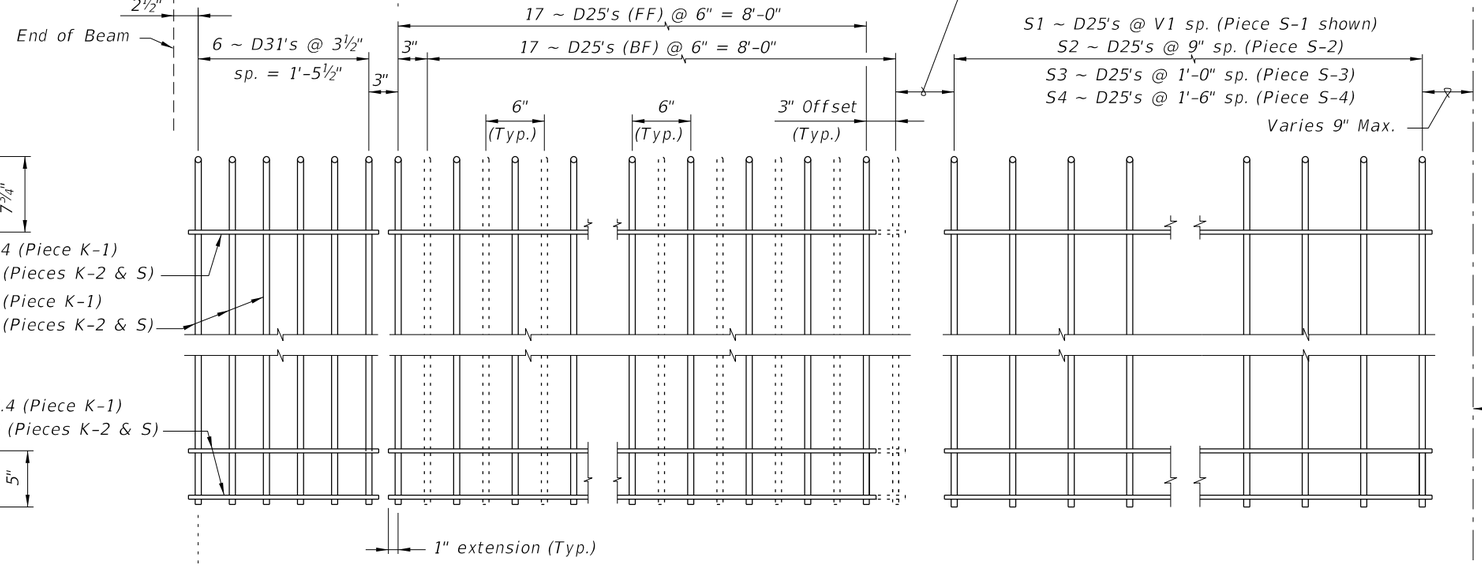
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, Y
and Strands N not Shown for Clarity)



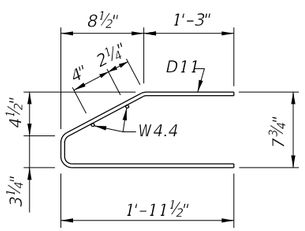
PIECES K & S
END VIEW



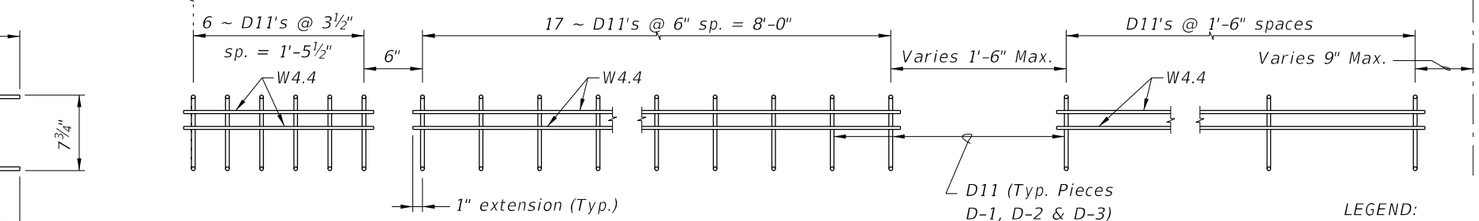
PIECE K-1
(Aligned EF)
(4 Required ~
2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required ~ Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

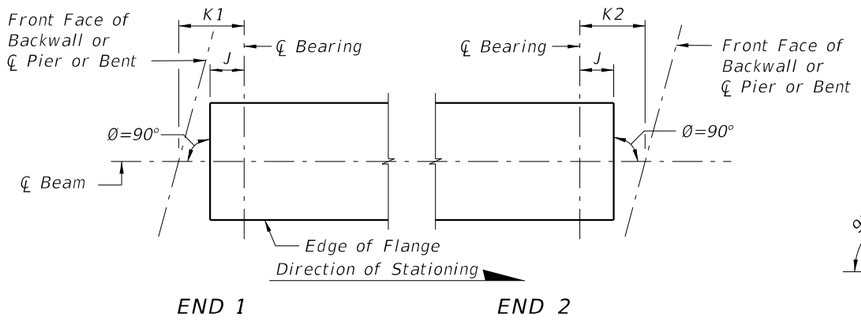
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

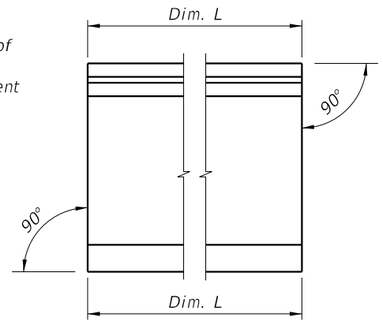
a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 6A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 450-010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

10/17/2024 10:54:17 AM

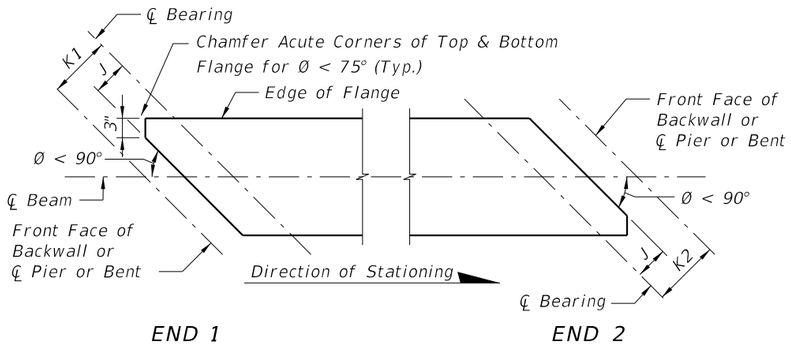
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	FLORIDA-I 96 BEAM - STANDARD DETAILS	INDEX	SHEET
11/01/16					450-096	2 of 2



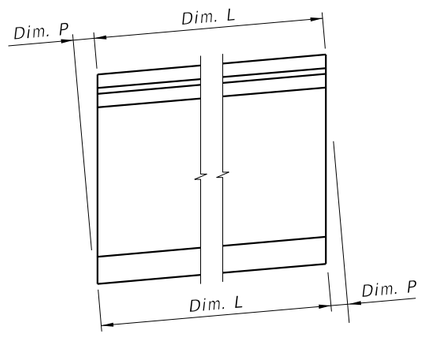
CASE 1
(Standard Orientation for New Construction)



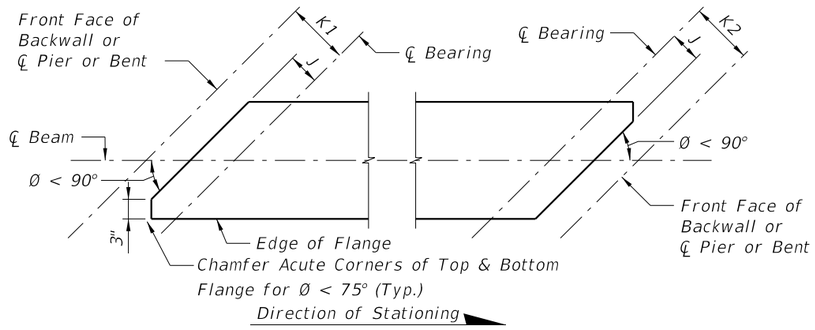
CONDITION 1
(Dim P = 0.0)



CASE 2
(Special Orientation for Widenings)

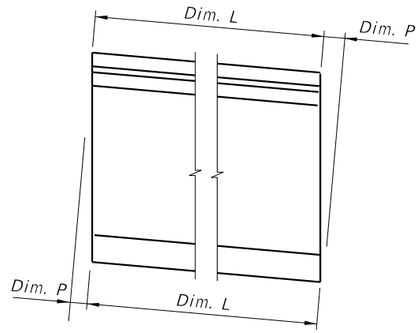


CONDITION 2



CASE 3
(Special Orientation for Widenings)

SCHEMATIC PLAN VIEWS AT BEAM ENDS



CONDITION 3

SCHEMATIC END ELEVATIONS OF BEAMS
(Showing Vertical Bevel of Beam End)

BEAM NOTES

1. Work this Index with the Table of Beam Variables in Structures Plans.
2. All bar bend dimensions are out to out.
3. Concrete cover: 2 inches minimum.
4. Strands N: ⅜" Ø minimum, stressed to 10,000 lbs. each.
5. Place one (1) Bar 4K or 5Z at each location. Alternate the direction of the ends for each bar.
6. Tie Bars 4K and 5Z to the fully bonded strands in the bottom or center row (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).
7. Place Bars 3D1 in beam END 1, and Bars 3D2 in beam END 2.
8. For Beams with vertically beveled end conditions:
   A. Place first row of Bars 3D1, 3D2, 4K, 4Y and 5Z parallel to the end of the beam. Progressively rotate remaining bars within the limits of Bars 5Z until vertical by adjusting the spacing at the top of beam up to a maximum of 1".
   B. For deformed WWR, cut top cross wire and rotate bars as required or reduce end cover at top of the beam to minimum 1".
9. For beams with skewed end conditions:
   A. WWR is not permitted for end reinforcement Bars 3D1, and 3D2 on skewed ends; use bar reinforcement.
   B. Place end reinforcement parallel to the skewed end of the beam. End reinforcement is defined as Bars 3D1, 3D2, 4K, 4Y and 5Z placed within the limits of the spacing for Bars 3D in "ELEVATION AT END OF BEAM".
   C. Beyond the limits of the spacing for Bars 3D, place Bars 4K perpendicular to the longitudinal axis of the beam. For placement see "SKEWED BEAM END DETAILS FOR WIDENING EXISTING BRIDGES" (Sheet 2).
10. Contractor Options:
    A. Deformed WWR may be used in lieu of Bars 3D, 4K, and 5Z as shown on Sheet 4; except at skewed ends (See Note 9).
    B. Bars 3D1 and 3D2 may be fabricated as a two-piece bar with a 1'-0" minimum lap splice of the bottom legs.
    C. For deformed WWR, supplemental transverse #4 bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands or above Strands N.
11. Embedment of Safety Line Anchorage Devices are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of required anchorage devices.
12. For beams with ends that will not to be encased in concrete diaphragms, cut wedges and recess Prestressing Strands at the end of the beam without damaging the surrounding concrete. See "STRAND CUTTING AND PROTECTING DETAIL" on Sheet 2.
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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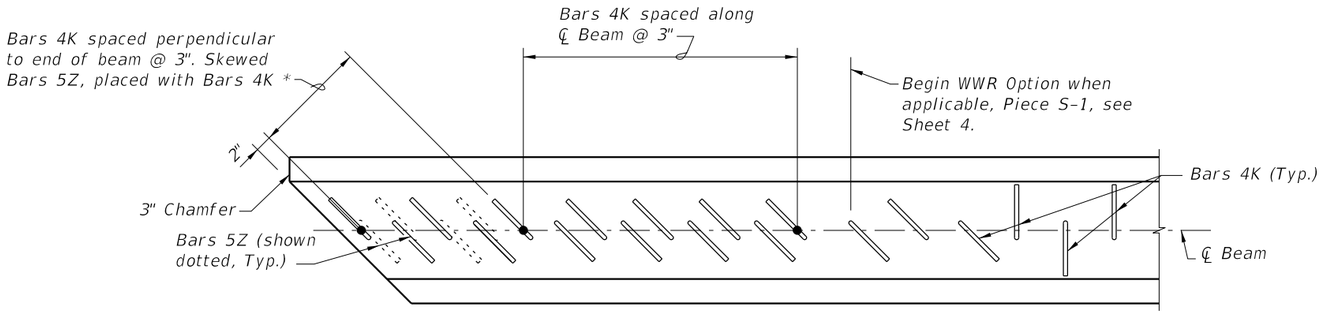
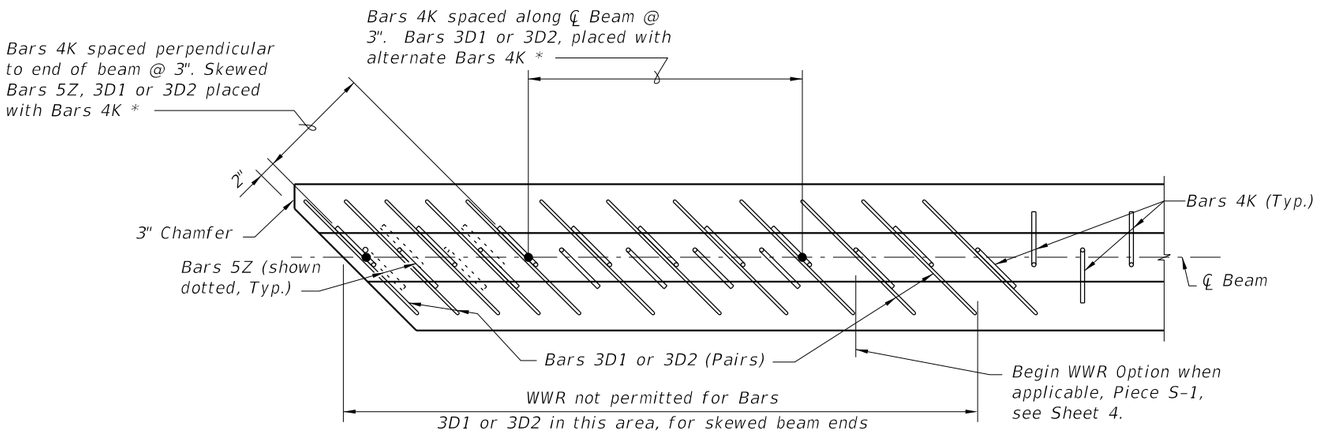
DETAILS AND NOTES

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	AASHTO TYPE II BEAM	INDEX	SHEET
11/01/18					450-120	1 of 4



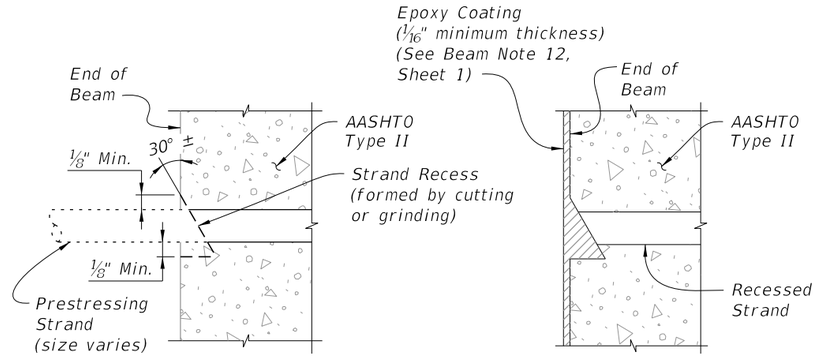
PARTIAL PLAN VIEW (SHOWING TOP FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 5A, 4Y & Strands N not shown for clarity)

* For number of Bars, spacing and placement details see Sheet 3. See Sheet 4 for WWR.



PARTIAL SECTION THRU WEB (SHOWING BOTTOM FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 4Y & Strands not shown for clarity)

SKEWED BEAM END DETAILS FOR WIDENING EXISTING BRIDGES



TYPICAL SECTION SHOWING CUT STRAND RECESS LIMITS

TYPICAL SECTION AFTER PROTECTING

STRAND CUTTING AND PROTECTING DETAIL

DETAILS AND NOTES

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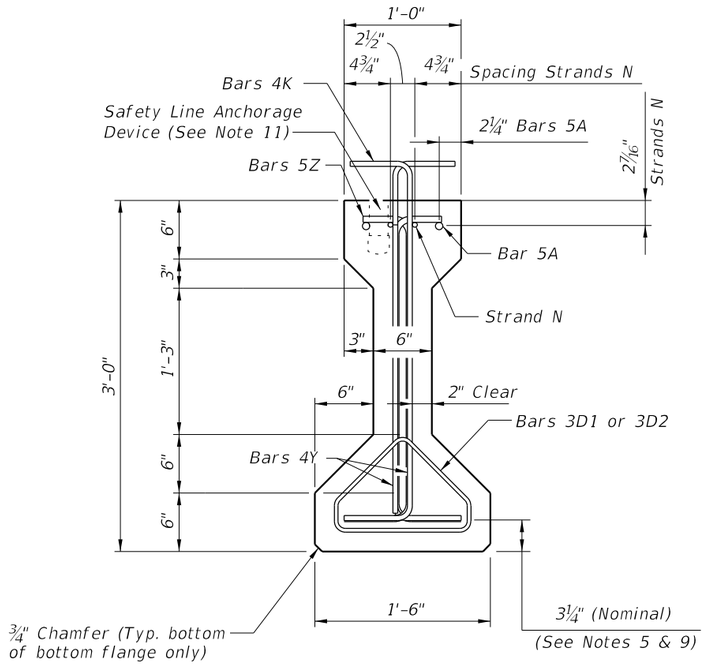
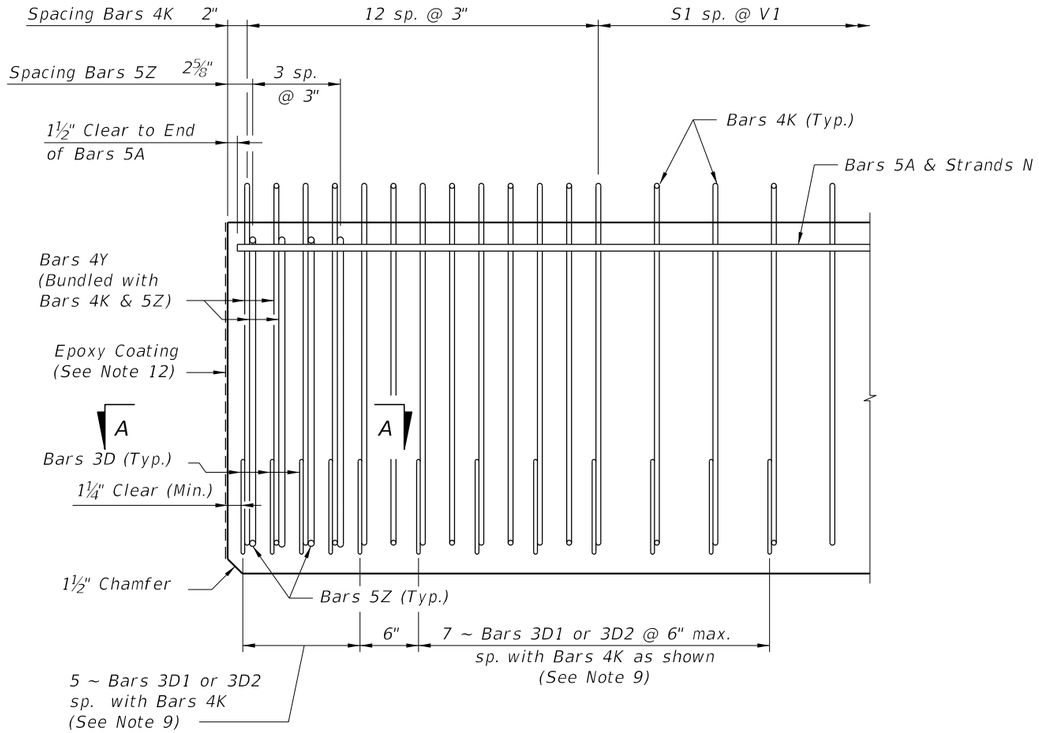
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	AASHTO TYPE II BEAM	INDEX	SHEET
11/01/19					450-120	2 of 4



END VIEW

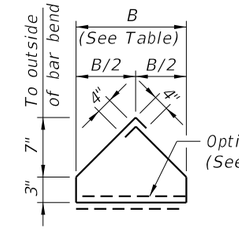


ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

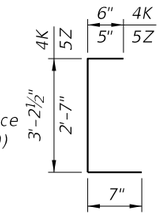
BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	5	4	12'-0"
D1	8, 9 & 10	3	12	See Table
D2	8, 9 & 10	3	12	See Table
K	5, 6, 8, 9 & 10	4	See Table	4'-4"
N	4 & 12	³⁄₈" Ø Strand	2	DIM L+5"
Y	8 & 9	4	8	2'-6"
Z	5, 6, 8, 9 & 10	5	8	3'-7"

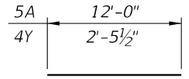
BENDING DIAGRAMS (See Note 1)



BARS 3D1 & 3D2



BARS 4K & 5Z



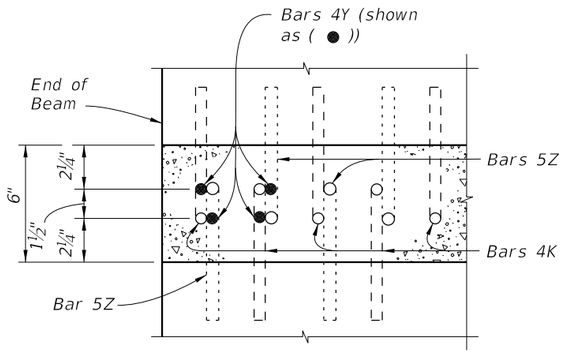
BARS 5A & 4Y

NOTES:

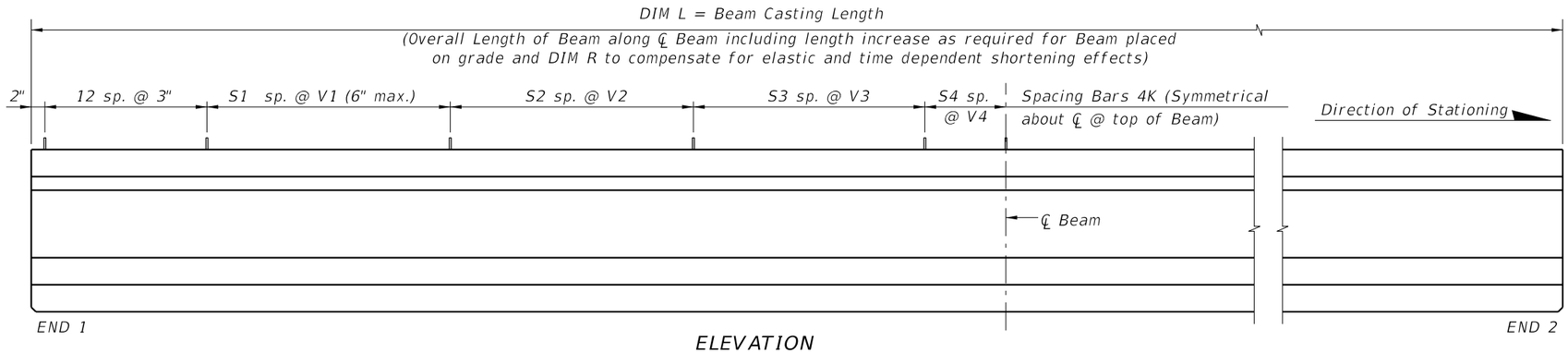
Work this Index with the AASHTO Type II Beam – Table of Beam Variables in Structures Plans.

For referenced notes, see Sheet 1.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type II Beam – Table of Beam Variables.



SECTION A-A
(Showing Bars 4K, 4Y & 5Z Only)



ELEVATION

STANDARD DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2025-26 STANDARD PLANS	AASHTO TYPE II BEAM	450-120	3 of 4

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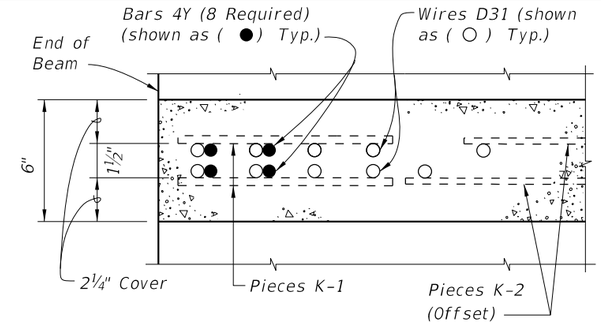
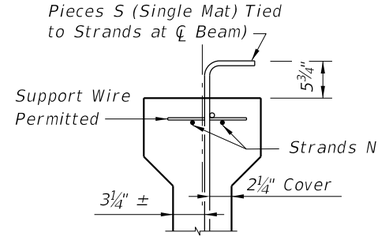
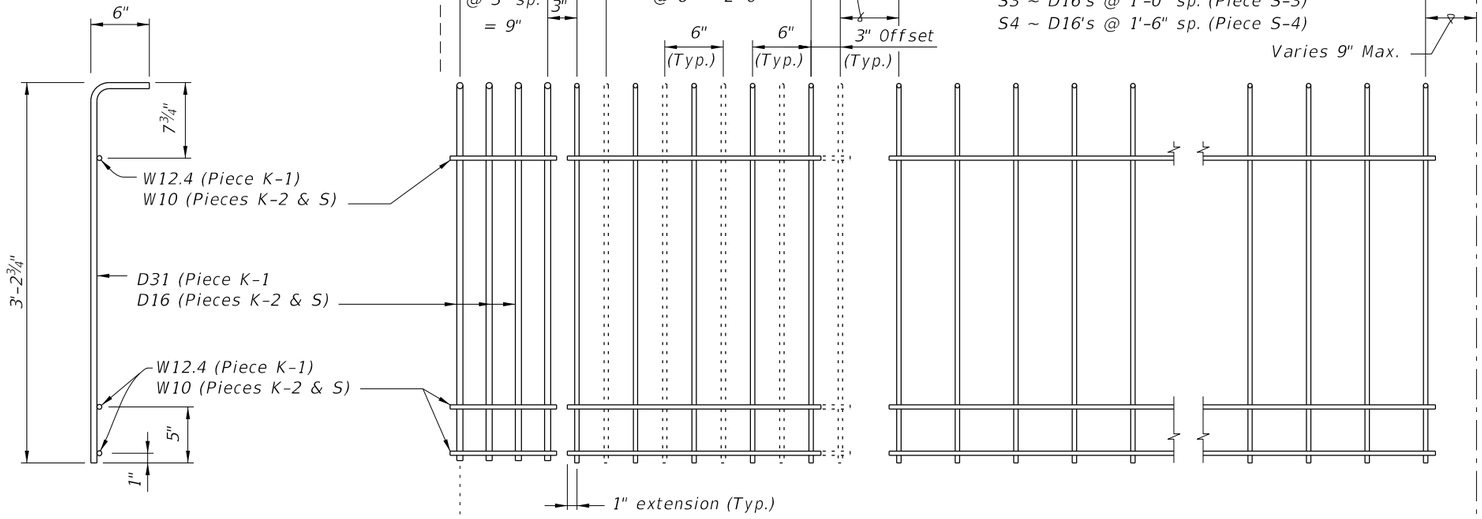
ALTERNATE REINFORCING STEEL WWR DETAILS

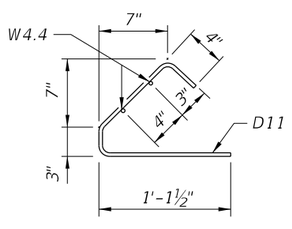


SECTION A-A
FOR WELDED WIRE REINFORCEMENT

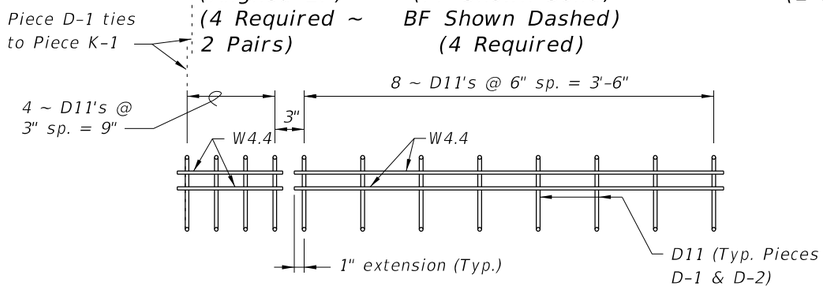


PARTIAL SECTION AT CENTER BEAM





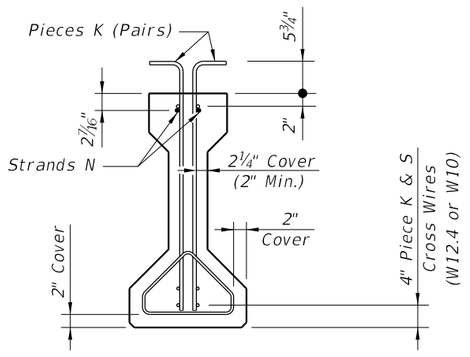
PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, Y and
Bottom Strands not Shown for Clarity)

NOTES:
a. See Sheet 3 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A as shown on Sheet 3. Place additional Bars 4Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1 & D-2 shall not be used; Conventional Reinforcement Bars D1 & D2 shall be used. See Sheet 2 Skew Details and Sheet 1 Note 9 for placement details. Shift Pieces K & Bars 4Y to accommodate skewed end conditions and align with Bars D.

STANDARD DETAILS

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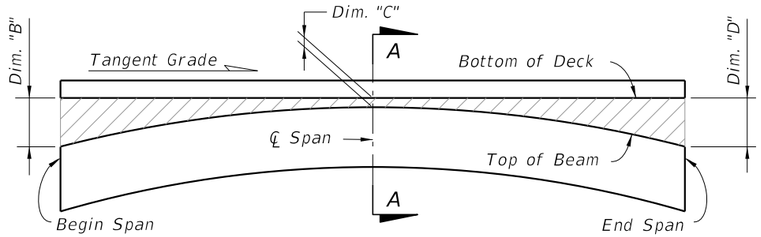
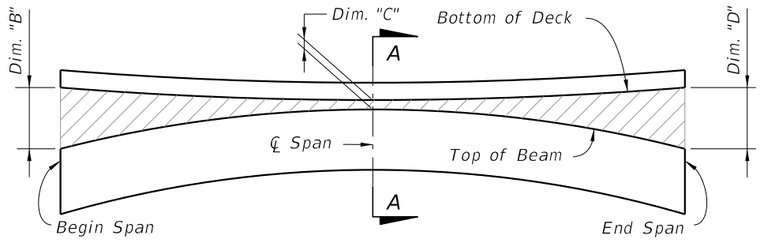
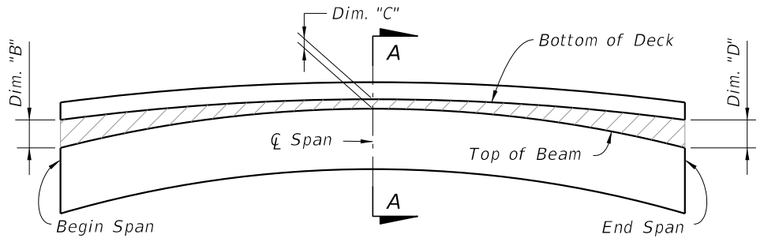
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	AASHTO TYPE II BEAM	INDEX	SHEET
11/01/16					450-120	4 of 4



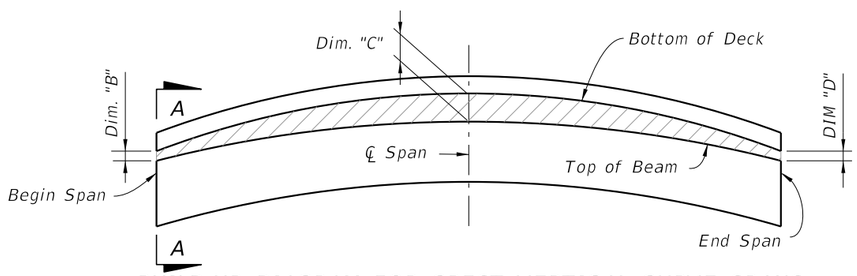
BUILD-UP DIAGRAM FOR TANGENT SPANS
(ALONG ℄ BEAM) (CASE 1)



BUILD-UP DIAGRAM FOR SAG VERTICAL CURVE & HORIZONTAL CURVE SPANS
(ALONG ℄ BEAM) (CASE 2)



BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
- CONTROL AT ℄ SPAN
(ALONG ℄ BEAM) (CASE 3)

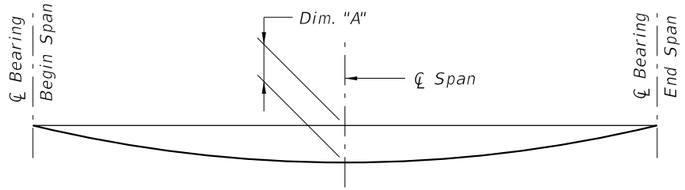


BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
- CONTROL AT BEGIN OR END SPAN
(ALONG ℄ BEAM) (CASE 4)

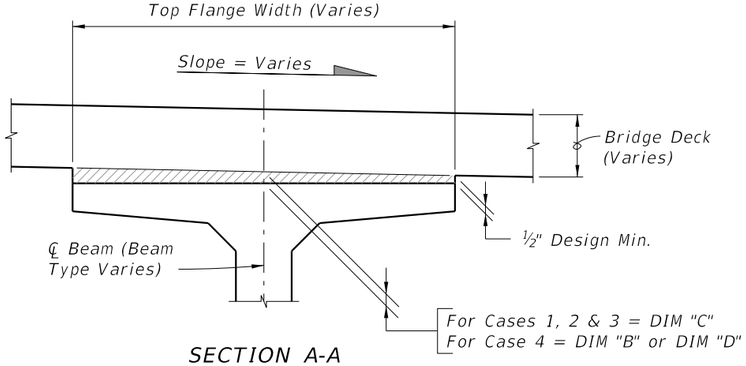
BEAM CAMBER AND BUILD-UP NOTES:

The build-up values given in the Data Table* are based on theoretical beam cambers. The Contractor shall monitor beam cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than +/- 1" from the theoretical "Net Beam Camber @ 120 Days" shown in the Data Table*, obtain approval from the Engineer to modify the build-up dimensions as required. When the measured beam cambers create a conflict with the bottom mat of deck steel, notify the Engineer a minimum of 21 days prior to casting.

Dim. "A" includes the weight of the Stay-In-Place Formwork.



DEAD LOAD DEFLECTION DIAGRAM



SECTION A-A
BUILD-UP OVER BEAMS
(Florida-I Beam Shown
AASHTO Type II Similar)

* NOTE:
Work this Index with the Build-up and Deflection Data Table for Florida-I and AASHTO Type II Beams in Structures Plans.

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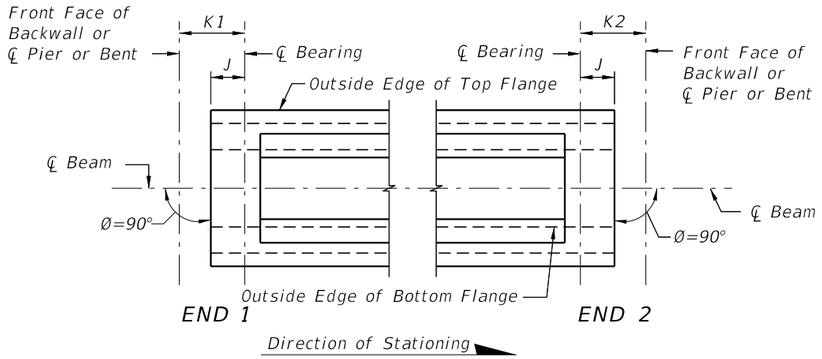
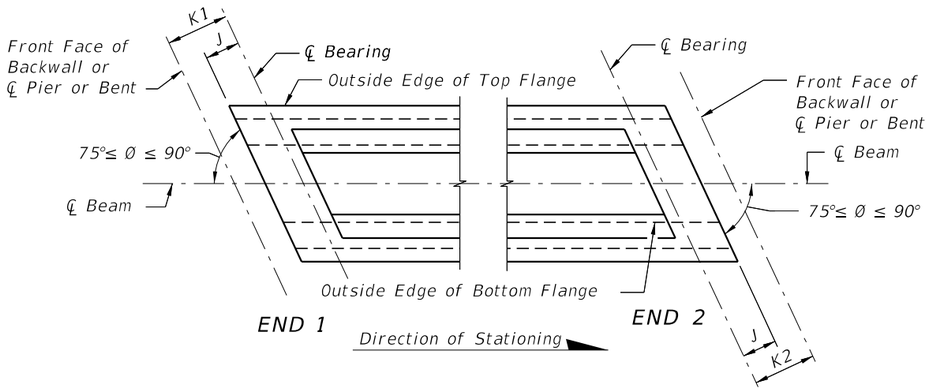
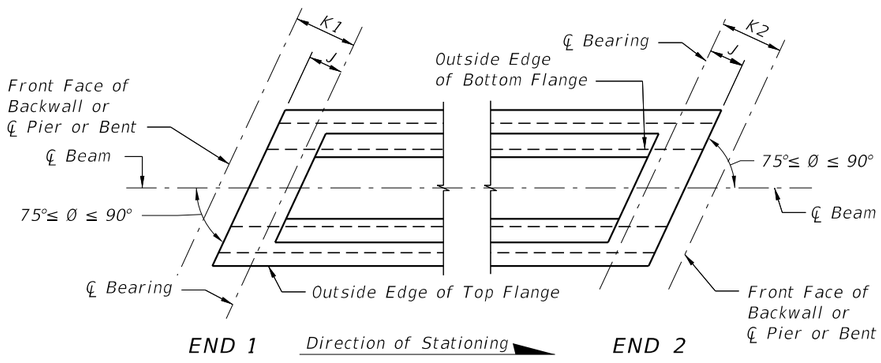
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/21			FY 2025-26 STANDARD PLANS	PRESTRESSED I-BEAMS BUILD-UP & DEFLECTION DATA	450-199	1 of 1



CASE 1



CASE 2



CASE 3

SCHEMATIC PLAN VIEWS AT BEAM ENDS

BEAM NOTES

1. Work this Index with the Florida-U Beam Standard Details (Index 450-248, 450-254, 450-263 and 450-272) and the Table of Beam Variables in Structures Plans.
2. All bar bend dimensions are out-to-out.
3. Concrete cover: 2 inches minimum. Maximum aggregate size is a No. 67.
4. Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.
5. Strands N: ⅜" Ø minimum, stressed to 10,000 lbs. each.
6. Tie Bars 5K to the fully bonded strands in the bottom row (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).
7. For beams without skewed ends or vertically beveled end conditions (see Note 8) the Engineer may approve the use of deformed WWR in lieu of Bars 6A1, 4A2, 5B, 4C, 3D, 5E, 4F, 4G, 4H, 5K, 5L and 4M. The spacing and sizes of deformed WWR must match the reinforcing sizes shown on the Florida-U Beam Standard Details sheets.
8. For Beams with vertically beveled end conditions, where "Dim. P" exceeds 1", place Bars 5E, and the first Bars 4F and 5K parallel to the end of the beam. Fan the remaining Bars 4F and 5K within the limits of "Dim. B" (End Diaphragm) at equal spaces until vertical.
9. Embedment of Safety Line Anchorage Devices are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of any anchorage devices or other required embedded hardware.
10. Intermediate diaphragms must be cast and concrete release strength obtained prior to removing the beam from casting bed.
11. Place drains pipes adjacent to each web at each beam end (four drains per beam).
    A. Drain Pipe: 2" NPS Schedule 80 PVC.
    B. Cover, wrap and secure wire screen around the end of the pipe prior to casting. Extend screen a minimum of 1" down the pipe sides.
    C. Provide removable pipe plugs during casting. Remove plugs from the inside of pipes after casting.
12. Protection of Strands:
    A. Provide a 2" deep recess around all strands (including dormant) or strand groups. Extend the recessed blockout to the web face and bottom of the flange for the bottom row of strands.
    B. After detensioning, cut strands ½" from recessed surface and fill the blockout to protect strands with Type F-2 or Q Epoxy Compound in accordance with Specification Section 926.
13. Use Stay-In-Place metal deck forms inside the beams.
14. Prior to deck placement, provide temporary blocking under each web at both ends of every beam. Ensure the temporary blocking is adequate to resist movements and rotations during deck placement. Leave temporary blocking and bracing in place for a minimum of four days after the deck is placed.
15. Based on the deck forming system and deck placement sequence, evaluate and provide any required temporary bracing between the U Beams.

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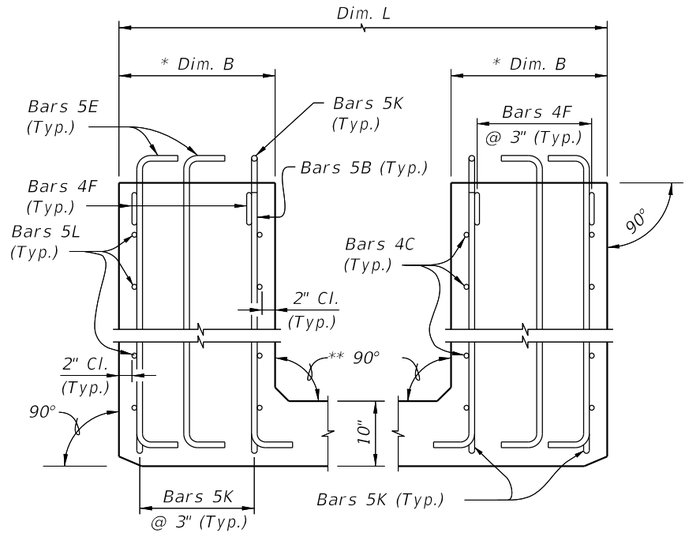
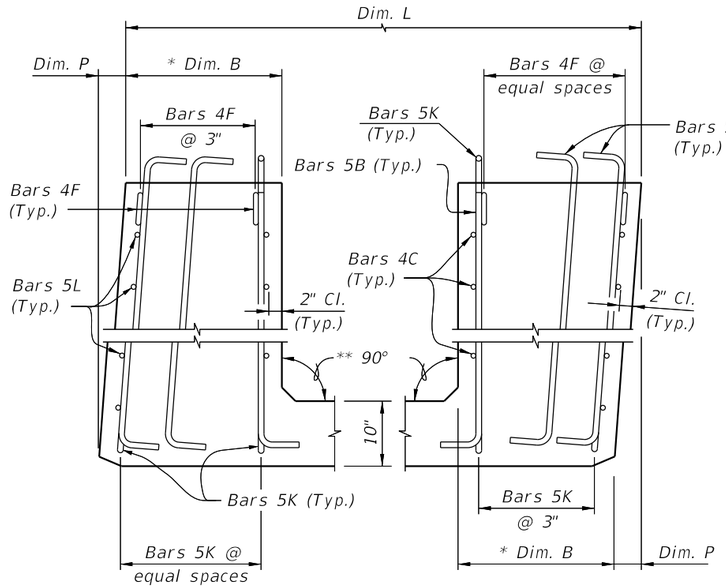
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	FLORIDA-U BEAM - TYPICAL DETAILS & NOTES	INDEX	SHEET
11/01/16					450-210	1 of 2



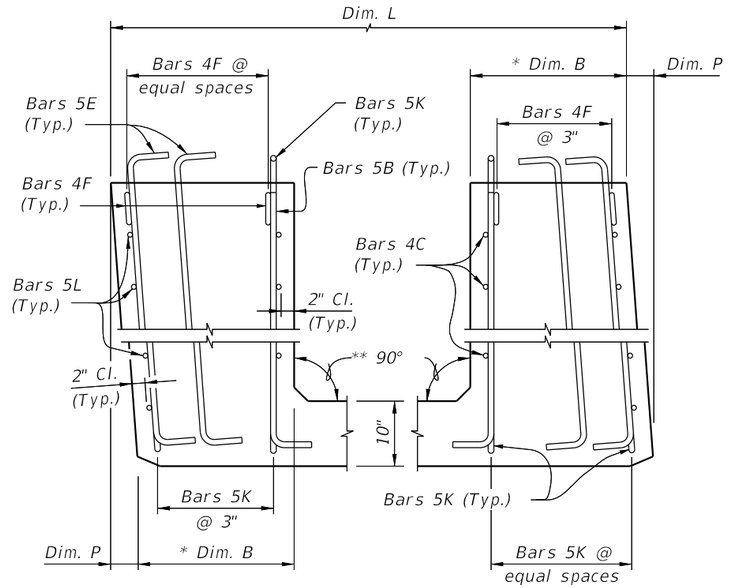
* Dim. B is 1'-6" for Florida-U 48 and 54 Beams and 2'-0" for Florida-U 63 and 72 Beams.

** Note 4, Sheet 1.

CONDITION 1
(P = 0.0)



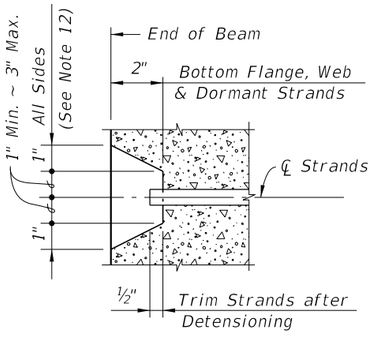
CONDITION 2



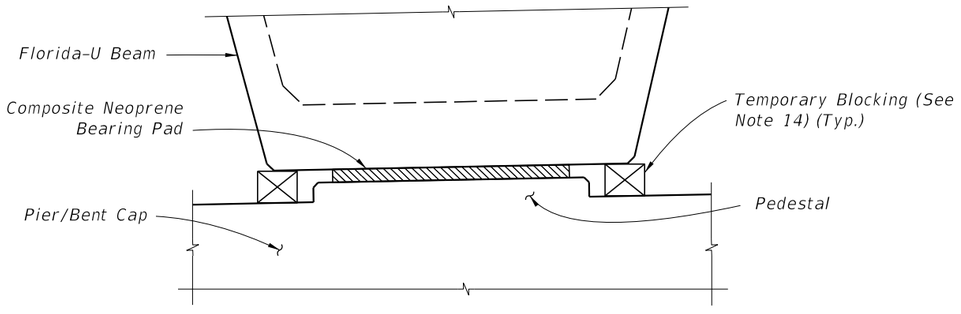
CONDITION 3

SCHEMATIC END ELEVATIONS OF BEAMS

(Showing Vertical Bevel of Beam End)



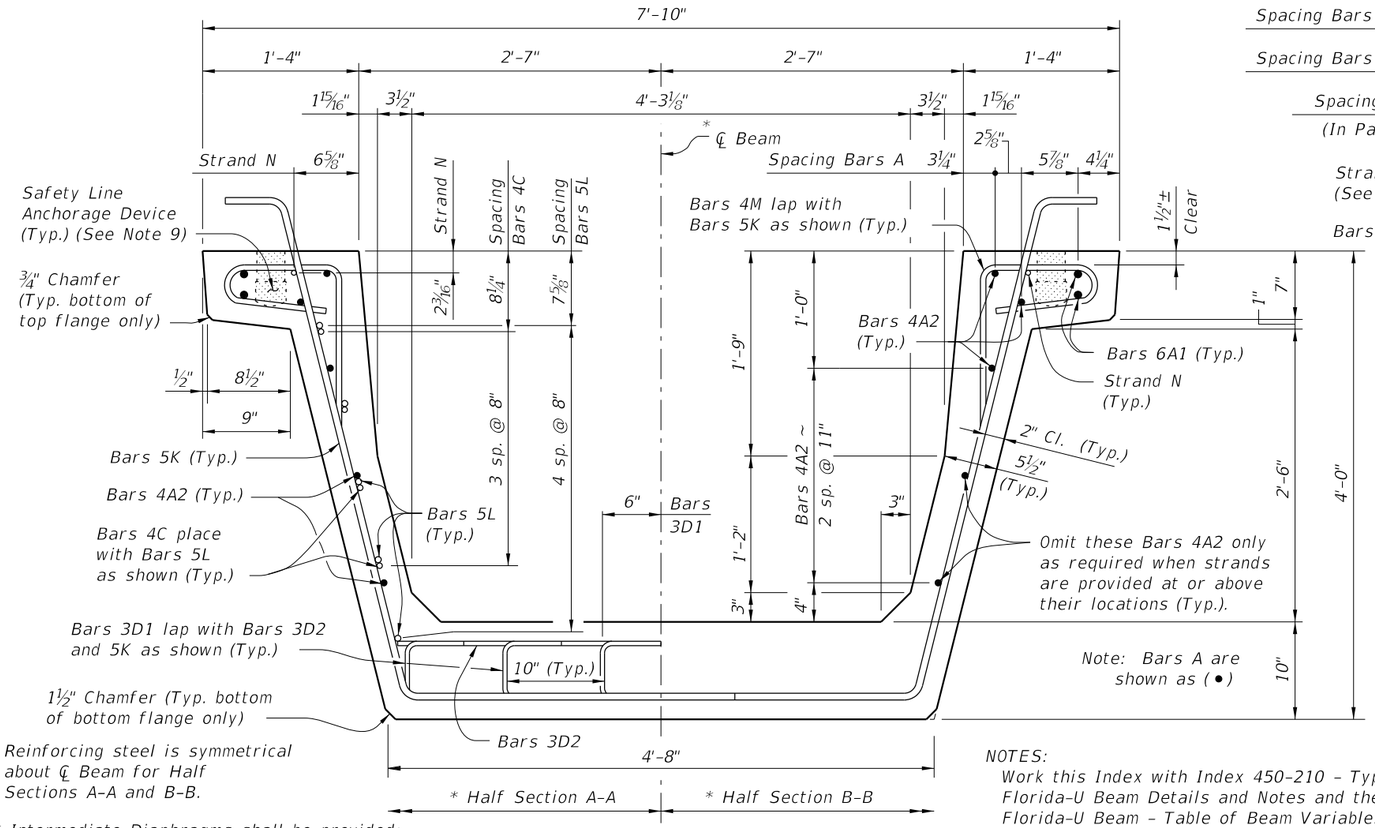
TYPICAL STRAND BLOCKOUT DETAIL



TEMPORARY BLOCKING OF BEAM ENDS

10/17/2024 10:55:04 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U BEAM - TYPICAL DETAILS & NOTES	450-210	2 of 2



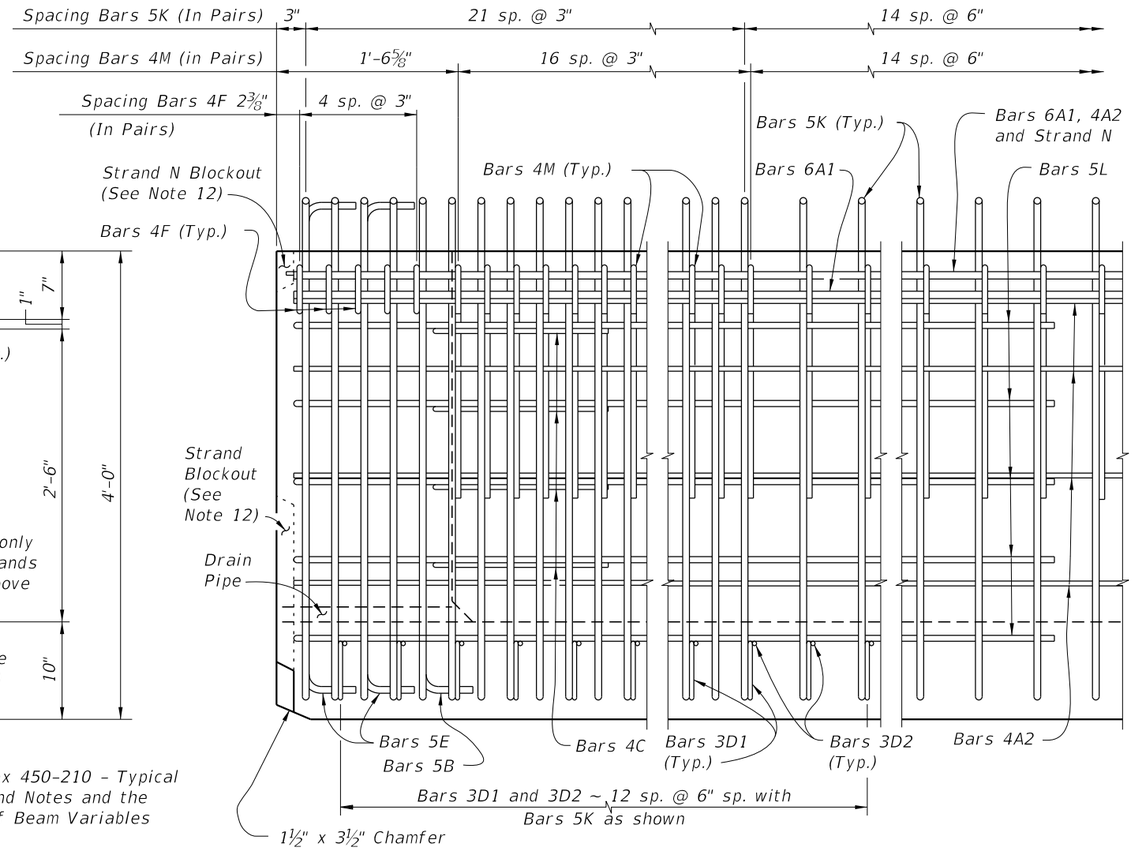
* Reinforcing steel is symmetrical about ℄ Beam for Half Sections A-A and B-B.

** Intermediate Diaphragms shall be provided:
(1) - At midspan.
(2) - At 20'-0" Max. from midspan when beam length (L) exceeds 60 Ft.

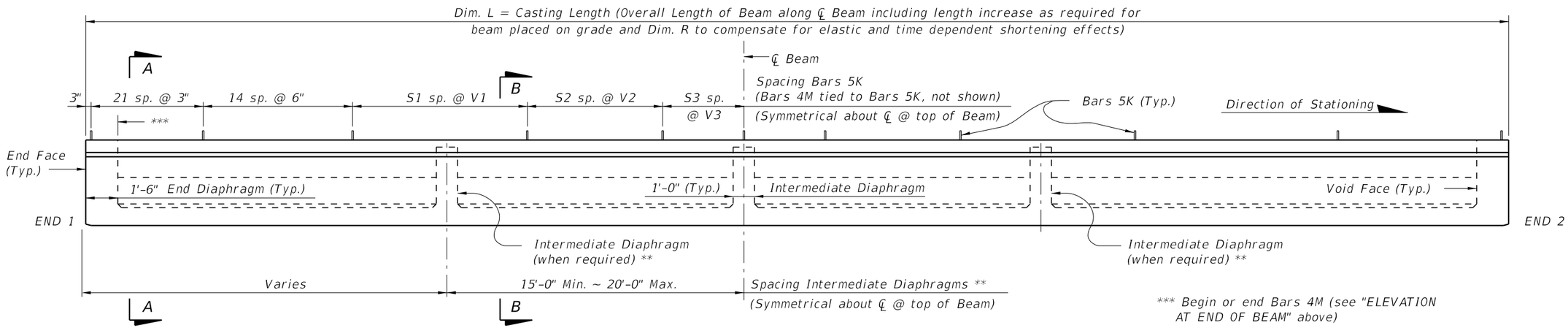
TYPICAL SECTION

NOTES:
Work this Index with Index 450-210 - Typical Florida-U Beam Details and Notes and the Florida-U Beam - Table of Beam Variables in Structures Plans.

For referenced notes see Index 450-210.



ELEVATION AT END OF BEAM

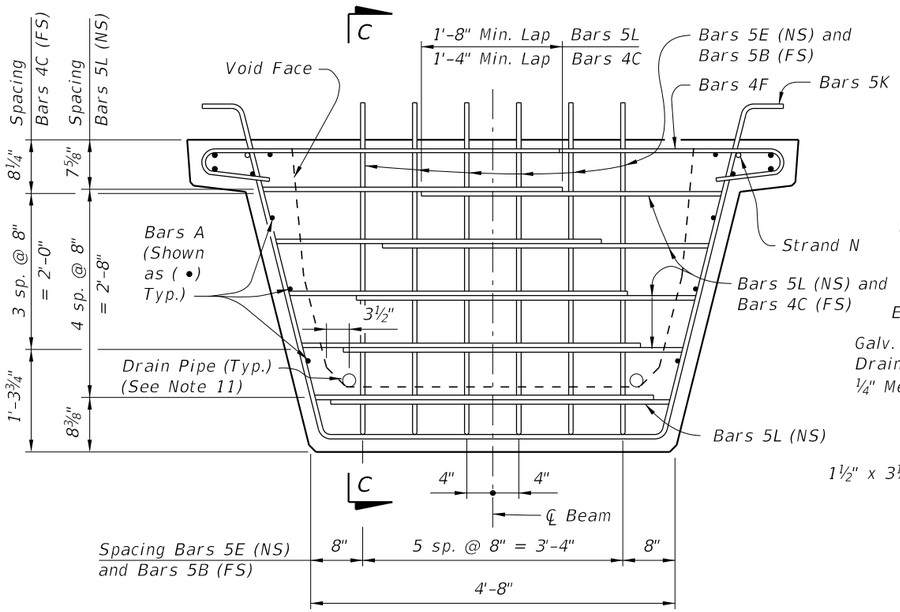


*** Begin or end Bars 4M (see "ELEVATION AT END OF BEAM" above)

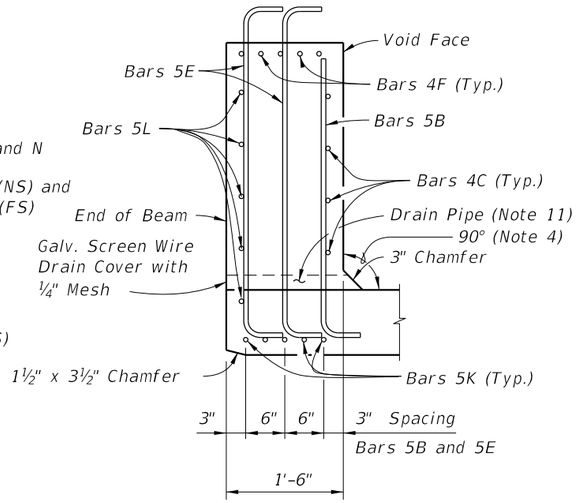
ELEVATION

10:55:11 AM
10/17/2024

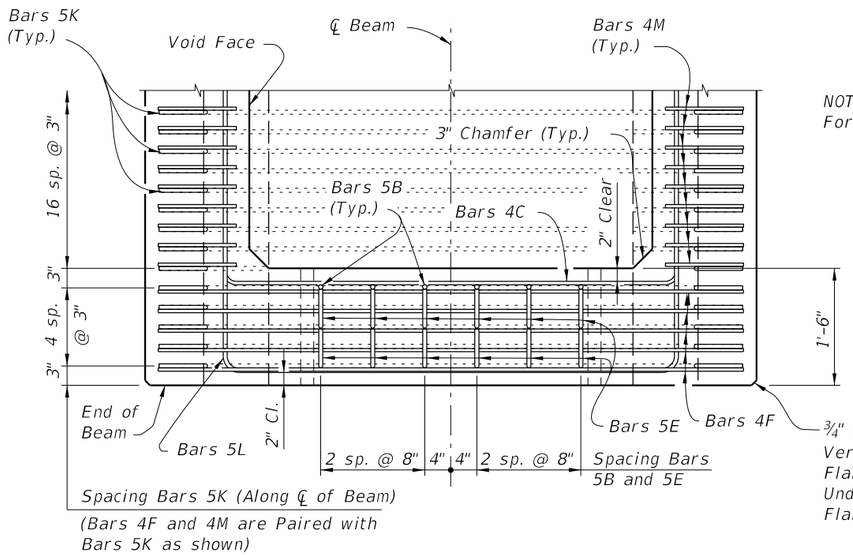
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	FLORIDA-U 48 BEAM - STANDARD DETAILS	INDEX	SHEET
11/01/16					450-248	1 of 3



END VIEW AT END DIAPHRAGM

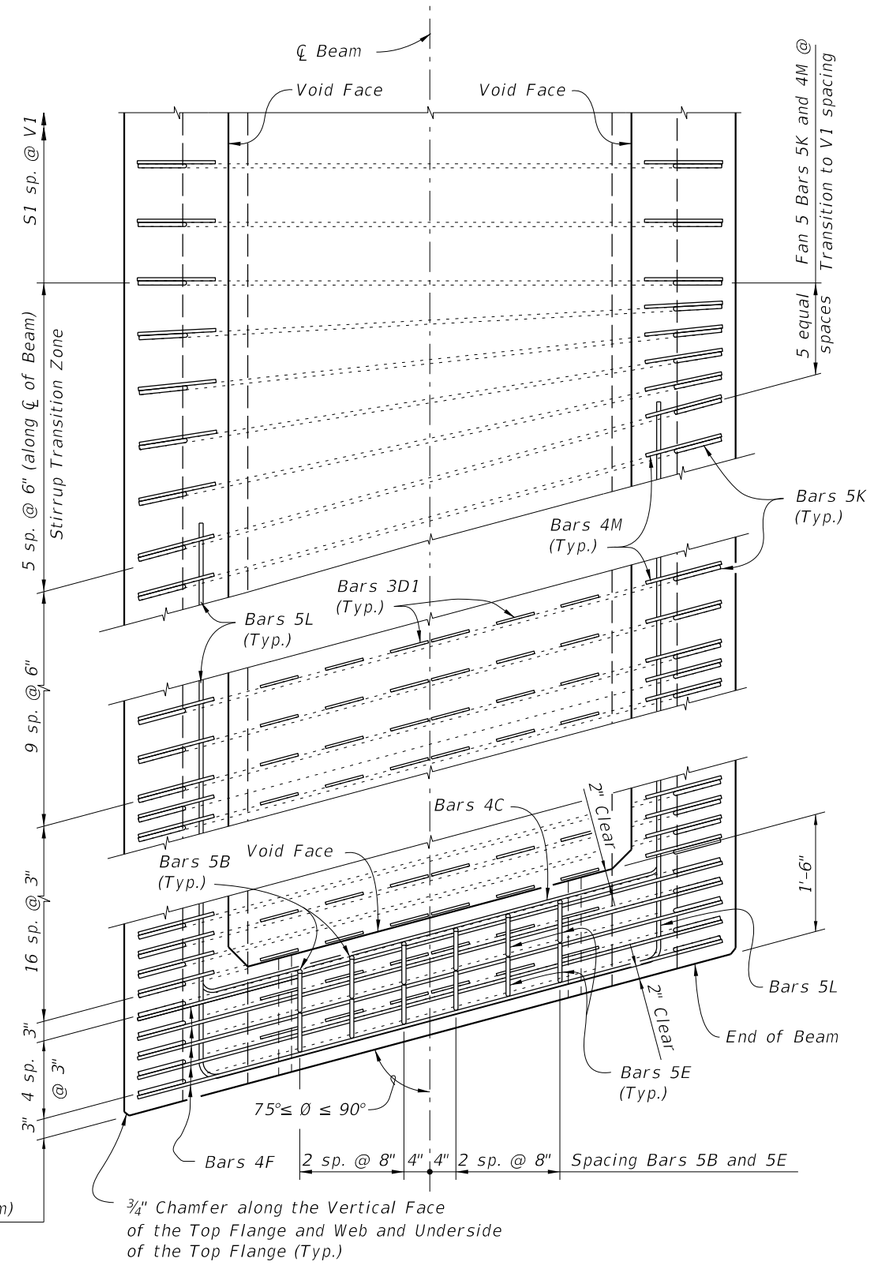


SECTION C-C



TOP VIEW OF END DIAPHRAGM
(Bars 3D1 And 3D2 Not Shown For Clarity)

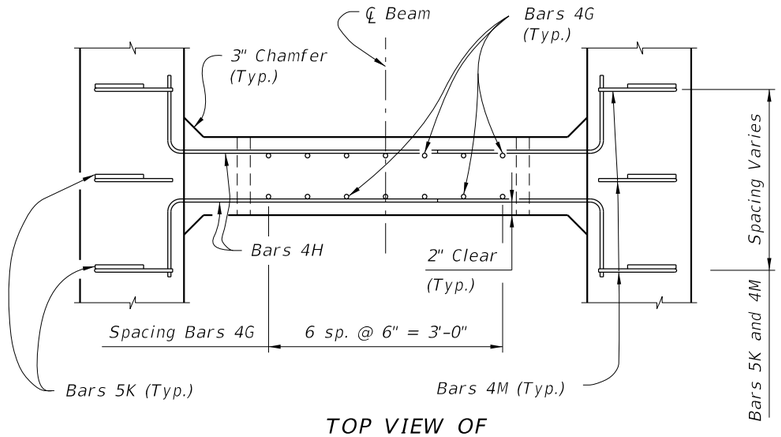
NOTES:
For referenced notes see Index 450-210.



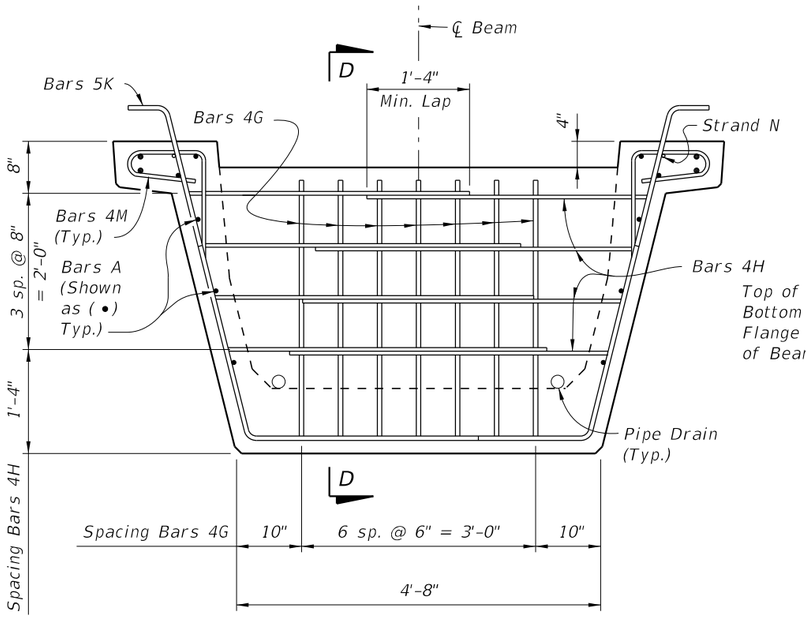
TOP VIEW OF SKEWED END DIAPHRAGM
AND STIRRUP TRANSITION ZONE
(Bars 3D2 Not Shown For Clarity)

10/17/2024 10:55:18 AM

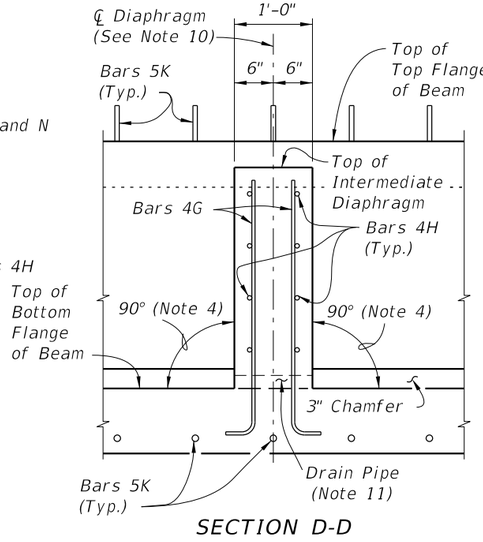
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 48 BEAM - STANDARD DETAILS	INDEX 450-248	SHEET 2 of 3



TOP VIEW OF INTERMEDIATE DIAPHRAGM



SECTION AT INTERMEDIATE DIAPHRAGM



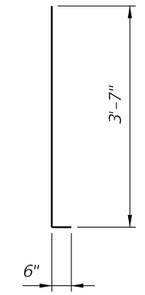
SECTION D-D

NOTES:
For referenced notes see Index 450-210.

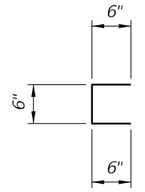
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

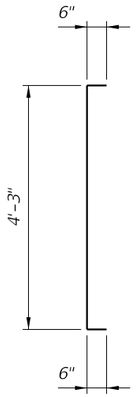
MARK	SIZE	NO. REQD.	LENGTH
A1	6	4	Dim. L – 4"
A2	4	10	Dim. L – 4"
B	5	12	4'-1"
C	4	16	5'-1"
D1	3	156	1'-6"
D2	3	26	4'-6"
E	5	24	5'-3"
F	4	20	6'-2"
G	4	See Table	4'-0"
H	4	See Table	4'-7"
K	5	See Table	8'-0"
L	5	20	14'-0"
M	4	See Table	3'-11"
N	⅜" Ø Strand	2	Dim. L – 3"



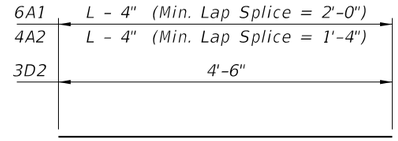
Bars 5B



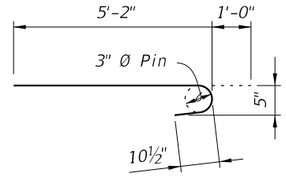
Bars 3D1



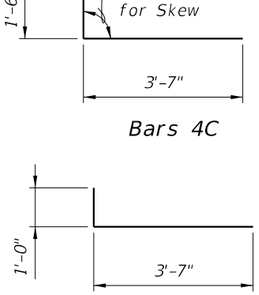
Bars 5E



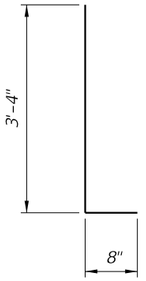
Bars 6A1, 4A2 and 3D2



Bars 4F

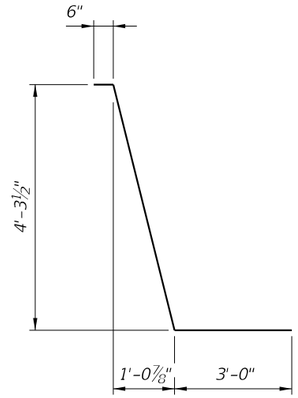


Bars 4C

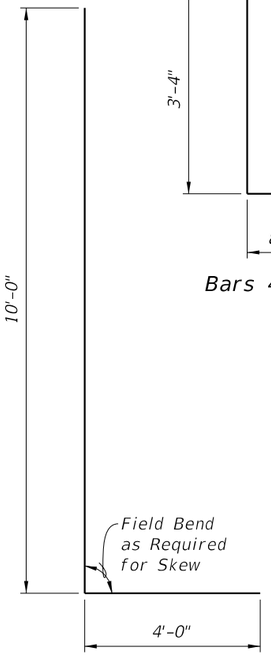


Bars 4G

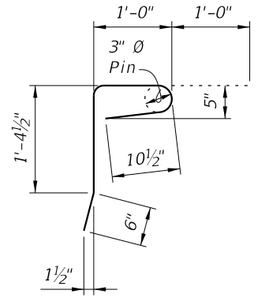
Bars 4H



Bars 5K



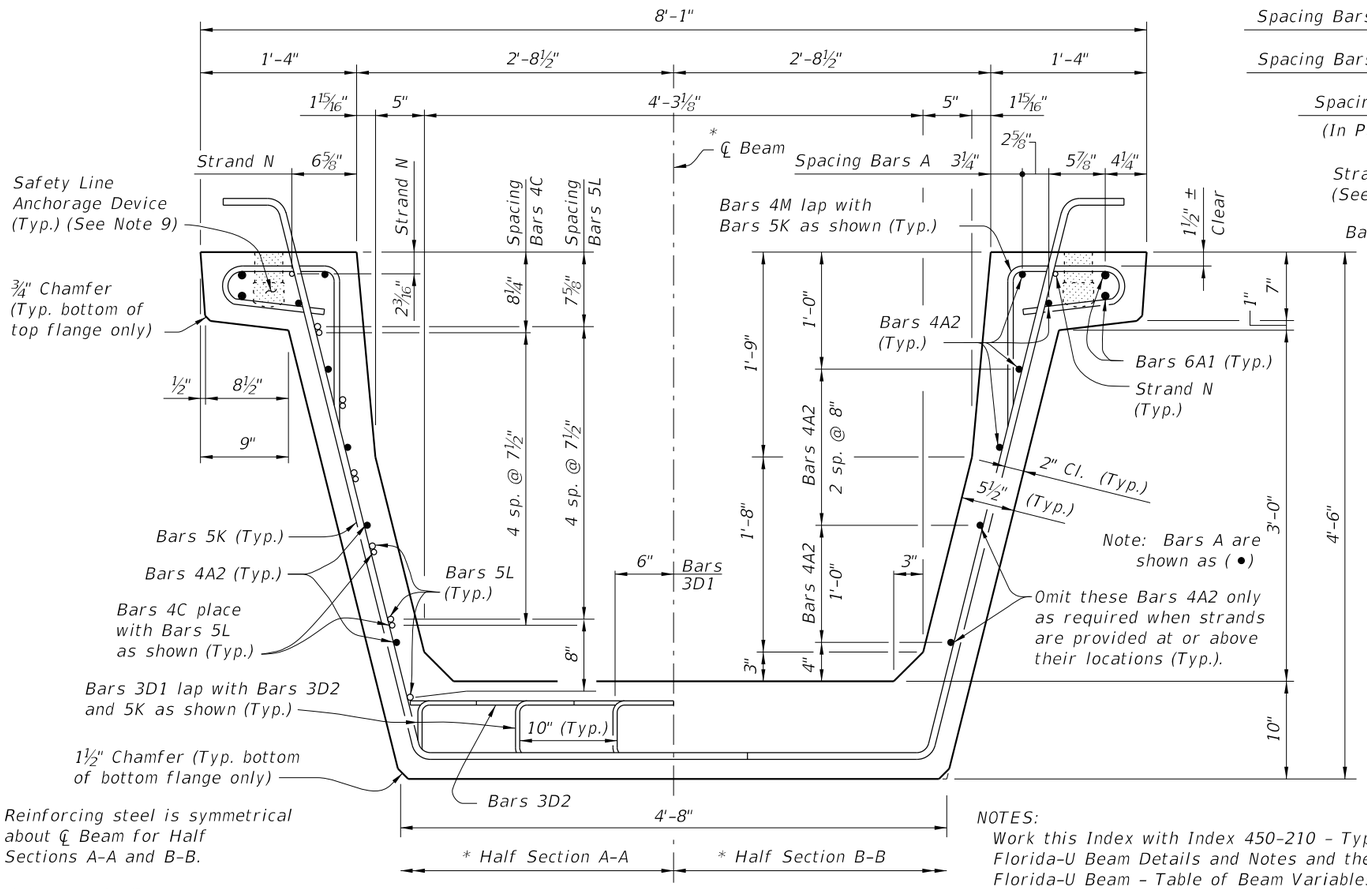
Bars 5L



Bars 4M

LAST REVISION	REVISION	DESCRIPTION:			
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 48 BEAM - STANDARD DETAILS	INDEX 450-248 / SHEET 3 of 3

10/17/2024 10:55:25 AM



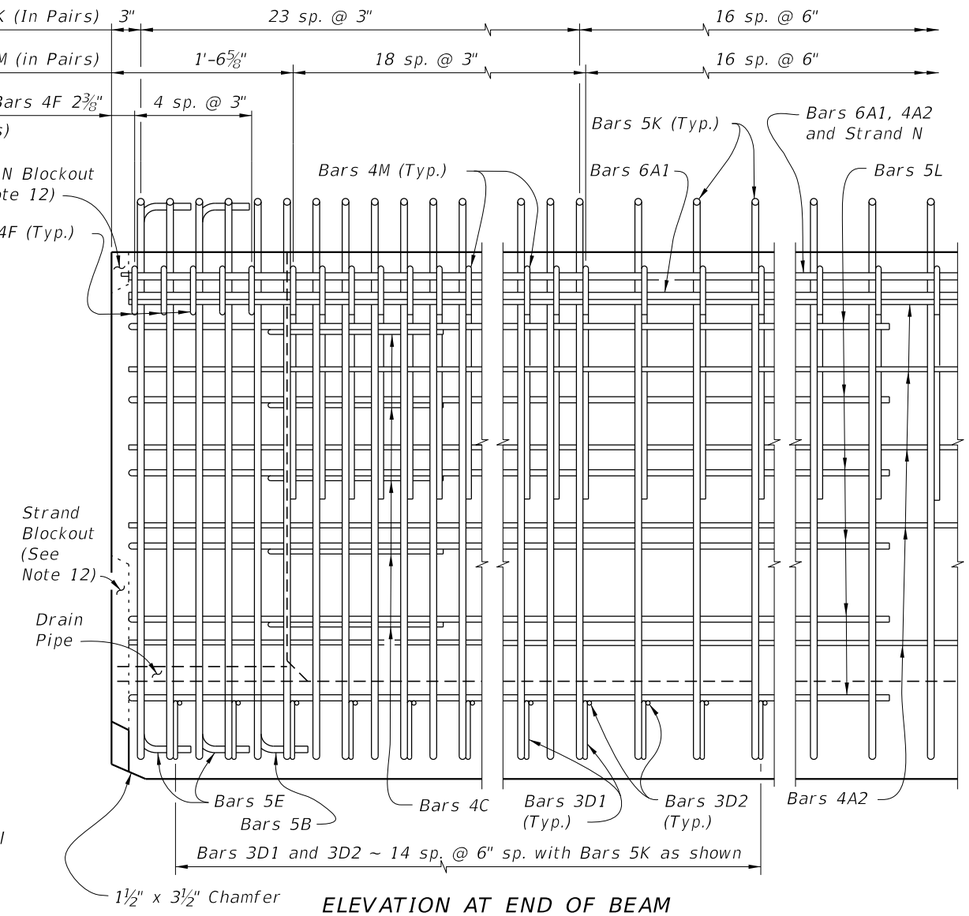
TYPICAL SECTION

* Reinforcing steel is symmetrical about ℄ Beam for Half Sections A-A and B-B.

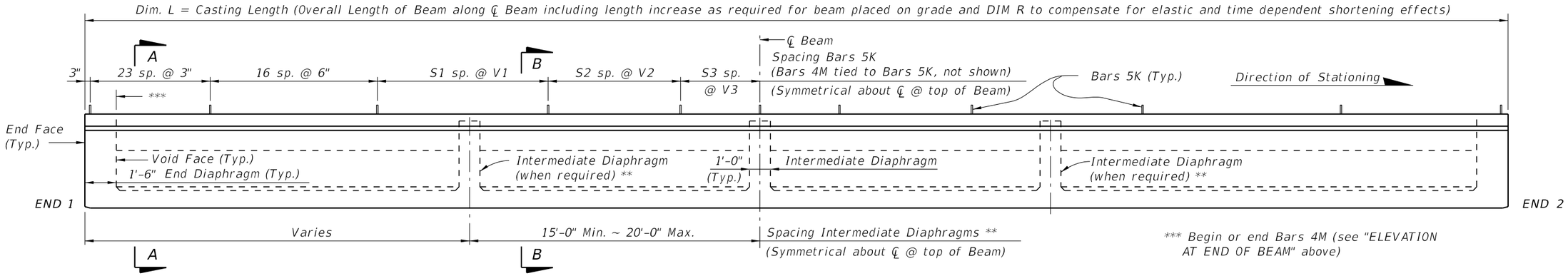
** Intermediate Diaphragms shall be provided:
(1) – At midspan.
(2) – At 20'-0" Max. from midspan when beam length (L) exceeds 60 Ft.

NOTES:
Work this Index with Index 450-210 – Typical Florida-U Beam Details and Notes and the Florida-U Beam – Table of Beam Variables in Structures Plans.

For referenced notes see Index 450-210.



ELEVATION AT END OF BEAM

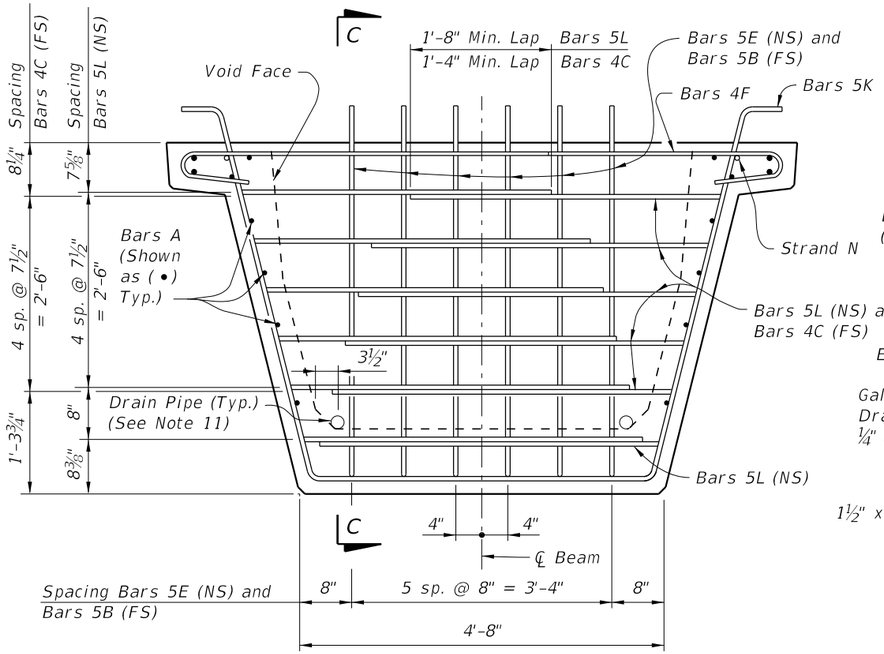


ELEVATION

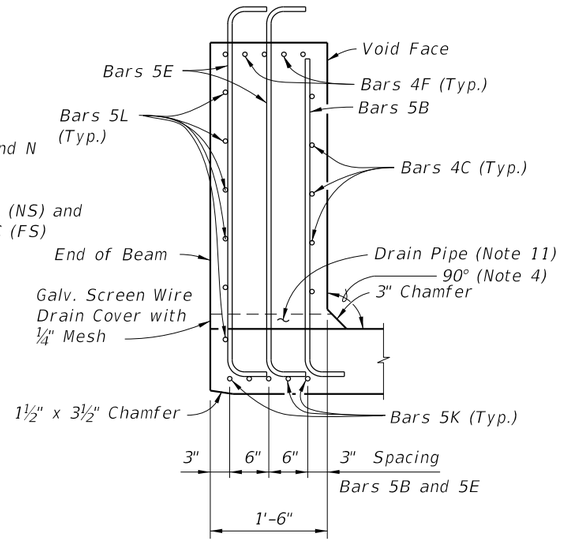
*** Begin or end Bars 4M (see "ELEVATION AT END OF BEAM" above)

10:55:32 AM
10/17/2024

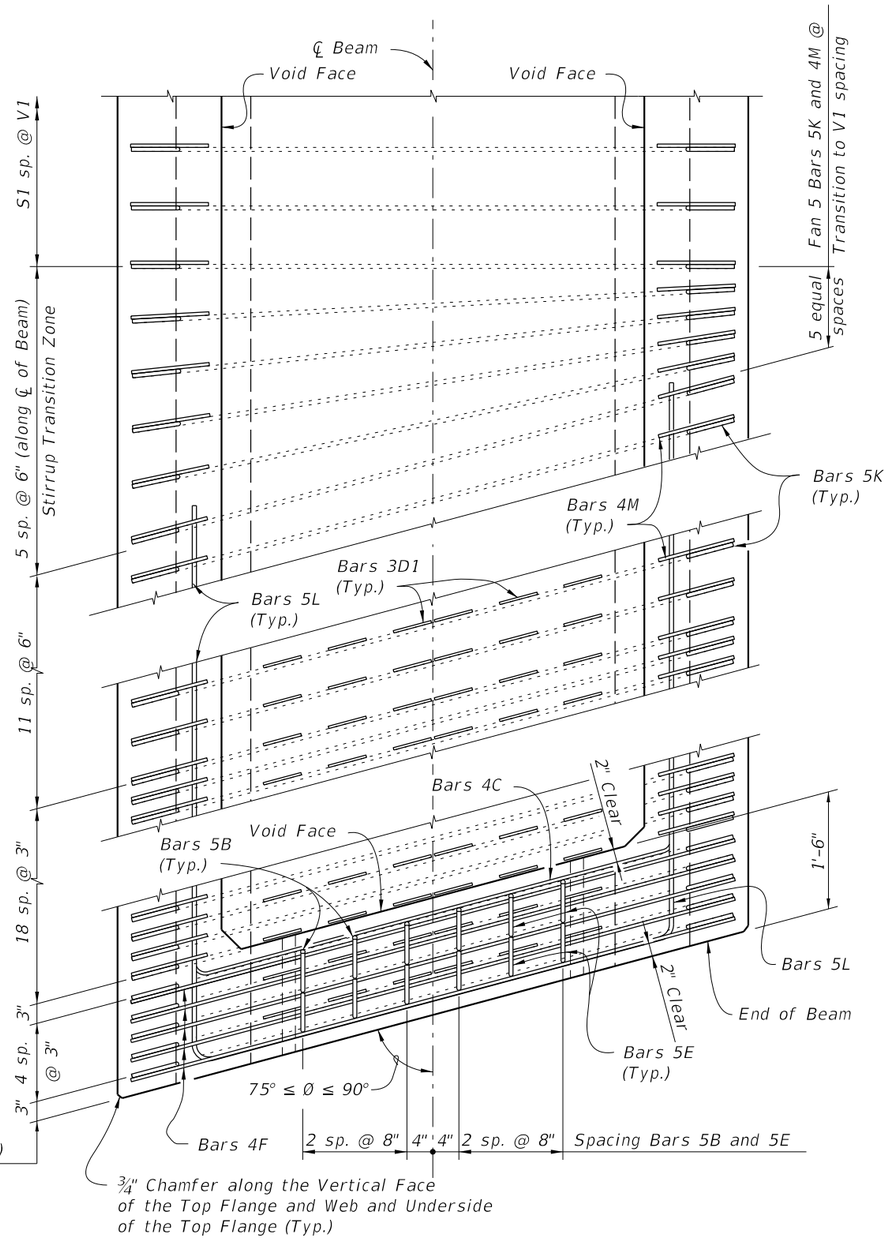
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 54 BEAM - STANDARD DETAILS	INDEX 450-254	SHEET 1 of 3



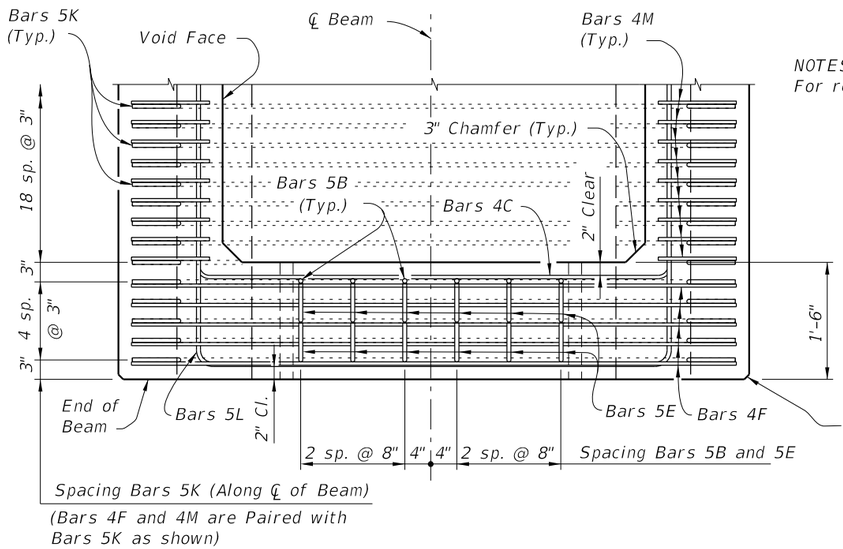
END VIEW AT END DIAPHRAGM



SECTION C-C



TOP VIEW OF SKEWED END DIAPHRAGM
AND STIRRUP TRANSITION ZONE
(Bars 3D2 Not Shown For Clarity)



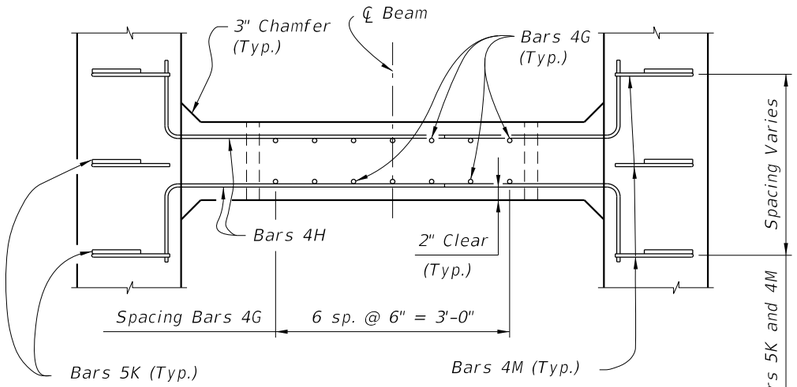
NOTES:
For referenced notes see Index 450-210.

¾" Chamfer along the Vertical Face of the Top Flange and Web and Underside of the Top Flange (Typ.)

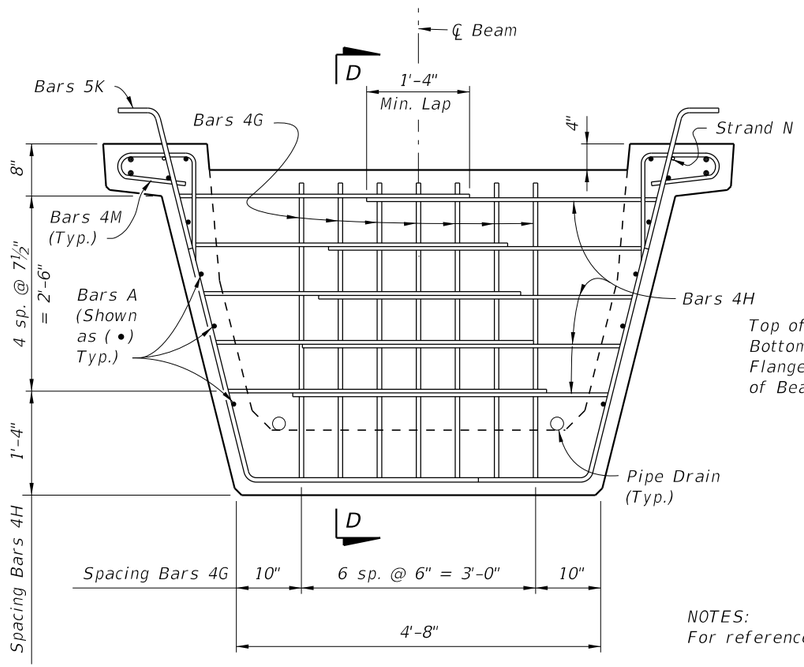
TOP VIEW OF END DIAPHRAGM
(Bars 3D1 And 3D2 Not Shown For Clarity)

10/17/2024 10:55:39 AM

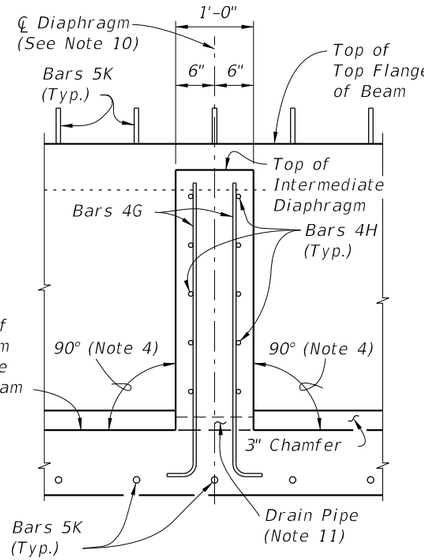
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT FY 2025-26 STANDARD PLANS	FLORIDA-U 54 BEAM - STANDARD DETAILS	INDEX 450-254	SHEET 2 of 3



TOP VIEW OF INTERMEDIATE DIAPHRAGM



SECTION AT INTERMEDIATE DIAPHRAGM



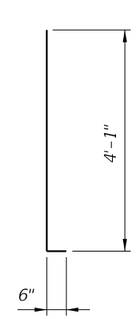
SECTION D-D

NOTES:
For referenced note see Index 450-210.

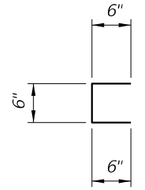
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

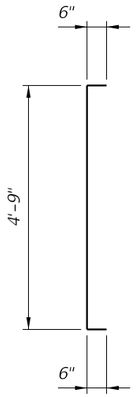
MARK	SIZE	NO. REQD.	LENGTH
A1	6	4	Dim. L – 4"
A2	4	12	Dim. L – 4"
B	5	12	4'-7"
C	4	20	5'-3"
D1	3	180	1'-6"
D2	3	30	4'-6"
E	5	24	5'-9"
F	4	20	6'-4"
G	4	See Table	4'-6"
H	4	See Table	4'-9"
K	5	See Table	8'-6"
L	5	24	16'-2"
M	4	See Table	3'-11"
N	⅜" Ø Strand	2	Dim. L – 3"



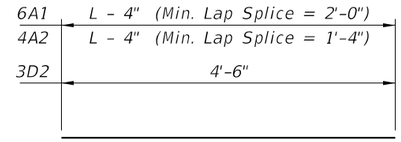
Bars 5B



Bars 3D1

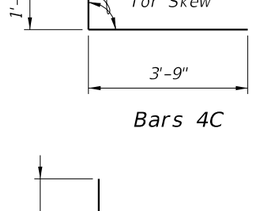


Bars 5E

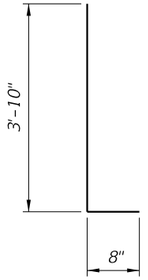


Bars 6A1, 4A2 and 3D2

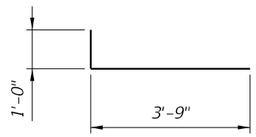
Bars 4F



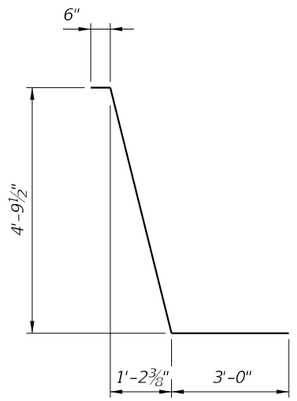
Bars 4C



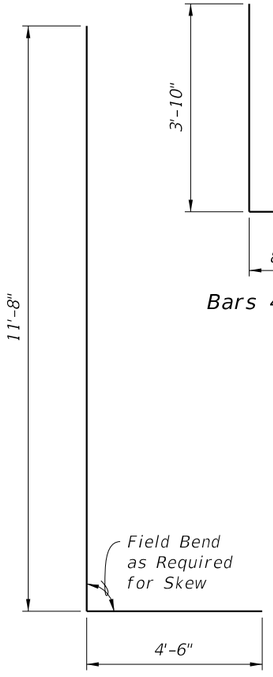
Bars 4G



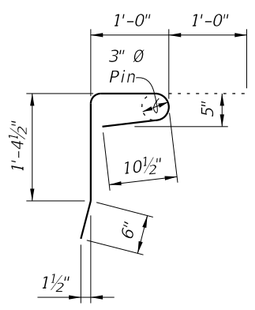
Bars 4H



Bars 5K



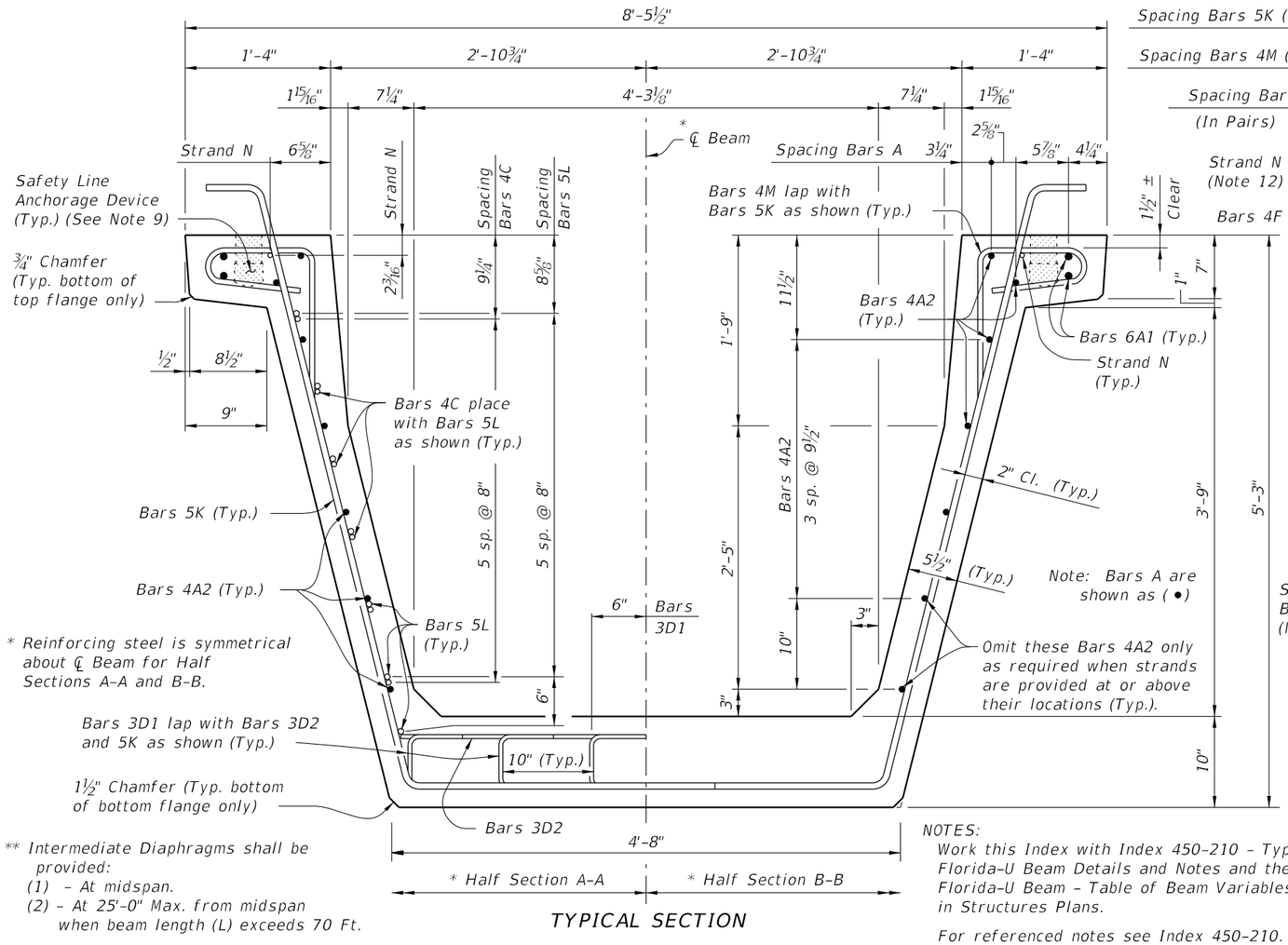
Bars 5L



Bars 4M

10/17/2024 10:55:47 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 54 BEAM - STANDARD DETAILS	INDEX 450-254 / SHEET 3 of 3



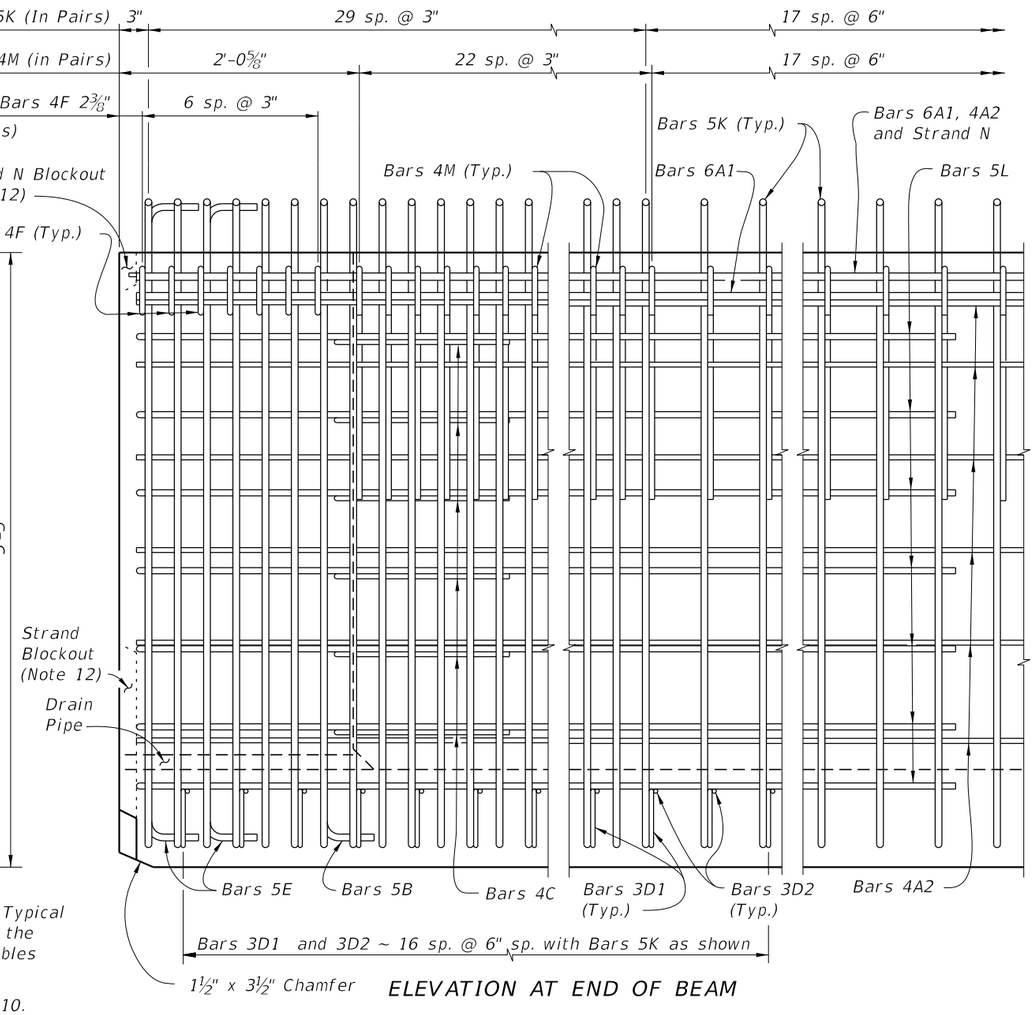
* Reinforcing steel is symmetrical about ℄ Beam for Half Sections A-A and B-B.

** Intermediate Diaphragms shall be provided:
(1) – At midspan.
(2) – At 25'-0" Max. from midspan when beam length (L) exceeds 70 Ft.

TYPICAL SECTION

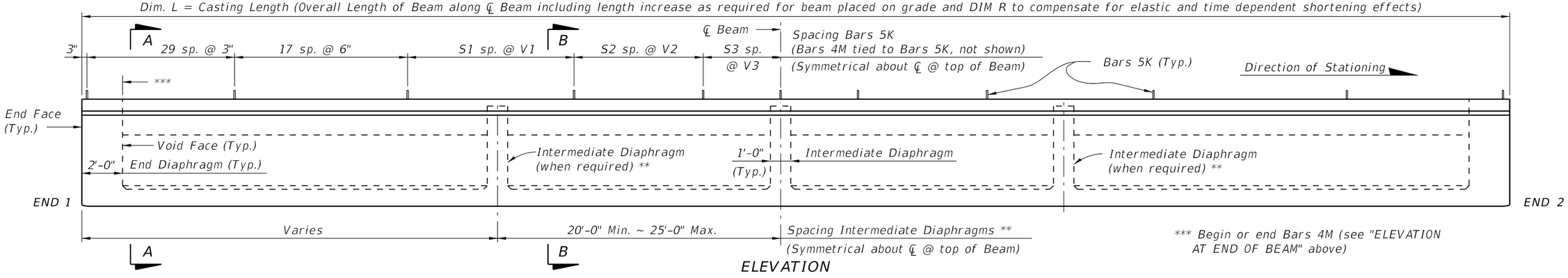
NOTES:
Work this Index with Index 450-210 – Typical Florida-U Beam Details and Notes and the Florida-U Beam – Table of Beam Variables in Structures Plans.

For referenced notes see Index 450-210.



ELEVATION AT END OF BEAM

Dim. L = Casting Length (Overall Length of Beam along ℄ Beam including length increase as required for beam placed on grade and DIM R to compensate for elastic and time dependent shortening effects)

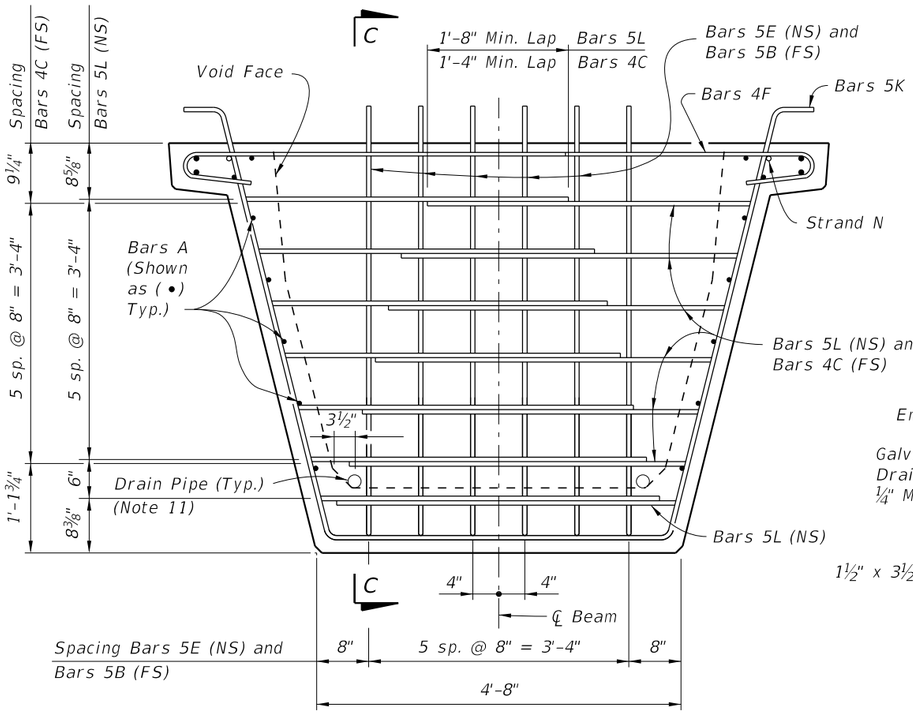


ELEVATION

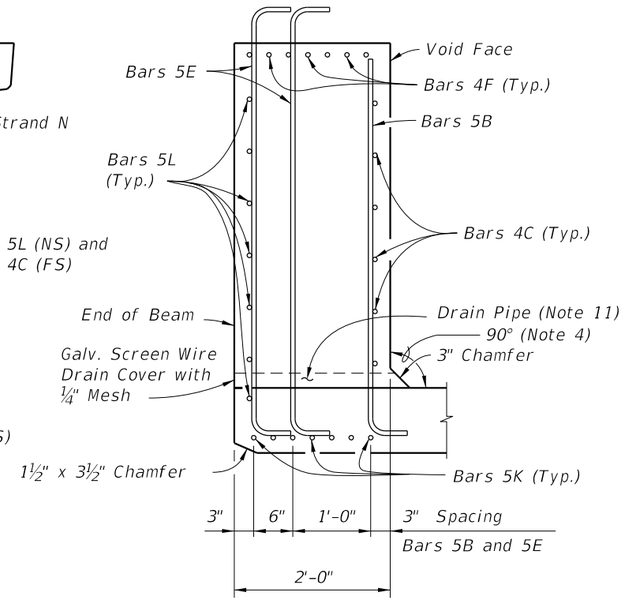
*** Begin or end Bars 4M (see "ELEVATION AT END OF BEAM" above)

LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 63 BEAM - STANDARD DETAILS	INDEX 450-263	SHEET 1 of 3

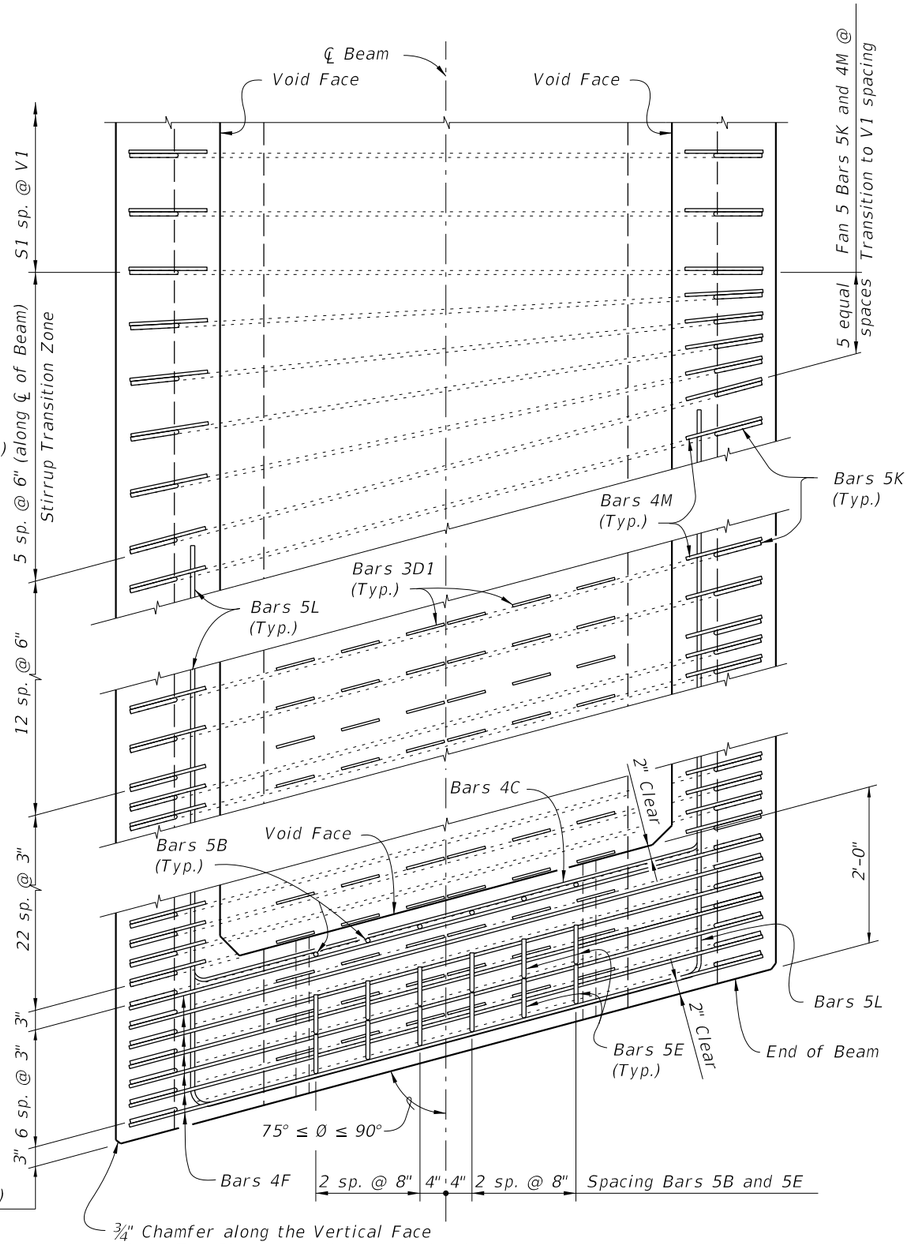
10/17/2024 10:55:53 AM



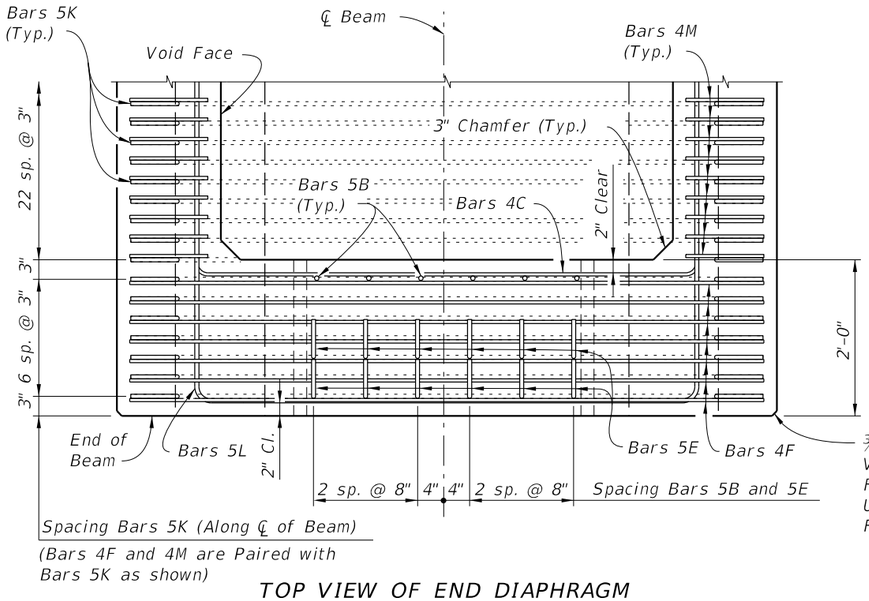
END VIEW AT END DIAPHRAGM



SECTION C-C



TOP VIEW OF SKEWED END DIAPHRAGM
AND STIRRUP TRANSITION ZONE
(Bars 3D2 Not Shown For Clarity)

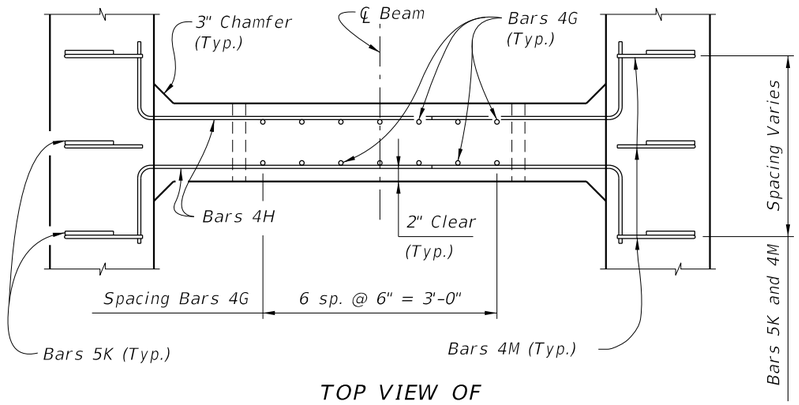


TOP VIEW OF END DIAPHRAGM
(Bars 3D1 And 3D2 Not Shown For Clarity)

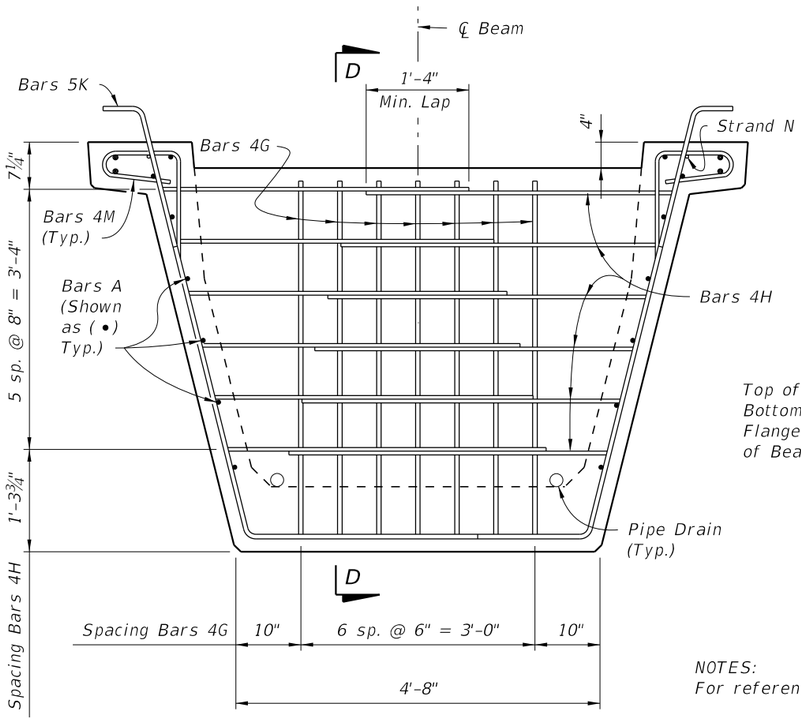
NOTES:
For referenced note see Index 450-210.

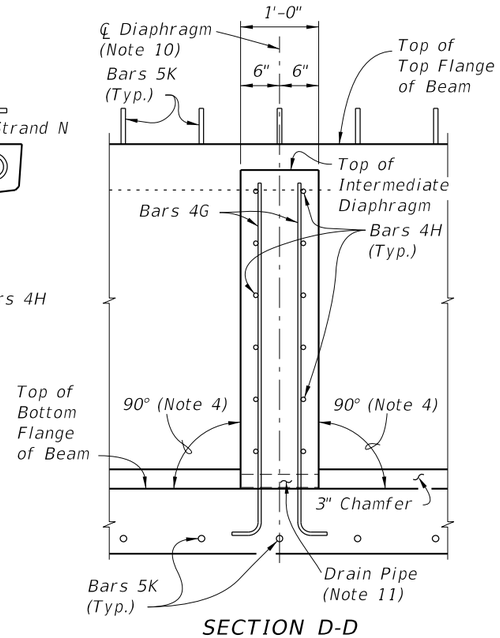
10/17/2024 10:56:00 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 63 BEAM - STANDARD DETAILS	450-263	2 of 3



TOP VIEW OF INTERMEDIATE DIAPHRAGM





SECTION D-D

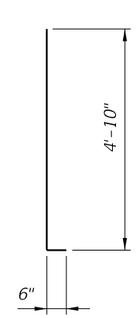
SECTION AT INTERMEDIATE DIAPHRAGM

NOTES:
For referenced notes see Index 450-210.

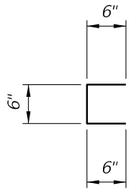
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

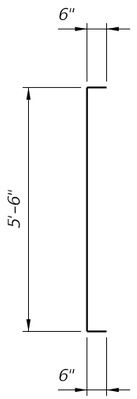
MARK	SIZE	NO. REQD.	LENGTH
A1	6	4	Dim. L - 4"
A2	4	12	Dim. L - 4"
B	5	12	5'-4"
C	4	24	5'-5"
D1	3	204	1'-6"
D2	3	34	4'-6"
E	5	24	6'-6"
F	4	28	6'-6"
G	4	See Table	5'-3"
H	4	See Table	4'-11"
K	5	See Table	9'-2½"
L	5	28	17'-8"
M	4	See Table	3'-11"
N	⅜" Ø Strand	2	Dim. L - 3"



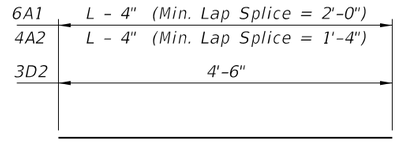
Bars 5B



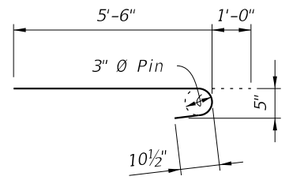
Bars 3D1



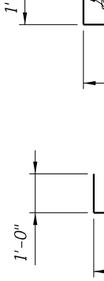
Bars 5E



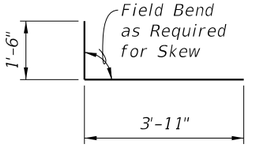
Bars 6A1, 4A2 and 3D2



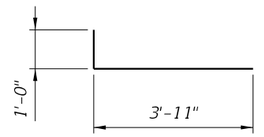
Bars 4F



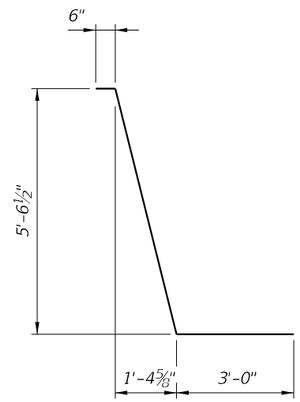
Bars 4G



Bars 4C

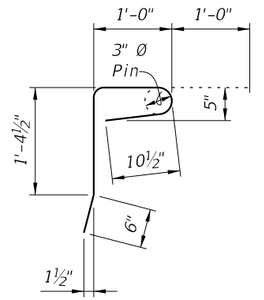


Bars 4H



Bars 5K

Bars 5L



Bars 4M

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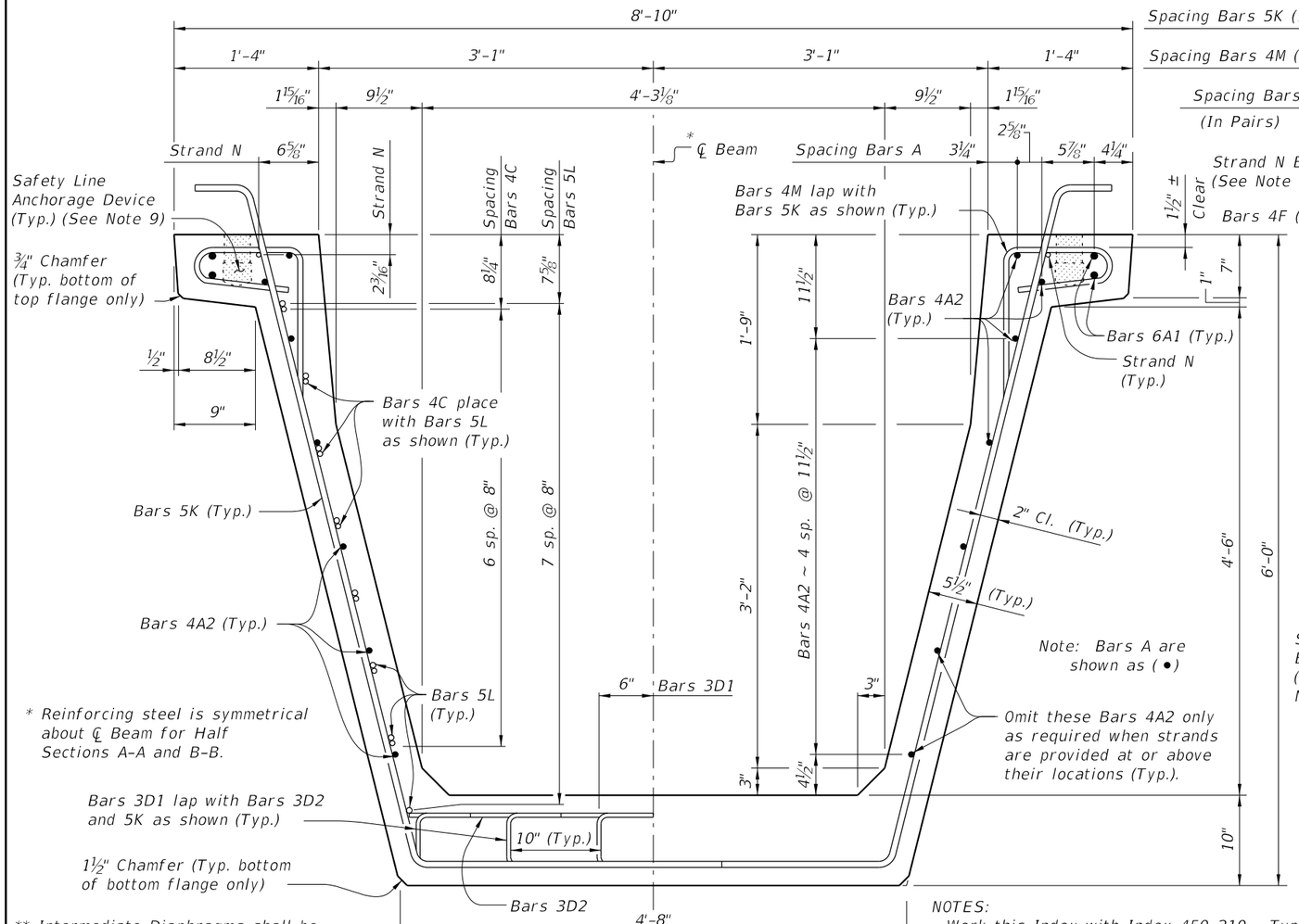
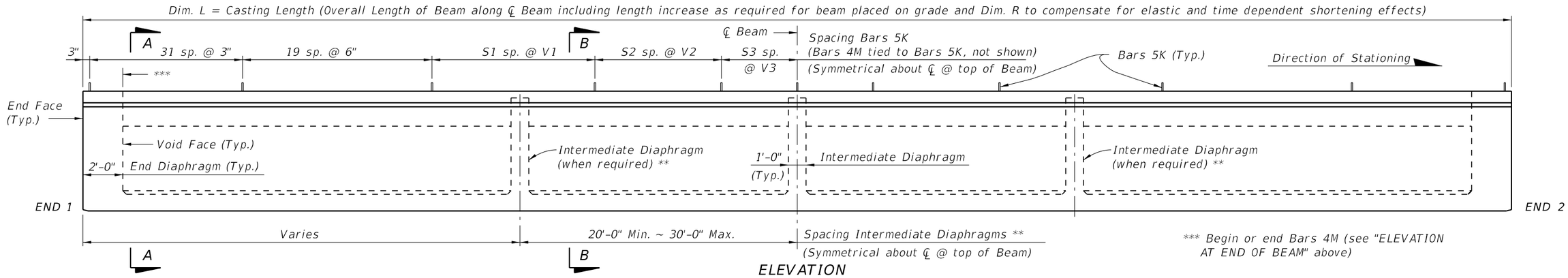
LAST REVISION	REVISION	DESCRIPTION:			
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 63 BEAM - STANDARD DETAILS	INDEX 450-263 / SHEET 3 of 3

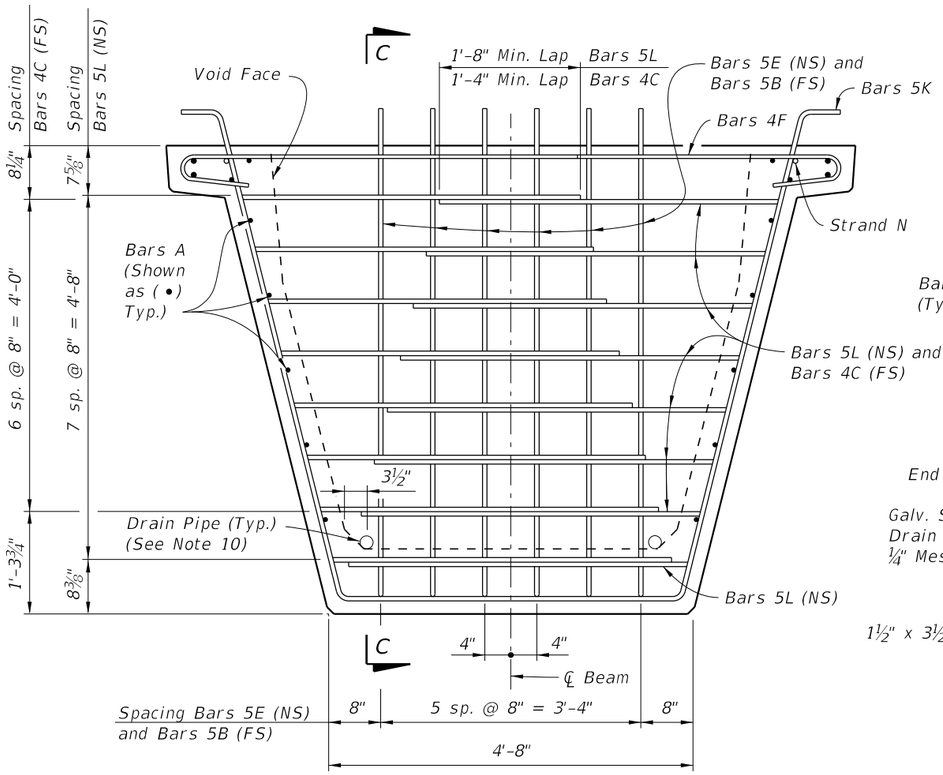




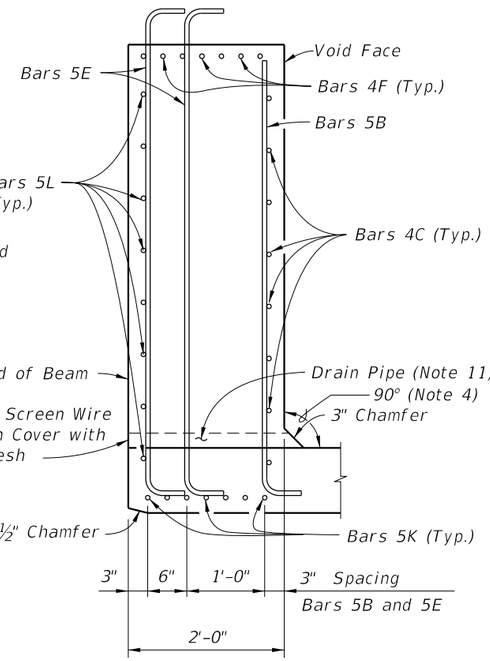
10:56:14 AM

10/17/2024

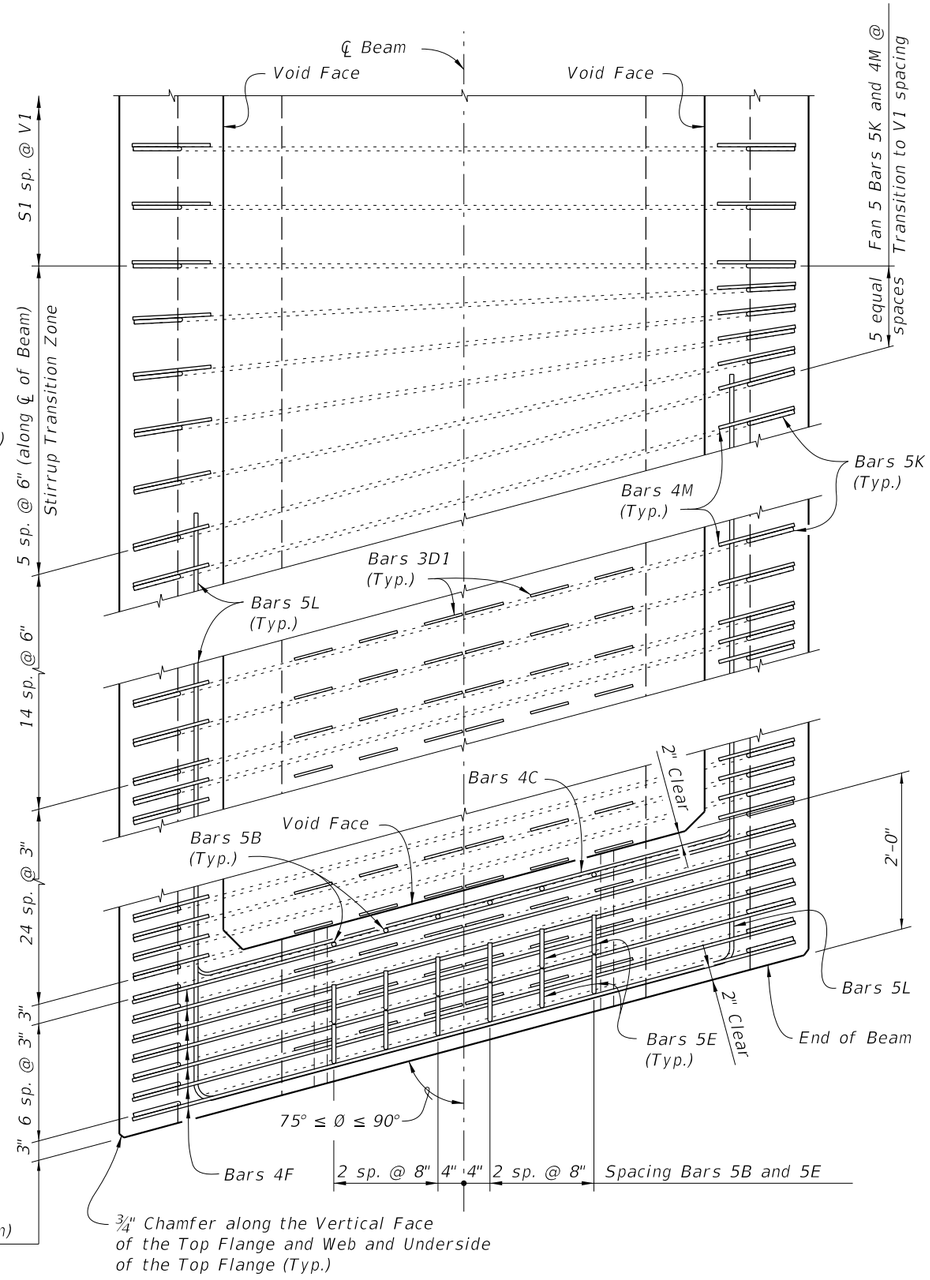
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 72 BEAM - STANDARD DETAILS	INDEX 450-272	SHEET 1 of 3



END VIEW AT END DIAPHRAGM

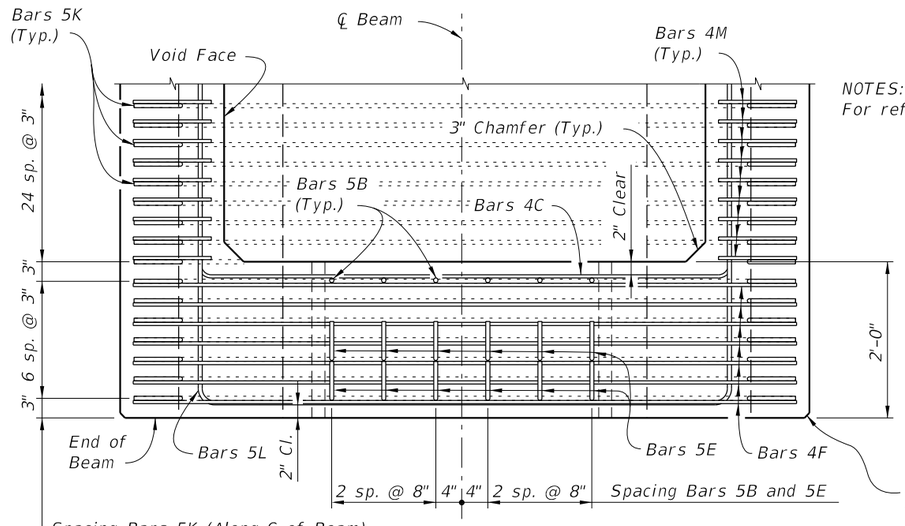


SECTION C-C



Spacing Bars 5K (Along ℄ of Beam)
(Bars 4F and 4M are Paired with
Bars 5K as shown)

TOP VIEW OF SKEWED END DIAPHRAGM
AND STIRRUP TRANSITION ZONE
(Bars 3D2 Not Shown For Clarity)



Spacing Bars 5K (Along ℄ of Beam)
(Bars 4F and 4M are Paired with
Bars 5K as shown)

¾" Chamfer along the
Vertical Face of the Top
Flange and Web and
Underside of the Top
Flange (Typ.)

TOP VIEW OF END DIAPHRAGM
(Bars 3D1 And 3D2 Not Shown For Clarity)

NOTES:
For referenced notes see Index 450-210.

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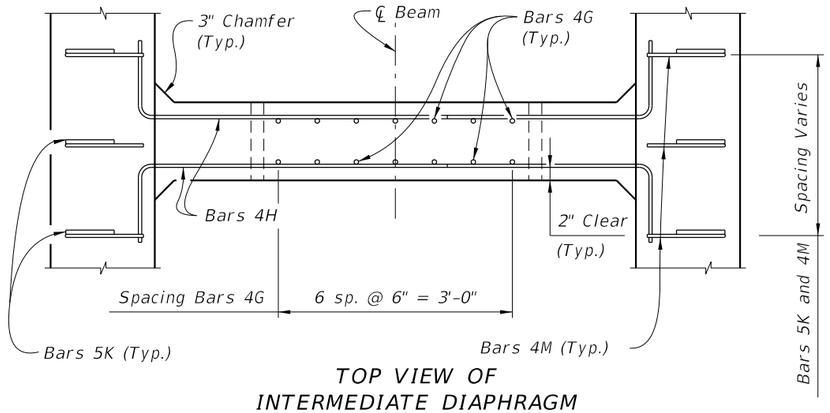
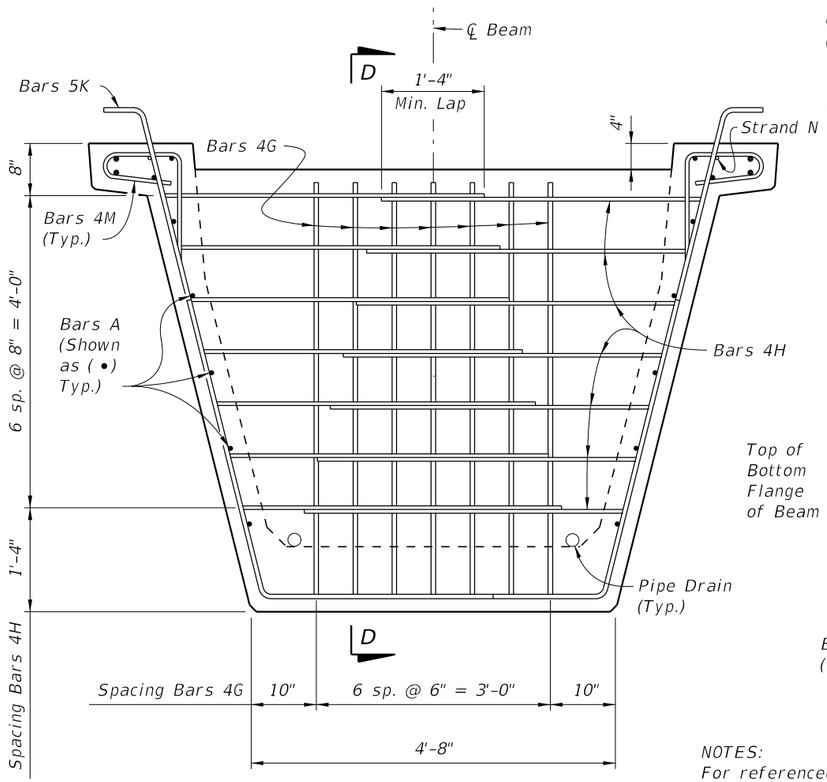
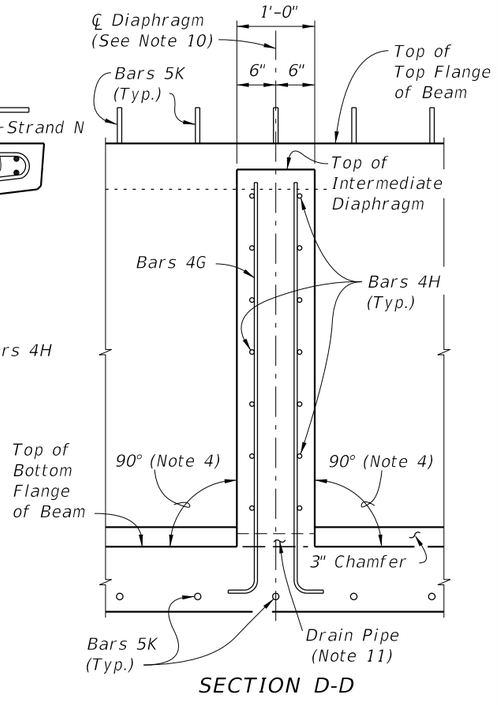
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 72 BEAM - STANDARD DETAILS	INDEX 450-272	SHEET 2 of 3



TOP VIEW OF INTERMEDIATE DIAPHRAGM



SECTION AT INTERMEDIATE DIAPHRAGM



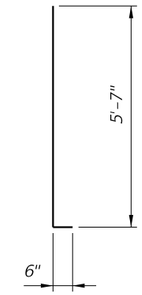
SECTION D-D

NOTES:
For referenced notes see Index 450-210.

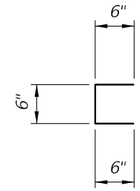
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

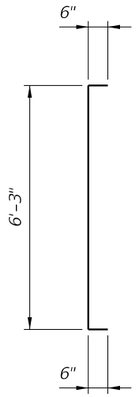
MARK	SIZE	NO. REQD.	LENGTH
A1	6	4	Dim. L - 4"
A2	4	14	Dim. L - 4"
B	5	12	6'-1"
C	4	28	5'-7"
D1	3	228	1'-6"
D2	3	38	4'-6"
E	5	24	7'-3"
F	4	28	6'-9"
G	4	See Table	6'-0"
H	4	See Table	5'-1"
K	5	See Table	10'-0"
L	5	32	19'-6"
M	4	See Table	3'-11"
N	3/8" Ø Strand	2	Dim. L - 3"



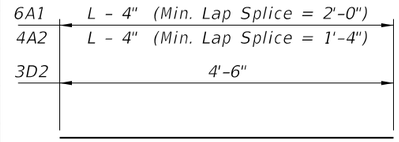
Bars 5B



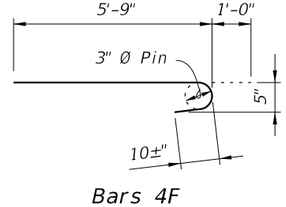
Bars 3D1



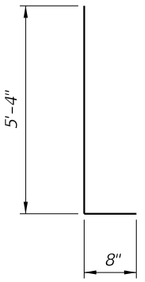
Bars 5E



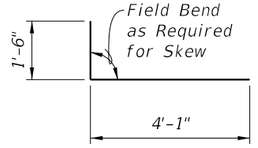
Bars 6A1, 4A2 and 3D2



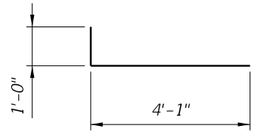
Bars 4F



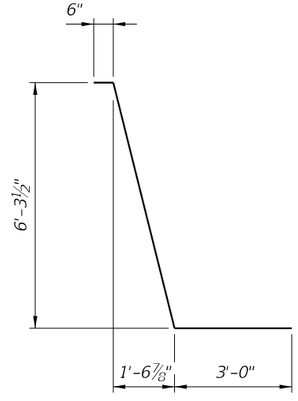
Bars 4G



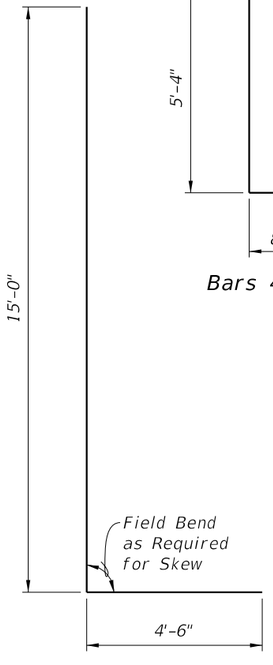
Bars 4C



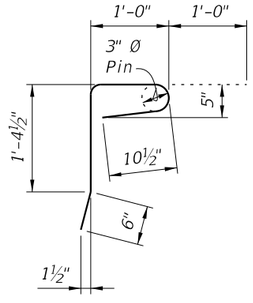
Bars 4H



Bars 5K



Bars 5L



Bars 4M

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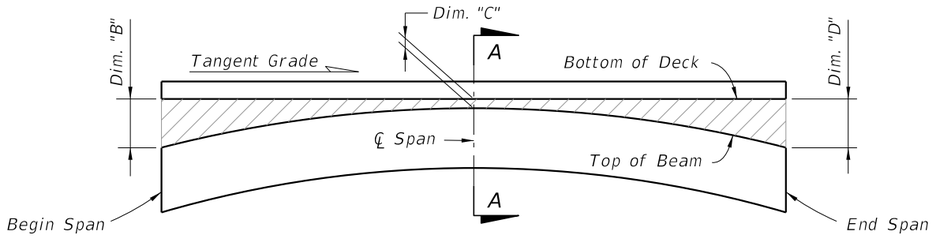
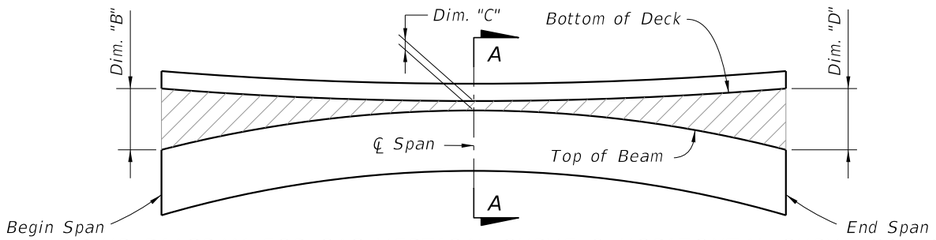
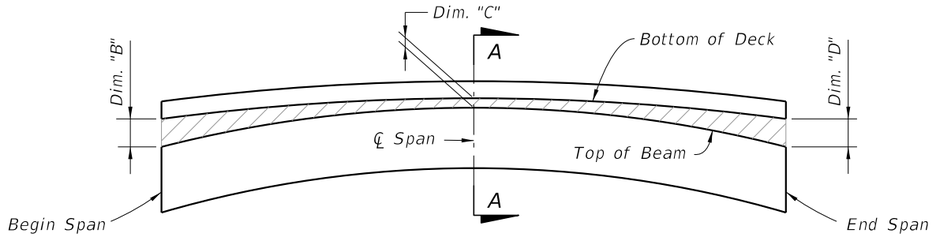
11/01/16			FY 2025-26 STANDARD PLANS	FLORIDA-U 72 BEAM - STANDARD DETAILS	INDEX 450-272	SHEET 3 of 3



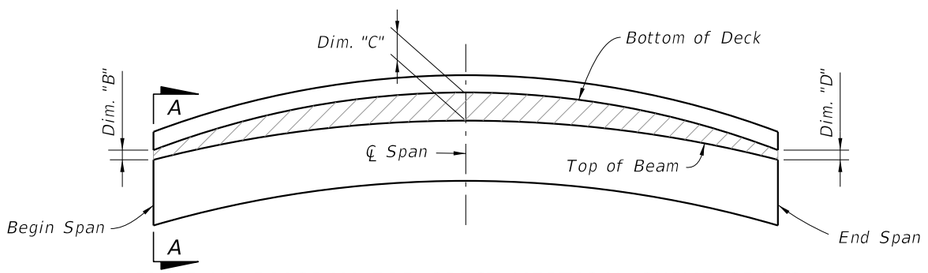
BUILD-UP DIAGRAM FOR TANGENT SPANS
(ALONG ℄ FLANGE) (CASE 1)



BUILD-UP DIAGRAM FOR SAG VERTICAL CURVE & HORIZONTAL CURVE SPANS
(ALONG ℄ FLANGE) (CASE 2)



BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
- CONTROL AT ℄ SPAN
(ALONG ℄ FLANGE) (CASE 3)

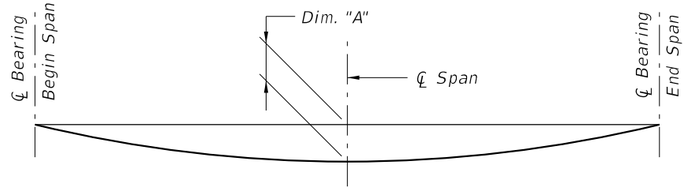


BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
- CONTROL AT BEGIN OR END SPAN
(ALONG ℄ FLANGE) (CASE 4)

BEAM CAMBER AND BUILD-UP NOTES:

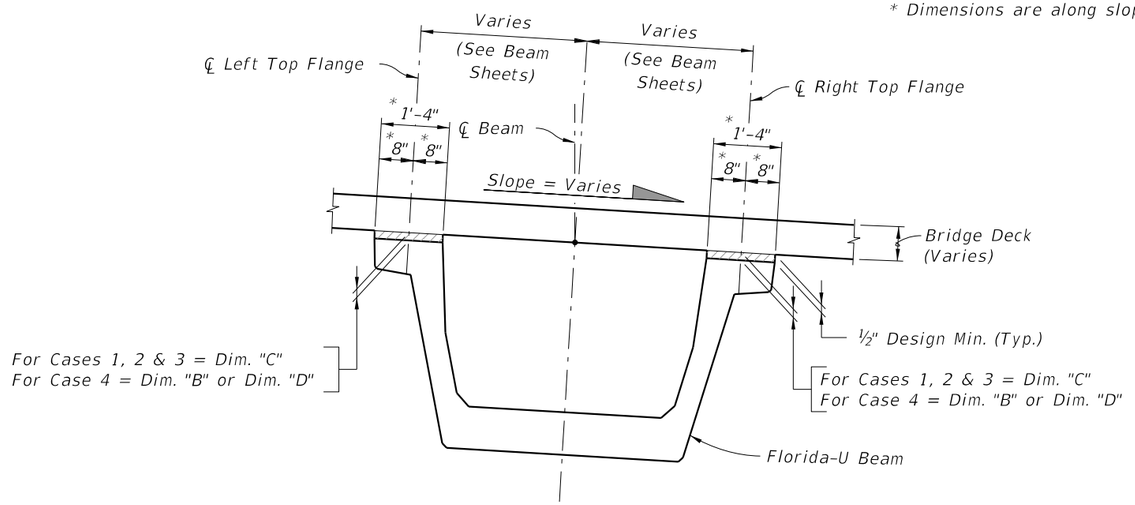
The build-up values given in the Data Table* are based on theoretical beam cambers. The Contractor shall monitor beam cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than +/- ½" from the theoretical "Net Beam Camber @ 120 Days" shown in the Data Table*, obtain approval from the Engineer to modify the build-up dimensions as required. When the measured beam cambers create a conflict with the bottom mat of deck steel, notify the Engineer a minimum of 21 days prior to casting.

Dim. "A" includes the weight of the Stay-In-Place Formwork.



DEAD LOAD DEFLECTION DIAGRAM
(ALONG ℄ BEAM)

* Dimensions are along slope.



SECTION A-A
BUILD-UP OVER BEAMS
(LOOKING AHEAD STATION)

* NOTE:
Work this Index with the Build-up and Deflection Data Table for Florida-U Beams in Structures Plans.

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LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	FLORIDA-U BEAMS - BUILD-UP & DEFLECTION DATA	INDEX	SHEET
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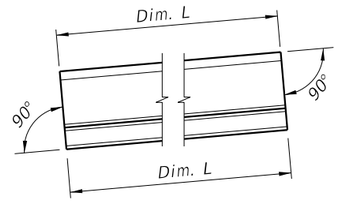
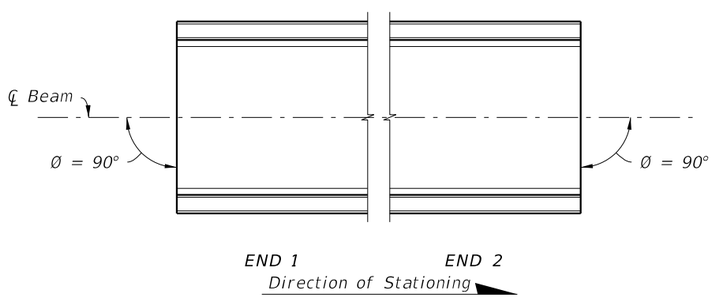
FABRICATION NOTES

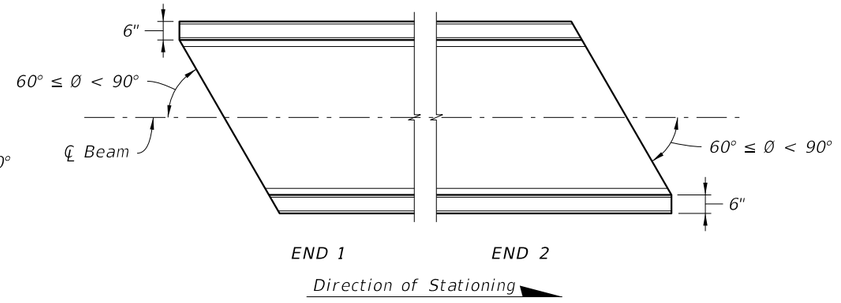
1. *The abbreviated FSB designation for depth and width is FSB "depth" x "width", e.g. FSB 12 x 48.*
2. *All bar dimensions are out-to-out.*
3. *Strands N shall be ASTM A416, Grade 250 or 270, ⅜" Ø or larger strands, stressed to 10,000 lbs. each.*
4. *Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".*
5. *For referenced Dimensions, Angles and Case Numbers, see Florida Slab Beam – Table of Variables in Structures Plans.*
6. *Bars 4D1 & 6Y1 correspond to END 1, and 4D2 & 6Y2 correspond to END 2.*
7. *Bars 5E1 correspond to interior FSBs, and 5E2 correspond to exterior FSBs.*
8. *Rake the top surface of the Slab Beams transversely to provide a roughened surface with ¼" amplitude.*
9. *Embedment of Safety Line Anchorage Devices are permitted to accommodate full protection systems. See shop drawings for details and spacings.*



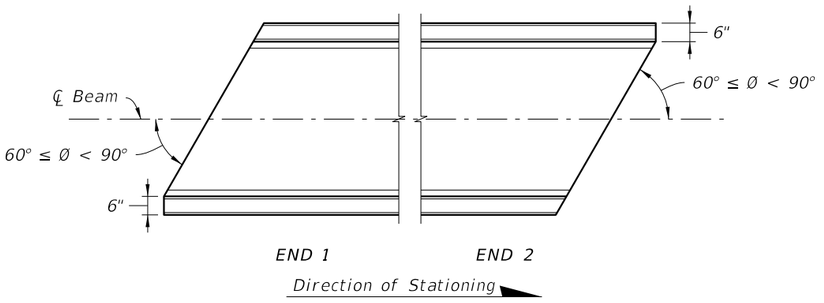
SCHEMATIC SIDE ELEVATION OF BEAM
(Beam on a Positive Grade shown; Beam on a Negative Grade or Horizontal Grade similar.)



CASE 1



CASE 2



CASE 3

SCHEMATIC PLAN VIEWS AT BEAM ENDS

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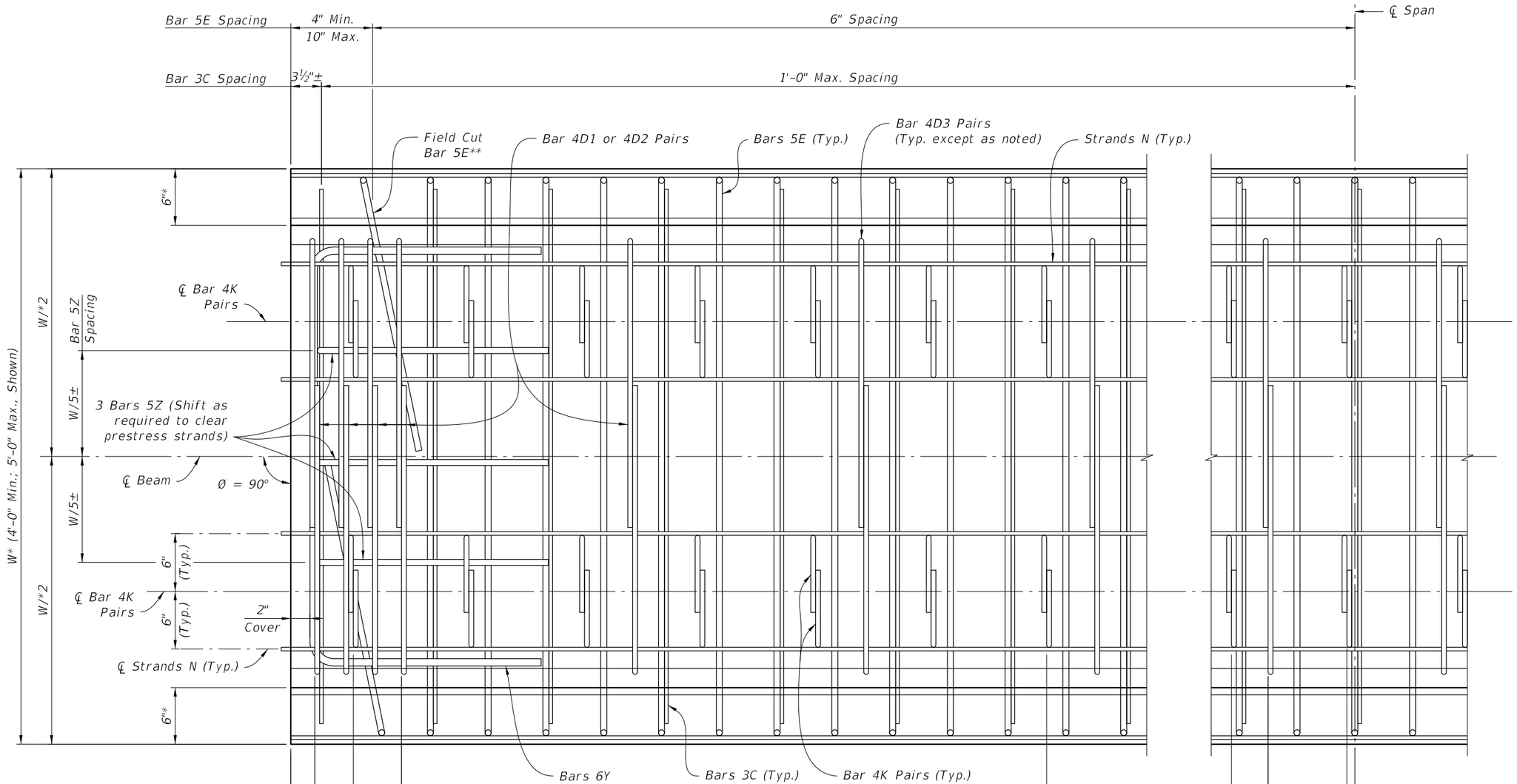
LAST REVISION	REVISION	DESCRIPTION:				
04/01/23			FY 2025-26 STANDARD PLANS	FLORIDA SLAB BEAM TYPICAL DETAILS AND NOTES	INDEX 450-450	SHEET 1 of 3



* Measured to Working Points.
** At Beam ends, use number of field cut and rotated Bars 5E as required to clear Bar 4D Pairs and Bar 4K Pairs.
*** Shift Bar 4K Pairs longitudinally as required to clear Bar 4D Pairs and Bars 3C and 5E.

CROSS REFERENCE:
For Dimensions V1, V2 & W and number of spaces S1 & S2, see Florida Slab Beam – Table of Variables in Structures Plans.

See Indexes 450-451, 450-452 and 450-453 for Bars 5E Details.

PARTIAL PLAN VIEW Ø = 90°
(END 1 SHOWN, END 2 SIMILAR)
(INTERIOR BEAM SHOWN, EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)

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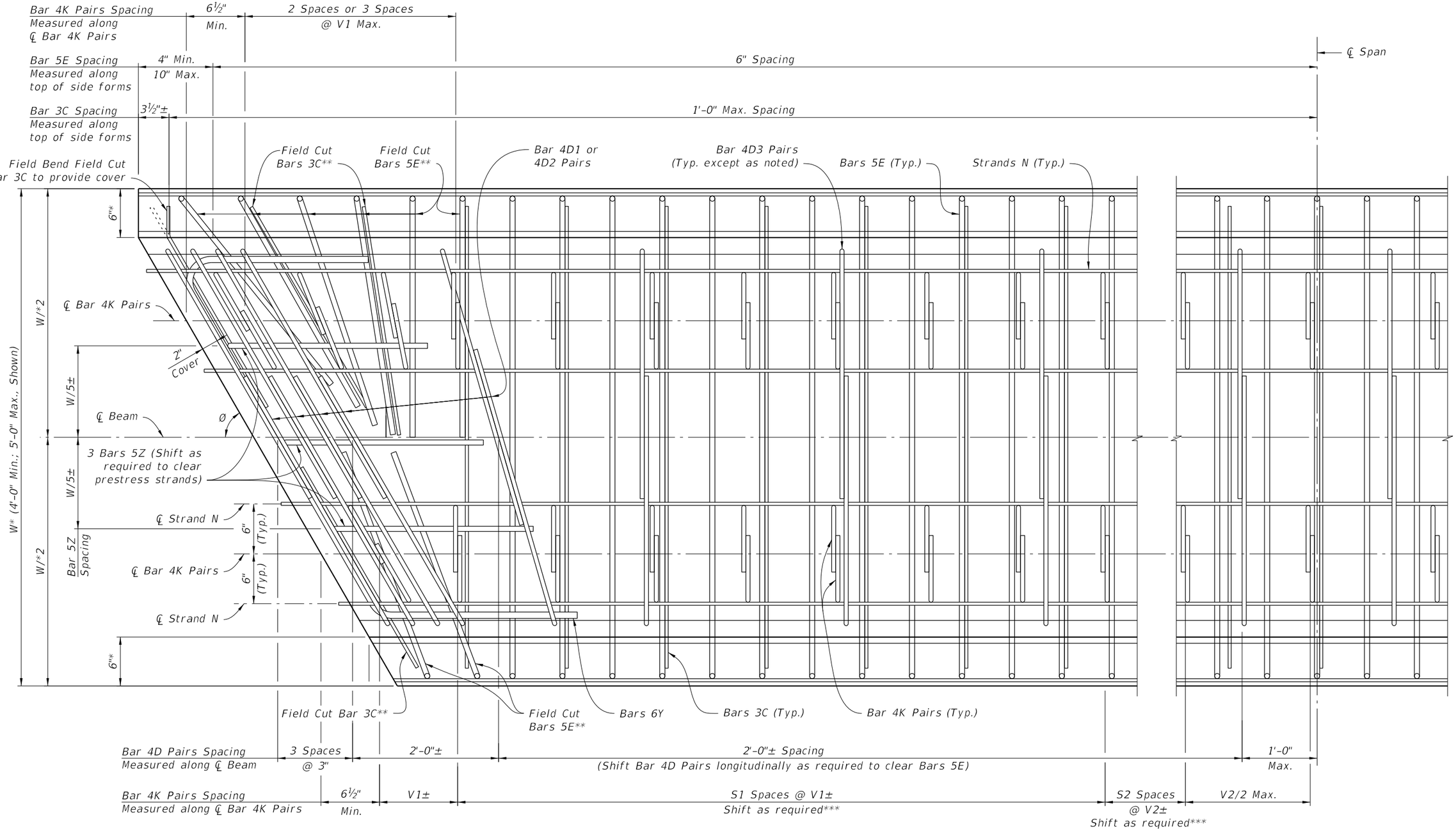
LAST REVISION	REVISION	DESCRIPTION:				
04/01/23			FY 2025-26 STANDARD PLANS	FLORIDA SLAB BEAM TYPICAL DETAILS AND NOTES	INDEX 450-450	SHEET 2 of 3



PARTIAL PLAN VIEW 60° ≤ Ø < 90°
(END 1 SHOWN, END 2 SIMILAR)
(INTERIOR BEAM SHOWN, EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)

* Measured to Working Points.
** At Beam ends, use number of field cut and rotated Bars 3C and 5E as required to clear Bar 4D Pairs and Bar 4K Pairs.
*** Shift Bar 4K Pairs longitudinally as required to clear Bar 4D Pairs and Bars 3C and 5E.

CROSS REFERENCE:
For Dimensions V1, V2 & W, Angle Ø and number of spaces S1 & S2, see Florida Slab Beam – Table of Variables in Structures Plans.

See Indexes 450-451, 450-452 and 450-453 for Bars 5E Details.

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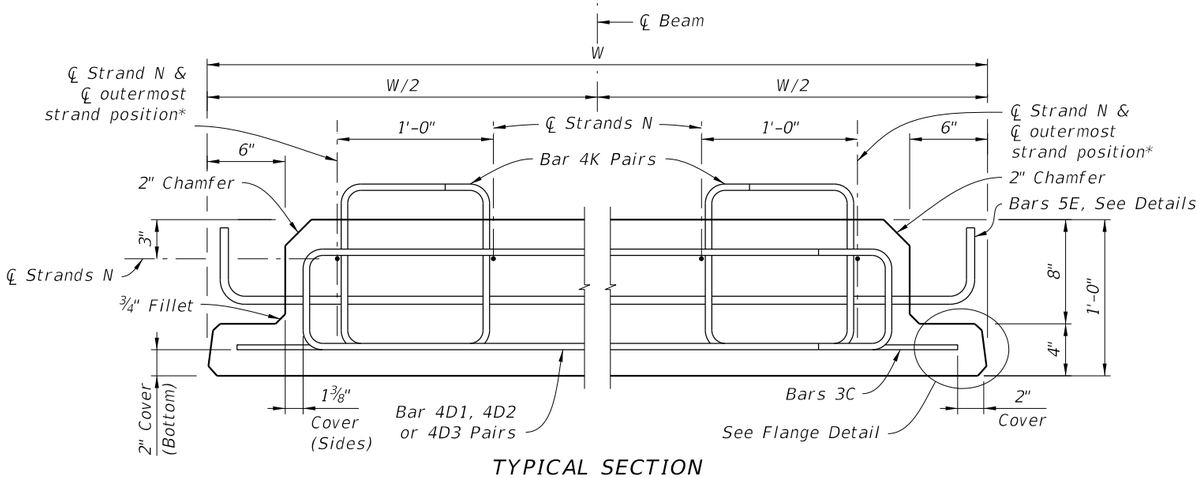
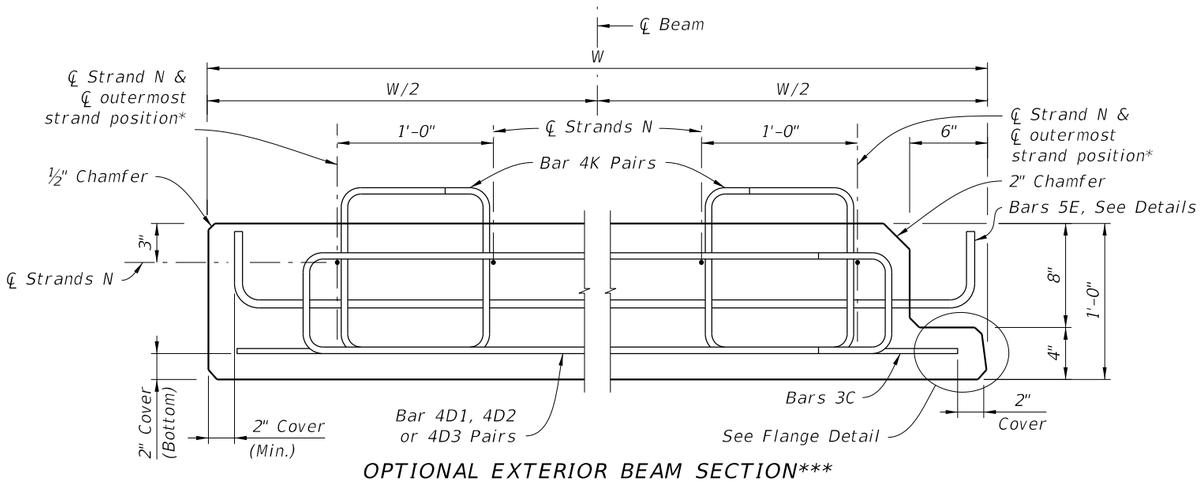
LAST REVISION	REVISION	DESCRIPTION:				
04/01/23			FY 2025-26 STANDARD PLANS	FLORIDA SLAB BEAM TYPICAL DETAILS AND NOTES	INDEX 450-450	SHEET 3 of 3



TYPICAL SECTION

(INTERIOR BEAM SHOWN; EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)



OPTIONAL EXTERIOR BEAM SECTION***

NOTES:

Work this Index with Index 450-450 and Florida Slab Beams – Table of Variables in Structures Plans.

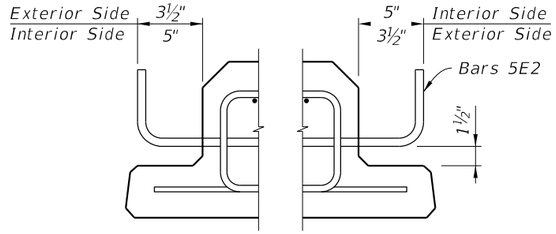
For Dimensions C, D, E, L, R, W & Y and Angle Ø, see Florida Slab Beam – Table of Variables in Structures Plans.

For referenced notes, see Index 450-450, Sheet 1.

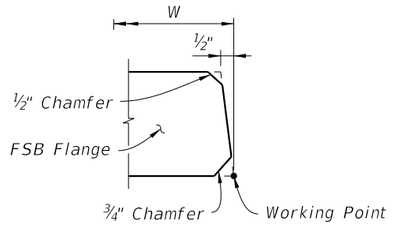
* For ℄ of outermost strand positions, see corresponding Strand Pattern on Florida Slab Beams – Table of Variables in Structures Plans.

** At the Contractor's option, the Detail as shown for Interior Beams may be used for Exterior Beams and the Bars 5E field bent on the exterior side of the Beam to provide the specified cover to the coping line.

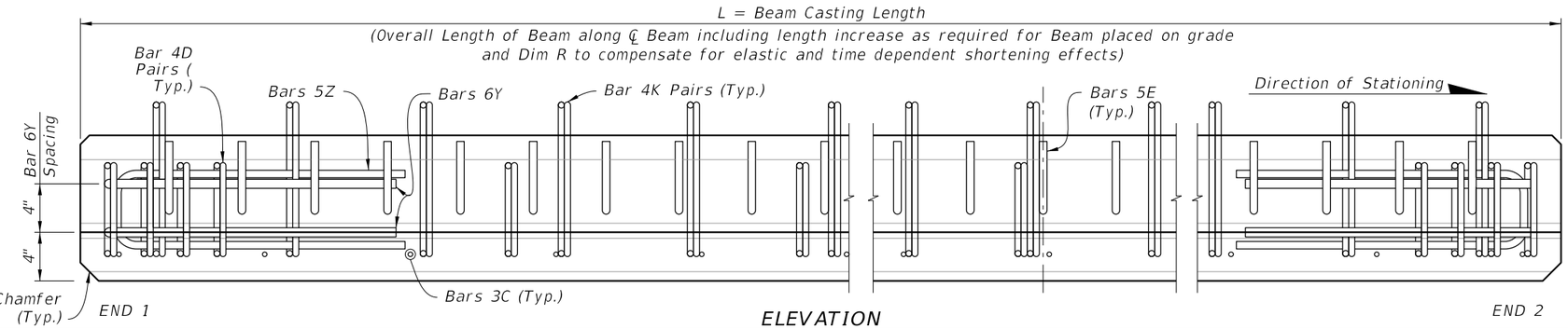
*** At the Contractor's option, the Optional Exterior Beam Section may be used.



EXTERIOR BEAMS**
BARS 5E DETAIL



FLANGE DETAIL
(TYPICAL BOTH SIDES OF FSB)

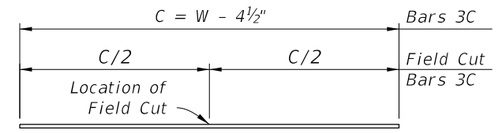


ELEVATION

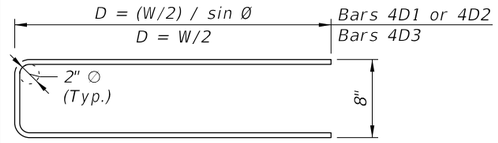
BILL OF REINFORCING BARS
FOR ONE BEAM ONLY

MARK	SIZE	NOTE NUMBERS	NUMBER REQUIRED	LENGTH (NOTE 1)
C	3		See Table	Varies
D1	4	6	10 (End 1)	Varies
D2	4	6	10 (End 2)	Varies
D3	4		See Table	Varies
E1	5	7	See Table	Varies
E2	5	7	See Table	Varies
K	4		See Table	2'-5"
N	See Note 3	3	4	Varies
Y1	6	6	2 (End 1)	Varies
Y2	6	6	2 (End 2)	Varies
Z	5		6	4'-6½"

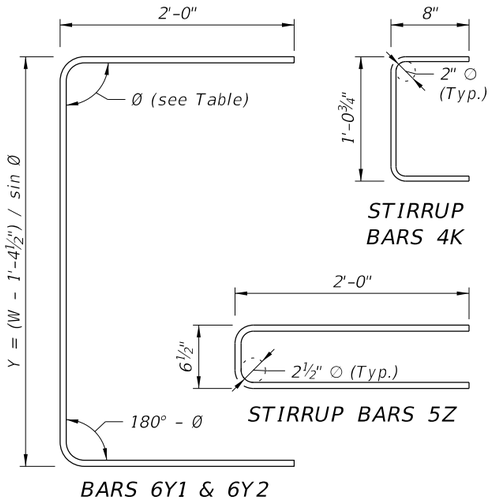
BENDING DIAGRAMS (See Note 1)



BARS 3C



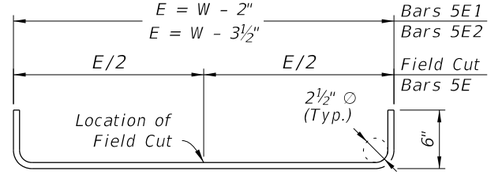
STIRRUP BARS 4D1, 4D2 & 4D3



STIRRUP BARS 4K

STIRRUP BARS 5Z

BARS 6Y1 & 6Y2



STIRRUP BARS 5E1 & 5E2

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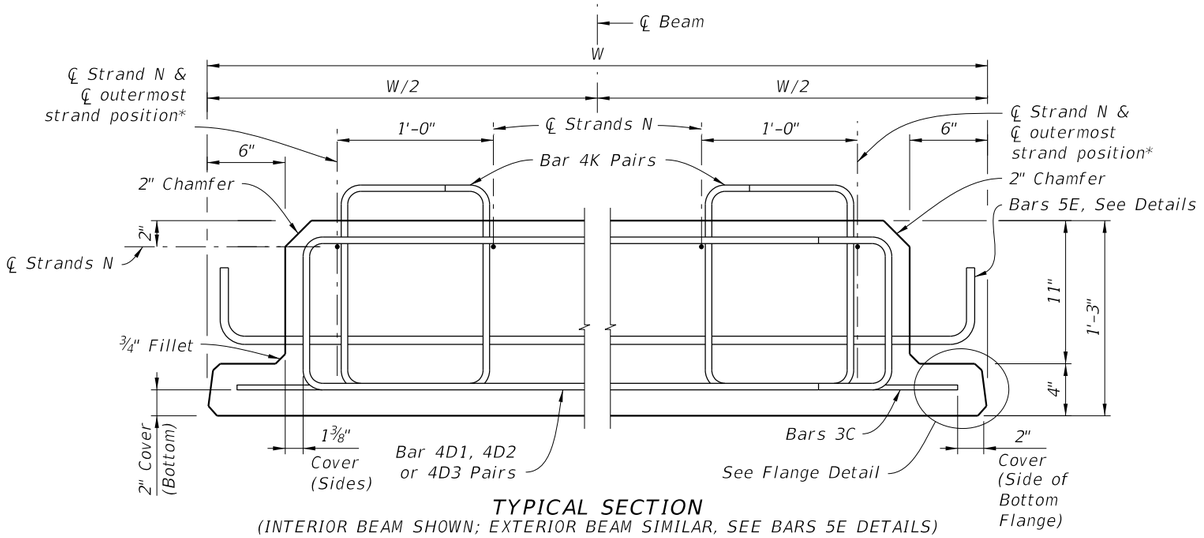
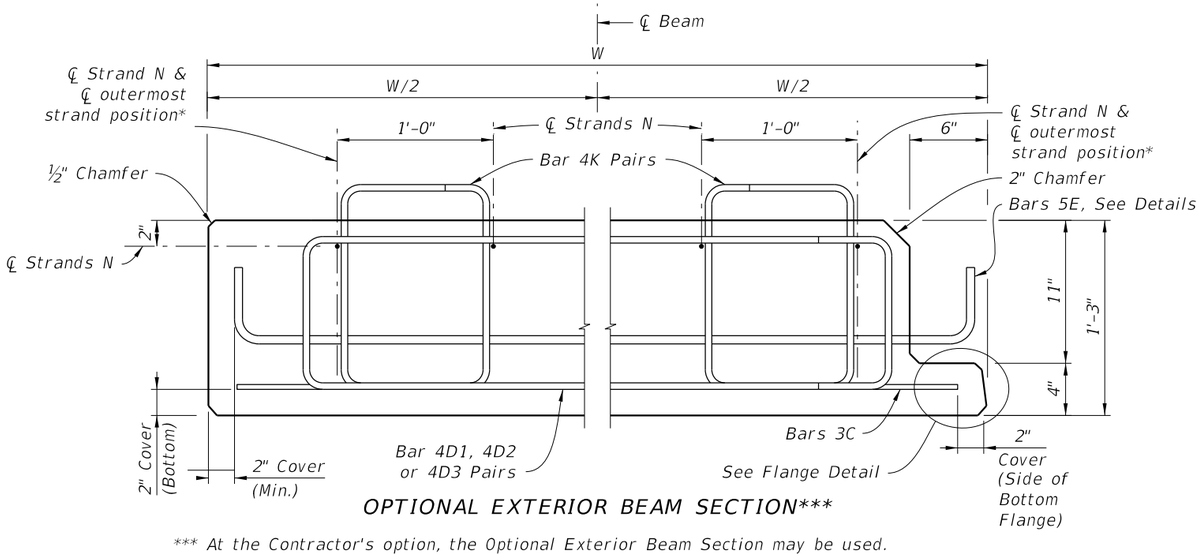
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	12" FLORIDA SLAB BEAM	INDEX	SHEET
11/01/20					450-451	1 of 1



TYPICAL SECTION

(INTERIOR BEAM SHOWN; EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)



OPTIONAL EXTERIOR BEAM SECTION***

*** At the Contractor's option, the Optional Exterior Beam Section may be used.

NOTES:

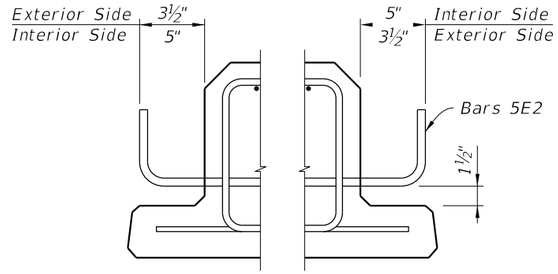
Work this Index with Index 450-450 and Florida Slab Beams – Table of Variables in Structures Plans.

For Dimensions C, D, E, L, R, W & Y and Angle Ø, see Florida Slab Beam – Table of Variables in Structures Plans.

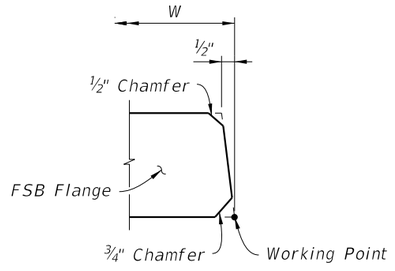
For referenced notes, see Index 450-450, Sheet 1.

* For ℄ of outermost strand positions, see corresponding Strand Pattern on Florida Slab Beams – Table of Variables in Structures Plans.

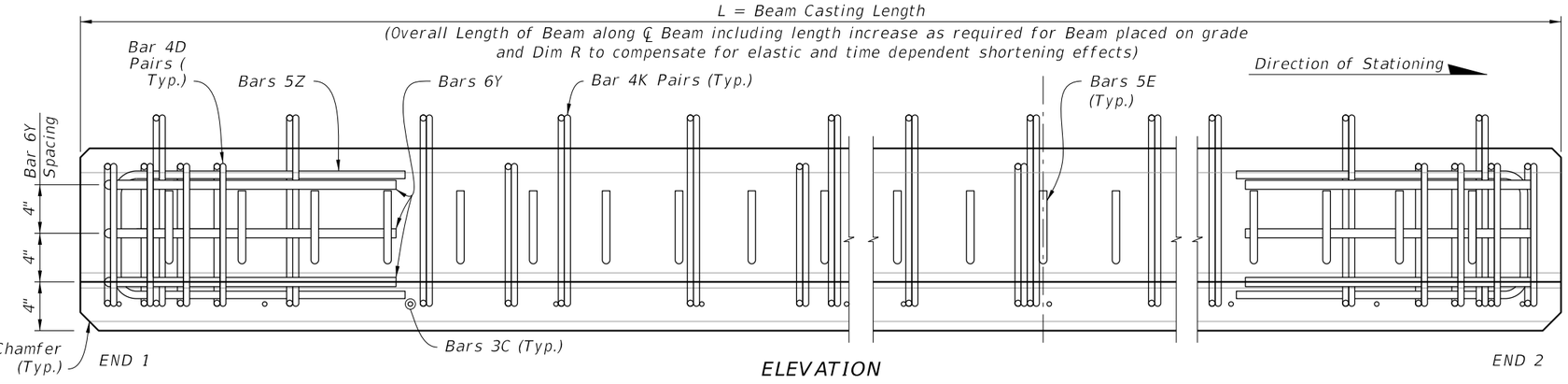
** At the Contractor's option, the Detail as shown for Interior Beams may be used for Exterior Beams and the Bars 5E field bent on the exterior side of the Beam to provide the specified cover to the coping line.



EXTERIOR BEAMS**
BARS 5E DETAIL



FLANGE DETAIL
(TYPICAL BOTH SIDES OF FSB)

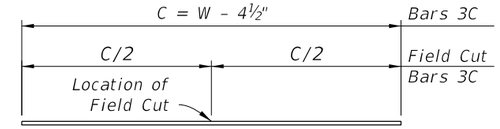


ELEVATION

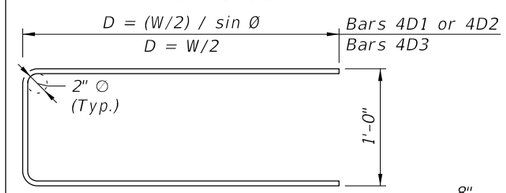
BILL OF REINFORCING STEEL
FOR ONE BEAM ONLY

MARK	SIZE	NOTE NUMBERS	NUMBER REQUIRED	LENGTH (NOTE 1)
C	3		See Table	Varies
D1	4	6	10 (End 1)	Varies
D2	4	6	10 (End 2)	Varies
D3	4		See Table	Varies
E1	5	7	See Table	Varies
E2	5	7	See Table	Varies
K	4		See Table	2'-8"
N	See Note 3	3	4	Varies
Y1	6	6	3 (End 1)	Varies
Y2	6	6	3 (End 2)	Varies
Z	5		6	4'-10½"

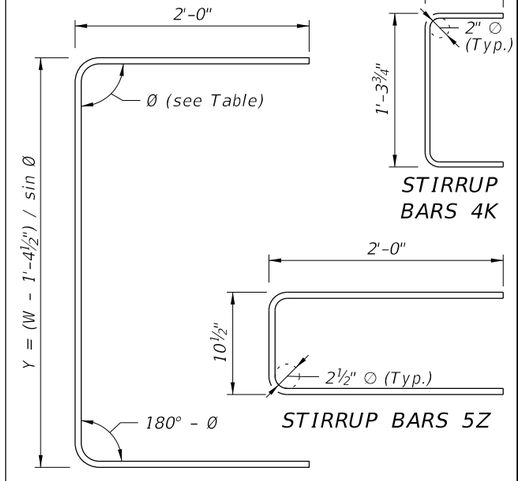
BENDING DIAGRAMS (See Note 1)



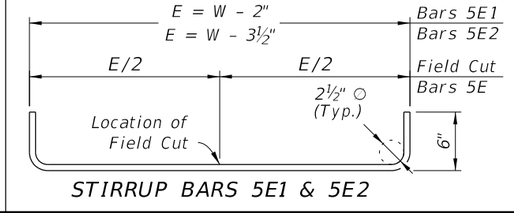
BARS 3C



STIRRUP BARS 4D1, 4D2 & 4D3



BARS 6Y1 & 6Y2



STIRRUP BARS 5E1 & 5E2

LAST REVISION	REVISION	DESCRIPTION:			
11/01/20			FY 2025-26 STANDARD PLANS	15" FLORIDA SLAB BEAM	INDEX 450-452 / SHEET 1 of 1

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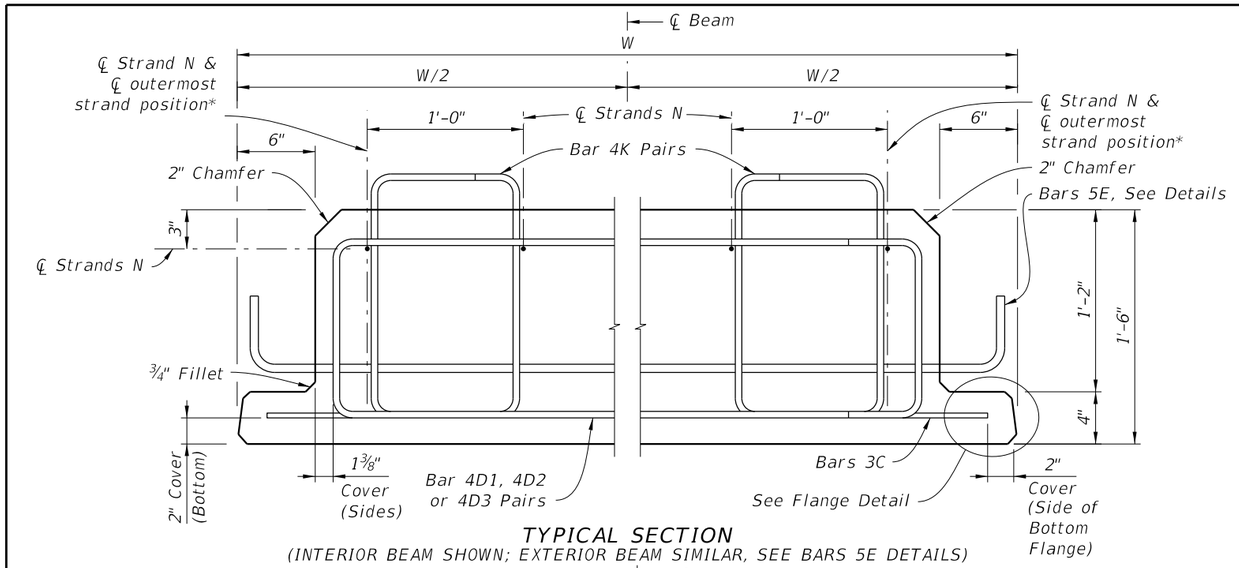
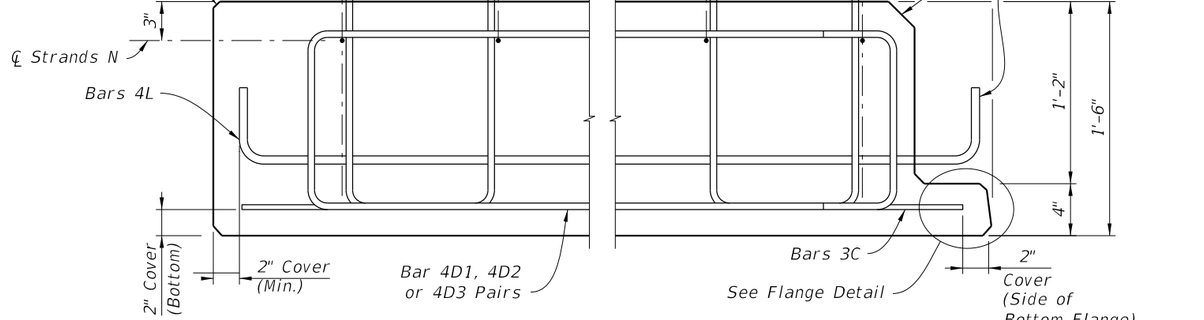


TYPICAL SECTION
(INTERIOR BEAM SHOWN; EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)

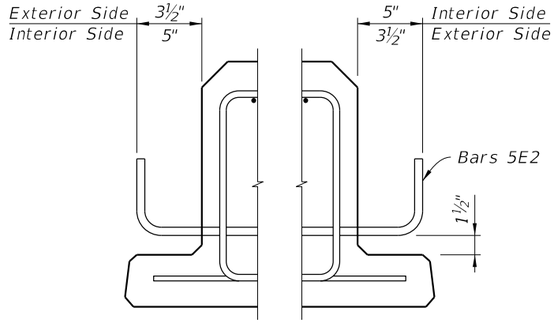


OPTIONAL EXTERIOR BEAM SECTION***

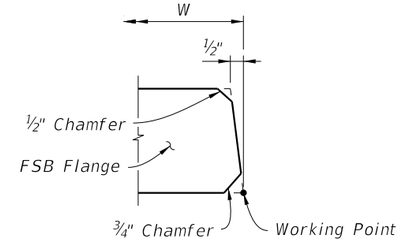
NOTES:
Work this Index with Index 450-450 and Florida Slab Beams – Table of Variables in Structures Plans.
For Dimensions C, D, E, L, R, W & Y and Angle Ø, see Florida Slab Beam – Table of Variables in Structures Plans.
For referenced notes, see Index 450-450, Sheet 1.

* For ℄ of outermost strand positions, see corresponding Strand Pattern on Florida Slab Beams – Table of Variables in Structures Plans.

** At the Contractor's option, the Detail as shown for Interior Beams may be used for Exterior Beams and the Bars 5E field bent on the exterior side of the Beam to provide the specified cover to the coping line.



EXTERIOR BEAMS**



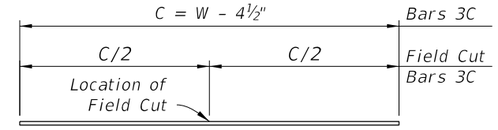
FLANGE DETAIL
(TYPICAL BOTH SIDES OF FSB)

*** At the Contractor's option, the Optional Exterior Beam Section may be used.

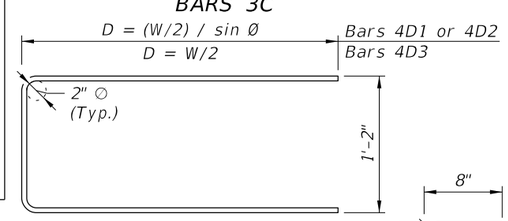
BILL OF REINFORCING STEEL
FOR ONE BEAM ONLY

MARK	SIZE	NOTE NUMBERS	NUMBER REQUIRED	LENGTH (NOTE 1)
C	3		See Table	Varies
D1	4	6	10 (End 1)	Varies
D2	4	6	10 (End 2)	Varies
D3	4		See Table	Varies
E1	5	7	See Table	Varies
E2	5	7	See Table	Varies
K	4		See Table	2'-11"
N	See Note 3	3	4	Varies
Y1	6	6	3 (End 1)	Varies
Y2	6	6	3 (End 2)	Varies
Z	5		6	5'-0½"

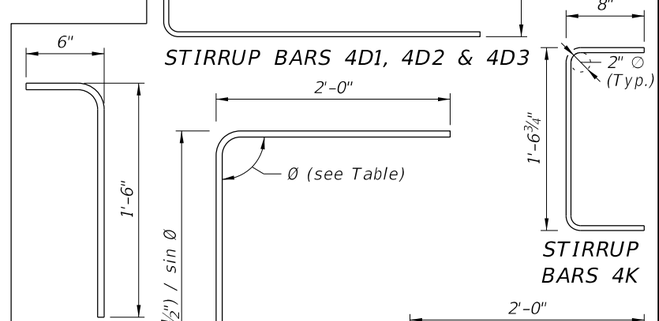
BENDING DIAGRAMS (See Note 1)



BARS 3C

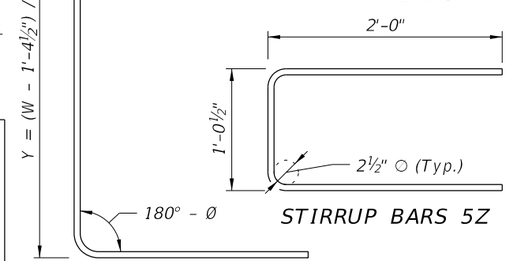


STIRRUP BARS 4D1, 4D2 & 4D3



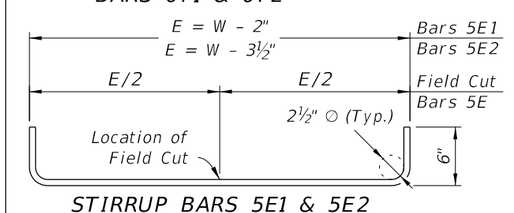
BARS 4L

STIRRUP BARS 4K

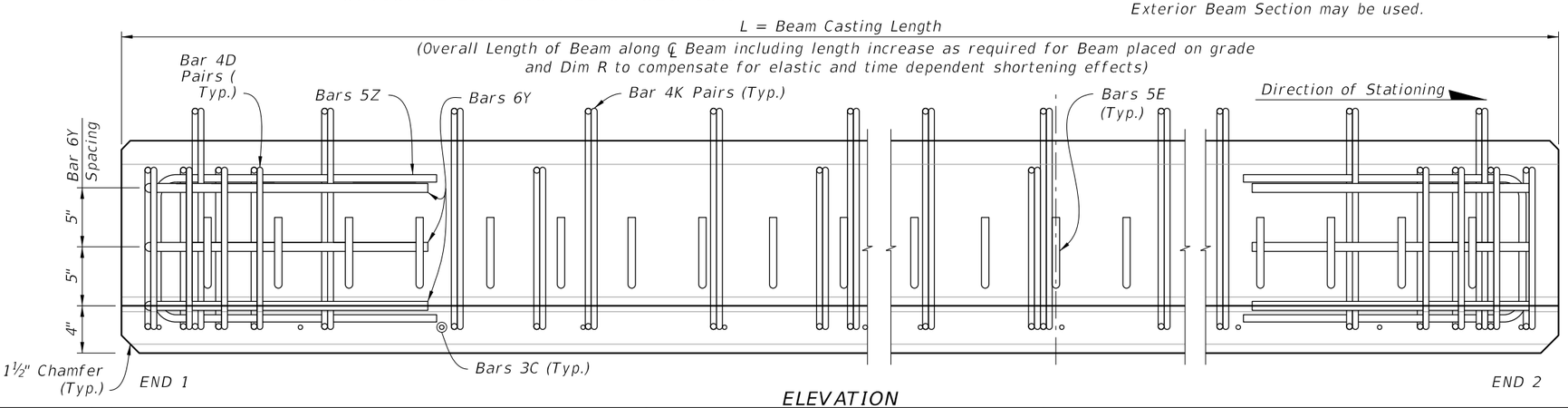


STIRRUP BARS 5Z

BARS 6Y1 & 6Y2



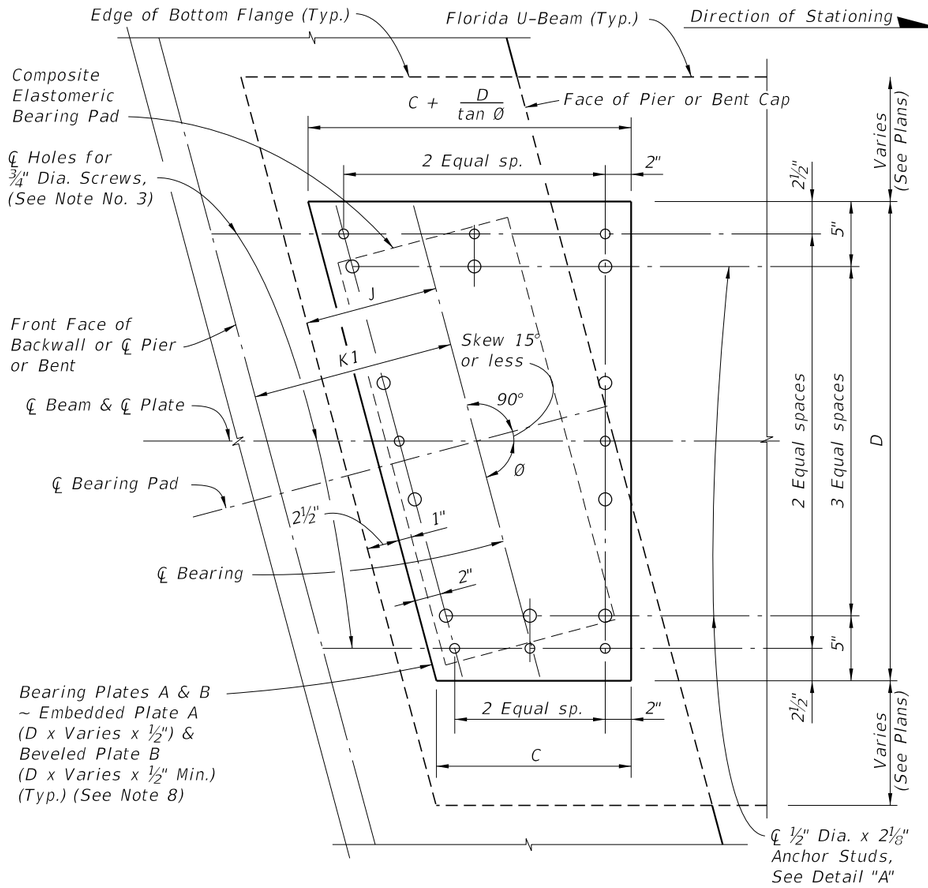
STIRRUP BARS 5E1 & 5E2



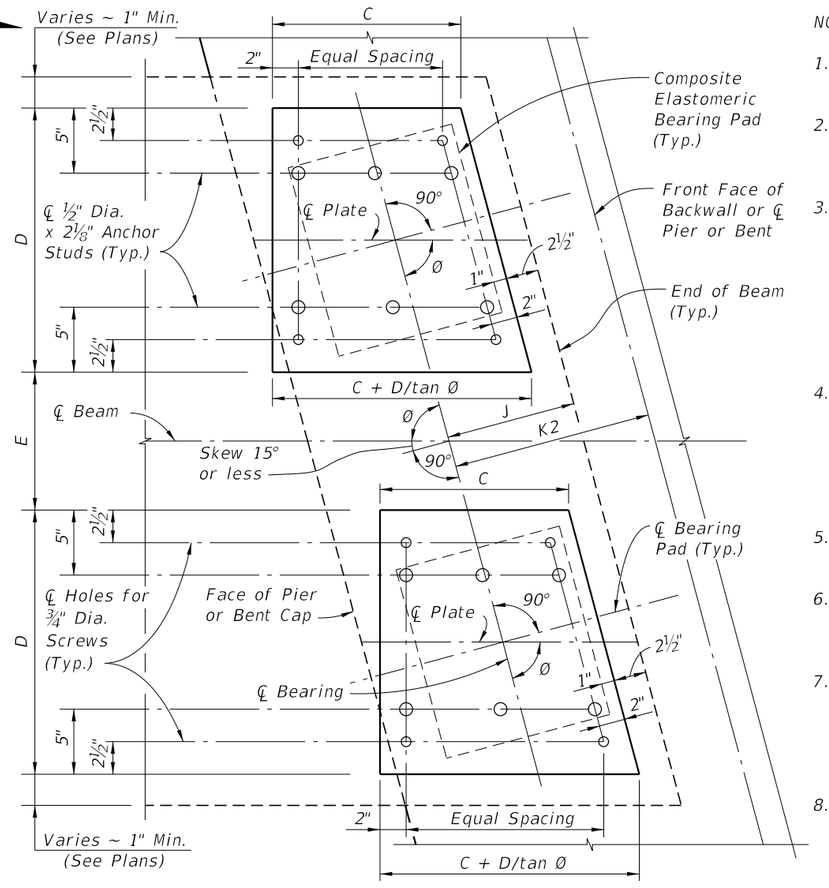
ELEVATION

10/17/2024 10:57:53 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/20			FY 2025-26 STANDARD PLANS	18" FLORIDA SLAB BEAM	INDEX 450-453	SHEET 1 of 1



PLAN VIEW OF TYPICAL SINGLE BEARING



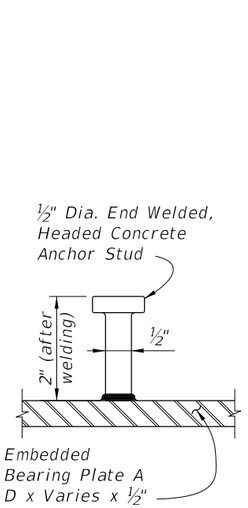
PLAN VIEW OF TYPICAL DOUBLE BEARING

PLAN

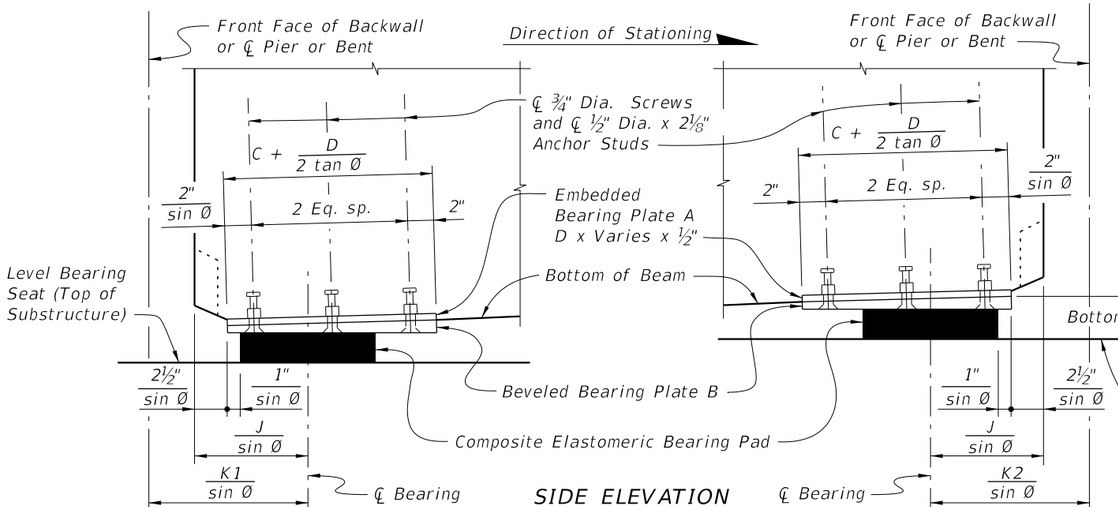
(0° < Skew ≤ 15° shown, Skew = 0° Similar)

NOTES:

1. Work this sheet with the 'BEVELED BEARING PLATE DATA TABLE' in the plans.
2. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams only as scheduled in the 'TABLE OF BEAM VARIABLES' on Beam Sheets.
3. Bearing plate material shall conform to ASTM A36 or ASTM A709 (Grade 36 or 50). Headed Concrete Anchor Studs shall conform to Specification Section 502. Hot-dip galvanized Bearing Plates A & B after fabrication except Galvanized Caps may be welded in place after hot-dip galvanizing. Drill Bearing Plates A and B as an assembled unit, thread Bearing Plate A only. Drill and thread holes perpendicular to bottom of Plate B and prior to plates being galvanized (ASTM A 123).
4. Provide Electroplated, Flat Countersunk Head Cap Screws in accordance with ASTM F 835. Electroplating shall be ASTM B 633, SC 2, Type 1. Provide screws long enough to maintain a ¾" minimum embedment into Embedded Bearing Plate A and Galvanized Cap. Provide steel Galvanized Caps with ½" Min. to 1½" Max. height and nominal 1" inside diameter.
5. Include the cost of Beveled Bearing Plates in the pay item for Prestressed Beams (Florida U-Beams).
6. For Dimensions C and D, see 'BEVELED BEARING PLATE DATA TABLE' in the Structures Plans. For Dimensions J, K1 and K2, see 'TABLE OF BEAM VARIABLES' on Beam Sheets.
7. All details and dimensions shown are along ℄ Beam for single bearings or ℄ Plate parallel to ℄ Beam for double bearings, except for dimensions to ¾" Dia. Screws and ½" Dia. x 2⅛" Anchor Studs, which are along ℄ Screws or ℄ Anchor Studs. Positive Slope shown, Negative Slope similar.
8. When Skew = 0°, dimensions for Embedded Bearing Plate A are D x C x ½" and for Beveled Plate B are D x C x ½" Min.

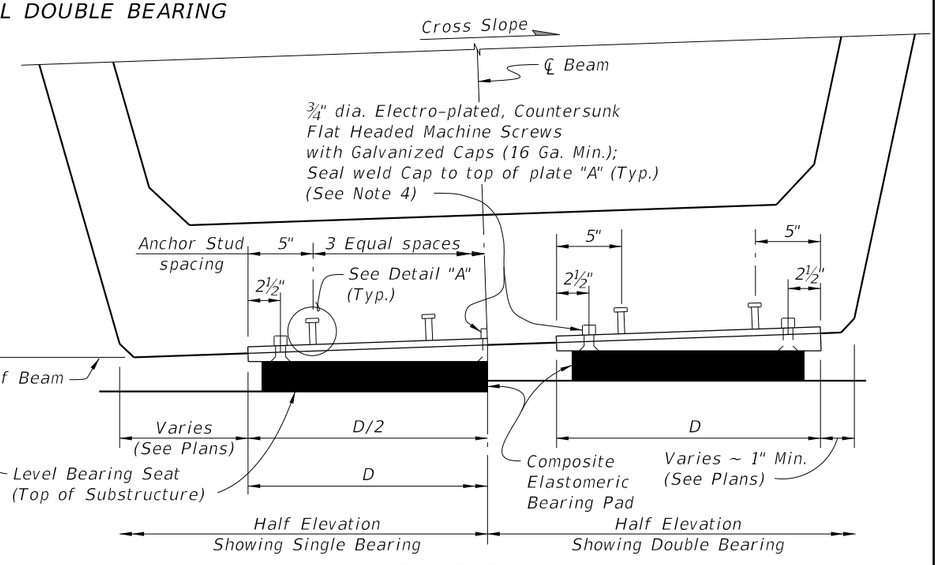


DETAIL "A"



SIDE ELEVATION

(See Note 7)

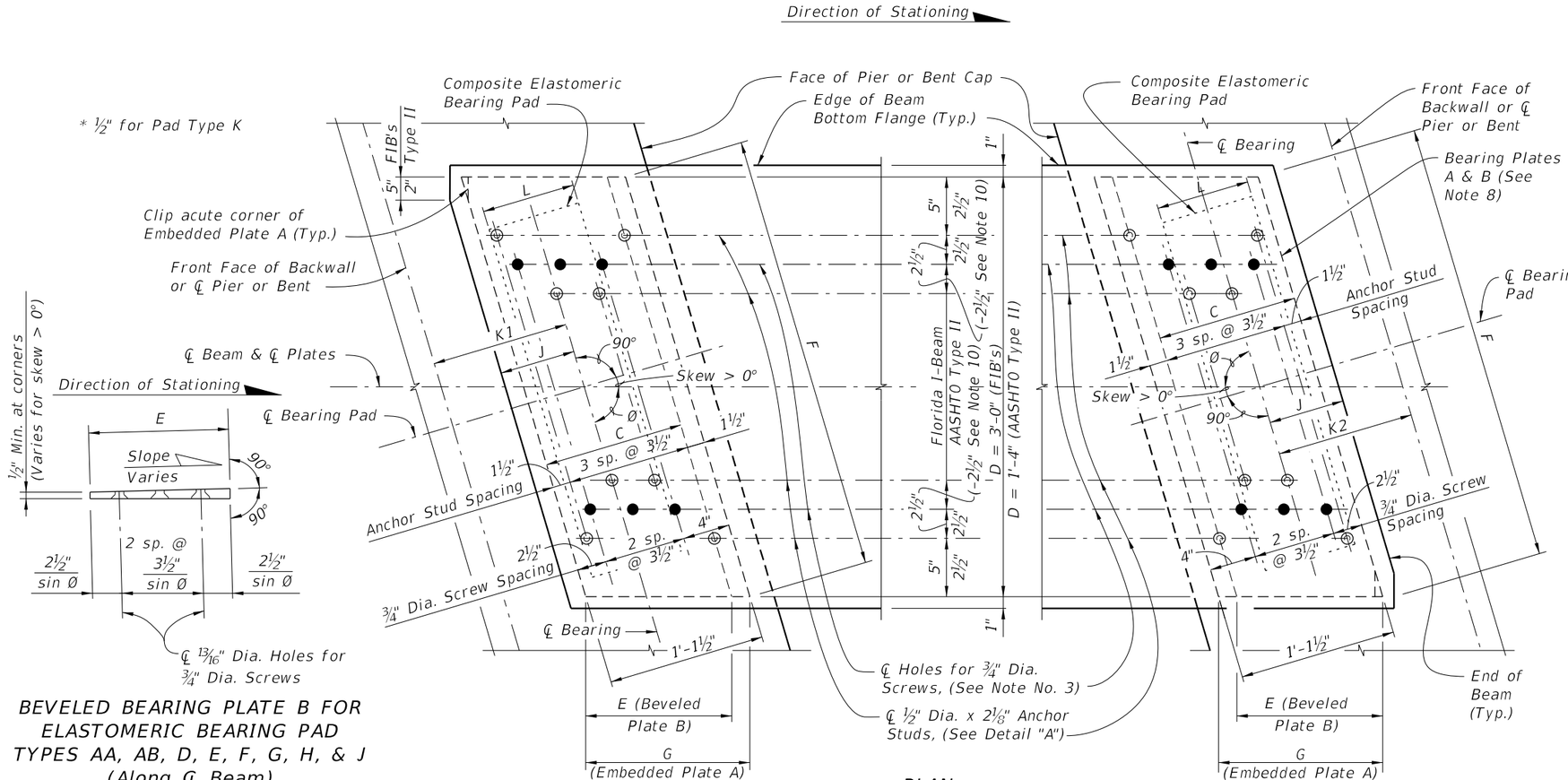


END ELEVATION

(Positive Cross Slope shown, Negative Cross Slope similar)

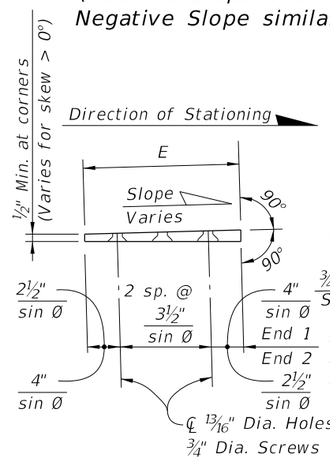
10/17/2024 10:58:02 AM

LAST REVISION	REVISION	DESCRIPTION:				
01/01/10			FDOT FY 2025-26 STANDARD PLANS	BEVELED BEARING PLATE DETAILS - PRESTRESSED FLORIDA-U BEAMS	INDEX 450-502	SHEET 1 of 1

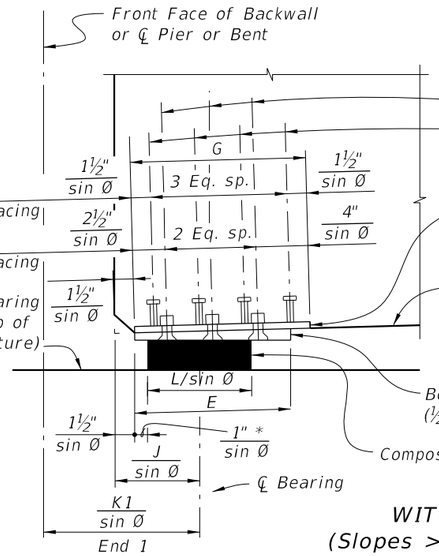


PLAN

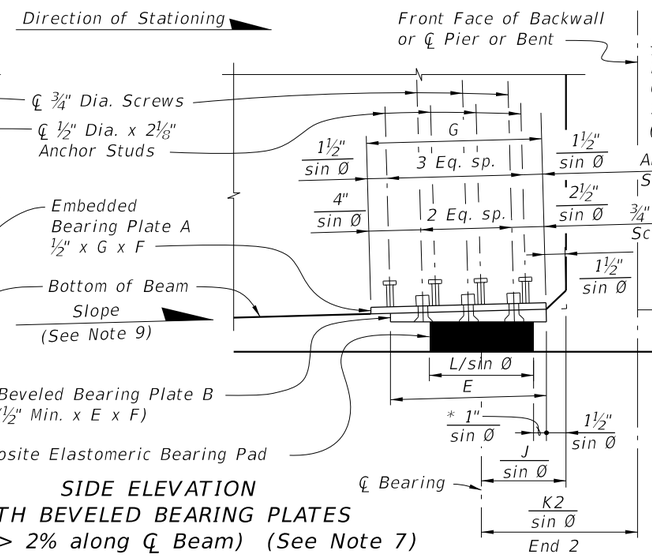
(0° < Skew ≤ 45° FIB Shown, Skew = 0° and AASHTO Type II Similar)

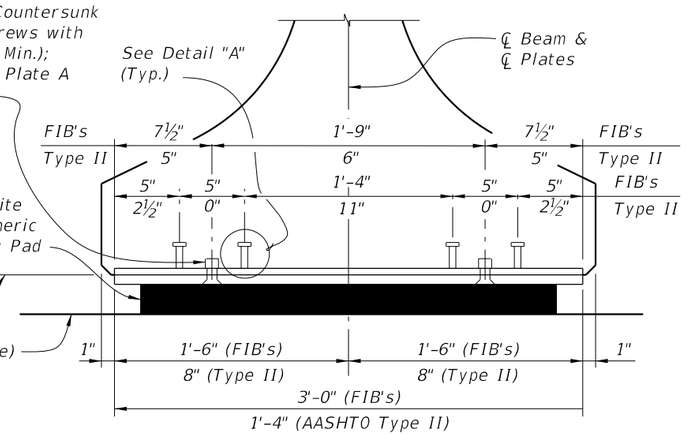


BEVELED BEARING PLATE B FOR ELASTOMERIC BEARING PAD TYPE K (Along ℄ Beam)



SIDE ELEVATION WITH BEVELED BEARING PLATES (Slopes > 2% along ℄ Beam) (See Note 7)





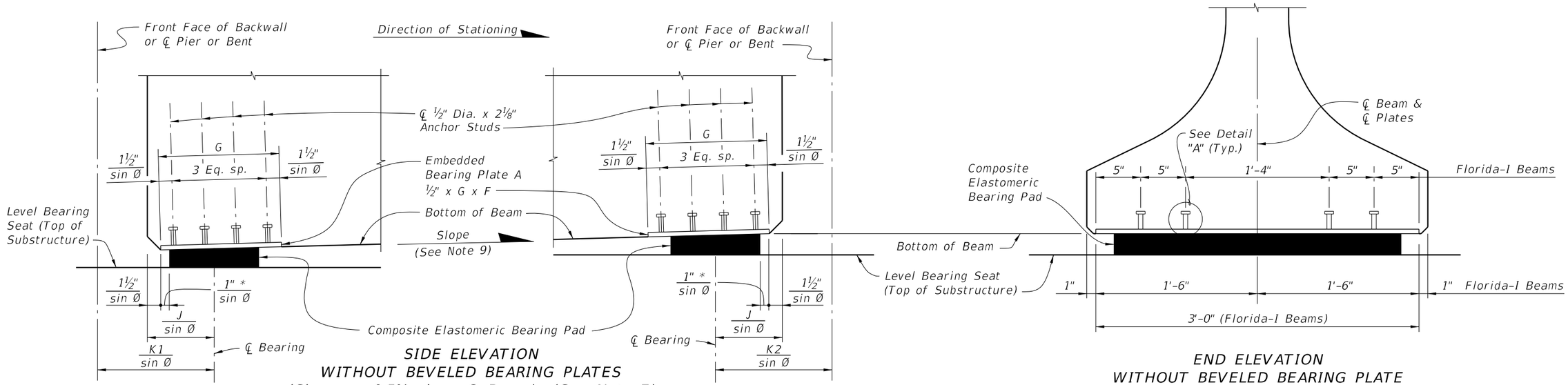
END ELEVATION WITH BEVELED BEARING PLATE

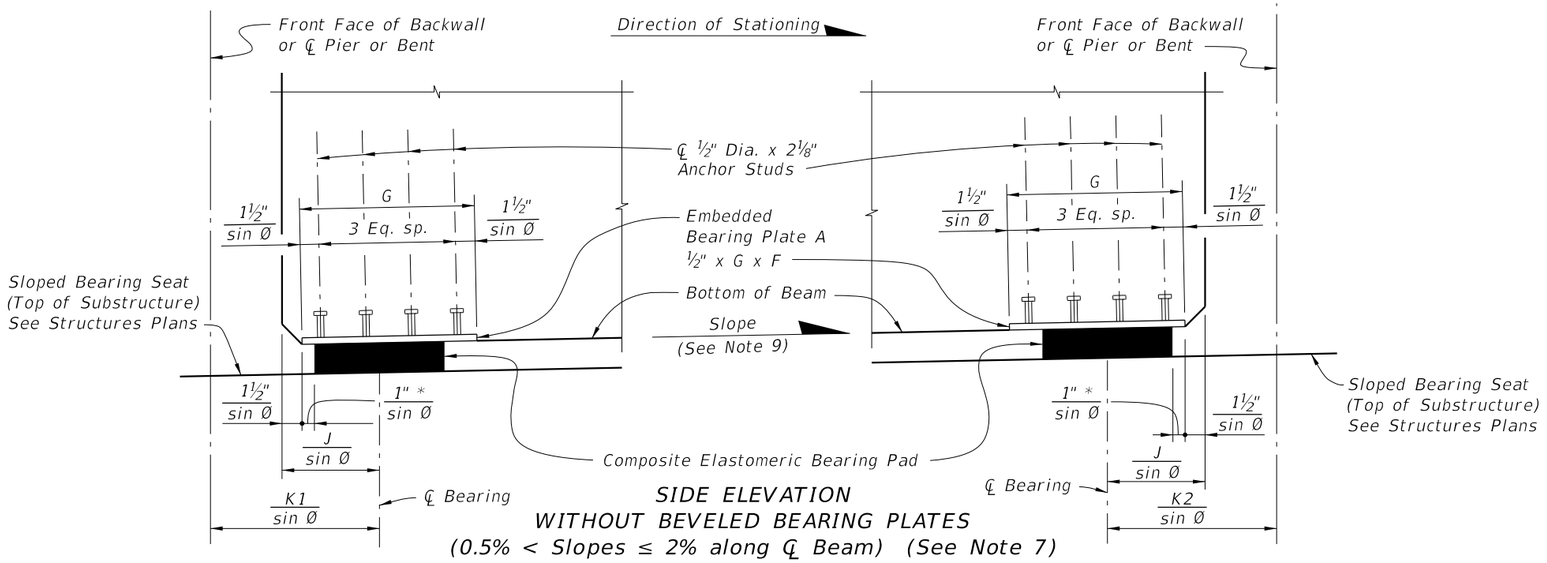
NOTES:

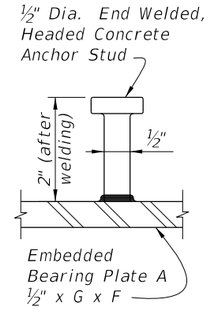
1. Work this sheet with Index 400-510 – Composite Elastomeric Bearing Pads, and the 'BEARING PLATE DATA TABLE' in the Structures Plans.
2. Embedded Bearing Plates A are required for all Florida-I beams. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams as scheduled in the 'BEARING PLATE DATA TABLE' in the Structures Plans.
3. Bearing plate material shall conform to ASTM A36 or ASTM A709 (Grade 36 or 50). Headed Concrete Anchor Studs shall conform to Specification Section 502. Hot-dip galvanize Bearing Plates A & B after fabrication except that Galvanized Caps may be welded in place after hot-dip galvanizing. Drill Bearing Plates A and B as an assembled unit, thread Bearing Plate A only. Holes are not required in Plate A when Plate B is not required. Drill and thread holes perpendicular to Embedded Plate A and prior to plates being galvanized (ASTM A 123).
4. Provide Electroplated, Flat Head Cap Screws in accordance with ASTM F 835. Electroplating shall be ASTM B633, SC 2, Type 1. Provide screws long enough to maintain a ¾" minimum embedment into Embedded Bearing Plate A and Galvanized Cap. Provide steel Galvanized Caps with ½" Min. to 1½" Max. height and nominal 1" inside diameter.
5. Include the cost of Bearing Plates in the pay item for Prestressed Beams.
6. For Pad Type and Dimensions C, D, E, F and G, see the 'BEARING PLATE DATA TABLE' in the Structures Plans. For Dimensions J, K1 and K2, see 'TABLE OF BEAM VARIABLES' in the Structures Plans.
7. All details and dimensions shown are along ℄ Beam, except for dimensions to ¾" Dia. Screws and ½" Dia. x 2⅛" Anchor Studs, which are along ℄ Screws or ℄ Anchor Studs. Positive Slope shown, Negative Slope similar.
8. When Skew = 0°, F = D = 3'-0" (Florida-I Beams) or 1'-4" (AASHTO Type II Beams) E = C, and G = 1'-1½".
9. Slope is determined along ℄ Beam at ℄ Bearing. See 'BEARING PLATE DATA TABLE' in the Structures Plans for Slope and Angle Ø.
10. For AASHTO Type II Beams negative dimensions indicate anchor studs are in a single line in the outside row.

10/17/2024 10:58:09 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/23			FY 2025-26 STANDARD PLANS	BEARING PLATES (TYPE 1) - PRESTRESSED FLORIDA-I AND AASHTO TYPE II BEAMS	INDEX 450-511	SHEET 1 of 2





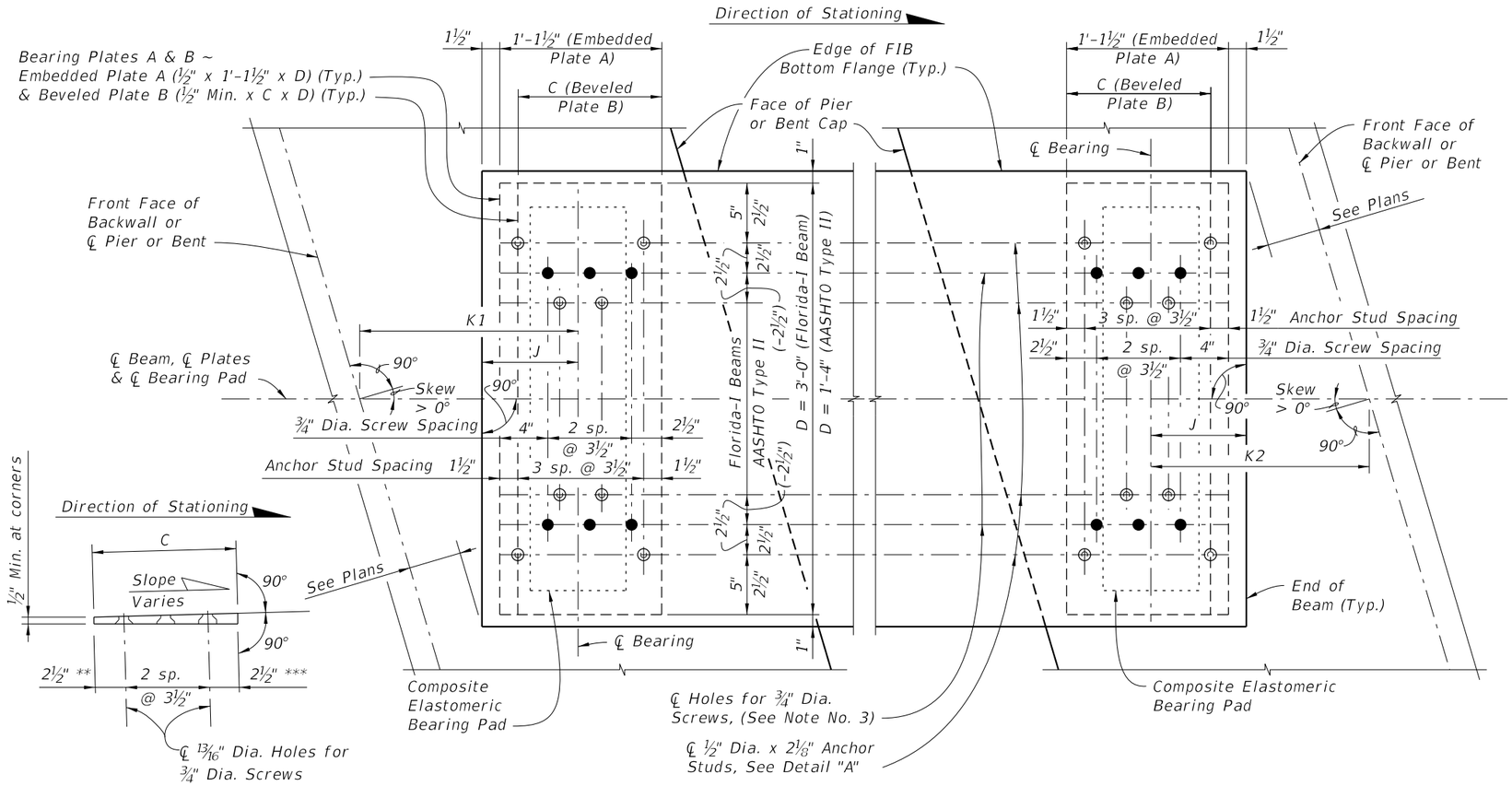


DETAIL "A"

CROSS REFERENCE:
See Sheet 1 for Notes.

10/17/2024 10:58:15 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20			FY 2025-26 STANDARD PLANS	BEARING PLATES (TYPE 1) - PRESTRESSED FLORIDA-I AND AASHTO TYPE II BEAMS	450-511	2 of 2



BEVELED BEARING PLATE B
(Along ℄ Beam)
(Positive Slope shown; Negative Slope similar)

PLAN
(FIB Skewed Alignment Shown, Skew = 0° and AASHTO Type II Similar)

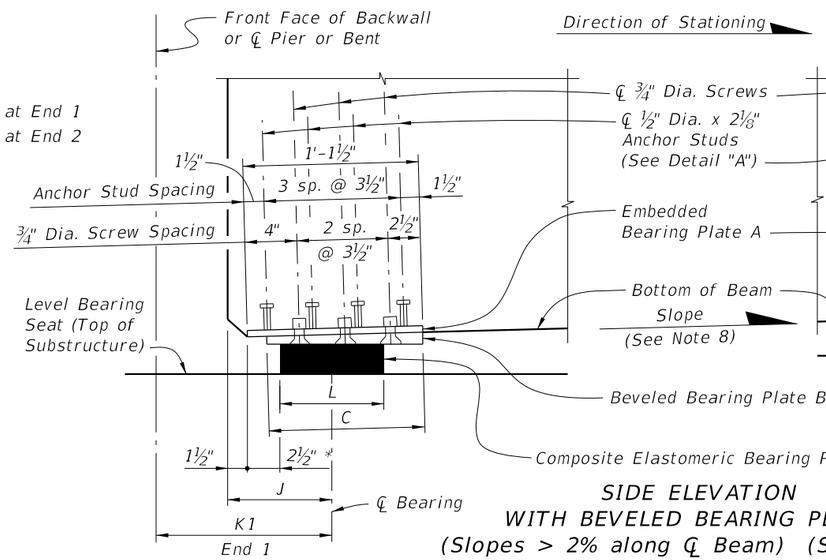
NOTES:

1. *Work this sheet with Index 400-510 – Composite Elastomeric Bearing Pads, and 'BEARING PLATE DATA TABLE' in the Structures Plans.*
2. *Embedded Bearing Plates A are required for all Florida-I beams. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams as scheduled in the 'BEARING PLATE DATA TABLE' in the Structures Plans.*
3. *Bearing plate material shall conform to ASTM A36 or ASTM A709 (Grade 36 or 50). Headed Concrete Anchor Studs shall conform to Specification Section 502. Hot-dip galvanize Bearing Plates A & B after fabrication except that Galvanized Caps may be welded in place after hot-dip galvanizing. Drill Bearing Plates A and B as an assembled unit, thread Bearing Plate A only. Holes are not required in Plate A when Plate B is not required. Drill and thread holes perpendicular to Embedded Plate A and prior to plates being galvanized (ASTM A 123).*
4. *Provide Electroplated, Flat Head Cap Screws in accordance with ASTM F 835. Electroplating shall be ASTM B633, SC 2, Type 1. Provide screws long enough to maintain a ¾" minimum embedment into Embedded Bearing Plate A and Galvanized Cap. Provide steel Galvanized Caps with ½" Min. to 1½" Max. height and nominal 1" inside diameter.*
5. *Include the cost of Bearing Plates in the pay item for Prestressed Beams.*
6. *For Pad Type and Dimension C, see the 'BEARING PLATE DATA TABLE' in the Structures Plans. For Dimensions J, K1 and K2, see 'TABLE OF BEAM VARIABLES' in the Structures Plans.*
7. *All details and dimensions shown are along ℄ Beam. Positive Slope shown, Negative Slope similar.*
8. *Slope is determined along ℄ Beam at ℄ Bearing. See 'BEARING PLATE DATA TABLE' in the Structures Plans for Slope.*

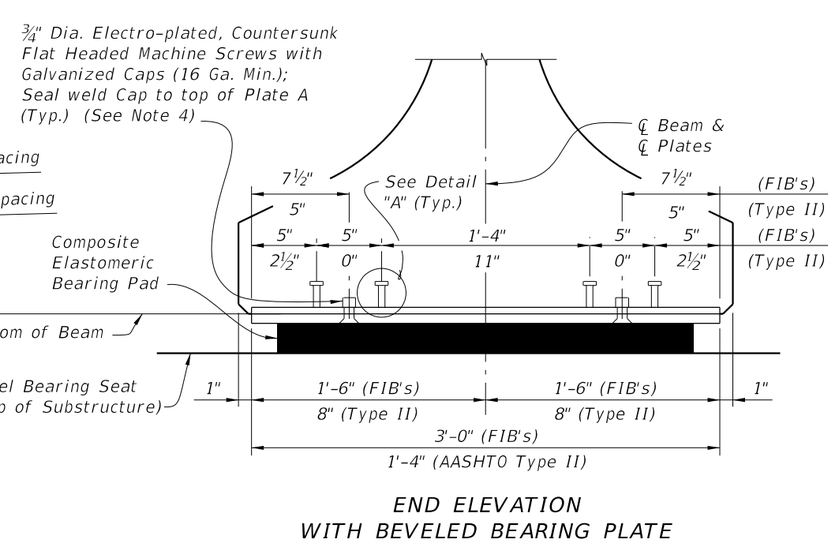
CROSS REFERENCE:
See Sheet 2 for Detail "A"

LEGEND:

* ½" for Pad Type K
** 4" for Pad Type K at End 1
*** 4" for Pad Type K at End 2



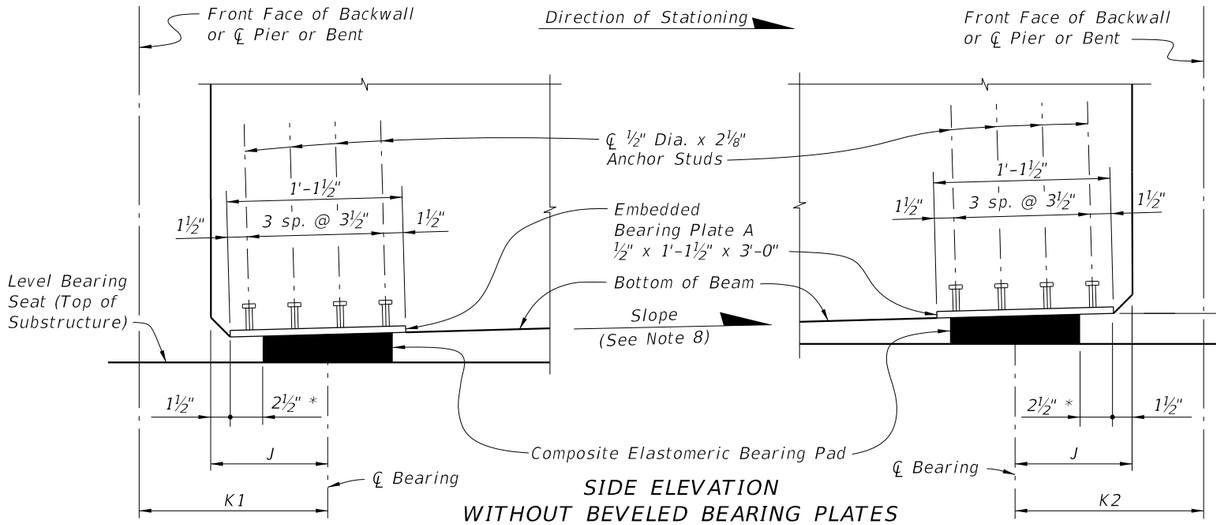
SIDE ELEVATION
WITH BEVELED BEARING PLATES
(Slopes > 2% along ℄ Beam) (See Note 7)



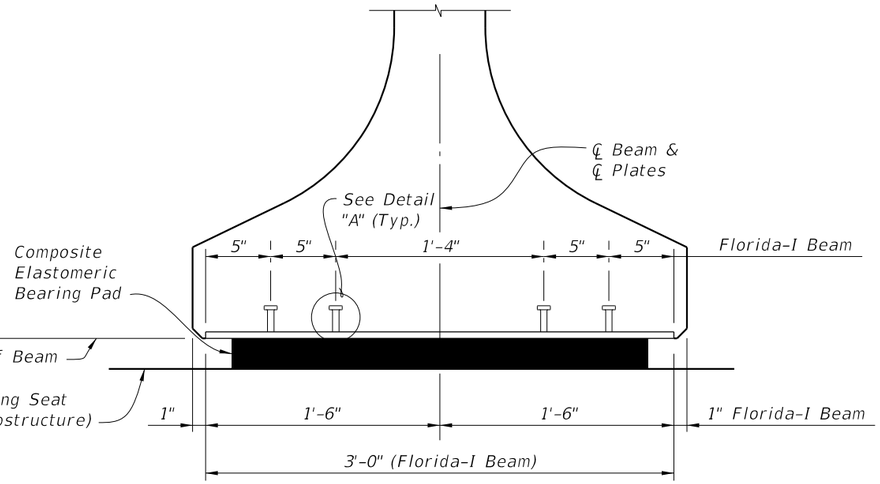
END ELEVATION
WITH BEVELED BEARING PLATE

10:58:22 AM
10/17/2024

LAST REVISION	REVISION	DESCRIPTION:			
07/01/14			FY 2025-26 STANDARD PLANS	BEARING PLATES (TYPE 2) - PRESTRESSED FLORIDA-I AND AASHTO TYPE II BEAMS	INDEX 450-512 / SHEET 1 of 2

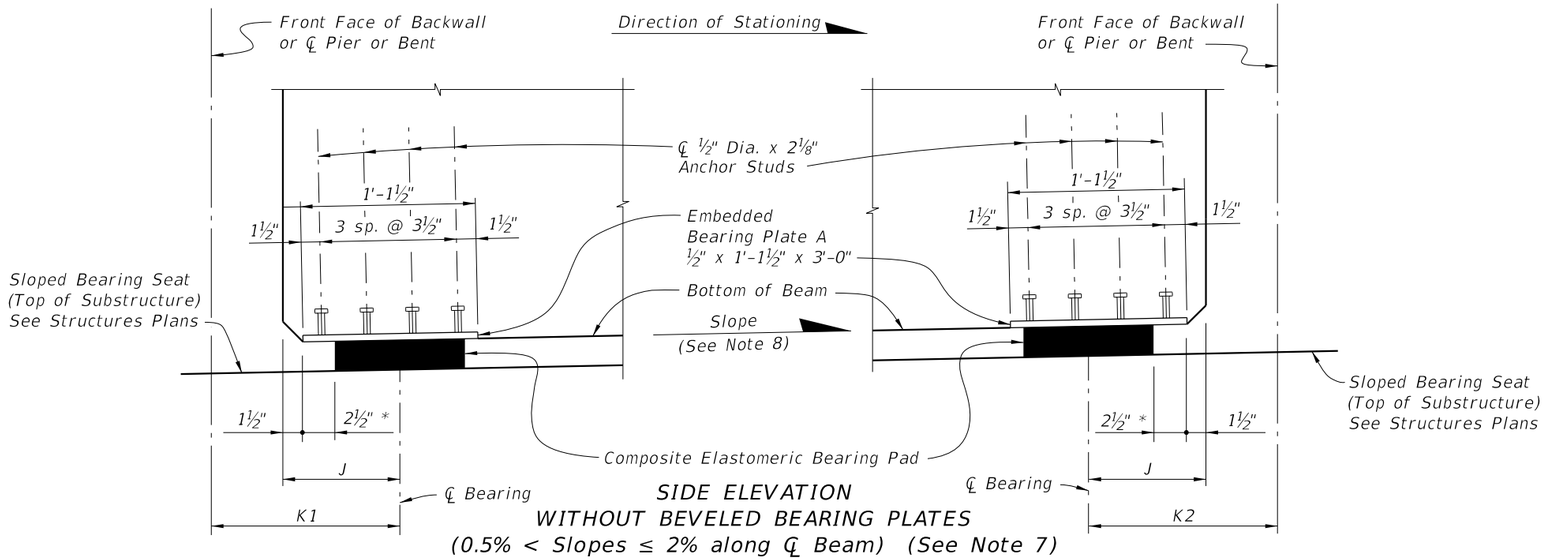


SIDE ELEVATION
WITHOUT BEVELED BEARING PLATES
(Slopes ≤ 0.5% along ℄ Beam) (See Note 7)

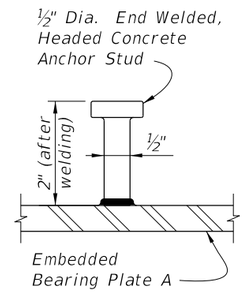


END ELEVATION
WITHOUT BEVELED BEARING PLATE

* ½" for Pad Type K



SIDE ELEVATION
WITHOUT BEVELED BEARING PLATES
(0.5% < Slopes ≤ 2% along ℄ Beam) (See Note 7)

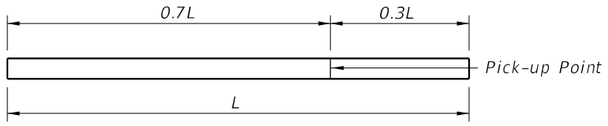


DETAIL "A"

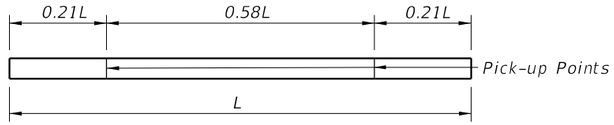
CROSS REFERENCE:
See Sheet 1 for Notes.

10/17/2024 10:58:28 AM

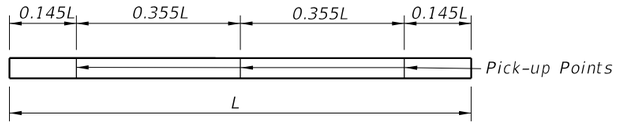
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/14			FY 2025-26 STANDARD PLANS	BEARING PLATES (TYPE 2) - PRESTRESSED FLORIDA-I AND AASHTO TYPE II BEAMS	450-512	2 of 2



1-POINT PICK-UP

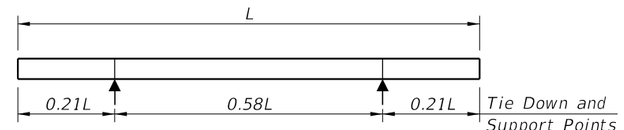


2-POINT PICK-UP

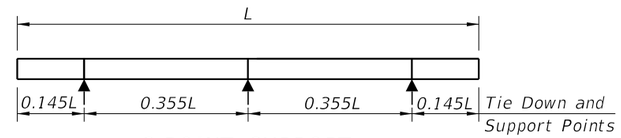


3-POINT PICK-UP

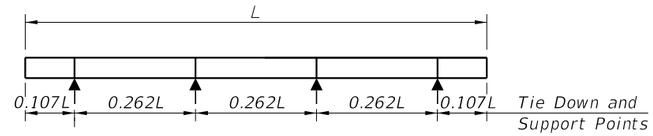
PILE PICK-UP DETAILS



2-POINT SUPPORT



3-POINT SUPPORT



4-POINT SUPPORT

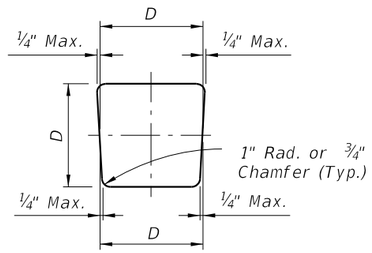
STORAGE AND TRANSPORTATION SUPPORT DETAILS

PRESTRESSED CONCRETE PILE NOTES:

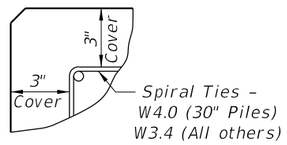
1. Work this Index with the Square Prestressed Concrete Pile Splices (Index 455-002), the Prestressed Concrete Pile Standards (Index 455-012 thru 455-030), the High Moment Capacity Square Prestressed Concrete Pile (Index 455-031) and the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V, except use Class VI for High Moment Capacity Pile (Index 455-031).
   - B. High Capacity Splice Collar: Class V.
   - C. See "GENERAL NOTES" in the Structures Plans for locations where the use of Highly Reactive Pozzolans is required.
3. Concrete strength at time of prestress transfer:
   - A. Piles: 4,000 psi minimum.
   - B. High Moment Capacity Piles: 6,500 psi minimum.
4. Carbon-Steel Reinforcing:
   - A. Bars: Meet the requirements of Specification Section 415.
   - B. Prestressing Strands: Meet the requirements of Specification Section 933.
   - C. Protect all strands permanently exposed to the environment and not embedded under final conditions in accordance with Specification Section 450.
5. Spiral Ties:
   - A. Tie each wrap of the spiral strand to a minimum of two corner strands.
   - B. One full turn required for spiral splices.
6. Pile Splices: Fill dowel holes and form the joint between pile sections with a Type AB Epoxy Compound in accordance with Specification Section 926. Use an Epoxy Bonding Compound or an Epoxy Mortar as recommended by the Manufacturer.

TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS

	D = Square Pile Size (inches)					Required Storage and Transportation Detail	Pick-Up Detail
	12	14	18	24	30		
Maximum Pile Length (Feet)	48	52	59	68	87	2, 3, or 4 point	1 Point
	69	75	85	98	124	2, 3, or 4 point	2 Point
	99	107	121	140	178	3 or 4 point	3 Point



TYPICAL PILE SHAPE FOR MOLD FORMS



DETAIL SHOWING TYPICAL COVER

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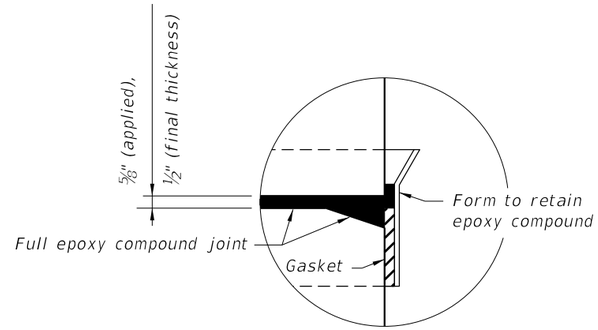
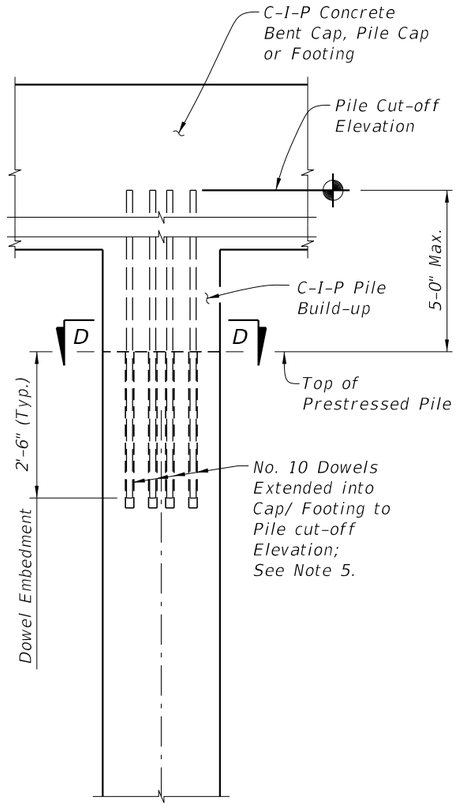
LAST REVISION	REVISION	DESCRIPTION:				
11/01/22			FDOT	FY 2025-26 STANDARD PLANS	SQUARE PRESTRESSED CONCRETE PILES - TYPICAL DETAILS & NOTES	INDEX 455-001 / SHEET 1 of 1

NOTES:

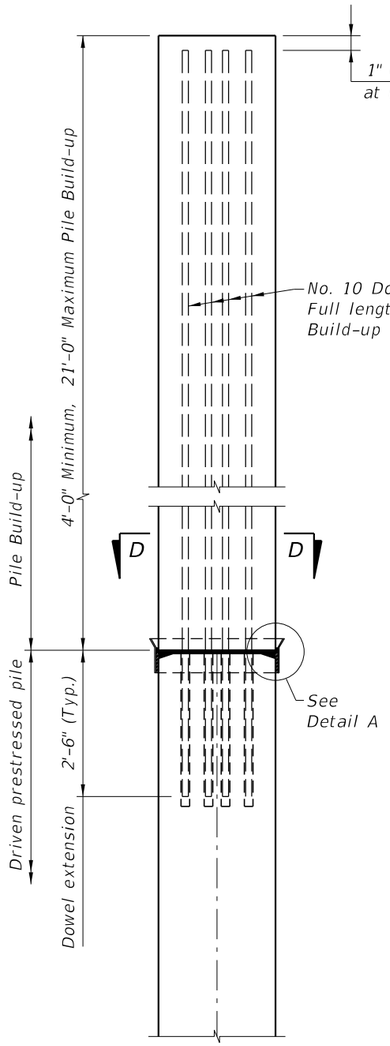
1. For Sections D–D, E–E, & F–F see Index 455–012 thru 455–030 for applicable concrete pile size and Pile Splice Reinforcement Details.
2. Prestressing strands, spiral ties and/or reinforcement are not shown for clarity.
3. When pile splices are necessary due to shipping and handling limitations, use the "Drivable Planned Prestressed Precast Splice Detail" or Mechanical Pile Splices on the Approved Products List (APL).
4. When preformed dowel holes are used, continue the 1" spiral tie pitch to 4'–0" below the head of the pile, See Index 455–018, 455–020 & 455–024. For preformed holes; use either removable preforming material or stay–in–place corrugated galvanized steel ducts meeting ASTM Specification A653, Coating Designation G90, 26 gauge. Use 2" diameter ducts with a minimum corrugation (rib) height of 0.12 in. fabricated with either welded or interlocked seams. Galvanizing of welded seams is not required.
5. For tension piles where top of Prestressed Pile is less than 3 feet below Pile Cut–off Elevation, extend No. 10 Dowels into cap beyond Pile Cut–off Elevation to achieve development as approved by the Engineer.



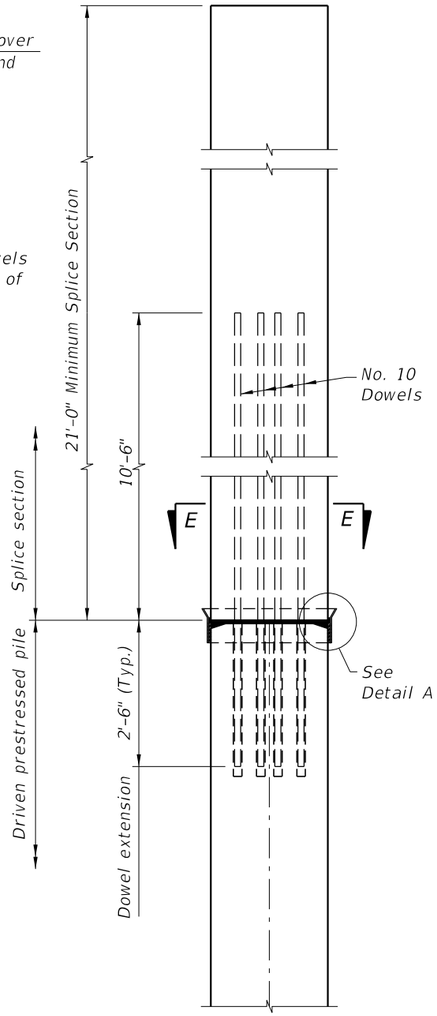
DETAIL A



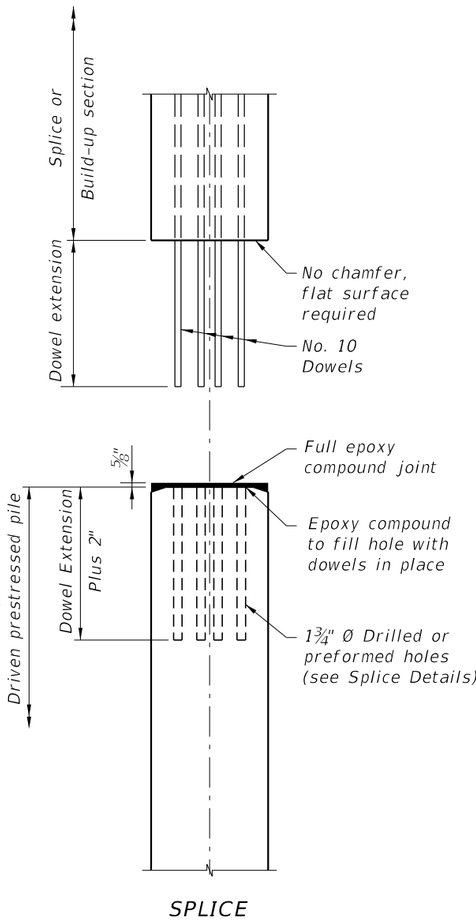
UNPLANNED REINFORCED C-I-P PILE BUILD-UP DETAIL



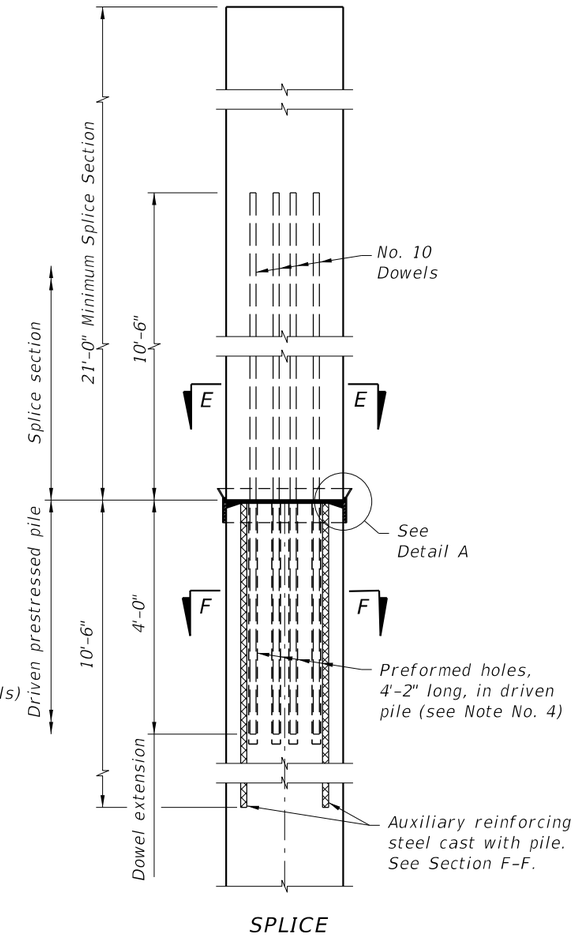
NON-DRIVABLE UNPLANNED REINFORCED PRECAST PILE BUILD-UP DETAIL



DRIVABLE UNPLANNED PRESTRESSED PRECAST PILE SPLICE DETAIL



SPLICE BEFORE BONDING



SPLICE AFTER BONDING

DRIVABLE PLANNED PRESTRESSED PRECAST PILE SPLICE DETAIL

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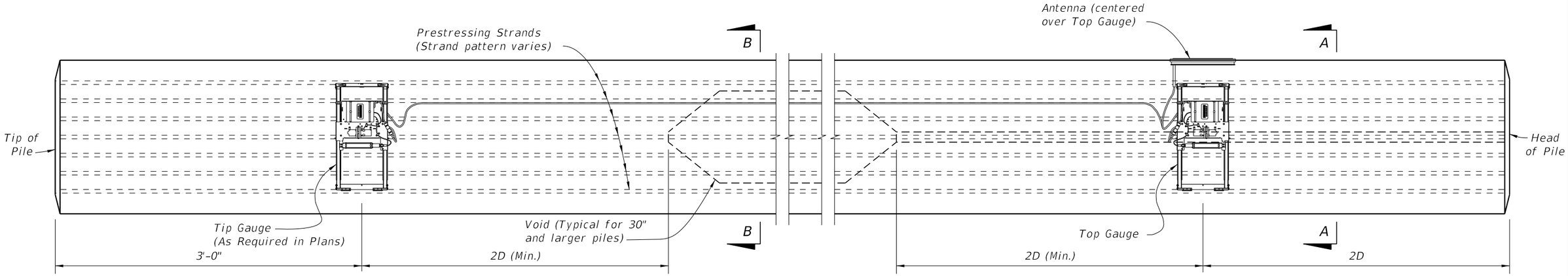
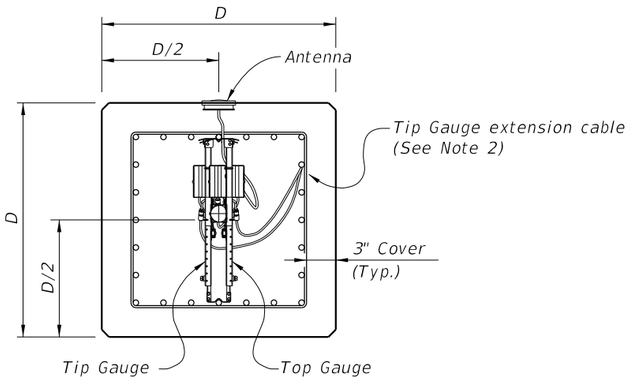
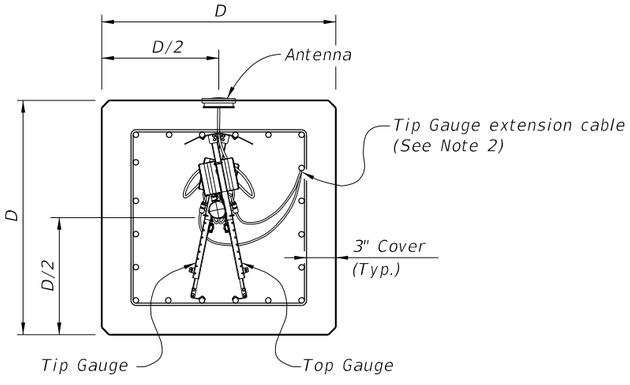
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	SQUARE PRESTRESSED CONCRETE PILE SPLICES	INDEX	SHEET
11/01/22						455-002	1 of 1



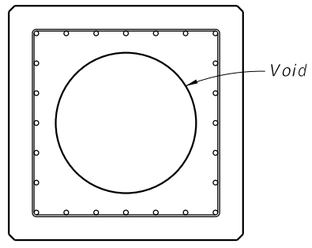
ELEVATION



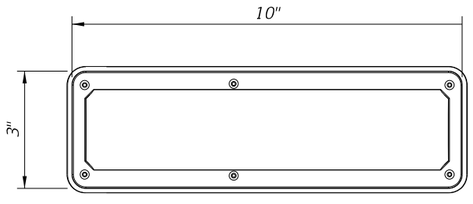
SECTION A-A
(Strand Pattern with odd number of strands per face)



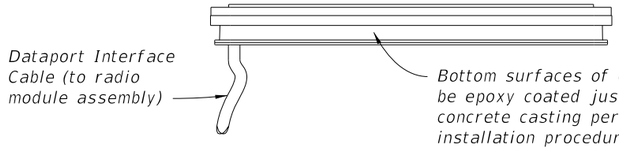
SECTION A-A
(Strand Pattern with even number of strands per face)



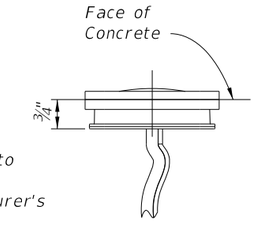
SECTION B-B
(Showing Voided Pile, Solid Pile Similar)



ANTENNA TOP VIEW



ANTENNA SIDE VIEW



ANTENNA END VIEW

NOTES:

1. For piles 18" and larger installed for bridge foundations, provide EDC Instrumentation in accordance with Specification Section 455.

2. Attach Tip Gauge extension cable to the underside of the strand shown in Section A–A. Secure cable to strand with nylon wire ties spaced a maximum of 6ft. along cable.

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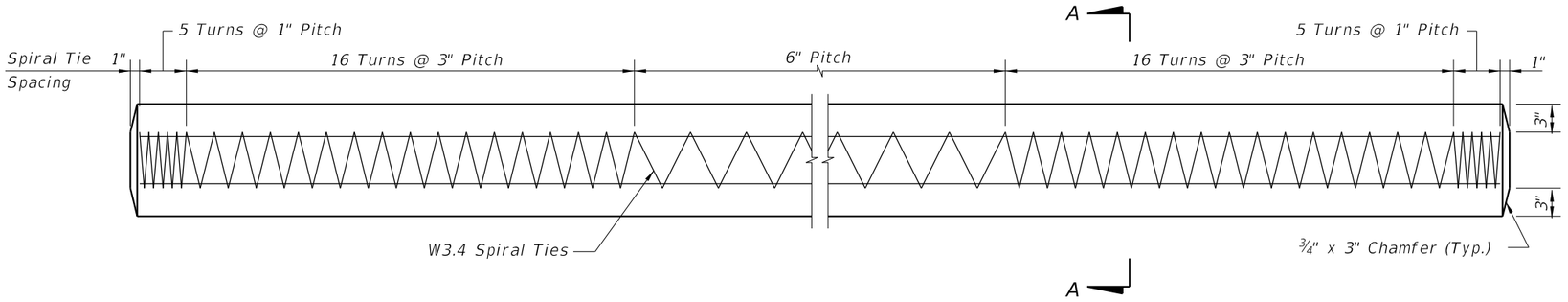
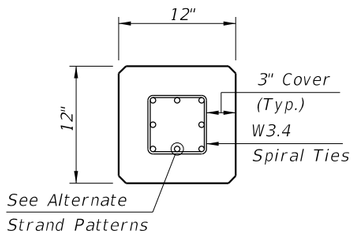
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20			FY 2025-26 STANDARD PLANS	SQUARE PRESTRESSED CONCRETE PILES - EDC INSTRUMENTATION	455-003	1 of 1



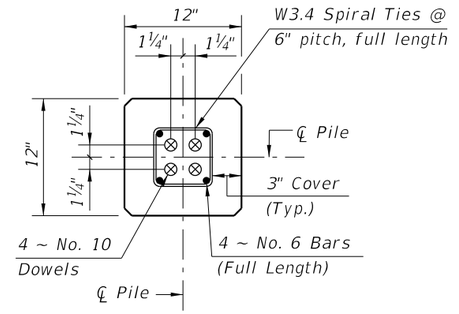
ELEVATION



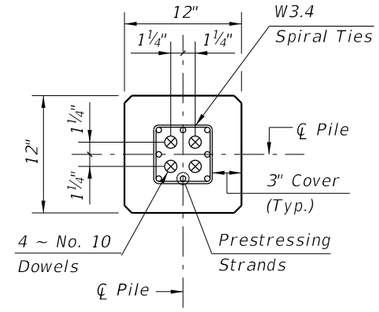
SECTION A-A

ALTERNATE STRAND PATTERNS

4 ~ 0.6" Ø, Grade 270 LRS, at 44 kips
8 ~ ½" Ø (Special), Grade 270 LRS, at 25 kips
8 ~ ½" Ø, Grade 270 LRS, at 24 kips
8 ~ 7/16" Ø, Grade 270 LRS, at 23 kips
12 ~ ⅜" Ø, Grade 270 LRS, at 16 kips



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Splice Detail)



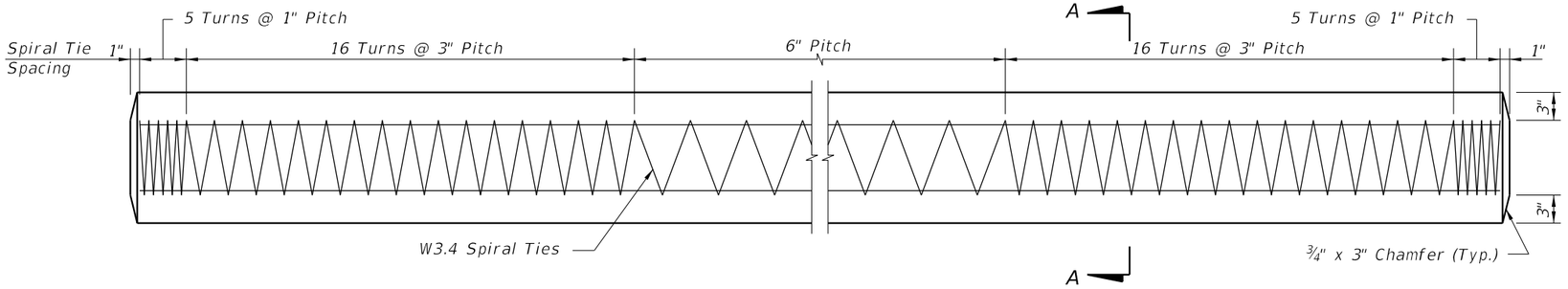
SECTION E-E
(See Drivable Unforeseen Prestressed Precast Pile Splice Detail)

PILE SPLICE REINFORCEMENT DETAILS

NOTES:
1. Work this Index with Index 450-001 – Typical Details and Notes for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

10/17/2024 10:58:55 AM

LAST REVISION	REVISION	DESCRIPTION:				
01/01/12			FY 2025-26 STANDARD PLANS	12" SQUARE PRESTRESSED CONCRETE PILE	INDEX 455-012	SHEET 1 of 1



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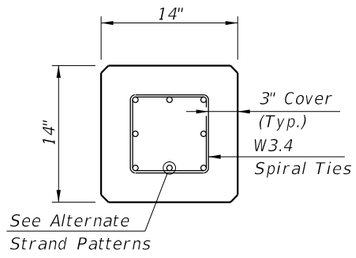
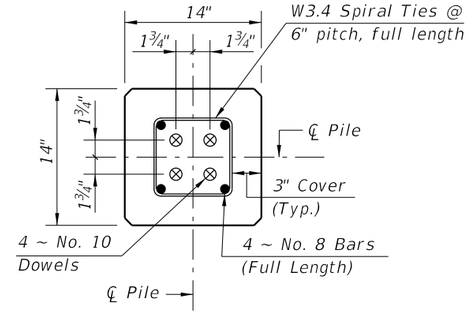


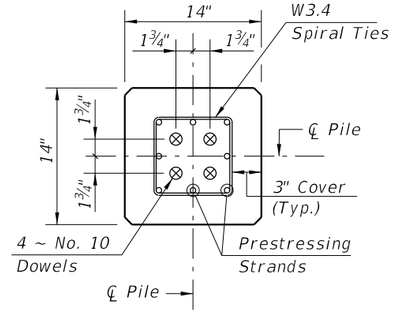
SECTION A-A

ALTERNATE STRAND PATTERNS

8 ~ 0.6" Ø, Grade 270 LRS, at 33 kips
8 ~ ½" Ø (Special), Grade 270 LRS, at 31 kips
8 ~ ½" Ø, Grade 270 LRS, at 31 kips
12 ~ 7/16" Ø, Grade 270 LRS, at 21 kips
16 ~ ⅜" Ø, Grade 270 LRS, at 16 kips



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Splice Detail)



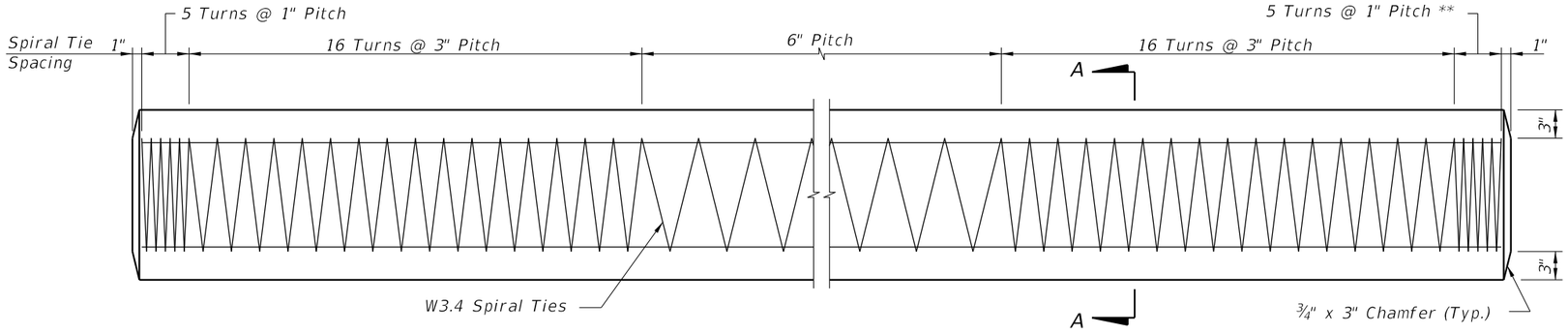
SECTION E-E
(See Drivable Unforeseen Prestressed Precast Splice Detail)

PILE SPLICE REINFORCEMENT DETAILS

NOTES:
1. Work this Index with Index 455-001 – Typical Details and Notes for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

10/17/2024 10:59:03 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	14" SQUARE PRESTRESSED CONCRETE PILE	INDEX	SHEET
01/01/12						455-014	1 of 1

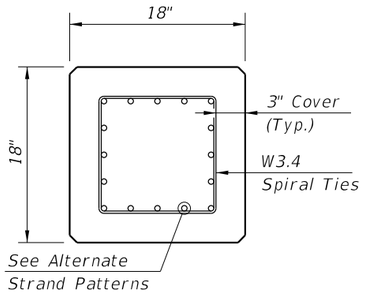


ELEVATION

** See Note 4 on Index 455-002

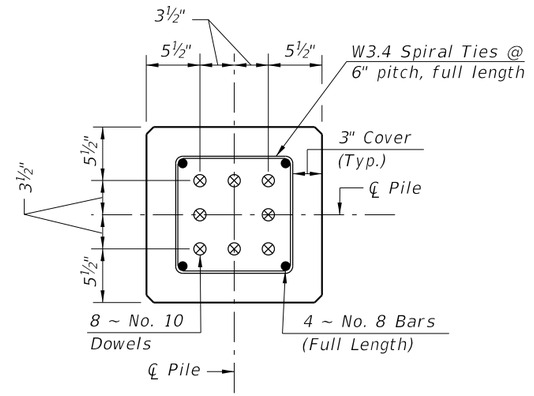
ALTERNATE STRAND PATTERNS

12 ~ 0.6" Ø, Grade 270 LRS, at 35 kips
12 ~ ½" Ø (Special), Grade 270 LRS, at 34 kips
16 ~ ½" Ø, Grade 270 LRS, at 26 kips
20 ~ 7/16" Ø, Grade 270 LRS, at 21 kips
24 ~ ⅜" Ø, Grade 270 LRS, at 17 kips

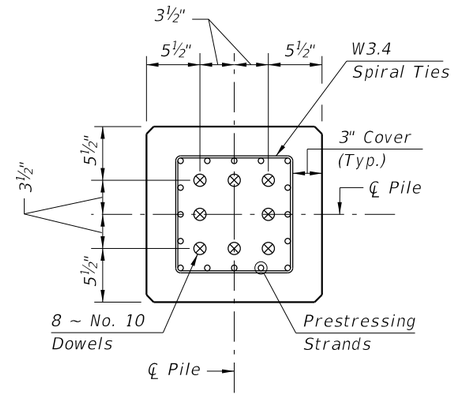


SECTION A-A

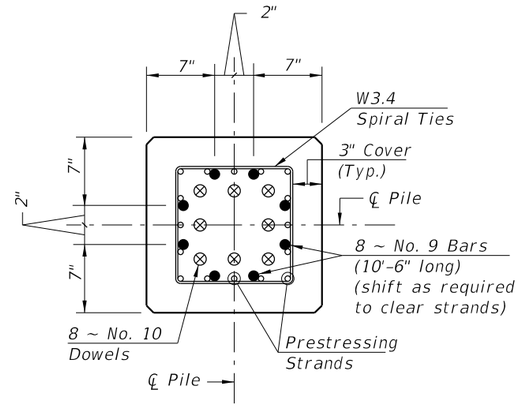
NOTES:
1. Work this Index with Index 455-001 – Typical Details and Notes for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Splice Detail)



SECTION E-E
(See Drivable Prestressed Precast Splice Detail)

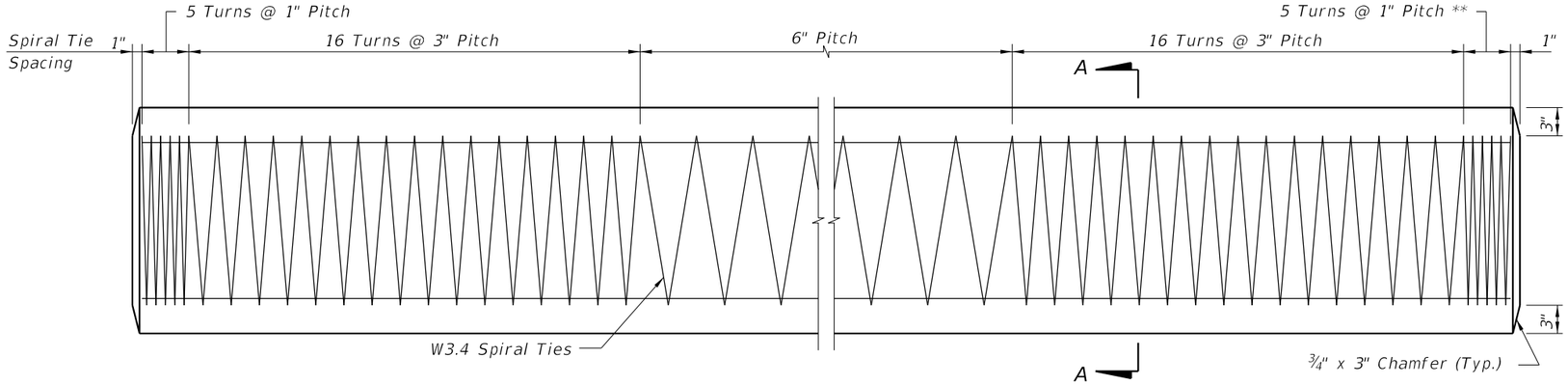


SECTION F-F
(See Drivable Preplanned Splice Detail)

PILE SPLICE REINFORCEMENT DETAILS

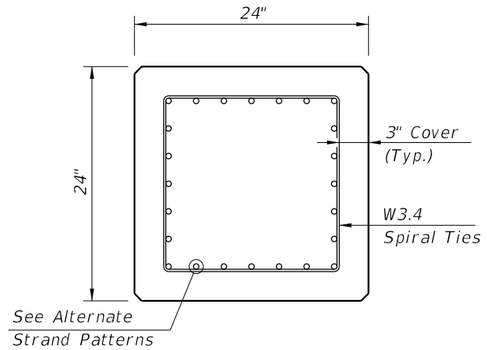
10/17/2024 10:59:09 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/12			FY 2025-26 STANDARD PLANS	18" SQUARE PRESTRESSED CONCRETE PILE	455-018	1 of 1



ELEVATION

** See Note 4 on Index 455-002

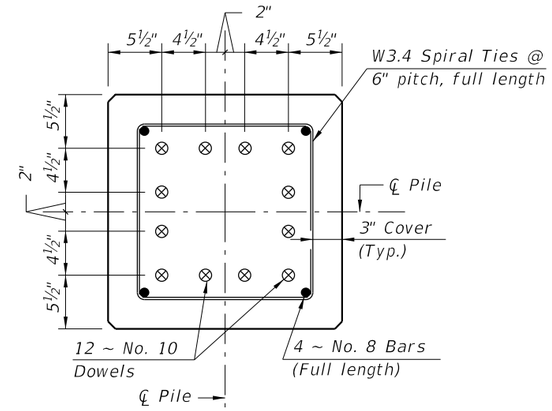


SECTION A-A

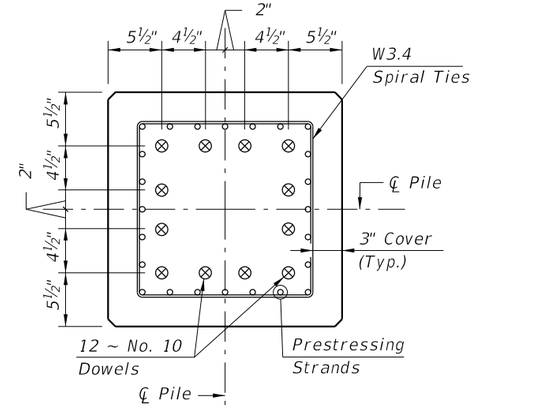
ALTERNATE STRAND PATTERNS

16 ~ 0.6" Ø, Grade 270 LRS, at 44 kips
20 ~ ½" Ø (Special), Grade 270 LRS, at 34 kips
24 ~ ½" Ø, Grade 270 LRS, at 31 kips

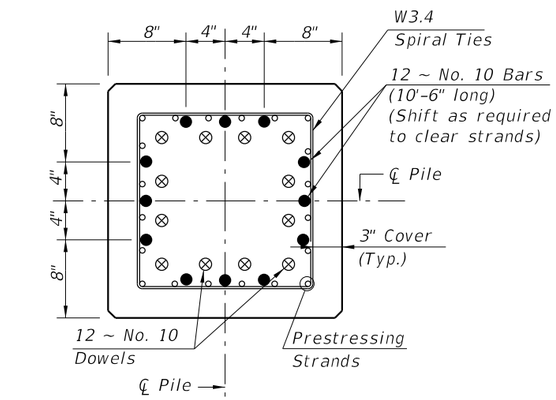
NOTES:
1. Work this Index with Index 455-001 – Typical Details and Notes for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Splice Detail)



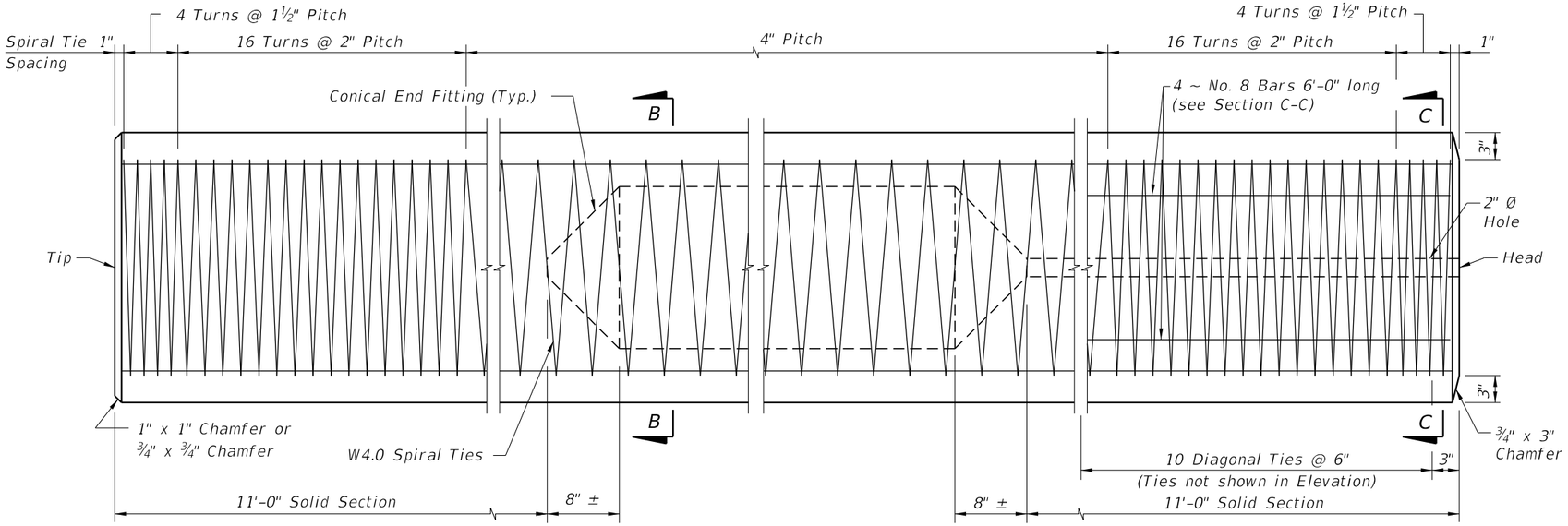
SECTION E-E
(See Drivable Prestressed Precast Pile Splice Detail)



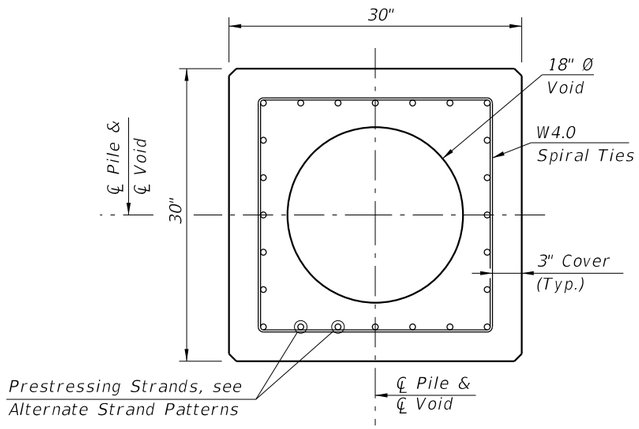
SECTION F-F
(See Drivable Preplanned Pile Splice Detail)

10/17/2024 10:59:15 AM

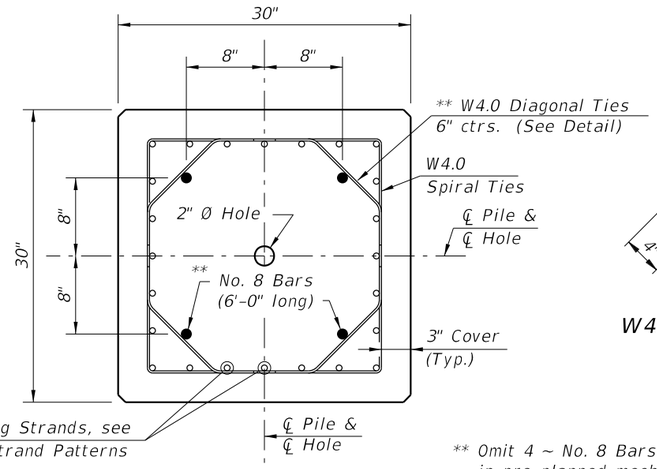
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	24" SQUARE PRESTRESSED CONCRETE PILE	INDEX	SHEET
01/01/12					455-024	1 of 1



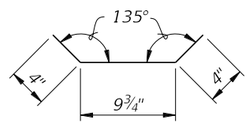
ELEVATION



SECTION B-B
(See Pile Splice Reinforcement Details)



SECTION C-C
(See Pile Splice Reinforcement Details)



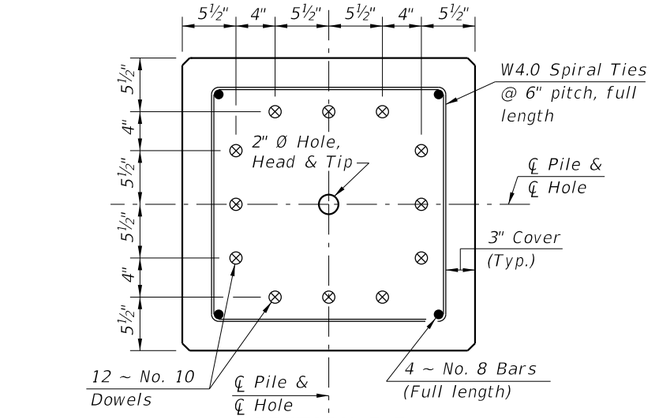
W4.0 DIAGONAL TIE DETAIL

** Omit 4 ~ No. 8 Bars and Diagonal Ties in pre-planned mechanical splice.

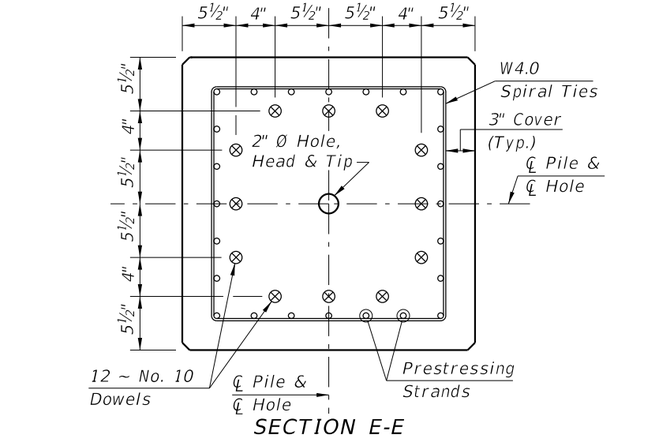
ALTERNATE STRAND PATTERNS

20 ~ 0.6" Ø, Grade 270 LRS, at 41 kips
24 ~ ½" Ø (Special), Grade 270 LRS, at 34 kips
28 ~ ½" Ø, Grade 270 LRS, at 29 kips

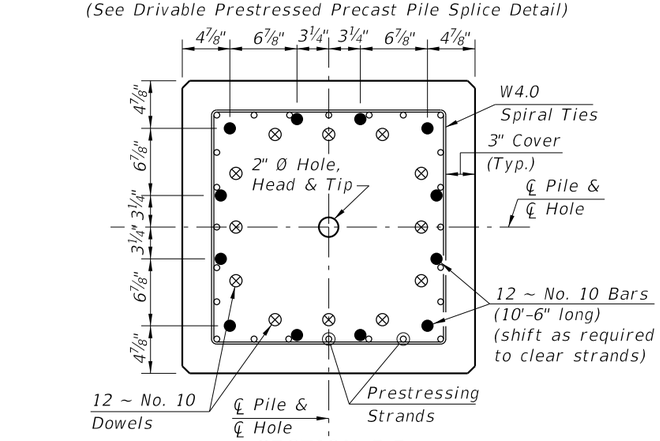
NOTES:
1. Venting shall be provided by the use of a 1" Ø PVC conduit through a substructure cap or column. Voids between segments of spliced piles shall be connected by 2" Ø hole(s).
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows: Place one strand at each corner and place the remaining strands equally spaced between the corner strands. The total strand pattern shall be concentric with the nominal concrete section of the pile.
3. CONTRACTOR OPTION: The 30" pile may be cast SOLID by omitting the 18" Ø void and the 2" Ø vent hole. In this event, the Contractor shall submit calculations for approval and a proposed strand configuration that provide net prestressing after losses equal to 1000 psi. Alternate configurations for the Diagonal Ties, to maintain the position of the 4 ~ No. 8 Bars, may be approved by the Engineer.
4. Work this Index with Index 455-001 – Notes and Details for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.



SECTION D-D
(See Nondrivable Unforeseen Reinforced Precast Pile Splice Detail)



SECTION E-E
(See Drivable Prestressed Precast Pile Splice Detail)

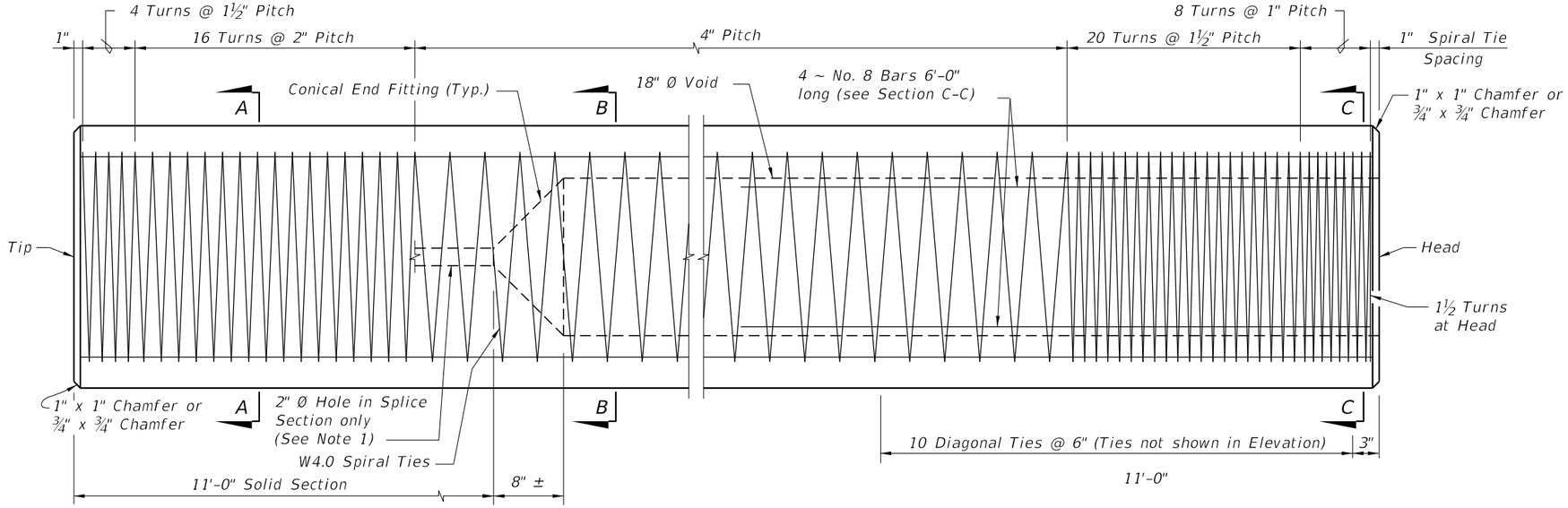


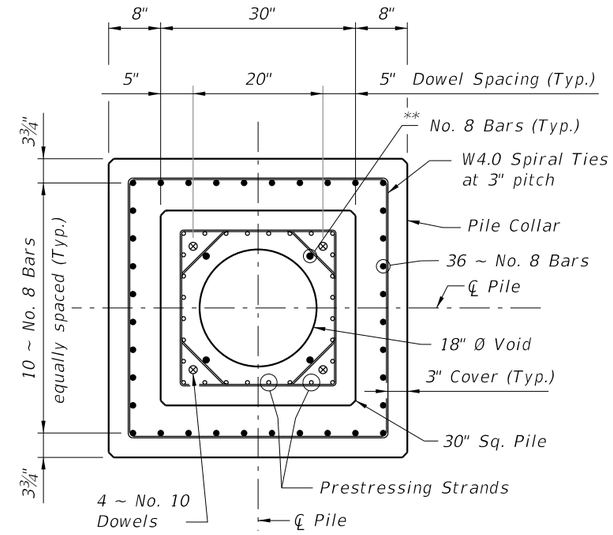
SECTION F-F
(See Drivable Preplanned Pile Splice Detail)

PILE SPLICE DETAILS

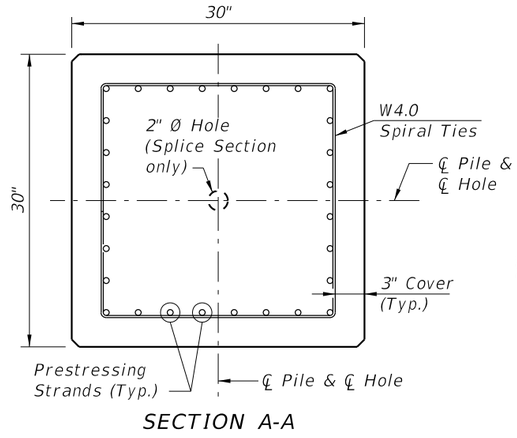
10/17/2024 10:59:22 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/22			FY 2025-26 STANDARD PLANS	30" SQUARE PRESTRESSED CONCRETE PILE	INDEX 455-030 / SHEET 1 of 1



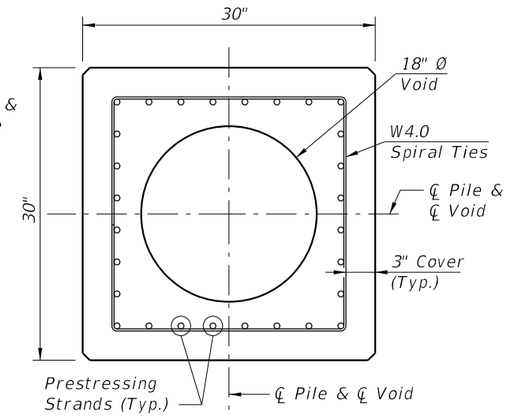


SECTION D-D
SECTION THRU PILE COLLAR

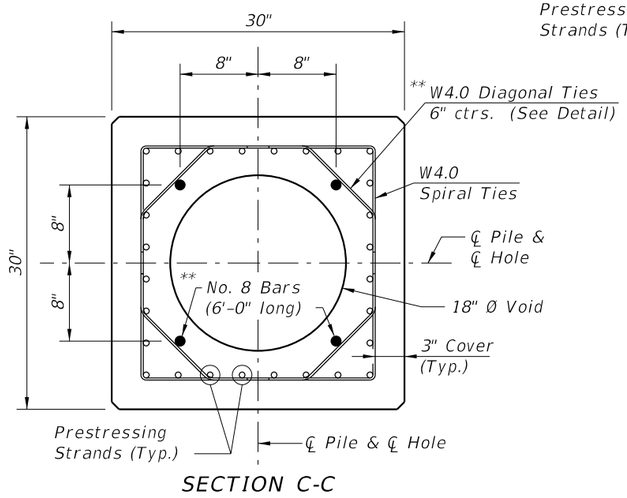


SECTION A-A

ELEVATION



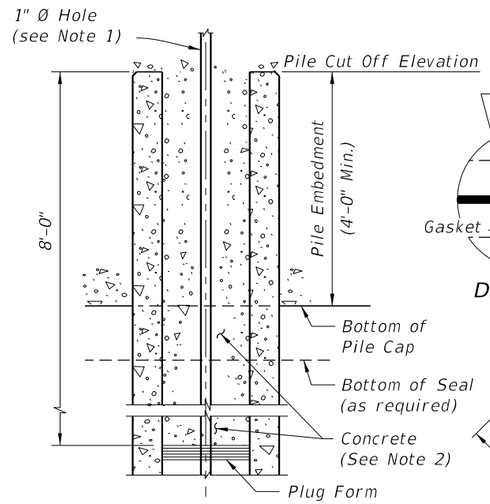
SECTION B-B



SECTION C-C

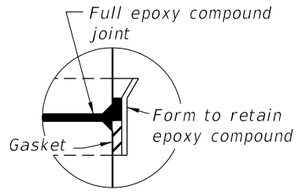
STRAND PATTERN

28 ~ 0.6" Ø, Grade 270 LRS, at 29.5 kips

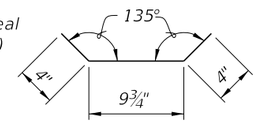


SECTION THROUGH PILE AT PILE CAP

** Omit 4 ~ No. 8 Bars and Diagonal Ties in pre-planned mechanical splice.

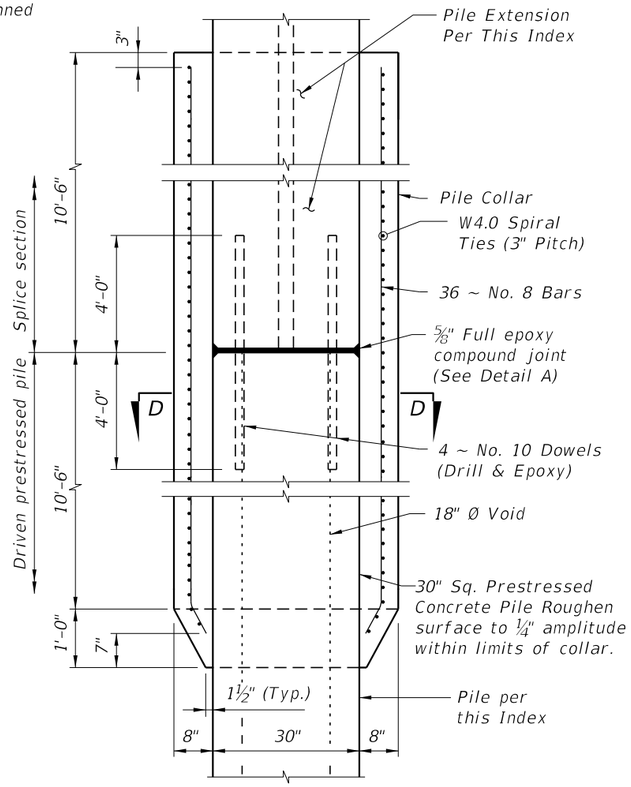


DETAIL A



W4.0 DIAGONAL TIE DETAIL

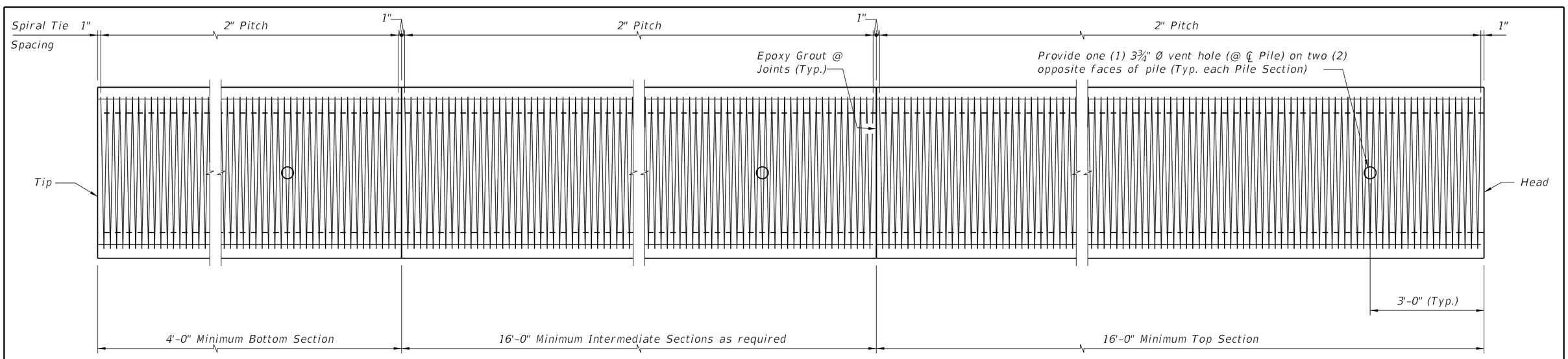
NOTES:
1. Venting shall be provided by the use of a 1" Ø PVC conduit through a substructure cap or column. Voids between segments of spliced piles shall be connected by 2" Ø hole(s).
2. After the pile is driven and cut to elevation, the top 8'-0" of the 18" Ø Void shall be filled with concrete. Prior to filling the top 8'-0" of the 18" Ø Void with concrete, strip the cardboard form material from the void. The concrete fill material shall be of the same type and strength as called for in the pile cap and paid for as substructure concrete.
3. Collar concrete shall reach a strength of 6,000 psi before pile driving is resumed.
4. Work this Index with Index 455-001 – Notes and Details for Square Prestressed Concrete Piles.



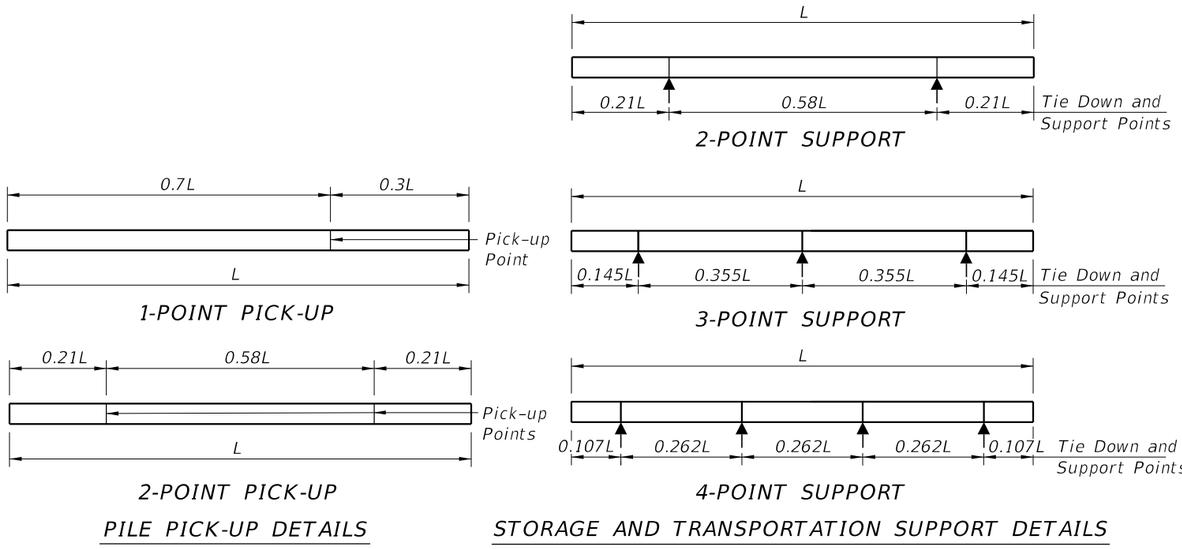
DETAIL OF PILE COLLAR FOR HIGH MOMENT CAPACITY 30" SQUARE PRESTRESSED PILE
-PILE SPLICE DETAIL-

10/17/2024 10:59:29 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/23			FDOT FY 2025-26 STANDARD PLANS	30" SQUARE PRESTRESSED CONCRETE PILE - HIGH MOMENT CAPACITY	INDEX 455-031	SHEET 1 of 1



ELEVATION



PILE PICK-UP DETAILS

STORAGE AND TRANSPORTATION SUPPORT DETAILS

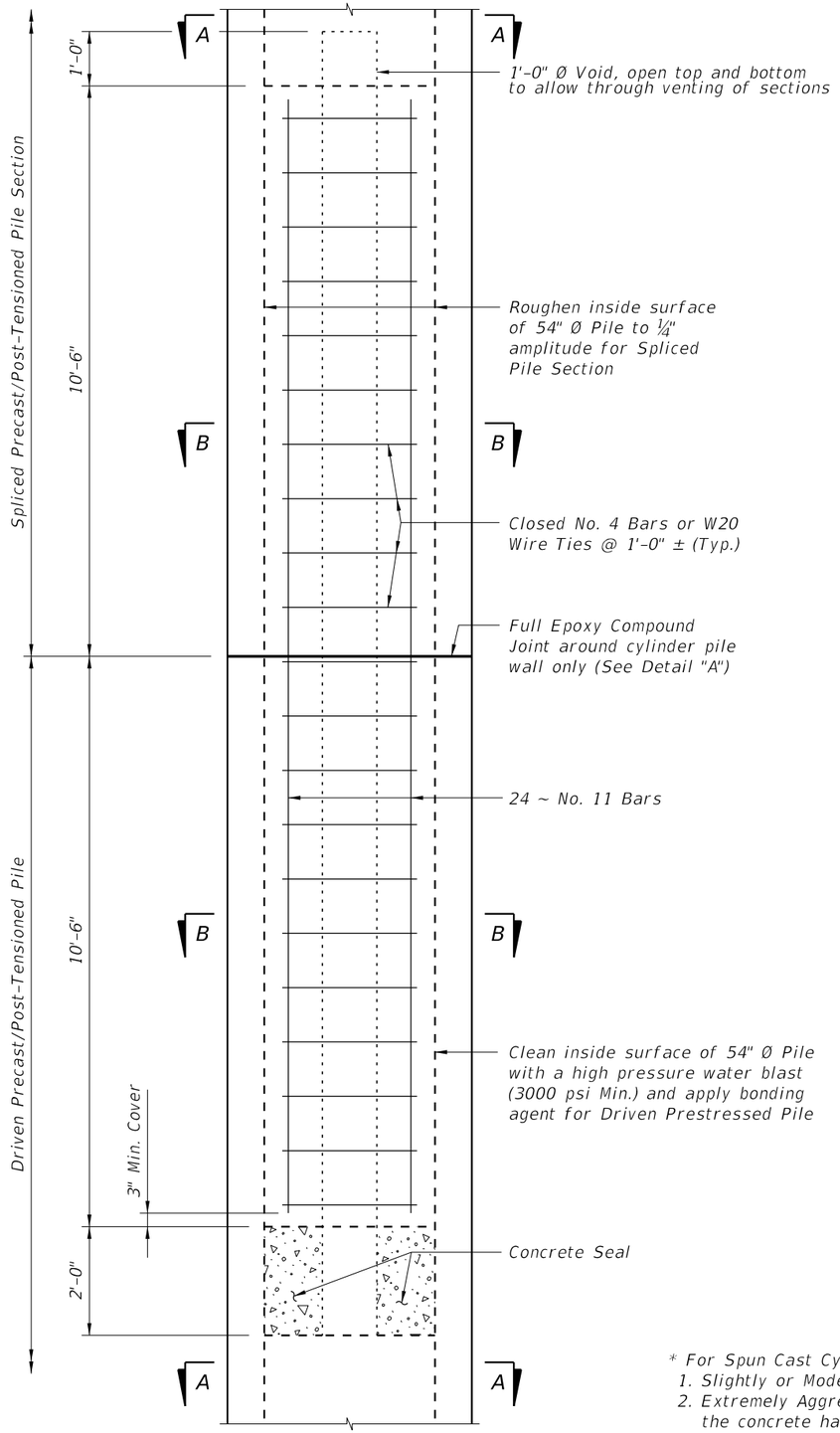
TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS		
Maximum Pile Length (Feet)	Required Storage and Transportation Detail	Pick-Up Detail
119	2, 3, or 4 point	1 Point
170	2, 3, or 4 point	2 Point

NOTES

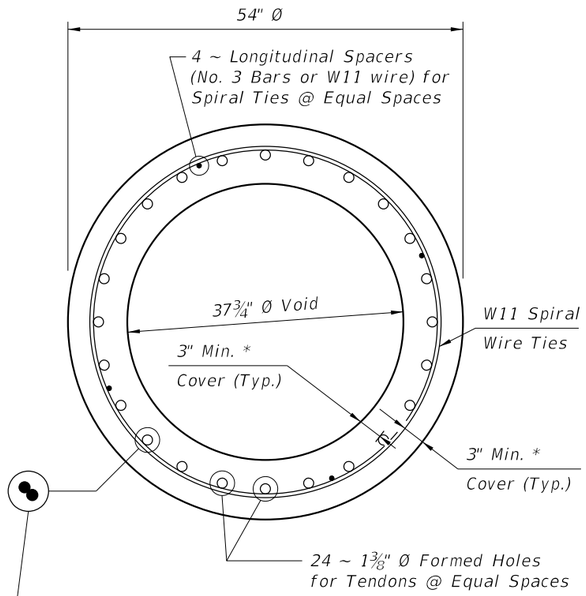
1. Work this Index with the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V.
   - B. Splice: Class IV.
   - C. See "GENERAL NOTES" in Structures Plans for locations where the use of Highly Reactive Pozzolans is required.
3. Concrete Strength at time of prestress transfer:
   - A. Piles: 6,000 psi minimum.
4. Carbon-Steel Reinforcing:
   - A. Bars: Meet the requirements of Specification Section 415.
   - B. Prestressing Strands: Meet the requirements of Specification Section 933.
   - C. Tendons: Two seven-wire ½" dia. (Special) Grade 270, low-relaxation strands tensioned to 33.8 kips.
   - D. Protect all carbon-steel strands permanently exposed to the environment and not embedded under final conditions in accordance with Specification Section 450.
   - E. Spiral Ties:
     - a. One half turn is required for carbon-steel spiral splice.
     - b. One full turn is required at the pile head and tip.
5. Pile Splices:
   - A. Epoxy: Type AB Epoxy Compound or Mortar must meet the requirements of Specification Section 926.
     - a. Use a Type AB Epoxy Bonding Compound or Epoxy Mortar, as recommended by the Manufacturer, to form the joint between pile sections
     - b. Use a Type AB Epoxy Bonding Compound as a bonding agent on internal pile surfaces.
   - B. Driving: Resume pile driving after splice concrete reaches a minimum strength of 5,500 psi.
6. Mark piles at the pick-up points to indicate the proper points for attaching handling lines.

10/17/2024 10:59:36 AM

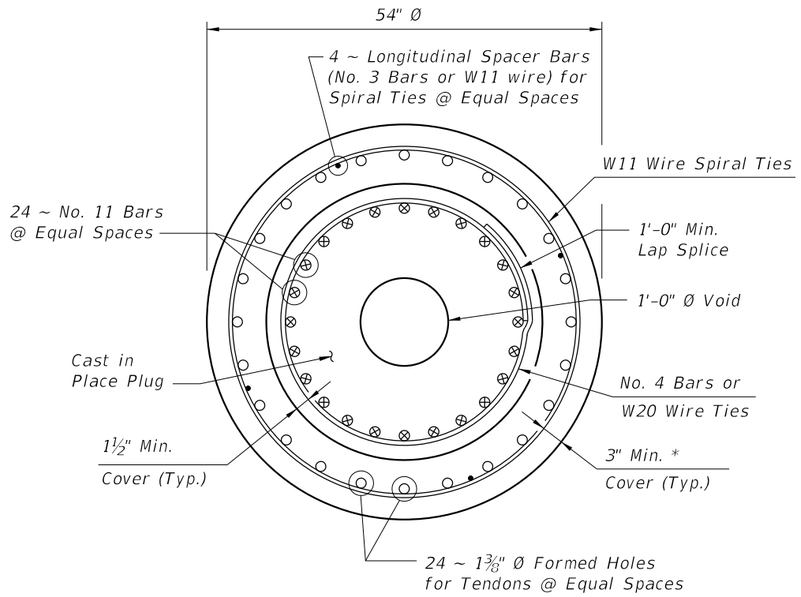
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	54" PRECAST/POST-TENSIONED CONCRETE CYLINDER PILE	INDEX	SHEET
11/01/22						455-054	1 of 2



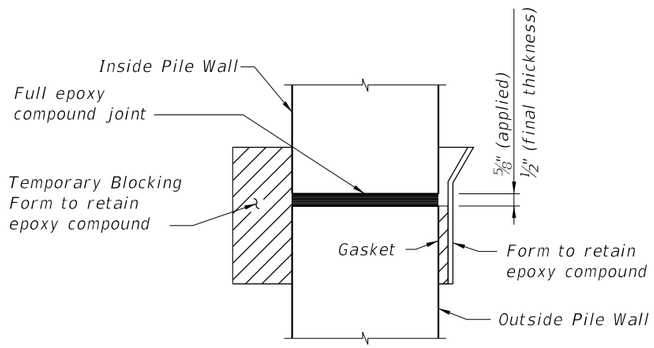
DRIVABLE UNFORESEEN FIELD SPLICE DETAIL
(Cast-In-Place Plug)



SECTION A-A



SECTION B-B

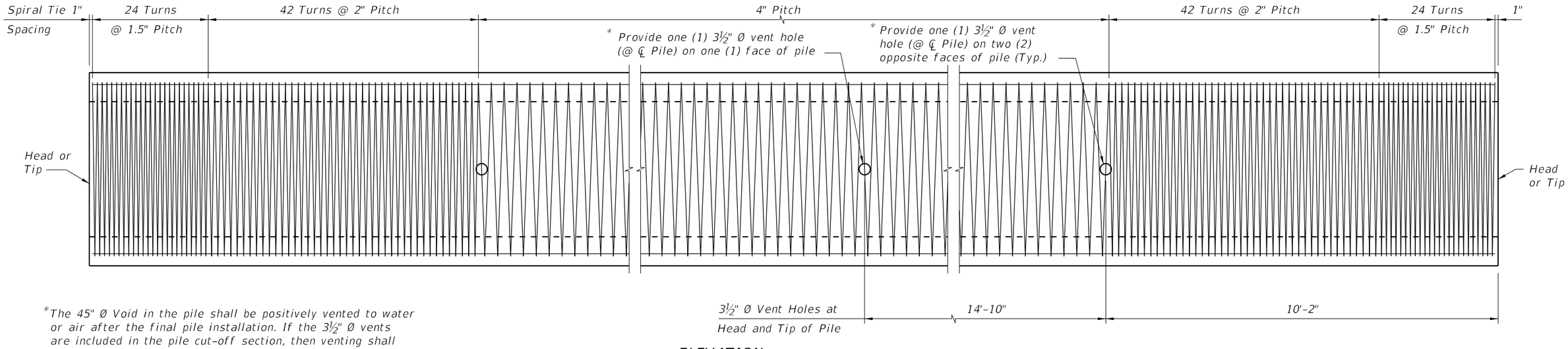


DETAIL "A"

* For Spun Cast Cylinder Piles, the following requirements for concrete cover apply:
1. Slightly or Moderately Aggressive Environments: The concrete cover may be reduced to 2 inches.
2. Extremely Aggressive Environments: The concrete cover may be reduced to 2 inches as long as the concrete has a documented chloride ion penetration apparent diffusion coefficient with a mean value of 0.005 in² per year or less; otherwise, a 3-inch concrete cover is required.

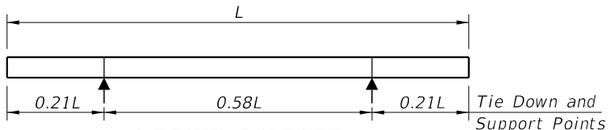
10/17/2024 10:59:43 AM

LAST REVISION	REVISION	DESCRIPTION:			
07/01/13			FY 2025-26 STANDARD PLANS	54" PRECAST/POST-TENSIONED CONCRETE CYLINDER PILE	INDEX 455-054 / SHEET 2 of 2

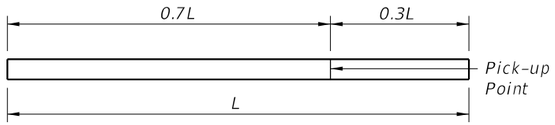


*The 45" Ø Void in the pile shall be positively vented to water or air after the final pile installation. If the 3½" Ø vents are included in the pile cut-off section, then venting shall be provided by the use of a 1" Ø PVC conduit through the substructure cap or column.

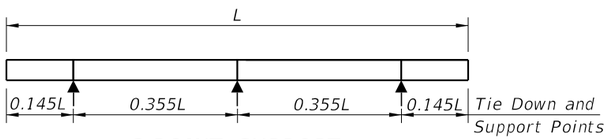
ELEVATION



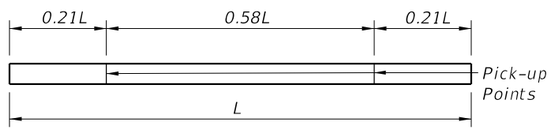
2-POINT SUPPORT



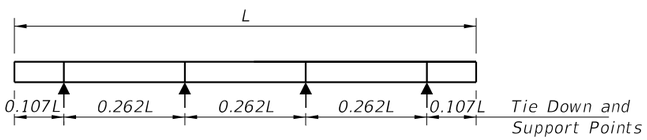
1-POINT PICK-UP



3-POINT SUPPORT



2-POINT PICK-UP



4-POINT SUPPORT

PILE PICK-UP DETAILS

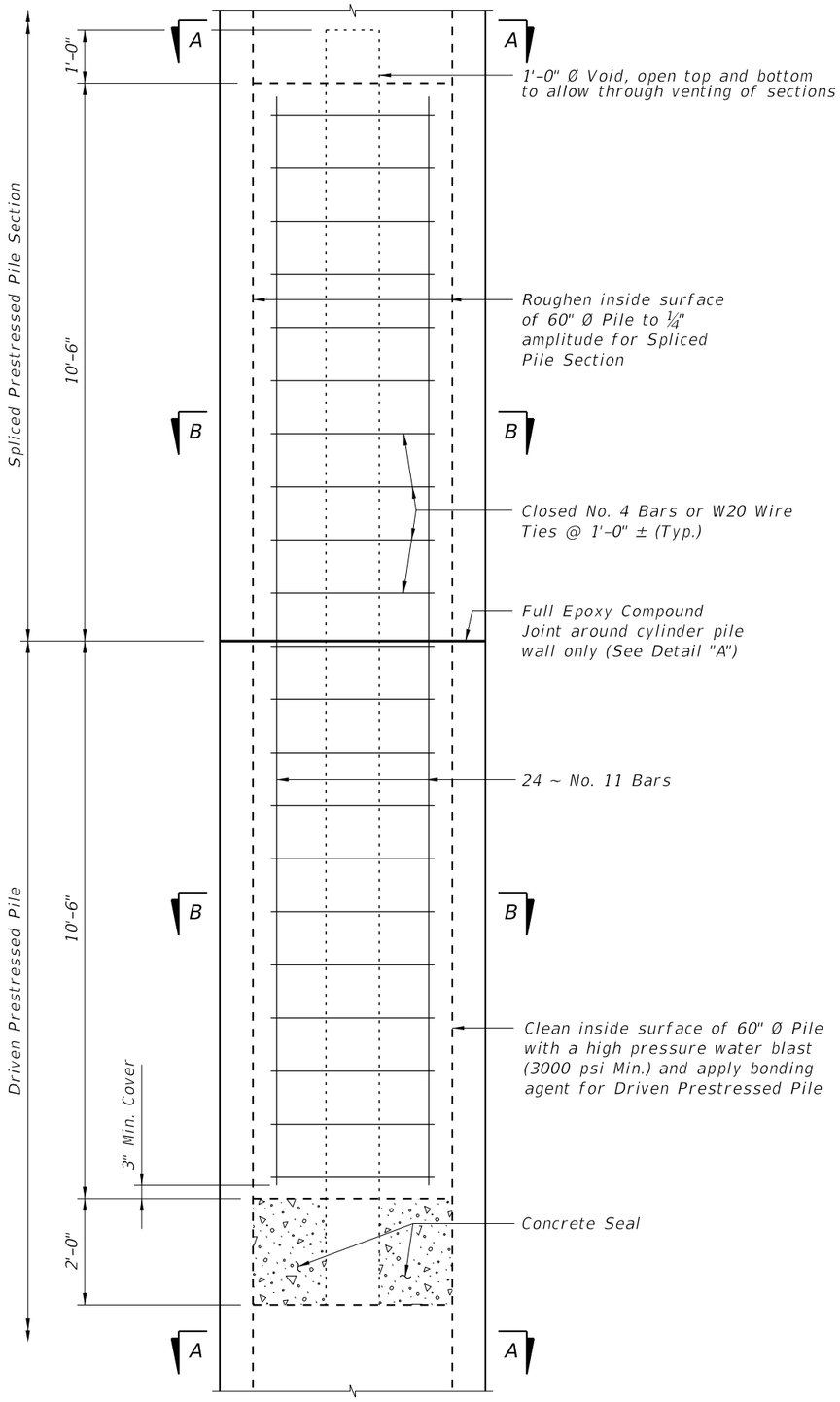
STORAGE AND TRANSPORTATION SUPPORT DETAILS

TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS		
Maximum Pile Length (Feet)	Required Storage and Transportation Detail	Pick-Up Detail
122	2, 3, or 4 point	1 Point
174	2, 3, or 4 point	2 Point

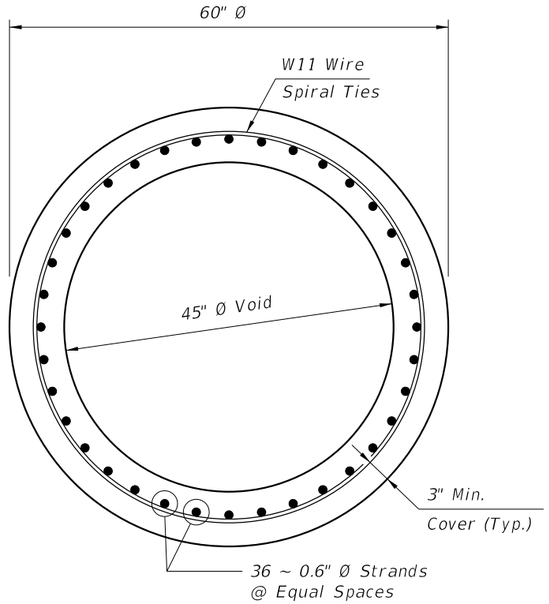
NOTES

1. Work this Index with the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V
   - B. Splice Collar: Class IV
   - C. See "GENERAL NOTES" in the Structures Plans for locations where the use of Highly Reactive Pozzolans is required.
3. Concrete Strength at time of prestress transfer:
   - A. Piles: 4,000 psi minimum.
4. Carbon-Steel Reinforcing:
   - A. Bars: Meet the requirements of Specification Section 415
   - B. Prestressing Strands: Use 0.6 dia. carbon-steel, Grade 270, low-relaxation strand stressed to 44.0 kips that meets the requirements of Specification Section 933.
   - C. Protect all carbon-steel strands permanently exposed to the environment and not embedded under final conditions in accordance with Specification Section 450.
5. Spiral Ties:
   - A. One half turn is required for carbon-steel spiral splices
   - B. One full turn is required at the head and tip of each pile
6. Pile Splices:
   - A. Epoxy: Type AB Epoxy Compound or Epoxy Mortar must meet the requirements of Specification Section 926.
     - a. Use a Type AB Epoxy Bonding Compound or Epoxy Mortar, as recommended by the Manufacturer, to form the joint between pile sections.
     - b. Use a Type AB Epoxy Bonding Compound as a bonding agent on internal pile surfaces.
   - B. Splices: Resume pile driving after the splice concrete reaches a minimum strength of 5,500 psi.
7. Mark piles at the pick-up points to indicate the proper points for attaching handling lines.

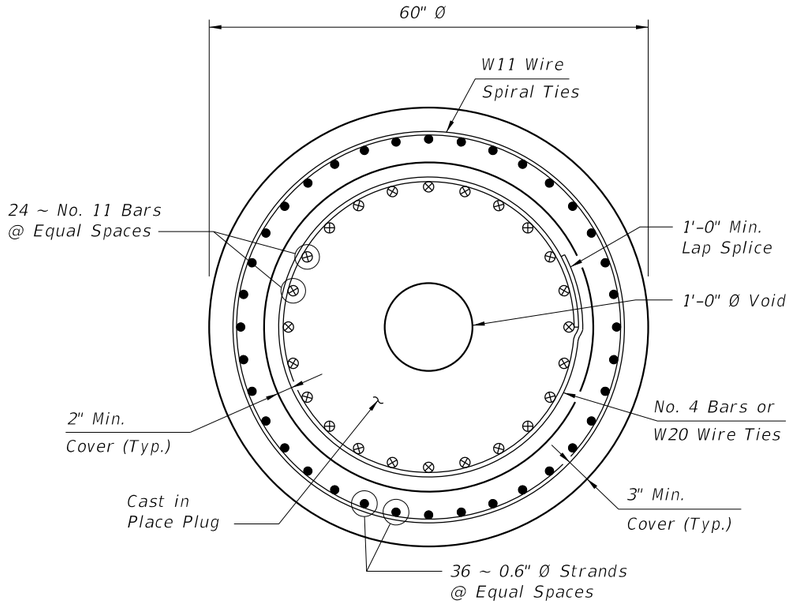
10/17/2024 10:59:49 AM



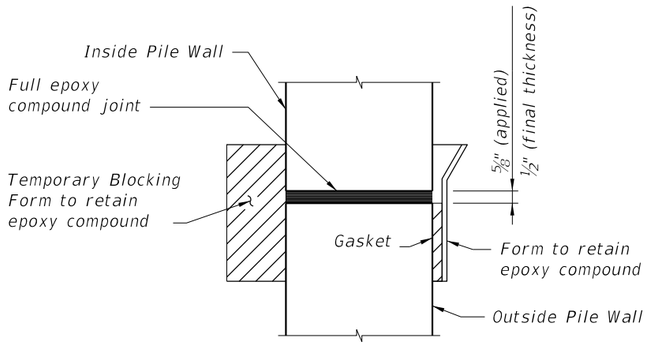
DRIVABLE UNFORESEEN FIELD SPLICE DETAIL
(Cast in Place Plug)



SECTION A-A



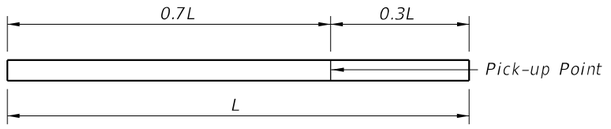
SECTION B-B



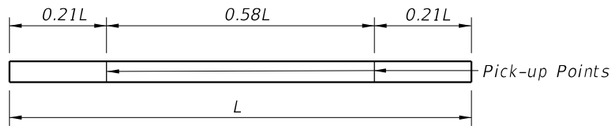
DETAIL "A"

10/17/2024 10:59:56 AM

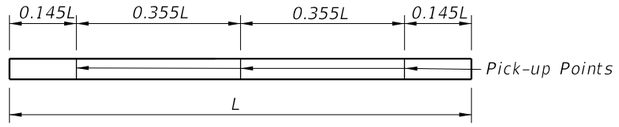
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/12			FY 2025-26 STANDARD PLANS	60" PRESTRESSED CONCRETE CYLINDER PILE	455-060	2 of 2



1-POINT PICK-UP

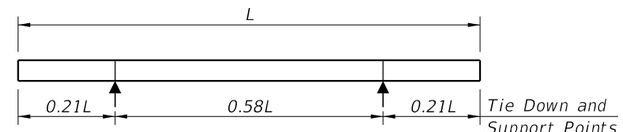


2-POINT PICK-UP

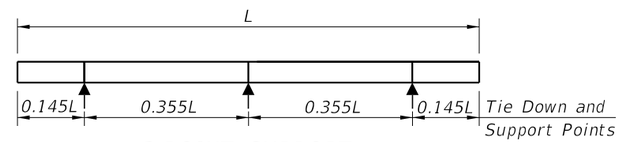


3-POINT PICK-UP

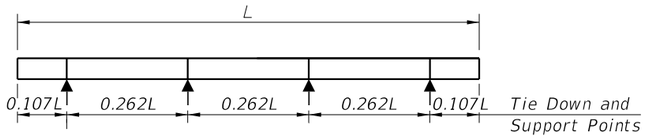
PILE PICK-UP DETAILS



2-POINT SUPPORT



3-POINT SUPPORT



4-POINT SUPPORT

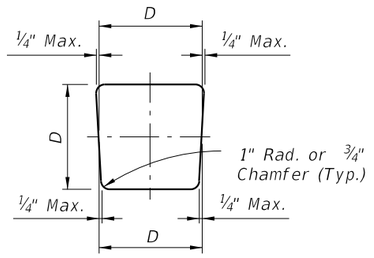
STORAGE AND TRANSPORTATION SUPPORT DETAILS

PRESTRESSED CONCRETE PILE NOTES:

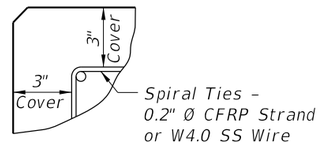
1. Work this Index with the Square Prestressed Concrete Pile Splices (Index 455-102), the Prestressed Concrete Pile Standards (Index 455-112, 455-114, 455-118, 455-124, 455-130, and the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V
   - B. See "GENERAL NOTES" in the Structures Plans for locations where the use of Highly Reactive Pozzolans is required for options using stainless steel strand and reinforcing.
3. Concrete strength at time of prestress transfer:
   - A. Piles: 4,000 psi minimum.
4. Reinforcing:
   - A. Bars:
     - a. Stainless Steel: Meet the requirements of Specification Section 931 for Type 304, Grade 75.
     - b. Carbon FRP: Meet the requirements of Specification Section 932.
   - B. Prestressing Strands:
     - a. Stainless Steel: Seven-wire HSSS, Grade 240 strand, meeting the requirements of Specification Section 933.
     - b. Carbon FRP: Meet the requirements of Specification Section 933.
     - c. All Strand diameters are nominal.
5. Spiral Ties:
   - A. Tie each wrap of the spiral strand to a minimum of two corner strands.
   - B. One full turn required for spiral splices.
6. Pile Splices: Fill dowel holes and form the joint between pile sections with a Type AB Epoxy Compound in accordance with Specification Section 926. Use an Epoxy Bonding Compound or an Epoxy Mortar as recommended by the Manufacturer.

TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS

	D = Square Pile Size (inches)					Required Storage and Transportation Detail	Pick-Up Detail
	12	14	18	24	30		
Maximum Pile Length (Feet)	48	52	59	68	87	2, 3, or 4 point	1 Point
	69	75	85	98	124	2, 3, or 4 point	2 Point
	99	107	121	140	178	3 or 4 point	3 Point



TYPICAL PILE SHAPE FOR MOLD FORMS



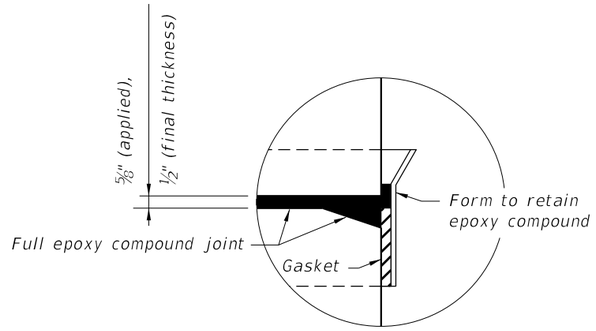
DETAIL SHOWING TYPICAL COVER

10/17/2024 11:00:04 AM

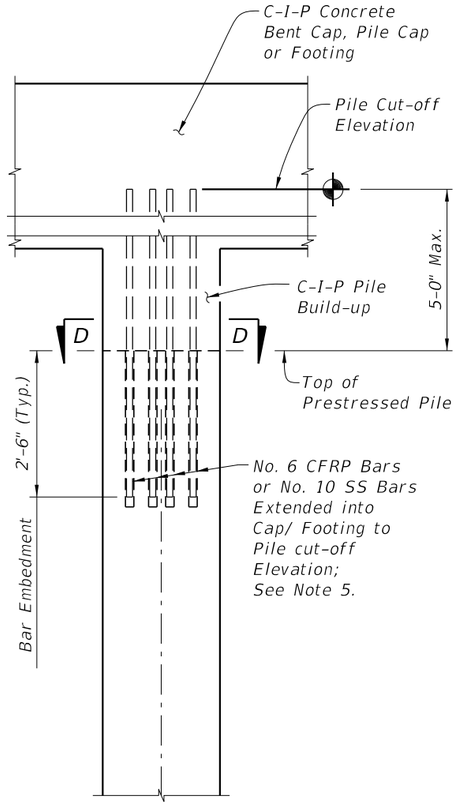
LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT	FY 2025-26 STANDARD PLANS	SQUARE CFRP & SS PRESTRESSED CONCRETE PILES - TYPICAL DETAILS & NOTES	INDEX 455-101 / SHEET 1 of 1

NOTES:

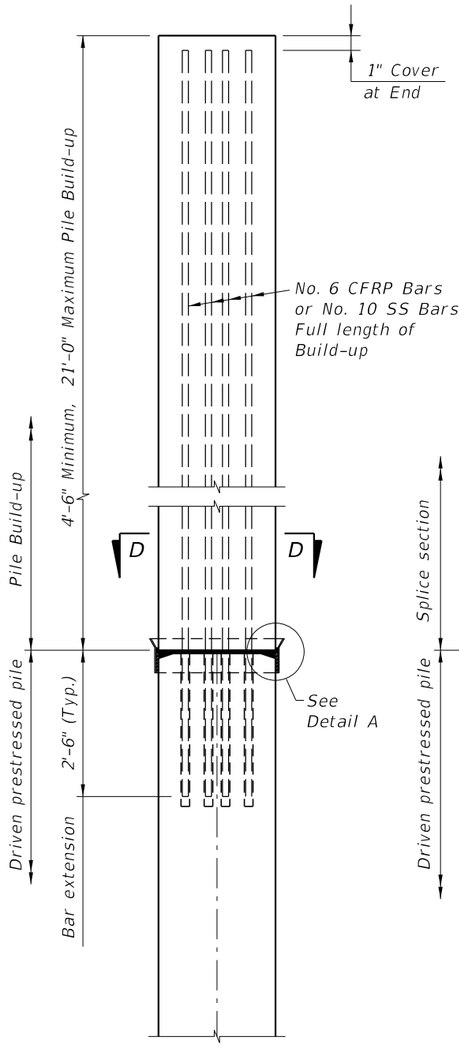
1. For Sections D-D, & E-E, see Index 455-112, 455-114, 455-118, 455-124 or 455-130 for applicable concrete pile size and Pile Splice Reinforcement Details.
2. Prestressing strands, spiral ties and/or reinforcement are not shown for clarity.
3. In cases where pile splices are desired due to length limitations in shipping and/or handling, the "Drivable Preplanned Prestressed Precast Splice Detail" shall be used.
4. When preformed dowel holes are utilized, the 1" spiral tie pitch shall be continued to 4'-0" below the head of the pile, See Index 455-118, 455-124. Preformed holes shall utilize either removable preforming material or stay-in-place corrugated galvanized steel ducts. Stay-in-place ducts shall be fabricated from galvanized sheet steel meeting the requirements of ASTM A653, Coating Designation G90, 26 gauge. Ducts shall be 1½" diameter for CFRP Bars, and 2" diameter for SS Bars with a minimum corrugation (rib) height of 0.12 in. Ducts shall be fabricated with either welded or interlocked seams. Galvanizing of welded seams will not be required.
5. For tension piles where top of Prestressed Pile is less than 3 feet below Pile Cut-off Elevation, extend No. 6 CFRP Bars or No. 10 SS into cap beyond Pile Cut-off Elevation to achieve development as approved by the Engineer.



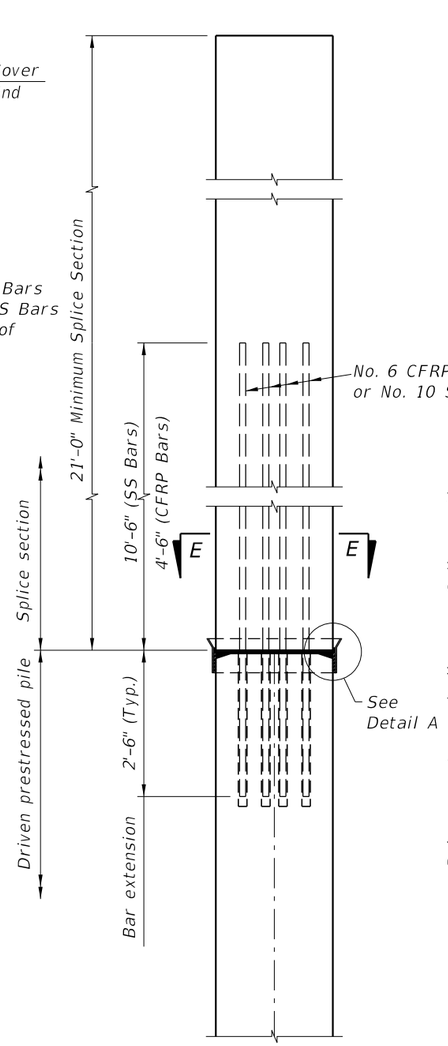
DETAIL A



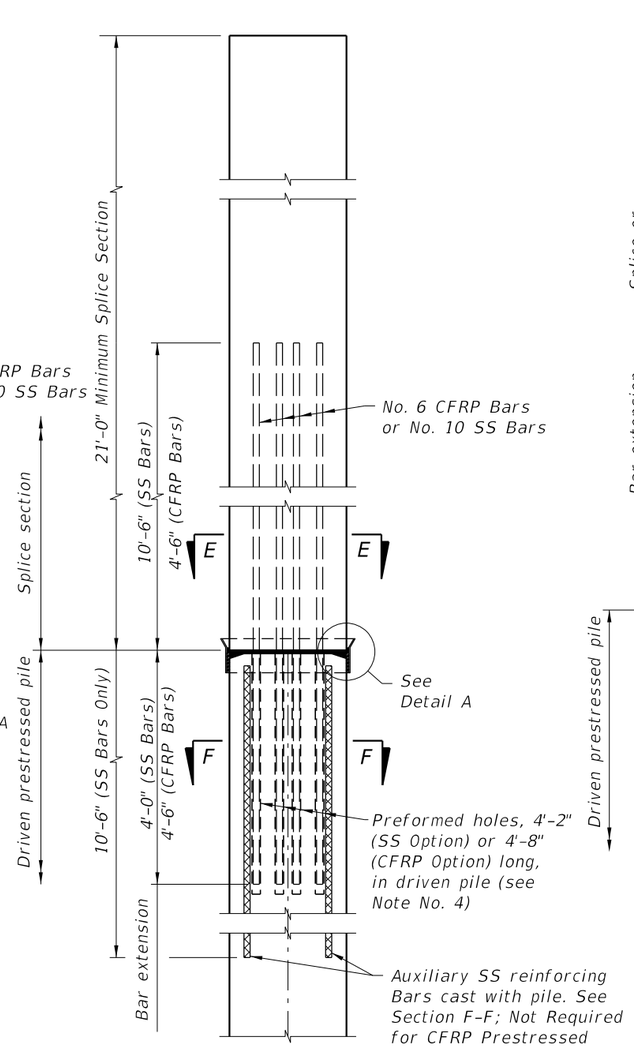
UNFORESEEN REINFORCED C-I-P PILE BUILD-UP DETAIL



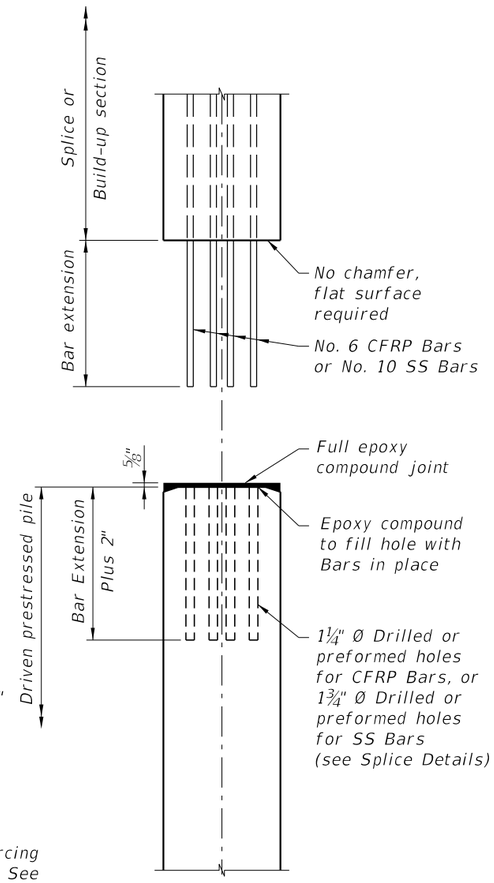
NONDRIVABLE UNFORESEEN REINFORCED PRECAST PILE BUILD-UP DETAIL



DRIVABLE UNFORESEEN PRESTRESSED PRECAST PILE SPLICE DETAIL



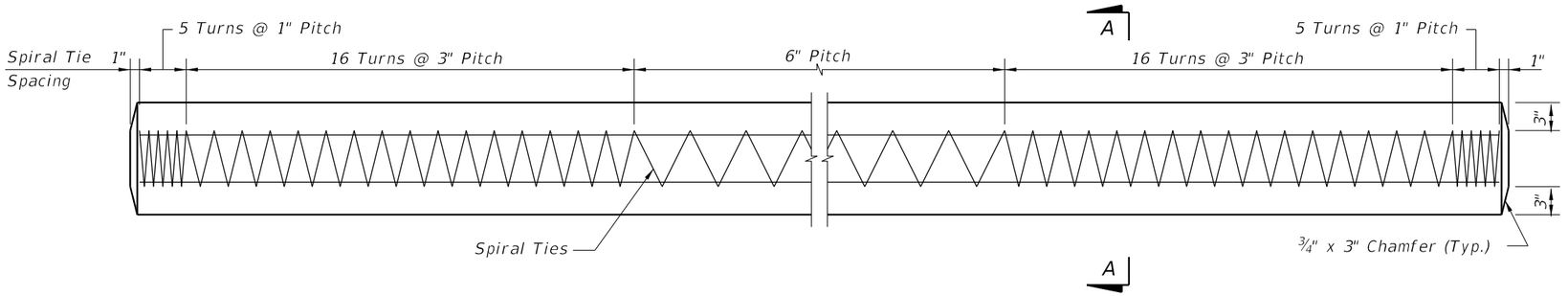
DRIVABLE PREPLANNED PRESTRESSED PRECAST PILE SPLICE DETAIL



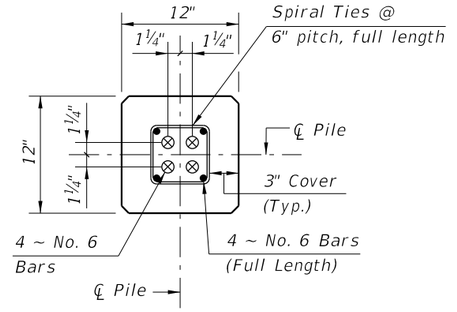
TYPICAL SPLICE BEFORE BONDING

10/17/2024 11:00:11 AM

LAST REVISION	REVISION	DESCRIPTION:			
01/01/16			FY 2025-26 STANDARD PLANS	SQUARE CFRP & SS PRESTRESSED CONCRETE PILE SPLICES	INDEX 455-102 / SHEET 1 of 1

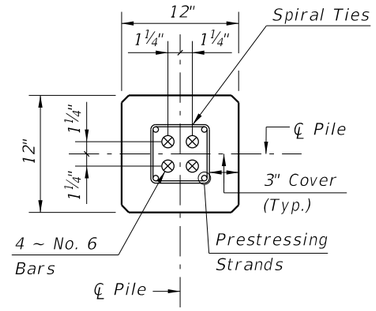


ELEVATION



SECTION D-D

(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E

(See Drivable Unforeseen Prestressed Precast Pile Splice Detail)

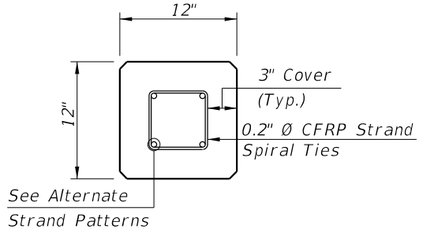
CFRP PILE SPLICE REINFORCEMENT DETAILS

NOTES:

1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized.

ALTERNATE STRAND PATTERNS

4 ~ 0.6" Ø, CFRP 7-Strand, at 42 kips
4 ~ ½" Ø, CFRP Single-Strand, at 41 kips

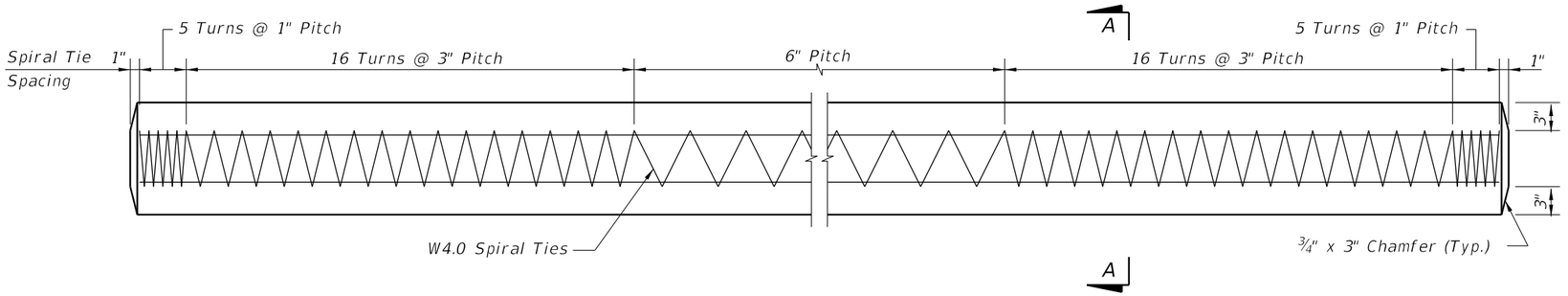


SECTION A-A

CFRP PRESTRESSED PILE DETAILS

LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	12" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX 455-112	SHEET 1 of 2

10/17/2024 11:00:17 AM

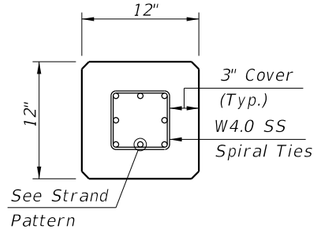


ELEVATION

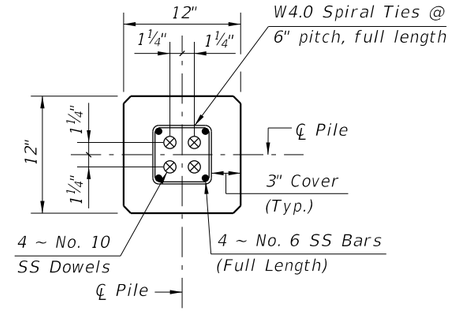
STRAND PATTERN

8 ~ 0.52" Ø, HSSS at 24 kips

8 ~ 0.62" Ø, HSSS at 26 kips

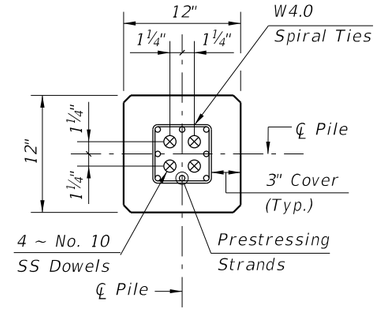


SECTION A-A



SECTION D-D

(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E

(See Drivable Unforeseen Prestressed Precast Pile Splice Detail)

SS PILE SPLICE REINFORCEMENT DETAILS

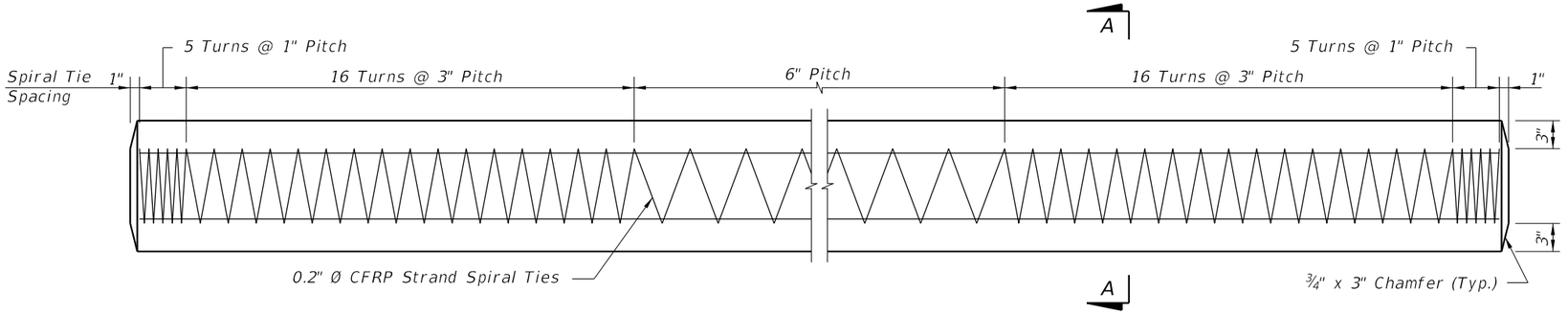
NOTES:

1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Strand Patterns may be utilized.
   The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

SS PRESTRESSED PILE DETAILS

10/17/2024 11:00:24 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	12" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/24						455-112	2 of 2



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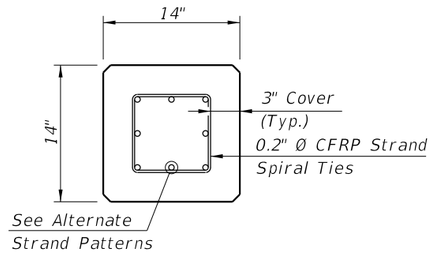
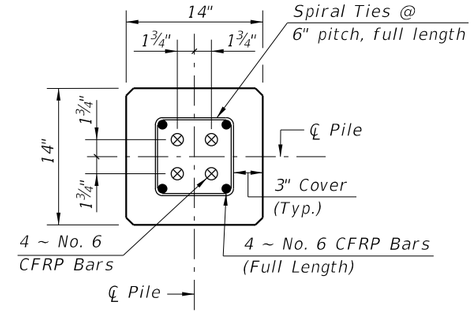


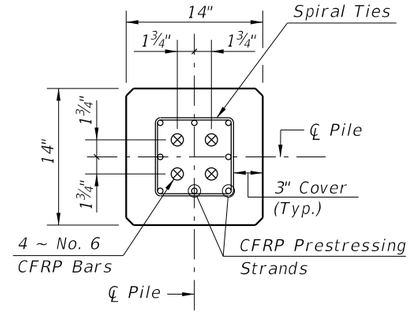
SECTION A-A

ALTERNATE STRAND PATTERNS

8 ~ 0.6" Ø, CFRP 7-Strand, at 31.5 kips
8 ~ ½" Ø, CFRP Single-Strand, at 30.5 kips



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E
(See Drivable Unforeseen Prestressed Precast Pile Splice Detail)

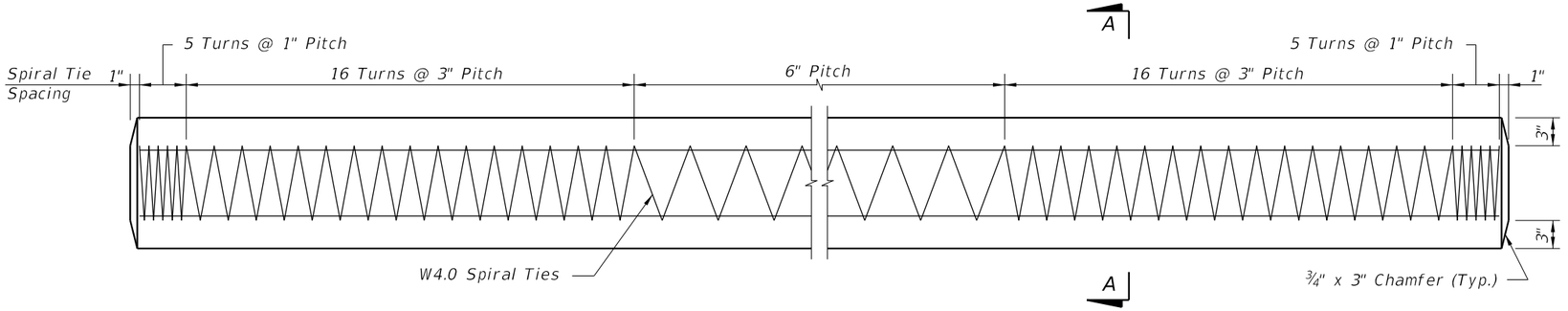
CFRP PILE SPLICE REINFORCEMENT DETAILS

NOTES:
1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized.
   The strands shall be located as follows:
   Place one strand at each corner and equally space the remaining strands between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

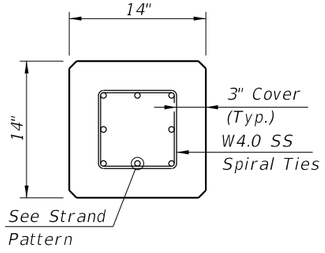
CFRP PRESTRESSED PILE DETAILS

10/17/2024 11:00:30 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	14" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/16					455-114	1 of 2



ELEVATION

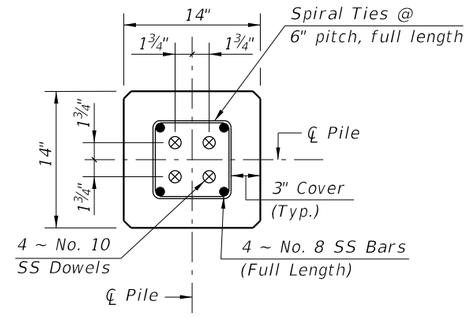


SECTION A-A

STRAND PATTERN

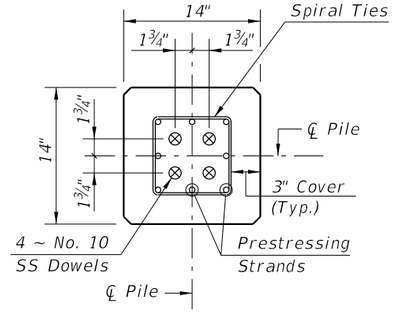
12 ~ 0.52" Ø, HSSS at 23 kips

8 ~ 0.62" Ø, HSSS at 35 kips



SECTION D-D

(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E

(See Drivable Unforeseen Prestressed Precast Splice Detail)

SS PILE SPLICE REINFORCEMENT DETAILS

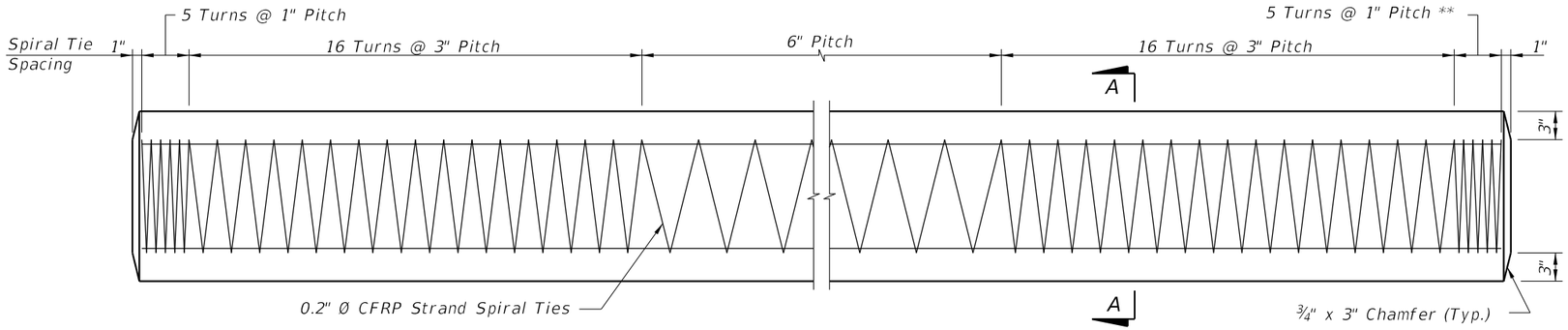
NOTES:

1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

SS PRESTRESSED PILE DETAILS

10/17/2024 11:00:37 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	14" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/24					455-114	2 of 2

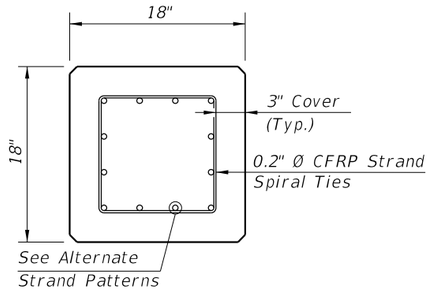


ELEVATION

** See Note 4 on Index 455-102

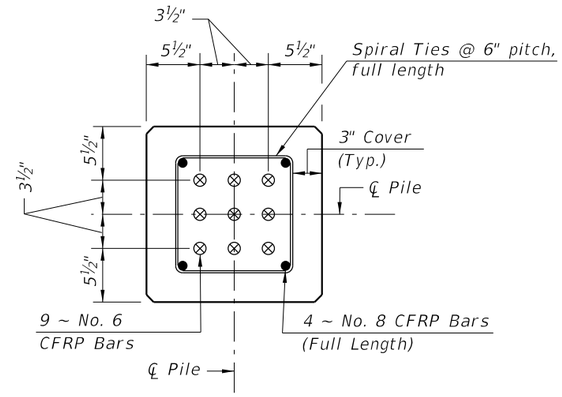
ALTERNATE STRAND PATTERNS

12 ~ 0.6" Ø, CFRP 7-Strand, at 34 kips
12 ~ ½" Ø, CFRP Single-Strand, at 33 kips

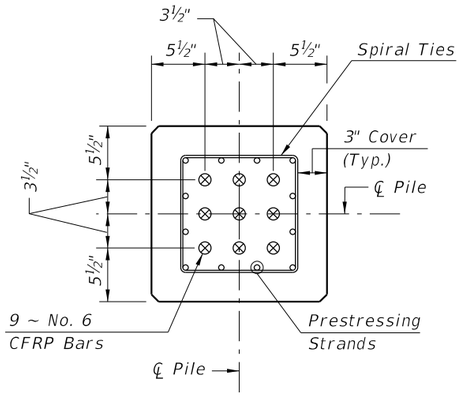


SECTION A-A

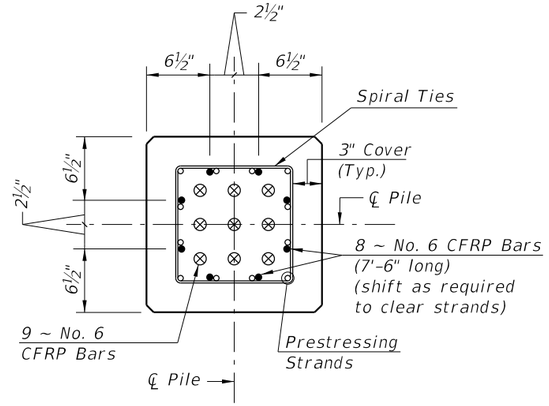
NOTES:
1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Strand Patterns may be utilized.
   The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E
(See Drivable Prestressed Precast Splice Detail)

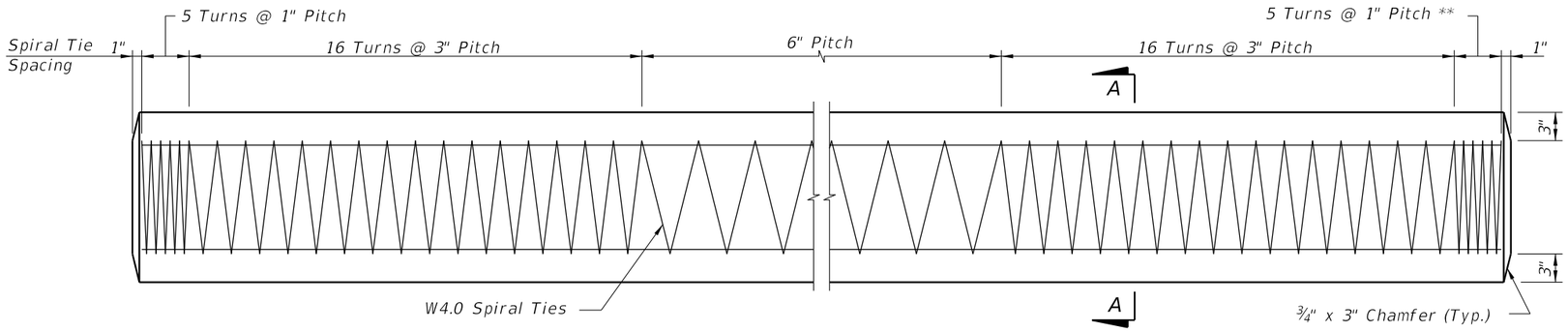


SECTION F-F
(See Drivable Preplanned Prestressed Precast Splice Detail)

CFRP PILE SPLICE REINFORCEMENT DETAILS

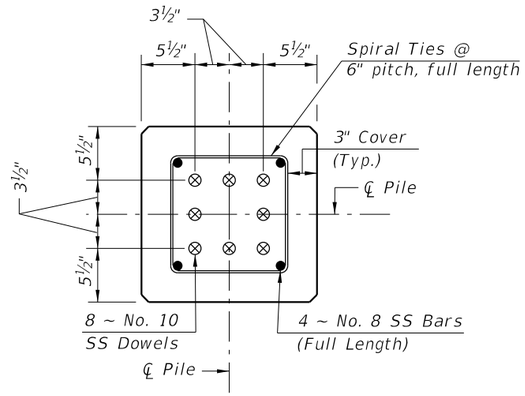
10/17/2024 11:00:44 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	18" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/16					455-118	1 of 2



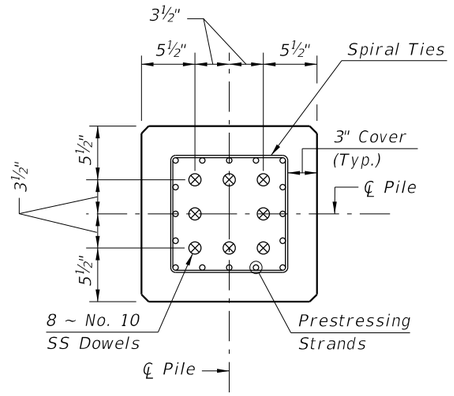
ELEVATION

** See Note 4 on Index 455-102



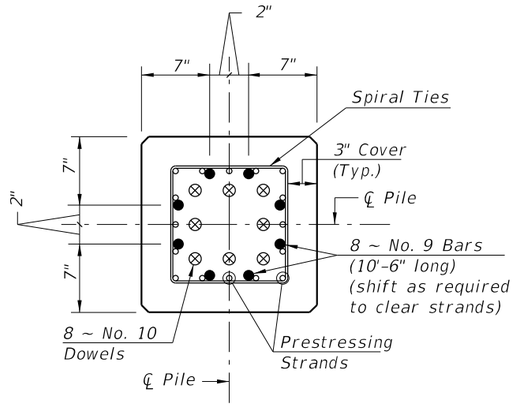
SECTION D-D

(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E

(See Drivable Prestressed Precast Splice Detail)



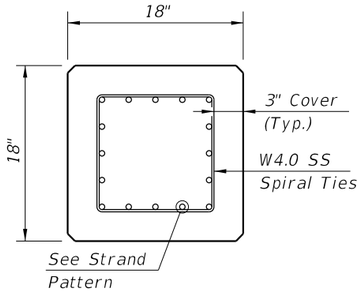
SECTION F-F

(See Drivable Preplanned Prestressed Precast Splice Detail)

SS PILE SPLICE REINFORCEMENT DETAILS

STRAND PATTERN

16 ~ 0.52" Ø, HSSS, at 26 kips
12 ~ 0.62" Ø, HSSS, at 35 kips



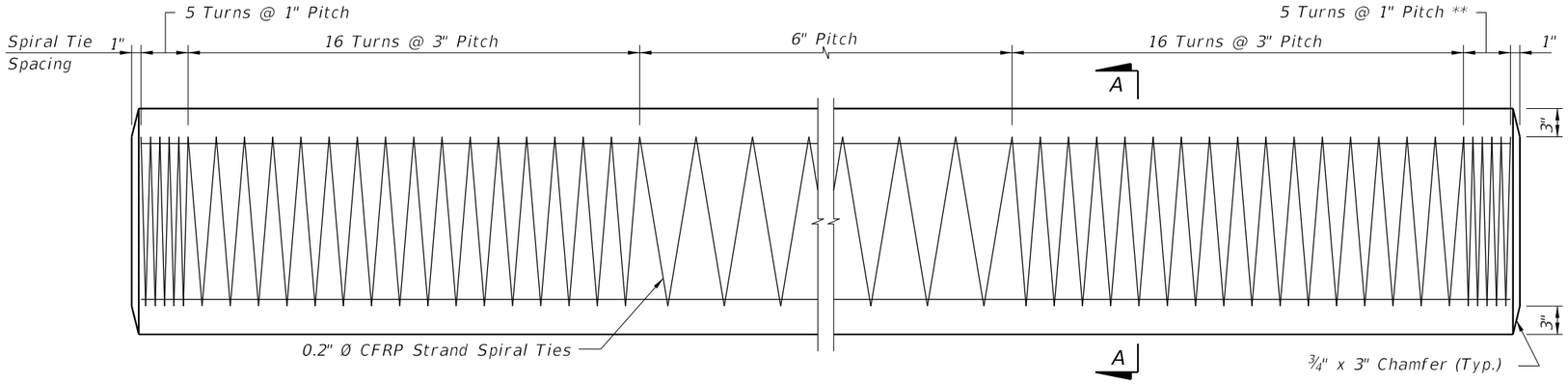
SECTION A-A

NOTES:

1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Strand Patterns may be utilized.
   The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

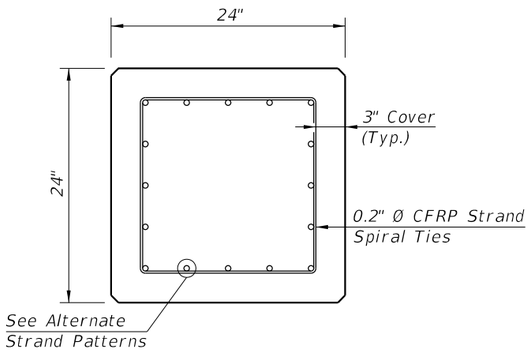
10/17/2024 11:00:51 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FY 2025-26 STANDARD PLANS	18" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX 455-118	SHEET 2 of 2



SPIRAL TIE ELEVATION

** See Note 4 on Index 455-102



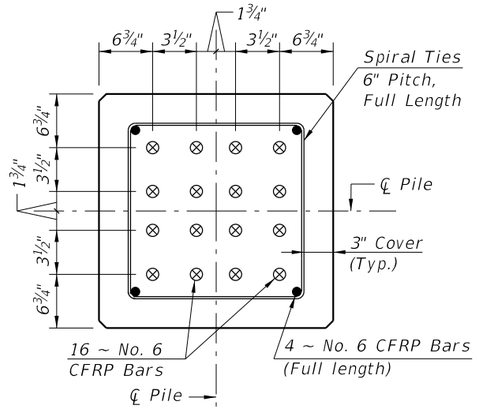
SECTION A-A

ALTERNATE STRAND PATTERNS

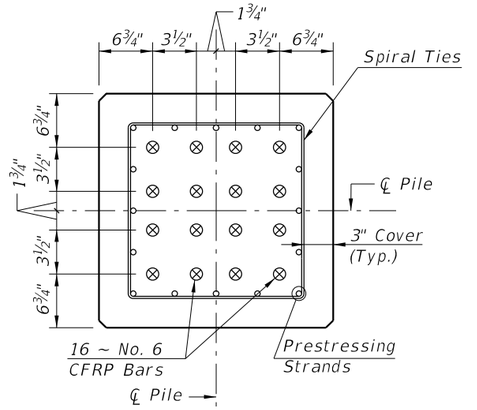
16 ~ 0.6" Ø, CFRP 7-Strand, at 42 kips
20 ~ ½" Ø, CFRP Single-Strand, at 35 kips

NOTES:

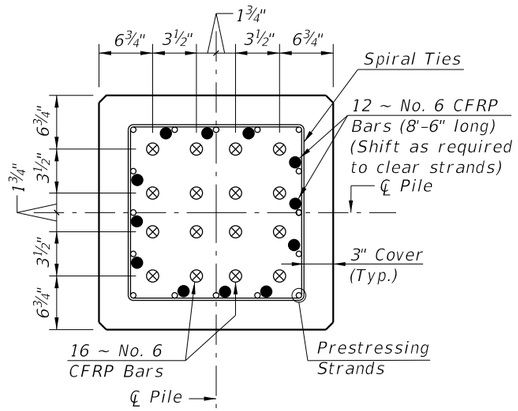
1. Work this Index with Index 455-101 - Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 - Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Strand Patterns may be utilized.
   The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E
(See Drivable Prestressed Precast Pile Splice Detail)



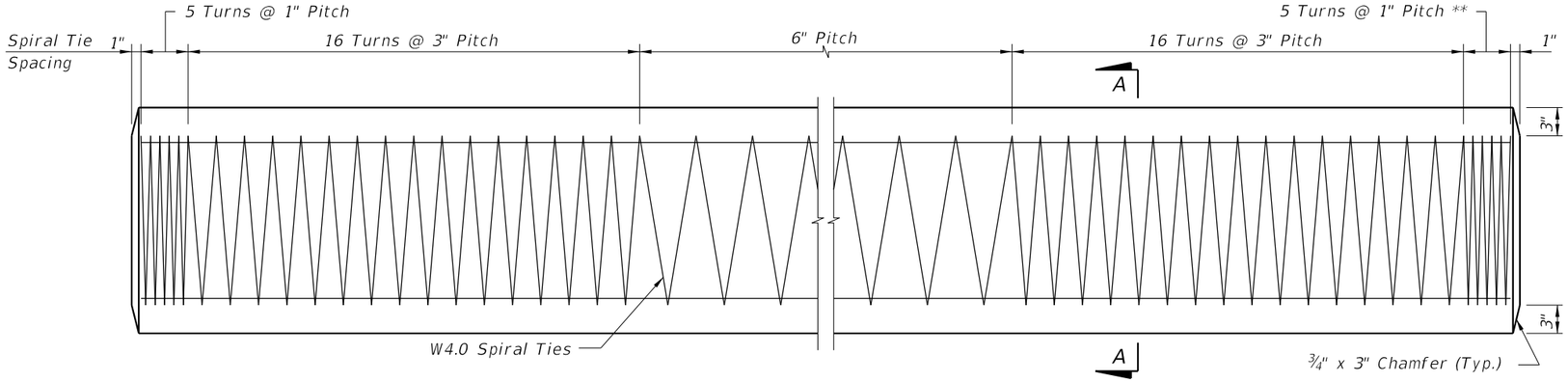
SECTION F-F
(See Drivable Preplanned Prestressed Precast Pile Splice Detail)

CFRP PILE SPLICE REINFORCEMENT DETAILS

CFRP PRESTRESSED PILE DETAILS

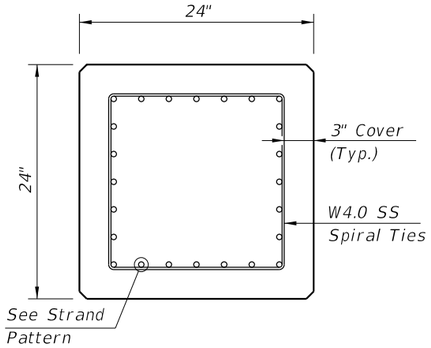
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	24" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/20					455-124	1 of 2

10/17/2024 11:00:57 AM



ELEVATION

** See Note 4 on Index 455-102

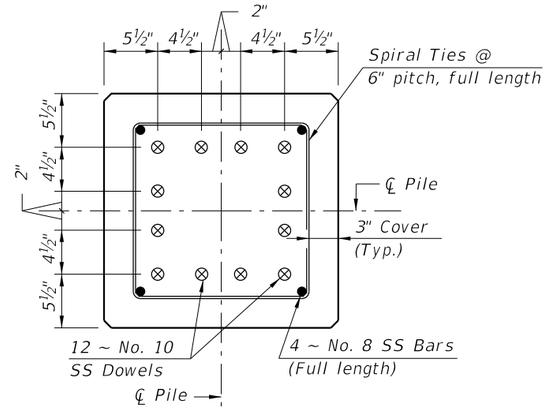


SECTION A-A

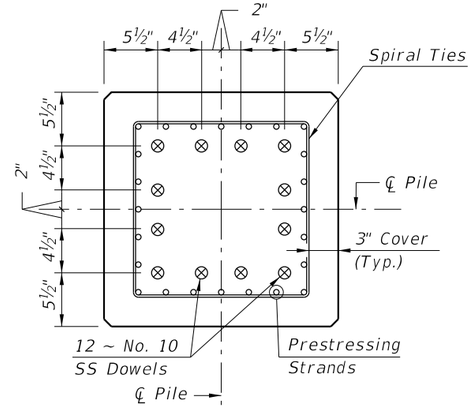
STRAND PATTERN

28 ~ 0.52" Ø, HSSS at 26 kips
20 ~ 0.62" Ø, HSSS at 35 kips

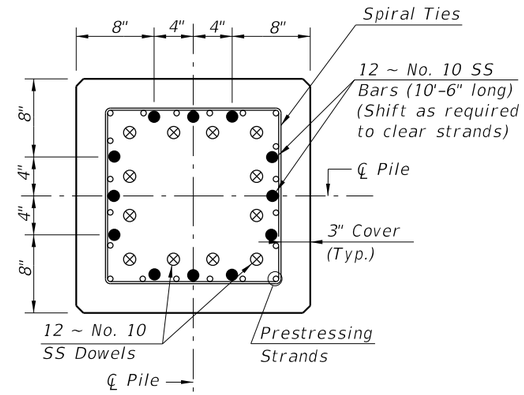
NOTES:
1. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.
2. Any of the given Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E
(See Drivable Prestressed Precast Pile Splice Detail)



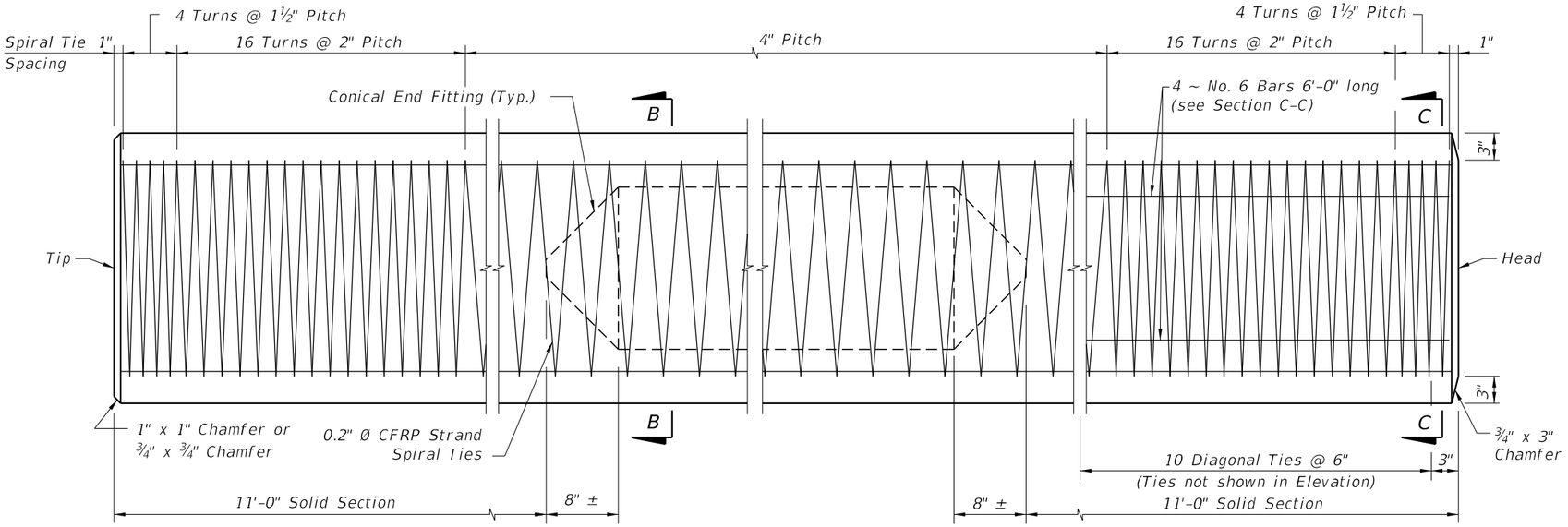
SECTION F-F
(See Drivable Preplanned Pile Splice Detail)

SS PILE SPLICE REINFORCEMENT DETAILS

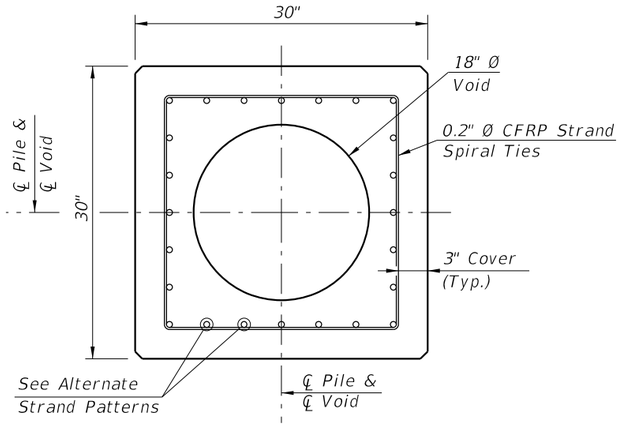
SS PRESTRESSED PILE DETAILS

10/17/2024 11:01:03 AM

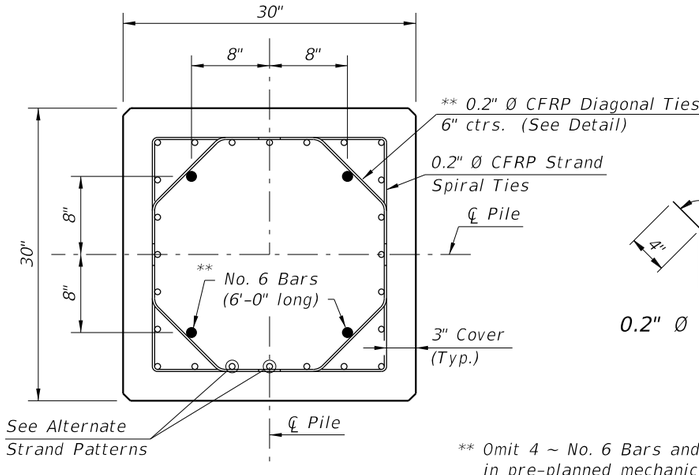
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	24" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/24						455-124	2 of 2



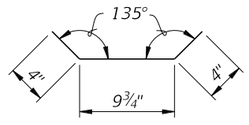
ELEVATION



SECTION B-B
(See Pile Splice Reinforcement Details)



SECTION C-C
(See Pile Splice Reinforcement Details)



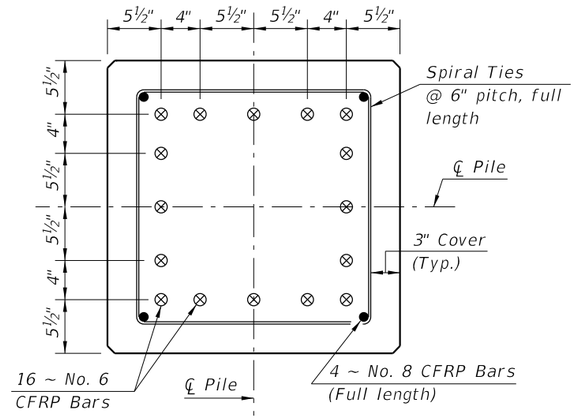
0.2" Ø DIAGONAL TIE DETAIL

** Omit 4 ~ No. 6 Bars and Diagonal Ties in pre-planned mechanical splice.

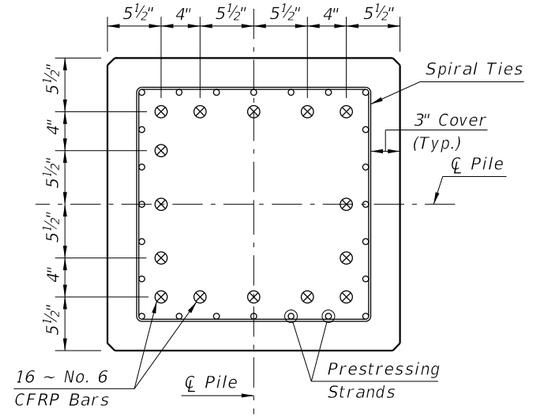
ALTERNATE STRAND PATTERNS

20 ~ 0.6" Ø, CFRP 7-Strand at 38 kips
20 ~ ½" Ø, CFRP Single-Strand at 37 kips

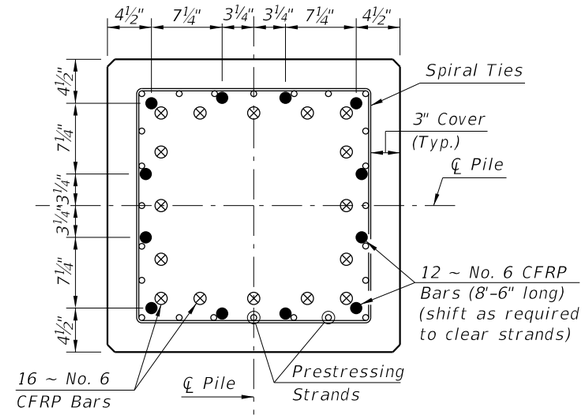
NOTES:
1. Any of the given Strand Patterns may be utilized. The strands shall be located as follows: Place one strand at each corner and place the remaining strands equally spaced between the corner strands. The total strand pattern shall be concentric with the nominal concrete section of the pile.
2. CONTRACTOR OPTION: The 30" pile may be cast SOLID by omitting the 18" Ø void. In this event, the Contractor shall submit calculations for approval and a proposed strand configuration that provide net prestressing after losses equal to 1000 psi. Alternate configurations for the Diagonal Ties, to maintain the position of the 4 ~ #6 Bars, may be approved by the Engineer.
3. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E
(See Drivable Prestressed Precast Pile Splice Detail)



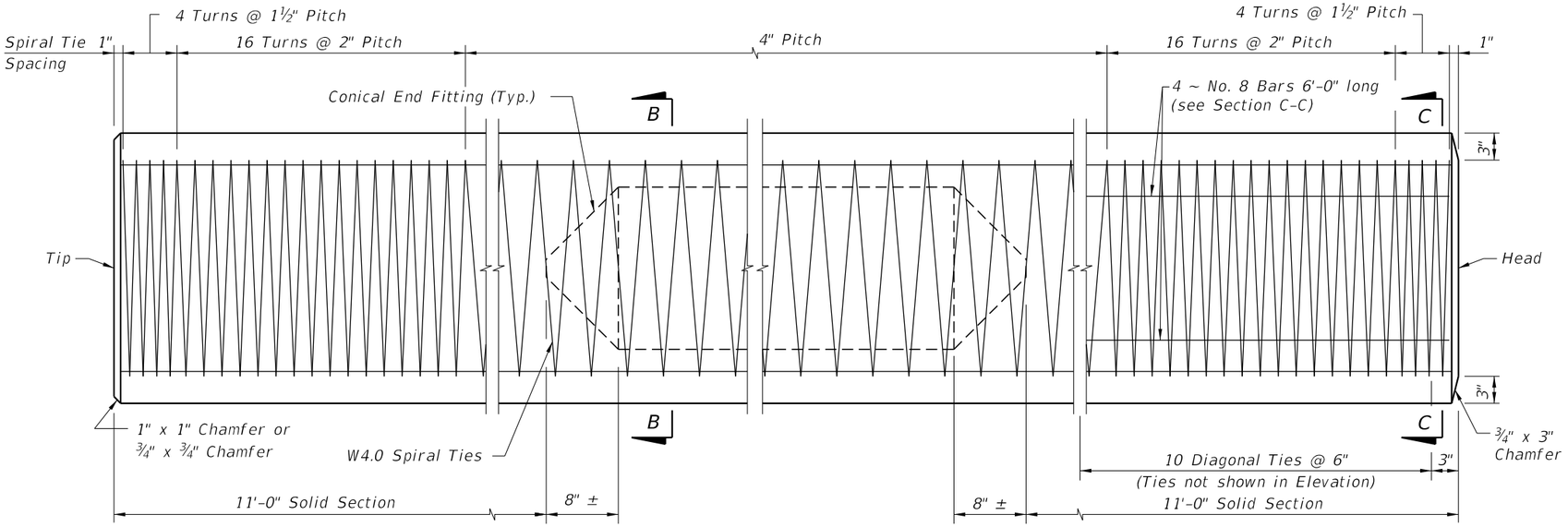
SECTION F-F
(See Drivable Preplanned Prestressed Precast Pile Splice Detail)

CFRP PILE SPLICE DETAILS

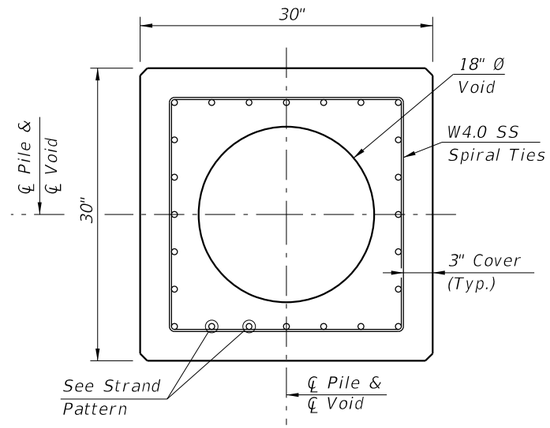
CFRP PRESTRESSED PILE DETAILS

10/17/2024 11:01:10 AM

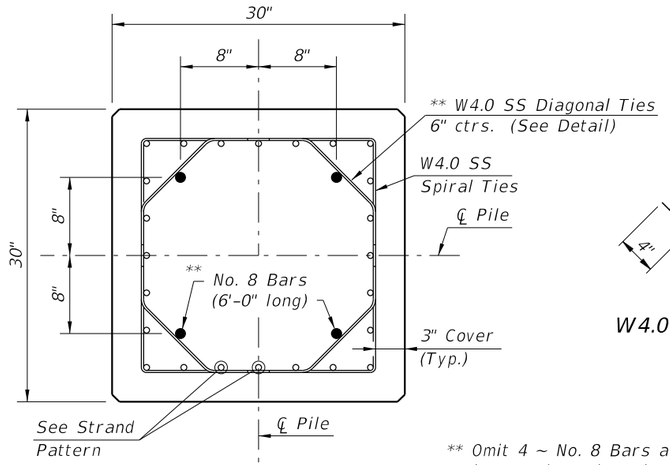
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	30" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/16					455-130	1 of 2



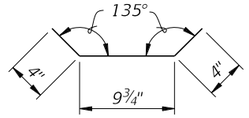
ELEVATION



SECTION B-B
(See Pile Splice Reinforcement Details)



SECTION C-C
(See Pile Splice Reinforcement Details)



W4.0 DIAGONAL TIE DETAIL

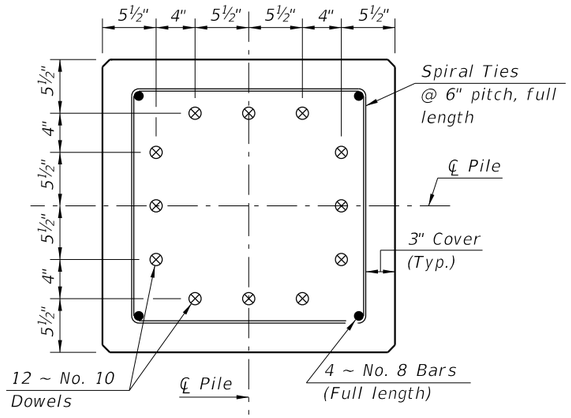
** Omit 4 ~ No. 8 Bars and Diagonal Ties in pre-planned mechanical splice.

STRAND PATTERN

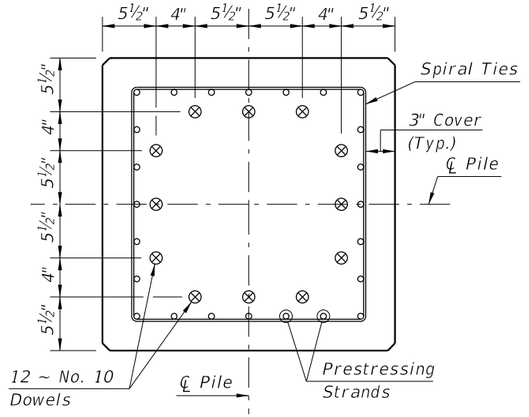
32 ~ 0.52" Ø, HSSS at 26 kips
24 ~ 0.62" Ø, HSSS at 35 kips

NOTES:

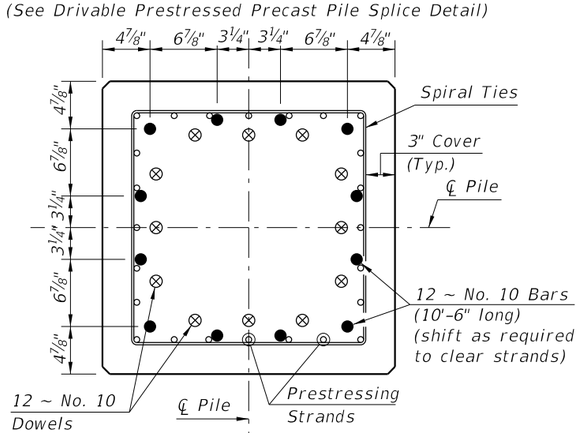
1. Any of the given Strand Patterns may be utilized. The strands shall be located as follows: Place one strand at each corner and place the remaining strands equally spaced between the corner strands. The total strand pattern shall be concentric with the nominal concrete section of the pile.
2. CONTRACTOR OPTION: The 30" pile may be cast SOLID by omitting the 18" Ø void. In this event, the Contractor shall submit calculations for approval and a proposed strand configuration that provide net prestressing after losses equal to 1000 psi. Alternate configurations for the Diagonal Ties, to maintain the position of the 4 ~ #8 Bars, may be approved by the Engineer.
3. Work this Index with Index 455-101 – Typical Details and Notes for Square CFRP & SS Prestressed Concrete Piles and Index 455-102 – Square CFRP & SS Prestressed Concrete Pile Splices.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Pile Build-Up Detail)



SECTION E-E
(See Drivable Prestressed Precast Pile Splice Detail)



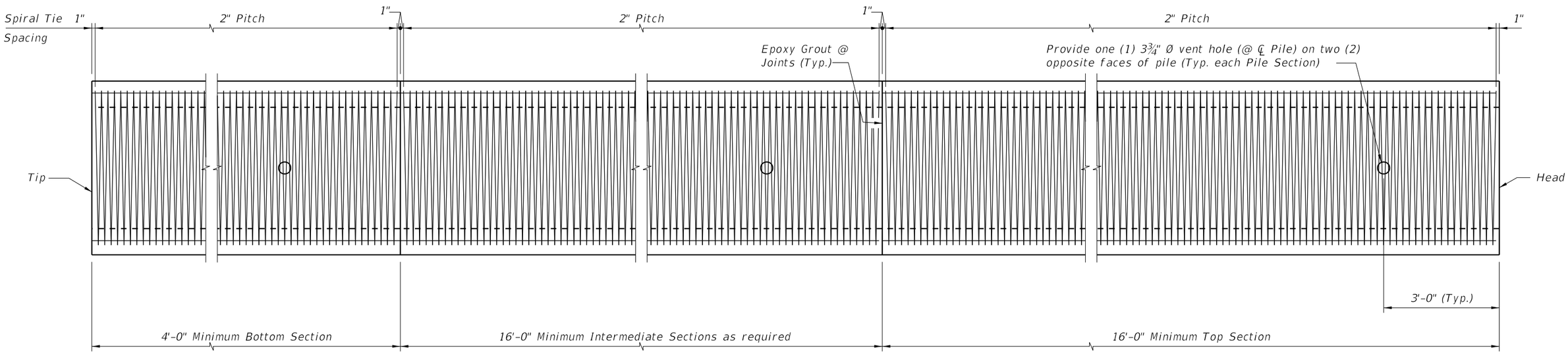
SECTION F-F
(See Drivable Preplanned Prestressed Precast Pile Splice Detail)

SS PILE SPLICE DETAILS

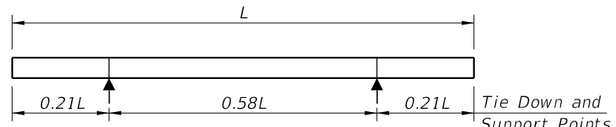
SS PRESTRESSED PILE DETAILS

10/17/2024 11:01:16 AM

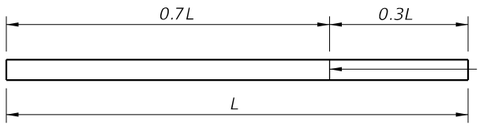
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	30" SQUARE CFRP & SS PRESTRESSED CONCRETE PILE	INDEX	SHEET
11/01/24					455-130	2 of 2



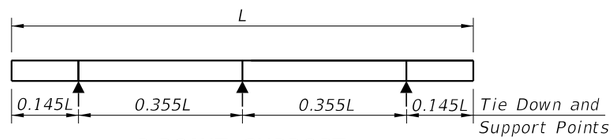
ELEVATION



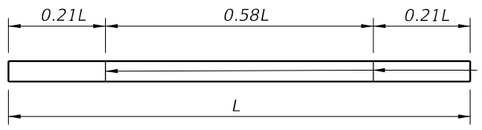
2-POINT SUPPORT



1-POINT PICK-UP

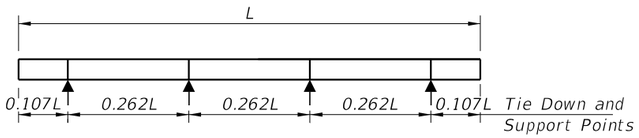


3-POINT SUPPORT



2-POINT PICK-UP

PILE PICK-UP DETAILS



4-POINT SUPPORT

STORAGE AND TRANSPORTATION SUPPORT DETAILS

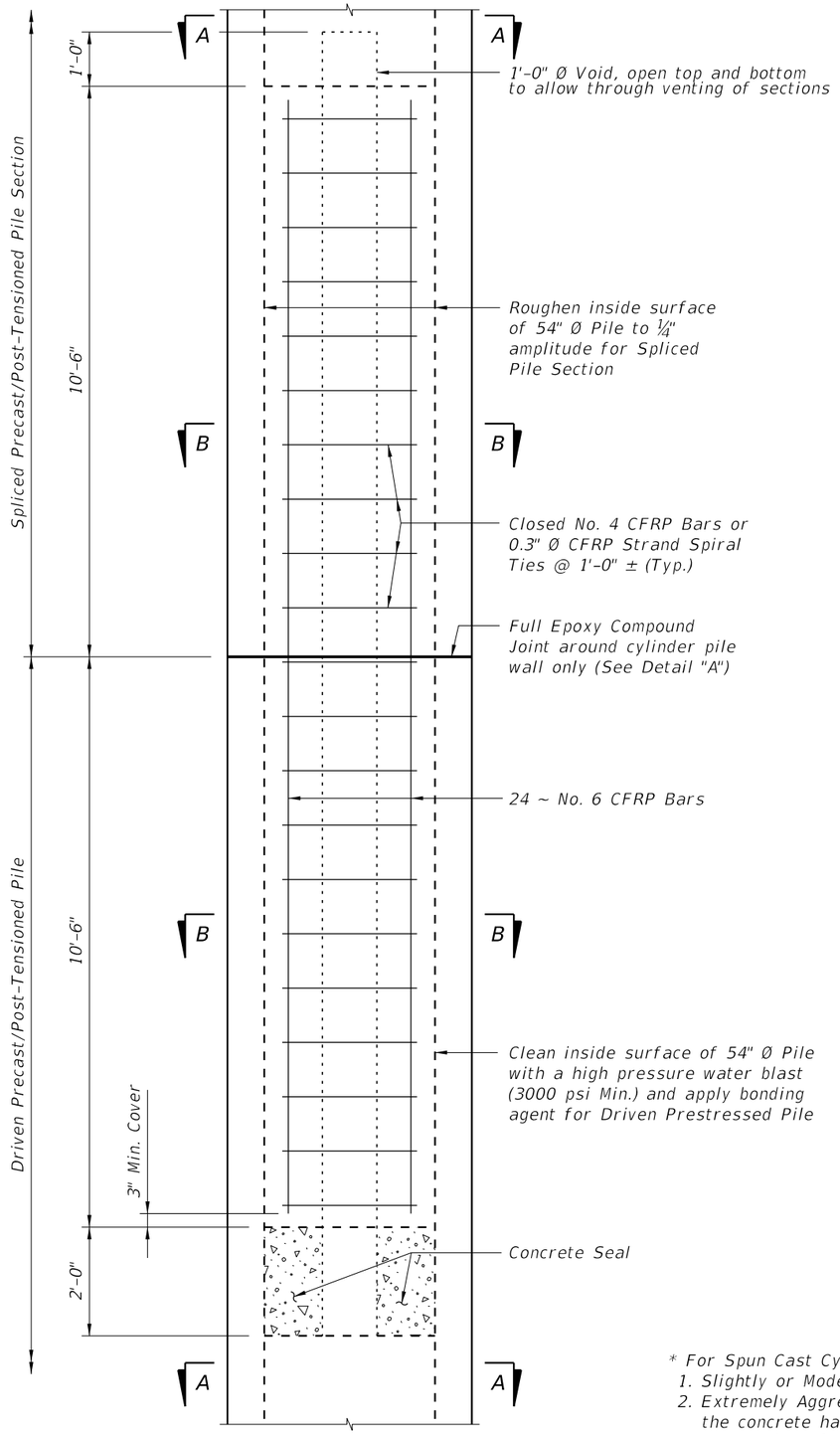
TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS		
Maximum Pile Length (Feet)	Required Storage and Transportation Detail	Pick-Up Detail
119	2, 3, or 4 point	1 Point
170	2, 3, or 4 point	2 Point

NOTES

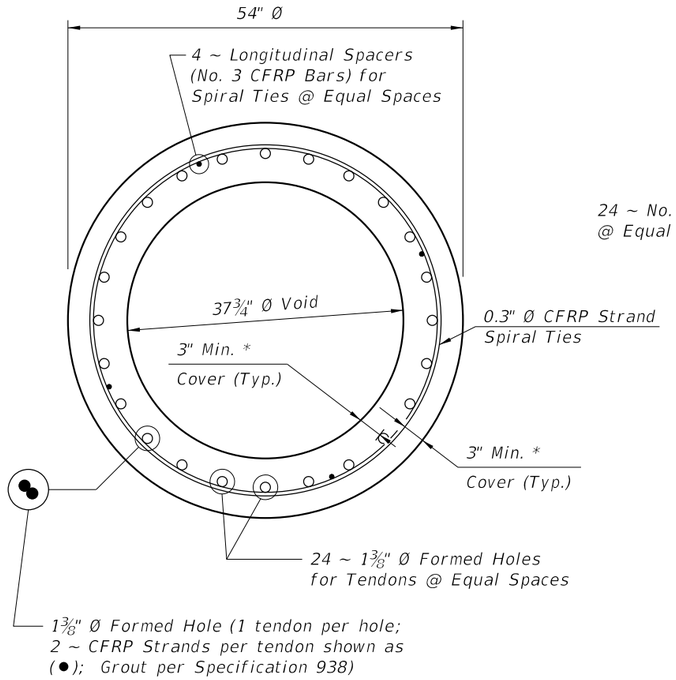
1. Work this Index with the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V
   - B. Splice: Class IV
   - C. See "GENERAL NOTES" in Structures Plans for locations where the use of Highly Reactive Pozzolans is required for options using stainless steel strand and reinforcing.
3. Concrete Strength at time of application of the prestressing force:
   - A. Piles: 6,000 psi minimum.
4. Reinforcing:
   - A. Bars:
     - a. Stainless Steel: Meet the requirements of Specification Section 931 for Type 304, Grade 75.
     - b. Carbon FRP: Meet the requirements of Specification Section 932.
   - B. Prestressing Strands:
     - a. Stainless Steel: Seven-wire HSSS, UNS S32205 (Type 2205) or UNS S31803 strand, meeting the requirements of Specification Section 933.
     - b. Carbon FRP: Meet the requirements of Specification Section 933.
   - C. Spiral Ties:
     - a. One half turn is required for carbon steel spiral splice.
     - b. One full turn is required at the pile head and tip.
5. Pile Splices:
   - A. Epoxy: Type AB Epoxy Compound or Mortar must meet the requirements of Specification Section 926.
     - a. Use a Type AB Epoxy Bonding Compound or Epoxy Mortar, as recommended by the Manufacturer, to form the joint between pile sections.
     - b. Use a Type AB Epoxy Bonding Compound as a bonding agent on internal pile surfaces.
   - B. Driving: Resume pile driving after splice concrete reaches a minimum strength of 5,500 psi.
6. Mark piles at the pick-up points to indicate the proper points for attaching handling lines.

10/17/2024 11:01:23 AM

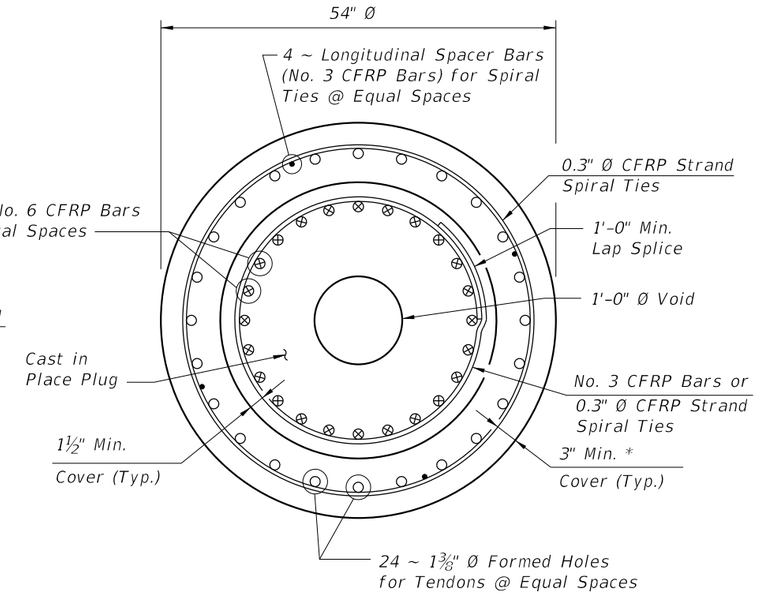
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	54" PRECAST/POST-TENSIONED CFRP & SS CONCRETE CYLINDER PILE	INDEX	SHEET
11/01/23						455-154	1 of 3



DRIVABLE UNFORESEEN FIELD SPLICE DETAIL
(Cast-In-Place Plug)



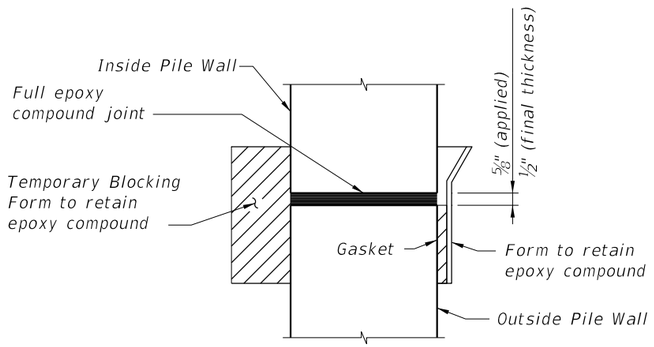
SECTION A-A



SECTION B-B

ALTERNATE STRAND PATTERNS

48 ~ 0.5" Ø, Single-Strand, at 28 kips
48 ~ 0.6" Ø, 7-Strand, at 29 kips



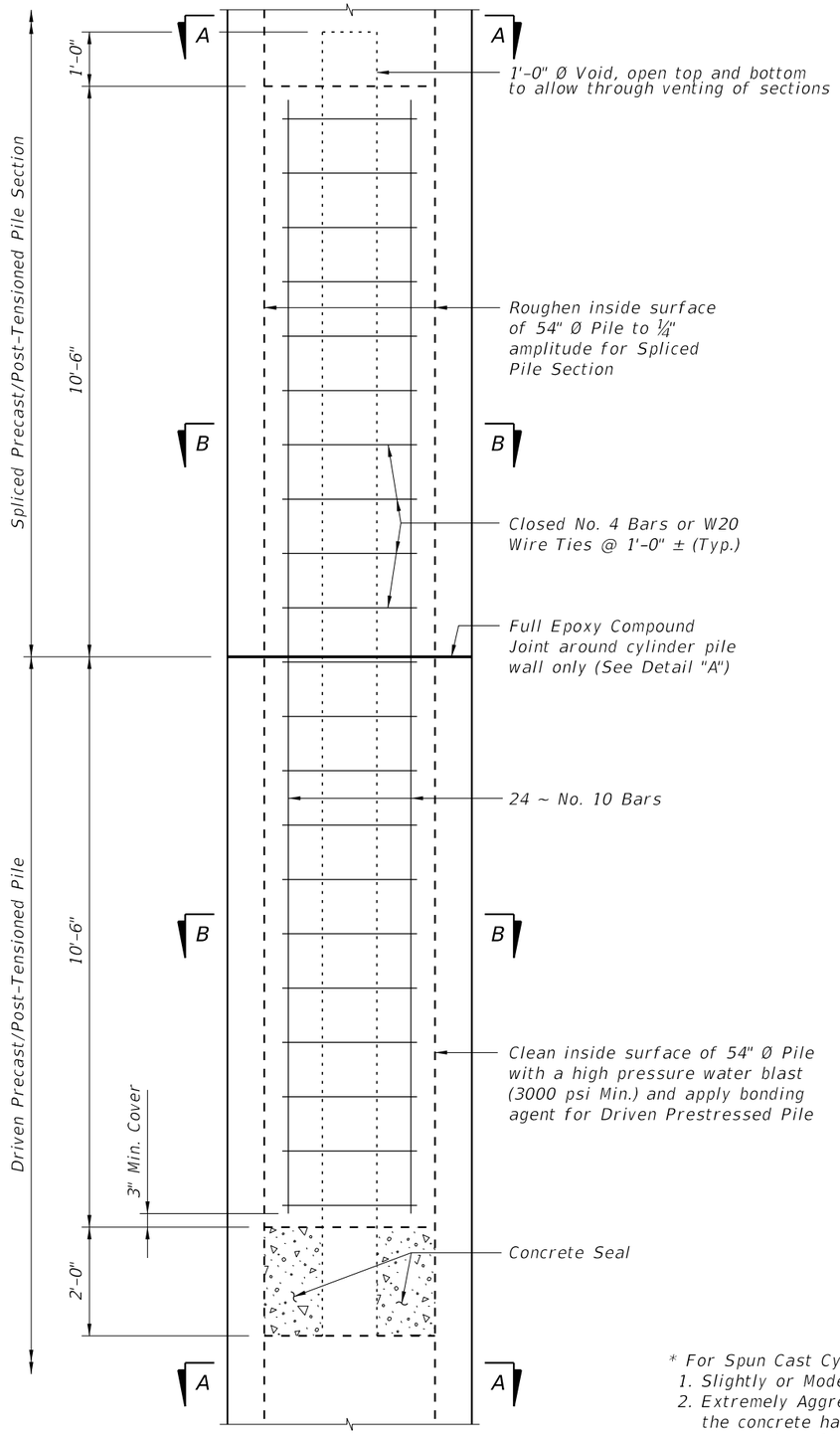
DETAIL "A"

* For Spun Cast Cylinder Piles, the following requirements for concrete cover apply:
1. Slightly or Moderately Aggressive Environments: The concrete cover may be reduced to 2 inches.
2. Extremely Aggressive Environments: The concrete cover may be reduced to 2 inches as long as the concrete has a documented chloride ion penetration apparent diffusion coefficient with a mean value of 0.005 in² per year or less; otherwise, a 3-inch concrete cover is required.

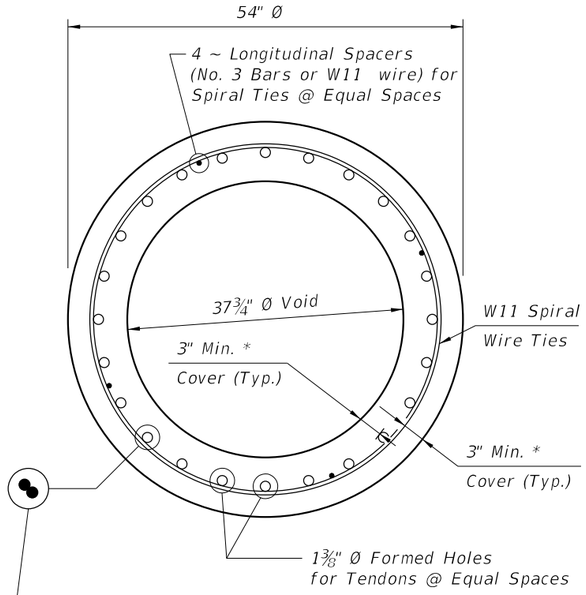
10/17/2024 11:01:30 AM

CFRP POST-TENSIONED PILE DETAILS

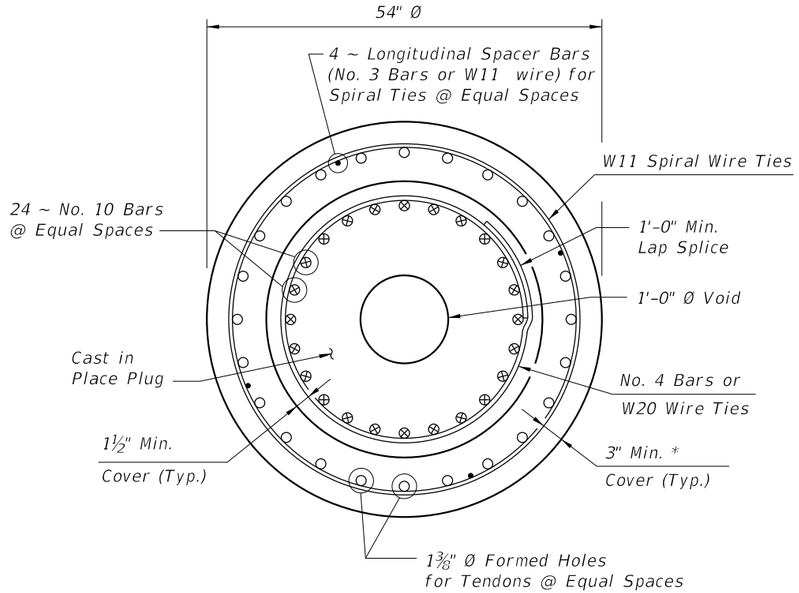
LAST REVISION	REVISION	DESCRIPTION:			
01/01/16			FY 2025-26 STANDARD PLANS	54" PRECAST/POST-TENSIONED CFRP & SS CONCRETE CYLINDER PILE	INDEX 455-154 / SHEET 2 of 3



DRIVABLE UNFORESEEN FIELD SPLICE DETAIL
(Cast-In-Place Plug)



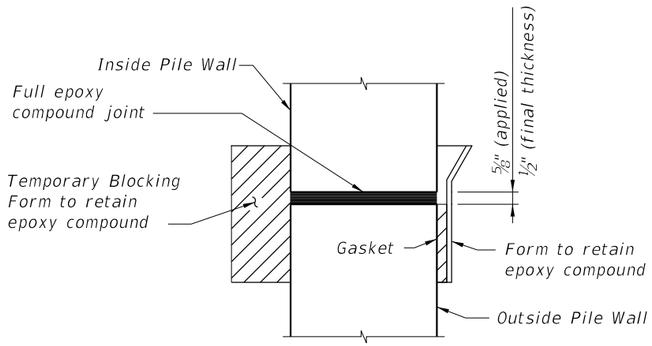
SECTION A-A



SECTION B-B

ALTERNATE STRAND PATTERNS

72 ~ ½" Ø, HSSS Strands, at 21 kips (24~3 strand tendons)
58 ~ ½" Ø, HSSS Strands, at 24 kips (29~2 strand tendons)
48 ~ 0.6" Ø, HSSS Strands, at 32 kips (24~2 strand tendons)



DETAIL "A"

* For Spun Cast Cylinder Piles, the following requirements for concrete cover apply:
1. Slightly or Moderately Aggressive Environments: The concrete cover may be reduced to 2 inches.
2. Extremely Aggressive Environments: The concrete cover may be reduced to 2 inches as long as the concrete has a documented chloride ion penetration apparent diffusion coefficient with a mean value of 0.005 in² per year or less; otherwise, a 3-inch concrete cover is required.

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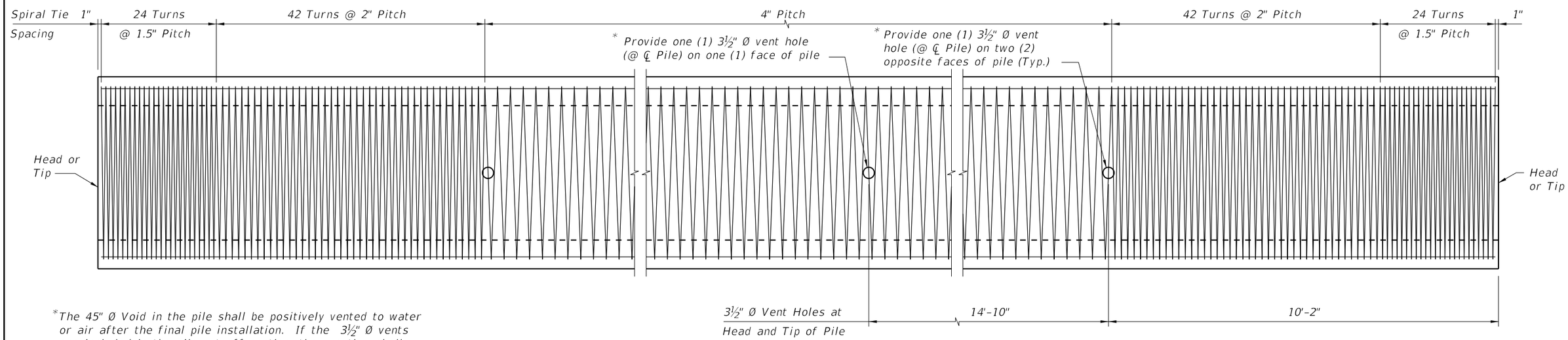
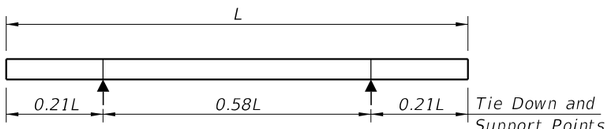
SS POST-TENSIONED PILE DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	54" PRECAST/POST-TENSIONED CFRP & SS CONCRETE CYLINDER PILE	INDEX	SHEET
01/01/16					455-154	3 of 3

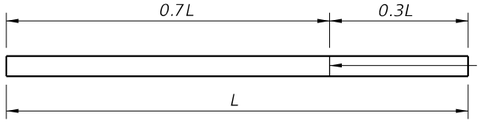


*The 45" Ø Void in the pile shall be positively vented to water or air after the final pile installation. If the 3½" Ø vents are included in the pile cut-off section, then venting shall be provided by the use of a 1" Ø PVC conduit through the substructure cap or column.

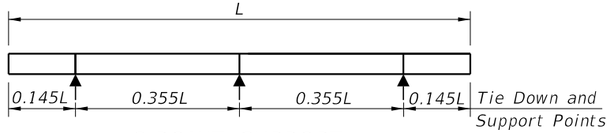
ELEVATION



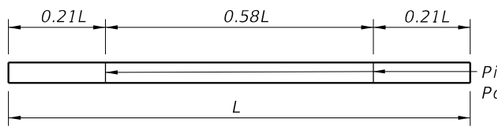
2-POINT SUPPORT



1-POINT PICK-UP

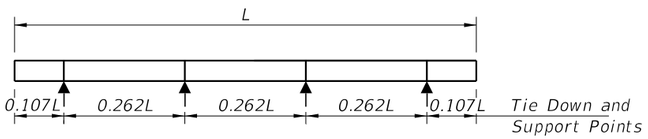


3-POINT SUPPORT



2-POINT PICK-UP

PILE PICK-UP DETAILS



4-POINT SUPPORT

STORAGE AND TRANSPORTATION SUPPORT DETAILS

TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS		
Maximum Pile Length (Feet)	Required Storage and Transportation Detail	Pick-Up Detail
122	2, 3, or 4 point	1 Point
174	2, 3, or 4 point	2 Point

NOTES

1. Work this Index with the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V
   - B. Splice Collar: Class IV
   - C. See "GENERAL NOTES" in the Structures Plans for locations where the use of Highly Reactive Pozzolans is required.
3. Concrete Strength at time of prestress transfer:
   - A. Piles: 4,000 psi minimum.
4. Reinforcing:
   - A. Bars:
     - a. Stainless Steel: Meet the requirements of Specification Section 931 for Type 304, Grade 75.
     - b. Carbon FRP: Meet the requirements of Specification Section 932.
   - B. Prestressing Strands:
     - a. Stainless Steel: Seven-wire HSSS, UNS S32205 (Type 2205) or UNS S31803 strand, meeting the requirements of Specification Section 933.
     - b. Carbon FRP: Meet the requirements of Specification Section 933.
   - C. Spiral Ties:
     - a. One half turn is required for carbon steel spiral splice.
     - b. One full turn is required at the pile head and tip.
5. Pile Splices:
   - A. Epoxy: Type AB Epoxy Compound or Epoxy Mortar must meet the requirements of Specification Section 926.
     - a. Use a Type AB Epoxy Bonding Compound or Epoxy Mortar, as recommended by the Manufacturer, to form the joint between pile sections
     - b. Use a Type AB Epoxy Bonding Compound as a bonding agent on internal pile surfaces.
   - B. Splices: Resume pile driving after the splice concrete reaches a minimum strength of 5,500 psi.
6. Mark piles at the pick-up points to indicate the proper points for attaching handling lines.

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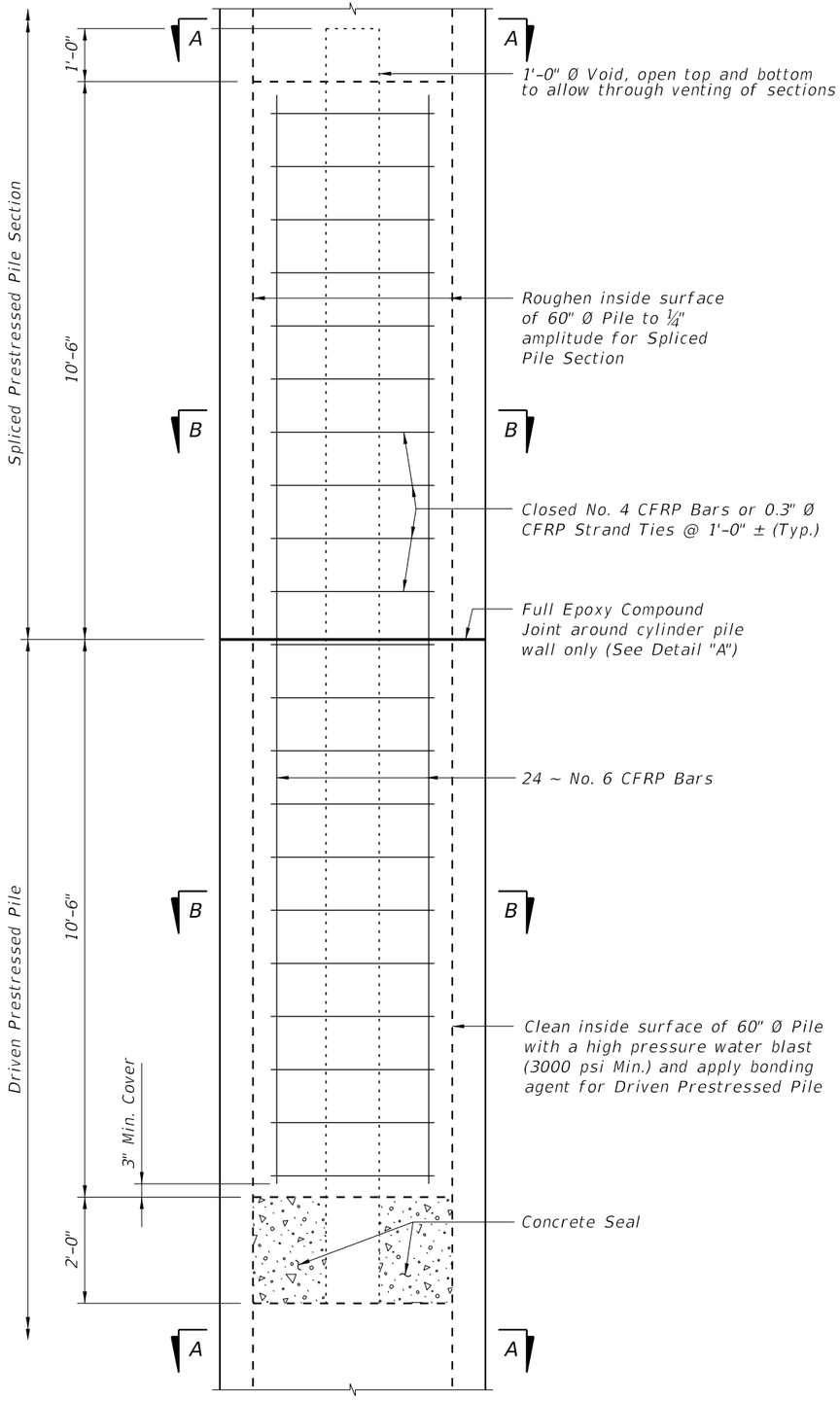
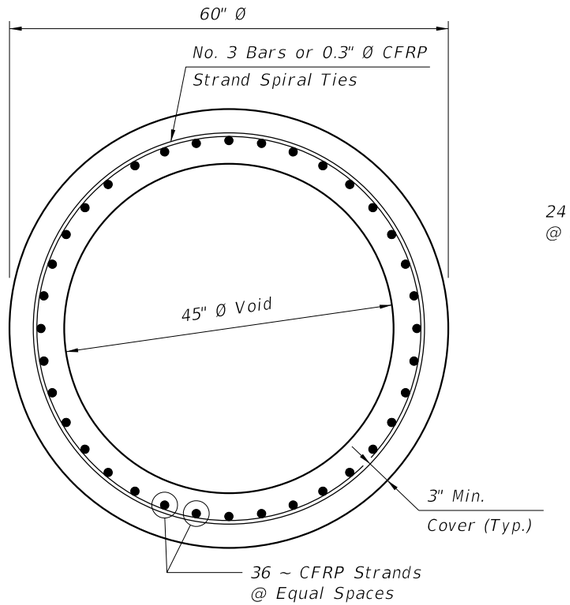
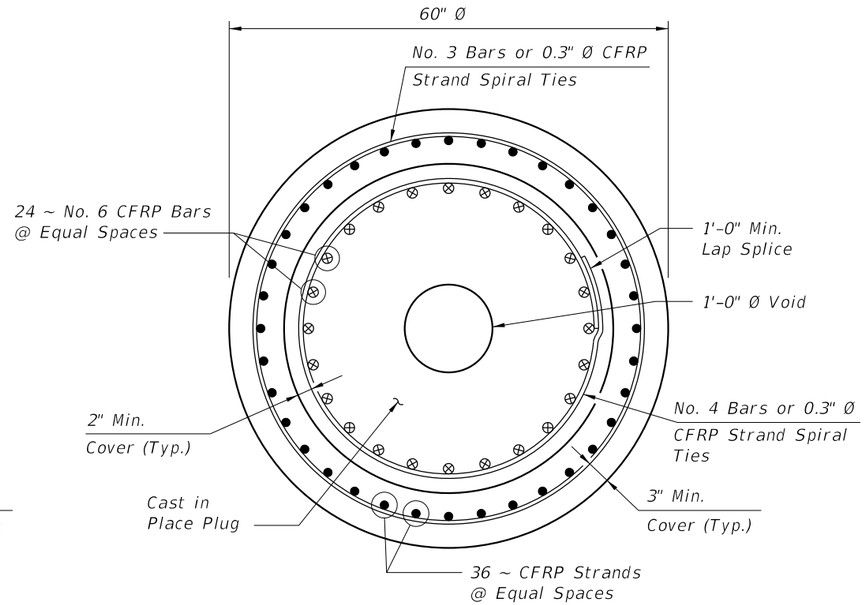


DRIVABLE UNFORESEEN FIELD SPLICE DETAIL
(Cast in Place Plug)



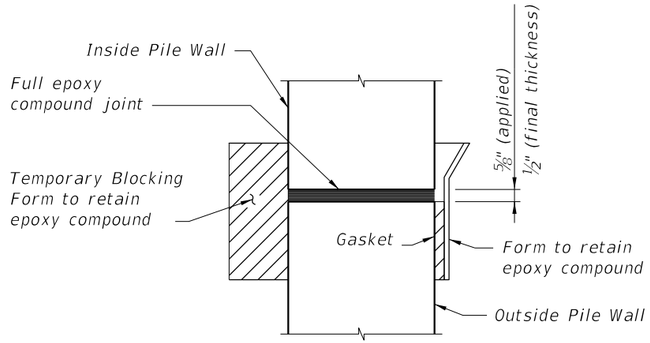
SECTION A-A



SECTION B-B

ALTERNATE STRAND PATTERNS

0.5" Ø, CFRP Single-Strand, at 39 kips
0.6" Ø, CFRP 7-Strand, at 40 kips



DETAIL "A"

CFRP PRESTRESSED PILE DETAILS

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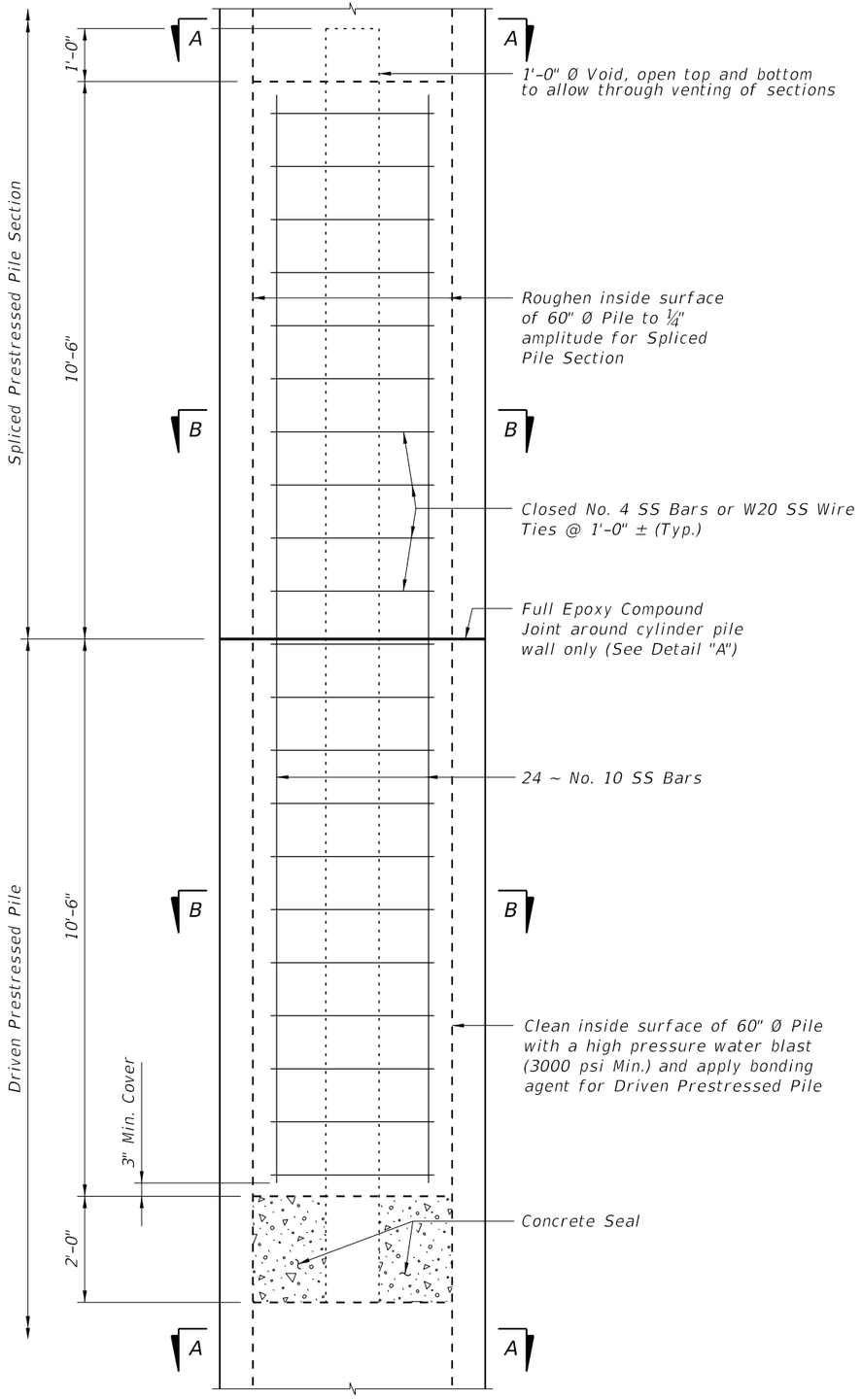
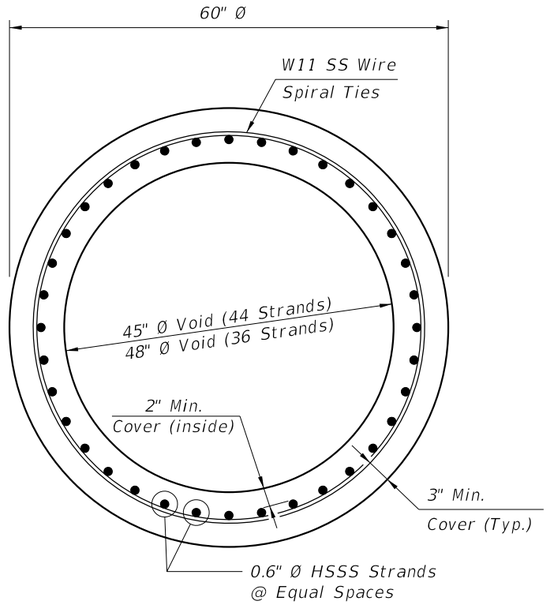
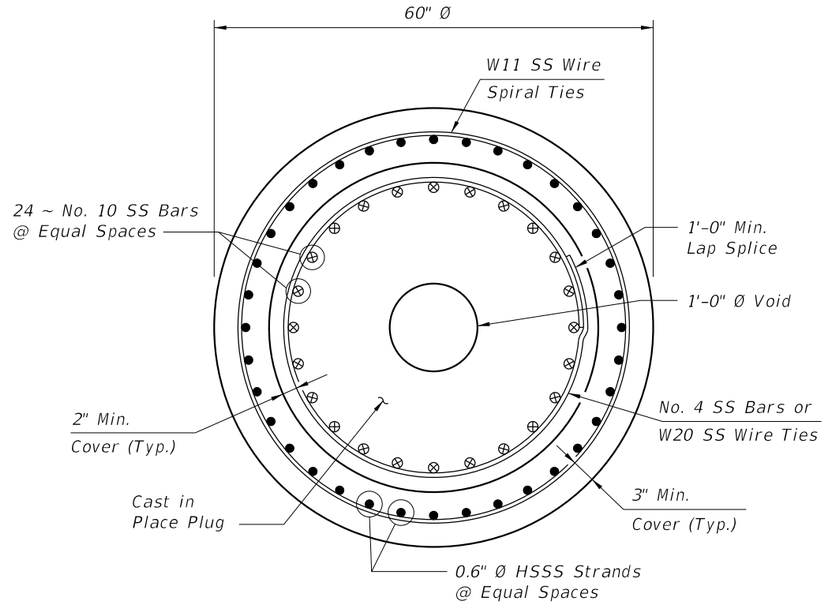
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	60" PRESTRESSED CFRP & SS CONCRETE CYLINDER PILE	INDEX	SHEET
01/01/16					455-160	2 of 3



DRIVABLE UNFORESEEN FIELD SPLICE DETAIL
(Cast in Place Plug)



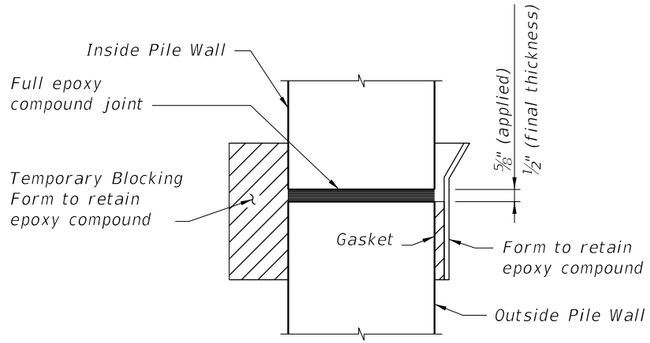
SECTION A-A



SECTION B-B

ALTERNATE STRAND PATTERNS

44 ~ 0.6" Ø, HSSS Strand, at 36 kips
36 ~ 0.6" Ø, HSSS Strand, at 36 kips



DETAIL "A"

SS PRESTRESSED PILE DETAILS

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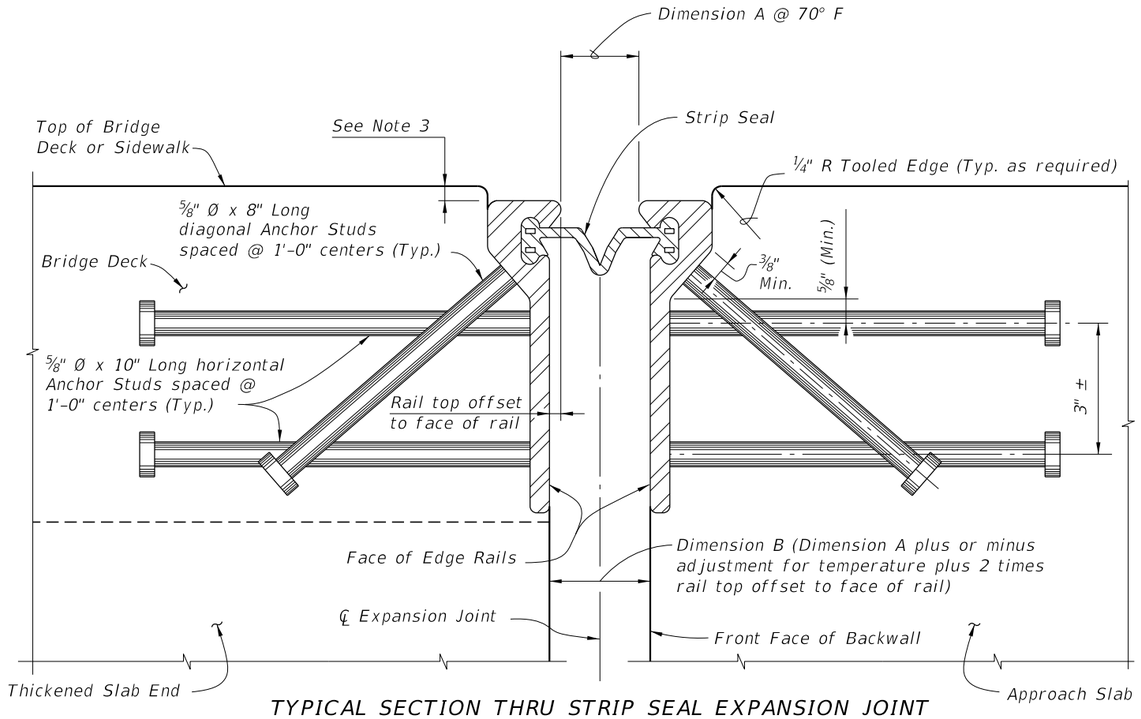
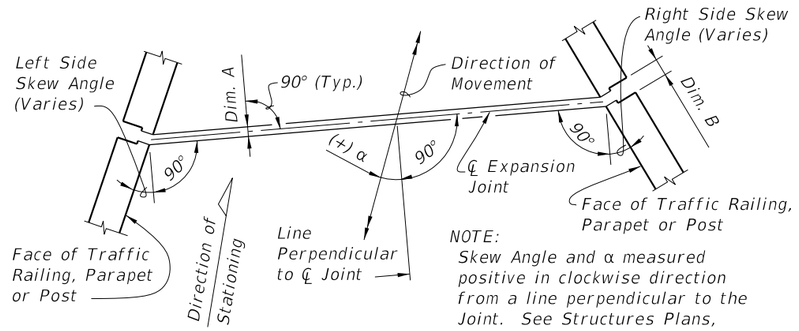
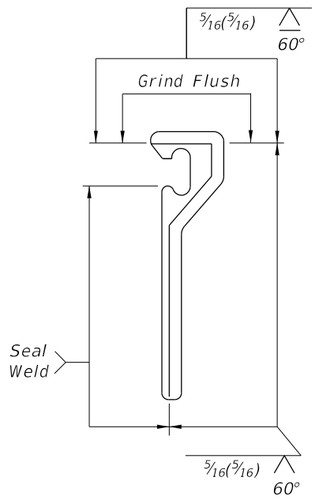
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/16			FY 2025-26 STANDARD PLANS	60" PRESTRESSED CFRP & SS CONCRETE CYLINDER PILE	455-160	3 of 3



TYPICAL SECTION THRU STRIP SEAL EXPANSION JOINT
(Begin or End Concrete Girder Bridge shown,
Intermediate Supports and Steel Girder Bridge similar.
Reinforcing Steel and Girder details not shown for clarity.)



MOVEMENT SCHEMATIC



SHOP SPLICE DETAIL

GENERAL NOTES:

1. *Furnish Strip Seal Expansion Joint Systems in accordance with Specification Section 458.*
2. *Shape of Edge Rail shown is representative, minor variations depending on manufacturer are permitted.*
3. *Recess the Edge Rail below the concrete surface in accordance with Specification Section 458.*
4. *Refer to the Expansion Joint Data Table in the Structures Plans for joint movement and Dimension A.*
5. *Refer to Specification Section 458 for installation and fabrication requirements.*

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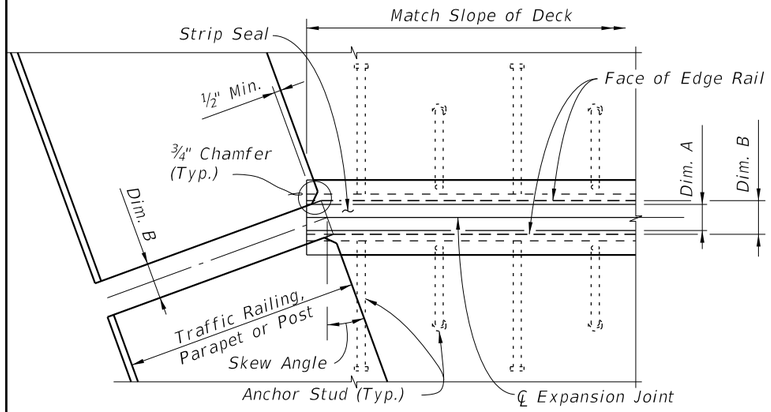
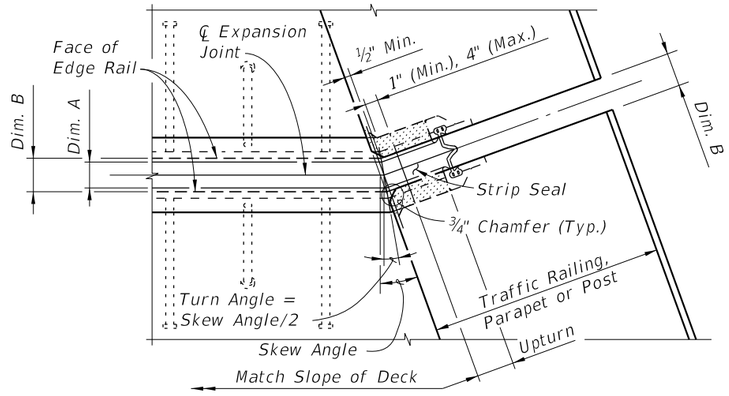
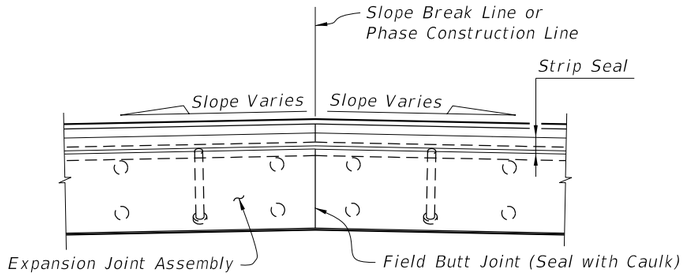
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2025-26 STANDARD PLANS	EXPANSION JOINT SYSTEM - STRIP SEAL	458-100	1 of 3



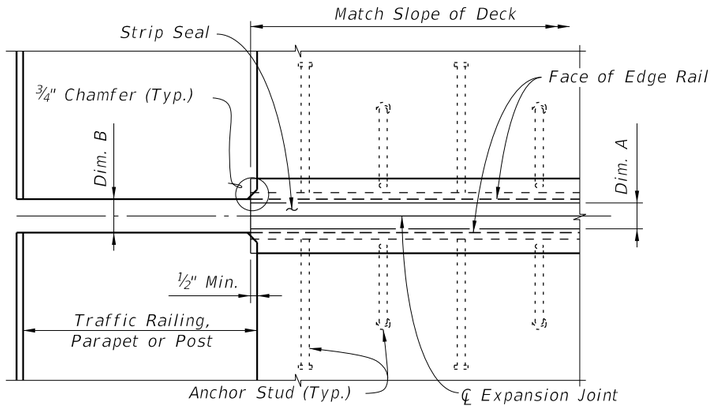
PARTIAL PLAN VIEW OF SKEWED JOINTS



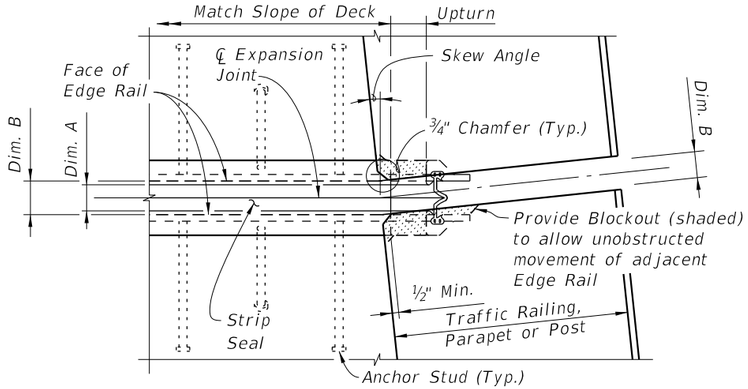
PARTIAL PLAN VIEW OF JOINTS SKEWED GREATER THAN 6°



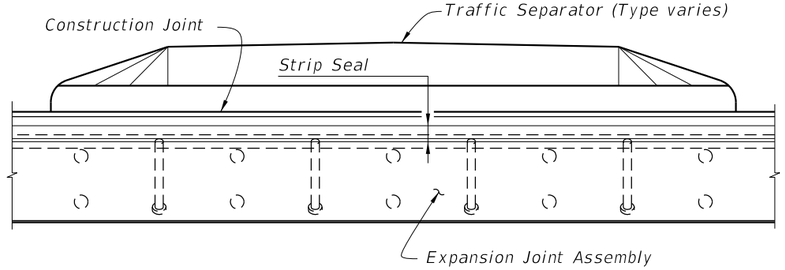
PARTIAL SECTION ALONG ℄ JOINT AT FIELD BUTT JOINT LOCATION (CROWNED DECK OR SLAB SHOWN)



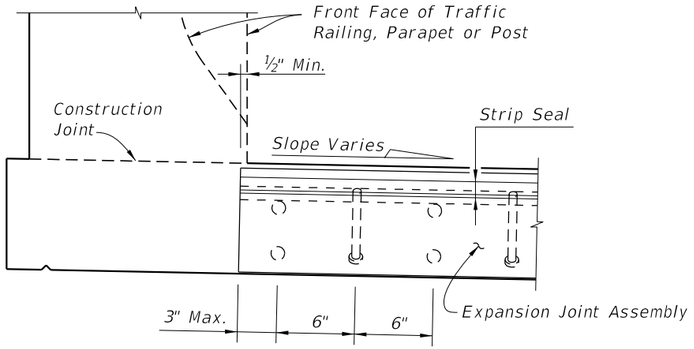
PARTIAL PLAN VIEW OF NONSKEWED JOINTS



PARTIAL PLAN VIEW OF NONSKEWED JOINTS & JOINTS SKEWED 6° OR LESS



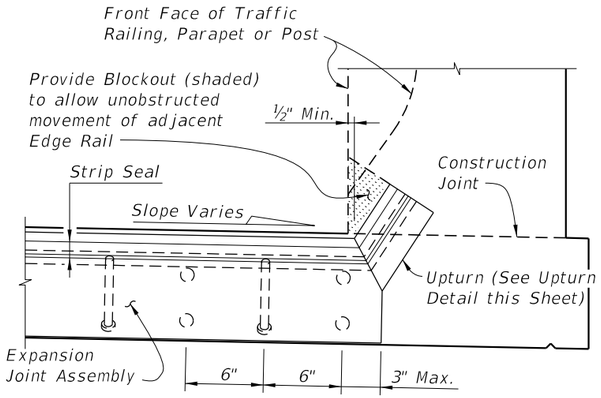
PARTIAL SECTION ALONG ℄ JOINT THRU TRAFFIC SEPARATOR



PARTIAL SECTION ALONG ℄ JOINT

JOINT TREATMENT AT HIGH SIDE OF DECK WITH SLOPE ≥ 1%

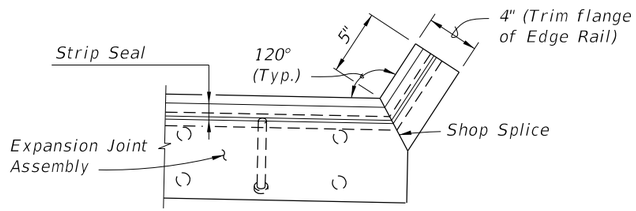
(Sidewalk Cover Plate where applicable not shown for clarity)



PARTIAL SECTION ALONG ℄ JOINT

JOINT TREATMENT AT LOW SIDE OF DECK & HIGH SIDE OF DECK WITH SLOPE < 1%

(Sidewalk Cover Plate where applicable not shown for clarity)

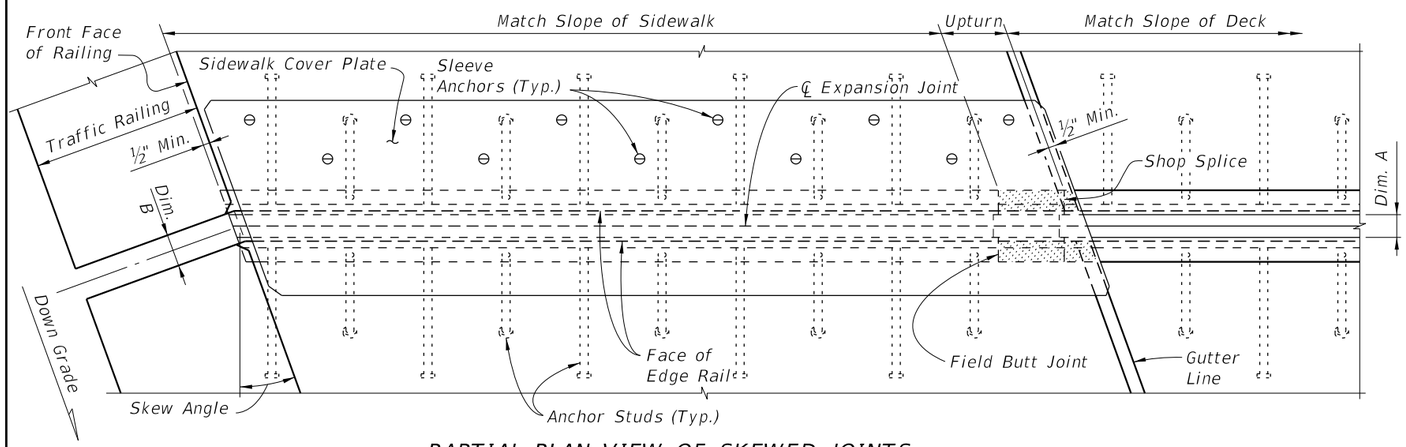


UPTURN DETAIL

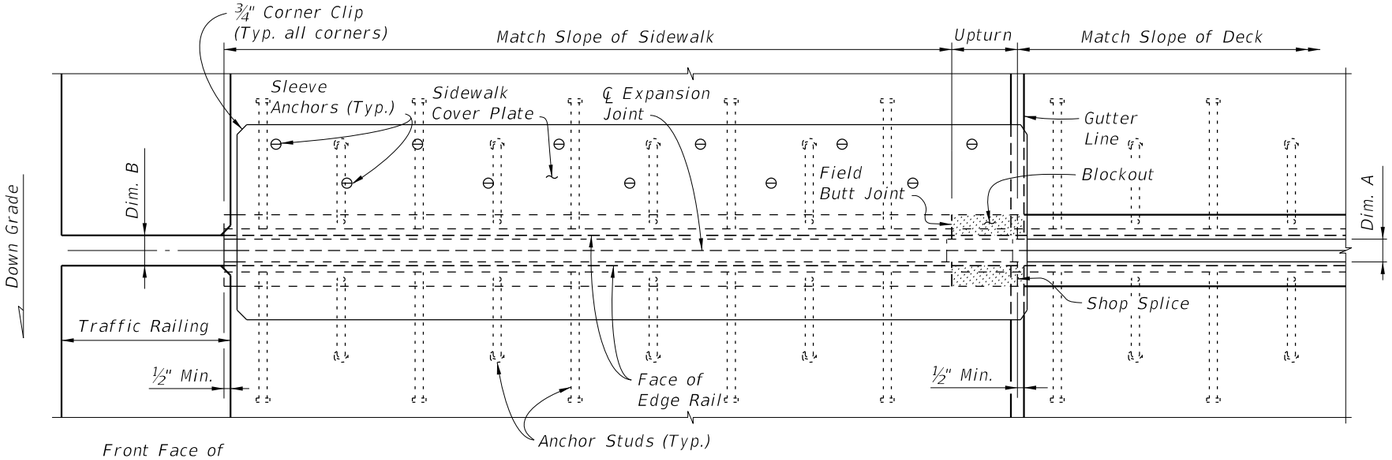
(TYPICAL AT TRAFFIC BARRIERS AND PARAPETS)

10/17/2024 11:02:09 AM

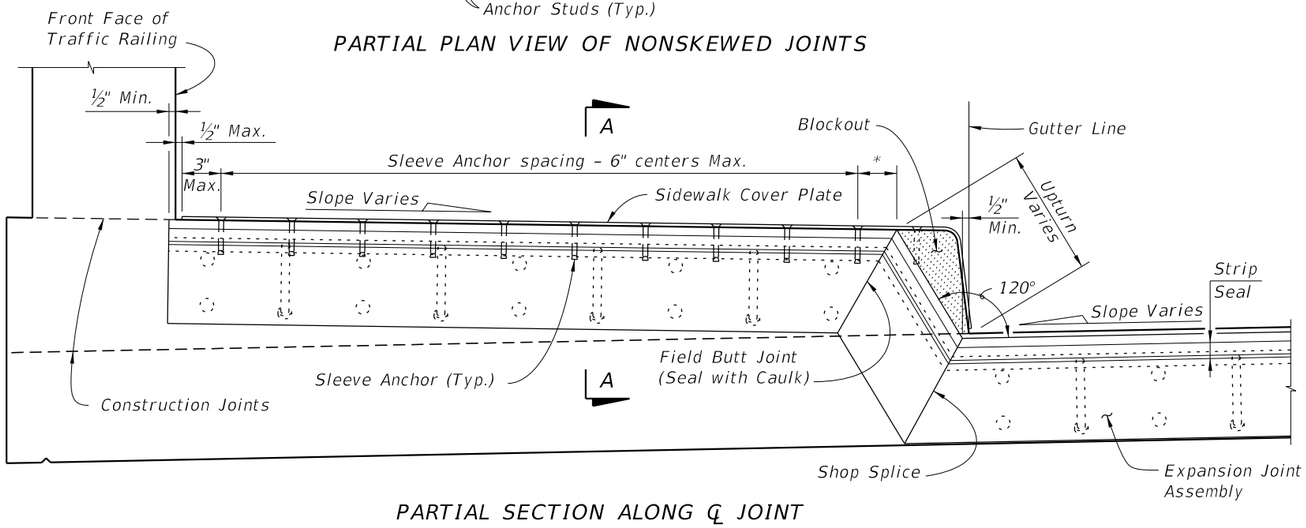
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	EXPANSION JOINT SYSTEM - STRIP SEAL	INDEX	SHEET
11/01/19					458-100	2 of 3



PARTIAL PLAN VIEW OF SKEWED JOINTS



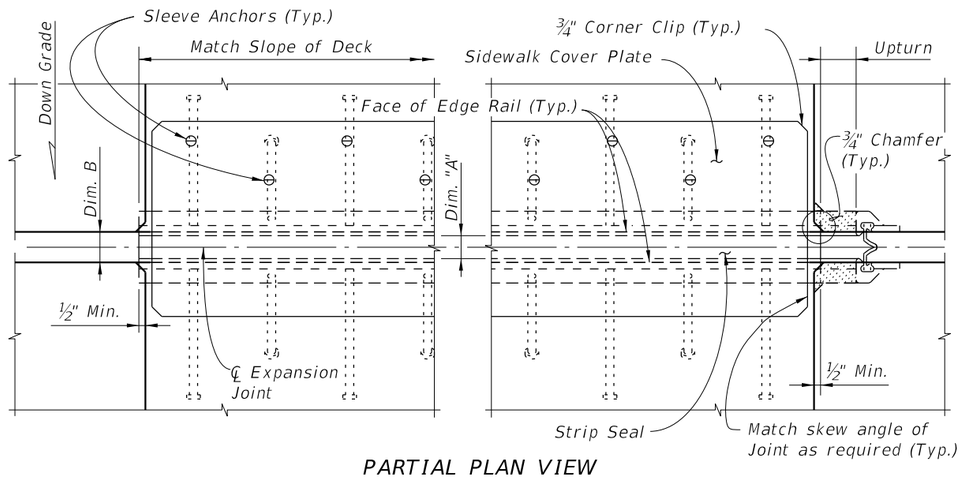
PARTIAL PLAN VIEW OF NONSKEWED JOINTS



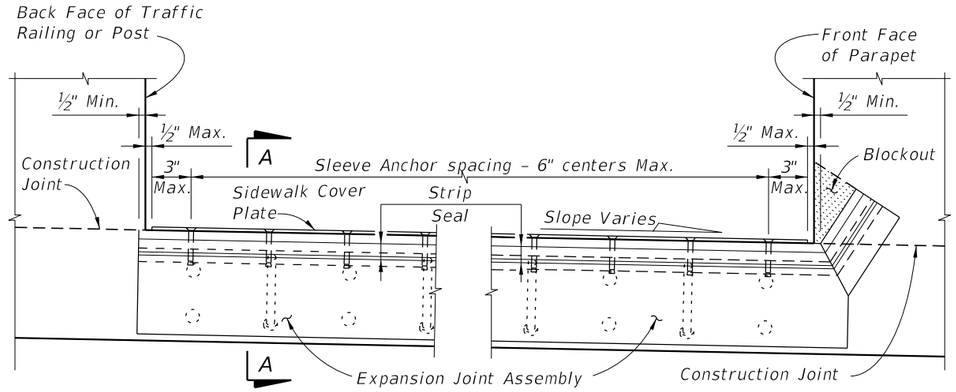
PARTIAL SECTION ALONG ℄ JOINT

RAISED SIDEWALK DETAIL

* Distance from ℄ Sleeve Anchor to edge of concrete is 2 inches minimum, 3 inches maximum.

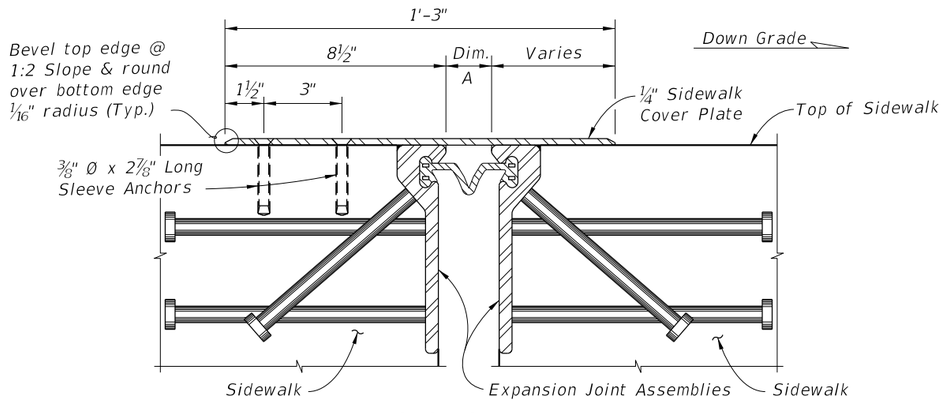


PARTIAL PLAN VIEW



PARTIAL SECTION ALONG ℄ JOINT

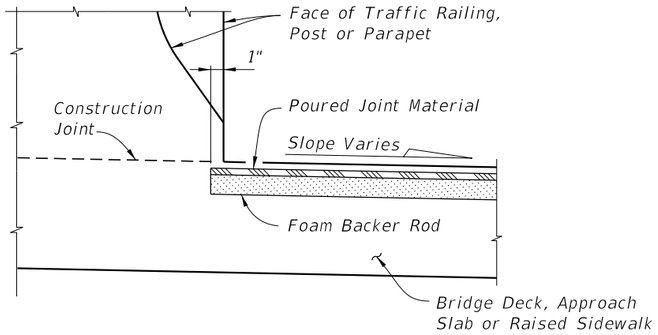
FLUSH SIDEWALK DETAIL



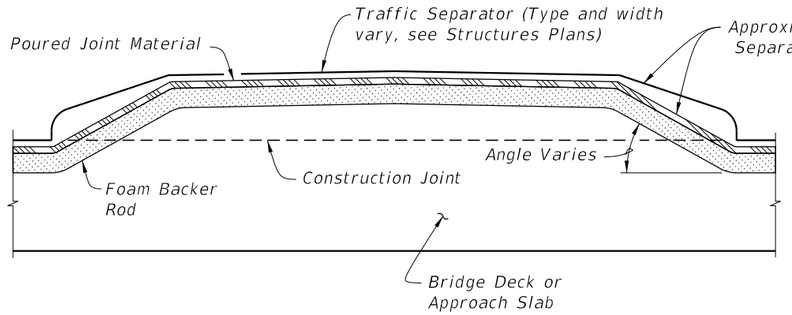
SECTION A-A

10/17/2024 11:02:15 AM

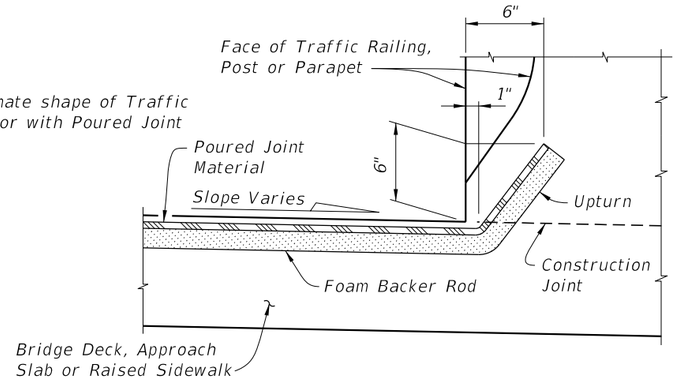
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2025-26 STANDARD PLANS	EXPANSION JOINT SYSTEM - STRIP SEAL	458-100	3 of 3



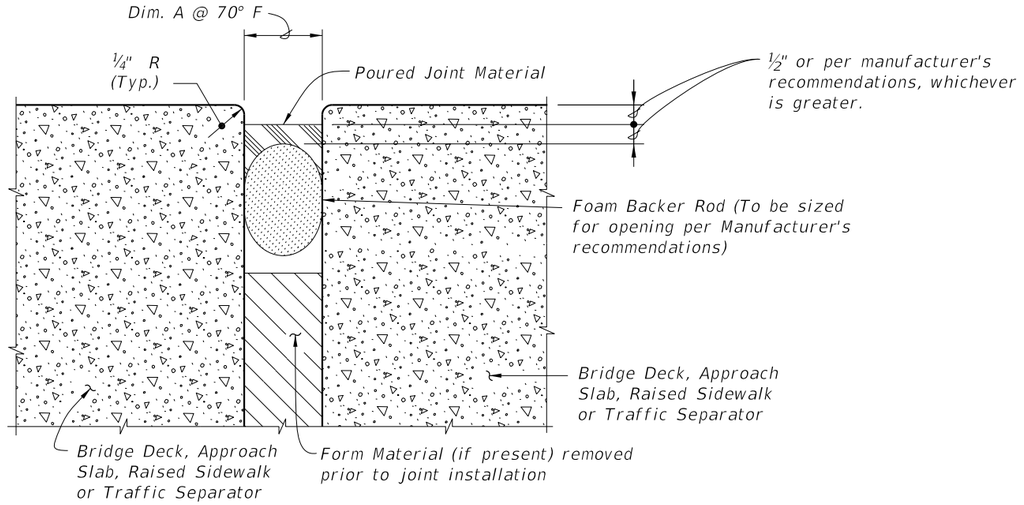
PARTIAL SECTION ALONG ℄ JOINT
JOINT TREATMENT AT HIGH SIDE OF
DECK WITH SLOPES 1% OR GREATER



PARTIAL SECTION ALONG ℄ JOINT,
JOINT TREATMENT AT TRAFFIC SEPARATOR



PARTIAL SECTION ALONG ℄ JOINT
JOINT TREATMENT AT LOW SIDE OF DECK OR
HIGH SIDE OF DECK WITH SLOPES < 1%



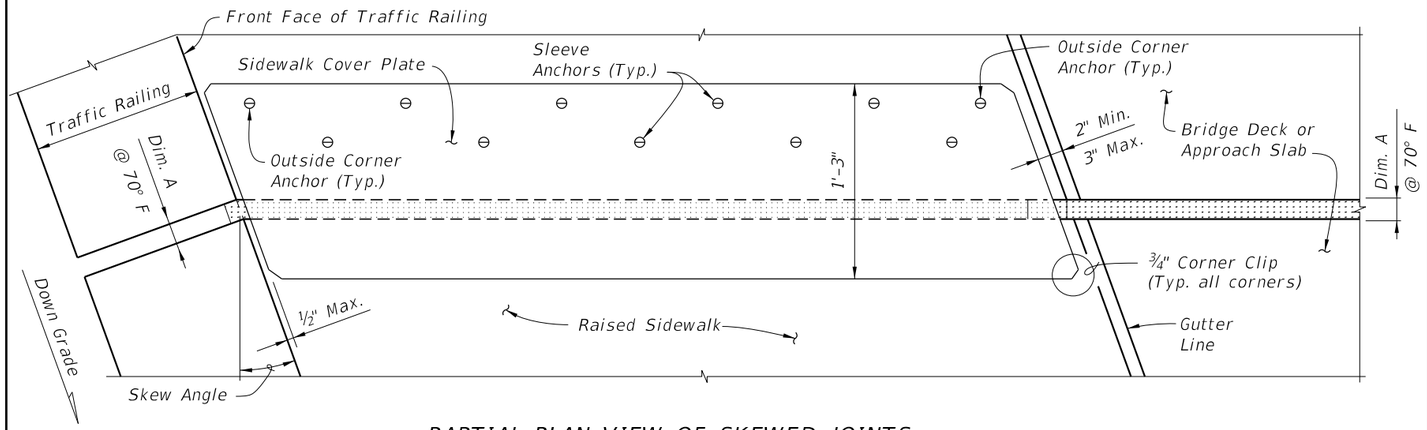
TYPICAL SECTION THRU JOINT

GENERAL NOTES:

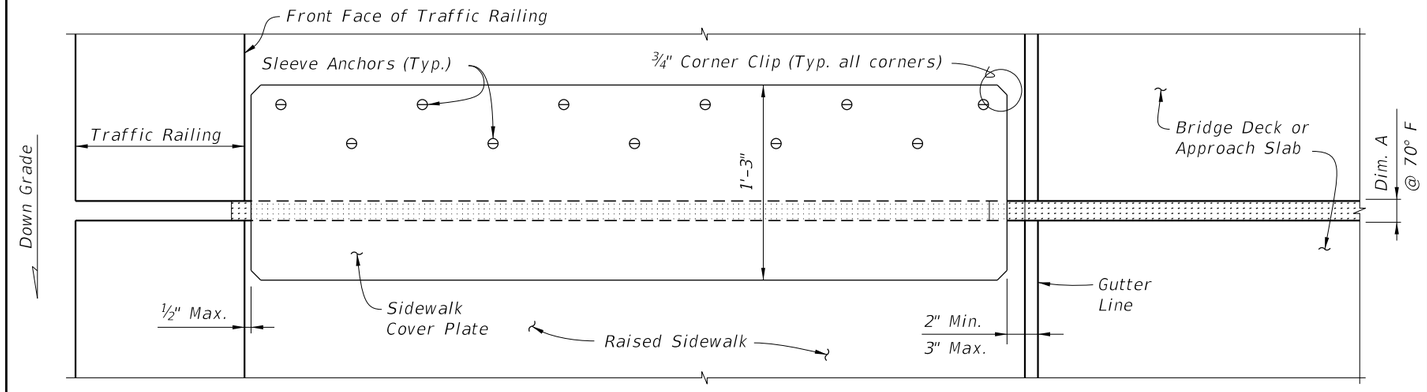
1. Furnish and install Poured Joint With Backer Rod Expansion Joint Systems in accordance with Specification Sections 458 and 932 using Type D silicone sealant material.
2. Refer to the Structures Plans, Poured Expansion Joint Data Table for Dim. A @ 70° F.

10/17/2024 11:02:22 AM

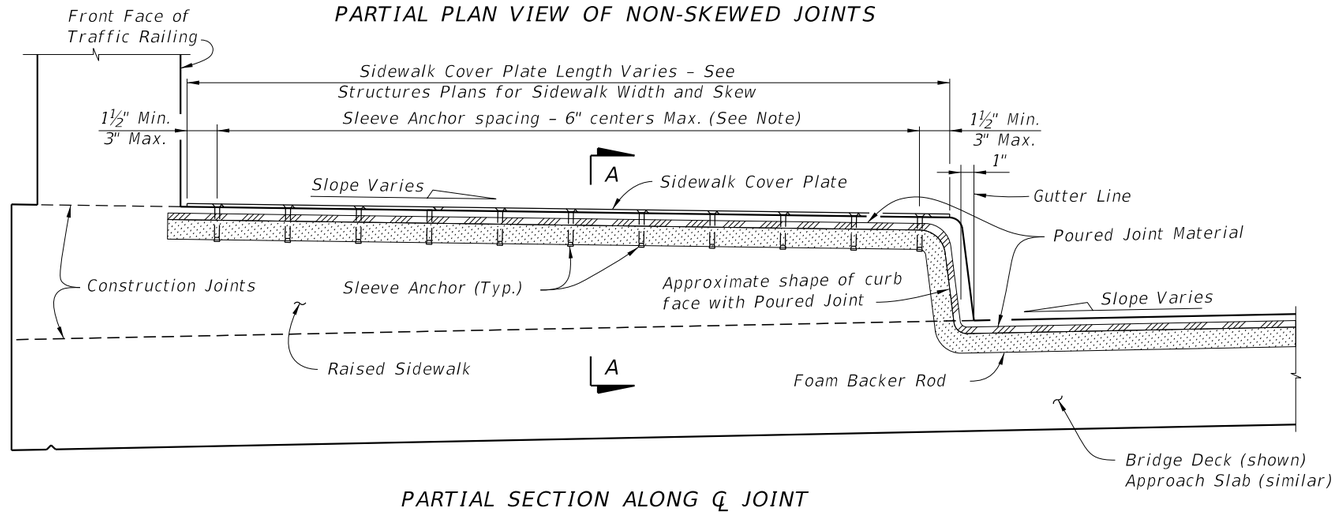
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/23			FY 2025-26 STANDARD PLANS	EXPANSION JOINT SYSTEM - POURED JOINT WITH BACKER ROD	458-110	1 of 2



PARTIAL PLAN VIEW OF SKEWED JOINTS

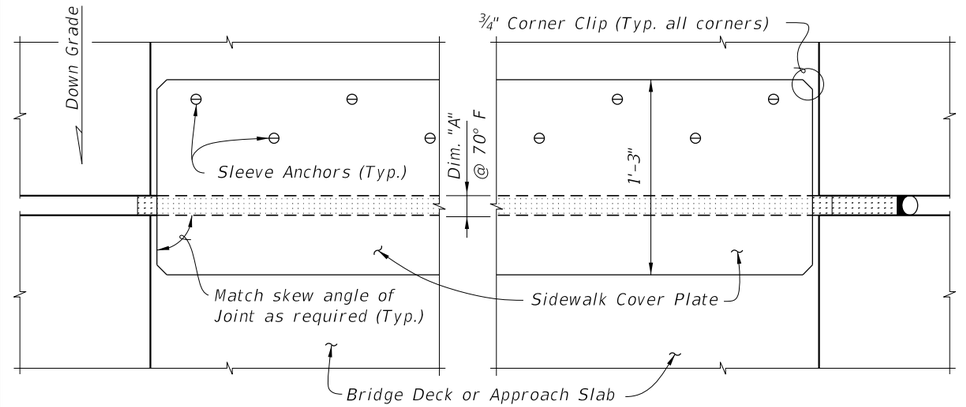


PARTIAL PLAN VIEW OF NON-SKEWED JOINTS

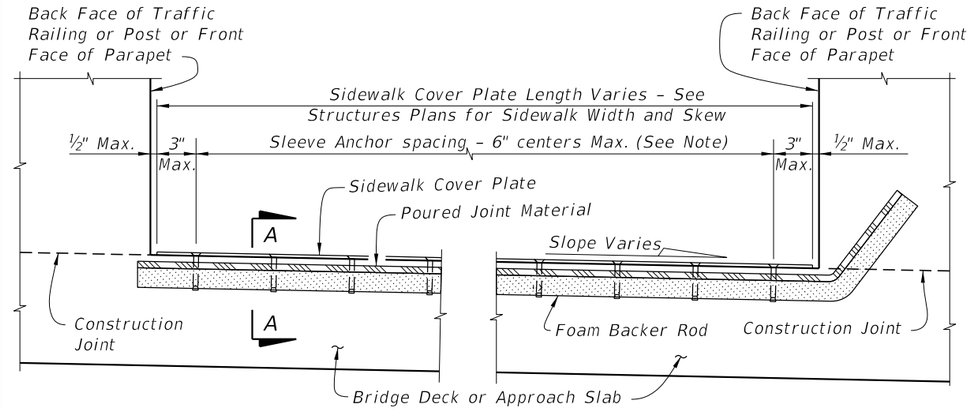


PARTIAL SECTION ALONG ℄ JOINT

RAISED SIDEWALK DETAIL

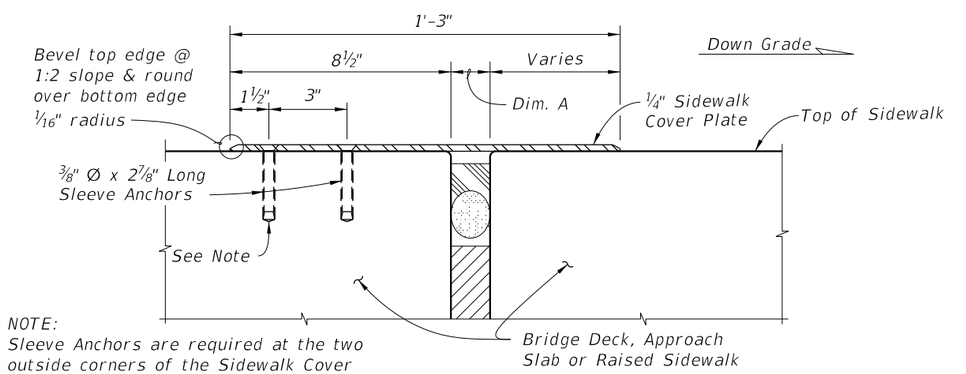


PARTIAL PLAN VIEW



PARTIAL SECTION ALONG ℄ JOINT

FLUSH SIDEWALK DETAIL

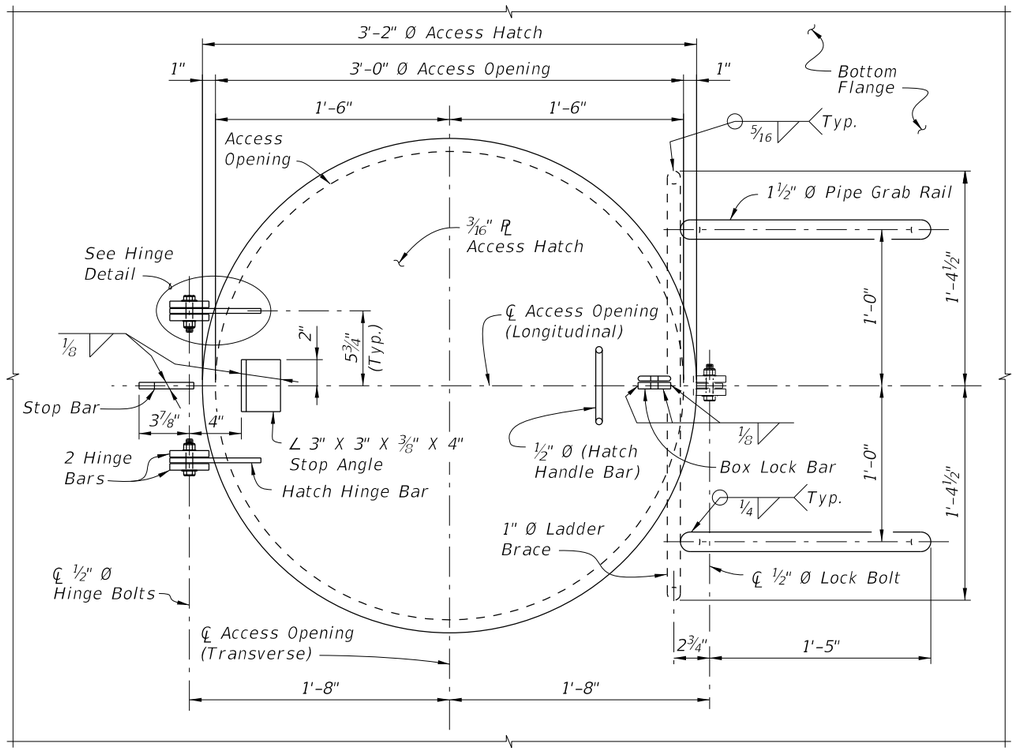


NOTE:
Sleeve Anchors are required at the two outside corners of the Sidewalk Cover Plate. Space Sleeve Anchors uniformly between the corner anchors.

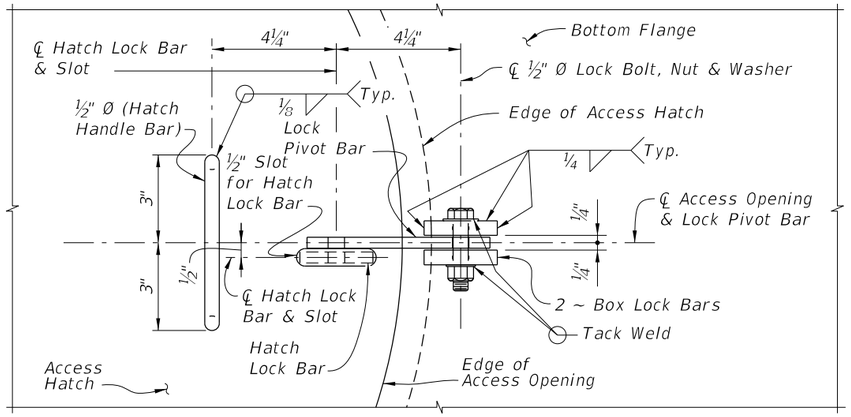
SECTION A-A

10/17/2024 11:02:30 AM

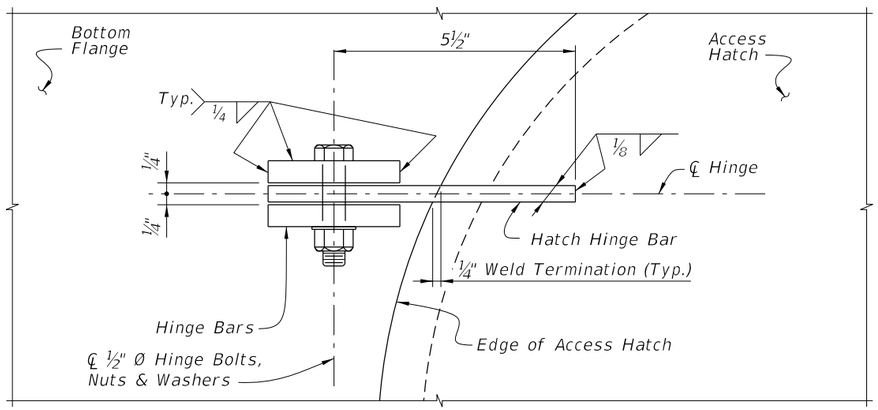
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/13			FY 2025-26 STANDARD PLANS	EXPANSION JOINT SYSTEM - POURED JOINT WITH BACKER ROD	458-110	2 of 2



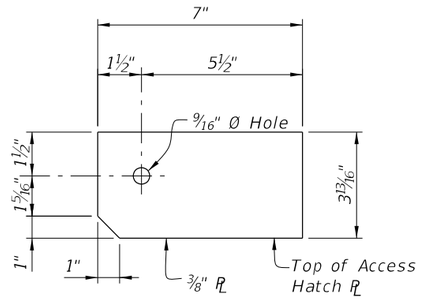
PLAN VIEW OF ACCESS HATCH ASSEMBLY



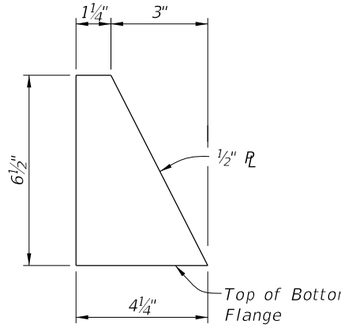
VIEW A-A



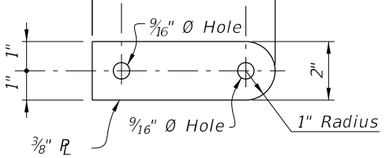
HINGE DETAIL



HATCH HINGE BAR DETAIL

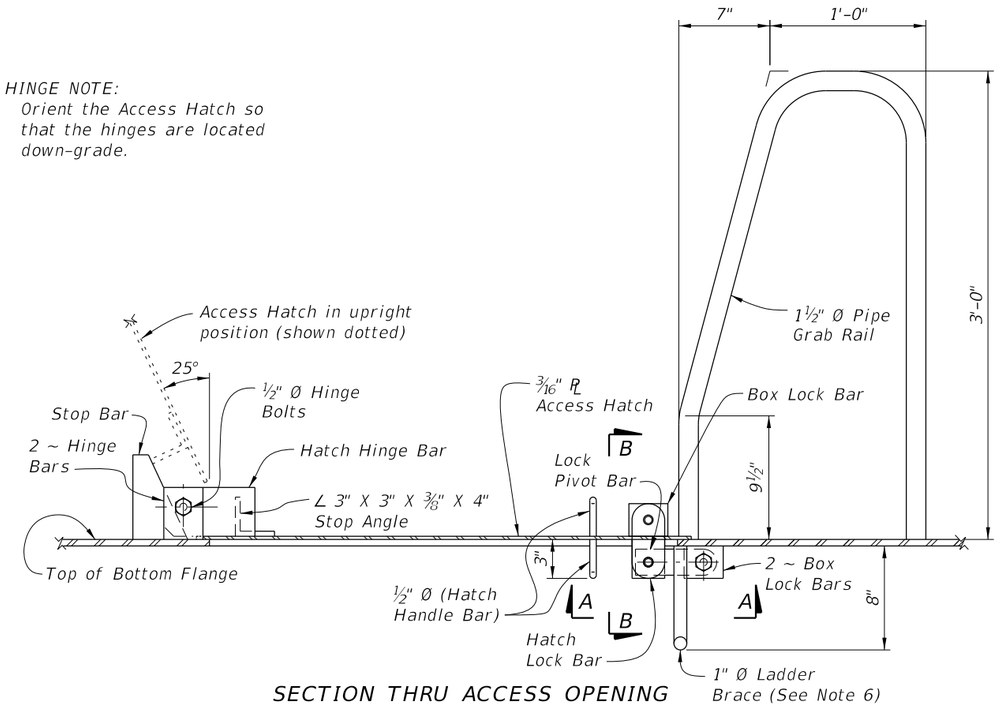


STOP BAR DETAIL

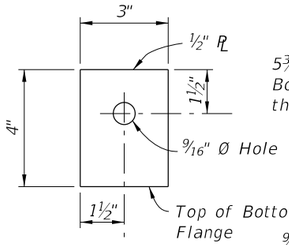


LOCK PIVOT BAR DETAIL

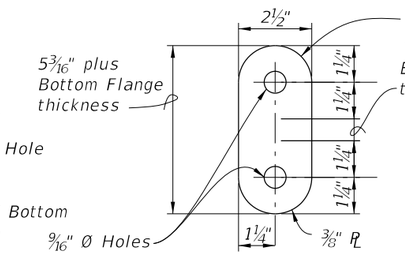
HINGE NOTE:
Orient the Access Hatch so that the hinges are located down-grade.



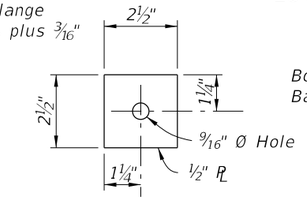
SECTION THRU ACCESS OPENING



HINGE BAR DETAIL

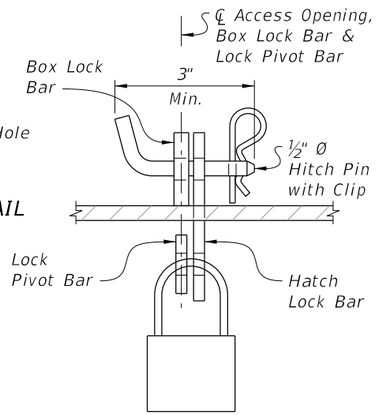


HATCH LOCK BAR DETAIL



BOX LOCK BAR DETAIL

NOTES:
1. All Structural Steel material in Access Hatch Assemblies shall conform to ASTM A709 Grade 36.
2. 1½" Ø Pipe Grab Rail shall be in accordance with ASTM A53 Grade B for standard weight pipe (Schedule 40).
3. ½" Ø Hatch Handle Bar, Hitch Pin and 1" Ø Ladder Brace shall be in accordance with ASTM A36.
4. All bolts shall conform to ASTM A307 or A449. All nuts shall conform to ASTM A563 and all washers shall conform to ASTM F-436.
5. All exposed edges of plates and openings shall be ground smooth.
6. Place Ladder Brace near the End Bents exclusively and only when the height is reasonable for access by a Ladder.
7. See Framing Plan sheets for locations of Access Hatch Openings.
8. Coat structural steel in accordance with Specification Section 560.
9. Include the cost of the Access Hatch Assembly and incidental items in the cost of the Steel Box Girders. No separate payment will be made for coating structural steel.



VIEW B-B
HATCH LOCK ASSEMBLY DETAIL

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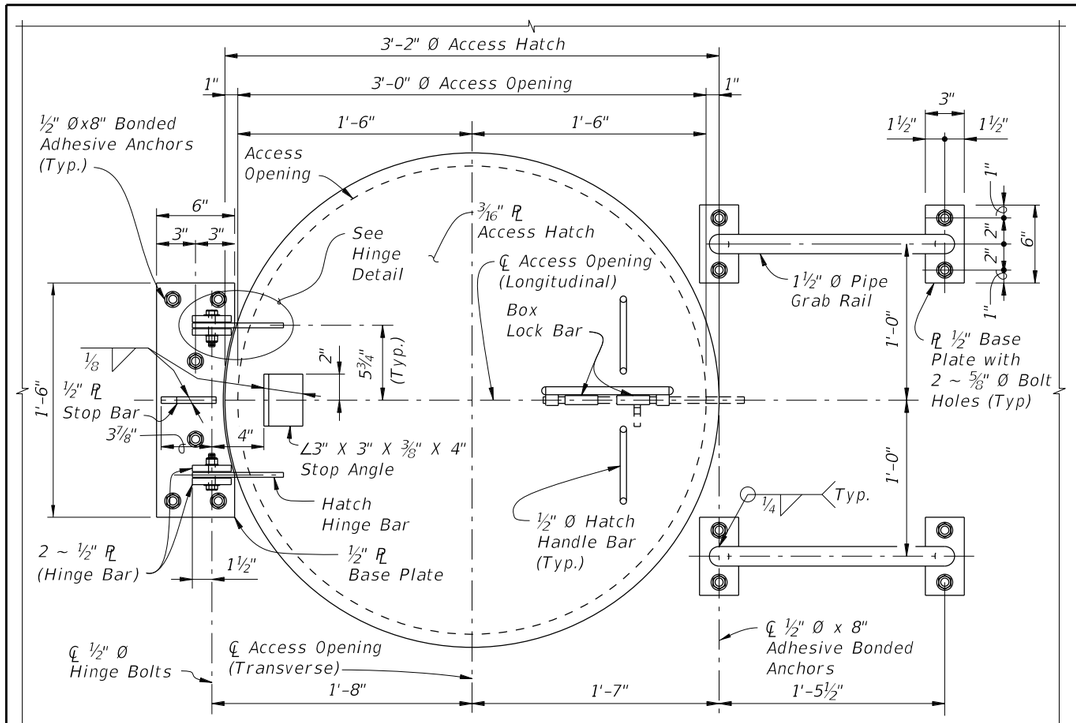
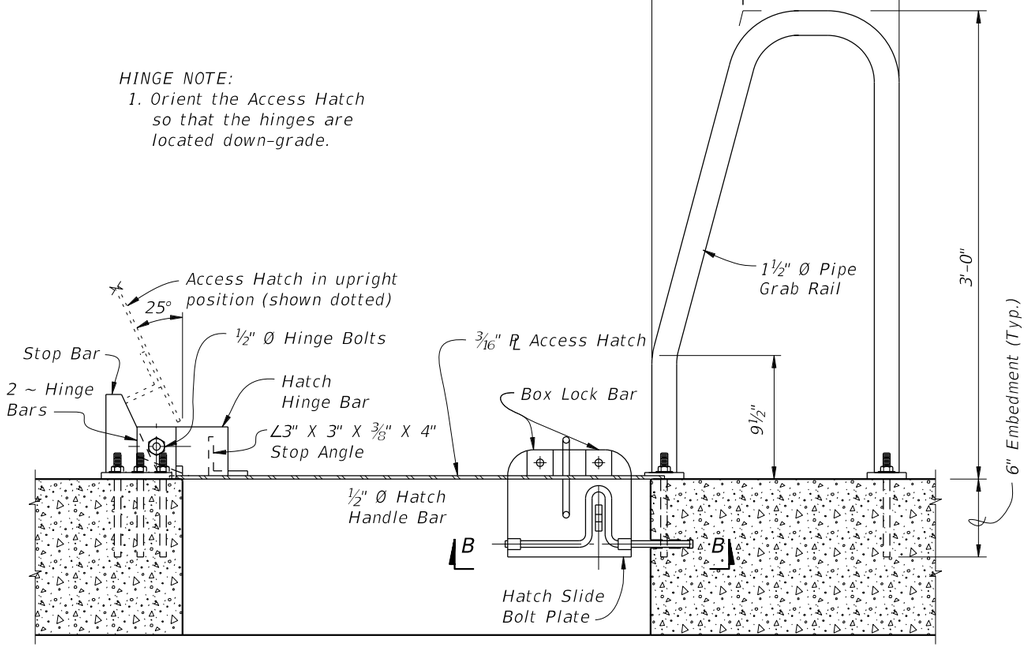
LAST REVISION	REVISION	DESCRIPTION:			
07/01/15			FY 2025-26 STANDARD PLANS	ACCESS HATCH ASSEMBLY FOR STEEL BOX SECTIONS	INDEX 460-250 / SHEET 1 of 1

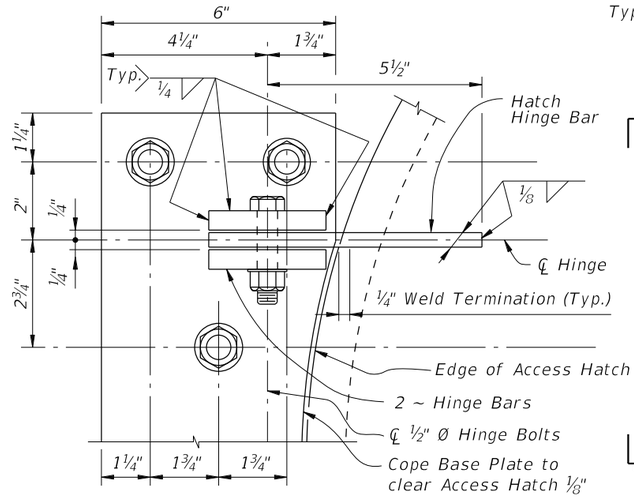


PLAN VIEW OF ACCESS HATCH ASSEMBLY

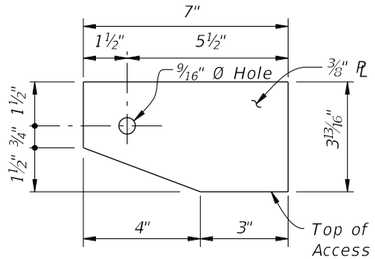
HINGE NOTE:
1. Orient the Access Hatch so that the hinges are located down-grade.



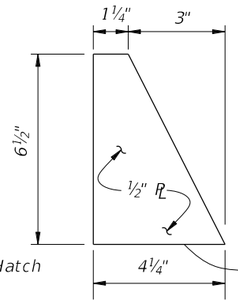
SECTION THRU ACCESS OPENING



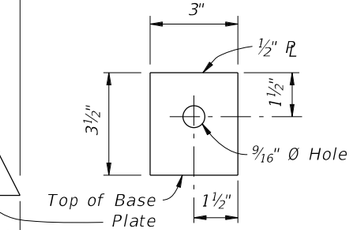
HINGE DETAIL



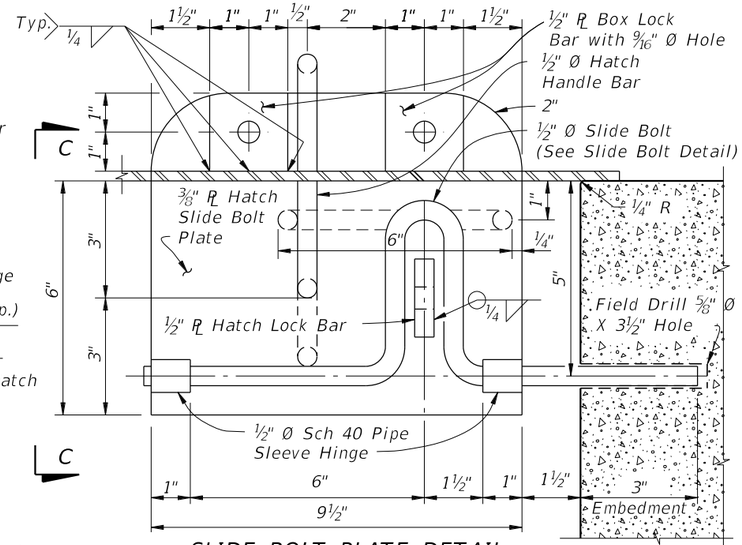
HATCH HINGE BAR DETAIL



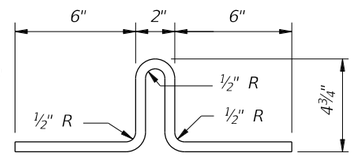
STOP BAR DETAIL



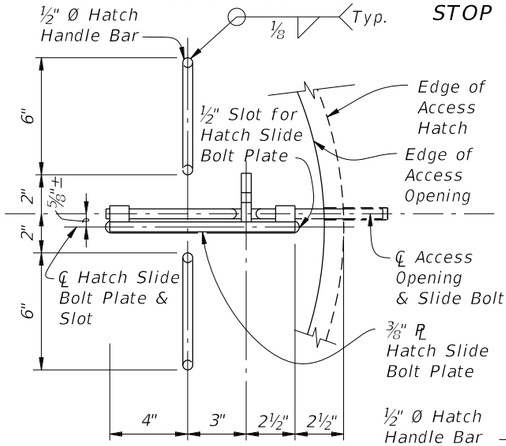
HINGE BAR DETAIL



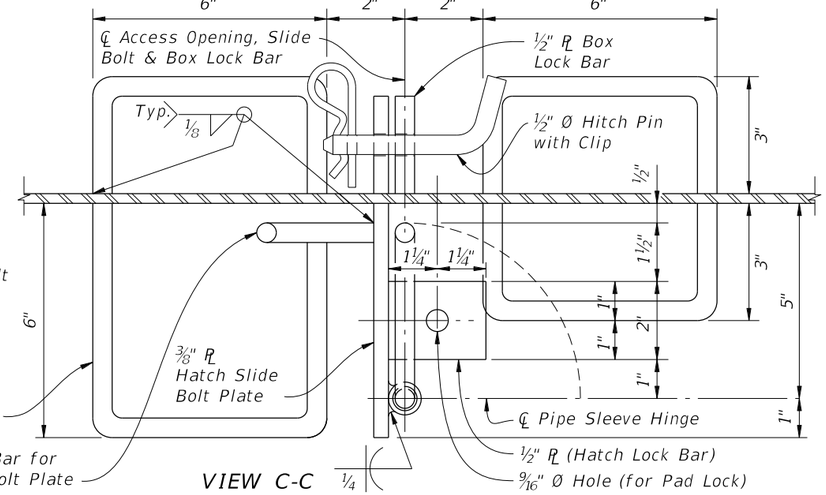
SLIDE BOLT PLATE DETAIL



SLIDE BOLT DETAIL



VIEW B-B



VIEW C-C

NOTES:
1. All Structural Steel material in Access Hatch Assemblies shall conform to ASTM A709 Grade 36.
2. 1½" Ø Pipe Grab Rail shall be in accordance with ASTM A53 Grade B for standard weight pipe (Schedule 40).
3. ½" Ø Hatch Handle Bar and Hitch Pin shall be in accordance with ASTM A36.
4. All bolts shall conform to ASTM A307 or A449. All nuts shall conform to ASTM A563 and all washers shall conform to ASTM F-436.
5. All exposed edges of plates and openings shall be ground smooth.
6. See Framing Plan sheets for locations of Access Hatch Openings.
7. Coat structural steel in accordance with Specification Section 560.
8. Include the cost of the Access Hatch Assembly and incidental items in the cost of the Concrete Box Section. No separate payment will be made for coating structural steel.

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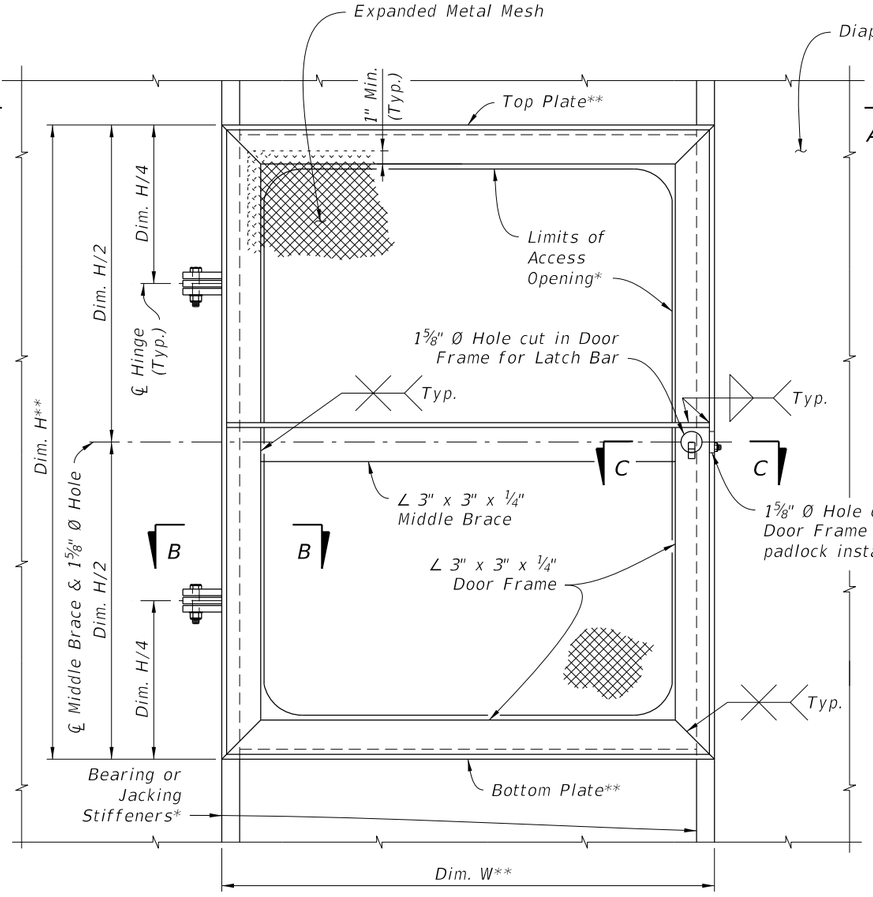
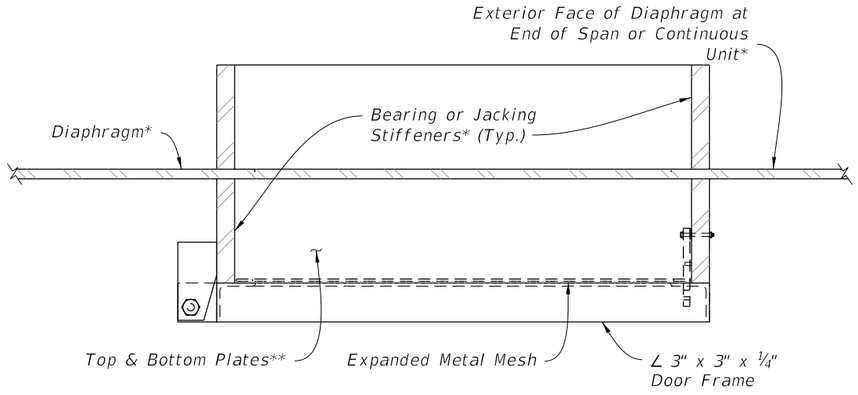
LAST REVISION	REVISION	DESCRIPTION:			
07/01/15			FY 2025-26 STANDARD PLANS	ACCESS HATCH ASSEMBLY FOR CONCRETE BOX SECTIONS	INDEX 460-251 / SHEET 1 of 1



ELEVATION VIEW OF ACCESS DOOR ASSEMBLY

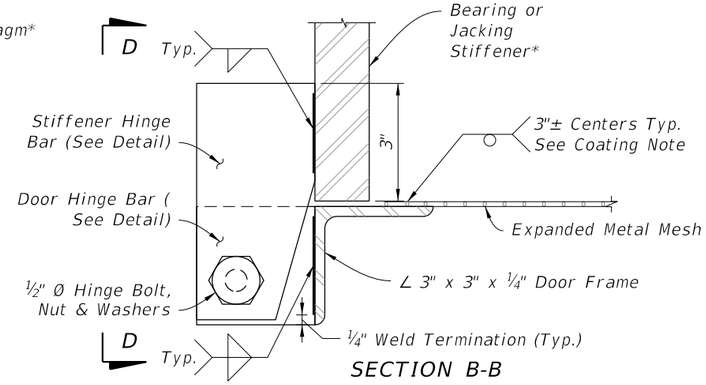
(At Access Opening in End Internal Diaphragm as seen from inside the Box Girder. Right Hand Door shown; Left Hand Door opposite hand)



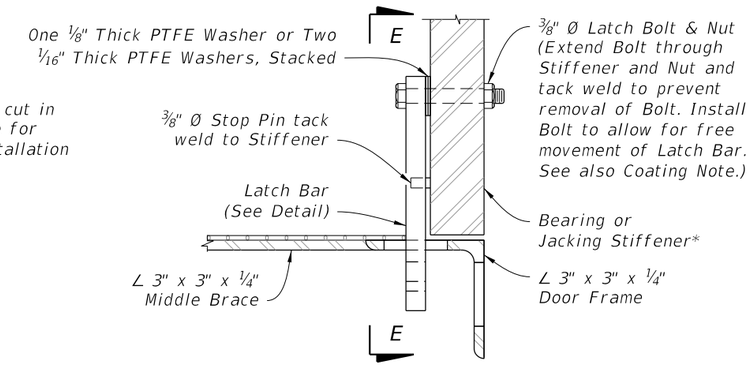
SECTION A-A

* See Plans for dimensions and details.

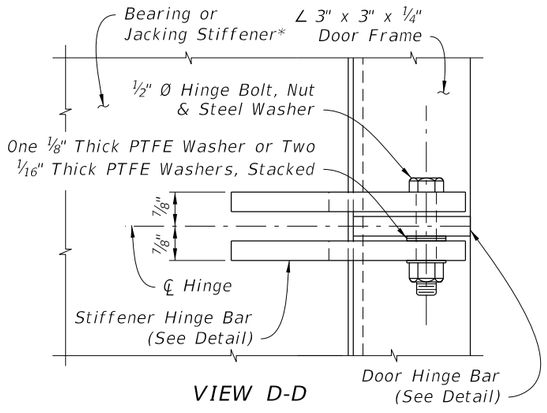
** See Access Door Assembly for Steel Box Girders Data Table in the Plans for Dim. H & Dim. W.



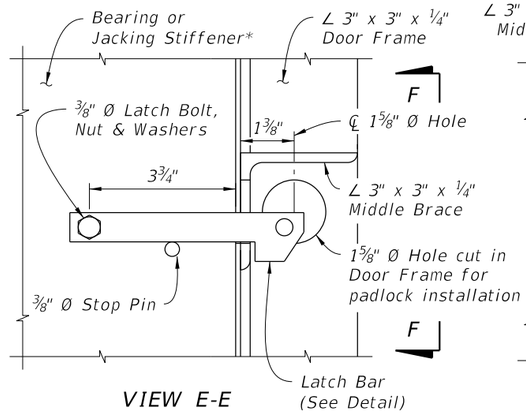
SECTION B-B



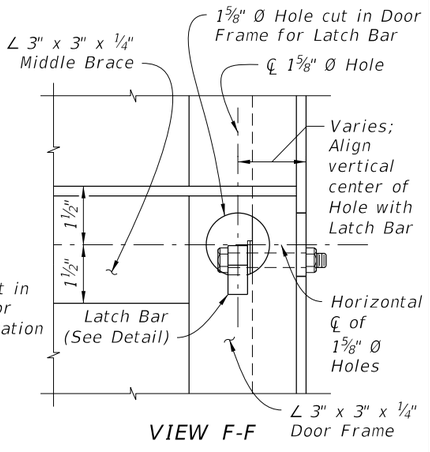
SECTION C-C



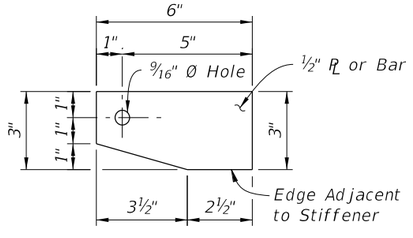
VIEW D-D



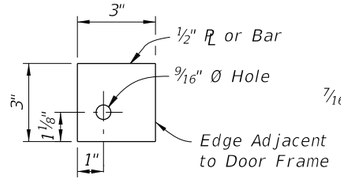
VIEW E-E



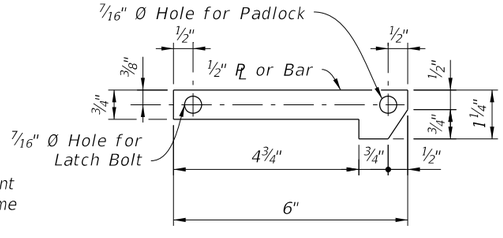
VIEW F-F



STIFFENER HINGE BAR DETAIL



DOOR HINGE BAR DETAIL



LATCH BAR DETAIL

ACCESS DOOR NOTES:

STRUCTURAL STEEL:

Fabricate Door Assemblies using structural steel in accordance with Specification 962, any grade. Grind all exposed edges and burs smooth. Non-destructive testing of welds is not required. See Plans for details of Diaphragm, Stiffeners and Top and Bottom Plates.

EXPANDED METAL MESH:

Expanded metal mesh shall be ½" No. 16 expanded carbon steel metal mesh in accordance with ASTM F1267, Type I or II, Class 2, Grade A.

BOLTS, NUTS AND STEEL WASHERS:

Bolts shall be stainless steel hex head bolts meeting the requirements of ASTM F593, Type 316. Nuts shall be ASTM F594, Type 316. Steel washers shall be stainless steel compatible with the bolts and nuts.

PTFE WASHERS:

PTFE washers shall be ¾" or 1" O.D. (nominal), 1/16" or 1/8" thick, sized for use with ⅜" or ½" diameter bolts as shown.

COATING:

Coat Access Door Assemblies after complete fabrication, including the expanded metal mesh, using an Interior Box Girder Coating System in accordance with Specification 975. Weld expanded metal mesh to the door frame after the door frame has been abrasive blast cleaned and prior to coating. Install Bolts and PTFE Washers after coating. Touch-up tack weld on Latch Bolt after welding.

DOOR HINGE LOCATION:

Place door hinges on the transverse downward side of the access opening.

PADLOCKS:

Provide a suitable keyed commercial grade, weather resistant padlock with a 2" shackle for each Access Door Assembly located at Bridge Abutments. Key all padlocks for Access Door Assemblies and Access Hatches (if present) on an individual bridge alike.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	ACCESS DOOR ASSEMBLY FOR STEEL BOX SECTIONS	INDEX	SHEET
07/01/15						460-252	1 of 1

TRAFFIC RAILING NOTES

This Traffic Railing Retrofit has been structurally evaluated to be equivalent or greater in strength to a design which has been successfully crash tested in accordance with NCHRP Report 350 TL-4 criteria.

CONCRETE: Concrete for Transition Blocks and Curbs shall be Class II (Bridge Deck).

REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60.

THRIE-BEAM GUARDRAIL: Steel Thrie-Beam Elements shall meet the requirements for Class B (10 Gauge) Guardrail of AASHTO M 180, Type II (Zinc coated). The minimum panel length for Thrie-Beam Elements shall be 12'-6". Field drilled holes for Post connections shall be ¾" by 2½" slotted holes.

GUARDRAIL BOLTS: Guardrail bolts, nuts and washers shall be in accordance with AASHTO M180.

GUARDRAIL POSTS AND BASE PLATES: Posts and Base Plates shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

ANCHOR BOLTS, NUTS AND WASHERS: Screw Anchors shall meet the requirements for Developmental Specification Dev937PIAS. Adhesive-Bonded Anchors and Anchor Bolts shall be fully threaded rods in accordance with ASTM F1554 Grade 105 or ASTM A193 Grade B7. At the Contractor's option, Anchor Bolts for through bolting may be in accordance with ASTM A449. All Nuts shall be single self-locking hex nuts and in accordance with ASTM A563 or ASTM A194. Flat Washers shall be in accordance with ASTM F436 and Plate Washers (for long slotted holes only) shall be in accordance with ASTM A36 or ASTM A709 Grade 36. After the nuts have been snug tightened, the anchor bolt threads shall be distorted to prevent removal of the nuts. Distorted threads and the exposed trimmed ends of anchors shall be coated with a galvanizing compound in accordance with the Specifications.

COATINGS: Screw Anchors shall be mechanically galvanized. All other Nuts, Bolts, Anchors, Washers, Guardrail Posts, Anchor Plates and Base Plates shall be hot-dip galvanized in accordance with the Specifications. Guardrail Post Assemblies shall be hot-dip galvanized after fabrication.

SCREW ANCHORS: Screw Anchors shall be listed on the Innovative or Approved Products List (IPL or APL). No proof testing is required.

ADHESIVE-BONDED ANCHORS AND DOWELS: Adhesive Bonding Material Systems for Anchors and Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 15,000 lbs. for ⅞" Ø anchor bolts; 55,000 lbs. for the 1¼" anchor bolts with 13" embedment; and 30,500 lbs. for the 1¼" Ø anchor bolts with 5" embedment.

BRIDGES ON CURVED ALIGNMENTS: The details presented in these Indexes are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

POST SPACING: Posts shall be located along the length of the bridge at typical 6'-3" or 3'-1½" spaces. Utilize the Modified Post Spacing at Intermediate Deck Joints Details as required to clear deck joints. Establish post spacing along the bridge and Roadway Guardrail Transition beginning with the Key Post. The variable post spacings located near begin and end bridge may be utilized to optimize the typical post spacing. Variable lengths of guardrail overlap are also permitted to optimize the typical post spacing. Symmetry of post spacing is not necessary.

THRIE-BEAM EXPANSION SECTION: Thrie-Beam Expansion Sections shall be installed at locations shown in the Plans. Install nuts for splice bolts finger-tight at 2½" slots in thrie beam expansion sections. Nuts shall fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening. Tighten guardrail bolts in 3¾" slots at guardrail post(s) that lie between the slotted expansion splice and bridge deck joint so that the bolt heads are in full contact with thrie-beam elements, but not so tight as to impede movement due to expansion.

BEARING PADS: Provide plain Neoprene pads with a durometer hardness of 60 or 70 and meeting the requirements of Specification Section 932, for ancillary structures.

ELEVATION MARKERS: Elevation Markers need not be replaced when portions of the existing traffic railing carrying existing elevation markers are removed.

BARRIER DELINEATORS: Install Barrier Delineators at the top of the guardrail offset blocks in accordance with Specification Section 705. Match the Barrier Delineators color (white or yellow) to the near edgeline.

PEDESTRIAN SAFETY TREATMENTS: Pedestrian Safety Treatment is required when called for in the Plans. See Index 536-001 for details.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers.

PAYMENT: Payment will be made under Metal Traffic Railing (Thrie-Beam Retrofit) which shall include all materials and labor required to fabricate and install the barrier and lapped guardrail where necessary to maintain post spacing. Transition Blocks and Curbs, Bridge Name Plate and Barrier Delineators and installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.

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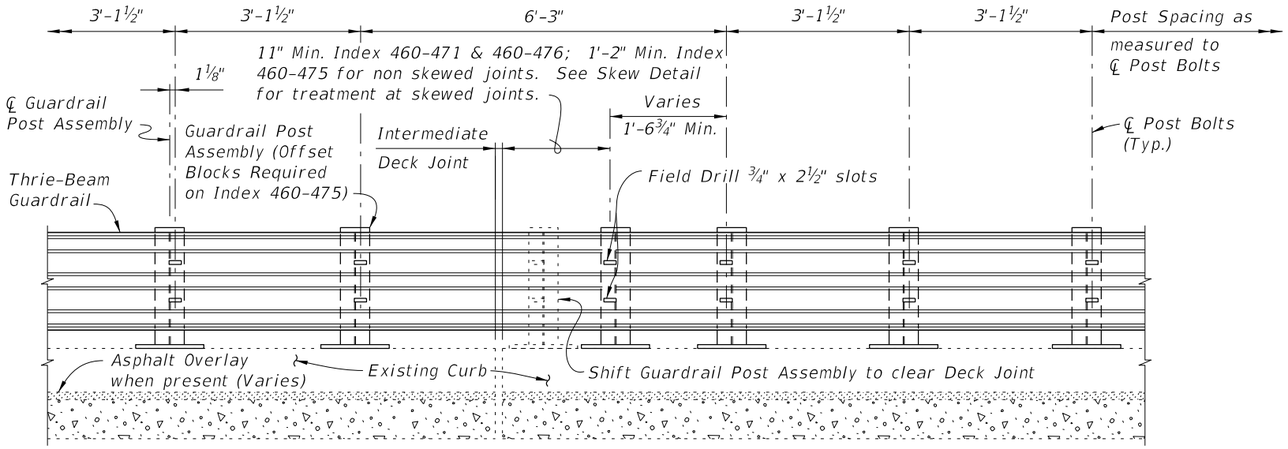
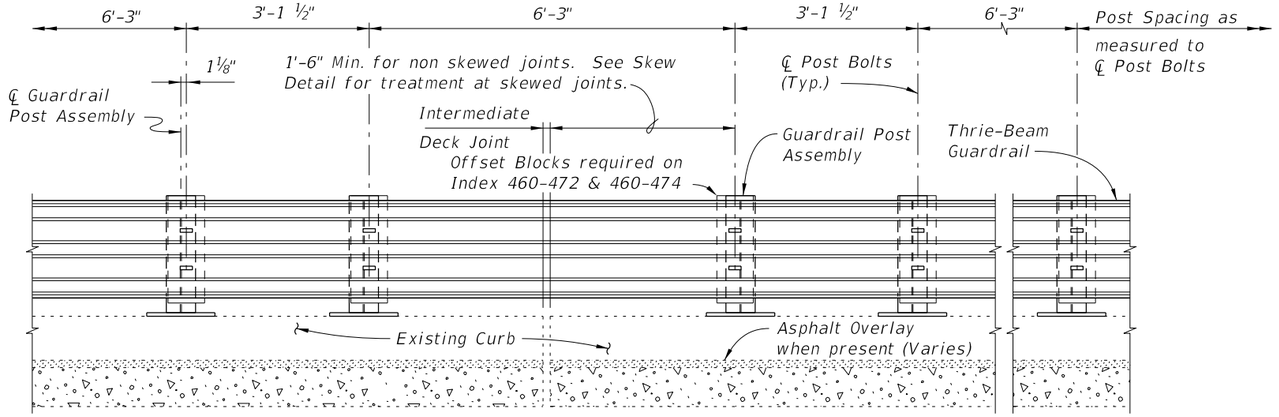
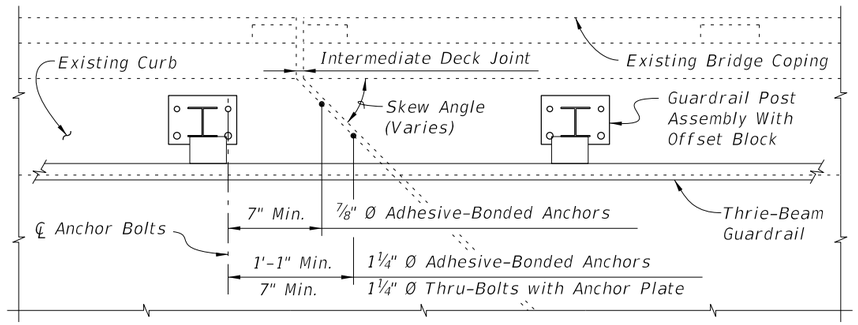
LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) TYPICAL DETAILS & NOTES	INDEX 460-470	SHEET 1 of 3



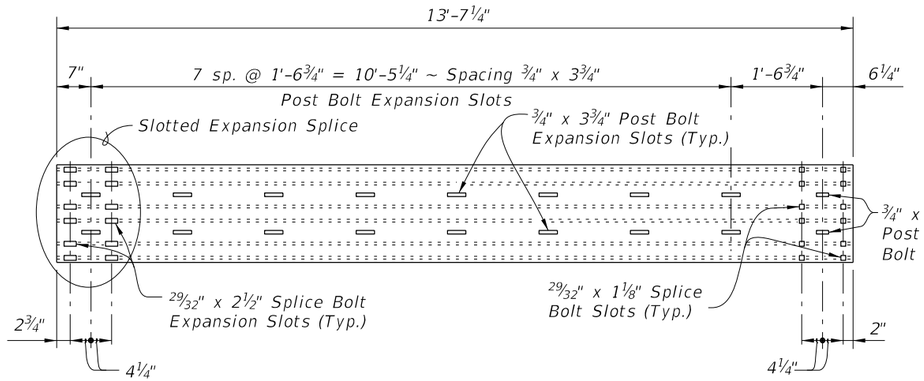
PARTIAL ELEVATION OF INSIDE FACE OF RAILING
MODIFIED POST SPACING AT INTERMEDIATE DECK JOINTS DETAIL
FOR INDEX 460-471, 460-475 & 460-476



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
MODIFIED POST SPACING AT INTERMEDIATE DECK JOINTS DETAIL
FOR INDEX 460-472, 460-473 & 460-474



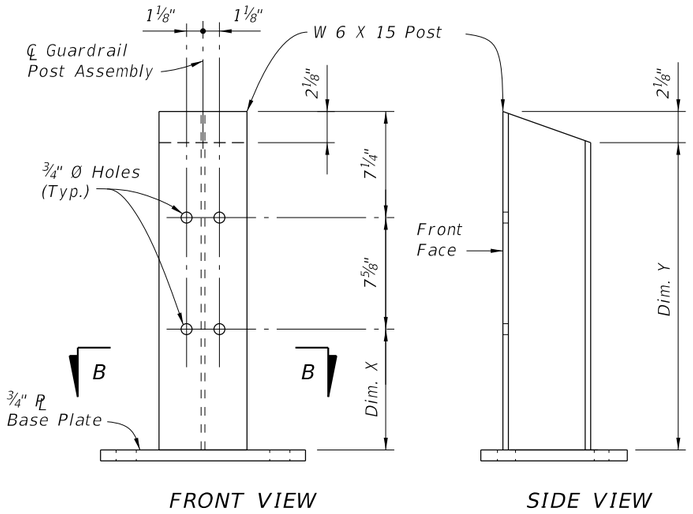
PARTIAL PLAN
INTERMEDIATE JOINT SKEW DETAIL



THRIE-BEAM EXPANSION SECTION

10/17/2024 11:03:03 AM

LAST REVISION	REVISION	DESCRIPTION:				
01/01/08			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) TYPICAL DETAILS & NOTES	INDEX 460-470	SHEET 2 of 3

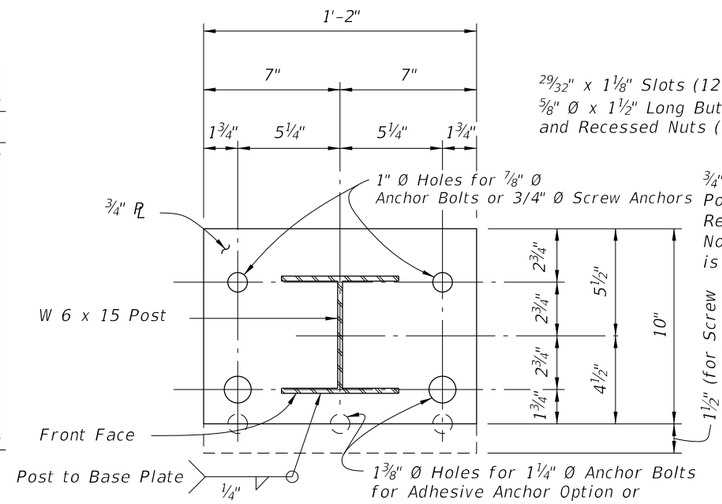


FRONT VIEW SIDE VIEW

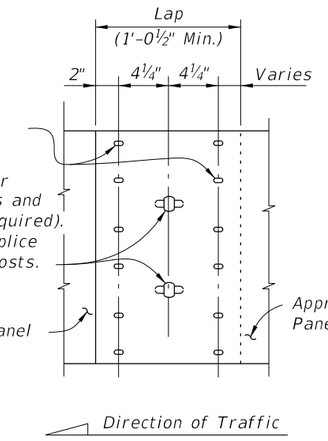
POST DIMENSION TABLE			
POST	CURB HEIGHT (DIM. A)	DIM. X	DIM. Y
Post "A"	5" to 7"	11¼"	2'-0"
Post "B"	> 7" to 10"	9¼"	1'-10"
Post "C"	> 10" to 1'-0"	7¼"	1'-8"

Note: Dim. A is equal to the exposed curb height. For location of Dim. A see Index 460-471 thru 460-476, Sheet 1.

GUARDRAIL POST ASSEMBLY DETAIL

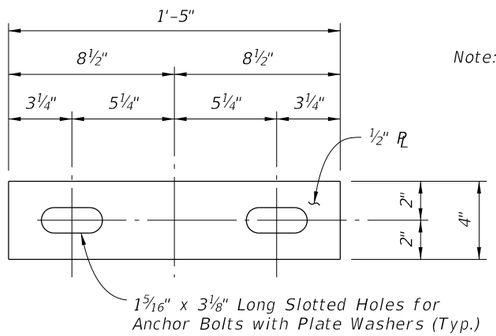


SECTION B-B



THRIE-BEAM GUARDRAIL SPLICE

Note: All Thrie Beam Panels shall be lapped in the direction of adjacent traffic. At the Contractor's option, laps may be extended. Field drill holes in Trailing Thrie Beam Guardrail Panel as required.



ANCHOR PLATE DETAIL

Note: The Anchor Plate and Plate Washer are applicable only to 1¼" Ø Anchor Bolts that are to be thru-bolted for Index 460-471 & 460-476.

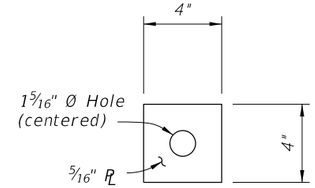
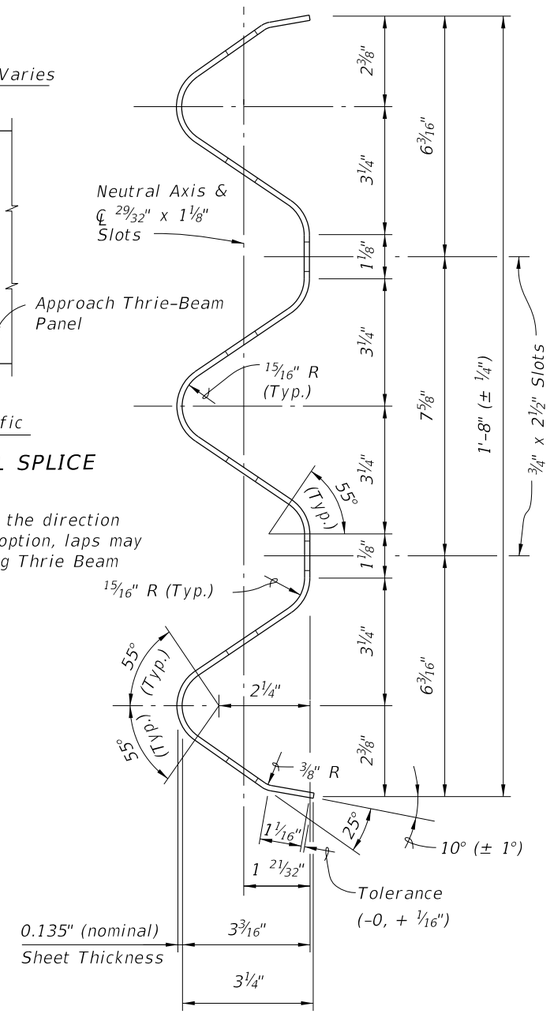
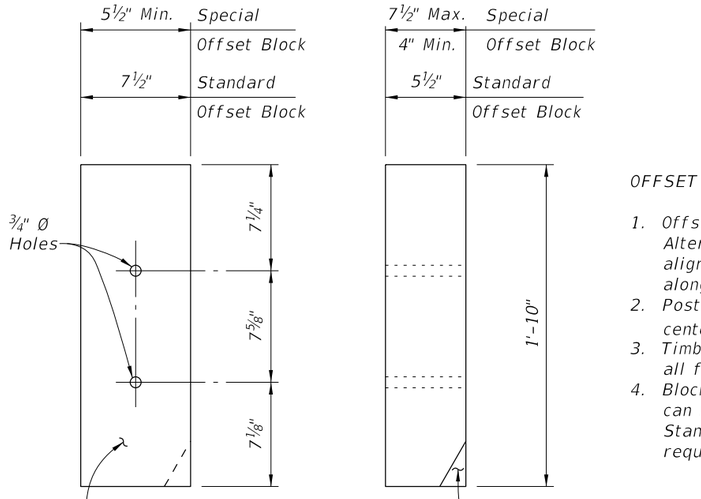


PLATE WASHER DETAIL



TYPICAL SECTION THRU THRIE-BEAM GUARDRAIL (EXPANSION SECTION SIMILAR)

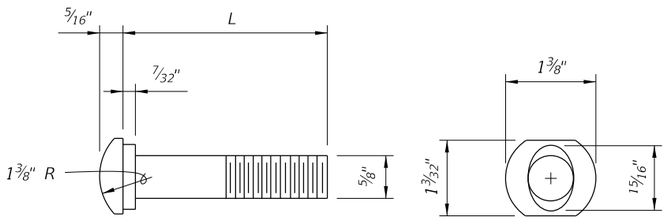


FRONT VIEW SIDE VIEW

OFFSET BLOCK DETAIL

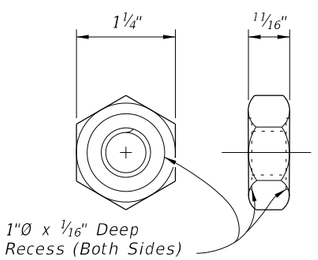
OFFSET BLOCK NOTES:

1. Offset blocks shall be timber or Approved Alternate. Uniformity of block size and alignment of guardrail shall be maintained along length of retrofit.
2. Post bolt holes in offset blocks to be centered (± ¼").
3. Timber offset blocks shall be dressed on all four sides (S4S).
4. Block assemblies for Special Offset Blocks can be made up of 2 or 3 Special or Standard Offset Blocks, field dressed as required.



⅝" OVAL SHOULDER BUTTON HEAD BOLT

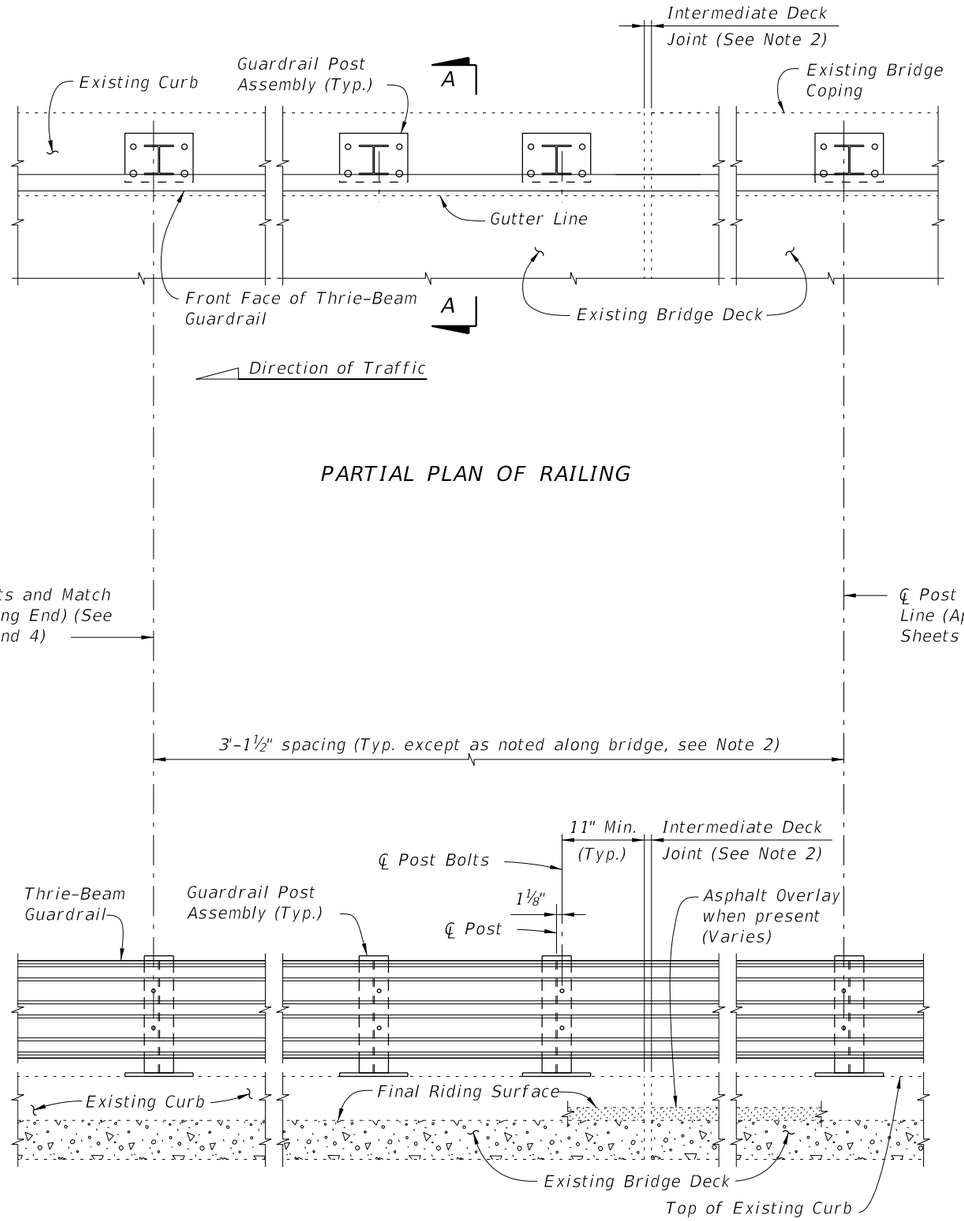
L	THREAD LENGTH	APPLICATION
1½"	Full Length	Rail Splice Bolt, Post Bolt for Index 460-471, 460-473 & 460-476
Varies (8" Min.)	4" Min.	Post Bolt for Index 460-472, 460-473, 460-474, 460-475 & 460-476



⅝" MODIFIED HEAVY HEX NUT (RECESSED NUT)

10/17/2024 11:03:10 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) TYPICAL DETAILS & NOTES	INDEX 460-470	SHEET 3 of 3



PARTIAL ELEVATION OF INSIDE FACE OF RAILING

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

NOTES:

1. On approach end provide Index 536-002 (as shown) or other site specific treatment, see Roadway Plans. For treatment of trailing end see Roadway Plans.
2. Actual joint dimension and orientation vary. For Intermediate Deck Joints use the Modified Post Spacing at Intermediate Deck Joints Detail, Index 460-470, Sheet 2, as required.
3. Areas where existing structure has been removed shall match adjoining areas and shall be finished flat by grouting or grinding as required. Exposed existing reinforcing steel shall be burned off 1" below existing concrete and grouted over.

CROSS REFERENCES:
For Section A-A see Sheet 2.
For Traffic Railing Notes and Details see Index 460-470.

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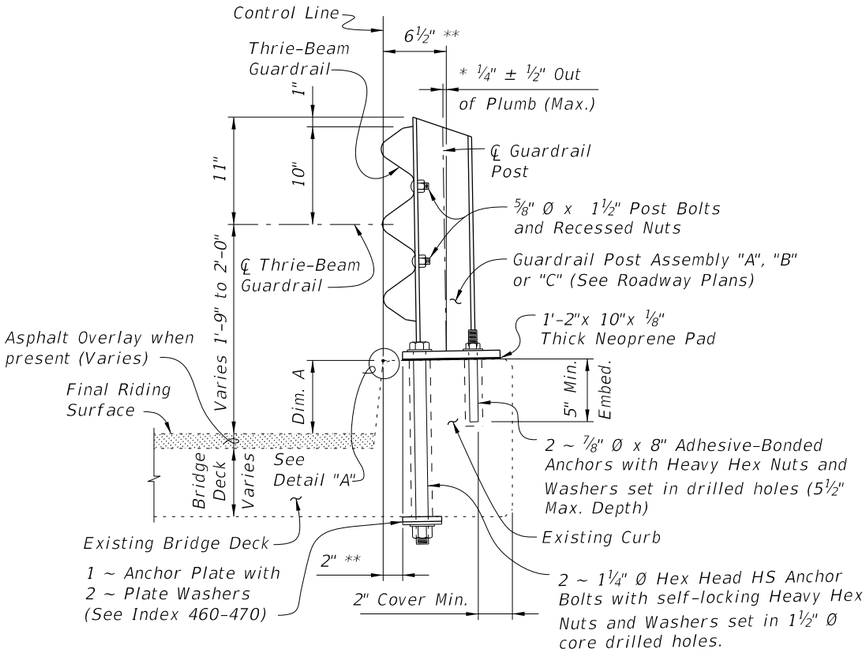
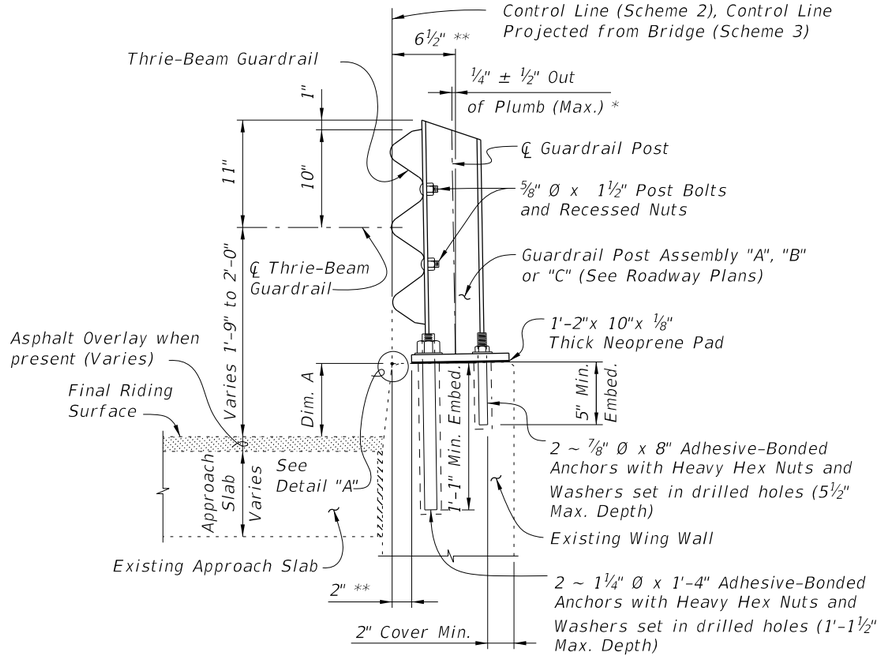
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) NARROW CURB	INDEX	SHEET
01/01/08						460-471	1 of 4

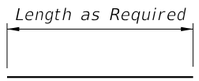


SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK



SECTION B-B
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEME 2 SHOWN, SCHEME 3 SIMILAR)

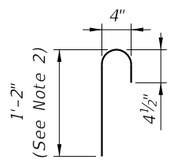
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
A	4	AS REQUIRED
D	4	1'-11"
L	4	4'-1"



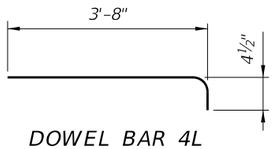
BAR 4A

NOTES:
1. All bar dimensions are out to out.
2. The 1'-2" vertical dimension shown for Bar 4D is based on a curb height of 9". If curb height is less or more than 9", decrease or increase this dimension by an amount equal to the difference in curb height.

BAR BENDING DIAGRAMS



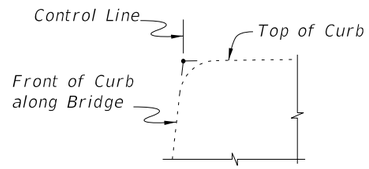
Dowel Bar 4D
(Standard 180° Hook)



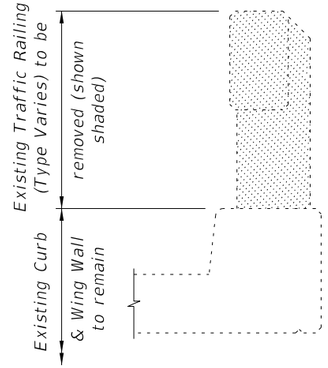
DOWEL BAR 4L

* Shim with washers around Anchors as required to maintain tolerance.

** Offset may vary ± 1" for Adhesive-Bonded Anchors to clear existing curb reinforcing and provide minimum edge clearance. Offset shall be consistent along length of bridge.



DETAIL "A"



TYPICAL SECTION THRU EXISTING TRAFFIC RAILING SHOWING LIMITS OF REMOVAL (BRIDGE DECK SHOWN, WING WALL SIMILAR)

CROSS REFERENCES:
For location of Section A-A see Sheets 1, 3 & 4.
For location of Section B-B see Sheets 3 & 4.
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

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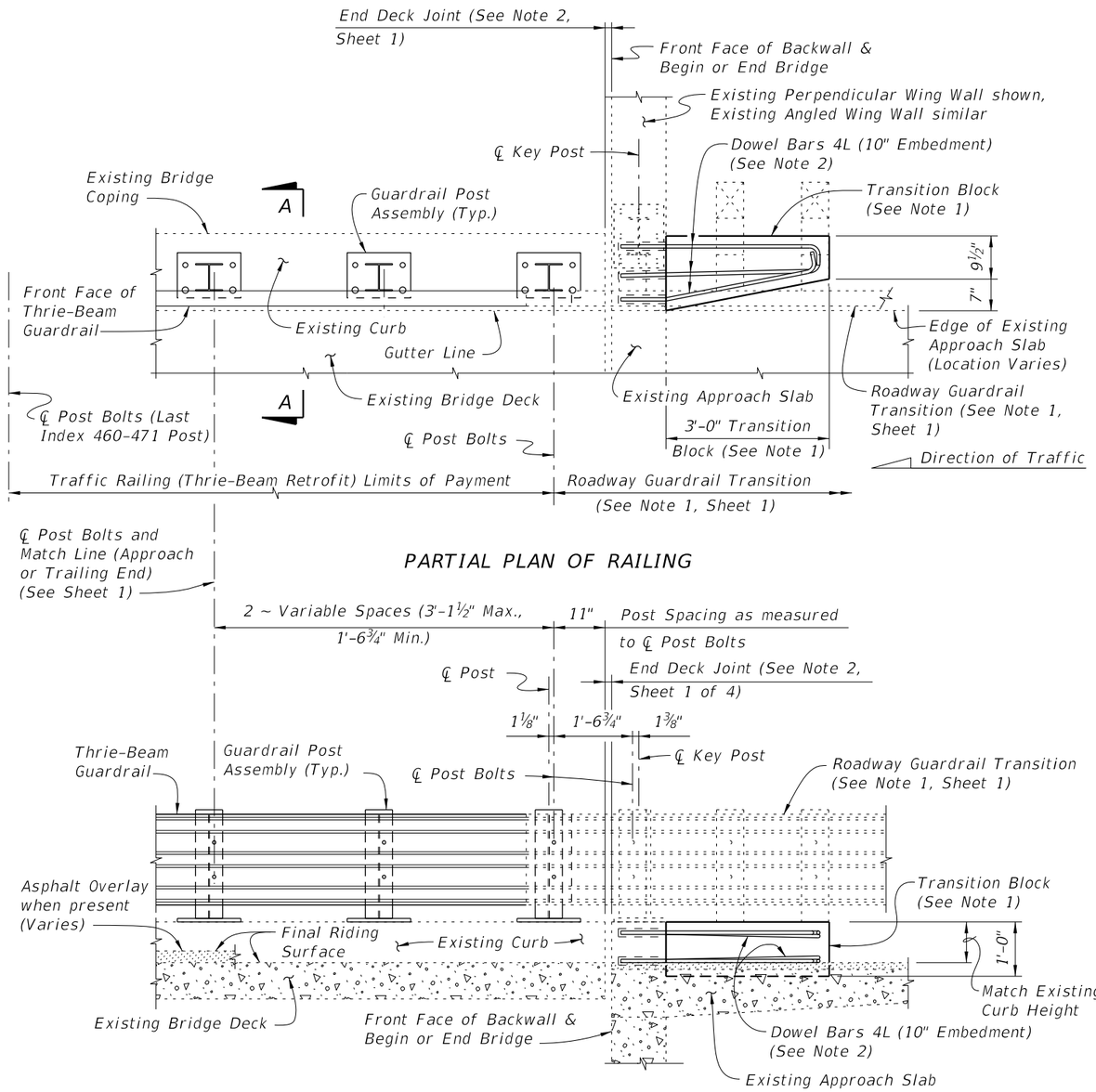
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) NARROW CURB	INDEX	SHEET
01/01/08						460-471	2 of 4



PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING

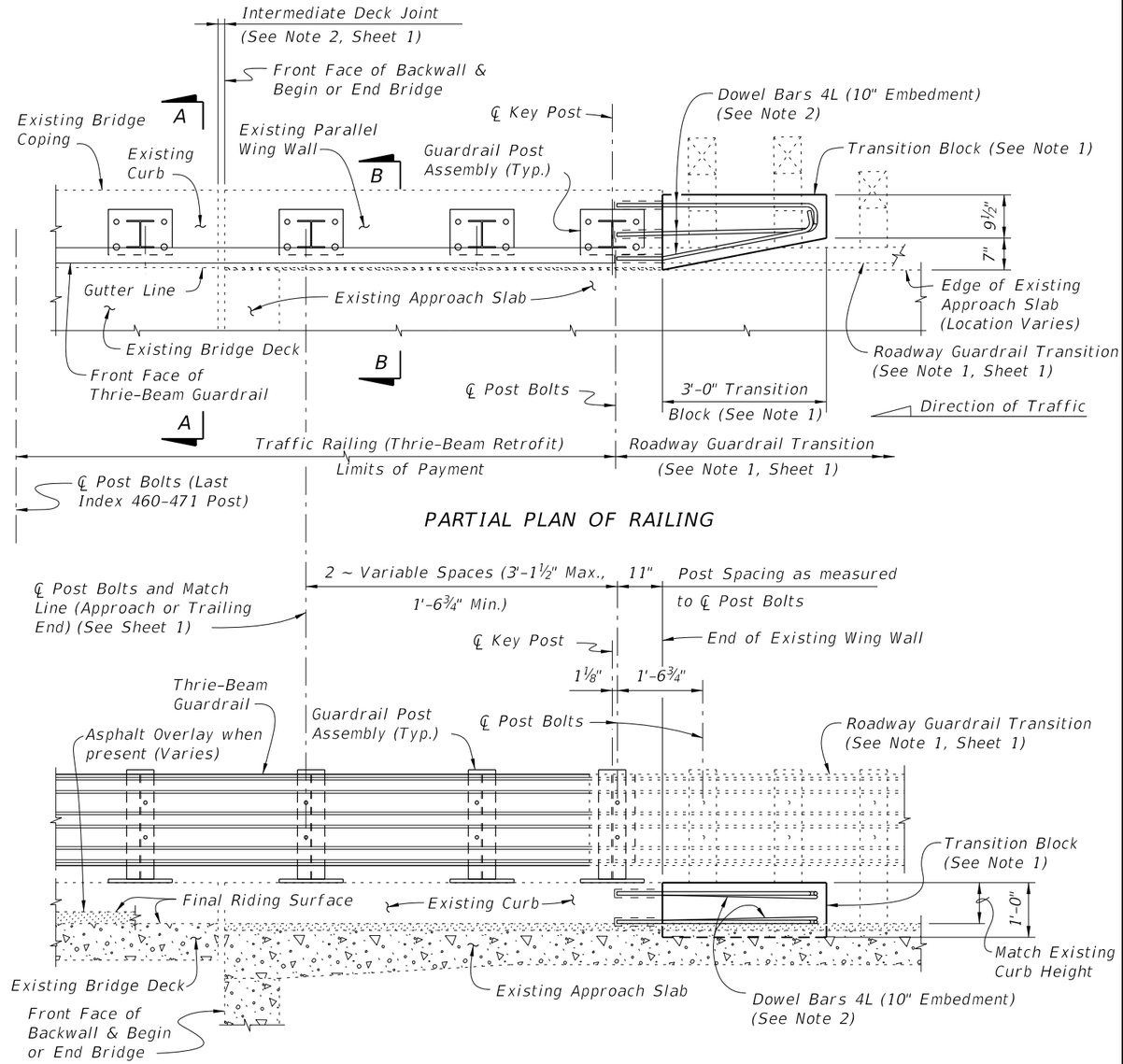
SCHEME 1

RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 2

RAILING END TREATMENT FOR PARALLEL WING WALLS

SCHEME 2 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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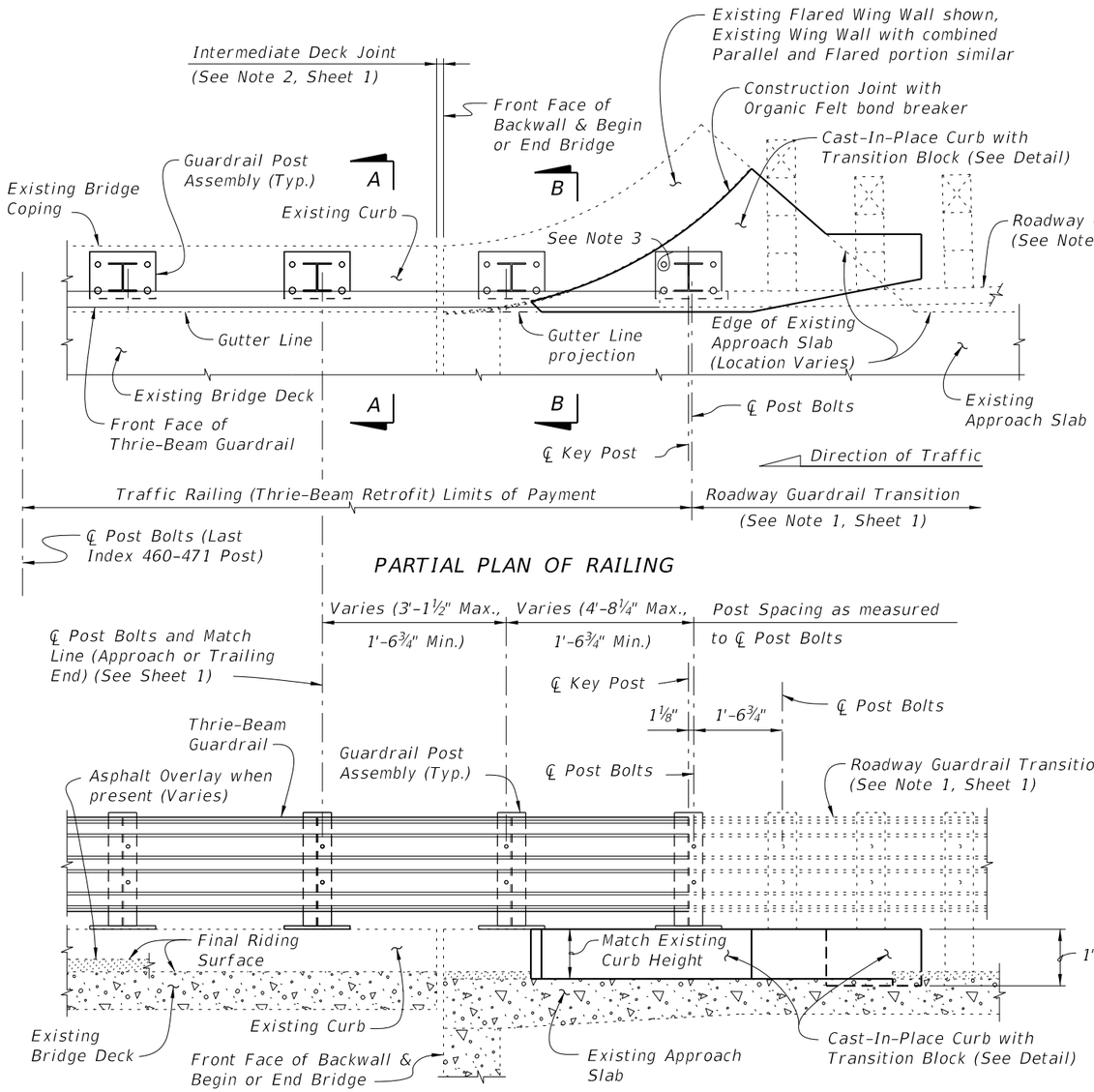
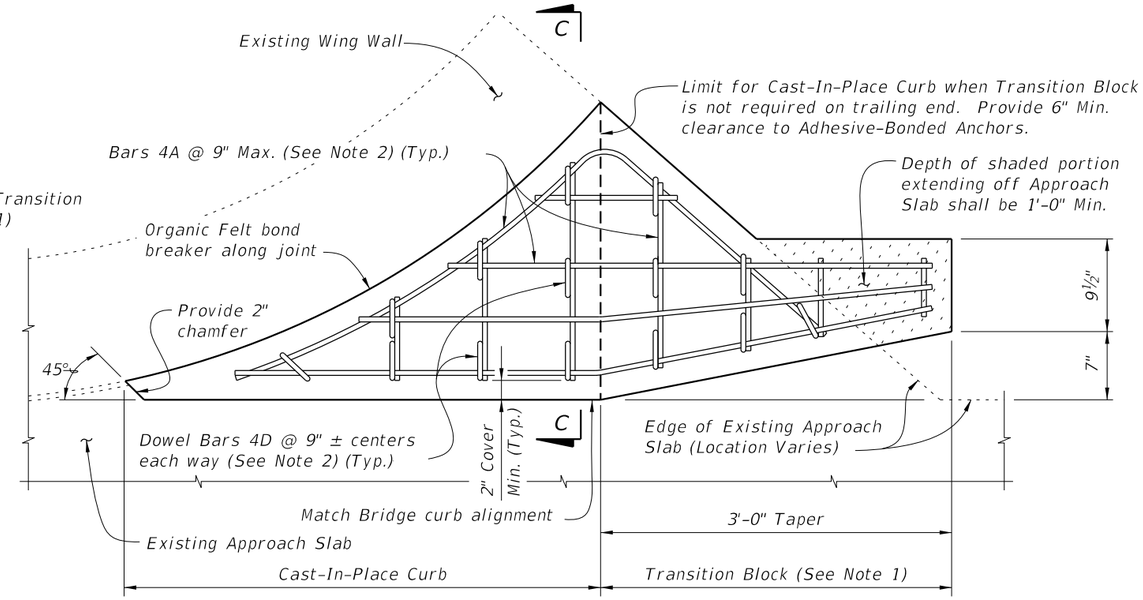
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) NARROW CURB	INDEX	SHEET
01/01/08						460-471	3 of 4

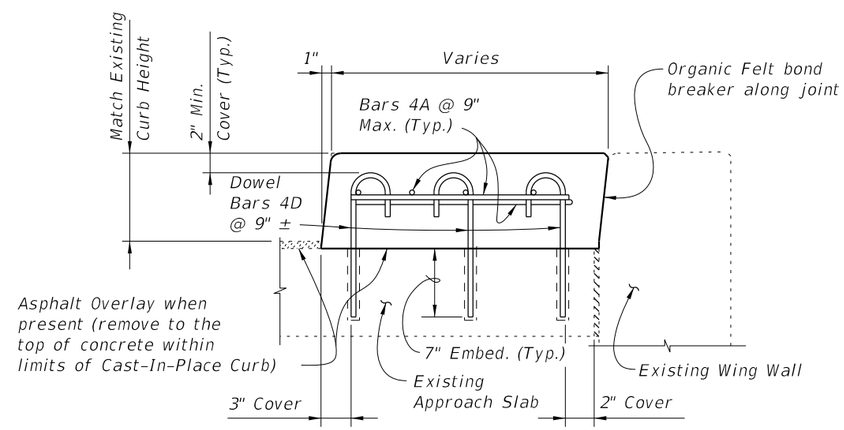


PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING



PLAN OF CAST-IN-PLACE CURB & TRANSITION BLOCK DETAIL
(Approach End with Transition Block Shown, Trailing End without Transition Block Similar)



SECTION C-C

SCHEME 3

RAILING END TREATMENT FOR FLARED WING WALLS

SCHEME 3 NOTES:

1. Provide Cast-In-Place Curb as shown. Shape and height of Transition Block and Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field cut and bend Bars 4A and rotate Dowel Bars 4B within Curb and Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

3. A single ⅞" Ø x 8" Adhesive-Bonded Anchor may be omitted as shown when 2" clear cover cannot be provided.

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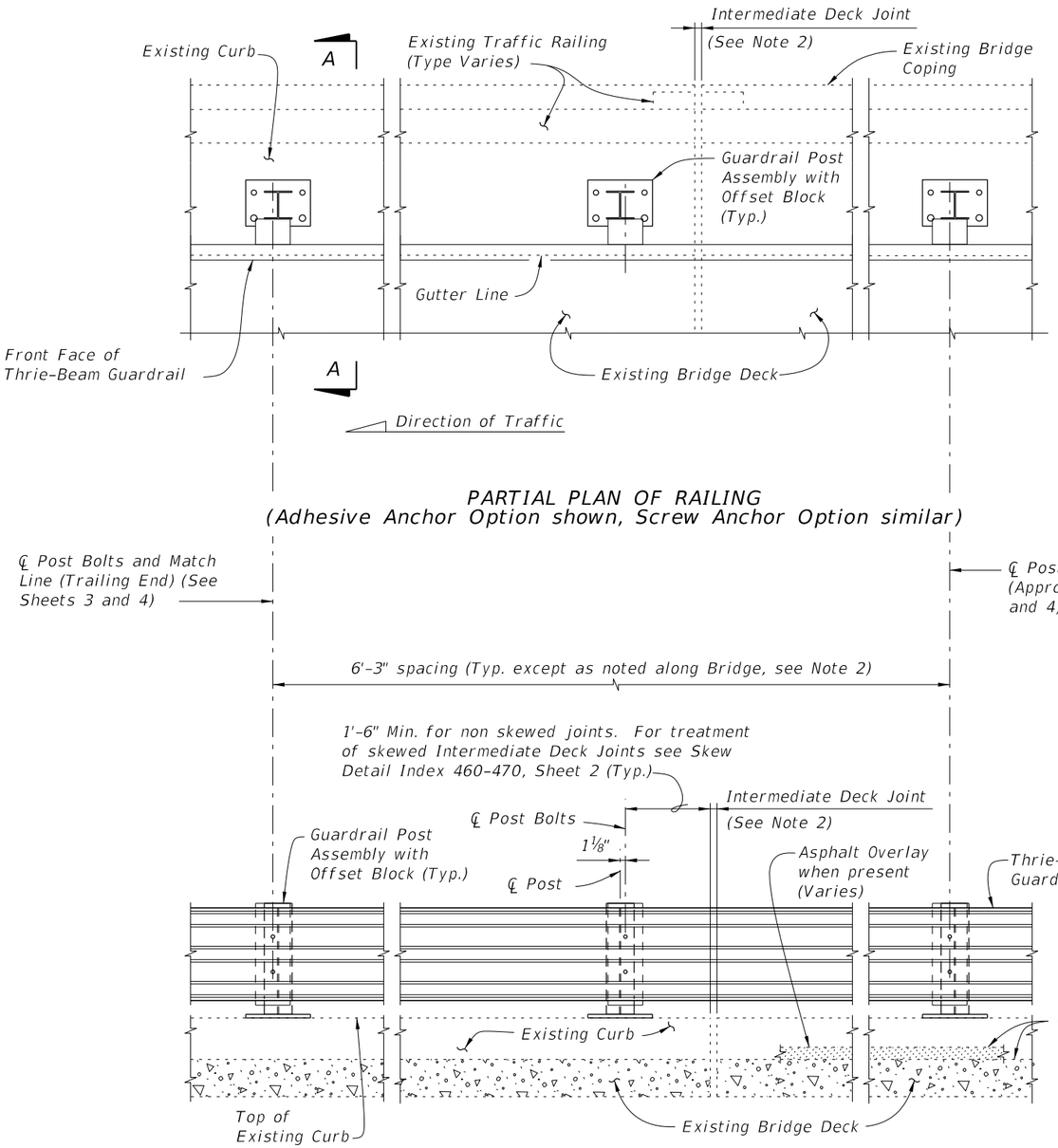
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) NARROW CURB	460-471	4 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Traffic Railing not shown for clarity)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

NOTES:

1. On approach end provide Index 536-002 (as shown) or other site specific treatment, see Roadway Plans. For treatment of trailing end see Roadway Plans.
2. Actual joint dimension and orientation vary. For Intermediate Deck Joints use the Modified Post Spacing at Intermediate Deck Joints Detail, Index 460-470, Sheet 2, as required.
3. Areas where existing structure has been removed shall match adjoining areas and shall be finished flat by grouting or grinding as required. Exposed existing reinforcing steel shall be burned off 1" below existing concrete and grouted over.

CROSS REFERENCES:
For Section A-A see Sheet 2.
For Traffic Railing Notes and Details see Index 460-470.

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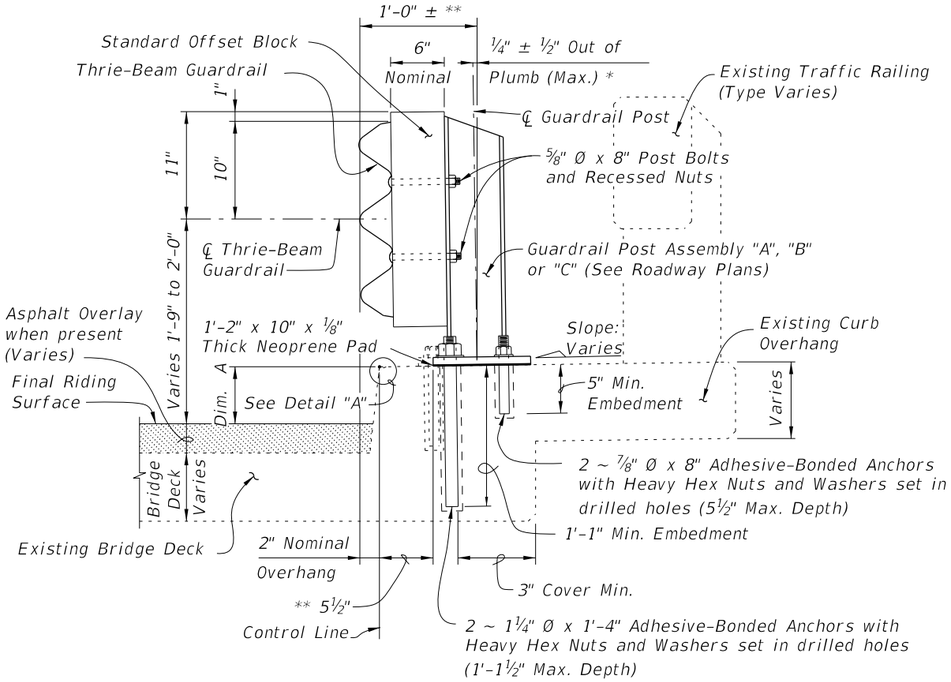
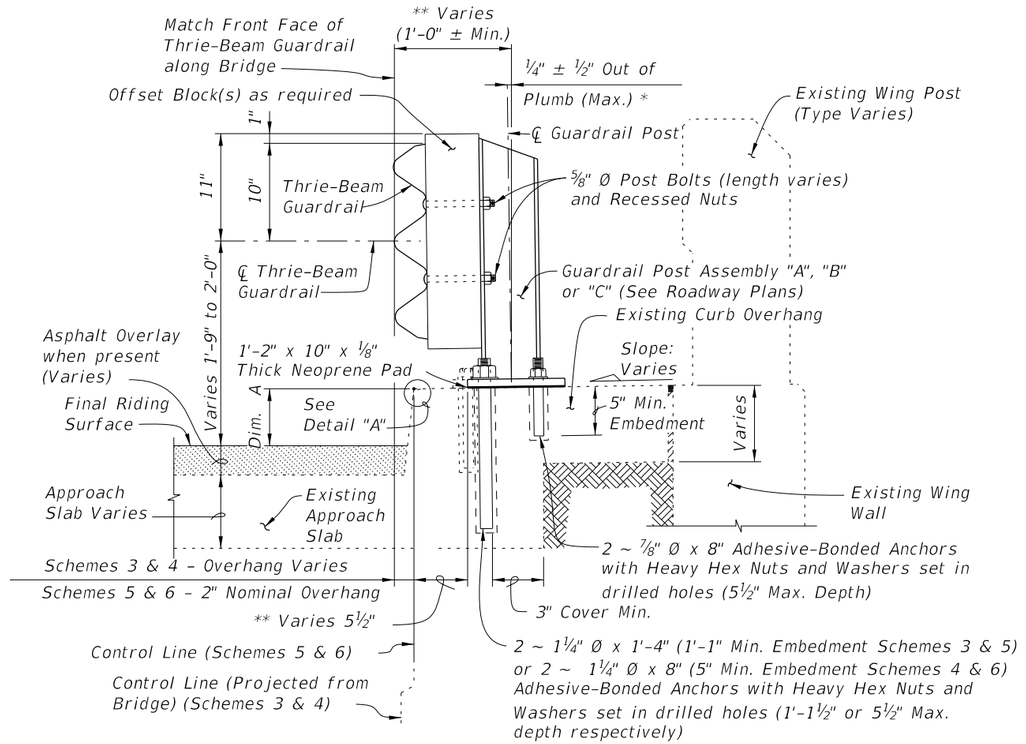
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 1	INDEX	SHEET
11/01/24						460-472	1 of 4



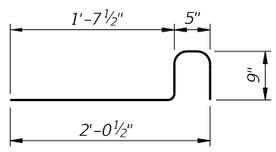
SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK
(Adhesive Anchor Option shown solid, Screw Anchor Option shown dashed)



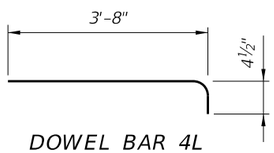
SECTION B-B
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEMES 5 AND 6 SHOWN, SCHEMES 3 AND 4 SIMILAR)
(Adhesive Anchor Option shown solid, Screw Anchor Option shown dashed)

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
D	4	3'-7"
L	4	4'-1"
M	4	2'-8"

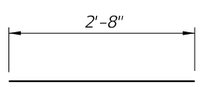
BAR BENDING DIAGRAMS



DOWEL BAR 4D



DOWEL BAR 4L

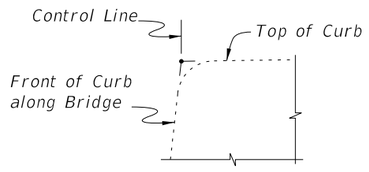


BAR 4M

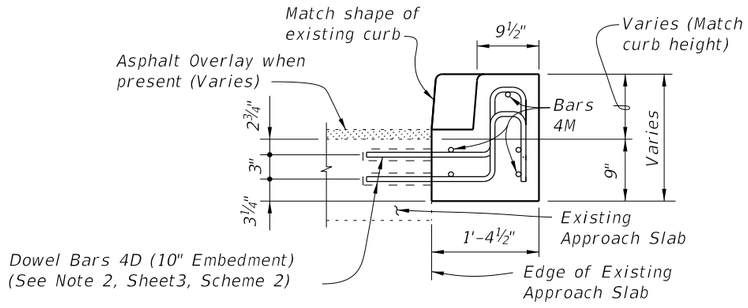
NOTE: All bar dimensions are out to out.

* Shim with washers around Anchors as required to maintain tolerance.

** Offset may vary ± 1" for Adhesive-Bonded Anchors to clear existing curb reinforcing and provide minimum edge clearance. Offset shall be consistent along length of bridge.



DETAIL "A"



VIEW C-C

CROSS REFERENCES:
For location of Section A-A see Sheets 1, 3 & 4.
For location of Section B-B see Sheet 4.
For location of View C-C see Sheet 3.
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

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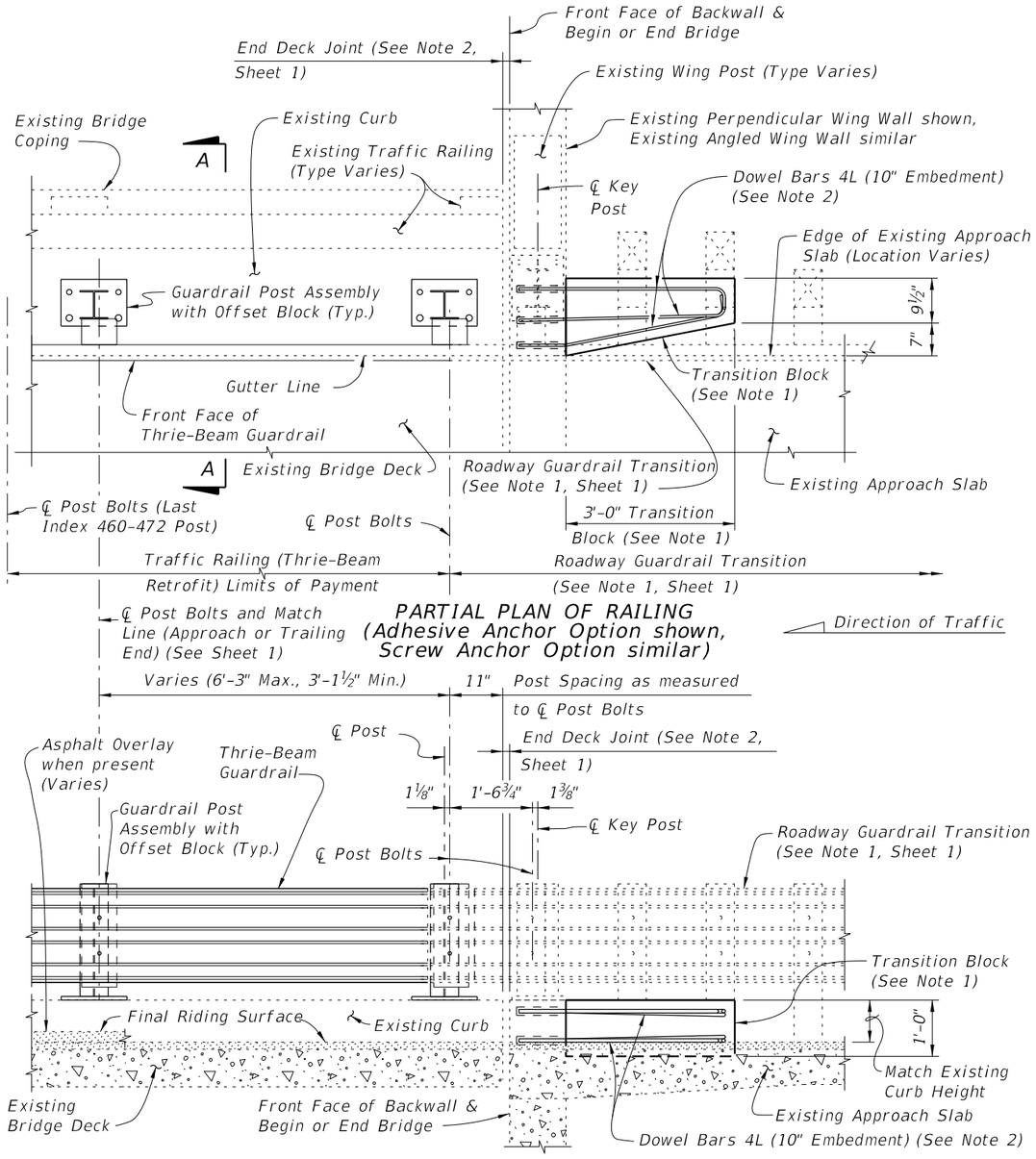
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 1	INDEX	SHEET
11/01/24						460-472	2 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

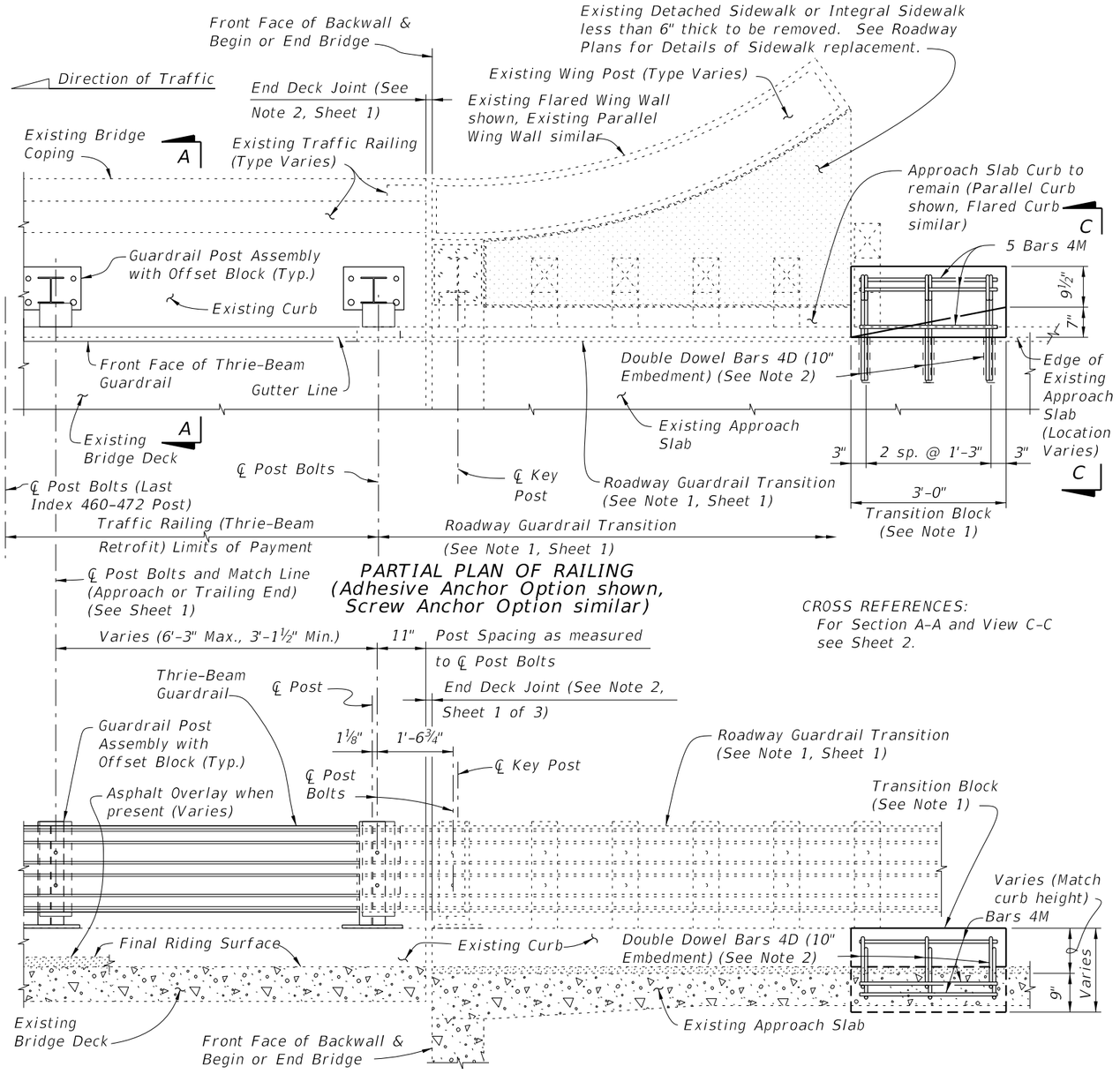
SCHEME 1

RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

CROSS REFERENCES:
For Section A-A and View C-C see Sheet 2.

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEME 2

RAILING END TREATMENT FOR PARALLEL OR FLARED CURBS WITH DETACHED SIDEWALKS OR INTEGRAL SIDEWALKS LESS THAN 6" THICK

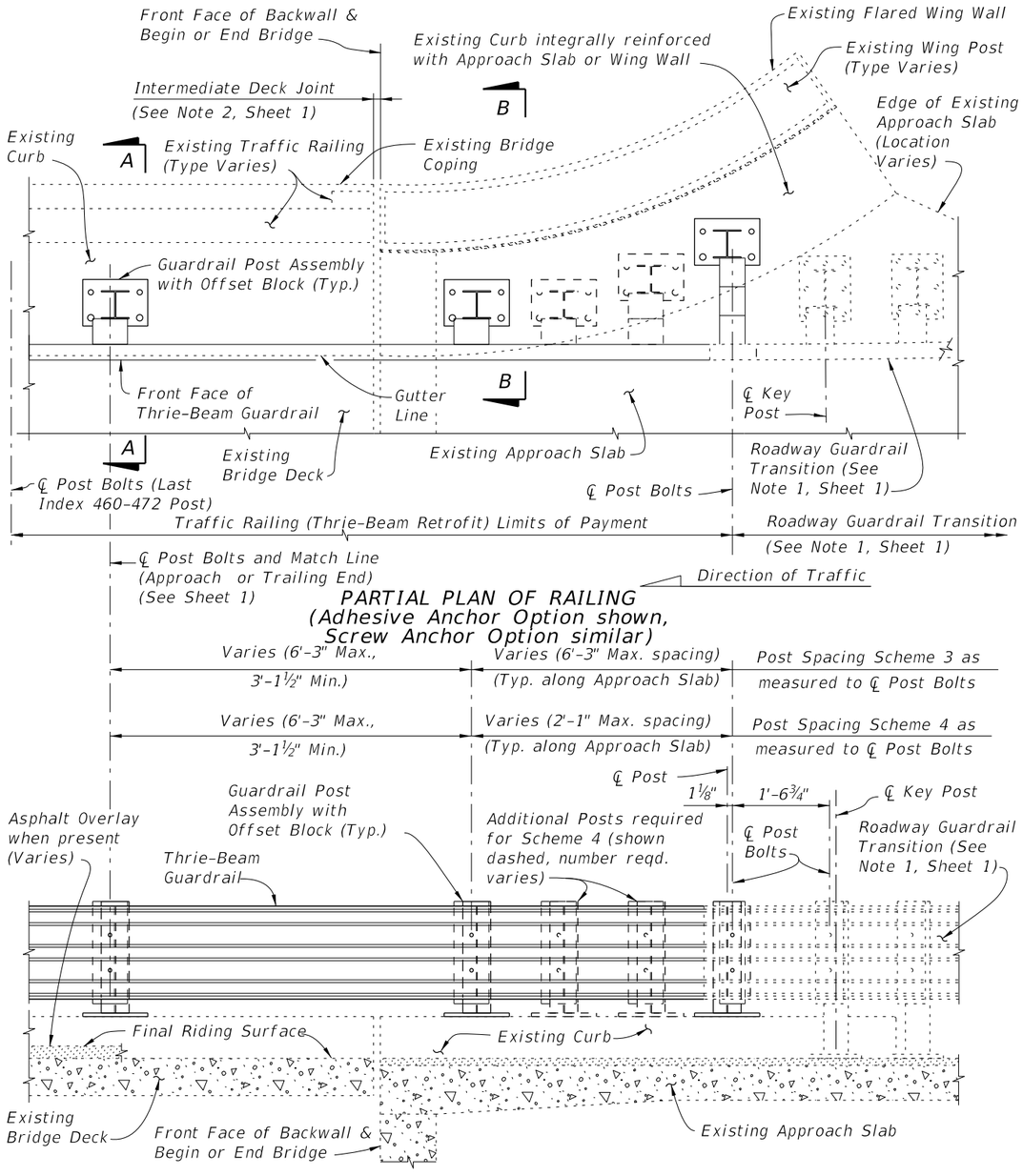
SCHEME 2 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic and on bridges with flared Approach Slab Curbs.

2. Field bend or tilt Dowel Bars 4D and Bars 4M within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

10/17/2024 11:03:58 AM

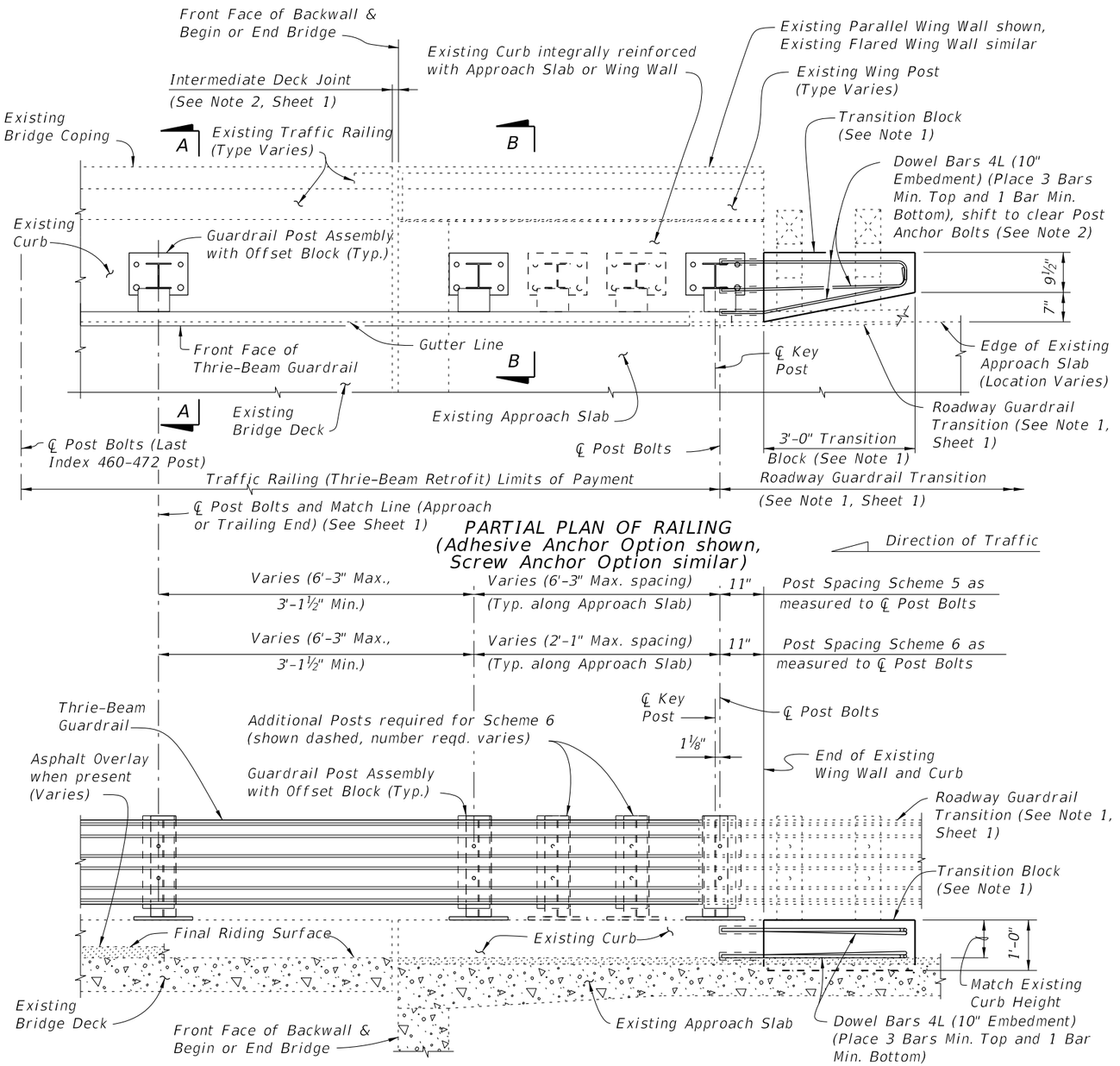
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 1	INDEX	SHEET
11/01/24						460-472	3 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEMES 3 AND 4
RAILING END TREATMENT FOR FLARED INTEGRAL CURBS



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEMES 5 AND 6
RAILING END TREATMENT FOR PARALLEL INTEGRAL CURBS

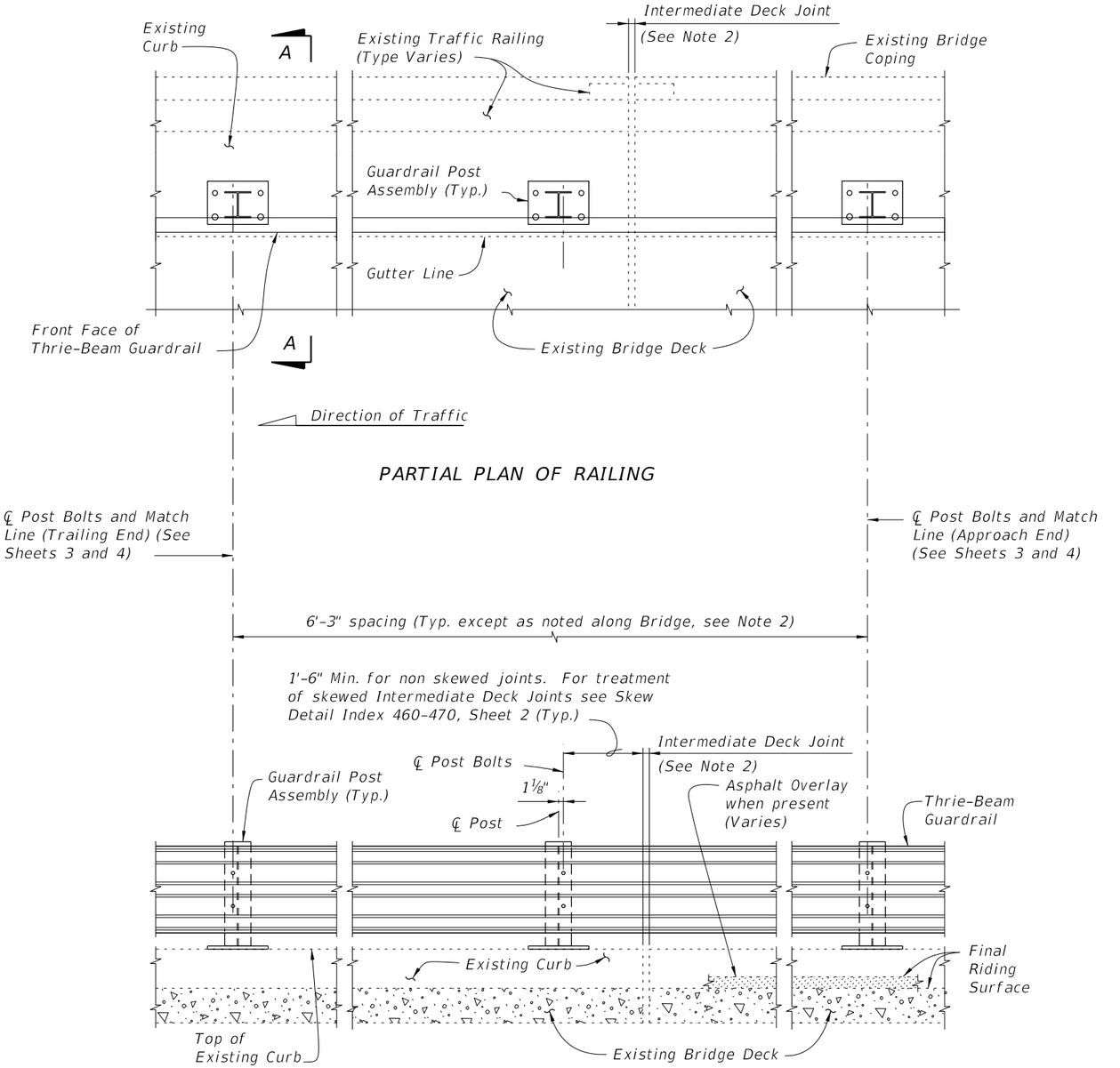
SCHEMES 5 AND 6 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

10/17/2024 11:04:05 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 1	INDEX	SHEET
11/01/24						460-472	4 of 4



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Traffic Railing not shown for clarity)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

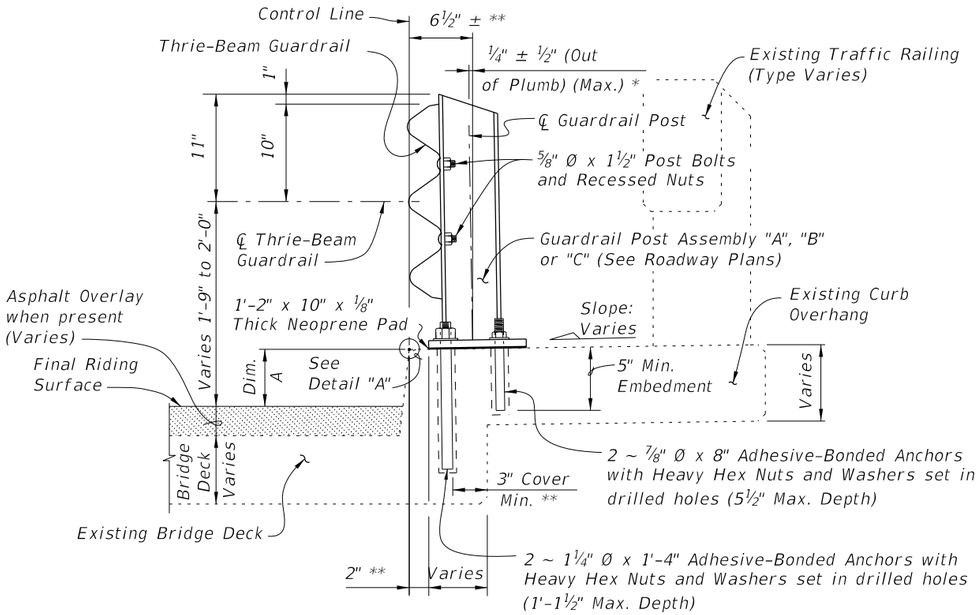
NOTES:

1. On approach end provide Index 536-002 (as shown) or other site specific treatment, see Roadway Plans. For treatment of trailing end see Roadway Plans.
2. Actual joint dimension and orientation vary. For Intermediate Deck Joints use the Modified Post Spacing at Intermediate Deck Joints Detail, Index 460-470, Sheet 2, as required.
3. Areas where existing structure has been removed shall match adjoining areas and shall be finished flat by grouting or grinding as required. Exposed existing reinforcing steel shall be burned off 1" below existing concrete and grouted over.

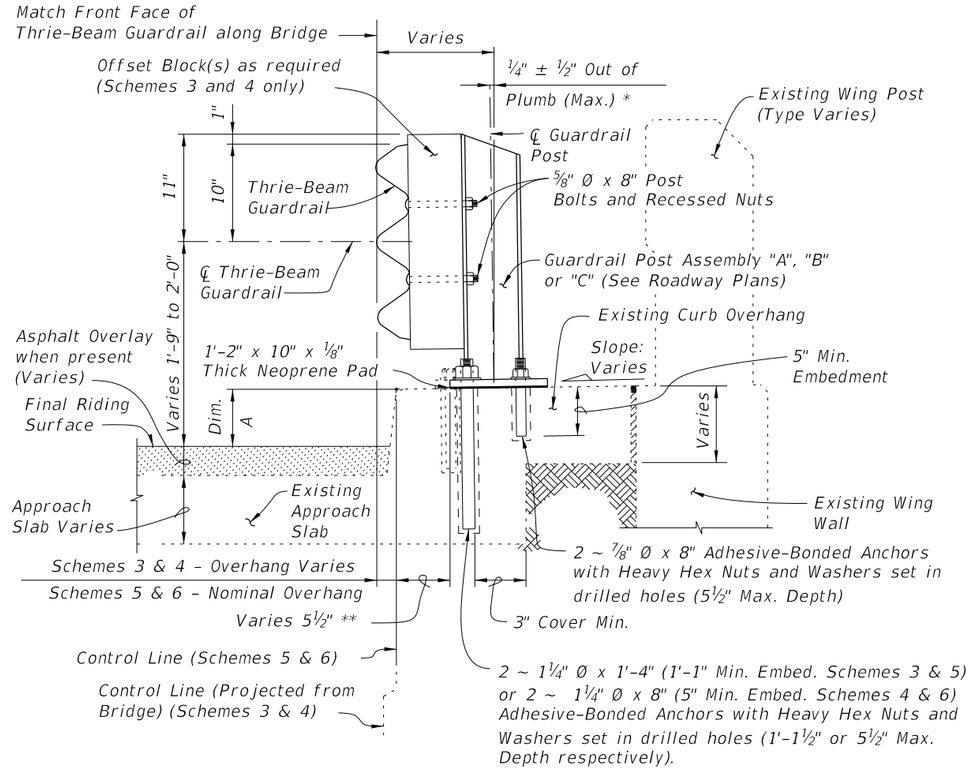
CROSS REFERENCES:
For Section A-A see Sheet 2.
For Traffic Railing Notes and Details see Index 460-470.

10/31/2024 6:10:50 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 2	INDEX	SHEET
01/01/08					460-473	1 of 4



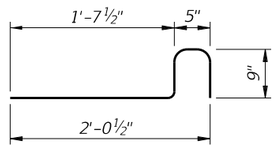
SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK



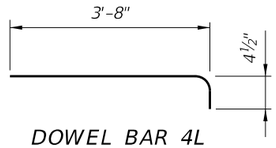
SECTION B-B
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEMES 5 AND 6 SHOWN, SCHEMES 3 AND 4 SIMILAR)
(Adhesive Anchor Option shown solid, Screw Anchor Option shown dashed)

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
D	4	3'-7"
L	4	4'-1"
M	4	2'-8"

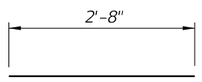
BAR BENDING DIAGRAMS



DOWEL BAR 4D



DOWEL BAR 4L

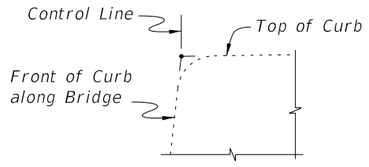


BAR 4M

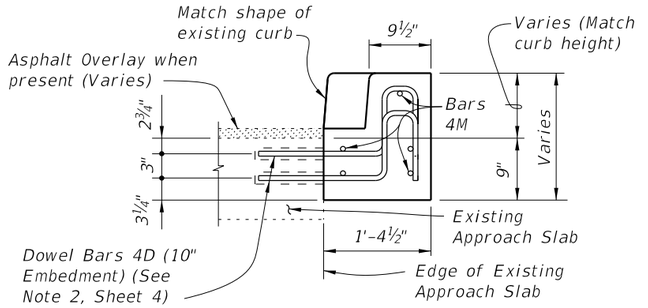
NOTE: All bar dimensions are out to out.

* Shim with washers around Anchor Bolts and Anchors as required to maintain tolerance.

** Offset may vary ± 1" for Adhesive-Bonded Anchors and Anchor Bolts to clear existing curb reinforcing and provide minimum edge clearance. Offset shall be consistent along length of bridge.



DETAIL "A"

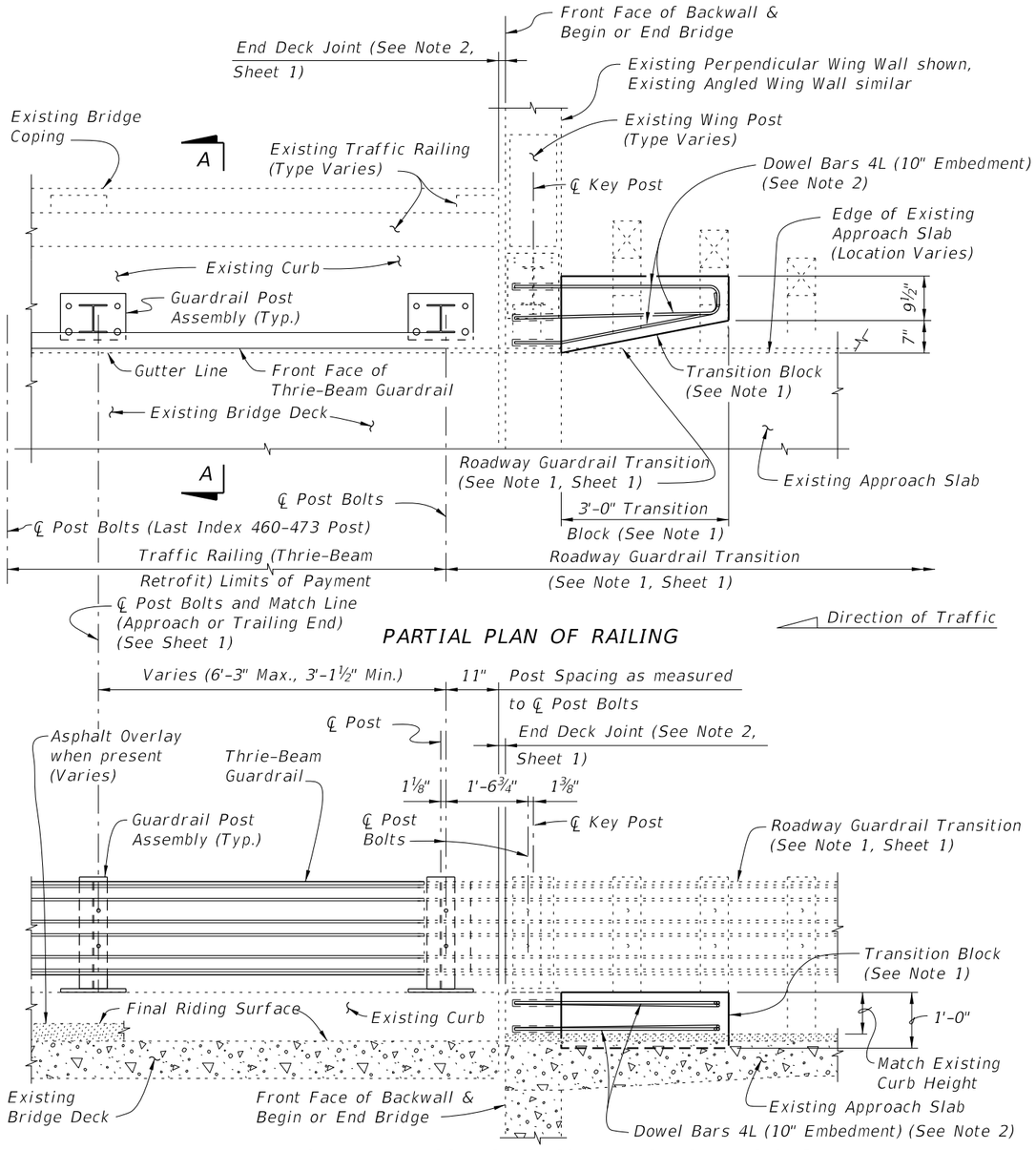


VIEW C-C

CROSS REFERENCES:
For location of Section A-A see Sheet 1, 3 and 4.
For location of Section B-B see Sheet 4.
For location of View C-C see Sheet 3.
For Traffic Railing Notes and Details see Index 460-470.
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

10/17/2024 11:04:18 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 2	INDEX	SHEET
11/01/24					460-473	2 of 4



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

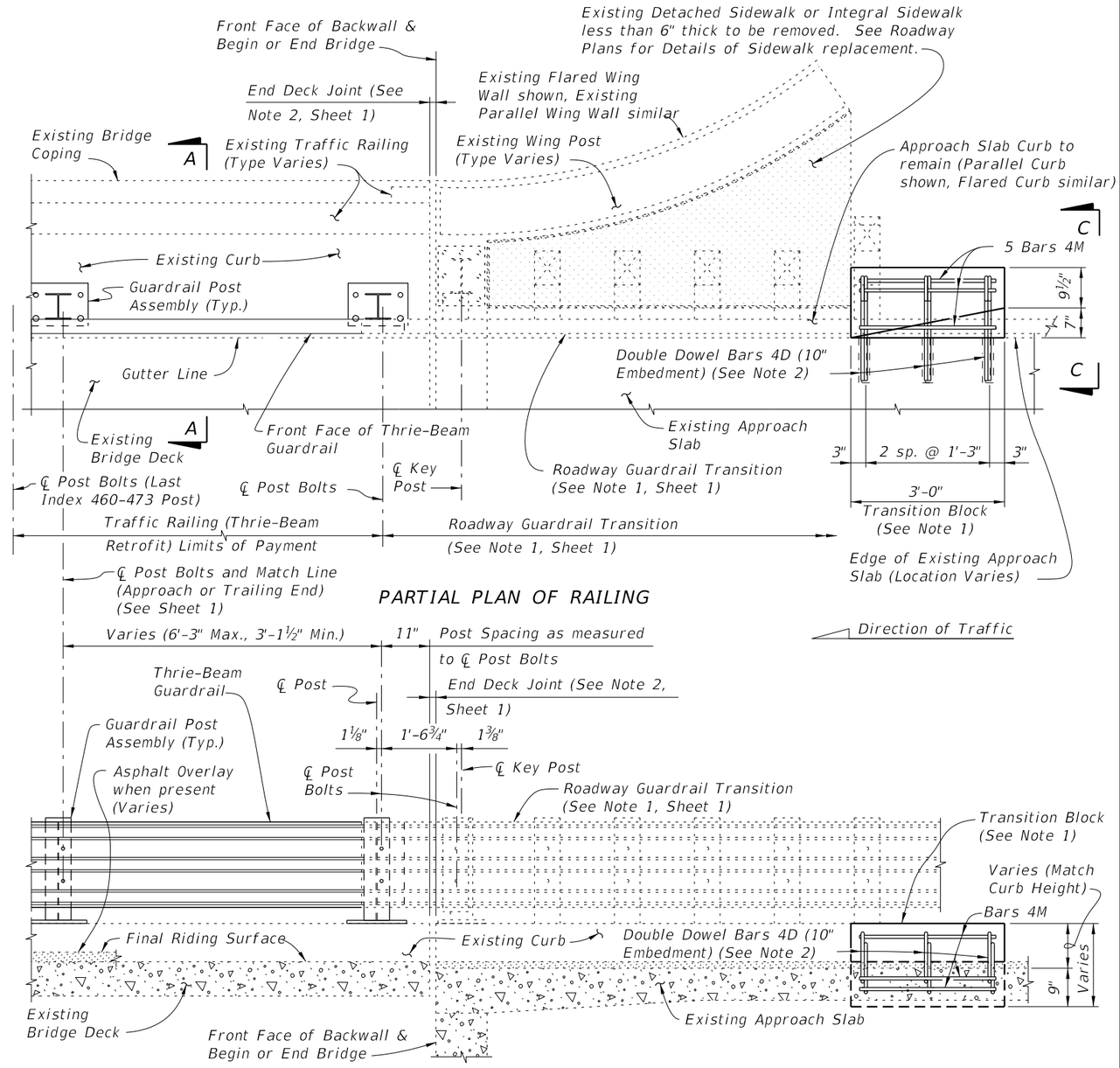
SCHEME 1

RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEME 2

RAILING END TREATMENT FOR PARALLEL OR FLARED CURBS WITH DETACHED SIDEWALKS OR INTEGRAL SIDEWALK LESS THAN 6" THICK

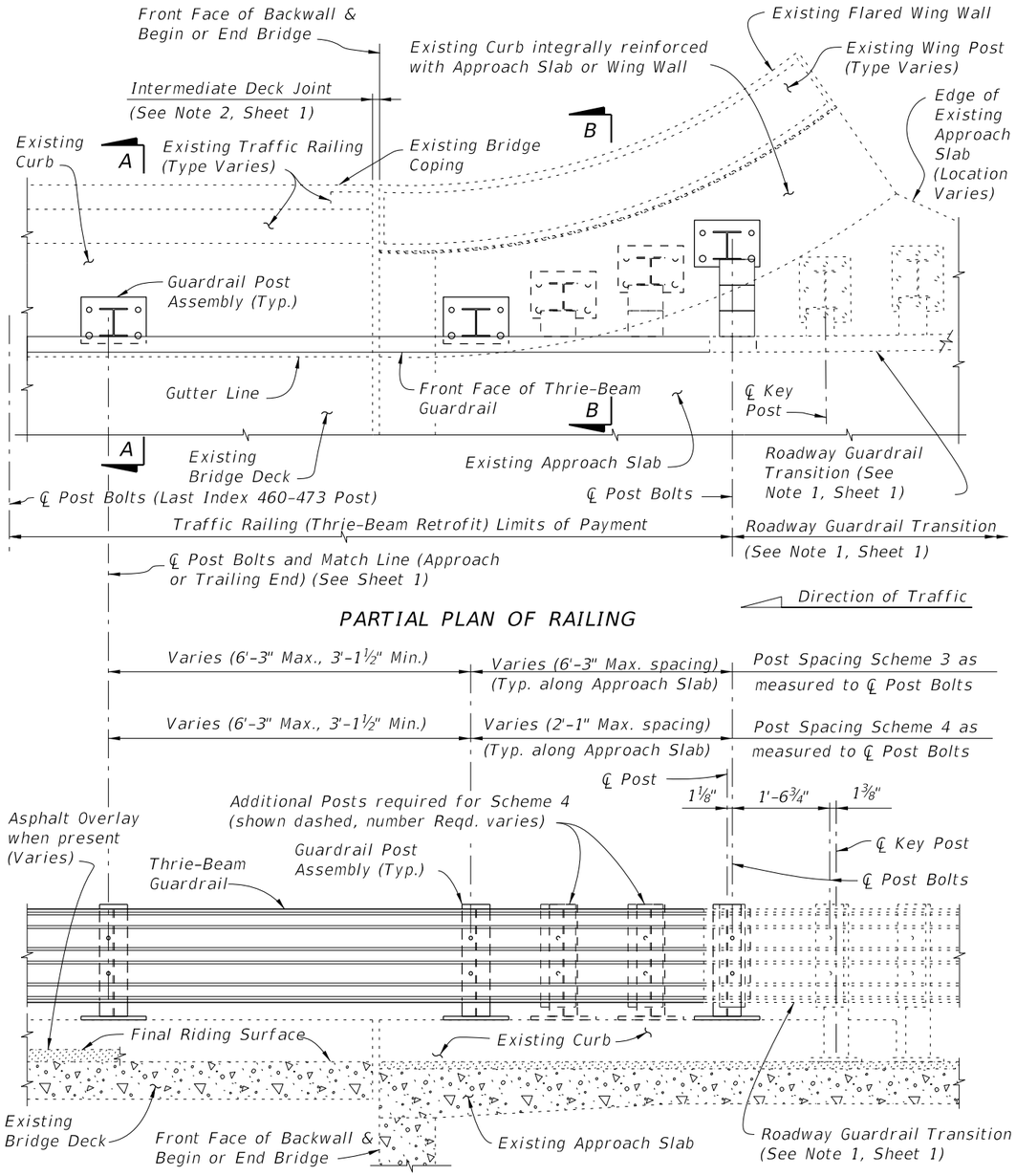
SCHEME 2 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic and on bridges with flared Approach Slab Curbs.

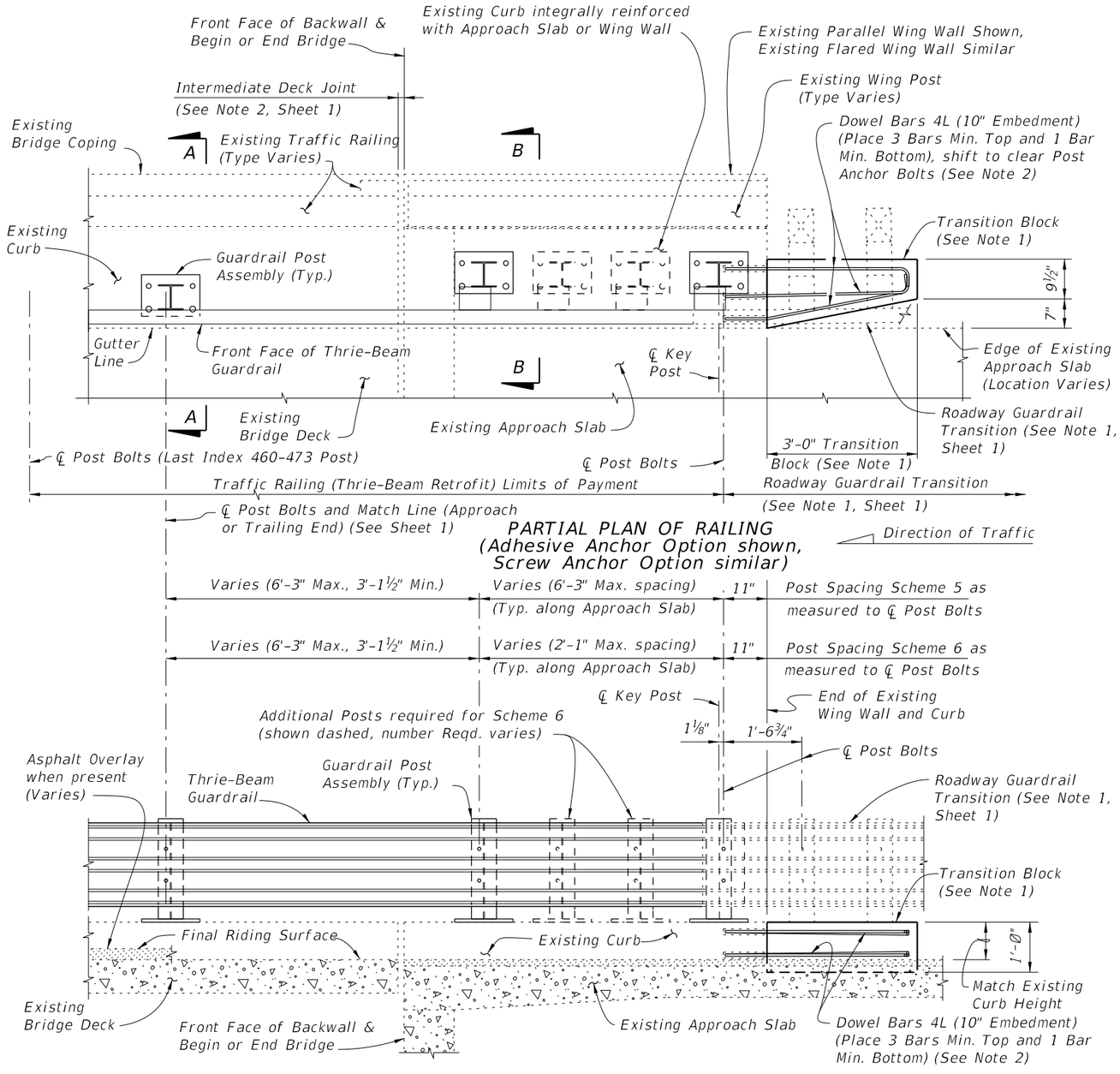
2. Field bend or tilt Dowel Bars 4D and Bars 4M within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

10/17/2024 11:04:25 AM

LAST REVISION	REVISION	DESCRIPTION:				
01/01/08			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 2	INDEX 460-473	SHEET 3 of 4



SCHEMES 3 AND 4
RAILING END TREATMENT FOR FLARED INTEGRAL CURBS



SCHEMES 5 AND 6
RAILING END TREATMENT FOR PARALLEL INTEGRAL CURBS

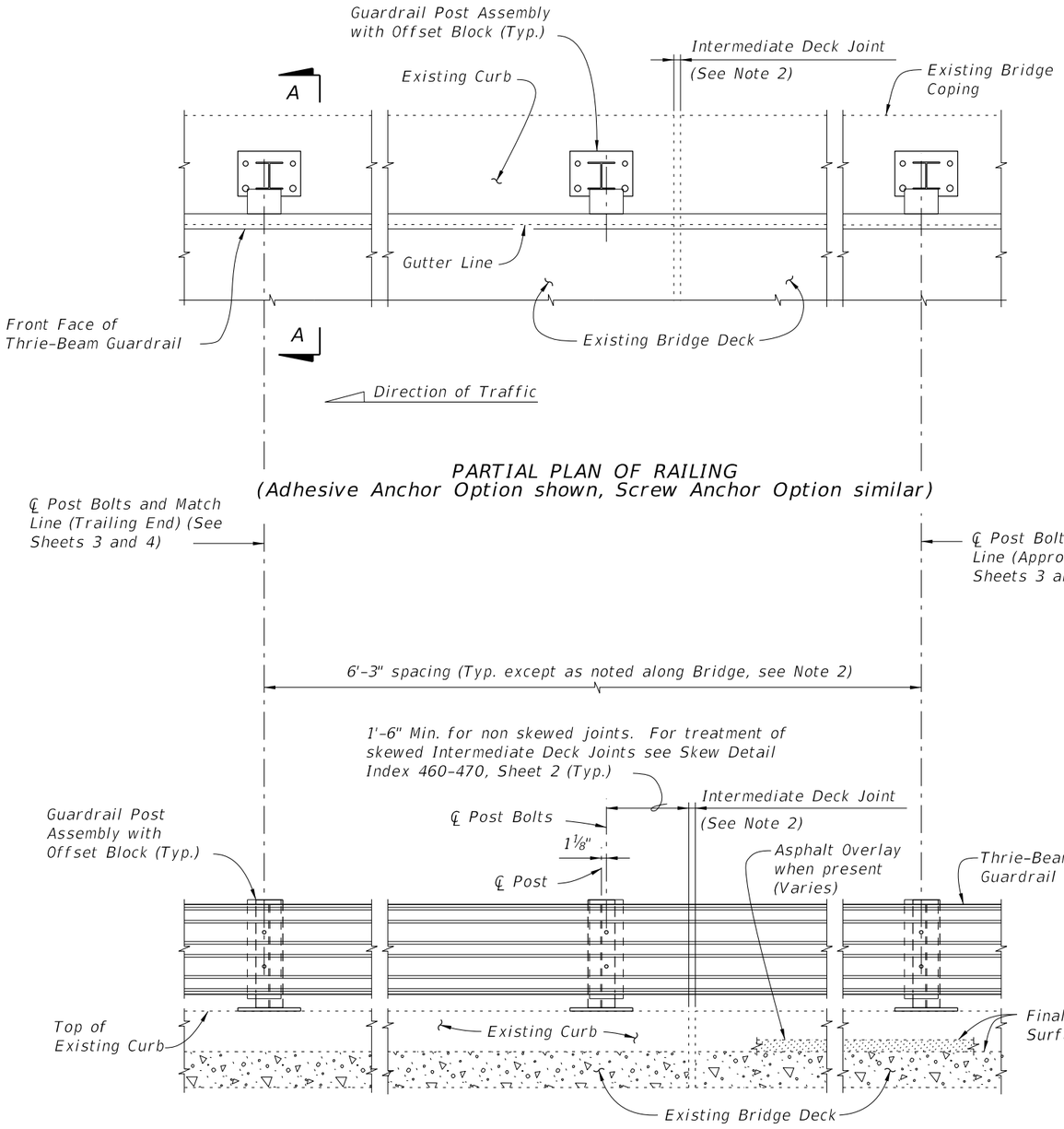
SCHEMES 5 AND 6 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

10/17/2024 11:04:32 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE STRONG CURB TYPE 2	INDEX 460-473	SHEET 4 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

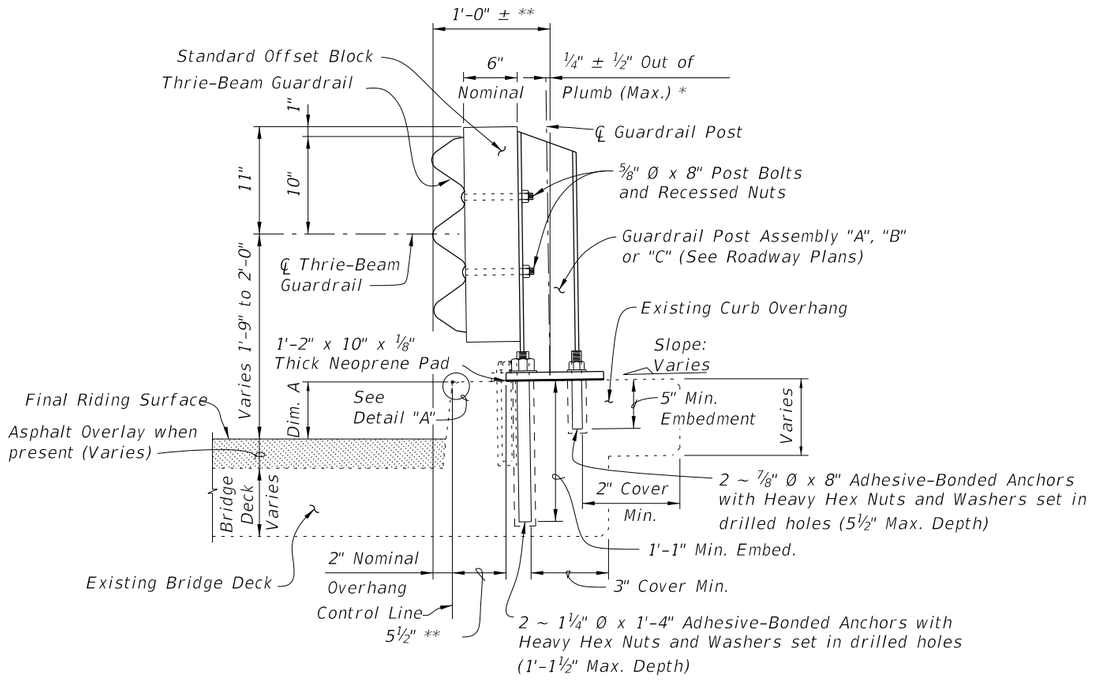
NOTES:

1. On approach end provide Index 536-002 (as shown) or other site specific treatment, see Roadway Plans. For treatment of trailing end see Roadway Plans.
2. Actual joint dimension and orientation vary. For Intermediate Deck Joints use the Modified Post Spacing at Intermediate Deck Joints Detail, Index 460-470, Sheet 2, as required.
3. Areas where existing structure has been removed shall match adjoining areas and shall be finished flat by grouting or grinding as required. Exposed existing reinforcing steel shall be burned off 1" below existing concrete and grouted over.

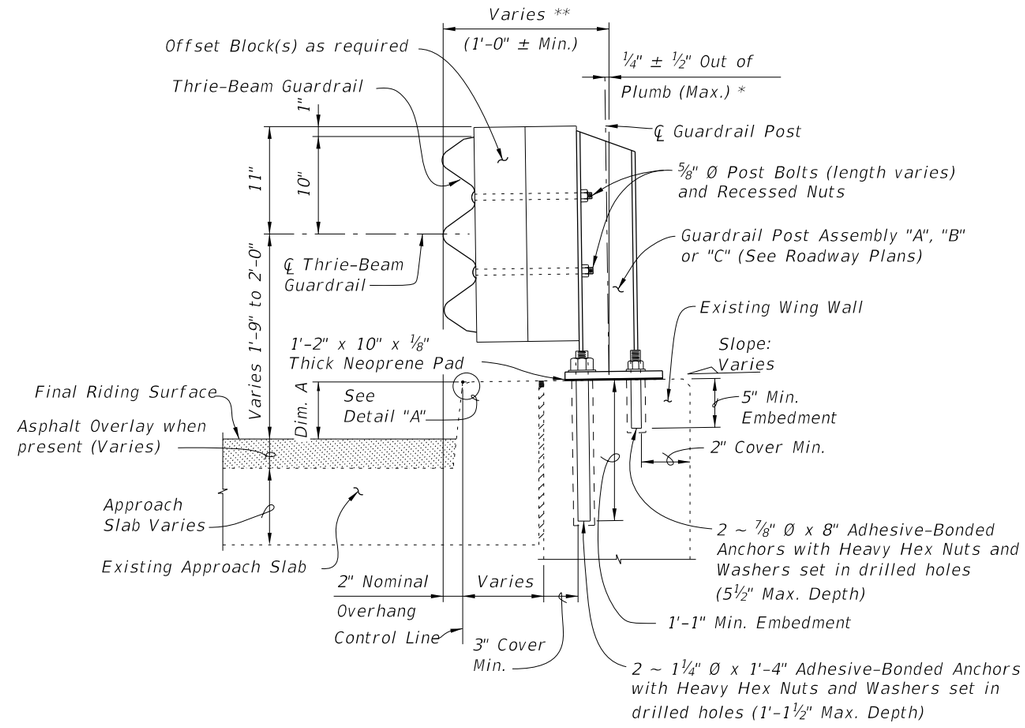
CROSS REFERENCES:
For Match Line see Sheets 3 & 4.
For Section A-A see Sheet 2.
For Traffic Railing Notes and Details see Index 460-470.

10/17/2024 11:04:39 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) INTERMEDIATE CURB	INDEX	SHEET
11/01/24					460-474	1 of 4



SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK
(Adhesive Anchor Option shown solid, Screw Anchor Option shown dashed)

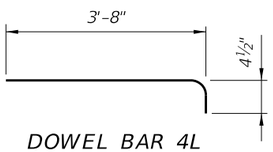


SECTION B-B (SCHEME 2)
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB

* Shim with washers around Anchor Bolts and Anchors as required to maintain tolerance.

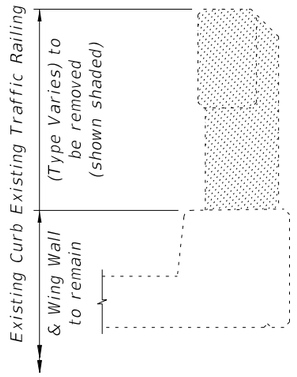
** Offset may vary ± 1" for Adhesive-Bonded Anchors to clear existing curb reinforcing and provide minimum edge clearance. Offset shall be consistent along length of bridge.

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
L	4	4'-1"
BAR BENDING DIAGRAM		

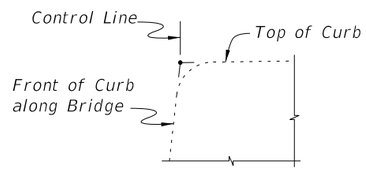


DOWEL BAR 4L

NOTE: All bar dimensions are out to out.



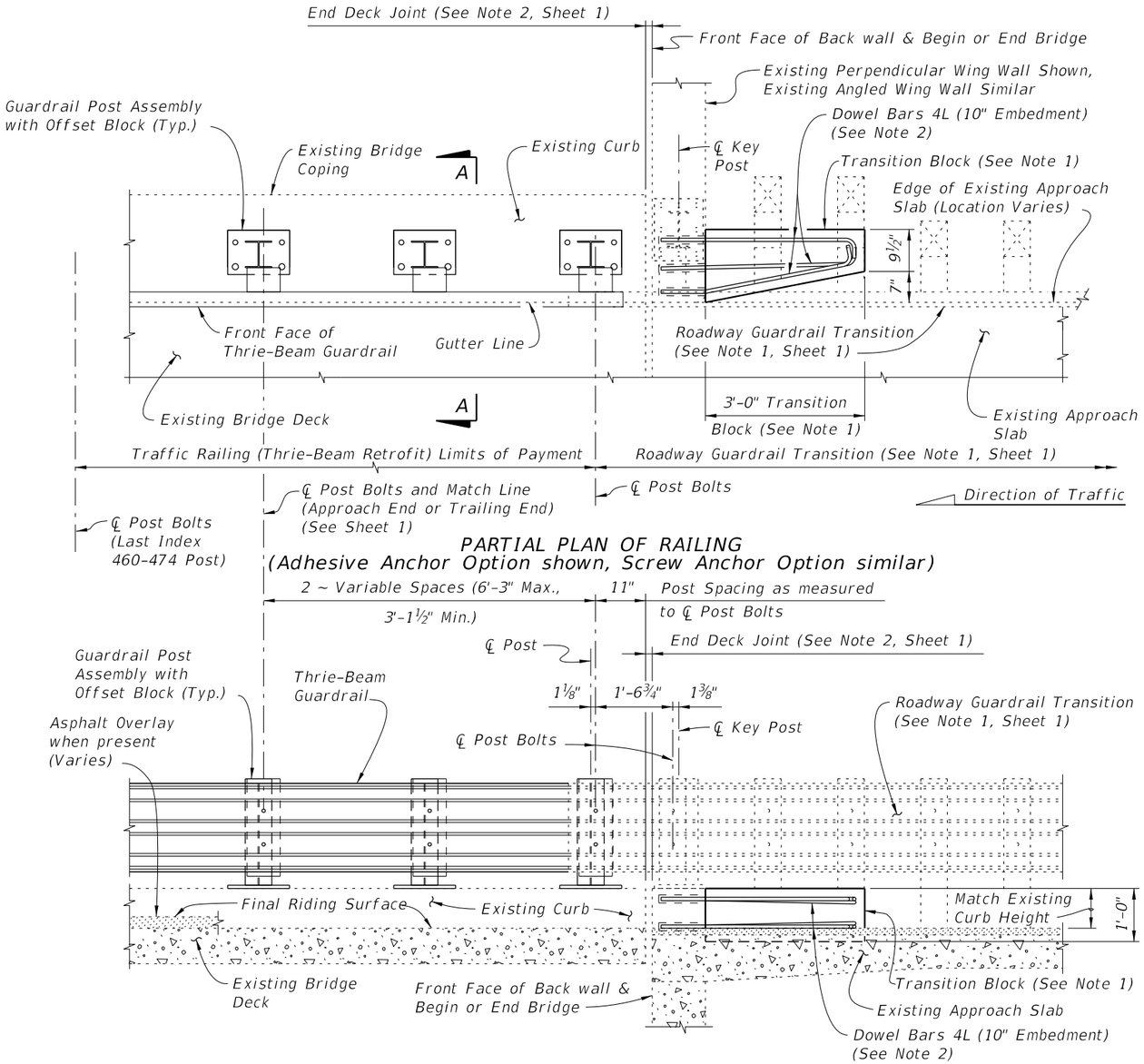
TYPICAL SECTION THRU EXISTING TRAFFIC RAILING SHOWING LIMITS OF REMOVAL (BRIDGE DECK SHOWN, WING WALL SIMILAR)



DETAIL "A"

CROSS REFERENCES:
For location of Section A-A see Sheet 1 and 3.
For location of Section B-B see Sheet 3
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

10/17/2024 11:04:46 AM



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

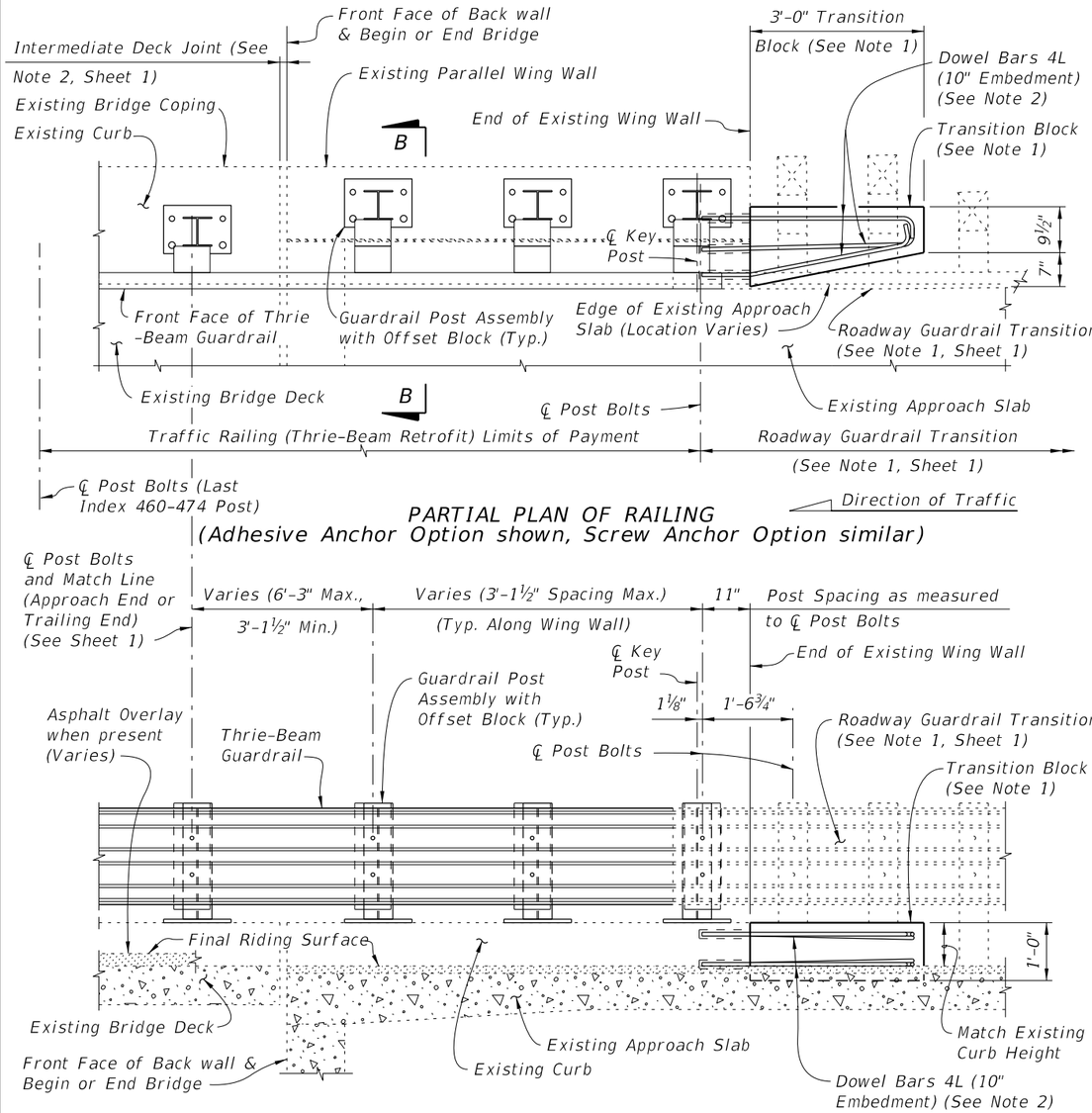
PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 2
RAILING END TREATMENT FOR PARALLEL WING WALLS

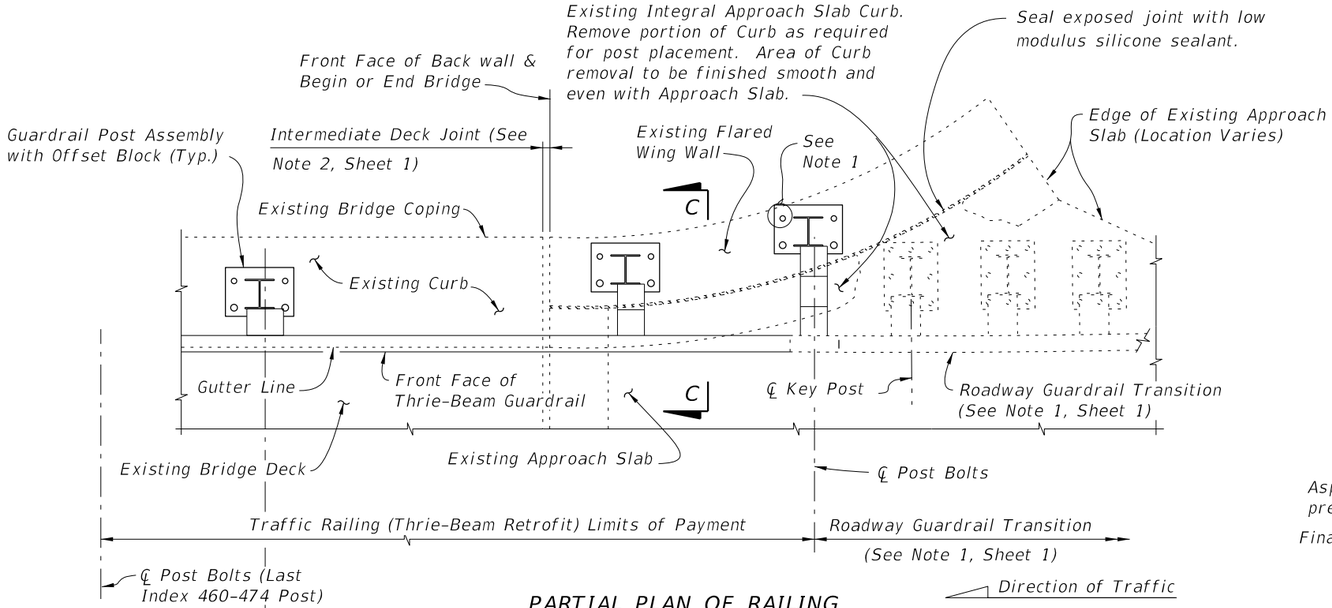
SCHEME 2 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

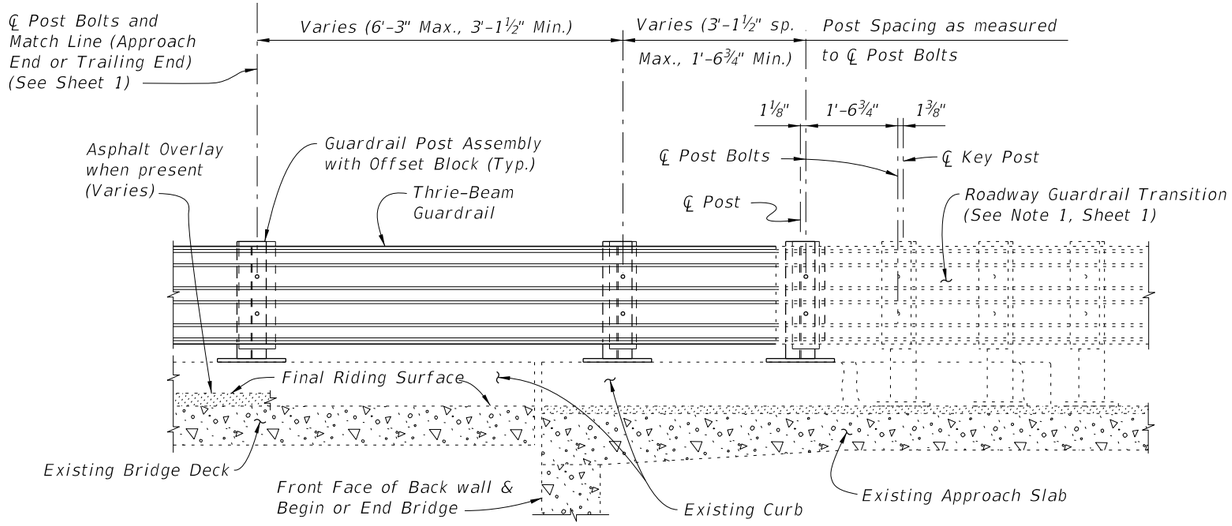
2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

10/17/2024 11:04:53 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) INTERMEDIATE CURB	INDEX 460-474	SHEET 3 of 4

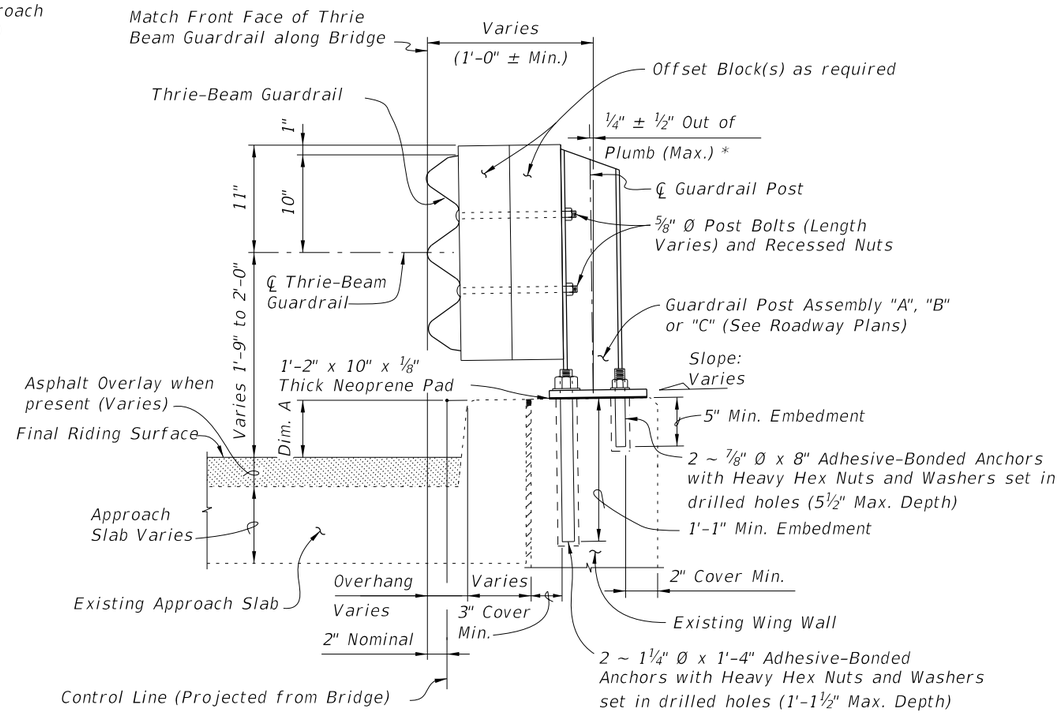


PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)



PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 3
RAILING END TREATMENT FOR FLARED WING WALLS



SECTION C-C (SCHEME 3)
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(Adhesive Anchor Option only)

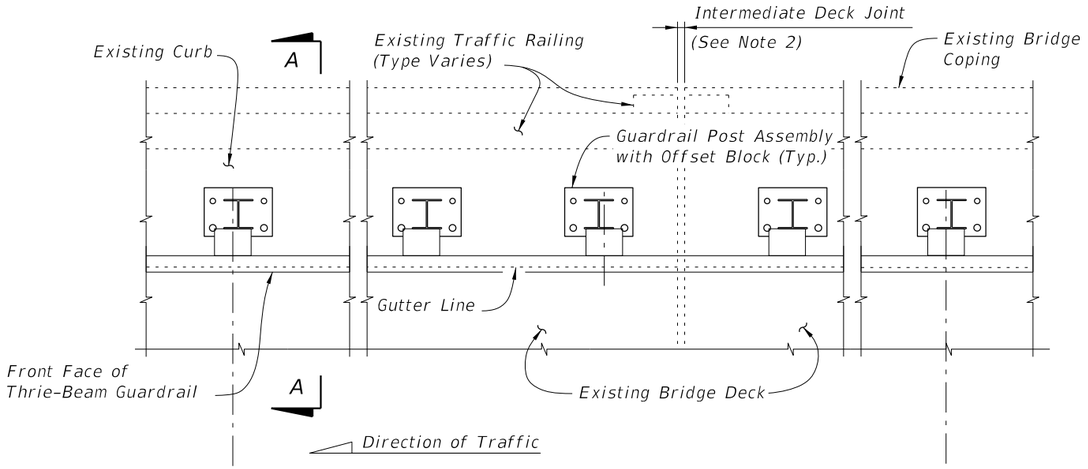
SCHEME 3 NOTE:

1. A single ⅞" Ø x 8" Adhesive-Bonded Anchor may be omitted as shown when 2" clear cover cannot be provided (see Section C-C).

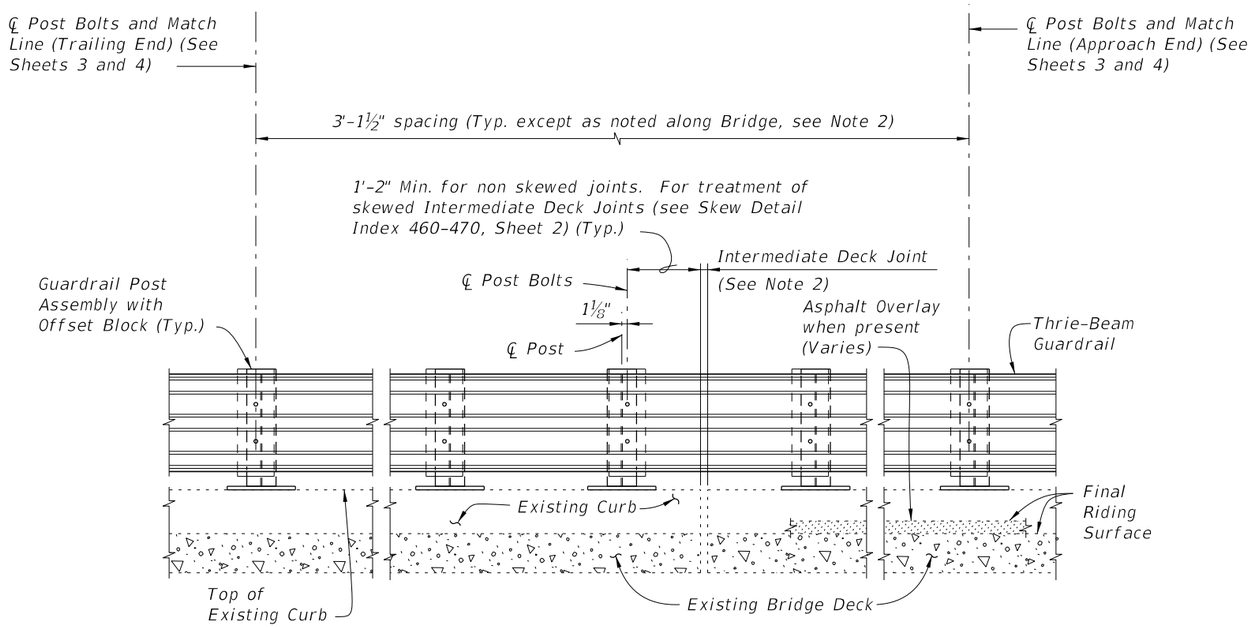
CROSS REFERENCE:
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

10/17/2024 11:04:59 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/24			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) INTERMEDIATE CURB	INDEX 460-474	SHEET 4 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Traffic Railing not shown for clarity)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

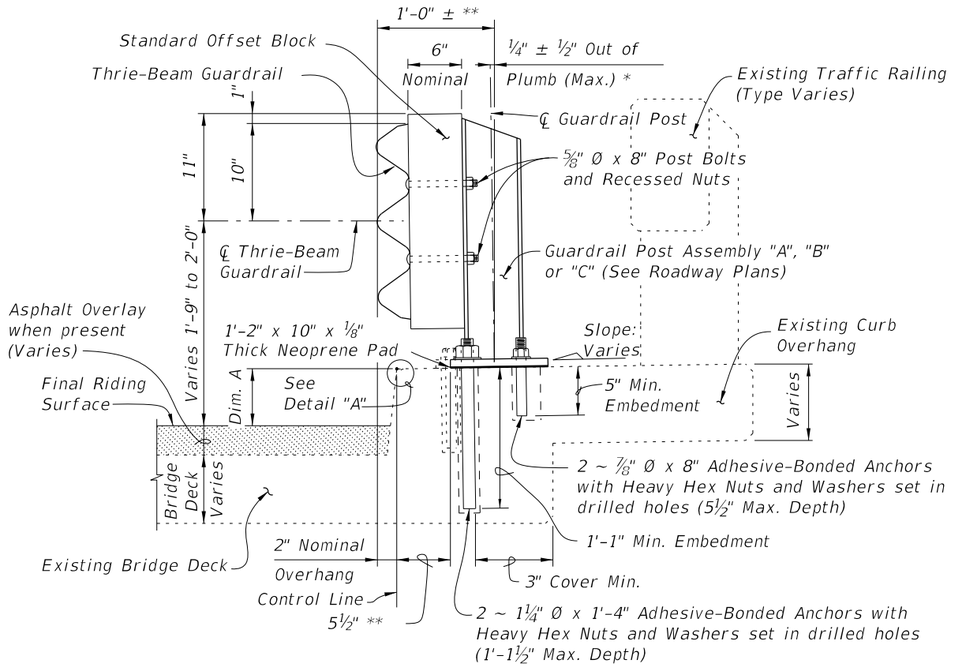
NOTES:

1. On approach end provide Index 536-002 (as shown) or other site specific treatment, see Roadway Plans. For treatment of trailing end see Roadway Plans.
2. Actual joint dimension and orientation vary. For Intermediate Deck Joints use the Modified Post Spacing at Intermediate Deck Joints Detail, Index 460-470, Sheet 2, as required.
3. Areas where existing structure has been removed shall match adjoining areas and shall be finished flat by grouting or grinding as required. Exposed existing reinforcing steel shall be burned off 1" below existing concrete and grouted over.

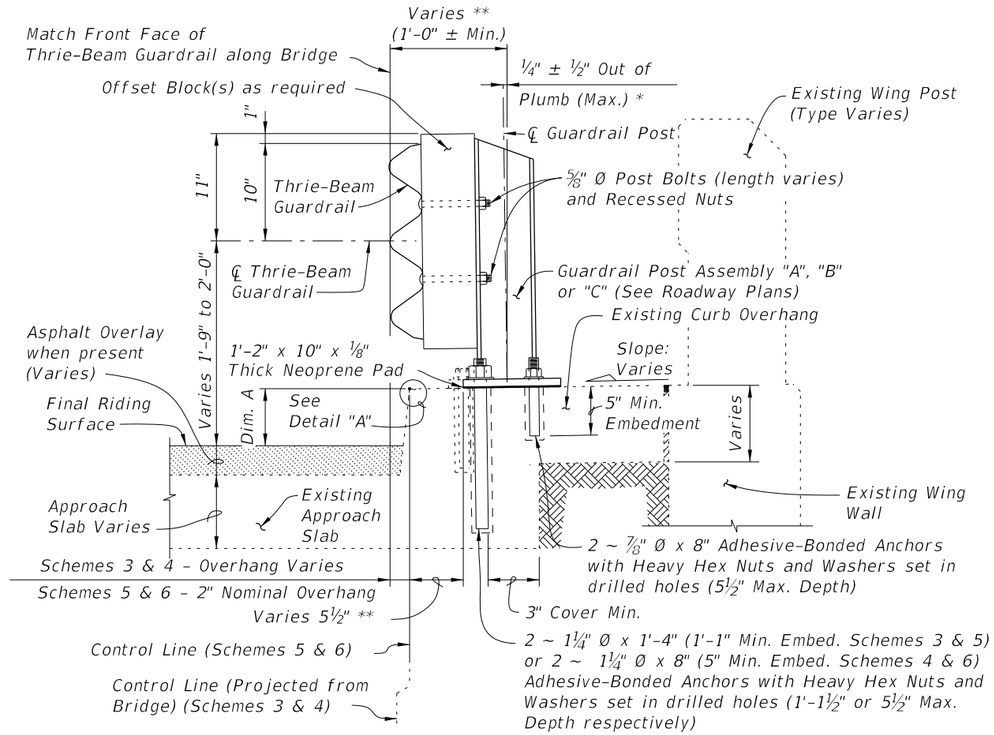
CROSS REFERENCES:
For Section A-A see Sheet 2.
For Traffic Railing Notes and Details see Index 460-470.

10/17/2024 11:05:06 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 1	INDEX	SHEET
11/01/24						460-475	1 of 4



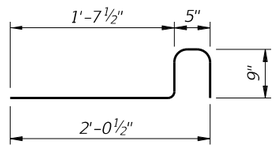
SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK
(Adhesive Anchor Option shown, Screw Anchor Option similar)



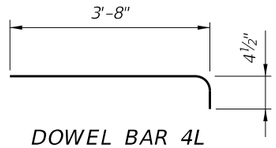
SECTION B-B
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEMES 5 AND 6 SHOWN, SCHEMES 3 AND 4 SIMILAR)
(Adhesive Anchor Option shown, Screw Anchor Option similar)

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
D	4	3'-7"
L	4	4'-1"
M	4	2'-8"

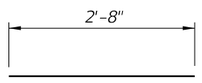
BAR BENDING DIAGRAMS



DOWEL BAR 4D



DOWEL BAR 4L

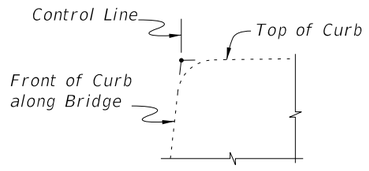


BAR 4M

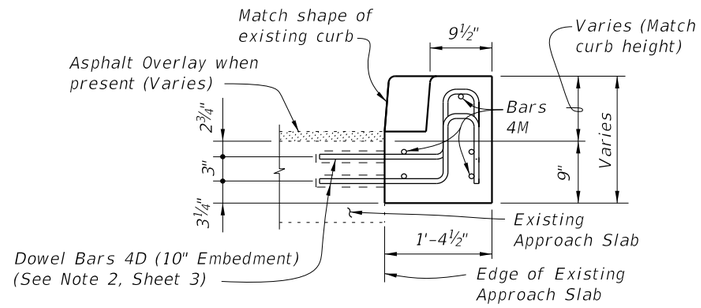
NOTE: All bar dimensions are out to out.

* Shim with washers around Anchors as required to maintain tolerance.

** Offset may vary ± 1" for Adhesive-Bonded Anchors to clear existing curb reinforcing and provide minimum edge clearance. Offset shall be consistent along length of bridge.



DETAIL "A"

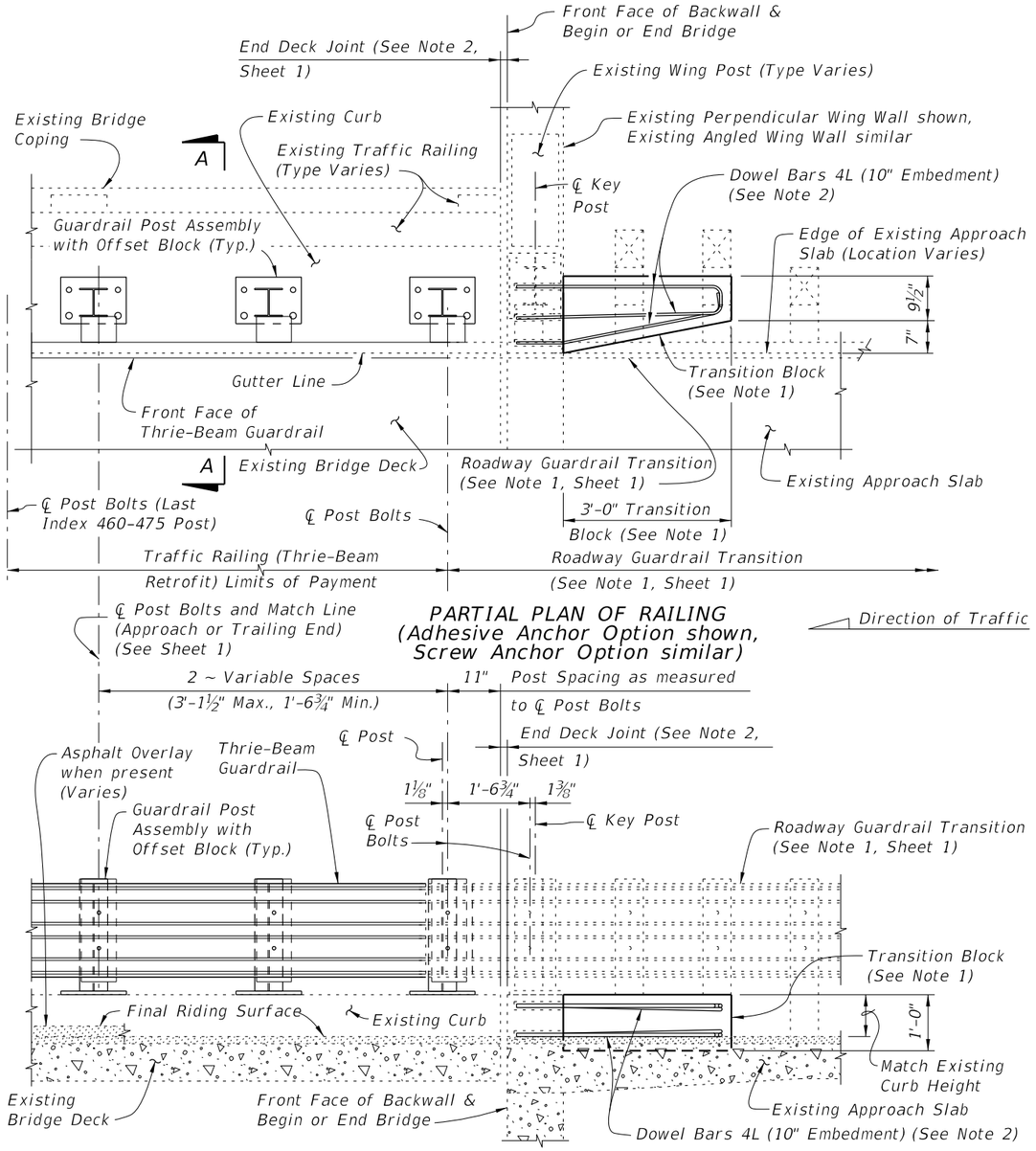


VIEW C-C

CROSS REFERENCES:
For location of Section A-A see Sheet 1, 3 & 4.
For location of Section B-B see Sheet 4.
For location of View C-C see Sheet 3.
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

10/17/2024 11:05:13 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 1	INDEX	SHEET
11/01/24						460-475	2 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

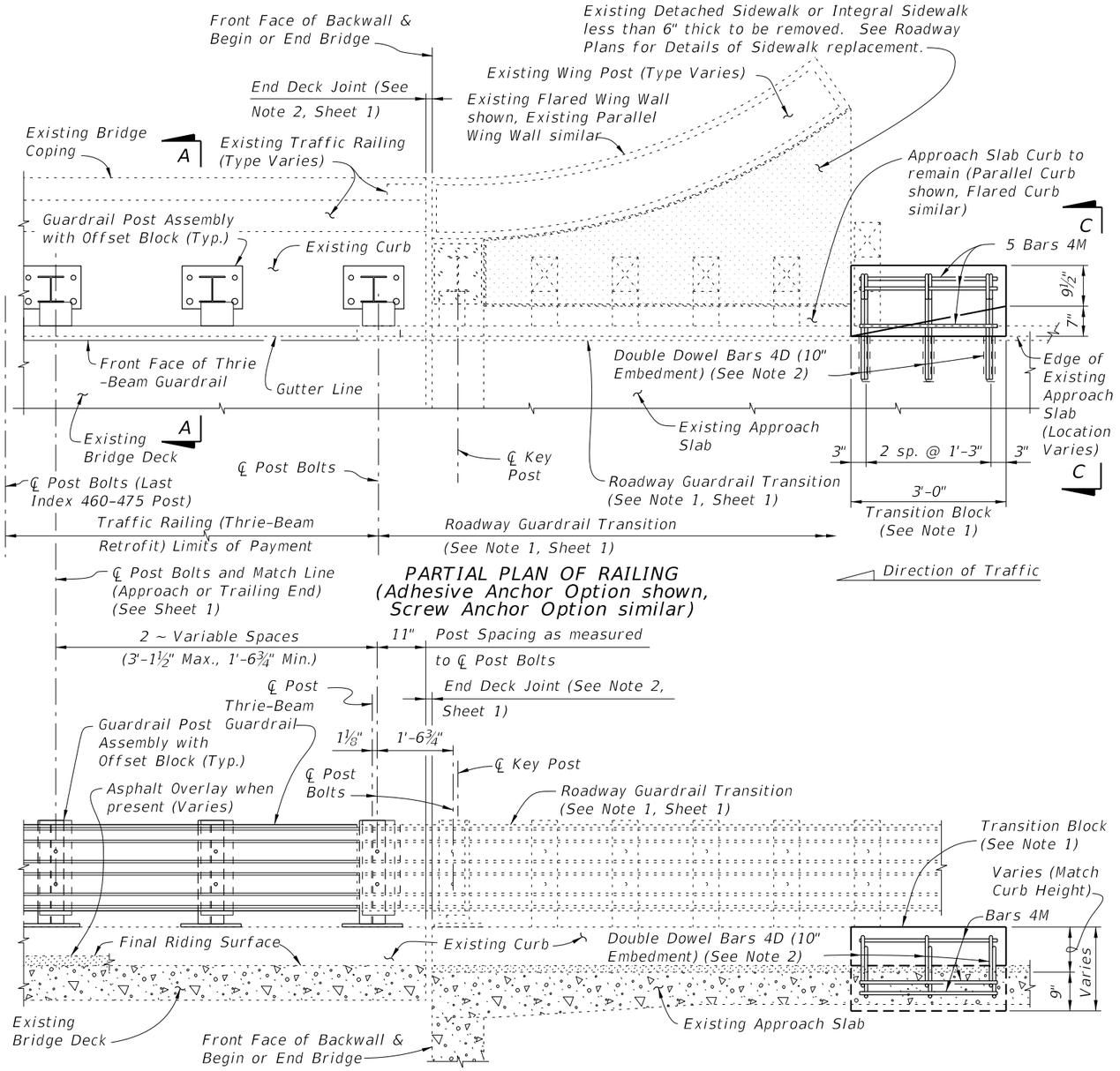
SCHEME 1

RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEME 2

RAILING END TREATMENT FOR PARALLEL OR FLARED CURBS WITH DETACHED SIDEWALKS OR INTEGRAL SIDEWALKS LESS THAN 6" THICK

SCHEME 2 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic and on bridges with flared Approach Slab Curbs.

2. Field bend or tilt Dowel Bars 4D and Bars 4M within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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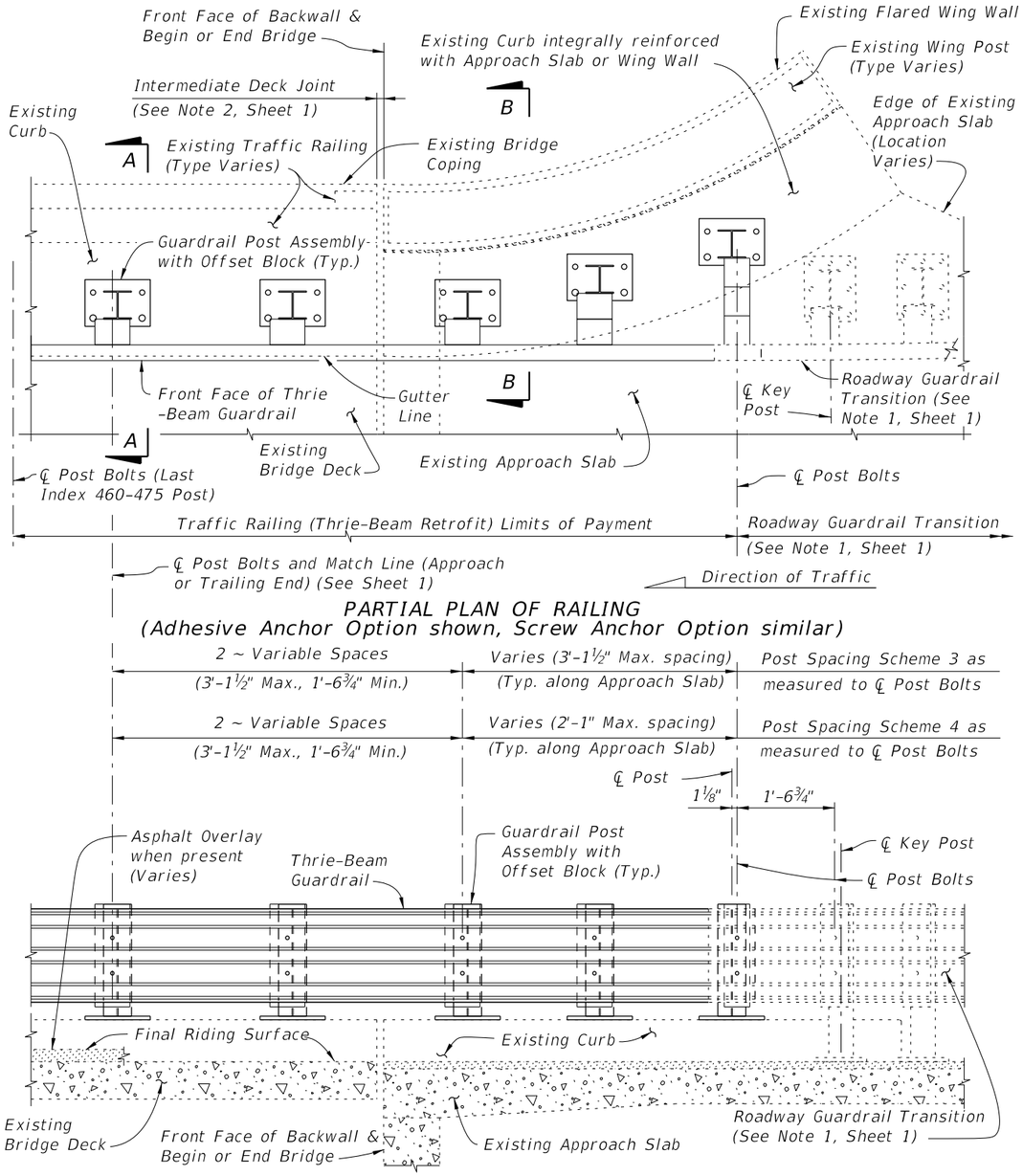
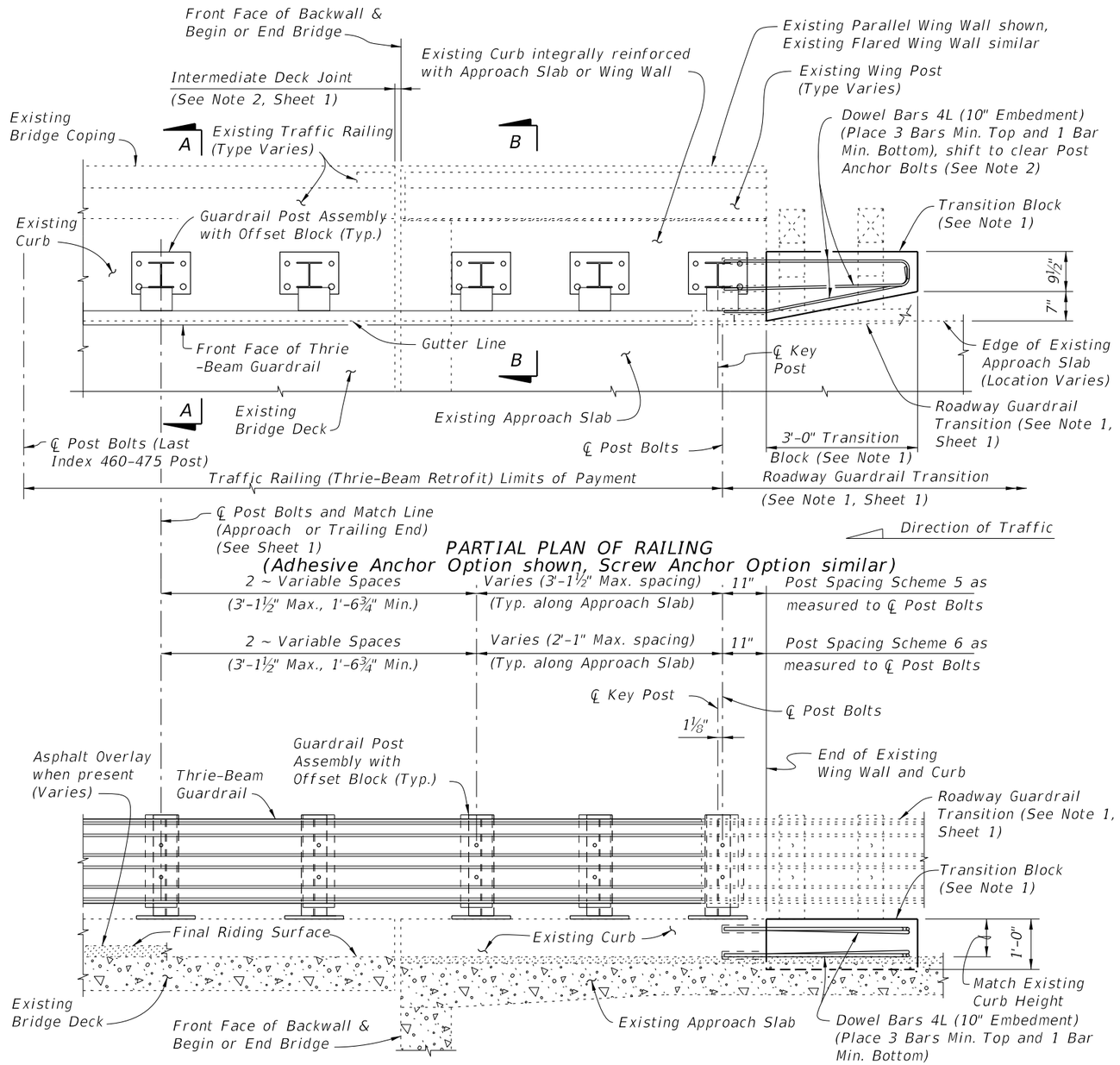
11/01/24						460-475	3 of 4



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEMES 3 AND 4
RAILING END TREATMENT FOR FLARED INTEGRAL CURBS



PARTIAL PLAN OF RAILING
(Adhesive Anchor Option shown, Screw Anchor Option similar)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEMES 5 AND 6
RAILING END TREATMENT FOR PARALLEL INTEGRAL CURBS

SCHEMES 5 AND 6 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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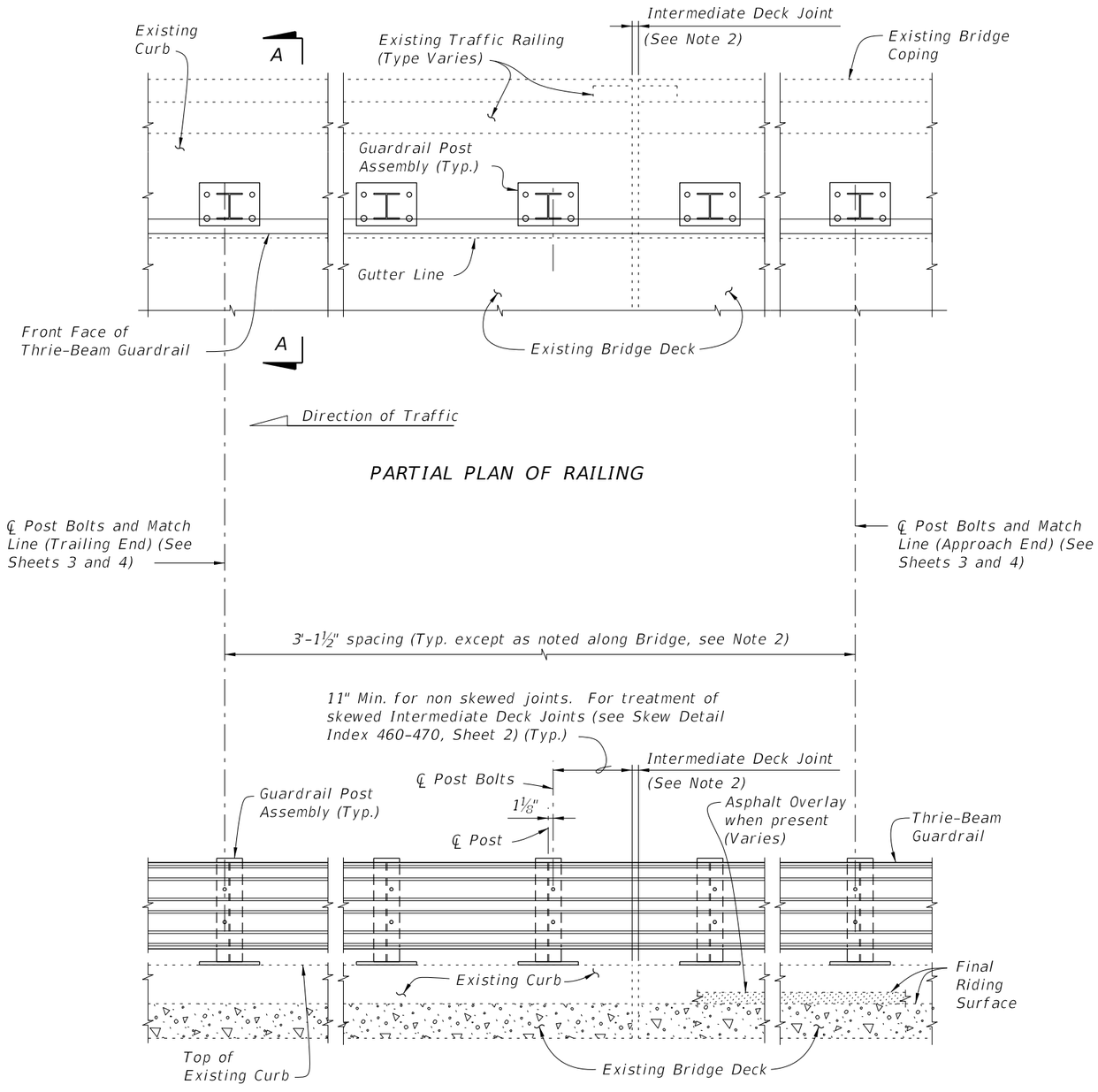
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 1	INDEX	SHEET
11/01/24						460-475	4 of 4



PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Traffic Railing not shown for clarity)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

NOTES:

1. On approach end provide Index 536-002 (as shown) or other site specific treatment, see Roadway Plans. For treatment of trailing end see Roadway Plans.
2. Actual joint dimension and orientation vary. For Intermediate Deck Joints use the Modified Post Spacing at Intermediate Deck Joints Detail, Index 460-470, Sheet 2, as required.
3. Areas where existing structure has been removed shall match adjoining areas and shall be finished flat by grouting or grinding as required. Exposed existing reinforcing steel shall be burned off 1" below existing concrete and grouted over.

CROSS REFERENCES:
For Section A-A see Sheet 2.
For Traffic Railing Notes and Details see Index 460-470.

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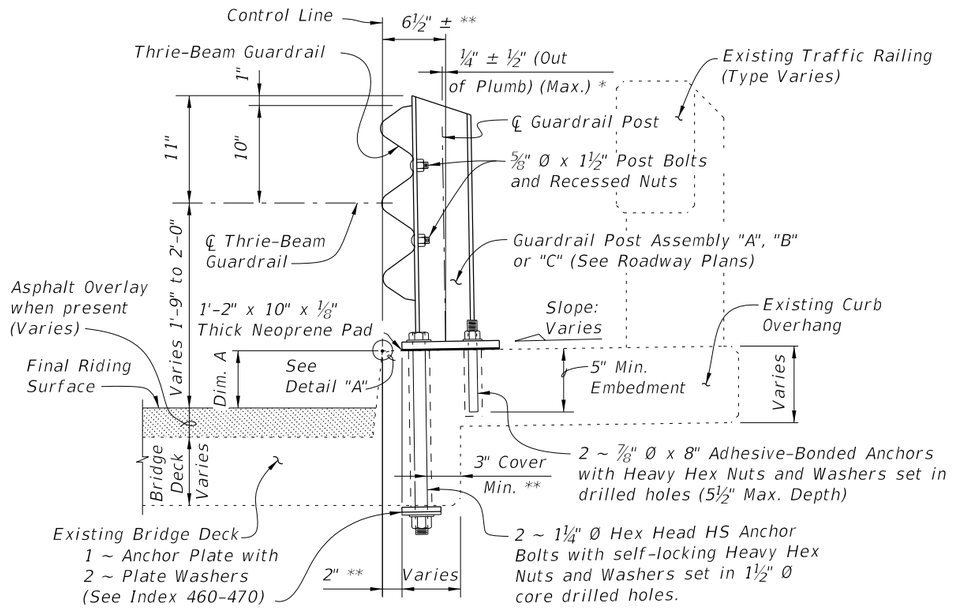
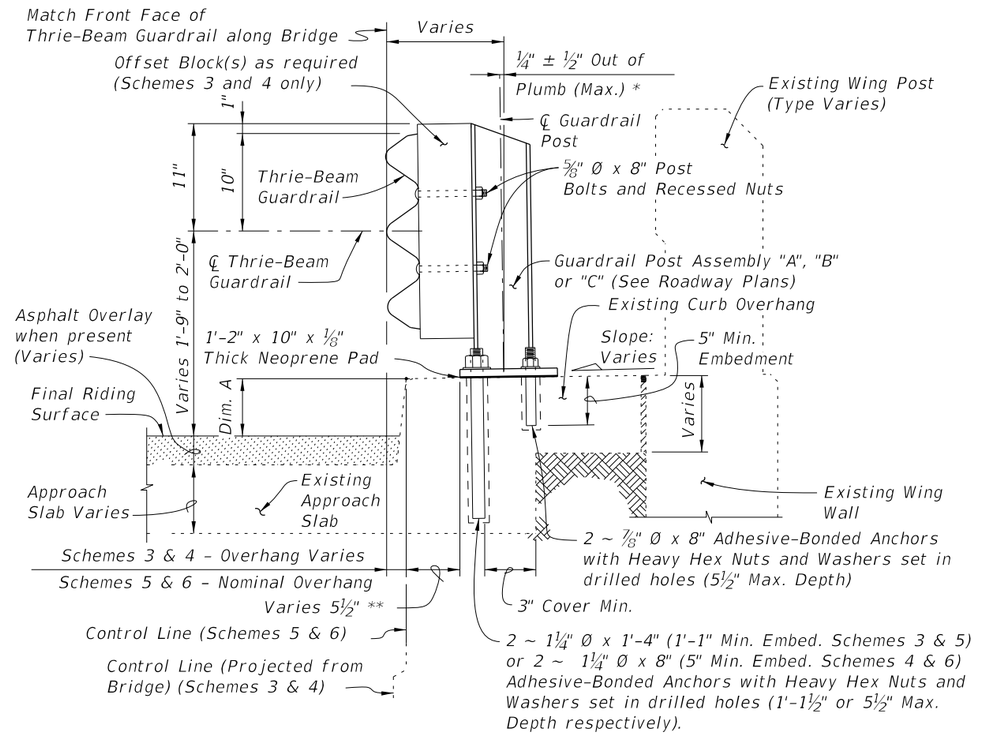
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 2	INDEX	SHEET
01/01/08					460-476	1 of 4



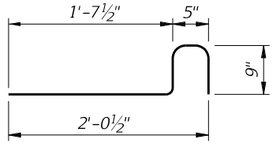
SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK



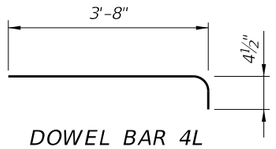
SECTION B-B
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEMES 5 AND 6 SHOWN, SCHEMES 3 AND 4 SIMILAR)

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
D	4	3'-7"
L	4	4'-1"
M	4	2'-8"

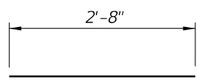
BAR BENDING DIAGRAMS



DOWEL BAR 4D



DOWEL BAR 4L

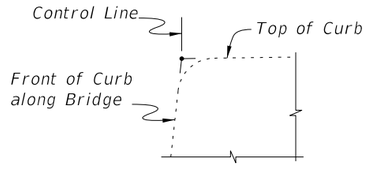


BAR 4M

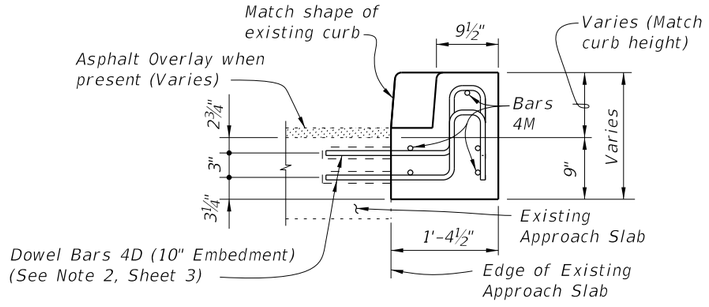
NOTE: All bar dimensions are out to out.

* Shim with washers around Anchors as required to maintain tolerance.

** Offset may vary ± 1" for Adhesive-Bonded Anchors to clear existing curb reinforcing and provide minimum edge clearance. Offset shall be consistent along length of bridge.



DETAIL "A"



VIEW C-C

CROSS REFERENCES:
For location of Section A-A see Sheet 1, 3 & 4.
For location of Section B-B see Sheet 4.
For location of Section C-C see Sheet 3.
For application of Dim. A see Post Dimension Table on Index 460-470, Sheet 3.

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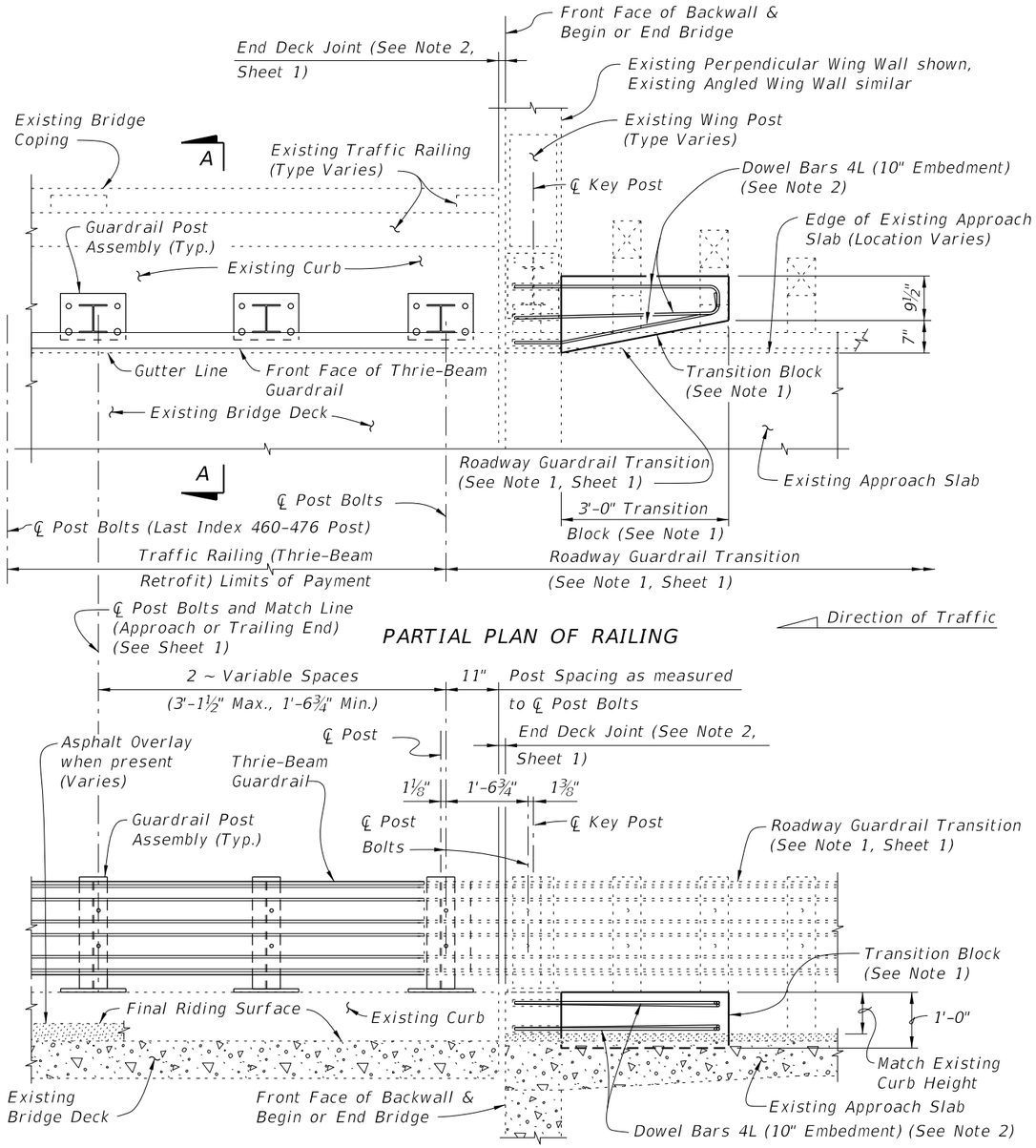
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 2	INDEX	SHEET
07/01/08					460-476	2 of 4



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

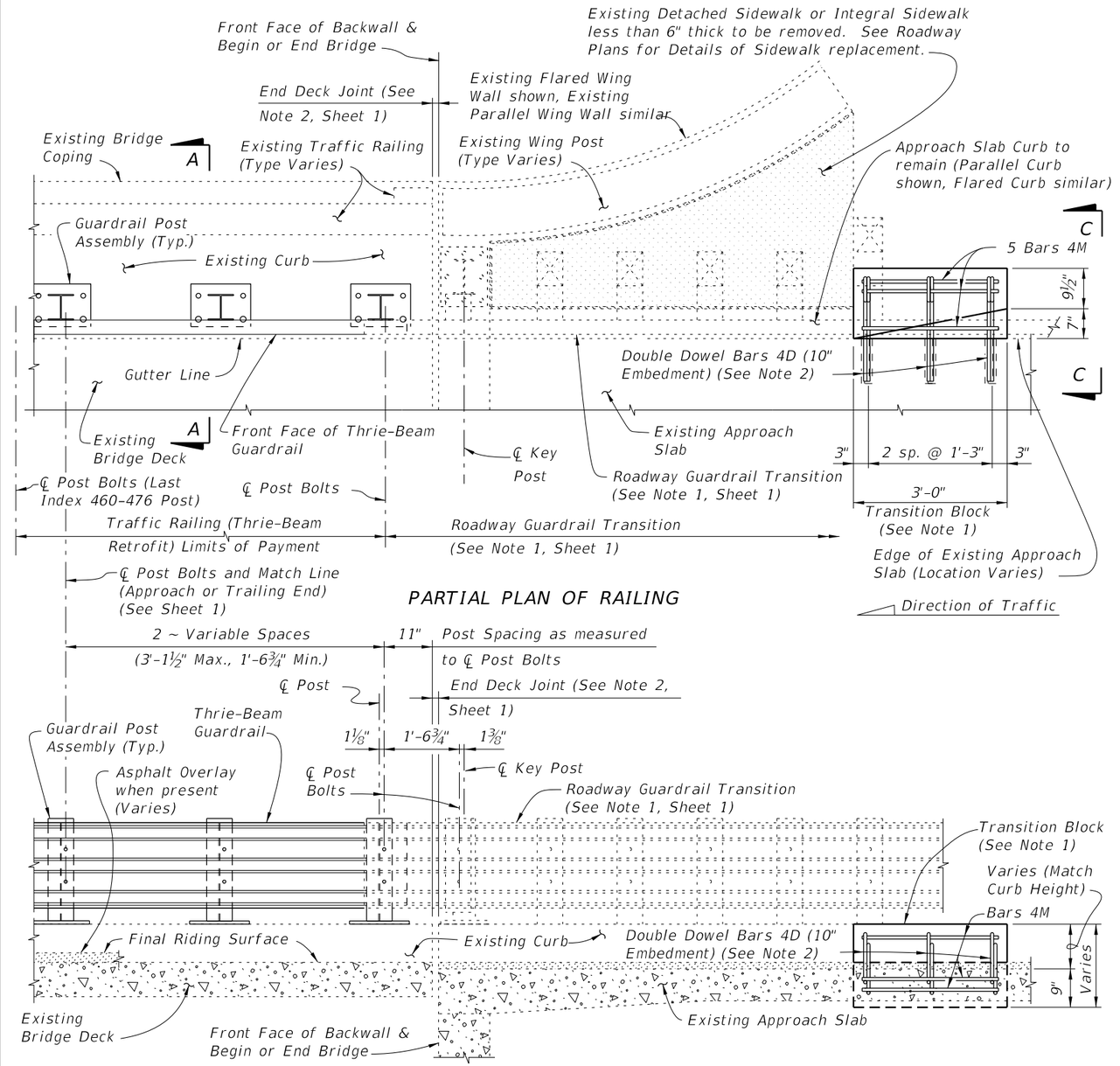
SCHEME 1

RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEME 2

RAILING END TREATMENT FOR PARALLEL OR FLARED CURBS WITH DETACHED SIDEWALKS OR INTEGRAL SIDEWALK LESS THAN 6" THICK

SCHEME 2 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic and on bridges with flared Approach Slab Curbs.

2. Field bend or tilt Dowel Bars 4D and Bars 4M within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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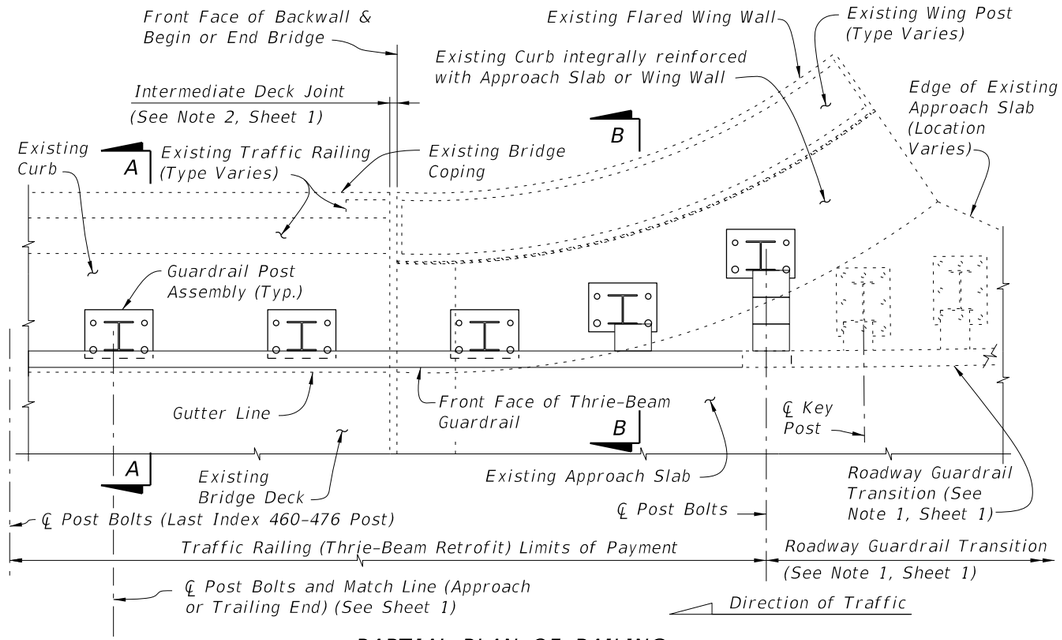
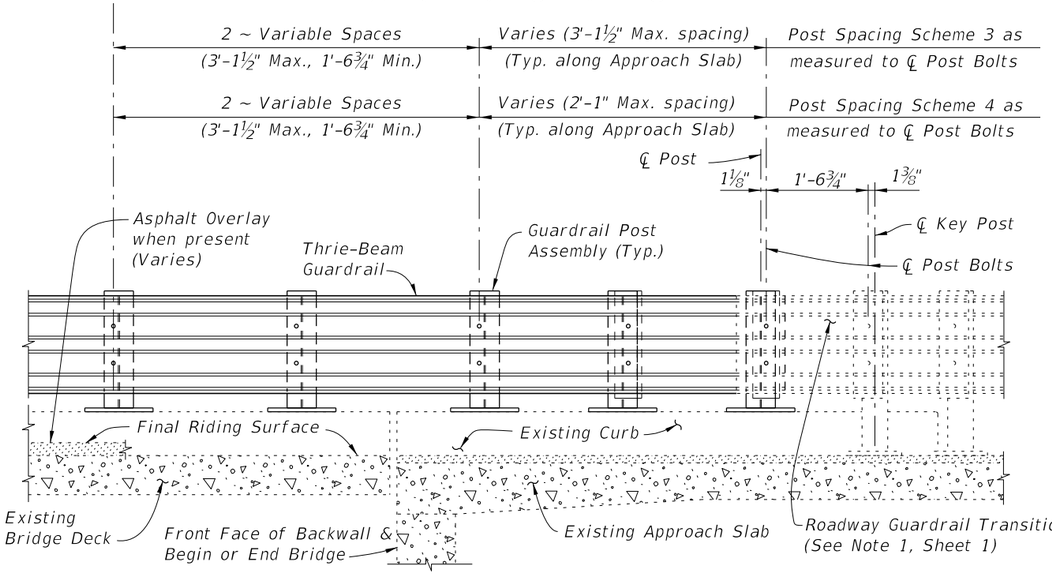
LAST REVISION	REVISION	DESCRIPTION:				
01/01/08			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 2	INDEX 460-476	SHEET 3 of 4

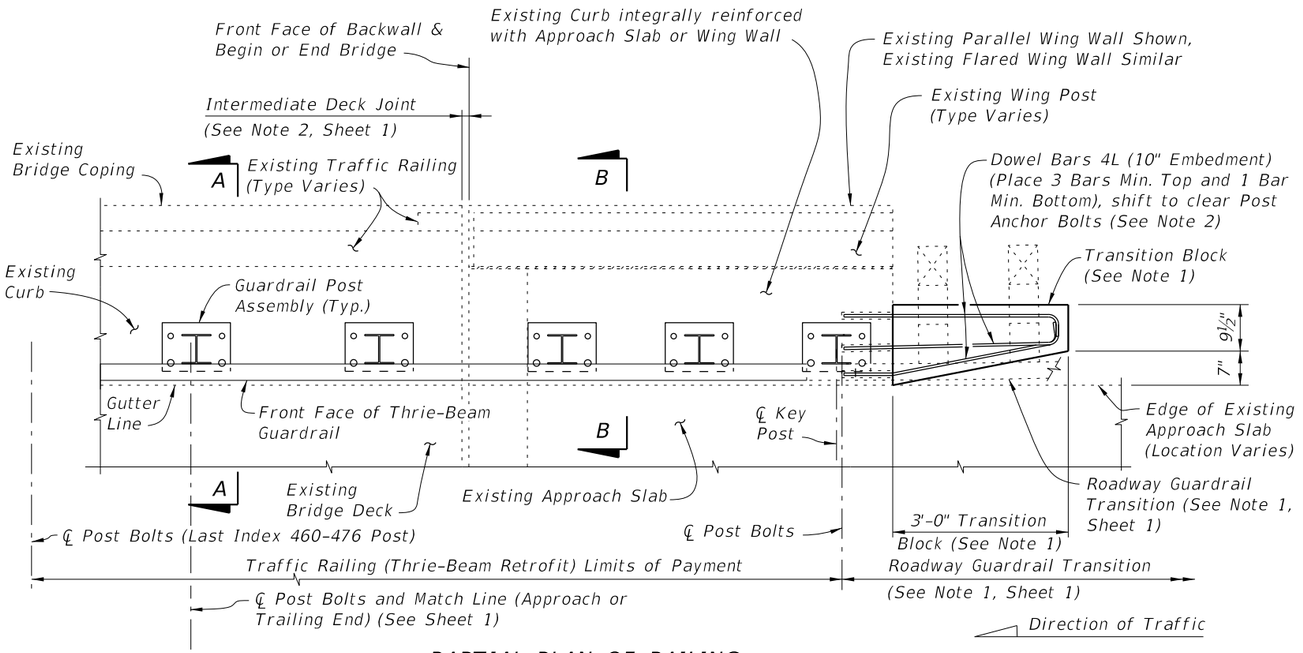


PARTIAL PLAN OF RAILING

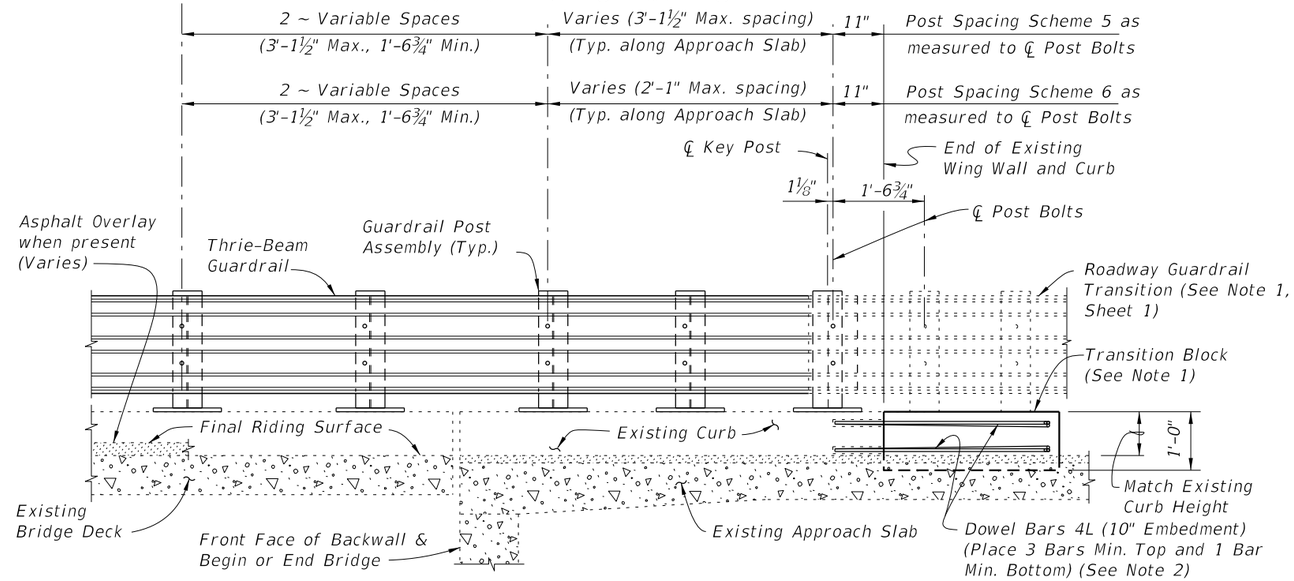


PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEMES 3 AND 4
RAILING END TREATMENT FOR FLARED INTEGRAL CURBS



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post and Traffic Railing not shown for clarity)

SCHEMES 5 AND 6
RAILING END TREATMENT FOR PARALLEL INTEGRAL CURBS

SCHEMES 5 AND 6 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of Transition Block or Curb shall match existing bridge curb. Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) WIDE CURB TYPE 2	INDEX	SHEET
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TRAFFIC RAILING RETROFIT NOTES

See Index 536-001 for component details, geometric layouts and associated notes not fully detailed herein.

CONCRETE: Concrete for Transition Blocks shall be Class II (Bridge Deck).

THRIE-BEAM PANEL: Steel Thrie-Beam Elements shall meet the requirements for Class B (10 Gauge) Guardrail of AASHTO M 180, Type II (Zinc coated). The minimum panel length for Thrie-Beam Elements shall be 12'-6". Field drilled holes for Post connections shall be ¾" by 2½" slotted holes.

BOLTS, NUTS AND WASHERS: Bolts, nuts and round washers shall be in accordance with AASHTO M180. Plate Washers shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

COATINGS: All Nuts, Bolts, Anchors, and Washers shall be hot-dip galvanized in accordance with the Specifications.

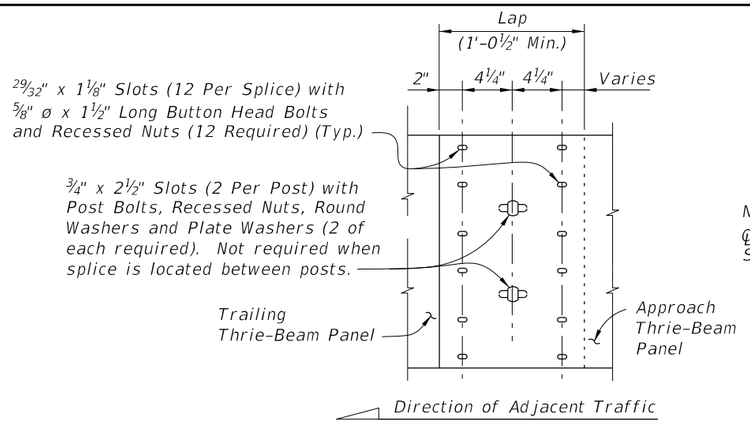
BRIDGES ON CURVED ALIGNMENTS: The details presented herein are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

THRIE-BEAM EXPANSION SECTION: Thrie-Beam Expansion Sections shall be installed at locations shown in the Plans. Install nuts for splice bolts finger-tight at 2½" slots in thrie-beam expansion sections. Nuts shall fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening. Tighten bolts in 3¾" slots at guardrail post(s) that lie between the slotted expansion splice and bridge deck joint so that the bolt heads are in full contact with thrie-beam elements, but not so tight as to impede movement due to expansion.

WOOD BLOCKS: All wood blocks, including required wedge shaped blocks shall be Pressure Treated Lumber in accordance with Specifications Section 955. Bolt holes in blocks to be centered (±¼").

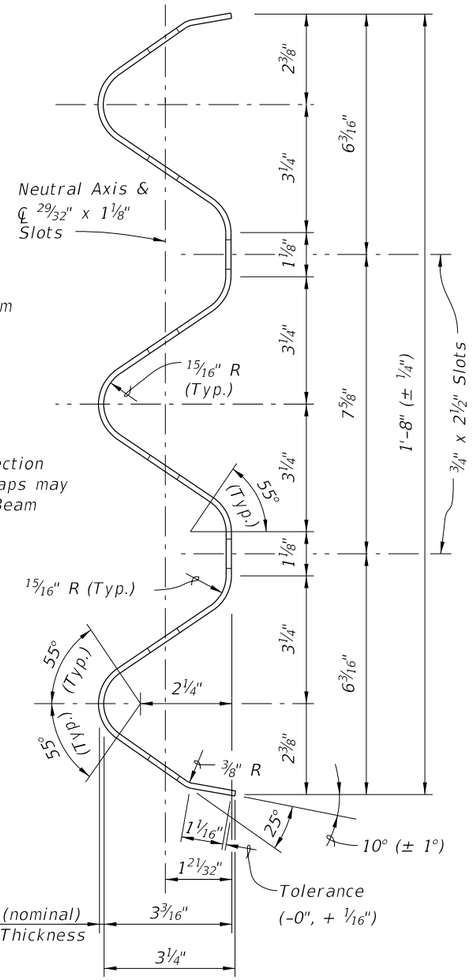
BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie-Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers.

PAYMENT: Payment will be made under Thrie-Beam Panel Retrofit which shall include all materials and labor required to fabricate and install the retrofit railing. Transition Blocks and Curbs, Bridge Name Plate and Barrier Delineators, where required, will not be paid for directly but shall be considered incidental work.

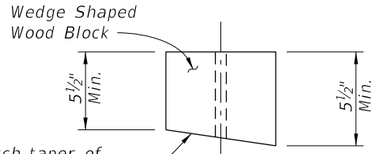


THRIE-BEAM PANEL SPLICE

NOTE: All Thrie Beam Panels shall be lapped in the direction of adjacent traffic. At the Contractor's option, laps may be extended. Field drill holes in Trailing Thrie-Beam Panel as required.



TYPICAL SECTION THRU CLASS B (10 GAUGE) THRIE-BEAM PANEL (EXPANSION SECTION SIMILAR)



PLAN VIEW

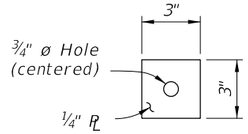
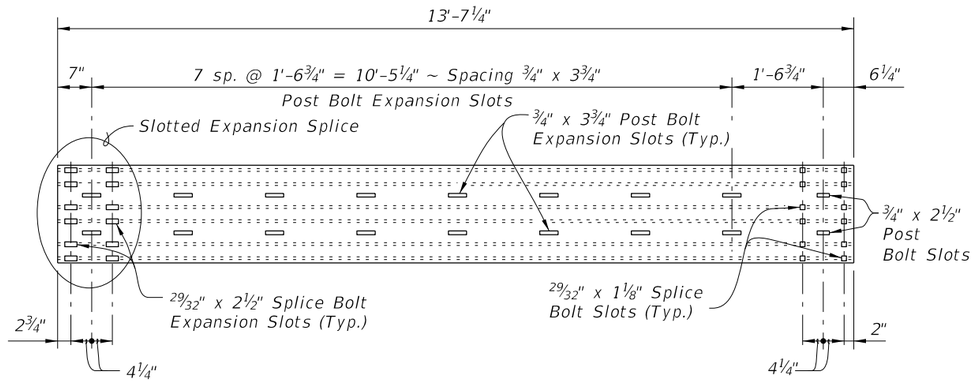
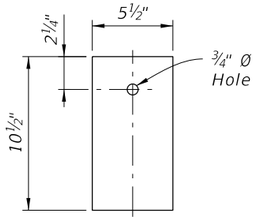


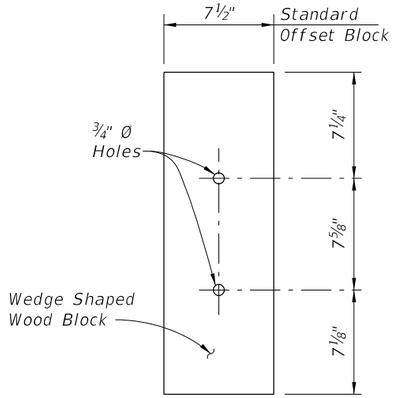
PLATE WASHER DETAIL



THRIE-BEAM EXPANSION SECTION

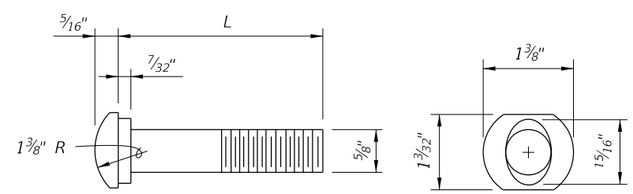


1" WOOD BLOCK



FRONT VIEW

WEDGE SHAPED BLOCK DETAIL



⅝" OVAL SHOULDER BUTTON HEAD BOLT

L (in)	THREAD LENGTH (in)	APPLICATION
1½	Full Length	Splice Bolt
14	4	Post Bolt

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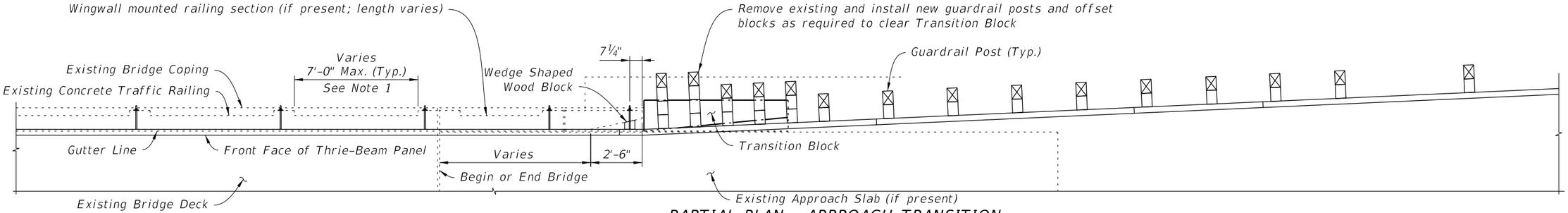
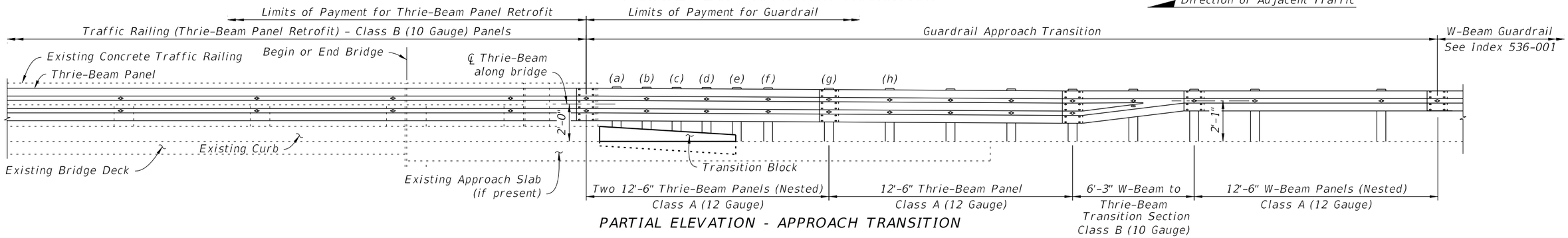
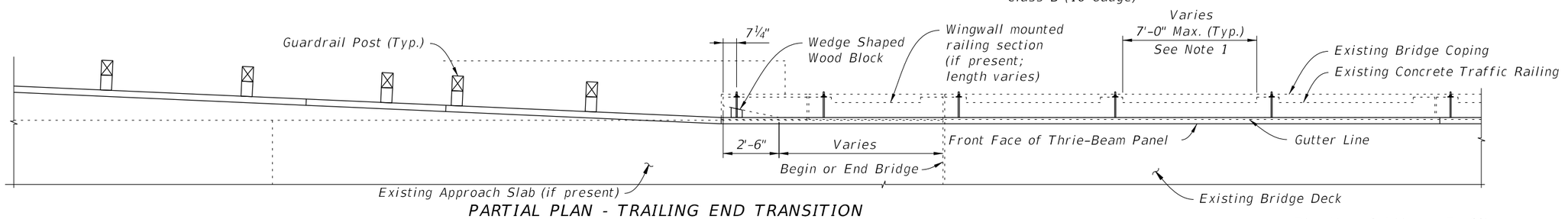
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/14			FY 2025-26 STANDARD PLANS	THRIE-BEAM PANEL RETROFIT (CONCRETE HANDRAIL)	460-477	1 of 4



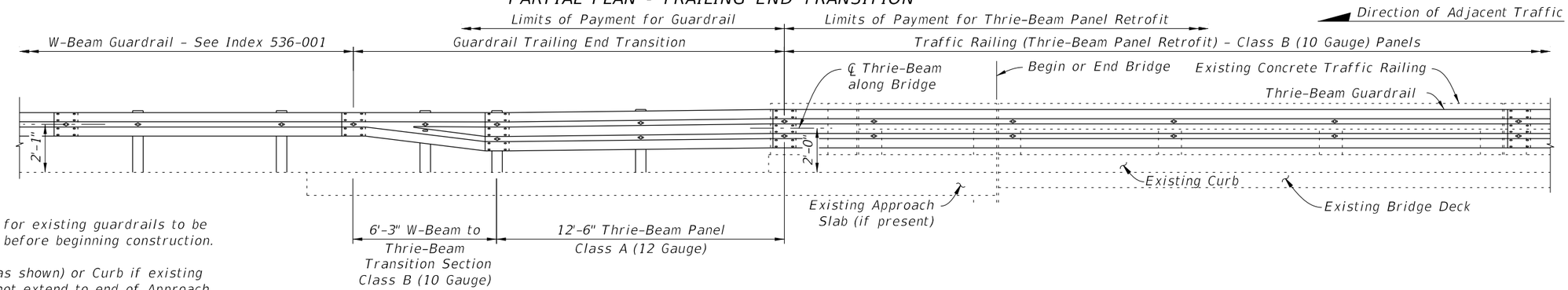
PARTIAL PLAN - APPROACH TRANSITION



PARTIAL ELEVATION - APPROACH TRANSITION



PARTIAL PLAN - TRAILING END TRANSITION



PARTIAL ELEVATION - TRAILING END TRANSITION

NOTES:

1. Dimensions and elevations for existing guardrails to be verified by the Contractor before beginning construction.
2. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of the traffic face of Transition Block or Curb shall match existing bridge curb. See Sheet 4 for Transition Block details. Block may be omitted on trailing ends with no opposing traffic.
3. Do not bolt nested rails to the blocks and posts at posts (a), (c) & (e).

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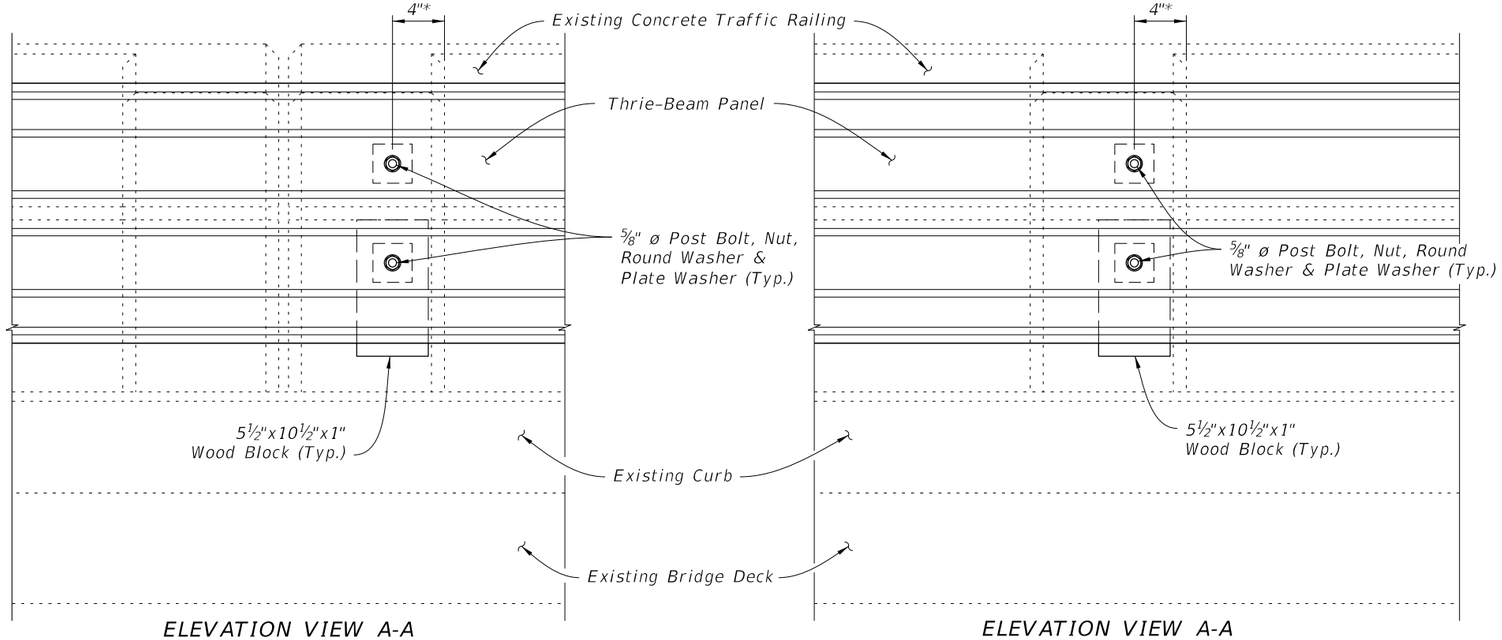
LAST REVISION	REVISION	DESCRIPTION:				
01/01/14			FDOT FY 2025-26 STANDARD PLANS	THRIE-BEAM PANEL RETROFIT (CONCRETE HANDRAIL)	INDEX 460-477	SHEET 2 of 4

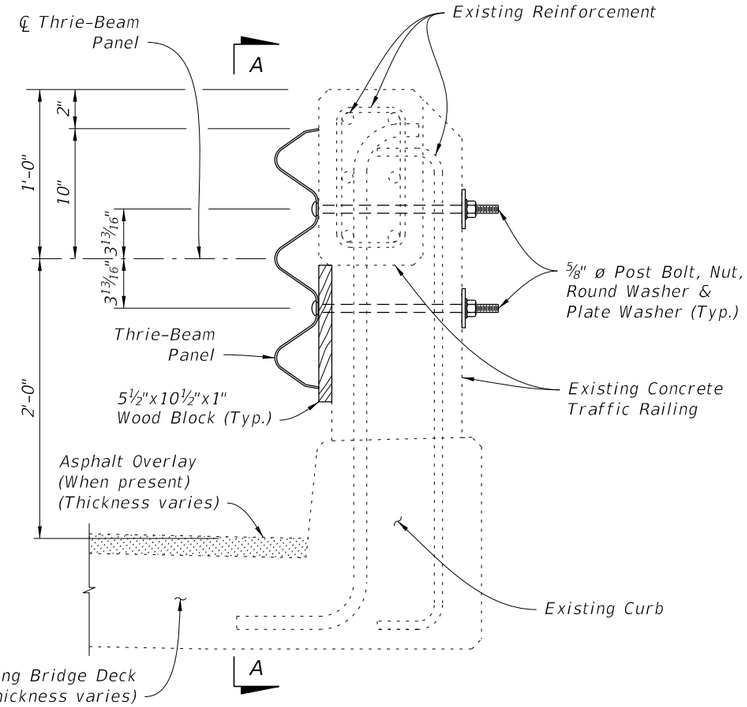


ELEVATION VIEW A-A
(At Double Posts)

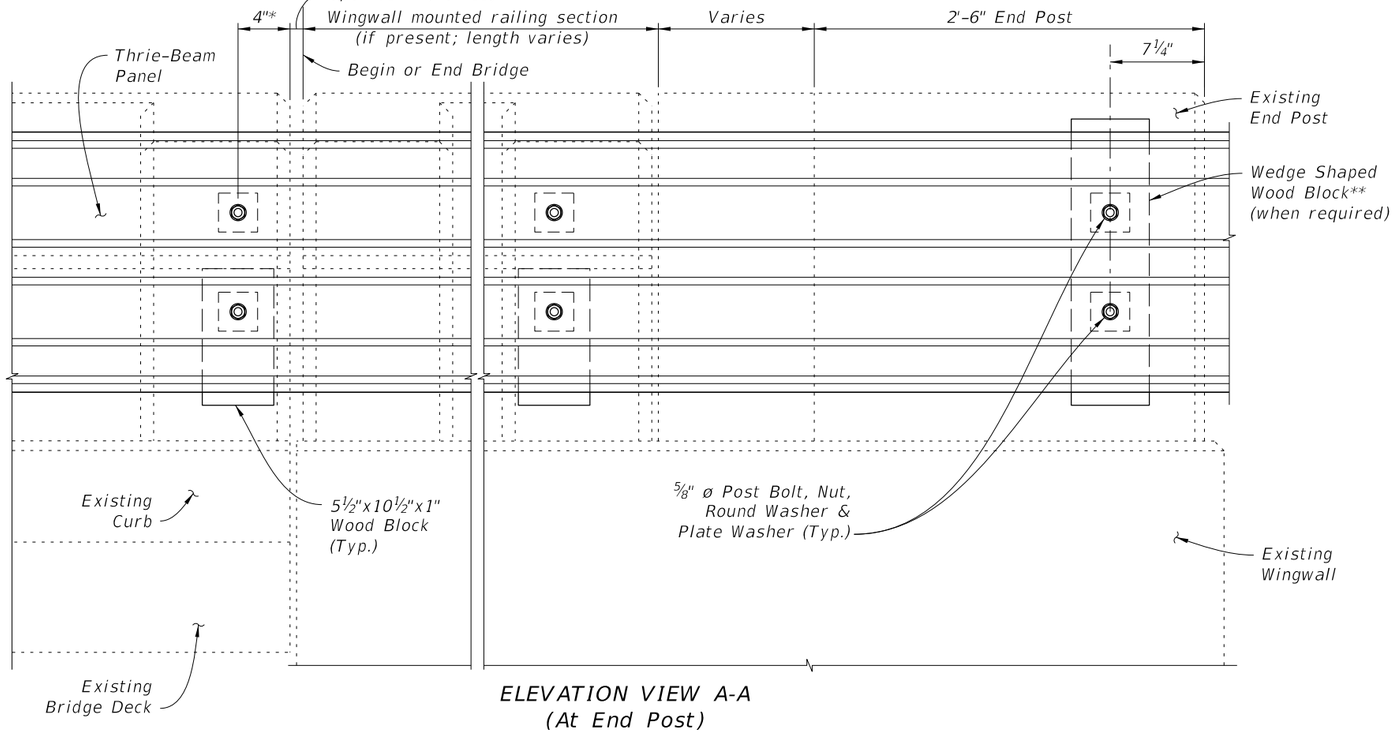
(View at Intermediate Double Posts shown; View at Expansion Joints similar)

ELEVATION VIEW A-A
(At Single Post)

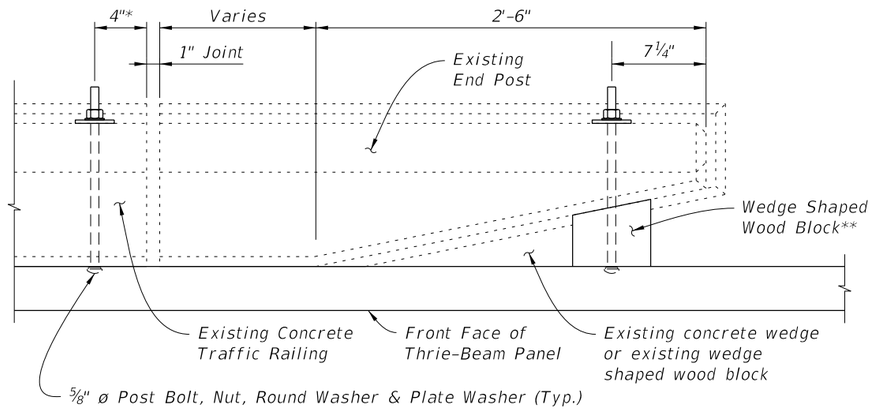
* *Measured from edge of existing Post. Bolts may be installed at either side of any Post.*



TYPICAL SECTION THRU RAILING POST ON BRIDGE DECK



ELEVATION VIEW A-A
(At End Post)



PLAN OF END POST

NOTES:

1. *Post Bolts shall be 5/8" ø x 14" long set in 7/8" ø core drilled holes, see Sheet No. 1.*
2. *Shift Post Bolt holes minimally inward toward center of posts if existing reinforcement is encountered during drilling of holes. If reinforcement is still encountered, notify the Engineer before proceeding with drilling.*
3. *Post Bolt spacing not to exceed 8'-0" (± 1").*

** *For End Posts with an existing wedge shaped wood block, remove existing wood block and replace with new Wedge Shaped Wood Block (See Sheet 1 for notes and details).*

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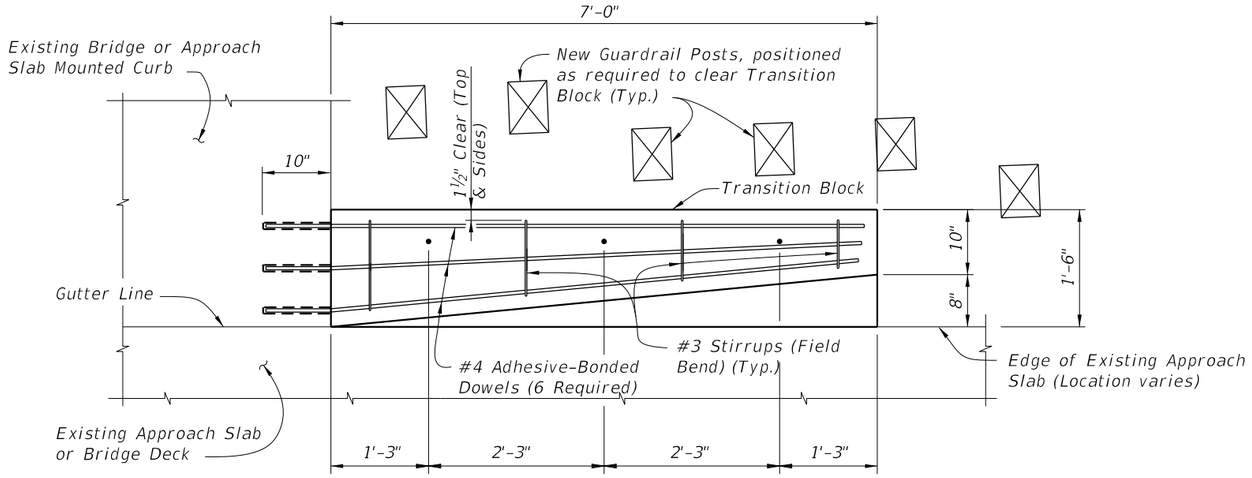
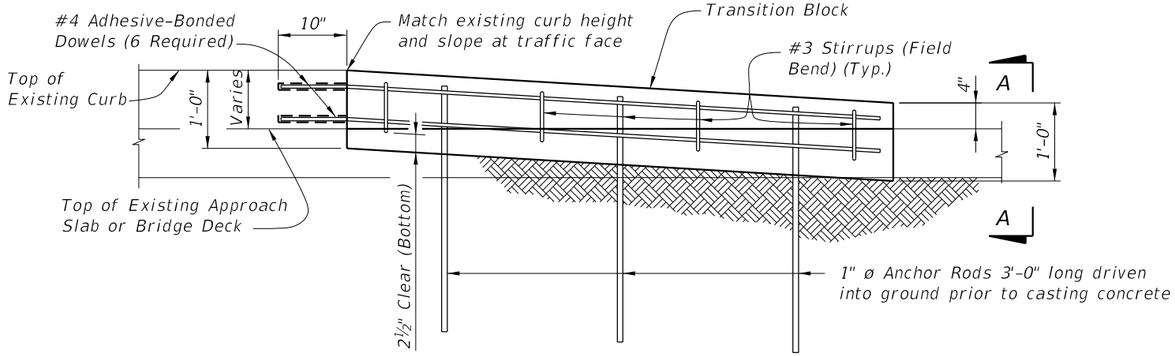
LAST REVISION	REVISION	DESCRIPTION:				
07/01/13			FY 2025-26 STANDARD PLANS	THRIE-BEAM PANEL RETROFIT (CONCRETE HANDRAIL)	INDEX 460-477	SHEET 3 of 4

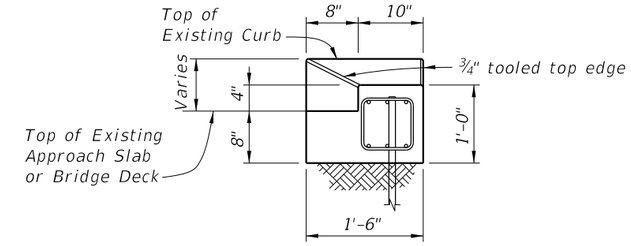


PLAN VIEW OF TRANSITION BLOCK
(GUARDRAIL NOT SHOWN FOR CLARITY)

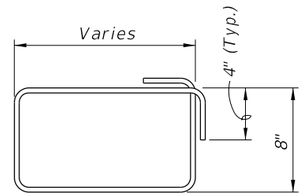


ELEVATION OF TRANSITION BLOCK
(GUARDRAIL AND POSTS NOT
SHOWN FOR CLARITY)

ESTIMATED QUANTITIES PER TRANSITION BLOCK		
ITEM	UNIT	QUANTITY
Concrete Class II (Bridge Deck)	CY	0.4
Reinforcing Steel	LB	61
Guardrail (Reset)	LF	12.5



END VIEW A-A



#3 STIRRUP (FIELD BEND)

NOTES:

ANCHOR RODS: Steel Anchor Rods shall be ASTM A36, ASTM A709 Grade 36 or ASTM A615 Grade 60 hot-dip galvanized in accordance with Specification Section 962.

ADHESIVE-BONDED DOWELS: Adhesive Bonding Material Systems for Dowels shall comply with Specification Section 937 (Type HV) and be installed in accordance with Specification Section 416.

Adhesive Bonded Dowels are shown installed in an existing curb or sidewalk integrally reinforced with Approach Slab, Wingwall or Bridge Deck. For installations in existing detached curbs or sidewalks, install dowels in available sound concrete.

Shift bars (as needed) to install six dowels into existing bridge or approach slab mounted curb.

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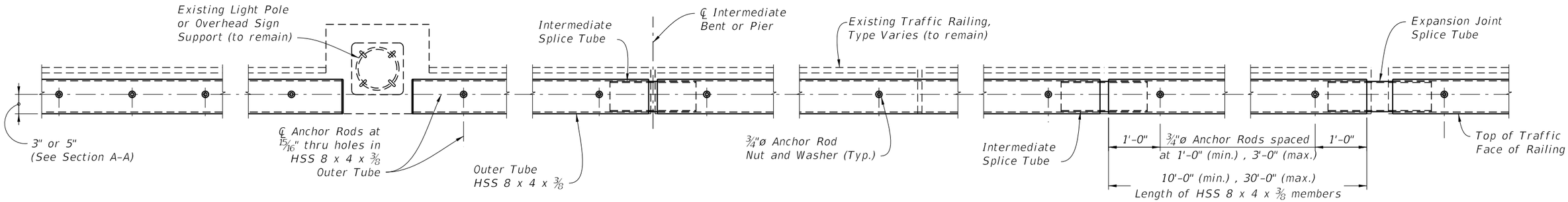
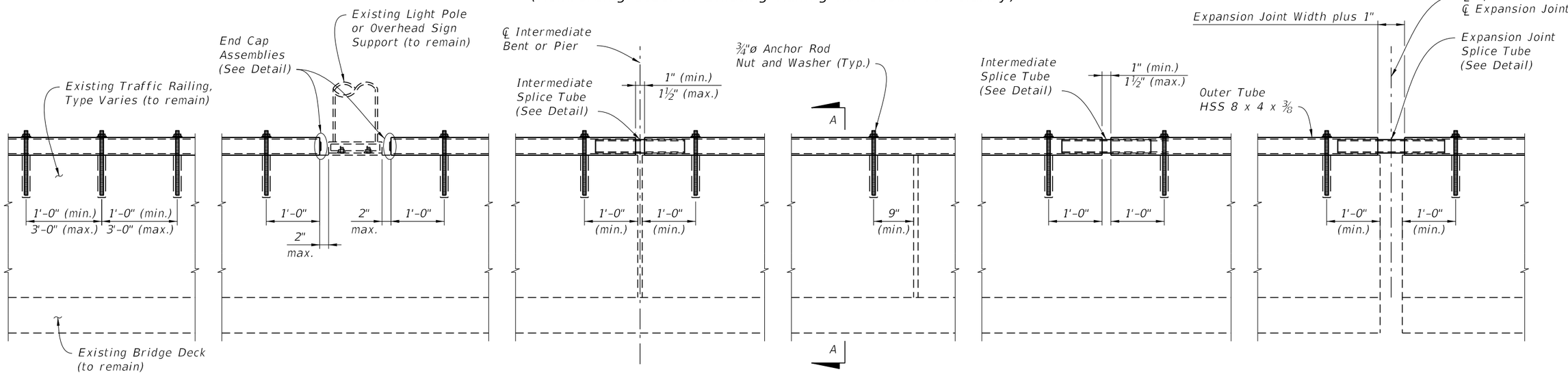
LAST REVISION	REVISION	DESCRIPTION:				
07/01/13			FY 2025-26 STANDARD PLANS	THRIE-BEAM PANEL RETROFIT (CONCRETE HANDRAIL)	INDEX 460-477	SHEET 4 of 4



PLAN
(Reinforcing Steel in Existing Railing not shown for clarity)



ELEVATION
(Reinforcing Steel in Existing Railing not shown for clarity)
(Railing on Bridge Deck shown, Railing on Approach Slab and Retaining Wall similar)

GENERAL NOTES

HSS TUBES: HSS Tubes shall be ASTM A500 Grade B.

END CAPS AND END TAPER ASSEMBLIES: Steel plate for End Caps and End Taper Assemblies shall be ASTM A709 Grade 36.

ANCHOR RODS, NUTS AND WASHERS: Adhesive Bonded anchors shall be fully shall be threaded rods in accordance with ASTM F1554 Grade 36 or ASTM A193 Grade B7. All Nuts shall be single self-locking hex nuts and in accordance with ASTM A563 or ASTM A194. Flat Washers shall be in accordance with ASTM F436. After the nuts have been snug tightened, distort the anchor rod threads to prevent removal of the nuts. Coat distorted threads and the exposed trimmed ends of anchor rods with a galvanizing compound in accordance with the Specifications.

COATINGS: Galvanize all Anchor Rods, Nuts, Bolts, Washers and HSS Tube Assemblies in accordance with the Specifications. Hot-dip HSS Tubes and Tube Assemblies after fabrication.

ADHESIVE-BONDED ANCHORS AND DOWELS: Adhesive Bonding Material Systems for Anchor Rods shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 10,000 lbs.

INSTALLATIONS ON CURVED ALIGNMENTS AND GRADES: The details presented in this Standard are shown for installations on tangent alignments and constant grades except as shown in the Offset Detail for Retrofit Installations on Horizontally Curved Alignments. Details for installations on horizontally curved alignments and or vertically curved profiles are similar. Straight sections of HSS Tube may be installed in a chorded manner within the offset limit shown in the Offset Detail for Retrofit Installations on Horizontally Curved Alignments. Shop bend HSS Tubes for use on horizontally curved alignments where the offset limit shown cannot be met using straight sections of HSS Tube. Straight and horizontally curved sections of HSS Tube may be field bent during installation for use on vertically curved profiles.

SHOP DRAWINGS: Submit shop drawings and obtain approval prior to fabrication in accordance with Specification Section 5. Show project specific geometry (line and grade) and bolt hole, expansion joint and splice locations. Include other project specific details as required.

PAYMENT: Payment will be made under Metal Traffic Railing (Rectangular Tube Retrofit) which shall include all materials and labor required to fabricate and install the Rectangular Tube Retrofit.

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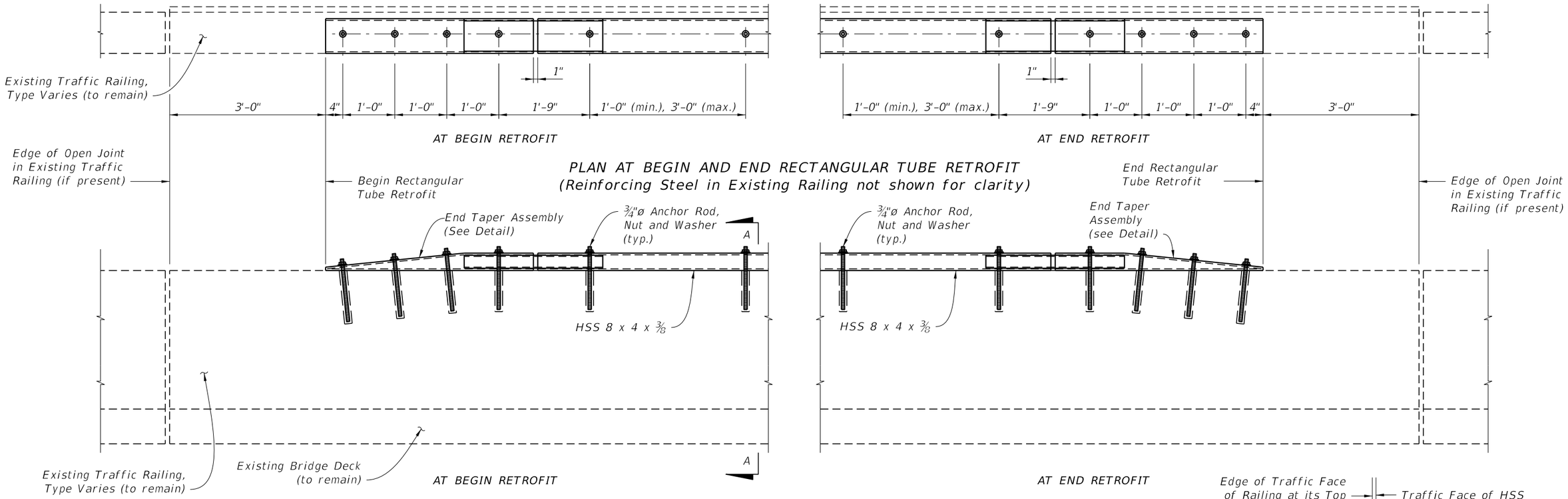
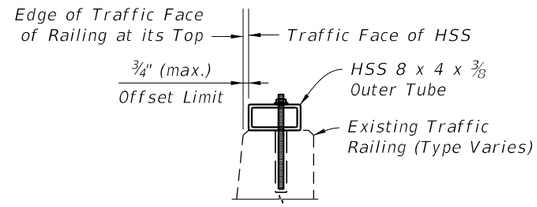
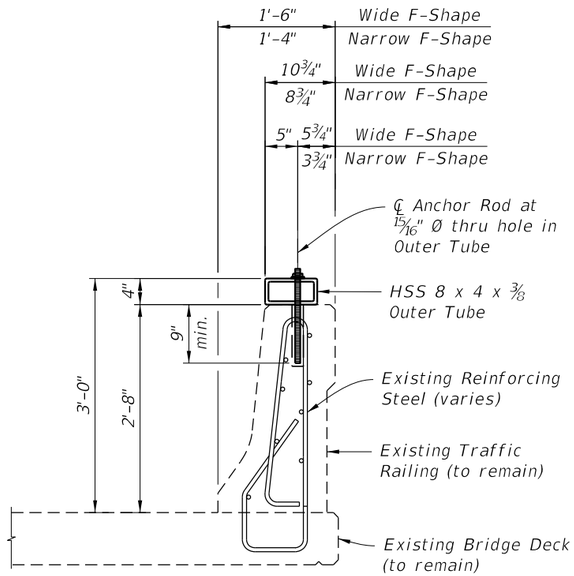


PLAN AT BEGIN AND END RECTANGULAR TUBE RETROFIT
(Reinforcing Steel in Existing Railing not shown for clarity)

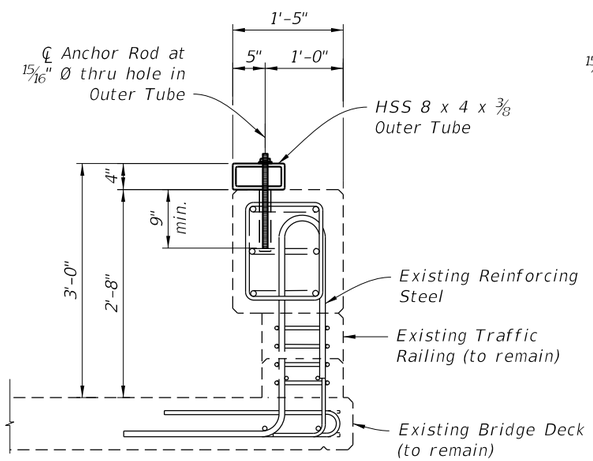
ELEVATION AT BEGIN AND END RECTANGULAR TUBE RETROFIT
(Reinforcing Steel in Existing Railing not shown for clarity)
(Railing on Bridge Deck shown, Railing on Approach Slab and Retaining Wall similar)



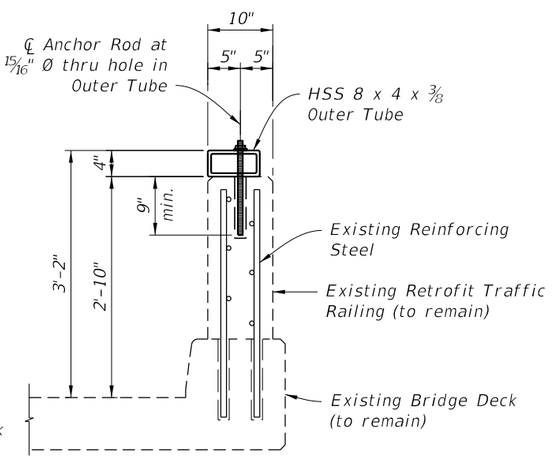
OFFSET DETAIL FOR INSTALLATIONS ON HORIZONTAL CURVES



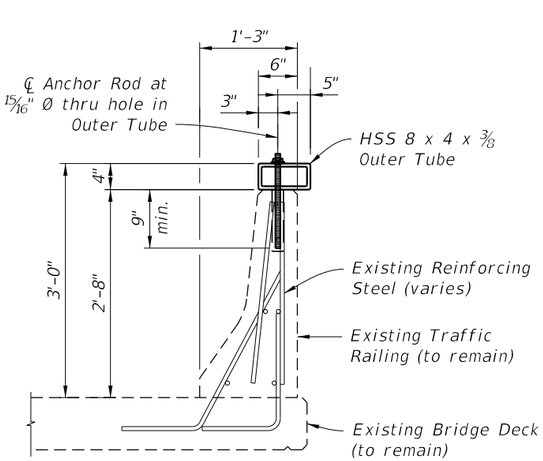
SECTION A-A
F-Shape Traffic Railing



SECTION A-A
Corral Shape Traffic Railing



SECTION A-A
Vertical Face Retrofit Traffic Railing



SECTION A-A
New Jersey Shape Traffic Railing

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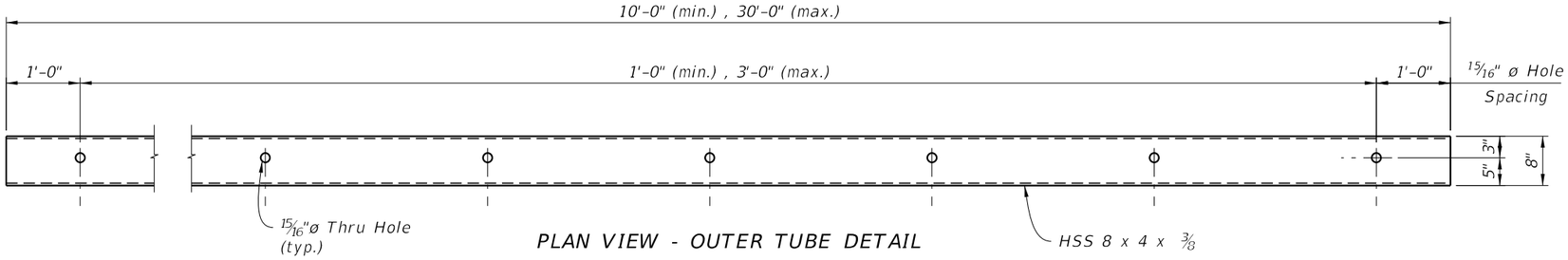
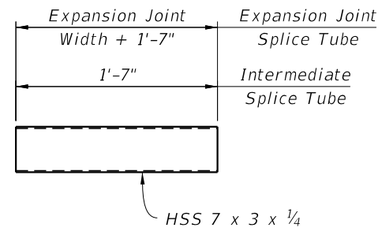
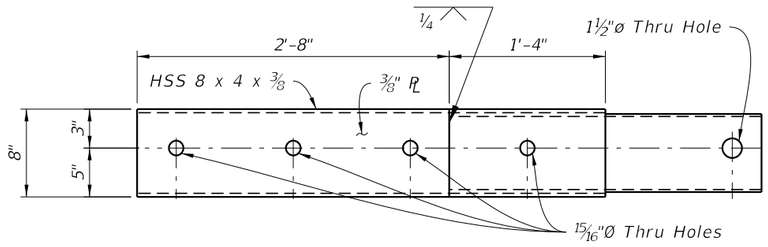
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (RECTANGULAR TUBE RETROFIT)	INDEX 460-490 / SHEET 2 of 3



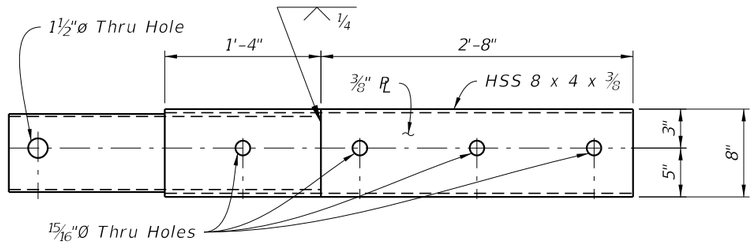
PLAN VIEW - OUTER TUBE DETAIL



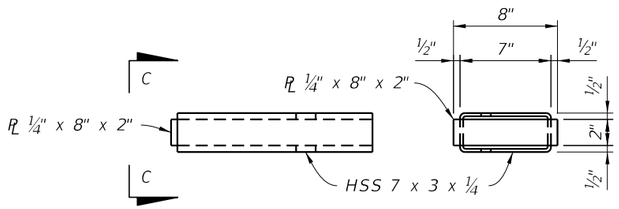
SPLICE TUBE DETAIL



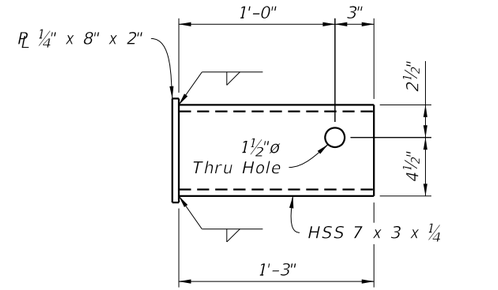
PLAN



PLAN

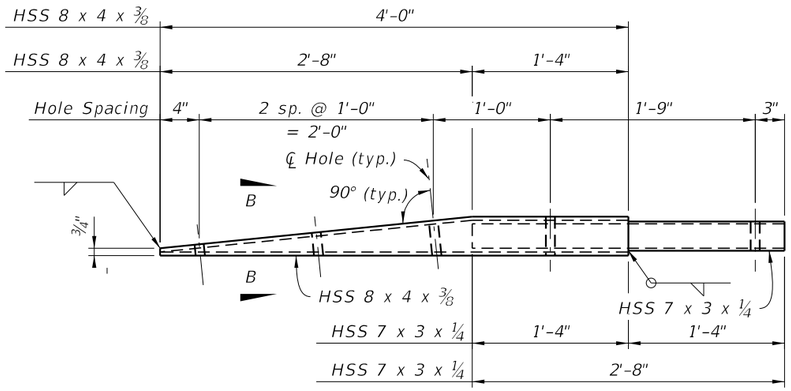


ELEVATION VIEW C-C

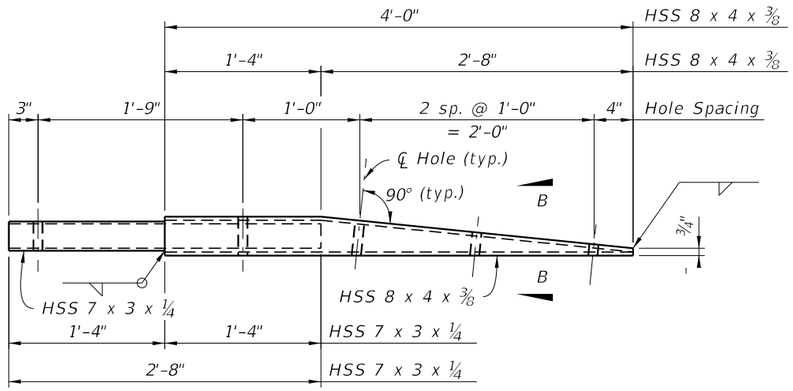


PLAN

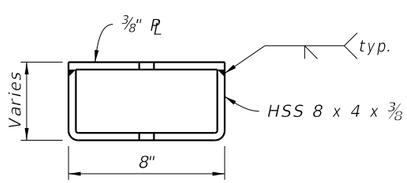
END CAP ASSEMBLY DETAIL



ELEVATION

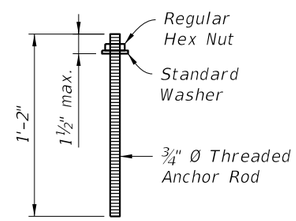


ELEVATION



SECTION B-B

TAPERED END ASSEMBLY DETAIL



ANCHOR RODS

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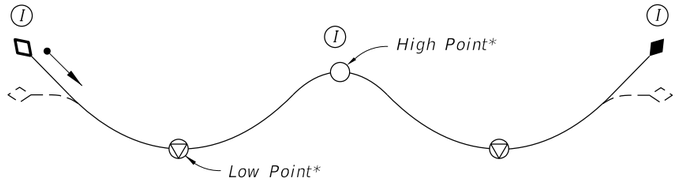
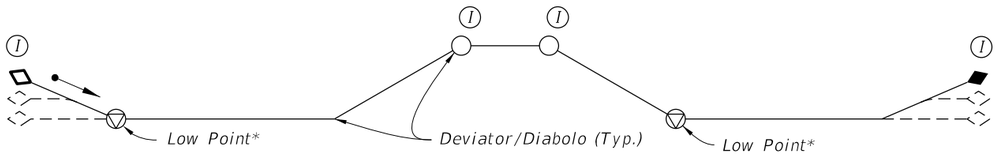
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (RECTANGULAR TUBE RETROFIT)	INDEX 460-490	SHEET 3 of 3

TYPICAL PROFILES FOR TENDONS WITH FLEXIBLE FILLER



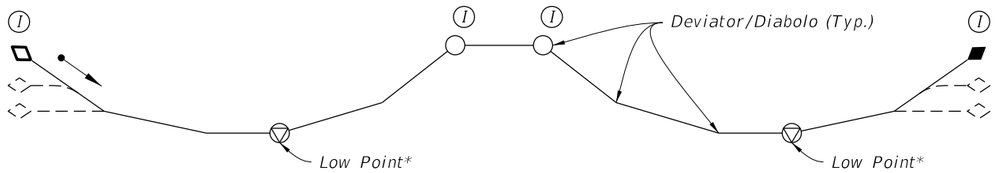
Profile F1

(2 Span Profile shown; Profiles for 3 or more Spans similar)



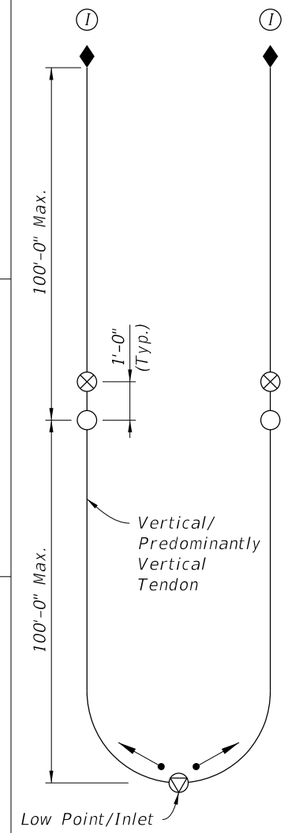
Profile F2

(2 Span Profile shown; Profiles for 3 or more Spans similar)

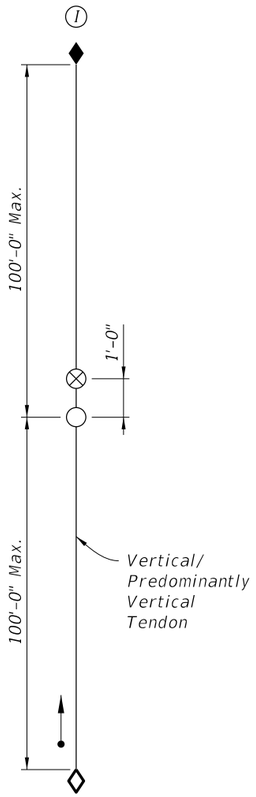


Profile F3

(2 Span Profile shown; Profiles for 3 or more Spans similar)



Profile F8

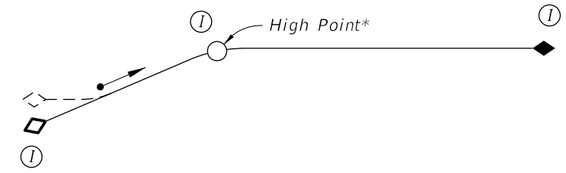


Profile F9

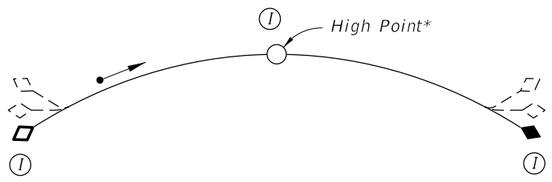
LEGEND:

- Strand, Wire or Bar Tendon
- Anchorage with Filler Inlet at lower end of Tendon
- Anchorage with Filler Outlet at higher end of Tendon
- Alternate tendon profile immediately adjacent to Anchorage
- Supplementary Filler Inlet
- Filler Port / Outlet
- Drain (See Specifications Section 462 for additional Drain location requirements)
- Direction of Filler Flow
- (I) Inspection Location

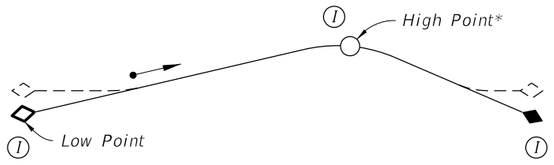
* Adjust location to coincide with the true high or low point(s) of the tendon.



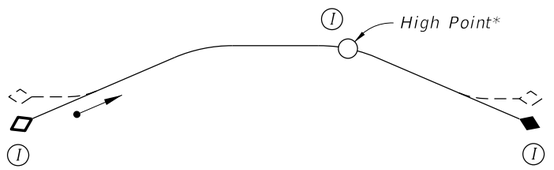
Profile F12



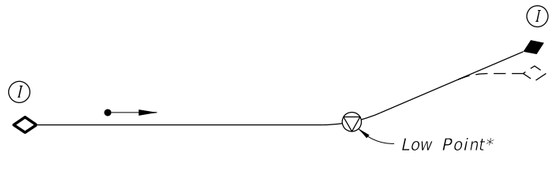
Profile F4



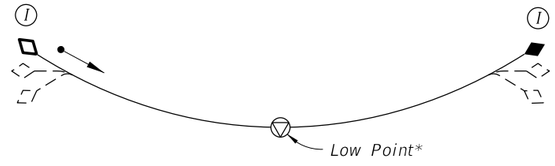
Profile F6



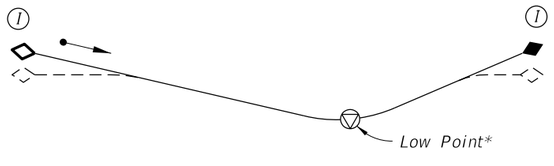
Profile F10



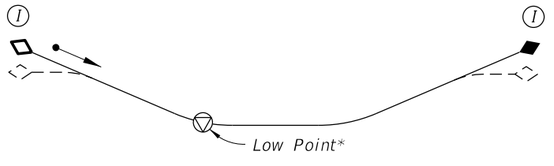
Profile F13



Profile F5



Profile F7



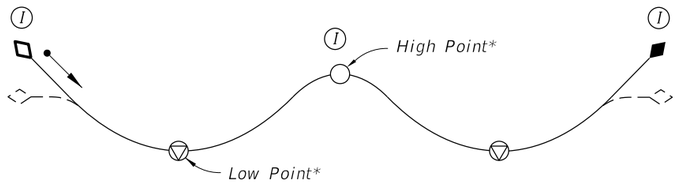
Profile F11

Profile F14

10/17/2024 11:06:50 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	POST-TENSIONING TENDON PROFILES	INDEX	SHEET
11/01/16					462-001	1 of 2

TYPICAL PROFILES FOR TENDONS WITH GROUT FILLER

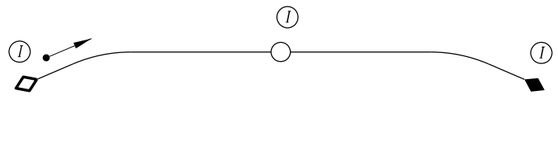


Profile G1

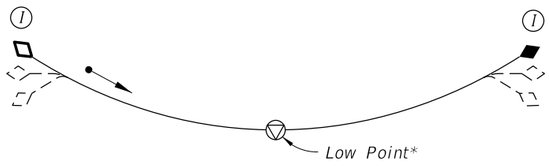
(2 Span Profile shown; Profiles for 3 or more Spans similar)

Profile G2

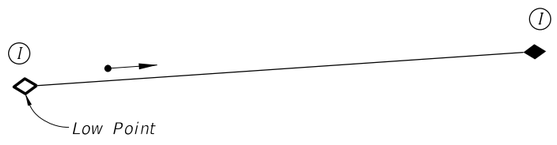
(Profile for Single Cell Box shown; Profiles for Multiple Cell Boxes similar)



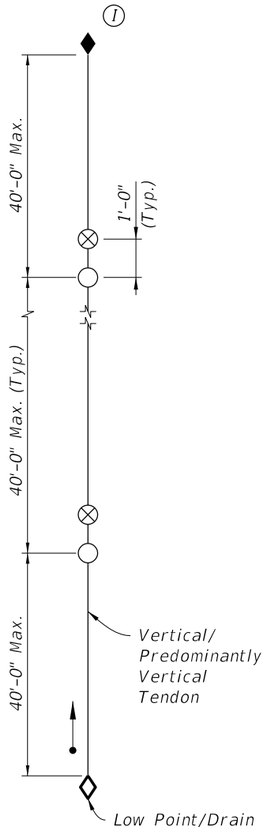
Profile G3



Profile G4



Profile G5

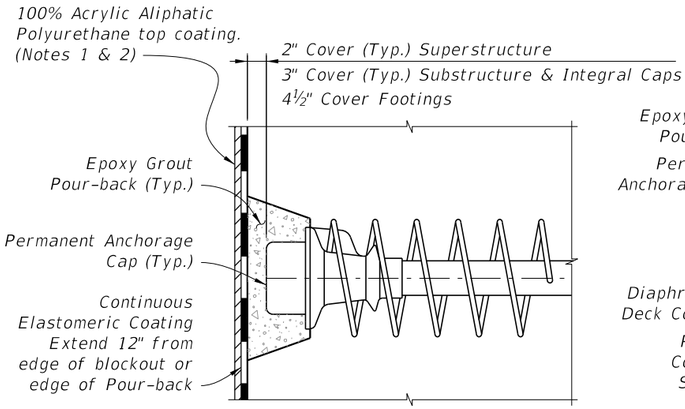


Profile G6

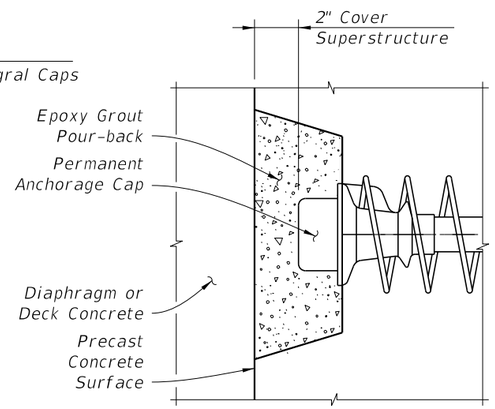
NOTE: See Sheet 1 of 2 for Typical Profiles for Tendons with Flexible Filler and for Legend of Symbols.

10/17/2024 11:06:57 AM

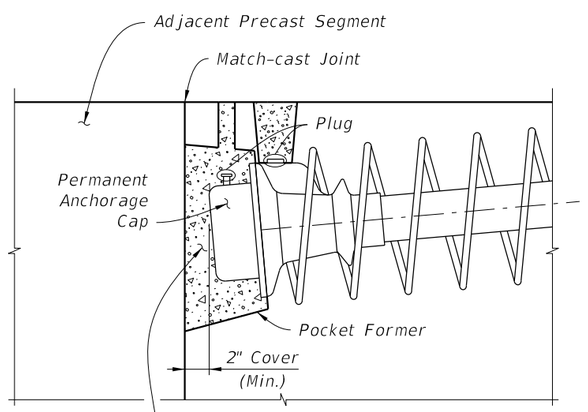
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	POST-TENSIONING TENDON PROFILES	INDEX	SHEET
7/22/16					462-001	2 of 2



TYPE 1

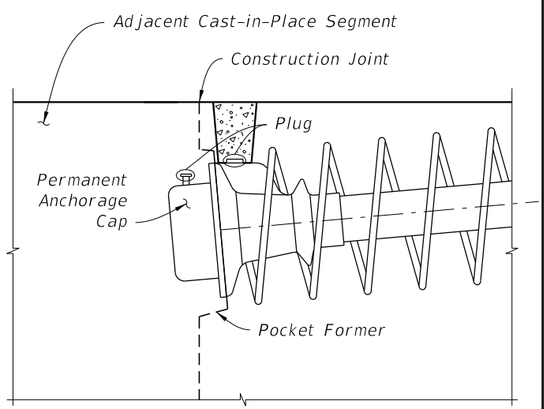


TYPE 2



TYPE 3A

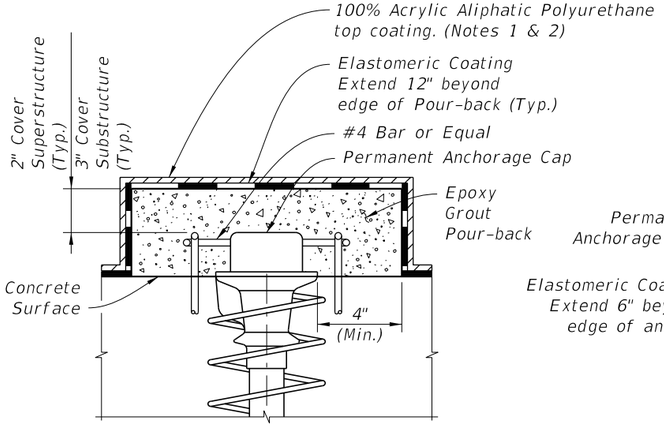
Epoxy Grout Pour-back placed after permanent tendons anchored in adjacent segment have been stressed



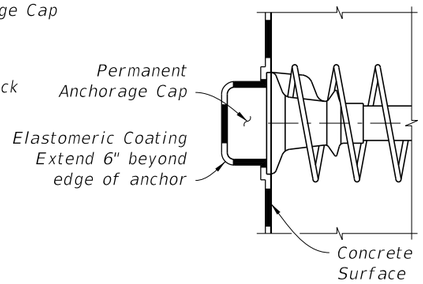
TYPE 3B

Notes:

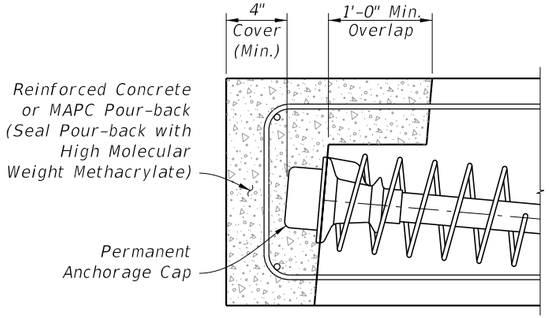
1. Meet the requirements of Specification Section 975-5.
2. Extend top coat 1" beyond limits of Elastomeric Coating.



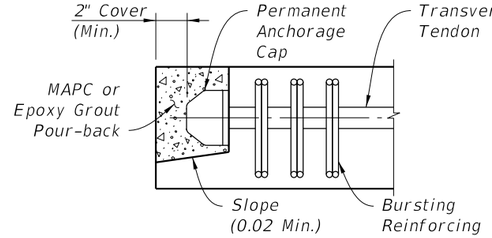
TYPE 4



TYPE 5



TYPE 6

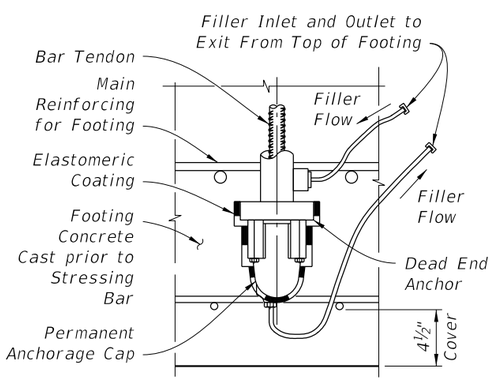


TYPE 7

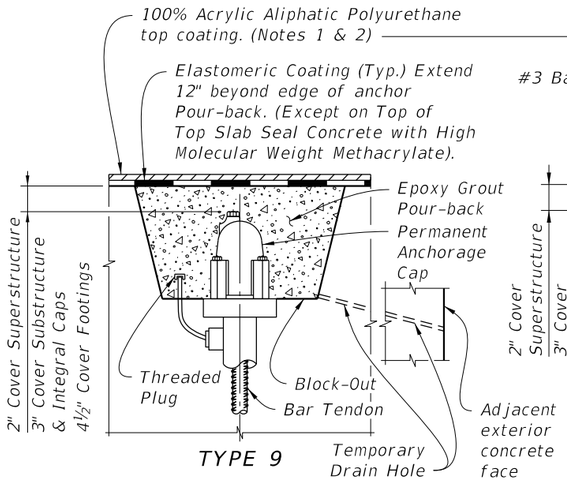
Type 7 Notes:

1. Traffic or Pedestrian/Bicycle Railing not shown for clarity.
2. Where Pour-back is not protected by Traffic or Pedestrian/Bicycle Railing, Coat Pour-back with High Molecular Weight Methacrylate.

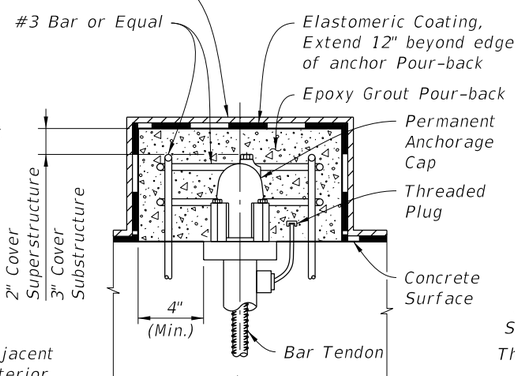
ANCHORAGE PROTECTION FOR STRAND TENDONS



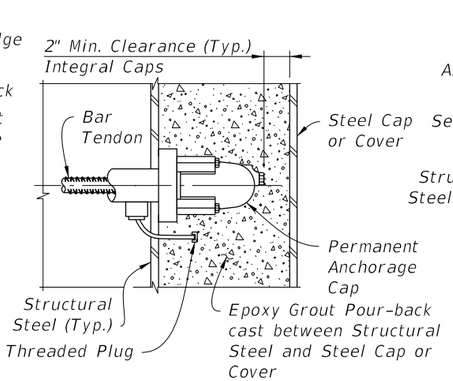
TYPE 8



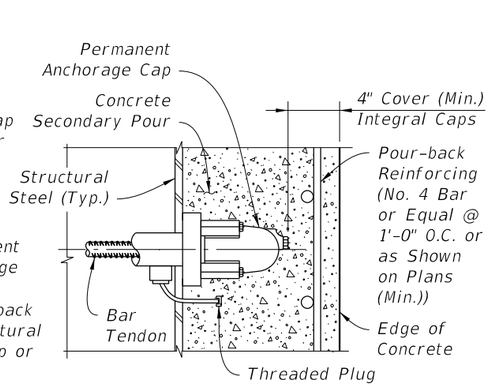
TYPE 9



TYPE 10



TYPE 11
(Shear Studs not Shown for Clarity)



TYPE 12
(Shear Studs not Shown for Clarity)

ANCHORAGE PROTECTION FOR BAR TENDONS

LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2025-26 STANDARD PLANS	POST-TENSIONING ANCHORAGE PROTECTION	INDEX 462-002	SHEET 1 of 1

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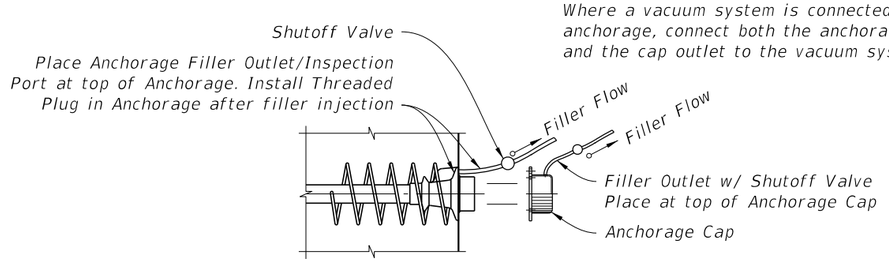
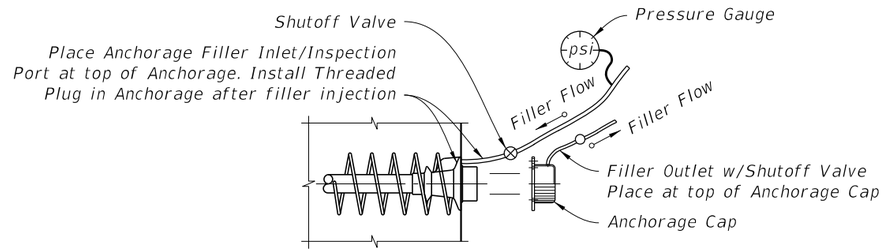
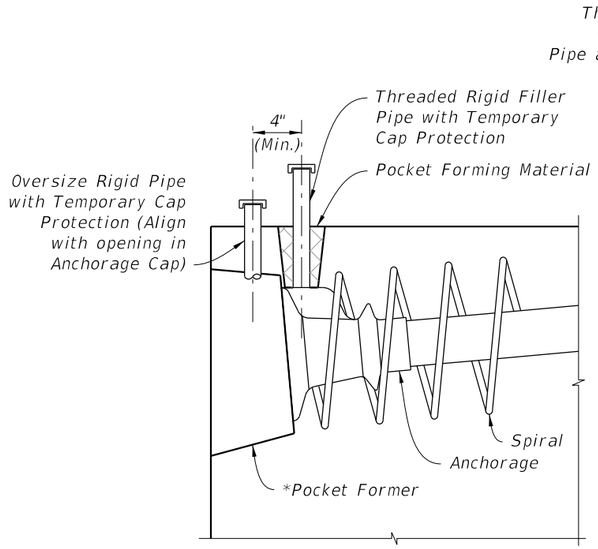
NOTE:
Where a vacuum system is connected to an anchorage, connect both the anchorage outlet and the cap outlet to the vacuum system.



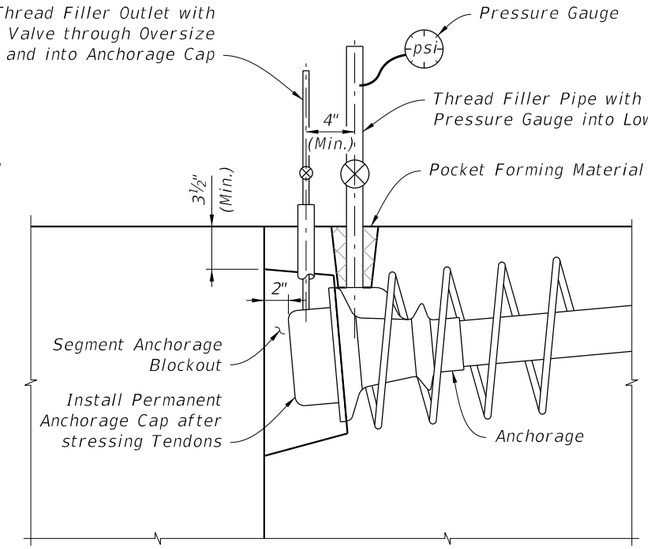
FACE INSPECTED
ANCHORAGE WITH FILLER OUTLET



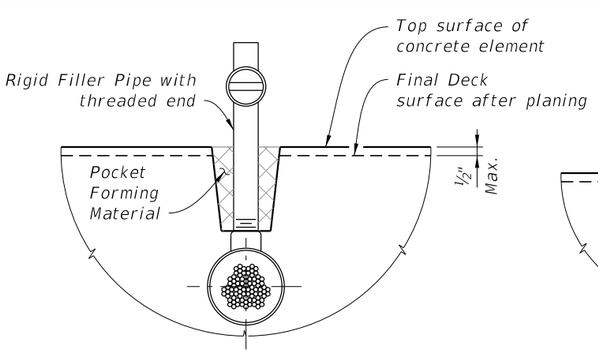
FACE INSPECTED
ANCHORAGE WITH FILLER INLET



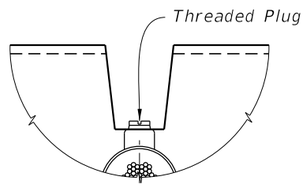
1 INSTALLATION & SHIPPING



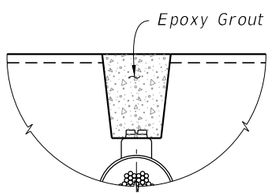
2 FILLER INJECTION



1 FILLER OUTLET CONNECTION TO DUCT



2 POCKET PREPARATION

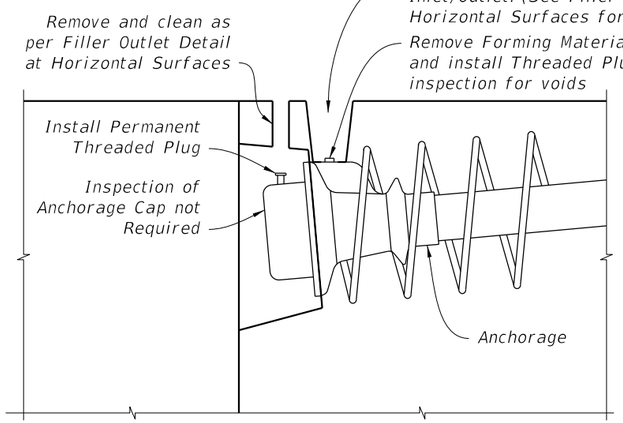


3 FILLING POCKET

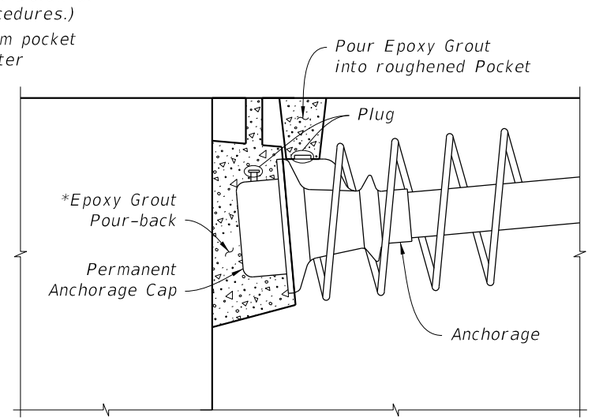
PROCEDURE:

1. After filler injection is completed, Remove Pocket Forming Material and Rigid Filler Pipe.
2. Inspect Tendon for voids as necessary.
3. Vacuum inject as required. If grout is used, allow grout to cure. If flexible filler is used, replace filler displaced by inspection. Remove pipe used for vacuum injecting.
4. Clean threads and rethread as required.
5. Install Threaded Plug into Outlet to form a tight fit.
6. Clean and roughen sides of pocket.
7. Fill Pocket with Epoxy Grout.

FILLER OUTLET DETAIL AT HORIZONTAL SURFACES



3 INSPECTION



4 PROTECTION

TOP INSPECTED ANCHORAGE WITH FILLER INLET INSTALLATION, FILLER INJECTION, INSPECTION & PROTECTION

NOTES:

1. Holes used for the Inspection and Filler Inlets/Outlets may be formed using tapered pipes or mandrels.
2. Where a vacuum system is connected to an anchorage, connect both the anchorage outlet and the cap outlet to the vacuum system.

* Round ◯ Pocket Former – Gravity fed placement of epoxy grout acceptable
Modified Square ⬠ Pocket Former – Gravity fed placement of epoxy grout acceptable
Square □ Pocket Former – Vacuum epoxy grouting required

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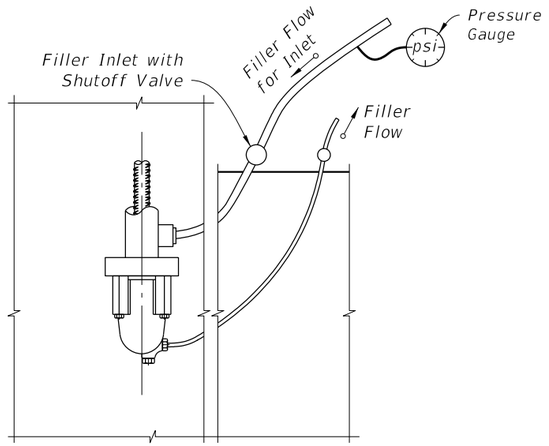
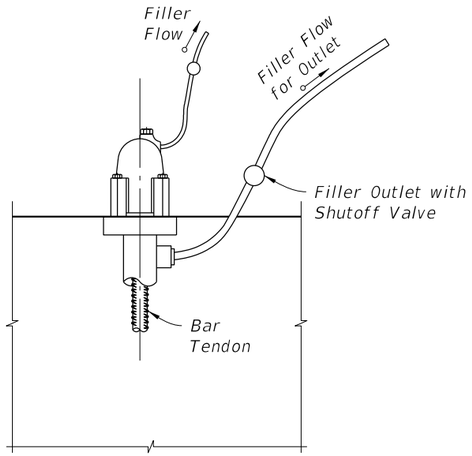


INLET END

(EMBEDDED ANCHORAGE SHOWN; ANCHORAGE AT CONCRETE SURFACE SIMILAR)

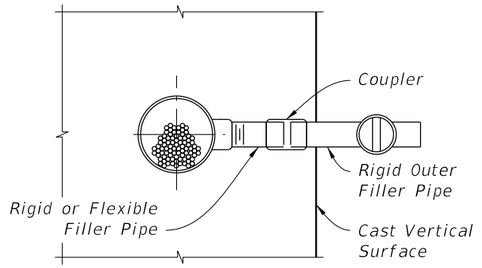


NOTES:
1. Anchor or Nut to allow for flow of Filler into Cap.
2. Where a vacuum system is connected to an anchorage, connect both the anchorage outlet and the cap outlet to the vacuum system.

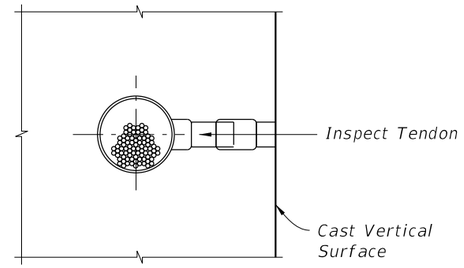
OUTLET END

FILLER INLET AND OUTLET DETAILS FOR BAR TENDONS

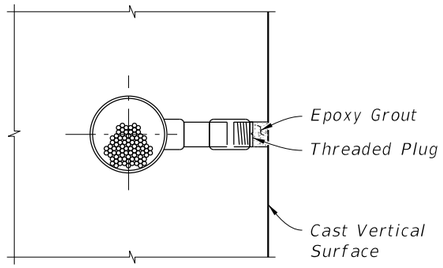
(VERTICALLY ORIENTED TENDON SHOWN; HORIZONTALLY ORIENTED TENDON SIMILAR)



1 FILLER OUTLET CONNECTION TO TENDON



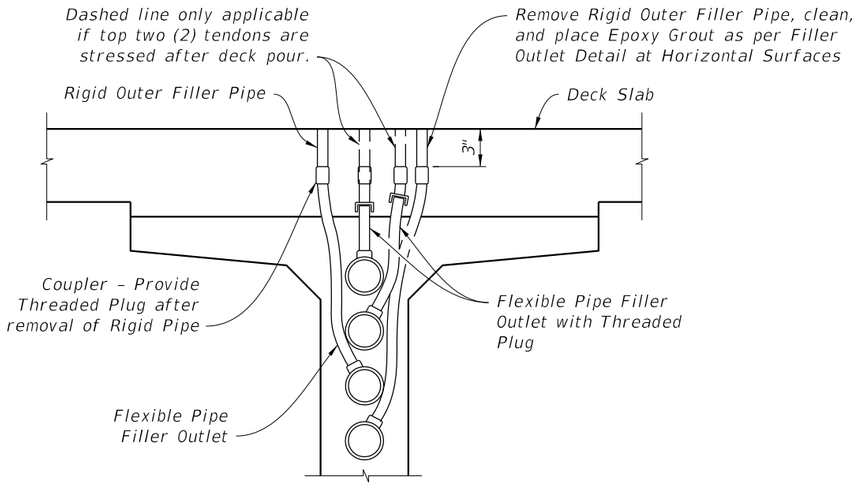
2 POCKET PREPARATION



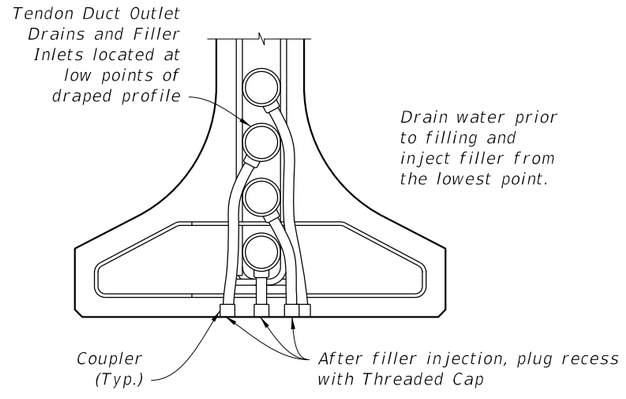
3 FILLING POCKET

PROCEDURE:
1. Remove Rigid Filler Pipe or drill Grout in flexible pipe.
2. Inspect tendon for voids.
3. Vacuum inject as required. If grout is used, allow grout to cure. If flexible filler is used, replace filler displaced by inspection. Remove pipe used for vacuum injecting.
4. Install Threaded Plug into Outlet to form a tight fit.
5. Over-ream hole (¼" Ø over-ream). Clean and roughen sides.
6. Fill pocket with epoxy grout.

FILLER OUTLET DETAIL AT VERTICAL SURFACES



TENDONS AT HIGH POINTS AND
3' FROM HIGH POINTS (FILLER OUTLET)



TENDONS AT LOW POINTS
(FILLER INLET / DRAIN)

FILLER INLET AND OUTLET DETAILS FOR I-GIRDERS

DETAILS FOR C.I.P. BOXES WITH INTERNAL TENDONS SIMILAR. WEB REINFORCING NOT SHOWN FOR CLARITY.

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LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	POST-TENSIONING ANCHORAGE AND TENDON FILLING DETAILS	INDEX	SHEET
11/01/16					462-003	2 of 2

GENERAL NOTES:

U.S. COAST GUARD NOTIFICATION: Notify the local office of the U.S. Coast Guard at least 30 days prior to beginning of construction of the Fender System.

14" SQUARE PRESTRESSED CONCRETE PILES – Provide 14" Square Prestressed Concrete Piles of sufficient length to achieve a minimum embedment of 20' into soil having a blow count greater than or equal to 6 (N ≥ 6). Pile splices and build-ups are not permitted. Use only 14" Square Prestressed Concrete Piles with 8 – ½" diameter Low Relaxation Strands fabricated in accordance with Index 455-014.

PLASTIC LUMBER AND STRUCTURAL COMPOSITE LUMBER WALES: Provide only Plastic Lumber (Thermoplastic Structural Shapes) and Structural Composite Lumber (Reinforced Thermoplastic Structural Shapes) Wales in accordance with Specification Section 973. Wales shall be continuous and spliced only at locations shown on the plans.

PLASTIC LUMBER DECKING FOR CATWALKS: Provide Plastic Lumber decking for catwalks when called for in the Plans in accordance with Specification Section 973.

Install Plastic Lumber Decking according to manufacturer's recommendations using stainless steel #10 x 3" (minimum) deck screws.

FIBERGLASS OPEN GRATING FOR CATWALKS: Provide Fiberglass Open Grating for catwalks when called for in the Plans. Fiberglass Open Grating shall be a heavy duty design suitable for exterior installations. Maximum gap opening on the walkway surface shall be 1½". Design live loads and deflections shall be a 50 psf uniformly distributed load with a maximum deflection of ⅜" or L/120 at the center of a simple span and a concentrated load of 250 pounds with a maximum deflection of ¼" at the center of a simple span. Color of Fiberglass Open Grating shall be gray or black.

Install Fiberglass Open Grating according to manufacturer's recommendations using stainless steel hardware, screws, bolts, nuts and washers. Attach Fiberglass Open Grating to Wales and Deck Supports at a 2'-0" maximum spacing so as to resist pedestrian live loads and uplift forces from wind, buoyancy and wave action.

CLEARANCE GAUGE AND LIGHT: Clearance Gauge to be furnished and installed by the Contractor. Clearance Gauge width and numeral height is dependent on visibility distance. The required visibility distance shall be determined by the United States Coast Guard District Commander. Provide and install Clearance Gauge Light in accordance with Specification Section 510 and Index 510-001.

NAVIGATION LIGHTS: Provide and install Navigation Lights in accordance with Specification Section 510, Index 510-001 and/or project specific details. Provide and maintain Temporary Navigation Lights during construction until permanent Navigation Lights are operational.

BOLTS, THREADED BARS, NUTS, SCREWS AND WASHERS: Furnish stainless steel Bolts in accordance with ASTM F593 Type 316. Furnish stainless steel Threaded Bars in accordance with ASTM A193 Grade B8M. Furnish stainless steel Nuts in accordance with ASTM F594 Type 316. Furnish stainless steel Screws in accordance with ASTM F593 Type 305. Furnish stainless steel Washers compatible with Bolts, Threaded Rods and Nuts under heads and nuts. Torque Nuts on 1" diameter Bolts and Threaded Bars to 150 lb-ft. Keep threads on Bolts, Threaded Bars and Nuts free from dirt, coarse grime and sand to prevent galling and seizing during tightening.

SPLICE PLATES: Furnish Splice Plates in accordance with ASTM A240 Type 316.

WIRE ROPE: Provide wire rope meeting one of the following requirements:

1. ½" diameter 6x19, 6x25 or 6x37 class IWRC Type 316 stainless steel wire rope with a minimum breaking strength of 18,000 lbs.

2. ½" diameter 6x19 galvanized wire rope with ultraviolet ray resistant polypropylene impregnation having an outside diameter of 5/8" with a minimum breaking strength of 22,000 lbs. Protect all ends with heat shrinkable end caps compatible with the rope's polypropylene that provide an effective water-tight seal.

FENDER SYSTEM ENERGY CAPACITY:
Maximum Energy Capacity = 50 ft-kip

GENERAL NOTES

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LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	FENDER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES	INDEX	SHEET
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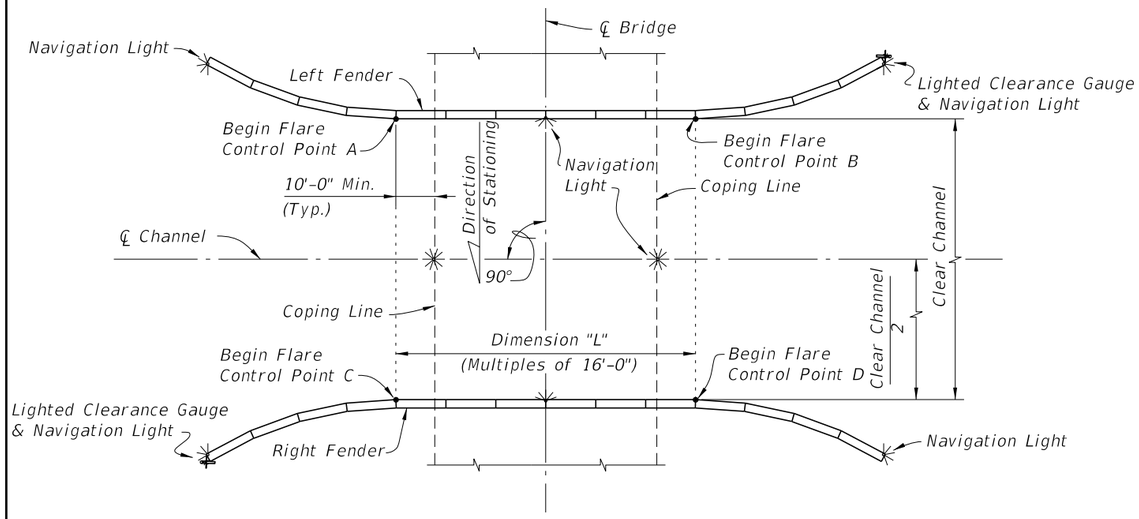
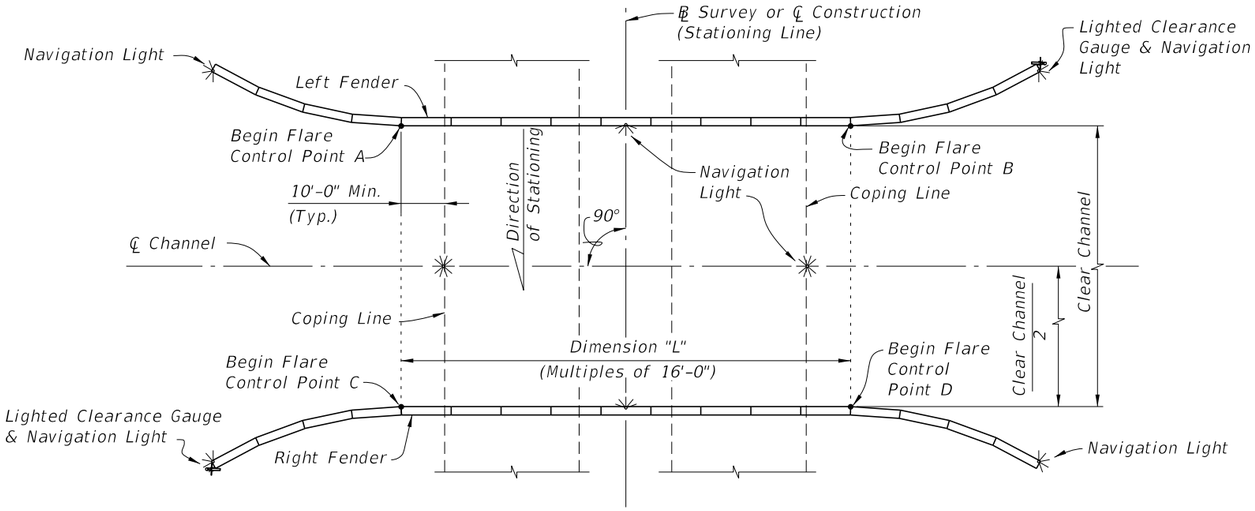
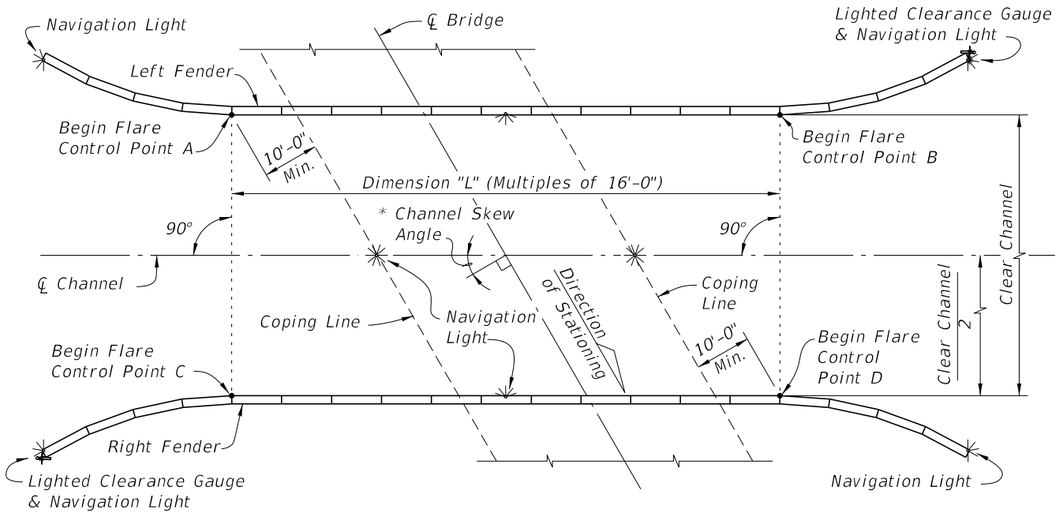


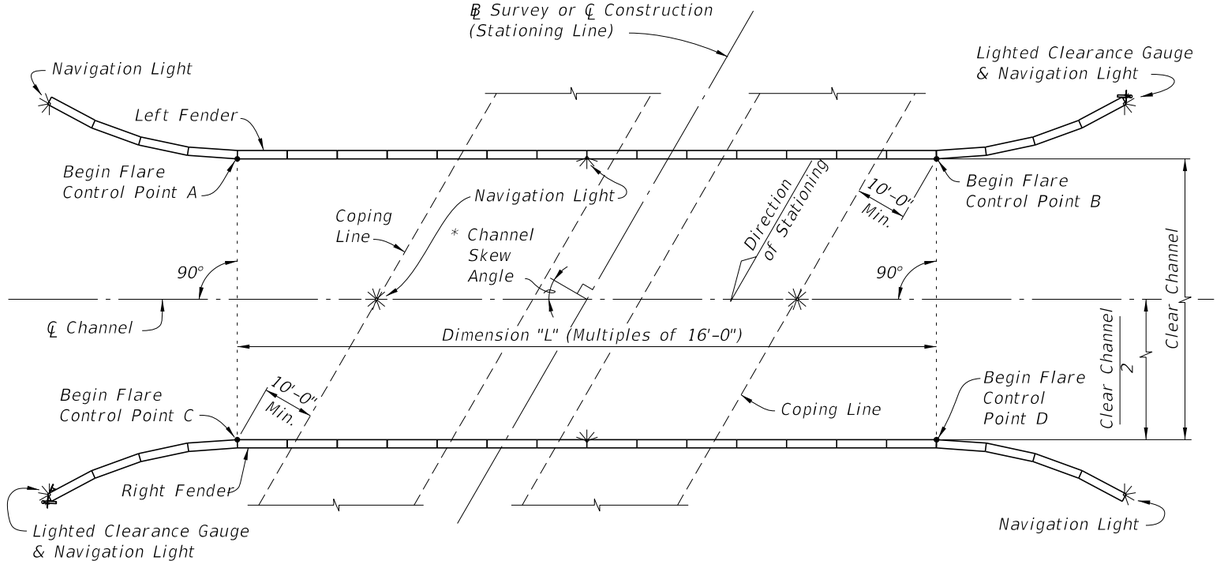
SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF SINGLE FIXED BRIDGE WITH NONSKEWED CHANNEL



SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF DUAL FIXED BRIDGES WITH NONSKEWED CHANNEL (PARALLEL DUAL FIXED BRIDGES SHOWN, NONPARALLEL DUAL FIXED BRIDGES SIMILAR)



SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF SINGLE FIXED BRIDGE WITH SKEWED CHANNEL



SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF DUAL FIXED BRIDGES WITH SKEWED CHANNEL (PARALLEL DUAL FIXED BRIDGES SHOWN, NONPARALLEL DUAL FIXED BRIDGES SIMILAR)

* See Structures Plans, Plan and Elevation and Foundation Layout Sheets for magnitude and orientation of Channel Skew Angle.

CROSS REFERENCES:
For Stations and Offsets of referenced Control Points A, B, C and D, Dimension "L" and Clear Channel Width see Fender System Table of Variables in Structures Plans.
For Navigation Light Details see Design Standards Index 510-001.

LAYOUT GEOMETRY

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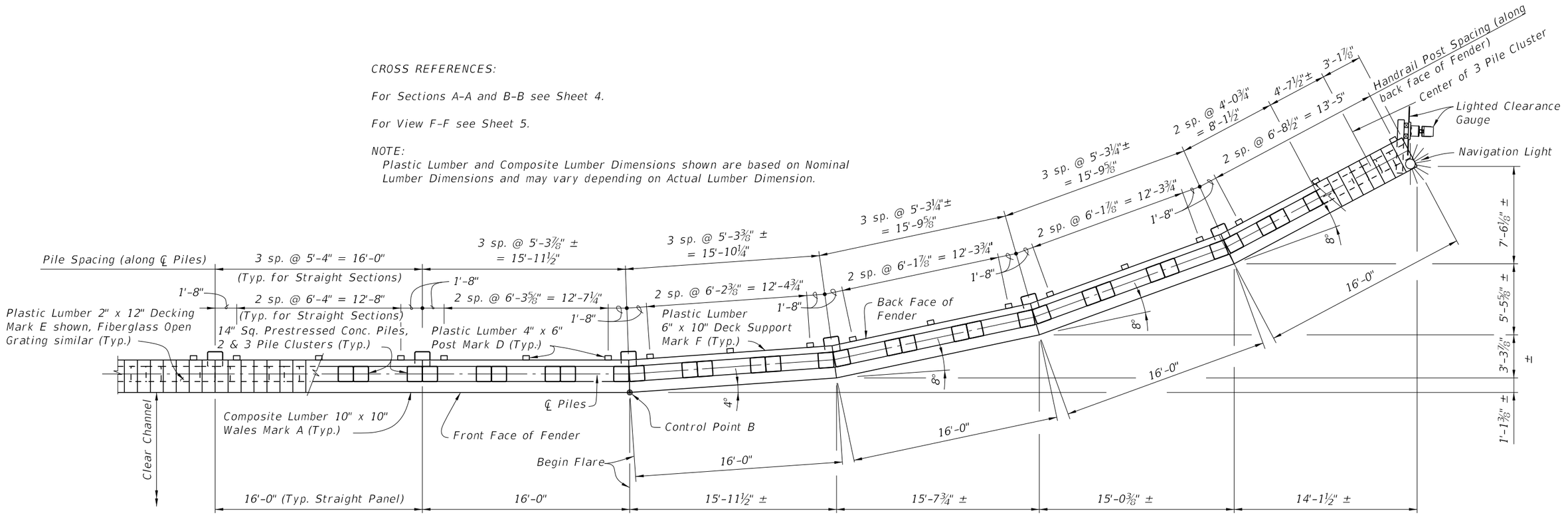
LAST REVISION	REVISION	DESCRIPTION:				
07/01/11			FY 2025-26 STANDARD PLANS	FENDER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES	INDEX 471-030	SHEET 2 of 7

CROSS REFERENCES:

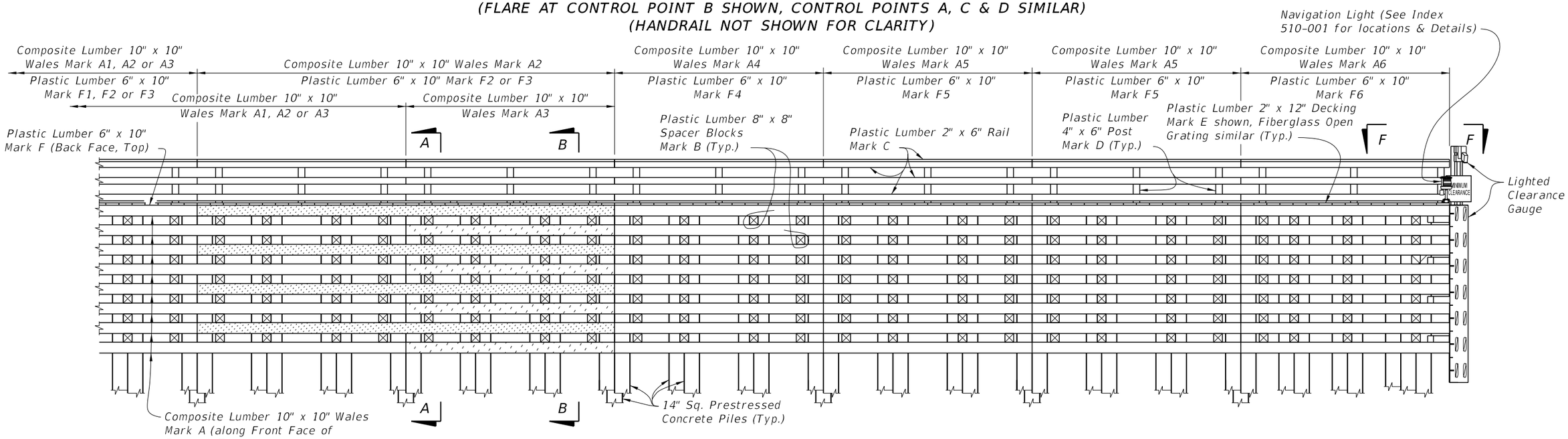
For Sections A-A and B-B see Sheet 4.

For View F-F see Sheet 5.

NOTE:
Plastic Lumber and Composite Lumber Dimensions shown are based on Nominal Lumber Dimensions and may vary depending on Actual Lumber Dimension.



PARTIAL PLAN VIEW (TYPICAL FLARE)
(FLARE AT CONTROL POINT B SHOWN, CONTROL POINTS A, C & D SIMILAR)
(HANDRAIL NOT SHOWN FOR CLARITY)



EXPANDED PARTIAL ELEVATION VIEW

LAST REVISION	REVISION	DESCRIPTION:				
01/11/17			FDOT FY 2025-26 STANDARD PLANS	FENDER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES	INDEX 471-030	SHEET 3 of 7

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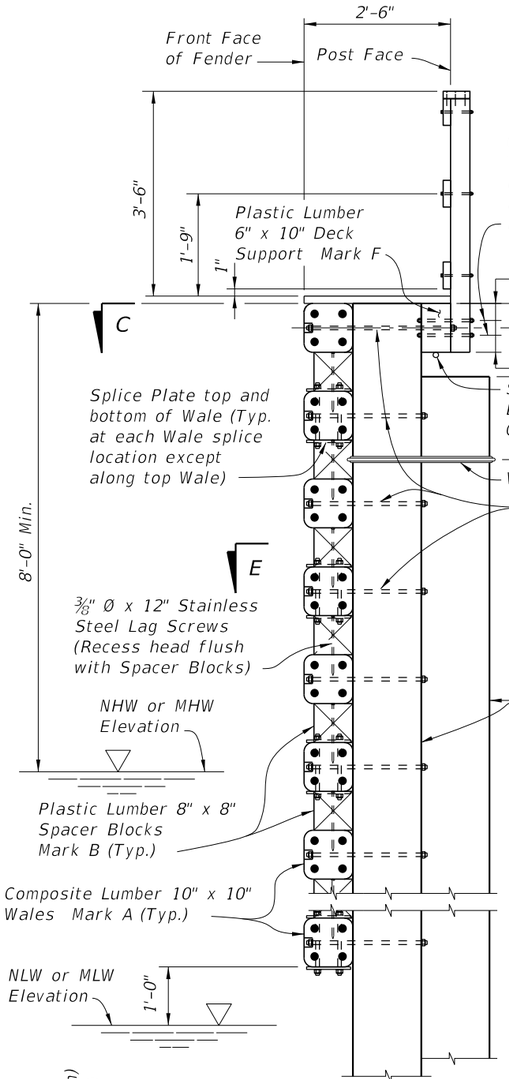
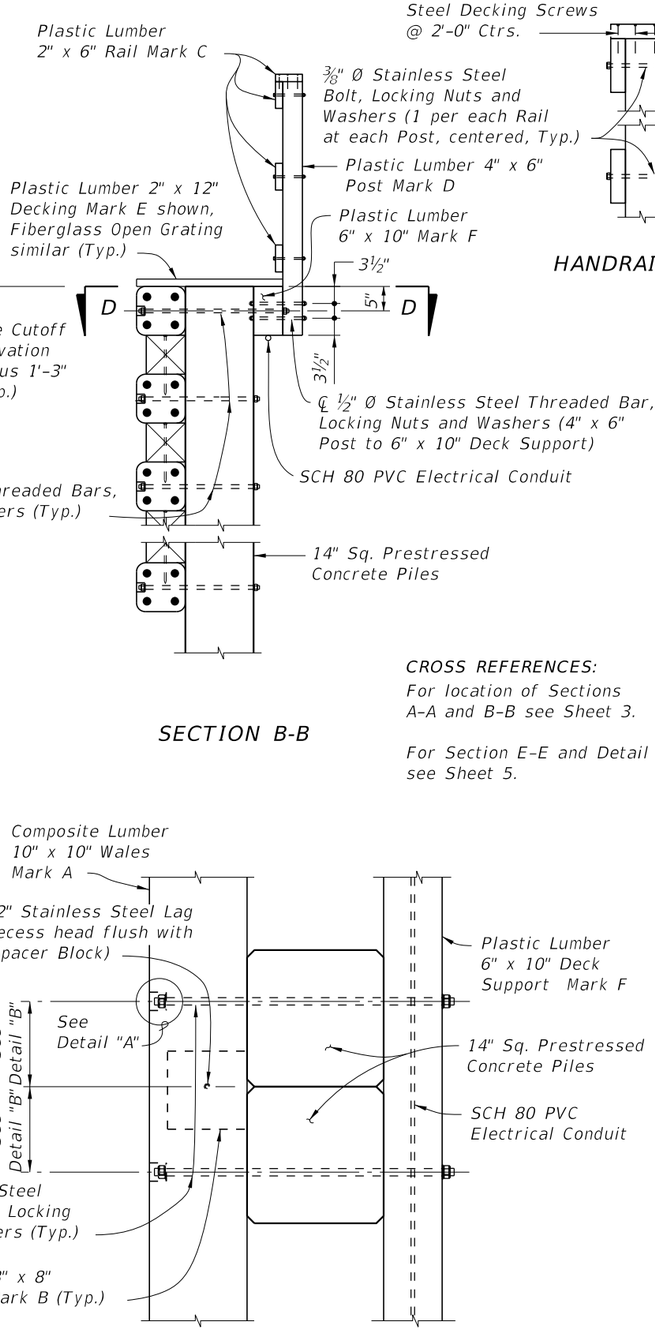
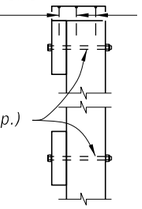


SECTION A-A

DETAIL "B" (SHOWING THREADED BAR LOCATION/RELATIONSHIP TO PILE PRESTRESSING STRANDS)



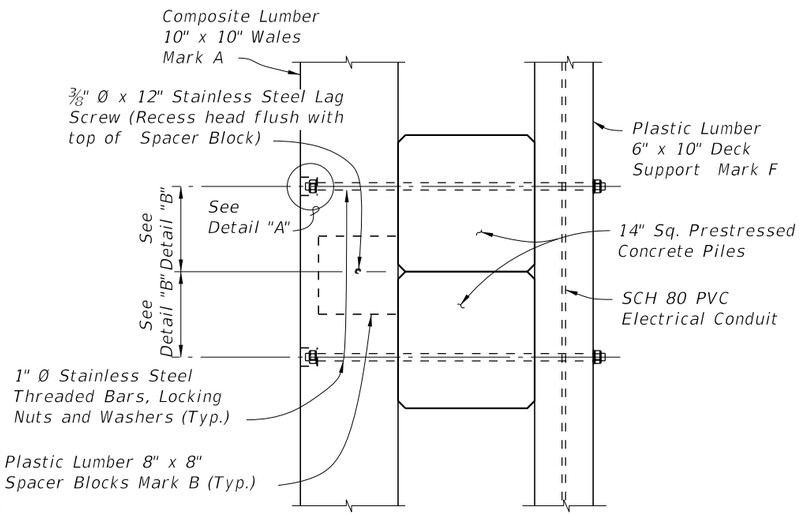
SECTION B-B



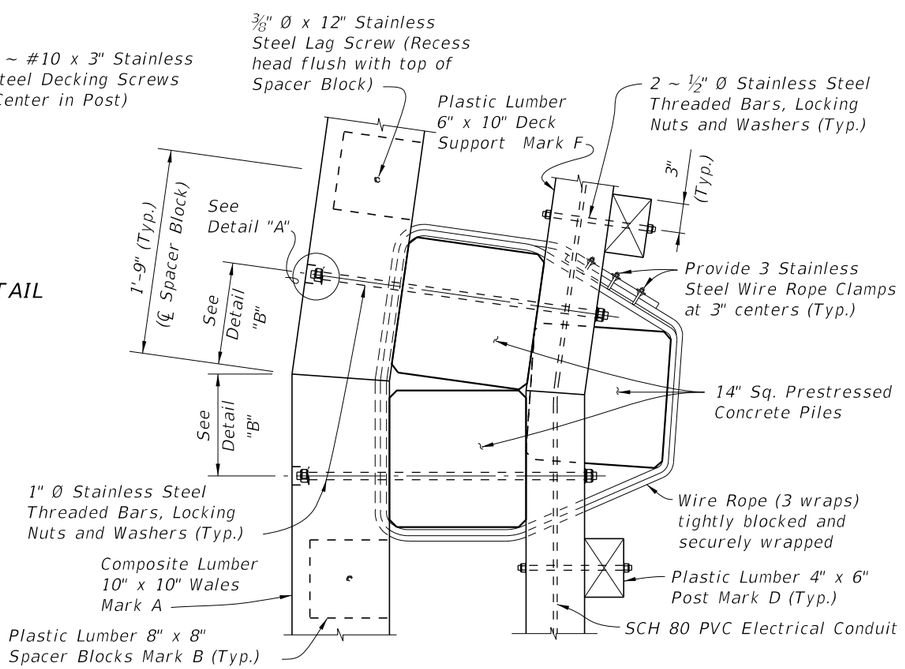
HANDRAIL DETAIL

CROSS REFERENCES:
For location of Sections A-A and B-B see Sheet 3.

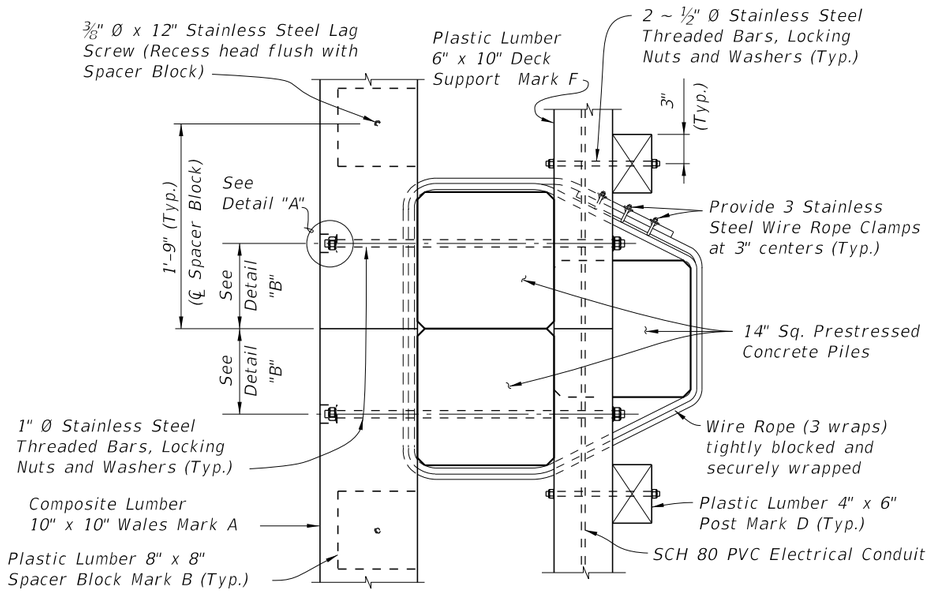
For Section E-E and Detail "A" see Sheet 5.



SECTION D-D
TYPICAL AT INTERMEDIATE PILES



SECTION C-C
TYPICAL FLARED SECTION
(8° TURN SHOWN, 4° TURN SIMILAR)



SECTION C-C
TYPICAL STRAIGHT SECTION

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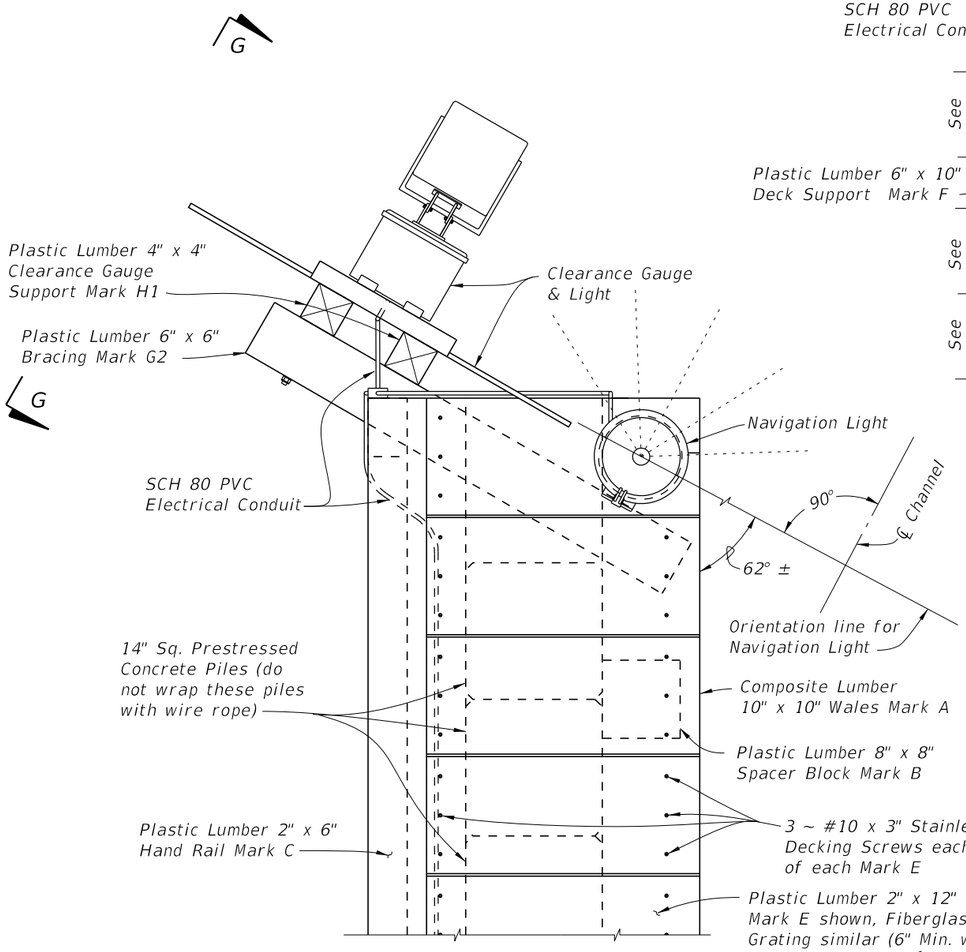
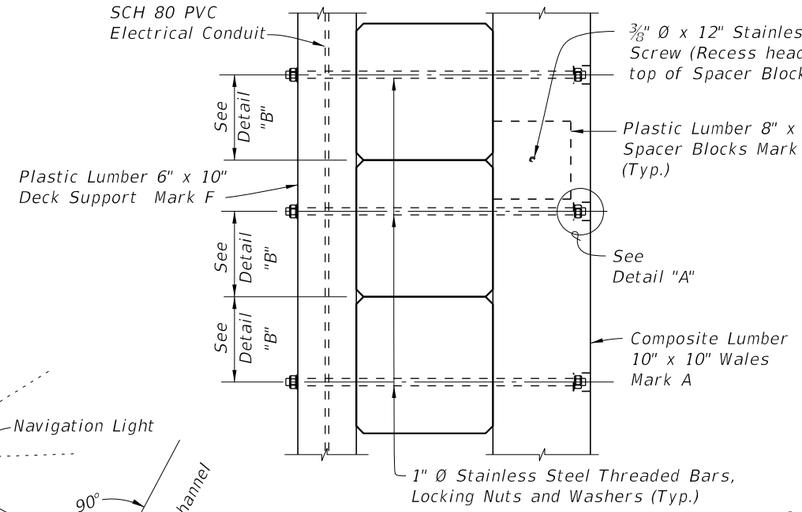
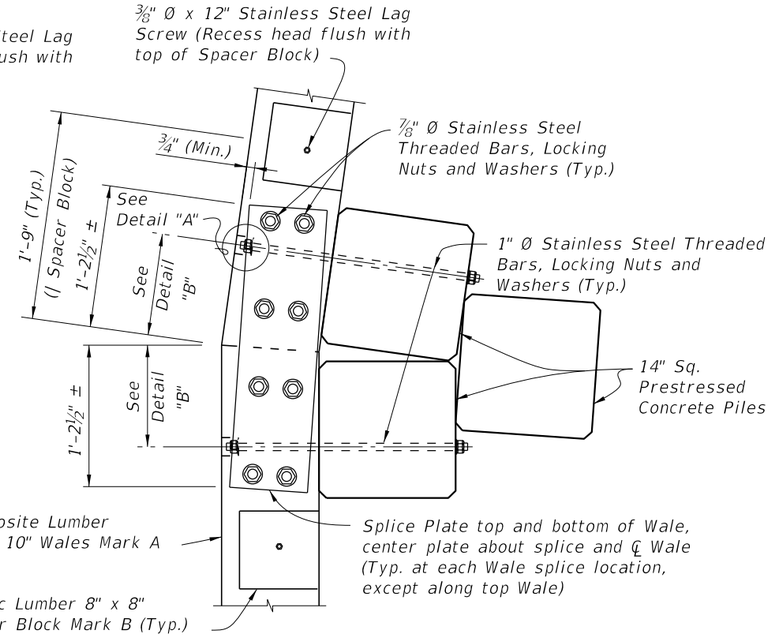
LAST REVISION	REVISION	DESCRIPTION:				
01/01/12			FY 2025-26 STANDARD PLANS	FENDER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES	INDEX 471-030	SHEET 4 of 7



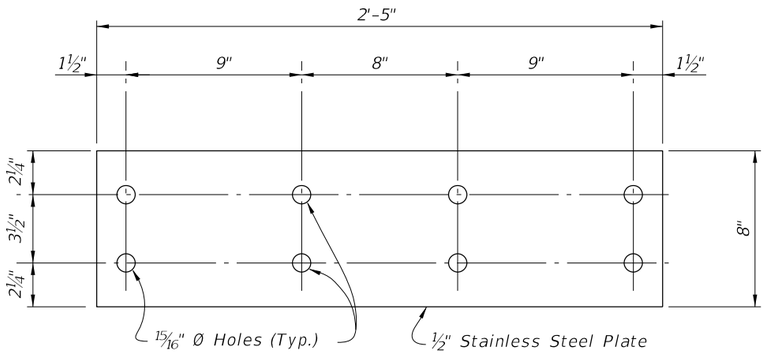
VIEW F-F
(SHOWING FENDER END WITH CLEARANCE GAUGE)



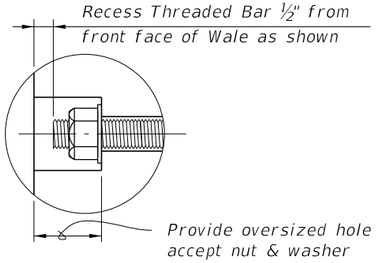
PARTIAL VIEW F-F
(SHOWING FENDER END; DECKING AND HANDRAIL NOT SHOWN FOR CLARITY)



SECTION E-E
TYPICAL FLARED SECTION
(8° TURN SHOWN, 4° TURN SIMILAR)



SPLICE PLATE DETAIL



DETAIL "A"

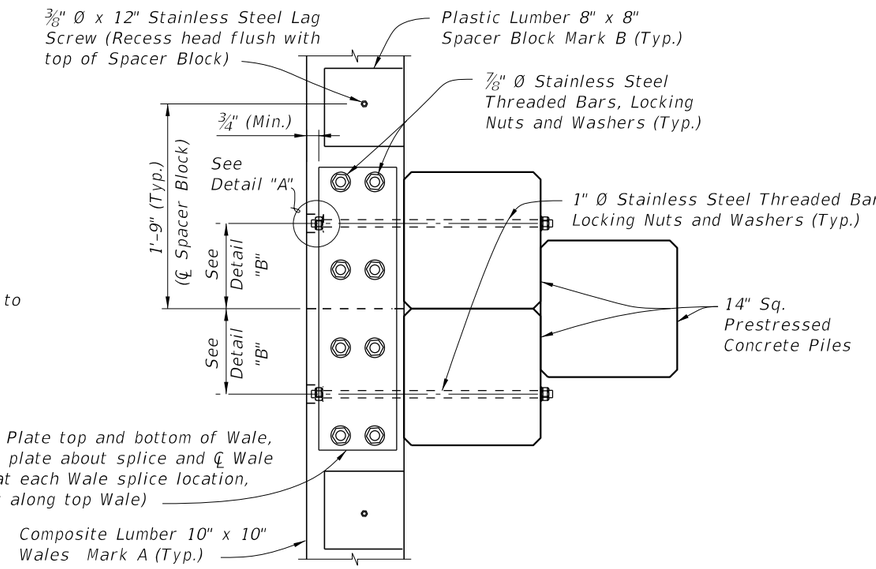
CROSS REFERENCES:

For Navigation Lights and SCH 80 PVC Electrical Conduit Details see Index 510-001.

For View G-G and Clearance Gauge Details see Sheet 4.

For Detail "B" and location of Section E-E see Sheet 2.

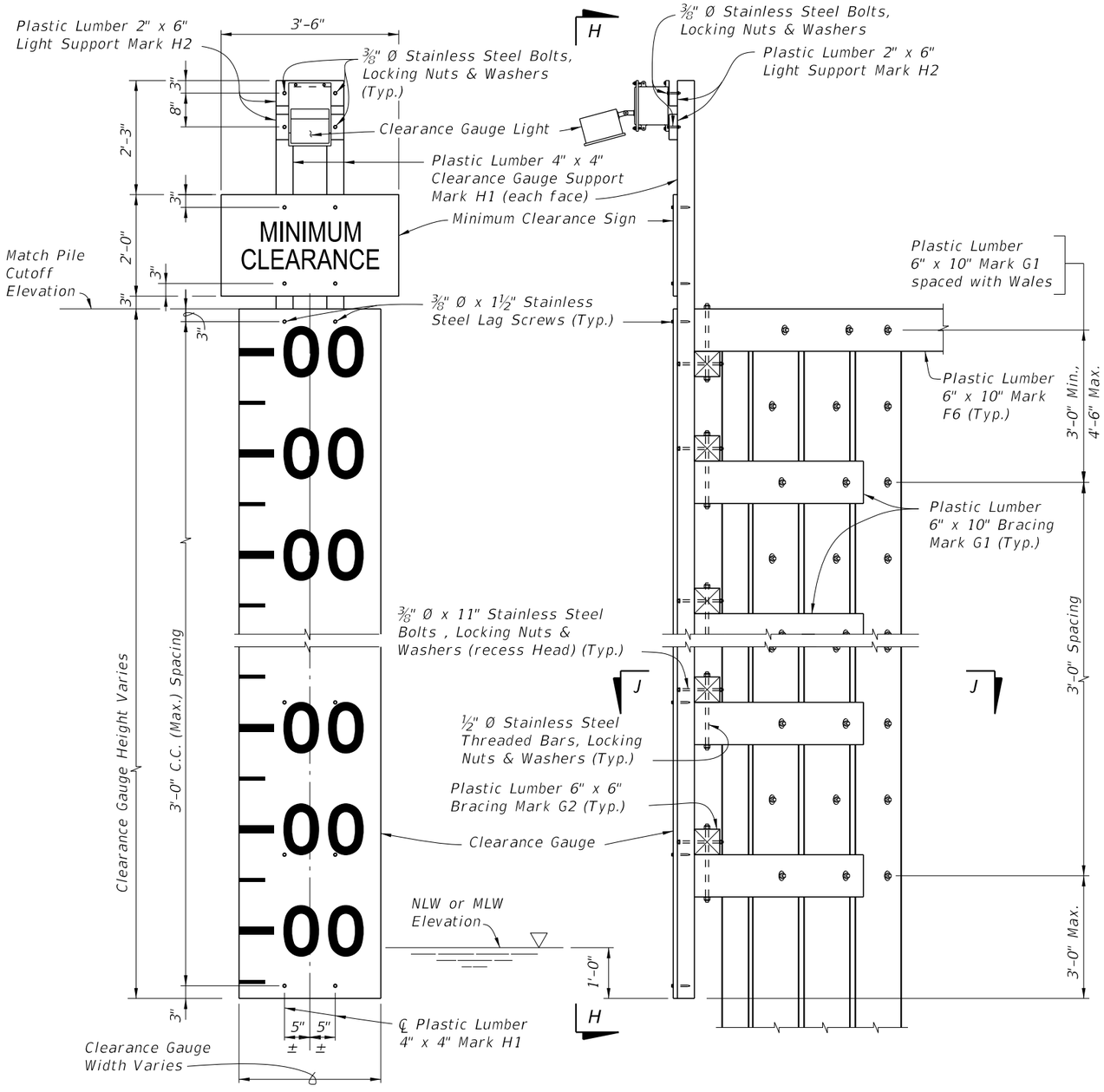
For location of View F-F see Sheet 1.



SECTION E-E
TYPICAL STRAIGHT SECTION

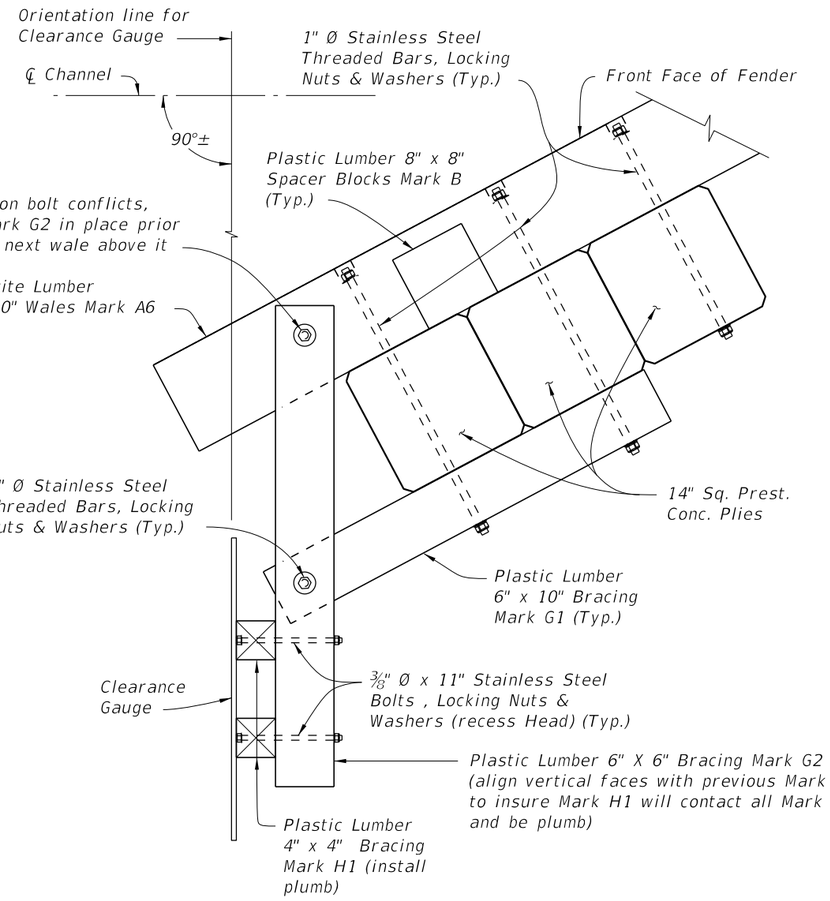
10/17/2024 11:07:53 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	FENDER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES	INDEX	SHEET
07/01/11					471-030	5 of 7



VIEW H-H
(WALES, PILES AND BRACING
NOT SHOWN FOR CLARITY)

VIEW G-G
(WALES, DECKING AND HANDRAIL
NOT SHOWN FOR CLARITY)



SECTION J-J

CROSS REFERENCES:

For Estimated Structural Composite and Plastic Lumber Bill of Materials Quantities and Fender System Table of Variables see Structures Plans.

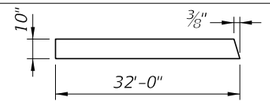
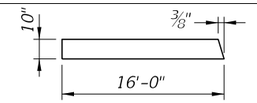
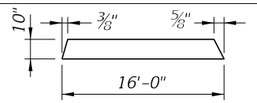
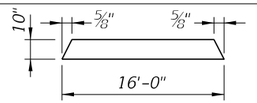
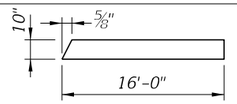
For location of View G-G see Sheet 5.

CLEARANCE GAUGE DETAILS

10/17/2024 11:08:00 AM

LAST REVISION	REVISION	DESCRIPTION:				
01/01/12			FDOT FY 2025-26 STANDARD PLANS	FENDER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES	INDEX 471-030	SHEET 6 of 7

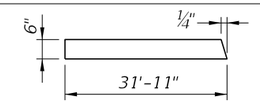
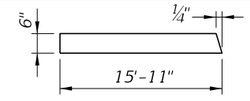
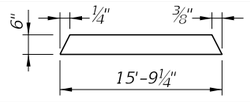
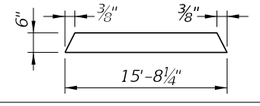
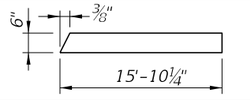
* STRUCTURAL COMPOSITE LUMBER BILL OF MATERIALS

MARK	SIZE (NOMINAL)	DIMENSIONS	BOARD FT. PER EACH	NO. REQD.	QUANTITY
A1	10" X 10" COMPOSITE LUMBER	32'-0" (STRAIGHT)	266.6	See Estimated Structural Composite and Plastic Lumber Bill of Materials Table in Structures Plans	
A2	10" X 10" COMPOSITE LUMBER		266.6		
A3	10" X 10" COMPOSITE LUMBER		133.3		
A4	10" X 10" COMPOSITE LUMBER		133.3		
A5	10" X 10" COMPOSITE LUMBER		133.3		
A6	10" X 10" COMPOSITE LUMBER		133.3		

* All Plastic Lumber and Composite Lumber Dimensions and Quantities shown are based on Nominal Lumber Dimensions and may vary depending on Actual Lumber Dimension.

** Provide Fiberglass Open Grating in lieu of 2" X 12" Plastic Lumber when called for in the Plans. Mounting hardware shall be Stainless Steel, install per Manufacturer's recommendations. See Structures Plans for Notes and Details.

* PLASTIC LUMBER BILL OF MATERIALS

MARK	SIZE (NOMINAL)	DIMENSIONS	BOARD FT. PER EACH	NO. REQD.	QUANTITY
B	8" X 8" PLASTIC LUMBER	8" (STRAIGHT)	3.6	See Estimated Structural Composite and Plastic Lumber Bill of Materials Table in Structures Plans	
C	2" X 6" PLASTIC LUMBER	16'-0" (STRAIGHT) (Trim & Miter Ends as required)	16.0		
D	4" X 6" PLASTIC LUMBER	4'-4" (STRAIGHT)	8.7		
** E	2" X 12" PLASTIC LUMBER	2'-6" (STRAIGHT) (Miter as required, 6" Min. width)	5.0		
F1	6" X 10" PLASTIC LUMBER	32'-0" (STRAIGHT)	160.0		
F2	6" X 10" PLASTIC LUMBER		159.6		
F3	6" X 10" PLASTIC LUMBER		79.6		
F4	6" X 10" PLASTIC LUMBER		78.8		
F5	6" X 10" PLASTIC LUMBER		78.4		
F6	6" X 10" PLASTIC LUMBER		79.3		
G1	6" X 10" PLASTIC LUMBER	3'-8" (STRAIGHT)	18.3		
G2	6" X 6" PLASTIC LUMBER	4'-1" (STRAIGHT)	12.3		
H1	4" X 4" PLASTIC LUMBER	PILE CUTOFF ELEV. MINUS NLW OR MLW ELEV. PLUS 5'-6" (STRAIGHT)	1.3 PER LF EACH		
H2	2" X 6" PLASTIC LUMBER	1'-2" (STRAIGHT)	1.2		

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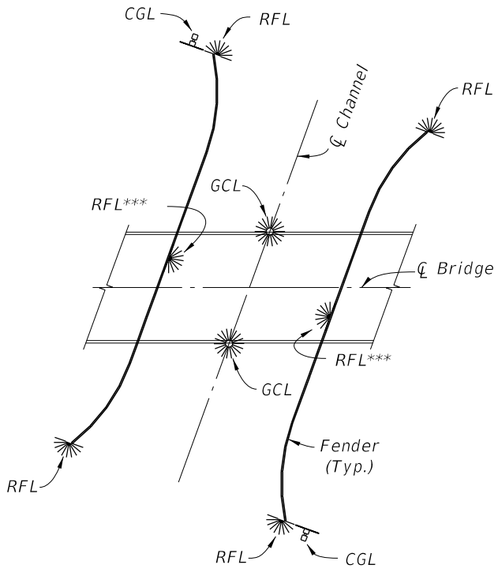
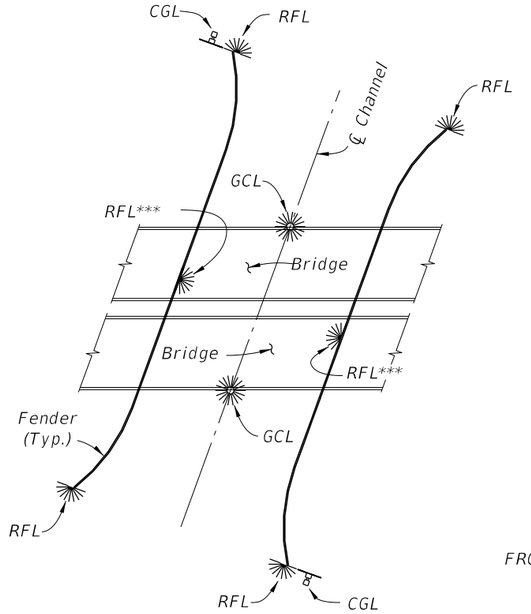


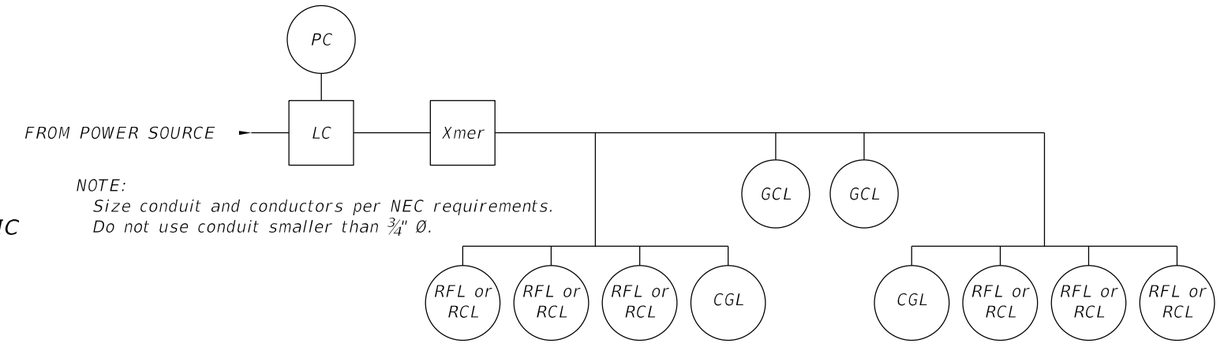
NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR SINGLE BRIDGE WITH FENDERS



NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR DUAL BRIDGES WITH FENDERS

NAVIGATION LIGHT NOTES:

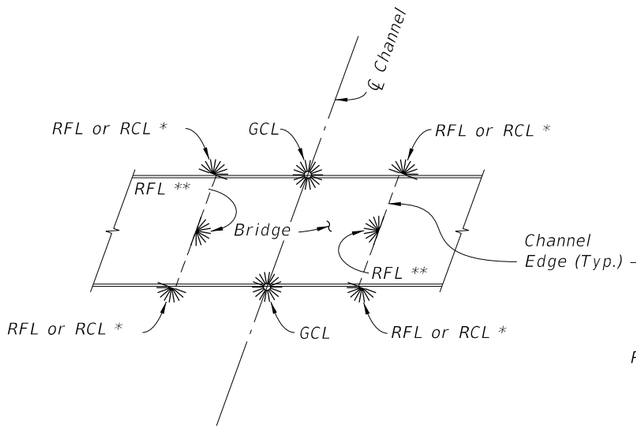
1. Provide Navigation Light System in compliance with Specifications Section 510.



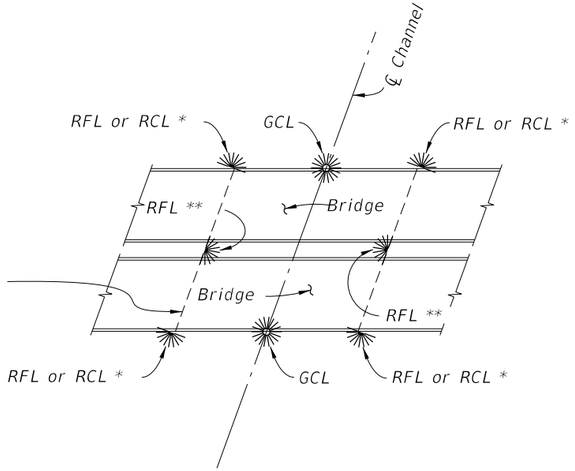
NOTE:
Size conduit and conductors per NEC requirements.
Do not use conduit smaller than $\frac{3}{4}$" Ø.

TYPICAL ELECTRICAL SCHEMATIC DIAGRAM

POWER CONDUCTORS			
DISTANCE (feet)	VOLTS	CONDUCTOR	TRANSFORMER
0 - 75	120	#12 AWG	N/A
75 - 500	120 or 240	#10 AWG	N/A
500-1000	240	#10 AWG	N/A
1000-2000	480	#10 AWG	2 KVA
2000-5000	480	#8 AWG	2 KVA
5000-10000	480	#6 AWG	2 KVA
over 10000	480	#4 AWG	2 KVA



NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR SINGLE BRIDGE WITHOUT FENDERS



NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR DUAL BRIDGES WITHOUT FENDERS

LEGEND

SYMBOL	DESCRIPTION
LC	Lighting Contactor
PC	Photocell Control
Xmer	Transformer (If Required)
RFL or RCL	Red Pier/Fender Light (180° visibility) Red Channel Margin Light (180° visibility)
GCL	Green Center Channel Light (360° visibility)
CGL	Clearance Gauge Light
CM	Channel Margin or Pier inner surface whichever defines Channel Edge.

* Use RFL when Pier is at Channel Edge and see CFR, Title 33, part 118 for Mounting Height restrictions. Use RCL otherwise.
** Mounted only on the Pier that defines CM, otherwise does not apply.
*** RFL to be located at mid length of straight portion of fender.

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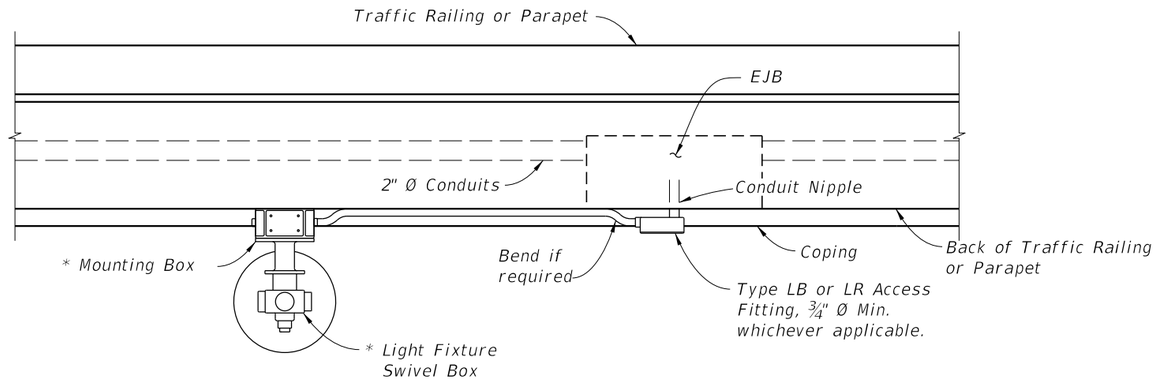
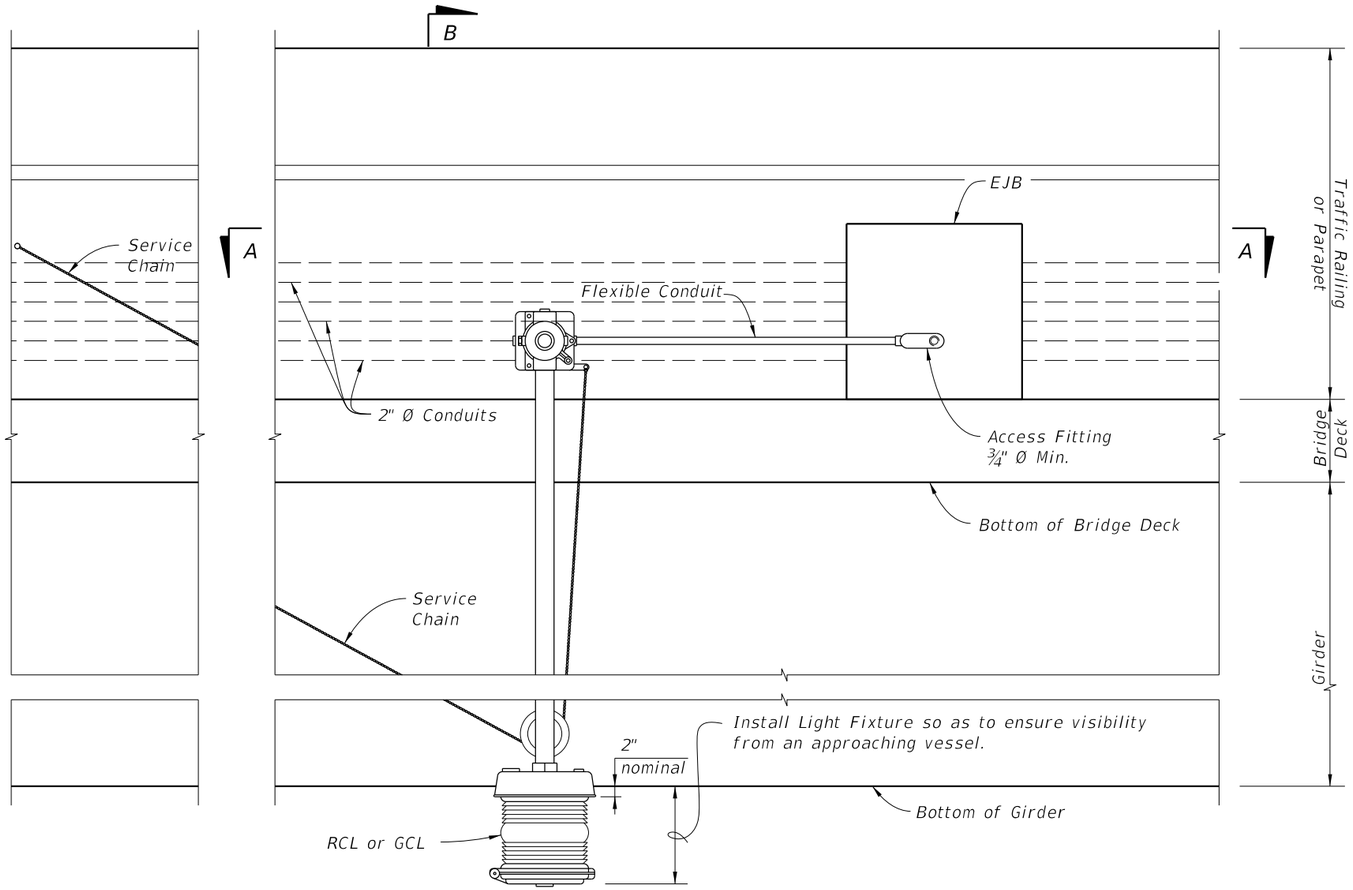
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2025-26 STANDARD PLANS	NAVIGATION LIGHT SYSTEM DETAILS (FIXED BRIDGES)	510-001	1 of 2



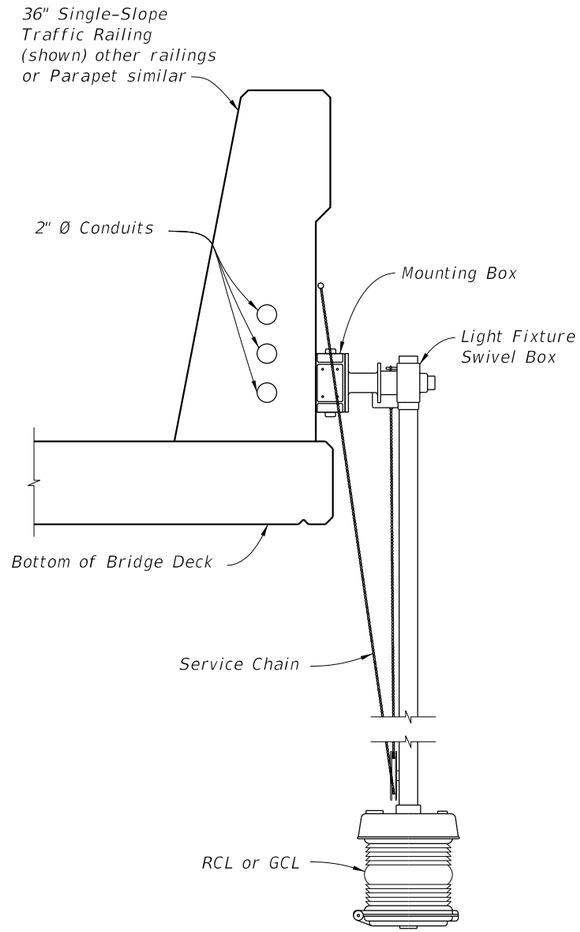
GCL OR RCL MOUNTING DETAILS (SCHEMATIC)
VIEW A-A

CROSS REFERENCES:
1. For Navigation Light System notes and legend, see Sheet 1.
2. See Utility Conduit Detail sheets for Embedded Junction Box (EJB) dimensions & locations.

* Supplied by Light Fixture Manufacturer



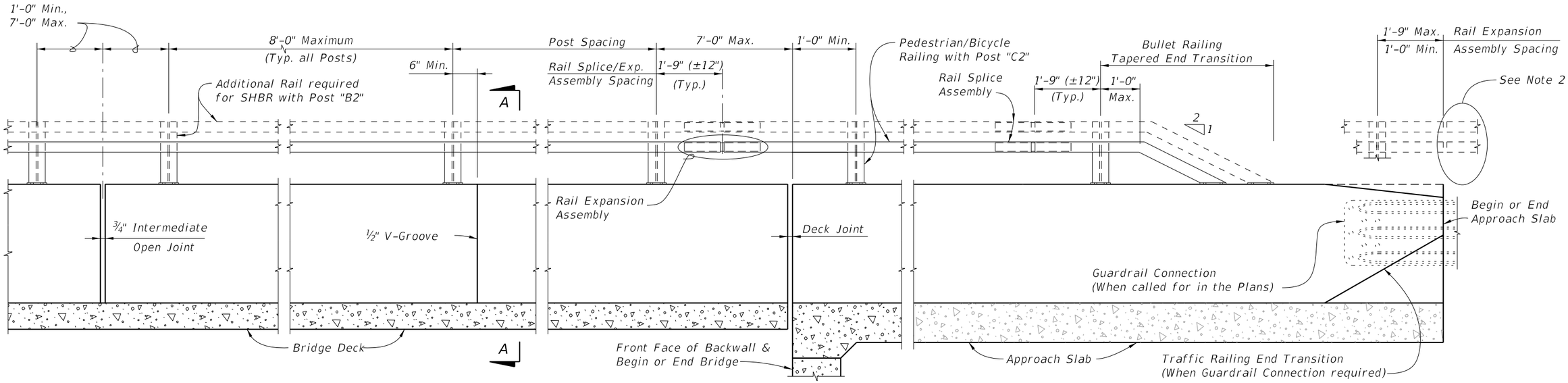
GCL OR RCL MOUNTING DETAILS (SCHEMATIC)
ELEVATION VIEW
(Traffic Railing (36" Single-Slope) shown, other railings similar)



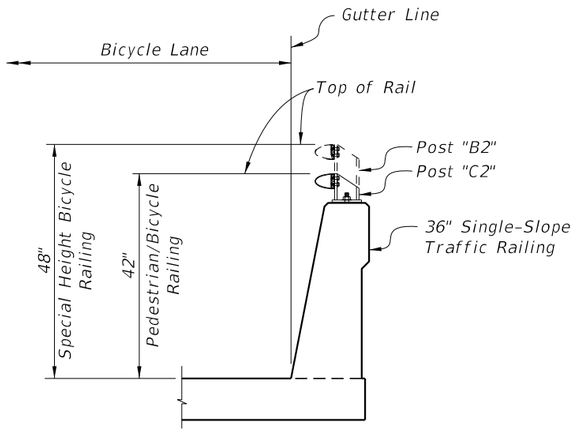
SECTION B-B
TYPICAL POSITION OF RCL OR GCL
RELATIVE TO SUPERSTRUCTURES

10/17/2024 11:08:21 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	NAVIGATION LIGHT SYSTEM DETAILS (FIXED BRIDGES)	INDEX	SHEET
11/01/17					510-001	2 of 2



ELEVATION OF INSIDE FACE OF TRAFFIC RAILING WITH PEDESTRIAN/BICYCLE BULLET RAILING



SECTION A-A
TYPICAL SECTION THRU BRIDGE DECK
(APPROACH SLAB SIMILAR)

NOTES:

1. A Bullet Railing Tapered-End Transition is required for all approach ends of Bullet Railings on Traffic Railings. When Guardrail Connection is required terminate the Bullet Railing Tapered-End Transition at beginning of the Traffic Railing End Transition.

2. Where Bullet Railing continues on retaining wall mounted Traffic Railings or Barriers, provide a Bullet Railing Tapered End Transition at the terminus of the Bullet Railing.

CROSS REFERENCES:

Work in conjunction with Index 515-022.

For Traffic Railing Details, Reinforcement and Notes see Index 521-427.

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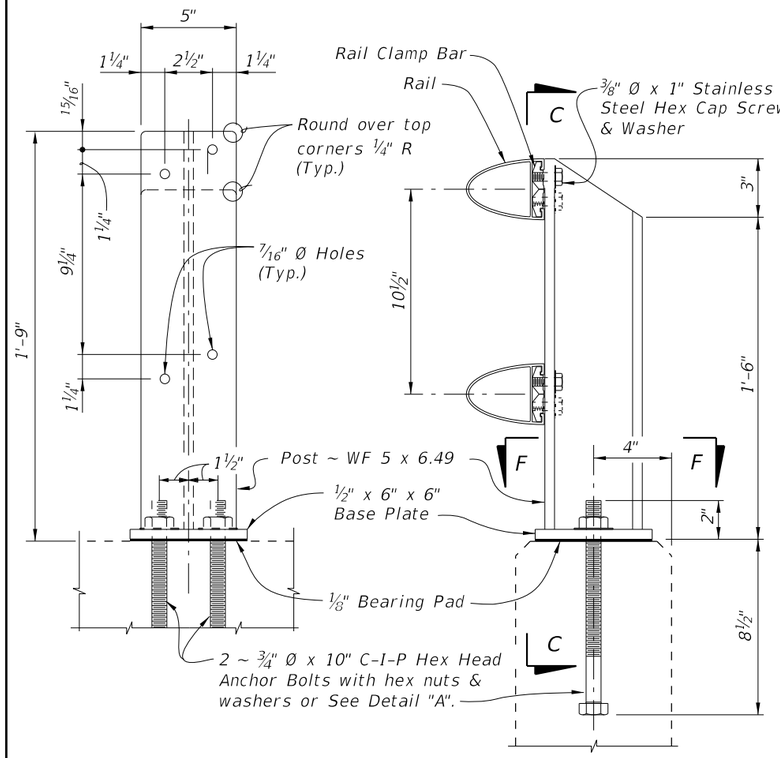
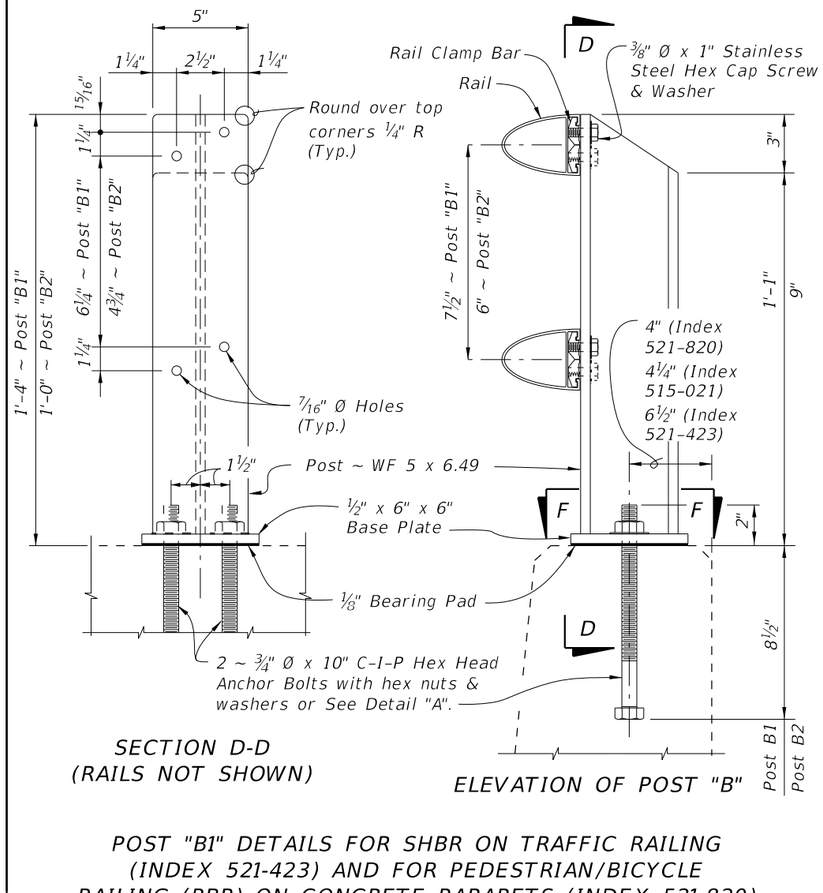
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2025-26 STANDARD PLANS	PEDESTRIAN/BICYCLE BULLET RAILING FOR TRAFFIC RAILING	515-021	1 of 1



SECTION C-C
(RAILS NOT SHOWN)

ELEVATION
OF POST "D"

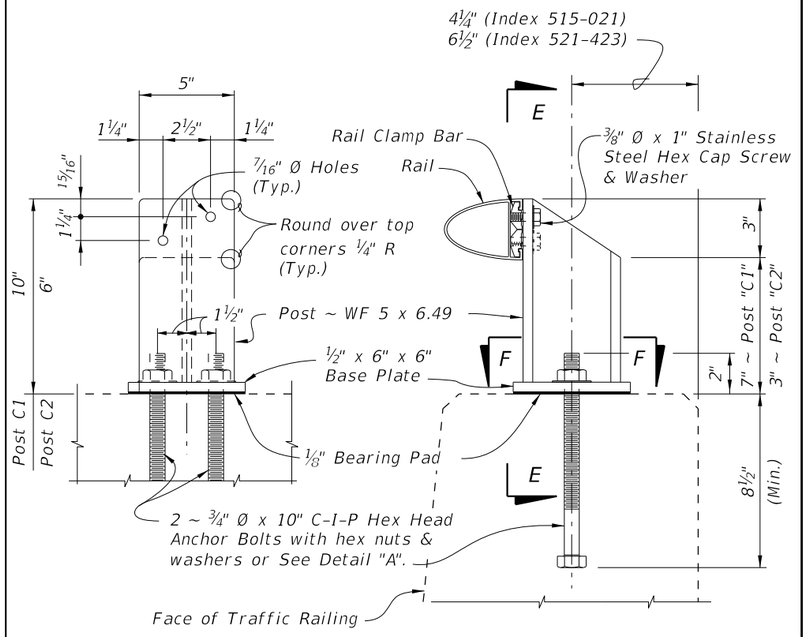
POST "D" DETAILS FOR SPECIAL HEIGHT BICYCLE RAILING (SHBR) ON CONCRETE PARAPET (INDEX 521-820)



SECTION D-D
(RAILS NOT SHOWN)

ELEVATION OF POST "B"

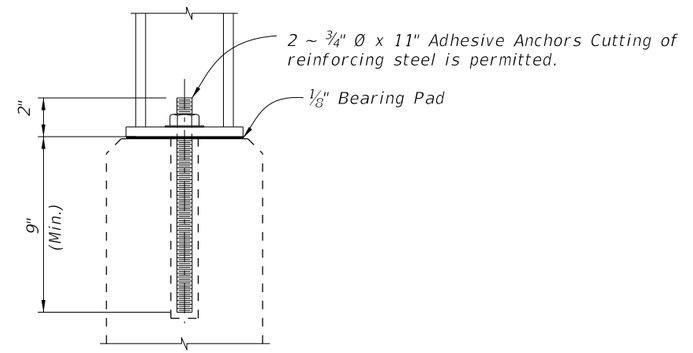
POST "B1" DETAILS FOR SHBR ON TRAFFIC RAILING (INDEX 521-423) AND FOR PEDESTRIAN/BICYCLE RAILING (PBR) ON CONCRETE PARAPETS (INDEX 521-820)
POST "B2" DETAILS FOR SHBR ON TRAFFIC RAILING (INDEX 521-427 AND 515-021)



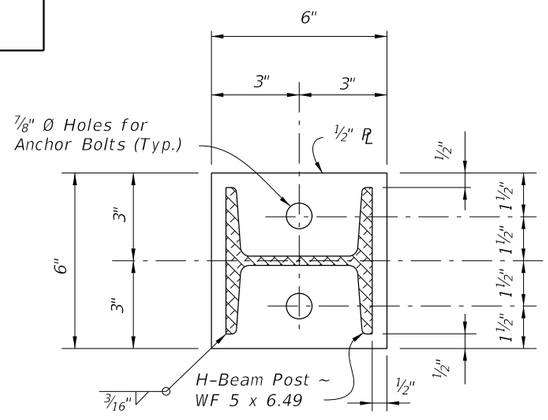
SECTION E-E
(RAIL NOT SHOWN)

ELEVATION
OF POST "C"

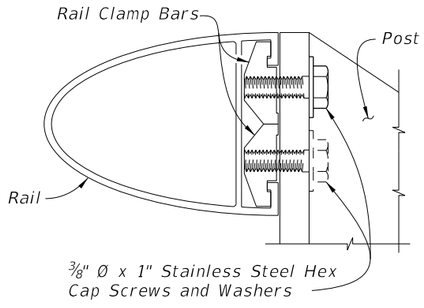
POST "C1" DETAILS FOR PEDESTRIAN/BICYCLE RAILING (PBR) ON TRAFFIC RAILINGS (INDEX 521-423)
POST "C2" DETAILS FOR PBR ON TRAFFIC RAILING (INDEX 521-427 & 515-021)



DETAIL "A"
ALTERNATE ANCHOR BOLT
(Concrete Parapet Shown, Traffic Railings Similar)



SECTION F-F
BASE PLATE DETAIL



RAIL TO POST CONNECTION DETAIL

CROSS REFERENCES:

For post spacing on Concrete Parapets see Index 521-820.

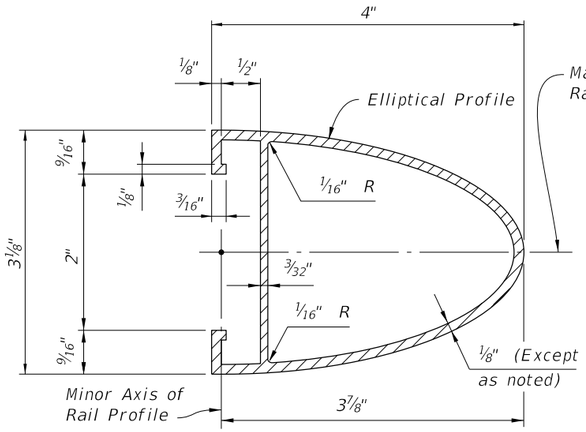
For post spacing on Traffic Railings see Index 515-021.

For Rail Details see Sheet 2.

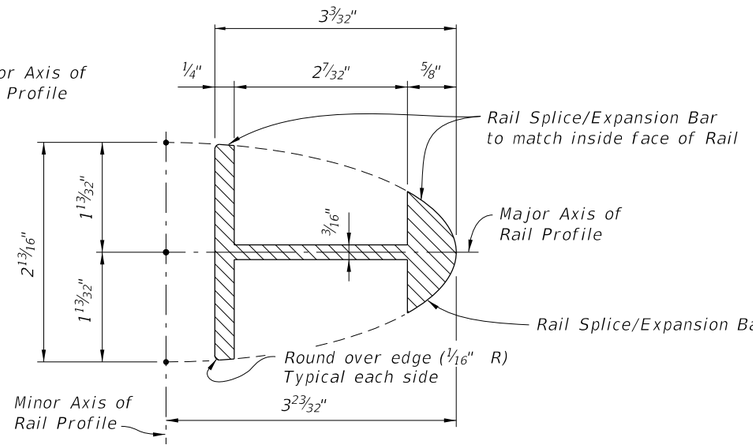
For Railing Notes and Tapered End Transition Details see Sheet 3.

10/17/2024 11:08:35 AM

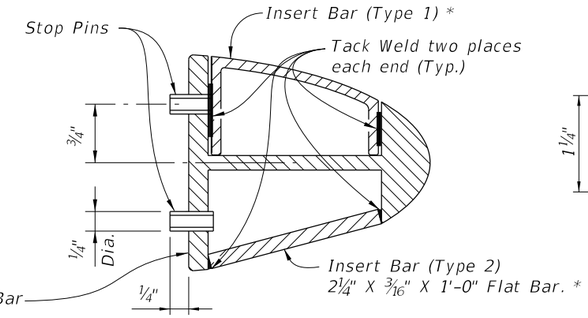
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FY 2025-26 STANDARD PLANS	PEDESTRIAN/BICYCLE BULLET RAILING DETAILS	INDEX 515-022	SHEET 1 of 3



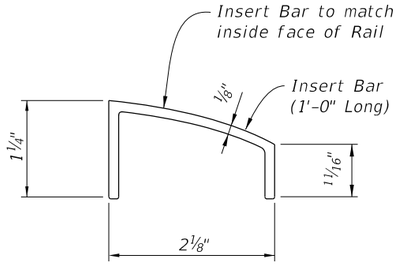
SECTION A-A
TYPICAL SECTION THRU RAIL



SECTION B-B - RAIL SPLICE/EXPANSION BAR
(Rail not shown for clarity)

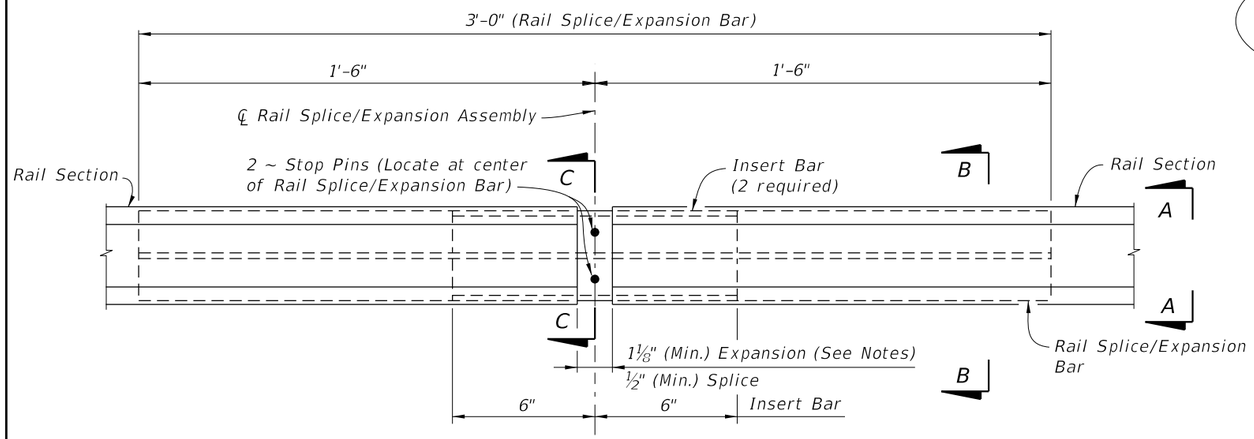


SECTION C-C
RAIL SPLICE/EXPANSION
BAR ASSEMBLY

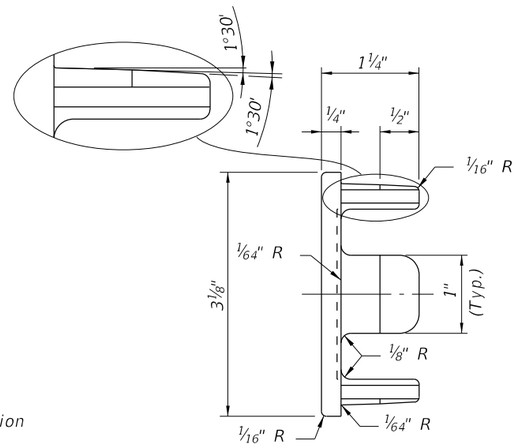


INSERT BAR DETAIL (TYPE 1)

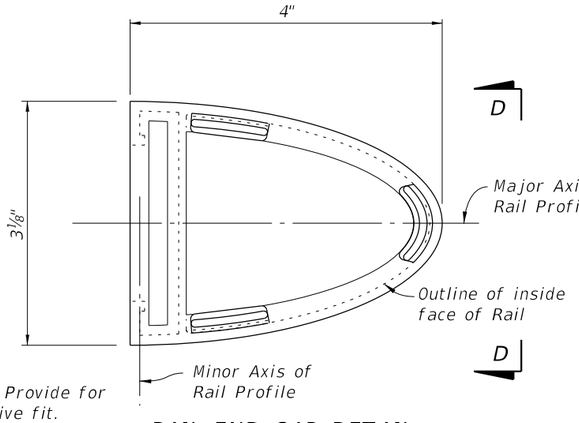
* Use of either Type 1 or Type 2 Insert Bars is at the option of the Contractor.



RAIL SPLICE/EXPANSION ASSEMBLY DETAIL



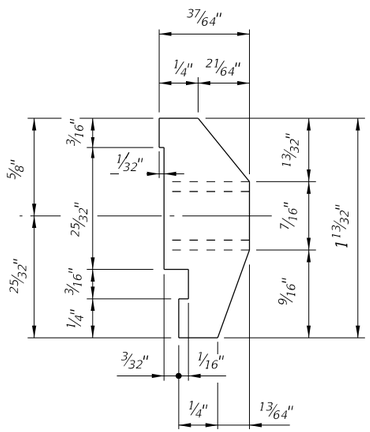
VIEW D-D



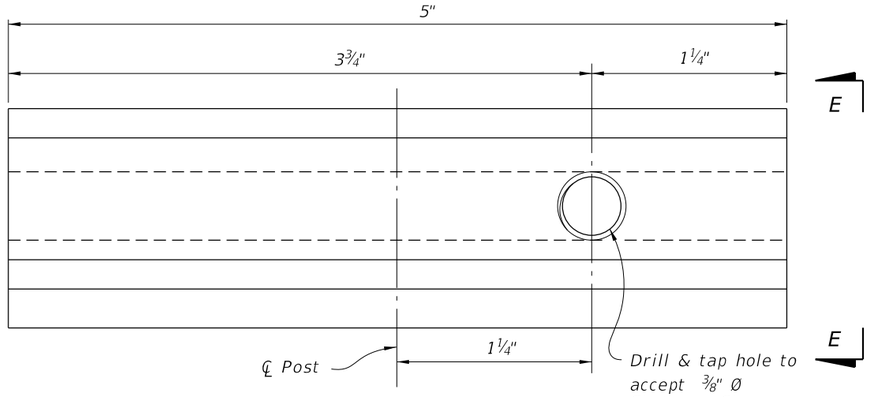
NOTE: Provide for drive fit.

RAIL END CAP DETAIL

CROSS REFERENCE:
For Notes and Tapered End Transition Details, See Sheet 3.



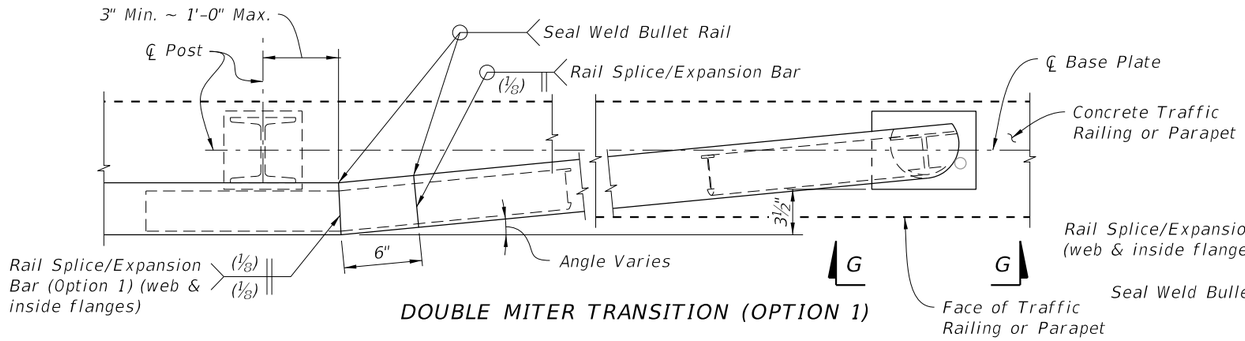
VIEW E-E



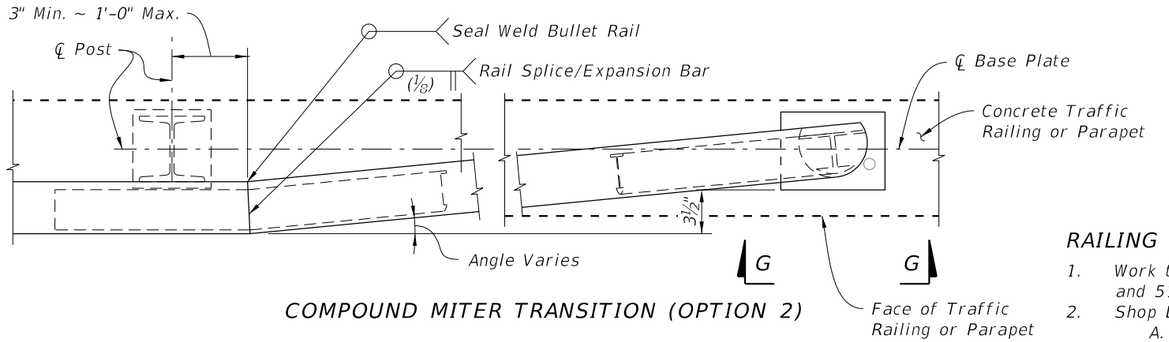
RAIL CLAMP BAR DETAIL

10/17/2024 11:08:43 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	PEDESTRIAN/BICYCLE BULLET RAILING DETAILS	INDEX	SHEET
07/01/14						515-022	2 of 3

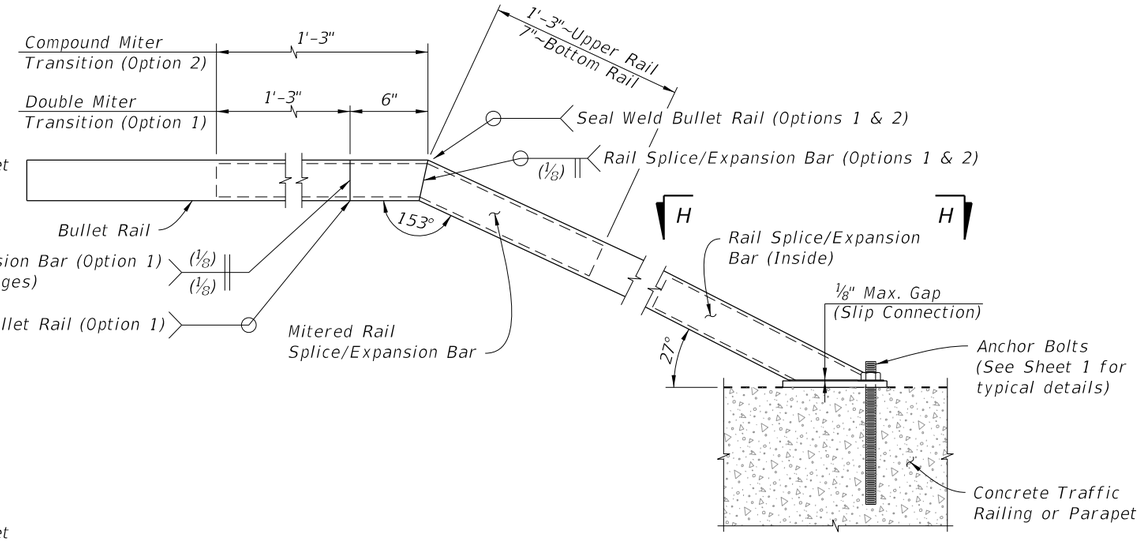


DOUBLE MITER TRANSITION (OPTION 1)

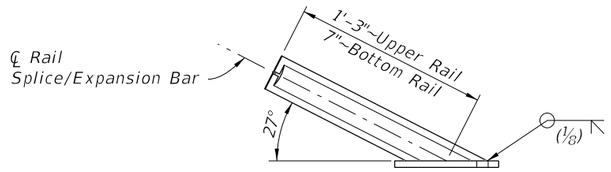


COMPOUND MITER TRANSITION (OPTION 2)

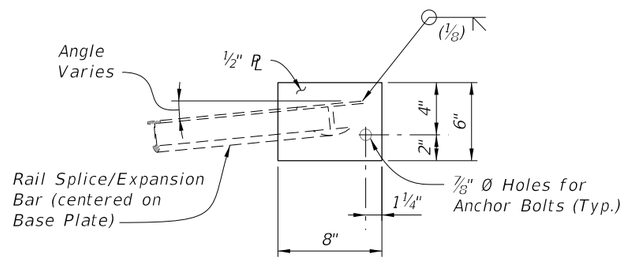
PARTIAL PLAN OF TAPERED END TRANSITIONS
(Single Rail Shown, Double or Triple Rail Similar)



ELEVATION OF TAPERED END TRANSITION
(Single Rail Shown, Double or Triple Rail Similar)



VIEW G-G TRANSITION BASE PLATE
(Bullet Rail not shown for Clarity)



VIEW H-H TRANSITION BASE PLATE
(Bullet Rail not shown for Clarity)

RAILING NOTES:

1. Work this Index with Index 521-423, 521-427, 521-428, 521-820 and 515-021 and Specification Section 515.
2. Shop Drawings: Submit shop drawings prior to fabrication.
   A. Include post and rail splice/expansion assembly location for curved alignments with radii < 40 feet and for all end terminations.
3. Materials:
   A. Supply Aluminum materials In accordance with Specification Section 965 and the following:
   Wrought Aluminum Post: ASTM B221, Alloy 6061-T6 or 6351-T5
   Rail End Cap: ASTM B26 sand cast aluminum alloy 356.0-F
   Plate and Bars: ASTM B209 Alloy 6061-T6
   Rails: ASTM B221 Alloy 6061-T6 or 6351-T5.
   Stop Pins: Press-fit aluminum or stainless steel pins or tubes
   B. Stainless Steel Fasteners: ASTM F-593, Alloy Group 2 (316).
   C. Bearing Pads: Plain or Fiber Reinforced meeting Specification Section 932 for Ancillary Structures.
   D. Anchor Bolts: Galvanized ASTM A307 Grade 36 Hex Head. Galvanized ASTM 1554 Grade 55 Threaded rods for Adhesive Anchors.
4. Layout:
   A. Posts shall be uniformly spaced with reasonable consistency.
   B. Tapered End Transitions are required at the terminus of the approach ends of Bullet Railing mounted on a Traffic Railing. Bullet Railings on concrete parapets shielded by a traffic railing do not require Tapered End Transitions unless noted otherwise in the Plans.
   C. Adjust post spacing's to avoid parapet obstacles, such as armor expansion plates, by 9 inches minimum.
   D. Rails shall be continuous over a minimum of 3 posts, except that lengths less than 12 feet need only be continuous over 2 posts.
   E. Space splices at 40 feet maximum. Splice all rails in a given railing section at about the same center line.
   F. Provide rail expansion assemblies in panels between posts on either side of a bridge expansion joint. Rail expansion assemblies are similar to the rail splice assemblies with increased space at the expansion assembly to allow for movement equal to 1.5 times the bridge joint opening or 1" greater than the expected joint movement.
5. Installation:
   A. Set rails near bridge expansion joints to allow for expected movement.
   B. Cutting of reinforcing steel is permitted for post installed anchors.
6. Payment: Includes the full cost of installed bullet railing. Cost of the Concrete Parapet or Traffic Railing is separate.

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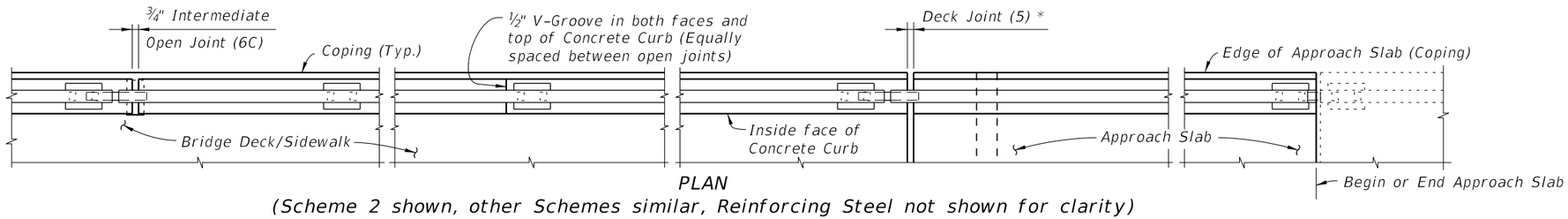
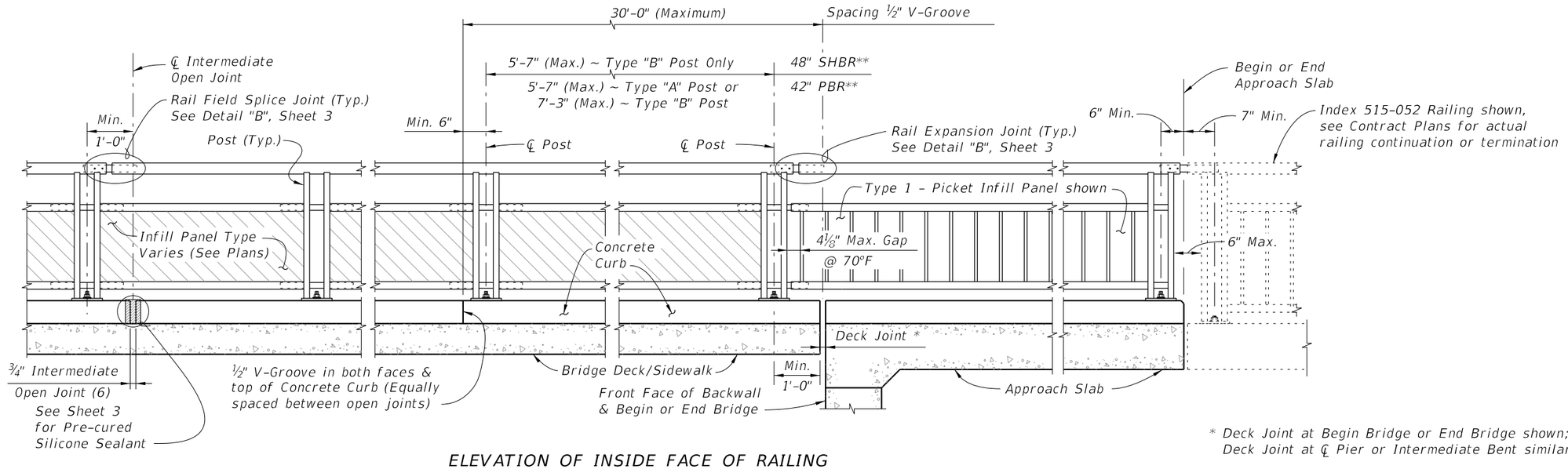
LAST REVISION	REVISION	DESCRIPTION:				
11/01/22			FDOT FY 2025-26 STANDARD PLANS	PEDESTRIAN/BICYCLE BULLET RAILING DETAILS	INDEX 515-022	SHEET 3 of 3



PLAN

(Scheme 2 shown, other Schemes similar, Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING

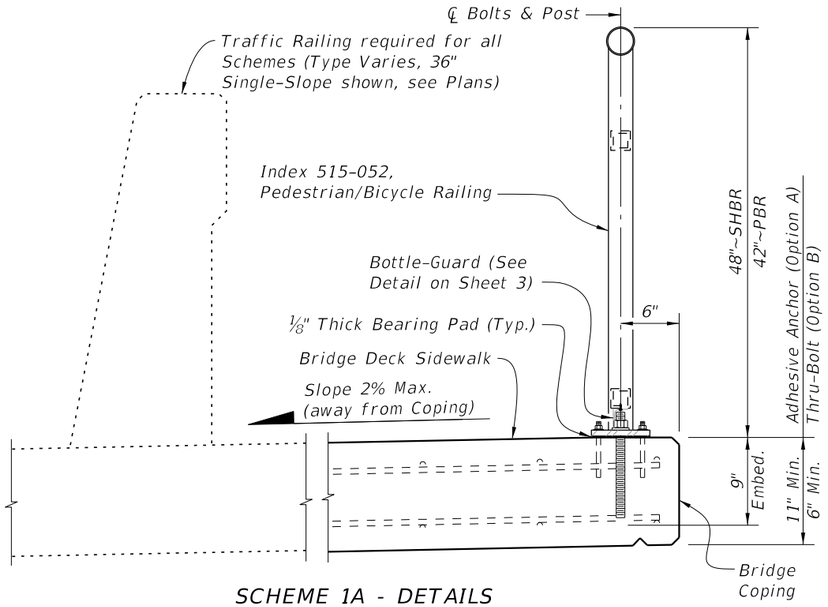
(Scheme 2 shown with Post "A", other Schemes similar, Reinforcing Steel not shown for clarity)

* Deck Joint at Begin Bridge or End Bridge shown;
Deck Joint at ℄ Pier or Intermediate Bent similar.

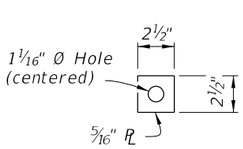
** SHBR~Special Height Bicycle Rail
PBR~Pedestrian/Bicycle Rail

NOTES:

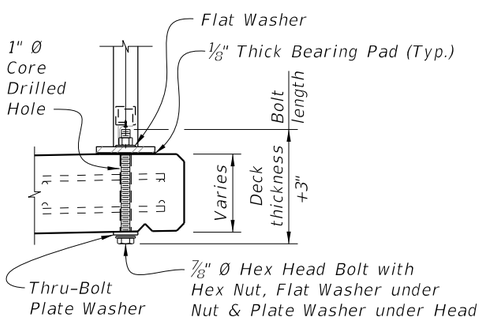
1. Shop Drawings are required.
2. Work this Index with Index 515-052 Bicycle/Pedestrian Railing Details (Steel) and Specification Section 515. Refer to the SPI for Design Criteria and Limits of Use.
3. Materials:
   - A. Steel: Galvanized after fabrication
     - a. Fasteners: Hex Head Bolt ASTM A307, Hex Nuts ASTM A563, Washers ASTM F436
     - b. Support Bracket (Scheme 3) L-shape and Stiffener Plate: ASTM A36
     - c. Bottle-guard (Schemes 1 & 3) L-shape: ASTM A36
   - B. Concrete: Same as bridge deck
   - C. Pre-cured Silicone Sealant: Specification Section 932
   - D. Bearing Pads: Provide ⅛" Plain, Fabric Reinforced or Fabric Laminated bearing pads that meet the requirements of Specification Section 932 for Ancillary Structures.
4. See Structures Plans, Superstructure Sheets for bridge information including concrete type, deck expansion joint locations and orientations, and thermal movement.
5. Railings:
   - A. For thermal movement greater than 4" (up to a maximum of 5"), clear opening between adjacent pickets, or panels at Rail Expansion Joints above Deck Joints must be reduced to 3½".
   - B. For treatment of railings on skewed bridges see Index 521-427.
6. Curbs:
   - A. Match open curb joints at Deck Expansion Joint locations to the deck joint dimension.
   - B. Construct Concrete Curb (Scheme 2) vertical with the top surface finished level transversely. See Concrete Curb Details Sheet 3.
   - C. Provide ¾" Intermediate open joints in curbs coinciding with the ¾" joints in the traffic railing.
7. Payment: Support bracket (Scheme 3) is incidental to the cost of railing. Curb concrete and reinforcing steel (Scheme 2) are included in the bridge deck quantities.



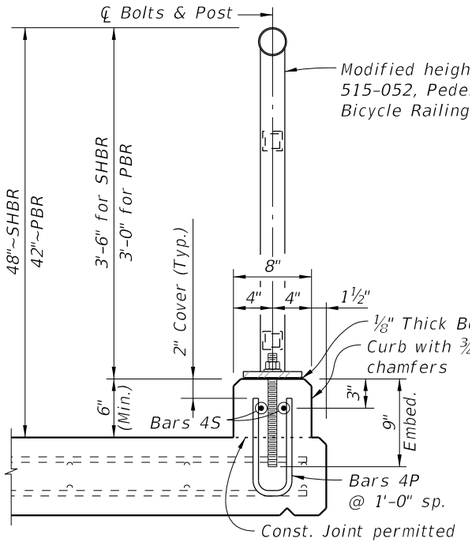
SCHEME 1A - DETAILS
(Adhesive Anchor Option shown)



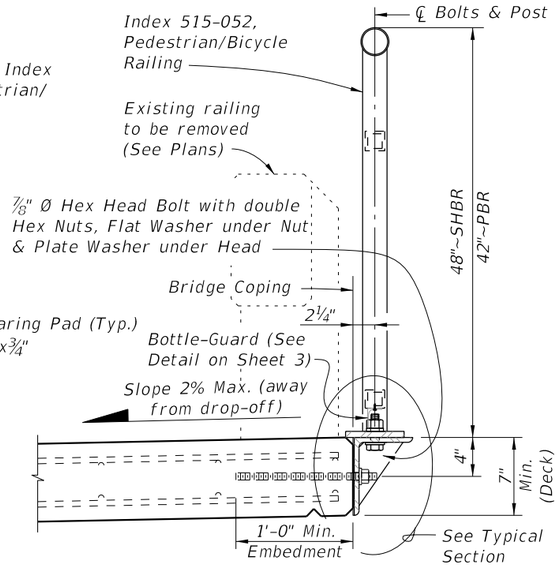
THRU-BOLT PLATE WASHER DETAIL



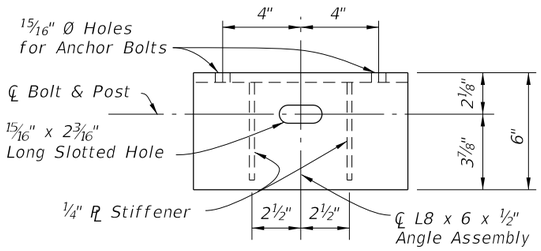
SCHEME 1B - DETAILS
(Thru-Bolt Option)



SCHEME 2 -
TYPICAL SECTION THROUGH
CURB MOUNTED RAILING



SCHEME 3 -
TYPICAL SECTION THROUGH
SIDE MOUNTED RAILING (RETROFIT)



PLAN VIEW

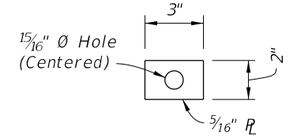
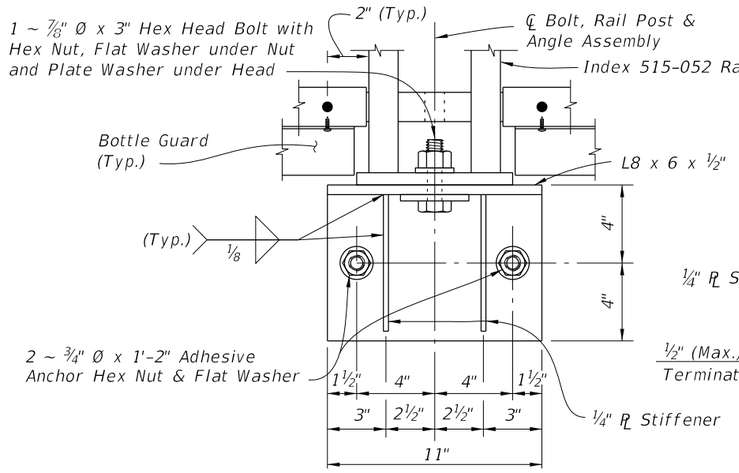
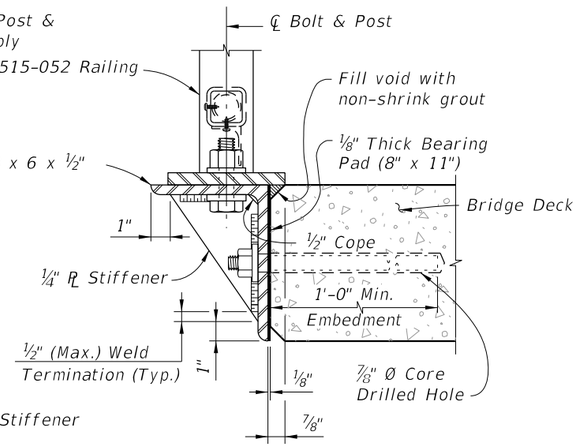


PLATE WASHER DETAIL



ELEVATION VIEW



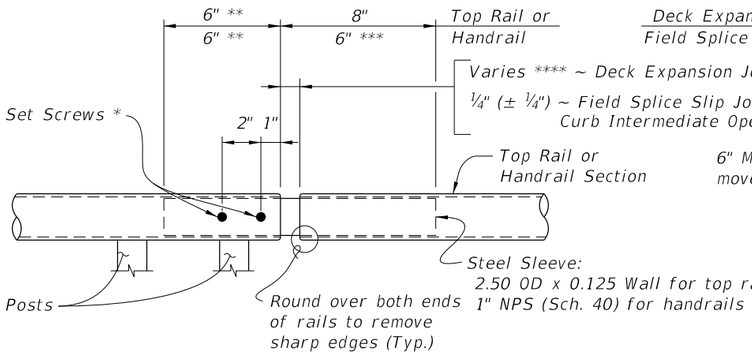
TYPICAL SECTION

SCHEME 1 - TYPICAL SECTION THROUGH DECK MOUNTED RAILING

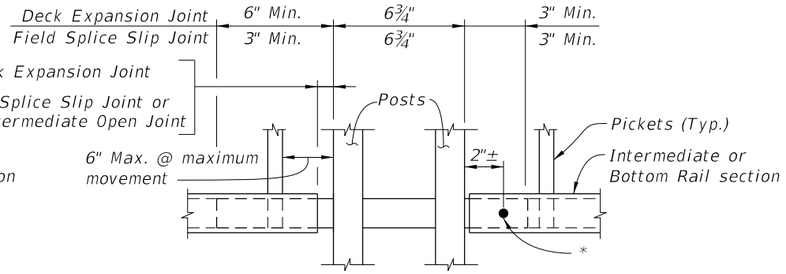
SCHEME 3 - SIDE-MOUNTED SUPPORT BRACKET DETAILS

10/17/2024 11:09:03 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	BRIDGE PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX	SHEET
11/01/17					515-051	2 of 3



ROUND RAILS - TOP RAIL OR HANDRAIL



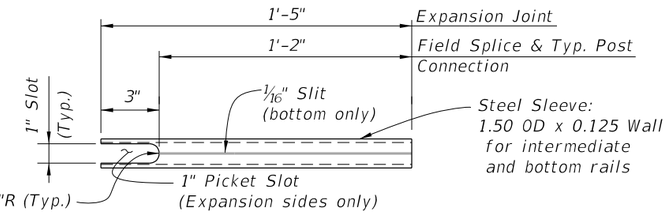
SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL

* ¼" Ø x ¾" Pan Head Stainless Steel (Type 316 or 18-8 Alloy) Set Screws along outside face of railing. Set screws must be set flush against the rail surface. A ¾" Ø plug weld may be substituted for the two set screws at expansion joints.

** Embedded length may be 4" for plug welded connection.

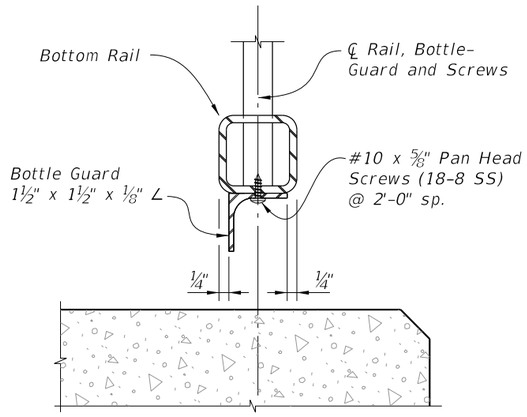
*** Increase handrail sleeve embedment to 8" for Expansion Joint openings greater than 2".

**** Expansion Joint opening shall match the clear opening in the deck joint but not greater than 3".



INTERMEDIATE OR BOTTOM RAIL - STEEL SLEEVE DETAIL (Bottom Side Shown)

DETAIL "B" EXPANSION JOINT (FIELD SPLICE SIMILAR)

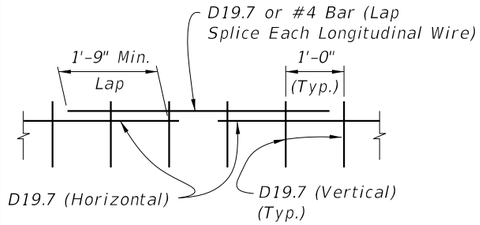


TYPICAL SECTION THROUGH BOTTOM RAIL
(Post Not Shown for Clarity)

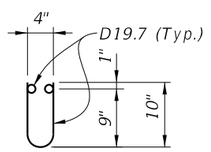
SCHEME 1 - BOTTLE GUARD DETAIL

ALTERNATE REINFORCING (WWR) DETAILS

NOTE: Place wire panels to minimize the end overhang. End Overhangs greater than 4¾" are not permitted.



SPLICE DETAIL
(Between WWR Sections)

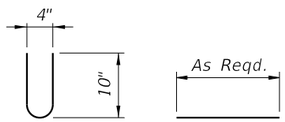


WWR SECTION DETAIL

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

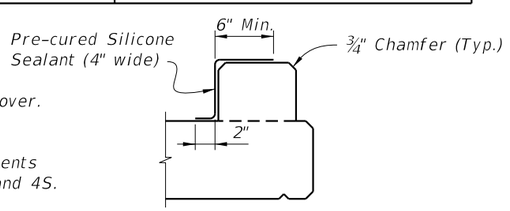
MARK	SIZE	LENGTH
P	4	2'-0"
S	4	As Reqd.



BAR 4P BAR 4S

CURB REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the curb on a retaining wall shall be the same as detailed for an 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 1'-8".
5. Deformed Welded Wire Reinforcement (WWR) meeting the requirements of Specification Section 931 may be used in lieu of all Bars 4P and 4S.



DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTE:

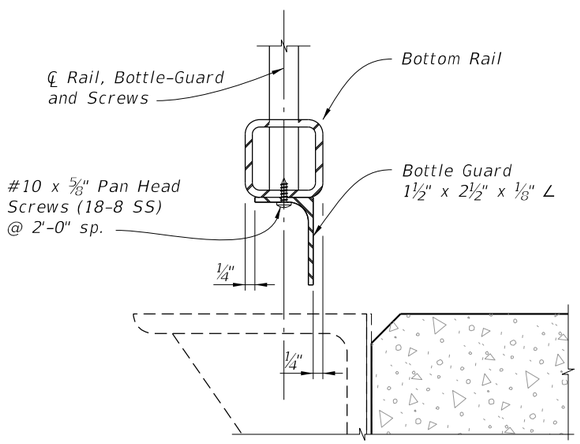
At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.

ESTIMATED CONCRETE CURB QUANTITIES (SCHEME 2)		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.0124
Reinforcing Steel	LB/LF	4.01

SCHEME 2 - CONCRETE CURB DETAILS

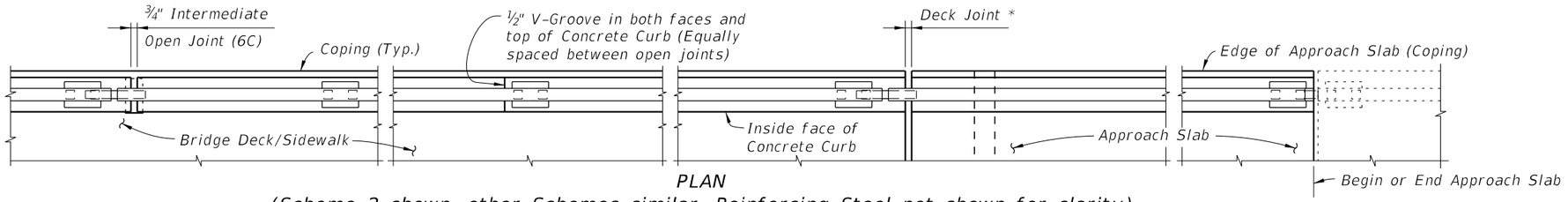
CROSS REFERENCE:

See Sheet 1 for Bridge Railing Notes.



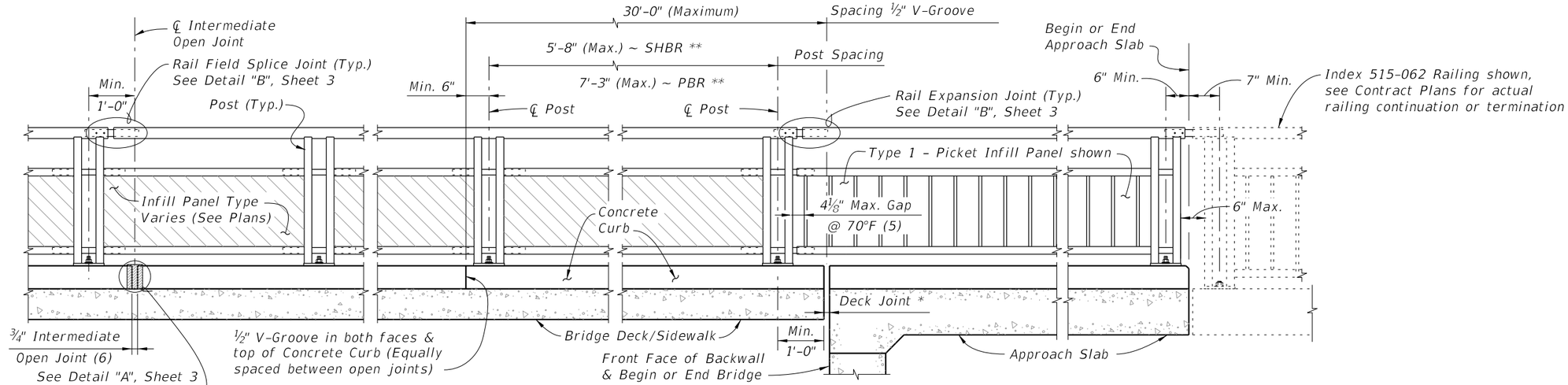
TYPICAL SECTION THROUGH BOTTOM RAIL
(Post Not Shown for Clarity)

SCHEME 3 - BOTTLE GUARD DETAIL



PLAN

(Scheme 2 shown, other Schemes similar, Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING

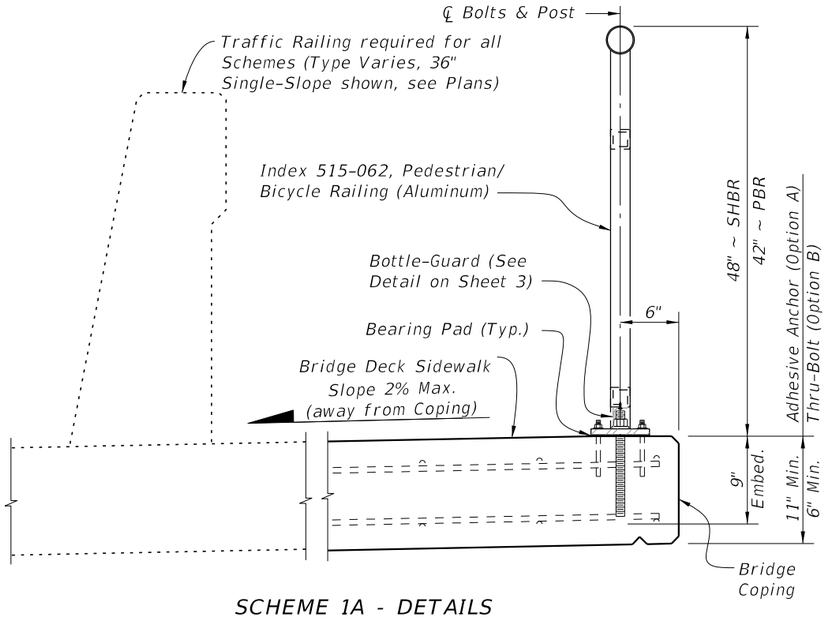
(Scheme 2 shown with Post "A", other Schemes similar, Reinforcing Steel not shown for clarity)

* Deck Joint at Begin Bridge or End Bridge shown; Deck Joint at ℄ Pier or Intermediate Bent similar.

** SHBR ~ Special Height Bicycle Railing
PBR ~ Pedestrian/Bicycle Railing

NOTES:

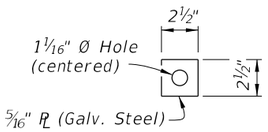
1. Shop Drawings are required.
2. Work this Index with Index 515-062 Aluminum Bicycle/Pedestrian Railing Details and Specification Section 515. Refer to the IDS for Design Criteria and Limits of Use.
3. Materials:
   - A. Galvanized Steel Fasteners: Hex Head Bolt ASTM A307, Hex Nuts ASTM A563, Washers ASTM F436
   - B. Aluminum:
     - a. Support Bracket (Scheme 3) L-shape and Stiffener Plate: ASTM B209, Alloy 6061-T6
     - b. Bottle-guard (Schemes 1 & 3) L-shape: ASTM B209, Alloy 6061-T6 or 6063-T5
   - C. Concrete: Same as bridge deck
   - D. Pre-cured Silicone Sealant: Specification Section 932
   - E. Bearing Pads: Provide ⅛" thick Plain, Fabric Reinforced or Fabric Laminated pads meeting the requirements of Specification Section 932 for Ancillary Structures.
4. See Structures Plans, Superstructure Sheets for bridge information including concrete type, deck expansion joint locations and orientations, and thermal movement.
5. Railings:
   - A. For thermal movement greater than 4" (up to a maximum of 5"), clear opening between adjacent pickets, or panels at Rail Expansion Joints above Deck Joints must be reduced to 3½".
   - B. For treatment of railings on skewed bridges see Index 521-427.
6. Curbs:
   - A. Match open curb joints at Deck Expansion Joint locations to the deck joint dimension.
   - B. Construct Concrete Curb (Scheme 2) vertical with the top surface finished level transversely. See Concrete Curb Details Sheet 3.
   - C. Provide ¾" Intermediate open joints in curbs coinciding with the ¾" joints in the traffic railing.
7. Payment: Support bracket (Scheme 3) is incidental to the cost of railing. Curb concrete and reinforcing steel (Scheme 2) are included in the bridge deck quantities.



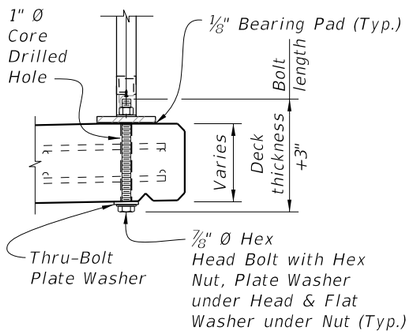
SCHEME 1A - DETAILS
(Adhesive Anchor Option)

CROSS REFERENCE:

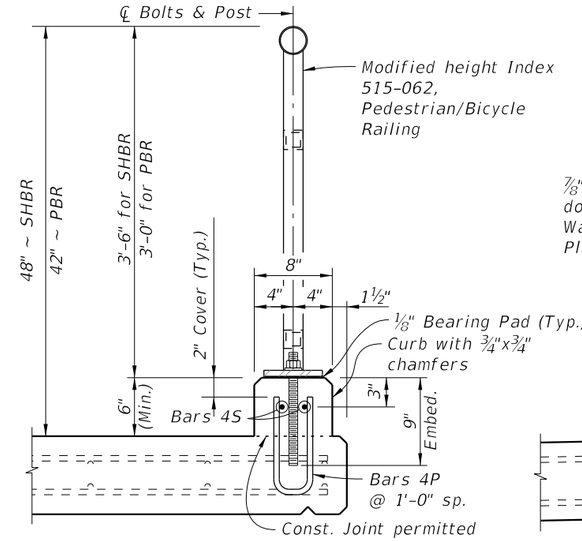
See Sheet 1 for Bridge Railing Notes.



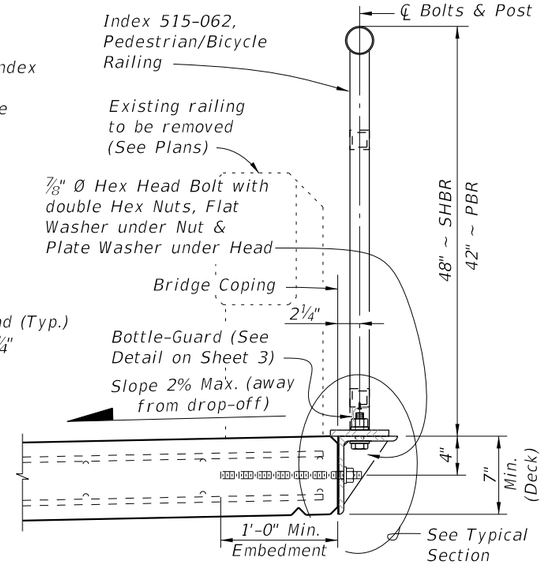
THRU-BOLT PLATE WASHER DETAIL



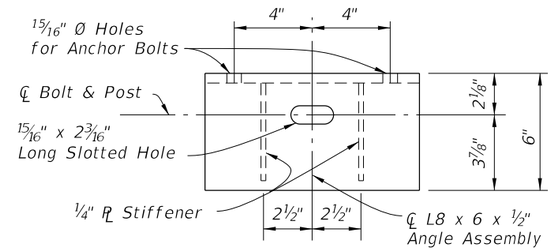
SCHEME 1B - DETAILS
(Thru-Bolt Option)



SCHEME 2 -
TYPICAL SECTION THROUGH
CURB MOUNTED RAILING



SCHEME 3 -
TYPICAL SECTION THROUGH
SIDE MOUNTED RAILING (RETROFIT)



PLAN VIEW

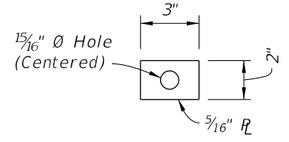
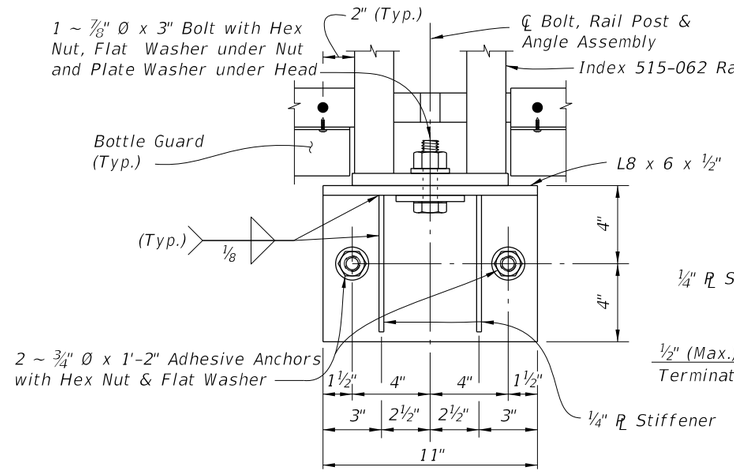
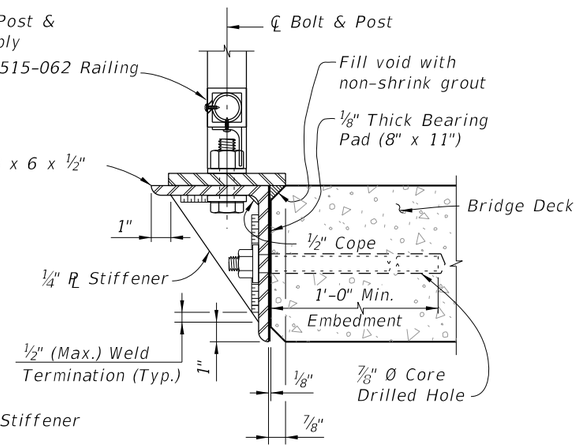


PLATE WASHER DETAIL



ELEVATION VIEW



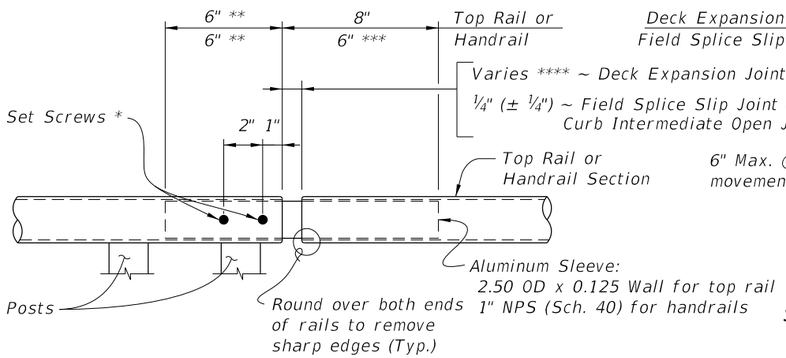
TYPICAL SECTION

SCHEME 1 - TYPICAL SECTION THROUGH DECK MOUNTED RAILING

SCHEME 3 - SIDE-MOUNTED SUPPORT BRACKET DETAILS

10/17/2024 11:10:03 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	BRIDGE PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX	SHEET
11/01/17						515-061	2 of 3



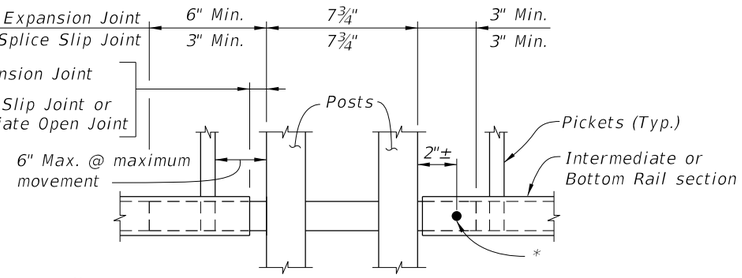
ROUND RAILS - TOP RAIL OR HANDRAIL

* ¼" Ø x ¾" Pan Head Aluminum (Alloy 7075-T73) or Stainless Steel (Type 316 or 18-8 Alloy) Set Screws along outside face of railing. Set screws must be set flush against the rail surface. A ¾" Ø plug weld may be substituted for the two set screws at expansion joints.

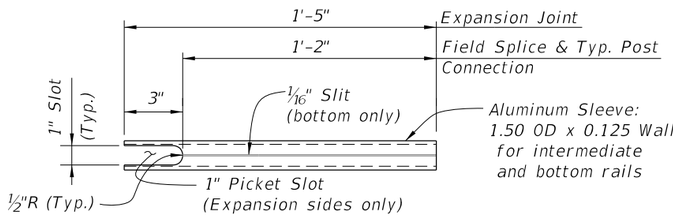
** Embedded length may be 4" for plug welded connection.

*** Increase handrail sleeve embedment to 8" for Expansion Joint openings greater than 2".

**** Expansion Joint opening shall match the clear opening in the deck joint but not greater than 3".

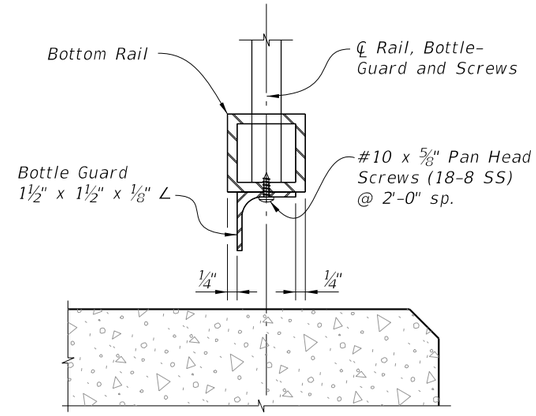


SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL



INTERMEDIATE OR BOTTOM RAIL - ALUMINUM SLEEVE DETAIL (Bottom Side Shown)

DETAIL "B" EXPANSION JOINT (FIELD SPLICE SIMILAR)

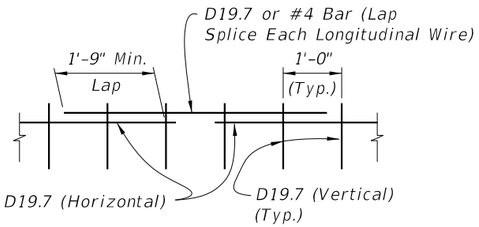


TYPICAL SECTION THROUGH BOTTOM RAIL
(Post Not Shown for Clarity)

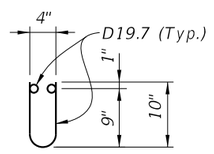
SCHEME 1 - BOTTLE GUARD DETAIL

ALTERNATE REINFORCING (WWR) DETAILS

NOTE: Place wire panels to minimize the end overhang. End Overhangs greater than 4¾" are not permitted.



SPLICE DETAIL
(Between WWR Sections)

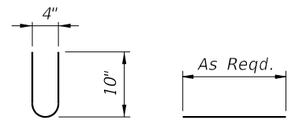


WWR
SECTION DETAIL

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

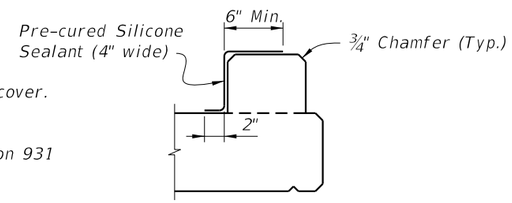
MARK	SIZE	LENGTH
P	4	2'-0"
S	4	As Reqd.



BAR 4P BAR 4S

CURB REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the curb on a retaining wall shall be the same as detailed for an 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 1'-8".
5. Deformed WWR meeting the requirements of Specifications Section 931 may be used in lieu of all Bars 4P and 4S.



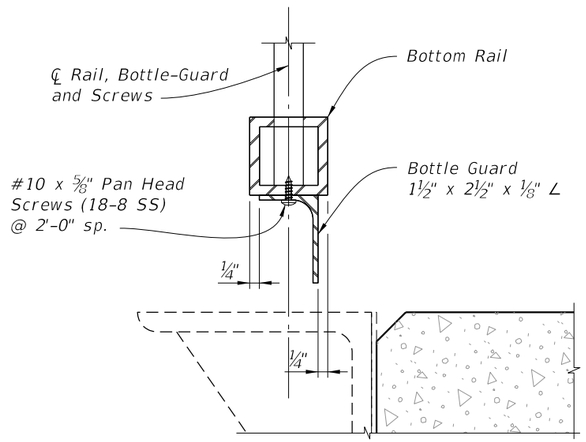
DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTE:

At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.

ESTIMATED CONCRETE CURB QUANTITIES (SCHEME 2)		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.0124
Reinforcing Steel	LB/LF	4.01

SCHEME 2 - CONCRETE CURB DETAILS



TYPICAL SECTION THROUGH BOTTOM RAIL
(Post Not Shown for Clarity)

SCHEME 3 - BOTTLE GUARD DETAIL

10/17/2024 11:10:09 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	BRIDGE PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX	SHEET
11/01/16					515-061	3 of 3

GENERAL NOTES

CONCRETE: Concrete for the Traffic Railing (Vertical Face Retrofit) shall be Class IV. Concrete for Curb Transition Blocks shall be Class II (Bridge Deck).

ADHESIVE-BONDED DOWELS: Adhesive Bonding Material Systems for Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 23,800 lbs. for Dowel Bars 6D on the inside face (traffic side) of the railing (1'-0" embedment) and 18,500 lbs for Dowel Bars 6D along the outside face of the traffic railing (5" min. embedment).

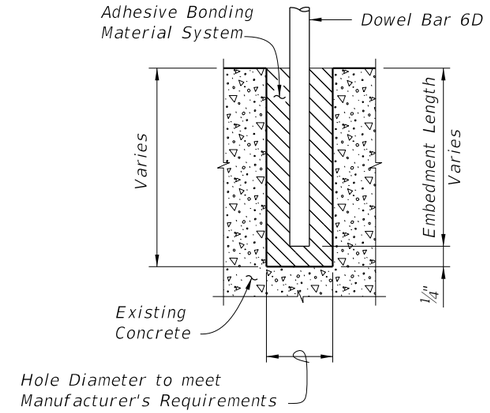
BRIDGES ON CURVED ALIGNMENTS: The details presented in this Standard are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

BARRIER DELINEATORS: Barrier Delineators shall meet Specification Section 993. Install Barrier Delineators on top of the Traffic Railing along the entire length of the bridge 2" from the face on the traffic side in accordance with Specification Section 705. Barrier Delineator color (white or yellow) shall match the color of the near edgeline.

GUARDRAIL: See Index 536-001 for guardrail component details, geometric layouts and associated notes not fully detailed herein.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise individual decals of letters and numbers.

PAYMENT: Concrete Traffic Railing-Bridge Retrofit - Post & Beam Railing (EA) includes all material and labor required to demolish a portion of the existing structure where required and to construct the concrete portion of the retrofit railing. Guardrail Approach Transition to rigid Barriers (EA) includes transition block, and necessary hardware to complete the Guardrail transitions shown.

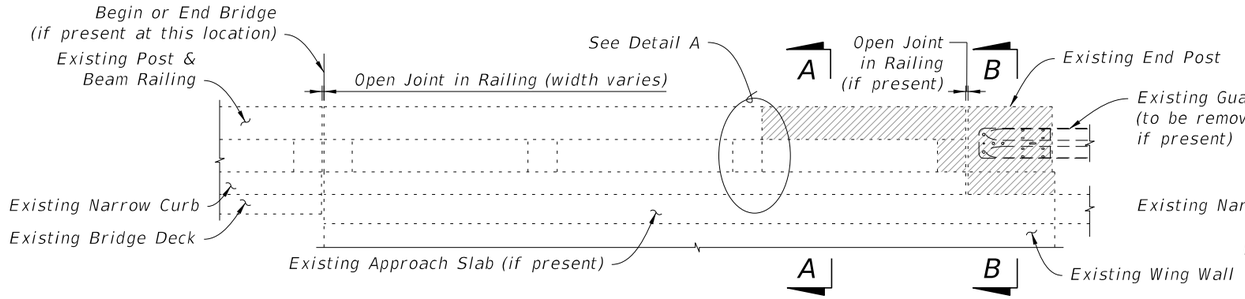


DOWEL DETAIL

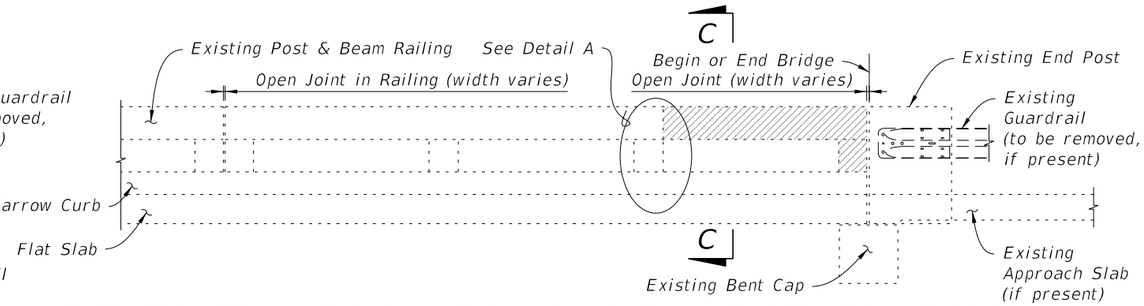
Note:
Shift dowel holes to clear if the existing reinforcement is encountered.

10/17/2024 11:10:16 AM

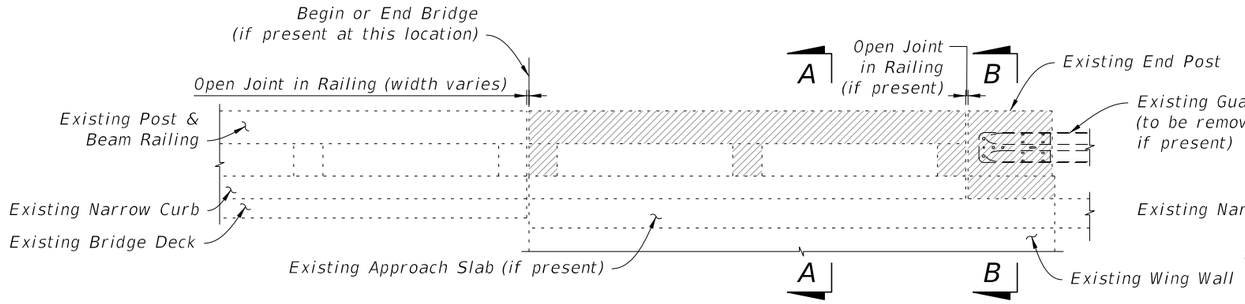
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)	INDEX	SHEET
11/01/19						521-404	1 of 8



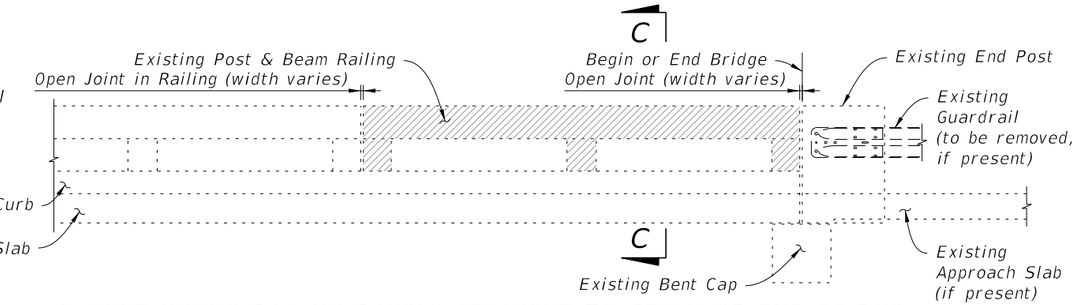
3 OR MORE CONTINUOUS RAILING PANELS ON WINGWALL ADJACENT TO END POST



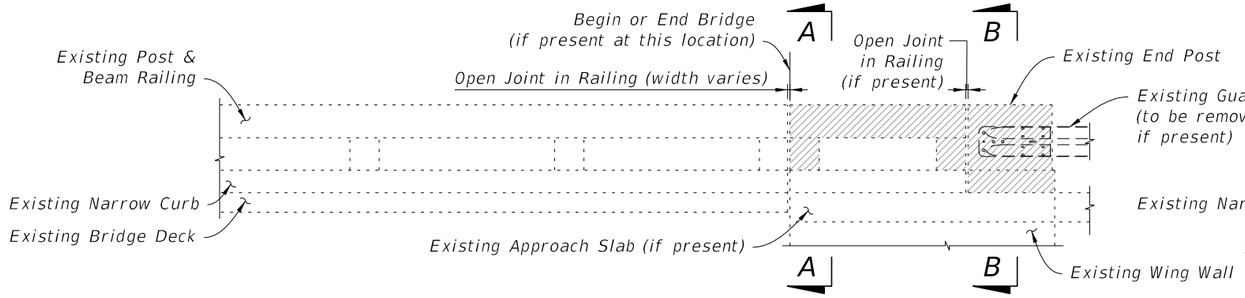
3 OR MORE CONTINUOUS RAILING PANELS ADJACENT TO BEGIN OR END BRIDGE



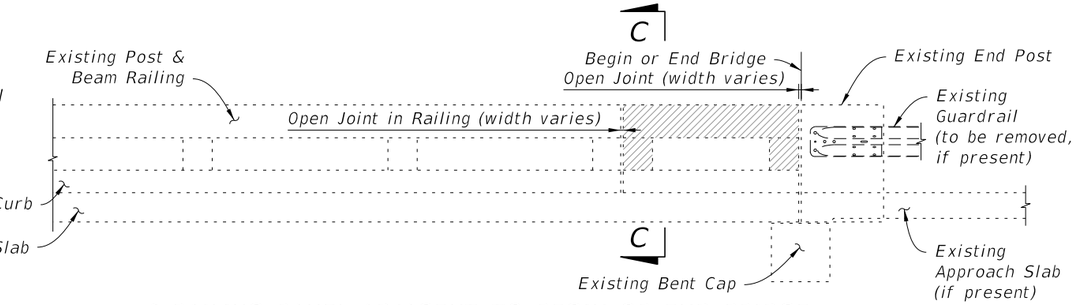
2 CONTINUOUS RAILING PANELS ON WINGWALL ADJACENT TO END POST



2 CONTINUOUS RAILING PANELS ADJACENT TO BEGIN OR END BRIDGE



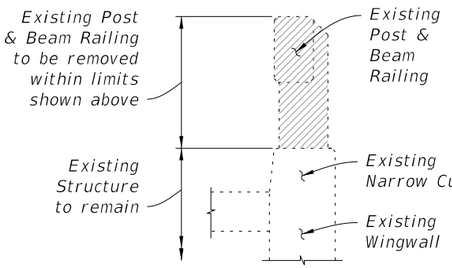
1 RAILING PANEL ON WINGWALL ADJACENT TO END POST



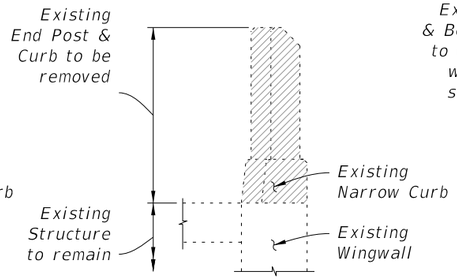
1 RAILING PANEL ADJACENT TO BEGIN OR END BRIDGE

SCHEME 1 - APPROACH ENDS OF BRIDGES WITH BEAM OR GIRDER SUPERSTRUCTURE

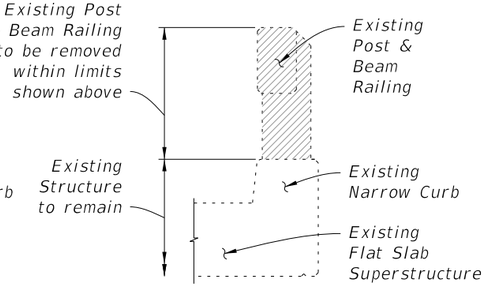
SCHEME 2 - APPROACH ENDS OF BRIDGES WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN) OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)



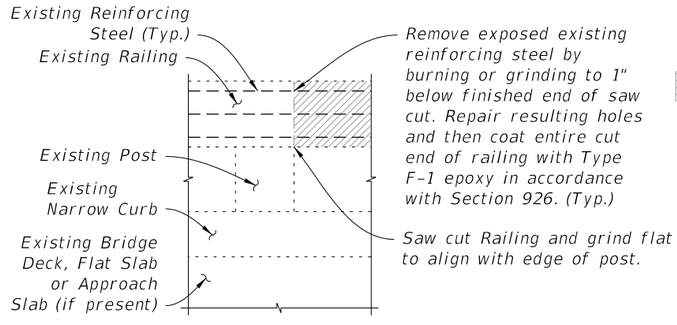
SECTION A-A



SECTION B-B



SECTION C-C



DETAIL A

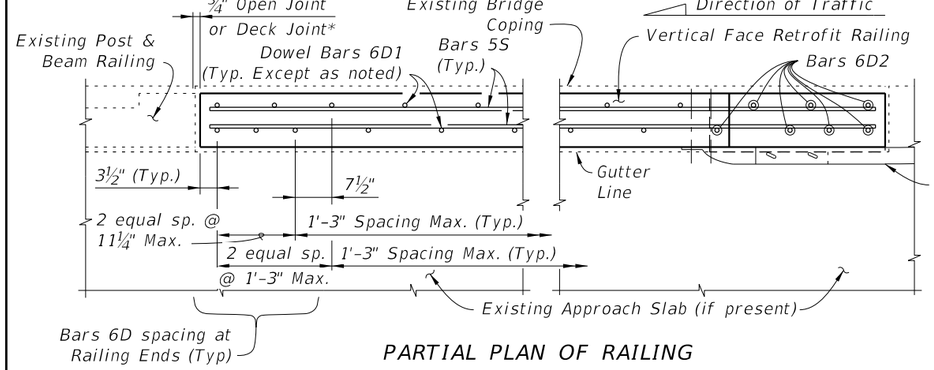
LEGEND

Limits of Existing Structure to be removed

LIMITS OF REMOVAL OF EXISTING STRUCTURE - POST & BEAM RAILING WITH NARROW CURB

10/17/2024 11:10:23 AM

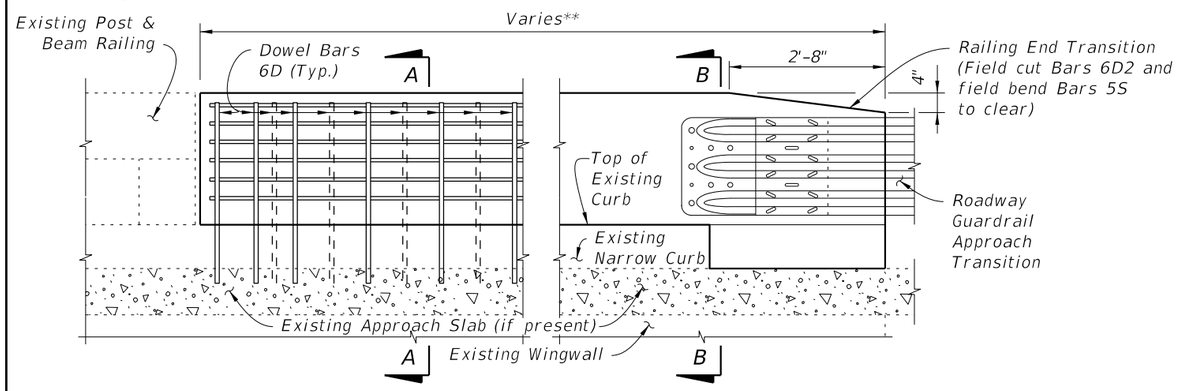
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)	INDEX	SHEET
07/01/13						521-404	2 of 8



PARTIAL PLAN OF RAILING

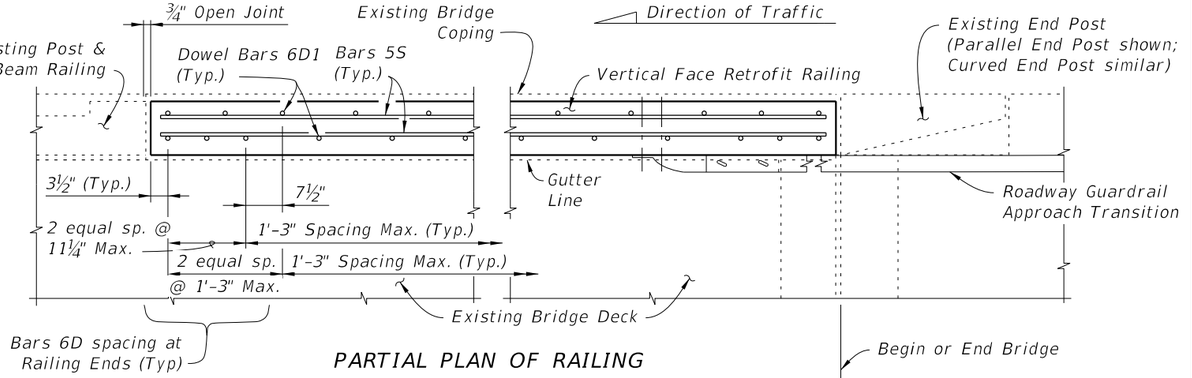
* Match width of existing Deck Joint at Begin or End Bridge (if present).

** See Limits of Removal of Existing Structure Sheet 2 of 8.

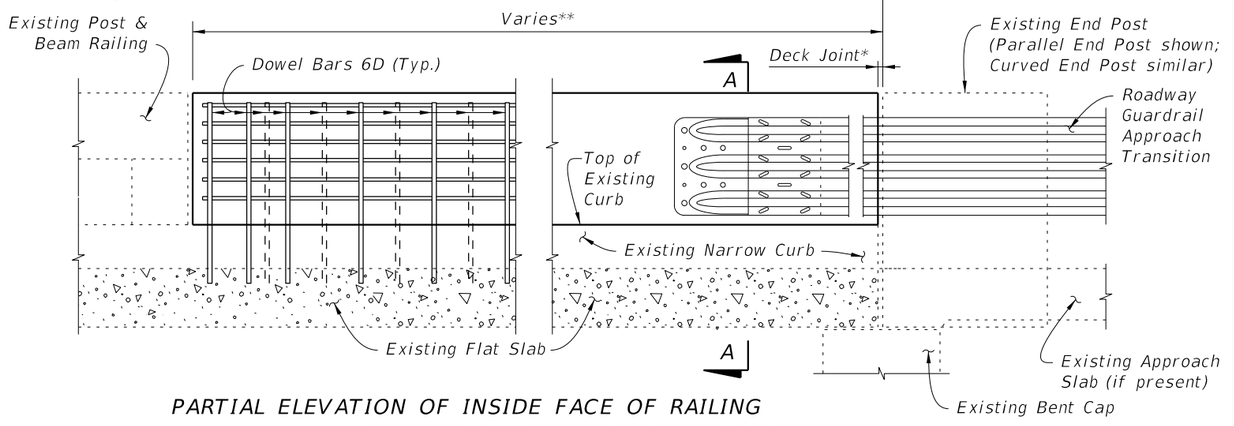


PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 1 - APPROACH ENDS OF BRIDGES WITH BEAM OR GIRDER SUPERSTRUCTURE

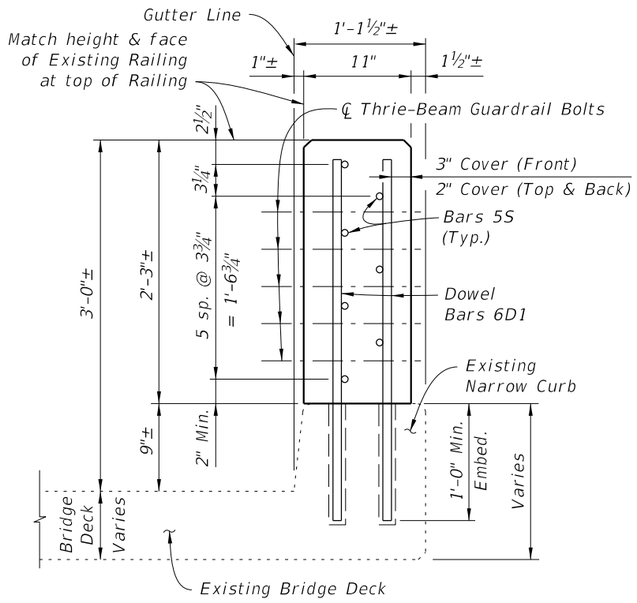


PARTIAL PLAN OF RAILING

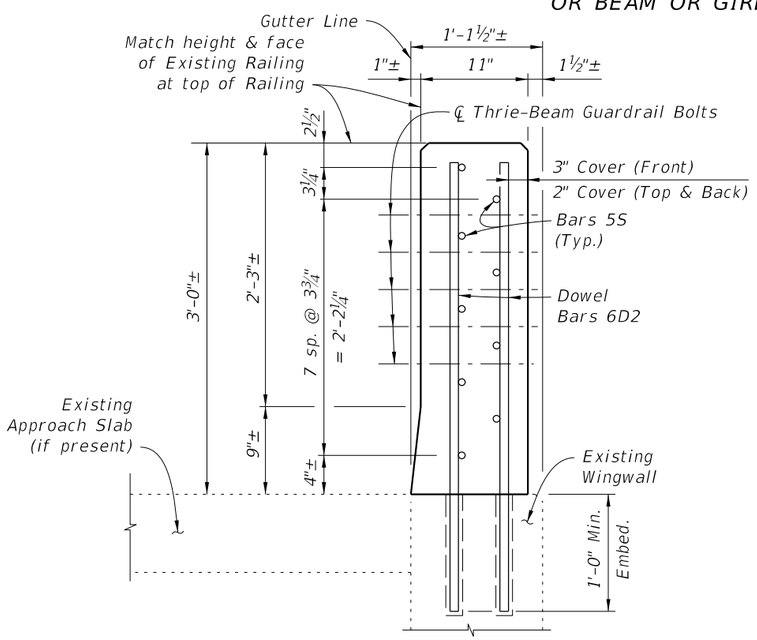


PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 2 - APPROACH ENDS OF BRIDGES WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN) OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)



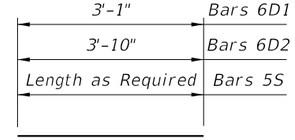
SECTION A-A



SECTION B-B

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/FT	0.076
Reinforcing Steel	LB/FT	14.71

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM		
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
D1	6	3'-1"
D2	6	3'-10"
S	5	AS REQD.



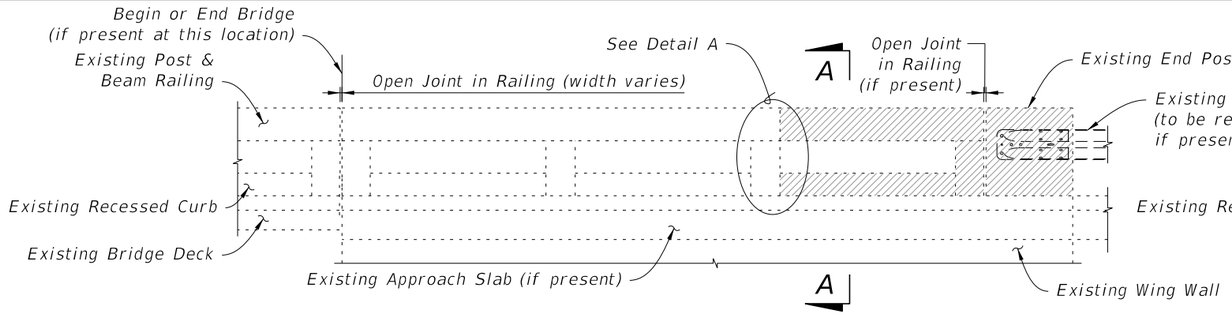
BARS 6D & 5S

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a retaining wall shall be the same as detailed for a bridge deck.
3. All reinforcing steel in the Vertical Face Retrofit Railing shall have a 2" minimum cover.

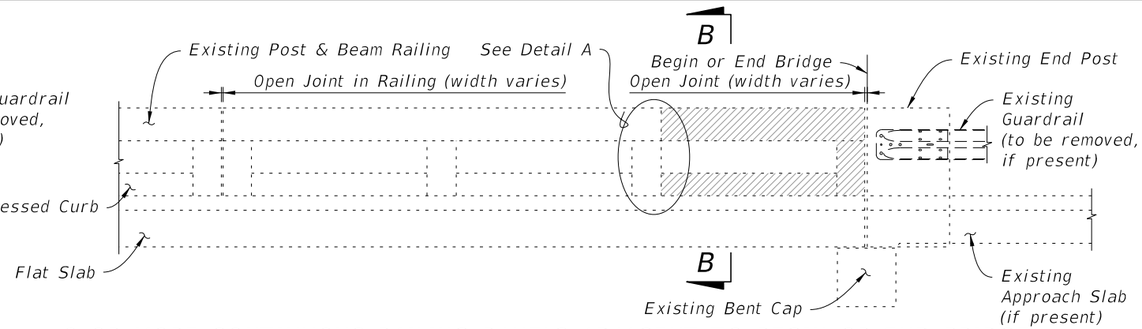
VERTICAL FACE RETROFIT RAILING DETAILS - POST & BEAM RAILING WITH NARROW CURB

10/17/2024 11:10:29 AM

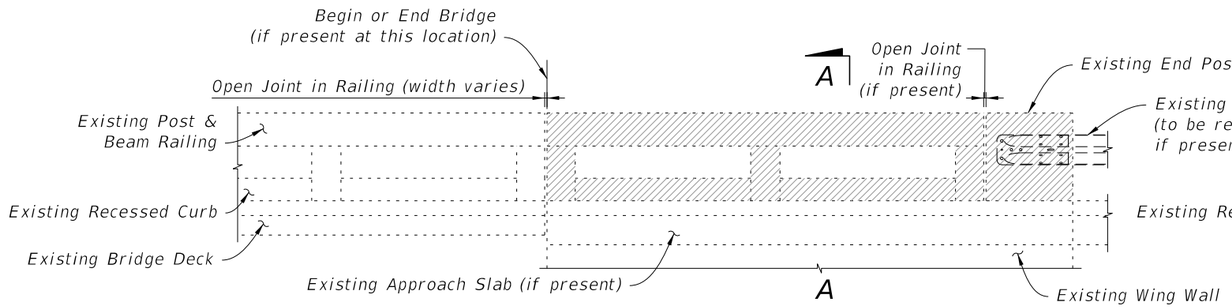
LAST REVISION	REVISION	DESCRIPTION:				
07/01/13			FDOT	FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)	INDEX 521-404 / SHEET 3 of 8



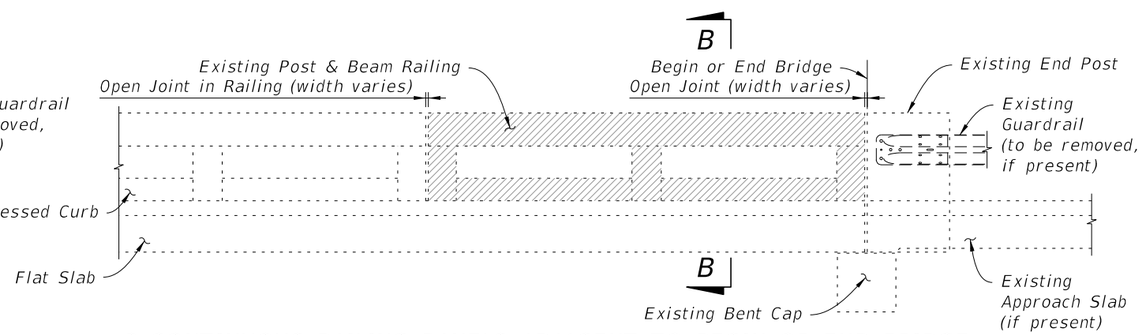
3 OR MORE CONTINUOUS RAILING PANELS ON WINGWALL ADJACENT TO END POST



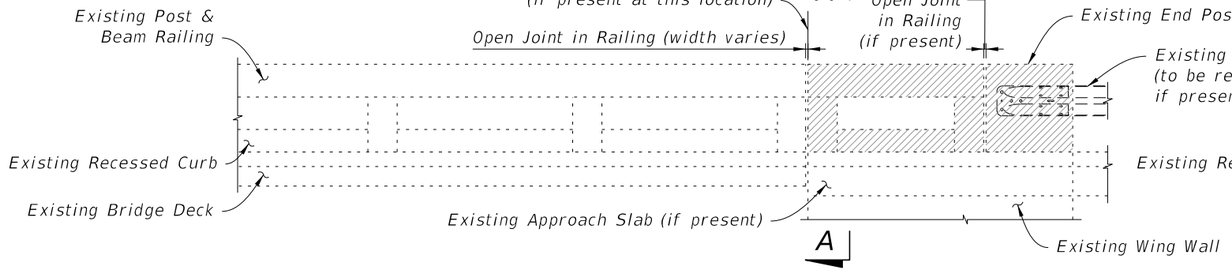
3 OR MORE CONTINUOUS RAILING PANELS ADJACENT TO BEGIN OR END BRIDGE



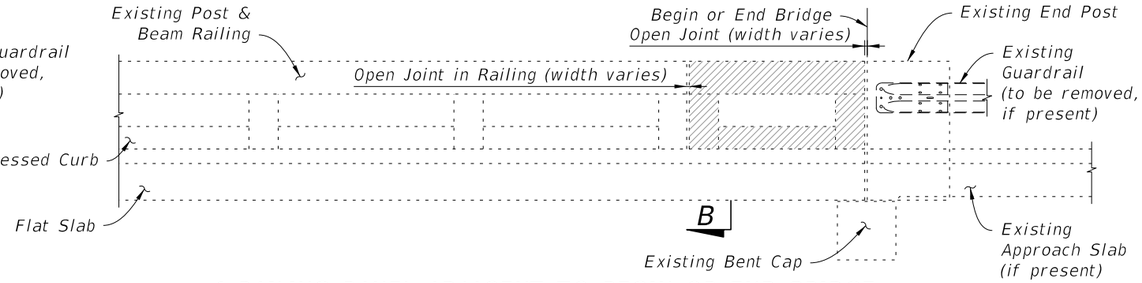
2 CONTINUOUS RAILING PANELS ON WINGWALL ADJACENT TO END POST



2 CONTINUOUS RAILING PANELS ADJACENT TO BEGIN OR END BRIDGE



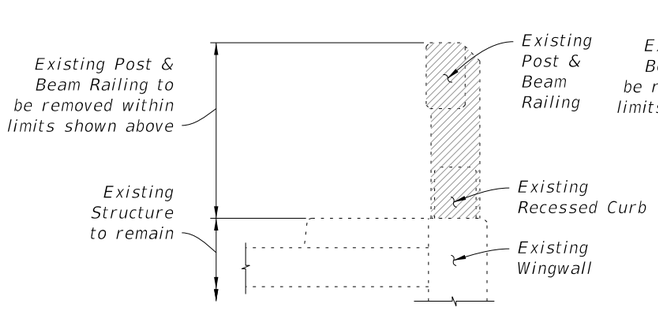
1 RAILING PANEL ON WINGWALL ADJACENT TO END POST



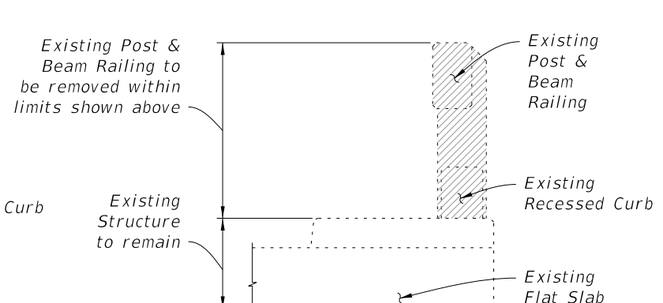
1 RAILING PANEL ADJACENT TO BEGIN OR END BRIDGE

SCHEME 3 - APPROACH ENDS OF BRIDGES WITH BEAM OR GIRDER SUPERSTRUCTURE

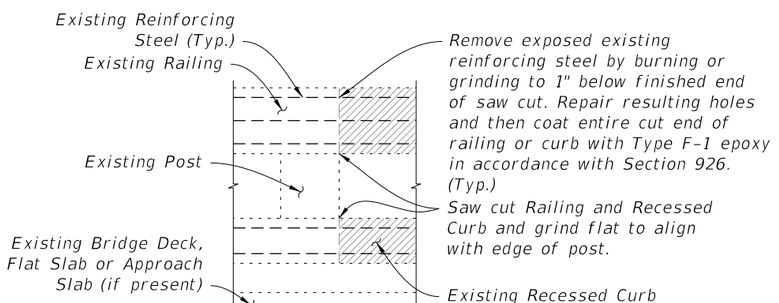
SCHEME 4 - APPROACH ENDS OF BRIDGES WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN) OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)



SECTION A-A



SECTION B-B



DETAIL A

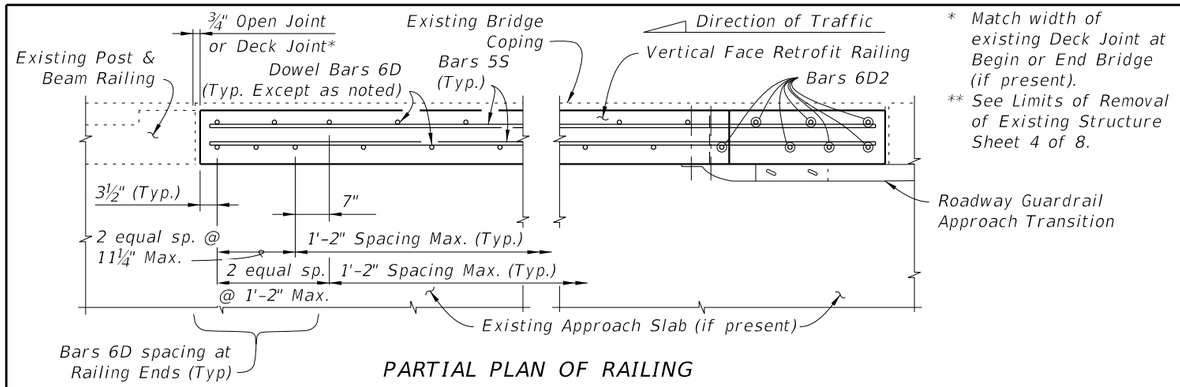
LEGEND

Limits of Existing Structure to be removed

LIMITS OF REMOVAL OF EXISTING STRUCTURE - POST & BEAM RAILING WITH RECESSED CURB

10/17/2024 11:10:36 AM

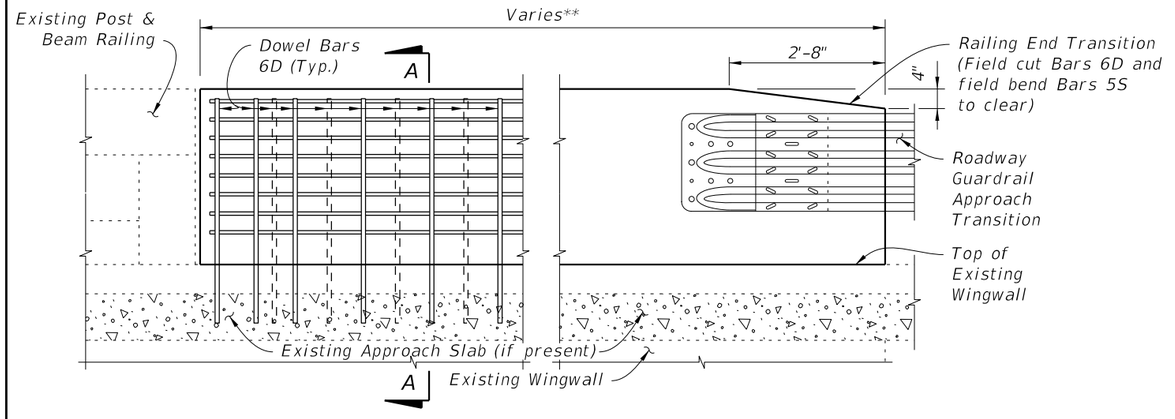
LAST REVISION	REVISION	DESCRIPTION:				
07/01/13			FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)	INDEX 521-404	SHEET 4 of 8



PARTIAL PLAN OF RAILING

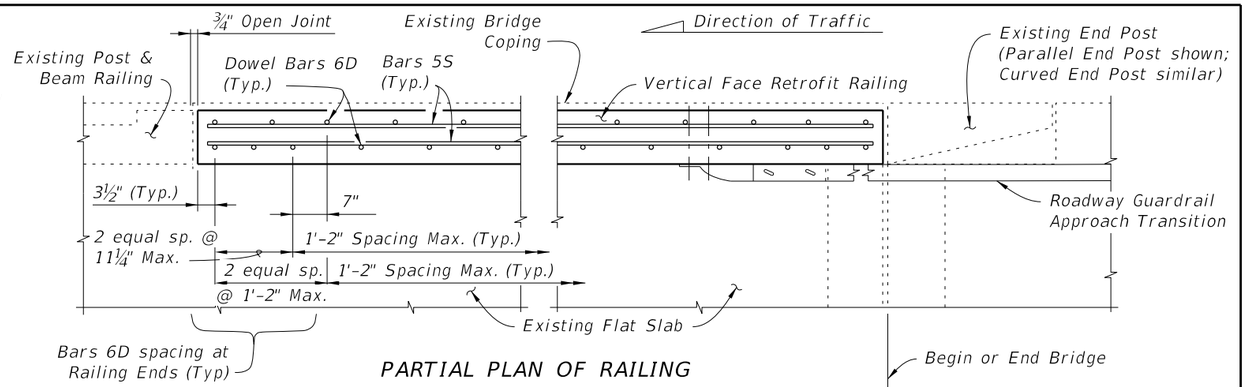
* Match width of existing Deck Joint at Begin or End Bridge (if present).

** See Limits of Removal of Existing Structure Sheet 4 of 8.

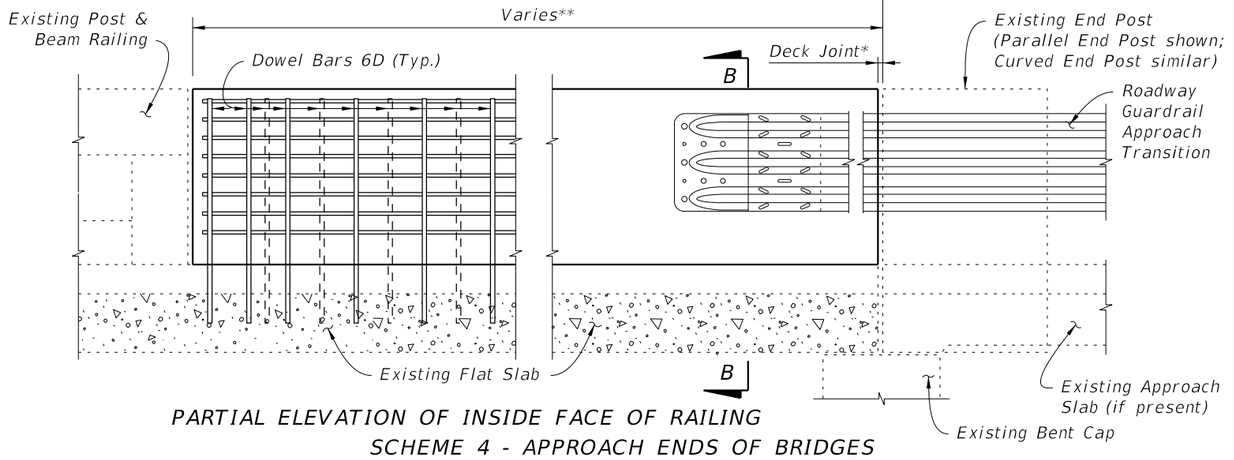


PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 3 - APPROACH ENDS OF BRIDGES WITH BEAM OR GIRDER SUPERSTRUCTURE

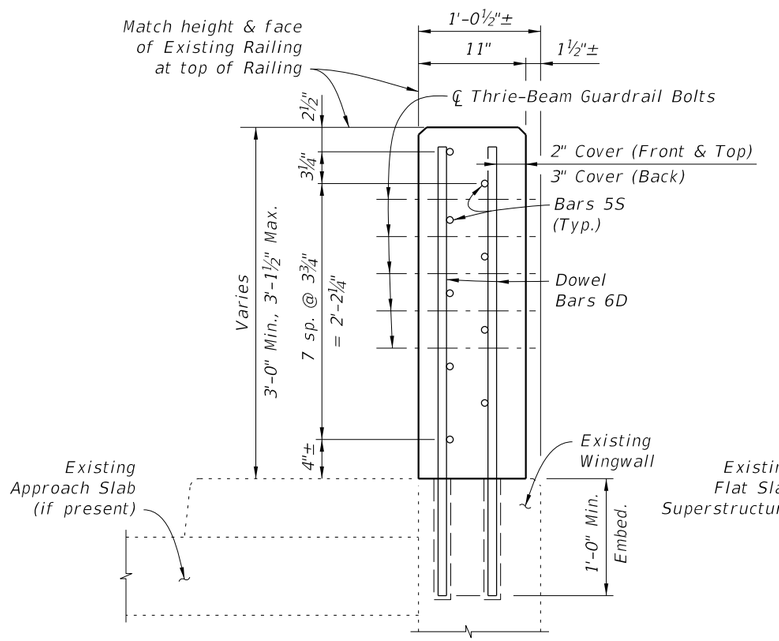


PARTIAL PLAN OF RAILING

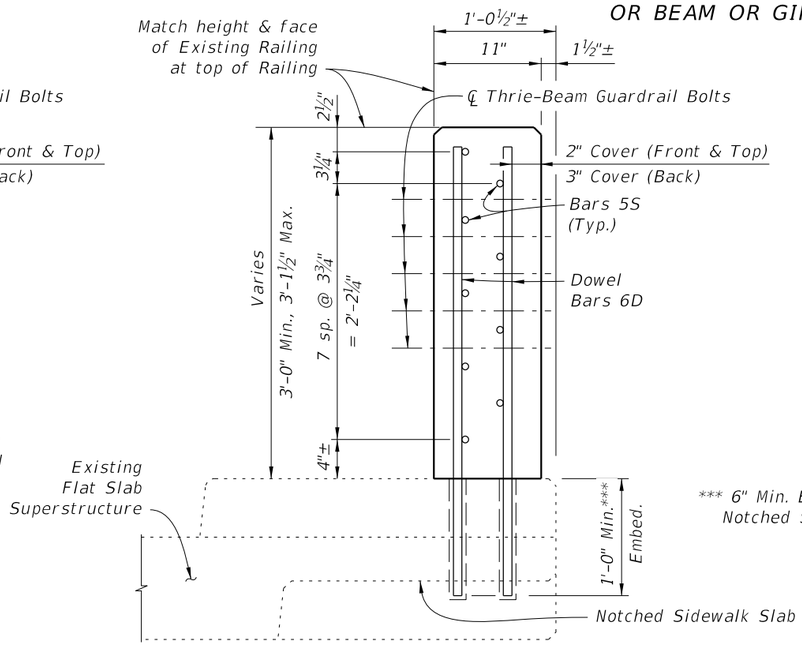


PARTIAL ELEVATION OF INSIDE FACE OF RAILING

SCHEME 4 - APPROACH ENDS OF BRIDGES WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN) OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)



SECTION A-A



SECTION B-B

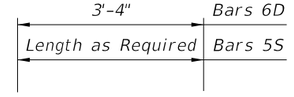
*** 6" Min. Embed. with Notched Sidewalk Slab.

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/FT	0.102
Reinforcing Steel	LB/FT	17.97

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
D	6	3'-4"
S	5	AS REQD.



BARS 6D & 5S

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a retaining wall shall be the same as detailed for a bridge deck.
3. All reinforcing steel in the Vertical Face Retrofit Railing shall have a 2" minimum cover.

VERTICAL FACE RETROFIT RAILING DETAILS - POST & BEAM RAILING WITH RECESSED CURB

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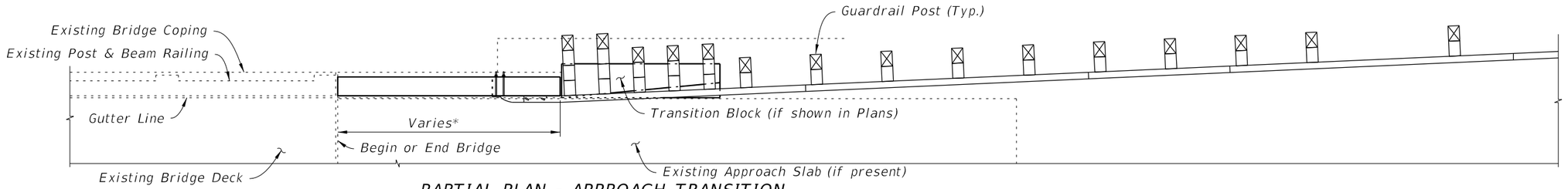
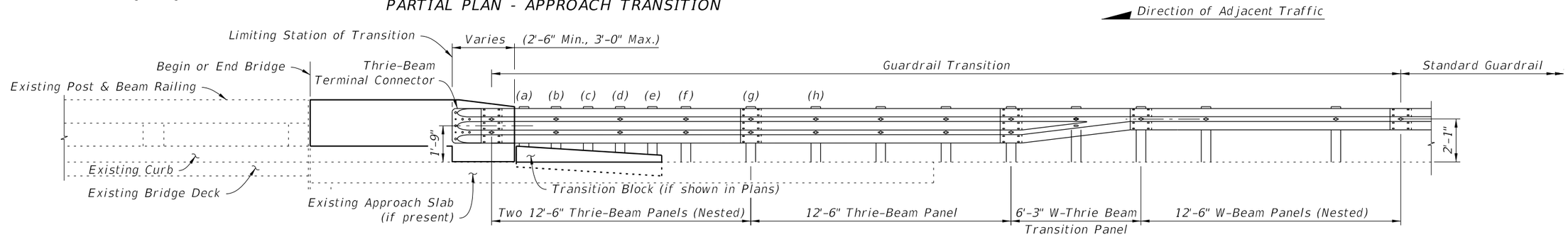


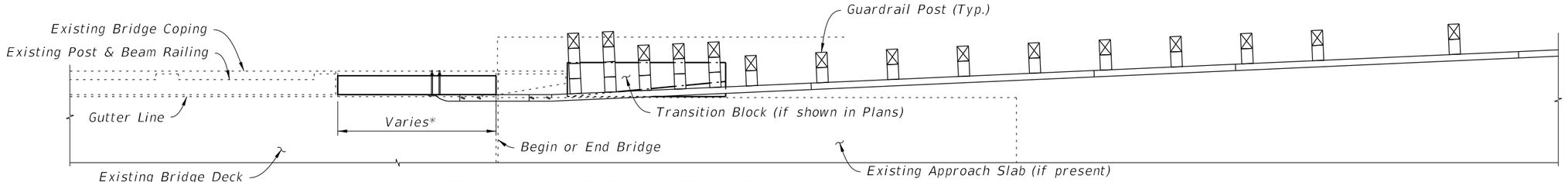
PARTIAL PLAN - APPROACH TRANSITION



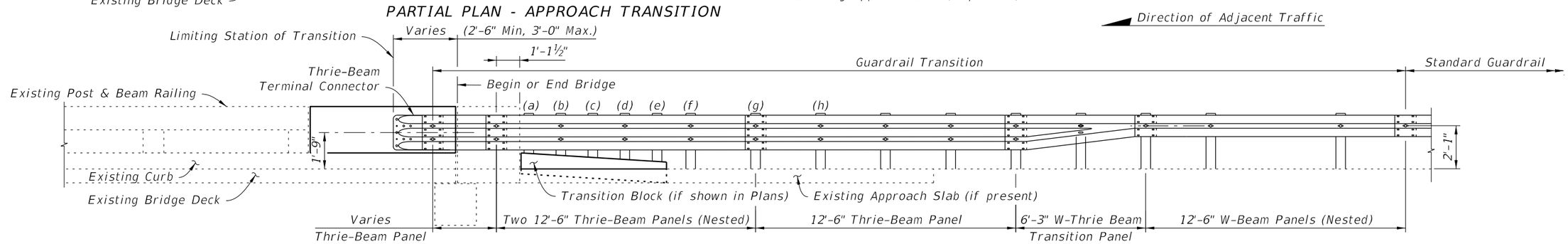
PARTIAL ELEVATION - APPROACH TRANSITION

SCHEMES 1 & 3

(Narrow Curb Shown, Recessed Curb Similar)



PARTIAL PLAN - APPROACH TRANSITION



PARTIAL ELEVATION - APPROACH TRANSITION

SCHEMES 2 & 4

(Narrow Curb Shown, Recessed Curb Similar, Flat Slab Superstructure Shown, Beam or Girder Superstructure Similar)

* See Limits of Removal of Existing Structure, Sheets 2 of 8 and 4 of 8.

GUARDRAIL TRANSITION DETAILS - SHEET 1 OF 2

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)	INDEX	SHEET
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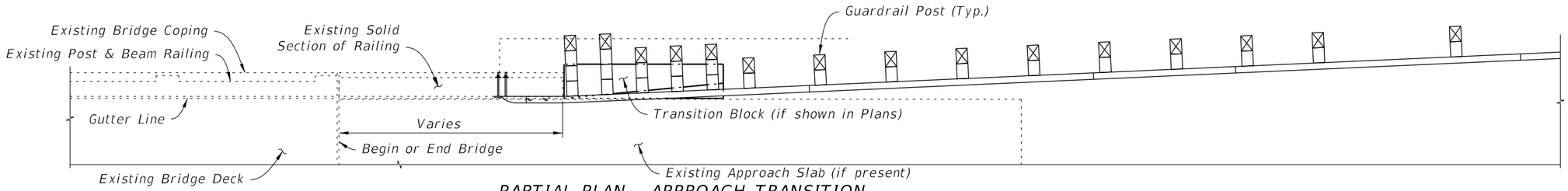
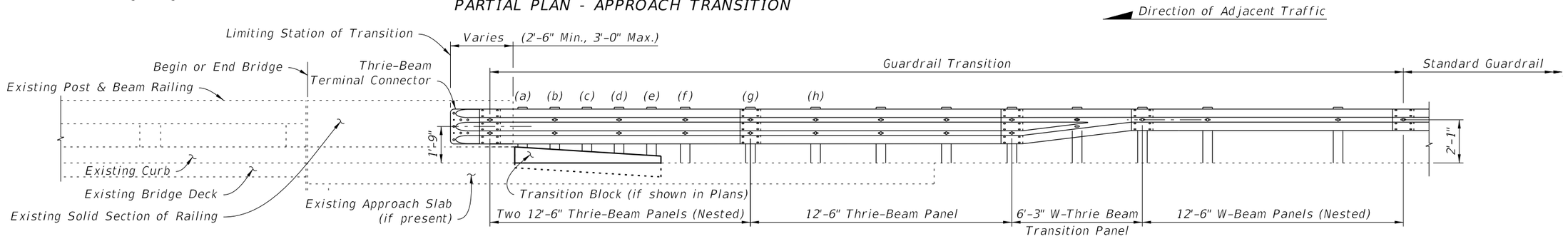


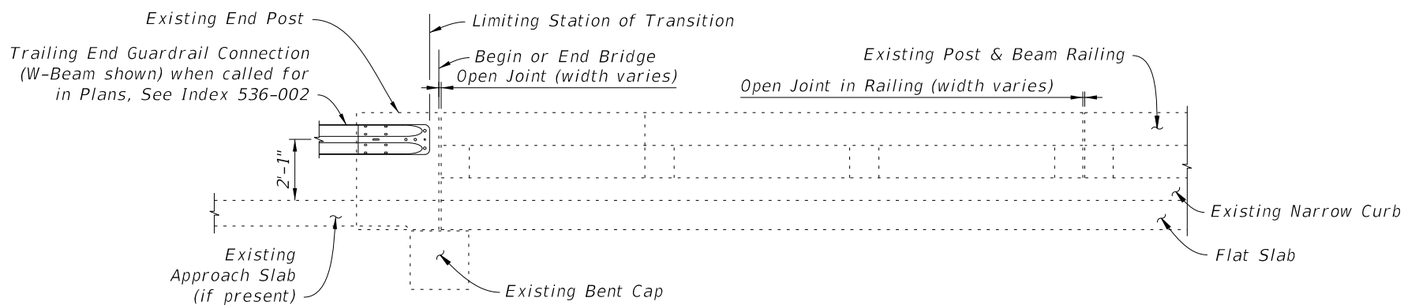
PARTIAL PLAN - APPROACH TRANSITION



PARTIAL ELEVATION - APPROACH TRANSITION

SCHEME 5

(Narrow Curb shown; Recessed Curb similar)



PARTIAL ELEVATION - TRAILING END TRANSITION

(Narrow Curb Scheme 2 shown; All other Schemes similar)

SCHEME 6

LAST REVISION	REVISION	DESCRIPTION:				
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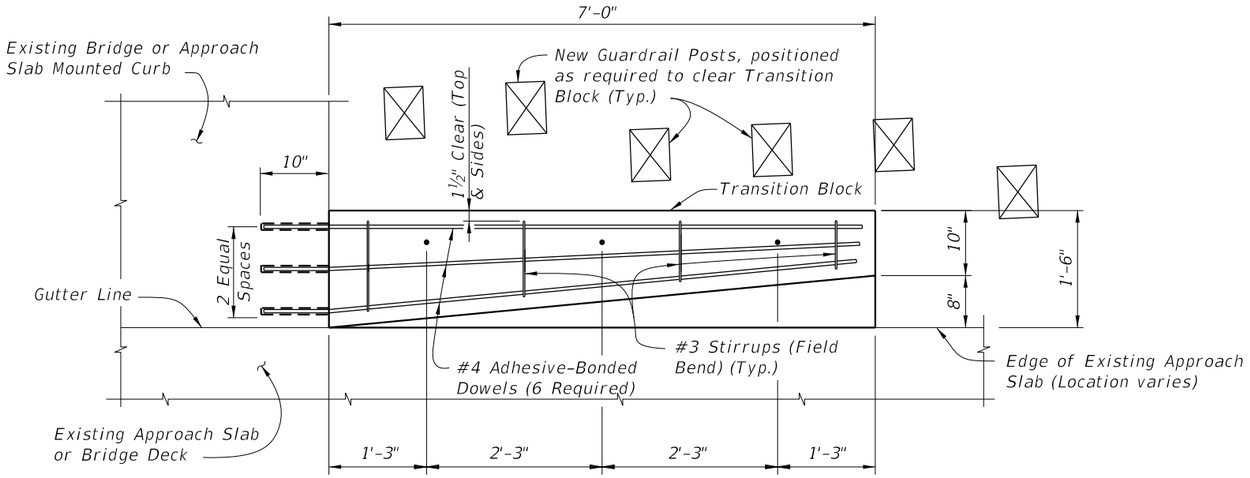
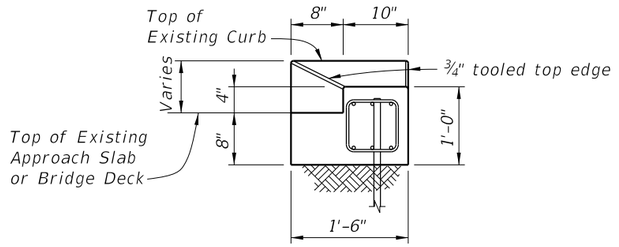
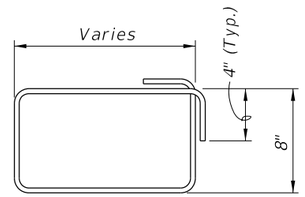


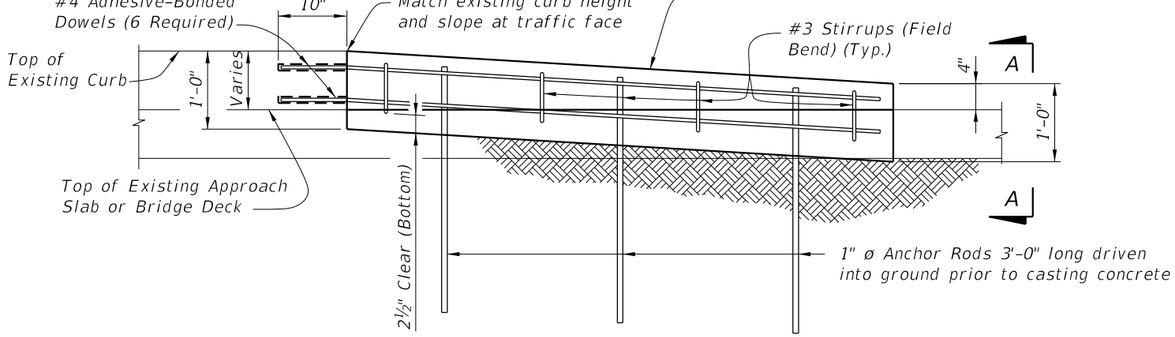
PLAN VIEW OF TRANSITION BLOCK
(GUARDRAIL NOT SHOWN FOR CLARITY)



END VIEW A-A



#3 STIRRUP (FIELD BEND)



ELEVATION OF TRANSITION BLOCK
(GUARDRAIL AND POSTS NOT
SHOWN FOR CLARITY)

ESTIMATED QUANTITIES PER TRANSITION BLOCK		
ITEM	UNIT	QUANTITY
Concrete Class II (Bridge Deck)	CY	0.4
Reinforcing Steel	LB	61

NOTES:

ANCHOR RODS: Steel Anchor Rods shall be ASTM A36, ASTM A709 Grade 36 or ASTM A615 Grade 60 hot-dip galvanized in accordance with Specification Section 962.

ADHESIVE-BONDED DOWELS: Adhesive Bonded Dowels are shown installed in an existing curb or sidewalk integrally reinforced with Approach Slab, Wingwall or Bridge Deck. For installations in existing detached curbs or sidewalks, install dowels in available sound concrete.

Shift bars (as needed) to install six dowels into existing bridge or approach slab mounted curb.

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GENERAL NOTES

CONCRETE: Concrete for the Traffic Railing (Vertical Face Retrofit) and replacement curb sections shall be Class IV. Concrete for Curb Transition Blocks shall be Class II (Bridge Deck).

REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60, except Expansion Dowel Bar B which shall be ASTM A36 smooth round bar hot-dip galvanized in accordance with the Specifications.

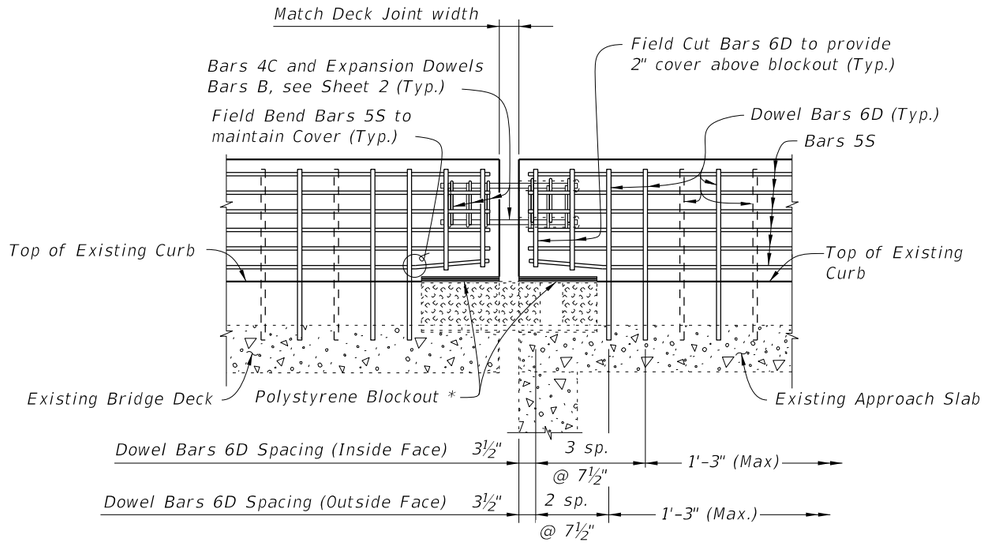
EXPANSION SLEEVE ASSEMBLY: Pipe sleeve shall be ASTM D2241 PVC pipe, SDR13.5. End Cap shall be ASTM D2466 PVC socket fitting, Schedule 40. End of Sleeve assembly at railing open joint shall be sealed with silicone to prevent concrete intrusion during railing casting. A compressible expanded polystyrene plug is required in the opposite end of the assembly for correct dowel positioning during railing casting. Correct dowel positioning is required in order to provide for thermal movement of the deck.

ADHESIVE-BONDED ANCHORS AND DOWELS: Adhesive Bonding Material Systems for Anchors and Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 23,800 lbs. for Dowel Bars 6D on the inside face (traffic side) of the railing (1'-0" embedment) and 18,500 lbs for Dowel Bars 6D along the outside face of the traffic railing (5" min. embedment).

BRIDGES ON CURVED ALIGNMENTS: The details presented in these Standards are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

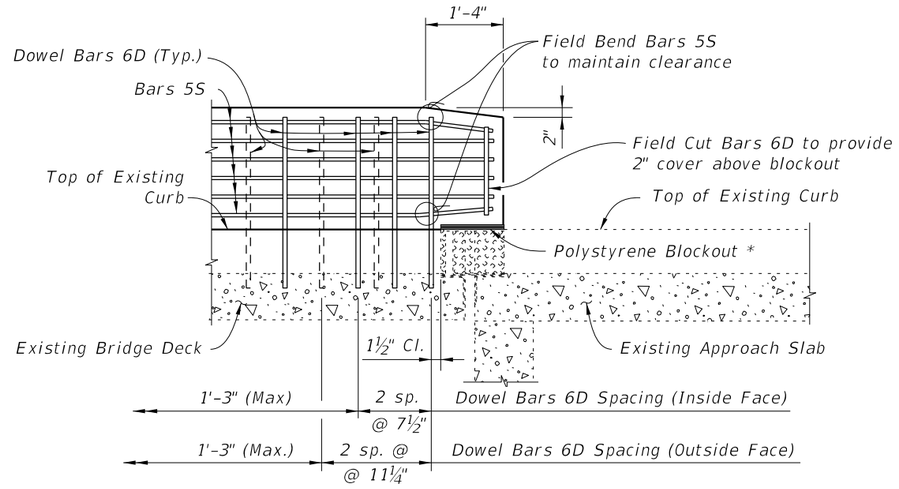
BARRIER DELINEATORS: Barrier Delineators shall meet Specification Section 993. Install barrier delineators on top of the Traffic Railing along the entire length of bridge 2" from the face on the traffic side in accordance with Specification Section 705. Barrier Delineator color (white or yellow) shall match the color of the near edgeline.

PAYMENT: Concrete Traffic Railing – Bridge Retrofit – Post & Beam Railing (each) includes all materials and labor required to demolish a portion of the existing structure where required and to construct the concrete portion of the retrofit railings. Guardrail Approach Transition to Rigid Barriers (EA) includes all transition blocks, and necessary hardware to complete the Guardrail transitions shown.



PARTIAL ELEVATION OF RAILING SHOWING FINGER/SLIDING PLATE JOINT AT BEGIN OR END BRIDGE - SCHEMES 2 THRU 5

* Place 1" thick polystyrene blockout over limits of bridge deck expansion joint full width to the end of the Traffic Railing to allow for thermal movement. Seal Forms to prevent mortar leakage into the expansion joint.



PARTIAL ELEVATION OF RAILING SHOWING FINGER/SLIDING PLATE JOINT AT BEGIN OR END BRIDGE - SCHEME 1 (Guardrail Transition not shown for clarity)

ESTIMATED TRAFFIC RAILING QUANTITIES			
ITEM	UNIT	QUANTITY	
		9" Curb	Increment
Concrete	CY/FT	0.064	0.003 per in. height
Reinforcing Steel	LB/FT	13.27	0.10 per in. length

(Quantities are based on a 9" curb, no curb cross slope and 1'-0" embedment length of Bars 6D. If the curb height or embedment length differs from that shown, increase or decrease quantity by the given per inch increment.)

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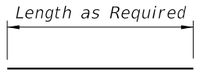
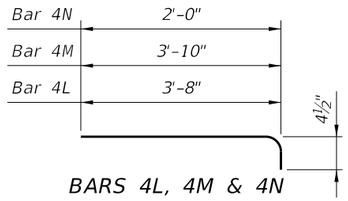
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM

BILL OF REINFORCING STEEL

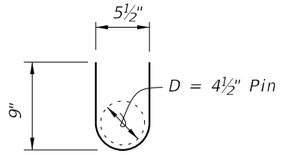
MARK	SIZE	LENGTH	NOTE NOS.
A	4	AS REQD.	3
B	1" Ø	2'-0"	2 & 5
C	4	2'-0"	1, 2 & 3
D	6	AS REQD.	2 & 3
L	4	4'-1"	1 & 3
M	4	4'-3"	1 & 3
N	4	2'-5"	1 & 3
S	5	AS REQD.	2, 3 & 4



BARS 4A, B, 6D & 5S

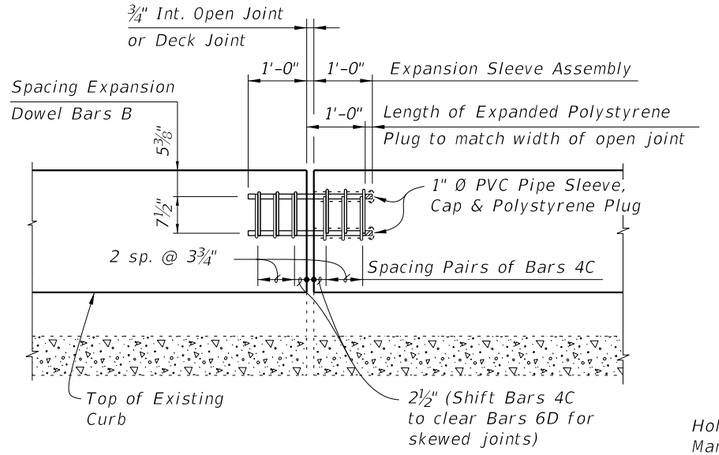


BARS 4L, 4M & 4N

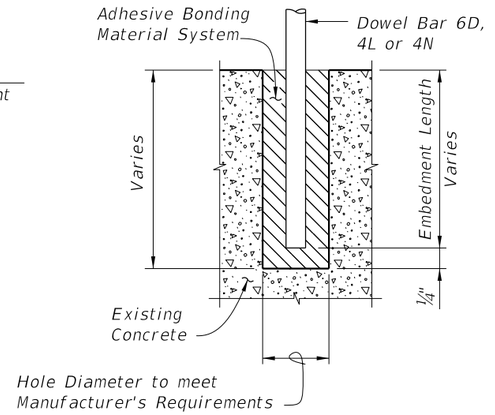


BARS 4C
(12 required per open joint)

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a retaining wall shall be the same as detailed for a bridge deck.
3. All reinforcing steel in the Vertical Face Retrofit Railing shall have a 2" minimum cover.
4. Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-0".
5. Expansion Dowel Bars B shall be ASTM A36 smooth round bar and hot-dip galvanized in accordance with the Specifications.



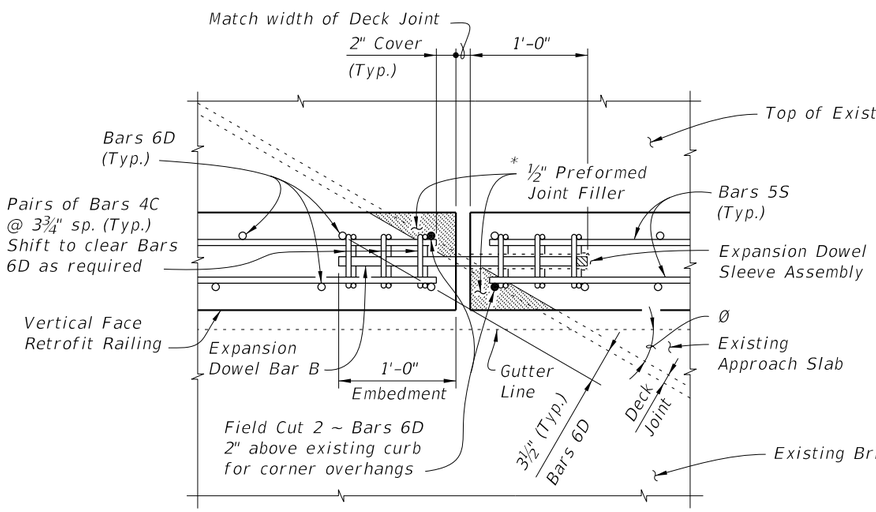
OPEN JOINT EXPANSION DOWEL DETAIL
(Railing Reinforcing Not Shown For Clarity)



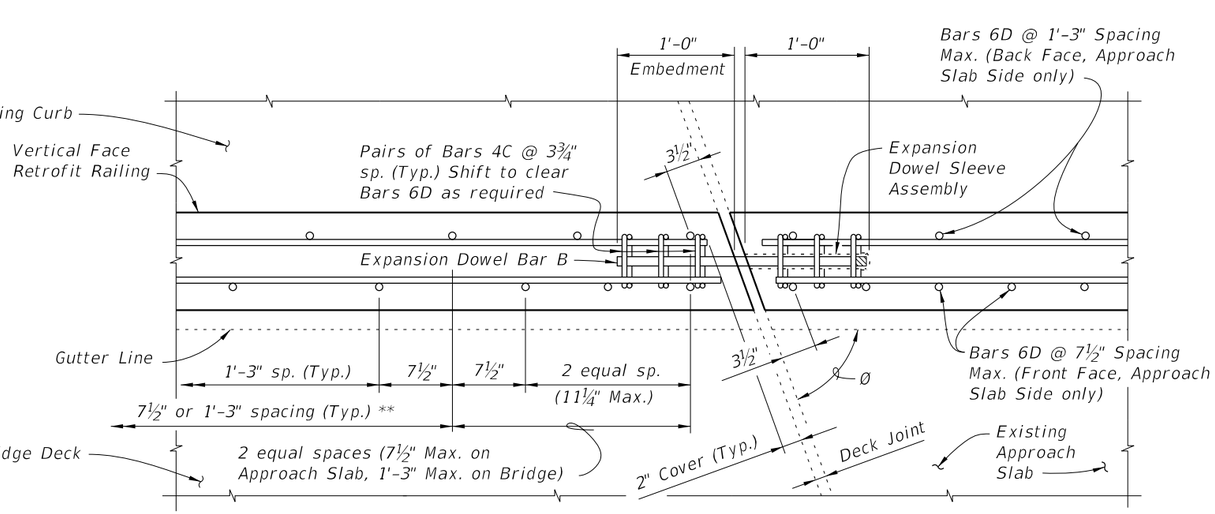
DOWEL DETAIL

Dowel Installation Note:
Shift dowel holes to clear if the existing reinforcement is encountered.

* ½" Preformed Joint Filler at top of Existing Curb shall extend beyond the joint material (Silicone, poured rubber, armored neoprene seal or sliding plates) as shown to prevent concrete intrusion during railing casting and shall be placed so as not to restrict in any way normal joint movement.



PARTIAL PLAN OF RAILING (SKEW ANGLE Ø LESS THAN 70°)



PARTIAL PLAN OF RAILING (SKEW ANGLE Ø = 70° OR GREATER)

SKEW DETAIL

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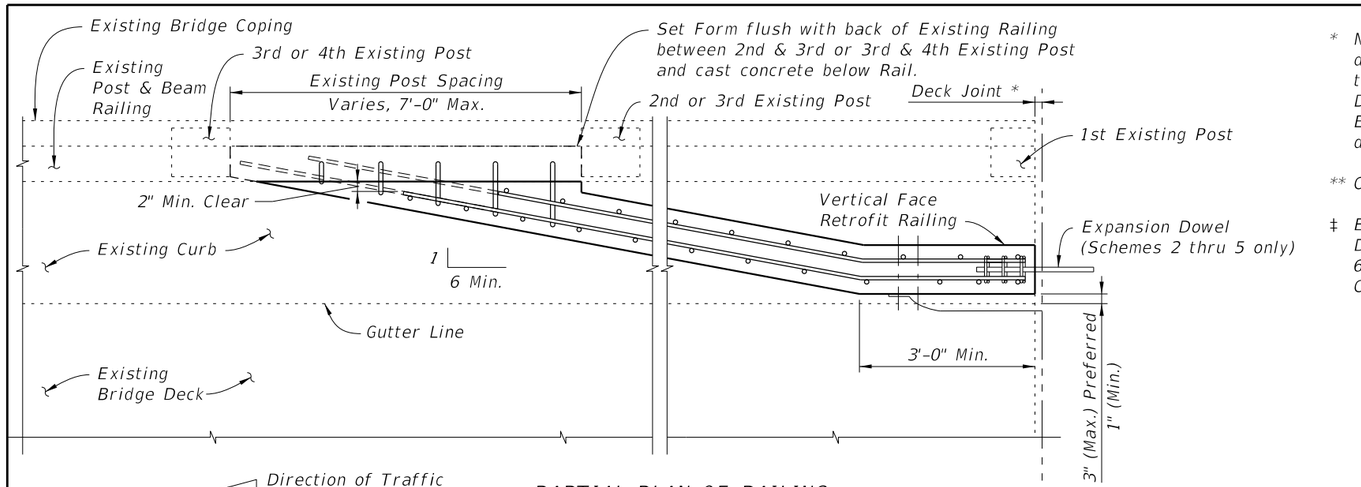
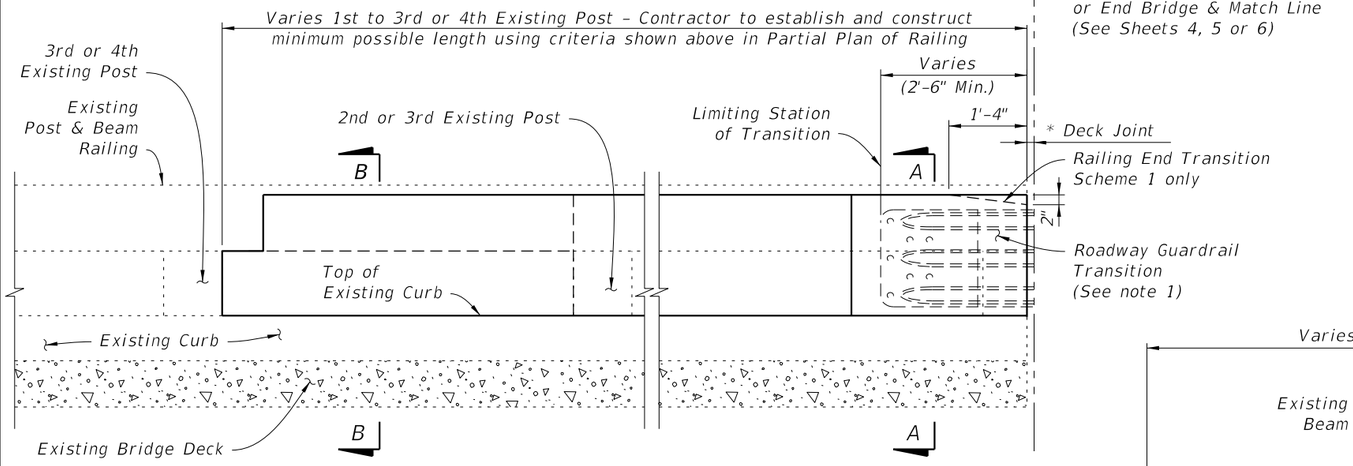


PARTIAL PLAN OF RAILING



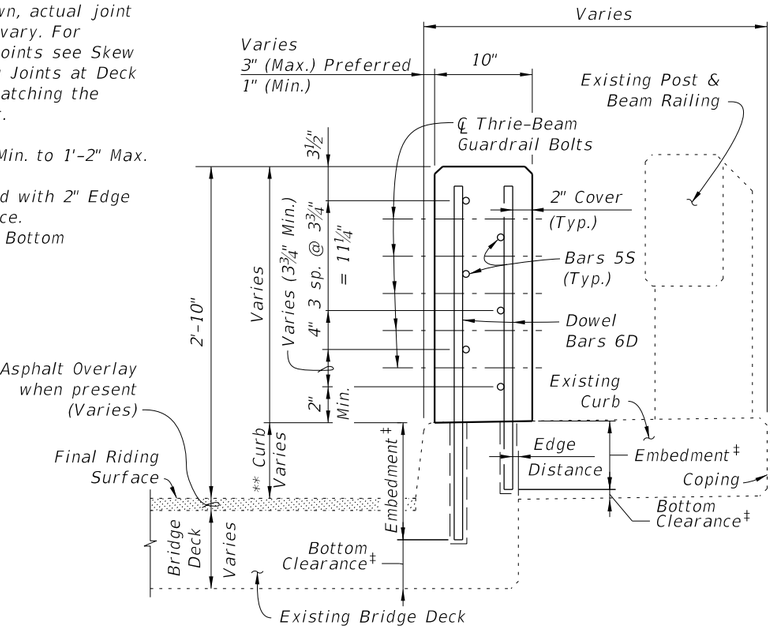
PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies & Bars 4C not shown for clarity)

Front Face of Backwall, Begin or End Bridge & Match Line (See Sheets 4, 5 or 6)

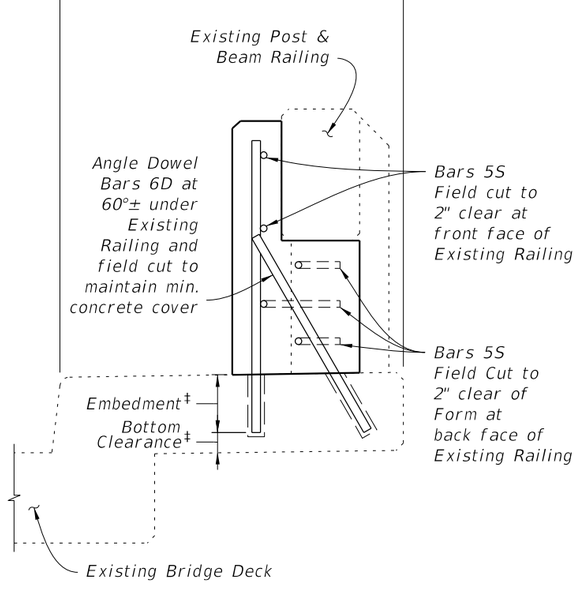
* Non skewed deck joint shown, actual joint dimensions and orientation vary. For treatment at skewed deck joints see Skew Detail. Provide open Railing Joints at Deck Expansion Joint locations matching the dimension of the Deck Joint.

** Curb heights vary from 5" Min. to 1'-2" Max.

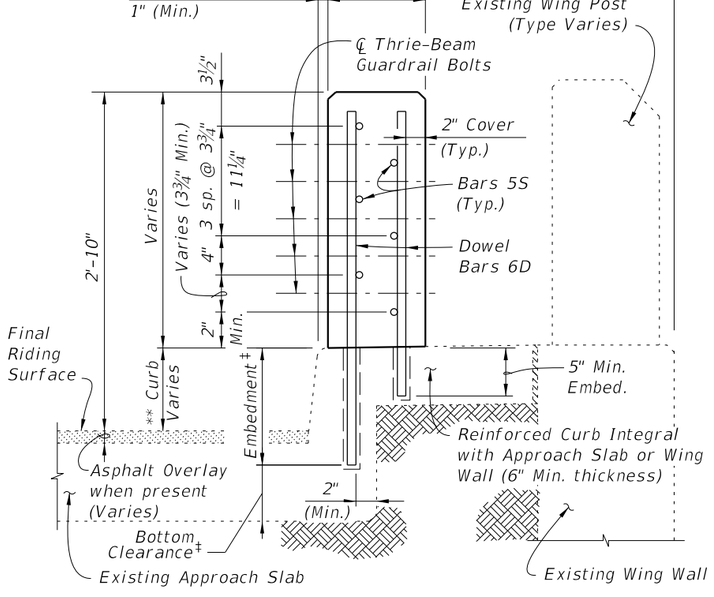
‡ Embedment – 1'-0" preferred with 2" Edge Distance or Bottom Clearance. 6" Min. if Edge Distance or Bottom Clearance is less than 2".



SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK



SECTION B-B



SECTION C-C
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEMES 2 AND 3 ONLY)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

NOTES:

1. On approach end provide a Roadway Guardrail Transition, Index 536-002 (as shown) or other site specific treatment. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is on the bridge, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is along the Wing Wall, see Schemes 2, 3, 4 or 5, Sheets 4, 5 and 6. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing. For treatment of trailing end see Roadway Plans.

2. Field cut Bars 5S and Dowel Bars 6D to maintain clearance within Vertical Face Retrofit Railing.

3. Where existing structure has been removed and not encased in new concrete; match adjoining areas and finish flat by grouting or grinding as required. Exposed existing reinforcing steel not encased in new concrete shall be burned off 1" below existing concrete and grouted over.

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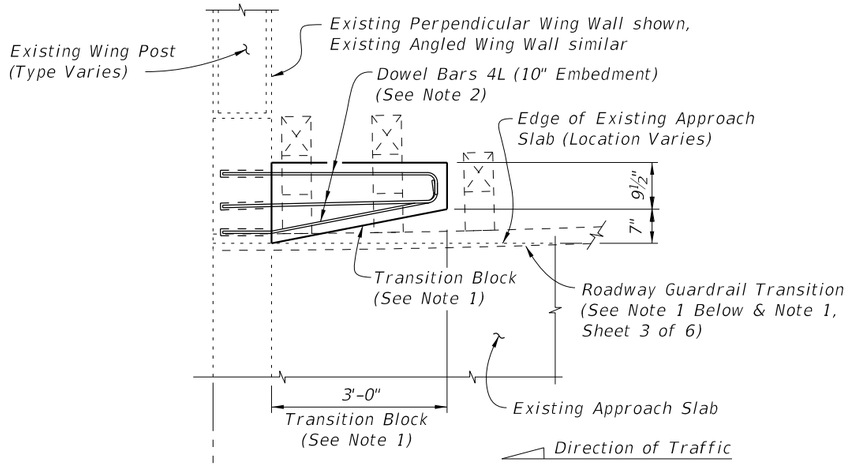
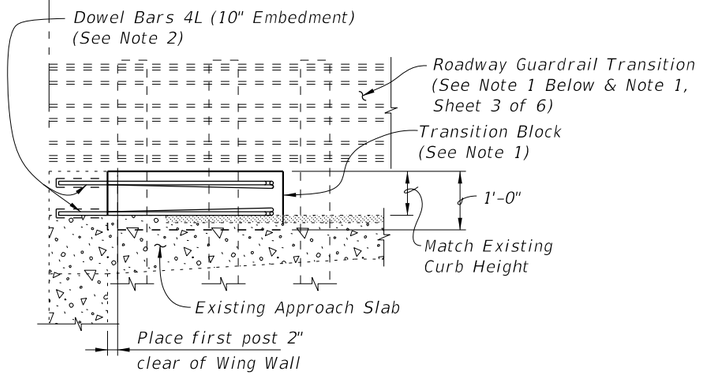


PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF GUARDRAIL
(Existing Wing Post not shown for clarity)

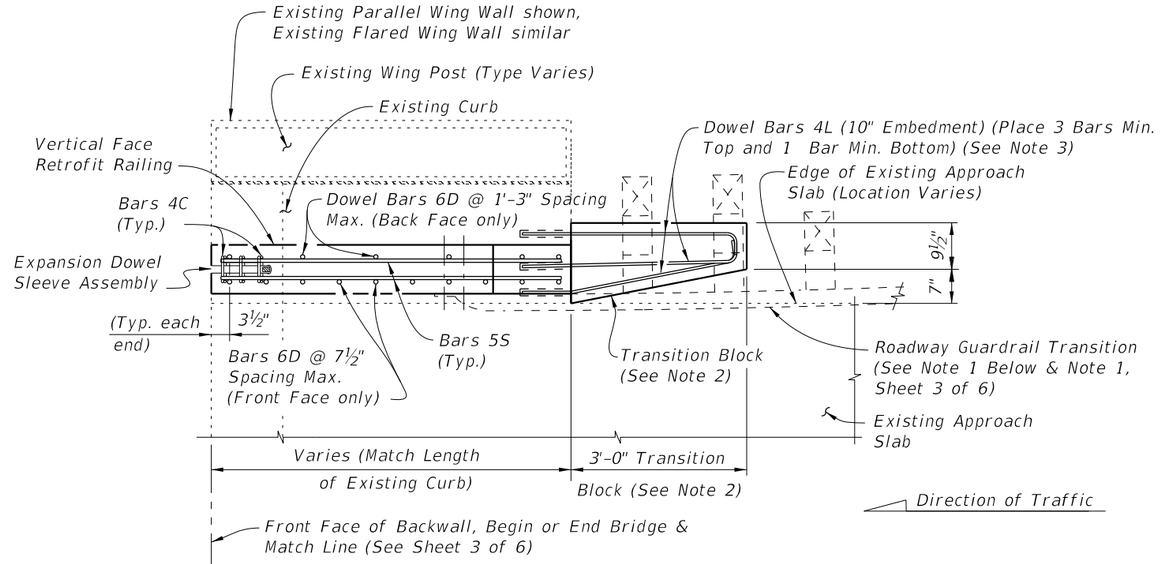
SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

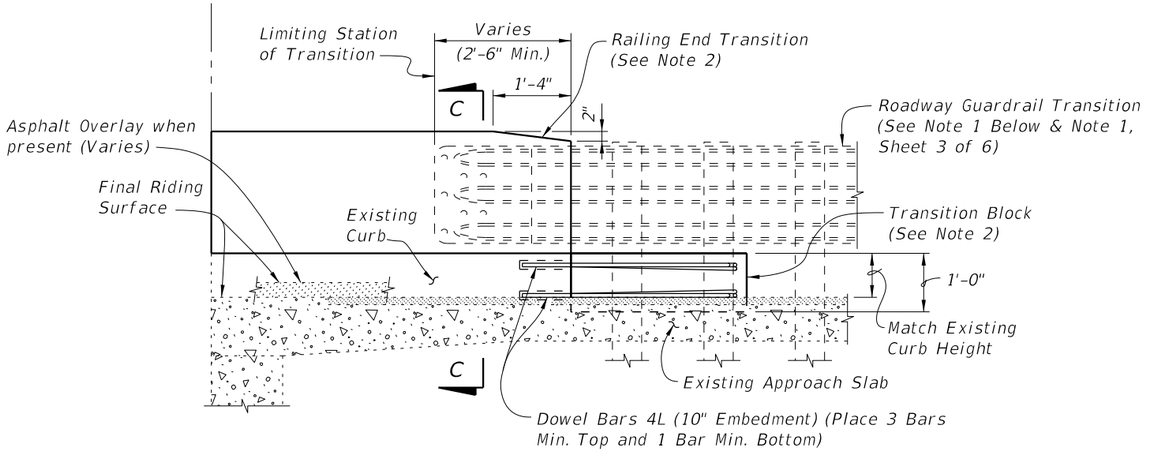
1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

3. If a Special Steel Guardrail Post is required for attachment to the top of a sloping Wing Wall, saw cut and remove a wedge shaped portion of the sloping Wing Wall as required to provide a level surface for post installation.



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 2
RAILING END TREATMENT FOR PARALLEL CURBS

SCHEME 2 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 3 of 6. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing.

2. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend beyond end of existing End Bent Wing Wall, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

3. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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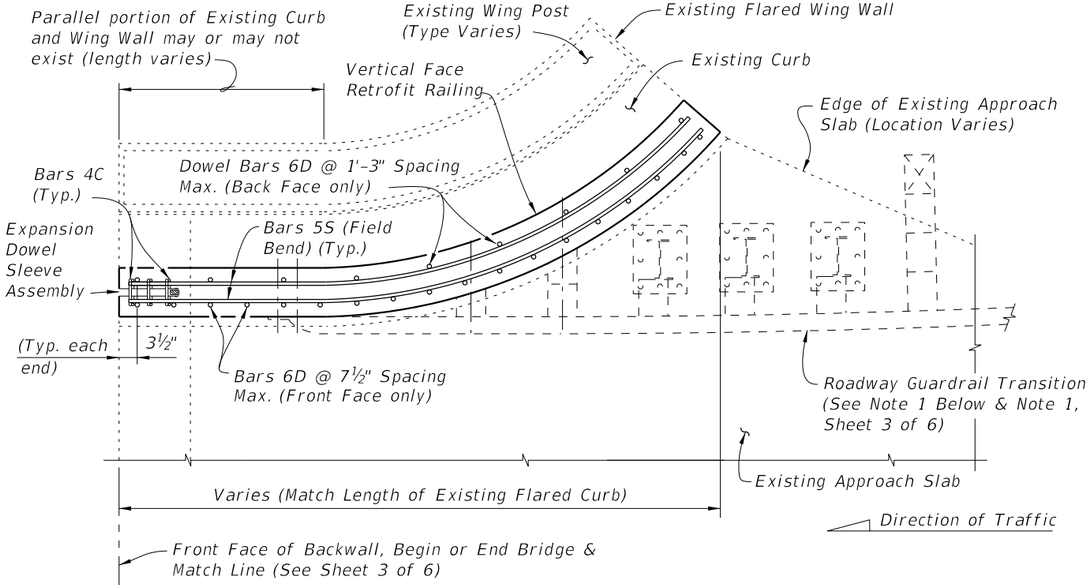
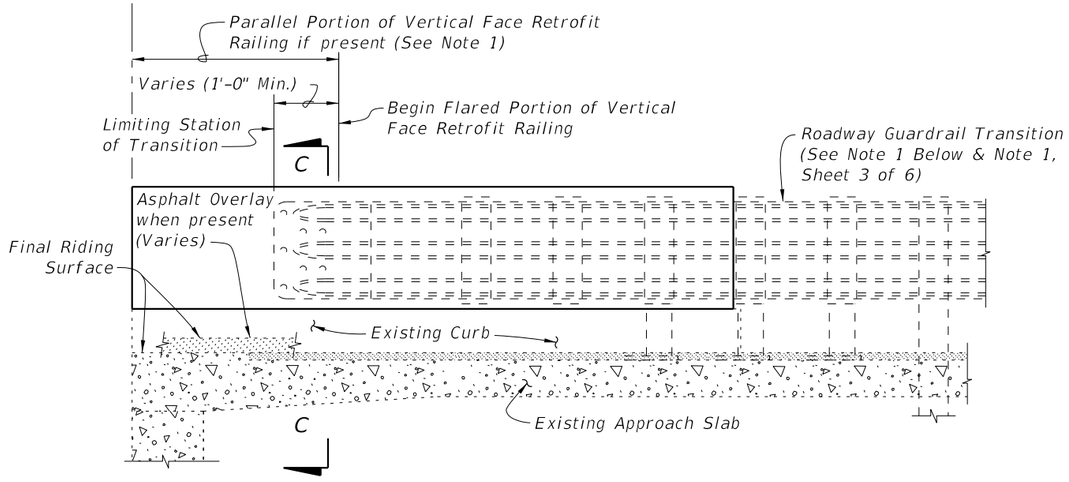


PARTIAL PLAN OF RAILING

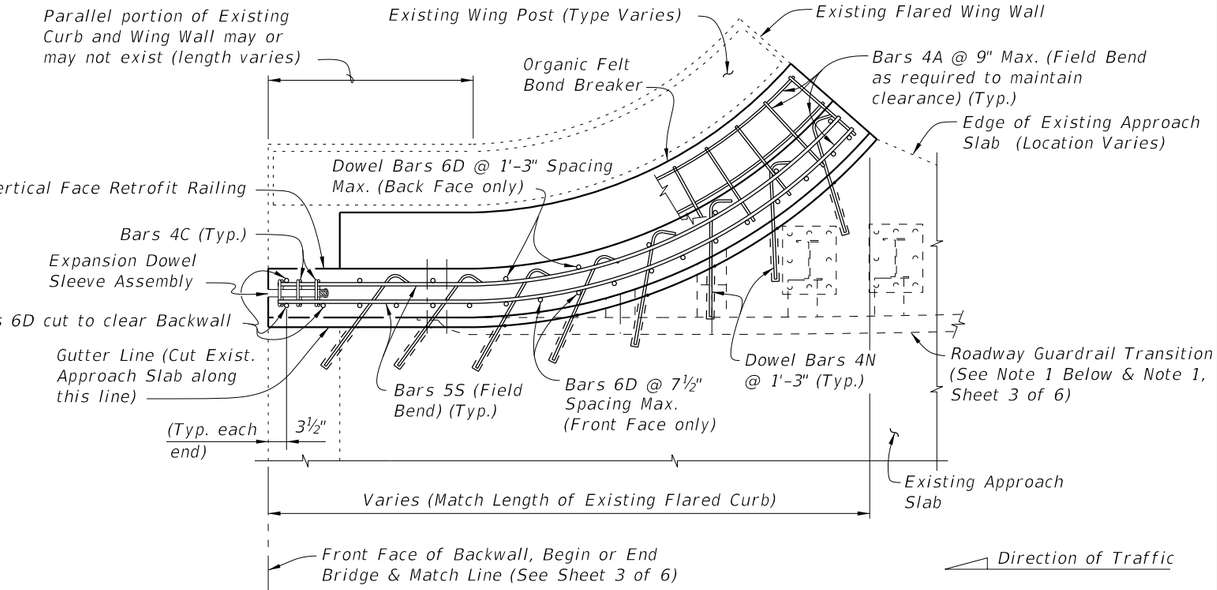


PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

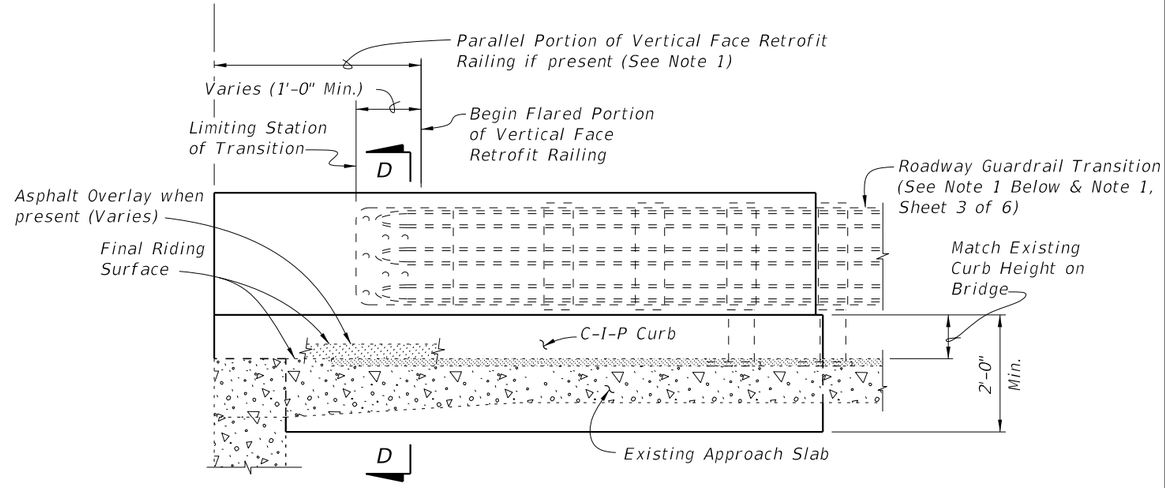
SCHEME 3
RAILING END TREATMENT FOR FLARED CURBS

SCHEME 3 NOTE:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 3 of 6.



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

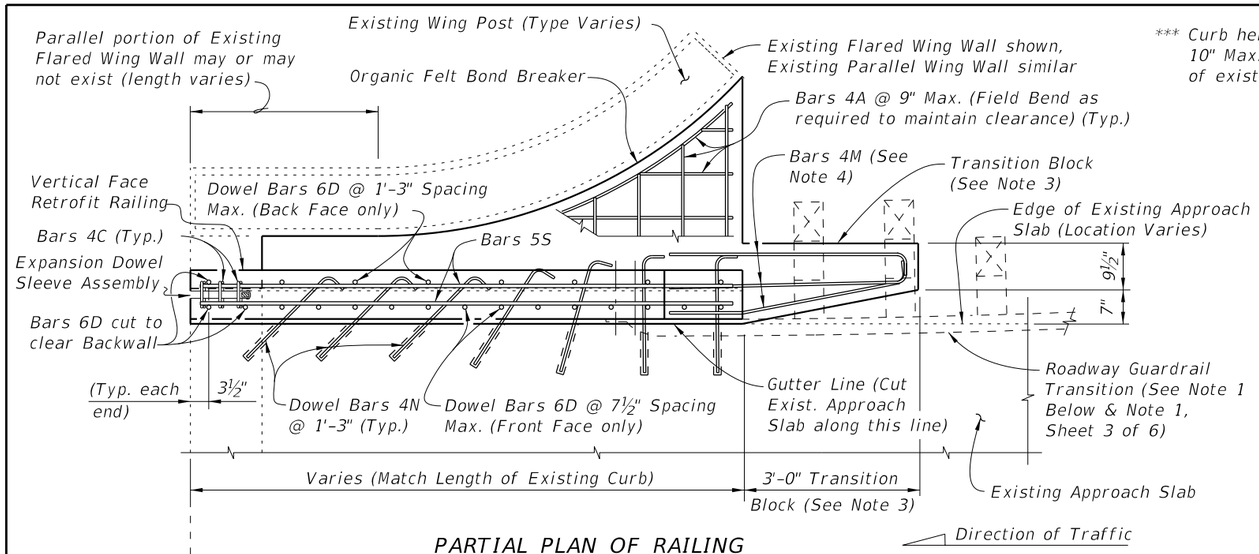
SCHEME 4
RAILING END TREATMENT FOR FLARED CURBS

SCHEME 4 NOTES:

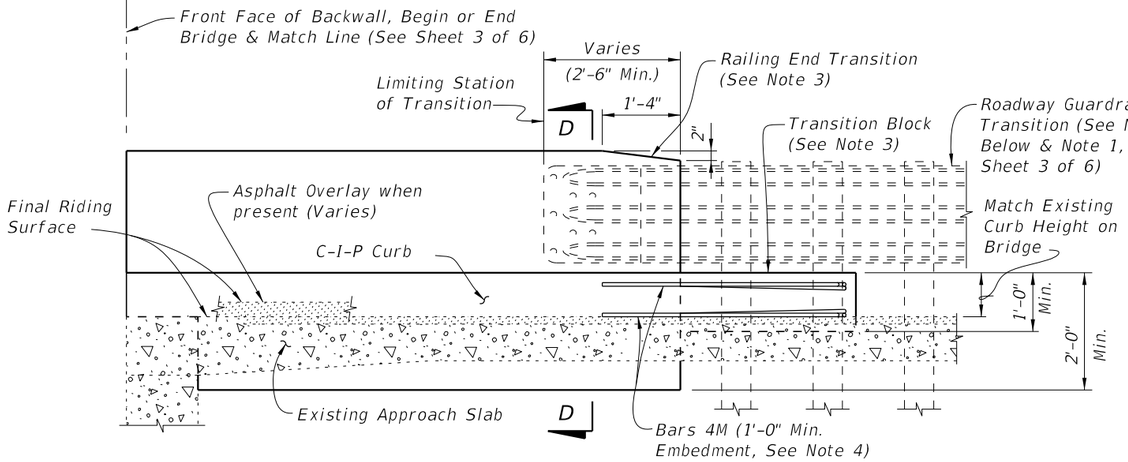
1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 3 of 6.
2. Dowel Bars 4N may be installed on a maximum angle of 45° to the cut edge of the Approach Slab as shown to facilitate drilling of holes and installation of bars.
3. At the Contractor's option, along the length of the Approach Slab curb that is to be replaced, Dowel Bars 6D may be cast in with the new section of curb as shown or they may be installed in drilled holes in the new section of curb using an Adhesive Bonding Material System with a 1'-0" minimum embedment.

10/17/2024 11:11:37 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS - EXISTING POST & BEAM BRIDGE RAILINGS (WIDE CURBS)	INDEX	SHEET
11/01/16						521-405	5 of 6



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 5
RAILING END TREATMENT FOR PARALLEL CURBS

SCHEME 5 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 3 of 6.

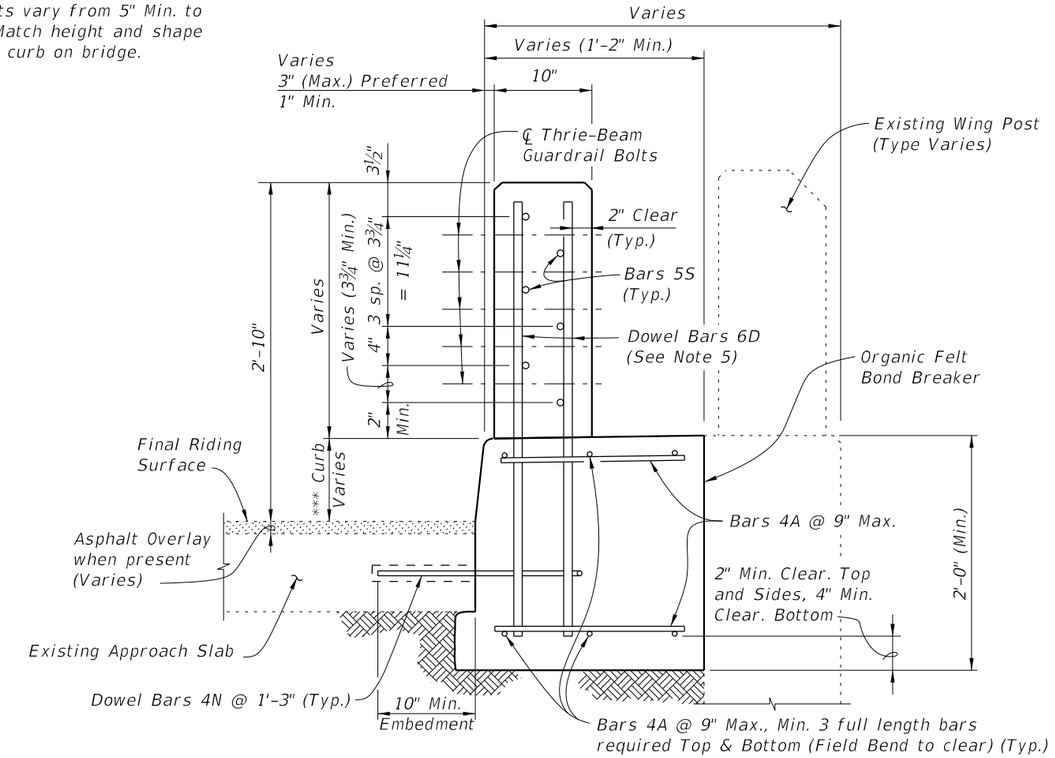
2. Dowel Bars 4N may be installed on a maximum angle of 45° to the cut edge of the Approach Slab as shown to facilitate drilling of holes and installation of bars.

3. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend beyond end of existing End Bent Wing Wall, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

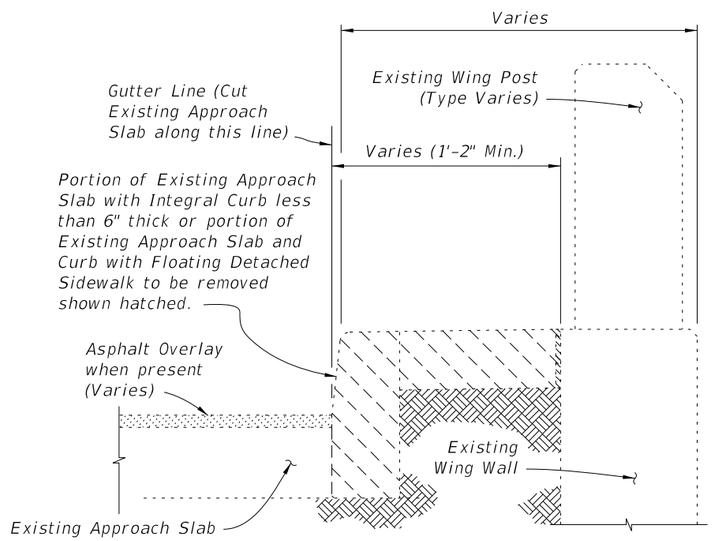
4. Field bend Dowel Bars 4M within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

5. At the Contractor's option, along the length of the Approach Slab curb that is to be replaced, Dowel Bars 6D may be cast in with the new section of curb as shown or they may be installed in drilled holes in the new section of curb using an Adhesive Bonding Material System with a 1'-0" minimum embedment.

*** Curb heights vary from 5" Min. to 10" Max. Match height and shape of existing curb on bridge.



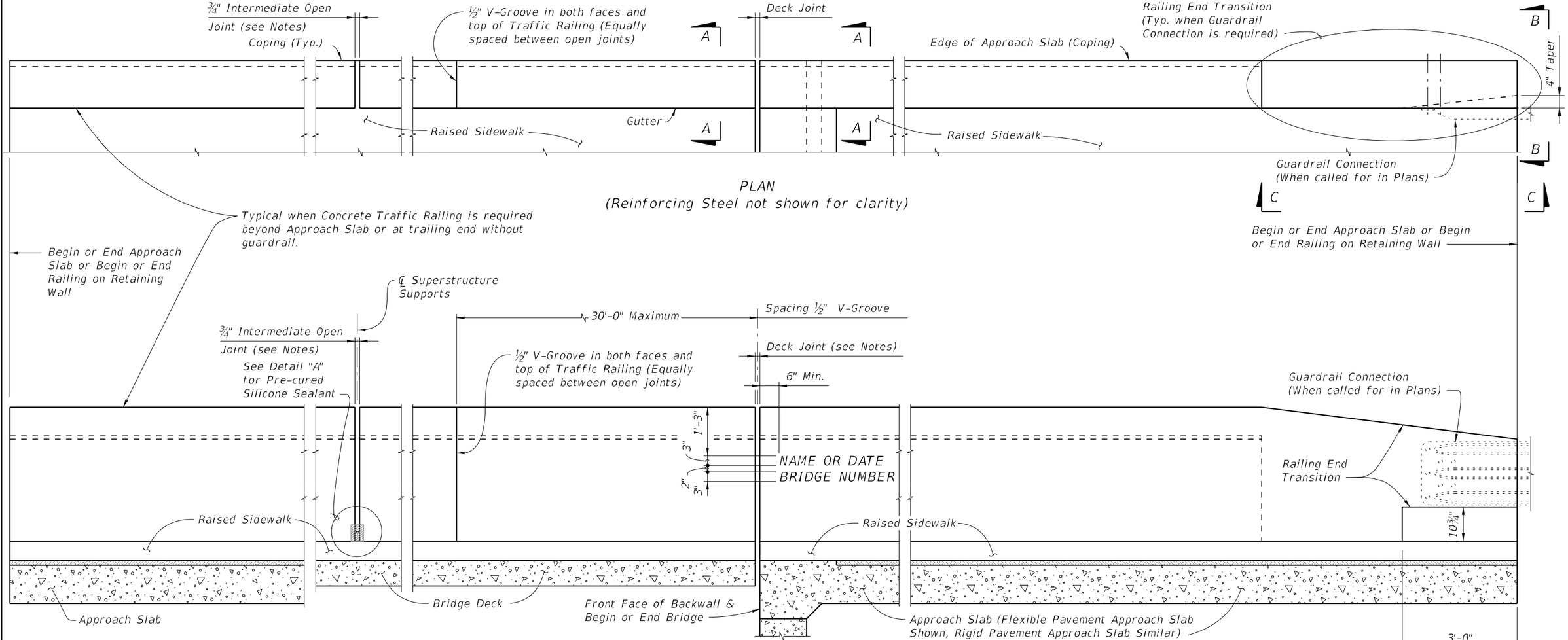
SECTION D-D
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEME 4 SHOWN, SCHEME 5 SIMILAR)



TYPICAL SECTION THRU EXISTING APPROACH
SLAB AND END BENT WING WALL SHOWING LIMITS OF REMOVAL
(SCHEMES 4 AND 5 ONLY)

10/17/2024 11:11:43 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	GUARDRAIL TRANSITIONS - EXISTING POST & BEAM BRIDGE RAILINGS (WIDE CURBS)	INDEX	SHEET
11/01/16						521-405	6 of 6



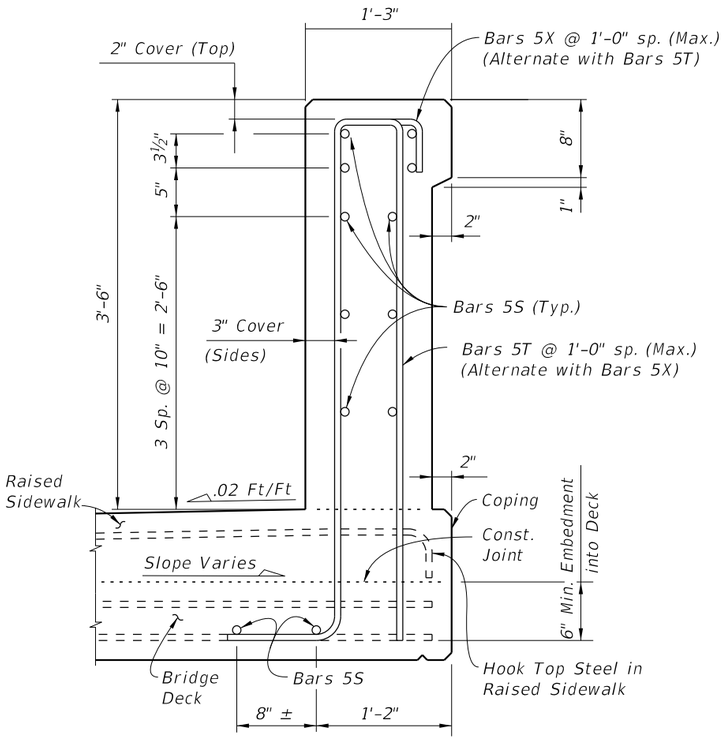
CROSS REFERENCE:
For Section A-A, View B-B and View C-C, see Sheet 2.
For Detail "A" see Sheet 3.

TRAFFIC RAILING NOTES

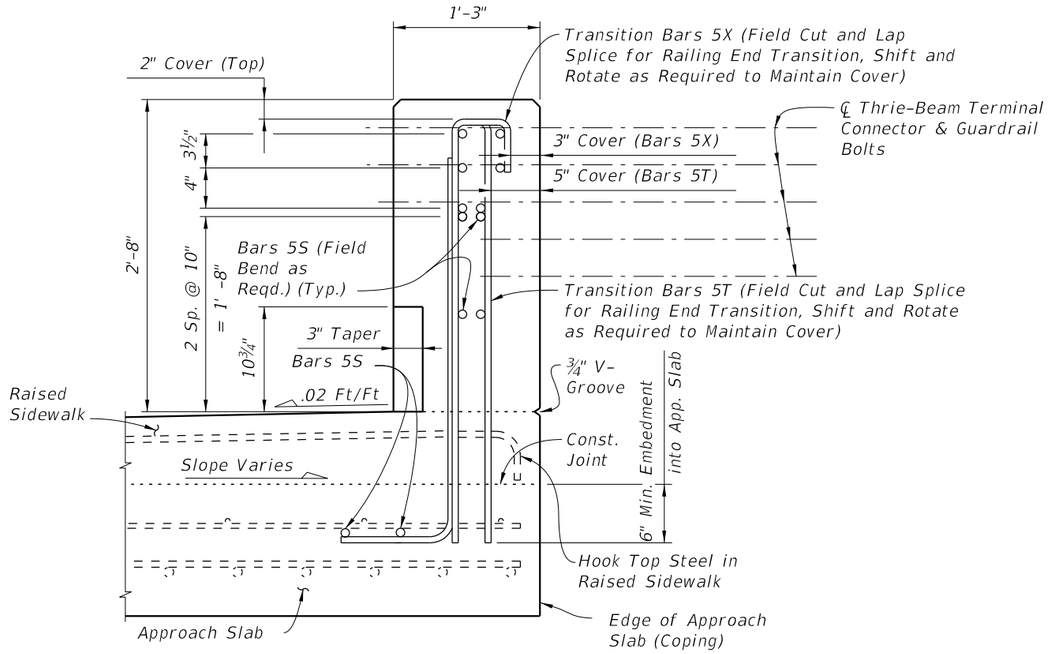
1. Materials: See Structures Plans, General Notes
2. Guardrail Connection Details: See Index 536-001
3. Traffic Railings may be constructed perpendicular to the sidewalk surface.
   If an adjoining railing is constructed plumb, transition the end of the Traffic Railing from perpendicular to plumb over a minimum distance of 20'-0". The cost of all modifications will be at the Contractor's expense.
4. Name, Date & Bridge Number: Place the Name and Bridge Number on the Traffic Railing on the driver's right side when approaching the bridge. Place the Date on the driver's left side when approaching the bridge. Use the Name as shown in the General Notes of the Structures Plans. The Date is the year the bridge is completed. For a widening when the existing railing is removed, use both the date on the removed rail and the year of the widening. Form letters and figures with ⅜" V-Grooves using preformed letters and figures. Black plastic letters and figures 3" tall may be used, if approved by the Engineer.
5. Open Joints: See the Superstructure Plans, Approach Slab and Retaining Wall Sheets for Deck Joint dimensions and orientation. Provide Open Railing Joints matching the dimensions of the Deck Joint at Deck Expansion Joint locations.
   A. For treatment of railings on skewed bridges see Sheet 3.
6. Open Joints: Provide ¾" Open Joints at:
   A. Superstructure supports where the slab is continuous.
   B. At ends of approach slabs when adjacent to retaining walls and at expansion joints on retaining wall junction slabs.
7. V-Grooves: Construct ½" V-Grooves plumb. Space V-Grooves equally between ¾" Open Joints and/or Deck Joints and the at V-Groove locations on the Retaining Wall footing/junction slabs.
8. Barrier Delineators: Install Barrier Delineators on top of the Traffic Railing 2" from the face of the traffic side in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.
9. Traffic Railing Transitions:
   A. Transition to guardrail: see Detail "A" and View B-B.
   B. Transition to 38" Concrete Barriers: see Detail "B" and View C-C. Work these details with Index 521-610.
10. See Superstructure Plans for drainage slot locations and size (when required)
11. For embedded conduit and junction boxes see Index 630-010. For Traffic Railings with Pedestrian/Bicycle Bullet Railings see Index 515-021 and 515-022 for Notes, Details and post spacing.

10/17/2024 11:11:50 AM

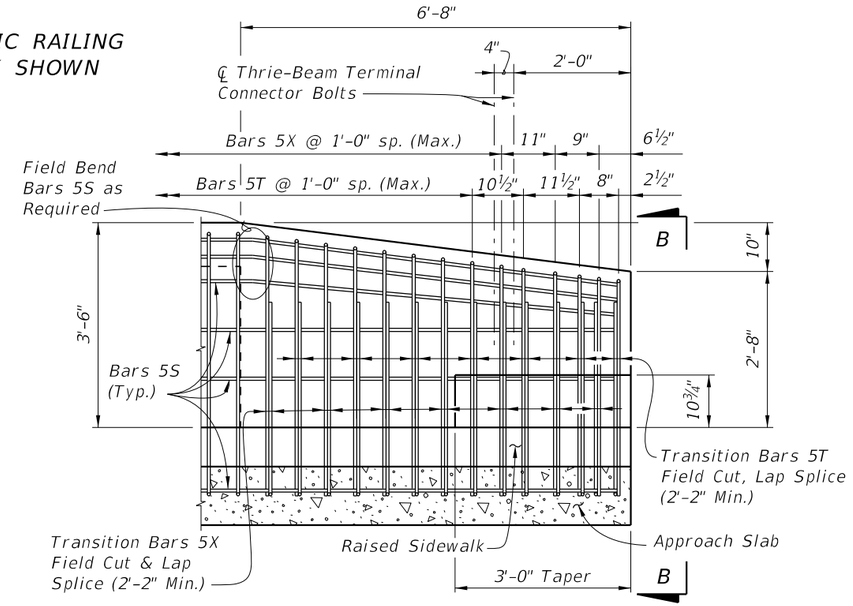
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (42" VERTICAL SHAPE)	INDEX	SHEET
11/01/20					521-422	1 of 3



SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING
SECTION THRU BRIDGE DECK SHOWN



VIEW B-B
(END VIEW OF TRAFFIC RAILING END TRANSITION)
(Approach Slab shown, Retaining Wall Junction Slab similar)



VIEW C-C
RAILING END TRANSITION
(Guardrail Not Shown For Clarity)

NOTES:

1. *Begin placing Railing Bars 5T and 5X on Approach Slab at the railing end and proceed toward Begin or End Bridge 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 Railing End Transition.*

2. *Omit Railing End Transition and Guardrail if Concrete Traffic Railing is used beyond the Approach Slab or Retaining Wall. See Structures Plans, Plan and Elevation Sheet and Roadway Plans. If Taper and Railing End Transition is omitted, extend Typical Section to end of the Approach Slab or limiting station on Retaining Wall, and space Bars 5T and 5X at 1'-0" (Typ.)*

CROSS REFERENCE:
For location of Section A-A, View B-B and View C-C, see Sheet 1.

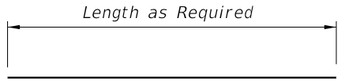
10/17/2024 11:11:57 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (42" VERTICAL SHAPE)	INDEX 521-422	SHEET 2 of 3

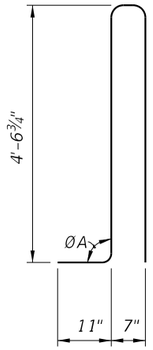
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

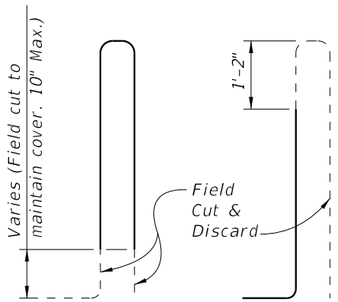
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
S	5	As Reqd.
T	5	10'-8"
X	5	6'-9"

ROADWAY CROSS-SLOPE	ØA	
	LOW GUTTER	HIGH GUTTER
0% to 2%	90°	90°
2% to 6%	87°	83°
6% to 10%	84°	96°



BAR 5S

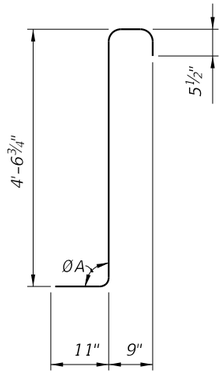


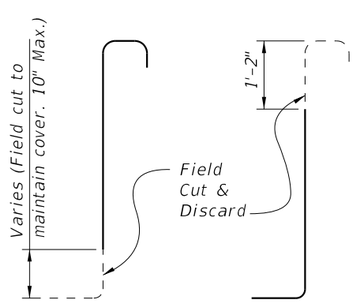


END TRANSITION STIRRUP BARS 5T

To Be Field Cut (7 of each required per Railing End Transition)

STIRRUP BAR 5T





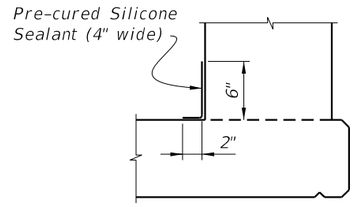
END TRANSITION STIRRUP BARS 5X

To Be Field Cut (7 of each required per Railing End Transition)

STIRRUP BAR 5X

REINFORCING STEEL NOTES:

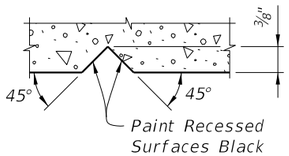
1. All bar dimensions in the bending diagrams are out to out.
2. The 4'-6¾" vertical dimension shown for Bars 5T and 5X is based on a bridge deck with a 6" thick x 6' wide raised sidewalk at low side of deck, 2% deck cross slope and a counter 2% raised sidewalk cross slope. If the raised sidewalk thickness, width or cross slope vary from the above amounts, adjust this dimension accordingly to achieve a 6" minimum embedment into the bridge deck. See Structures Plans, Superstructure and Approach Slab Sheets.
3. The reinforcement for the railing on a retaining wall shall be the same as detailed above with ØA = 90°.
4. All reinforcing steel at the open joints shall have a 2" minimum cover.
5. Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-2".
6. The Contractor may utilize Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.



DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTES:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.

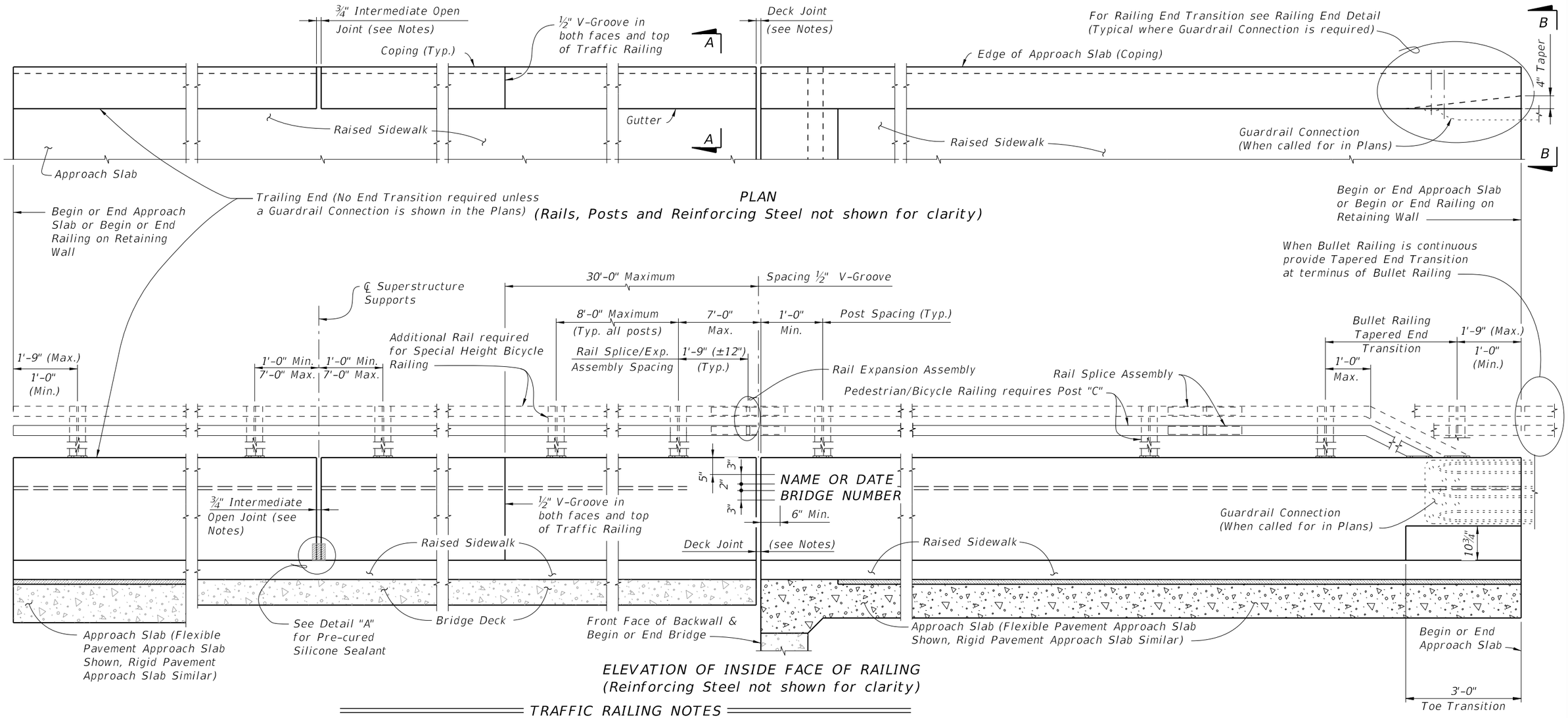


SECTION THRU RECESSED "V" GROOVE
TO FORM INSCRIBED LETTERS AND FIGURES

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.145
Reinforcing Steel	LB/LF	30.68

(The above quantities are based on a 6" thick x 6' wide raised sidewalk at low side of deck, 2% deck cross slope and counter 2% sidewalk cross slope)

10/17/2024 11:12:03 AM



ELEVATION OF INSIDE FACE OF RAILING
(Reinforcing Steel not shown for clarity)

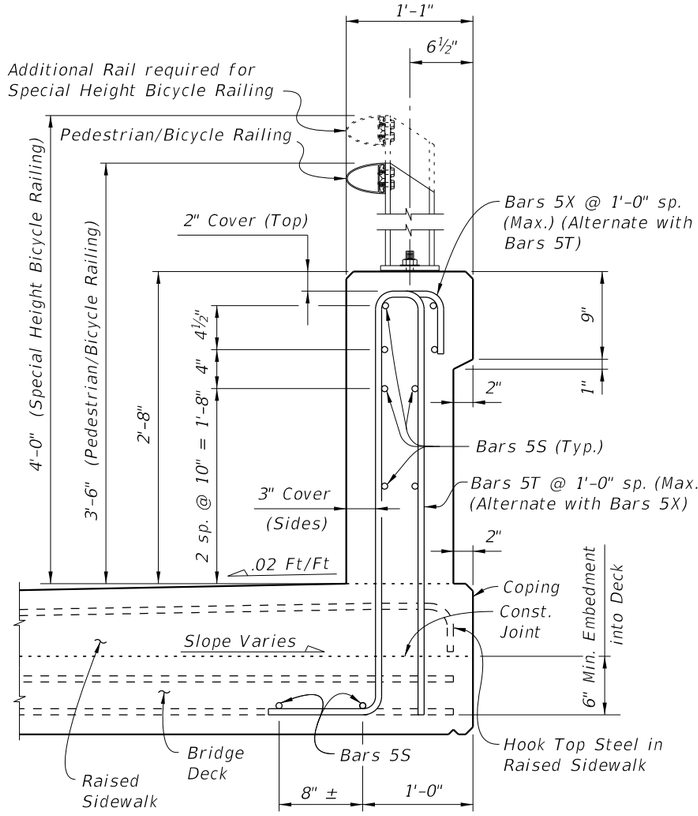
TRAFFIC RAILING NOTES

1. Materials: See Structures Plans, General Notes
2. Guardrail Connection Details: See Index 536-001
3. Traffic Railings may be constructed perpendicular to the sidewalk surface.
   If an adjoining railing is constructed plumb, transition the end of the Traffic Railing from perpendicular to plumb over a minimum distance of 20'-0". The cost of all modifications will be at the Contractor's expense.
4. Name, Date & Bridge Number: Place the Name and Bridge Number on the Traffic Railing on the driver's right side when approaching the bridge. Place the Date on the driver's left side when approaching the bridge. Use the Name as shown in the General Notes of the Structures Plans. The Date is the year the bridge is completed. For a widening when the existing railing is removed, use both the date on the removed rail and the year of the widening. Form letters and figures with ⅜" V-Grooves using preformed letters and figures. Black plastic letters and figures 3" tall may be used, if approved by the Engineer.
5. Open Joints: See the Superstructure Plans, Approach Slab and Retaining Wall Sheets for Deck Joint dimensions and orientation. Provide Open Railing Joints matching the dimensions of the Deck Joint at Deck Expansion Joint locations.
   A. For treatment of railings on skewed bridges see Sheet 3.
6. Open Joints: Provide ¾" Open Joints at:
   A. Superstructure supports where the slab is continuous.
   B. At ends of approach slabs when adjacent to retaining walls and at expansion joints on retaining wall junction slabs.
7. V-Grooves: Construct ½" V-Grooves plumb. Space V-Grooves equally between ¾" Open Joints and/or Deck Joints and the at V-Groove locations on the Retaining Wall footing/junction slabs.
8. Barrier Delineators: Install Barrier Delineators on top of the Traffic Railing 2" from the face of the traffic side in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.
9. For embedded conduit and junction boxes see Index 630-010.
10. For Traffic Railings with Pedestrian/Bicycle Bullet Railings see Index 515-021 and 515-022 for Notes, Details and post spacing.

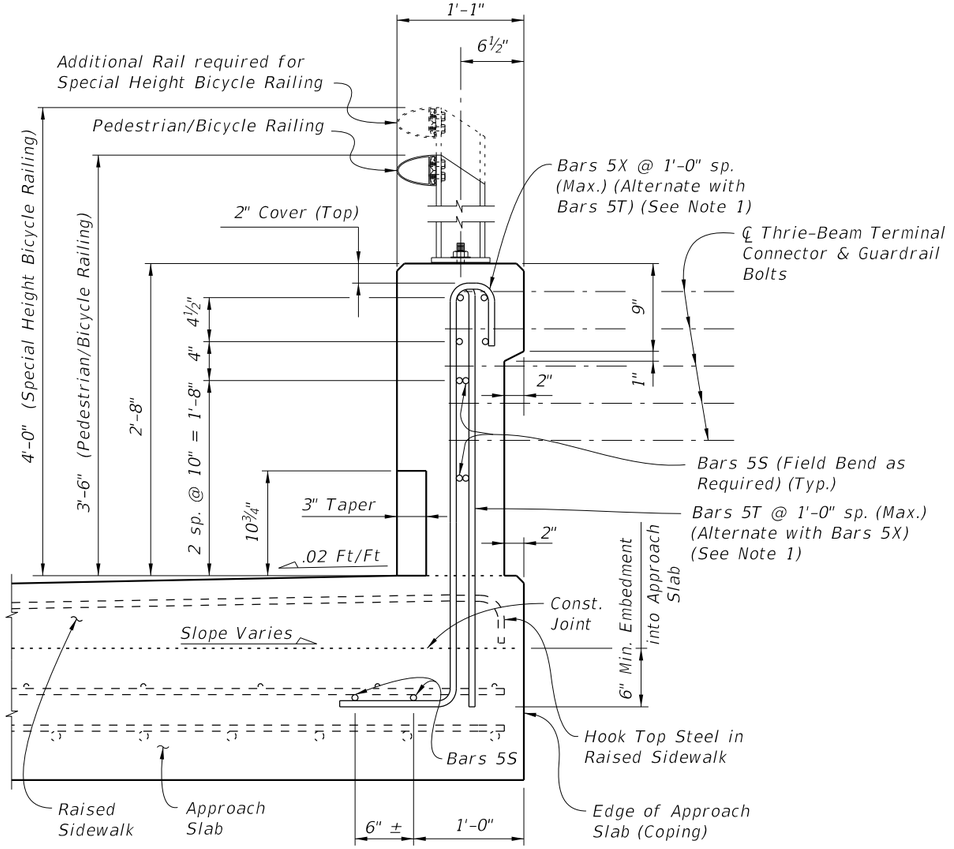
CROSS REFERENCE:
For Section A-A and View B-B, see Sheet 2.
For Detail "A" see Sheet 3.

10/17/2024 11:12:10 AM

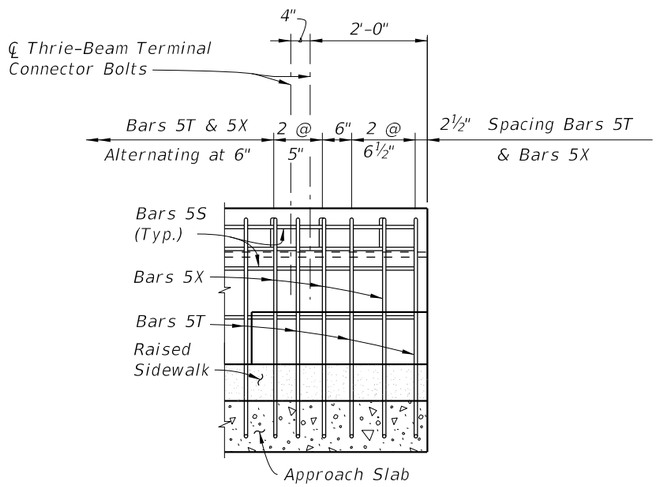
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (32" VERTICAL SHAPE)	INDEX	SHEET
11/01/20					521-423	1 of 3



SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING
(Section Thru Bridge Deck shown)



VIEW B-B
APPROACH SLAB END VIEW
OF TRAFFIC RAILING



RAILING END DETAIL
(Guardrail Not Shown For Clarity)

NOTES:

1. Begin placing Railing Bars 5T and 5X on Approach Slab at the railing end and proceed toward Begin or End Bridge 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 Railing End Transition.

2. Omit Railing End Transition and Guardrail if Concrete Traffic Railing is used beyond the Approach Slab or Retaining Wall. See Structures Plans, Plan and Elevation Sheet and Roadway Plans. If Taper and Railing End Transition is omitted, extend Typical Section to end of the Approach Slab or limiting station on Retaining Wall, and space Bars 5T and 5X at 1'-0" (Typ.)

CROSS REFERENCE:
For location of Section A-A and View B-B see Sheet 1.

NOTE: For Bullet Railing Details, see Index 515-022.

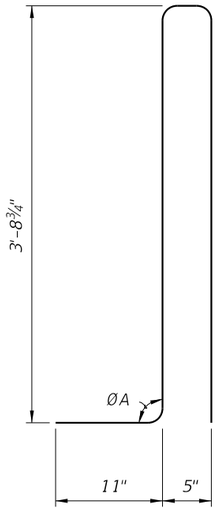
10/17/2024 11:12:16 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (32" VERTICAL SHAPE)	INDEX 521-423	SHEET 2 of 3

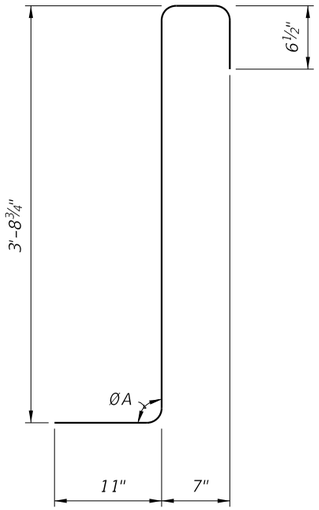
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
S	5	As Reqd.
T	5	9'-0"
X	5	5'-10"

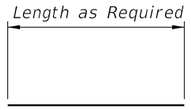
ROADWAY CROSS-SLOPE	ØA	
	LOW GUTTER	HIGH GUTTER
0% to 2%	90°	90°
2% to 6%	87°	93°
6% to 10%	84°	96°



STIRRUP BAR 5T



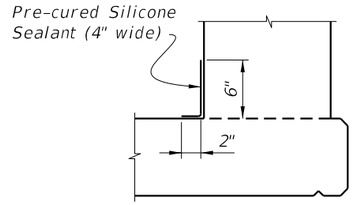
STIRRUP BAR 5X



BAR 5S

REINFORCING STEEL NOTES:

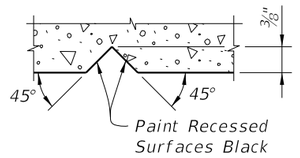
1. All bar dimensions in the bending diagrams are out to out.
2. The 3'-8¾" vertical dimensions shown for Bars 5T and 5X are based on a bridge deck with a 6" thick x 6' wide raised sidewalk at low side of deck, 2% deck cross slope and a counter 2% raised sidewalk cross slope. If the raised sidewalk thickness, width or cross slopes vary from the above amounts, adjust these vertical dimensions accordingly to achieve a 6" minimum embedment into the bridge deck.
3. The reinforcement for the railing on a Retaining Wall shall be the same as detailed with ØA = 90°.
4. All reinforcing steel at the open joints shall have a 2" minimum cover.
5. Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-2".
6. The Contractor may utilize Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.



DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTES:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.

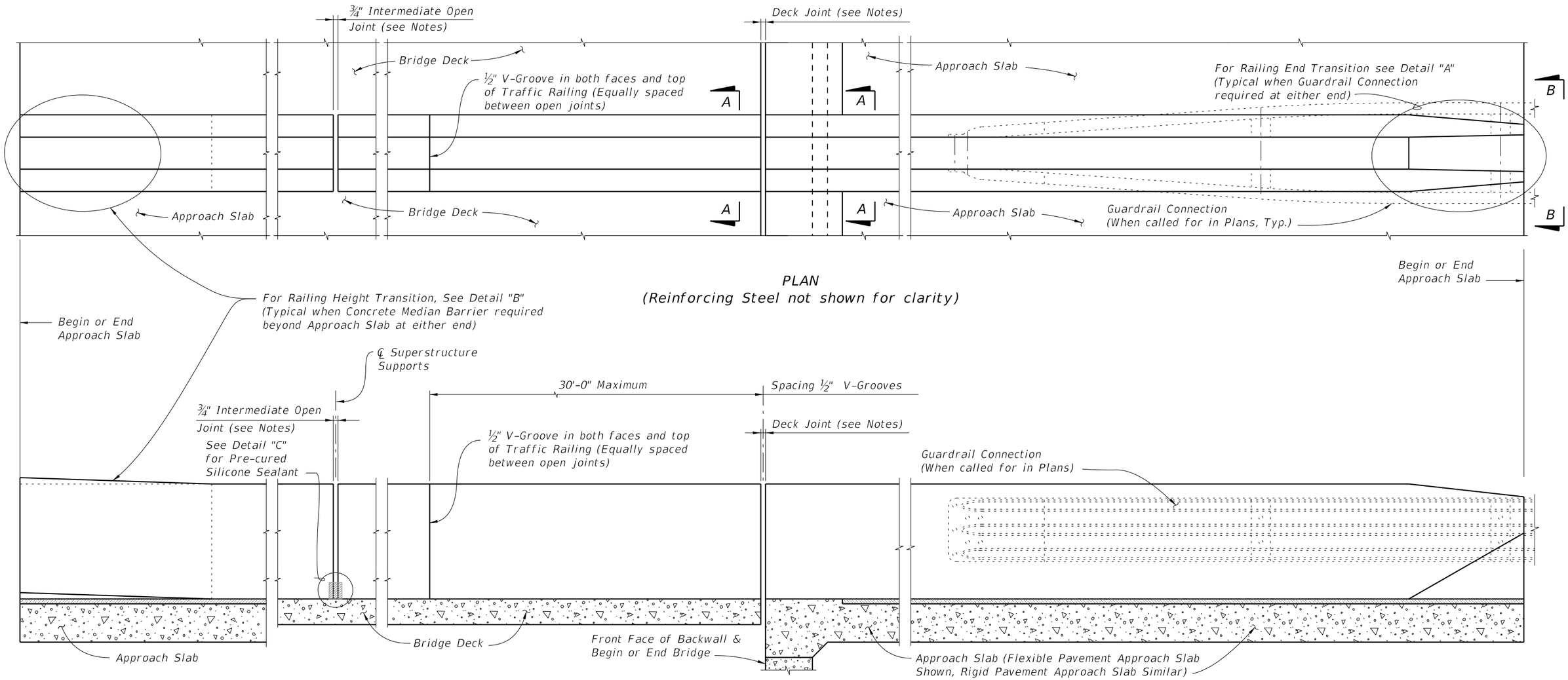


SECTION THRU RECESSED "V" GROOVE
TO FORM INSCRIBED LETTERS AND FIGURES

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.095
Reinforcing Steel	LB/LF	25.90

(The above quantities are based on a 6" thick x 6' wide raised sidewalk at low side of deck, 2% deck cross slope and counter 2% sidewalk cross slope.)

10/17/2024 11:12:23 AM



CROSS REFERENCE:
For Section A-A, View B-B, Detail "A" and Detail "B" see Sheet 2.

For Detail "C" see Sheet 4.

TRAFFIC RAILING NOTES

1. Materials: See Structures Plans, General Notes
2. Guardrail Connection Details: See Index 536-001
3. Superelevation: Traffic Railings on Superelevated bridges may be constructed perpendicular to the roadway surface. If an adjoining railing is constructed plumb, transition the end of the Traffic Railing from perpendicular to plumb over a minimum distance of 20'-0". The cost of all modifications will be at the Contractor's expense.
4. Open Joints: See the Superstructure Plans, Approach Slab and Retaining Wall Sheets for Deck Joint dimensions and orientation. Provide Open Railing Joints matching the dimensions of the Deck Joint at Deck Expansion Joint locations.
   A. For treatment of railings on skewed bridges see Sheet 3.
5. Open Joints: Provide ¾" Open Joints at:
   A. Superstructure supports where the slab is continuous.
   B. At ends of approach slabs when adjacent to retaining walls and at expansion joints on retaining wall junction slabs.
6. V-Grooves: Construct ½" V-Grooves plumb. Space V-Grooves equally between ¾" Open Joints and/or Deck Joints.
7. Barrier Delineators: Install Barrier Delineators on top of the Traffic Railing along the centerline in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.
8. Traffic Railing Transitions: see the Plans for type and location
   A. Transition to guardrail: see Detail "A".
   B. Transition to 38" Concrete Median Barrier: see Detail "B".
9. See Superstructure Plans for drainage slot locations and size (when required). See Index 521-427 Sheet 5 for details.
10. For embedded conduit and junction boxes see Index 630-010.

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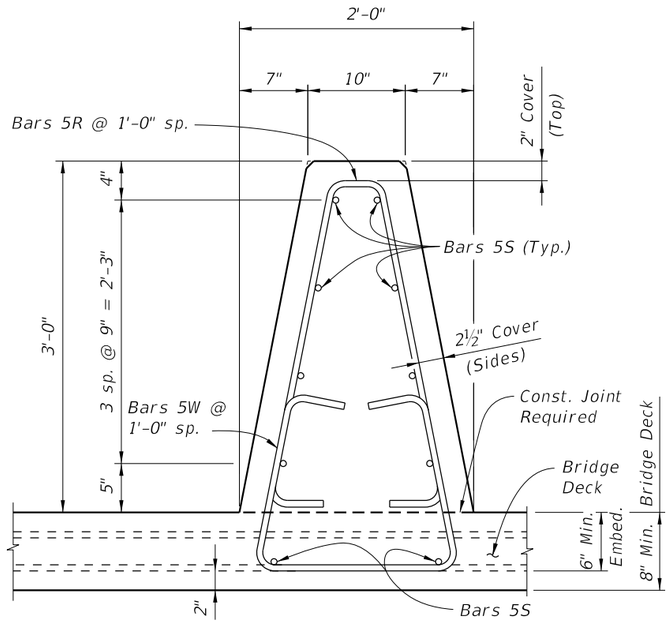
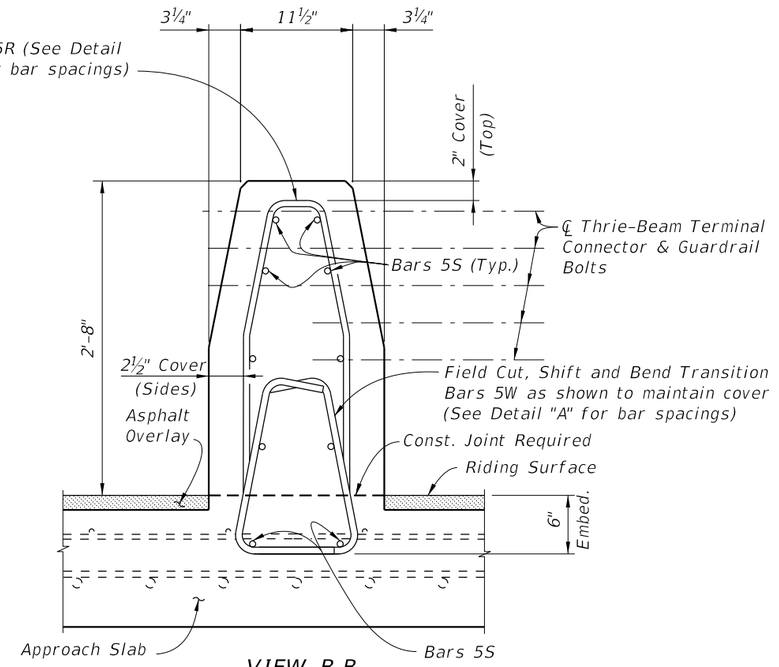
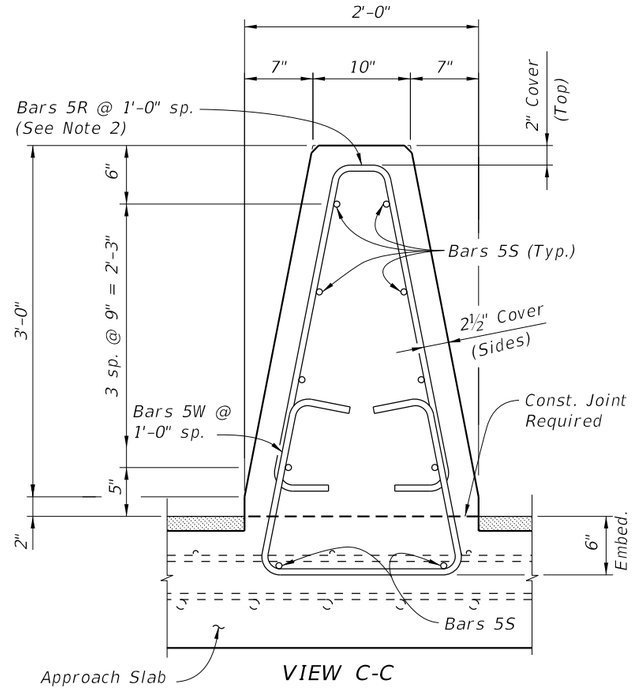
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (MEDIAN 36" SINGLE-SLOPE)	INDEX	SHEET
11/01/20						521-426	1 of 4



SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING
(SECTION THRU BRIDGE DECK SHOWN - SECTION THRU APPROACH SLAB SIMILAR)

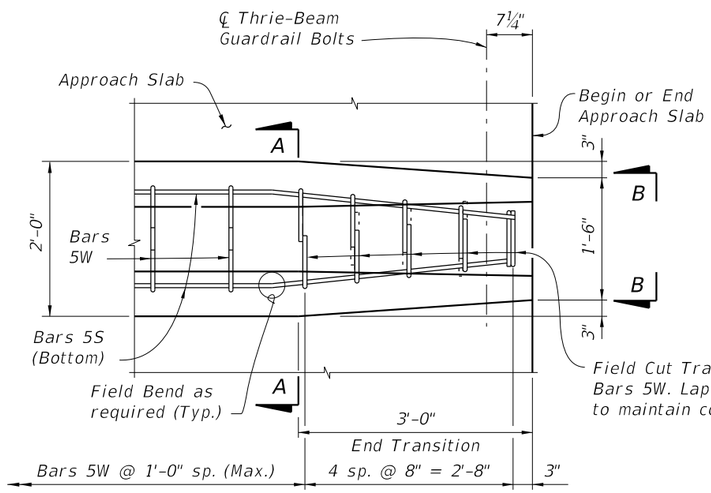


VIEW B-B
END TRANSITION

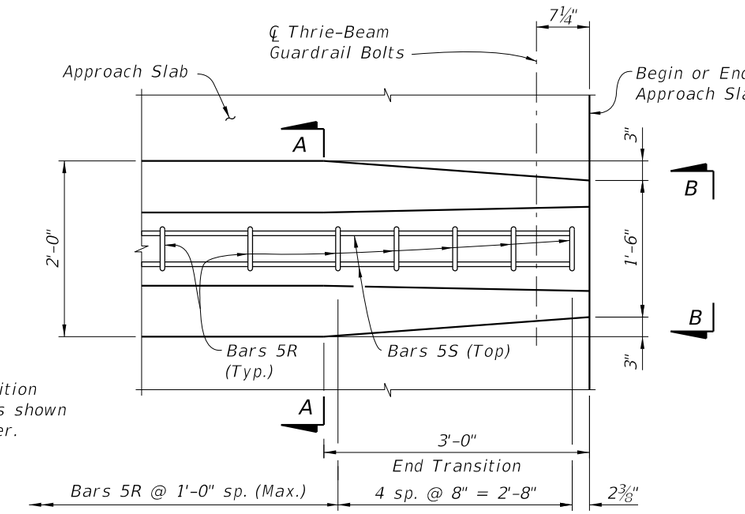


VIEW C-C
HEIGHT TRANSITION

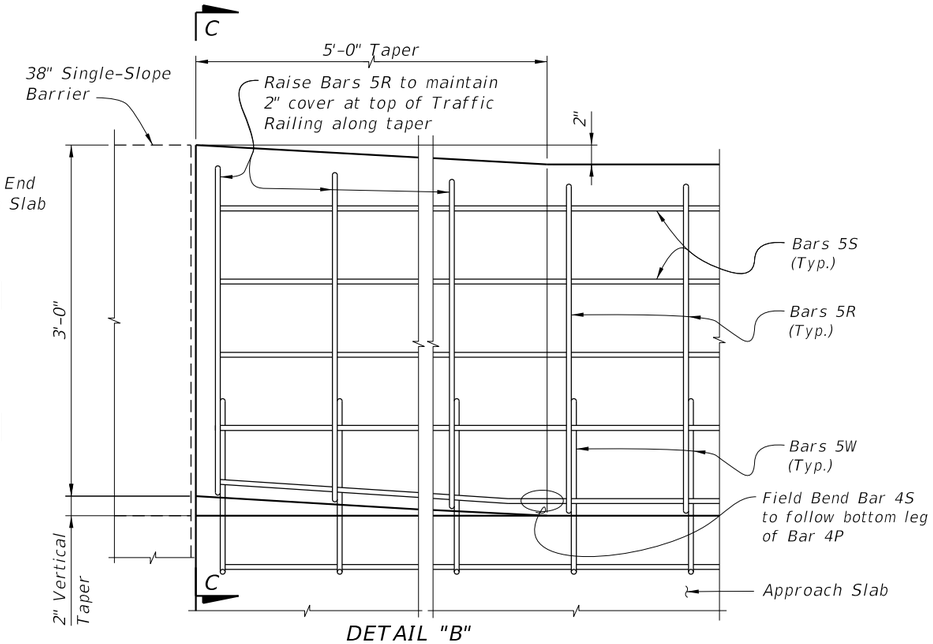
NOTES:
1. When guardrail approaches are shown in the plans, begin placing Railing Bars 5R and 5W on Approach Slab at the railing end and proceed toward Begin or End Bridge to avoid conflict with guardrail bolt holes. Cut, bend and lap bars as shown to maintain cover. If required, adjustments to the bar spacing for Bars 5R and 5W shall be made immediately adjacent to Begin or End Bridge.
2. When a Concrete Barrier is used beyond the Approach Slab form a 5'-0" long Height Transition and raise Bars 5R up to maintain 2" top clearance.



PLAN - Railing End Transition
(Showing Bars 5W and 5S)



PLAN - Railing End Transition
(Showing Bars 5R and 5S)



DETAIL "B"
ELEVATION - RAILING HEIGHT TRANSITION
(Showing Transition to 38" Single-Slope Barrier)

DETAIL "A"

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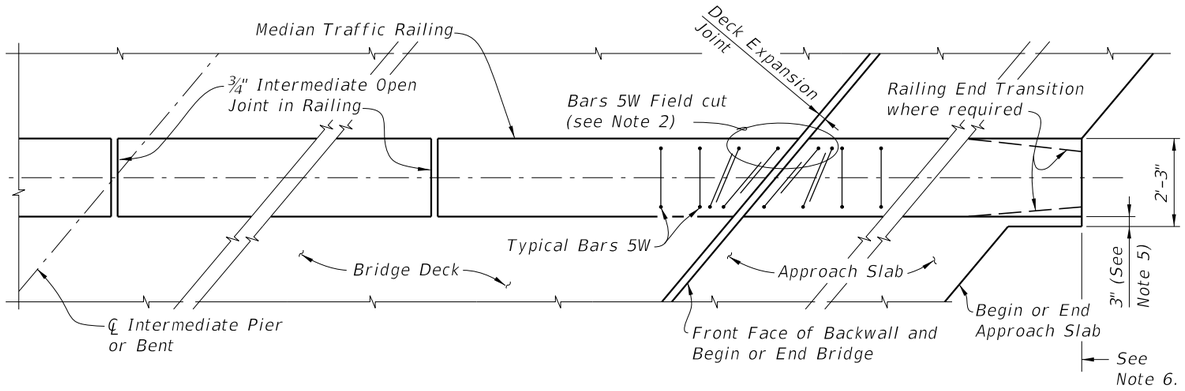
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/23			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (MEDIAN 36" SINGLE-SLOPE)	521-426	2 of 4



PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB WITH MEDIAN TRAFFIC RAILING

NOTES:

1) Median Traffic Railing reinforcement vertical Bars 5W may be shifted up to 1" (Max.) and rotated up to 10 degrees as required to allow proper placement.

2) Transition Stirrup Bars 5W shall be used as required at railing ends adjacent to expansion joints to facilitate placement of bars in acute corners. Place Transition Bars 5W in a fan pattern to maintain spacing. Rotate bars in 10° (Max.) increments as required.

3) Median Traffic Railing ends at deck expansion joints shall follow the deck joint with allowance for joint movement. See Structures Plans, Superstructure and Approach Slab Sheets for Details.

4) ¾" Intermediate Open Joints and V-Grooves in railing shall be placed perpendicular or radial to the ℄ of the median railing. See Structures Plans, Superstructure and Approach Slab Sheets for locations.

5) At begin or end approach slab extend slab at the median railing ends 3" (open side) as shown to provide a base for casting of the railing.

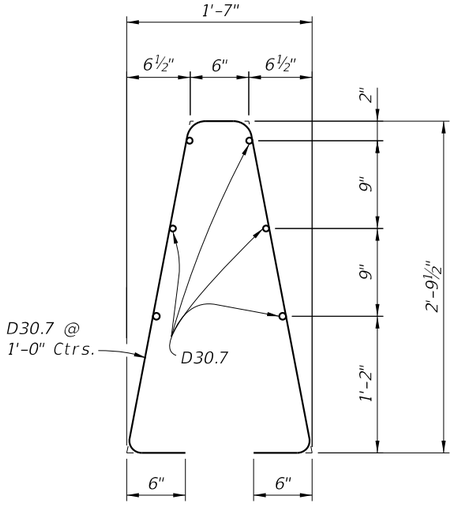
6) Work this Sheet with Approach Slab Indexes as applicable.

7) Deck Expansion Joint at begin or end bridge shown. Deck Expansion Joints at ℄ Pier or Intermediate Bents are similar.

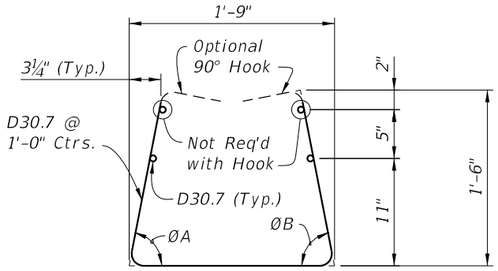
8) Partial Plan Views shown are intended as guides only. See Structures Plans, Superstructure and Approach Slab Sheets for skew angles, joint orientation, dimensions and details.

9) If Welded Wire Reinforcement is used in lieu of conventional reinforcement, placement of the WWR vertical elements shall be similar to those shown above. Clipping of horizontal elements to facilitate placement shall be minimized where possible. Where clipping is required, supplement horizontal elements by lap splicing with deformed bars having an equivalent area of steel.

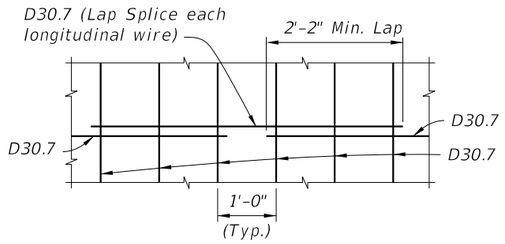
ALTERNATE REINFORCING STEEL (WWR) DETAILS



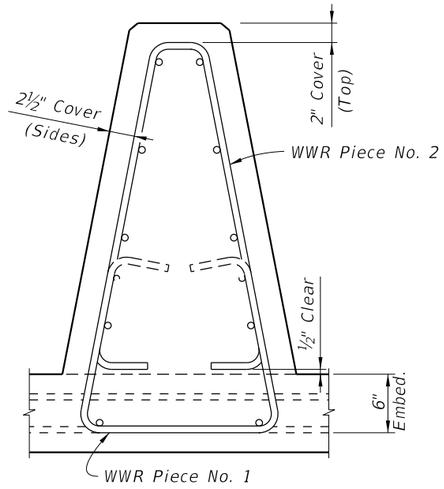
WWR Piece No. 2



WWR Piece No. 1



SPLICE DETAIL
(Between WWR Sections)



SECTION A-A

WELDED WIRE REINFORCEMENT NOTES:

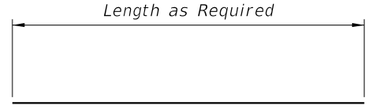
1. At the option of the Contractor deformed Welded Wire Reinforcement (WWR) may be utilized in lieu of all Bars 5R, 5S and 5W. WWR must meet the requirements of Specification Section 931.
2. WWR at Railing End Transition shall be field bent inward as required (Pieces 1 & 2) to maintain cover. The bottom of Piece 1 shall be cut to allow overlap.
3. Place WWR panels so as to minimize the end overhang of longitudinal wires at Railing Ends and Open Joints. Overhangs greater than 6" are not permitted.

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

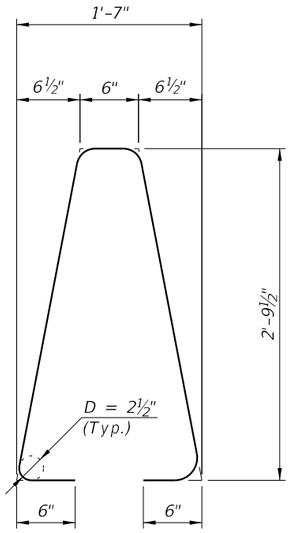
ROADWAY CROSS-SLOPE	ON SLOPE		AT CROWN	
	ØA	ØB	ØA	ØB
0% to 2%	79°	79°	79°	79°
>2% to 6%	81°	77°	79°	79°
>6% to 10%	84°	74°	79°	79°

ØA and ØB shall be 79° if Contractor elects to place railing perpendicular to the deck, and approach slabs.

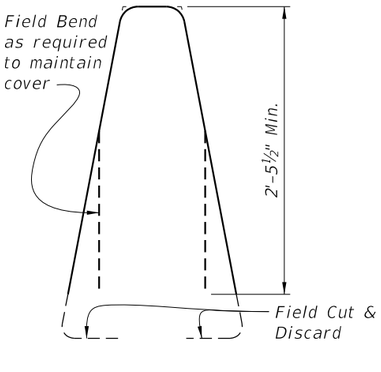
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
R	5	7'-2"
S	5	As Reqd.
W	5	5'-10"



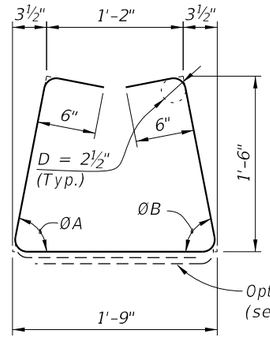
BAR 5S



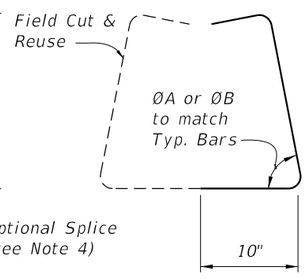
STIRRUP BAR 5R



TRANSITION STIRRUP BAR 5R
(5 required per Railing
End Transition)



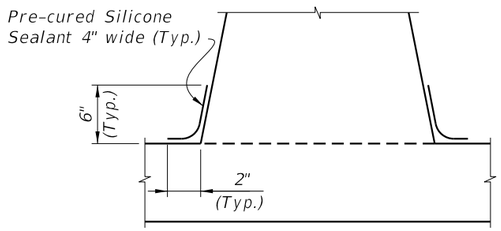
STIRRUP BAR 5W



TRANSITION STIRRUP BAR 5W
To Be Field Cut
(10 required per Railing
End Transition)

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-2".
4. At the Contractor's option, Bars 5W may be fabricated as a two piece bar with a 1'-2" lap splice of the bottom legs.



DETAIL "C" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTES:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. Include the cost of the Pre-cured Silicone Sealant in the Contract Unit Price for the Traffic Railing.

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.157
Reinforcing Steel	LB/LF	23.99

(The above quantities are based on a crowned roadway, with a 2% cross slope)

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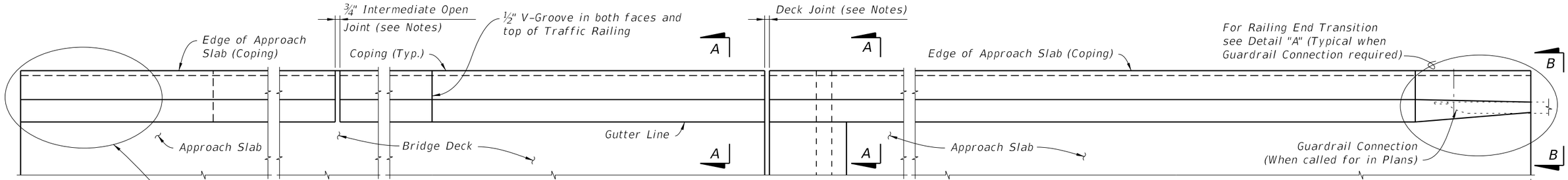
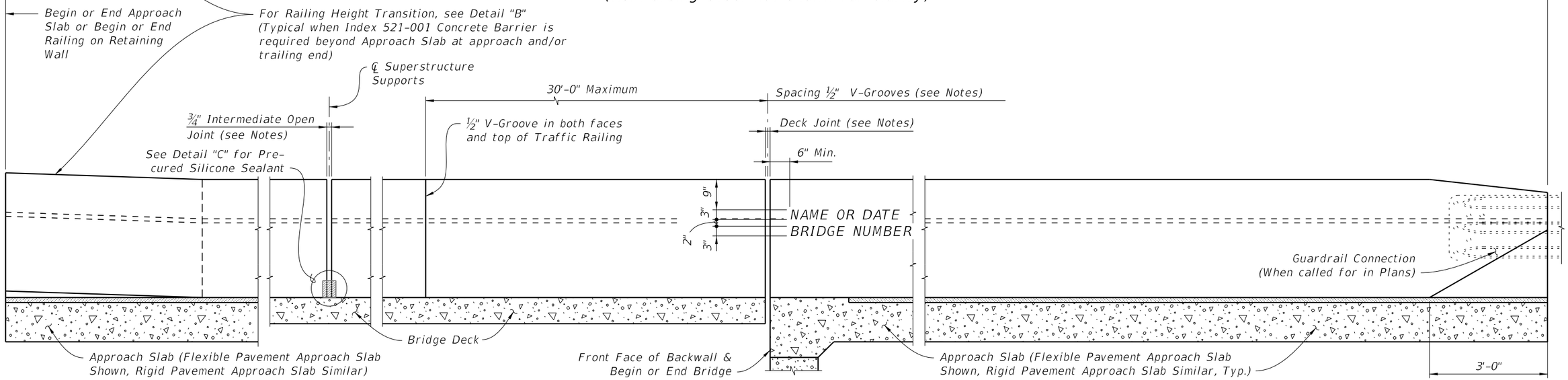
01/01/18			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (MEDIAN 36" SINGLE-SLOPE)	521-426	4 of 4



PLAN
(Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING
(Reinforcing Steel not shown for clarity)
(Railing on Bridge Deck and Approach Slab shown, Railing on Retaining Wall similar)

CROSS REFERENCE:
For Section A-A, View B-B, Detail "A" and Detail "B", see Sheet 2. For Detail "C", see Sheet 4.

TRAFFIC RAILING NOTES

1. Materials: See Structures Plans, General Notes
2. Guardrail Connection Details: See Index 536-001
3. Superelevation: Traffic Railings on Superelevated bridges may be constructed perpendicular to the roadway surface. If an adjoining railing is constructed plumb, transition the end of the Traffic Railing from perpendicular to plumb over a minimum distance of 20'-0". The cost of all modifications will be at the Contractor's expense.
4. Name, Date & Bridge Number: Place the Name and Bridge Number on the Traffic Railing on the driver's right side when approaching the bridge. Place the Date on the driver's left side when approaching the bridge. Use the Name as shown in the General Notes of the Structures Plans. The Date is the year the bridge is completed. For a widening when the existing railing is removed, use both the date on the removed rail and the year of the widening. Form letters and figures with ⅜" V-Grooves using preformed letters and figures. Black plastic letters and figures 3" tall may be used, if approved by the Engineer.
5. Open Joints: See the Superstructure Plans, Approach Slab and Retaining Wall Sheets for Deck Joint dimensions and orientation. Provide Open Railing Joints matching the dimensions of the Deck Joint at Deck Expansion Joint locations.
   A. For treatment of railings on skewed bridges see Sheet 3.
6. Open Joints: Provide ¾" Open Joints at:
   A. Superstructure supports where the slab is continuous.
   B. At ends of approach slabs when adjacent to retaining walls and at expansion joints on retaining wall junction slabs.
7. V-Grooves: Construct ½" V-Grooves plumb. Space V-Grooves equally between ¾" Open Joints and/or Deck Joints and the at V-Groove locations on the Retaining Wall footing/junction slabs.
8. Barrier Delineators: Install Barrier Delineators on top of the Traffic Railing 2" from the face of the traffic side in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.
9. Traffic Railing Transitions:
   A. Transition to guardrail: see Detail "A" and View B-B.
   B. Transition to 38" Concrete Barriers: See Detail "B" and View C-C.
10. See Superstructure Plans for drainage slot locations and size (when required)
11. For embedded conduit and junction boxes see Index 630-010. For Traffic Railings with Pedestrian/Bicycle Bullet Railings see Index 515-021 and 515-022 for notes, details and post spacing.

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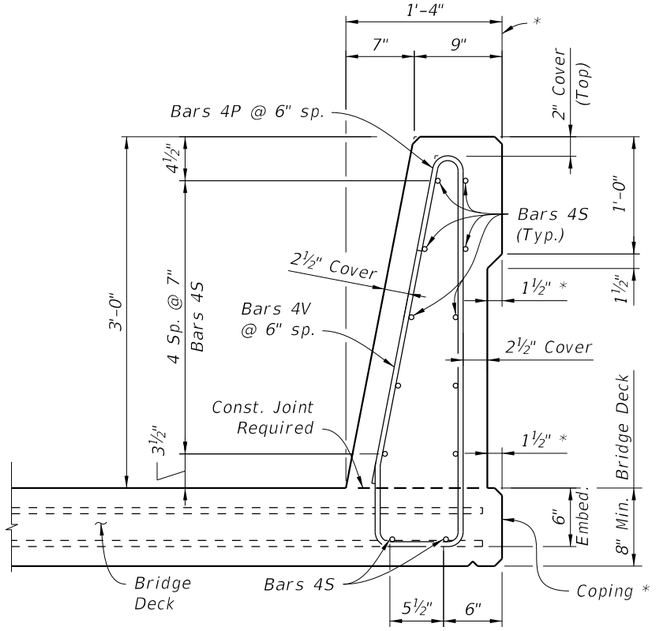
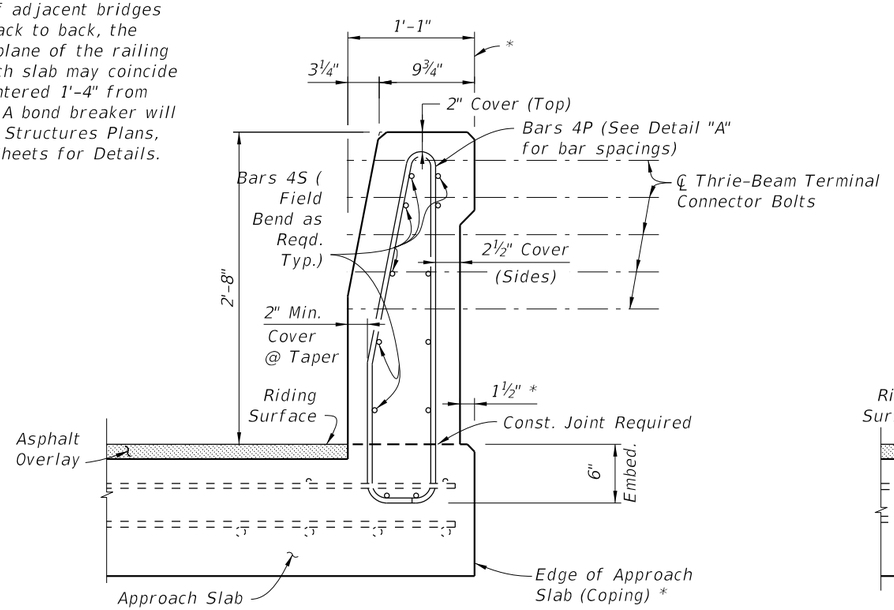
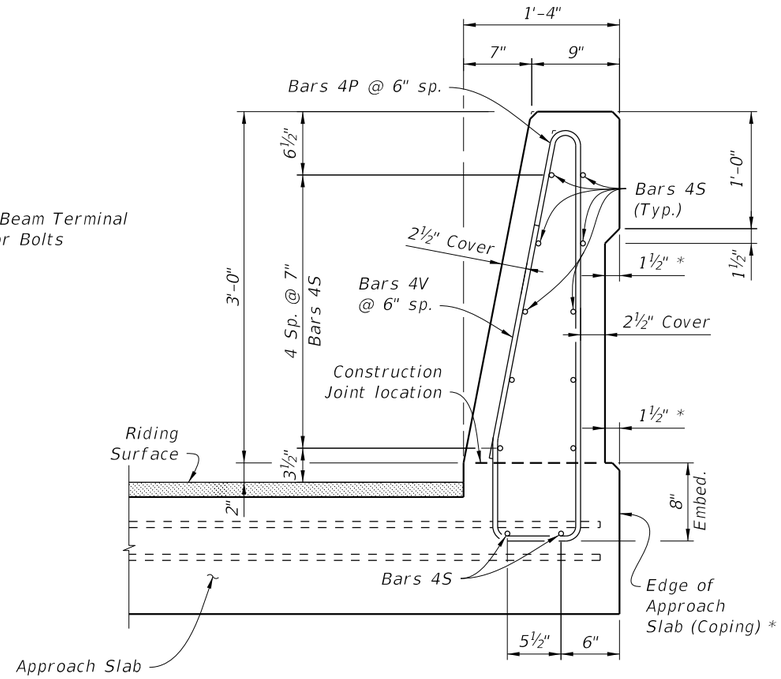
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (36" SINGLE-SLOPE)	INDEX	SHEET
11/01/20					521-427	1 of 5



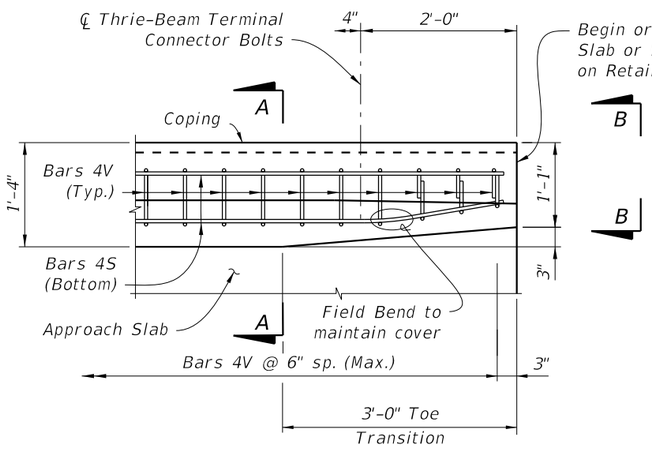
* *Where railings of adjacent bridges are to be built back to back, the outside vertical plane of the railing and deck/approach slab may coincide along a plane centered 1'-4" from each gutter line. A bond breaker will be required. See Structures Plans, Superstructure Sheets for Details.*



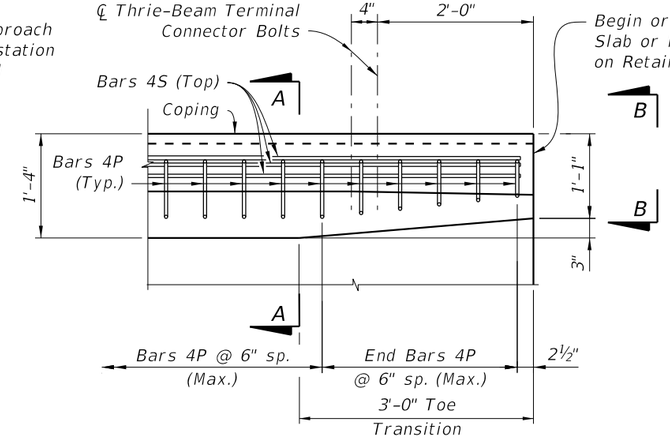
VIEW B-B
END TRANSITION
(Section thru Approach Slab shown, Section thru Retaining Walls similar)



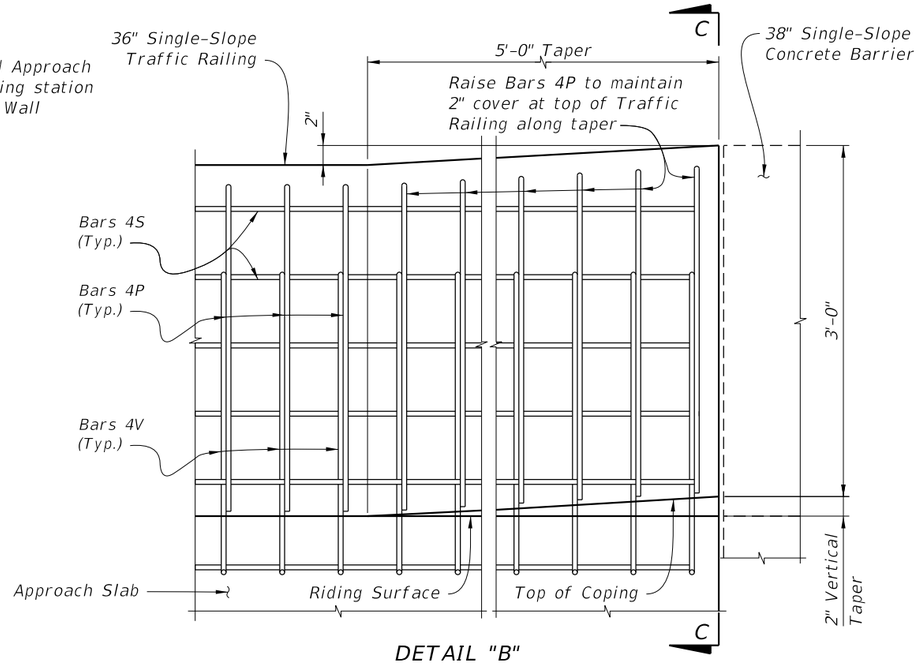
VIEW C-C
HEIGHT TRANSITION



PLAN - RAILING END TRANSITION
(Showing Bars 4V and 4S)



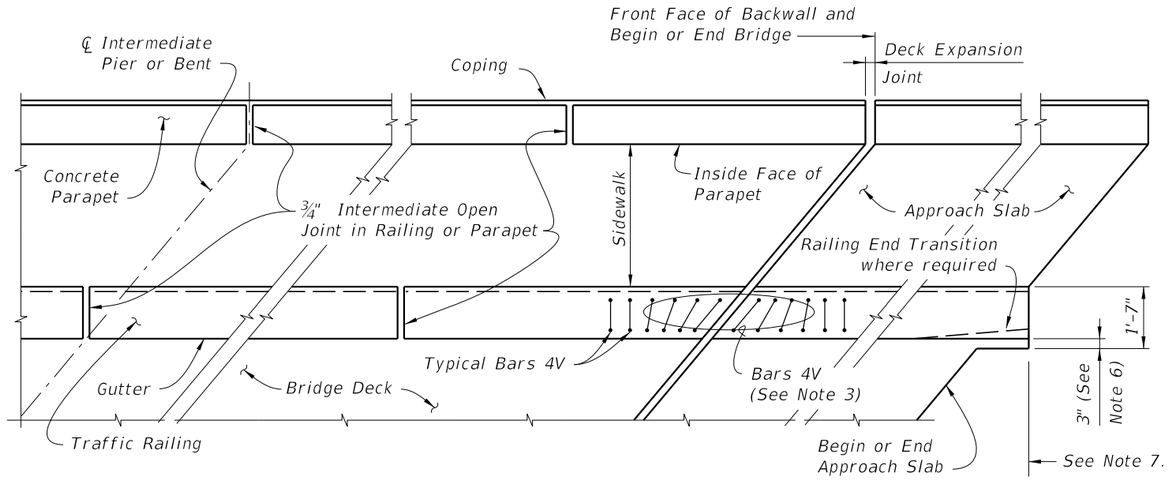
PLAN - RAILING END TRANSITION
(Showing Bars 4P and 4S)



DETAIL "B"
ELEVATION - RAILING HEIGHT TRANSITION
(Showing Transition to Index 521-001 38" Single-Slope Concrete Barrier)

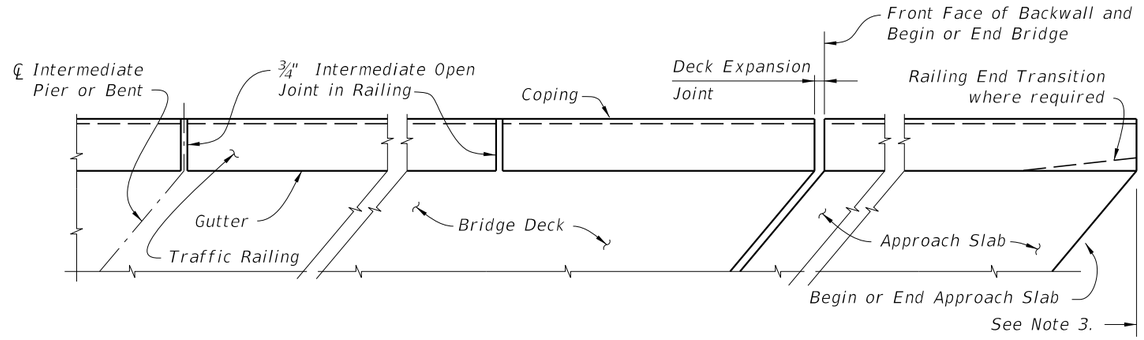
DETAIL "A"

NOTES: Omit Detail "A" and provide Detail "B" if Index 521-001 Concrete Barrier is used beyond the Approach Slab; See Structures Plans, Plan and Elevation Sheet and Roadway Plans.
Detail "B" is not required when transitioning to Index 521-610.
If Transitions A or B are not required, extend Typical Section to end of the Approach Slab.



PARTIAL PLAN VIEW OF SKEWED BRIDGE DECK AND APPROACH SLAB WITH SIDEWALK, SINGLE-SLOPE TRAFFIC RAILING AND PEDESTRIAN/BICYCLE RAILING INDEX 521-820 or 521-825, OTHER TRAFFIC RAILINGS SIMILAR

NOTES:
1) Concrete Parapet reinforcement is not effected by skew angle, see Index 521-820 for details.
2) Parapet expansion joint shall match the deck expansion joint which shall be turned perpendicular or radial to the gutter line. See Structures Plans, Superstructure Sheets for details.
3) Traffic Railing reinforcement vertical Bars 4V & 4P may be shifted up to 1" (Max.) and rotated up to 10 degrees as required to allow proper placement. Bars 4V adjacent to expansion joints shall be field adjusted to maintain clearance and spacing, extra Bars 4V will be required. Cut bottom horizontal portion of 4V Bars to maintain maximum horizontal length to each vertical leg being placed. Discard the remainder of the bar. Rotate cut bars to maintain clearance.
4) Railing ends at deck expansion joints shall follow the deck joint with allowance for joint movement. Expansion joint at the inside face of parapet shall be turned perpendicular or radial to this line. See Structures Plans, Superstructure and Approach Slab Sheets for details.
5) ¾" Intermediate Open Joints and V-Grooves in railing and parapet shall be placed perpendicular or radial to the gutter line or inside face of parapet line. See Structures Plans, Superstructure Sheets for locations.
6) At begin or end approach slab extend slab at the railing ends 3" (gutter side or back face of railing as required) as shown to provide a base for casting of the railing. Field trim toe of Bars 4V by 1 inch as required to maintain concrete cover at edge of deck.
7) When Guardrail is shown on the approach, begin placing Railing Bars 4P and 4V on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail bolt holes. If required, adjustments to the bar spacing for Bars 4P and 4V shall be made immediately adjacent to Begin or End Bridge.



PARTIAL PLAN VIEW OF SKEWED BRIDGE DECK AND APPROACH SLAB WITH SINGLE-SLOPE TRAFFIC RAILING, OTHER TRAFFIC RAILINGS SIMILAR

NOTES:
1) Railing expansion joint shall match the deck expansion joint which shall be turned perpendicular or radial to the gutter line. See Structures Plans, Superstructure Sheets for details.
2) ¾" Intermediate Open Joints and ½" V-Grooves in railing shall be placed perpendicular or radial to the gutter line. See Structures Plans, Superstructure and Approach Slab Sheets for locations.
3) When Guardrail is shown on the approach, begin placing Railing Bars 4P and 4V on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail bolt holes. If required, adjustments to the bar spacing for Bars 4P and 4V shall be made immediately adjacent to Begin or End Bridge.

GENERAL NOTES:
1) Work this Sheet with Traffic Railing, Pedestrian/Bicycle Railing, and Approach Slab Indexes as applicable.
2) Deck Expansion Joint at begin or end bridge shown. Deck Expansion Joints at ℄ Pier or Intermediate Bents are similar.
3) Partial Plan Views shown are intended as guides only. See Structures Plans, Superstructure and Approach Slab Sheets for skew angles, joint orientation, dimensions and details.
4) Railings on Raised Sidewalks shall be treated similar to the Partial Plan View of Bridge Deck with Traffic Railing.
5) If Welded Wire Reinforcement is used in lieu of conventional reinforcement, placement of the WWR vertical elements shall be similar to those shown above. Clipping of horizontal elements to facilitate placement shall be minimized where possible. When clipping is required, supplement horizontal elements by lap splicing with deformed bars having an equivalent area of steel.

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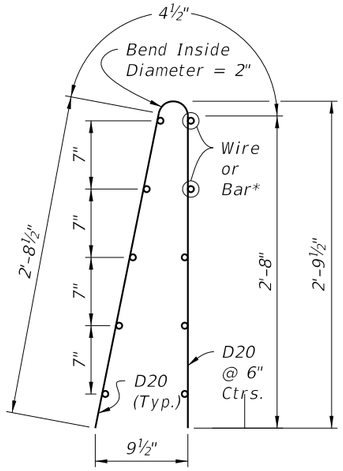
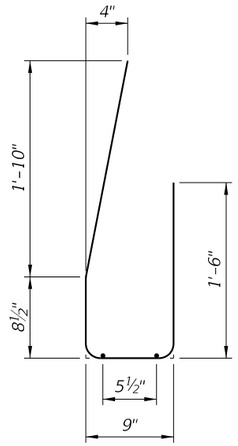
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (36" SINGLE-SLOPE)	INDEX 521-427	SHEET 3 of 5

ALTERNATE REINFORCING STEEL (WWR) DETAILS

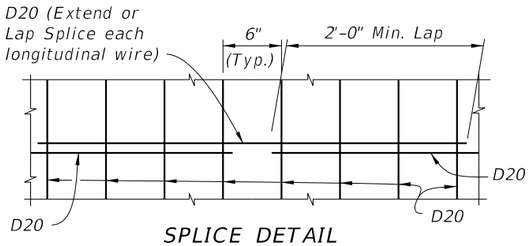
* Longitudinal D20 Wires or #4 Bars may be tied.



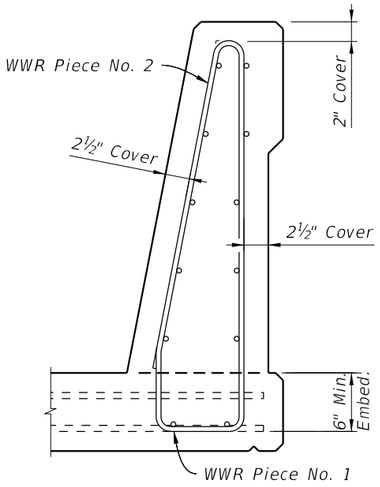
WWR Piece No. 2



WWR Piece No. 1



SPLICE DETAIL
(Between WWR Sections)



WELDED WIRE REINFORCEMENT NOTES:

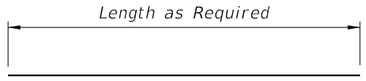
1. At the option of the Contractor deformed Welded Wire Reinforcement (WWR) may be utilized in lieu of all Bars 4P, 4S and 4V. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.
2. WWR at Railing End Transition shall be field bent inward as required (Piece 2) to maintain cover. The bottom of the vertical wires (D20) in Piece 2 shall be cut a maximum of 4 inches and the gutter side portion bent inward as required to allow placement.

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

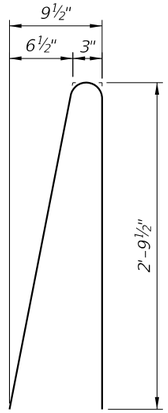
ROADWAY CROSS-SLOPE	LOW GUTTER	HIGH GUTTER
	ØB	ØB
0% to 2%	90°	90°
2% to 6%	87°	93°
6% to 10%	84°	96°

ØB shall be 90° if Contractor elects to place railing perpendicular to the deck and approach slabs.

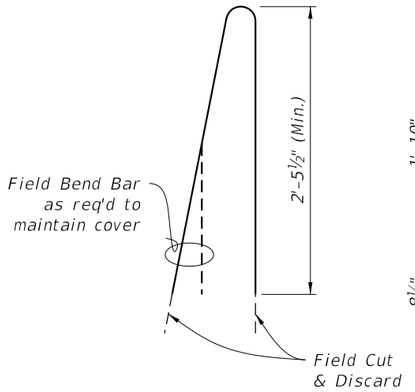
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
P	4	5'-11"
S	4	As Reqd.
V	4	4'-10"



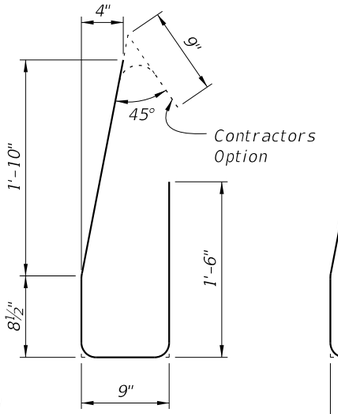
BAR 4S



STIRRUP BAR 4P



END STIRRUP BAR 4P
To Be Field Cut
and Bent

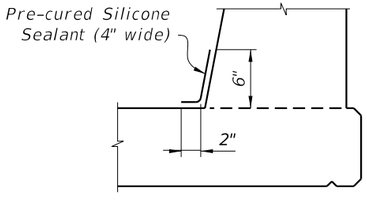


BAR 4V

END TRANSITION BAR 4V
Field Cut and Lapped

REINFORCING STEEL NOTES:

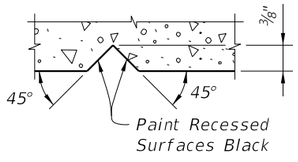
1. All bar dimensions in the bending diagrams are out to out.
2. The 8½" vertical dimensions shown for Bar 4V is based on a 6" embedment into the bridge deck without a raised sidewalk. If a raised sidewalk is to be provided, increase this dimension to achieve a 6" minimum embedment into the bridge deck. See Structures Plans, Superstructure and Approach Slab Sheets.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 2'-0".



DETAIL "C" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTES:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. Include the cost of the Pre-cured Silicone Sealant in the Contract Unit Price for the Traffic Railing.



SECTION THRU RECESSED
"V" GROOVE TO FORM INSCRIBED
LETTERS AND FIGURES

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.107
Reinforcing Steel	LB/LF	24.78

(The above quantities are based on a 2% deck cross slope; railing on low side of deck.)

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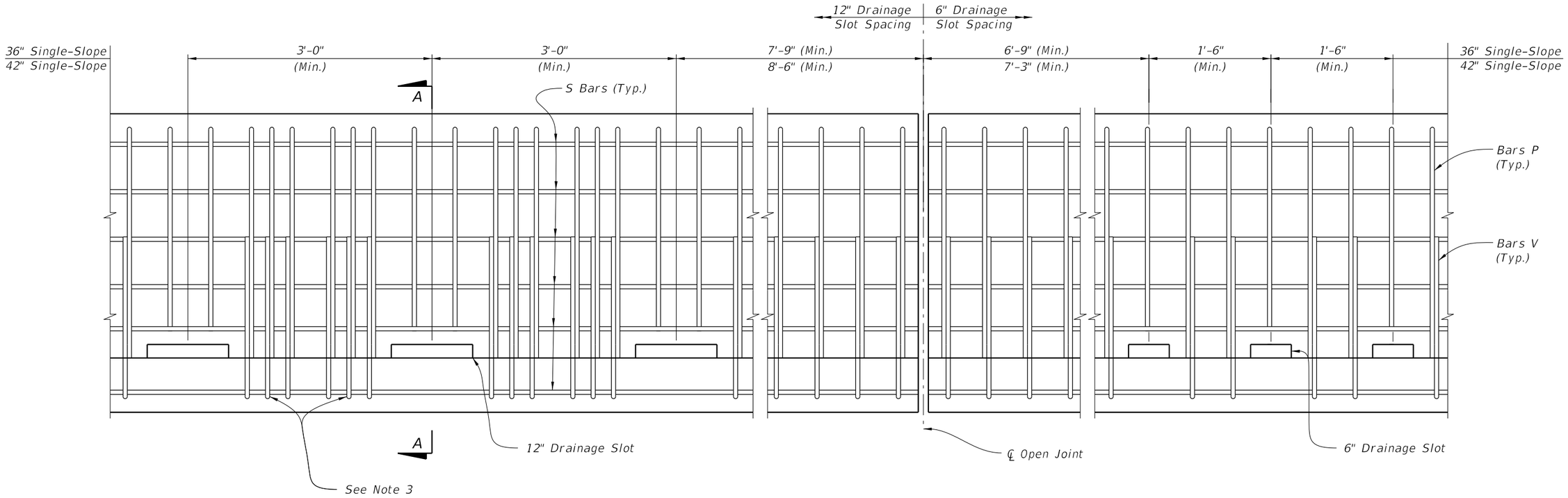
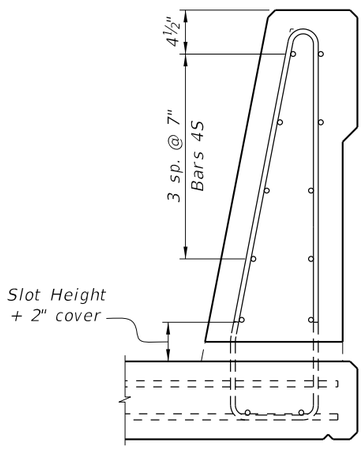
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT	FY 2025-26 STANDARD PLANS	521-427	4 of 5

TRAFFIC RAILING - (36" SINGLE-SLOPE)



ELEVATION



SECTION A-A
36" Single-Slope Shown
Other traffic railings similar

DRAINAGE SLOT NOTES:

1. Use only when required for safety. See Plans for locations and size of drainage slots.
2. Maintain 2" minimum cover to all reinforcing. Trim P Bars over drainage slots and raise bottom S bars as necessary to maintain cover.
3. For slots greater than 6" in length, add additional vertical bars (V & P) on each side of the opening.
4. Drainage slot heights are 2" or 3". See the plans for size and location details.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (36" SINGLE-SLOPE)	INDEX	SHEET
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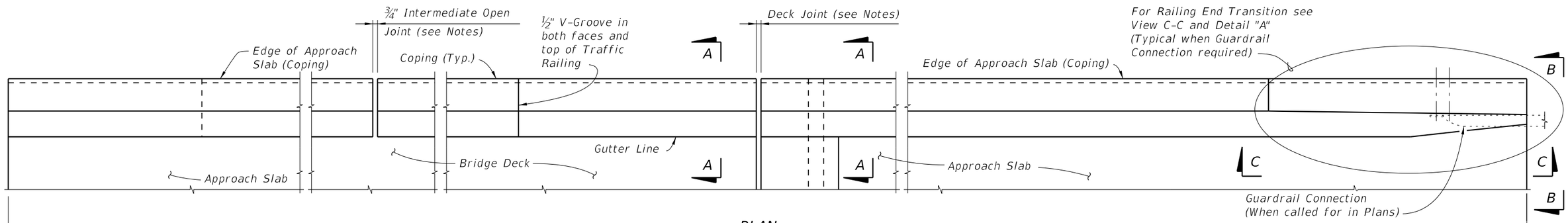
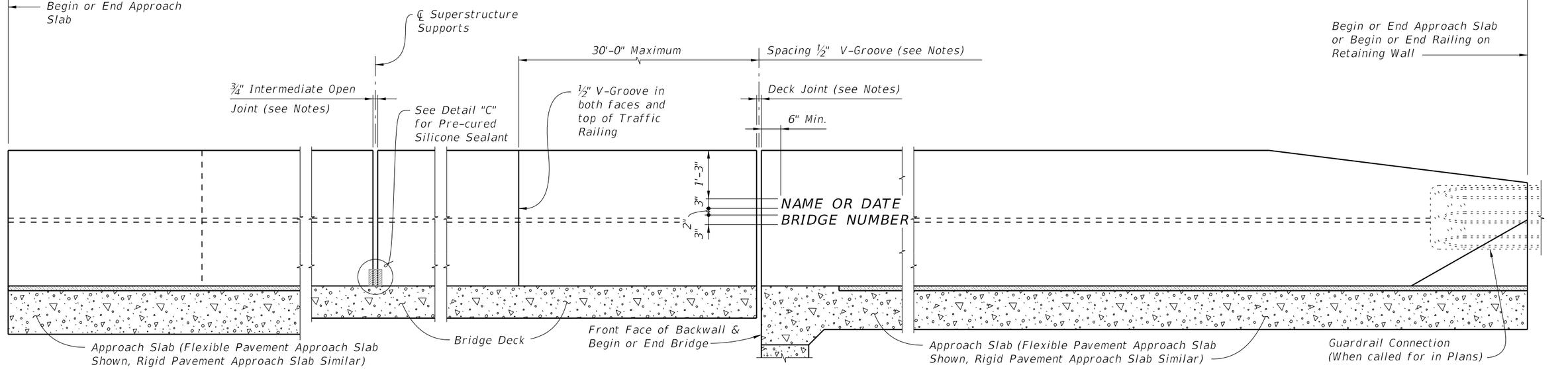


PLAN
(Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING
(Reinforcing Steel not shown for clarity)
(Railing on Bridge Deck and Approach Slab shown, Railing on Retaining Wall similar)

CROSS REFERENCE:
For Section A-A, End View B-B and Detail "A" see Sheet 2.
For Detail "B" see Sheet 3.
For Detail "C" see Sheet 4.

TRAFFIC RAILING NOTES

1. Materials: See Structures Plans, General Notes
2. Guardrail Connection Details: See Index 536-001
3. Superelevation: Traffic Railings on Superelevated bridges may be constructed perpendicular to the roadway surface. If an adjoining railing is constructed plumb, transition the end of the Traffic Railing from perpendicular to plumb over a minimum distance of 20'-0". The cost of all modifications will be at the Contractor's expense.
4. Name, Date & Bridge Number: Place the Name and Bridge Number on the Traffic Railing on the driver's right side when approaching the bridge. Place the Date on the driver's left side when approaching the bridge. Use the Name as shown in the General Notes of the Structures Plans. The Date is the year the bridge is completed. For a widening when the existing railing is removed, use both the date on the removed rail and the year of the widening. Form letters and figures with ⅜" V-Grooves using preformed letters and figures. Black plastic letters and figures 3" tall may be used, if approved by the Engineer.
5. Open Joints: See the Superstructure Plans, Approach Slab and Retaining Wall Sheets for Deck Joint dimensions and orientation. Provide Open Railing Joints matching the dimensions of the Deck Joint at Deck Expansion Joint locations.
   A. For treatment of railings on skewed bridges see Index 521-427 Sheet 3.
6. Open Joints: Provide ¾" Open Joints at:
   A. Superstructure supports where the slab is continuous.
   B. At ends of approach slabs when adjacent to retaining walls and at expansion joints on retaining wall junction slabs.
7. V-Grooves: Construct ½" V-Grooves plumb. Space V-Grooves equally between ¾" Open Joints and/or Deck Joints and the at V-Groove locations on the Retaining Wall footing/junction slabs.
8. Barrier Delineators: Install Barrier Delineators on top of the Traffic Railing 2" from the face of the traffic side in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.
9. Traffic Railing Transitions: See Plans for type and location
   A. Transition to guardrail: See Detail "A" and View B-B.
   B. Transition to 44" Roadway Concrete Barriers. See Detail "B" and View C-C.
   C. Transitions to 36" or 38" concrete barriers at end of approach slab: See Detail "C", View D-D and Section E-E.
10. Drainage Slots: See Superstructure Plans for drainage slot locations and size (if required). See Index 521-427 Sheet 5 for details.
11. Embedded conduit and junction boxes: See Index 630-010.

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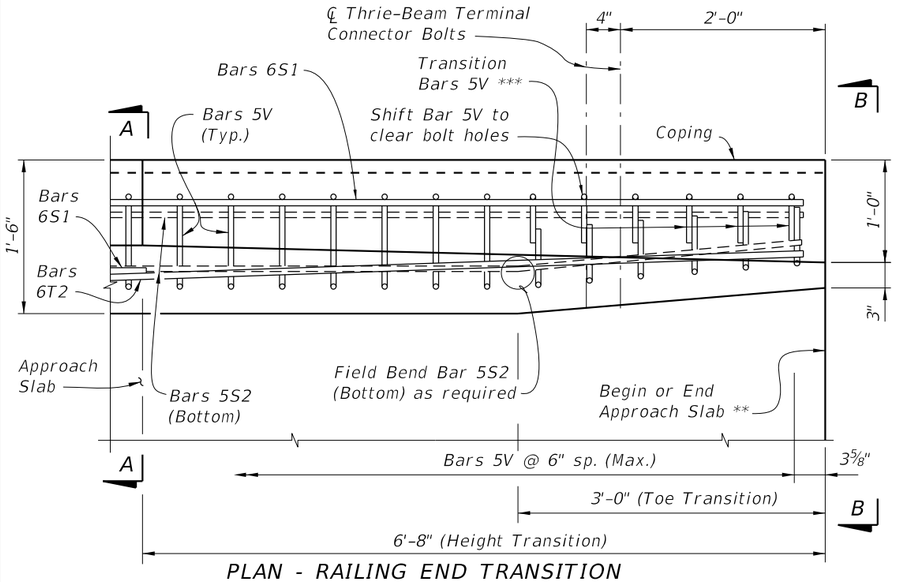
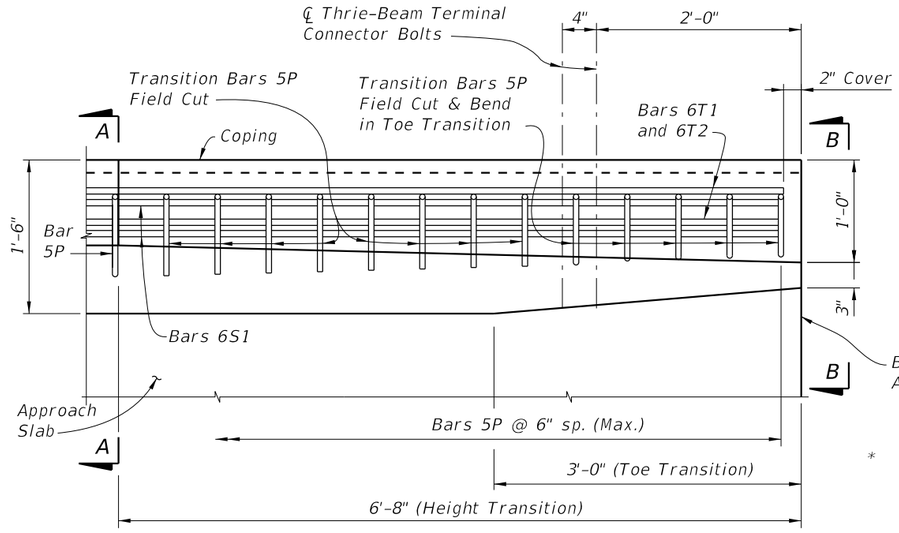
LAST REVISION	REVISION	DESCRIPTION:				
11/01/20			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (42" SINGLE-SLOPE)	INDEX 521-428	SHEET 1 of 4



PLAN - RAILING END TRANSITION
(Showing Lower Section with Bars 5V, 6S1, 5S2 and 6T2)



PLAN - RAILING END TRANSITION
(Showing Upper Section with Transition Bars 5P and Bars 6S1, 6T1 & 6T2)

NOTE:
Begin placing Railing Bars 5P and 5V on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5P and 5V shall be made immediately adjacent to Begin or End Bridge. Shift Bars 5P and 5V (see Detail "A") as required to maintain cover in Railing End Transition.

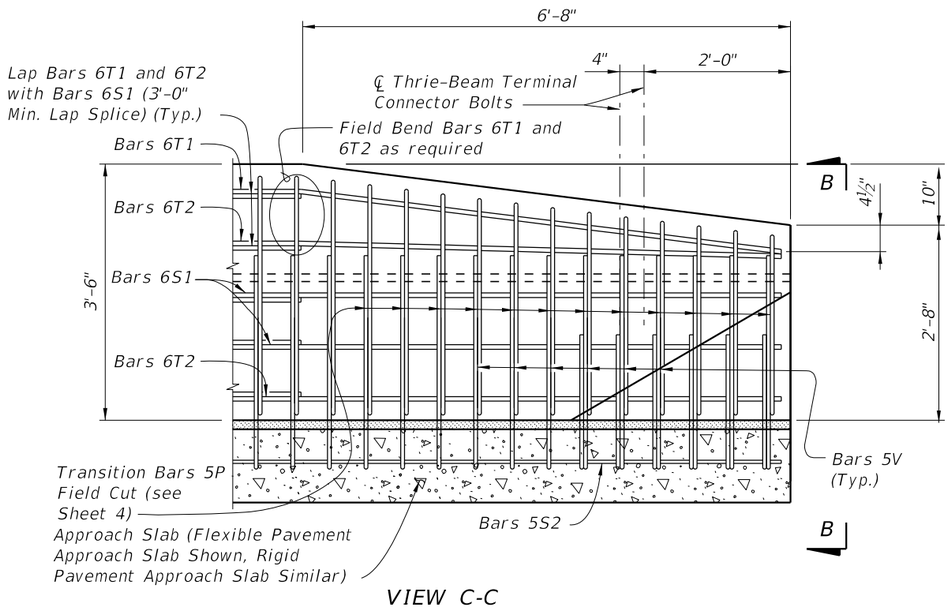
* Where railings of adjacent bridges are to be built back to back, the outside vertical plane of the railing and deck may coincide along a plane centered 1'-6" from each gutter line. A bond breaker will be required. See Structures Plans, Superstructure Sheets for Details.

** See joint orientation note on Sheet 1.

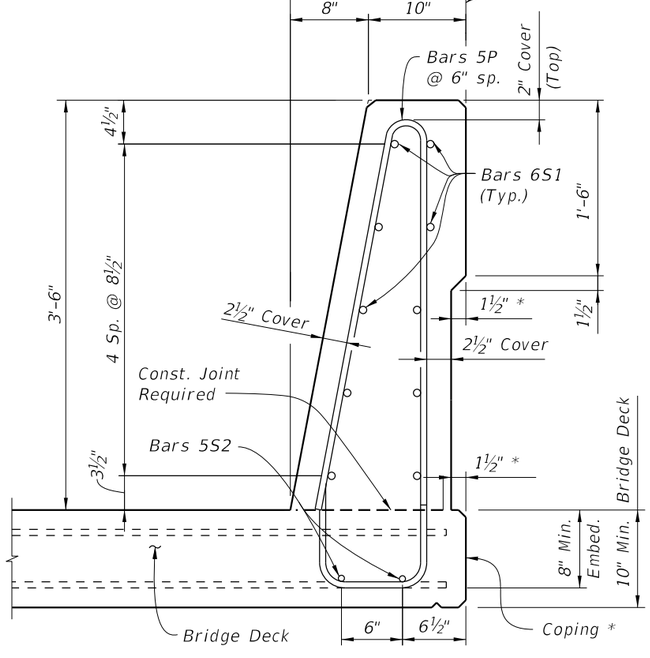
*** Field Cut & Lap Bars 5V in Toe Transition to maintain clearance.

DETAIL "A"

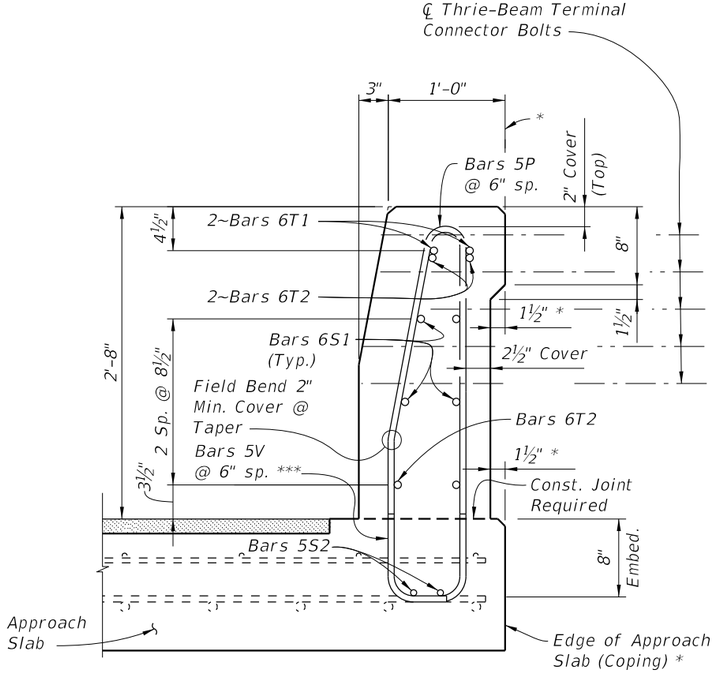
NOTE:
Omit Detail "A" and provide Detail "B" if 44" Concrete Barrier or Single-Slope Traffic Railing is used beyond the Approach Slab. See Structures Plan and Elevation Sheet and Roadway Plans. If Transitions are not required, extend Typical Section to end of Approach Slab.



VIEW C-C
ELEVATION - RAILING END TRANSITION
(Guardrail not shown for clarity)



SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING
(Section Thru Bridge Deck shown -
Section Thru Approach Slab similar)



VIEW B-B
END TRANSITION
(Section thru Approach Slab shown,
Section thru Retaining Walls similar)

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (42" SINGLE-SLOPE)	INDEX	SHEET
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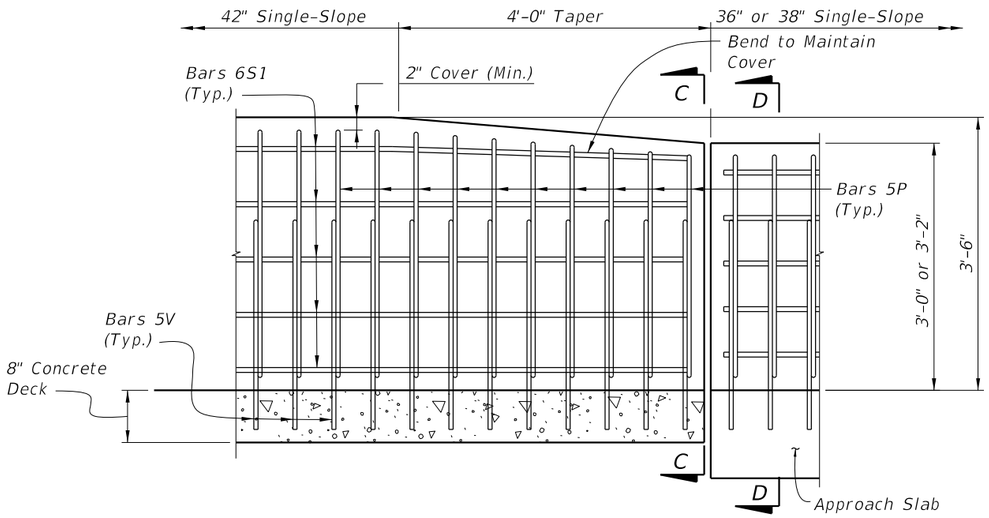
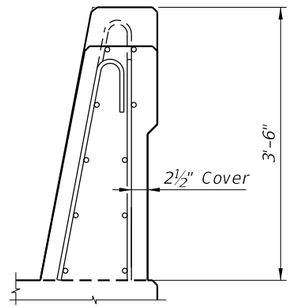
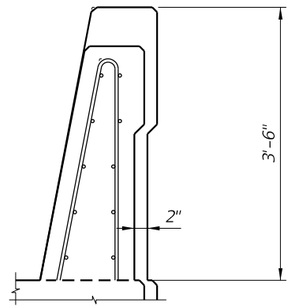
NOTE:
1. Provide Detail "B" height transition where 42" Traffic Railings are required on bridge, and 36" or 38" Barriers are shown on approaches. See Structures Plans for coping details.
2. Work Detail "B" with Indexes 400-090 or 400-091, 521-427, and 521-610 as necessary.
3. Field cut 5P Bars as shown to maintain 2" min. (4" max.) cover at top of traffic railing.





VIEW C-C
RAILING HEIGHT TRANSITION
(Begin/End of Bridge)
(Bars 5V not shown for clarity)



SECTION D-D
(Index 400-091 Shown, 400-090 Similar)
(Index 521-427 Bars 4V not shown for Clarity)

DETAIL "B"

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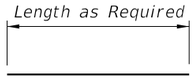
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (42" SINGLE-SLOPE)	INDEX	SHEET
11/01/20						521-428	3 of 4

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

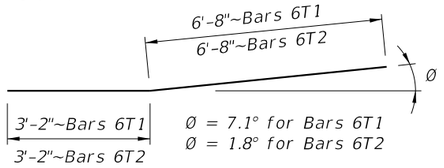
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
P	5	7'-0"
S1	6	As Reqd.
S2	5	As Reqd.
T1 & T2	6	10'-0"
V	5	5'-9"

ROADWAY CROSS-SLOPE	LOW GUTTER	HIGH GUTTER
	ØB	ØB
0% to 2%	101°	101°
2% to 6%	98°	104°
6% to 10%	95°	107°

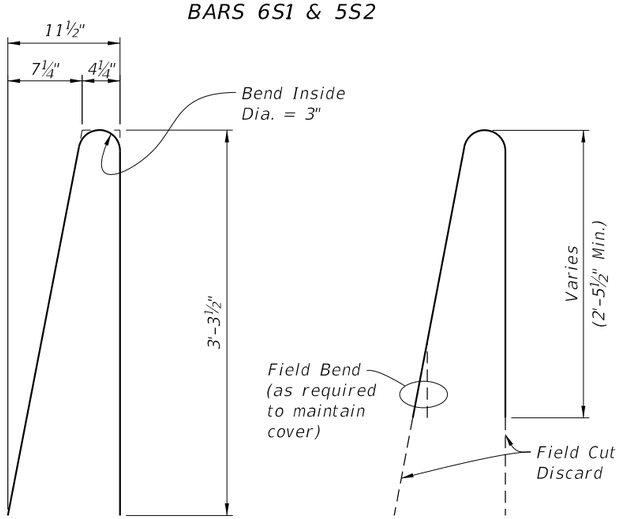
ØA and ØB shall be 90° if Contractor elects to place Railing perpendicular to the Deck.



BARS 6S1 & 5S2

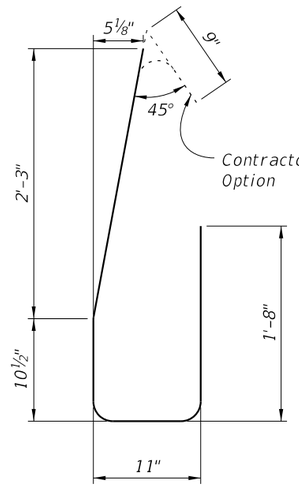


TRANSITION BARS 6T1 & 6T2
(2~Bars 6T1 & 3~Bars 6T2 required per Railing End Transition)

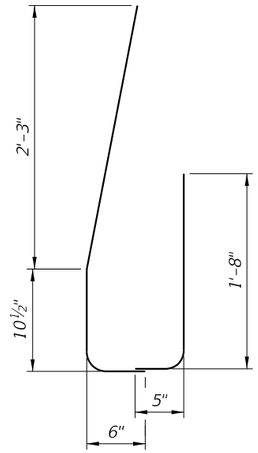


STIRRUP BAR 5P

TRANSITION STIRRUP BAR 5P
To Be Field Cut (10 of each required per Railing End Transition)

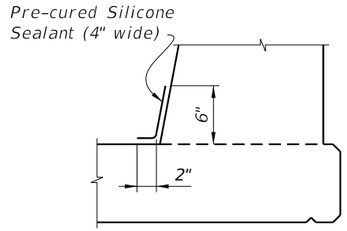


STIRRUP BAR 5V



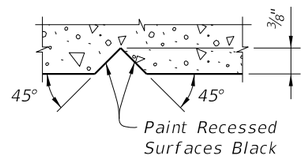
END STIRRUP BAR 5V
To Be Field Cut and Lapped

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 6S1 may be continuous or spliced at the construction joints. Lap splices for Bars 6S1 and 5S2 shall be a minimum of 3'-0" and 2'-2", respectively.
4. The Contractor may utilize deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.



DETAIL "C" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTES:
1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.



SECTION THRU RECESSED
"V" GROOVE TO FORM INSCRIBED
LETTERS AND FIGURES

ESTIMATED TRAFFIC RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.143
Reinforcing Steel	LB/LF	39.34

Note:
The estimated railing quantities are based on a 2% deck cross slope; railing on low side of deck.

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TRAFFIC RAILING NOTES

This Traffic Railing Retrofit has been structurally evaluated to be equivalent or greater in strength to a design which has been successfully crash tested previously and approved for a NCHRP Report 350 Test Level 4 rating, except for the Tapered End Transition on Index 521-484.

CONCRETE: Concrete for the Traffic Railing (Vertical Face Retrofit), Spread Footing Approaches and replacement curb sections shall be Class IV. Concrete for Curb Transition Blocks shall be Class II (Bridge Deck).

REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60, except Expansion Dowel Bar B which shall be ASTM A36 smooth round bar hot-dip galvanized in accordance with the Specifications.

EXPANSION SLEEVE ASSEMBLY: Pipe sleeve shall be ASTM D2241 PVC pipe, SDR13.5. End Cap shall be ASTM D2466 PVC socket fitting, Schedule 40. End of Sleeve assembly at railing open joint shall be sealed with silicone to prevent concrete intrusion during railing casting. A compressible expanded polystyrene plug is required in the opposite end of the assembly for correct dowel positioning during railing casting. Correct dowel positioning is required in order to provide for thermal movement of the deck.

ADHESIVE-BONDED ANCHORS AND DOWELS: Adhesive Bonding Material Systems for Anchors and Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 23,800 lbs. for Dowel Bars 6D on the inside face (traffic side) of the railing (1'-0" embedment) and 18,500 lbs for Dowel Bars 6D along the outside face of the traffic railing (5" min. embedment).

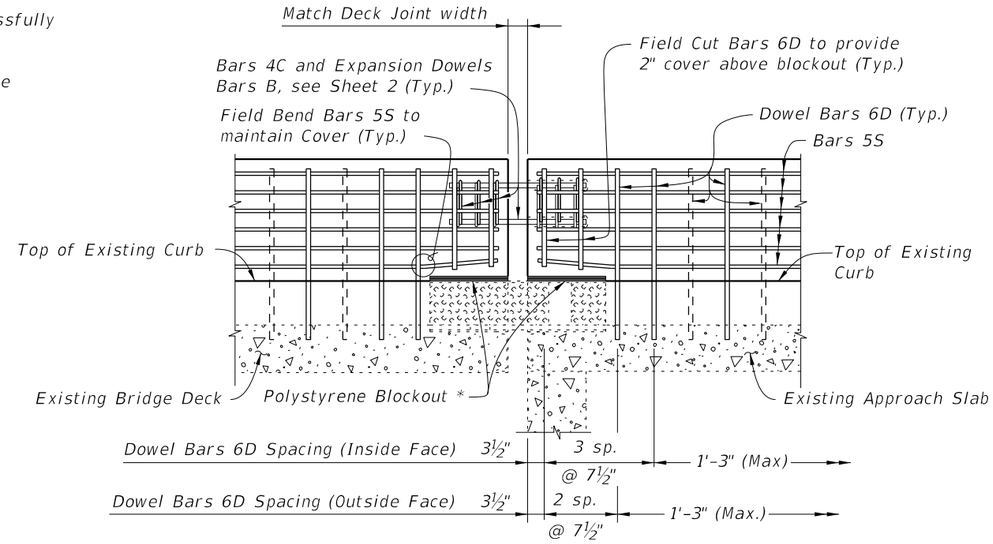
BRIDGES ON CURVED ALIGNMENTS: The details presented in these Indexes are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

NAME, DATE AND BRIDGE NUMBER: The Name and Bridge Number shall be placed on the Traffic Railing so as to be seen on the driver's right side when approaching the bridge. The Date shall be placed on the driver's left side when approaching the bridge. The Date shall be the year the bridge was constructed. Letters and figures may be 3" tall black plastic as approved by the Engineer or $\frac{3}{8}$" V-Grooves. V-Grooves shall be formed by preformed letters and figures.

ELEVATION MARKERS: Elevation Markers need not be replaced when portions of the existing traffic railing carrying existing elevation markers are removed.

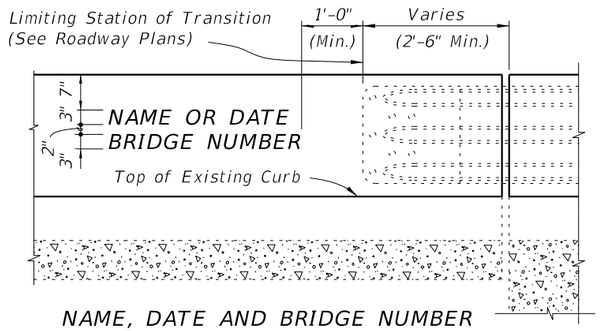
BARRIER DELINEATORS: Barrier Delineators shall meet Specification Section 993. Install Barrier Delineators on top of the Traffic Railing 2" from the face on the traffic side in accordance with Specification Section 705. Match the Barrier Delineator color (white or yellow) to the near edgeline.

PAYMENT: Payment under Traffic Railing (Vertical Face Retrofit) includes all materials and labor required to construct the railing and incidental work as required for transition blocks, curbs, spread footing approaches, and Barrier Delineators.



PARTIAL ELEVATION OF RAILING SHOWING FINGER/SLIDING PLATE JOINT - SCHEMES 2 THRU 5
(Begin or End Bridge Shown, Intermediate Joints Similar)

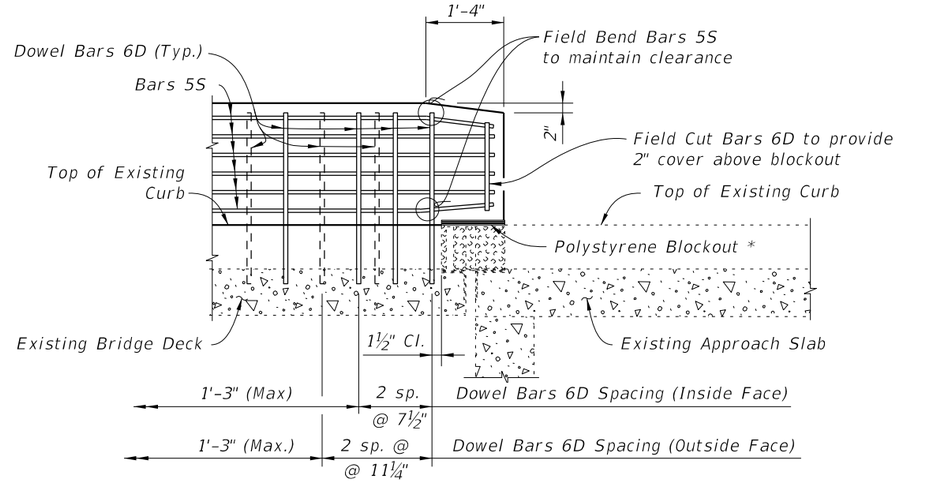
* Place 1" thick polystyrene blockout over limits of bridge deck expansion joint full width to the end of the Traffic Railing to allow for thermal movement. Seal Forms to prevent mortar leakage into the expansion joint.



NAME, DATE AND BRIDGE NUMBER
LETTERING DETAIL

ESTIMATED TRAFFIC RAILING QUANTITIES			
ITEM	UNIT	QUANTITY	
		9" Curb	Increment
Concrete	CY/FT	0.064	0.003 per in. height
Reinforcing Steel	LB/FT	13.27	0.10 per in. length

(Quantities are based on a 9" curb, no curb cross slope and 1'-0" embedment length of Bars 6D. If the curb height or embedment length differs from that shown, increase or decrease quantity by the given per inch increment.) See Index 521-484, Sheet 4 for Spread Footing Approach Quantities.



PARTIAL ELEVATION OF RAILING SHOWING FINGER/SLIDING PLATE JOINT AT BEGIN OR END BRIDGE - SCHEME 1
(Guardrail Transition not shown for clarity)

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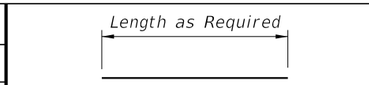
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) TYPICAL DETAILS & NOTES	INDEX	SHEET
07/01/19						521-480	1 of 2

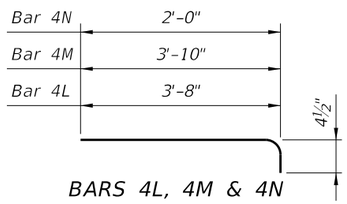
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM

BILL OF REINFORCING STEEL

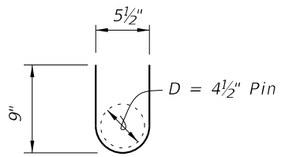
MARK	SIZE	LENGTH	INDEX NO.	NOTE NOS.
A	4	AS REQD.	521-482 ONLY	3
B	1" Ø	2'-0"	521-481 THRU 521-483	2 & 5
C	4	2'-0"	521-481 THRU 521-484	1, 2 & 3
D	6	AS REQD.	521-481 THRU 521-484	2 & 3
E	5	7'-4"	521-484 ONLY	1 & 3
F	5	4'-3"	521-484 ONLY	3
G	4	AS REQD.	521-484 ONLY	3
L	4	4'-1"	521-481 THRU 521-483	1 & 3
M	4	4'-3"	521-482 ONLY	1 & 3
N	4	2'-5"	521-482 ONLY	1 & 3
S	5	AS REQD.	521-481 THRU 521-484	2, 3 & 4



BARS 4A, B, 6D, 5F, 4G & 5S



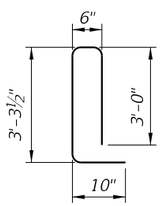
BARS 4L, 4M & 4N



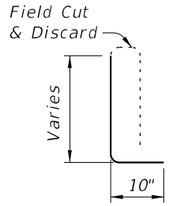
BARS 4C
(12 required per open joint)

REINFORCING STEEL NOTES:

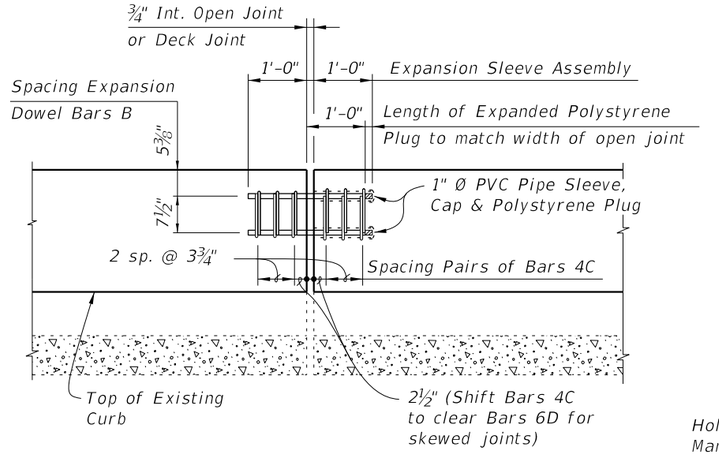
1. *All bar dimensions in the bending diagrams are out to out.*
2. *The reinforcement for the railing on a retaining wall shall be the same as detailed for a bridge deck.*
3. *All reinforcing steel in the Vertical Face Retrofit Railing shall have a 2" minimum cover.*
4. *Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-2".*
5. *Expansion Dowel Bars B shall be ASTM A36 smooth round bar and hot-dip galvanized in accordance with the Specifications.*



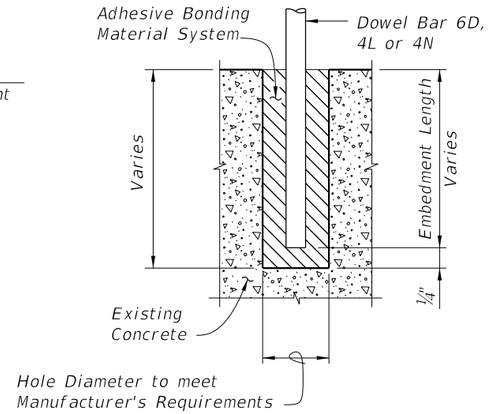
BARS 5E
(Typical Section)



BARS 5E
(Tapered End Transition)



OPEN JOINT EXPANSION DOWEL DETAIL
(Railing Reinforcing Not Shown For Clarity)



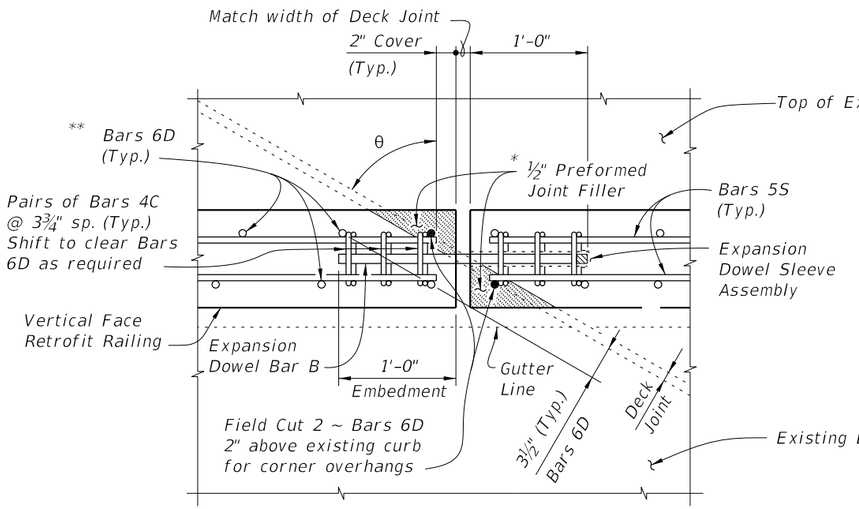
DOWEL DETAIL

Dowel Installation Notes:

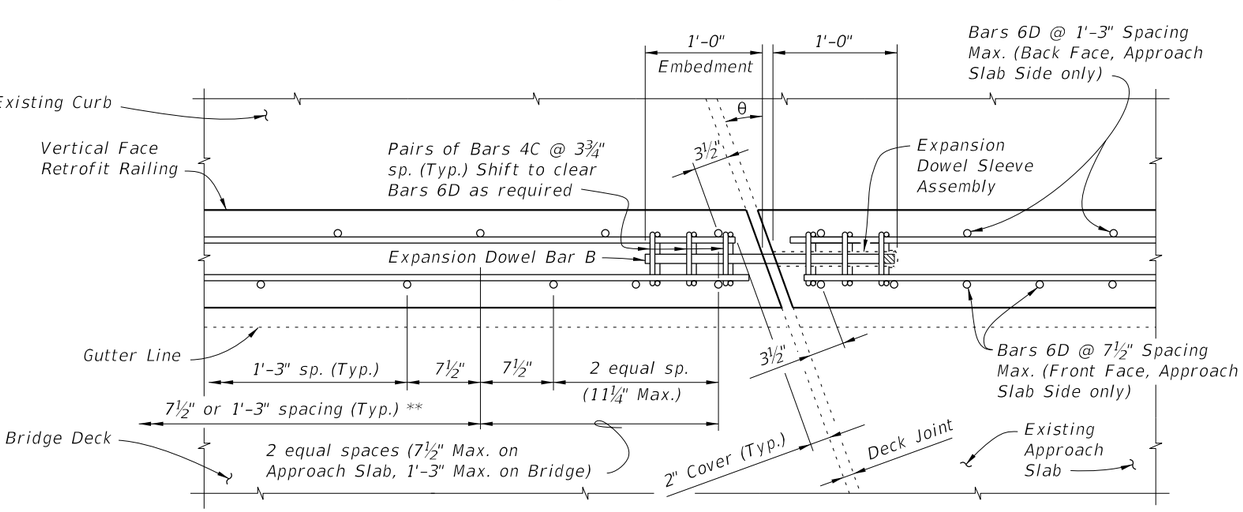
1. *Shift dowel holes to clear if the existing reinforcement is encountered.*
2. *See Index 521-481 thru 521-484 for required embedment length of Bars 6D, 4L or 4N.*

* ½" Preformed Joint Filler at top of Existing Curb shall extend beyond the joint material (Silicone, poured rubber, armored neoprene seal or sliding plates) as shown to prevent concrete intrusion during railing casting and shall be placed so as not to restrict in any way normal joint movement.

** See Index 521-481 thru 521-484 for spacing of Bars 6D.



PARTIAL PLAN OF RAILING (SKEW ANGLE θ GREATER THAN 20°)
(Skewed Deck Joint at Begin or End Bridge Shown, Skewed Deck Joint at Intermediate Pier or Bent Similar)

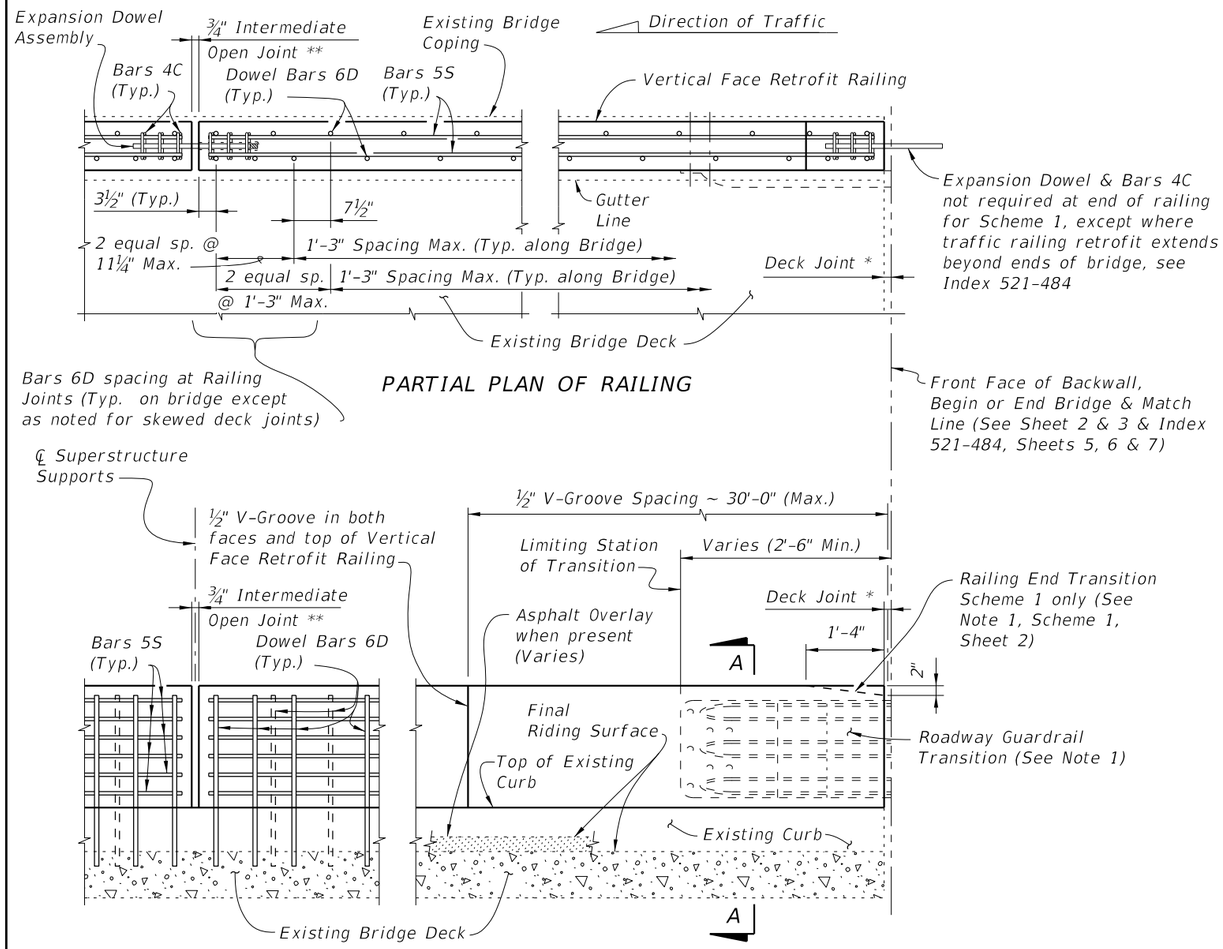


PARTIAL PLAN OF RAILING (SKEW ANGLE θ = 20° OR LESS)
(Skewed Deck Joint at Begin or End Bridge Shown, Skewed Deck Joint at Intermediate Pier or Bent Similar)

SKEW DETAIL

10/17/2024 11:14:05 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/16			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) TYPICAL DETAILS & NOTES	INDEX 521-480 / SHEET 2 of 2



PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies & Bars 4C not shown for clarity)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

NOTES:

1. On approach end provide a Roadway Guardrail Transition, Index 536-002 (as shown) or other site specific treatment. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is on the bridge, attach Thrie Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is along the Wing Wall, see Schemes 2 or 3, Index 521-481, Sheet 2 and 3. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing. For treatment of trailing end see Roadway Plans. If vertical face retrofit extends beyond bridge and approach slab ends, see Index 521-484 for treatment and Details.

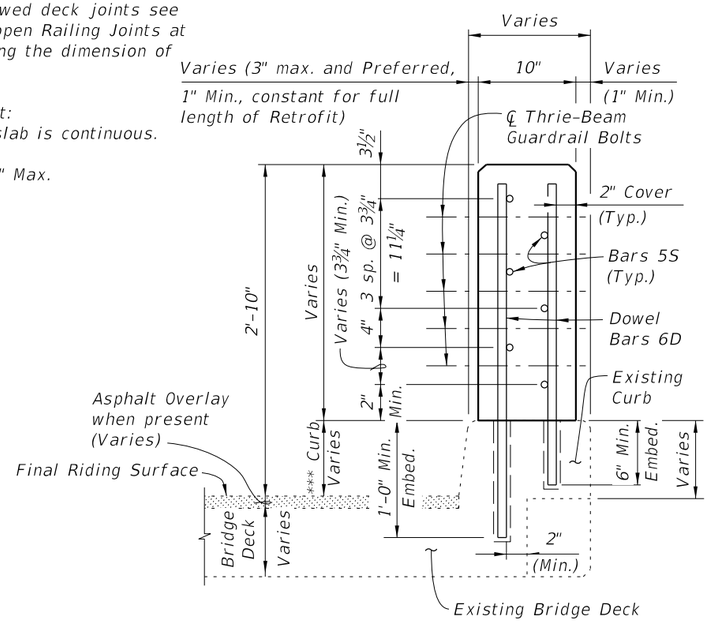
2. Field cut Bars 5S and Dowel Bars 6D to maintain clearance within Vertical Face Retrofit Railing.

3. Where existing structure has been removed and not encased in new concrete; match adjoining areas and finish flat by grouting or grinding as required. Exposed existing reinforcing steel not encased in new concrete shall be burned off 1" below existing concrete and grouted over.

* Non skewed deck joint shown, actual joint dimensions and orientation vary. For treatment at skewed deck joints see Skew Detail, Index 521-480. Provide open Railing Joints at Deck Expansion Joint locations matching the dimension of the Deck Joint.

** Provide ¾" Intermediate Open Joints at:
(1) – Superstructure supports where slab is continuous.

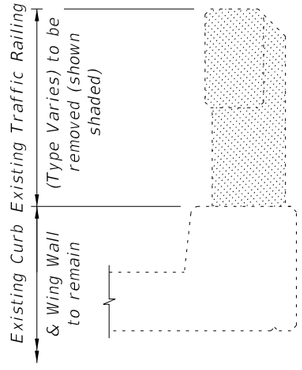
*** Curb heights vary from 5" Min. to 1'-2" Max.



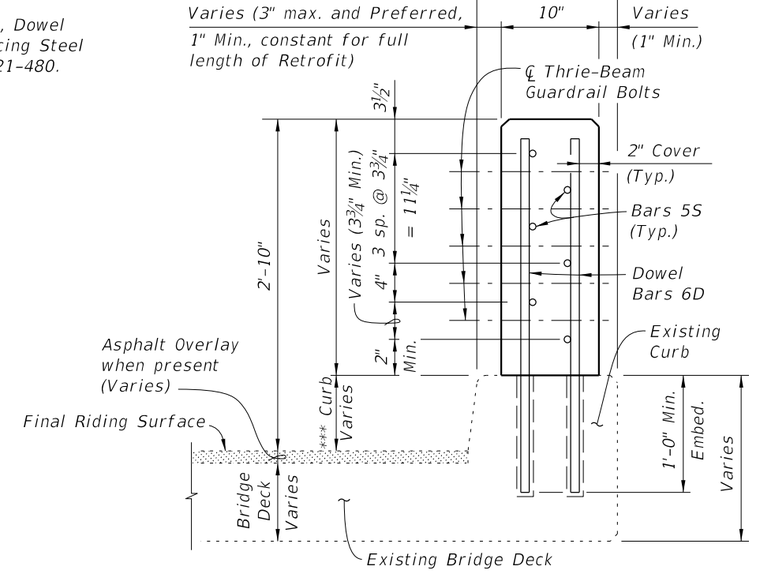
SECTION A-A
TYPICAL SECTION THRU RAILING ON CURB WITH CORBELS

CROSS REFERENCE:

For General Notes, Estimated Quantities, Dowel Detail, Expansion Dowel Detail, Reinforcing Steel Notes & Bending Diagrams see Index 521-480.



TYPICAL SECTION THRU EXISTING TRAFFIC RAILING SHOWING LIMITS OF REMOVAL
(BRIDGE DECK SHOWN, WING WALL SIMILAR)



SECTION A-A
TYPICAL SECTION THRU RAILING ON FULL DEPTH CURB (BRIDGE SHOWN, WING WALL SIMILAR)

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) NARROW CURB	INDEX	SHEET
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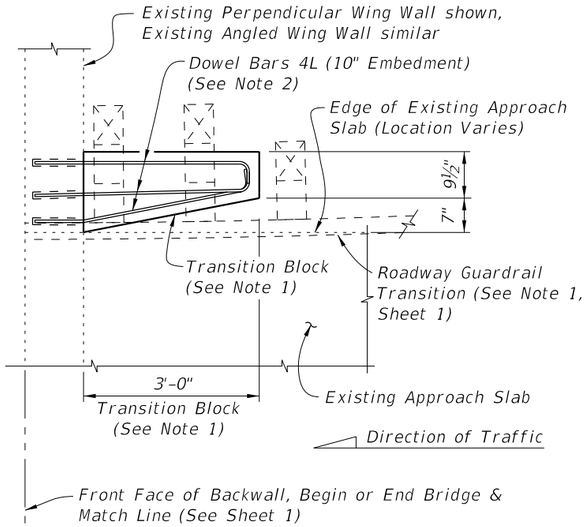
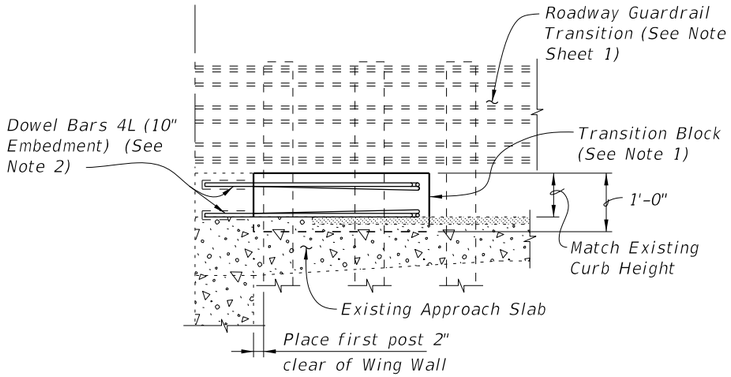


PARTIAL PLAN OF GUARDRAIL



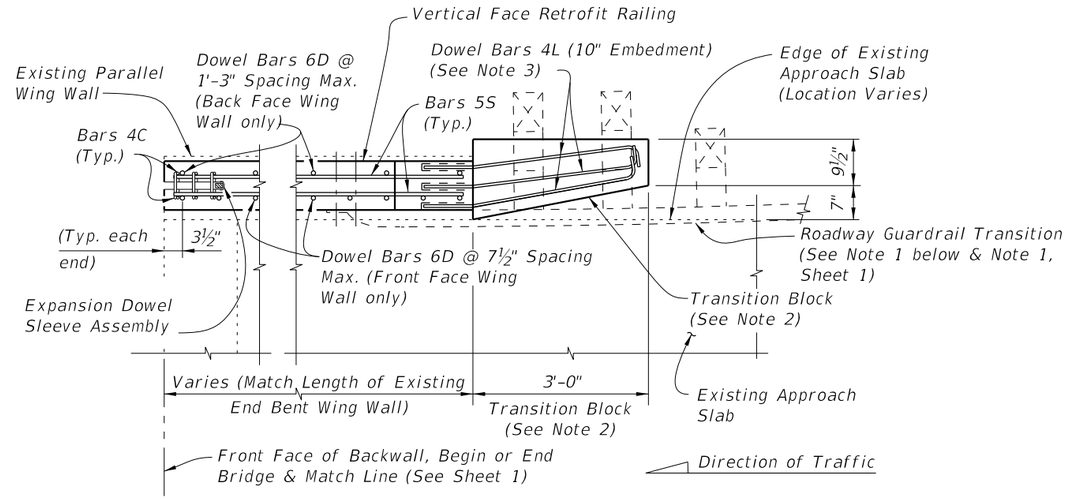
PARTIAL ELEVATION OF INSIDE FACE OF GUARDRAIL

SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

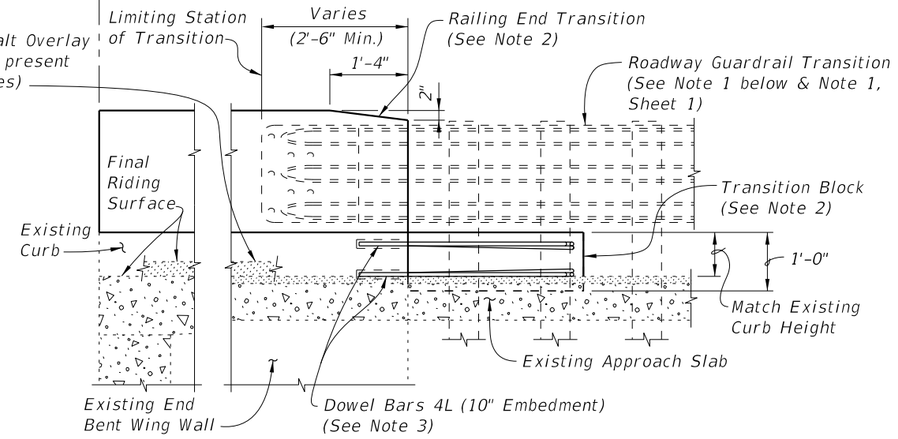
SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 2
RAILING END TREATMENT FOR PARALLEL WING WALLS

SCHEME 2 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Index 521-481, Sheet 1. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing.

2. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

3. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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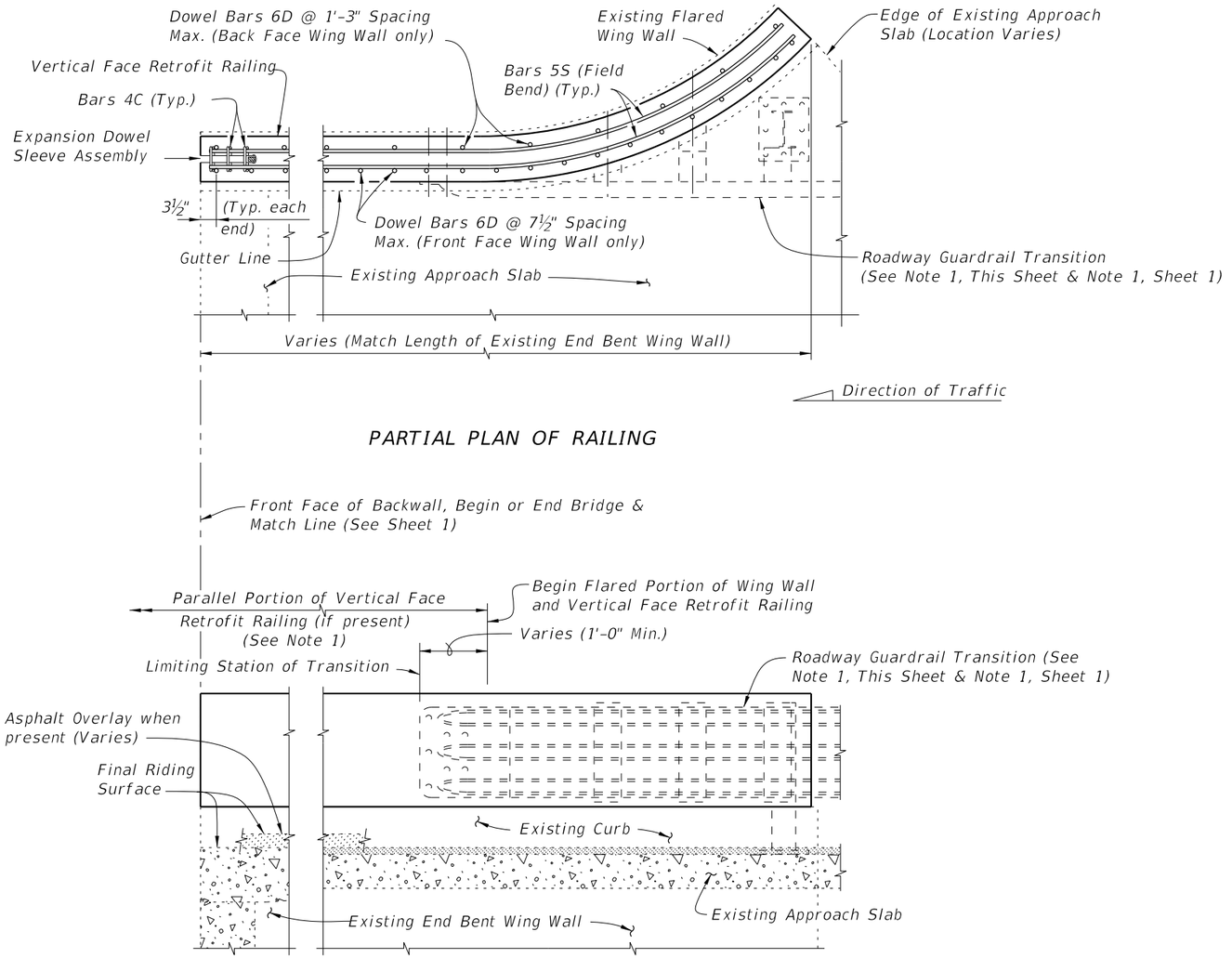
LAST REVISION	REVISION	DESCRIPTION:				
07/01/07			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) NARROW CURB	INDEX 521-481	SHEET 2 of 3



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 3 NOTE:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1.

SCHEME 3
RAILING END TREATMENT FOR FLARED WING WALLS

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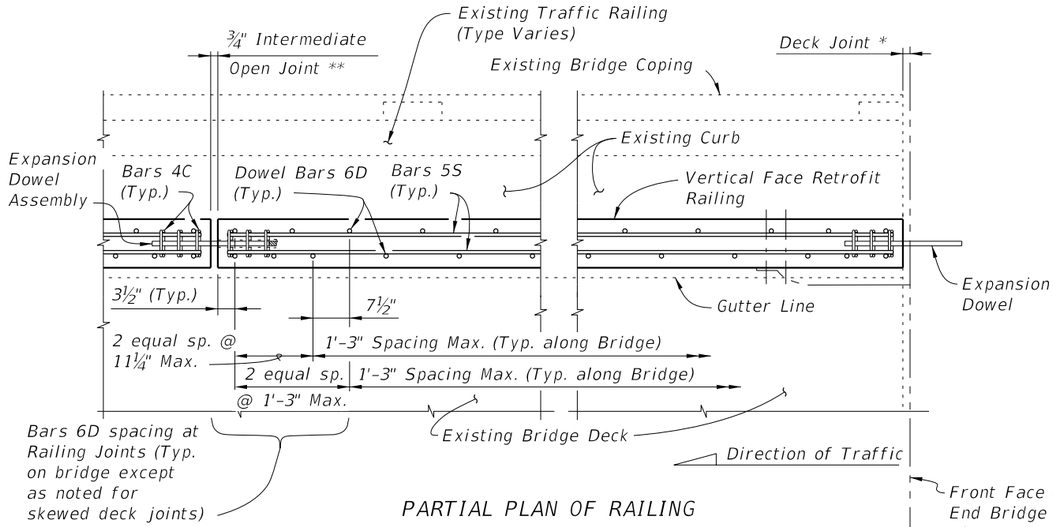
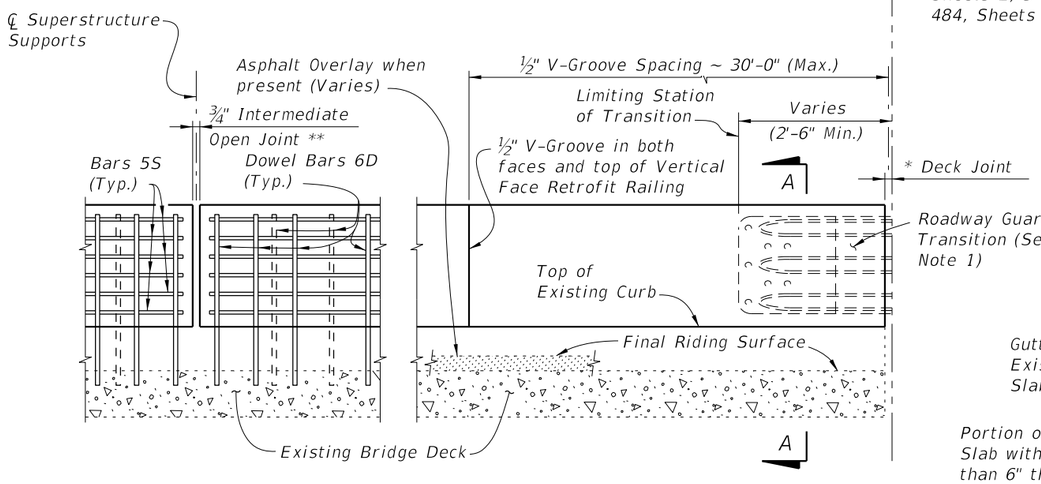
LAST REVISION	REVISION	DESCRIPTION:				
07/01/07			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) NARROW CURB	INDEX 521-481	SHEET 3 of 3



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Traffic Railing, Expansion Dowel
Assemblies & Bars 4C not shown for clarity)

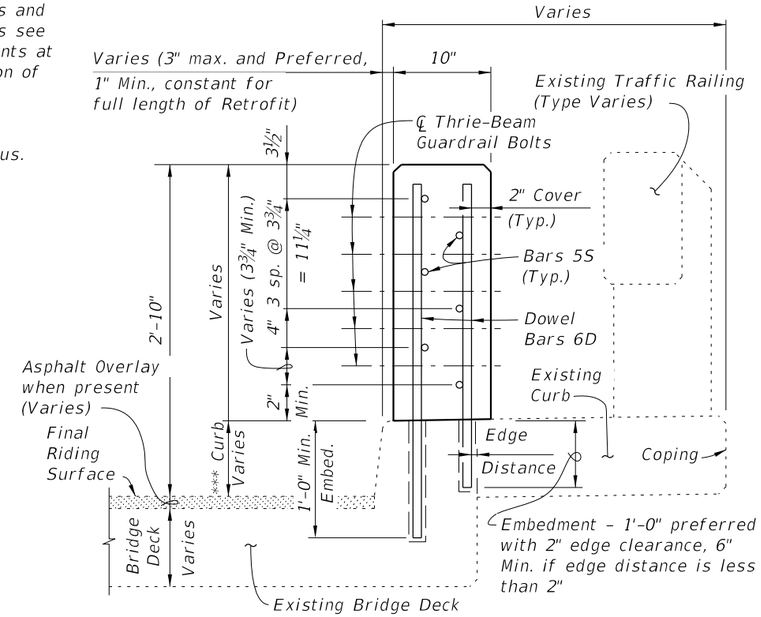
* Non skewed deck joint shown, actual joint dimensions and orientation vary. For treatment at skewed deck joints see Skew Detail, Index 521-480. Provide open Railing Joints at Deck Expansion Joint locations matching the dimension of the Deck Joint.

** Provide ¾" Intermediate Open Joints at:
(1) – Superstructure supports where slab is continuous.

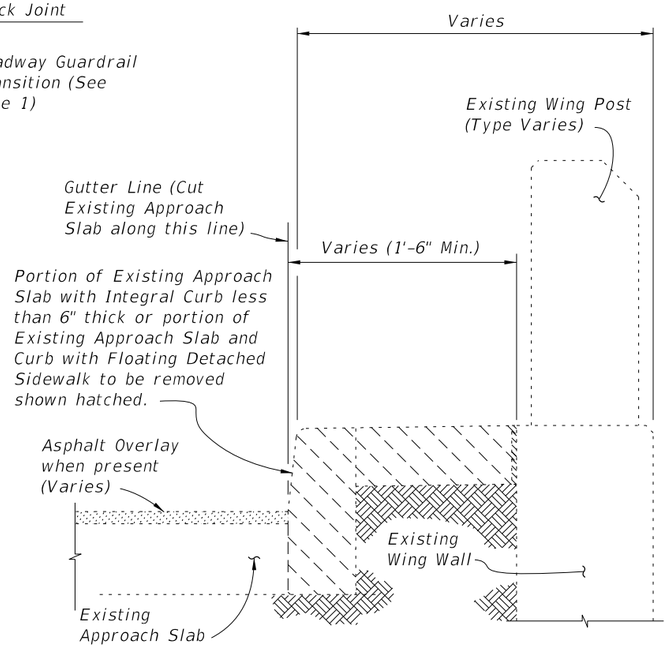
*** Curb heights vary from 5" Min. to 1'-2" Max.

CROSS REFERENCE:

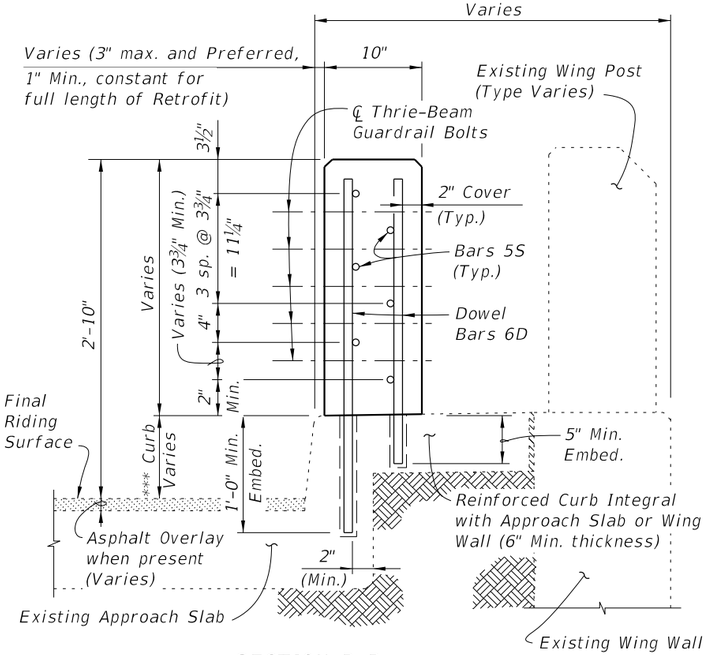
For General Notes, Estimated Quantities, Dowel Detail, Expansion Dowel Detail, Reinforcing Steel Notes & Bending Diagrams see Index 521-480.



SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK



TYPICAL SECTION THRU EXISTING APPROACH
SLAB AND END BENT WING WALL
SHOWING LIMITS OF REMOVAL
(SCHEMES 4 AND 5 ONLY)



SECTION B-B
TYPICAL SECTION THRU
RAILING ALONG APPROACH SLAB
(SCHEMES 2 AND 3 ONLY)

TYPICAL TREATMENT OF RAILING ALONG BRIDGE

NOTES:

1. On approach end provide a Roadway Guardrail Transition, Index 536-002 (as shown) or other site specific treatment. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is on the bridge, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is along the Wing Wall, see Schemes 2, 3, 4 or 5, Sheets 3 and 4. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing. For treatment of trailing end see Roadway Plans. If vertical face retrofit extends beyond bridge and approach slab ends, see Index 521-484 for treatment and Details.

2. Field cut Bars 5S and Dowel Bars 6D to maintain clearance within Vertical Face Retrofit Railing.

3. Where existing structure has been removed and not encased in new concrete; match adjoining areas and finish flat by grouting or grinding as required. Exposed existing reinforcing steel not encased in new concrete shall be burned off 1" below existing concrete and grouted over.

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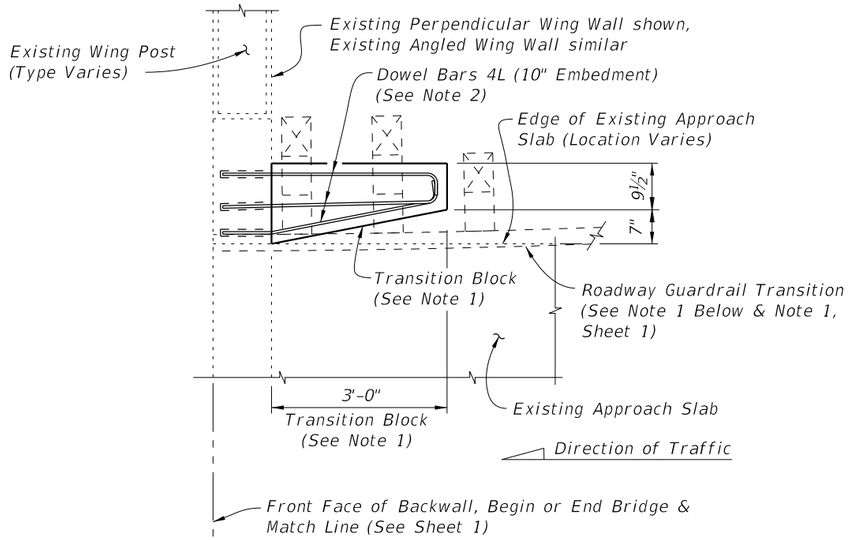
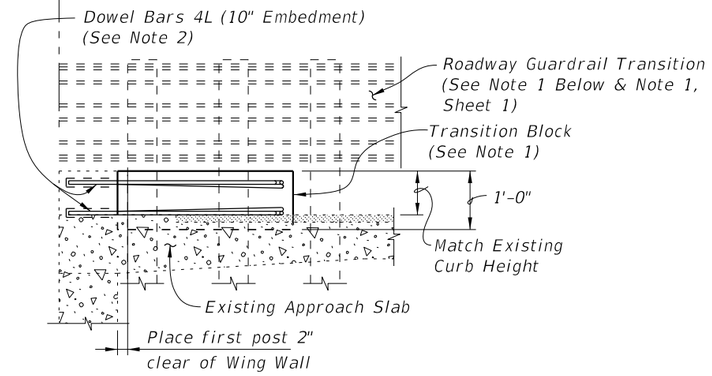
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) WIDE CURB	INDEX	SHEET
07/01/13						521-482	1 of 4



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF GUARDRAIL
(Existing Wing Post not shown for clarity)

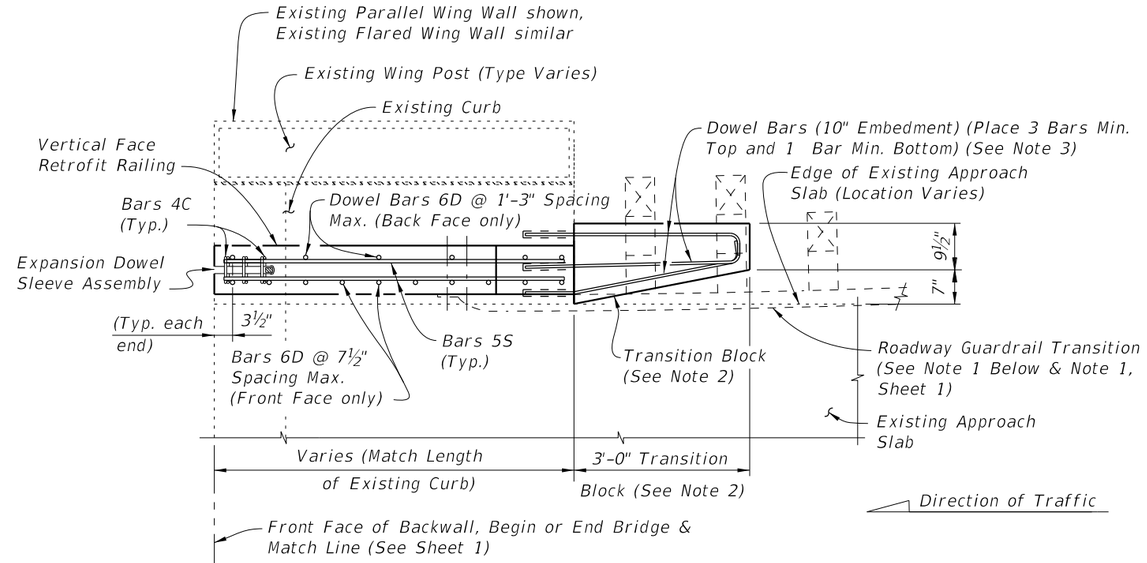
SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

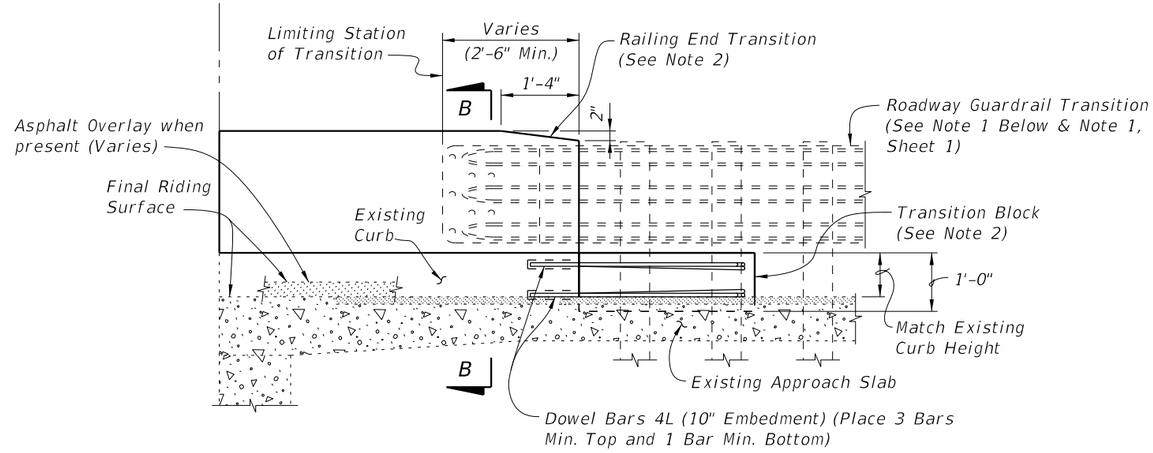
1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

3. If a Special Steel Guardrail Post is required for attachment to the top of a sloping Wing Wall, saw cut and remove a wedge shaped portion of the sloping Wing Wall as required to provide a level surface for post installation.



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

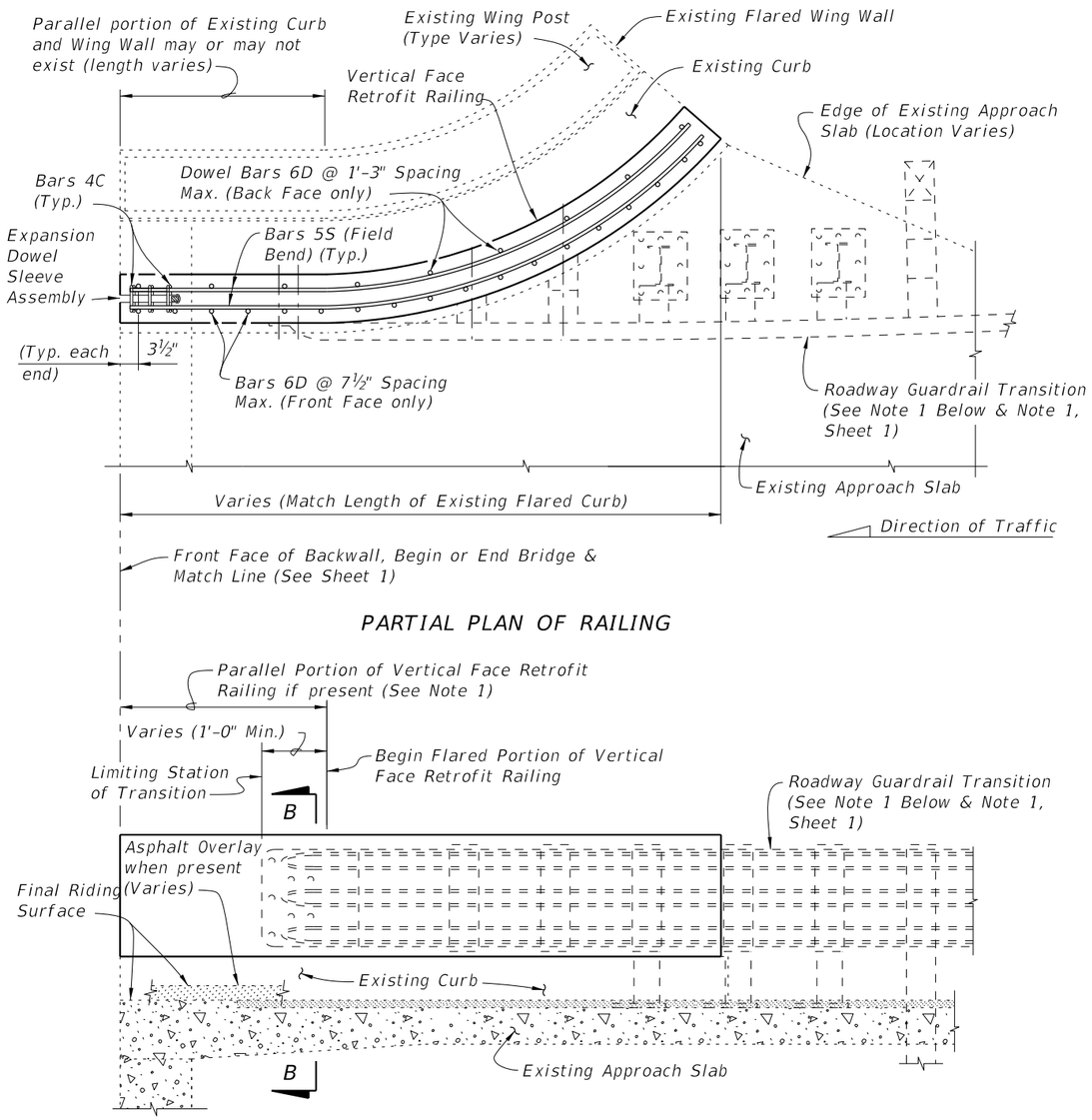
SCHEME 2
RAILING END TREATMENT FOR PARALLEL CURBS

SCHEME 2 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing.

2. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend beyond end of existing End Bent Wing Wall, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

3. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

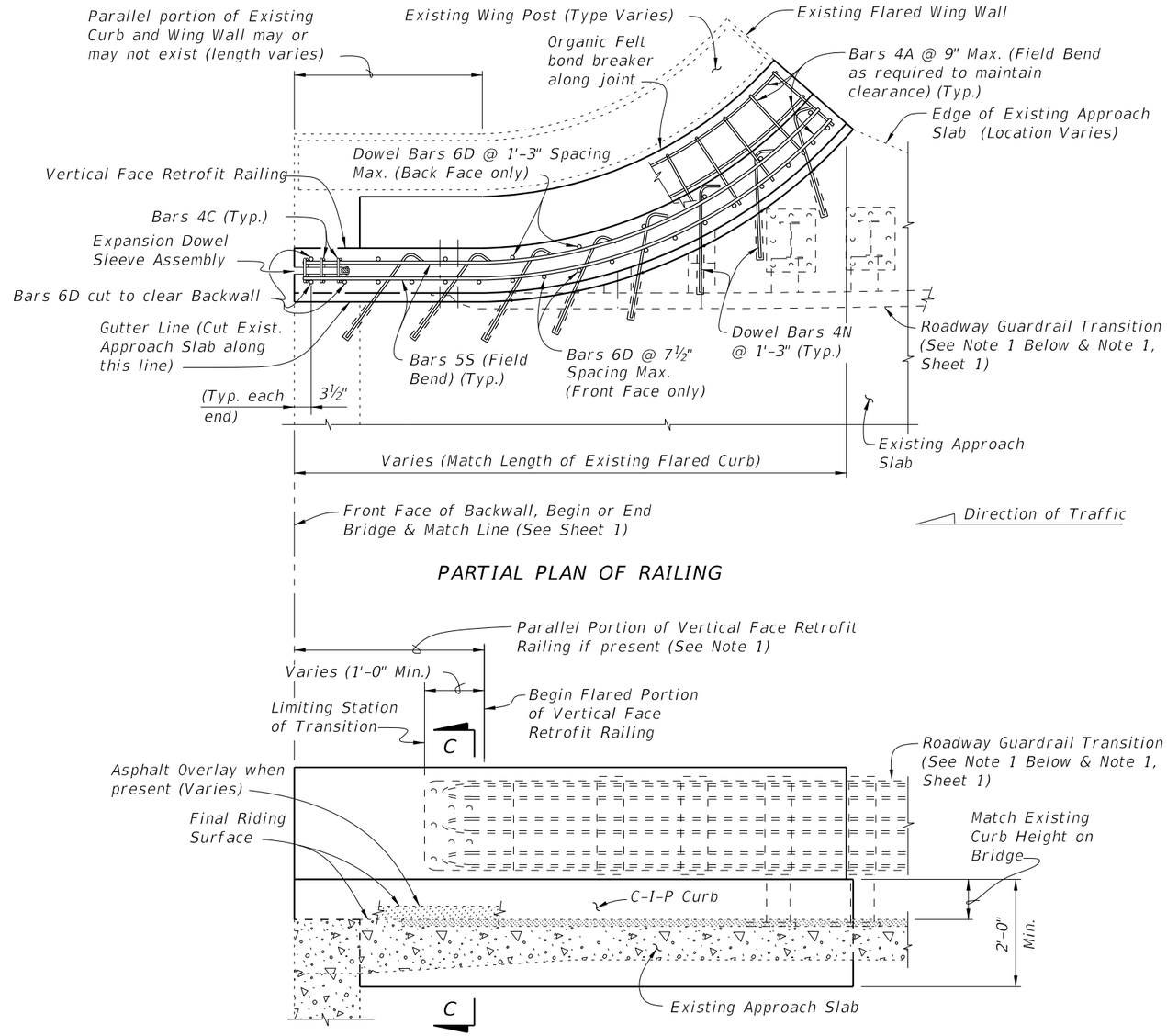


SCHEME 3

RAILING END TREATMENT FOR FLARED CURBS

SCHEME 3 NOTE:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1.



SCHEME 4

RAILING END TREATMENT FOR FLARED CURBS

SCHEME 4 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1.

2. Dowel Bars 4N may be installed on a maximum angle of 45° to the cut edge of the Approach Slab as shown to facilitate drilling of holes and installation of bars.

3. At the Contractor's option, along the length of the Approach Slab curb that is to be replaced, Dowel Bars 6D may be cast in with the new section of curb as shown or they may be installed in drilled holes in the new section of curb using an Adhesive Bonding Material System with a 1'-0" minimum embedment.

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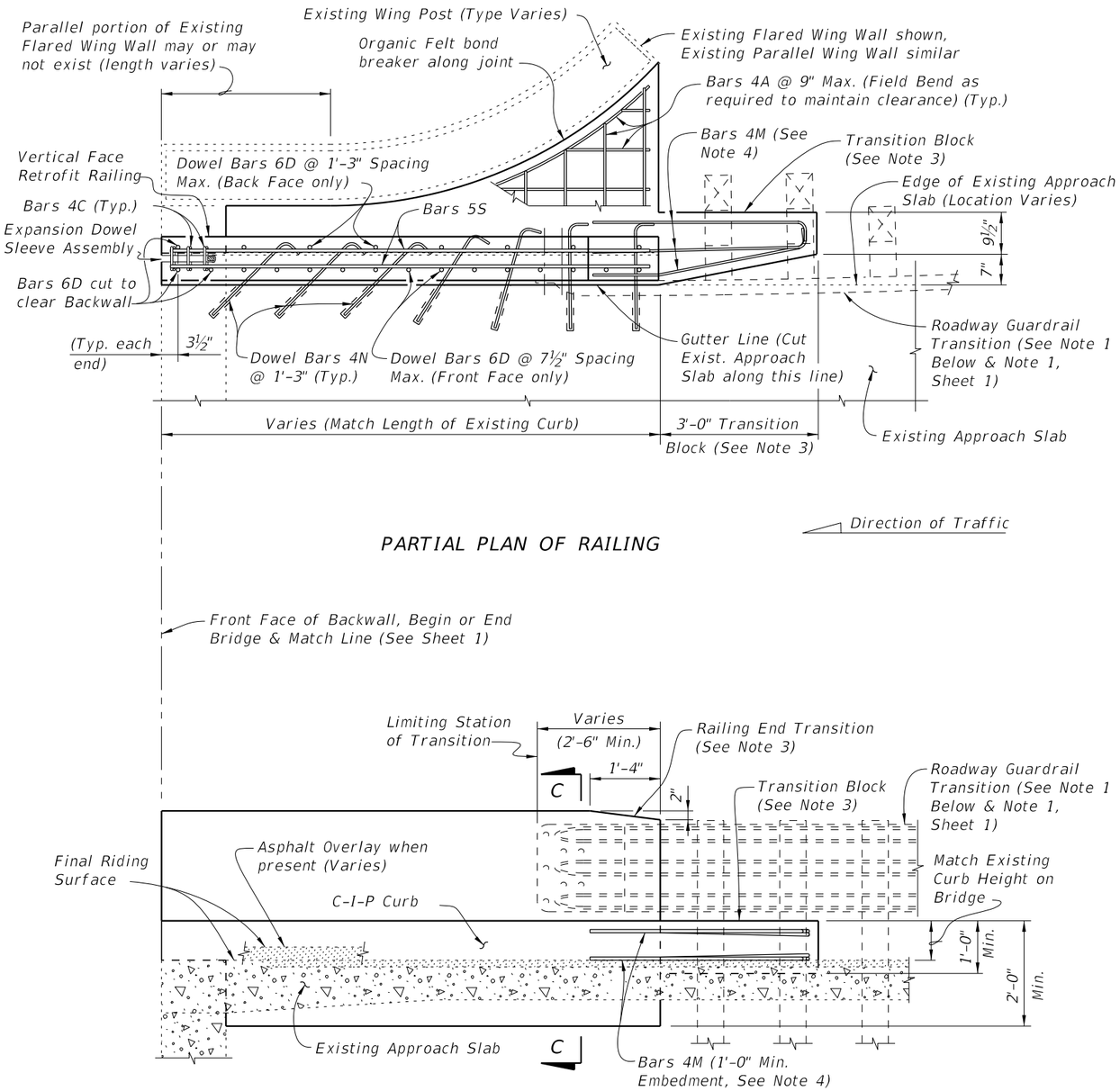
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) WIDE CURB	INDEX 521-482 / SHEET 3 of 4

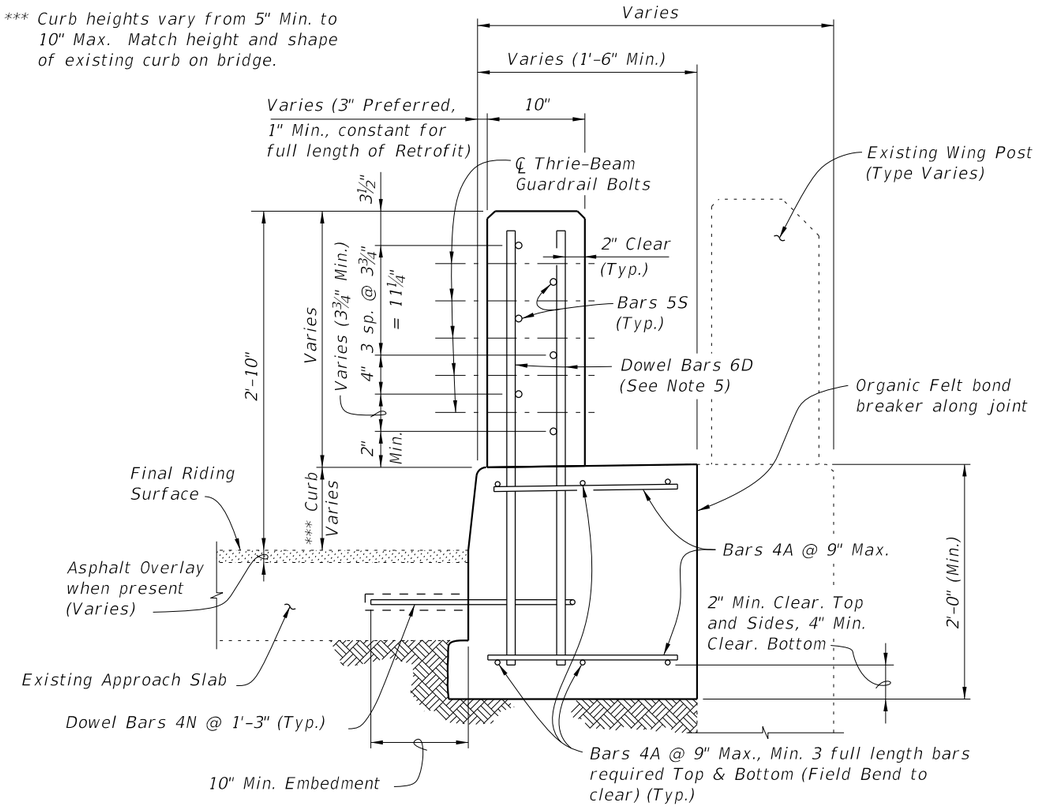


PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 5
RAILING END TREATMENT FOR PARALLEL CURBS

*** Curb heights vary from 5" Min. to 10" Max. Match height and shape of existing curb on bridge.



SECTION C-C
TYPICAL SECTION THRU RAILING ALONG APPROACH SLAB
(SCHEME 4 SHOWN, SCHEME 5 SIMILAR)

SCHEME 5 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1.
2. Dowel Bars 4N may be installed on a maximum angle of 45° to the cut edge of the Approach Slab as shown to facilitate drilling of holes and installation of bars.
3. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend beyond end of existing End Bent Wing Wall, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.
4. Field bend Dowel Bars 4M within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.
5. At the Contractor's option, along the length of the Approach Slab curb that is to be replaced, Dowel Bars 6D may be cast in with the new section of curb as shown or they may be installed in drilled holes in the new section of curb using an Adhesive Bonding Material System with a 1'-0" minimum embedment.

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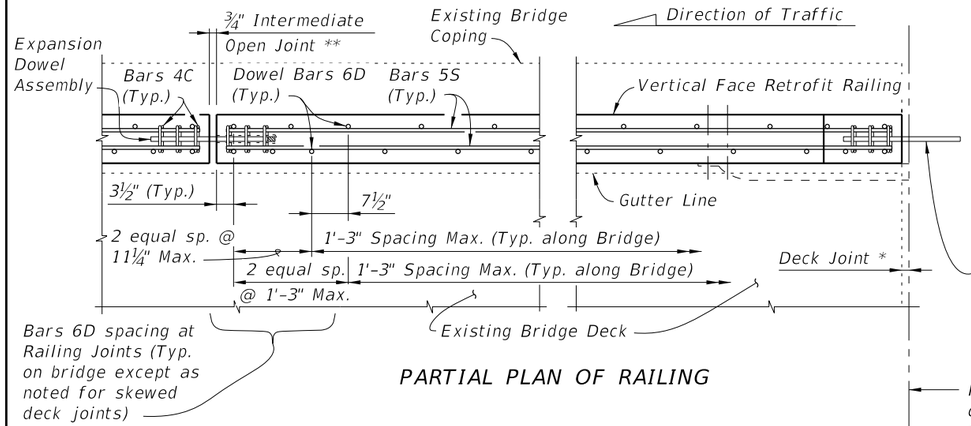
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) WIDE CURB	INDEX	SHEET
11/01/16					521-482	4 of 4



PARTIAL PLAN OF RAILING

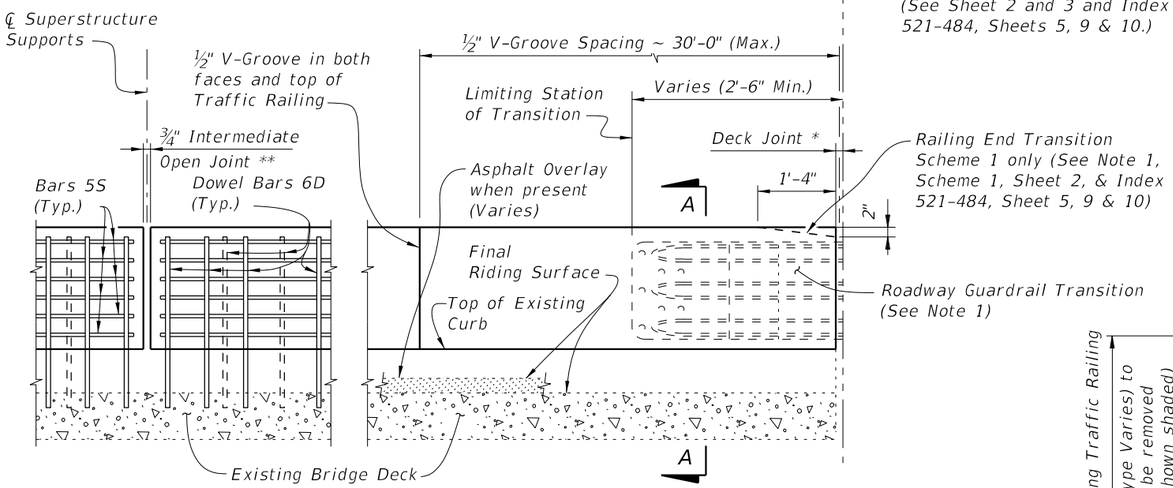
* *Non skewed deck joint shown, actual joint dimensions and orientation vary. For treatment at skewed deck joints see Skew Detail, Index 521-480. Provide open Railing Joints at Deck Expansion Joint locations matching the dimension of the Deck Joint.*

** *Provide ¾" Intermediate Open Joints at :*
(1) – Superstructure supports where slab is continuous.

*** *Curb heights vary from 5" Min. to 1'-2" Max.*

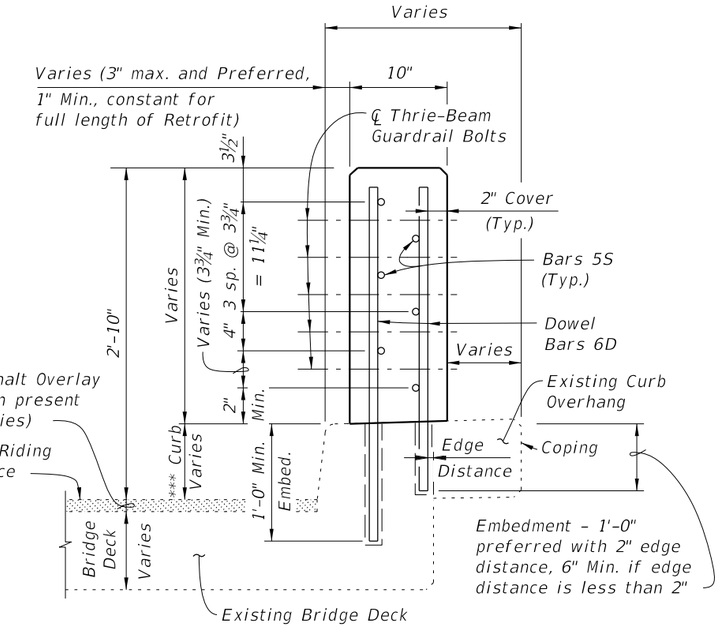
Expansion Dowel & Bars 4C not required at end of railing for Scheme 1, except where traffic railing retrofit extends beyond ends of bridge, see Index 521-484

Front Face of Backwall, Begin or End Bridge & Match Line (See Sheet 2 and 3 and Index 521-484, Sheets 5, 9 & 10.)

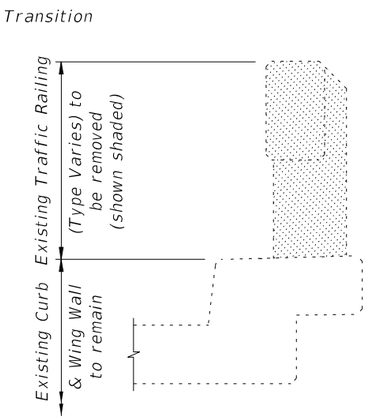


PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity

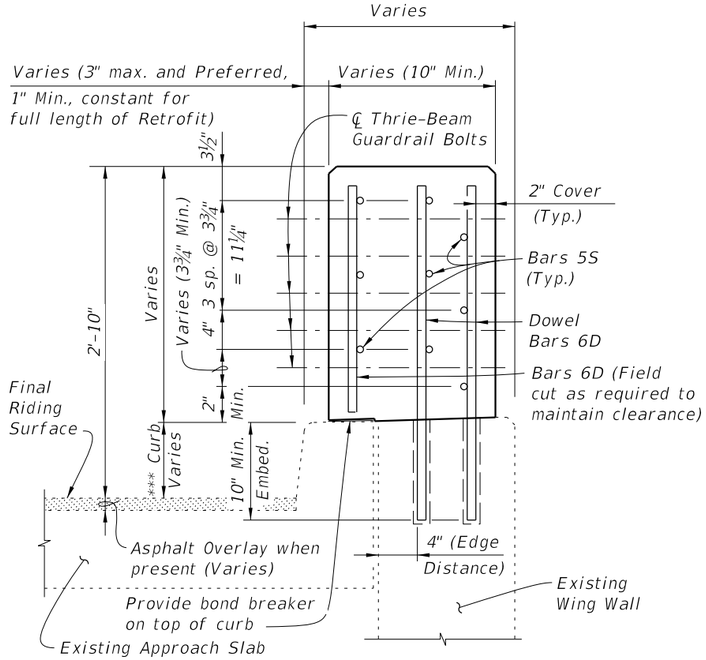
TYPICAL TREATMENT OF RAILING ALONG BRIDGE



SECTION A-A
TYPICAL SECTION THRU RAILING ON BRIDGE DECK



TYPICAL SECTION THRU EXISTING TRAFFIC RAILING
SHOWING LIMITS OF REMOVAL
(BRIDGE DECK SHOWN, WING WALL SIMILAR)



SECTION B-B
TYPICAL SECTION THRU RAILING ON WING WALL

NOTES:

1. *On approach end provide a Roadway Guardrail Transition, Index 536-002 (as shown) or other site specific treatment. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is on the bridge, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is along the Wing Wall, see Schemes 2 or 3, Sheets 2 & 3. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing. For treatment of trailing end see Roadway Plans. If vertical face retrofit extends beyond bridge and approach slab ends, see Index 521-484 for treatment and Details.*

2. *Field cut Bars 5S and Dowel Bars 6D to maintain clearance within Vertical Face Retrofit Railing.*

3. *Where existing structure has been removed and not encased in new concrete; match adjoining areas and finish flat by grouting or grinding as required. Exposed existing reinforcing steel not encased in new concrete shall be burned off 1" below existing concrete and grouted over.*

CROSS REFERENCE:

For General Notes, Estimated Quantities, Dowel Detail, Expansion Dowel Detail, Reinforcing Steel Notes & Bending Diagram see Index 521-480.

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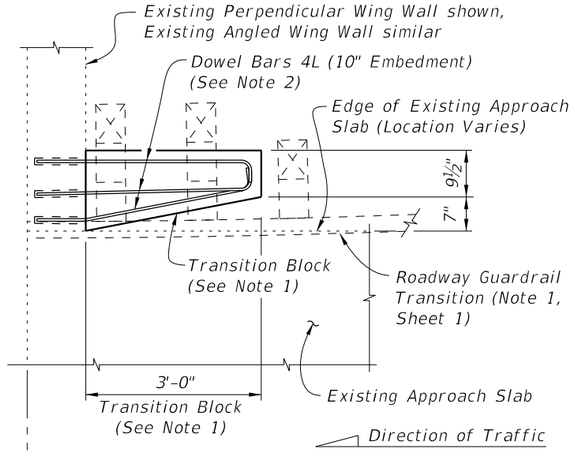
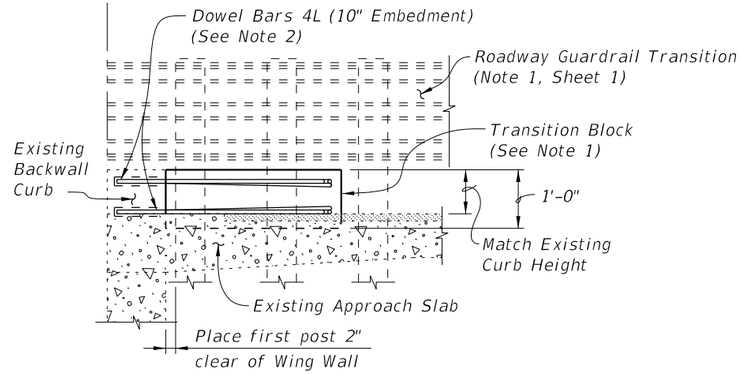
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/13			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) INTERMEDIATE CURB	521-483	1 of 3



Front Face of Backwall, Begin or End Bridge & Match Line (See Sheet 1)

PARTIAL PLAN OF GUARDRAIL



PARTIAL ELEVATION OF INSIDE FACE OF GUARDRAIL

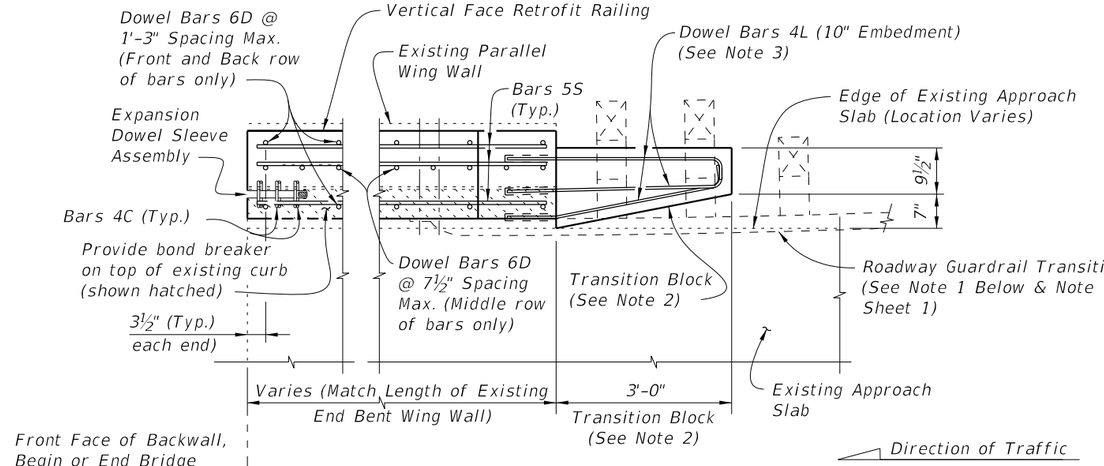
SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS

SCHEME 1 NOTES:

1. Provide Transition Block (as shown) or Curb if existing Approach Slab does not have a curb, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

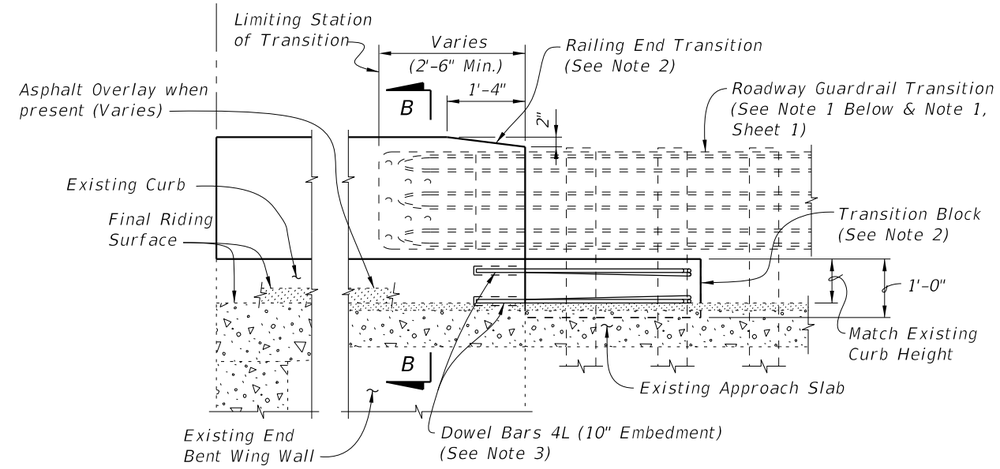
2. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

3. If a Special Steel Guardrail Post is required for attachment to the top of a sloping Wing Wall, saw cut and remove a wedge shaped portion of the sloping Wing Wall as required to provide a level surface for post installation.



Front Face of Backwall, Begin or End Bridge & Match Line (See Sheet 1)

PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 2
RAILING END TREATMENT FOR PARALLEL WING WALLS

SCHEME 2 NOTES:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1. On skewed bridges, if the skew along the deck joint extends across the width of the railing, the 2'-6" minimum dimension shall apply to both the front and back face of the railing.

2. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend beyond end of existing End Bent Wing Wall, see Roadway Plans. Shape and height of Transition Block or Curb shall match existing bridge curb. Railing End Transition and Transition Block may be omitted on trailing ends with no opposing traffic.

3. Field bend Dowel Bars 4L within Transition Block as required to maintain 2" top and side clearance and 3" bottom clearance.

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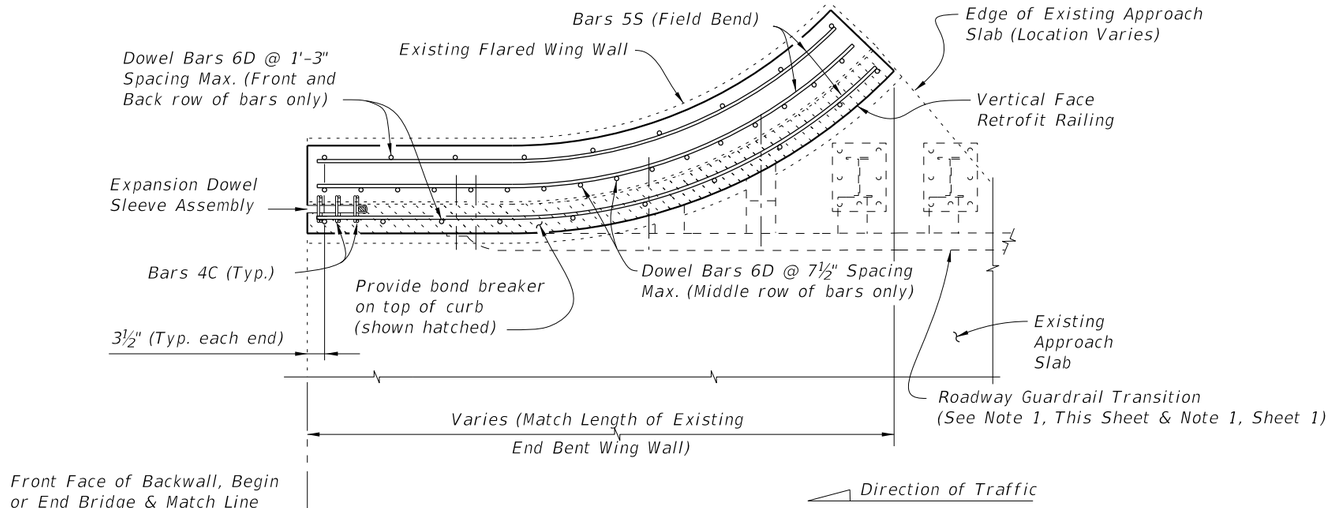
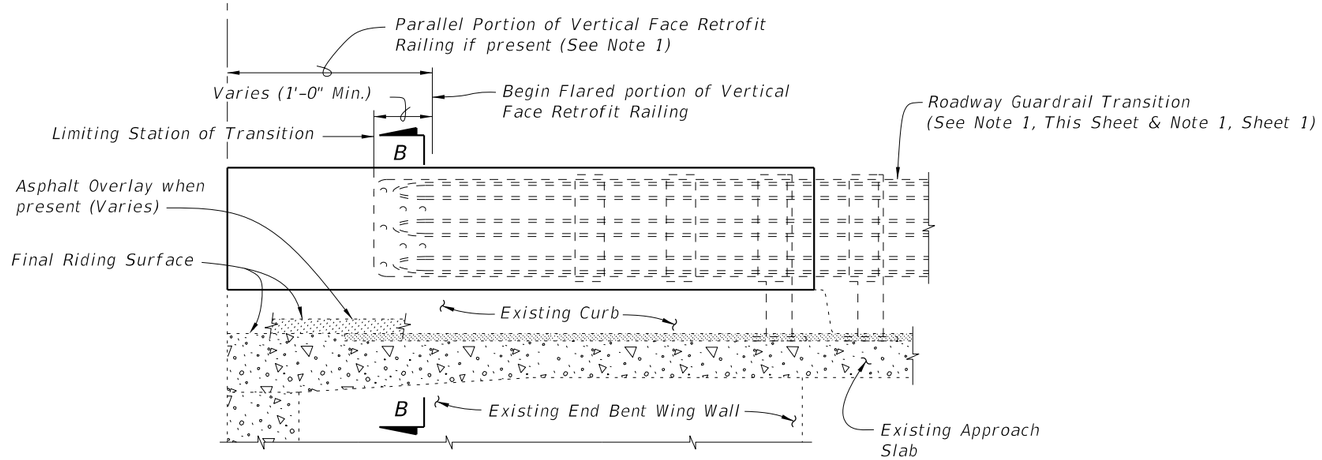
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) INTERMEDIATE CURB	INDEX	SHEET
07/01/07						521-483	2 of 3



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Railing Reinforcing and Expansion Dowel Assemblies not shown for clarity)

SCHEME 3 NOTE:

1. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment. If limiting station of Roadway Guardrail Transition is along the Wing Wall, attach Thrie-Beam Terminal Connector to railing as shown above. If limiting station of Roadway Guardrail Transition is on the bridge, see Sheet 1.

SCHEME 3
RAILING END TREATMENT FOR FLARED WING WALLS

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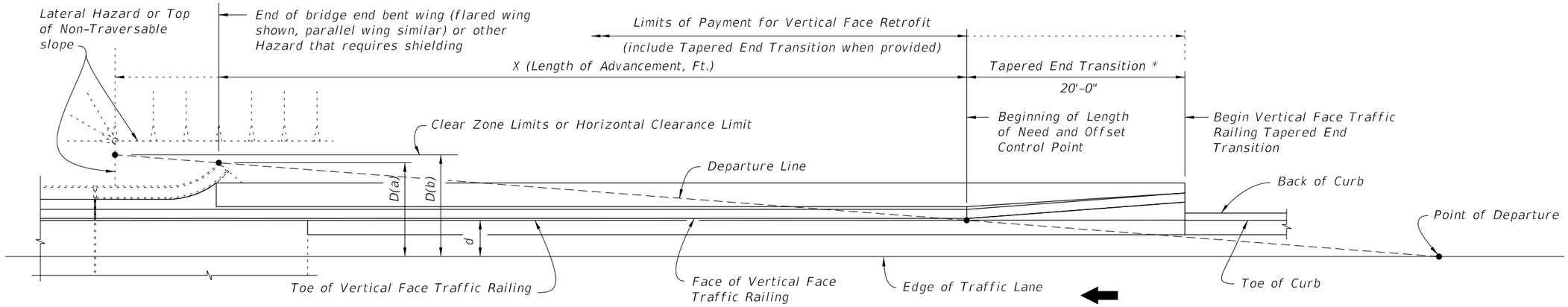
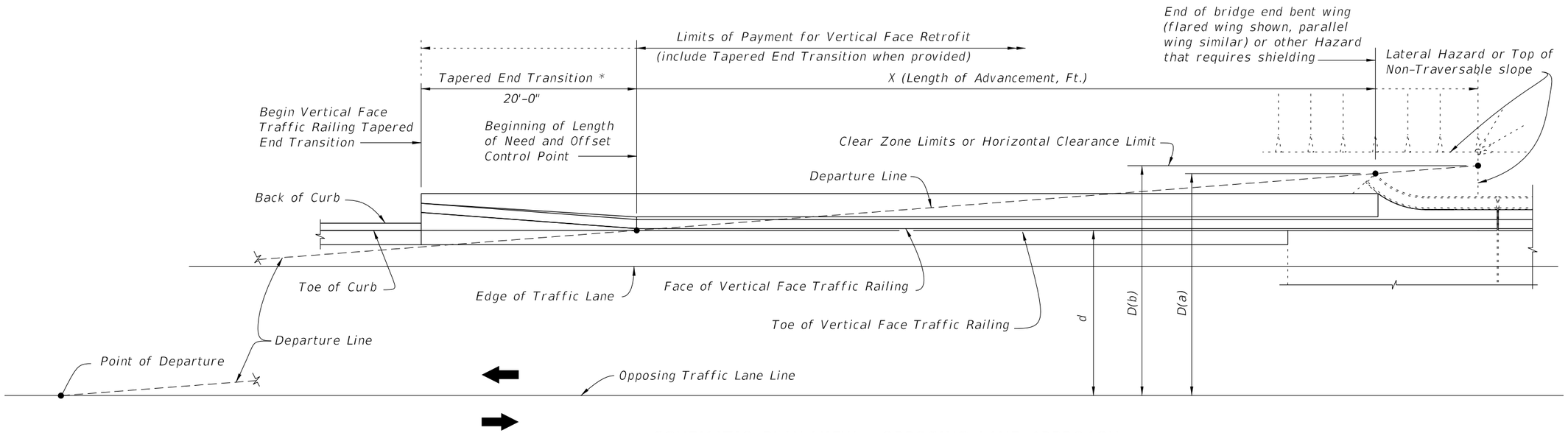
LAST REVISION	REVISION	DESCRIPTION:				
07/01/07			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) INTERMEDIATE CURB	INDEX 521-483	SHEET 3 of 3



* Guardrail or Crash Cushion may also be shown in the Contract Plans, in lieu of the Tapered End Transition.

SCHEMATIC PLAN VIEW - NEAR LANE APPROACH



SCHEMATIC PLAN VIEW - OPPOSING LANE APPROACH

CROSS REFERENCES:
For General Notes, Dowel Details, Expansion Dowel Details, Reinforcing Steel Notes and Reinforcing Steel Bending Diagram see Index 521-480.

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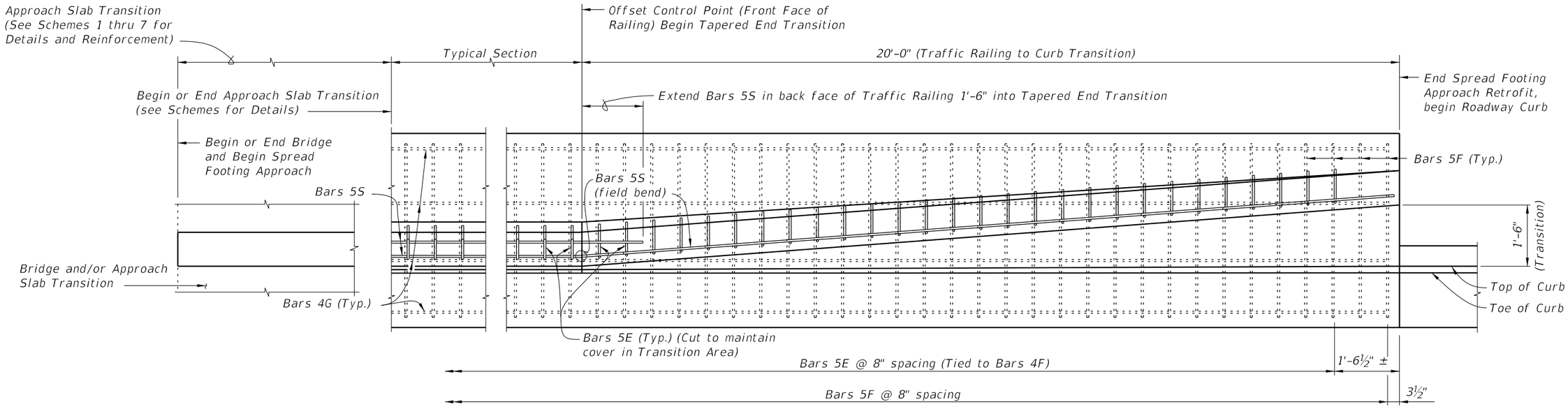
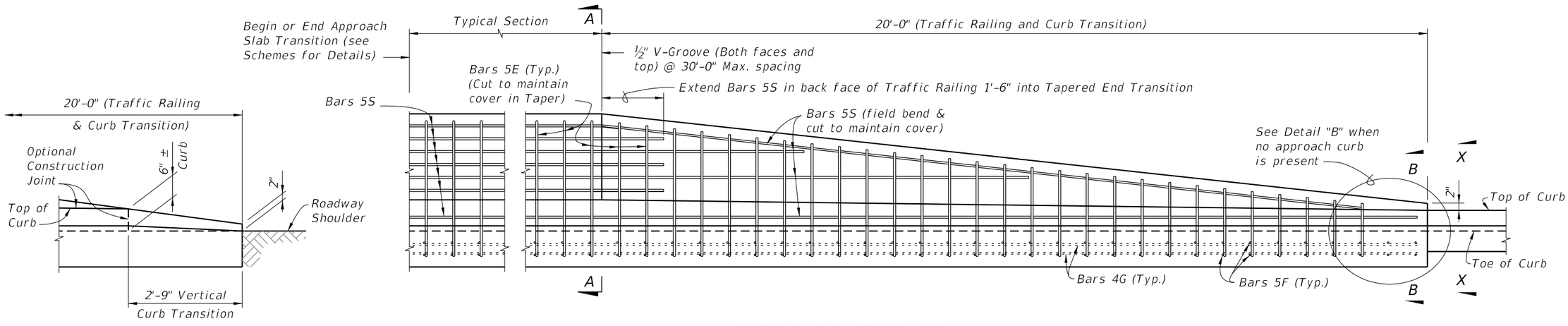
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/09			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	521-484	1 of 10



PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

DETAIL "B"
TRANSITION TO NON-CURB APPROACH
(Reinforcing Not Shown For Clarity)

TAPERED END TRANSITION

CROSS REFERENCES:
For Section A-A, B-B and X-X see Sheet 4.

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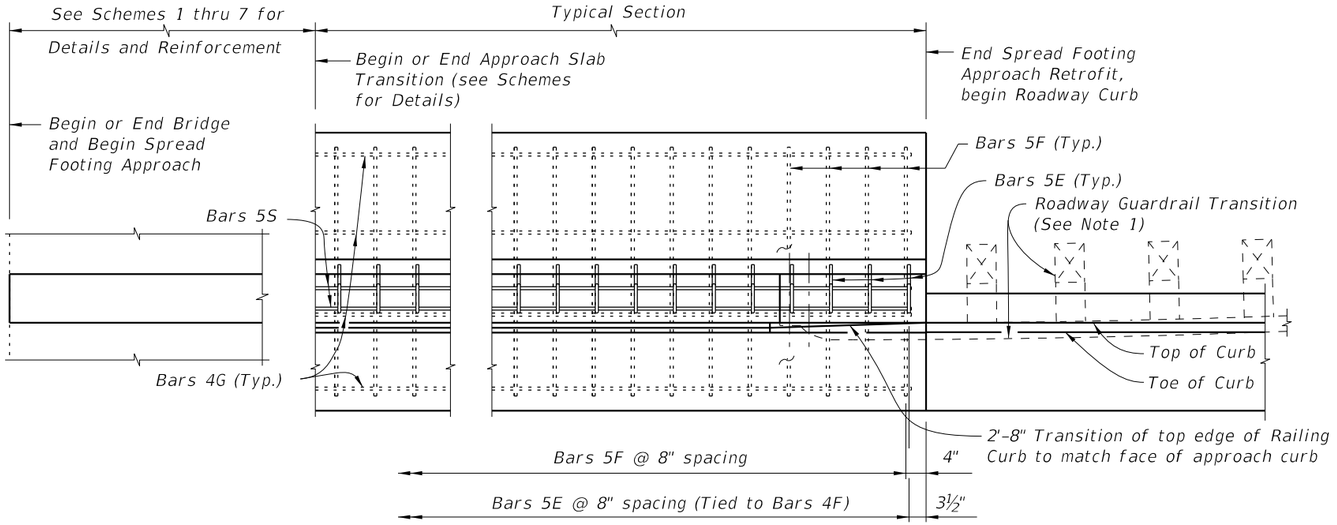
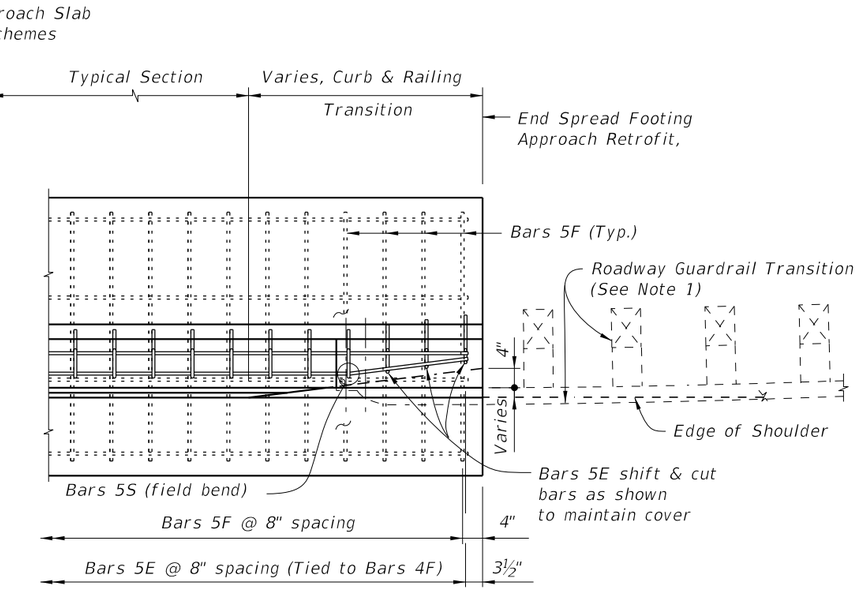
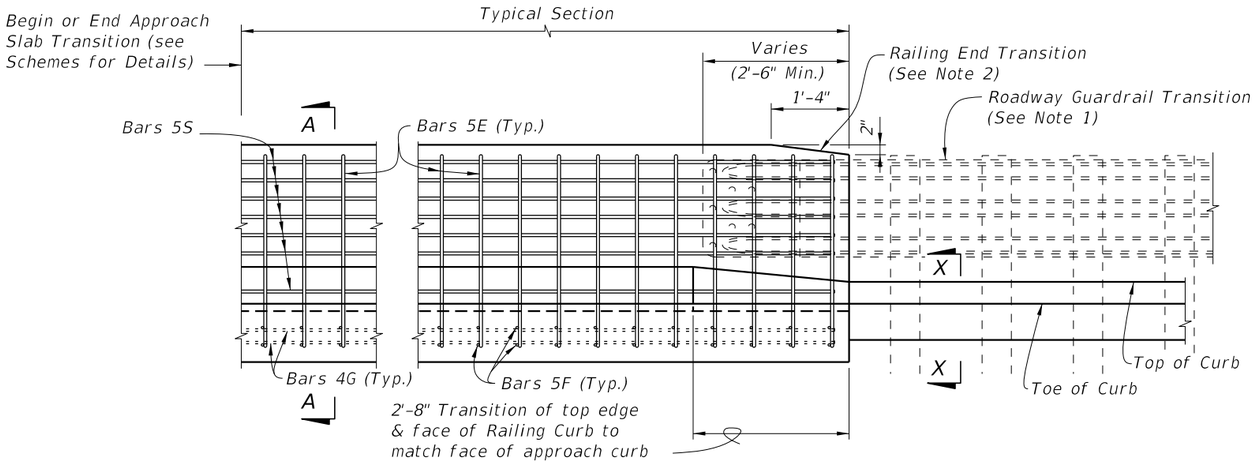
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX	SHEET
07/01/09					521-484	2 of 10



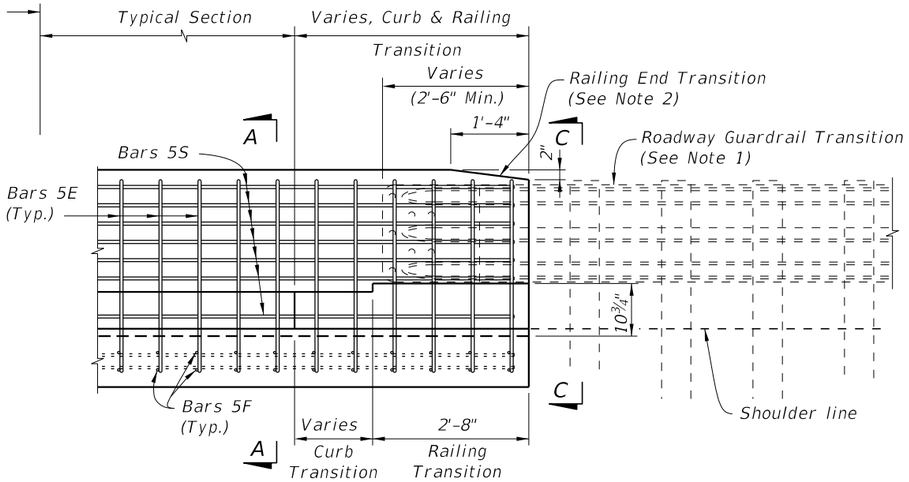
PARTIAL PLAN VIEW
(With Curb Approach)



PARTIAL PLAN VIEW
(Without Curb Approach)



PARTIAL ELEVATION VIEW
(With Curb Approach)



PARTIAL ELEVATION VIEW
(Without Curb Approach)

GUARDRAIL END TRANSITION

NOTES:

1. *On approach end provide a Roadway Guardrail Transition, Index 536-002 (Sheet 16 – Scheme 1) or other site specific treatment. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment.*
2. *Provide Railing & Curb Base Transitions (as shown) if curb does not extend beyond end of Spread Footing Approach, see Roadway Plans. Railing End Transition & Railing & Curb Base Transitions may be omitted on trailing ends with no opposing traffic.*

CROSS REFERENCES:
For Section A-A, C-C and X-X see Sheet 4.

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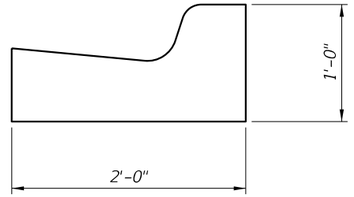
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/09			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	521-484	3 of 10

ESTIMATED TRAFFIC RAILING RETROFIT SPREAD FOOTING APPROACH QUANTITIES		
ITEM	UNIT	QUANTITY
		9" Curb
Concrete – Typical Section	CY/Ft.	0.25
Reinforcing Steel – Typical Section	Lb./Ft.	38
Concrete – 20'-0" Tapered End Transition plus Footing	CY	4.57 Total
Reinforcing Steel – 20'-0" Tapered End Transition plus Footing	Lb.	776 Total

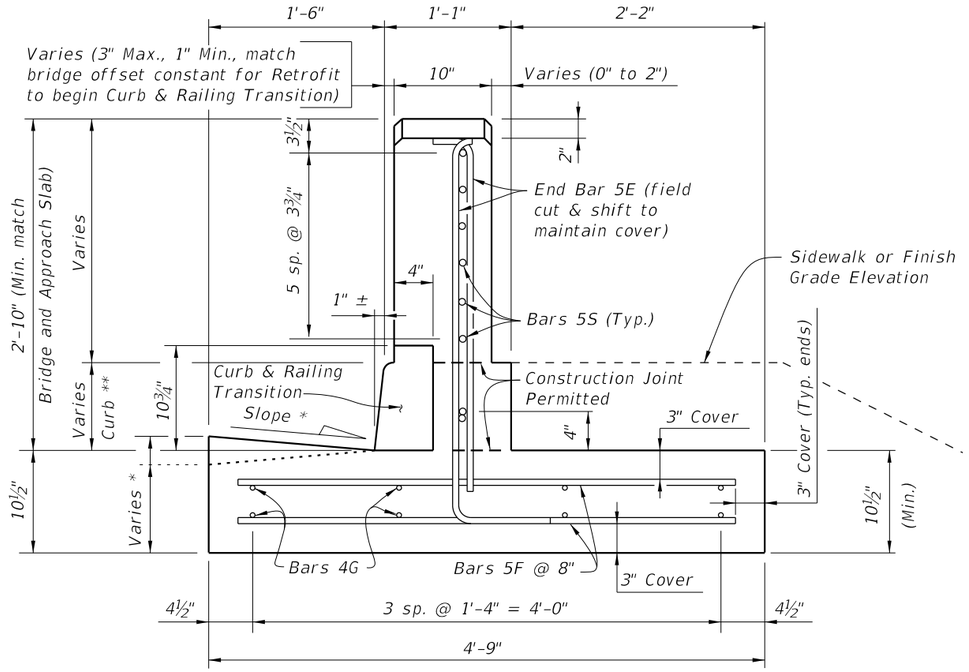
NOTE: Quantities are based on a 9" curb, no curb cross slope.



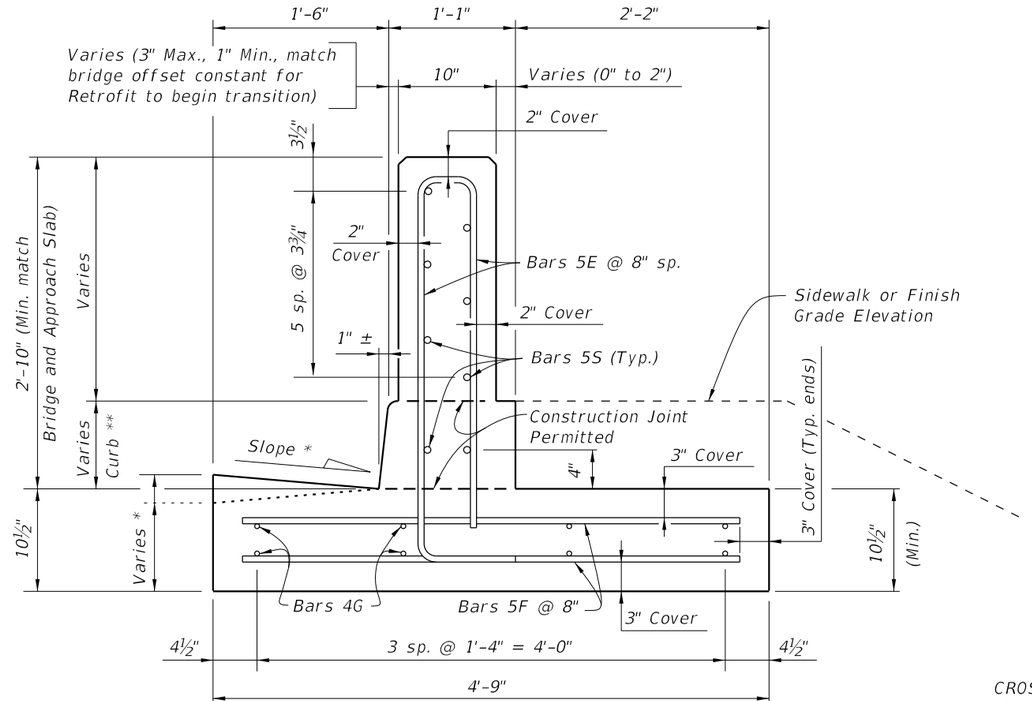
SECTION X-X (TYPICAL CURB, TYPE VARIES, TYPE F SHOWN)
(See Index 520-001 and Plans for Details)

* Match Cross Slope of high side and low side at begin or end bridge or approach slab.

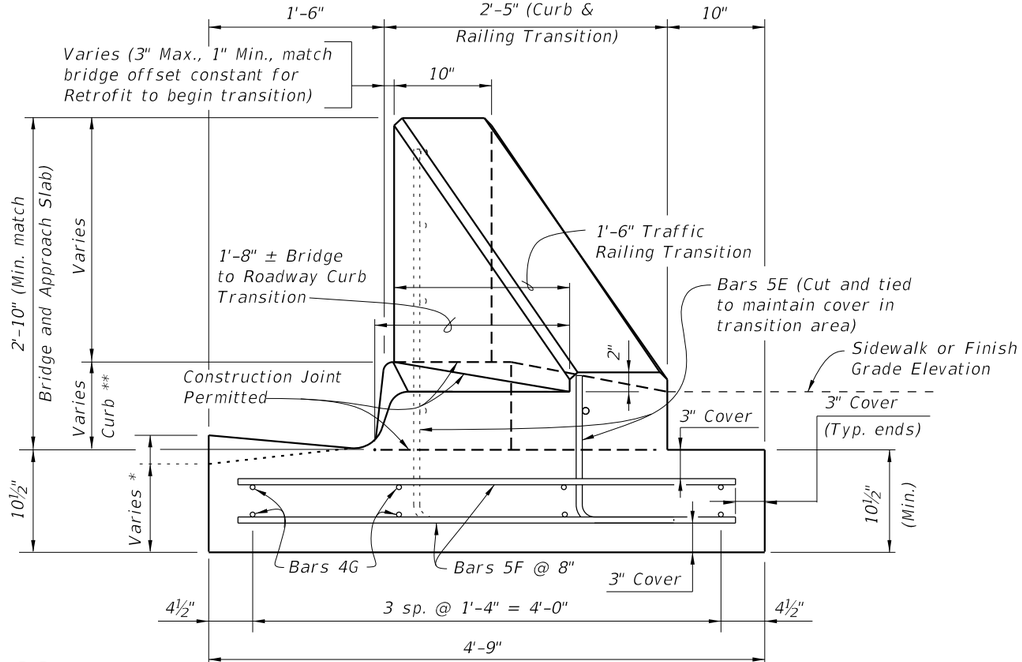
** Match curb height of adjacent bridge and approach slab. Adjust height in Transition area to match adjoining Roadway curb.



SECTION C-C
(GUARDRAIL END TRANSITION)



SECTION A-A
TYPICAL SECTION
(9" Curb shown, 6" Curb similar)



SECTION B-B
TAPERED END TRANSITION
(Bars 5S not shown for clarity)

CROSS REFERENCES:
For location of Sections A-A, B-B and X-X see Sheet 2.
For location of Section C-C see Sheet 3.

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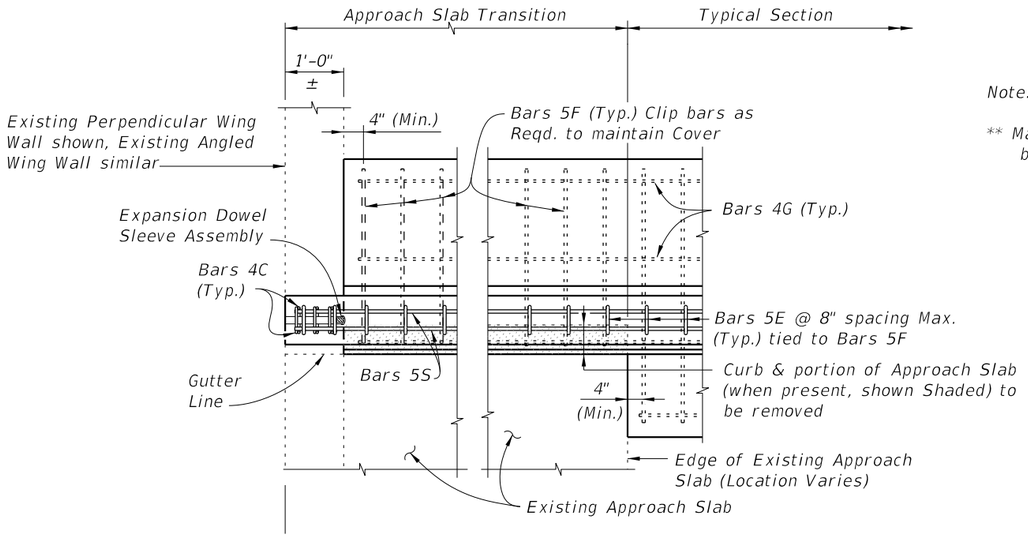
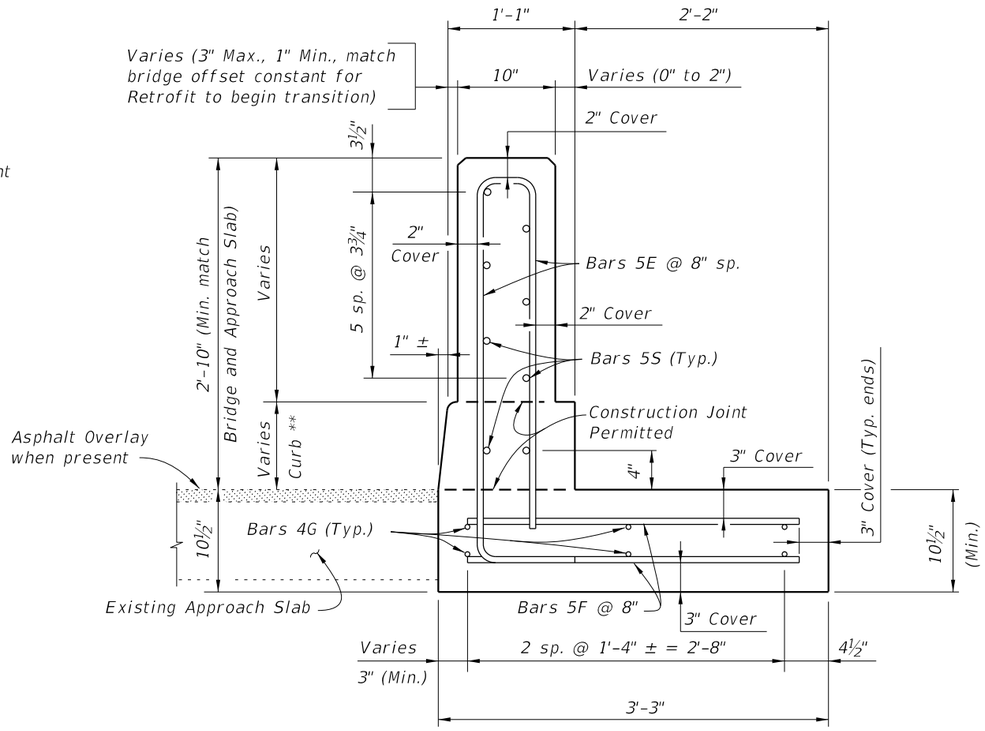
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX	SHEET
07/01/09						521-484	4 of 10



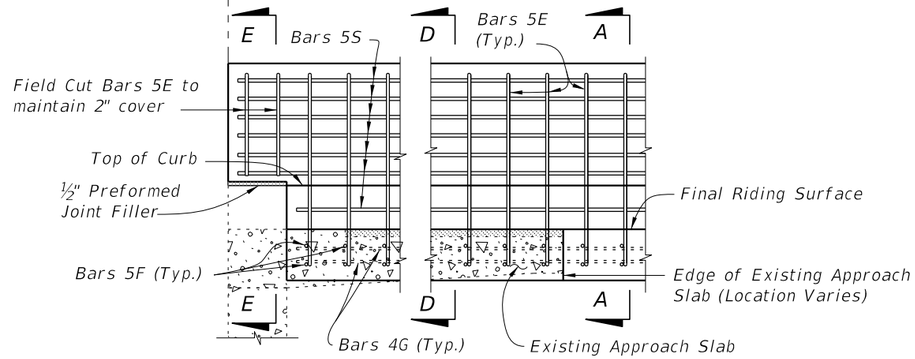
PARTIAL PLAN

Note:

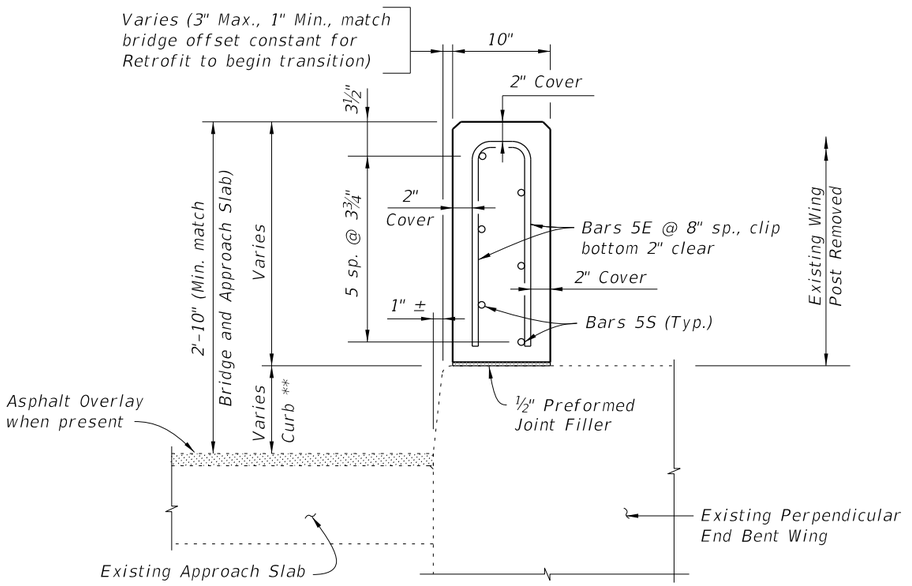
** Match curb height of adjacent bridge and approach slab.



SECTION D-D



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)

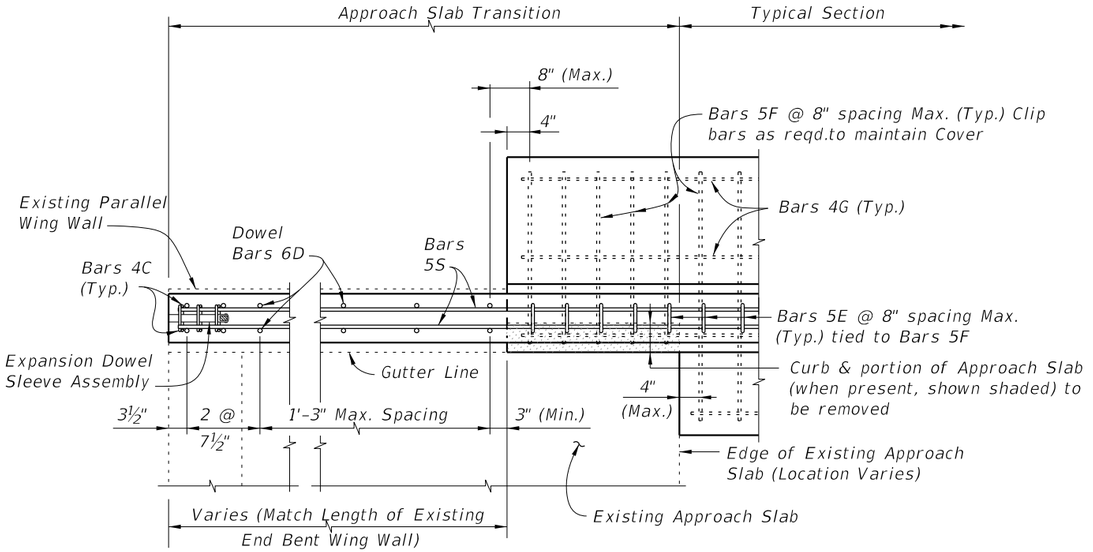


SECTION E-E (NARROW CURB SHOWN,
WIDE AND INTERMEDIATE CURBS SIMILAR)

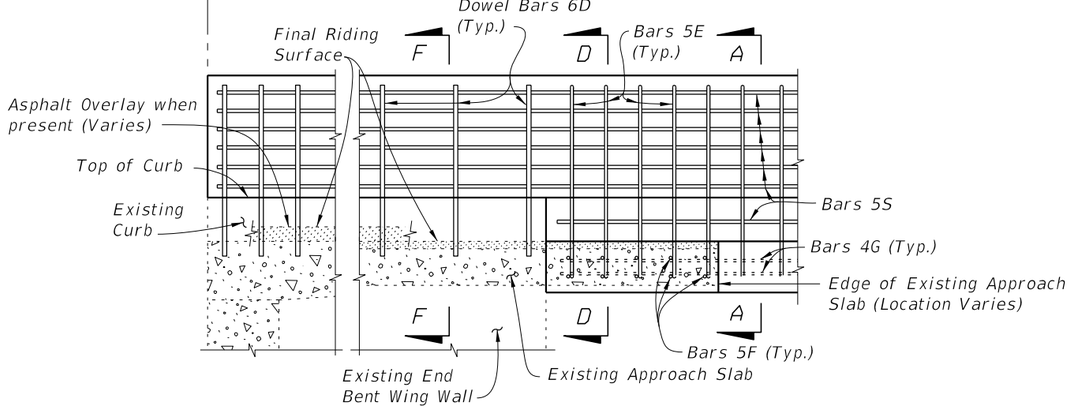
SCHEME 1 ~ MODIFICATION FOR INDEX 521-481, 521-482 AND 521-483 - SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS WITH NARROW CURBS (SHOWN), WIDE CURBS AND INTERMEDIATE CURBS (SIMILAR)

CROSS REFERENCE:
For Section A-A see Sheet 4.
For Expansion Dowel Assembly and placement of Dowel Bars 6D Details see Index 521-480.

10/17/2024 11:15:51 AM

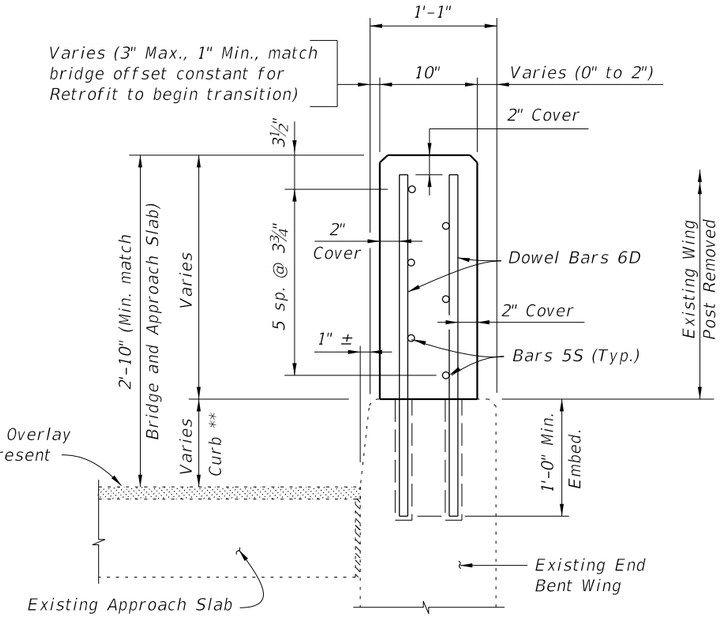


PARTIAL PLAN

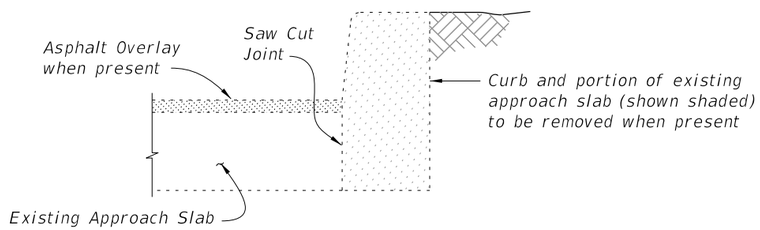


PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)

Note:
** Match curb height at adjoining existing end bent wing.



SECTION F-F



SECTION THRU EXISTING CURB AND
APPROACH SLAB TO BE REMOVED
(Free Standing Curb Similar)

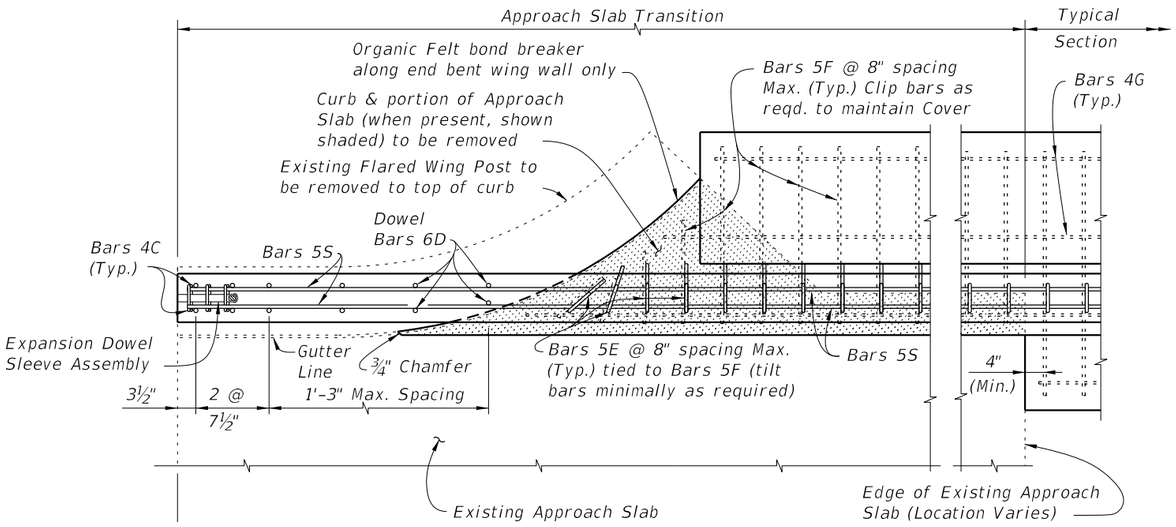
SCHEME 2 ~ MODIFICATION FOR INDEX 521-481 - SCHEME 2
RAILING END TREATMENT FOR PARALLEL WING WALLS WITH NARROW CURBS

NOTES:
1. Remove existing concrete along saw cut joints. Existing reinforcing steel may be cut at joint or extended into new concrete. Exposed existing reinforcing not encased in new concrete shall be removed 1" below existing concrete surface and grouted over.

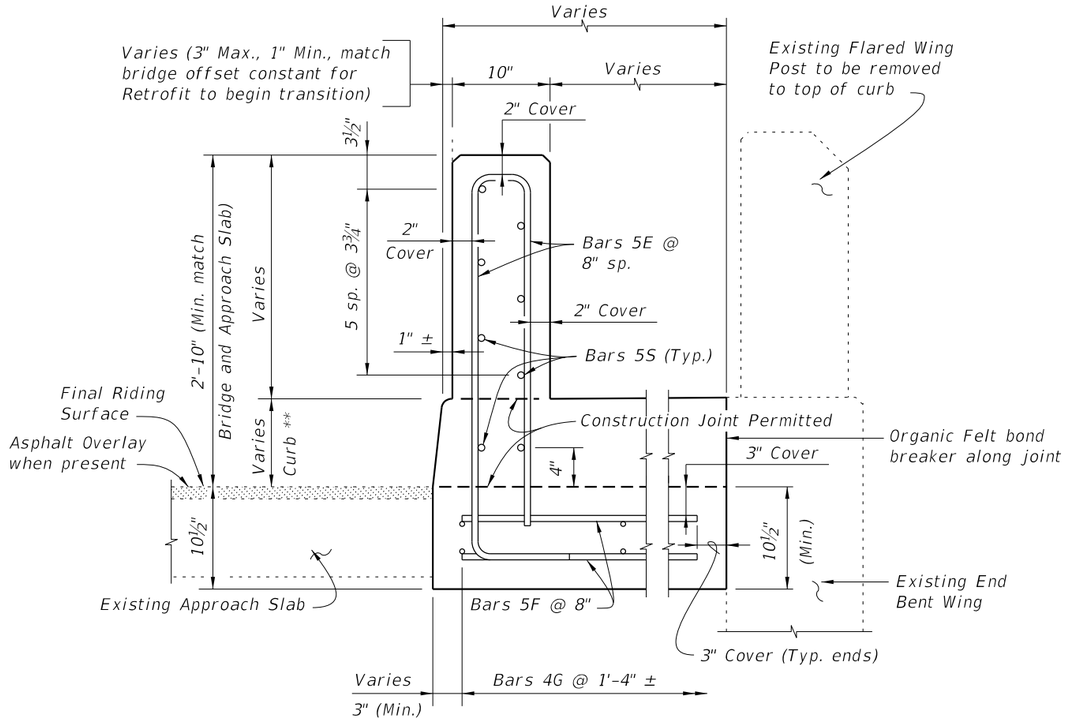
CROSS REFERENCES:
For Section A-A see Sheet 4.
For Section D-D see Sheet 5.
For Expansion Dowel Assembly and placement of Dowel Bars 6D Details see Index 521-480.

10/17/2024 11:15:58 AM

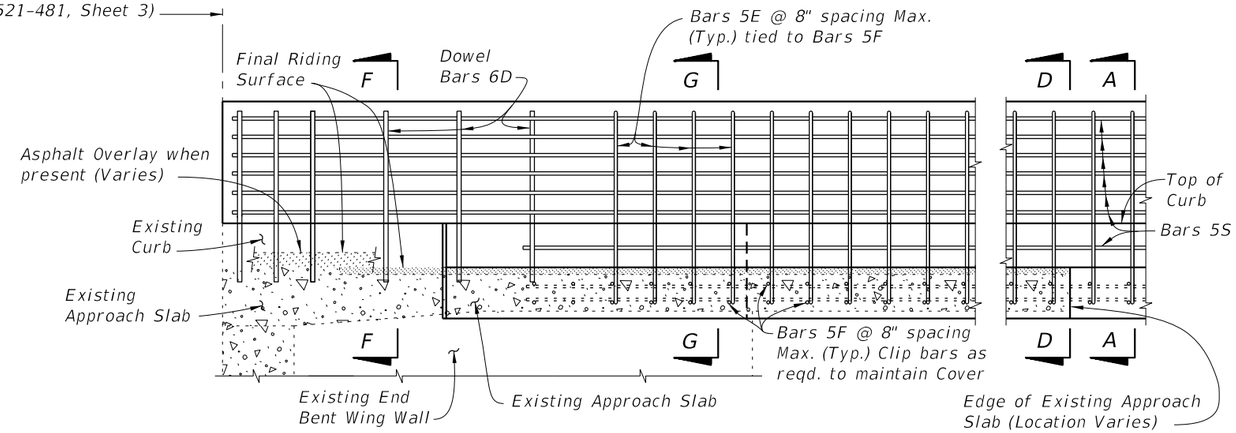
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX	SHEET
07/01/09					521-484	6 of 10



PARTIAL PLAN OF RAILING



SECTION G-G



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)

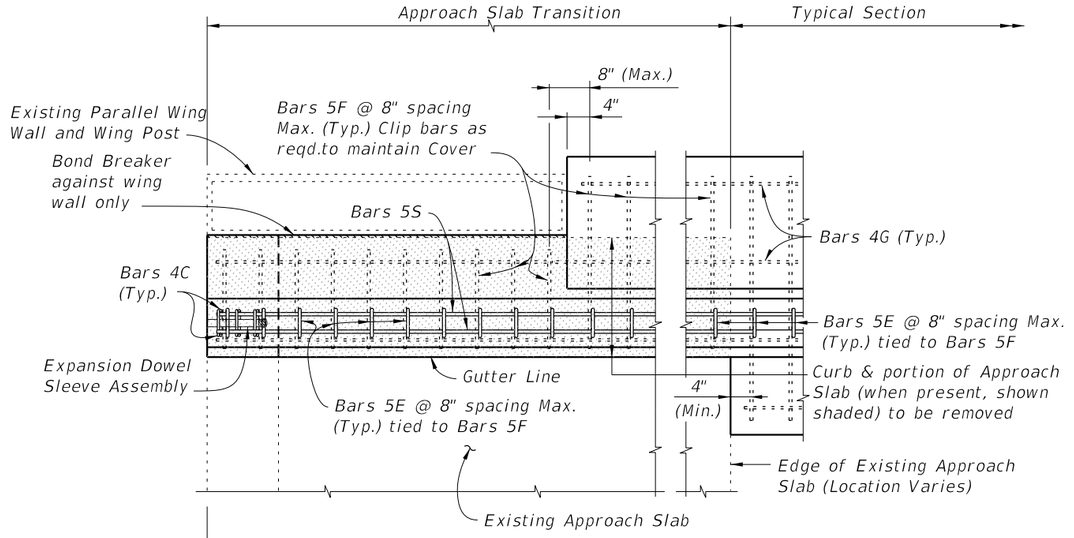
Note:
** Match curb height at adjoining existing end bent wing.

CROSS REFERENCES:
For Section A-A see Sheet 4.
For Section D-D see Sheet 5.
For Section F-F see Sheet 6.
For Expansion Dowel Assemblies Details and placement of Dowel Bars 6D see Index 521-480.

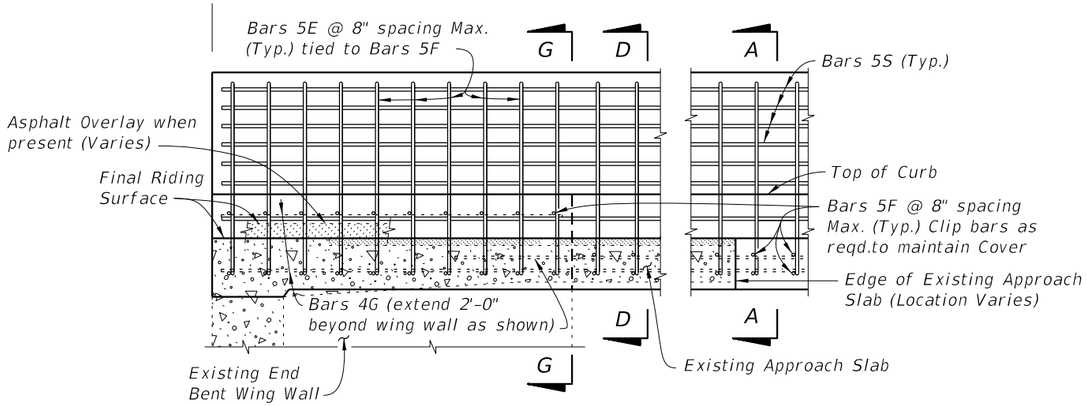
SCHEME 3 ~ MODIFICATION FOR INDEX 521-481 SCHEME 3
RAILING END TREATMENT FOR FLARED WING WALLS WITH NARROW CURBS

10/17/2024 11:16:05 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX 521-484	SHEET 7 of 10

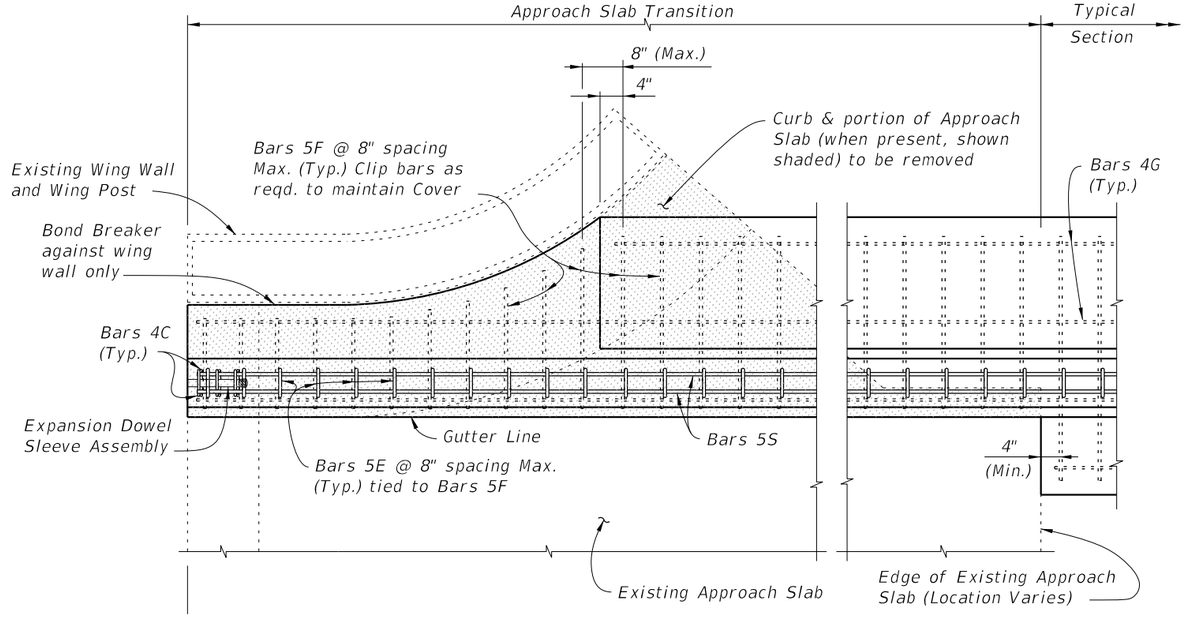


PARTIAL PLAN OF RAILING

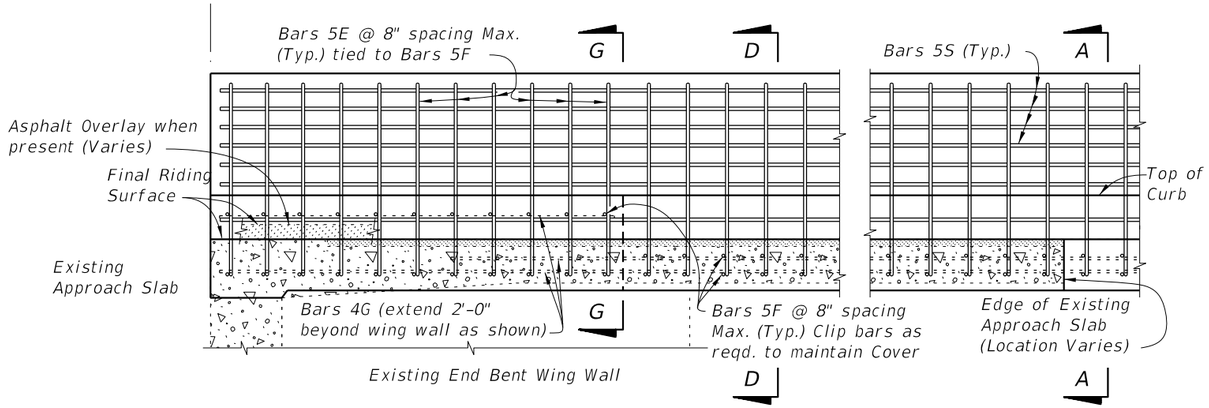


PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Expansion Dowel Assemblies and Bars 4C not shown for clarity)

SCHEME 4 ~ MODIFICATION FOR INDEX 521-482 SCHEME 2
RAILING END TREATMENT FOR PARALLEL CURBS AND WING WALLS WITH WIDE CURBS



PARTIAL PLAN OF RAILING



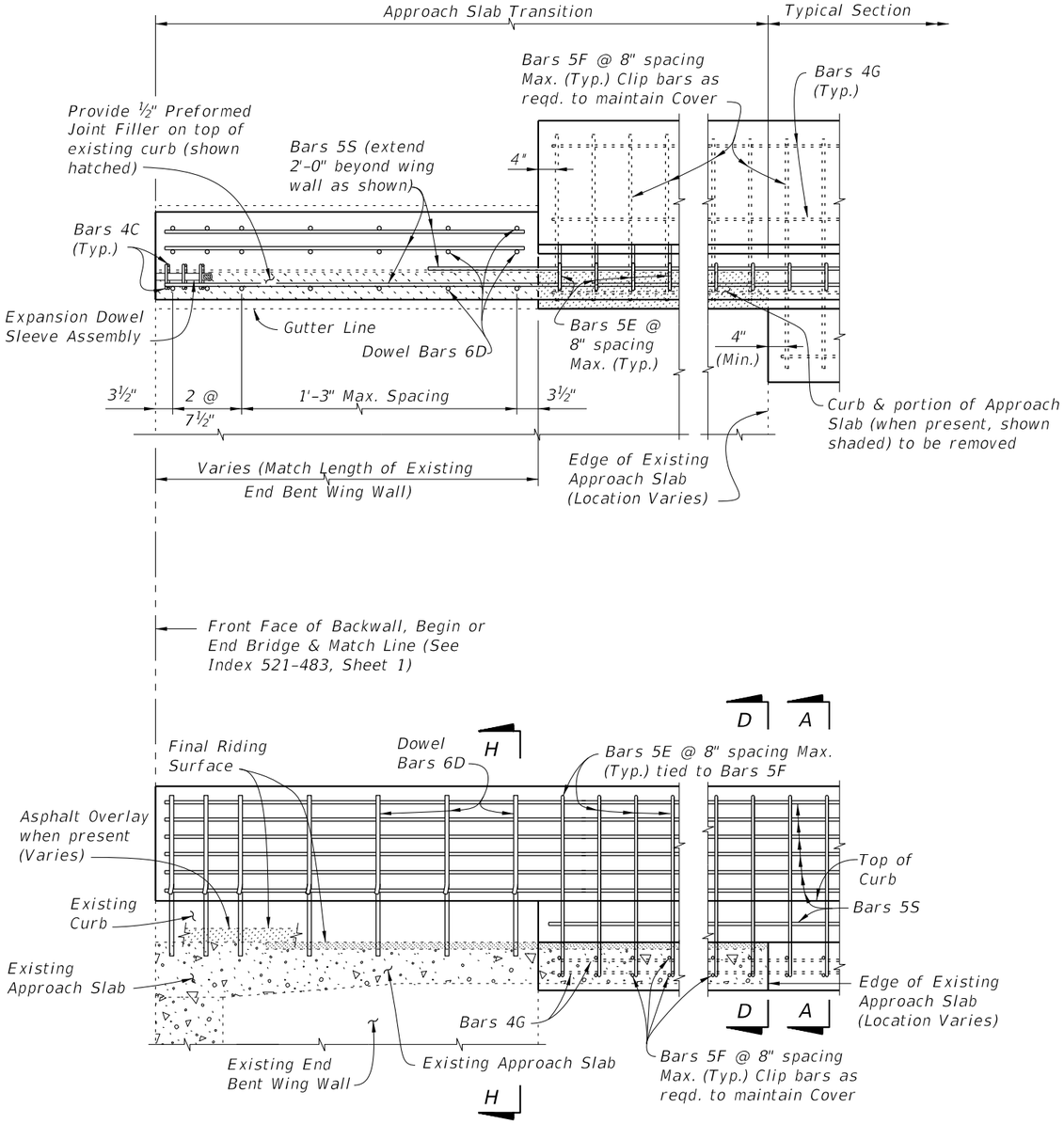
PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Expansion Dowel Assemblies and Bars 4C not shown for clarity)

SCHEME 5 ~ MODIFICATION FOR INDEX 521-482 SCHEME 3 AND 4
RAILING END TREATMENT FOR PARALLEL CURBS AND FLARED WING WALLS WITH WIDE CURBS

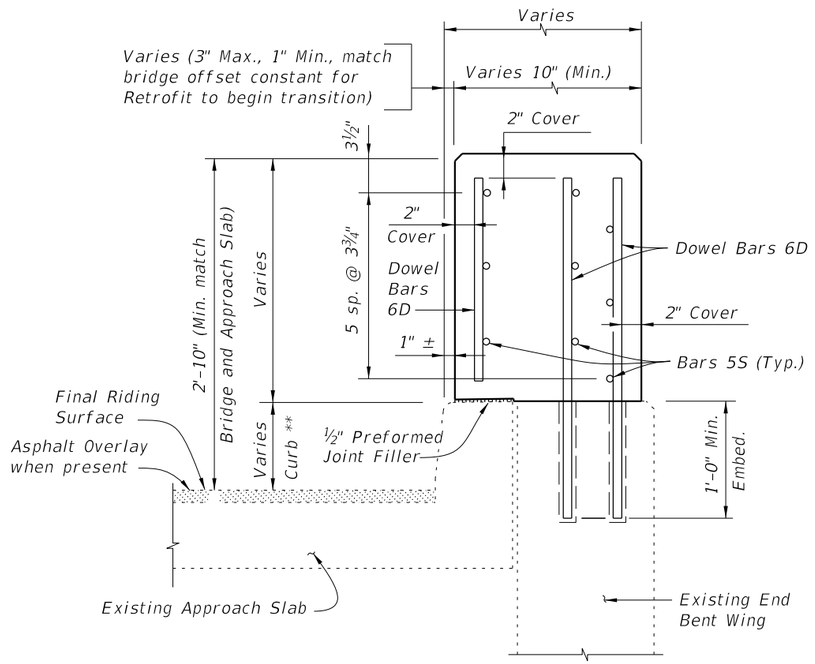
CROSS REFERENCES:
For Section A-A see Sheet 4
For Section D-D see Sheet 5.
For Section G-G see Sheet 7.
For Expansion Dowel Assemblies Details see Index 521-480.

10/17/2024 11:16:12 AM

LAST REVISION	REVISION	DESCRIPTION:				
07/01/09			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX 521-484	SHEET 8 of 10



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)



SECTION H-H

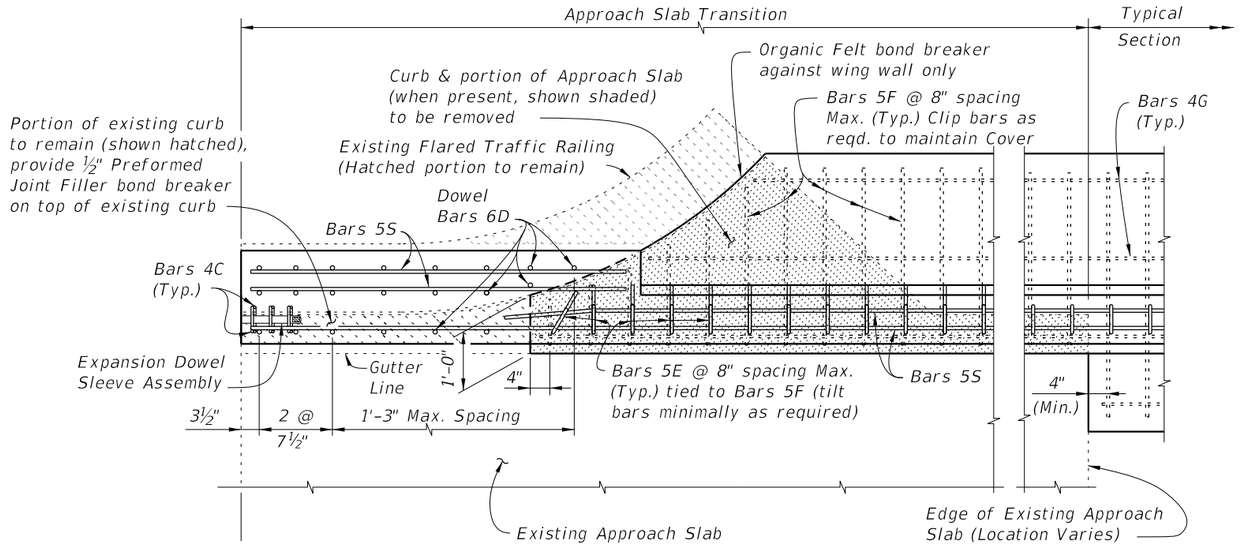
Note:
** Match curb height at adjoining existing end bent wing.

CROSS REFERENCES:
For Section A-A see Sheet 4.
For Section D-D see Sheet 5.
For Expansion Dowel Assembly and placement of Dowel Bars 6D Details see Index 521-480.

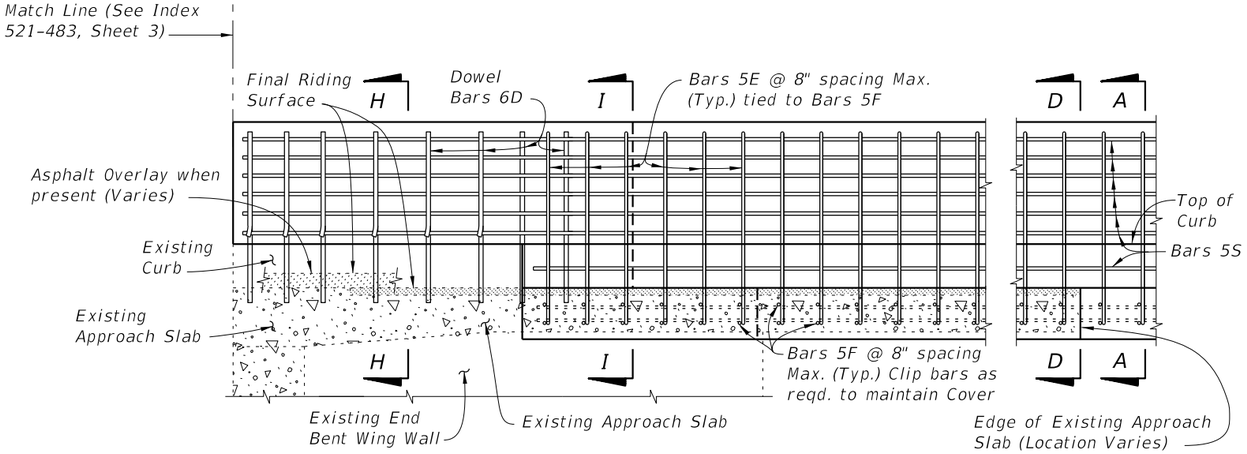
SCHEME 6 ~ MODIFICATION FOR INDEX 521-483 SCHEME 2
RAILING END TREATMENT FOR PARALLEL CURBS AND WING WALLS WITH INTERMEDIATE CURBS

10/17/2024 11:16:20 AM

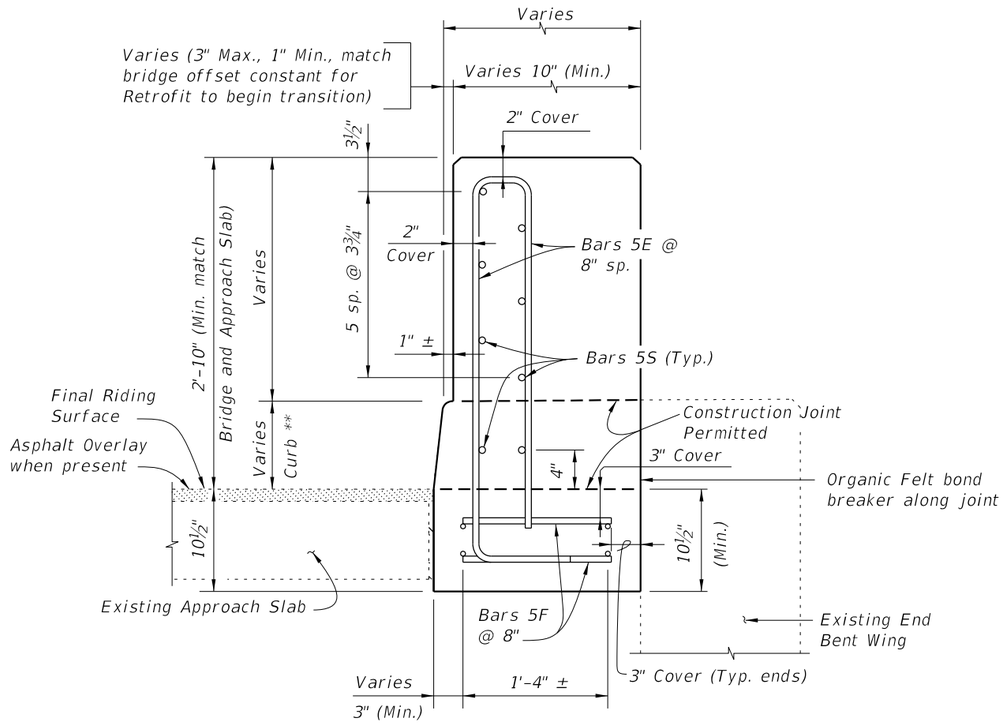
LAST REVISION	REVISION	DESCRIPTION:				
07/01/09			FDOT FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX 521-484	SHEET 9 of 10



PARTIAL PLAN OF RAILING



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)



SECTION I-I

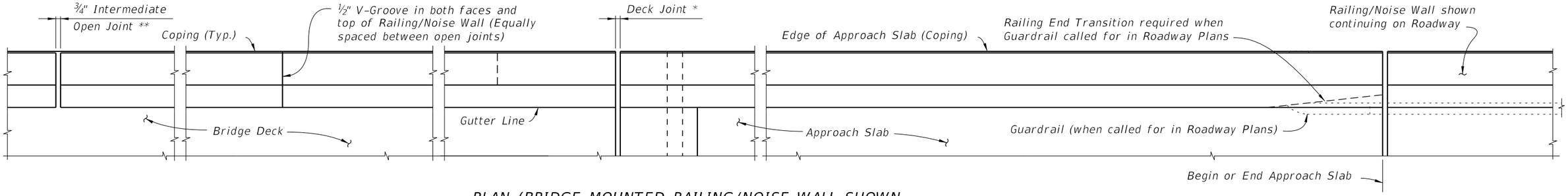
Note:
** Match curb height at adjoining existing end bent wing.

CROSS REFERENCES:
For Section A-A see Sheet 4.
For Section D-D see Sheet 5.
For Section H-H see Sheet 9.
For Expansion Dowel Assemblies and placement of Dowel Bars 6D Details see Index 521-480.

SCHEME 7 ~ MODIFICATION FOR INDEX 521-483 SCHEME 3
RAILING END TREATMENT FOR PARALLEL CURBS AND
FLARED WING WALLS WITH INTERMEDIATE CURBS

10/17/2024 11:16:27 AM

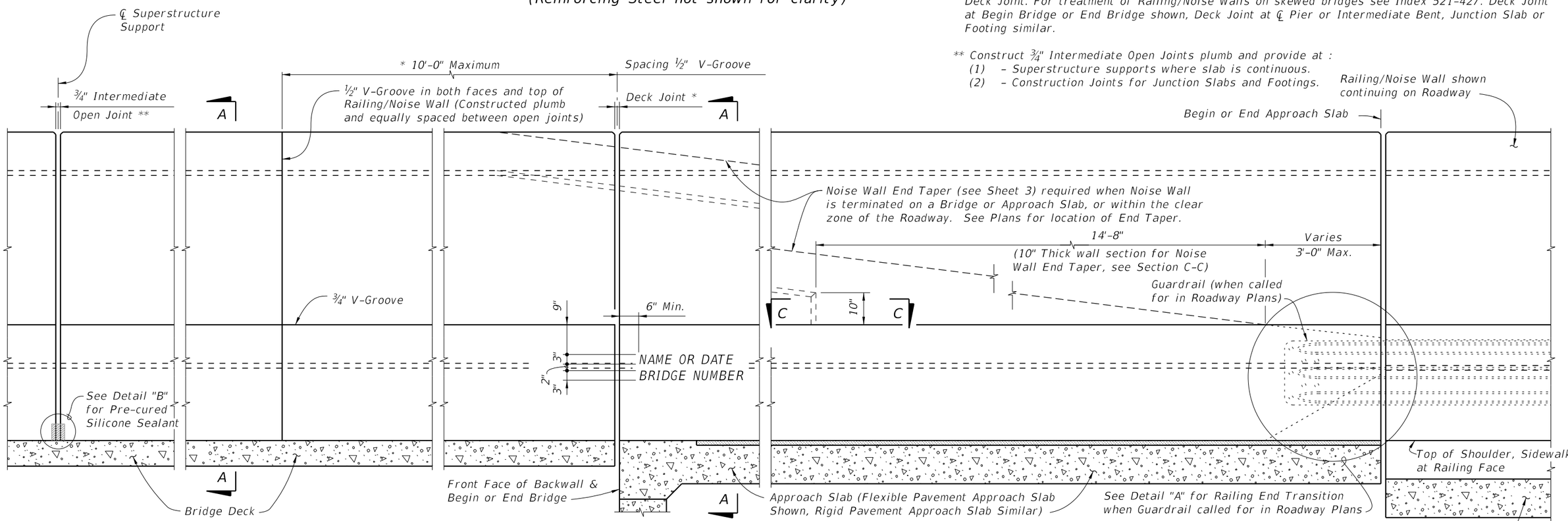
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH	INDEX 521-484 / SHEET 10 of 10



PLAN (BRIDGE MOUNTED RAILING/NOISE WALL SHOWN, WALL OR FOOTING MOUNTED RAILING/NOISE WALL SIMILAR) (Reinforcing Steel not shown for clarity)

* On Bridges see Superstructure and Approach Slab Sheets for actual dimensions and joint orientation. Open Railing/Noise Wall Joints at Deck Expansion Joint locations shall match the dimensions of the Deck Joint. For treatment of Railing/Noise Walls on skewed bridges see Index 521-427. Deck Joint at Begin Bridge or End Bridge shown, Deck Joint at ℄ Pier or Intermediate Bent, Junction Slab or Footing similar.

** Construct ¾" Intermediate Open Joints plumb and provide at :
(1) – Superstructure supports where slab is continuous.
(2) – Construction Joints for Junction Slabs and Footings.



CROSS REFERENCE:
For Detail "B" and V-Groove Lettering Detail see Sheet 4.
For Section A-A see Sheet 3.
For Section C-C and Detail "A" see Sheet 5.

NAME, DATE AND BRIDGE NUMBER : For Railing/Noise Wall on bridges, place the Name as shown in the General Notes in the Structures Plans and Bridge Number on the Traffic Railing so as to be seen on the driver's right side when approaching the bridge. Place the Date on the driver's left side when approaching the bridge. The Date shall be the year the bridge is completed. For a widening when the existing railing is removed, use both the existing date and the year of the widening. Black plastic letters and figures 3" in height may be used, as approved by the Engineer, in lieu of the letters and figures formed by ⅜" V-Grooves. V-Groves shall be formed by preformed letters and figures.

ELEVATION OF INSIDE FACE OF RAILING/NOISE WALL (BRIDGE MOUNTED RAILING/NOISE WALL SHOWN, WALL OR FOOTING MOUNTED RAILING/NOISE WALL SIMILAR) (Reinforcing Steel not shown for clarity)

Notes
1. Work this with Indexes 521-512 through 521-515.
2. Construct Traffic Railing/ Noise Wall and joints plumb, not perpendicular to the roadway surface.
3. Concrete:
   A. Class II for slightly aggressive environments.
   B. Class IV for moderately or extremely aggressive environments.
4. Provide ¾" open joints every 30 to 90 feet. Align open joints with construction joints in the Junction Slab or footing.
5. Install Barrier Delineators 2'-4" above the riding surface in accordance with Specification Section 705. Match the Delineator color (White or Yellow) to the near edgeline.
6. Slip forming of the traffic railing portion is permitted.

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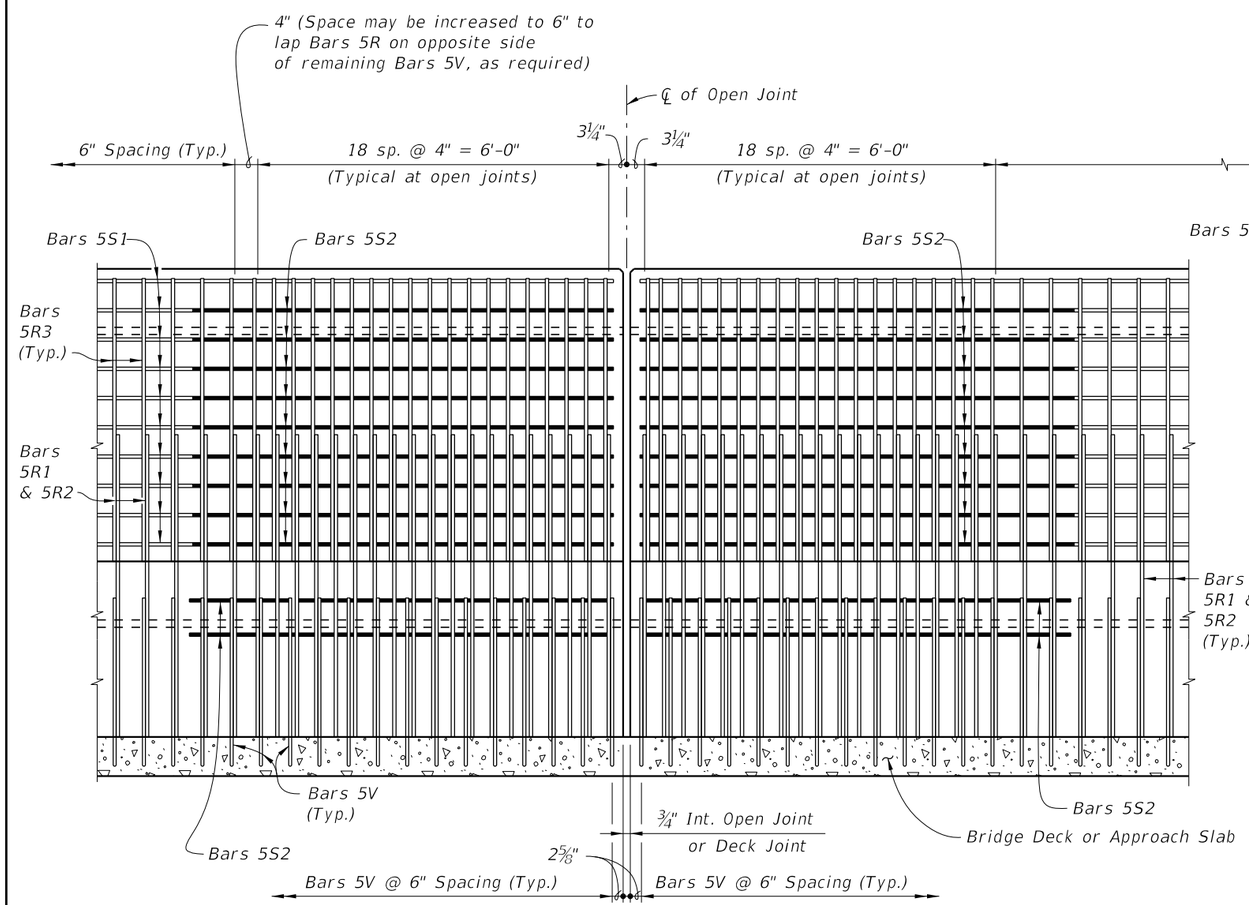
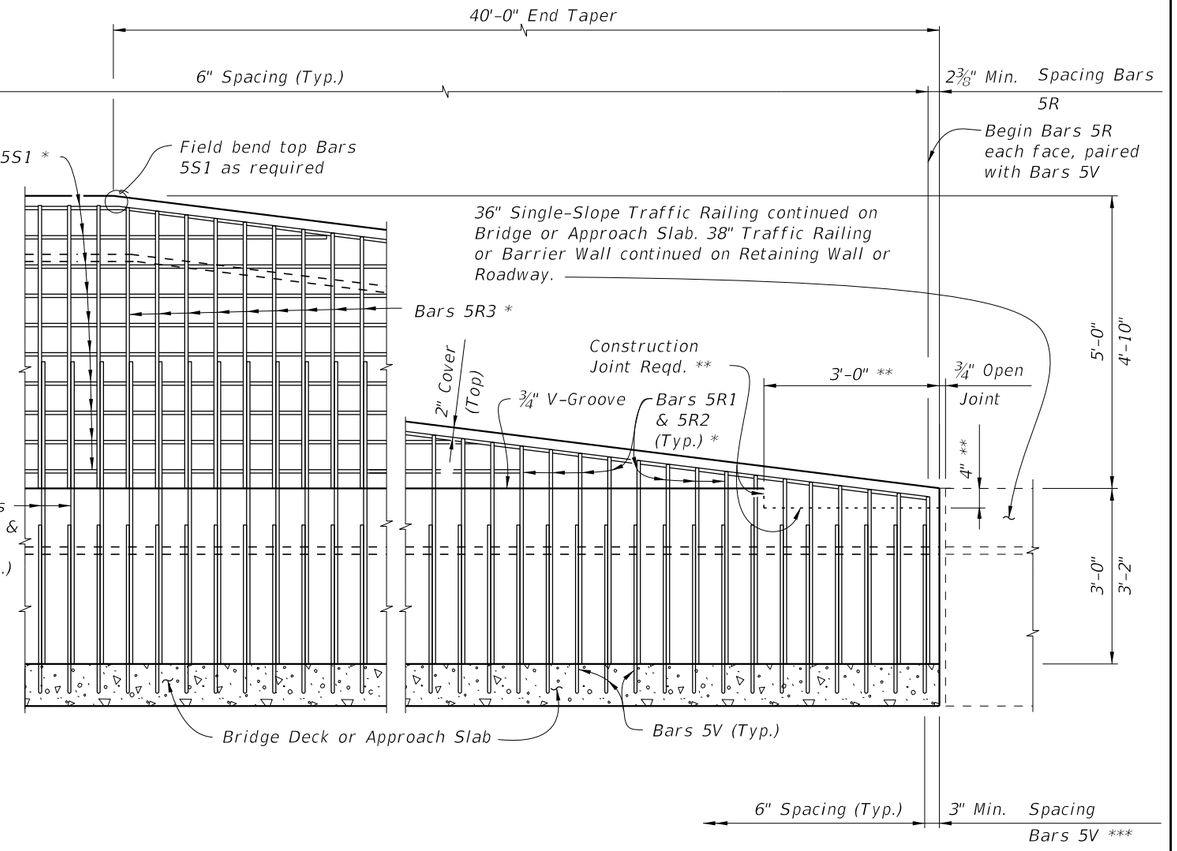
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING/NOISE WALL (8'-0") - BRIDGE	INDEX	SHEET
11/01/18					521-509	1 of 5



ELEVATION OF RAILING/NOISE WALL REINFORCING STEEL
(INTERMEDIATE OPEN JOINT SHOWN, DECK JOINT SIMILAR)
(Bars 5S1 in Railing not shown for clarity)



ELEVATION OF RAILING/NOISE WALL END TAPER (ADJACENT TO TRAFFIC RAILING SHOWN, GUARDRAIL ATTACHMENT SIMILAR SEE DETAIL "A", SHEET 5)
(Bars 5S1 in Railing not shown for clarity)

NOTES:
* Field Cut Bars 5R & 5S1 to maintain clearance.
** Terminate ¾" V-groove at construction joint & cast top of railing with End Taper.
*** Bar spacing shown for Bars 5V only applies when Single-Slope Traffic Railing continues. For transition to guardrail see Sheet 5.

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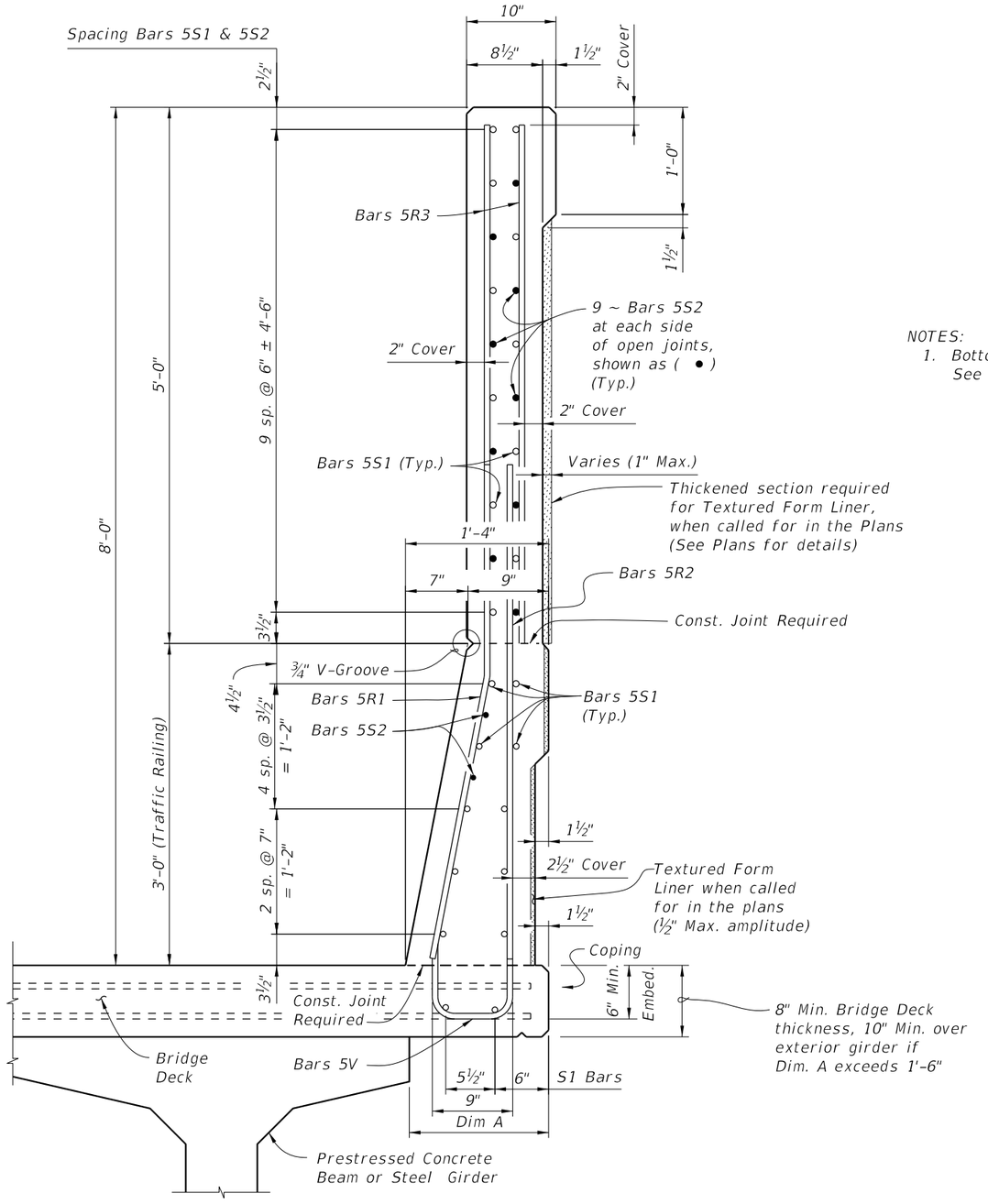
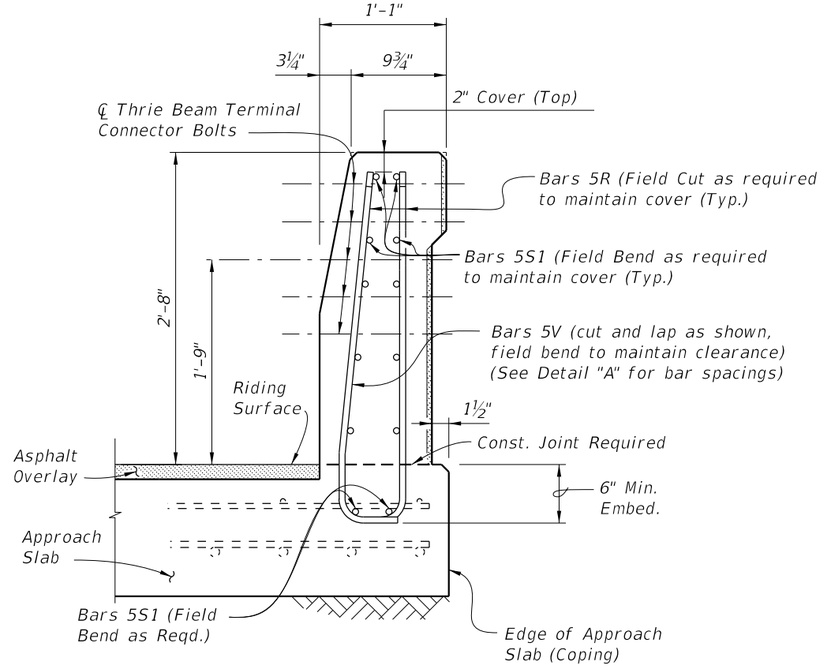
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING/NOISE WALL (8'-0") - BRIDGE	INDEX	SHEET
11/01/18					521-509	2 of 5



SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING/NOISE WALL
(Section Thru Bridge Deck Shown, Section Thru Approach Slab Similar)

CROSS REFERENCE:
For locations of Section A-A see Sheet 1.
For location of View B-B, see Sheet 5.

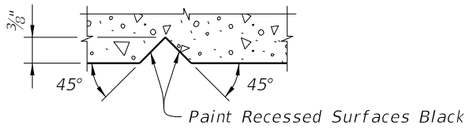
NOTES:
1. Bottom Bars 5S1 shown are part of the Traffic Railing/Noise Wall reinforcing. See Superstructure Sheets in the Plans for additional Bridge Deck Reinforcing.



VIEW B-B
END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT AT END OF APPROACH SLAB
(Flexible Pavement Approach Slab Shown, Rigid Pavement Approach Slab Similar)

10/17/2024 11:16:49 AM

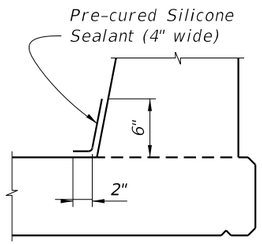
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING/NOISE WALL (8'-0") - BRIDGE	INDEX	SHEET
11/01/18						521-509	3 of 5



SECTION THRU RECESSED "V" GROOVE TO FORM INSCRIBED LETTERS AND FIGURES

INTERMEDIATE JOINT SEAL NOTES:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.



DETAIL "B" - SECTION AT INTERMEDIATE OPEN JOINT

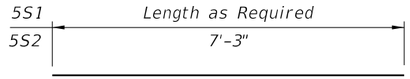
ESTIMATED TRAFFIC RAILING/NOISE WALL QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete (Railing)	CY/LF	0.107
Concrete (Noise Wall)	CY/LF	0.136
Reinforcing Steel (Typical)	LB/LF	69.36
Additional Reinf. @ Open Joint	LB	226.85

(The above quantities are based on the bridge mounted typical section, 2% deck cross slope and railing on low side of deck.)

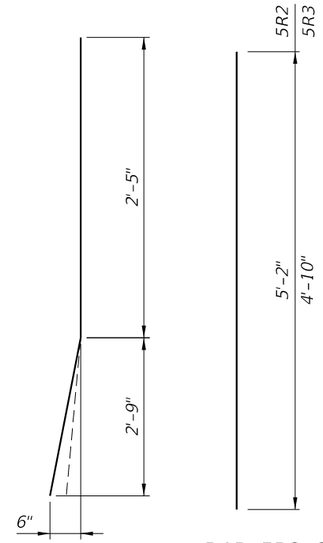
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
R1	5	5'-2"
R2	5	5'-2½"
R3	5	4'-10"
S1	5	As Reqd.
S2	5	7'-3"
V	5	6'-6½"

BRIDGE CROSS-SLOPE		LOW GUTTER		HIGH GUTTER	
		ØA	ØB	ØA	ØB
BRIDGE MOUNTED	0% to 2%	90°	90°	90°	90°
	2% to 6%	93°	87°	87°	93°
	6% to 10%	96°	84°	84°	96°



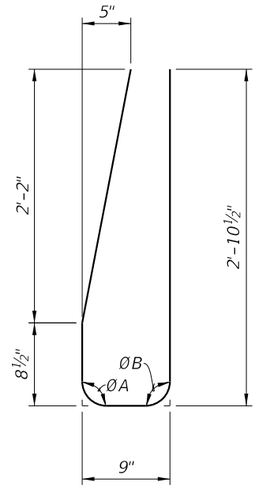
BARS 5S1 & 5S2



BAR 5R1

BAR 5R2 & BAR 5R3

(Field Cut and Bend for Railing End Transition)



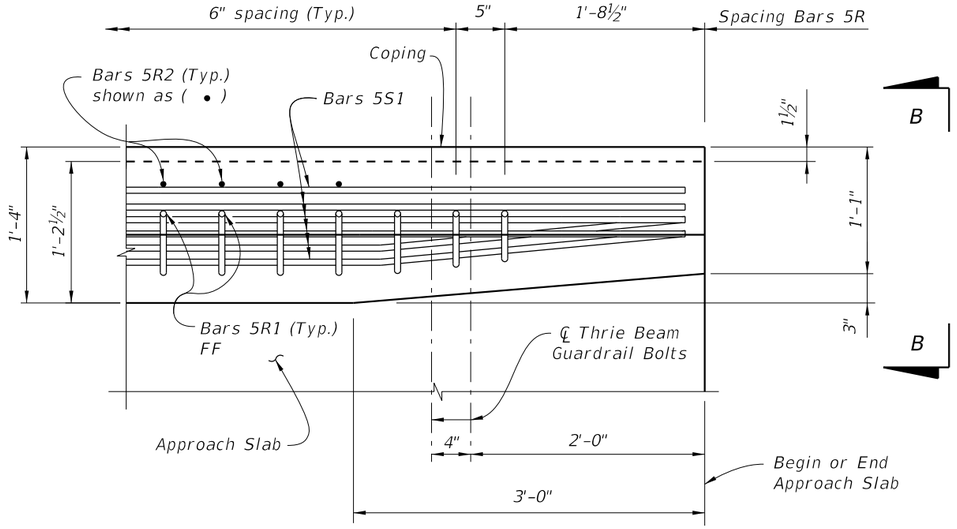
STIRRUP BAR 5V

END STIRRUP BAR 5V To Be Field Cut (Railing End Transition)

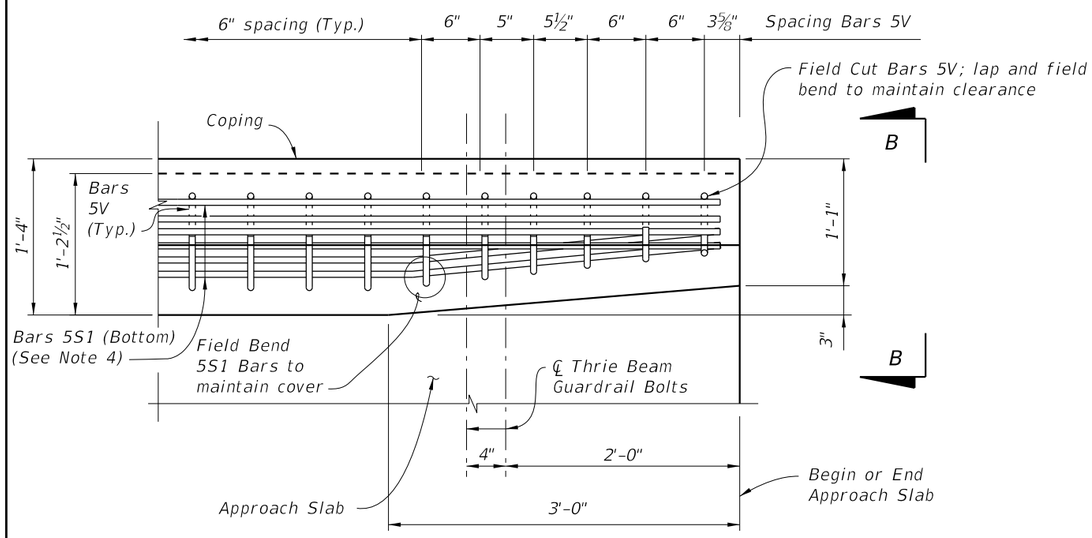
REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 5R shall be one continuous or lap spliced bar. No mechanical couplers are permitted.
4. Bars 5S1 may be continuous or spliced at the construction joints. Lap splices for Bars 5R2 and 5S1 shall be a minimum of 2'-2".
5. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of deformed wire meeting the requirements of Specification Section 931.

CROSS REFERENCE:
For locations of Detail "B", see Sheet 1.



PLAN - RAILING END TRANSITION
(Showing Bars 5R, and Bars 5S1) (Bars 5V &
Noise Wall Reinforcement not shown for Clarity)

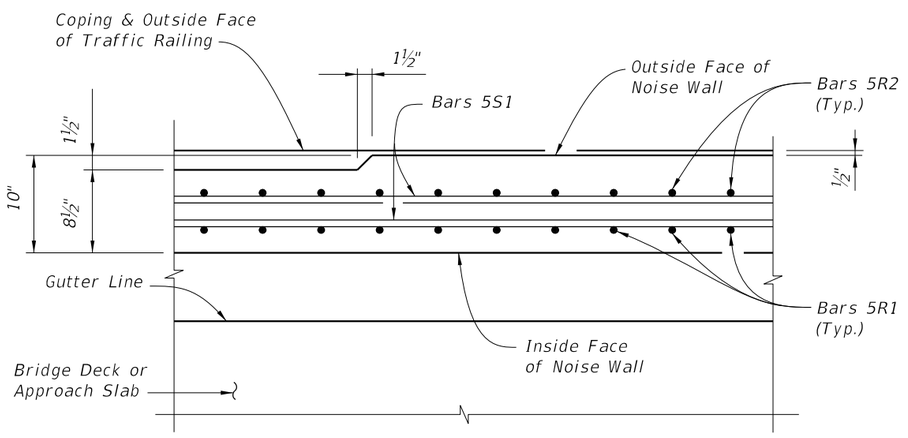


PLAN - RAILING END TRANSITION
(Showing Bars 5V and Bars 5S1)
(Bars 5R not shown for Clarity)

DETAIL "A"

DETAIL "A" NOTES:

1. *Begin placing Railing Bars 5V at the railing end and proceed toward the guardrail (thrie beam) terminal connector to ensure placement of guardrail bolt holes. Pair Bars 5R with Bars 5V as shown. Clearance of Bars 5R & 5V to guardrail bolt holes shall be checked to prevent cutting of bars if holes are to be drilled. Shift bars locally where conflicts occur.*
2. *For Guardrail connection details see Index 536-001.*
3. *Omit Railing End Transition if a 36" Single-Slope Traffic Railing is used beyond the End Taper. See the Plan Sheets.*
4. *Field cut Bars 5R2 to maintain cover. Field cut Bars 5V and lap as necessary to maintain cover; field cut & bend Bars 5R1 front leg (more plumb) to maintain cover and tie to S1 Bars.*



SECTION C-C
THRU NOISE WALL END TAPER

CROSS REFERENCE:
For location of Detail "A" see Sheet 1.
For location of Section C-C see Sheet 1.
For View B-B see Sheet 3.

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LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	TRAFFIC RAILING/NOISE WALL (8'-0") - BRIDGE	INDEX	SHEET
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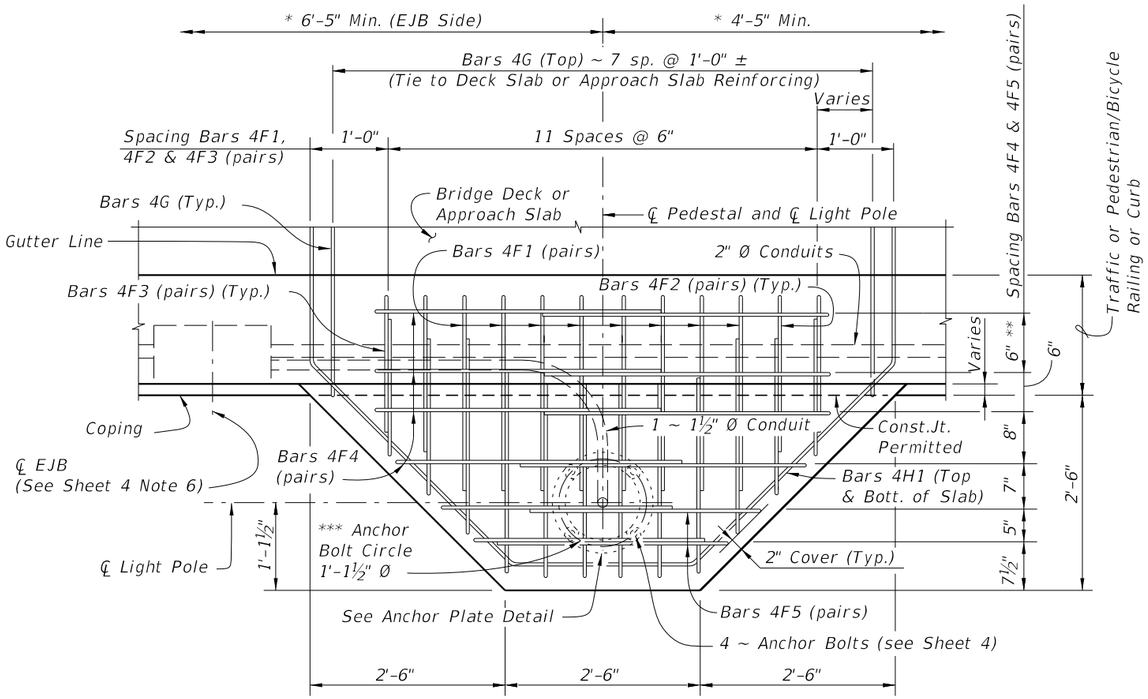
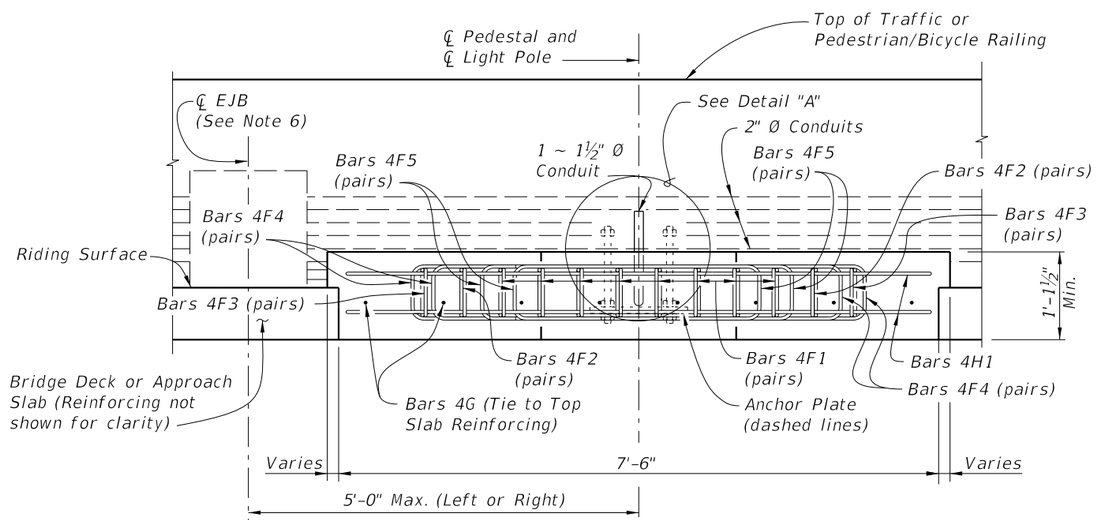
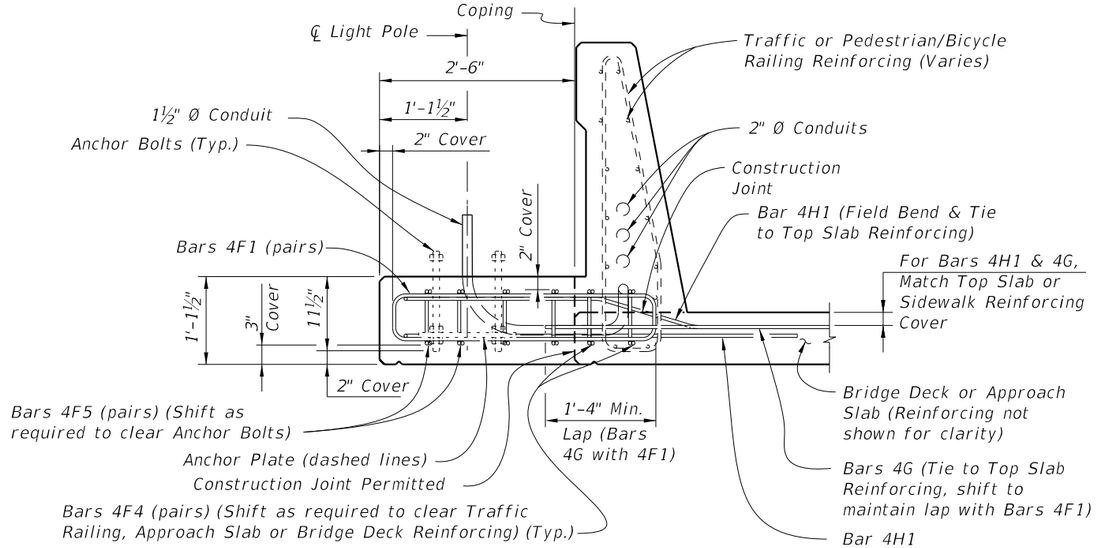


* Slip Forming Method of Construction requires the Engineer's approval within the limits shown.
** For Index 521-820 – Pedestrian/Bicycle Railing and concrete curb, this dimension is 3½". For raised sidewalks, this dimension is 1'-0" Max.
*** Anchor Bolt pattern orientation shall be as shown.

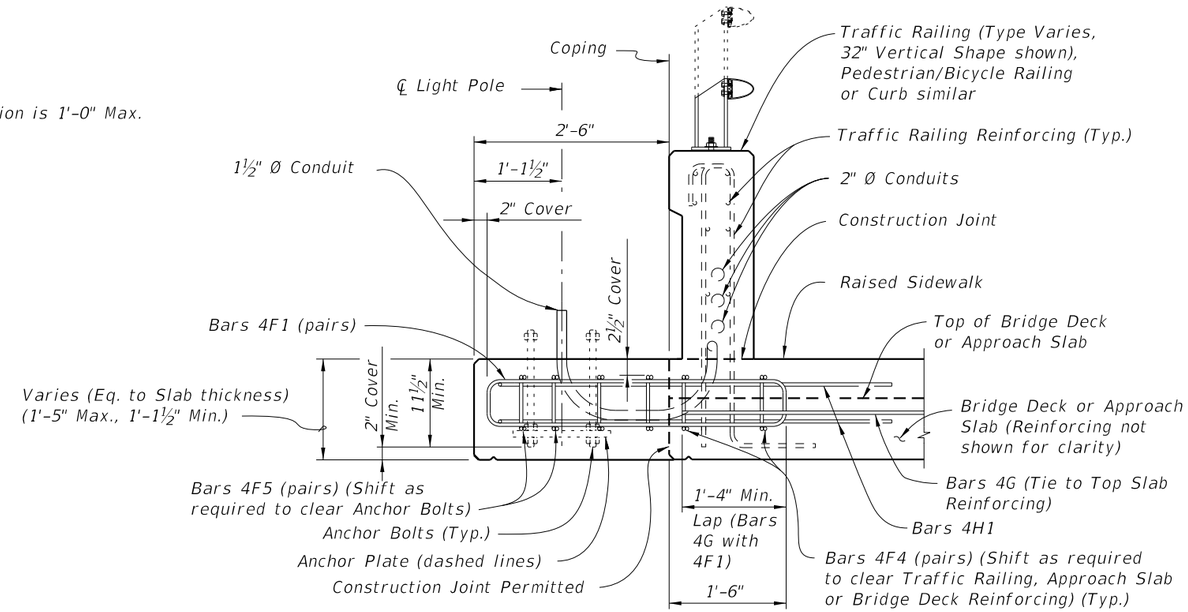
OPTION 1 & 2
PLAN VIEW



OPTION 1
ELEVATION VIEW
(Without Raised Sidewalk shown, with Raised Sidewalk similar)



OPTION 1
TYPICAL SECTION AT LIGHT POLE PEDESTAL



TYPICAL SECTION AT LIGHT POLE PEDESTAL
WITH RAISED SIDEWALK

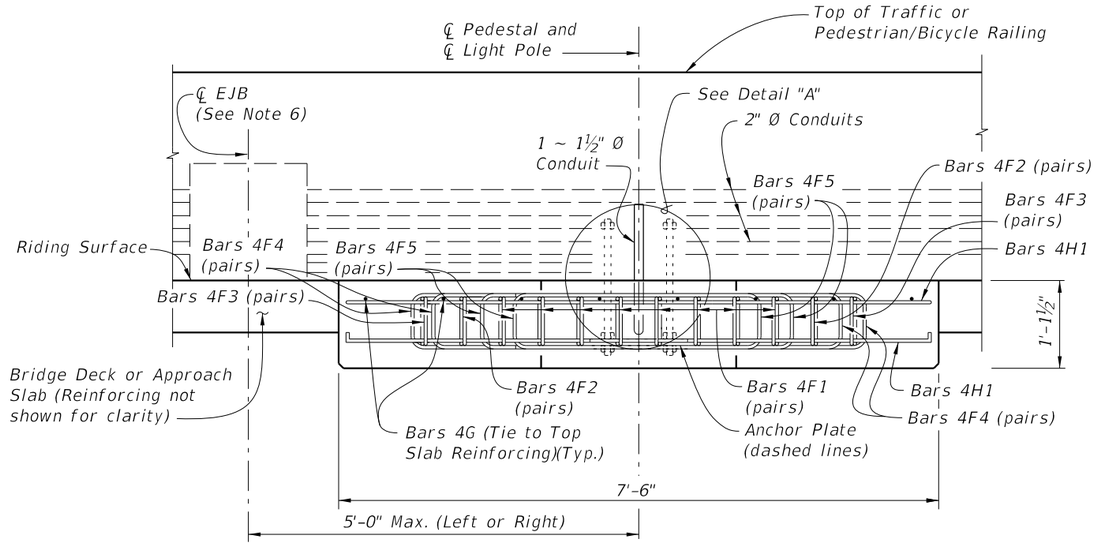
CROSS REFERENCE:
For Detail "A", Anchor Plate Detail and Light Pole Pedestal Notes, see Sheet 4.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.

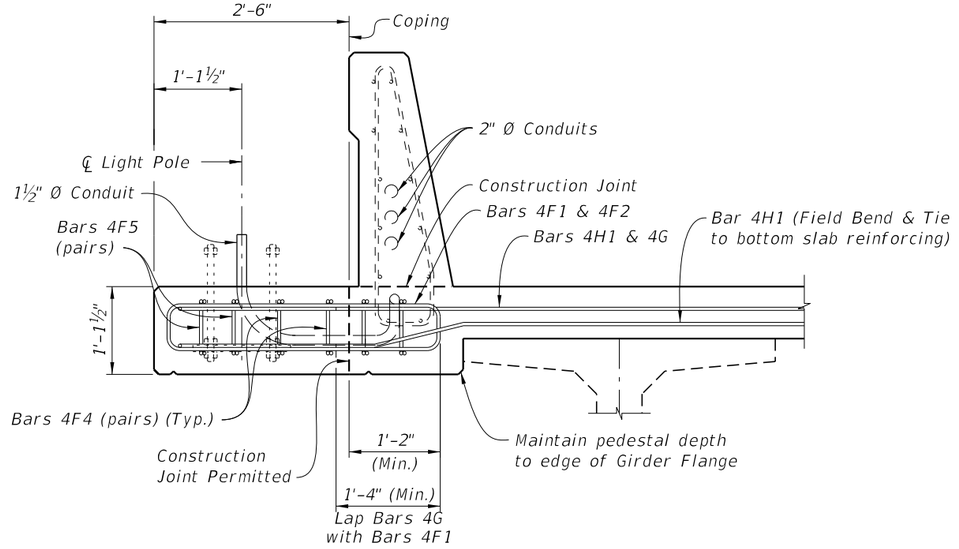
CASE 1 LIGHT POLE PEDESTAL FOR APPROACH SLAB OR BRIDGE DECK THICKNESS LESS THAN 1'-5½" AT COPING

10/17/2024 11:17:10 AM

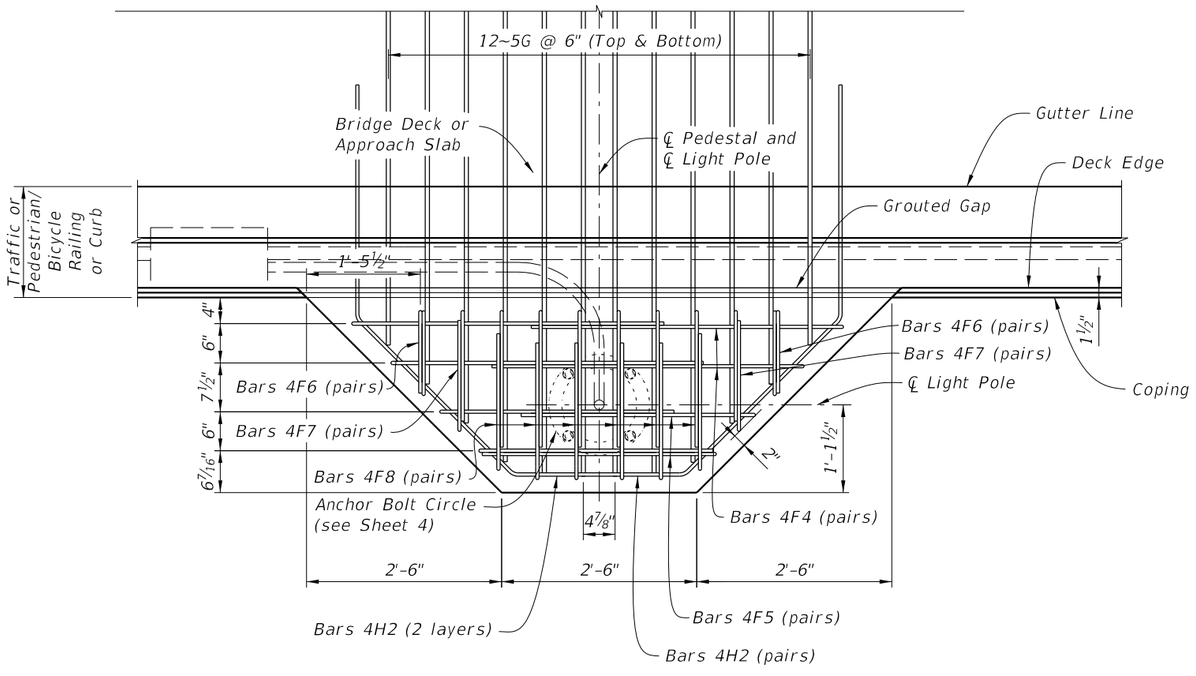
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/21			FY 2025-26 STANDARD PLANS	LIGHT POLE PEDESTAL - BRIDGE	521-660	1 of 4



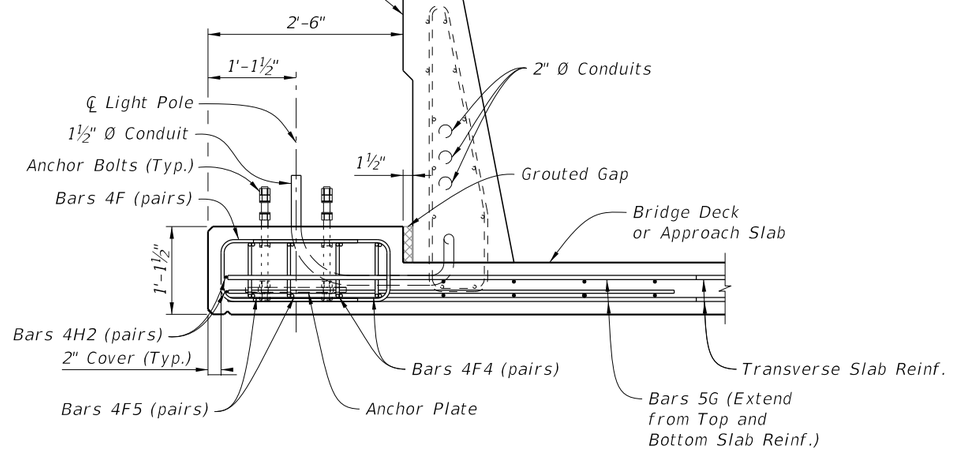
OPTION 2 - ELEVATION VIEW



OPTION 2 - TYPICAL SECTION AT LIGHT POLE PEDESTAL
(Approach Slab Similar)



OPTION 3 – PLAN VIEW
WITH GAP BETWEEN BARRIER AND PEDESTAL TO ALLOW SLIP FORMING



OPTION 3 – TYPICAL SECTION AT LIGHT POLE PEDESTAL
WITH GAP BETWEEN BARRIER AND PEDESTAL TO ALLOW SLIP FORMING

CROSS REFERENCE:
For Detail "A", Anchor Plate Detail and Light Pole Pedestal Notes, see Sheet 4.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.

CASE 1 LIGHT POLE PEDESTAL FOR APPROACH SLAB OR BRIDGE DECK LESS THAN 1'-5½" AT COPING

LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	LIGHT POLE PEDESTAL - BRIDGE	INDEX	SHEET
11/01/24					521-660	2 of 4

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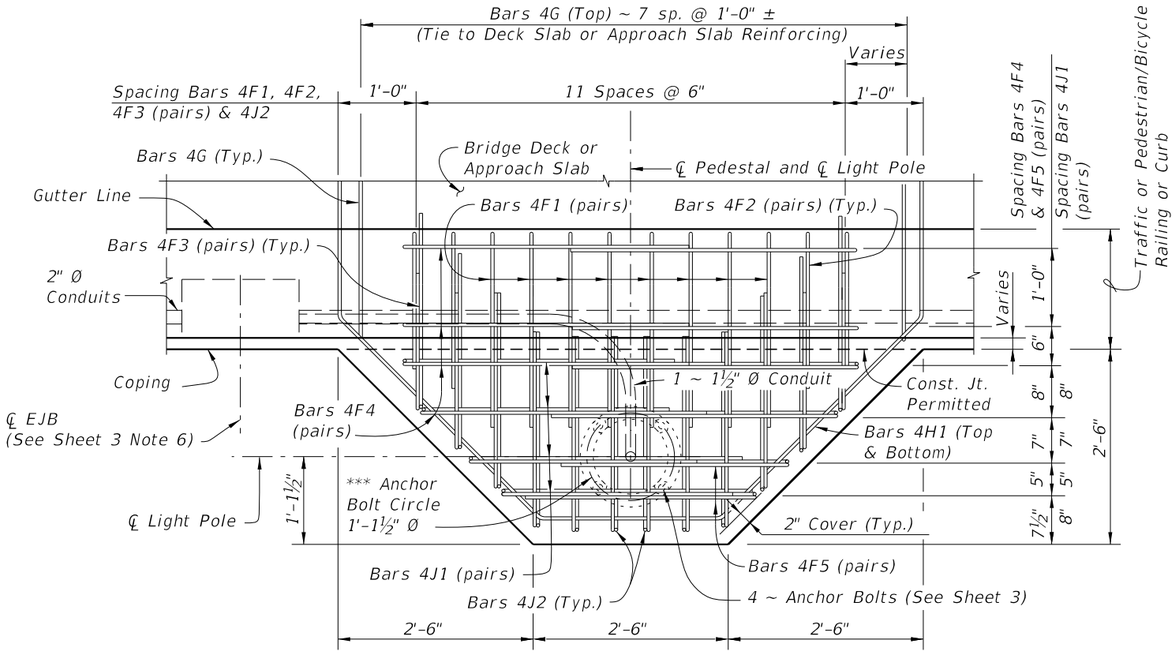
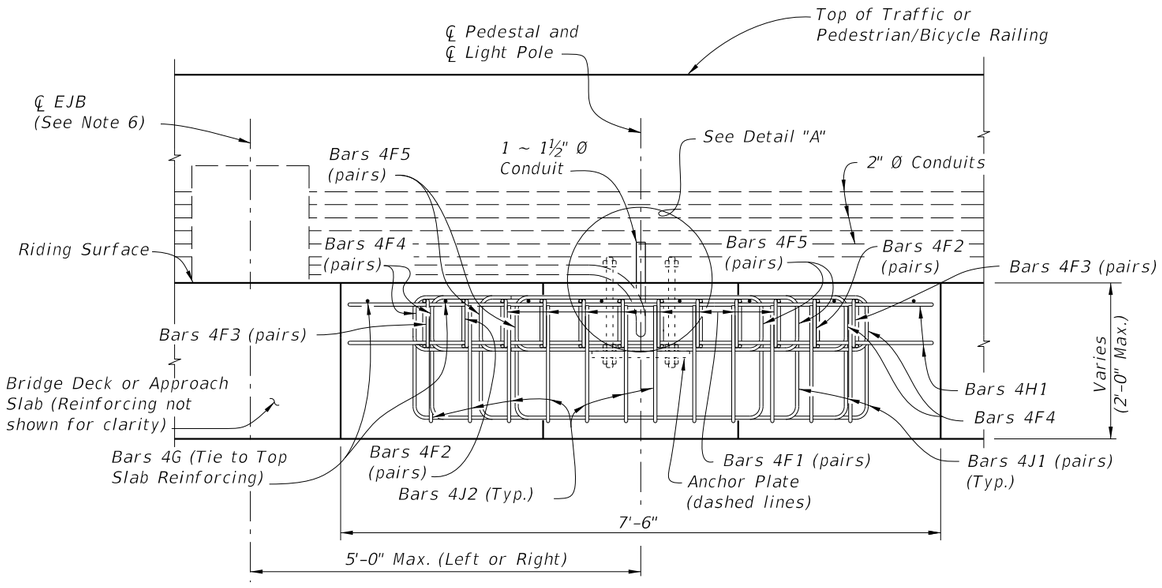
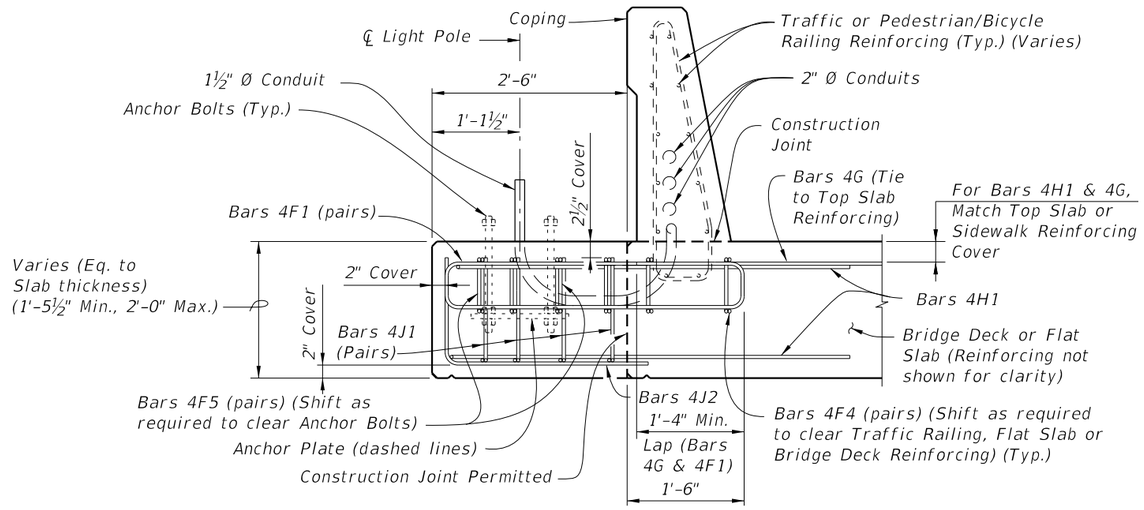


*** Anchor Bolt pattern orientation shall be as shown.

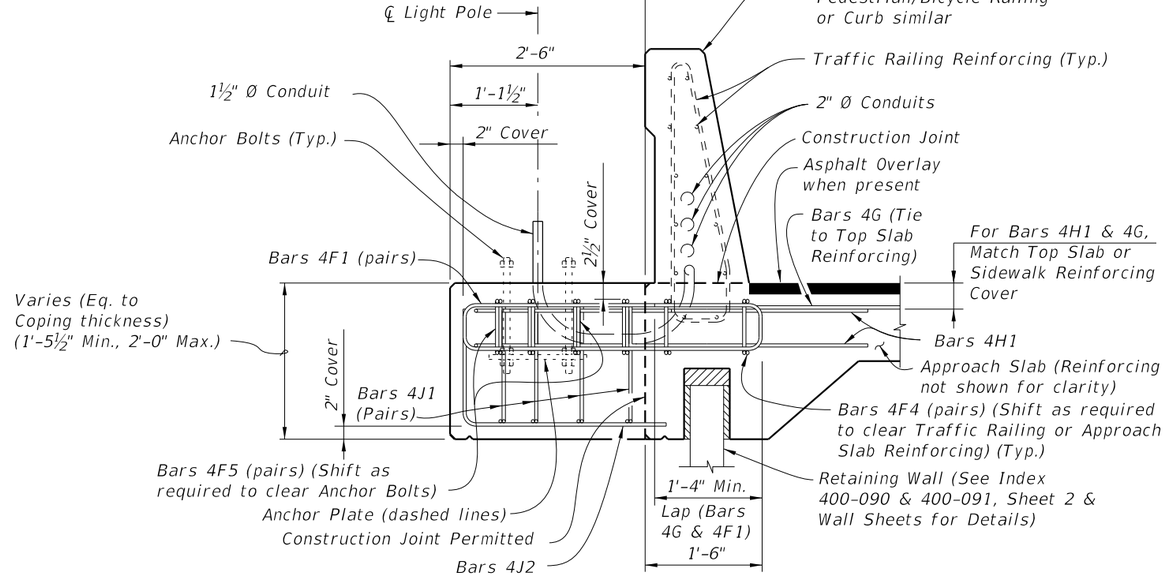
PLAN VIEW



ELEVATION VIEW



TYPICAL SECTION AT LIGHT POLE PEDESTAL



TYPICAL SECTION AT LIGHT POLE PEDESTAL FOR APPROACH SLAB ON RETAINING WALL

CROSS REFERENCE:
For Detail "A", Anchor Plate Detail and Light Pole Pedestal Notes, see Sheet 4.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.

CASE 2 LIGHT POLE PEDESTAL FOR APPROACH SLAB OR BRIDGE DECK THICKNESS AT COPING 1'-5½" OR GREATER

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/21			FY 2025-26 STANDARD PLANS	LIGHT POLE PEDESTAL - BRIDGE	521-660	3 of 4

10/17/2024 11:17:24 AM

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

REINFORCING STEEL NOTES:

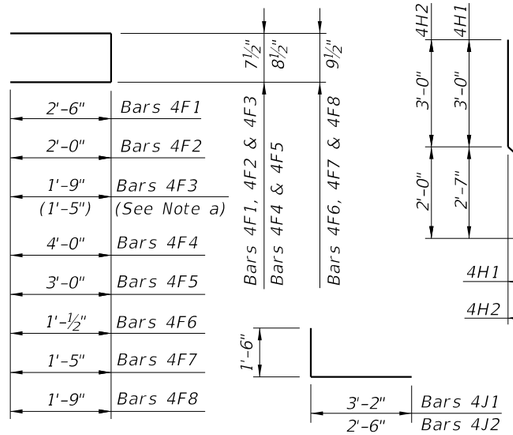
a. When Pedestal is attached to Pedestrian/Bicycle Railing – Index 521-820 or an 8" wide concrete curb and the Bridge Deck or Approach Slab thickness is less than 1'-1½", Bars 4F3 shall have leg length and bar length shown in parentheses.

b. The number of bars shown in parentheses is for Bars 4F4 when Pedestal is attached to Pedestrian/Bicycle Railing – Index 521-820 or an 8" wide concrete curb, and the Bridge Deck or Approach Slab thickness is less than 1'-1½".

c. Lap Splices for Bars 4F1, 4F2 & 4F3 shall be a minimum of 1'-4". Lap Splices for Bars 4F4 & 4F5 shall be minimum of 1'-8".

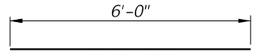
d. Bars 4J1 and 4J2 are not required when Pedestal thickness is less than 1'-5½". Field trim height of bars to maintain cover when Pedestal thickness is less than 2'-0". Field trim length of Bars 4J2 on Retaining Wall Coping to maintain cover.

e. All bar dimensions in the bending diagrams are out to out.

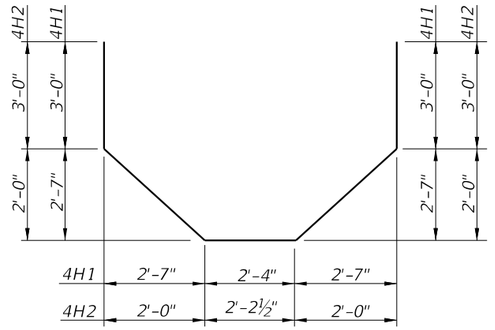


BARS 4F

BARS 4J1 & 4J2



BAR 5G

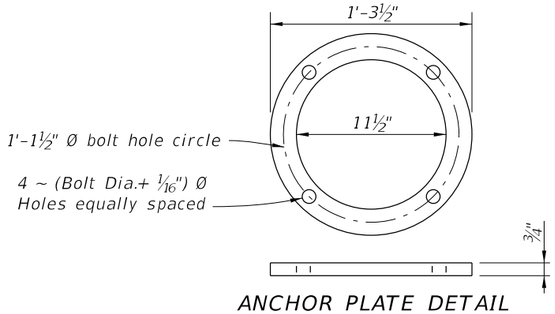


PLAN BARS 4H

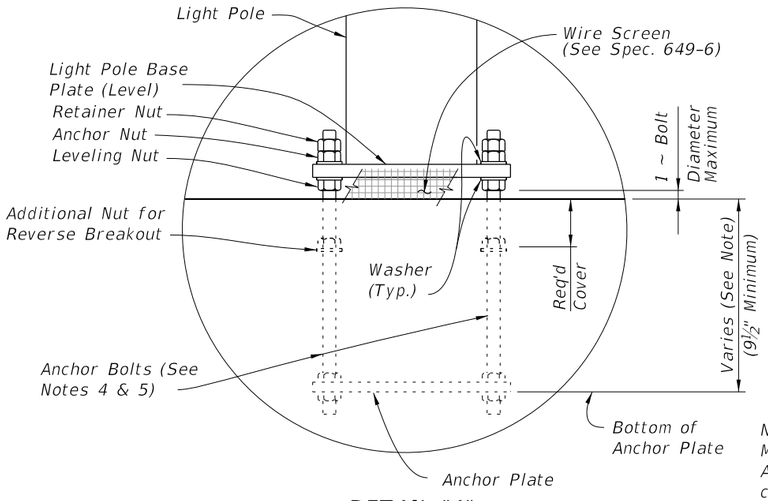
BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH	NOTES
F1	4	16	5'-8"	c
F2	4	4	4'-8"	c
F3	4	4	4'-2" (3'-6")	a, c
F4	4	8 (6) [4 for Option 3]	8'-9"	b, c
F5	4	4	6'-9"	c
F6	4	4	2'-11"	–
F7	4	4	3'-8"	–
F8	4	12	4'-4"	–
G	4 [5 for Option 3]	8 [24 for Option 3]	6'-0"	–
H1	4	2	15'-8"	–
H2	4	2	13'-10"	–
J1	4	8	4'-8"	d
J2	4	12	4'-0"	d

( ) See Reinforcing Steel Note a & b.



ANCHOR PLATE DETAIL



DETAIL "A"

Note: Min. anchor bolt embed is 9 1/2".
Max embed must maintain min. required bottom cover.
Anchor bolt embed max. may be as long as required for constructability depending on which pedestal option is used.

CROSS REFERENCE:
For location of Detail "A" see Sheets 1,2 and 3.

LIGHT POLE PEDESTAL NOTES

1. Concrete and Reinforcing Steel required for the construction of the Pedestal shall meet the same requirements as the Traffic Railing or Pedestrian/Bicycle Railing the Pedestal is attached to.

2. Light Pole Pedestal may be used with the following:
   Index 521-422 – Traffic Railing (42" Vertical Shape),
   Index 521-423 – Traffic Railing (32" Vertical Shape),
   Index 521-427 – Traffic Railing (36" Single-Slope),
   Index 521-428 – Traffic Railing (42" Single-Slope),
   Index 521-820 – Pedestrian/Bicycle Railing,
   Index 515-021 – Pedestrian/Bicycle Bullet Railing for Traffic Railing or
   Index 515-509 – Traffic Railing /Noise Wall – Bridge.

3. Unless otherwise noted, Traffic Railing (36" Single-Slope) is shown in all Views and Sections. The Pedestal details for other Traffic Railings or Pedestrian/Bicycle Railing are similar.

4. ANCHOR BOLTS:
   Anchor Bolt design is based on the standard Roadway Aluminum Light Pole configurations shown on Index 715-002 with a maximum 40 ft. luminaire mounting height and a maximum 12 ft. arm length.
   Use 1" Ø anchor bolt for up to 75 ft. bridge deck height above natural ground or MLW.

   Anchor Bolts: ASTM F1554 Grade 55.
   Nuts: ASTM A563 Grade A, Heavy-Hex.
   Washers: ASTM F436 Type 1.
   Anchor Plate: ASTM A709 (Grade 36) or ASTM A36.
   Coating: Galvanize all Nuts, Bolts Washers, in accordance with ASTM F2329. Galvanize plates in accordance with ASTM A123.

   The Contractor is responsible for ensuring the anchor bolt configuration is compatible with the light pole base plate. Submit modifications of the anchor bolt design to the Engineer for approval.

5. Install Anchor Bolts plumb.

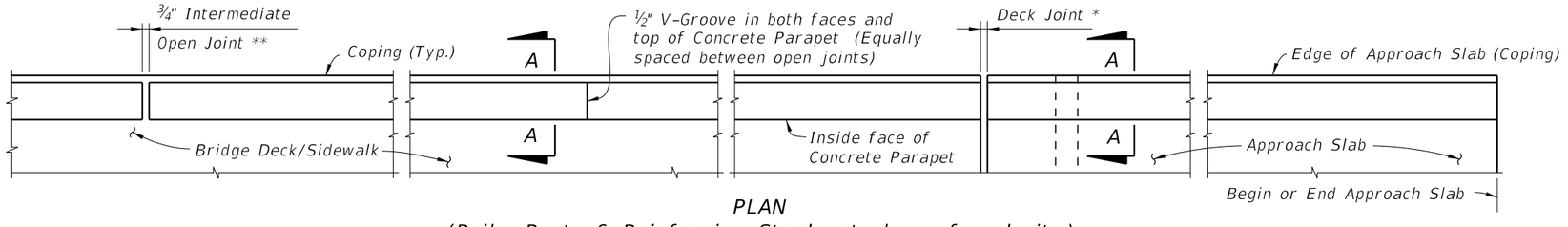
6. For Conduit, Embedded Junction Boxes (EJB), Expansion/Deflection Fitting and adjacent Reinforcing Steel Details, see Utility Conduit Detail Sheets and Index 630-010.

7. PAYMENT: The cost of Wire Screen, Anchor Bolts, Nuts, Washers and Anchor Plates shall be included in the Bid Price for Light Poles. The cost of all Labor, Concrete and Reinforcing Steel required for the Construction of the Pedestals, and Miscellaneous Hardware required for the completion of the Electrical System, shall be included in the Bid Price for the Traffic Railing or Pedestrian/Bicycle Railing the Pedestal is attached to.

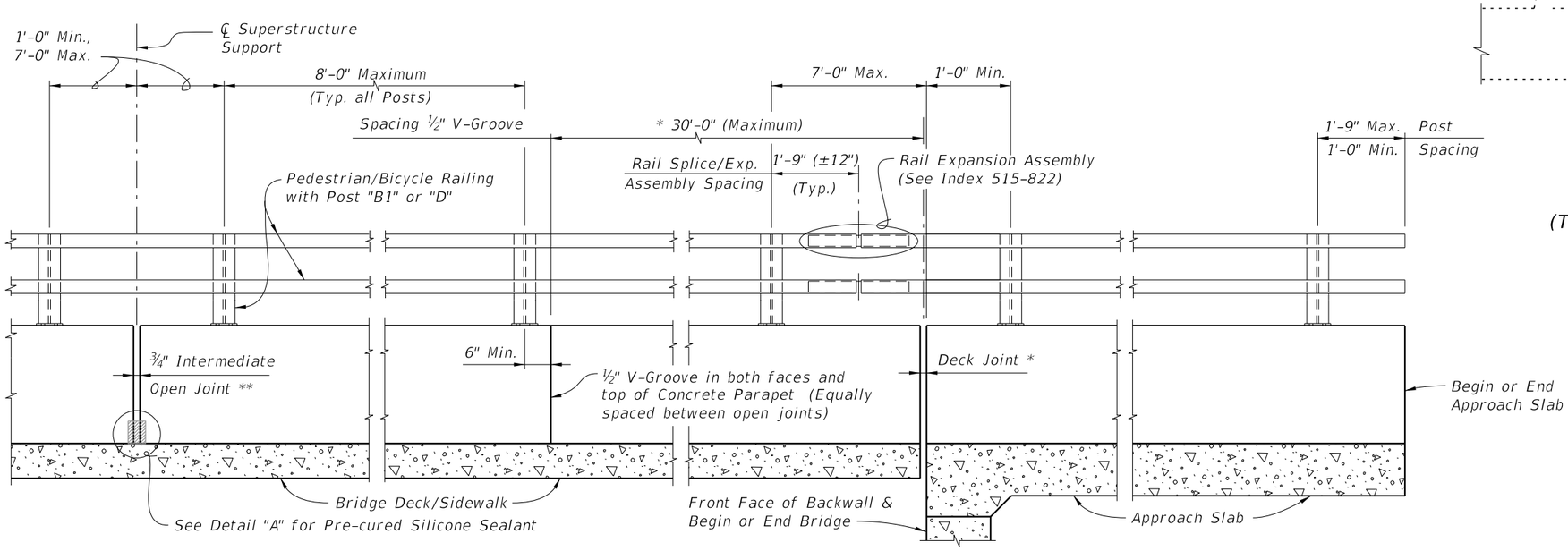
ESTIMATED LIGHT POLE PEDESTAL QUANTITIES PER LIGHT POLE PEDESTAL

ITEM	UNIT	QUANTITY
Concrete Per Pedestal Thickness	CY/In.	0.040
Reinforcing Steel	LB	195 (182)

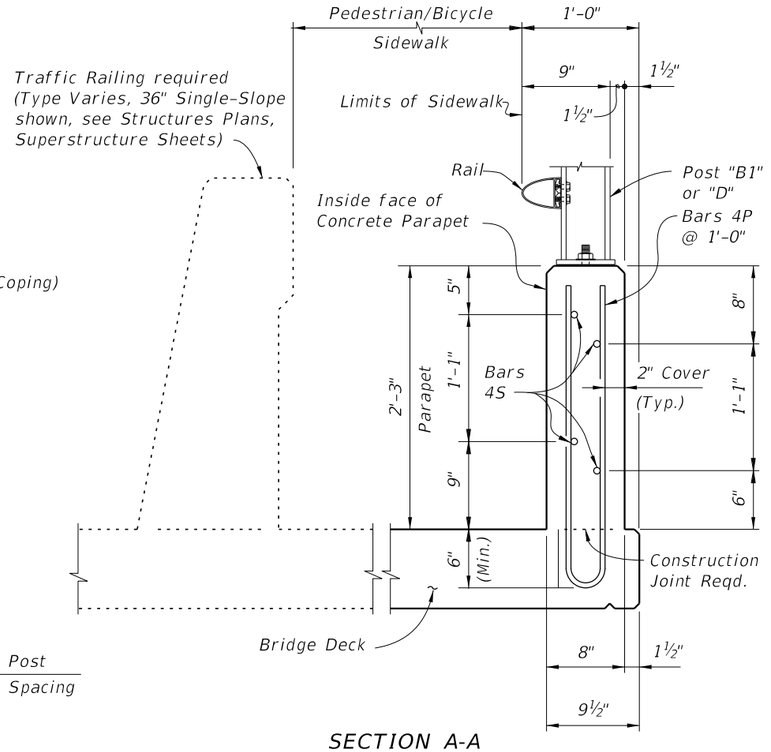
(The Reinforcing Steel quantity shown in parenthesis is for a Pedestal attached to Pedestrian/Bicycle Railing – Index 521-820 with Bridge Deck or Approach Slab thinner than 1'-1½". Add 59 Lbs. for Bars 4J1 & 4J2 when Pedestal Thickness is 1'-5½" or greater)



PLAN
(Rails, Posts & Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING
(Reinforcing Steel not shown for clarity)



SECTION A-A
(Typical Section Thru Bridge Deck Shown,
Section Thru Approach Slab Similar)
Bars P1 shown, Bars P2 similar

* *See Structures Plans, Superstructure Sheets for actual dimensions and joint orientation. Open Parapet Joints at Deck Expansion Joint locations shall match the dimension of the Deck Joint. For treatment of Railings on skewed bridges see Index 521-427. Deck Joint at Begin Bridge or End Bridge shown. Deck Joint at ℄ Pier or Intermediate Bent similar.*

** *¾" Intermediate Open Joints shall be provided at locations coinciding with ¾" Joints for the Traffic Railing.*

PEDESTRIAN/BICYCLE RAILING NOTES:

CONCRETE PARAPET: Concrete parapet shall be placed vertical and top surface shall be level transversely.
RAIL AND POST DETAILS: For Rail, Post, Rail Splice/Expansion Assembly fabrication and installation details see Index 515-022.
BRIDGE FENCING: For Bridge Fencing see Index 550-010 thru 550-013 in lieu of Posts and Rails on Index 515-022.
PAYMENT: Concrete parapet shall be paid for under the contract unit price for 27" Concrete Parapet (Pedestrian/Bicycle), LF, and Rails shall be paid for under Bullet Railings, LF.

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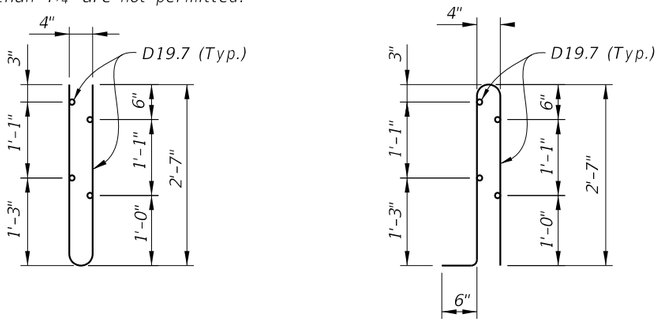
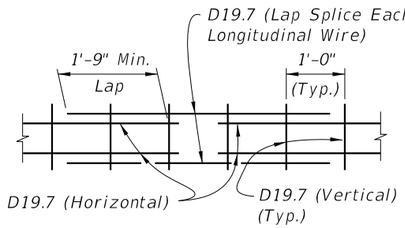
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT	FY 2025-26 STANDARD PLANS	27" CONCRETE PARAPET WITH PEDESTRIAN/BICYCLE BULLET RAILING	INDEX 521-820 / SHEET 1 of 2

ALTERNATE REINFORCING (WELDED WIRE REINF.) DETAILS

NOTE: Place wire panels to minimize the end overhang. End Overhangs greater than 4¾" are not permitted.



WELDED WIRE REINFORCEMENT (WWR)

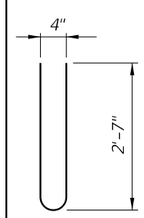


SPLICE DETAIL
(Between WWR Sections)

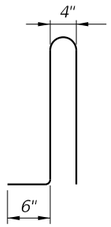
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

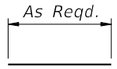
MARK	SIZE	LENGTH
P1	4	5'-6"
P2	4	6'-0"
S	4	As Reqd.



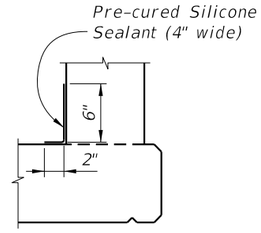
BAR 4P1



BAR 4P2



BAR 4S



DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTE:

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant meeting the requirements of Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Concrete Parapet.

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the parapet on a retaining wall shall be the same as detailed above for a 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 1'-8".
5. Bars 4P2 may be used in lieu of Bars 4P1.
6. At the option of the Contractor deformed WWR may be used in lieu of all Bars 4P or 4P2 and 4S.

ESTIMATED CONCRETE PARAPET QUANTITIES

ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.056
Reinforcing Steel (P1 & S)	LB/FT	6.35
Reinforcing Steel (P2 & S)	LB/FT	6.68

(The above quantities are based on a deck with a 2% cross slope)

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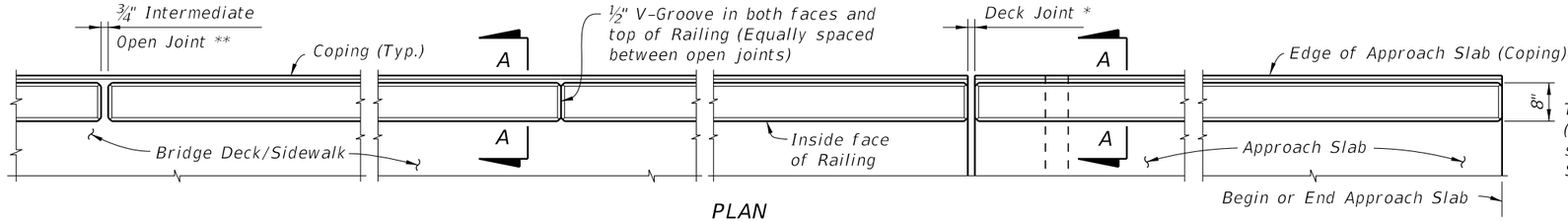
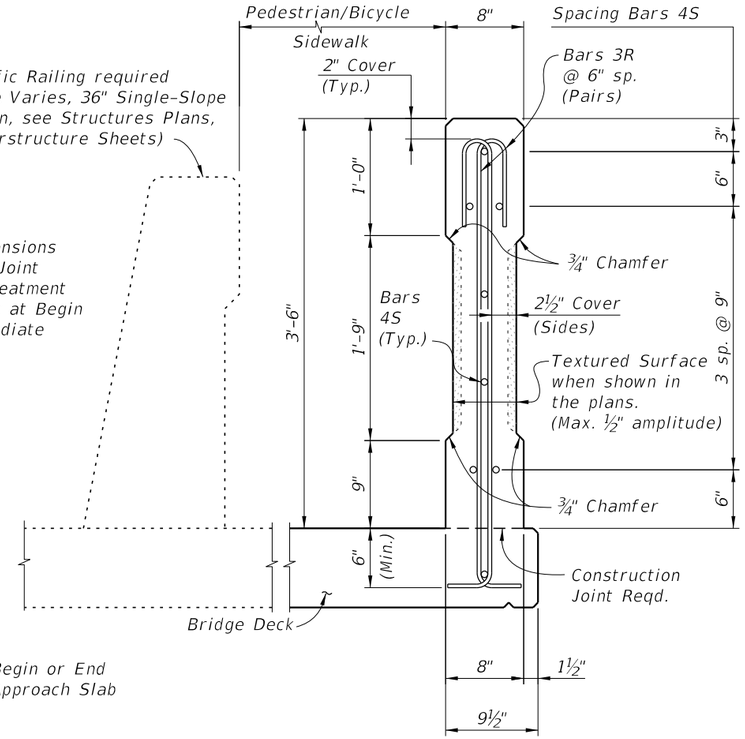
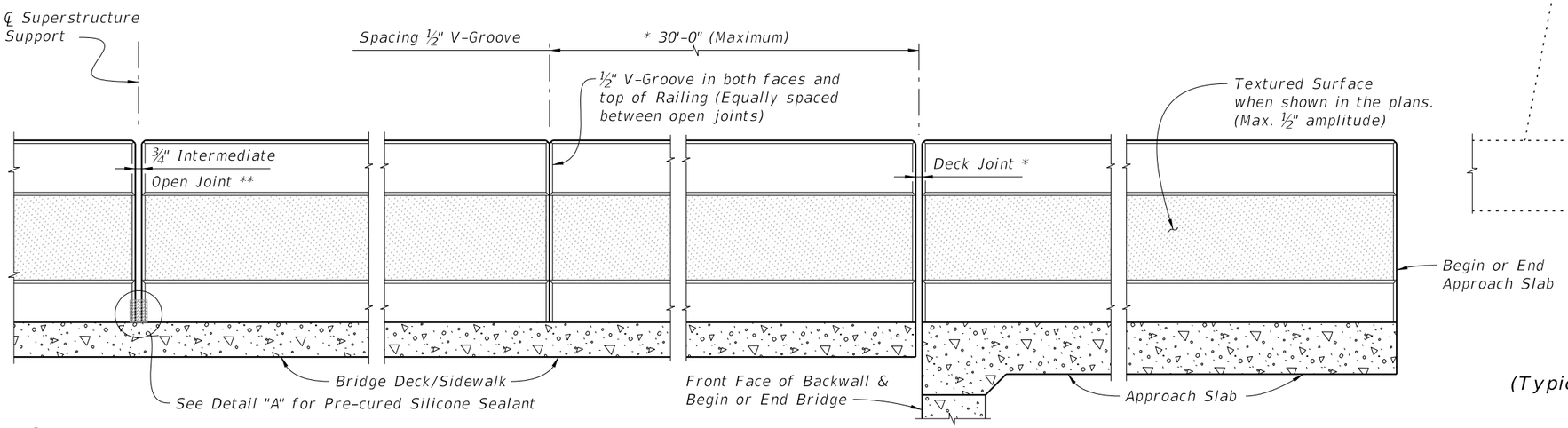


PLAN
(Reinforcing Steel not shown for clarity)

* See Structures Plans, Superstructure Sheets for actual dimensions and joint orientation. Open Railing Joints at Deck Expansion Joint locations shall match the dimension of the Deck Joint. For treatment of Railings on skewed bridges see Index 521-427. Deck Joint at Begin Bridge or End Bridge shown. Deck Joint at ℄ Pier or Intermediate Bent similar.



SECTION A-A
(Typical C-I-P Section Thru Bridge Deck Shown, Section Thru Approach Slab Similar)

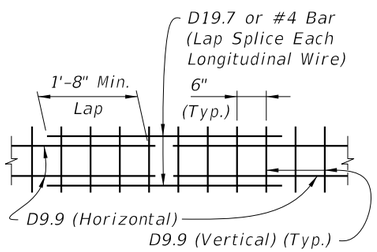


** ¾" Intermediate Open Joints shall be provided at locations coinciding with ¾" Joints for the Traffic Railing.

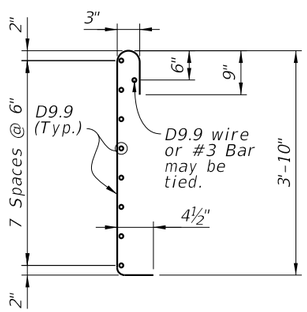
ELEVATION OF INSIDE FACE OF RAILING
(Reinforcing Steel not shown for clarity)

ALTERNATE REINFORCING (WELDED WIRE REINF.) DETAILS

NOTE: Place wire panels to ensure vertical wire is within 4" of open joints.



SPLICE DETAIL
(Between WWR Sections)

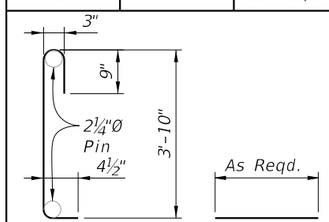


WELDED WIRE REINFORCEMENT (WWR)
(2 Pieces Reqd.)

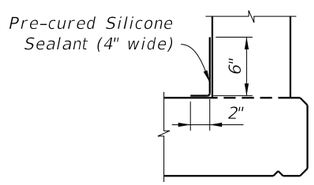
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
R	3	5'-2"
S	4	As Reqd.



BAR 3R BAR 4S



DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

ESTIMATED CONCRETE RAILING QUANTITIES

ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.079
Reinforcing Steel	LB/LF	13.12

(The above quantities are based on a deck with a 2% cross slope)

RAILING NOTES:
1. Railing shall be placed vertical and top surface shall be level transversely.

INTERMEDIATE JOINT SEAL NOTES:
1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class 5 Finish Coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Railing.

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a retaining wall shall be the same as detailed above for an 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bar splices for Bars 4S shall be a minimum of 1'-8".
5. At the option of the Contractor deformed WWR may be used in lieu of all Bars 3R and 4S.

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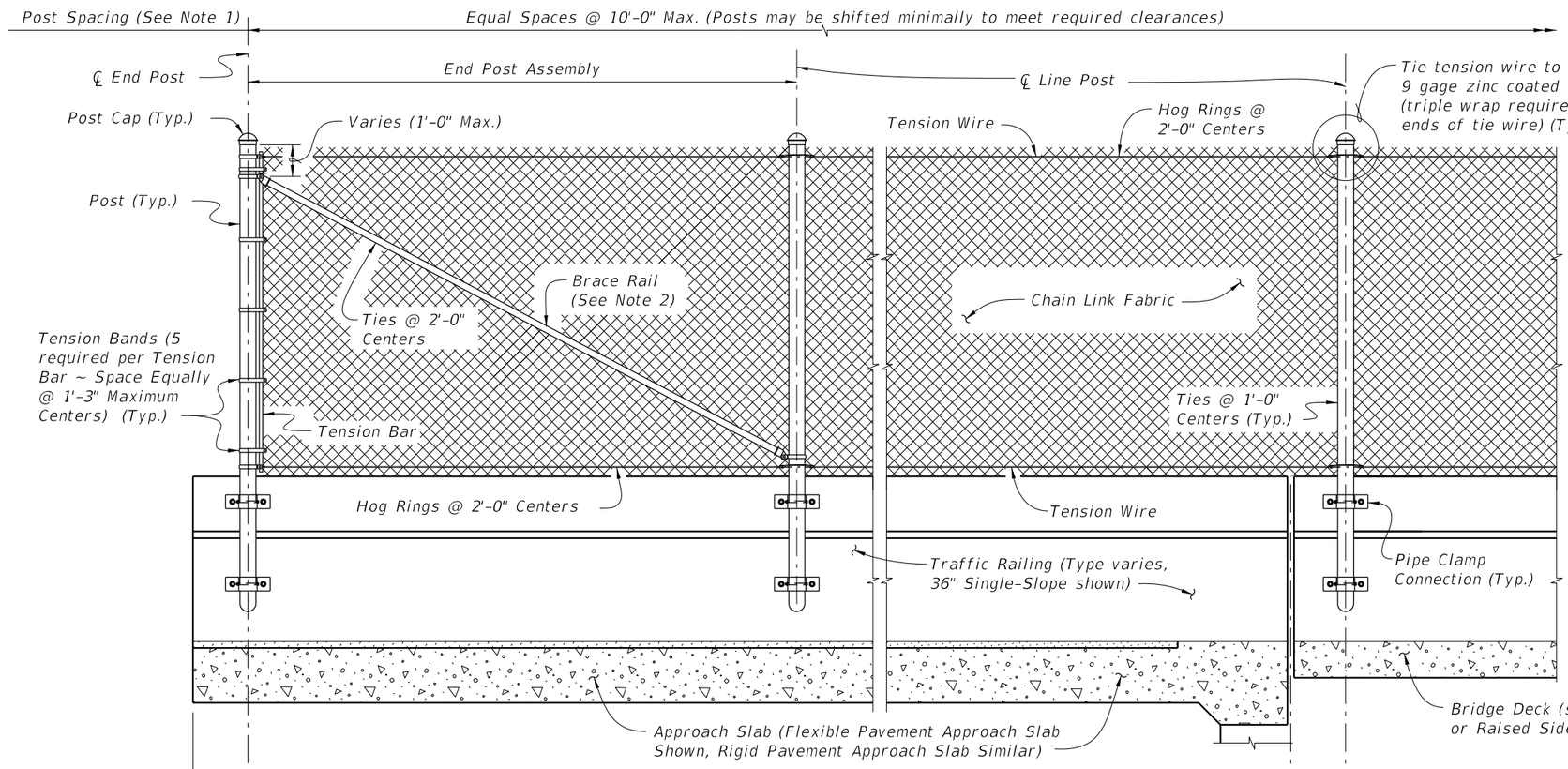
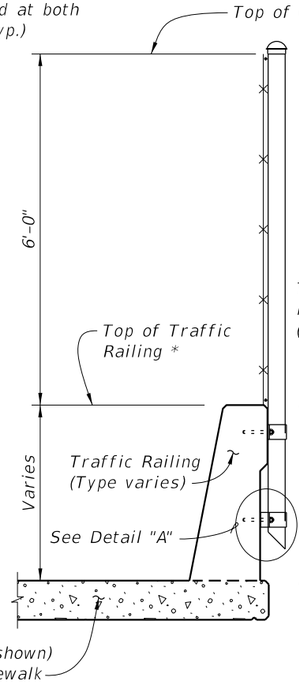
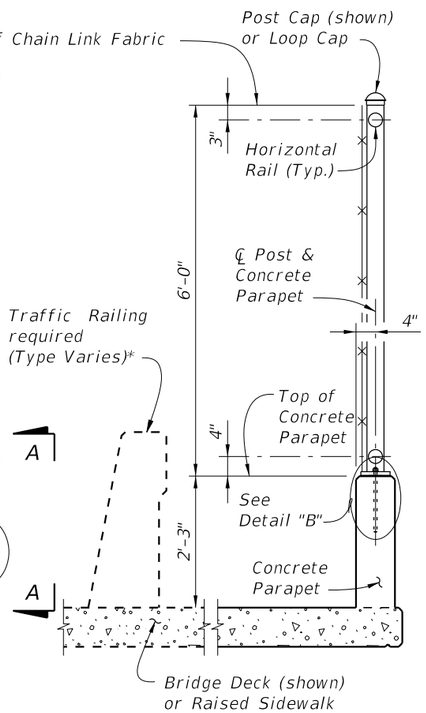
LAST REVISION	REVISION	DESCRIPTION:	FY 2025-26 STANDARD PLANS	42" CONCRETE PEDESTRIAN/BICYCLE RAILING	INDEX	SHEET
11/01/17					521-825	1 of 1



ELEVATION OF OUTSIDE FACE OF RAILING
(Traffic Railing Shown, Concrete Parapet Similar) (See Note 3)



TYPICAL SECTION ON TRAFFIC RAILING BARRIER



TYPICAL SECTION ON CONCRETE PARAPET

NOTES:
1. A Pull Post Assembly is required at maximum intervals of 500'-0". See Sheet 3.
2. Brace rails are only required for vertical fence installations on Traffic Railing.
3. Provide horizontal rails for vertical fence installations on Concrete Parapets in lieu of tension wire. Locate horizontal rails as shown in the Typical Section for Concrete Parapets at right.

* Do not anchor fencing to the top of Traffic Railings.

FENCING NOTES

FENCE INSTALLATION:
Install posts plumb (within a tolerance of ± 1½"). Use shim plates as required to achieve plumb. The required quantity and thickness of shim plates will be determined in the field. Install chain link fence in accordance with ASTM F567 as applicable.

TRAFFIC RAILING DETAILS:
See Superstructure Sheets for Traffic Railing details.

CONCRETE PARAPET DETAILS:
See Index 521-820 – Pedestrian/Bicycle Railing for Concrete Parapet details. Provide fencing in lieu of aluminum bullet railing as shown on Index 521-820.

LIMITS OF FENCING:
Limits of fencing are from begin of approach slab at Begin Bridge to end of approach slab at End Bridge, unless otherwise shown in the plans.

PAYMENT:
Payment will be made under Fencing, Type R. Payment includes posts, horizontal and expansion rails, brace rails and bands, rail ends, combination rail ends, boulevard clamps, chain link fabric, tension wire, ties, hog rings, tension bars and bands, post and loop caps, pipe clamps, base plates, anchor rods, bolts, nuts, washers, shim plates, spacers, bearing pads, miscellaneous fence fittings and hardware and all incidental materials and labor required to complete installation of the fence.

CROSS REFERENCE:
For Table of Fence Components, Table of Post Attachment Components, View A-A and Detail "A" see Sheet 2.
For Pull Post Assembly Detail for Traffic Railings see Sheet 3.
For Pull Post Assembly Detail for Concrete Parapets and Detail "B" see Sheet 4.

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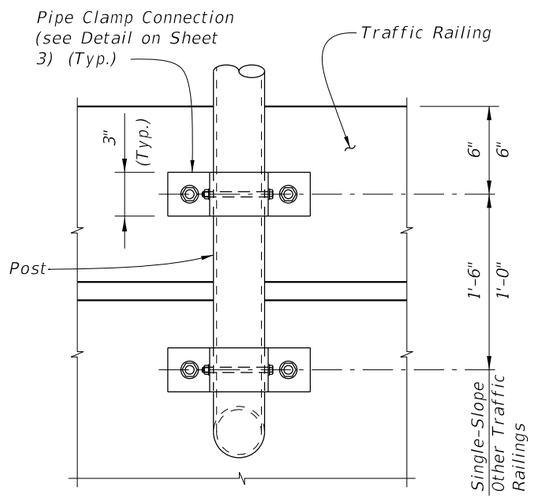
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2025-26 STANDARD PLANS	BRIDGE FENCING (VERTICAL)	550-010	1 of 4

TABLE OF CHAIN LINK FENCE COMPONENTS

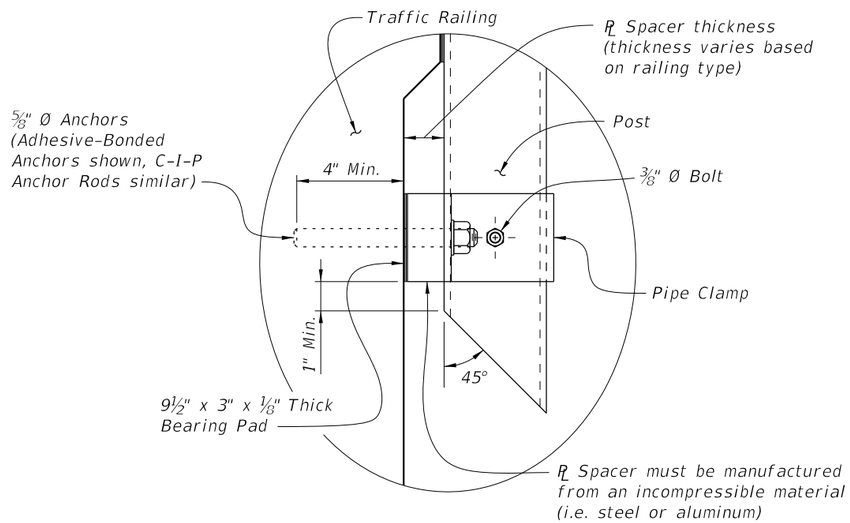
COMPONENT		ASTM DESIGNATION	COMPONENT INFORMATION
Traffic Railings and Concrete Parapets	Posts	F1083	Galvanized Steel Pipe – 3" NPS, Schedule 40 Regular Grade
	Chain Link Fabric (2" mesh with twisted top and knuckled bottom selvage)	A392	Zinc Coated Steel – 9 gage (coated wire diameter), Class 2 Coating
		A491	Aluminum Coated Steel – 9 gage (coated wire diameter)
		F668	Polyvinyl Chloride (PVC) Coated Steel – 9 gage Class 2b
	Tie Wires	F626	Zinc Coated Steel Wire – 9 gage
	Brace Bands	F626	12 Gage (Min. thickness) x ¾" (Min. width) Steel Bands (Beveled or Heavy)
	Tension Bars	F626	3/16" (Min. thickness) x ¾" (Min. width) x 5'–10" (Min. height) Steel Bars
	Tension Bands	F626	14 Gage (Min. thickness) x ¾" (Min. width) Steel Bands
	Miscellaneous Fence Components	F626	Zinc Coated Steel ~ (includes post or loop caps, horizontal and brace rail ends, combination rail ends, boulevard clamps and all other miscellaneous fittings & hardware)
Concrete Parapets	Horizontal Rails	F1083	Galvanized Steel Pipe – 2½" NPS, Schedule 40 Regular Grade
	Expansion Rails	F1083	Galvanized Steel Pipe – 2" NPS, Schedule 40 Regular Grade
	Bolts	A307	¼" Ø x 4¼" Hex Head Bolts for Expansion Rail Connections
	Nuts	A563	Hex Nuts for Expansion Rail Connections
	Washers	F436	Flat Washers for Expansion Rail Connections
Traffic Railings	Tension Wire	A824 & A817	Type II (Zinc Coated Steel Wire) – 7 gage, Class 4 Coating
			Type I (Aluminum Coated Steel Wire) – 7 gage
	Hog Rings	F626	Zinc Coated Steel Wire – 12 gage
	Brace Rails	F1083	Galvanized Steel Pipe – 1¼" NPS, Schedule 40 Regular Grade

TABLE OF POST ATTACHMENT COMPONENTS

COMPONENT		ASTM DESIGNATION	COMPONENT INFORMATION
Pipe Clamps		A36 or A709 Grade 36	¼" Steel PL
Base Plates		A36 or A709 Grade 36	¾" Steel PL
Shim Plates		A36 or A709 Grade 36 or B209 Alloy 6061–T6 or B221 Alloy 6063–T5	Plate thicknesses as required. Holes in shim plates will be ¾" Ø. For edge shims match the edge length of the base plate with a min. width of 3/4". Apply adhesive bonding material bed of 1–1/2" (Min.) wide
Spacers		–	Plate thickness varies based on traffic railing type (See Detail "A")
Pipe Clamp Connection	Adhesive Anchor Rods	F1554 Grade 36	Fully threaded Headless Anchor Rods ~ ⅝" Ø x 6" (no spacer) or ⅝" Ø x (6" + spacer thickness)
	C–I–P Anchor Rods	F1554 Grade 36	Hex Head Anchor Rods ~ ⅝" Ø x 6" (no spacer) or ⅝" Ø x (6" + spacer thickness)
Base Plate Connection	Adhesive Anchor Rods	F1554 Grade 36	Fully threaded Headless Anchor Rods ~ ⅞" Ø x 14½"
	C–I–P Anchor Rods	F1554 Grade 36	Hex Head Anchor Rods ~ ⅞" Ø x 14½"
Bolts		A307	⅜" Ø x 4¾" Hex Head Bolts for Pipe Clamp Connections to Posts
Nuts		A563	Hex Nuts for Pipe Clamp and Base Plate Connections
Washers		F436	Flat Washers for Pipe Clamp and Base Plate Connections
Bearing Pads (Plain Neoprene)		–	In accordance with Specification Section 932 for Ancillary Structures



VIEW A-A



DETAIL "A"

POST ATTACHMENT NOTES

ANCHOR RODS, NUTS AND WASHERS:
After the nuts have been tightened, distort the Anchor Rod threads to prevent removal of the nuts. Coat distorted threads and exposed trimmed ends of anchors with a galvanizing compound in accordance with Specification Section 562.

COATINGS:
Hot-dip galvanize all Nuts, Washers, Bolts, C–I–P Anchor Rods, Adhesive Anchors and Fence Framework (Posts, Internal Sleeves, Shim Plates, Base Plates, Pipe Clamps and Spacers) in accordance with Specification Section 962. Hot-dip galvanize Fence Framework after fabrication.

ADHESIVE–BONDED ANCHORS AND DOWELS:
Adhesive Bonding Material Systems for Anchors and Dowels will comply with Specification Section 937 and be installed in accordance with Specification Section 416. Cutting of reinforcing steel is permitted for drilled hole installation.

WELDING:
All welding will be in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Weld metal will be E60XX or E70XX. Nondestructive testing of welds is not required.

CROSS REFERENCE:
For location of View A–A and Detail "A" see Sheet 1.

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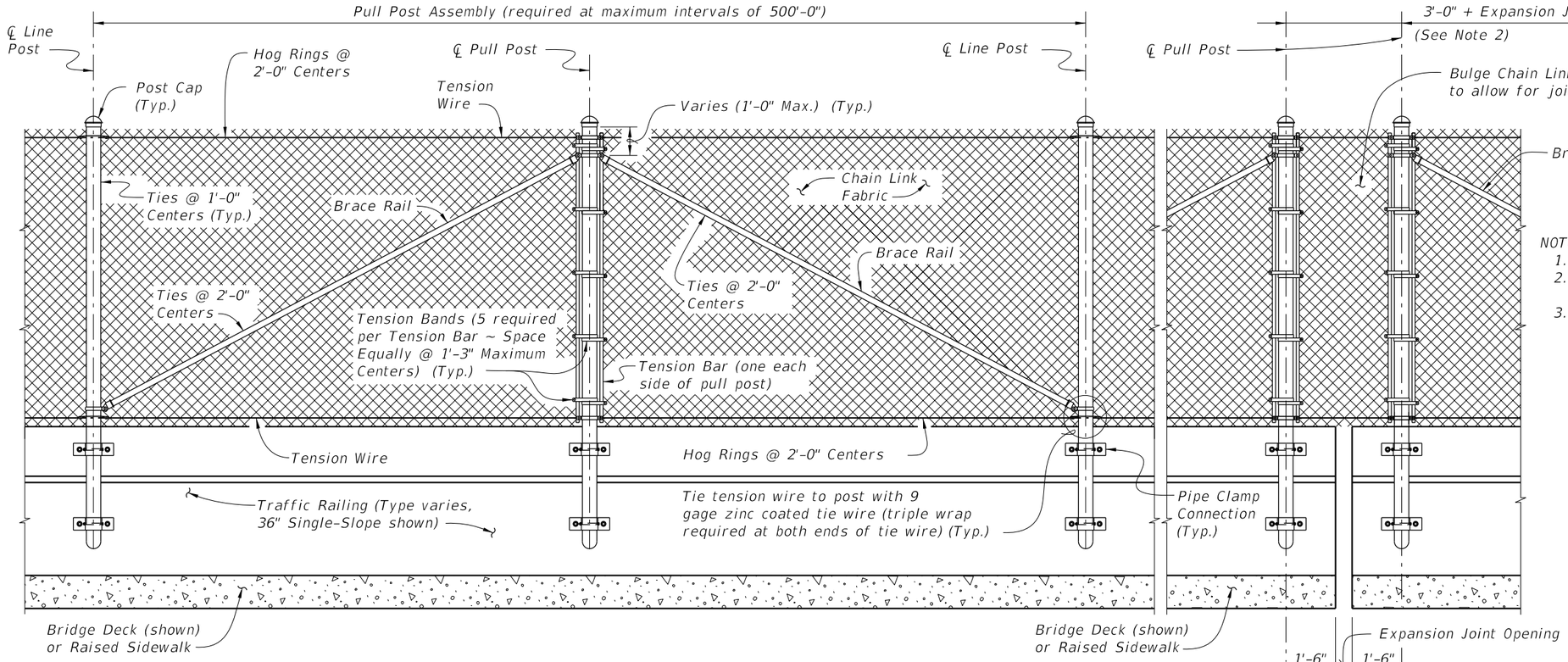
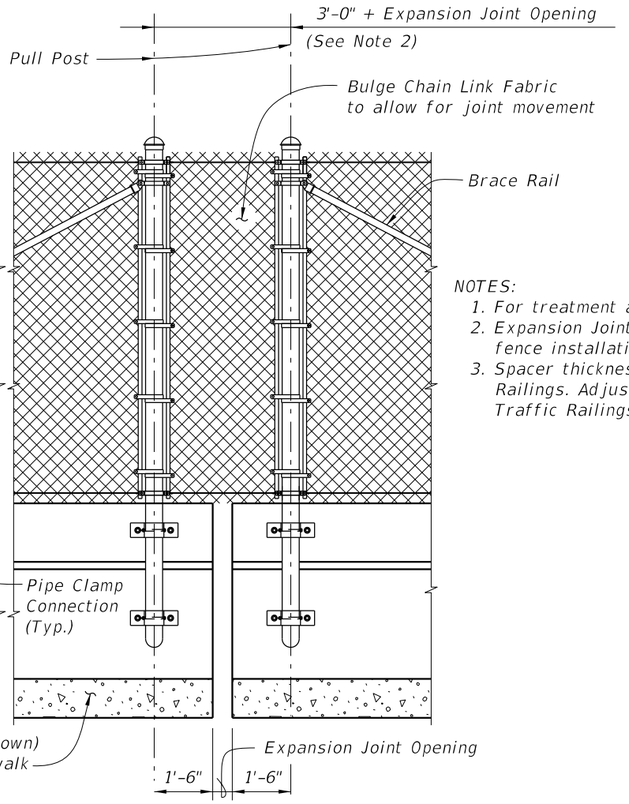


PULL POST ASSEMBLY DETAIL FOR TRAFFIC RAILING

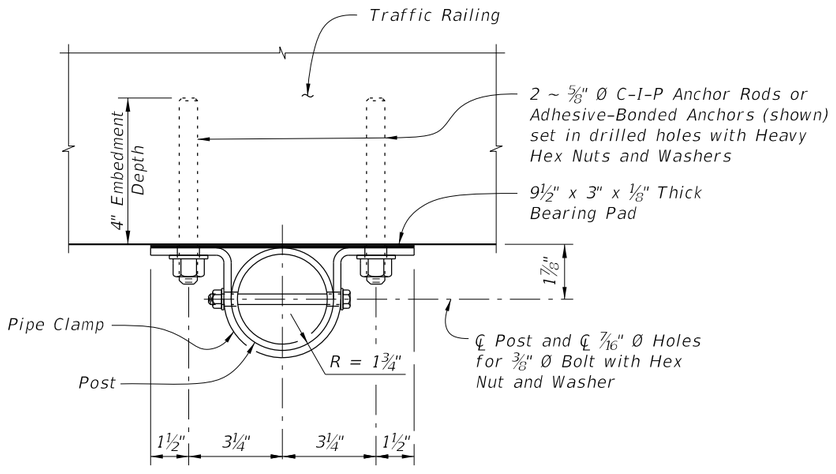


EXPANSION ASSEMBLY DETAIL

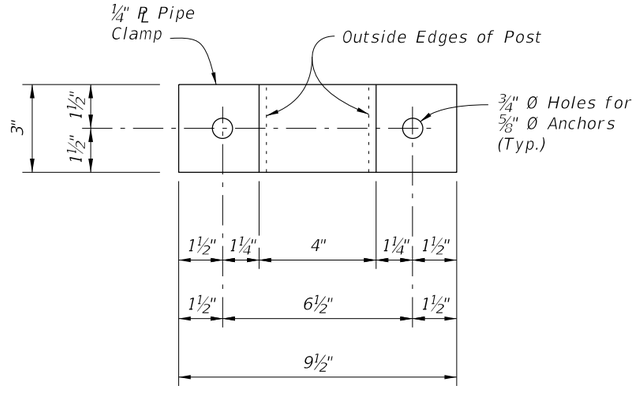
(Required only at expansion joint locations where total movement exceeds 6")

NOTES:

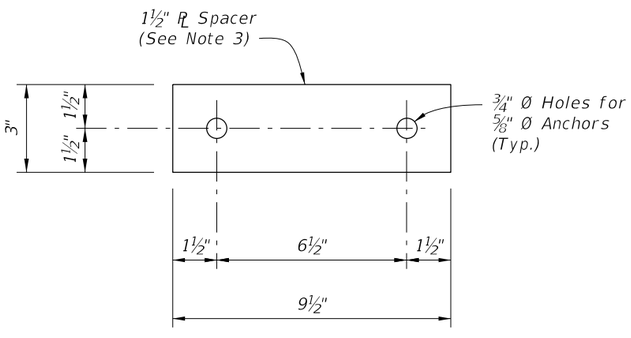
1. For treatment at bridge ends, see Sheet 1.
2. Expansion Joint Opening is the width at the time of fence installation.
3. Spacer thickness shown is for Single-Slope Traffic Railings. Adjust thickness as required for other Traffic Railings.



PIPE CLAMP CONNECTION DETAIL
(Connection without spacer shown, Connection with spacer similar)



PIPE CLAMP DETAIL



SPACER DETAIL

(Must be manufactured from an incompressible material (i.e., steel or aluminum))

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	BRIDGE FENCING (VERTICAL)	INDEX	SHEET
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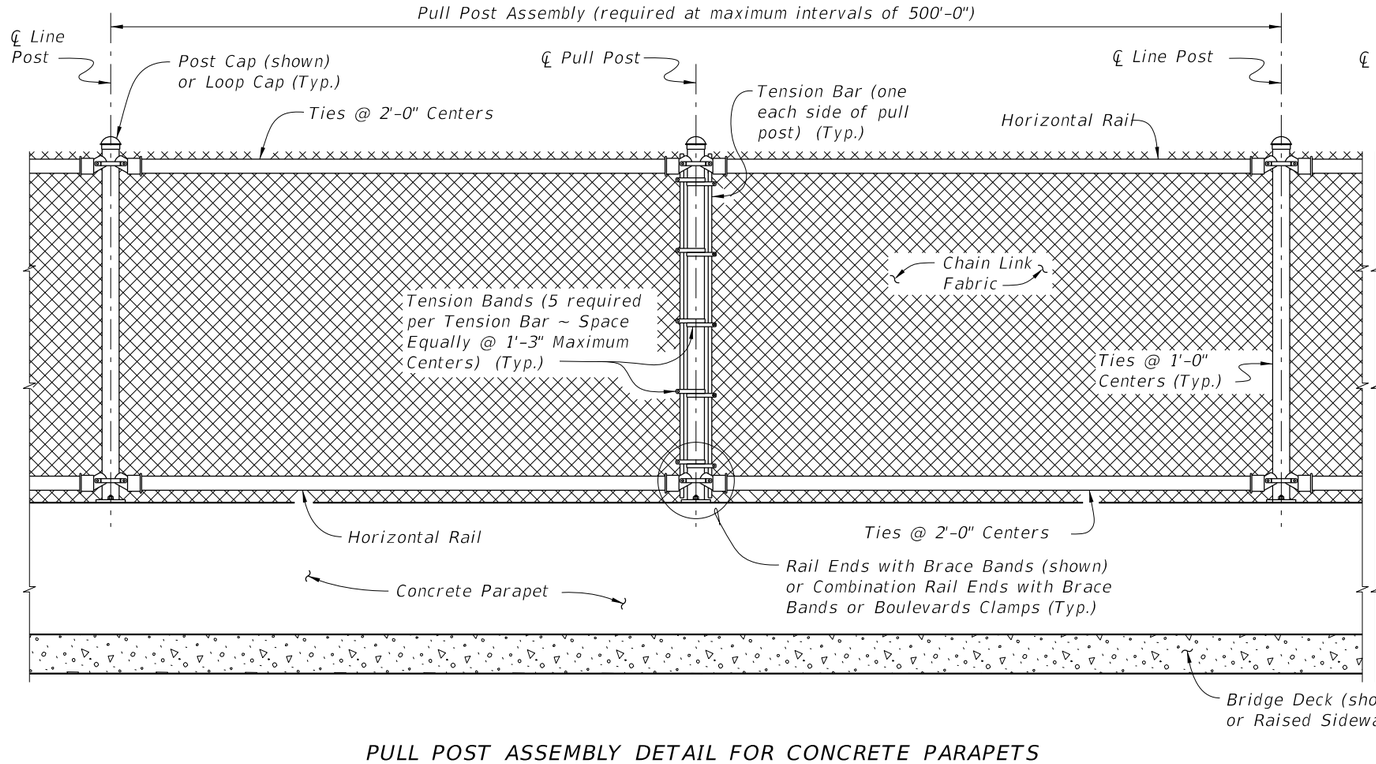
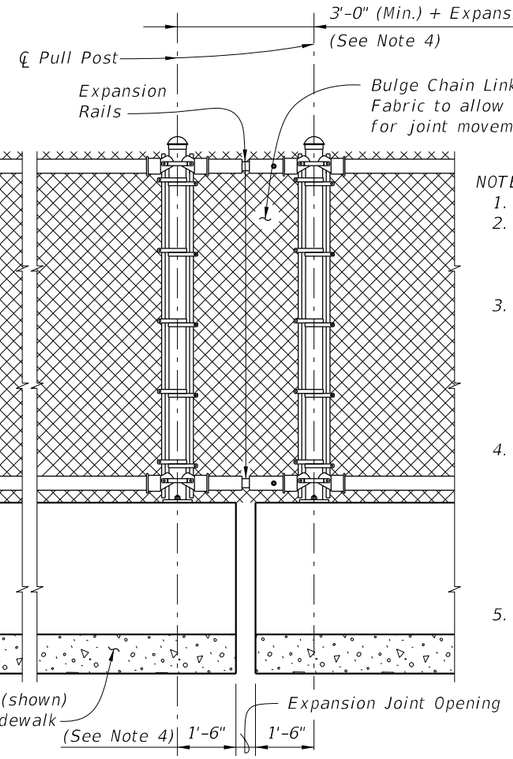


PULL POST ASSEMBLY DETAIL FOR CONCRETE PARAPETS

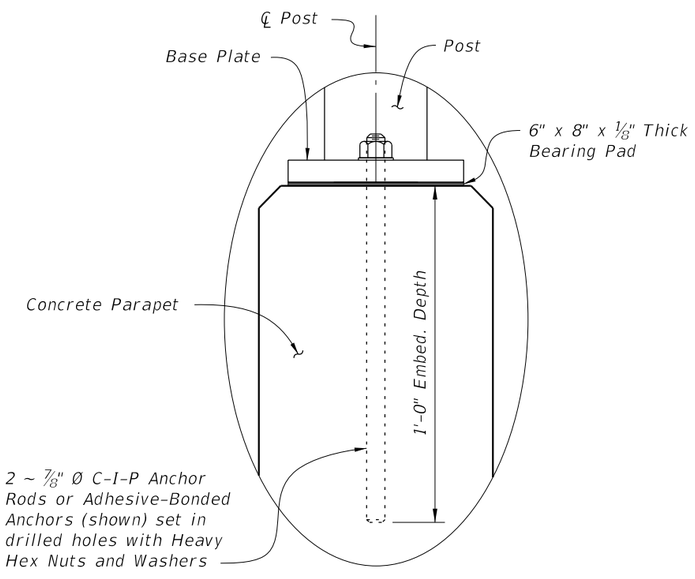


EXPANSION ASSEMBLY DETAIL

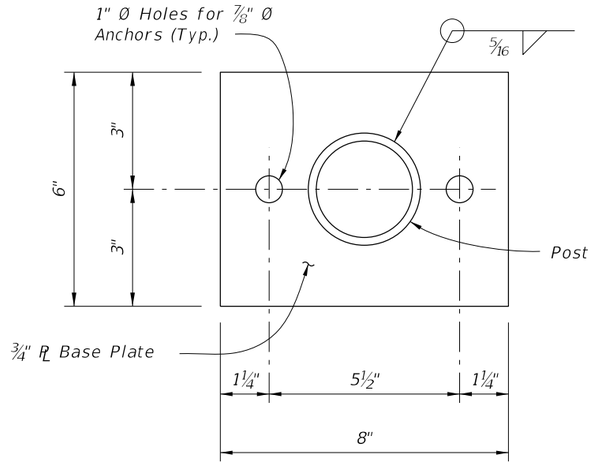
(Required only at expansion joint locations where total movement exceeds 6")

NOTES:

1. For treatment at the bridge ends, see Index 811 Sheet 1.
2. Expansion Rails are required at expansion joint locations where the total movement exceeds 1". Install expansion rails midway between the fence posts spanning the expansion joint.
3. An Expansion Assembly is required where the total joint movement exceeds 6". Expansion Assembly includes Expansion Rails and two pull posts (as shown). When the Expansion Joint Opening is greater than 9" add an additional length to the free end of the Expansion Rail equal to the difference between the Expansion Joint Opening and 9".
4. Install the post on the fixed (bolted) side of the Expansion Rail 1'-6" from the edge of the expansion joint. Install the post on the slip (unbolted) side of the Expansion Rail 1'-6" from the edge of the expansion joint unless the Expansion Joint Opening is greater than 9". When the Expansion Joint Opening exceeds 9" increase the 1'-6" dimension by the difference between the Expansion Joint Opening and 9".
5. Install nut for the expansion rail finger-tight. The nut will fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening.

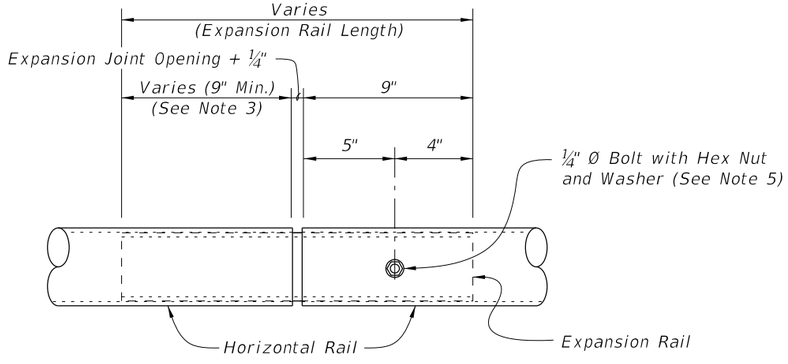


DETAIL "B"



BASE PLATE DETAIL

CROSS REFERENCE:
For location of Detail "B" see Sheet 1.



EXPANSION RAIL DETAIL

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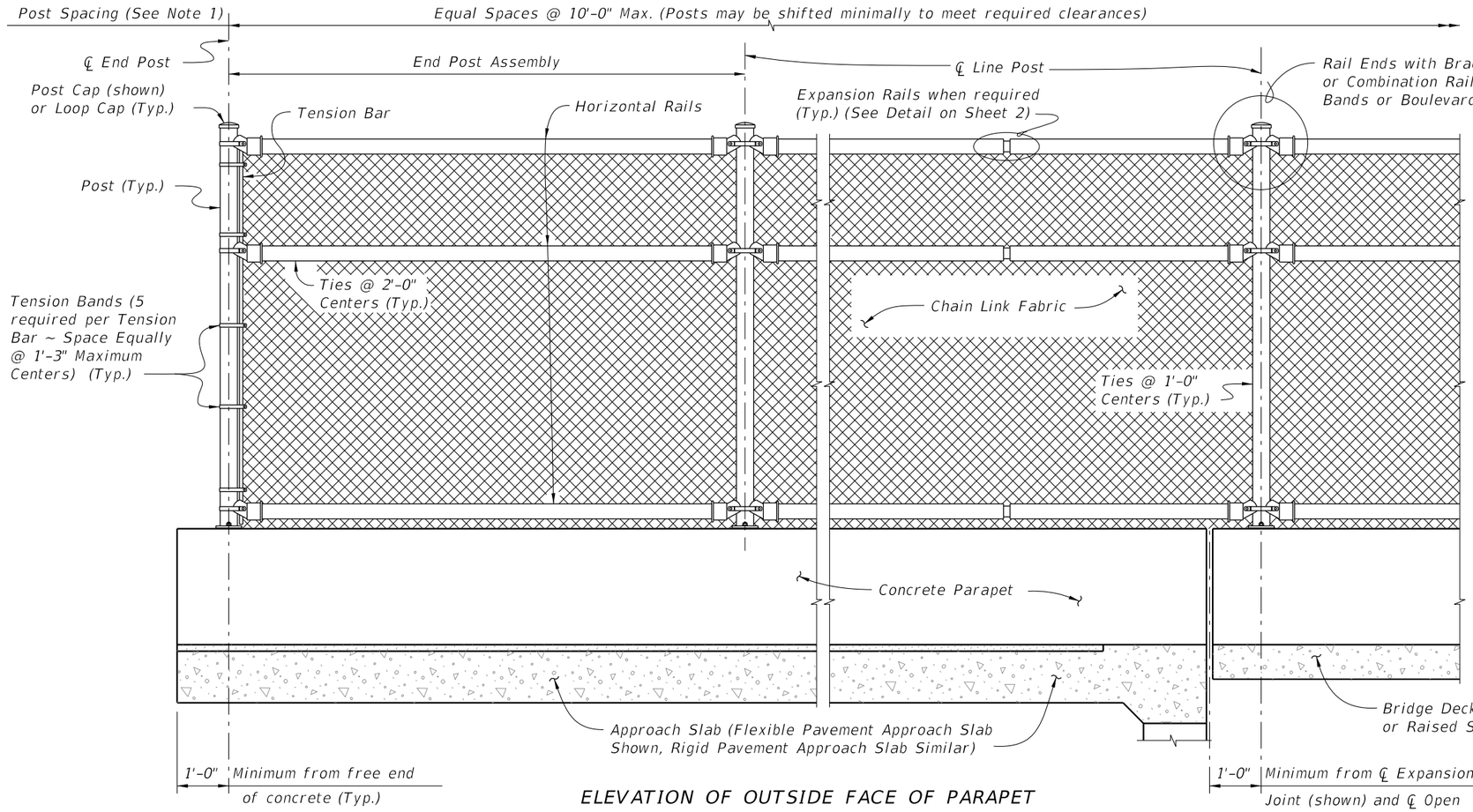
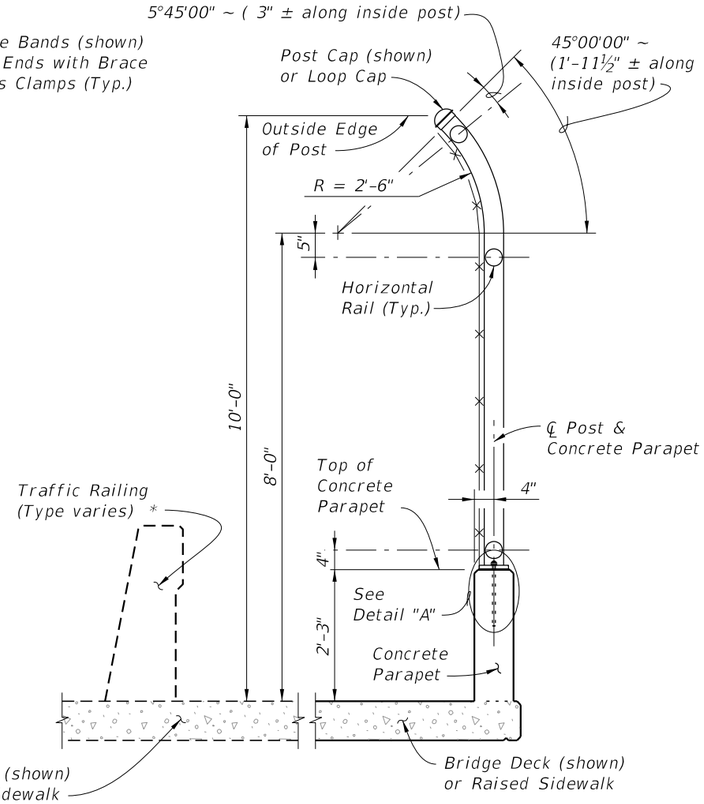
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2025-26 STANDARD PLANS	BRIDGE FENCING (VERTICAL)	550-010	4 of 4



ELEVATION OF OUTSIDE FACE OF PARAPET



TYPICAL SECTION

* Do not anchor fencing to the top of Traffic Railings.

NOTES:

1. A Pull Post Assembly is required at maximum intervals of 500'-0". See Sheet 2.

FENCING NOTES

FENCE APPLICATION:
This bridge fence can only be used on sidewalk installations separated from traffic by a traffic railing.

FENCE INSTALLATION:
Install posts plumb (within a tolerance of ± 1½"). Use shim plates as required to achieve plumb. The required quantity and thickness of shim plates will be determined in the field. Install chain link fence in accordance with ASTM F567 as applicable.

CONCRETE PARAPET DETAILS:
See Index 521-820 – Pedestrian/Bicycle Bullet Railing for Concrete Parapet details. Provide fencing in lieu of aluminum bullet railing as shown on Index 521-820.

LIMITS OF FENCING:
Limits of fencing are from begin of approach slab at Begin Bridge to end of approach slab at End Bridge, unless otherwise shown in the plans.

PAYMENT:
Payment will be made under Fencing, Type R. Payment includes posts, horizontal and expansion rails, brace bands, rail ends, combination rail ends, boulevard clamps, chain link fabric, ties, tension bars and bands, post and loop caps, base plates, anchor rods, bolts, nuts, washers, shim plates, neoprene pads, miscellaneous fence fittings and hardware and all incidental materials and labor required to complete installation of the fence.

CROSS REFERENCE:
For Table of Fence Components and Pull Post Assembly Detail see Sheet 2.
For Table of Post Attachment Components and Detail "A" see Sheet 3.

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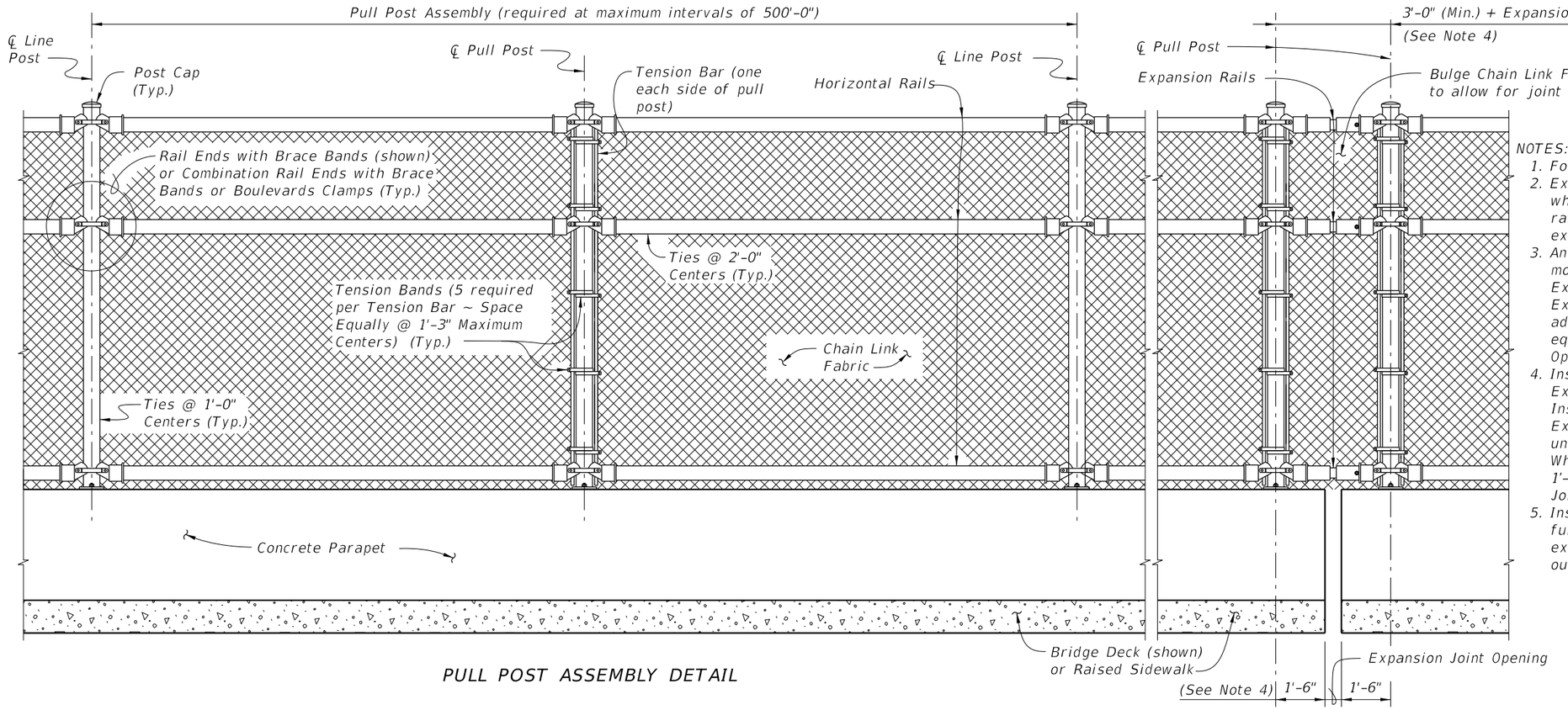
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	BRIDGE FENCING ON PARAPET (CURVED TOP)	INDEX	SHEET
11/01/23						550-011	1 of 3



PULL POST ASSEMBLY DETAIL

EXPANSION ASSEMBLY DETAIL

(Required only at expansion joint locations where total movement exceeds 6")

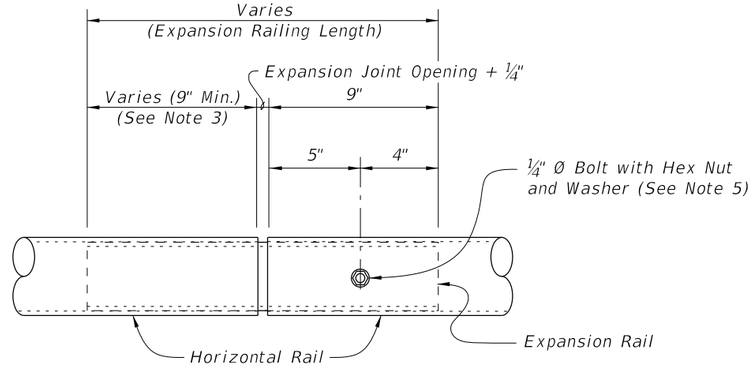
NOTES:

1. For treatment at the bridge ends, see Sheet 1.
2. Expansion Rails are required at expansion joint locations where the total movement exceeds 1". Install expansion rails midway between the fence posts spanning the expansion joint.
3. An Expansion Assembly is required where the total joint movement exceeds 6". Expansion Assembly includes Expansion Rails and two pull posts (as shown). When the Expansion Joint Opening is greater than 9" add an additional length to the free end of the Expansion Rail equal to the difference between the Expansion Joint Opening and 9".
4. Install the post on the fixed (bolted) side of the Expansion Rail 1'-6" from the edge of the expansion joint. Install the post on the slip (unbolted) side of the Expansion Rail 1'-6" from the edge of the expansion joint unless the Expansion Joint Opening is greater than 9". When the Expansion Joint Opening exceeds 9" increase the 1'-6" dimension by the difference between the Expansion Joint Opening and 9".
5. Install nut for the expansion rail finger-tight. The nut will fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening.

TABLE OF CHAIN LINK FENCE COMPONENTS

COMPONENT	ASTM DESIGNATION	COMPONENT INFORMATION
Posts	F1083	Galvanized Steel Pipe – 3½" NPS, Schedule 40 Regular Grade
Horizontal Rails	F1083	Galvanized Steel Pipe – 3" NPS, Schedule 40 Regular Grade
Expansion Rails	F1083	Galvanized Steel Pipe – 2½" NPS, Schedule 40 Regular Grade
Bolts	A307	¼" Ø x 4¼" Hex Head Bolts for Expansion Rail Connections
Nuts	A563	Hex Nuts for Expansion Rail Connections
Washers	F436	Flat Washers for Expansion Rail Connections
Chain Link Fabric (2" mesh with twisted top and knuckled bottom selvage)	A392	Zinc Coated Steel – 9 gage (coated wire diameter), Class 2 Coating
	A491	Aluminum Coated Steel – 9 gage (coated wire diameter)
	F668	Polyvinyl Chloride (PVC) Coated Steel – 9 gage Zinc Coated Wire, Class 2b
Tie Wires	F626	Zinc Coated Steel Wire – 9 gage
Brace Bands	F626	12 Gage (Min. thickness) x ¾" (Min. width) Steel Bands (Beveled or Heavy)
Tension Bars	F626	3/16" (Min. thickness) x ¾" (Min. width) x Variable Height Steel Bars ~ Height = Post Length along inside Post – 2" Max.
Tension Bands	F626	14 Gage (Min. thickness) x ¾" (width) Steel Bands
Miscellaneous Fence Components	F626	Zinc Coated Steel ~ (includes post or loop caps, horizontal and brace rail ends, combination rail ends, boulevard clamps and all other miscellaneous fittings and hardware)

LEGEND: NPS = Nominal Pipe Size



EXPANSION RAIL DETAIL

10/17/2024 11:18:33 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	BRIDGE FENCING ON PARAPET (CURVED TOP)	INDEX	SHEET
11/01/23						550-011	2 of 3

TABLE OF POST ATTACHMENT COMPONENTS		
COMPONENT	ASTM DESIGNATION	COMPONENT INFORMATION
Base Plates	A36 or A709 Grade 36	¾" Steel ℄
Shim Plates	A36 or A709 Grade 36 or B209 Alloy 6061-T6 or B221 Alloy 6063-T5	Plate thicknesses as required. Holes in shim plates will be ¾" Ø. For edge shims match the edge length of the base plate with a min. width of 3/4". Apply adhesive bonding material bed of 1-1/2" (Min.) wide
Adhesive Anchor Rods	F1554 Grade 36	Fully threaded Headless Anchor Rods ~ ⅞" Ø x 14½"
C-I-P Anchor Rods	F1554 Grade 36	Hex Head Anchor Rods ~ ⅞" Ø x 14½"
Nuts	A563	Hex Nuts for Base Plate Connections
Washers	F436	Flat Washers for Base Plate Connections
Bearing Pads (Plain)	-	In accordance with Specification Section 932 for ancillary structures

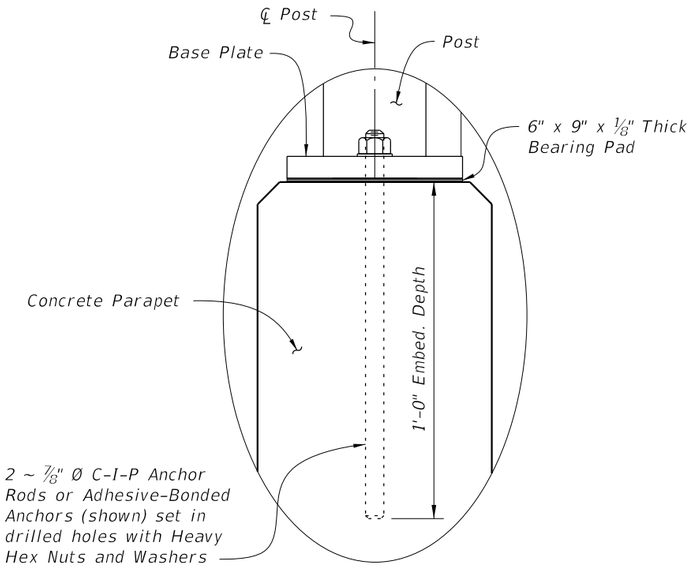
POST ATTACHMENT NOTES

ANCHOR RODS, NUTS AND WASHERS:
After the nuts have been tightened, distort the Anchor Rod threads to prevent removal of the nuts. Coat distorted threads and exposed trimmed ends of anchors with a galvanizing compound in accordance with Specification Section 562.

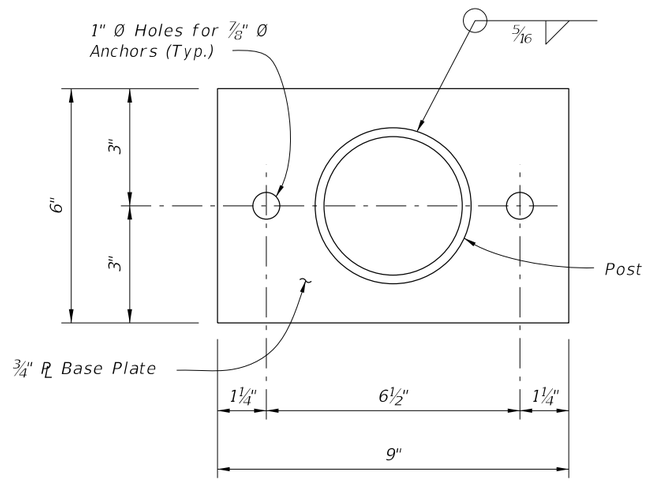
COATINGS:
Hot-dip galvanize all Nuts, Washers, Bolts, C-I-P Anchor Rods, Adhesive Anchors and Fence Framework (Posts, Internal Sleeves, Shim Plates and Base Plates) in accordance with Specification Section 962. Hot-dip galvanize Fence Framework after fabrication.

ADHESIVE-BONDED ANCHORS AND DOWELS:
Adhesive Bonding Material Systems for Anchors and Dowels will comply with Specification Section 937 and be installed in accordance with Specification Section 416. Cutting of reinforcing steel is permitted for drilled hole installation.

WELDING:
All welding will be in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Weld metal will be E60XX or E70XX. Nondestructive testing of welds is not required.



DETAIL "A"

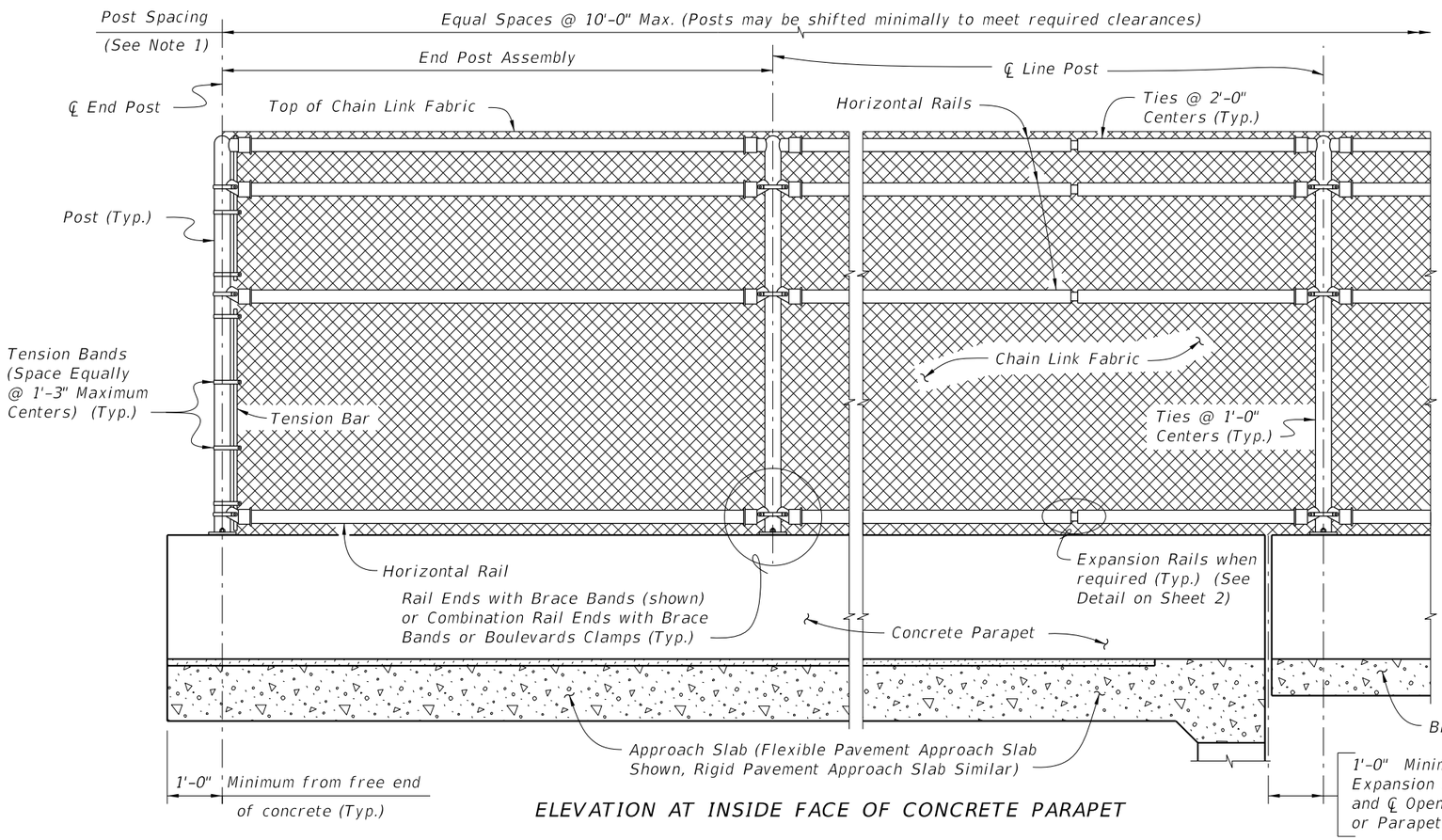


BASE PLATE DETAIL

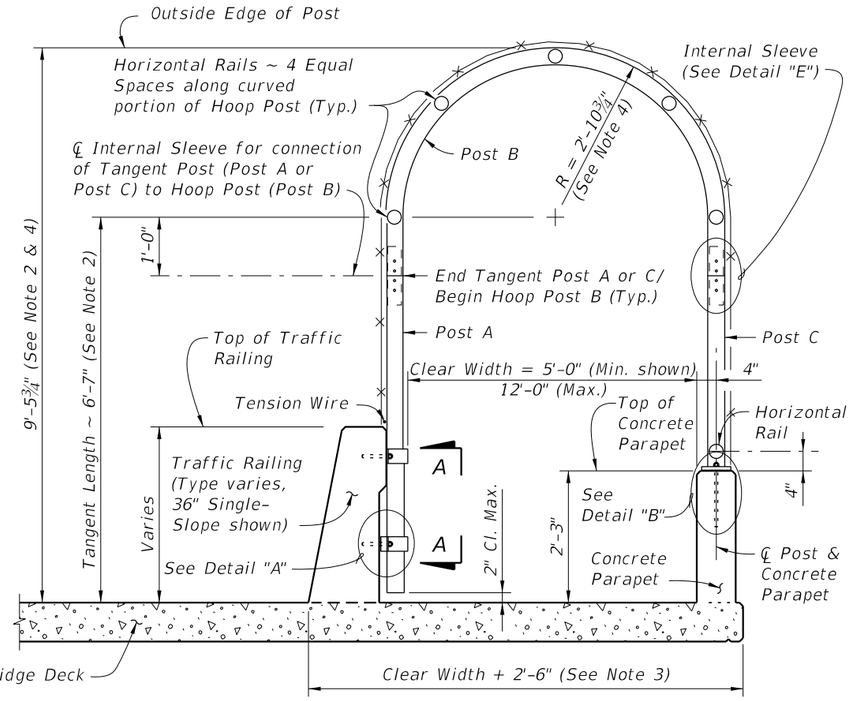
CROSS REFERENCE:
For location of Detail "A" see Sheet 1.

10/17/2024 11:18:40 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/24			FDOT FY 2025-26 STANDARD PLANS	BRIDGE FENCING ON PARAPET (CURVED TOP)	550-011	3 of 3



ELEVATION AT INSIDE FACE OF CONCRETE PARAPET



TYPICAL SECTION

NOTES:

1. A Pull Post Assembly is required at maximum intervals of 500'-0". See Sheet 3.
2. Dimension is measured along Inside Face of Concrete Parapet.
3. Dimension shown is for 36" Single-Slope Traffic Railings as shown in Index 521-427. Adjust as required for other Traffic Railing Barriers and sidewalk widths.
4. For sidewalk clear widths greater than 5'-0", increase the radius of Post B at the rate of 6" for every one foot increase in sidewalk width.

FENCING NOTES

FENCE INSTALLATION:
Install posts plumb (within a tolerance of ± 1½"). Use shim plates as required to achieve plumb. The required quantity and thickness of shim plates will be determined in the field. Install chain link fence in accordance with ASTM F567 as applicable.

TRAFFIC RAILING DETAILS:
See Superstructure Sheets for Traffic Railing details.

CONCRETE PARAPET DETAILS:
See Index 521-820 – Pedestrian/Bicycle Railing for Concrete Parapet details. Provide fencing in lieu of aluminum bullet railing as shown on Index 521-820.

LIMITS OF FENCING:
Limits of fencing are from begin of approach slab at Begin Bridge to end of approach slab at End Bridge, unless otherwise shown in the plans.

PAYMENT:
Payment will be made under Fencing, Type R. Payment includes posts, horizontal and expansion rails, brace bands, rail ends, combination rail ends, boulevard clamps, chain link fabric, tension wire, ties, hog rings, tension bars and bands, pipe clamps, base plates, anchor rods, bolts, nuts, washers, shim plates, spacers, neoprene pads, miscellaneous fence fittings and hardware and all incidental materials and labor required to complete installation of the fence.

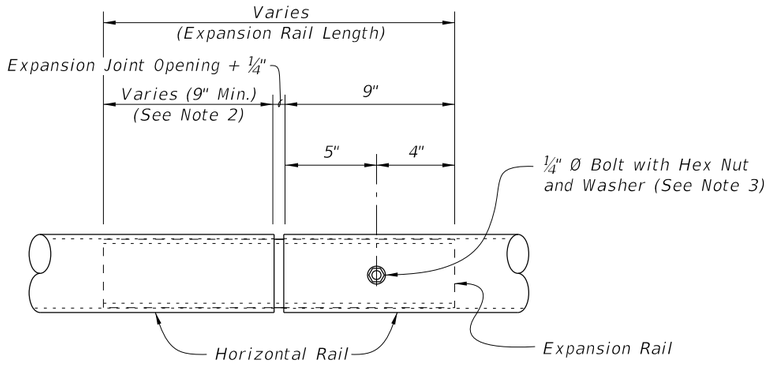
CROSS REFERENCE:
For Table of Fence Components and Table of Post Attachment Components see Sheet 2.
For Pull Post Assembly Detail, View A-A and Detail "A" see Sheet 3.
For Detail "B" and "E" see Sheet 4.

10/17/2024 11:18:47 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/23			FY 2025-26 STANDARD PLANS	BRIDGE FENCING (ENCLOSED)	550-012	1 of 4

TABLE OF CHAIN LINK FENCE COMPONENTS

COMPONENT	ASTM DESIGNATION	COMPONENT INFORMATION
Posts	F1083	Galvanized Steel Pipe – 3" NPS, Schedule 40 Regular Grade
Horizontal Rails and Internal Sleeves	F1083	Galvanized Steel Pipe – 2½" NPS, Schedule 40 Regular Grade
Expansion Rails	F1083	Galvanized Steel Pipe – 2" NPS, Schedule 40 Regular Grade
Chain Link Fabric (2" mesh with knuckled bottom selvages)	A392	Zinc Coated Steel – 9 gage (coated wire diameter), Class 2 Coating
	A491	Aluminum Coated Steel – 9 gage (coated wire diameter)
	F668	Polyvinyl Chloride (PVC) Coated Steel – 9 gage Class 2b Zinc Coated Wire
Tension Wire	A824 & A817	Type II (Zinc Coated Steel Wire) – 7 gage, Class 4 Coating
		Type I (Aluminum Coated Steel Wire) – 7 gage
Tie Wires	F626	Zinc Coated Steel Wire – 9 gage
Hog Rings	F626	Zinc Coated Steel Wire – 12 gage
Brace Bands	F626	12 gage (Min. thickness) x ¾" (Min. width) Steel Bands (Beveled or Heavy)
Tension Bars	F626	3/16" (Min. thickness) x ¾" (Min. width) x Variable Height Steel Bars ~ Height = Tangent or Hoop Length – Barrier or Parapet Height – 2" max.
Tension Bands	F626	14 gage (Min. thickness) x ¾" (Min. width) Steel Bands
Miscellaneous Fence Components	F626	Zinc Coated Steel ~ (includes horizontal rail ends, combination rail ends, boulevard clamps and all other miscellaneous fittings and hardware)
Bolts	A307	⅜" Ø x 4¼" Hex Head Bolts for Internal Sleeve connections ¼" Ø x 4¼" Hex Head Bolts for Expansion Rail connections
Nuts	A563	Hex Nuts for Internal Sleeve and Expansion Rail connections
Washers	F436	Flat Washers for Internal Sleeve and Expansion Rail connections



EXPANSION RAIL DETAIL

NOTES:

1. Expansion Rails are required at expansion joint locations where the total movement exceeds 1". Install expansion rails midway between the fence posts spanning the expansion joint.
2. An Expansion Assembly is required where the total joint movement exceeds 6". Expansion Assembly includes Expansion Rails and two pull posts (see Sheet 3). When the Expansion Joint Opening is greater than 9" add an additional length to the free end of the Expansion Rail equal to the difference between the Expansion Joint Opening and 9".
3. Install nut for the expansion rail finger-tight. The nut will fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening.

TABLE OF POST ATTACHMENT COMPONENTS

COMPONENT		ASTM DESIGNATION	COMPONENT INFORMATION
Pipe Clamps		A36 or A709 Grade 36	¼" Steel PL
Base Plates		A36 or A709 Grade 36	¾" Steel PL
Shim Plates		A36 or A709 Grade 36 or B209 Alloy 6061-T6 or B221 Alloy 6063-T5	Plate thicknesses as required. Holes in shim plates will be ¾" Ø. For edge shims match the edge length of the base plate with a min. width of 3/4". Apply adhesive bonding material bed of 1-1/2" (Min.) wide
Spacers		–	Plate thickness varies based on Traffic Railing type. (See Detail "A")
Pipe Clamp Connection	Adhesive Anchor Rods	F1554 Grade 36	Fully threaded Headless Anchor Rods ~ ⅝" Ø x 6" (no spacer) or ⅝" Ø x (6" + spacer thickness)
	C-I-P Anchor Rods	F1554 Grade 36	Hex Head Anchor Rods ~ ⅝" Ø x 6" (no spacer) or ⅝" Ø x (6" + spacer thickness)
Base Plate Connection	Adhesive Anchor Rods	F1554 Grade 36	Fully threaded Headless Anchor Rods ~ ⅞" Ø x 14½"
	C-I-P Anchor Rods	F1554 Grade 36	Hex Head Anchor Rods ~ ⅞" Ø x 14½"
Bolts		A307	⅜" Ø x 4¾" Hex Head Bolts for Pipe Clamp Connections to Posts
Nuts		A563	Hex Nuts for Pipe Clamp and Base Plate Connections
Washers		F436	Flat Washers for Pipe Clamp and Base Plate Connections
Bearing Pads (Plain)		–	In accordance with Specification Section 932 for Ancillary Structures

POST ATTACHMENT NOTES

ANCHOR RODS, NUTS AND WASHERS:
After the nuts have been tightened, distort the Anchor Rod threads to prevent removal of the nuts. Coat distorted threads and exposed trimmed ends of anchors with a galvanizing compound in accordance with Specification Section 562.

COATINGS:
Hot-dip galvanize all Nuts, Washers, Bolts, C-I-P Anchor Rods, Adhesive Anchors and Fence Framework (Posts, Internal Sleeves, Shim Plates, Base Plates, Pipe Clamps and Spacers) in accordance with Specification Section 962. Hot-dip galvanize Fence Framework after fabrication.

ADHESIVE-BONDED ANCHORS AND DOWELS:
Adhesive Bonding Material Systems for Anchors and Dowels will comply with Specification Section 937 and be installed in accordance with Specification Section 416. Cutting of reinforcing steel is permitted for drilled hole installation.

WELDING:
All welding will be in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Weld metal will be E60XX or E70XX. Nondestructive testing of welds is not required.

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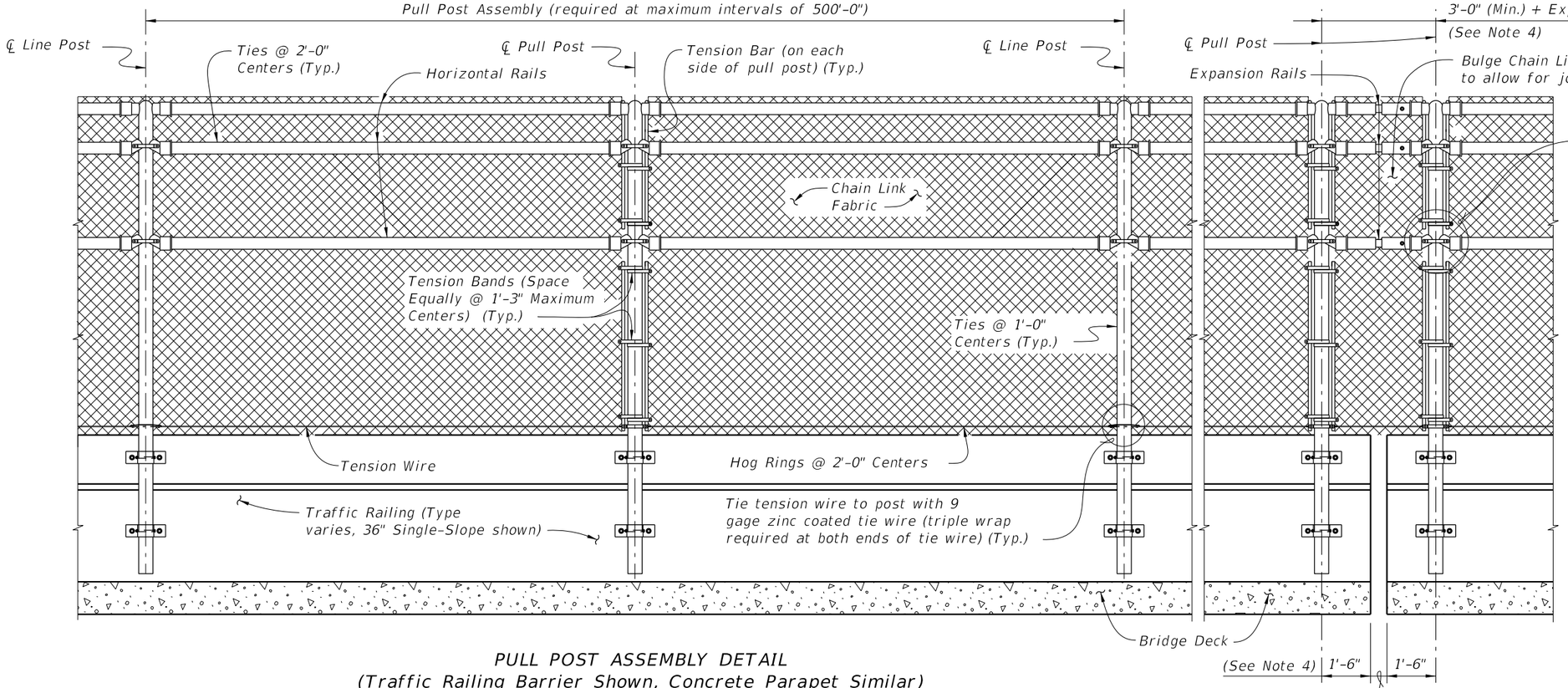
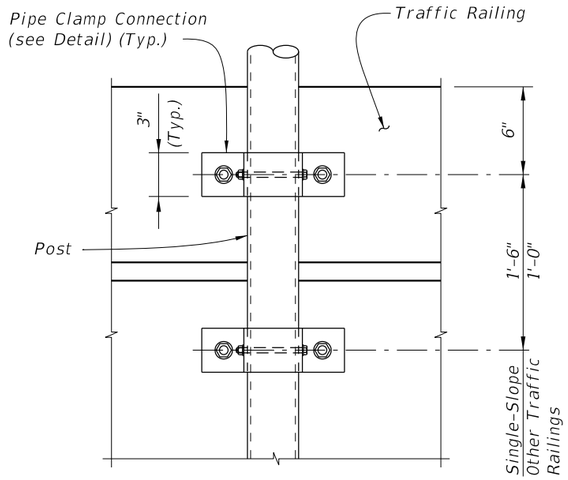


PULL POST ASSEMBLY DETAIL
(Traffic Railing Barrier Shown, Concrete Parapet Similar)

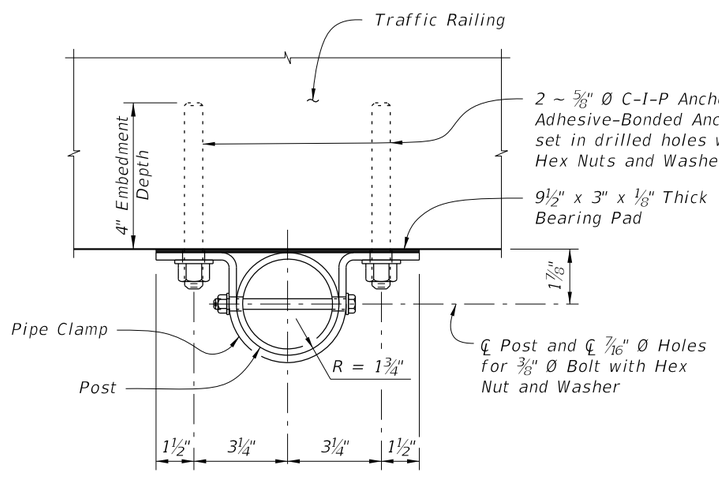
EXPANSION ASSEMBLY DETAIL
(Required only at expansion joint locations where total movement exceeds 6")

NOTES:

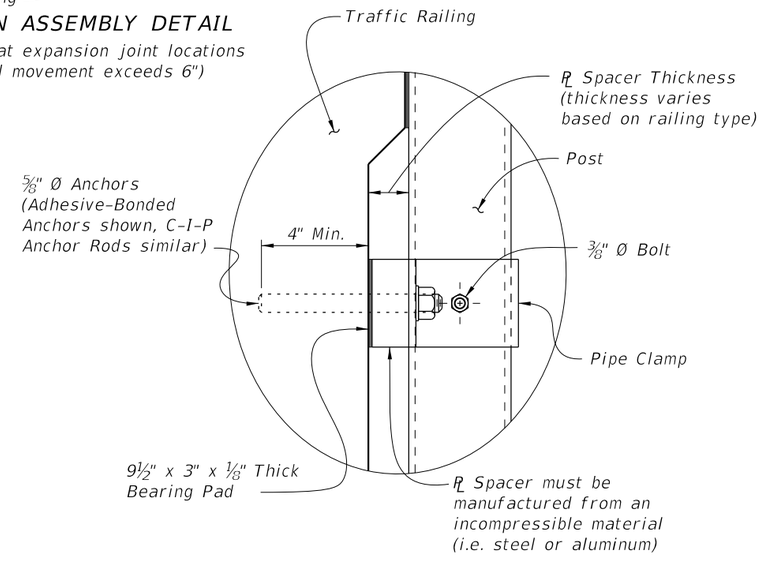
1. For treatment at the bridge ends, see Sheet 1.
2. Expansion Rails are required at expansion joint locations where the total movement exceeds 1". See Sheet 2 for Expansion Rail Detail and notes.
3. An Expansion Assembly is required where the total joint movement exceeds 6". Expansion Assembly includes Expansion Rails and two pull posts (as shown). When the Expansion Joint Opening is greater than 9" add an additional length to the free end of the Expansion Rail equal to the difference between the Expansion Joint Opening and 9".
4. Install the post on the fixed (bolted) side of the Expansion Rail 1'-6" from the edge of the expansion joint. Install the post on the slip (unbolted) side of the Expansion Rail 1'-6" from the edge of the expansion joint unless the Expansion Joint Opening is greater than 9". When the Expansion Joint Opening exceeds 9" increase the 1'-6" dimension by the difference between the Expansion Joint Opening and 9".



VIEW A-A



PIPE CLAMP CONNECTION DETAIL
(Connection without spacer shown, Connection with spacer similar)



DETAIL "A"

CROSS REFERENCE:
For location of View A-A and Detail "A" see Sheet 1.

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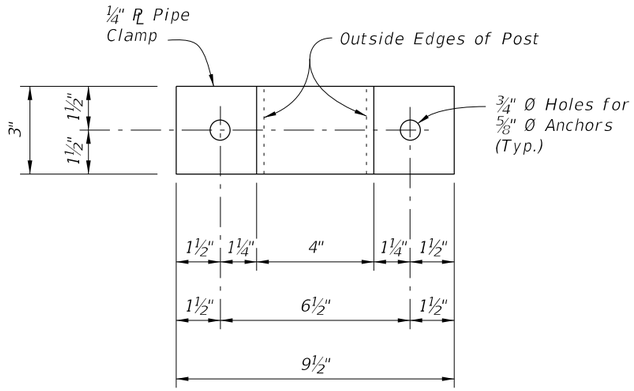
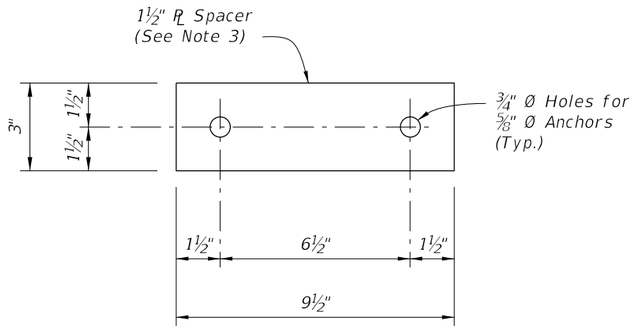
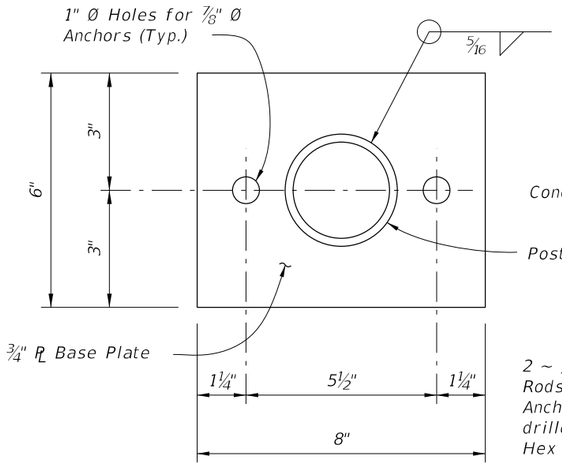


PIPE CLAMP DETAIL

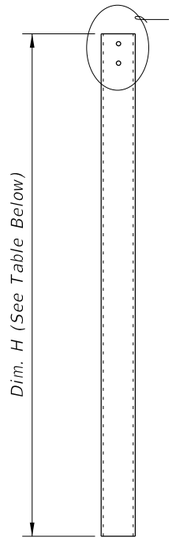


SPACER DETAIL

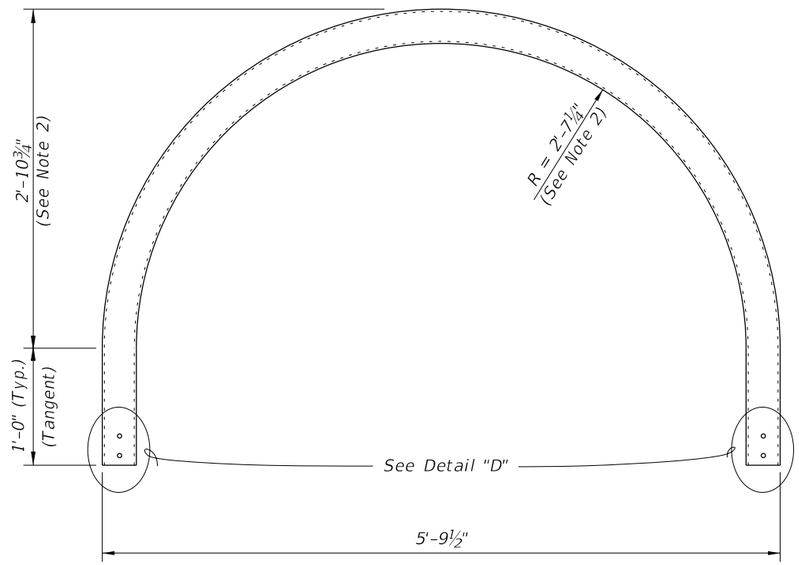
(Must be manufactured from an incompressible material (i.e. steel or aluminum))



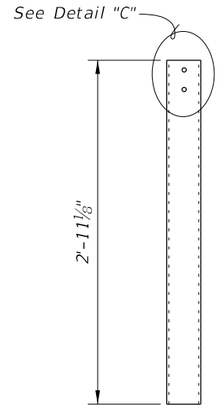
BASE PLATE DETAIL



POST A DETAIL



POST B DETAIL

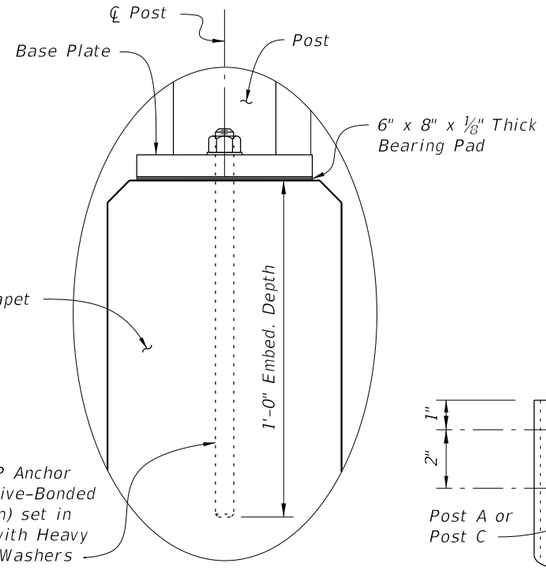


POST C DETAIL

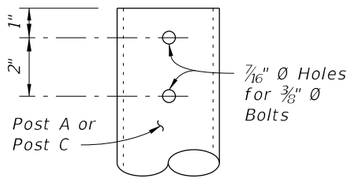
SIDEWALK CROSS-SLOPE	DIM. H (See Note 1)
2% Left	5'-6¼"
2% Right	5'-3¾"

NOTES:

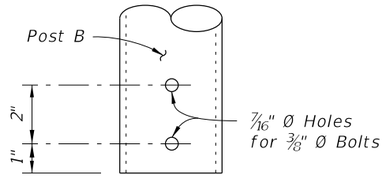
1. Values shown for Dim. H are for a 5'-0" clear sidewalk width. Adjust as required for clear sidewalk widths greater than 5'-0".
2. For clear sidewalk widths greater than 5'-0" increase radius and height by 6" for every one foot increase in sidewalk width.
3. Spacer plate thickness shown is for Single-Slope Traffic Railings. Adjust thickness as required for other Traffic Railings.



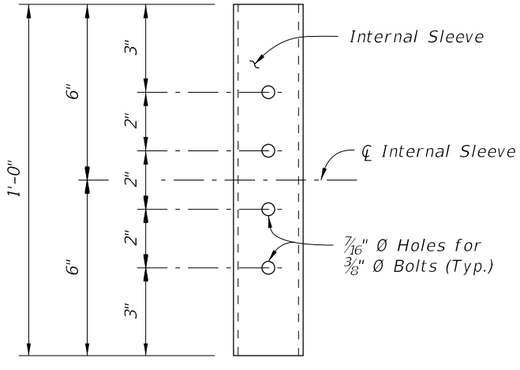
DETAIL "B"



DETAIL "C"



DETAIL "D"



DETAIL "E"
(INTERNAL SLEEVE DETAIL)

CROSS REFERENCE:
For location of Details "B" and "E" see Sheet 1.

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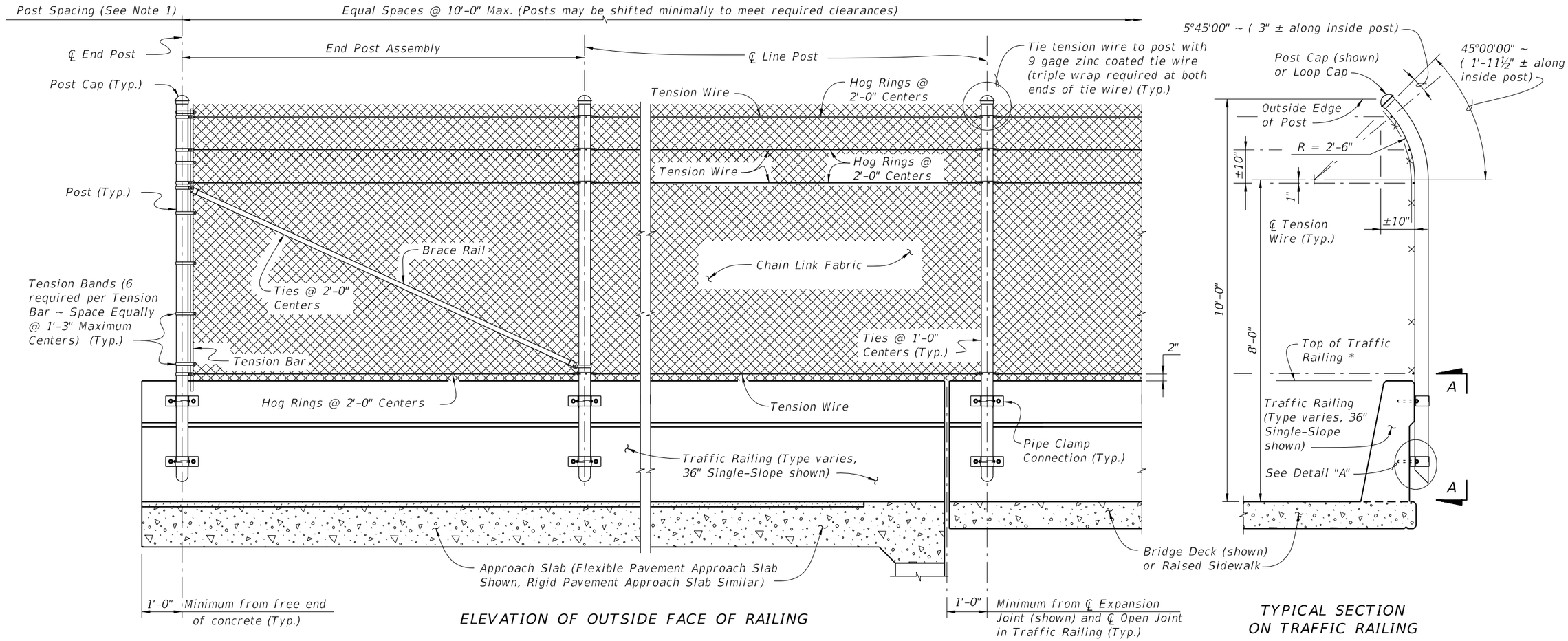

ELEVATION OF OUTSIDE FACE OF RAILING

TYPICAL SECTION ON TRAFFIC RAILING

NOTES:
1. A Pull Post Assembly is required at maximum intervals of 500'-0". See Sheet 3.

* Do not anchor Fencing to the top of Traffic Railings.

FENCING NOTES

FENCE INSTALLATION:
Install posts plumb (within a tolerance of ± 1½"). Use shim plates as required to achieve plumb. The required quantity and thickness of shim plates will be determined in the field. Install chain link fence in accordance with ASTM F567 as applicable.

TRAFFIC RAILING DETAILS:
See Superstructure Sheets for Traffic Railing details.

LIMITS OF FENCING:
Limits of fencing are from begin of approach slab at Begin Bridge to end of approach slab at End Bridge, unless otherwise shown in the plans.

PAYMENT:
Payment will be made under Fencing, Type R. Payment includes all materials and labor required to complete installation of the fence.

CROSS REFERENCE:
For Table of Fence Components, Table of Post Attachment Components, View A-A and Detail "A" see Sheet 2.
For Pull Post Assembly Detail for Traffic Railing see Sheet 3.

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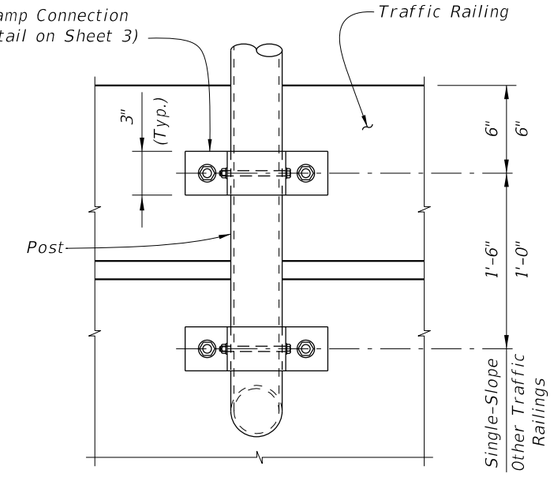
TABLE OF CHAIN LINK FENCE COMPONENTS

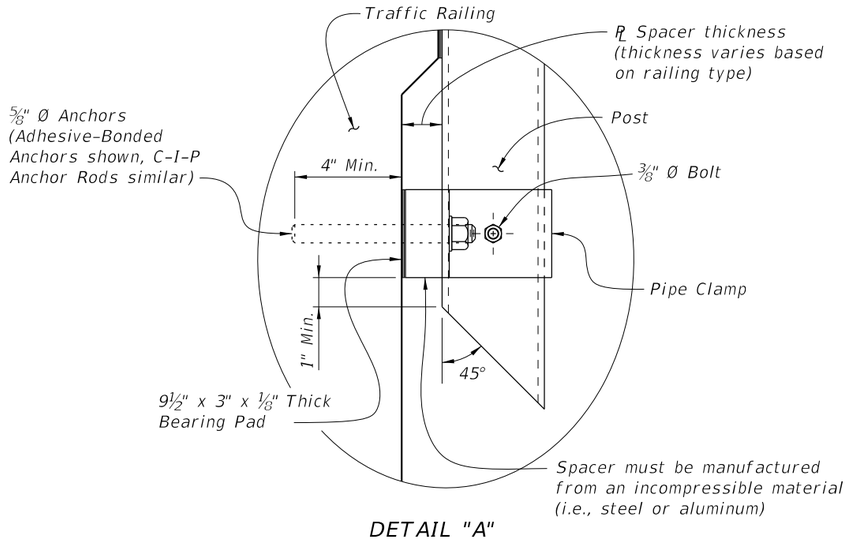
COMPONENT	ASTM DESIGNATION	COMPONENT INFORMATION
Posts	F1083	Galvanized Steel Pipe – 3½" NPS, Schedule 40 Regular Grade
Chain Link Fabric (2" mesh with twisted top and knuckled bottom selvage)	A392	Zinc Coated Steel – 9 gage (coated wire diameter), Class 2 Coating
	A491	Aluminum Coated Steel – 9 gage (coated wire diameter)
	F668	Polyvinyl Chloride (PVC) Coated Steel – 9 gage Class 2b
Tie Wires	F626	Zinc Coated Steel Wire – 9 gage
Brace Bands	F626	12 Gage (Min. thickness) x ¾" (Min. width) Steel Bands (Beveled or Heavy)
Tension Bars	F626	3/16" (Min. thickness) x ¾" (Min. width) x 6'–10" (Min. height) Steel Bars
Tension Bands	F626	14 Gage (Min. thickness) x ¾" (Min. width) Steel Bands
Miscellaneous Fence Components	F626	Zinc Coated Steel ~ (includes post or loop caps, horizontal and brace rail ends, combination rail ends, boulevard clamps and all other miscellaneous fittings & hardware)
Tension Wire	A824 & A817	Type II (Zinc Coated Steel Wire) – 7 gage, Class 4 Coating
		Type I (Aluminum Coated Steel Wire) – 7 gage
Hog Rings	F626	Zinc Coated Steel Wire – 12 gage
Brace Rails	F1083	Galvanized Steel Pipe – 1¼" NPS, Schedule 40 Regular Grade

TABLE OF POST ATTACHMENT COMPONENTS

COMPONENT		ASTM DESIGNATION	COMPONENT INFORMATION
Pipe Clamps		A36 or A709 Grade 36	¼" Steel PL
Base Plates		A36 or A709 Grade 36	¾" Steel PL
Shim Plates		A36 or A709 Grade 36 or B209 Alloy 6061-T6 or B221 Alloy 6063-T5	Plate thicknesses as required. Holes in shim plates will be ¾" Ø. For edge shims match the edge length of the base plate with a min. width of 3/4". Apply adhesive bonding material bed of 1-1/2" (Min.) wide
Spacers		–	Plate thickness varies based on traffic railing type (See Detail "A")
Pipe Clamp Connection	Adhesive Anchor Rods	F1554 Grade 36	Fully threaded Headless Anchor Rods ~ ⅝" Ø x 6" (no spacer) or ⅝" Ø x (6" + spacer thickness)
	C-I-P Anchor Rods	F1554 Grade 36	Hex Head Anchor Rods ~ ⅝" Ø x 6" (no spacer) or ⅝" Ø x (6" + spacer thickness)
Bolts		A307	⅜" Ø x 4¾" Hex Head Bolts for Pipe Clamp Connections to Posts
Nuts		A563	Hex Nuts for Pipe Clamp Connections
Washers		F436	Flat Washers for Pipe Clamp Connections
Bearing Pads (Plain Neoprene)		–	In accordance with Specification Section 932 for Ancillary Structures



VIEW A-A



DETAIL "A"

POST ATTACHMENT NOTES

ANCHOR RODS, NUTS AND WASHERS:
After the nuts have been tightened, distort the Anchor Rod threads to prevent removal of the nuts. Coat distorted threads and exposed trimmed ends of anchors with a galvanizing compound in accordance with Specification Section 562.

COATINGS:
Hot-dip galvanize all Nuts, Washers, Bolts, C-I-P Anchor Rods, Adhesive Anchors and Fence Framework (Posts, Internal Sleeves, Shim Plates, Base Plates, Pipe Clamps and Spacers) in accordance with Specification Section 962. Hot-dip galvanize Fence Framework after fabrication.

ADHESIVE-BONDED ANCHORS AND DOWELS:
Adhesive Bonding Material Systems for Anchors and Dowels will comply with Specification Section 937 and be installed in accordance with Specification Section 416. Cutting of reinforcing steel is permitted for drilled hole installation.

WELDING:
All welding will be in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Weld metal will be E60XX or E70XX. Nondestructive testing of welds is not required.

CROSS REFERENCE:
For location of View A-A and Detail "A" see Sheet 1.

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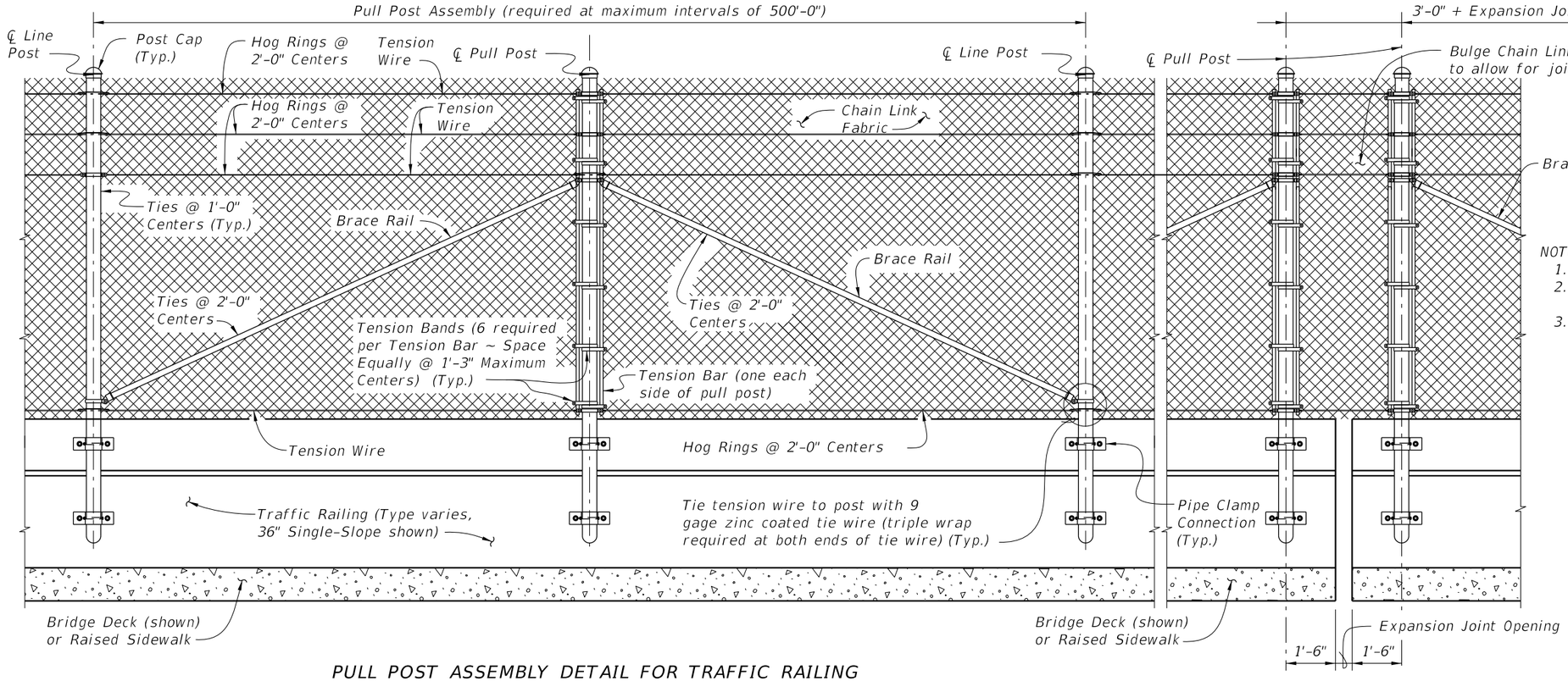
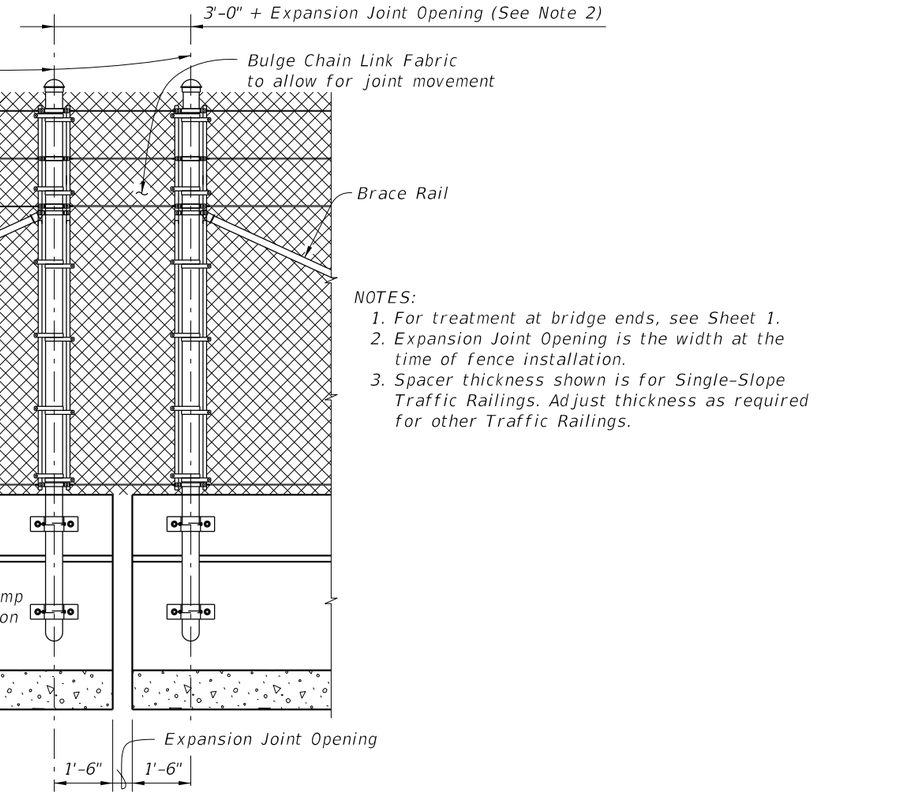


PULL POST ASSEMBLY DETAIL FOR TRAFFIC RAILING

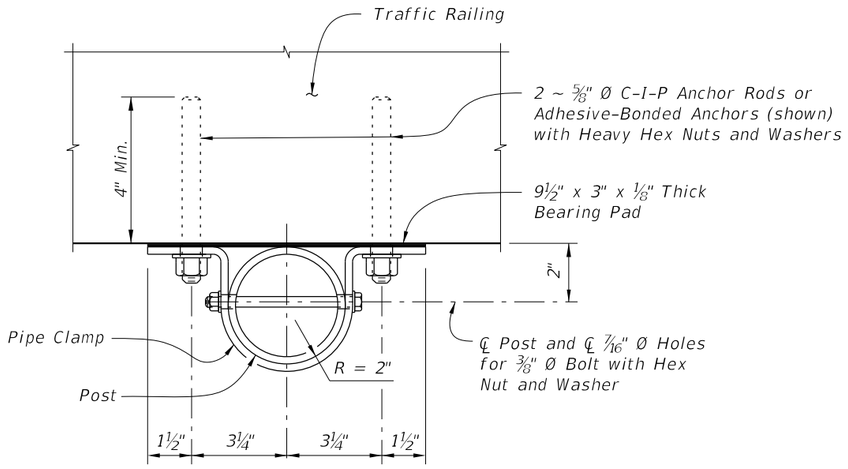


EXPANSION ASSEMBLY DETAIL

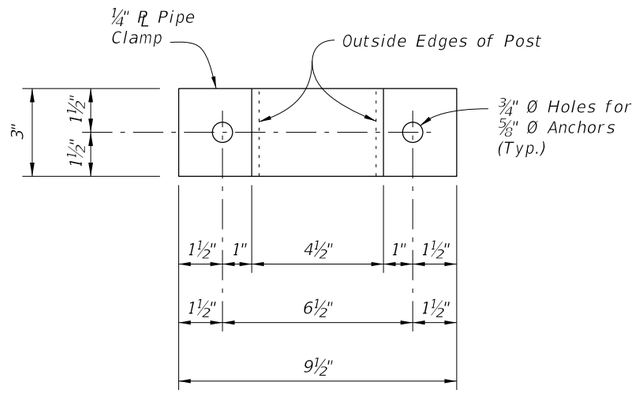
(Required only at expansion joint locations where total movement exceeds 6")

NOTES:

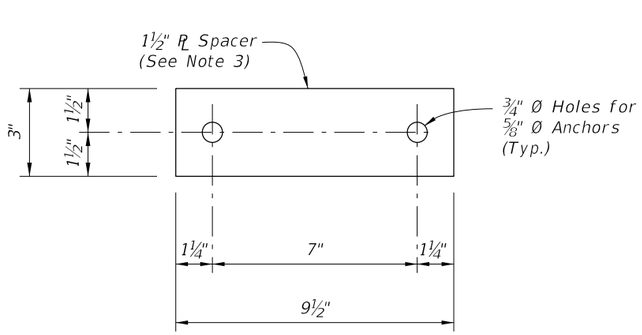
1. For treatment at bridge ends, see Sheet 1.
2. Expansion Joint Opening is the width at the time of fence installation.
3. Spacer thickness shown is for Single-Slope Traffic Railings. Adjust thickness as required for other Traffic Railings.



PIPE CLAMP CONNECTION DETAIL
(Connection without spacer shown, Connection with spacer similar)



PIPE CLAMP DETAIL



SPACER DETAIL

(Must be manufactured from an incompressible material (i.e., steel or aluminum))

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CONDUIT GENERAL NOTES:

1. Furnish and install approved Conduits, Fittings and Embedded Junction Boxes (EBJ's) in accordance with Specification Sections 630 and 635, this Standard, the National Electric Code (NEC) and as directed by the Engineer.

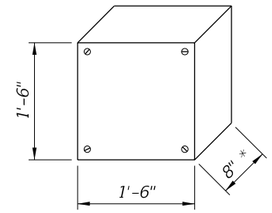
2. Furnish and install Embedded Junction Boxes (EJB) with weatherproof covers sized in accordance with NEC requirements and the maximum size limits shown. Install EJB adjacent to the Begin and End of Bridges, Begin and End of Retaining Walls, (except omit EJB adjacent to the Bridge unless a precast Traffic Railing with junction slab is used), and at other locations as necessary to maintain 300 foot maximum spacing. See Plans for additional locations and details.

3. For Conduit not designated for future use, see Plans for details. For Conduit designated for future use, stub out and cap the Conduit. Drive a 3'–0"± long ¾" (min.) diameter Steel Pipe flush with the ground line adjacent to the end of the Conduit as shown on Sheets 2, 3 or 4. Provide the location of the stub out with Steel Pipe to the Engineer for inclusion on the As–Built Plans.

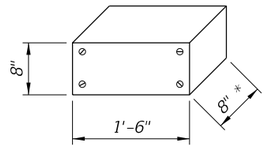
4. Shift vertical Railing reinforcement symmetrically to provide 2" clearance to EJB. Space shifted vertical reinforcement at minimum 3" centers. Cut horizontal Railing reinforcement to provide 2" clearance to EJB and provide supplemental reinforcement as shown. To facilitate placement of Conduit, Expansion Fittings, and Expansion/Deflection Fittings, shift reinforcing a maximum of 1" but do not cut railing reinforcing to facilitate Conduit or Fittings. Do not bundle Conduits, or Conduit and horizontal reinforcement.

5. Place conduits as indicated in this Standard unless Structures Plans indicate fewer.

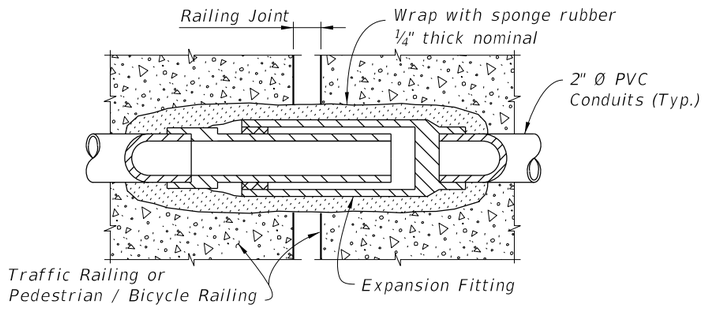
* Reduce to 6" maximum when installed in Pedestrian/ Bicycle Railings.



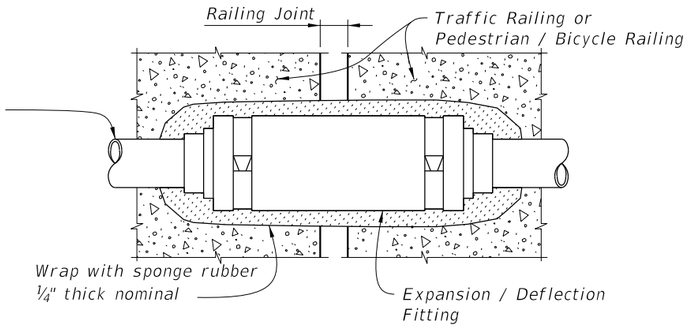
EJB "A"
Double or Triple Conduit
(Maximum Dimensions)



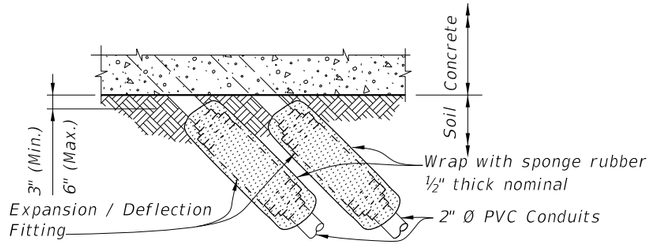
EJB "B"
Single Conduit
(Maximum Dimensions)



DETAIL "A"
EXPANSION FITTING DETAIL



DETAIL "B" EXPANSION / DEFLECTION
FITTING DETAIL (CONCRETE / CONCRETE)



DETAIL "C" EXPANSION / DEFLECTION
FITTING DETAIL (CONCRETE / SOIL)

GENERAL

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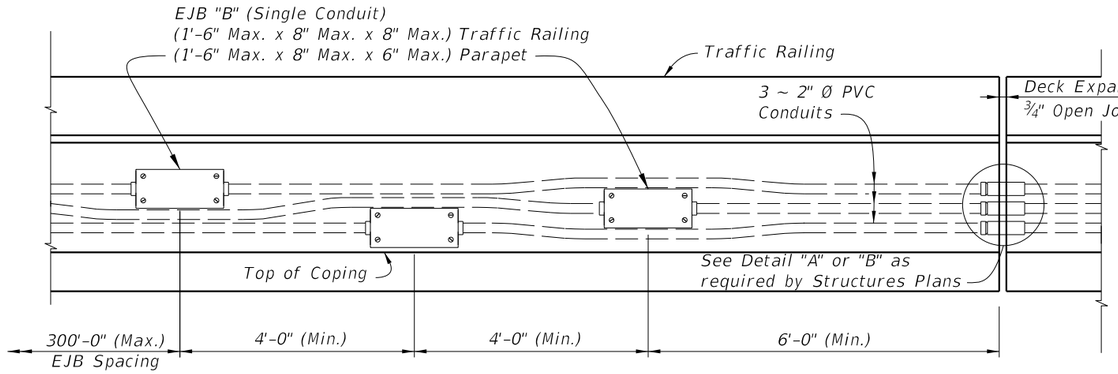
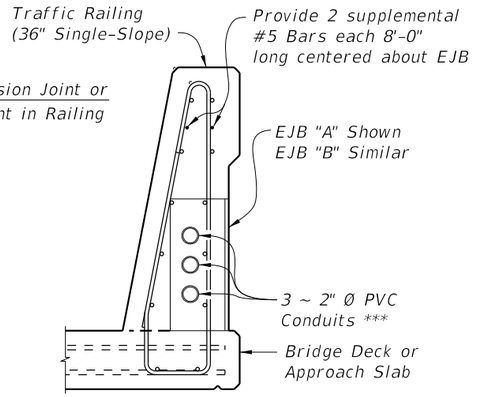
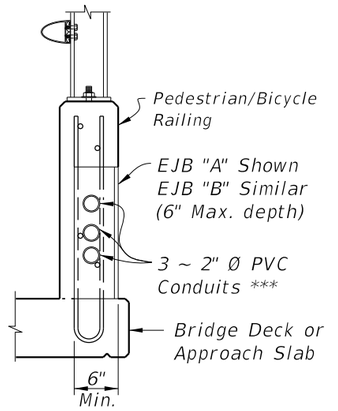


EJB "B" DETAIL

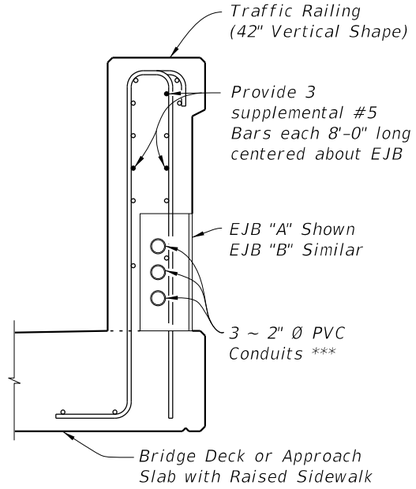
* 36" Single-Slope Traffic Railing shown, other Traffic Railings and Pedestrian/Bicycle Railings similar.
** EJB "A" shown, EJB "B" similar. See EJB "B" Detail.
*** See Sheet 1, Note 5.



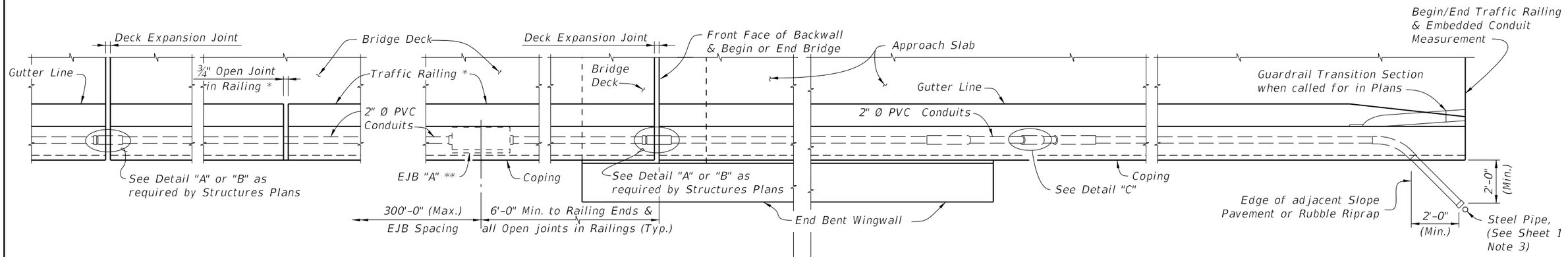
SECTION THRU
TRAFFIC RAILING AT EJB
(36" SINGLE-SLOPE SHOWN,
42" SINGLE-SLOPE SIMILAR)



SECTION THRU PEDESTRIAN /
BICYCLE RAILING AT EJB

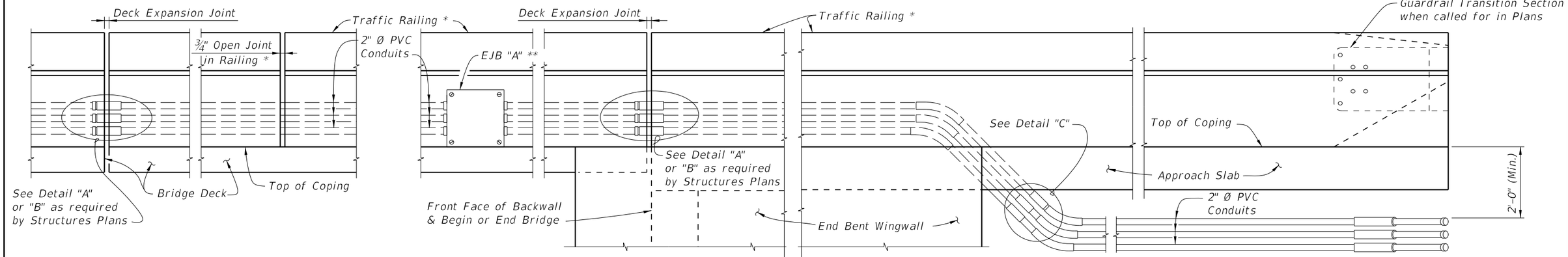


SECTION THRU
TRAFFIC RAILING AT EJB
(42" VERTICAL SHAPE SHOWN,
32" VERTICAL SHAPE SIMILAR)



PARTIAL PLAN VIEW ALONG BRIDGE

PARTIAL PLAN VIEW ALONG APPROACH SLAB WITHOUT CONTINUING TRAFFIC RAILING



PARTIAL ELEVATION VIEW ALONG BRIDGE

PARTIAL ELEVATION VIEW ALONG APPROACH SLAB WITHOUT CONTINUING TRAFFIC RAILING

BRIDGE AND APPROACH SLAB WITH EDGE RAILING

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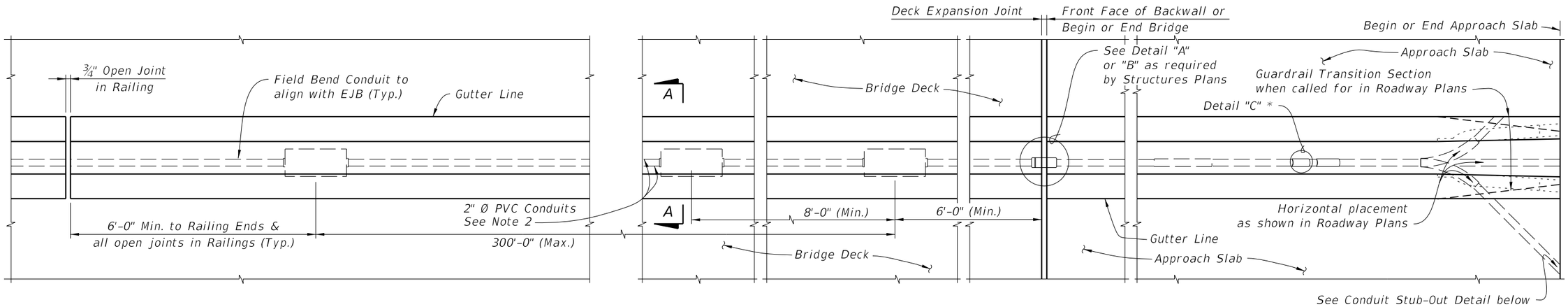
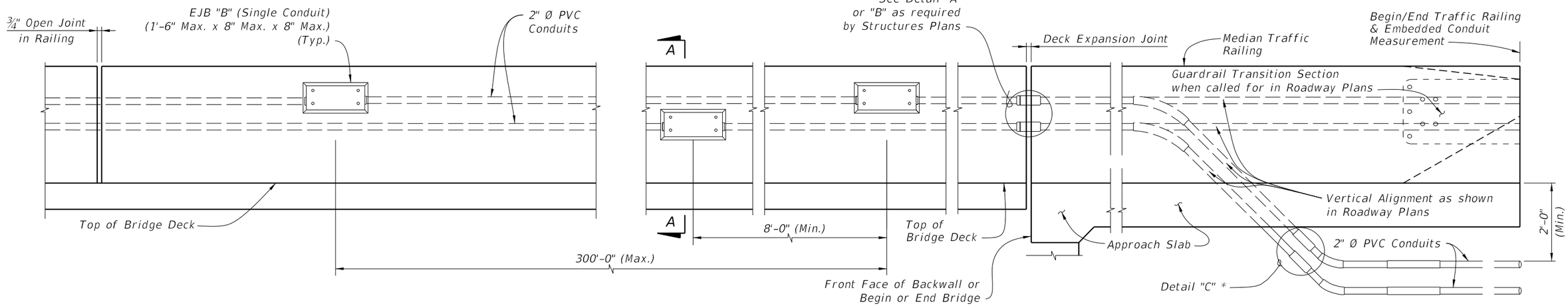


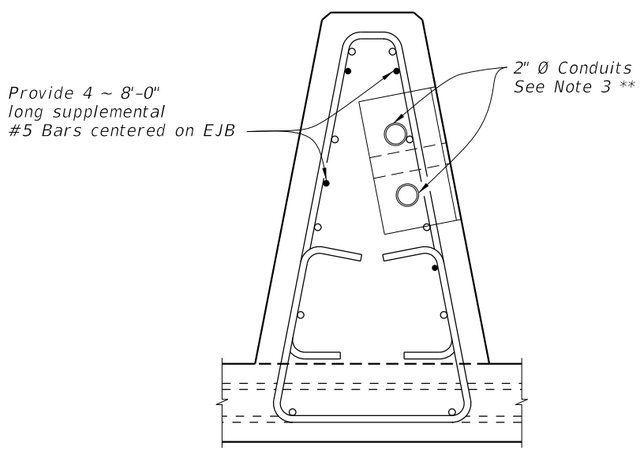
PARTIAL PLAN VIEW OF MEDIAN TRAFFIC RAILING ALONG BRIDGE

PARTIAL PLAN VIEW OF MEDIAN TRAFFIC RAILING ALONG APPROACH SLAB

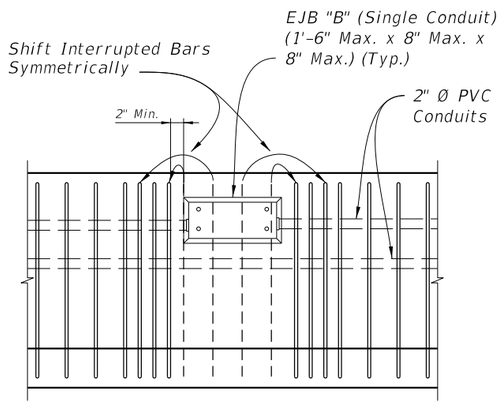


PARTIAL ELEVATION VIEW OF MEDIAN TRAFFIC RAILING ALONG BRIDGE

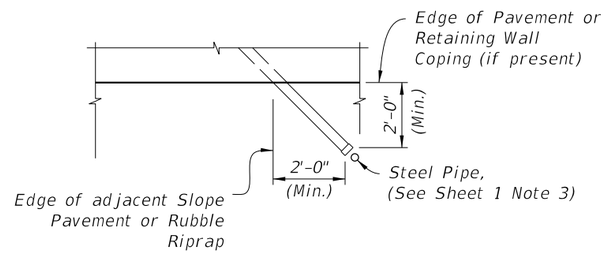
PARTIAL ELEVATION VIEW OF MEDIAN TRAFFIC RAILING ALONG APPROACH SLAB



SECTION A-A
Median Traffic Railing (See Note 4)



JUNCTION BOX REBAR CONFLICT ELEVATION



CONDUIT STUB-OUT DETAIL

NOTES:

1. Work this sheet with Index 521-426.
2. Adjust Conduit horizontally and vertically as necessary to align with EJB "B".
3. When installed in traffic face of a railing, use EJB "B" with a minimum 3/8" thick galvanized steel cover.
4. Position EJB such that, with gasket and cover plate secured and in place, cover plate is flush with the railing face. Flush is +1/8" to -1/4" measured with a horizontal straightedge.

* For non-continuing Traffic Railing only.
** See Sheet 1, Note 5

BRIDGE AND APPROACH SLAB WITH MEDIAN TRAFFIC RAILING

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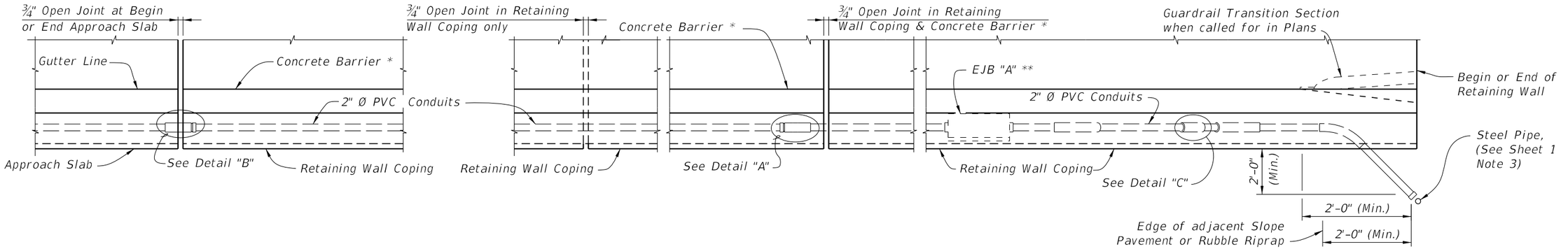
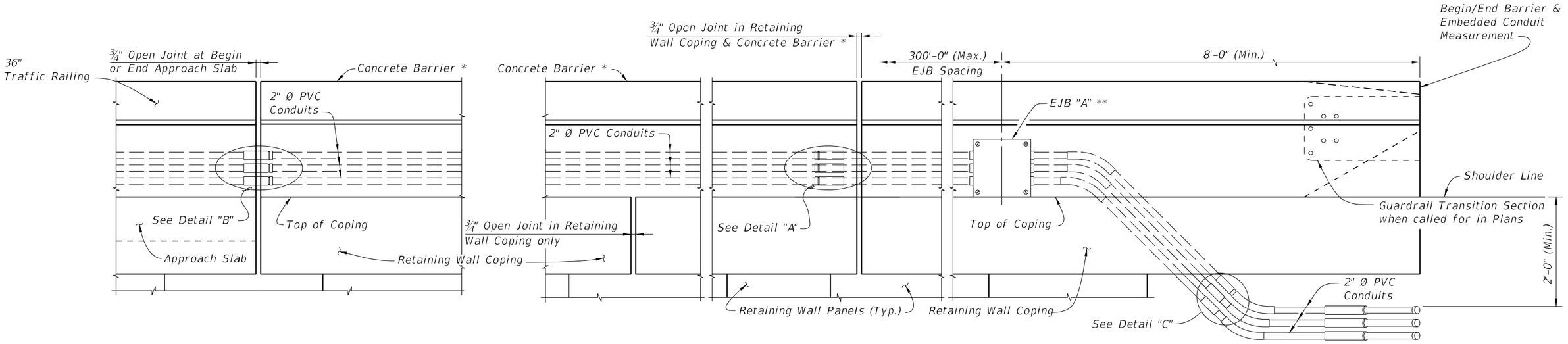


PARTIAL PLAN VIEW ALONG APPROACH SLAB WITH CONTINUING CONCRETE BARRIER

PARTIAL PLAN VIEW ALONG RETAINING WALL



PARTIAL ELEVATION VIEW ALONG APPROACH SLAB WITH CONTINUING Concrete Barrier (Retaining Wall Mounted Concrete Barrier shown, Traffic Railing similar)

PARTIAL ELEVATION VIEW ALONG RETAINING WALL

* Index 521-610 Concrete Barrier/Junction Slab shown, other railings and parapets similar.
** EJB "A" shown EJB "B" similar. See EJB "B" Detail on Sheet 2.

APPROACH SLAB AND RETAINING WALL WITH CONCRETE BARRIER

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BOX GIRDER MAINTENANCE LIGHTING NOTES:

1. Submit shop drawings to the Engineer detailing the layout of the maintenance lighting system for the entire structure. The shop drawings must include, but not be limited to, the following items:
   a. Conduit layout and installation details through diaphragms, around post-tensioning (PT) ducts, lateral bracing and cross frames as necessary.
   b. Conduit access through box girder end diaphragms with minimum 1" clearance in all directions.
   c. Conduit expansion fitting details.
   d. Fastener details for the interior electrical system.
   e. Single line diagram showing mini power centers, switches, contactors, timers, etc.
   f. Mini power center details including circuit breaker details.
   g. Mini power center mounting details if required.
   h. Feeder schedule.
2. Ensure installation meets all requirements of the latest edition of the National Electrical Code (NEC) and local ordinances. Install grounding in accordance with NEC Article 250. Maintain separation between 480V and 120V Conductors / Conduits throughout.
3. Furnish all labor, equipment, materials, and incidentals required for a complete and functional installation.
4. Use only new, unused and Underwriters Laboratories (UL) listed equipment and materials for outdoor use.
5. Furnish and install polyvinyl chloride (PVC) conduit in conformance with UL Section 651, NEC Section 347 and NEMA TC-2, UV-resistant and schedule 80. Bend conduits as necessary to connect to loads.
6. Provide PVC sleeve 2" larger in diameter than conduit to accommodate construction tolerance.
7. Install a UL labeled expansion fitting for specified PVC conduit at all structure expansion joints. Provide certification that the expansion fitting meets the following minimum requirements: Compatibility with the connected conduits, waterproof, UV protected and allows longitudinal movement equal to that of the Expansion Joint.
8. Use only Alloy 316 stainless steel supporting hardware. Provide minimum $\frac{3}{16}$" Ø fasteners. For concrete or SIP form mounting, provide anchor bolts (expansion, drop-in or adhesive) suitable for dynamic loading (due to vibration caused by traffic). Install fasteners to avoid conflicts with reinforcing steel and PT ducts. For structural steel mounting, do not attach fasteners to main members, i.e. webs and flanges.
9. Furnish power distribution at 480V AC, 1 phase, with step down transformers at regular intervals. Furnish 7.5 KVA mini power center with eight 20A breakers as the step down transformer, feeding a maximum of 20 lamps and 20 receptacles. Each mini power center will provide power to no more than 1000' of bridge, preferably 500' on each side of the mini power center. 480V top feed, 120V bottom feed to maintain separation.
10. Furnish and install lighting contactors to switch the 480V AC feeding the mini power centers.
11. Furnish and install copper conductors, Type XHHW. Do not use any conductor larger than #4 AWG.
12. Provide enough slack in all interior cable terminations to allow for minor shifting of the structure.
13. Furnish and install National Electric Manufacturers Association (NEMA) Type 4X (non-metallic) surface mounted boxes sized in conformance with the NEC.
14. Furnish and install 120V duplex receptacles (GFI, NEMA Type 5-20R), in non-metallic outlet boxes at 50' maximum on centers. Provide each receptacle with a gasketed weather-protective outdoor plate. Maximum wire size to connect to receptacles is #12 AWG.
15. Furnish and install surface mounted, fully enclosed, incandescent light fixtures with gasketed clear globes and wire guards at 50' maximum on centers. Provide 100 watt, 130 volt, vibration resistant and brass base incandescent lamps.
16. Provide six hour reset timers for each circuit to turn off the lighting system automatically.

CROSS REFERENCES:
1. For Maintenance Light Details, see Sheet 2.
2. For actual bridge section, see Structures Plans.

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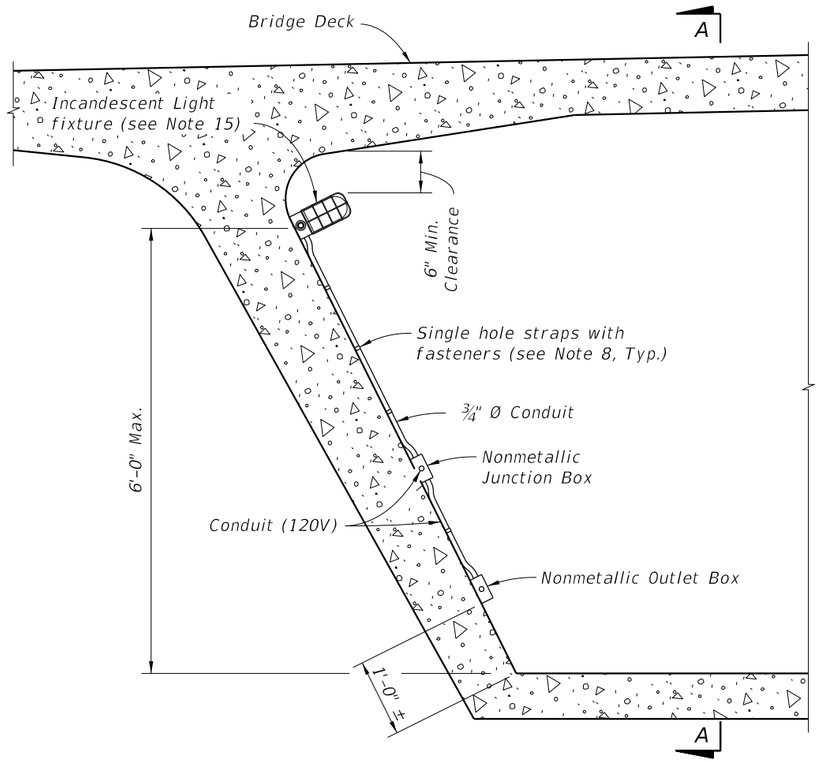
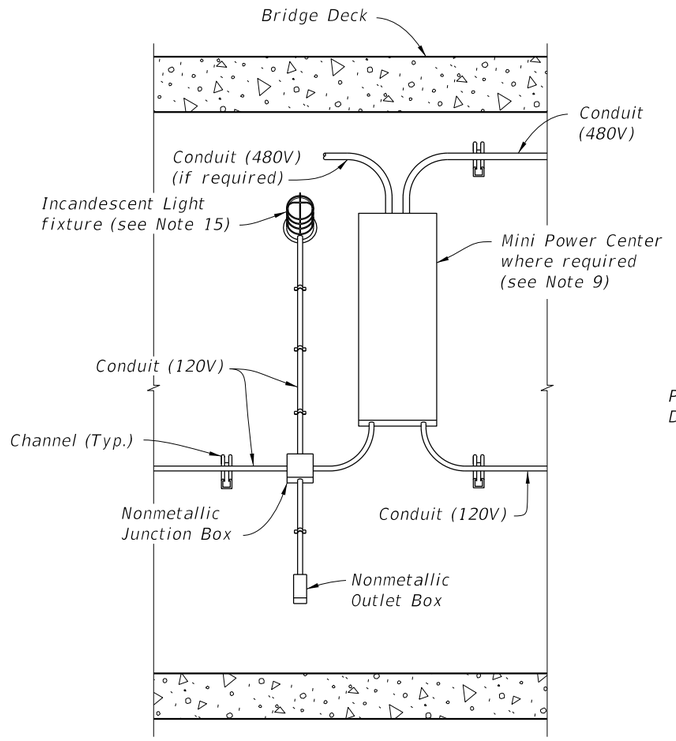
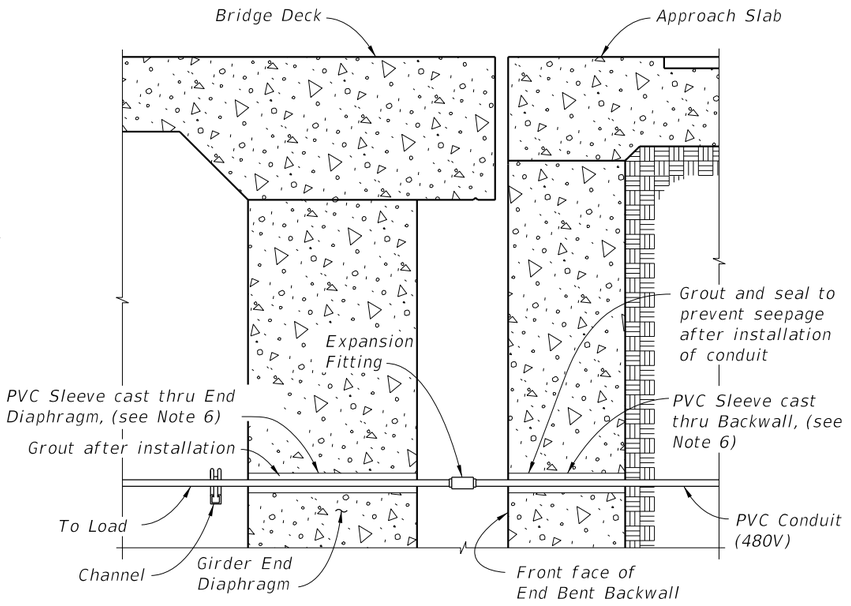


LIGHTING DETAILS FOR CONCRETE BOX GIRDER BRIDGE

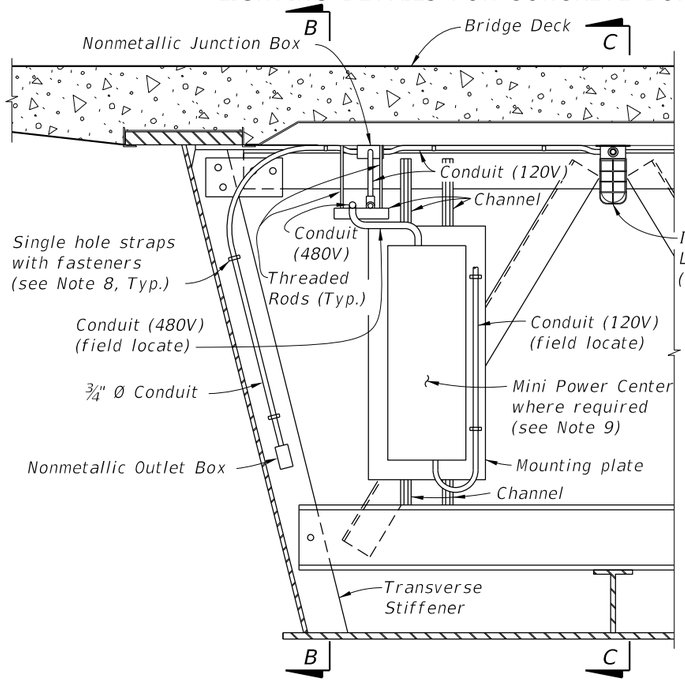


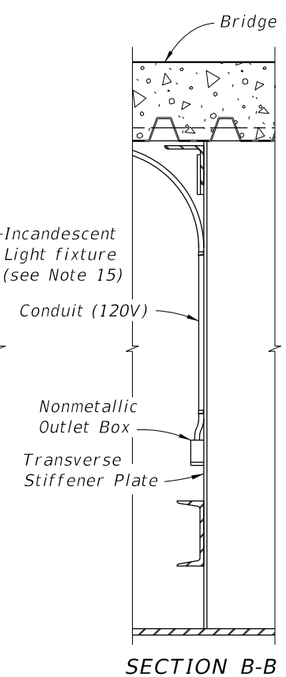
SECTION A-A



CONCRETE BOX GIRDER BRIDGE SECTION THRU END BENTS

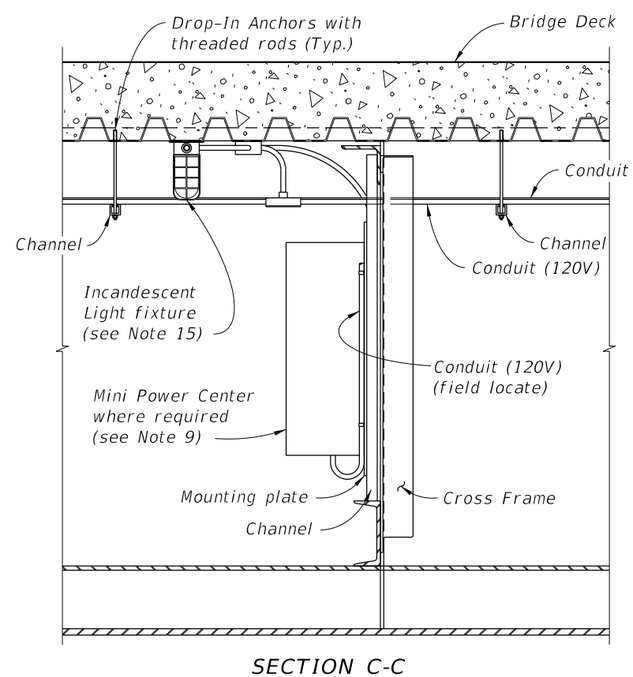
CROSS REFERENCE:
1. For Box Girder Maintenance Lighting Notes see Sheet 1.



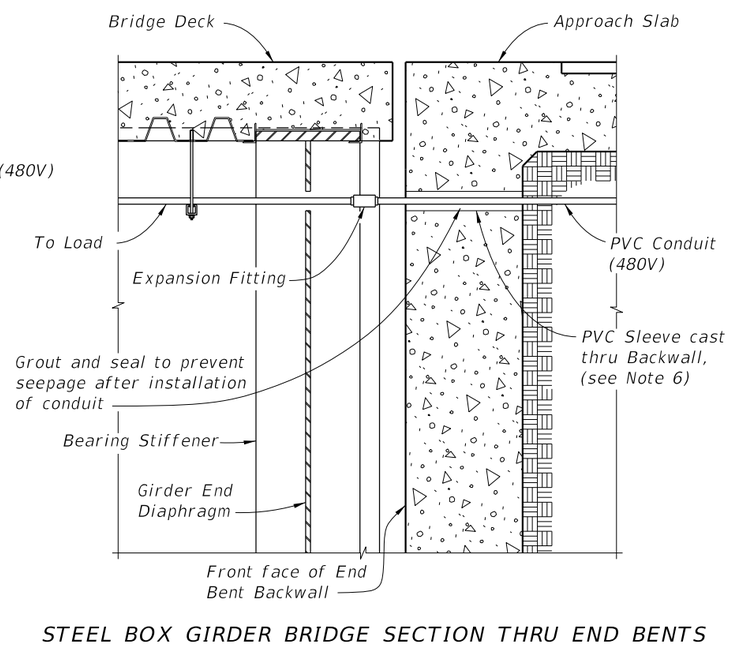


SECTION B-B

LIGHTING DETAILS FOR STEEL BOX GIRDER BRIDGE
(Cross Frame section shown, other Transverse Stiffener sections similar)



SECTION C-C



STEEL BOX GIRDER BRIDGE SECTION THRU END BENTS

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