

FY 2024-25 STANDARD PLANS FOR ROAD CONSTRUCTION

Effective for Projects with Lettings in the Fiscal Year (FY) from

July 1, 2024 through June 30, 2025

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

FY 2024-25 Standard Plans for Road and Bridge Construction Topic No. 625-010-003

FDOT FY 2024-25 STANDARD PLANS

NOTICE

The Standard Plans are intended to support the various engineering processes for construction operations on the State Highway System. They are established to ensure the application of uniform standards in the preparation of contract plans for construction of roadways and structures. These Standard Plans may be used for maintenance operations or adopted by other authorities for use on projects under their jurisdiction.

It is the responsibility of the Engineer of Record using these Standard Plans to determine the fitness for a particular use of each standard in the design of a project. The inappropriate use of and adherence to these standard Plans does not exempt the engineer from the professional responsibility of developing an appropriate design.

PATENTED DEVICES, MATERIALS AND PROCESSES

The use of any design, method, process, material or device either expressed or implied by these standards that are covered by patent, copyright, or proprietary privilege is the sole responsibility of the user. Any infringement on the rights of the inventor, patentee, assignee or licensee shall be the sole responsibility of the user. For additional information refer to Subsection 7-3 of the FDOT Standard Specifications for Road and Bridge Construction.

DISTRIBUTION OF EXEMPT PUBLIC DOCUMENTS:

It is the policy of the Department to protect the State Highway System's infrastructure by defining the responsibilities for disclosure and use of sensitive documents showing the structural elements used in the design and construction of Department structures. Section 119.071(3)(b), Florida Statute (F.S.), provides that these sensitive documents are exempt from Chapter 119, F.S., Florida's public records law. In accordance with Section 119.071(3)(b), F.S., the Department has adopted Procedure 050-020-026, Distribution of Exempt Public Documents Concerning Department Structures and Security System Plans, to define the method and responsibilities for disclosure and use of these sensitive documents.

Structure is defined in Section 334.03(27), F.S., as "a bridge, viaduct, tunnel, causeway, approach, ferry slip, culvert, toll plaza, gate, or other similar facility used in connection with a transportation facility" which would include related pipes and pipe systems. However, for the purpose of the public records law and Procedure 050-020-026, the Department has determined that the term "structure" includes "bridges with an opening of more than 20 feet between undercopings of abutments or spring lines of arches or extreme ends of openings for multiple boxes, and those other bridges subject to safety inspection under Section 335.074, F.S." A roadway is not otherwise a structure for the purposes of Procedure 050-020-026.

Therefore, plans, blueprints, schematic drawings, and diagrams of structures owned by the Department are exempt from the public records provisions of Chapter 119, F.S. This exemption includes draft, preliminary, and final formats as described in Procedure 050-020-026 and includes paper, electronic, and other formats. The Department has provided for the limited release of such documents in Procedure 050-020-026.

Entities or persons outside the Department requesting or receiving copies of any portion of plans or other documents considered Exempt Documents under Procedure 050-020-026 must complete and submit a request form (Form No. 050-020-26). The form also advises the requestor that the entity or person receiving the documents shall maintain their exempt status. This procedure applies to all Department internal or contracted staff who have access to such Exempt Documents in their Department work. Refer to Procedure 050-020-026 for additional requirements.

CERTIFICATION STATEMENT

I hereby certify that these Standard Plans were prepared by me or under my responsible charge, compiled from designs prepared, examined, adopted and implemented by the Florida Department of Transportation in accordance with established procedures, and as approved by the Federal Highway Administration.

This Document has been digitally signed and sealed by Richard A. Jenkins. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Richard A. Jenkins, P.E. State Standard Plans Engineer

The official version of the Standard Plans is the PDF version and can be found at:



RON DESANTIS GOVERNOR 605 Suwannee Street Tallahassee, FL 32399-0450 JARED W. PERDUE, P.E. SECRETARY

October 17, 2023

James Christian Division Administrator Federal Highway Administration 3500 Financial Plaza, Suite 400 Tallahassee, Florida 32312

Re: Office of Design

FY 2024-25 Standard Plans for Road and Bridge Construction

Dear Mr. Christian:

In accordance with the Stewardship and Oversight Agreement on Project Assumption and Program Oversight by and between the Federal Highway Administration, Florida Division, and the State of Florida Department of Transportation we are requesting approval of the FY 2024-25 Standard Plans for Road and Bridge Construction (Standard Plans) for use on federal aid projects. Copies of all revised Indexes for the FY 2024-25 Standard Plans were previously provided to the Florida Division Office for review and approval. All comments from the reviews have been addressed.

Sincerely,

Rick Jenkins, P.E.

State Standard Plans Engineer

For FHWA Florida Division Office use:

Approved for Use on Federal Aid Projects:

10/17/23

BREN I GEORGE

Digitally signed by BREN I GEORGE Date: 2023.10.17 13:04:36 -04'00'

For James Christian, P.E. Division Administrator

ABBREVIATIONS

FY 2024-25 STANDARD PLANS

Abbreviation	Meaning	Abbreviation	4-25 STANDARD PLANS Meaning	Abbreviation	Meaning
	4 	(S 		G
AASHT0	American Association Of State Highway And Transportation Officials	CSIP	Cost Savings Initiative Proposal	G	Shear Modulus
AC	Alternating Current	CSL	Cross-hole Sonic Logging	g	Gram
Accel.	Acceleration	СТРВ	Cement Treated Permeable Base	Ga.	Gauge or Gage
ACI	American Concrete Institute	Ctr., Ctrs.	Center	Galv.	Galvanized
ADA	Americans With Disabilities Act	Cu. Ft.	Cubic Feet	GFI	Ground Fault Interrupter
ADT	Average Daily Traffic	Cu. Yd., CY,	Cubic Yard	GFRP	Glass Fiber Reinforced Polymer
AFAD	Automated Flagger Assistance Device	[D	Grd.	Ground
AISC	American Institute Of Steel Construction	D	Depth, Distance or Diameter		H
AISI	American Iron and Steel Institute	Dia. or Ø	Diameter	Hd.	Head
Alt.	Alternate	Dbl.	Double	H.S., HS	High Strength
Alum.	Aluminum	Decel.	Deceleration	HDPE	High Density Polyethylene
ANSI	American National Standards Institute	Deg.	Degree	Horiz.	Horizontal
A05	Apparent Opening Size	Dim.	Dimension	HP	Horsepower or H-Pile
APL	Approved Products List	Dist.	Distance	HSHV	High Strength Horizontal Vertical
Арр.	Approach	DMM	Domestic Mail Manual		I
Approx.	Approximate	DPI	Ditch Point Intersection	ID, I.D.	Inside Diameter or Identification
ARTBA	American Road & Transportation Builders Association	Dt	Ditch	in.	Inch(es)
Asph.	Asphalt	DT0E	District Traffic Operations Engineer	Inc.	Incorporated
Assem.	Assembly	I		Int.	Interior
ASTM	American Society For Testing And Materials	е	Superelevation Rate	Inv.	Invert
ATPB	Asphalt Treated Permeable Base	E.P. or EOP	Edge Of Pavement	ITS	Intelligent Transportation Systems
Auxil.	Auxiliary	EA or Ea.	Each		J
AWG	American Wire Gauge	EIA	Electronic Industries Alliance	JCT	Junction
AWS	American Welding Society	El. or Elev.	Elevation	Jt.	Joint
L	B	Embed.	Embedment		Κ
Bot.	Bottom	EPDM	Ethylene Propylene Diene Monomer	k	kip
Brkwy.	Breakaway	Eq.	Equation or Equal	kip	1000 Pounds
b/w	Between	Equip.	Equipment	ksi	Kips Per Square Inch
(S	etc.	Et Cetera (And So Forth)	kVA	Kilovolt Ampere
CC, C to C	Center to Center	ETP	Electronic Tough Pitch		L
C & G	Curb And Gutter	Ex.	Example	L	Length
C.C.	Crash Cushion	Exist.	Existing	LA	Limited Access
CCTV	Closed-Circuit Television	Exp.	Expansion	lb or lbs.	Pound(s)
CFR	Code of Federal Regulations	Ext.	Extension	lb/sy	Pounds Per Square Yard
CFRP	Carbon Fiber Reinforced Polymer	I	F	lbf	Pound force
cfs, CFS	Cubic Feet Per Second	FAC	Florida Administrative Code	LBR	Lime rock Bearing Ratio
CIP, C.I.P. or C-I-P	Cast In Place	FC	Friction Course	LF	Linear Foot (Feet)
CJP	Complete Joint Penetration	Fdn.	Foundation	Lgth.	Length
Ckt.	Circuit	F.L. or F	Flow Line	Long.	Longitudinally or Longitudinal
<u> </u>	Center Line	FI.	Florida	LRFD	Load Resistance Factor Design
CI.	Clearance	FDEP	Florida Department Of Environmental Protection	LRS	Low-Relaxation Strand
CMP	Corrugated Metal Pipe	FDOT	Florida Department Of Transportation	LS	Lump Sum
Con.	Connection	FHWA	Federal Highway Administration	LSD	Lump Sum per Day
Conc.	Concrete	FIB	Florida-I Beam	Lt.	Left
Const.	Construct or Construction	F.S.	Florida Statutes		
Cont.	Continuation or Continuous	FS	Far Side		
Corr.	Corrugated	FSB	Florida Slab Beam		
Cov.	Cover	Ft.	Foot or Feet		
CP	Concrete Pipe	FTP	Florida Traffic Plans		

ABBREVIATIONS

FY 2024-25 STANDARD PLANS

bbreviation	Meaning	Abbreviation	Meaning	Abbreviation	<u>Meaning</u>
M m	Meter	 Pen.	P Penetration	: St. or ST.	S
m²	Meter Square	PPB	Pier Protection Barrier	Sta.	Station
Mach.	Machine	PPP	Polypropylene pipe	Std.	Standard
MAS	Motorist Awareness System	Prest.	Prestressed	Stg.	Strong
MASH	Manual for Assessing Safety Hardware (AASHT0)	PRS	Portable Regulatory Sign	Stl.	Steel
Max.	Maximum	psf	Pounds Per Square Foot	SW	Skewed Angle
MES	Mitered End Section	PSI or psi	Pounds Per Square Inch	Swk.	Sidewalk
М.Н.	Manhole or Mounting Height	PT	Point of Tangency or Pressure Treated	SYM	Symmetrical
MHW	Mean High Water	PTFE	Polytetrafluoroethylene		, Т
Mid.	Middle	PVC	Polyvinyl Chloride	T or t	Thickness, Tangent Distance or Time
Mil or Mils	One-Thousandth Of An Inch		0	Tan	Tangent
Min.	Minimum or Minute	Q	Flow Volume	T&G	Tongue and Groove
Misc.	Miscellaneous	Qty.	Quantity	TCP	Traffic Control Plan(s)
MLW	Mean Low Water		R	TCZ	Traffic Control Zone
mm	Millimeter	R or Rad.	Radius	Temp.	Temperature or Temporary
Mod.	Modification	Rt.	Right	Theo.	Theoretical
MOT.	Maintenance Of Traffic	R/W	Right Of Way	THW or THWN	Insulation (Flame Retardant, Moisture
MPH or mph	Miles Per Hour	RC	Reverse Crown	TTTW OT TTTWIN	And Heat Resistant Thermoplastic)
MPH OF MIPH MUTCD	Manual On Uniform Traffic Control Devices	RCP	Reinforced Concrete Pipe	TMA	Truck/Trailer Mounted Attenuator
		Rd.	Road or Round	TN	Ton
N					Transition or Transverse
N NA or N/A	Standard Penetration Number	Rdwy.	Roadway Retiguing or Rostangular	Trans. TTC	
NA or N/A	Not Available or Not Applicable	Rect.	Reticuline or Rectangular		Temporary Traffic Control
NC	Normal Crown	Ref.	Reference	TVSS	Transient Voltage Surge Suppression
NCHRP	National Cooperative Highway Research Program	Reinf.	Reinforced or Reinforcement	TX	Transmit
NDCBU	Neighborhood Delivery And Collection Box Unit	Req. or Reqd.	Required	Тур.	Typical
NEMA	National Electrical Manufacturers Association	RGS	Rigid Galvanized Steel		U
NHW	Normal High Water	RPM	Raised Pavement Markers	UL	Underwriters Laboratories
No.	Number	R/R or RR	Railroad	UPS	Uninterruptible Power Supply
Nom.	Nominal	RSDU	Radar Speed Display Unit	USPS	United States Postal Service
NPS	Nominal Pipe Size	RU	Rack Unit	Util.	Utilities
NPT	National Pipe Thread	RX	Receive	UV	Ultraviolet
NS or N.S.	Near Side		5		V
NS	Non-Structural	S or s	Speed, Spacing or Second	Veh.	Vehicle
NTS	Not To Scale	Sch.	Schedule	Vert.	Vertical
O		SHBR	Special Height Bicycle Railing	VPD or Vpd.	Vehicles Per Day
O.C.	On Center	Shldr.	Shoulder		N
0 to 0 or 0.0.	Out to Out	SHW	Seasonal High Water	W	Width or Wide
0.B.G.	Optional Base Group	SIP	Stay In Place	WT	Weight
0D or 0.D.	Outside Diameter	SP	Superpave	WWM	Welded Wire Mesh
0z.	Ounce	Spa., Spcg. or Sp.	Space(ing)(s)	WWR	Welded Wire Reinforcing
P		Spec.	Specification		Υ
Pavt.	Pavement	sq	Square	Yd.	Yard
PBR	Pedestrian/Bicycle Railing	Sq. Ft., SF, sf or S.F.	Square Foot	Yr.	Year
PC	Point Of Curvature	sq. in.	Square Inch		
PCC	Plain Cement Concrete	Sq. Yd., SY or S.Y.	Square Yard		
pcf	Pounds per Cubic Foot	SR	State Road		
PCMS	Portable Changeable Message Sign	FSB	Florida Slab Beam		

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000-525	Ramp Terminals	350-001	Concrete Pavement Joints
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102-615	Multilane Roadway, Intersection Work	425-024	Curb Inlet Top - Type 9
102-620	Multilane Roadway, Temporary Diversion	425-025	Curb Inlet Top - Type 10
102-625	Temporary Road Closure	425-030	Median Barrier Inlets Types 1 and 2
102-628	Two-Way Left-Turn Lanes	425-031	Adjacent Barrier Inlet
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102-660	Sidewalk Closure	425-040	Gutter Inlet - Type S
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430-011	U-Type Concrete Endwalls - Baffles and Grate Optional - 15" to 30" Pipe	521-010 Opaque Visual Barrier
430-012	U-Type Concrete Endwall - Energy Dissipator - 30" to 72" Pipe	521-510 Concrete Barrier/Noise Wall (8'-0")
430-020	Flared End Section	521-511 Concrete Barrier/Noise Wall (14'-0")
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570-010	Shoulder Sodding and Turf on Existing Facilities	700-090	Dynamic Message Sign Walk-In
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659-020	Camera Mounting Details	715-010	High Mast Lighting
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665-001	Pedestrian Detector Assembly Installation Details	830-T01	Railroad (Grade) Crossings
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700-030	Wind and Hanger Beams for Overhead Signs		
700-031	External Lighting for Signs		
700-040	Cantilever Sign Structure		

700-041 Span Sign Structure

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Standard Plan Index	Description
102-110	Sheet 2: Updated the ADHESIVE-BONDING MATERIAL SYSTEM Note to "When using adhesive bonding material systems for anchor bolts, use a Type HSHV adhesive meeting the requirements of Section 937 and listed on the APL. Install anchor bolts in accordance with Specification 416. Field testing requirements of Specification 416 do not apply." Sheet 4: Updated the GEOTEXTILE FABRIC Note: "Provide and install Type D-5 geotextile fabric in accordance with Specifications 514 to contain backfill materials behind the barrier units."
102-200	Sheet 2: Changed reference of "Filter Fabric" to "Geotextile". Sheet 3: Changed reference of "Filter Fabric" to "Geotextile".
102-600	Sheet 1: Added symbols legend. Sheet 9: Added left-turn lane closure detail. Quick Reference Sheet: Updated coefficient in Table 8.
102-660	Increase the maximum work zone speed allowed for Option 2 to 45mph.
120-001	Update Note 4 to reference proper testing.
400-010	Sheet 2: Updated the TYPICAL BACK-FILL DETAIL Callout: " Install a continuous 1.5' x 1.5' drain using clean, broken stone or grave, graded and placed to allow free drainage. Provide and install Type D-3 geotextile in accordance with Specifications 514 around the perimeter to prevent fill from washing out."
400-011	Updated GENERAL NOTES: Note 1 - 3 Updated to active voice. Note 5 - Updated "Joint Seal: Provide and install organic bond breaker or Type D-5 geotextile in accordance with Specifications 400 and 514, respectively." Note 6 - Updated reference from Specification 985 to Specification 514. Changed all references of "Geotextile Fabric" to "Geotextile". Changed all references of "Section" to "Specification".
400-289	Sheet 5: Changed the location of the main reinforcing in Detail J and K to be at the correct point of the radius to maximize the effectiveness of the reinforcing; Changed callout "Filter Fabric" to "Geotextile" in DETAIL "B". Sheet 6: Changed callout "Filter Fabric" to "Geotextile" in DETAIL "L". Sheet 7: Changed callout "Filter Fabric" to "Geotextile" in DETAIL "L" and DETAIL "N". Sheet 8: Changed all references "Filter Fabric" to "Geotextile" and changed Specification reference of 985 to 514 in the ASPHALTIC CONCRETE BASE detail.

Standard Plan Index	Description
400-291	All Sheets: Changed all references of "Filter Fabric" to "Geotextile".
400-292	Sheet 1: Changed all references of "Filter Fabric" to "Geotextile". Sheet 7: Changed all references of "Filter Fabric" to "Geotextile".
415-010	Sheet 1: Added hook styles to the reinforcing list.
425-001	Sheet 1: Updated the Table of Contents to reflect title change on Sheet 3. Sheet 3: Added Note "Wrap with geotextile in accordance with Specification 514." to the PIPE TO STRUCTURE FILTER FABRIC WRAP detail; Changed all references of "Filter Fabric" to "Geotextile". Sheet 4: Added Note 4 "Install Type D-3 geotextile in accordance with Specifications 514." to the SUMP BOTTOM detail.; Changed all references of "Filter Fabric" to "Geotextile".
425-031	Sheet 1: General Note 5 altered to specify "If Alternate G grate is specified in the Plans, field installation of a roller bar is not permitted."
425-052	Moved the note about slot placement from the non-traversable inlet details to General Notes. The note and requirement should apply to all the inlets that have slots.
430-001	Sheet 1: Updated Table of Contents to reflect title change on Sheet 3. Sheet 2: In the ROUND CONCRETE PIPE DETAIL, Deleted Notes 1 and 2; Added New Note 1 "Locate the last full wrap of reinforcement within 3 inches of the spigot shoulder and meet ASTM C76 for round pipe."; Updated all Note references; Updated detail to show 3" "Max" dimension. In the ELLIPTICAL CONCRETE PIPE JOINT DETAIL, Added New Note 1 "Locate the last full wrap of reinforcement within 3 inches of the spigot shoulder and meet ASTM C507 for elliptical pipe."; Updated new Note 2 to "Type D-3 Geotextile Jacket is required on both type of joints."; Updated Note 3 to "Details shown before joint is homed."; Added "3" Max (See Note 1)" callout and dimension to both details. Sheet 3: Updated Note 2 "Install Type D-3 geotextile in accordance with Specification 514. Install securing device to hold the geotextile jacket on to the pipe."; Changed all references of "Filter Fabric" to "Geotextile".

Standard Plan Index	Description
430-012	Sheet 1: Added GENERAL Note 5 "Install Type D-2 geotextile fabric in accordance with Specifications 514." Sheet 2: Changed all references of "Filter Fabric" to "Geotextile".
430-022	General Note 1: Added "or use manufacturer approved coupler" on the end. General Note 2: Added "metal" between corrugated and mitered. Delete "either."
440-001	Sheet 1: Updated Note 5 "Install Type D-3 geotextile fabric in accordance with Specification 514."; Changed all references of "Filter Fabric" to "Geotextile". Sheet 2: Changed all references of "Filter Fabric" to "Geotextile". Sheet 3: Changed all references of "Filter Fabric" to "Geotextile".
443-001	Sheet 1: Updated Note 3 "Install Type D-3 geotextile fabric in accordance with Specification 514."; Changed all references of "Filter Fabric" to "Geotextile". Sheet 2: Changed all references of "Filter Fabric" to Geotextile.
446-001	Sheet 1: Updated Note 4 "Provide and install Type D-3 geotextile fabric in accordance with Specifications 514."; Changed all references of "Filter Fabric" to Geotextile. Sheet 3: Moved Note 3 to General Note 4 on Sheet 1; Renumbered Notes; Updated Note references in callout; Changed all references of "Filter Fabric" to "Geotextile". Sheet 4: Moved Note 3 to General Note 4 on Sheet 1; Renumbered Notes; Updated Note references in callout; Changed all references of "Filter Fabric" to "Geotextile".
450-511	Sheet 1: Changed Dimension L to account for the skew angle; Added Dimension "L" on plan; Added note clarifying negative dimension for AASHTO Beam anchor studs.
455-001	Sheet 1: Corrected typo in Note 6.
455-031	Sheet 1: Changed the location of the dowels; Deleted part of note 2 not allowing for corrugated galvanized metal pipe forms.

Standard Plan Index	Description
455-154	Sheet 1: Corrected Note 3 language for clarity.
455-400	Sheet 1: Changed the "PLASTIC FILTER FABRIC" Note in the SHEET PILE DESIGN CRITERIA AND NOTES to "GEOTEXTILE: Provide and install Type D-2 or D-3 geotextile in accordance with Specifications 514. Extend the geotextile to the bottom of the "X" dimension."; Changed all references of "Filter Fabric" or "Plastic Filter Fabric" to "Geotextile".
455-440	Sheet 1: Changed the "PLASTIC FILTER FABRIC" Note in the SHEET PILE DESIGN CRITERIA AND NOTES to "GEOTEXTILE: Provide and install Type D-2 or D-3 geotextile in accordance with Specifications 514. Extend the geotextile to the bottom of the "X" dimension."; Changed all references of "Filter Fabric" or "Plastic Filter Fabric" to "Geotextile".
458-110	Sheet 1: Changed annotation about form material to indicate it should be removed completely.
509-070	Sheet 1: Change General Note 5, Class VI to 3-4; Delete Type V and Type VI from Traffic Control Devices for Flush Shoulder Roadway Details. Sheet 3: Change 12'-5'' min in PLAN; Change 51" Max to 57" Min in Median Section at Signal Gates Detail.
521-001	Sheet 2: Revised note 5 to accommodate "shoulder rocking".
521-510	Sheet 4: Corrected reinforcing steel estimated quantities.
521-511	Sheet 1: Updated references to notes. Sheet 3: Corrected reinforcing steel estimated quantities.
521-513	Sheet 2: Corrected reinforcing steel estimated quantities.
521-650	Sheet 1: Table 1 - Changed the column headings to "Top of Pedestal Height (Ft.)" and "Luminaire Mounting Height"; Note 10 - Added Index 521-611 reference. Sheet 3: Detail "A" - Added minimum depth for base plate; Added new Anchor Plate Detail.

Standard Plan Index	Description
524-001	Sheet 1: Updated GENERAL NOTE 5 "Select appropriate geotextile based on the application type referenced in Specification 985 and install in accordance with Specification 514 under all ditch pavement except for miscellaneous asphalt." Sheet 2: Changed "Filter Fabric" to "Geotextile" in Table 1. Sheet 3: Changed all references of "Filter Fabric" to "Geotextile".
536-001	ALL Sheets: Renumbered all notes and sheet borders to account for new Sheet 21. Sheet 1: Updated Table of Contents to add new Sheet 21; Modified General Note 4 to remove the need for washers at panel splices and steel post flanges. Sheet 5: Removed Modified Thrie-Beam reference in Note 6 Sheet 18: Revised to increment Sections F-F to H-H and G-G to I-I Sheet 19: Revised to increment Section H-H to J-J Sheet 20: Added new reference for trailing end curb options in Note 1 Sheet 21: New Sheet Added new Index Sheet for "Trailing End Transition Connection to Rigid Barrier - Curb Connections" (Curb Options).
546-001	Removed the option for stacking multiple applications of preformed thermoplastic to achieve a height of 1/2" for Raised Rumble Strips. Included a 6" offset from the end of the rumble strips to lane lines.
550-011	All Sheets: Change Index title.
550-012	Sheet 1: Replaced the 7'-5" dimension because the calculated dimension is off by 3/8" and the dimension varies depending on clear width; Removed the 5'-5" dimension because it varies; Revised the Clear Width note from 5ft min to add 12 ft max.
550-013	All Sheets: Change Index title.
630-010	Sheet 1: Revised conduit call out to remove material specification.
639-001	Sheet 1: Added pole dimensions for the new Type P-IID concrete pole option in Detail B; Removed height dimensions for the meter and service disconnect in Details A and B; Added reference to Note 6 in the meter and service disconnect callouts in Details A and B; Added Note 5 to reference Index 641-010 for prestressed concrete pole details and explain optional pole usage; Added Note 6 to provide height information for the meter and service disconnect.

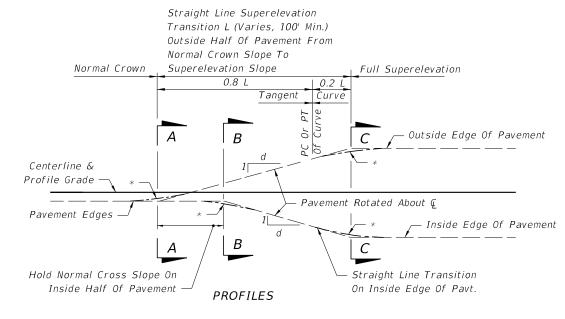
Standard Plan Index	Description
641-020	Sheet 2: Added note allowing additional strand pattern and updated associated tables. Sheet 3: Added a new strand pattern.
646-001	Added Note 6, "In lieu of footing design shown, a Spread Footing may be used in accordance with index 700–120."
649-010	Sheet 1: Changed phrase from "full-penetration groove" to "complete joint penetration; Changed note 1 and revised Section A-A to add clarity to anchor bolt nuts. Sheet 3: Changed weld detail to say "CJP."
649-020	Sheet 1: Changed phrase from "full-penetration groove" to "complete joint penetration. Sheet 3: Changed note 2 and revised Section A-A to add clarity to anchor bolt nuts. Sheet 4: Changed weld detail to say "CJP."
649-031	Sheet 1: Changed phrase from "full-penetration groove" to "complete joint penetration." Sheet 2: Changed note 3 and revised Section A-A to add clarity to anchor bolt nuts. Sheet 3: Added a note about the diameter of the female splice. Sheet 4: Changed weld detail to say "CJP." Sheet 6: Changed weld detail to say "CJP."
654-001	Update Note 4; Added Note 12, "In lieu of footing design shown, a Spread Footing may be used in accordance with index 700-120."
676-010	All Sheets: Renumbered Sheet 1: Deleted Existing Controller Cabinet detail and Notes Sheet 3: Updated Metal Pole to have an ITS Cabinet Sheet 4: New sheet for Ground Mounted Controller Cabinet Riser.

Standard Plan Index	Description
695-001	Sheet 1: Added modem antenna to cabinet; Removed "furnished separately" from Backplane callout; Moved J1 Mounting Bracket Details to Sheet 18; Added Table of Content; Updated Note 1D from "J1" to "P1"; Updated Note 4 to read "Provide and install Speed/Classification Unit, Modem, and Antenna"; Updated Note 5 to be consistent with other sheets; Updated Note 6 to read "Provide and install a 12-fiber single mode cable, a 12-port patch panel, and a managed field Ethernet switch." Titled sheet Continuous Count Station Traffic Monitoring Site - TTMS/CCS." Sheet 2: Added modem antenna to cabinet; Removed "furnished separately" from Backplane callout; Updated Note 1D from "J1" to "P1"; Updated Note 4 to read "Provide and install Speed/Classification Unit, Modem, and Antenna."; Update Note 5 to be consistent with other sheets; Updated Note 6 to read "Provide and install a 12-fiber single mode cable, a 12-port patch panel, and a managed field Ethernet switch." Titled Sheet "Continuous Count Station Traffic Monitoring Site - TTMS/CCS"; Changed Veh. Sensor Term. Strip to Piezo Sensor Terminal Strip. Sheet 3: Titled sheet for Continuous Count Station Traffic Monitoring Site - TTMS/CCS"; Changed Veh. Sensor Term. Strip to Piezo Sensor Terminal Strip. Sheet 4: Titled sheet for Continuous Count Station Traffic Monitoring Site - TTMS/CCS; Titled details "Pinout Chart, Receptacles, and Plug Details"; Corrected Equipment Cable Plug table to P1. Sheet 5: Added "Traffic Flow" in each lane; Updated Note #3 to read "Twist loop leads at the rate of 8 to 16 twists per foot. Extend the twisted pair loop wire directly to the cabinet. No splicing of the loop leads will be permitted." Deleted Note #6; Moved DETAILS "A THRU 'C' to Sheet 18; Titled sheet "Continuous Count Station Traffic Monitoring Site - TTMS/CCS - Lane Layout for TTMS/CCS Inductive Loop and Axle Sensors"; Updated callouts to specify "non weight" axle sensors; Renumbered notes. Sheet 6: New Sheet 11 - Weigh-In-Motion Monitoring Site - PTMS - Cabinet Layout Details (Four

Standard Plan Index	Description			
695-001 Cont.	Sheet 8: New Sheet 19 - Non-Intrusive Vehicle Sensor; Added Note 4 - "Cabinet, ground rod pull box, and maintenance service slab installed per Index 676-001, except cabinet center will be 4 feet above grade."; Added Maintenance Service Slab and Pull Box for ground rod to the ELEVATION detail. NEW Sheet 8: Short Term Traffic Monitoring Site - PTMS - Lane Layout for TMS Inductive Loop and Axle Sensors. Sheet 9: New Sheet 20 - Added Title "Solar Power Pole with Pole Mounted Cabinet and Pedestal Mounted Cabinet Details"; Updated Note 1 to read "Cabinet, ground rod pull box, and maintenance service slab installed per Index 676-001, expect cabinet center will be 4 feet above grade."; Added Maintenance Service Slab and Pull Box for ground rod to the two ELEVATION details; Deleted ground rod clamps and added exothermic weld call out; Updated the DETAILS lettering sequence. NEW Sheet 9: Weigh-In-Motion Monitoring Site - Cabinet Layout Details (Four Lanes or Less). Sheet 10: New Sheet - Weigh-In-Motion Monitoring Site - Cabinet Backplane Details. Sheet 11: New Sheet - Previous Sheet 6. Sheet 12: New Sheet - Non-Motorized Monitoring Site - Cabinet Sideplane and Cabinet Backplane Details. Sheet 13: New Sheet - Non-Motorized Monitoring Site - Narrow Side Path Configurations. Sheet 14: New Sheet - Non-Motorized Monitoring Site - Large Shared Use Path Configurations. Sheet 15: New Sheet - Non-Motorized Monitoring Site - Extra Large Shared Use Path Configurations. Sheet 16: New Sheet - Non-Motorized Monitoring Site - Paved Sidewalk Configuration. Sheet 17: New Sheet - Previous Sheet 8. Sheet 20: New Sheet - Previous Sheet 9.			
700-010	Sheet 5: Change minimum Driven Post Hole Diameter to 12" and added Note 2 about an alternate post hole shape. Sheet 9: Changed second sign from top on 3rd column (right column from 2 digit US Shield to 3 digit US Shield. Changed sign image.			

Standard Plan Index	Description			
700-011	Changed the first column to have sign size of Width x Height rather than Height x Length. The four dimensions under the heading will need to be reversed to make this change complete.			
700-020	Sheet 1: Revised bolts in the Hanger Beams to show correctly; Changed all reference of length to width and depth to height. Sheet 2: Added Foundation Notes to allow for precast concrete foundation with an octagon shape as a substitute for the circular shaped foundation shown. Sheet 3: Revised bolts in the Hanger Beams to show correctly; Changed all reference of length to width and depth to height.			
700-030	Sheet 1: Corrected CADD error not showing the bolts in the Hanger Beams correctly; Added language to Detail B bolt call out to clarify number of bolts required; Changed all reference of length to width and depth to height.			
700-090	Sheet 4: Changed weld detail to say "CJP."			
700-101	Add reflective strip to post on WWD sign Case X.			
700-102	For signs $G20-1$ and $G20-2$ changed the dimension from height x width to width x height $(4'x2')$.			
700-110	Added missing callout; Added additional callouts for clarity: Changed all reference lengths to width to keep consistent with MUTCD.			
700-120	Sheet 3: New Sheet - Spread Footing Foundation Sheet 12: New Sheet - Roadside Sign Assembly - 9 Sheet 13: New Sheet - Roadside Sign Assembly - 10 Sheet 14: New Sheet - Roadside Sign Assembly - 11			
711-003	Sheet 1: Deleted 18" white hash marks.			
715-001	Sheet 1: Deleted the "Access Panel" drawing and added a "Pole Base" callout on the 'Metal Pole Wiring Detail'. Added the "Access Door" drawing and a "Pole Base" callout on the 'Metal Pole Detail'.			

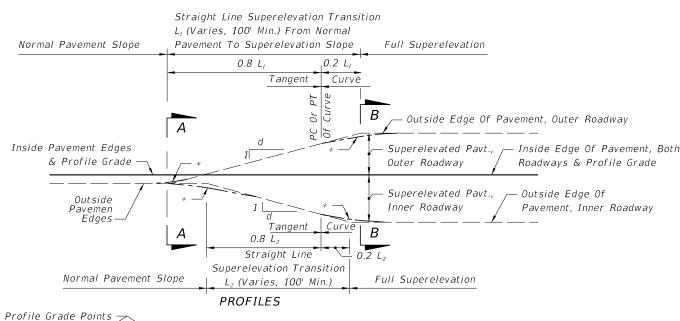
Standard Plan Index	Description		
715-002	Sheet 4: Added Shaft Foundation Note 3 to allow for concrete foundation with an octagon shape as a substitute for the circular shaped shaft that's shown. Sheet 5: Added new structural grout pad details to the plan and section view. Added new note 9 to explain structural grout pad construction and reference specification. Sheet 6: Changed weld detail to say "CJP."		
715-003	Sheet 3: Added Foundation Note 3 to allow for precast foundation with an octagon shape as a substitute for the circular shaped shaft foundation shown.		
715-010	Sheet 1: Changed phrase from "full-penetration groove" to "complete joint B70penetration. Sheet 2: Added Table numbers. Sheet 3: Corrected the welding arrows on Section A-A and C-C to be consistent with AWS; Added note to Section CC that silicone caulk should be done after galvanizing; Changed weld detail to say "CJP."		

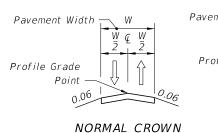


SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS DESIGN SPEED, MPH NUMBER OF LANES IN ONE 25-40 | 45-50 | 55-60 | 65-70 DIRECTION l Lane & 2 Lane 1:175 1:200 | 1:225 | 1:250 1:160 | 1:180 | 1:200 3 Lane 1:150 | 1:170 | 1:190 4 Lane or More

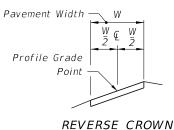
The length of superelevation transition is to be determined by the relative slope between the travel way edge of pavement and the profile grade, except that the minimum length of transition shall be 100 ft.

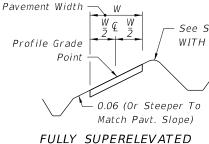
* Short Vertical Curves Are To Be Used On Construction To Avoid Angular Breaks In Edge Profiles





SECTION AA





SECTION CC

See SHOULDER CONSTRUCTION WITH SUPERELEVATION

THESE TRANSITION DETAILS ARE TO APPLY IN ALL CASES, EXCEPT UNDER THE FOLLOWING CONDITIONS:

- 1. Curves of insufficient length.
- 2. Insufficient tangent length between curves.
- 3. Deficient transition distance between a curve and other control point(s).
- 4. At PCC's or PRC's (Runoff rates are applicable).

Pavement Width Median — Pavement Width Slope As Indicated On Plans NORMAL SECTION

SECTION AA

0.06 (Or Steeper To Match Pavt. Slope) See SHOULDER CONSTRUCTION WITH SUPERELEVATION

Profile Grade Points

FULLY SUPERELEVATED SECTION BB

See SHOULDER CONSTRUCTION

WITH SUPERELEVATION

0.05 (Or Steeper To

Match Pavt. Slope)

2-LANE, 4-LANE OR 6-LANE PAVEMENT, NO MEDIAN

SECTION BB

Transitions for these exceptions are to be as detailed in the plans.

2-LANE, 4-LANE OR 6-LANE PAVEMENT WITH MEDIAN

SUPERELEVATION TRANSITIONS =

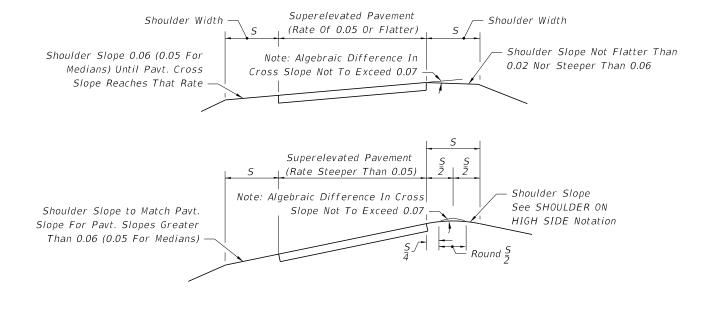
SYMBOL:

Direction of Traffic

DESCRIPTION:

NOTES:

- 1. These details apply to both paved and grassed shoulders. For median shoulders use 0.05 in lieu of 0.06.
- 2. SHOULDER ON HIGH SIDE: A shoulder slope of 0.06 downward from the edge of travel way will be maintained until a 0.07 break in slope at the pavement edge is reached due to superelevation of the pavement. As the pavement superelevation increases, the 0.07 break in slope will be maintained and the shoulder flattened until the shoulder slope reaches the minimum of 0.02 downward from the edge of travel way. Any further increase in pavement superelevation will necessitate sloping the inside half of the shoulder toward the travel way and the outer half outward, both at 0.02 for superelevations 0.06-0.09 and both at 0.03 for superelevation 0.10. For shoulders with paved widths 5 feet or less see Special Shoulder Break Over Details on Sheet 2 of 2.
- 3. SHOULDER ON LOW SIDE: Maintain 0.06 cross slope across shoulder until pavement cross slope reaches 0.06. For pavement cross slopes greater than 0.06, shoulder to have same slope as pavement. See SHOULDER SLOPES ON SUPERELEVATION SECTION (Sheet 2).



SHOULDER CONSTRUCTION WITH SUPERELEVATION =

LAST REVISION 11/01/23

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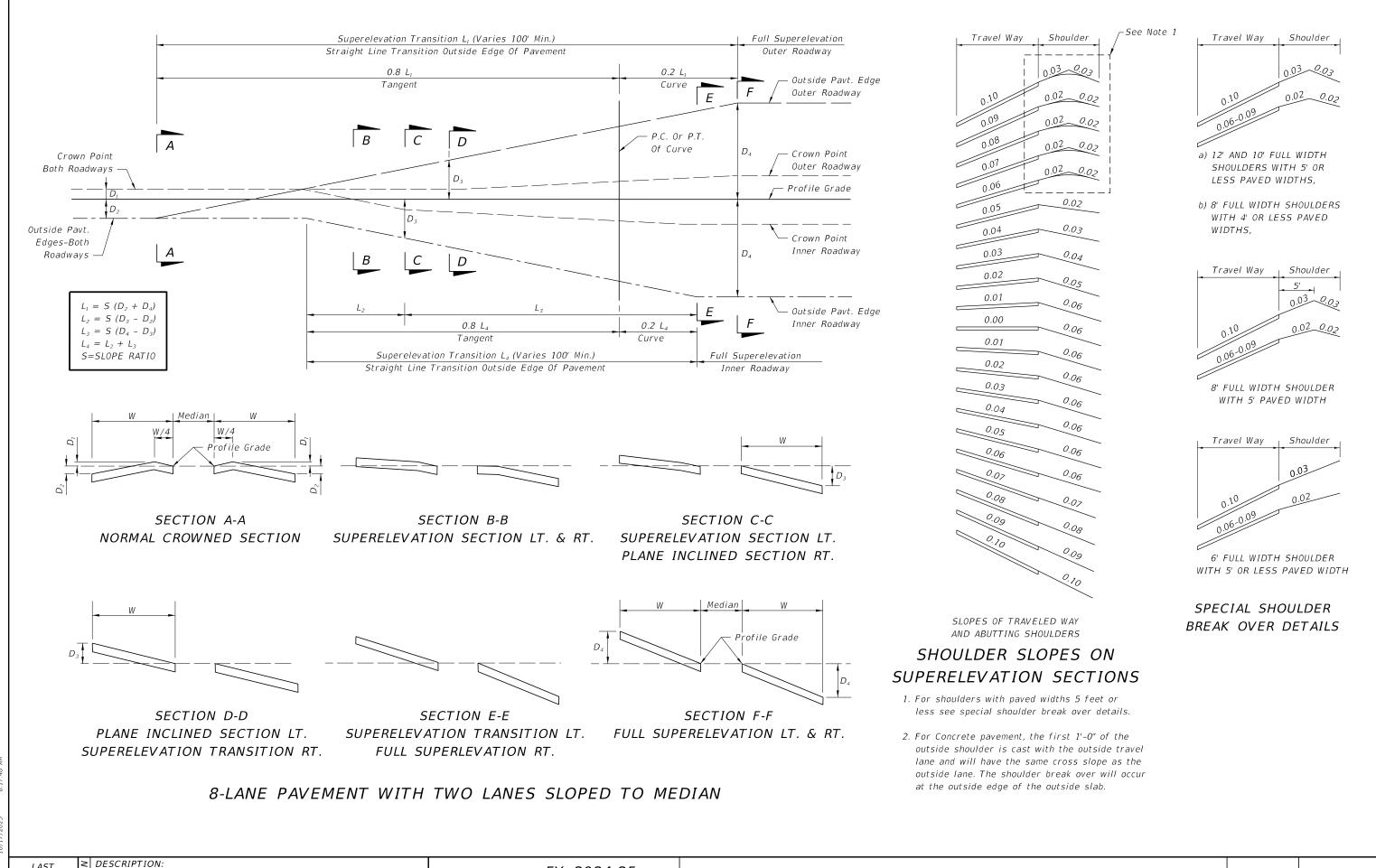
FY 2024-25 STANDARD PLANS

SUPERELEVATION TRANSITIONS -HIGH SPEED ROADWAYS

INDEX

SHEET

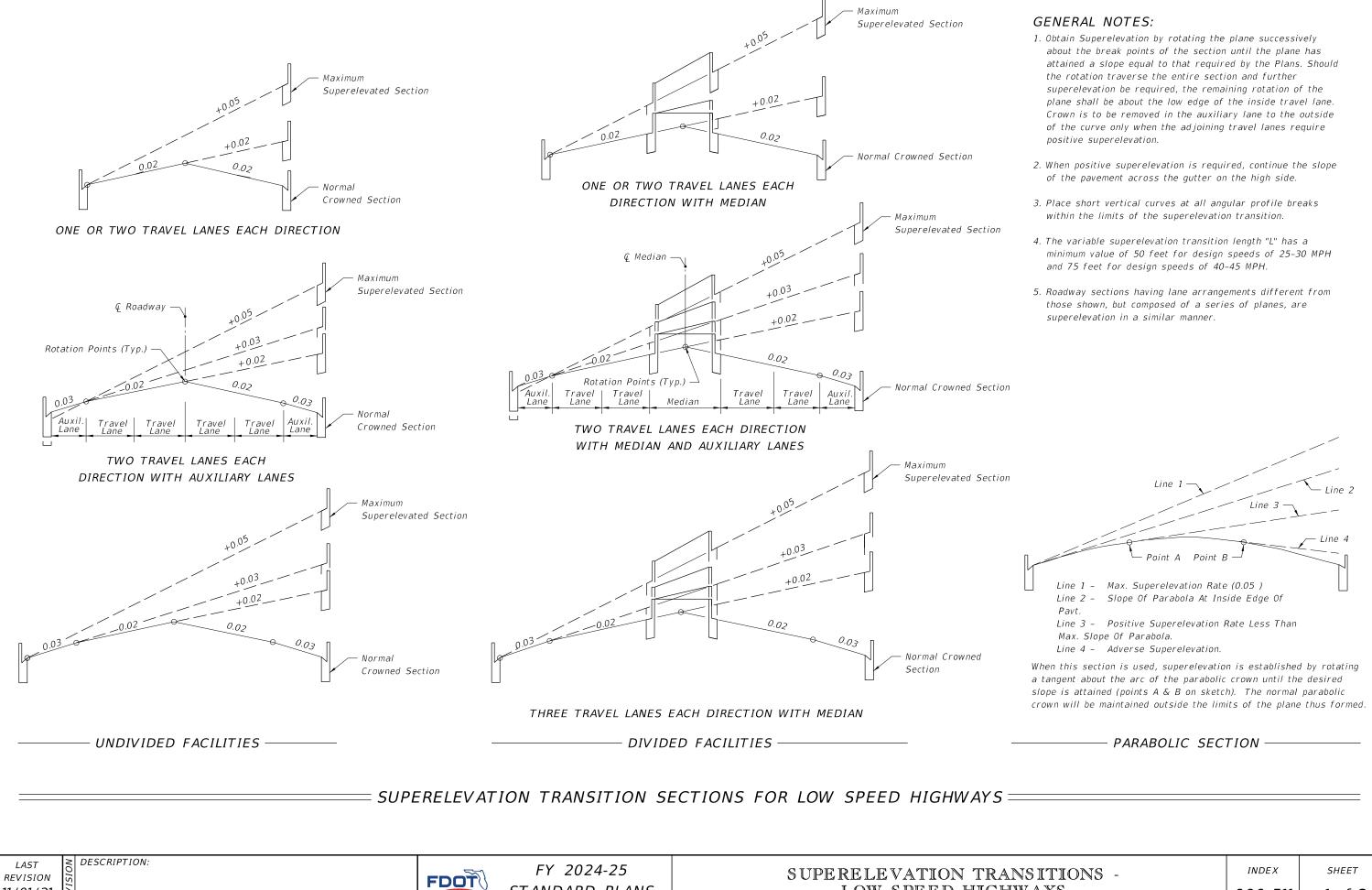
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REVISION 11/01/18

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2 of 2

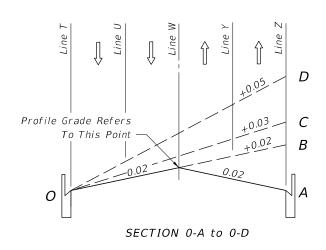


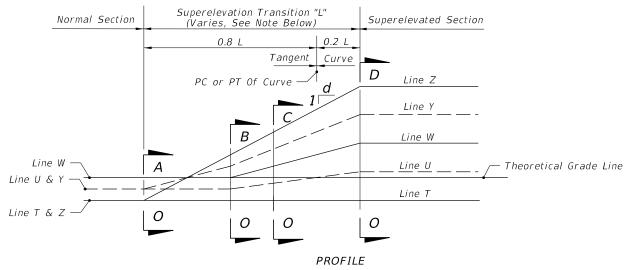
11/01/21

NOTE:

The sections and profiles shown are examples of superelevation transitions. Similar schemes should be used for roadways having other sections.

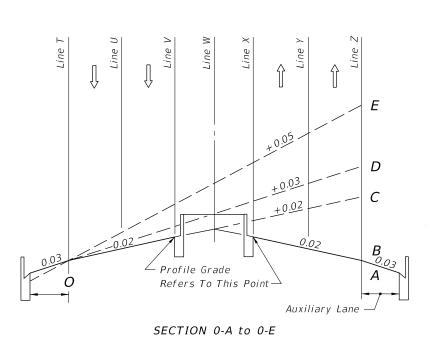
LINE	DESCRIPTION			
T	Inside Travel Lane			
U	Inside Lane Line			
V	Inside Median Edge Pavement			
W	© Construction			
X	Outside Median Edge Pavement			
Y	Outside Lane Line			
Z	Z Outside Travel Lane			
Inside And Outside Are Relative				
To Curve Center				

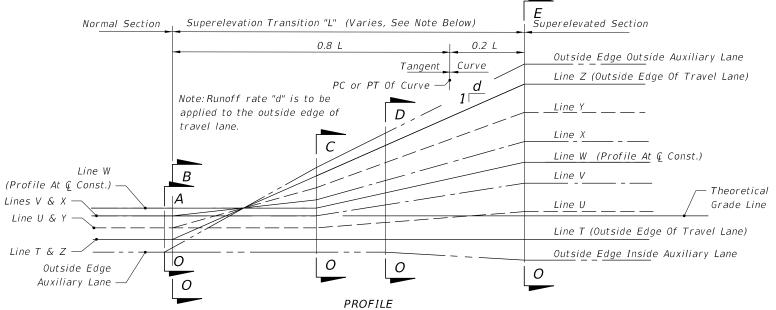




TWO LANES EACH DIRECTION-

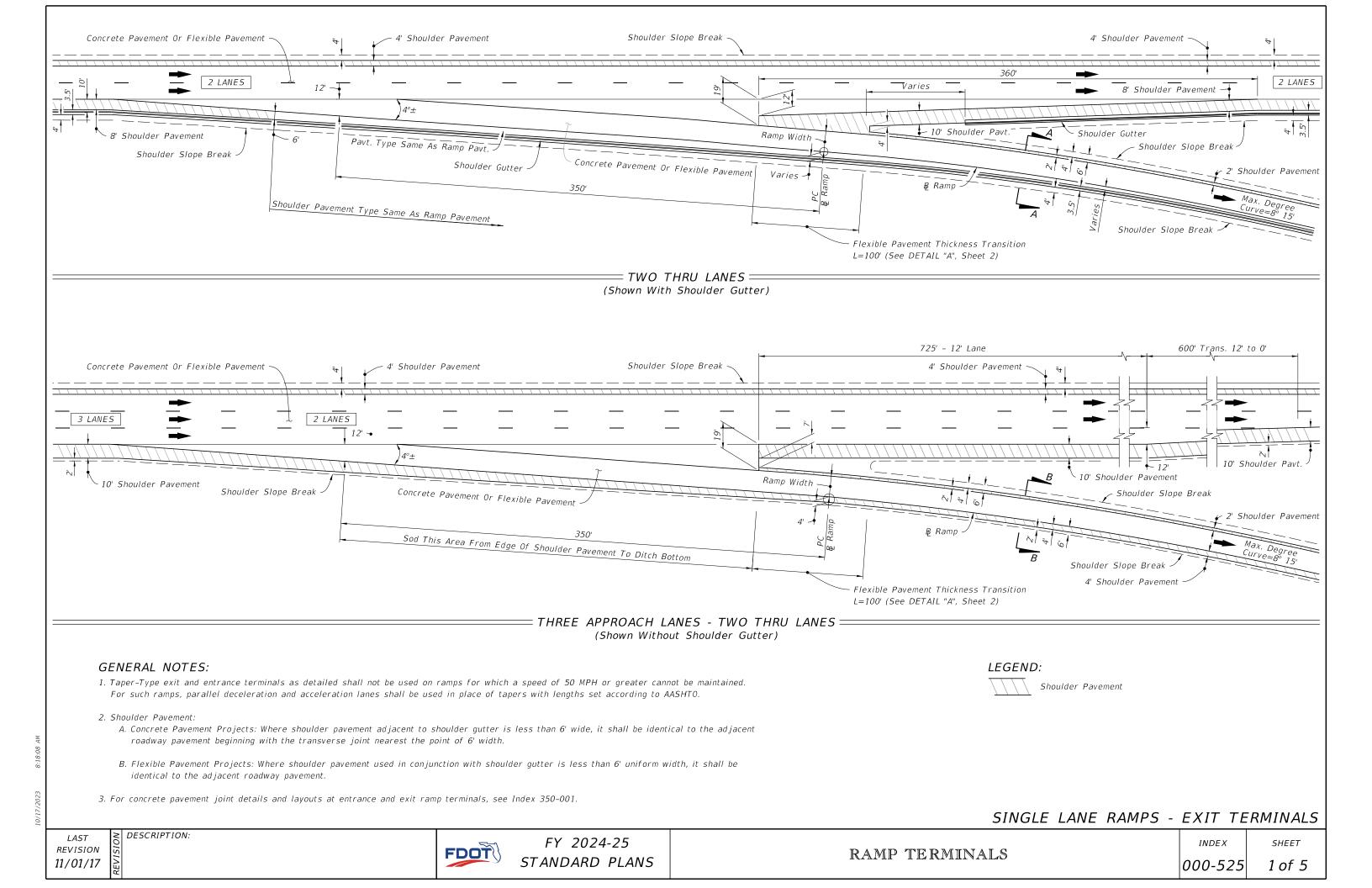
SLOPE RATIOS FOR **SUPERELEVATION** TRANSITIONS DESIGN SPEED 1:d MPH25-35 1:100 40 1:125 45 1:150 1:125 May Be Used For 45 mph Under Restricted Conditions.

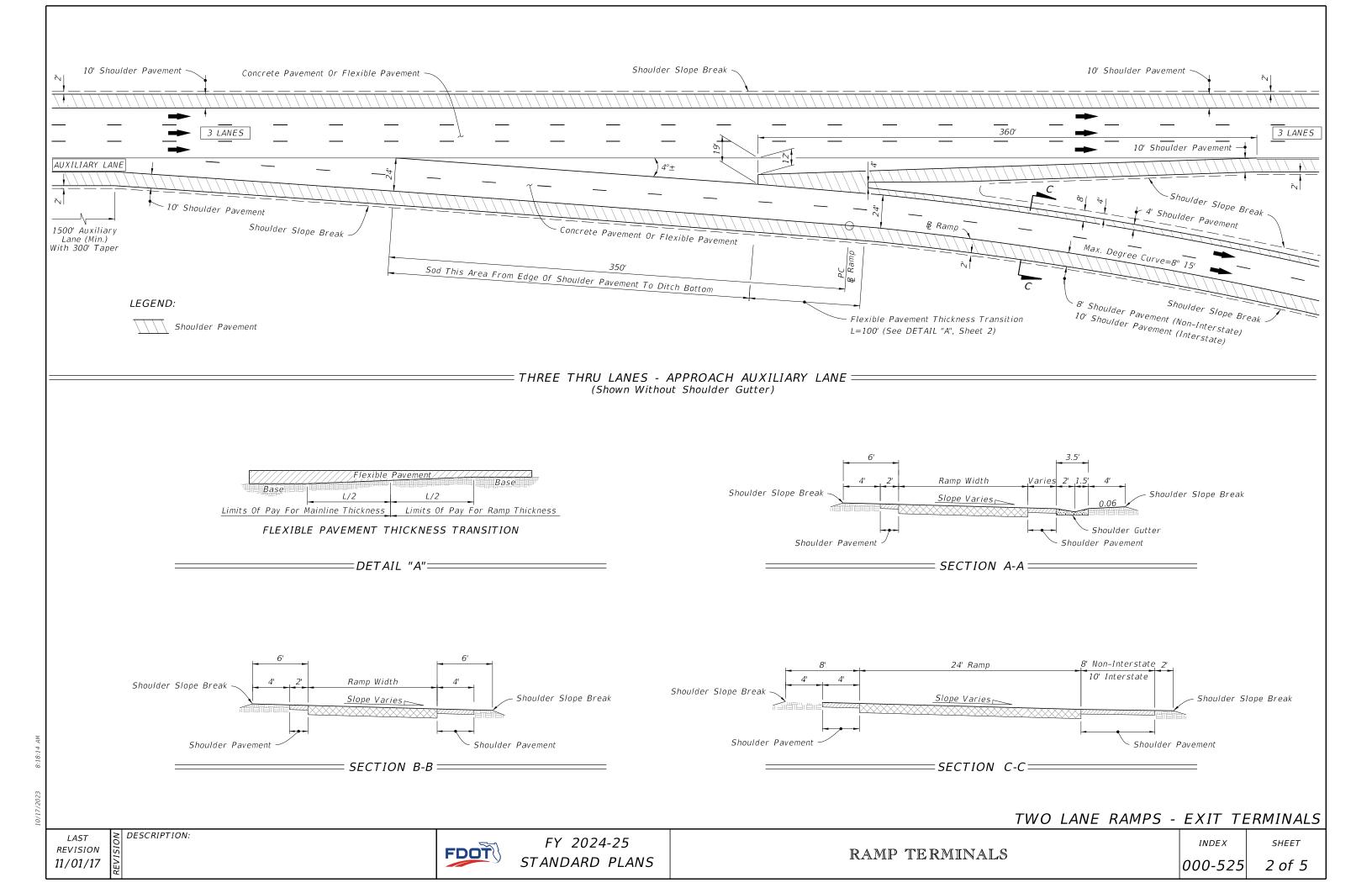


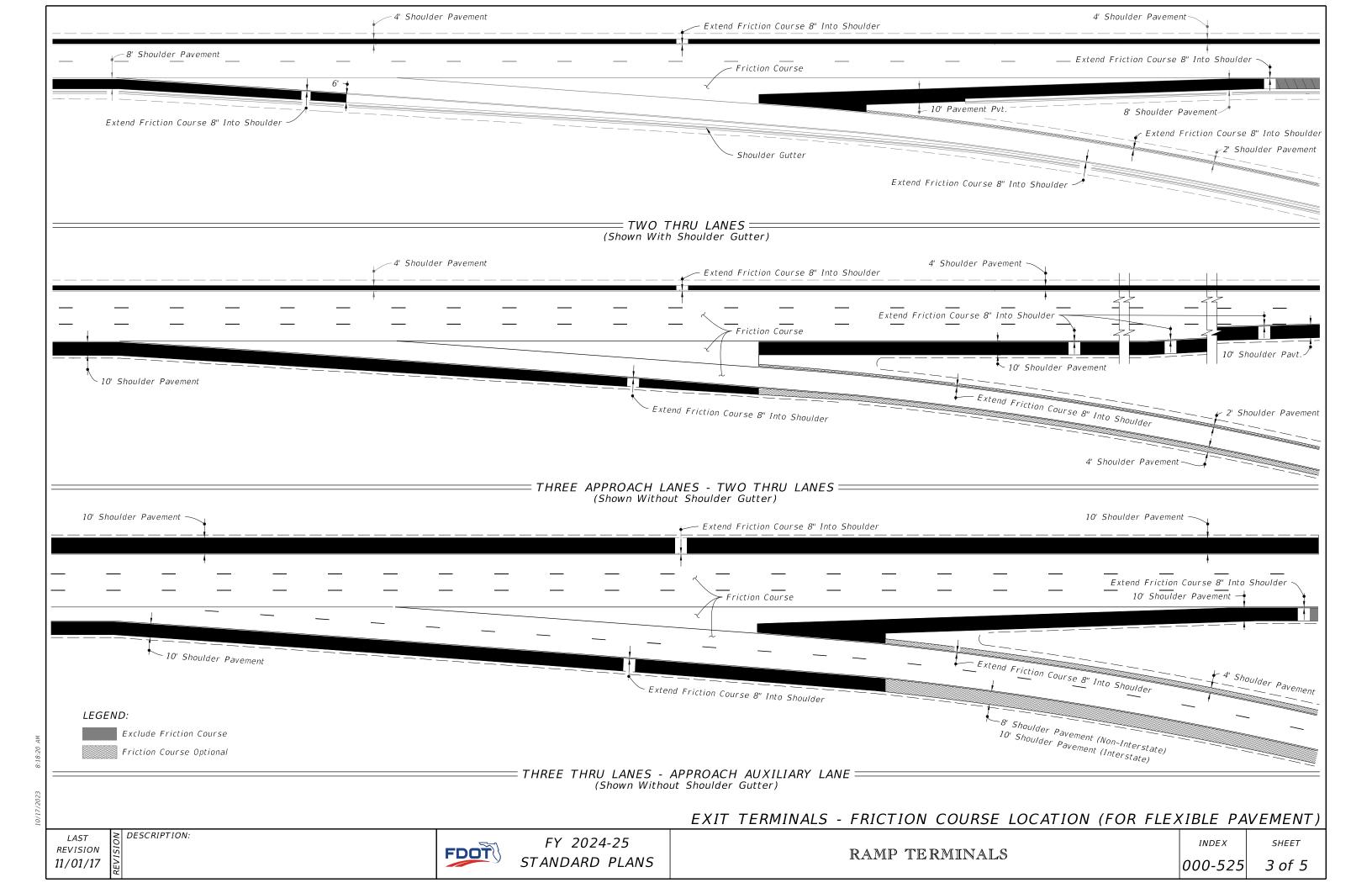


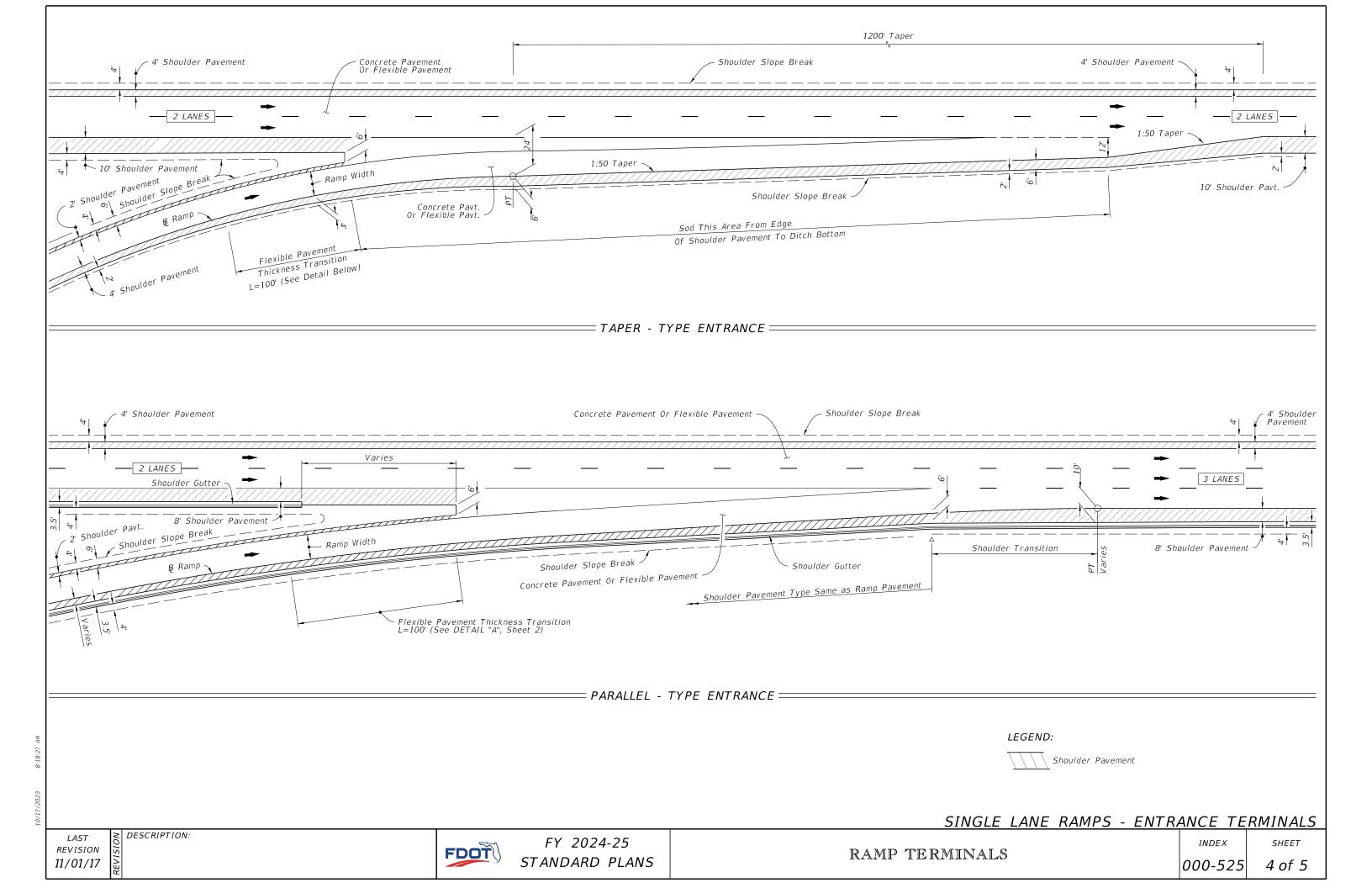
-TWO LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANE

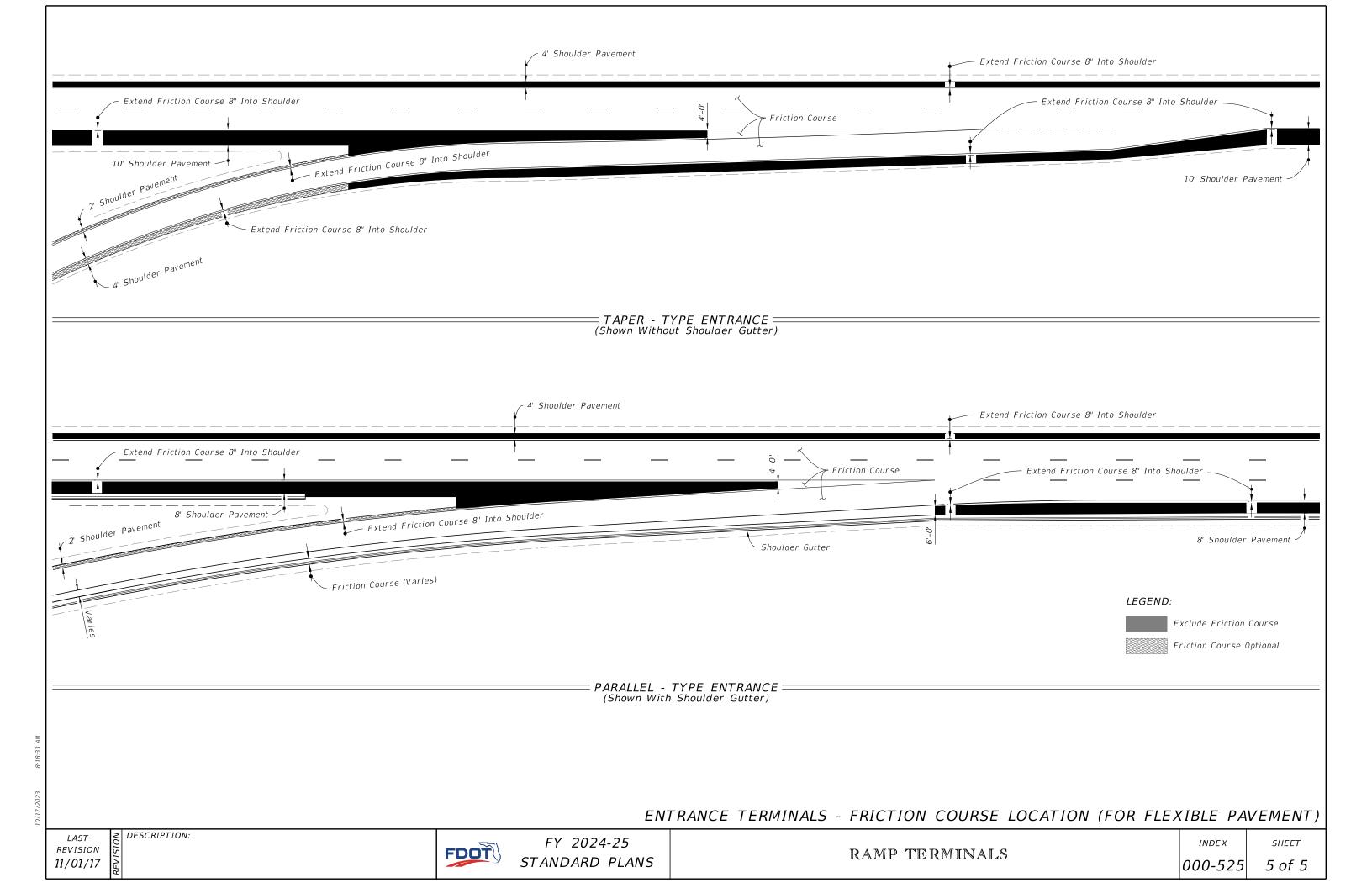
EXAMPLE SUPERELEVATION SECTIONS AND PROFILES FOR LOW SPEED HIGHWAYS =







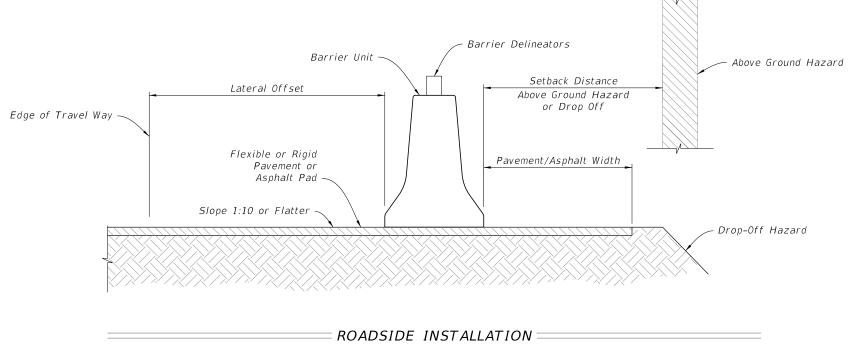


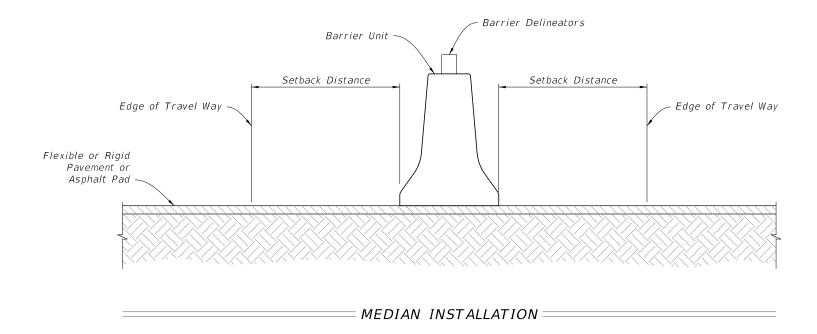


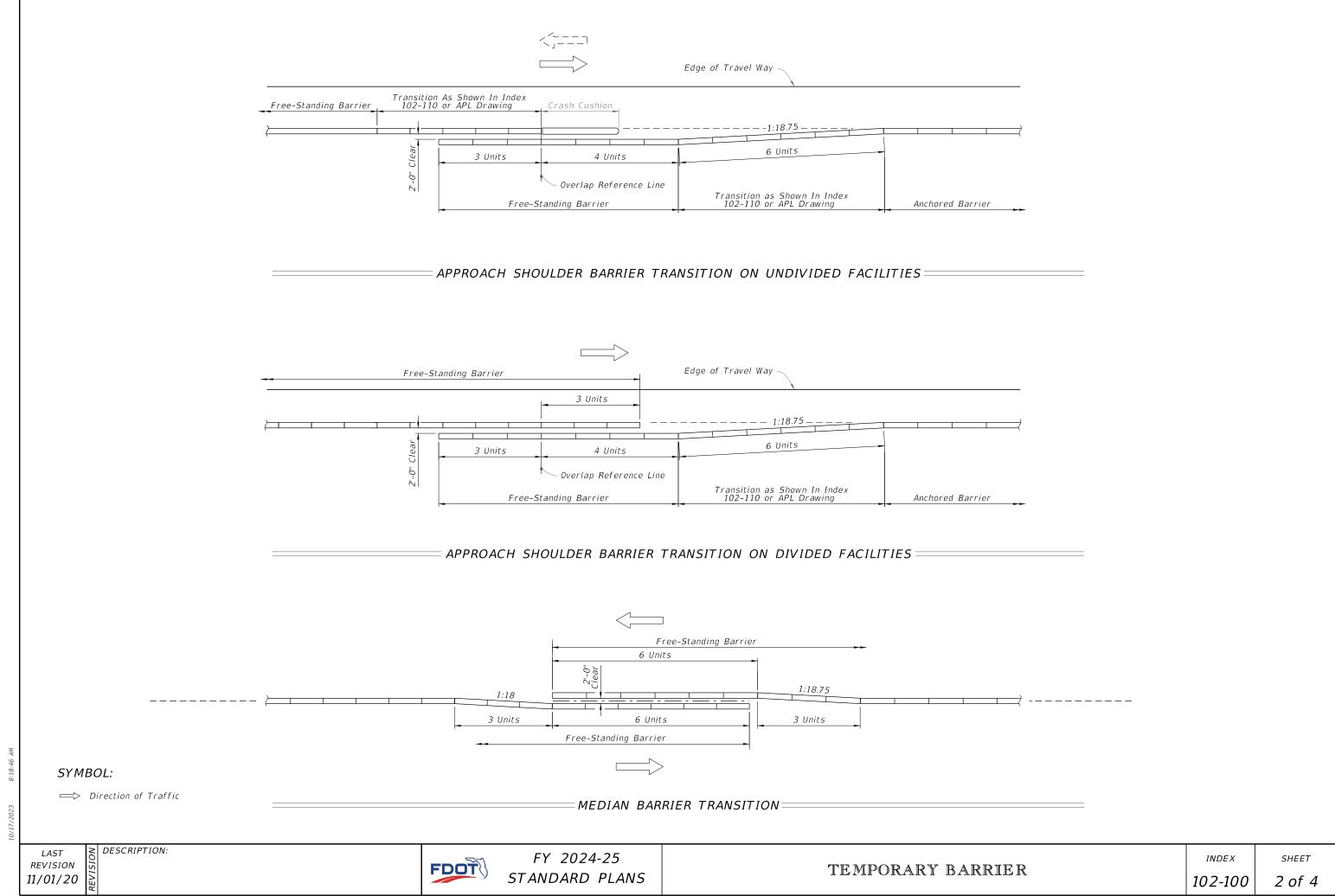
GENERAL NOTES:

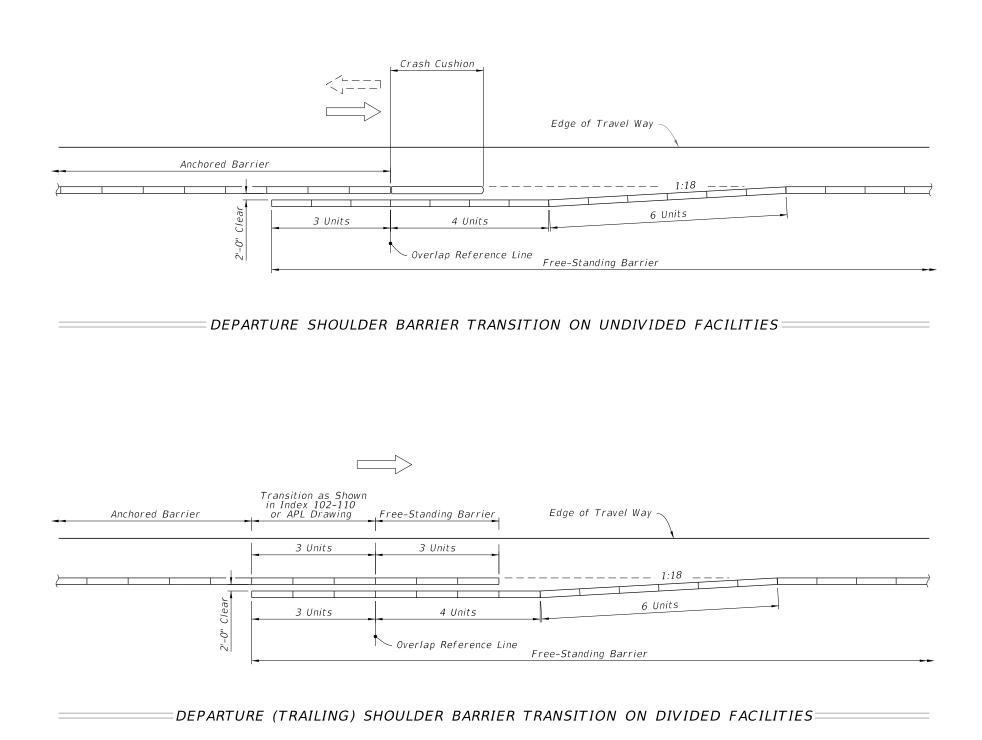
- 1. Temporary barrier systems may be any of the following:
 - A. Type K Temporary Concrete Barrier System (Index 102-110) installed as either Free-Standing or Anchored.
 - B. Proprietary Temporary Barrier Systems on the Approved Product List (APL).
 - a. Concrete Barrier (Free-Standing or Anchored)
 - b. Steel Barrier (Anchored)
 - c. Water Filled Barrier (Free-Standing)
- 2. Where existing flexible pavement is not present, construct a minimum 2" thick temporary Asphalt Pad using Miscellaneous Asphalt Pavement in accordance with Specification 339 with the exception that the use of a pre-emergent herbicide is not required.
- 3. For Barrier Delineators, see Specification 102. Mount on top of temporary barriers. Color must match adjacent longitudinal pavement marking.
- 4. Remove all grass debris, loose dirt, and sand for the pavement, bridge deck, or asphalt pad surface within the barrier footprint just prior to placement of the temporary barrier.
- 5. Ensure the setback distance is clear of any grass, construction debris, stockpiled materials, equipment, and objects.
- 6. Transitions are required between Type K Barrier and free-standing, anchored, back-filled or other types of temporary barrier. See Index 102-110 for transitions between Type K Barrier and permanent bridge or traffic railing. Refer to the APL for transitions allowed for Proprietary Temporary Barrier Systems.
- 7. Anchoring (Bolting) of temporary barrier or crash cushions is not permitted on bridge superstructures that contain post-tensioned tendons within the concrete deck (top flange of concrete box girders) or on bridge superstructures consisting of longitudinally prestressed, transversely post-tensioned, solid or voided concrete slab units.
- 8. Anchor abutting segments of temporary barrier terminated with a Crash Cushion as shown in Index 102-110
- 9. The requirements of this Index do not apply to Temporary Low Profile Barrier, See Index 102-120.
- 10. Setback requirements below cover most Temporary Barrier options. Provide additional setback distance for APL products that require additional setback (deflection) space.

INSTALLATION DATA						
CONDITION	LATERAL OFFSET	SETBACK DISTANCE	PAVEMENT/ ASPHALT WIDTH			
Anchored	2' Min.	2' Min. (See Note)	1' Min.			
Free-standing	2' Min.	4' Min.	4' Min.			
NOTE: For Bridge Decks see Index 102-110 or APL.						







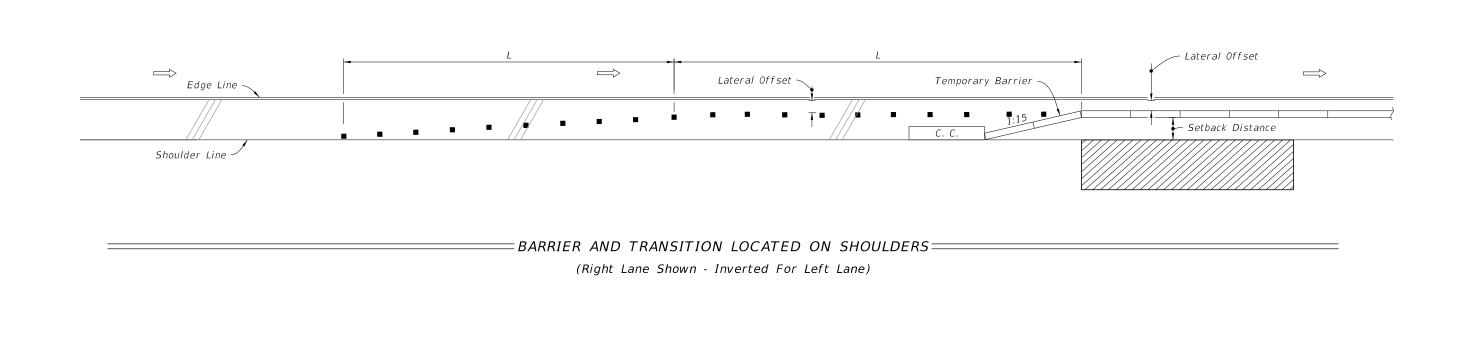


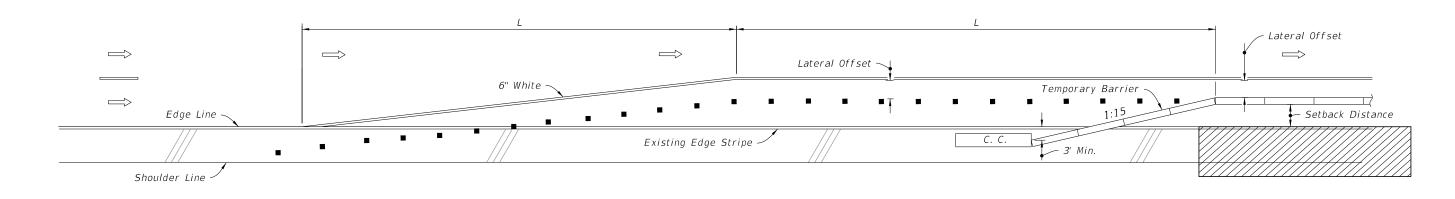
SYMBOL:

□⇒ Direction of Traffic

DESCRIPTION: REVISION 11/01/20

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BARRIER AND TRANSITION WITH LANE DROP ON MULTILANE FACILITIES=

(Right Lane Merge Left Shown - Inverted For Left Lane Merge Right)

NOTE:

L = Taper Length, See Index 102-600 for "L" and channelizing device spacing values.

SYMBOLS:

Work Area

■ Channelizing Device (See Index 102-600)

C. C. Crash Cushion

DESCRIPTION:

Lane Identification and Direction of Traffic

LAST REVISION 11/01/20

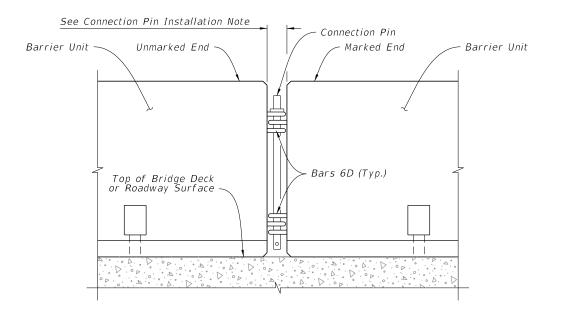
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GENERAL NOTES:

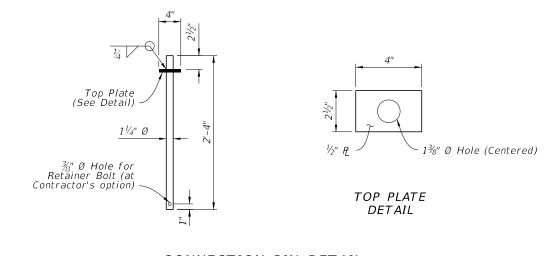
- 1. Meet the requirements of Index 102-100.
- 2. For fabrication details see Sheets 15 thru 17.
- 3. <u>HANDLING</u>: Do not lift or move the Barrier Units by using Bars 6D that extend from the ends of the units. Approximate weight of one unit equals 2.7 tons.
- 4. <u>CONNECTION PIN ASSEMBLY</u>: Use steel for Connection Pin and Top Plate assemblies in accordance with ASTM A36 or ASTM A709 Grade 36. Nondestructive testing of welds is not required. At the Contractor's option, a ¾" diameter hole may be provided at the bottom of the Connection Pin, as shown, for the installation of a vandal resistance bolt.
- 5. <u>CONNECTION PIN INSTALLATION</u>: Initially set Barrier Units by using a 3½" wooden block between ends of adjacent units. Install Connection Pin between adjacent Barrier Units as shown, then pull newly placed Barrier Unit away from adjacent Barrier Unit to remove slack between Connection Pin and Bars 6D (except as shown on Sheet 2). Do not use Barrier Units unconnected.
- 6. REUSE OF CONNECTION PINS AND STAKES: Connection pins and stakes may be reused if they have the structural integrity of new pins.
- 7. <u>REMOVAL OF BOLTS, STAKES AND KEEPER PINS:</u> Upon removal or relocation of Barrier Units, remove all Anchor Bolts and completely fill the remaining holes in bridge decks, approach slabs and roadway rigid pavements that are to remain with Magnesium Ammonium Phosphate Concrete in accordance with Specification 930 or with an Epoxy Resin Compound, Type F or Q, in accordance with Specification 926. If a flexible pavement is present and is to remain, completely fill the remaining holes in the flexible pavement with hot or cold patch asphalt material.
- 8. <u>TYPE K ANCHORED TO FREE-STANDING TRANSITIONS</u>: Use the 3-3-2-1 Anchorage Transition Detail when transitioning Free-Standing and Anchored Units or when connecting Free-Standing runs to Crash Cushions, as shown in this Index.

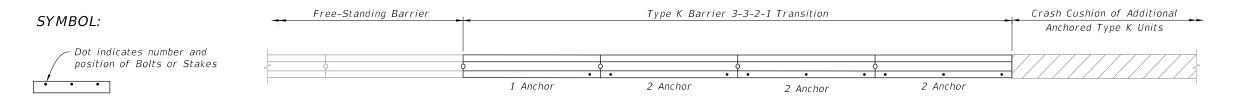
THRIE-BEAM GUARDRAIL SPLICE INSTALLATION NOTES:

- 1. <u>THRIE-BEAM GUARDRAIL:</u> Provide Thrie-Beam Guardrail for splices meeting the requirements of specification 967 and as follows: Two panels per splice (One panel per side) of Class B (10 Gauge), or Four panels per splice (Two nested panels per side) of Class A (12 Gauge). Use a 12'-6" guardrail panel. Provide and install all other associated metallic guardrail components (Terminal Connectors, Shoulder Bolts, Hex Bolts and Nuts, Filler Plates, etc.) in accordance with Index 536-001. Install five Guardrail Anchor Bolts at each end of each splice in any of the standard seven anchor bolt holes in the Thrie-Beam Terminal Connector. If reinforcing steel is encountered when drilling holes for Guardrail Anchor Bolts in Type K Barrier Units, shift Thrie-Beam Terminal Connector so as to clear reinforcing steel within the given tolerances or select a different bolt hole to use. Do not drill or cut through reinforcing steel within Type K Barrier Units. Drilling or cutting through reinforcing steel within permanent concrete traffic railings is permitted.
- 2. <u>GUARDRAIL OFFSET BLOCKS</u>: Provide and install timber Offset Blocks meeting the requirements of Specification 967. Field trim Offset Blocks as required for proper fit. Utilize Offset Blocks as shown and required in order to prevent bending or kinking of Thrie-Beam Guardrail panels.
- 3. <u>CONCRETE FOR FILLING TAPERED TRAFFIC RAILING TOES:</u> Provide concrete for filling tapered toes of Traffic Railings as shown meeting the material requirements of Specification 346, any Class, or a commercially available pre-bagged concrete mix (3000 psi minimum compressive strength). Sampling, testing, evaluation and certification of the concrete in accordance with Specification 346 is not required. Saturate with water the surfaces upon and against which the concrete fill will be placed prior to placing concrete. Place and finish concrete fill using forms or by hand methods to the general configurations shown so as to provide a smooth shape transition between the Type K Barrier and the adjacent traffic railing. A low slump is desirable if placing and finishing concrete by hand methods. Cure the concrete fill by application of a curing compound, or by covering with a wet tarp or burlap for a minimum of 24 hours. Completely remove the concrete fill upon relocation or removal of the Type K Temporary Concrete Barrier.



— DETAIL OF CONNECTION BETWEEN BARRIER UNITS

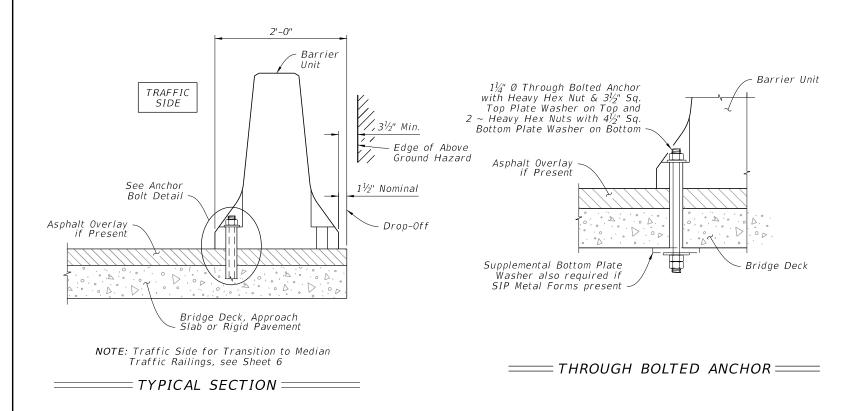




= 3-3-2-1 ANCHORAGE TRANSITION DETAIL =

17/2003

DESCRIPTION:



BOLTED INSTALLATION NOTES:

Bridge deck shown, approach slab or rigid pavement similar; installation adjacent to drop-off shown, median transition installation similar.

LIMITATION OF USE: This installation technique can only be used on rigid pavement and concrete bridge decks as shown. Anchor Bolts must not be installed on both sides of the Barrier Units. Do not bolt down Barrier Units across bridge finger or modular expansion joints.

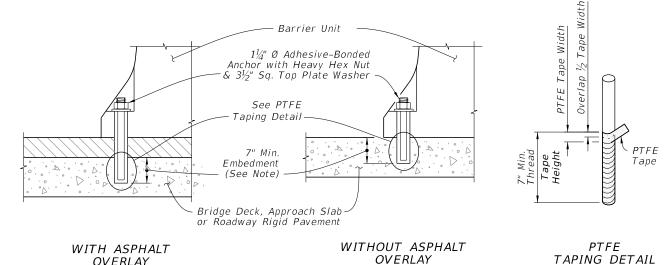
ANCHOR BOLTS, NUTS AND WASHERS: When using Adhesive-Bonded Anchor Bolts, use fully threaded rods in accordance with ASTM F 1554 Grade 36. Install Anchor Bolts for through bolting in accordance with ASTM A 307 or ASTM F 1554 Grade 36. Install nuts in accordance with ASTM A 563 or ASTM A 194. Install Flat Washers in accordance with ASTM F 436 and Plate Washers in accordance with ASTM A 36 or ASTM A 709 Grade 36.

Install three (3) Anchor Bolts per Barrier Unit on the traffic side of the Barrier Units as shown, except for Transition Installations. For the number and positions of Anchor Bolts required in Transition Installations see Sheets 8 and 9 and Index 102-100. Drilling through deck reinforcing steel to install Anchor Bolts is permitted. Unless otherwise shown in the Plans, at the Contractor's option Barrier Units may be installed by through bolting (where geometrically possible) or by the use of Adhesive-Bonded Anchor Bolts. Do not drill into or otherwise damage the tops of supporting beams or girders, bridge deck expansion joints or drains. Install Anchor Bolts and Nuts so that the maximum extension beyond the face of the Barrier Units is $lac{1}{2}$ ". Snug tighten the Nuts on the Anchor Bolts. For through bolted installations, snug tighten the double Nuts on the underside of the deck against each other to minimize the potential for loosening.

Omit one (1) Anchor Bolt within a single Barrier Unit if a conflict exists between the Anchor Bolt location and a bridge deck expansion joint or drain. The adjacent Barrier Units must each be installed with the standard three (3) Anchor Bolts.

Omit one (1) Anchor Bolt within a single Barrier Unit as shown in the Treatment at Bridge Deck Expansion Joint Schematic if the Barrier Unit straddles a bridge deck expansion joint. The adjacent Barrier Units must each be installed with the standard three (3) Anchor Bolts.

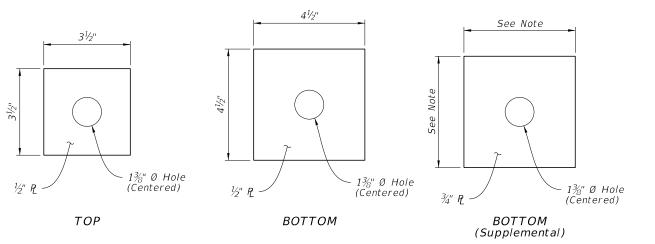
ADHESIVE-BONDING MATERIAL SYSTEMS: When using adhesive bonding material systems for anchor bolts, use a Type HSHV adhesive meeting the requirements of Specification 937 and listed on the APL. Install anchor bolts in accordance with Specification 416. Field testing requirements of Specification 416 do not apply.



NOTE: Wrap threads with a single overlapping layer of PTFE tape to facilitate removal of anchors.

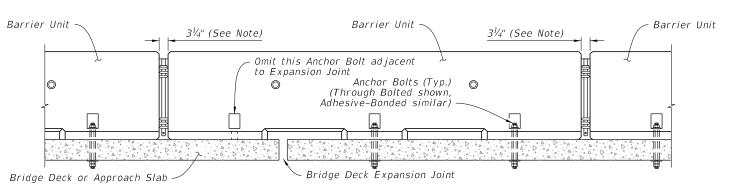
OVERLAY

= ADHESIVE BONDED ANCHOR INSTALLATION =



NOTE: Dimension as required to span SIP Metal Form Corrugations plus 1/2" Minimum overlap each side.

PLATE WASHER DETAIL =



NOTE:To accommodate movement at Expansion Joint, set Barrier Units with $3\frac{3}{4}$ " gap at locations shown.

TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC

= ANCHORED INSTALLATIONS - BOLTED =

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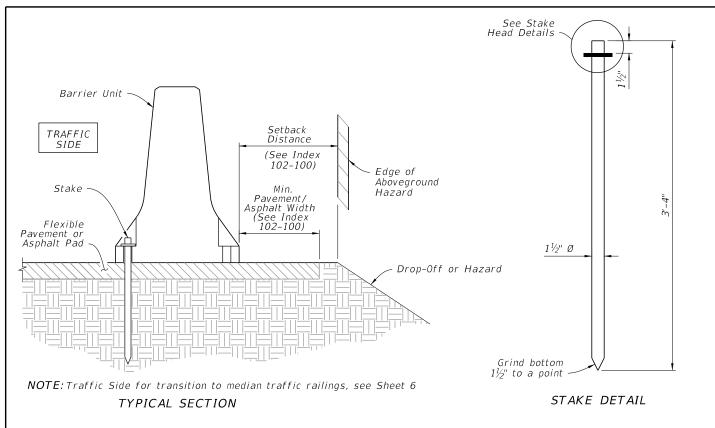
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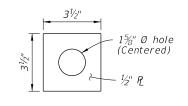
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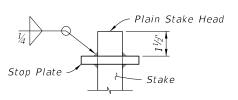
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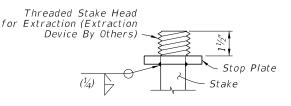




STOP PLATE DETAIL



PLAIN STAKE HEAD DETAIL



OPTIONAL EXTRACTION STAKE HEAD DETAIL

STAKED INSTALLATION NOTES:

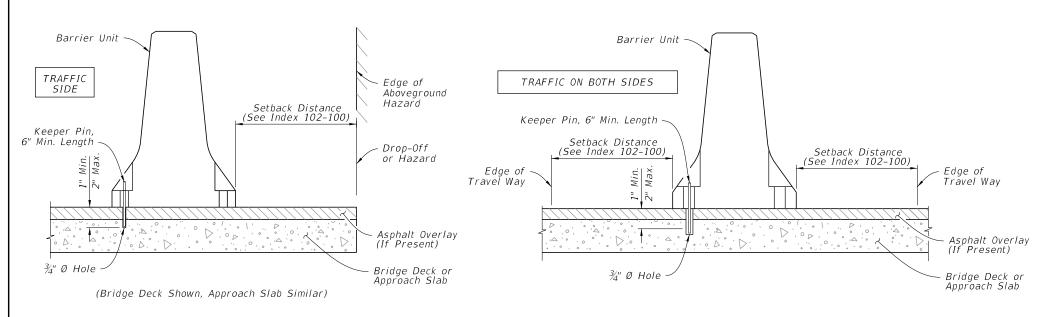
LIMITATION OF USE: This installation technique can only be used on flexible pavement or an Asphalt Pad as shown. Stakes must not be installed on both sides of the Barrier Units.

STAKES: Provide steel for Stake assemblies in accordance with ASTM A 36 or ASTM A 709 Grade 36. Weld in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Welding metal are E60XX or E70XX. Nondestructive testing of welds is not required.

Install three (3) Stakes on the traffic side of the Barrier Units as shown, except for Transition Installations. For the number and positions of stakes required in Transition Installations see Sheets 4, 5 and 6 and Index 102-100. Install Stakes so that the Stop Plate is snug against the bottom of the Anchor Blockout.

BURIED UTILITIES: Prior to installation of Stakes verify locations of all adjacent buried utilities, drainage structures, pipes, etc. If conflicts between Stake locations and buried elements exist, a maximum of two (2) Stakes within a single Barrier Unit may be omitted if the adjacent Barrier Units are installed with the standard three (3) Stakes.

ANCHORED INSTALLATIONS - STAKED



TRAFFIC SIDE Edge of Aboveground Hazard Setback Distance (See Index 102-100) Drop-Off or Hazard Flexible or Rigid Pavement, or Asphalt Pad

TYPICAL MEDIAN SECTION

TYPICAL ROADWAY SECTION

FREE-STANDING INSTALLATION NOTES:

- 1. For Bridge Decks only, use Keeper Pins that are 1#2" diameter, smooth steel bar in accordance with ASTM A36 or ASTM A709 Grade 36. As directed by the Engineer in order to limit vibration induced translation of the Barrier Units, install one (1) Keeper Pin per Barrier Unit as shown.
- 2. If traffic is on both sides of the Barrier (i.e. Median Installation), alternate Keeper Pin locations from side to side of Barrier Units along the length of the installation. If traffic is on only one side of the barrier install keeper pins on the traffic side as shown.
- 3. Do not drill into or otherwise damage bridge deck expansion joints or drains.

FREE-STANDING INSTALLATION =

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TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

Barrier Unit

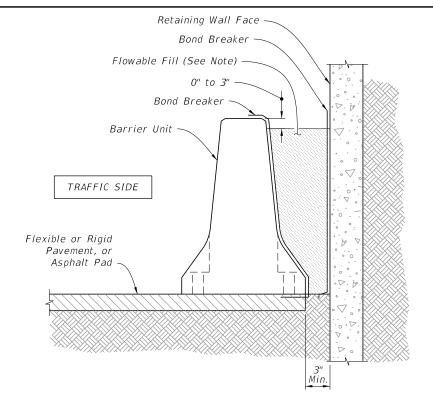
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DESCRIPTION:

TYPICAL BRIDGE SECTION

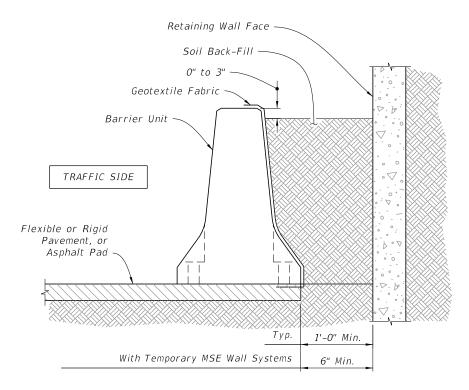


NOTE:

Provide Excavatable Flowable Fill in accordance with Specification 121.

TYPICAL SECTION ADJACENT TO RETAINING WALL WITH FLOWABLE FILL BACK-FILL

FLOWABLE FILL BACK-FILL ROADSIDE INSTALLATIONS

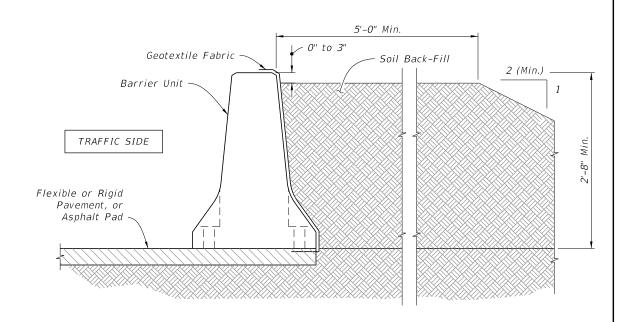


TYPICAL SECTION ADJACENT TO RETAINING WALL WITH SOIL BACK-FILL

NOTES:

SOIL BACK-FILL MATERIAL: Provide Back-Fill Material consisting of any available clean soil. Compact Back-Fill Material until the soil mass is firm and unyielding. Provide erosion control as specified in the Plans. If none is specified in the Plans, provide erosion control as required to maintain the integrity of the Back-Fill embankment.

GEOTEXTILE: Provide and install Type D-5 geotextile in accordance with Specification 514 to contain Back-Fill Material behind the Barrier Units. Geotextile may be continuous over the length and height of the installation or may be individual pieces as required to cover the Lift/DrainSlots and open vertical joints between Barrier Units.



TYPICAL SECTION WITH SOIL BACK-FILL

SOIL BACK-FILLED ROADSIDE INSTALLATIONS

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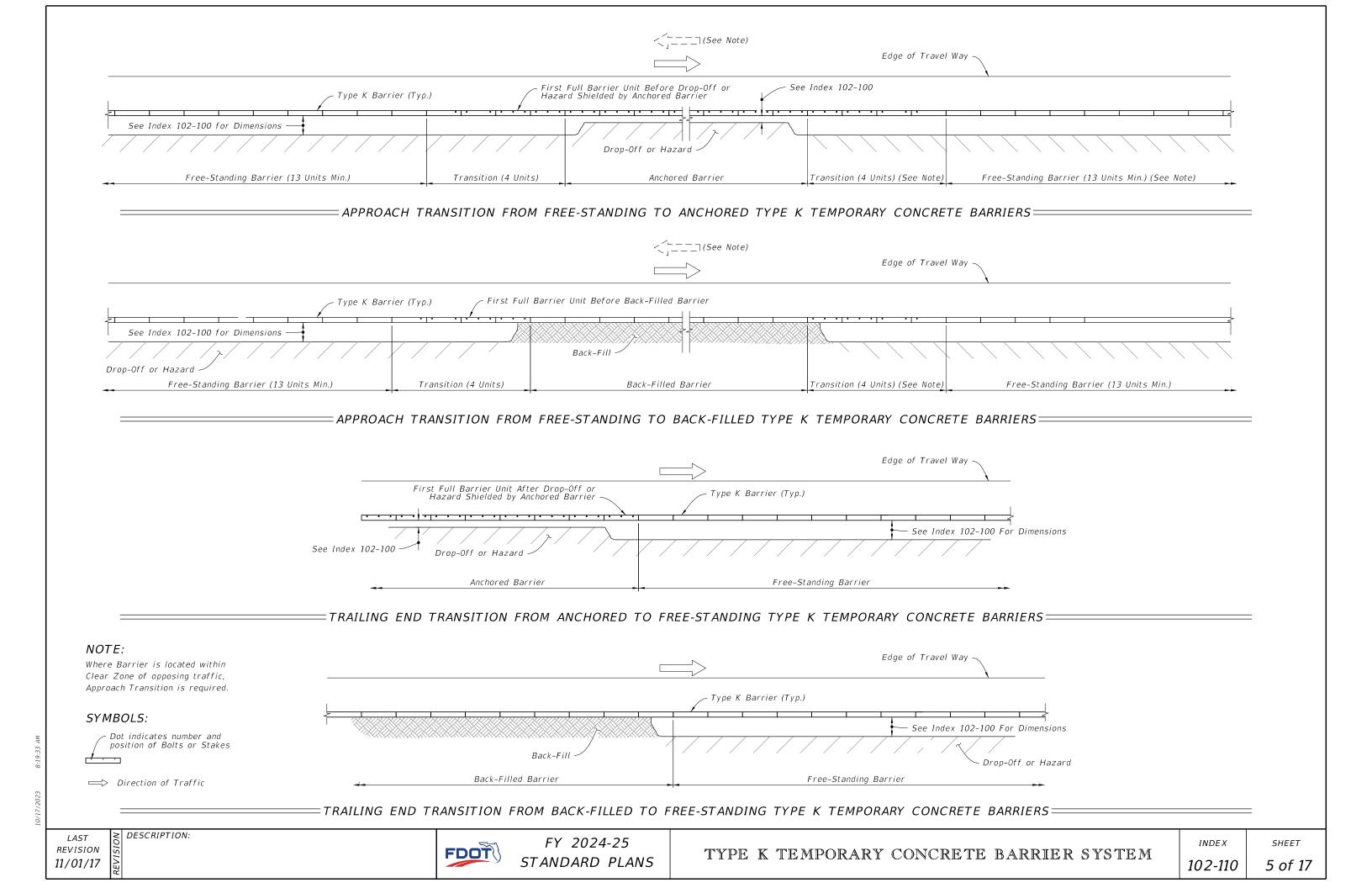
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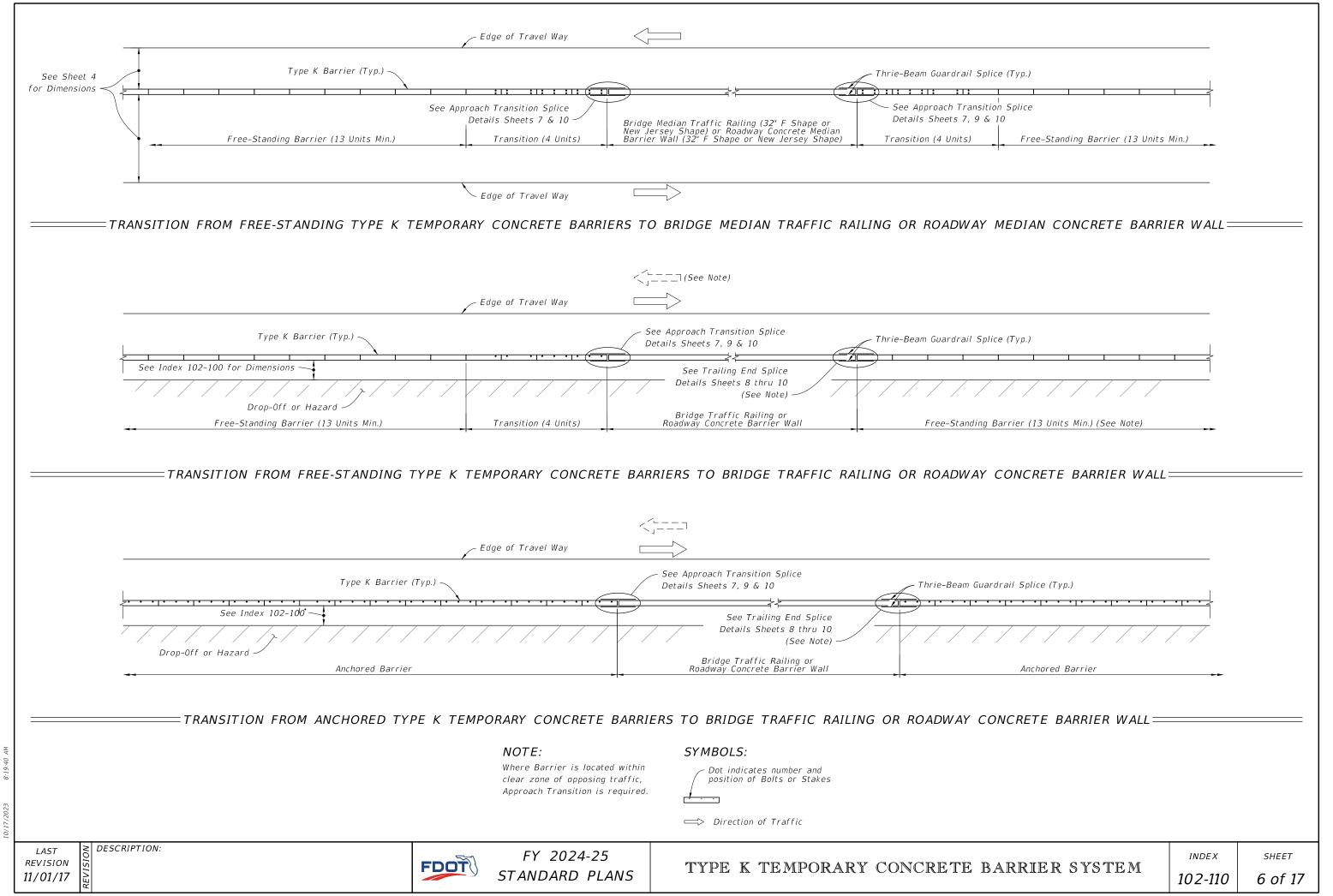
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TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

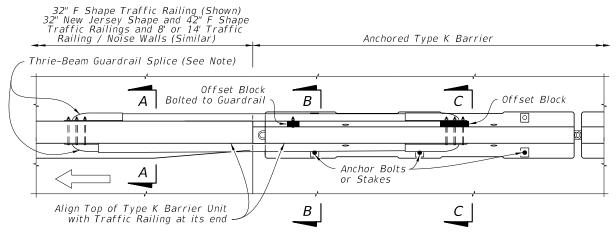
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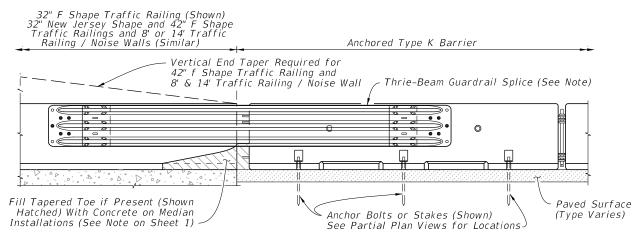




PARTIAL PLAN VIEW AT MEDIAN TRAFFIC RAILING



PARTIAL PLAN VIEW AT SHOULDER TRAFFIC RAILING



PARTIAL ELEVATION VIEW

APPROACH TRANSITION SPLICE DETAIL = FOR F AND NEW JERSEY SHAPE TRAFFIC RAILINGS AND 8' & 14' TRAFFIC RAILING / NOISE WALLS (CONCRETE BARRIER WALL SIMILAR)

SYMBOL:

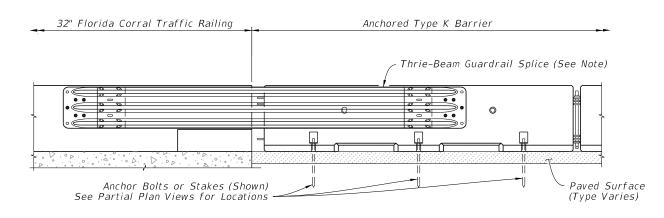
□⇒ Direction of Traffic

NOTE:

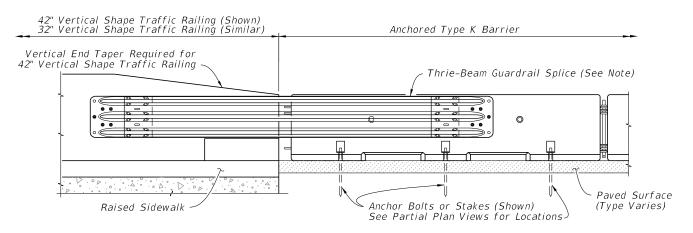
See Thrie-Beam Guardrail Positioning Detail, Sheet 10 and Notes for Thrie-Beam Guardrail Splice Installations, Sheet 1.

32" Florida Corral Traffic Railing (Shown) 32" & 42" Vertical Shape Traffic Railings (Similar) Anchored Type K Barrier 1'-0"± Thrie-Beam Guardrail Splice (See Note) Offset Block В С Bolted to Guardrail Offset Block Anchor Bolts С or Stakes В Align Top of Type K Barrier Unit With Traffic Railing at its end

PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW - FLORIDA CORRAL TRAFFIC RAILING



PARTIAL ELEVATION VIEW - VERTICAL SHAPE TRAFFIC RAILINGS

APPROACH TRANSITION SPLICE DETAIL FOR FLORIDA CORRAL AND VERTICAL SHAPE TRAFFIC RAILINGS

CROSS REFERENCES:

See Sheet 10 for Section A-A, Section B-B and Section C-C.

REVISION 11/01/17

DESCRIPTION:

FDOT

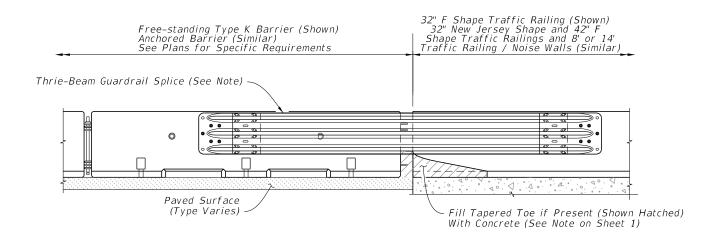
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PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

= TRAILING END SPLICE DETAIL =FOR F AND NEW JERSEY SHAPE TRAFFIC RAILINGS AND 8' & 14' TRAFFIC RAILING / NOISE WALLS

SYMBOL:

□⇒ Direction of Traffic

NOTE:

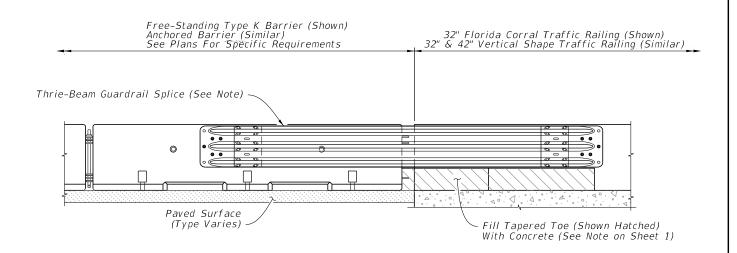
See Thrie-Beam Guardrail Positioning Detail, Sheet 10 and Notes for Thrie-Beam Guardrail Splice Installations, Sheet 1.

CROSS REFERENCES:

See Sheet 10 for Section A-A, Section B-B and Section C-C.

Free-Standing Type K Barrier (Shown) Anchored Barrier (Similar) 32" Florida Corral Traffic Railing (Shown) 32" & 42" Vertical Shape Traffic Railing (Similar) See Plans for Specific Requirements 1'-0" ± Thrie-Beam Guardrail Splice (See Note) ~ Offset Block 'Max. at (Concrete Offset Block Bolted to С |B|Α Guardrail 97. С Fill Tapered Toe if Present (Shown Hatched) With Concrete (See Note on Sheet 1) Align Top of Type K Barrier Unit With Traffic Railing at its end 7'-0" ± Limits of concrete fill

PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

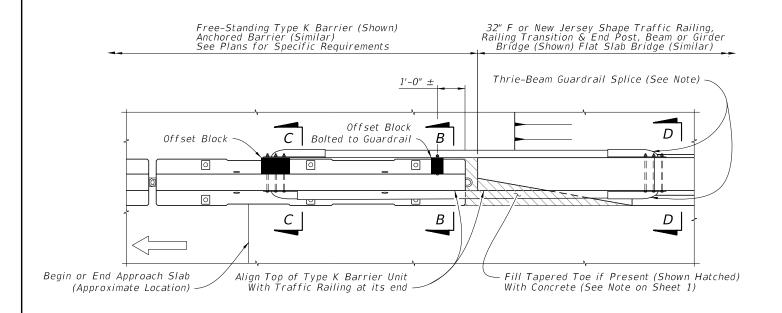
TRAILING END SPLICE DETAIL = FOR FLORIDA CORRAL AND VERTICAL SHAPE TRAFFIC RAILINGS

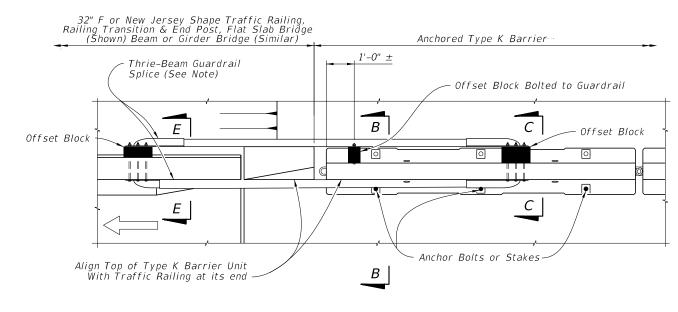
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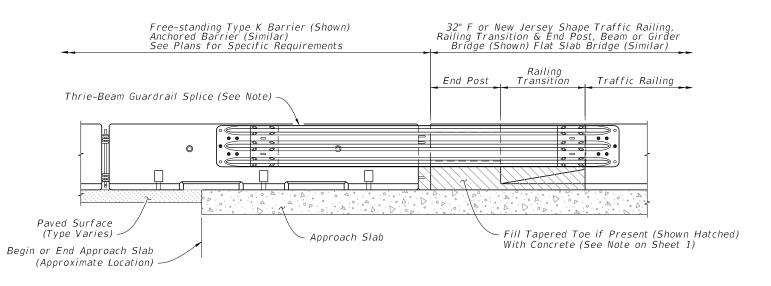


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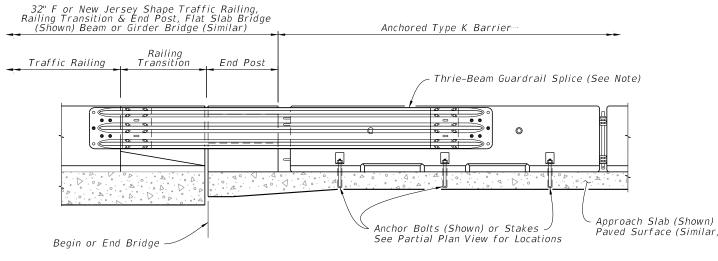




PARTIAL PLAN VIEW



PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

PARTIAL ELEVATION VIEW

CROSS REFERENCES: See Sheet 10 for Section B-B, Section C-C and Section E-E.

= ${\it TRAILING}$ ${\it END}$ ${\it SPLICE}$ ${\it DETAIL}$ =FOR 32" F AND NEW JERSEY SHAPE TRAFFIC RAILINGS WITH RAILING TRANSITION AND END POST

= APPROACH TRANSITION SPLICE DETAIL =FOR 32" F AND NEW JERSEY SHAPE TRAFFIC RAILINGS WITH RAILING TRANSITION AND END POST

SYMBOL:

⇒ Direction of Traffic

NOTE:

See Thrie-Beam Guardrail Positioning Detail, Sheet 10 and Notes for Thrie-Beam Guardrail

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DESCRIPTION:

CROSS REFERENCES:

See Sheet 10 for Section B-B, Section C-C and Section D-D.

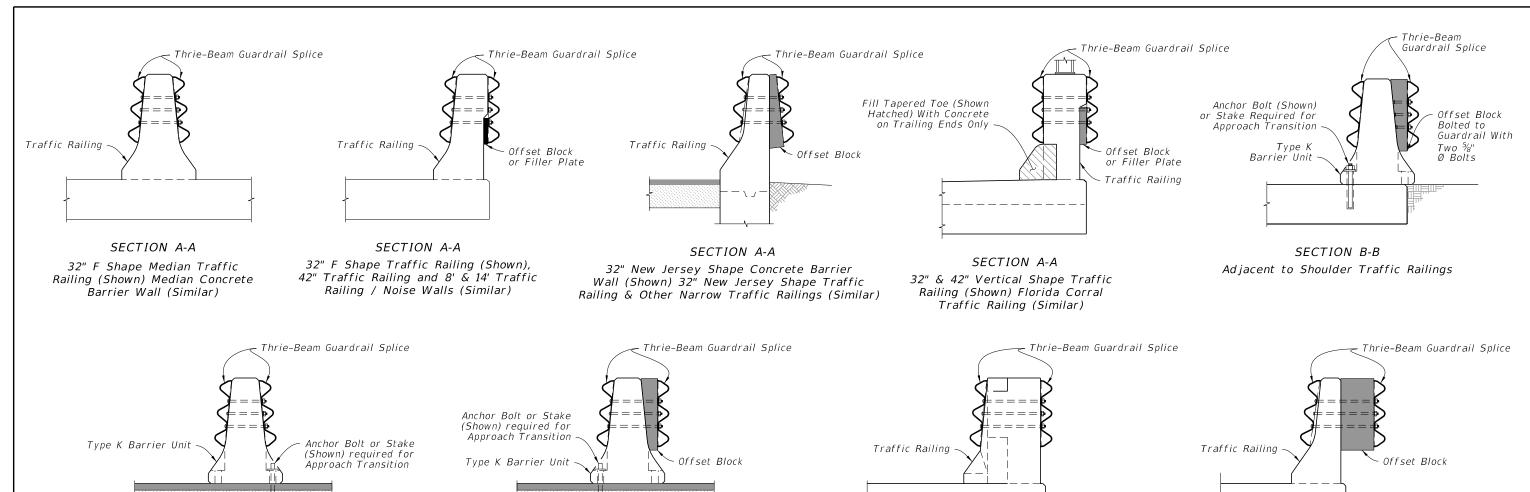
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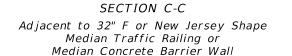
FY 2024-25 STANDARD PLANS Splice Installations, Sheet 1.

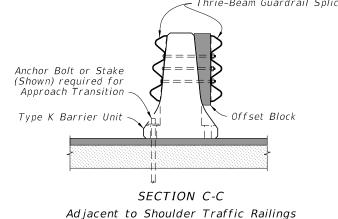
INDEX

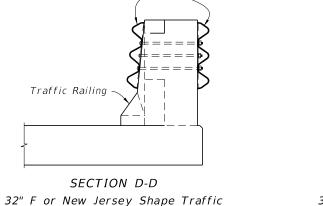
SHEET

TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

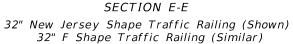




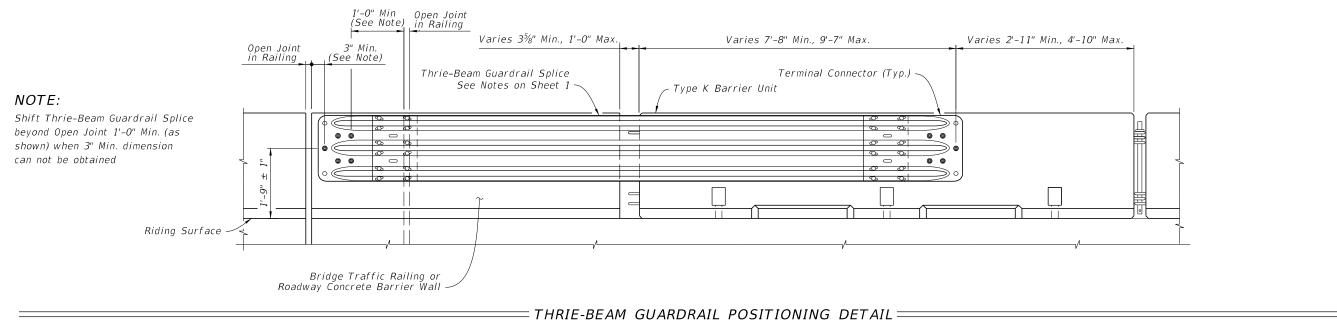




Railing, Railing Transition & End Post



= CROSS SECTIONS:



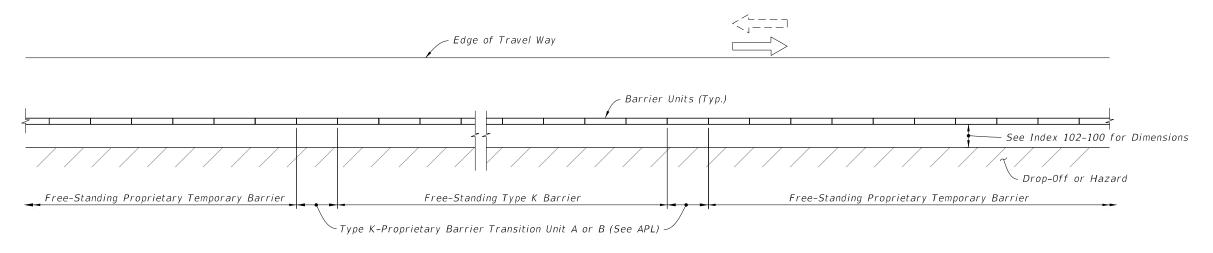
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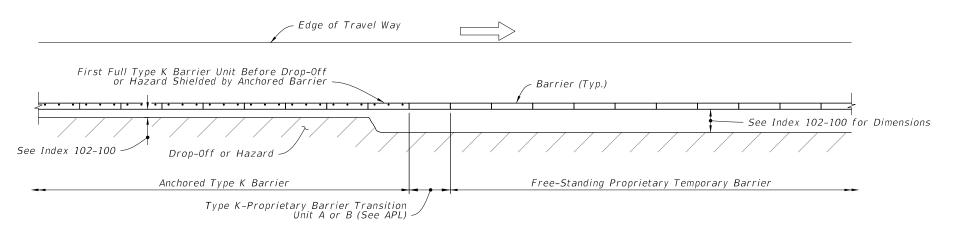
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APPROACH TRANSITION FROM FREE-STANDING PROPRIETARY TEMPORARY BARRIERS TO ANCHORED TYPE K TEMPORARY CONCRETE BARRIERS



APPROACH AND TRAILING END TRANSITIONS FROM FREE-STANDING TYPE K TEMPORARY CONCRETE BARRIERS TO FREE-STANDING PROPRIETARY TEMPORARY BARRIERS



TRAILING END TRANSITION FROM ANCHORED TYPE K TEMPORARY CONCRETE BARRIERS TO FREE-STANDING PROPRIETARY TEMPORARY BARRIERS

TYPE K-PROPRIETARY TEMPORARY CONCRETE BARRIER TRANSITIONS

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DESCRIPTION:

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TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

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NOTE:

SYMBOLS:

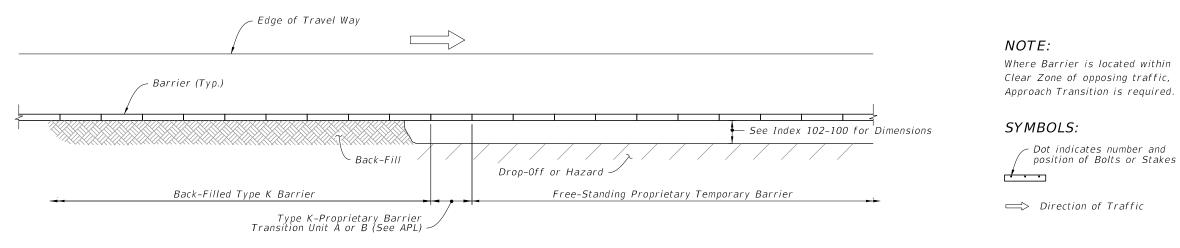
Where Barrier is located within Clear Zone of opposing traffic, Approach Transition is required.

Dot indicates number and position of Bolts or Stakes

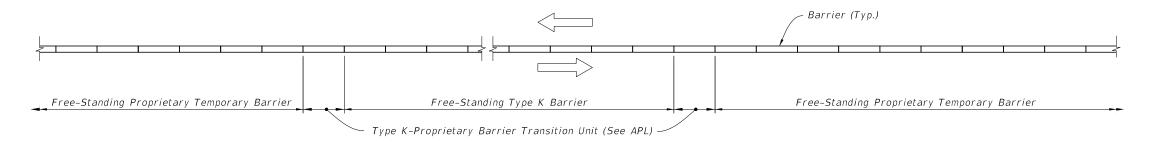
□⇒ Direction of Traffic

SHEET

APPROACH TRANSITION FROM FREE-STANDING PROPRIETARY TEMPORARY BARRIERS TO BACK-FILLED TYPE K TEMPORARY CONCRETE BARRIERS



TRAILING END TRANSITION FROM BACK-FILLED TYPE K TEMPORARY CONCRETE BARRIERS TO FREE-STANDING PROPRIETARY TEMPORARY BARRIERS



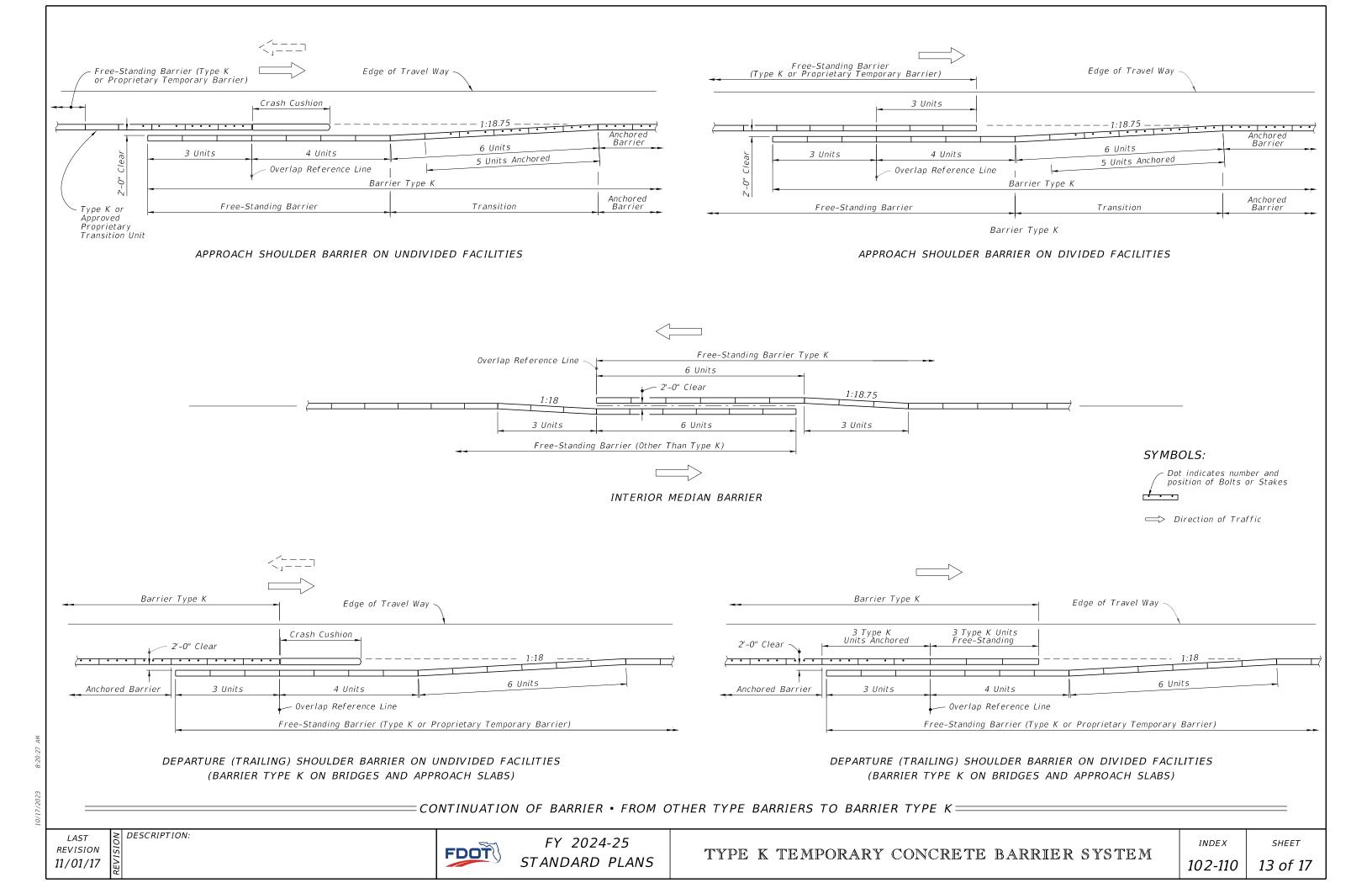
MEDIAN APPROACH AND TRAILING END TRANSITIONS FROM FREE-STANDING TYPE K TEMPORARY CONCRETE BARRIERS TO FREE-STANDING PROPRIETARY TEMPORARY BARRIERS

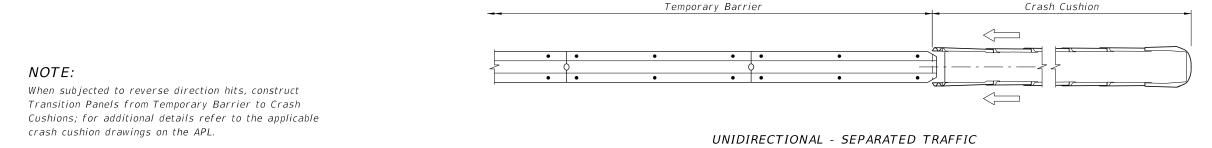


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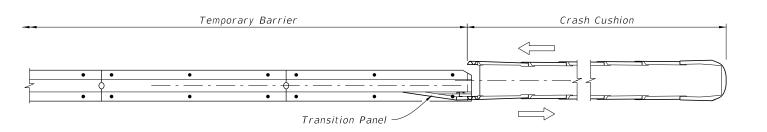
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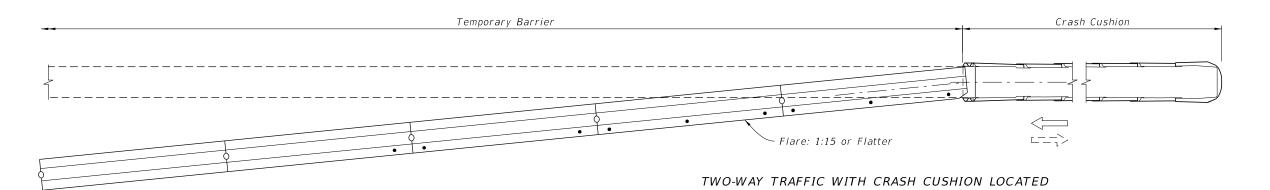


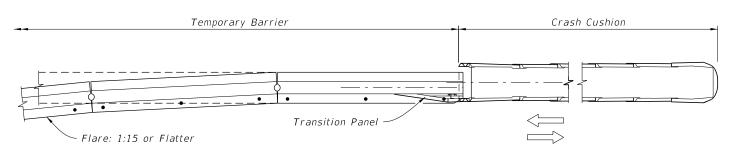
- Dot indicates number and position of Bolts or Stakes

□⇒ Direction of Traffic



BIDIRECTIONAL - SEPARATED TRAFFIC





OUTSIDE OPPOSING LANE CLEAR ZONE OR ONE-WAY TRAFFIC

TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED WITHIN OPPOSING LANE CLEAR ZONE

END TREATMENT WHEN SHIELDED BY A CRASH CUSHION SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)

SHIELDING ENDS WITH REDIRECTIVE CRASH CUSHIONS (REDIRECTIVE OPTION)

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DESCRIPTION:

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FABRICATOR PREQUALIFICATIONS:

- A. The Concrete Plant that meets the requirements;
- a. Specification 450 for prestressed concrete
- b. Specification 105 for precast.

CONCRETE:

- A. Construct Barrier Units with Class IV concrete in accordance with Specification 346.
- B. Specification 346-10 is not applicable.
- C. Barrier Units represented by concrete acceptance strength tests which fall below 5000 psi will be rejected.

REINFORCING STEEL:

- A. Use only steel reinforcing that meet ASTM A 615, Grade 60, with the exception of Bars 6D1, 6D2 and 6D3.
- B. Bars 6D1, 6D2 and 6D3 use steel reinforcing that meets ASTM A 706, with the exception that a $2\frac{3}{4}$ " diameter pin must be used for the 180 degree bend test.
- C. After steel reinforcing fabrication, hot dip galvanized in accordance with Specification 962 or coated with a cold galvanizing compound in accordance with Specification 562, all or part of Bars 6D.
- D. At the Fabricator's option, the entire length of Bars 6D may be galvanized or coated.
- E. The minimum limit of galvanizing or coating is shown in the Bending Diagrams.
- F. Install Bars 6D within $\frac{1}{8}$ " of the plan dimensions.
- G. Correct placement of Bars 6D is critical for proper fit up and performance of individual Barrier Units.
- H. At the option of the Fabricator, Deformed Welded Wire Fabric in accordance with Specification 931 and the details shown on Sheet 15 may be utilized in lieu of Bars 4A and 5B.
- I. All dimensions in the Bending Diagrams are out to out.
- J. Install all reinforcing steel with a 2" minimum cover, except as noted.

LIFTING SLEEVE ASSEMBLY:

- A. Inclusion of the Lifting Sleeve Assemblies is optional.
- B. Use steel in accordance with ASTM A 53 for the Pipe Sleeve.
- C. Hot-dip galvanize the Lifting Sleeve Assemblies after their fabrication in accordance with the Specifications.

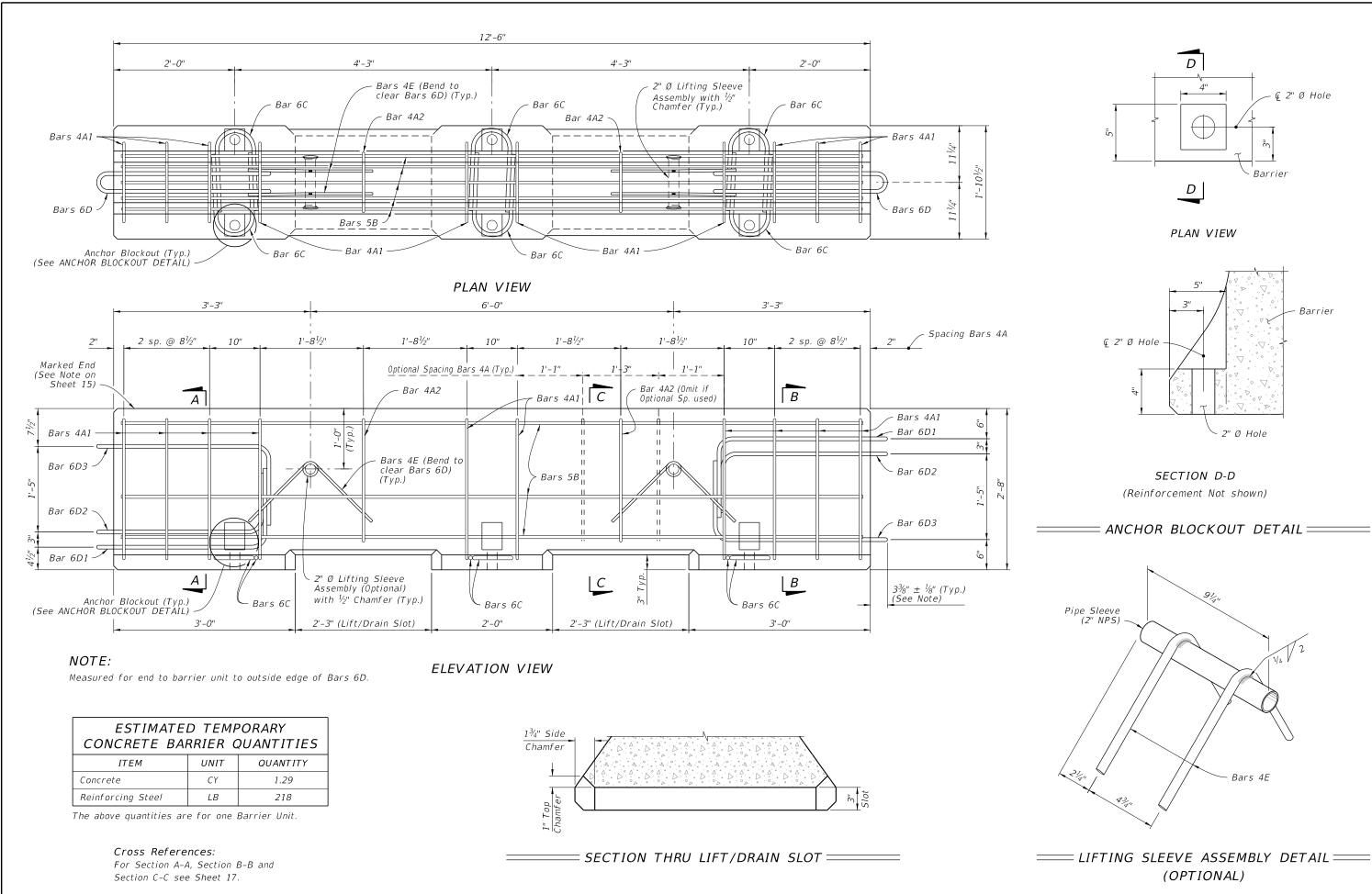
SURFACE FINISH:

- A. Construct Barrier Units in accordance with Specifications 400 and 521.
- B. Finish the top and sides of the Barrier Units with a General Surface Finish.
- C. Finish the bottom of the Barrier Units to a dense uniform surface by floating in lieu of the General Surface Finish.
- D. Use stationary metal forms or stationary timber forms with a form liner.

MARKING:

- A. Permanently mark the top left end of each Barrier Unit by the use of an embedded and anchored metallic plate with letters and figures a minimum of 0.5" tall.
- B. Ink stamps are not allowed.
- C. Permanently mark with the following information:
 - Type K1
 - Fabricator's name or symbol
 - Date of manufacture (day, month and year)

DESCRIPTION:



DESCRIPTION: REVISION 11/01/17

FDOT

FY 2024-25 STANDARD PLANS

TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

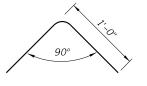
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Q 2" Ø Hole

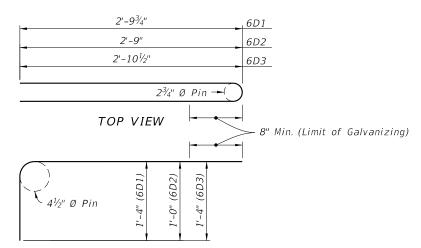
Barrier

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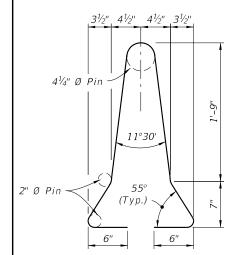
BAR 6C

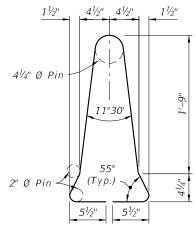


BAR 4E



SIDE VIEW BARS 6D1, 6D2 & 6D3





STIRRUP BAR 4A1

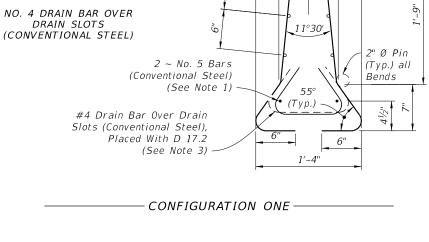
DESCRIPTION:

STIRRUP BAR 4A2

BILL OF REINFORCING STEEL			
MARK	SIZE	NUMBER	LENGTH
A1	4	10	6'-1"
A2	4	2	5'-5"
В	5	5	12'-3" (Straight)
С	6	6	3'-1"
D1	6	2	8'-4"
D2	6	2	7'-6"
D3	6	2	8'-6"
E	4	4	2'-0"

CONVENTIONAL REINFORCING

STEEL BENDING DIAGRAMS



D 17.2 (Typ.

Vertical Bar)

(See Note 2)

55°

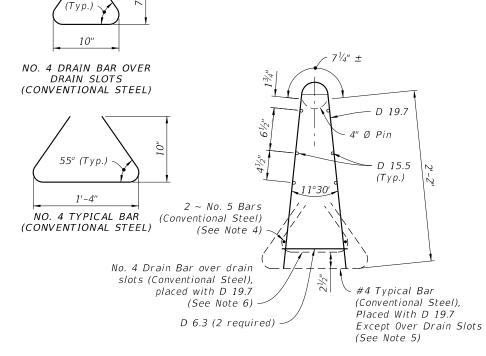
10"

(Typ.)

 $3\frac{1}{2}$ " $4\frac{1}{2}$ " $4\frac{1}{2}$ " $3\frac{1}{2}$ "

D 15.5

(Typ.)

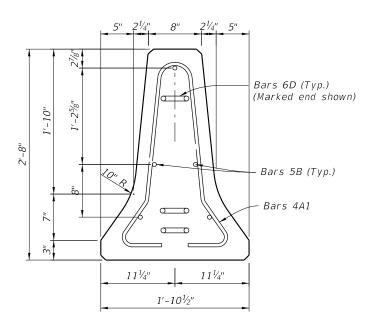


NOTES:

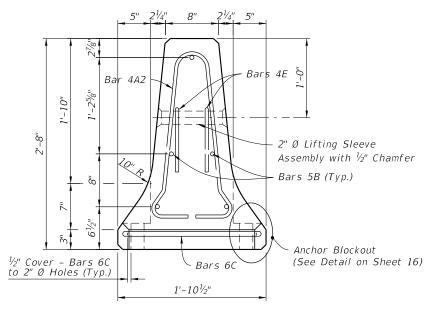
1. Place 2 \sim No. 5 Bars (12'-3" long) in bottom of Welded Wire Reinforcement cage as shown.

CONFIGURATION TWO-

- 2. Match D17.2 spacing to Bars 4A in the Elevation View, Sheet 15.
- 3. Field trim D17.2 to clear drain slot by 2".
- 4. Place 2 ~ No. 5 Bars (12'-3" long) tied to D 19.7 inside of bottom Welded Wire Reinforcement cage as shown.
- 5. Match D19.7 spacing to Bars 4A in the Elevation View, Sheet 15.
- 6. Field trim D19.7 to clear drain slot by 2".



SECTION A-A (SHOWN) (SECTION B-B SIMILAR)



SECTION C-C (Bars 6D not shown for clarity)

NOTES:

- 1. Provide $\frac{3}{4}$ " Chamfer at top and bottom corners of Barrier.
- 2. Provide a minimum of 2" cover on the top and bottom.
- 3. Provide a minimum of $1\frac{3}{4}$ " cover on both sides

ALTERNATE REINFORCING STEEL DETAIL =

WELDED WIRE REINFORCEMENT

CROSS SECTION

LAST REVISION 11/01/17



FY 2024-25 STANDARD PLANS

INDEX

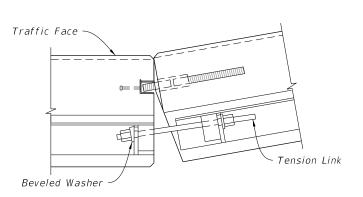
SHEET

102-110 *17 of 17*

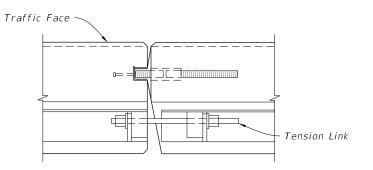
GENERAL NOTES: 1. Pursuant to 35 United States Code, Chapter 18, also known as the Bayh Dole Act of 1980, the non mountable curb was developed through federal funding. The 'Portable Temporary Low Profile Barrier For Roadside Safety' is a licensed design by the University Of Florida. Any infringement on the rights of the designer shall be the sole responsibility of the user. 2. This Index is provided by the Florida Department Of Transportation solely for use by the Department and its assignees. The purpose for this Index is to indicate the approval of use of the barrier on the State Highway System; to provide sufficient pictorials for identifying the barrier unit; and, to provide general installation geometry for the barrier. 3. This legally mandated relationship is unique to federally funded University patents that Department contractors use on Contracts. Pursuant to federal law, the University may pursue royalties for a valid patent. Only those barrier units cast by producers licensed by the University Of Florida will be allowed for installation on the State Highway System in Florida. Barrier wall units shall conform to Specification 521 and shall be produced in Department-approved plants with quality control plans for precasting concrete barrier walls. Each barrier wall unit shall be permanently marked with an identification that is traceable to the manufacturer, the producing precast concrete plant and the date of production. This permanent identification mark will serve as certification that the unit has been manufactured in accordance with University of Florida drawings and specifications, and the approved quality control program. 4. The low profile barrier is to be installed only with hardware and accessories furnished by the licensed barrier producer. Units shall be used for no purpose other than as interconnected segments in a run of barrier. Low profile barrier wall units shall maintain firm contact with adjoining units. Nuts on tensioning rods shall be installed snug tight. 5. The low profile barrier is applicable for work zone speeds of 45 mph or less. 6. If the plans specify Low Profile Barrier then substitution with other barrier types is not 7. Tubular markers shall be orange in color and installed along the run of barrier at the ends and at 50' centers on tangents and 25' centers on radii. The markers shall be fixed to the top of the barrier by an adhesive or other method approved by the engineer. Approach end units shall be marked with a Type I object marker. The cost of the tubular markers and Type I object marker shall be included in the cost of the low profile barrier. 8. Information regarding licensing, shop drawings, specifications, quality control and certification of compliance can be obtained from the University Of Florida: Office of Technology Licensing, P.O. Box 115500, Gainesville, Florida, 32611-5500. Telephone: 352-392-8929, Fax: 352-392-6600. Reference UF#11052. 9. The Portable Temporary Low Profile Barrier For Roadside Safety shall be paid for under the contract unit price for Barrier Wall (Temporary) Low Profile Concrete, LF, and will be full compensation for furnishing, installing, maintaining and removing barrier wall. 10. Setback distance shall be kept clear of any grass, construction debris, stockpiled materials, equipment, and objects. BACKSIDE AND END PICTORIAL VIEWS PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY DESCRIPTION:

11/01/19

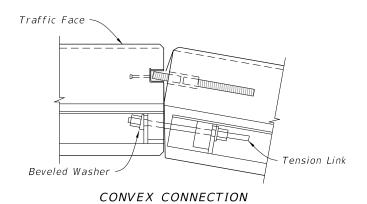
FDOT



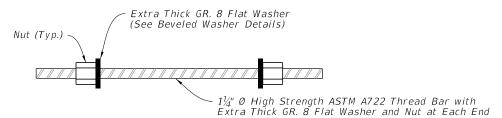
CONCAVE CONNECTION



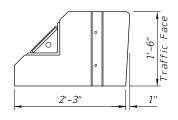
PARALLEL CONNECTION

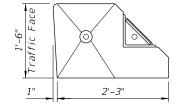


== PLAN VIEWS OF CONNECTIONS ======



= TENSION LINK DETAIL =

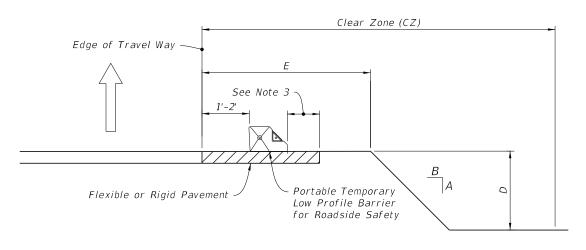




FLAT FACE FEMALE END

BEVELED FACE MALE END

END VIEWS =



= <code>SETBACK DISTANCE AT DROP-OFFS</code> =

NOTES:

- 1. LIMITATION OF USE: This installation technique can only be used on flexible or rigid pavement.
- 2. ASPHALT PAD: Where existing pavement is not present, construct 2" Asphalt Pad using miscellaneous asphalt pavement in accordance with Specification 339 with the exception that the use of a pre-emergent herbicide is not required. Payment for asphalt pad will be included in the cost of the barrier.
- 3. Minimum 9" on 1:10 or flatter slopes for 'Portable Temporary Low Profile Barrier For Roadside Safety.' For values A, B, D and E see Index 102-600.

SYMBOLS:

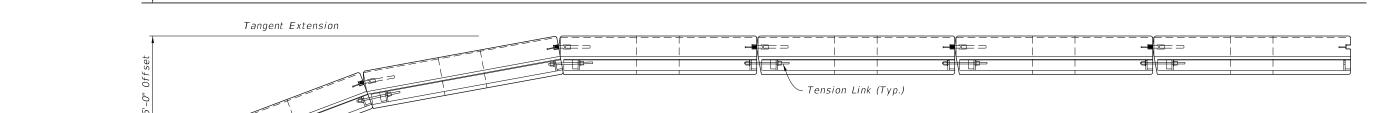
Type I Object Marker

□⇒ Direction of Traffic

WORK ZONE	LATERAL	SETBACK
SPEED	OFFSET	DISTANCE
45 MPH OR LESS	1' MIN, 2' PREFERRED	



Edge of Traffic Lane



Height to Bottom of Type 1 Object Marker is 18"

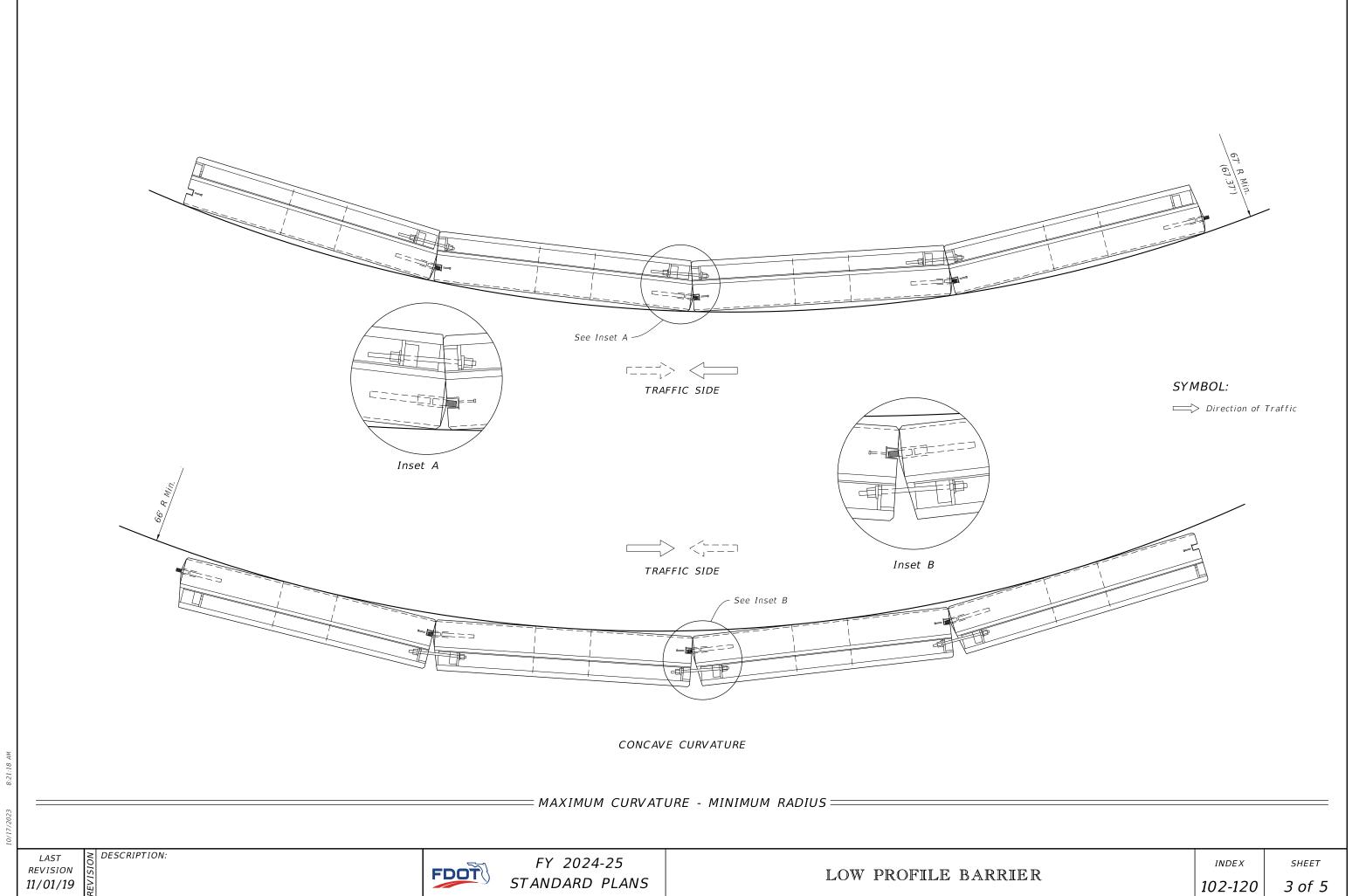
= APPROACH END OFFSET ===

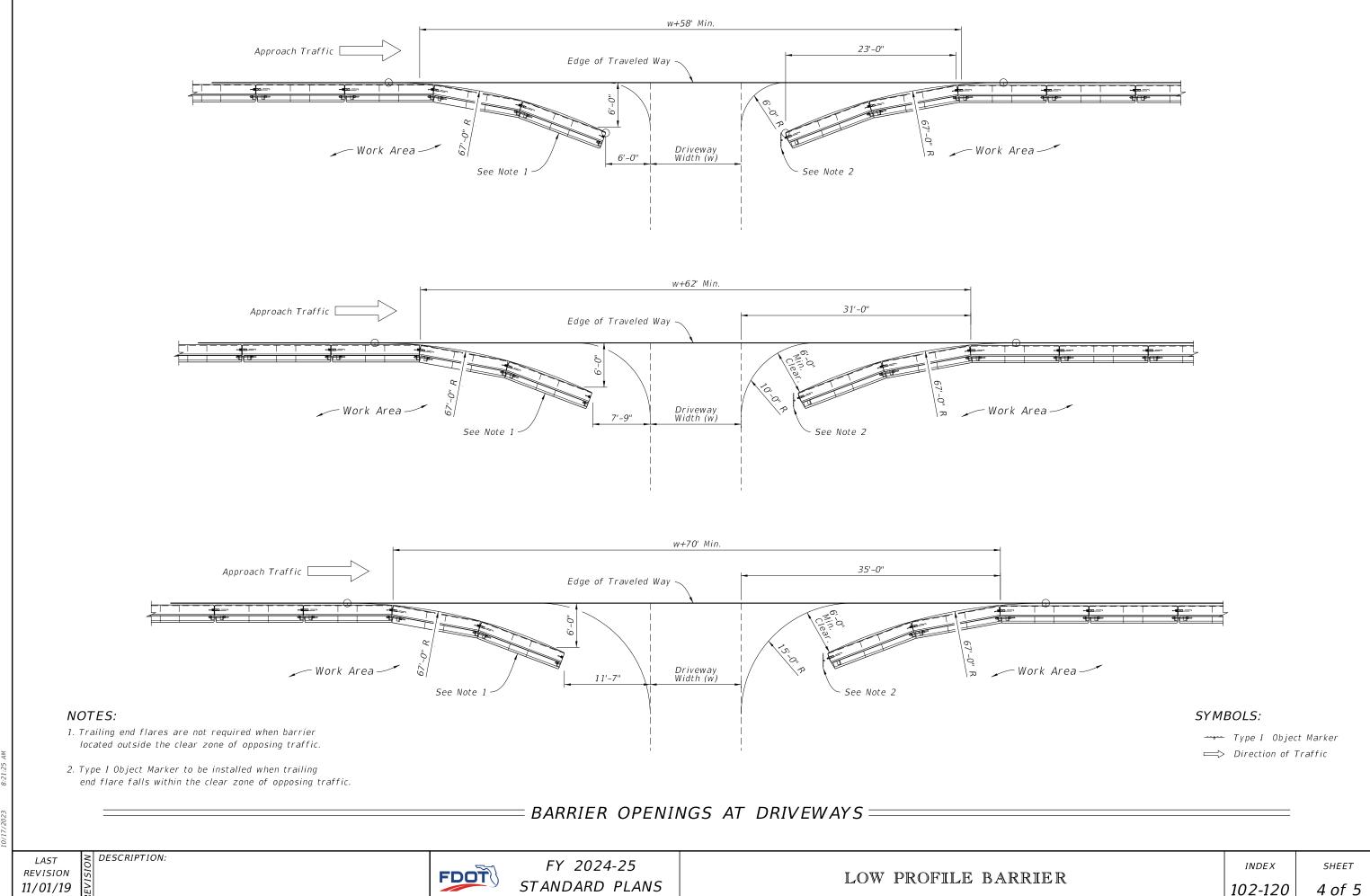
PLAN VIEW

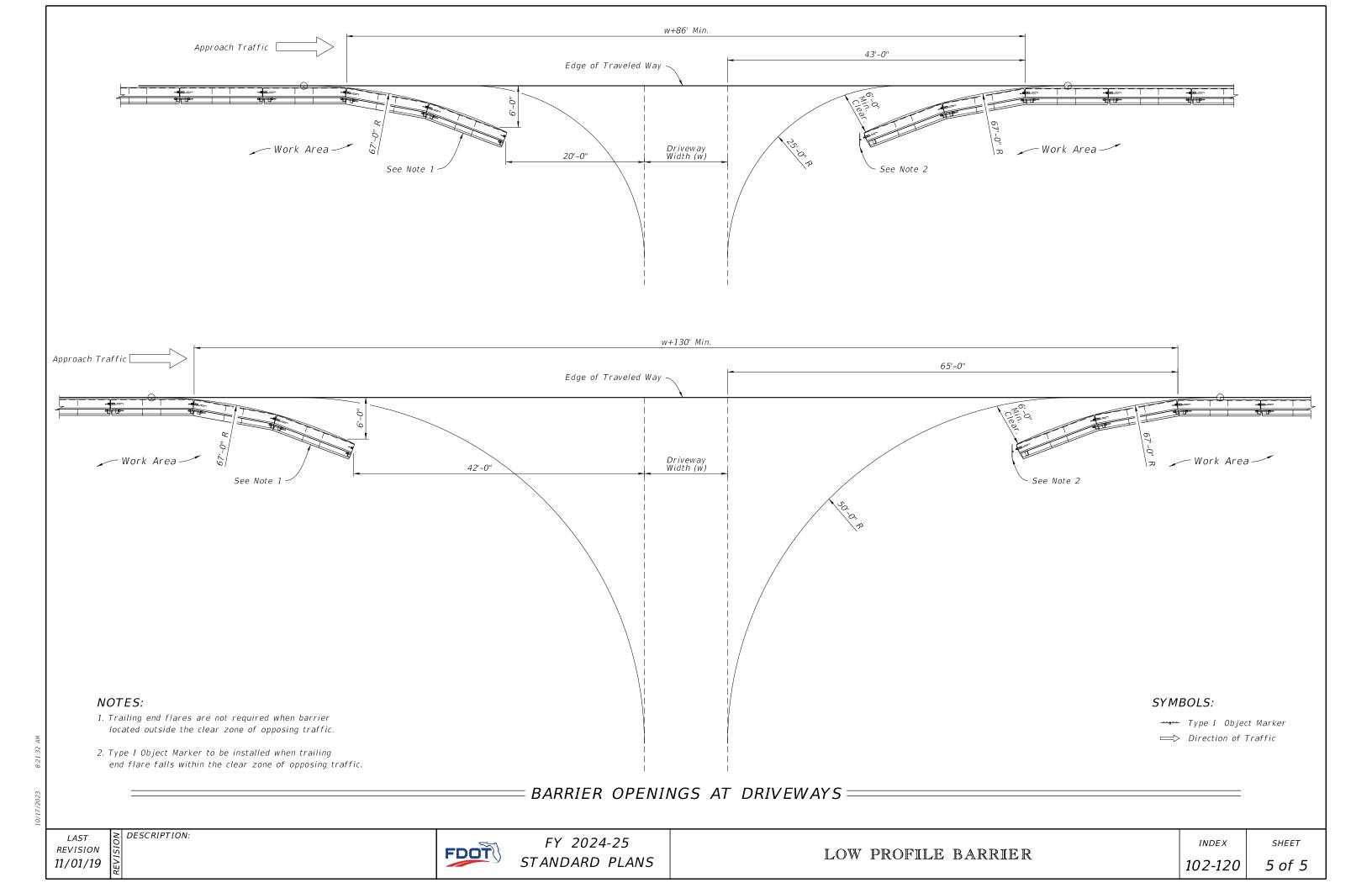
≥ DESCRIPTION: LAST REVISION 11/01/22

FDOT

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	Length Of Lane Closures
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GENERAL NOTES:

- 1. This Index contains information specific to the Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway System. Certain requirements in this Index are based on the high volume nature of State Highways. For highways, roads and streets off the State Highway System, the local agency (City/County) having jurisdiction may adopt requirements based on the minimum requirements provided in the MUTCD.
- 2. Use this Index in accordance with the Plans and Indexes 102-601 through 102-680. Indexes 102-601 through 102-680 are Department-specific typical applications of commonly encountered situations. Adjust device location or number thereof as recommended by the Worksite Traffic Supervisor and approved by the Engineer. Devices include, but are not limited to, flaggers, portable temporary signals, signs, pavement markings, and channelizing devices. Comply with MUTCD or applicable Department criteria for any changes and document the reason for the change.
- 3. Except for emergencies, any road closure on State Highway System must comply with Section 335.15, F.S.

TABLE 1				
CHANNELIZING DEVICE SPACING				
Work		Max.	Spacing (feet,)
Zone Speed (mph)	Cone Temp Tubular	orarv		arricades, arricades, els, or Drums
` ' '	Taper	Tangent	Taper	Tangent
≤ 45	25	50	25	50
≥ 50	25	50	50	100

TABLE 2		
TAPER LENGTH "L"		
Work Zone Speed (mph)	Min. Length (feet)	
≤ 40	$L = \frac{WS^2}{60}$	
≥ 45	L = WS	
Where: W = width of offset in feet S = speed in mph		

TAB	LE 3
WORK ZONE SIG	GN SPACING "X"
Road Type	Min. Spacing (feet)
Arterials and Collectors with Work Zone Speed ≤ 40 mph	200
Arterials and Collectors with Work Zone Speed ≥ 45 mph	500
Limited Access Roadways *	1,500
* For Limited access roadways with work zone speed ≤ 55 mph, the minimum spacing may be reduced in accordance with the MUTCD and as approved by the Engineer.	

TAB	LE 4	
BUFFER L	ENGTH "B"	
Work Zone Speed (mph)	Min. Length (feet)	
25	155	
30	200	
35	250	
40	305	
45	360	
50	425	
55	495	
60	570	
65	645	
70	730	
Note: When Puffer Length "P"		

vvork ∠one	ı Mir.
Speed (mph)	Length (fe
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
Note: When Buf	
cannot be attai geometric cons	

the greatest length possible, but not less than 155 feet.

SYMBOLS:

Work Area

■ Channelizing Device

Work Zone Sign

Type III Barricade

Lane Identification and Direction of Traffic

DESCRIPTION:

Advisory Speed

The maximum recommended travel speed through a curve or a hazardous area.

Travel Way

The portion of the roadway for the movement of vehicles. For traffic control through work zones, travel way may include the temporary use of shoulders and any other permanent or temporary surface intended for use as a lane for the movement of vehicular traffic.

- a. Travel Lane: The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other traffic lanes.
- b. Auxiliary Lane: The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic.

Detour, Lane Shift, and Diversion

A detour is the redirection of traffic onto another roadway to bypass the temporary traffic control zone. A lane shift is the redirection of traffic onto a different section of the permanent pavement. A diversion is the redirection of traffic onto a temporary roadway, usually adjacent to the permanent roadway and within the limits of the right of way.

Aboveground Hazard

An aboveground hazard is any object, material or equipment other than traffic control devices that encroaches upon the travel way or that is located within the clear zone which does not meet the Department's safety criteria, i.e., anything that is greater than 4" in height and is firm and unyielding or doesn't meet breakaway requirements.

TEMPORARY TRAFFIC CONTROL DEVICES:

- 1. All temporary traffic control devices shall be ON the Department's Approved Products List (APL). Ensure the appropriate APL number is permanently marked on the device in a readily visible location.
- 2. All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered. Do not store temporary traffic control devices on the shoulder, sidewalk, or other roadway facility not affected by the work when work is suspended.
- 3. Arrow Boards, Portable Changeable Message Signs, Radar Speed Display Trailer, Portable Regulatory Signs, and any other trailer mounted device shall be delineated with a channelizing device placed at each corner when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crash cushion when not in use.

OVERHEAD WORK:

Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)

Overhead work using a modified lane closure is allowed if all of the following conditions are met:

- a. Work operation is located in a signalized intersection and limited to signals, signs, lighting and utilities.
- b. Work operations are 60 minutes or less.
- c. Speed limit is 45 mph or less.
- d. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
- e. Aerial lift equipment is placed directly below the work area to close the lane.
- f. Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 100 foot taper.
- g. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)

Overhead work above a open traffic lane is allowed if all of the following conditions are met:

- a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
- b. Work operations are 60 minutes or less.
- c. Speed limit is 45 mph or less.
- d. No encroachment by any part of the work activities and equipment within an area bounded by 2 feet outside the edge of travel way and 18 feet high.
- e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
- f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
- g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
- h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK ADJACENT TO AN OPEN TRAFFIC LANE)

Overhead work adjacent to an open traffic lane is allowed if all of the following conditions are met:

- a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
- b .Work operations are 1 day or less.
- c. Speed limit is 45 mph or less.
- d. No encroachment by any part of the work activities and equipment within 2 foot from the edge of travel way up to 18' height. Above 18' in height, no encroachment by any part of the work activities and equipment over the open traffic lane (except as allowed in Option 2 for work operations of 60 minutes or less).
- e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
- f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
- g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
- h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OVERHEAD WORK: (Cont.)

OPTION 4 (OVERHEAD WORK MAINTAINING TRAFFIC WITH NO ENCROACHMENT BELOW THE OVERHEAD WORK AREA)

Traffic shall be detoured, shifted, diverted or paced as to not encroach in the area directly below the overhead work operations in accordance with the appropriate index drawing or detailed in the plans. This option applies to, but not limited to, the following construction activities:

- a. Beam, girder, segment, and bent/pier cap placement.
- b. Form and falsework placement and removal.
- c. Concrete placement.
- d. Railing construction located at edge of deck.
- e. Structure demolition.

OPTION 5 (CONDUCTOR/CABLE PULLING ABOVE AN OPEN TRAFFIC LANE)

Overhead cable and/or de-energized conductor installations initial pull to proper tension shall be done in accordance with the appropriate Index or temporary traffic control plan.

Continuous pulling operations of secured cable and/or conductors are allowed over open lane(s) of traffic with no encroachment by any part of the work activities, materials or equipment within the minimal vertical clearance above the travel way. The utility shall take precautions to ensure that pull ropes and conductors/cables at no time fall below the minimum vertical clearance.

On Limited Access facilities, a site specific temporary traffic control plan is required. The temporary traffic control plan shall include:

- a. The temporary traffic control set up for the initial pulling of the pull rope across the roadway.
- b. During pulling operations, advance warning consisting of no less than a Changeable Message Sign upstream of the work area with alternating messages, "Overhead Work Ahead" and "Be Prepared to Stop" followed by a traffic control officer and police vehicle with blue lights flashing during the pulling operation.

RAILROADS:

Railroad crossings affected by a construction project should be evaluated for traffic controls to reduce queuing on the tracks. The evaluation should include as a minimum: traffic volumes, distance from the tracks to the intersections, lane closure or taper locations, signal timing, etc.

SIGHT DISTANCE:

- 1. Tapers: Transition tapers should be obvious to drivers. If restricted sight distance is a problem (e.g., a sharp vertical or horizontal curve), the taper should begin well in advance of the view obstruction. The beginning of tapers should not be hidden behind curves.
- 2. Intersections: Traffic control devices at intersections must provide sight distances for the road user to perceive potential conflicts and to traverse the intersection safely. Construction equipment and materials shall not restrict intersection sight distance.

ABOVEGROUND HAZARD:

- 1. Aboveground hazards (see definitions) are to be considered work areas during working hours and treated with appropriate work zone traffic control procedures. During nonworking hours, all objects, materials and equipment that constitute an aboveground hazard must be stored/placed outside the travel way and clear zone or be shielded by a barrier or crash cushion.
- 2. For aboveground hazards within a work zone the clear zone required should be based on the regulatory speed posted during construction.

8-21-45 AM

TABLE 5 CLEAR ZONE WIDTHS FOR WORK ZONES TRAVEL LANES & AUXILIARY LANES & WORK ZONE SPEED MULTILANE RAMPS SINGLE LANE RAMPS (MPH) (feet) (feet) 60-70 30 18 55 24 14 45-50 18 10 30-40 14 10 ALL SPEEDS 4' BEHIND FACE 4' BEHIND FACE CURB & GUTTER OF CURB OF CURB

NOTE: For temporary conditions where existing curb has been removed but not reconstructed, curb and gutter values may be used.

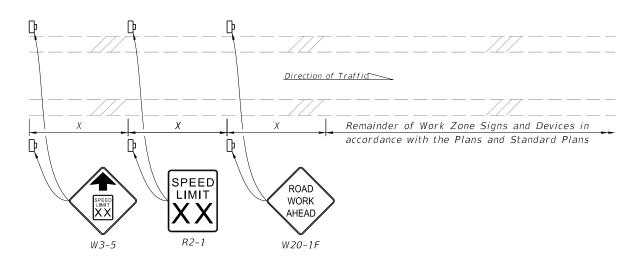
SUPERELEVATION:

Horizontal curves constructed in conjunction with work zone traffic control should have the required superelevation applied to the design radii. Under conditions where normal crown controls curvature, the minimum radii that can be applied are listed in the table below.

TABLE 6		
MINIMUM RADII FOR NORMAL CROWN		
WORK ZONE POSTED SPEED	MINIMUM RADIUS	
MPH	feet	
70	4090	
65	3130	
60	2400	
55	1840	
50	1390	
45	1080	
40	820	
35	610	
30	430	
Superelevate When Smaller		
Radii is Used		

LENGTH OF LANE CLOSURES:

For interstates and state highways with a posted speed of 55MPH or greater, lane closures must not exceed 3 miles (includes taper, buffer, and work zone) in any given direction and must not close two consecutive interchanges.



NOTES:

- 1. X = Work Zone Sign Spacing
- 2. When called for in the Plans, use this detail in accordance with the Plans and Standard Plans. Place the speed reduction signs (W3-5 and R2-1) in advance of the "Road Work Ahead" sign (W20-1F) as shown.
- 3. Do not use this detail in conjunction with the Motorist Awareness System.
- 4. For speed reductions greater than 10 MPH, reduce the speed in 10 MPH increments of 'X' distance. Do not reduce the speed below the minimum statutory speed for the class of facility.
- 5. Place additional "Speed Limit" signs (R2-1) at intervals of no more than one mile for rural conditions and 1.000 feet for urban conditions.
- 6. For undivided roadways, omit the signs shown in the median.
- 7. Remove temporary regulatory speed signs as soon as the conditions requiring the reduced speed no longer exist. Once the work zone regulatory speeds are removed, the regulatory speed existing prior to construction will automatically go back into effect.

= SPEED REDUCTION SIGNING =====

OVERWEIGHT/OVERSIZE VEHICLES:

Restrictions to Lane Widths, Heights or Load Capacity can greatly impact the movement of over dimensioned loads. The Contractor shall notify the Engineer who in turn shall notify the State Permits Office, phone no. (850) 410–5777, at least seven calendar days in advance of implementing a maintenance of traffic plan which will impact the flow of overweight/oversized vehicles. Information provided shall include location, type of restriction (height, width or weight) and restriction time frames. When the roadway is restored to normal service the State Permits Office shall be notified immediately.

LANE WIDTHS:

Lane widths of through roadways should be maintained through work zone travel ways wherever practical. Provide minimum widths for work zone travel lanes as follows: 11' for Interstate with at least one 12' lane provided in each direction, unless formally excepted by the Federal Highway Administration; 11' for all other limited access roadways; and 10' for all other facilities.

HIGH-VISIBILITY SAFETY APPAREL:

All high-visibility safety apparel shall meet the requirements of the International Safety Equipment Association (ISEA) and the American National Standards Institute (ANSI) for "High-Visibility Safety Apparel", and labeled as ANSI/ISEA 107-2004 or newer. The apparel background (outer) material color shall be either fluorescent orange-red or fluorescent yellow-green as defined by the standard. The retroreflective material shall be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet. Class 3 apparel may be substituted for Class 2 apparel. Replace apparel that is not visible at 1,000 feet.

WORKERS: All workers within the right-of-way shall wear ANSI/ISEA Class 2 apparel. Workers operating machinery or equipment in which loose clothing could become entangled during operation shall wear fitted high-visibility safety apparel. Workers inside the bucket of a bucket truck are not required to wear high-visibility safety apparel.

UTILITIES: When other industry apparel safety standards require utility workers to wear apparel that is inconsistent with FDOT requirements such as NFPA, OSHA, ANSI, etc., the other standards for apparel may prevail.

FLAGGERS: For daytime activities, Flaggers shall wear ANSI/ISEA Class 2 apparel. For nighttime activities, Flaggers shall wear ANSI/ISEA Class 3 apparel.

Regulatory Speed (In Work Zones)

Where flaggers are used, a FLAGGER symbol or legend sign must replace the WORKERS symbol or legend sign.

The flagger must be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed or to stop as required before entering the work site. Flaggers shall be positioned to maintain maximum color contrast between the Flagger's high-visibility safety apparel and equipment and the work area background.

Hand-Signaling Devices

STOP/SLOW paddles are the primary hand-signaling device. The STOP/SLOW paddle shall have an octagonal shape on a rigid handle. If the STOP/SLOW paddle is placed on a rigid staff, the minimum length of the staff, measured from the bottom of the paddle to the end of the staff that rests on the ground, must not be less than 6 ft. STOP/SLOW paddles shall be at least 24 inches wide with letters at least 6 inches high and should be fabricated from light semirigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When used at night-time, the STOP/SLOW paddle shall be retroreflectorized.

Flag use is limited to immediate emergencies, intersections, and when working on the centerline or shared left turn lanes where two (2) flaggers are required and there is opposing traffic in the adjacent lanes. Flags, when used, shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff that is approximately 36 inches in length. When used at nighttime, flags shall be retroreflectorized red.

Flashlight, lantern or other lighted signal that will display a red warning light shall be used at night.

Flagger Stations

Flagger stations shall be located far enough in advance of the work area so that approaching road users will have sufficient distance to stop before entering the work area. When used at nighttime, the flagger station shall be illuminated

SURVEY WORK ZONES:

The SURVEY CREW AHEAD symbol or legend sign shall be the principal Advance Warning Sign used for Traffic Control Through Survey Work Zones and may replace the ROAD WORK AHEAD sign when lane closures occur, at the discretion of the Party Chief.

When Traffic Control Through Work Zones is being used for survey purposes only, the END ROAD WORK sign as called for on certain 102 Series of Indexes should be omitted.

Survey Between Active Traffic Lanes or Shared Left Turn Lanes

The following provisions apply to Main Roadway Traffic Control Work Zones. These provisions must be adjusted by the Party Chief to fit roadway and traffic conditions when the Survey Work Zone includes intersections.

- (A) A STAY IN YOUR LANE (MOT-1-06) sign shall be added to the Advance Warning Sign sequence as the second most immediate sign from the work area.
- (B) Elevation Surveys-Cones may be used at the discretion of the Party Chief to protect prism holder and flagger(s). Cones, if used, may be placed at up to 50' intervals along the break line throughout the work zone.

SURVEY WORK ZONES: (Cont.)

- (C) Horizontal Control-With traffic flow in the same direction, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' towards the flow of traffic.
- (D) Horizontal Control-With traffic flow in opposite directions, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' in both directions towards the flow of traffic.

SIGNS:

SIGN MATERIALS

Mesh signs and non-retroreflectice vinyl signs may only be used for daylight operations. Non-retroreflectice vinyl signs must meet the requirements of Specifications Section 994.

Retroreflective vinyl signs meeting the requirements of Specification Section 994 may be used for daylight or night operations not to exceed 1 day except as noted in the Indexes.

Rigid or Lightweight sign panels may be used in accordance with the vendor APL drawing for the sign stand to which they are attached.

INTERSECTING ROAD SIGNING

Signing for the control of traffic entering and leaving work zones by way of intersecting crossroads shall be adequate to make drivers aware of work zone conditions. When Work operations exceed 60 minutes, place the ROAD WORK AHEAD sign on the side street entering the work zone.

ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING

Adjoining work zones may not have sufficient spacing for standard placement of signs and other traffic control devices in their advance warning areas or in some cases other areas within their traffic control zones. Where such restraints or conflicts occur or are likely to occur, one of the following methods will be employed to avoid conflicts and prevent conditions that could lead to misunderstanding on the part of the traveling public as to the intended travel way by the traffic control procedure applied:

- (A) For scheduled projects the engineer in responsible charge of project design will resolve anticipated work zone conflicts during the development of the project traffic control plan. This may entail revision of plans on preceding projects and coordination of plans on concurrent projects.
- (B) Unanticipated conflicts arising between adjoining in progress highway construction projects will be resolved by the Resident Engineer for projects under his residency, and, by the District Construction Engineer for in progress projects under adjoining residencies.
- (C) The District Maintenance Engineer will resolve anticipated and occurring conflicts within scheduled maintenance operations.
- (D) The Unit Maintenance Engineer will resolve conflicts that occur within routine maintenance works; between routine maintenance work, unscheduled work and/or permitted work; and, between unit controlled maintenance works and highway construction projects.

SIGNS: (Cont.)

SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING

Existing or temporary traffic control signs that are no longer applicable or are inconsistent with intended travel paths shall be removed or fully covered.

Sign blanks or other available coverings must completely cover the existing sign. Rigid sign coverings shall be the same size as the sign it is covering, and bolted in a manner to prevent movement.

Sign covers are incidental to work operations and are not paid for separately.

SIGNING FOR DETOURS, LANE SHIFTS AND DIVERSIONS

Detours should be signed clearly over their entire length so that motorists can easily determine how to return to the original roadway. The reverse curve (W1-4) warning sign should be used for the advanced warning for a lane shift. A diversion should be signed as a lane shift.

EXTENDED DISTANCE ADVANCE WARNING SIGN

Advance Warning Signs shall be used at extended distance of one-half mile or more when limited sight distance or the nature of the obstruction may require a motorist to bring their vehicle to a stop. Extended distance Advanced Warning Signs may be required on any type roadway, but particularly be considered on multilane divided highways where vehicle speed is generally in the higher range (45 MPH or more).

UTILITY WORK AHEAD SIGN

The UTILITY WORK AHEAD (W21-7) sign may be used as an alternate to the ROAD WORK AHEAD or the ROAD WORK XX FT (W20-1) sign for utility operations on or adjacent to a highway.

LENGTH OF ROAD WORK SIGN

The length of road work sign (G20-1) bearing the legend ROAD WORK NEXT_____ MILES is required for all projects of more than 2 miles in length. The number of miles entered should be rounded up to the nearest mile. The sign shall be located at begin construction points.

GROOVED PAVEMENT AHEAD SIGN

The GROOVED PAVEMENT AHEAD sign is required 500 feet in advance of a milled or grooved surface open to traffic. The W8-15P placard shall be used in conjunction with the GROOVED PAVEMENT AHEAD sign.

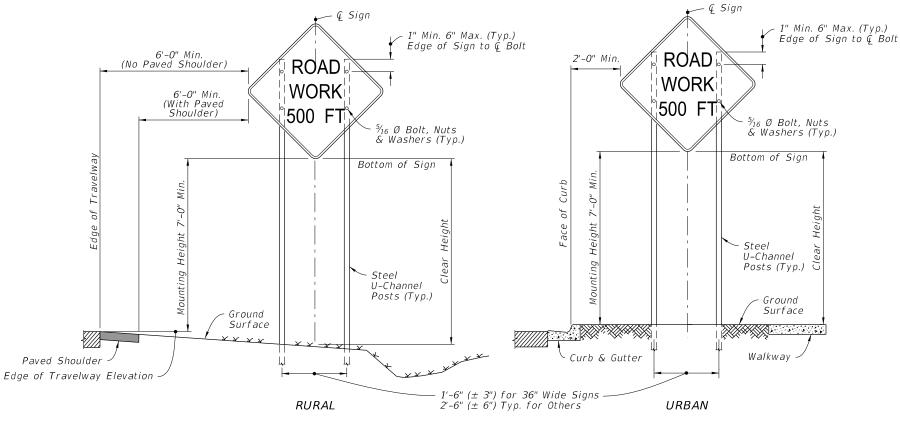
END ROAD WORK SIGN

The END ROAD WORK sign (G20-2) should be installed on all projects, but may be omitted where the work operation is less than 1 day. The sign should be placed approximately 500 feet beyond the end of a construction or maintenance project unless other distance is called for in the plans. When other Construction or Maintenance Operations occur within 1 mile this sign should be omitted and signing coordinated in accordance with Index 102-600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.

NOTES:

- 1. All signs shall be post mounted when work operations exceed one day except for:
- a. Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the APL
- b. Pedestrian and bicycle advanced warning or pedestrian regulatory signs mounted on sign supports in accordance with the vendor drawing shown on the APL.
- c. Median barrier mounted signs per Index 700-013.
- d. Bridge mounted signs per Index 700-012.
- 2. Unless shielded with barrier or outside of the Clear Zone, signs mounted on temporary supports or barricades, and barricade/sign combination must be crashworthy in accordance with NCHRP 350 requirements and included on the Approved Products List (APL).
- 3. Use only approved systems listed on the Department's Approved Products List (APL).
- 4. Manufacturers seeking approval of U-Channel and steel square tube sign support assemblies for inclusion on the Approved Products List (APL) must submit a APL application, design calculations (for square tube only), and detailed drawings showing the product meets all the requirements of this Index.
- 5. Provide 3 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.43 in³ for 60 ksi steel, a minimum section modulus of 0.37 in³ for 70 ksi steel, or a minimum section modulus of 0.34 in³ for 80 ksi steel.
- 6. Provide 4 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.56 in³ for 60 ksi steel, or a minimum section modulus of 0.47 in³ for 70 ksi or 80 ksi steel.
- 7. U-channel posts shall conform with ASTM A 499, Grade 60, or ASTM A 576, Grade 1080 (with a minimum yield strength of 60 ksi). Square tube posts shall conform with ASTM A 653, Grade 50, or ASTM A 1011, Grade 50.
- 8. Sign attachment bolts, washers, nuts, and spacers shall conform with ASTM A307 or A 36.
- 9. Install 4 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.
- 10. The contractor may install 3 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.
- 11. Install all posts plumb.
- 12. The contractor may set posts in preformed holes to the specified depth with suitable backfill tamped securely on all sides, or drive 3 lb/ft sign posts and any size base post in accordance with the manufacturer's detail shown on the APL.

DESCRIPTION:



2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR)

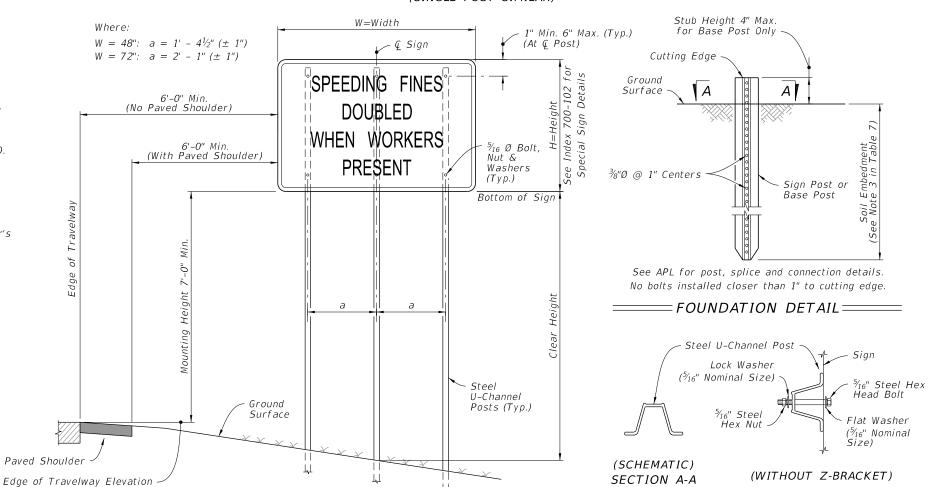


TABLE 7 POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS

SIGN SHAPE	SIGN SIZE (inches)	NUMBER OF STEEL U CHANNEL POSTS
Octagon	30x30	1
	36x36x36	1
Triangle	48x48x48	1
	60x60x60	2
	24x18	1
	24x30	1
	30x24	1
	36 x 18	1
	36x24	1
Doctorale	48 x 18	1
Rectangle	48x24	1
(W x H)	36 x 48	2
	48×30	2
	48x36	2
	54x36	2
	48x60	2 3
	72x48	3
	30x30	1
Square	36 x 36	2
	48 x 48	2
Diamond	48×48	2
Circle	36Ø	2

Notes For Table:

- 1. Use 3 lb/ft posts for Clear Height up to 10' and 4 lb/ft posts for Clear Height up to 12'.
- 2. Minimum foundation depth is 4.0' for 3 lb/ft posts and 4.5' for 4 lb/ft posts.
- 3. For both 3 lb/ft and 4 lb/ft base or sign posts installed in rock, a minimum cumulative depth of 2' of rock layer is required.
- 4. The soil plate as shown on the APL vendor drawing is not required for base posts or sign posts installed in existing rock (as defined in Note 3), asphalt roadway, shoulder pavement or soil under sidewalk.
- 5. For diamond warning signs with supplement plaque (up to 5 ft2 in area), use 4 lb/ft posts for up to 10 ft Clear Height (measure to the bottom of diamond warning sign).

WORK ZONE SIGN SUPPORTS

REVISION 11/01/21

FDOT

FY 2024-25 STANDARD PLANS

= 3 POST SIGN SUPPORT MOUNTING DETAILS =

GENERAL INFORMATION FOR TRAFFIC

=== SIGN ATTACHMENT DETAIL===

INDEX 102-600

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ROAD WORK NEXT XX MILES

END ROAD WORK G20-2

PILOT CAR FOLLOW ME G20-4





B/0



B/0



M4-10L

0/B











NOT PASS R4-1

WITH CARE R4-2

TRUCKS USE RIGHT LANE R4-5







KEEP K LEFT R4-7BL



KEEP 7 RIGHT R4-7BR B/W







B/0





B/0









B/0

0/B

W1 - 1RB/WB/0

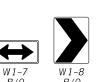


W1 - 3RB/0



W1-4b B/0

















B/0





W5-3

B/0



B/0





B/0



B/0

DIP W8-2

B/0

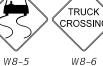


B/0



B/0







B/0



B/0



DETOUR

AHEAD

W20-2A

FND BLASTING

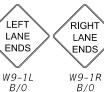
ZONE

W22-3

B/0









B/0



W5-2

B/0



















B/0



ROAD WORK 500 FT W20-1A

B/0



B/0



B/0





B/0









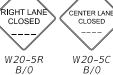
B/0















B/0



B/0



B/0







B/0



B/0



B/0

B/0

TURN OFF AND CELL PHONE

W22-2

NOTES:

- 1. The size of diamond shaped Temporary Traffic Control (TTC) warning signs shall be a minimum of 48" X 48".
- 2. Fluorescent orange shall be used for all orange colored work zone signs.
- 3. The sign shields, symbols and messages contained on this sheet are provided for ready reference to those signs used in the development of the 102 Series of Indexes and are commonly used in the development of traffic control plans. For additional signs and sign detail information refer to the STANDARD HIGHWAY SIGNS MANUAL as specified in the MUTCD. Special signs for traffic control plans will be as approved by the State Traffic Plans Engineer.

The sign codes shown on this sheet are for the purpose of identifying cell names found in the Traffic Control Cell Library (TCZ.Cel).

The STANDARD HIGHWAY SIGNS MANUAL should be referenced for the official sign codes for use in the development of traffic control plans.

See Index 700-102 for MOT sign details.

COLOR CODES:

B/0

Legend and/or Symbol Background

R-Red (Reflectorized) Y-Yellow (Reflectorized) G-Green (Reflectorized) O-Orange (Reflectorized) B-Black (Non-Reflectorized) W-White (Reflectorized)

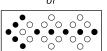
COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

REVISION 11/01/20

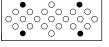
DESCRIPTION:



INDEX

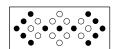






CAUTION





MOVE/MERGE LEFT

MOVE/MERGE RIGHT

MOVE/MERGE RIGHT OR LEFT

Minimum Required LampsAdditional Lamps Allowed

- MODES

NOTES:

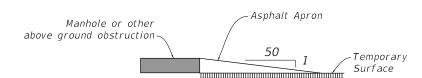
An arrow board in the arrow or chevron mode shall be used only for stationary or moving lane closures on multilane roadways.

For shoulder work, blocking the shoulder, for roadside work near the shoulder, or for temporarily closing one lane on a two-lane, two-way roadway, an arrow board shall be used only in the caution mode.

A single arrow board shall not be used to merge traffic laterally more than one lane. When arrow boards are used to close multiple lanes, a single board shall be used at the merging taper for each closed lane.

When Advance Warning Arrow Boards are used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.

= ADVANCE WARNING ARROW BOARDS ===



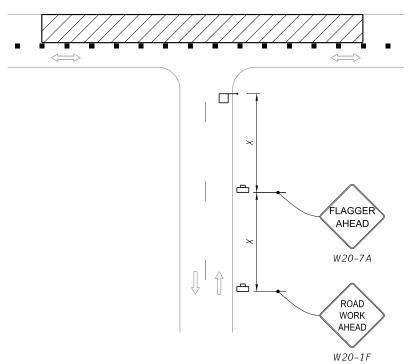
NOTES:

Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than $\frac{1}{4}$ " shall have a temporary asphalt apron constructed as shown above.

All transverse joints that have a difference in elevation of 1" or more shall have a temporary asphalt apron constructed as shown above.

The apron is to be removed prior to constructing the next lift of asphalt. The cost of the temporary asphalt shall be included in the contract unit price for Maintenance of Traffic, LS.

== MANHOLES/CROSSWALKS/JOINTS ======



NOTE:

Optionally, use "Flagger Ahead" sign with text (W20-7A) instead of "Flagger Ahead" sign with symbol (W20-7).

= SIDE ROAD INTERSECTING THE WORK ZONE =

SIGNALS:

Existing traffic signal operations that require modification in order to carry out work zone traffic control shall be included in the Plans and be approved by the District Traffic Operations Engineer.

Refer to Specification 102-9 for additional information.

CHANNELIZING DEVICES:

Channelizing devices for work zone traffic control shall be as prescribed in Part VI of the MUTCD, subject to supplemental revisions provided in the contract documents and the 102 Series of Indexes. Lighting Devices must not be used to supplement channelization. Omit tapers and channelizing devices for paved shoulders less than 4' in width.

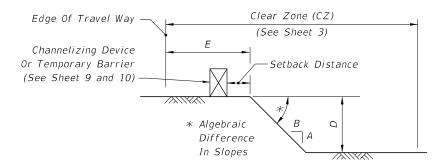
CHANNELIZING DEVICE CONSISTENCY:

Barricades, vertical panels, cones, tubular markers and drums shall not be intermixed within either the lateral transition or within the tangent alignment.

TRUCK/TRAILER-MOUNTED ATTENUATORS:

Truck/Trailer-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Index 102-607. For short-term, stationary operations, see Part VI of the MUTCD.

- 3. Drop-offs may be mitigated by placement of slopes with optional base material per Specifications Section 285. Slopes shallower than 1:4 may be required to avoid algebraic difference in slopes greater than 0.25. Include the cost for the placement and removal of the material in Maintenance of Traffic, LS. Use of this treatment in lieu of a temporary barrier is not eligible for CSIP consideration. Conduct daily inspections for deficiencies related to erosion, excessive slopes, rutting or other adverse conditions. Repair any deficiencies immediately.
- 4. For Setback Distance, refer to the Index or Approved Products List (APL) drawing of the selected barrier.
- 5. For Conditions 1 and 3 provided in Table 8, any drop-off condition that is created and restored within the same work period will not be subject to use of temporary barriers; however, channelizing devices will be required.
- 6. When permanent curb heights are \geq 6", no channelizing device will be required. For curb heights < 6", see Table 8.

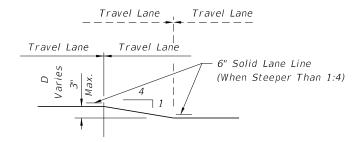


DROP-OFF CONDITION DETAIL

Table 8 Drop-off Protection Requirements			
Condition	E (ft)	D (in.)	Device Required
1	0-12	> 3	Temporary Barrier
2	> 12-CZ	> 3 to ≤ 5	Channelizing Device
3	0-CZ	> 5	Temporary Barrier
4	Removal of Bridge or Retaining Wall Barrier		Temporary Barrier
5		f portions of ge Deck	Temporary Barrier

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING NOTES

- 1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.
- 2. Whenever there is a difference in elevation between adjacent travel lanes, the W8-11 sign with "UNEVEN LANES" is required at intervals of $\frac{1}{2}$ mile maximum.
- 3. If D is $1\frac{1}{2}$ " or less, no treatment is required.
- 4. Treatment allowed only when D is 3" or less.
- 5. If the slope is steeper than 1:4 (not to be steeper than 1:1), the R4-1 and MOT-1-06 signs shall be used as a supplement to the W8-11; this condition should never exceed 3 miles in length.



TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING DETAIL

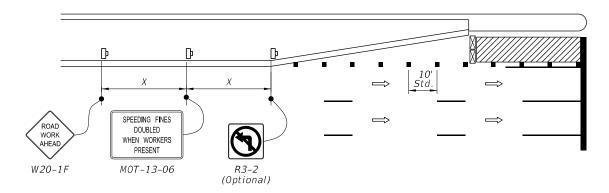
PEDESTRIAN WAY DROP-OFF CONDITION NOTES

- 1. A pedestrian way drop-off is defined as:
- a. a drop in elevation greater than 10" that is closer than 2' from the edge of the pedestrian way
- b. a slope steeper than 1:2 that begins closer than 2' from the edge of the pedestrian way when the total drop-off is greater than 60"
- 2. Protect any drop-off adjacent to a pedestrian way with pedestrian longitudinal channelizing devices, temporary barrier wall, or approved handrail.

DROP-OFFS IN WORK ZONES

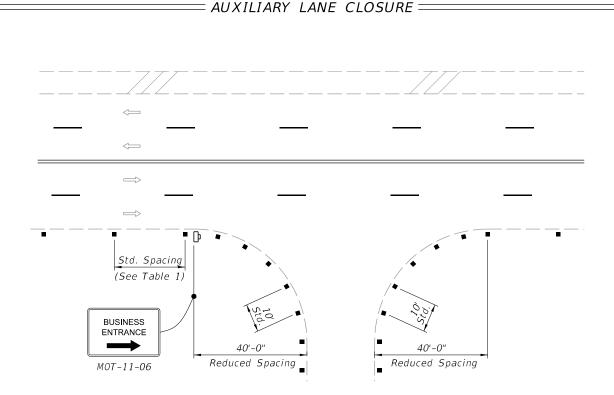
DESCRIPTION:

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NOTES:

- 1. X = Work Zone Sign Spacing (See Table 3).
- 2. The SPEEDING FINES DOUBLE WHEN WORKERS
 PRESENT sign (MOT-13-06) may be omitted when
 work operation will be in place for 24 hours or less.



NOTES:

- 1. For single business entrances, place one 24" x 36" BUSINESS ENTRANCE sign (MOT-11-06) showing the specific business name for each affected driveway entrance. Logos may be provided by business owners. Standard BUSINESS ENTRANCE sign (MOT-11-06) may be used when approved by the Engineer.
- 2. When several businesses share a common driveway entrance, place one 24" x 36" standard BUSINESS ENTRANCE sign (MOT-11-06) in accordance with Index 700-102 at the common driveway entrance.
- 3. Channelizing devices shall be placed at a reduced spacing on each side of the driveway entrance, but shall not restrict sight distance for the driveway users.
- 4. Business entrance signs are intended to guide motorist to business entrances moved/modified or disturbed during construction projects.

 Business entrance signs are not required where there is minimal disruption to business driveways which is often the case with resurfacing type projects.

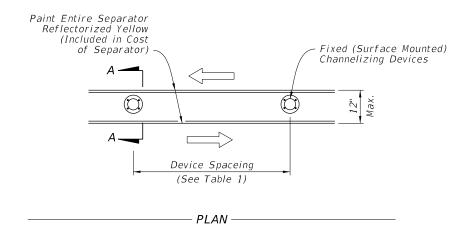
BUSINESS ENTRANCE SIGNS AND CHANNELIZING = DEVICES PLACEMENT AT BUSINESS ENTRANCE

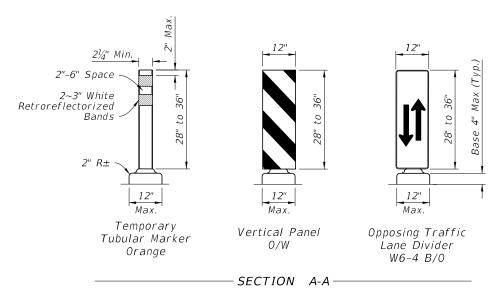
LAST REVISION 11/01/23

DESCRIPTION:



FY 2024-25 STANDARD PLANS





NOTES:

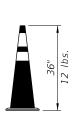
- 1. Temporary lane separators shall be supplemented with any of the following approved fixed (surface mounted) channelizing devices: temporary tubular markers, vertical panels, or opposing traffic lane divider panels. Opposing traffic lane divider panels (W6-4) shall only be used as center lane dividers to separate opposing vehicular traffic on a two-lane, two-way operation. Temporary Tubular Markers, Vertical Panels and Opposing Traffic Lane Divider panels shall not be intermixed within the limits where the temporary lane separator is used. The connection between the channelizing device and the temporary lane separator curb shall hold the channelizing device in a vertical position.
- 2. Reflectorized materials shall have a smooth sealed outer surface which will display the same approximate color day and night. Furnish channelizing devices having retroreflective sheeting meeting the requirements of Section 990.
- 3. 12" openings for drainage shall be constructed in the asphalt and portable temporary lane separator at a maximum spacing of 25' in areas with grades of 1% or less or 50' in areas with grades over 1% as directed by the Engineer.
- 4. Tapered ends shall be used at the beginning and end of each run of the temporary lane separator to form a gradual increase in height from the pavement level to the top of the temporary lane separator.
- 5. The Contractor has the option of using portable temporary lane separators containing fixed channelizing devices in lieu of the temporary asphalt separator and channelizing devices detailed on this sheet. The portable temporary lane separator shall come in portable sections that can be connected to maintain continuous alignment between the separate curb sections. Each temporary lane separator section shall be 36 inches to 48 inches in total length. Portable temporary lane separators shall duplicate the color of the pavement marking. Portable temporary lane separators shall be one of those listed on the Approved Products List.

= FIXED CHANNELIZING DEVICES == (Temporary Lane Separators)

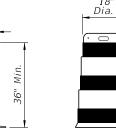
INDEX

SHEET

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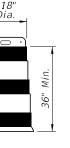


TEMPORARY CONES TUBULAR MARKER

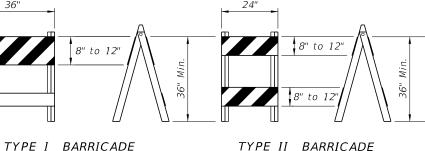


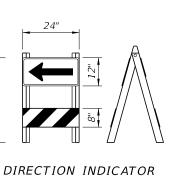
PLASTIC

DRUMS

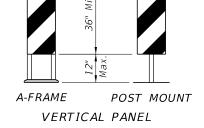


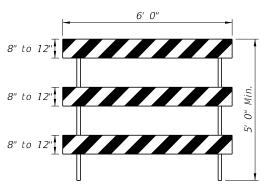






BARRICADE



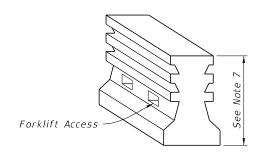


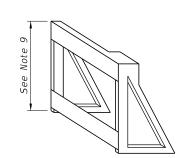
TYPE III BARRICADE

CHANNELIZING DEVICES =

CHANNELIZING DEVICE NOTES:

- 1. The details shown on this sheet are for the following purposes:
- a. For ease of identification and
- b. To provide information that supplements or supersedes that provided by the MUTCD.
- 2. The Type III Barricade shall have a unit length of 6'-0" only. When barricades of greater lengths are required those lengths shall be in multiples of the 6'-0" unit.
- 3. No sign panel should be mounted on any channelizing device unless the channelizing device/sign combination was found to be crashworthy and the sign panel is mounted in accordance with the vendor drawing for the channelizing device shown on the Approved Products List (APL).
- 4. Ballast shall not be placed on top rails or any striped rails or higher than 13" above the driving surface.
- 5. The direction indicator barricade may be used in tapers and transitions where specific directional guidance to drivers is necessary. If used, direction indicator barricades shall be used in series to direct the driver through the transition and into the intended travel lane.
- 6. The splicing of sheeting is not permitted on channelizing devices or MOT signs.
- 7. For rails less than 3'-0" long, 4" stripes shall be used.
- 8. Cones shall:
- a. Be used only in active work zones where workers are present.
- b. Be reflectorized as per the MUTCD with Department-approved reflective collars when used at night.
- 9. For pedestrian longitudinal channelizing devices, the device shall have a minimum of 8" continuous detectable edging above the walkway. A gap not exceeding a height of 2" is allowed to facilitate drainage. The top surface of the device shall be a minimum height of 32" and have a $\frac{1}{8}$ " or less difference in any plane at all connection points between the devices to facilitate hand trailing. The bottom and the top surface of the device shall be in the same vertical plane. If pedestrian drop-off protection is required, the device shall have a footprint or offset of at least 2', otherwise the device must be at least 42" in height above the walkway and be anchored or ballasted to withstand a 200 lb lateral point load at the top of the device.





= PEDESTRIAN LONGITUDINAL CHANNELIZING DEVICES =

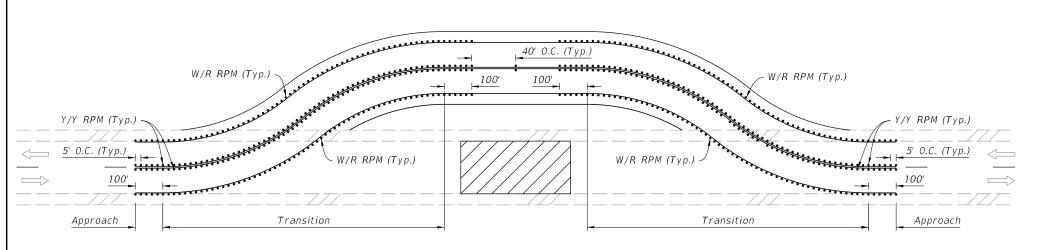
TEMPORARY BARRIER NOTES:

1. Where a barrier is specified, any of the types below may be used in accordance with the applicable Index:

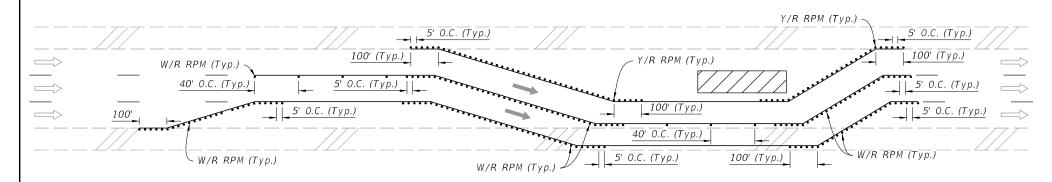
<u>Index</u>	Description
102-100	Temporary Barrier
102-120	Low Profile Barrie
536-001	Guardrail

2. Trailer Mounted Barriers may be used to provide positive protection for workers within the work areas. APL drawings may be used as a guide to develop project specific Temporary Traffic Control Plans that are signed and sealed by the Contractor's Engineer.





RPM PLACEMENT ON TWO-LANE ROADWAYS



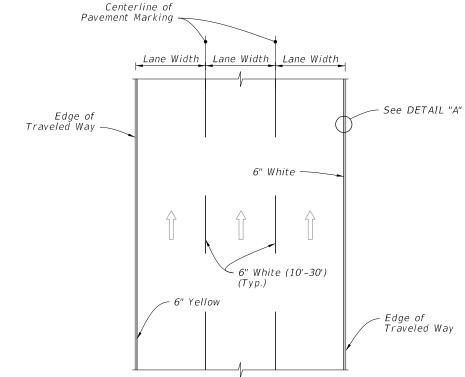
RPM PLACEMENT ON MULTILANE ROADWAYS

(Lane Shift Shown, Other Multilane Typical Applications Similar)

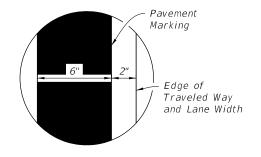
NOTES:

- 1. Install RPMs as a supplement to:
- b. Edge lines in transitions (e.g., merges, diversions, lane shifts)
- c. Edge lines of gore areas
- 2. Extend pavement marking and 5' RPM spacing by 100' in each direction for all transitions regardless of the line type.
- 3. Place RPMs in accordance with this detail and Index 706-001.

RPM PLACEMENT IN WORK ZONES =



PLAN VIEW



DETAIL "A"

PAVEMENT MARKINGS PLACEMENT =

WORK ZONE PAVEMENT MARKINGS

REVISION 11/01/23

DESCRIPTION:

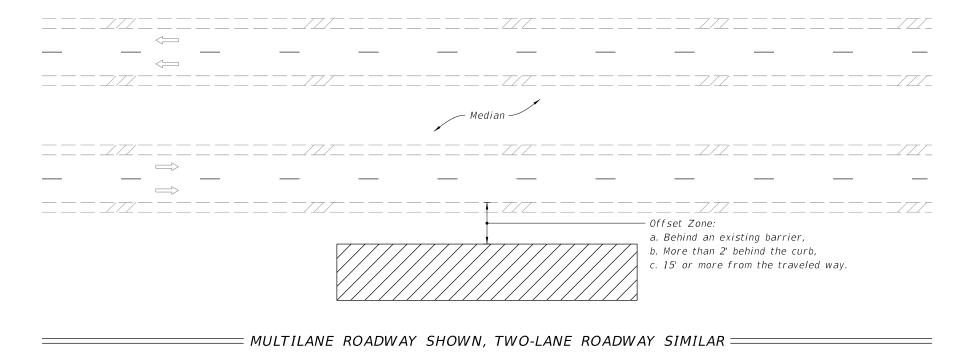
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FY 2024-25 STANDARD PLANS

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

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SHEET 11 of 11



NOTES:

- 1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work beyond the shoulder.
- 2. Use Index 102-602 when the work operation (excluding establishing and terminating the work area) requires that two or more work vehicles cross the Offset Zone in any one hour period.
- 3. Use Index 102-660 when Work Area encroaches a Sidewalk.

SYMBOLS:

Work Area

Lane Identification and Direction of Traffic

REVISION 11/01/20

DESCRIPTION:



2. L = Taper Length X = Work Zone Sign Spacing B = Buffer LengthSee Index 102-600 for "L", "X", "B", and channelizing device spacing values.

- 3. Where work activities are between 2' and 15' from the edge of traveled way, the Engineer may omit signs and channelizing devices for work operations 60 minutes
- 4. When four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area), use a flagger or lane closure to accommodate work vehicle ingress and egress.
- 5. For work less than 2' from the traveled way and work zone speed is greater than 45 MPH, use a lane closure.
- 6. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" Signs (G20-2) along with the associated work zone sign spacing distances may be omitted when the work operation is in place for 24 hours or less.
- 7. Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.
- 8. Omit "Shoulder Closed" signs (W21-5a) along with associated work zone sign spacing distances for work on the median.
- 9. When there is no paved shoulder, the "Worker" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a).

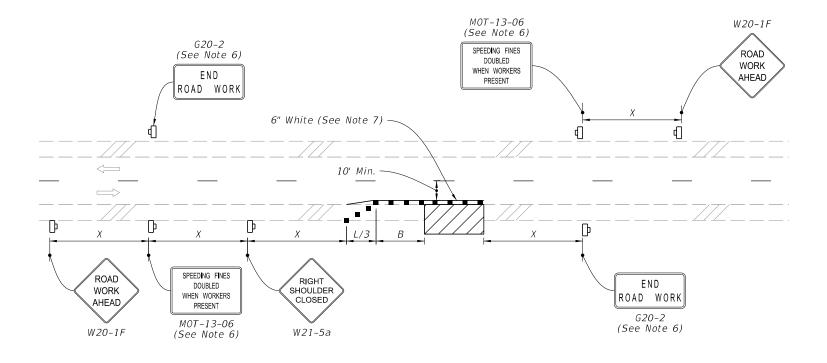
SYMBOLS:

Work Area

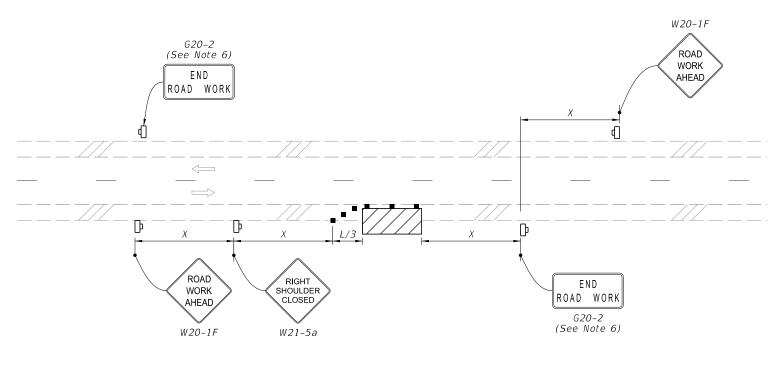
Channelizing Device (See Index 102-600)

Work Zone Sign

Lane Identification and Direction of Traffic

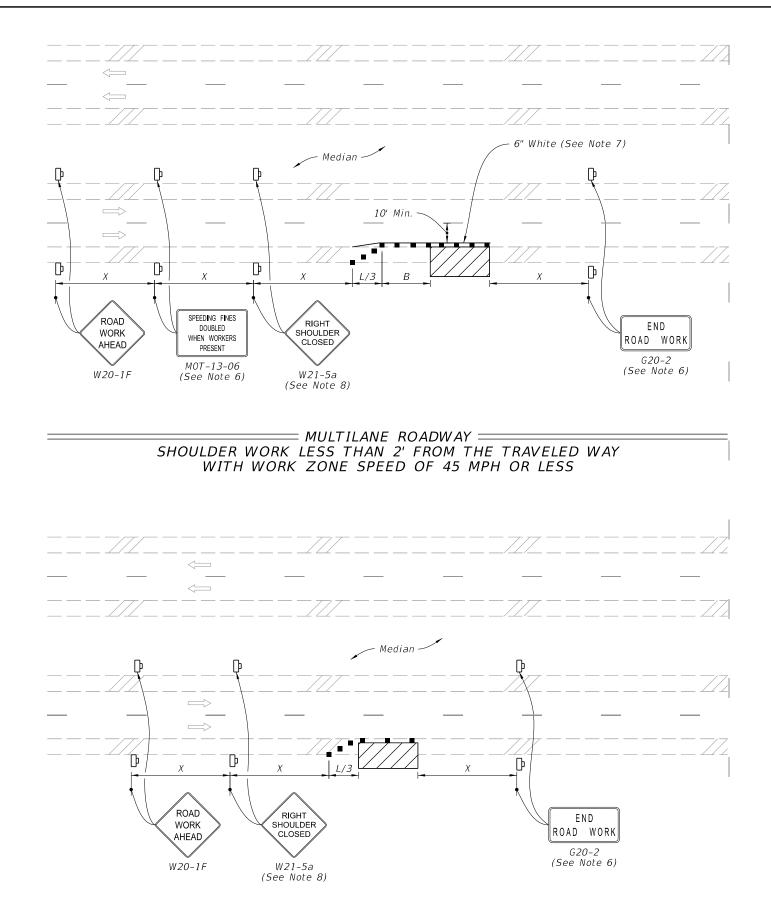


= TWO-LANE ROADWAY = SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY WITH WORK ZONE SPEED OF 45 MPH OR LESS



:TWO-LANE ROADWAY =

SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY



Work Area

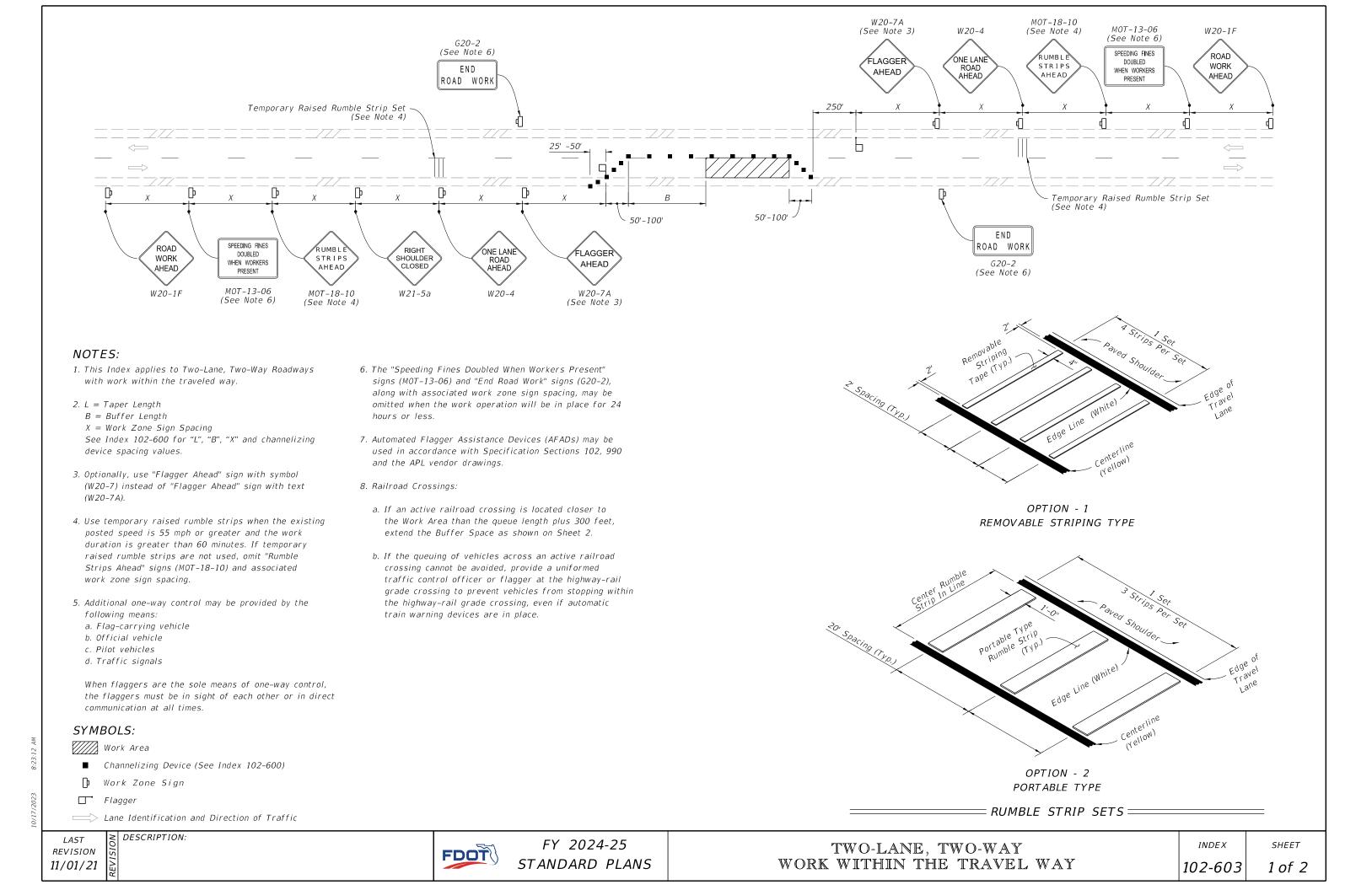
■ Channelizing Device (See Index 102-600)

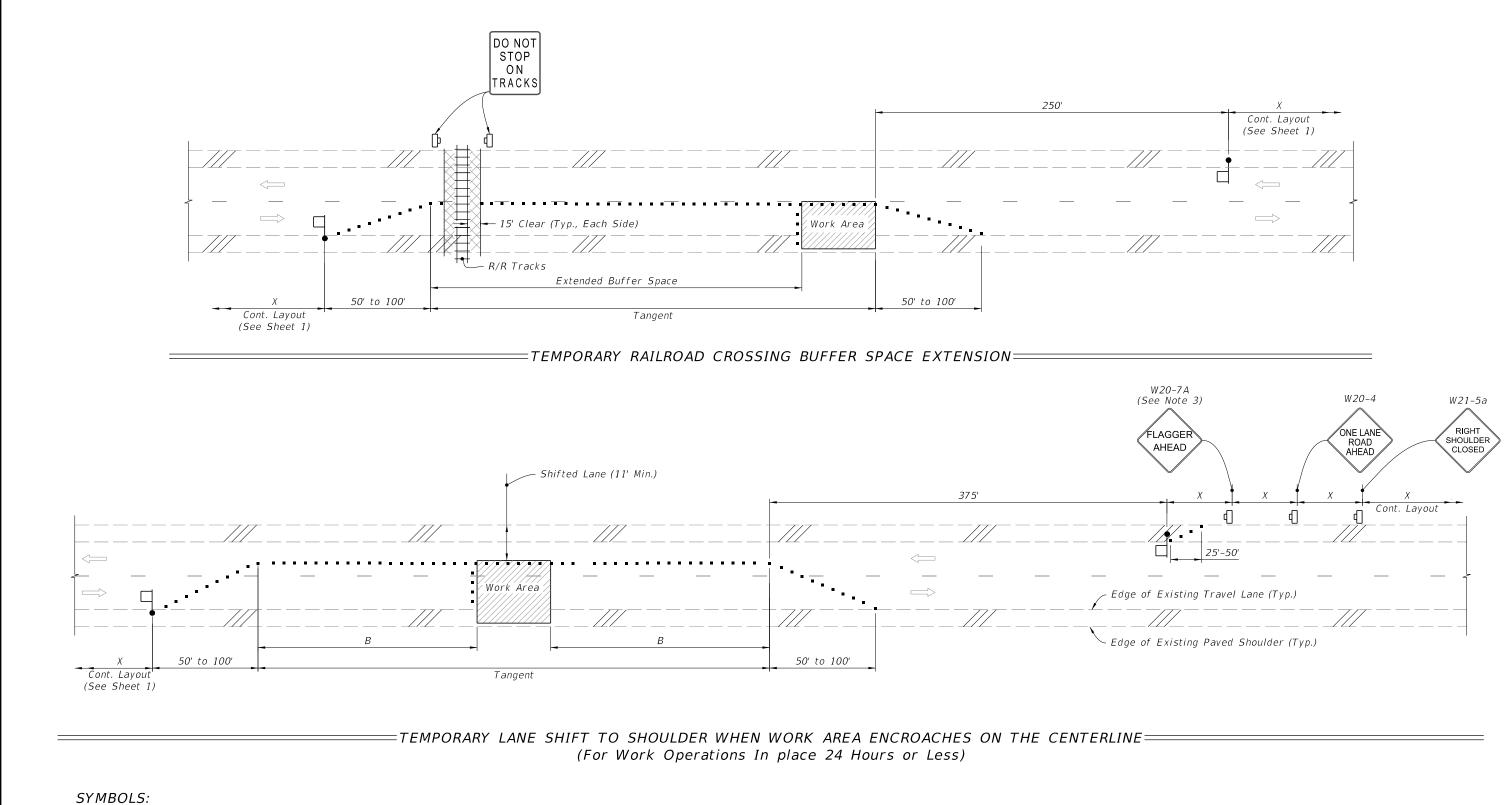
₩ork Zone Sign

Lane Identification and Direction of Traffic

SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

DESCRIPTION:





Work Area

■ Channelizing Device (See Index 102-600)

₩ork Zone Sign

☐ Flagger

DESCRIPTION:

Lane Identification and Direction of Traffic

SPECIAL CONDITIONS

REVISION 11/01/21

FDOT

FY 2024-25 STANDARD PLANS

TWO-LANE, TWO-WAY WORK WITHIN THE TRAVEL WAY

INDEX 102-603

SHEET 2 of 2

GENERAL NOTES:

- 1. This Index applies to two-lane, two-way roadways with work within or near the intersection.
- 2. X = Work Zone Sign SpacingSee Index 102-600 for "X" and channelizing device spacing values.
- 3. Optionally, use "Flagger Ahead" sign with text (W20-7A) instead of "Flagger Ahead" sign with symbol (W20-7).
- 4. If vehicles in a parking zone block the line of sight to TCZ signs, locate and post mount signs in accordance with Index 700-101.
- 5. If the work area extends across a crosswalk, close the crosswalk in accordance with Index 102-660.
- 6. For unsignalized intersections, use Temporary Raised Rumble Strips in accordance with Index 102-603. Placement of Rumble Strips and additional signs should begin at FLAGGER sign location.
- 7. The "End Road Work" signs (G20-2) along with the associated work zone sign distances may be omitted when the work zone will be in place for 24 hours or less.
- 8. As an option to the "STOP" sign (R1-1) and Restricted Left/Right Turning Movement sign (R3-1 or R3-2), the "SIDE ROAD INTERSECTING THE WORK ZONE" flagging operation from Index 102-600 may be used.

SYMBOLS:

Work Area

■ Channelizing Device (See Index 102-600)

Work Zone Sign

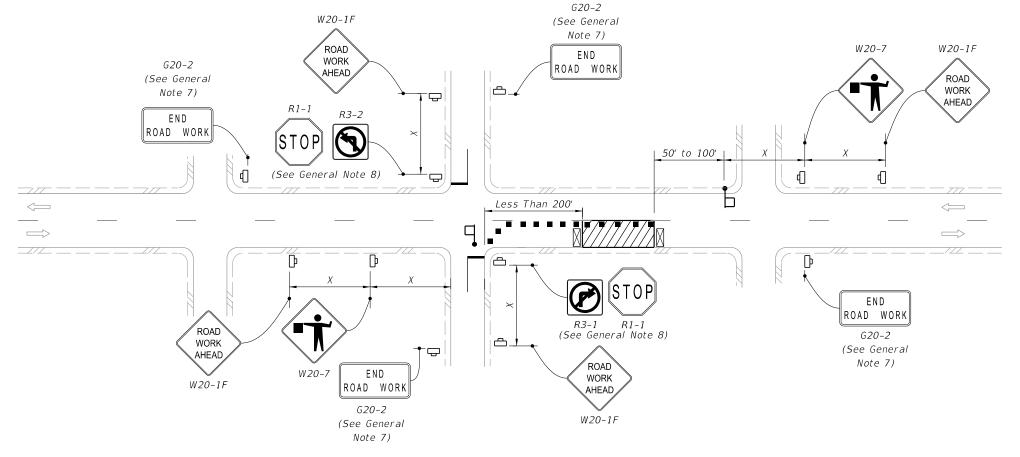
Type III Barricade

DESCRIPTION:

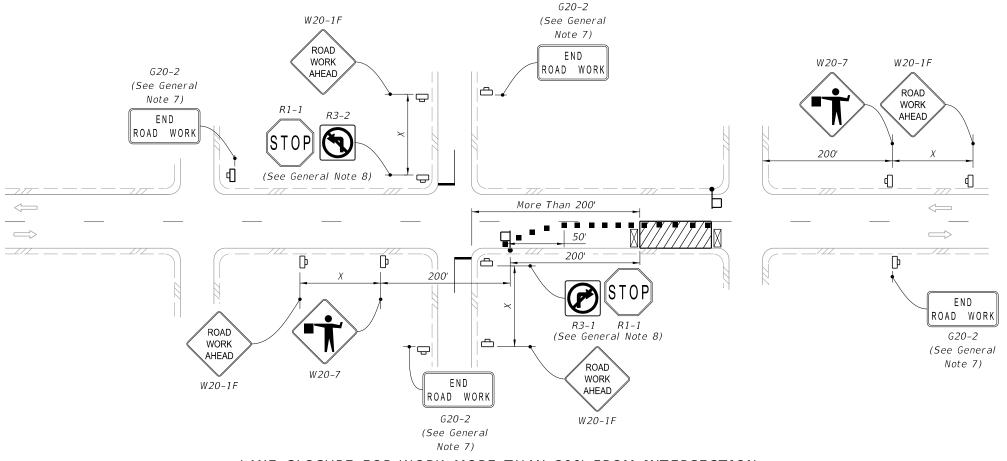
Stop Bar

☐ Flagger

Lane Identification and Direction of Traffic

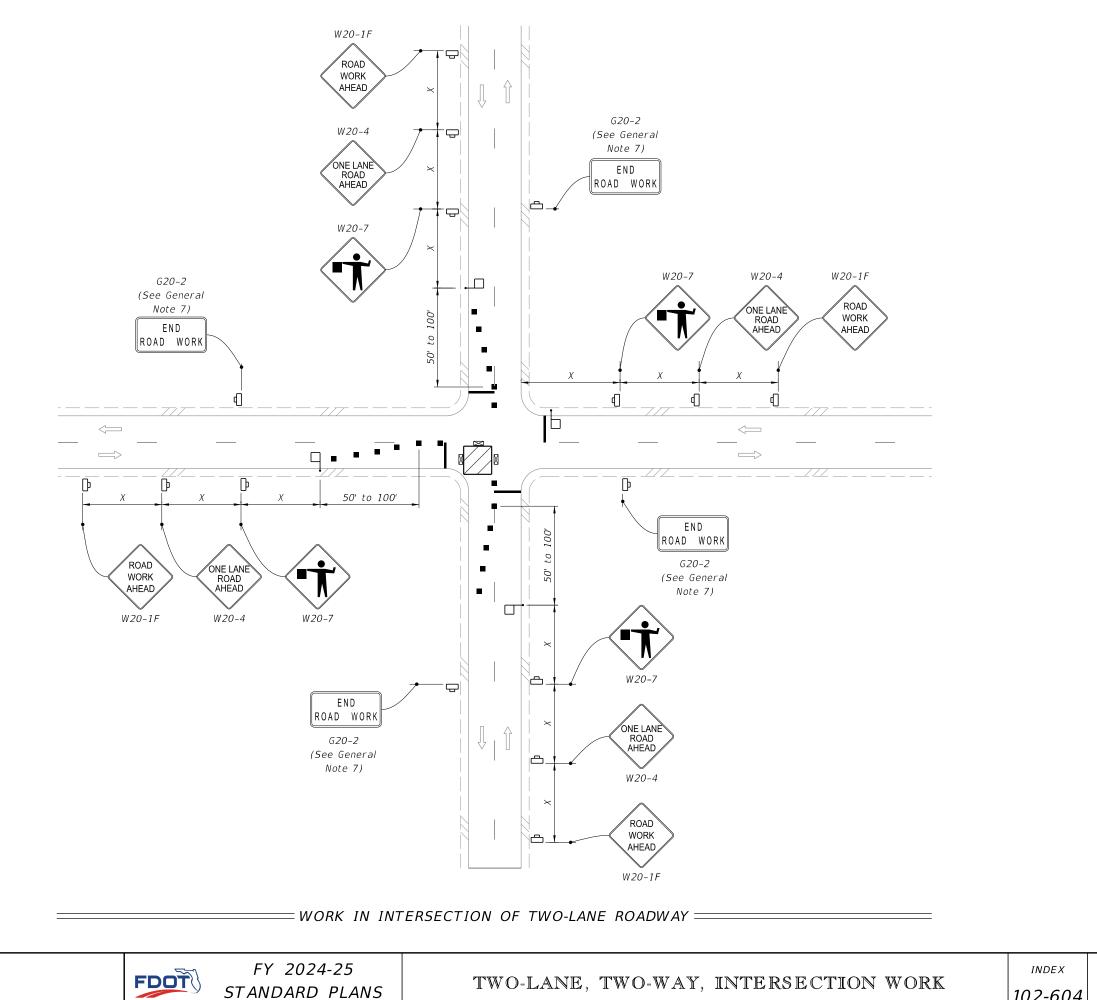


LANE CLOSURE FOR WORK LESS THAN 200' FROM INTERSECTION:



LANE CLOSURE FOR WORK MORE THAN 200' FROM INTERSECTION

REVISION 11/01/22



REVISION 11/01/22

SYMBOLS:

Stop Bar

☐ Flagger

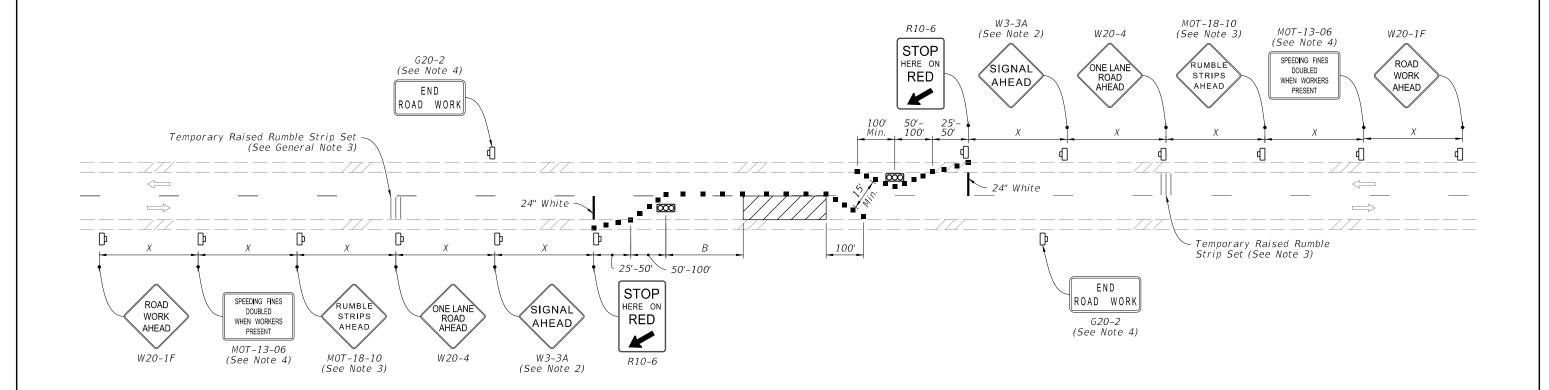
DESCRIPTION:

■ Channelizing Device (See Index 102-600)

Lane Identification and Direction of Traffic

Work Zone Sign

Type III Barricade



NOTES:

- 1. L = Taper Length
- B = Buffer Length
- X = Work Zone Sign Distance

See Index 102-600 for "L", "B", "X", and channelizing device spacing values.

- 2. Optionally, use "Signal Ahead" signs with symbols (W3-3) instead of "Signal Ahead" signs with text (W3-3A).
- 3. Use temporary raised rumble strips in accordance with Index 102-603.
- 4. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" signs (G20-2), along with associated work zone sign distances, may be omitted when the work operation will be in place for 24 hours or less.
- 5. For the maximum distance between temporary traffic signals, do not exceed the distance at which the temporary traffic signals can safely communicate. When the distance temporary traffic signals is greater than 0.25 miles, use a combination of a pilot vehicle and manually-controlled temporary traffic signals.
- 6. Monitor temporary traffic signals by having one or more workers present during operation. In the event of a temporary traffic signal failure, use flaggers to control traffic.

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Temporary Traffic Signal
- Lane Identification and Direction of Traffic

DESCRIPTION:

GENERAL NOTES:

- 1. This Index applies to two-lane, two-way and multilane roadways with work that requires a moving operation.
- 2. Mount vehicle-mounted signs with the bottom of the sign at a minimum height of 48 inches above the pavement. Vehicle mounted changeable message signs may be used in lieu of truck mounted static signs and arrow boards. Ensure changeable message signs flash alternately to read "Left or Right Lane" or "Two Left or Two Right Lanes", "Closed Ahead", and the arrow symbol. Do not use arrow boards in combination with truck mounted changeable message signs or obscure boards with equipment, supplies, signs, or enclosure. Cover or turn sign legends from view when work is not in progress.
- 3. For multilane roadways with curb and no paved shoulder, omit the shadow vehicle that would have been used on the paved shoulder. In such instances, the warning sign should be mounted on the shadow vehicle farthest from the work vehicle.
- 4. Where work activities within 2' of the edge of travel way are incidental (i.e., Mowing, Litter Removal), the Engineer may omit requirements for signs and the Shadow vehicle on the shoulder.
- 5. Minimize the longitudinal spacing between vehicles to deter road users from driving in between.
- 6. Use inverted plan of the illustrations for work on left side of roadways.
- 7. Ensure that all vehicles in the mobile operation convoy have functional two-way communication.
- 8. If the speed of the mobile operation exceeds the existing posted minimum speed limit on limited access roadways and one half the existing posted speed limit on other roadways, the Engineer may delete requirements for shadow vehicles and attenuators. In such situations, mount arrow board and sign on the work vehicle.
- 9. The distance between the advance warning sign and the work location should not exceed 5 miles.

SYMBOLS:

Lane Identification and Direction of Traffic

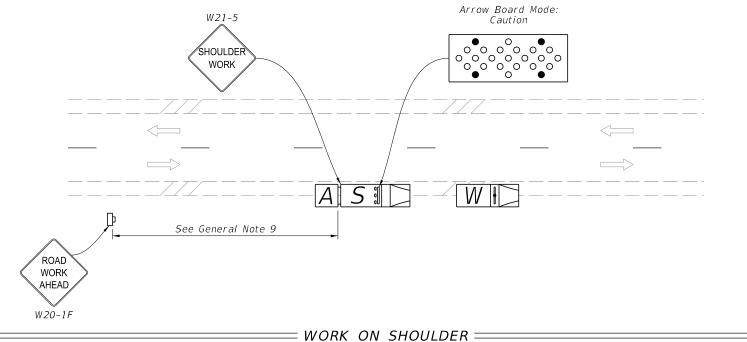
A Truck/Trailer Mounted Attenuator (TMA)

W Work Vehicle With Warning Lights

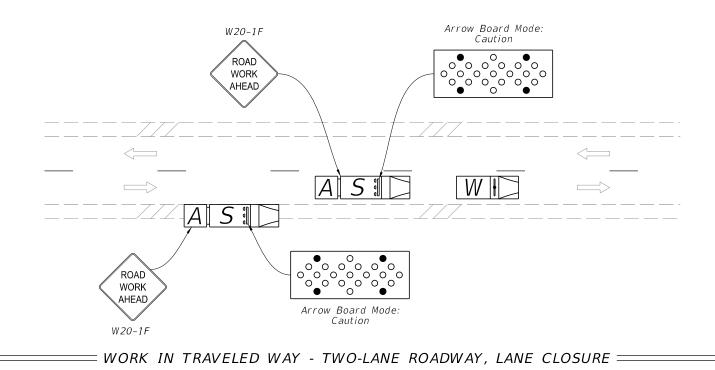
Single Shadow (S) Vehicle With Warning Lights And Arrow Board

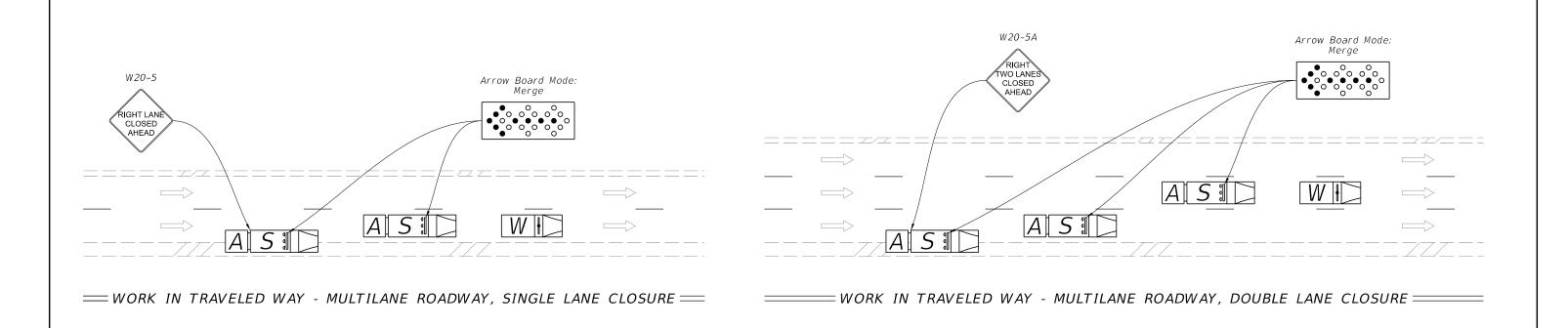
Work Zone Sign

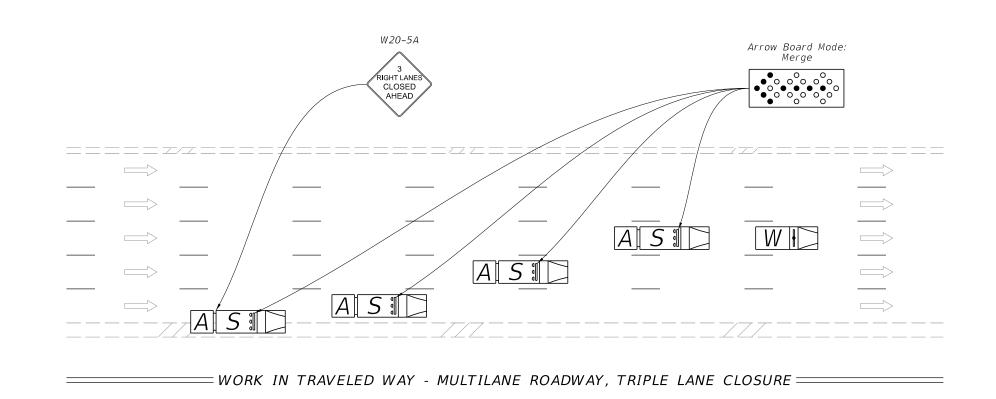
DESCRIPTION:



(Two-Lane Roadway Shown, Multilane Roadway Similar)







DESCRIPTION:

W Nork Vehicle With Warning Lights

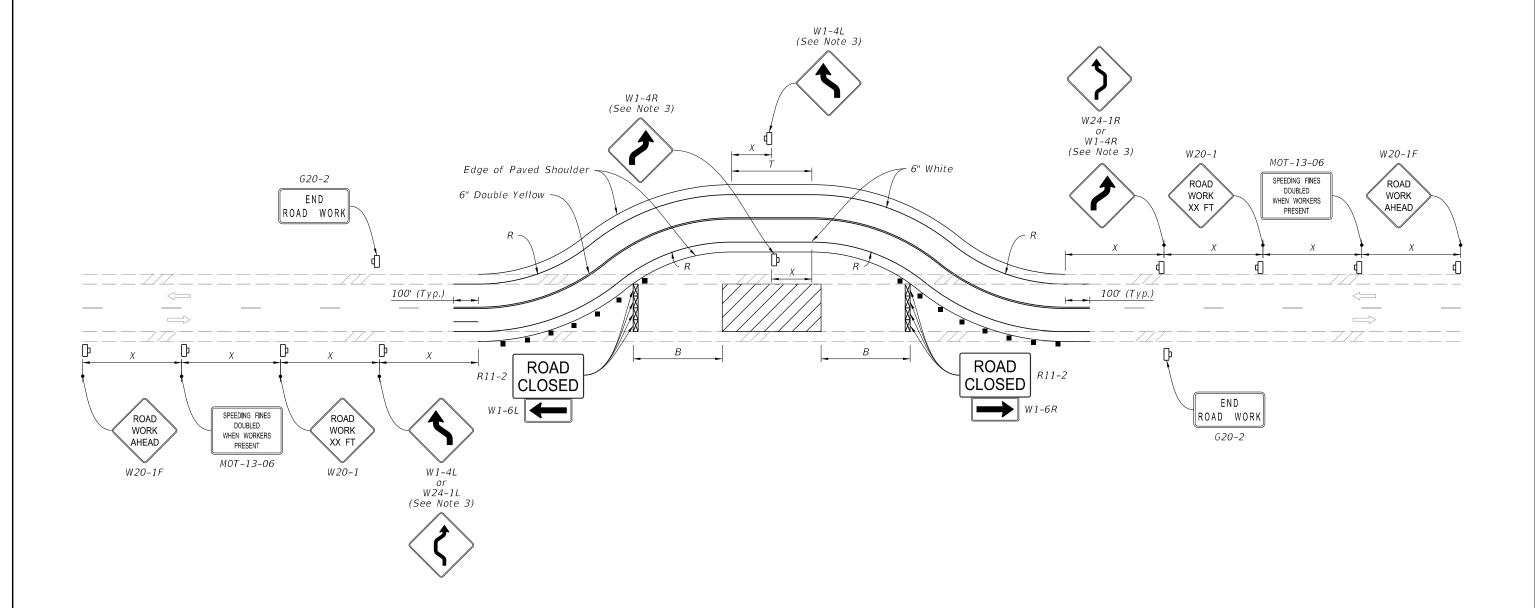
SID Shadow (S) Vehicle With Warning Lights And Arrow Board

Truck/Trailer Mounted Attenuator (TMA)

Lane Identification and Direction of Traffic

REVISION 11/01/22

FDOT





■ Channelizing Device (See Index 102-600)

₩ork Zone Sign

∑ Type III Barricade

DESCRIPTION:

Lane Identification and Direction of Traffic

NOTES:

1. This Index applies to Two-Lane, Two-Way Roadways with temporary diversions.

2. B = Buffer Length

X = Work Zone Sign Distance

R = Radius of Curve

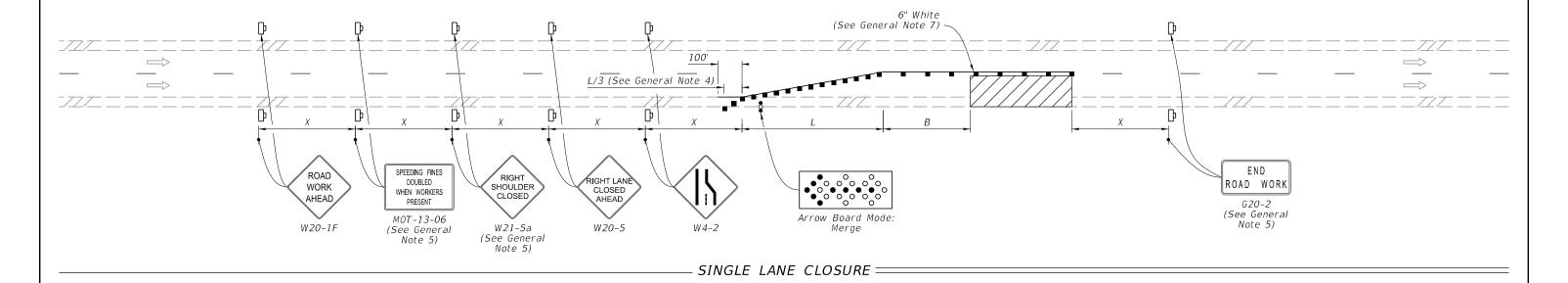
See Index 102-600 for "B", "X", and channelizing device spacing values.

See Plans for "R" values.

3. If the tangent distance "T" is less than 600', for each direction use a "Double Reverse Curve" sign (W24-1) instead of the first "Reverse Curve" sign (W1-4) and omit the second "Reverse Curve" sign.

REVISION 11/01/20

FDOT





■ Channelizing Device (See Index 102-600)

Work Zone Sign

Arrow Board

Lane Identification and Direction of Traffic

GENERAL NOTE:

- 1. L = Taper Length
- B = Buffer Length
- X = Work Zone Sign Distance

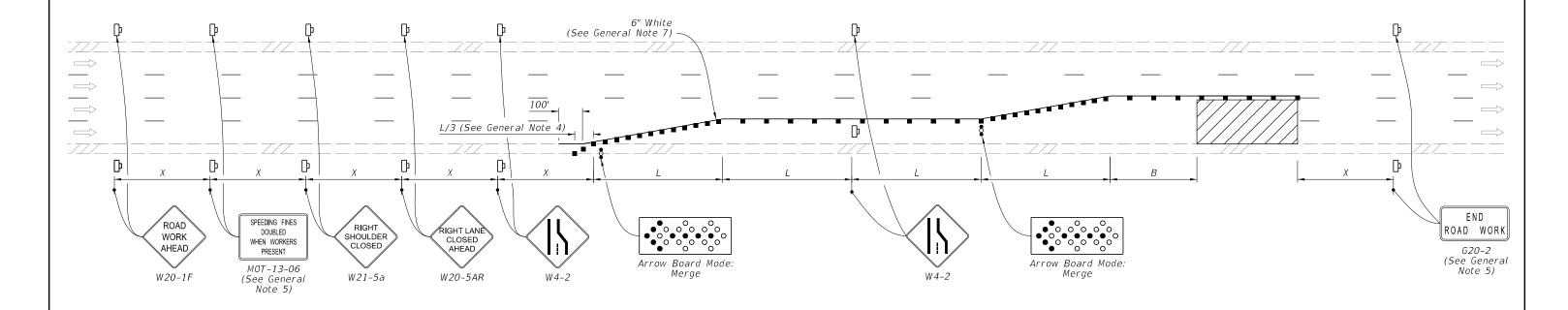
See Index 102-600 for "L", "B", "X", and channelizing device spacing values.

- 2. On undivided highways the median signs as shown are to be omitted.
- 3. On limited access facilities, omit "Right Shoulder Closed" signs (W21-5a) and associated work zone sign spacing distances.
- 4. If the paved shoulder is less than 4' in width, omit the taper and channelizing devices from the paved shoulder.
- 5. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" signs (G20-2) and "Right Shoulder Closed" (W21-5a), along with associated work zone sign distances, may be omitted when the work operation will be in place for 24 hours or less. For Single Lane Closures, arrow boards and buffer (B) may also be omitted when the work operation will be in place for 60 minutes or less and the speed limit is 45 mph or less.
- 6. Use inverted plan of the illustrations for work on left side of roadways.
- 7. Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.

DESCRIPTION:







DOUBLE LANE CLOSURE =

SYMBOLS:

DESCRIPTION:



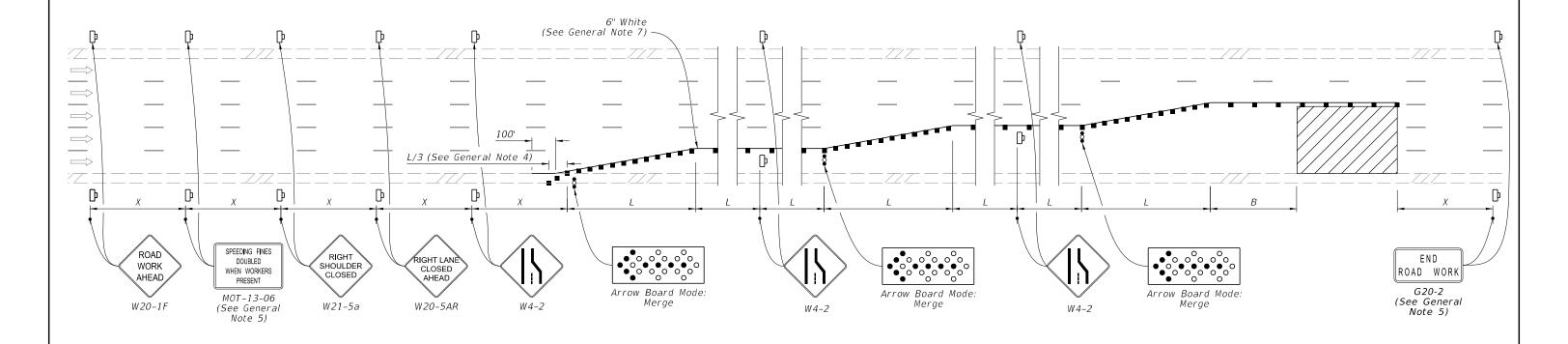
■ Channelizing Device (See Index 102-600)

Work Zone Sign

Arrow Board

Lane Identification and Direction of Traffic

LAST REVISION 11/01/20



= TRIPLE LANE CLOSURE =

SYMBOLS:



DESCRIPTION:

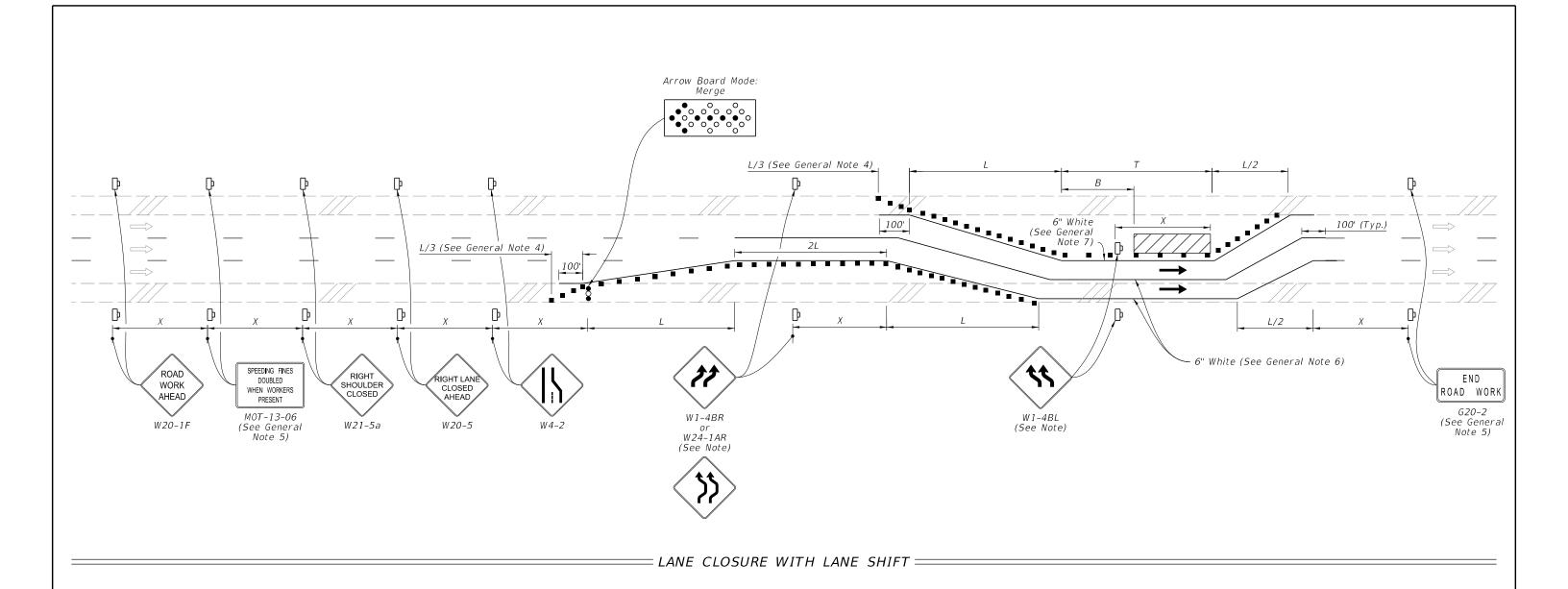
■ Channelizing Device (See Index 102-600)

Work Zone Sign

Arrow Board

Lane Identification and Direction of Traffic

REVISION 11/01/20



NOTE:

If the tangent distance "T" is less than 600', then use "Double Reverse Curve" signs (W24-1A) instead of the first pair of "Reverse Curve" signs (W1-4B) and omit the second pair of "Reverse Curve" signs.

SYMBOLS:



■ Channelizing Device (See Index 102-600)

₩ork Zone Sign

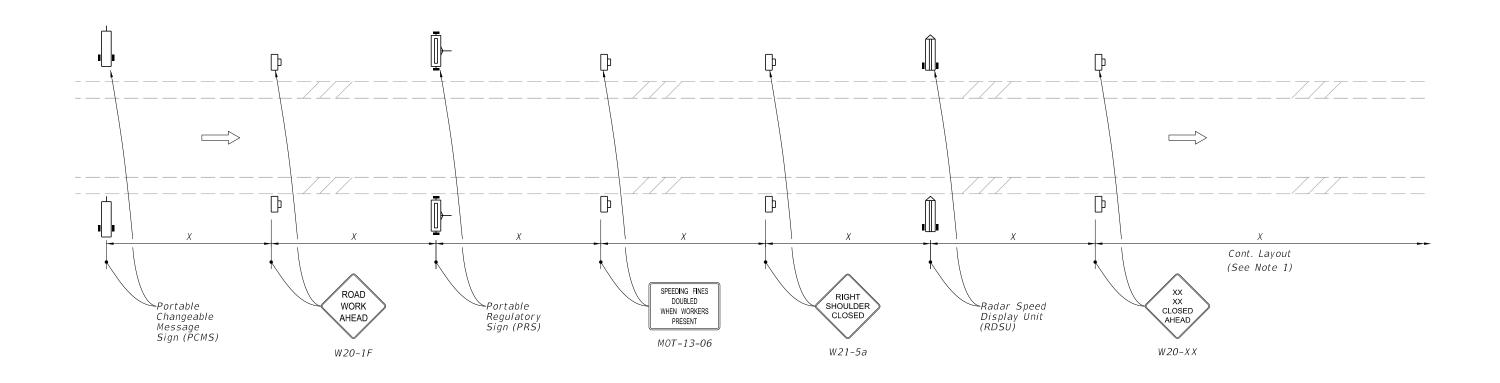
Arrow Board

Lane Identification and Direction of Traffic

REVISION 11/01/20

DESCRIPTION:





MOTORIST AWARENESS SYSTEM

SYMBOLS:

Work Zone Sign

(1) PCMS= Portable Changeable (Variable) Message Sign

1 (2) PRS= Portable Regulatory Sign-Speed Limit When Flashing

(2) RSDU= Radar Speed Display Unit

Lane Identification and Direction of Traffic

NOTES:

- 1. Use the Motorist Awareness System (MAS) for lane closures of at least 5 days (consecutive or not) on multilane divided facilities with a posted speed of 55 mph or greater when workers are present and not protected by a barrier.
- 2. Locate the Motorist MAS devices (i.e., PCMS, PRS, and RDSU) within the advance warning signs as shown. Continue with the remainder of the work zone signs and devices in accordance with the Plans or Standard Plans after the appropriate "Lane Closed Ahead" (W20-XX) sign.
- 3. For a posted speed of 65 mph or greater, display speed with a ten mph reduction. For a posted speed of 60 mph, display a reduced speed of 55 mph. For areas outside of the lane closure, use the posted speed as the work zone speed.
- 4. Omit the PCMS in the median for roadways with three lanes or less in the same direction of traffic.

TYPICAL PCMS DISPLAY:

With speed reduction:

Message 1: WORKERS PRESENT AHEAD Message 2: SPEED REDUCED NEXT XXMI

Without speed reduction:

Message 1: WORKERS PRESENT AHEAD

Message 2: NEXT XX MILES

REVISION 11/01/21

DESCRIPTION:





- 1. L = Taper Length
- B = Buffer Length
- X = Work Zone Sign Distance

See Index 102-600 for "L", "B", "X", and channelizing device spacing values.

- 2. If vehicles in a parking zone block the line of sight to TCZ signs, locate and post mount signs in accordance with Index 700-101.
- 3. Use temporary "STOP" sign (R1-1) where the existing stop bar is more than 30' from the taper, remove or cover existing sign.
- 4. The "Speeding Fines Doubled When Workers Present" sign (MOT-13-06) and "End Road Work" Sign (G20-2), along with associated Work Zone Sign Distances, may be omitted when the work operation will be in place for 24 hours or less. Additionally, arrow boards may be omitted when the work operation will be in place for 60 minutes or less and the speed
- 5. If the work area extends across a crosswalk, close the crosswalk in accordance with Index 102-660.
- 6. Dual signs are required for divided roadways.

SYMBOLS:

Work Area

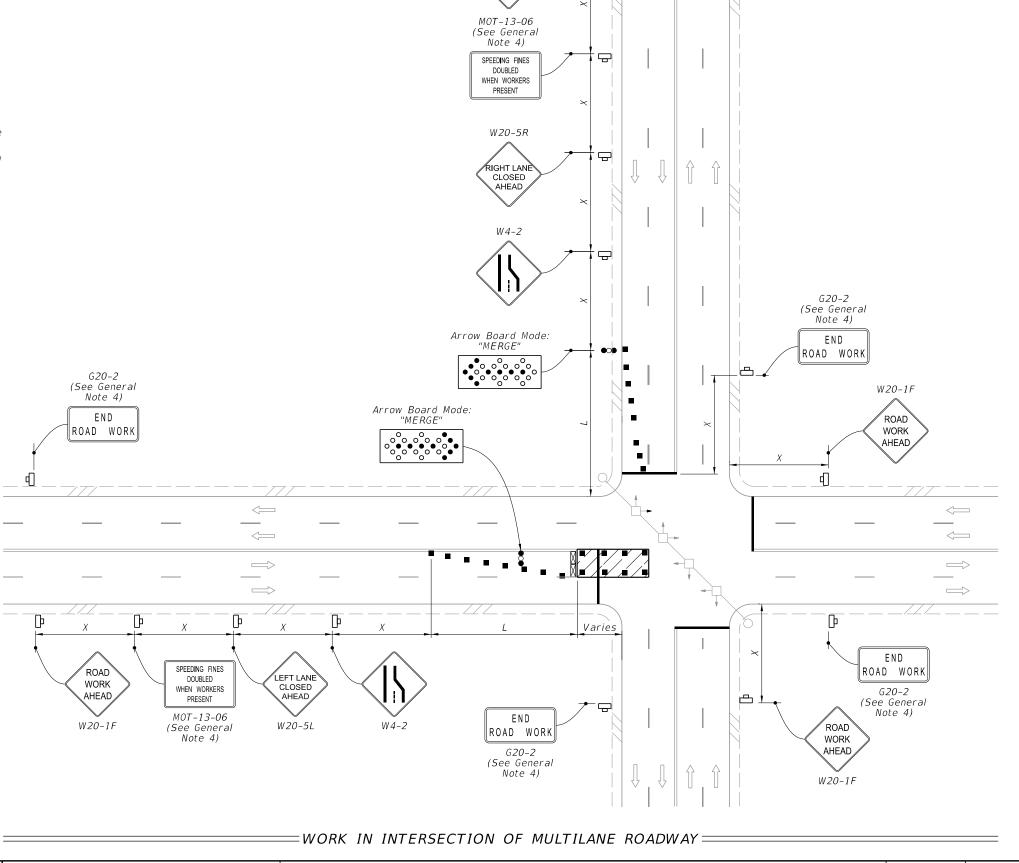
■ Channelizing Device (See Index 102-600)

Work Zone Sign

Type III Barricade

Arrow Board

Lane Identification and Direction of Traffic

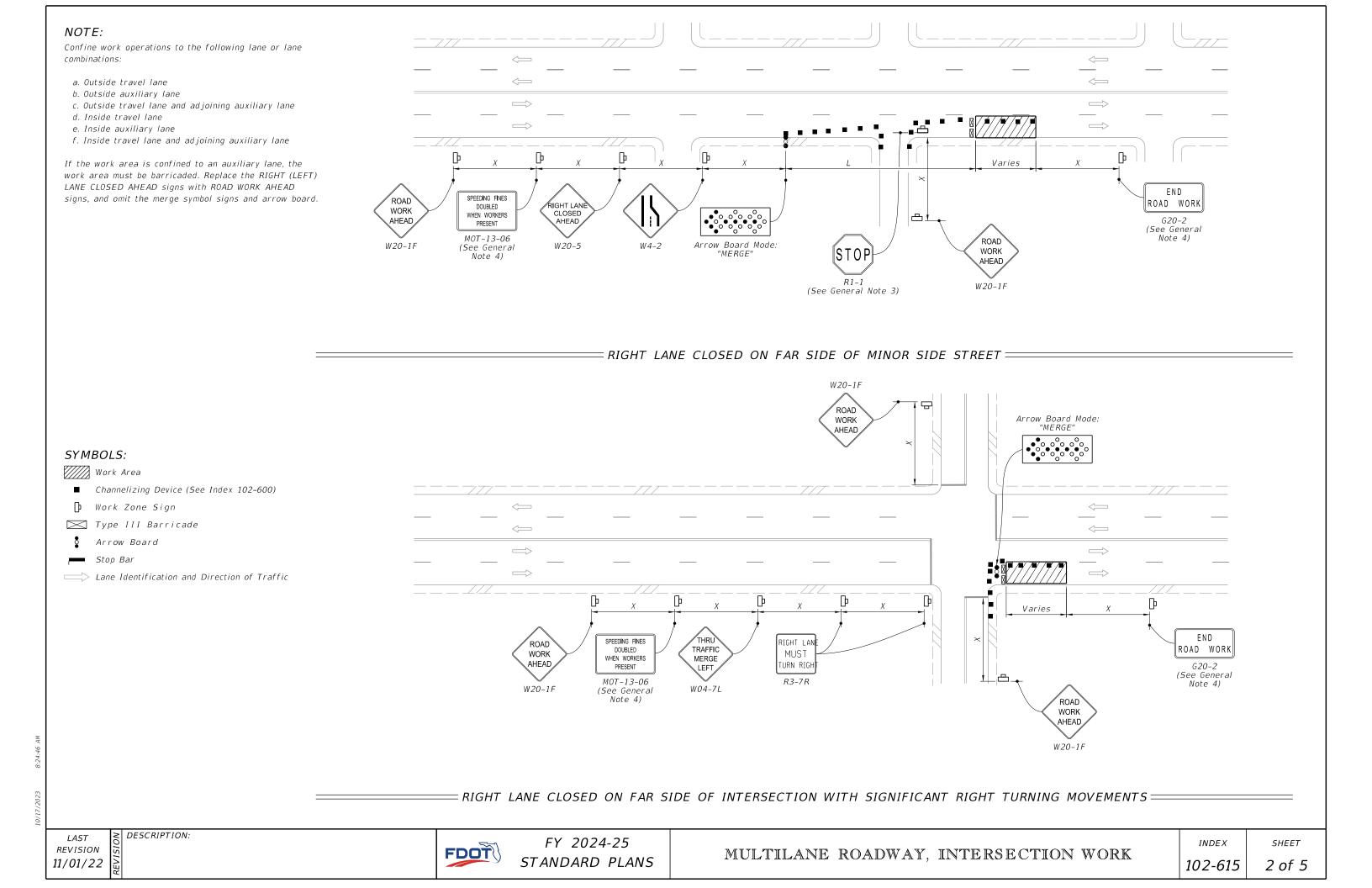


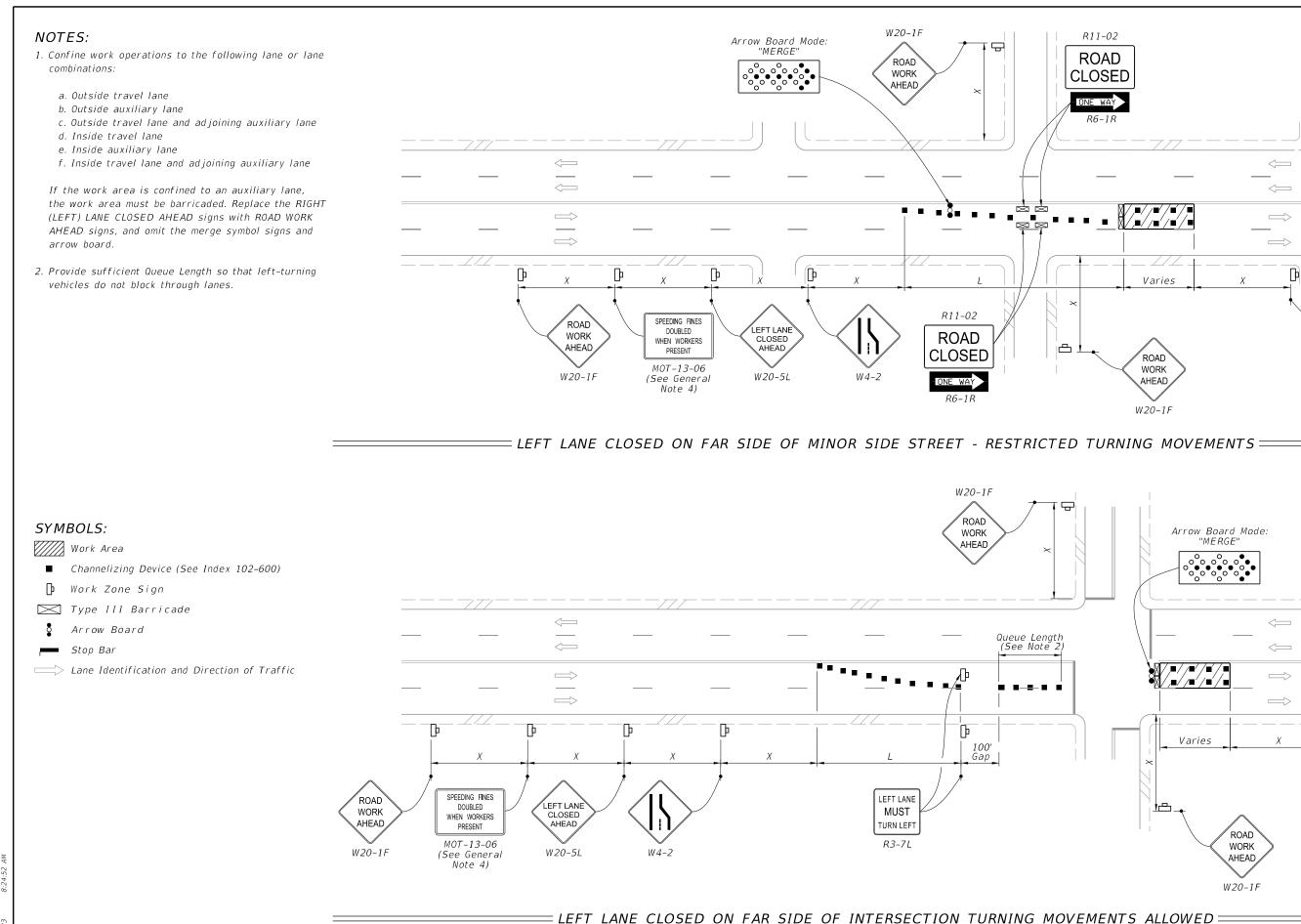
W20-1F

ROAD

WORK

AHEAD





11/01/22

DESCRIPTION:

FDOT

END ROAD WORK

G20-2

(See General

Note 4)

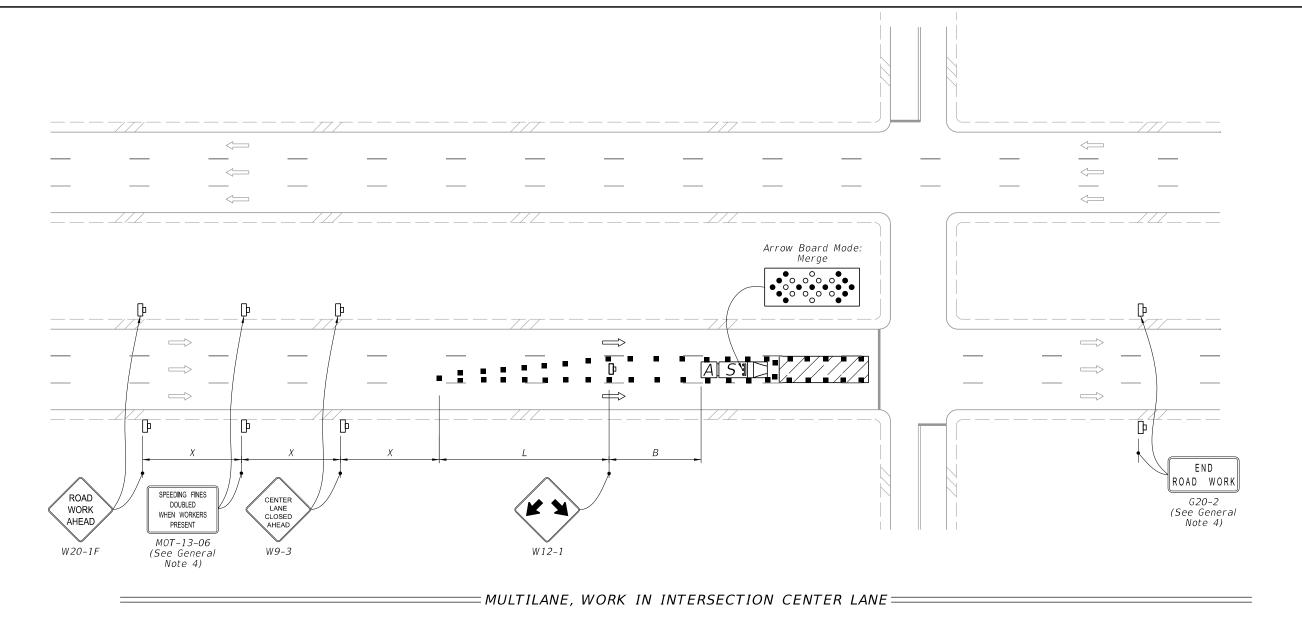
END

ROAD WORK

G20-2

(See General

Note 4)



NOTES:

- 1. Confine work operations to one center travel lane and leave the adjacent travel lanes open to traffic.
- 2. Ensure that the merging taper only directs vehicular traffic into either the right or left lane.

SYMBOLS:

■ Channelizing Device (See Index 102-600)

Work Zone Sign

Type III Barricade

Arrow Board

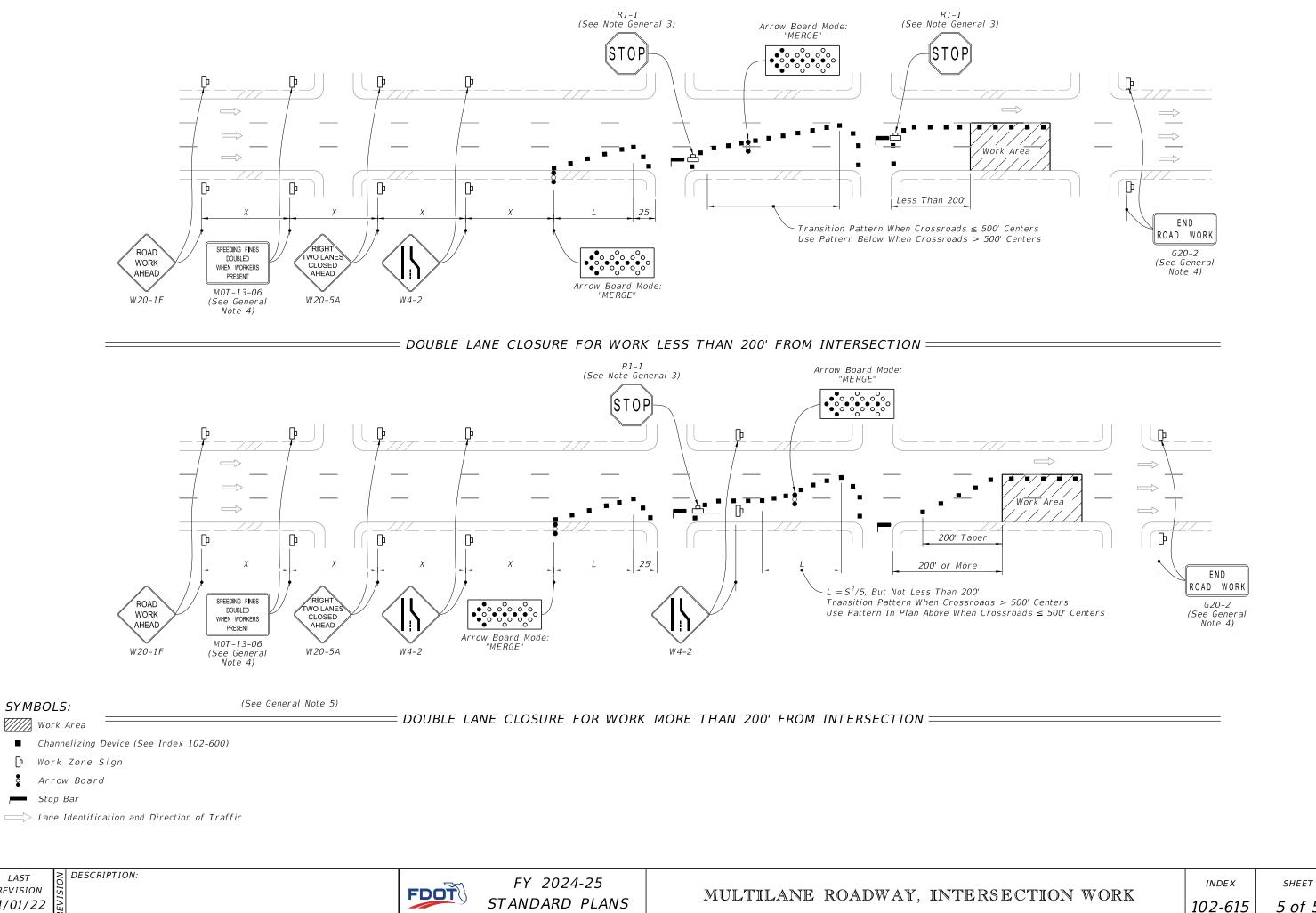
Stop Bar

Single Shadow (S) Vehicle With Warning Lights And Arrow Board

A Truck/Trailer Mounted Attenuator (TMA)

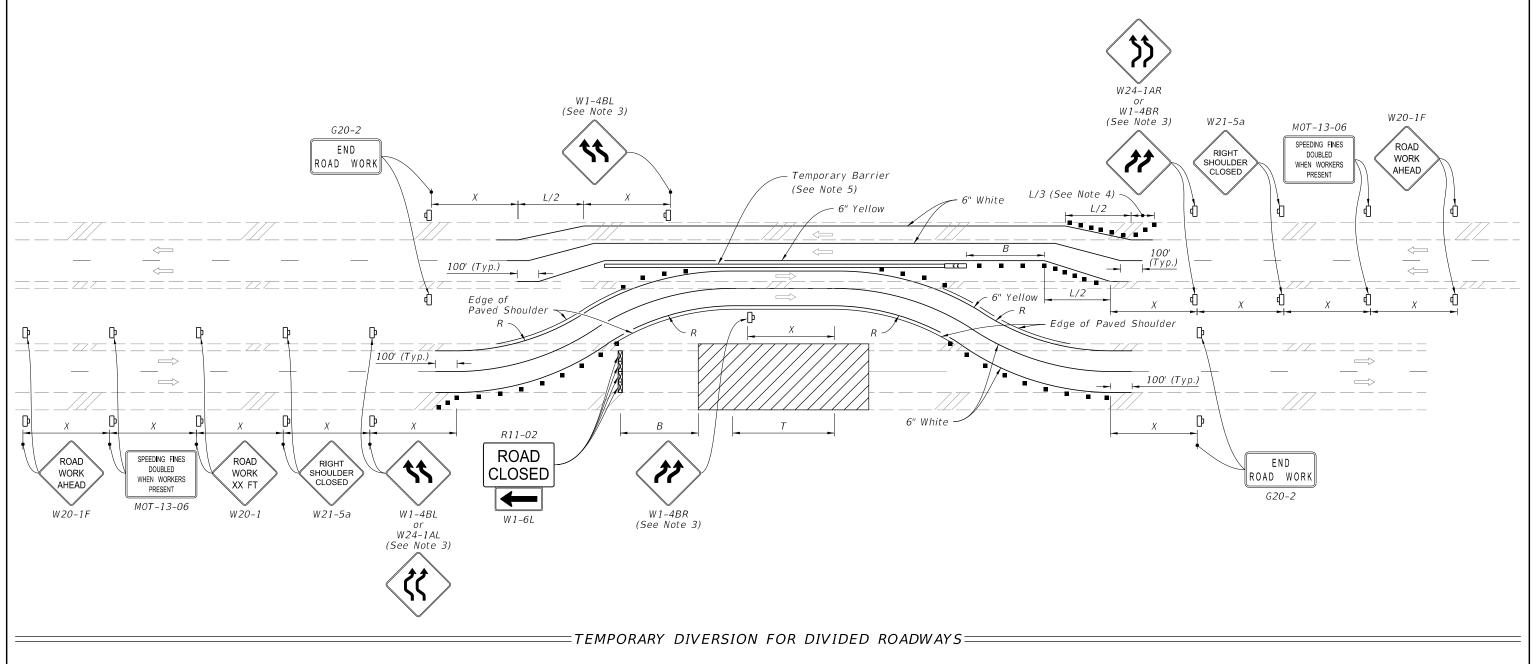
Lane Identification and Direction of Traffic

REVISION 11/01/22 DESCRIPTION:



REVISION 11/01/22

SYMBOLS:



SYMBOLS:



■ Channelizing Device (See Index 102-600)

Work Zone Sign

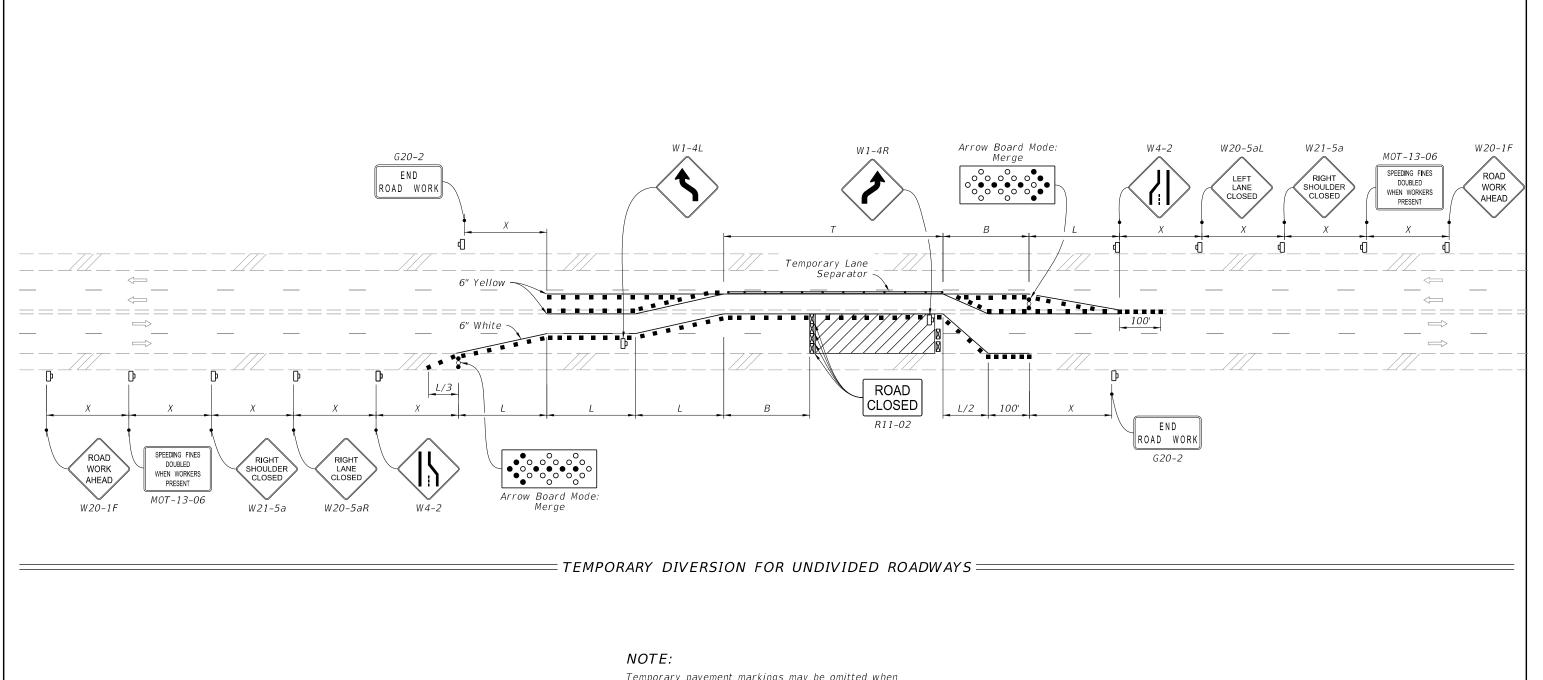
Type III Barricade

Crash Cushion

Lane Identification and Direction of Traffic

NOTES:

- 1. This Index applies to multilane roadways, except with undivided roadways with 6 or more lanes, where the work requires the closure of the lanes in one direction and diversion is provided to convert the opposing traffic lanes to temporary two-way travel.
- 2. L = Taper Length
- B = Buffer Length
- X = Work Zone Sign Distance
- R = Radius of Curve
- See Index 102-600 for "L", "B", "X", channelizing device spacing values. See Plans for "R" values.
- 3. For undivided roadways with a tangent distance "T" less than 600', use "Double Reverse Curve" signs (W24-1A) instead of the first pair of "Reverse Curve" signs (W1-4B) and omit the second pair of "Reverse Curve" signs.
- 4. If the paved shoulder is less than 4' in width, omit the taper and channelizing devices shown on the paved shoulder.
- 5. Temporary Lane Separator may be used in lieu of Temporary Barrier for speed limits of 45 mph or less.



Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.

SYMBOLS:

Work Area

■ Channelizing Device (See Index 102-600)

₩ork Zone Sign

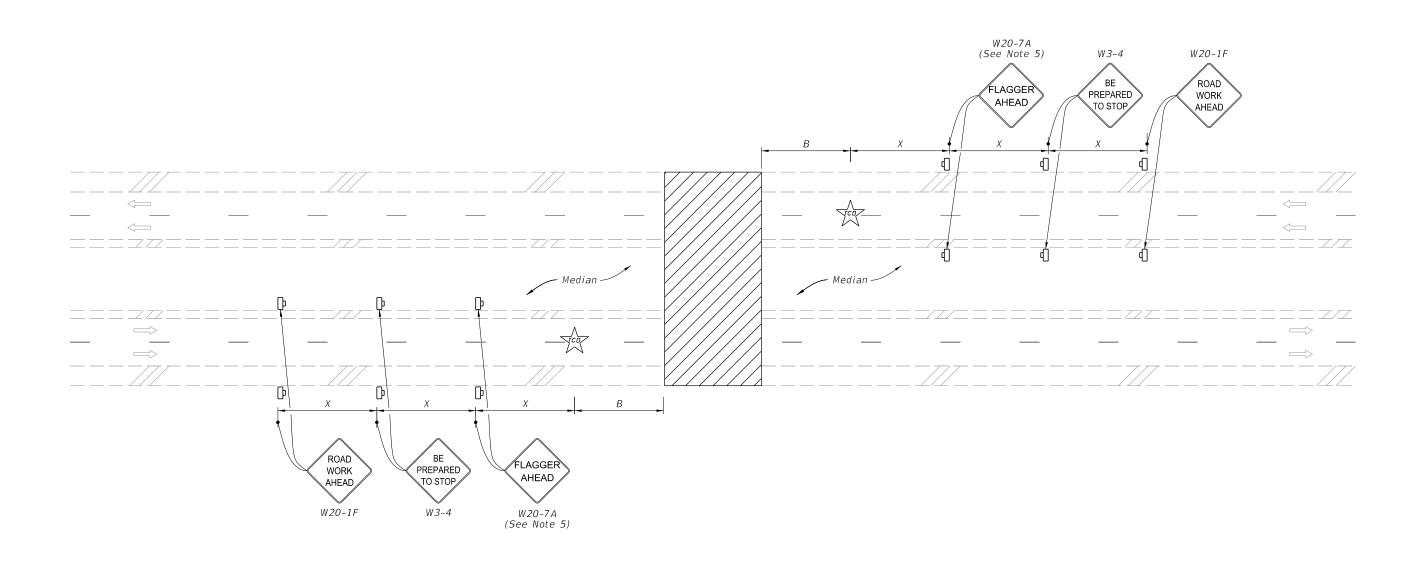
Type III Barricade

Crash Cushion

Lane Identification and Direction of Traffic

REVISION 11/01/21

DESCRIPTION:

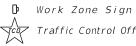


(Multilane Roadway Shown, Two-Lane Roadway Similar)

SYMBOLS:



Work Area



Traffic Control Officer

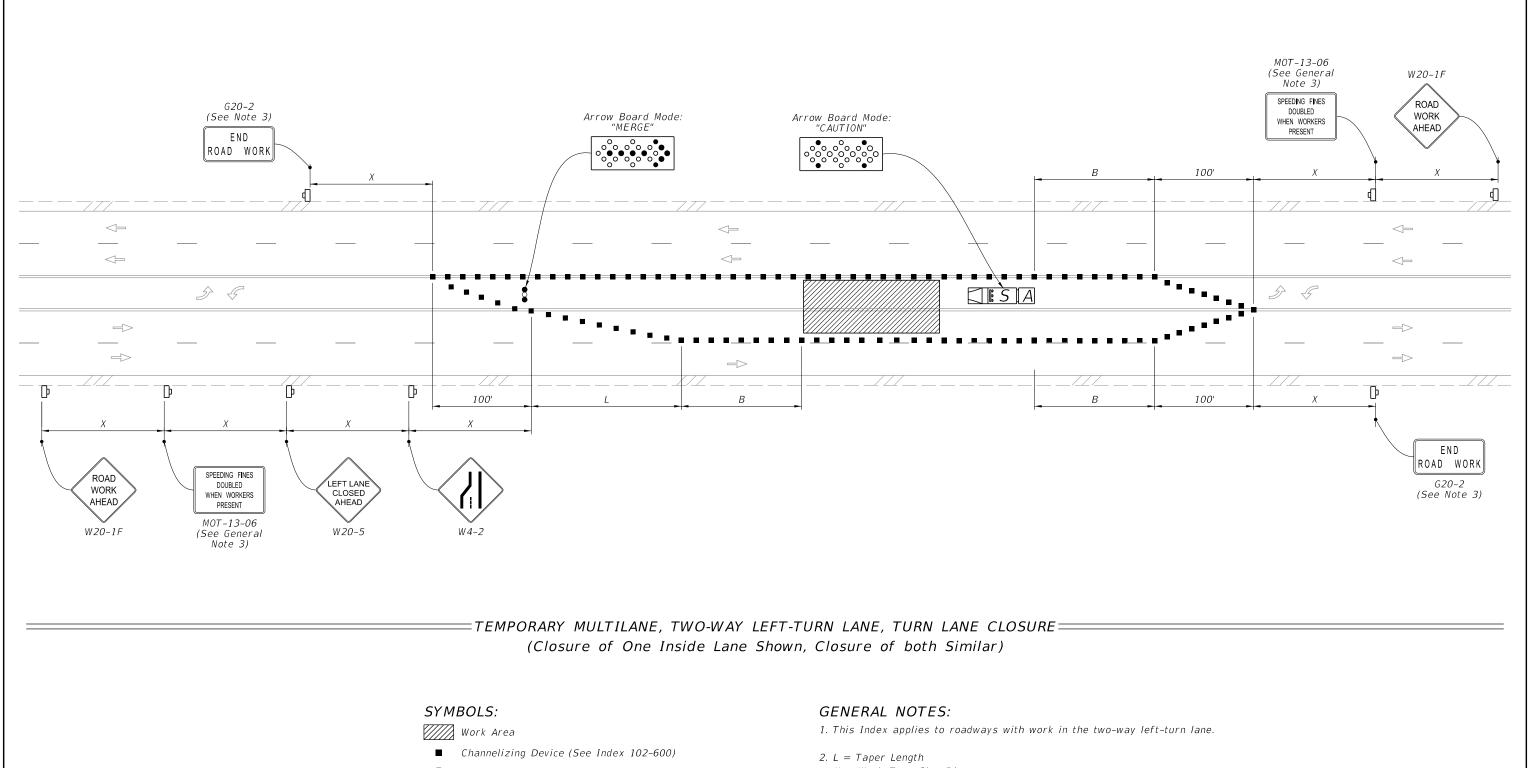
Lane Identification and Direction of Traffic

NOTES:

- 1. This Index applies to two-lane, two-way and multilane roadways, except limited access facilities, with temporary daytime roadway closures of 5 minutes or less.
- 2. B = Buffer LengthX = Work Zone Sign DistanceSee Index 102-600 for "B" and "X" values.
- 3. For Two-Lane Roadways, a Flagger may substitute the traffic control officer with approval of the Engineer.
- 4. Traffic volume or complexly of the roadway may dictate additional signs, devices or traffic control officers.
- 5. Optionally, use FLAGGER AHEAD sign with symbol (W20-7) instead of FLAGGER AHEAD sign with text (W20-7A).
- 6. Dual Signs are required for divided roadways only.

DESCRIPTION:





₩ork Zone Sign

Arrow Board

Sin Shadow (S) Vehicle With Warning Lights And Arrow Board

A Truck/Trailer Mounted Attenuator (TMA)

Lane Identification and Direction of Traffic

X = Work Zone Sign Distance

B = Buffer Length

See Index 102-600 for "L", "X", "B", and channelizing device spacing values.

- 3. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" Sign (G20-2), along with associated Work Zone Sign Distances, may be omitted when the work operation will be in place for 24 hours or less.
- 4. If closure of both inside lanes on multilane roadways is needed, duplicate lane closure and merge; signs, channelizing devices, taper, and arrow board, for both directions

REVISION 11/01/21

DESCRIPTION:

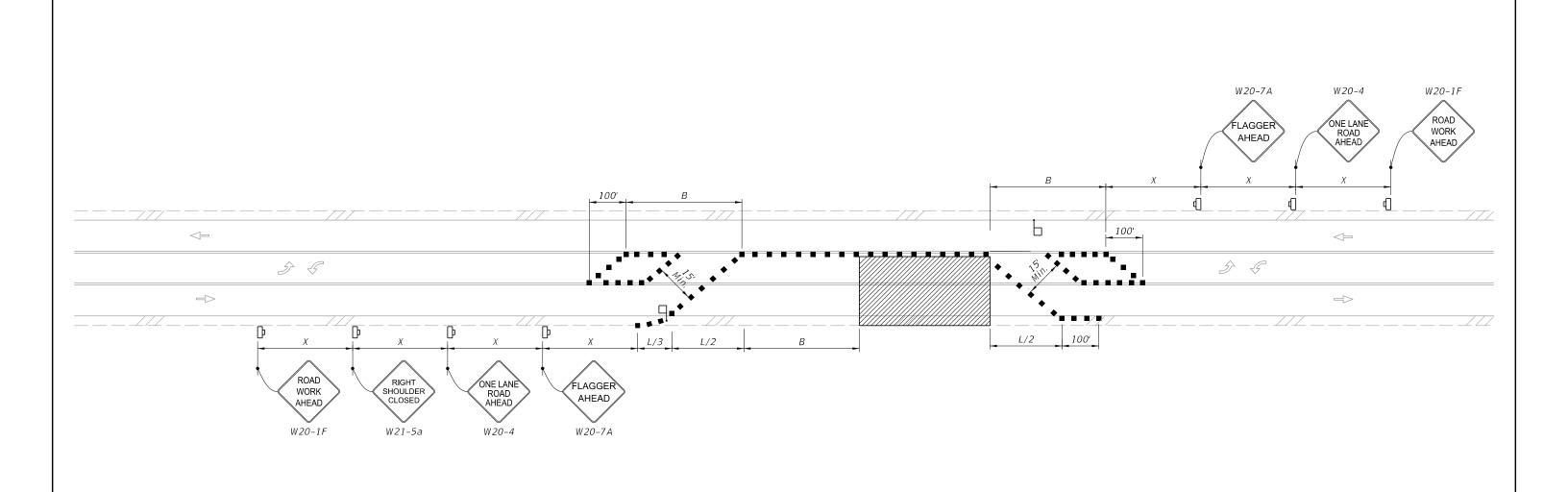
FDOT

FY 2024-25 STANDARD PLANS

TWO-WAY LEFT-TURN LANES

INDEX

SHEET 1 of 3



= TEMPORARY TWO-WAY LEFT-TURN LANE CLOSURE, TWO-LANE, TWO-WAY ROADWAY, WORK WITHIN THE =TRAVELED WAY WITH LANE CLOSURES OF 24 HRS OR LESS AND WORK ZONE SPEED OF 45 MPH OR LESS

SYMBOLS:

Work Area

■ Channelizing Device (See Index 102-600)

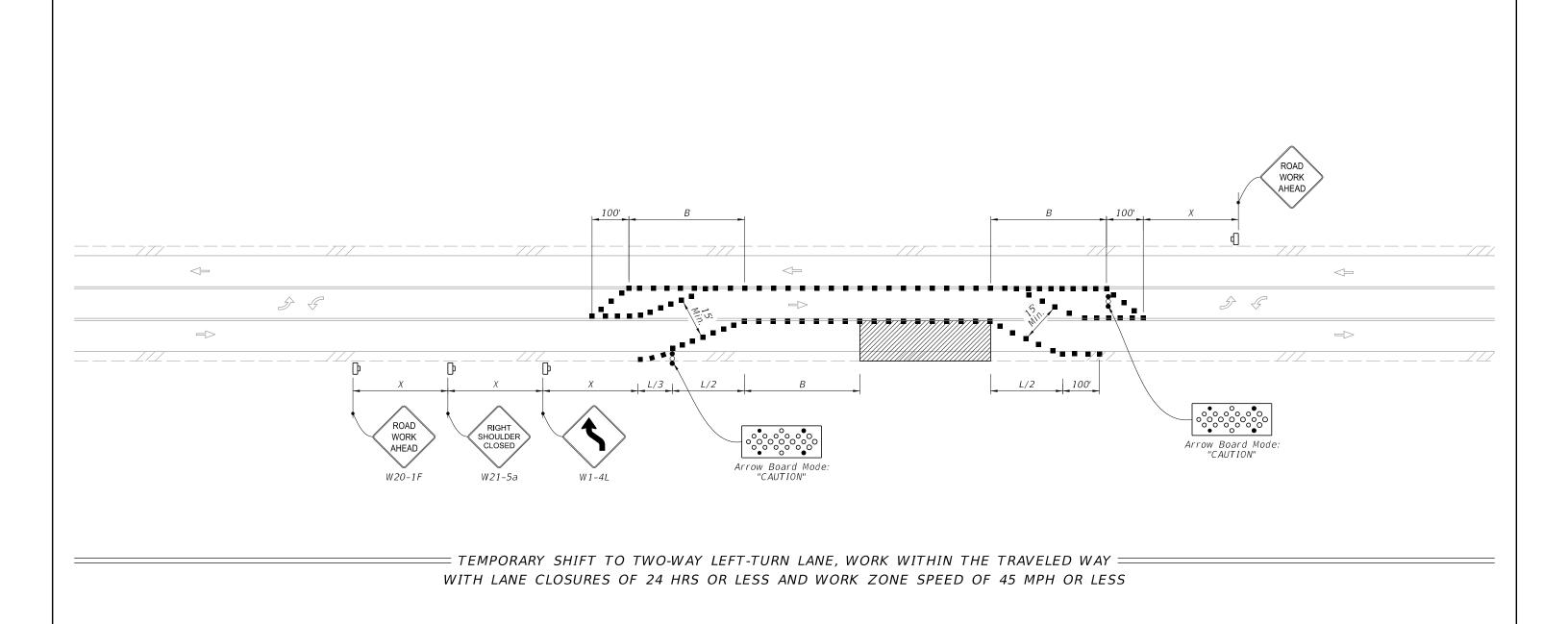
₩ork Zone Sign

☐ Flagger

□⇒ Lane Identification and Direction of Traffic

≥ DESCRIPTION: REVISION 11/01/20





SYMBOLS:

Work Area

Channelizing Device (See Index 102-600)

₩ork Zone Sign

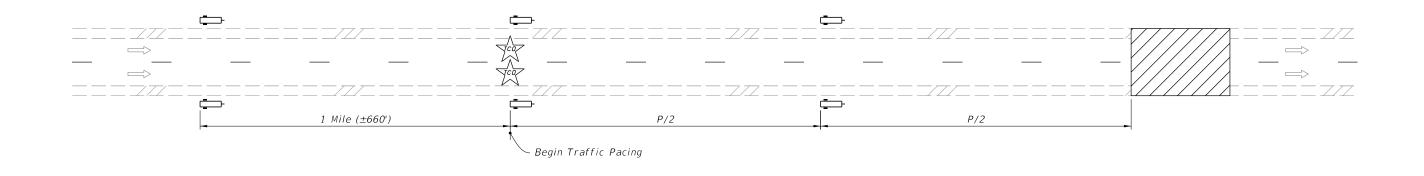
Arrow Board

DESCRIPTION:

Flagger

Lane Identification and Direction of Traffic

REVISION 11/01/21



TYPICAL PCMS DISPLAY:

During day of pacing operation:

Message 1: ROAD WORK TONIGHT Message 2: EXPECT PERIODIC DELAYS

During pacing operation:

Message 1: SLOW TRAFFIC AHEAD Message 2: BE PREPARED TO STOP

One week prior to pacing operation (Optional):

Message 1: EXPECT DELAYS ON Message 2: (Month Day Time)

Traffic Control Officer

SYMBOLS:



Work Area



Portable Changeable Message Sign (PCMS)

Lane Identification and Direction of Traffic

NOTES:

- 1. P = Traffic Pacing Length For "P" value, see Traffic Pacing Length table or calculate using Formulas.
- 2. See the Plans for traffic pacing restrictions.
- 3. Do not exceed work duration of 30 minutes or traffic pacing length of 10 miles.
- 4. Coordinate with the traffic control officer supervisor to provide the correct number of traffic control officers for each traffic pacing operation. Ensure traffic control officers are located at roadway access points in accordance with the pacing plan.
- 5. Ensure that the necessary equipment is properly positioned for the work before requesting that the traffic control officer supervisor initiate the traffic pacing operation.
- 6. If workers or equipment are within the traveled way during the traffic pacing operation, use a truck- or trailer-mounted attenuator with portable changeable message sign to protect the work.
- 7. For work durations of less than five minutes (e.g, moving large vehicles across the roadway), portable changeable message signs and truck-mounted attenuators are not required. Use traffic pacing length values from the five minute column of the table.
- 8. Where feasible, do not pace traffic past the last available existing egress until the work has been completed.
- 9. When more than one traffic pacing operation is required in a calendar day, allow sufficient time between pacing operations to permit traffic to return to normal speed and flow.
- 10. Maintain communications with all police vehicles throughout the traffic pacing.

TRAFFIC PACING LENGTH "P"						
Pacing Speed = 20 mph						
Work Zone	Work Duration (minutes)					
Speed (mph)	5	10	15	20	25	30
70	2.3	4.7	7.0	9.3	-	-
65	2.4	4.8	7.2	9.6	-	-
60	2.5	5.0	7.5	10.0	-	-
55	2.6	5.2	7.9	-	-	-
50	2.8	5.6	8.3	_	-	_
				,		

NOTES: (1) All lengths in the above table are in miles.

(2) For work durations with no values shown above, calculate length using a reduced pacing speed, but not less than 10 mph.

FORMULAS:

 $S_W = Work Zone Speed (mph)$

 $S_p = Pacing Speed (mph)$

 $t_W = Work Duration (minutes)$

P = Traffic Pacing Length (miles

$$P = \frac{t_W}{60} S_p \left(\frac{S_p}{S_W - S_p} + 1 \right)$$

$$P = P_c + P_W$$

P_C = distance paced vehicles must travel before the vehicles at regulatory speed have cleared the work zone

$$P_{C} = \left(\frac{\frac{t_{W}}{60} \times S_{p}^{2}}{S_{W} - S_{p}}\right)$$

 P_W = distance paced vehicles travel while work is performe

$$P_W = \left(\frac{t_W}{60} \times S_p\right)$$

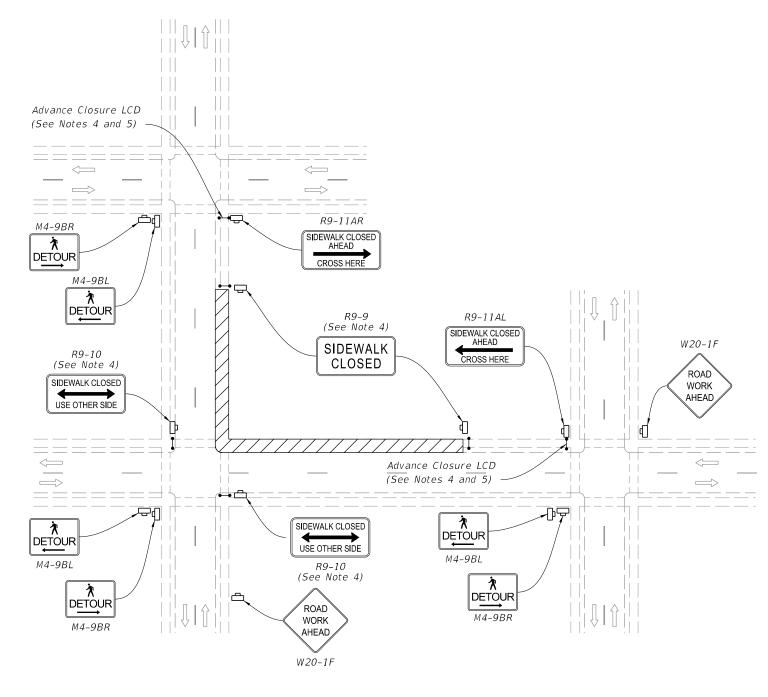
NOTES:

- 1. Cover or deactivate pedestrian traffic signal display(s) controlling closed crosswalks.
- 2. Place pedestrian LCDs across the full width of the closed sidewalk.
- 3. For post mounted signs located near or adjacent to a sidewalk, maintain a minimum 7' clearance from the bottom of the sign panel to the surface of the sidewalk.
- 4. "Sidewalk Closed" signs (R9-XX) may be mounted on pedestrian LCDs in accordance with the manufacturer's instructions.
- 5. Omit the Advance Closure LCD if it blocks access to other pedestrian facilities (e,g,, transit stops, residences, or business entrances).

SYMBOLS:



- ₩ork Zone Sign
- •• Pedestrian Longitudinal Channelizing Device (LCD)
- Lane Identification and Direction of Traffic



PEDESTRIAN DETOUR =

REVISION 11/01/20

DESCRIPTION:





- 1. L = Taper Length
- B = Buffer Length
- X = Work Zone Sign Distance
- See Index 102-600 for "L", "B", "X", channelizing device spacing values.
- 2. Provide a 5' wide temporary pedestrian way with a maximum cross-slope of 0.02, except where space restrictions warrant a minimum width of 4'. Provide a 5' x 5' passing space for temporary pedestrian ways less than 5' in width at intervals not to exceed 200'.
- 3. When temporary pedestrian ways require curb ramps, meet the requirements of Index 522-002. Detectable warnings are not required for curb ramps diverting pedestrian traffic into a closed lane.
- 4. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" signs (G20-2), along with associated work zone sign distances, may be omitted when the work operation will be in place for 24 hours or less.
- 5. Pedestrian Diversion Option 2 may only be used when called for in the Plans or as approved by an Engineer.

SYMBOLS:

Work Area

Temporary Pedestrian Way

■ Channelizing Device (See Index 102-600)

• Pedestrian Longitudinal Channelizing Device (LCD)

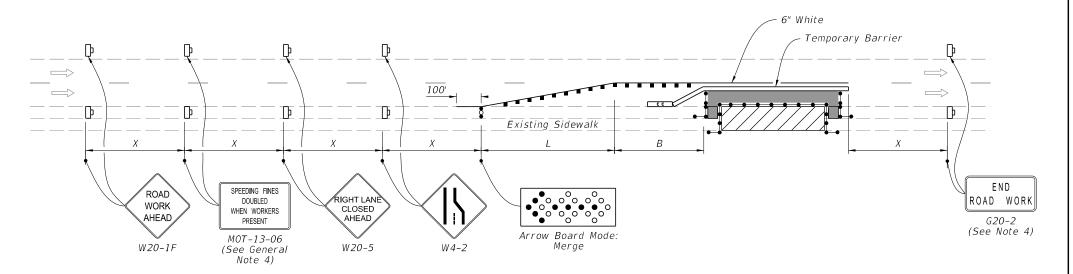
Work Zone Sign

DESCRIPTION:

Arrow Board

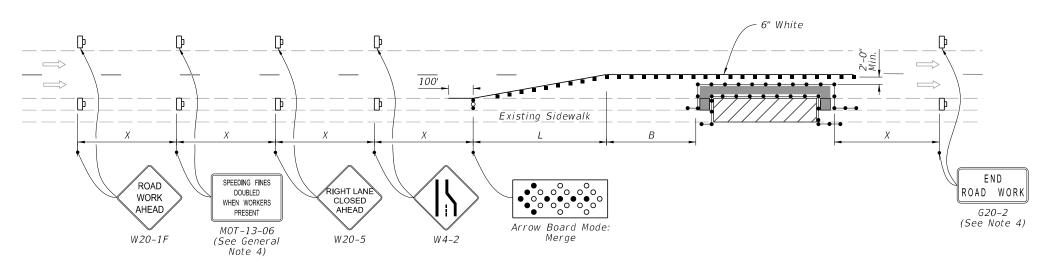
Crash Cushion

Lane Identification and Direction of Traffic

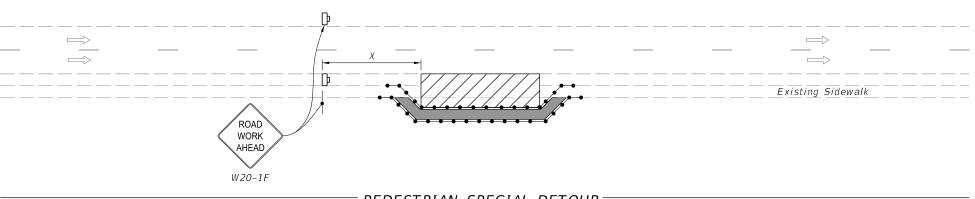


= PEDESTRIAN DIVERSION - OPTION 1:

(Temporary Barrier Shown, Low Profile Barrier Similar)

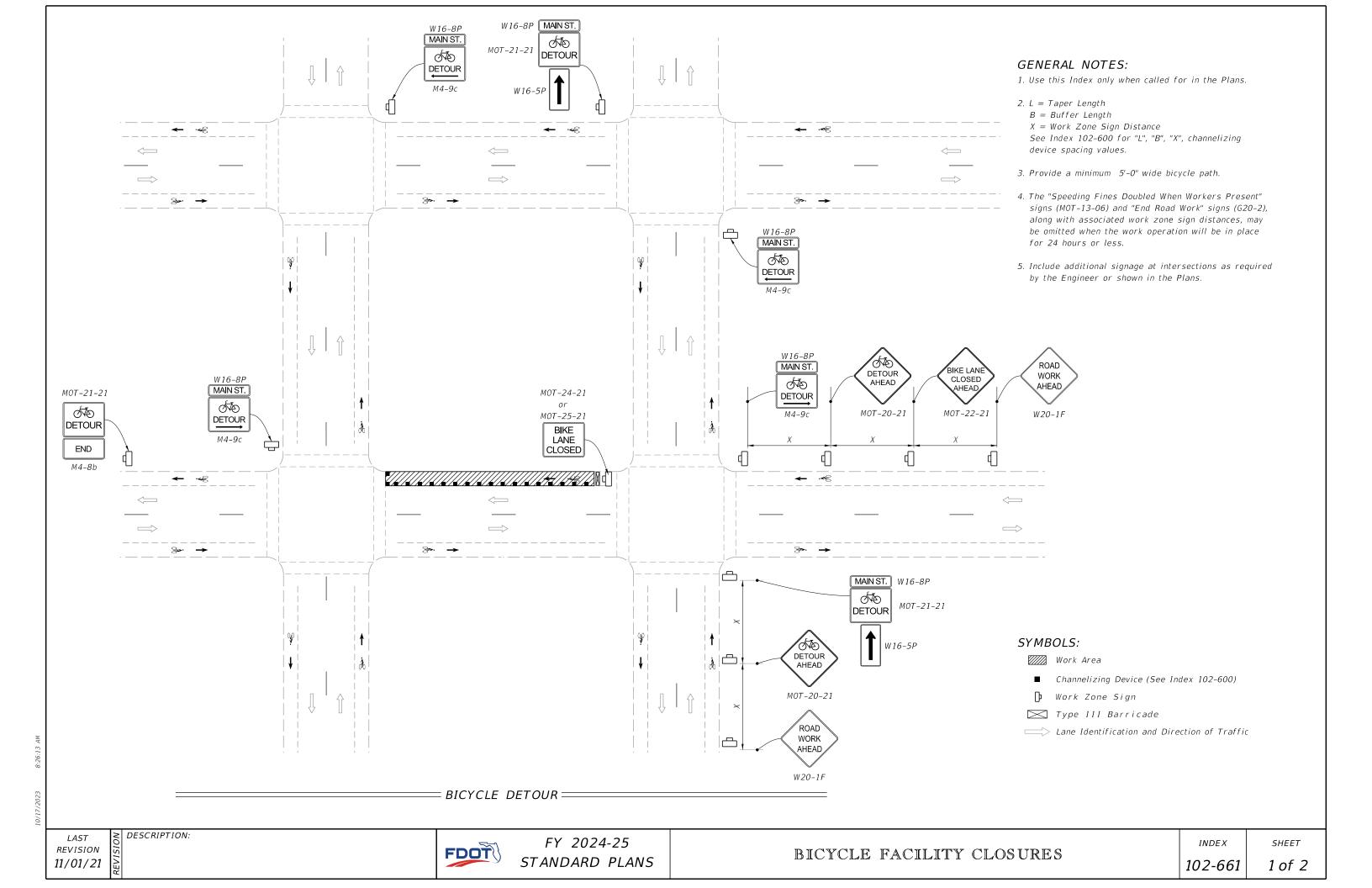


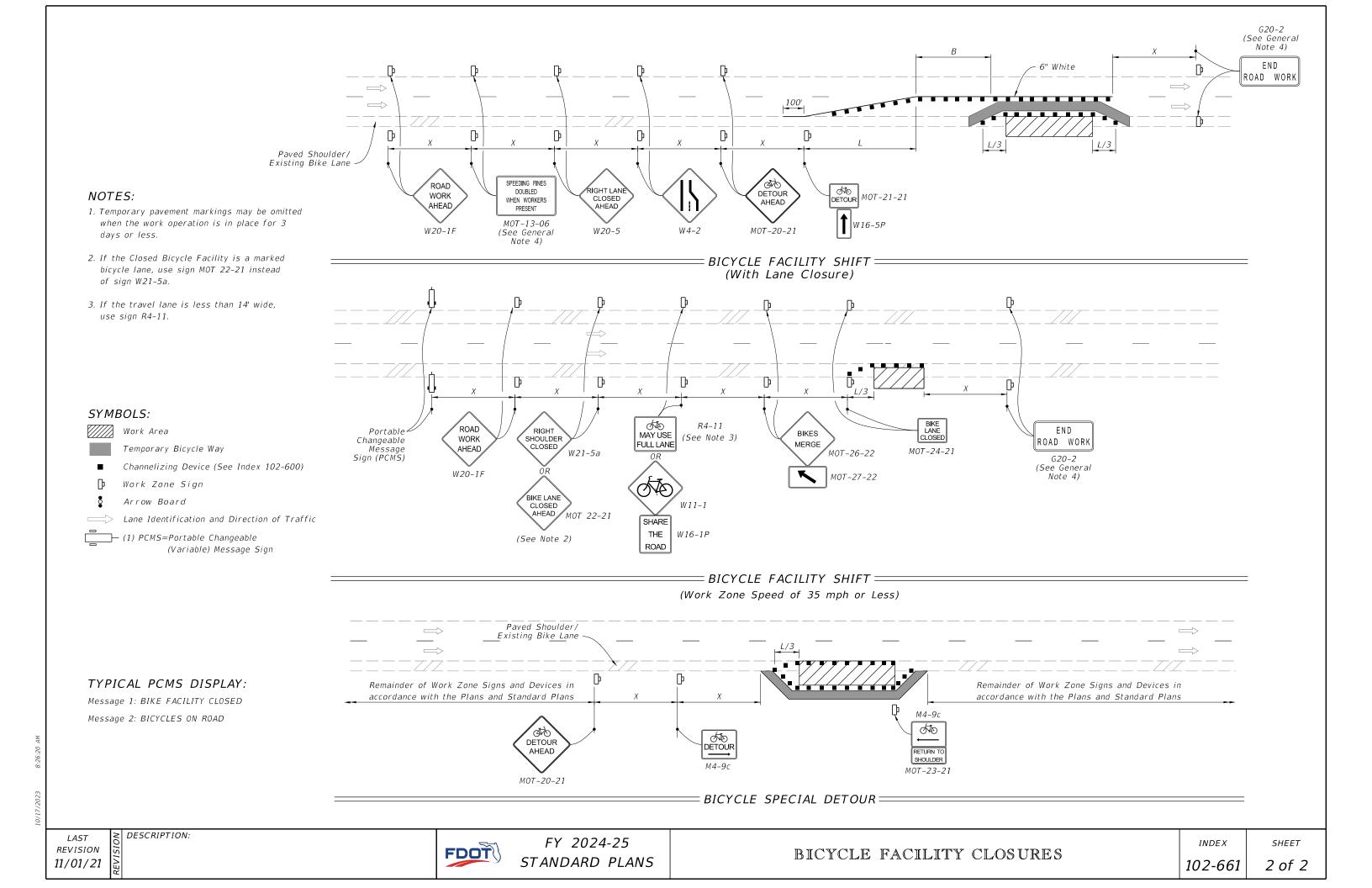
PEDESTRIAN DIVERSION - OPTION 2 (Work Zone Speed 45 mph or Less)

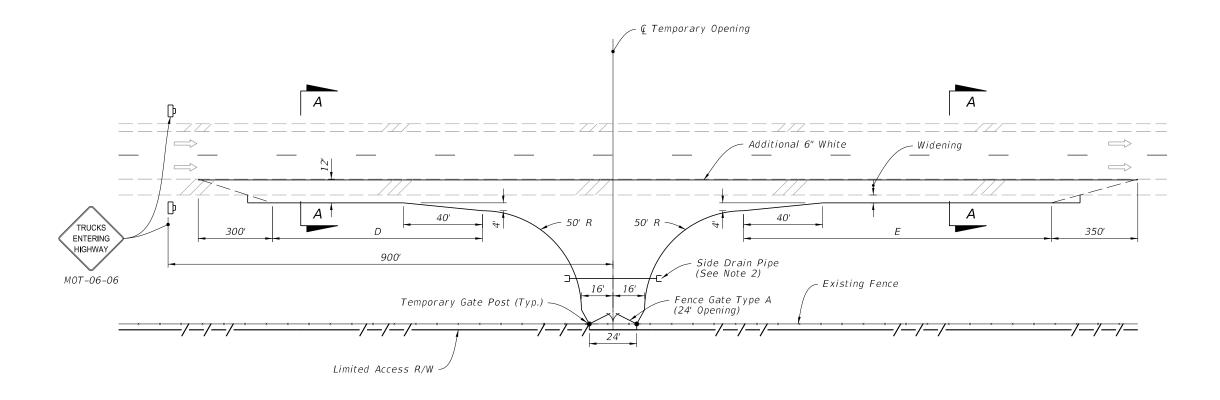


= PEDESTRIAN SPECIAL DETOUR ==

REVISION 11/01/23







NOTES:

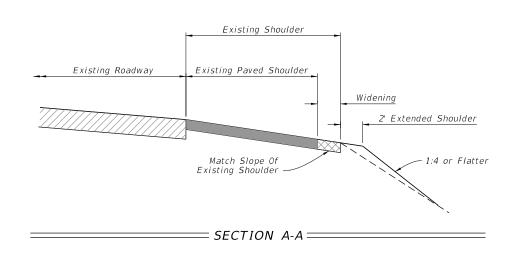
- 1. X = Work Zone Sign Distance, see Index 102-600 for "X" value.
- 2. Use mitered end sections for any end sections within the clear zone.
- 3. Match cross slope of existing shoulder for widening.
- 4. Provide 2' of unpaved shoulder outside of the widening.
- 5. No more than two (2) access openings will be allowed on each project.
- 6. Do not vary from the plan detail without approval of the Engineer.

SYMBOLS:

₩ork Zone Sign

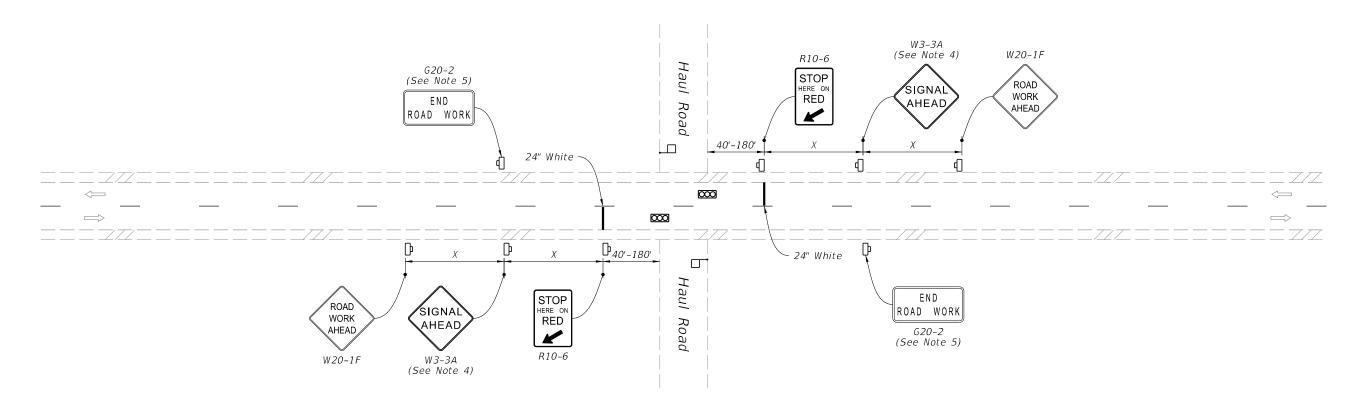
Lane Identification and Direction of Traffic

LENGTH OF ACCESS LANES			
Grade	D (feet)	E (feet)	
2% or less	590	1540	
3 to 4% Upgrade	530	2310	
3 to 4% Downgrade	710	925	



DESCRIPTION:

SHEET



(Two-Lane Roadway Shown, Multilane Roadway Similar)

SYMBOLS:

₩ork Zone Sign

Temporary Traffic Signal

Flagger

NOTES:

- 1. This Index is intended for two-way and multilane roadways, excluding limited access facilities, with haul roads that intersect the roadway.
- 2. X=Work Zone Sign Distance, see Index 102-600 for "X" values.
- 3. Use Type III Barricades to block haul road access when the haul road is not in operation and a flagger/signal operator is not on duty, except when the haul road is an existing properly marked road.
- 4. Optionally, use "Signal Ahead" signs with symbols (W3-3) instead of "Signal Ahead" signs with text (W3-3A).
- 5. The "End Road Work" signs (G20-2) may be omitted when the work operation is in place for 24 hours or less.
- 6. Optionally, use temporary traffic signals for control of the haul road.

REVISION 11/01/22

DESCRIPTION:

2. Staging, storage, dumping, washing and operation of equipment is not permitted within the limits of the tree protection barrier, including during barrier installation.

3. Install all tree protection prior to commencement of construction and remove when directed by the Engineer. Maintain protection at all times.

4. For closely spaced groups of trees, place the tree protection barrier around the entire group.

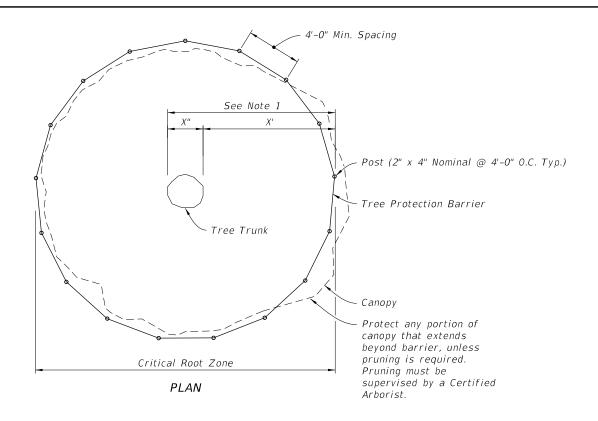
5. Inspect trunk protection and tree quarterly to prevent girdling. Adjust bands to allow tree growth as needed.

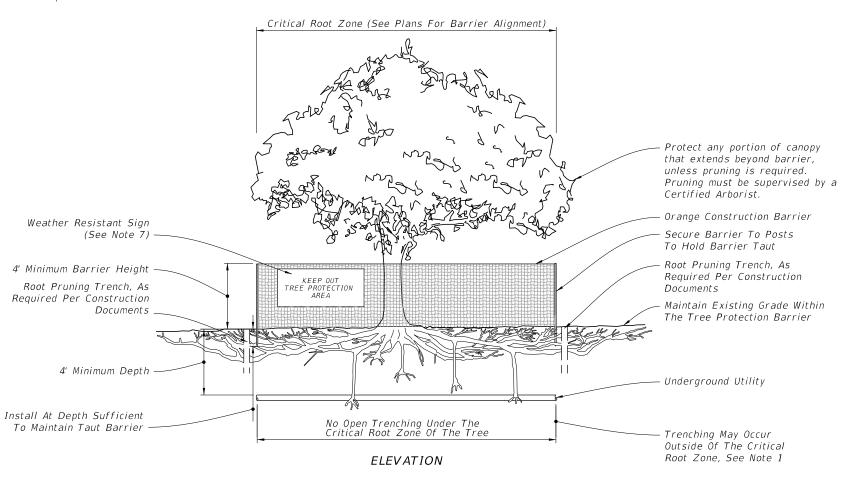
6. See plans for any additional requirements or modifications within the tree protection area.

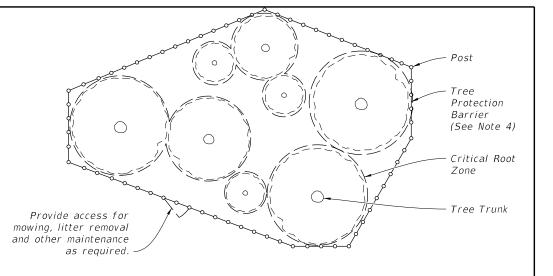
7. Place weather resistant sign every 50' along the barrier, with 6" minimum text height and provide text in English and Spanish. Sign should read " Keep Out Tree Protection Area".

8. Alternate tree protection systems approved by the Engineer may be used in lieu of the tree protection barrier detailed on this Index as long as the critical root zone is protected.

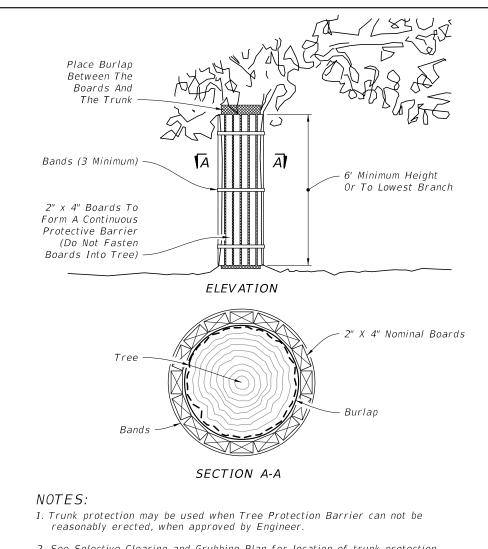
9. The Critical Root Zone may be reduced, in the field, by a certified Arborist or Landscape Architect.







PLAN == PROTECTION BARRIER FOR TREE GROUPINGS ======



2. See Selective Clearing and Grubbing Plan for location of trunk protection,

3. Adjust bands to allow tree growth (inspect quarterly to prevent girdling).

=TRUNK PROTECTION =

REVISION 11/01/18

DESCRIPTION:



TREE PROTECTION BARRIER:

FY 2024-25 STANDARD PLANS

TREE PROTECTION AND PRESERVATION

INDEX

SHEET

1 of 1

110-100

- 2. Mailboxes will not be permitted on Interstate highways, freeways, or other highways where prohibited by law or regulation.
- 3. The contractor shall give the Postmaster of the delivery route(s) written notice of project construction 7 days prior to the beginning of work, with Saturdays, Sundays and Holidays excluded.

The Contractor shall furnish and install one mailbox in accordance with this Index at each mail patron delivery location and maintain the box throughout the contract period. The Contractor shall apply box numbers to each patron box in accordance with identification specifications of the Domestics Mail Manual of the U. S. Postal Service; where local street names and house numbers are authorized by the Postmaster as a postal address, the Contractor shall inscribe the house number on the box; if the box is located on a different street from the patrons residence, the Contractor shall inscribe the street name and house number on the box.

The Contractor shall coordinate removal of the patrons existing mailboxes. Immediately after installing the new mailboxes the Contractor must notify each "Mail Delivery Patron" by Certified Mail that removal of the existing mailboxes must be accomplished in 21 days after receipt of notices. Patrons shall have the option of removing their existing mailboxes or leaving the mailboxes in place for removal by the Contractor; removal by the Contractor shall be included in the contract unit price for Mailbox, Each. The Contractor shall dispose of mailboxes and supports in areas provided by him.

Reuse of existing mailboxes by the Contractor will not be a requirement under any construction project; however where an existing mailbox meets the design requirements of this Index and is structurally and functionally sound, the Contractor at his option may elect to reuse the existing mailbox in lieu of constructing a new mailbox. Any use of existing mailboxes must be approved by the Engineer.

4. Mailboxes shall be light sheet metal or plastic construction, in traditional style only, and only in Size 1 as prescribed by the Domestic Mail Manual of the U. S. Postal Service (DMM).

Mailbox production standards, lists of approved manufacturers and suppliers of mailboxes, design approval and guidance may be obtained by writing to the Rural Delivery Division, Delivery Service Department, Operations Group, USPS Headquarters, Washington, DC 20260.

5. Mailboxes shall be located on the right-hand side of the roadway in the direction of the delivery route, except on one-way roads and streets where they may be placed on the left-hand side.

Mailboxes on rural highways shall be set with the roadside face of the box offset from the edge of the traveled way a minimum distance of the greater of the following:

- a. Shoulder width plus 8" to 12"
- b. 10' for ADT over 10,000 vpd 8' for ADT 100 to 10,000 vpd

6' for ADT under 100 vpd

DESCRIPTION:

2'-6" for low speed and ADT under 100 vpd

When a mailbox is installed within the limits of guardrail it should be placed behind the guardrail whenever practical.

Mailboxes on curbed highways, roads, and streets shall be set with the face of the box between 6" and 12" behind the face of curb. If the sidewalk abuts the curb or if an unusual condition exists which makes it difficult or impractical to install or serve boxes at the curb, the Contractor, with concurrence of the local postal authority, may be permitted to install all mailboxes at the back edge of the sidewalk, where they can be served by the carrier from the sidewalk.

- 6. Mailboxes shall be set with the bottom of the box between 42" and 48" above the mail stop surface, unless the U.S. Postal Service establishes other height restrictions.
- 7. No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangements have been shown to be safe by crash testing in accordance with NCHRP Report 350.

Neighborhood Delivery and Collection Box Units (NDCBU) are a specialized multiple mailbox installation that must be located outside the highway and street clear zones. The location of NDCBUs is the sole responsibility of the Postmaster for the delivery route under consideration.

- 8. Lightweight newspaper receptacles may be mounted below the mailbox on the side of the support post in conformance with the USPS Domestic Mail Manual. The mail patron shall be responsible for newspaper receptacle installation and maintenance.
- 9. Wood and steel support posts for both single and double mailbox mountings shall be embedded no more than 24" into the ground.

Concrete, block, brick, stone or other rigid foundation structure or encasement, either above or below the shoulder ground line, will not be permitted for mailboxes on rural highways. On urban roads and streets where mailbox support posts are set within rigid pavement back of curb, the support posts shall be separated from the pavement by a minimum of 1" of expansion material.

Support posts shall not be fitted nor installed with surface mount base plates.

10. At driveway entrances mailboxes shall be placed on the far side of the driveway in the direction of the delivery route.

At intersecting roads mailboxes shall be located 100' or more from the centerline of the intersecting road on the far side in the direction of the delivery route, with the distance increased to 200' when the route volume exceeds 400 vehicles per day.

11. Wood support posts shall be in conformance with the material and dimensional requirements of Specification 952 and the treatment requirements of Specification 955.

Steel support posts shall have an external finish equal to or better than two coats of weather resistant, air dried or baked, paint or enamel. Surface(s) shall be cleaned of all loose scale prior to finishing. The Postal Service prefers that posts be painted white, but other colors may be used when approved by the Engineer. When galvanized posts are used painting is not required.

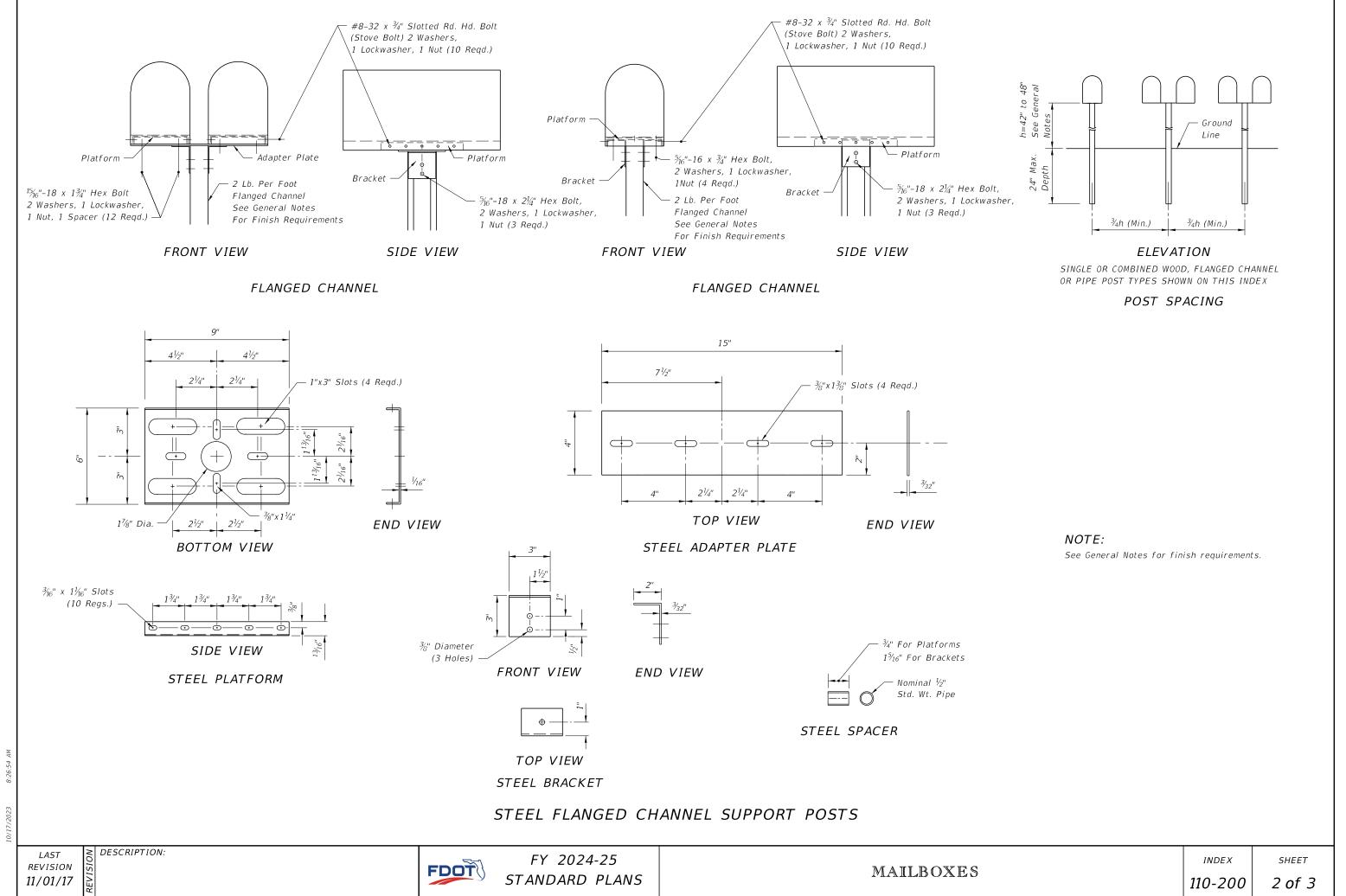
Mounting brackets, plates, platforms, shelves and accessory hardware surface finishes are to be suited to support post finish.

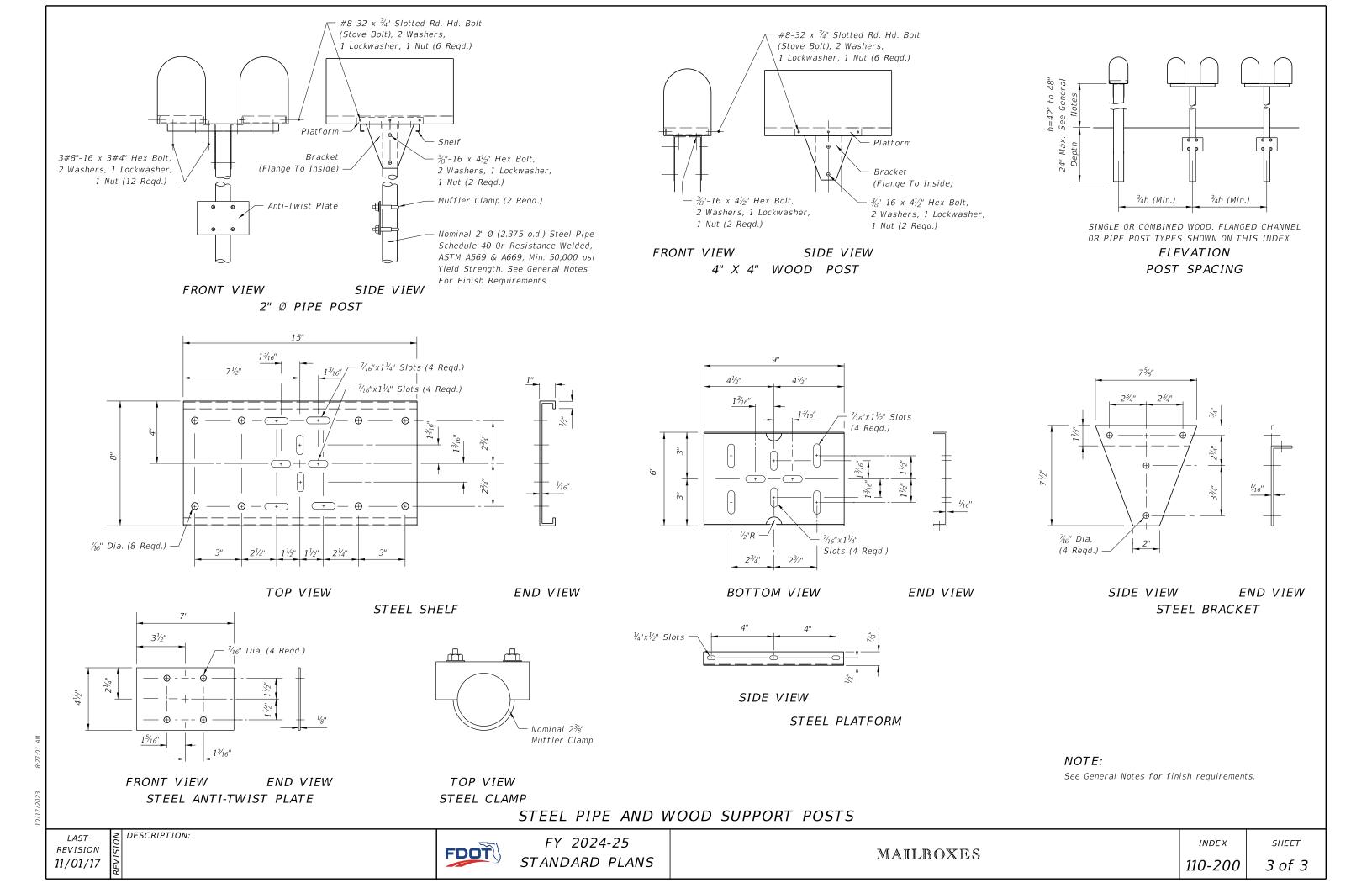
12. Mailboxes shall be paid for under the contract unit price for Mailboxes, Each. Payment shall be full compensation for boxes, posts and accessory items essential for installation in accordance with this standard; erection; adjustments to suit construction needs; and, for identification letters and numbers.

Payment shall be limited to one mailbox per patron address whether the mailbox is new, reused, salvaged, reset or relocated. Payment shall be per mailbox regardless of the number of mailboxes per support or grouping arrangement.

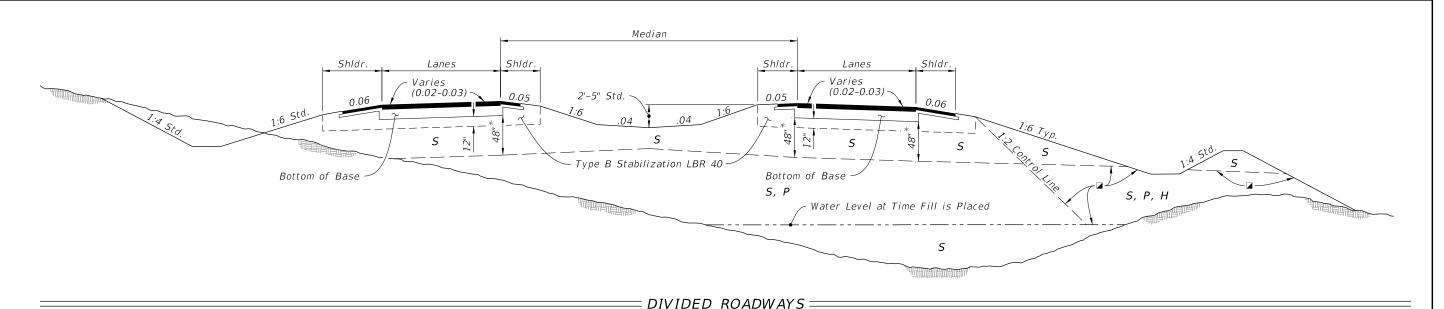
The above compensation shall include any work and cost incurred by the contractor for removal and disposal of existing mailboxes.

There shall be no payment participation for NDCBU furnishing, assembly, installation, resetting or relocation.



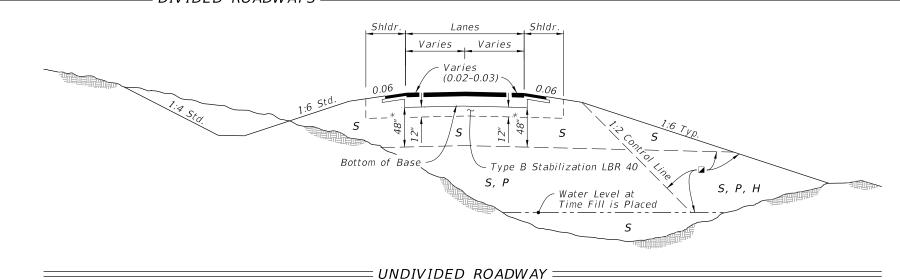


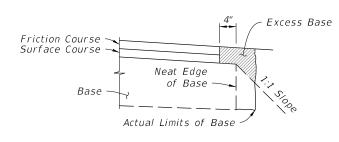




GENERAL NOTES:

- 1. Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this Index do not supersede the details shown in the Plans or Indexes 120-002 and 160-001.
- 2. Plastic (P) soils may be placed above the existing water level (at the time of construction) to within 4 feet of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for short distances.
- 3. High Plastic (H) soils excavated within the project limits may be used in embankment construction as indicated on this Index. High Plastic soils are not to be used for embankment construction when obtained from outside the project limits.
- 4. Select (S) soils having an average organic content of more than two and one-half (2.5) percent, or having an individual test value which exceeds four (4) percent, are not permitted in the subgrade portion of the roadbed. Select (S), Plastic (P), or High Plastic (H) soils having an average organic content of more than five (5) percent, or an organic content individual test result which exceeds seven (7) percent, are not permitted in the portion of embankment inside the control line, unless written authorization is provided by the District Geotechnical Engineer; these soils may be used for embankment construction outside the control line, unless restricted by the Plans or otherwise specified in the Plans, provided they can be compacted sufficiently to sustain a drivable surface for operational vehicles as approved by the Engineer. Determine average organic content from the test results from a minimum of three randomly selected samples from each stratum or stockpile of a particular material. Perform tests in accordance with FM 1-T 267.
- 5. Highly organic soils, composed primarily of partially decayed organic matter, often dark brown or black in color with an odor of decay, and sometimes fibrous, are designated as muck. Further, any stratum or stockpile of soil which contains pockets of highly organic material may be designated as Muck (M). Highly organic soils are not permitted within the subgrade or embankment portion of the roadbed.





NOTES:

- 1. All material in the shaded area is excess base to be removed.
- 2. There is no additional payment for removal of excess base material.

= REMOVAL OF EXCESS BASE MATERIAL =

<u>SYMBOL</u>	<u>SOIL</u>	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
Р	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50)
Н	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50)
М	Muck	A-8

Classification listed left to right in order of preference.

- ☑ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.
- ** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.
- * For cut sections this dimension may be reduced to 24"; see Index 120-002. For minor collectors and local facilities this dimension may be reduced to 18".

GENERAL NOTES AND FLEXIBLE PAVEMENT

LAST REVISION IN 11/01/23



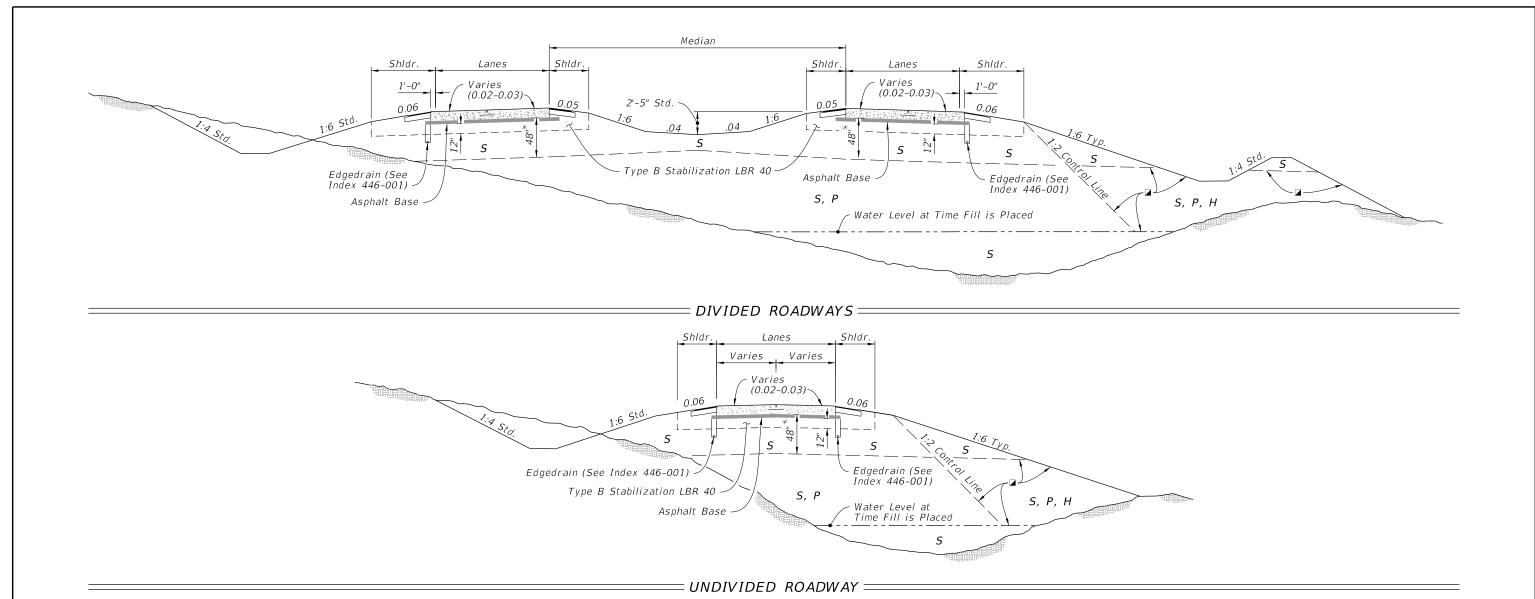
FY 2024-25
STANDARD PLANS

EMBANKMENT UTILIZATION

INDEX 120-001

-001 1 of 3

SHEET



<u>SYMBOL</u>	<u>SOIL</u>	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
Р	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50)
Н	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50)
М	Muck	A-8

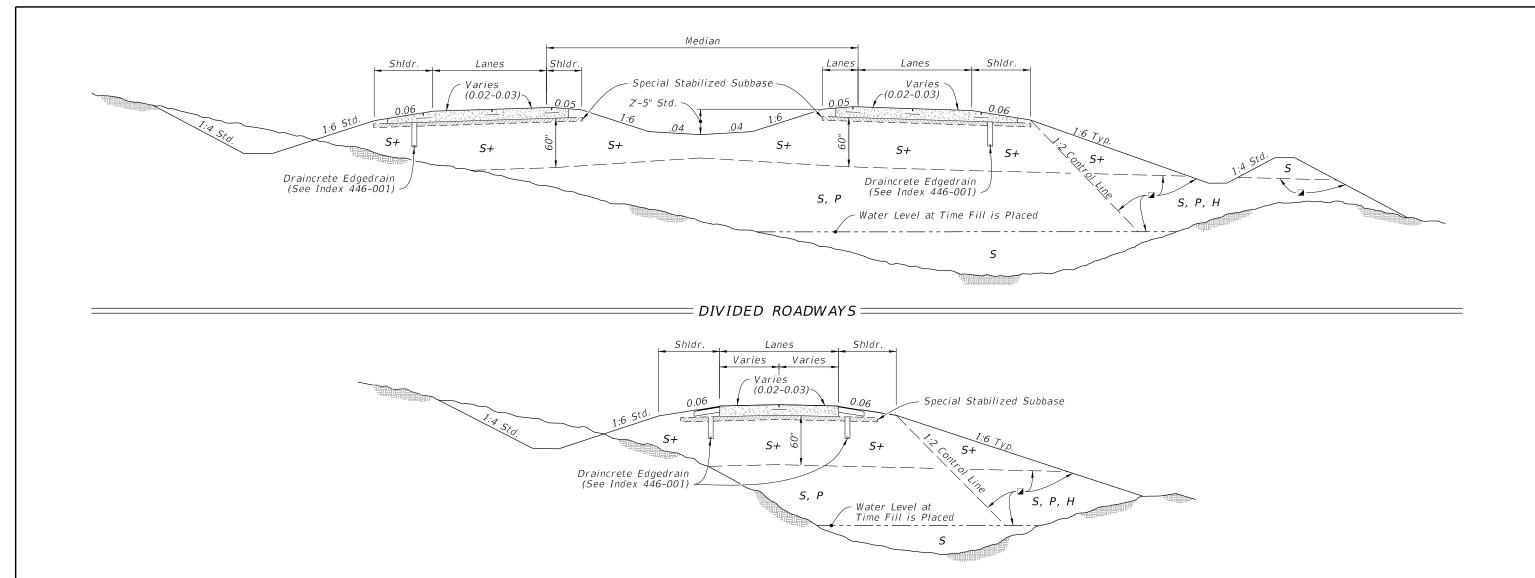
Classification listed left to right in order of preference.

- ☑ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.
- ** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.
- * For cut sections this dimension may be reduced to 24"; see Index 120-002. For minor collectors and local facilities this dimension may be reduced to 18".

RIGID PAVEMENT - ASPHALT BASE OPTION

LAST REVISION 11/01/18

DESCRIPTION:



UNDIVIDED ROADWAY =

SYMBOL	<u>SOIL</u>	CLASSIFICATION (AASHTO M 145)	
S	Select	A-1, A-3, A-2-4 **	
S+	Special Select	A-3 *** With Minimum Average Lab Permeability of $5x10^{-5}$ cm/sec. (0.14 ft./day) as per AASHTO T 215	
Р	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL<50)	
Н	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL>50)	
М	Muck	A-8	

Classification listed left to right in order of preference.

- ☑ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.
- *** When called for in the Plans, some types of A-2-4 material may be approved in writing by the District Materials Engineer.

 This material must meet the minimum lab permeability requirement, be nonplastic, and not exceed 12% passing the No. 200

 U.S. Standard sieve.
- ** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact.

 They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

Special Stabilized Subbase: 3" of #57 or #89 Coarse Aggregate Mixed Into Top 6".

RIGID PAVEMENT - ASPHALT BASE OPTION

LAST REVISION 11/01/18

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

SHEET

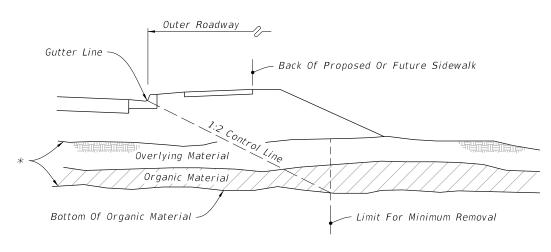
Control Line Set By Normal Shoulder Point Whether Or Not Shoulder Gutter Is Used Outer Roadway Organic Material Bottom Of Organic Material Limit For Minimum Removal ~

WITH OVERBURDEN - HALF SECTION

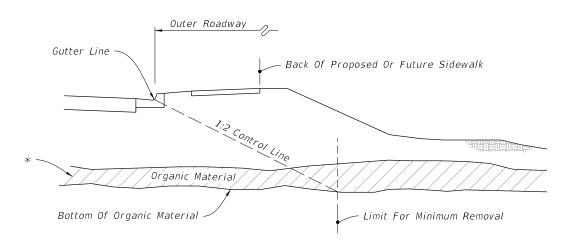
WITHOUT OVERBURDEN - HALF SECTION

CONSTRUCTION OF FLUSH SHOULDER ROADWAY =

CONSTRUCTION OF CURBED ROADWAY







WITHOUT OVERBURDEN - HALF SECTION

*Remove overlying material and organic material within the limits shown and backfill in accordance with Index 120-001, unless approved otherwise by the District Geotechnical Engineer; The limits include full median width when applied to divided facilities with median widths up to 64'; When median width is greater than 64' and for bifurcated roadways the organic material removal limits will be set by a 1:2 control line complimentary to the outer roadway that will accommodate one future median lane on each roadway unless specified otherwise by the plans.

GENERAL NOTES:

DESCRIPTION:

- 1. All details shown on this Index for removal of organic and plastic materials apply unless otherwise shown on the plans.
- 2. Utilize excavated materials in accordance with Index 120-001.
- 3. Where organic or plastic material is undercut, backfill with suitable material in accordance with Index 120-001, unless otherwise shown on the plans.
- 4. The term "Plastic Material" used in this Index in conjunction with removal of plastic soil is as defined under soil classifications for Plastic (P) and High Plastic (H) on Index 120-001.
- 5. See Index 160-001 for miscellaneous earthwork details.

- 6. The term "Organic Material" as used on this Index is defined as any soil which has an average organic content greater than five (5.0) percent, or an individual organic content test result which exceeds seven (7.0) percent. Remove organic material as shown on this Index and the plans unless directed otherwise by the District Geotechnical Engineer. Determine the average organic content from the test results from a minimum of three randomly selected samples from each stratum. Perform tests in accordance with AASHTO T267 on the portion of a sample passing the No. 4 sieve.
- 7. In areas of curbed roadway, where underdrain is to be constructed beneath the proposed pavement, the grade of the underdrain filter material will not extend above the bottom of the stabilized section of the subgrade. Gradation of the filter material must conform to Standard Specifications. The minimum grade of underdrain pipe is 0.2%.

GENERAL NOTES AND REMOVAL OF ORGANIC MATERIAL

REVISION 11/01/17

FDOT

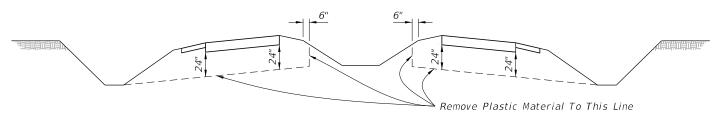
FY 2024-25 STANDARD PLANS

SUBSOIL EXCAVATION

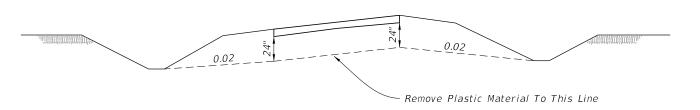
INDEX 120-002

SHEET

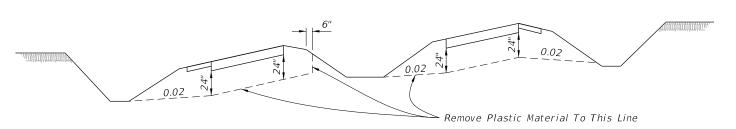
TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON SUPERELEVATION

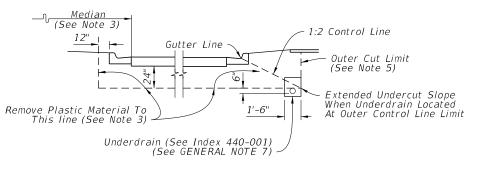


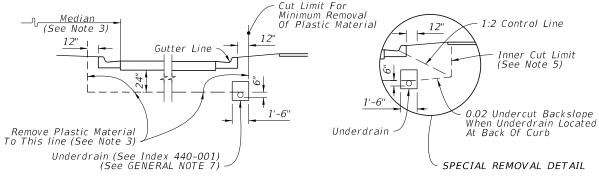
TYPICAL CUT SECTION ON SUPERELEVATION

=DIVIDED FREEWAYS, ARTERIALS, MAJOR COLLECTORS HAVING FLUSH ==== MEDIANS, ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS

= $INTERSTATE \; FACILITIES, \; FREEWAYS, \; DIVIDED \; ARTERIALS =$ AND MAJOR COLLECTORS HAVING DEPRESSED MEDIANS

NOTES:





PREFERABLE REMOVAL

MINIMUM REMOVAL

(See Special Removal Detail) 6. Cross slopes of 0.02 shown above are minimums. Follow the cross

slope of the pavement to the extent possible.

or preferable removal is used.

1. See Sheet 1 for the GENERAL NOTES.

2. When the typical cut details are applied to minor collectors and local facilities, the undercut may be reduced from 24" to 18".

3. Where frequency of median breaks indicates that it is impractical

to leave plastic material in the median, the designer may elect to

becomes apparent, due to normal required construction procedures,

indicate total removal of this material. If during construction it

that it is impractical to leave the plastic material in the median,

total removal of this material shall be approved by the Engineer.

5. Where the Preferable Removal method is shown in the plans and it

is impossible to place the underdrain at the Outer Cut Limit due to

conflict with storm drain trunk lines, remove to Inner Cut Limit and

4. Refer to roadway cross sections to determine whether minimum

place underdrain at location shown for Minimum Removal.

CONSTRUCTION AND LOCATION OF UNDERDRAIN IN CURBED ROADWAY = (See Note 4)

REMOVAL OF PLASTIC MATERIAL

REVISION 11/01/17

DESCRIPTION:

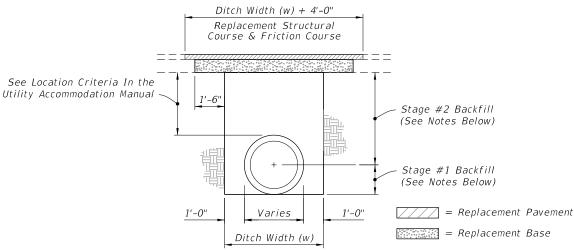
FDOT

FY 2024-25 STANDARD PLANS

SUBSOIL EXCAVATION

INDEX 120-002

SHEET 2 of 2



NOTES:

PAVEMENT REMOVAL AND REPLACEMENT

- 1. Pavement shall be mechanically sawed.
- 2. The replacement asphalt shall match the existing structural and friction courses for type and thickness in accordance with current FDOT asphalt mix specifications.
- 3. The new base materials shall be either of the same type and composition as the materials removed or of equal or greater structural adequacy.

BACKFILL OPTION

1. COMPACTED AND STABILIZED FILL

- A. Place backfill material in accordance with Specification 125.
- B. In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.
- C. In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

2. FLOWABLE FILL

- A. If compaction can not be achieved through normal mechanical methods then flowable fill may be used.
- B. Flowable fill is to be placed in accordance with Specification 121, as approved by the Engineer.
- C. Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.
- D. In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.
- E. In Stage #2, place flowable fill to the bottom of the existing base course.

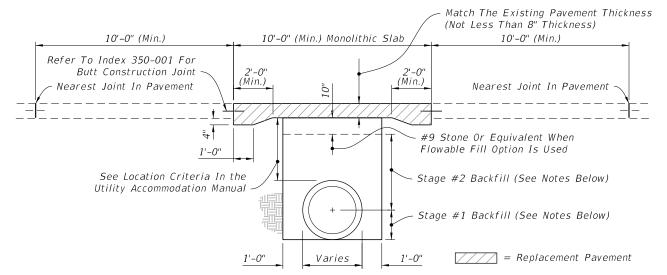
= <code>FLEXIBLE PAVEMENT CUT</code> ==

GENERAL NOTES

- 1. The details provided in this Index apply to cases in which jack and bore or directional boring methods are not required by the Engineer.
- 2. Flowable fill shall not be placed directly over loose, or high plastic, or muck material (see Index 120-001) which will cause settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to
- 3. These details do not apply to utility cuts longitudinal to the centerline of the roadway which may require the additional use of geotextiles, special bedding and backfill, or other special requirements.
- 4. Method of construction must be approved by the Engineer

DESCRIPTION:

5. Some pipe may require special granular backfill up to 6" above top of pipe. Geotextiles may be required to encapsulate the special



NOTES:

PAVEMENT REMOVAL AND REPLACEMENT

- 1. High early strength cement concrete (3000 psi) meeting the requirements of Specification 346 shall be used for rigid pavement replacement.
- 2. Pavement shall be mechanically sawed and restored to conform with existing pavement joints within 12 hours.

BACKFILL OPTION

1. GRANULAR BACKFILL

- A. Any edgedrain system that is removed shall be replaced with the same type materials. Any edgedrain system that is damaged shall be repaired with methods approved by the Engineer.
- B. Fill material shall be placed in accordance with the Standard Specifications. Fill material shall be special select soil in accordance with Index 350-001.
- C. In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above
- D. In Stage #2, construct fill along the sides of the pipe and up to the bottom of replacement pavement.

2. FLOWABLE FILL

- A. If mechanical compaction can not be achieved through normal mechanical methods then flowable fill may be used.
- B. Flowable fill is to be placed in accordance with Specification 121, as approved by the Engineer
- C. Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.
- D. In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.
- E. In Stage #2, place flowable fill to the bottom of the stone layer

RIGID PAVEMENT CUT=

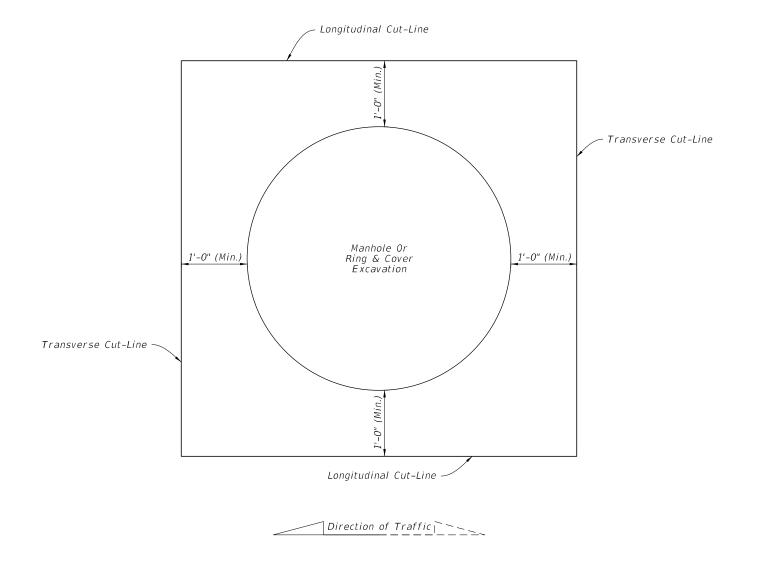
- 6. Where asphalt concrete overlays exist over full slab concrete pavement, the replacement pavement shall have an overlay constructed over the replacement slab. The overlay shall match the existing asphalt pavement thickness. The replacement friction course shall match the existing friction course, except structural course may be used in lieu of dense graded friction course.
- 7. All shoulder pavement, curb, curb and gutter, and their substructure disturbed by utility trench cut construction shall be restored in kind.
- 8. The use of flowable fill to reduce the time traffic is taken off a facility is acceptable but must have prior approval by the Engineer. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and a maximum depth of six (6) feet unless supported by an engineering document prepared by a registered professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential
- 9. Excavatable flowable fill is to be used when the flowable fill option is selected.

TRENCH CUTS AND RESTORATIONS ACROSS ROADWAYS

LAST REVISION 11/01/17

FDOT

FY 2024-25 STANDARD PLANS

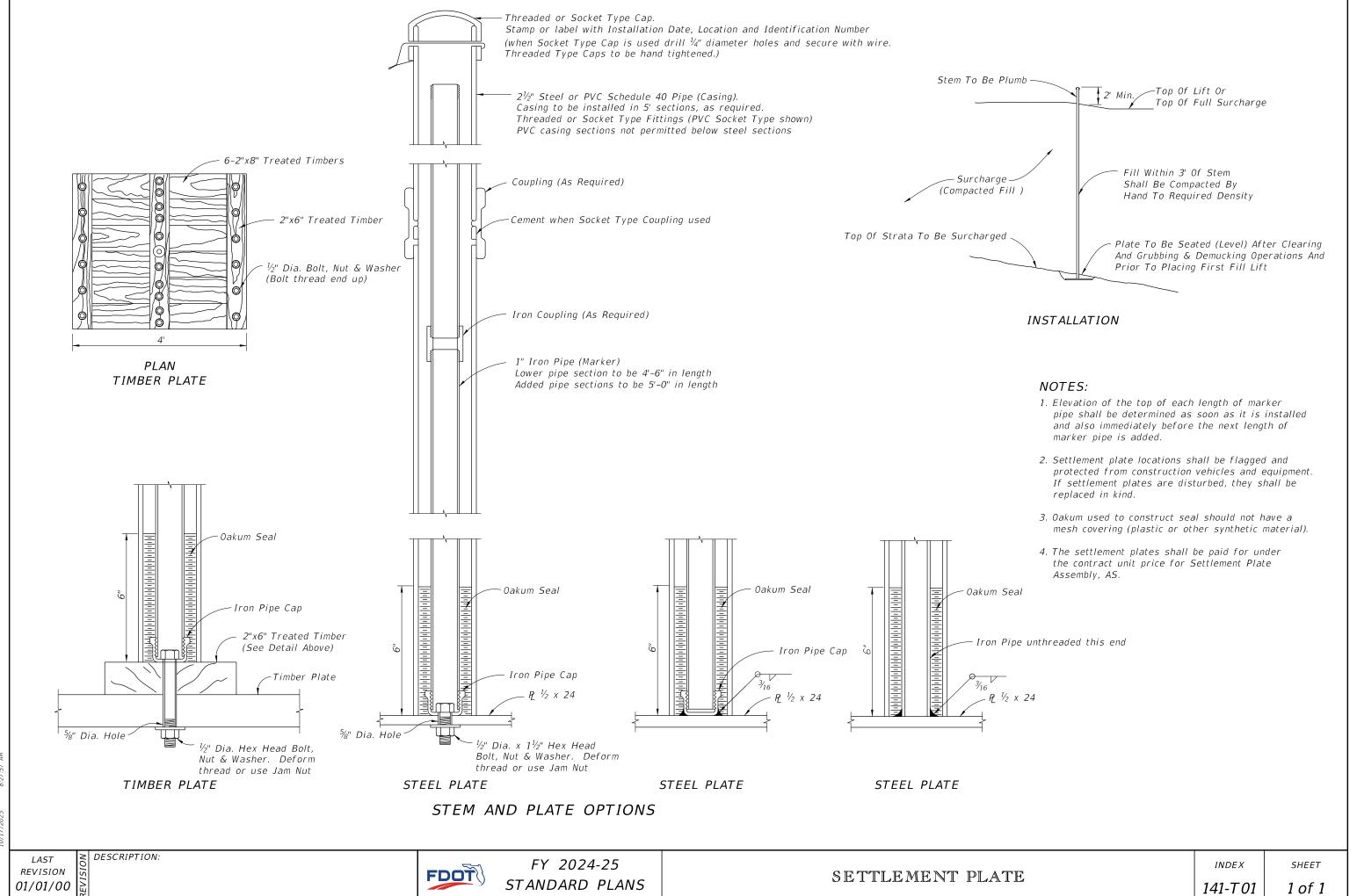


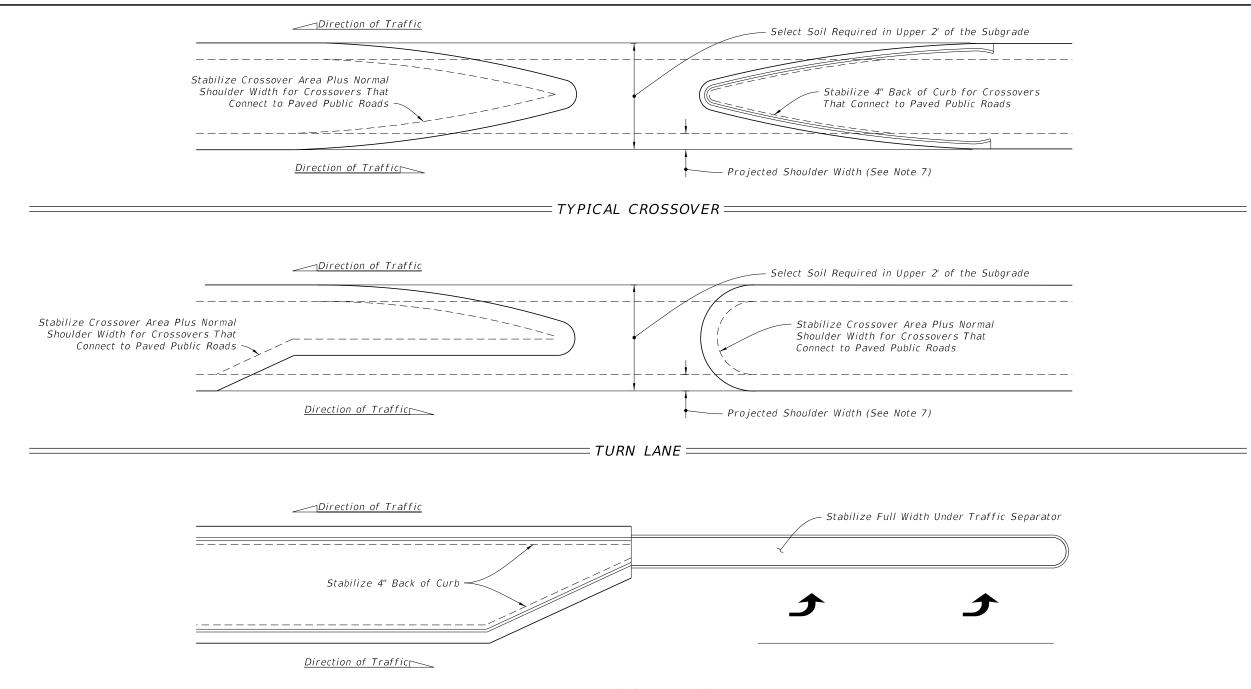
PARTIAL CUTS FOR RING AND COVER ADJUSTMENTS =

NOTES

- 1. Cut-Lines must be straight and cleanly sawed.
- 2. See Sheet 1 for replacement pavement.
- 3. Adjust manholes prior to placing friction course when pavement resurfacing is occurring in the area adjacent to the manhole.
- 4. Align Longitudinal Cut-Lines with pavement joint or center of traffic lane to avoid wheel path.
- 5. For rigid pavement, align Transverse Cut-Lines with nearest existing joint.

NONTRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT





= $\mathit{TRAFFIC}$ $\mathit{SEPARATOR}$ =

NOTES:

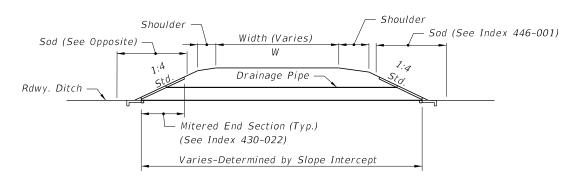
- 1. When the median has curb or curb and gutter, stabilize 4" back of curb.
- 2. When the median has shoulder with no curb or curb and gutter, stabilize to normal shoulder width.
- 3. See the details above for stabilizing requirements at crossroads.
- 4. Stabilize entire area under all paved traffic islands.
- 5. Stabilize full width under all traffic separators.
- 6. Provide select soil where shown above and as defined on Index 120-001. For minor collectors and local facilities the depth of select material thickness may be reduced from 24" to 18".
- 7. Limits of Stabilization for Intermediate U-Turn Crossovers and, unless otherwise specified in the Plans, at paved and unpaved private roads and unpaved public roads.

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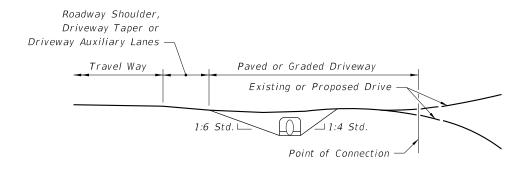
LAST REVISION 11/01/19

DESCRIPTION:

PLAN

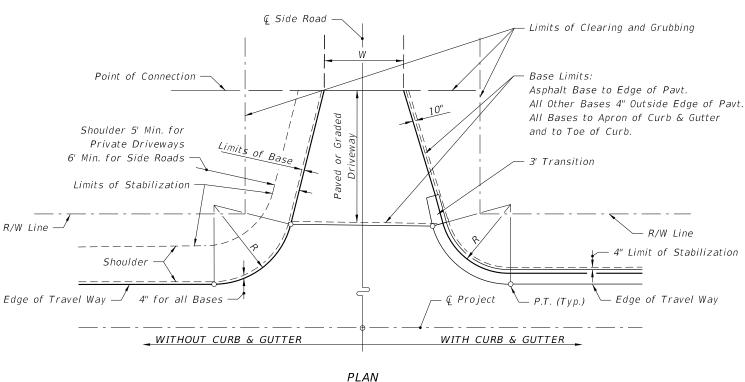


DRAINAGE SECTION



DRIVEWAY PROFILE AND END VIEW

:FLUSH SHOULDER ROADWAY - DRIVEWAY CONSTRUCTION =



= LIMITS OF CLEARING & GRUBBING,=STABILIZING AND BASE AT DRIVEWAYS

DRIVEWAY ENTRANCES NOTES:

- 1. See Plans for Driveway Width (W) and Return Radius (R).
- 2. See the Plans for drainage pipe size and length or as determined by the Engineer. The size will be no less than 15" diameter or equivalent.
- 3. Stable material may be required for graded driveways to private property as directed by the Engineer in accordance with Specification 102-8.
- 4. The driveway pavement requirement at graded connections may be waived for connections serving one or two homes or field entrances with less than 20 trips per day, or 5 trips per hour as approved by the Engineer, or when not shown in the Plans.
- 5. Point of Connection:
 - a. Construct paved driveways for all paved connecting facilities. The connecting point will be determined by the Engineer.
 - b. Construct paved driveways for all business, commercial, industrial or high volume residential graded connecting facilities. Construct the connecting point 30'-0' from edge of travel way or at R/W line, whichever is less.
 - c. Construct paved driveways for all side road connections. The R/W is the connecting point.

REVISION 11/01/18

DESCRIPTION:

DRIVEWAY TYPES =

AREAS FOR ONE 5' DEEP DRIVEWAY ARRON (SV)

DRIVEWAY APRON (SY)				
Drive	Intersection			
Width	Noi	-mal	Skewed	
(Ft.)	Type I	Type II	Type I	Type II
12	26	51	31	60
14	27	52	33	61
16	28	53	34	63
18	29	54	35	64
20	31	55	37	65
22	32	56	38	67
24	33	57	39	68
26	34	58	40	69
28	35	59	42	70
30	36	61	43	72
32	37	62	44	73
34	38	63	46	74
36	39	64	47	76
38	41	65	48	77
40	42	66	49	78
42	43	67	51	79
44	44	68	52	81
46	45	69	53	82
48	46	71	55	83
50	47	72	56	85
52	48	73	57	86
54	49	74	58	87
56	51	75	60	88
58	52	76	61	90
60	53	77	62	91

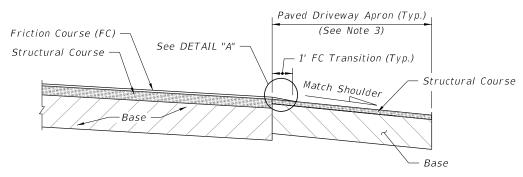
MATERIAL TYPES AND THICKNESSES FOR PAVED CONNECTIONS

Co	C	Makasisla	Minimum Thickness (in.)		
	Course	Materials	Connections	Roadway*	
	Structural	Structural Asphaltic Concrete		1 ½"	
	Bases Optional Base (See Specification 285)		0.B.G. 2	0.B.G. 3	
		'	1½" 0.B.G. 2	1 /2	

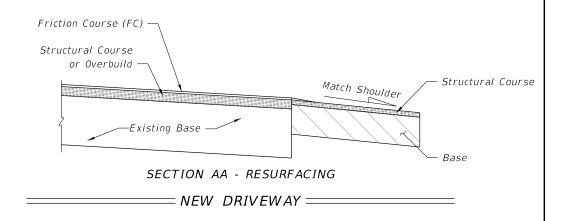
st Travel way flares (bypass lanes), auxiliary lanes serving more than a single connection, and all median crossovers including their auxiliary lanes and/or transition tapers.

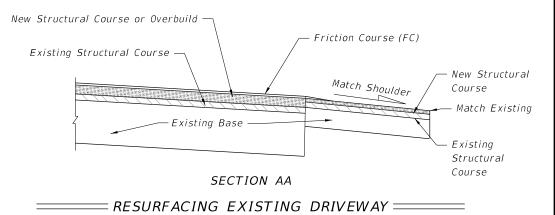
NOTES

- 1. Use same material for driveway structural course and roadway overbuild or structural course, except as approved by the Engineer for graded connections. Other Department-approved equivalent pavements may be used at the discretion of the Engineer.
- 2. Auxiliary lanes and their transition tapers shall be the same structure as the abutting travel way pavement thickness or any of the roadway structures tabulated above, whichever is thicker.
- 3. If an asphalt base course is used for a driveway, its thickness may be increased to match the edge of travel way pavement thickness in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.
- 4. A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.
- 5. Use Class NS concrete at least 6" thick for driveways paved with Portland Cement Concrete. Construct in accordance with Specifications 347, 350, and 522.
- 6. The Department may require other pavement criteria where local conditions warrant.



SECTION AA - NEW CONSTRUCTION





GENERAL NOTES:

- 1. Driveways are to be constructed or resurfaced for low volume (single family, duplex, farm, etc.) residential connections as directed by the Engineer.
- 2. Driveways construction is not required for low volume residential connections where roadway shoulders are paved.
- 3. Match existing paved shoulder widths \geq 4'. For all other shoulders conditions, construct at 5' wide.
- 4. Connections beyond the shoulder width are to be constructed as directed by the Engineer.
- 5. Construct Driveway Base in accordance with Specification 286.
- 6. Payment for structural course and friction course is to be included in roadway pavement pay item.

REVISION 11/01/18

FDOT

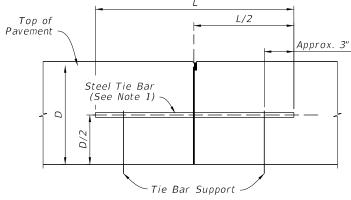
FY 2024-25 STANDARD PLANS

PAVED AND GRADED DRIVEWAYS

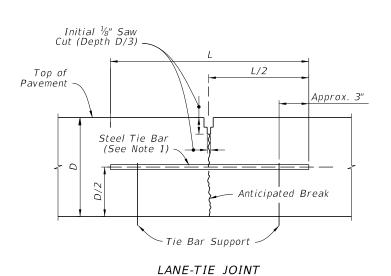
INDEX 330-001

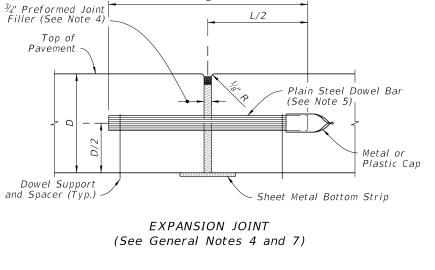
SHEET 2 of 2

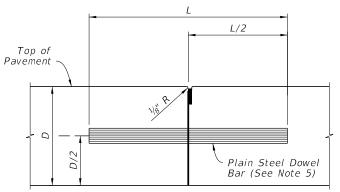
DESCRIPTION:



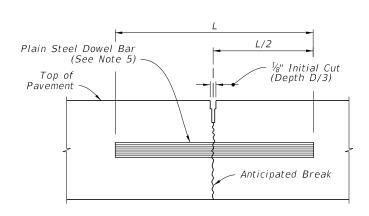






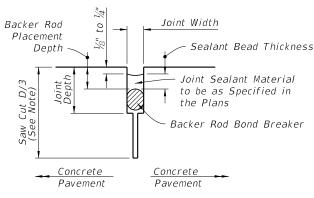


BUTT CONSTRUCTION JOINT (Used At Discontinuance Of Work)



CONTRACTION JOINT (Sawed Method)

= TRANSVERSE JOINTS =



NOTE:

(D=Conc. Pavt. Thick.) Not required for construction joints, existing joints, or cracks.

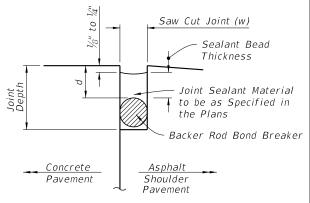
BACKER ROD BOND BREAKER (CONCRETE-CONCRETE JOINTS)

	•			,
	JOINT	DIMENSIC	NS (INCHE	5)
JOINT	SEALANT	BACKER	MINIMUM	BACKER ROD
WIDTH	BEAD	ROD DIA.	JOINT	PLACEMENT
חוטוייי	THICKNESS	ROD DIA.	DEPTH	DEPTH
1/4	1/4	3/8	1	1/2
3/8	1/4	1/2	1 1/4	1/2

Unless otherwise indicated on the plans the joint width for new construction will be $^{1}\!\!/_{\!4}$ " for construction joints, $\frac{3}{8}$ " for all other joints.

For rehabilitation projects the joint width will be shown on the plans or established by the Engineer based on field conditions.

CONCRETE-CONCRETE JOINTS



"d" and "w" = $\frac{3}{4}$ ", unless specified in the Plans.

CONCRETE-ASPHALT SHOULDER JOINTS

=== JOINT SEAL DIMENSIONS ====

GENERAL NOTES:

- 1. For Longitudinal Joints:
- A. Tie bars are deformed #4 or #5 reinforcing steel bars meeting the requirements of Specification 931.
- B. Provide a tied joint with #4 bars 25" in length at 24" spacing or #5 bars 30" in length at 36" spacing.
- 2. Transverse joints are to be spaced at a maximum of 15'. Dowel Bars are required at all transverse joints unless otherwise noted in the plans.
- 3. For bridge expansion joints, see Index 370-001.
- 4. Punch clean holes in preformed joint filler greater than bar diameter
- 5. Coat plain steel dowel bars and welded wire basket assemblies in accordance with Specification 931. Lubricate dowel bars in accordance with Specification 350.
- 6. New and rehabilitation projects, backer rod bond breaker is required. Shoulder must be repaired if proper joint shape can not be attained.

DESCRIPTION:

7. Sheet metal bottom strips in accordance with Specification 931. Not required with asphalt base.

REVISION 11/01/22

FDOT

= LONGITUDINAL JOINTS ===

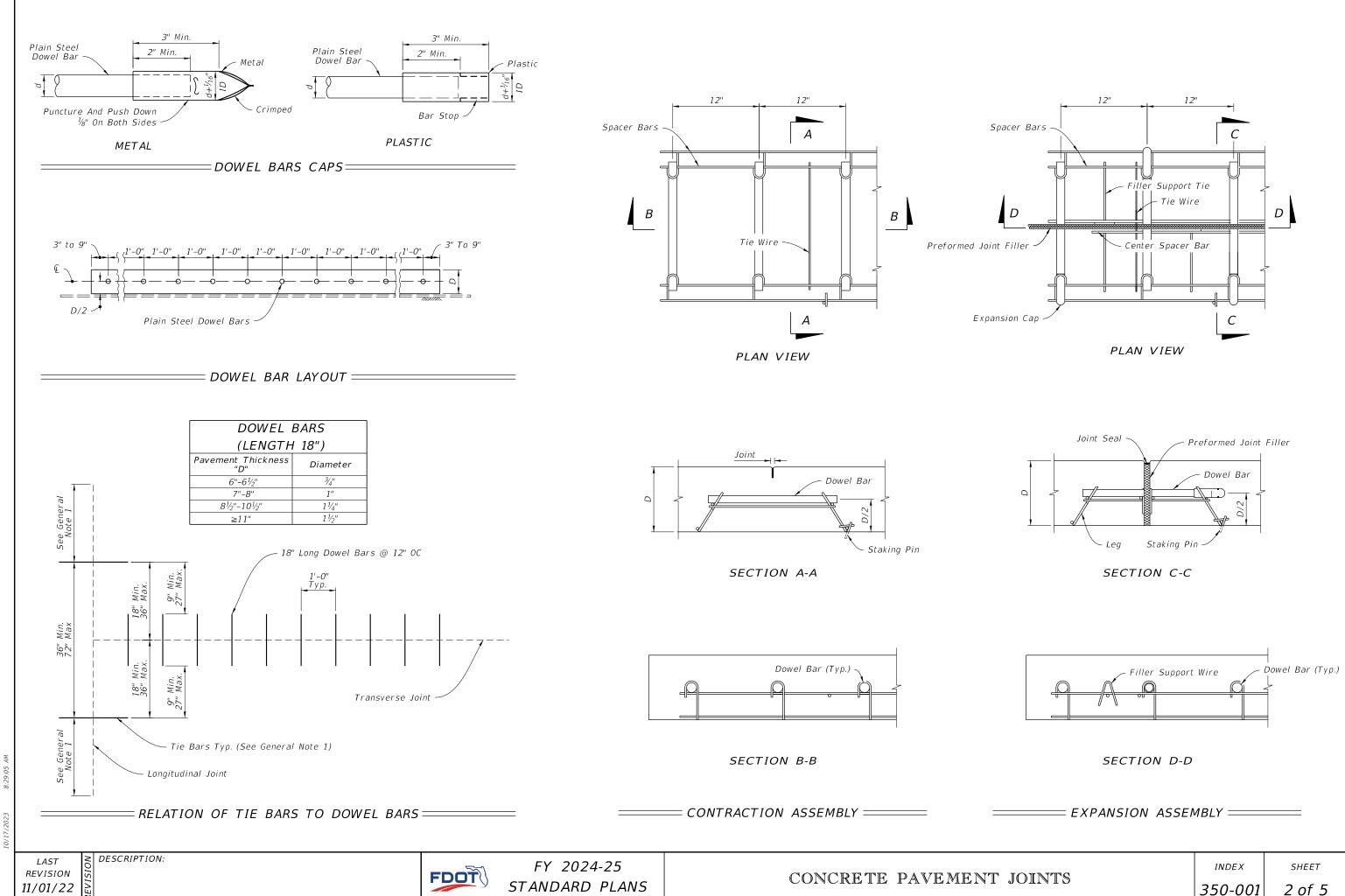
FY 2024-25 STANDARD PLANS

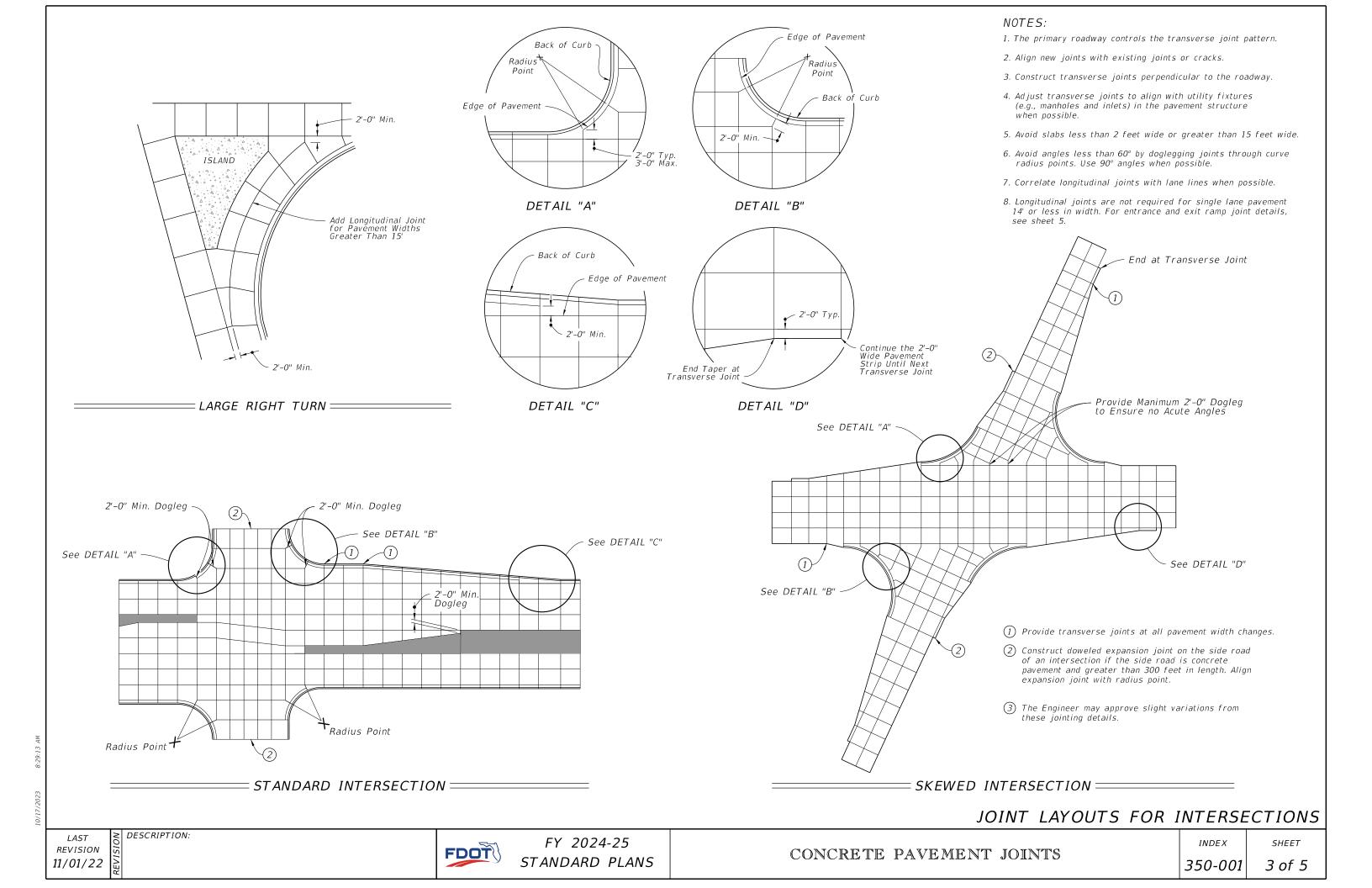
CONCRETE PAVEMENT JOINTS

INDEX 350-001

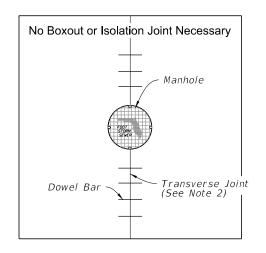
SHEET

1 of 5



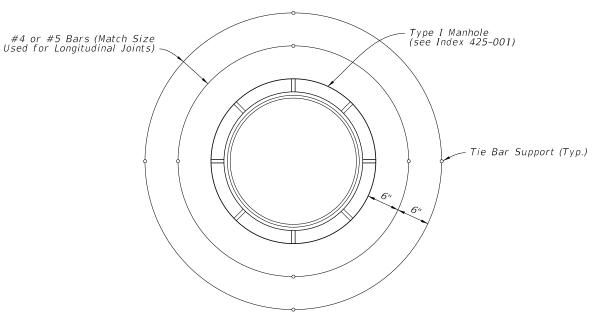


MANHOLE WITH == LONGITUDINAL JOINT

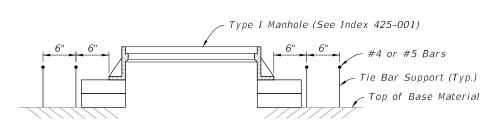


MANHOLE WITH TRANSVERSE JOINT

> Install Dowel Bars Parallel to the Pavement Centerline

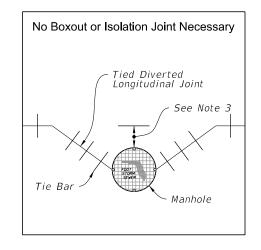


PLAN

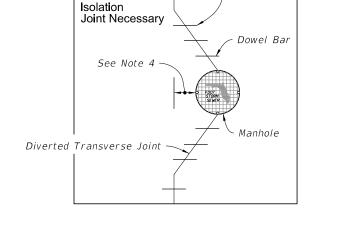


ELEVATION

MANHOLE REINFORCEMENT = (See Notes 3 and 4)



= MANHOLE WITH DIVERTED =LONGITUDINAL CONTRACTION JOINT



No Boxout or

= MANHOLE WITH DIVERTED = TRANSVERSE CONTRACTION JOINT

NOTES:

- 1. Use boxouts when utility structure is in the path of construction joints. Provide a 1 foot minimum clearance between the exterior limit of the structure to the diamond boxout.
- 2. Adjust transverse joint to intersect manhole, if possible.
- 3. If distance between the longitudinal joint and the edge of manhole is 2 feet or less, divert the longitudinal joint at a 2:1 taper rate to the center of the manhole. If the distance is greater than 2 feet, do not divert the joint, saw as normal, and place reinforcement rebar around the manhole.
- 4. If the distance from the edge of the manhole to the nearest transverse joint is 4 feet or less, redirect joint at 2:1 taper to intersect the center of the manhole. If distance is greater than 4 feet, do not divert the joint, saw as normal, and place reinforcement rebar around the
- 5. Align transverse joint with one edge of inlet when practical.
- 6. All manholes, meter boxes and other projections into the pavement shall be boxed-in with $\frac{1}{2}$ " preformed expansion joint material.

ISOLATION JOINT DETAILS

REVISION 11/01/22

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

CONCRETE PAVEMENT JOINTS

INDEX 350-001

SHEET 4 of 5

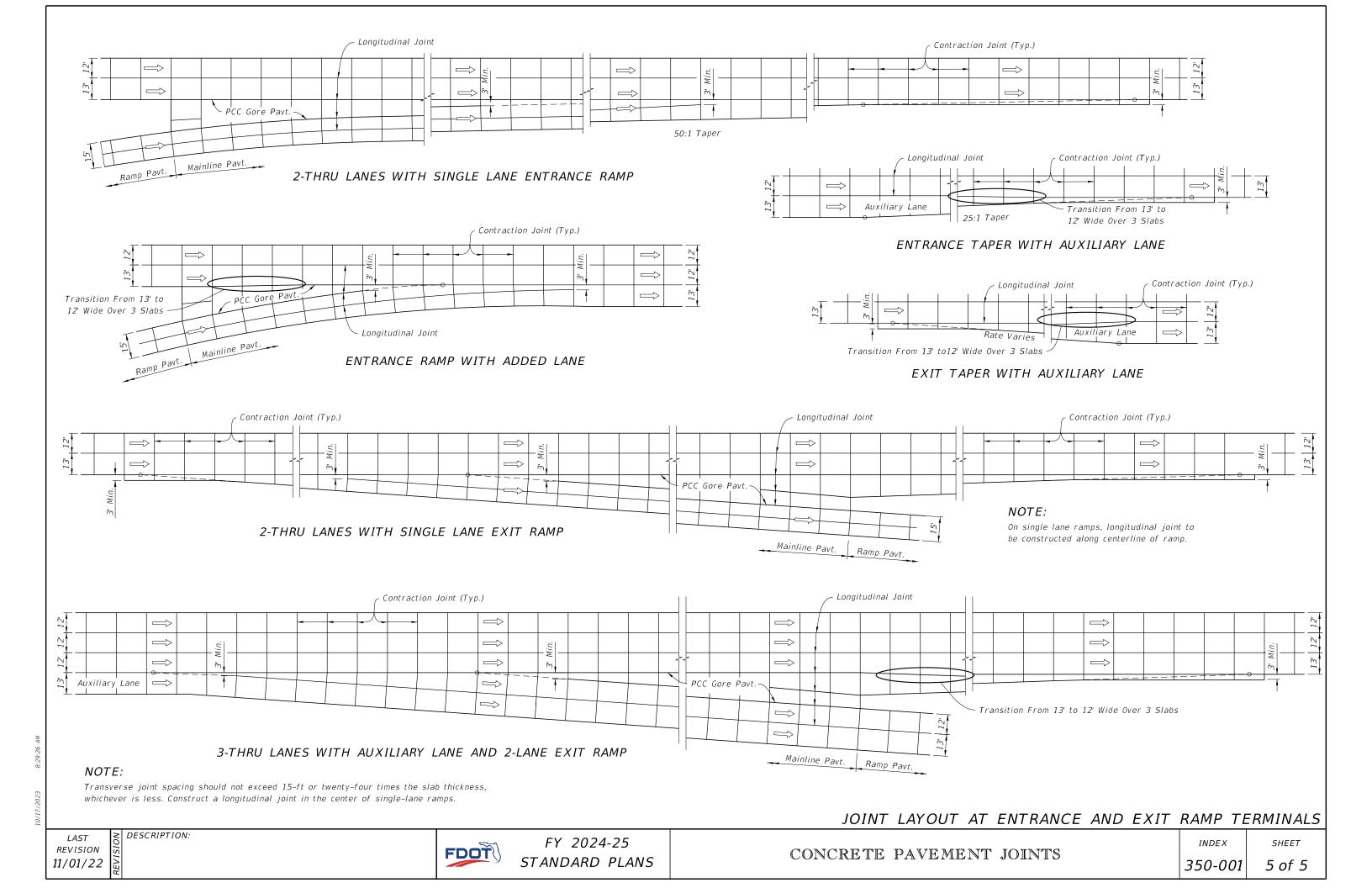


FIGURE 10.2 - REPAIR METHOD: NONE OR CLEAN AND SEAL

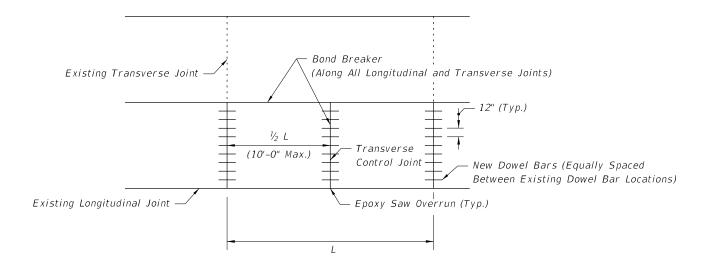


FIGURE 10.3 - FULL SLAB FULL DEPTH REPLACEMENT

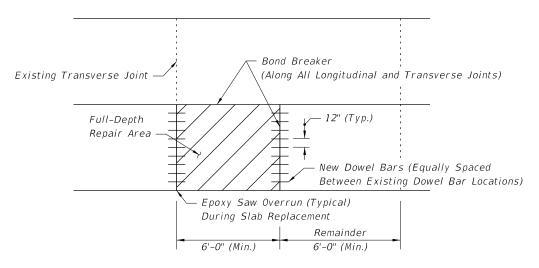


FIGURE 10.4 - PARTIAL SLAB FULL DEPTH REPLACEMENT

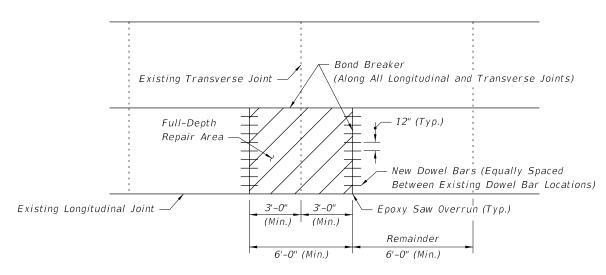


FIGURE 10.5 - FULL-DEPTH REPAIR ON BOTH SIDES OF THE JOINT

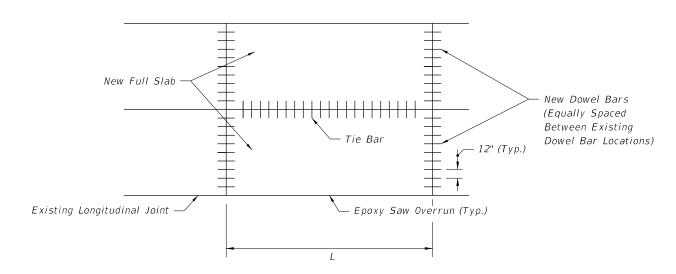


FIGURE 10.6 - MULTIPLE SLAB FULL DEPTH REPLACEMENT

GENERAL NOTES

- 1. For Repair and Replacement Criteria see Sheet 2.
- 2. Full depth repairs consist of removing and replacing at least a portion of the existing slab to the bottom of the concrete.
- 3. Repair boundaries shall be sawed full-depth with diamond saw blades. On hot days, it may not be possible to make this cut without first making a wide, pressure relief cut within the repair boundaries. A carbide-tipped wheel saw may be used for this purpose, but the wheel saw must not intrude on the adjacent lane, unless the lane is slated for repair. The wheel saw cuts produce a ragged edge that promotes excessive spalling along joints. Hence, if wheel saw cuts are made, diamond saw cuts must be made 18 in. outside the wheel saw cuts. To prevent damage to the base, the wheel saw must not be allowed to penetrate more than 0.5 in. into the base.
- 4. No additional base or subgrade material shall be added and all loose base or subgrade material shall be removed prior to placement of the new concrete slab. The concrete slab shall be placed to the full depth of the material removed. No additional compensation will be allowed for additional concrete required to bring proposed concrete slab up to finished grade.
- 5. Removal of the damaged concrete pavement shall be by lifting. Any good concrete pavement which is damaged during removal of damaged areas shall be removed and replaced by the contractor at his expense.
- 6. If the roadway contract includes grinding, then the slab replacement shall be performed first.
- 7. During slab replacement operations, fill any saw cut over runs into adjacent slabs with epoxy.
- 8. Install tie bars at longitudinal joints when two full adjacent or multiple replaced slabs.

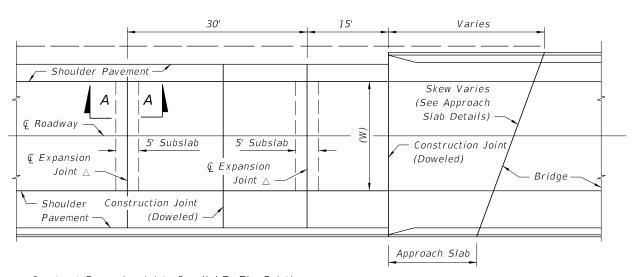
10/11/2023

DESCRIPTION:

SLAB REPAIR AND REPLACEMENT CRITERIA

DISTRESS PATTERN		SEVERITY/DESCRIPTION	REPAIR METHOD	REFERENCE
CRACKING				
	Light	$< \frac{1}{8}$ ", no faulting, spalling $< \frac{1}{2}$ " wide	None	Figure 10.2
Longitudinal	Moderate	$\frac{1}{8}$ " <width <<math="">\frac{1}{2}", spalling <3" wide</width>	Clean and Seal	Figure 10.2
	Severe	width $> \frac{1}{2}$ ", spalling > 3 " faulting $> \frac{1}{2}$ "	Replace	Figure 10.3
	Light	$<\frac{1}{8}$ ", no faulting, spalling $<\frac{1}{2}$ " wide	None	Figure 10.2
Transverse	Moderate	$\frac{1}{8}$ " <width <<math="">\frac{1}{2}", spalling <3" wide</width>	Clean and Seal	
	Severe	width $>^{1}\!\!/_{2}$ ", spalling $>^{3}$ " faulting $>^{1}\!\!/_{2}$ "	Replace	Figure 10.3, 10.4 and 10.5
Corner Breaks	adjacent lo	the slab is separated by a crack that intersects the ngitudinal and transverse joint, describing an approximate with the direction of traffic.	Full Depth	Figure 10.4 and 10.5
Intersecting Random Cracks (Shattered Slab)	Cracking pa	atterns that divide the slab into three or more segments.	Full Depth	Figure 10.3 and 10.4
JOINT DEFICIENCIES				
	Light	spall width $<1\frac{1}{2}$ ", $<\frac{1}{3}$ slab depth, <12 " in length	None	Figure 10.4 and 10.5
Spall Nonwheel Path	Moderate	$1^{1}/_{2}$ " <spall <="" <3",="" <math="" width="">^{1}/_{3} slab depth, <12" in length</spall>	None	Figure 10.4 and 10.5
	Severe	spall width >3" or length >12"	Full Depth	Figure 10.4 and 10.5
	Light	spall width $<1\frac{1}{2}$ ", $<$ than $\frac{1}{3}$ slab depth, $<$ 12" in length	None	Figure 10.4 and 10.5
Spall Wheel Path	Moderate	$1\frac{1}{2}$ " <spall <="" <3",="" <math="" width="">\frac{1}{3} slab depth, <12" in length</spall>	Full Depth	Figure 10.4 and 10.5
	Severe	spall width >3" or length >12"	Full Depth	Figure 10.4 and 10.5
SURFACE DETERIORATION				
Pop Outs Nonwheel Path		s of surface pavement broken loose, normally ranging 1 in. diameter and $rac{1}{2}$ to 2 in. in depth.		
	Light	Not deemed to be a traffic hazard	Keep under observation	
	Severe	Flying debris deemed a traffic hazard	Full Depth	Figure 10.4
Pop Outs Wheel Path	Small pieces of surface pavement broken loose, normally >3" diameter and 2" in depth.			
	Light	Deemed to be a traffic hazard	Full Depth	Figure 10.4
	Severe	Flying debris deemed a traffic hazard	Full Depth	Figure 10.4
MISCELLANEOUS DISTRESS				-
	Elevation di	ifferences across joints or cracks.		
Faulting	Light	Faulting <4/32"	None	
. 229	Moderate	4 < Faulting < 16/32"	Grind	
	Severe	Faulting >16/32"	Grind	
	Light	0 <drop-off <1"<="" td=""><td>None</td><td></td></drop-off>	None	
Lane To Shoulder Drop-Off	Moderate	1" <drop-off <3"<="" td=""><td>Build Up</td><td>N/A</td></drop-off>	Build Up	N/A
	Severe	drop-off >3 "	Build Up	1
Water Bleeding Or Pumping		ejection of water through joints or cracks.	Install appropriate drainage, edge drain, permeable subbase, reseal joints, etc.	N/A
Blowups		vement at transverse joints or cracks often d by shattering of the concrete.	Full Depth	Figure 10.3 and 10.4

≥ DESCRIPTION:



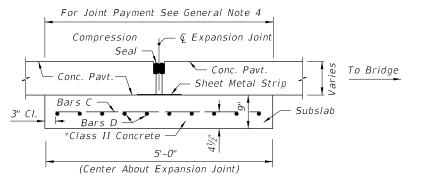
PLAN

△ Construct Expansion Joints Parallel To The Existing

Transverse Pavement Joints On Rehabilitation Projects, And

Parallel To The Standard Transverse Pavement Joints Shown

In The Plans For New Construction.



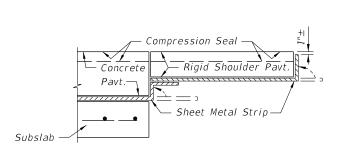
REINFORCING STEEL							
Mark	Size	Spac.	No. Reqd.	Length			
С	5	6"	Varies	4'-6''			
D	5	6"	10	W Minus 6"			

* Finish surface smooth. Cure with heavy coating of wax base white pigmented curing compound. Apply second application immediately prior to placing pavement.

SECTION A-A

GENERAL NOTES:

- 1. For asphalt base, use four expansion joints, spaced at 15 feet, per Index 350-001.
- 2. The centerline of roadway and the centerline of bridge do not necessarily coincide. Determine the centerline of the roadway pavement prior to the placement of the expansion joint.
- 3. For information on other types of concrete pavement joints see Index 350-001.
- 4. Pay quantity for expansion joint is the length of joint to be constructed across the roadway and shoulder pavements, measured at right angles to the centerline of the roadway. Payment for expansion joint is full compensation for joint construction, including reinforced concrete subslab, sheet metal strip and compression seal, but, not including roadway pavement reconstruction associated with joint replacement or reconstruction. Expansion joint to be paid for under the contract unit price for Bridge Approach Expansion Joint, LF.



RIGID SHOULDER PAVEMENT

Compression Seal Concrete Pavt. Sheet Metal Strip Subslab

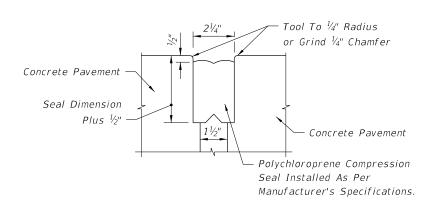
EXPANSION JOINT =

SODDED SHOULDER OR FLEXIBLE SHOULDER PAVEMENT

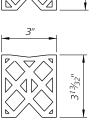
NOTES:

DESCRIPTION:

- 1. Immediately prior to placing the seal, thoroughly clean the joint of all foreign material. Immediately after the seal is placed, bend up the sheet metal strip against the pavement edge.
- 2. Use a minimum 16 gage steel, 12" wide sheet metal strip, Galvanized in accordance with ASTM A-526, Coating Designation G90.



NOTE:Thoroughly coat all contacting surfaces between the compression seal and concrete with a lubricant-adhesive.



JOINT DIMENSIONS

OPTIONAL SEALS

= SHEET METAL STRIP DETAILS =

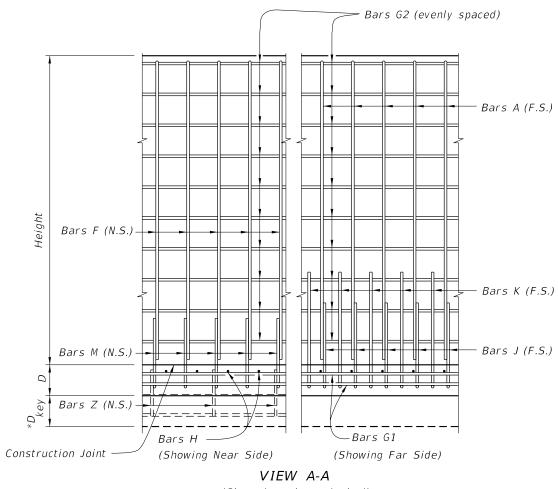
= COMPRESSION SEAL DETAIL =

LAST REVISION 11/01/21

FDOT

FY 2024-25 STANDARD PLANS BRIDGE APPROACH EXPANSION JOINT CONCRETE PAVEMENT WITH SPECIAL SELECT SOIL BASE

INDEX



(Shear key shown dashed)

NOTES

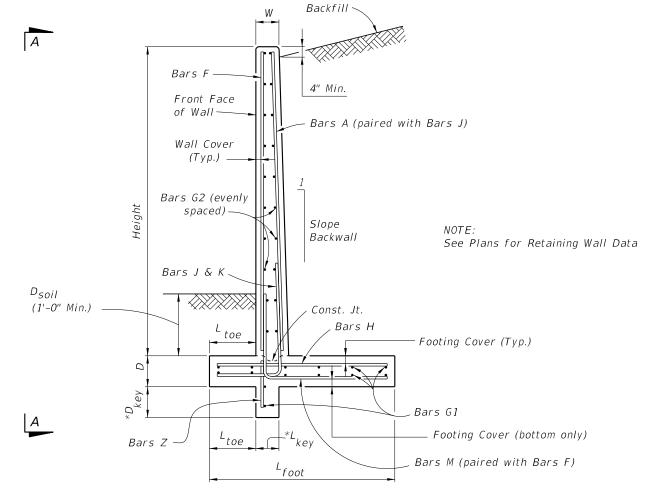
TRAFFIC RAILINGS OR PARAPETS:

If there is a Traffic Railing or Parapet on the wall, align Wall Joints with V-Grooves, and Wall Expansion Joints with Barrier Open Joints.

FOUNDATION:

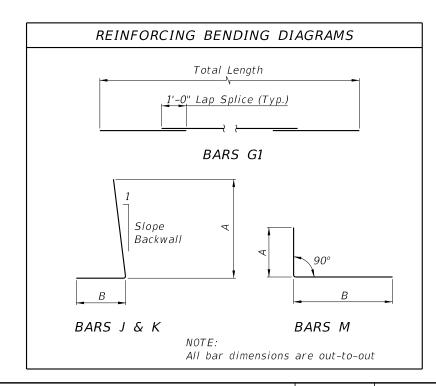
DESCRIPTION:

Prepare the soil below the footing in accordance with the requirements for spread footings in Specification Section 455.



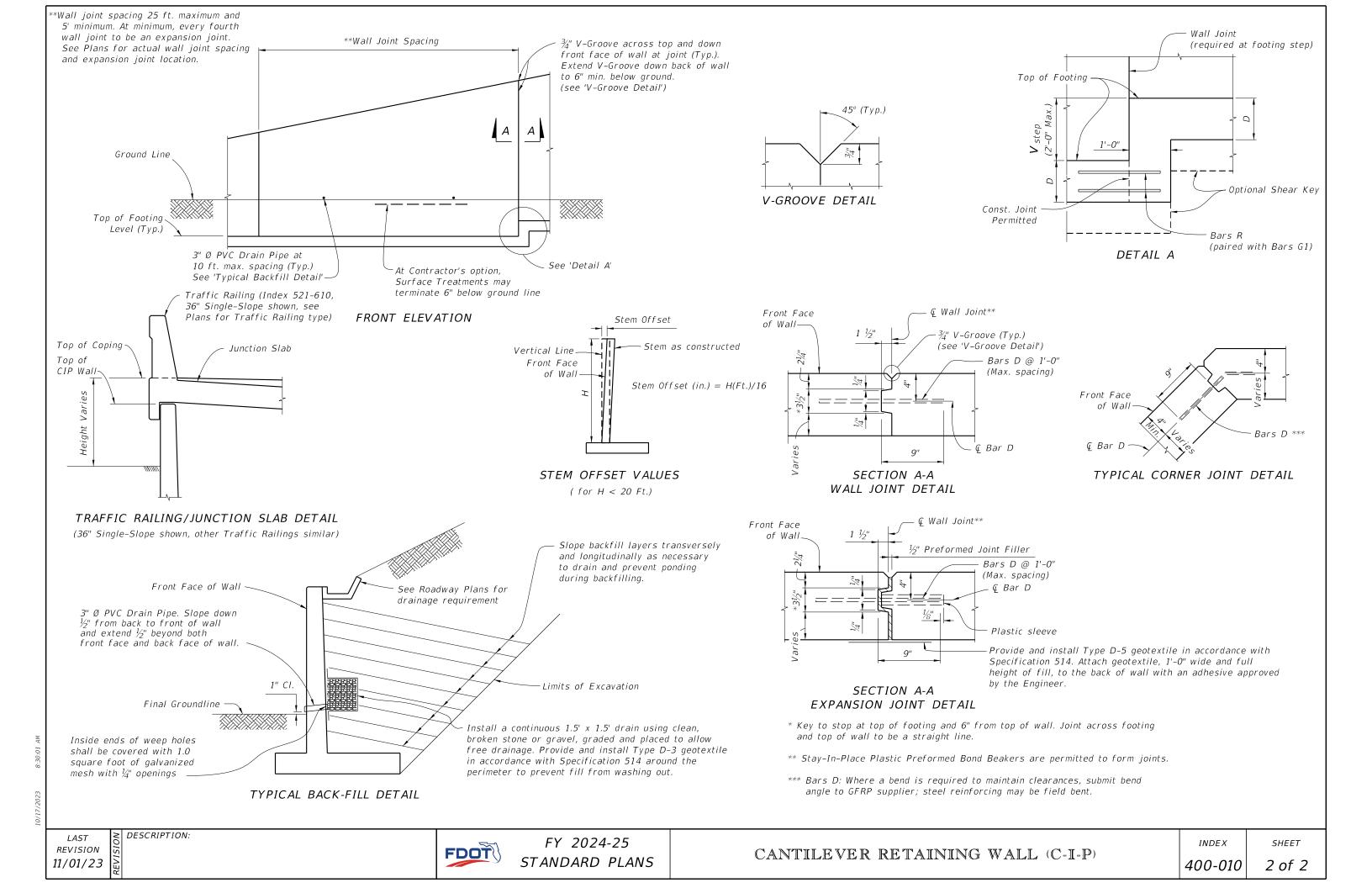
* Shear Key is required only when specified in the Plans.

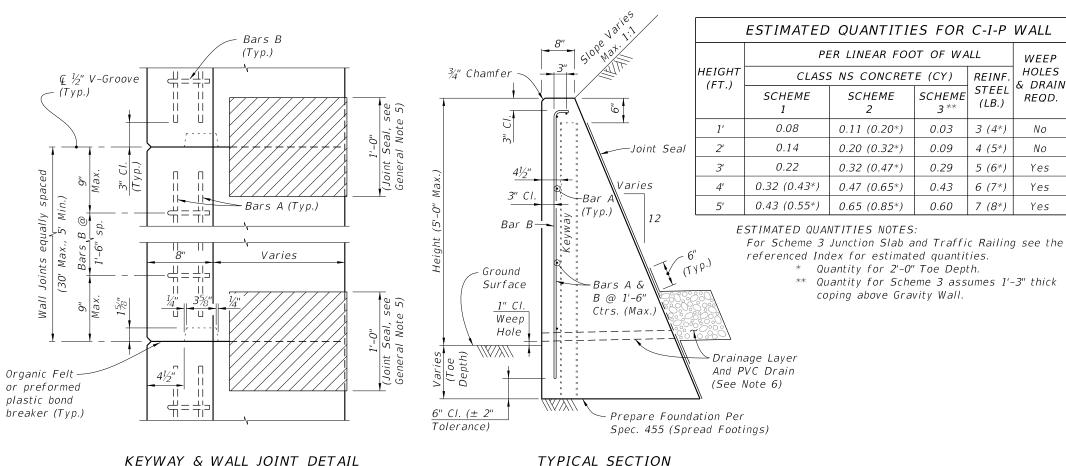
TYPICAL SECTION



REVISION 11/01/20







(TOP VIEW)

GENERAL NOTES

WEEP

HOLES

& DRAIN

REQD.

No

Yes

Yes

Yes

REINF

SCHEME

0.03

0.09

0.29

0.43

0.60

3 **

SCHEME

2

0.11 (0.20*)

0.20 (0.32*)

0.32 (0.47*)

0.47 (0.65*)

0.65 (0.85*)

STEEL

(LB.)

3 (4*)

4 (5*)

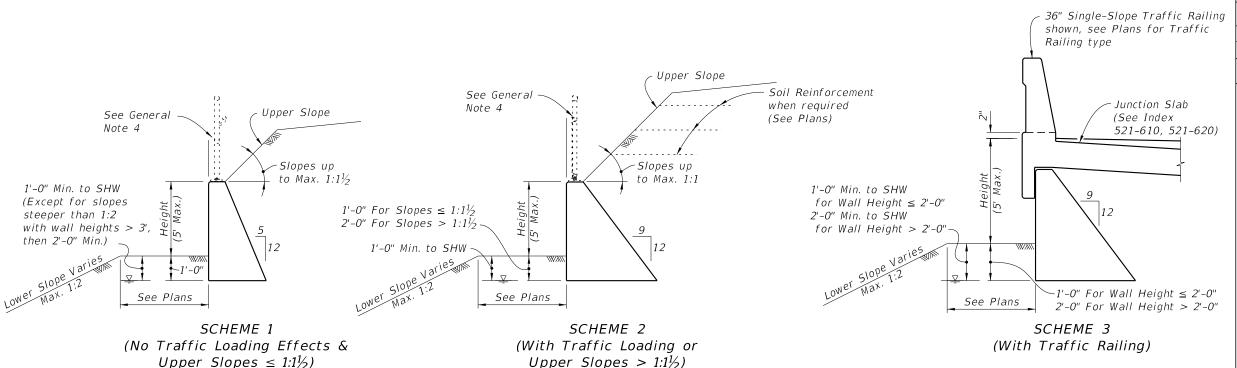
5 (6*)

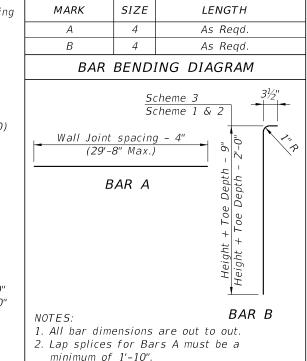
6 (7*)

7 (8*)

- 1. C-I-P Gravity Walls constructed as extensions of reinforced concrete retaining walls, except for walls of proprietary designs, provide the same face texture and finish as the reinforced concrete retaining wall.
- 2. Use Class NS Concrete for Gravity Wall per Specification 347. Concrete for Scheme 3 Junction Slab and Traffic Railing shall be Class II per Specification 346, unless otherwise specified in the plans.
- 3. Reinforcing steel meets the requirements of Specification 931 (Grade 40 or 60). Smooth or Deformed Welded Wire Reinforcement (WWR) may be substituted on an equal area basis. Do not increase bar/wire spacing for Grade 60 reinforcing steel or WWR.
- 4. When required, for adjunct guiderail, see Index 515-070 or 515-080 as appropriate. For adjunct Type B fence see Index 550-002.
- 5. Joint Seal: Provide and install organic bond breaker or Type D-5 geotextile in accordance with Specifications 400 and 514 respectively. Mop all contact surfaces of concrete and Organic Felt or geotextile with cut-back asphalt. Stop Organic Felt or geotextile 6" below top of wall.
- 6. Provide a continuous 1'x1' clean gravel or crushed rock drain for wall heights 3 ft. and higher. Wrap drainage layer as shown, with Type D-3 geotextile in accordance with Specification 514. Provide 8"x8" galvanized mesh with $\frac{1}{4}"$ openings, at the inside end of the PVC Drain Pipe. Provide 2" Ø PVC Drain Pipe (Sch. 40) at 10 ft. max. spacing (when Drainage Layer is required). Locate outermost edge of Drain Pipe a minimum of 2'-0" from wall joints.
- 7. Cost of reinforcing steel, face texture, finish, joint seal, drain pipes, drainage layer, galvanized mesh and geotextile to be included in the Contract Unit Price for Concrete Class NS, Gravity Wall. Cost of concrete for Junction Slab in Scheme 3, to be included in Contract Unit Price for Concrete Traffic Railing Barrier With Junction Slab. Adjunct railings or fences to be paid for separately.

TYPICAL SECTION C-I-P CONCRETE GRAVITY WALL





BILL OF REINFORCING STEEL

DESCRIPTION: LAST REVISION 11/01/23

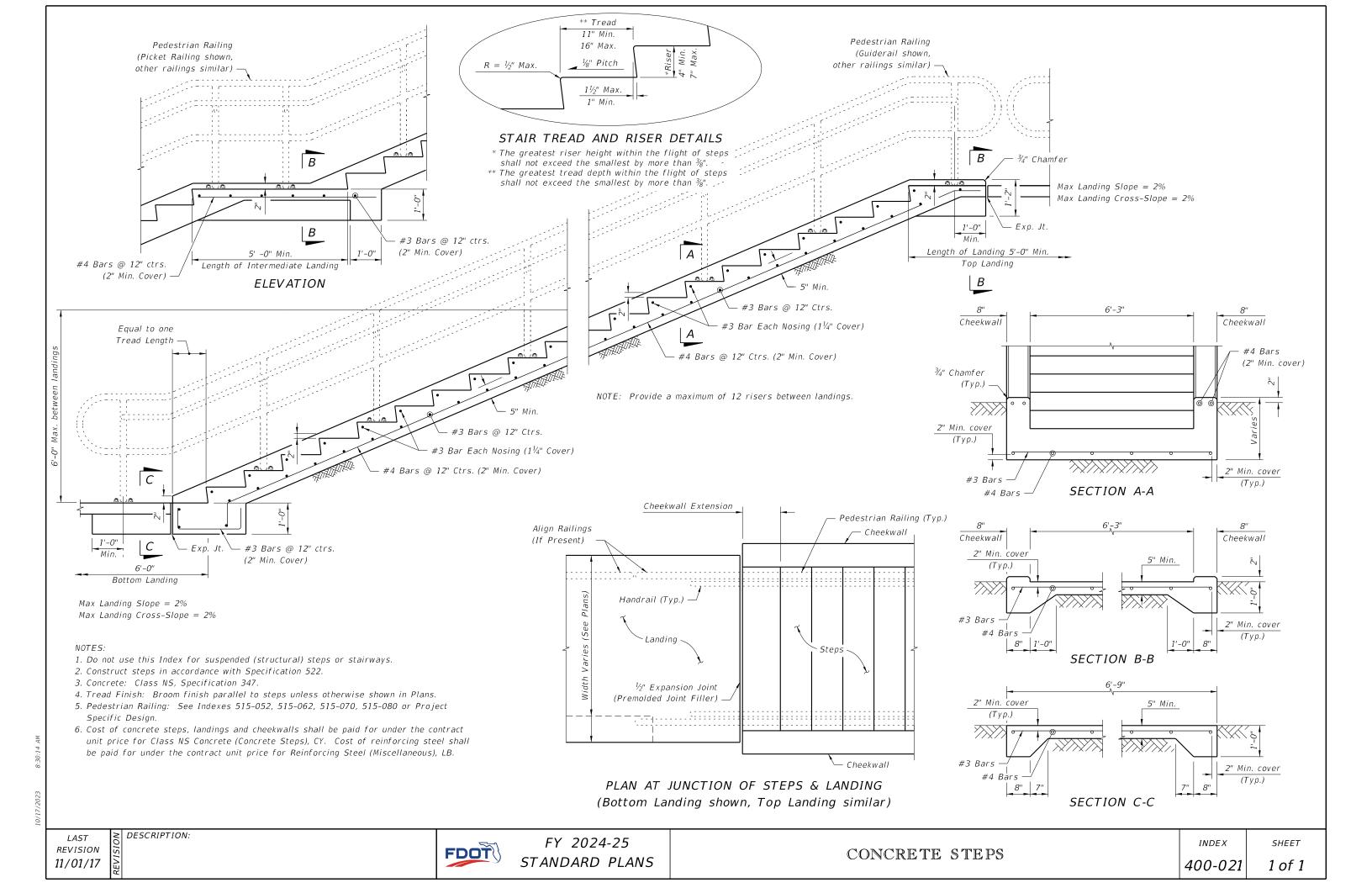
FDOT

FY 2024-25 STANDARD PLANS

GRAVITY WALL

INDEX 400-011

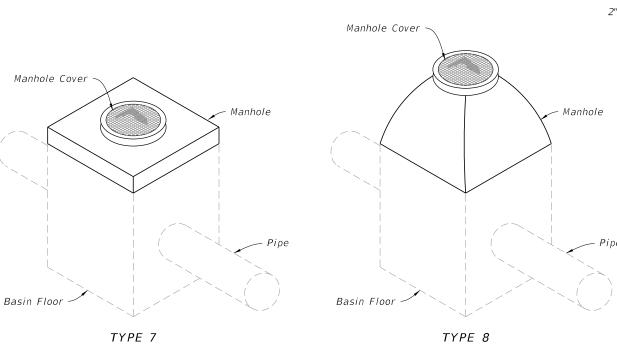
SHEET 1 of 1



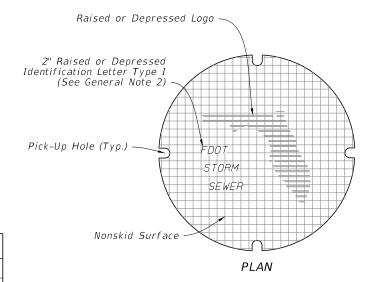
GENERAL NOTES:

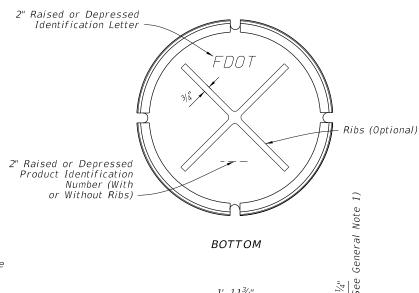
- 1. Use a 1-piece cover, unless the 2-piece cover is called for in the Plans, except at inlets and manholes with sump bottoms. Use the 2-piece cover when the sump depth exceeds 2', unless otherwise noted.
- 2. Include "Adjustable" on the cover for Type I manhole adjustable frames.
- 3. For square or rectangular precast drainage structures, use either deformed or smooth WWR meeting the requirements of Specification 931. WWR must be continuous around the box and lapped in accordance with Option 1 or 3 as shown in the Wall Reinforcing Splice Details.
- 4. Lap splice horizontal steel in the walls of rectangular structures in accordance with Option 1, 2 or 3 as shown in the Wall Reinforcing Splice Details.
- 5. Welding of splices and laps is permitted. Use AASHTO M259 requirements and restrictions on welds.
- 6. Rebar straight end embedment of peripheral reinforcement may be used in lieu of ACI standard hooks for top and bottom slabs, except when hooks are specifically called for in the Plans.
- 7. Precast opening for pipe must be the pipe OD plus 6" (\pm 2" tolerance). Use mortar to seal the pipe into the opening of such a mix that shrinkage will not cause leakage into or out of the structure. Dry-pack mortar may be used to seal openings less than $2\frac{1}{2}$ " wide.

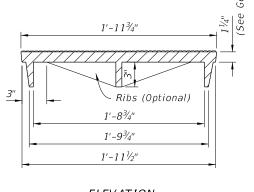
	TABLE OF CONTENTS:					
Sheet	Description					
1	General Notes, Contents, Manhole Top Overview, and Manhole Covers					
2	Manhole Frames and Manhole Tops					
3	Inlet Locking Grates, Subgrade and Base Temporary Drains, and Pipe to Structure Geotextile Wrap					
4	Drainage Structure Invert, Sump Bottom, Wall Reinforcing Splice Details, and Typical Slab to Wall Details					
5	Precast Option and Equivalent Reinforcement substitution					
6	Construction Joints and Minimum Box Riser Segment Dimensions					
7	Skewed Pipe in Rectangular Structures					
8	Miscellaneous Pipe Connection Details					



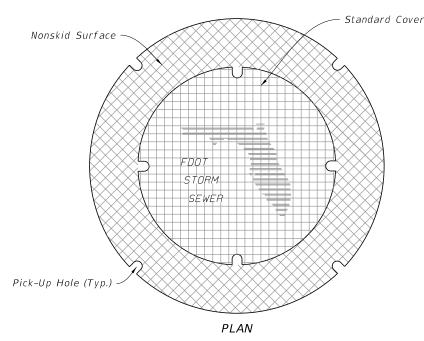
MANHOLE TOPS =

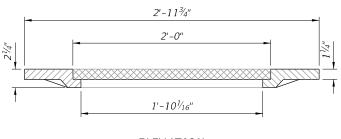






ELEVATION 1-PIECE COVER





ELEVATION

2-PIECE COVER

= MANHOLE COVERS =

LAST REVISION 11/01/23

DESCRIPTION:

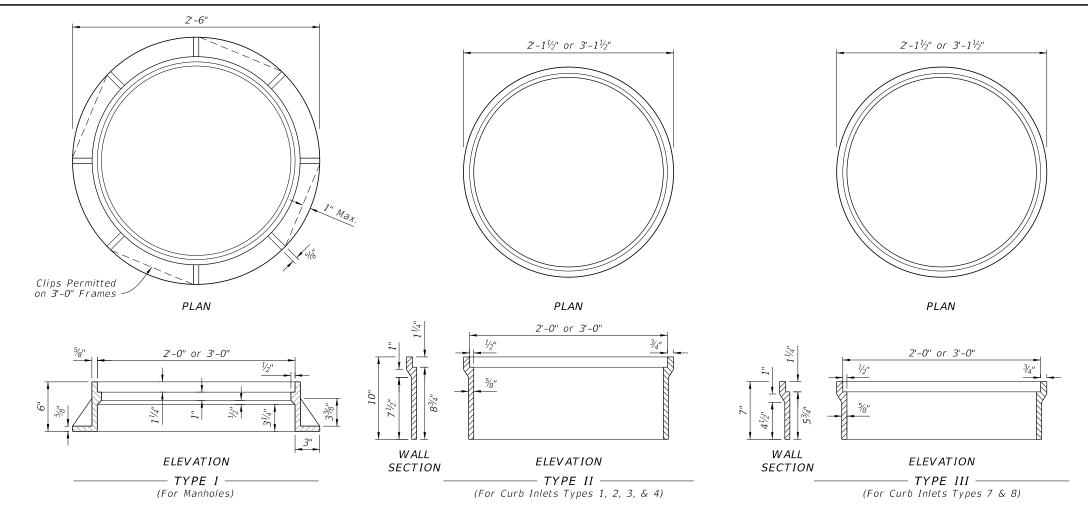


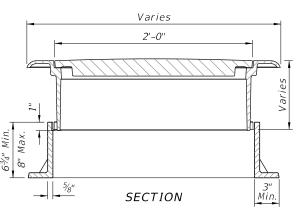
FY 2024-25 STANDARD PLANS

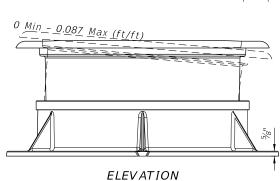
SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES INDEX 425-001 _{SHEET} 1 of 8

F	2'-0"	OPENING	3'-0" OPENING					
Frame Type	Eramo	Cover (Std.)	Eramo	2-Piece Cover				
Type	rranne	Cover (Sta.)	rranne	Inside	Outside	Total		
I	155	190	220	190	220	410		
H	145	190	255	190	220	410		
III	90	190	180	190	220	410		

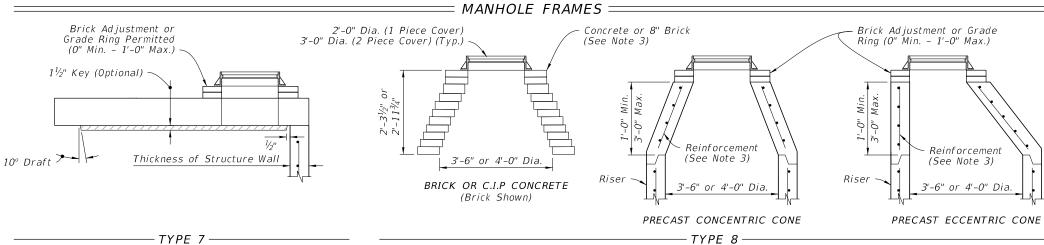
Frame Type I in Table 1, includes Adjustable frames.







=TYPE I ADJUSTABLE FRAME=



NOTES:

- 1. Use Class II concrete for Manhole top Type 7 slabs.
- 2. Manhole top Type 7 slabs may be of cast-in-place or precast construction. The optional key is for precast tops and in lieu of dowels. Omit frame and sláb openings whén top is used over a junction box.
- 3. Manhole top Type 8 may be of cast-in-place, precast concrete construction, or brick construction. For concrete construction, use the same concrete and steel reinforcement as the supporting wall unit. An eccentric cone may be used.
- 4. Use construction joint options, as shown on Sheet 6 to secure manhole tops to structures.
- 5. Frames may be adjusted to a maximum 12" height with brick or precast ASTM C478 grade rings.
- 6. Manhole top Type 8 may be substituted for a Type 7, if the minimum dimensions are not reduced.
- 7. Manhole top Type 7 may be substituted for Type 8, if the minimum thickness (h) above pipe opening cannot be maintained with Type 8.

MANHOLE TOPS

MANHOLE FRAMES AND MANHOLE TOPS

LAST REVISION 11/01/20

DESCRIPTION:

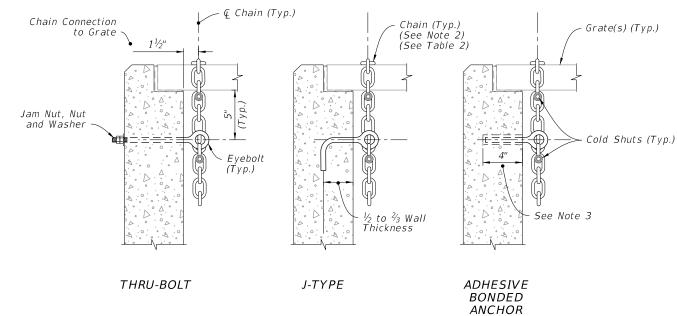
FDOT

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SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES INDEX

SHEET

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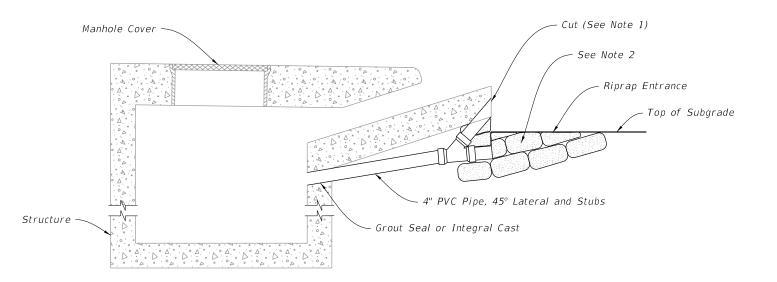


NOTES:

- 1. Install either a $\frac{1}{2}$ " Ø x 1" Diameter Threaded Straight (Thru-Bolt), a J-Type, or an adhesive Bonded Anchor Eyebolt.
- 2. Install a $\frac{3}{16}$ " Chain and $\frac{3}{16}$ " Cold Shuts. When chaining two grates together provide adequate loop for easy handling.
- 3. Install adhesive bonded anchor option with a minimum of 4" embedment, and in accordance with Specification 416.

	TABLE 2 EYEBOLT AND CHAIN REQUIREMENTS								
Index Number	Inlet Type	Eye- Bolts	Length of Chain	Handling & Remarks					
425-030	1	1	4'-0"	Slide & Spin					
423-030	2	2	2 @ 4'-0"	Slide & Spin					
425-031	N/A	1	3'-8"	Slide or Slide & Spin					
425-032	N/A	1	4'-0"	Slide & Spin					
425-040	S	1	4'-0"	Slide & Spin					
425-041	V	1	4'-0"	Slide & Spin					
425-050	Α	1	3'-0"	Slide					
425-051	В	1	5'-0"	Slide & Spin					
	С	1	2'-6"	Slide & Spin					
	D	1	2'-6"	Slide & Spin					
425-052	Ε	2	2 @ 2'-6"	Slide & Spin					
	Н	2	2 @ 2'-6"	Flip Ctr. Grate and Slide & Spin Single Free Grate					
			1 or 2 @ 1'-6"	Center Grate(s) Chained to One End Grate					
	F	1	3'-6"	Flip or Slide & Spin					
425-053	G	1	6'-0"	Slide					
			2'-0"	Lifting Loop					
425-054	J	1	4'-0''	Slide & Spin					

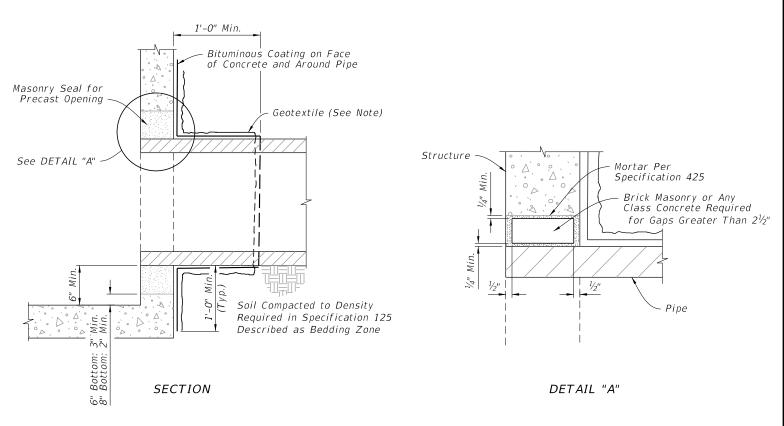
LOCKING GRATES TO INLETS:



NOTES:

- 1. Bevel cut upper stub to match forming for apron face. Capping or plugging of upper stub is not required. Remove friable base material at stub opening to permit covering of opening with structural course material.
- 2. Remove riprap, cement PVC cap on lower stub, and place compacted fill in entrance prior to placing base material.

SUBGRADE AND BASE TEMPORARY DRAINS =



NOTE:

Wrap with Type D-3 geotextile in accordance with Specification 514.

= PIPE TO STRUCTURE GEOTEXTILE WRAP =

LOCKING GRATES, SUBGRADE AND BASE TEMPORARY DRAINS, AND PIPE TO STRUCTURE GEOTEXTILE WRAP

LAST REVISION 11/01/23

DESCRIPTION:

FDOT

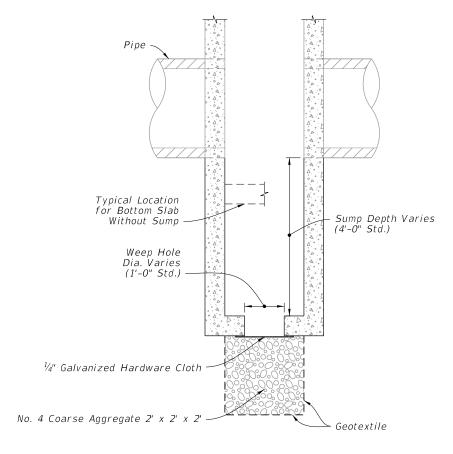
FY 2024-25 STANDARD PLANS

SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES

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NOTE: For all structures unless excluded by special detail.

= DRAINAGE STRUCTURE INVERT ==

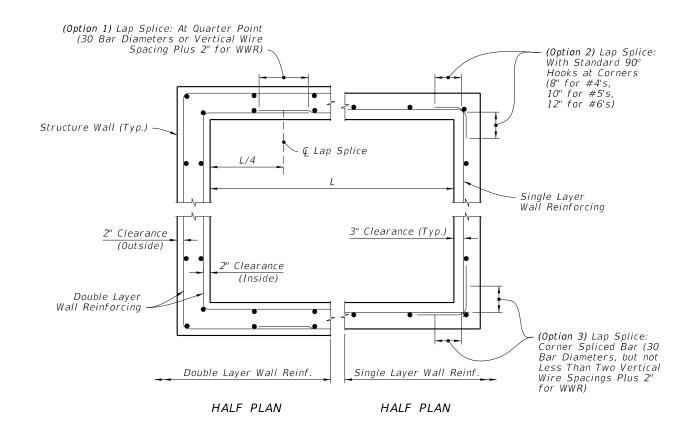


NOTES:

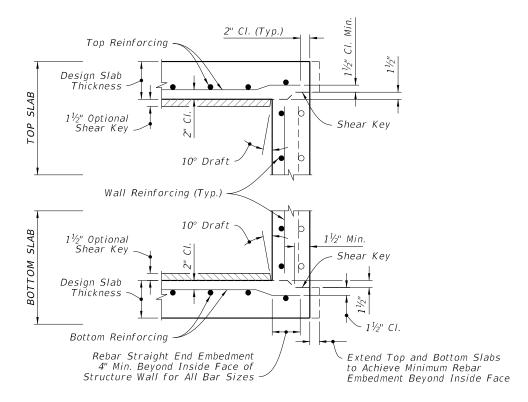
DESCRIPTION:

- 1. Construct sumps in inlets and manholes connecting to French Drains unless excluded in the Plans.
- 2. Construct sumps only where called for in the Plans at all other locations.
- 3. Construct weep holes in sump bottom only where called for in the Plans.
- 4. Install Type D-3 geotextile in accordance with Specification 514.

SUMP BOTTOM =



WALL REINFORCING SPLICE DETAILS



NOTES:

- 1. See Sheet 6 for optional construction joints.
- 2 Bend bars as required to maintain cover.

TYPICAL SLAB TO WALL DETAILS (PRECAST STRUCTURE SHOWN)

DRAINAGE STRUCTURE INVERT, SUMP BOTTOM, WALL REINFORCING SPLICE DETAILS, AND TYPICAL SLAB TO WALL DETAILS

11/01/23

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SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES INDEX

SHEET 4 of 8

REVISION

NOTES:

- 1. See inlet indexes for optional precast inlet construction details up to depths of 15'.
- 2. Interior dimensions of an Alt. "B" Bottom may be adjusted to reflect these inlet interior dimensions when precast units are used in conjunction with Alt. "B" Structure Bottoms, Index 425-010.
- 3. Use concrete meeting the requirements of ASTM C478 or Class IV for precast structures with 6" wall or slab thickness.
- 4. Reinforcement may be deformed bar reinforcement or welded wire reinforcement. Bar reinforcement other than 60 ksi may be used, however only two grades are recognized: Grade 40 and Grade 60. Smooth welded wire reinforcement will be recognized as having a design strength of 65 ksi and deformed welded wire reinforcement will be recognized as having a design strength of 70 ksi. The area of reinforcement required may be adjusted in accordance with the Equivalent Steel Area Table provided. Use the following equations to determine the steel area and spacing for bars not otherwise specified:

Grade 40 Steel Area = As40= 60/40 x As60

Smooth Welded Wire Reinforcement Steel Area = As65= 60/65 x As60

Deformed Welded Wire Reinforcement Steel Area = As70= 60/70 x As60

When a reduced area of reinforcement is provided, any maximum bar spacing shown must also be reduced as determined by the following equations, unless otherwise shown:

Max. Grade 40 Bar Spacing = Grade 60 Bar Spacing

Max. Smooth Welded Wire Spacing = Grade 60 Bar Spacing x 0.86

Max. Deformed Welded Wire Spacing = Grade 60 Bar Spacing x 0.74

When an increased area of reinforcing is provided, the maximum bar spacing may be increased by the squared ration of increased steel area, but not to exceed 12":

Max. Bar Spacing Provided $\leq=$ Max. Bar Spacing Required x $\left(\frac{Steel\ Area\ Provided}{Min.\ Steel\ Area\ Required}\right)^2$

Use wire no smaller than than W3.1 or D4.0, or larger and with spacing 8" or less. Use bar reinforcement displaying the minimum yield designation grade mark, or either the number 60 or one (1) grade mark line to be acceptable at the higher value. Use maximum bar spacing no greater than two (2) times the slab thickness with a maximum spacing of 12" or three (3) times the wall thickness, with a maximum spacing of 18" for vertical bars and 12" for horizontal bars. Wires smaller than W3.1 or D4.0 may be used in the walls of ASTM C 478 round structure bottoms and round risers.

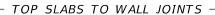
5. Fiber-reinforced concrete may be substituted for conventional steel reinforcement in accordance with the Structures Design Guidelines. Submit shop drawings corresponding to an approved fiber-reinforced concrete mix design for approval to the State Drainage Office.

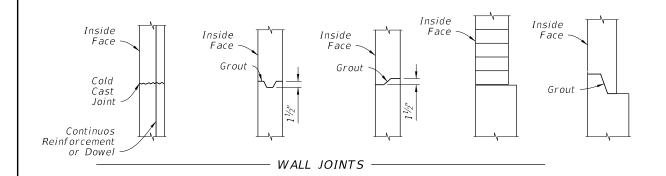
PRECAST OPTION AND EQUIVALENT REINFORCEMENT SUBSTITUTION

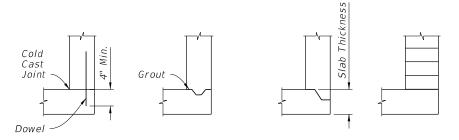
LAST REVISION 11/01/20

DESCRIPTION:









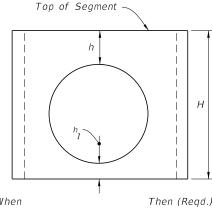
NOTES:

1. One or more types of joints may be used in a single structure, except brick wall structure. Brick wall construction is permitted on circular units only.

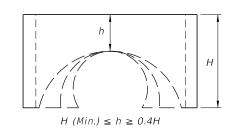
BOTTOM SLAB TO WALL JOINTS

- 2. All grouted joints are to have a maximum thickness of 1".
- 3. Keyways are to be a minimum of $1\frac{1}{2}$ " deep.
- 4. Joint dowels are to be #4 bars, 12" long with a minimum of 6 bars per joint approximately evenly spaced for circular structures or at maximum 12" spacing for rectangular structures. Bars may be either Adhesive Bonded Dowels in accordance with Specification 416, or placed approximately 6" into fresh concrete leaving the remainder to extend into the secondary cast. Welded wire reinforcement may be substituted for the dowel bar in accordance with the equivalent steel area table on Sheet 5.
- 5. Minimum cover on dowel reinforcing bars is 2" to outside face of structure.
- 6. Seal joints between wall segments and between wall segments and top or bottom slabs with preformed plastic gasket material inaccordance with Specification 430 or non-shrink grout in accordance with Specification 934.
- 7. Insert products approved by the Engineer may be used in lieu of dowel embedment.

CONSTRUCTION JOINT OPTIONS



Then (Regd.) $6'' \le h_1 < 0.75H (Min.)$ $h \ge 0.4H$ $h_i \geq 0.75H$ (Min.) $h \ge H (Min.)$



NOTES:

- 1. Segments may be inverted. Opening for pipe is the pipe OD plus 6" (± 2" tolerance).
- 2. If h can not be attained, then a top or bottom slab must be attached to the segment as shown below.

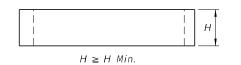
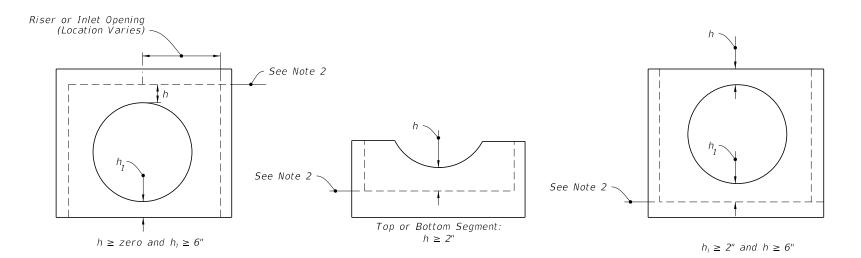


	TABLE 3
Minim	num Value for H
H (min.)	Box or Riser Diameter
1'-0"	3'−6" & 4'−0"
1'-6"	5'-0" & 6'-0"
21 011	> E! O!!

RISER SEGMENTS OTHER THAN DOWEL



NOTES:

- 1. h may be less than 6" when approved by the Engineer, but not for inlet segments at finish grade elevation.
- 2. Dowel construction joint or monolithic cast only.

-SEGMENTS FOR SLAB TO WALL DOWEL CONSTRUCTION JOINTS OR MONOLITHIC CAST

MINIMUM BOX AND RISER SEGMENT DIMENSIONS

CONSTRUCTION JOINT OPTIONS AND MINIMUM BOX AND RISER SEGMENT DIMENSIONS

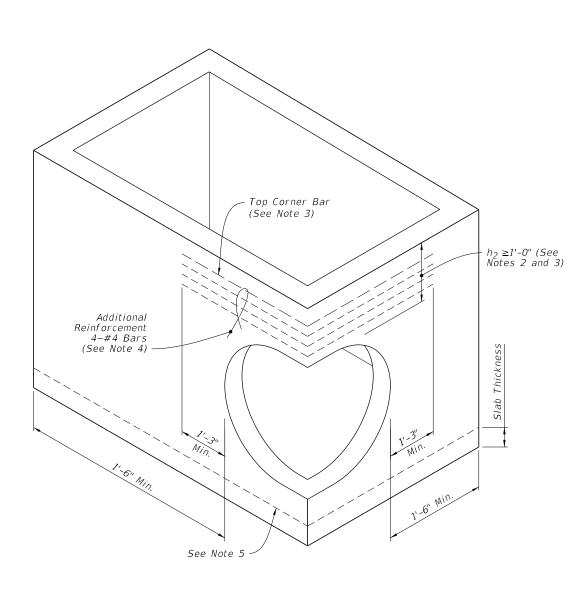
REVISION 11/01/20

DESCRIPTION:

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SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES

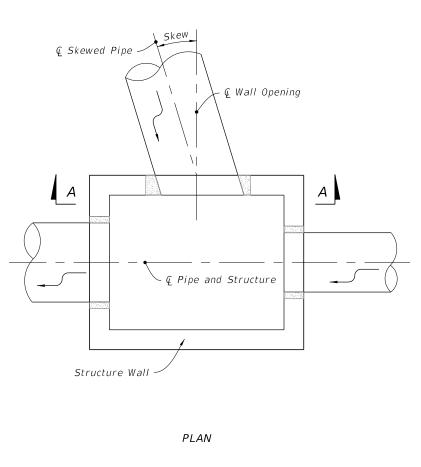
INDEX 425-001

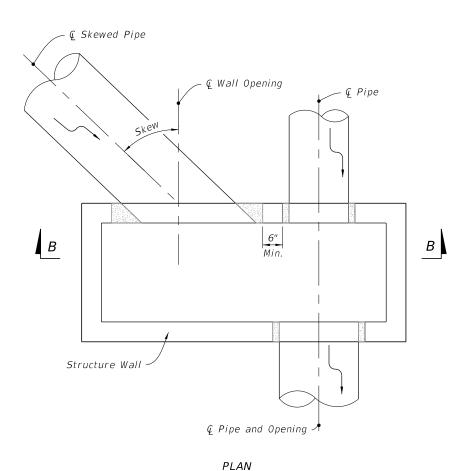


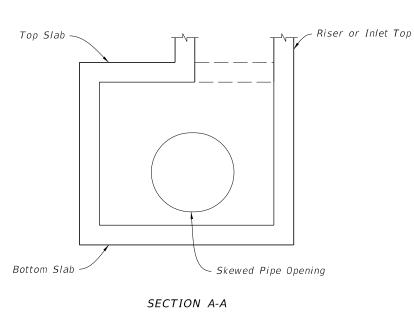


DESCRIPTION:

- 1. Submit Shop Drawings of corner openings for approval by the Engineer.
- 2. h_2 may be less than 1'-0" when a minimum 1'-0" deep segment, 8" slab or curb inlet is provided above the corner opening.
- 3. For inlet segments at finish grade elevation, substitute a #8 Bar for the top corner bar when $1'-0'' \le h_2 < 2'-0''$.
- 4. Install bars continuously around corner and evenly spaced. Tie additional reinforcement to the outside of vertical wall reinforcement.
- 5. Dowel construction joint or monolithically cast wall and slabs.







Straight Pipe Opening Bottom Slab Skewed Pipe Opening

Riser or Inlet Top

 $SKEWS \leq 45^{\circ}$ (Not Centered) $SKEWS > 45^{\circ}$ (Not Centered)

SECTION B-B

SKEWED PIPE IN RECTANGULAR STRUCTURES = (See Table 4 on Sheet 8)

Top Slab -

= PIPE OPENING AT CORNER =

SKEWED PIPE IN RECTANGULAR STRUCTURES

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SUPPLEMENTARY DETAILS

INDEX 425-001

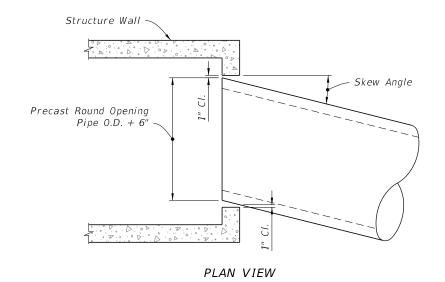


TABLE 4 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS													
	WALL						PIPE	SIZE					
	THICKNESS	18"	18" 24" 30" 36" 42" 48" 54" 60" 66" 72" 78" 84"										
MAXIMUM	8"	19° 17° 16° 16° 15° 14° 14° 13° 13° 13° 12° 12°											
SKEW ANGLE	6"	21°	20°	18°	17°	17°	16°	15°	15°	14°	14°	13°	13°

NOTE:

These values are based on 2" clearance for precast structures. Larger skews are possible for Cast-In-Place Structures or elliptical pipe openings when approved by the Engineer.

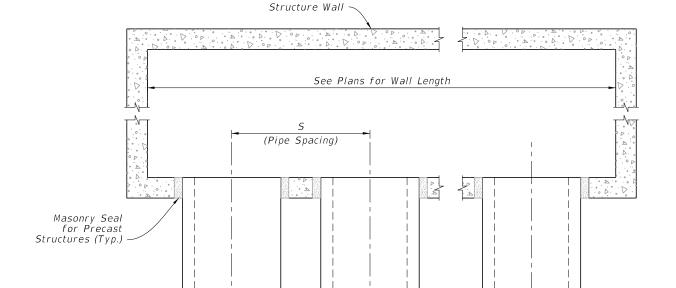
MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS =

· 1~Extra #4 Bar Each Side of Opening Lap Splice (Typ.) (See Note) Precast Opening Pipe 0.D. + 6" Horizontal Wall Reinforcement (Vertical Wall Reinforcement Not Shown for Clarity) -Precast Opening Pipe O.D. + 6"

Structure Wall

PLAN VIEW

Lap splice: 20 bar diameter for deformed wire or bar, but not less than vertical wire spacing plus 2" for WWR or 40 bar diameters for smooth wire.



SIZES FOR PARALL	MINIMUM R MULTIPLE EL PIPE CTIONS
PIPE	PIPE
SIZE	SPACING
3126	(5)
18"	2'-10"
24"	3'-5"
30"	4'-3"
36"	5'-1"
42"	6'-0"
48"	6'-9"
54"	7'-8"
60"	8'-6"
66"	9'-0"
72"	10'-0"
78"	10'-9"
84"	11'-8"

PLAN VIEW

MULTIPLE PARALLEL PIPE CONNECTIONS - RECTANGULAR STRUCTURES =

MISCELLANEOUS PIPE CONNECTION DETAILS

REVISION 11/01/20

FDOT

FY 2024-25 STANDARD PLANS

FOR DRAINAGE STRUCTURES

INDEX 425-001

SHEET 8 of 8

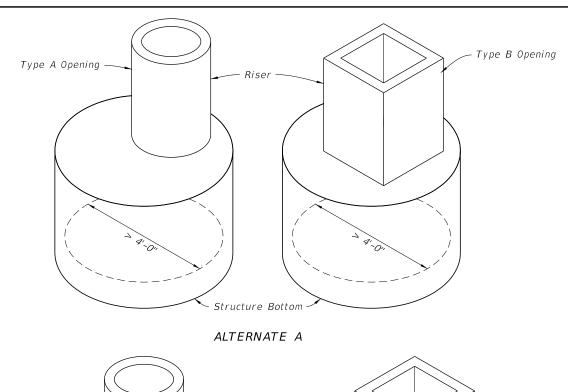
GENERAL NOTES:

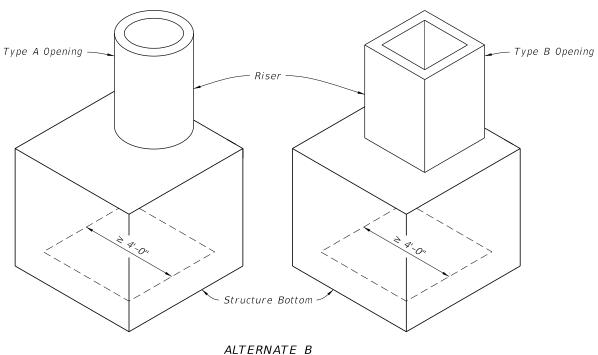
- 1. Work this Index with Specification 425 and Index 425-001.
- 2. Type P standard structure bottoms are 4'-0"diameter and smaller (Alt. A) and 3'-6" square (Alt. B) . Larger standard structure bottoms are designated Type J. Risers are permitted for all structures.
- 3. Walls of circular structures (Alt. A) constructed in place may be of brick or reinforced concrete. Construct precast and rectangular structures (Alt. B) with reinforced concrete only.
- 4. Wall thickness and reinforcement are for either reinforced cast-in-place or precast concrete units except that precast circular units may be furnished with walls in accordance with ASTM C478 (See Table 1).
- 5. Top and bottom slab thickness and reinforcement are for precast and cast-in-place construction. Use Class II concrete, except when Class IV concrete is shown in the Plans.
- 6. Alt. A or Alt. B structure bottoms may be used in conjunction with curb inlet tops Types 1, 2, 3, 4, 5, 6, 9, and 10, and any manhole or junction box. Alt. B structure bottoms may be used in conjunction with curb inlet Types 7 & 8, or any ditch bottom inlet.
- 7. Rectangular structures may be rotated as directed by the Engineer in order to facilitate connections between the structure walls and pipes.
- 8. Use straight embedment reinforcement in top and bottom slabs ,except when ACI hooks are specifically required.
- 9. Construct corner fillets as shown for rectangular structures used with circular risers and inlet throats, and when used on skew with rectangular risers, inlets, and inlet throats. Construct fillets in the top slab of the Alt. A structure bottoms when used with the Type B risers. Reinforce each fillet with two #5 bars.
- 10. Units larger than specified standards may be substituted at the contractor's option when these units will not cause or increase the severity of utility conflicts. Furnish such larger units at no additional cost to the Department. Larger Alt. A units cannot replace Alt. B units without approval of the Engineer. This Note applies to this Index only.

REINFORCEMENT NOTES:

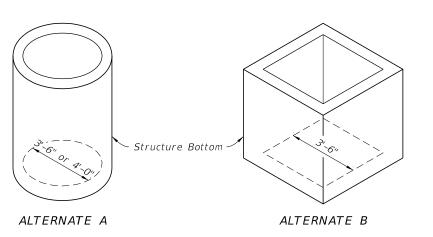
- 1. Locate wall reinforcement in rectangular structures as shown in the WALL REINFORCEMENT SPLICE DETAILS in Index 425-001.
- 2. Provide a minimum 2"clear cover for all reinforcement unless otherwise noted and except for 3'6"diameter ASTM C478 units.
- 3. Additional bars used to restrain hole formers for precast structures with grouted pipe connections may be left flush with the hole surface.
- 4. Cut or bend reinforcement at pipe openings to maintain cover.
- 5. Remove exposed ends of reinforcing at precast pipe openings and grouted joints to 1" below the concrete surface and seal with a Type F Epoxy meeting the requirements of Specification 926.
- 6. Equivalent area smooth or deformed welded wire reinforcement may be substituted in accordance with Index 425-001.

	TABLE OF CONTENTS:					
Sheet	Description					
1	General Notes and Contents					
2	Dimensional and Reinforcing Details					
3	Tables 1, 2, 3, and 4					
4	Tables 5 and 6					





= TYPE J



= TYPE P ==

REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

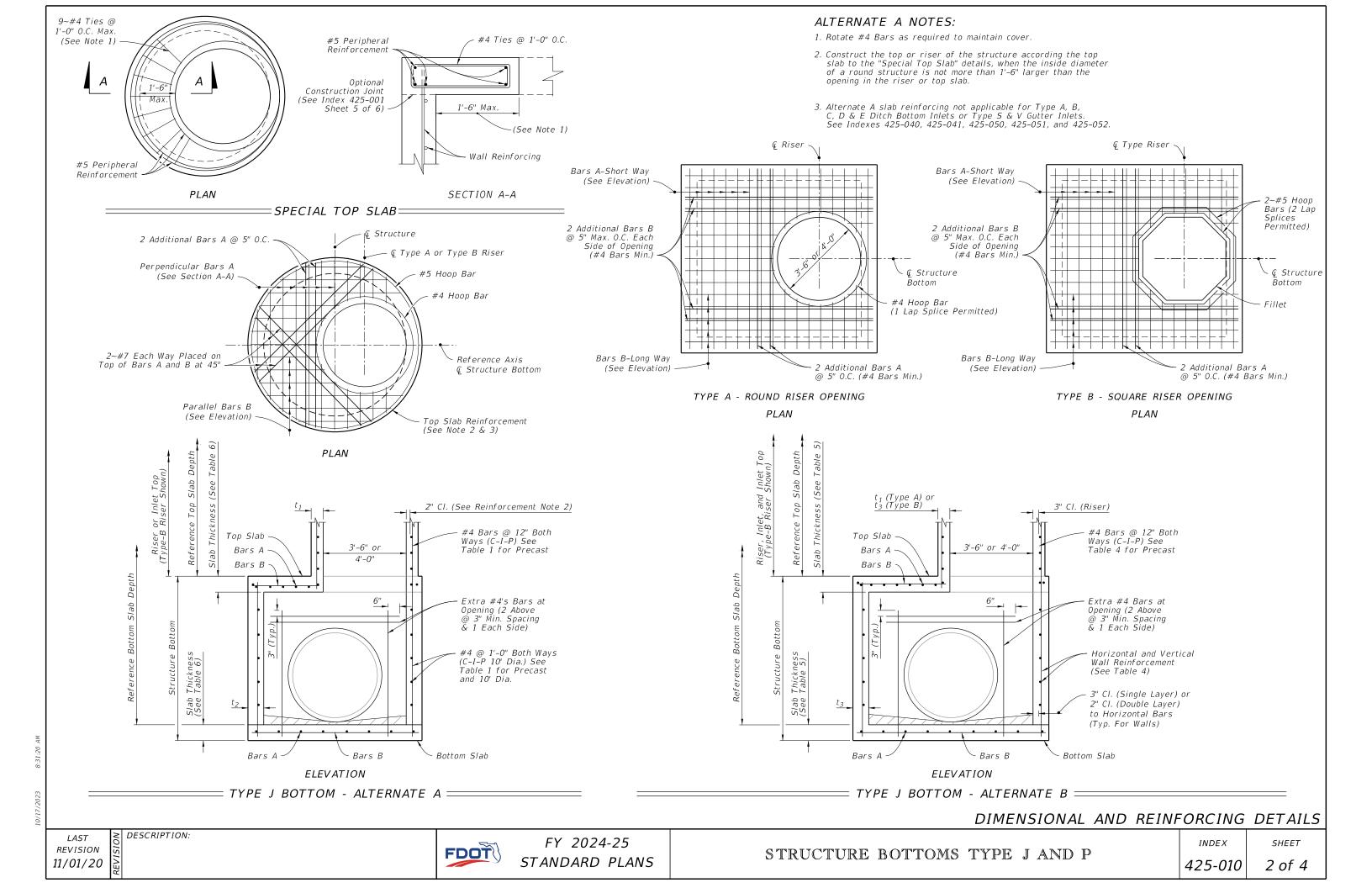


	TABLE 1 - ALTERNATE A - STRUCTURES										
		CAST-I	N-PLACI	E ITEMS		PREC	AST ITEI	MS			
	 STRUCTURE/RISER		S II CON	ICRETE	CLAS	S II CON	ICRETE	ASTM C478			
TYPE	DIAMETER (ft)	t ₁	t ₂	A _S	t ₁	t ₂	A 5	t ₁ or t ₂	A 2***		
			BOTTOM (in.)	(in ² /ft.)	RISER (in.)	BOTTOM (in.)	(in ² /ft.)	(in.)	(in: ² /ft.)		
Р	3'-6"	6	8	0.20	6	8	0.20	4**	0.105		
Р	4'-0"	6	8	0.20	6	8	0.20	5**	0.120		
J	5'-0"	-	8	0.20	-	8	0.20	6**	0.150		
J	6'-0"	-	8	0.20	-	8	0.20	6	0.180		
J	7'-0"	-	8	0.20	-	8	0.20	7	0.210		
J	8'-0"	-	8	0.20	-	8	0.20	8	0.240		
J	10'-0"	-	10	0.40##	_	10	0.40##	10	0.300		
J	12'-0"	-	10	0.40##	_	12	0.40##	12	0.360		

 t_1 and t_2 - Wall Thickness.

A_S- Vertical and horizontal areas of reinforcement.

##Provide 0.20 eq. in.2/ft. at each face, 12" max. bar spacing.

A2 = 0.40 sq. in. for riser section height equal or less than 2'-0" (2 hoop min.)

 $A_2 = 0.60$ sq. in. for riser section height more than 2'-0" up to 4'-0" (3 hoop min.)

Areas of reinforcing for precast items are based on Grade 60 reinforcing.

No reduction in the area of reinforcement is allowed for welded wire fabric in Table 1.

Area of vertical reinforcing may be reduced in accordance with ASTM C478.

SQUARE AND RECTANGULAR STRUCTURES							
TVDE	WALL		WALL THICKNESS (t ₃)				
TYPE	LENGTH (FT)	DEPTH (FT)	C-I-P (in.)	PRECAST (in.)			
Р	≤ 3'-6"	40	6 Riser 8 Bottom	6			
J	4'-0"	40	8	6			
J	5'-0"	22	-	6			
J	6'-0"	15	-	6			
J	5'-0" to 9'-0"	40	8	8			
J	10'-0"	26	8	8			
J	10'-0" to 12'-0"	40	10	9			
J	16'-0"	35	-	9			
J	16'-0"	40	10	10			
J	20'-0"	25		9			
J	20'-0"	30	10	10			

TABLE 2 - ALTERNATE B

See Table 4 for Reinforcing Schedule.

TABLE 3 - REINFORCING SCHEDULE					
		GRADE 60 BARS OR 65 KSI & 70 KSI WELDED WIRE REINFORCING			
		MA	XIMUM SP	ACING	
SCHEDULE	GRADE 60 AREA	GR 60	WWR EQUIV. AREA		
	(in? /ft)	BARS (in.)	65 KSI (in.)	70 KSI (in.)	
A12	0.20	12	8	8	
A6	0.20	6	5	$4\frac{1}{2}$	
B10	0.24	10	8	7½	
B5.5	0.24	5½	5	4	
C6.5	0.37	$6\frac{1}{2}$	6	5	
C3.5	0.37	3½	3	$2\frac{1}{2}$	
D7	0.53	7	6	5	
D4.5	0.53	4½ 5	4	$3\frac{1}{2}$	
E5	0.73	5	4	4	
E3	0.73	3	3	3	
F5	1.06	5	4	4	
F3.5	1.06	$3\frac{1}{2}$	3	3	
G5	1.45	5	4	4	
G.3.5	1.45	3½	3	3	
H4	1.75	4	3	3	

		TAB	LE 4 - W	'ALL	DESIG	GNS -
	VERTICAL HORIZONTAL REINFORCING REINFORCING					WALL THICKNESS
W ALL DEPT H	SCHE	DULE	WALL SCHEDULE		N THIC	
		SIZE:	3'-6" & RISE	:R		
≥1.17' - 40'	Α	12	≥1.17' < 10'	В	10	6"/8"
			10' < 18'	В	5.5	6"/8"
			18' < 29'	C	6.5	6"/8"
			29' - 40'	C.	3.5	6"/8"
		5.	IZE: 4'-0"			
≥1.17' - 40'	Α	12	≥1.17′ < 6′	В	10	6"/8"
			6' < 10'	В	5.5	6"/8"
			10' < 20'	С	6.5	6"/8"
			20' < 28'	С.	3.5	6"/8"
			28' - 40'	D	4.5	6"/8"
		S.	IZE: 5'-0"			
≥1.17' - 40'	Α	12	≥1.17' < 5'	В	5.5	6"/8"
			5' < 9'		6.5	6"/8"
			9' < 15'		3.5	6"/8"
			15' < 22'	D	4.5	6"/8"
			22' - 40'	E	<u> 3</u>	8"
		5.	IZE: 6'-0"			
≥1.17′ < 26′	A	12	≥1.17' < 9'	С	3.5	6"/8"
	7.		9' < 15'		4.5	6"/8"
			15' < 26'		3	8"
	Inside	Outside			Outside	
26' - 40'	A12	A12	26' - 40'	D7	D7	8"
		5	IZE: 7'-0"			
	Inside	Outside		Inside	Outside	
≥1.17′ < 25′	A12	A12	≥1.17' < 7'	B10	B10	8"
26' - 40'	B10	B10	7' < 10'	B5.5	B5.5	8"
			10' < 20'	C6.5	C6.5	8"
			20' < 30'	D7	D7	8"
			30' - 40'	E5	E5	8"
		S	IZE: 8'-0"			
	Inside	Outside		Inside	Outside	
≥1.17' < 20'	A12	A12	≥1.17' < 6'	B5.5	B5.5	8"
20' - 40'	C6.5	C6.5	6' < 13'	C6.5	C6.5	8"
	20,5	20,5	13' < 22'	D7	D7	8"
			22' < 31'	E5	E5	8"
			31' - 40'	F5	F5	8"
		S	IZE: 9'-0"			
	Inside	Outside		Insida	Outside	
≥1.17' < 12'	A12	A12	≥1.17' < 8'	C6.5	C6.5	8"
12' < 28'	C6.5	C6.5	8' < 15'	D7	D7	8"
28' - 40'	D7	D7	15' < 23'	E5	E5	8"
			23' - 40'	F5	F5	8"
		SI	ZE: 10'-0"			
	Inside	Outside		Insida	Outside	
≥1.17' < 10'	B10	B10	≥1.17' < 10'	D7	D7	8"
10' < 21'	C6.5	C6.5	10' < 17'	E5	E5	8"
21' < 26'	D7	D7	17' < 26'	F5	F5	8"
	C6.5	C6.5	26' - 40'	F5	F5	10"
26' - 40'	(.n -)	(,r)				

VERTICAL REINFORCING				HORIZONTAL REINFORCING			
WALL DEPTH	SCHI	EDULE	W ALL DEPT H	SCHEDULE		WALI THICKN	
	Si	ZE: 10'	-0" (Precast	Only)			
	Inside	Outside		Inside	Outside		
26' - 40'	D7	D7	26' - 40'	F5	F5	9"	
		SI	ZE: 12'-0"				
	Inside	Outside		Inside	Outside		
≥1.17' < 14'	B10	B10	≥1.17' < 10'	C6.5	C6.5	10	
14' < 25'	C6.5	C6.5	10' < 17'	D7	D7	10	
25' - 40'	D7	D7	17' < 24'	E5	E5	10	
			24' - 40'	F5	F5	10	
	Si	ZE: 12'	-0" (Precast	Only)			
	Inside	Outside		Inside	Outside		
≥1.17' < 12'	B10	B10	≥1.17' < 10'	D7	D7	9"	
12' < 24'	C6.5	C6.5	10' < 17'	D4.5	D4.5	9"	
24' - 40'	D7	D7	17' < 23'	E5	E5	9"	
			23' < 32'	F5	F5	9"	
			32' - 40'	G5	G5	9"	
		SI	ZE: 16'-0"		<u> </u>		
	Inside	Outside		Inside	Outside		
≥1.17' < 11'	C6.5	C6.5	≥1.17' < 13'	D7	D7	10	
11' < 20'	D7	D7	13' < 20'	E5	E5	10	
20' < 28'	E5	E5	20' < 28'	F5	F5	10	
28' - 40'	F5	F5	28' - 40'	G5	G5	10	
	Si	ZF: 16'	-0" (Precast	Only)			
		Outside	1		Outside		
≥1.17' < 10'	C6.5	C6.5	≥1.17' < 9'	D7	D7	9"	
10' < 18'	D7	D7	9' < 13'	D4.5	D4.5	9"	
18' < 25'	E5	E5	13' < 19'	E5	E5	9"	
25' - 35'	F5	F5	19' < 27'	F5	F5	9"	
			27' - 35'	G5	G5	9"	
		SI	ZE: 20'-0"				
	Inside	Outside		Inside	Outside		
≥1.17' < 10'	C6.5	C6.5	≥1.17' < 8'	D7	D7	10	
10' < 17'	D7	D7	8' < 12'	E5	E5	10	
17' - 30'	E5	E5	12' < 20'	F5	F5	10	
-17 30			20' - 30'	G5	G5	10	
	5.1	7F · 20'	-0" (Precast				
		Outside		, ,	Outside		
≥1.17' < 8'	C6.5	C6.5	≥1.17' < 8'	D4.5	D4.5	9"	
21.17 < 0 8' < 13'	D7	D7	8' < 12'	E5	E5	9 9"	
13' - 25'	E5	E5	12' < 19'	F5	F5	<u>9</u> 9"	
10 20			19' - 25'	G5	G5	<u>9</u> 9"	

RECTANGULAR STRUCTURES

- 1. Wall depth is measured to the top of the bottom slab for boxes and to the top of the intermediate slab for risers.
- 2. Wall height is the distance between top of lower slab to bottom of upper slab. Maximum wall height is 12' for wall lengths exceeding 5', or 10' for wall lengths exceeding 12'.
- 3. Wall lengths exceeding 6'-0" require two layers of reinforcing (See Table 4) with 2" of cover from the horizontal bars to the inside and outside faces for each layer.
- 4. Wall lengths exceeding the dimensions or depths shown in Table 4, or 12'-0" diameter require a special design.
- 5. Wall thickness and reinforcing for rectangular structures is based on the longer wall length.

TABLES 1, 2, 3, AND 4

REVISION 11/01/20

DESCRIPTION:



^{**}Modified minimum wall thickness.

^{***}Min. total circumferential reinforcement for continuous steel hoops:

TABLE 5 - SLAB DESIGNS - SQUARE AND RECTANGULAR STRUCTURES (ALL SLABS 8" THICK EXCEPT HORT WAY AND LONG WAY)

C// O D:		LONG-WAY			
SHOR	T-WAY	LONG-WAT			
SLAB	SCHEDULE	SLAB	SCHEDULE		
DEPTH	(Bars A)	DEPTH	(Bars B)		
	SIZE: 3'-6"	x UNLIMITED			
≥0.5′ < 8′	B10	≥0.5′ < 24′	B10		
8' < 13'	B5.5	24'-40'	B5.5		
13' < 31'	C6.5				
31'-40'	D7				
	SIZE: 4' x	UNLIMITED			
≥0.5′ < 7′	B5.5	≥0.5' < 15'	B10		
7' < 19'	C6.5	15' < 29'	B5.5		
19' < 31'	D7	29'-40'	C6.5		
31'-40'	E5				
		5' x 5'			
≥0.5' < 3'	C6.5	≥0.5′ < 3′	C6.5		
3' < 7'	B5.5	3' < 13'	C6.5		
7' < 22'	C6.5	13' < 22'	D7		
22' < 29'	D7	22' < 29'	D4.5		
29'-40'	E5	29'-40'	E5		
	SIZE:	5' x 6'			
≥0.5′ < 12′	C6.5	≥0.5′ < 3′	C6.5		
12' < 26'	D7	3' < 9'	B5.5		
26'-40'	E5	9' < 23'	C3.5		
		23' < 35'	D4.5		
		35'-40'	E5		
	1	5' x 7'			
≥0.5′ < 10′	C6.5	≥0.5' < 10'	B5.5		
10' < 20'	D7	10' < 31'	C3.5		
20' < 34'	E5	31'-40'	D4.5		
34'-40'	F 5				
	SIZE:	5' x 8'			
≥0.5' < 7'	C6.5	≥0.5′ < 8′	B10		
7' < 13'	D7	8' < 17'	B5.5		
13' < 24'	E5	17' < 25'	C6.5		
24'-40'	F5	25'-40'	C3.5		
	SIZE:	5' x 9'			
≥0.5' < 8'	C6.5	≥0.5′ < 14′	B10		
8' < 14'	D7	14' < 24'	B5.5		
14' < 25'	E5	24' < 34'	C6.5		
25'-40'	F 5	34'-40'	C3.5		
	SIZE: 5' x	UNLIMITED			
≥0.5′ < 8′	C6.5	≥0.5' < 14'	B10		
	D7	14' < 24'	B5.5		
8' < 14'					
8' < 14' 14' < 25' 25'-40'	E5 F5	24' < 34' 34'-40'	C6.5 C3.5		

SHORT-WAY		LONG	G-WAY
SLAB SCHEDULE DEPTH (Bars A)		SLAB DEPTH	SCHEDULE (Bars B)
	SIZE:	6' x 6'	
≥0.5' < 13'	C6.5	≥0.5' < 10'	C3.5
13' < 23'	D7	10' < 18'	D4.5
23'-40'	E5	18' < 27'	E5
		27' < 33'	E3
		33'-40'	F 5
	SIZE:	6' x 7'	
≥0.5′ < 8′	C6.5	≥0.5′ < 8′	C6.5
8' < 16'	D7	8' < 12'	C3.5
16' < 28'	E5	12' < 21'	D4.5
28'-40'	F5	21' < 28'	E5
		28' < 35'	E3
		35'-40'	F5
	SIZE:	6' x 8'	
≥0.5′ < 6′	C6.5	≥0.5′ < 6′	B5.5
6' < 13'	D7	6' < 11'	C6.5
13' < 22'	E5	11' < 17'	C3.5
22' < 35'	F5	17' < 22'	D4.5
35'-40'	G5	22' < 32'	E5
		32'-40'	E3
	SIZE:	6' x 9'	
≥0.5′ < 8′	D7	≥0.5′ < 8′	B5.5
8' < 14'	E5	8' < 14'	C6.5
14' < 24'	F5	14' < 21'	C3.5
24'-34'	G5	21' < 25'	D4.5
		25'-34'	E5
	SIZE: 6' x	UNLIMITED	
≥0.5′ < 8′	D7	≥0.5′ < 8′	B5.5
8' < 14'	E5	8' < 14'	C6.5
14' < 24'	F5	14' < 21'	C3.5
24'-34'	G5	21' < 25'	D4.5
		25'-34'	E5
	SIZE:	7' x 7'	
≥0.5′ < 8′	C6.5	≥0.5′ < 4′	C6.5
8' < 15'	D7	4' < 7'	C3.5
15' < 26'	E5	7' < 11'	D4.5
26'-40'	F5	11' < 22'	E3
		22' < 32'	F3.5
		32'-40'	G3.5
		7' x 8'	
≥0.5′ < 5′	C6.5	≥0.5′ < 5′	C6.5
5' < 11'	D7	5' < 8'	C3.5
11' < 19'	E5	8' < 13'	D4.5
19' < 30'	F 5	13' < 22'	E3
30'-40'	G5	22' < 30'	F3.5
	SIZE:	30'-40' 7' x 9'	G3.5
≥0.5' < 9'	D7	≥0.5′ < 7′	C6.5
9' < 15'	E5	7' < 10'	C3.5
15' < 25'	F 5	10' < 14'	D4.5
25' - 34'	G5	14' < 21'	E5
		21' < 29'	F 5
	1	29'-34'	F3.5

SHOR	Γ-WAY	LONG-WAY		
SLAB DEPTH	SCHEDULE (Bars A)	SLAB DEPTH	SCHEDULE (Bars B)	
	SIZE:	8' x 8'		
≥0.5' < 10'	D7	≥0.5′ < 9′	D4.5	
10' < 19'	E5	9' < 13'	E5	
19'-30'	F5	13' < 18'	F 5	
		18' < 23'	F3.5	
		23'-30'	G3.5	
	SIZE:	8' x 9'		
≥0.5′ < 8′	D7	≥0.5′ < 7′	D7	
8' < 14'	E5	7' < 9'	D4.5	
14' < 23'	F 5	9' < 15'	E3	
23'-31'	G3.5	15' < 20'	F 5	
		20' < 23'	F3.5	
		23'-31'	G3.5	
	SIZE:	9' x 9'		
≥0.5′ < 8′	D7	≥0.5′ < 7′	D4	
8' < 14'	E5	7' < 10'	E5	
14' < 22'	F5	10' < 17'	F3.5	
		17' < 22'	G3.5	
512	ZE: 9'x9'x10"	SLAB THICKN	IESS	
22' < 36'	F5	22' < 31'	F3.5	
36'-40'	G5	31'-40'	G3.5	
SIZ	E: 10'x10'x10"	SLAB THICK	NESS	
≥0.5′ < 7′	C6.5	0.5' < 6'	C6.5	
7' < 10'	D7	6' < 9'	D4.5	
10' < 18'	E5	9' < 15'	E5	
18' < 27'	F5	15' < 22'	F 5	
27'-32'	G5	22'-32'	G3.5	
SIZ	E: 12'x12'x12"	SLAB THICK	NESS	
≥0.5′ < 10′	D7	≥0.5' < 8'	D7	
10' < 16'	E5	8' < 14'	E5	
16' < 25'	F 5	14' < 22'	F5	
25'-35'	G5	22' < 30'	G5	
		30'-35'	Н4	

SLAB AND WALL DESIGN TABLE NOTES

- 1. Size is the inside dimension(s) of a structure.
- 2. Slab reinforcement is appropriate for top, intermediate, and bottom slabs.
- top of slab.
- 5. Reinforcing schedules with larger areas of steel may be substituted for schedules with smaller bar

TABLE 6	S - SLAB D	ESIGNS					
ROUN	ROUND STRUCTURES						
7,007	D STRUCT	ONES					
SLAB	SLAB	REINF.					
DEPTH		(2-WAY)					
DEPIH	THICKNESS	SCHEDULE					
SIZE	E: 3'-6" DIAMET	TER					
2'-15'	6" Precast	C6.5					
0.5' < 30'	8"	A6					
30'-40'	8"	B5.5					
SIZI	E: 4'-0" DIAMET	rer					
≥0.5′ < 19′	8"	A6					
19' < 30'	8"	B5.5					
30'-40'	8"	C6.5					
	E: 5'-0" DIAMET						
≥0.5′ < 15′	8"	B5.5					
15' < 26'	8"	C6.5					
26' < 35'	8"	D7					
35'-40'	8"	D4.5					
SIZE	E: 6'-0" DIAMET						
≥0.5′ < 9′	8"	B5.5					
9' < 15'	8"	C6.5					
15' < 22'	8"	C3.5					
22' < 30'	8"	D4.5					
30'-40'	8"	E5					
	E: 7'-0" DIAMET						
≥0.5' < 8'	8"	C3.5					
8' < 16'	8"	D4.5					
16' < 23'	8"	E5					
23' < 27'	8"	E3					
27'-40'	8"	F3.5					
	E: 8'-0" DIAMET						
≥0.5′ < 10′	8"	D4.5					
10' < 16'	8"	E5					
16' < 19'	8"	E3					
19' < 29'	8"	F3.5					
29'-40'	10"	F5					
SIZE	: 10'-0" DIAME						
≥0.5' < 12'	10"	D4.5					
12' < 20'	10"	E5					
20' < 28'	10"	F5					
28'-40'	10"	G3.5					
	: 12'-0" DIAME						
≥0.5′ < 8′	10"	D4.5					
8' < 13'	10"	E5					
		 					

10"

12"

- 3. Bottom Slabs for precast 3'-6" x 3'-6" rectangular structures at 15' depth or less, may be 6" thick.
- 4. Slab depth is measured from finished grade to
- or wire spacing, except that Schedule B10 may not be substituted for Schedule A6. See Index 425-001 for allowable bar spacing adjustments when larger areas of reinforcing are substituted.

TABLES 5 AND 6

F5

G3.5

G3.5

REVISION 11/01/20

DESCRIPTION:

13' < 18'

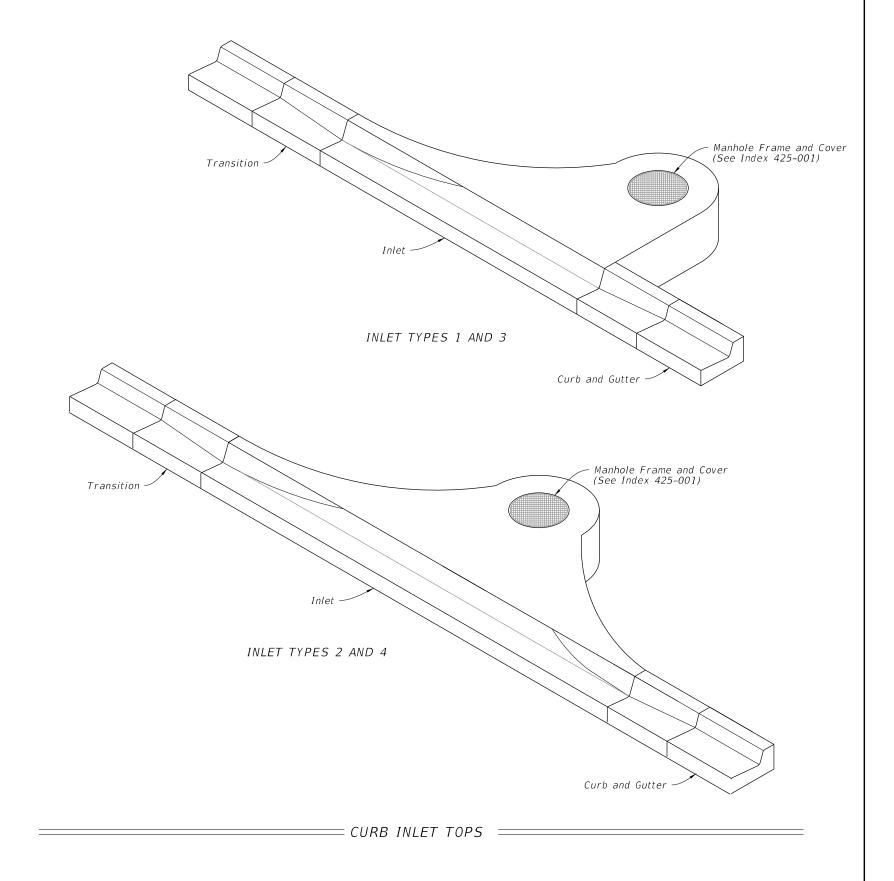
18' < 26'

26'-40'

GENERAL NOTES:

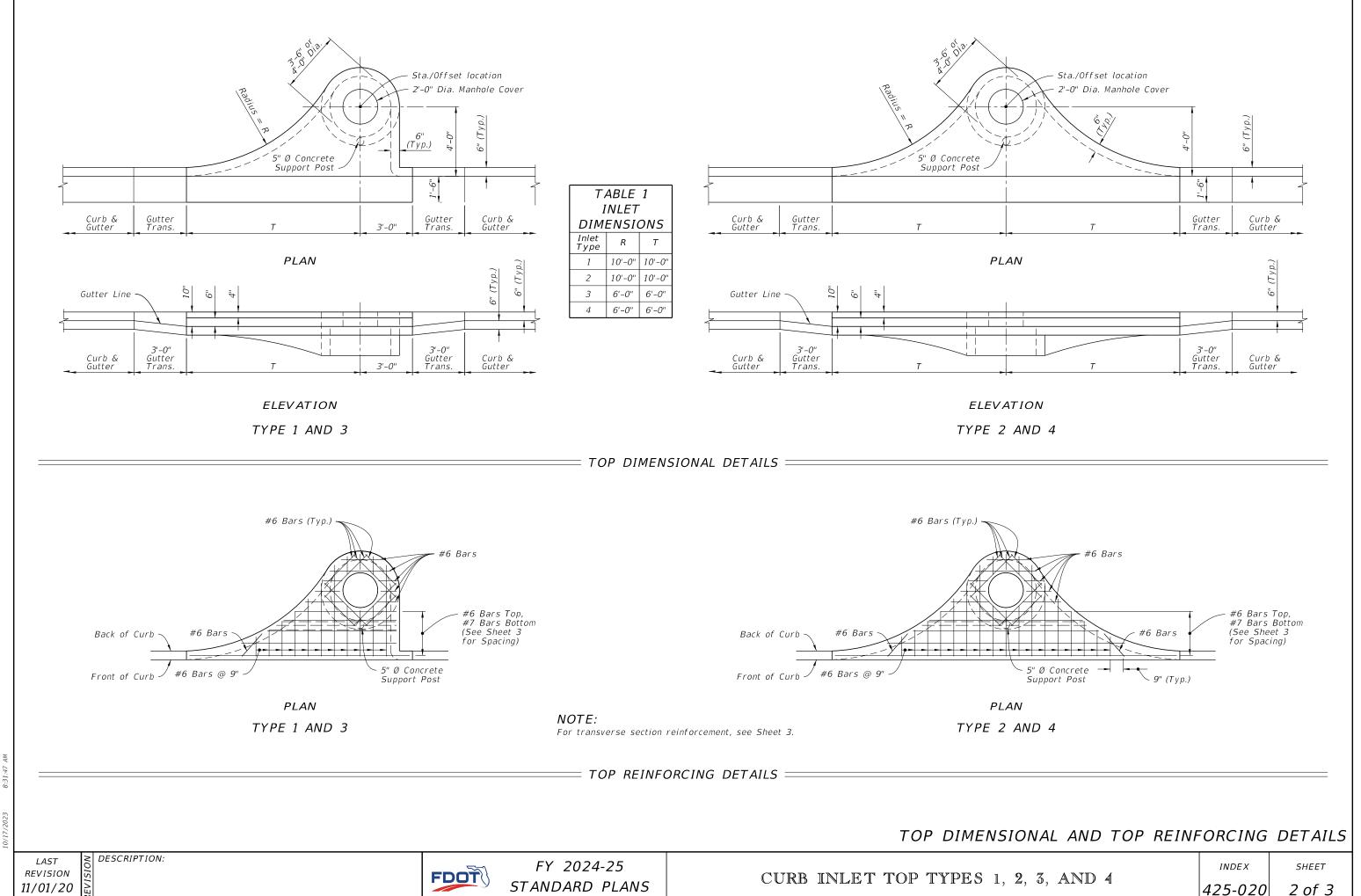
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Conform finished grade and slope of the Inlet Tops to the finished cross slope and grade of the adjacent sidewalk and/or border.
- 3. Provide $1\frac{1}{4}$ " minimum cover for steel in the Inlet Top.
- 4. Construction of Inlet Tops are either precast or cast-in-place.
- 5. For precast units, the rear wall and apron may be precast as a separate piece from the top slab. Provide a minimum of 7 ~ #4 dowels, otherwise install in accordance with Index 425-001 "OPTIONAL CONSTRUCTION JOINTS".
- 6. These inlets are designed for use with standard curb and gutter Type E and Type F.
- 7. Use only round concrete support posts.

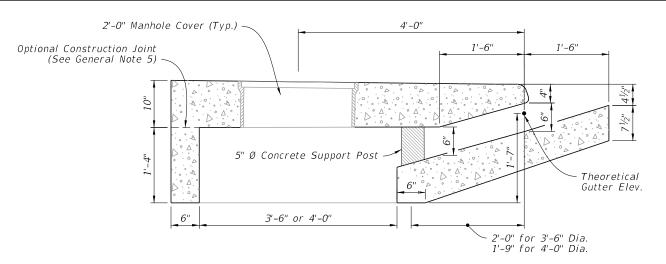
TABLE OF CONTENTS:			
Sheet	Description		
1	General Notes and Contents		
2	Top Dimensional and Reinforcing Details		
3	Transverse Dimensional and Reinforcing Details		



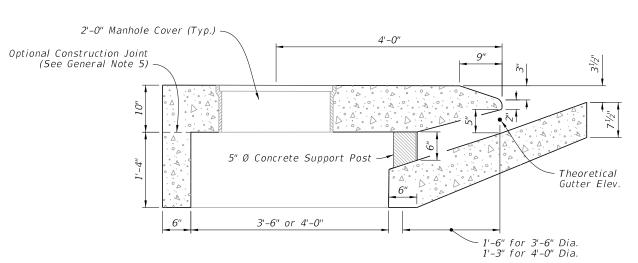
DESCRIPTION:







INLET SECTION WITH TYPE F CURB AND GUTTER

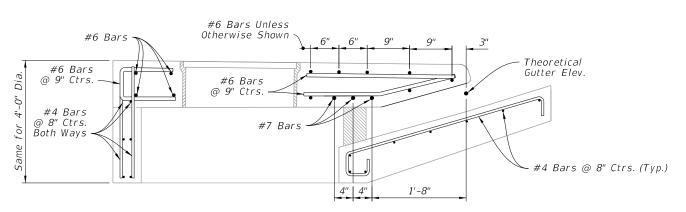


INLET SECTION WITH TYPE E CURB AND GUTTER

#6 Bars Unless

Otherwise Shown

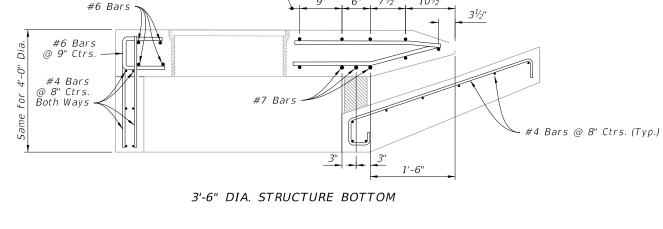
TRANSVERSE DIMENSIONAL DETAILS



3'-6" DIA. STRUCTURE BOTTOM

#6 Bars Unless

Otherwise Shown





4'-0" DIA. STRUCTURE BOTTOM

INLET SECTION WITH TYPE F CURB AND GUTTER

INLET SECTION WITH TYPE E CURB AND GUTTER

4'-0" DIA. STRUCTURE BOTTOM

TRANSVERSE REINFORCING DETAILS =

TRANSVERSE DIMENSIONAL AND REINFORCING DETAILS

REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

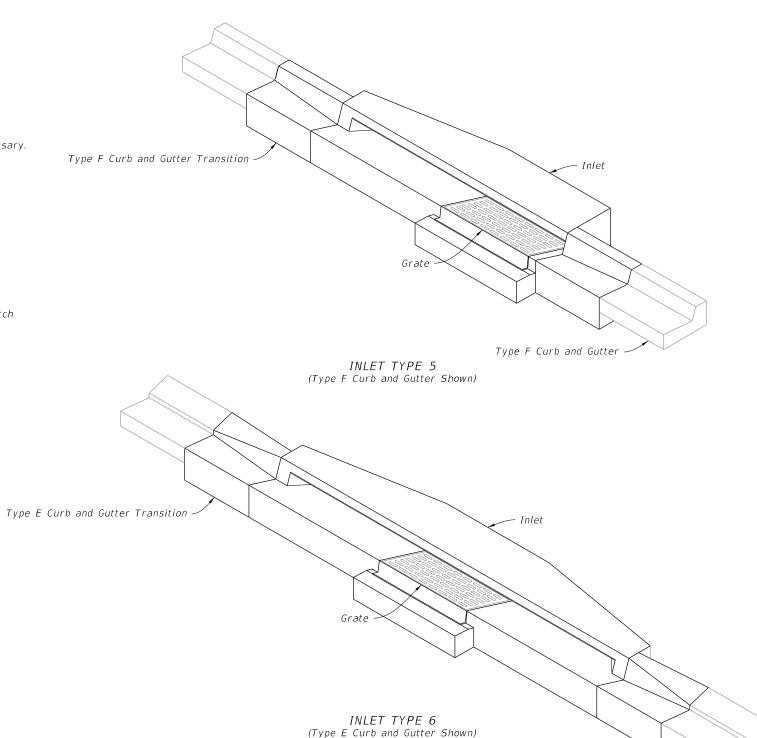
CURB INLET TOP TYPES 1, 2, 3, AND 4

INDEX 425-020

3 of 3

- 2. Conform the finished grade and slope of the inlet tops with the finished cross slope and grade of the proposed sidewalk and/or border.
- 3. For inlets constructed on a curve, refer to the plans to determine the radius. Bend steel when necessary.
- 4. Use Grade 60 reinforcing bars with $1\frac{1}{4}$ " minimum cover unless otherwise shown, see Sheet 6 for equivalent area Welded Wire Reinforcement details.
- 5. Inlet tops may be either cast-in-place or precast concrete. Conform precast units to the dimensions shown or in accordance with approved shop drawings.
- 6. Corner fillets are required at inlet opening for precast units or C-I-P units used in conjunction with circular inlet bottoms or skewed rectangular inlet boxes. Finish top of fillets flush with drain throat bottom and match slope.
- 7. For Type E curb and gutter, transition the shape of the curb over the gutter transition length to match the face of the inlet (Type Ft).
- 8. Meet the requirements of ASTM A36/A36M with steel used for frames and grates.
- 9. Use either cast iron grates or steel grates.

	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Type 5 and 6 Dimensional Details
3	Type 5 and 6 Reinforcing and Bar Bending Details
4	Precast Dimensional and Reinforcing Details
5	Cast-In-Place Dimensional and Reinforcing Details
6	Alternate Welded Wire Reinforcing (WWR) Details
7	Grate, Anchor, and Grouting Details



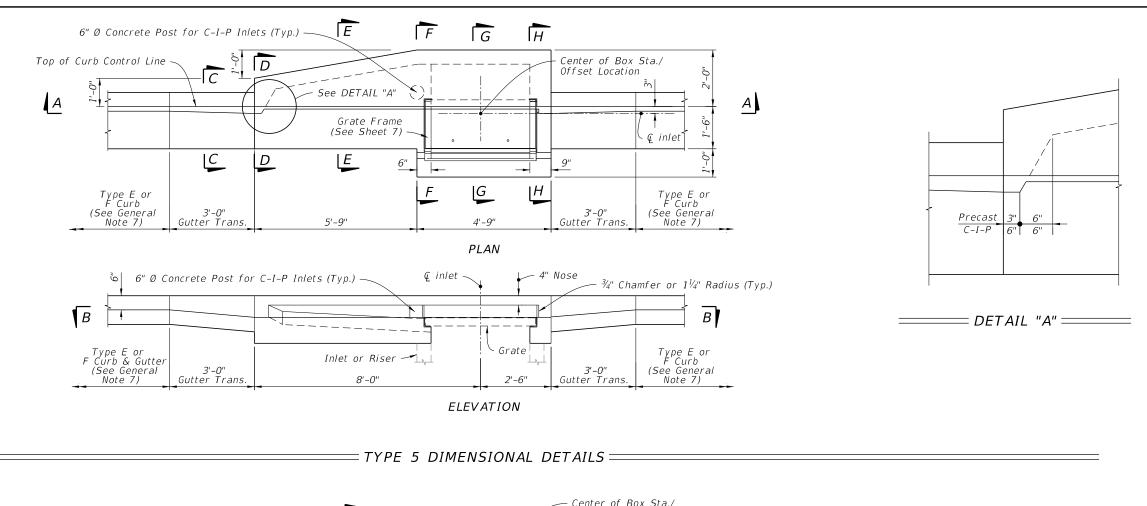
=== CURB INLETS TOPS ====

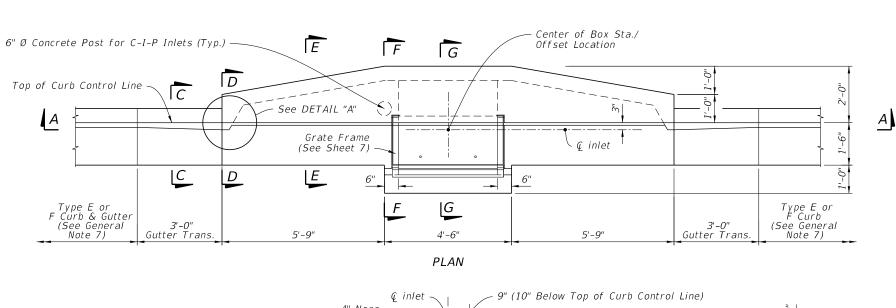
REVISION 11/01/20

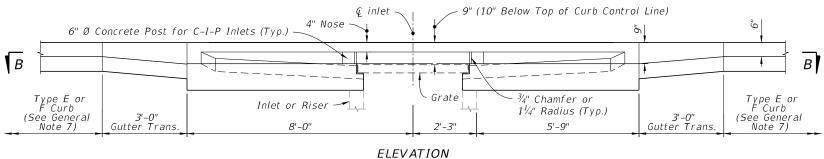
DESCRIPTION:



Type E Curb and Gutter —







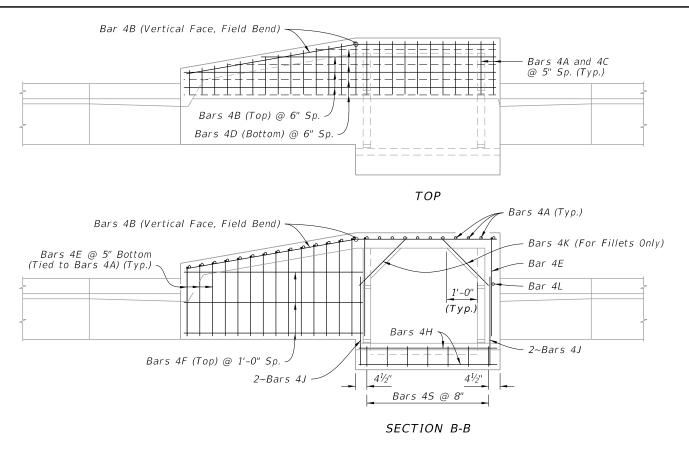
= TYPE 6 DIMENSIONAL DETAILS =

TYPE 5 AND 6 DIMENSIONAL DETAILS

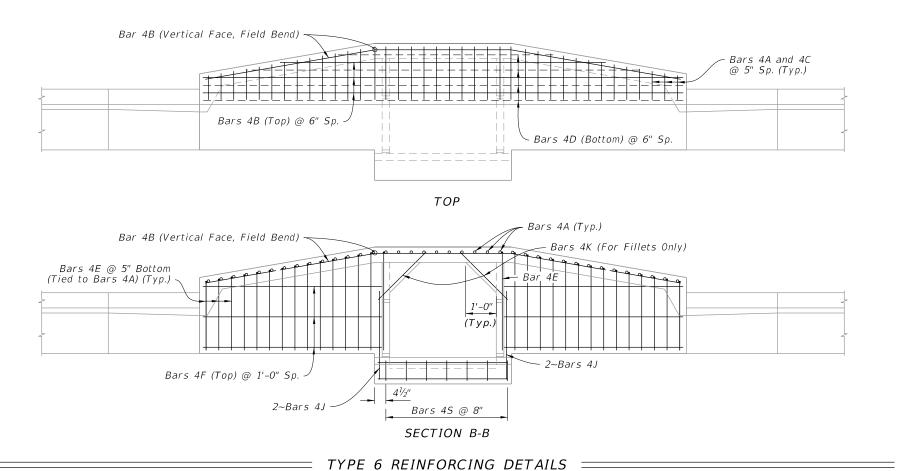
LAST REVISION III/01/20

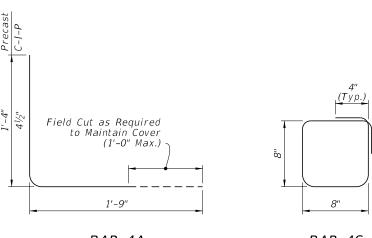
DESCRIPTION:

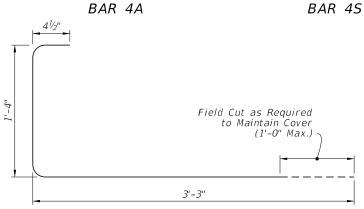
FDOT



TYPE 5 REINFORCING DETAILS







BAR 4E

	BIL	L OF RE	INFORCING STE	EL	
	SIZE	TYP	TYPE 5 INLET		E 6 INLET
MARK	SIZE	NO.	LENGTH	NO.	LENGTH
A (Precast)	4	25	3'-1"	38	3'-1"
A (C-I-P)	4	25	2'-11/2"	38	2'-1½"
В	4	6	10'-3"	6	15'-9"
С	4	25	11" to 1'-11"	38	11" to 1'-11"
D	4	4	10'-3"	4	15'-9"
Ε	4	16	4'-111½"	30	4'-111½"
F	4	3	6'-0''	6	6'-0"
Н	4	4	4'-6"	4	4'-6"
J	4	4	3'-0"	4	3'-0"
K (Fillet)	4	2	2'-3"	2	2'-3"
L (Precast)	4	1	1'-4"	0	
L (C-I-P)	4	10	1'-4"	9	1'-4"
5	4	7	3'-2"	7	3'-2"

NOTES:

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. Bars 4A and 4E may be combined into a single bar.
- 3. Welded Wire Reinforcement consists of smooth or deformed wire meeting the requirements of Specification 931.

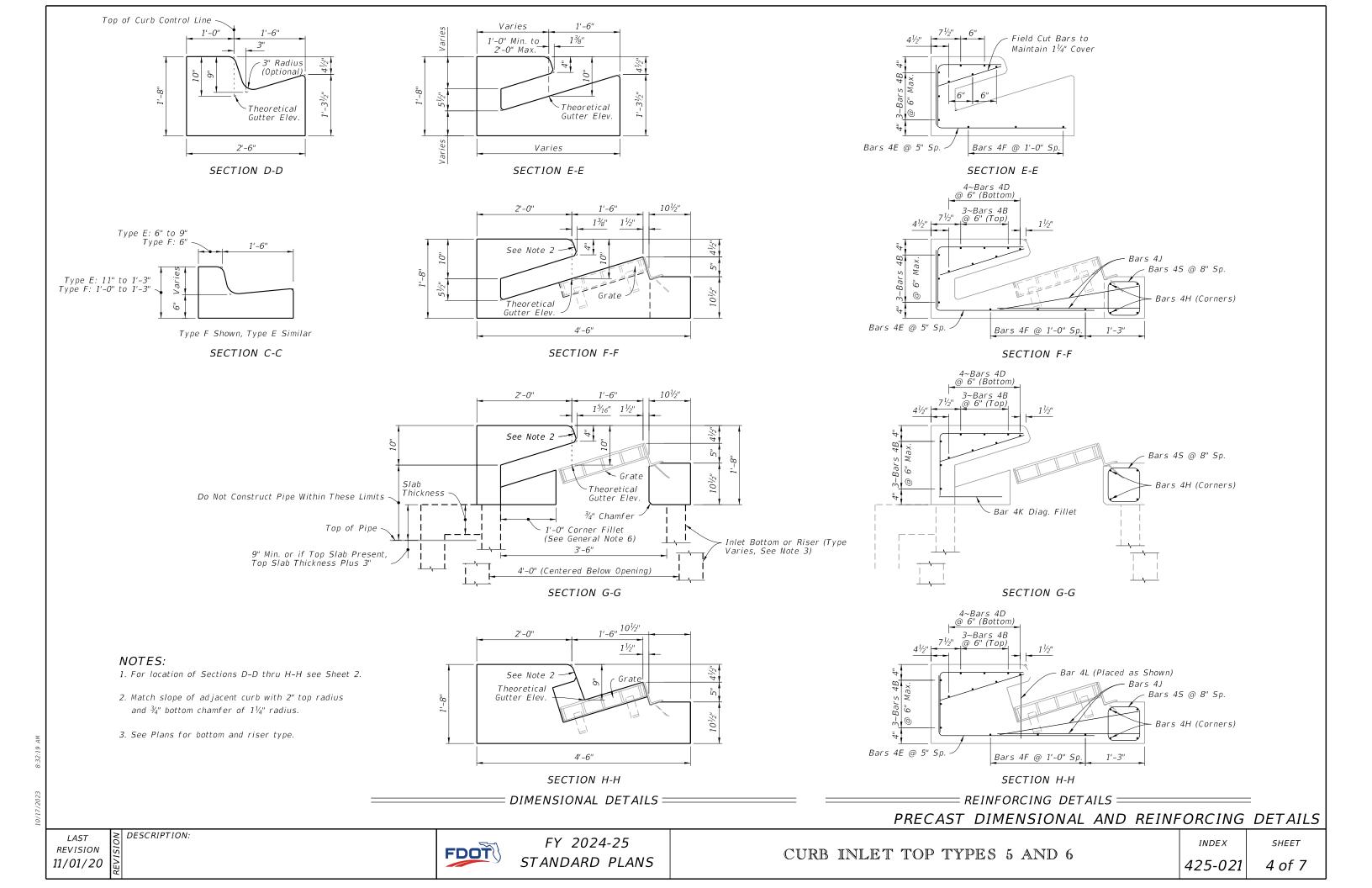
TYPE 5 AND 6 REINFORCING AND BAR BENDING DETAILS

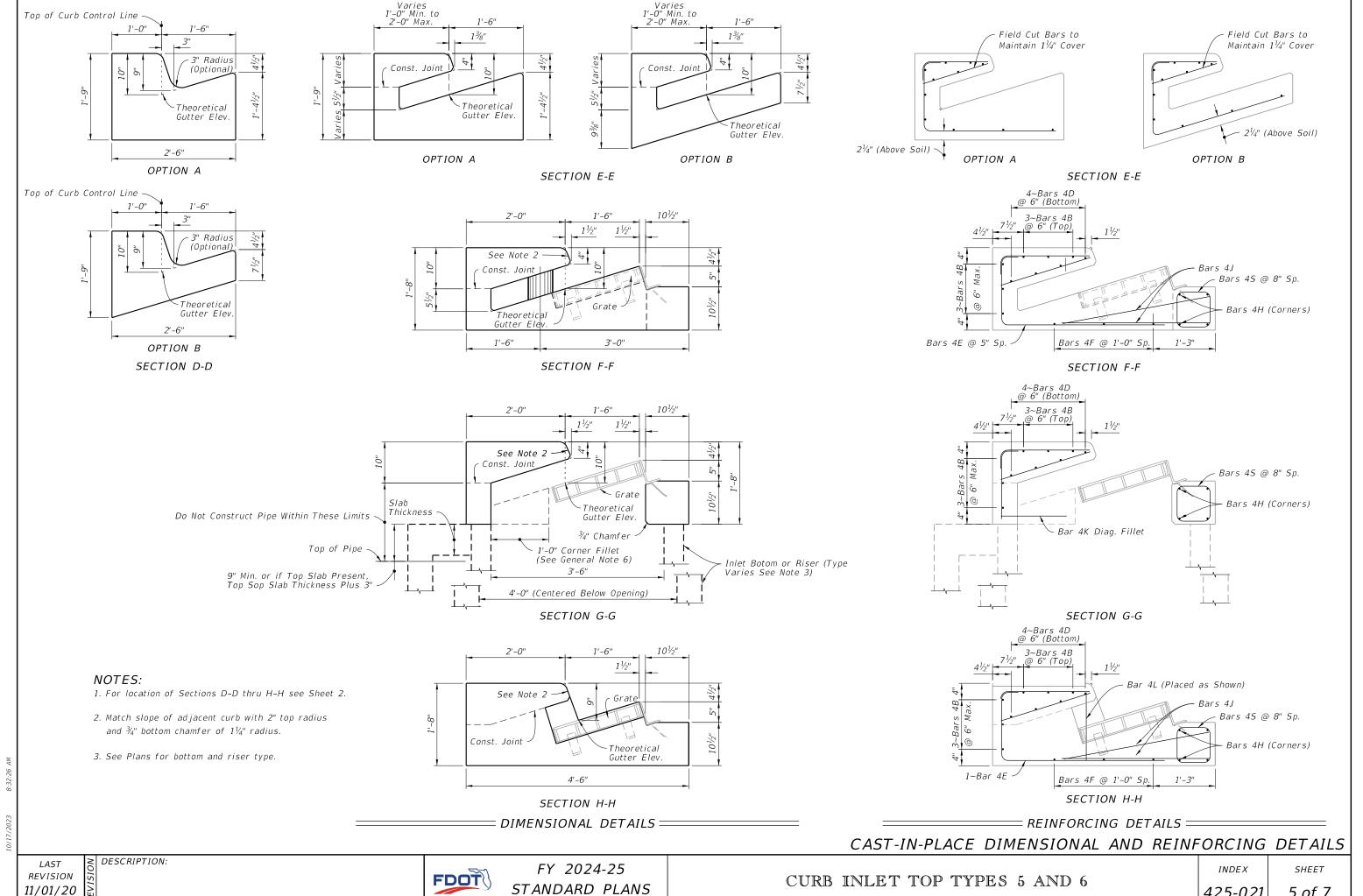
LAST REVISION 11/01/20

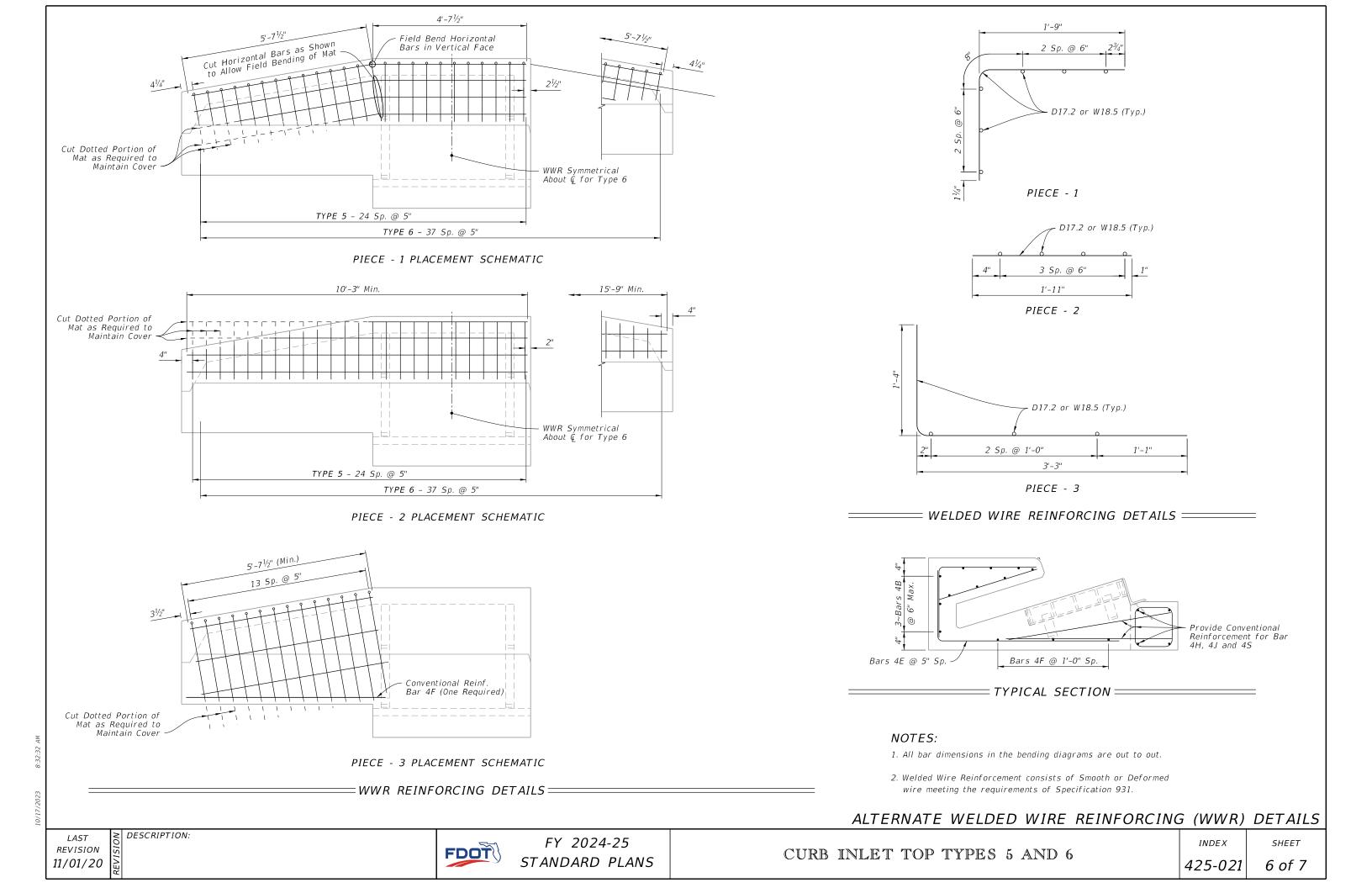
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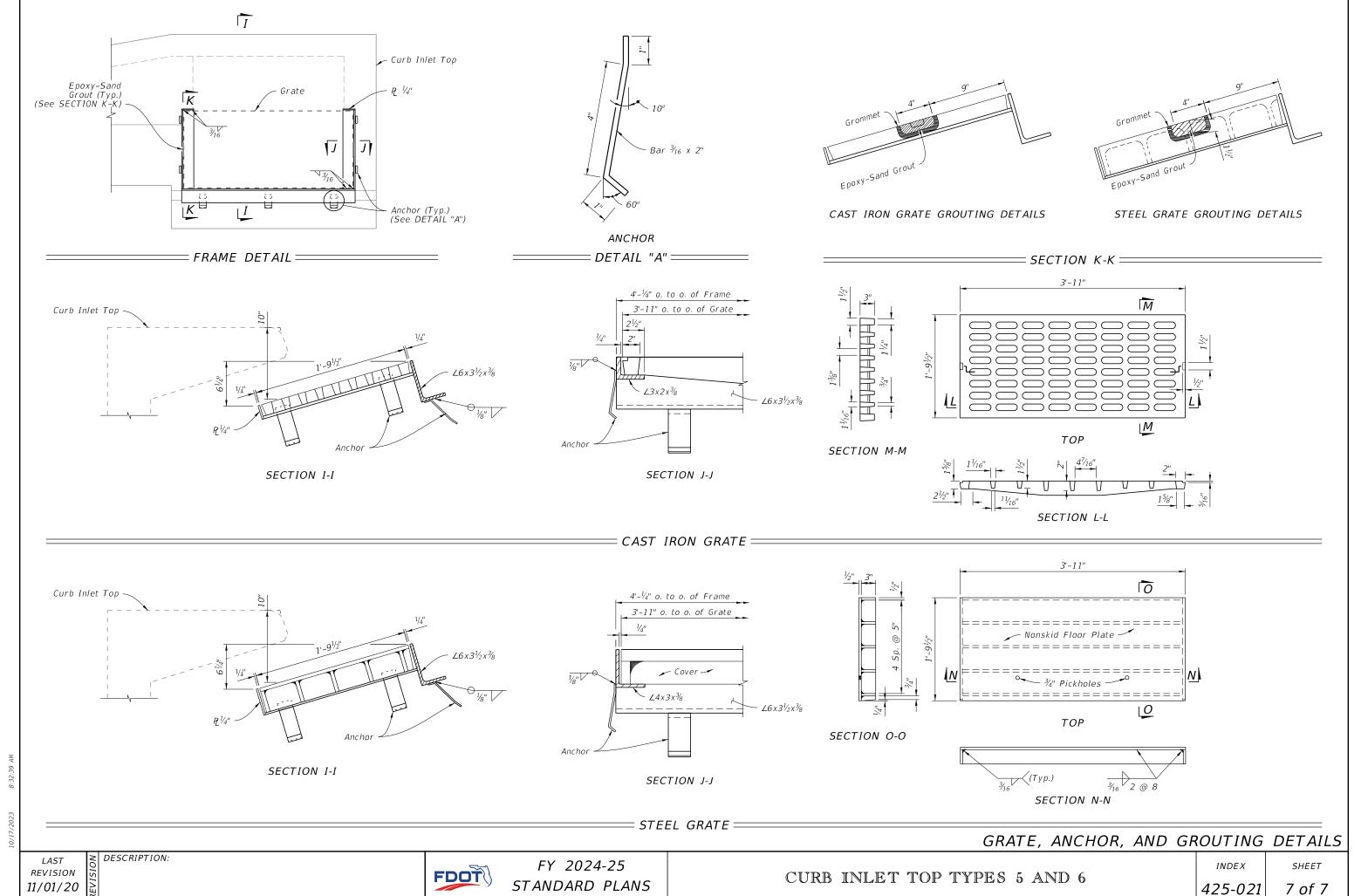
FDOT

FY 2024-25 STANDARD PLANS





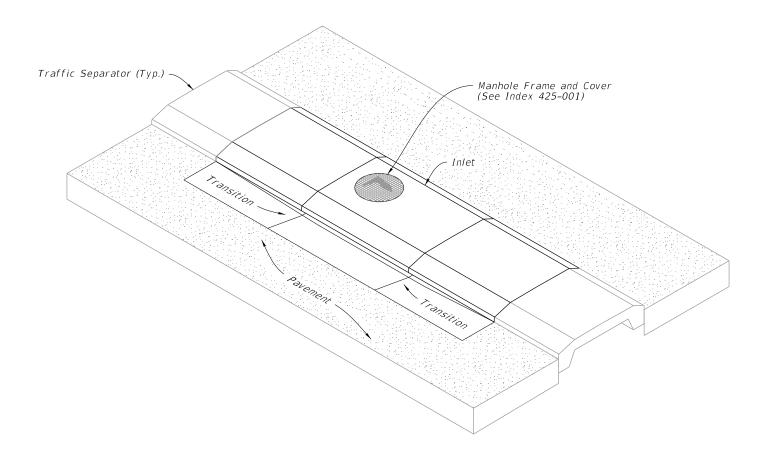




GENERAL NOTES:

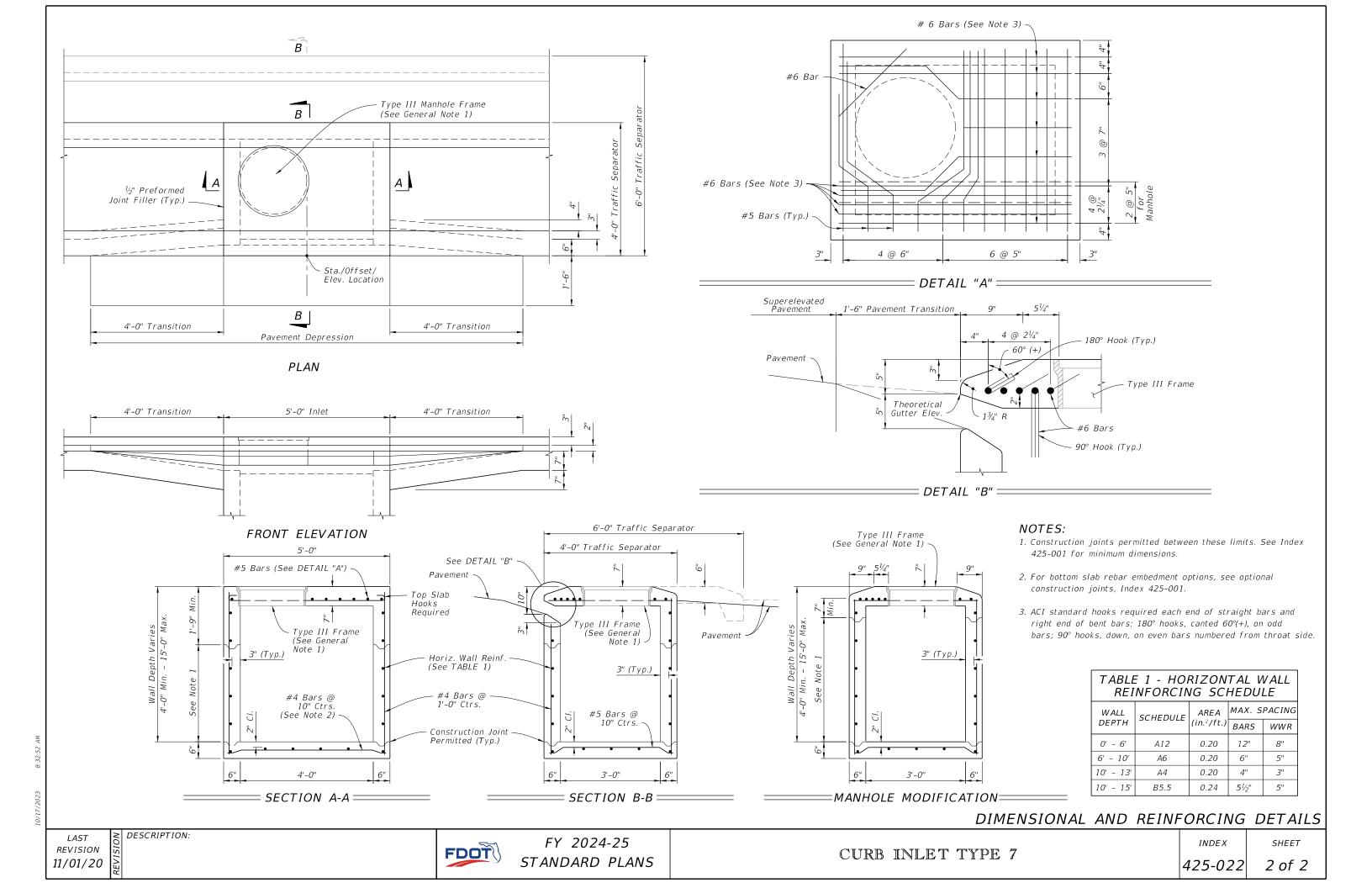
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Use Grade 60 reinforcing bars with 2" minimum cover unless otherwise shown. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary. Bars to clear pipe by $1\frac{1}{2}$ ".
- 3. Recommended maximum pipe sizes are 24" longitudinal and 30" transverse. For larger pipe, inlets with Alt. B bottoms, Index 425-010 is recommended.
- 4. All dimensions are for both precast and cast-in-place inlets unless otherwise shown.

TABLE OF CONTENTS:				
Sheet	Description			
1	General Notes and Contents			
2	Dimensional and Reinforcing Details			



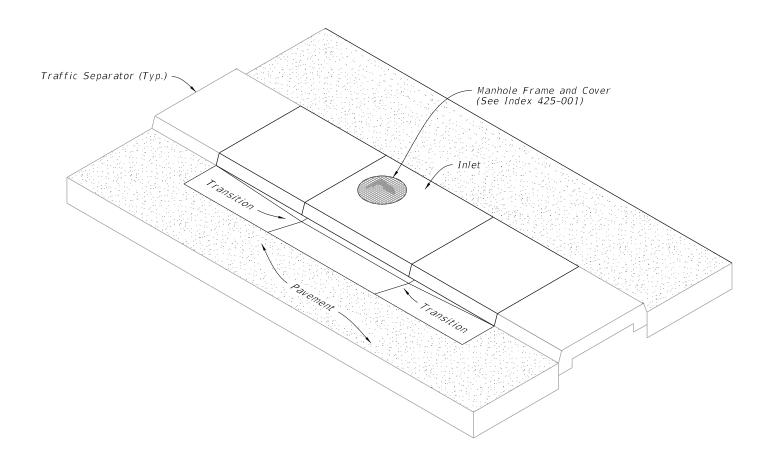
= CURB INLET TYPE 7 =(Bottom Not Shown)

DESCRIPTION:



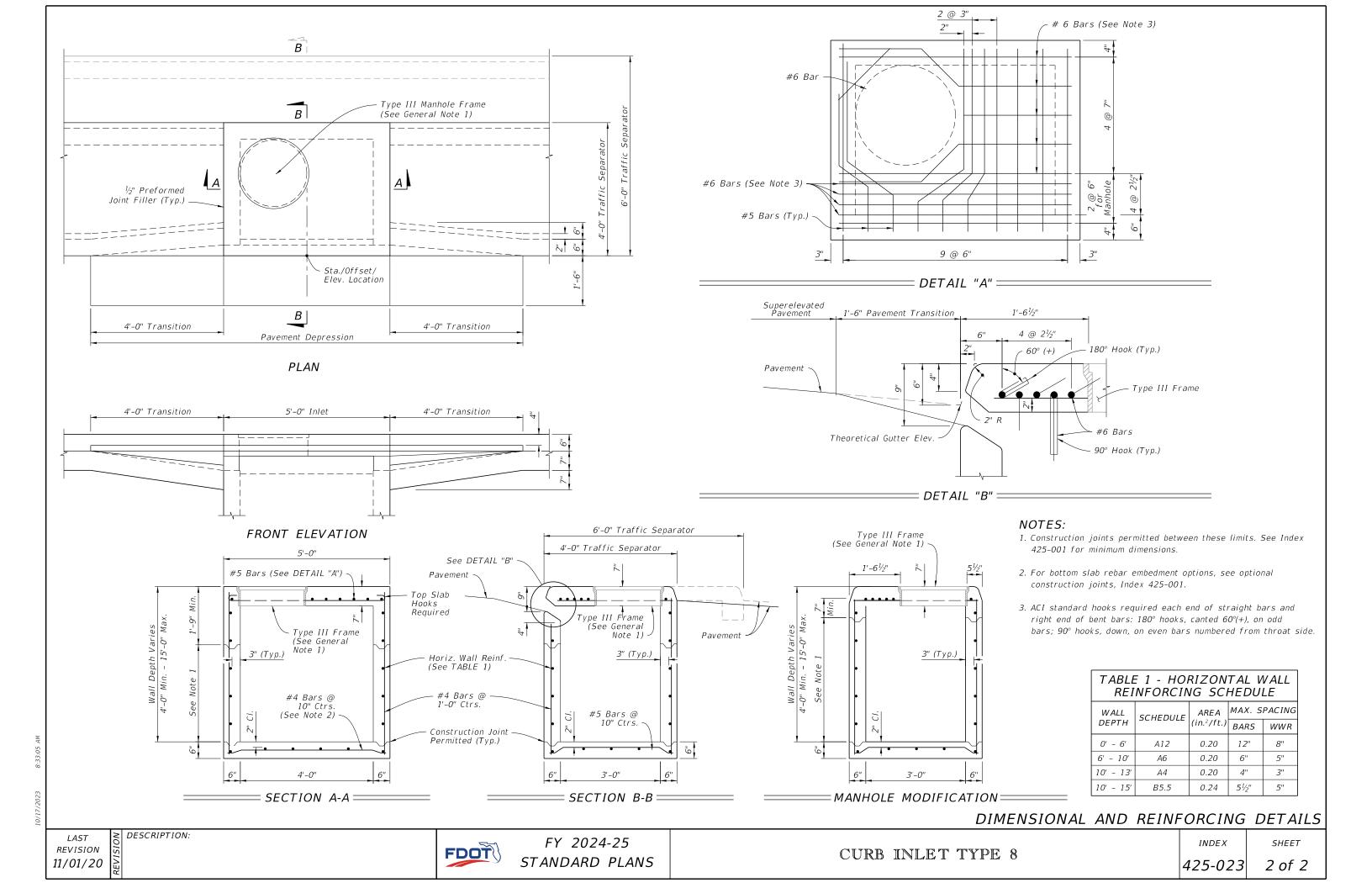
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Use Grade 60 reinforcing bars with 2" minimum cover unless otherwise shown. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary. Bars to clear pipe by $1\frac{1}{2}$ ".
- 3. Recommended maximum pipe sizes are 24" longitudinal and 30" transverse. For larger pipe, inlets with Alt. B bottoms, Index 425-010 is recommended.
- 4. All dimensions are for both precast and cast-in-place inlets unless otherwise shown.

TABLE OF CONTENTS:		
Sheet	nt Description	
1	General Notes and Contents	
2	Dimensional and Reinforcing Details	



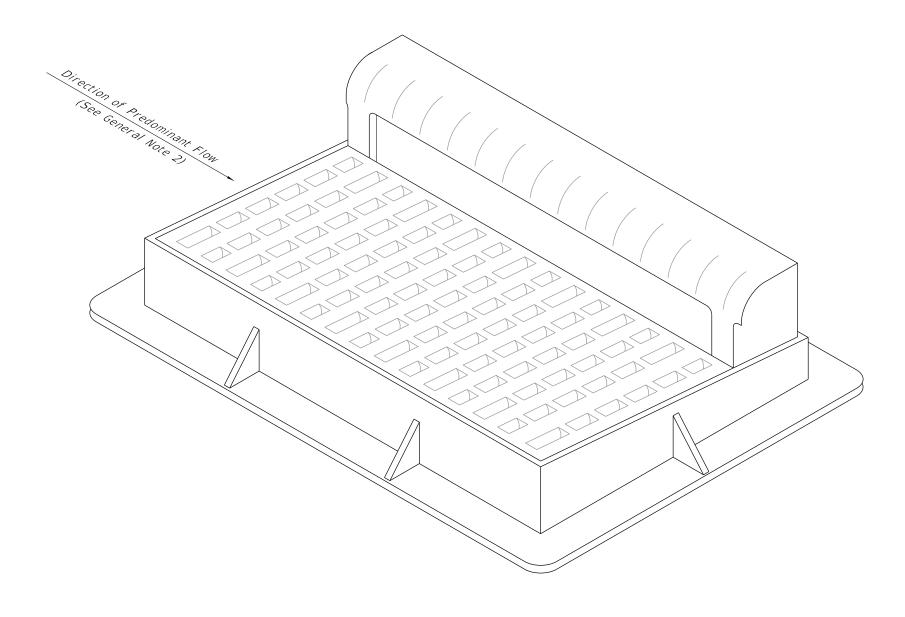
CURB INLET TYPE 8 (Bottom Not Shown)

REVISION 11/01/20

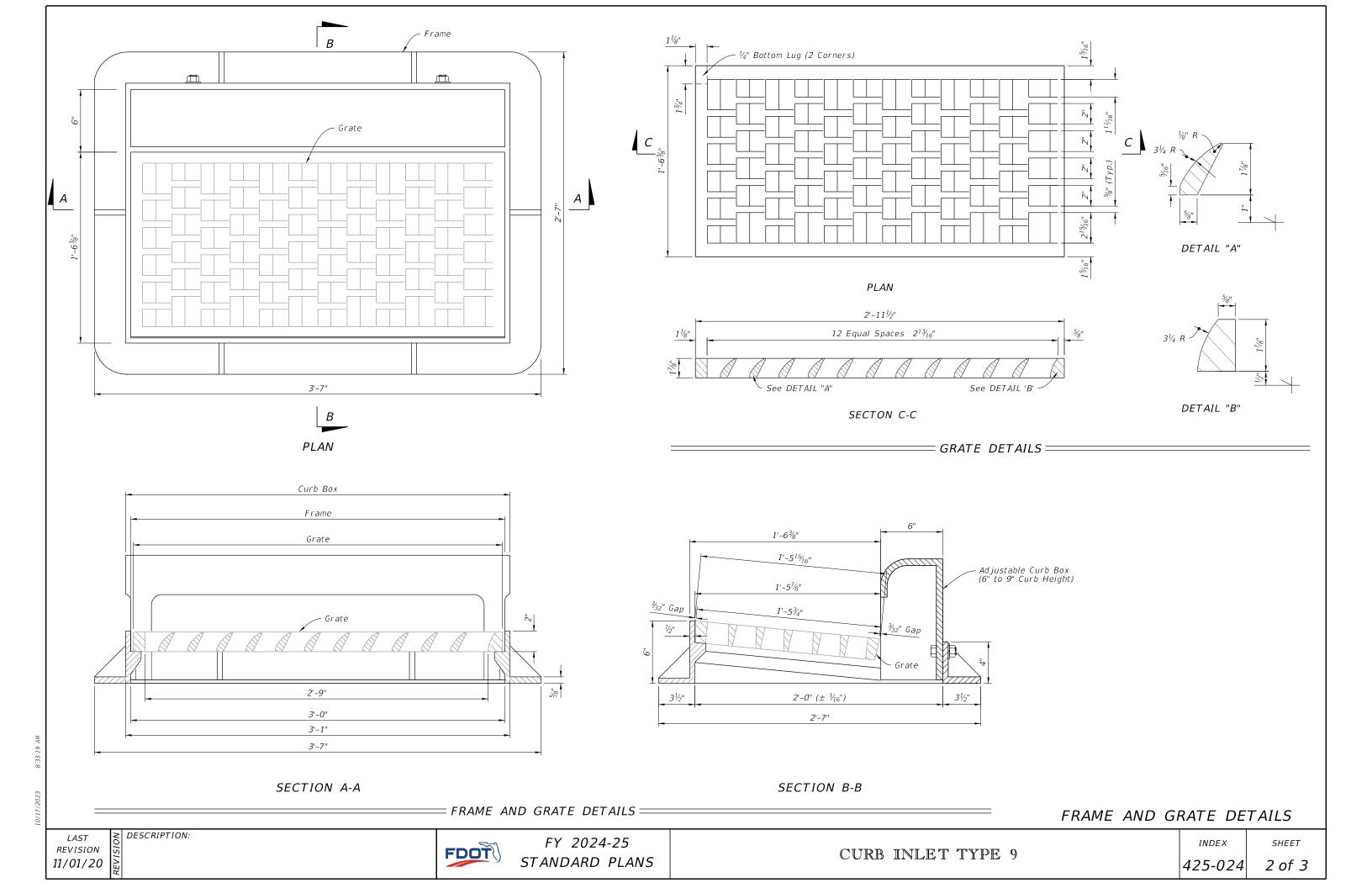


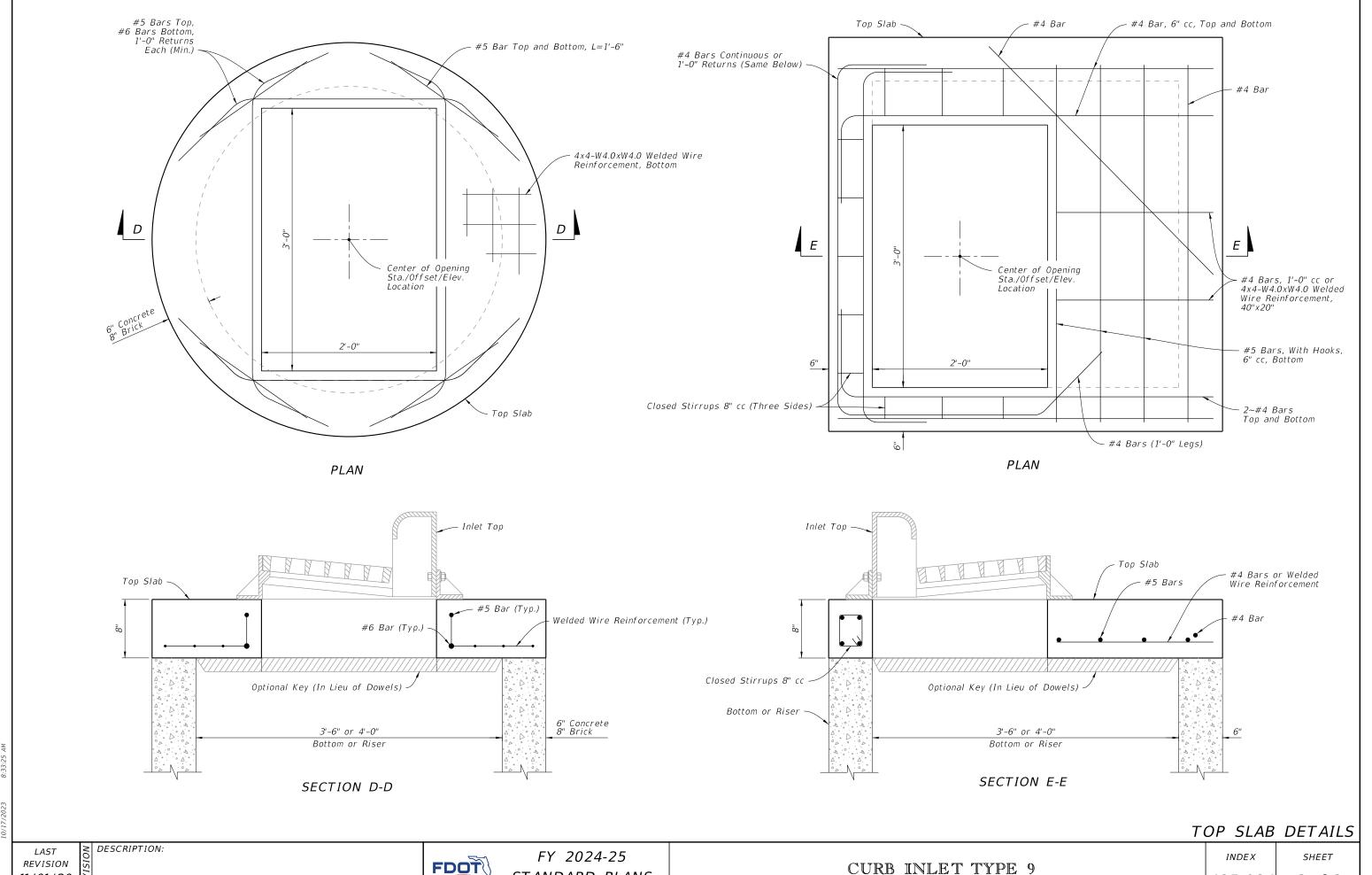
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Orient grate with vanes directed toward predominant flow.
- 3. Provide $1\frac{1}{4}$ " minimum cover for steel in slab tops unless otherwise shown. Tops may be either cast-in-place or precast concrete.
- 4. Place top slab openings such that 2 edges of inlet frame will be located directly above bottom wall or riser wall for Alternate B applications.
- 5. When used on a structure with dimensions larger than those detailed on Sheet 3 and risers are not applied, construct the top slab using Index 425-010 with the slab opening adjusted to 24"x36". The "Special Top Slab" on Index 425-010 is not permitted.
- 6. Frame may be adjusted with one to six courses of brick.
- 7. Vaned grates with approximately equal openings that satisfy AASHTO HL-93 loading are permitted. Provide reversible (right or left) grates.

TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Frame and Grate Details	
3	Top Slab Details	



= CURB INLET TOP TYPE 9 ===



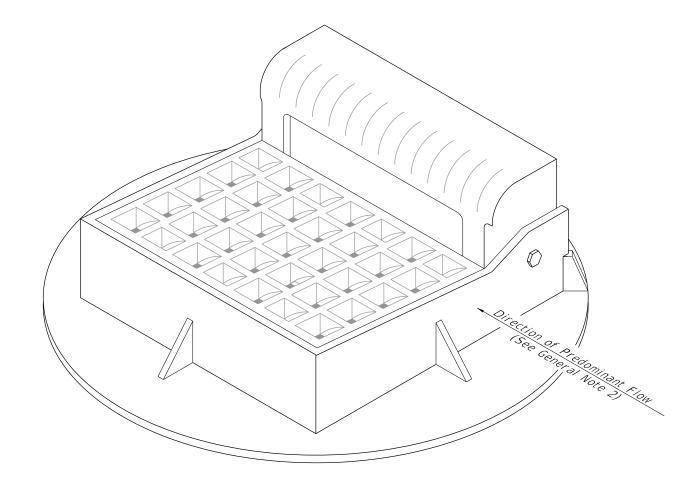


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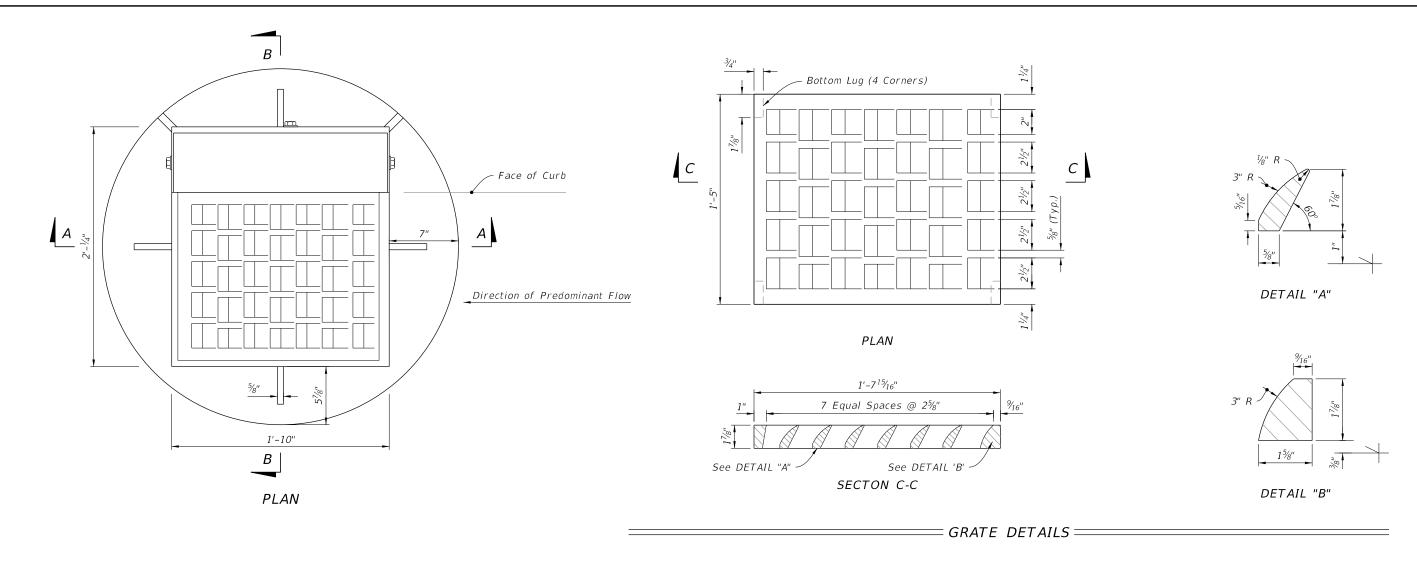
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Orient grate with vanes directed toward predominant flow.
- 3. Provide $1\frac{1}{4}$ " minimum cover for steel in slab tops unless otherwise shown. Tops may be either cast-in-place or precast concrete.
- 4. Place top slab openings such that 2 edges of inlet frame will be located directly above bottom or riser walls, for Alternate B applications.
- 5. When used on a structure with dimensions larger than those detailed on Sheet 3 and risers are not applied, construct the top slab using Index 425-010 with the slab opening adjusted to 22"x24". The "Special Top Slab" on Index 425-010 is not permitted.
- 6. Frame may be adjusted with one to six courses of brick.
- 7. Vaned grates with approximately equal openings that satisfy AASHTO HL-93 loading are permitted. Provide reversible (right or left) grates.

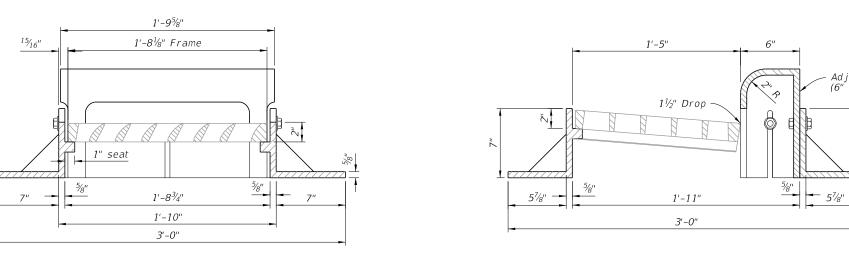
TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Frame and Grate Details	
3	Top Slab Details	



= CURB INLET TOP TYPE 10 =====







SECTION B-B

FRAME AND GRATE DETAILS

FRAME AND GRATE DETAILS

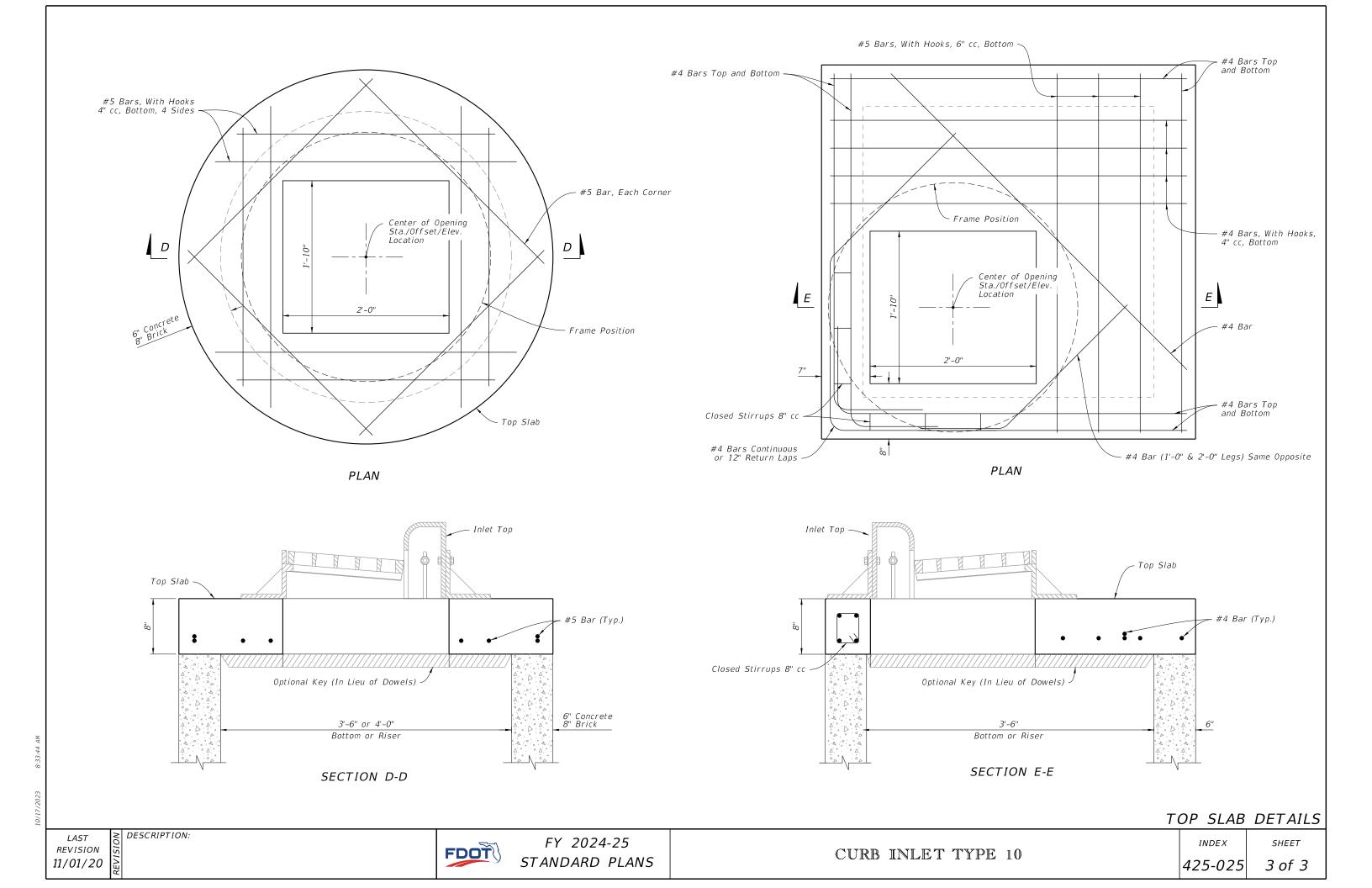
LAST REVISION 11/01/20

≥ DESCRIPTION:

FDOT

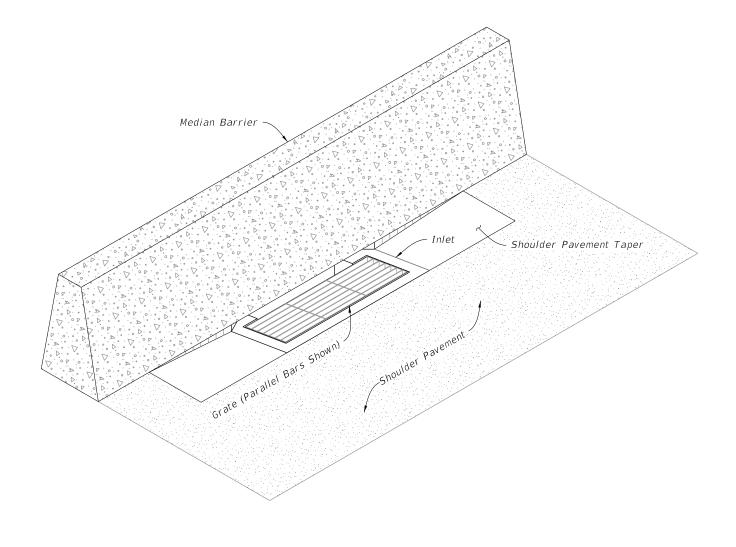
SECTION A-A

- Adjustable Curb Box (6" to 9" Curb Height)



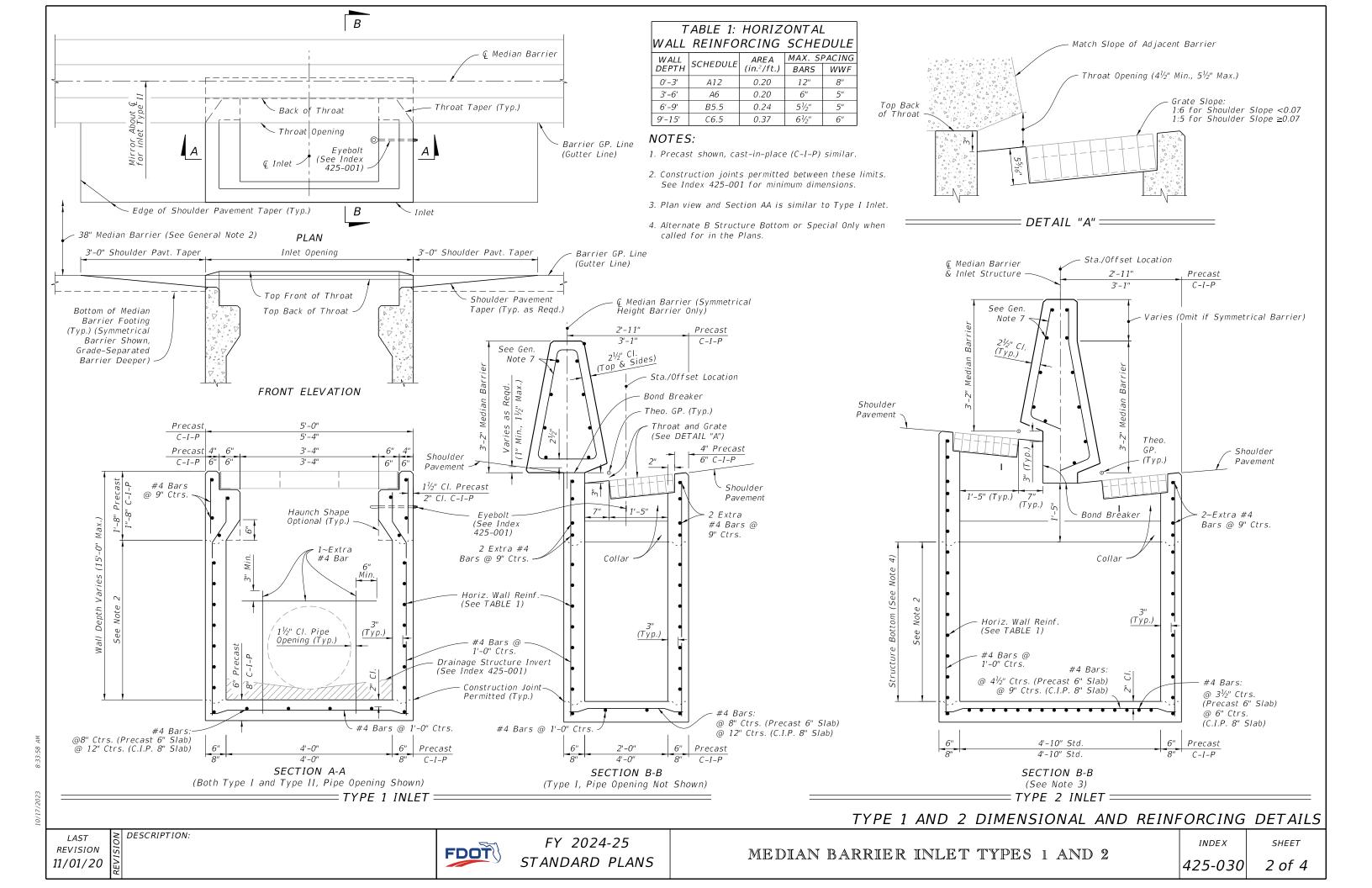
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Where called for in the Plans, use this inlet in conjunction with Median Barrier per Index 521-001.
- 3. Inlet Descriptions:
- Type 1: Inlet on one side of Median Barrier Type 2: Inlet on both sides of Median Barrier
- 4. See Index 425-040 for grate details. Use the parallel bar grate unless reticuline grate is called for in the Plans.
- 5. Chamfer all edges to $\frac{3}{4}$ " or tool to $\frac{1}{4}$ " radius.
- 6. Use Grade 60 #4 bars for inlet wall reinforcing. Position horizontal wall reinforcing 3" from the inside face unless otherwise shown. Equivalent areas of welded wire per Index 425-001 are permitted.
- 7. Use Grade 60 #4 or #5 bars for barrier reinforcing as required to match the stirrups and longitudinal steel of the adjacent Median Barrier per Index 521-001. Provide 2" or 2 ½"reinforcing steel cover to match the adjacent barrier reinforcing cover unless otherwise shown. Match the stirrup spacing of the adjacent barrier. Run longitudinal steel bars over the full length of the Concrete Barrier Transition and run continuously with the longitudinal steel of the adjacent barriers. Use lap splices as required.
- 8. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.
- 9. Install one layer of ASTM D6380 Class S, Type III organic felt bond breaker between inlet and barrier, including footings.

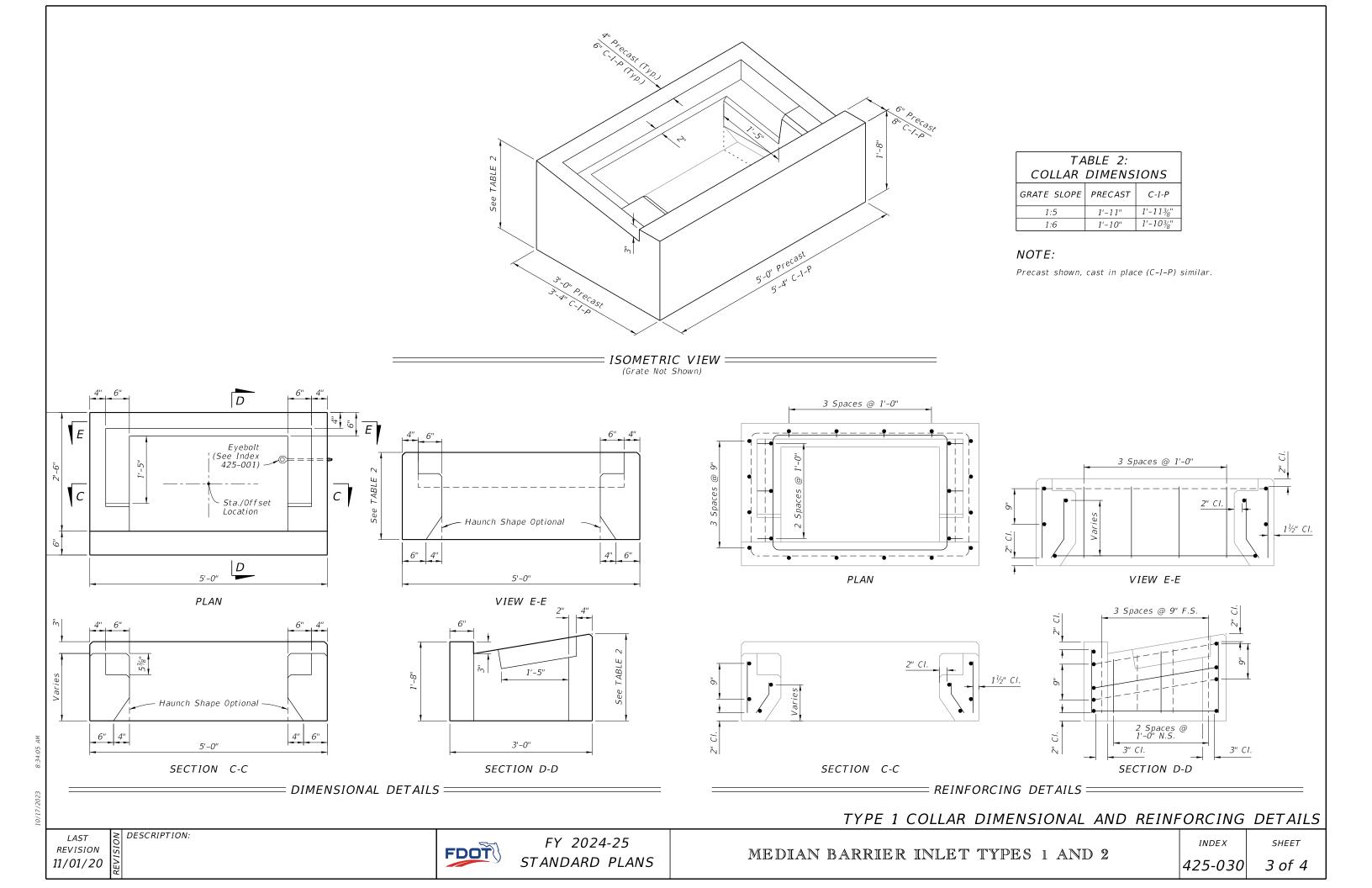
	TABLE OF CONTENTS:		
Sheet	Description		
1	General Notes and Contents		
2	Type 1 and 2 Dimensional and Reinforcing Details		
3	Type 1 Collar Dimensional and Reinforcing Details		
4	Type 2 Collar Dimensional and Reinforceing Details		

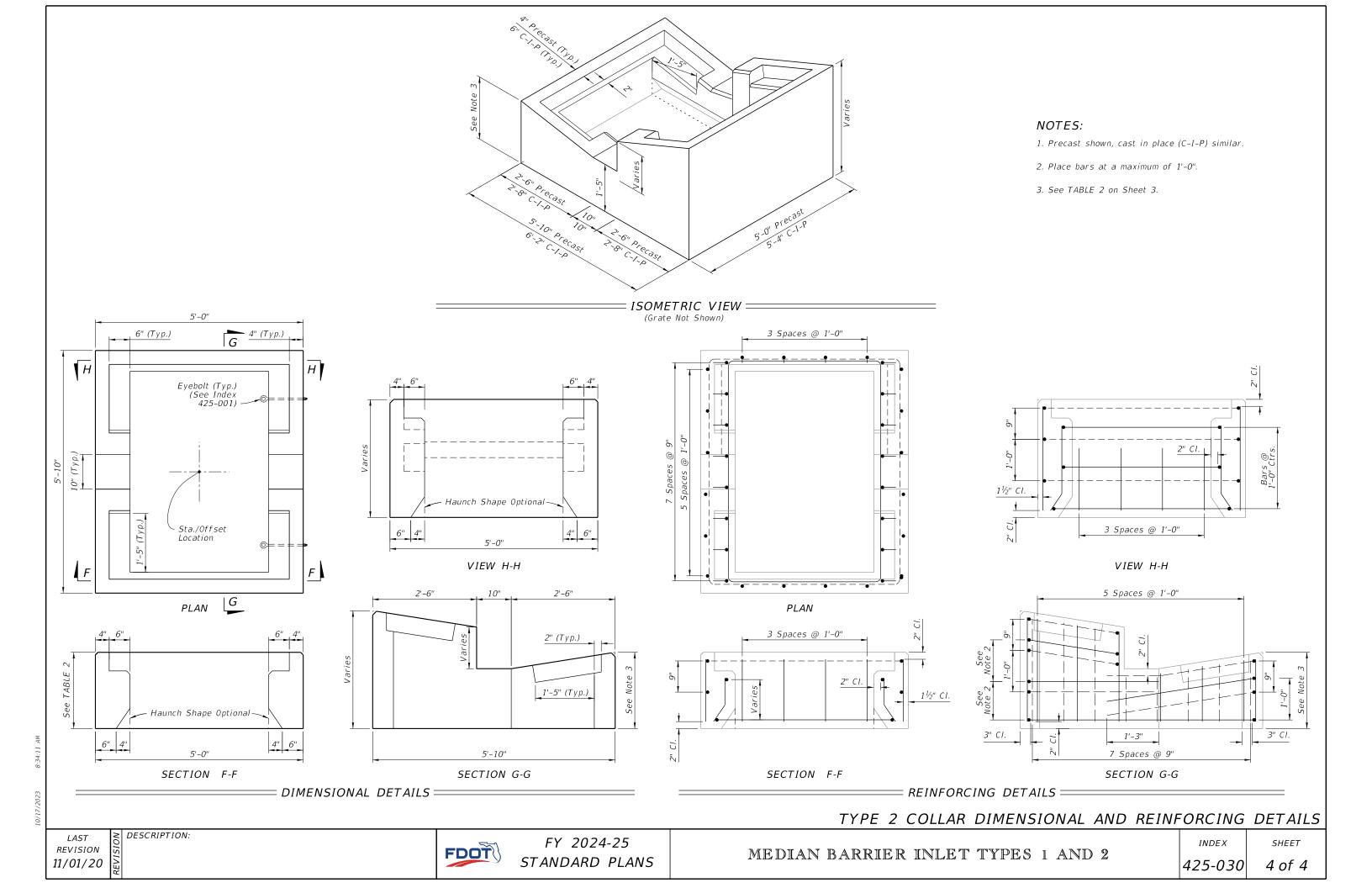


= MEDIAN BARRIER INLET = (Type 1 Shown, Type 2 Similar)



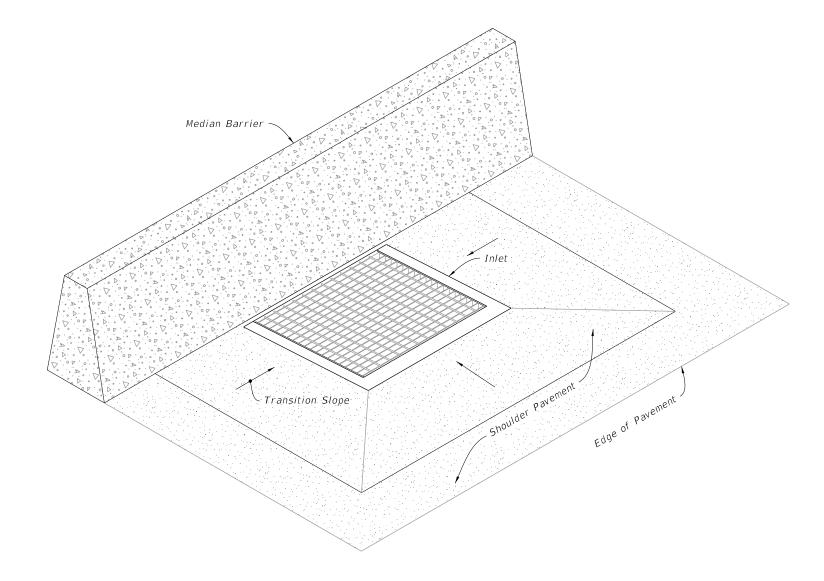






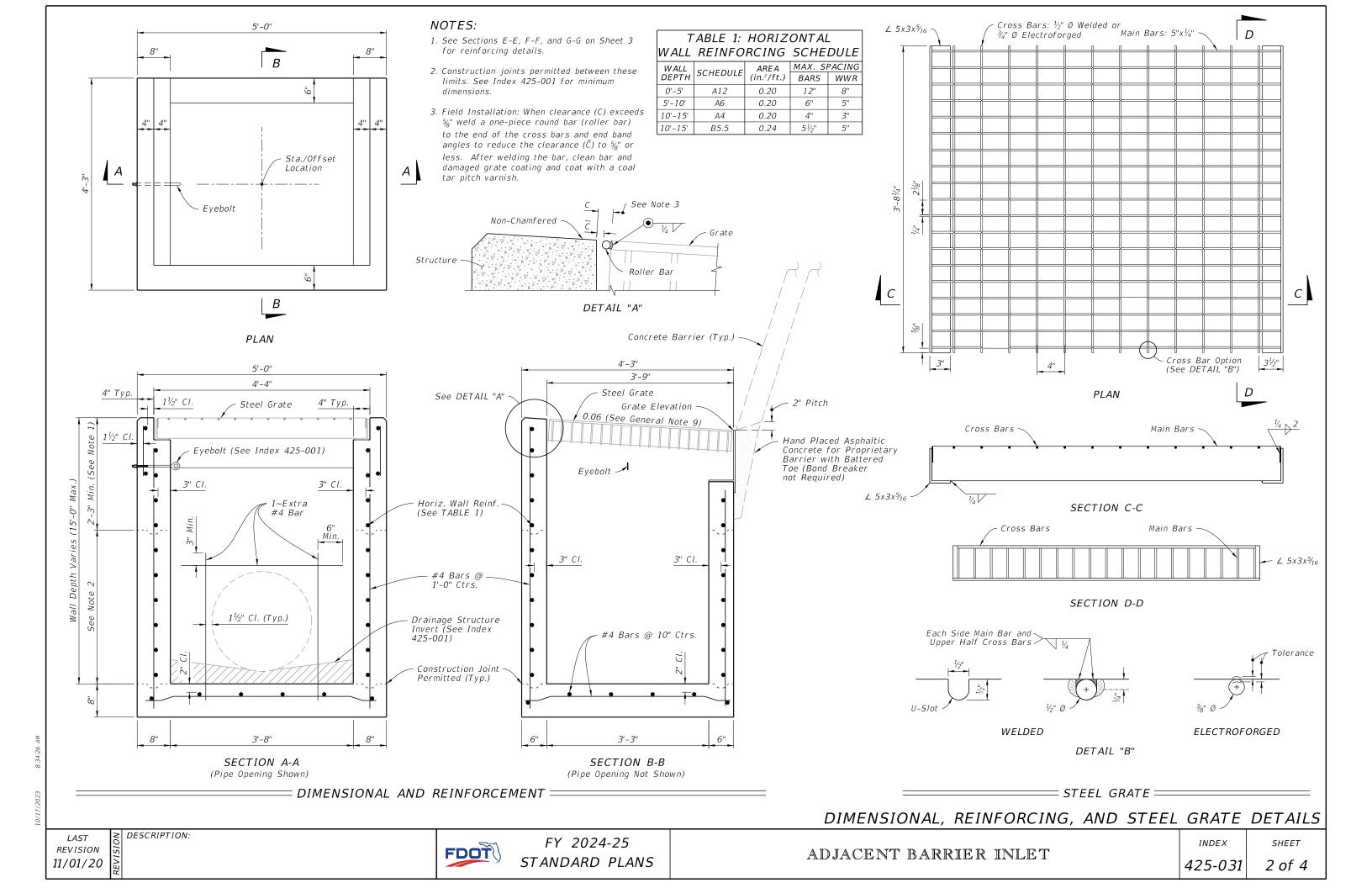
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. When called for in the Plans, use this inlet in conjunction with median or shoulder barrier per Index 521-001 or a barrier with junction slab and wall coping per Index 521-610.
- 3. Reinforce the upper 2'-3" of the inlet in accordance with sections CC, DD, and EE regardless of construction method.
- 4. Chamfer exposed edges and corners to $\frac{3}{4}$ " or tool to $\frac{1}{4}$ " radius.
- 5. Do not field install roller bars when Alt. G grates are specified in the Plans in accordance with Specification 425. Adjust tolerance during fabrication or casting, or match grate to structure prior to galvanizing.
- 6. Use Grade 60, #4 bars for reinforcing steel. See Index 425-001 for equivalent area of welded wire fabric.
- 7. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.
- 8. Anchor bolts: Use either ASTM A307 hex head bolts cast-in-place, or ASTM A36 or F1554 (Grade 36) galvanized fully threaded rod, adhesive bonded anchors installed in accordance with Specification 416. Rods must be a minimum of 6" long with 4" minimum embedment with one ASTM 194 or A563 heavy hex head nut and one ASTM F436 flat washer each. Hot-dip galvanize anchor bolts, nuts, and washers.
- 9. Reduce Cross Slope: Use a flatter cross slope as required to match adjacent grading per the Plans. Reduce vertical dimensions and bar spacing as needed to maintain concrete cover as shown.

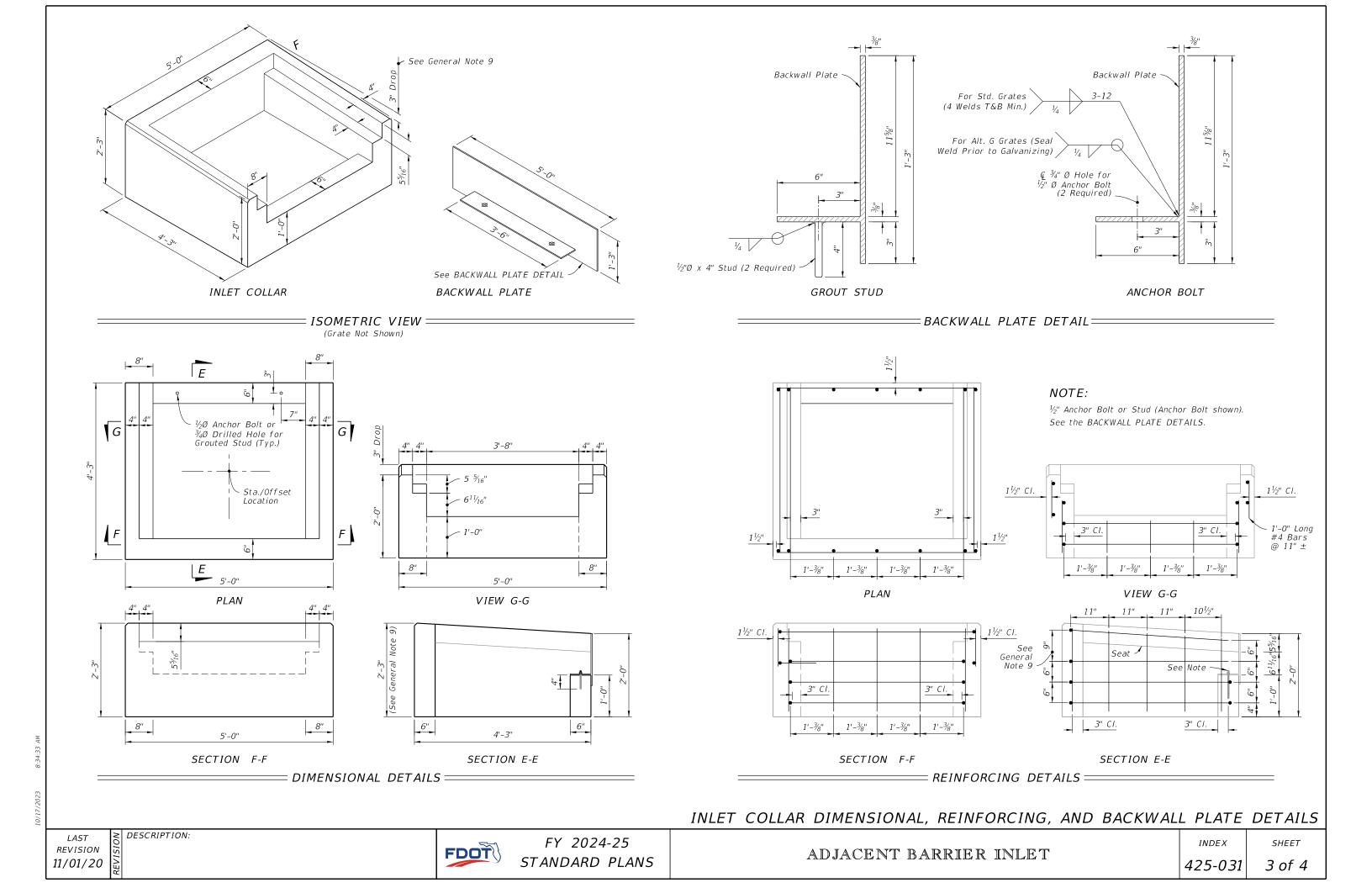
TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Dimensional, Reinforcing, and Steel Grate Details	
3	Inlet Collar Dimensional, Reinforcing, and Backwall Plate Details	
4	Shoulder Pavement Wrap, Barrier Type Examples, and Structure Bottoms	

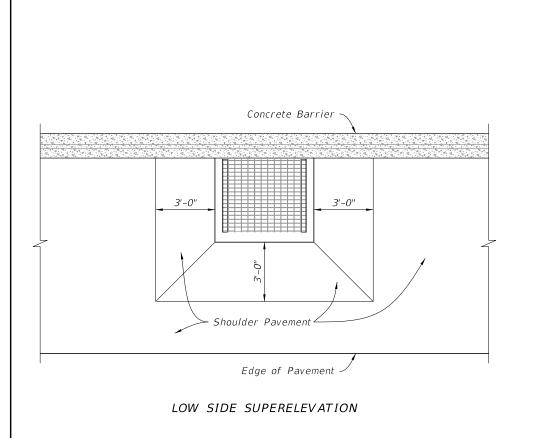


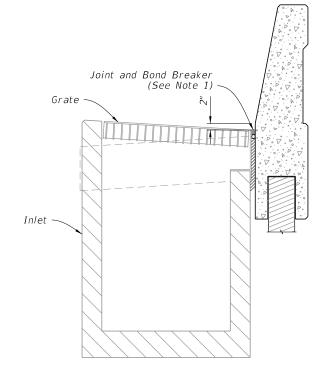
= ADJACENT BARRIER INLET =(Shoulder Barrier Similar)

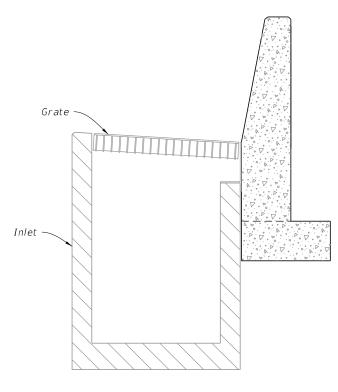








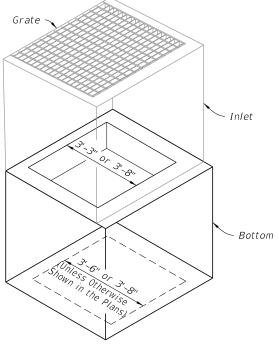




JUNCTION SLAB AND WALL COPING ALTERNATE B STRUCTURE BOTTOM

Inlet

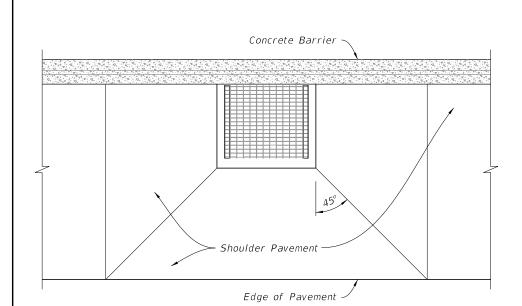
Bottom



ALTERNATE B STRUCTURE BOTTOM

NOTE: Alt. B Structure Bottom Only. See Index 425-010

= INLET WITH STRUCTURE BOTTOM:



HIGH SIDE TRANSITION

SUPERELEVATION SHOULDER PAVEMENT WRAP =

BARRIER TYPE EXAMPLES =

STEM AND FOOTING

REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

SHOULDER PAVEMENT WRAP, BARRIER TYPE EXAMPLES, AND STRUCTURE BOTTOMS

INDEX

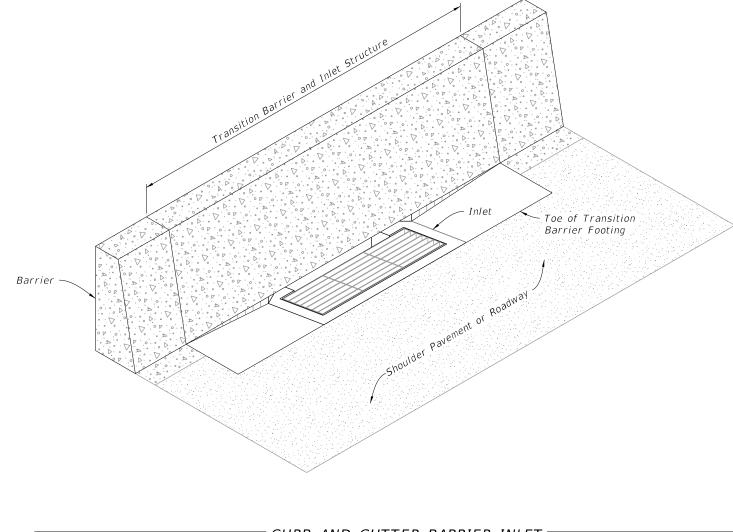
SHEET

- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Where called for in the Plans, use this inlet in conjunction with Curb and Gutter Barrier per Index 521-001. Construct Barrier segments shown herein in accordance with requirements of Index 521-001, including connections to adjacent barrier segments using the Doweled Joint.
- 3. Reinforcing shown is grade 60 steel bars. For the equivalent area of welded wire reinforcement for the inlet, see Index 425-001. Reinforcing shall have 2" minimum cover unless otherwise shown. Trim or bend bars to provide $1\frac{1}{2}$ " clearance around pipe openings.

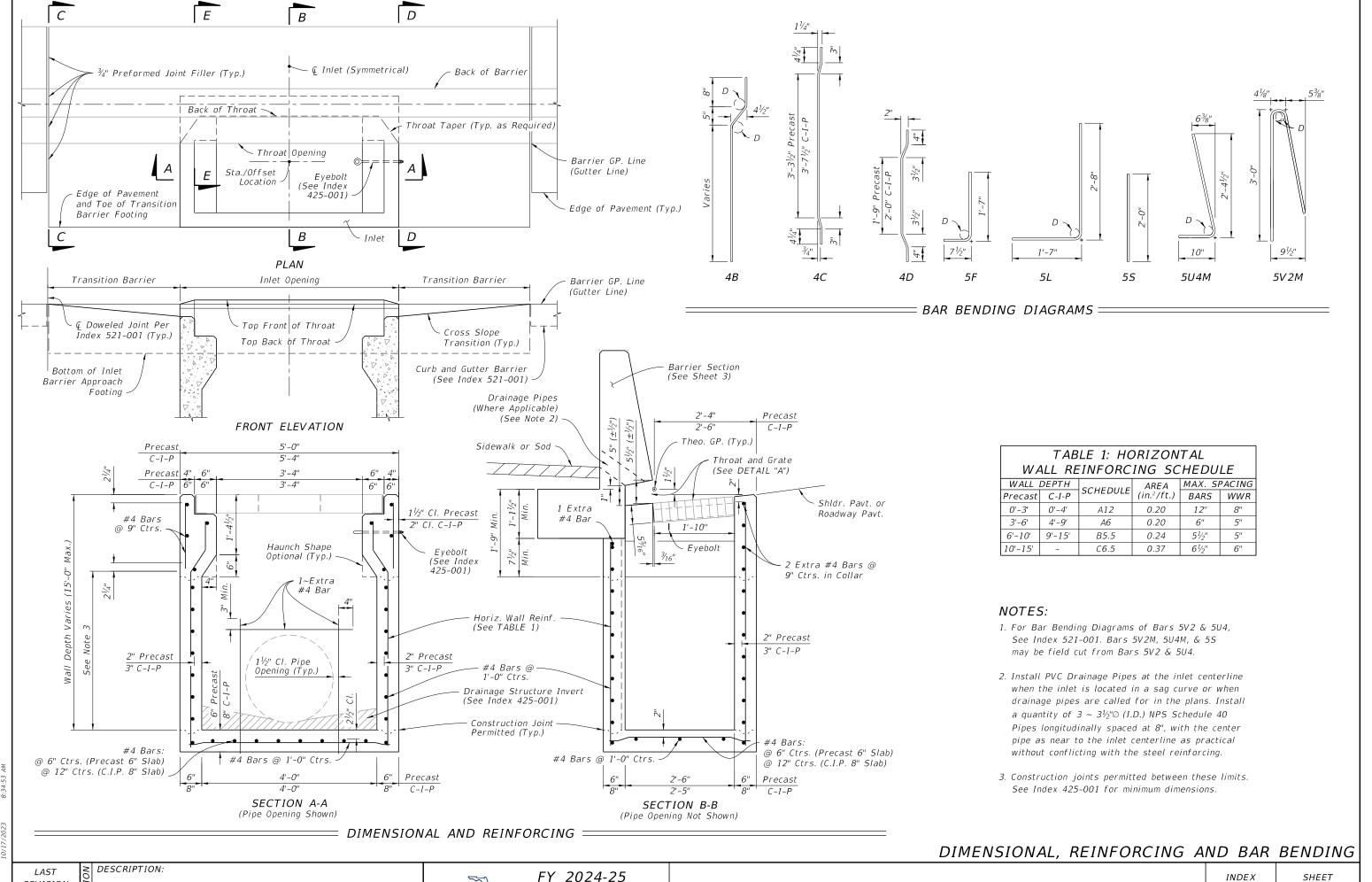
For Bar Bending Details of Bars 5V2 & 5U4, see Index 521-001. For all others, see Sheet 2.

- 4. Apply a 3/4" chamfer or 1/4" radius to all exposed concrete edges.
- 5. Grates may be fabricated with reticuline bars or with either $\frac{1}{2}$ " \bigcirc welded or $\frac{3}{8}$ " \bigcirc electroforged cross bars and bearing bars as detailed on Sheet 3.
- 6. All dimensions are for both precast and cast in place (C-I-P) inlets unless otherwise indicated.

TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Dimensional, Reinforcing, and Bar Bending	
3	Transitional Dimensional, Reinforcing, and Grate Details	
4	Inlet Top Dimensional and Reinforcing Details	

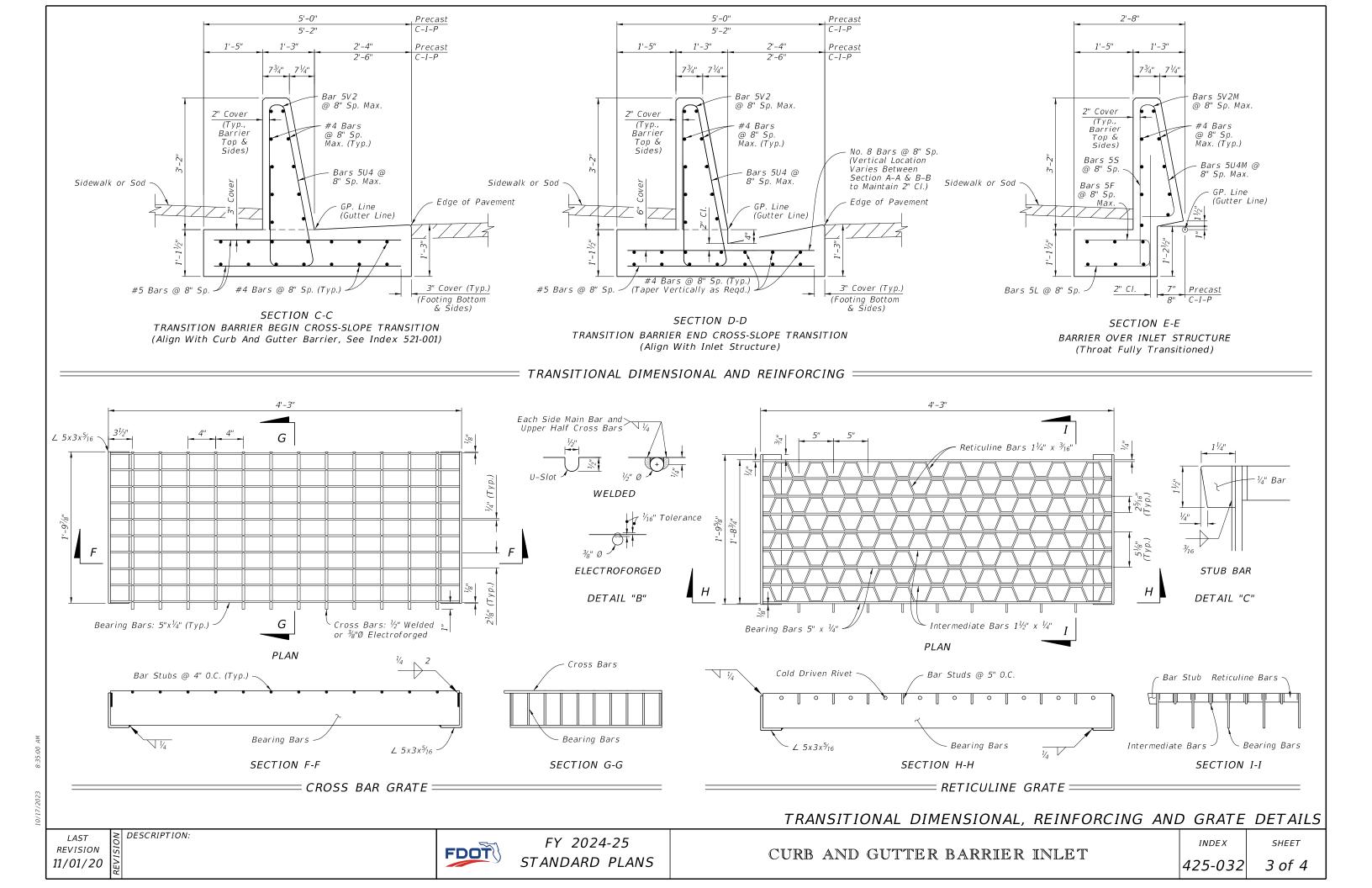


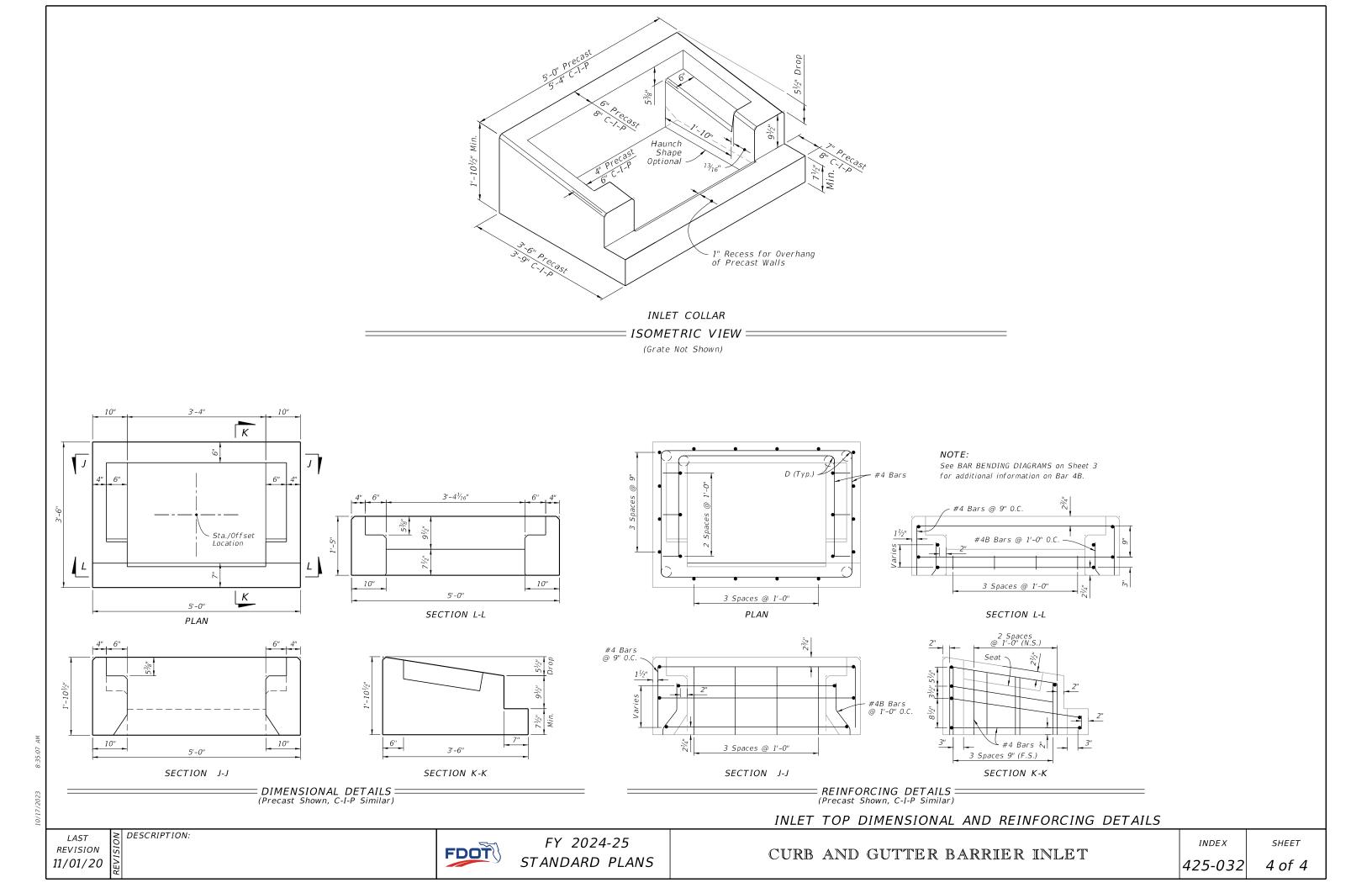
= CURB AND GUTTER BARRIER INLET ===



REVISION

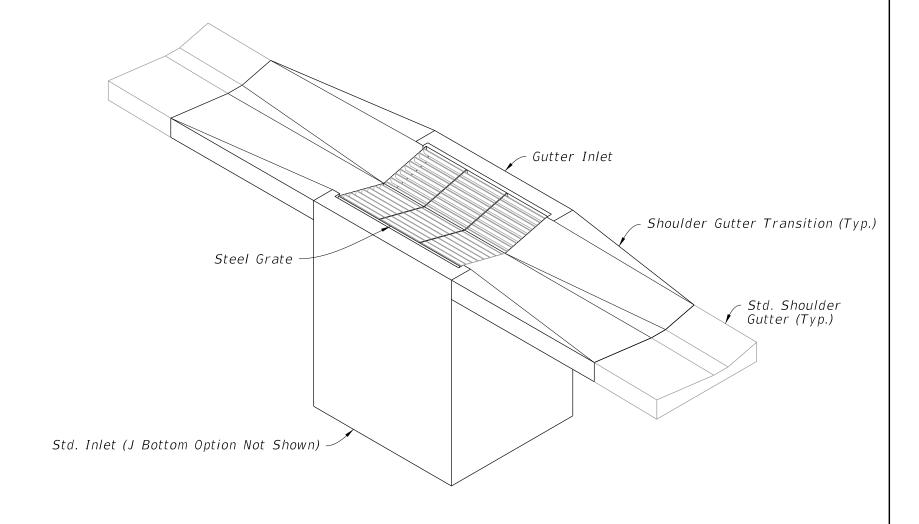
11/01/20





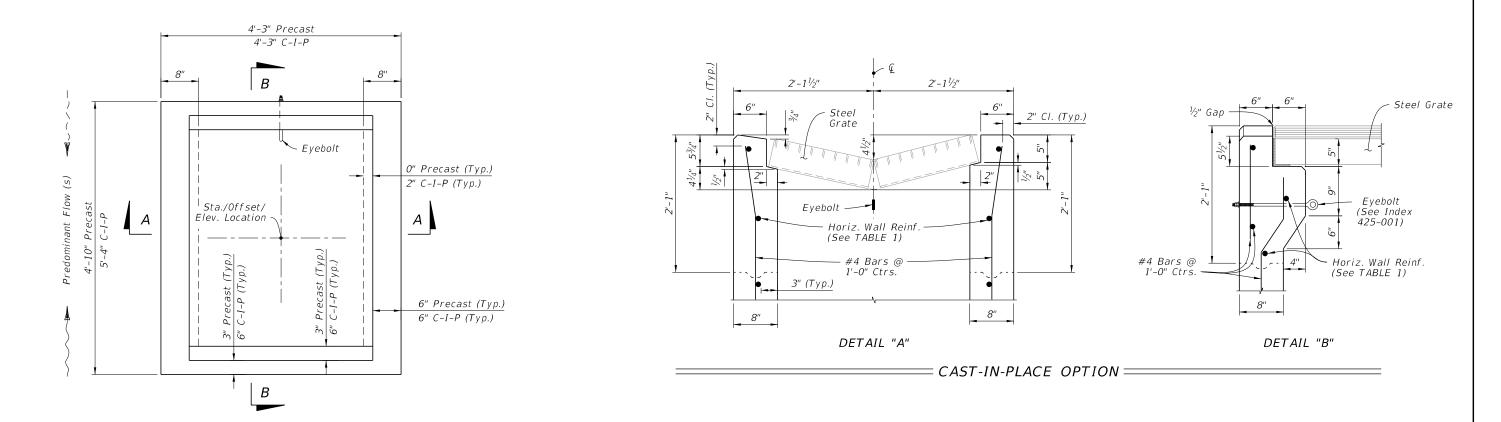
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Use Grade 60 reinforcing bars with 2" minimum cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars to provide $1\frac{1}{2}$ " minimum clearance around pipe.
- 3. Chamfer all exposed edges and corners $\frac{3}{4}$ " or tool to $\frac{1}{4}$ " radius.
- 4. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.

TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Dimensional and Reinforcing Details	
3	Transition and Apron Details	
4	Steel Grate Details	
5	Alternate A Structure Bottom - Top Slab Details	



GUTTER INLET TYPE S

(Pipe Opening Not Shown)



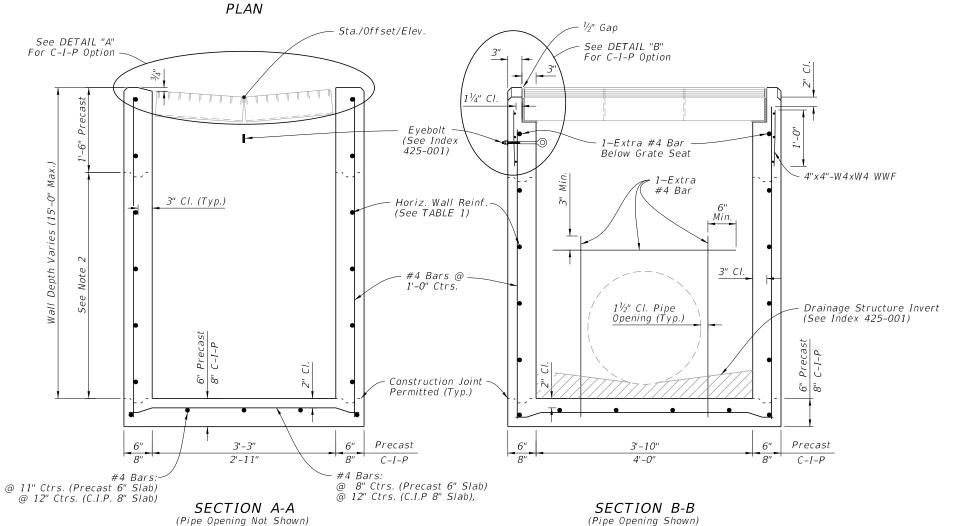


TABLE 1				
HORIZO	HORIZONTAL WALL REINFORCING SCHEDULE			
WALL	SCHEDULE	AREA	MAX. S	SPACING
DEPTH	$I \mid SCHEDULE \mid (in.^2/ft.)$	(in.²/ft.)	BARS	WWR
0' - 5'	A12	0.20	12"	8"
5' - 9'	A6	0.20	6"	5"
9' - 12'	A4	0.24	4"	3"
9' - 15'	B5.5	0.24	5½"	5"

NOTES:

- 1. Concrete Apron/Transition not shown.
- 2. Construction joints permitted between these limits. See Index 425-001 for minimum dimensions.

DIMENSIONAL AND REINFORCING DETAILS

REVISION 11/01/20

DESCRIPTION:

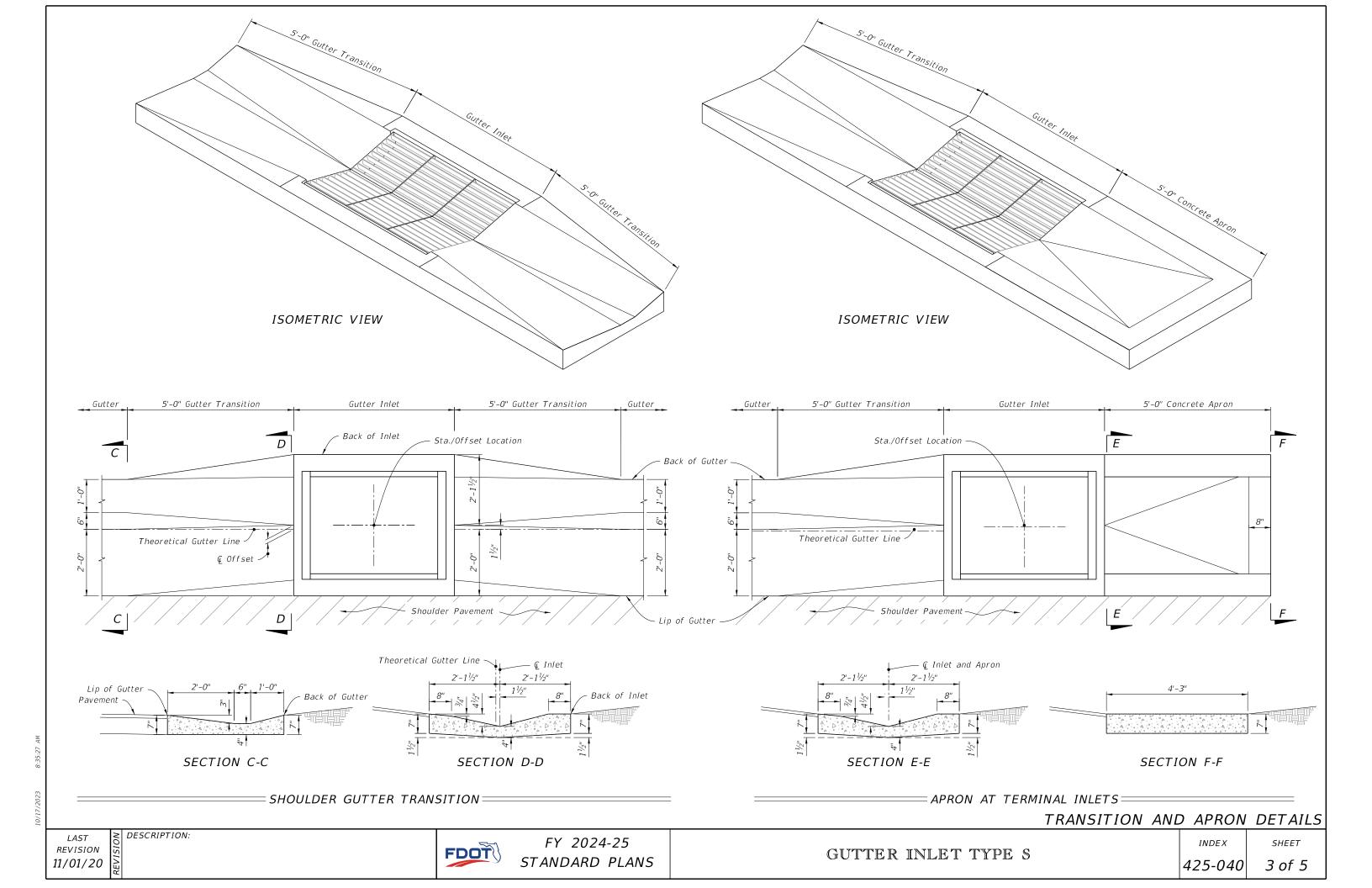
FDOT

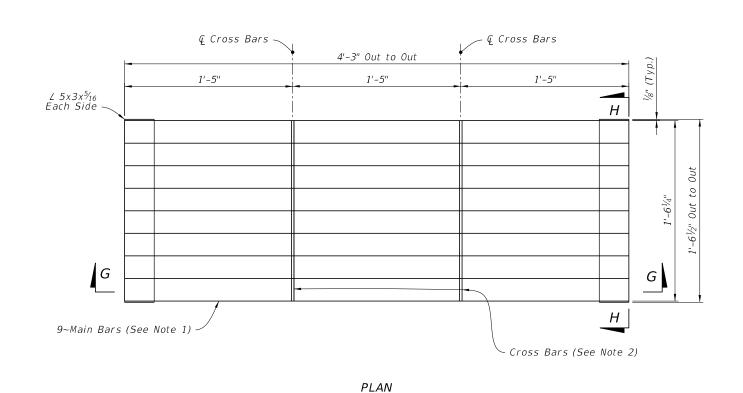
FY 2024-25 STANDARD PLANS

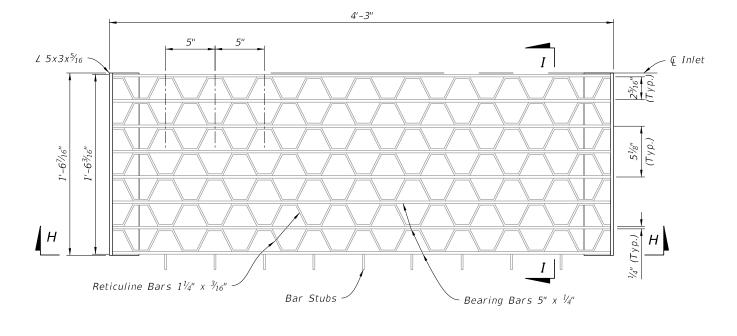
GUTTER INLET TYPE S

INDEX 425-040

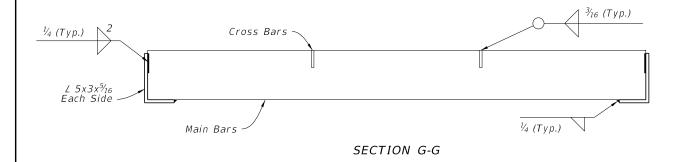
SHEET 2 of 5







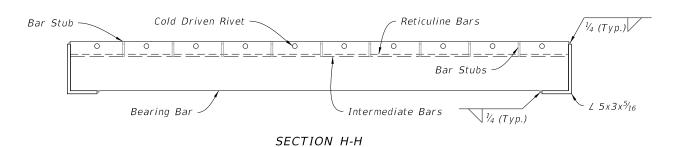
PLAN

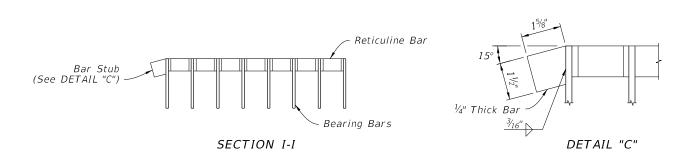


= PARALLEL BARS

NOTES:

- 1. Main Bars are $5"x^{1/4}$ ", notched for Cross Bars, and spaced equally apart.
- 2. Cross Bars are $1\frac{3}{4}$ " $x\frac{1}{4}$ " and continuously welded at Main Bar Notches.
- 3. Main Bars and Cross Bars are flush on top.





= RETICULINE BARS =

DESCRIPTION: LAST REVISION 11/01/20

FDOT

FY 2024-25 STANDARD PLANS

GUTTER INLET TYPE S

INDEX

STEEL GRATE DETAILS

SHEET

425-040 4 of 5

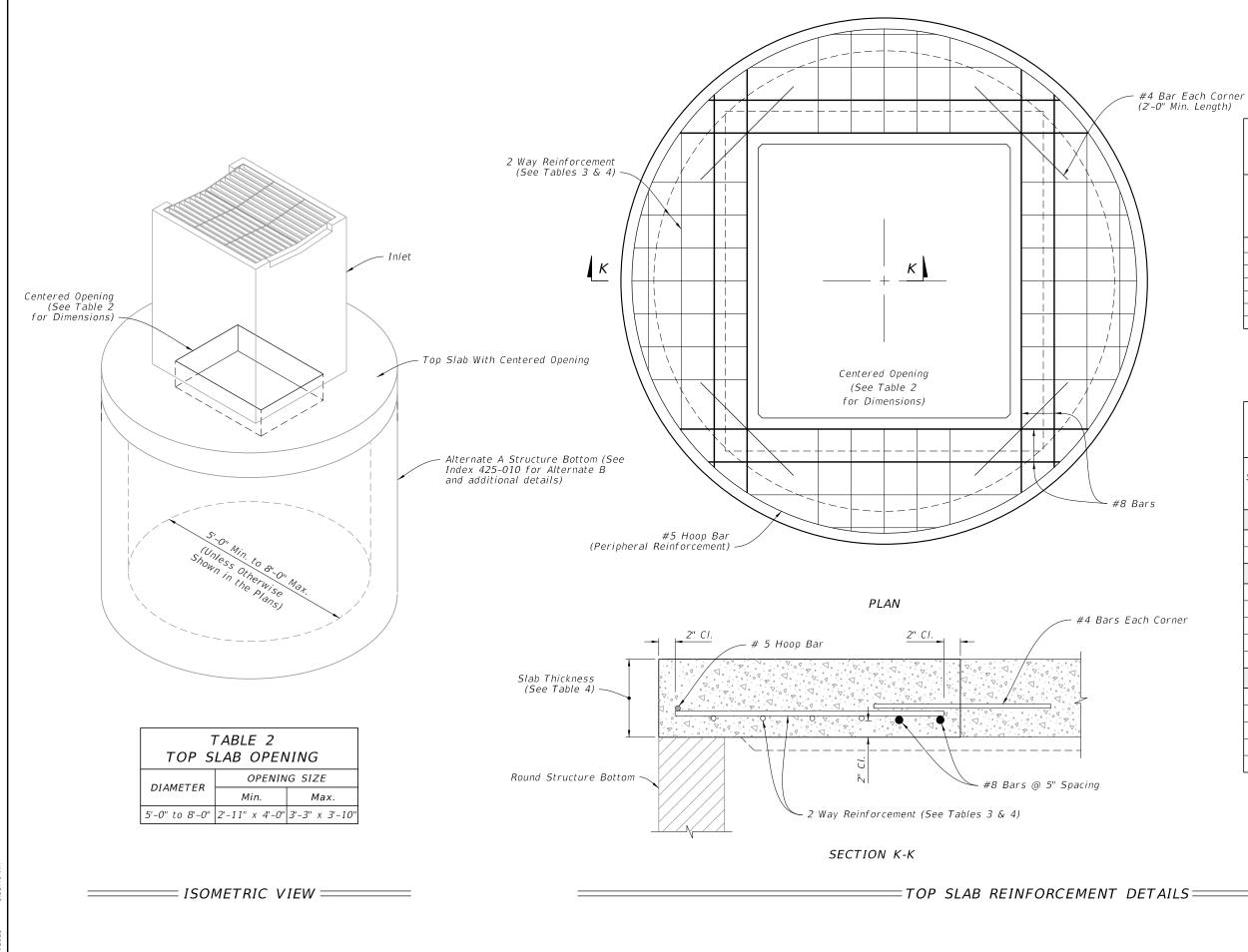


TABLE 3 TOP SLAB REINFORCING SCHEDULE

SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) In.²/ft.
Α	0.20
В	0.24
С	0.37
D	0.53
Ε	0.73
F	1.06
G	1.45

TABLE 4 TOP SLAB WITH CENTERED OPENING

CZMIZMED CI ZMINC			
STRUCTURE DEPTH	SLAB THICKNESS	REINFORCING (2 WAY) SCHEDULE	
	SIZE: 5'-0"		
≥0.5′<30′	91/2"	С	
30'<40'	9½"	D	
SIZE: 6'-0"			
≥0.5′<8′	91/2"	В	
8'<18'	9½"	С	
18'<30'	9½"	D	
30'<37'	9½"	Ε	
37'-40'	91/2"	G	
SIZE: 8'-0"			
≥0.5′<9′	11½"	С	
9'<15'	11½"	D	
15'<23'	111/2"	Е	
23'<33'	111/2"	Е	
33'-40'	11½"	G	

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

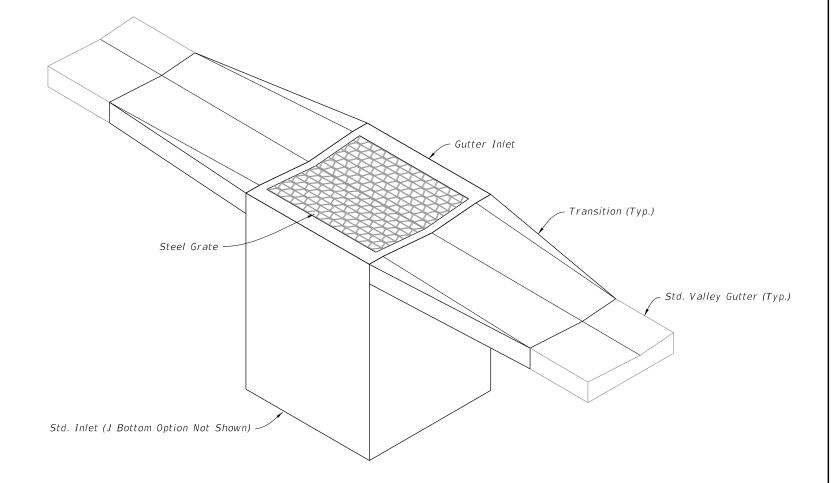
GUTTER INLET TYPE S

425-040

5 of 5

- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe to clear pipe $1\frac{1}{2}$ ".
- 3. Chamfer all exposed edges and corners $\frac{3}{4}$ " or tool to $\frac{1}{4}$ " radius.
- 4. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.

TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Dimensional and Reinforcing Details	
3	Steel Grate Details	
4	Alternate A Structure Bottom - Top Slab Details	

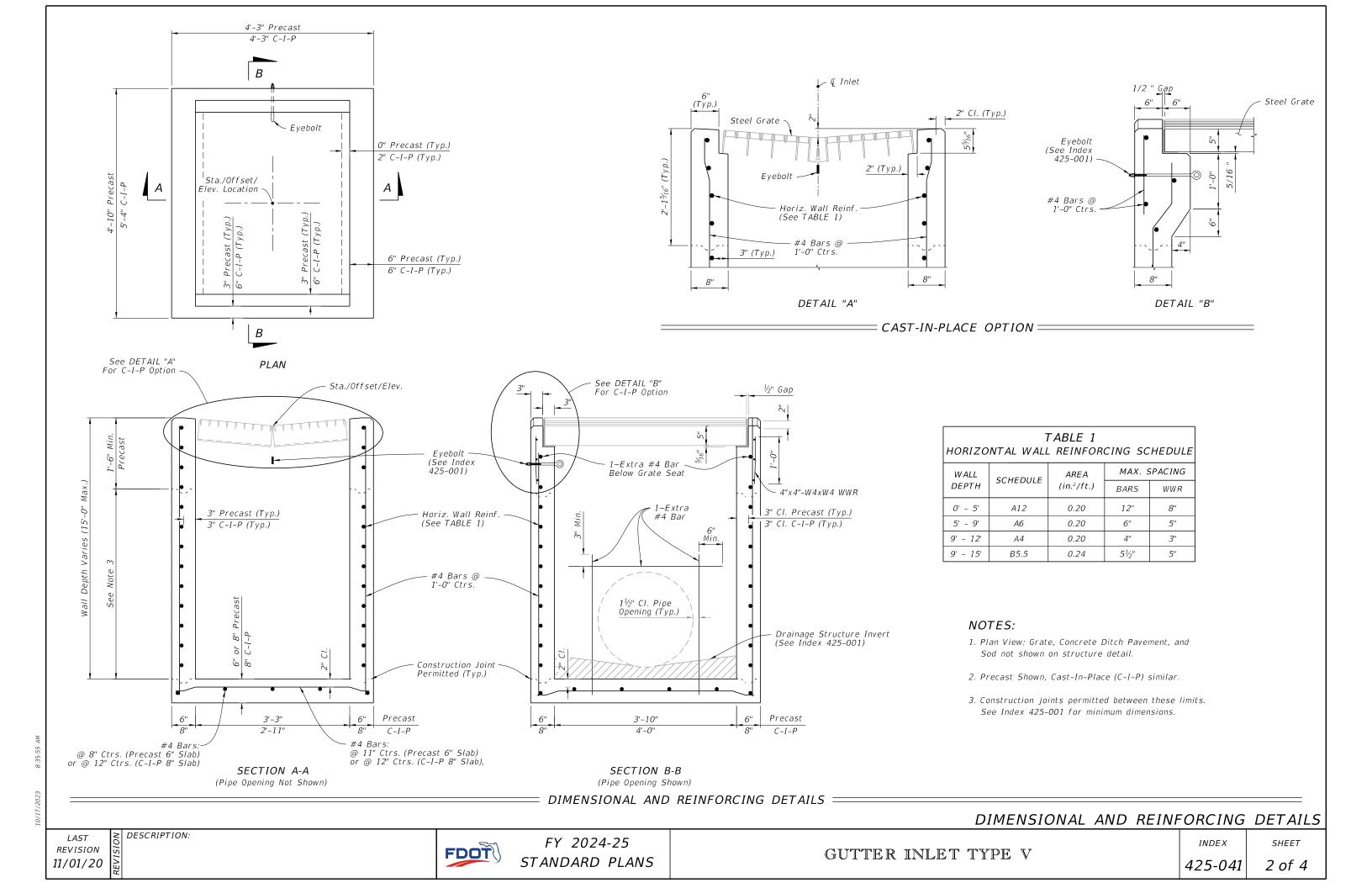


= GUTTER INLET TYPE V =====

(Pipe Opening Not Shown)

REVISION 11/01/20





4'-3"

Grate @

Bar $\frac{1}{4}$ "x1 $\frac{1}{2}$ "X5" (5 Required)

STEEL GRATE DETAILS

. - Inlet @

SHEET

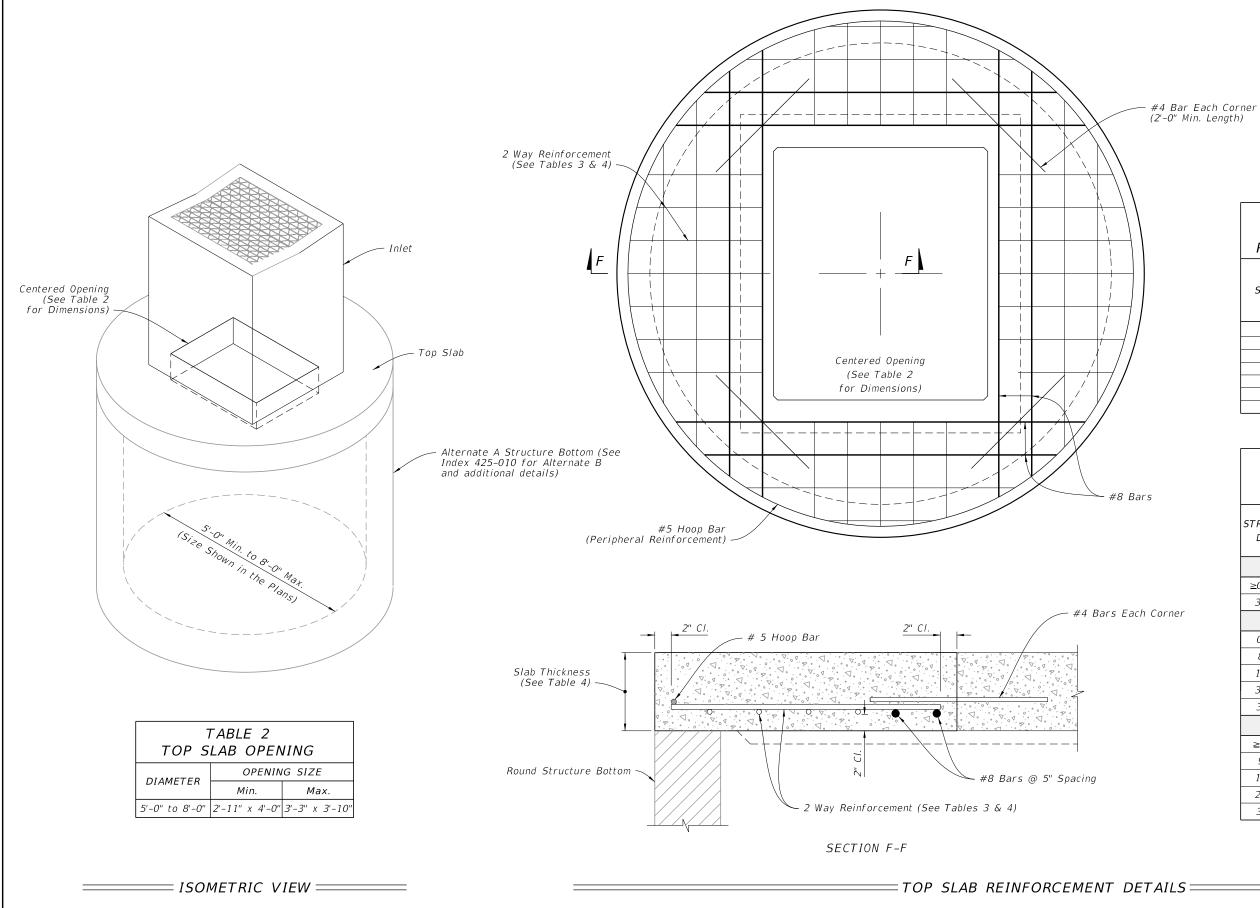


TABLE 3		
TOP SLAB		
REINFORCING SCHEDULE		
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) In.²/ft.	
Α	0.20	
В	0.24	
С	0.37	
D	0.53	
Е	0.73	
F	1.06	
G	1.45	

TABLE 4

TOP SLAB WITH CENTERED OPENING				
STRUCTURE DEPTH	SLAB THICKNESS	REINFORCING (2 WAY) SCHEDULE		
	SIZE: 5'-0"			
≥0.5′<30′	9½"	С		
30'<40'	9½"	D		
SIZE: 6'-0"				
0.5'<8'	9½"	В		
8'<18'	9½"	С		
18'<30'	9½"	D		
30'<37'	9½"	Е		
37'-40'	9½"	G		
SIZE: 8'-0"				
≥0.5′<9′	11½"	С		
9'<15'	11½"	D		
15'<23'	111/2"	E		
23'<33'	11½"	Ε		
33'-40'	11½"	G		
	CEN STRUCTURE DEPTH ≥0.5'<30' 30'<40' 0.5'<8' 8'<18' 18'<30' 30'<37' 37'-40' ≥0.5'<9' 9'<15' 15'<23' 23'<33'	CENTERED OF STRUCTURE DEPTH SLAB THICKNESS SIZE: 5'-0" $9\frac{1}{2}$ " ≥0.5'<30'		

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

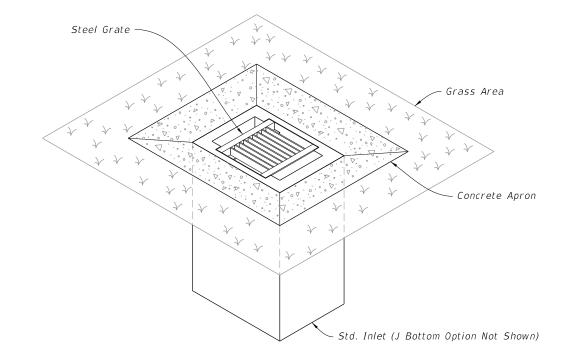
GUTTER INLET TYPE V

1NDEX 425-041 SHEET

4 of 4

- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. All reinforcing is Grade 60 bars with 2" minimum cover unless otherwise noted. Cut or bend bars out of way of pipe to clear pipe by $1\frac{1}{2}$ ". See Index 425-001 for equivalent area of welded wire fabric.
- 2. Chamfer all exposed edges and corners $\frac{3}{4}$ " or tooled to $\frac{1}{4}$ " radius.
- 4. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
- 5. Quantities are for informational and estimating purposes only.

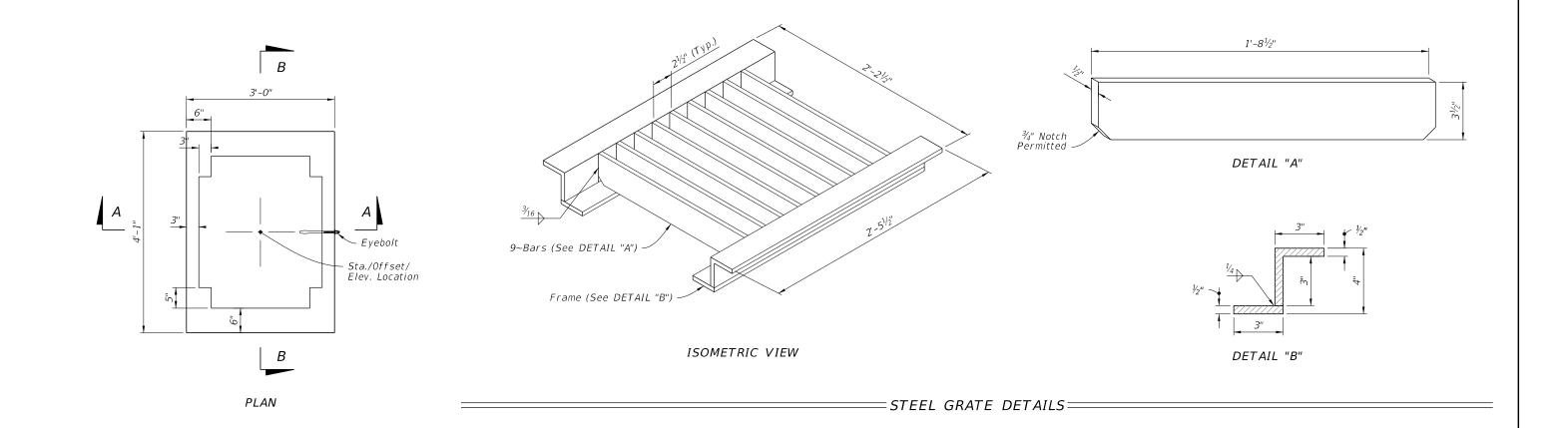
	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Dimensional, Reinforcing, and Steel Grate Details
3	Concrete Apron and Sodded Area Details
4	Alternate A Structure Bottom - Top Slab Details



DITCH BOTTOM INLET TYPE A

(Pipe Opening Not Shown)

11/01/20



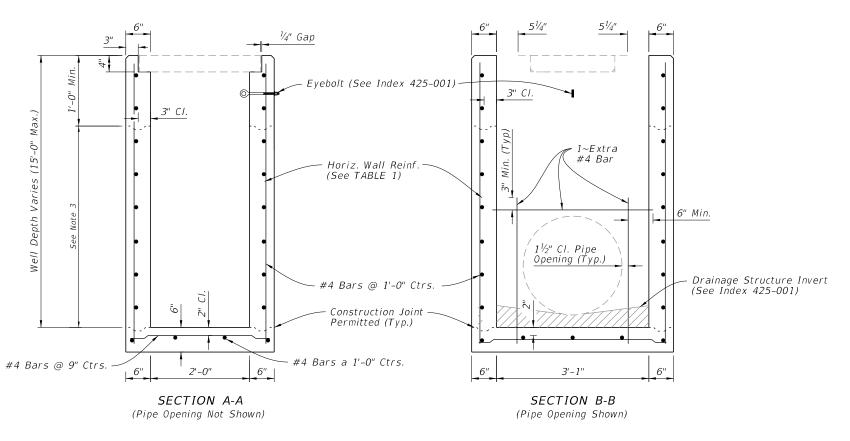


TABLE 1 HORIZONTAL WALL REINFORCING SCHEDULE				
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. S	SPACING WWR
0' - 10'	A12	0.20	12"	8"
10' - 15'	A6	0.20	6"	5"

NOTES:

- 1. Plan View: The Steel Grate, Concrete Apron, and Sod are not shown.
- 2. See Sheet 3 for Concrete Apron and Sodded Area details.
- 3. Construction joints permitted between these limits. See Index 425-001 for minimum dimensions.

DIMENSIONAL AND REINFORCING DETAILS

DIMENSIONAL, REINFORCING, AND STEEL GRATE DETAILS

REVISION 11/01/20

DESCRIPTION:

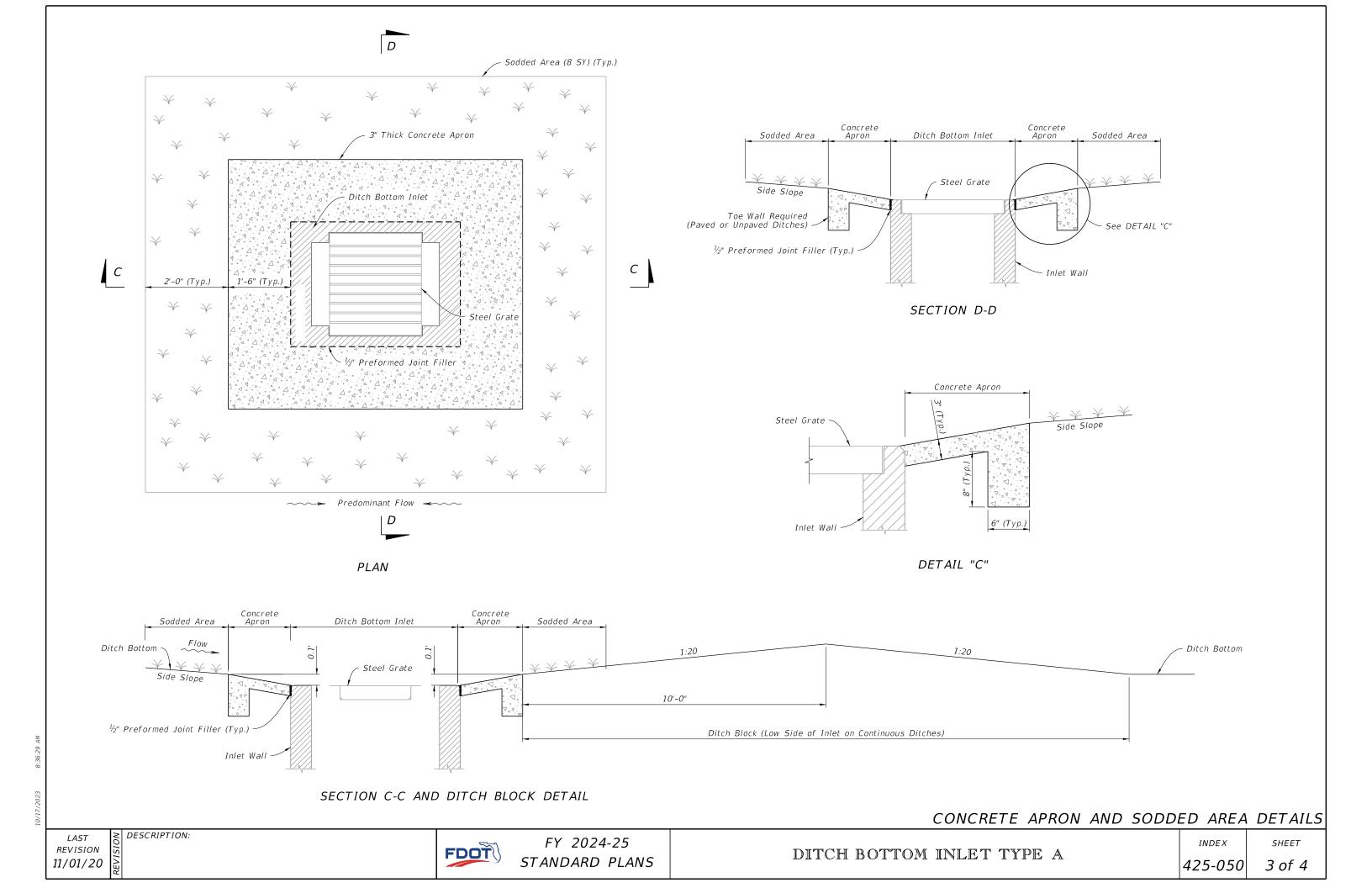
FY 2024-25 STANDARD PLANS

DITCH BOTTOM INLET TYPE A

INDEX 425-050

SHEET 2 of 4

FDOT



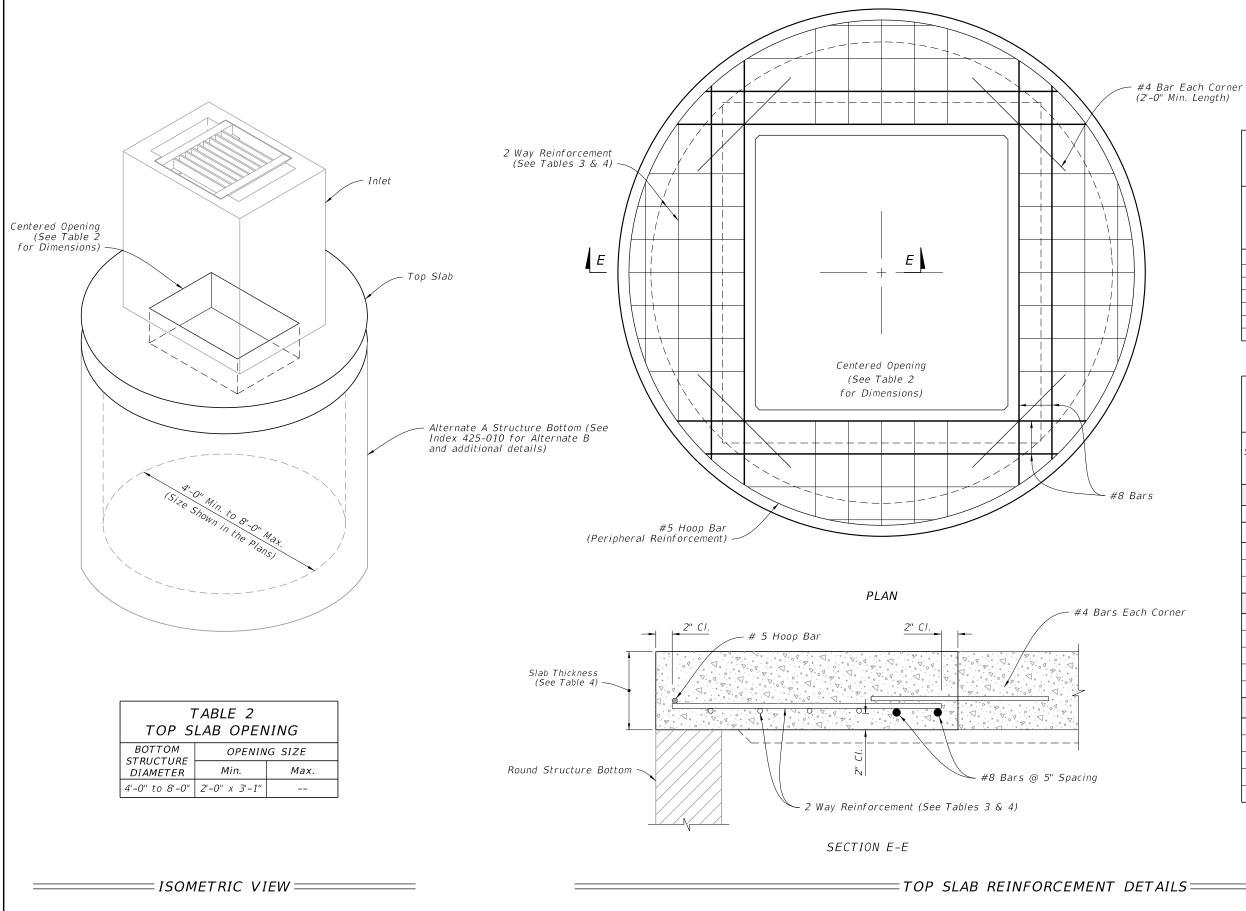


TABLE 3		
TOP SLAB		
REINFORCING SCHEDULE		
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) In.²/ft.	
Α	0.20	
В	0.24	
С	0.37	
D	0.53	
Е	0.73	

TABLE 4

1.06 1.45

TOP SLAB WITH CENTERED OPENING		
STRUCTURE DEPTH	SLAB THICKNESS	REINFORCING (2 WAY) SCHEDULE
	SIZE: 4'-0"	
≥0.5'-40'	91/2"	С
SIZE: 5'-0"		
≥0.5′<30′	91/2"	С
30'-40'	9½"	D
	SIZE: 6'-0"	
0.5'<8'	9½"	В
8'<18'	9½"	С
18'<30'	9½"	D
30'<37'	91/2"	Е
37'-40'	9½"	G
SIZE: 8'-0"		
≥0.5'<9'	$11\frac{1}{2}$ "	С
9'<15'	11½"	D
15'<23'	111/2"	Е
23'<33'	11½"	Е
33'-40'	111/2"	G

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

LAST REVISION 11/01/20

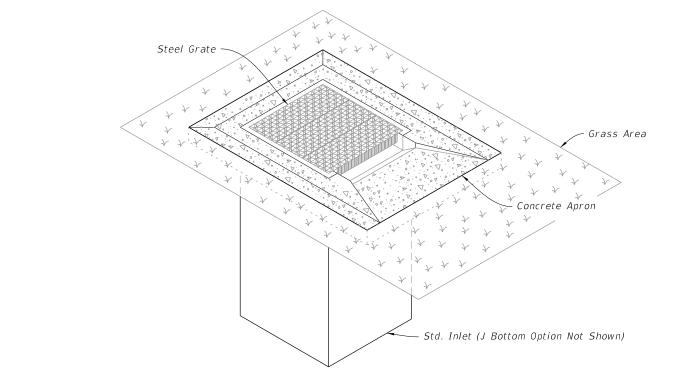
DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

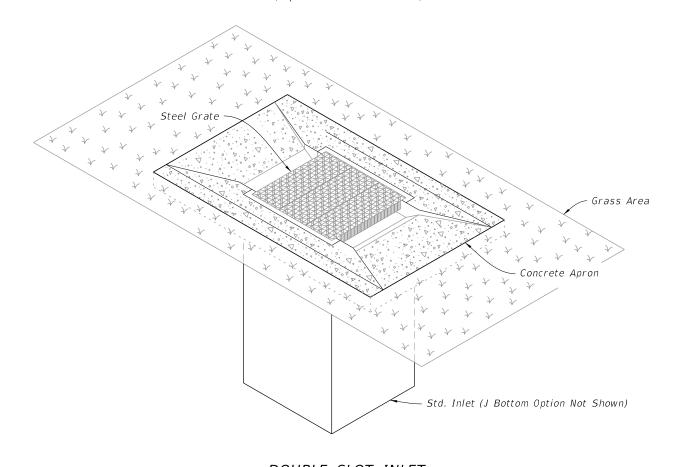
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. All reinforcing is Grade 60 bars with 2" minimum cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire fabric. Bars to be cut or bent for min. $1\frac{1}{2}$ " clearance around pipe.
- 3. Chamfer all exposed edges and corners $\frac{3}{4}$ " or tooled to $\frac{1}{4}$ " radius.
- 4. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.
- 5. Quantities are for informational and estimating purposes only.

	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Dimensional, Reinforcing, and Grate Details
3	Traversable Top Details
4	Concrete Apron and Sodded Area Details
5	Alternate A Structure Bottom – Top Slab Details



SINGLE SLOT INLET =

(Pipe Connection Not Shown)



DOUBLE SLOT INLET ===

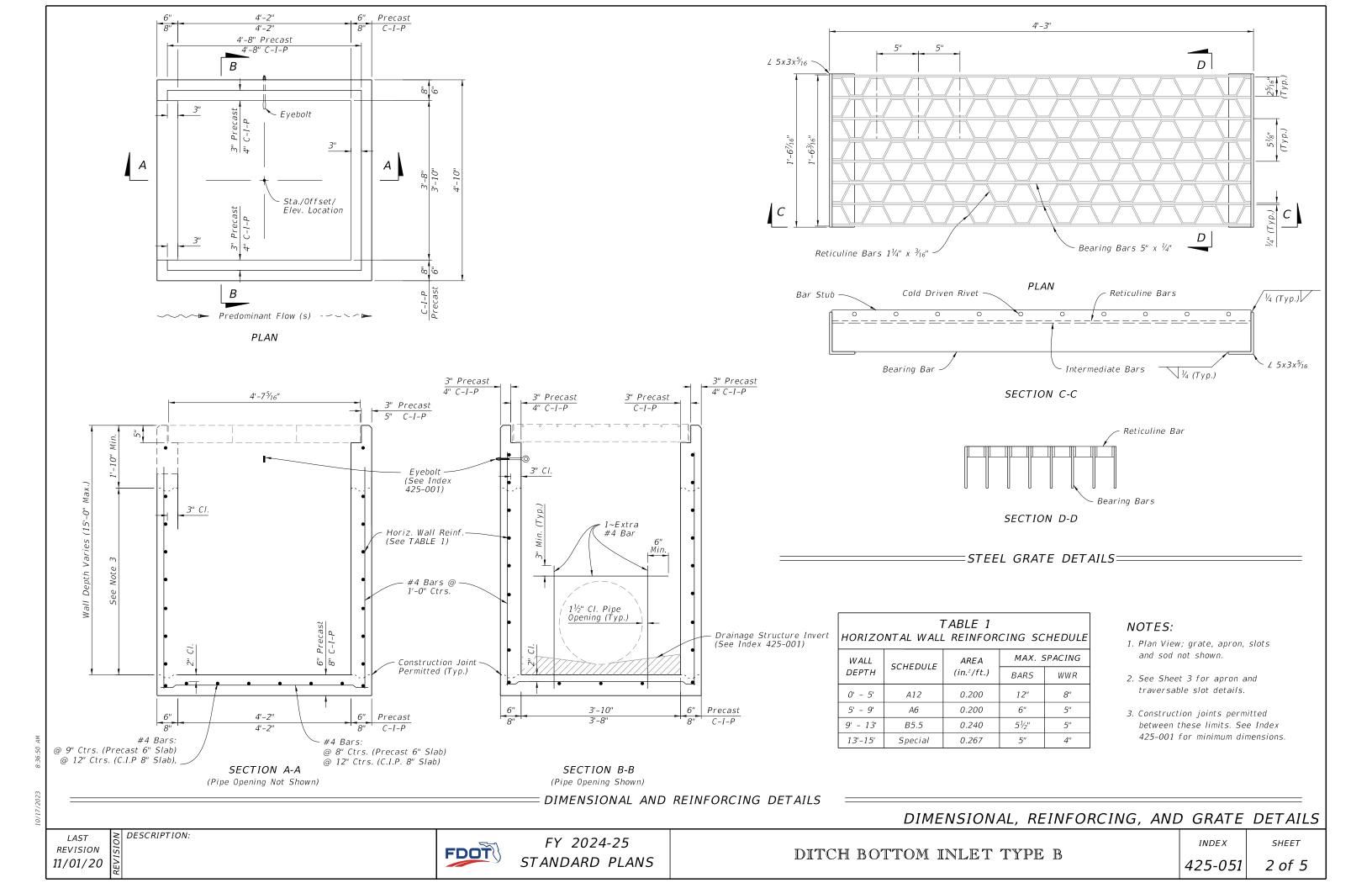
(Pipe Connection Not Shown)

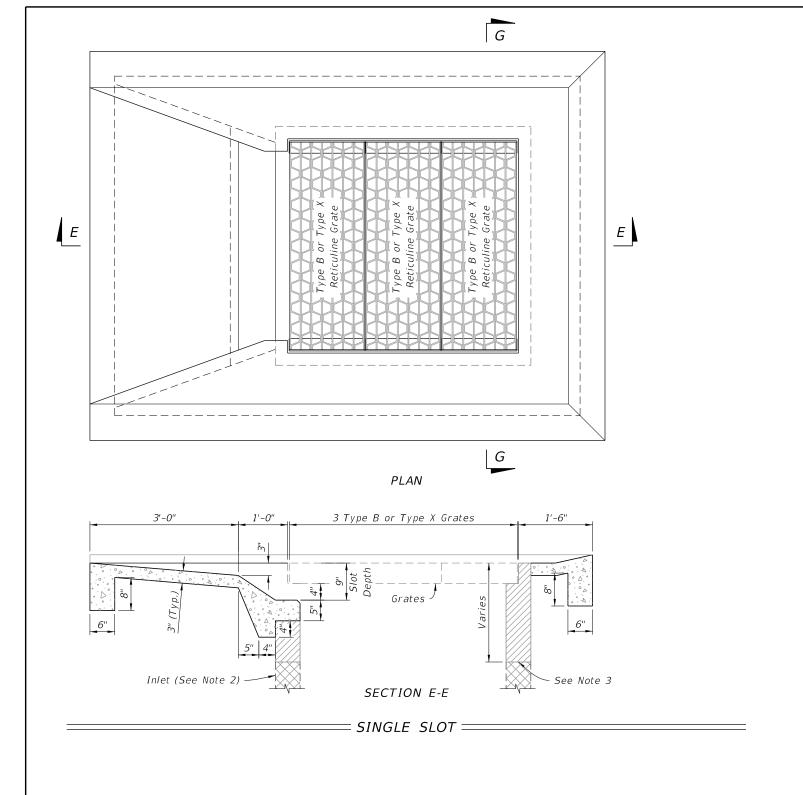
DITCH BOTTOM INLET TYPE B

REVISION 11/01/20

DESCRIPTION:

FDOT

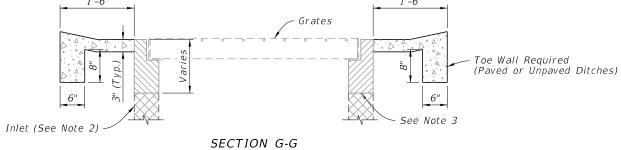




G PLAN1'-0" 3 Type B or Type X Grates Inlet (See Note 2) SECTION F-F DOUBLE SLOT

NOTES:

- 1. These traversable tops are for new or existing Type B Inlets and for conversion of existing Type X Inlets.
- 2. Inlet box (line type indicates existing box to facilitate depiction of partial construction on existing inlets)
- 3. On new boxes the traversable top may be cast as a monolithic unit or cast in segments, and the location of this line may be lower to facilitate handling and placement; however, the slot depth is to remain at 9 inches. See Index 425-001 for top to wall connection. For converting to traversable tops on existing inlets remove concrete to this line and expose the existing reinforcement. Reshape or splice in reinforcement to penetrate the rim and returns of the grate seat, and bend the reinforcement into the slot shelf to extend into the abutting throat pavement.
- 4. See Sheet 2 for Precast and C-I-P dimensions.



TRAVERSABLE TOP DETAILS

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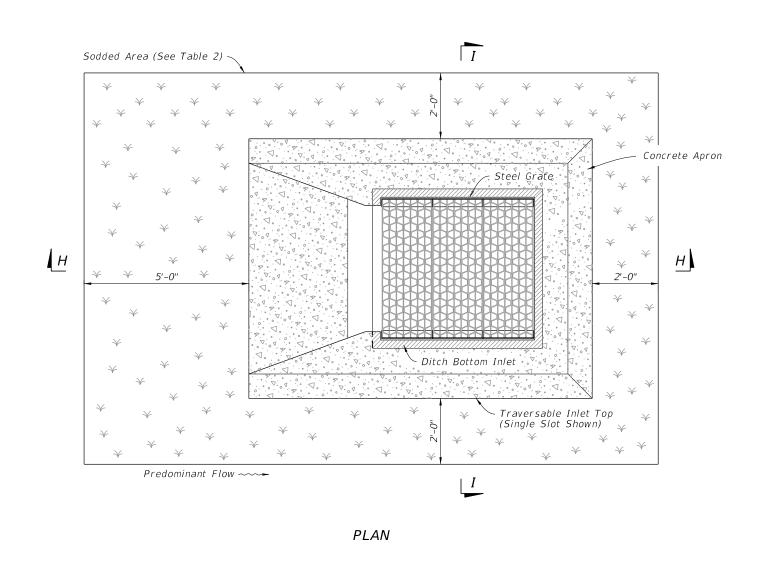
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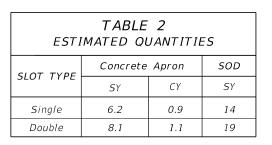
FY 2024-25 STANDARD PLANS

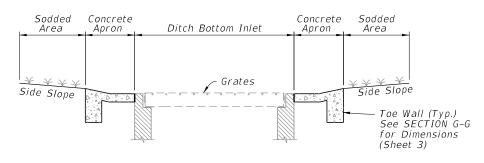
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SHEET

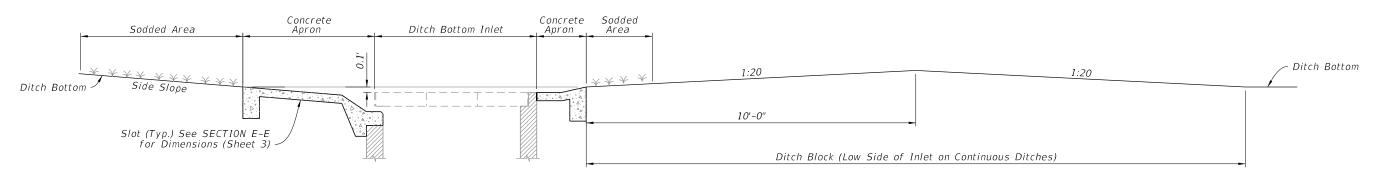
F







SECTION I-I



SECTION H-H AND DITCH BLOCK

CONCRETE APRON AND SODDED AREA DETAILS

LAST DESCRIPTION:
REVISION 11/01/20

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DITCH BOTTOM INLET TYPE B

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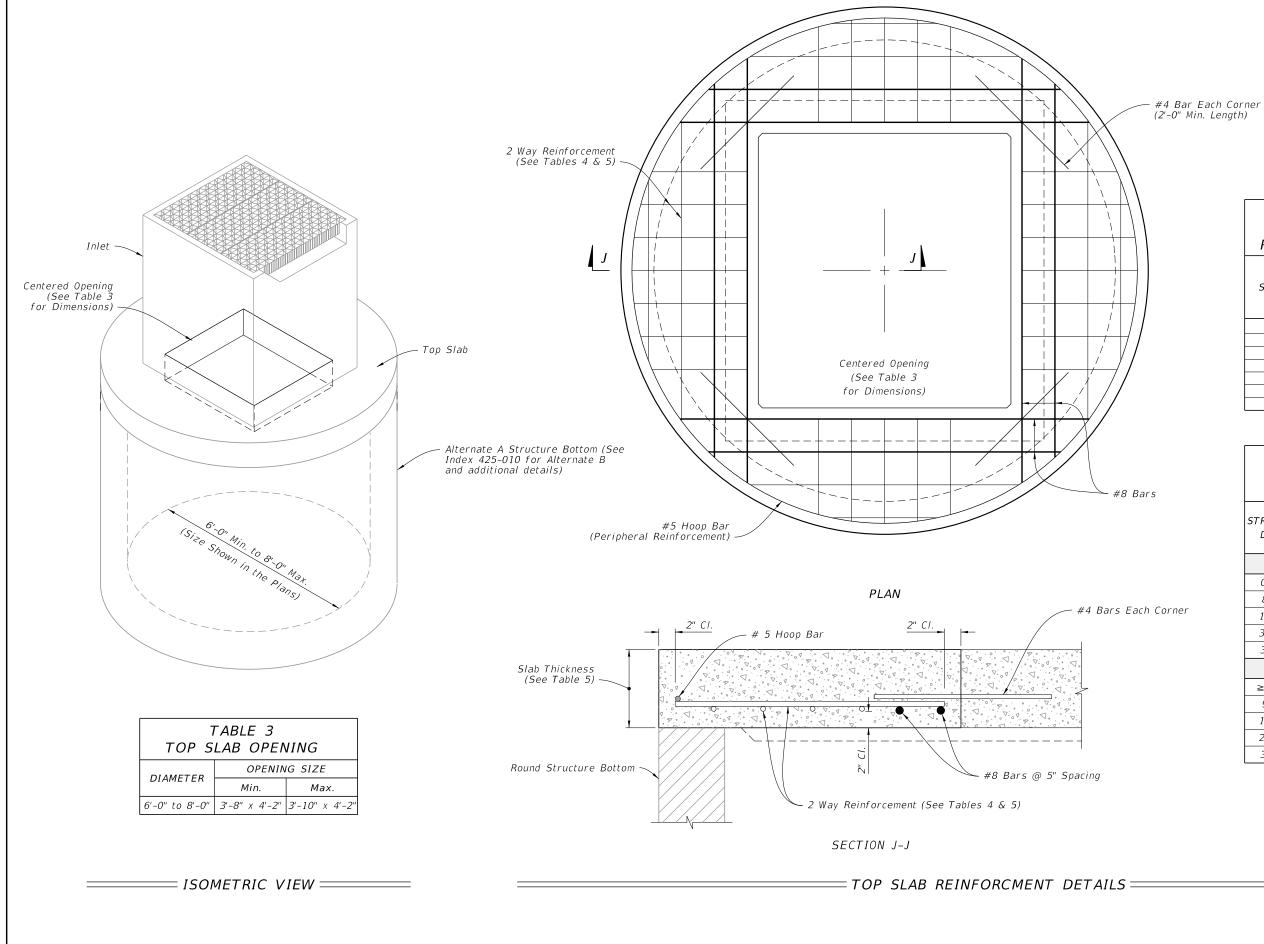


TABLE 4 TOP SLAB REINFORCING SCHEDULE		
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) In.²/ft.	
Α	0.20	
В	0.24	
С	0.37	
D	0.53	
Е	0.73	
F	1.06	
G	1.45	

TABLE 5

TOP SLAB WITH CENTERED OPENING				
STRUCTURE DEPTH	SLAB THICKNESS	REINFORCING (2 WAY) SCHEDULE		
	SIZE: 6'-0"			
0.5'<8'	91/2"	В		
8'<18'	91/2"	С		
18'<30'	91/2"	D		
30'<37'	91/2"	Е		
37'-40'	91/2"	G		
	SIZE: 8'-0"			
≥0.5'<9'	11½"	С		
9'<15'	111/2"	D		
15'<23'	111/2"	E		
23'<33'	11½"	E		
33'-40'	11½"	G		

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

DITCH BOTTOM INLET TYPE B

INDEX 425-051

SHEET 5 of 5

2. Chamfer all exposed edges and corners $\frac{3}{4}$ " chamfer or tooled to $\frac{1}{4}$ " radius.

3. All reinforcing is Grade 60 bars with 2" minimum. cover unless otherwise noted. Cut or bend bars for $1\frac{1}{2}$ " clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening.

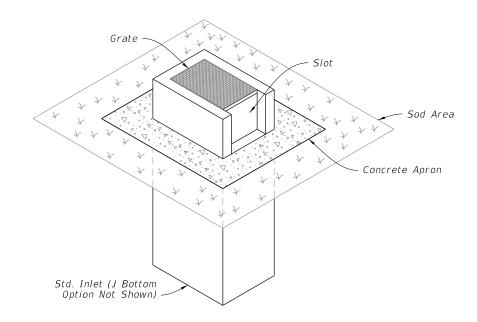
4. Use Concrete Apron on inlets without slots and inlets with non-traversable slots only when called for in the Plans.

5. Quantities are for informational and estimating purposes only.

6. Slots are not permitted on sides with grate seats.

Std. Inlet (J Bottom Option Not Shown)
====== DITCH BOTTOM INLET TYPE C ===================================

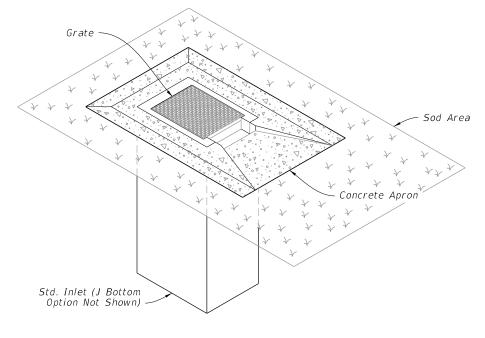
(Without Slot - Type D, E, and H Similar, Pipe Connection Not Shown)



——— DITCH BOTTOM INLET TYPE C *NON-TRAVERSABLE*

(Slot > 7" Shown - Type D, E, and H Similar, Pipe Connection Not Shown)

TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Type C - Dimensional, Reinforcing, and Grate Details	
3	Type D – Dimensional, Reinforcing, and Grate Details	
4	Type E – Dimensional, Reinforcing, and Grate Details	
5	Type H (2 & 3 Grate) – Dimensional, Reinforcing, and Steel Grate Details	
6	Type H (4 Grate) – Dimensional, Reinforcing, and Steel Grate Details	
7	Cast Iron Grate Details	
8	Non-Traversable Inlet Details	
9	Traversable Inlet Without Slot Details	
10	Traversable Inlet With Slot Details	
11	Case 1 – Add Traversable Slots to Existing Inlets	
12	Case 2 – Add Traversable Slots (Partial) to Existing Inlets	
13	Case 3 – Add Traversable Slots (Partial) to Existing Inlets and Ditch Block	
14	Alternate A Structure Bottom - Top Slab Details	

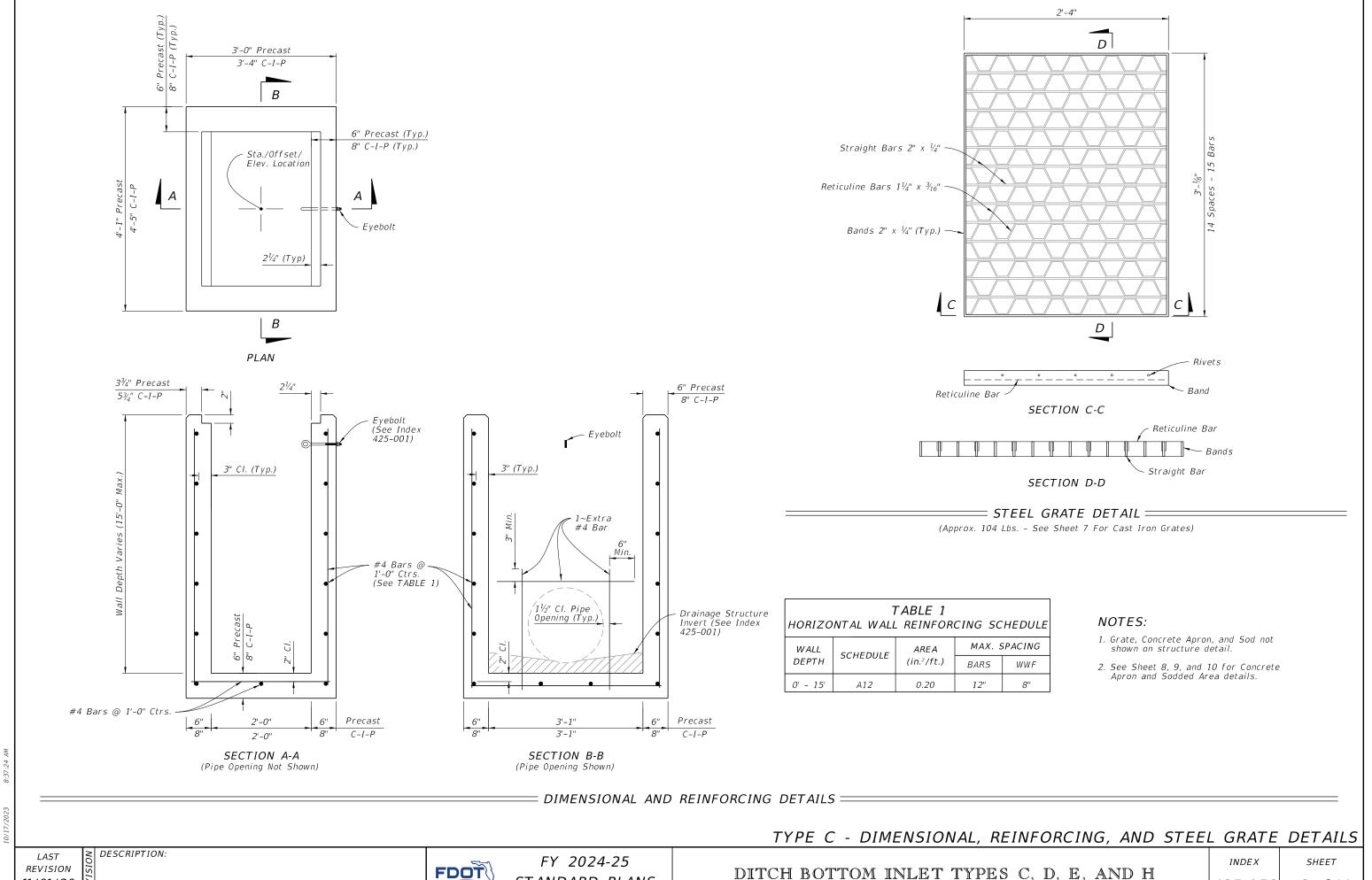


= DITCH BOTTOM INLET TYPE C ====== TRAVERSABLE

(Single Slot < 7" Shown, Double Slot, Type D, and E Similar, Pipe Connection Not Shown)

REVISION 11/01/23

DESCRIPTION:



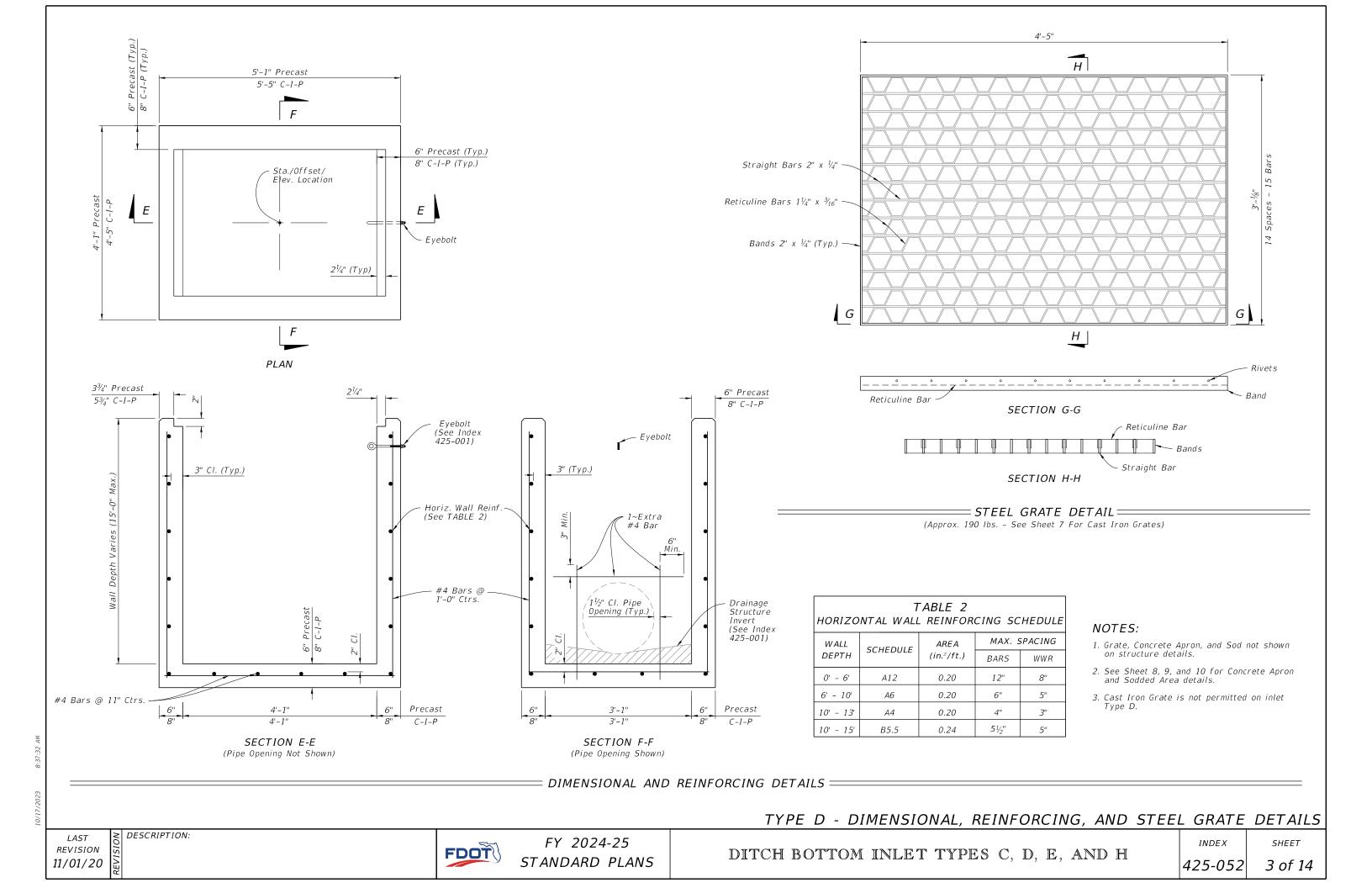
11/01/20

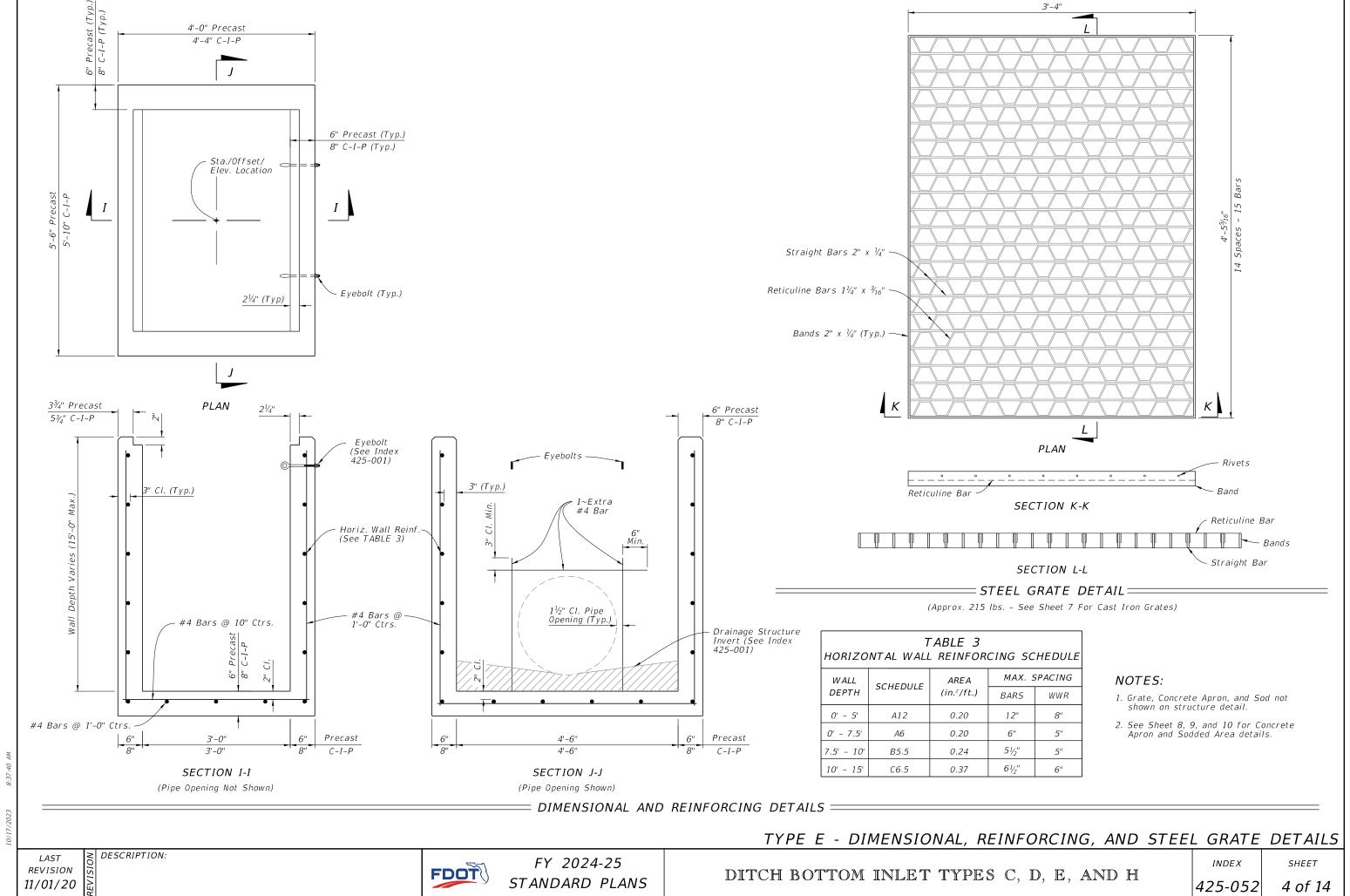
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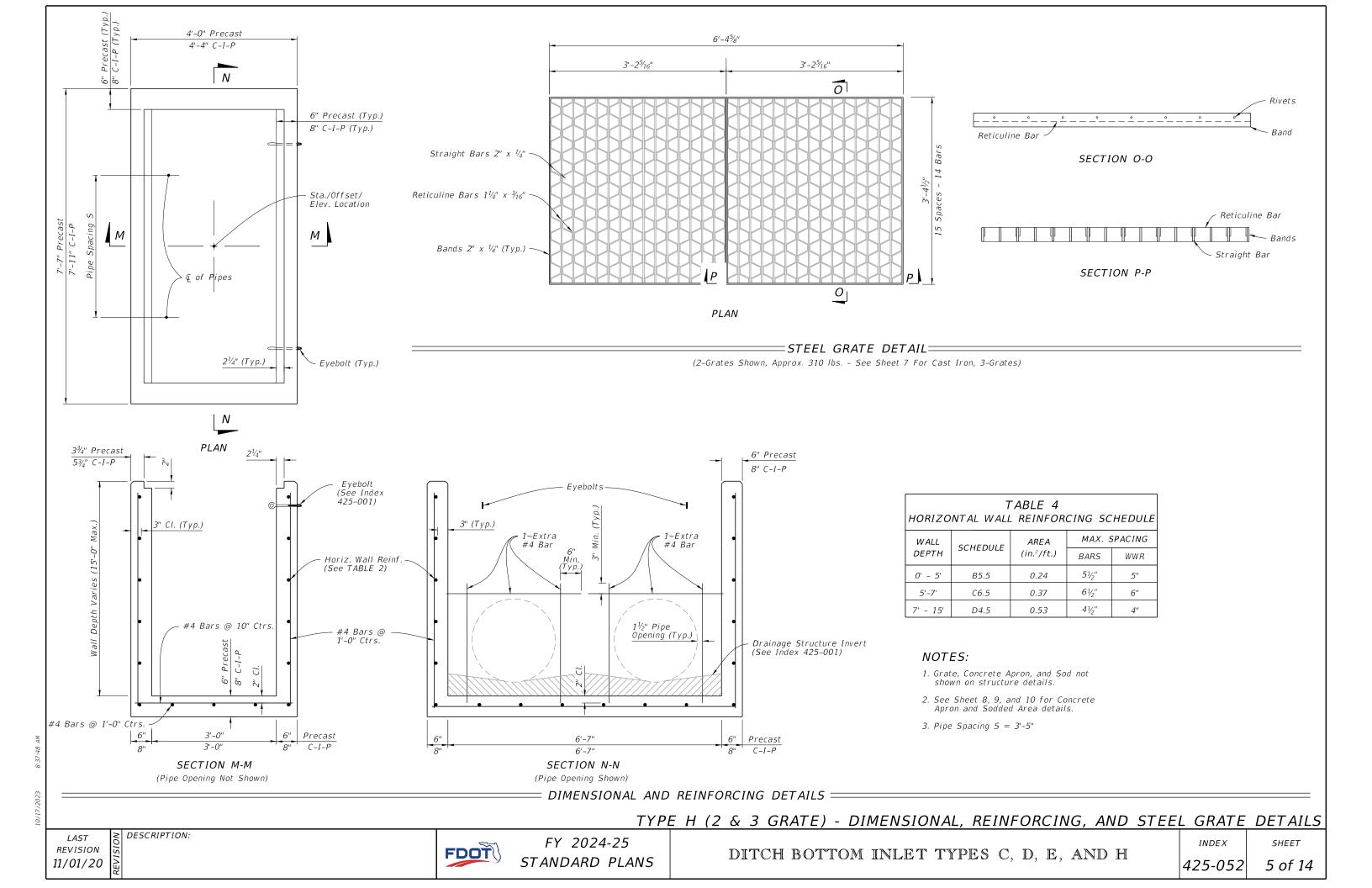
STANDARD PLANS

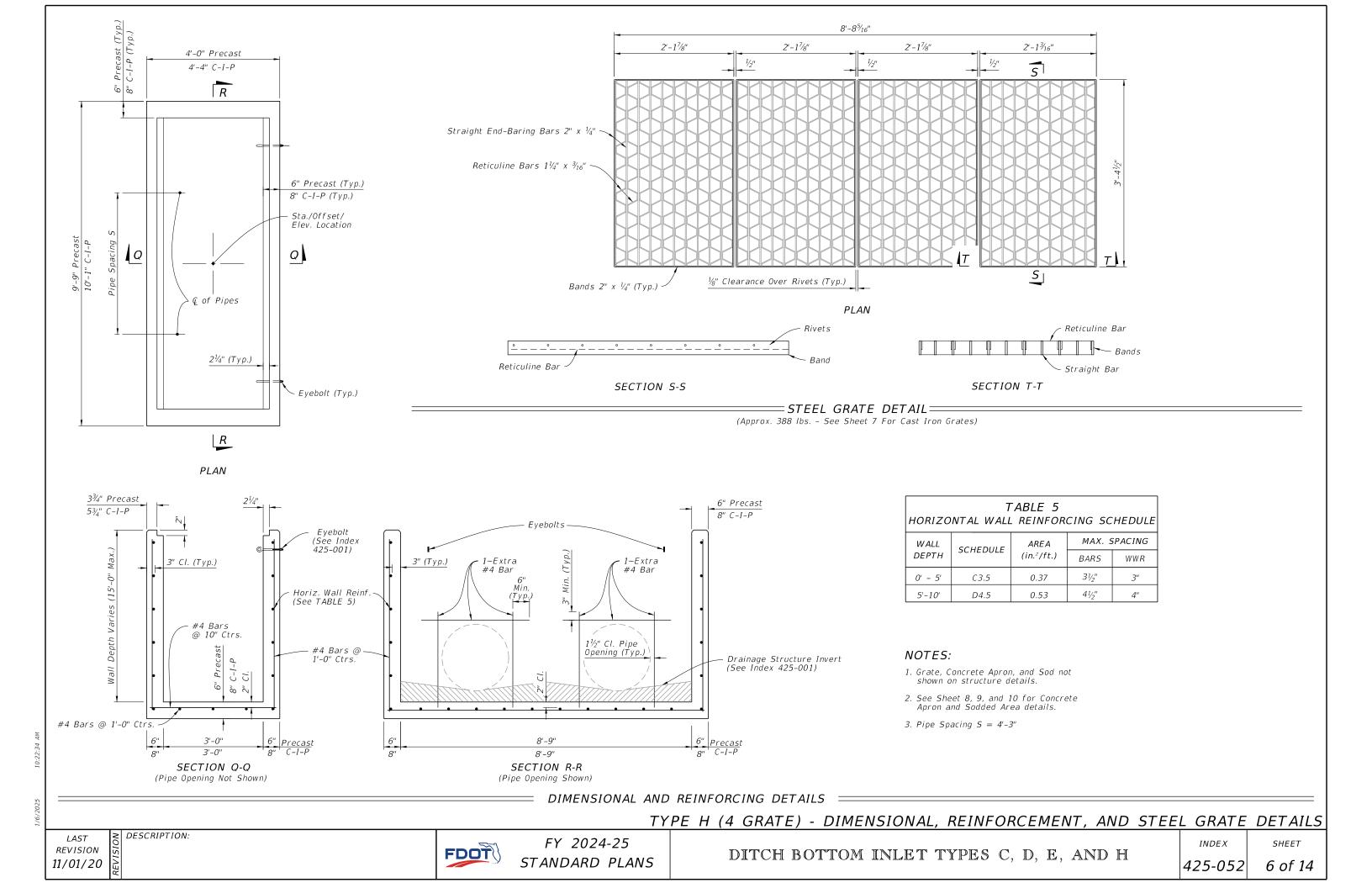
DITCH BOTTOM INLET TYPES C, D, E, AND H

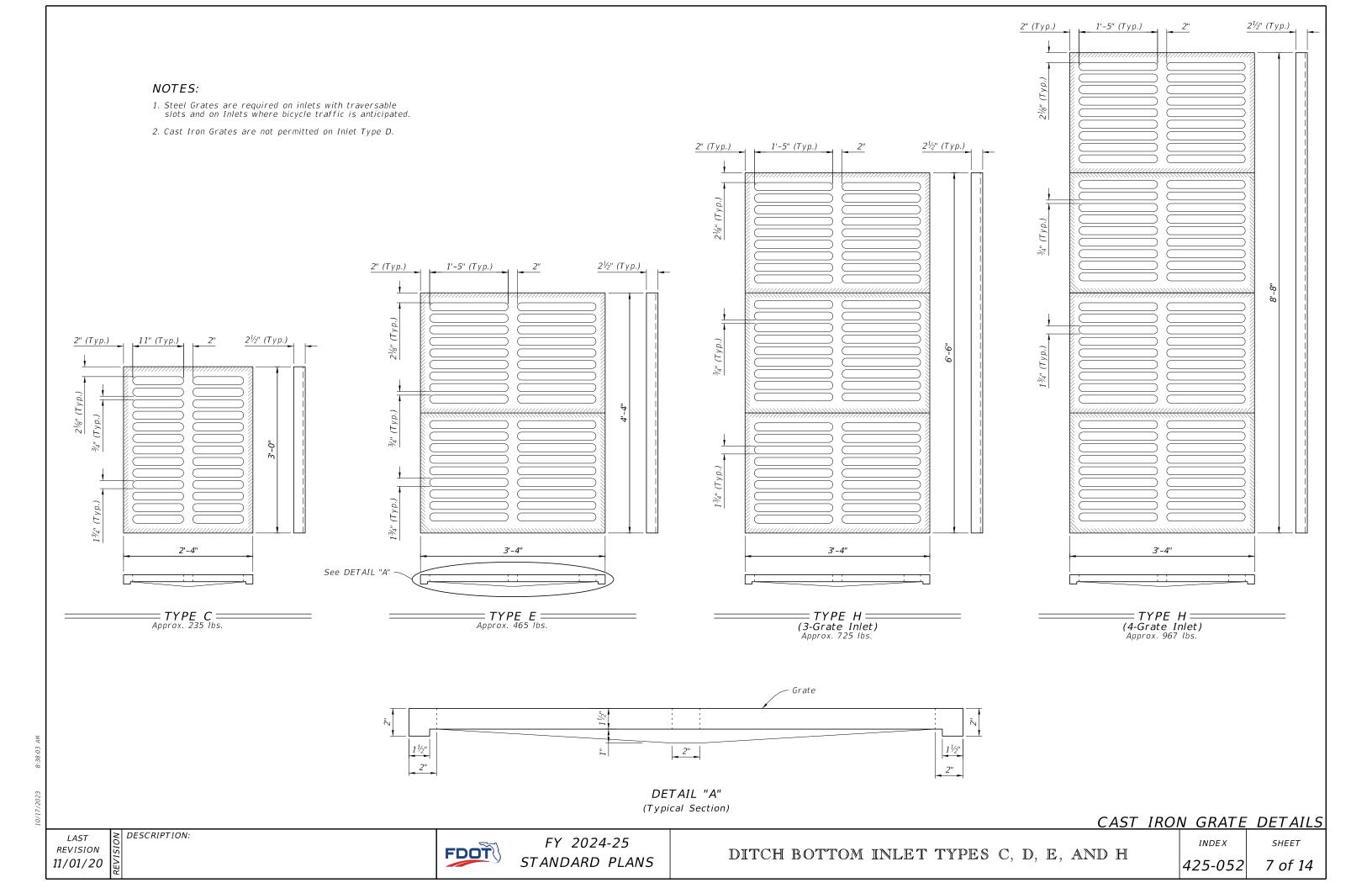
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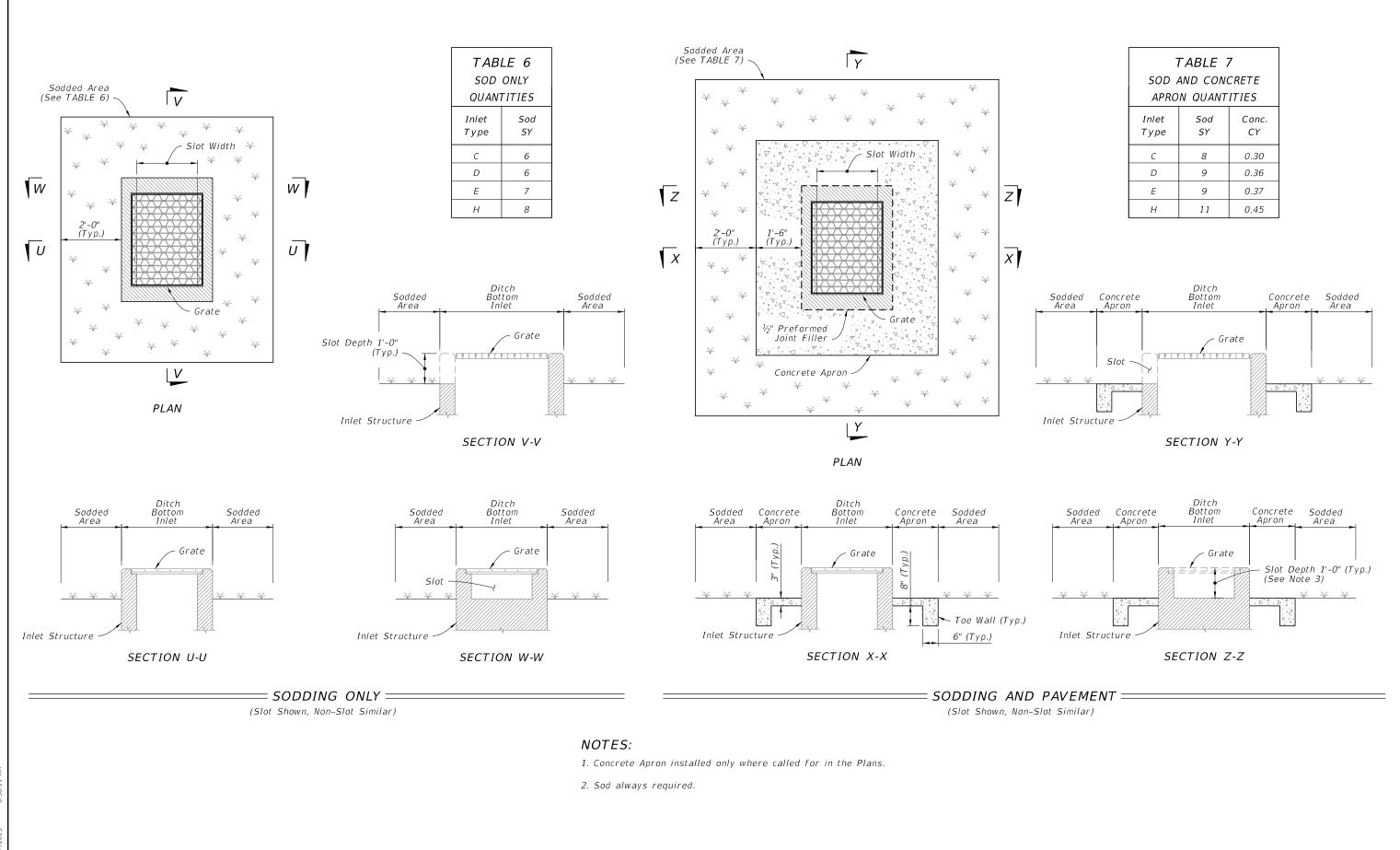












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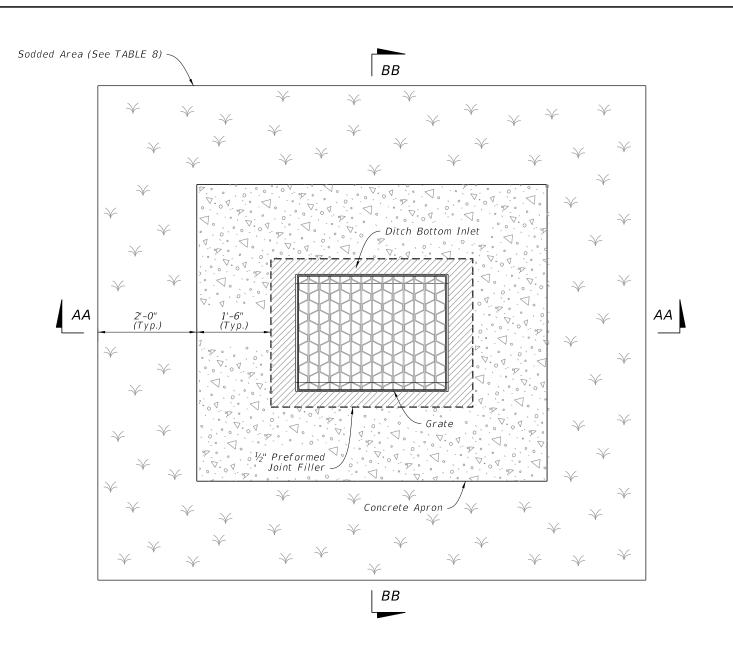
DITCH BOTTOM INLET TYPES C, D, E, AND H

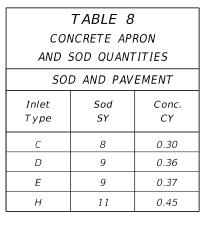
INDEX 425-052

NON-TRAVERSABLE INLET DETAILS

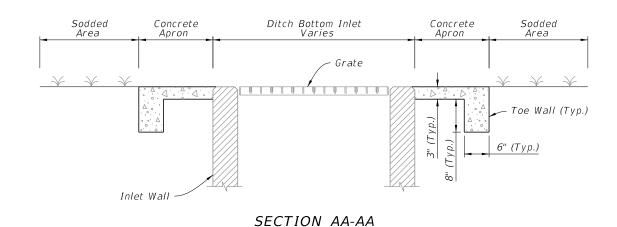
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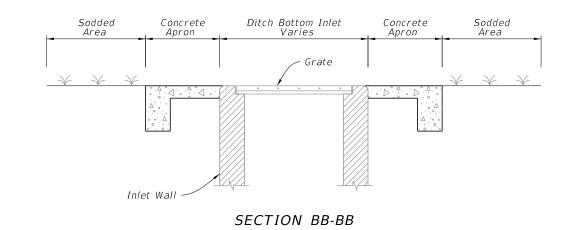
SHEET





- 1. Concrete Apron to be installed only where called for in the Plans.
- 2. Sod always required.



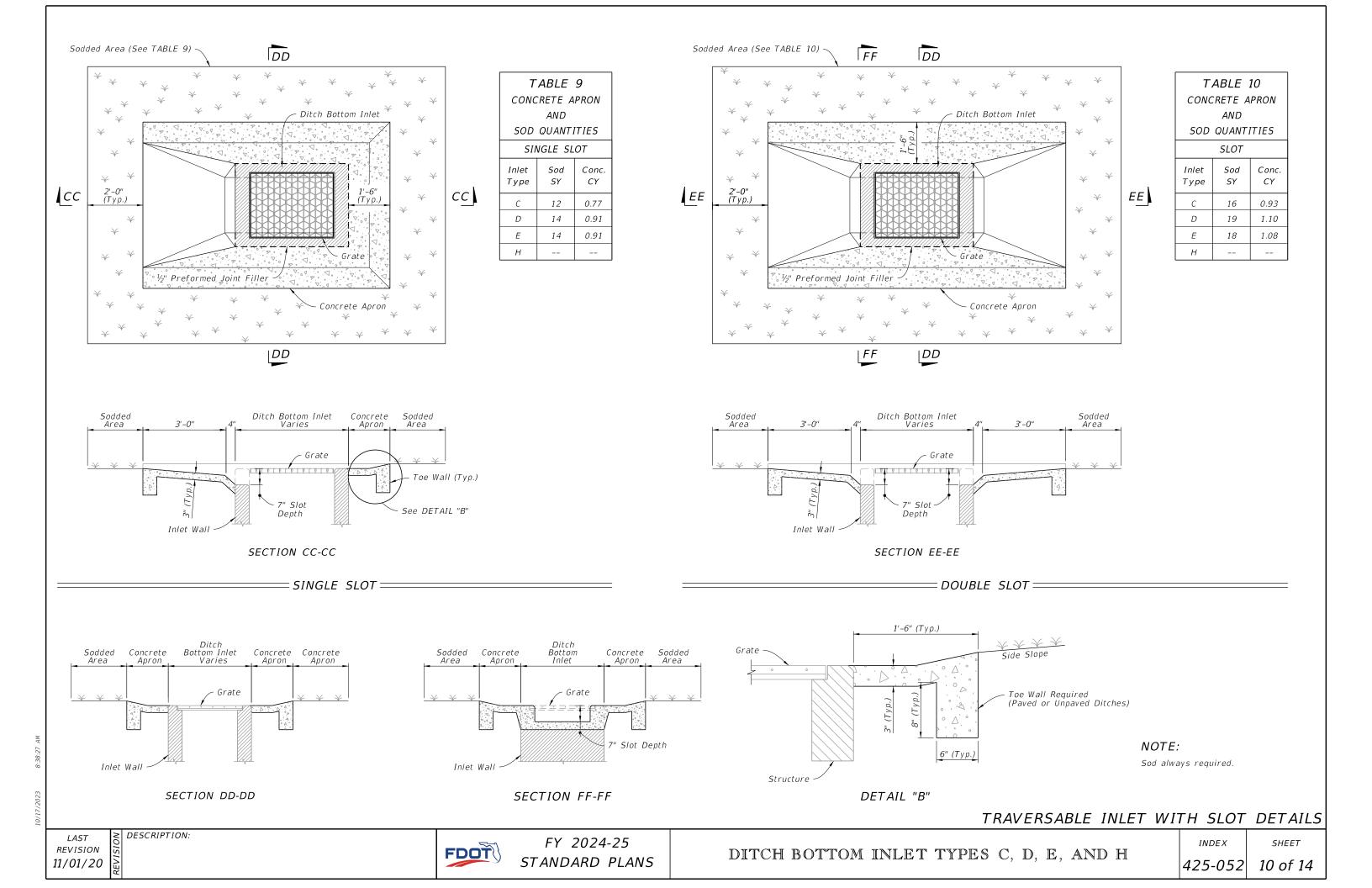


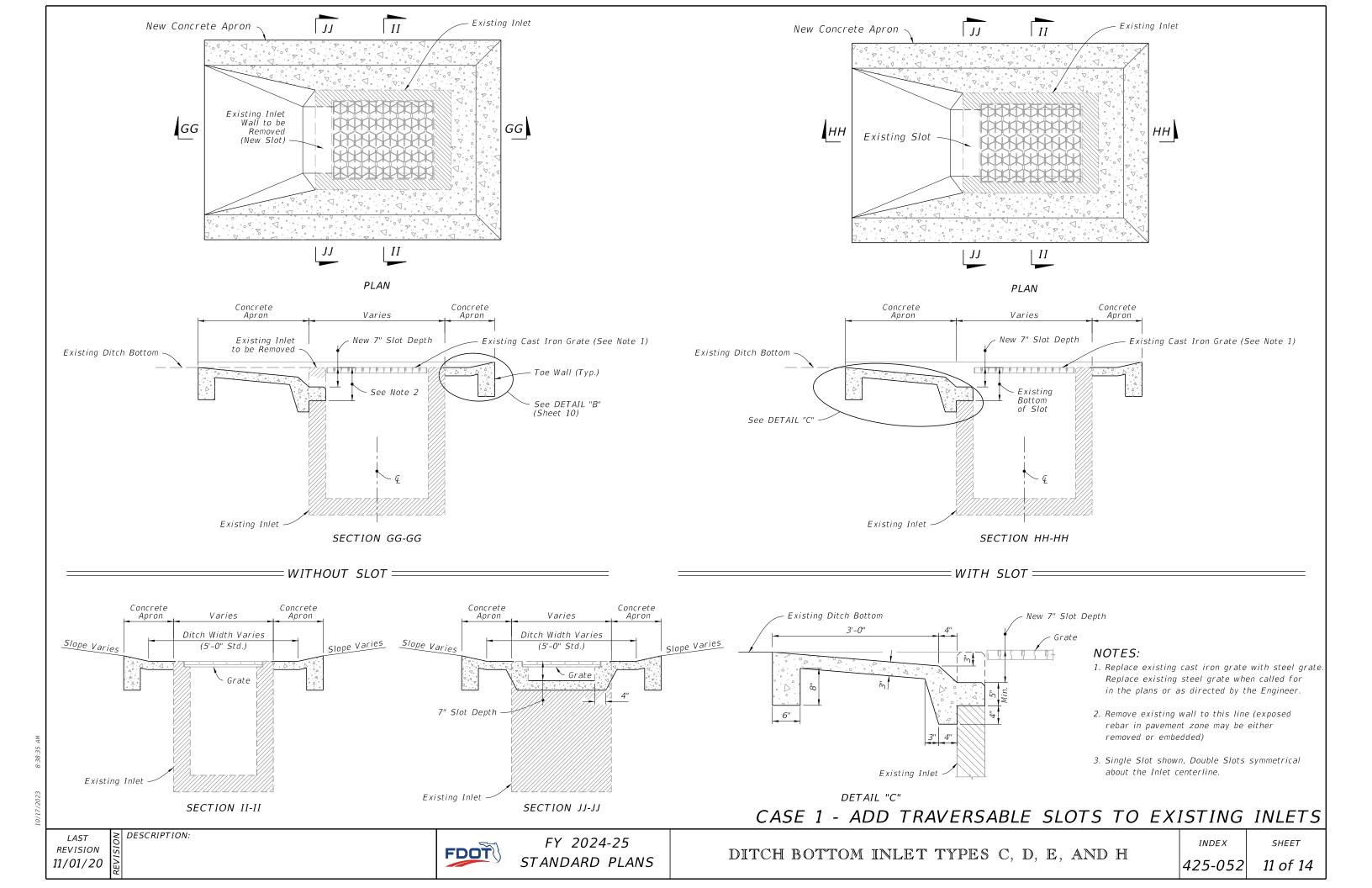
TRAVERSABLE INLET WITHOUT SLOT DETAILS

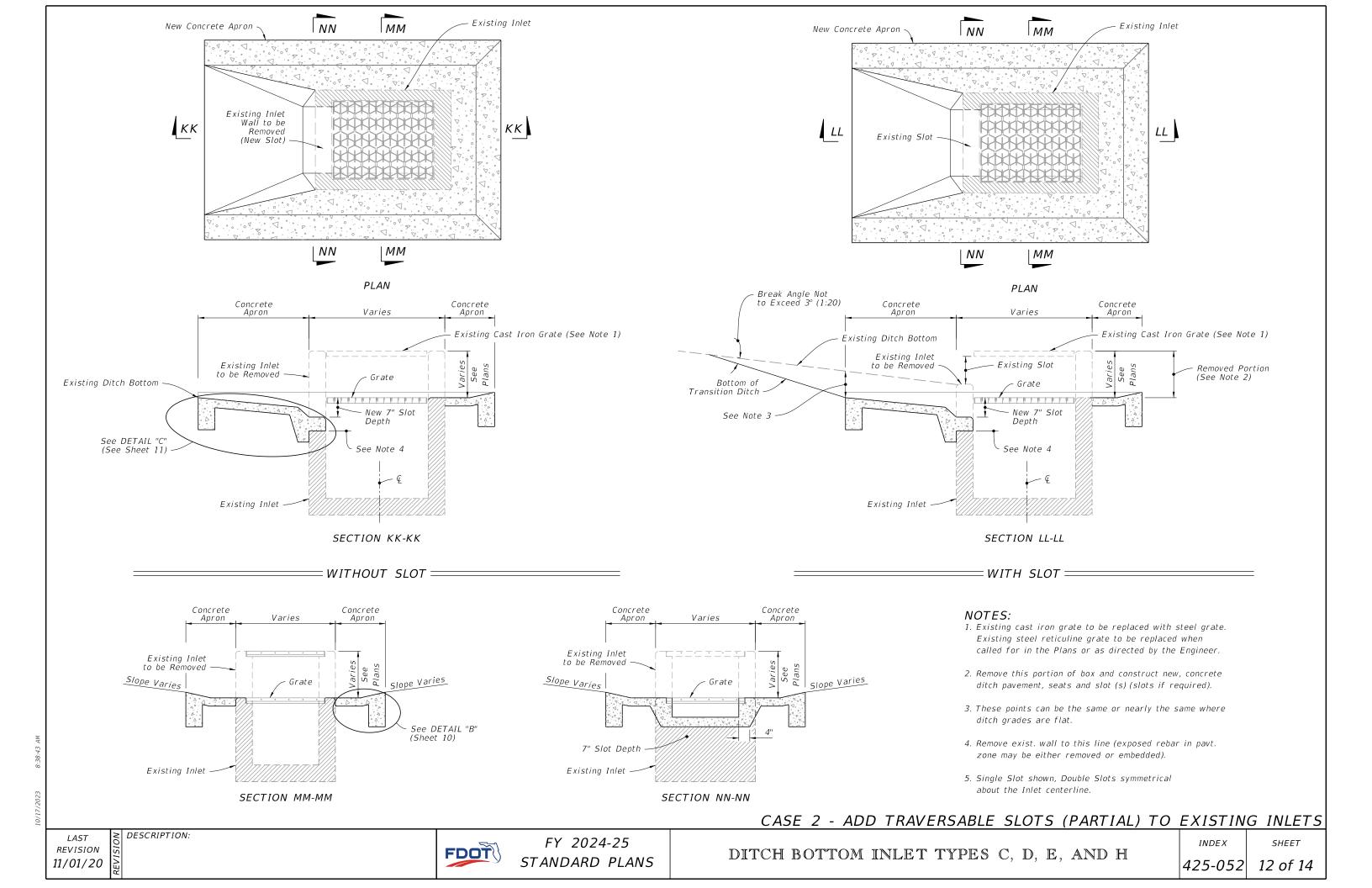
LAST OF DESCRIPTION:
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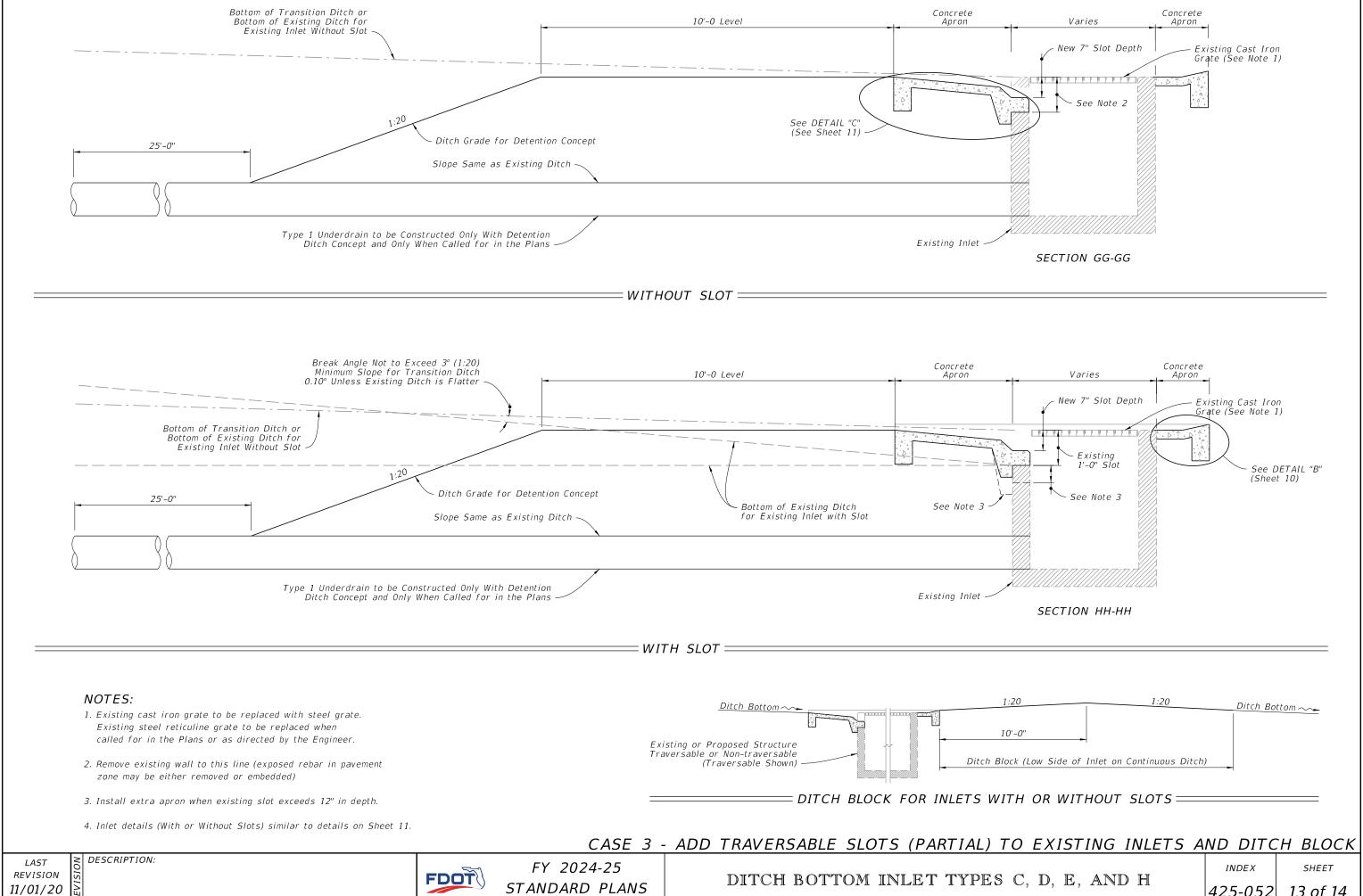
FDOT

FY 2024-25 STANDARD PLANS









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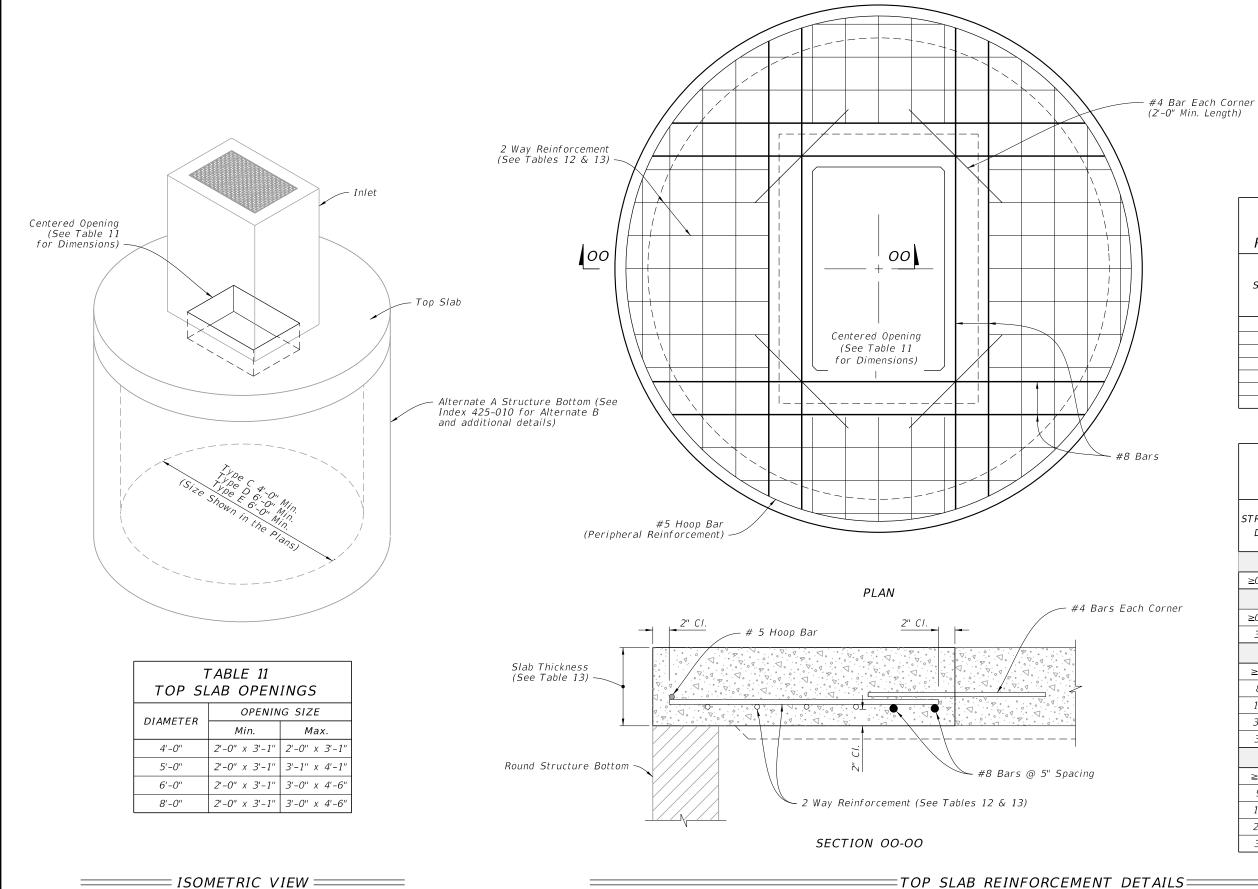


TABLE 12 TOP SLAB REINFORCING SCHEDULE		
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE REINFORCING) In.²/ft.	
Α	0.20	
В	0.24	
С	0.37	
D	0.53	
Е	0.73	
F	1.06	
G	1.45	

TABLE 13

TOP SLAB WITH CENTERED OPENING				
STRUCTURE SLAB DEPTH THICKNESS		REINFORCING (2 WAY) SCHEDULE		
	SIZE: 4'-0"			
≥0.5′<40′	91/2"	В		
	SIZE: 5'-0"			
≥0.5′<30′	≥0.5'<30' 9½" C			
30'-40'	91/2"	D		
	SIZE: 6'-0"			
≥0.5'<8' 9½" B		В		
8'<18'	91/2"	С		
18'<30'	9½"	D		
30'<37'	9½"	Е		
37'-40'	9½"	G		
	SIZE: 8'-0"			
≥0.5′<9′	≥0.5'<9' 11½" C			
9'<15'	11½"	D		
15'<23'	11½"	Е		
23'<33'	11½"	Е		
33'-40'	11½"	G		

= TOP SLAB REINFORCEMENT DETAILS =

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

REVISION 11/01/20

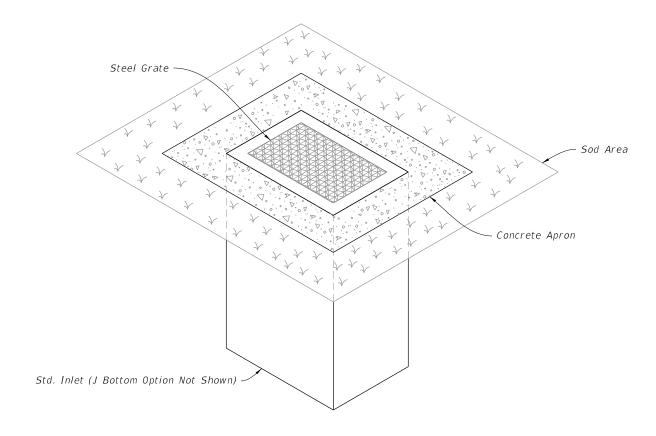
DESCRIPTION:

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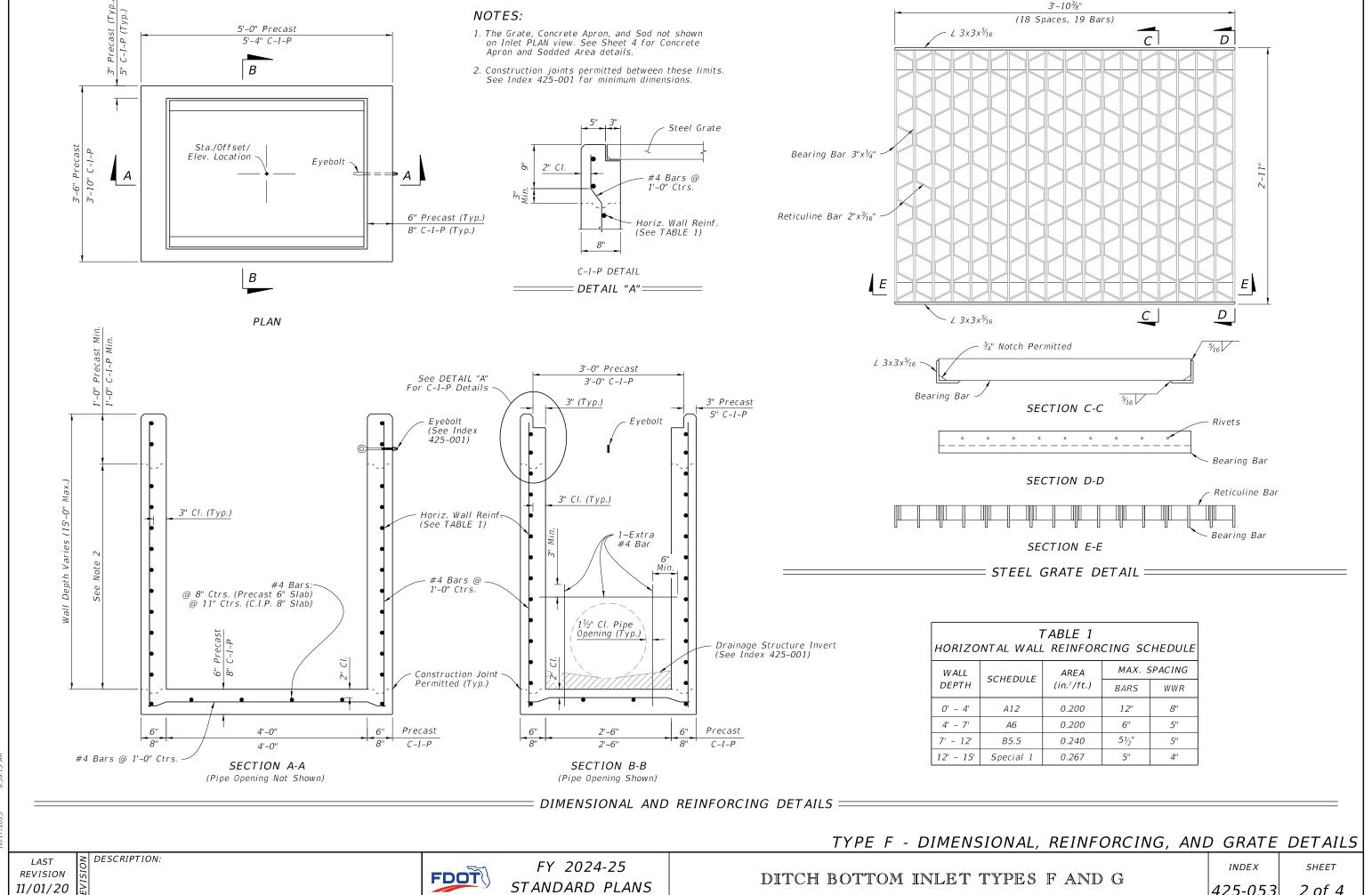
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. When inlet is placed in areas subject to bicycle traffic, install filler bar when clearance or gap is greater than $\frac{5}{8}$ " as shown in Index 425-031.
- 3. These inlets may be used with Alternate B structure bottoms, Index 425-010.
- 4. Chamfer all exposed edges and corners $\frac{3}{4}$ " chamfer or tooled to $\frac{1}{4}$ " radius.
- 5. See Index for supplemental details.
- 6. Reinforcing bars are Grade 60 with 2" minimum cover unless otherwise noted. Cut or bend bars to provide $1\frac{1}{2}$ " clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening as shown.
- 7. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.
- 8. Quantities are for informational and estimating purposes only.

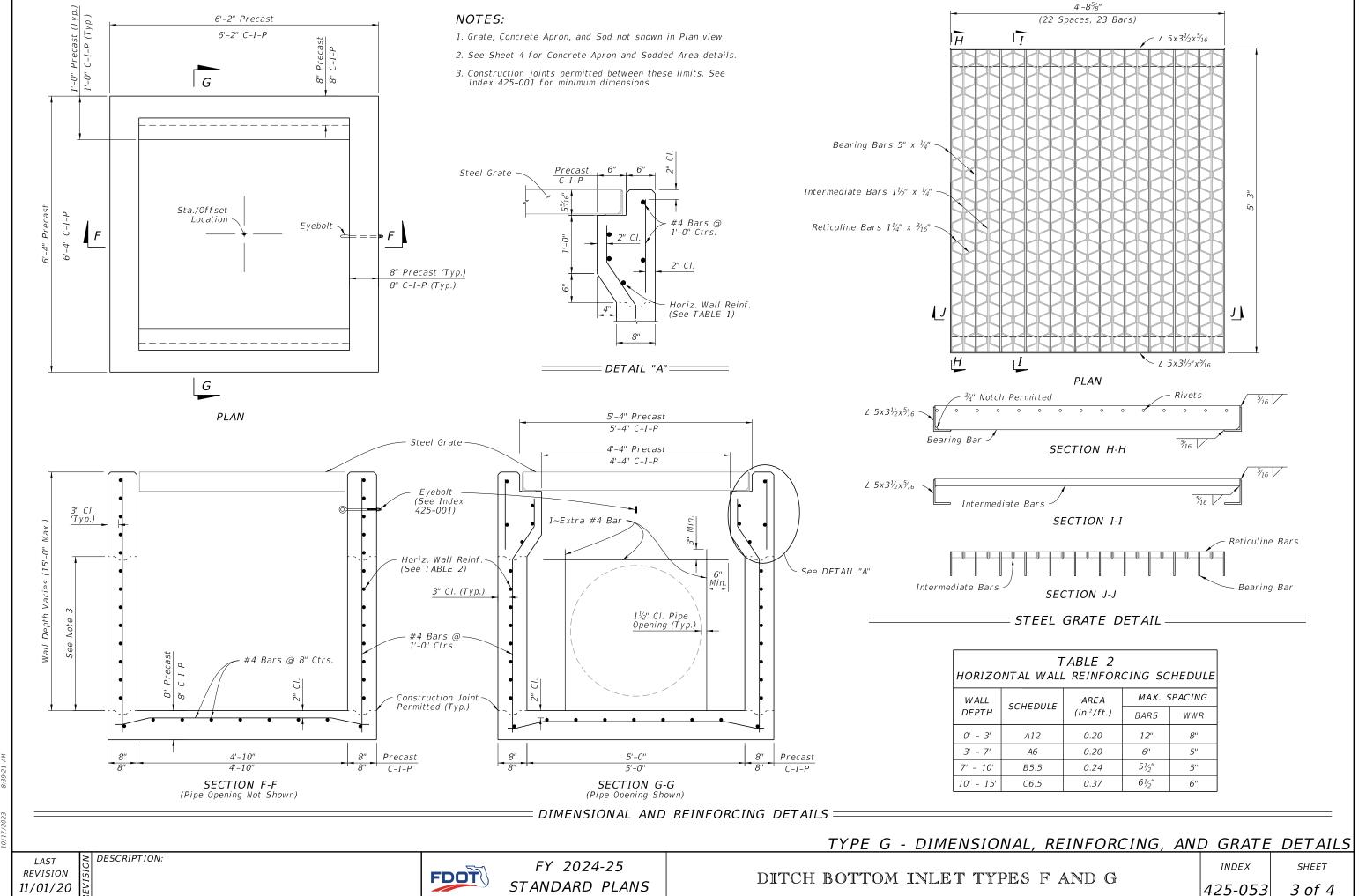
	TABLE OF CONTENTS:	
Sheet	Description	
1	General Notes and Contents	
2	Type F – Dimensional, Reinforcing, and Grate Details	
3	Type G - Dimensional, Reinforcing, and Grate Details	
4	Concrete Apron and Sodded Area Details	

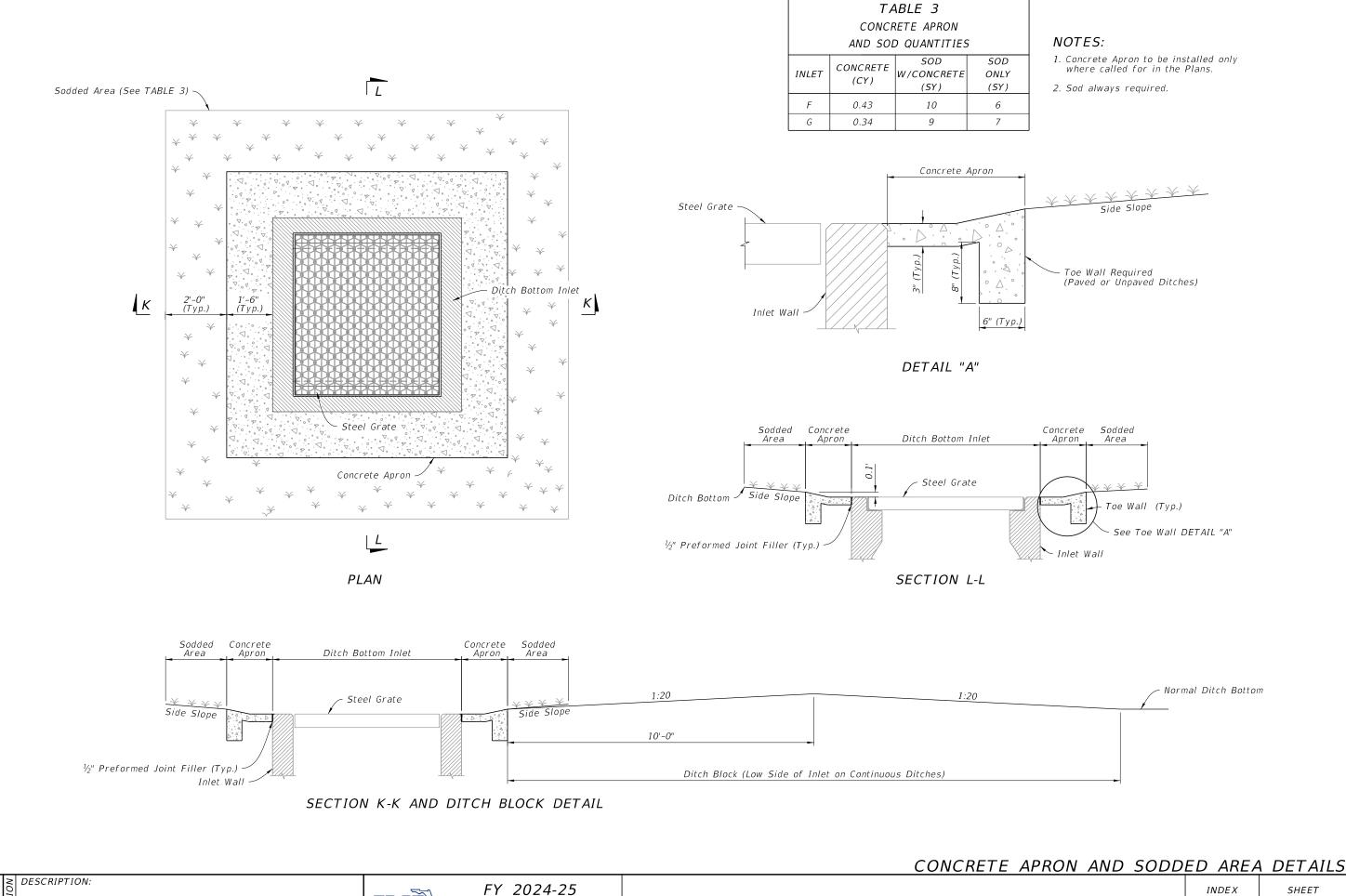


_____ DITCH BOTTOM INLET TYPE F

(Type G Similar, Pipe Connection Not Shown)





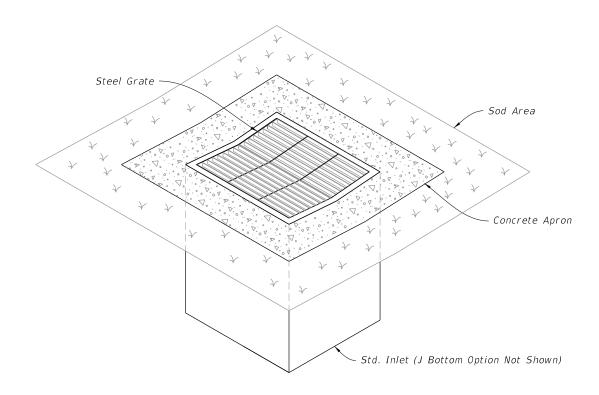


REVISION 11/01/20

FDOT

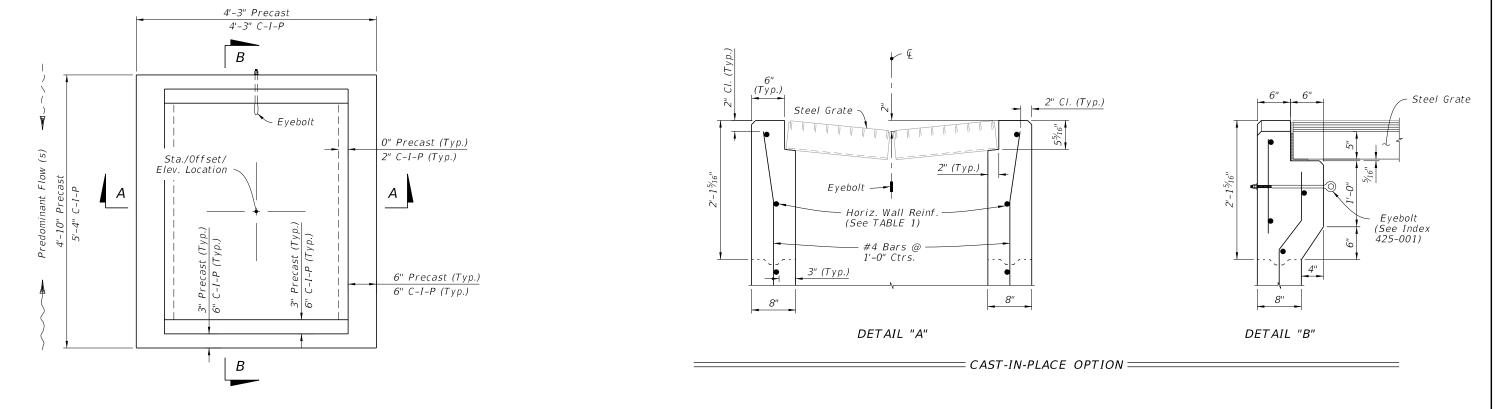
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Reinforcing bars are Grade 60 bars with 2" minimum cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary; bars to clear pipe by $1\frac{1}{2}$ ".
- 3. Chamfer all exposed edges and corners $\frac{3}{4}$ " or tooled to $\frac{1}{4}$ " radius.
- 4. Dimensions are for both precast and cast-in-place inlets unless otherwise noted.
- 5. Quantities are for informational and estimating purposes only.

	TABLE OF CONTENTS:	
Sheet	Description	
1	General Notes and Contents	
2	2 Dimensional and Reinforcing Details	
3	3 Grate, Concrete Apron, and Sodded Area Details	
4	Alternate A Structure Bottom - Top Slab Details	



DITCH BOTTOM INLET TYPE J (Pipe Connection Not Shown)

DESCRIPTION:



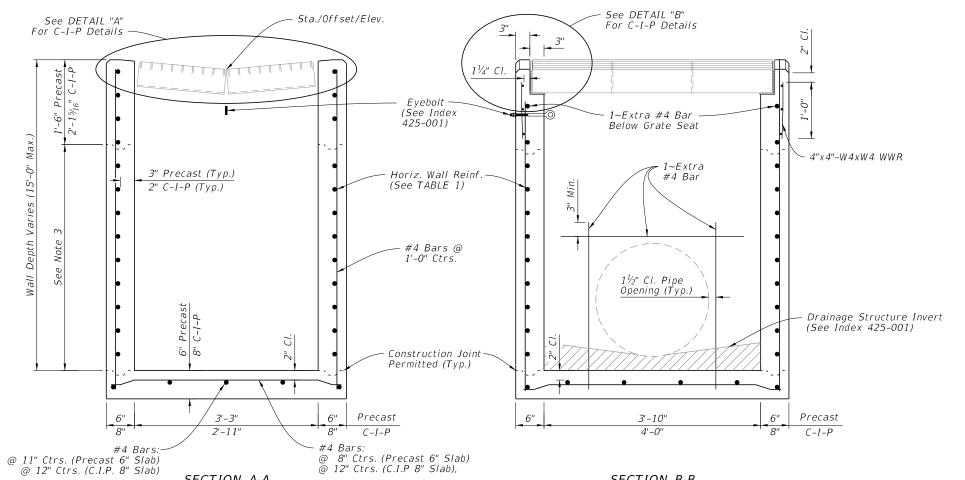


TABLE 1 HORIZONTAL WALL REINFORCING SCHEDULE					
WALL	WALL SCHEDULE AREA MAX. SPACING				
DEPTH	SCHEDULE	(in.²/ft.)	BARS	WWR	
0' - 4'	A12	0.20	12"	8"	
4' - 9'	A6	0.20	6"	5"	
9' - 12'	A4	0.24	4"	3"	
9' - 15'	B5.5	0.24	5½"	5"	

- 1. Grate, Concrete Apron, and Sod not shown in Plan View.
- 2. See Sheet 3 for Concrete Apron and Sodded Area details.
- 3. Construction joints permitted between these limits. See Index 425-001 for minimum dimensions.

DIMENSIONAL AND REINFORCING DETAILS

SECTION B-B

(Pipe Opening Shown)

DIMENSIONAL AND REINFORCING DETAILS

REVISION 11/01/20

DESCRIPTION:

FDOT

SECTION A-A

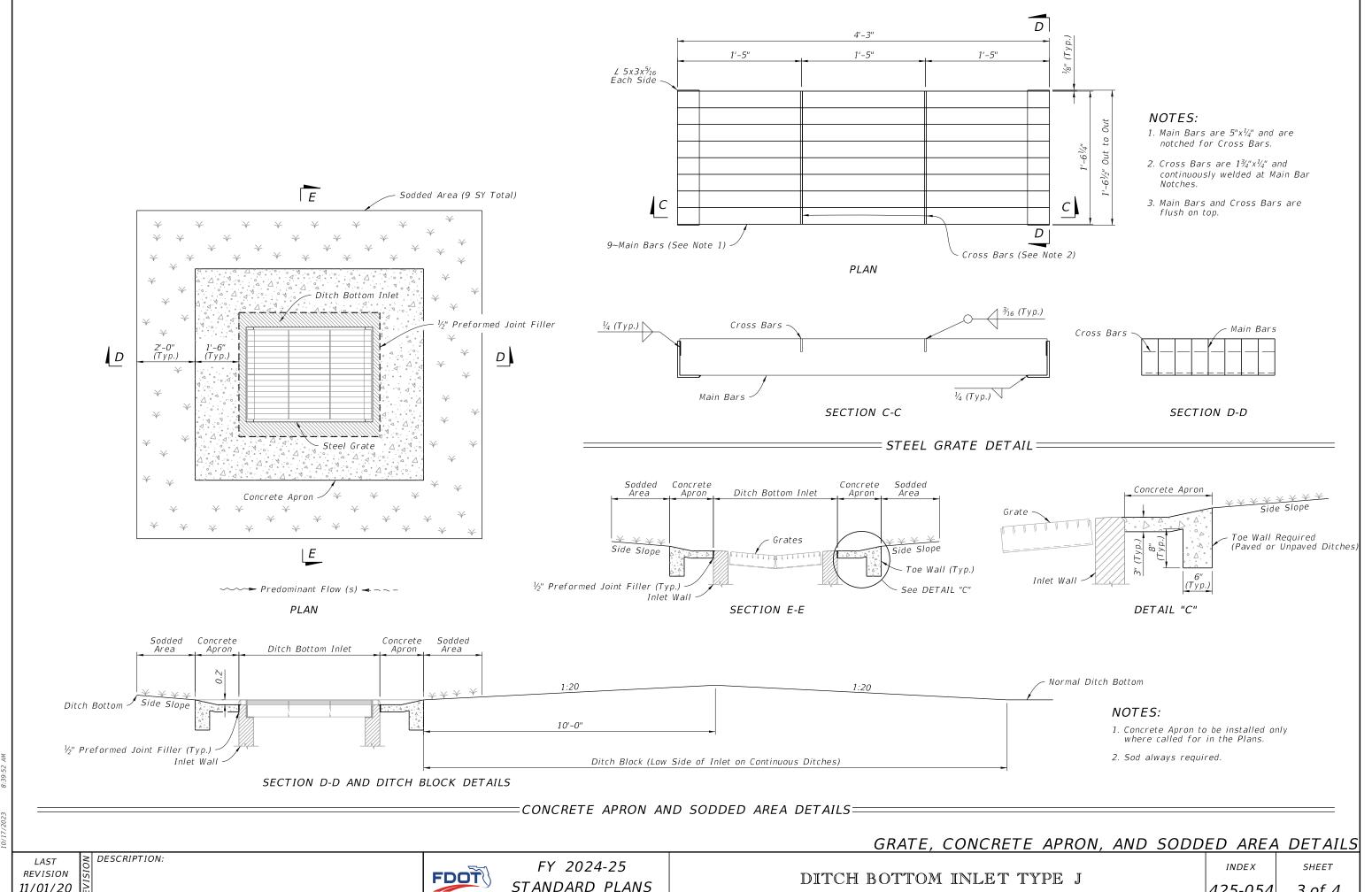
(Pipe Opening Not Shown)

FY 2024-25 STANDARD PLANS

DITCH BOTTOM INLET TYPE J

INDEX 425-054

SHEET 2 of 4



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425-054 3 of 4

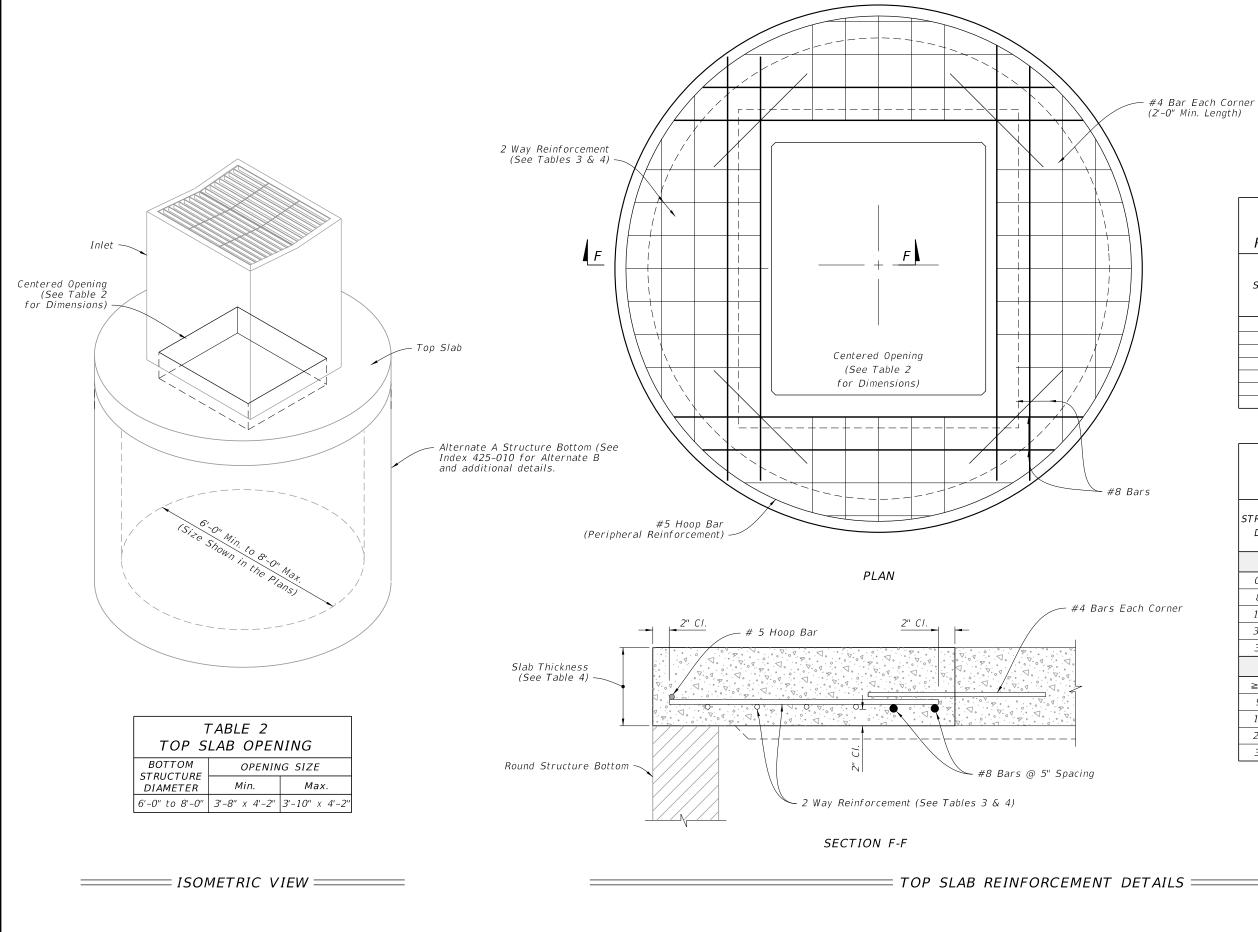


TABLE 3		
τ	OP SLAB	
REINFOR	CING SCHEDULE	
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE REINFORCING) In.²/ft.	
Α	0.20	
В	0.24	
С	0.37	
D	0.53	
Е	0.73	
F	1.06	
G	1.45	

TOP SLAB WITH CENTERED OPENING				
STRUCTURE DEPTH	SLAB THICKNESS	REINFORCING (2 WAY) SCHEDULE		
	SIZE: 6'-0"			
0.5'<8' 9 ¹ / ₂ " B				
8'<18'	91/2"	С		
18'<30'	9½"	D		
30'<37'	9½"	Е		
37'-40'	9½"	G		
	SIZE: 8'-0"			
≥0.5′<9′	≥0.5'<9' 11½" C			
9'<15' 11½"		D		
15'<23'	11½"	Е		
23'<33'	11½"	Е		
33'-40'	$11\frac{1}{2}$ "	G		

TABLE 4

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

REVISION 11/01/20

FDOT

STANDARD PLANS

DITCH BOTTOM INLET TYPE J

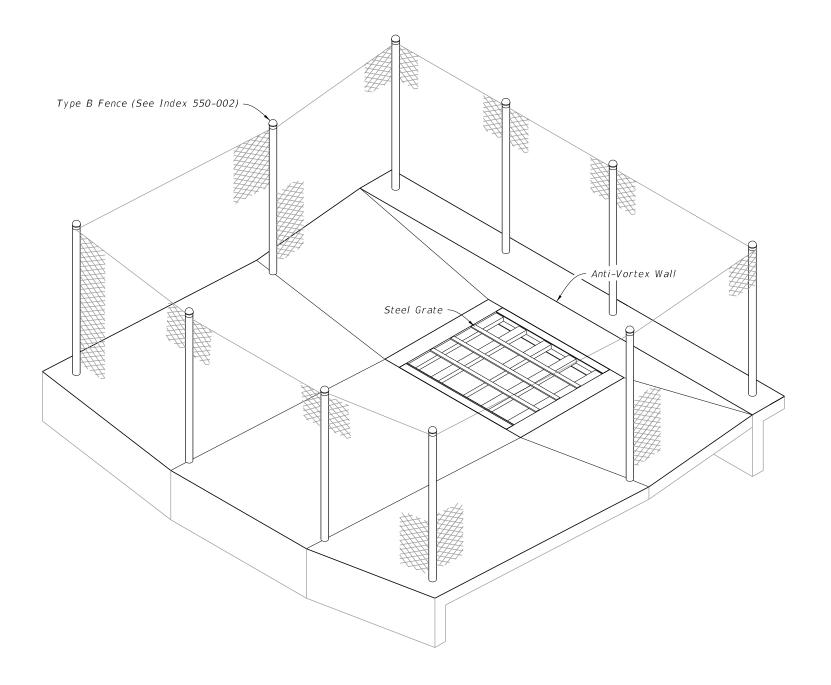
INDEX 425-054

SHEET 4 of 4

DESCRIPTION:

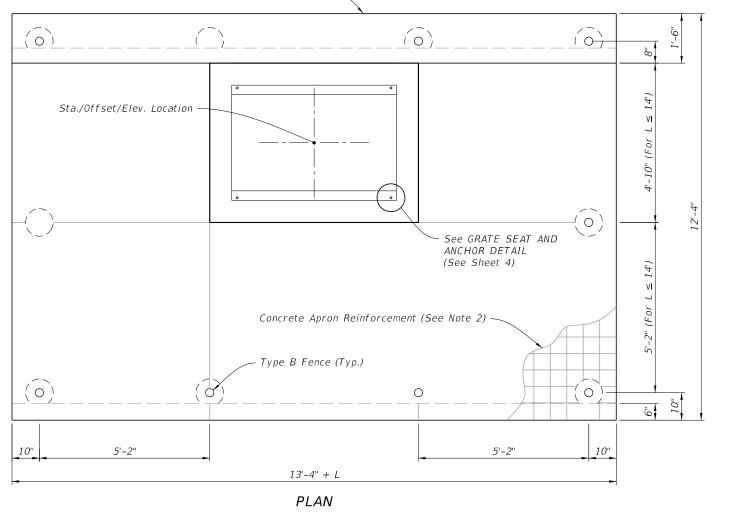
- 1. Work this Index with Index 425-001 and Index 550-002.
- 2. Chamfer all exposed edges and corners $\frac{3}{4}$ " or tooled to $\frac{1}{4}$ " radius.
- 3. Use Class II concrete for inlet and anti-vortex wall.
- 4. Use Grade 60 reinforcing bars with 2" minimum cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire reinforcing (WWR). Cut or bend bars for $1 \frac{1}{2}$ " clearance around pipe opening. Bend top and corner bars to clear anchor holes.
- 5. Channel section C 3x6 at 14" max. bar spacing may be used as an alternate for the C 4x5.4 channel at 15" bar spacing.
- 6. Channels and bars for grate are ASTM A242/A242M, A572/A572M or A588/A588M, Grade 50 steel, and galvanized in accordance with Specification 975.
- 7. Use Fence Type B for fence enclosure (Index 550-002). Install all posts in concrete. A minimum of 10 posts required. Use 3" nominal diameter posts for corner and approach side posts.
- 8. Anchor Bolts are ASTM F1554 Grade 36 fully threaded headless bolts, installed in accordance with Specifications 416 and 937. Nuts are ASTM A563 or A194 and washers are ASTM F436 or Type A plain washers. Galvanize all nuts, bolts and washers.
- 9. Quantities are for informational and estimating purposes only.

	TABLE OF CONTENTS:	
Sheet	Sheet Description	
1	General Notes and Contents	
2	2 Inlet Lengths (L) Less Than or Equal to 9'	
3	3 Inlet Lengths (L) Greater Than or Equal to 9'	
4	Steel Grate Details	



= INLET ${\it FENCE}$ ${\it ENCLOSURE}$ ==

DESCRIPTION:

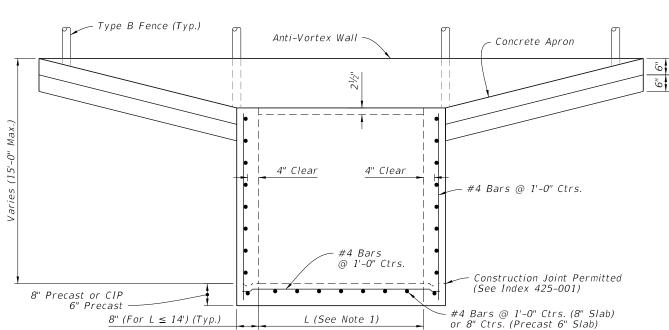


Anti-Vortex Wall

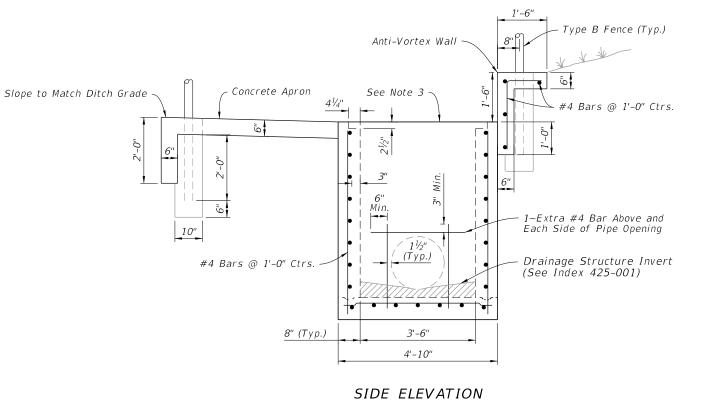
TABLE 1						
SINGLE Horizon	E LAY tal Wall	ER RE Reinfor	EINFOF cing Sch	RCING edules		
WALL	SCH.	AREA	MAX. SPACING			
DEPTH	зсп.	(in²/ft)	BARS	WWR		
SIZE: L = 5'-0"						
0'-5'	A12	0.20	12"	8"		
5'-8'	A6	0.20	6"	5"		
8'-15'	B5.5	0.24	5½"	5"		
SIZE: L = 6'-0"						
0'-4'	A12	0.20	12"	8"		
4'-6'	B5.5	0.24	5½"	5"		
6'-9'	C6.5	0.37	61/2"	6"		
9'-15'	C3.5	0.37	31/2"	3"		
SIZE: L = 7'-0"						
0'-4'	B5.5	0.24	5½"	5"		
4'-7'	C6.5	0.37	6½"	6"		
7'-15'	D4.5	0.53	4½"	4"		
SIZE: L = 8'-0"						
0'-3'	B5.5	0.24	5½"	5"		
3'-5'	C6.5	0.37	6½"	6"		
5'-9'	D4.5	0.53	41/2"	4"		
9'-15'	E5	0.73	5"	4"		
SIZE: L = 9'-0"						
0'-4'	C6.5	0.37	6½"	6"		
4'-7'	D4.5	0.53	4½"	4"		
7'-15'	E3	0.73	3"	3"		

NOTES:

- 1. See Plans for Inlet length (L).
- 2. Use 6"x6" 10/10 welded wire reinforcing.
- 3. Grate not shown.
- 4. Pipe opening not shown.



(See Note 4) FRONT ELEVATION



INLET LENGTHS (L) LESS THAN OR EQUAL TO 9'

REVISION 11/01/20

DESCRIPTION:

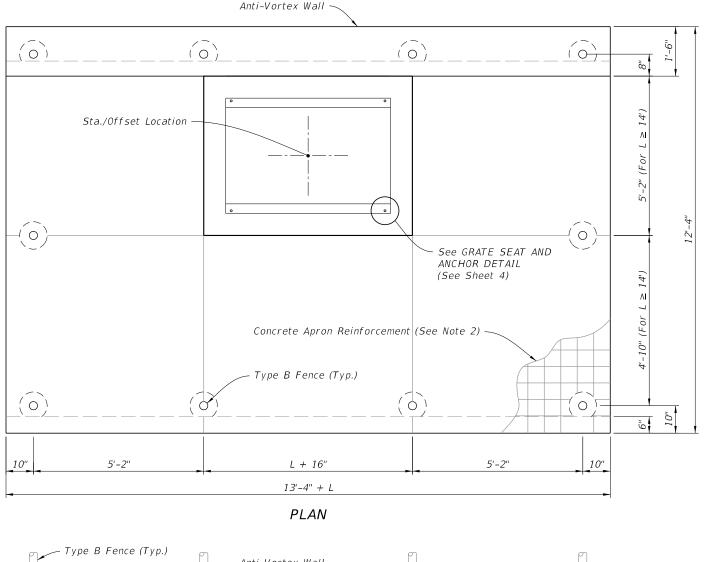
FDOT

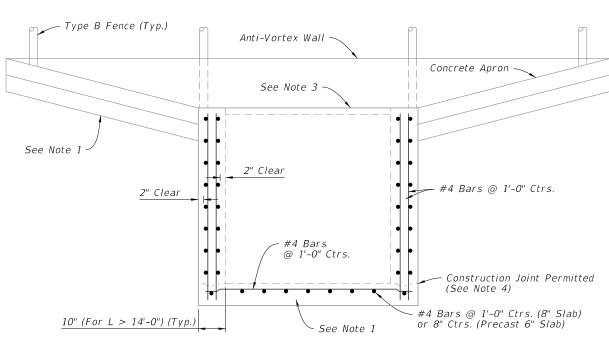
FY 2024-25 STANDARD PLANS

DITCH BOTTOM INLET TYPE K

INDEX

SHEET





(See Note 5) FRONT ELEVATION

NOTE:

TABLE 2

DOUBLE LAYER REINFORCING Horizontal Wall Reinforcing Schedules

SIZE: L = 9'-0"

0.20

0.20

0.24

0.37

SIZE: L = 10'-0"

0.20

0.20

0.37

0.37

0.24

0.37

0.53

0.37

0.53

0.73 SIZE: $L = 16'-0" \times 10" WALL THICK$ 0.37

0.53

0.73

 $SIZE: L = 18'-0" \times 10" WALL THICK$

SIZE: L = 14'-0''

SIZE: L = 12'-0"

SCH.

A12

B5.5

C6.5

A12

A6

C6.5

C3.5

B5.5

D4.5

C6.5

D4.5

E5

C6.5

D4.5

E5

C6.5

DEPTH

0'-4'

4'-6'

8'-15'

0'-3'

3'-5'

8'-15'

0'-4' 4'-6'

6'-15'

4'-7'

4'-8'

AREA MAX. SPACING

(in²/ft) BARS WWR

12"

5½"

6½"

12"

6"

6½"

3½"

5½"

4½"

61/2"

4½"

5"

6½"

 $4\frac{1}{2}$

5"

5"

5"

6"

8"

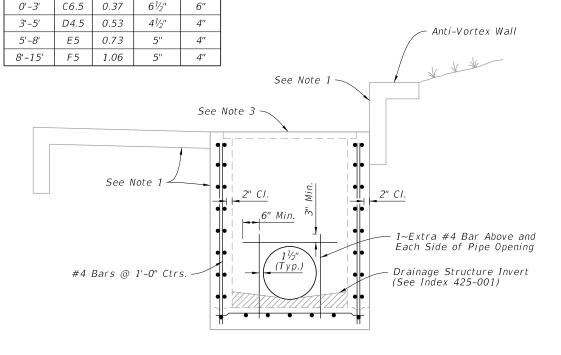
5"

4"

6"

4"

- 1. See Sheet 2 for dimension details.
- 2. Use 6"x6" 10/10 welded wire reinforcing.
- 3. Grate not shown.
- 4. See Index 425-001 for construction joint details.
- 5. Pipe Opening not shown.



SIDE ELEVATION

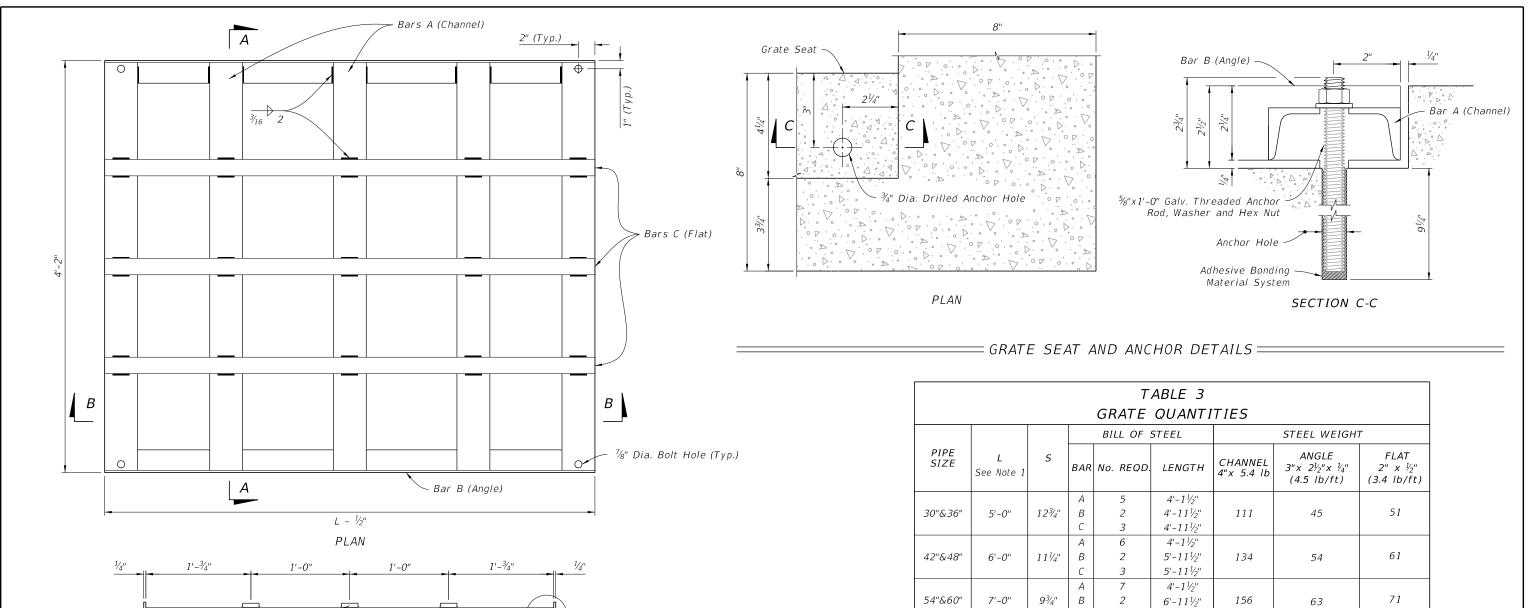
INLET LENGTHS (L) GREATER THAN OR EQUAL TO 9'

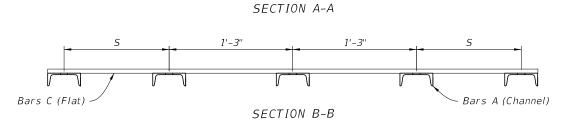
REVISION 11/01/20

DESCRIPTION:

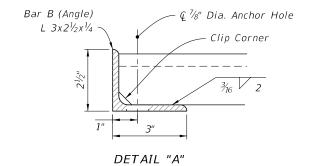
FDOT

FY 2024-25 STANDARD PLANS





Bars C (Flat) -



NOTES:

∽ See DETAIL "A"

- 1. See Sheet 2 for dimension "L" location.
- 2. See Section B-B for dimension "S" location.

			BILL OF STEEL		STEEL WEIGHT			
PIPE SIZE	L See Note 1	5	BAR	No. REQD.	LENGTH	CHANNEL 4"x 5.4 lb	ANGLE $3"x \ 2\frac{1}{2}"x \ \frac{1}{4}"$ (4.5 lb/ft)	FLAT 2" x ½" (3.4 lb/ft)
30"&36"	5'-0"	12¾"	A B C	5 2 3	4'-1 ¹ / ₂ " 4'-11 ¹ / ₂ " 4'-11 ¹ / ₂ "	111	45	51
42"&48"	6'-0"	111/4"	A B C	6 2 3	4'-1½" 5'-11½" 5'-11½"	134	54	61
54"&60"	7'-0"	9¾"	A B C	7 2 3	4'-1½" 6'-11½" 6'-11½"	156	63	71
66"&72"	8'-0"	81/4"	A B C	8 2 3	4'-1 ¹ / ₂ " 7'-11 ¹ / ₂ " 7'-11 ¹ / ₂ "	178	72	81
84"	9'-0"	141/4"	A B C	8 2 3	4'-1½'' 8'-11½'' 8'-11½''	178	81	91
SPECIAL	10'-0"	12¾"	A B C	9 2 3	4'-1½" 9'-11½" 9'-11½"	201	90	102
SPECIAL	12'-0"	9¾"	A B C	11 2 3	4'-1½" 11'-11½" 11'-11½"	245	108	122
SPECIAL	14'-0"	141/4"	A B C	12 2 3	4'-1½" 13'-11½" 13'-11½"	267	126	142
SPECIAL	16'-0"	1111/4"	A B C	14 2 3	4'-1½" 15'-11½" 15'-11½"	312	144	163
SPECIAL	18'-0"	81/4"	A B C	16 2 3	4'-1½" 17'-11½" 17'-11½"	356	162	183

STEEL GRATE DETAILS

LAST REVISION IN THE PROPERTY OF THE PROPERTY

Bar B (Angle)

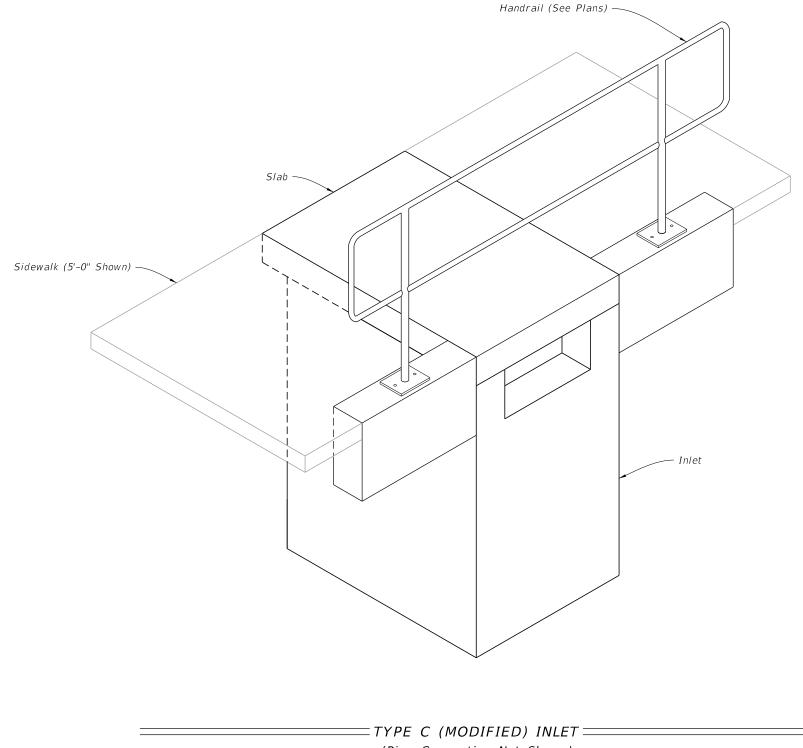
FDOT

Bars A (Channel)

FY 2024-25 STANDARD PLANS

- 1. Work this Index with Index 425-052.
- 2. Quantities are for informational and estimating purposes only.

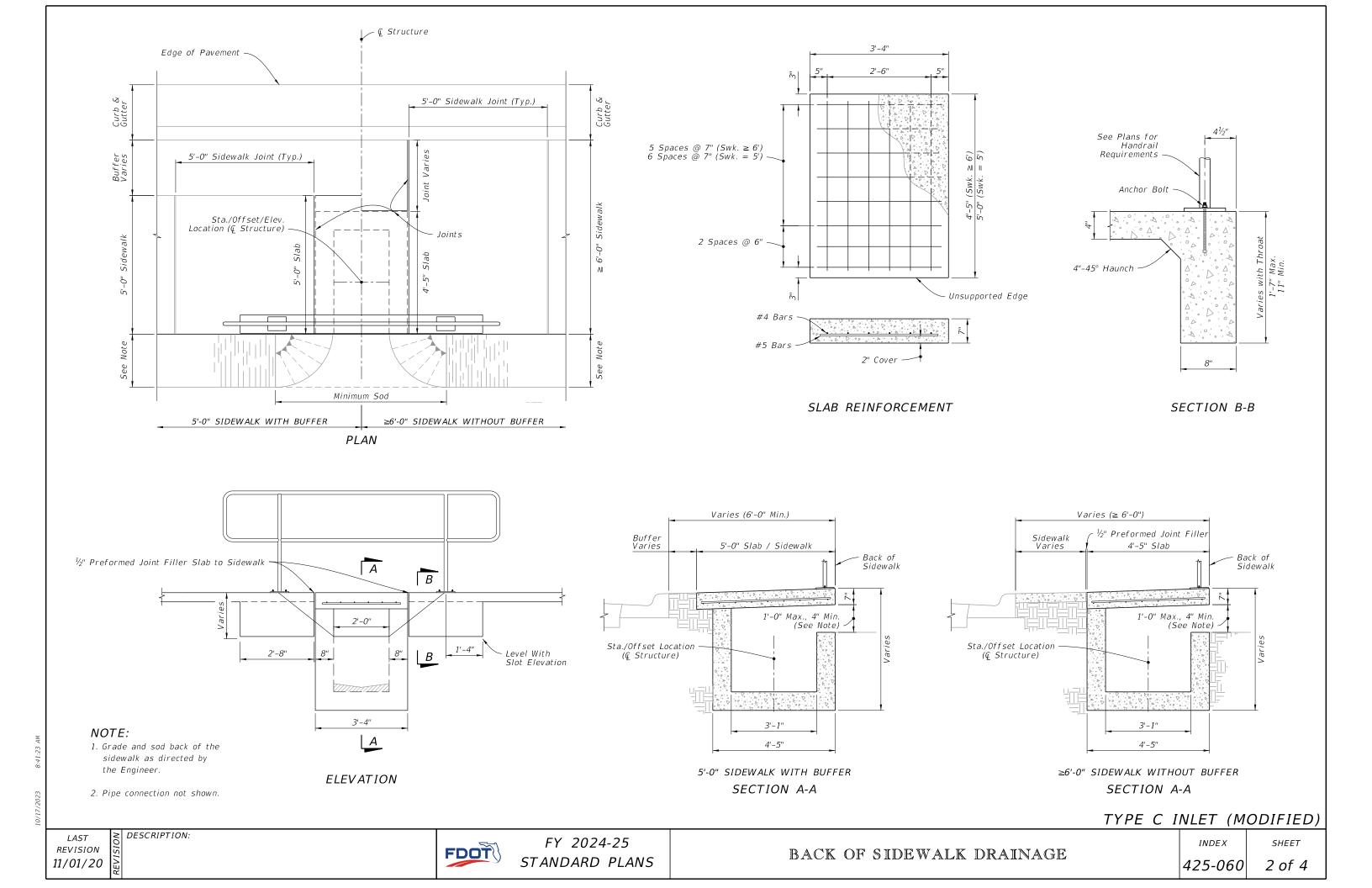
	TABLE OF CONTENTS:			
Sheet	Description			
1	General Notes and Contents			
2	Inlet Type C (Modified)			
3	Special Concrete Endwall			
4	Shallow Ditches and Yard Drains			

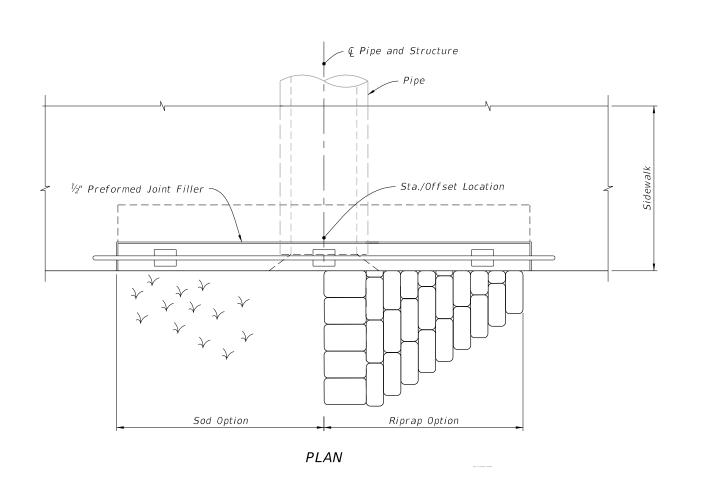


(Pipe Connection Not Shown)

REVISION 11/01/20

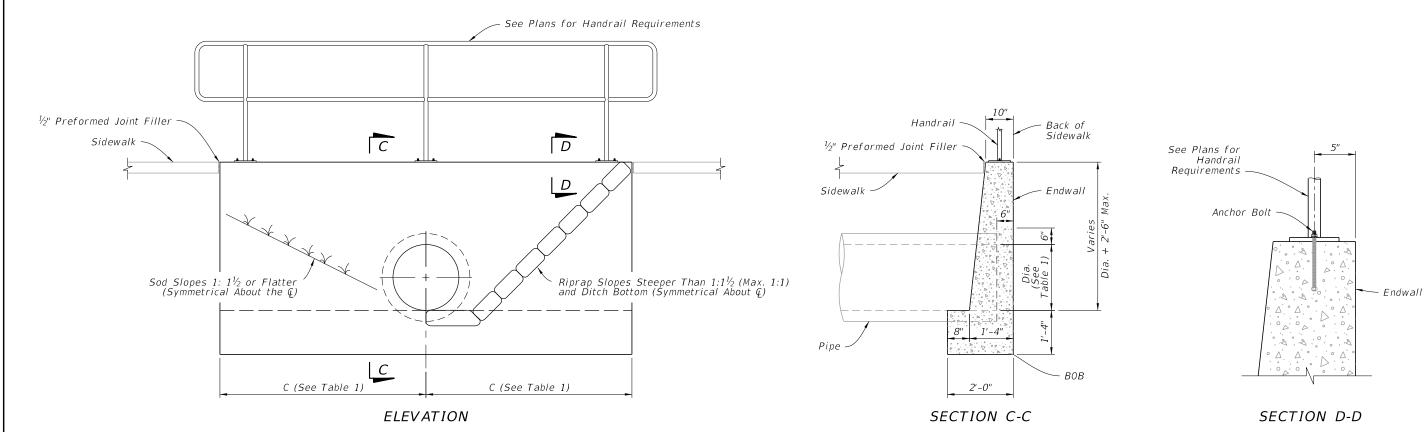






- 1. Grading back of sidewalk as directed in the Plans.
- 2. Concrete quantities shown are for maximum wall heights and for information only.
- 3. Riprap quantities are for informational and estimating purposes only.

TABLE - 1					
Pipe Size Dia.(in)	С	Concrete Class II (CY)	Sand-Cement Riprap (CY)		
15	4'-9"	2.3	1.1		
18	5'-3"	2.6	1.3		
24	6'-3"	3.3	1.8		



SPECIAL CONCRETE ENDWALL

REVISION 11/01/20

DESCRIPTION:

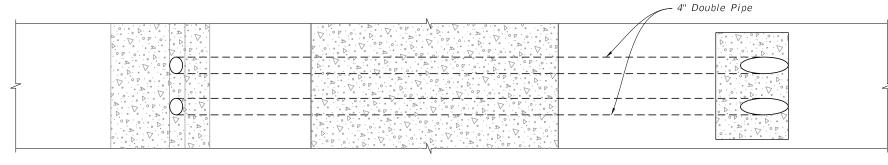
FDOT

FY 2024-25 STANDARD PLANS

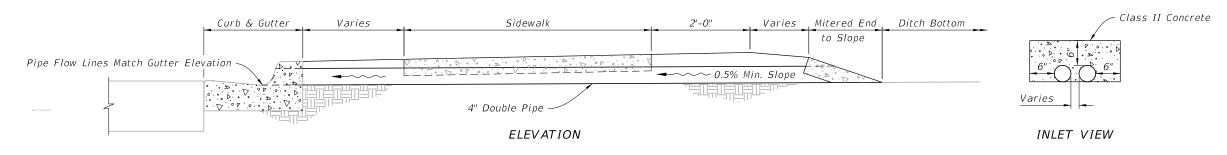
BACK OF SIDEWALK DRAINAGE

INDEX 425-060 SHEET

- 1. Construct at locations as directed by the Engineer.
- 2. Use either cast iron pipe or PVC rigid conduit, U.L. listed for direct sunlight exposure, Schedule 40.



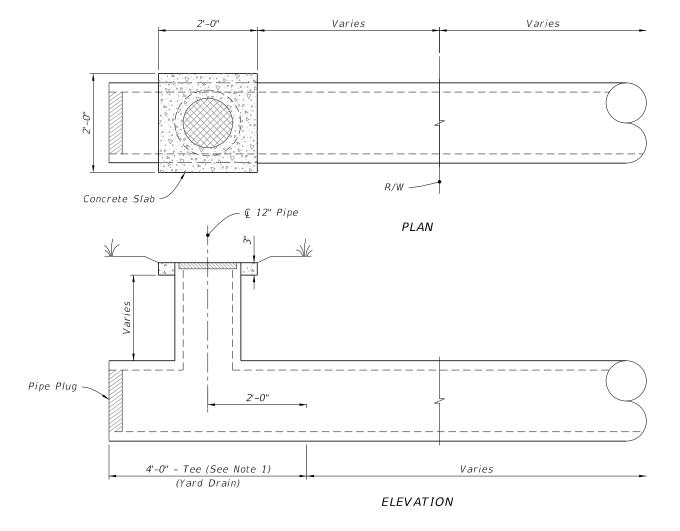
PLAN



SHALLOW DITCHES

NOTES:

- 1. Tee will be either concrete or PVC, 15"x15"x12".
- 2. Grate will have diameter of $14\frac{1}{4}$ ", $2\frac{1}{2}$ " thick, minimum 45 square inches flow area, and be light duty cast iron in accordance Specification 962.



= YARD DRAINS =

SHALLOW DITCHES AND YARD DRAINS

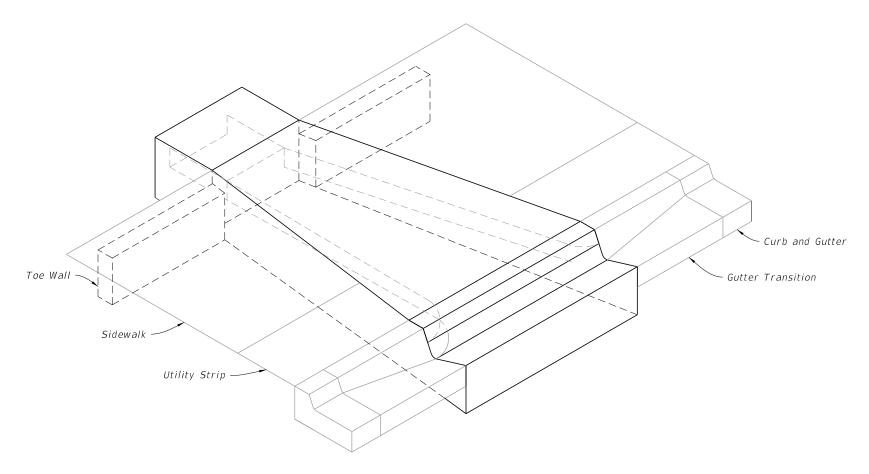
LAST REVISION 11/01/21

DESCRIPTION:

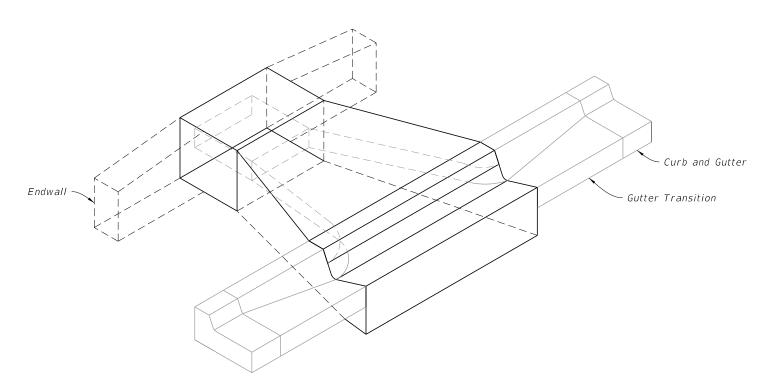
FDOT

- 1. The finished grade and slope of the inlet top are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
- 2. When inlets are to be constructed on a curve, refer to the plans to determine the radius. Bend steel when necessary.
- 3. Inlets can be either cast-in-place or precast concrete. Chamfer all exposed edges 3/4".
- 4. All reinforcement is ASTM A615/A615M Grade 60 steel, either smooth or deformed with a 2" minimum cover, unless otherwise shown. Equivalent area grade 40 steel or 65 ksi welded wire fabric may be substituted.

TABLE OF CONTENTS:				
Sheet	Description			
1	General Notes and Contents			
2	Type-I Dimensional Details			
3	Reinforcice Details			
4	Type-II Dimensional Details			
5	Multiple Barrel Flumes			



=TYPE I CLOSED FLUME INLET WITH SIDEWALK=
Single Barrel Flume Shown

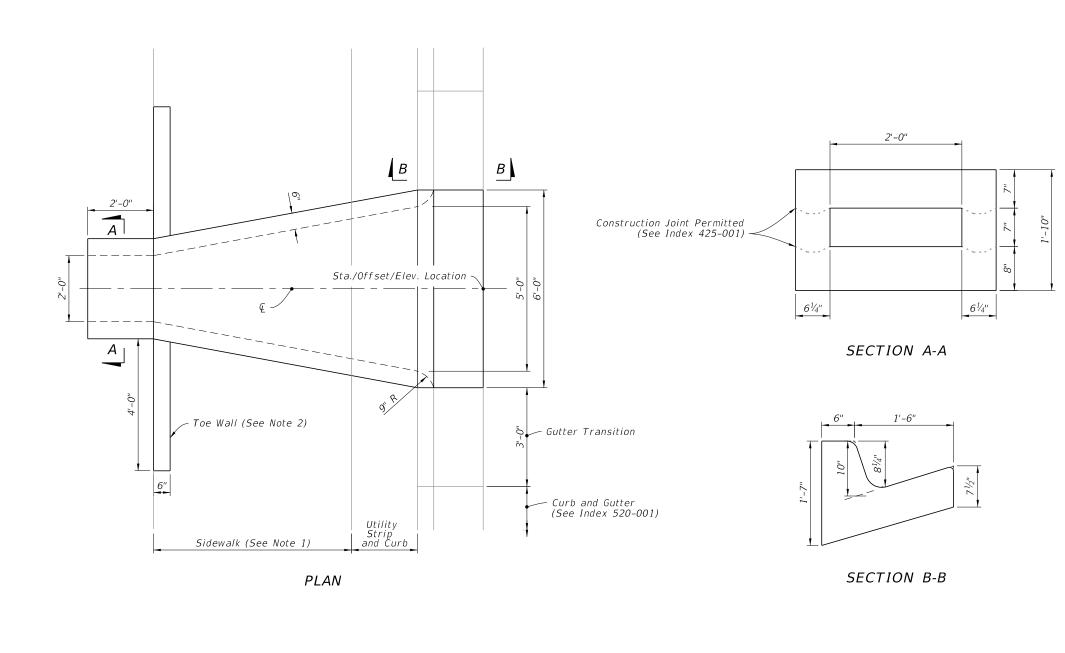


TYPE II CLOSED FLUME INLET WITHOUT SIDEWALK == Single Barrel Flume Shown

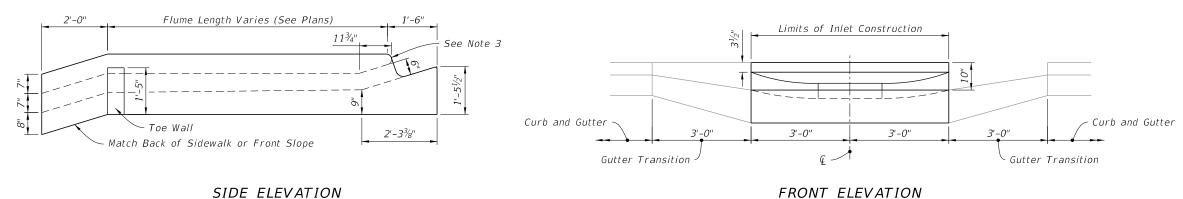
REVISION 11/01/20

DESCRIPTION:

FDOT



- 1. Use sloped section with sidewalk applications only.
- 2. Use Toe Walls with Sidewalk application only. For Endwall without Sidewalk see DETAILS on Sheet 4.
- 3. Slope to match adjacent curb with 2" top radius and $1\frac{1}{4}$ " bottom radius.
- 4. See Sheet 5 for multiple barrel flumes span variation.



TYPE-I DIMENSIONAL DETAILS

REVISION 11/01/21

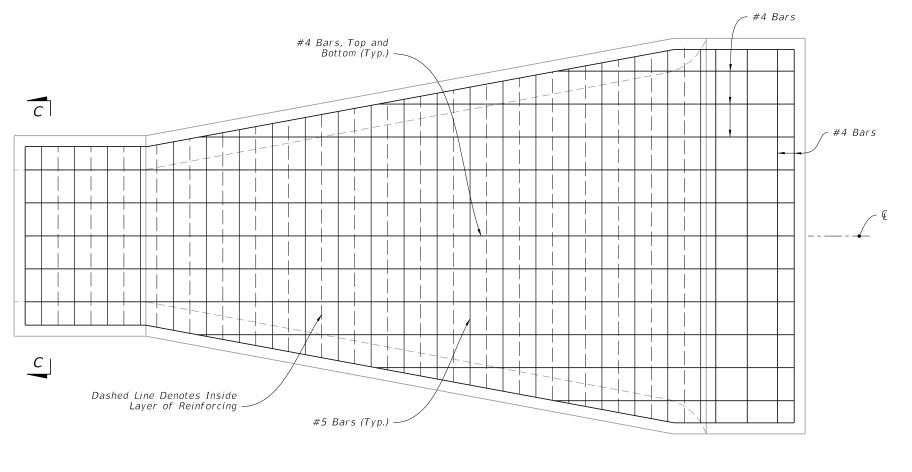
DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

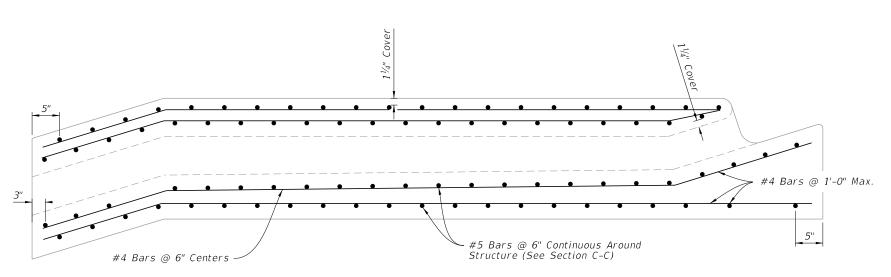
CLOSED FLUME INLET

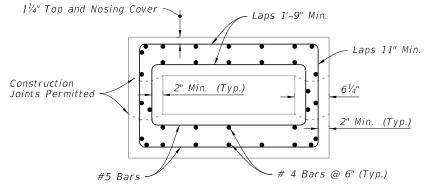
INDEX 425-061 SHEET



Type I Closed Flume Inlet shown, Type II Closed Flume Inlet Similar.

PLAN





SECTION C-C

SIDE ELEVATION

REINFORCING DETAILS

REVISION 11/01/20

DESCRIPTION:

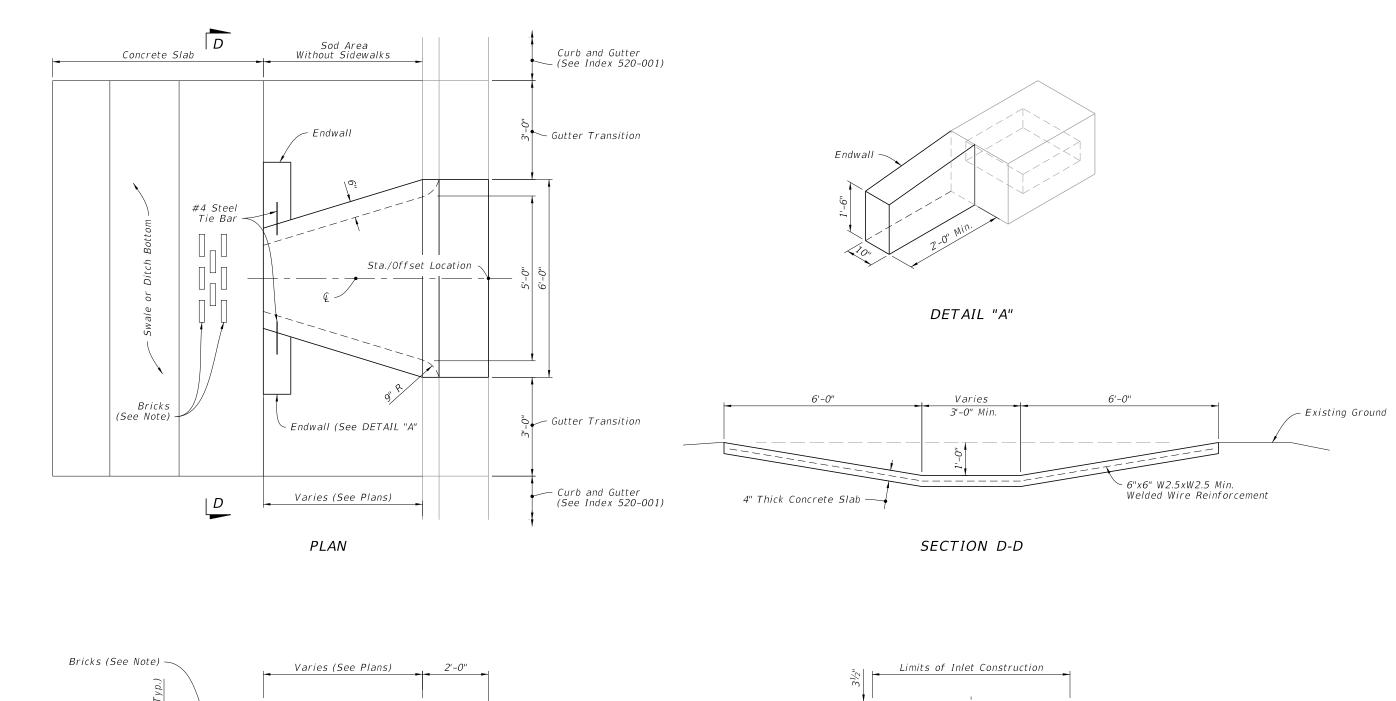
FDOT

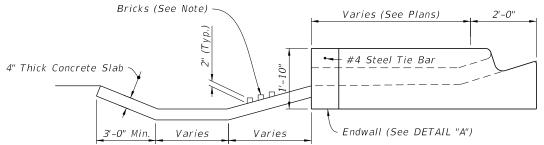
FY 2024-25 STANDARD PLANS

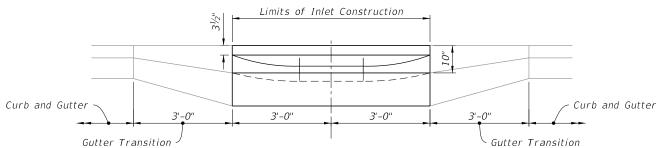
CLOSED FLUME INLET

INDEX 425-061

SHEET 3 of 5







SIDE ELEVATION

FRONT ELEVATION

NOTE:

When called for in the Plans, install bricks to dissipate energy.

TYPE II DIMENSIONAL DETAILS

REVISION 11/01/20

DESCRIPTION:

FDOT

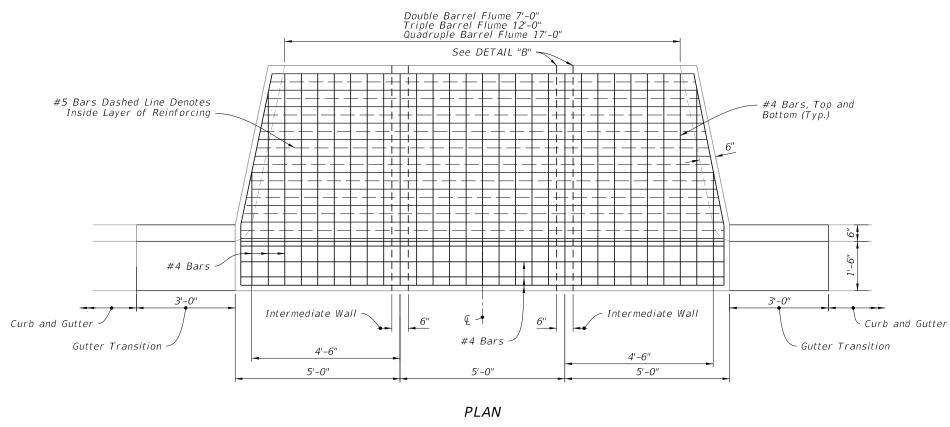
FY 2024-25 STANDARD PLANS

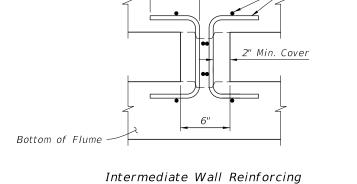
CLOSED FLUME INLET

INDEX

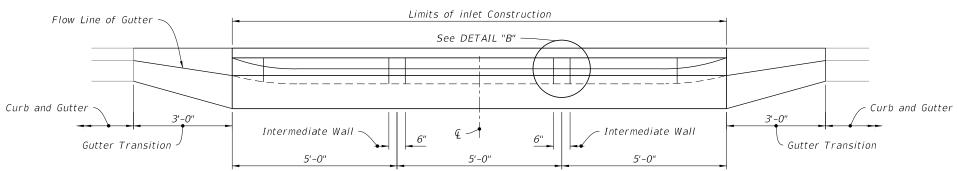
SHEET

4 of 5 425-061





6" Min.



Intermediate Wall Reinforcing
DETAIL "B"

NOTE:

Top of Flume -

Triple barrel flume shown, double and quadruple similar.

FRONT ELEVATION

MULTIPLE BARREL FLUMES

#4 Bar (Typ.)

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

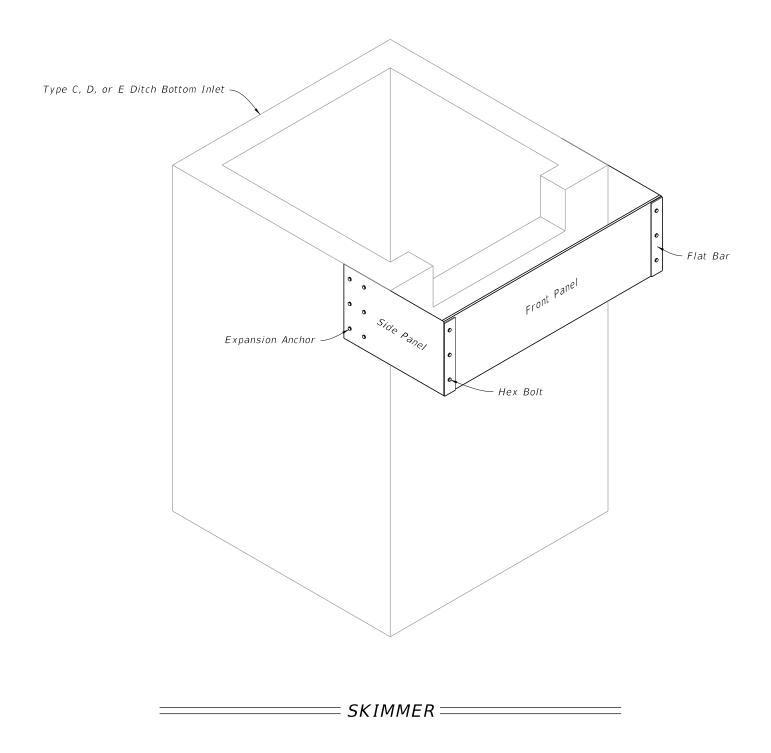
CLOSED FLUME INLET

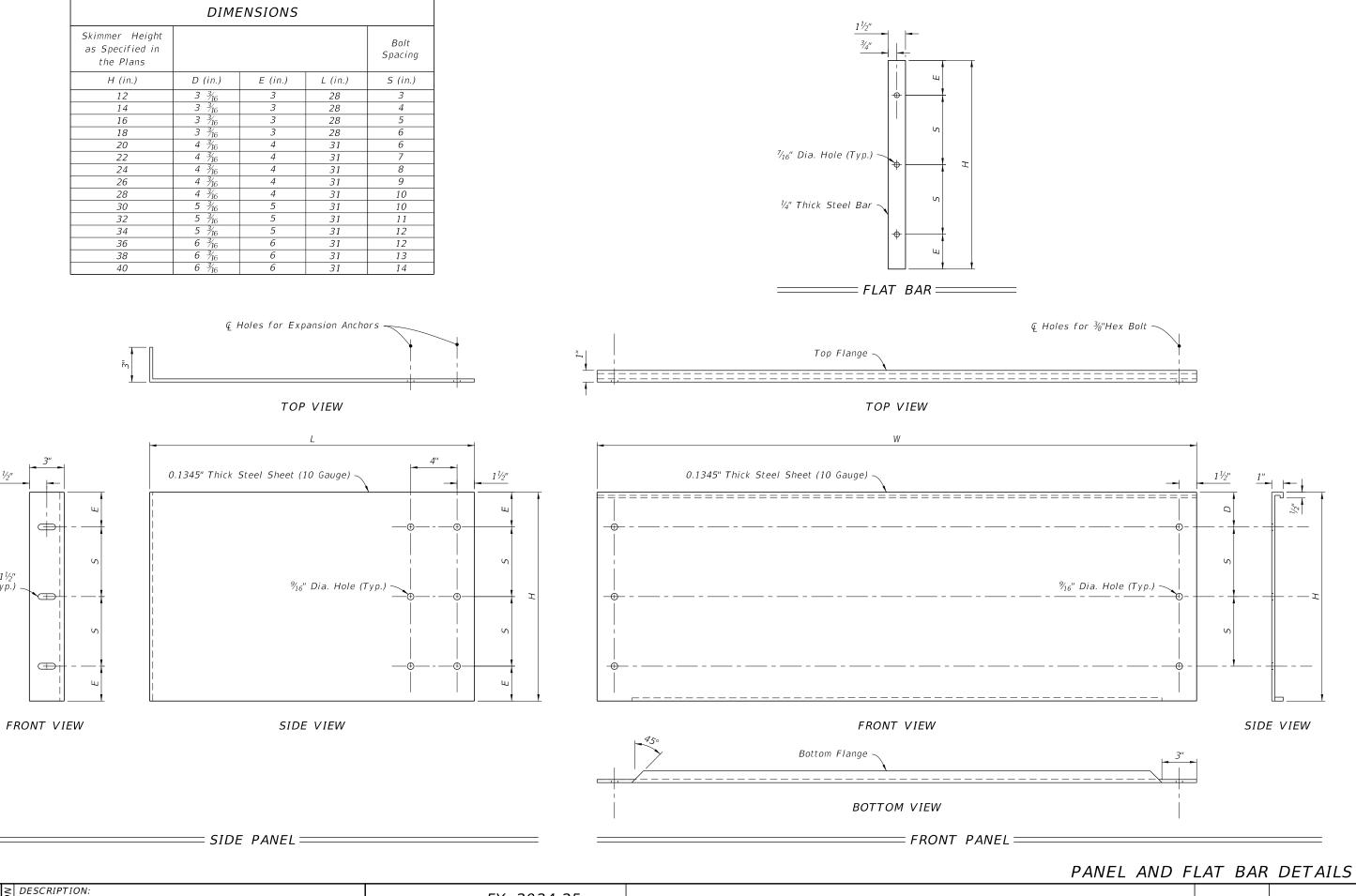
INDEX 425-061 5 of 5

024-25

- 1. The side panels are dimensionally symmetric, and may be used on either side of the structure.
- 2. Two (2) skimmers may be installed on a single structure provided they are constructed on opposite ends.
- 3. The width of the front panel (dimension W) is equal to the same as the outside dimension across the front of the structure.
- 4. Hot dip galvanize the front panel, side panels, and flat bars after fabrication.
- 5. The location of the reinforcing steel in these structures must conform to the Index 425-052 to avoid conflict with the expansion anchors used to attach the skimmer.
- 6. Use grates on the inlets unless otherwise specified in the Plans.
- 7. A skimmer consists of two (2) side panels, one front panel, two (2) flat bars, and accessory hardware.

TA	TABLE OF CONTENTS:							
Sheet	Description							
1	General Notes and Contents							
2	Panel and Flat Bar Details							
3	Installation Details							



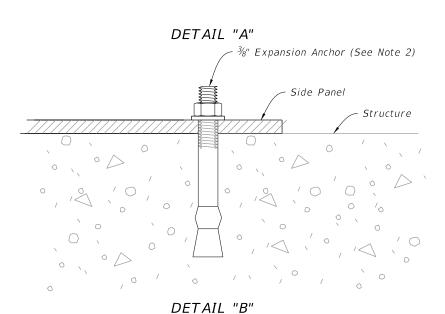


10/17/2023

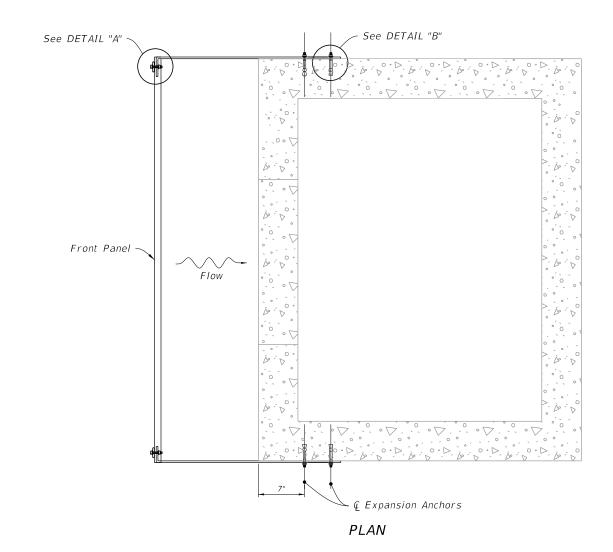
LAST REVISION IS 11/01/20

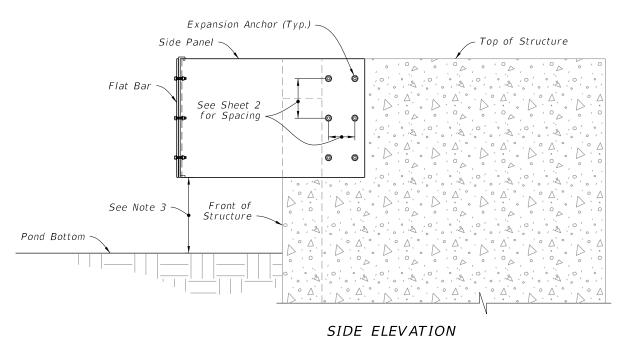
 $^{1}\!\!/_{2}$ " x $1^{1}\!\!/_{2}$ " Slot (Typ.)

FDOT



- 1. Hex Bolt, Flat Washer, Fender Washer, And Lock Nut, all Stainless Steel. (6 Required Per Skimmer)
- 2. Install a stainless steel stud type expansion anchor with nut and washer. Embedment depth = $2^{1}\!\!/_{2}^{n}$. Anchors to be installed according to the manufacturer's recommendations (12 required per skimmer).
- 3. Install the skimmer so that the distance between the pond bottom at the structure and the skimmer is not less than 1 foot.





INSTALLATION DETAILS

REVISION 11/01/20

FDOT

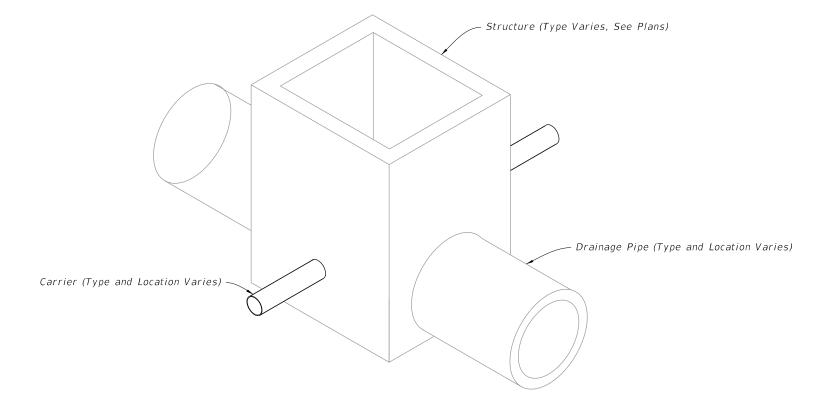
- 1. Work with Index 425-001 and Index 425-010.
- 2. Use Class II Concrete.
- 3. Maximum opening for pipe shall be the pipe OD plus 6". Mortar used to seal the pipe into the opening will be of such mix that shrinkage will not cause leakage into or out of the structure.
- 4. If a conflict with a potable water supply line is discovered during construction, submit the following to Florida Department of Environmental Protection (FDEP)

 District Administrator For Drinking Water prior to constructing conflict structure:
 - a. Plans Revision(s)
 - b. Justification describing inordinate cost and practical avoidance
 - c. Upon request, Utility Agency Owner (UAO) supporting documentation for cost of relocation or adjustment

Potable water supply lines passing through a drainage structure must be in compliance with Chapter 62-555.314(3) F.A.C. This Index and rule citation provide accepted methods for addressing conflicts when they cannot be reasonably avoided.

Website for District FDEP Drinking Water Contacts: https://floridadep.gov/water/source-drinking-water/content/organization-drinking-water-program

TABLE OF CONTENTS:							
Sheet Description							
1	General Notes and Contents						
2	Utility Conflict Condition I and II Details						

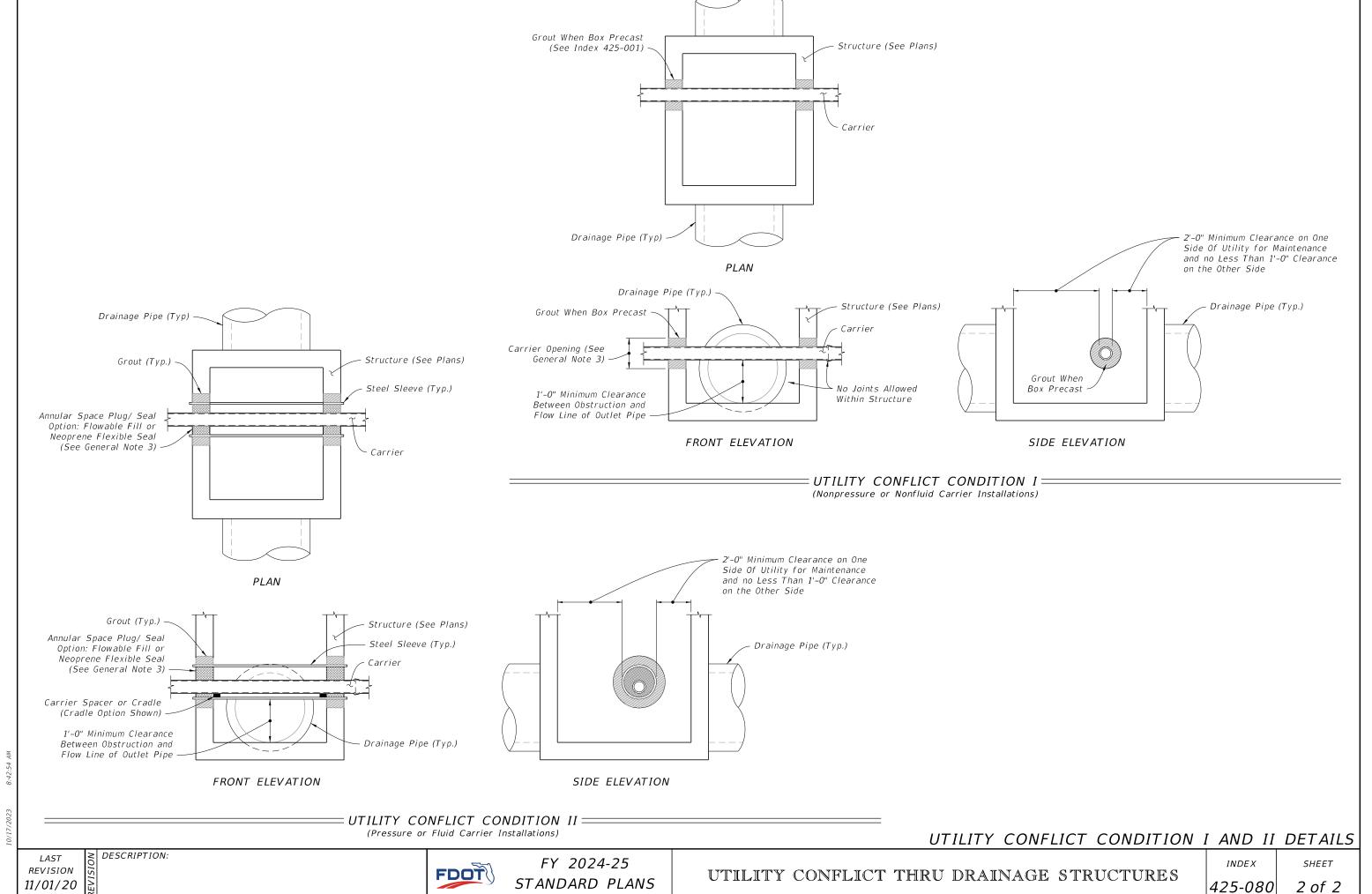


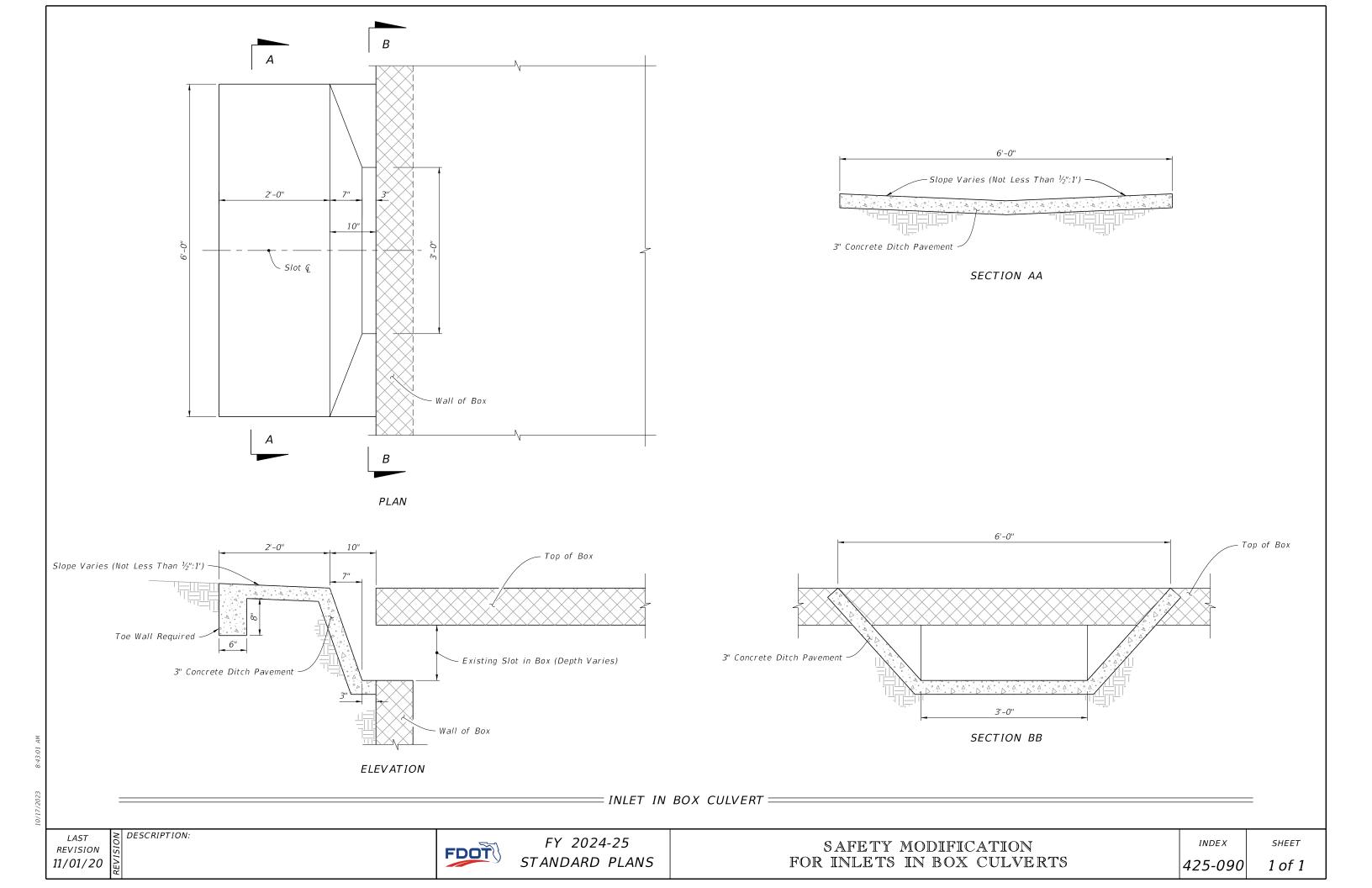
UTILITY CONFLICT (Condition I Shown, Condition II Similar)

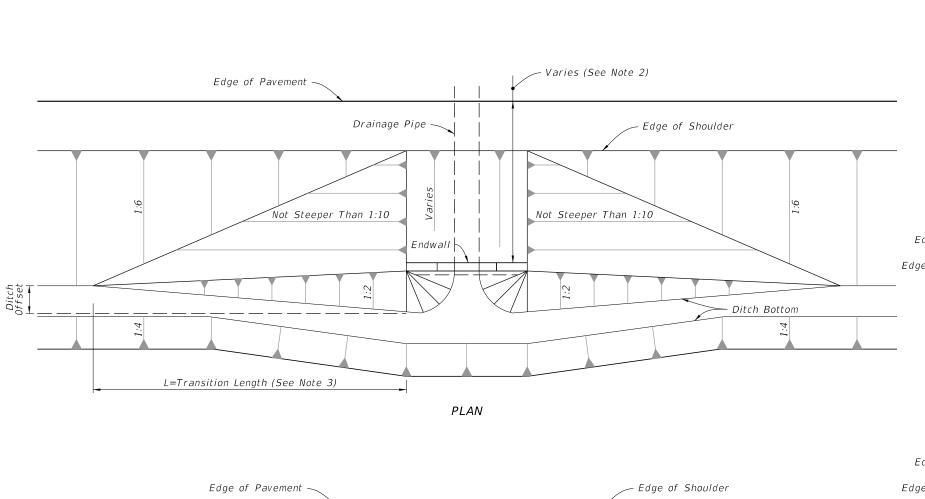
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DESCRIPTION:

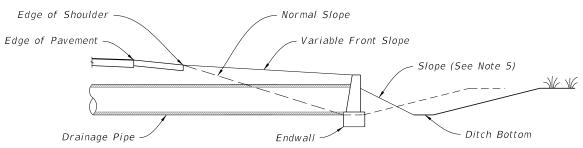
1 of 2





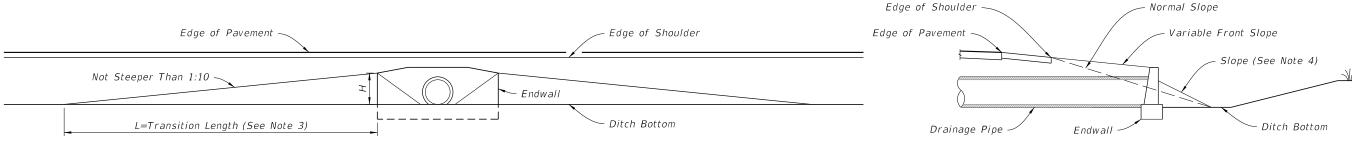


- 1. Fill or excavate variable slopes during normal grading operations.
- 2. Minimum distance as required to comply with safety criteria.
- 3. Use Larger Value Of Either: L=10xH (No Maximum) L=10xDitch Offset (Maximum L=100')
- 4. Slope to normal slope if possible. Slope not to be steeper than 1:2. See side elevation (extended) below if 1:2 slope must go beyond toe of normal slope.
- 5. 1:2 slope if necessary to go beyond normal toe of slope and maintain ditch width by moving out back slope.



SIDE ELEVATION (EXTENDED)

SIDE ELEVATION (TYPICAL)



FRONT SLOPES AT DRAINAGE STRUCTURES:

	TABLE OF CONTENTS:							
Sheet	Description							
1	Limits of Variable Front Slopes at Drainage Structures							
2	Round and Elliptical Concrete Pipe Joint							
3	Geotextile Jacket, Concrete Jacket, and Pipe Plug							
4	Concrete Collars							
5	Single Pipe End Guard							
6	Double Pipe End Guard							
7	Retaining Wall Concrete Gutter and Drains							

LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES

LAST REVISION 11/01/23

DESCRIPTION:

FDOT

END ELEVATION

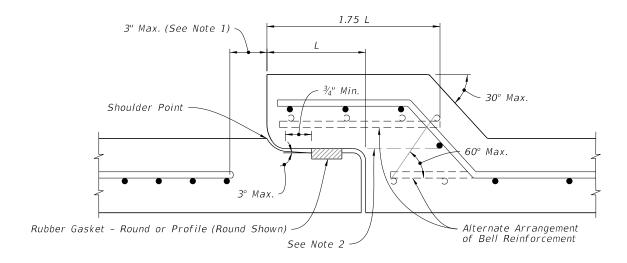
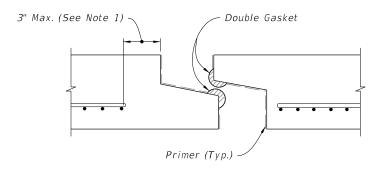


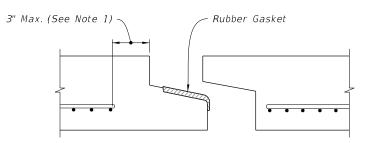
TABLE 1 SCHEDULE OF BELL REINFORCEMENT Classes II, III, IV, AND V; Wall A, B, AND C							
Nominal Pipe Diameter	Design Bell Reinforcement	Maximum Reinforcement Under Tolerance					
	in² per foot	in² per foot					
15" 0.07 0.010							
18"	0.07	0.010					
24"	0.09	0.010					
30"	0.12	0.010					
36"	0.14	0.010					
42"	0.16	0.010					
48"	0.19	0.011					
54"	0.21	0.012					
60"	0.23	0.0135					
66"	0.26	0.015					
7 <i>2</i> "	0.28	0.0165					
78"	0.30	0.018					
84"	0.33	0.0195					
90"	0.35	0.021					
96"	0.37	0.0225					
102"	0.40	0.024					
108" 0.42 0.0255							

- 1. Locate the last full wrap of reinforcement within 3 inches of the spigot shoulder and meet ASTM C76 for round pipe.
- 2. All circumferential steel located above this line and within the 1.75 L is defined as bell reinforcement.

ROUND CONCRETE PIPE JOINT DETAIL



PREFORMED PLASTIC JOINT



PROFILE RUBBER GASKET

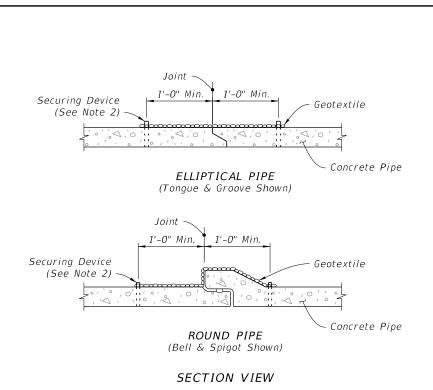
NOTES:

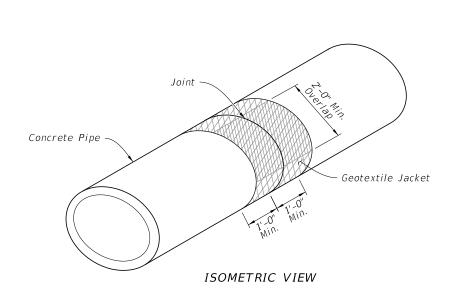
- 1. Locate the last full wrap of reinforcement within 3 inches of the spigot shoulder and meet ASTM C507 for elliptical pipe.
- 2. Type D-3 Geotextile Jacket is required on both type of joints.
- 3. Details shown before joint is homed.

= ELLIPTICAL CONCRETE PIPE JOINT DETAIL=

ROUND AND ELLIPTICAL CONCRETE PIPE JOINT

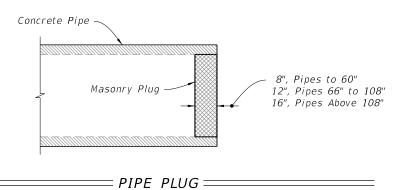
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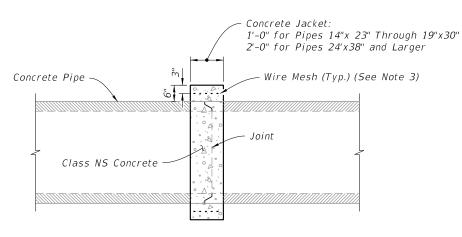




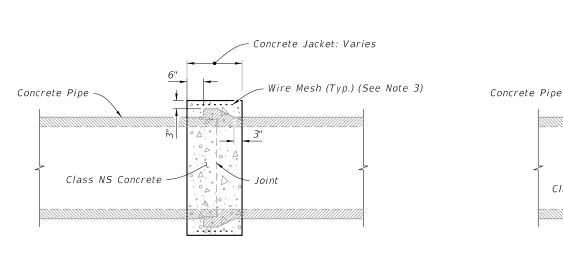


(For All Pipe Types - Concrete Elliptical Pipe Shown)





ELLIPTICAL PIPE



ROUND PIPE

SIMILAR TYPES (Only When Called For In The Plans)

CONCRETE JACKET =

NOTES:

- 1. Alternate connection must be approved by the Engineer.
- 2. Install Type D-3 geotextile in accordance with Specification 514. Install securing device to hold the geotextile jacket on to the pipe.
- 3. Any wire mesh arrangement which provides 0.126 square inches of steel area per linear foot both ways may be used, provided the wires are spaced a minimum of 2" and/or a maximum of 6" on centers.
- 4. Do not use a concrete jacket to join dissimilar metal pipes.
- 5. 12" for pipes 15" through 24"; 24" for pipes 30" and larger.
- 6. 12" for pipes 14" x 23" through 19" x 30"; 24" for pipes 24" x 38" and larger.

GEOTEXTILE JACKET, CONCRETE JACKET, AND PIPE PLUG

LAST REVISION 11/01/23

FDOT

FY 2024-25 STANDARD PLANS

MISCELLANEOUS DRAINAGE DETAILS

INDEX

Concrete Jacket (See Note 6)

ELLIPTICAL PIPE

(Tongue & Groove Shown)

ROUND PIPE

(Bell & Spigot Shown)

DISSIMILAR JOINTS

Bituminous Coating (Metal Pipe Only)

Concrete Jacket: 2'-0"

Wire Mesh (Typ.) (See Note 3)

Concrete Jacket (See Note 5)

Concrete Pipe

Wire Mesh (Typ.)(See Note 3)

Concrete Pipe

Metal Pipe

Class NS Concrete

Class NS Concrete

0

1'-0"

1'-0"

CONCRETE AND METAL PIPE SHOWN (Others Similar)

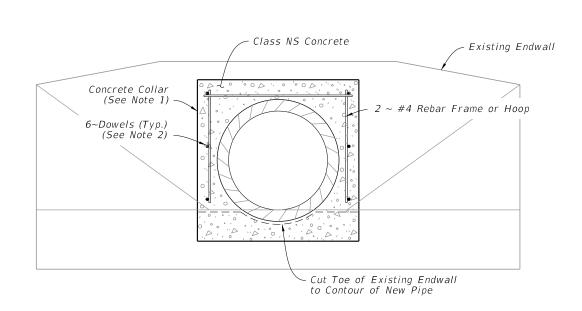
DISSIMILAR TYPES

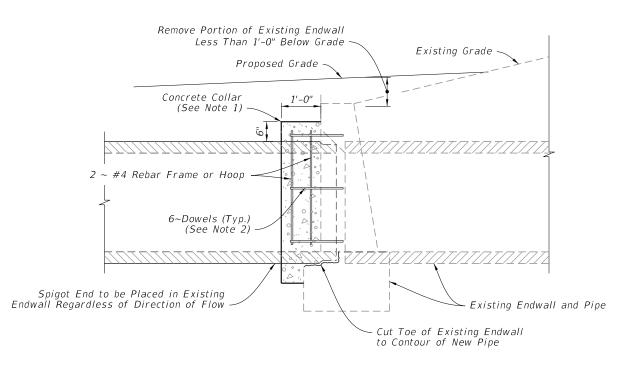
Class NS Concrete

SHEET

DESCRIPTION:

430-001 3 of 7





END ELEVATION SIDE ELEVATION

EXTENSION OF EXISTING PIPE CULVERTS =

NOTES:

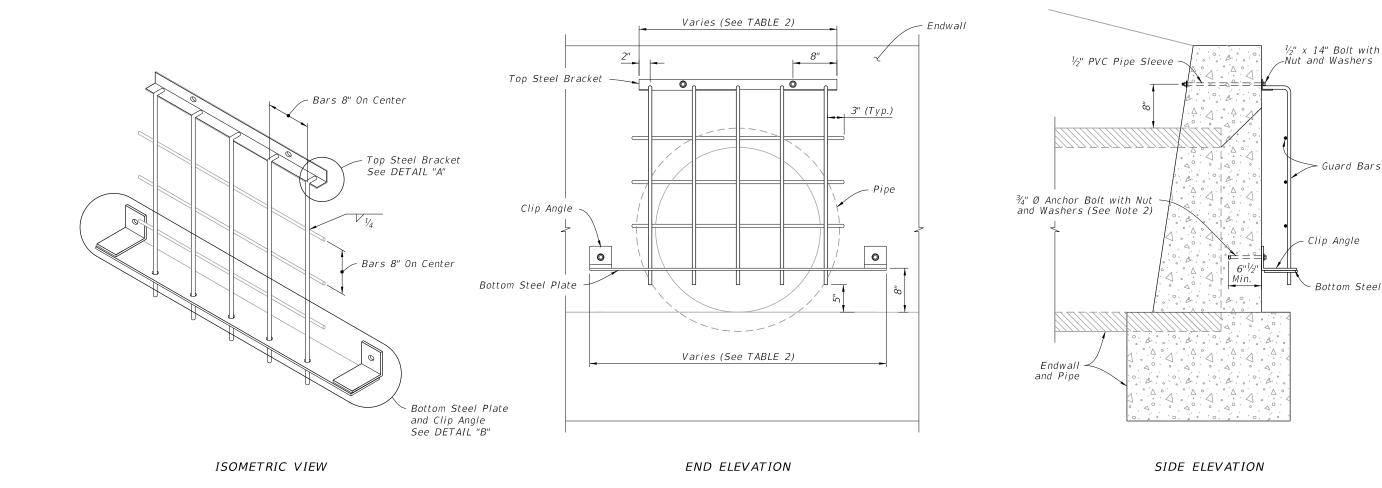
- 1. The collar may be formed by any method approved by the Engineer.
- 2. Install $\frac{1}{2}$ "x16" dowels in adhesive bond material.

CONCRETE COLLARS

REVISION 11/01/20

DESCRIPTION:

FDOT



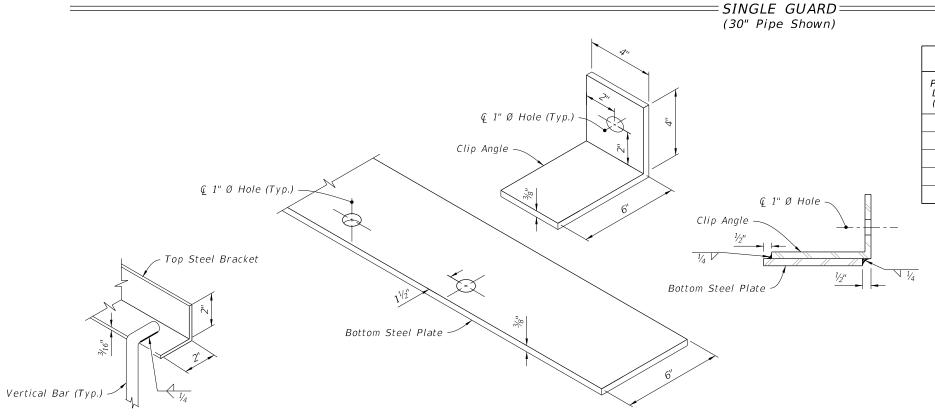


	TABLE 2 - SINGLE GUARD										
Pipe Dia. (in)	Top Steel Bracket	Bottom Steel Plate	eel Number Number of Vertical Number of Horizontal W								
18	2'-4"	3'-6"	4	4	1/2"	1	1/2"	48			
24	3'-0"	4'-0"	5	5	1/2"	2	1/2"	58			
30	3'-0"	4'-6"	5	5	5/8"	3	5/8"	74			
36	6 3'-8" 5'-0" 6 6 5%" 4 5%"							90			
42	4'-4"	5'-6"	7	7	5/8"	5	5/8"	111			

- 1. Construct guards only at locations specifically called for in Plans.
- 2. Anchor Bolts (Galvanized): Use C-I-P Hex Head bolts or fully threaded adhesive anchors, installed in accordance with Specification 416.

SINGLE PIPE END GUARD

→ Guard Bars

Clip Angle

Bottom Steel Plate

REVISION 11/01/20 = DETAIL "A" ===

DESCRIPTION:

FDOT

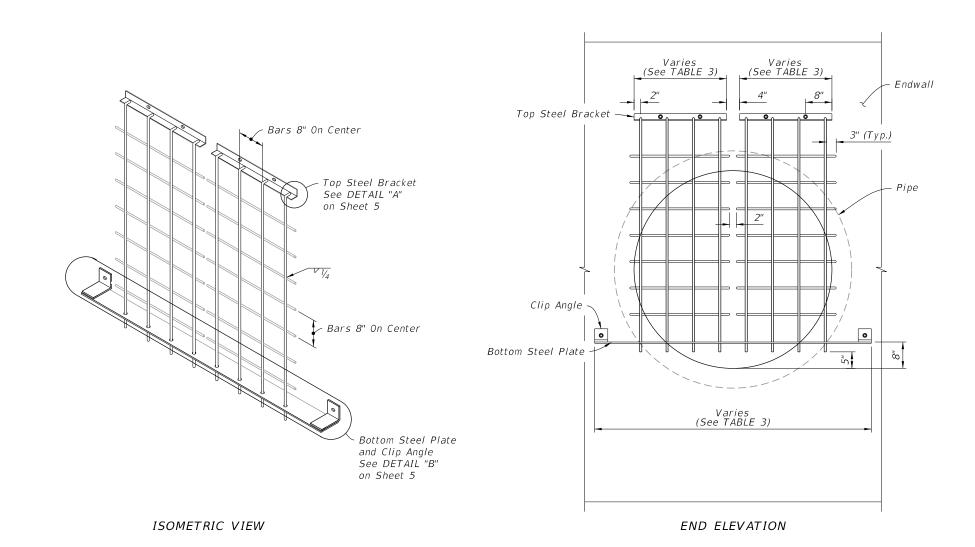
FY 2024-25 STANDARD PLANS

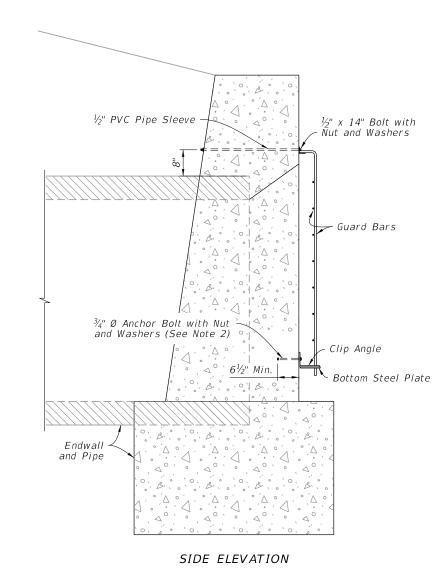
DETAIL "B'

MISCELLANEOUS DRAINAGE DETAILS

INDEX 430-001

SHEET 5 of 7





DOUBLE GUARD (60" Pipe Shown)

NOTES:

- 1. Construct guards only at locations specifically called for in Plans.
- 2. Anchor Bolts (Galvanized): Use C-I-P Hex Head bolts or fully threaded adhesive anchors, installed in accordance with Specification 416.

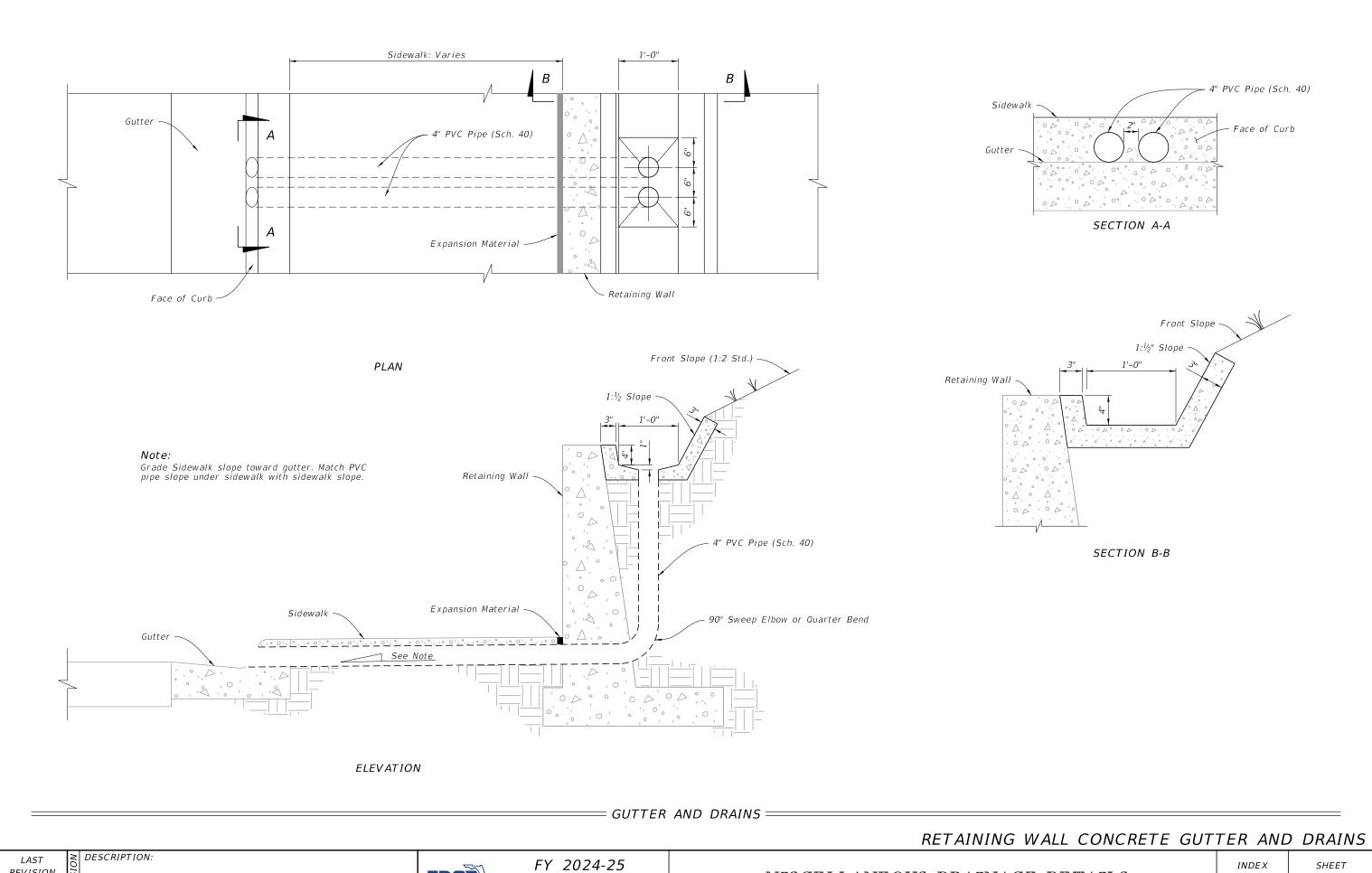
	TABLE 3 - DOUBLE GUARD									
Pipe Dia. (in)	Dia. Bracket Bracket Steel of Total Vert. Bars Vert. Bars Bars									
48	48 2'-4" 2'-4" 6'-0" 8 4 4 5%" 5 5%" 127								127	
54 2'-4" 2'-4" 6'-6" 8 4 4 3/4" 6 5/8" 1								157		
60	2'-4"	2'-4"	7'-0"	8	4	4	3/4"	7	5/8"	172

DOUBLE PIPE END GUARD

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

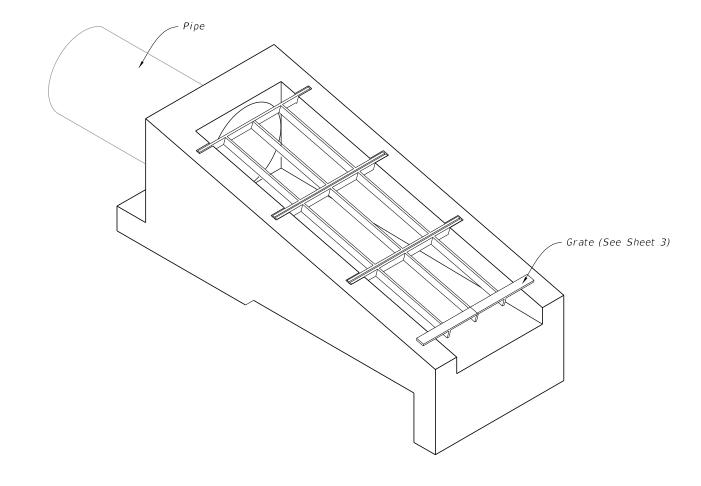


REVISION 11/01/20

FDOT

- 1. Use Class II concrete.
- 2. Reinforcing steel: All bars are size #4. Spacings shown are center to center. Laps to be 1'-5" minimum. Cover is 2" except as noted. Square welded wire fabric (two cages max.) having an equivalent cross sectional area (0.20 sq. in.) may be substituted for bar reinforcement.
- 3. Endwall may be cast in place or precast concrete. Construct precast units to dimensions shown, or as shown in approved shop drawings. Use Index 425-001 for opening and grouting details.
- 4. Quantities shown are for estimating purposes only.

	TABLE OF CONTENTS:						
Sheet	Description						
1	General Notes and Contents						
2	Dimensional and Reinforcing Details						
3	Type 1 and Type 2 Grate Details						



= U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES ==(24" Pipe Shown)

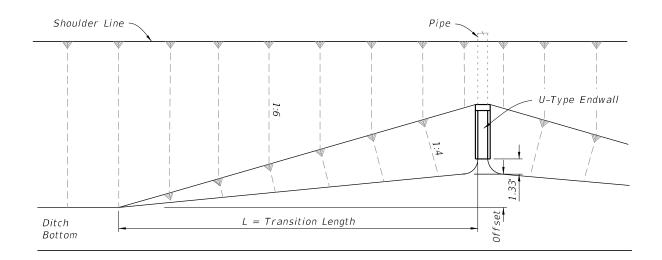


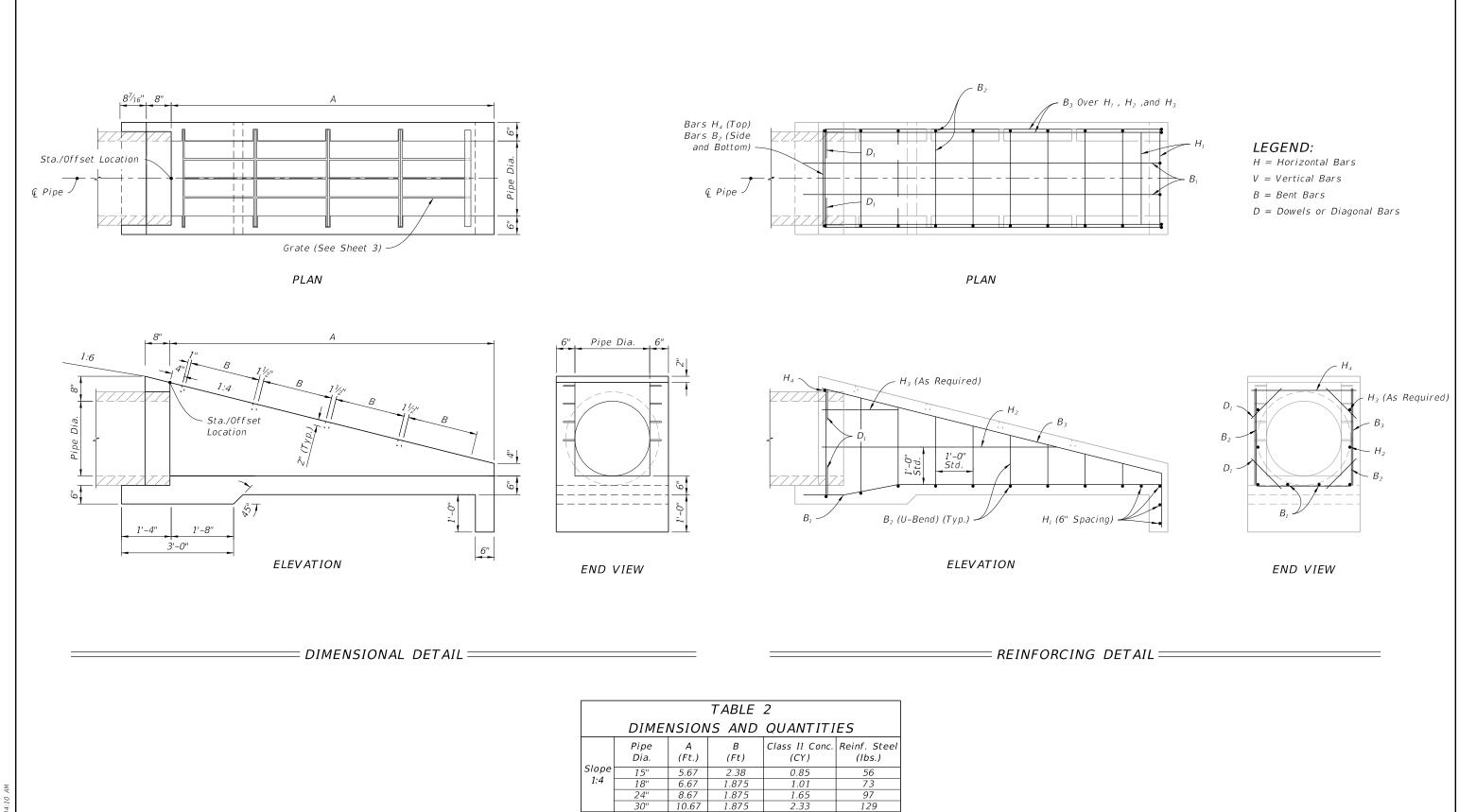
TABLE 1							
SLOPE TRANSITIONS							
	Pipe Dia.	Offset (Ft.)	L (Ft.)				
Slope 1:4	15"	4.2	42				
	18"	4.8	48				
	24"	5.8	58				
	30"	6.9	69				

= FRONT SLOPE TRANSITION AT ENDWALL =

DESCRIPTION: REVISION 11/01/21



INDEX 430-010



LAST REVISION 11/01/21

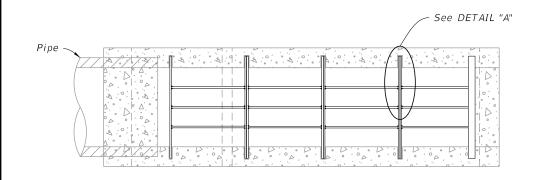
DESCRIPTION:

FDC

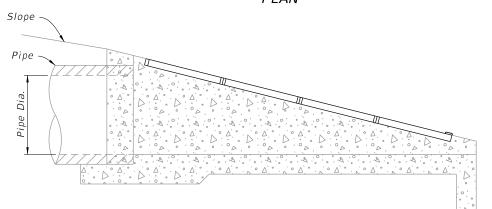
FDOT ST.

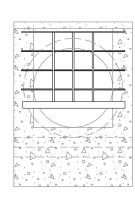
FY 2024-25 STANDARD PLANS U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES INDEX 430-010

SHEET 2 of 3



PLAN





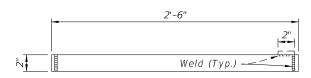
ELEVATION

END VIEW

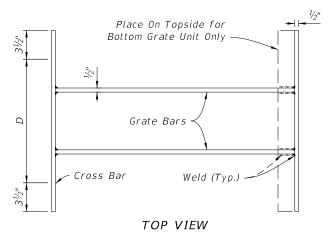
NOTES:

- 1. Install grate bars evenly spaced across dimension D.
- 2. All bars and grate bars are $\frac{1}{2}$ " x 2".

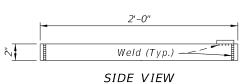
TABLE 3									
	NUMBER OF GRATE BARS AND GRATES REQUIRED								
Pipe Dia.	Pipe Dia. Grate Bars Reqd. Grate Grate Reqd. Total								
, D	Type No. 1	Type No. 2	Wt. (Ibs.)	Type No. 1	Type No. 2	Grate Wt. (lbs.)			
15"	2	0	28.93	2	0	57.86			
18"	0	3	33.69	0	3	101.08			
24"	0	4	4 43.63 0 4 17						
30"	0	5	53.55	0	5	267.75			

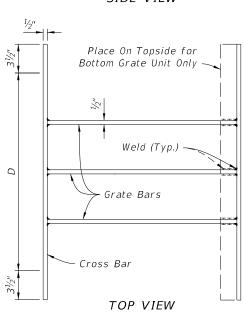


SIDE VIEW

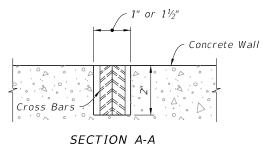


TYPE 1

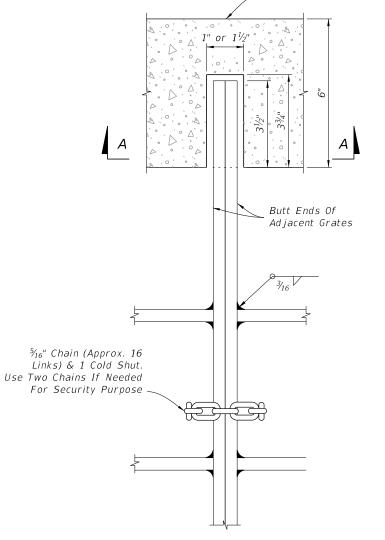




TYPE 2



U-Type Concrete Endwall



GRATE, SEAT, WELD & CHAIN DETAIL

= DETAIL "A" =

TYPE 1 AND TYPE 2 GRATE DETAILS

REVISION 11/01/19

FDOT

TYPE 1 AND TYPE 2 GRATE DETAILS =

STANDARD PLANS

U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES

INDEX 430-010

SHEET 3 of 3

DESCRIPTION:

3. See Sheet 5 when steel grating is required on endwall.

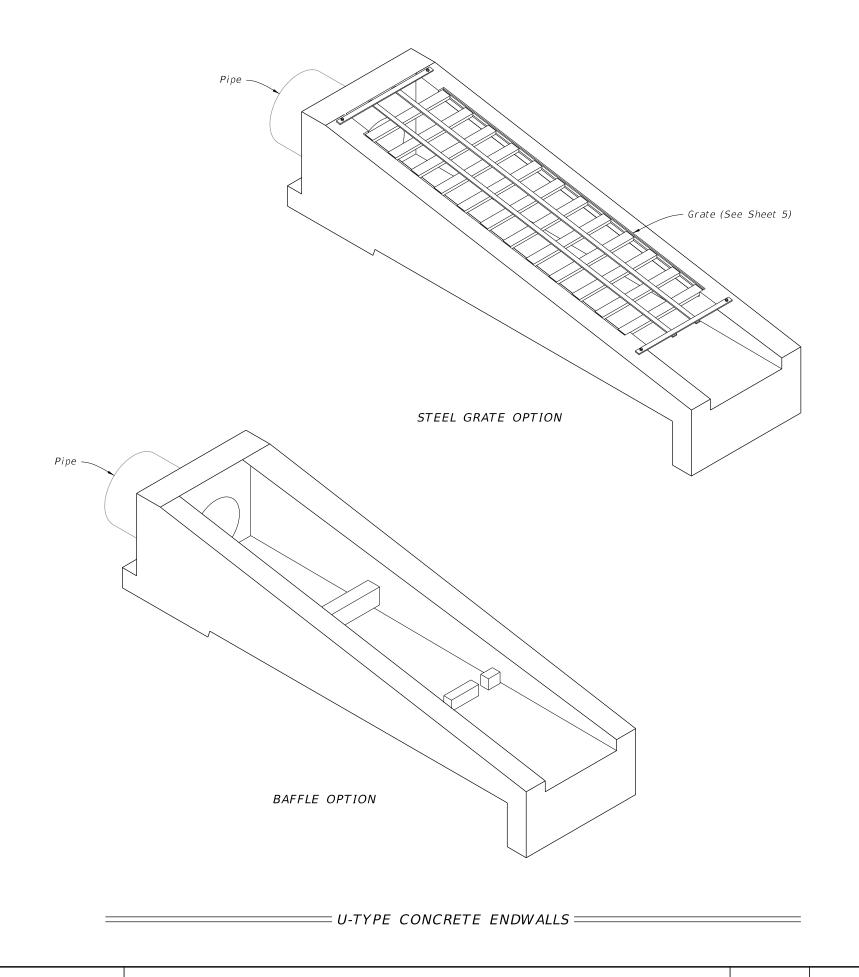
4. All reinforcing #4 bars with 2" clearance except as noted.

5. Channel section C 3x6 may be substituted for C 4x5.4 channel.

6. Endwall may be cast in place or precast concrete. Construct precast units to dimensions shown, or as shown in approved shop drawings. Submit requests for shop drawing approvals to the Engineer. Use Index 425-001 for opening and grouting details.

7. Quantities shown are for estimating purposes only.

	TABLE OF CONTENTS:							
Sheet	Description							
1	General Notes and Contents							
2	Endwalls for 1:2 Slopes With Baffles							
3	Endwalls for 1:2 Slopes Without Baffles and Bending Bar Diagram							
4	Endwalls for 1:3, 1:4, and 1:6 Slopes							
5	Steel Grate Option							

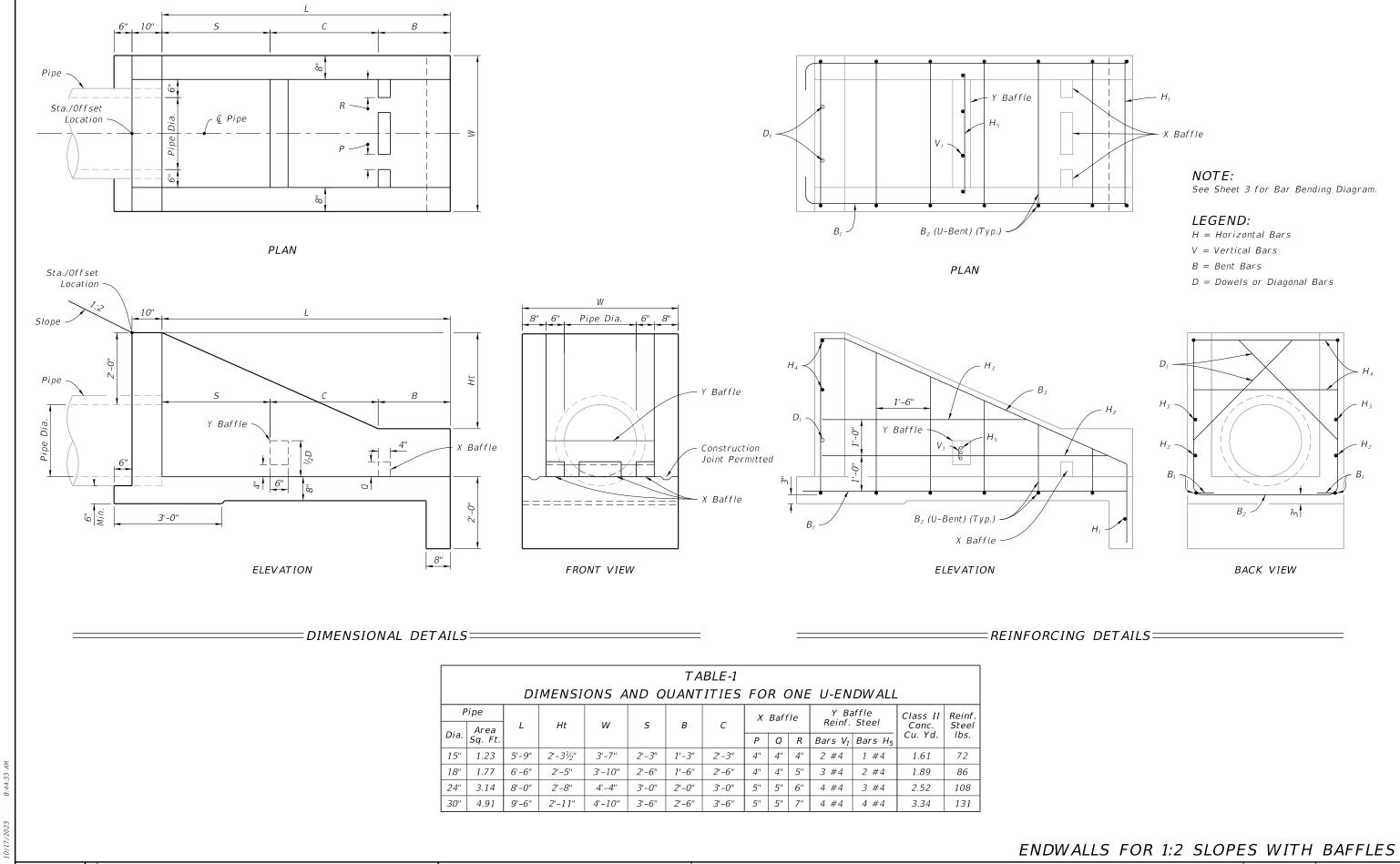


10/11/2023

LAST REVISION 11/01/21

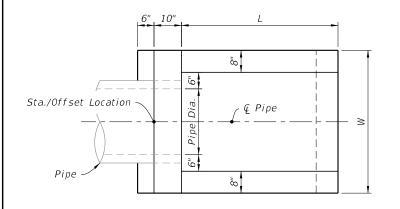
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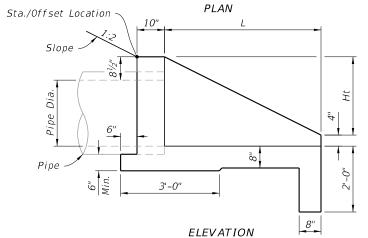


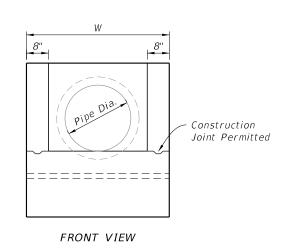


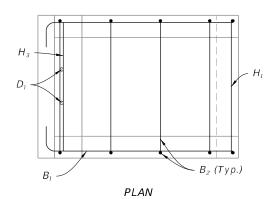
LAST OF DESCRIPTION:
REVISION OF 11/01/21

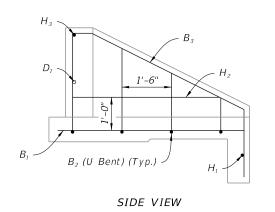
FDOT











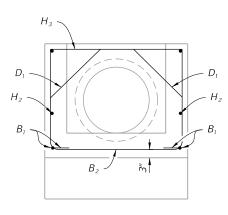
LEGEND:

H = Horizontal Bars

V = Vertical Bars

B = Bent Bars

D = Dowels or Diagonal Bars



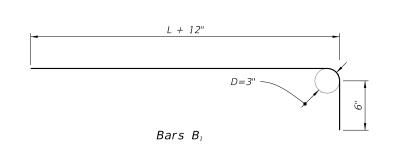
BACKWALL SECTION

DIMENSIONAL DETAILS -

REINFORCING DETAILS

TABLE-2								
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL								
Pip	Pipe Class II Reinf.							
Dia.	Area Sq. Ft.	L	Ht	W	Conc. Cu. Yd.	Steel Ibs.		
15"	1.23	3'-3"	1'-71/2"	3'-7"	0.89	39		
18"	1.77	3'-9"	1'-10 ¹ / ₂ "	3'-10"	1.05	43		
24"	3.14	4'-9"	2'-41/2"	4'-4"	1.40	55		
30"	4.91	5'-9"	2'-101/2"	4'-10"	1.88	64		

= ENDWALL WITHOUT BAFFLES =



W-4''

Bars B₂

BENDING DIAGRAM =

ENDWALLS FOR 1:2 SLOPES WITHOUT BAFFLES AND BAR BENDING DIAGRAM

REVISION 11/01/21

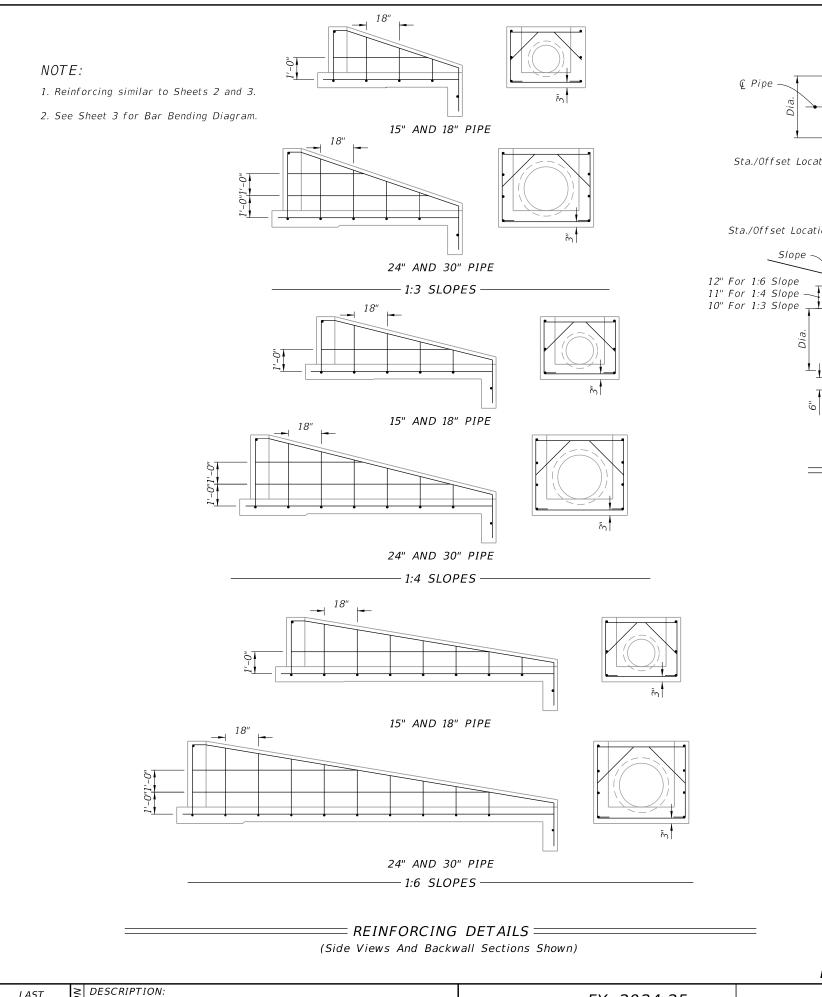
FDOT

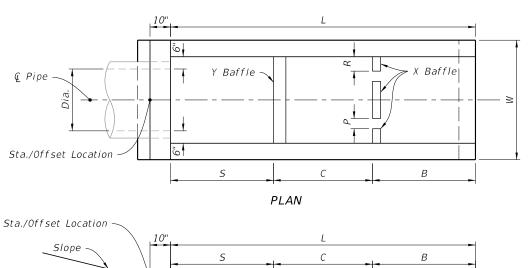
FY 2024-25 STANDARD PLANS

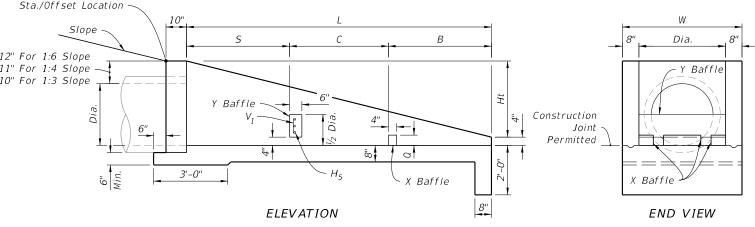
U-TYPE CONCRETE ENDWALLS BAFFLES AND GRATE OPTIONAL 15" TO 30" PIPE

INDEX 430-011 SHEET

≥ DESCRIPTION:







=== DIMENSIONAL DETAILS =

	TABLE-3										
D	DIMENSIONS AND QUANTITIES FOR BAFFLES										
Pipe		X Baffle	<u>.</u>		e Reinf. eel	Class II Concrete	Reinf. Steel				
Dia.	P Width	Q Height	R Length	Bar V ₁	Bar H ₅	Cu. Yd.	lbs.				
15"	4"	4"	4"	2- #4	1- #4		4				
18"	4"	4"	5"	3- #4	2- #4	0.10	8				
24"	5"	5"	6"	4- #4	3- #4] 0.10	12				
30"	5"	5"	7"	4- #4	4- #4		16				

	TABLE-4										
	DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL										
Rate Of	Р	ipe	1	Ht	w		fle Locat en Requii		Class II Concrete	Reinf. Steel	
Slope	Dia.	Area (Sq. Ft.)	L	770	VV	S	В	С	Cu. Yd.	Ibs.	
	15"	1.23	5'-3"	1'-9"	3'-7"	1'-9"	1'-9"	1'-9"	1.19	51	
1:3	18"	1.77	6'-0"	2'-0"	3'-10"	2'-0"	2'-0"	2'-0"	1.42	56	
1:3	24"	3.14	7'-6"	2'-6"	4'-4"	2'-6"	2'-6"	2'-6"	1.94	77	
	30"	4.91	9'-0"	3'-0"	4'-10"	3'-0"	3'-0"	3'-0"	2.54	96	
	15"	1.23	7'-4"	1'-10"	3'-7"	2'-6"	2'-6"	2'-4"	1.54	64	
1 . 1	18"	1.77	8'-4"	2'-1"	3'-10"	2'-10"	2'-10"	2'-8"	1.84	71	
1:4	24"	3.14	10'-4"	2'-7"	4'-4"	3'-6"	3'-6"	3'-4"	2.53	92	
	30"	4.91	12'-4"	3'-1"	4'-10"	4'-2"	4'-2"	4'-0"	3.34	124	
	15"	1.23	11'-6"	1'-11"	3'-7"	3'-10"	3'-10"	3'-10"	2.19	89	
1.6	18"	1.77	13'-0"	2'-2"	3'-10"	4'-4"	4'-4"	4'-4"	2.63	103	
1:6	24"	3.14	16'-0"	2'-8"	4'-4"	5'-4"	5'-4"	5'-4"	3.59	143	
	30"	4.91	19'-0"	3'-2"	4'-10"	6'-4"	6'-4"	6'-4"	4.81	180	

ENDWALLS WITH AND WITHOUT BAFFLES FOR 1:3, 1:4, AND 1:6 SLOPES

REVISION 11/01/21

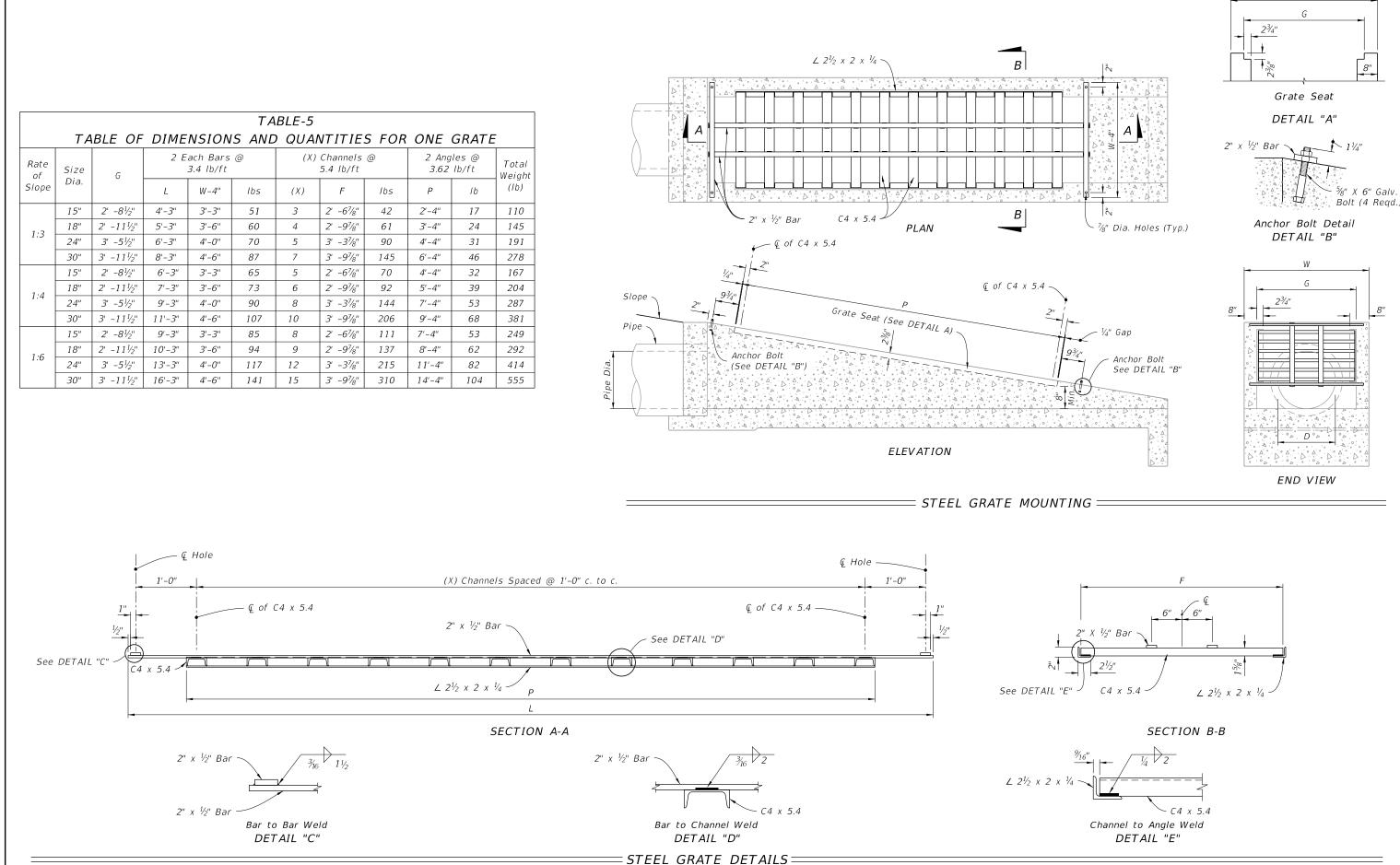
FDOT

FY 2024-25 STANDARD PLANS

U-TYPE CONCRETE ENDWALLS BAFFLES AND GRATE OPTIONAL 15" TO 30" PIPE

INDEX 430-011

SHEET 4 of 5



DESCRIPTION: REVISION 11/01/21

FY 2024-25 STANDARD PLANS

U-TYPE CONCRETE ENDWALLS BAFFLES AND GRATE OPTIONAL 15" TO 30" PIPE

INDEX

STEEL GRATE OPTION

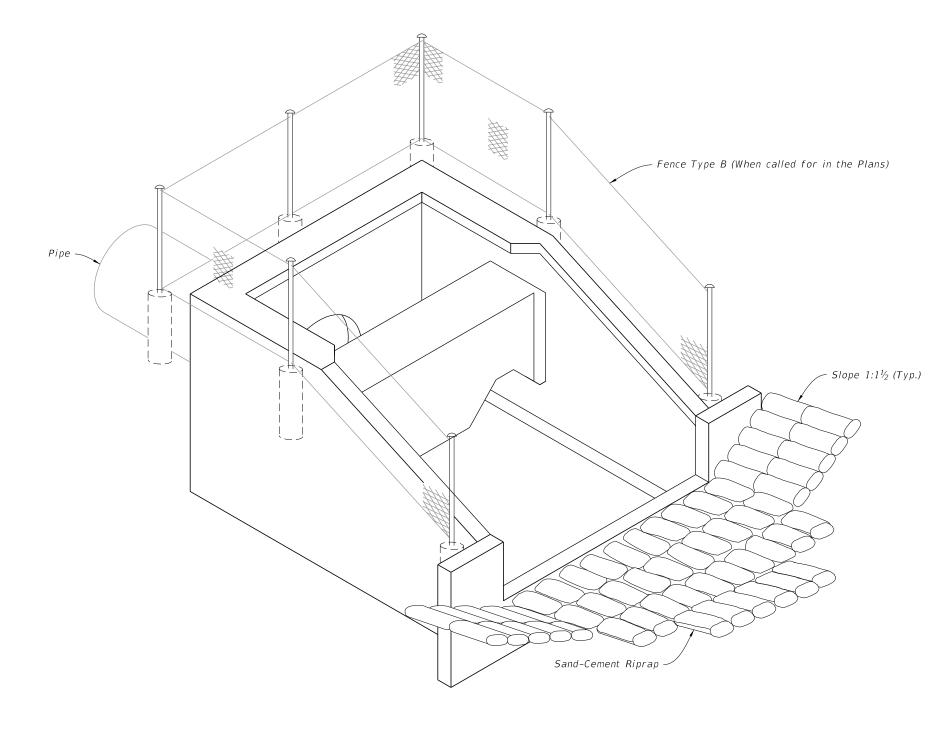
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SHEET

430-011 5 of 5

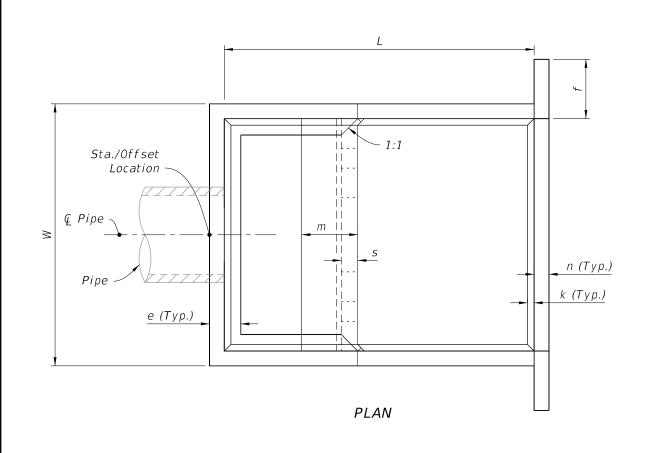
- 1. Use Class II concrete.
- 2. Chamfer all exposed edges ¾".
- 3. See Index 550-002 for details of Type B fencing.
- 4. Quantities shown are for estimating purposes only.
- 5. Install Type D-2 geotextile in accordance with Specification 514.

	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Dimensional Details
3	Reinforcing Details and Bending Diagram

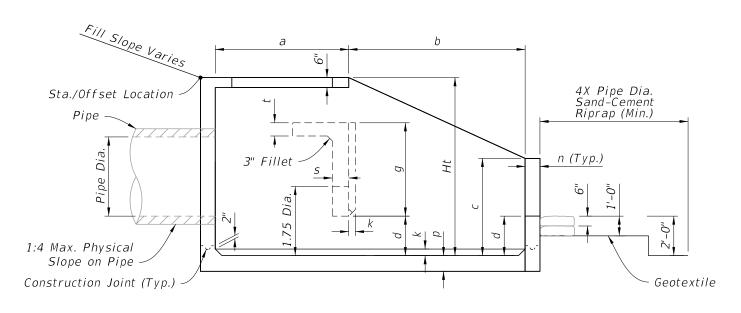


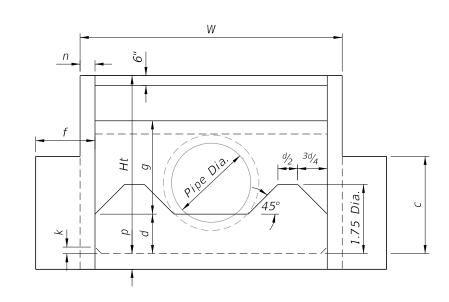
= U-TYPE CONCRETE ENDWALLS =

≥ DESCRIPTION:



P	Pipe						DIM	ENSI	ON 7	ABLE	Ē									Sand-Cement	
Dia.	Area	Feet - Inches Inches										hes Concrete (CY)			Reinf. Steel (Ib)	Riprap (Nom.)					
Dia.	(SF)	W	Ht	L	а	b	С	d	e	f	g	m	n	р	S	t	k		(12)	(CY)	
30"	4.91	9-0	6-3	10-8	4-7	6-1	3-4	1-4	1-2	2-6	3-0	1-11	6	6½	7	7	3	6.72	736	10.6	
36"	7.07	10-5	7-3	12-4	5-3	7-1	3-10	1-7	1-3	3-0	3-6	2-3	7	7½	8	8	3	10.34	1,072	13.6	
42"	9.62	11-10	8-0	14-0	6-0	8-0	4-5	1-9	1-6	3-0	3-11	2-6	8	81/2	9	8	4	14.82	1,429	17.5	
48"	12.57	13-3	9-0	15-8	6-9	8-11	4-11	2-0	1-7	3-0	4-5	2-10	9	91/2	10	8	4	20.36	2,000	22.1	
54"	15.90	14-8	9-9	17-4	7-4	10-0	5-5	2-2	1-10	3-0	4-11	3-0	10	101/2	10	8	4	27.19	2,659	27.2	
60"	13.63	16-1	10-9	19-0	8-0	11-0	5-11	2-5	1-11	3-0	5-4	3-4	11	111/2	11	8	6	34.49	3,552	32.5	
66"	23.76	17-3	11-6	20-6	8-8	11-10	6-5	2-7	2-1	3-0	5-9	3-7	12	$12\frac{1}{2}$	12	8	6	42.82	4,472	38.3	
72"	28.27	18-6	12-3	22-0	9-3	12-9	6-11	2-9	2-3	3-0	6-2	3-9	12	$12\frac{1}{2}$	12	8	6	50.68	5,426	44.5	





ELEVATION FRONT VIEW

DIMENSIONAL DETAILS:

DIMENSIONAL DETAILS

LAST REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

U-TYPE CONCRETE ENDWALLS ENERGY DISSIPATOR 30" TO 72" PIPE INDEX 430-012

^{SHEET} 2 of 3

- 1. All bar dimensions are measured out to out.
- 2. All Bars are size #4 unless otherwise note
- 3. Install reinforcing steel with a minimum of 2" cover
- 4. Bars B6 and B7 (N.S. and F.S.) equivalent in size to $B_{\rm 5}$ (cut and bend as required)
- 5. Bars V_1 , V_2 , V_3 , V_4 , V_5 , H_1 , H_2 , H_3 , H_4 , and H_5 are straight bars.

1.	/ 1/ /	Dui (arrine r	1310113	C I	c measi	ar cu	Out		our.	
2	ΛII	Rarc	ara	ciza	#1	unlace	othe	rwic	ر ۵	noted	

H = Horizontal Bars

II = HOHZOMEAL DAIS

V = Vertical Bars

B = Bent Bars

LEGEND:

D = Dowels or Diagonal Bars

		B ₁		B_2		B_3		B_4		B ₅	B_{IO}		
Pipe	1	Spacing (FtIn.)								Spacing (FtIn.)		Spacing (FtIn.)	
30"	4	0-91/2	4	1-6	5	0-11	4	0-91/2	5	0-51/2	4	0-91/2	
36"	5	1-0	4	1-6	5	0-10	5	1-0	5	0-5	5	1-0	
42"	5	0-11	4	1-6	6	1 – 1	5	0-11	6	0-61/2	5	0-11	
48"	5	0-91/2	4	1-0	6	1-0	5	0-91/2	6	0-6	5	0-91/2	
54"	5	0-81/2	4	0-10	7	1 – 1	5	0-81/2	7	0-61/2	5	0-81/2	
60"	6	0-10	5	1 – 1	7	1-0	6	0-10	7	0-6	6	0-10	
66"	6	0-81/2	5	0-111/2	7	0-11	6	0-81/2	7	0-51/2	6	0-81/2	
72"	6	0-71/2	5	0-10	7	0-10	6	0-71/2	7	0-5	6	0-71/2	

2d+9"

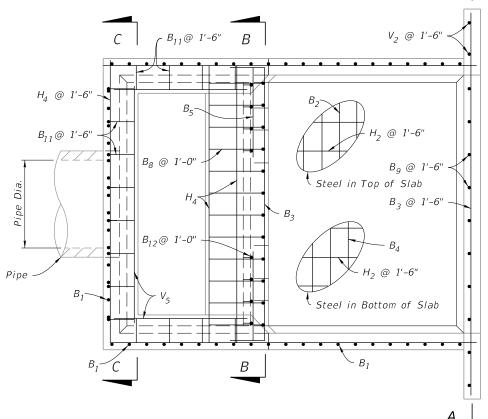
g-4"

p+k+18"

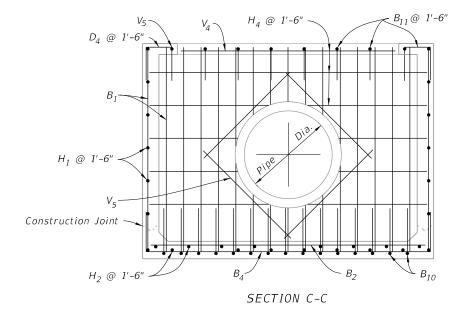
2'-0"

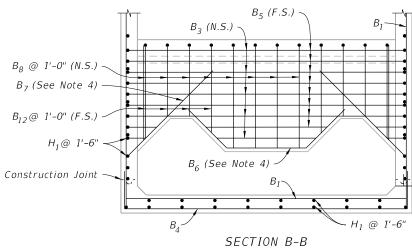
BARS B₅ B₈ B₁₀ B₁₁ B₁₂

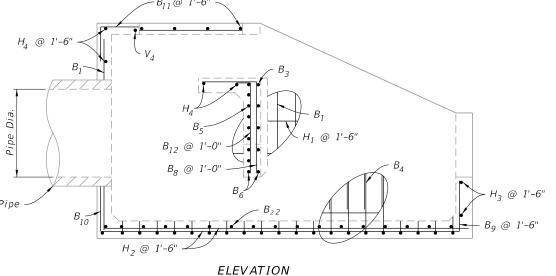
 B_8 , B_{12}

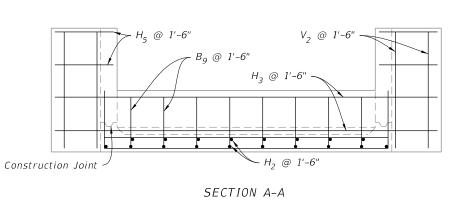


PLAN









p + k + 18"

BAR B_4

W-4

BENDING DIAGRAM =

= REINFORCING DETAILS =

REINFORCING DETAILS AND BENDING DIAGRAM

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

U-TYPE CONCRETE ENDWALLS ENERGY DISSIPATOR 30" TO 72" PIPE INDEX 430-012

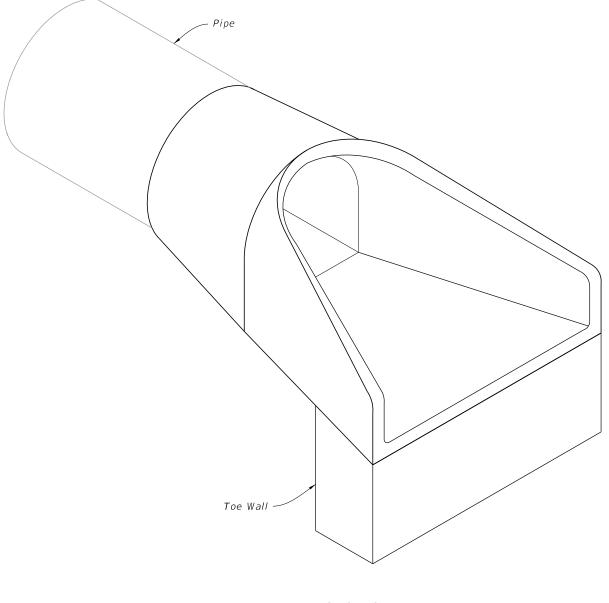
3 of 3

/2023 8:45:17

- 1. Provide flared end sections meeting the requirements of ASTM C76 with the exception that dimensions and reinforcement meet the criteria in the table on sheet 2. Circumferential reinforcement may consist of either one cage or two cages of steel. Use concrete compressive strength of 4000 psi.
- 2. Connections between the flared end section and the pipe culvert may be any of the following types unless otherwise shown on the plans.
 - a. Joints meeting the requirements of Section 449 of the Standard Specifications (O-Ring Gasket). Flared end section joint dimensions and tolerances shall be identical or compatible to those used in the pipe culvert joint. When pipe culvert and flared end section manufacturers are different, the manufacturer of the flared end sections must certify the compatibility of joint designs.
 - b. Joints sealed with preformed plastic gaskets. Use gaskets that meet the requirements Specification 942-2 of the Standard Specifications and the minimum sizes for gaskets as specified for equivalent sizes of elliptical pipe.
 - c. Reinforced concrete jackets, as detailed on sheet 2. When non-coated corrugated metal pipe is called for in the Plans, use bituminous coated pipe in the jacketed area as specified on Index 430-001.

 Construct concrete jacket as specified in Index 430-001.
- 3. Cast Toe Walls in place using Class II Concrete.
- 4. On skewed pipe culverts place the flared end sections in line with the pipe culvert. Warp the side slopes as required to fit the flared end sections.
- 5. Quantities shown are for estimating purposes only.

	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Straight Flare, Optional Shape Details, and Reinforced Concrete Jacket Detail

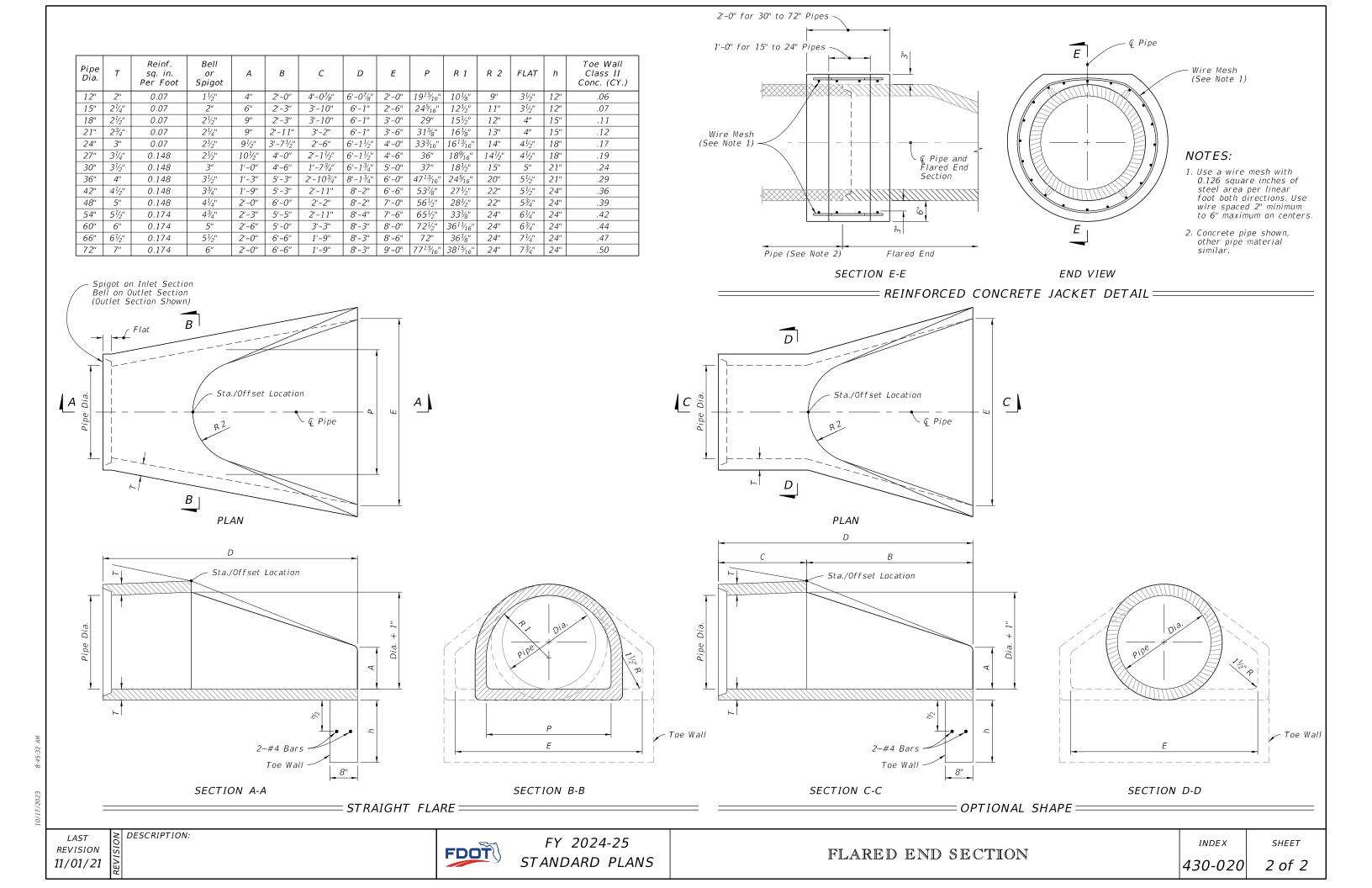


= FLARED END SECTION =

8:45:25 AM

DESCRIPTION:





- 1. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of cross drain pipe; corrugated steel pipe mitered end sections may be used with any type of cross drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of cross drain pipe except steel pipe. When bituminous coated metal pipe is specified for cross drain pipe, construct the mitered end sections with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the cross drain pipe, construct a concrete jacket in accordance with Index 430-001.
- 2. Use either corrugated metal or concrete mitered end sections for corrugated polyethylene pipe (HDPE), polyvinyl-chloride pipe (PVC), steel reinforced polyethylene pipe (SRPE), and polypropylene pipe (PP). When used in conjunction with corrugated mitered end sections, make connection using either a formed metal band specifically designated to join HDPE, PVC, SRPE, or PP pipe, with metal pipe. When used in conjunction with a concrete mitered end sections, construct concrete jacket in accordance with Index 430-001.
- 3. Class NS concrete cast-in-place reinforced slabs are required for all sizes of cross drain pipes. Construct slabs at $5\frac{1}{2}$ " thick, unless 3" thickness is called for in the Plans.
- 4. Select lengths of concrete pipe that avoid excessive connections in the assembly of the mitered end section.
- 5. Repair corrugated metal pipe galvanizing that is damaged during beveling and perforating.
- 6. When existing multiple cross drain pipes are spaced other than the dimensions shown in this Index, have nonparallel axes, or non-uniform sections, either construct the mitered end sections separately as single pipe or collectively as multiple pipe end sections as directed by the Engineer.
- 7. Saddle Slope:
 - 1:4 Miter Slope to © of pipe for round pipes less than or equal to 18" diameter and 1:1 for round pipes greater than or equal to 24" diameter.

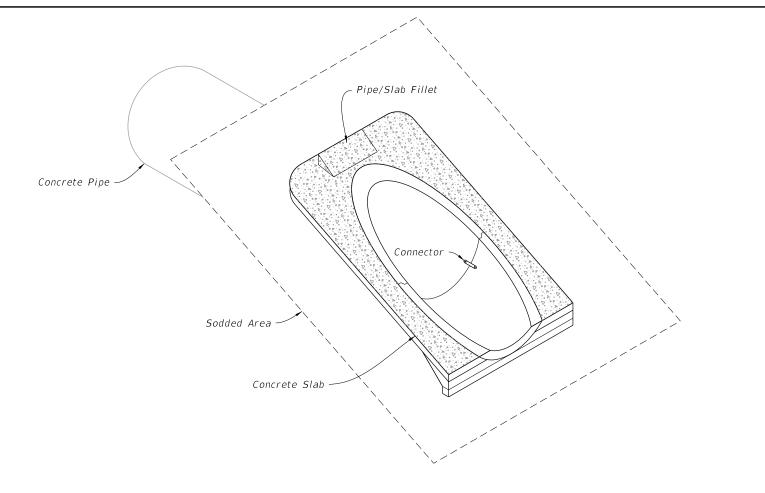
Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger. Slope to the span line for pipe arch 28"x20" or smaller and 1:2 for pipe arch 35"x24" or larger.

1:2 Miter - Slope to ¢ of pipe for round pipes less than or equal to 18"diameter and 1:2 for round pipes greater than or equal to 24" diameter.

Slope to the major axis for elliptical pipes 29"x45" or smaller and 1:1 for pipes 34"x53" or larger. Slope 1:1 for all pipe arch sizes.

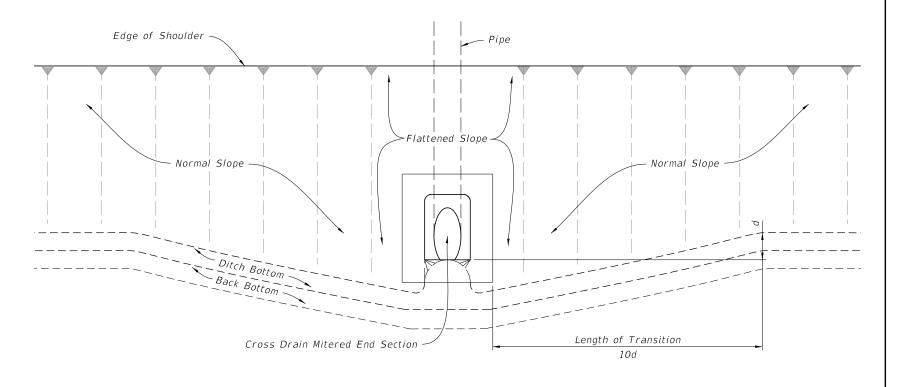
8. Quantities shown are for estimating purposes only.

	TABLE OF CONTENTS:								
Sheet	Description								
1	General Notes and Contents								
2	Single and Multiple Concrete Pipe								
3	Concrete Pipe Dimensions and Quantities								
4	Single and Multiple Corrugated Metal Pipe								
5	Corrugated Metal Pipe Dimensions and Quantities								
6	Concrete Pipe Connections and Corrugated Metal Pipe (CMP) Anchor Detail								



= CROSS DRAIN MITERED END SECTION =

(Concrete Pipe Shown, Corrugated Metal Pipe Similar)



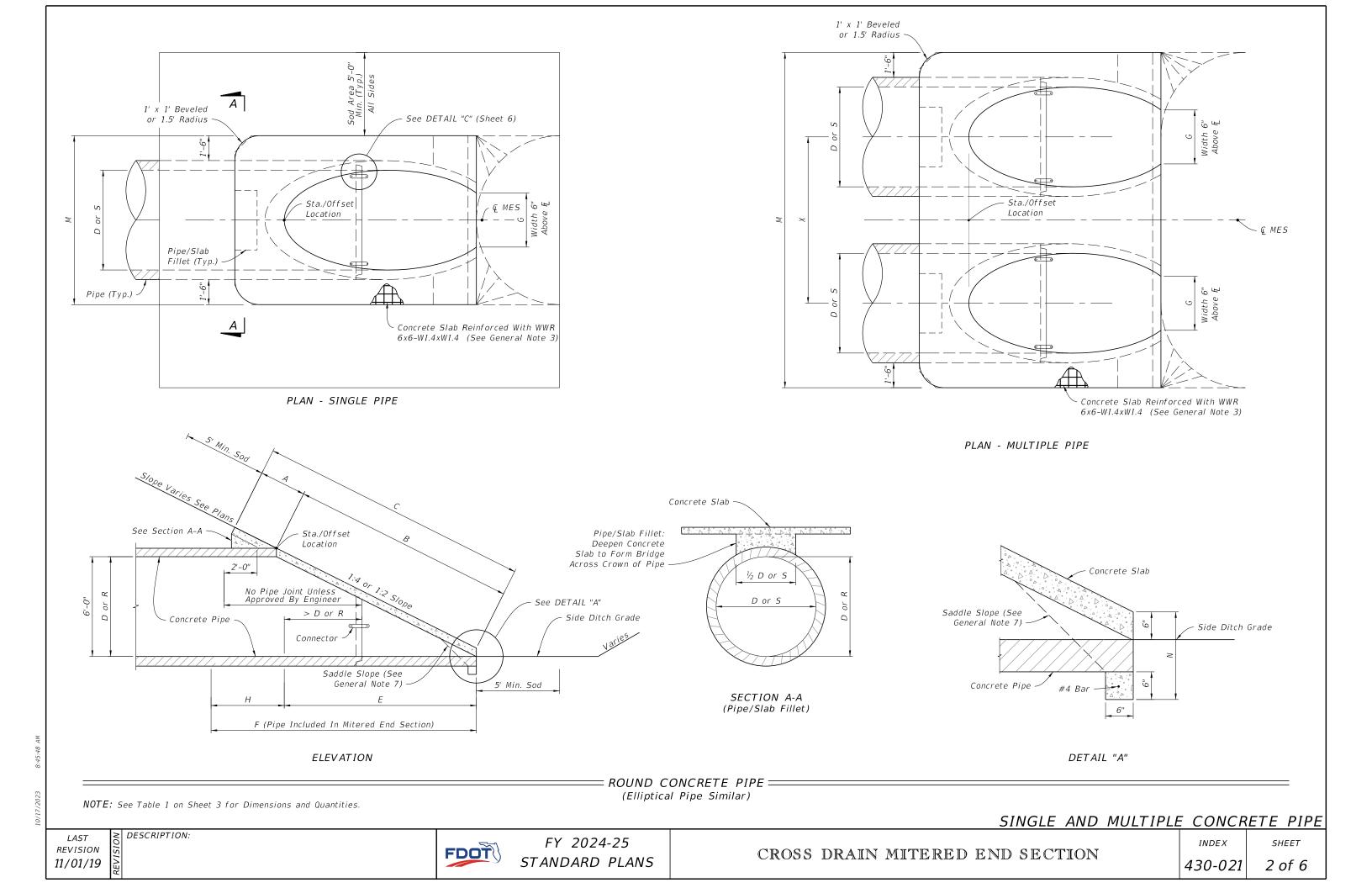
= SLOPE AND DITCH TRANSITIONS =

REVISION 11/01/19

DESCRIPTION:



1 of 6



LAST	ΝС	DESCRIPTION:
EVISION	SI	
/01/19	EVi	

Dia. Rise Span

	FY 2024-25							
FDOT	STANDARD PLANS							

— | 58" | 91" | 11'-8" | 4.08' | 18.87' | 22.95' | 18.36' | 22' | 5.01' | 3.6' | 11.83' | 23.50' | 35.17' | 46.83' | 1.63' | 3.02 | 5.98

G

3.4' 10.58' 13.42' 1.21' 0.31 0.45 0.60 0.75 1.09 3.4' 24 2.06' 3.85' 5.50' 8.92' | 12.33' | 15.75' 1.12 1.42 0.39 0.59 0.79 1.00 2.00' 3.4' 6.08' 14.58' 18.83' 1.50 1.91 0.46 0.76 1.04 **—** 5'-1" 2.24' 16.83' 21.92' 39 45 5 56' 2.51 0.55 1.33 1.71 3.4' 1.95 0.94 7.25' | 13.25' 19.25' | 25.25' 2.45 3.19 0.66 1.15 1.66 2.15 30 43 50 2.65' 3.4' 7.83' 14.58' 2.04 2.93 3.84 0.76 1.37 1.96 2.57 21.33' 3.4' 3.58 4.72 1.62 2.38 4.28 5.68 0.99 1.90 2.81 4.4' 6.43 4.27 9.58' 27.92' 37.08' 4.84 2.15 3.21 1.11 5 59 7.45 1.24 2.46 3.68 4 90 0.40 0.61 5 12' 35 **—** | 2'-10" 7 48' 5 0 3' 1 41' 4.0' 4.92' 0.99 1.31 1.65 0.470.69 0.91 1.14 25 7.75 10.58' 13.42' 0.66 8.92' 0.90 1.21 1.52 40 9.03' | 13' | 2.00' 6.08' 3.05 0.76 1.19 1.63 2.07 2.63 1.48 6.67' 3.08 3.96 0.89 2.05 4.0' 3.91 1.82 3.34 Slope 1.21 2.15 3.07 4.00 63 7'-8" 21' 2.83' 4.0' 8.42' | 16.08' | 23.75' | 31.42' 1.46' 5.77 7.58 1.39 2.55 3.72 4.88 44 61 69 3.00' 4.0' 3.02 4.44 75 9'-2" 3.73' 21.03' 25' 3.18' 5.40 7.15 49 80 9.58' 18.75' 27.92' 37.08' 8.18 10.84 1.91 3.66 69 4.0' 27.59' 30.16' 40.16' 13.13 2.12 4.18 6.24 8.30 74 4' 1.50' 10.58' 13.42' 0.67 0.85 0.19 0.33 0.45 14" 23" 3'-4" 2.01' 1.90' 8.71' 1.99' 4.00' 1.89' 12.04' 15.38' 0.25 0.40 0.81 1.02 0.69 10.04' 14.04' 18.04' 1.09 1.39 0.34 0.55 0.95 5'-0" 2.20' 2.85' 3.4' 6.79' 11.79' 16.79' 1.31' 1.45 0.71 1.00 1.28 42 3.85' 6.05' 3.56' 1.86 0.43 26 0.62 2.34' 479' 7.13' 4.39' 3.19' 3.6' 13 42' 19.33' 1.84 2 39 0.52 0.90 1.27 1.65 41 47 15.25' 22.25' 29.25' 1.11 Slope 2.52' 1.29 1.87 6.46' 8.98' 5.89' 3.95 3.1' 8.92' 16.75' 24.58' 32.42' 2.74 3.60 0.70 2.46 49 57 6.73' | 10' | 4.28' 9.67' 18.58' 27.50' 36.42' 2.26 3.33 4.40 0.81 1.54 2.26 2.99 43 63 8.33' 10.42' 20.33' 30.25' 40.17' 3.93 5.21 0.93 1.79 2.66 3.53 57 68 3.6' 4.77' 32.42' 43.08' 3.03 2 80' 9.26' 12 06' 8 39' 11 08' 21 75' 1.58' 4.50 104 2 04 4.02 49 61 5.96 2.90' 5.01' 5.20 1.17 2.33 3.49 4.66 18" 2'-10" 2.36' 3.06' 3.03' 5' 1.50' 2.0' 4.92' 10.58' 13.42' 1.21' 0.92 1.14 0.30 0.45 0.61 0.76 29 32 14" | 23" | 3'-4" | 2.44' 3.75' 6.19' 3.70' | 6' | 1.90' | 2.3' 5.38' | 12.04' | 15.38' | 1.23' 0.83 1.13 1.42 0.36 0.56 0.76 0.95 24 5.36' 2.37' 2.6' | 6.04' 10.04' 14.04' 18.04' 1.57 0.79 1.08 24" 38" 5'-0" 2.79' 7.18' 10' 2.85' 3.0' 6.79' 11.79' 16.79' 21.79' 2.81 1.10 1.53 1.96 0.68 | 29" | 45" | 5'-11" 3.05' 8.90' 8.70' 3.19' 3.3' 7.50' 13.42' | 19.33' | 25.25' 2.92 3.77 0.86 1.45 2.04 2.63 33 46 53 10.62 1.81 2.60 Slope 38" 2.14 3.10 65 15 38' 3 95 24 58' 32 42' 1 46' 453 5.92 4 0 5 43" | 68" | 8'-11" 3.56' 17.27' 13.36' | 17' | 4.28' 3.6' 9.67' 18.58' 27.50' 36.42' 1.50' 2.02 5.56 7.32 1.38 2.58 3.79 4.99 41 51 61 71 9'-11" 3.73' 15.43' 19.16' 15.03' 19' 4.59' 4.0' 10.42' 20.33' 30.25' 40.17' 1.54' 2.34 4.49 6.64 8.79 1.59 3.05 4.51 5.97 55 66 3.3' | 11.08' | 21.75' | 32.42' | 43.08' | 1.58' | 10.16 47 71 3.91' 17.15' | 21.06' 16.70' | 20' | 4.77' 5.17 3.50 5.19 59 2.66 7.66 1.80 6.88

TABLE 1
SINGLE AND MULTIPLE CONCRETE PIPE DIMENSIONS AND QUANTITIES

Single Double Triple Quad.

5½" CONC. SLAB (CY)

(See General Note 3)

Pine

Pipe

3" CONC. SLAB (CY)

(See General Note 3)

Pipe 0.41

Single Double Triple | Quad. | Single Double Triple | Quad. | Single Double Triple | Quad. |

0.54

Pip<u>e</u>

0.67

SODDING (SY)

В Е

 \triangle 6.42' \triangle 6.25' Dimensions permitted to allow use of 8' standard pipe lengths.

 \diamond 10.40' \diamond 10.10' Dimensions permitted to allow use of 12' standard pipe lengths.

CONCRETE PIPE DIMENSIONS AND QUANTITIES

8.95 11.90 2.04 4.04 6.05 8.05

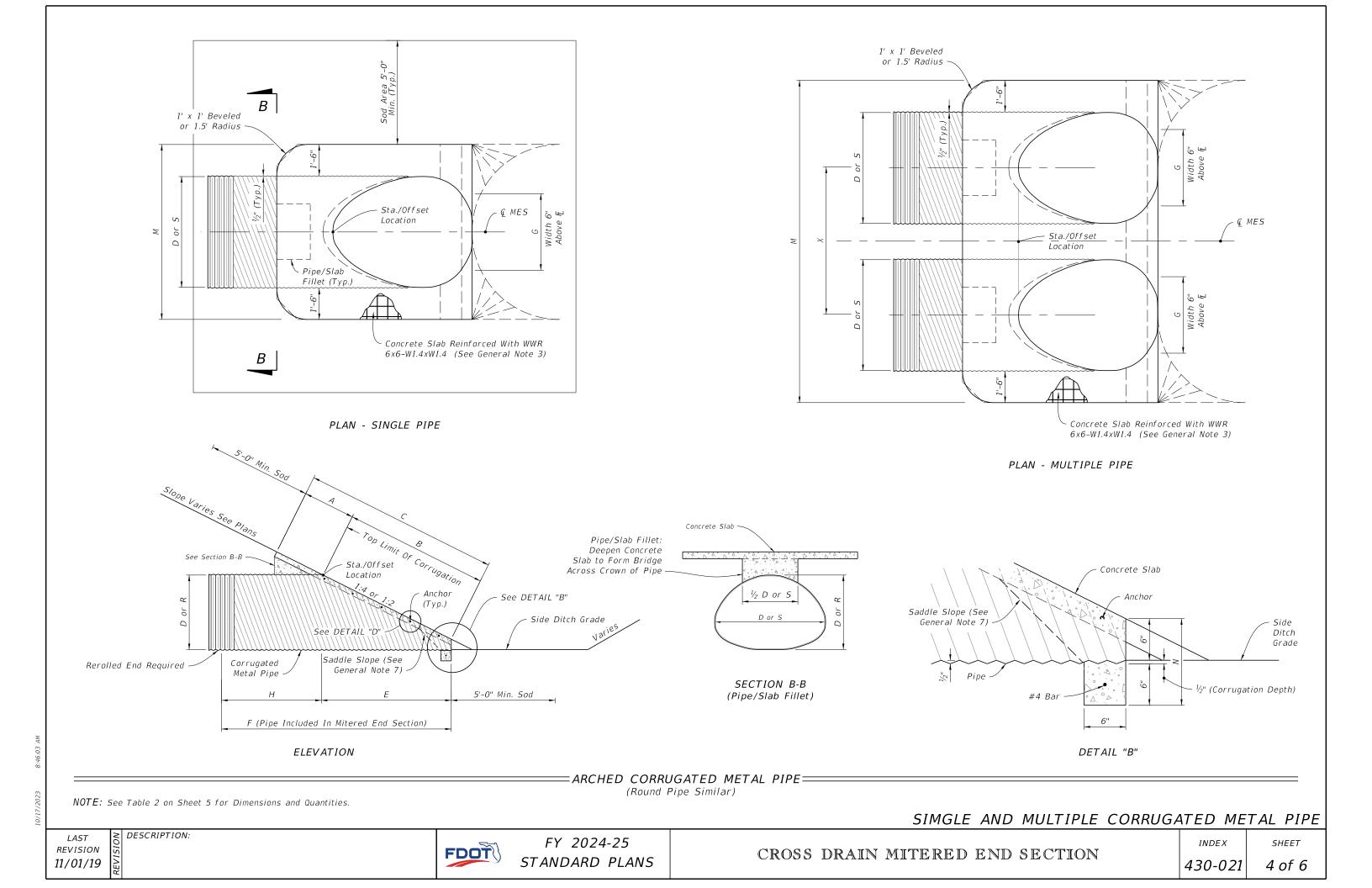


	TABLE 2																												
						SIN	NGLE AND MULTIPLE CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES																						
		Dia	C	Diag										1	1			-	CONC. S Genera	•	′			LAB (CY al Note .	* .		SODDIN	VG (SY)	
		Dia. D	Span S	Rise R	X	A	В	С	Ε	F	G	Н	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	/V	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
		15"	_	_	2'-7"	2.5'	1.68'	4.18'	1.5'	5.0'	1.23'	3.5'	4.33'	6.92'	9.50'	12.08'	1.04'	0.35	0.54	0.74	0.94	0.24	0.37	0.51	0.64	21	24	27	29
		18"		_	2'-10"	2.5'	2.24'	4.74'	2.0'	6.0'	1.41'	4.0'	4.58'	7.42'	10.25'	13.08'	1.04'	0.38	0.62	0.87	1.12	0.26	0.43	0.61	0.78	22	25	28	31
(I)		24"		_	3'-5"	2.5'	3.35'	5.85'	3.0'	7.0'	1.73'	4.0'	5.08'	8.50'	11.92'	15.33'	1.04'	0.47	0.76	1.05	1.34	0.32	0.52	0.72	0.91	23	27	31	35
Pipe	1.7	30"	l —		4'-3"	2.5'	4.47'	6.97'	4.0'	8.0'	2.00'	4.0'	5.58'	9.83'	14.08'	18.33'	1.04'	0.57	0.96	1.37	1.77	0.38	0.64	0.91	1.18	25	30	35	39
- 1	1:2	36"		_	5'-1"	2.5'	5.59'	8.09'	5.0'	9.0'	2.24'	4.0'	6.08'	11.17'	16.25'	21.33'	1.04'	0.67	1.19	1.72	2.26	0.44	0.78	1.13	1.48	27	33	38	44
tal	Slope	42"			6'-0"	2.5'	6.71'	9.21'	6.0'	10.0'	2.45'	4.0'	6.58'	12.58'	18.58'	24.58'	1.04'	0.78	1.48	2.17	2.87	0.51	0.96	1.41	1.87	29	36	42	49
Meta		48"			6'-9"	2.5'	7.83'	10.33'	7.0'	11.0'	2.65'	4.0'	7.08'	13.83'	20.58'	<i>27.33</i> ′	1.04'	0.89	1.71	2.54	3.36	0.57	1.09	1.63	2.15	31	38	46	53
		54"		_	7'-8"	2.5'	8.94'	11.44'	8.0'	12.0'	2.83'	4.0'	7.58'	15.25'	22.92'	30.58'	1.04'	1.02	2.06	3.10	4.14	0.65	1.32	1.99	2.66	33	41	50	58
ated		60"	I —	_	8'-6"	2.5'	10.06'	12.56'	9.0'	13.0'	3.00'	4.0'	8.08'	16.58'	25.08'	33.58'	1.04'	1.14	2.38	3.63	4.89	0.71	1.49	2.28	3.07	34	44	53	63
nga		15"	—		2'-7"	2.5'	3.09'	5.59'	3.0'	7.0'	1.23'	4.0'	4.33'	6.92'	9.50'	12.08'	1.04'	0.44	0.68	0.91	1.15	0.31	0.47	0.63	0.79	22	25	28	31
~		18"	_		2'-10"	2.5'	4.12'	6.62'	4.0'	8.0'	1.41'	4.0'	4.58'	7.42'	10.25'	13.08'	1.04'	0.49	0.77	1.03	1.31	0.34	0.53	0.71	0.90	24	27	30	33
0.0		24"		_	3'-5"	2.5'	6.18'	8.68'	6.0'	10.0'	1.73'	4.0'	5.08'	8.50'	11.92'	15.33'	1.04'	0.65	1.09	1.38	1.77	0.44	0.69	0.92	1.18	27	30	34	38
) /	1.1	30"	I —	_	4'-3"	2.5'	8.25'	10.75'	8.0'	12.0'	2.00'	4.0'	5.58'	9.83'	14.08'	18.33'	1.04'	0.81	1.34	1.90	2.44	0.53	0.88	1.25	1.60	29	34	39	44
Round	Slope	36"		_	5'-1"	2.5'	10.31'	12.81'	10.0'	14.0'	2.24'	4.0'	6.08'	11.17'	16.25'	21.33'	1.04'	0.97	1.68	2.41	3.14	0.62	1.07	1.53	2.00	32	38	44	49
301	Stope	42"	l —	_	6'-0"	2.5'	12.37'	14.87'	12.0'	16.0'	2.45'	4.0'	6.58'	12.58'	18.58'	24.58'	1.04'	1.13	2.08	3.06	4.02	0.71	1.30	1.92	2.52	35	42	48	55
1 "		48"		_	6'-9"	2.5'	14.43'	16.93'	14.0'	18.0'	2.65'	4.0'	7.08'	13.83'	20.58'	<i>27.33</i> ′	1.04'	1.29	2.49	3.69	4.88	0.80	1.54	2.29	3.02	38	46	53	60
		54"			7'-8"	2.5'	16.49'	18.99'	16.0'	20.0'	2.83'	4.0'	7.58'	15.25'	22.92'	30.58'	1.04'	1.48	2.98	4.47	5.98	0.91	1.83	2.74	3.67	41	49	58	66
		60"	<u> </u>	<u> </u>	8'-6"	2.5'	18.55'	21.05'	18.0'	22.0'	3.00'	4.0'	8.08'	16.58'	25.08'	33.58'	1.04'	1.66	3.49	5.31	7.13	1.02	2.15	3.27	4.39	44	53	63	72
			17"	13"	2"-6"	2.5'	1.30'	3.80'	1.17'	4'	1.39'	2.8'	4.50'	7.00'	9.50'	12.00'	1.04'	0.41	0.61	0.81	1.02	0.33	0.49	0.65	0.81	21	23	26	29
			21"	15"	2'-10"	2.5'	1.68'	4.17'	1.50'	5'	1.76'	3.5'	4.83'	7.67'	10.50'	13.33'	1.04'	0.43	0.66	0.88	1.10	0.33	0.50	0.67	0.83	22	25	28	31
_			28"	20"	3'-5"	2.5'	2.61'	5.11'	2.33'	6'	2.22'	3.7'	5.42'	8.83'	12.25'	15.67'	1.04'	0.51	0.78	1.06	1.33	0.37	0.56	0.76	0.95	23	27	30	34
Arch	1:2		35"	24"	4'-0"	2.5'	3.35'	5.85	3.00'	7'	2.55'	4.0'	6.00'	10.00'	14.00'	18.00'	1.04'	0.57	0.90	1.22	1.55	0.40	0.62	0.84	1.07	24	29	33	38
Ą	Slope		42"	29"	4'-9"	2.5'	4.29'	6.79'	3.83'	8'	2.97'	4.2'	6.58'	11.33'	16.08'	20.83'	1.04'	0.64	1.04	1.46	1.87	0.43	0.70	0.98	1.25	26	31	37	42
ре	STOPE	_	49"	33"	5'-6"	2.5'	5.03'	7.53'	4.50'	9'	3.34'	4.5'	7.17'	12.67'	18.17'	23.67'	1.04'	0.73	1.23	1.72	2.22	0.49	0.82	1.15	1.48	28	34	40	46
Pi		_	57"	38"	6'-4"	2.5'	5.96'	8.46'	5.33'	10'	3.65'	4.7'	7.83'	14.17'	20.50'	26.83'	1.04'	0.83	1.44	2.04	2.64	0.55	0.95	1.35	1.75	29	36	44	51
je		_	64"	43"	7'-1"	2.5'	6.89'	9.39'	6.17'	11'	3.89'	4.8'	8.42'	15.50'	22.58'	29.67'	1.04'	0.95	1.67	2.39	3.11	0.62	1.10	1.57	2.05	31	39	47	55
et		_	71"	47"	7'-10"	2.5'	7.64'	10.14'	6.83'	12'	4.14'	5.2'	9.00'	16.83'	24.67'	32.50'	1.04'	1.05	1.89	2.74	3.57	0.69	1.24	1.80	2.35	33	41	50	59
Z		_	17"	13"	2'-6"	2.5'	2.41'	4.91'	2.33'	7'	1.39'	4.7'	4.50'	7.00'	9.50'	12.00'	1.04'	0.48	0.71	0.95	1.18	0.38	0.56	0.74	0.92	22	25	27	30
рə		_	21"	15"	2'-10"	2.5'	3.09'	5.59'	3.00'	8'	1.76	5.0'	4.83'	7.67'	10.50'	13.33'	1.04'	0.52	0.80	1.09	1.31	0.39	0.59	0.80	0.95	23	26	29	32
at .		_	28"	20"	3'-5"	2.5'	4.81'	7.31'	4.67'	9'	2.22'	4.3'	5.42'	8.83'	12.25'	15.67'	1.04'	0.61	0.92	1.27	1.59	0.43	0.64	0.88	1.10	25	29	33	37
orrug	1:4	\vdash	35"	24"	4'-0"	2.5'	6.18'	8.68'	6.00'	11'	2.55'	5.0'	6.00'	10.00'	14.00'	18.00'	1.04'	0.73	1.14	1.55	1.97	0.49	0.77	1.05	1.33	28	32	37	41
īr	Slone	_	42"	29"	4'-9"	2.5'	7.90'	10.40'	7.67'	12'	2.97'	4.3'	6.58'	11.33'	16.08'	20.83'	1.04'	0.87	1.39	1.92	2.45	0.57	0.92	1.27	1.62	30	35	41	46
ြိ	Siope	\vdash	49"	33"	5'-6"	2.5'	9.28'	11.78'	9.00'	14'	3.34'	5.0'	7.17'	12.67'	18.17'	23.67'	1.04'	1.00	1.66	2.30	2.96	0.65	1.08	1.50	1.93	32	38	45	51
			57"	38"	6'-4"	2.5'	11.00'	13.50'	10.67'	16'	3.65'	5.3'	7.83'	14.17'	20.50'	26.83'	1.04'	1.18	2.00	2.82	3.64	0.76	1.30	1.83	2.37	35	42	49	56
			64"	43"	7'-1"	2.5'	12.71'	15.21'	12.33'	17'	3.89'	4.7'	8.42'	15.50'	22.58'	29.67'	1.04'	1.36	2.39	3.38	4.38	0.87	1.55	2.18	2.83	38	45	53	61
		<u> </u>	71"	47"	7'-10"	2.5'	14.09'	16.59'	13.67'	19'	4.14'	5.3'	9.00'	16.83'	24.67'	32.50'	1.04'	1.50	2.65	3.81	4.97	0.95	1.68	2.43	3.17	40	48	57	66

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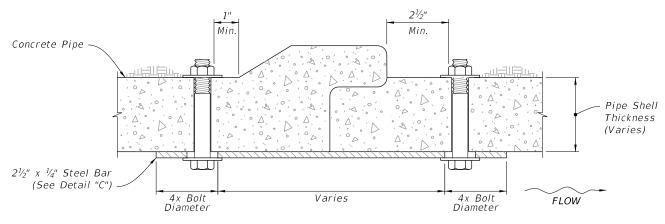
LAST REVISION

11/01/19

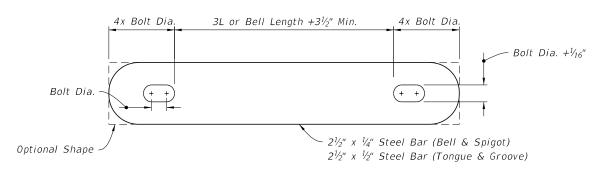
DESCRIPTION:

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TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



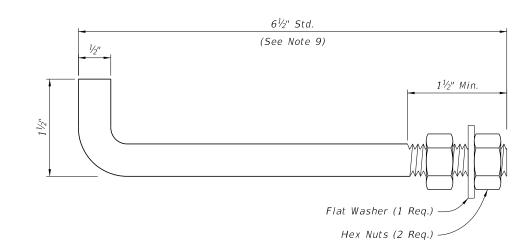
STEEL BAR

- 1. Use galvanized steel for all bars, bolts, nuts, and washers.
- 2. Two connectors required per joint, located 60° right and left of bottom center of pipe.

Bolt Dia.	Pipe Dia.
3/8"	15" to 36"
5/8"	42" to 72"

3. Bolt holes in pipe shell are to be drilled.





NOTES:

- 1. Anchors required for CMP only.
- 2. Use galvanized steel for all anchors, nuts, and washers.
- 3. Bend anchor where required to center in concrete slab.
- 4. Repair damaged surfaces after bending.
- 5. Space anchors a distance equal to four (4) corrugations.
- 6. Place the anchors in the outside crest of corrugation.
- 7. Place flat washers on inside wall of pipe.
- 8. Drill or punch holes in the mitered end pipe; burning not permitted.
- 9. A 6" \times $\frac{1}{2}$ " bolt substitution is permitted.

CORRUGATED METAL PIPE (CMP) ANCHOR DETAIL

DETAIL "D"

CONCRETE PIPE CONNECTION AND CORRUGATED PIPE ANCHOR DETAILS

LAST REVISION 11/01/19

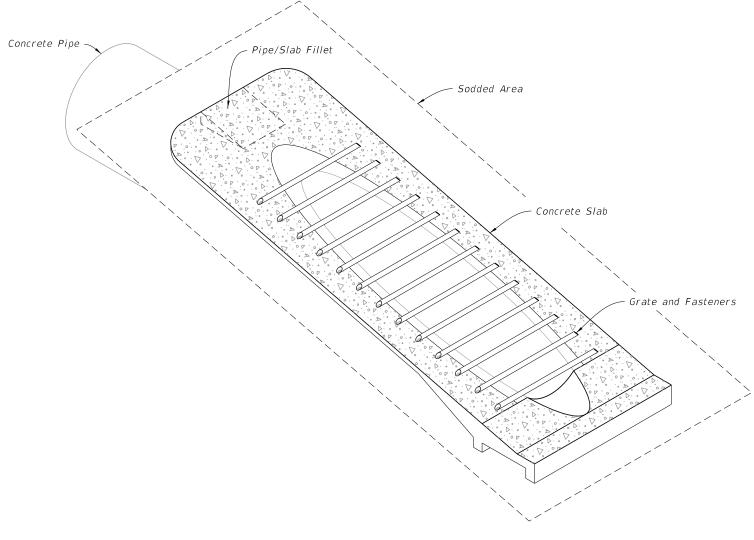
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- 1. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of side drain pipe; corrugated steel pipe mitered end sections may be used with any type of side drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of side drain pipe except steel pipe. When bituminous coated metal pipe is specified for side drain pipe, construct the mitered end sections with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the side drain pipe, construct a concrete jacket in accordance with Index 430-001 or use manufacturer approved coupler.
- 2. Use either corrugated metal or concrete mitered end sections for corrugated polyethylene pipe (HDPE), polyvinyl-chloride pipe (PVC), steel reinforced polyethylene pipe (SRPE), and polypropylene pipe (PP). When used in conjunction with corrugated metal mitered end sections, make connection using a formed metal band specifically designated to join HDPE, PVC, SRPE, or PVC pipe. When used in conjunction with a concrete mitered end sections, construct concrete jacket in accordance with Index 430-001.
- 3. Use class NS concrete cast-in-place reinforced slabs for all cross drain pipes.
- 4. Select lengths of concrete pipe that avoid excessive connections in the assembly of the mitered end section.
- 5. Repair corrugated metal pipe galvanizing that is damaged during beveling and perforating.
- 6. When existing multiple side drain pipes are spaced other than the dimensions shown in this Index, have nonparallel axes, or non-uniform sections, either construct the mitered end sections separately as single pipe or collectively as multiple pipe end sections as directed by the Engineer.
- 7. Saddle Slope:
- 1:4 Miter Slope to ${\mathfrak C}$ of pipe for round pipes less than or equal to 18" diameter and 1:1 for round pipes greater than or equal to 24" diameter.

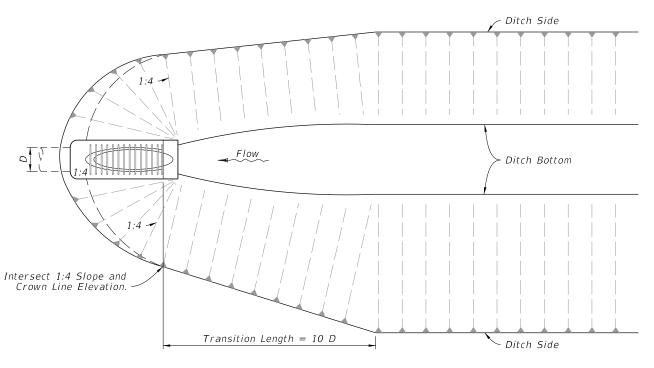
Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger. Slope to the span line for pipe arch 28"x20" or smaller and 1:2 for pipe arch 35"x24" or larger.

- 1:2 Miter Slope to Ç of pipe for round pipes less than or equal to 18"diameter and 1:2 for round pipes greater than or equal to 24" diameter. Slope to the major axis for elliptical pipes 29"x45" or smaller and 1:1 for pipes 34"x53" or larger. Slope 1:1 for all pipe arch sizes.
- 8. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:										
Sheet	Description									
1	General Notes and Contents									
2	Single and Multiple Concrete Pipe									
3	Concrete Pipe Dimensions and Quantities and Permissible Pavement Modifications									
4	Single and Multiple Corrugated Metal Pipe									
5	Corrugated Metal Dimensions and Quantities									
6	Concrete Pipe Connection and Corrugated Metal Pipe Anchor Details									
7	Fastener Unit and Grate Details									



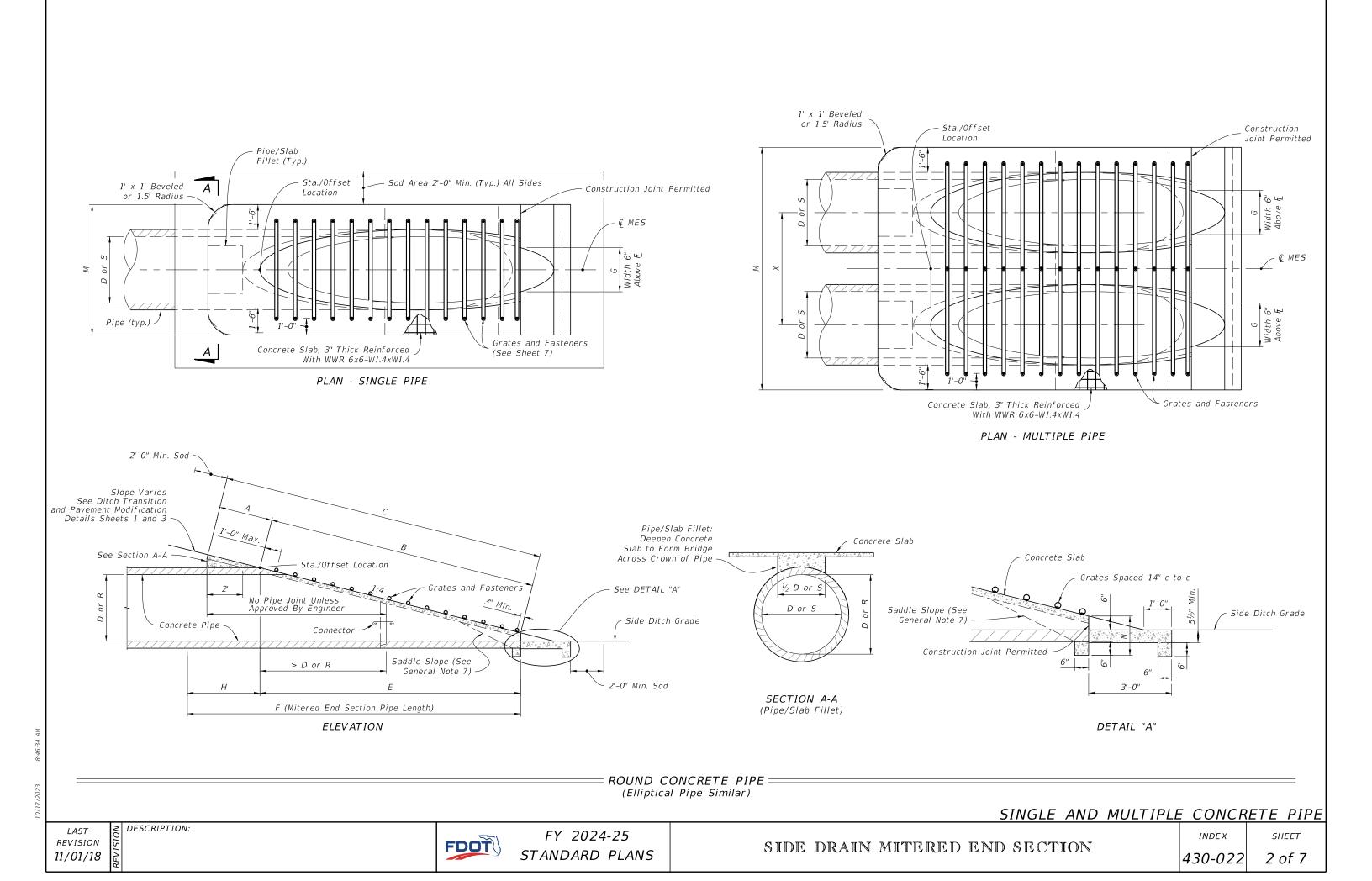
=SIDEDRAIN MITERED END SECTION= (Concrete Pipe Shown, Corrugated Metal Pipe Similar)



= DITCH TRANSITION =

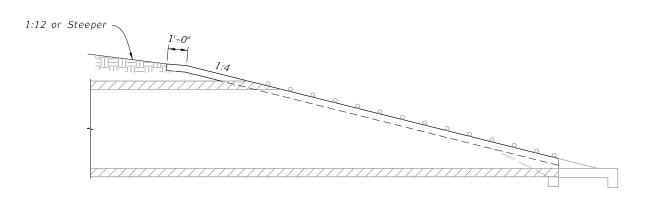
DESCRIPTION:

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SINGLE AND MULTIPLE CONCRETE PIPE DIMENSIONS AND QUANTITIES																										
a u	D:-	D:	6									М				GRATE :	3" CONC. SLAB (CY)				SODDING (SY)					
Pip	Dia. D	Rise R	Span S	Х	Α	В	С	Ε	F	G	Н	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Ν	STANDARD WEIGHT PIPE	EXTRA STRONG PIPE	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
	15"		_	2'-7"	2.27'	4.09'	6.36'	4.03'	8'	1.22'	4.0'	4.63'	7.21'	9.79'	12.37'	1.19'			0.76	1.16	1.54	1.94	8	10	11	12
l o	18"			2'-10"	2.36'	5.12'	7.48'	5.03'	9'	1.41'	4.0'	4.92'	7.75'	10.58'	13.42'	1.21'			0.85	1.28	1.71	2.17	9	10	12	13
et	24"		—	3'-5"	2.53'	7.18'∆	9.71'	<i>7.03</i> ′ ∆	11'	1.73'	4.0'	5.50'	8.92'	12.33'	15.75'	1.25'			1.02	1.58	2.15	2.75	10	12	13	15
יכר	30"	—	—	4'-3"	2.70'	9.25'	11.95'	9.03'	13'	2.00'	4.0'	6.08'	10.33'	14.58'	18.83'	1.29'	21/2"	3"	1.23	1.98	2.74	3.50	12	14	15	17
10.	36"	—		5'-1"	2.87'	11.31'\(\>	14.18'	11.03' 💠	15'	2.24'	4.0'	6.67'	11.75'	16.83'	21.92'	1.33'	21/2"	3"	1.40	2.38	3.33	4.24	13	15	17	20
) p	42"	_	—	6'-0"	3.05'	13.37'	16.42'	13.03'	17'	2.45'	4.0'	7.25'	13.25'	19.25'	25.25'	1.38'	2½"	31/2"	1.60	2.83	4.04	5.26	14	17	19	22
nuc	48"		—	6'-9"	3.22'	15.43'	18.65'	15.03'	19'	2.65'	4.0'	7.83'	14.58'	21.33'	28.08'	1.42'	21/2"	31/2"	1.81	3.26	4.70	6.14	15	18	21	24
Rol	54"		—	7'-8"	3.39'	17.49'	20.88'	17.03'	21'	2.83'	4.0'	8.42'	16.08'	23.75'	31.42'	1.46'	3"	4"	2.03	3.78	5.54	7.28	17	20	23	27
_	60"	—	—	8'-6"	3.56'	19.55'	23.11'	19.03'	23'	3.00'	4.0'	9.00'	17.50'	26.00'	34.50'	1.50'	3"	4"	2.28	4.36	6.43	8.50	18	22	25	29
		12"	18"	2'-10"	2.36'	3.06'	5.42'	3.03'	5'	1.50'	2.0'	4.92'	7.75'	10.58'	13.42'	1.21'			0.68	1.04	1.41	1.77	8	9	11	12
به		14"	23"	3'-4"	2.44'	3.75'	6.19'	3.70'	6'	1.90'	2.3'	5.38'	8.71'	12.04'	15.38'	1.23'			0.76	1.19	1.63	2.05	9	10	12	13
ret		19"	30"	4'-0"	2.62'	5.47'	8.09'	5.36'	8'	2.37'	2.6'	6.04'	10.04'	14.04'	18.04'	1.27'	2½"	3"	0.95	1.52	2.09	2.65	10	12	13	15
nci	_	24"	38"	5'-0"	2.79'	7.18'	9.97'	7.03'	10'	2.85'	3.0'	6.79'	11.79'	16.79'	21.79'	1.31'	21/2"	3"	1.18	1.95	2.74	3.53	11	13	15	18
00	_	29"	45"	5'-11"	3.05'	8.90'	11.95'	8.70'	12'	3.19'	3.3'	7.50'	13.42'	19.33'	25.25'	1.38'	2½"	31/2"	1.41	2.42	3.44	4.45	12	15	18	20
je		34"	53"	7'-0"	3.22'	10.62'	13.84'	10.36'	13'		2.6'	8.25'	15.25'	22.25'	29.25'	1.42'	3"	31/2"	1.63	2.92	4.22	5.52	13	17	20	23
Ų.		38"	60"	7'-10"	3.39'	11.99'	15.38'	11.70'	15'	3.95'	3.3'	8.92'	16.75'	24.58'	32.42'	1.46'	3"	4"	1.83	3.36	4.89	6.41	14	18	21	25
Ellipti		43"	68"	8'-11"	3.56'	13.71'	17.27'	13.36'	17'	4.28'	3.6'	9.67'	18.58'	27.50'	36.42'	1.50'	3"	4"	2.09	3.95	5.80	7.65	16	20	23	27
		48"	76"	9'-11"	<i>3.73</i> ′	15.43'	19.16'	15.03'	19'	4.59'	4.0'	10.42'	20.33'	30.25'	40.17'	1.54'	3"	HSS 5"x ⁵ ∕ ₁₆ "	2.37	4.54	6.73	8.92	17	21	26	30
		53"	83"	10'-8"	3.91'	17.15'	21.06'	16.70'	20'	4.77'	3.3'	11.08'	21.75'	32.42'	43.08'	1.58'	3"	HSS 5"x ⁵ ∕ ₁₆ "	2.61	5.09	7.56	10.03	18	23	27	32
		58"	91"	11'-8"	4.08'	18.87'	22.95'	18.36'	22'	5.01'	3.6'	11.83	23.50'	35.17'	46.83'	1.63'	3½"	HSS 5"x¾"	2.91	5.77	8.64	11.50	19	24	29	35

 $\triangle 6.42'$ $\triangle 6.25'$ Dimensions permitted to allow use of 8' standard pipe lengths. $\Diamond 10.40'$ $\Diamond 10.10'$ Dimensions permitted to allow use of 12' standard pipe lengths.

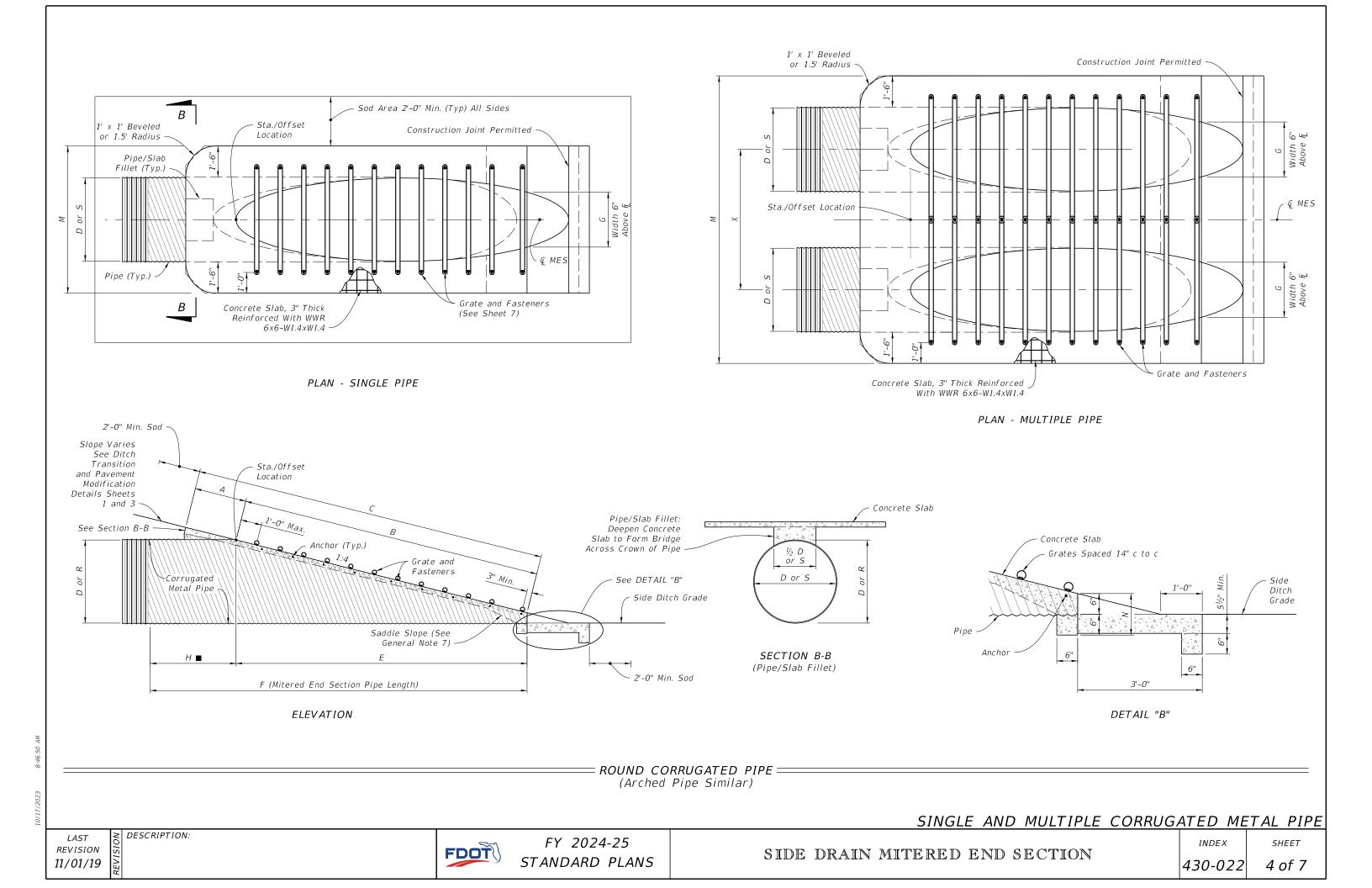


= $PERMISSIBLE\;PAVEMENT\;MODIFICATION <math>=$

CONCRETE PIPE DIMENSIONS AND QUANTITIES AND PERMISSIBLE PAVEMENT MODIFICATION

LAST REVISION 11/01/19

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							SING	LE A	ND A	1ULT.	IPLE	CORF	RUGAT	ED M	1ET AL	PIPE	DIMENSI	ONS AND C	QUAN7	ITIES	5					
Ь	Dia	Enan	Dico										I	И			GRATE .	SIZES	3" (CONC. S	SLAB (CY	<u></u>		SODDIN	VG (SY)	
ip	Dia.	Span	KISE	X	Α	В	C	E	F	G	Н	Single	Double	Triple	Quad.	N	STANDARD	EXTRA	Single	Double	Triple	Quad.	Single	Double	Triple	Quad.
4		3	_ ^									Pipe	Pipe	Pipe	Pipe		WEIGHT PIPE	STRONG PIPE	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
	8"		—	2'-0"	2.5'	0.72'	3.22'	0.7'	4.0'	0.58'	3.3'	3.75'	5.75'	7.75'	9.75'	1.04'			0.52	0.90	1.22	1.54	7	8	8	9
	10"		—	2'-2"	2.5'	1.34'	3.84'	1.3'	5.0'	0.81'	3.7'	3.92'	6.08'	8.25'	10.41'	1.04'			0.64	0.99	1.34	1.70	7	8	9	10
ьq	12"		—	2'-4"	2.5'	2.06'	4.56'	2.0'	6.0'	1.00'	4.0'	4.08'	6.42'	8.75'	11.08'	1.04'			0.68	1.09	1.48	1.88	7	8	10	11
at	15"			2'-7"	2.5'	3.09'	5.59'	3.0'	7.0'	1.23'	4.0'	4.33'	6.92'	9.50'	12.08'	1.04'			0.64	1.00	1.35	1.71	8	9	10	11
ipe	18"		—	2'-10"	2.5'	4.12'	6.62'	4.0'	8.0'	1.41'	4.0'	4.58'	7.42'	10.25'	13.08'	1.04'			0.69	1.09	1.49	1.89	9	10	11	12
rr P	24"		_	3'-5"	2.5'	6.18'	8.68'	6.0'	10.0'	1.73'	4.0'	5.08'	8.50'	11.92'	15.33'	1.04'			0.83	1.34	1.82	2.34	10	11	13	14
20/2	30"		—	4'-3"	2.5'	8.25'	10.75'	8.0'	12.0'	2.00'	4.0'	5.58'	9.83'	14.08'	18.33'	1.04'	21/2"	3"	0.96	1.63	2.32	2.99	11	13	15	17
de de	36"		—	5'-1"	2.5'	10.31'	12.81'	10.0'	14.0'	2.24'	4.0'	6.08'	11.17'	16.25'	21.33'	1.04'	2½"	3"	1.08	1.92	2.77	3.62	12	14	17	19
Įž,	42"		—	6'-0"	2.5'	12.37'	14.87'	12.0'	16.0'	2.45'	4.0'	6.58'	12.58'	18.58'	24.58'	1.04'	21/2"	3½"	1.20	2.26	3.34	4.61	13	16	18	21
RC	48"	_	_	6'-9"	2.5'	14.43'	16.93'	14.0'	18.0'	2.65'	4.0'	7.08'	13.83'	20.58'	27.33'	1.04'	2½"	3½"	1.60	3.11	4.62	6.12	14	17	20	23
	54"		_	7'-8"	2.5'	16.49'	18.99'	16.0'	20.0'	2.83'	4.0'	7.58'	15.25'	22.92'	30.58'	1.04'	3"	4"	1.76	3.56	5.34	7.14	15	19	22	26
	60"		—	8'-6"	2.5'	18.55'	21.05'	18.0'	22.0'	3.00'	4.0'	8.08'	16.58'	25.08'	33.58'	1.04'	3"	4"	1.94	4.03	6.12	8.20	17	20	24	28
	_	17"	13"	2'-6"	2.5'	2.41'	4.91'	2.33'	7'	1.39'	4.7'	4.50'	7.00'	9.50'	12.00'	1.04'			0.62	0.95	1.27	1.60	8	9	10	11
ta		21"	15"	2'-10"	2.5'	3.09'	5.59'	3.00'	8'	1.76'	5.0'	4.83'	7.67'	10.50'	13.33'	1.04'			0.69	1.06	1.44	1.77	8	9	11	12
Me		28"	20"	3'-5"	2.5'	4.81'	7.31'	4.67'	9'	2.22'	4.3'	5.42'	8.83'	12.25'	15.67'	1.04'			0.81	1.26	1.73	2.19	9	11	12	14
PA		35"	24"	4'-0"	2.5'	6.18'	8.68'	6.00'	11'	2.55'	5.0'	6.00'	10.00'	14.00'	18.00'	1.04'	21/2"	3"	0.94	1.51	2.09	2.66	10	12	14	15
ite -	_	42"	29"	4'-9"	2.5'	7.90'	10.40'	7.67'	12'	2.97'	4.3'	6.58'	11.33'	16.08'	20.83'	1.04'	21/2"	31/2"	1.06	1.76	2.46	3.16	11	13	15	17
198	_	49"	33"	5'-6"	2.5'	9.28'	11.78'	9.00'	14'	3.34'	5.0'	7.17'	12.67'	18.17'	23.67'	1.04'	21/2"	31/2"	1.19	2.02	2.84	3.68	12	14	17	19
Pir	_	57"	38"	6'-4"	2.5'	11.00'	13.50'	10.67'	16'	3.65'	5.3'	7.83'	14.17'	20.50'	26.83'	1.04'	3"	4"	1.35	2.35	3.35	4.36	13	16	19	22
10.	_	64"	43"	7'-1"	2.5'	12.71'	15.21'	12.33'	17'	3.89'	4.7'	8.42'	15.50'	22.58'	29.67'	1.04'	3"	4"	1.50	2.70	3.86	5.03	14	17	20	24
1		7 111	17"	7/ 10//	2 E'	1.4.00	16 EO	12 (7)	101	1 1 11	E 21	0.00	1000	21671	22 50	1 0 4	211	All	162	201	1 27	E EO	1 E	10	2.2	25

123 8:46:58 AM

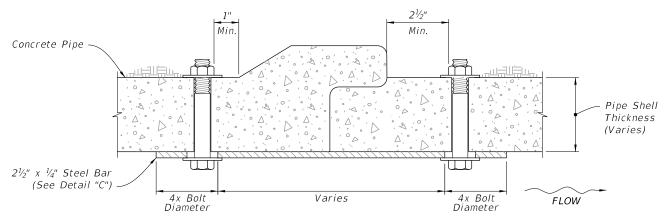
LAST O DESCRIPTION:
REVISION II/01/19

FDOT

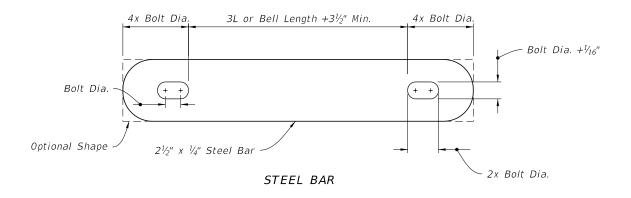
FY 2024-25
STANDARD PLANS

CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES

TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



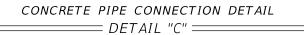
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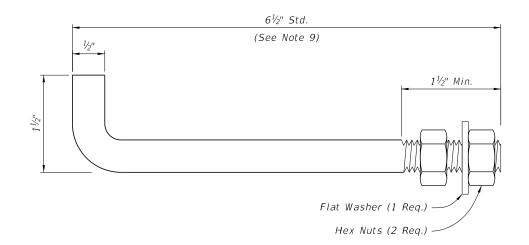
DESCRIPTION:

- 1. Use galvanized steel for all bars, bolts, nuts, and washers.
- 2. Two connectors required per joint, located 60° right and left of bottom center of pipe.

Bolt Dia.	Pipe Dia.
3/8"	15" to 36"
5/8"	42" to 72"

3. Bolt holes in pipe shell are to be drilled.





NOTES:

- 1. Anchors required for CMP only.
- 2. Use galvanized steel for all anchors, nuts, and washers.
- 3. Bend anchor where required to center in concrete slab.
- 4. Repair damaged surfaces after bending.
- 5. Space anchors a distance equal to four (4) corrugations.
- 6. Place the anchors in the outside crest of corrugation.
- 7. Place flat washers on inside wall of pipe.
- 8. Drill or punch holes in the mitered end pipe; burning not permitted.
- 9. A 6" \times $\frac{1}{2}$ " bolt substitution is permitted.

CORRUGATED METAL PIPE (CMP) ANCHOR DETAIL = DETAIL "D" =

CONCRETE PIPE CONNECTION AND CORRUGATED PIPE ANCHOR DETAILS

REVISION 11/01/19

FDOT

FY 2024-25 STANDARD PLANS

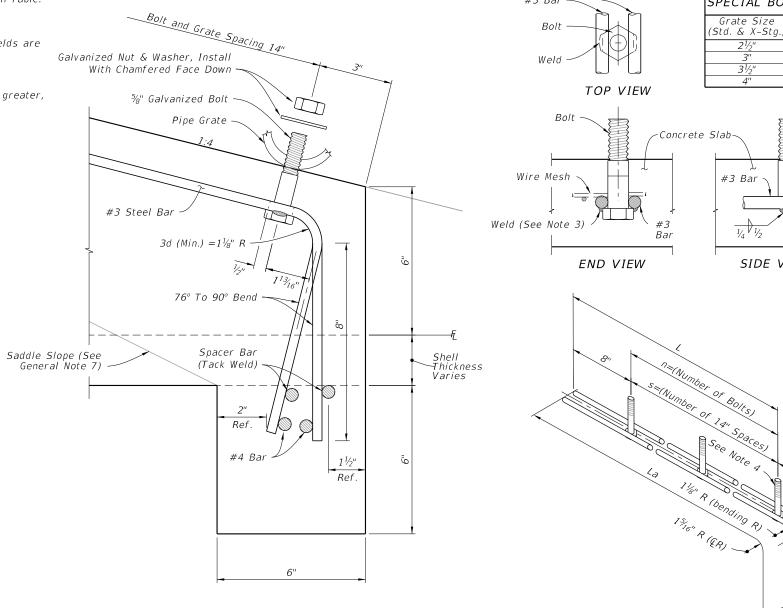
NOTES:

- 1. 5% your 3" bolts are standard for all grate fasteners, except when the contractor elects to use the slotted upper holes for the intermediate fasteners on multiple drain pipes, which will require bolt lengths in the Special Bolt Length Table.
- 2. %" galvanized bolt hex head bolt shown; either hex head or square head bolt may be used. Use only hex nuts.
- 3. Make the specified weld when the fabricated unit is subject to hazardous hauls and repeated handling. Tack welds are permitted for local or job site fabrication. Galvanizing over welded surface not required.
- 4. Omit on trailing downstream ends on divided roadways.
- 5. Use grates on all round pipes 30" or greater, Pipe arches 35" x 24" or greater, and elliptical pipe 19" x 30" or greater, unless excluded in the Plans. Use grates on smaller pipes only when called for in the Plans.

	CONCRETE PIPE											
	F	ROUND	PIPE		ELLIPTICAL PIPE							
Pipe Dia.	5	n	L	La	Drain Size	S	n	L	La			
*15"	3	4	4'-0"	4'-11''	*12"x18"	2	3	2'-10"	3'-9"			
*18"	4	5	5'-2"	6'-1"	*14"x23"	3	4	4'-0'	4'-11"			
*24"	6	7	7'-6"	8'-5"	19"x30"	4	5	5'-2"	6'-1"			
30"	7	8	8'-8"	9'-7"	24"x38"	5	6	6'-4"	7'-3"			
36"	9	10	11'-0"	11'-11"	29"x45"	7	8	8'-8"	9'-7"			
42"	11	12	13'-4"	14'-3"	34"x53"	8	9	9'-10"	0'-9"			
48"	13	14	15'-8"	16'-7"	38"x60"	10	11	12'-2"	13'-1"			
54"	14	15	16'-10"	17'-9"	43"x68"	11	12	13'-4"	14'-3"			
60"	16	17	19'-2"	20'-1"	48"x76"	13	14	15'-8"	16'-7"			
	<u> </u>				53"x83"	14	15	16'-10"	17'-9"			
					58"x91"	15	16	18'-0"	18'-11"			

	CORRUGATED METAL PIPE										
	R	OUND	PIPE		ARCHED PIPE						
Pipe Dia.	5	n	L	La	Drain Size	S	n	L	La		
*15"	2	3	2'-10"	3'-9"	*17"x13"	1	2	1'-8"	2'-7"		
*18"	3	4	4'-0"	4'-11"	*21"x15"	2	3	2'-10"	3'-9"		
*24"	5	6	6'-4"	7'-3"	*28"x20"	4	5	5'-2"	6'-1"		
30"	7	8	8'-8"	9'-7"	35"x24"	5	6	6'-4"	7'-3"		
36"	8	9	9'-10"	10'-9"	42"x29"	6	7	7'-6"	8'-5"		
42"	10	11	12'-2"	13'-1"	49"x33"	7	8	8'-8"	9'-7"		
48"	12	13	14'-6"	15'-5"	57"x38"	9	10	11'-0"	11'-11"		
54"	14	15	16'-10"	17'-9"	64"x43"	10	11	12'-2"	13'-1"		
60"	15	16	18'-0"	18'-11"	71"x47"	12	13	14'-6"	15'-5"		

* See Note 5



#3 Bar

MULTIPLE FASTENER UNIT DETAIL:

(For Single and Multiple Pipes)

NOTE:

1. Install intermediate slot and fastener for multiple drain pipes only.

Options for top opening:

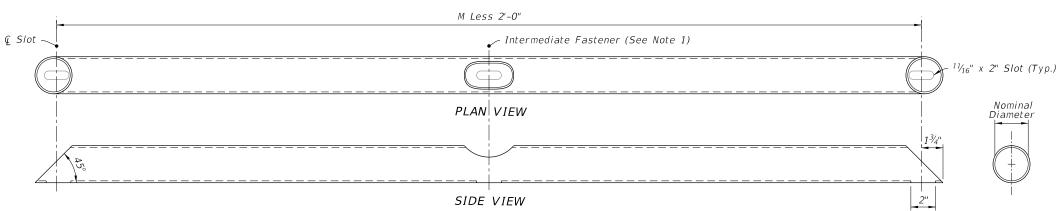
a. 4" of 6" mill head cut, 1" deep

b. 2" diameter drilled hole

c. 11/16" x 2" slot

Bottom opening: $^{11}/_{16}$ " x 2" slot.

DESCRIPTION:



GRATE DETAIL:

(For Single and Multiple Pipes)

FASTENER UNIT AND GRATE DETAILS

REVISION 11/01/20

FDOT

FY 2024-25 STANDARD PLANS

SIDE DRAIN MITERED END SECTION

INDEX 430-022

SPECIAL BOLT LENGTH

SIDE VIEW

Bolt Length

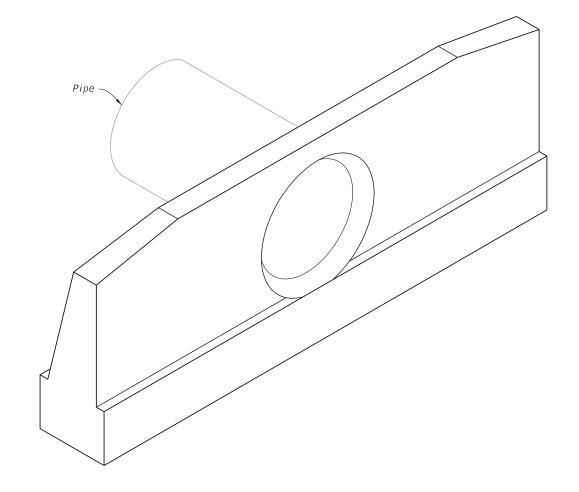
Bolt

Wire Mesh

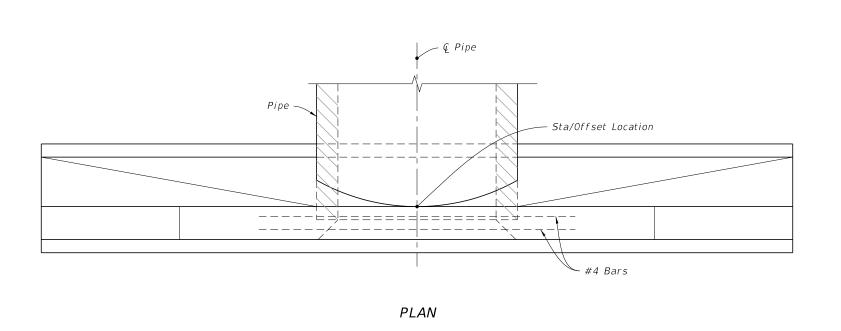
SHEET 7 of 7

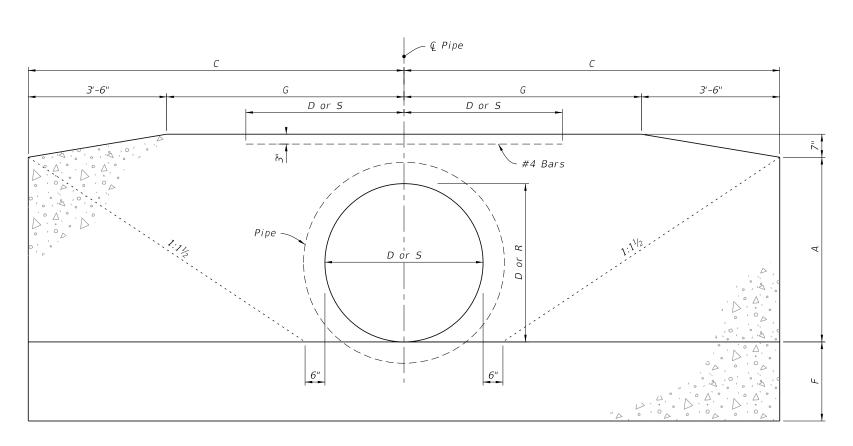
- 1. Use Class II concrete.
- 2. Reinforcing steel is either Grade 40 or 60.
- 3. Endwalls may be cast in place or precast concrete. (Additional reinforcement necessary for handling precast units will be determined by the Contractor or the supplier).
- 4. Chamfer all exposed edges and corners to 3/4".
- 5. Endwall dimensions, locations and positions are for round and elliptical concrete pipe and for round and pipe-arch corrugated metal pipe. Round concrete pipe shown.
- 6. On outfall ditches with side slopes flatter than 1:1.5 provide 20' transitions from the endwall to the flatter side slopes, right of way permitting.
- 7. Construct front slope and ditch transitions in accordance with Index 430-001.
- 8. Quantities shown are for estimating purposes only.

	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Concrete Endwall Details
3	Concrete and Metal Pipe Tables
4	Spacing For Multiple Pipes

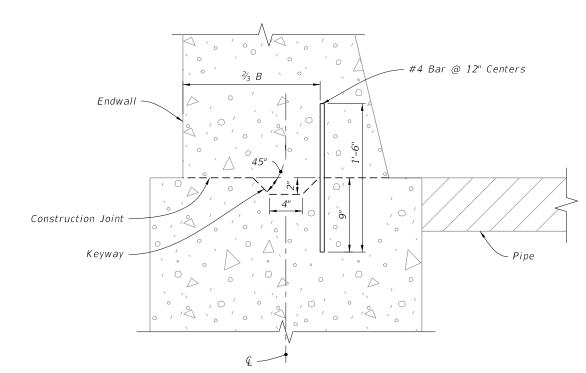


=== STRAIGHT CONCRETE ENDWALL ========



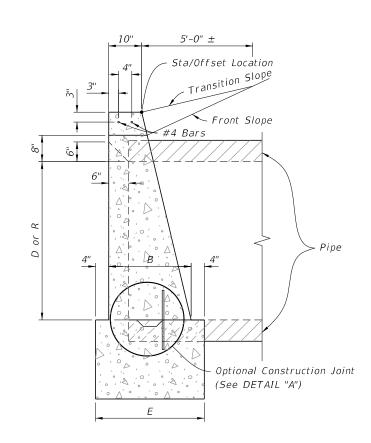






NOTE: Keyway and Dowels are required for optional construction joint.

DETAIL "A"



SIDE ELEVATION

CONCRETE ENDWALL DETAILS

REVISION 11/01/19

≥ DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

INDEX 430-030

SHEET 2 of 4

											ELL1	PTICA	AL CO	NCRE	TE AI	VD C	ORRUC	GATED	META	L PIPI	E ARC	ЭН											
a	Rise	Snan	0	pening ,	Area (S	F)		Dimensions							Class II Concrete (CY) Number Of Pipe And Skew Angle Of Pipe (α)								Rise	Snan	Approx.								
ip	R	Span	^	lumber	Of Pine	· C										Y		Single		Dou		Jei Oi i	The And	Tri		T Pipe ((α)	Ouad	ruple		R	c	Equiv.
~	^		1	2	3	<u> </u>	A	В	C	E	F	G	Y	0°	15°	30°	45°	0°	O°	15°	30°	45°	0°	1.5°	30°	45°	0°	15°	30°	45°		ا "	Round
	12"	18"	13	2.6	3.9	5.2	1'-8"	1'-2"	3'-9"	1'-10"	1'-2"	0'-3"	2'-10"	2'-10"	2'-11"	.3'3"	4'-0"	1.09	1.45	1.46	1.51	1.60	1.80	1.82	1.91	2.09	2.16	2.20	2.33	2.60	12"	18"	1.5"
	14"	23"	1.8	3.6	5.4	7.2	1'-10"	1'-3"	4'-21/2"	1'-11"	1'-3"	81/2"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	1.36	1.82	1.84	1.89	2.01	2.29	2.32	2.43	2.68	2.75	2.80	2.97	3.33	14"	23"	18"
	19"	30"	3.3	6.6	9.9	13.2	2'-3"	1'-4"	5'-11/5"	2'-0"	1'-4"	1'-71/2"	4'-2"	4'-2"	4'-4"	4'-10"	5'-11"	1.89	2.55	2.57	2.65	2.82	3.22	3.27	3.43	3.77	3.88	3.95	4.19	4.70	19"	30"	24"
_ n	24"	38"	5.1	10.2	15.3	20.4	2'-8"	1'-5"	6'-3"	2'-1"	1'-5"	2'-9"	5'-2"	5'-2"	5'-4"	6'-0"	7'-4"	2.64	3.55	3.58	3.69	3.93	4.48	4.54	4.77	5.24	5.39	5.49	5.82	6.53	24"	38"	30"
ete	29"	45"	7.4	14.8	22.2	29.6	3'-1"	1'-6"	7'-0"	2'-2"	1'-6"	3'-6"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"	3.32	4.48	4.52	4.66	4.96	5.64	5.72	6.00	6.60	6.80	6.92	7.34	8.24	29"	45"	36"
ic.	34"	53"	10.2	20.4	30.6	40.8	3'-6"	1'-7"	7'-111/2"	2'-3"	1'-7"	4'-51/2"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"	4.24	5.76	5.81	6.00	6.39	7.29	7.40	7.76	8.55	8.81	8.97	9.52	10.70	34"	53"	42"
jo.	38"	60"	12.9	25.8	38.7	51.6	3'-10"	1'-8"	8'-9"	2'-4"	1'-8"	5'-3"	7'-11"	7'-11"	8'-2"	9'-2"	11'-2"	5.22	7.16	7.23	7.46	7.96	9.10	9.24	9.70	10.71	11.05	11.25	11.95	13.46	38"	60"	48"
1°	43"	68"	16.6	33.2	49.8	66.4	4'-3"	1'-10"	9'-81/2"	2'-6"	1'-10"	6'-21/2"	8'-10"	8'-10"	9'-2"	10'-2"	12'-6"	6.63	9.01	9.09	9.38	10.00	11.39	11.56	12.13	13.36	13.77	14.02	14.88	16.73	43"	68"	54"
	48"	76"	20.5	41.0	61.5	82.0	4'-8"	2'-1"	10'-8"	2'-9"	2'-0"	7'-2"	9'-9"	9'-9"	10'-1"	11'-3"	13'-9"	8.66	11.74	11.85	12.22	13.02	14.82	15.04	15.77	17.37	17.91	18.23	19.34	21.74	48"	76"	60"
	53"	83"	24.8	49.6	74.4	99.2	5'-1"	2'-6"	11'-7"	3'-2"	2'-6"	8'-1"	10'-7"	10'-7"	10'-11"	12'-3"	15'-0"	12.50	16.98	16.98	17.67	18.83	21.47	21.78	22.86	25.18	25.97	26.44	28.06	31.55	53"	83"	66"
<u> </u>	58"	91"	29.5	59.0	88.5	118.0	5'-6"	2'-10"	12'-61/2"	3'-6"	2'-10"	9'-01/2"	11'-4"	11'-4"	11'-9"	13'-1"	16'-0"	16.46	22.26	22.46	23.16	24.66	28.05	28.46	29.85	32.85	33.85	34.46	36.55	41.05	58"	91"	72"
<u>_</u>	13"	17"	1.1	2.2	3.3	4.4	1'-9"	1'-2"	3'-10"	1'-10"	1'-2"	0'-4"	2'-6"	2'-6"	2'-7"	2'-11"	3'-6"	1.16	1.47	1.48	1.52	1.60	1.78	1.80	1.88	2.04	2.09	2.12	2.23	2.48	13"	17"	15"
etë	15"	21"	1.6	3.2	4.8	6.4	1'-11"	1'-2"	4'-3"	1'-10"	1'-2"	0'-9"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.33	1.69	1.70	1.75	1.84	2.04	2.06	2.15	2.33	2.40	2.44	2.57	2.84	15"	21"	18"
Σ	20"	28"	2.8	5.6	8.4	11.2	2'-4"	1'-3"	5'-2"	1'-11"	1'-3"	1'-8"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	1.78	2.31	2.33	2.39	2.53	2.83	2.87	2.99	3.26	3.36	3.42	3.60	4.01	20"	28"	24"
рə	24"	35"	4.3	8.6	12.9	17.2	2'-8"	1'-4"	5'-111/2"	2'-0"	1'-4"	2'-5½"		4'-0"	4'-2"	4'-7"	5'-8"	2.34	3.03	3.05	3.14	3.32	3.72	3.77	3.93	4.29	4.40	4.47	4.72	5.25	24"	35"	30"
at	29"	42"	5.9	11.8	17.7	23.6	3'-1"		6'-101/2"	2'-1"	1'-5"	3'-41/2"	4'-9"	4'-9"	4'-11"	5'-6"	6'-9"	3.13	4.06	4.09	4.20	4.45	4.99	5.06	5.28	5.76	5.93	6.03	6.36	7.09	29"	42"	36"
Вn.	33"	49"	8.4	16.8	25.2	33.6	3'-5" 3'-10"	1'-6" 1'-7"	7'-8"	2'-2"	1'-6" 1'-7"	4'-2"	5'-6"	5'-6"	5'-8" 6'-7"	6'-4"	7'-9"	3.83	5.00	5.04	5.18	5.48	6.16	6.24	6.52	7.12	7.32	7.44	7.86	8.76	33"	49"	42"
1 5	38" 43"	57"	10.6	21.2 26.4	31.8 39.6	42.4	4'-3"		0' 61/"	2'-3" 2'-4"	1'-8"	5-11/2	6'-4"	6'-4"	7'-4"	7'-4" 8'-2"	8'-11"	4.87	6.31	6.36 7.70	6.53	6.91 8.37	7.74	7.84	8.18	8.93	9.18	9.33 11.33	9.85 11.97	10.96 13.33	38"	57"	48" 54"
3	43	71"	13.2 16.9	33.8	50.7	52.8 67.6	4-3	1'-8"	9'-61/2"	2'-6"	2'-0"	6'-10"	7'-10"	7'-10"	8'-1"	9'-1"	10'-0"	5.88 7.80	7.64 10.15	10.23	7.91 10.51	0.5/	9.40 12.49	9.52 12.65	9.94 13.22	10.86 14.43	14.85	15.10	15.94	17.77		71"	60"
Щ	4/	/ 1	10.9	33.8	30.7	0/.0	4-/	1-10	10-4	2-0	2-0	0-10	/ -10	7-10	0-1	9-1	11-1	7.80	10.15	10.23	10.51	11.12	12.49	12.05	13.22	14.43	14.85	15.10	15.94	1/.//	4/	/ 1	00

NOTES:

- 1. Dimension X is calculated as: $X = Y*SEC \alpha$.
- 2. Select tabular quantities using skew values as follows:

End Skew to Pipe Use Tabulated Value

 0° to 5°
 0°

 6° to 15°
 15°

 16° to 30°
 30°

 31° or Over
 45°

CONCRETE AND METAL PIPE TABLES

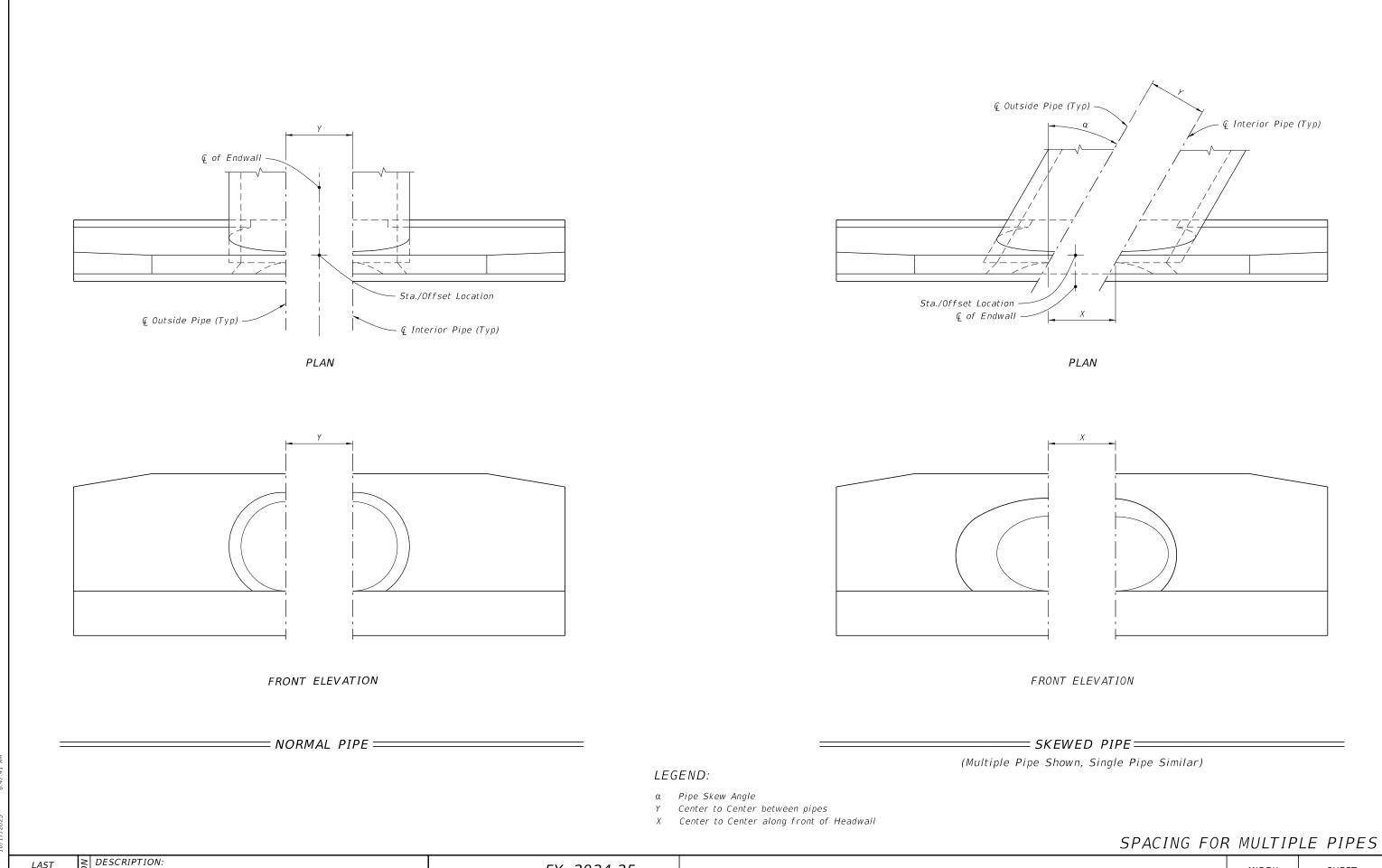
LAST REVISION 11/01/21

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

SHEET



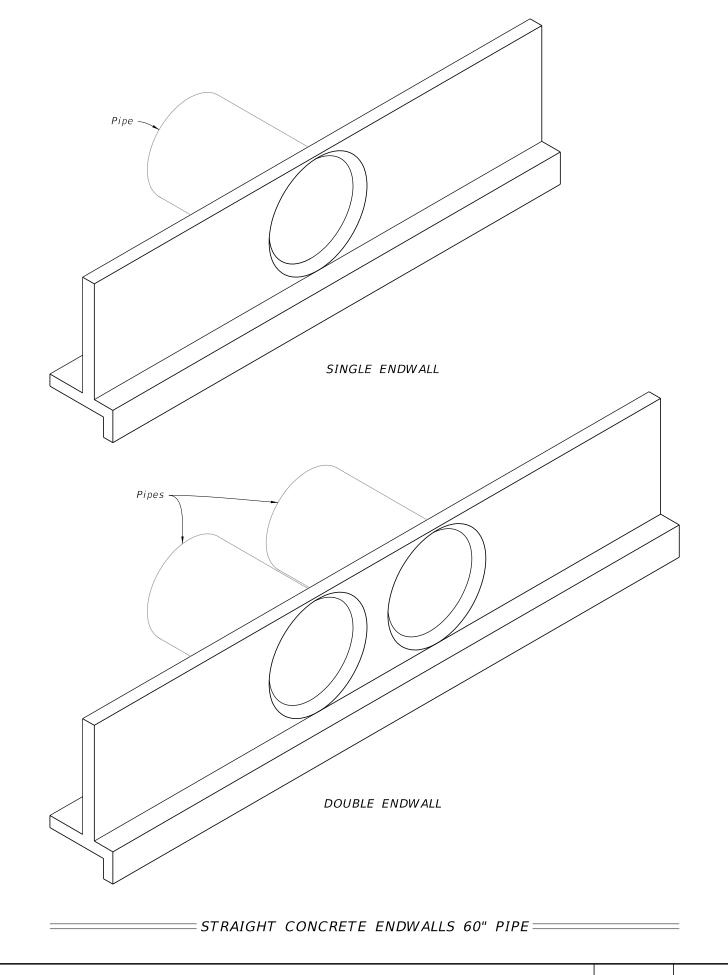
REVISION 11/01/19

FDOT

FY 2024-25 STANDARD PLANS

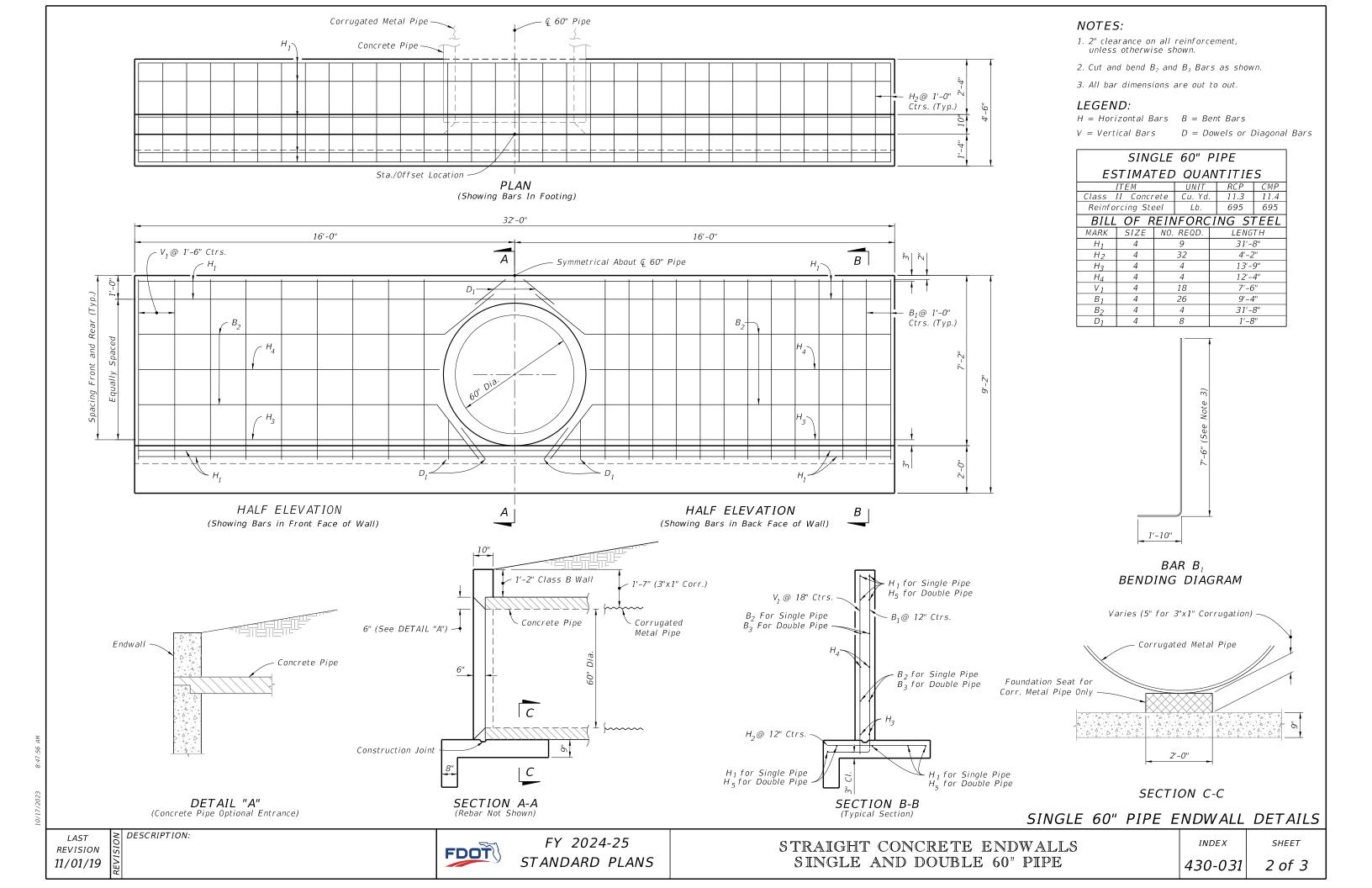
- 2. Reinforcing steel is either Grade 40 or 60.
- 3. Endwalls may be cast in place or precast concrete. The Contractor or the Supplier will determine the additional reinforcement necessary for handling precast units.
- 4. Chamfer all exposed edges and corners $\frac{3}{4}$ " unless otherwise shown.
- 5. Quantities shown are for estimating purposes only.

T	ABLE OF CONTENTS:						
Sheet	Description						
1	1 General Notes and Contents						
2	Single 60" Pipe Endwall Details						
3	Double 60" Pipe Endwall Details						



REVISION 11/01/19

≥ DESCRIPTION:



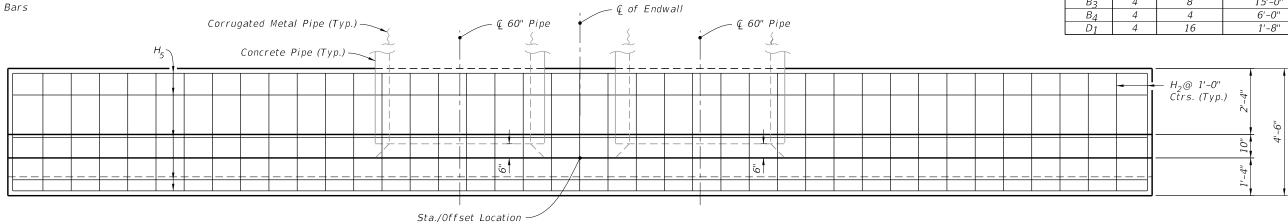
NOTES:

- 1. 2" clearance on all reinforcement, unless otherwise shown.
- 2. Cut and bend B_3 Bars as shown.
- 3. All bar dimensions are out to out.

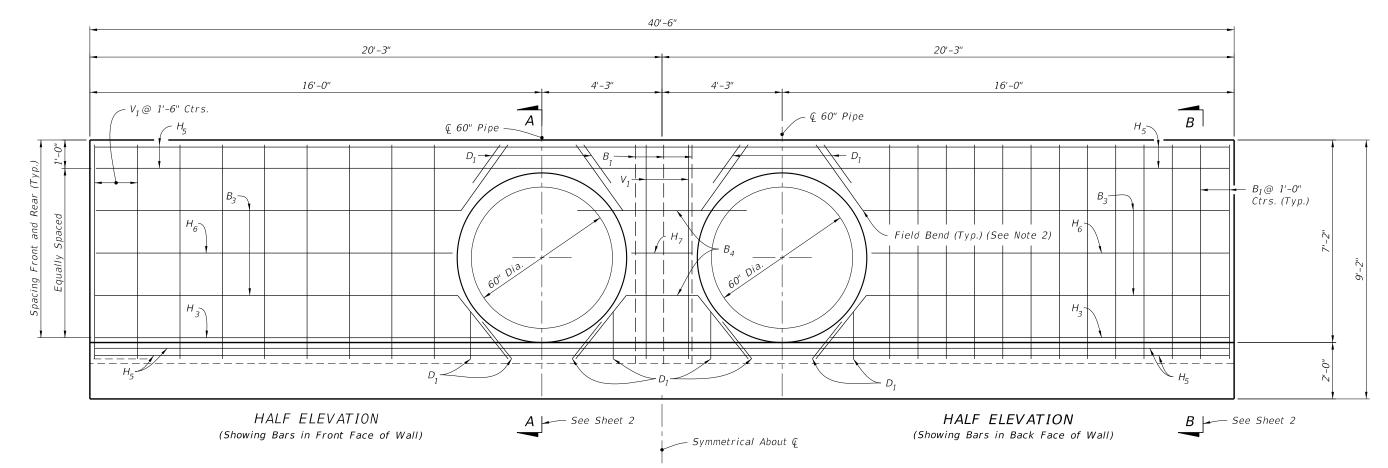
LEGEND:

- H = Horizontal Bars
- V = Vertical Bars
- B = Bent Bars
- D = Dowels or Diagonal Bars

	DOU	BLE	60"	PII	PΕ				
ES	TIMA	TED	QUA	NT	ITIE	s			
	ITEM		UNIT		RCP	CMP			
Class	II Concr	ete	Cu. Yd.	.	13.7	13.8			
Reinfo	rcing Ste	eel	Lb.		824	824			
BILL	OF R	REIN	IFORC	ΊN	G 57	TEEL			
MARK	MARK SIZE NO			LENGTH					
H ₂	4		41	4'-2"					
Н3	4		4	13'-9"					
H ₅	4		9		40'-	2"			
H ₆	4		4	12'-6"					
H ₇	4		2		2'-2	nii -			
V ₁	4		20	7'-6"					
В1	4		29	9'-4"					
В3	4		8		2"				



PLAN (Showing Bars In Footing)



DOUBLE 60" PIPE ENDWALL DETAILS

LAST REVISION 11/01/19

FDOT

FY 2024-25 STANDARD PLANS

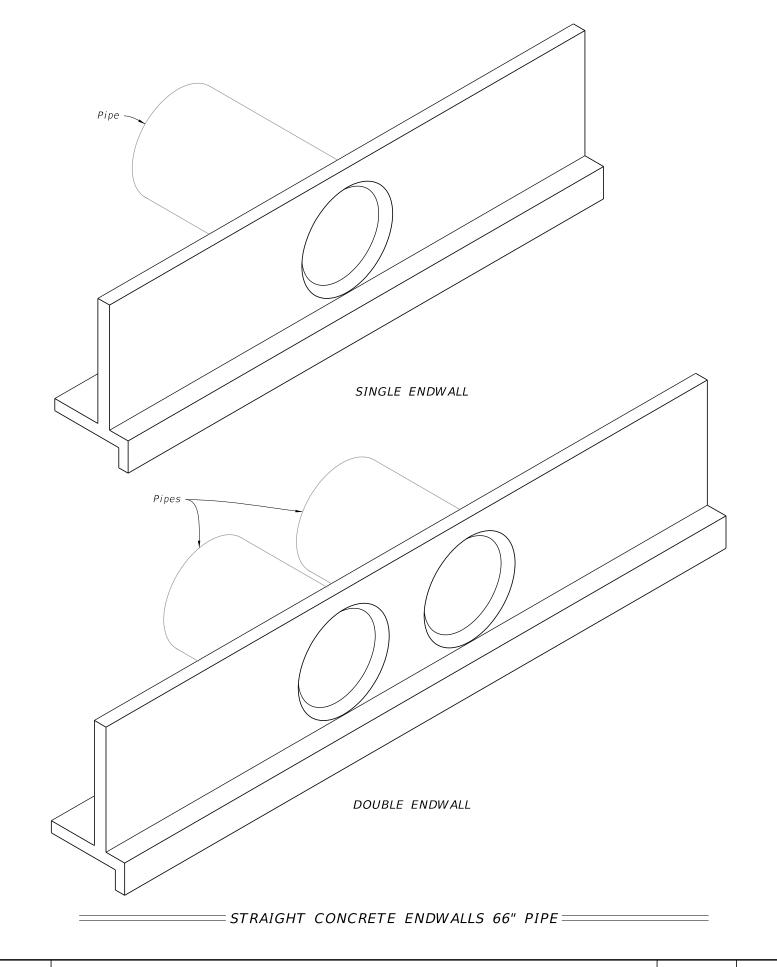
STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 60" PIPE

430-031

3 of 3

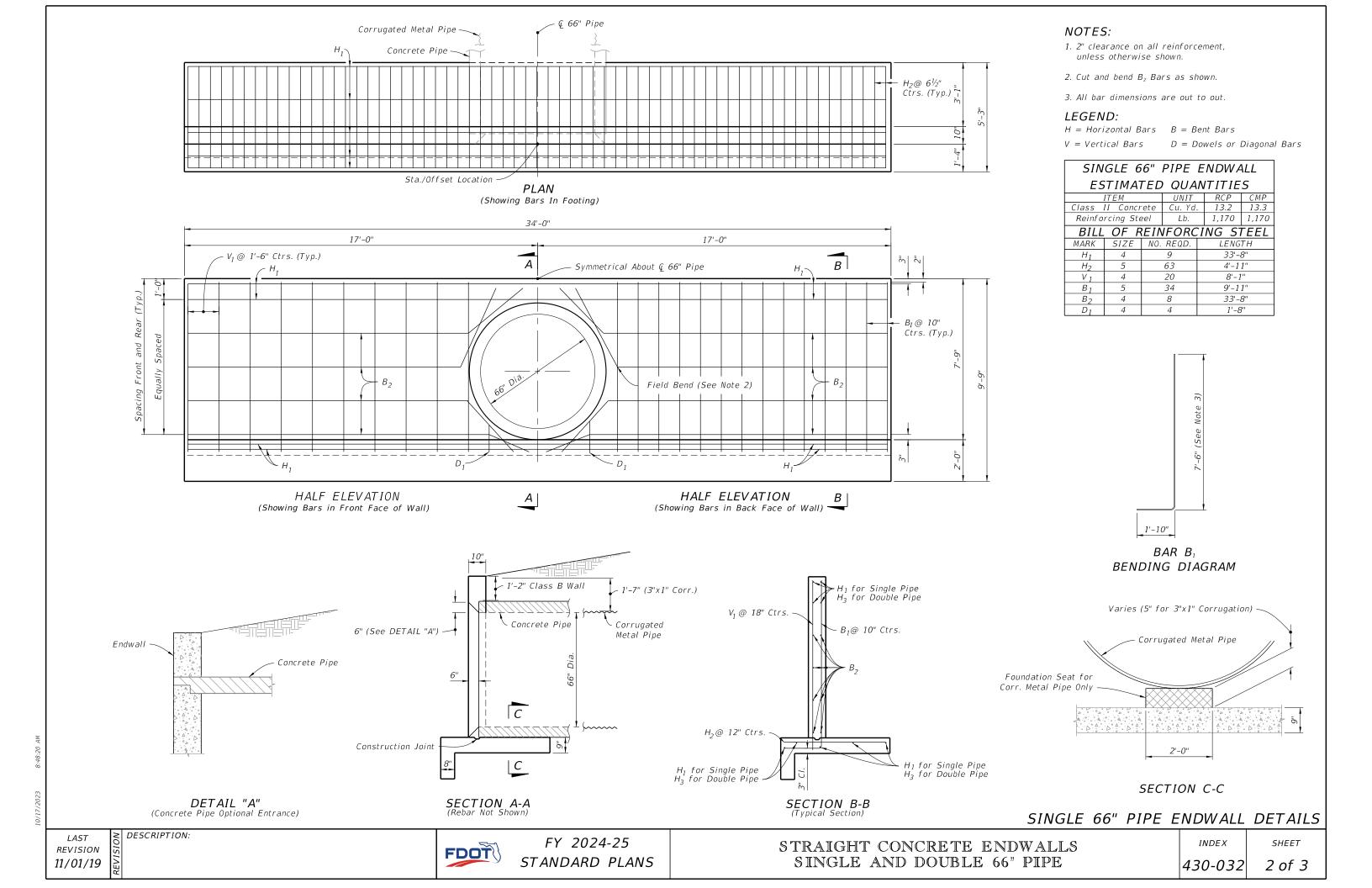
- 1. Use Class II concrete.
- 2. Reinforcing steel is either Grade 40 or 60.
- 3. Endwalls may be cast in place or precast concrete. The Contractor or the Supplier will determine the additional reinforcement necessary for handling precast units.
- 4. Chamfer all exposed edges and corners $\frac{3}{4}$ " unless otherwise shown.
- 5. Quantities shown are for estimating purposes only.

T.	ABLE OF CONTENTS:							
Sheet	Sheet Description							
1	1 General Notes and Contents							
2	Single 66" Pipe Endwall Details							
3	Double 66" Pipe Endwall Details							



REVISION 11/01/19

≥ DESCRIPTION:



NOTES:

- 1. 2" clearance on all reinforcement, unless otherwise shown.
- 2. Cut and bend B_3 Bars as shown.
- 3. All bar dimensions are out to out.

LEGEND:

H = Horizontal Bars

V = Vertical Bars

B = Bent Bars

D = Dowels or Diagonal Bars

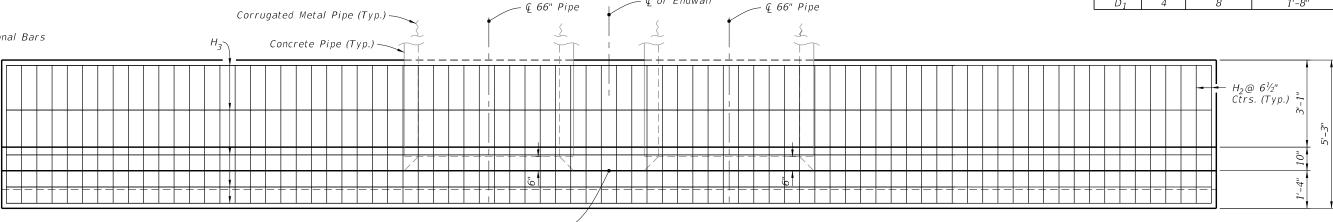
DOUBLE 66" PIPE ENDWALL

ESTIMATED QUANTITIES

ITEM UNIT RCP CMP
Class II Concrete Cu. Yd. 16.0 16.2
Reinforcing Steel Lb. 1,406 1,406

BILL OF REINFORCING STEEL

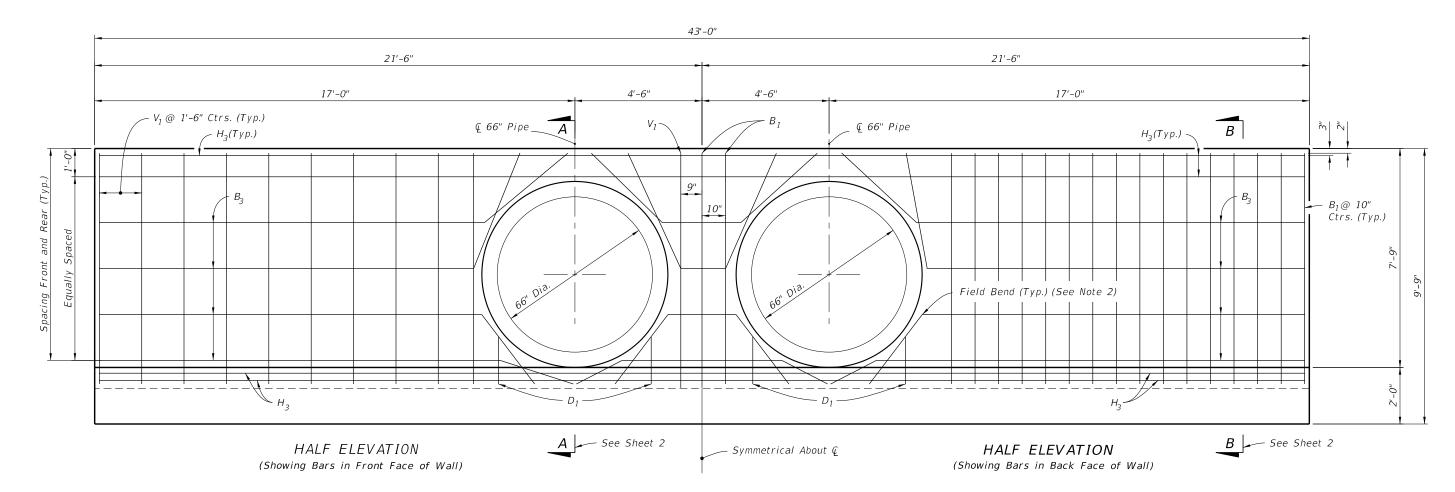
BILL	OF R	KEINFORC	ING SIEE
MARK	SIZE	NO. REQD.	LENGTH
H_2	5	80	4'-11"
H_3	4	9	42'-8"
V 1	4	22	8'-1"
B_1	5	37	9'-11"
B_3	4	8	42'-8"



Q of Endwall

PLAN (Showing Bars In Footing)

Sta./Offset Location



DOUBLE 66" PIPE ENDWALL DETAILS

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

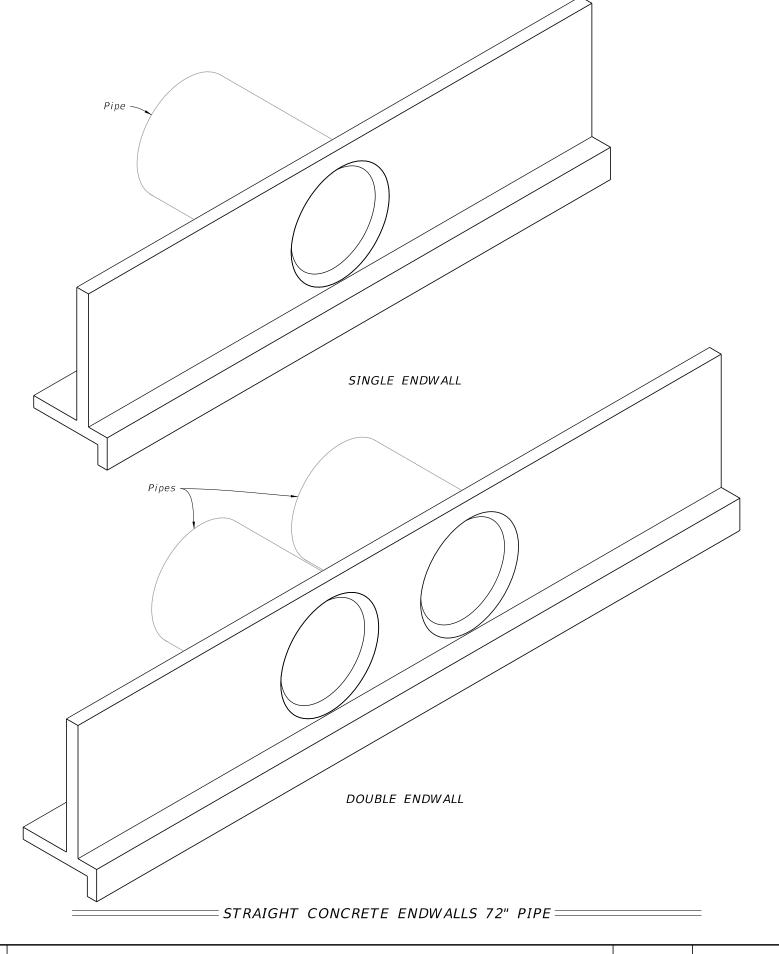
STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 66" PIPE

430-032

32 3 of 3

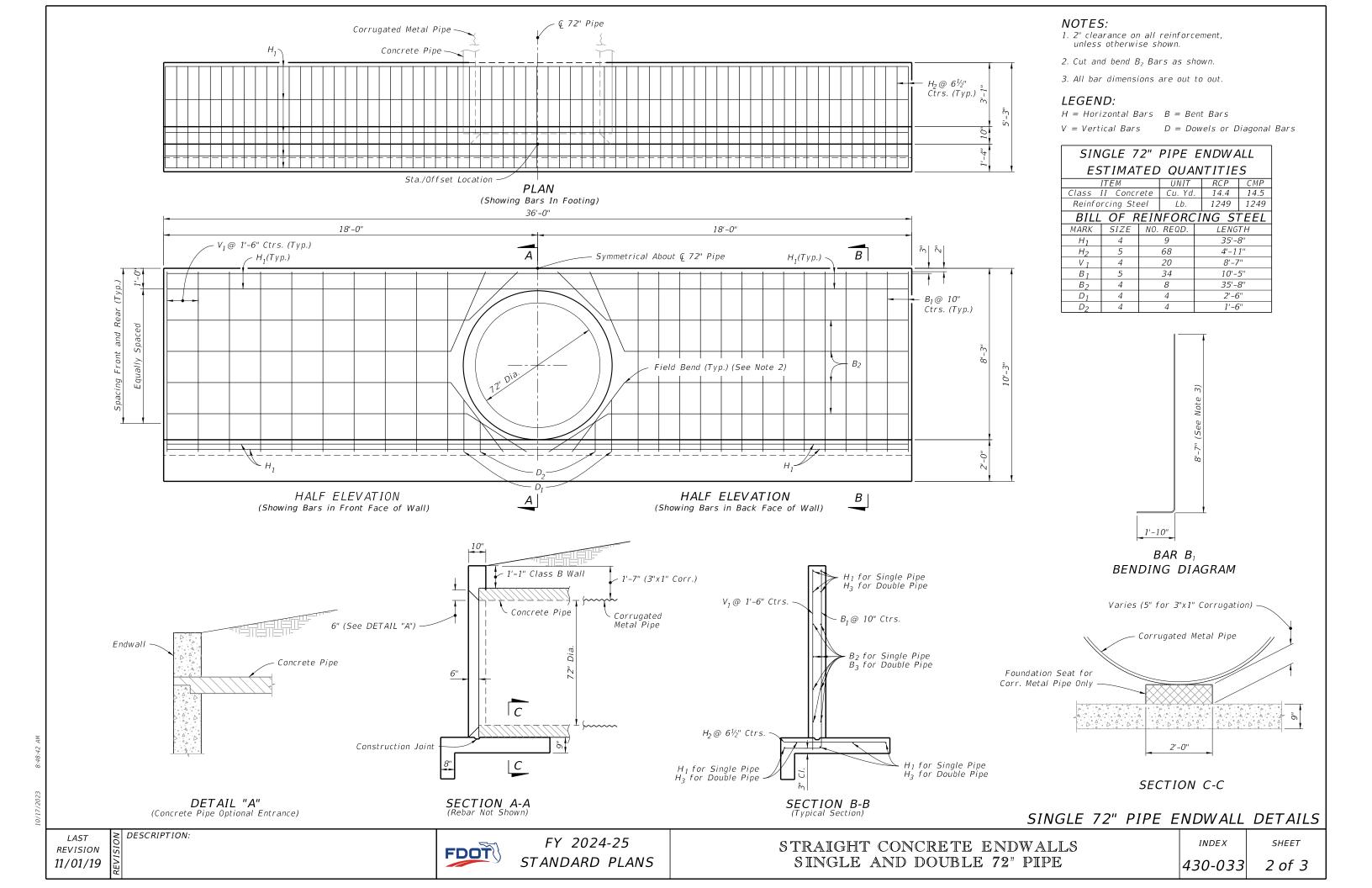
- 1. Use Class II concrete.
- 2. Reinforcing steel is either Grade 40 or 60.
- 3. Endwalls may be cast in place or precast concrete. The Contractor or the Supplier will determine the additional reinforcement necessary for handling precast units.
- 4. Chamfer all exposed edges and corners $\frac{3}{4}$ " unless otherwise shown.
- 5. Quantities shown are for estimating purposes only.

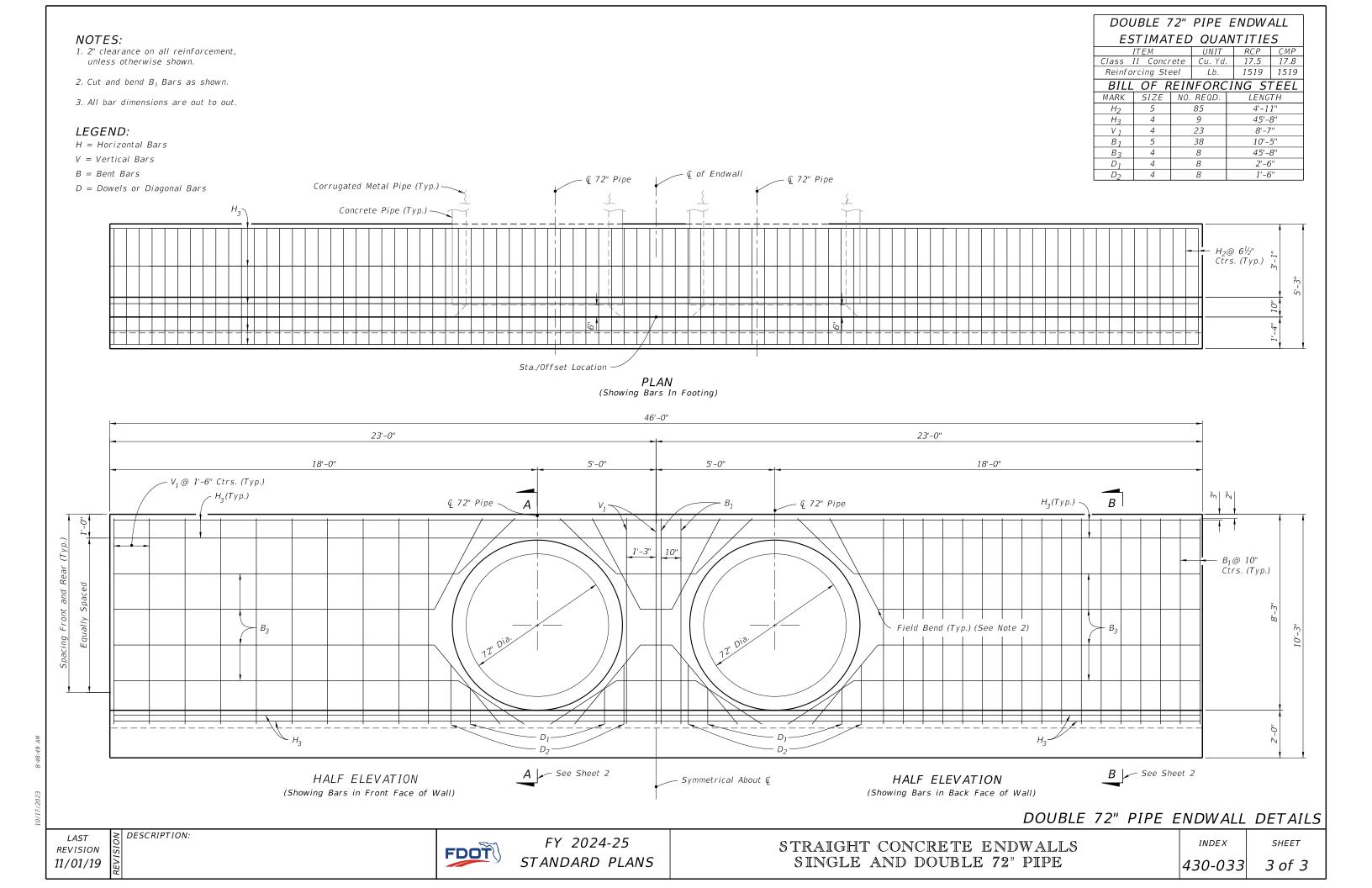
T	ABLE OF CONTENTS:						
Sheet Description							
1 General Notes and Contents							
2	Single 72" Pipe Endwall Details						
3	Double 72" Pipe Endwall Details						



REVISION 11/01/18

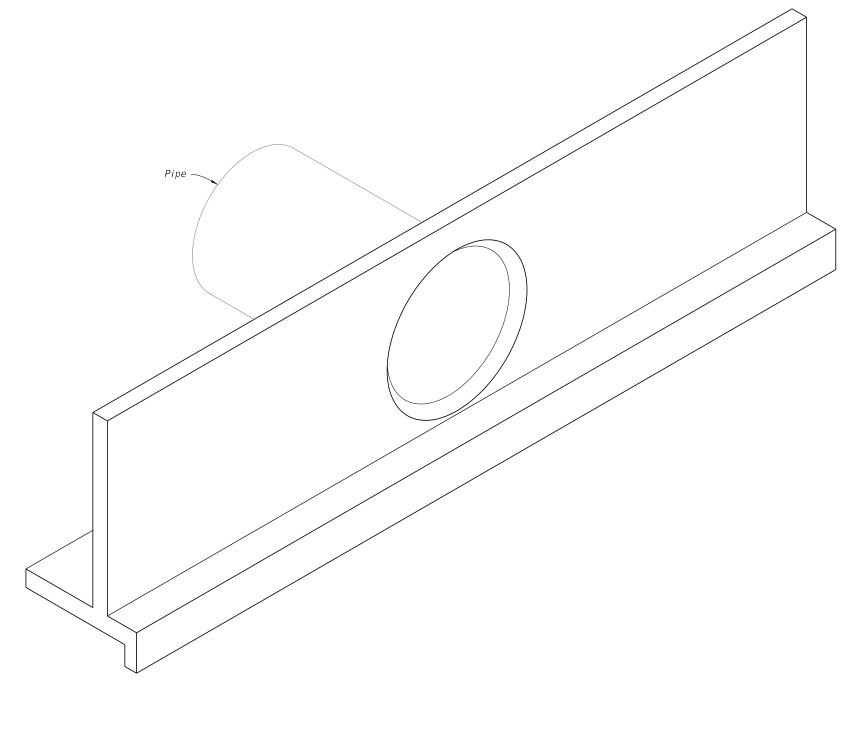
FDOT





- 1. Use Class II concrete.
- 2. Reinforcing steel is either Grade 40 or 60.
- 3. Endwalls may be cast in place or precast concrete. The Contractor or the Supplier will determine the additional reinforcement necessary for handling precast units.
- 4. Chamfer all exposed edges and corners $\frac{3}{4}$ " unless otherwise shown.
- 5. Quantities shown are for estimating purposes only.

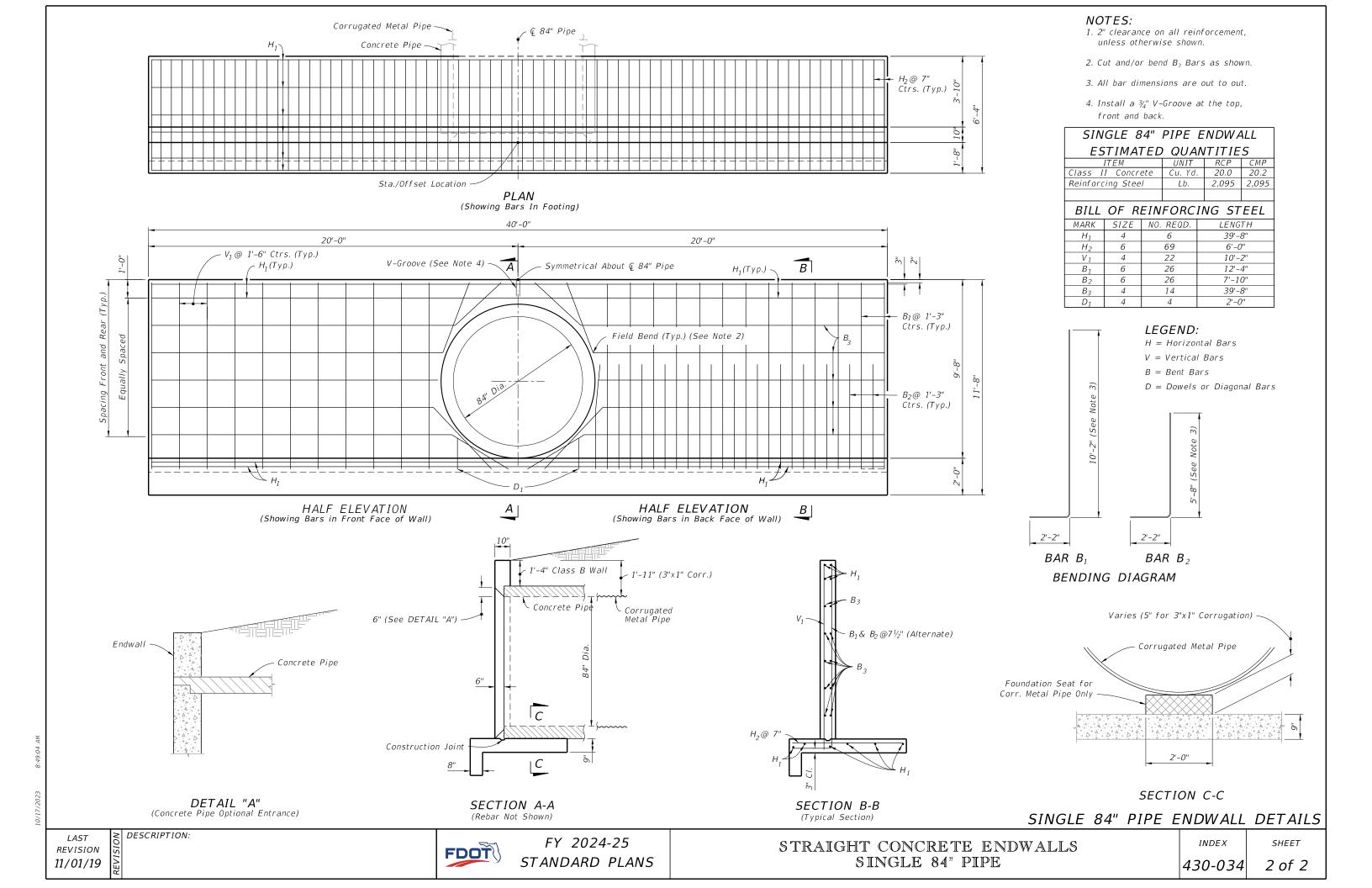
T	ABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Single 84" Pipe Endwall Details



=STRAIGHT CONCRETE ENDWALL SINGLE 84" PIPE===

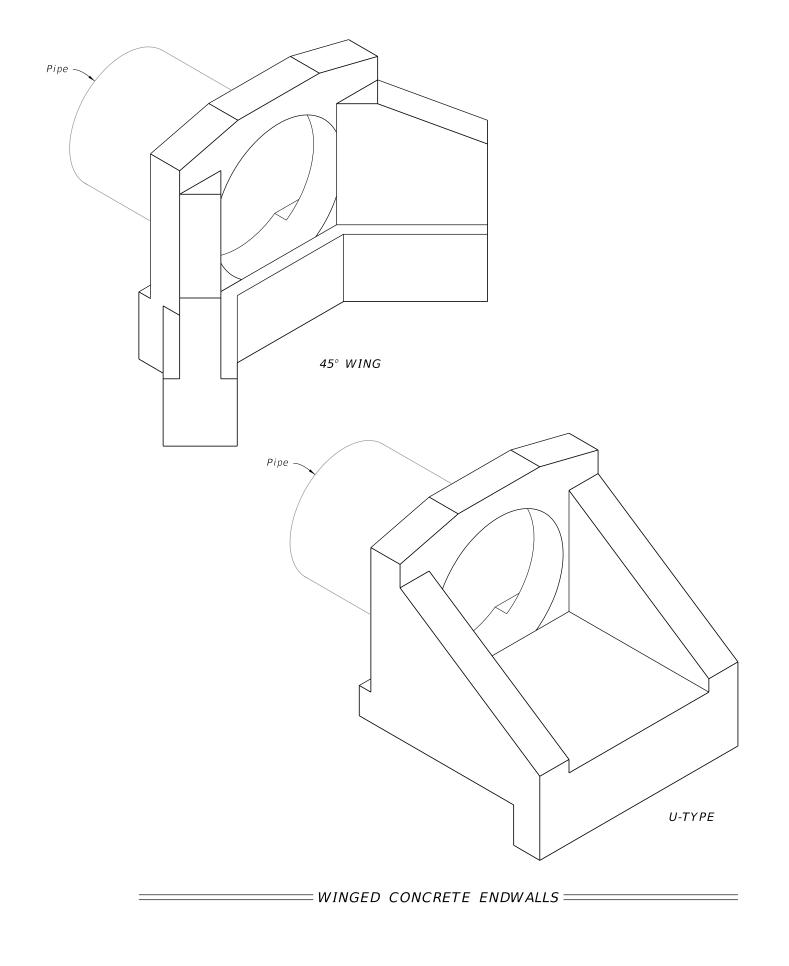
≥ DESCRIPTION:





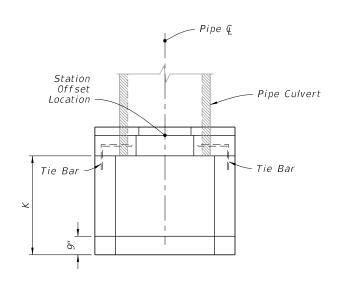
- 1. Use Class II concrete.
- 2. Chamfer all exposed edges and corners $\frac{3}{4}$ " unless otherwise shown.
- 3. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:						
Sheet	Description					
1	General Notes and Contents					
2	U-Type and 45° Endwalls					

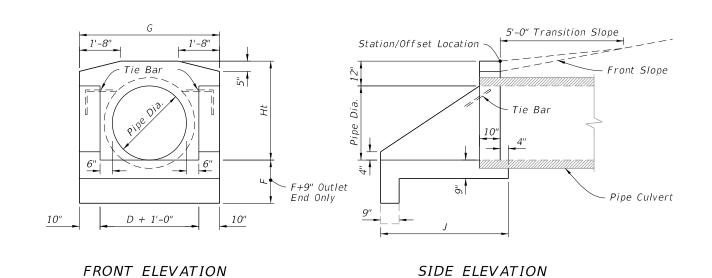


REVISION 11/01/21

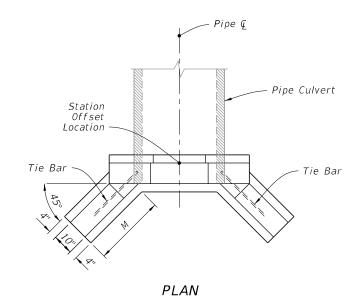
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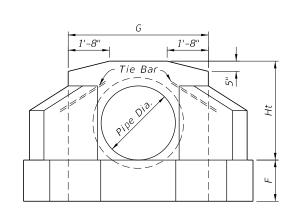


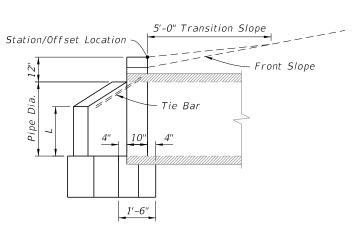
PLAN



	DIMENSIONS AND ESTIMATED QUANTITIES PIPE CULVERT ENDWALLS WITH U-TYPE WINGS												
	DIMENSIONS								QL	JANTITIE.	S IN ON	IE ENDW	4 <i>LL</i>
F	Pipe Wall Footing						Concrete, Class II, Total (CY)					Steel	
Dia.	Area	G Ht K		F	,	R	CP	С	MP		CIP	Tie Bars	
D	(ft²)	U	110	, ,	,	J	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	TIC Bars
15"	1.2	3'-11"	2'-3"	1'-5"	1'-3"	2'-7"	0.59	0.67	0.62	0.70	0.61	0.70	none
18"	1.8	4'-2"	2'-6"	1'-9"	1'-3"	2'-11"	0.70	0.79	0.74	0.82	0.74	0.82	none
24"	3.1	4'-8"	3'-0"	2'-6"	1'-6"	3'-8"	1.01	1.11	1.06	1.16	1.06	1.16	2-#6 Bars x 2'-0"
30"	4.9	5'-2"	3'-6"	3'-3"	1'-6"	4'-5"	1.33	1.44	1.41	1.51	1.40	1.51	2-#6 Bars x 2'-0"
36"	7.1	5'-8"	4'-0"	4'-0"	1'-9"	5'-2"	1.73	1.85	1.84	1.96	1.82	1.94	2-#6 Bars x 2'-6"
42"	9.6	6'-2"	4'-6"	4'-9"	2'-0"	5'-11"	2.19	2.32	2.32	2.45			2-#6 Bars x 2'-6"
48"	12.6	6'-8"	5'-0"	5'-6"	2'-0"	6'-8"	2.64	2.78	2.81	2.95			2-#6 Bars x 3'-0"







FRONT ELEVATION

SIDE ELEVATION

	DIMENSIONS AND ESTIMATED QUANTITIES PIPE CULVERT ENDWALLS WITH 45° WINGS									
			DIMENSI	ONS		QUANTITIES IN ONE ENDWALL				
Pipe Wall Footing						Footing	Concrete, Class II			
Dia.	Area	Ht	G	,	М	F	Tot	Total (CY)		Steel Tie Bars
D	(ft²)	п	G		141		RCP	CMP	CIP	
15"	1.2	2'-3"	3'-7"	1'-0"	1'-3"	1'-3"	0.56	0.59	0.59	none
18"	1.8	2'-6"	3'-10"	1'-2"	1'-7"	1'-3"	0.74	0.77	0.77	none
24"	3.1	3'-0"	4'-4"	1'-5"	2'-1"	1'-4"	1.01	1.06	1.06	2 -#6 Bars x 2'-0"
30"	4.9	3'-6"	4'-10"	1'-9"	2'-5"	1'-6"	1.32	1.40	1.39	2 -#6 Bars x 2'-0"
36"	7.1	4'-0"	5'-4"	2'-0"	2'-11"	1'-8"	1.72	1.83	1.82	2 -#6 Bars x 2'-6"
42"	9.6	4'-6"	5'-10"	2'-3"	3'-6"	2'-0"	2.34	2.47		2 -#6 Bars x 2'-6"
48"	12.6	5'-0"	6'-4"	2'-6"	4'-0''	2'-0"	2.74	2.90		2 -#6 Bars x 2'-6"

= ENDWALL WITH U-TYPE WINGS =

= ENDWALL WITH 45° WINGS =

U-TYPE AND 45° ENDWALLS

REVISION 11/01/21

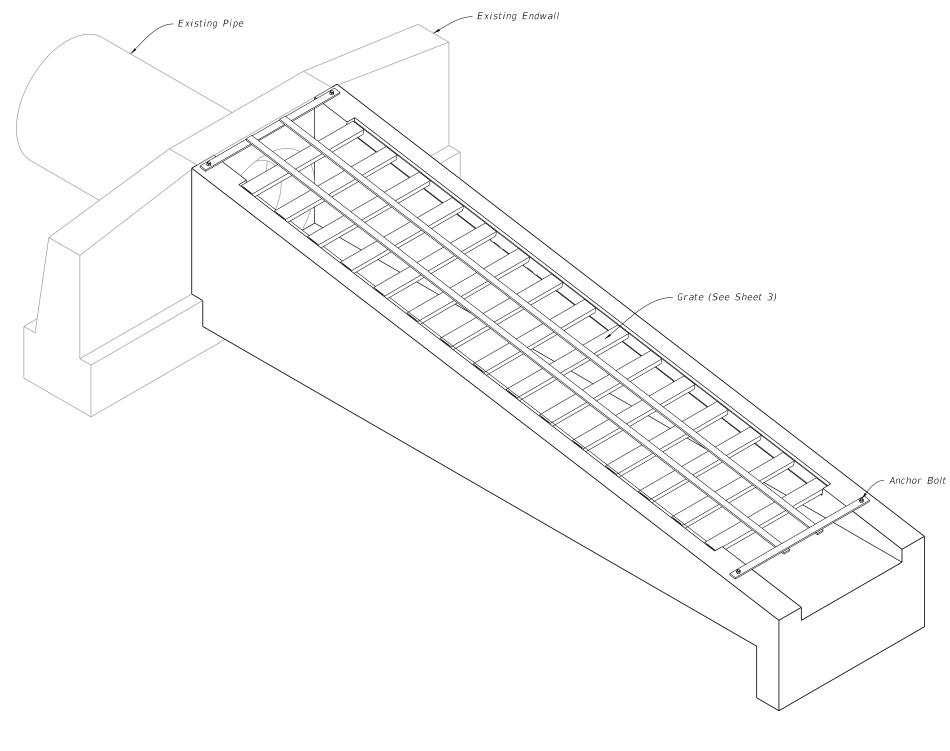
≥ DESCRIPTION:

FDOT

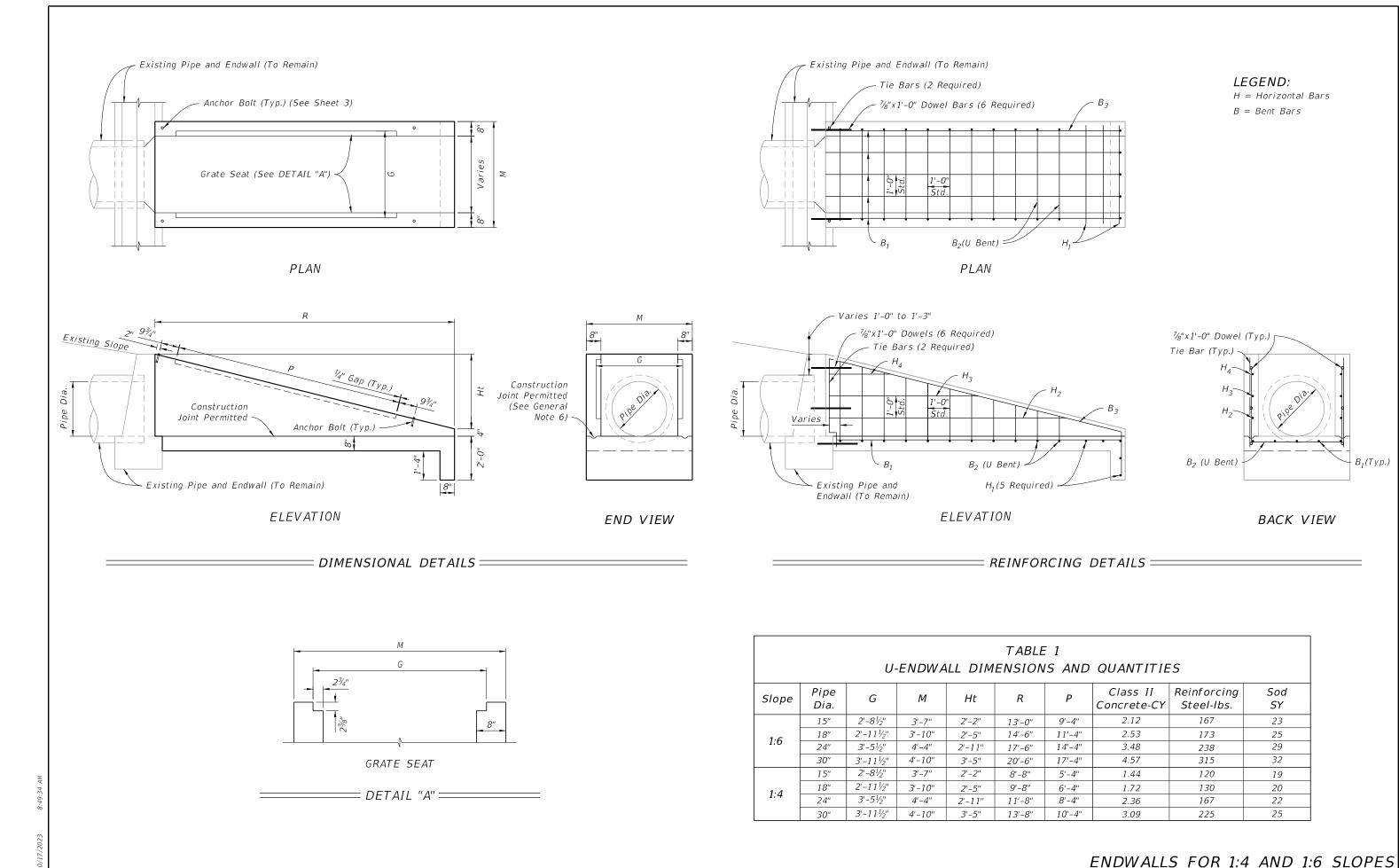
FY 2024-25 STANDARD PLANS

- 1. Use Class II Concrete.
- 2. Channel section C3 \times 6.0 may be substituted for the C4 \times 5.4 channel.
- 3. All steel reinforcing bars are #4 with 2" cover except as noted. Spacing shown are center to center. Lap bars 1'-5" minimum. Welded wire fabric (two cages max.) with an equivalent cross section area (0.20 sq. in.) may be substituted for bar reinforcement.
- 4. Drill $1\frac{1}{4}$ " holes 8" deep with a rotary drill in existing endwall for dowel bars. Thoroughly clean holes prior to installing Adhesive-Bonded Dowels.
- 5. Quantities shown are for estimating purposes only.
- 6. For supplemental details, see Index 425-001.

TABLE OF CONTENTS:						
Sheet	Description					
1	General Notes and Contents					
2	Endwalls for 1:4 and 1:6 Slopes					
3	Steel Grate					



=== SAFETY MODIFICATIONS ===



REVISION 11/01/21

DESCRIPTION:

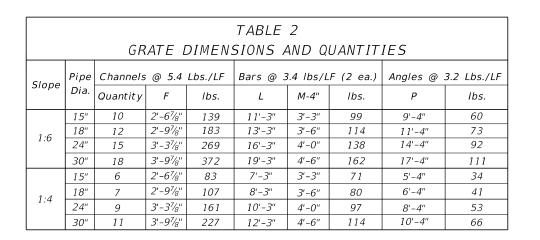
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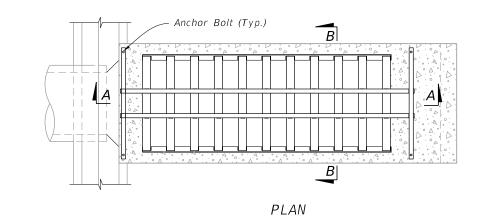
FY 2024-25 STANDARD PLANS

SAFETY MODIFICATIONS FOR ENDWALLS

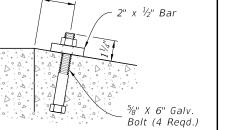
INDEX 430-090

SHEET 2 of 3

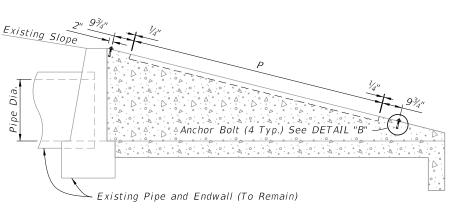


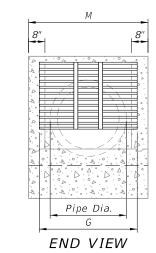






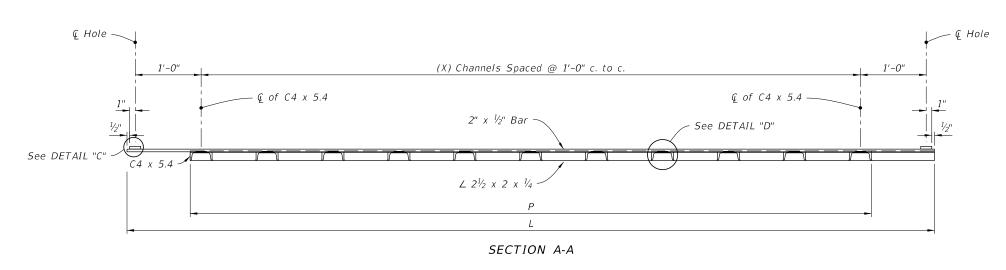
Anchor Bolt Detail DETAIL "B"

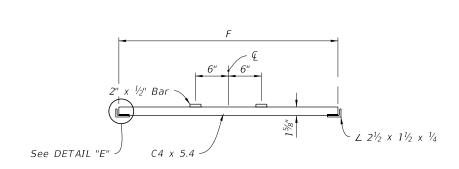




ELEVATION

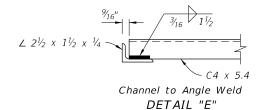
STEEL GRATE MOUNTING





SECTION B-B





STEEL GRATE DETAILS

STEEL GRATE

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FDOT

FY 2024-25 STANDARD PLANS

SAFETY MODIFICATIONS FOR ENDWALLS

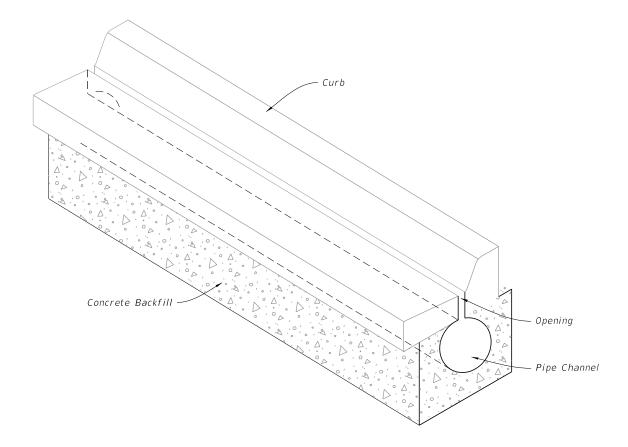
INDEX 430-090

SHEET 3 of 3

DESCRIPTION:

- 1. Install outlet pipes and preformed channel inverts with a slope of 0.6% or steeper toward the outlet regardless of the surface slope, unless shown different in the Plans.
- 2. Stub trench drain directly into drainage structures or install outlet pipes to connect trench drain to drainage structures.
- 3. Provide a cleanout port compatible with the manufactured system for Type I drains at the upstream end and at intervals of 50 feet maximum. Provide a cleanout port with an opening of 6" to 10" wide (transverse to the trench drain length) and 18" to 24" long. Form curbs or separators around the cleanout when cleanouts are placed adjacent to raised curb or separator. Install the cleanout with a removable load resistant cover or grate.
- 4. Excavate trench to allow for a minimum of 6" of concrete to be placed under and alongside the trench drain channel system. Install concrete backfill in accordance with Specification 347. Install concrete backfill extending a minimum of 6" past the end of the drain opening at the end of all Type I or II units.
- 5. Install transverse bars spaced 4" to 6" on center for Type I Trench Drain.

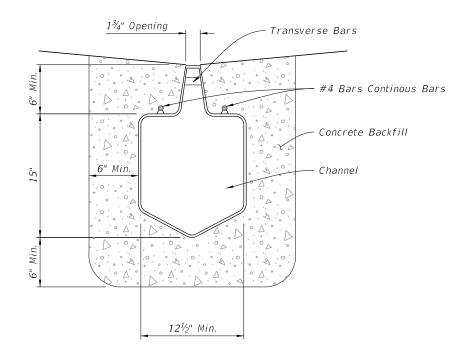
TABLE OF CONTENTS:					
Sheet	Description				
1	General Notes and Contents				
2	Type I – Nonremovable Grate				
3	Type II – Removable Grate				



= TRENCH DRAIN ASSEMBLY =====

DESCRIPTION:

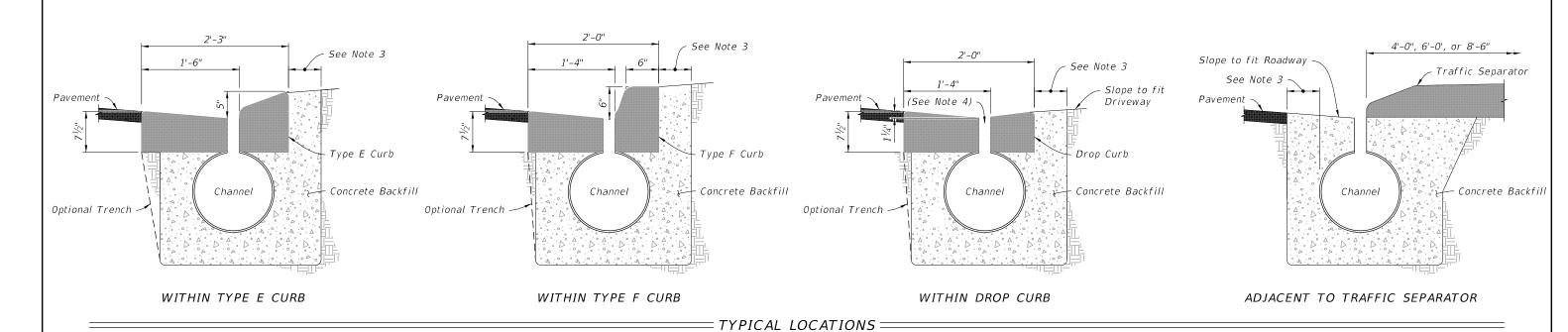




1¾" Opening - Grate Consisting of Vertical Bars and Transverse Bars (Web Spacers) (See Note 1) Concrete Backfill 6" Min. Channel 15" (Typ.) (See Note 2)

= PREFORMED POLYETHYLENE CHANNEL ==

ROUND PIPE CHANNEL =



(Round Channel Shown, Preformed Polyethylene Similar)

DESCRIPTION:

- 1. Opening for fixed height grates. Opening at the pipe can be 3".
- 2. The Round Pipe Channel is 15" in diameter, unless otherwise shown in the Plans.
- 3. Provide a minimum 6" concrete on this side of the drain.
- 4. Install grates on preformed polyethylene channel at driveways.

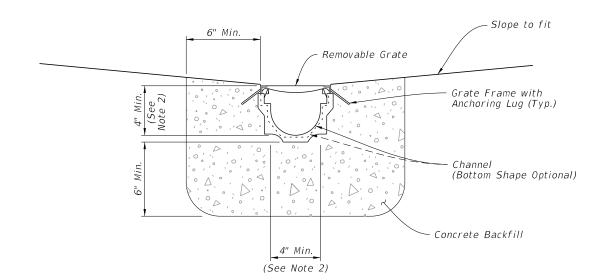
TYPE I - NONREMOVABLE GRATE

LAST REVISION 11/01/19

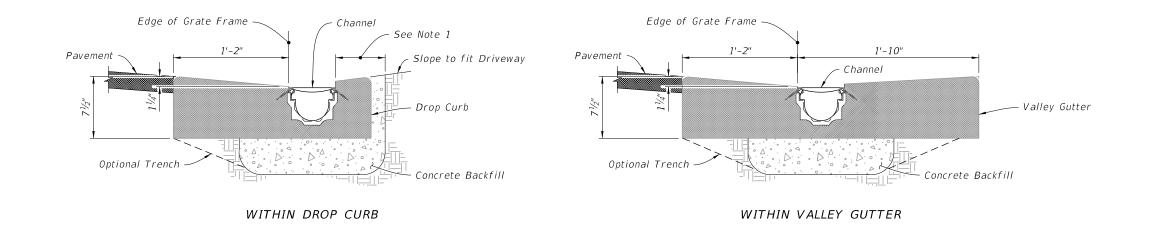
FDOT

FY 2024-25 STANDARD PLANS

INDEX SHEET 436-001 2 of 3



= PREFORMED CHANNEL WITH REMOVABLE GRATE ==



= $extit{TYPICAL}$ $extit{LOCATIONS}$ =

NOTES:

- 1. Provide minimum 6" of concrete on this side of the drain.
- 2. 4" Minimum unless otherwise shown in Plans.

TYPE II - REMOVABLE GRATE

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FY 2024-25
STANDARD PLANS

TRENCH DRAIN

1NDEX 436-001

3 of 3

4" smooth interior equivalent to 5" corrugated interior

5" smooth interior equivalent to 6" corrugated interior

6" smooth interior equivalent to 8" corrugated interior

8" smooth interior equivalent to 10" corrugated interior

2. Fine aggregate is quartz sand meeting the requirements of Specifications 902-4.

3. Coarse aggregate is gravel or stone meeting the requirements of Specification 901-2 or 901-3. The gradation is in accordance with Specifications 901, Grades 4, 467, 5, 56 or 57 stone unless otherwise shown restricted in the Plans.

4. Install Underdrain Type I, II, III and V in accordance with Specification 440.

5. Install Type D-3 geotextile in accordance with Specifications 514. The internal geotextile of Type V underdrain has a permittivity of 0.7 /sec. and an AOS of #40 sieve.

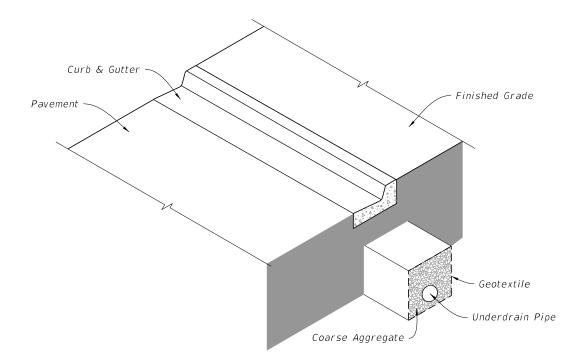
6. When Type I is used, use a geotextile sock in accordance with Specification 948.

7. See Index 120-002 for the standard location of Type I, II, and III underdrain. The location of Type V underdrain and nonstandard locations of Type I, II, and III underdrain will be as detailed in the plans.

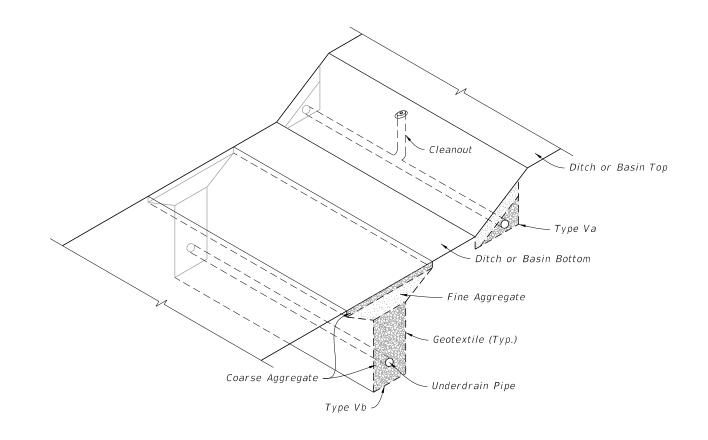
8. Install geotextile joints with a overlap a minimum of 1'. Install the internal geotextile of Type V underdrain with an overlap into the coarse aggregate or the fine aggregate a minimum of 1'.

9. Use nonperforated pipes for underdrain outlet and make all bends using ½ (45 deg.) elbows. Construct 90 deg. bends with two ½ elbows separated by at least 1' of straight pipe. Outlet pipes stubbed into inlets or other drainage structures must be a minimum 6" above the structure flow line. Install concrete aprons, hardware cloth, and sod for outlet pipes discharging to grassed areas as shown in Index 446-001 for Edgedrain Outlets.

TABLE OF CONTENTS:						
Sheet	Description					
1	General Notes and Contents					
2	Type I, II, and III Underdrains					
3	Type Va, Vb, and Cleanout					

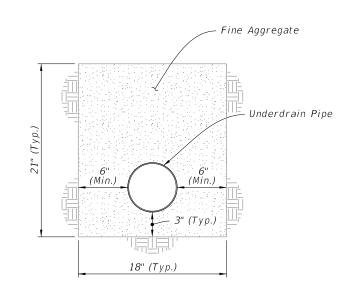


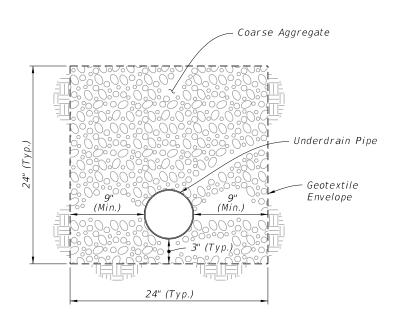
UNDERDRAIN TYPE I, II, AND III ASSEMBLY = (Type II Shown, Others Similar)

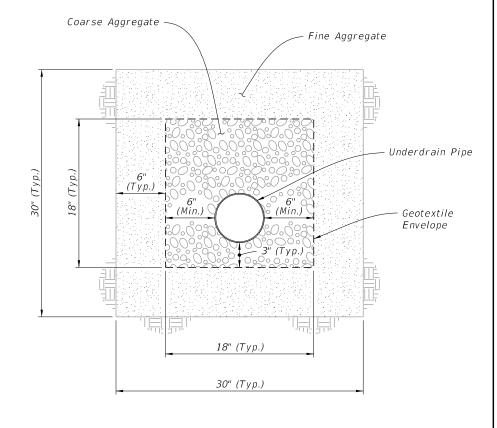


= UNDERDRAIN TYPE Va AND Vb ASSEMBLY =

8:50:13 A







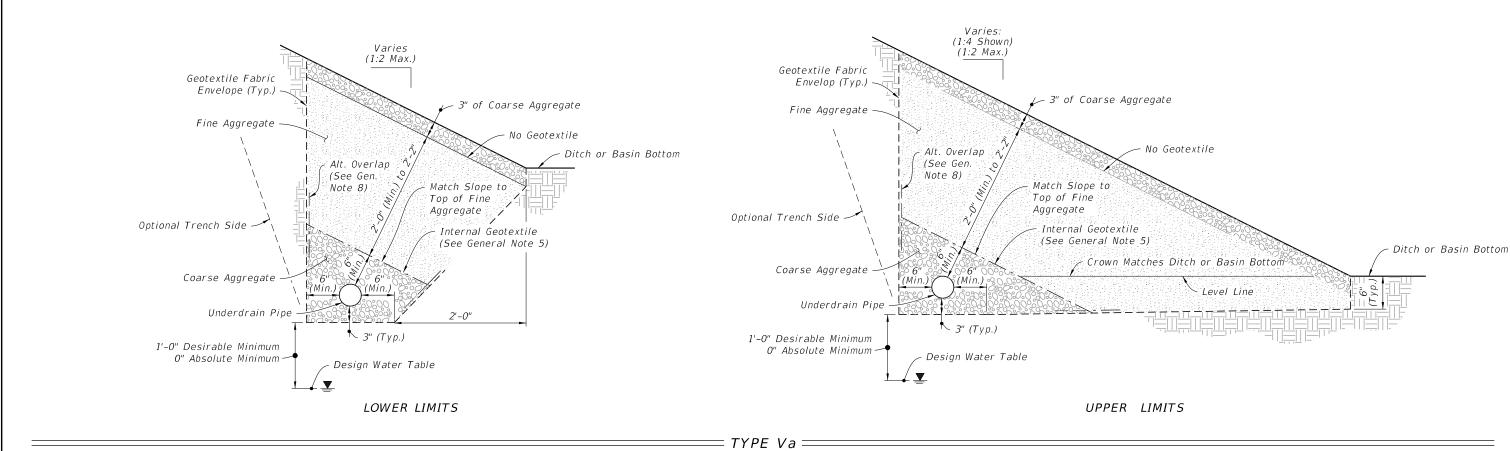
=TYPE I==

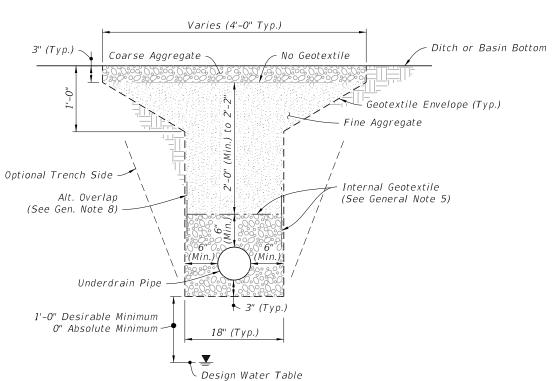
=TYPE II===

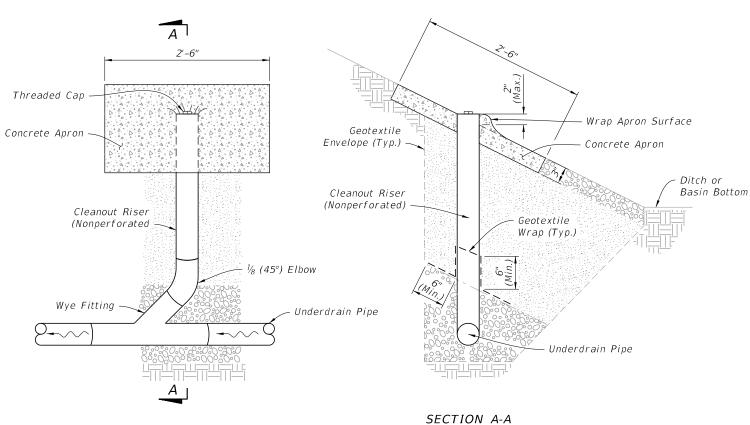
=TYPE III=

≥ DESCRIPTION: LAST REVISION 11/01/23

FDOT







= TYPE V $\mathit{CLEANOUT}$ =

TYPE Va, Vb, AND CLEANOUT

LAST REVISION 11/01/23

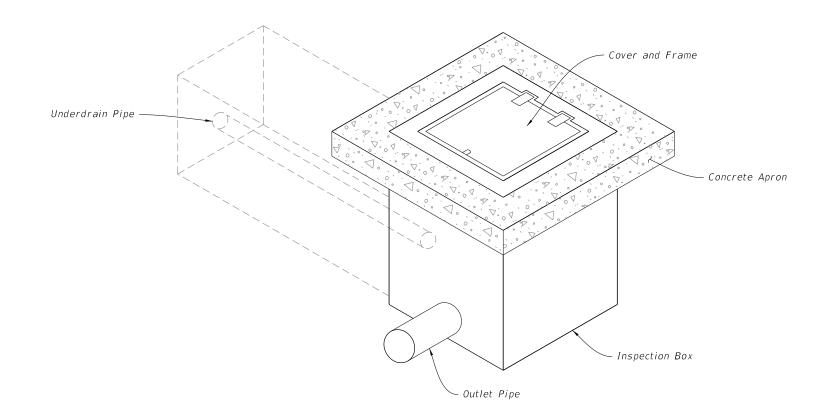
DESCRIPTION:

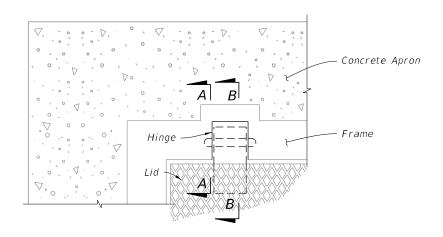
FDOT

SHEET

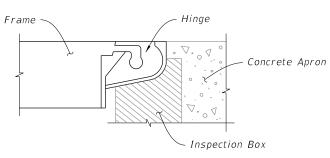
- 1. Install light duty cast iron cover and frame in accordance with Specification 962.
- 2. Use Class II concrete. Use No. 3 bars (Grade 60) on 8" centers both ways, sides and bottom.
- 3. Furnish covers with pick holes. Do not use fitted lifts or handles.
- 4. Manhole Type P Alternate A, Index 425-010, Type I Frame and Cover, Index 425-001, may be used in lieu of the box detailed in this Index.

TABLE OF CONTENTS:						
Sheet	Description					
1	General Notes and Contents					
2	Typical Inspection Box Installation					
3	Typical Urban, Slope, and Top Adjustment Installations					

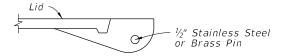




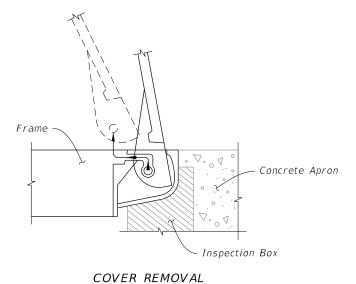
PLAN VIEW



SECTION A-A (Frame)

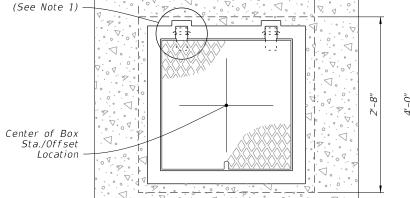


SECTION B-B (Lid)



HINGE DETAIL

2'-8"



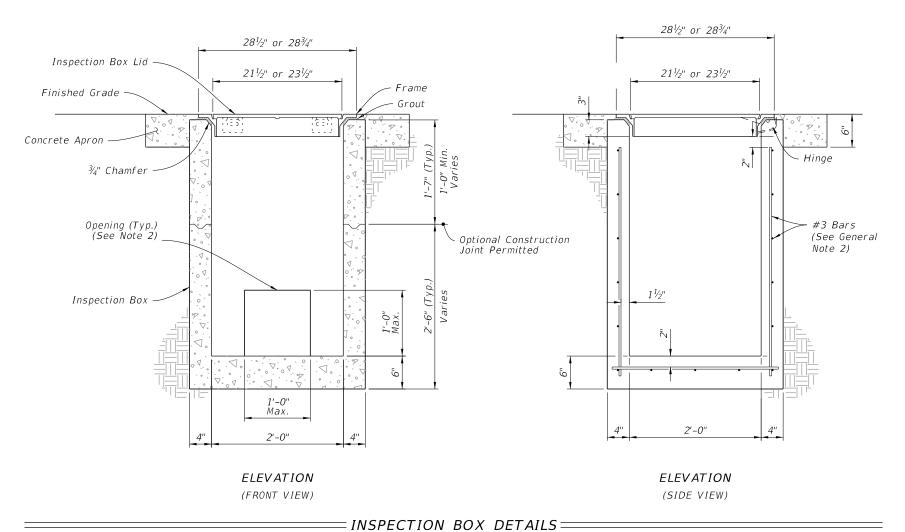
HINGE DETAILS

Concrete Apron

PLAN

NOTES:

- 1. Cast or field cut 2 ~ 4" wide slots for hinges. Grout around hinge covers.
- 2. One or more sides may have an opening, see Plans for required openings. Grout around opening to seal between underdrain pipe and inspection box.



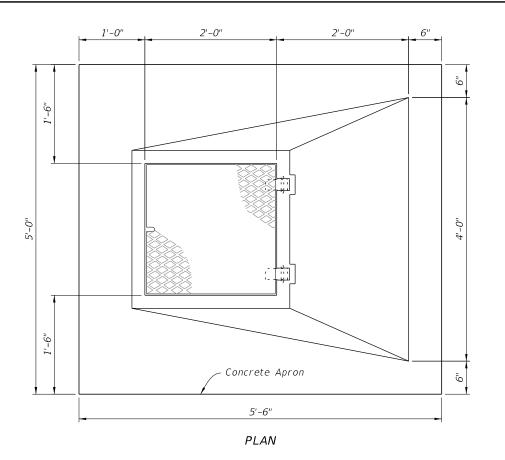
TYPICAL INSPECTION BOX INSTALLATION

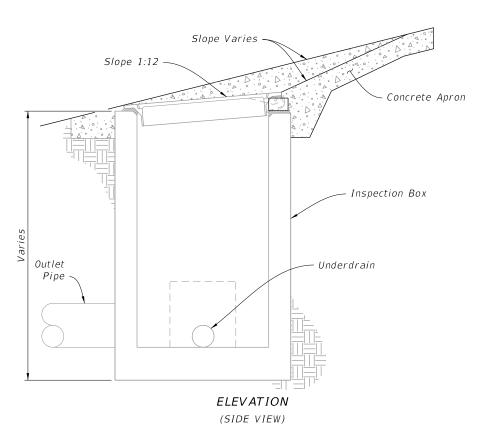
REVISION 11/01/19

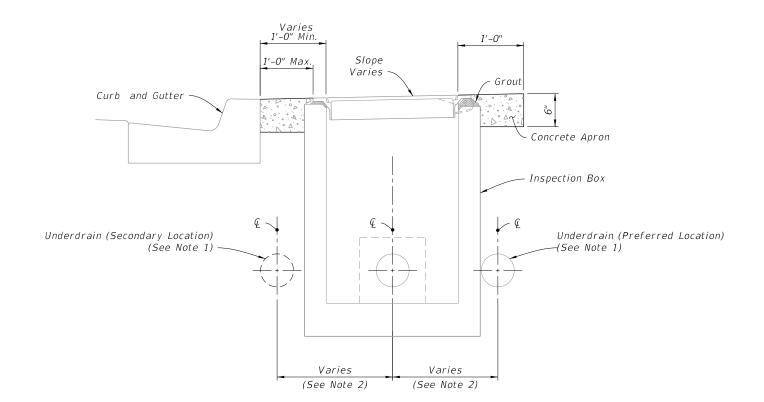
DESCRIPTION:

FDOT

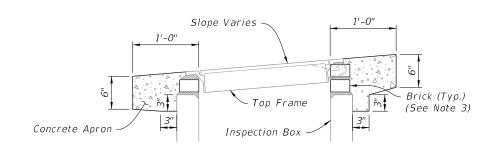
SHEET







= TYPICAL URBAN INSTALLATION =



= TOP ADJUSTMENT =

NOTES:

- 1. See Index 120-002 for Underdrain placement.
- 2. Curve the Underdrain to connect to the Inspection Box.
- 3. A maximum of 2 adjustment courses of brick is permitted.

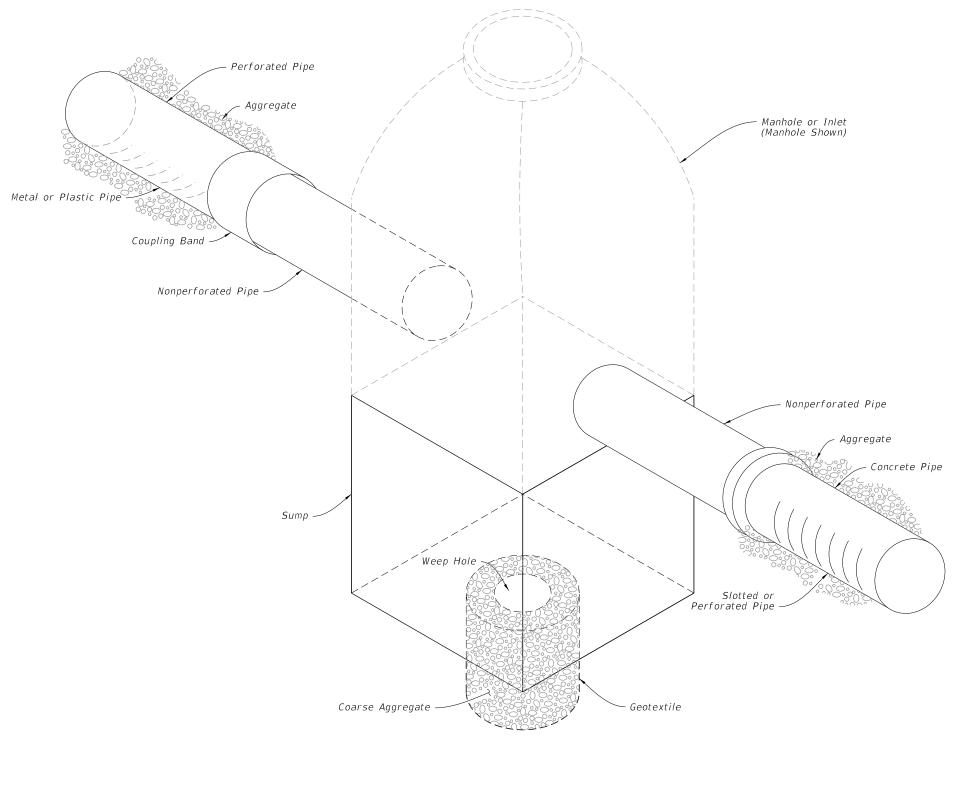
TYPICAL URBAN, SLOPE, AND TOP ADJUSTMENT INSTALLATIONS

REVISION 11/01/19

FDOT

FY 2024-25 STANDARD PLANS

DESCRIPTION:



- 1. Place concrete pipe with the slots positioned on sides.
- 2. Alignment joints are standard (gaskets not required). Recorrugation of metal pipe ends not required.
- 3. Install Type D-3 geotextile in accordance with Specification 514. Lap all geotextile joints a minimum of one (1) foot.
- 4. Construct the standard cross section unless other section(s) described or detailed in the plans.
- 5. See Index 430-001 for supplemental details.
- 6. Take the necessary precautions to prevent contamination of the trench with sand, silt and foreign materials.

TABLE OF CONTENTS:					
Sheet	Description				
1	General Notes and Contents				
2	French Drain System				
3	Concrete Slotted Pipe Options				

= FRENCH DRAIN ASSEMBLY =

443-001

Manhole/Sump Geotextile Envelope Geotextile Envelope NOTES: Coupling Band 1. Construct sumps unless excluded in the Plans. 2. For additional sump bottom information see Index 425-001. 3. Construct weep holes only where called for in the Plans. Weep Hole 4. Only cast and ductile iron sanitary sewer, or cast iron, ductile and steel water mains will be allowed to pass directly through french drain (without sleeve). 5. Use only steel, cast or ductile iron sleeves. No. 4 Coarse Aggregate No. 4 Coarse Aggregate 6. No slots or perforations. Sleeve (See Note 5) PLANUtility Pipe (See Note 4) Manhole or Inlet (Manhole With Sump Shown) Bituminous Coating for Metal Pipe Only (Field Applied) Over Lap 1'-0" (Min.) -Geotextile Envelope No. 4 Coarse Aggregate Geotextile Geotextile Envelope Envelope Coupling Band Typical Location for Bottom Slab Utility (See Note 4) Without Sump 1'-0" Varies, As Varies, As -Varies, As Shown in the Plans Shown in Shown in (Typ.) 1'-0" Ø the Plans the Plans Weep Hole (See 1'-0" Note 3) No. 4 Coarse No. 4 Coarse Aggregate Aggregate (Typ.) Pipe OD (Typ.) Perforated Pipe 8'-0" (See Note 6) 8'-0" (See Note 6) Slotted or Perforated Pipe SECTION A-A Sump (See Notes 1 & 2) Geotextile Envelope 1/4" Galvanized Hardware Cloth No. 4 Coarse Aggregate (2'x2'x2') METAL OR PLASTIC PIPE CONCRETE PIPE ELEVATION FRENCH DRAIN (Round Pipe Shown) FRENCH DRAIN SYSTEM DESCRIPTION: FY 2024-25 INDEX FDOT

STANDARD PLANS

FRENCH DRAIN

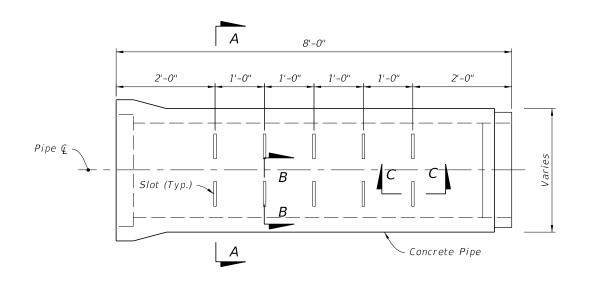
REVISION

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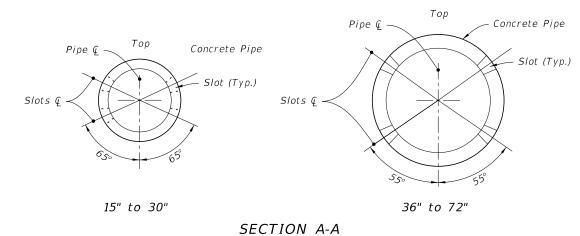
SHEET

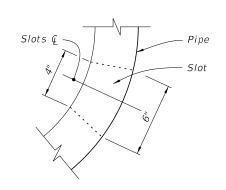
2 of 3

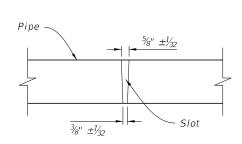
443-001



SIDE VIEW



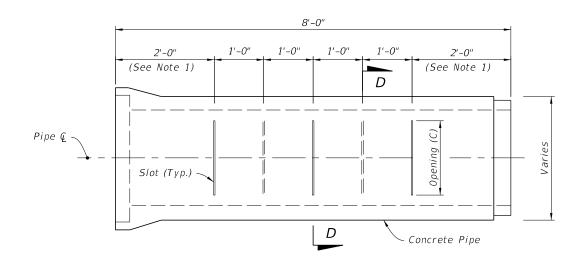




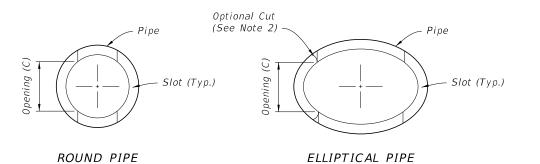
SECTION B-B

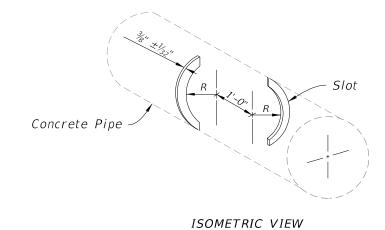
SECTION C-C

= OPTION A - ROUND PIPE ==



SIDE VIEW





SECTION D-D

(Round Pipe Shown)

NOTES:

- 1. 2'-0" for 8'-0" joints of pipe; 2'-6" for 12'-0" joints of pipe
- 2. A curved cut is acceptable provided the control dimension is maintained.

ROUND PIPE					
	Slot Cut				
Pipe Size	Opening (C)				
	Min.	Max.			
15"	12"	14"			
18"	12"	14"			
24"	16"	18"			
30"	16"	18"			
36"	22"	24"			
42"	22"	24"			
48"	22"	24"			
54"	24"	26"			
60"	24"	26"			
66"	24"	26"			
72"	24"	26"			

ELLIPT	ELLIPTICAL PIPE						
	Slot Cut						
Pipe Size	Opening (C)						
	Min.	Max.					
14"x23"	10"	12"					
19"x30"	14"	16"					
24"x38"	14"	16"					
29"x45"	20"	22"					
34"x53"	20"	22"					
38"x60"	20"	22"					

= OPTION B - ROUND OR ELLIPTICAL PIPE =

CONCRETE SLOTTED PIPE OPTIONS

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FDOT

FY 2024-25 STANDARD PLANS

FRENCH DRAIN

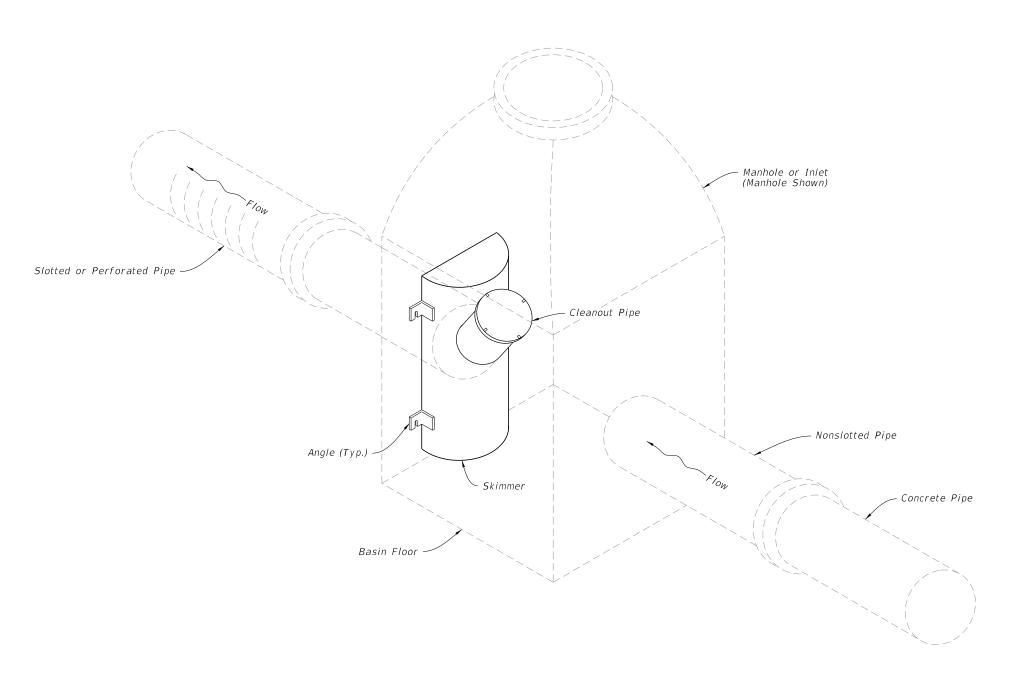
INDEX 443-001

SHEET 3 of 3

GENERAL NOTES:

- 1. The French Drain Skimmer is a hooded cover, mounted over an outlet in a catchbasin, that prevents oil and floating debris from exiting the basin.
- 2. Place neoprene gasket material between the skimmer and the catchbasin at all points of contact. Trim the gasket to extend 1/2 inch beyond the joint on all sides.
- 3. Provide skimmer baffle, cleanout pipe and angles constructed of either galvanized steel, aluminum, polyvinyl chloride, polyethylene, fiberglass or acrylonitrite butadiene styrene. Provide hot-dip galvanized steel components, unless stainless.
- 4. Use Mounting hardware, hinges and latches made of stainless steel. Loss prevention device can use either stainless steel chain or riveted nylon strap.
- 5. Provide skimmer bodies (baffles) and cleanout pipe meeting Specification 943 for steel, 945 for aluminum or 948 for plastics.
- 6. Work this Index in accordance with Specification 425.

TA	TABLE OF CONTENTS:								
Sheet Description									
1	General Notes and Contents								
2	Type I Skimmers								
3	Type II Skimmers								

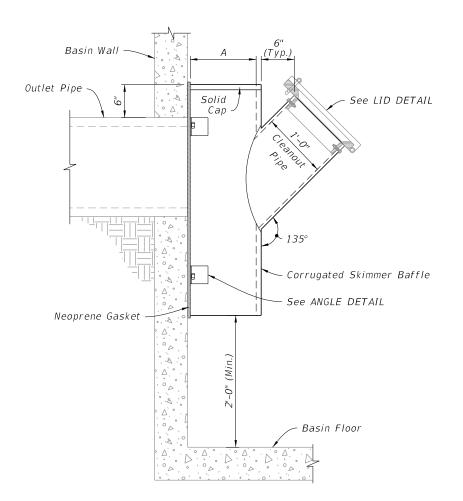


SKIMMER FOR FRENCH DRAIN OUTLETS ASSEMBLY =

DESCRIPTION:

Basin Wall - Corrugated Skimmer Baffle Cleanout Pipe Skimmer Ç Outlet Pipe Neoprene Gasket Angles (4 Typ.) (See Note 3)

PLAN

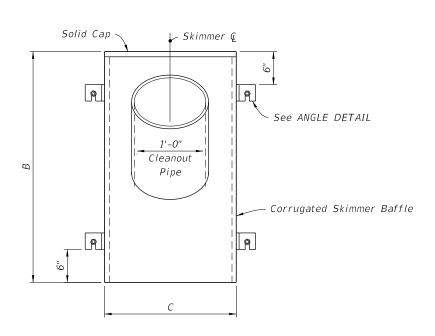


SIDE ELEVATION

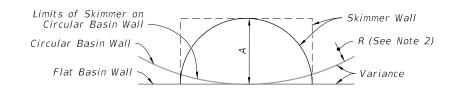
NOTES:

- 1. Conform the backs of skimmers to the shape of the basin walls on which they are mounted.
- 2. "R" is the radii required for curved back skimmers. Applies to both skimmer types. See Plans.
- 3. Weld Angles at all points of contact with skimmer.

DIMENSION TABLE										
OUTLET PIPE	Α	В	С							
18"	12"	42"	24"							
24"	15"	48"	30"							
30"	18"	54"	36"							
36"	21"	60"	42"							

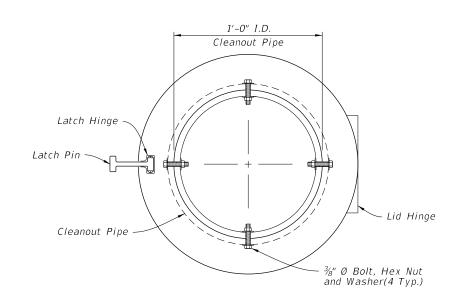


FRONT ELEVATION

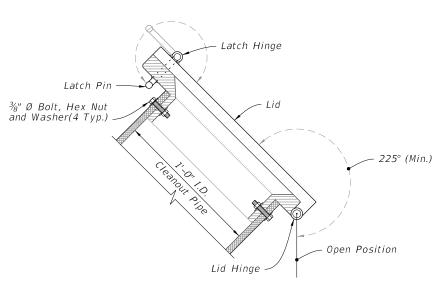


SCHEMATIC VIEW

TYPE I DETAILS

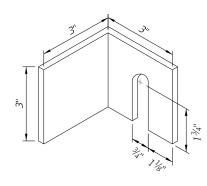


PLAN



SIDE ELEVATION

LID DETAIL=



= ANGLE DETAIL ==

TYPE I SKIMMERS

LAST 11/01/19

DESCRIPTION:

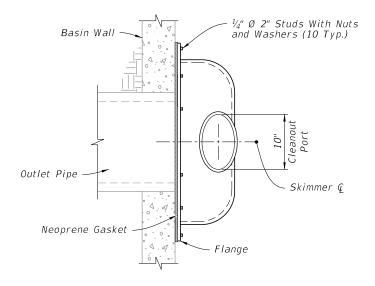
FDOT

FY 2024-25 STANDARD PLANS

SKIMMERS FOR FRENCH DRAIN OUTLETS

INDEX SHEET

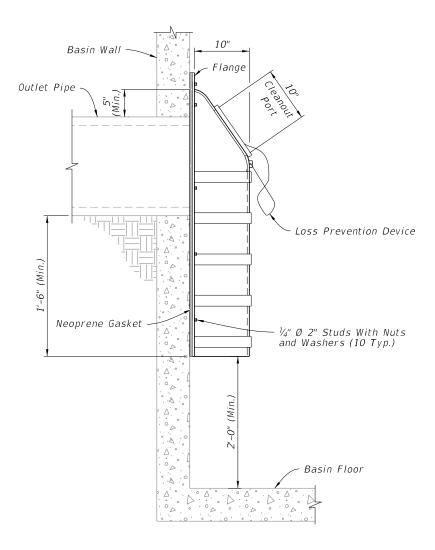
443-002 2 of 3

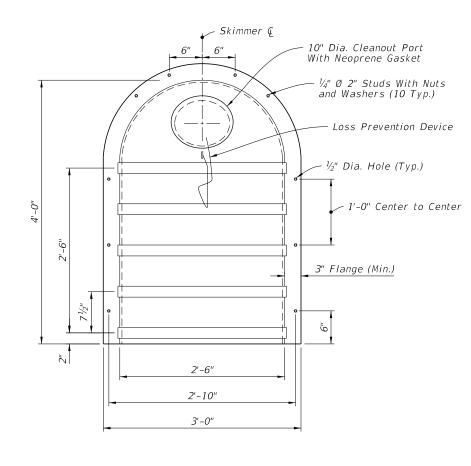


PLAN

NOTE:

Install a gasket for the cleanout with either a threaded screw-in lid or a lid secured by four stainless steel quick-release latches.





FRONT ELEVATION

SIDE ELEVATION

= TYPE II DETAILS =

TYPE II SKIMMERS

LAST REVISION 11/01/19

DESCRIPTION:



FY 2024-25 STANDARD PLANS

SHEET





24" STEEL WELL GRATE

Total Opening: 1.7 sq ft minimum

DESCRIPTION:

For 24" well, outer diameter = 29"

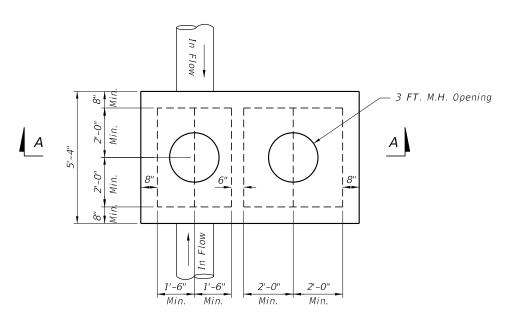
Steel well grate to be installed over 24" deep well.

Steel grate to be hot dipped galvanized after

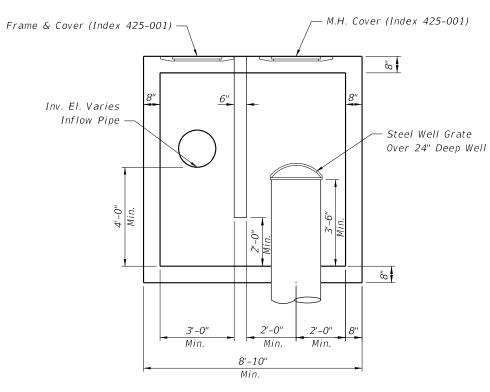
fabrication, see Specification Section 962.

Heavy duty "bee hive" grate

Openings: $1-\frac{1}{2}$ " maximum

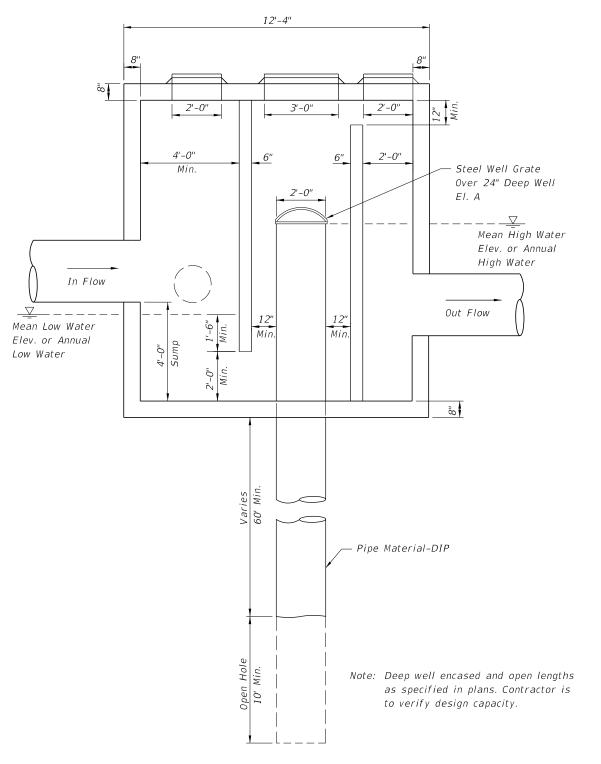


TOP SLAB PLAN



SECTION A-A

STRUCTURE WITH NO OUTFLOW



SPECIAL MANHOLE STRUCTURE DETAIL WITH OUTFALL

DESIGN NOTES:

- 1. Depth of Casing Varies, 60' min.
- 2. Depth of Open Hole, 10'-20'.
- 3. Actual Size Of The Inflow And Outflow Chambers Will Be Determined By The Size Of The Pipes (Refer To Table 3 Of Index 425-010). The Width Of The Box Shall Be Constant Based On The Largest Pipe. The Length Is To Be Adjusted Based On Size and Orientation Of The Pipes.

FDOT

FY 2024-25 STANDARD PLANS

- 1. Do not leave trench greater than 2' in depth overnight. Barricade trenches at all times.
- 2. Construct concrete pavement subdrainage adjacent to the low edge of the roadway pavement and under travel lanes, auxiliary pavement and shoulders, as called for in the plans. Extend the concrete pavement subdrainage 50' beyond and begin 50' before the flat point (100' overlap) when the low edge shifts between outside and inside edges of pavement. Place concrete pavement subdrainage on the low side of ramps for crossroad terminals.
- 3. Install concrete pavement subdrainage on a grade parallel with the edge of pavement profile, except on profiles flatter than one-tenth percent (0.10%) install the concrete pavement subdrainage on a minimum grade of one-tenth percent (0.10%).
- 4. Remove adhering base material and soil from the vertical face of the concrete immediately prior to placing the geotextile. Provide and install Type D-3 geotextile in accordance with Specification 514.
- 5. Submit a procedure for holding the geotextile in position on the vertical face of the trench for approval by the Engineer prior to placing draincrete.
- 6. Cap the upper end of each separate run of the concrete pavement subdrainage pipe.
- 7. Install outlet pipes at 500' maximum intervals. Use elbows or 1/8 bends to connect the outlet pipe to the concrete pavement subdrain pipe. Use elbows or bends of the same material as the outlet pipe.

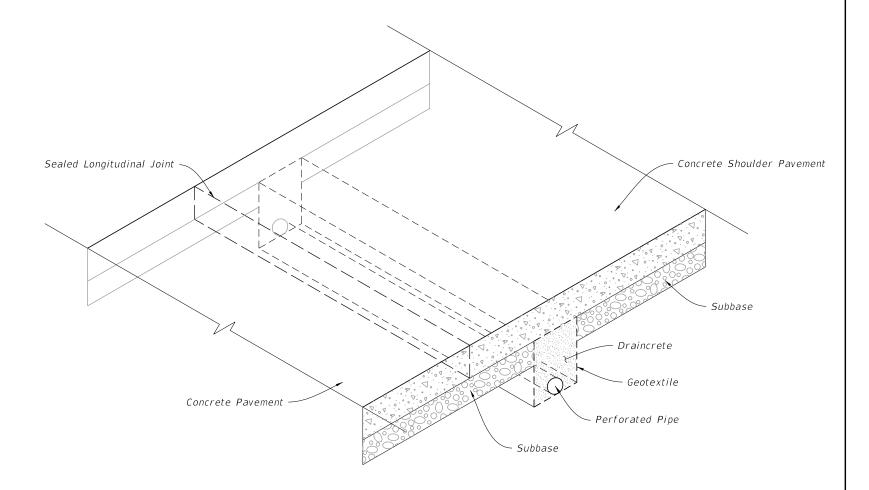
Stub outlet pipes into existing inlets or into existing ditch pavements at an elevation 6" above the inlet flowline or ditch bottom when directed by the Engineer. Concrete apron and bordering sod are not required for stubbed outlets, but replacement sodding will be required at trenches for pipes stubbed into paved ditches.

Install a single outlet apron for separate outlet pipes of concrete pavement subdrainage from opposite directions in sag vertical curves.

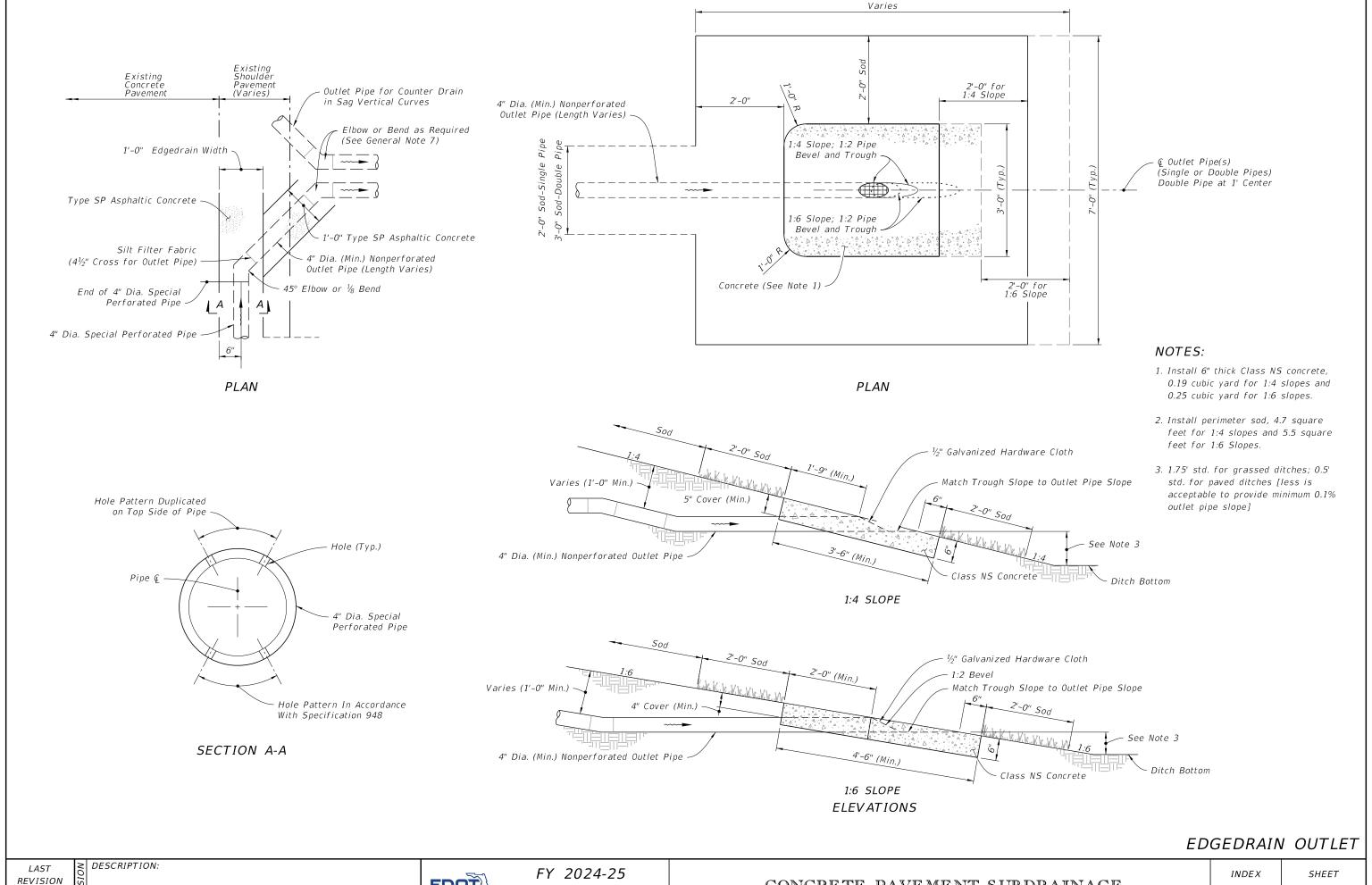
Install backfill consisting of cohesive soils around outlet pipes.

8. Replace existing paved shoulder removed for the construction of outlet pipes with Type SP asphaltic concrete at the rate of 500 LB per SY.

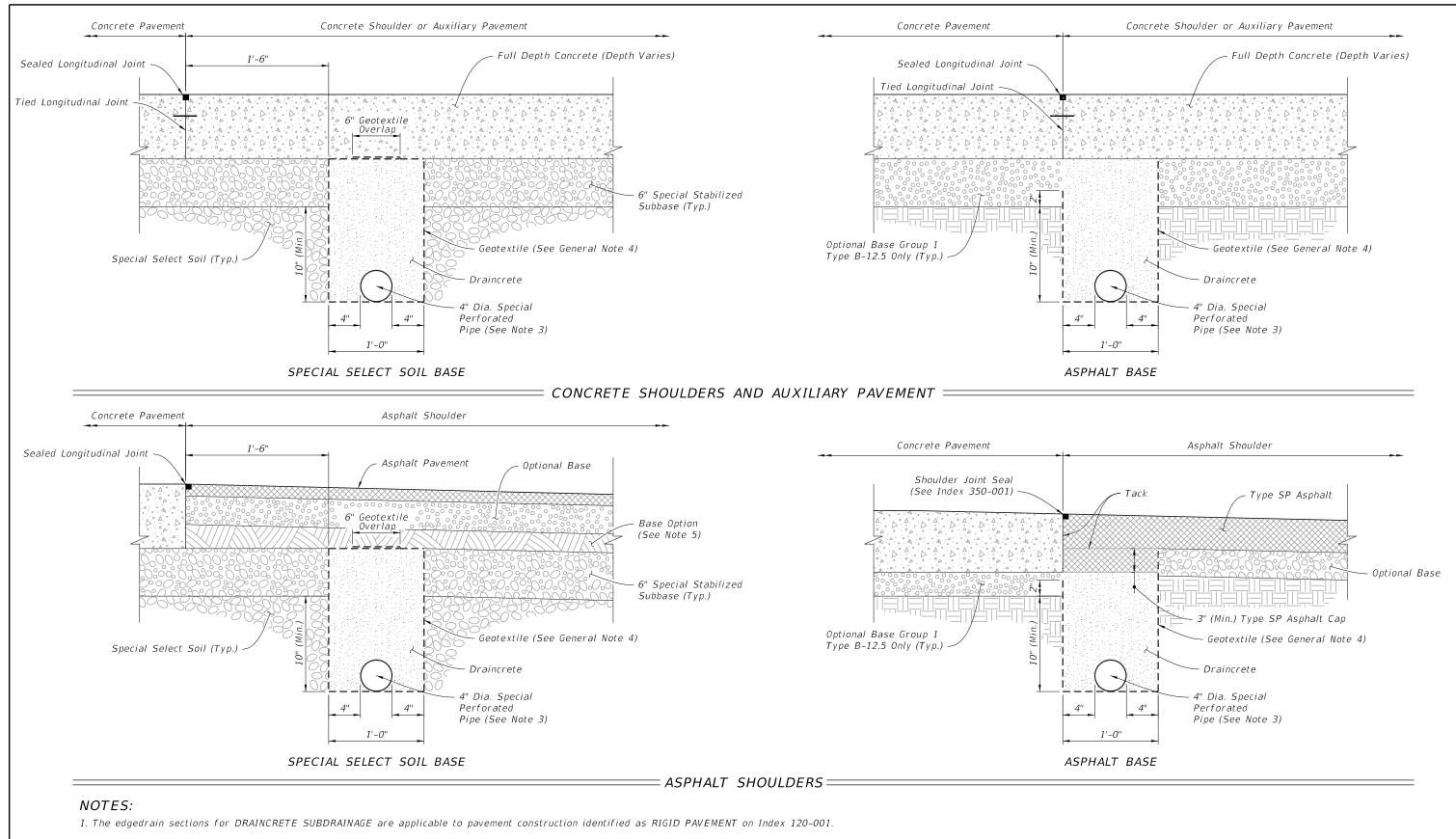
-	TABLE OF CONTENTS:								
Sheet Description									
1	1 General Notes and Contents								
2	Edgedrain and Outlet								
3	New Construction								
4	Rehabilitation								



DRAINCRETE SUBDRAINAGE =



11/01/19



- 2. Confine the construction of draincrete edgedrain to an area in which the entire operation can be carried out in five (5) work days, unless another construction period is called for in the plans, with sufficient time allowed for the draincrete to set before placement of pavement.
- 3. Install only noncorrugated or smooth lined corrugated pipe.
- 4. At the Contractor's option this area may be constructed of Optional Base material (Specification 285) or special stabilized subbase.

NEW CONSTRUCTION

LAST REVISION 11/01/23

DESCRIPTION:

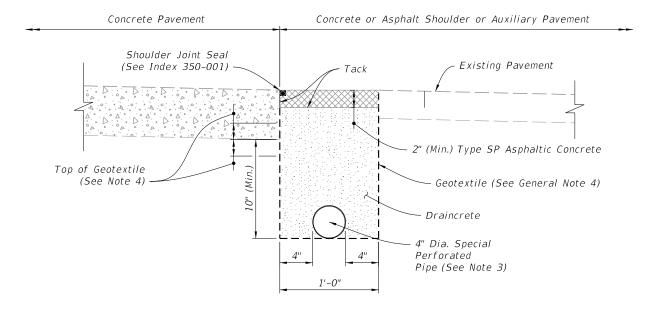
FDOT

FY 2024-25 STANDARD PLANS

CONCRETE PAVEMENT SUBDRAINAGE

INDEX 446-001

SHEET 3 of 4



EXISTING SHOULDERS:

NOTES:

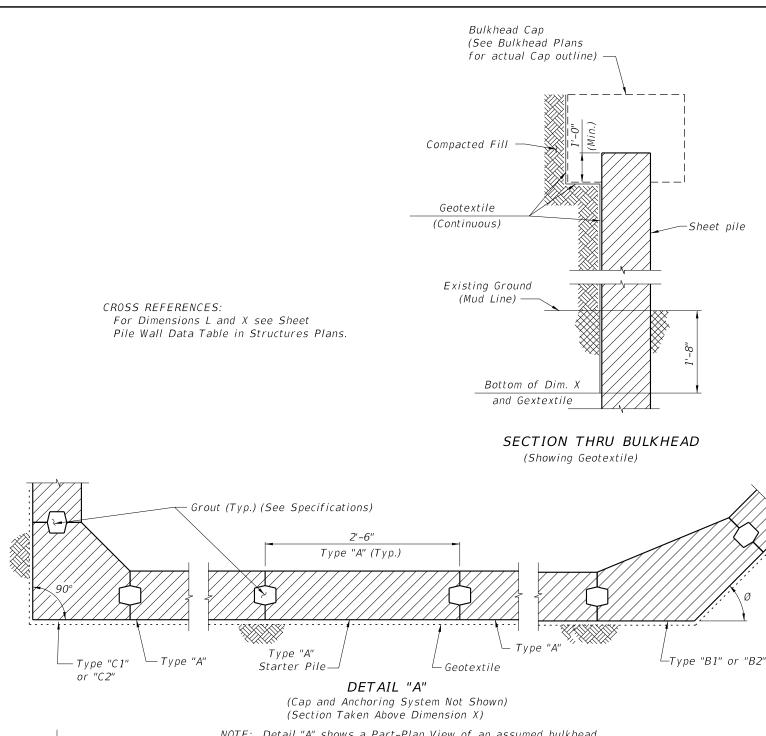
- 1. The edgedrain sections for DRAINCRETE SUBDRAINAGE are applicable to pavement construction identified as RIGID PAVEMENT on Index 120-001.
- 2. Confine the construction of draincrete edgedrain to an area in which the entire operation can be carried out in five (5) work days, unless another construction period is called for in the plans, with sufficient time allowed for the draincrete to set before placement of pavement.
- 3. Install only noncorrugated or smooth lined corrugated pipe.
- 4. Install geotextile 2" below bottom of pavement for cement stabilized, soil cement and econocrete subbases and 2" above bottom of pavement for other subbases.

REVISION 11/01/23

DESCRIPTION:

FDOT

REHABILITATION



SHEET PILE DESIGN CRITERIA AND NOTES

DESCRIPTION:

This Index includes details for five types of piles with two thicknesses.

Types "B1", "B2", "C1" and "C2" piles (corner piles) are of reinforced concrete construction, and Type "A" is of prestressed concrete construction. The piles shall be manufactured, cured and installed in accordance with the requirements of the contract documents.

MATERIALS: (for materials not listed refer to the Specifications) CONCRETE

Class: V for slightly and moderately aggressive environments

V with Highly Reactive Pozzolans for extremely aggressive environments

Unit weight: 150 pcf

Modulus of Elasticity: Based on the use of Florida limerock concrete

REINFORCING STEEL

ASTM A615 Grade 60

PRESTRESSING STEEL

ASTM A416 Grade 270 (Low-Relaxation Strand)

DESIGN PARAMETERS:

Type "A"

Concrete Compressive Strength at release of prestressing: 4000 psi minimum Uniform compression after prestressing losses: 1000 psi minimum

Pick-up, Storage and Transportation: 0.0 psi tension with 1.5 times pile self weight

Types "B1", "B2", "C1" & "C2"

Pick-up, Storage and Transportation: Minimum compressive strength f'ci ≥ 4000 psi required.

ENVIRONMENT:

The pile designs are applicable to all Environments.

GEOTEXTILE:

Provide and install Type D-2 or D-3 geotextile in accordance with Specification 514. Extend the geotextile to the bottom of the "X" dimension.

PILE PICK-UP AND HANDLING:

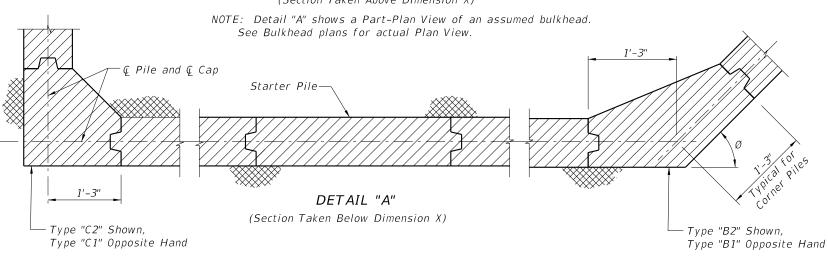
Type "A"

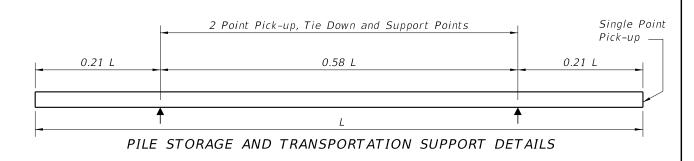
Pick-up of pile may be either a single point pick-up or a two point pick-up as shown below.

Types "B1", "B2", "C1" & "C2"

Two point pick-up for lifting out of forms & two point support for storage & transportation. Single point pick-up for installation only.

The 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to $\frac{1}{2}$ " to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-51/5". No changes shall be made to the tongues or grooves.





NOTES AND DETAILS

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DESCRIPTION:

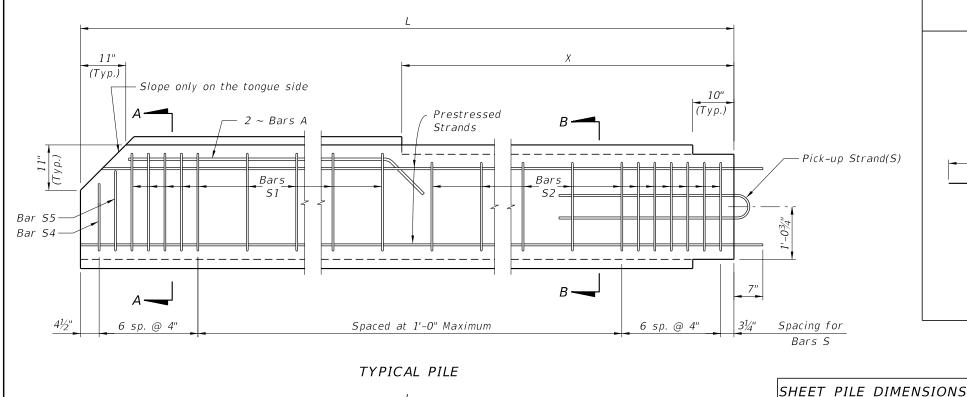
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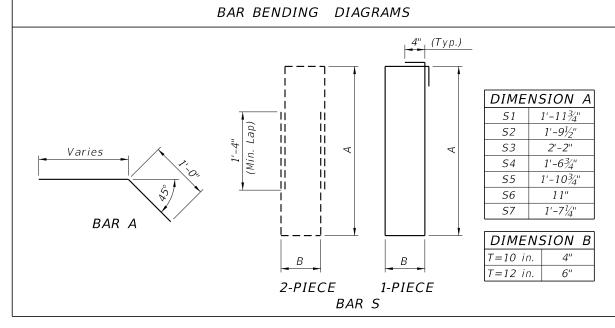
FY 2024-25 STANDARD PLANS

(CONVENTIONAL)

INDEX

SHEET



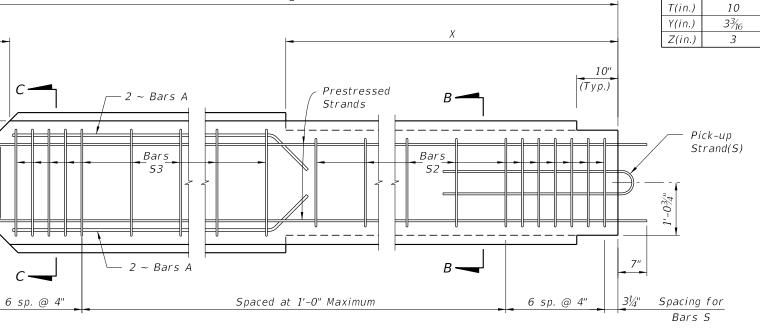


NOTES:

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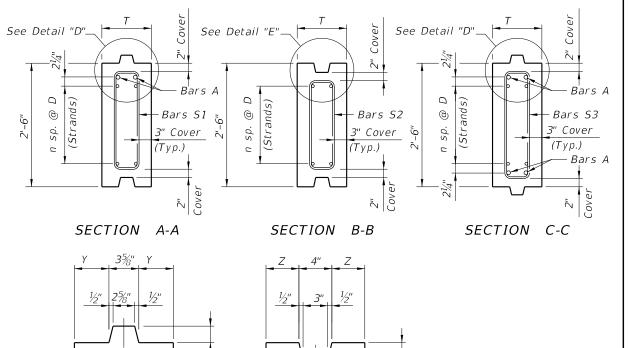
 $4\frac{3}{16}$

- 1. Intermediate Prestress Strands not shown in Elevations and Sections.
- 2. All bar dimensions are out-to-out.
- 3. Bars A are #5 and Bars S are #4.
- 4. At the Contractor's option Bars S may be fabricated as a two piece bar as shown in the Bar Bending Diagram.
- 5. The Contractor may use Deformed Welded Wire Reinforcement meeting the requirements of Specification Section 931 in lieu of Bars A and Bars S if the wire size and spacing provide the same area of reinforcing steel per foot as the Bars shown.
- 6. For Dimensions L and X see Sheet Pile Data Table in Structures Plans.



STARTER PILE

WALL THICKNESS	STRAND DIA. (in.)	MAXIMUM L	n	D (in.)	TOTAL # OF STRANDS	INITIAL (JACKING) FORCE (Kip)
T=10 in.	0.5	28'-0"	6	31/4	14	31
	0.6	27'-0"	4	5	10	44
T=12 in.	0.5	31'-0"	7	2 16		31
	0.6	30'-0"	5	4	12	44



DETAIL "E"

(Typical Groove)

TYPE "A" STANDARD SECTION

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FDOT

FY 2024-25 STANDARD PLANS

PRECAST CONCRETE SHEET PILE WALL

DETAIL "D"

(Typical Tongue)

INDEX 455-400

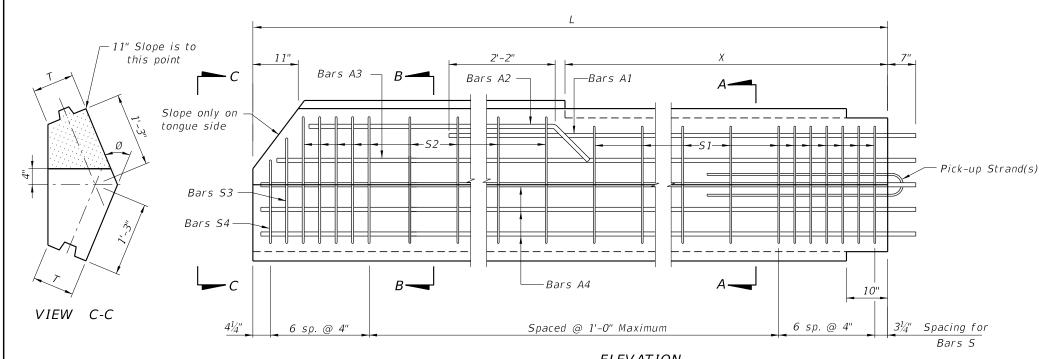
SHEET 2 of 4

11"

(Typ.)

Bar S7

Bar S6-

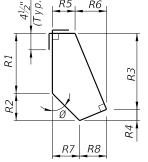


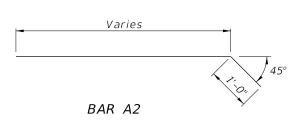
ELEVATION (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

BAR BENDING DIAGRAMS

	STIRRUP DIMENSIONS (T = 10")												
Ø	BAR MARK	R1	R·2	R:3	R4	R·5	R6	R7	R:8				
	<i>S</i> 1	111/4"	9¾"	1'-6½"	2½"	5"	43/4"	5½"	41/4"				
30°	<i>S2</i>	1'-1½"	9¾"	1'-8 ³ / ₄ "	2½"	4½"	5½"	5¾"	41/4"				
30	53	11½"	8"	1'-6"	11/4"	5"	4½"	4½"	5"				
	54	11¼"	41/4"	1'-1 ³ / ₄ "	1¾"	5"	3¾"	2½"	6¼"				
	51	11½"	8"	1'-4"	4"	5½"	6½"	8"	4"				
4.5°	S-2	1'-13/4"	8"	1'-5 ³ / ₄ "	4"	4½"	7½"	8"	4"				
75	53	11½"	6¾"	1'-4"	21/4"	5½"	6¾"	6¾"	5½"				
	54	11½"	3½"	1'-0"	3"	5½"	5"	3½"	7"				
	<i>S</i> 1	1'-0"	6"	1'-03/4"	51/4"	6"	71/4"	101/4"	3"				
600	52	1'-2"	6"	1'-2 ³ / ₄ "	5½"	43/4"	8¾"	10½"	3"				
60°	53	1'-0"	43/4"	1'-1½"	31/4"	6"	8"	8¾"	5½"				
	54	1'-0"	2½"	10"	4½"	6"	5¾"	4"	7½"				

	STIRRUP DIMENSIONS (T = 12")										
Ø	BAR MARK	R1	R:2	R:3	R:4	R·5	R6	R:7	R8		
	S1	11½"	10"	1'-6"	3½"	7"	43/4"	5¾"	6"		
30°	S2	1'-13/4"	10"	1'-81/4"	3½"	6½"	5½"	5 ³ ⁄ ₄ "	6"		
] 50	<i>S3</i>	11½"	8½"	1'-5¾"	2"	7"	4¾"	4½"	71/4"		
	<i>S4</i>	11½"	4"	1'-11/4"	21/4"	7"	3¾"	2½"	8¼"		
	S1	1'-0"	8½"	1'-31/4"	5½"	7½"	6¼"	8½"	5½"		
45°	52	1'-2½"	8½"	1'-5½"	5½"	6½"	71/4"	8½"	5½"		
45	<i>S3</i>	1'-0"	7"	1'-4"	3"	7½"	6¾"	7"	71/4"		
	<i>S4</i>	1'-0"	3½"	11¾"	3¾"	7½"	5"	3½"	9"		
	S1	1'-0½"	$6\frac{1}{4}$ "	1 1 ¾"	7"	8"	6¾"	10¾"	4"		
60°	52	1'-2¾''	$6\frac{1}{4}$ "	1'-2"	7"	6¾"	8"	10¾"	4"		
	53	1'-0½"	5"	1'-1½"	4"	8"	8"	9"	7"		
	54	1'-01/2"	21/2"	9½"	5½"	8"	5½"	41/4"	91/4"		

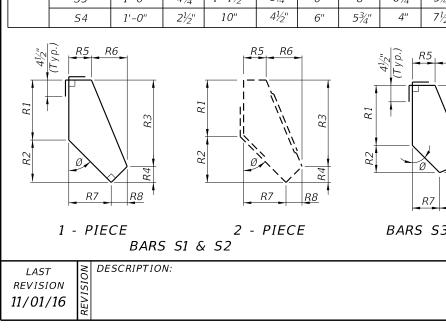


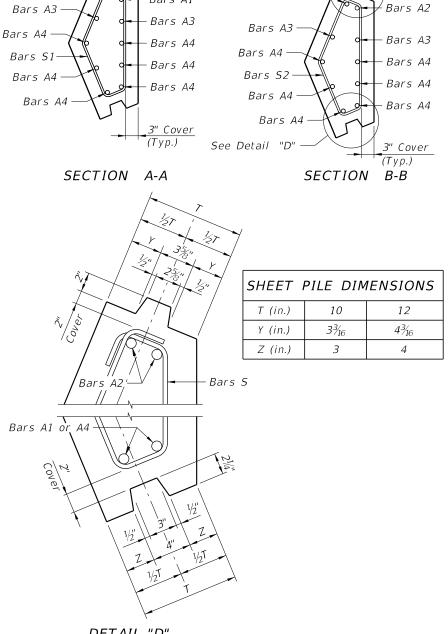


BARS S3 & S4

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See Detail "D"

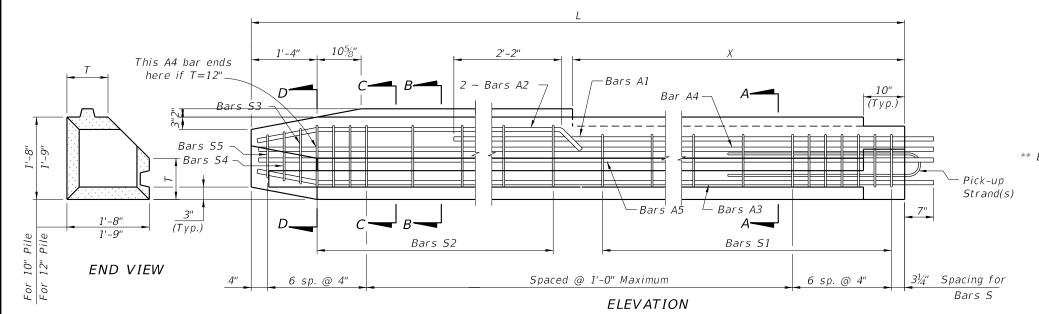
Bars A1

Bars A2

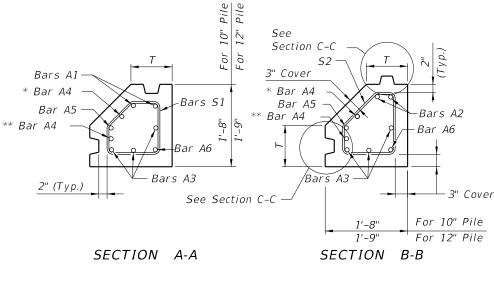
DETAIL "D" (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

- 1. This drawing includes details for precast concrete corner piles for 10" and 12" thick sheet pile systems. The details apply equally to both thicknesses.
- 2. The bar configurations shown in Sections A-A and B-B shall be used for Ø angles between 15° and 75°. For Ø angles not shown, the reinforcing bar dimensions may be interpolated or extrapolated from the stirrup dimensions shown.
- 3. All bar dimensions are out-to-out.
- 4. Bars A are #8 and Bars S are #4.
- 5. Values for Stirrup Dimensions are shown for Ø equal to 30°, 45° & 60° only.
- 6. At the Contractor's option Bars S may be fabricated as a 2 piece bar with a minimum lap length of 1'-4", as shown in Bar Bending Diagrams.
- 7. If Type "B1" or "B2" pile is used as a Starter Pile show tongue on both sides of pile from Dim. X down. Show dimensions for Bars S2, S3 & S4 in shop drawings.
- 8. If tongue must be on the opposite side from that shown all dimensions and Bars A, S2, S3 and S4 will be the same but opposite hand.
- 9. For Dimensions L, X and Angle Ø, see Sheet Pile Data Table in Structures Plans.

TYPE "B1" AND "B2" - VARIABLE ANGLE CORNER PILE

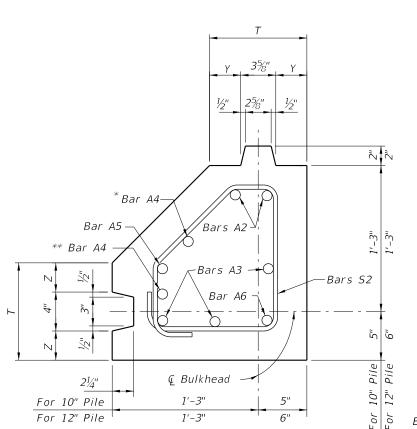


(TYPE "C1" PILE SHOWN, TYPE "C2" PILE OPPOSITE HAND)

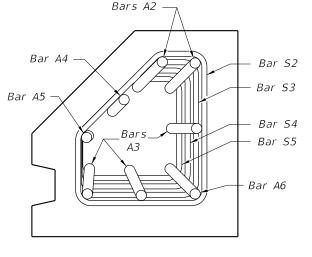


* This Bar A4 shall be 1'-2" shorter than other A4 bars for T = 12".

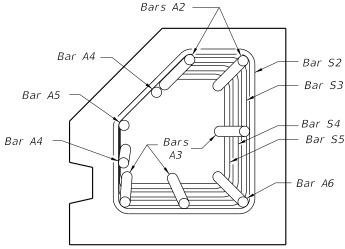
** This Bar A4 (not shown in elevation) is included only if T = 12".



SECTION C-C (T=10" or 12")



SECTION D-D (T=10")



SECTION D-D (T=12")

STIRRUP DIMENSIONS											
θ	T (in.)	BAR MARK	R1	R2	R3						
		51	7"	5¾"	7"						
		52	7"	8"	4¾"						
	10	53	6¼"	7½"	4¾"						
		54	5½"	6½"	4¾"						
90°		<i>S5</i>	43/4"	5¾"	43/4"						
90		51	9"	4¾"	9"						
		52	9"	7"	6¾"						
	12	53	8½"	6¼"	6¾"						
		54	7½"	5½"	6¾"						
		<i>S5</i>	6¾"	4¾"	$6\frac{3}{4}$ "						

SHEET PI	LE DIME	NSIONS
T (in.)	10	12
Y (in.)	<i>3¾</i> ₆	4¾ ₁₆
Z (in.)	3	4

BAR BENDING DIAGRAMS
$\frac{R2}{R3}$
STIRRUPS S
STIRRUPS S STIRRUPS S Varies 1'-2" Varies (Bars A2 only)
BARS A
Note: All Bar dimensions are out-to-out.

- 1. All bar dimensions are out-to-out.
- 2. Bars A are #8 and Bars S are #4.
- 3. This drawing includes information for precast Corner Piles for 10" and 12" thick Sheet Pile systems. The details apply to both thicknesses but the bar configurations change slightly according to the thickness values used.
- 4. If Type "C1" or "C2" pile is used as a Starter Pile show tongue on both sides of pile from Dim. X down. Show dimensions for Bars S2, S3, S4 & S5 in
- 5. If tongue must be on opposite side (Groove Side) from that shown, all dimensions and reinforcement shall follow the corresponding Tongue or Groove side.
- 6. For Dimensions L and X see Sheet Pile Data Table in Structures Plans.

TYPE "C1" AND "C2" - RIGHT ANGLE CORNER PILE

REVISION 07/01/12

DESCRIPTION:

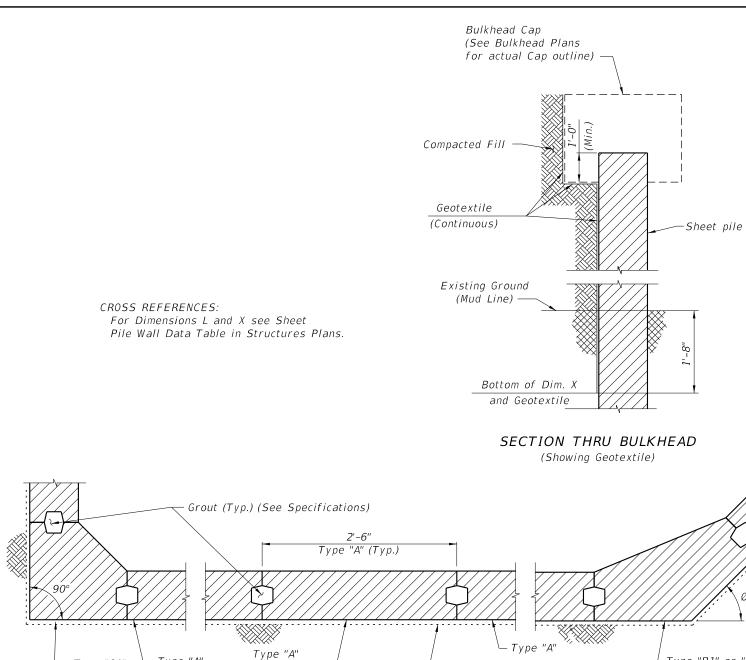
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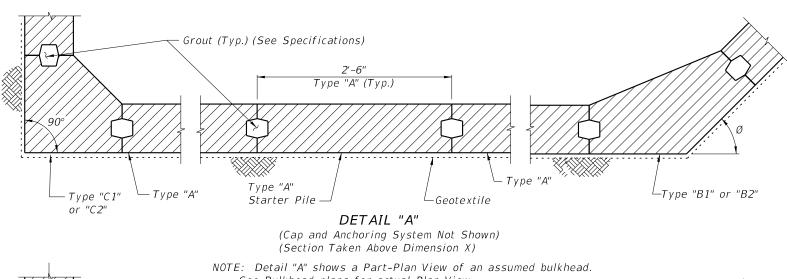
FY 2024-25 STANDARD PLANS PRECAST CONCRETE SHEET PILE WALL

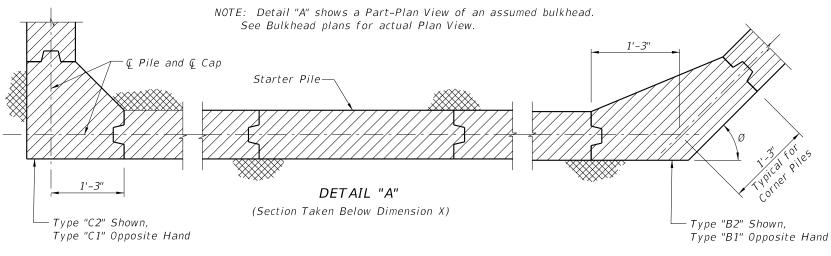
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(CONVENTIONAL)







SHEET PILE DESIGN CRITERIA AND NOTES

DESCRIPTION:

This Index includes details for six types of piles with two thicknesses. Type "A" is prestressed concrete construction with CFRP or HSSS strands. Types "B1", "B2", "C1" and "C2" piles (corner piles) are reinforced concrete construction. Manufacture, cure and install Sheet Piles in accordance with the requirements of the contract documents.

MATERIALS: (for materials not listed refer to the Specifications)

CONCRETE

Class: V

Unit weight: 145 pcf

Modulus of Elasticity: Based on the use of Florida limerock aggregate concrete

REINFORCING BARS

Glass Fiber Reinforced Polymer (GFRP) bars meeting the requirements of Specification Section 932.

PRESTRESSING STRAND

Stainless Steel: Prestressing steel shall be seven-wire HSSS, Grade 240 strand, meeting the requirements of Specification Section 933.

Carbon FRP: Prestressing strand shall be CFRP strand, meeting the requirements of Specification Section 933.

DESIGN PARAMETERS:

Type "A"

Concrete Compressive Strength at release of prestressing: 4000 psi minimum Uniform compression after prestressing losses: 700 psi minimum Pick-up, Storage and Transportation: 450 psi tension with 1.5 times pile self weight for single-point pick-up at f'c ≥ 6000 psi

Types "B1", "B2", "C1" & "C2"

Pick-up, Storage and Transportation: Minimum compressive strength f'ci ≥ 4000 psi required for two-point pick-up; $f'c \ge 6000$ psi for single-point pick-up.

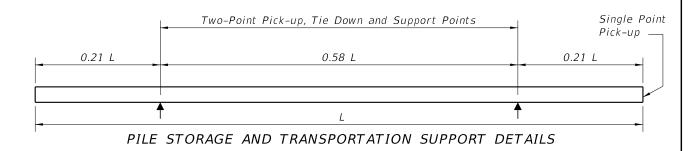
GEOTEXTILE:

Provide and install Type D-2 or D-3 geotextile in accordance with Specification 514. Extend the geotextile to the bottom of the "X" dimension.

PILE PICK-UP AND HANDLING:

Two-point pick-up for lifting out of forms & two-point support for storage & transportation. Single-point pick-up for installation only.

The 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to $\frac{1}{2}$ " to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-51/5". No changes shall be made to the tongues or grooves.



NOTES AND DETAILS

REVISION 11/01/23

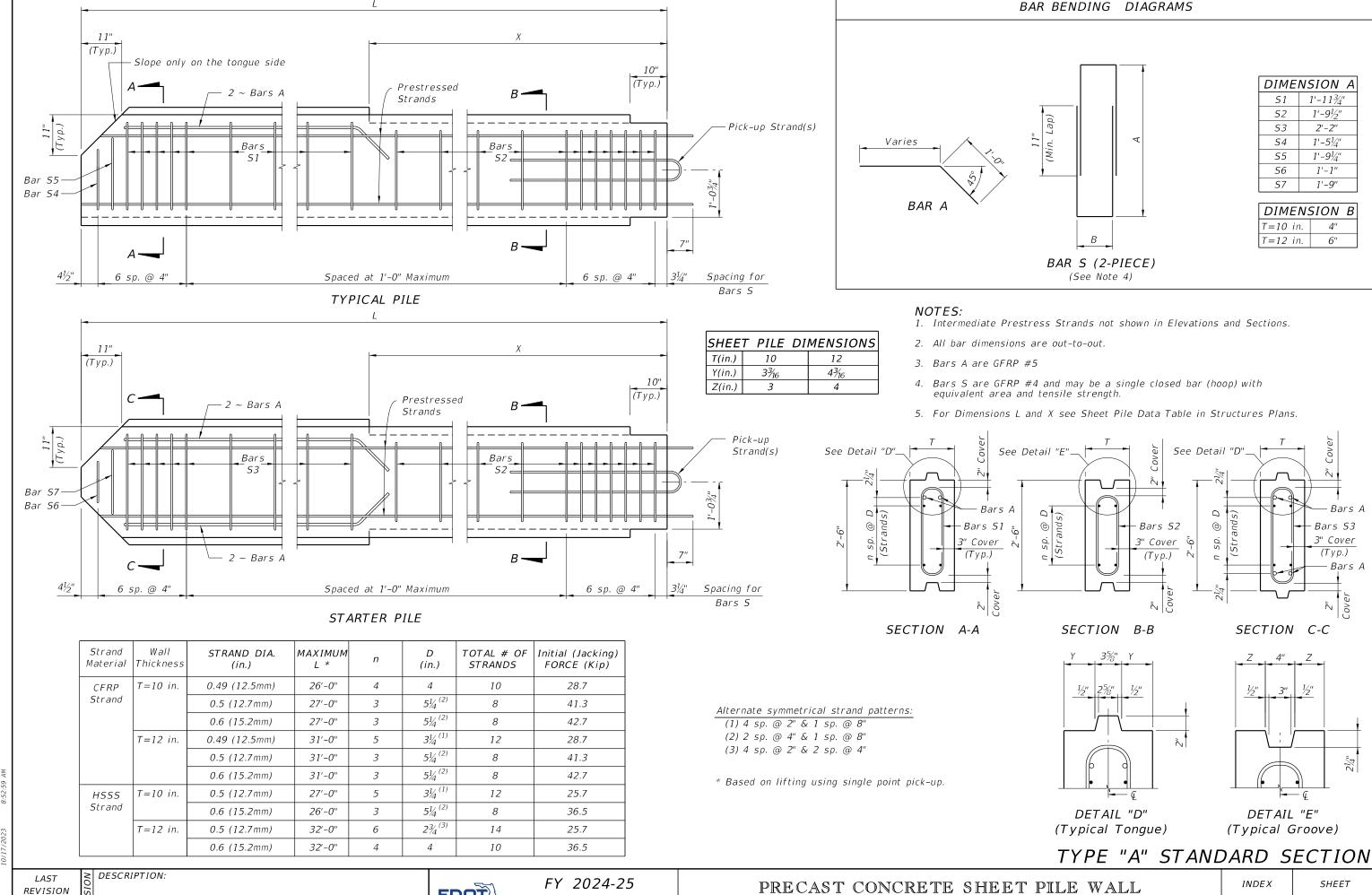
DESCRIPTION:

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FY 2024-25 STANDARD PLANS INDEX

SHEET

PRECAST CONCRETE SHEET PILE WALL (CFRP/GFRP & HSSS/GFRP)



11/01/22

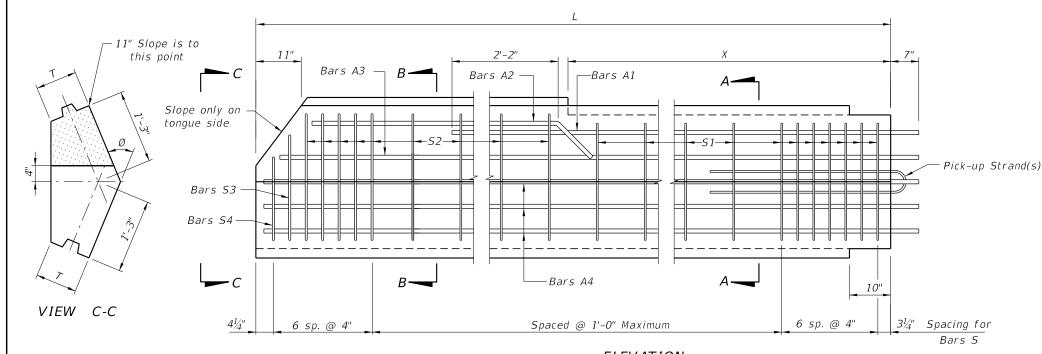
FDOT

STANDARD PLANS

(CFRP/GFRP & HSSS/GFRP)

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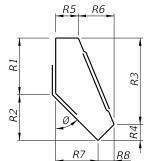


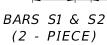
ELEVATION (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

BAR BENDING DIAGRAMS

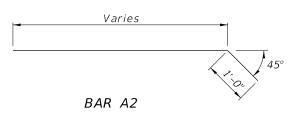
	STIRRUP DIMENSIONS (T = 10")												
Ø	BAR MARK	R1	R:2	R3	R:4	R·5	R6	R7	R8				
	51	111/4"	9¾"	1'-6½"	2½"	5"	43/4"	5½"	41/4"				
30°	S:2	1'-1½"	9¾"	1'-8¾"	2½"	4½"	5½"	5¾"	41/4"				
30	53	1 1½"	8"	1'-6"	11/4"	5"	4½"	4½"	5"				
	54	1 1½"	41/4"	1'-1 ³ / ₄ "	1¾"	5"	3¾"	2½"	$6\frac{1}{4}''$				
	51	11½"	8"	1'-4"	4"	5½"	6½"	8"	4"				
45°	5:2	1'-13/4"	8"	1'-5 ³ / ₄ "	4"	4½"	7½"	8"	4"				
43	53	1 1½"	6¾"	1'-4"	21/4"	5½"	6¾"	6¾"	5½"				
	54	1 1½"	3½"	1'-0"	3"	5½"	5"	3½"	7"				
	S1	1'-0"	6"	1'-03/4"	5½"	6"	71/4"	101/4"	3"				
600	5:2	1'-2"	6"	1'-2 ³ / ₄ "	5½"	4¾"	8¾"	10½"	3"				
60°	53	1'-0"	43/4"	1'-1½"	31/4"	6"	8"	8¾"	5½"				
	54	1'-0"	2½"	10"	4½"	6"	5 ³ / ₄ "	4"	7½"				

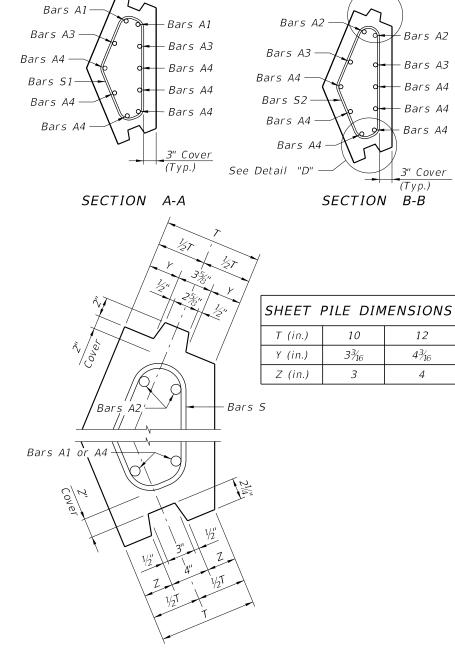
STIRRUP DIMENSIONS (T = 12")										
Ø	BAR MARK	R1	R2	R:3	R:4	R·5	R6	R7	R:8	
	S1	11½"	10"	1'-6"	3½"	7"	43/4"	5¾"	6"	
30°	S:2	1'-13/4"	10"	1'-81/4"	3½"	6½"	5½"	5¾"	6"	
30	53	11½"	8½"	1'-5¾"	2"	7"	4¾"	4½"	7½"	
	54	11½"	4"	1'-11/4"	2½"	7"	3¾"	2½"	81⁄4"	
	51	1'-0"	8½"	1'-31/4"	5½"	7½"	6¼"	8½"	5½"	
45°	S:2	1'-21/4"	8½"	1'-5½"	5½"	6½"	7½"	8½"	5½"	
45	53	1'-0"	7"	1'-4"	3"	7½"	6¾"	7"	71/4"	
	54	1'-0"	31/2"	1 1 ¾"	3¾"	7½"	5"	3½"	9"	
	<i>S</i> 1	1'-01/2"	6½"	1 1 ¾"	7"	8"	6¾"	10¾"	4"	
60°	5:2	1'-2 ³ / ₄ "	6½"	1'-2"	7"	6¾"	8"	10¾"	4"	
60	53	1'-01/2"	5"	1'-1½"	4"	8"	8"	9"	7"	
	54	1'-01/2"	21/2"	9½"	5½"	8"	5½"	41/4"	91/4"	





DESCRIPTION:





See Detail "D"

-Bars A2

-Bars A3

Bars A4

Bars A4

Bars A4

3" Cover Typ.

12

 $4\frac{3}{16}$

4

DETAIL "D" (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND) NOTES:

- 1. This drawing includes details for precast concrete corner piles for 10" and 12" thick sheet pile systems. The details apply equally to both thicknesses.
- 2. The bar configurations shown in Sections A-A and B-B shall be used for Ø angles between 15° and 75°. For Ø angles not shown, the reinforcing bar dimensions may be interpolated or extrapolated from the stirrup dimensions shown.
- 3. All bar dimensions are out-to-out.
- 4. Bars A are GFRP #8 and Bars S are GFRP #4.
- 5. Values for Stirrup Dimensions are shown for Ø equal to 30°, 45° & 60° only.
- 6. Bars S are fabricated as a 2 piece stirrup with a minimum lap length of 8", as shown in Bar Bending Diagrams, or a single closed bar (hoop) when approved by the Engineer.
- 7. If Type "B1" or "B2" pile is used as a Starter Pile show tongue on both sides of pile from Dim. X down. Show dimensions for Bars S2, S3 & S4 in shop drawings.
- 8. If tongue must be on the opposite side from that shown all dimensions and Bars A, S2, S3 and S4 will be the same but opposite hand.
- 9. For Dimensions L, X and Angle Ø, see Sheet Pile Data Table in Structures Plans.

TYPE "B1" AND "B2" - VARIABLE ANGLE CORNER PILE

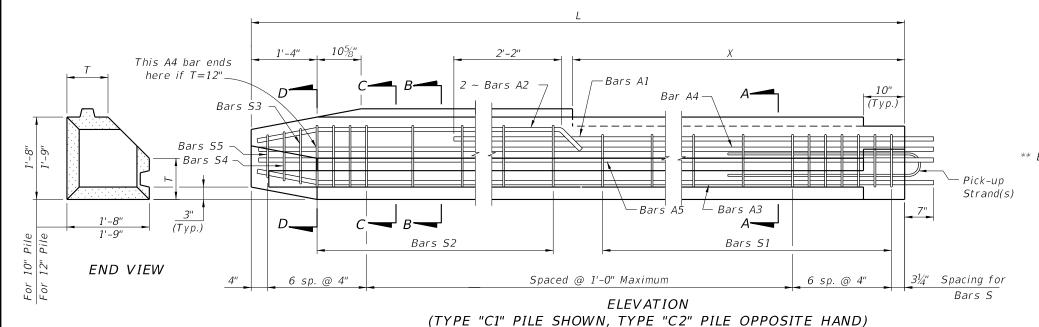
REVISION 11/01/16

FDOT

FY 2024-25 STANDARD PLANS PRECAST CONCRETE SHEET PILE WALL

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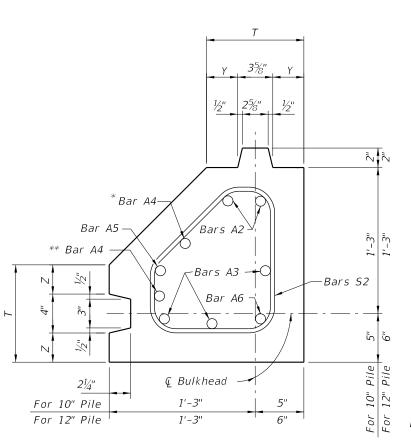
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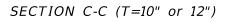


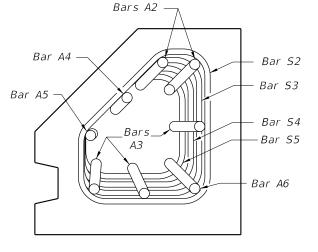
Pile Pile See Section C-C 3" Cover Bars A1 * Bar A4 * Bar A4 Bars S1 Bar A5 Bar A5 ** Bar A4 ** Bar A4 Bar A6 2" (Typ.) 3" Cover See Section C-C For 10" Pile For 12" Pile SECTION A-A SECTION B-B

* This Bar A4 shall be 1'-2" shorter than other A4 bars for T = 12".

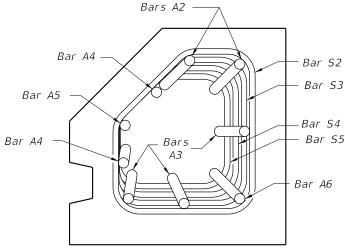
** This Bar A4 (not shown in elevation) is included only if T = 12".







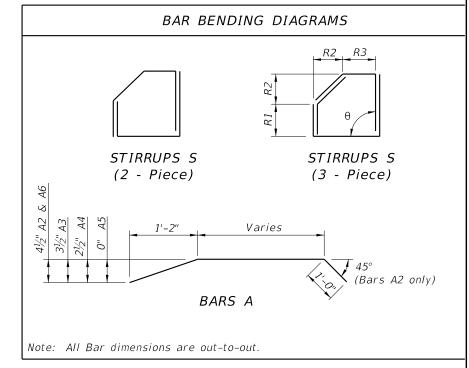
SECTION D-D (T=10")



SECTION D-D (T=12")

STIRRUP DIMENSIONS											
θ	T (in.)	BAR MARK	R1	R2	R3						
		51	7"	5¾"	7"						
		52	7"	8"	4¾"						
	10	53	6½"	71/4"	4¾"						
		54	5½"	$6\frac{1}{2}$ "	4¾"						
90°		<i>S5</i>	43/4"	5¾"	43/4"						
90		51	9"	4¾"	9"						
		52	9"	7"	6¾"						
	12	53	81/4"	6¼"	6¾"						
		54	7½"	5½"	6¾"						
		<i>S5</i>	6¾"	43/4"	6¾"						

SHEET PI	LE DIME	NSIONS
T (in.)	10	12
Y (in.)	<i>3¾</i> ₆	4¾ ₁₆
Z (in.)	.3	4



NOTES:

- 1. All bar dimensions are out-to-out.
- 2. Bars A are GFRP #8 and Bars S are GFRP #4.
- 3. This drawing includes information for precast Corner Piles for 10" and 12" thick Sheet Pile systems. The details apply to both thicknesses but the bar configurations change slightly according to the thickness values used.
- 4. If Type "C1" or "C2" pile is used as a Starter Pile show tongue on both sides of pile from Dim. X down. Show dimensions for Bars S2, S3, S4 & S5 in shop drawings.
- 5. At the Contractor's option Bars S may be fabricated as a 2 piece or 3 piece bar with a minimum lap length of 8", as shown in Bar Bending Diagrams, or as a single closed bar (hoop) when approved by the Engineer.
- 6. If tongue must be on opposite side (Groove Side) from that shown, all dimensions and reinforcement shall follow the corresponding Tongue or Groove side.
- 7. For Dimensions L and X see Sheet Pile Data Table in Structures Plans.

TYPE "C1" AND "C2" - RIGHT ANGLE CORNER PILE

REVISION 11/01/16

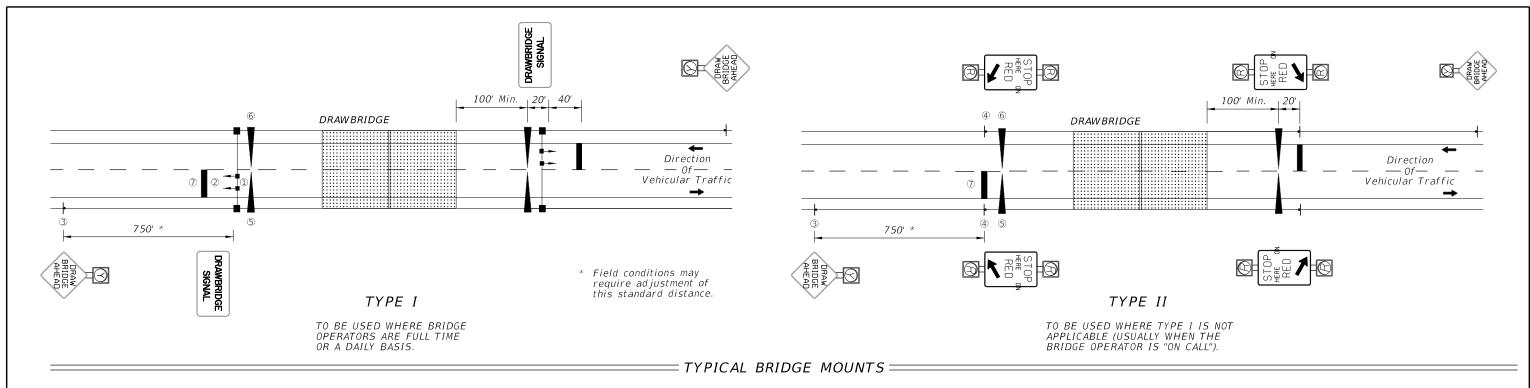
DESCRIPTION:

FDOT

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SHEET



NOTES:

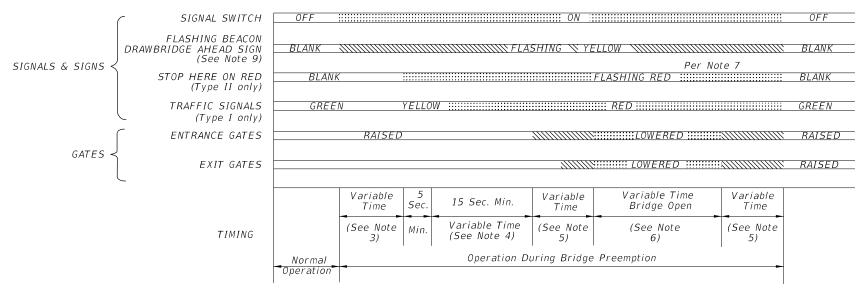
- 1. A bypass switch shall be installed to override each timing interval in case of a malfunction.
- 2. "STOP HERE ON RED" is omitted in Type I operation and "TRAFFIC SIGNALS" are omitted in Type II operation.
- 3. The time between beginning of flashing yellow on "Drawbridge Ahead" sign and the clearance of traffic signal to red, or beginning of flashing red should not be less than the travel time of a passenger car, from the sign location to the stop line, traveling at the 85 percentile approach speed.
- 4. Beginning of operation of drawbridge gates shall not be less than 15 seconds after steady red or 20 seconds after flashing red (Actual time may be determined by the bridge tender.)
- 5. Time of gate lowering and raising is dependent upon gate type.
- 6. Time of bridge opening is determined by the bridge tender.
- 7. Each gate shall be operated by a separate switch.
- 8. On each approach (Type II), all four red signals shall be on the same two circuit flashers, with the two top signals on one circuit, and the two bottom signals on the alternately flashing circuit.
- 9. A Drawbridge Ahead sign is required for both types of signal operation, However a flashing beacon shall be added to the sign when physical conditions prevent a driver traveling at the 85% approach speed from having continuous view of at least one signal indication for approximately 10 seconds.
- 10. Requirements on gate installation are contained in the "Manual on Uniform Traffic Control Devices" Section 4J.
- 11. "In accordance with Traffic Engineering Manual (Topic Number 750-000-005) Section 2.1, SLIPPERY WHEN WET SIGNS shall be placed in advance of all MOVABLE and NONMOVABLE STEEL DECK BRIDGES."

LEGEND:

- ① TRAFFIC SIGNALS] Mast Arm Mounted (Off Bridge)
- ② DRAWBRIDGE SIGN \ Monotube Support Mounted (On Bridge)
- ③ DRAWBRIDGE AHEAD SIGN WITH YELLOW FLASHING BEACON
- STOP HERE ON RED SIGN WITH RED FLASHING BEACONS
 Ground Mounted
- 5 ENTRANCE GATE
- 6 EXIT GATE
- ② 24" THERMOPLASTIC STOP BAR



SLIPPERY WHEN WET SIGN See Note 11



== SEQUENCE CHART =

LAST REVISION 11/01/22

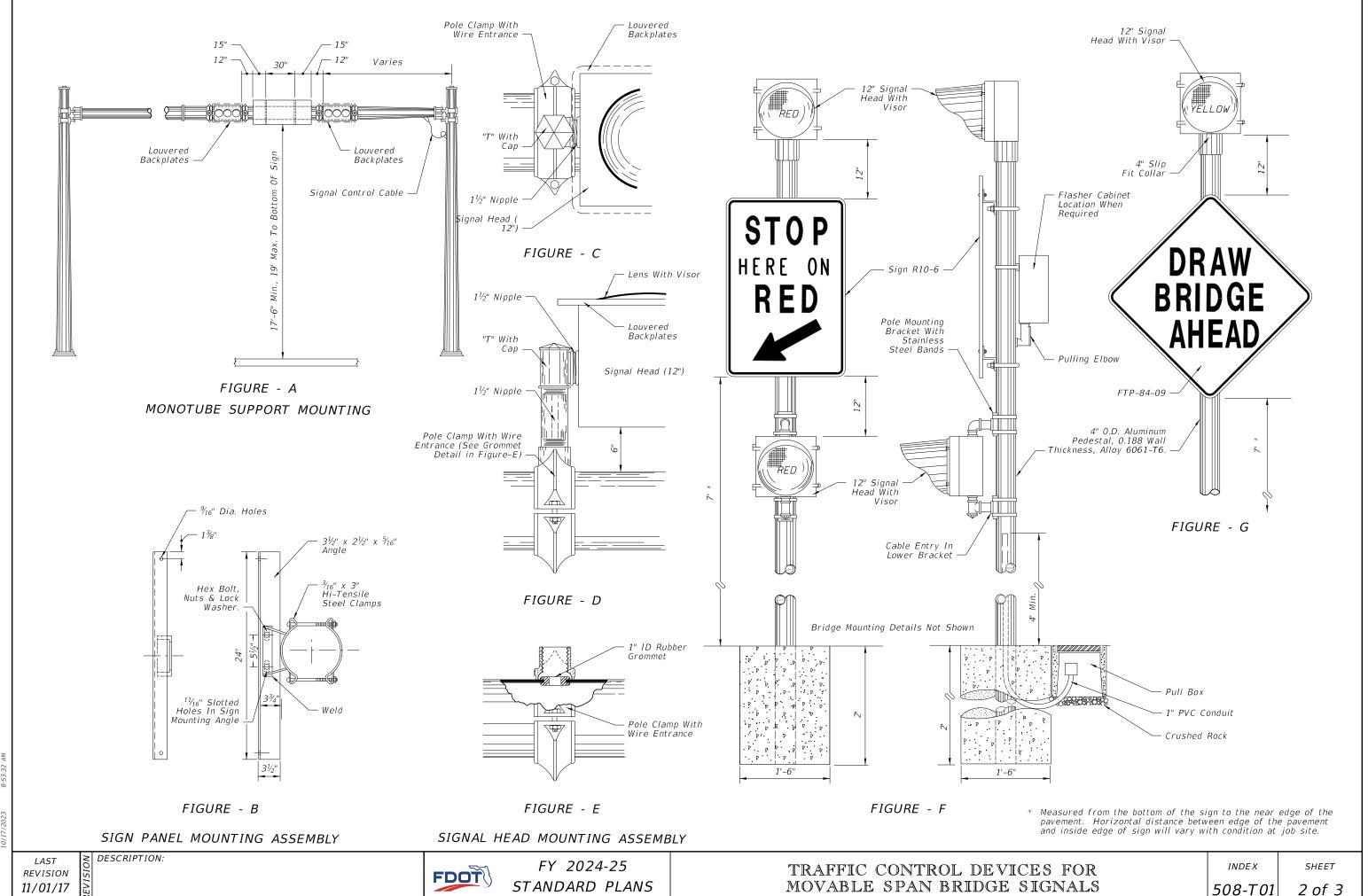
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FY 2024-25 STANDARD PLANS

TRAFFIC CONTROL DEVICES FOR MOVABLE SPAN BRIDGE SIGNALS

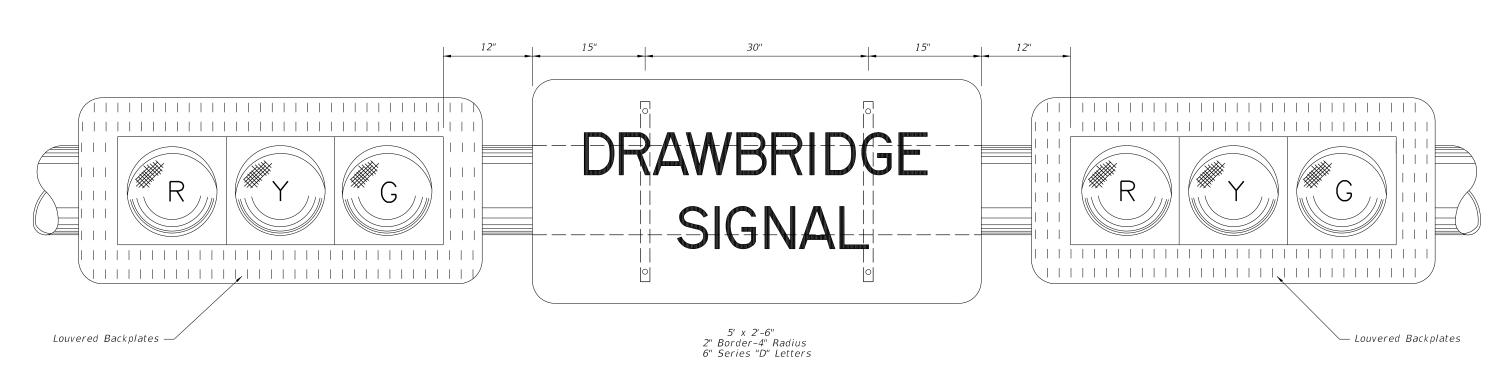
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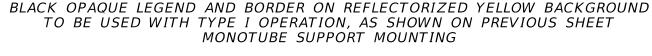
sнеет 1 of 3

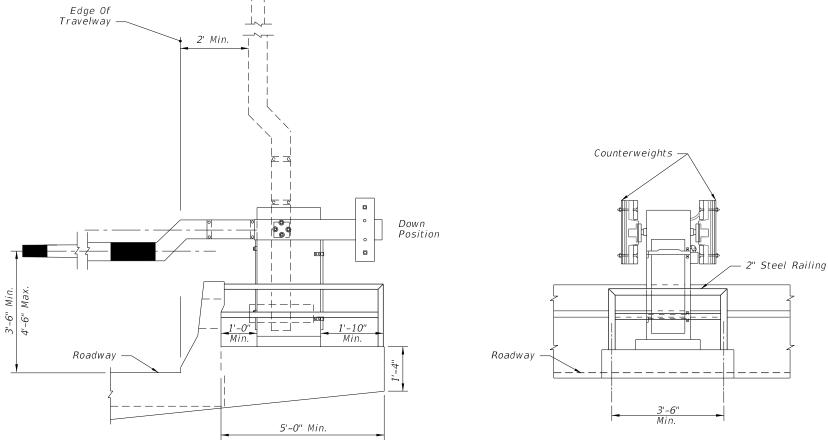


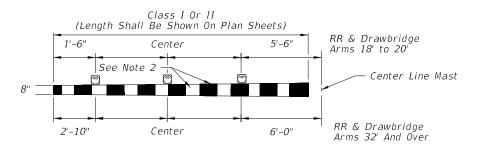
STANDARD PLANS

MOVABLE SPAN BRIDGE SIGNALS









NOTES:

- 12 volt flashing red lights shall be mounted on gate arm and shall operate in the flashing mode only when gate arm is in the lower position or in the process of being lowered. The number of lights shall vary accordingly to length of the gate arm.
- 2. Alternating 16" pattern of fully reflectorized red and white stripes.

GATE & ARM DETAIL

TYPICAL LAMP PLACEMENT

REVISION 11/01/17

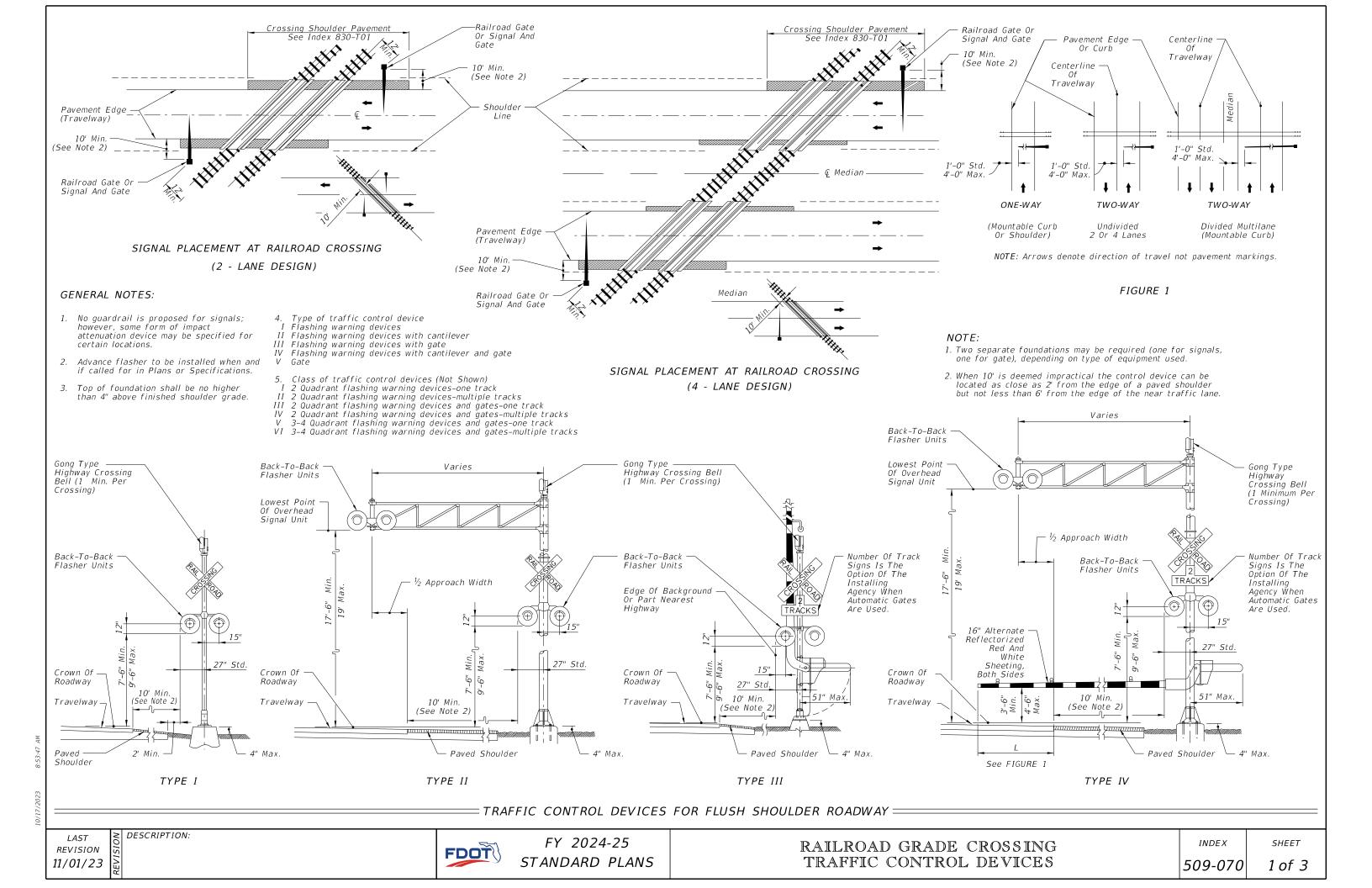
FDOT

FY 2024-25 STANDARD PLANS

TRAFFIC CONTROL DEVICES FOR MOVABLE SPAN BRIDGE SIGNALS INDEX

SHEET

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Railroad Gate Or Signal And Gate Railroad Gate Or Signal And Gate ACUTE ANGLE (AND RIGHT ANGLE)

SIGNAL PLACEMENT AT RAILROAD CROSSING
(2 LANES, CURB & GUTTER)

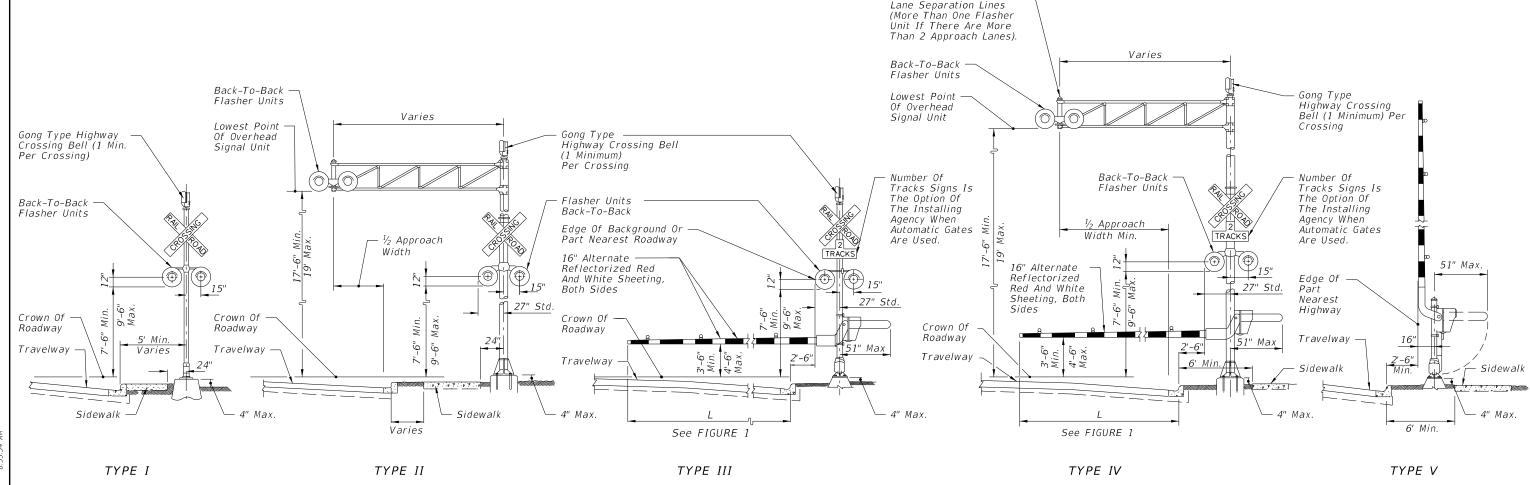
Railroad Gate Or Signal And Gate Sidewalk Sidewalk Sidewalk Sidewalk Signal And Gate OBTUSE ANGLE

SIGNAL PLACEMENT AT RAILROAD CROSSING
(2 LANES, CURB & GUTTER)

As A Minimum, Position One Flasher Unit Over

NOTES:

- 1. The location of flashing warning devices and stop lines shall be established based on future (or present) installation of gate with appropriate track clearances.
- 2. Where plans call for railroad traffic control devices to be installed in curbed medians, the minimum median width shall be 12'-6".
- 3. Location of railroad traffic control device is based on the distance available between face of curb & sidewalk, 0' to 6' Locate device outside sidewalk. Over 6' Locate device between face of curb and sidewalk.
- 4. Stop line to be perpendicular to edge of roadway, approx. 15' from nearest rail; or 8' from and parallel to gate when present.
- When a cantilevered-arm flashing warning device is used, the minimum vertical clearance shall be 17'-6" from above the Crown of Roadway to the Lowest Point of the Overhead Signal Unit.



=TRAFFIC CONTROL DEVICES FOR CURBED ROADWAY=

10/17/2023

LAST ODESCRIPTION: REVISION 15 11/01/23

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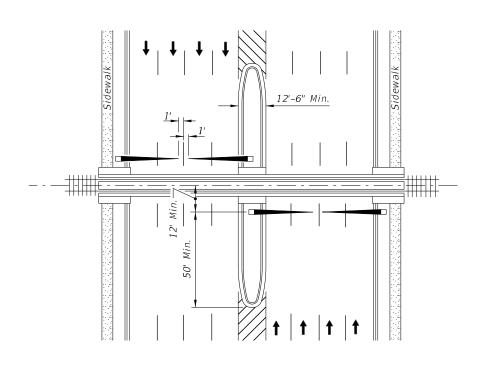
FY 2024-25 STANDARD PLANS

RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES

INDEX

SHEET

509-070



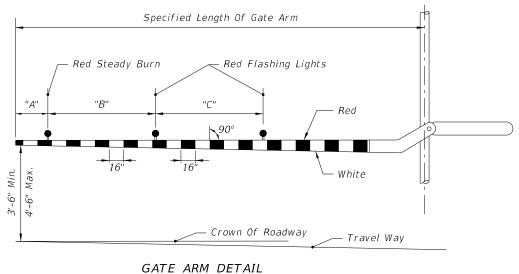
RAILROAD GATE ARM LIGHT SPACING						
Specified Length Of Gate Arm	Dimension "A"	Dimension "B"	Dimension "C"			
14 Ft.	6"	36"	5'			
15 Ft.	18"	36"	5'			
16-17 Ft.	24"	36"	5'			
18-19 Ft.	28"	41"	5'			
20-23 Ft.	28"	4'	5'			
24-28 Ft.	28"	5'	5'			
29-31 Ft.	36"	6'	6'			
32-34 Ft.	36"	7'	7'			
35-37 Ft.	36"	9'	9'			
38 And Over	36"	10'	10'			

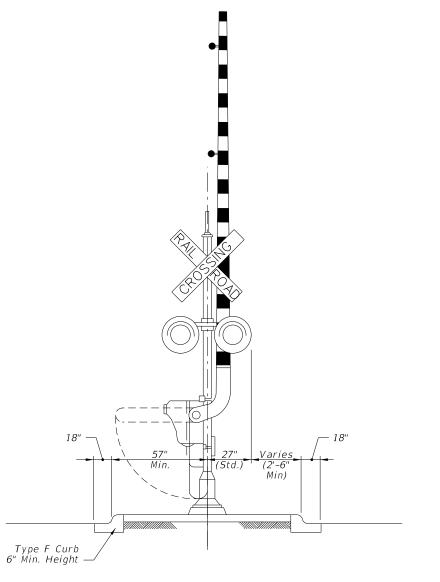
PLAN

NOTE:

DESCRIPTION:

For additional information see the "Manual On Uniform Traffic Control Devices", Part 8; The "Traffic Control Handbook" , Part VIII; and AASHTO "A Policy On Geometric Design Of Streets And Highways".





MEDIAN SECTION AT SIGNAL GATES

RELATIVE LOCATION OF CROSSING TRAFFIC CONTROL DEVICES

6" White —

= MEDIAN SIGNAL GATES FOR MULTILANE UNDIVIDED URBAN SECTIONS ==(Three or More Driving Lanes in one Direction, 45 mph or less)

REVISION 11/01/23

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RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES

INDEX 509-070

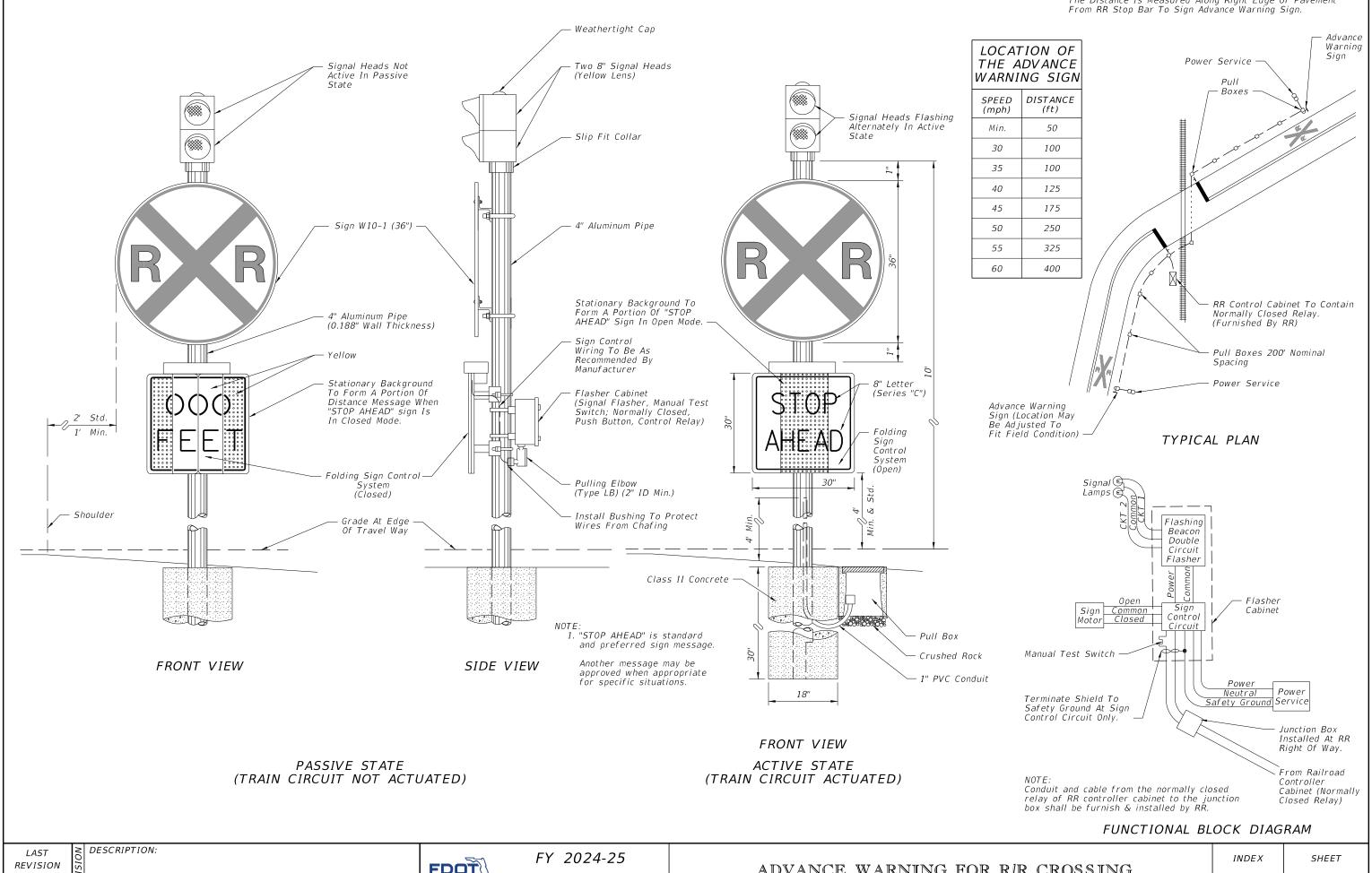
Gate or Flashing Signal With Gates

Flashing Signal (If Not with Gate)

As Required

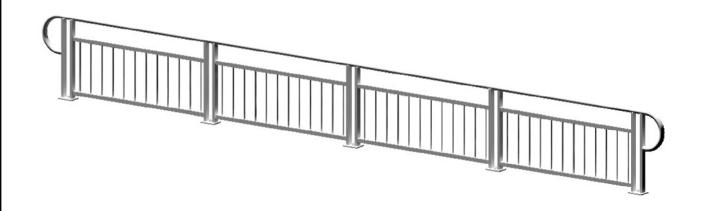
Edge of Traveled Way

SHEET 3 of 3



11/01/21

FDOT



3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL (42" Height shown, 48" Height Similar)

TABLE 1 - RAILING MEMBERS					
MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS		
Post "A"	HSS 2½ x 1½ x½	2.50" x 1.50"	0.125"		
Post "B"	HSS 2½ x 1½ x¾ ₁₆	2.50" x 1.50"	0.188"		
Top Rail	2½" NPS (Sch. 10)	2.875"	0.120"		
	HSS 3.000 x 0.120	3.000"	0.120"		
End Hoops	2½" NPS (Sch. 10)	2.875"	0.120"		
	HSS 3.000 x 0.120	3.000"	0.120"		
Top Rail Joint/Splice Sleeves	HSS 2.500 x 0.125	2.500"	0.125"		
Intermediate & Bottom Rail	HSS 2 x 2 x 3/16	2.00" x 2.00"	0.188" ⁽¹⁾		
Int. & Bottom Rail Post Connection Sleeve	HSS 1.500 x 0.125	1.500"	0.125" ⁽¹⁾		
Handrail Joint (Chlica Classes	1" NPS (Sch. 40)	1.315"	0.133"		
Handrail Joint/Splice Sleeves	HSS 1.500 x 0.125	1.500"	0.125"		
Handrails	1½" NPS (Sch. 40)	1.900"	0.145"		
Handrail Support Bar	¾" Ø Round Bar	0.750"	N/A		
Pickets (Type 1 Infill Panel)	¾" Ø Round Bar	0.750"	N/A		
Infill Panel Members (Types 2 - 5)	Varies (See Details)	Varies	Varies		

TABLE 1 NOTES:

(1) 0.125" wall thickness permitted for rails with post spacings less than 5'-8", except that Post Connection Sleeve must be $1\frac{1}{4}$ " NPS (Sch. 40).

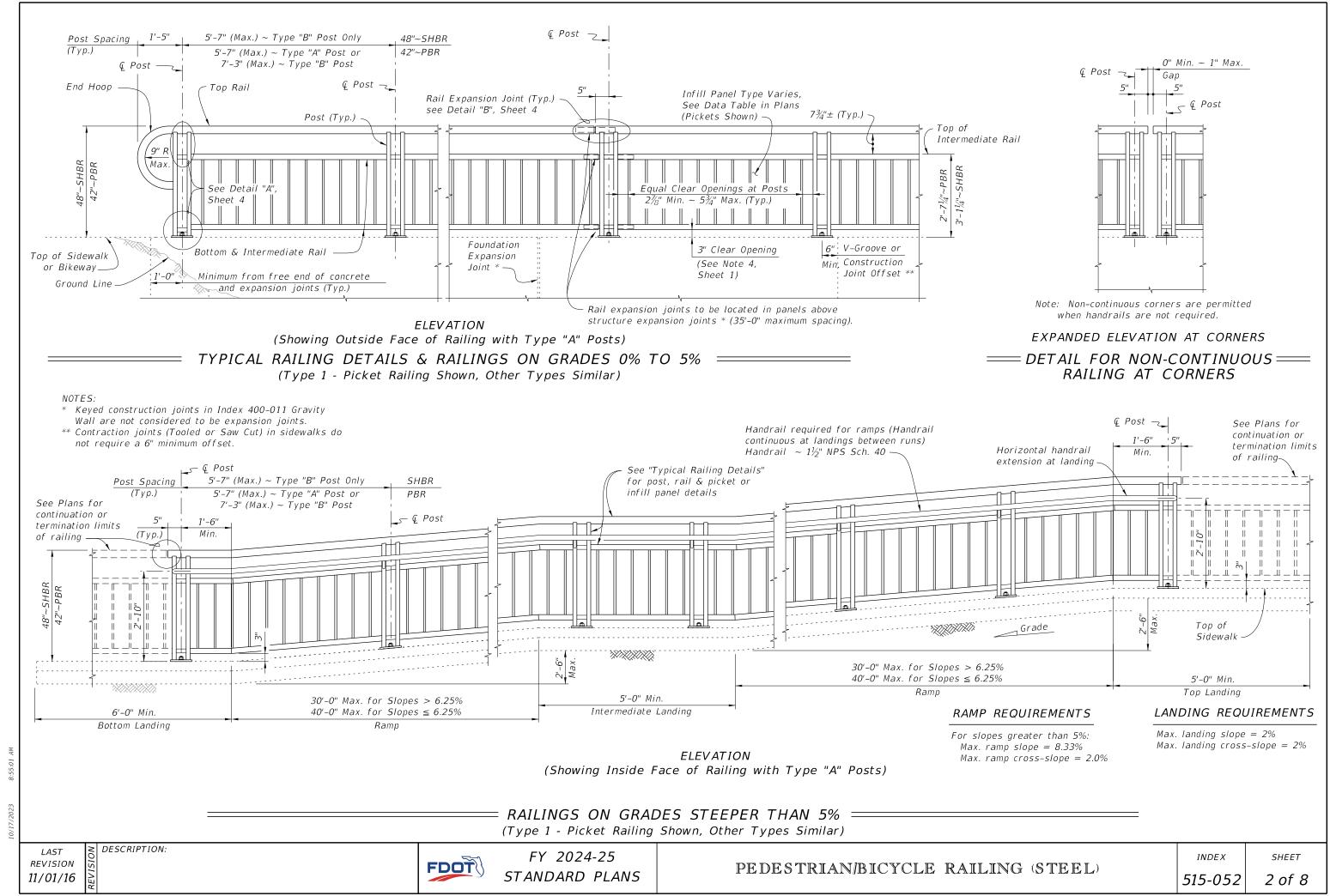
NOTES =

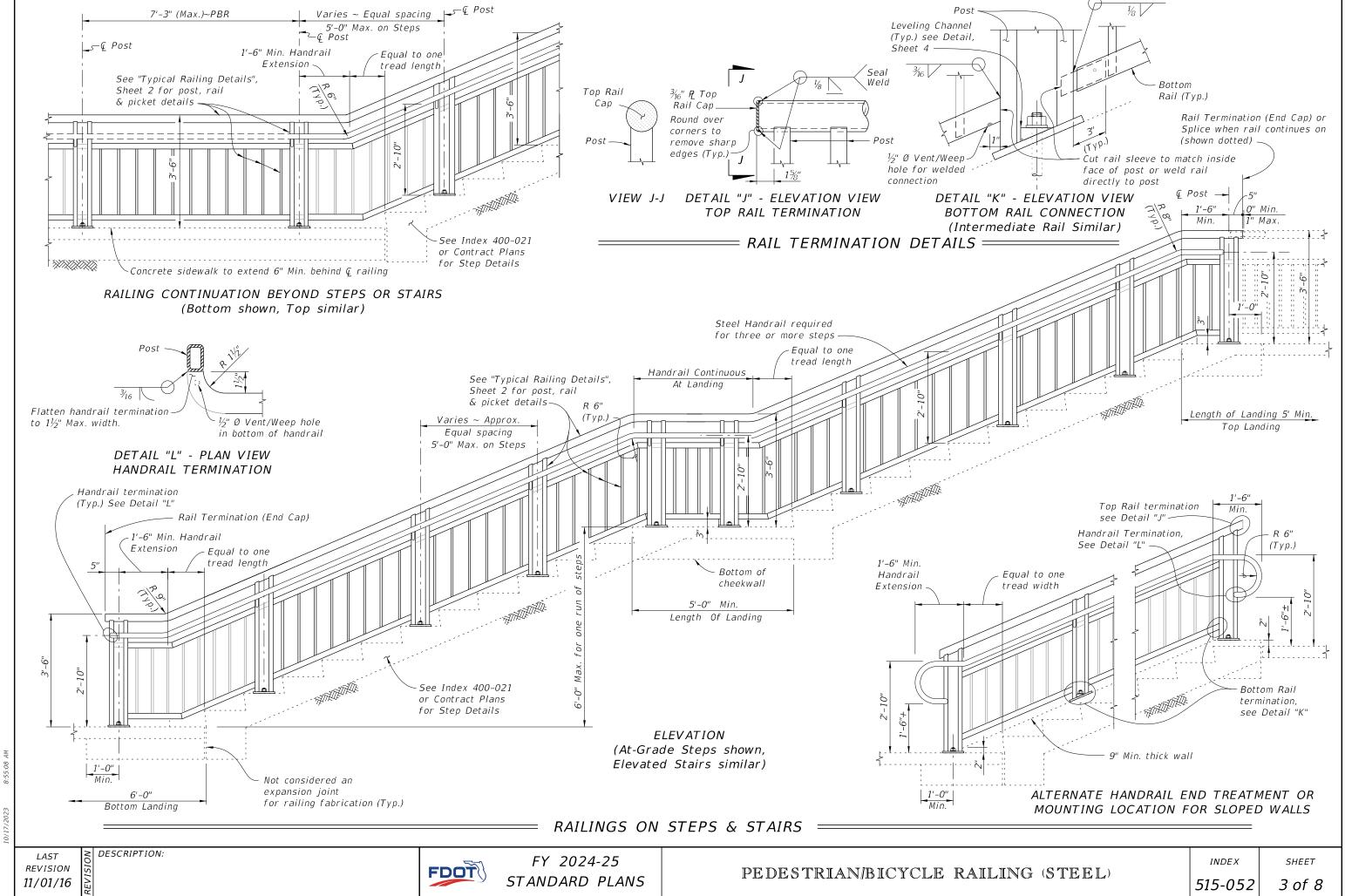
- 1. Shop Drawings are required; see Specification Section 515
- 2. For bridge mounted railings work this Index with Index 515-051 Bridge Bicycle/Pedestrian Railing
- 3. Materials:
 - A. Pipe Rails and Pickets: ASTM A500 Grade B, C or D, or ASTM A53 Grade B for standard weight pipe (Schedule 40) and ASTM A36 for bars.
 - B. Structural Tube: ASTM A500 Grade A, B, C, or D or ASTM A501
 - C. Steel Plate: ASTM A36 or ASTM A709 Grade 36
 - D. U-Channels and filler plates: ASTM A36 or ASTM A1011 (Grade 36).
 - E. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
 - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
 - a. Hex Head Bolts: ASTM A 307
 - 1. \%" diameter single bolt option, Grade 36
 - 2. 7/6" four bolt option, Grade 55
 - b. Adhesive Anchors: ASTM F1554 fully threaded rods, Grade 55
 - c. Hex Nuts: ASTM A563
 - d. Flat Washers: ASTM F436
 - e. Plate Washers: ASTM A36 or ASTM A706 Grade 36.
 - G. Shims: ASTM B209 Alloy 6061
 - H. Bearing Pads: 1/8" Plain, Fabric Reinforced or Fabric Laminated pads that meet the
 - requirements of Specification Section 932 for Ancillary Structures.
- 4. Fabricate pickets and vertical panel elements parallel to the posts; except Type 2, 3 and 5 panel infills may be fabricated parallel to the longitudinal grade. Maintain a maximum clear opening of 5% for standard installations and 3% when a 4" sphere requirement is indicated in the Data Tables.
- 5. Maximum spacing between expansion joints is 40'-0". Locate an Expansion Joint between the posts on either side of the Deck
- 6. Field splices are similar to the Expansion Joint Detail and may be approved by the Engineer to facilitate handling; but the top rail must be continuous across a minimum of two posts.
- 7. For intermediate and bottom horizontal rails, the screwed joints shown may be substituted with alternate joints shown in detail "K".
- 8. Make corners and changes in tangential longitudinal alignment with a 9" bend radius or terminate adjoining sections with mitered end sections when handrails are not required.
- 9. For changes in tangential longitudinal alignment greater than 45°, position posts a maximum of 2'-0" each side of the corner but not at the corner apex.
- 10. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius.
- 11. Handrails are required and must be continuous at landings for:
 - A. Grades Steeper than 5%,
 - B. Three or more steps
- 12. Installation: Cutting of reinforcing steel is permitted for post installed anchors.

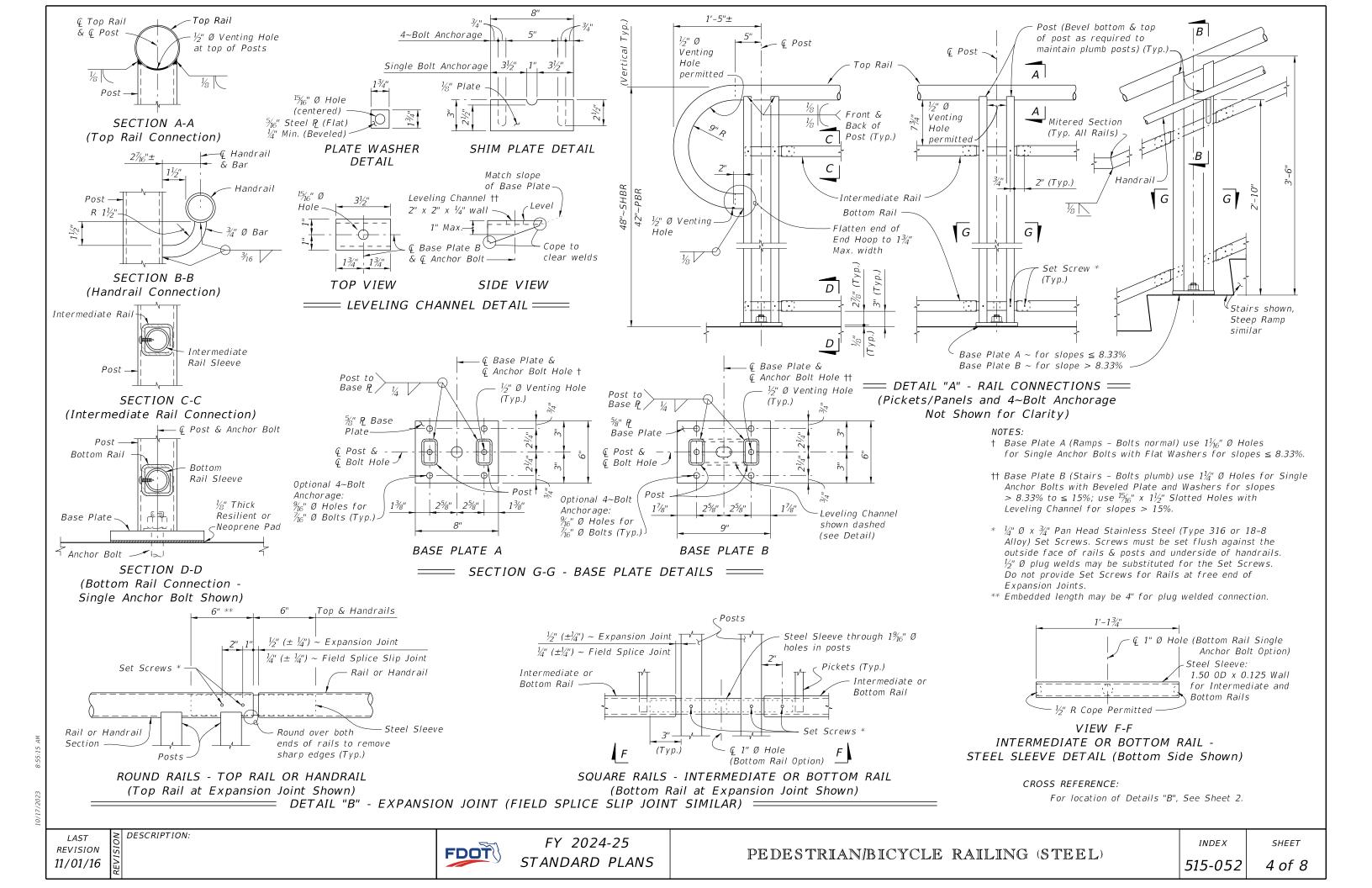
DESCRIPTION:

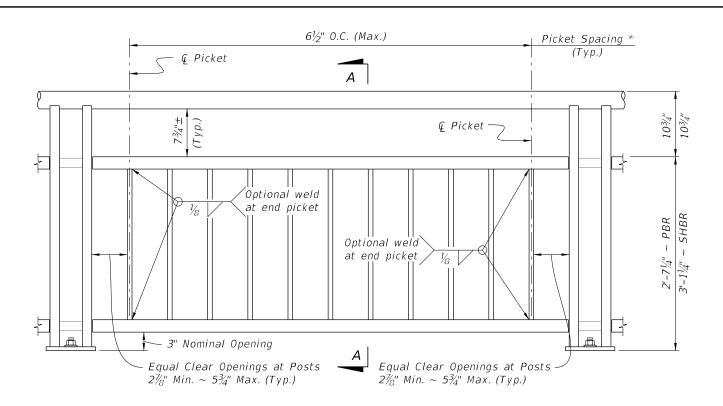


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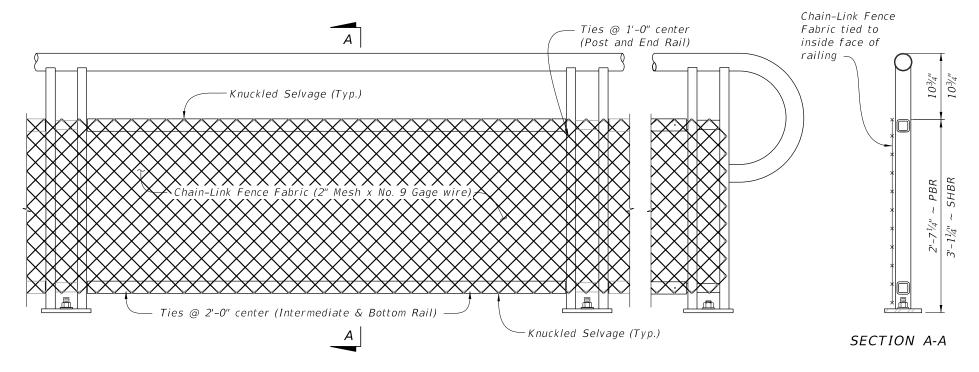




TYPE 1 - PICKET INFILL PANEL

PICKET NOTES:

* Picket Spacing of $6\frac{1}{2}$ " centers is based on a $\frac{3}{4}$ " Ø Bar for standard applications. When shown in the Contract Plans a $4\frac{1}{2}$ " picket spacing may be required. See Note 4 (Sheet 1).



TYPE 2 - CHAIN-LINK (Continuous Infill Panel)

DESCRIPTION:

1. See Plans for Infill Panel option required.

TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS					
COMPONENT	ASTM	COMPONENT INFORMATION			
Chain-Link Fence Fabric (2" mesh with knuckled top and bottom selvage)	A 392	Zinc-Coated Steel - No. 9 gage (coated wire diameter), Class 2 Coating			
	A 491	Aluminum-Coated Steel - No. 9 gage (coated wire diameter)			
	F 668	Polyvinyl Chloride (PVC) Coated Steel - No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) ~ See Plans for specified color of PVC.			
Tie Wires	F 626	Zinc-Coated Steel Wire - No. 9 gage with coating to match Chain-Link Fence Fabric.			
Tension Bars	F 626	$^{3}\!\!/_{16}$ " (Min. thickness) x $^{3}\!\!/_{4}$ " (Min. width) x 2'-3' (Min. height) Steel Bars			
Miscellaneous Fence Components	F 626	Zinc-Coated Steel			

- ¾" Max.

DETAIL "1A" (Top of Picket Connection)

DETAIL "1B"

(Bottom of Picket Connection)

(Shown dashed) Picket $\sim \frac{3}{4}$ " Ø Bar (Typ.)

Picket ~ ¾" Ø Bar (Typ.)

¹¾″ Ø Max. Hole for Ramps,

15/16" Ø Max. Hole for Stairs.

(Optional weld at end picket)

1/8" Thick Resilient or Neoprene Pad

45° Beveled End Permitted

CHAIN-LINK PANEL NOTE:

Intermediate Rail

Bottom Rail

45° Beveled

End Permitted

(Shown dashed) Base Plate

√ Anchor Bolt

¹¾6" Ø Max. Hole for Ramps, 15/16" Ø Max. Hole for Stairs.

(Optional weld at end picket)

See Detail "1A"

See Detail "1B"

SECTION A-A

Chain-Link Fence Fabric shall be continuous along limits of railing. Splicing of Chain-Link panels using Tension Bars at 20'-0" minimum increments is permitted.

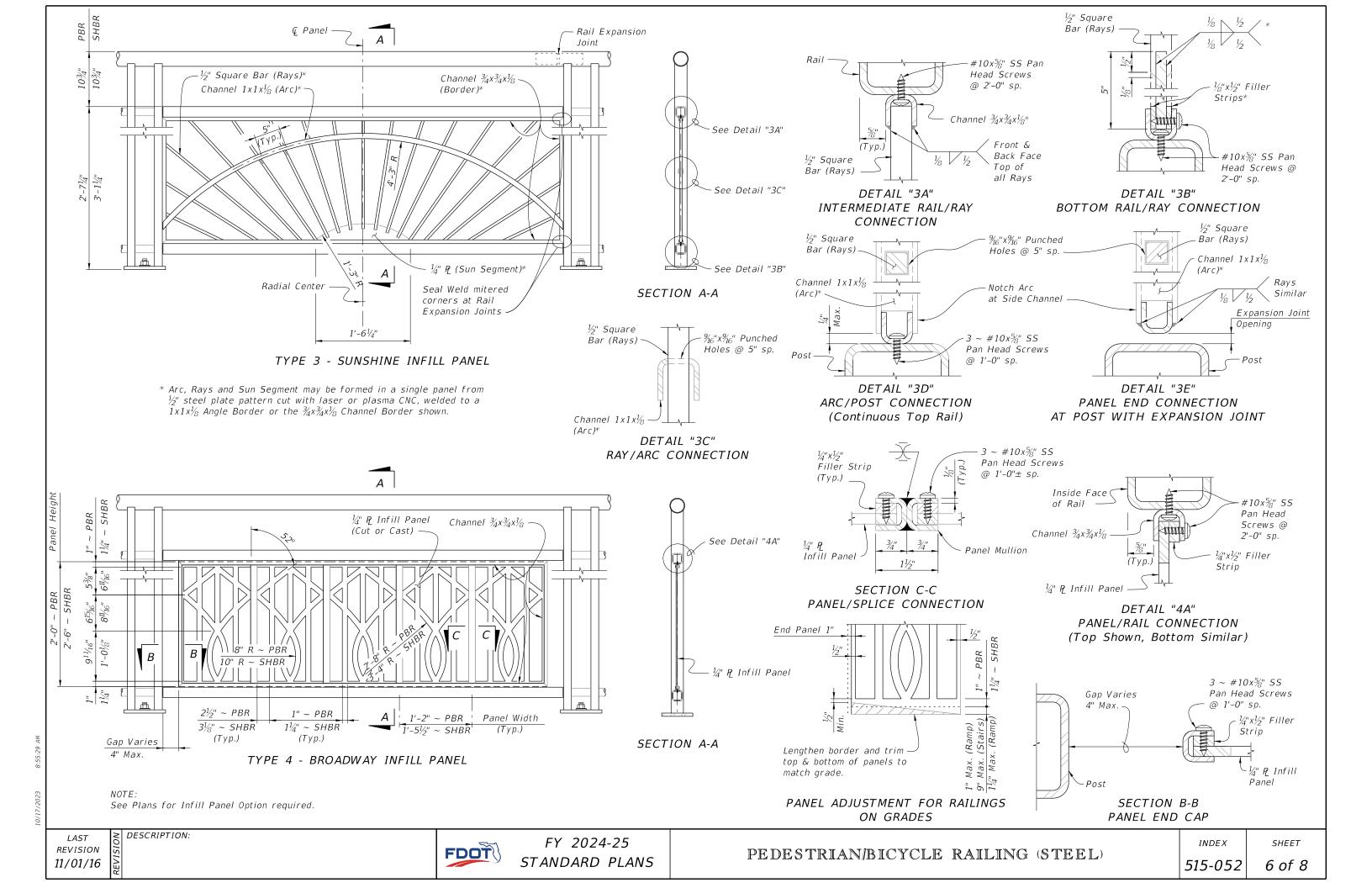
REVISION 11/01/21

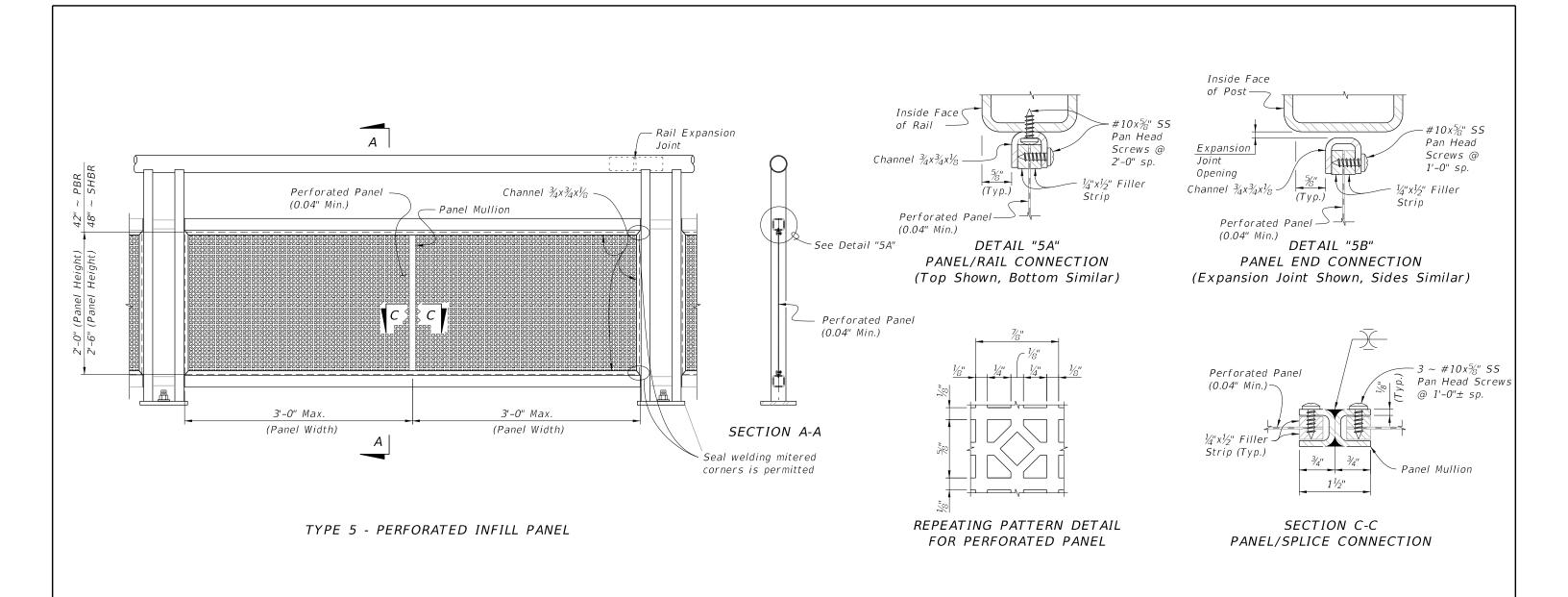
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FY 2024-25 STANDARD PLANS

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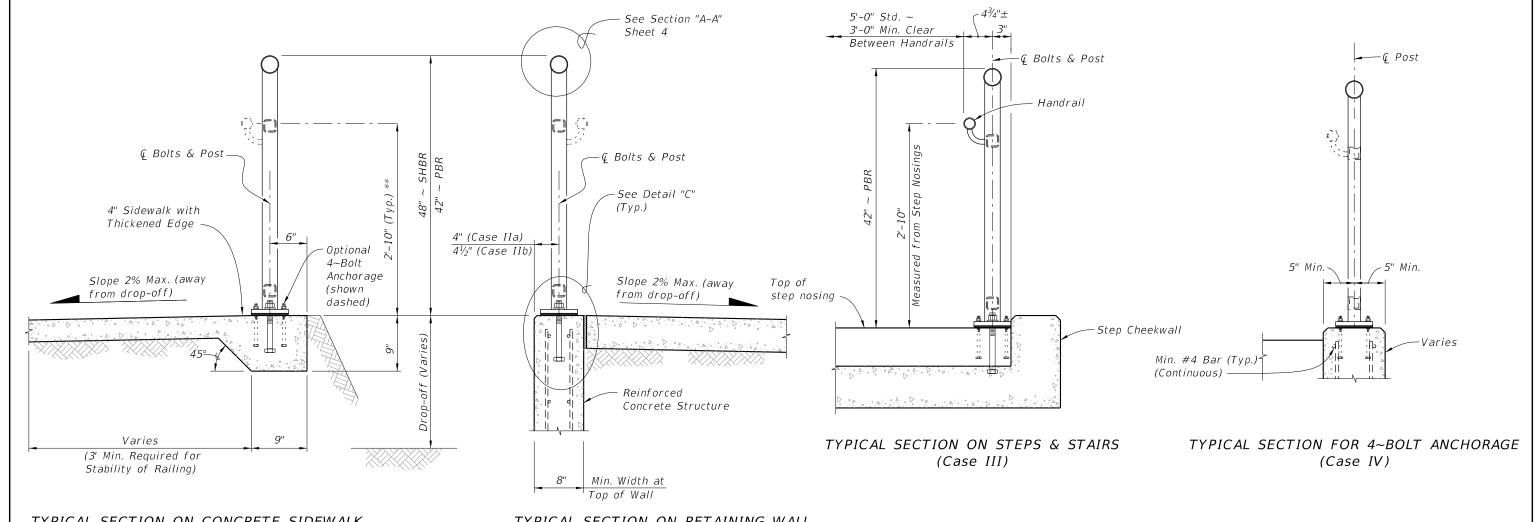
NOTES:

DESCRIPTION:

1. See Plans for Infill Panel Type required.

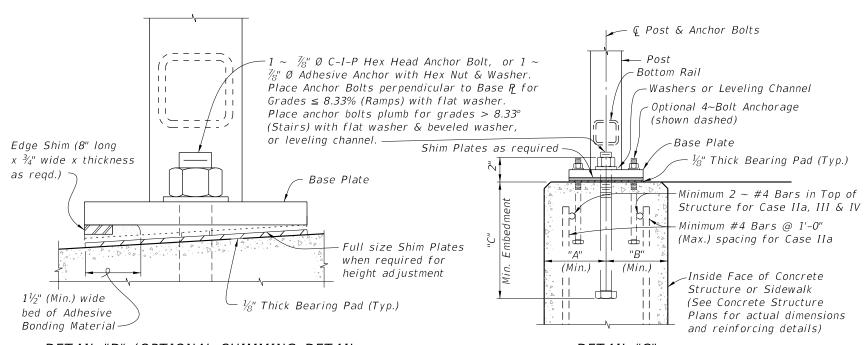
REVISION 11/01/16

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TYPICAL SECTION ON CONCRETE SIDEWALK (Case I)

TYPICAL SECTION ON RETAINING WALL (Case II)



	ANCHOR BOLT TABLE						
CASE STRUCTUR	CTRUCTURE	DIMENSIONS			ANCHOR LENGTH		44464465
CASE	STRUCTURE TYPE	A Edge Dist.	B Edge Dist.	C Embedment	C-I-P Hex Head Bolt		ANCHOR SIZE
Ι	Unreinforced Concrete	6"	1'-2"	6"	7½"	8"	%" Ø
IIa	Reinforced Concrete	4"	4"	9"	10 ¹ /2"	11"	%" Ø
IIb	Gravity Wall Index 400-011	41/2"	3 ¹ / ₂ " @ top	9"	10½"	11"	%" Ø
III	Step Cheekwall	4 ¹ /2"	4 ¹ / ₂ "	9"	10 ¹ /2"	11"	%" Ø
IV	Varies	5"	5"	5"	$6\frac{1}{2}$ "	7"	7∕16" Ø

** When required; measured from top of sidewalk.

DETAIL "D" (OPTIONAL SHIMMING DETAIL FOR CROSS SLOPE CORRECTION) (Used in lieu of Beveled Shim Plates)

DESCRIPTION:

DETAIL "C" (Cast-In-Place Anchor Bolts shown, Adhesive Anchors similar)

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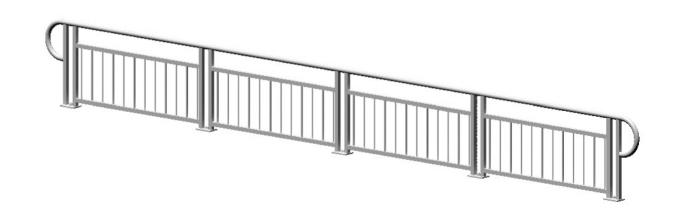
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FY 2024-25 STANDARD PLANS

PEDESTRIAN/BICYCLE RAILING (STEEL)

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SHEET

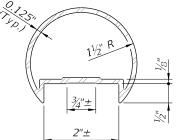


3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL (42" Height shown, 48" Height Similar)

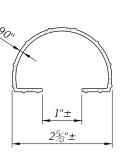
TABLE 1 - RAILING MEMBERS						
MEMBER	ALLOY ⁽¹⁾	DESIGNATION OUTSIDE DIMENSION		WALL THICKNESS		
Posts (Type "A" & "B")	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250"		
Posts (Type "C")	6061-T6	Extrusion 1½x2½x0.125	1.50" x 2.50"	0.125"		
Top Plate (Type "C")	6061-T6	Extrusion (See Details)	2¾" x 7"	Varies		
Tan Bail	COC1 TC	2½" NPS (Sch. 10) 2.87		0.120"		
Top Rail	6061-T6	3" Round Top Cap Rail	3.000"	0.125"		
Fiel Harris		2½" NPS (Sch. 10)	2.875"	0.120"		
End Hoops	6063-T5	3.00 OD x 0.125 Wall	3.000"	0.125"		
	COC2 T5	2.50 OD x 0.125 Wall	2.500"	0.125"		
Top Rail Joint/Splice Sleeves	6063-T5	Top Cap Rail Inner Sleeve	2.800"	0.090"		
Intermediate & Bottom Rail	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250" ⁽²⁾		
Int. & Bottom Rail Post Connection Sleeve	6063-T5	1.50 OD x 0.125 Wall (3)	1.500"	0.125"		
11 1 1 1 1 1 1 5 1 5 1	6063-T5	1" NPS (Sch. 40)	1.315"	0.133"		
Handrail Joint/Splice Sleeves	6063-T5	1.50 OD x 0.125 Wall	1.500"	0.125"		
Handrails	6061-T6	1½" NPS (Sch. 40)	1.900"	0.145"		
Handrail Support Bar	6061-T6	¾" Ø Round Bar	0.750"	N/A		
Pickets (Type 1 Infill Panel)	6061-T6	¾" Ø Round Bar	0.750"	N/A		
Infill Panel Members (Types 2 - 5)	6063-T5	Varies (See Details)	Varies	Varies		

TABLE 1 NOTES:

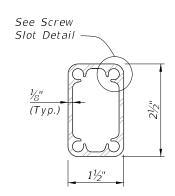
- (1) Alloy 6061-T6 or 6063-T52 & T6 may be substituted for Alloy 6063-T5.
- (2) 0.188" wall thickness permitted for rails with post spacings less than 5'-9".
- (3) 1" NPS (Sch. 40) non-slit rail sleeves may be substituted when welded connection Detail "K" is utilized.



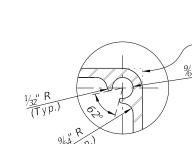
3" ROUND TOP CAP RAIL TOP CAP RAIL INNER SPLICE SLEEVE

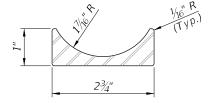


ALTERNATIVE BOTTOM & INTERMEDIATE RAIL SECTION FOR TYPE 3, 4 & 5 RAILINGS



POST TYPE "C" SCREW SLOT SECTION





OPTIONAL TOP PLATE EXTRUSION SECTION (POST TYPE "C")

ALTERNATE TOP RAIL SECTION

REVISION 11/01/18



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SCREW SLOT DETAIL

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SHEET

= NOTES =

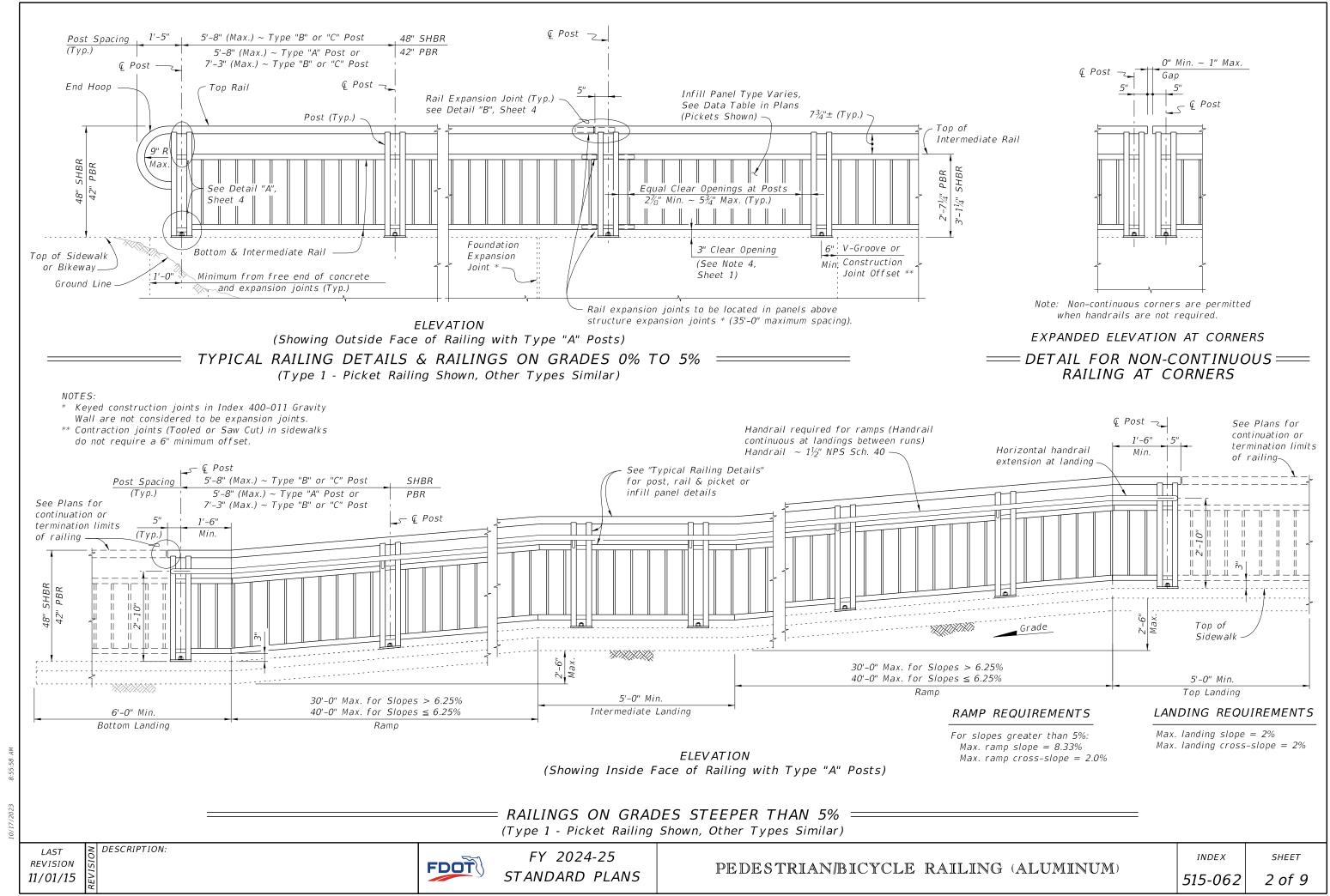
- 1. Shop Drawings are required, see Specification Section 515.
- 2. For bridge mounted railings, work this Index with Index 515-061 Bridge Bicycle/Pedestrian Railing (Aluminum)
- - A. Structural Extrusions, Tube, Pipe and Bars: Table 1 and ASTM B221 or ASTM B429
 - a. Top, bottom and intermediate rail corner bends with maximum 4'-0" post spacing may be Alloy 6063-T6
 - B. Base Plates and Rail Caps: ASTM B209 Alloy 6061-T6
 - C. Perforated panels (Type 5) Alloy 3003-H14
 - D. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
 - E. Aluminum screws: Alloy 2024-T4 or 7075-T73
 - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
 - a. Hex Head Bolts: ASTM A 307
 - 1. %" diameter single bolt option, Grade 36
 - 2. $\frac{7}{16}$ " diameter four bolt option, Grade 55
 - b. Adhesive Anchors: ASTM F1554 fully threaded rods, Grade 55
 - c. Hex Nuts: ASTM A563
 - d. Flat Washers: ASTM F436
 - e. Plate Washers: ASTM A36 or ASTM A706 Grade 36.
 - G. Shims: ASTM B209 Alloy 6061 or 6063
 - H. Bearing Pads: Provide 1/8" thick Plain, Fabric Reinforced or Fabric Laminated Bearing Pads meeting the requirements of Specification Section 932 for Ancillary Structures.
- 4. Fabricate pickets and vertical panel elements parallel to the posts; except Type 2, 3 and 5 panel infills may be fabricated parallel to the longitudinal grade. Maintain a maximum clear opening of 5% for standard installations and 3% when a 4" sphere requirement is indicated in the Data Tables.
- 5. Locate railing expansion Joints between the posts on either side of
- the deck expansion joint. Maximum spacing between expansion joints is 35'-0".
- 6. Field splices are similar to the Expansion Joint Detail and may be approved by the Engineer to facilitate handling; but the top rail must be continuous across a minimum of two posts.
- 7. For intermediate and bottom horizontal rails, the screwed joints shown may be substituted with alternate joints shown in detail "K" for Post Type "A" & "B".
- 8. Make corners and changes in tangential longitudinal alignment with a 9" bend radius or terminate adjoining sections with mitered end sections when handrails are not required.
- 9. For changes in tangential longitudinal alignment greater than 45', position posts a maximum of 2'-0" each side of the corner but not at the corner apex.
- 10. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius.
- 11. Handrails are required and must be continuous at landings for:
 - A. Grades Steeper than 5%,
 - B. Three or more steps
- 12. Installation: Cutting of reinforcing steel is permitted for post installed anchors.

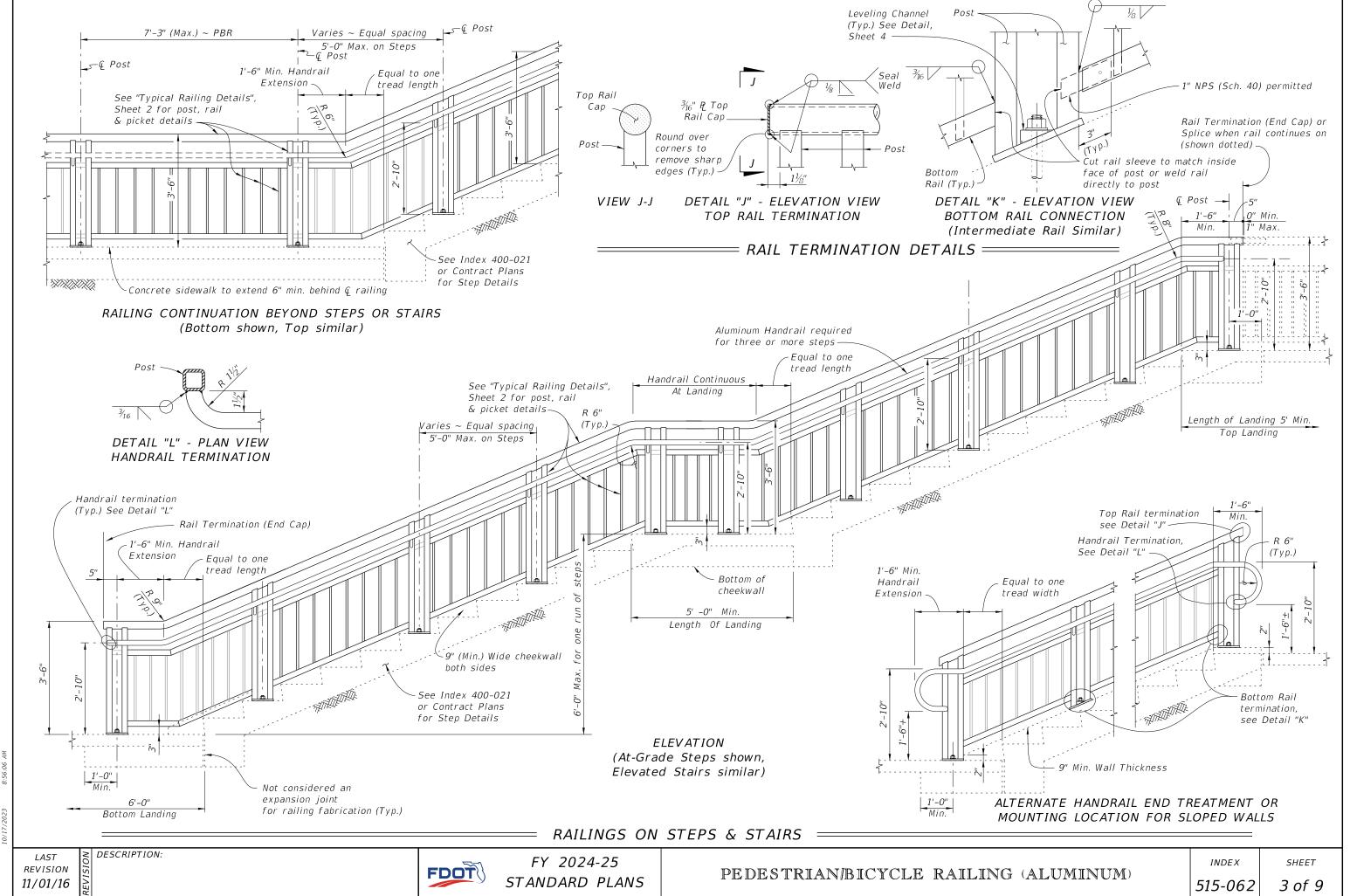
CROSS REFERENCES:

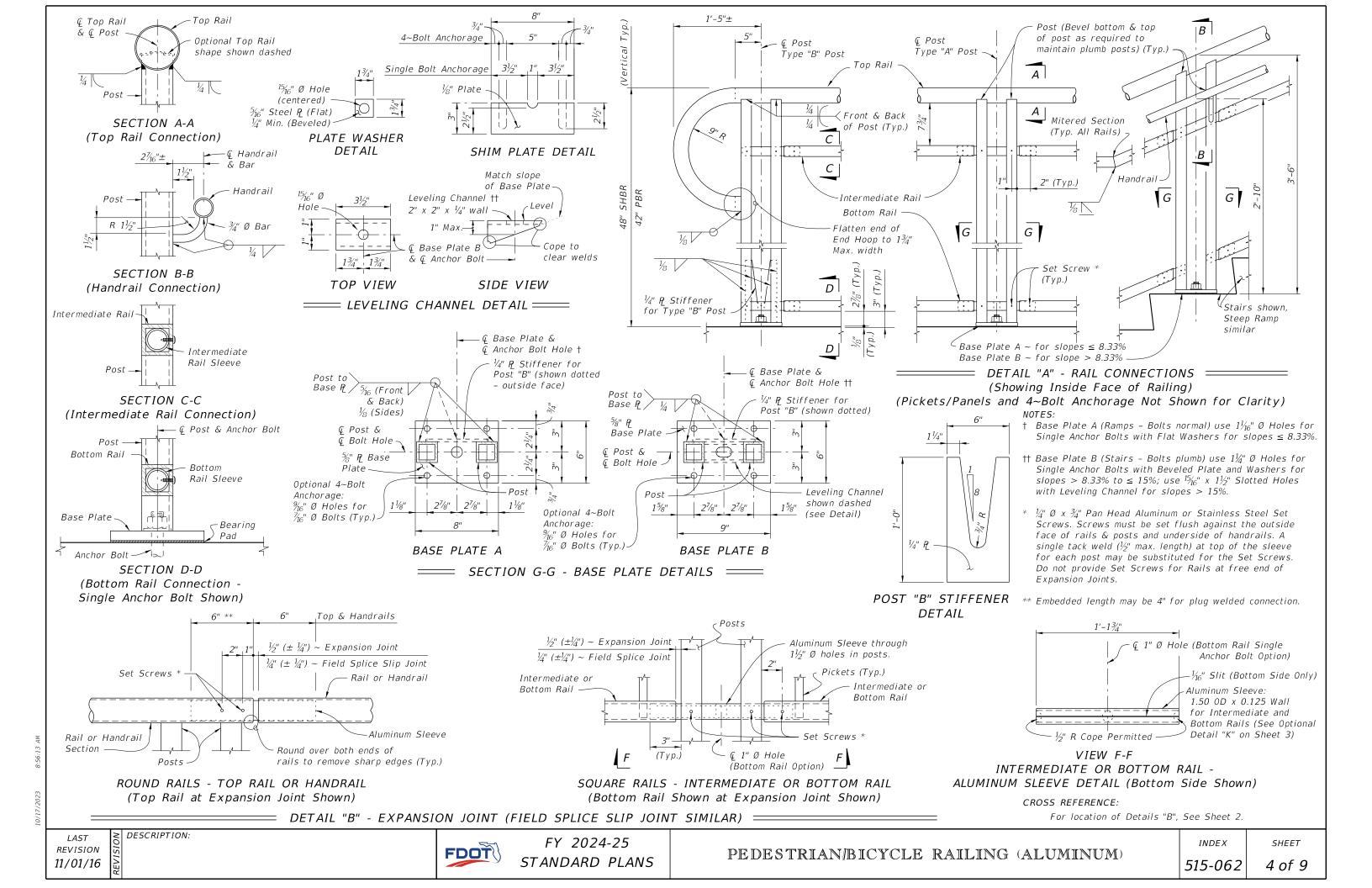
Detail "A", Sheet 4

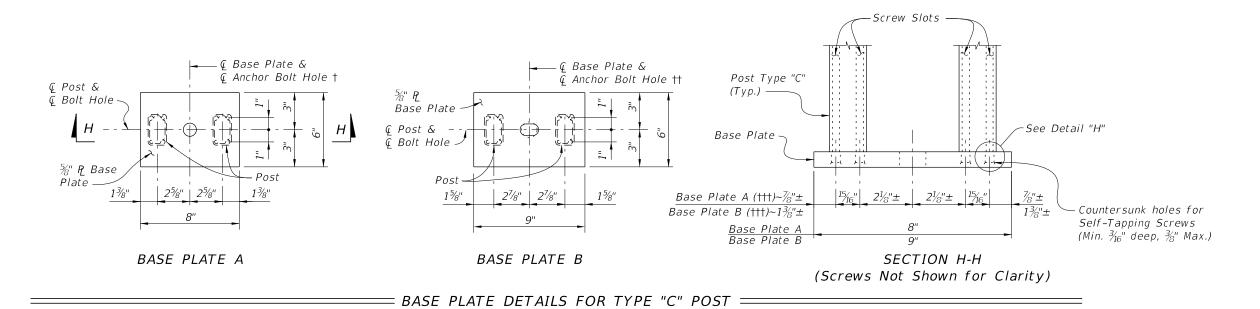
Detail "B", Sheet 4

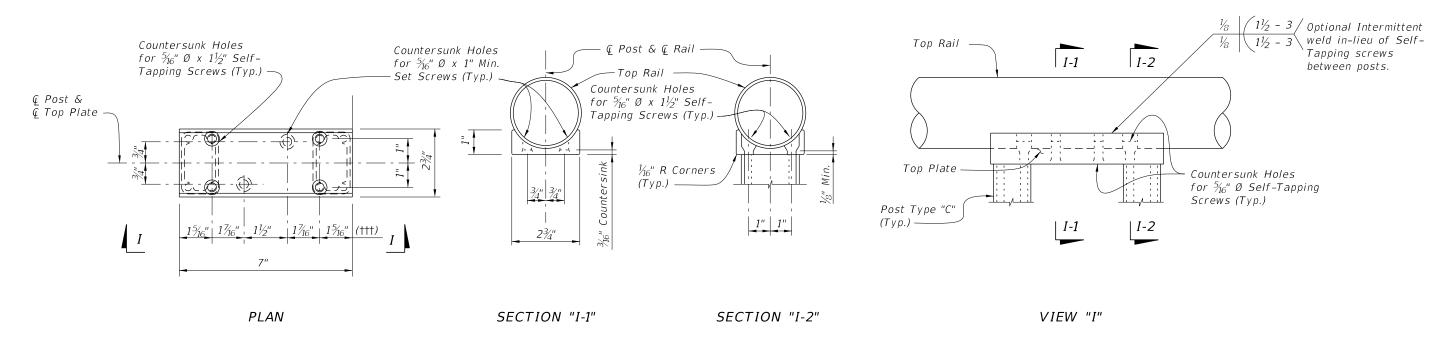
Detail "K", Sheet 3











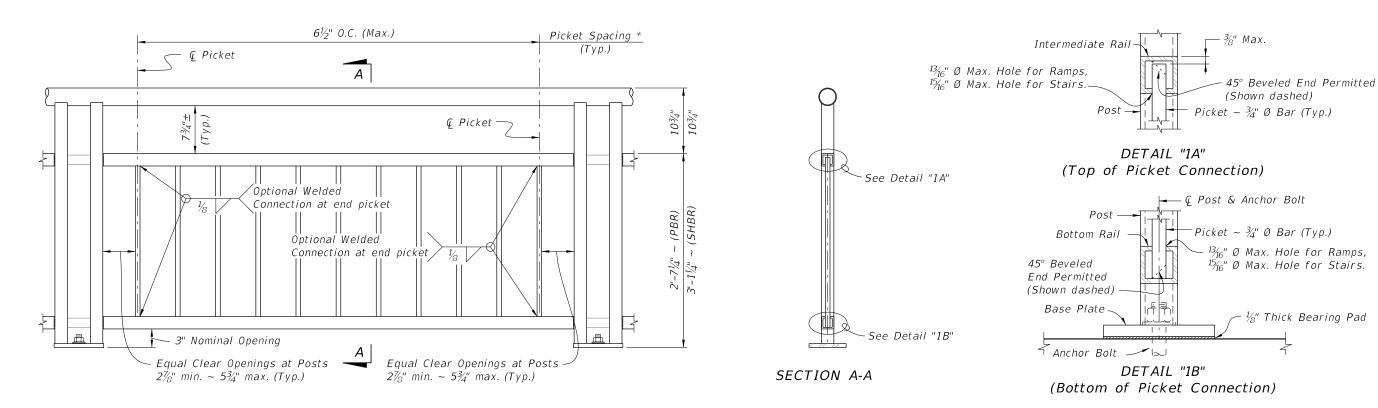
= TOP PLATE DETAILS FOR TYPE "C" POST = (Screws Not Shown For Clarity)

Notes:

- See Sheet 4 for Notes.
- See Sheet 4 for Notes.
- Length varies for beveled posts on grades. Holes must be drilled plumb to align with screw slot.

DESCRIPTION: REVISION 11/01/16

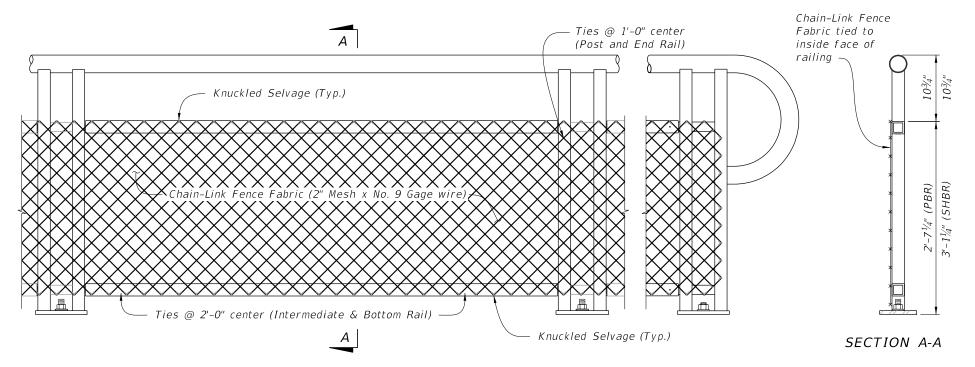
FDOT



PICKET NOTES:

st Picket Spacing of $6larll_2$ " centers is based on a $rac{3}{4}$ " Ø Bar for standard applications. When shown in the Contract Plans a $4\frac{1}{2}$ " picket spacing may be required. See Note 4 (Sheet 1).

TYPE 1 - PICKET INFILL PANEL



TYPE 2 -	CHAIN-LINK	(Continuous	Infill	Panel)

DESCRIPTION:

See Plans for Infill Panel option required.

TABLE 2 - CHA	IN-LINK	PANEL COMPONENT MATERIALS
COMPONENT	ASTM	COMPONENT INFORMATION
Chain-Link Fence Fabric (2" mesh with	A392	Zinc-Coated Steel - No. 9 gage (coated wire diameter), Class 2 Coating
knuckled top and bottom selvage)	A491	Aluminum-Coated Steel - No. 9 gage (coated wire diameter)
	F668	Polyvinyl Chloride (PVC) Coated Steel - No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) ~ See Plans for specified color of PVC.
Tie Wires	F626	Zinc-Coated Steel Wire - No. 9 gage with coating to match Chain-Link Fence Fabric.
Tension Bars	F626	$^{3}\!\!/_{16}$ " (min. thickness) x $^{3}\!\!/_{4}$ " (min. width) x 2'-3' (min. height) Steel Bars
Miscellaneous Fence Components	F626	Zinc-Coated Steel

CHAIN-LINK PANEL NOTE:

Chain-Link Fence Fabric shall be continuous along limits of railing. Splicing of Chain-Link panels using Tension Bars at 20'-0" minimum increments is permitted.

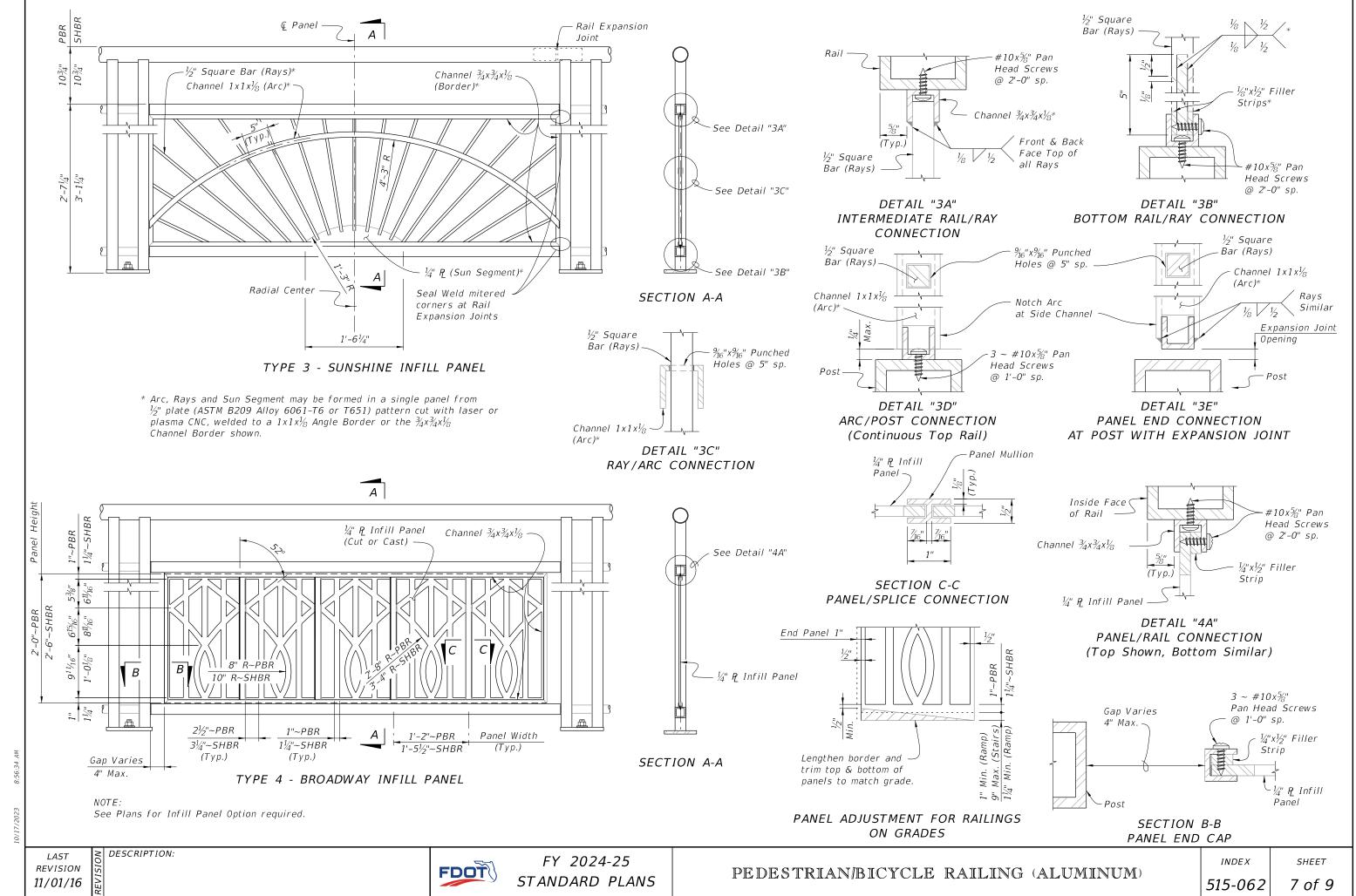
REVISION 11/01/21

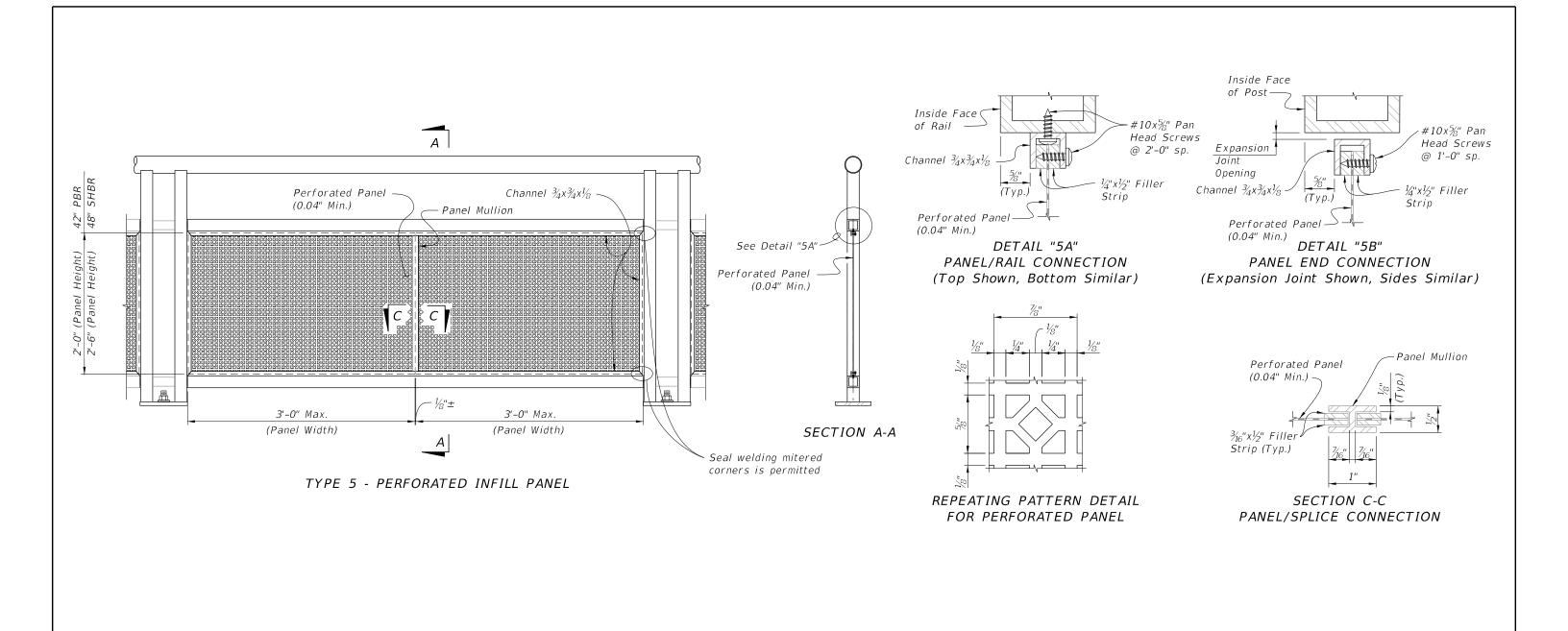
FDOT

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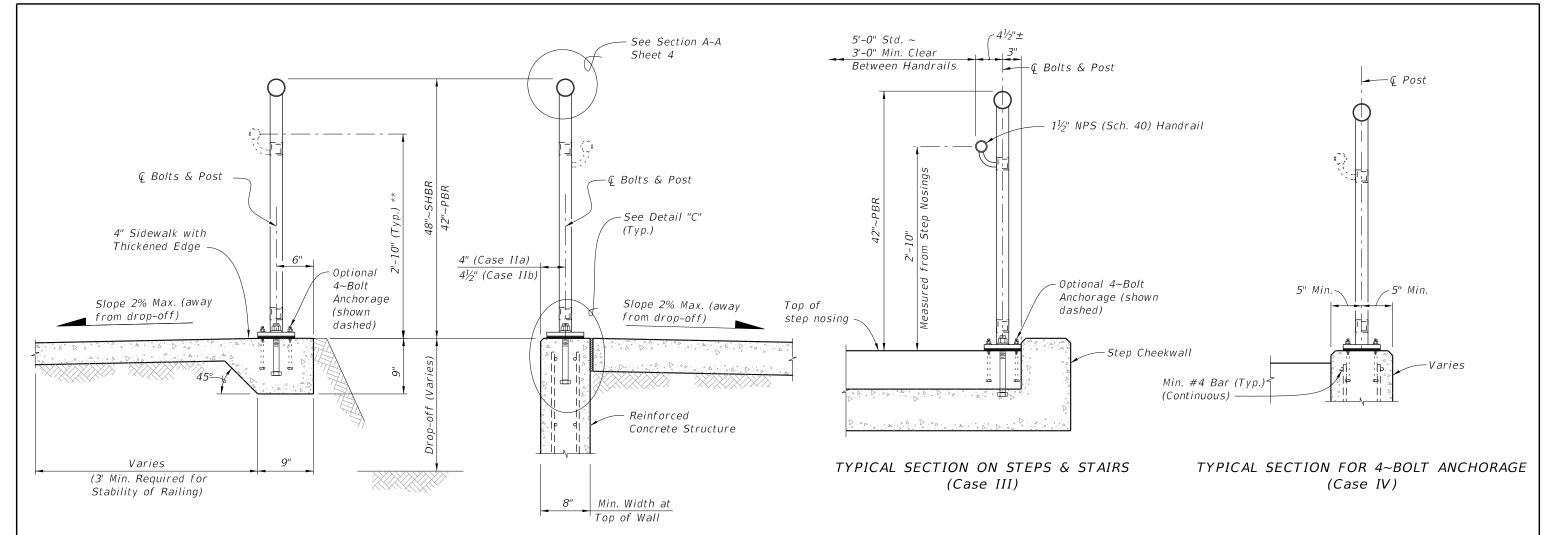
SHEET 6 of 9





DESCRIPTION: REVISION 11/01/16

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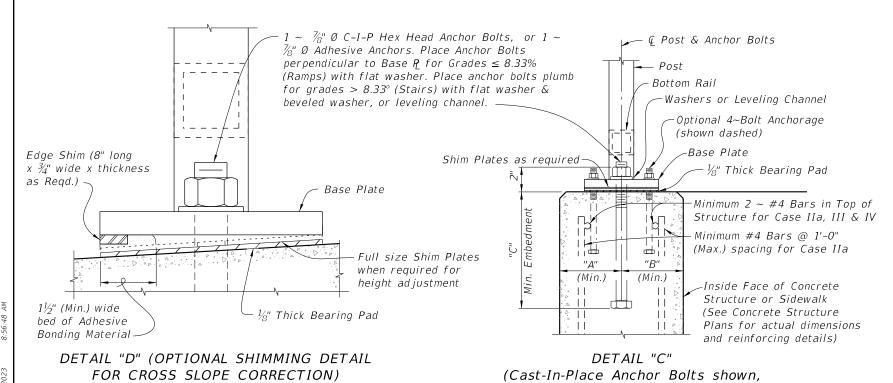


TYPICAL SECTION ON CONCRETE SIDEWALK (Case I)

(Used in lieu of Beveled Shim Plates)

DESCRIPTION:

TYPICAL SECTION ON RETAINING WALL (Case II)



ANCHOR BOLT TABLE							
	STRUCTURE TYPE	DIMENSIONS		ANCHOR LENGTH			
CASE		"A" Edge Dist.	"B" Edge Dist.	"C" Embedment	C.I.P Hex Head Bolt	Adhesive Anchor	ANCHOR SIZE
I	Unreinforced Concrete	6"	1'-2"	6"	7½"	8"	%" Ø
IIa	Reinforced Concrete	4"	4"	9"	10½"	1 1"	%" Ø
IIb	Gravity Wall Index 400-011	4 ¹ / ₂ "	3½" @ top	9"	10½"	1 1"	7⁄8" Ø
III	Step Cheekwall	4 ¹ / ₂ "	4½"	9"	10½"	1 1"	%" Ø
IV	Varies	5"	5"	5"	6½"	7"	7₁6" Ø

** When required; measured from top of sidewalk (Typ.)

LAST REVISION 11/01/20

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Adhesive Anchors similar)

PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

INDEX 515-062

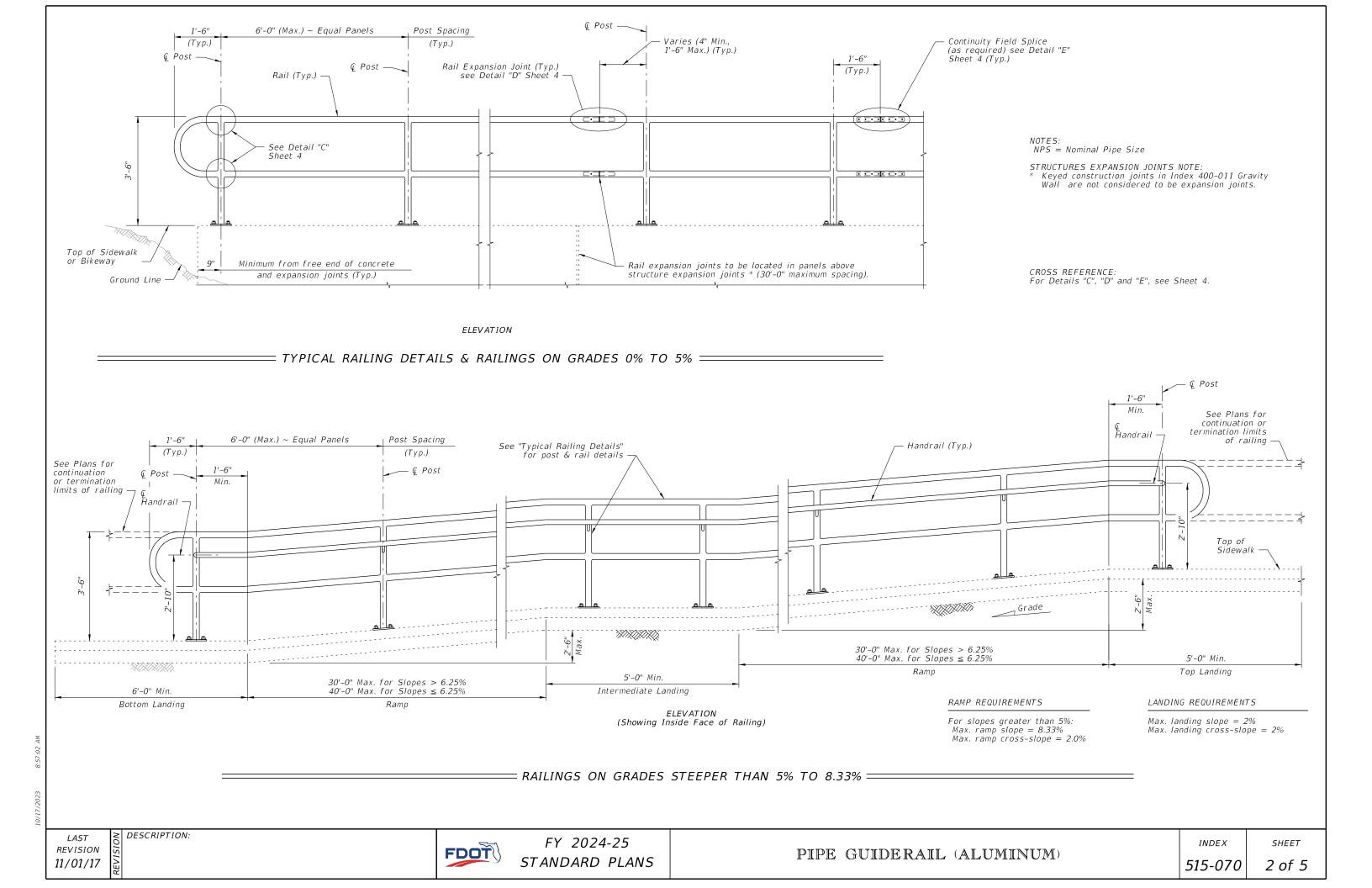
SHEET

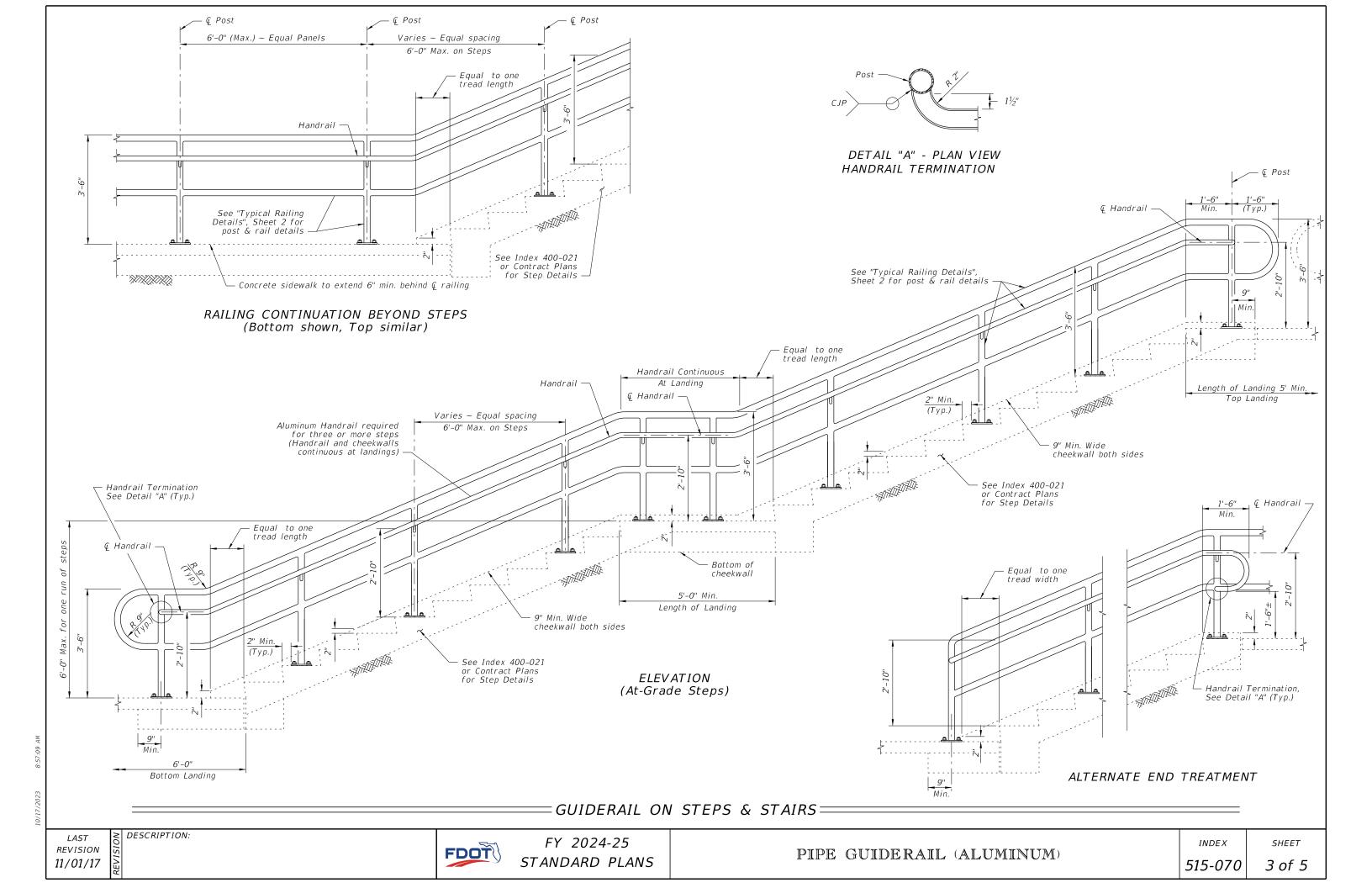
- 1. Shop Drawings are required.
- 2. Work with Specification 515.
- 3. Materials:
- A. Pan Head Set Screws: Aluminum Alloy 2024-74 or 7075-T73 or Stainless Steel (SS) Type 316 or 18-8 Alloy.
- B. Base Plates and Cap Plates: ASTM B209, Alloy 6061-T6
- C. Structural Pipe Tube and Bars: ASTM B221 or ASTM B429, Alloy 6061-T6
- D. End Rails 90° bends and corner bends with a maximum 4 foot spacing: Alloy 6063-T5 is permitted.

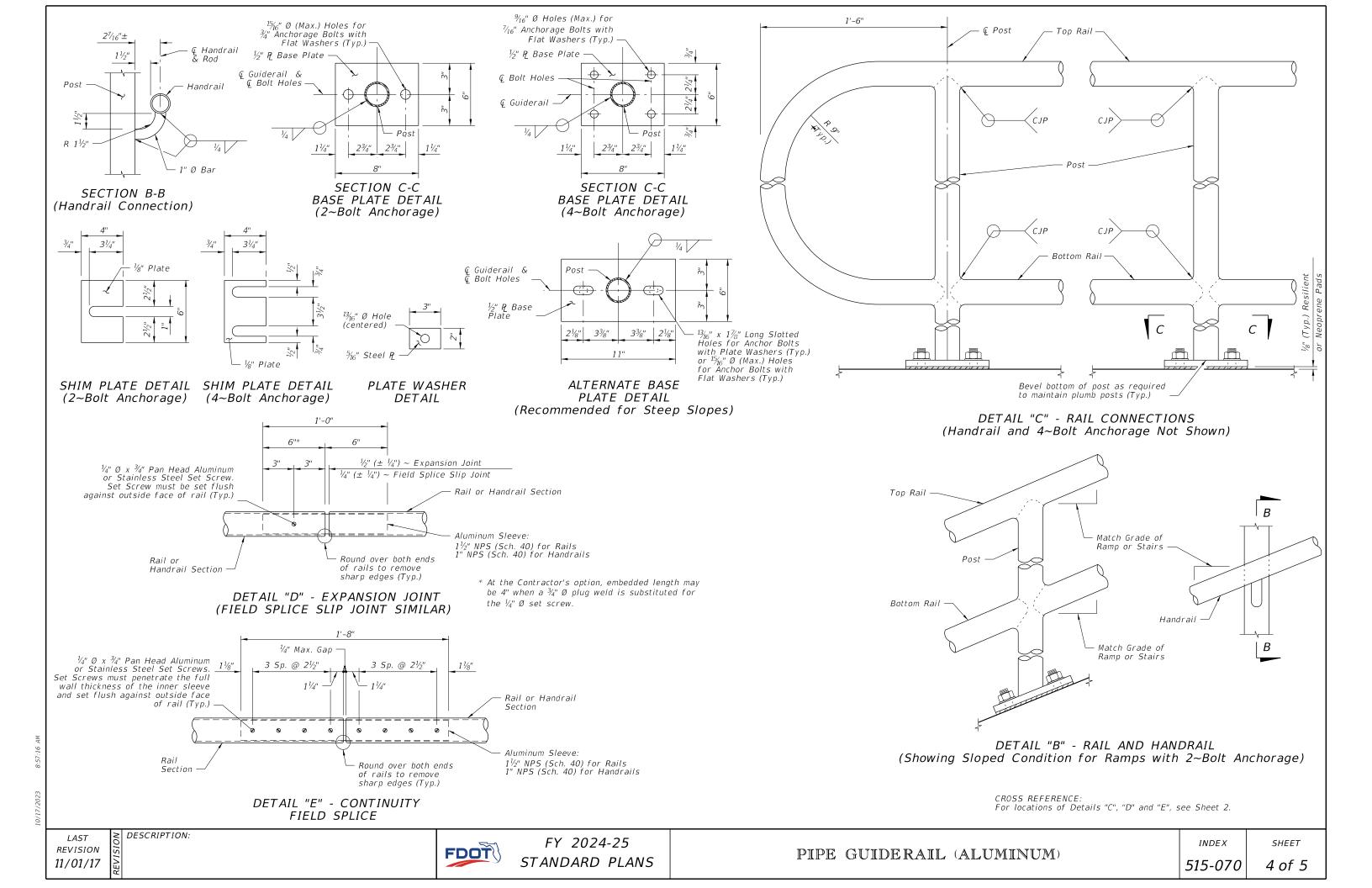
RAILING MEMBER DIMENSIONS TABLE					
MEMBER	OUTSIDE DIMENSION	WALL THICKNESS			
Posts	2" NPS (Sch. 40)	2.375"	0.154"		
Rails	2" NPS (Sch. 40)	2.375"	0.154"		
Rail Joint/Splice Sleeves	1½" NPS (Sch. 40)	1.900"	0.145"		
Handrails Joint/Splice Sleeves	1" NPS (Sch. 40) 1.50 ODx0.125 Wall	1.315" 1.500"	0.133" 0.125"		
Handrails	1½" NPS (Sch. 40)	1.900"	0.145"		
Handrail Support Bar	1" Ø Round Bar	1.000"	N/A		

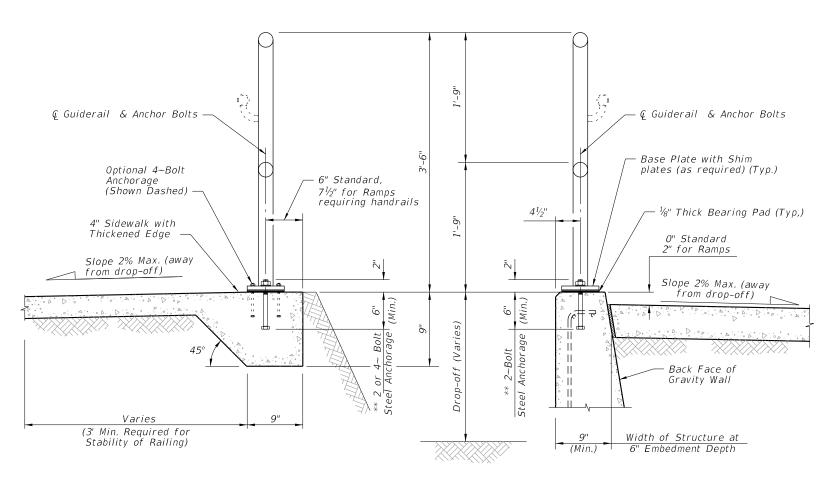
- E. Galvanized Steel Fasteners:
- a. Hex Head Bolts: ASTM A 307 Type 1 or ASTM F1554 Grade 36
- b. Adhesive Anchors: ASTM F1554 Grade 36 fully threaded rods
- c. Hex Nuts: ASTM A563
- d. Flat Washers: ASTM F436
- F. Aluminum Shims: ASTM B209, Alloy 6061
- G. Bearing Pads: Plain, Fabric Reinforced, or Fabric Laminated meeting requirements of Specifications 515 & 932.
- 4. Fabrication:
- A. Place expansion joints at a maximum of 30'-0"spacing
 B. Field splices are similar to the expansion joint detail and may be approved by the Engineer to facilitate handling; but top rail must be continuous across a minimum of two posts.
 C. Continuity field splice (Detail "E"); only use to make the railing continuous for unforeseen field adjustments
- D. Corners and changes in tangential longitudinal alignment may be made continuous with a 9" bend radius or
- terminated at adjoining sections with a standard end hoop when handrails are not required.
- E. For curved longitudinal alignments, shop bend top and bottom rails and handrails to match the alignment radius.
- F. For changes in tangential longitudinal alignment greater than 45°, position posts a maximum of 2'-0" each side of the corner, not at the corner apex.
- 5. <u>Handrails are required and must be continuous at landings for:</u>
- A. Grades Steeper than 5%
- B. Three or more steps
- 6. Cutting of reinforcing steel is permitted for post installed anchor bolts.

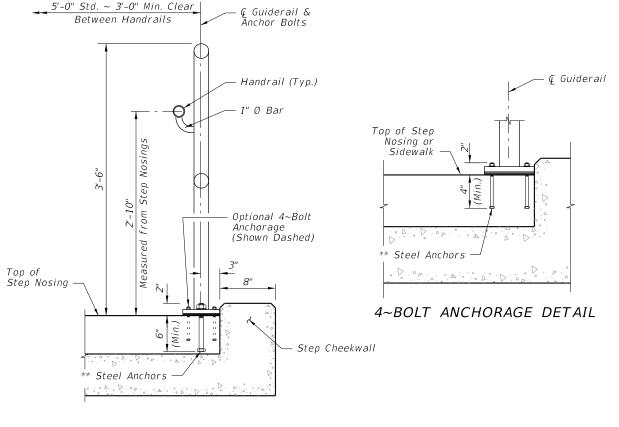
DESCRIPTION:







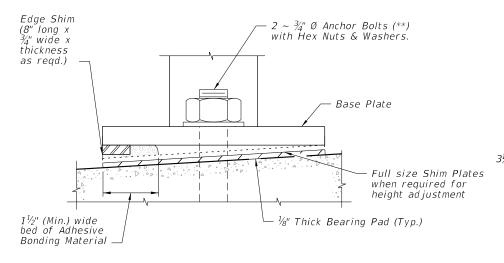




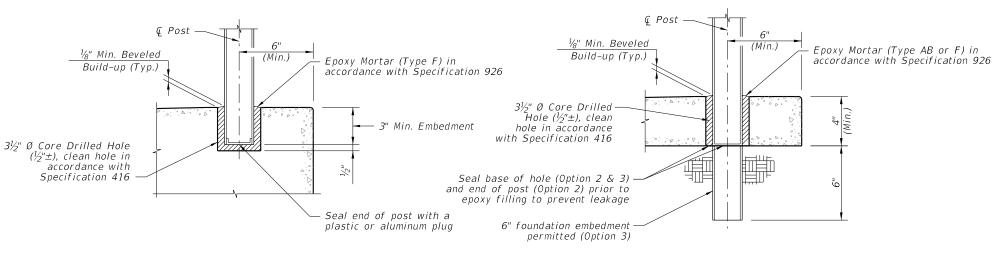
TYPICAL SECTION ON CONCRETE SIDEWALK

TYPICAL SECTION ON GRAVITY WALL (Other Retaining Walls Similar)

TYPICAL SECTION ON STEPS & STAIRS



DETAIL "F" (OPTIONAL SHIMMING DETAIL FOR CROSS SLOPE CORRECTION) (Used in lieu of Beveled Shim Plates)



SIDEWALK ANCHORAGE DETAIL OPTION 1

SIDEWALK ANCHORAGE DETAIL OPTION 2 & 3

NOTES: ** $2 \sim \frac{3}{4}$ " Ø x 8" or $4 \sim \frac{7}{16}$ " Ø x 6" Steel Anchors: Galvanized Steel Bolts (As Shown) (C-I-P); Galvanized U-Bolts and Collaboration of the Galvanized Adhesive Anchors Permitted

*** The minimum embedment for Adhesive Anchors is 6" for 2~Bolt Anchorage or 4" for 4~Bolt Anchorage.

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2. <u>Materials:</u>

- A. Pan Head Set Screws: Stainless Steel (SS) Type 316 or 18-8 Alloy.
- B. Base Plates and Cap Plates: ASTM A36 or ASTM A709 Grade 36
- C. Pipe Rails and Posts: ASTM A53 Grade B for standard weight pipe and ASTM A500 Grade B, C or D or ASTM A501 for Structural Tube.

Handrail Support Bars: ASTM A36

RAILING MEMBER DIMENSIONS TABLE				
MEMBER	DESIGNATION	OUTSIDE WALL DIMENSION THICKNESS		
Posts	2" NPS (Sch. 40)	2.375"	0.154"	
Rails	2" NPS (Sch. 40)	2.375"	0.154"	
Rail Joint/Splice Sleeves	1½" NPS (Sch. 40)	1.900"	0.145"	
Handrails Joint/Splice Sleeves	1" NPS (Sch. 40) HSS1.500x0.125	1.315" 1.500"	0.133" 0.125"	
Handrails	1½" NPS (Sch. 40)	1.900"	0.145"	
Handrail Support Bar	1" Ø Round Bar	1.000"	N/A	

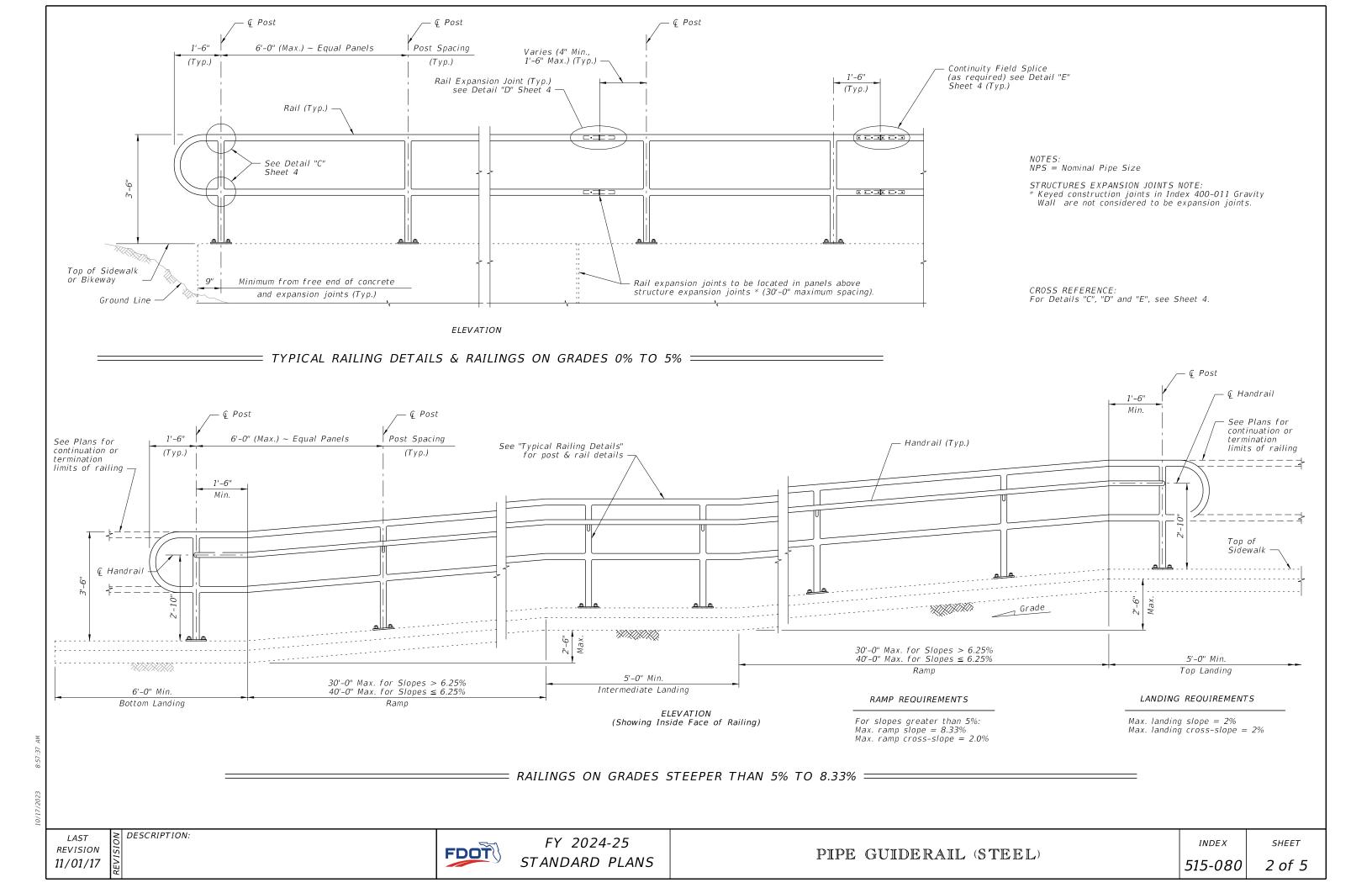
D. Galvanized Steel Fasteners:

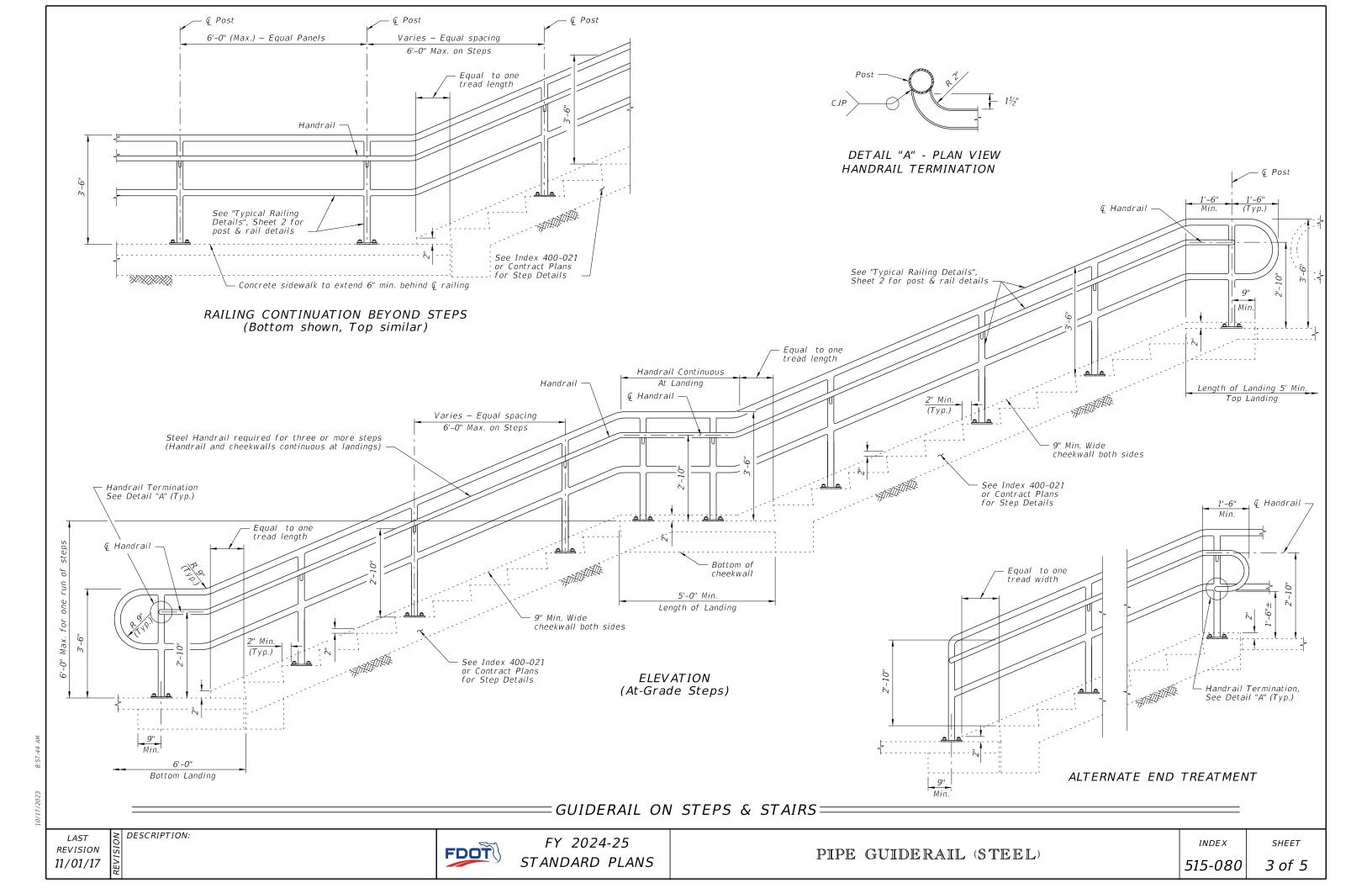
- a. Hex Head Bolts: ASTM A307 Type 1 or ASTM F1554 Grade 36
- b. Adhesive Anchors: ASTM F1554 Grade 36 fully threaded rods
- c. Hex Nuts: ASTM A563
- d. Flat Washers: ASTM F436
- E. Aluminum Shims: ASTM B209, Alloy 6061
- F. Bearing Pads: Plain, Fabric Reinforced, or Fabric Laminated meeting requirements of Specifications 515 and 932.

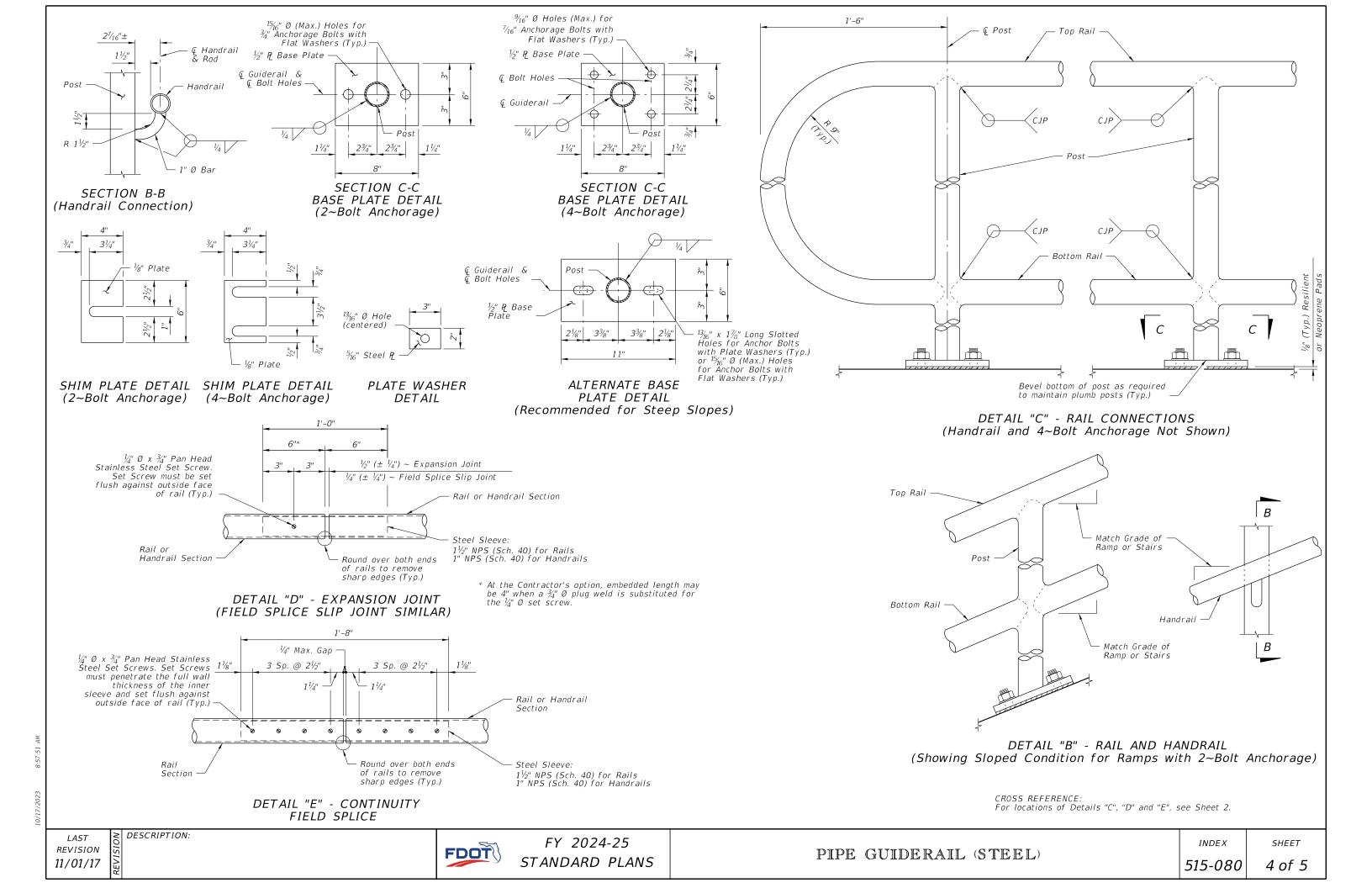
3. Fabrication:

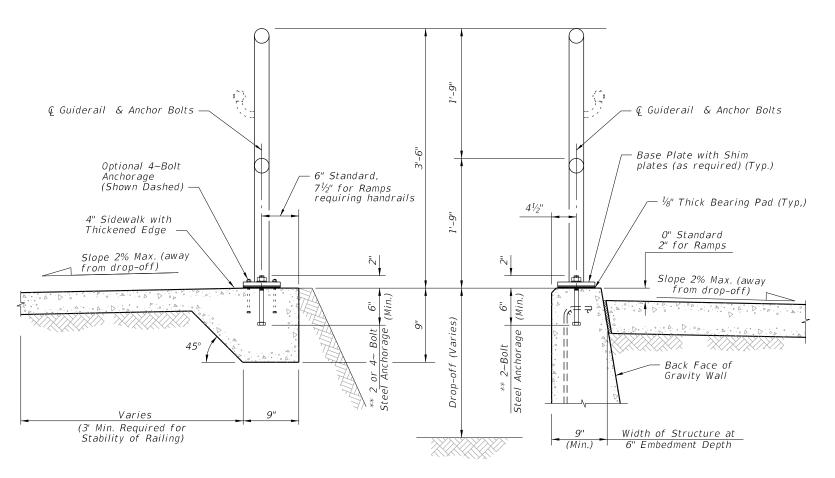
- A. Place expansion joints at a maximum of 30'-0"spacing.
- B. Field splices are similar to the expansion joint detail and may be approved by the Engineer to facilitate handling; but top rail must be continuous across a minimum of two posts.

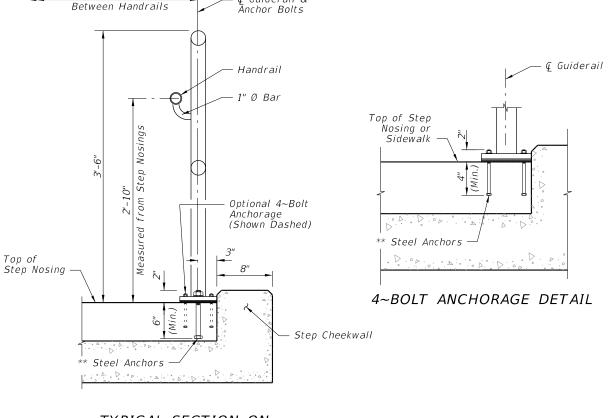
 C. Continuity field splice (Detail "E") only use to make the railing continuous for unforeseen field adjustments
- D. Corners and changes in tangential longitudinal alignment may be made continuous with a 9"bend radius or terminated at adjoining sections with a standard end hoop when handrails are not required.
- E. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius. F. For changes in tangential longitudinal alignment greater than 45° , positioned posts a maximum of 2'-0" each side of the corner, not at the corner apex.
- 4. Handrails are required and must be continuous at landings for:
- A. Grades Steeper than 5%,
- B. Three or more steps
- 5. Cutting of reinforcing steel is permitted for adhesive anchor bolt installations.











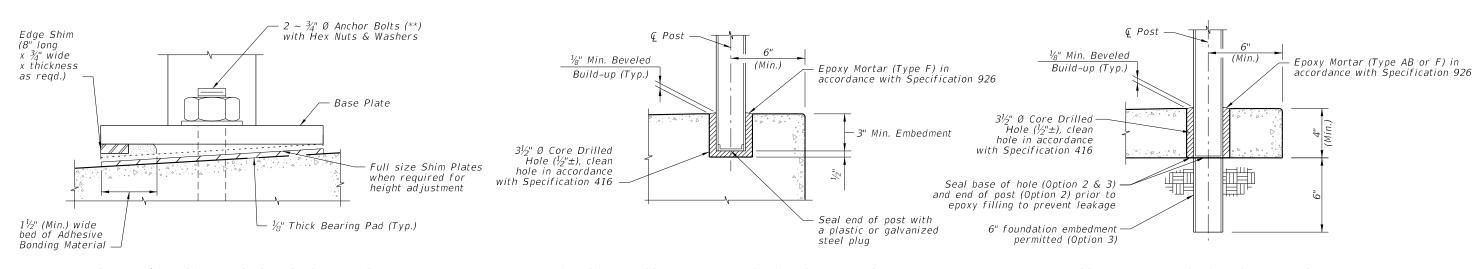
Guiderail &

TYPICAL SECTION ON CONCRETE SIDEWALK

TYPICAL SECTION ON GRAVITY WALL (Other Retaining Walls Similar)

TYPICAL SECTION ON STEPS & STAIRS

5'-0" Std. ~ 3'-0" Min. Clear_



DETAIL "F" (OPTIONAL SHIMMING DETAIL FOR CROSS SLOPE CORRECTION) (Used in lieu of Beveled Shim Plates)

OPTIONAL SIDEWALK ANCHORAGE DETAIL

SIDEWALK ANCHORAGE DETAIL OPTION 2 & 3

 2 $\sim 34''$ Ø x 8" or 4 $\sim 7_{16}''$ Ø x 6" Steel Anchors: Galvanized Steel Bolts (As Shown) (C-I-P); Galvanized U-Bolts Permitted (C-I-P); Galvanized Adhesive Anchors Permitted (*); Expansion Anchors Not Permitted.

*** The minimum embedment for adhesive anchors is 6" for 2~Bolt Anchorage or 4" for 4~Bolt Anchorage.

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DESCRIPTION:

FDOT

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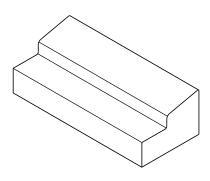
SHEET 5 of 5

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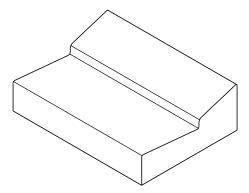
GENERAL NOTES:

- 1. For curb, gutter and curb & gutter provide $\frac{1}{8}$ " $\frac{1}{4}$ " contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers.
- 2. Locate expansion joints for curb, gutter and curb & gutter in accordance with Specification 520.

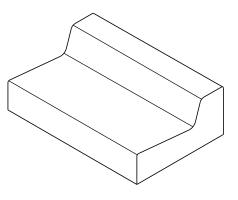
TABLE OF CONTENTS:				
Sheet	Description			
1	General Notes and Contents			
2	Concrete Curb and Gutter			
3	Curb and Gutter Joints and Endings, Concrete Bumper Guard, and Asphaltic Concrete Curb			



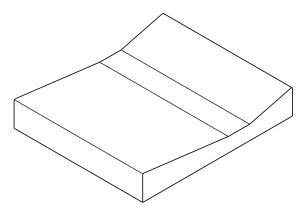




TYPE E

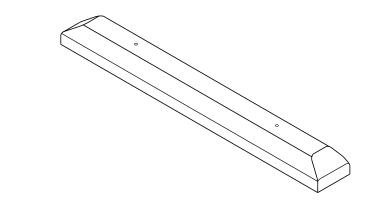


TYPEF



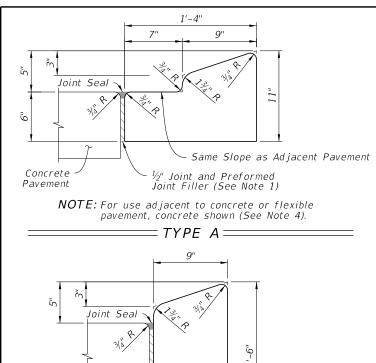
SHOULDER GUTTER

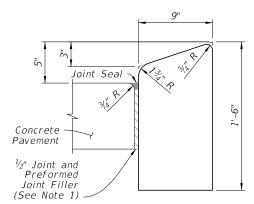
TYPE A, TYPE E, TYPE F, AND SHOULDER GUTTER (Other Types Similar)



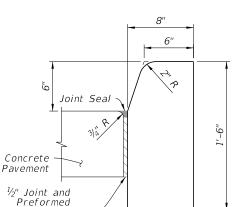
= CONCRETE BUMPER GUARD ===

DESCRIPTION:





NOTE: For use adjacent to concrete or flexible pavement, concrete shown. TYPE B



NOTE: For use adjacent to concrete or flexible pavement, concrete shown.

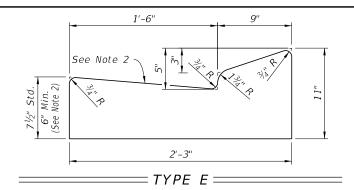
= TYPE D=

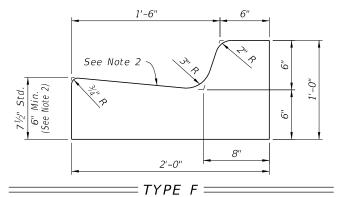
NOTES:

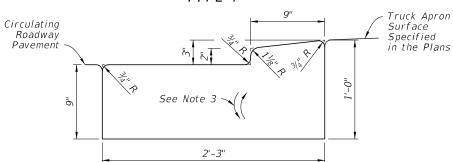
Joint Filler (See Note 1)

- 1. For Type A, Type B, and Type D Curb: Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see Sheet 3.
- 2. For Type E, Type F, Drop Curb, and Valley Gutter: When used on high side of roadways, match the cross slope of the gutter to the cross slope of the adjacent pavement. The thickness of the lip is 6", unless otherwise shown on Plans.
- 3. For Type RA, rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.
- 4. For details depicting usage of Type A Curb adjacent to flexible pavement see Sheet 3.

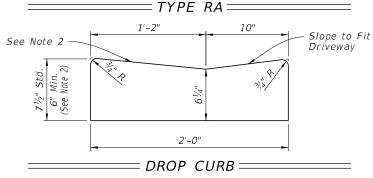
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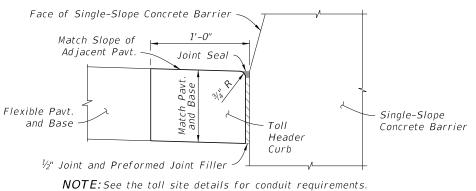


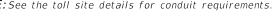


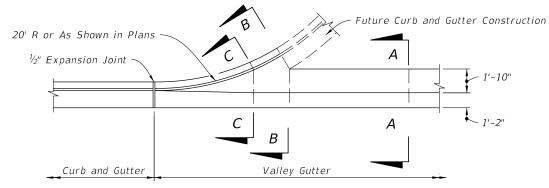


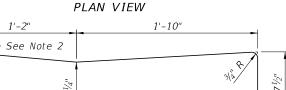
NOTE: Traffic Bearing Sections for use in Roundabout Central Island Construction.

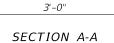


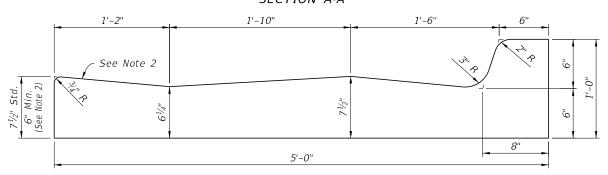




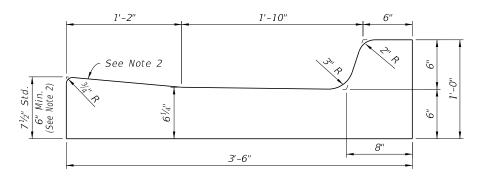




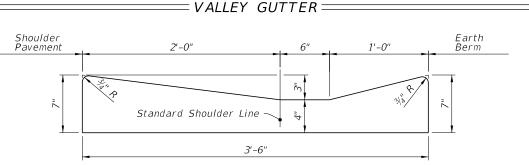




SECTION B-B



SECTION C-C



SHOULDER GUTTER ==

CONCRETE CURB AND GUTTER

REVISION 11/01/21

FDOT

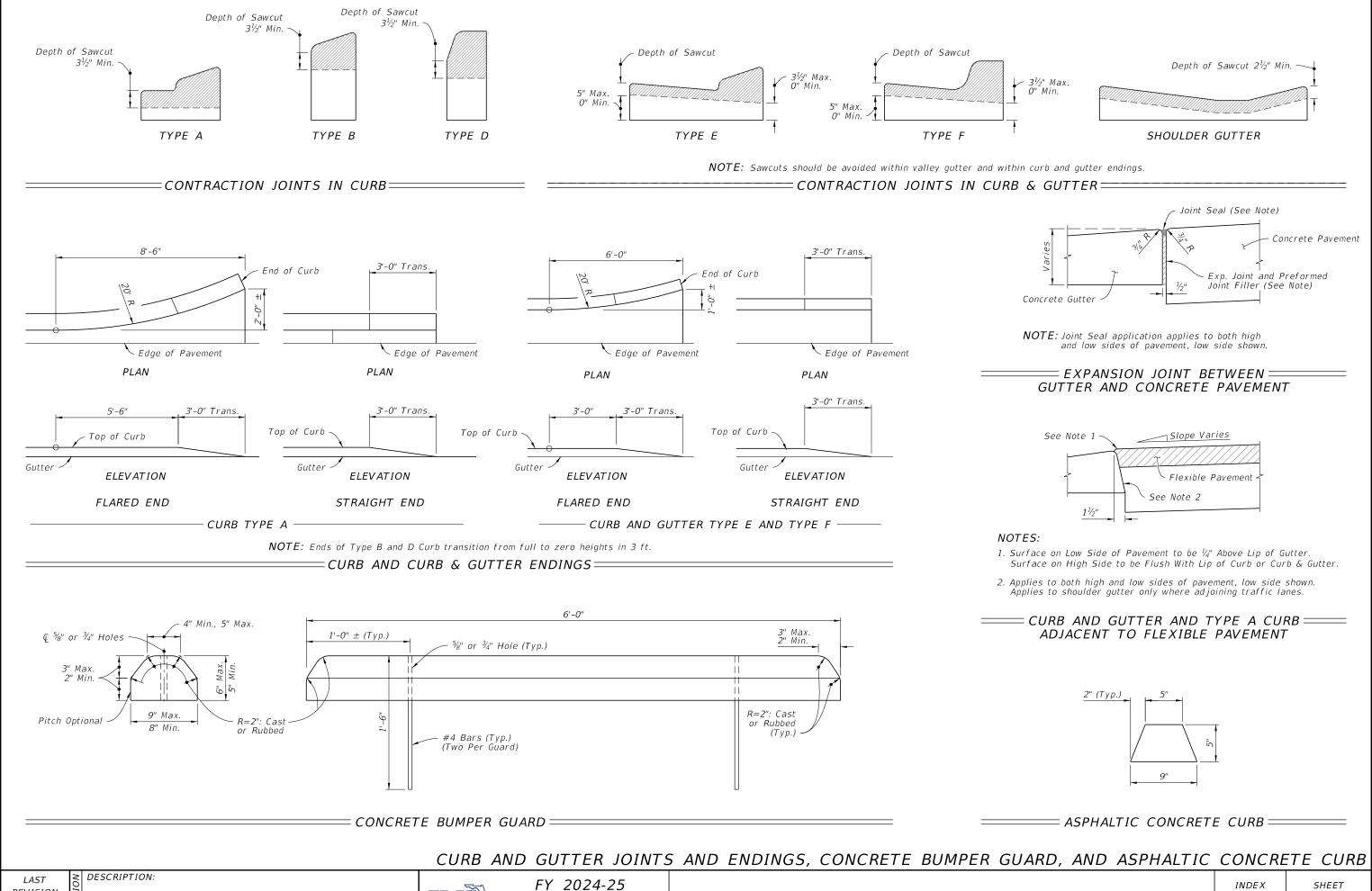
FY 2024-25 STANDARD PLANS

= TOLL HEADER CURB =

CURB AND GUTTER

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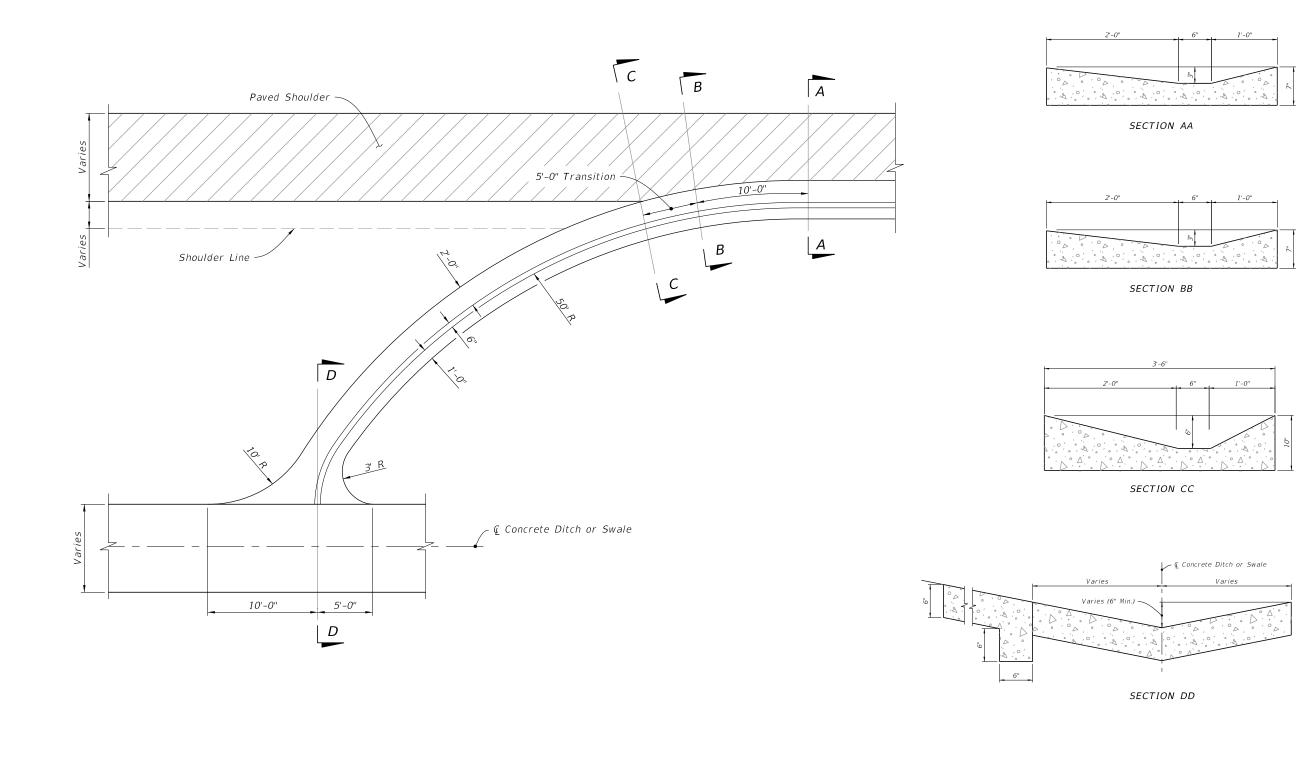
REVISION 11/01/21

FDOT

STANDARD PLANS

CURB AND GUTTER

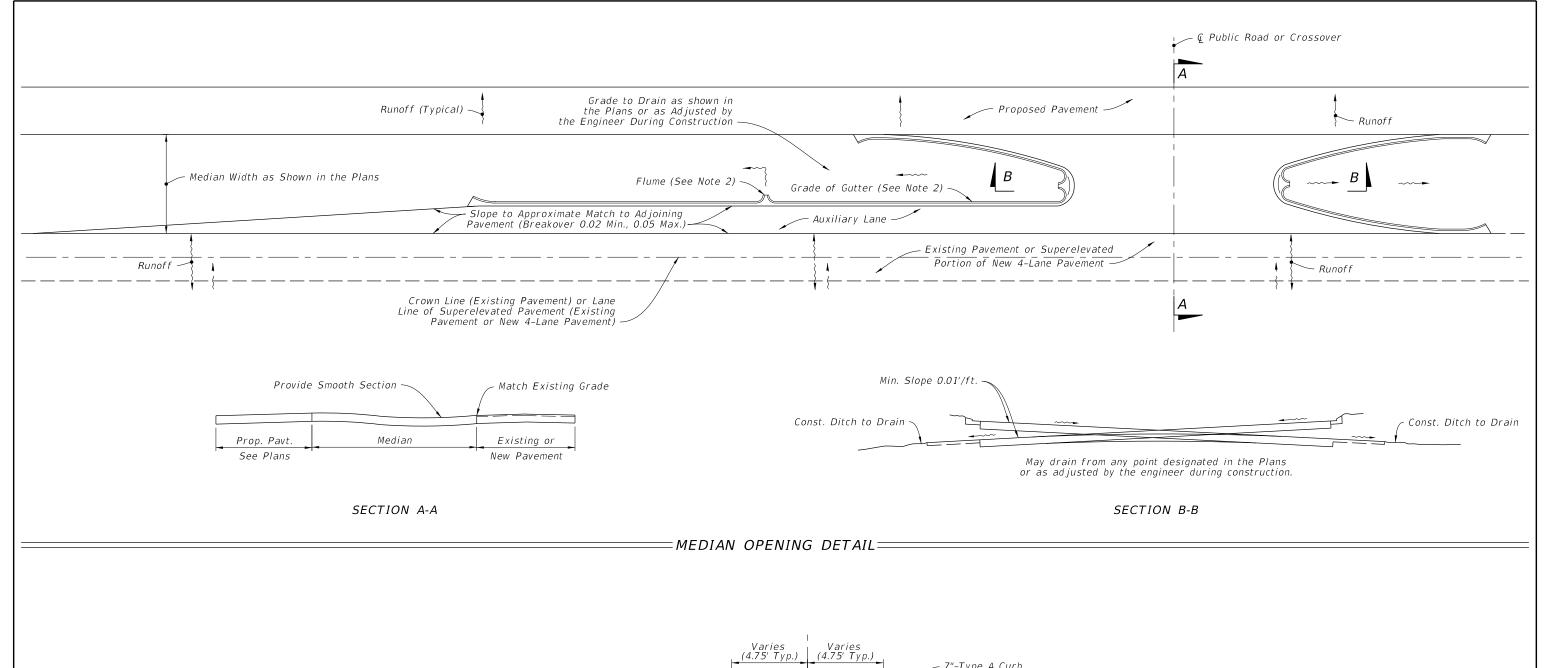
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= CONCRETE SPILLWAY AT END OF SHOULDER GUTTER DETAILS ==

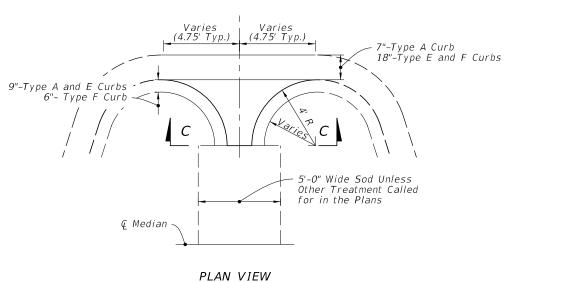
≥ DESCRIPTION: LAST REVISION 11/01/21

FDOT



DESCRIPTION:

- 1. These details are to apply to projects which provide for the conversion of 2-lane sections to 4-lane divided highway sections and for superelevated sections of new 4-lane divided highways. Layout above is illustration only.
- 2. See Plans for flume length and location and grade of gutter. Flume locations may be adjusted by the Engineer during construction. If necessary to provide minimum gutter grade, warp surface of the median pavement within limits of the median curb or curb and gutter.



SECTION CC

=FLUME DETAIL=

REVISION 11/01/21

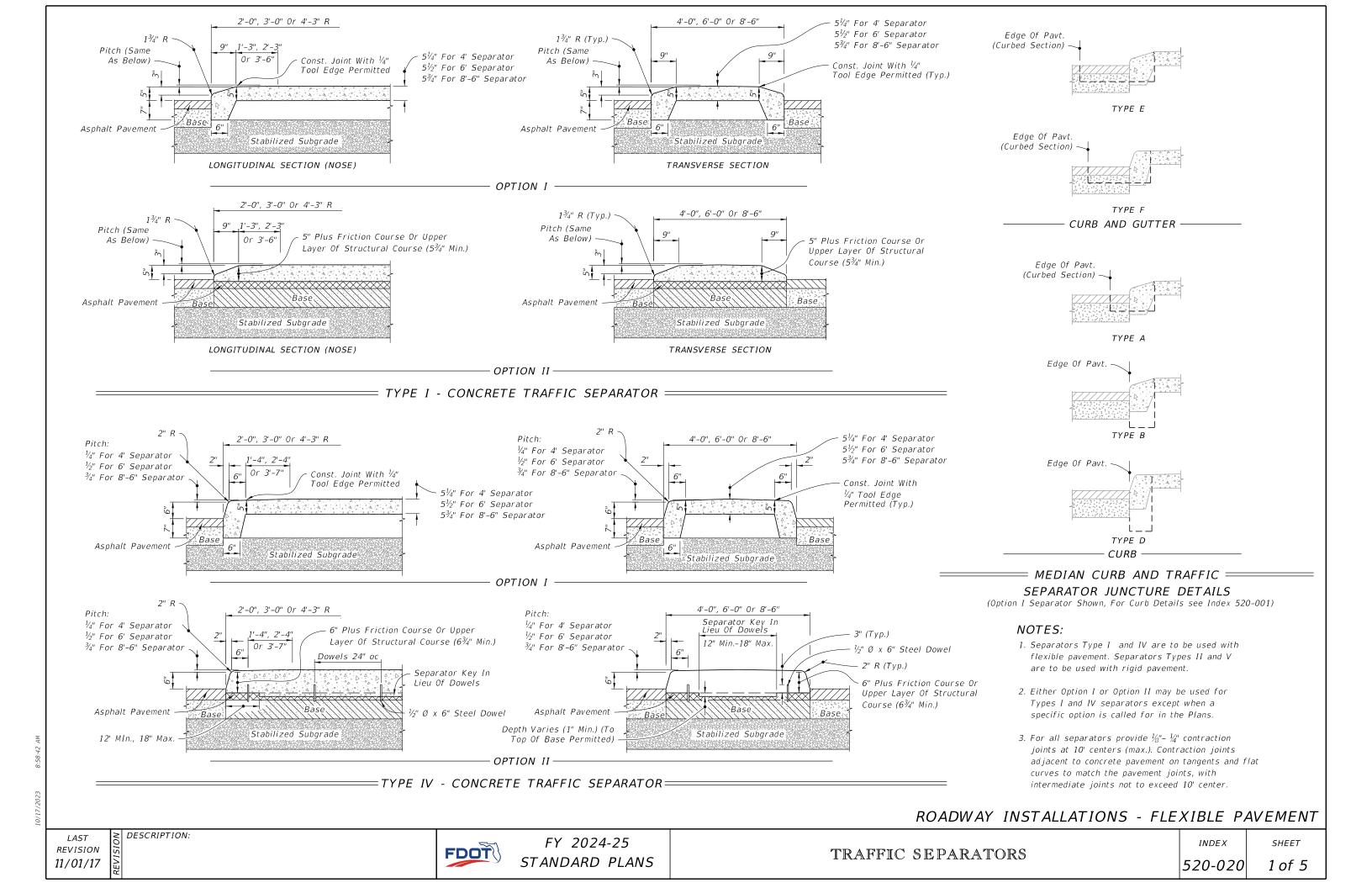
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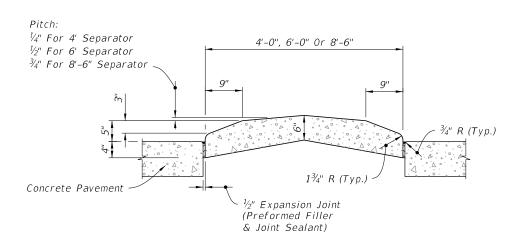
FY 2024-25 STANDARD PLANS

MEDIAN OPENING FLUME

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SHEET 1 of 1

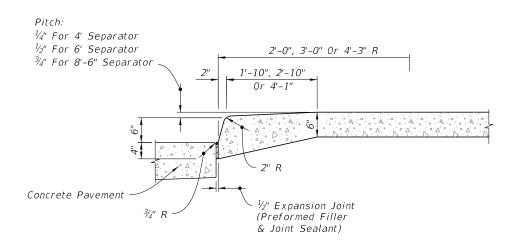


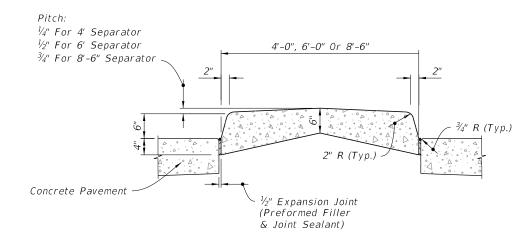


LONGITUDINAL SECTION (NOSE)

TRANSVERSE SECTION

= TYPE II - CONCRETE TRAFFIC SEPARATOR =





LONGITUDINAL SECTION (NOSE)

TRANSVERSE SECTION

TYPE V - CONCRETE TRAFFIC SEPARATOR:

ROADWAY INSTALLATIONS - RIGID PAVEMENT

REVISION 11/01/17

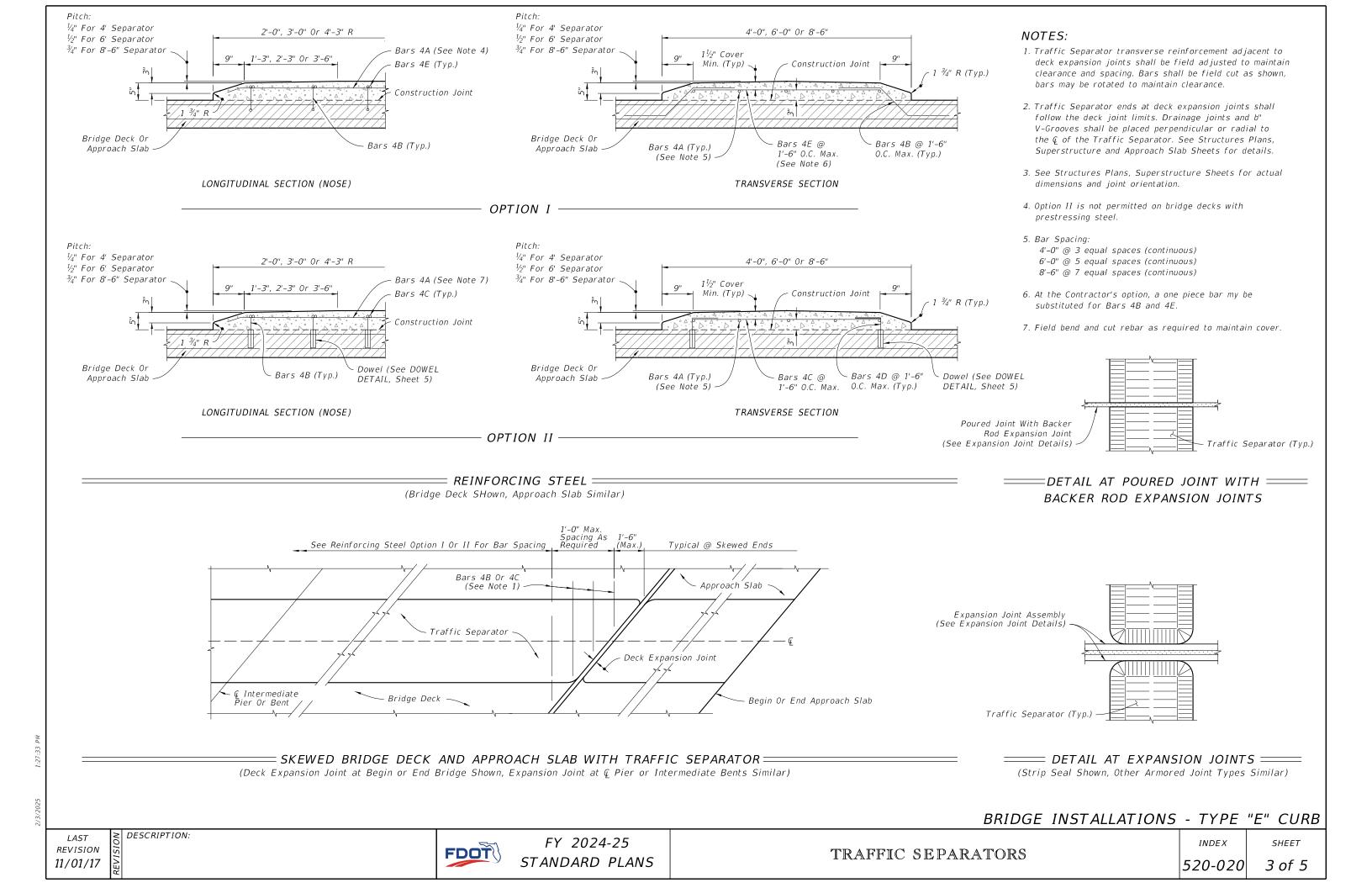
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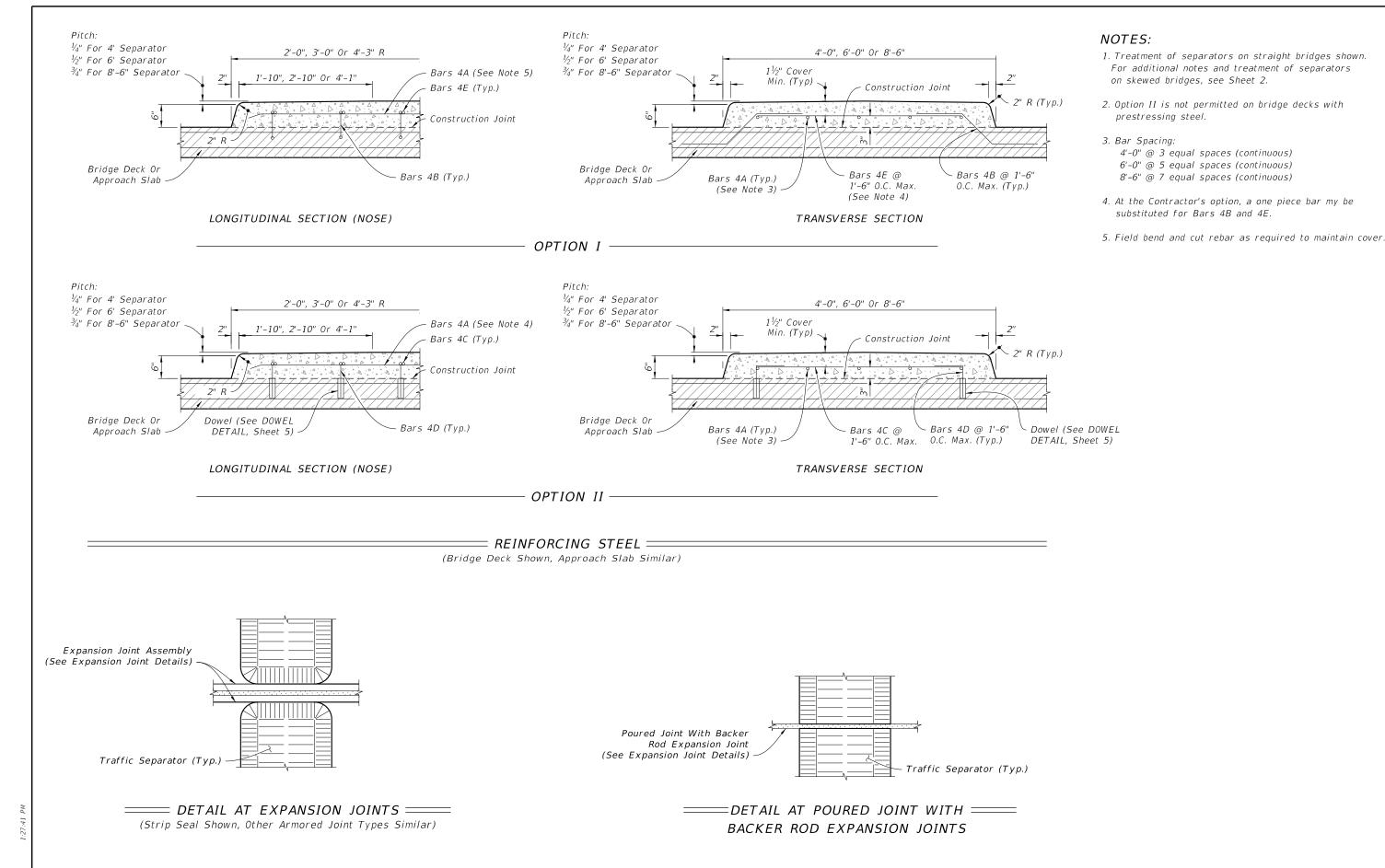
FY 2024-25 STANDARD PLANS

TRAFFIC SEPARATORS

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BRIDGE INSTALLATIONS - TYPE "F" CURB

11/01/17

DESCRIPTION:

FDOT

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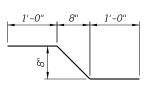
TRAFFIC SEPARATORS

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REVISION

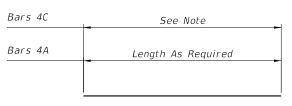


Bars 4A & 4E

Bar 4B

Length of Bars 4E is 2'-5" for 4'-0" Separator. Length of Bars 4E is 4'-5" for 6'-0" Separator. Length of Bars 4E is 6'-11" for 8'-6" Separator.

— OPTION I —





Bars 4A & 4C

Bar 4D

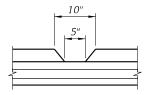
Length of Bars 4C is $2'-4\frac{1}{2}''$ for 4'-0'' Separator. Length of Bars 4C is $4'-4\frac{1}{2}''$ for 6'-0'' Separator. Length of Bars 4C is $6'-10\frac{1}{2}$ " for 8'-6" Separator.

— OPTION II —

REINFORCING STEEL NOTES:

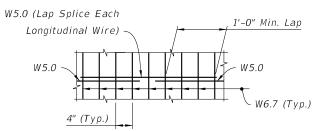
- 1. All dimensions are out to out.
- 2. The 8" vertical dimension shown for Bars 4B and 4D are based on a slab $8\frac{1}{2}$ " thick or greater without a wearing surface. If slab thickness is less than 81/3", decrease this dimension by an amount equal to the difference in thickness. If a wearing surface is to be provided, increase this dimension by an amount equal to the wearing surface thickness.

= CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS =====



See Structures Plans, Superstructure Sheets for location(s) of drainage joints. Locations for drainage joints shall be limited to the constant width section of separator.

> DRAINAGE JOINT DETAIL = (For 5" Opening Or Less)



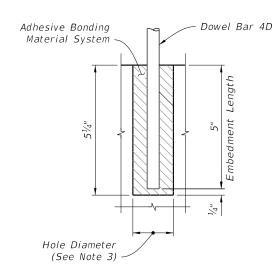
SPLICE DETAIL (Between WWR 3 x 4 - W5.0 x W6.7 Sections)

OPTION A: Use Welded Wire Reinforcement 3 x 4 - W5.0 x W6.7 as required by plans in place of Bars 4A, 4B and 4E. Bend the Welded Wire Reinforcement to the dimensions of Bar 4B shown in the Bending Diagram for Reinforcing Steel Option I.

OPTION B: Use Welded Wire Reinforcement 3 x 4 - W5.0 x W6.7 as required by plans in place of Bars 4A and 4C shown in Reinforcing Steel Option II.

NOTE: Welded Wire Reinforcement to consist of smooth wire meeting the requirements of Specification 931.

==== ALTERNATE REINFORCING STEEL DETAILS===== (Welded Wire Reinforcement)



DOWEL NOTES:

- 1. Shift Dowel Holes to clear if existing reinforcement is encountered.
- 2. Provide and install an adhesive bonding material system in accordance with Specifications 416 and 937.
- 3. The dowel hole diameter is to meet adhesive bonding material system manufacturer's requirements.

=DOWEL DETAIL===

ESTIMATED TRAFFIC SEPARATOR QUANTITIES:

CONSTANT WIDTH OF SEPARATOR:

	<u> TYPE "E"</u>		<u>TYPE "F"</u>
4'-0''	Width = 0.056 CY per Ft.	-	0.072 CY per Ft
6'-0"	Width = 0.089 CY per Ft.	-	0.112 CY per Ft
8'-6"	$Width = 0.132 \ CY \ per \ Ft.$	_	0.164 CY per Ft

NOSE:

	TYPE "E"		<u> TYPE "F"</u>
4'-0"	Width = 0.080 CY	-	0.109 CY
6'-0"	Width = 0.193 CY	-	0.257 CY
8'-6"	Width = 0.403 CY	-	0.536 CY

REINFORCING STEEL:

(All quantities are based on an $8\frac{1}{2}$ " slab.)

OPTION I:

4'-0" Width - 6.37 Lbs. per Ft. 6'-0" Width - 8.60 Lbs. per Ft. 8'-6" Width - 11.05 Lbs. per Ft.

OPTION II:

4'-0" Width - 4.77 Lbs. per Ft. 6'-0" Width - 7.00 Lbs. per Ft. 8'-6" Width - 9.45 Lbs. per Ft.

BRIDGE INSTALLATIONS - TYPE "E" AND "F" CURB

REVISION 11/01/17

DESCRIPTION:



GENERAL NOTES:

DESCRIPTION:

SHEET

1

2

CONTENTS

Median Barrier

Index Contents: General Notes

- 1. BARRIER CONCRETE: Use Class II concrete for all barriers constructed in slightly aggressive environments, and use Class IV Concrete for all barriers constructed in moderately or extremely aggressive environments. On all exposed surfaces, apply a General Surface Finish in accordance with Specification 400.
- 2. STEEL BAR REINFORCEMENT: Where required to maintain continuity, provide lap splices of at least 18 inches for No. 4 bars and 20 inches for No. 5 bars, unless otherwise shown herein (including shorter splices as provided by the default bar bending diagrams).

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

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

GENERAL NOTES (CONTINUED):

- 4. TOP FACE LONGITUDINAL REINFORCEMENT: Unless otherwise specified, the longitudinal reinforcement shown closest to the top face of the barrier has a maximum cover of $4\frac{1}{2}$ ", measured from the top face of the barrier.
- 5. MINIMUM BARRIER LENGTH: Unless otherwise shown in the Plans, the minimum Concrete Barrier length is 40 feet.
- 6. CONSTRUCTION JOINTS: Install Construction Joints only as needed for discontinuous concrete casting or cold joints. Maintain continuity of steel reinforcement across Construction Joints. Construction Joints are classified herein as Transverse Joints or Longitudinal Joints.

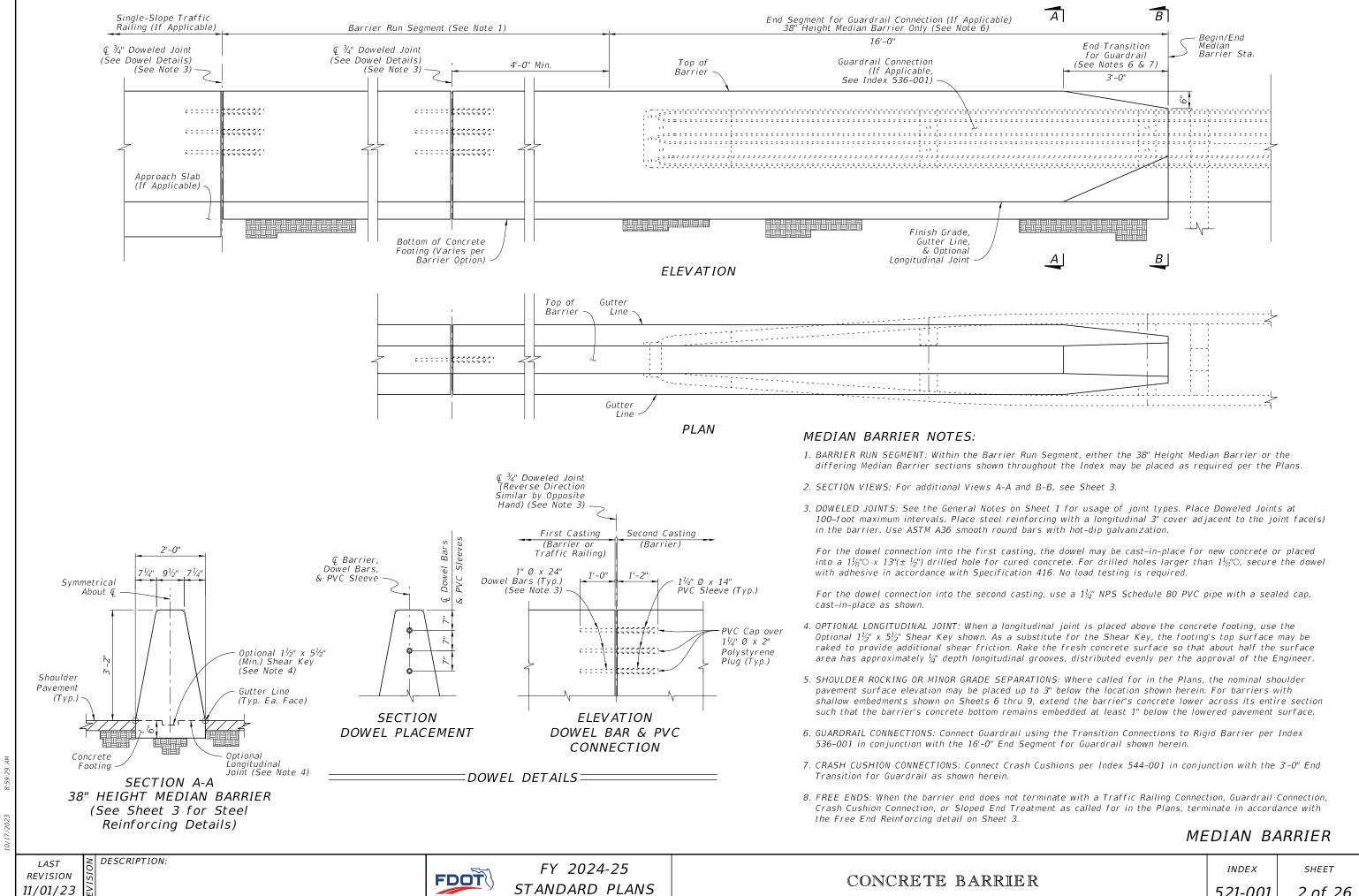
Transverse Joints are permitted at 20-foot or greater intervals along the barrier. For Tall Grade-Separated Sections, see Sheet 5 for additional Transverse Joint requirements.

Longitudinal Joints are only permitted where indicated in the following details and notes, with a vertical position tolerance of $\pm 1\frac{1}{2}$ " from the locations shown.

- 7. DOWELED JOINTS: As shown in the Dowel Details on Sheets 2 & 13, install ³/₄" Doweled Joints for Concrete Barrier connections to Wall Coping Barriers, Pier Protection Barriers, and Traffic Railings. Doweled Joints are also required for expansion mitigation in Median Barrier as defined per Sheets 2 & 5. Doweled Joints are not permitted within Grade–Separated Median Barrier.
- 8. CRACK CONTROL V-GROOVES: At 20-foot intervals, place $\frac{3}{8}$ " depth V-grooves that run vertically and/or transversely in the front, top, and back faces of barriers. The V-grooves can be either molded or scored while the concrete is still plastic.
- 9. SUBGRADE: Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).
- 10. FOOTING BOTTOM CONCRETE COVER: At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.
- 11. FINISH GRADE ELEVATION: At the barrier face location, the finish grade pavement has a vertical position tolerance of $\pm \frac{1}{2}$ " from the nominal locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.
- 12. DRAINAGE INLETS: Where called for in the Plans, install corresponding inlets per Indexes 425-030 thru 425-032.
- 13. LIGHT POLE MOUNTING: Where called for in the Plans, install aluminum light poles per Index 715-002.
- 14. OPAQUE VISUAL BARRIER: Where called for in the Plans, install Opaque Visual Barrier per Index 521-010.
- 15. BARRIER END MARKERS: For all free ends of concrete barriers that are not shielded with an end treatment or connection to another barrier or traffic railing type, install a Type 3 Object Marker on the end face per Specification 705.
- 16. BARRIER DELINEATORS: Install Barrier Delineators in accordance with Specification 705. For median barriers, mount the delineator on the top of the barrier, at the centerline of barrier, with reflective sheeting facing traffic on both approaches. For shoulder barriers and split sections, mount the delineators on the top of the barrier, with the roadway side of the delineator located 2" from the front face of the barrier and the reflective sheeting facing traffic of the nearest approach.
- 17. TOLL SITES: Where called for in the Plans, substitute the steel reinforcing bars shown herein with GFRP reinforcing bars of the same size. Construct GFRP reinforcing bars in accordance with Specification 932, and use a maximum 4½" inner diameter for bar bends. Alternative bar bending details and shapes may be used so long as the final location of the reinforcing is unchanged and the bars are either continuous or fully spliced at the side and bottom barrier locations. Where required to fit pull boxes while maintaining bar spacing and concrete cover, trim GFRP bars as defined in the Plans.

At toll site locations, the use of Median Barriers on outside shoulders is permitted where called for in the Plans. Shoulder Pavement shown herein may be substituted with material for an alternate usage where defined in the Plans.

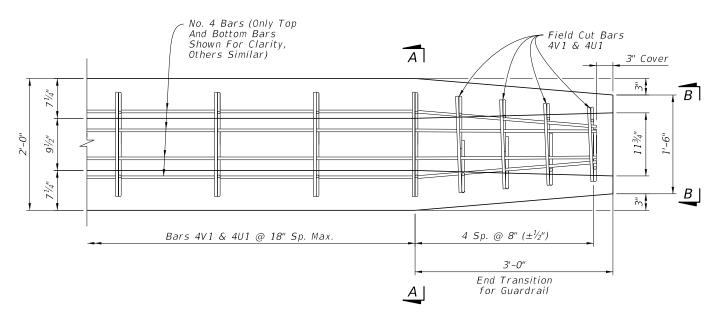
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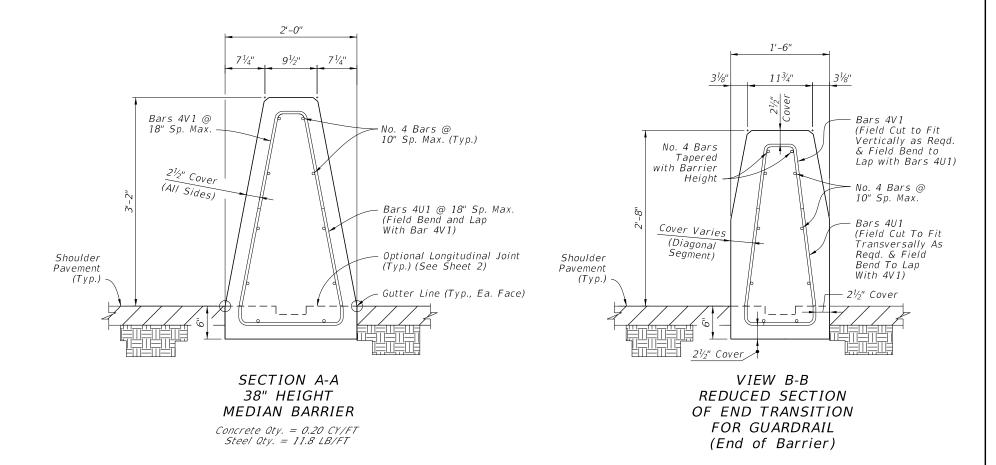
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PLAN VIEW - 38" HEIGHT MEDIAN BARRIER FREE END REINFORCING (See Note 3)



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

- 1. GENERAL: Work with the Plan and Elevation Views on Sheet 2.
- 2. BAR BENDING DIAGRAMS: For additional information on Bars 4V1 and 4U1, see the details on Sheet 26.
- 3. PLAN VIEWS: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal steel locations, see the section views.

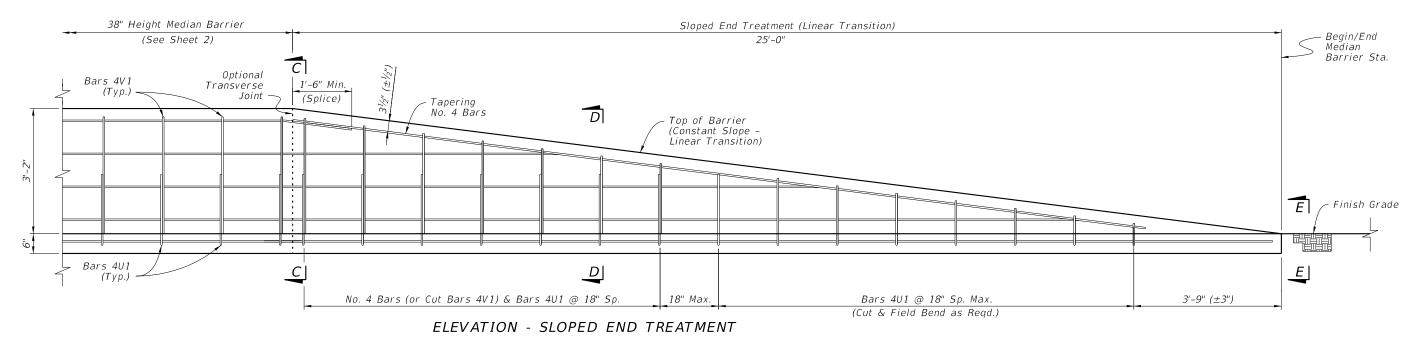


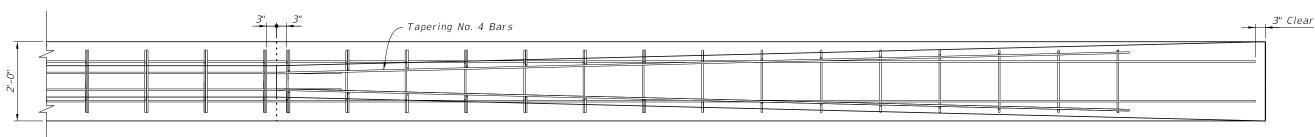
MEDIAN BARRIER - REINFORCING DETAILS

REVISION 11/01/20

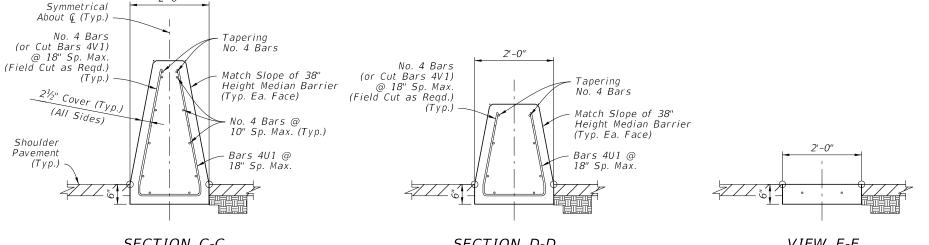
DESCRIPTION:

FDOT





PLAN - SLOPED END TREATMENT (Only Top & Bottom Longitudinal Bars Shown for Clarity, See Section Views for All Longitudinal Steel Locations)



SECTION C-C **BEGIN TRANSITION** REINFORCING (Height Varies Linearly per Elevation View)

SECTION D-D INTERMEDIATE TRANSITION REINFORCING (Height Varies Linearly per Elevation View)

NOTES:

- 1. GENERAL: Install Sloped End Treatment only where called for in the plans.
- 2. JOINTS: Construction or Doweled Joints are not permitted within the Sloped End Treatment segment.

VIEW E-E **END TRANSITION**

MEDIAN BARRIER - SLOPED END TREATMENT

REVISION 11/01/18

DESCRIPTION:

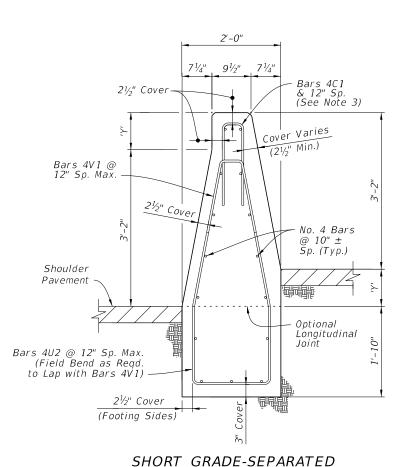
FDOT

FY 2024-25 STANDARD PLANS

CONCRETE BARRIER

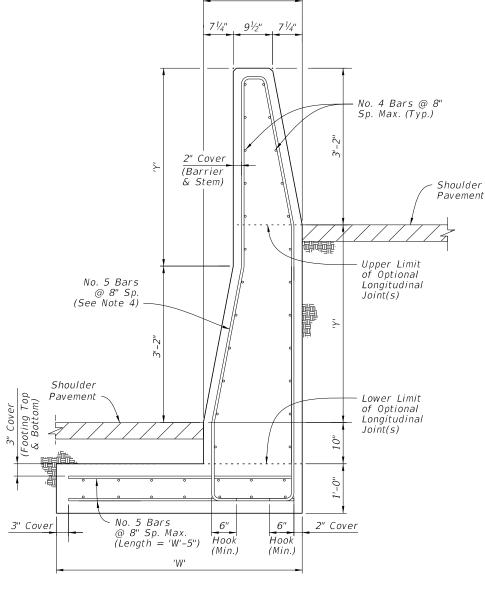
INDEX

SHEET



2'-0" 71/4". $9^{1}/_{2}''$ No. 4 Bars @ 8" Sp. Max. (Typ.) 2" Cover (Barrier & Stem) Shoulder Pavement of Optional No. 5 Bars Longʻitudinal Joint(s) @ 8" Sp. (See Note 4) Shoulder Pavement Lower Limit of Optional Longitudina Joint(s) No. 5 Bars 2" Cover 3" Cover @ 8" Sp. Max. (Length = 'W'-5") Hook Hook (Min.) (Min.)

TALL GRADE-SEPARATED HEEL FOOTING SECTION $FOR Y \leq 4'-0''$



2'-0"

TALL GRADE-SEPARATED TOE FOOTING SECTION $FOR Y \leq 4'-0''$

NOTES:

1. GENERAL: Install the Grade-Separated sections where shown in the Plans and as required to accommodate vertical offsets in pavement of Height Y. Doweled Joints are not permitted within Grade-Separated sections.

SECTION FOR Y ≤ 9"

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

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

Transverse Joints between Tall Grade-Separated Sections do not require continuous steel across the joint if the following conditions are met:

- i. The barrier length on both sides is at least 40 feet, where each segment has continuous steel reinforcement.
- ii. The barrier's vertical steel spacing is reduced to 4" O.C. for a total of 12 spaces on both sides of the joint.

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

TALL GRADE-SEPARATED SECTIONS DIMENSION TABLE Max. Height, Y | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" Footing Width, W 3'-3" 3'-6" 3'-9" 4'-0" 4'-3" 4'-6" 4'-6"

MEDIAN BARRIER - GRADE-SEPARATED

REVISION 11/01/18

DESCRIPTION:

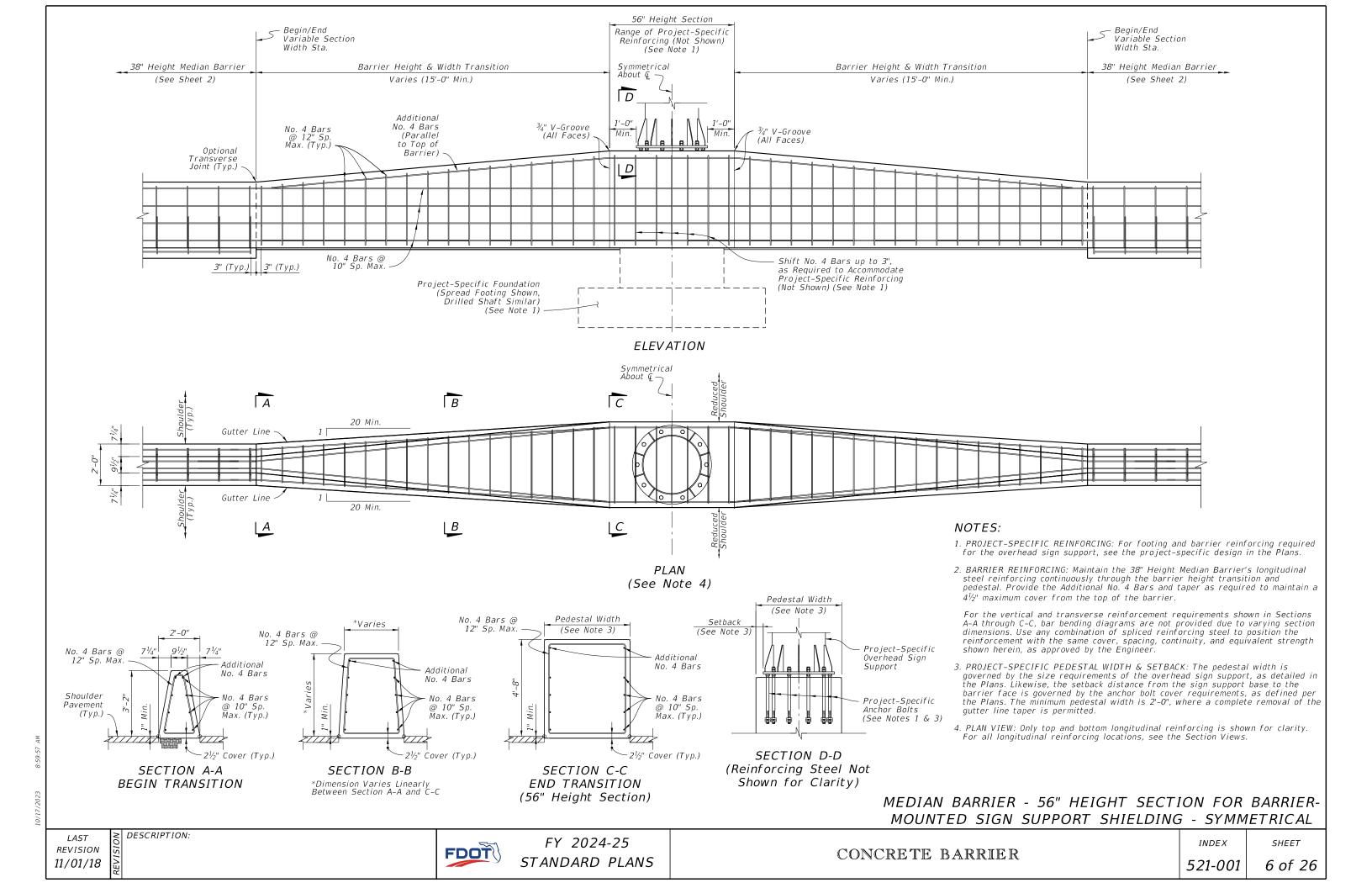
FDOT

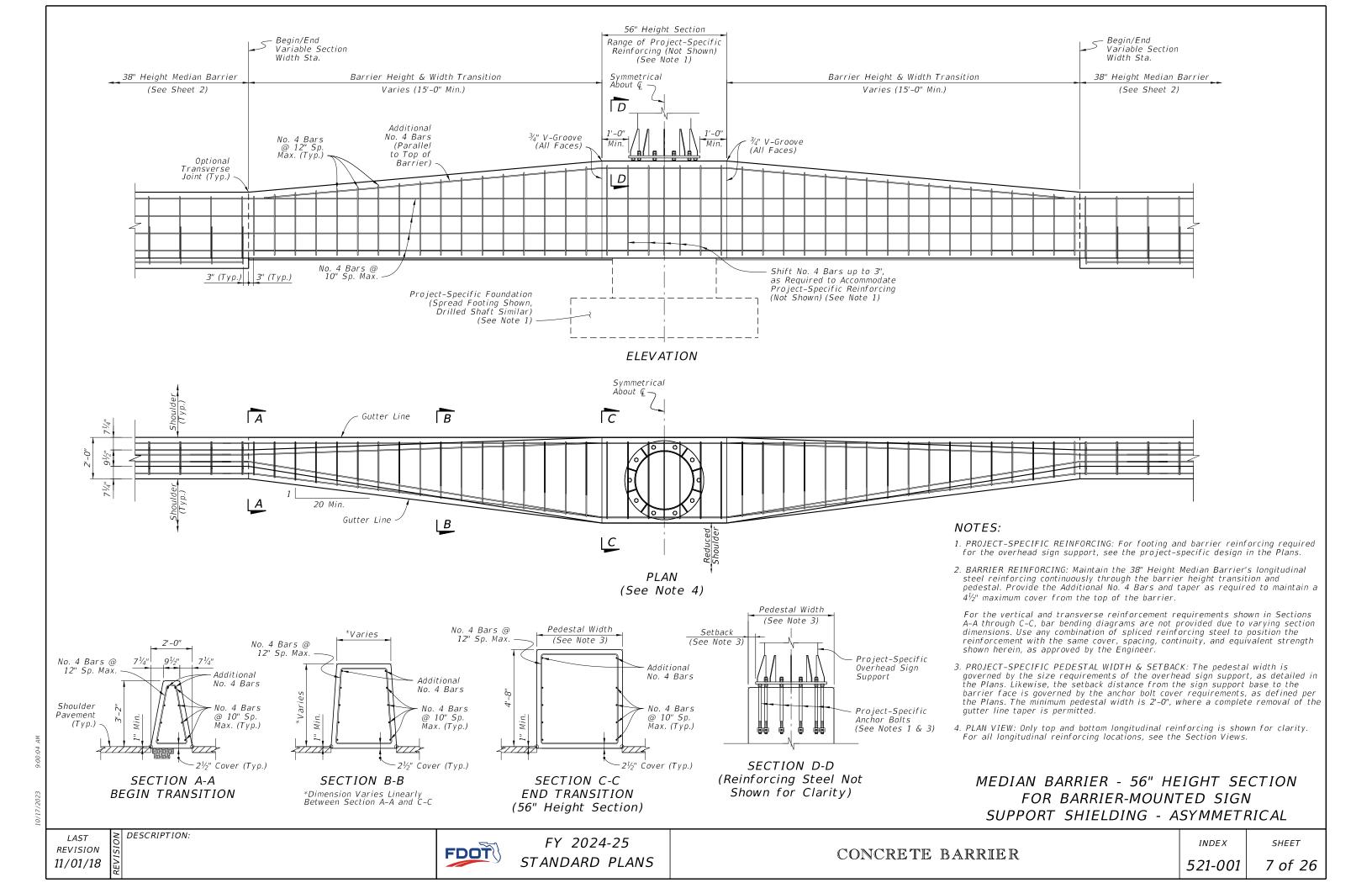
FY 2024-25 STANDARD PLANS

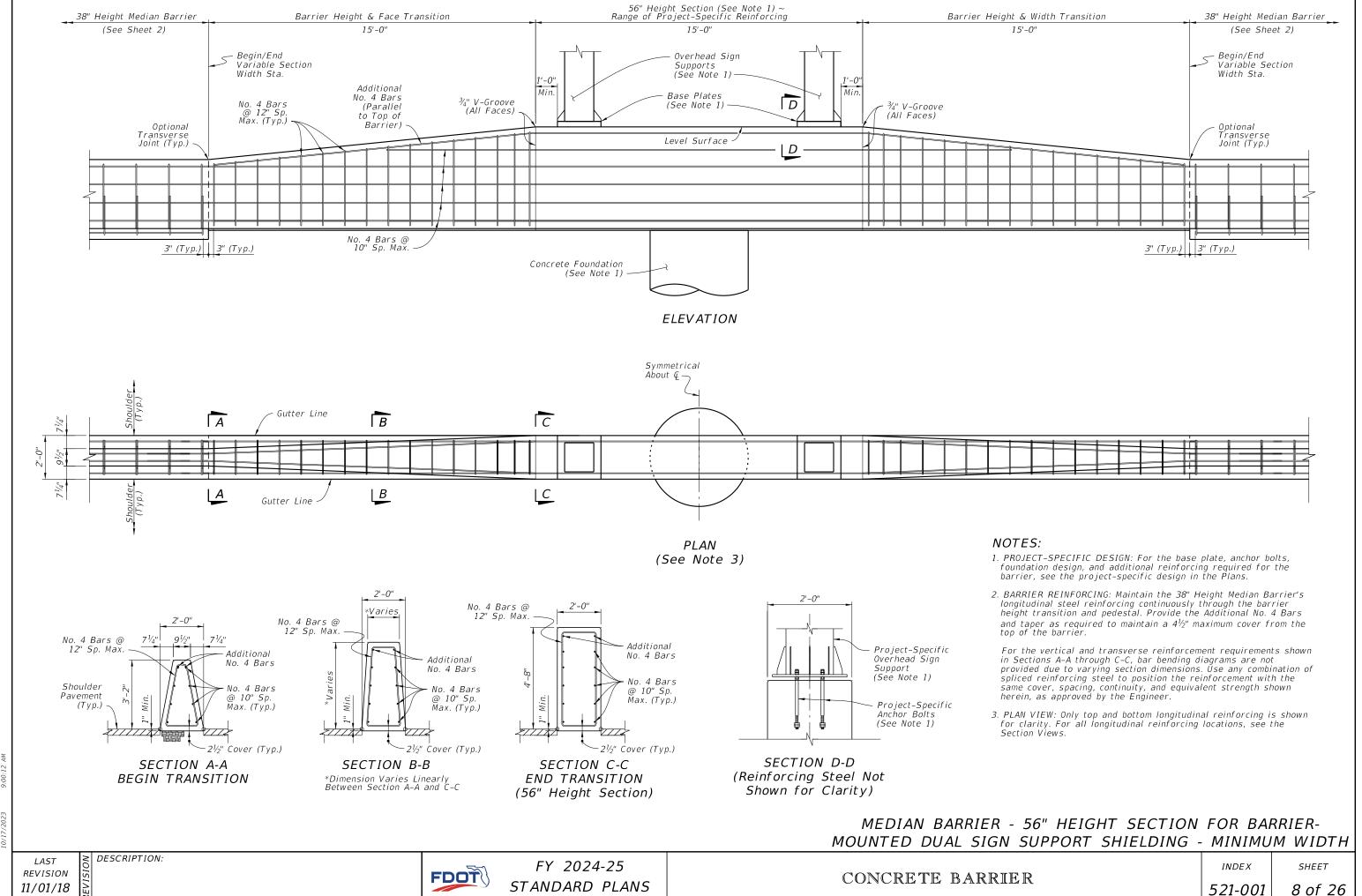
CONCRETE BARRIER

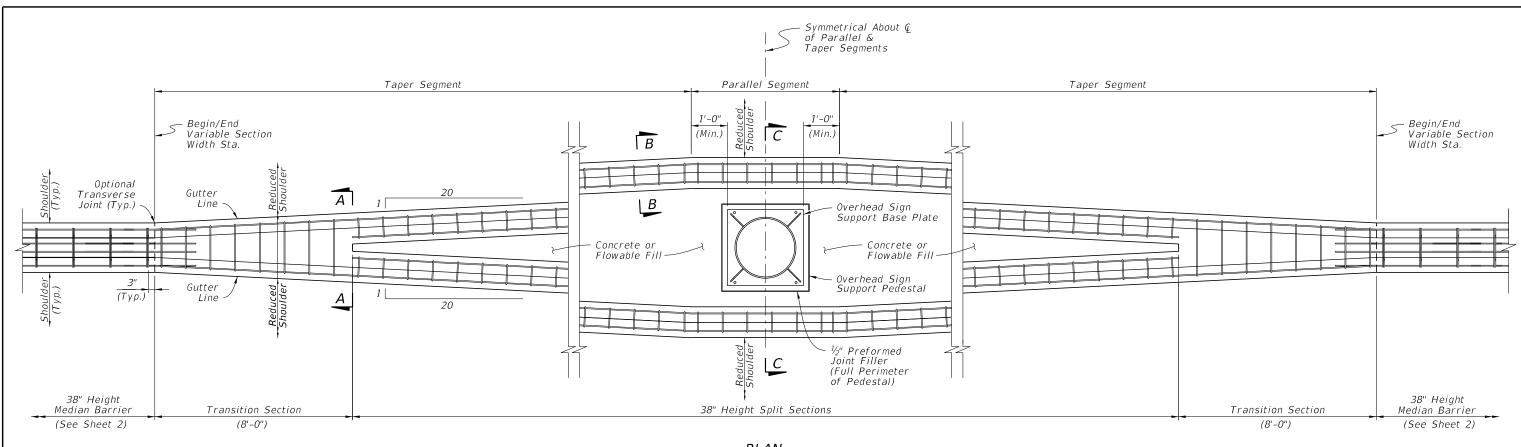
INDEX 521-001

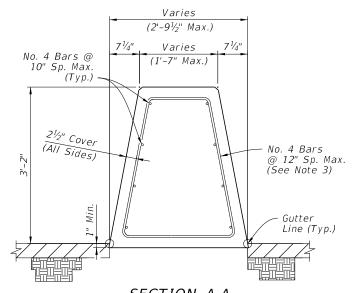
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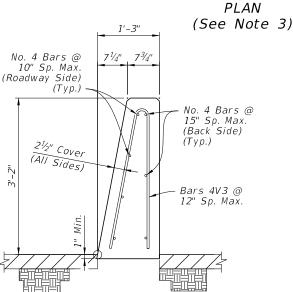






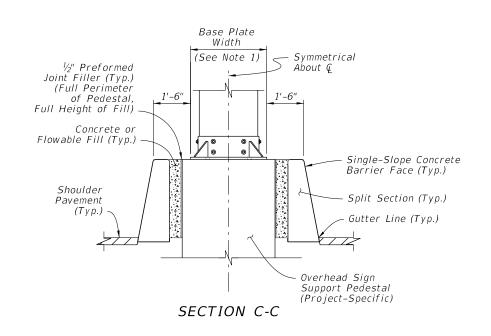


- 1. OVERHEAD SIGN SUPPORT: The overhead sign support shown is an example only; see the Plans for the project-specific dimensions and requirements. The overall length and width of the barrier's taper and parallel segments is governed by the overhead sign support dimensions as defined in the Plans.
- 2. MULTIPLE SIGN SUPPORTS: The parallel segment may be lengthened to accommodate multiple sign supports, with the approach and trailing tapers located 1 foot, measured longitudinally, upstream and downstream from the first and last sign support bases, respectively.
- 3. PLAN VIEW: Only outermost longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.



SECTION B-B 38" HEIGHT SPLIT SECTION (OPPOSITE SIDE SIMILAR BY OPPOSITE HAND)

- 4. STIRRUP BARS: For the vertical and transverse reinforcement requirements shown in Sections A-A, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.
- 5. CONCRETE OR FLOWABLE FILL: Use Class NS Concrete in accordance with Specification 347 or Non-Excavatable Flowable Fill in accordance with Specification



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

REVISION 11/01/18

FDOT

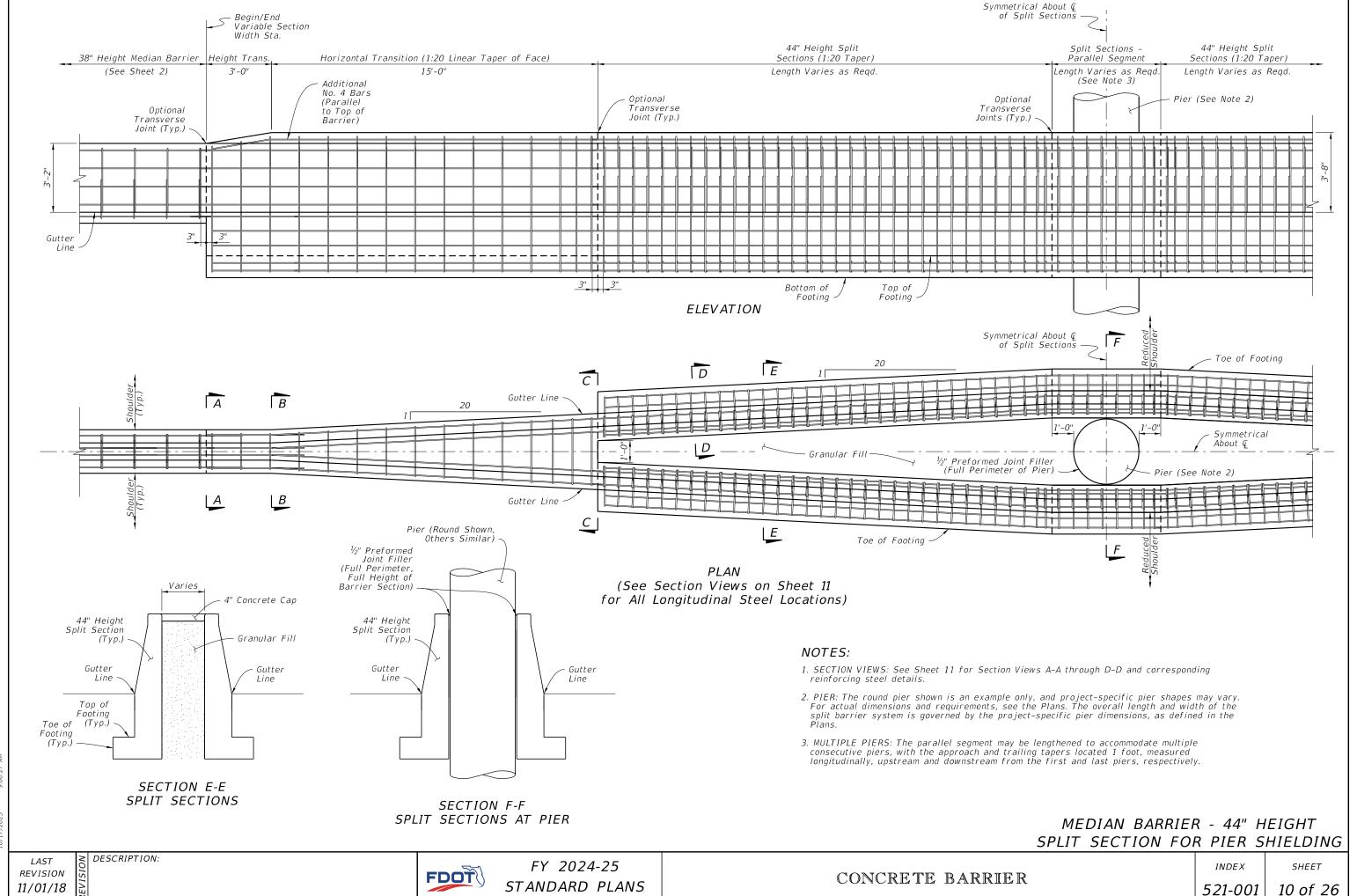
FY 2024-25 STANDARD PLANS

CONCRETE BARRIER

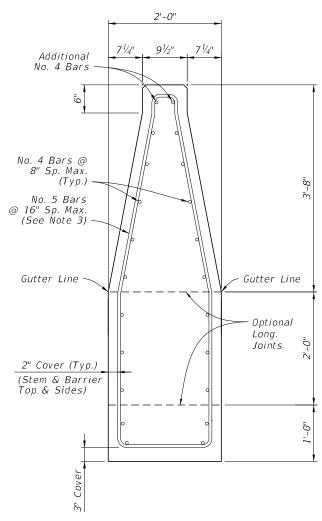
INDEX 521-001

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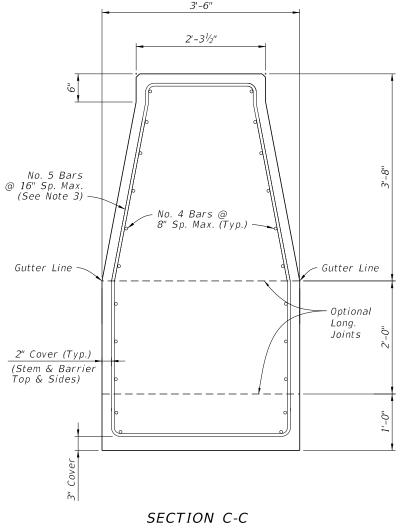
DESCRIPTION:



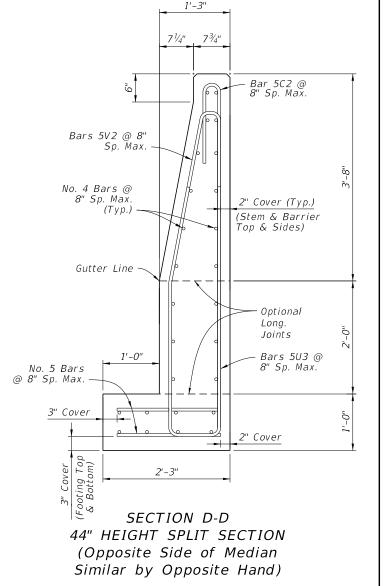
BEGIN HEIGHT TRANSITION (show spliced bars)



SECTION B-B END HEIGHT TRANSITION BEGIN WIDTH TRANSITION



END WIDTH TRANSITION BEGIN SPLIT SECTIONS



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

NOTES:

- 1. GENERAL: Work with the Plan and Elevation views on Sheet 10.
- 2. LONGITUDINAL REINFORCING CONTINUITY: Maintain all longitudinal steel reinforcing shown in Section C-C continuously into Section D-D (spliced where required). The additional longitudinal reinforcing shown in Section D-D does not require continuity into Section C-C, and it starts 3" from the construction joint or edge of concrete per the details on Sheet 10.
- 3. STIRRUP BARS: For the vertical and transverse reinforcement requirement shown, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

MEDIAN BARRIER - 44" HEIGHT SPLIT SECTION FOR PIER SHIELDING - DETAILS

REVISION 11/01/18

DESCRIPTION:

FDOT

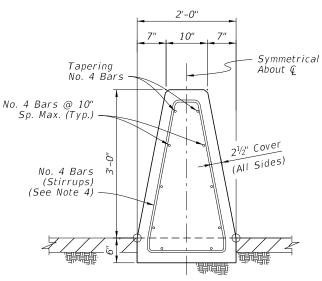
FY 2024-25 STANDARD PLANS

CONCRETE BARRIER

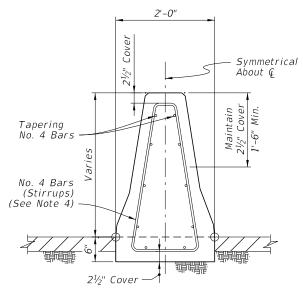
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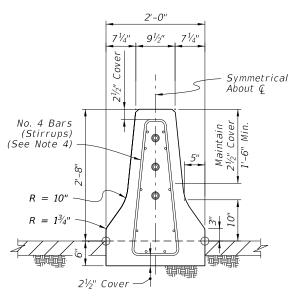
SECTION A-A BEGIN TRANSITION - OPTION 'A' MATCH SINGLE-SLOPE 38" HEIGHT MEDIAN BARRIER



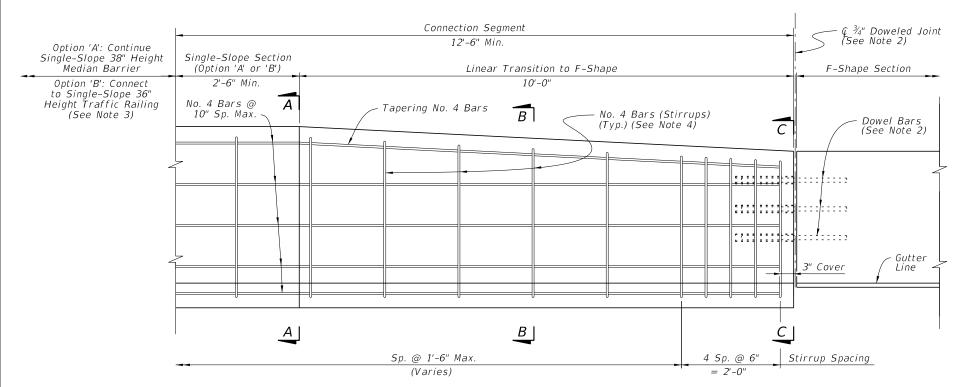
SECTION A-A BEGIN TRANSITION - OPTION 'B' MATCH SINGLE-SLOPE 36" HEIGHT TRAFFIC RAILING (Bridge Applications)



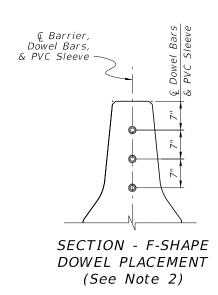
SECTION B-B INTERMEDIATE SECTION OF LINEAR TRANSITION



SECTION C-C **END TRANSITION** MATCH 32" HEIGHT F-SHAPE SECTION



ELEVATION (Reverse Direction Similar by Opposite Hand)



- 1. GENERAL: Construct the Connection Segment as required per the Plans to connect existing F-Shape sections to Single-Slope Median Barrier or Traffic Railing sections. Construct Option 'A' or 'B' as required to match the heights of the connecting sections.
- 2. DOWELED JOINT: Install Dowel Bars per the Dowel Details on Sheet 2.
- 3. TRAFFIC RAILING CONNECTION: For the Option 'B' connection, use a Doweled Joint per Sheet 2 and the additional Free End Reinforcing with reduced bar spacing per Sheet 3.
- 4. STIRRUP BARS: For the vertical and transverse reinforcement requirements shown, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

MEDIAN BARRIER - CONNECTION TO F-SHAPE

11/01/18

DESCRIPTION:

FDOT

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CONCRETE BARRIER

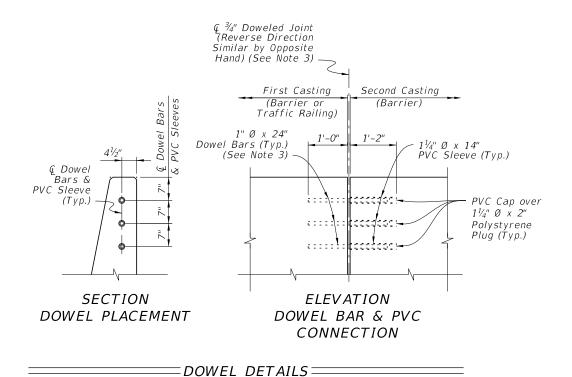
INDEX 521-001

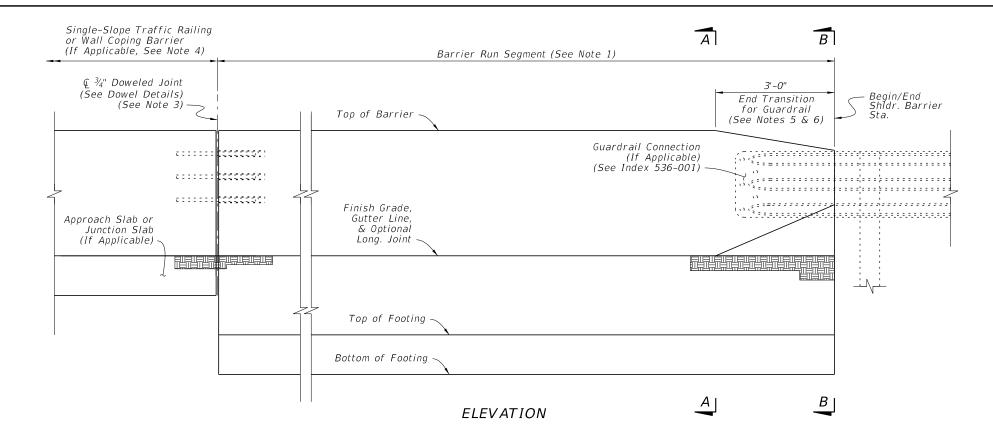
SHEET

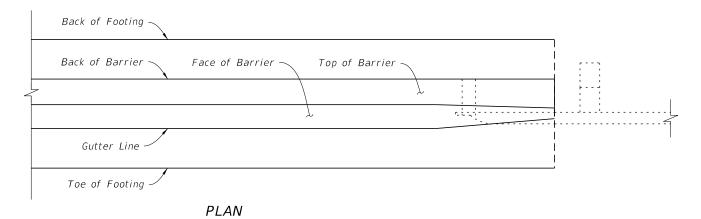
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SECTION A-A 38" HEIGHT SHOULDER BARRIER (See Sheet 14 for Reinforcing Steel Details)







SHOULDER BARRIER NOTES:

- 1. BARRIER RUN SEGMENT: Either the 38" Height Shoulder Barrier or the differing Shoulder Barrier sections shown throughout the Index may be placed within this segment as required per the Plans.
- 2. SECTION VIEWS: For additional Views A-A and B-B, see Sheet 14.
- 3. DOWELED JOINTS: See the General Notes on Sheet 1 for usage of joint types. Place steel reinforcing with a longitudinal 3" cover adjacent to the joint face in the barrier. Use ASTM A36 smooth round bars with hot-dip galvanization.

For the dowel connection into the first casting, the dowel may be cast-in-place for new concrete or placed into a $1\frac{1}{8}$ " \times x 13"(\pm $\frac{1}{2}$ ") drilled hole for cured concrete. For drilled holes larger than 11/8"O, secure the dowel with adhesive in accordance with Specification 416. No load testing is required.

For the dowel connection into the second casting, use a $1\frac{1}{4}$ " NPS Schedule 80 PVC pipe with a sealed cap, cast-in-place as shown.

- 4. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the $\frac{3}{4}$ " Doweled Joint.
- 5. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001.
- 6. CRASH CUSHION CONNECTIONS: Connect Crash Cushions per Index 544-001 in conjunction with the 3'-0" End Transition for Guardrail as shown herein.
- 7. FREE ENDS: When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, or Crash Cushion Connection as called for in the Plans, terminate in accordance with the Free End Reinforcing Note on Sheet 14.

SHOULDER BARRIER

REVISION 11/01/22

DESCRIPTION:

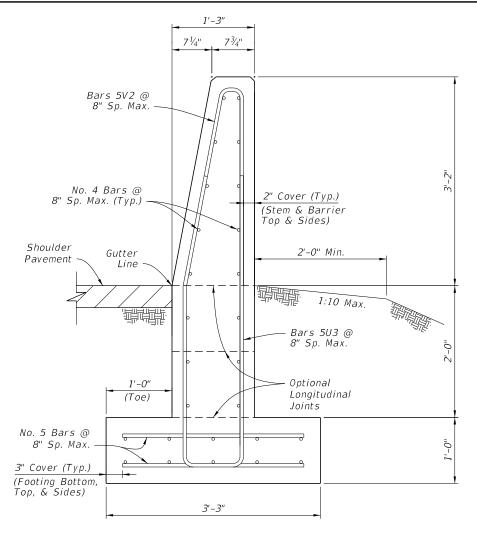
FDOT

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CONCRETE BARRIER

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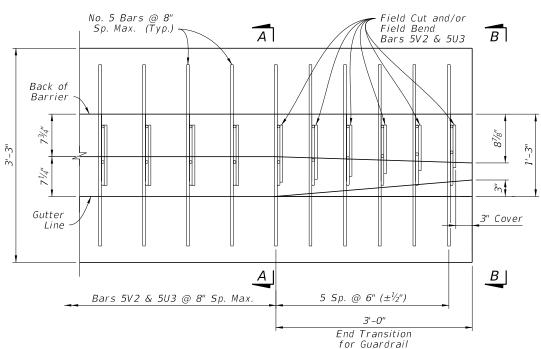


SECTION A-A 38" HEIGHT SHOULDER BARRIER

Concrete Qty. = 0.32 CY/FT Steel Qty. = 50.9 LB/FT

NOTES:

- 1. GENERAL: Work with the Plan and Elevation Views on Sheet 13. The Section Option footings shown on Sheet 15 may be substituted where called for in the Plans
- 2. FREE END REINFORCING: Where shown in the Plans, terminate the 38" Height Barrier section with a transverse vertical end face. Reduce the spacing of Bars 5V2 and 5U3 to 6" for 5 Spaces, placed with 3" cover from the barrier's end face.
- 3. BAR BENDING DIAGRAMS: For additional details for bars 5V2 and 5U3, see the Bar Bending Diagrams on Sheet 26.



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

61/8"

Bars 5V2 @ 6" Sp. (Field Bend Top & Cut Bottom to Lap

Shoulder

Pavement

No. 5 Bars

3" Cover (Typ.)

Top, & Sides)

(Footing Bottom,

@ 6" Sp.

with Bars 5U3)

Cover Varies
(Diagonal Segment

2½" Cover

2" Cover (Min.)

1'-0"

(Toe)

8⁷/8"

No. 4 Bars Tapered Down with Barrier Height

No. 4 Bars

2'-0" Min.

Optional

Joints

Longitudinal

@ 8" Sp. Max. (Typ.)

1:10 Max.

Bars 5U3 @ 6" Sp. (Field Bend Bottom

to Align with Bars 5V2)

2" Cover

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

SHOULDER BARRIER - REINFORCING DETAILS

LAST REVISION 11/01/18

DESCRIPTION:

FDOT

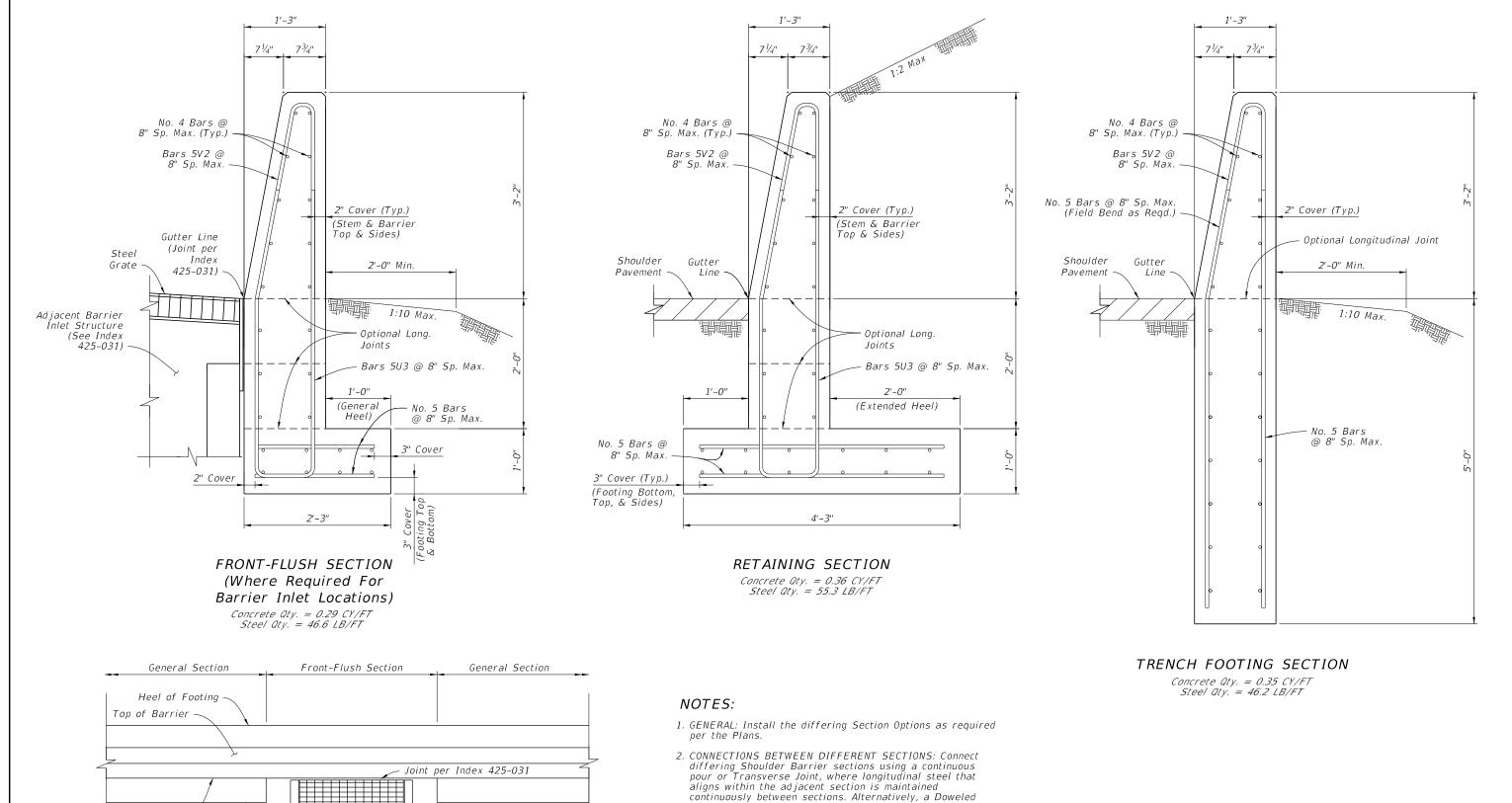
FY 2024-25
STANDARD PLANS

CONCRETE BARRIER

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/ 2024-25



- Joint may be used as shown on Sheet 13.
- 3. FLUSH RETAINING SECTION COMBINATION: Where Barrier Inlets are required in retaining segments, install the Flush Section, except replace the 1'-0" General Heel with the 2'-0" Extended Heel as shown in the Retaining Section. Use longer lateral reinforcing bars of 2'-10" length to maintain the cover shown.

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

SHOULDER BARRIER - SECTION OPTIONS

REVISION 11/01/19 Gutter Line

DESCRIPTION:

Toe of Footing

FDOT

Adjacent Barrier

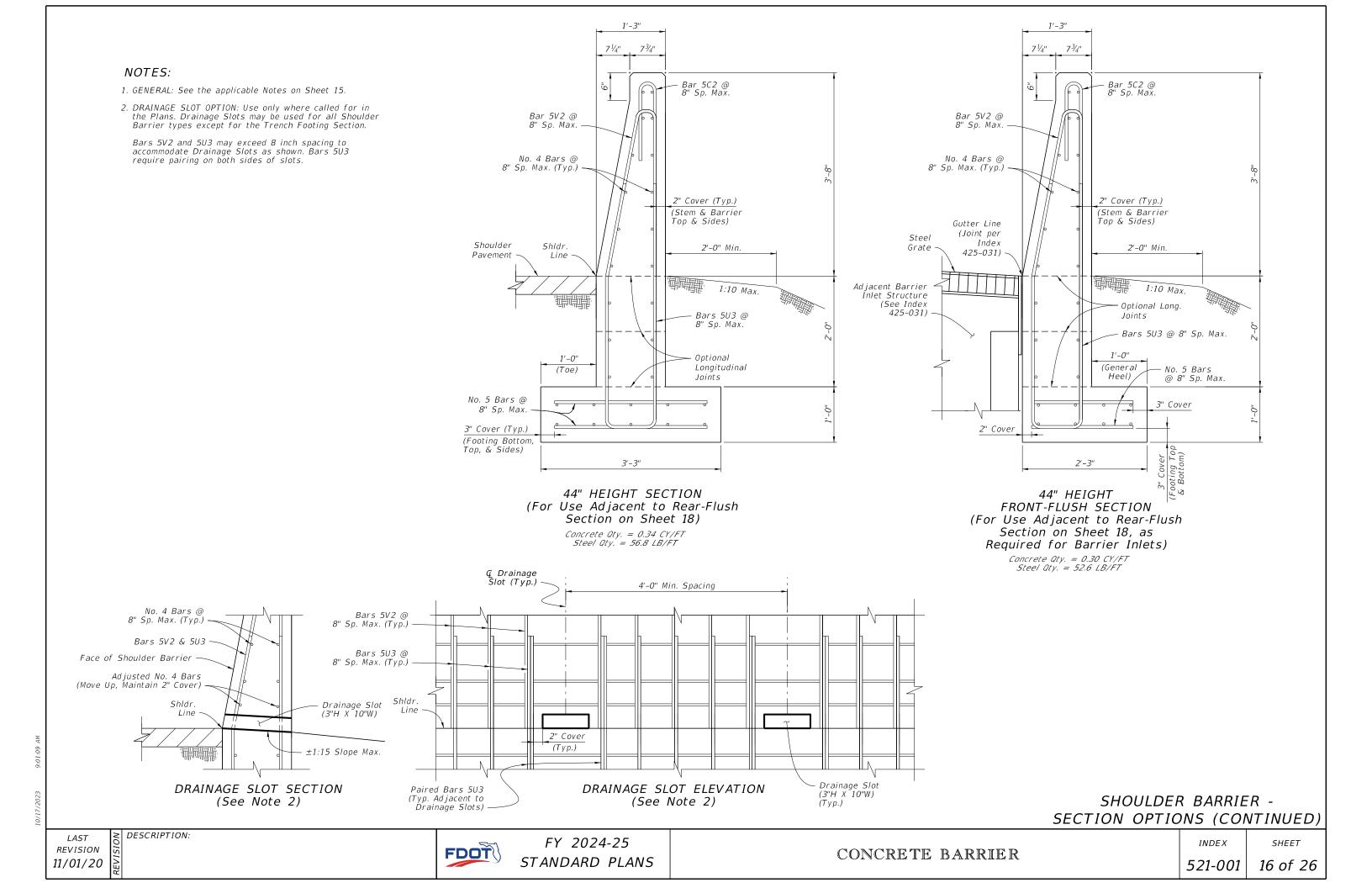
per Index 425-031

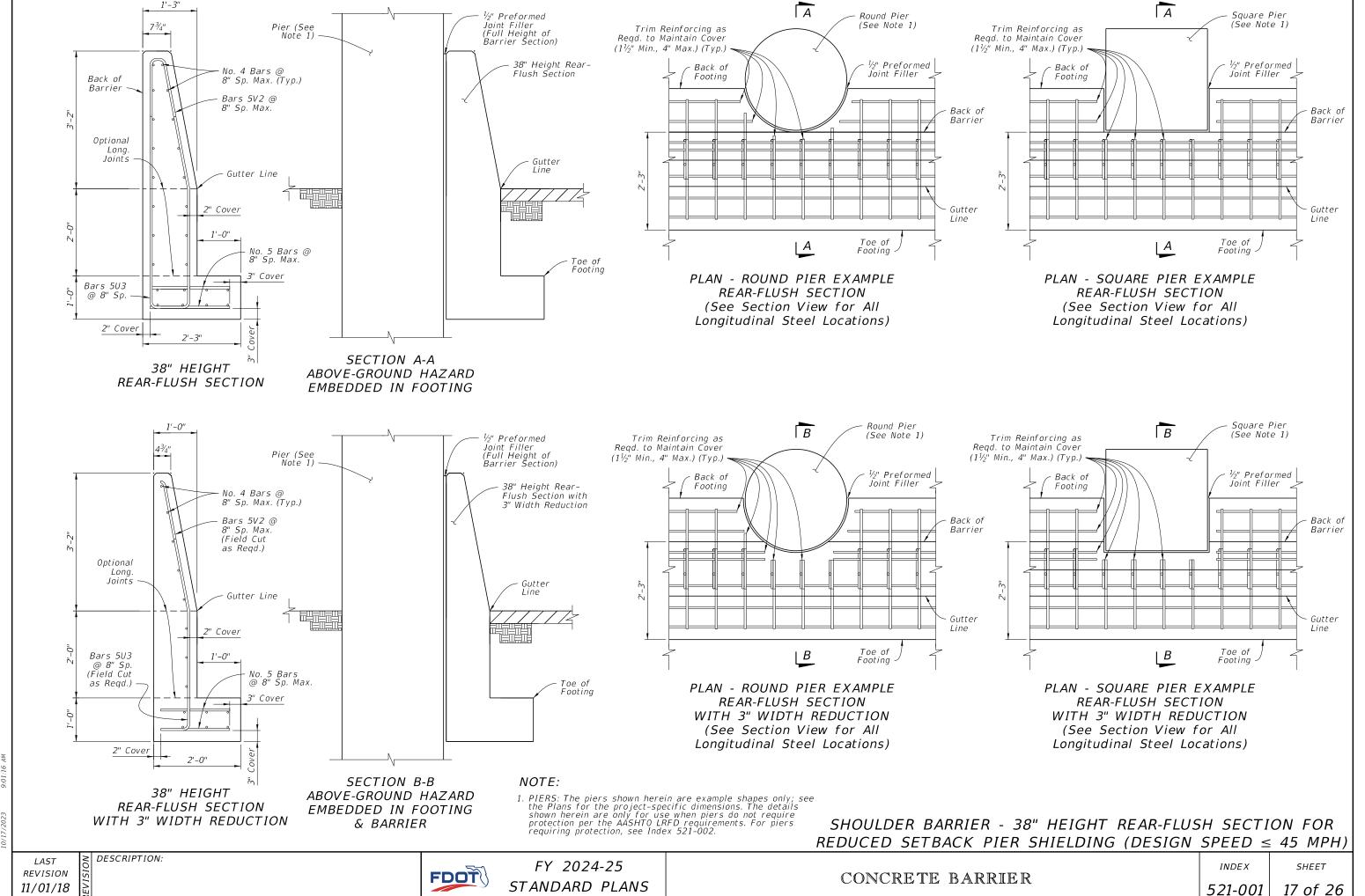
Inlet Structure

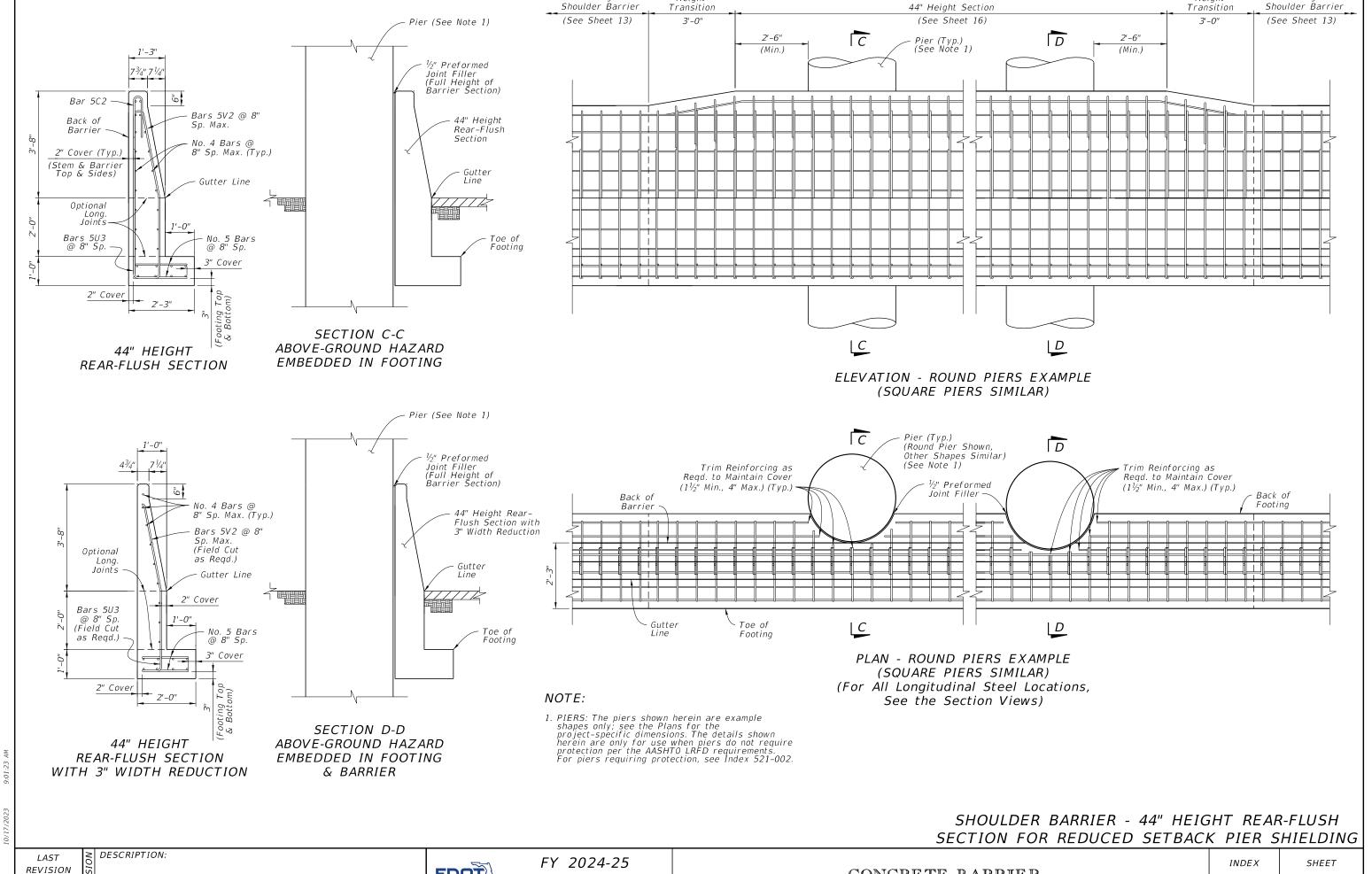
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CONCRETE BARRIER

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Height

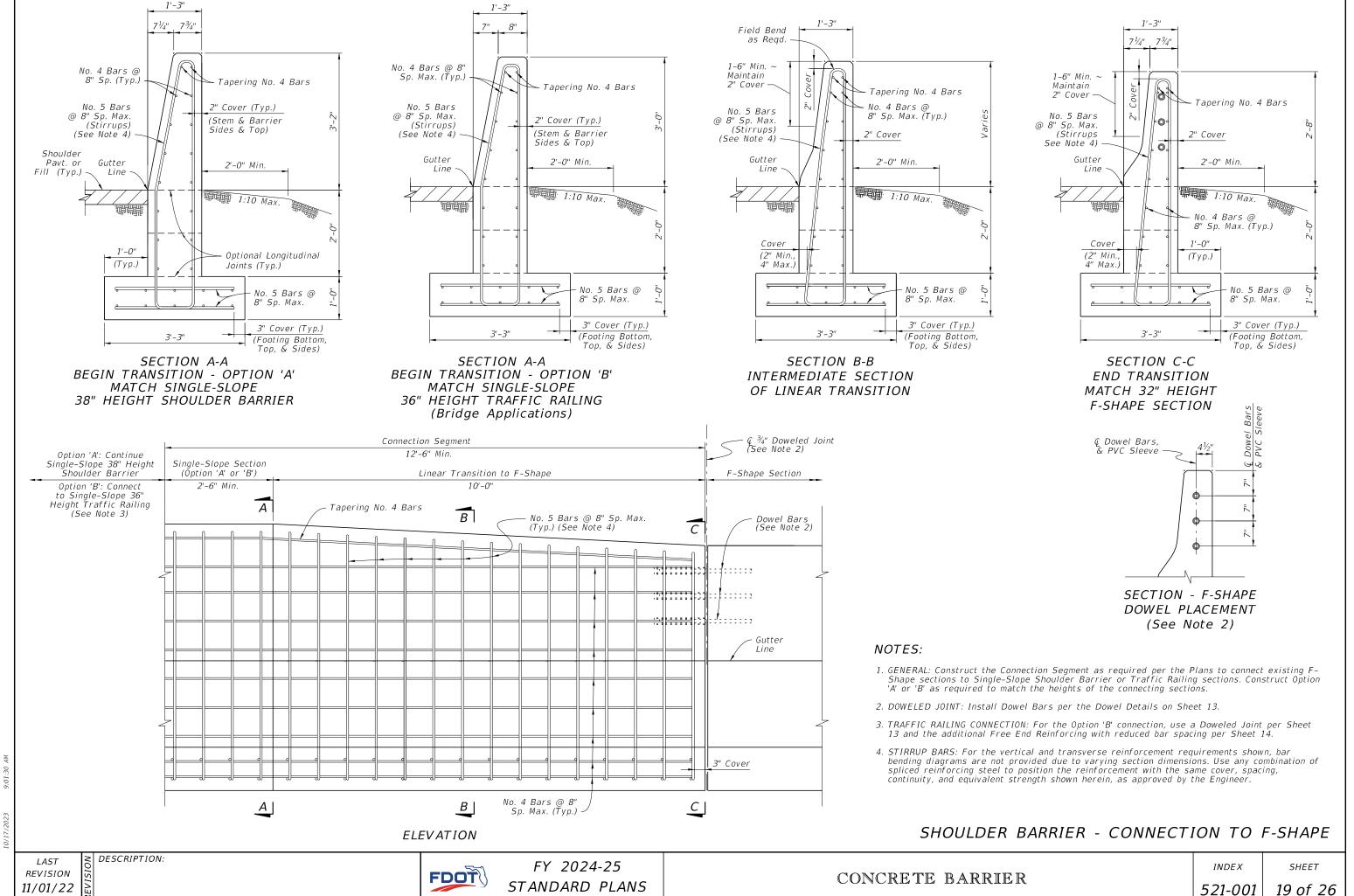
38" Height

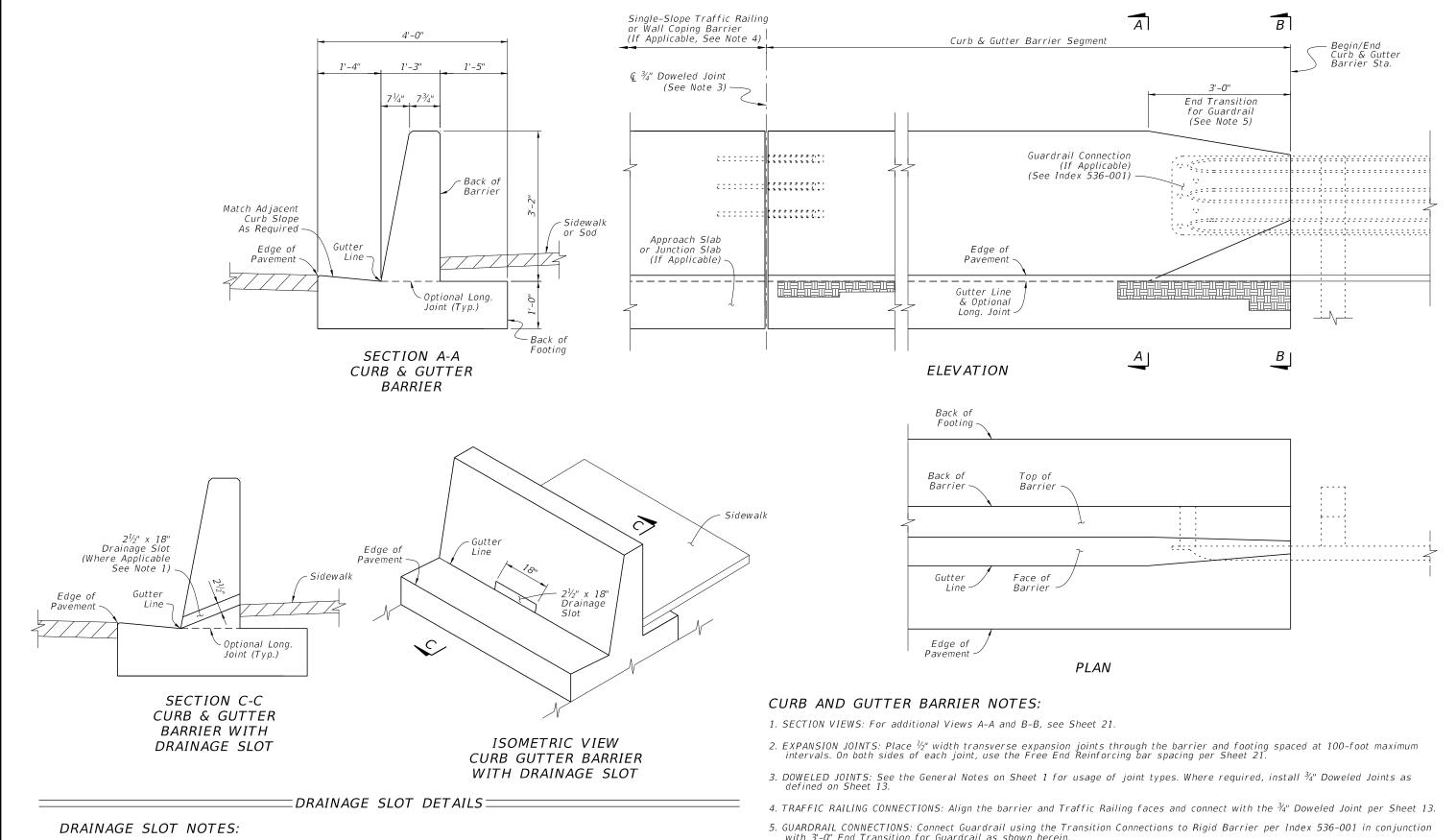
11/01/18

FDOT

38" Height

Height





- 1. GENERAL: Place $2^{\frac{1}{2}}$ " x 18" Drainage Slots at locations and/or spacing called for in the Plans. The minimum spacing is 20 feet.
- 2. STEEL REINFORCEMENT CONFLICT: When the Drainage Slot encounters a conflict with reinforcing steel, shift or cut the reinforcing steel to provide $2\frac{1}{2}$ "($\pm \frac{1}{2}$ ") of concrete cover for the reinforcing around the Drainage Slot. If cutting the vertical bars, maintain 8" bar spacing. If shifting the vertical bars, move the bars from the standard 8" spacing location to the closest end of the drainage slot (distributing additional vertical reinforcement evenly on each side of the Drainage Slot).
- with 3'-0" End Transition for Guardrail as shown herein.
- 6. FREE ENDS: When the barrier end does not terminate with a Traffic Railing connection or Guardrail connection as called for in the Plans, terminate the barrier in accordance with the Free End Reinforcing Note on Sheet 21.

CURB AND GUTTER BARRIER

REVISION 11/01/22

DESCRIPTION:

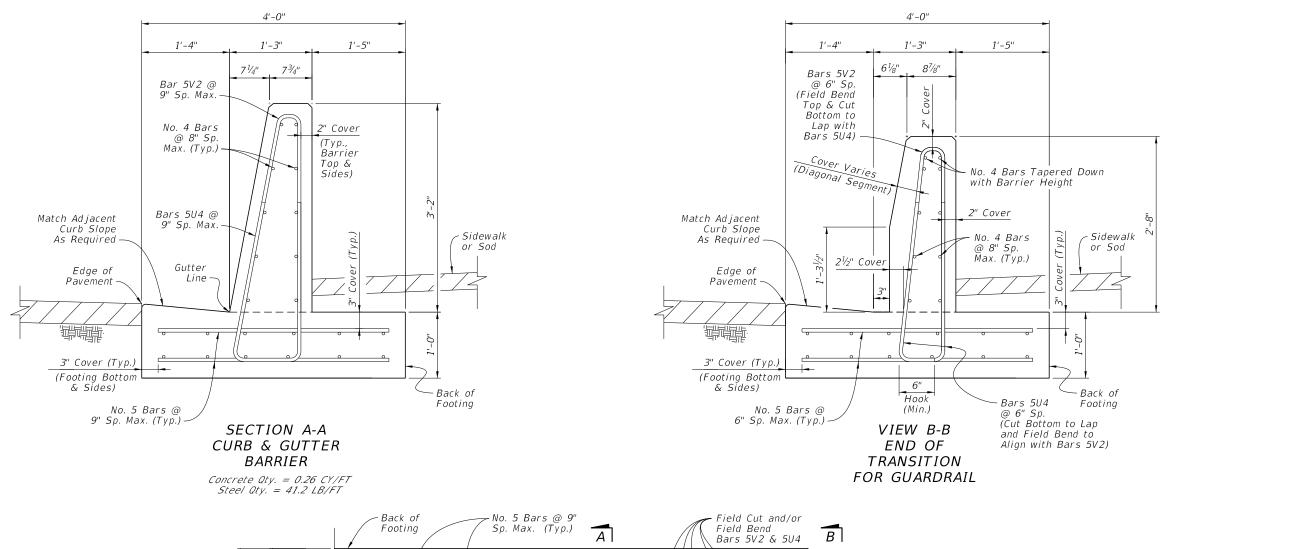
FDOT

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CONCRETE BARRIER

INDEX

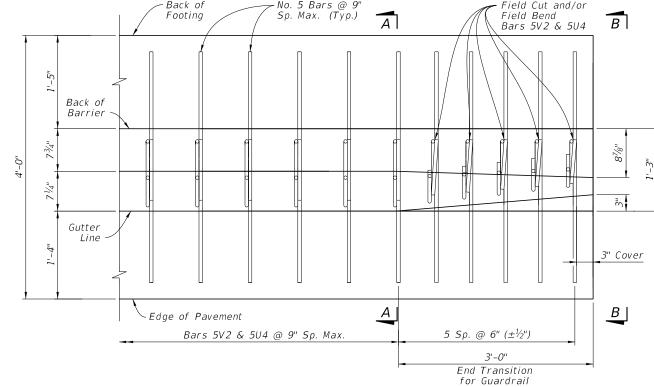
SHEET 20 of 26





DESCRIPTION:

- 1. GENERAL: Work with the Plan and Elevation Views on Sheet 20.
- 2. FREE END REINFORCING: Where shown in the Plans, terminate the 38" Curb & Gutter Barrier section with a transverse vertical end face. Reduce the spacing of Bars 5V2 and 5U4 to 6" for 5 Spaces, placed with 3" cover from the barrier's end face.
- 3. BAR BENDING DIAGRAMS: For additional details for bars 5V2 and 5U4, see the Bar Bending Diagrams on Sheet 26.



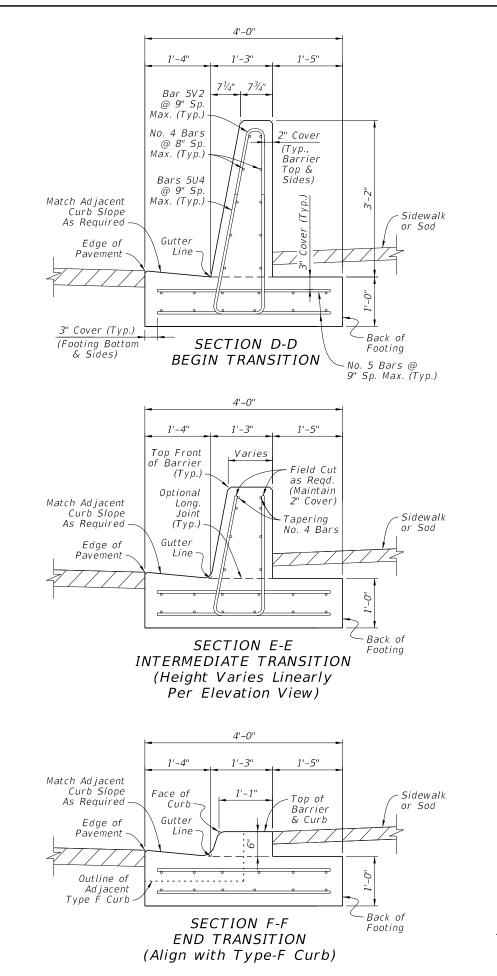
PLAN VIEW - END SEGMENT FOR GUARDRAIL CONNECTION (Longitudinal Steel Not Shown for Clarity)

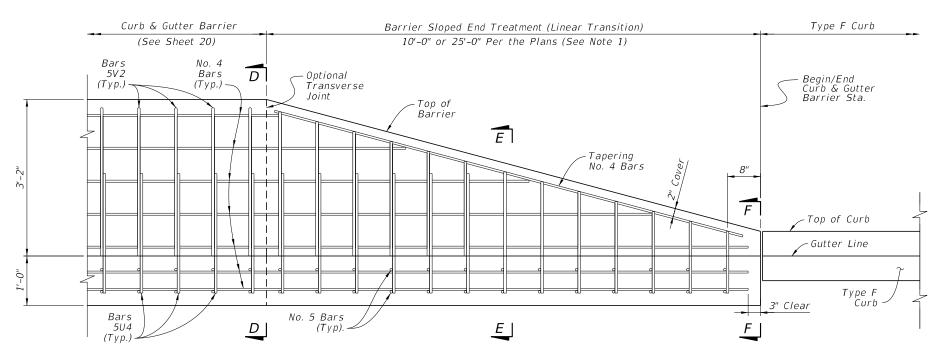
CURB AND GUTTER BARRIER -REINFORCING DETAILS

FDOT

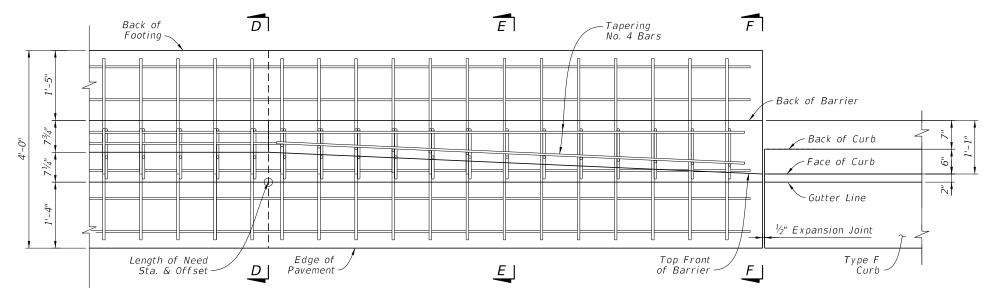
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ELEVATION - CURB AND GUTTER BARRIER
SHOWING SLOPED END TREATMENT
(Approach and Trailing
End Similar by Opposite Hand)



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

NOTES:

- 1. GENERAL: Install a Sloped End Treatment only where called for in the Plans, using either a 10'-0" length or 25'-0" length treatment as specified in the Plans. The 10'-0" length option is shown herein, while the 25'-0" length option requires additional trimmed Bars 5U4 & 5V2 at the same 9" longitudinal spacing.
- 2. BAR BENDING DIAGRAMS: For additional details on Bars 5V2 & 5U4, see the Bar Bending Diagrams on Sheet 26.

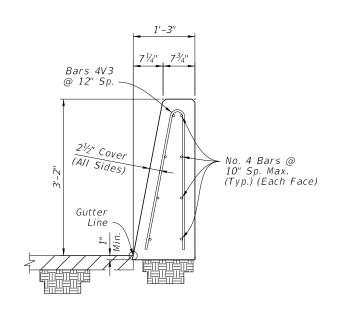
CURB AND GUTTER BARRIER - SLOPED END TREATMENT

LAST REVISION IN 11/01/18

DESCRIPTION:

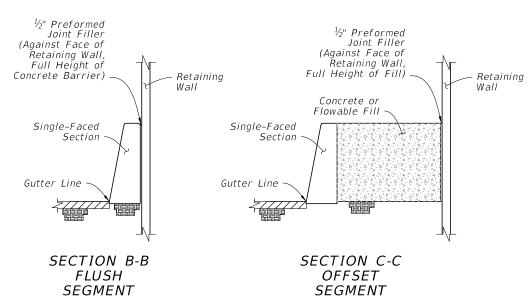
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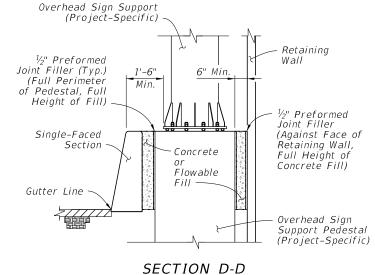
FY 2024-25 STANDARD PLANS INDEX SHEET



SECTION A-A 38" HEIGHT SINGLE-FACED SECTION (Reverse Side Similar by Opposite Hand)

(See Section A-A for Barrier Reinforcing)





OVERHEAD SIGN

SUPPORT

NOTES:

DESCRIPTION:

- 1. TAPER SEGMENTS AND OFFSET SEGMENT: The plan view shown is an example only, showing general geometry for the taper segments and offset segment. For the actual segment lengths and corresponding taper rates required, see the barrier placement
- 2. OVERHEAD SIGN SUPPORT: The overhead sign support shown is an example only; see the Plans for the project-specific dimensions and requirements if applicable.
- 3. CONNECTION TO SHOULDER BARRIER SECTIONS: Connect to Shoulder Barrier sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections or has a full lap splice with the adjacent section's longitudinal steel.
- 4. FREE ENDS: Where shown in the Plans, terminate the Single-Faced Section with a transverse end face. Place a stirrup bar with a 3" cover from the end face. Place longitudinal bars with a 3" cover from the end face.
- 5. CONCRETE OR FLOWABLE FILL: Use Class NS Concrete in accordance with Specification 347 or Non-Excavatable Flowable Fill in accordance with Specification 121.

WALL SHIELDING BARRIER -38" HEIGHT SECTION -APPROACH & TRAILING TRANSITION

REVISION 11/01/18

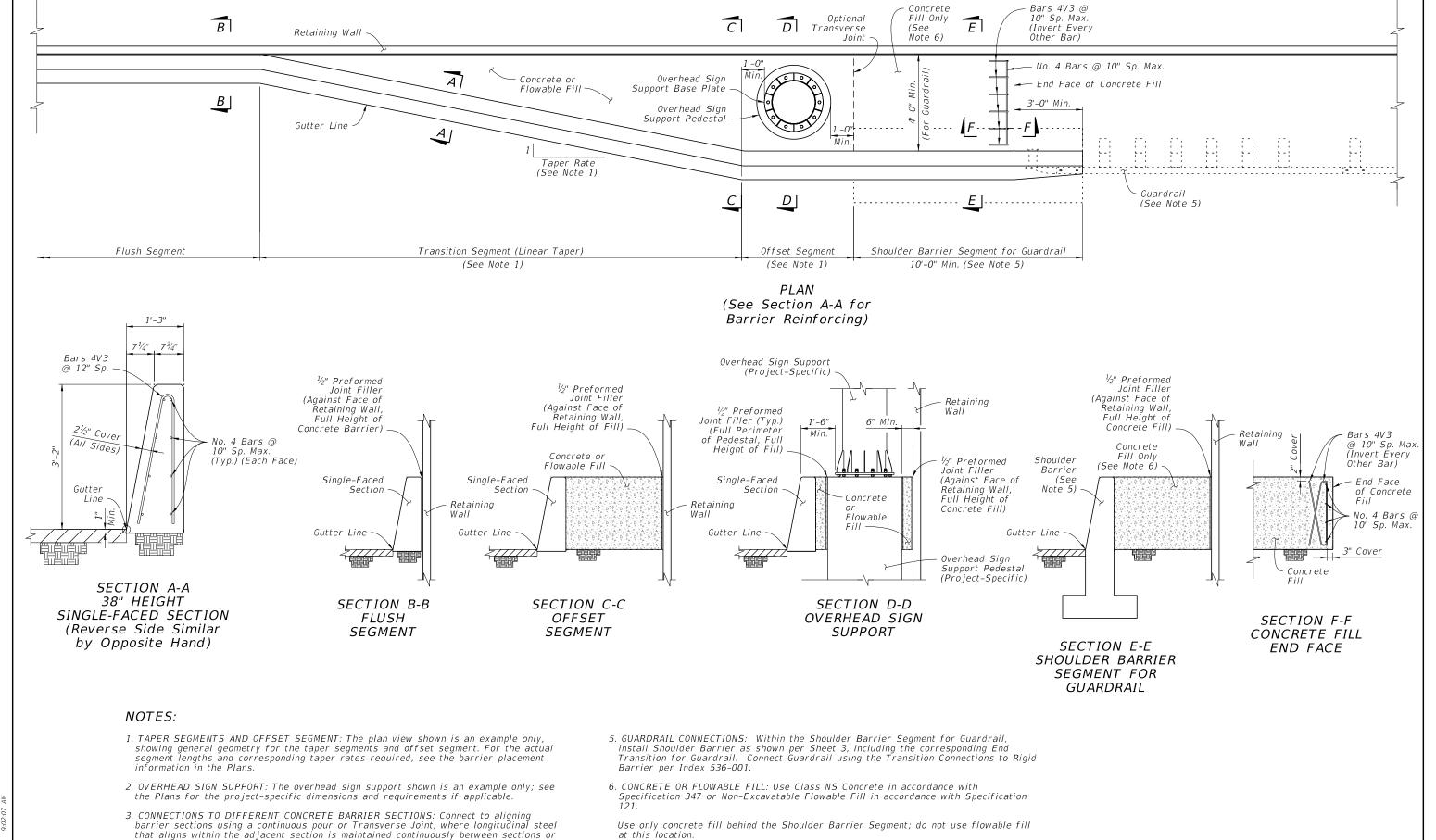
FDOT

FY 2024-25 STANDARD PLANS

CONCRETE BARRIER

INDEX

SHEET



DESCRIPTION: REVISION

11/01/18

FDOT

has a full lap splice with the adjacent section's longitudinal steel.

longitudinal bars with a 3" cover from the end face.

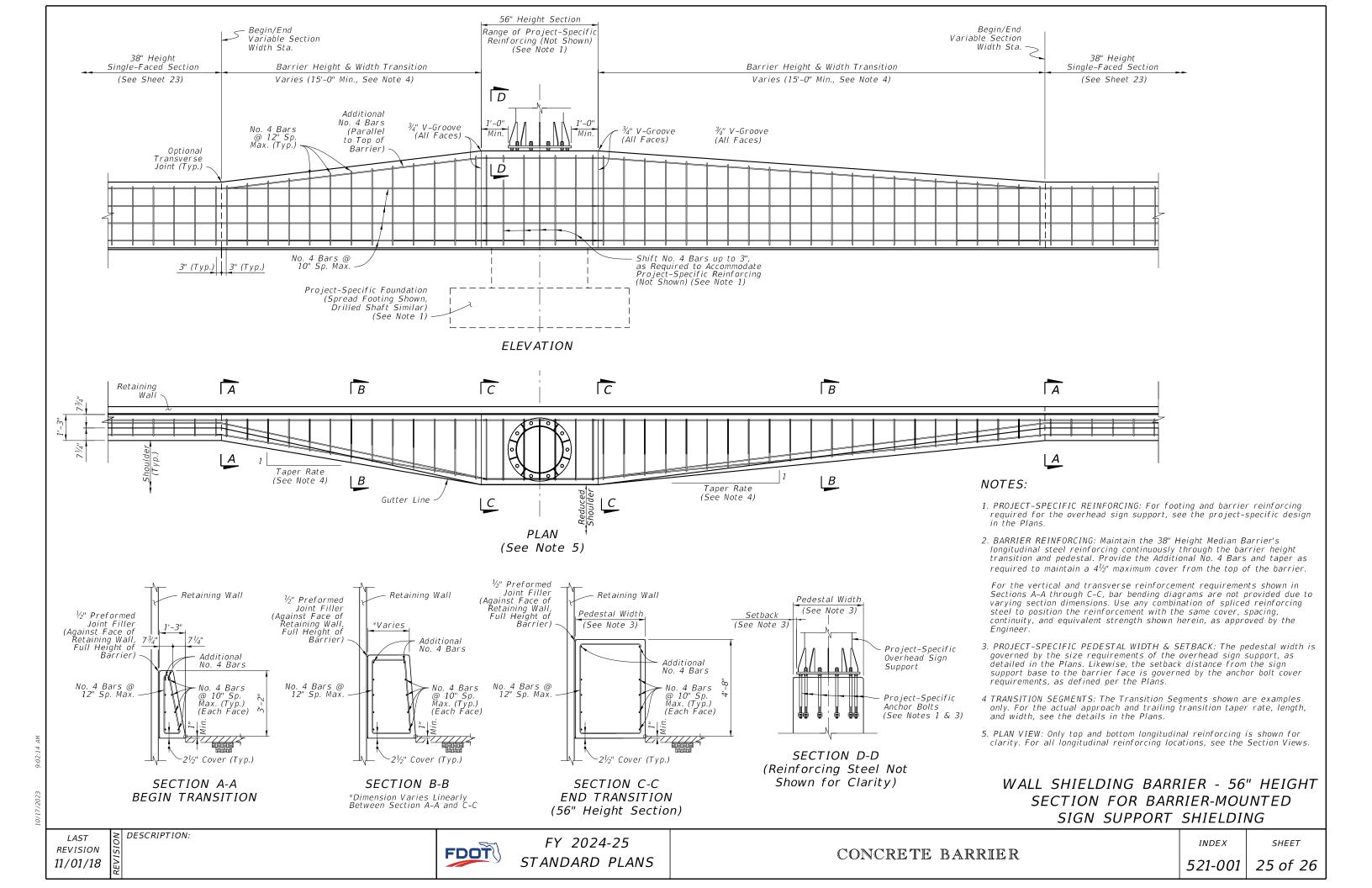
4. FREE ENDS: Where shown in the Plans, terminate the Single-Faced Section with a transverse end face. Place a stirrup bar with a 3" cover from the end face. Place

FY 2024-25 STANDARD PLANS

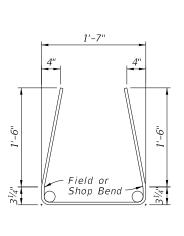
at this location

WALL SHIELDING BARRIER 38" HEIGHT SECTION -

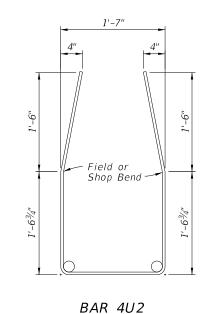
GUARDRAIL CONNECTION

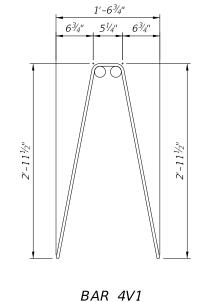


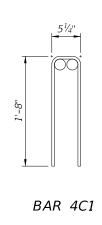
BILL OF REINFORCING STEEL			
MARK	SIZE LENGTH		
C1	4	3'-8"	
C2	5	3'-0"	
U1	4	5'-1"	
U2	4	7'-8"	
U3	5	9'-7"	
U4	5	5'-9"	
V1	4	6'-4"	
V2	5	6'-3"	
V3	4	5'-10"	

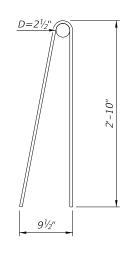


BARS 4U1





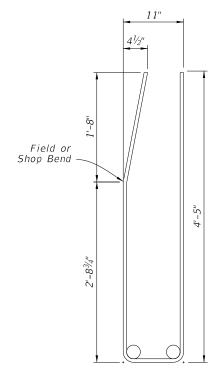




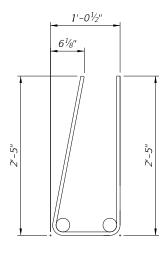
BAR 4V3

NOTES:

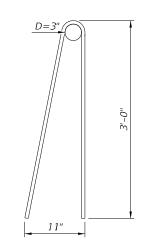
- 1. Work with the Standard Bar Bending Details per Index 415-001.
- 2. All bar dimensions in the bending diagrams are out to out.
- 3. Use standard inner diameters for bar bending unless otherwise shown.



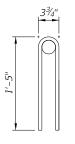
BAR 5U3



BAR 5U4



BAR 5V2



BAR 5C2

REINFORCING BAR BENDING DIAGRAMS

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

GENERAL NOTES:

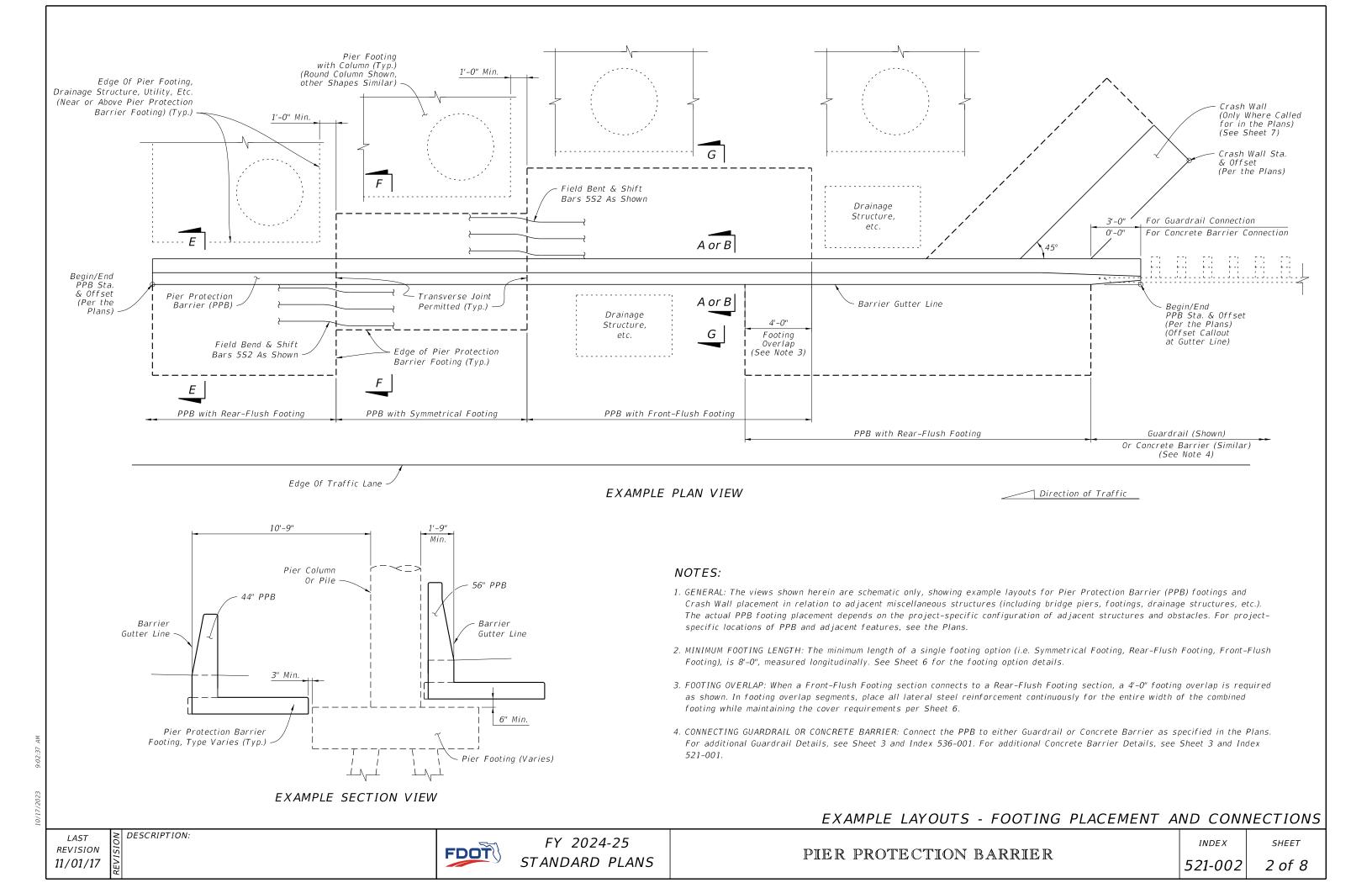
- 1. CONCRETE: Use Class III or IV concrete unless otherwise called for in the Plans.
- 2. CONSTRUCTION JOINTS: Maintain continuity of reinforcement steel across Construction Joints; reinforcement lap splices are permitted immediately adjacent to joints. Construct all Pier Protection Barrier continuously, with no expansion or contraction joints. Construction Joints are classified herein as Transverse Joints or Longitudinal Joints.

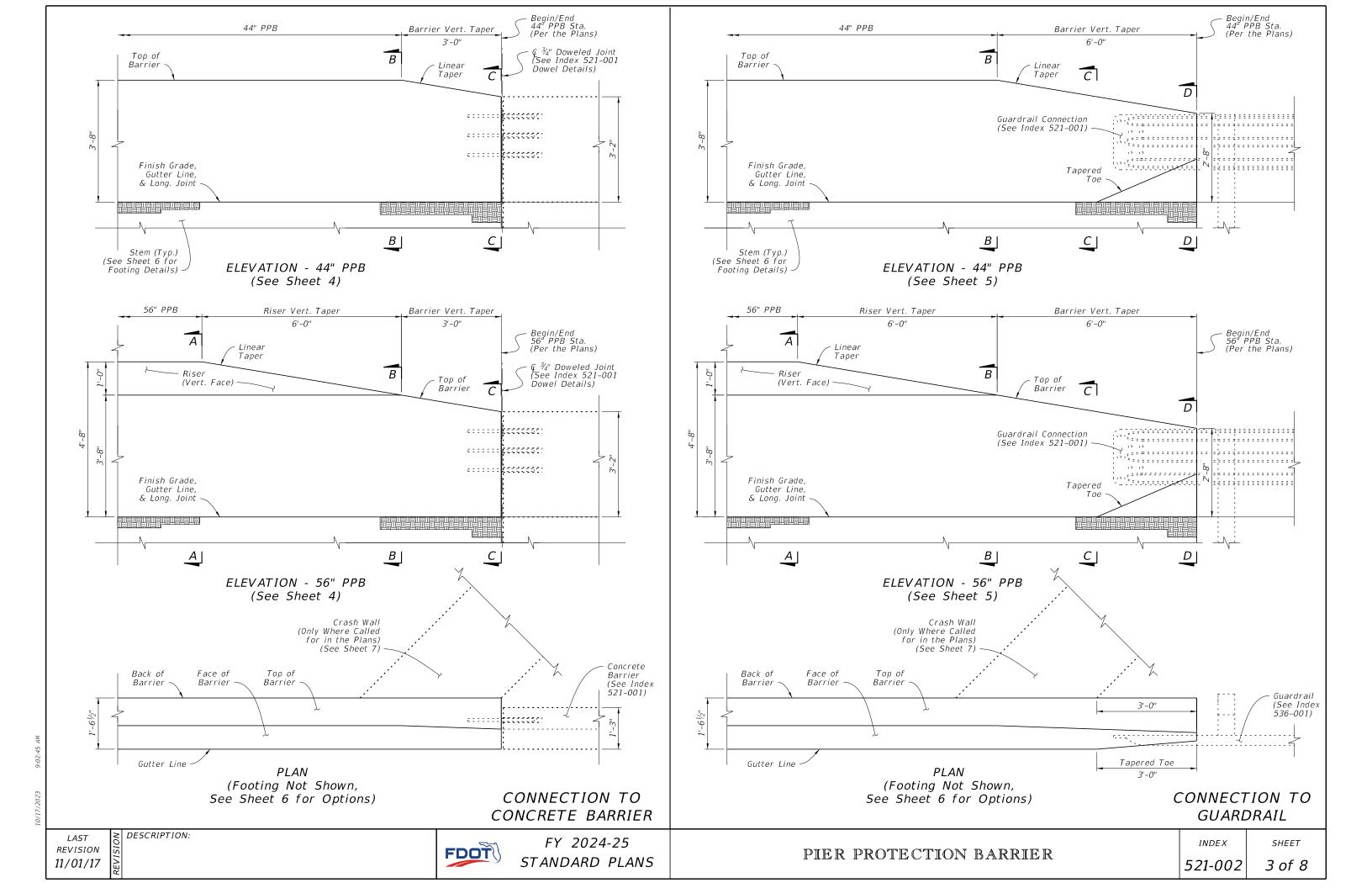
Transverse Joints are permitted at 40 foot or greater intervals along the barrier.

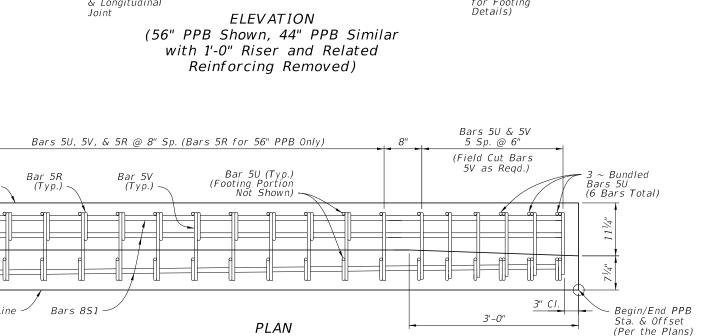
Longitudinal Joints may only be installed where indicated in the following details and notes, with a location tolerance of \pm 1" from the locations shown.

- 3. FOUNDATION: Compact the top 12 inches of the subgrade to at least 98% of the maximum density determined by FM 1-T 180, Method D.
- 4. DRAINAGE INLETS: See Index 425-031 for Adjacent Barrier Inlets, and isolate these structures from Pier Protection Barriers and Footings with 1" Preformed Joint Filler.
- 5. BARRIER END MARKERS: For all free ends of barriers that are not connected to guardrail or concrete barrier, install a Type 3 Object Marker on the end face per Specification 705.
- 6. BARRIER DELINEATORS: Install Barrier Delineators in accordance with Specification 705. Mount the delineators on the top face of the barrier, with the roadway side of the delineator located 2" from the front face of the barrier and the reflective sheeting facing traffic of the nearest approach.
- 7. CRACK CONTROL: Provide ½" depth crack control V-Grooves at 15' to 30' spacing. Locate V-Grooves above any joint or discontinuity in the barrier footing. Align V-Grooves perpendicular to the longitudinal axis of the Pier Protection Barrier and make continuous across the top surface and both side faces. For slip formed barriers, score ½" V-Grooves while the concrete is still plastic, otherwise pre-form the joints when stationary forms are utilized.

DESCRIPTION:







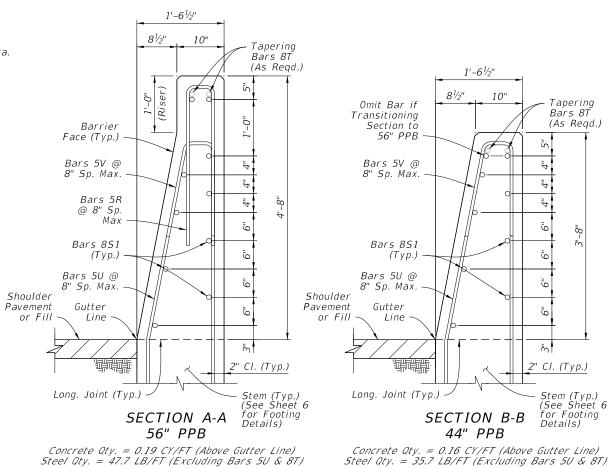
(Details Not Shown Below Gutter Line, See Sheet 6 for Footing and Stem Details) (Only Top & Bottom Longitudinal Steel Shown, See Section Views for All Steel Locations)

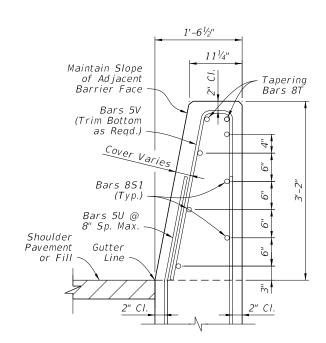
NOTES:

Back of

Barrier

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





END VIEW C-C (Connects to Adjacent Concrete Barrier, Aligned at Gutter Line)

BARRIER DETAILS - CONNECTION TO CONCRETE BARRIER

LAST REVISION 11/01/17

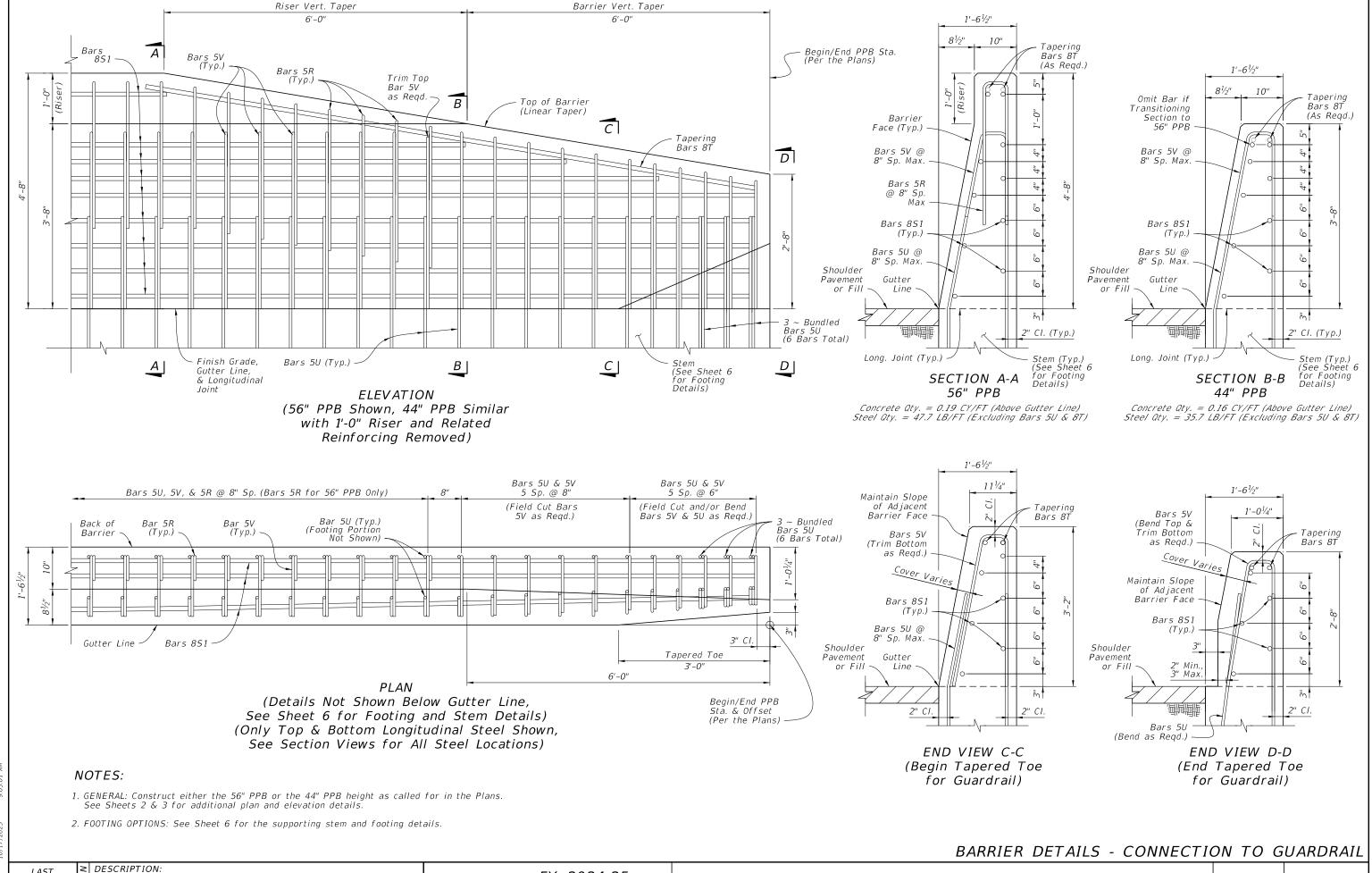
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FY 2024-25
STANDARD PLANS

PIER PROTECTION BARRIER

521-002 4

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REVISION

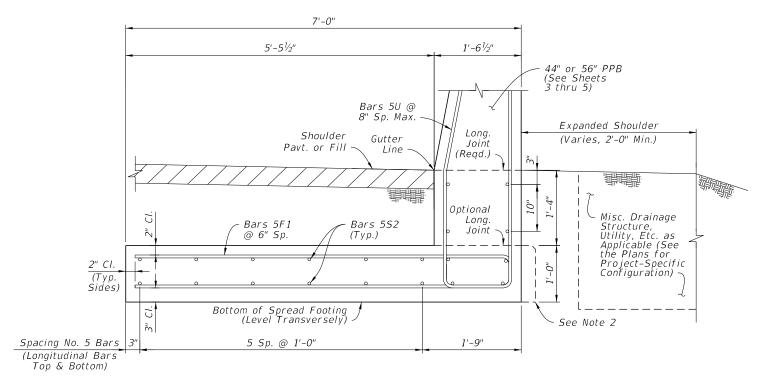
11/01/17

FDOT

FY 2024-25 STANDARD PLANS

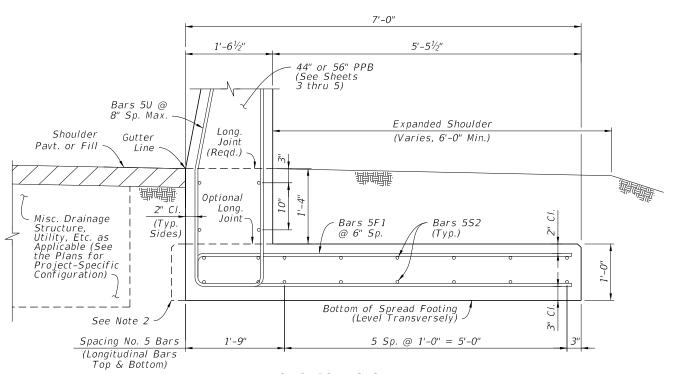
INDEX *521-002*

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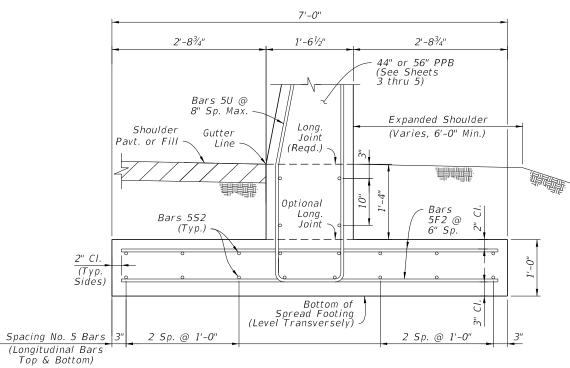
SECTION E-E REAR-FLUSH FOOTING OPTION

Concrete Qty. = 0.34 CY/FT (Below Gutter Line) Steel Qty. = 63.5 LB/FT (Including Bars 50)



SECTION G-G FRONT-FLUSH FOOTING OPTION

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



SECTION F-F SYMMETRICAL FOOTING OPTION

Concrete Qty. = 0.34 CY/FT (Below Gutter Line) Steel Qty. = 62.6 LB/FT (Including Bars 50)

NOTES:

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

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

- 2. OPTIONAL SLIP FORMING SUPPORT: The 1'-0" depth spread footing may be extended by 3" laterally beyond the face of the stem to provide support for a subsequent slip forming operation above. Do not adjust the steel reinforcement location for the additional concrete.
- 3. GUARDRAIL CONNECTION TAPERED TOE: For tapering the barrier as shown on Sheet 5, View D-D, bend Bars U away from the stem face as required. For this case, the cover requirement is variable for one side of the stem (only at the tapered toe locations).

BARRIER FOOTING OPTIONS

REVISION 11/01/17

FDOT

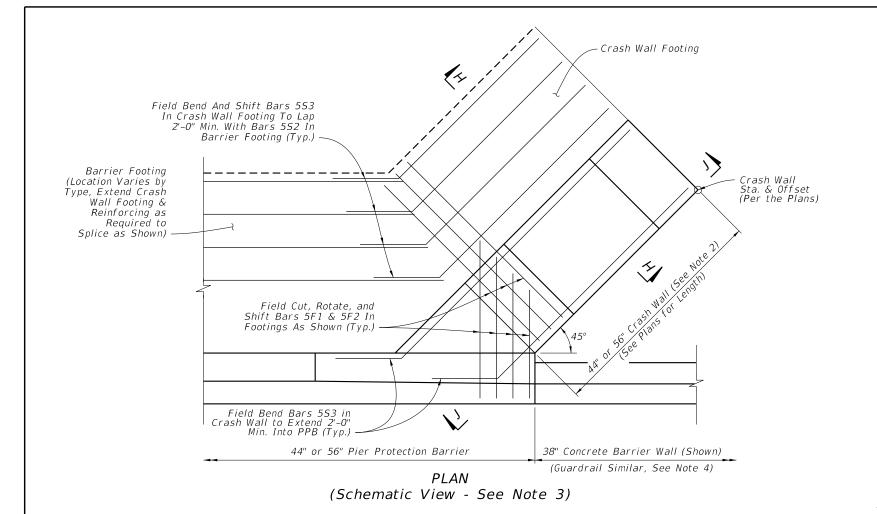
FY 2024-25 STANDARD PLANS

PIER PROTECTION BARRIER

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DESCRIPTION:



44" or 56" PPB 44" or 56" Crash Wall (See Note 2) (See Plans for Length) 44" Crash Wall 56" Crash Wall Q Crash Wall (Symmetrical) 2'-6" (Typ.) Match Cross Slope of \overline{H} Shoulder Linear Taper (Typ.)PPB End Height (Тур. Eńds) Field Trim Bars 5L and Bend Bars 5S3 Locally As Required To Maintain Cover (Typ.) Match Cross Slope of Shoulder <u>H</u>

44" Crash Wall 56" Crash Wall Crash Wall Crash Wall 4'-0" 3'-0" Bars 5E @ 1'-0" Sp. Max. (With Bars 5L) Bars 553 (Typ., Wall & (Typ.)Stem) 1'-0" Bars 5L @ @ 1'-0" Sp. Bars 5L @ @ @ 1'-0" Sp. Sр. Sp. Max. Max. Match Cross Slope of Shoulder | Joint Regd. Optional Name of the Indian Long. Bars 5F1 Bars 5S3 Joint @ 6" Sp. (Typ.)2" CI. Spacing Bars 5S3 Ö (Longitudinal Bars (Тур. Éach Face) Sides) Bottom of Spread Footing (Level Transversely) See Note 5 Spacing Bars 5S3 3 Sp. @ 1'-0" (Longitudinal Bars Top & Bottom)

> Concrete Qty. = 0.82 CY/FT (44" Crash Wall) or 0.93 CY/FT (56" Crash Wall) Steel Qty. = 71.8 LB/FT (44" Crash Wall) or 76.0 LB/FT (56" Crash Wall)

SECTION H-H CRASH WALL

NOTES:

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

For additional layout details, see Sheets 2 & 3.

- 2. CRASH WALL HEIGHT: Install the Crash Wall at a height which matches the adjacent PPB (either 44" or 56").
- 3. SCHEMATIC VIEWS: Only partial reinforcing is shown in the Schematic Views to establish a trend while keeping clarity. For all reinforcing steel locations and spacing requirements, see Section H-H.
- 4. GUARDRAIL CONNECTIONS: To facilitate guardrail connections, shift the Crash Wall 3 feet from the end of the PPB as shown on Sheets 2 & 3.
- 5. OPTIONAL SLIP FORMING SUPPORT: The 1'-0" depth spread footing may be extended by 3" laterally beyond the face of the wall to provide support for a subsequent slip forming operation above. Do not adjust the steel reinforcement location for the additional concrete.

VIEW J-J CRASH WALL ELEVATION (Schematic View - See Note 3)

CRASH WALL DETAILS

LAST CONTRIBUTION IN 11/01/17

DESCRIPTION:

FDOT

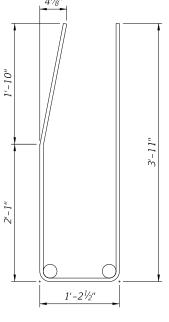
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BULL OF BEILLEOBOLING STEEL			
BILL OF REINFORCING STEEL			
MARK	SIZE	LENGTH	
V	5	7'-5"	
U	5	8'-11"	
R	5	6'-0"	
F1	5	13'-9"	
F2	5	Varies (Straight)	
L	5	6'-5" / 7'-5"	
E	5	4'-6"	
<i>S</i> 1	8	Varies (Straight)	
<i>S2, S3</i>	5	Varies (Straight)	

	1'-2½"
	81/8" 63/8"
3'-6"	

BARS 5V



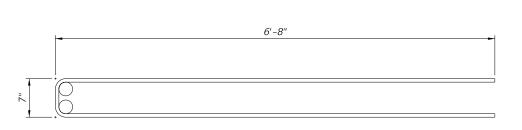
BARS 5U



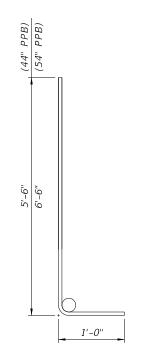
BARS 5R

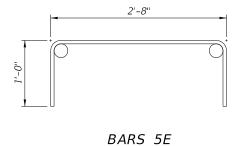
NOTES:

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



BARS 5F1





BARS 5L

BAR BENDING DIAGRAMS

LAST REVISION 11/01/17

DESCRIPTION:

FDOT

GENERAL NOTES:

- 1. GENERAL: Construct Opaque Visual Barrier (OVB) in accordance with Specification 521. Use either cast-inplace or precast panels with Class II Concrete and Class 3 Surface Finish. Do not cast OVB concrete monolithically with the Concrete Barrier or Traffic Railing; use an ASTM D6380, Class S, Type III Organic Felt bond breaker as needed.
- 2. DOWEL BAR CONNECTION: For the embedment in Concrete Barrier or Traffic Railing concrete, dowel bars must be either cast in place for new concrete or grouted in place for existing concrete. Embed the dowel bars to the corresponding depths shown, and use the bar lengths provided in the Dowel Bar Length Table.

At cast in place embedment locations, longitudinally shift the dowel bars only as required to avoid reinforcing steel in the Concrete Barrier or Traffic Railing.

At grouted embedment locations, drill $\frac{5}{8}$ " Ø holes to a depth of $6\frac{1}{4}$ ". Use only approved non-shrink grout on the APL. Drilling through existing reinforcing steel is permitted.

3. TRANSVERSE JOINTS: Place $\frac{1}{2}$ " Transverse Joints with a maximum spacing of 50'-0" and a minimum spacing of 20'-0". Use a consistent spacing where practical.

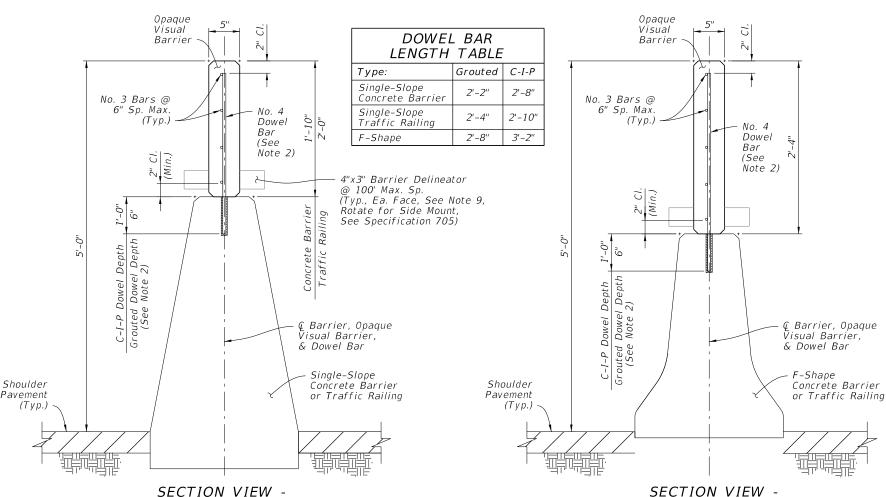
Without violating the above spacing requirements, place Transverse Joints matching the location and width of open joints in the supporting Concrete Barrier or Traffic Railing.

- 4. SLOPED END TREATMENTS: Regardless of the traffic direction, place Sloped End Treatments on all exposed ends of OVB, excluding leave-outs for barrier-mounted signs and light poles. See Note 7 below.
- 5. BARRIER-MOUNTED SIGNS AND LIGHT POLES: Where signs and barrier-mounted light pole structures conflict with placement of OVB, end and restart the OVB with a transverse vertical face located a longitudinal distance of 2" $(\pm^1/2")$ from the base of the structure. Follow the same reinforcing scheme and concrete cover requirement for the Transverse Joint shown herein. See Note 7 below.
- 6. LARGE BARRIER-MOUNTED SIGN SUPPORTS: See Sheet 2 for details. See Note 7 below.
- 7. LEAVE-OUTS: OVB leave-outs are longitudinal gaps in OVB segments required to accommodate barrier-mounted signs and light pole placement. Leave-outs up to 15 feet in length are included in OVB length measurement.
- 8. ASYMMETRICAL CONCRETE BARRIER SECTIONS: When mounting on top of an asymmetrical Concrete Barrier section (not shown), align the centerline of the OVB with the centerline of the top face of the Concrete Barrier section.
- 9. SPLIT CONCRETE BARRIER SECTIONS: For split Concrete Barrier sections that run separately (for vertical structures, bridges, etc.), OVB is only required on top of one of the Concrete Barrier sections. Place OVB on top of the Concrete Barrier section with the highest elevation. For these segments, mount barrier delineators on only the OVB face nearest the roadway (barrier mount other side). Longitudinally overlapping OVB runs are permitted where called for in the Plans, as designated with overlapping Begin and End Station OVB callouts.
- 10. VERTICAL REINFORCING: Place vertical No. 3 bars with the spacing shown, except that No. 3 bars at the dowel bar locations may be shifted longitudinally to fit or they may be omitted at the contractor's option.
- 11. OPTIONAL WELDED WIRE REINFORCEMENT: With the approval of the Engineer, the No. 3 bars shown herein may be replaced with welded wire reinforcement in accordance with Specification 415. Use welded wire reinforcement of equal or greater strength than the bars being replaced; maintain the same cover requirements with equivalent or smaller spacing.
- 12. VARIABLE HEIGHT CONCRETE BARRIERS: See Sheet 2 for details.

DESCRIPTION:

13. CONCRETE BARRIER AND TRAFFIC RAILING TRANSITIONS BETWEEN DIFFERING SECTIONS: Transition the OVB section using a method similar to the OVB Linear Bottom Transition shown in Elevation View 'B' on Sheet 2, except adjust the longitudinal length of the transition as required.

ELEVATION VIEW - OPAQUE VISUAL BARRIER



SECTION VIEW OPAQUE VISUAL BARRIER
FOR MEDIAN SINGLE-SLOPE
CONCRETE BARRIER
OR TRAFFIC RAILING

OPAQUE VISUAL BARRIER
FOR MEDIAN F-SHAPE
CONCRETE BARRIER
OR TRAFFIC RAILING

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LAST REVISION 11/01/22

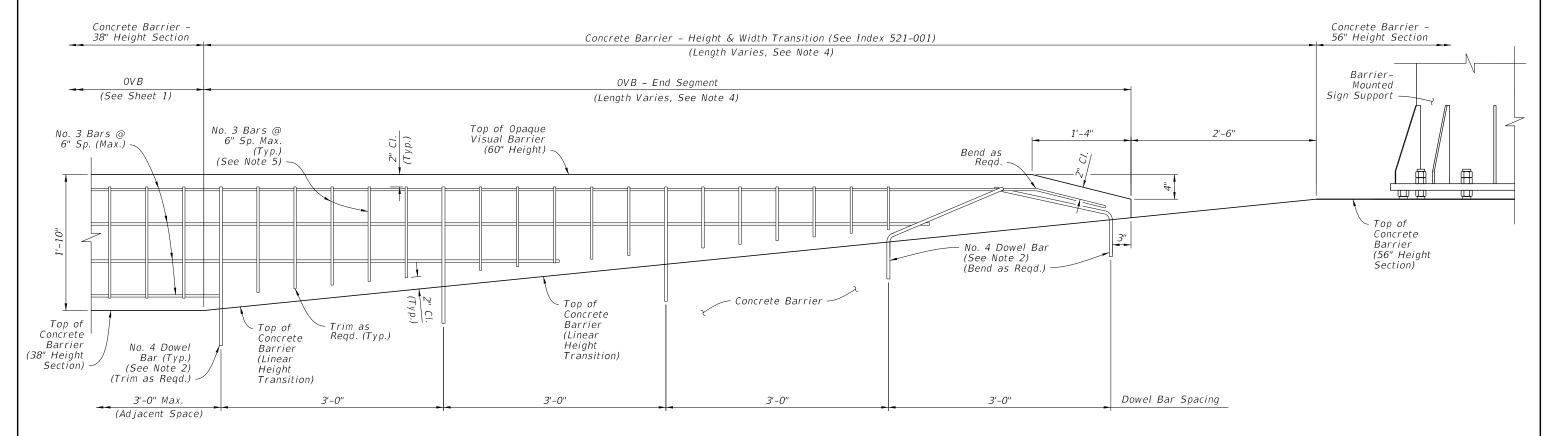
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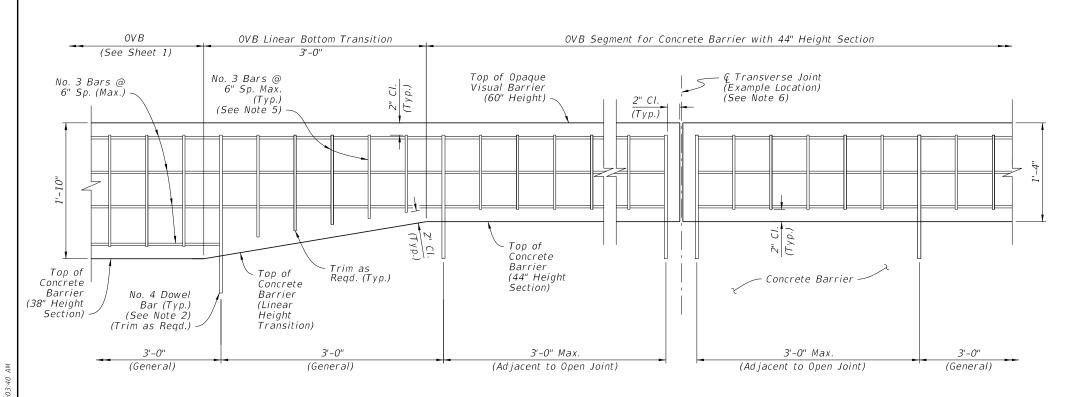
OPAQUE VISUAL BARRIER

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SHEET



ELEVATION VIEW 'A' - OVB END SEGMENT AT CONCRETE BARRIER HEIGHT TRANSITION FROM 38" HEIGHT TO 56" HEIGHT SECTION (REVERSE DIRECTION SIMILAR BY OPPOSITE HAND)



ELEVATION VIEW 'B' - OVB SEGMENT FOR CONCRETE BARRIER WITH 44" HEIGHT SECTION (OVB LINEAR BOTTOM TRANSITION SHOWN, REVERSE DIRECTION SIMILAR BY OPPOSITE HAND)

NOTES:

- 1. LATERAL DIMENSIONS: Maintain the OVB section width and lateral placement as defined on Sheet 1.
- 2. DOWEL BAR LENGTHS & CONNECTIONS: For the differing OVB section heights, trim or adjust the dowel bar lengths as required to meet the clearances shown while maintaining the dowel bar connection requirements of Sheet 1.

Elevation View 'A' - For the two dowel bars closest to the OVB end location, use full dowel bar lengths and bend as shown to maintain clearances. Overlapping dowel bars may deviate from the lateral centerline as required.

3. DOWEL BAR SPACING:

Elevation View 'B' - The dowel locations shown in this detail are examples only, and may shift to maintain the spacing pattern that is governed by adjacent OVB. Maintain the dowel bar spacing scheme as defined on Sheet 1; place dowel bars within the OVB Linear Bottom Transition as required.

4. SEGMENT LENGTHS:

Elevation View 'A' - The length of the OVB End Segment is governed by the length of linear width and height transition of the Concrete Barrier.

Elevation View 'B' - The length of the reduced-section OVB segment is governed by the length of Concrete Barrier with 44" Height Section.

- 5. VERTICAL REINFORCING: For the differing OVB section heights, trim or adjust the vertical No. 3 Bar lengths as required to meet the clearances shown.
- 6. TRANSVERSE JOINTS:

Follow the requirements of Sheet 1.

Elevation View 'A' - Do not place Transverse Joints within the End Segment.

Elevation View 'B' - Maintain the Transverse Joint spacing scheme as defined on Sheet 1; place dowel bars within the OVB Linear Bottom Transition as reauired.

REVISION 11/01/18

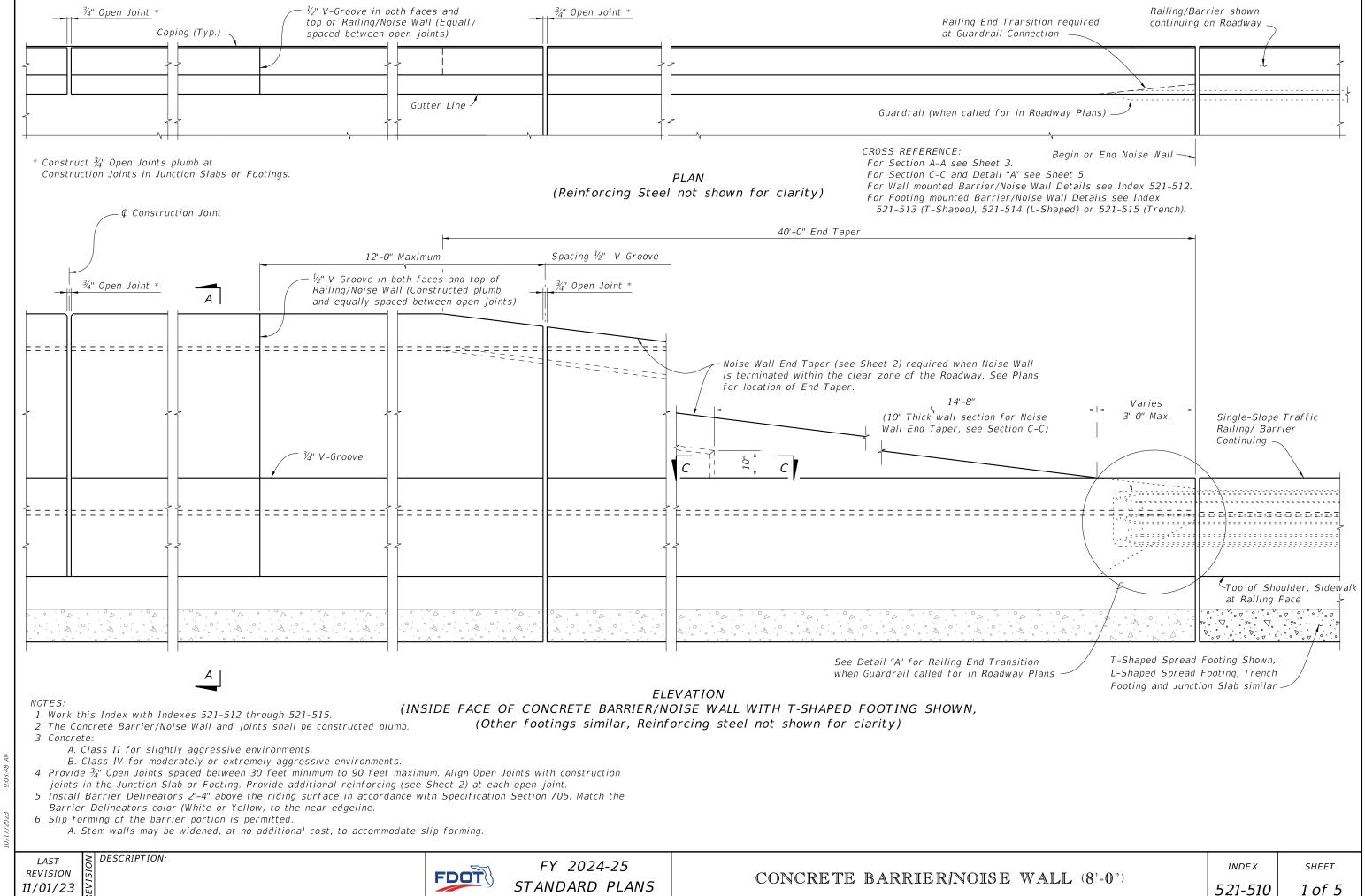
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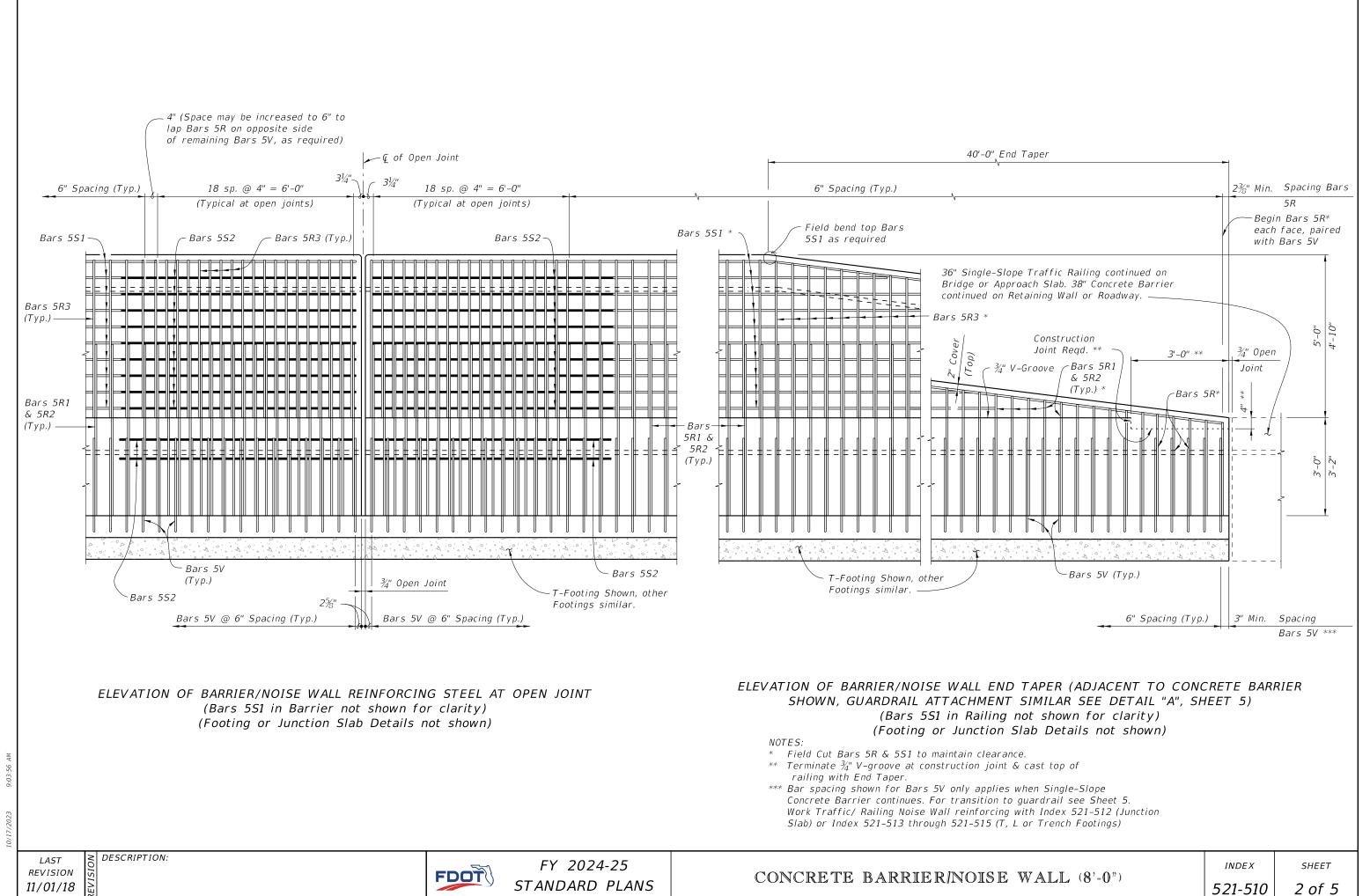
FY 2024-25 STANDARD PLANS

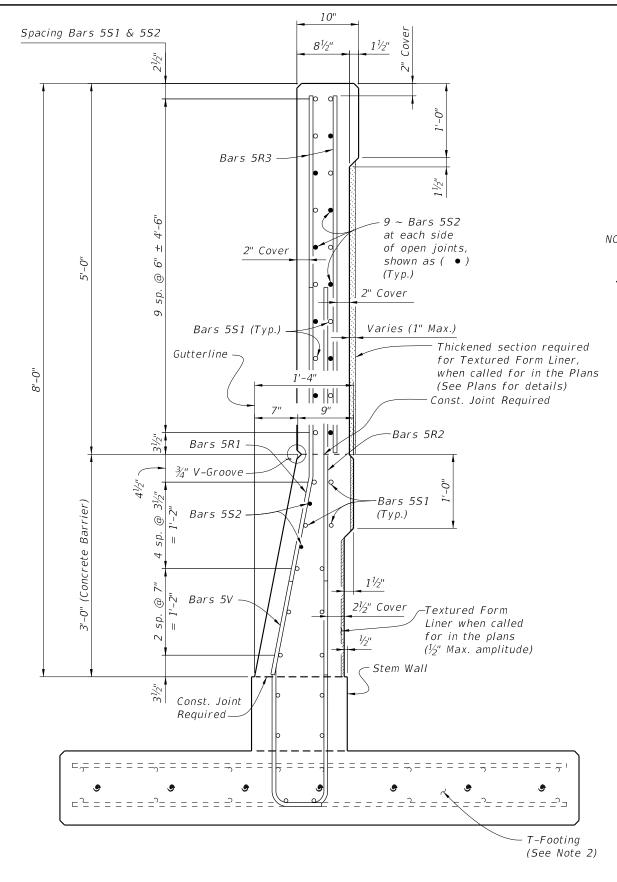
OPAQUE VISUAL BARRIER

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SHEET 2 of 2







SECTION A-A TYPICAL SECTION THRU CONCRETE BARRIER/NOISE WALL AT OPEN JOINT (Section Thru T-Footing Shown, Section Thru Junction Slab, L or Trench Footings similar)

CROSS REFERENCE:

For locations of Section A-A see Sheet 1. For location of View B-B, see Sheet 5. For Detail "A", see Sheet 5

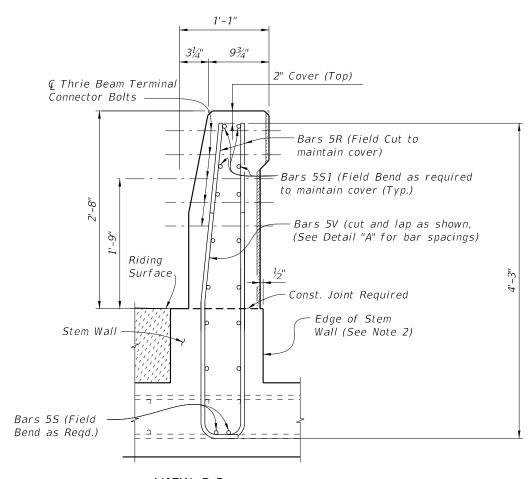
NOTES:

1. Bars 5V shown are for T-Shape footings. 5V for Junction Slab, L-Shape and Trench footings are similar.

2. Foundation Details:

Index 521-512 (Junction Slab) Index 521-513 (T-Shape) Index 521-514 (L-Shape)

Index 521-515 (Trench)



VIEW B-B END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (T-Footing shown, Junction Slab, L or Trench Footings similar)

REVISION 11/01/18

DESCRIPTION:

FY 2024-25 FDOT STANDARD PLANS

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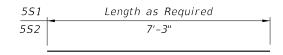
SHEET 3 of 5

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	81.55	
Additional Reinf. @ Open Joint	LB	241.58	

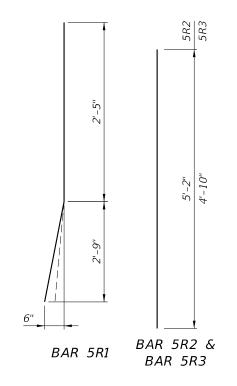
(The above quantities are based on the Concrete Barrier/ Noise wall typical section, (excluding junction slab or footing)

REINFORCING STEEL BENDING DIAGRAMS

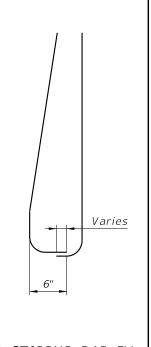
BILL OF REINFORCING STEEL			
MARK	SIZE	LENGTH	
R1	5	5'-2"	
R2	5	5'-2½"	
R3	5	4'-10''	
51	5	As Reqd.	
52	5	7'-3"	
V (Wall)	5	6'-6 ¹ / ₂ "	
V (T-Footing)	5	7'-8½"	



BARS 551 & 552



1'-101/2" 9" STIRRUP BAR 5V



END STIRRUP BAR 5V To Be Field Cut (Railing End Transition)

REINFORCING STEEL NOTES:

(Field Cut and Bend for Railing End Transition)

- 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 5R, 5S1 and 5W 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.
- 6. See Index 521-514 and 521-515 for L-shaped and Trench footing vertical reinforcing.

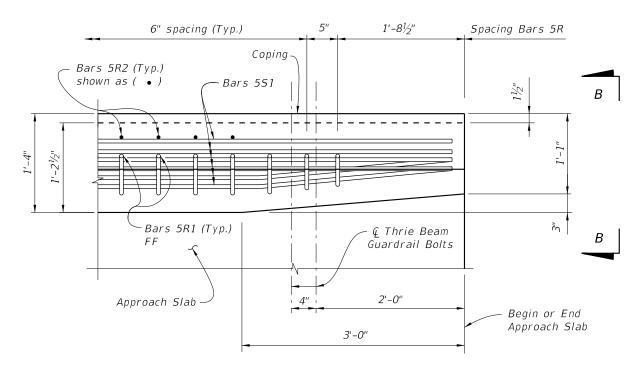
CROSS REFERENCE: See Index 521-512 for Junction Slab Details and Indexes 521-513 thru 521-515

for additional footing details.

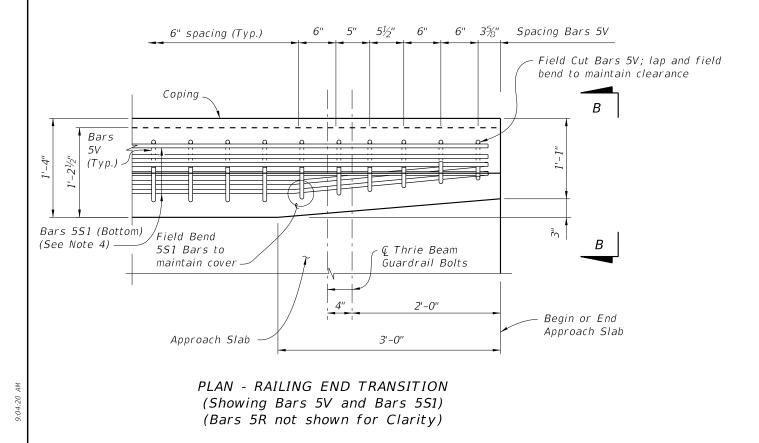
REVISION 11/01/23

DESCRIPTION:

FDOT



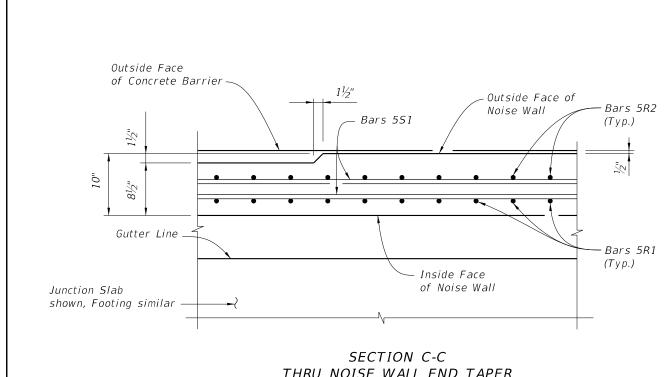
PLAN - RAILING END TRANSITION (Showing Bars 5R, and Bars 5S1) (Bars 5V not shown for Clarity)



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 bolt holes are to be drilled. Shift bars locally where conflicts occur.
- 2. For Guardrail connection details see Index 536-001.
- Omit Railing End Transition if a Single-Slope Concrete Barrier/ Barrier continues 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. (See Sheet 1 Notes 1 and 2)



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.

DESCRIPTION: REVISION 11/01/18

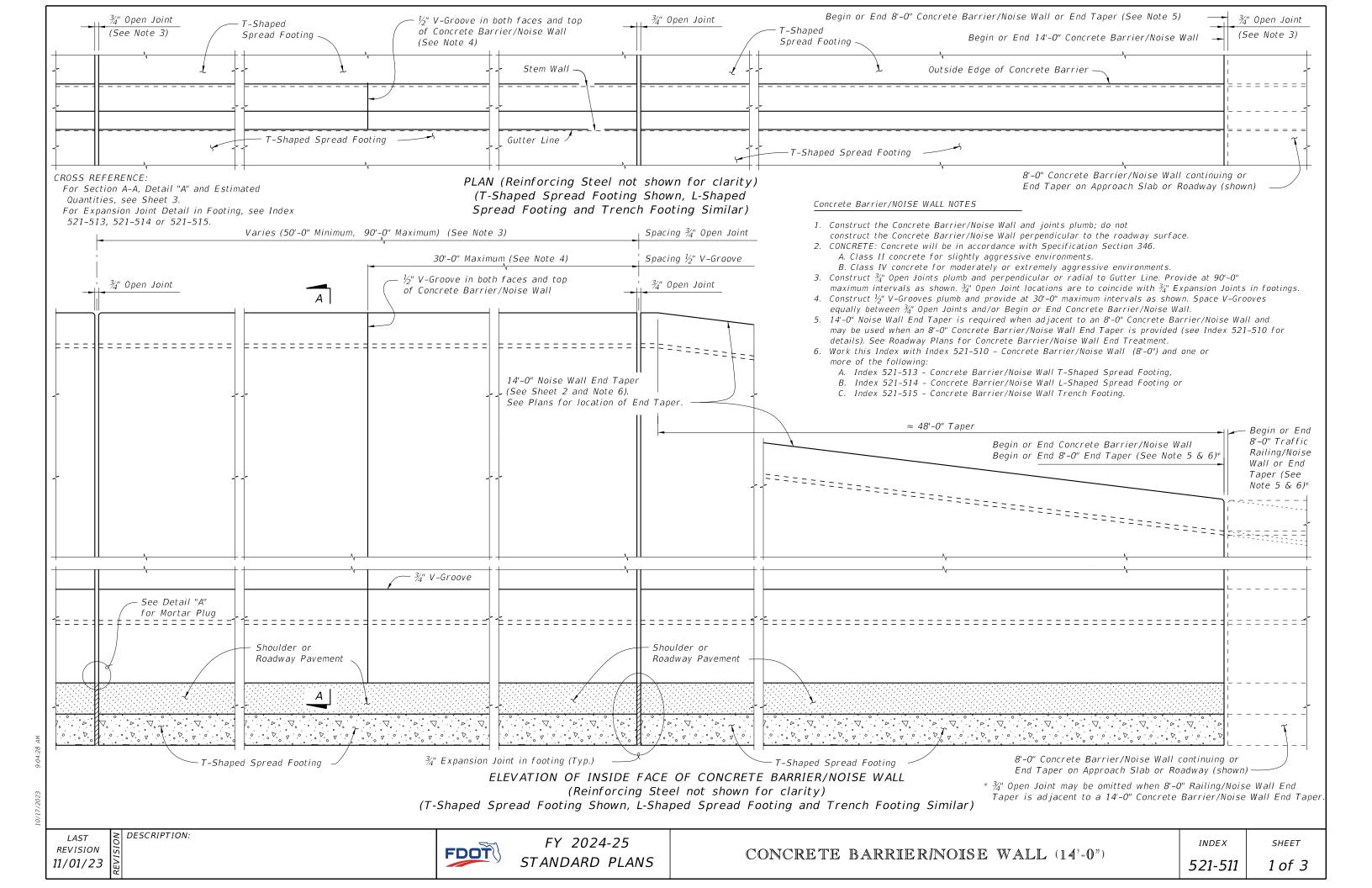
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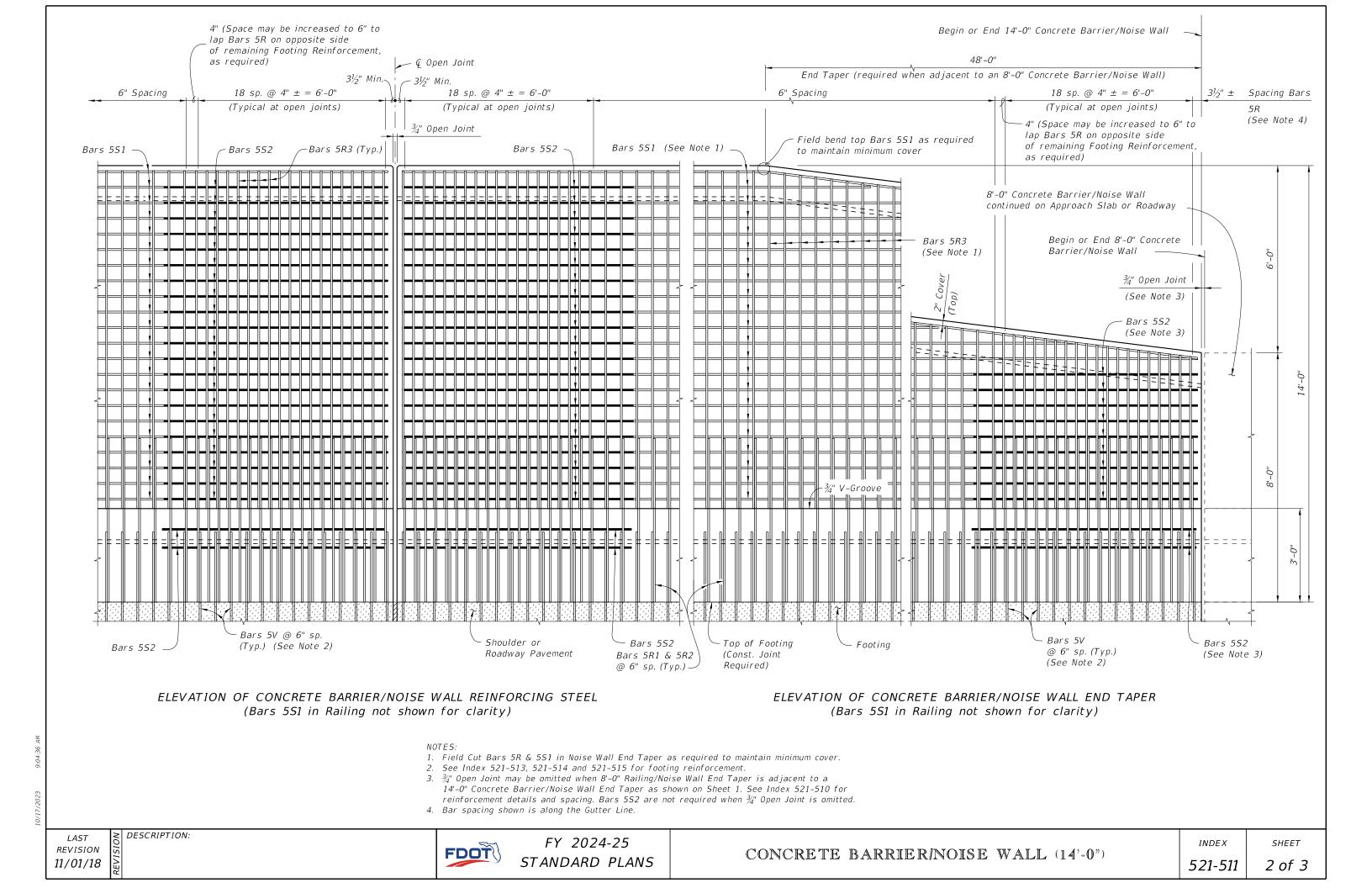
FY 2024-25 STANDARD PLANS

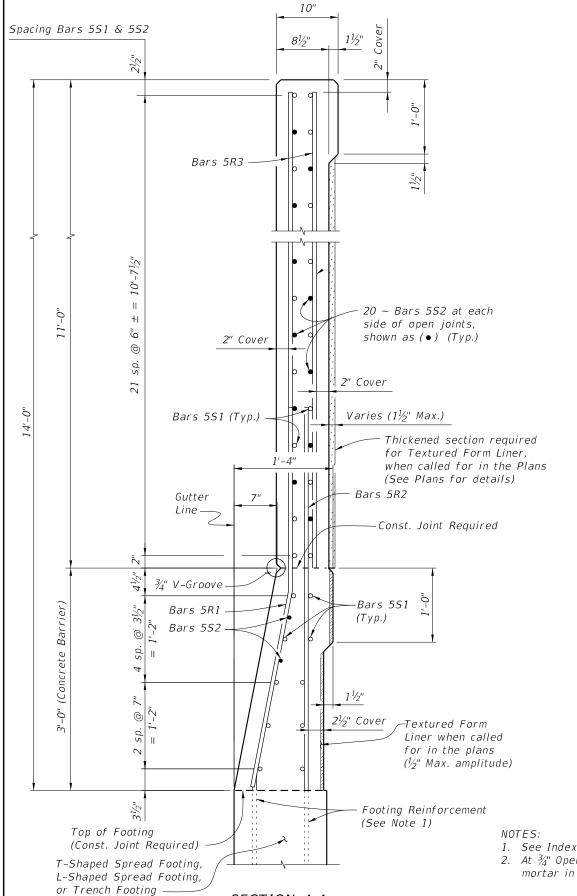
CONCRETE BARRIER/NOISE WALL (8'-0")

INDEX

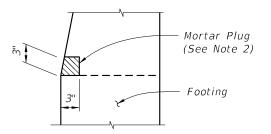
SHEET 5 of 5







SECTION A-A TYPICAL SECTION THRU CONCRETE BARRIER/NOISE WALL

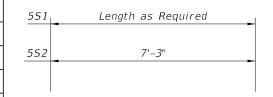


DETAIL "A" -SECTION AT OPEN JOINT

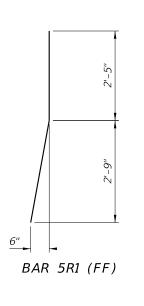
- 1. See Index 521-513, 521-514 or 521-515 for footing reinforcement.
- 2. At $\frac{3}{4}$ " Open Joints, plug the lower 3" portion of the open joint by filling it with mortar in accordance with Specification Section 400.

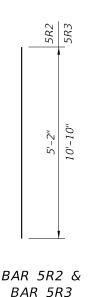
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL			
MARK	SIZE	LENGTH	
R1	5	5'-2"	
R2	5	5'-2 ¹ / ₂ "	
R3	5	10'-10"	
S1	5	AS REQD.	
52	5	7'-3"	



BARS 5S1 & 5S2





REINFORCING STEEL NOTES:

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing steel at the open joints will have a 2" minimum cover.
- 3. Bars 5R may be continuous or spliced at construction joints. Lap splices for Bars 5R, and 5S1 will be a minimum of 2'-2".
- 4. 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.

ESTIMATED CONCRETE BARRIER/NOISE WALL QUANTITIES

ITEM	UNIT	QUANTITY
Concrete (Concrete Barrier)	CY/FT	0.107
Concrete (Noise Wall, excluding any thickening)	CY/FT	0.293
Reinforcing Steel (Railing/Noise Wall) (Bars R1, R2, R3, S1 & V)	LB/FT	120.88
Additional Reinf. @ Open Joint (Railing/Noise Wall)	LB	378.22

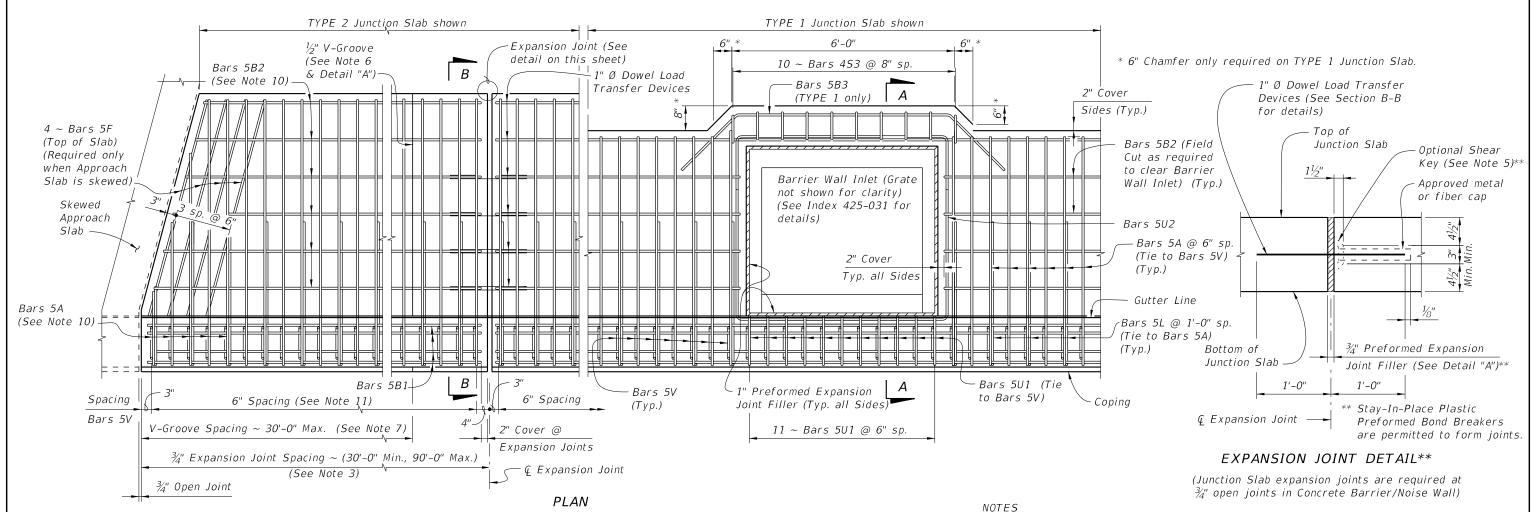
CROSS REFERENCE:

For locations of Section A-A and Detail "A", see Sheet 1.

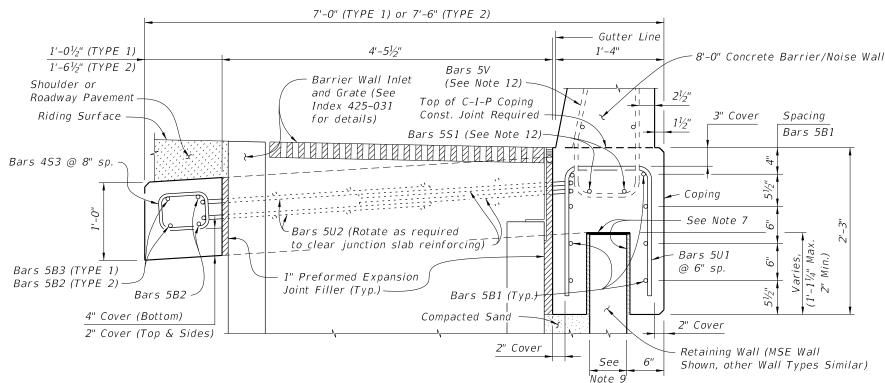
REVISION 11/01/23

DESCRIPTION:





JUNCTION SLAB ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET



SECTION A-A SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL (TYPE 1 Junction Slab Shown, TYPE 2 Similar)

- 1. Work this Index with Index 521-510 Concrete Barrier/Noise Wall (8'-0").
- 2. Concrete will be in accordance with Specification Section 346.
 - A. Use Class II concrete for slightly aggressive environments.
- B. Class IV concrete for moderately or extremely aggressive environments. Construct $rac{3}{4}$ " Expansion Joints and face of coping plumb, and either perpendicular
- or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
- Dowel Load Transfer Devices will be hot-dip galvanized ASTM A36 smooth round bars or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
- Shear Keys in Junction Slab are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 5° to 45° from horizontal.
- Construct ½" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Barrier/Noise Wall.
- Provide Organic Felt bond breaker on top and Expanded Polystyrene ($\frac{1}{2}$ " thick) on sides of retaining wall.
- Shoulder or Roadway Pavement is required on top of the junction slab for its entire length on the traffic side of the Barrier/Noise Wall. See Section B-B for
- Actual location & width vary depending on type of Retaining Wall used.
- 10. Field cut Bars 5A and 5B2 as required to maintain minimum cover for skewed Approach Slab.
- Spacing shown is along the Gutter Line.
- 12. See Index 521-510 for Bars 5V and 2 ~ Bars 5S1. See Plans for Junction Slab width (TYPE).

CROSS REFERENCE:

For Section B-B and Detail "A", see Sheet 2.

REVISION 11/01/20

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CONCRETE BARRIER/NOISE WALL JUNCTION SLAB

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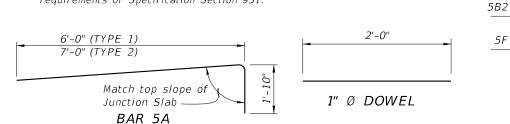
DESCRIPTION:

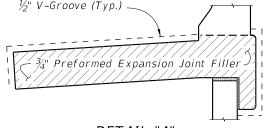
REINFORCING STEEL BENDING DIAGRAMS (8'-0" Concrete Barrier/Noise Wall) (TYPE 1 and 2)

BILL OF REINFORCING STEEL LENGTH MARK SIZE TYPE 1 TYPE 2 5 7'-10" 8'-10" Α В1 5 AS REQD. AS REQD. В2 5 AS REQD. AS REQD. 5 В3 10'-0" N/A5 4'-8" 5'-8" 5 4'-5" 4'-5" 53 4 3'-1" 4'-0" U 1 5 4'-9" 4'-9" U2 5 12'-10" 12'-10" DOWEL | 1" Ø Smooth Bar 2'-0" 2'-0"

REINFORCING STEEL NOTES:

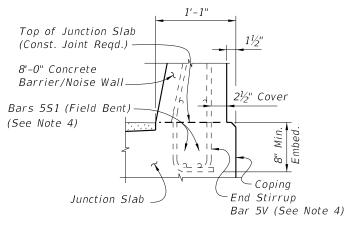
- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing steel at the open joints will have a 2" minimum cover.
- 3. Lap splices for Bars 5B will be a minimum of 2'-2".
- 4. The Contractor may use Deformed WWR when approved by the Engineer. Deformed WWR must meet the requirements of Specification Section 931.





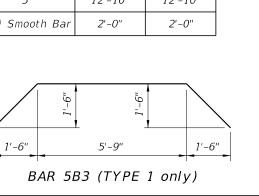
DETAIL "A"

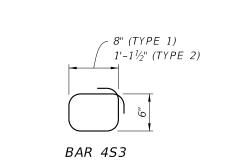
(Showing Locations of $\frac{1}{2}$ " V-Grooves and 3/4" Preformed Expansion Joint Filler)

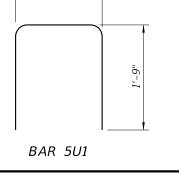


PARTIAL END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5V and Bars 5B1)

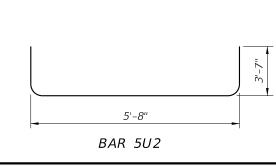
NOTE: See Index 521-510, Detail "A" for details.







1'-2"



3'-9"

BAR 5L

Length as Required

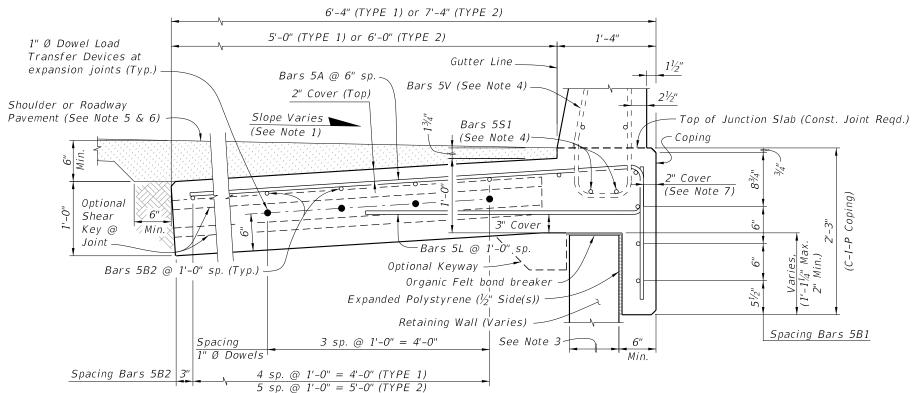
Length as Required

4'-8"

BARS 5B & 5F

5B1

5F



ESTIMATED JUNCTION SLAB QUANTITIES QUANTITY ITEM UNIT TYPE 1 TYPE 2 Concrete (Junction Slab) CY/FT 0.268 0.305 LB/FT 31.72 34.85 Reinforcing Steel (Typical) Additional Reinf. @ Expansion Joint LB 21.36 21.36

NOTES:

- 1. Match Cross Slope of Travel Lane or Shoulder.
- 2. Vary Junction Slab slope based on roadway cross slope to maintain a minimum 6" asphalt depth at the edge of the slab as shown.
- 3. Actual width varies depending on type of Retaining Wall used.
- 4. See Index 521-510 for Bars 5V and Bars 5S1.
- 5. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finished grade. Vary the Junction Slab slope to maintain a minimum 1'-6" thickness at the inside edge of the slab.
- 6. See Roadway Plans for asphalt shoulder, roadway pavement and overbuild.
- 7. If slip forming is used, submit shop drawings for approval showing Expansion Joint support details and $2\frac{1}{2}$ " side cover with adjusted Typical Section dimensions.
- 8. Bars 5L and 5C are grouped together and placed with every other Bar 5A.
- 9. Bar 5L to lap Bar 5C for minimum wall embedment. Minimum Lap splice length 2'-2".

CROSS REFERENCE:

For location of Section B-B, see Sheet 1.

DESCRIPTION: REVISION

FDOT

SECTION B-B

TYPICAL SECTION THRU JUNCTION SLAB AND RETAINING WALL

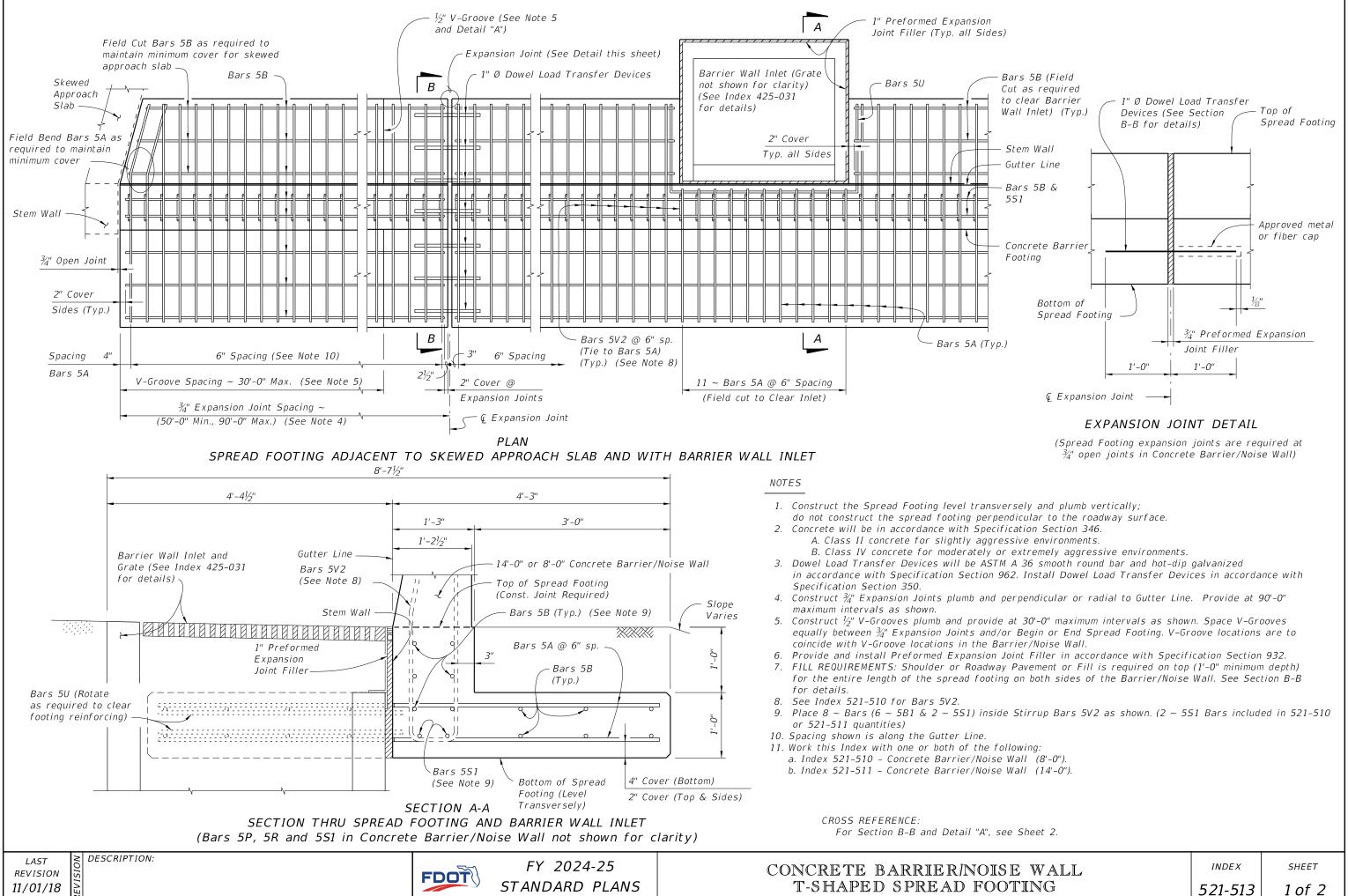
(8'-0" Concrete Barrier/Noise Wall)

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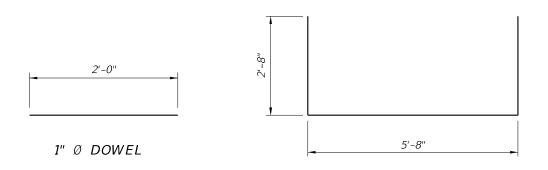
SHEET

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5A	6'-8"
 5B	Length as Required
	-

BARS 5A & 5B

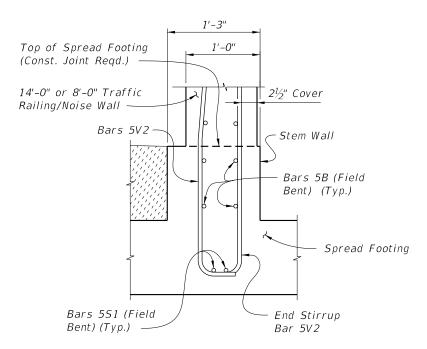


REINFORCING STEEL BENDING DIAGRAMS

BAR 5U

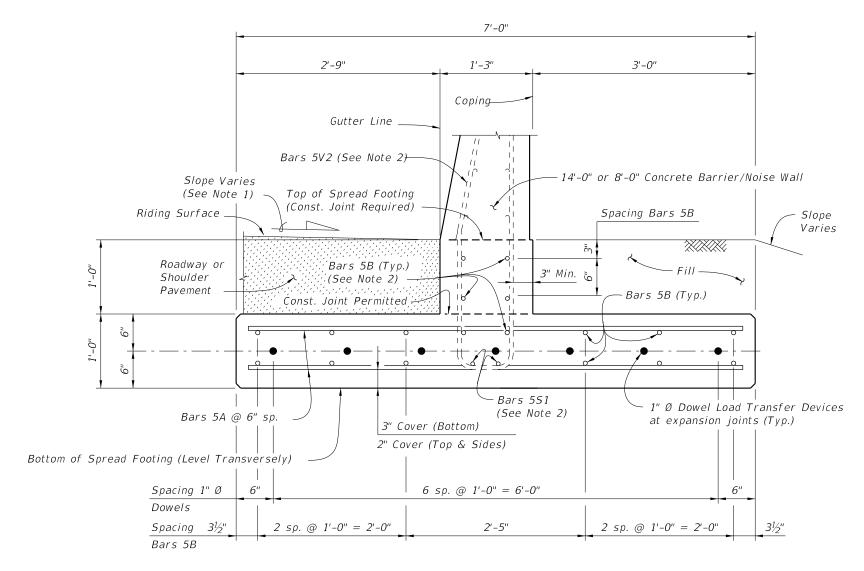
REINFORCING STEEL NOTES:

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing steel at the open joints will have a 2" minimum cover.
- 3. Lap splices for Bars 5B will be a minimum of 2'-2".
- 4. 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.



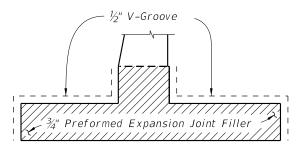
PARTIAL END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5V2, and Bars 5B inside of Stirrup Bars 5V2)

NOTE: See Index 521-510, Detail "A" for details.



SECTION B-B TYPICAL SECTION THRU SPREAD FOOTING (Bars 5R and 5S1 in Concrete Barrier/Noise Wall not shown for clarity)

- 1. Match Cross Slope of Travel Lane or Shoulder.
- 2. See Sheet 1, Notes 8 & 9.



DETAIL "A"

(Showing Locations of ½" V-Grooves and 3/4" Preformed Expansion Joint Filler)

ESTIMATED T-SHAPED SPREAD FOOTING QUANTITIES			
ITEM UNIT QUANTITY			
Concrete (Footing)	CY/FT	0.312	
Reinforcing Steel (Typical)	LB/FT	47.36	
Additional Reinf. @ Expansion Joint	LB	37.38	

Note: The reinforcing steel quantity includes the difference between Index 521-510 or 521-511 and Bars 5V shown. Bars 5S1 are included in Index 521-510 or 521-511 quantities.

CROSS REFERENCE:

For location of Section B-B, see Sheet 1.

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DESCRIPTION:

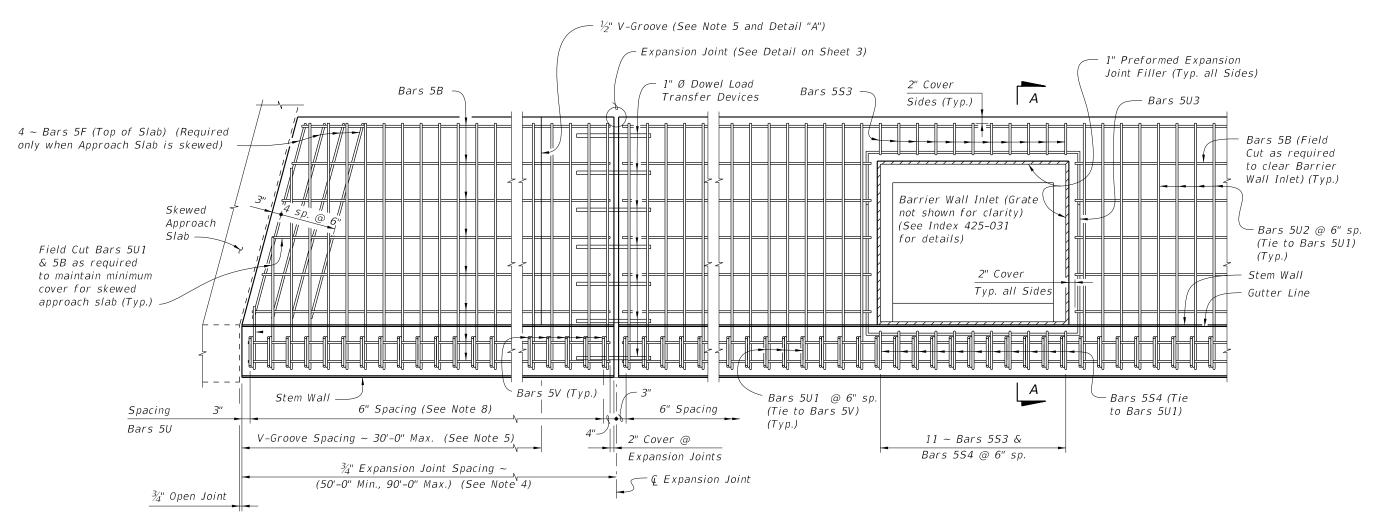
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CONCRETE BARRIER/NOISE WALL T-SHAPED SPREAD FOOTING

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SHEET 2 of 2



PLAN - OPTION B SPREAD FOOTING ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET (Option A Similar) (Bars S1 Not Shown)

NOTES

- 1. Construct the Spread Footing level transversely; do not construct the spread footing perpendicular to the roadway surface.
- 2. Concrete will be in accordance with Specification Section 346.
 - A. Class II concrete for slightly aggressive environments.
 - B. Class IV concrete for moderately or extremely aggressive environments.
- 3. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
- 4. Construct $\frac{3}{4}$ " Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
- 5. Construct 1/3" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between $\frac{3}{4}$ Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with V-Groove locations in the Concrete Barrier/Noise Wall.
- 6. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
- 7. Shoulder or Roadway Pavement and Fill is required on the traffic side of the spread footing for a distance of 4'-0" and the full length of the spread footing (3'-0" minimum depth) on the backside of the spread footing for Option A. Fill is required for a distance of 4'-0" on the backside of the spread footing and the full length of the spread footing (3'-0" minimum depth) on the traffic side of the spread footing for Option B. See Typical Sections on Sheets 2 and 3 for details.
- 8. Spacing shown is along the Gutter Line.
- 9. Work this Index with one or both of the following:
- a. Index 521-510 Concrete Barrier/Noise Wall (8'-0").
- b. Index 521-511 Concrete Barrier/Noise Wall (14'-0").

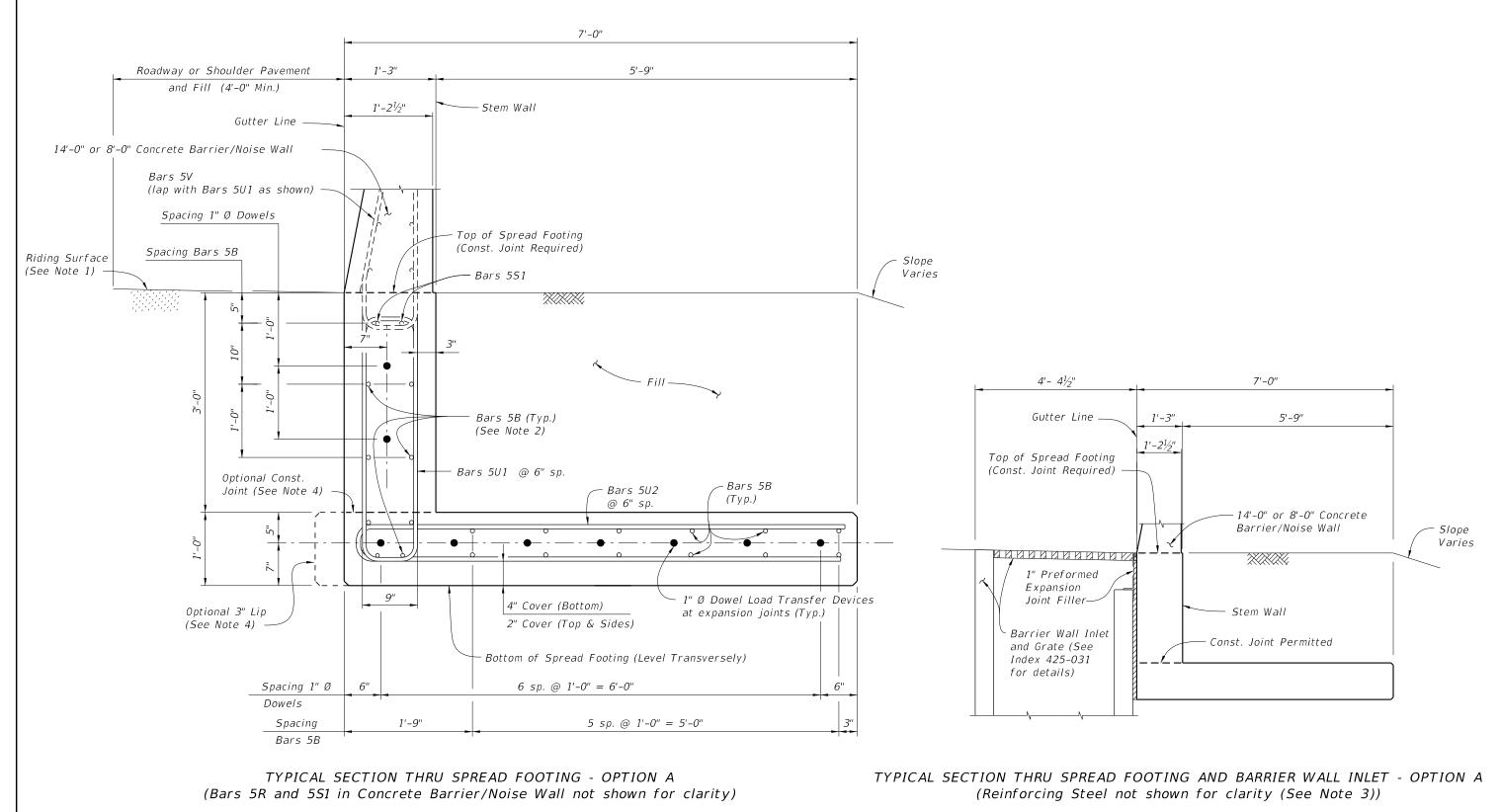
CROSS REFERENCE:

For Detail "A", see Sheet 3. For Section A-A and Estimated Quantities, see Sheet 4.

REVISION 11/01/18

DESCRIPTION:

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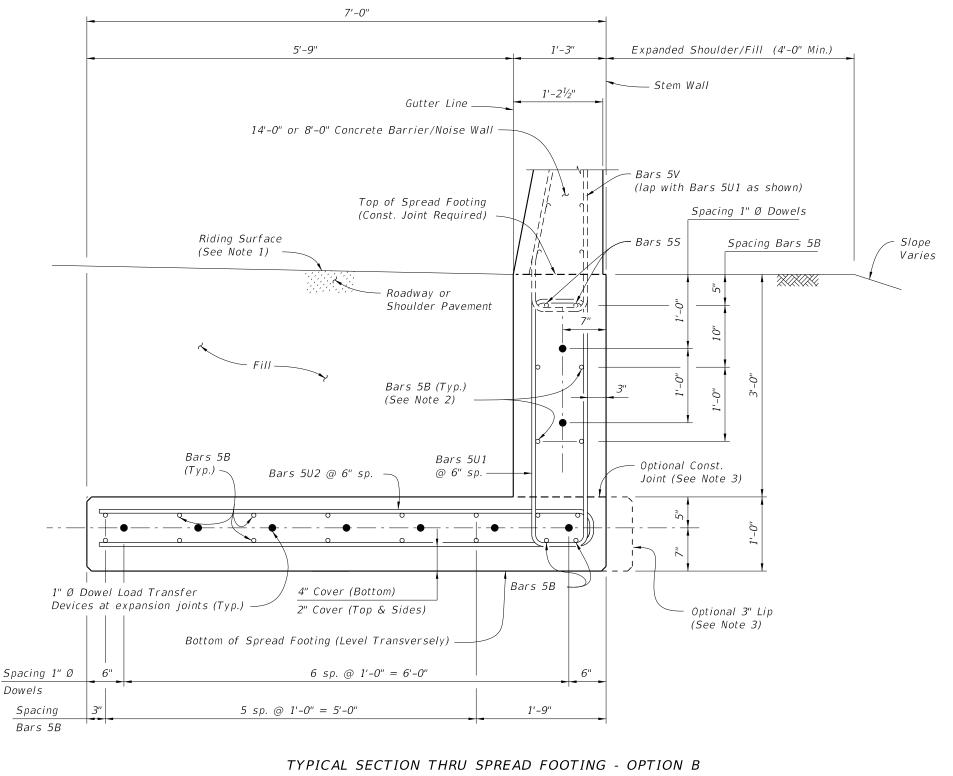
IOTES:

- 1. Match Cross Slope of Travel Lane or Shoulder.
- 2. Place $10 \sim Bars$ (8 $\sim Bars$ 5B and 2 $\sim Bars$ 5S1) inside Bars 5U1 as shown, (2 $\sim 5S1$ Bars are included in 521-510 or 521-511 quantities)
- 3. For Reinforcing Steel spacing, see Typical Section Thru Spread Footing - Option A this Sheet.
- 4. Provide 3" lip when optional construction joint is used.

LAST REVISION 11/01/17

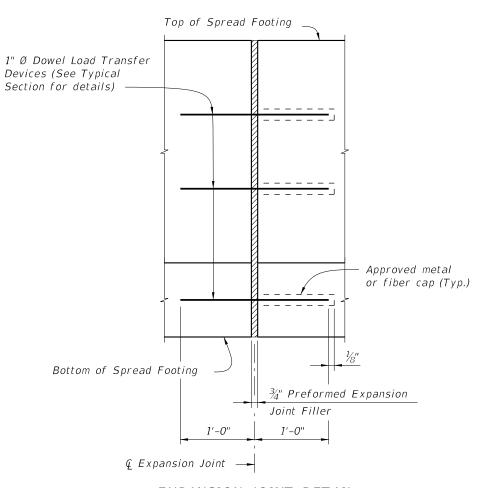
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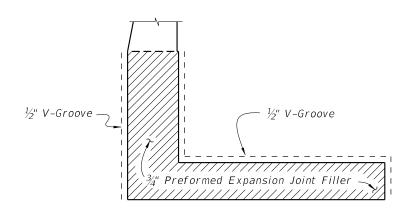
(Bars 5P, 5R and 5S1 in Concrete Barrier/Noise Wall not shown for clarity)

- 1. Match Cross Slope of Travel Lane or Shoulder.
- 2. Place 10 ~ Bars (8 ~ Bars 5B and 2 ~ Bars 5S1) inside Bars 5U1 as shown.
- 3. Provide 3" lip when optional construction joint is used.



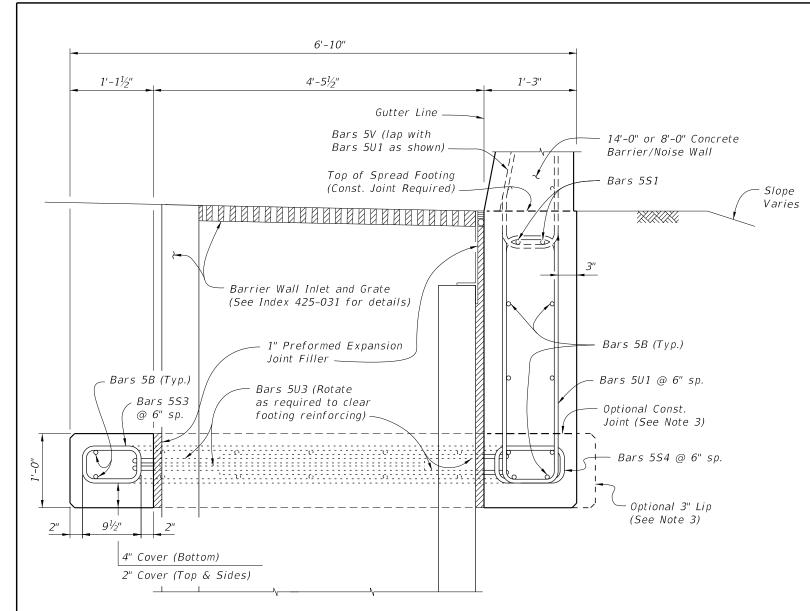
EXPANSION JOINT DETAIL

(Spread Footing expansion joints are required at 3/4" open joints in Concrete Barrier/Noise Wall)



DETAIL "A" (Option A Shown, Option B Similar)

(Showing Locations of $\frac{1}{2}$ " V-Grooves and 3/4" Preformed Expansion Joint Filler)



SECTION A-A TYPICAL SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET - OPTION B (Bars 5P, 5R and 5S1 in Concrete Barrier/Noise Wall not shown for clarity)

- 1. Place 8 ~ Bars 5B and 2 Bars S1 inside Bars 5U1 as shown.
- 2. For Reinforcing Steel spacing, see Typical Section Thru Spread Footing - Option B on Sheet 3.
- 3. Provide 3" lip when optional construction joint is used.

ESTIMATED L-SHAPED SPREAD FOOTING QUANTITIES				
ITEM UNIT QUANTITY				
Concrete (Footing)	CY/FT	0.398		
Reinforcing Steel (Typical) *	LB/FT	68.84		
Additional Reinf. @ Expansion Joint	LB	48.06		

* Bars 5V and 5S1 are included in Index 521-510 or 521-511 quantities.

CROSS REFERENCE:

For location of Section A-A, see Sheet 1.

REINFORCING STEEL BENDING DIAGRAMS BILL OF REINFORCING STEEL Length as Required MARK SIZE LENGTH AS REQD. В 5 5'-6" F 5 5'-6" *S3* 5 3'-7" BARS 5B & 5F 54 5 3'-10" 5 9'-2" U 1 2'-0" U2 5 13'-10" UЗ 5 12'-10" DOWEL 1" Ø Smooth Bar 2'-0" 1" Ø DOWEL 6'-8" 5'-8" BAR 5U2 BAR 5U3 **BAR 5S3** 11" **BAR 5S4** BAR 5U1 REINFORCING STEEL NOTES:

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing steel at the open joints will have a 2" minimum cover.
- 3. Lap splices for Bars 5B will be a minimum of 2'-2".
- 4. Lap splices Bars 5T and 5V with 5U1 will 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.

LAST REVISION 11/01/17

DESCRIPTION:

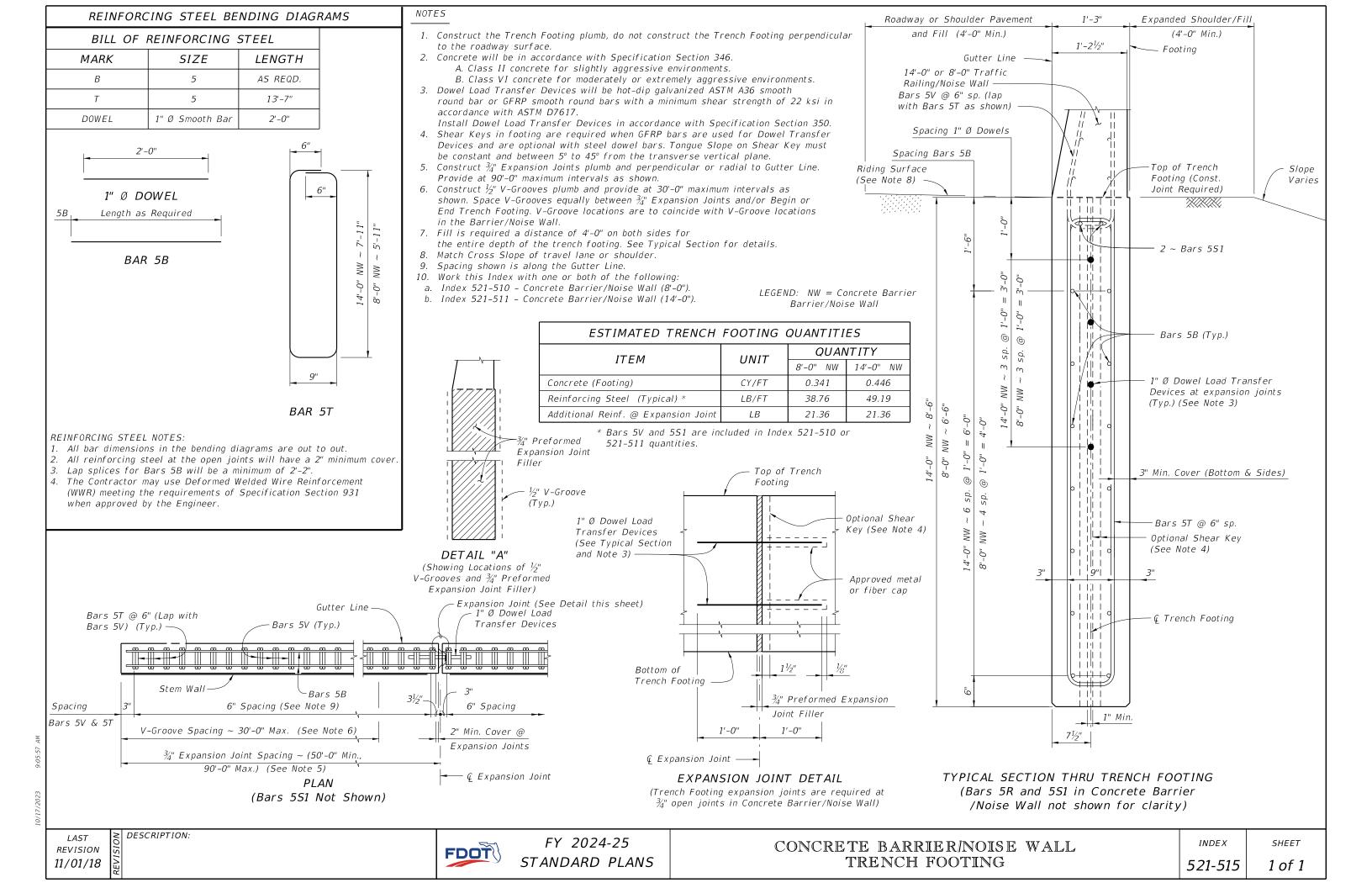
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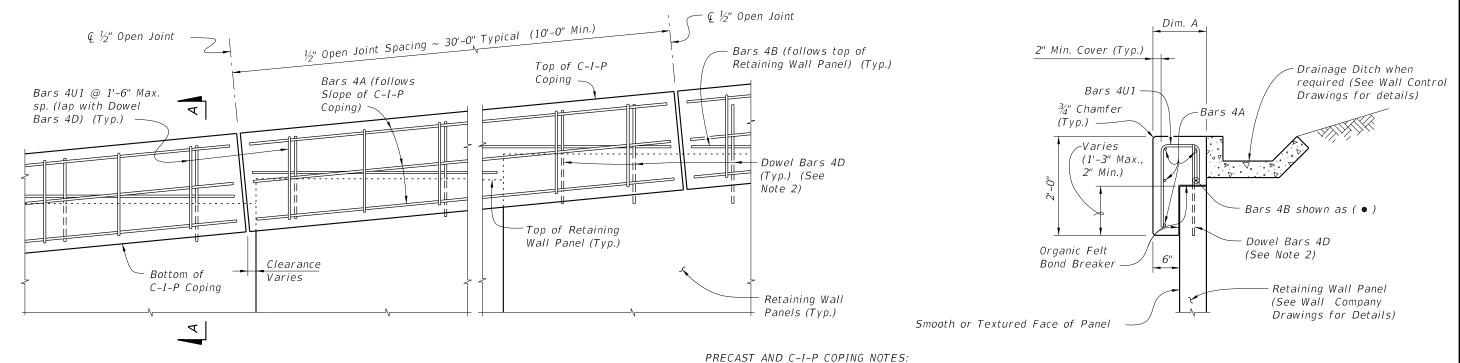
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CONCRETE BARRIER/NOISE WALL

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C-I-P COPING - PARTIAL ELEVATION VIEW

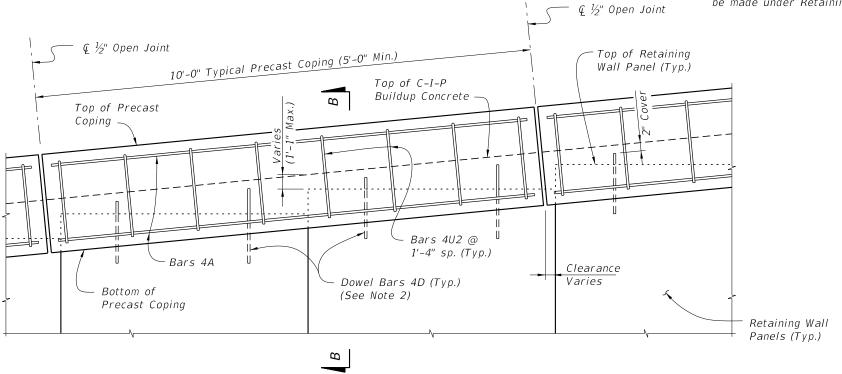
1. Provide Class II concrete for slightly aggressive environments or Class IV for moderately or extremely aggressive environments.

2. Dowel Bars 4D extend 11" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover. See Wall Company Drawings for number and spacing of Dowel Bars 4D.

3. Payment for Dowel Bars 4D, Buildup Concrete and Coping will be made under Retaining Wall System (Permanent).

SECTION A-A C-I-P COPING Dim. A

Panel width + 6" Panel width Dim. B | + 1'-0" Min.



2" Min. Cover (Typ.) Drainage Ditch when required (See Wall Bars 4U2 Control Drawings · Bar's 4A for details) (Typ.)3/4" Chamfer (Typ.) -2" Cover Min. C-I-P Buildup Class NS Concrete (1'-1" Max.) Provide $3\frac{1}{2}$ " x $3\frac{1}{2}$ " preservative treated timber blocking @ 5' Max. Spacing for gaps > 1" Varies (1'-3" Max., - Dowel Bars 4D 2" Min.) (See Note 2) ¾" Std. $(\frac{1}{2}'')$ Min. ~ $2\frac{1}{2}''$ Max.) Retaining Wall Panel (See Wall Company Smooth or Textured Face of Panel Drawings for Details)

Dim. B

SECTION B-B PRECAST COPING

PRECAST COPING - PARTIAL ELEVATION VIEW

REVISION 11/01/22

DESCRIPTION:

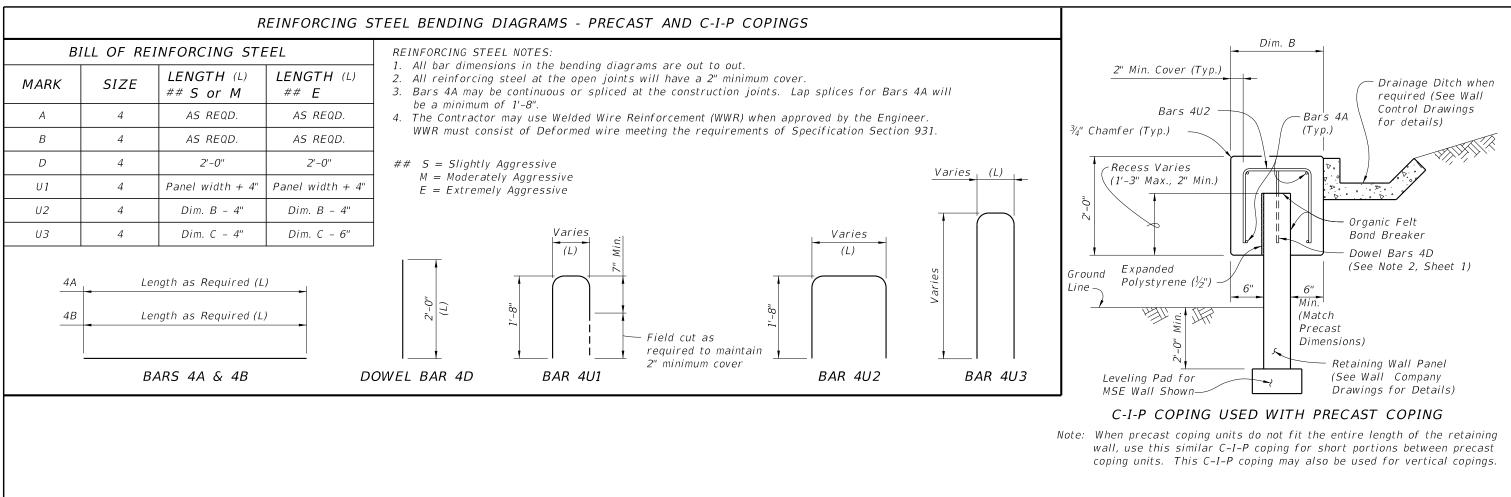
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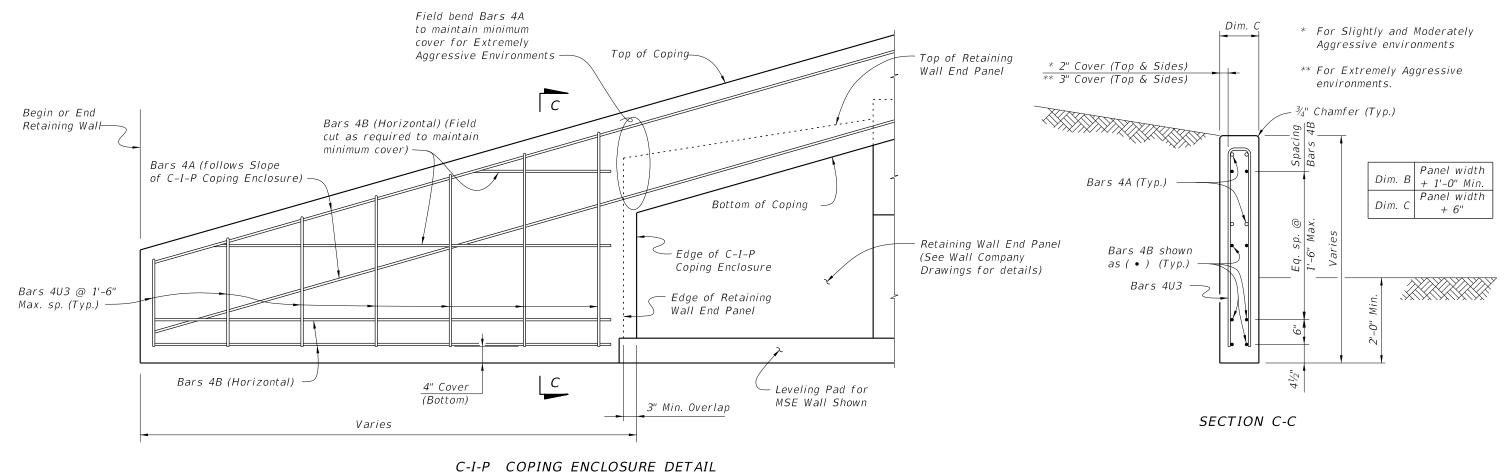
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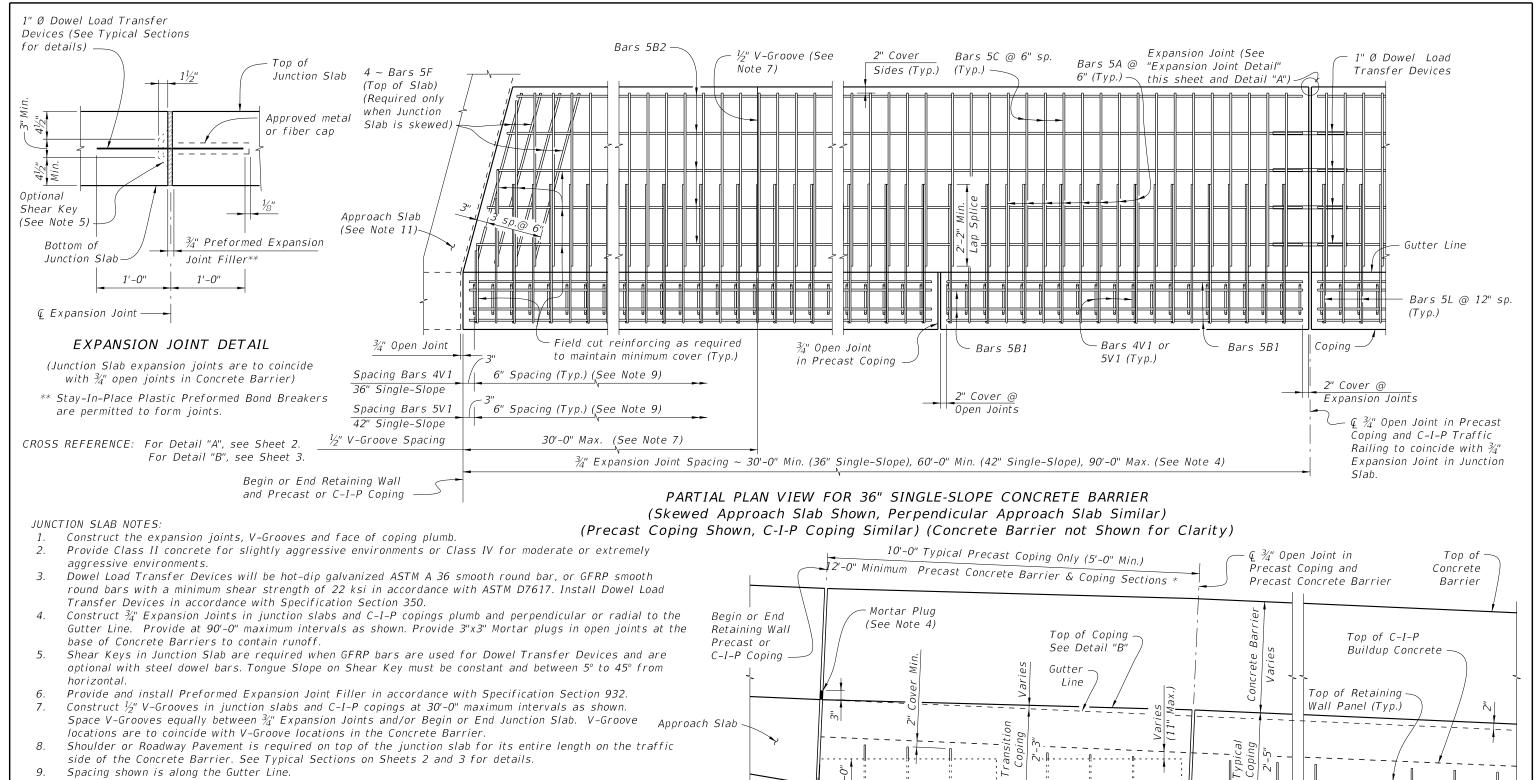




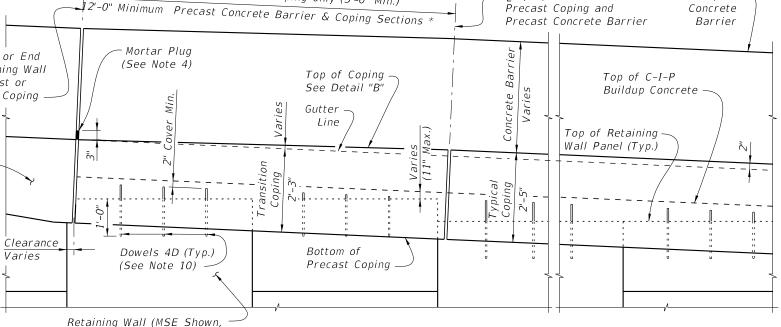
REVISION

11/01/19

DESCRIPTION:



- For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extended 9" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
- The following Indexes contain details of the intersection of the retaining wall at approach slabs: Index 400-090 - Approach Slabs (Flexible Pavement Approaches) Index 400-091 - Approach Slabs (Rigid Pavement Approaches)
- Junction slabs with rigid pavement: the two inch increase in concrete barrier height is not required.
- There are two options to accommodate the 2" height transitions :
 - A. Raise the top of coping elevation 2" and mount either a 36" or 42" standard barrier on top
 - B. Transition the height of the concrete barrier by gradually extending the toe and back of the barrier 2" while keeping the top of coping elevation even with the gutterline elevation.
- The barrier construction joint must be at the interface of the coping and the barrier base. Embed the V bars a minimum of 9" below the construction joint.
 - For embedded conduit and junction boxes, see Index 630-010.



PARTIAL ELEVATION VIEW (Precast Coping and Junction Slab Reinforcing not Shown for Clarity) (Precast Coping Shown, C-I-P Coping Similar)

Other Types Similar) (Typ.)

* C-I-P End Section must $be \ge 12'-0''$.

SINGLE-SLOPE CONCRETE BARRIERS

REVISION 11/01/21

DESCRIPTION:

FDOT

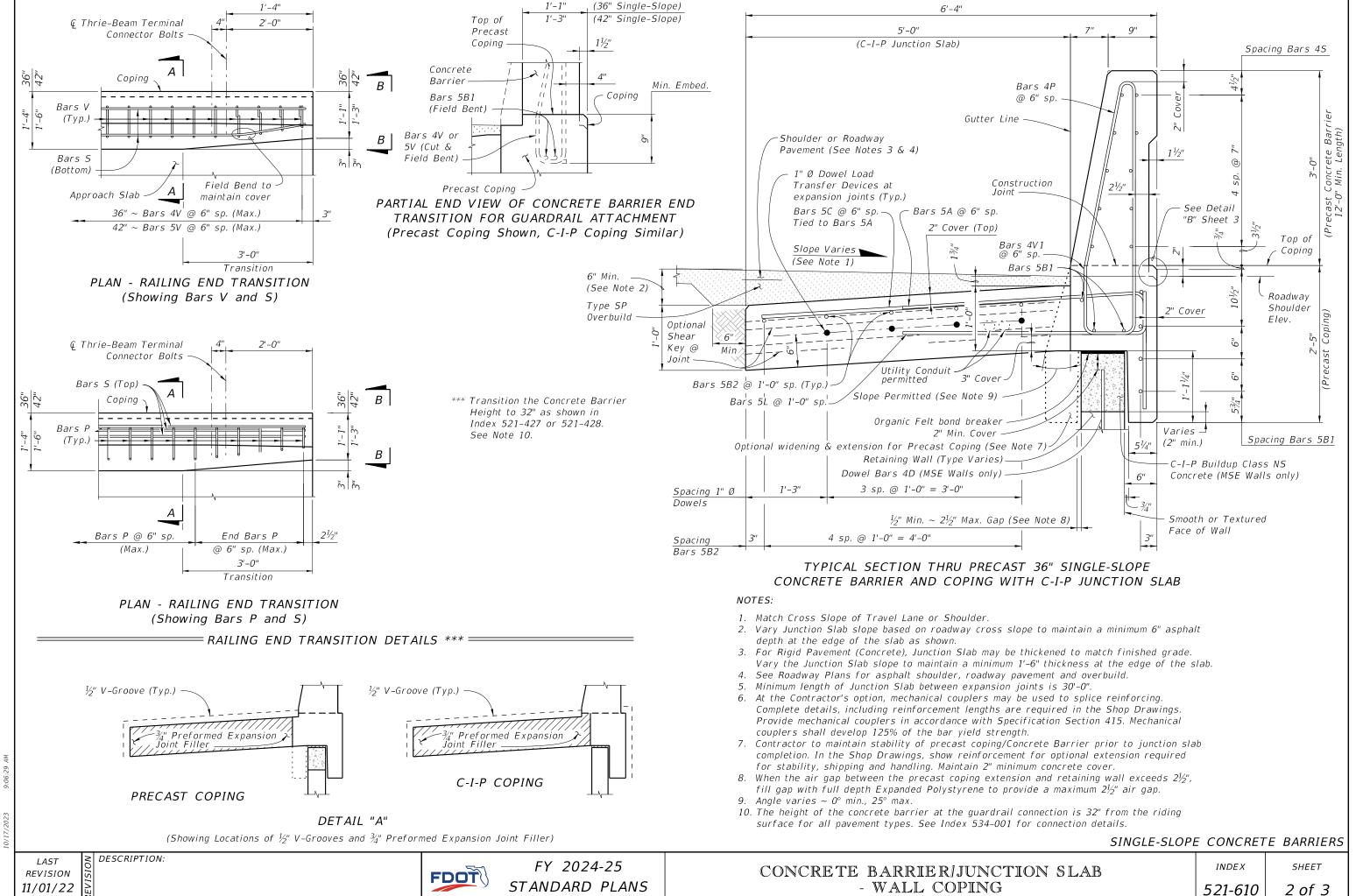
FY 2024-25 STANDARD PLANS

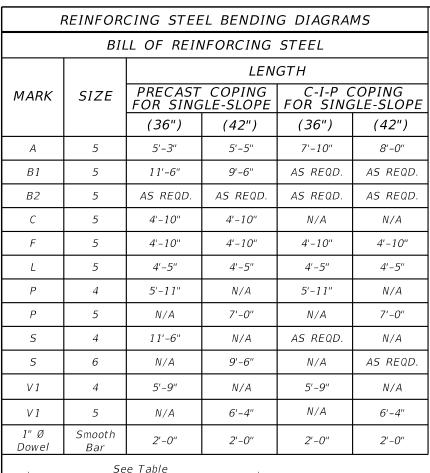
CONCRETE BARRIER/JUNCTION SLAB - WALL COPING

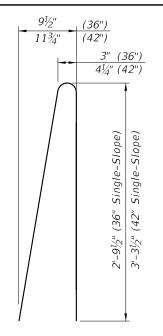
INDEX

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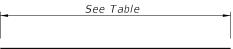
SHEET



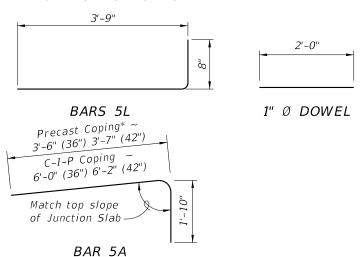


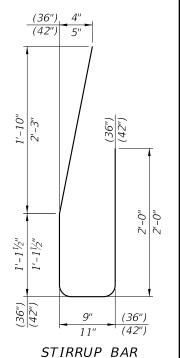


STIRRUP BAR 4P (36") 5P (42")



BARS 5B1, 5B2, 5C, 5F, 4S, & 6S

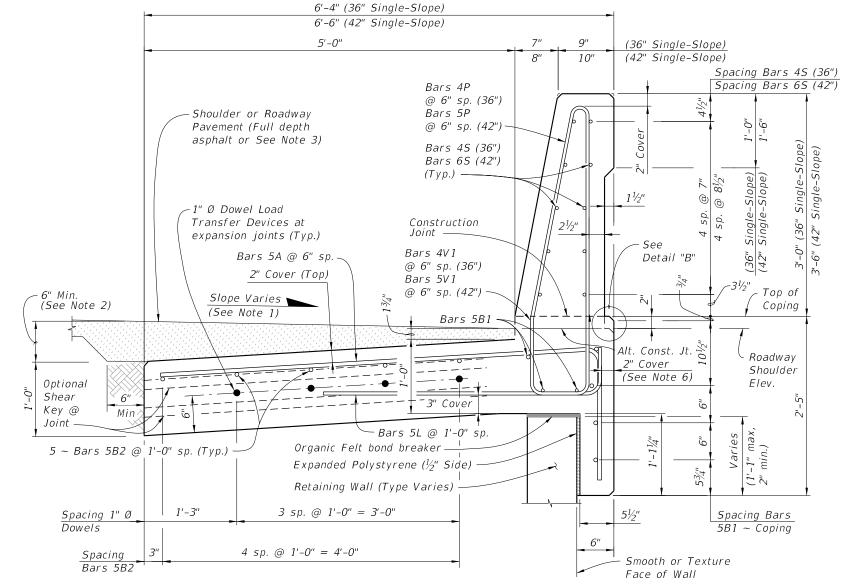




4V1 (36") 5V1 (42")

* See Note 5 & 6 REINFORCING STEEL NOTES:

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing steel at expansion and open joints will have a 2" minimum cover
- 3. Lap splices for Bars 5B & 5S will be a minimum of 2'-2".
- 4. For Precast Copings only, lap splice Bars 5A with Bars 5C. Lap splices will be a minimum of 2'-2".
- 5. The Contractor may use either full length Bars 5A or lap splice with Bars 5C at Bars 5A
- 6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is $1'-2\frac{1}{2}$ " (36" Single-Slope) or $1'-4\frac{1}{2}$ " (42" Single-Slope).
- 7. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 4'-8".
- 8. When approved by the Engineer, the Contractor may use deformed Welded Wire Reinforcement (WWR) meeting the requirements of Specification Section 931.
- 9. Contractor may use a single #4 stirrup for Bars 4P and 4V1, or a single #5 stirrup for Bars 5P and 5V1.

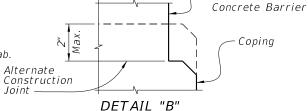


TYPICAL SECTION THRU C-I-P CONCRETE BARRIER WITH C-I-P JUNCTION SLAB AND C-I-P COPING NOTES: (PRECAST COPING SIMILAR WITH C-I-P BUILDUP)

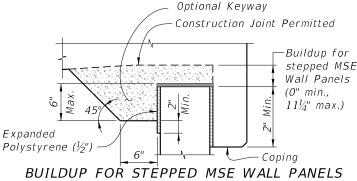
- 1. Match Cross Slope of Travel Lane or Shoulder.
- Vary the Junction Slab slope based on the roadway cross slope to maintain a minimum 6" asphalt depth at the edge of the slab.
- 3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade. Vary the Junction Slab slope to maintain a minimum 1'-6" thickness at the inside edge of the slab.
- 4. Minimum length of Junction Slab between expansion joints is 30'-0" for 36" Single-Slope or 60'-0" for 42" Single-Slope.
- Contractor to maintain stability of precast coping prior to junction slab completion. In the Shop Drawings, show reinforcement for optional extension required for stability, shipping and handling. Maintain 2" minimum concrete cover.
- 6. If slip forming is used, submit shop drawings for approval showing $2\frac{1}{2}$ " side cover with the Typical Section dimensions adjusted.

ESTIMATED QUANTITIES FOR C-I-P				
ITEM	QUANTITY (36")	QUANTITY (42")		
Concrete	CY/LF	0.376	0.420	
Reinforcing Steel (Typical) (excludes Bars 5C & 5F)	LB/LF	62.45	82.17	
Additional Reinf. @ Expansion Joint (Steel Dowels)	LB	21.36	21.36	

(The above concrete quantities are based on a max. superelevation of 6.25%)



OPTIONAL NOTCH AT TOP OF COPING



AND C-I-P COPING

SINGLE-SLOPE CONCRETE BARRIERS

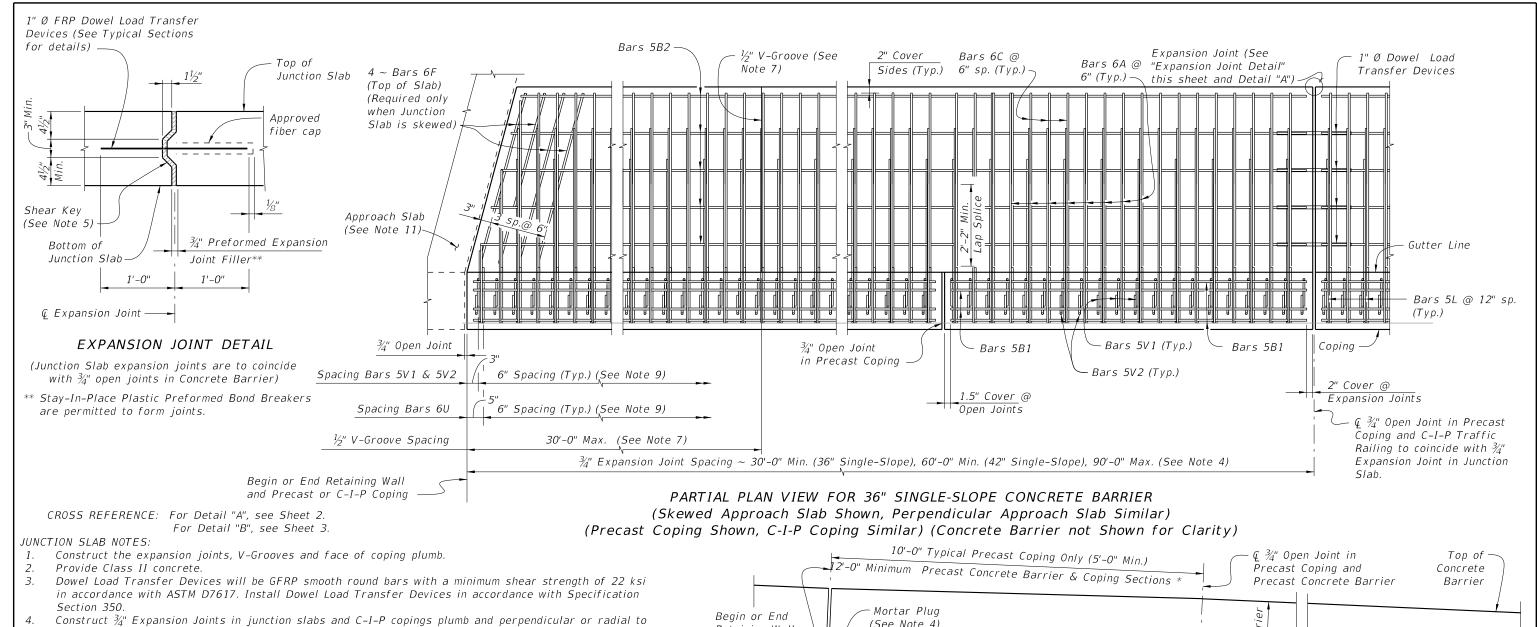
LAST REVISION 11/01/22

DESCRIPTION:



FY 2024-25 STANDARD PLANS

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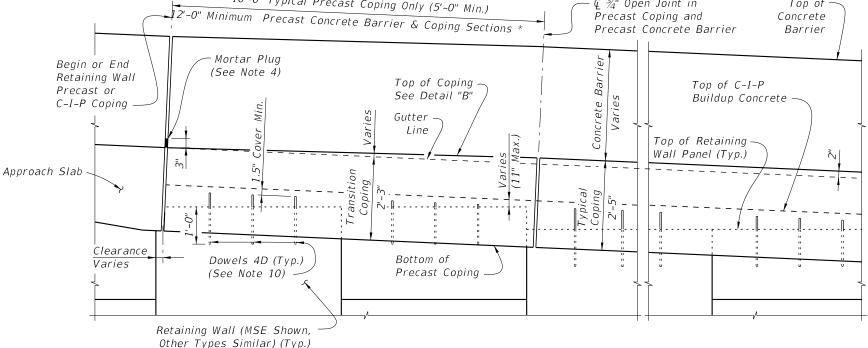


- 4. Construct ¾" Expansion Joints in junction slabs and C-I-P copings plumb and perpendicular or radial t the Gutter Line. Provide at 90'-0" maximum intervals as shown. Provide 3"x3" Mortar plugs in open joints at the base of Concrete Barriers to contain runoff.
- 5. Shear Keys in Junction Slab are required. Tongue Slope on Shear Key must be constant and between 5° to 45° from horizontal.
- 6. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
- 7. Construct $\frac{1}{2}$ " V-Grooves in junction slabs and C-I-P copings at 30'-0" maximum intervals as shown. Space V-Grooves equally between $\frac{3}{4}$ " Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Concrete Barrier.
- 8. Shoulder or Roadway Pavement is required on top of the junction slab for its entire length on the traffic side of the Concrete Barrier. See Typical Sections on Sheets 2 and 3 for details.
- 9. Spacing shown is along the Gutter Line.

DESCRIPTION:

- 10. For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extended 9" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete.

 See Wall Company Drawings for number and spacing of Dowel Bars 4D.
- 11. The following Indexes contain details of the intersection of the retaining wall at approach slabs: Index 400-090 - Approach Slabs (Flexible Pavement Approaches) Index 400-091 - Approach Slabs (Rigid Pavement Approaches)
- 12. Junction slabs with rigid pavement: the two inch increase in concrete barrier height is not required.
- 3. There are two options to accommodate the 2" height transitions :
 - A. Raise the top of coping elevation 2" and mount either a 36" or 42" standard barrier on top B. Transition the height of the concrete barrier by gradually extending the toe and back of the barrier 2" while keeping the top of coping elevation even with the gutterline elevation.
- 4. The barrier construction joint must be at the interface of the coping and the barrier base. Embed the V bars a minimum of 9" below the construction joint.
- 15. For embedded conduit and junction boxes, see Index 630-010.



PARTIAL ELEVATION VIEW

(Precast Coping and Junction Slab Reinforcing not Shown for Clarity)

(Precast Coping Shown, C-I-P Coping Similar)

* C-I-P End Section must $be \ge 12'-0''$.

SINGLE-SLOPE CONCRETE BARRIERS

LAST REVISION 11/01/21

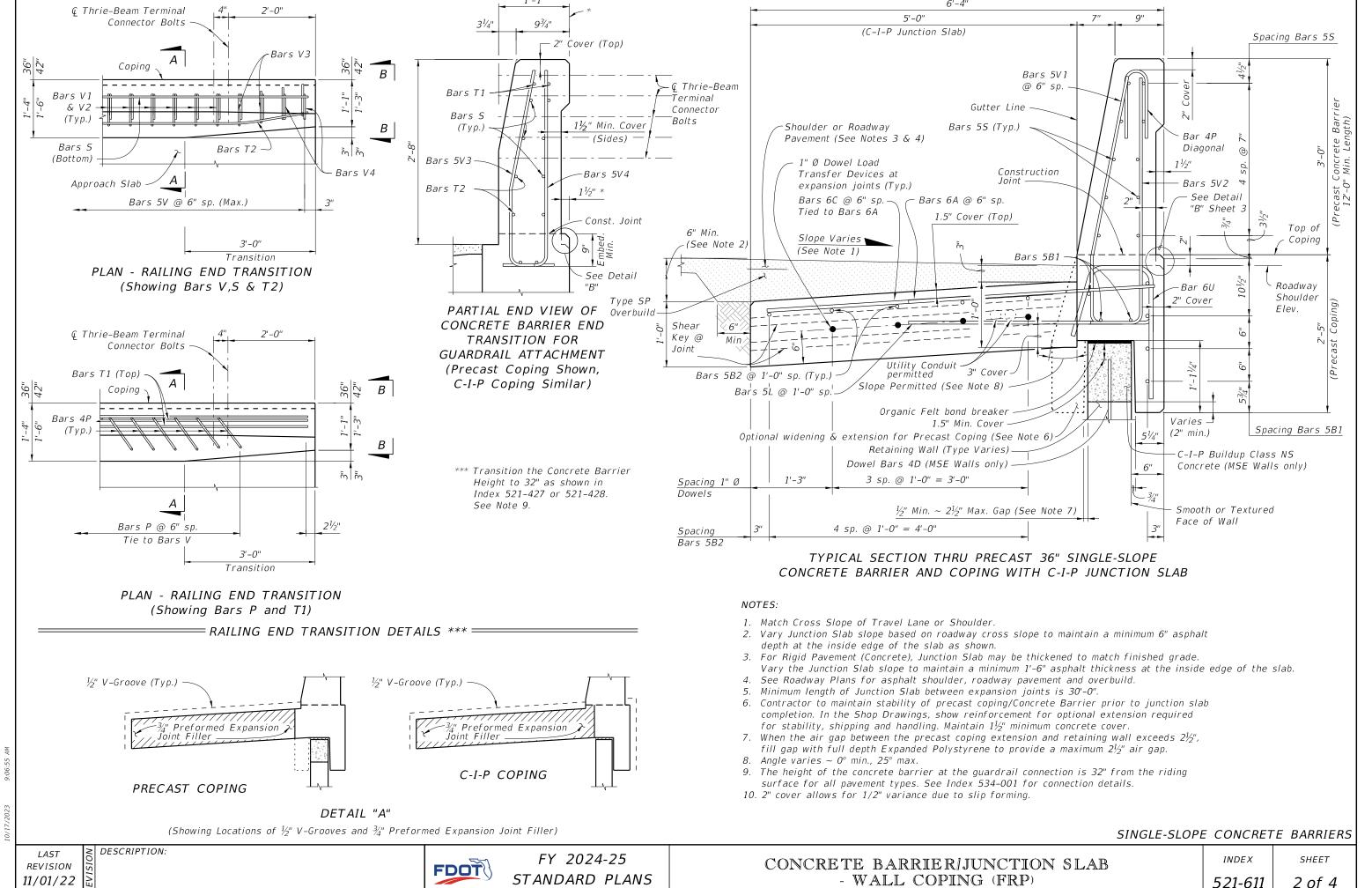
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FY 2024-25 STANDARD PLANS

CONCRETE BARRIER/JUNCTION SLAB
- WALL COPING (FRP)

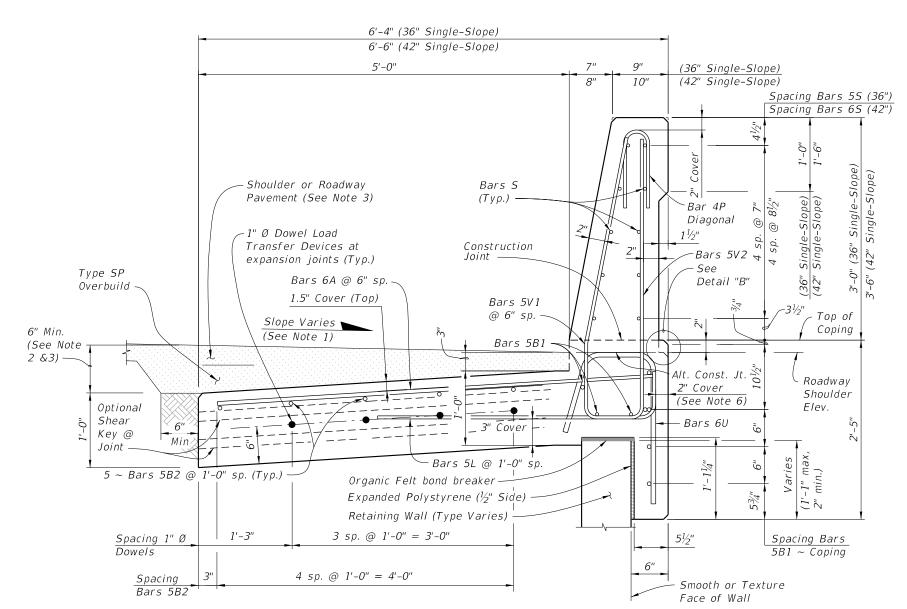
INDEX SHEET

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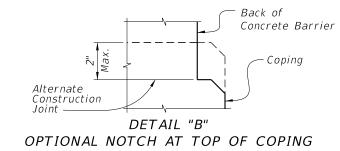


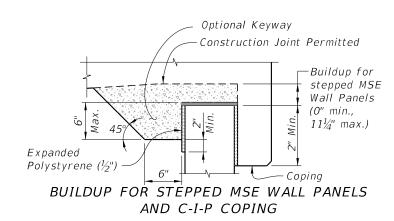


REVISION



TYPICAL SECTION THRU C-I-P CONCRETE BARRIER WITH C-I-P JUNCTION SLAB AND C-I-P COPING (PRECAST COPING SIMILAR WITH C-I-P BUILDUP)





NOTES:

DESCRIPTION:

- 1. Match Cross Slope of Travel Lane or Shoulder.
- 2. Vary the Junction Slab slope based on the roadway cross slope to maintain a minimum 6" asphalt depth at the inside edge of the slab.
- 3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade. Vary the Junction Slab slope to maintain a minimum 1'-6" thickness at the inside edge of the slab.
- 4. Minimum length of Junction Slab between expansion joints is 30'-0" for 36" Single-Slope or 60'-0" for 42" Single-Slope.
- 5. Contractor to maintain stability of precast coping prior to junction slab completion. In the Shop Drawings, show reinforcement for optional extension required for stability, shipping and handling. Maintain 1.5" minimum concrete cover.
- 6. 2" cover allows for 1/3" variance due to slip forming.

ESTIMATED QUANTITIES FOR C-I-P				
ITEM UNIT QUANTITY QUANTITY (42")				
Concrete	CY/LF	0.376	0.420	
GFRP (excludes Bars 6C & 6F)	LF/LF	69.42	72.41	
Additional Reinf. @ Expansion Joint (Dowels)	LF	8.00	8.00	

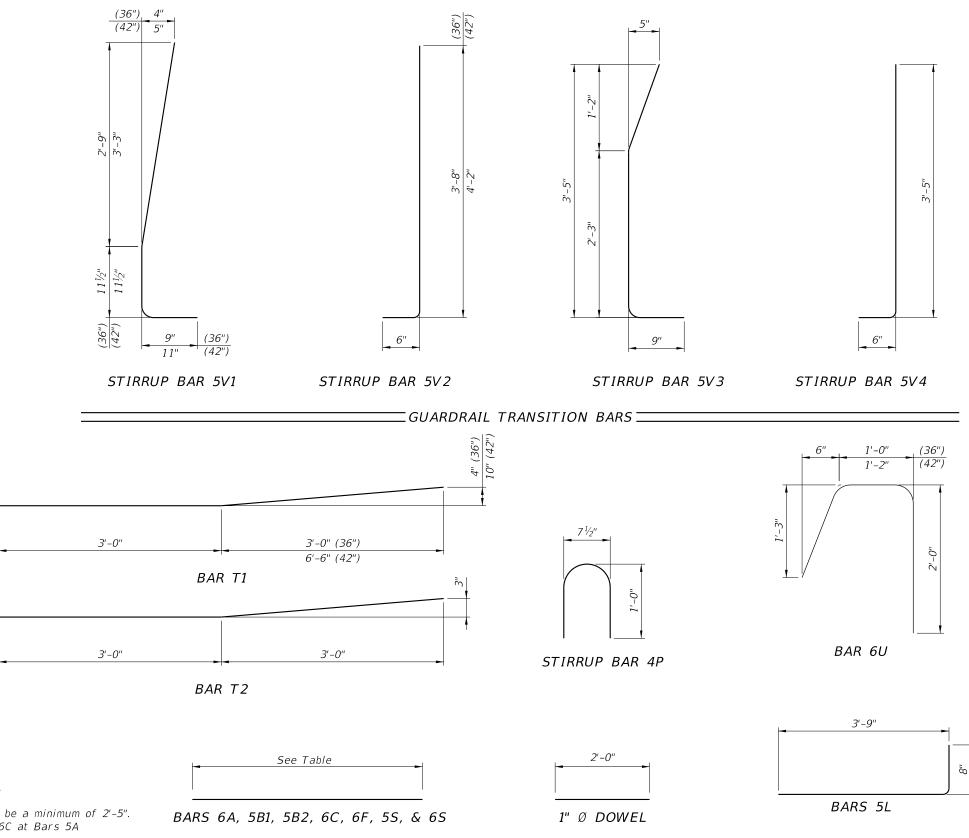
(The above concrete quantities are based on a max. superelevation of 6.25%)

SINGLE-SLOPE CONCRETE BARRIERS

FDOT

FY 2024-25 STANDARD PLANS

	I	FRP BENDI	NG DIAGR	AMS		
	FRP REINFORCING					
LENGTH						
MARK	SIZE	PRECAST FOR SING	COPING SLE-SLOPE	C-I-P C FOR SING	COPING GLE-SLOPE	
		(36")	(42")	(36")	(42")	
Α	6	5'-3"	5'-5"	7'-10"	8'-0"	
B1	5	11'-6"	9'-6"	AS REQD.	AS REQD.	
B2	5	AS REQD.	AS REQD.	AS REQD.	AS REQD.	
С	6	4'-10"	4'-10"	N/A	N/A	
F	6	4'-10"	4'-10''	4'-10"	4'-10"	
L	5	4'-5"	4'-5"	4'-5"	4'-5"	
Р	4	2'-7"	2'-7"	2'-7"	2'-7"	
5	5	11'-6"	N/A	AS REQD.	N/A	
5	6	N/A	9'-6"	N/A	AS REQD.	
T 1	5	6'-1"	N/A	6'-1"	N/A	
T 1	6	N/A	9'-6"	N/A	9'-6"	
T2	5	6'-1"	N/A	6'-1"	N/A	
Т2	6	N/A	6'-1"	N/A	6'-1"	
U	7	4'-4"	4'-6''	4'-4"	4'-6"	
V 1	5	4'-6''	5'-2"	4'-6"	5'-2"	
V2	5	4'-3"	4'-8"	4'-3"	4'-8"	
V3	5	4'-2"	4'-2"	4'-2"	4'-2"	
V4	5	3'-11"	3'-11"	3'-11"	3'-11"	
1" Ø Dowel	Smooth Bar	2'-0"	2'-0"	2'-0"	2'-0"	

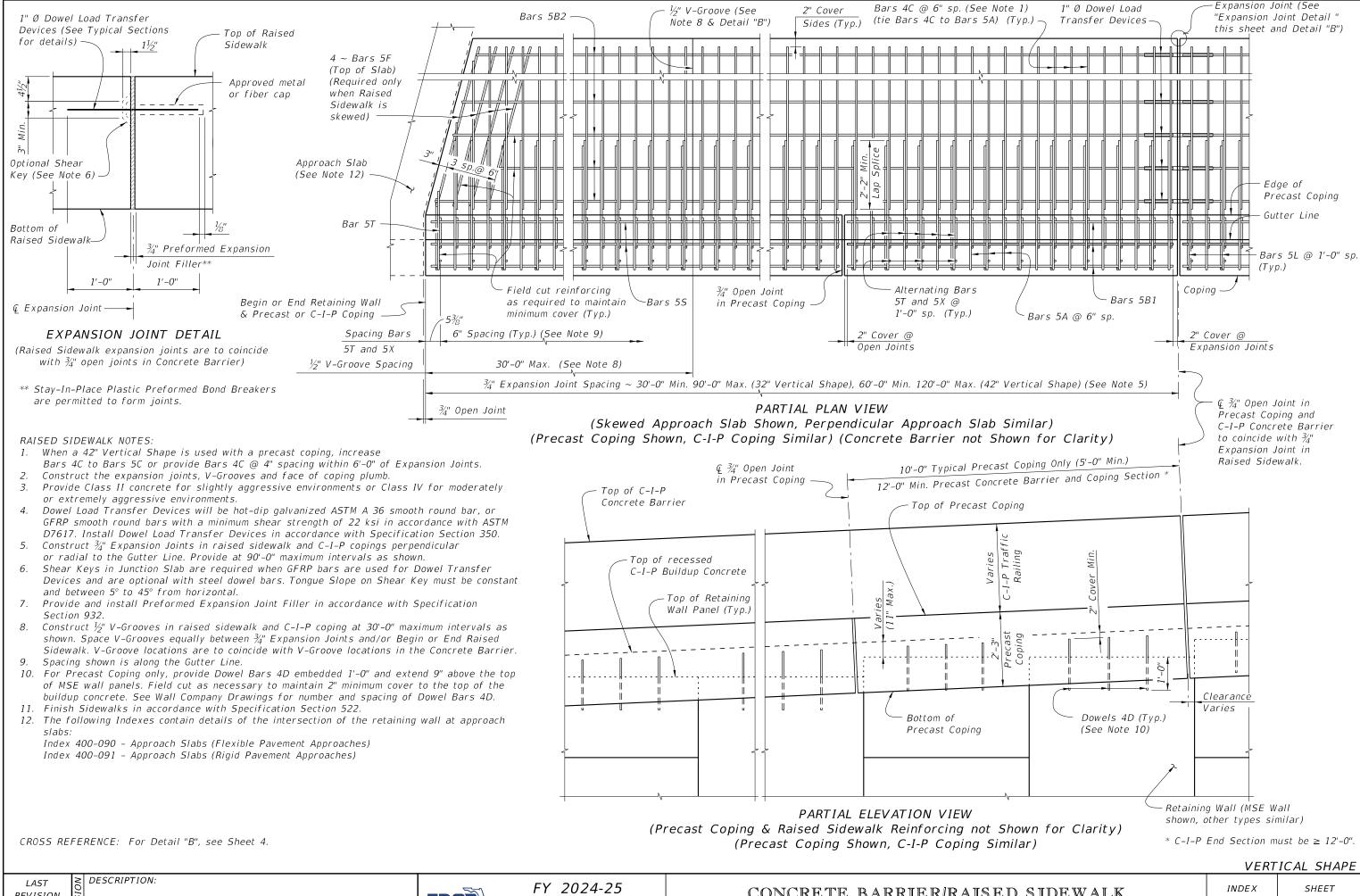


REINFORCING STEEL NOTES:

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing at expansion and open joints will have a 1.5" minimum cover.
- 3. Lap splices for Bars 5B & 5S will be a minimum of 2'-2".
- 4. For Precast Copings only, lap splice Bars 6A with Bars 6C. Lap splices will be a minimum of 2'-5".
- 5. The Contractor may use either full length Bars 7A or lap splice with Bars 6C at Bars 5A for C-I-P Copings.
- 6. Contractor may use a single #5 stirrup in lieu of two bars for 5P and 5V1.
- 7. FRP Bars can not be field bent.

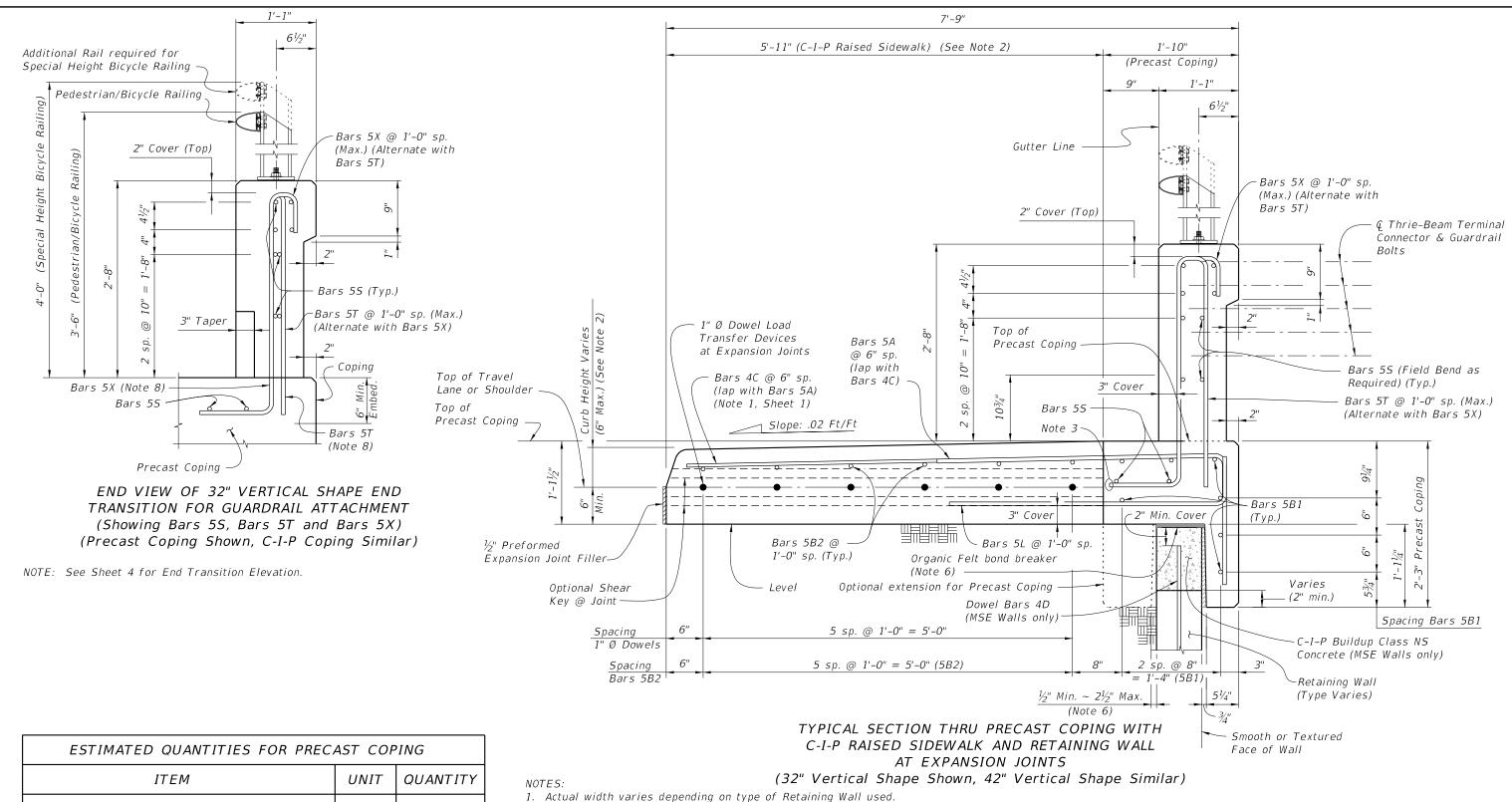


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REVISION 11/01/18

FDOT



ESTIMATED QUANTITIES FOR PRECAST COPING				
ITEM	UNIT	QUANTITY		
Concrete (Precast Coping)	CY/LF	0.095		
Concrete (C-I-P Raised Sidewalk)	CY/LF	0.232		
Reinforcing Steel (Precast Coping) excluding Bars 5T, 5X and 5S (Typ.)	LB/LF	23.90		
Reinforcing Steel (C-I-P Raised Sidewalk) (Typ.)	LB/LF	13.50		
Additional Reinf. @ Expansion Joints (Steel Dowels)	LB	32.04		

The above concrete quantities are based on a Type D Concrete Curb (See Note 2).

DESCRIPTION:

2. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 5'-11" dimension is based on a 32" Vertical Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.

- 3. Trim end of Bars 5T and 5X to clear construction joint for 42" Vertical Shape.
- 4. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.
- 5. Contractor to maintain stability of precast coping prior to junction slab completion.
- 6. When the air gap between the precast coping extension and retaining wall exceeds $2\frac{1}{2}$, fill gap with full depth Expanded Polystyrene to provide a maximum $2\frac{1}{2}$ " air gap.
- 7. For Bullet Railings, see Index 515-021 and 515-022.
- 8. Begin placing Railing Bars 5T and 5X at the railing end and proceed toward Retaining Wall to avoid conflict with quardrail bolt holes. If required, adjustments to the bar spacing for Bars 5T and 5X shall be made immediately adjacent to Begin or End Bridge. Cut, shift and rotate Bars 5T and 5X as required to maintain cover in End Transition.

FY 2024-25

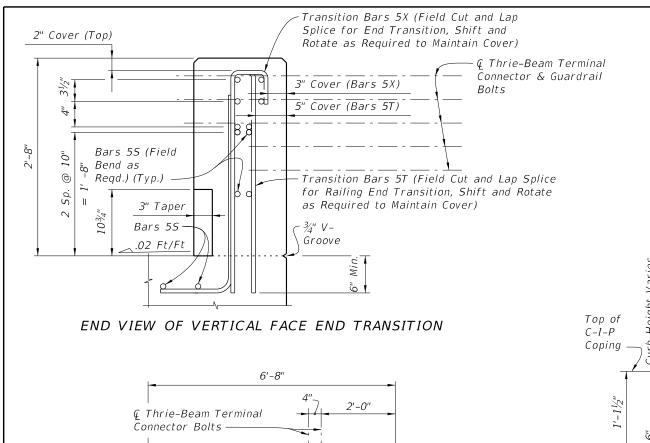
32" VERTICAL SHAPE

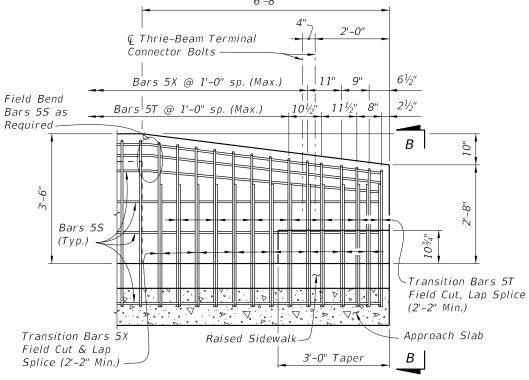
REVISION 11/01/22

STANDARD PLANS

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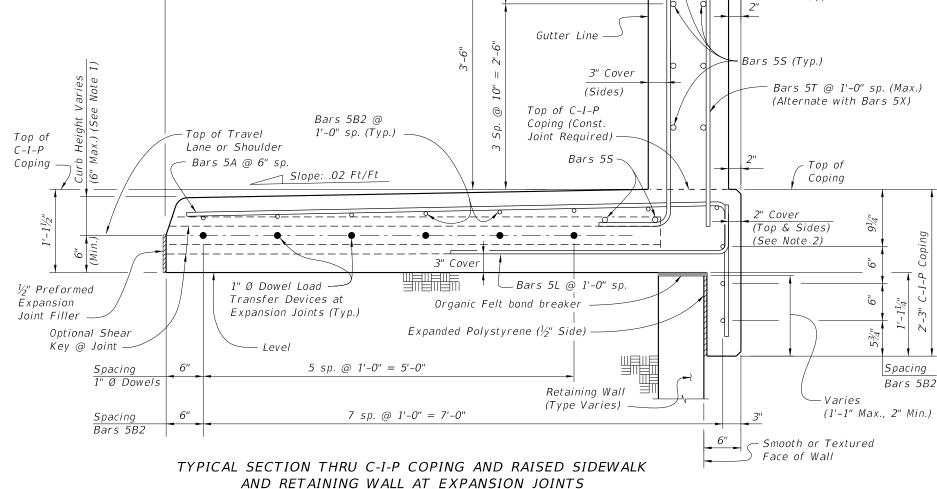


ELEVATION END TRANSITION (Guardrail Not Shown For Clarity)

ESTIMATED QUANTITIES FOR C-I-P COPING				
ITEM UNIT QUANTIT				
Concrete	CY/LF	0.326		
Reinforcing Steel (Typical) excluding Bars 5T, 5X and 5S (Typ.)	LB/LF	35.38		
Additional Reinf. @ Expansion Joints (Steel Dowels)	LB	32.04		

The above concrete quantities are based on a Type D Concrete Curb on a level Retaining Wall (See Note 1).

DESCRIPTION:



7'-9"

2" Cover (Top)

6'-6"

Optional Keyway -Buildup for stepped MSE Wall Panels (0" min., $11\frac{1}{4}$ " max.) Expanded Polystyrene (1/2")

1'-3"

42" Vertical Shape

-Bars 5X @ 1'-0" sp. (Max.)

(Alternate with Bars 5T)

BUILDUP FOR STEPPED MSE WALL PANELS AND C-I-P COPING

NOTES:

1. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 6'-6" dimension is based on a 42" Vertical Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.

(42" Vertical Face Shown, 32" Vertical Face Similar)

- 2. If slip forming is used, submit shop drawings for approval showing 3" side cover with the Typical Section dimensions adjusted.
- 3. Begin placing Railing Bars 5T and 5X at the railing end and proceed toward Retaining Wall to avoid conflict with guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5T and 5X shall be made immediately adjacent to Begin or End Retaining Wall. Cut, shift and rotate Bars 5T and 5X as required to maintain cover in End Transition.

42" VERTICAL SHAPE

REVISION 11/01/18

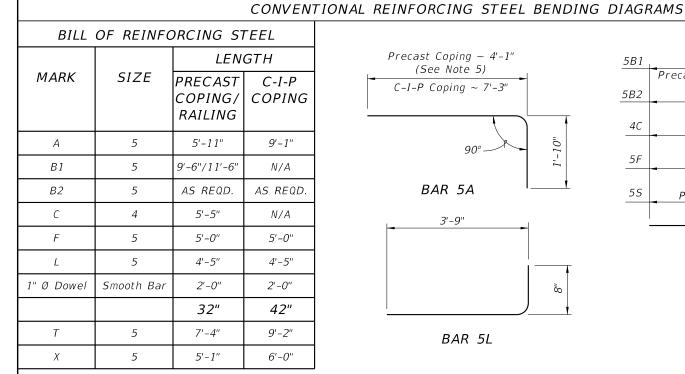
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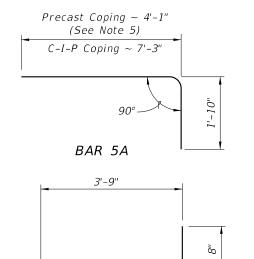
CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING

INDEX *521-620*

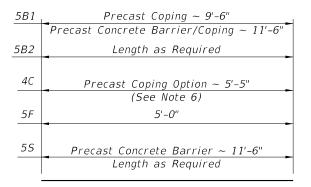
Construction Joint Permitted

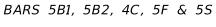
SHEET 3 of 4

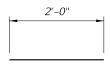




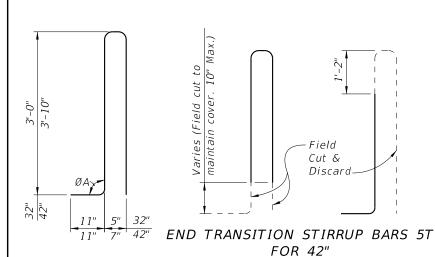
BAR 5L

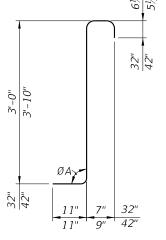


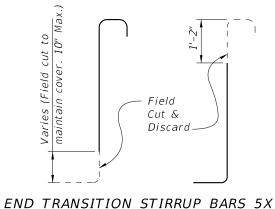




1" Ø DOWEL







FOR 42"

To Be Field Cut (7 of each required per Railing End Transition)

STIRRUP BAR 5X

STIRRUP BAR 5T REINFORCING STEEL NOTES:

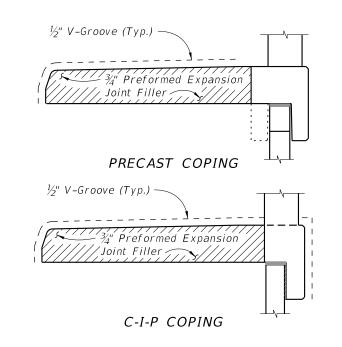
1. All bar dimensions in the bending diagrams are out to out.

- 2. All reinforcing steel at expansion joints will have a 2" minimum cover.
- 3. Lap splices for Bars 5B and 5S will be a minimum of 2'-2".
- 4. Lap splice Bars 5A with Bars 4C will be a minimum of 2'-2".
- 5. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-8".
- 6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 5'-8", and reinforcing size must be increased to #5
- 7. The Contractor may use deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.

To Be Field Cut (7 of each required per Railing End Transition)

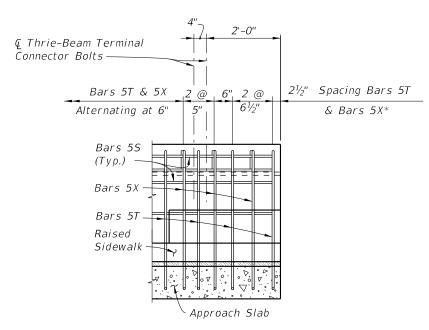
* See Sheet 3 Note 3.

DESCRIPTION:



DETAIL "B"

(Showing Locations of $\frac{1}{2}$ " V-Grooves and 3/4" Preformed Expansion Joint Filler)



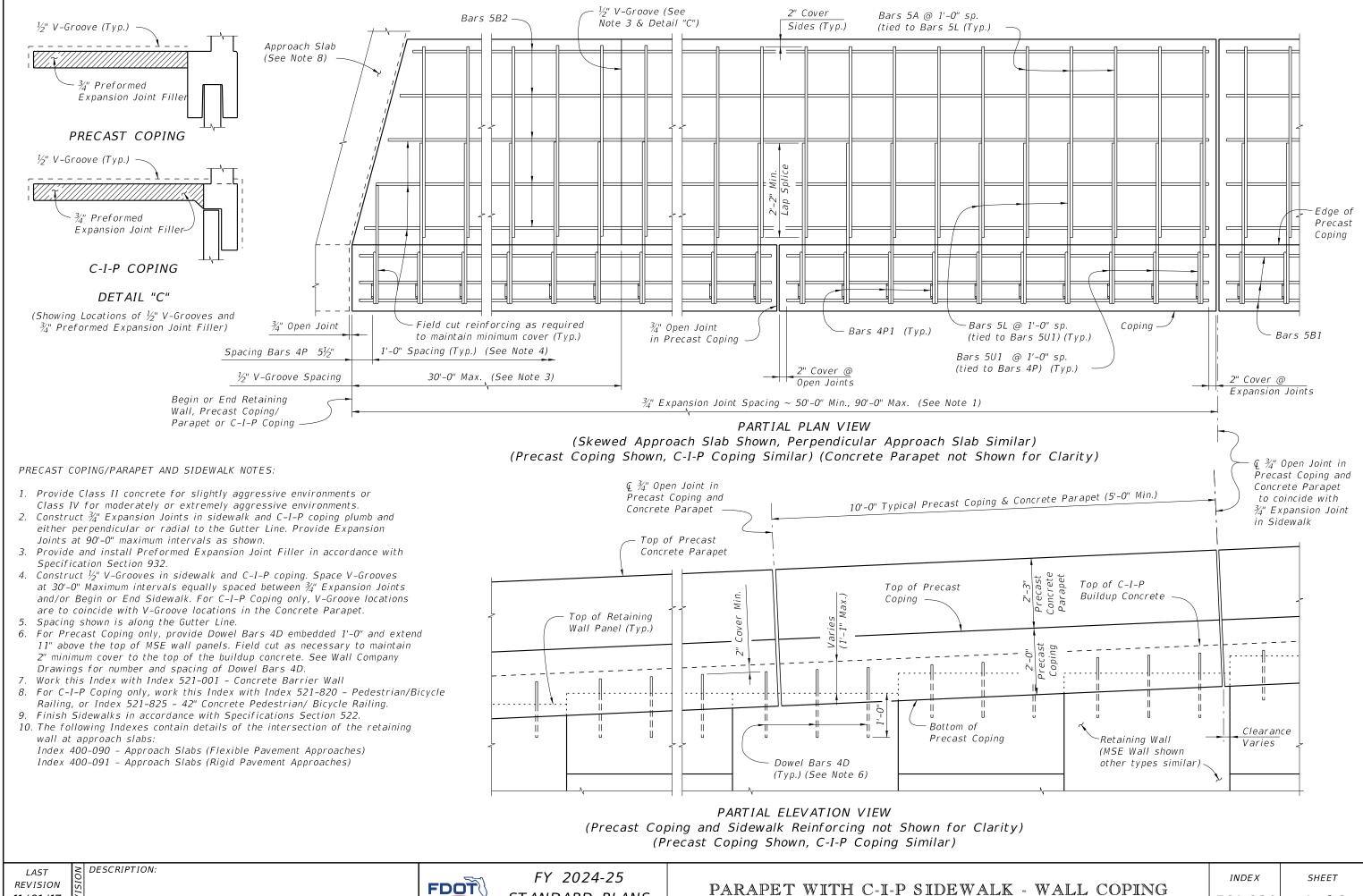
END TRANSITION ELEVATION FOR 32" VERTICAL SHAPE (Guardrail Not Shown For Clarity)

ESTIMATED CONCRETE BARRIER QUANTITIES				
QUANTITY				
ITEM UNIT		32"	42"	
Concrete	CY/LF	0.095	0.145	
Reinforcing Steel LB/LF 23.38 28.33				

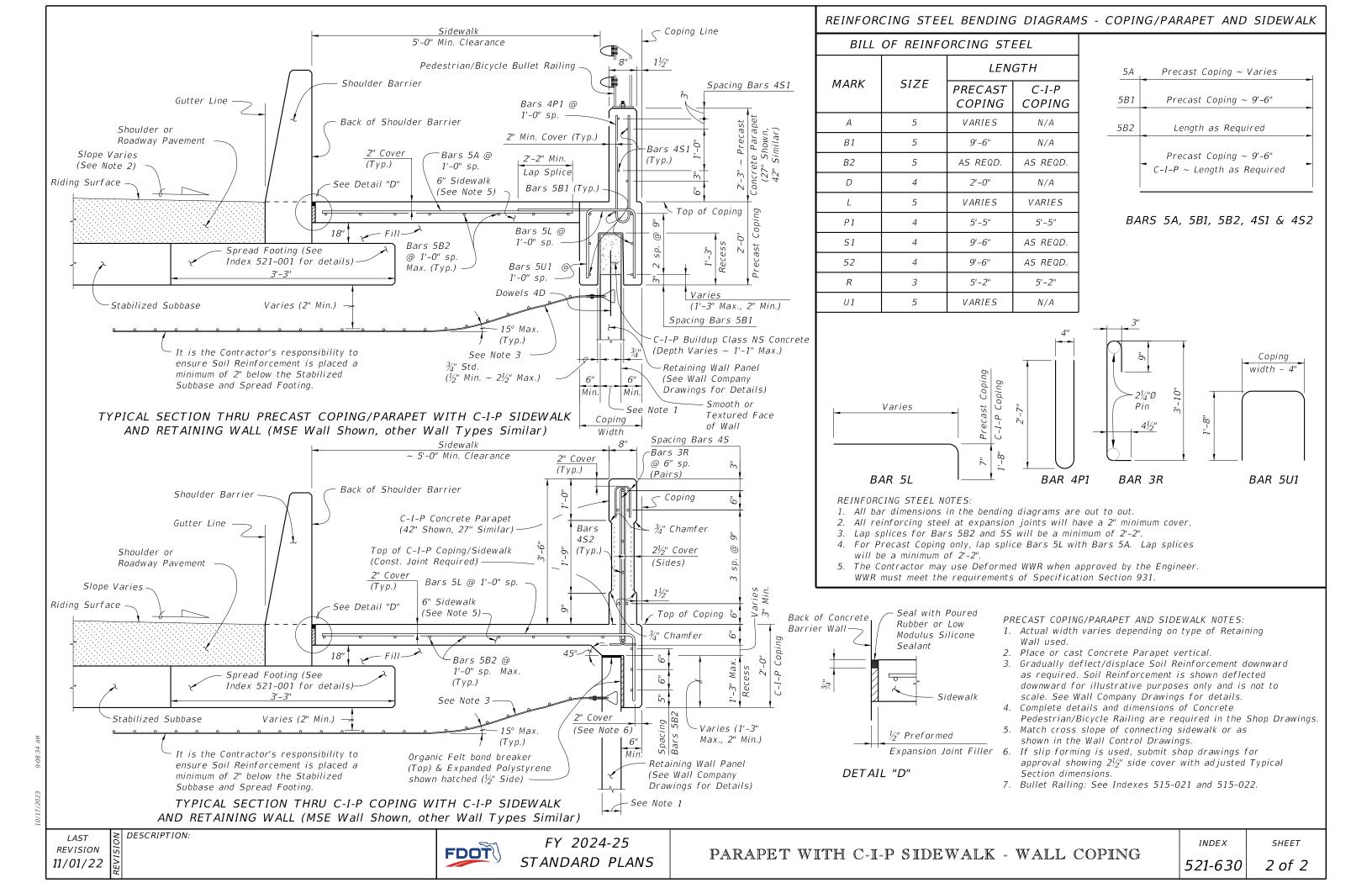
VERTICAL SHAPE

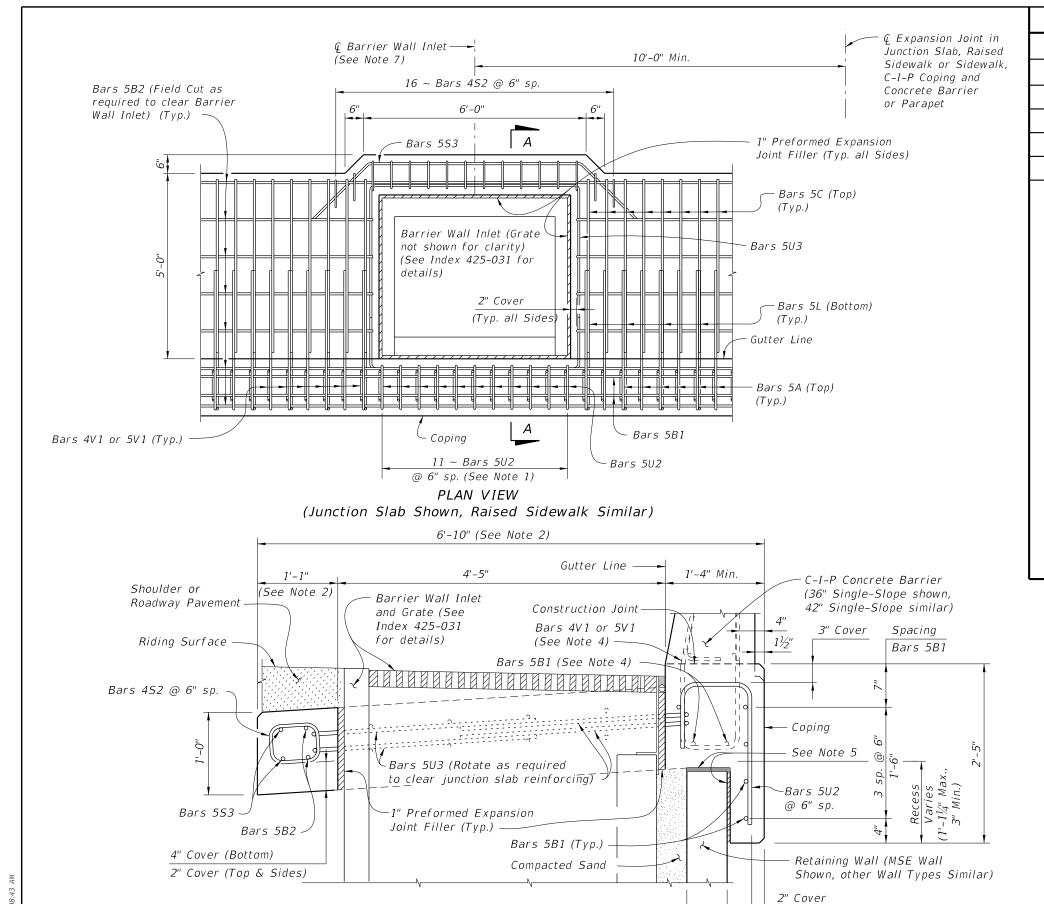
REVISION 11/01/18





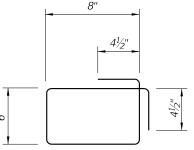
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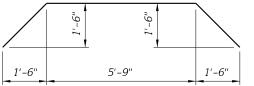


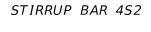


REINFORCING STEEL BENDING DIAGRAMS - DRAINAGE

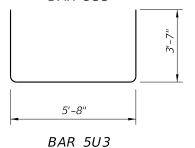
BILL OF REINFORCING STEEL MARK REQD. SIZE LENGTH 52 16 4 3'-1" 5 53 2 10'-0" U2 11 5 *VARIES* 5 U3 12'-10"

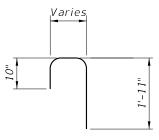












BAR 5U2

- REINFORCING STEEL NOTES:
- 1. All bar dimensions in the bending diagrams are out to out.
- 2. All reinforcing steel at open joints will have a 2" minimum cover.
- 3. See Index 521-610, 521-620 & 521-630 for Bars 5A, 5B, 5C and 5L.
- 4. 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.

NOTES:

- 1. Spacing shown is along the Gutter Line. Spacing shown is for C-I-P Junction Slab. For C-I-P Raised Sidewalks or Sidewalks, match bar spacing and size shown in Typical Sections (i.e., 11 ~ Bars 5U2 and 15 ~ Bars 4S2 @ 6" spacing for Raised Sidewalks).
- 2. Dimensions shown are for junction slab. Increase width as required for C-I-P Raised Sidewalk and Sidewalks.
- 3. Actual location & width vary depending on type of Retaining Wall used.
- 4. See Index 521-610 for Bars 4V1 or 5V1 and 5B1.
- 5. Organic Felt bond breaker (Top) & Expanded Polystyrene shown hatched $(\frac{1}{2}'')$ Side).
- 6. Locate © Barrier Wall Inlet a minimum of 10'-0" away from © Expansion Joints in Junctions Slab, Raised Sidewalk or Sidewalk, C-I-P Coping and Traffic Railing or Concrete Parapet.
- 7. Locate open joints in Barrier Wall and Coping a minimum of 5'-0" from the centerline of the Barrier Wall Inlet.
- 8. Work this Index with the following as appropriate:

Index 521-610 Index 521-620

Index 521-630

DESCRIPTION: LAST REVISION 11/01/19

FDOT

SECTION A-A SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL (Junction Slab Shown, Raised Sidewalk Similar)

> FY 2024-25 STANDARD PLANS

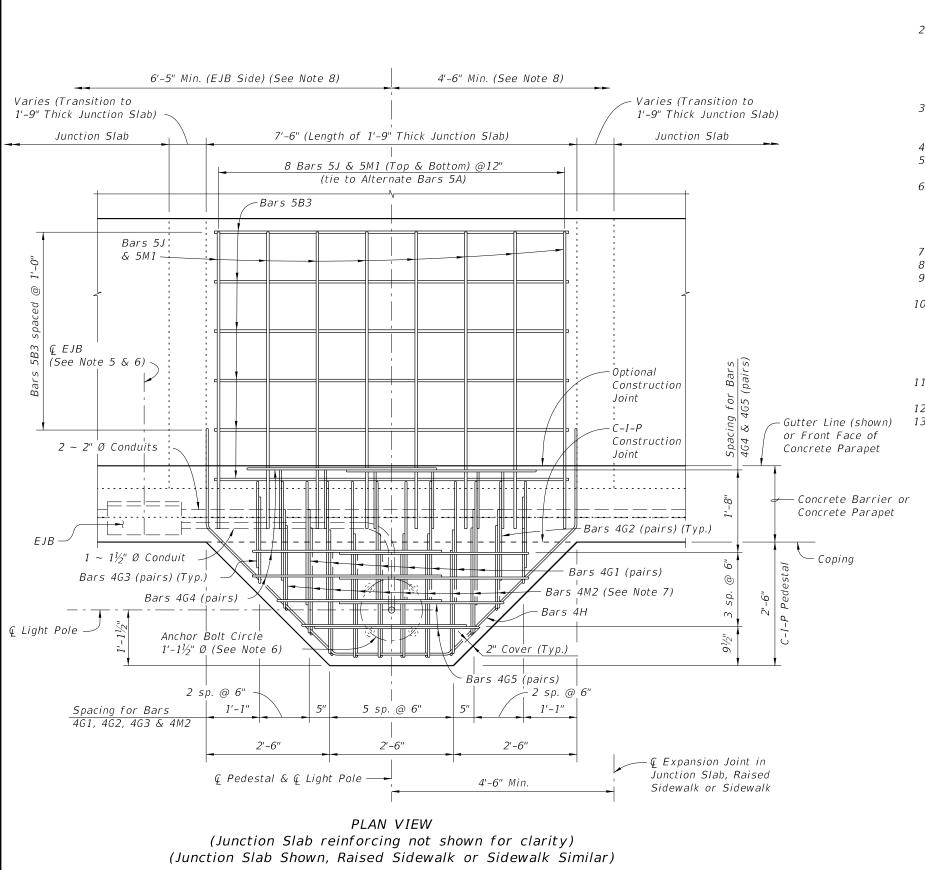
DRAINAGE INLET OPENINGS IN JUNCTION SLAB - WALL COPING

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See



LIGHT POLE PEDESTAL NOTES:

1. ANCHOR BOLTS:

Anchor Bolt design is based on the standard Roadway Aluminum Light Pole configurations shown on Index 715-002 with top of pedestal 75' or less above ground or MLW.

Anchor Bolt Diameter: See Table 1

2. MATERIALS:

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, and plates in accordance with ASTM F2329.

3. The Contractor is responsible for ensuring the anchor bolt design is compatible with the light pole base plate. Modifications to the anchor bolt design shown must be signed and sealed by the Contractor's Specialty Engineer and submitted to the Engineer for approval prior to construction.

4. Install Anchor Bolts plumb.

- 5. For conduit, EJB and expansion/deflection fitting details, see Utility Conduit Detail Drawings and Index 630-010.
- 6. The cost of anchor bolts, nuts, washers and anchor plates will be included in the Bid Price for Light Poles. Include the cost of all labor, concrete and reinforcing steel required for construction of the pedestals, and miscellaneous hardware required for the completion of the electrical system in the Bid Price for either the Concrete Barrier or Concrete Parapet that the pedestal is behind.
- 7. Field Cut Bars 4M2 as required to maintain clearance.
- 8. Slip Forming Method of construction requires the Engineer's approval within the limits shown.
- 9. Reinforcing shown for light pole pedestals is in addition to typical reinforcing for Junction Slabs and Raised Sidewalks.
- 10. Work this Index with the following as appropriate:

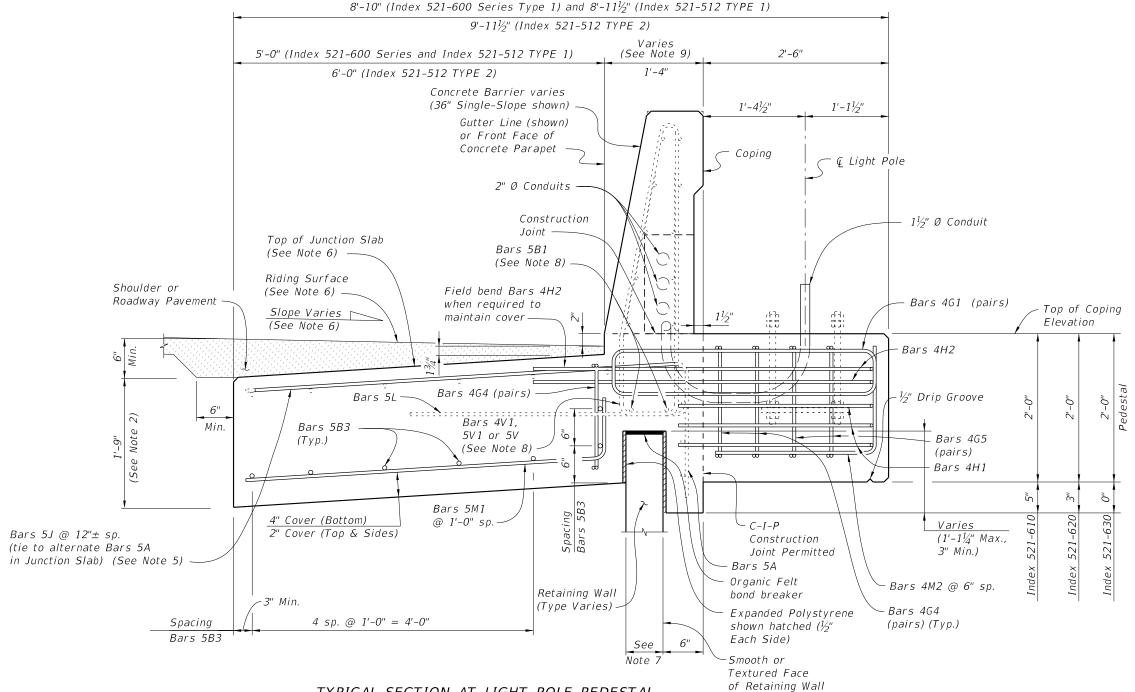
Index 521-512 Index 521-610 Index 521-611

Index 521-620 Index 521-630

- 11. Pedestal may be precast in one section with Coping. Minimum Precast Coping section length is 10 ft. or 12 ft for combination Precast Concrete Barrier and Coping section.
- 12. For Estimated Quantities, see Sheet 3.
- 13. Unless otherwise noted, Concrete Barrier (36" Single-Slope) is shown in all Views and Sections. The Pedestal details for other Concrete Barriers or pedestrian/bicycle railings are similar.

1	TABLE 1 DESIGN LIMITATION FOR ANCHOR BOLTS (1" Dia.)				
Wind	Wind Arm Top of Pedestal Height (Ft.)*				
Speed	Length	Luminaire Mounting Height			
(MPH)	(Ft.)	40 Ft.	45 Ft.	50 Ft.	
120	ALL	75	75	75	
140	ALL	75	75	75	
160	8 & 10	75	75	45**	
160	12 & 15	75	75	25**	

- * Above Natural Ground
- ** Use $1\frac{1}{4}$ " Ø Anchor bolts for wall heights greater than the height shown and less than 75'.



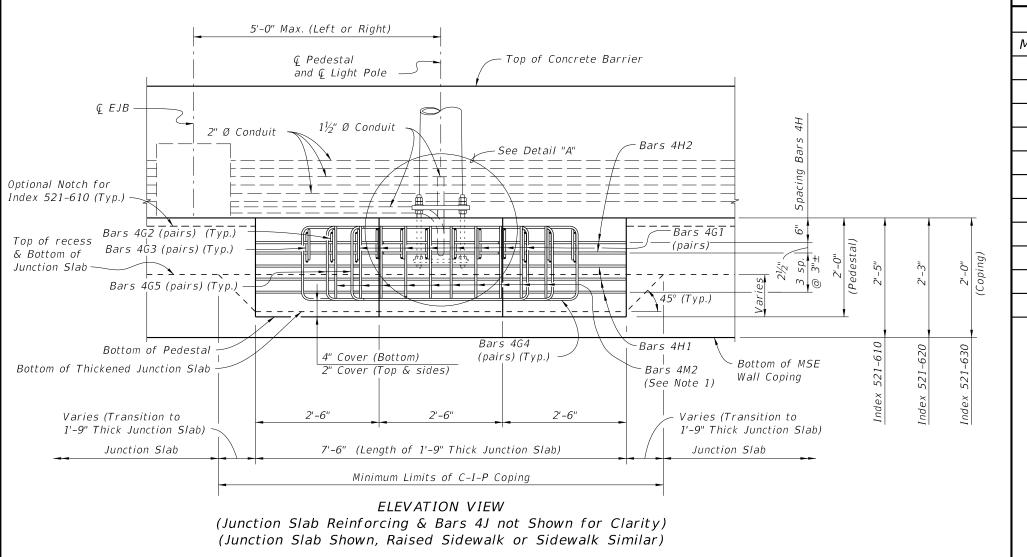
TYPICAL SECTION AT LIGHT POLE PEDESTAL

(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar) (36" Single-Slope Concrete Barrier shown, other railings similar)

- 1. Provide Concrete Class to match adjacent coping.
- For junction slabs, increase the 1'-0" depth dimension to 1'-9".
- For Parapet with sidewalk see Index 521-630, but increase 6" sidewalk depth to 1'-6". For raised sidewalk see Index 521-620.
- The minimum length of the Junction Slabs, raised sidewalks and sidewalks is 30'-0", measured along the Gutter Line.
- Bars 4J are only required when pedestals are behind a Concrete Barrier or Concrete Barrier/ Noise Wall.
- Top of junction slab may be thickened to match finished grade of concrete pavement or shoulder, or top of sidewalk or raised sidewalk (See Notes 3 & 4).
- Actual width varies depending on type of retaining wall used.
- See Index 521-610 for Bars 4V1, 5V1 and 5B, or Index 521-512 for Bars 5V and 5B1.
- Work with Index 521-512 (Concrete Barrier/ Noise Wall), Index 521-610 (Single-Slope), Index 521-620 (Vertical Shape), and Index 521-630 (Concrete Parapet).

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DESCRIPTION:

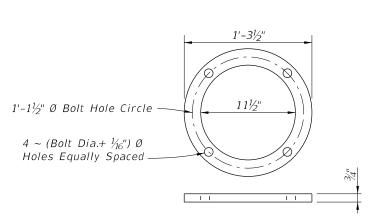


Wire Screen 1⅓" Ø Conduit (See Spec. 649-6) Light Pole 2" Ø Conduit Light Pole Base Plate (Level) Leveling Nut (See Note 2) Washer Slope Pedestal (Typ.)Surface Longitudinally with Profile Grade Anchor Plate Anchor Bolts

DETAIL "A"

NOTES:

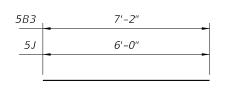
- 1. Field Cut Bars 4M2 as required to maintain minimum cover.
- 2. Maximum clearance between leveling nut and top of pedestal will not exceed anchor bolt diameter.



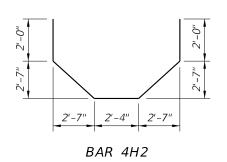
ANCHOR PLATE DETAIL

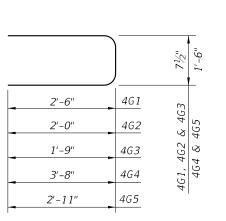
REINFORCING STEEL BENDING DIAGRAMS - LIGHT POLE PEDESTAL

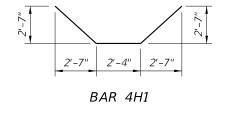
BILL OF REINFORCING STEEL				
MARK	SIZE	NO. REQD.	LENGTH	
В3	5	7	7'-2"	
G 1	4	16	5'-8"	
G2	4	4	4'-8"	
G3	4	4	4'-2"	
G4	4	6	8'-10"	
G5	4	4	7'-4"	
H1	4	3	9'-8"	
H2	4	2	13'-8"	
J	5	8	6'-0"	
M 1	5	8	5'-10"	
M2	4	10	3'-8"	

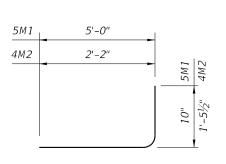


BARS 5B3 & 5J









BARS 4G1, 4G2, 4G3, 4G4 & 4G5

REINFORCING STEEL NOTES:

BAR 5M1 & 4M2

- 1. All bar dimensions in the bending diagrams are out to out.
- 2. Lap splices for Bars 4G1, 4G2, 4G3, 4G4 & 4G5 will be a minimum of 1'-4".
- 3. 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.

ESTIMATED QUANTITIES				
ITEM UNIT QUANTITY				
Concrete (Pedestal)	CY	0.926		
Concrete (Thickened Junction Slab)	CY	1.222		
Reinforcing Steel	LB	334.09		

(The quantities above are for one C-I-P Light Pole Pedestal. The concrete quantity for the thickened junction slab is based on a 5'-0" length, 9" increase in thickness and a 5" wide retaining wall panel. Adjust thickened concrete quantity as required.

LAST REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

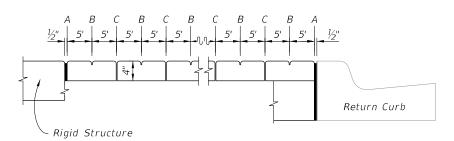
LIGHT POLE PEDESTAL - WALL COPING

INDEX *521-650*

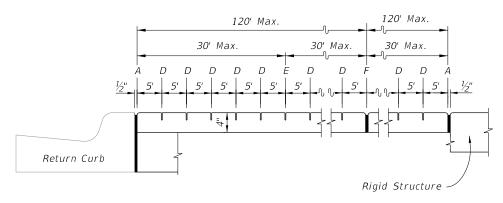
SHEET 3 of 3

GENERAL NOTES:

- 1. Construct sidewalks in accordance with Specification 522. Use 6" concrete for Sidewalks and Curb Ramps Located within Curb Returns (See Plan View). Install all other concrete with thickness as shown, unless otherwise detailed in the Plans.
- 2. Include detectable warnings on sidewalk curb ramps in accordance with Index 522-002.
- 3. For Driveways see Index 522-003.
- 4. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils and not more than $\frac{1}{2}$ ".
- 5. Construct sidewalks with Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Railing or Pipe Guiderail shown in the plans. (See RAILING DETAIL)



OPEN JOINTS



SAWED JOINTS

LONGITUDINAL SECTION

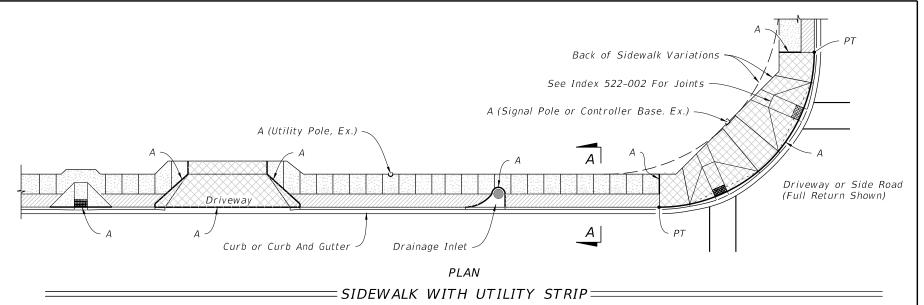
LEGEND:

- A- $\frac{1}{2}$ " Expansion Joints (Preformed Joint Filler) between the sidewalk and; driveways, sidewalk-intersections, and all other fixed objects (e.g. drainage inlets and utility poles).
- B- 1/8" Dummy Joints, Tooled
- C- 1/8" Formed Open Joints

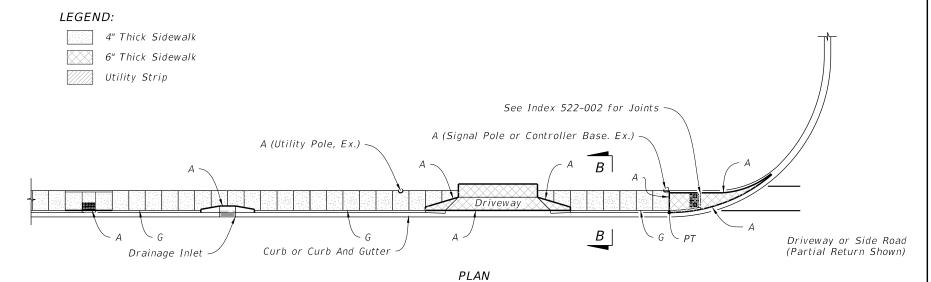
DESCRIPTION:

- D- $\frac{3}{16}$ " Saw Cut Joints, $1\frac{1}{2}$ " Deep (within 96 hours) Max. 5' Centers
- $E-\frac{3}{16}$ " Saw Cut Joints, $1\frac{1}{2}$ " Deep (within 12 hours) Max. 30' Centers Joint(s) Required When Length Exceeds 30'
- F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.
- G- Cold Joint With Bond Breaker, Tooled

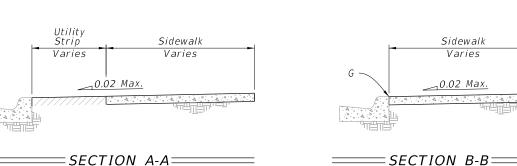


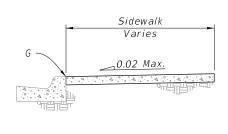


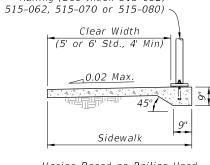




SIDEWALK WITHOUT UTILITY STRIP







Railing (See Index 515-052,

Varies Based on Railing Used

=== RAILING DETAIL ====

GENERAL NOTES AND CONCRETE SIDEWALK ON CURBED ROADWAYS

LAST REVISION 11/01/18

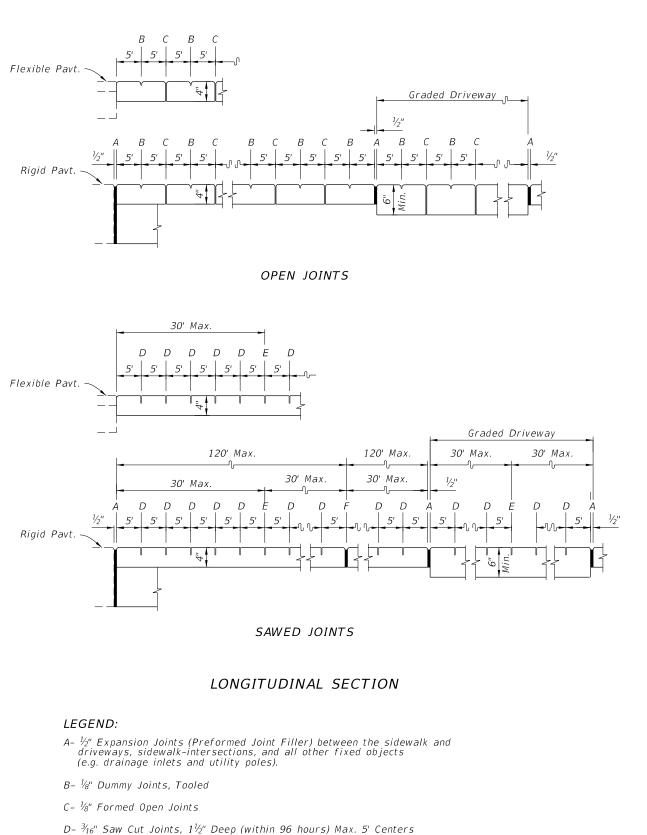
FY 2024-25 STANDARD PLANS

CONCRETE SIDEWALK

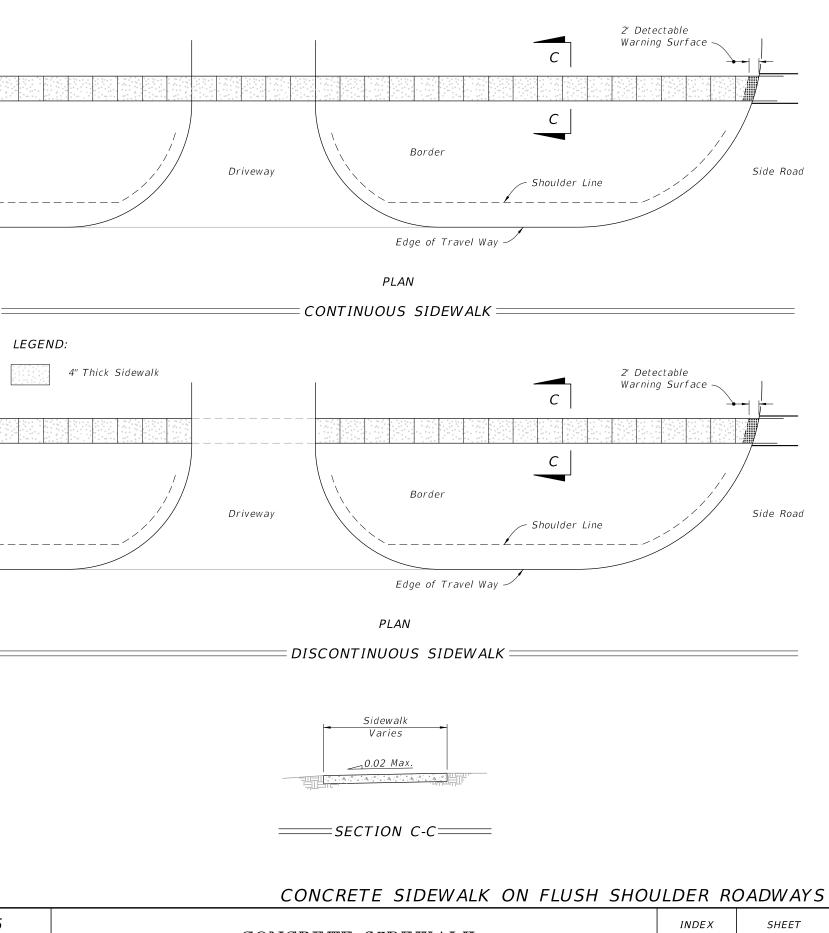
INDEX 522-001

SHEET 1 of 2

FDOT



LEGEND:



REVISION 11/01/18

DESCRIPTION:

the Engineer.

FDOT

FY 2024-25 STANDARD PLANS

CONCRETE SIDEWALK

522-001

2 of 2

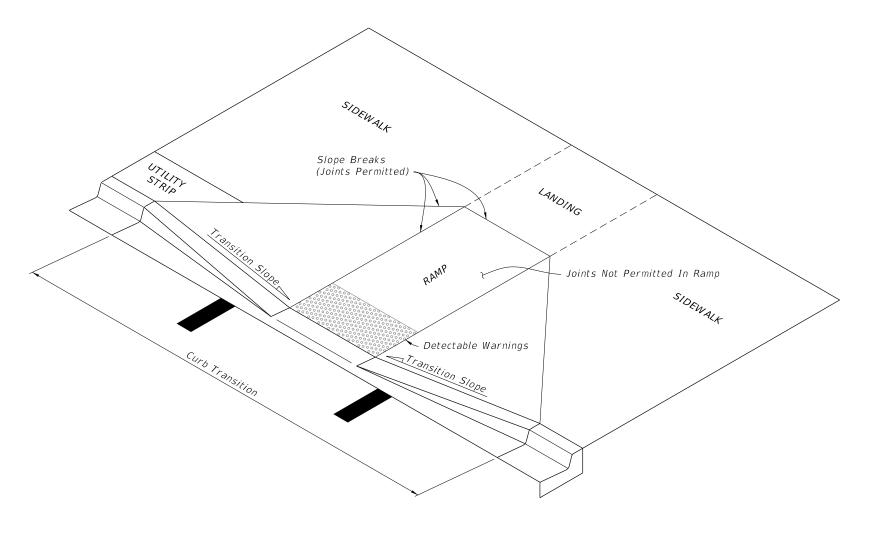
E- $\frac{3}{16}$ " Saw Cut Joints, $1\frac{1}{2}$ " Deep (within 12 hours) Max. 30' Centers Joint(s) Required When Length Exceeds 30'

F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by

SIDEWALK JOINTS =

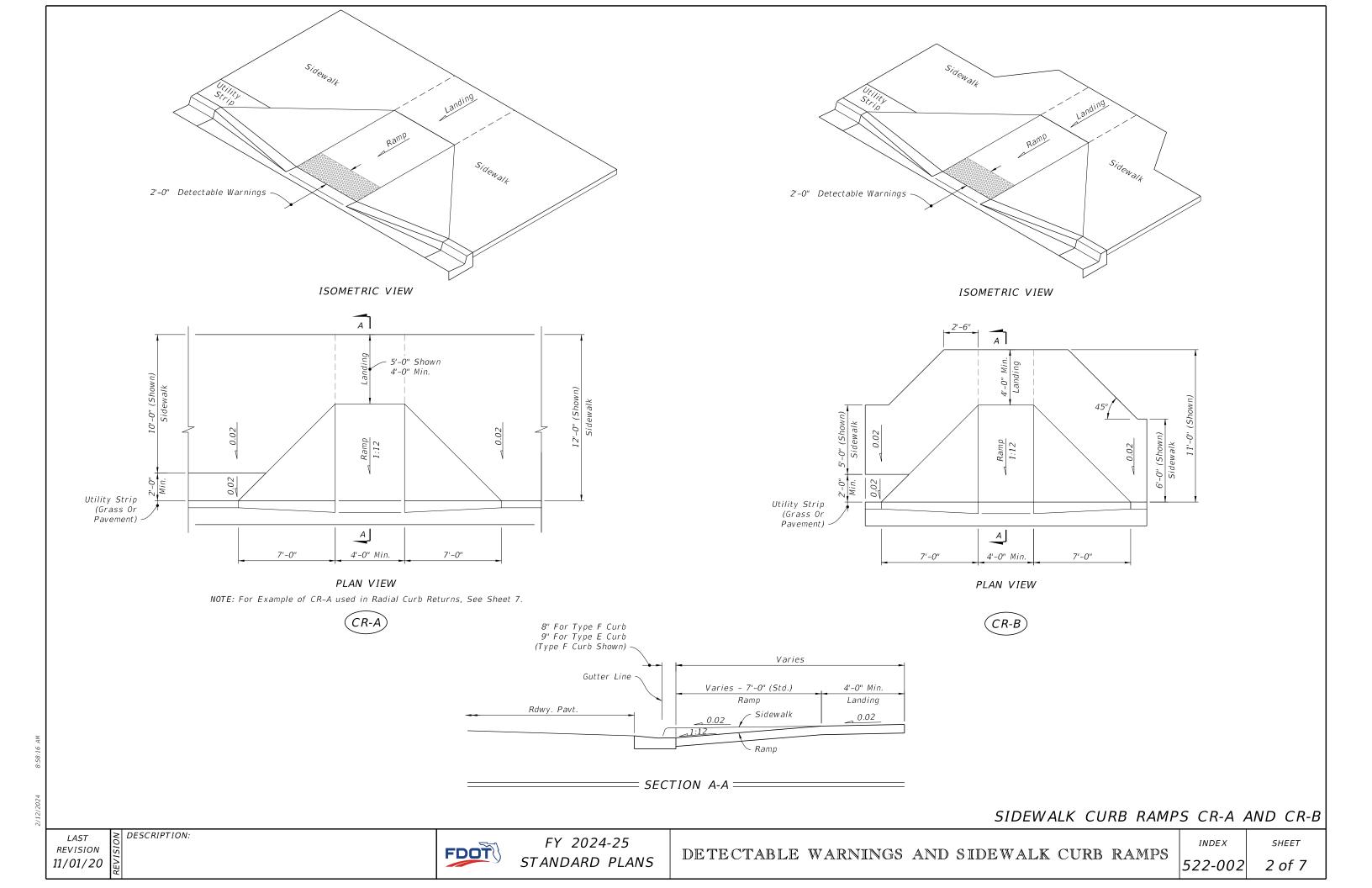
1. Cross Slopes and Grades:

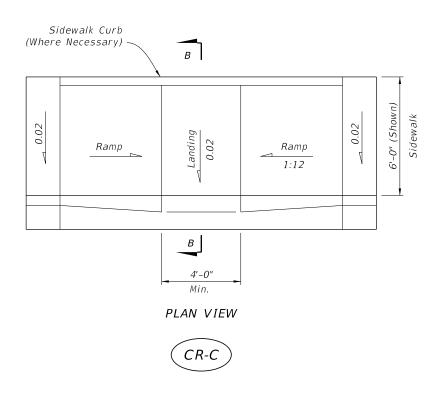
- A. Sidewalk, ramp, and landing slopes (i.e. 0.02, 0.05, and 1:12) shown in this Index are maximums. With approval of the Engineer, provide the minimum feasible slope where the requirements cannot be met.
- B. Landings must have cross-slopes less than or equal to 0.02 in any direction.
- C. Maintain a single longitudinal slope along each side of the curb ramp. Ramp slopes are not required to exceed 15 feet in length.
- D. Joints permitted at the location of Slope Breaks. Otherwise locate joints in accordance with Index 522-001. No joints are permitted within the ramp portion of the Curb Ramp.
- 2. Curb, Curb and Gutter and/or Sidewalk:
- A. Refer to Index 522-001 for concrete thickness and sidewalk details.
- B. Remove any existing curb, curb and gutter, or sidewalk to the nearest joint beyond the curb transition or to the extent that no remaining section is less than 5 feet long.
- C. Width of Curb Ramp is 4'-0" minimum. Match sidewalk or Shared Use Path width as shown in the Plans.
- 3. Curb Ramp Alpha-Identification:
- A. Sidewalk curb ramp alpha-identifications (e.g. CR-A) are provided for reference purposes in the Plans.
- B. Alpha-identifications CR-I and CR-J are intentionally omitted.
- 4. Detectable Warnings:
- A. Install detectable warnings in accordance with Specification 527.
- B. Place detectable warnings across the full width of the ramp or landing, to a minimum depth of 2 feet measured perpendicular to the curb line and no greater than 5 feet from the back of the curb or edge of pavement.
- C. If detectable warnings are shown in the Plans on slopes greater than 5%, align the truncated domes with the centerline of the ramp; otherwise, the truncated domes are not required to be aligned.

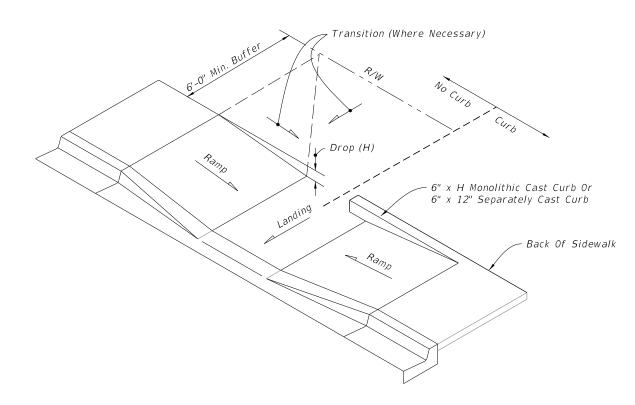


CURB RAMP NOMENCLATURE =

SHEET

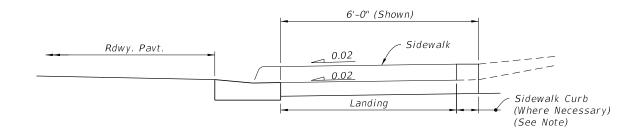






CONSTRUCTION OF SIDEWALK CURB IN CUT SECTIONS

Ramp, Sidewalk



NOTE: For additional information on sidewalk curb construction, see SIDEWALK CURB OPTIONS details.

. Or Landing 0.02 Or Landing 0.02 6" MONOLITHIC CAST CURB SEPARATELY CAST CURB =SIDEWALK CURB OPTIONS:

= SECTION B-B=

SIDEWALK CURB RAMPS CR-C AND SIDEWALK CURB

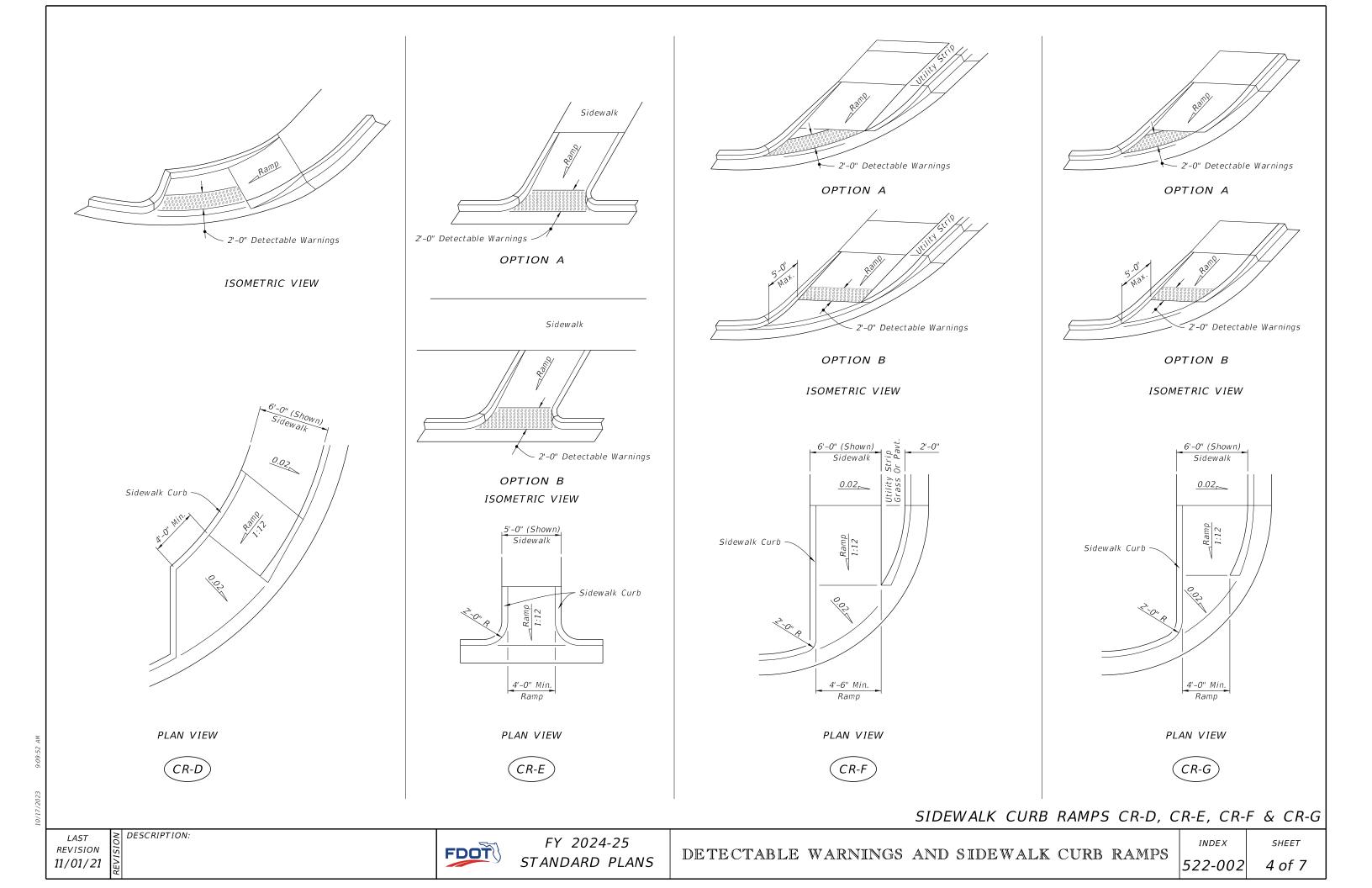
H (Varies) -

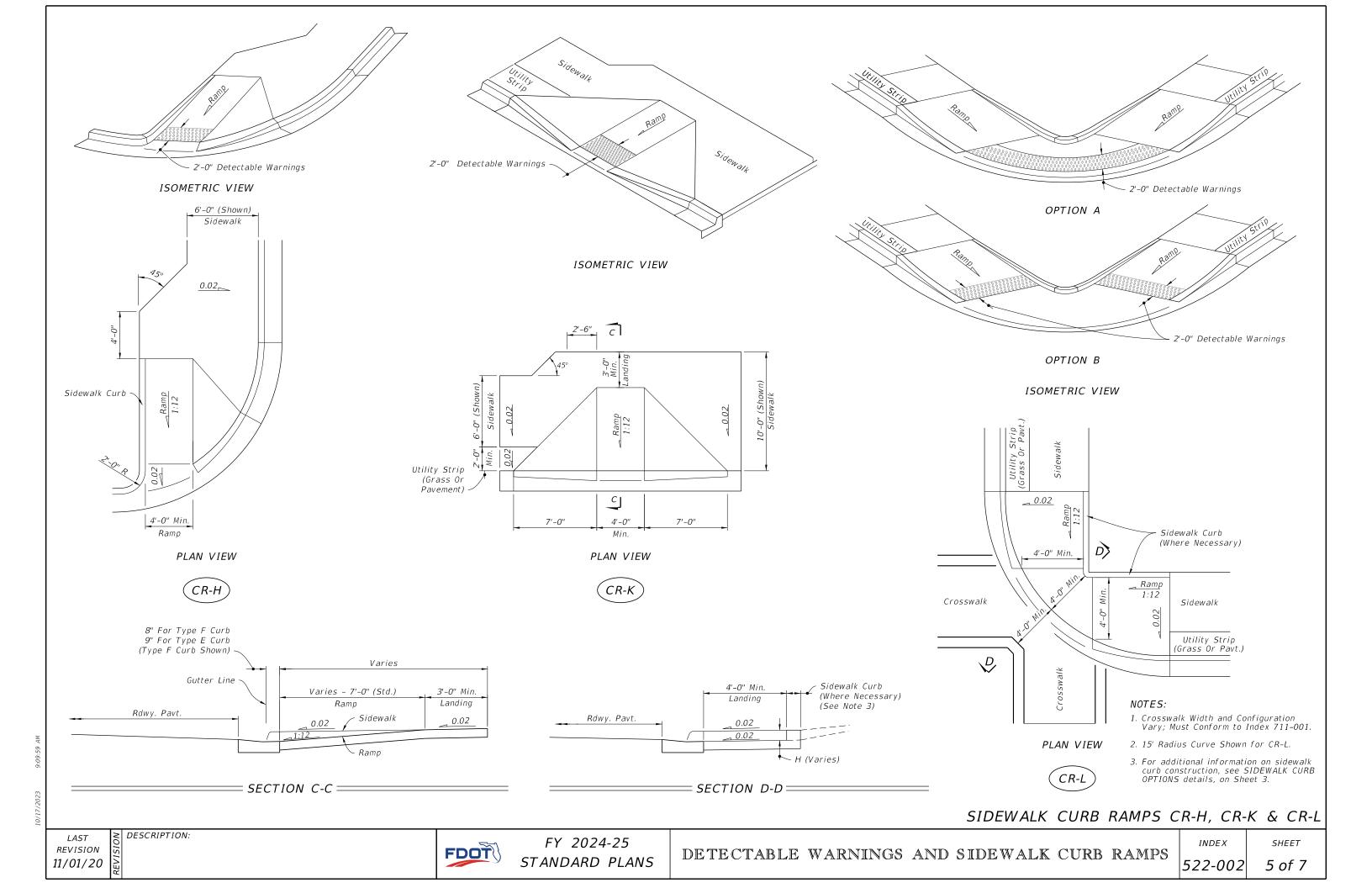
REVISION 11/01/20

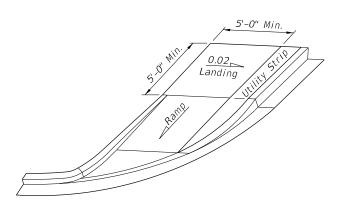
DESCRIPTION:

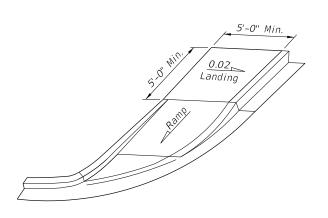
FDOT

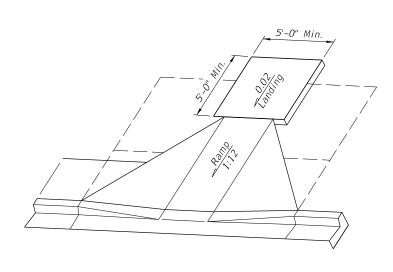
Ramp, Sidewalk





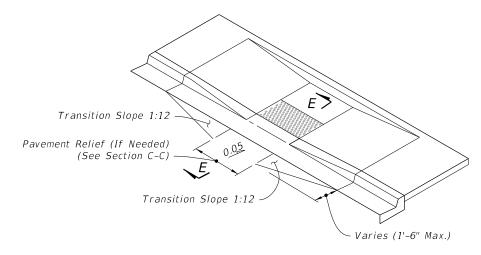




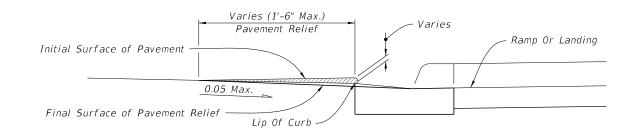


LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS

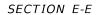
(See CR-F, CR-G & CR-K Respectively For Detectable Warning Details/Options)



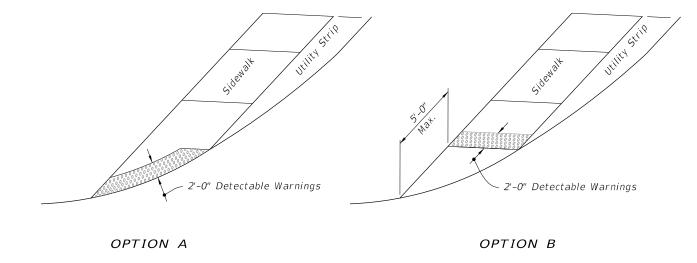
ISOMETRIC VIEW (CR-C Shown, Other Similar)



NOTE: Remove Elevated Pavement By Spading And Rolling, Smooth Milling, or Grinding.



PAVEMENT RELIEF DETAILS =



= DETECTABLE WARNING ON FLUSH SHOULDER SIDEWALKS =

CURB RAMPS WITHOUT SIDEWALKS AND FLUSH SHOULDER SIDEWALKS

11/01/20

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

INDEX

SHEET

REVISION

NOTES: 1. Where crosswalk markings are used, ramps must fall within the crosswalk limits. A clear space of 48" minimum is required at the bottom of the ramp within a marked crosswalk. If crosswalk markings are not present, a clear space of 48" minimum is required at the bottom of the ramp outside of active travel lanes. 2. Crosswalk widths and configurations vary; must conform to Index 711-001. 3. Flangeway Gap may be up to 3" for Freight-only Railways.

4'-0" Min.

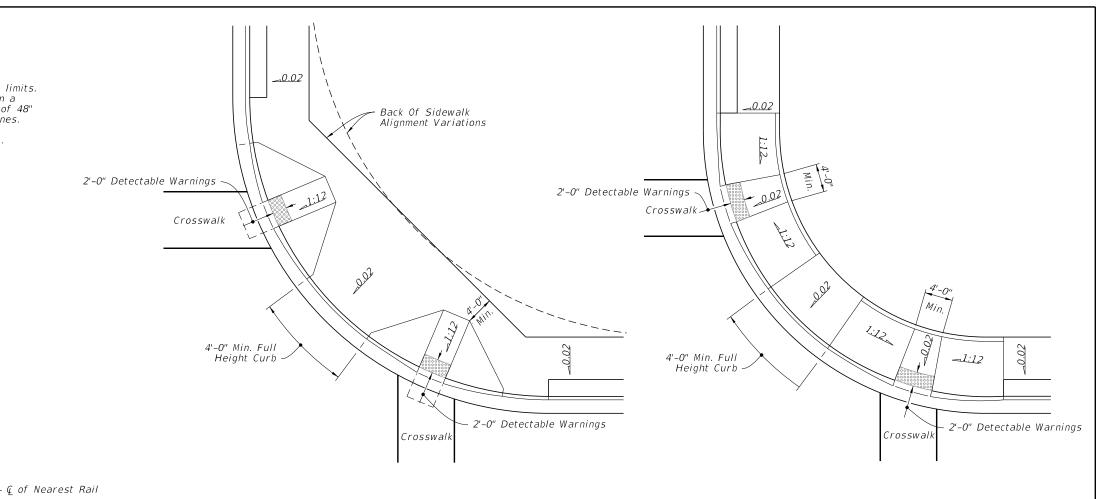
= RAILROAD CROSSING =====

2'-0" Detectable Warnings

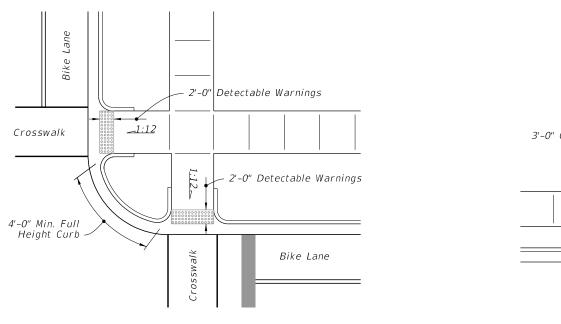
2'-0" Detectable Warnings

Flangeway Gap $(2^{1}/_{2}" Max.)$

(See Note 3)



CURB RAMPS WITHIN RADIAL RETURN



3'-0" Curb Transition From Full to Zero Height Full Height Curb, 2'-0" Min 2'-0" Detectable Warnings 1<u>:12</u> Crosswalk Utility Strip

CURB RAMPS OUTSIDE RADIAL RETURN

LINEAR SIDEWALK RAMPS

=PLACEMENT OF SIDEWALK CURB RAMPS AT CURBED RETURNS (TYP.)=

RAILROAD CROSSING AND CURB RAMPS AT CURBED RETURNS

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FDOT

FY 2024-25 STANDARD PLANS

DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

INDEX 522-002

SHEET 7 of 7

DESCRIPTION:

Rail Car Width

GENERAL NOTES:

- 1. Work this Index with Specification 522.
- 2. Refer to Index 520-001 for drop curb details and Index 522-001 for joints between driveway, sidewalks, and curb.
- 3. Existing Curb and Gutter

Remove existing curb and gutter to either the nearest joint beyond the flared point or to where no remaining section is less than 5 feet long.

- 4. Grades and cross slopes shown are maximums.
- 5. Longitudinal Joints:

Construct $\frac{1}{8}$ " open joints placed at equal (20' max.) intervals for driveways over 20' wide. Match joints in curb and gutter to match joints in driveways.

6. Transverse Joints:

Construct $\frac{1}{8}$ open joints @ 10' Centers and $\frac{1}{2}$ expansion joints with preformed joint filler every 5th joint.

- 7. Construct driveways (6" thick concrete) to a uniform width (W) to the R/W line or the extent shown in the Plans.
- 8. Width of Sidewalk Thru Driveway is 4'-0" minimum. Match sidewalk width when shown in Plans or when utility strip width is equal to or greater than the depth of the Driveway Apron.
- 9. Alpha-Numeric Identification:

 <u>Concrete Flared Driveway Al</u>pha-Numeric Identifications (e.g. G4) are provided for reference purposes in the Plans.

LEGEND:

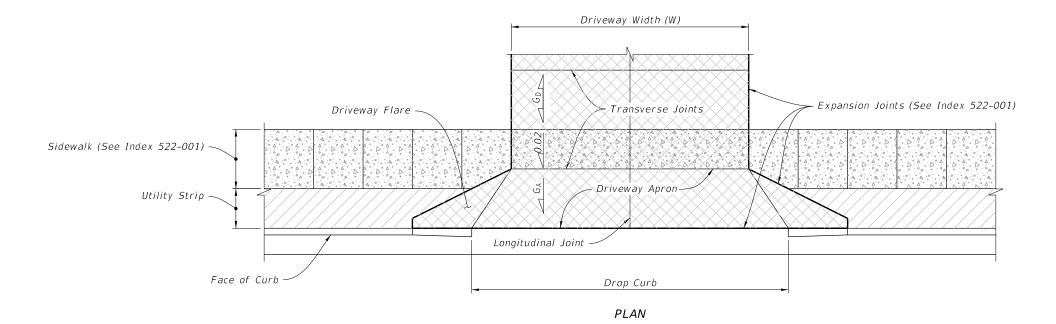
אַ Sidewalk

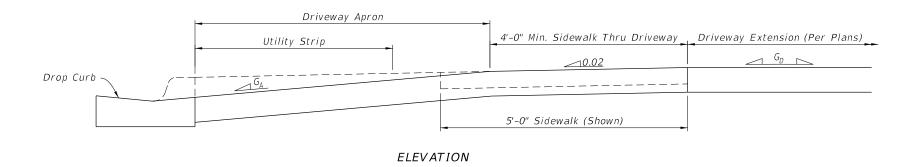
Flared Driveway (6" Thick Concrete)

Sidewalk Thru Driveway (6" Thick Concrete)

Utility Strip

- G_A Grade of Apron
- G_D Grade of Driveway (Per Plans)





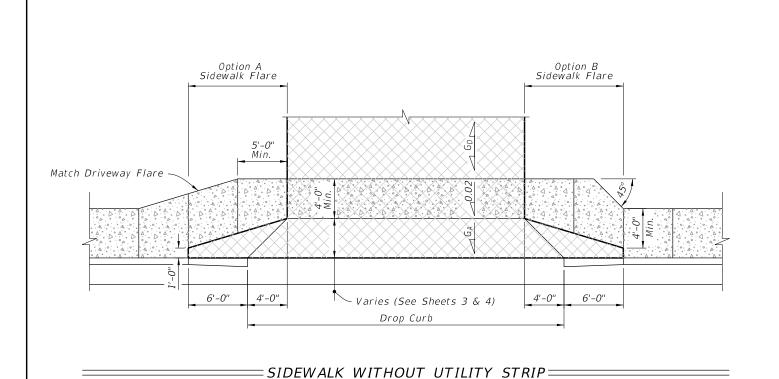
CONCRETE FLARED DRIVEWAY NOMENCLATURE

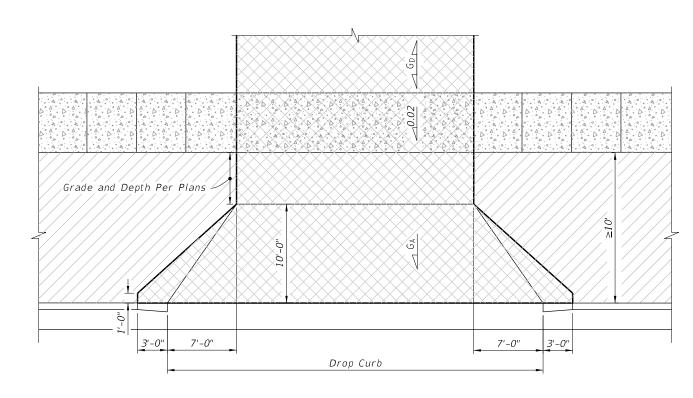
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LAST REVISION 11/01/18

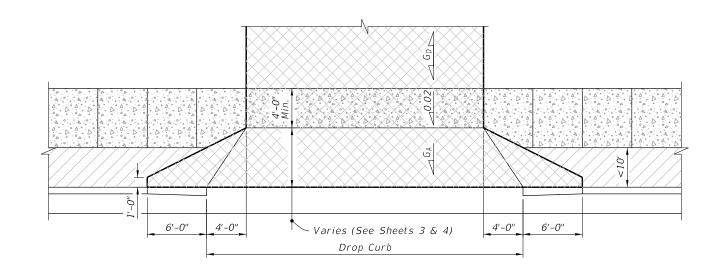
DESCRIPTION:







=WITHOUT SIDEWALK OR UTILITY STRIP ≥ 10' WIDE==



=UTILITY STRIP < 10' WIDE====

LEGEND:

Sidewalk

Flared Driveway (6" Thick Concrete)

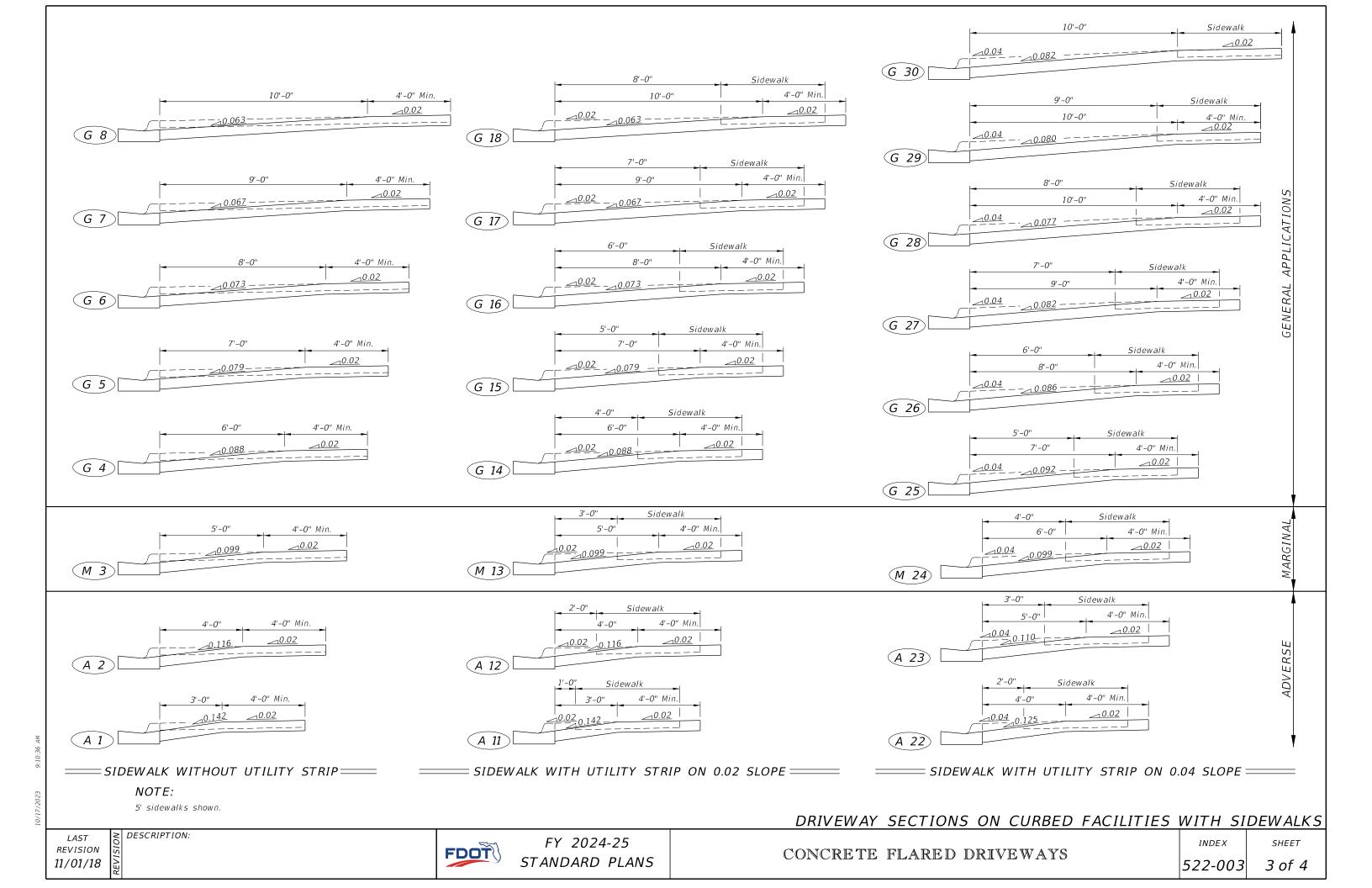
Sidewalk Thru Driveway (6" Thick Concrete)

Utility Strip

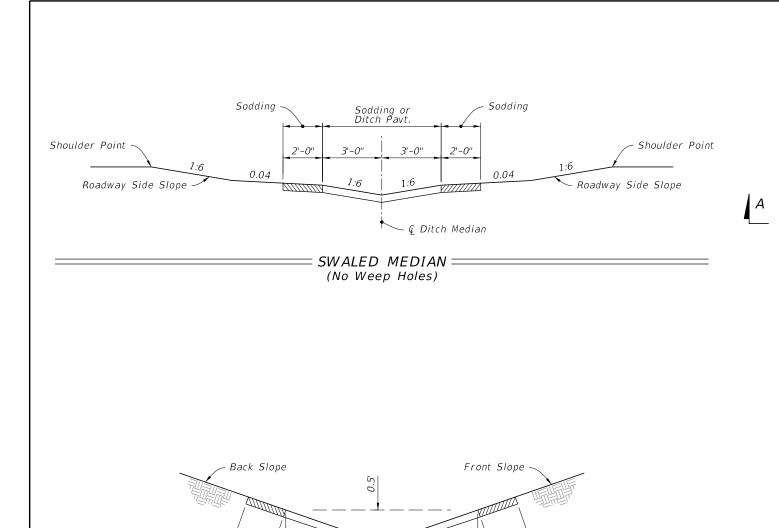
REVISION 11/01/18

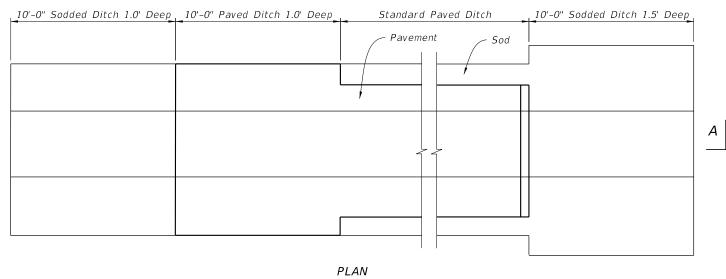
DESCRIPTION:

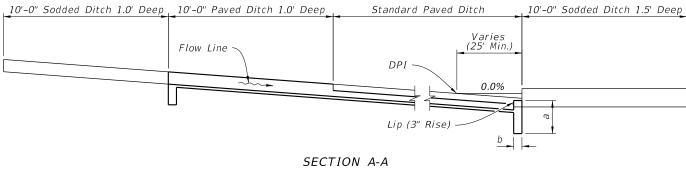
FDOT



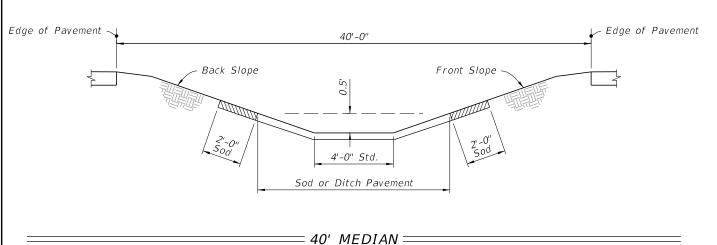








PAVED DITCH END TREATMENT:



Sod or Ditch Pavement

ROADWAY SIDE DITCH =

GENERAL NOTES:

- 1. Install type of ditch pavement shown on Plans.
- 2. Construct lip at the end of ditch pavement downstream of DPI or on flatter grades where there is a decrease in ditch velocity.
- 3. Use toewalls with all ditch paving, except adjacent to drainage structures.
- 4. Construct sides of paving with 1' minimum height for junction of R/W ditch spillway and lateral ditch.
- 5. Select appropriate geotextile based on the application type referenced in Specification 985 and install in accordance with Specification 514 under all ditch pavement except for miscellaneous asphalt.
- 6. Install ditch pavement requiring reinforcement as detailed in Plans.

REVISION 11/01/23

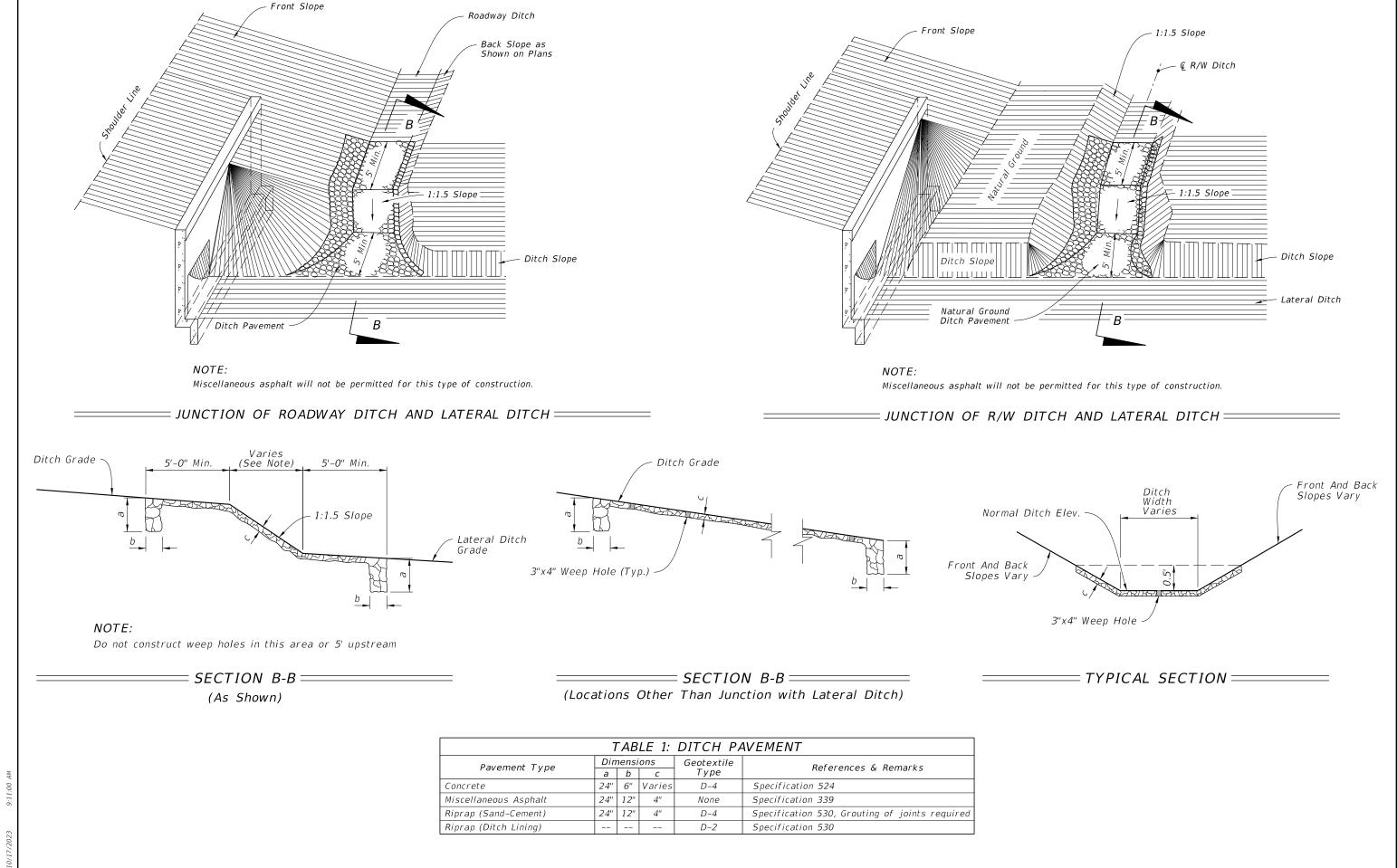
DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

INDEX SHEET *524-001*

1 of 3

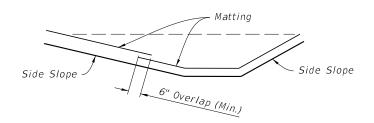


REVISION 11/01/23

DESCRIPTION:

Matting

SECTION C-C



SECTION D-D

= MATTING FOR DITCH ==

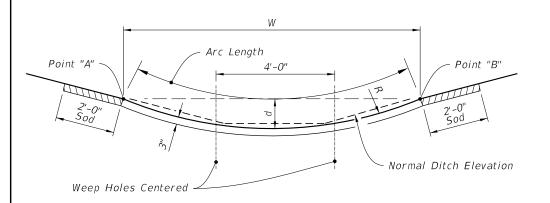
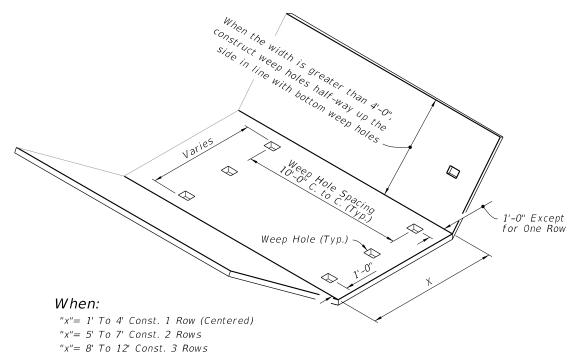


TABLE 2: ALTERNATE DITCH PAVEMENT									
TO REPLACE:	W	d	R	Rows Of Weep Holes	Arc Length				
6' Median Swale	6'	0.24'	19'	0	6.0'				
1:6 Front Slopes; 1:4 Back Slope									
5' Ditch Bottom Width	10'	0.67'	19'	2	10.1'				
4' Ditch Bottom Width	9'	0.54'	19'	2	9.1'				
1:4 Front Slopes & Back Slope									
5' Ditch Bottom Width	9'	0.74'	14'	2	9.2'				
4' Ditch Bottom Width	8'	0.58'	14'	1 (in center)	8.1'				

NOTE:

For use only where side slopes are 1:4 or flatter. Point "A" and "B" are at the same elevation and should be used to locate the paved section.



NOTES:

"x"= 13' To 17' Const. 4 Rows

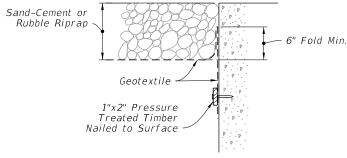
"x"= 18' To 22' Const. 5 Rows

(Typical)

- 1. Construct all weep holes 3"x4" rectangle or 4" or 5" diameter circle hole. Place $\frac{1}{2}$ cu. ft. (12" x 12" x 6") of No. 57 aggregate under each hole with 1 sq. ft. of galvanized wire mesh ($\frac{1}{4}$ " openings) placed between the aggregate and the ditch pavement.
- 2. Rectangle weep holes shown, round weep holes similar.
- 3. Weep hole spacing may be reduced to 5' minimum when directed by the Engineer.

Sand-Cement or Rubble Riprap 6" Fold Min. No Adhesive Above Here Geotextile 12" Bituminous Coating of Face of Concrete

BONDED OPTION



NOTE:

Either option may be used, unless called for in the plans.

NAILED OPTION

= ${\it GEOTEXTILE}$ ${\it PLACEMENT}$ === WEEP HOLE ARRANGEMENT =AT CONCRETE STRUCTURE

= ALTERNATE DITCH PAVEMENT ==

DESCRIPTION: REVISION 11/01/23

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DITCH PAVEMENT AND SODDING

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- A. Prestressed concrete posts with equivalent strength resistance may be substituted for conventionally reinforced precast posts shown in this index when approved as part of a Producer's Quality Control Plan.
- B. Producer shop drawings for prestressed concrete post designs must be approved by the State Structures Design Office prior to inclusion in the Quality Control Plan.
- 2. Construct Noise Walls in accordance with the requirements of Specification Section 534, and Augers Cast Piles in accordance with Specification Section 455.
- 3. Field verify the location of all overhead and underground services shown in the Wall Control Drawings.
- 4. Wall Height is the nominal height of the walls above finished grade. The Wall Embedment Depth for design is 1'-0". The actual embedment depth may vary plus or minus 6" along the length of the wall.
- 5. Post Spacing in this Index are nominal, and are measured from centerline to centerline of the auger cast piles. Actual post spacing may vary as shown in the Wall Control Drawings.
- - A. The sum of the individual stacked panel heights is the Wall Height plus 1'-0" (embedment depth).
 - B. Where special graphics are required, locate the horizontal panel joints outside of the graphics. Where possible, hold horizontal panel joints at a constant elevation.
 - C. Side Installed Panels are only permitted when reduced overhead clearance between posts prohibits installing panels from the top.
 - 1. For Flush Face panels, install panel into posts from the back face of the wall. Recessed panels may be installed from the back or front
 - 2. After panels are installed and centered between posts, grout between both panel ends and the adjoining posts (see Sheets 4 and 5 for details).
 - D. Individual panel heights should be between 6'-0" and 12'-0" tall. The minimum panel height is 4'-0" and may be used where overhead clearance is limited, or where graphic panels are required on shorter walls.
- 7. Concrete And Grout:
 - A. Concrete Class and Compressive Strength for:
 - 1. Precast Panels, Posts, and Post Caps: Class IV
 - 2. Cast-In-Place Collars: Class IV
 - B. Minimum Compressive Strength for form removal and handling of posts and panels:
 - 1. 2,500 psi for horizontally cast post and panels
 - 2. 2,000 psi for vertically cast panels or when tilt-up tables are used for horizontally cast panels.
 - C. Grout for Auger Cast Piles:
 - 1. Maximum Working Compressive Strength = 2,000 psi
 - 2. Minimum 28 day strength = 5,000 psi
- 8. Reinforcing Steel:
 - A. In addition to the requirements of Specification Section 415, tie post and pile stirrups at the following locations as a minimum:
 - 1. Post Stirrups Tie at all four corner bars and at every third interior bar
 - 2. Pile Stirrups Tie to the main vertical reinforcing at alternate intersections for circular configurations and at the four corners and at every third interior bar intersection for rectangular configurations.
 - B. Provide 2" concrete cover unless noted otherwise.
- 9. Casting Tolerances for precast panels and posts:
 - A. Overall Height and Width: $+/-\frac{1}{4}$ "
 - B. Thickness: +/- 1/4"
 - C. Plane of side mold: +/- 1/16"
 - D. Openings: +/- 1/2"

DESCRIPTION:

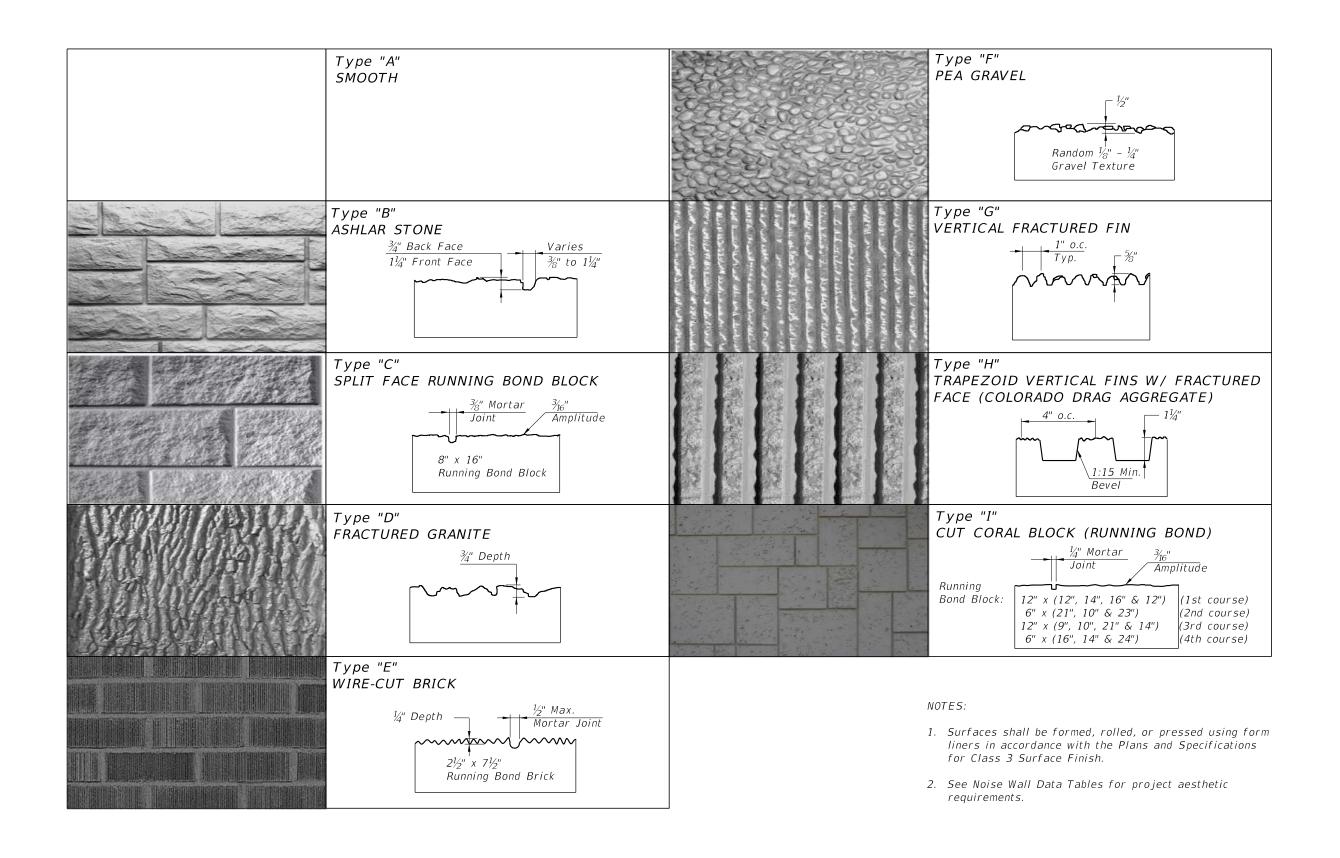
- E. Out of Square: 1/8" per 6 ft., but not more than 3/8"total along any side
- F. Warping: 1/16" per foot distance to nearest corner
- G. Bowing: 1/240 panel dimension
- H. Surface Smoothness for Type "A" Smooth Surface Texture Option: +/- 1/16"

- 10. Provide Plain or Fiber Reinforced Bearing Pads meeting the requirements of Specification Section 932 for Ancillary Structures.
 - A. For Collar Bearing Points provide:
 - 1. 4"x 4"x ½" Fiber Reinforced Pads;
 - 2. Plain Pads may be substituted for Fiber Reinforced Pads when sufficient bearing area is available on the concrete collar for the following:
 - a. 10' Post Spacing: $4''x 4''x \frac{1}{2}''$
 - b. 20' Post Spacing and Wall Height < 17 feet: $4''x 4''x \frac{1}{2}''$
 - c. 20' Post Spacing and Wall Height ≥ 17 feet: 4"x 5"x ½"
 - B. At panel bearing points between stacked panels, use Plain or Fiber Reinforced Bearing Pads.

GENERAL NOTES

REVISION 11/01/19





TEXTURE OPTIONS

REVISION 11/01/13

FDOT

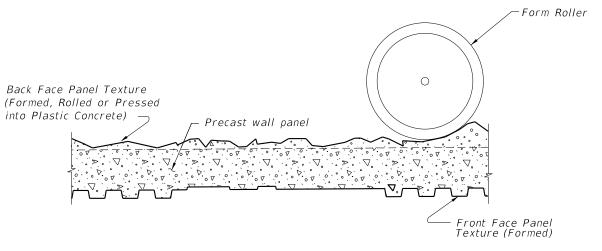
FY 2024-25 STANDARD PLANS

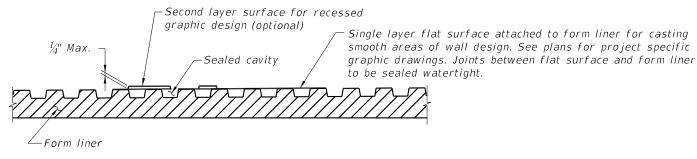
NOISE WALLS - (PRECAST)

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HALF ELEVATION (Front Face Post and Panel Texture Type "H" shown) (Graphic Type SE-2 shown) (Two stacked panels shown, three stacked panels similar)





TYPICAL FORMING DETAIL (Front Face Panel Texture Type "H" shown) (Back Face Panel Texture Type "D" shown) (Post Forming Details Similar)

NOTES:

- 1. Submit specific form liner samples for approval by the Engineer.
- 2. Textures and graphics shown are for demonstration purposes only. See Noise Wall Data Tables in the plans for project specific texture and graphic requirements.

GRAPHICS & TEXTURE DETAILS

11/01/14

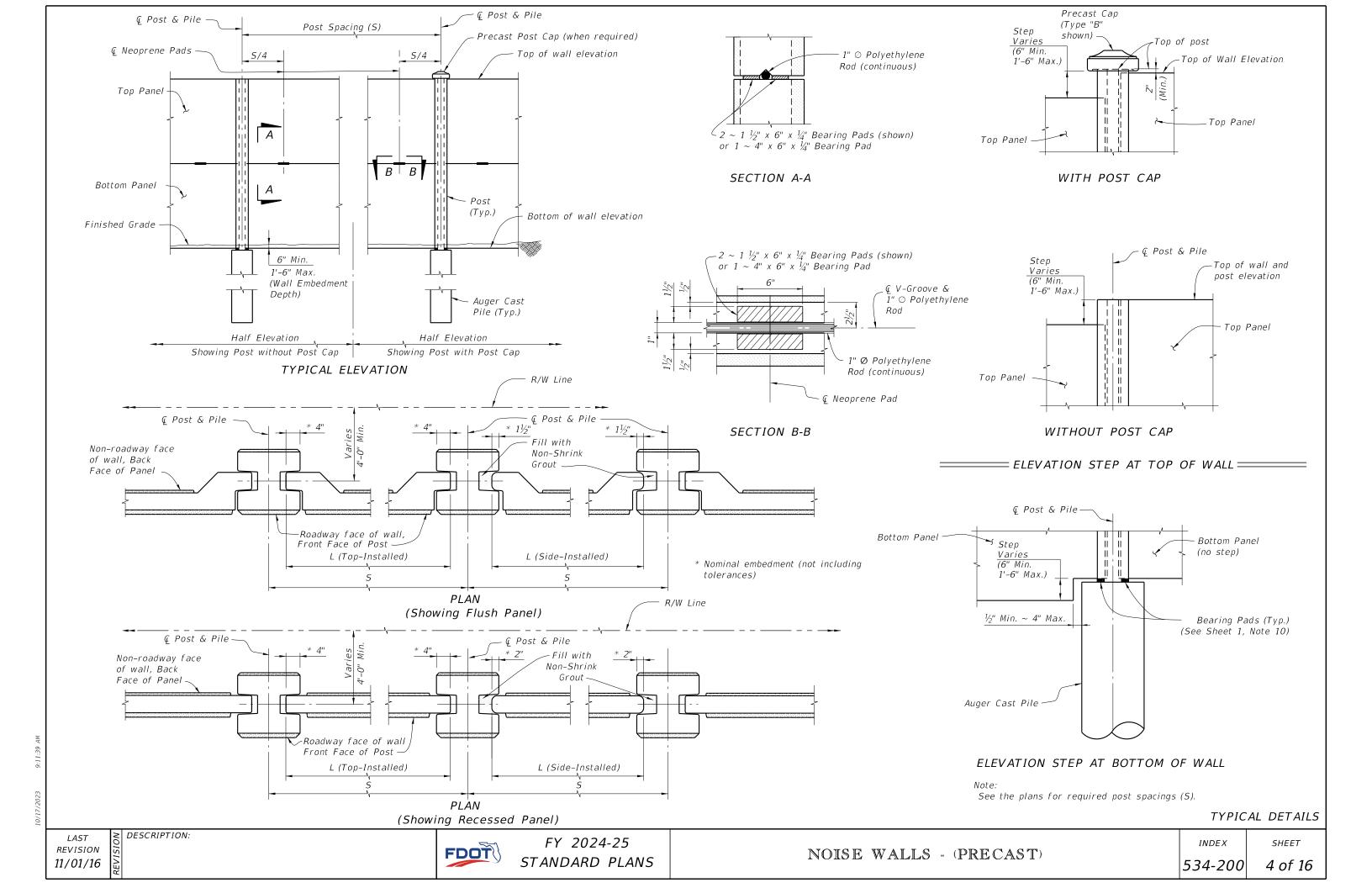
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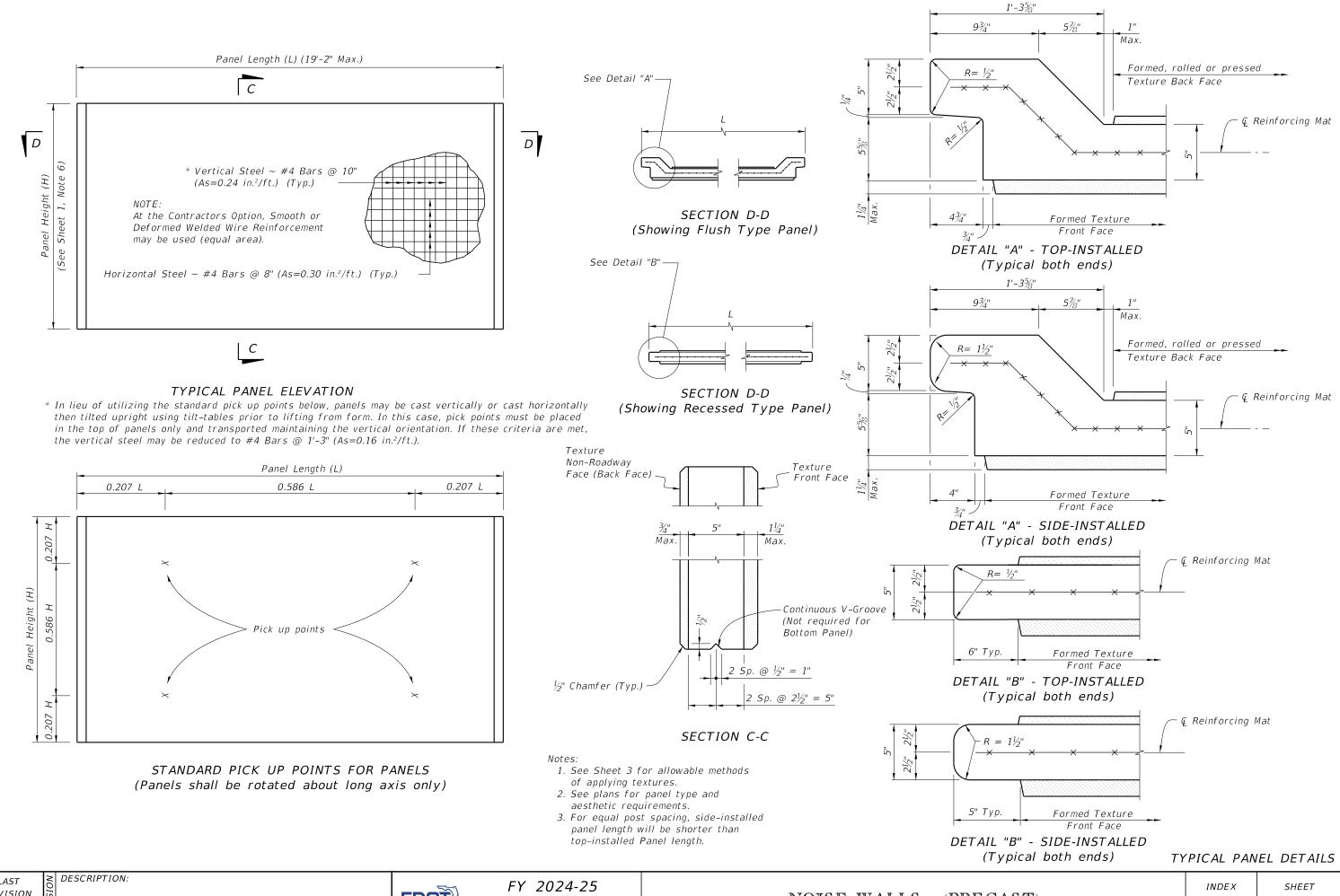
FDOT

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REVISION

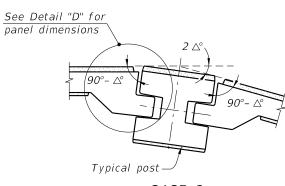
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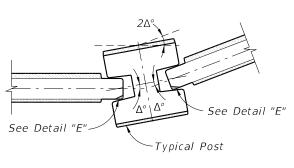


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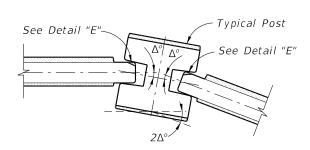
FDOT



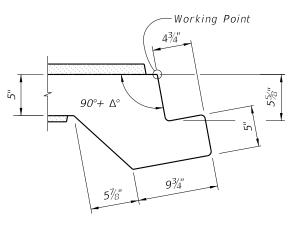
CASE 2 (Exterior Angle)



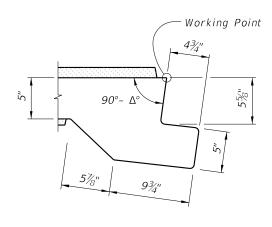
CASE 1 (Interior Angle)



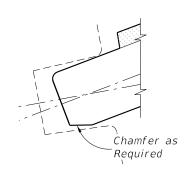
CASE 2 (Exterior Angle)



DETAIL "C"



DETAIL "D"



DETAIL "E" (Back Face Chamfer Shown Front Face Chamfer Similar)

The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle ($2\Delta^{\circ}$) between panels exceeds 7°.

> PIVOTING DETAILS = (Flush Type Panel)

The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle (2 Δ °) between panels exceeds 20°.

> = PIVOTING DETAILS =(Recessed Type Panel)

> > TYPICAL PANEL DETAILS

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DESCRIPTION:

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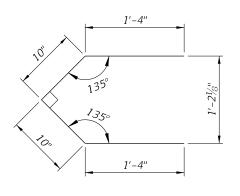
FY 2024-25 STANDARD PLANS

NOISE WALLS - (PRECAST)

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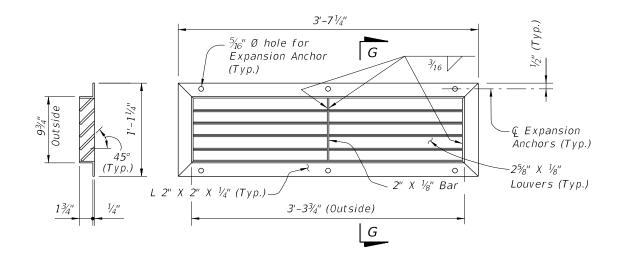
SHEET 6 of 16

DRAINAGE HOLES TYPES A, B, C & D (Front Face of Wall Shown) (Two Holes Shown, One Hole Similar)

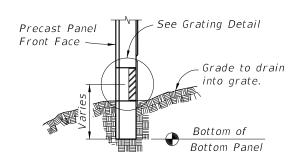


BAR A2 (Pair) Bar Length = 4'-4''

= BAR BENDING DETAILS (#3 Bars)



GRATING DETAIL



SECTION F-F

GRATING NOTES:

SECTION G-G

- 1. Grating shall be ASTM A36 steel welded in accordance with the current edition of ANSI/AWS D1.1 Steel Welding Code. Hot-dip galvanize grate after fabrication in accordance with Specification
- 2. Expansion Anchors: Use $\frac{1}{4}$ " Ø x 2" min. corrosion resistant (zinc/aluminum alloy or stainless steel) expansion anchors to connect grates to panels.
- 3. Blockout textured concrete surface for a strip 2" wide around drainage hole to enable secure attachment of the drainage grate.

DRAINAGE HOLE DETAILS

REVISION 11/01/17

DESCRIPTION:

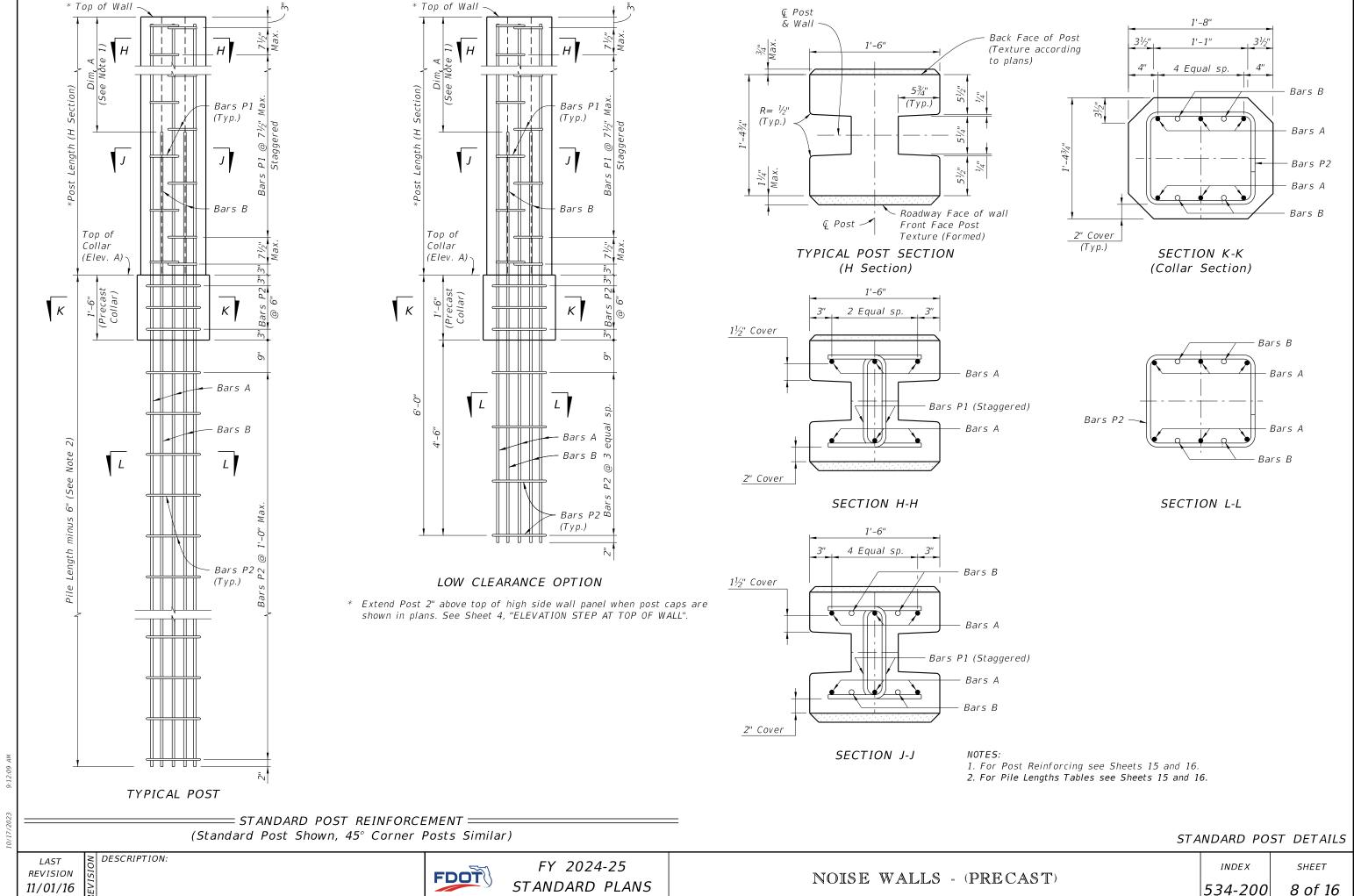
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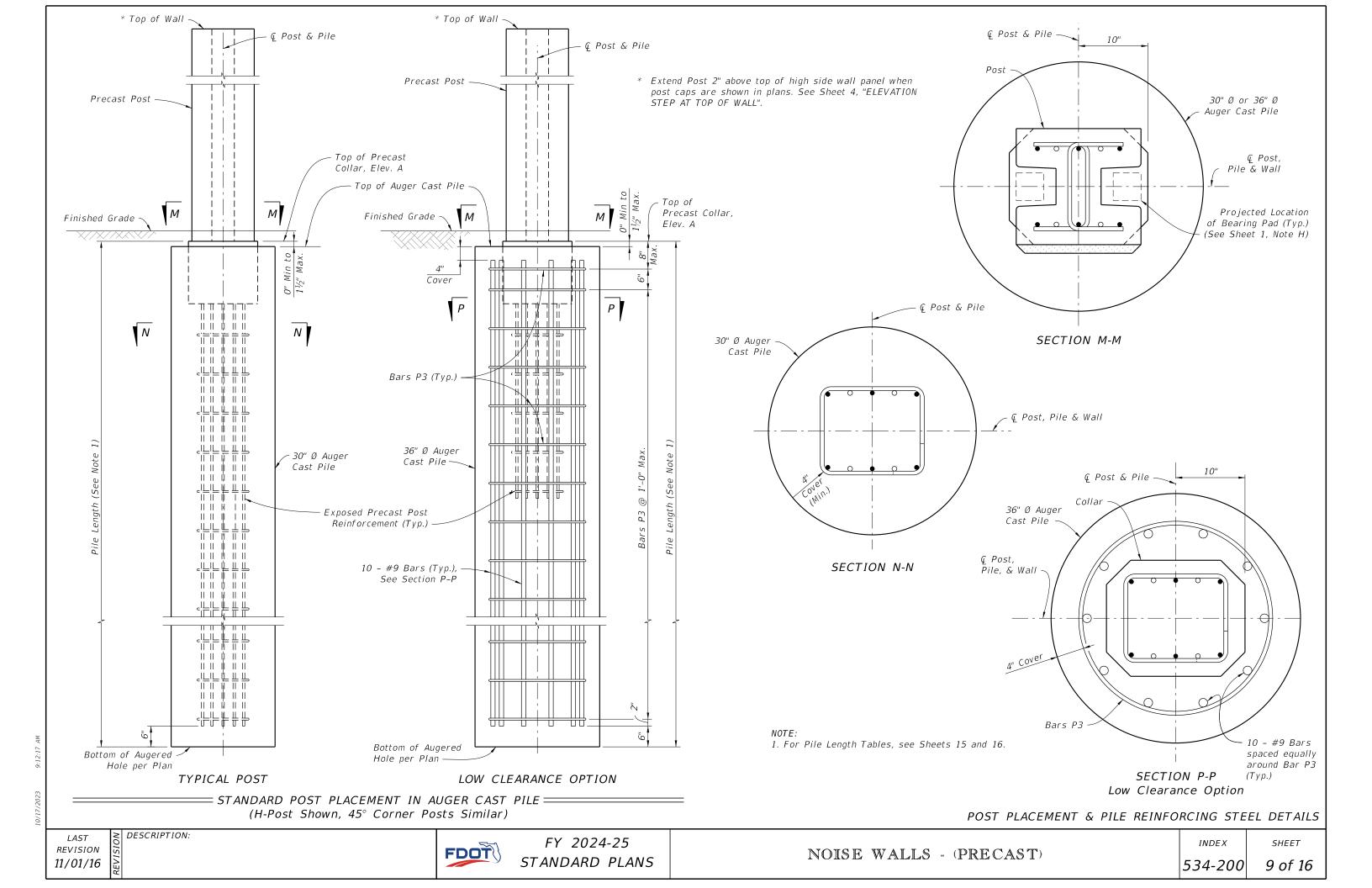
FY 2024-25 STANDARD PLANS

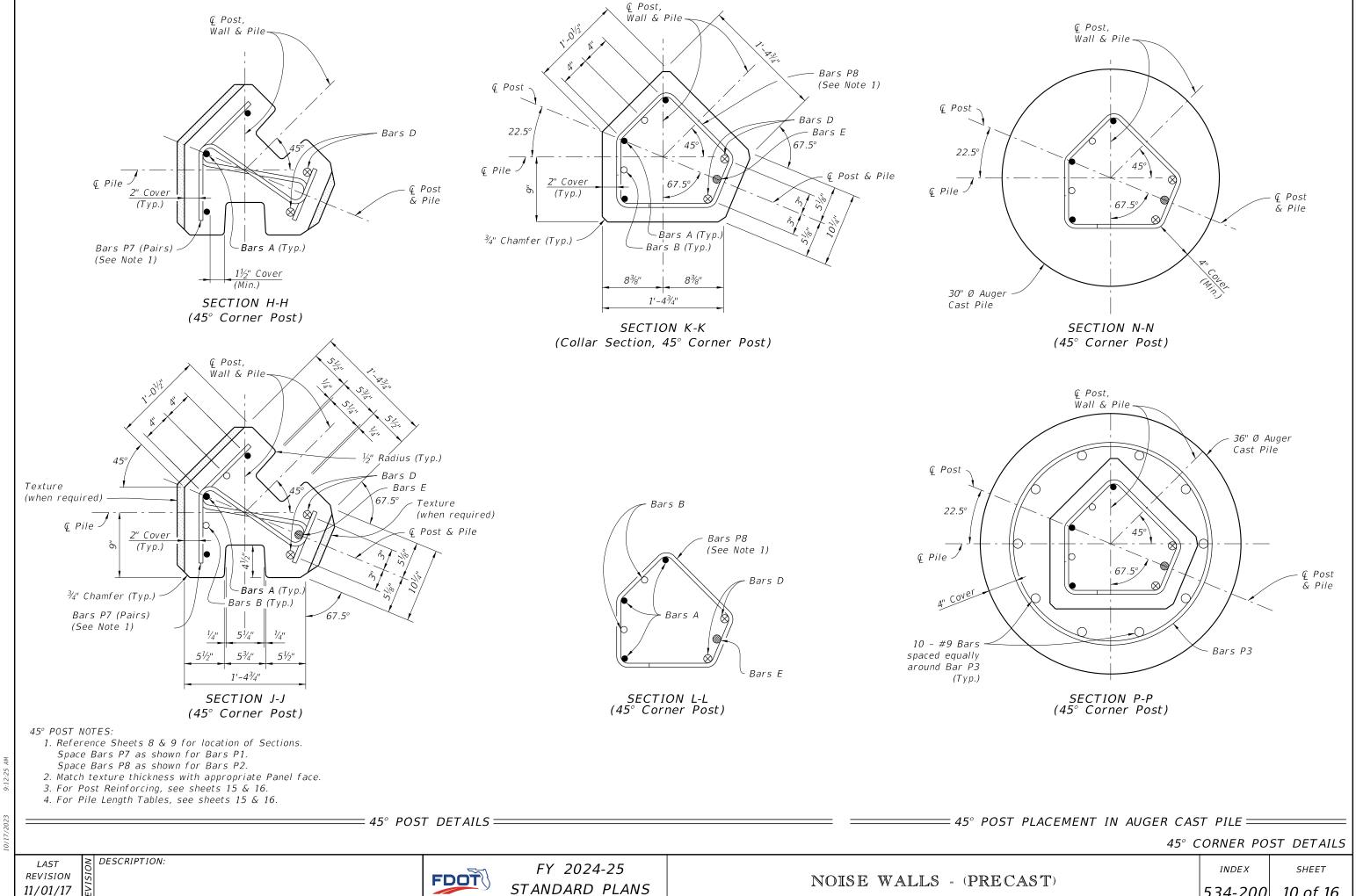
NOISE WALLS - (PRECAST)

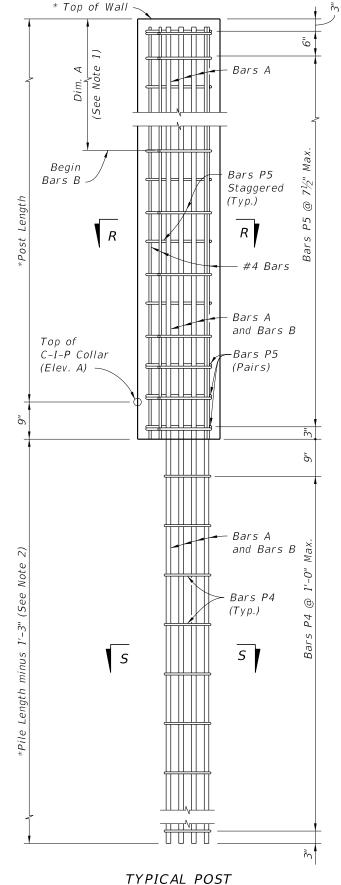
INDEX SHEET 534-200

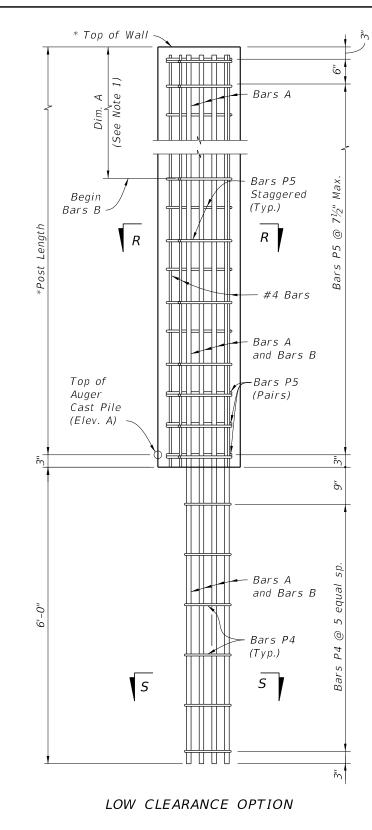
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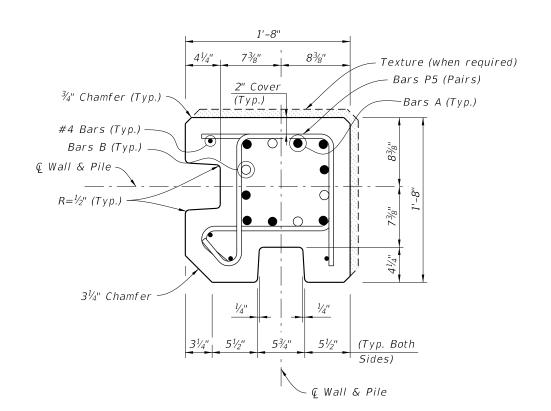




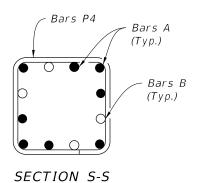


* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".

= 90 $^{\circ}$ CORNER POST REINFORCMENT =(Post Surface Features Not Shown For Clarity)



SECTION R-R



90° CORNER POST NOTES:

- 1. For Post Reinforcing, see Sheets 15 and 16.
- 2. For Pile Length Tables, see Sheets 15 and 16.
- 3. Reduce typical panel length or adjust pile spacing at each 90° Corner Post.
- 4. Match texture thickness with appropriate Panel face.

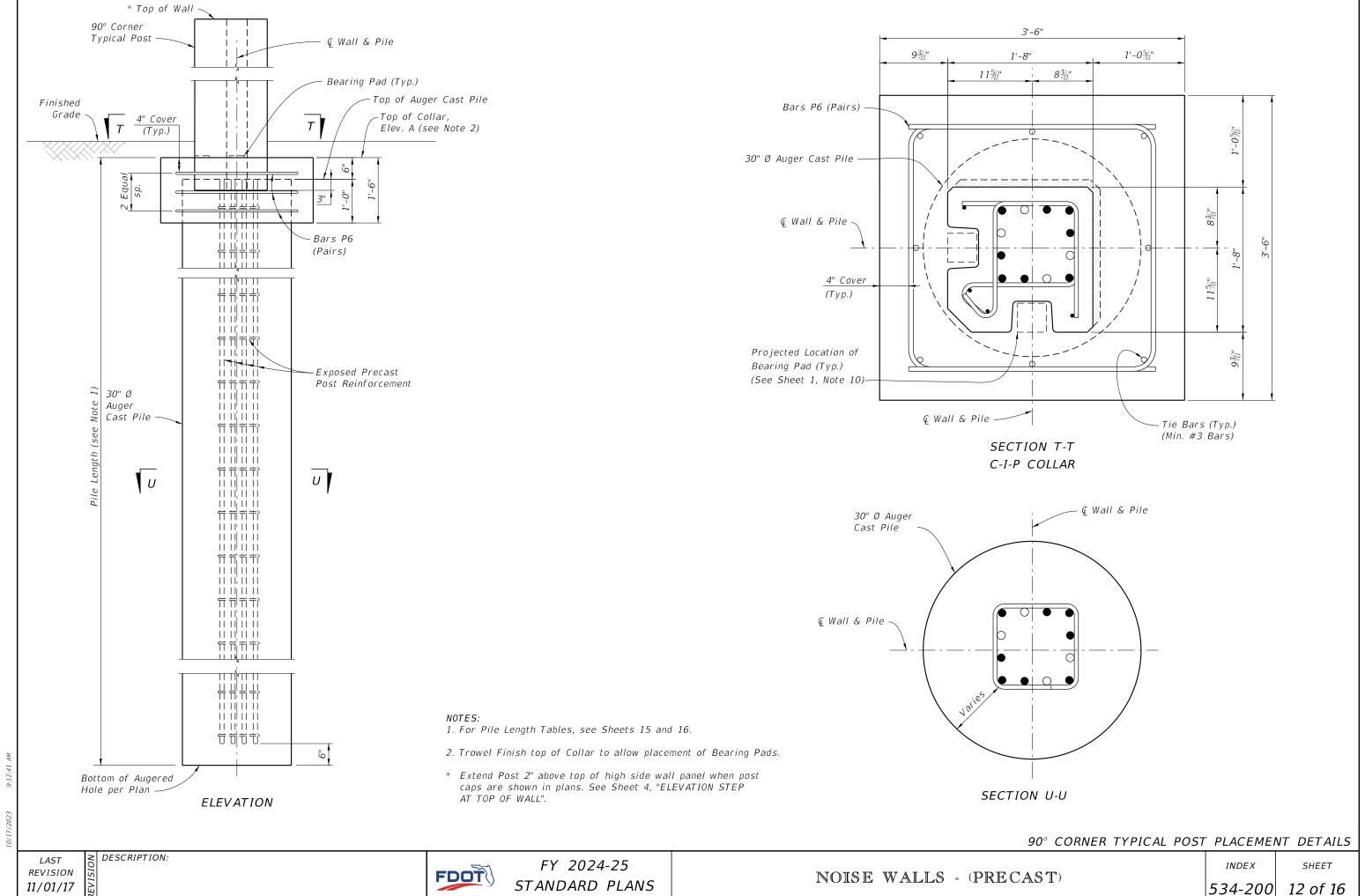
90° CORNER POST DETAILS

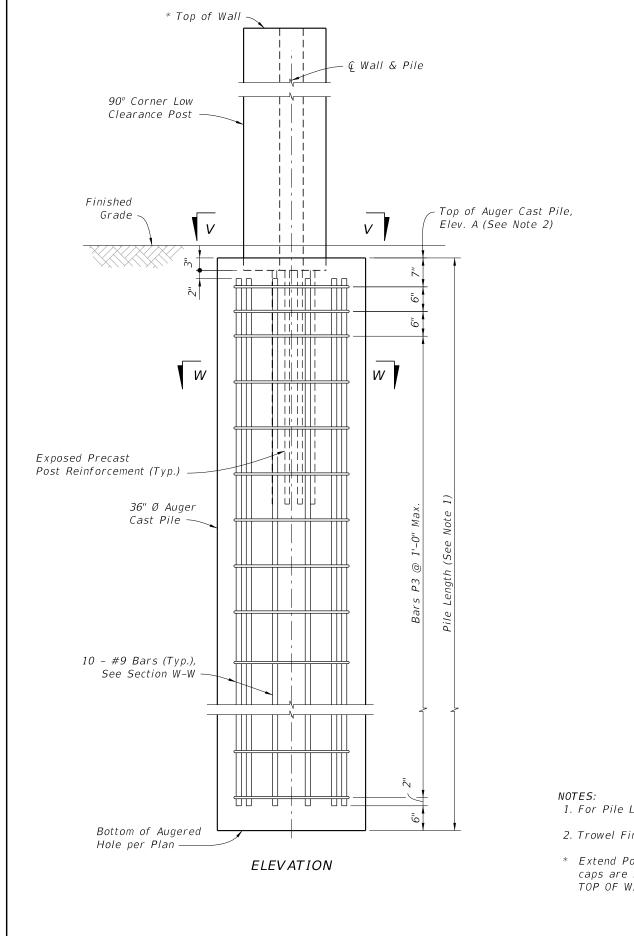
REVISION 11/01/16

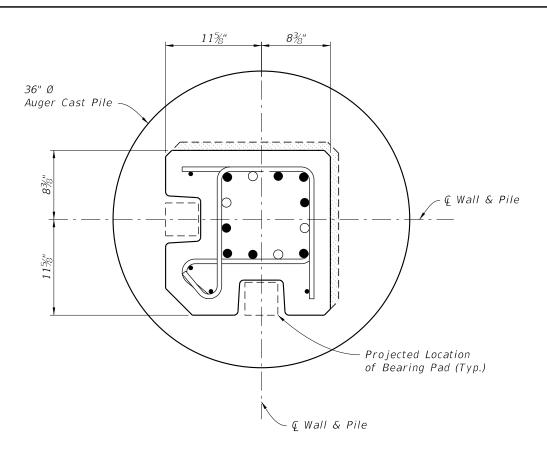
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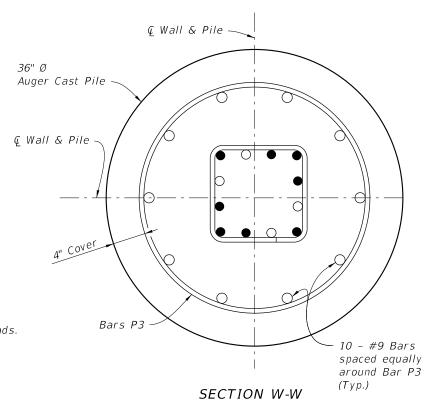
INDEX SHEET 534-200 11 of 16







SECTION V-V



- 1. For Pile Length Tables, see Sheets 15 and 16.
- 2. Trowel Finish top of auger cast pile to allow placement of Bearing Pads.
- * Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".

90° CORNER LOW CLEARANCE POST PLACEMENT & PILE REINFORCING STEEL DETAILS

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FDOT

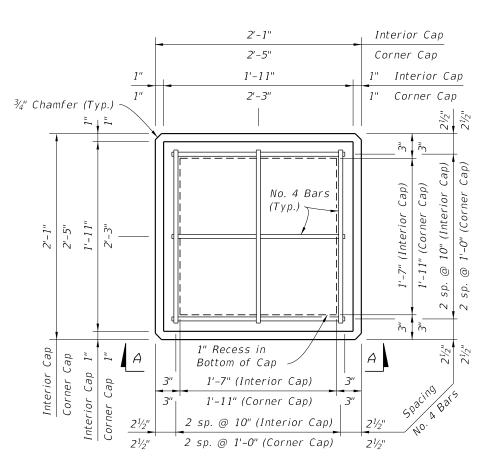
FY 2024-25 STANDARD PLANS

NOISE WALLS - (PRECAST)

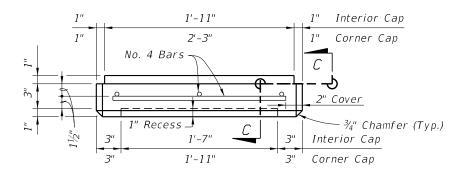
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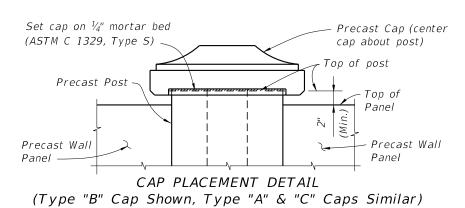
SHEET

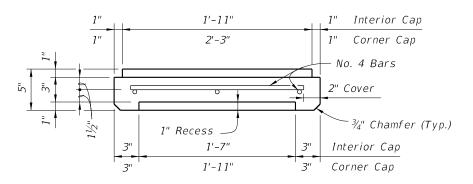


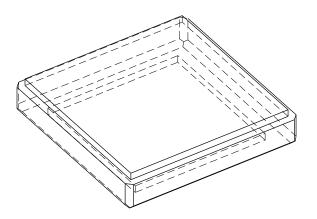
PLAN VIEW (Type "A" Cap Shown, Type "B" & "C" Caps Similar)



VIEW A-A SHOWN, VIEW B-B SIMILAR (Type "A" Cap Shown, Type "B" & "C" Caps Similar)



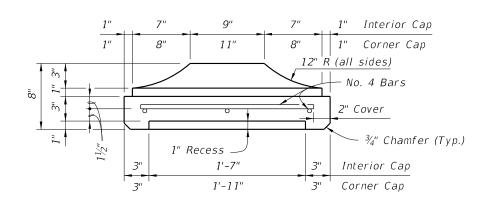


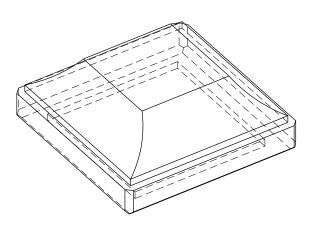


SECTION C-C

PICTORIAL VIEW

= TYPE "A" CAP DETAILS =

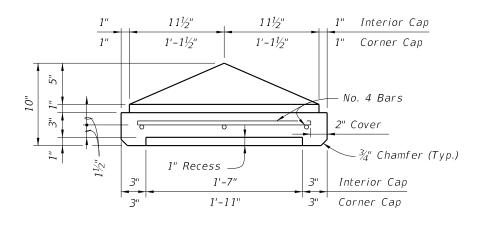


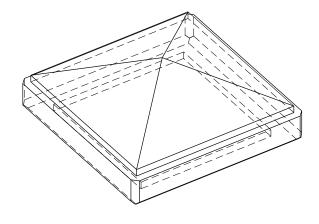


SECTION C-C

PICTORIAL VIEW

= TYPE "B" CAP DETAILS =





SECTION C-C

PICTORIAL VIEW

= TYPE "C" CAP DETAILS =

REVISION 11/01/14

DESCRIPTION:

FDOT

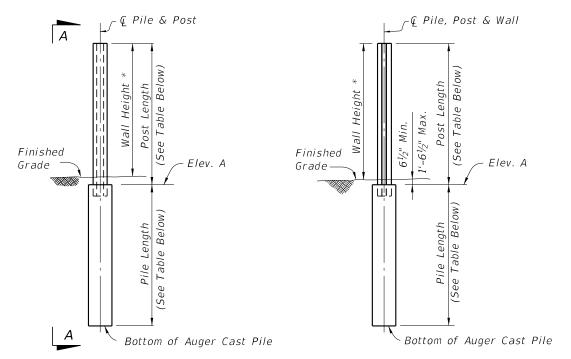
FY 2024-25 STANDARD PLANS

NOISE WALLS - (PRECAST)

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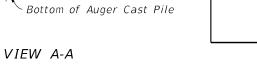
SHEET

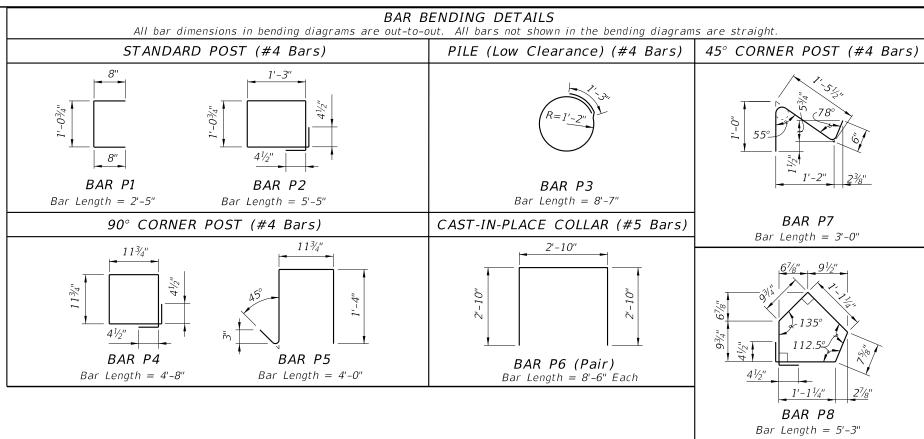
PRECAST POST CAPITAL



* See Sheet 1, Note 4.

PILE/POST ELEVATION





		Т	ABLE 1	'A - T	ABLE (OF PO.	ST RE	INFOR	CING S	STEEL								TAI	BLE 1B	- PILI	ELEN	GTHS	(Feet)	- WIN	D SPE	ED =	130 M	РН			
	POST LE	ENGTHS	S WIND SPEED = 130 MPH								10'-0" POST SPACING 20'-0" POST SPACING																				
NOMINAL WALL										'-0" SPACING			20'-0" POST SPACING				NOMINAL WALL	H-POSTS		CORNER POSTS					H-POSTS			CORNER POSTS			
HEIGHT (Feet)	WITHOUT CAP	WITH CAP	BARS A		ARS B	BARS D	BA	ARS E	BARS A	BA	RS 3	BARS D	В	ARS E	HEIGHT (Feet)	50	'L 1	50.	IL 2	50	IL 1	50	IL 2	501	'L 1	501	L 2	501	īL 1	501	IL 2
			SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'		<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " Ø	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘
12	13'-0 ¹ / ₂ "	13'-2 ¹ / ₂ "	#4	#4	7'-11"	#4	#4	9'-11"	#5	#5	9'-8"	#6	#6	9'-4"	12	11	10	10	10	11	10	10	10	15	14	13	12	14	13	13	12
13	14'-0 ¹ / ₂ "	14'-2 ¹ / ₂ "	#4	#4	10'-11"	#4	#4	10'-11"	#5	#5	9'-8"	#6	#6	9'-4"	13	12	11	10	10	11	10	10	10	15	14	13	13	15	14	13	12
14	15'-0 ¹ / ₂ "	15'-2 ¹ / ₂ ''	#4	#4	10'-11"	#5	#5	11'-8"	#6	#6	11'-4"	#7	#7	10'-8"	14	12	11	11	10	12	11	10	10	16	15	14	13	15	14	14	13
15	16'-0 ¹ / ₂ "	16'-2 ¹ / ₂ "	#4	#4	10'-11"	#5	#5	12'-8"	#6	#6	11'-4"	#7	#7	10'-8"	15	12	12	11	10	12	11	11	10	16	15	15	13	16	15	14	13
16	17'-0 ¹ / ₂ "	17'-2 ¹ / ₂ "	#5	#5	13'-8"	#5	#5	12'-8"	#6	#6	11'-4"	#7	#7	10'-8"	16	13	12	11	11	12	12	11	10	17	16	15	14	16	15	15	14
17	18'-0 ¹ / ₂ "	18'-2 ¹ / ₂ "	#5	#5	14'-8"	#5	#5	12'-8"	#7	#7	12'-8"	#7	#8	10'-0"	17	13	12	12	11	13	12	11	11	18	16	16	14	17	16	15	14
18	19'-0 ¹ / ₂ "	19'-2 ¹ / ₂ "	#5	#5	14'-8"	#6	#6	14'-4"	#7	#7	12'-8"	#8	#8	12'-0"	18	14	13	12	11	13	12	12	11	18	17	16	15	18	16	15	14
19	20'-0 ¹ / ₂ "	20'-2 ¹ / ₂ "	#5	#5	14'-8"	#6	#6	14'-4"	#7	#8	12'-0"	#8	#9	11'-3"	19	14	13	12	12	14	13	12	11	19	17	16	15	18	17	16	15
20	21'-0 ¹ / ₂ "	21'-2 ¹ / ₂ "	#6	#6	16'-4"	#6	#6	14'-4"	#8	#7	14'-8"	#9	#8	14'-0"	20	14	13	13	12	14	13	12	12	19	18	17	16	19	17	16	15
21	22'-0 ¹ / ₂ "	22'-2 ¹ / ₂ "	#6	#6	16'-4"	#6	#6	14'-4"	#8	#8	14'-0"	#9	#10	12'-4"	21	15	14	13	12	14	13	13	12	20	18	17	16	19	18	17	16
22	23'-0 ¹ / ₂ "	23'-2 ¹ / ₂ "	#6	#6	16'-4"	#7	#7	16'-8"	#8	#9	13'-3"	#10	#9	15'-3"	22	15	14	14	13	15	14	13	12	20	19	18	17	20	18	17	16

TABLE NOTE:

- 1. Bars D and Bars E are for 45° Corner Posts only.
- 2. See Contract Plans for project wind speed.
- 3. Soil 1 = Loose Granular Soil, N = 4 to 9. Soil 2 = Medium Dense Granular Soil, N = 10 to 40.

PILE DEPTH & REINFORCING SUMMARY

REVISION 11/01/16

DESCRIPTION:

FDOT

SHEET

		T.	ABLE 3	BA - T.	ABLE	OF PO	ST RE	INFOR	CING	STEEL								TAE	3LE 3B	- PIL	E LEN	GTHS	(Feet)	- WIN	ID SPI	EED =	170 M	IPH			
	POST LI	ENGTHS	WIND SPEED = 170 MPH									10'-0" POST SPACING 20'-0" POST SPACING																			
NOMINAL WALL								"-0" SPACING			20'-0" POST SPACING				NOMINAL WALL	H-POSTS				CORNER POSTS				H-P0STS				CORNER POSTS			
HEIGHT (Feet)	WITHOUT CAP	WITH CAP	BARS A	BA	NRS B	BARS D	В	ARS E	BARS A	BA	iRS B	BARS D	В	ARS E	HEIGHT (Feet)	50	IL 1	50.	IL 2	50	IL 1	501	'L 2	50	IL 1	501	IL 2	501	IL 1	501	IL 2
			SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'		<i>30</i> " ∅	<i>36</i> " ∅	<i>30</i> " ∅	<i>36</i> " ∅	<i>30</i> " ∅	<i>36</i> " ⊘	<i>30</i> " ∅	<i>36</i> " ⊘	<i>30</i> " ∅	<i>36</i> " ∅	<i>30</i> " ∅	<i>36</i> " ∅	<i>30</i> " ∅	<i>36</i> " ∅	<i>30</i> " ∅	<i>36</i> " ⊘
12	13'-0 ¹ / ₂ "	13'-2 ¹ / ₂ "	#5	#5	9'-8"	#5	#5	8'-8"	#6	#6	8'-4"	#7	#7	7'-8"	12	14	13	12	11	13	12	12	11	18	17	16	15	18	16	16	15
13	14'-0 ¹ / ₂ ''	14'-2 ¹ / ₂ "	#5	#5	10'-8"	#6	#6	10'-4"	#7	#7	8'-8"	#8	#7	8'-8"	13	14	13	13	12	14	13	12	11	19	18	17	16	19	17	16	15
14	15'-0 ¹ / ₂ ''	15'-2 ¹ / ₂ "	#5	#5	10'-8"	#6	#6	10'-4"	#7	#7	8'-8"	#8	#8	8'-0"	14	15	14	13	12	14	13	13	12	20	18	18	16	19	18	17	16
15	16'-0 ¹ / ₂ "	16'-2 ¹ / ₂ ''	#6	#6	12'-4"	#6	#6	10'-4"	#8	#7	10'-8"	#9	#8	10'-0"	15	15	14	14	13	15	14	13	12	21	19	18	17	20	18	18	16
16	17'-0 ¹ / ₂ ''	17'-2 ¹ / ₂ "	#6	#6	12'-4"	#7	#7	11'-8"	#8	#8	10'-0"	#9	#10	8'-4"	16	16	15	14	13	15	14	14	13	21	20	19	17	21	19	18	17
17	18'-0 ¹ / ₂ ''	18'-2 ¹ / ₂ ''	#6	#6	12'-4"	#7	#7	11'-8"	#9	#8	12'-0"	#10	#9	10'-3"	17	16	15	15	14	16	15	14	13	22	20	19	18	21	20	19	17
18	19'-0 ¹ / ₂ ''	19'-2 ¹ / ₂ ''	#7	#7	13'-8"	#7	#8	11'-0"	#9	#10	10'-4"	#10	#11	8'-5"	18	17	16	15	14	16	15	15	14	23	21	20	19	22	20	19	18
19	20'-0 ¹ / ₂ "	20'-2 ¹ / ₂ "	#7	#7	13'-8"	#8	#7	13'-8"	#10	#10	11'-4"	#11	#11	10'-5"	19	17	16	15	14	17	16	15	14	23	22	21	19	23	21	20	18
20	21'-0 ¹ / ₂ "	21'-2 ¹ / ₂ "	#7	#7	13'-8"	#8	#8	13'-0"	#10	#11	10'-5"	#11	#14	7'-0"	20	18	17	16	15	17	16	15	14	24	22	21	20	23	21	20	19
21	22'-0 ¹ / ₂ "	22'-2 ¹ / ₂ "	#7	#8	13'-0"	#9	#8	15'-0"	#11	#10	13'-4"	#14	#11	12'-5"	21	18	17	16	15	18	17	16	15	25	23	22	20	24	22	21	19
22	23'-0 ¹ / ₂ "	23'-2 ¹ / ₂ "	#8	#7	16'-8"	#9	#9	14'-3"	#11	#11	12'-5"	#14	#14	9'-0"	22	19	18	17	16	18	17	16	15	25	23	22	21	24	23	22	20

TABLE NOTE:

- 1. Bars D and Bars E are for 45° Corner Posts only.
- 2. See Contract Plans for project wind speed.
- 3. Soil 1 = Loose Granular Soil, N = 4 to 9;

DESCRIPTION:

Soil 2 = Medium Dense Granular Soil, N = 10 to 40.

PILE DEPTH & REINFORCING SUMMARY

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NOISE WALLS - (PRECAST)

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CORNER POSTS

S01L 2

36"

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30"

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S0IL 1

36"

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22

GENERAL NOTES:

- 1. Construct Perimeter Walls in accordance with Specification Section 534.
- 2. Choice of either Precast Option or Masonry Option is at the discretion of the Contractor. Contractor must also select the desired foundation type. Modifications to this Index is restricted to those required for geometric needs only.
- 3. Post spacing is measured from centerline to centerline of foundation element. For this Index, posts and foundation elements have been designed for 20 ft. spacings. Use post spacings less than 20 feet only at changes in horizontal alignment, wall terminations or to accommodate
- 4. See "Perimeter Wall Data Tables" in the plans for project requirements.
- 5. Field verify the locations of all overhead and underground utilities shown in the Wall Control Drawings.

PRECAST OPTION NOTES:

- 6. WALL NOTES:
- A. Walls may consist of either a single height panel or two stacked panels. Minimum panel height is 4'-3".
- B. Only when reduced overhead clearance between posts prohibits installation of panels from the top, side-installed panels are allowed. After panel is centered between posts, grout between panel ends and posts.
- 7. CONCRETE AND GROUT:
- A. Cast-in-Place and Precast Concrete: Class IV
- B. Grout for Auger Cast Piling: Minimum 28 Day Strength = 5000 psi
- C. Minimum Compressive Strength for Form Removal and Handling of Posts, Panels and Precast Spread Footings:
 - i. 2,500 psi for horizontally cast post, panels and precast spread footings.
- ii. 2,000 psi for vertically cast panels or when tilt-up form tables are used for horizontally cast panels.
- 8. REINFORCING STEEL:
- A. Concrete Cover: $1\frac{1}{2}$ " unless otherwise noted.
- B. In addition to the requirements of Specification Section 415, tie post and pile stirrups at the following locations as a minimum:
- i. Post Stirrups Tie at all four corner bars and at every third interior bar intersection.
- ii. Pile Stirrups Tie to the main vertical reinforcing at alternate intersections.
- 9. BEARING PADS:
- A. Bearing Pads for Collar or Pedestal Bearing Points and between stacked panels may be either Plain or Fiber Reinforced Neoprene Pads, in accordance with Specification Section 932 for ancillary structures.
- 10. CASTING TOLERANCES:
- A. Overall Height & Width: $+/-\frac{1}{4}$ "
- B. Thickness: $+/-\frac{1}{4}$ " C. Plane of side mold: $\pm 1/-\frac{1}{16}$ "
- D. Openings: $\pm /-\frac{1}{2}$ "
- E. Out of Square: $\frac{1}{8}$ " per 6 ft., but not more than $\frac{3}{8}$ " total along any side
- F. Warping: $\frac{1}{16}$ " per foot distance to nearest corner
- G. Bowing: 1/240 panel dimension

Construct Auger Cast Piling in accordance with the Plans and Specification Section 455.

MASONRY OPTION NOTES:

DESCRIPTION:

- 12. WALL NOTES:
- A. Inspect construction in accordance with the International Building Code (IBC) Section 17.
- B. Construct masonry walls with 8x8x16 block using a running bond pattern and concave
- C. Make all elevation changes (steps) in footing and top of wall using full height blocks. Make top of wall steps at pilasters exclusively. Footing steps may be made between pilasters as necessary to maintain minimum soil cover.

MASONRY OPTION NOTES (CONT.):

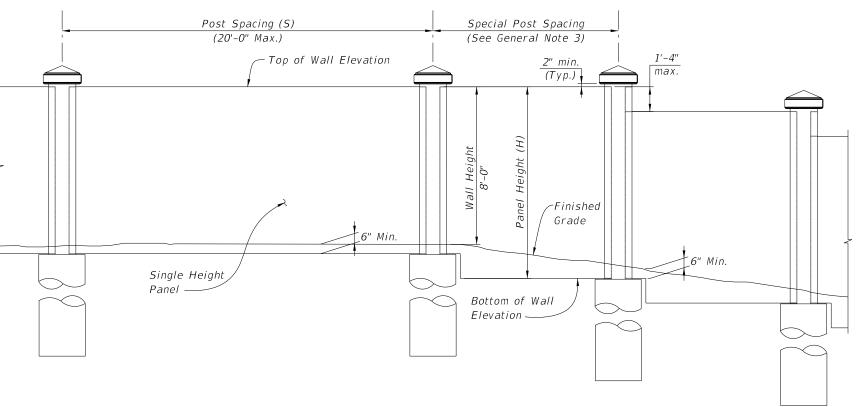
- D. Fully Grout all cells with horizontal or vertical reinforcing bars.
- E. Use reinforcing bar positioners to maintain vertical and horizontal bar placement.
- F. Fully grout first three courses of the wall.
- G. Joint Reinforcement: Use W 1.7 (9mm) galvanized ladder reinforcing spaced at 16" vertically. Provide special accessories for corners, intersections, etc. Joint reinforcing shall be continuous except it shall not pass through vertical masonry control joints. Lap joint reinforcing a minimum of 6".
- H. Construct expansion joints in the foundation at 90 foot maximum intervals, and directly below a wall control joint.
- I. Dowel Load Transfer Devices will be ASTM A 36 smooth round bars hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
- J. For spread footings, use a walk-behind compactor of at least 600 lbs. in weight. Obtain a minimum density of 95% of the maximum dry density as determined by FM 1 T-180. Perform soil density tests at 100 foot intervals.
- K. Protect walls during construction from soil, grout or mortar stains. Clean wall as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- L. Use soap and potable water to clean walls. If stain removal is necessary, use a cleaning method indicated in NCMA TEK 8-2A applicable to the type of stain on the exposed surface.
- M. During construction, cover tops of walls, with waterproof sheeting at the end of each day's work, or when construction is not in progress. Extend sheeting a minimum of 2 feet down each side and secure in place.
- N. Comply with Hot Weather Requirements in ACI 530.1.

13. MATERIALS:

- A. Concrete Masonry Units (CMU): Provide normal weight blocks.
- B. Cast-In-Place Concrete: Class II for slightly to moderate aggressive environments or Class IV for extremely aggressive environments
- C. Mortar: Type S meeting requirements of ASTM C1329
- D. Grout: Type S; coarse grout.
- E. Aggregate for Grout: Meet the requirements of ASTM C404 or Specification Section 901 size 8 or 89.

14. STORAGE OF MATERIALS:

- A. Store CMU's on elevated platforms in a dry location or under cover.
- If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp or exceeded the manufacturers shelf life.
- C. Store masonry accessories and reinforcing to prevent corrosion and accumulation of dirt and oil.

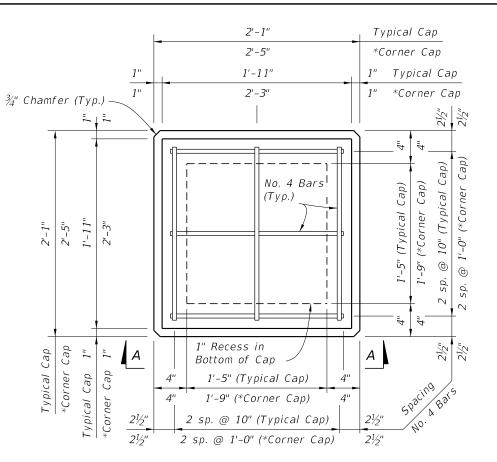


GENERAL WALL ELEVATION (Precast Option with SIngle Height Panel Shown, Others Similar)

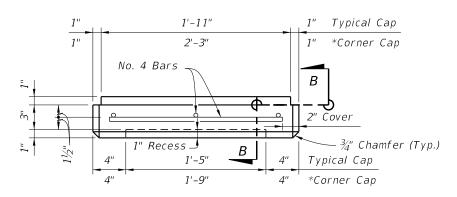
GENERAL NOTES

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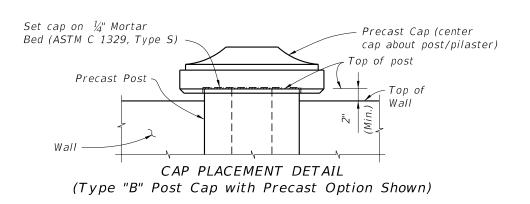


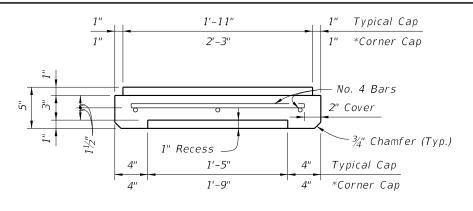


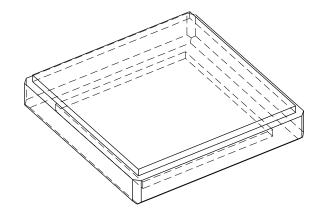
PLAN VIEW (Type "A" Cap Shown, Type "B" & "C" Caps Similar)



VIEW A-A (Type "A" Cap Shown, Type "B" & "C" Caps Similar)





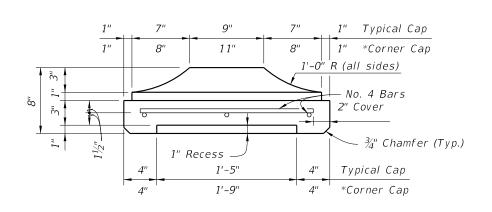


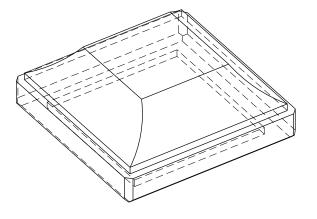
SECTION B-B

PICTORIAL VIEW

= TYPE "A" CAP DETAILS ==

*Precast Option only

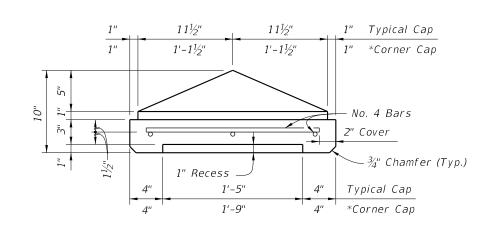


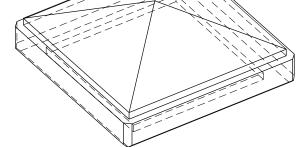


SECTION B-B

PICTORIAL VIEW

= TYPE "B" CAP DETAILS ===





SECTION B-B

PICTORIAL VIEW

== TYPE "C" CAP DETAILS ====

POST CAP DETAILS

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DESCRIPTION:

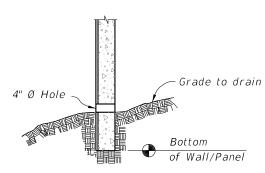
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PERIMETER WALLS

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SECTION C-C (Precast Option Shown, Masonry Option Similar)

- 1. Drainage holes may be formed with 4" NPS PVC pipe that may remain in place.
- 2. See Wall Control drawings for number, Type and location/ spacing of drainage holes.

DRAINAGE DETAILS

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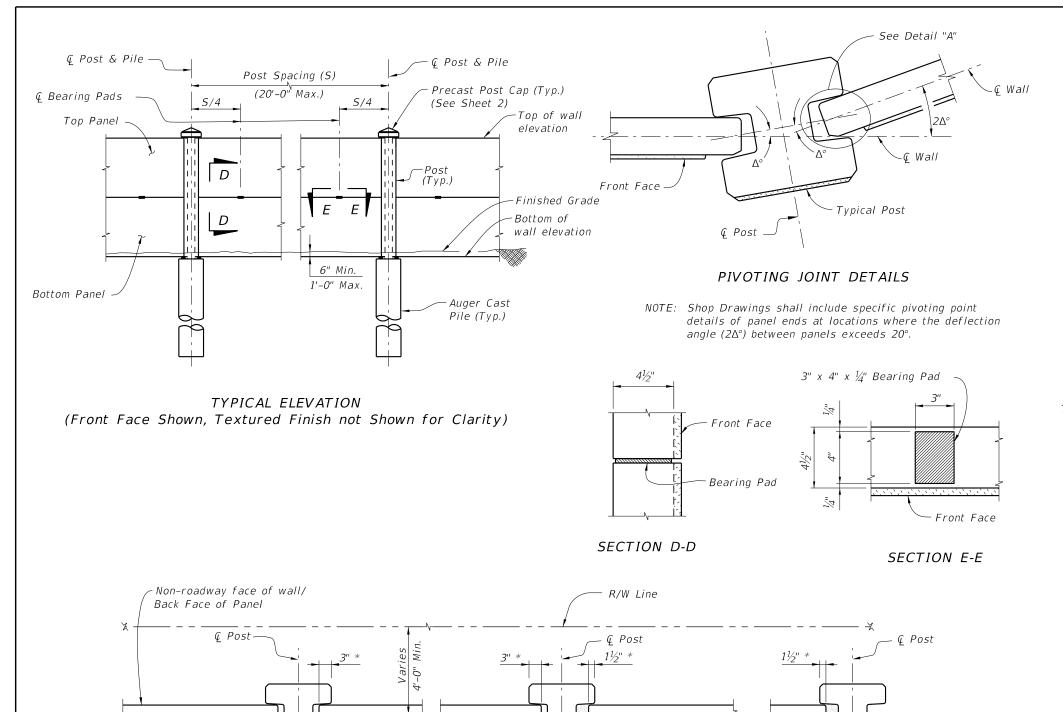
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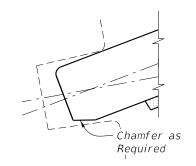
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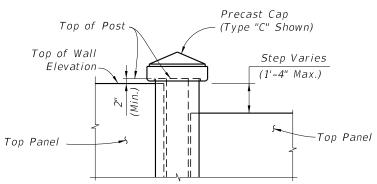
SHEET 3 of 10

DESCRIPTION:

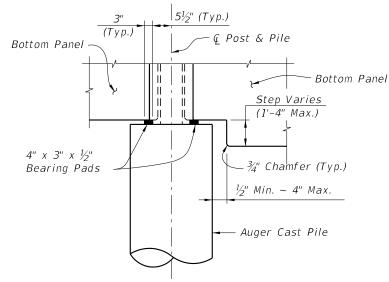




DETAIL "A" (Back Face Chamfer Shown Front Face Chamfer Similar)



ELEVATION STEP AT TOP OF WALL (Precast Panel Cap not Shown)



ELEVATION STEP AT BOTTOM OF WALL

PRECAST OPTION - TYPICAL DETAILS

LAST REVISION 11/01/17

DESCRIPTION:

Roadway face of wall/ Front Face of Panel -

FDOT

L (Top-Installed)

TYPICAL PLAN

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Fill with Non-Shrink Grout

L (Side-Installed)

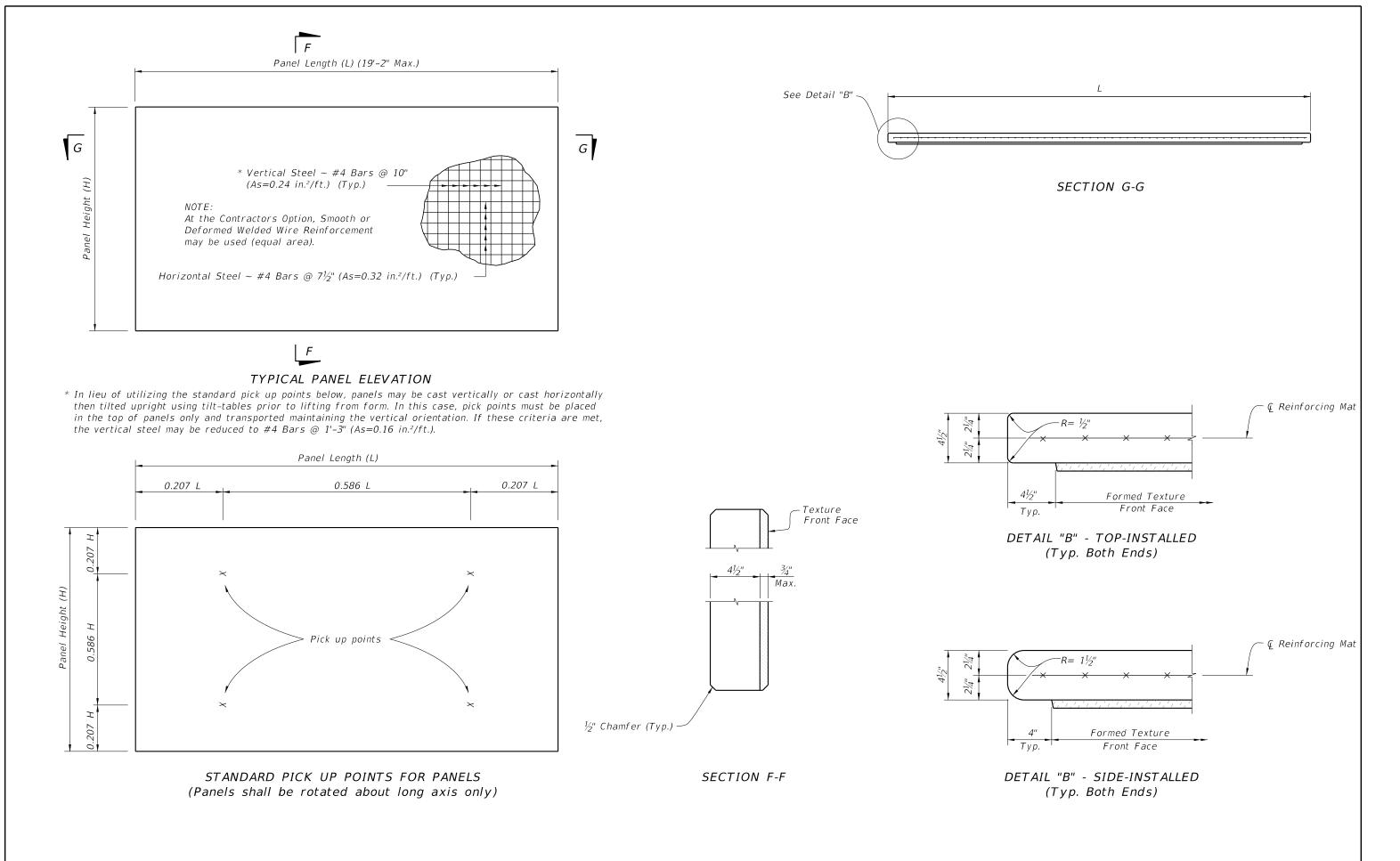
* Nominal embedment (not including tolerances)

PERIMETER WALLS

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SHEET



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DESCRIPTION:

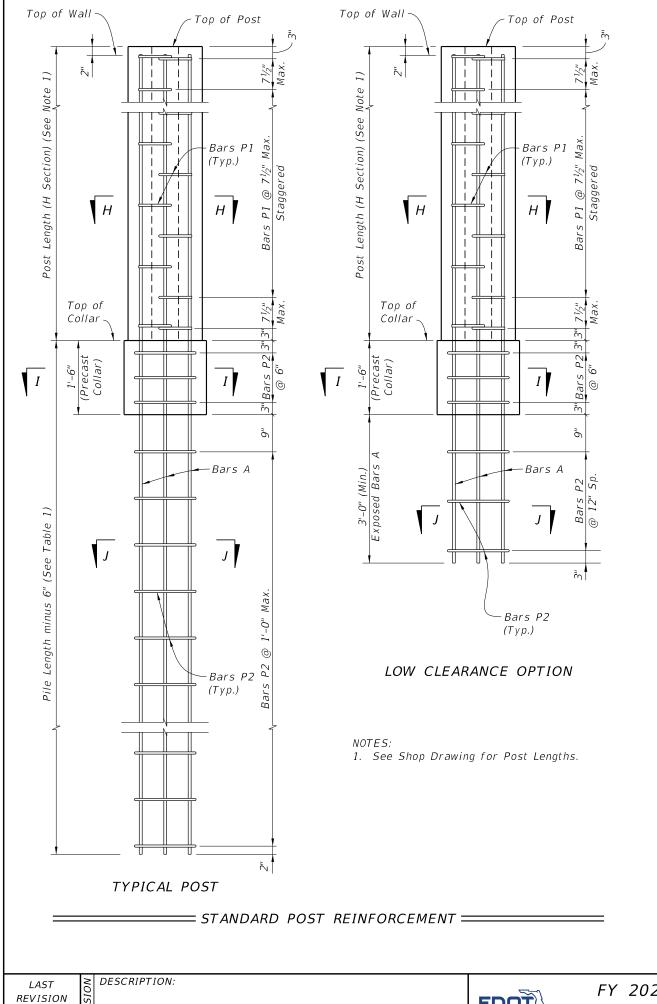


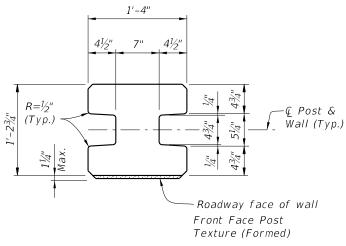
FY 2024-25 STANDARD PLANS PRECAST OPTION - TYPICAL PANEL DETAILS

PERIMETER WALLS

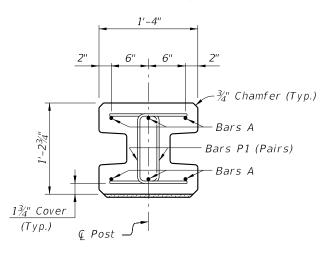
INDEX SHEET 534-250

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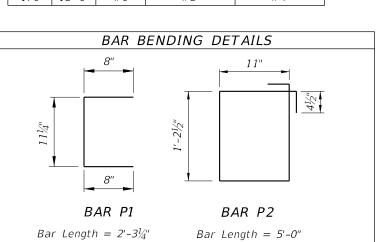


TYPICAL POST SECTION (H Section)



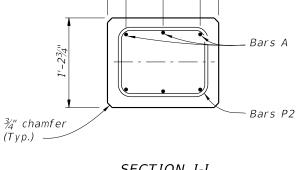
SECTION H-H (H Section - Above Collar)

	TABLE 1										
Wind Speed (MPH)	Pile Length	Bars A	Bars P1 thru P6	Bars S1							
130	12'-0"	#5	#3	#4							
150	13'-6"	#5	#3	#4							
170	15'-0"	#6	#3	#4							



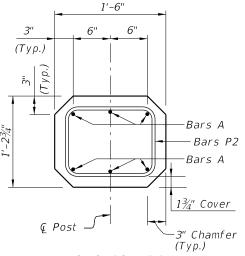
All bar dimensions in bending diagrams are out-to-out.

All bars not shown in the bending diagrams are straight.

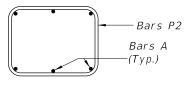


1'-6"

SECTION I-I Precast Collar



SECTION I-I (for Low Clearance Option)



SECTION J-J

PRECAST OPTION - STANDARD POST DETAILS

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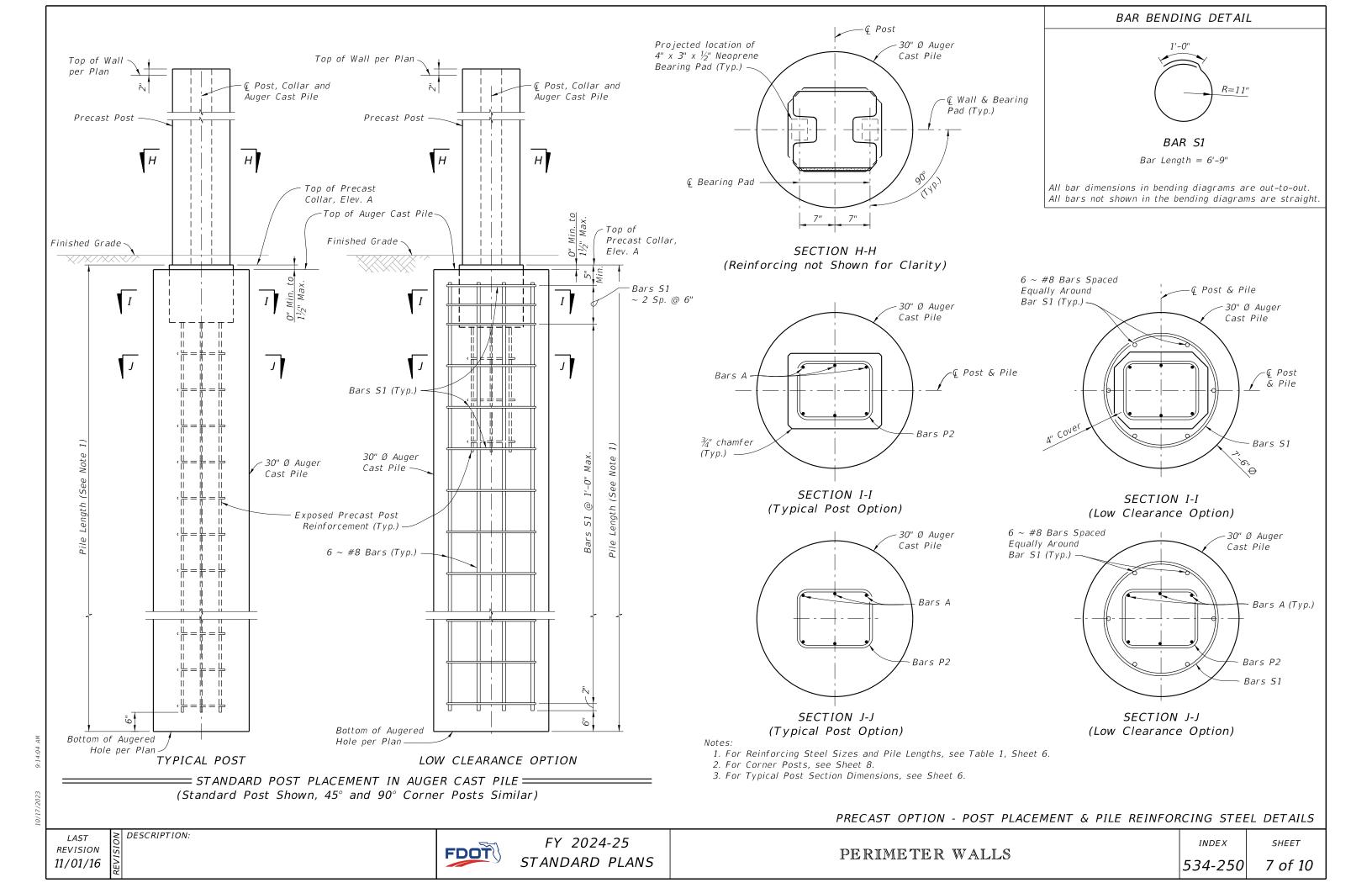
INDEX

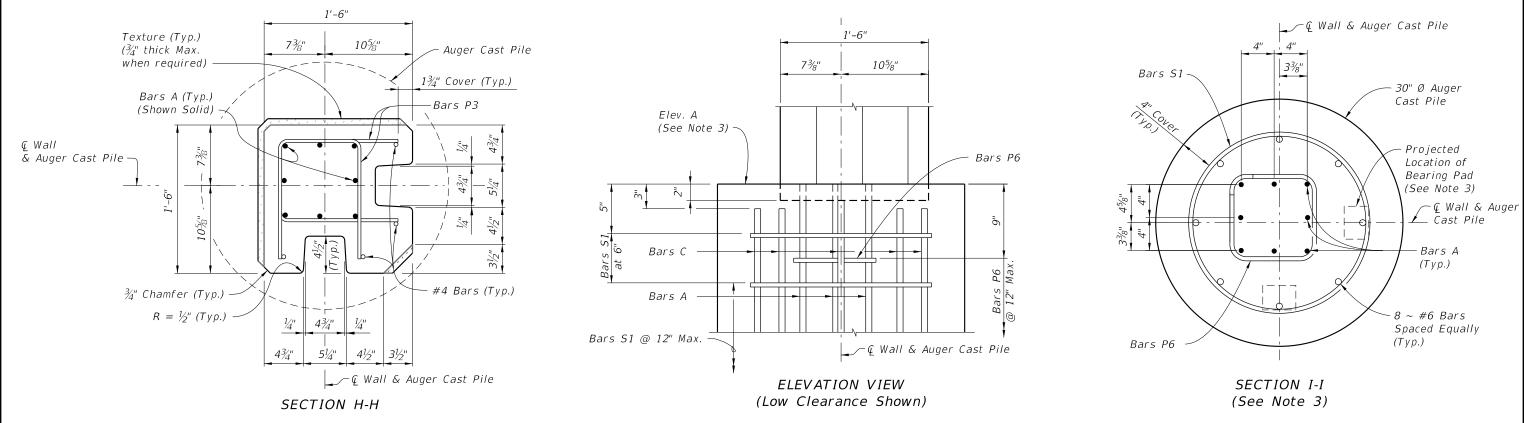
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SHEET

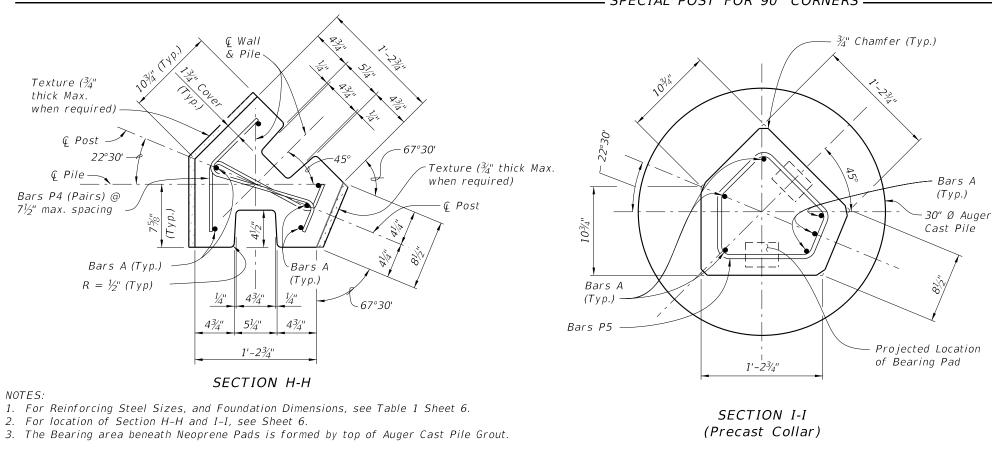
PERIMETER WALLS

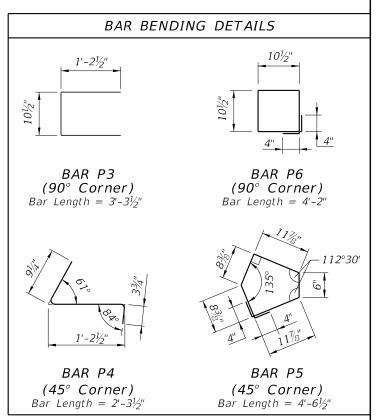
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All bar dimensions in bending diagrams are out-to-out. All bars not shown in the bending diagrams are straight.

= SPECIAL POSTS FOR 45 $^{\circ}$ CORNERS =

PRECAST OPTION - SPECIAL CORNER POSTS

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PERIMETER WALLS

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SHEET

DESCRIPTION:

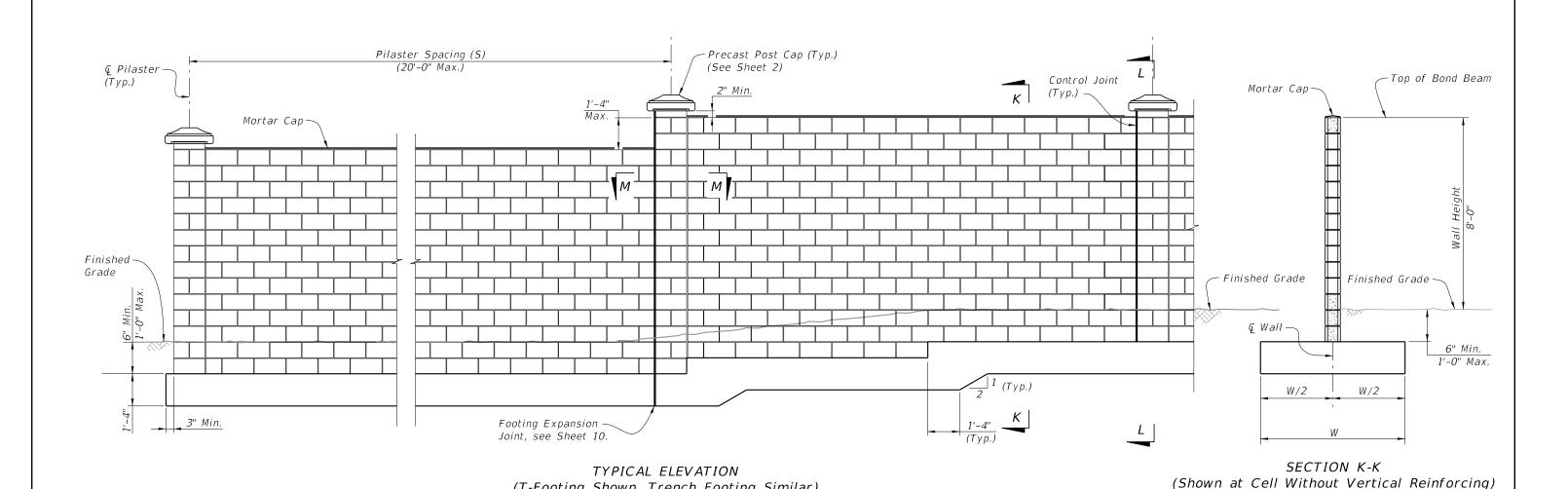
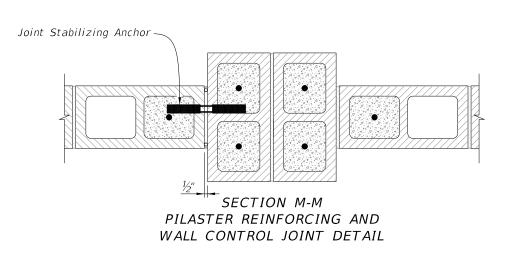


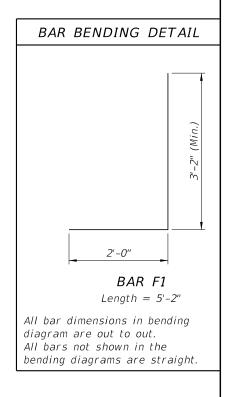
	Table 2											
Wind Speed Category	Masonry	Walls	Foundations									
	(8x8)	x16)	Bars	T-Footing Width	Trench Footing							
	Bars V1	SV Spacing	F1 & F2	(W)	Depth (D)							
130	#5	2'-8"	#5	4'-4"	5'-6"							
150	#5	2'-0"	#5	5'-0"	6'-4"							
170	#5	1'-4"	#5	6'-0"	7'-0"							

Notes:

- 1. End vertical reinforcing bars $1rac{1}{2}$ " from top of bond beam blocks and horizontal bars $1\frac{1}{2}$ " from edge of control joints.
- 2. Do not continue horizontal #4 Bond beam reinforcing through control joint.
- 3. Use stainless steel joint stabilizing anchors spaced at 16" vertically at all control joints. Install per manufacturers instructions.
- 4. Seal Control Joints with backer rod and Type "A" silicone sealant (top and both sides).
- 5. See Sheet 10 for Bar placement details.
- 6. For Pilaster Cap Details, see Sheet 2.

DESCRIPTION:





MASONRY OPTION

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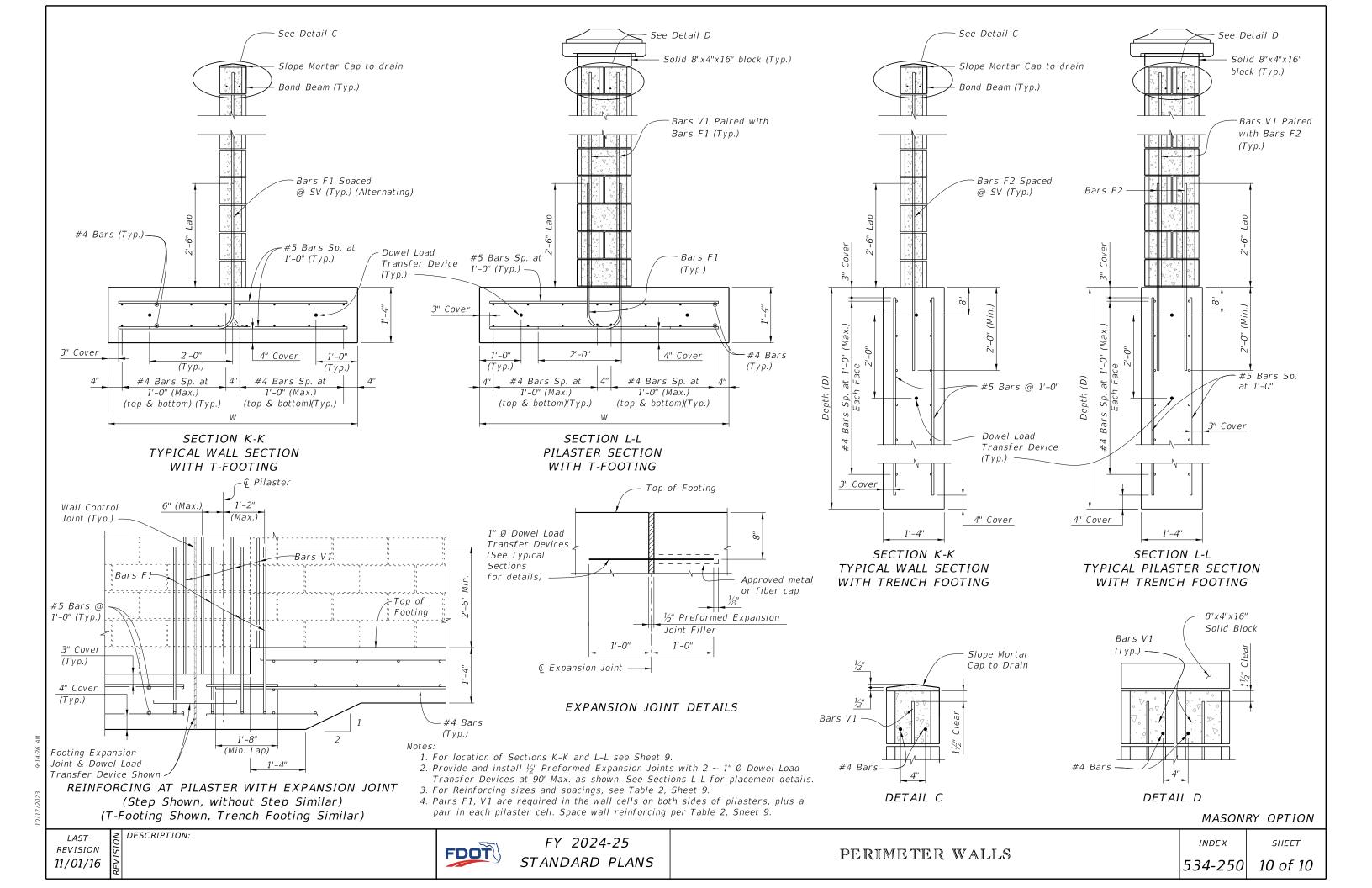
(T-Footing Shown, Trench Footing Similar)

PERIMETER WALLS

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SHEET	CONTENTS
1	General Notes;
I	Index Contents
2	General, TL-3 Guardrail – Installed Plan and Elevation
3	Low-Speed, TL-2 Guardrail - Installed Plan and Elevation
4	W-Beam and Thrie-Beam Panel Details
5	Post and Offset Block Details
6	Guardrail Sections – Heights and Adjacent Slopes
7	End Treatment - Approach Terminal Geometry, Parallel
8	End Treatment - Approach Terminal Geometry, Curbed and Double Faced
9	End Treatment - Trailing Anchorage
10	End Treatment - Component Details
1 1	End Treatment - Controlled Release Terminal (CRT) System
12	Layout for CRT System - Side Roads and Driveways
13	Approach Transition Connection to Rigid Barrier – General, TL-3
14	Approach Transition Connection to Rigid Barrier – General, TL-3 – Curb Connections
15	Approach Transition Connection to Rigid Barrier – Low-Speed, TL-2
16	Approach Transition Connection to Rigid Barrier – Low-Speed, TL-2 – Curb Connections
17	Approach Transition Connection to Rigid Barrier – Details
18	Approach Transition Connection to Rigid Barrier – Double Faced Guardrail
19	Layout to Rigid Barrier – Approach Ends
	Layout to Rigid Barrier – Approach Ends with Double Faced Guardrail
20	Layout to Rigid Barrier – Trailing Ends
	Trailing End Transition Connection to Rigid Barrier
21	Trailing End Transition Connection to Rigid Barrier - Curb Connections
22	Rub Rail Details
23	Pedestrian Safety Treatment - Pipe Rail
	Modified Mount - Special Steel Post for Concrete Structure Mount;
24	Modified Mount – Encased Post for Shallow Mount;
	Modified Mount – Frangible Leave–Out for Concrete Surface Mount
	Barrier Delineators – Post Mounted;
25	Clear Space - Reduced Post Spacing for Hazards;
	5%" Button–Head Bolt System

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10/11/2023

11/01/23

LAST O DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

GENERAL NOTES:

1. INSTALLATION: Construct guardrail in accordance with Specification 536

This Index, along with the plans and the manufacturers' drawings on the Approved Products List (APL), is sufficiently detailed for installation of General Guardrail, Low-Speed Guardrail, End Treatment assemblies, and their connecting options shown herein. This precludes requirements for shop drawing submittals unless otherwise specified in the plans.

- 2. COMPATIBILITY: The General Guardrail in this Index is based on the Midwest Guardrail System (MGS) design, with an approximate height of 31" at the top of the Panel (2'-1" mounting height at vertical & of Panel) and a midspan panel splice as shown on Sheet 2. Guardrail components included on the APL, which are compatible with this Index, may also be identified as 31" or MGS Guardrail.
- 3. STANDARD COMPONENTS: Standard guardrail components, including posts, panels, and bolt systems, are based on the Task Force 13 Publication: Guide to Roadside Hardware Components (http://tf13.org/Guides/componentGuide/).
- 4. BUTTON-HEAD BOLTS: Install Button-Head Bolts where indicated using bolts, nuts, and washers as defined on Sheet 25. Place washers under nuts against timber posts. Washers are not required at steel post flanges and panel lap splices. Do not place washers between bolt heads and panels, except where otherwise shown in this Index.
- 5. HEX-HEAD BOLTS: Install Hex-Head Bolts where indicated using bolts, nuts, and washers in accordance with material properties of Specification 967. Place washers under nuts.
- 6. MISCELLANEOUS ASPHALT PAVEMENT: Install Miscellaneous Asphalt Pavement where indicated with a tolerance of $\pm \frac{1}{2}$ " depth and in accordance with Specification 339.
- 7. ADJACENT SIDEWALKS & SHARED USE PATHS: When guardrail posts are placed within 4'-0" of a sidewalk or shared use path, use timber posts, or use steel posts only if treated with Pipe Rail as shown on Sheet 23.

When timber posts are used, one of the following safety treatments is required for the bolt(s) protruding from the back face of the posts:

- a. After tightening the nut, trim the protruding post bolt flush with the nut and galvanize per Specification 562.
- b. Use post bolts 15" in length and countersink the washer and nut between 1" and $1\frac{1}{2}$ " deep into the back face of the post.
- c. Use 15" post bolts with sleeve nuts and washers.

When End Treatment posts are within 4'-0" of a sidewalk or shared use path, steel posts are not permitted within the End Treatment segment. Terminate the Pipe Rail outside of End Treatment segments, as noted per Sheet 23.

- 8. NESTED W-BEAM: Where called for in the plans, install two W-Beam Panels mounted flush per location, securing all panels with Button-Head Bolts threaded through aligned slots and holes. 2" Button-Head Bolts are permitted for panel splice locations.
- 9. CONNECTION TO RIGID BARRIER: The connections to Rigid Barrier in this Index only apply to newly constructed bridge Traffic Railing and Concrete Barrier or where the complete Approach Transition Connection to Rigid Barrier shown herein can be installed without conflicting with existing Traffic Railings, structures, or approach slabs.

For connecting guardrail to existing bridge Traffic Railings, see Indexes 536-002, 521-404, and 521-405.

10. CONNECTION TO EXISTING GUARDRAIL: Where a transition to existing guardrail at 27" height is required, linearly transition the new guardrail height over a distance ranging from 25'-0" to 31'-3". Height transitions must occur outside of End Treatment and Approach Transition segments.

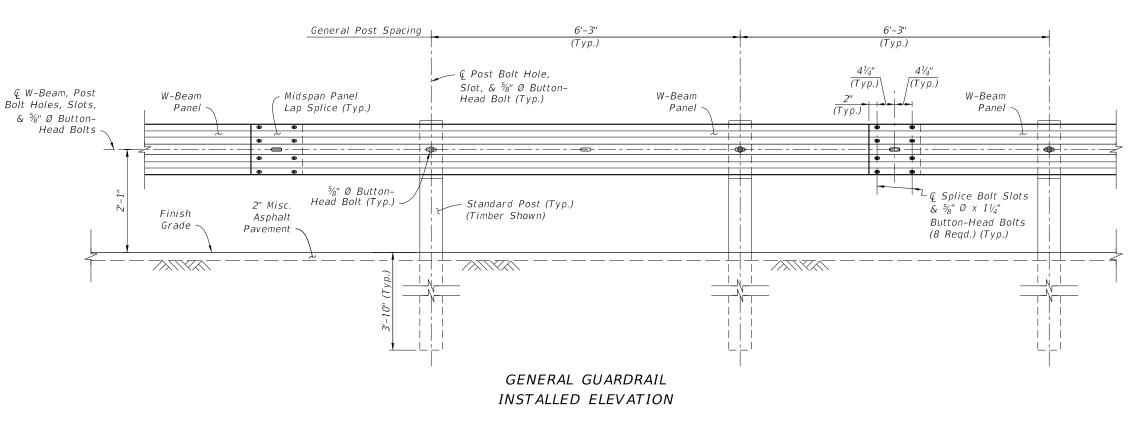
Provide an immediate transition to the required midspan panel splice using the available panel options on Sheet 4 (9'- $4\frac{1}{2}$ " or 15'- $7\frac{1}{2}$ " panel). Alternatively, this transition to midspan panel splice may be achieved by installing a single reduced post spacing of 3'- $1\frac{1}{2}$ " within the new guardrail, immediately adjacent to the connection location.

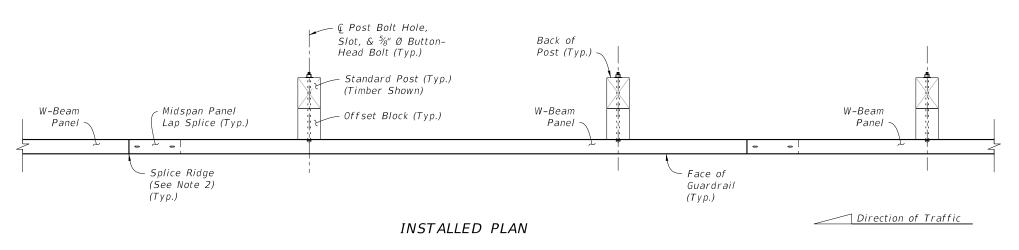
11. PLANS CALLOUTS: Begin/End Station labels are shown throughout this Index as they correspond to the station and offset callouts specified in the plans.

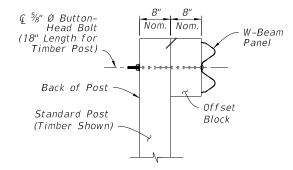
In the plans, Begin/End Guardrail Station refers to the General TL-3 Guardrail Pay Item, and it may be abbreviated as Begin/End GR. Station. Where the Low-Speed TL-2 Guardrail Pay Item is specifically required, the callout in the plans will then specify Begin/End TL-2 GR. Station.

12. QUANTITY MEASUREMENT: Measure guardrail and corresponding components as defined in Specification 536. The Guardrail length is measured along the centerline of installed Panels, between the points labeled Begin/End Guardrail Station shown on the following Index Sheets and defined in the plans (typically measured from the © of the panel's post bolt slots at the approach/trailing ends).

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INSTALLED SECTION

NOTES:

1. GENERAL: Install the General Guardrail configuration where indicated in the plans. This may include tapered segments if called for in the plans.

Use 12'-6" or longer W-Beam Panels. A single 6'-3" Panel may be used at the end of the run to meet the nominal Begin/End Guardrail Sta. requirements.

Where a differing guardrail configuration is required for constructability beyond the options shown in this Index or the plans, obtain approval from the Engineer prior to installation.

2. MIDSPAN PANEL LAP SPLICE: For proper structural function, place all Lap Splices at midspan unless otherwise indicated.

Lap the Panels with the Splice Ridge oriented downstream of the final Direction of Traffic in the nearest traffic lane. For reverse lane conditions, orient the Splice Ridge downstream of the lane direction with the highest traffic volume. Orienting Lap Splices for Temporary Traffic Control phasing is not required.

- 3. CONNECTION DETAILS: Connections to End Treatments, Approach Transitions, or other segment types are defined in the following Index Sheets, APL Drawings, or the plans.
- 4. W-BEAM PANEL DETAILS: See Sheet 4.
- 5. POST & OFFSET BLOCK DETAILS: See Sheet 5.
- 6. GUARDRAIL SECTIONS: For Sections showing typical mounting heights, grading, and lateral offsets in relation to adjacent roadway features, see Sheet 6.
- 7. MODIFIED MOUNTS: Where concrete structures, concrete sidewalk, or shallow depth conditions are encountered, see Sheet 24 for additional post mounting options.
- 8. DEFINED SEGMENTS: The General Guardrail shown provides the base configuration, including Post Spacing and splice locations, for Defined Segment modifications where indicated in the plans and using the Guardrail Types, Sections, and/or hardware as shown in this Index (e.g. Double Faced W-Beam, Deep Posts at Slope Breaks, Pipe Rail, Rub Rail, or Reduced Post Spacing for Hazards).

GENERAL, TL-3 GUARDRAIL DETAILS

REVISION 11/01/23

DESCRIPTION:

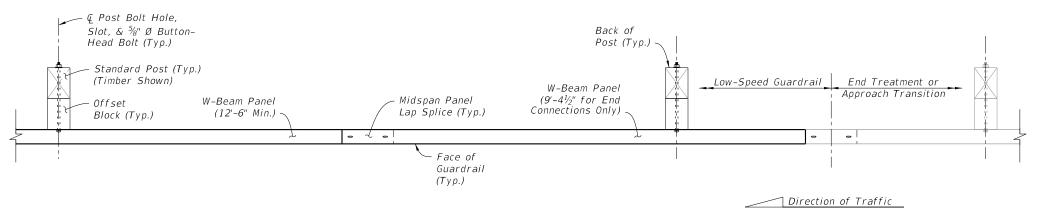
FDOT

FY 2024-25 STANDARD PLANS

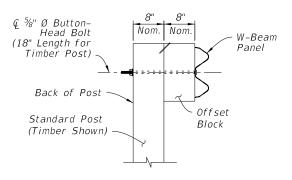
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LOW-SPEED GUARDRAIL INSTALLED ELEVATION



INSTALLED PLAN



INSTALLED SECTION

NOTES:

1. GENERAL: Install the Low-Speed Guardrail configuration where indicated in the plans. Low-Speed Guardrail may include tapered segments if called for in the plans.

Use 12'-6" or 25'-0" W-Beam Panels for normal spans, and use 9'- $4\frac{1}{2}$ " Panels for end connections to adjoining segments as shown. A single 6'-3" Panel may be used at the end of the Low-Speed Guardrail run along with a single reduced 6'-3" post spacing to meet the nominal Begin/End Guardrail Sta. required.

Where a differing guardrail configuration is required for constructability beyond the options shown in this Index or the Plans, obtain approval from the Engineer prior to installation.

2. MIDSPAN PANEL LAP SPLICE: For proper structural function, place all Lap Splices at midspan unless otherwise indicated.

Lap the Panels with the Splice Ridge oriented downstream of the final Direction of Traffic in the nearest traffic lane. For reverse lane conditions, orient the Splice Ridge downstream of the lane direction with the highest traffic volume. Orienting Lap Splices for Temporary Traffic Control phasing is not required.

- 3. CONNECTION DETAILS: Connections to End Treatments, Approach Transitions, or other segment types are defined in the following Index Sheets, APL Drawings, or the plans.
- 4. W-BEAM PANEL DETAILS: See Sheet 4.
- 5. POST & OFFSET BLOCK DETAILS: See Sheet 5.
- 6. GUARDRAIL SECTIONS: For Sections showing typical mounting heights, grading, and lateral offsets in relation to adjacent roadway features, see Sheet 6.
- 7. MODIFIED MOUNTS: Where concrete structures, concrete sidewalk, or shallow depth conditions are encountered, see Sheet 24 for additional post mounting options.
- 8. RESTRICTIONS: Low-Speed Guardrail segments are not permitted for use with items including, but not limited to, Double Faced W-Beam, Deep Posts at Slope Breaks, Raised Curb, Pipe Rail, and/or Rub Rail.

LOW-SPEED. TL-2 GUARDRAIL DETAILS

REVISION 11/01/23

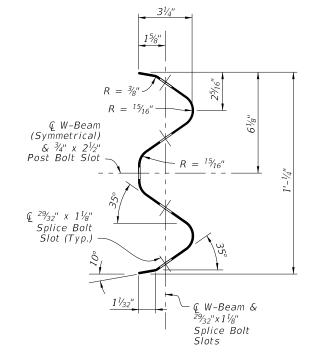
DESCRIPTION:

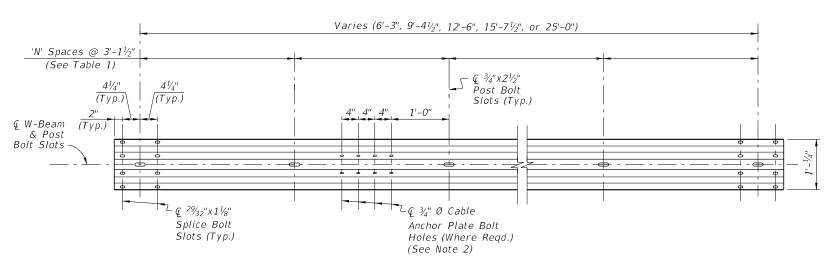
FDOT

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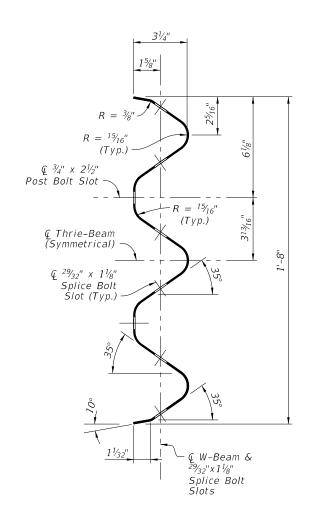


W-BEAM PANEL ELEVATION

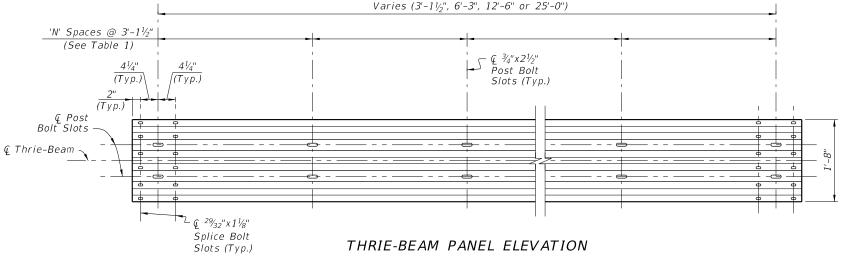
PANEL SUMMARY TABLE:

Panel Type	Number of Spaces 'N'	Gauge									
6'-3" W-Beam	2	12									
9'-4½" W-Beam	3	12									
12'-6" W-Beam	4	12									
15'-7½" W-Beam	5	12									
25'-0" W-Beam	8	12									
3'-1½" Thrie-Beam	1	10									
6'-3" Thrie-Beam	2	12									
12-6" Thrie-Beam	4	12									
25-0" Thrie-Beam	8	12									
Thrie-Beam Trans.	2	10									

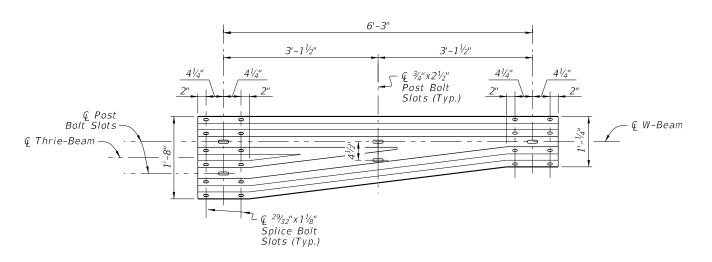
W-BEAM PANEL SECTION



THRIE-BEAM PANEL SECTION



THRIE-BEAM PANEL ELEVATION



THRIE-BEAM TRANSITION PANEL ELEVATION (Reverse Direction Similar by Opposite Hand)

NOTES:

Use corrugated steel panels in accordance with Specification 967 and made from either Class A, 12 gauge steel or Class B, 10 gauge steel as specified in the 'Panel Summary Table' above.

2. CABLE ANCHOR PLATE BOLT HOLES: Include 3/4" Ø Cable Anchor Plate Bolt Holes only where required for installation of the Cable Anchor Plate shown on Sheet 9, 10, & 11.

 $^{29}\!\!\!/_{32}$ " x 1%" slots may substitute for the $^3\!\!\!/_4$ " Ø holes shown.

W-BEAM AND THRIE-BEAM PANEL DETAILS

REVISION 11/01/23

FDOT

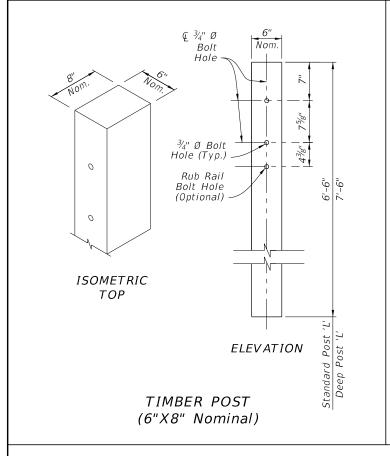
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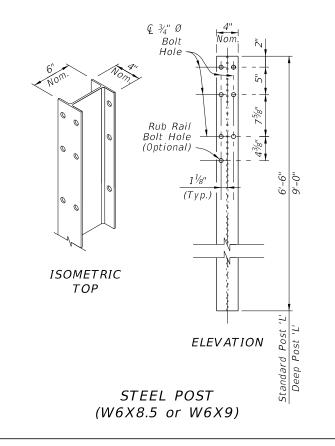
GUARDRAIL

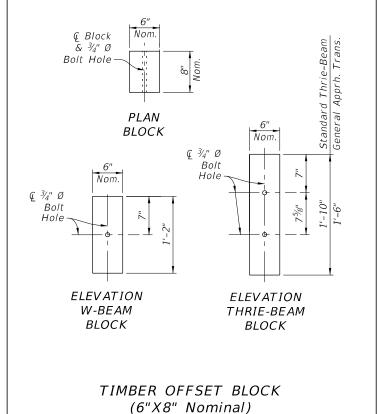
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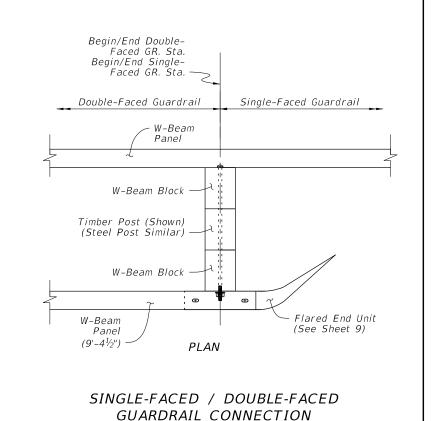
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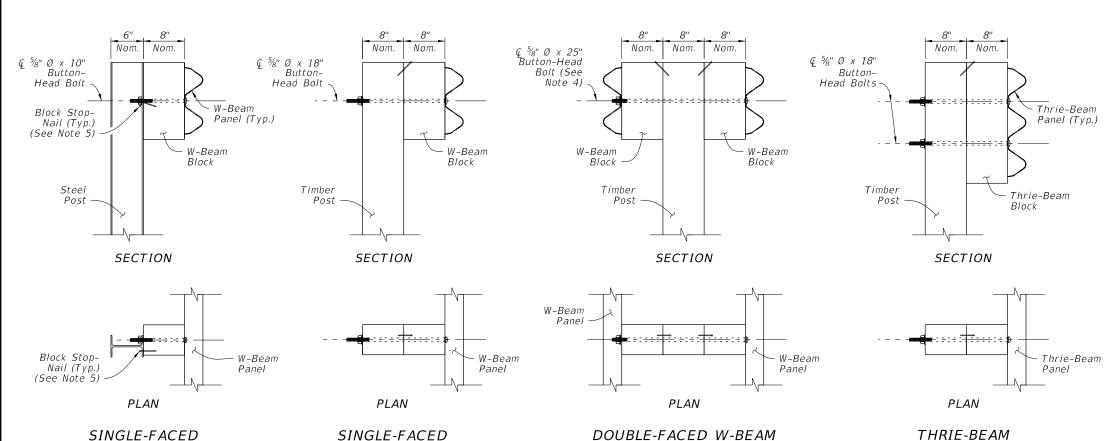
DESCRIPTION:











NOTES:

- 1. STANDARD POSTS: Where Standard Posts are called for in this Index, use either a Timber Post or Steel Post at the Length, 'L', shown for Standard Posts. Use a single post material type consistently per each run of guardrail. Only where specified in the Plans, use the Deep Post 'L' for Slope Break Conditions as
- 2. OFFSET BLOCKS: For each Panel type, install the corresponding Offset Block type as shown. For General, TL-3 (Single Faced) Approach Transitions only, use the 1'-6" Thrie-Beam Block (See
- 3. BOLT HOLES: 3/4" Ø Bolt Holes shown in posts within this Index may be substituted with $^{13}/_{16}$ " Ø Bolt Holes.
- 4. DOUBLE FACED GUARDRAIL: Orient Post Bolts with the Button-Head located on the side nearest the traffic lane. The bolt's threaded portion is not permitted to extend beyond $\frac{3}{4}$ " from the face of the tightened nut; trim the threaded portion as needed and galvanize in accordance with Specification 562.
- 5. BLOCK STOP-NAIL: Drive one nail per Standard Offset Block as shown to prevent Block rotation. Use steel 3½" Type 16d nails with ASTM A153 hot-dip galvanization. For steel posts, drive the nail through the unused flange Bolt Hole and bend the nail so its head contacts the flange.
- 6. MATERIALS: Use timber and steel posts and offset blocks in accordance with Specification 967. Composite offset blocks may be substituted as approved on the APL. Use a single offset block type consistently per each run of guardrail.

POST AND OFFSET BLOCK DETAILS

REVISION 11/01/23 W-BEAM

STEEL POST

DESCRIPTION:

FDOT

W-BEAM

TIMBER POST

FY 2024-25 STANDARD PLANS

TIMBER POST

(Thrie-Beam Similar)

(Steel Post Similar)

TIMBER POST

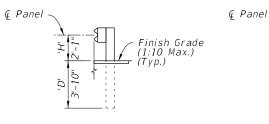
(Steel Post Similar)

INDEX

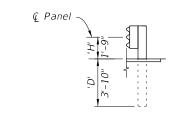
SHEET

GUARDRAIL

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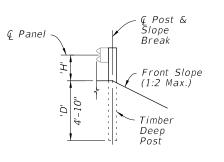
W-BEAM DOUBLE FACED



THRIE-BEAM

♀ Panel

DOUBLE FACED THRIE-BEAM

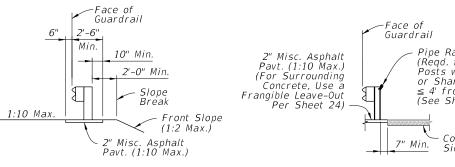


î Post & Slope **€** Panel Break Front Slope (1:2 Max.) Steel Deep Post

SLOPE BREAK CONDITION TIMBER DEEP POST

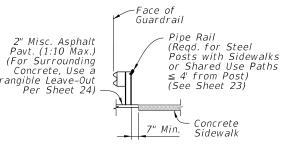
SLOPE BREAK CONDITION STEEL DEEP POST

GUARDRAIL TYPES - MOUNTING HEIGHTS & POST DEPTHS

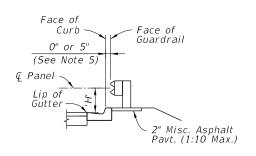


W-BEAM

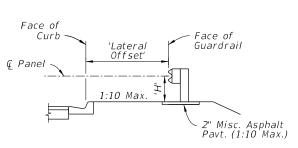
TYPICAL GRADING & PAVT. PLACEMENT DETAIL (See Note 2)



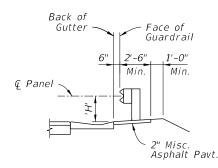
TYPICAL SIDEWALK DETAIL (Work with Other Sections as Reqd.)



ADJACENT TO CURB (Type F Curb Shown)



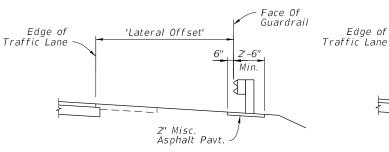
BEHIND CURB (Type F Curb Shown)



ADJACENT TO SHOULDER GUTTER

GUARDRAIL SECTIONS - TYPICAL

GUARDRAIL SECTIONS - CURB & GUTTER:



GUARDRAIL HEIGHT SUMMARY TABLE:

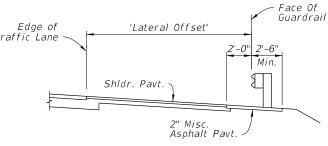
3'-10'

3'-10"

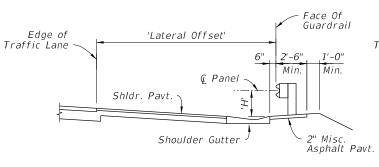
4'-10"

6'-4"

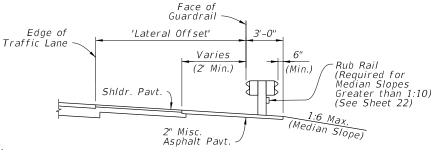
UNPAVED OR PARTIALLY PAVED SHOULDER



FULLY PAVED SHOULDER



SHOULDER GUTTER



DOUBLE FACED GUARDRAIL (Shown In Median)

GUARDRAIL SECTIONS - SHOULDERS:

NOTES:

- Min. Depth 'D': Mounting Height 'H': Post Length 'L'.
- 1. GUARDRAIL SECTIONS: Construct Sections as indicated in the plans. The details shown herein depict W-Beam Guardrail, but are applicable to the other defined Guardrail Types placed at the corresponding height, 'H'. Use components per Sheets 4 & 5. Steel and timber post types are interchangeable unless otherwise defined. The 1:10 Max. cross slope shown is the maximum slope permitted for proper guardrail function, but project-specific cross slope requirements are governed by additional design criteria, per the plans.
- 2. TYPICAL GRADING & PAVEMENT PLACEMENT DETAIL: Construct features as depicted except where superceded by specific Guardrail Sections or the plans. Place the Slope Break a Minimum of 2' behind the post. For Deep Posts, the slope break may be placed at the Q Post with the 2" Miscellaneous Asphalt Pavement omitted.
- 3. SLOPE BREAK CONDITION: Install Deep Posts only where called for in the plans. Deep Posts are only permitted where post spacing is 6'-3" or less.
- 4. LATERAL OFFSETS: The Lateral Offsets shown are governed by the station and offset call outs for Face of Guardrail, as shown in the plans.
- 5. ADJACENT TO CURB: Place the Face of Guardrail consistently offset either flush with the Face of Curb or 5" behind the Face of Curb, as indicated by the plans station and offset callout. For offset changes, transition the Face of Guardrail as shown in the plans.

GUARDRAIL SECTIONS

REVISION 11/01/23 Type:

W-Beam

Thrie-Beam

Timber Deep Post

Steel Deep Post

DESCRIPTION:

(Single and Double Faced)

(Single and Double Faced)

1'-9"

See Above

See Above

FDOT

6'-6"

6'-6"

7'-6"

9'-0"

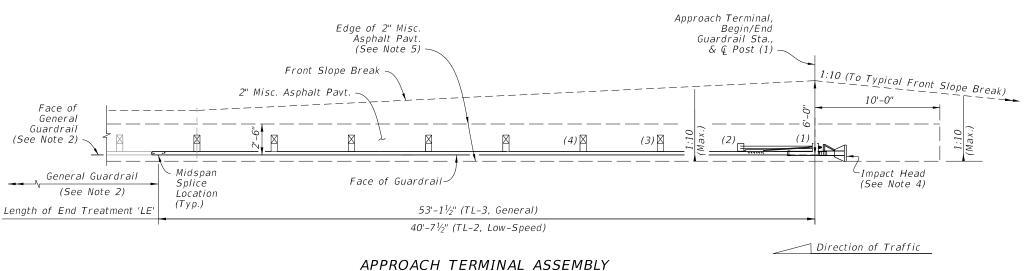
FY 2024-25 STANDARD PLANS

GUARDRAIL

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'PARALLEL' TYPE - PLAN VIEW

NOTES:

1. INSTALLATION: Locate Approach Terminals where called for in the plans, with the Post (1) & placed at the Begin/End Guardrail Station indicated in

The Plan Views shown herein are schematic only, showing basic geometry for Approach Terminals listed on the APL. The predefined Length of End Treatment, 'LE', includes the proprietary portion of various Approach Terminals and provides for more consistent planning of assembly installations across the differing Approach Terminal types. Forwardanchoring style Approach Terminals may vary from the planned lengths shown by up to 3'-0".

Construct Approach Terminals as shown in the APL and in accordance with the manufacturer's unique drawing details, procedures, and specifications.

Install posts in accordance with the manufacturer's drawings. The Special Posts on Sheet 24, including Special Steel Posts, Encased Posts, and Frangible Leave-Outs, are not permitted within the Approach Terminal segment unless otherwise called for in the plans

Align panel lap splices in accordance with the manufacturer's drawings, regardless of the direction of traffic.

Install adjacent grading, gutters, and/or curbing as shown herein.

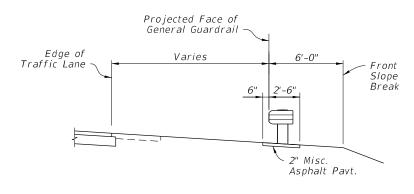
2. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments.

Approach Transitions, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans

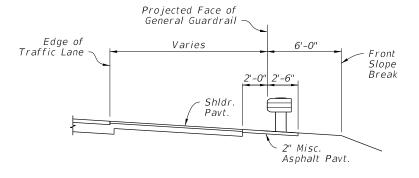
- 3. APPROACH TERMINAL TEST LEVEL: Install either a Test Level 3 (TL-3) or Test Level 2 (TL-2) Approach Terminal as specified in the plans. TL-3 Approach Terminals may substitute for TL-2 Approach Terminals unless the substitution is specifically prohibited in the plans. TL-2 Approach Terminals may not substitute for TL-3 installations.
- 4. IMPACT HEAD END DELINEATOR: Apply Yellow Retroreflective Sheeting to the nose of the End Terminal in accordance with Specification 536.
- 5. 2" MISCELLANEOUS ASPHALT PAVEMENT: The Plan View depicts the Unpaved Shoulder condition. For Fully Paved Shoulder and Shoulder Gutter conditions, extend the 2" Misc. Asphalt Pavement as shown in the corresponding 'Section at Post (1)' details below

The 2" Misc. Asphalt Pavement shown upstream of Post (1) may be substituted with a different pavement type where called for in the Plans.

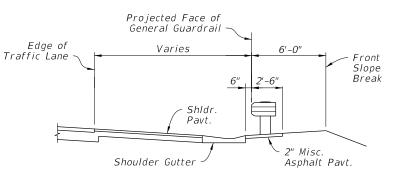
- 6. CLEAR AREA REQUIREMENT: Do not place any permanent aboveground installations within the areas shown with 1:10 maximum grading. For the finished condition, keep this area free of all aboveground obstructions, including dense vegetation and trees.
- 7. 'CURBED' AND 'DOUBLE FACED' GUARDRAIL SEGMENTS: See Sheet 8.



SECTION AT POST (1) WITH UNPAVED SHOULDER



SECTION AT POST (1) WITH FULLY PAVED SHOULDER



SECTION AT POST (1) WITH SHOULDER GUTTER

END TREATMENT - APPROACH TERMINAL GEOMETRY - PARALLEL

REVISION 11/01/23

DESCRIPTION:

FDOT

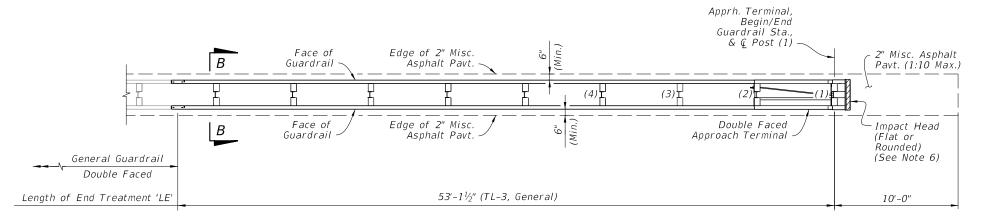
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GUARDRAIL

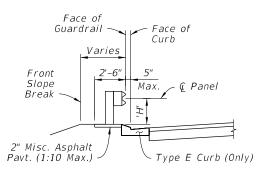
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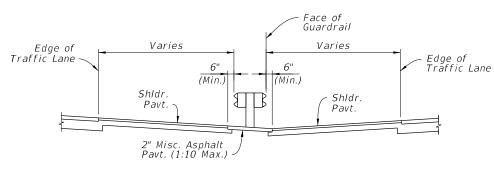
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APPROACH TERMINAL ASSEMBLY 'DOUBLE FACED' SEGMENT - PLAN VIEW



'CURBED' SECTION A-A (Height, 'H', Measured from Misc. Asphalt Pavt.)



'DOUBLE FACED' SECTION B-B (1:10 Slope or Flatter Regd.)

NOTES:

- 1. GENERAL: See Notes 1 through 3 on Sheet 7.
- 2. CURBED SEGMENTS: Type E curb is required within the limits shown. When a different curb type is called for outside of the Type E curb limits, transition the curb shape linearly, over a nominal distance ranging 5'-0" to
- 3. TAPER LENGTH: For Curbed Segments, taper the guardrail away from the roadway where shown to place the inside edge of the Impact Head at 5" behind the face of the curb. Where additional lateral offset is required to fit the Approach Terminal Assembly hardware, such as a soil plate, place the Impact Head as close to the curb as the hardware allows, not to exceed 2'-0" from the face of curb.
- 4. GUARDRAIL HEIGHT TAPER: For Curbed Segments, the connecting General Guardrail Mounting Height, 'H', is typically measured from the Lip of Gutter (See Sheet 6 Guardrail Sections, 'Adjacent to Curb'), while the End Terminal Assembly 'H' is measured from the Misc. Asphalt Pavt. (See Section A-A). Linearly taper the difference in Mounting Height over a minimum length of 12'-6", starting where indicated herein.
- 5. DOUBLE FACED SEGMENT: Connect to Double Faced General Guardrail. Use consistent Posts and Offset Block types as specified in the APL drawings over the entire Length of End Treatment, 'LE'. Posts and Offset Blocks in the adjoining General Guardrail segment may be different from those inside of the 'LE'. A change in post type between timber and steel is permitted, immediately outside of the 'LE' segment.

Maintain the 1:10 maximum grading as shown in Section B-B throughout segment 'LE'. Where required, transition to differing adjacent slopes linearly, over a minimum longitudinal length of 25'-0".

- 6. IMPACT HEAD END DELINEATOR: Apply Yellow Retroreflective Sheeting to the nose of the End Terminal in accordance with Specification 536.
- 7. CLEAR AREA REQUIREMENT: Do not place any permanent aboveground installations within the areas shown with 1:10 maximum grading. For the finished condition, keep this area free of all aboveground obstructions, including dense vegetation and trees.
- 8. 2" MISCELLANEOUS ASPHALT PAVEMENT: The 2" Misc. Asphalt Pavement shown upstream of Post (1) may be substituted with a different pavement type where called for in the Plans.
- 9. SINGLE FACED 'PARALLEL' SEGMENTS: See Sheet 7.

END TREATMENT - APPROACH TERMINAL GEOMETRY CURBED AND DOUBLE FACED

DESCRIPTION: REVISION 11/01/23

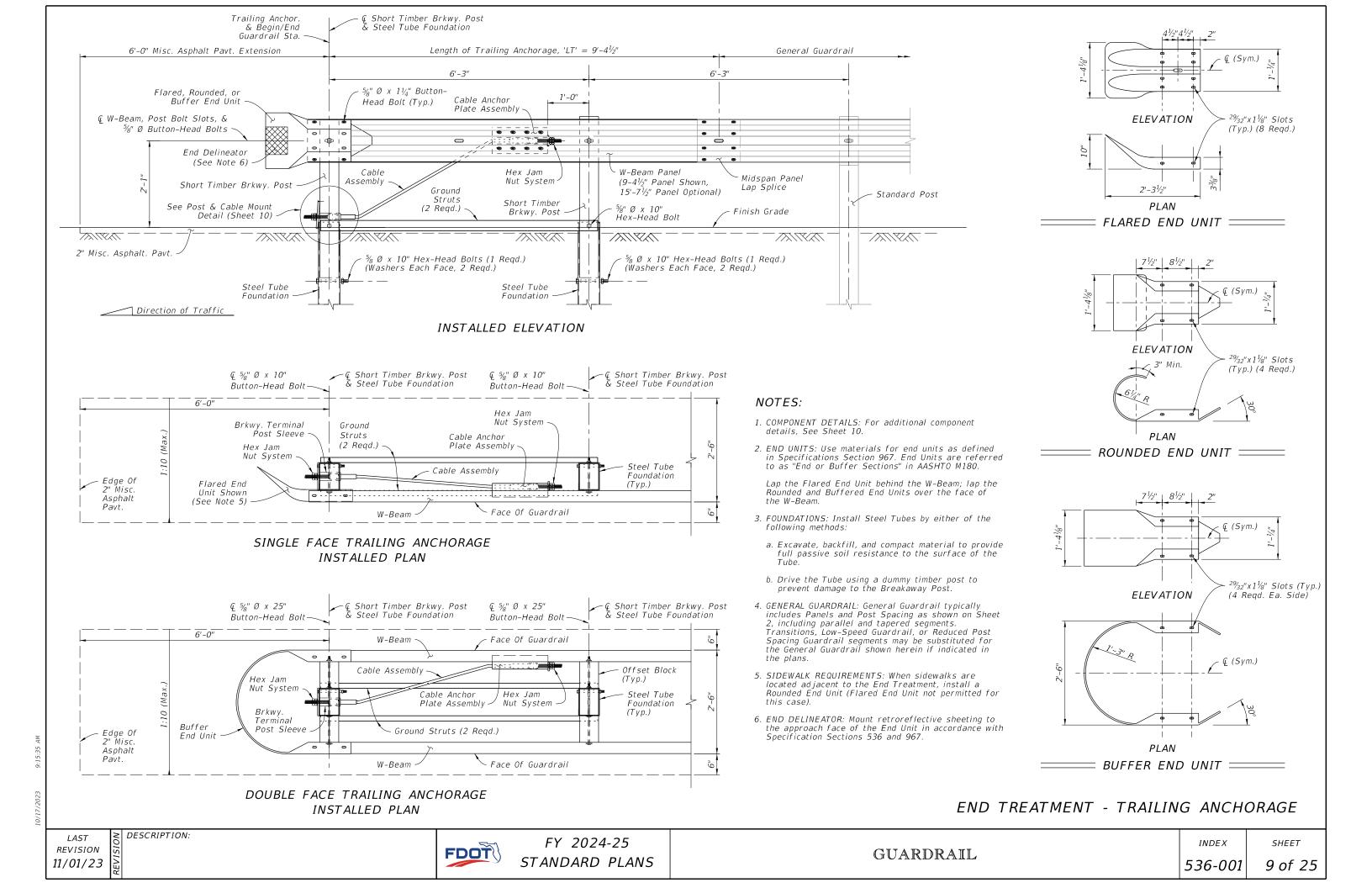
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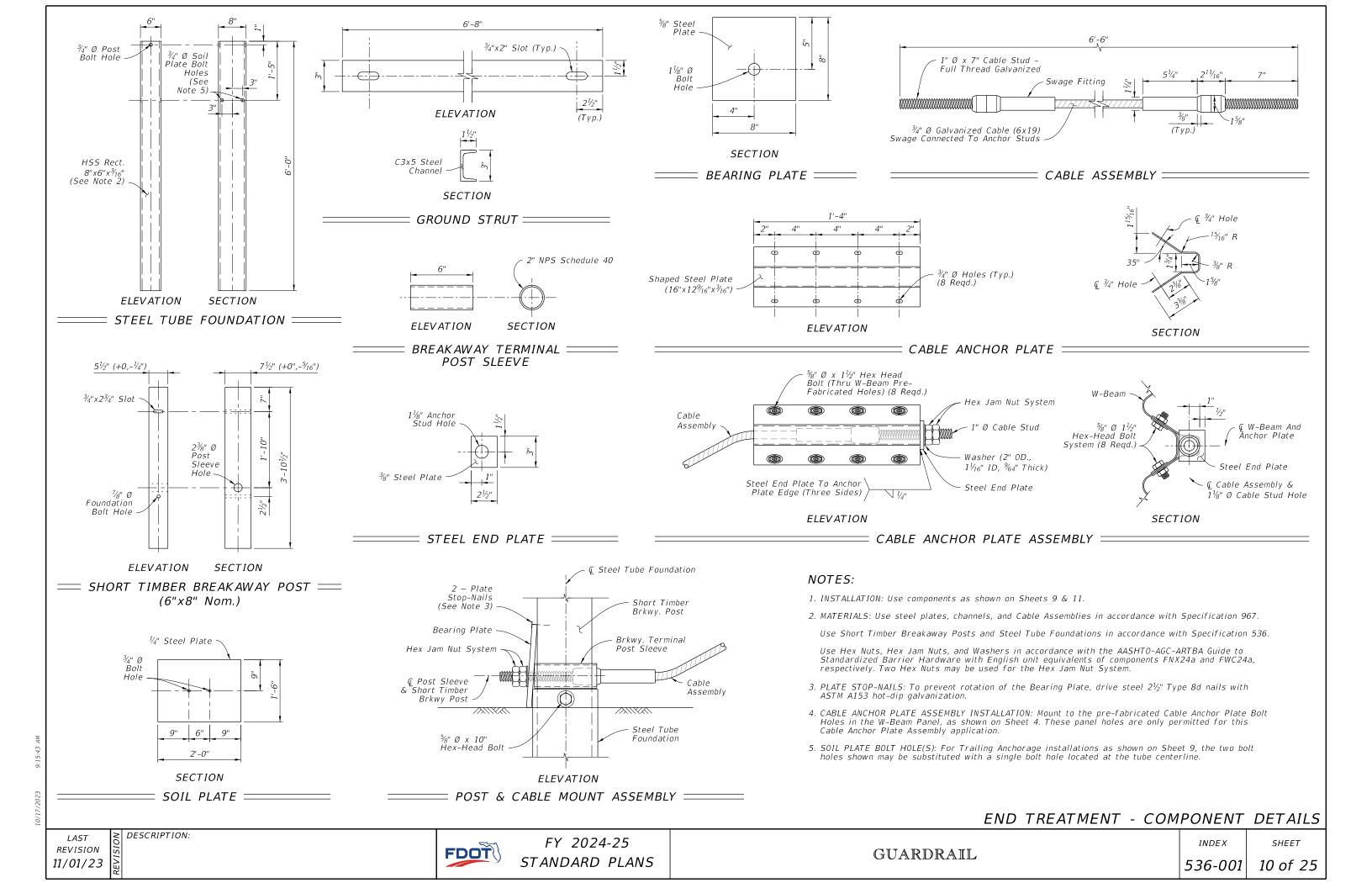
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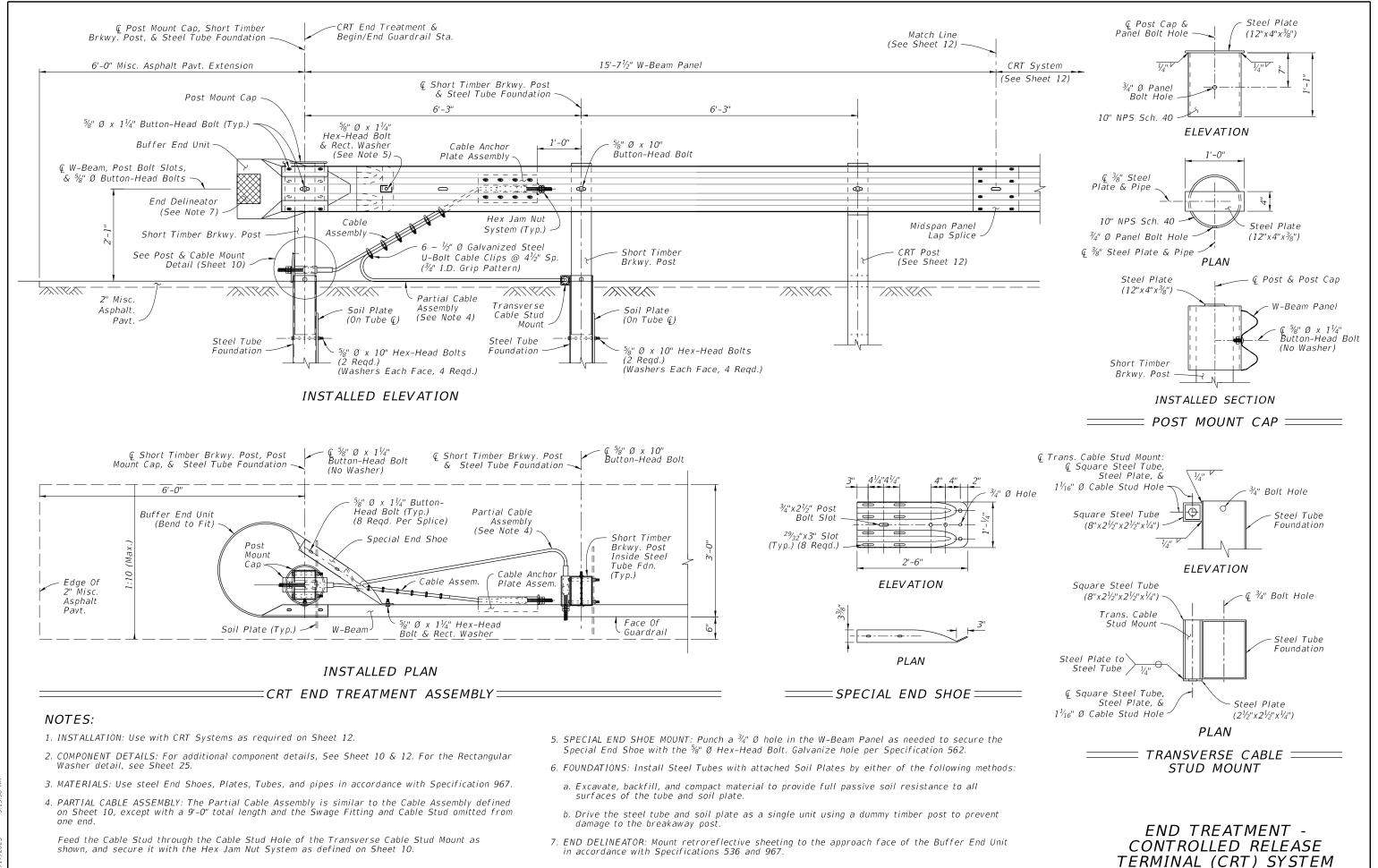
GUARDRAIL

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DESCRIPTION:

FDOT

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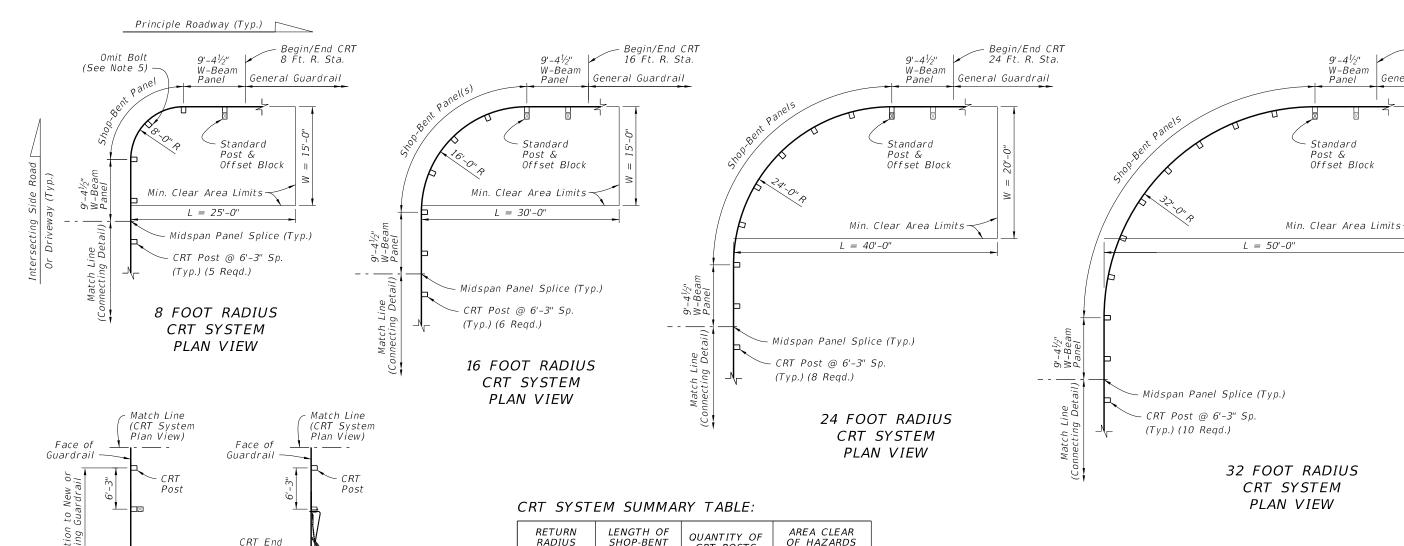
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SHEET

LAST REVISION 11/01/23

GUARDRAIL



CONTINUING OPTION

END TREATMENT OPTION

RETURI RADIUS (FT.)			QUANTITY OF CRT POSTS	AREA CLEAR OF HAZARDS 'L' x 'W' (FT.)		
8		12.5	5	25 x 15		
16		25.0	6	30 x 15		
24		37.5	8	40 x 20		
32		50.0	10	50 x 20		

CONNECTING DETAIL=

Treatment

& Begin/End

Guardrail Sta.

NOTES:

DESCRIPTION:

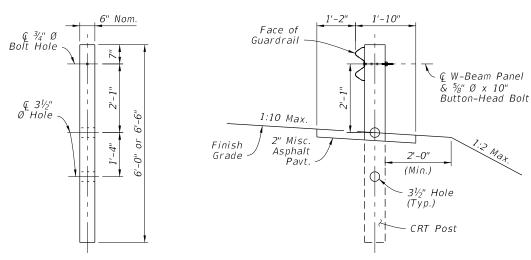
1. INSTALLATION: Construct the specified radius layout and Connecting Detail option as shown in the plans.

Treatment

(See Sheet 11)

Assembly

- 2. MIN. CLEAR AREA: Keep the area behind the CRT free of fixed objects and aboveground hazards within the Min. Clear Area limits shown. Maintain a slope not steeper than 1:10 for a minimum 2' behind the posts, and maintain a slope not steeper than 1:2 beyond 2'
- 3. APPROACH GRADING: Maintain grading on the roadway side of the guardrail face at a maximum slope of 1:10.
- 4. MATERIALS: For CRT Posts, use Timber Post material in accordance with Specification 967. Use steel panels and hardware in accordance with Specification 967.
- 5. BOLT OMISSION: For the 8 Foot Radius CRT System only, do not place a panel-to-post mount bolt at the center CRT Post (omit the 1/8" Button-Head Bolt only at the location shown).
- 6. SHOP-BENT PANELS: Install Shop-Bent panel(s) where indicated using 12'-0" or 25'-0" W-Beam Panels. Splice at post locations within the CRT radius using the General configuration of 🐉 Ø Button-Head Bolts (8 reqd. per splice).
- 7. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Transitions, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.



CRT POST ELEVATION (6"x8" Nom. Timber)

CRT INSTALLED SECTION

LAYOUT FOR CONTROLLED RELEASE TERMINAL (CRT) SYSTEMS -SIDE ROADS AND DRIVEWAYS

REVISION 11/01/23

FY 2024-25 STANDARD PLANS

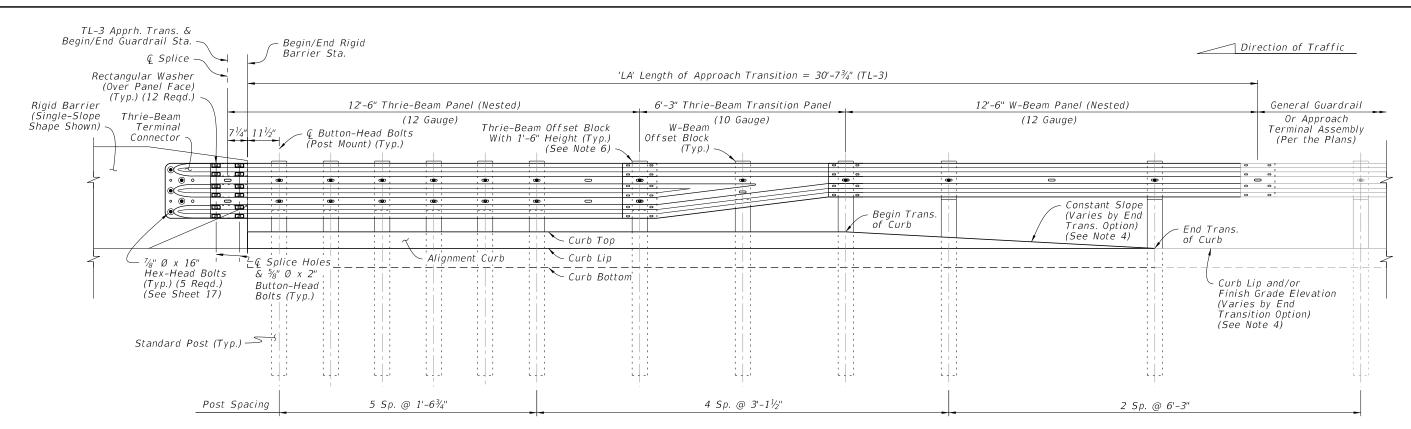
INDEX SHEET

FDOT

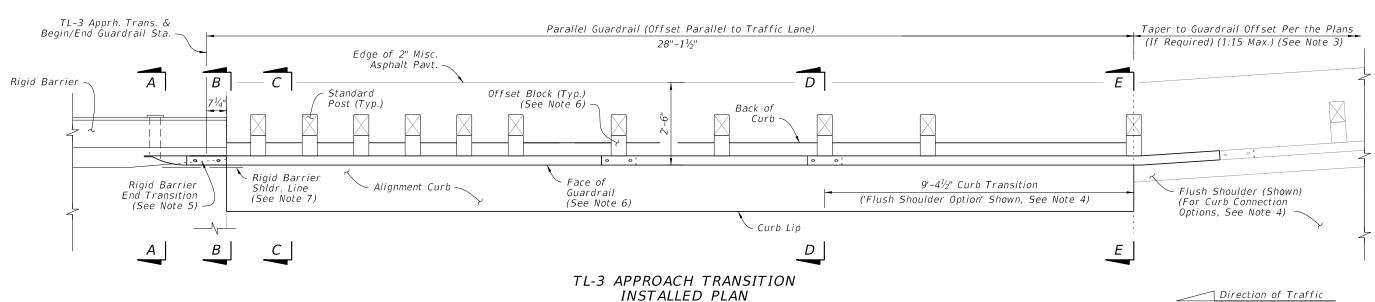
Begin/End CRT

32 Ft. R. Sta.

General Guardrail



TL-3 APPROACH TRANSITION INSTALLED ELEVATION



NOTES:

- 1. INSTALLATION: Construct the Approach Transition segment where indicated in the plans. For example Layouts showing the Approach Transition's fit among other guardrail segments, see Sheet 19.
- For existing bridge connection options, see Indexes 536-002, 521-404, and 521-405.
- SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.
- 3. GUARDRAIL TAPER: The connecting guardrail may require a different lateral offset if shown in the plans. At the location shown herein, taper the guardrail to the connecting guardrail offset. If the adjacent guardrail segment has the same offset as the Approach Transition segment, then no taper is required.
- 4. END TRANSITION OF CURB OPTIONS: The Plan and Elevation views depict an example Curb Transition to Flush Shoulder from Section D-D to E-E, but this transition may require a different shape depending on the End Transition option shown in the plans (Either a 'Shoulder Gutter Option', 'Raised Curb Option', or 'Flush Shoulder Option'). See Sheet 14 for additional curb options and Sheet 17 for curb shape details.
- 5. RIGID BARRIER END TRANSITION: Taper the Rigid Barrier toe as shown. See Concrete Barrier, Index 521–001, and Traffic Railing, Indexes 521–422 and 521–428, for details.
- 6. OFFSET BLOCKS: For Thrie-Beam post locations within the Length of Approach Transition segment, use the Timber Offset Blocks with 1'-6" height shown on Sheet 5.

For the midspan of the Thrie-Beam Transition Panel and for all other W-Beam locations shown herein, use the W-Beam Offset Blocks with 1'-2" height.

- 7. OFFSET: The required offset difference between the Face of Guardrail and Rigid Barrier Shoulder Line is considered negligible and may not be shown in the guardrail offset callouts in the plans. A consistent guardrail offset deviation of up to 4 inches outside of the Rigid Barrier Shoulder Line is permitted over the length 'LA'.
- 8. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Terminals, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.

APPROACH TRANSITION CONNECTION TO RIGID BARRIER - GENERAL, TL-3

LAST REVISION IS 11/01/23

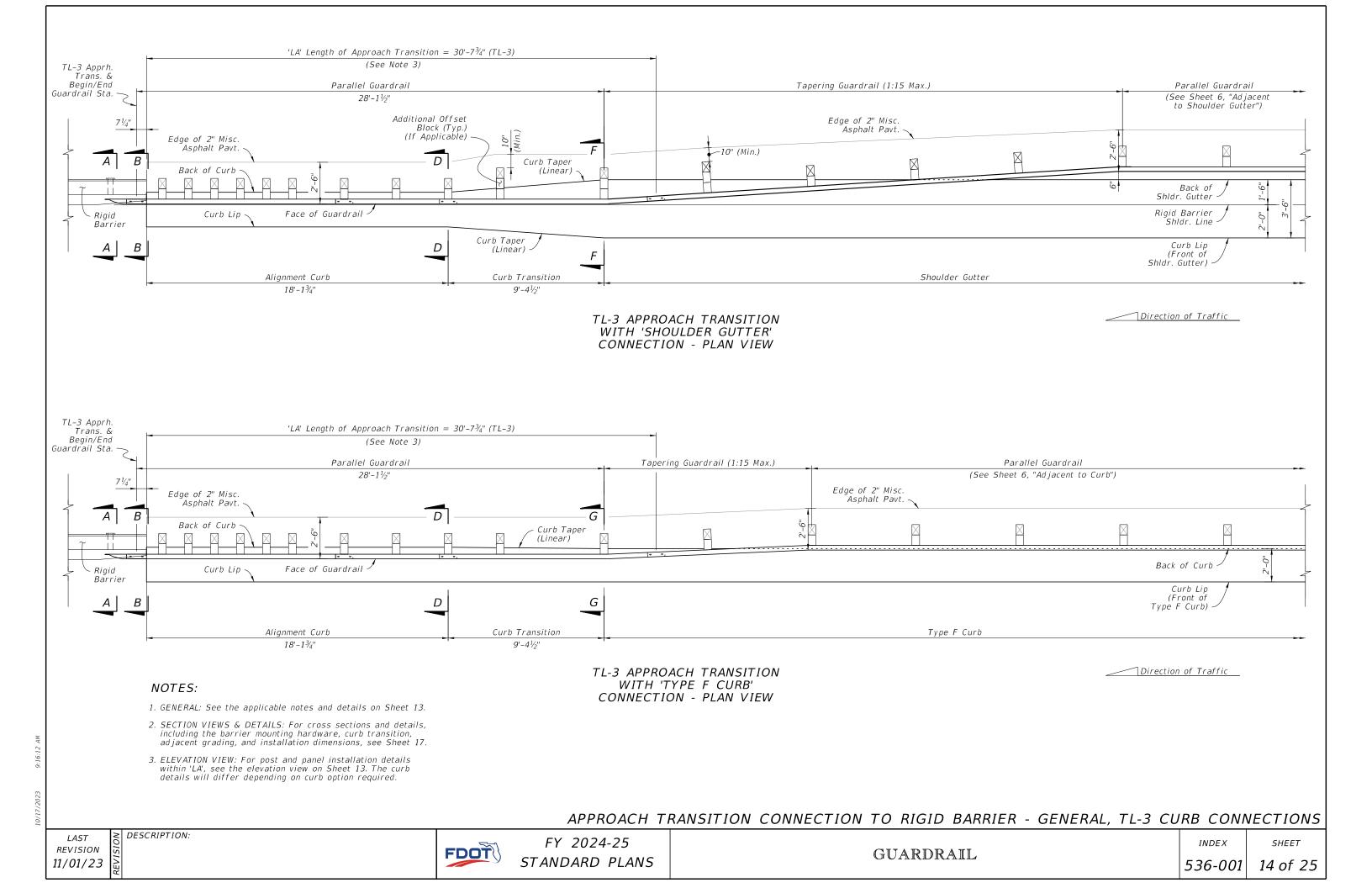
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STANDARD PLANS

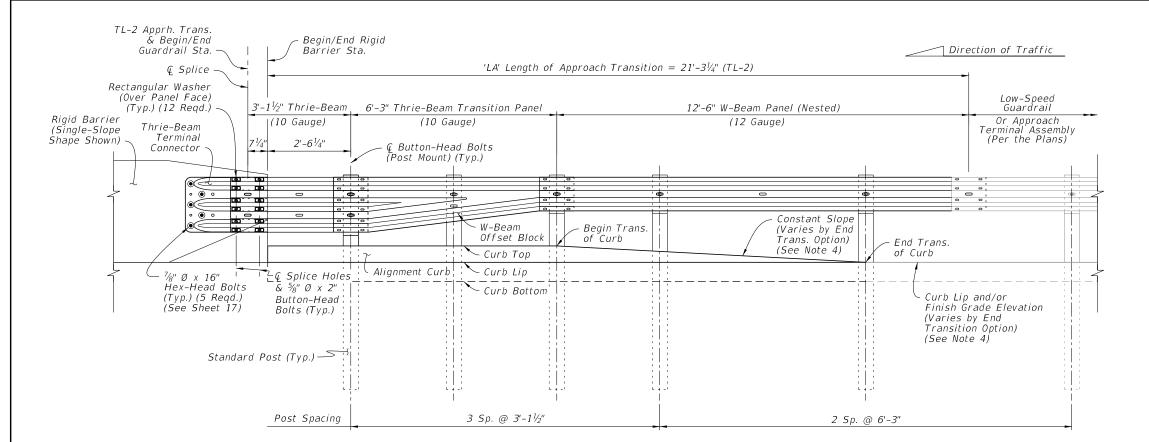
GUARDRAIL

INDEX

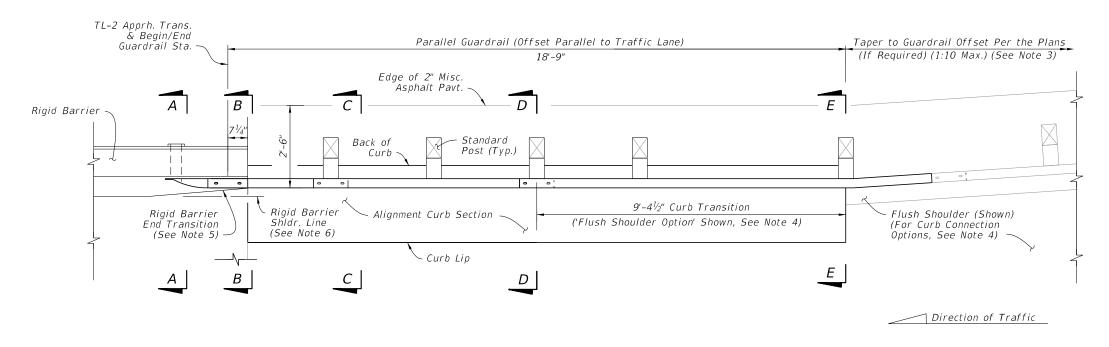
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TL-2 APPROACH TRANSITION INSTALLED ELEVATION



TL-2 APPROACH TRANSITION INSTALLED PLAN

NOTES:

1. INSTALLATION: Construct the Approach Transition segment where indicated in the plans. For example Layouts showing the Approach Transition's fit among other guardrail segments, see Sheet 19.

For existing bridge connection options, see Indexes 536-002, 521-404, and 521-405.

- 2. SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.
- 3. GUARDRAIL TAPER: The connecting guardrail may require a different lateral offset if shown in the plans. At the location indicated herein, taper the guardrail to the connecting guardrail offset. If the adjacent guardrail segment has the same offset as the Approach Transition segment, then no taper is required.
- 4. END TRANSITION OF CURB OPTIONS: The Plan and Elevation views depict an example Curb Transition to Flush Shoulder from Section D-D to E-E, but this transition may require a different shape depending on the End Transition option shown in the plans (Either a 'Shoulder Gutter Option', 'Raised Curb Option', or 'Flush Shoulder Option'). See Sheet 16 for additional curb options and Sheet 17 for curb shape details.
- 5. RIGID BARRIER END TRANSITION: Taper the Rigid Barrier toe as shown. See Concrete Barrier, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-428, for details.
- 6. OFFSET: The required offset difference between the Face of Guardrail and Rigid Barrier Shoulder Line is considered negligible and may not be shown in the guardrail offset callouts in the plans. A consistent guardrail offset deviation of up to 4 inches outside of the Rigid Barrier Shoulder Line is permitted over the length 'LA'.
- 7. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Terminals, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.

APPROACH TRANSITION CONNECTION TO RIGID BARRIER - LOW-SPEED, TL-2

LAST REVISION 11/01/23

DESCRIPTION:

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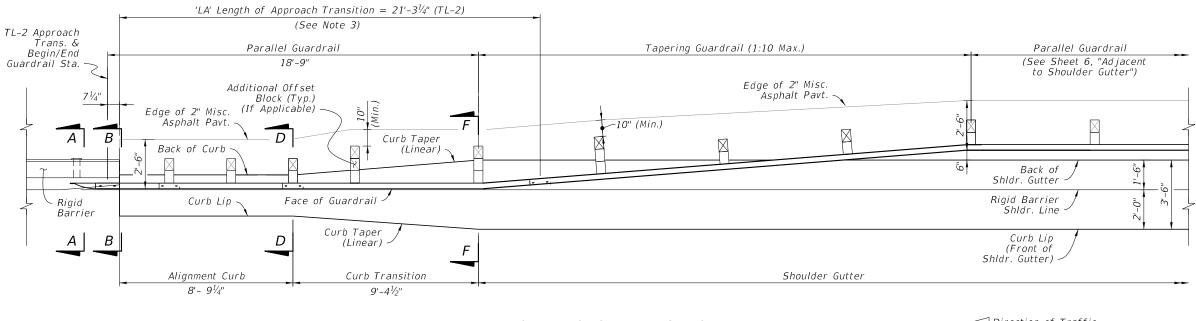
FY 2024-25 STANDARD PLANS

GUARDRAIL

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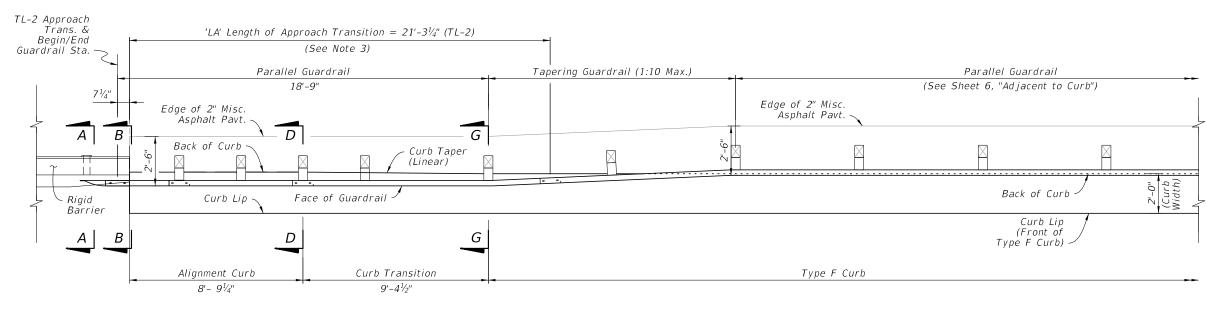
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TL-2 APPROACH TRANSITION WITH 'SHOULDER GUTTER' CONNECTION - PLAN VIEW

□ Direction of Traffic



NOTES:

- 1. GENERAL: See the applicable notes and details on Sheet 15.
- 2. SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.
- 3. ELEVATION VIEW: For post and panel installation details within 'LA', see the elevation view on Sheet 15. The curb details will differ depending on curb option required.

TL-2 APPROACH TRANSITION WITH 'TYPE F CURB' CONNECTION - PLAN VIEW

☐ Direction of Traffic

APPROACH TRANSITION CONNECTION TO RIGID BARRIER - LOW-SPEED, TL-2 CURB CONNECTIONS

LAST REVISION 11/01/23

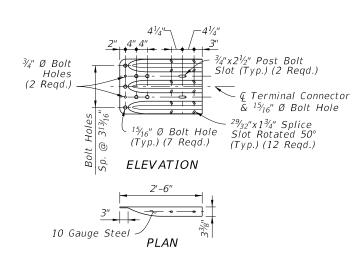
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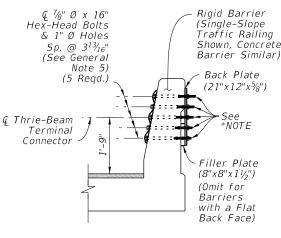
GUARDRAIL

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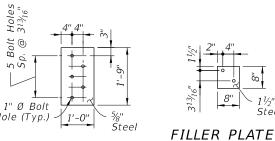


THRIE-BEAM TERMINAL CONNECTOR DETAIL

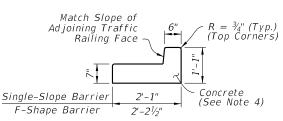


SECTION A-A RIGID BARRIER TERMINAL CONNECTOR MOUNT

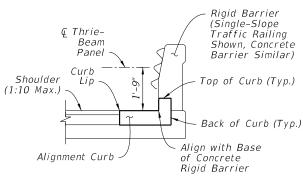
*NOTE: For locations within 4'-0" of a sidewalk or shared use path, trim bolts down to within 1/4" of tightend nut. Deform exposed threads. File down sharp edges and burrs.



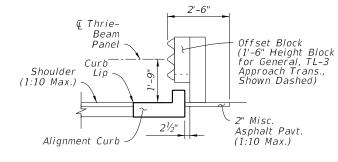
BACK PLATE



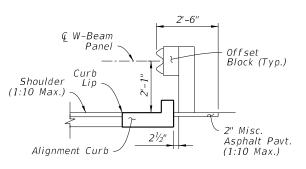
ALIGNMENT CURB **SECTION**



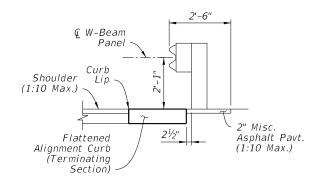
SECTION B-B BEGIN ALIGNMENT CURB (Mate to Rigid Barrier)



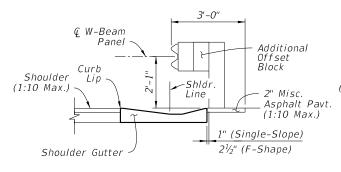
SECTION C-C ALIGNMENT CURB (Intermediate)



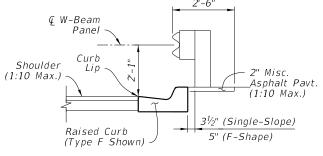
SECTION D-D **BEGIN TRANSITION** (End Alignment Curb)



SECTION E-E **END TRANSITION** FLUSH SHOULDER OPTION

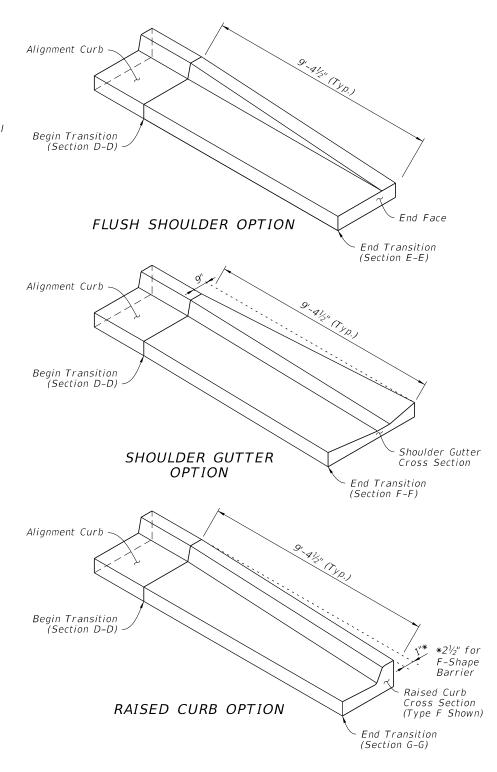


SECTION F-F **END TRANSITION** SHOULDER GUTTER OPTION



SECTION G-G **END TRANSITION** RAISED CURB OPTION

CURB TYPICAL SECTIONS



CURB TRANSITION ISOMETRIC VIEWS =

NOTES:

- 1. PLAN AND ELEVATION VIEWS: Work with Sheets 13 thru 16.
- 2. END TRANSITION OF CURB OPTION: Install one of the three End Transition types shown per Section E-E as indicated by the plans.
- 3. GRADING BEHIND POSTS: Place Slope Break a Min. 2'-0" behind the post, per Sheet 6.
- 4. MATERIALS & CONSTRUCTION: Construct the concrete Aligning Curb and Curb transition in accordance with Specification 520. Use steel Plates and Thrie-Beam Terminal Connectors in accordance with Specification 967

APPROACH TRANSITION CONNECTION - DETAILS

REVISION 11/01/23

DESCRIPTION:

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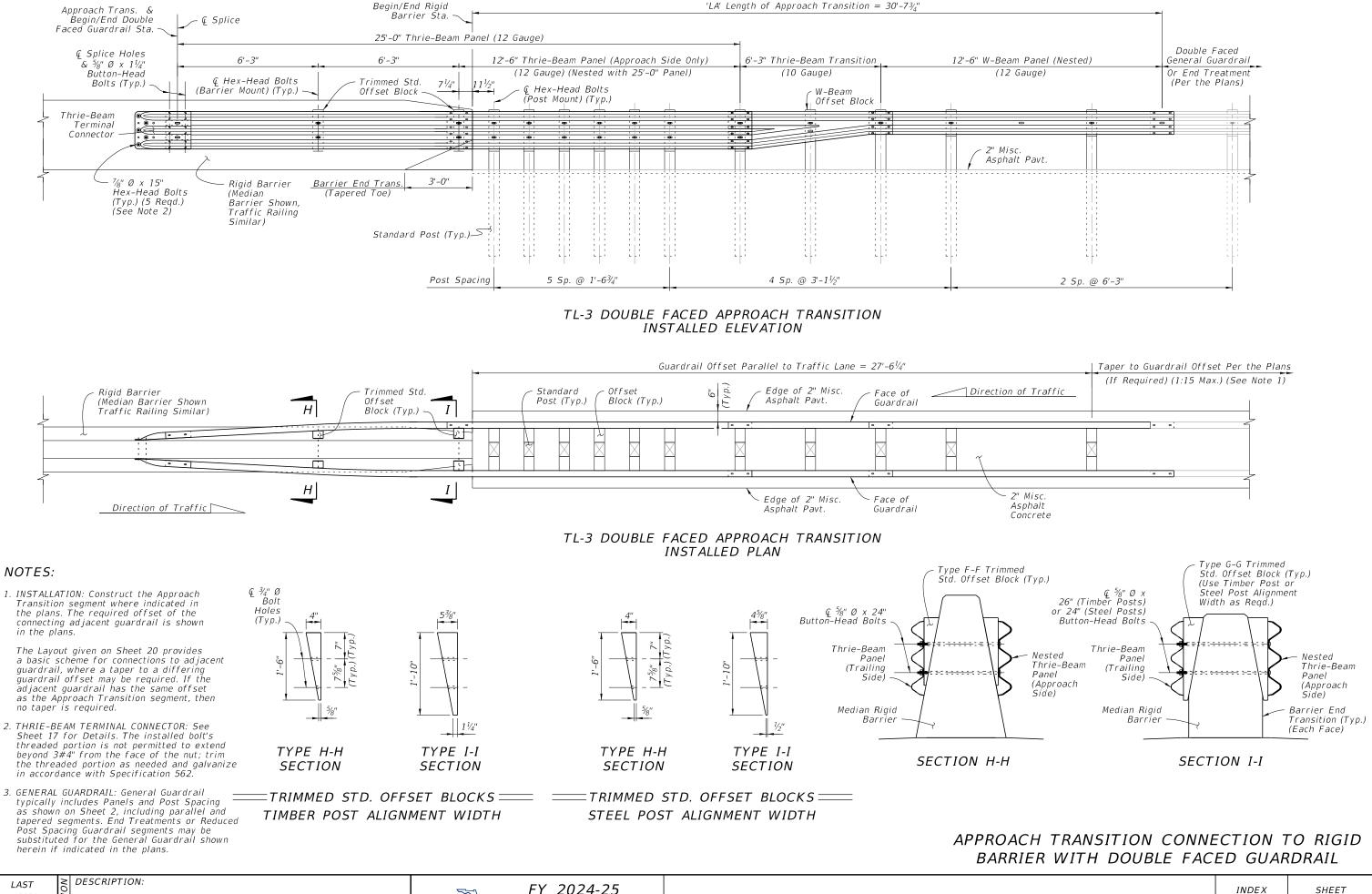
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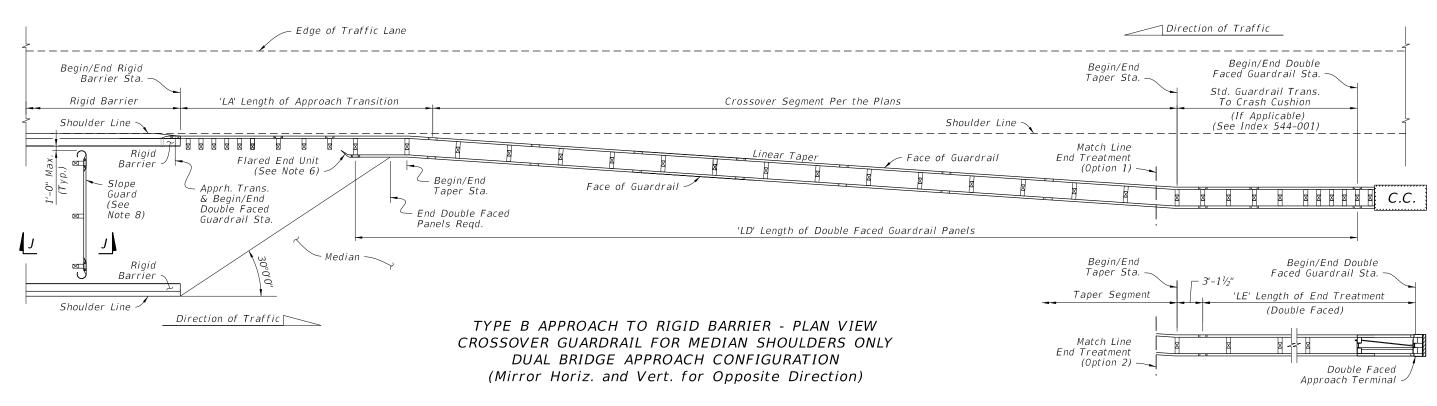
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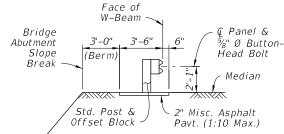
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TYPE A APPROACH TO RIGID BARRIER - PLAN VIEW MEDIAN OR OUTSIDE SHOULDERS (Mirror Horiz. and/or Vert. for Opposite Direction and/or Side of Road)





SECTION J-J BRIDGE ABUTMENT SLOPE GUARD (Between Bridges)

DESCRIPTION:

NOTES:

- 1. INSTALLATION: The Plan Views shown are schematic only, showing example geometry for connecting guardrail segments including taper locations and Double Faced Guardrail requirements as applicable. Work this Sheet with the plans, where stationing and offsets for Begin/End Guardrail, Begin/End Rigid Barrier, and Begin/End Taper are specified. For existing bridge layouts, see Index 536-002, 521-404,
- 2. GENERAL (OR LOW-SPEED) GUARDRAIL SEGMENT: Construct this segment if shown in the plans. For the case where this segment's offset differs from the Approach Transition offset, linearly taper the guardrail between the Begin/End Taper Stations and offsets as specified in the plans.

For the shortest length case of a direct connection between the End Treatment and the Approach Transition, this segment may be omitted as shown in the plans.

- 3. LENGTH OF APPROACH TRANSITION 'LA': Install the applicable Approach Transition as shown per Sheets 13 thru 16, where called for in the plans.
- 4. LENGTH OF END TREATMENT 'LE': Install the Approach Terminal End Treatment as shown per Sheet 7 or 8, where called for in the plans. Use the corresponding APL drawings for construction details.
- 5. CROSSOVER GUARDRAIL (FOR TYPE B APPROACH): Install the Crossover Segment tapering linearly from the Begin Taper Sta. and offset to the End Taper Sta. and offset as specified in the plans.

6. LENGTH OF DOUBLE FACED GUARDRAIL PANELS, 'LD' (FOR TYPE B APPROACH): Terminate the Double Faced Guardrail panels as shown (based upon the 30° line measured from the hazard on the opposite side of the median). Extend the panel segment longer than the dimension 'LD' as needed for the Panel's end Bolt Slot to align with a post Bolt hole.

Install a Flared End Unit where shown, as defined on Sheet 9.

- 7. END TREATMENT OPTIONS (FOR TYPE B & C APPROACH): For Double Faced applications, use either a Double Faced Approach Terminal Assembly per Sheet 8 or a Crash Cushion per Index 544-001. For either Option, meet the 1:10 adjacent grading requirements for Approach Terminals as shown on Sheet
- 8. SLOPE GUARD: Where indicated in the plans, install a Guardrail segment between bridge approaches and offset from the bridge abutment's Slope Break as shown. Install posts at the end bolt slots of the panel system. Use post spacing of either $3'-1\frac{1}{2}$ " or 6'-3", as needed to correctly fit system between barrier's. The system may also be lengthened to fit by installing two Rounded End Units as defined on Sheet 9.

LAYOUT TO RIGID BARRIER - APPROACH ENDS

REVISION 11/01/23

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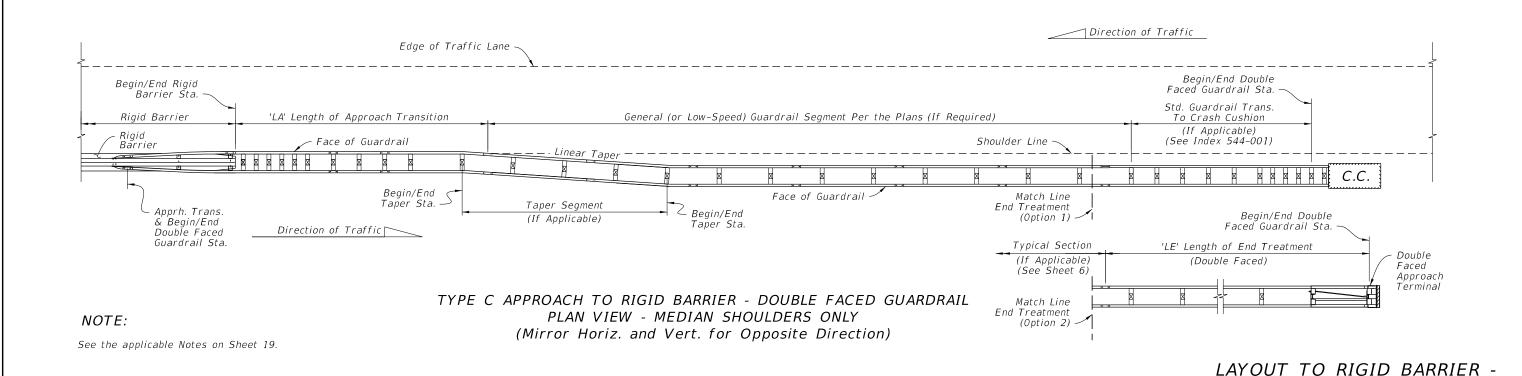
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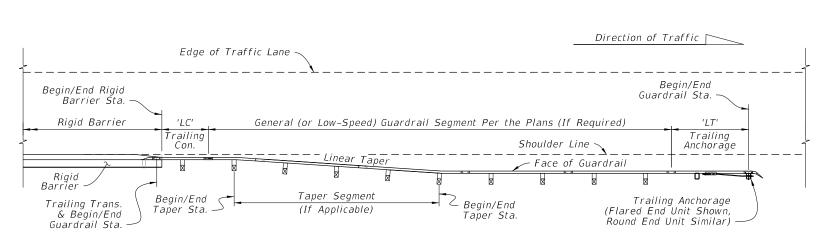
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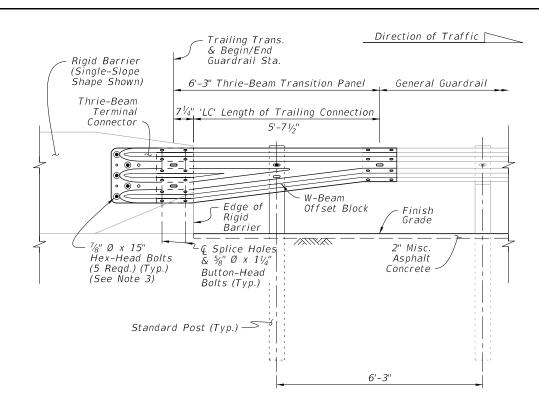




TYPE D TRAILING CONNECTION FROM RIGID BARRIER PLAN VIEW - MEDIAN OR OUTSIDE SHOULDER (Mirror Horiz. and/or Vert. for Opposite Direction and/or Side of Road)

NOTES:

- 1. See the applicable Notes on Sheet 19. For connections with curb options, see sheet 21.
- 2. LENGTH OF TRAILING ANCHORAGE, 'LT': Install the Trailing Anchorage as shown on Sheet 9, where called for in the plans.
- 3. THRIE-BEAM TERMINAL CONNECTOR: Install connector and bolts as shown on Sheet 17.
- 4. RIGID BARRIER SINGLE SLOPE END FACE: See Concrete Barrier Wall, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-423, for details.



TRAILING END TRANSITION CONNECTION TO RIGID BARRIER - INSTALLED ELEVATION

LAYOUT TO RIGID BARRIER - TRAILING ENDS

APPROACH ENDS WITH DOUBLE FACED GUARDRAIL

DESCRIPTION: REVISION 11/01/23

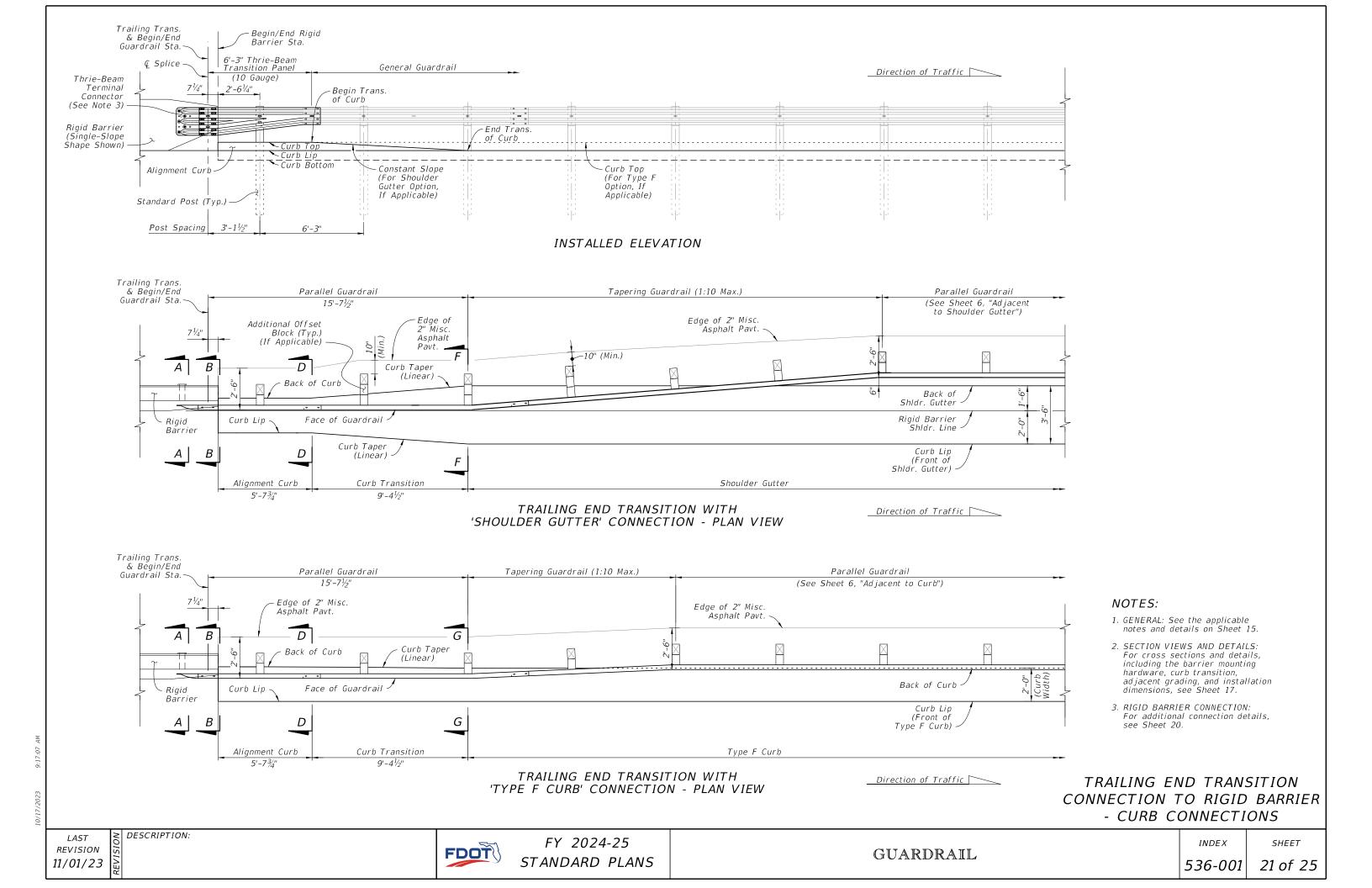
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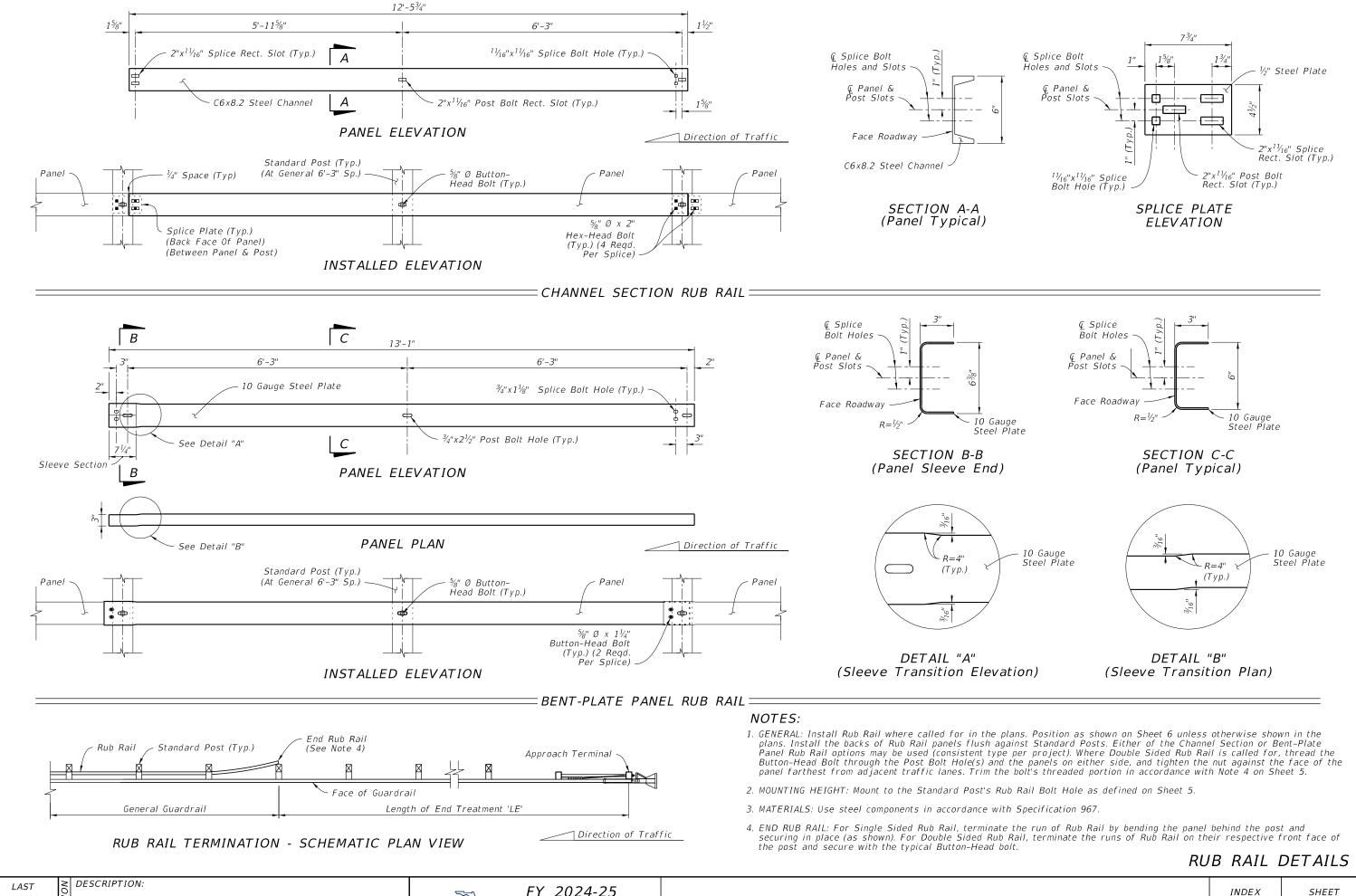
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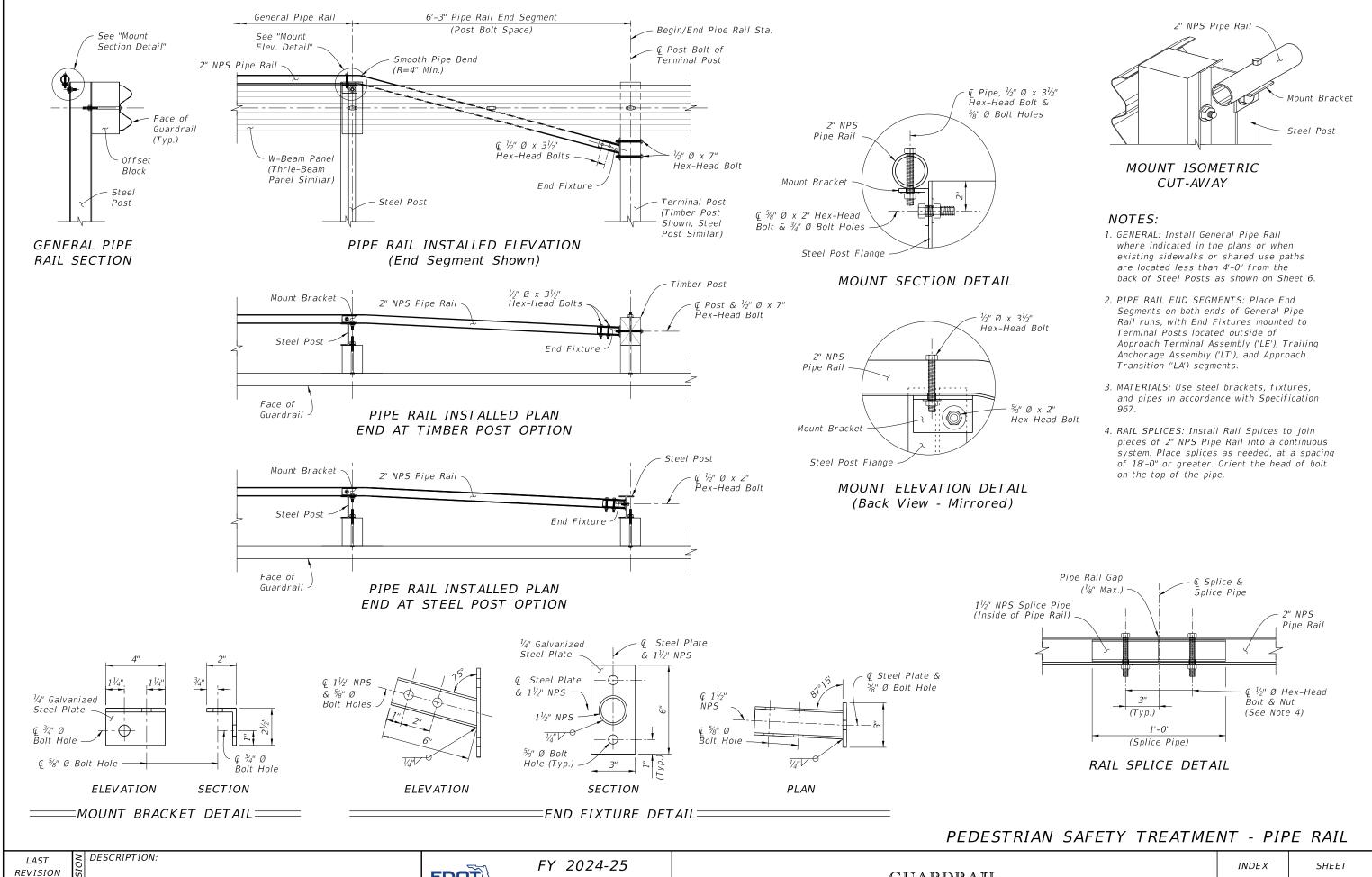
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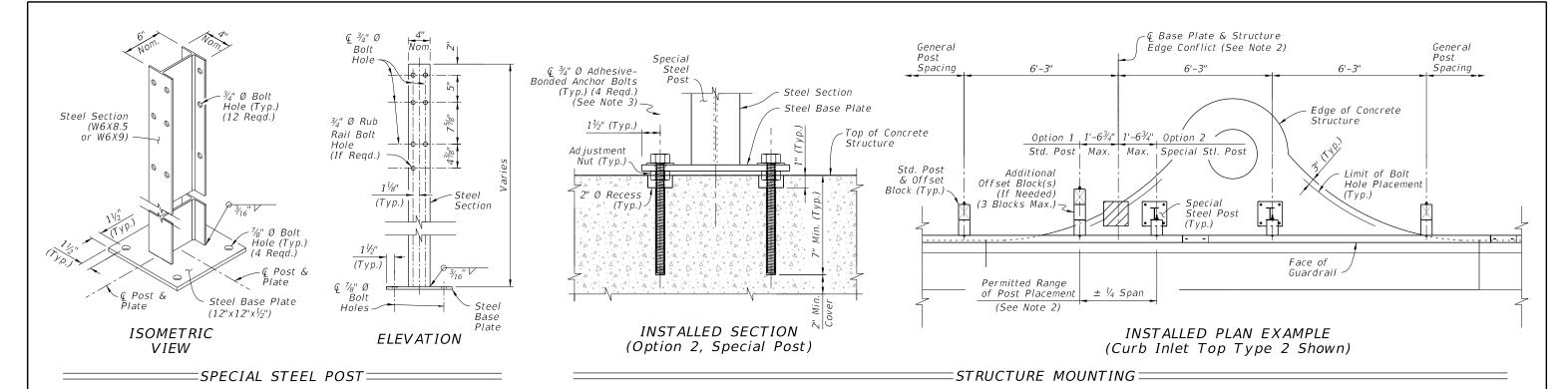
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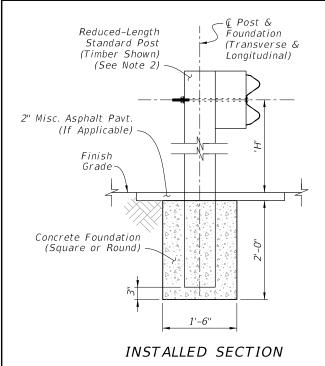
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NOTES:

- 1. INSTALLATION: When the construction of Guardrail at the required post spacing results in post(s) located atop culverts, inlets, pier footings, or similar concrete structures, a Special Steel Post may be substituted for a Standard Post. Install where shown in the plans and/or as-needed, in accordance with Specification 536.
- 2. EDGE CONFLICT: When a required post location causes an Edge Conflict with the structure, where the Steel Base Plate is not located entirely on the structure at least 3" from the Edge of Concrete, the longitudinal post location may be altered by up to 1'-6 $\frac{3}{4}$ " (Quarter Span) from the original required spacing location to prevent the Edge Conflict. With the post location adjusted, use a Std. Post mounted in soil (Option 1) or a Special Steel Post with its Base Plate mounted entirely on the structure (Option 2). Maintain the original required spacing locations upstream and downstream
- 3. BASE PLATE MOUNT: Install Special Steel Posts as shown using steel Adhesive-Bonded Anchor Bolts in accordance with Specification 536. Use $\frac{3}{4}$ " Hex-Head Bolts for structures less than 9" deep as defined in the Specification.
- 4. PANEL MOUNT TO ADJUSTED POST: Punch additional 3/4"x2½" Post Bolt Slot(s) in the W-Beam or Thrie-Beam Panel only where needed to mount the panel to a post in an adjusted location. Meet the Panel Post Bolt Slots requirements of Specification 536.
- 5. MATERIALS: Use steel base plates in accordance with Specification 536.

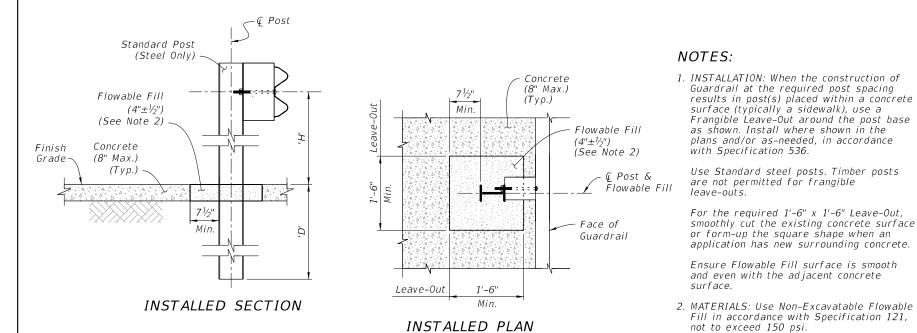
SPECIAL STEEL POST FOR CONCRETE STRUCTURE MOUNT



DESCRIPTION:

NOTES:

- 1. INSTALLATION: When the construction of Guardrail at the required post spacing results in post(s) conflicting with underground utilities or other underground obstructions, an Encased Post may be used where a 2'-0" depth will avoid the conflict. Install where shown in the plans and/or as-needed, in accordance with Specification 536.
- 2. REDUCED-LENGTH STANDARD POST: Use a Standard Post with reduced Length such that the Panel Height 'H' is maintained while the post bottom terminates 3" from the bottom of the Concrete Foundation. Typically, the Post Length 'L' is 4'-7" for W-Beam Guardrail.
- 3. FOUNDATION: Use non-reinforced Class NS Concrete material in accordance with Specification 347. After casting the concrete, ensure the surrounding soil material is completely backfilled and tamped to provide full passive resistance.
- 4. LIMIT: Encased Posts are not permitted for more than 3 consecutive posts.



FRANGIBLE LEAVE-OUT FOR CONCRETE SURFACE MOUNT

ENCASED POST FOR SHALLOW MOUNT

REVISION 11/01/23

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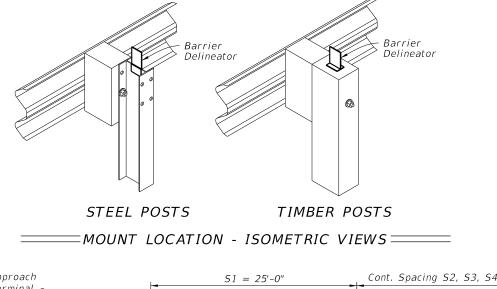
- 2. MATERIALS: Use materials of the size and type defined for Barrier Delineators in Specification 993.
- 3. COLOR: Use either white or yellow retroreflective sheeting to match the color of the nearest lane's edgeline.
- 4. MOUNT LOCATIONS: Mount Barrier Delineators atop posts as shown, starting with Post (3) of Approach Terminals and incrementally increasing spacing towards the downstream direction. Install the Barrier Delineators at the following

S1 = 25' x 1 Space S2 = 50' x 1 Space S3 = 75' x 1 Space

 $S4 = 100' \times for$ the Remaining Run

Additionally, place a Barrier Delineator on Post (2) of the Trailing Anchorage or on the post nearest the Rigid Barrier.

5. MEDIAN GUARDRAIL: Install retroreflective sheeting on both sides of the barrier delineator for Guardrail on





BARRIER DELINEATORS

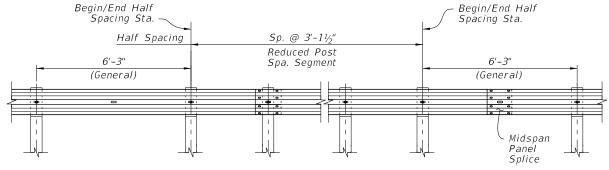
NOTES:

1. INSTALLATION: Work these details with the plans, where Stationing for Begin/End Half Spacing and Begin/End Quarter Spacing are indicated if required.

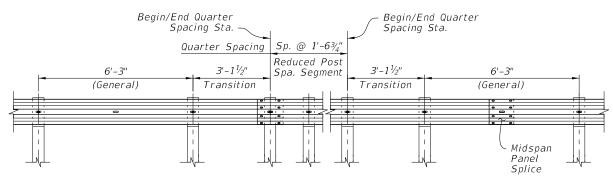
Where the Begin/End Stations indicated in the plans do not correspond exactly to post locations in construction, extend the Reduced Post Spacing segment to the nearest post(s) before the Begin Station and/or after the End Station called for.

- 2. PANEL SPLICES: Midspan Panel Splices are not required in Transition and Reduced Post Spacing segments, however they are required for General segments. To place midspan splices in General segments, use one Non-General panel length $(9'-4\frac{1}{2}'')$ or $15'-7\frac{1}{2}''$) or add an additional Transition spaced post where required.
- 3. LOW-SPEED GUARDRAIL: For Reduced Post Spacing with Low-Speed Guardrail (12'-6" post spacing), the Reduced Spacing pattern requires a 6'-3" space between the 12'-6'' and $3'-1\frac{1}{2}''$ spaces.
- 4. PANEL POST BOLT SLOTS: For Quarter Spacing configurations, punch additional $\frac{3}{4}$ " $\times 2^{1/2}$ " Post Bolt Slots in the panels only where required for mounting and in accordance with Specification 536.

DESCRIPTION:

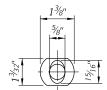


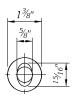
DETAIL 'S' - HALF SPACING ELEVATION (AS REQD. PER THE PLANS)

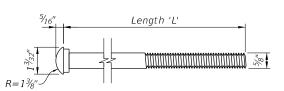


DETAIL 'S' - QUARTER SPACING ELEVATION (AS REQD. PER THE PLANS)

REDUCED POST SPACING FOR HAZARDS





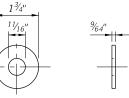


ELEVATION OPTION 1

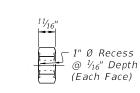
ELEVATION OPTION 2

PROFILE (Option 1 Shown)

BUTTON-HEAD BOLT =



ELEVATION PROFILE

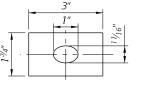


ELEVATION

PROFILE

= W A S H E R =

=HEX-NUT ======





ELEVATION

PROFILE

=RECTANGULAR $\,$ WASHER $\,$ (For CRT & Terminal Connectors Where Shown -Install Over Panel Face)

BUTTON-HEAD BOLT LENGTHS:

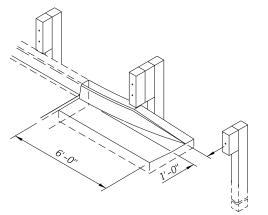
Application(s):	Length 'L':	Min. Thread Length:
Panel Splice	1 1/4"	Full Length
Steel Post Mount – Single Faced Guardrail	10"	4"
Timber Post Mount - Single Faced Guardrail	18"	4"
Steel or Timber Post Mount - Double Faced Guardrail	25"	4"

NOTES:

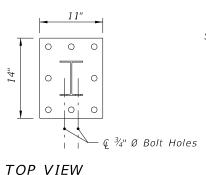
- 1. Use nuts, bolts, and washers in accordance with Specification 967.
- 2. For Steel Posts with Double Faced Guardrail, the single 25" Length bolt (one bolt thru both post flanges) may be replaced with two 10" Length bolts (one bolt per post flange).
- 3. Use bolts listed in Table 2 in corresponding locations shown in this Index.

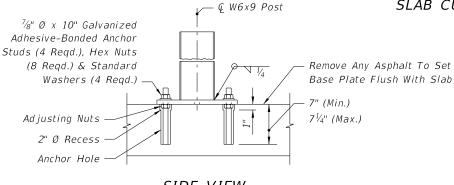
%" BUTTON-HEAD BOLT

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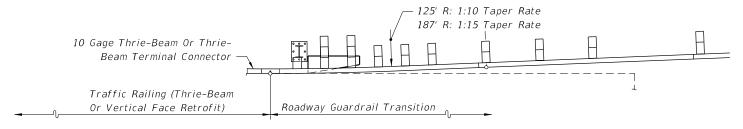
CURB TYPE F FLARE WHEN END OF EXISTING APPROACH SLAB CURB EXPOSED



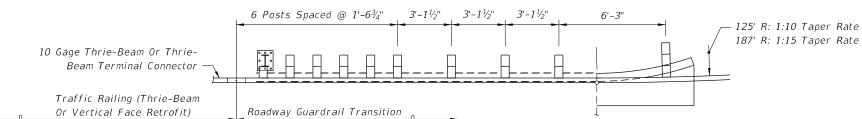


SIDE VIEW

SPECIAL STEEL POST FOR ROADWAY THRIE-BEAM TRANSITIONS TO BRIDGE TRAFFIC RAILING RETROFITS



APPROACH SLAB WITHOUT CURB



GUARDRAIL TRANSITION ALIGNMENTS FOR BRIDGE THRIE-BEAM AND VERTICAL FACE TRAFFIC RAILING RETROFIT

LAST REVISION 11/01/19

DESCRIPTION:



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GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES

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APPROACH SLAB WITH CURB Longitudinal Location Of Transition Blocks And Curb End Flares Will Vary With Scheme Type PARTIAL PLAN VIEWS

NOTES FOR GUARDRAIL TRANSITIONS CONNECTING TO TRAFFIC RAILING RETROFITS ON EXISTING BRIDGES

GENERAL NOTES 1. This index provides guardrail transition details for approach and trailing end guardrail connections to existing bridges, including details for connecting to traffic railing retrofits

and safety shape barriers on existing bridges. Sheets 1 through 26 apply to bridges with retrofitted traffic railings (Sheet 26 shows the trailing end guardrail connections). Sheets 27 and 28 apply to bridges with safety shape traffic railing, and they provide approach and trailing end transition connection details for guardrail. Construct these guardrail transitions

2. For miscellaneous guardrail components and construction details that are not provided in this

and connections where called for in the plans.

Index, refer to Index 536-001.

- 1. The transition detail shown on this sheet shows (a) the standard post spacings within the typical thrie-beam approach transitions connecting to existing bridges with retrofit traffic railings, and (b) depict the typical alignments of the approach transitions.
- 2. The curb and gutter flare shown on this sheet is typical of flares that are to be constructed when approach slab curbs extend to the beginning of the slab, and where other treatment to curb blunt ends are not in place.
- 3. The special steel post for roadway thrie-beam transitions detailed on this sheet is specific to all transition applications on this index that require one or more steel posts.

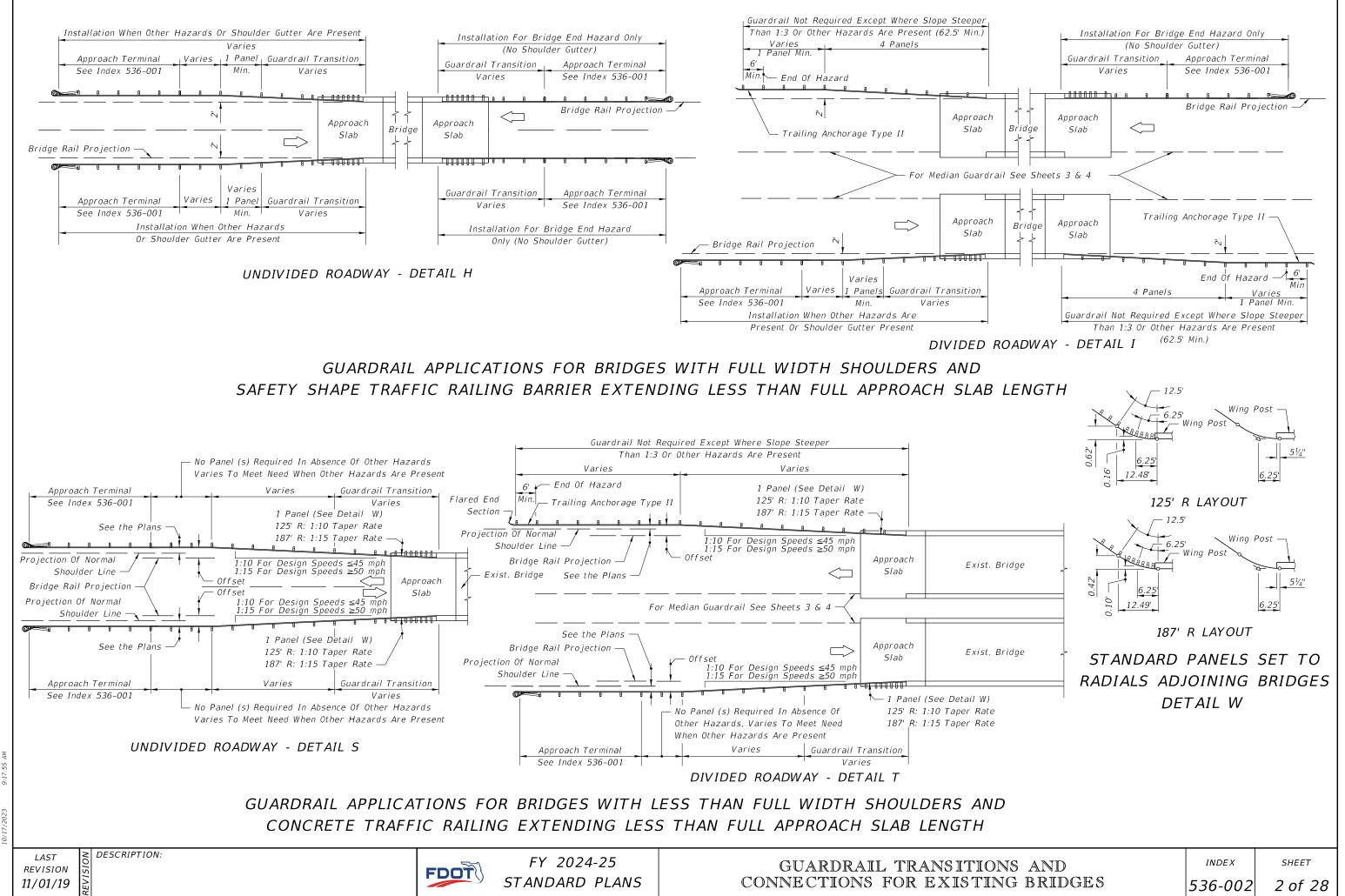
The special steel post and base plate assembly shall be fabricated in accordance with Specification 967.

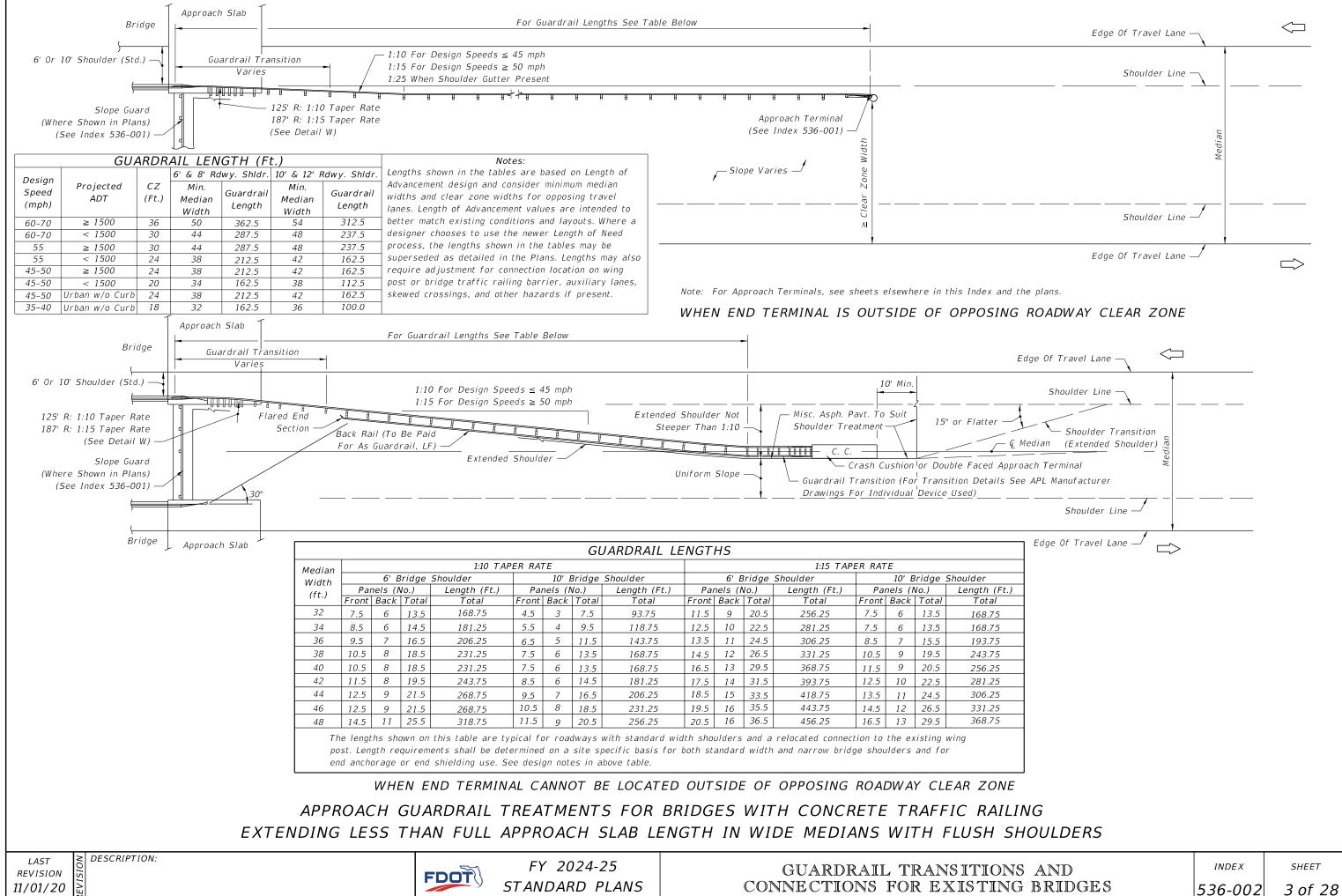
Anchor studs shall be fully threaded rods in accordance with ASTM F1554 Grade 36 or ASTM A193 Grade B7. All nuts shall be heavy hex in accordance with ASTM A563 or ASTM A19

4. Anchor studs and nuts shall be hot-dip zinc coated in accordance with the Specifications. After the nuts have been snug tightened, the anchor stud threads shall be single punch distorted immediately above the top nuts to prevent loosening of the nuts. Distorted threads shall be coated with a galvanizing compound in accordance with the Specifications.

Adhesive bonding material systems for anchors shall comply with Specification 937 and be installed in accordance with Specification 416.4. Nested beam extensions and points for terminal connector attachments will vary for traffic railing barrier vertical face retrofits. The plan views for the vertical face retrofit barriers show the primary configurations for each particular scheme. The associated pictorial views show the variations.

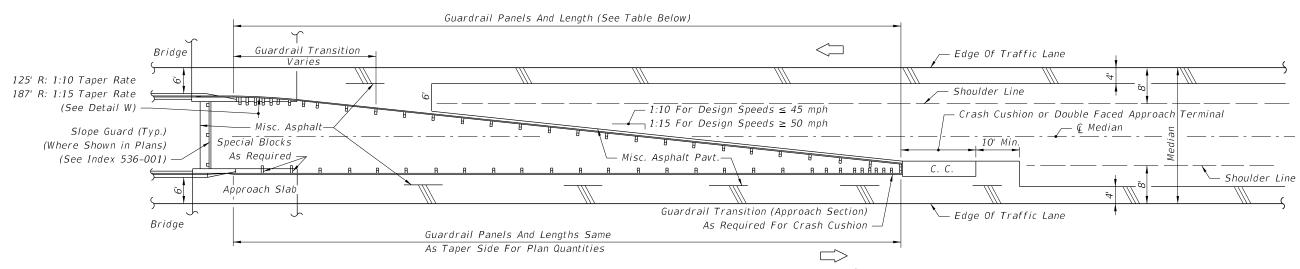
5. For installing thrie-beam terminal connector to traffic railing vertical face retrofits, see notations on Sheets 15 through 18 and the flag notation on Sheet 26.





STANDARD PLANS

MEDIANS WITH 10' BRIDGE SHOULDERS



MEDIANS WITH 6' BRIDGE SHOULDERS

Note: The guardrail configurations shown apply only to parallel or near parallel bridges with open medians.

GUARDRAIL LENGTHS													
MEDIAN WIDTH	6' BRIDGE SHOULDERS				10' BRIDGE SHOULDERS								
	1:10 TAPER RATE		1:15 TAPER RATE		1:10 TAPER RATE		1:15 TAPER RATE						
(Ft.)	PANELS (No.)	LENGTH (Ft.)	PANELS (No.)	LENGTH (Ft.)	PANELS (No.)	LENGTH (Ft.)	PANELS (No.)	LENGTH (Ft.)					
30	12.5	156.25	18.5	231.25	6.5	81.25	9.5	118.75					
28	11.5	143.75	16.5	206.25	5.5	68.75	7.5	93.75					
26	9.5	118.75	14.5	181.25	5.5*	68.75	5.5*	68.75					
24	8.5	106.25	11.5	143.75	5.5*	68.75	5.5*	68.75					

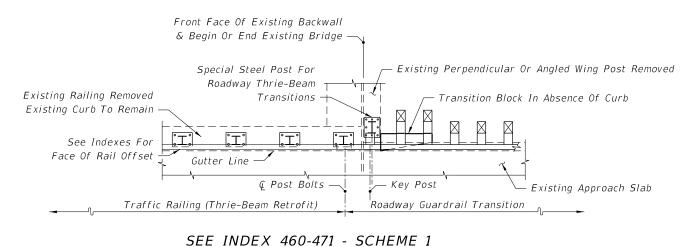
The lengths shown in this table are based on standard widths for roadway and bridge median shoulders. Length requirements for both standard width and narrow bridge shoulders and end anchorage or end shielding requirements shall be determined on a site specific basis. The number of panels may be reduced when installing a crash cushion more than 2.5' in width; see * below.

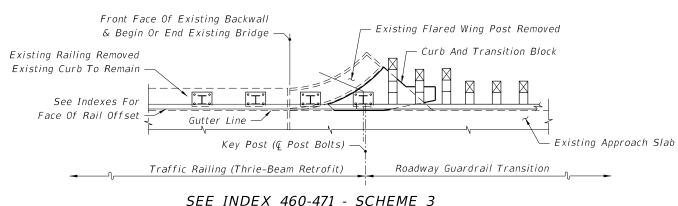
*Number shown is the minimum number of panels plus a W-Thrie beam transition panel; single faced guardrail must have a length of five (5) or more panels.

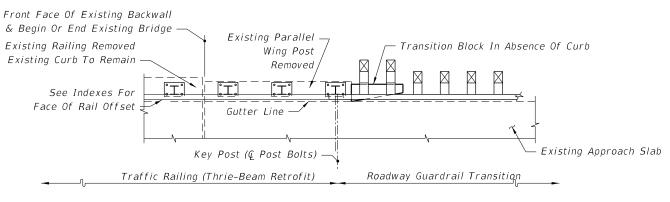
APPROACH GUARDRAIL TREATMENTS FOR BRIDGES WITH CONCRETE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH IN NARROW MEDIANS WITH FLUSH SHOULDERS

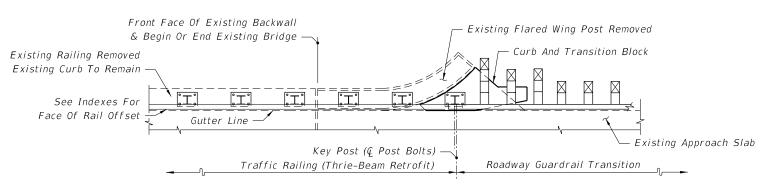
11/01/19

DESCRIPTION:









SEE INDEX 460-471 - SCHEME 2

SEE INDEX 460-471 - SCHEME 3

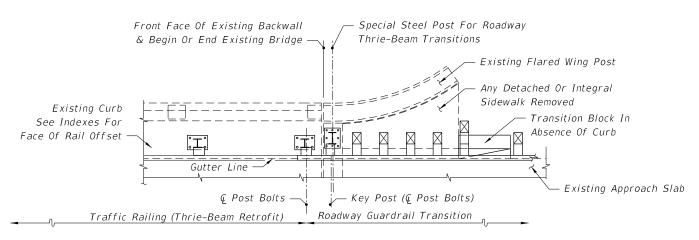
PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

REVISION 11/01/19

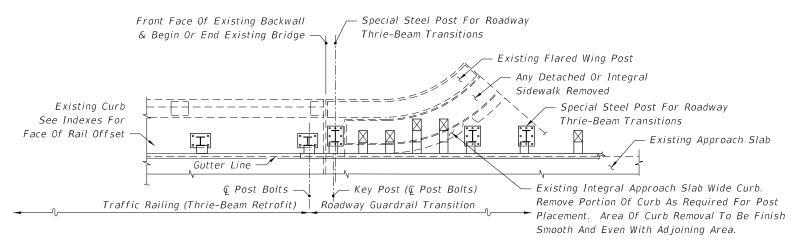
DESCRIPTION:

FDOT

SEE INDEXES 460-472 & 460-475 - SCHEME 2



SEE INDEXES 460-472 & 460-475 - SCHEME 2



SEE INDEXES 460-472 & 460-475 - SCHEME 2

PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

DESCRIPTION:

Front Face Of Existing Backwall

II.

Gutter Line

Traffic Railing (Thrie-Beam Retrofit)

Existing Curb

See Indexes For

Face Of Rail Offset

& Begin Or End Existing Bridge -

© Post Bolts

SEE INDEXES 460-472 & 460-475 - SCHEME 1

Existing Perpendicular Or Angled Wing Post

Transition Block In Absence Of Curb

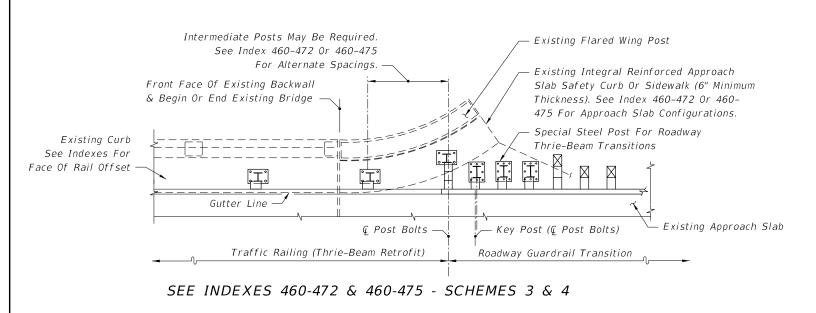
- Existing Approach Slab

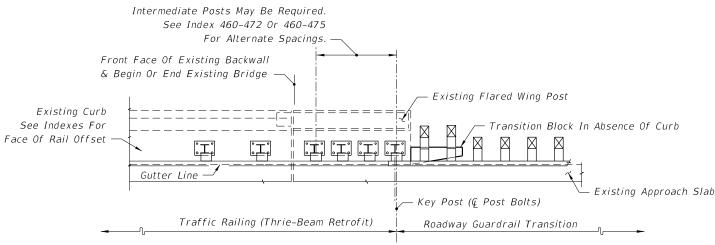
Special Steel Post For Roadway

Thrie-Beam Transitions

Key Post (@ Post Bolts)

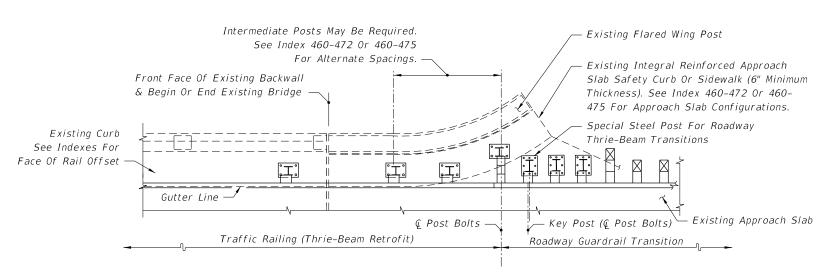
Roadway Guardrail Transition



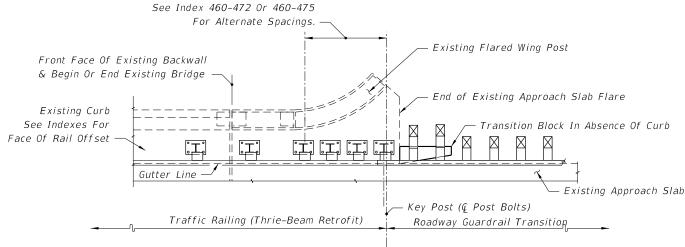


SEE INDEXES 460-472 & 460-475 - SCHEMES 5 & 6

Intermediate Posts May Be Required.



SEE INDEXES 460-472 & 460-475 - SCHEMES 3 & 4



SEE INDEXES 460-472 & 460-475 - SCHEMES 5 & 6

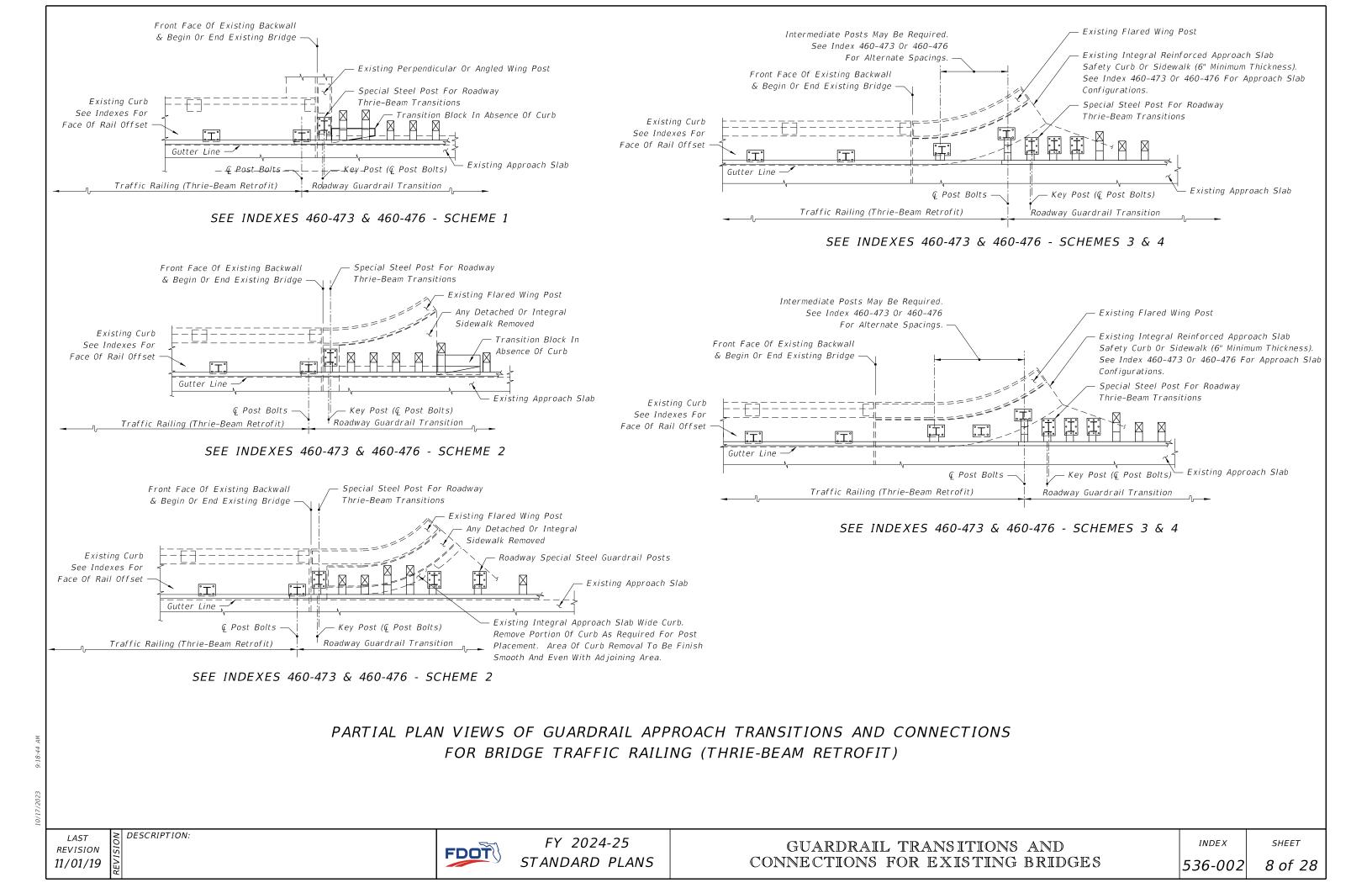
PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

1/17/2023 9:18:36 A

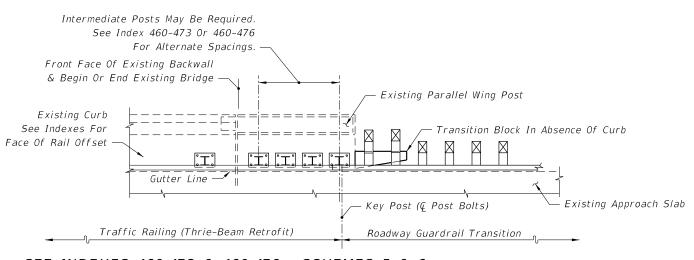
LAST REVISION 11/01/19

DESCRIPTION:

FDOT



SEE INDEXES 460-473 & 460-476 - SCHEMES 5 & 6



SEE INDEXES 460-473 & 460-476 - SCHEMES 5 & 6

PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

10/17/2023 9:18:53

LAST REVISION 11/01/19

DESCRIPTION:



SEE INDEX 460-474 - SCHEME 1

Front Face Of Existing Backwall

Existing Railing And Parallel

Existing Curb

See Indexes For

Face Of Rail Offset

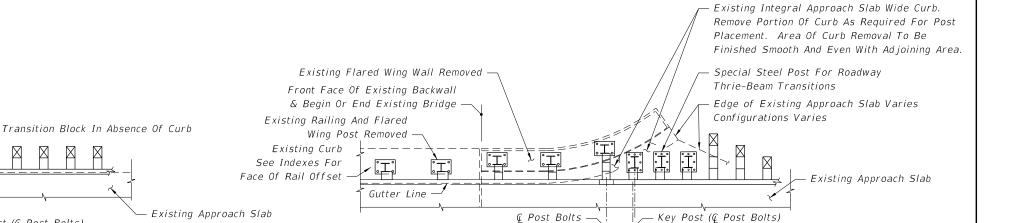
Wing Post Removed

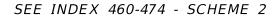
& Begin Or End Existing Bridge —

Gutter Line -

:T:

Traffic Railing (Thrie-Beam Retrofit)





— Key Post (Ç Post Bolts)

Roadway Guardrail Transition

SEE INDEX 460-474 - SCHEME 3

Roadway Guardrail Transition

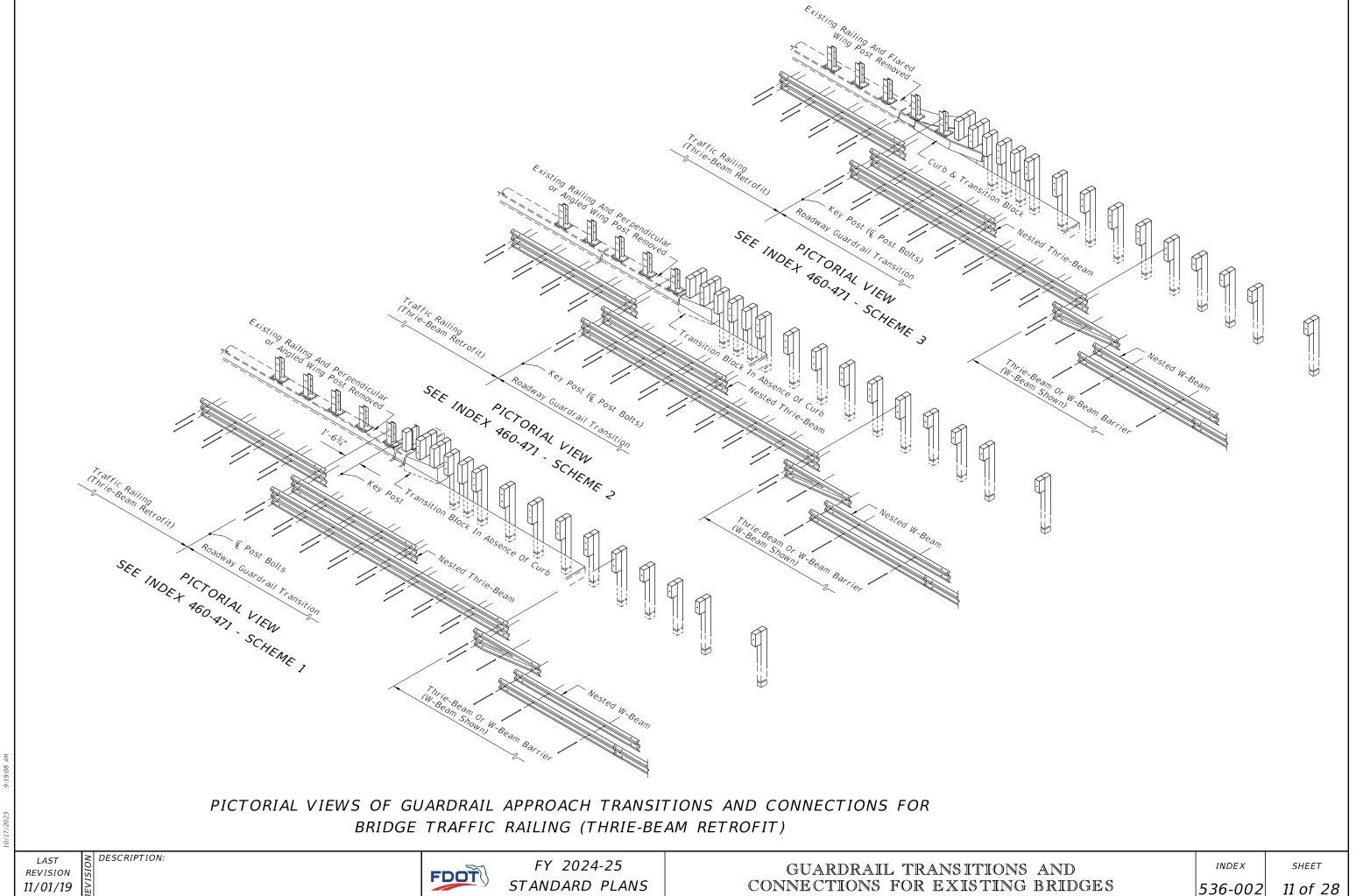
PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

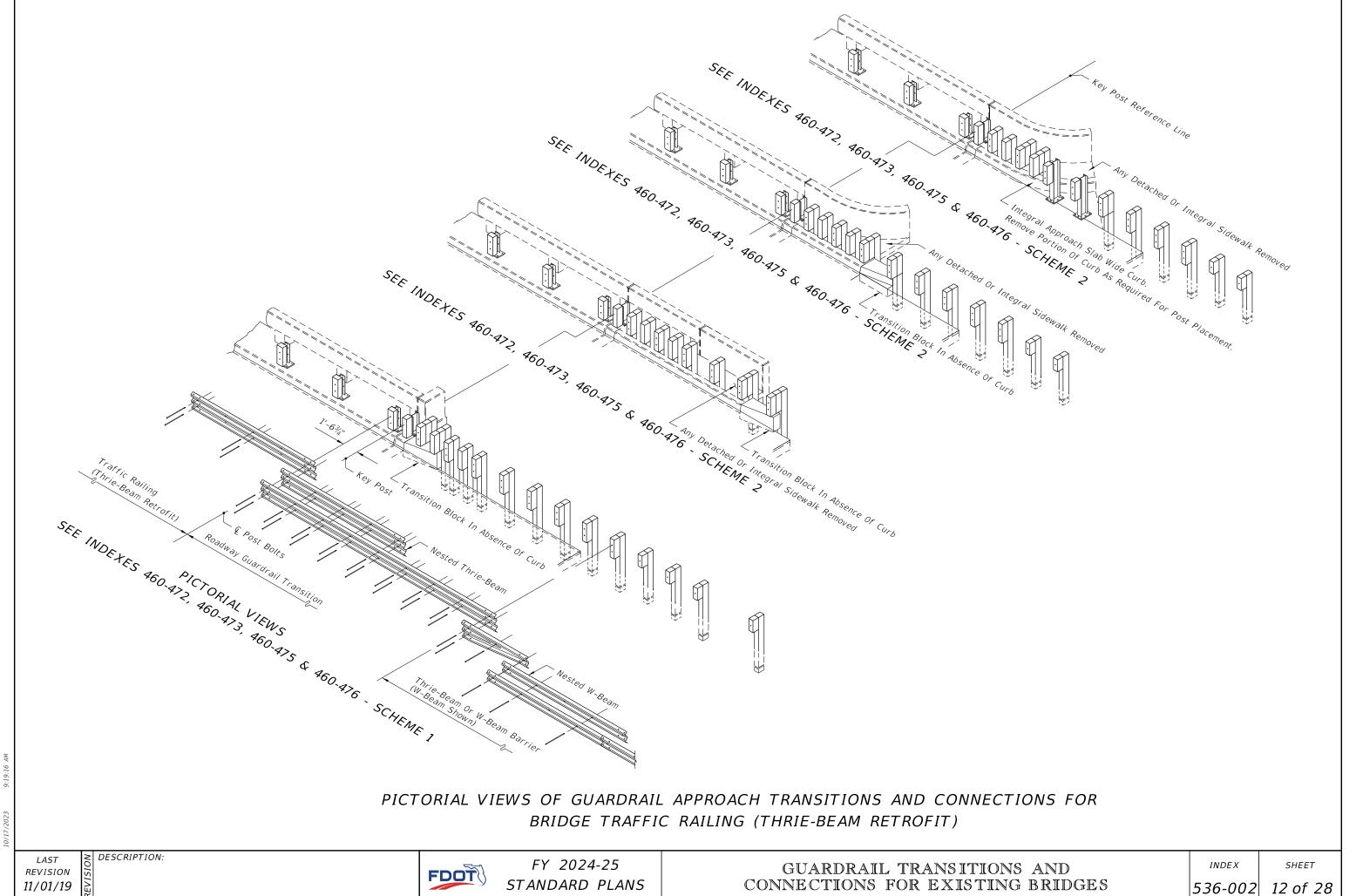
LAST REVISION 11/01/19

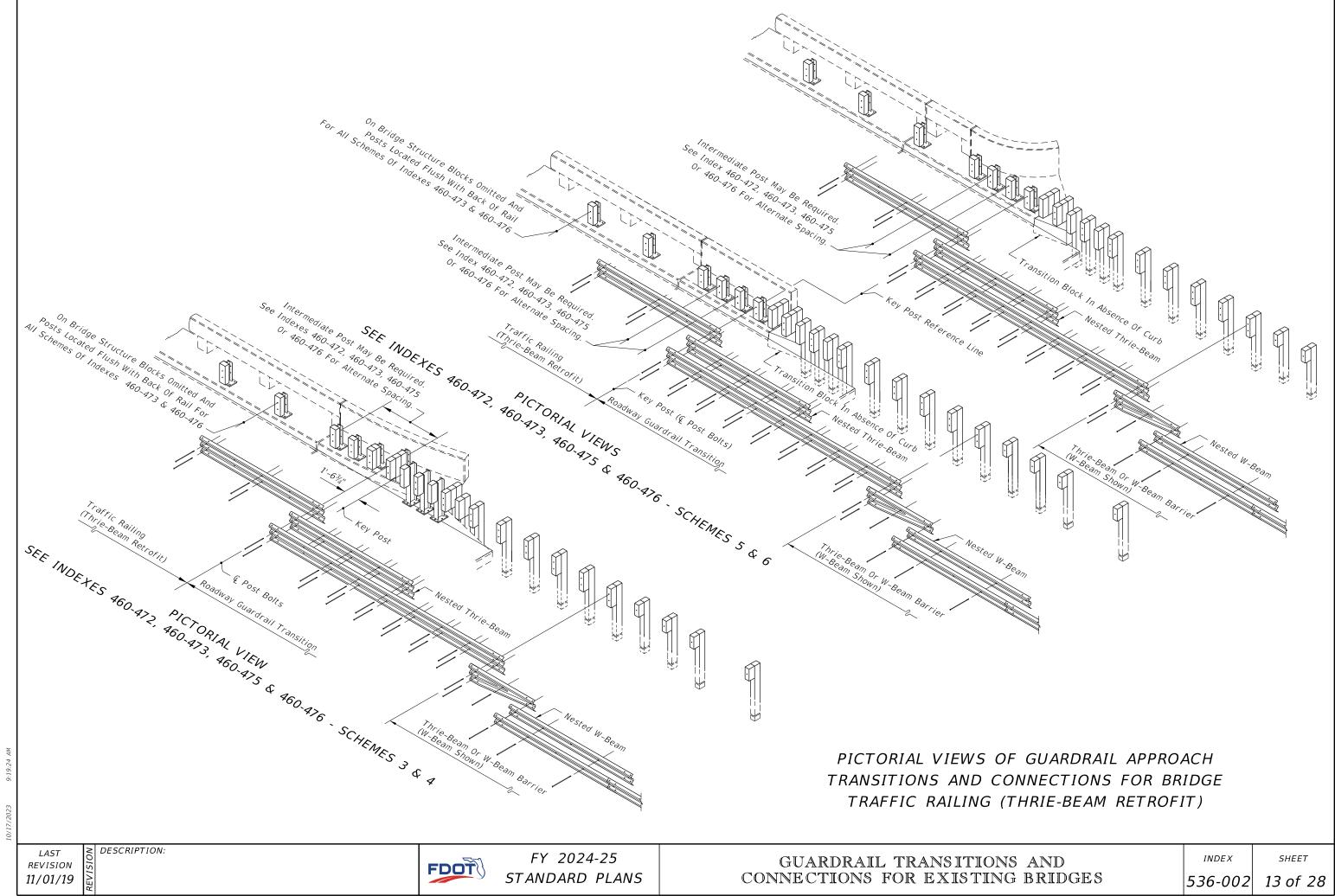
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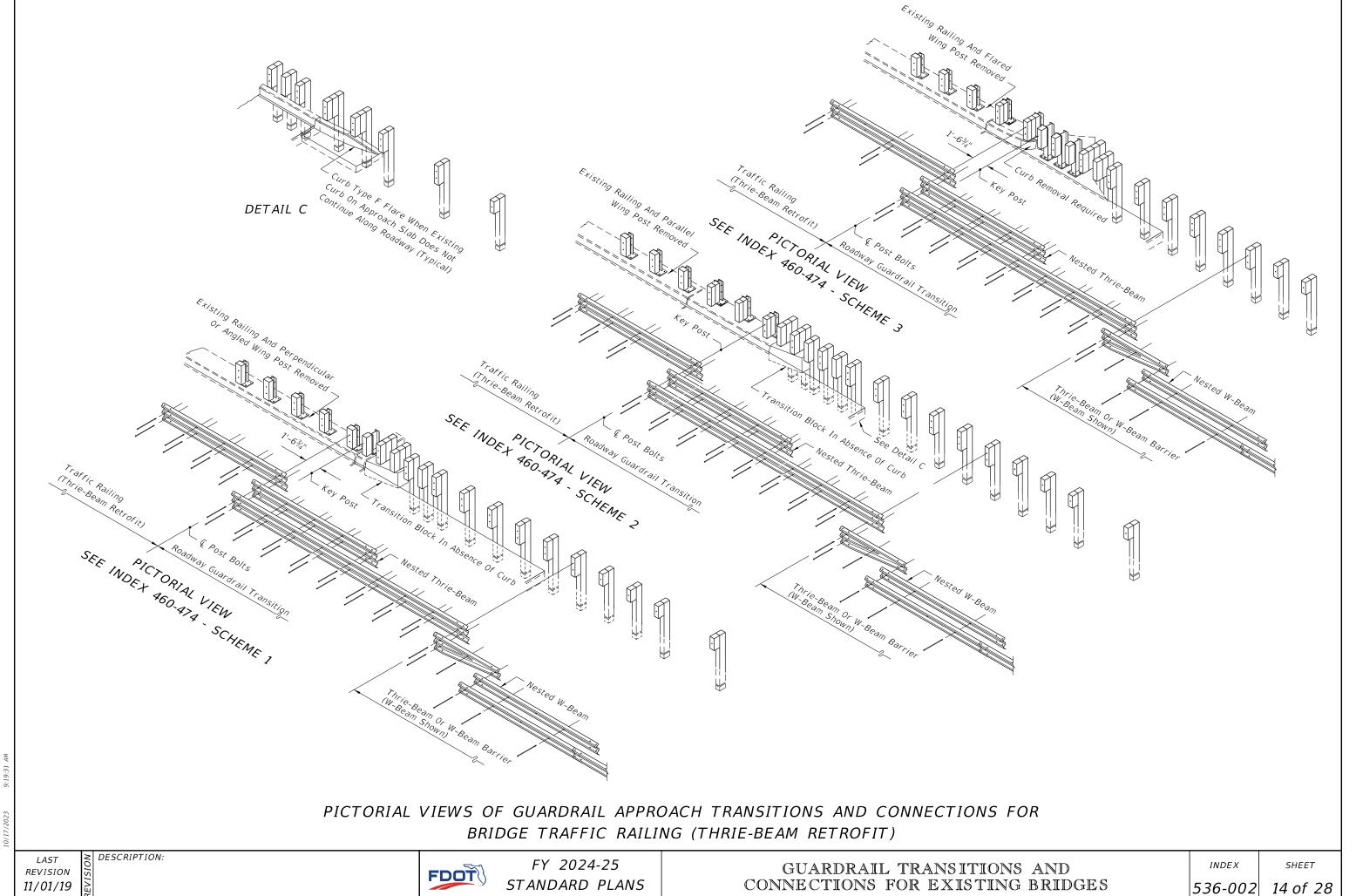
FDOT

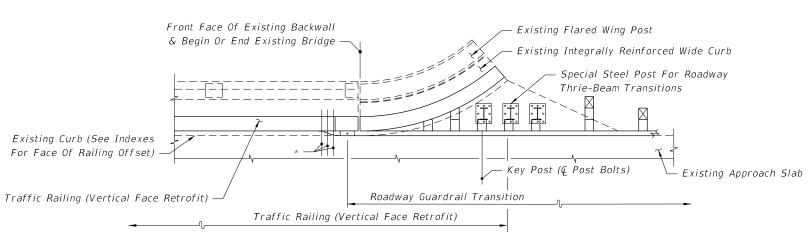
Traffic Railing (Thrie-Beam Retrofit)



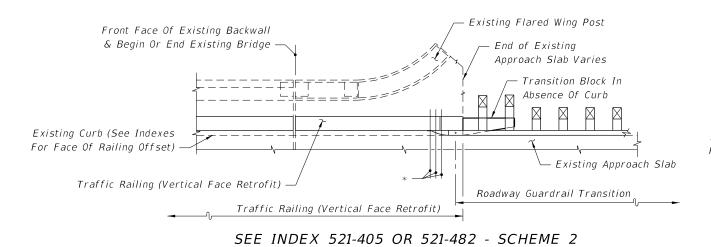


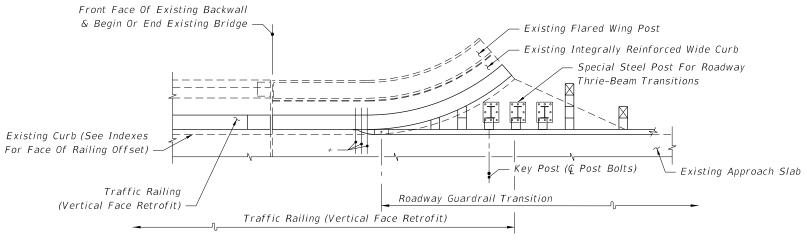






SEE INDEX 521-405 OR 521-482 - SCHEME 3





SEE INDEX 521-405 OR 521-482 - SCHEME 3

Note:

*21" x 12" x $\frac{5}{8}$ " Thrie-Beam Terminal Connector Plate (Back-Up Plate), And $\frac{7}{8}$ "Ø x 12" Long HS Hex Bolts And Nuts (5 Reqd.) With $\frac{21}{4}$ " OD Plain Round Washers Under Heads And Nuts

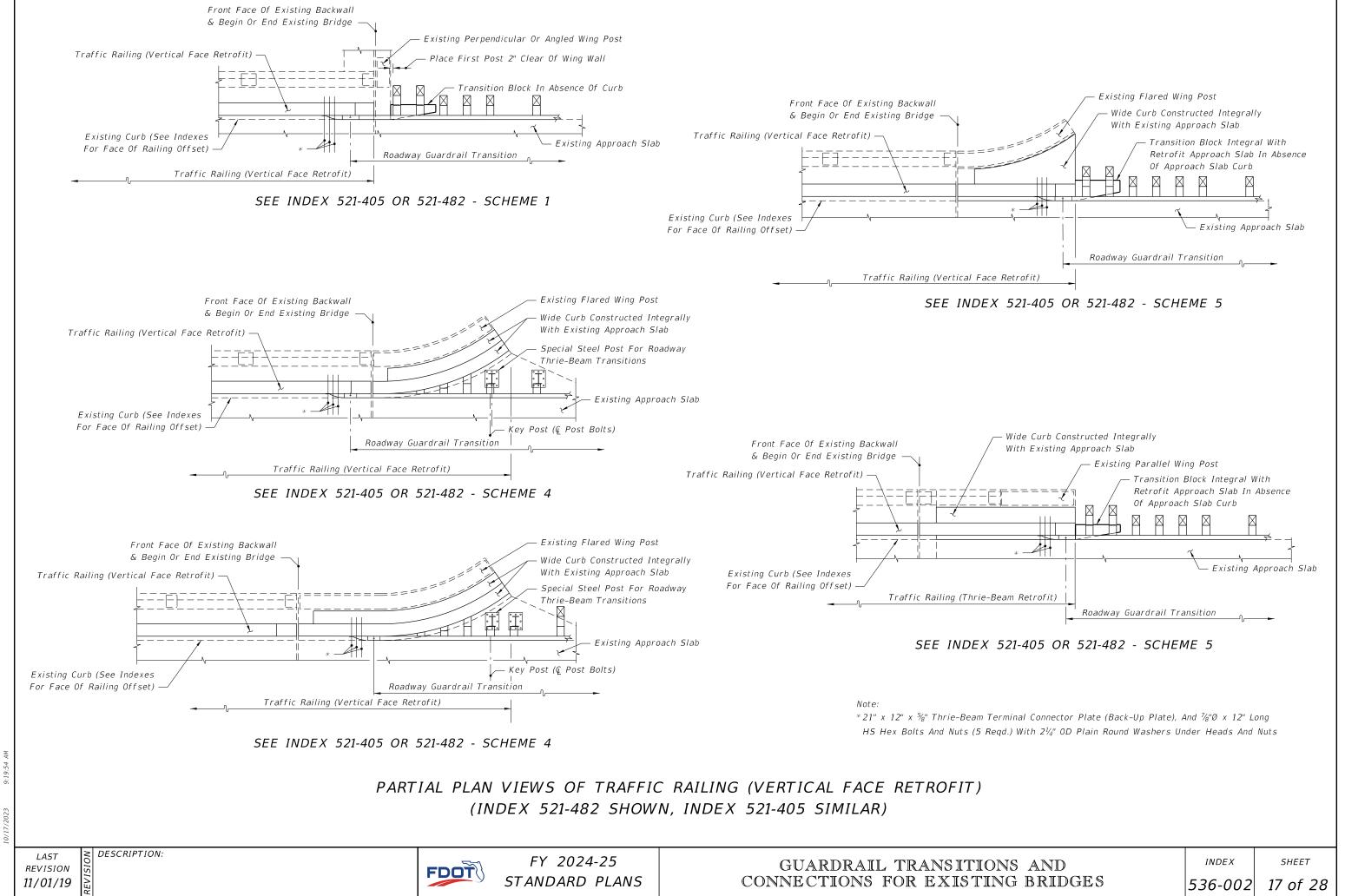
PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)
(INDEX 521-482 SHOWN, INDEX 521-405 SIMILAR)

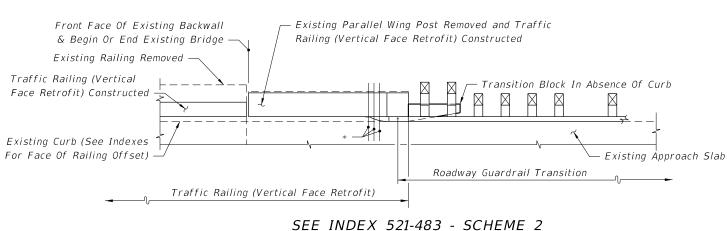
10/17/2023 9:1

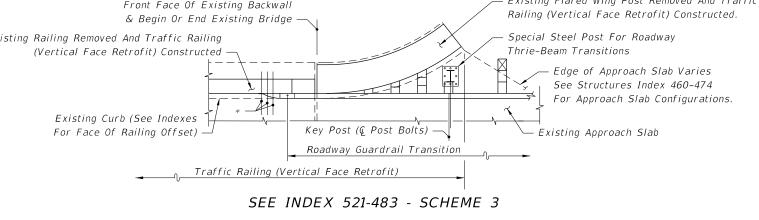
LAST REVISION 11/01/19

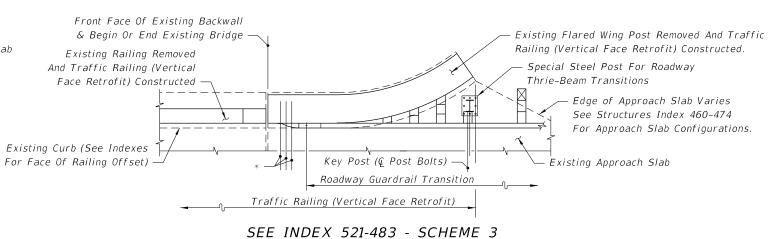
DESCRIPTION:

FDOT









Note:

*21" x 12" x %" Thrie–Beam Terminal Connector Plate (Back–Up Plate), And 🏸 Ø HS Hex Bolts And Nuts (12" Long For Scheme 1 And Length To Fit For Schemes 2 And 3) (5 Regd.) With $2\frac{1}{4}$ " OD Plain Round Washers Under Heads And Nuts

PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)

REVISION 11/01/19

FDOT

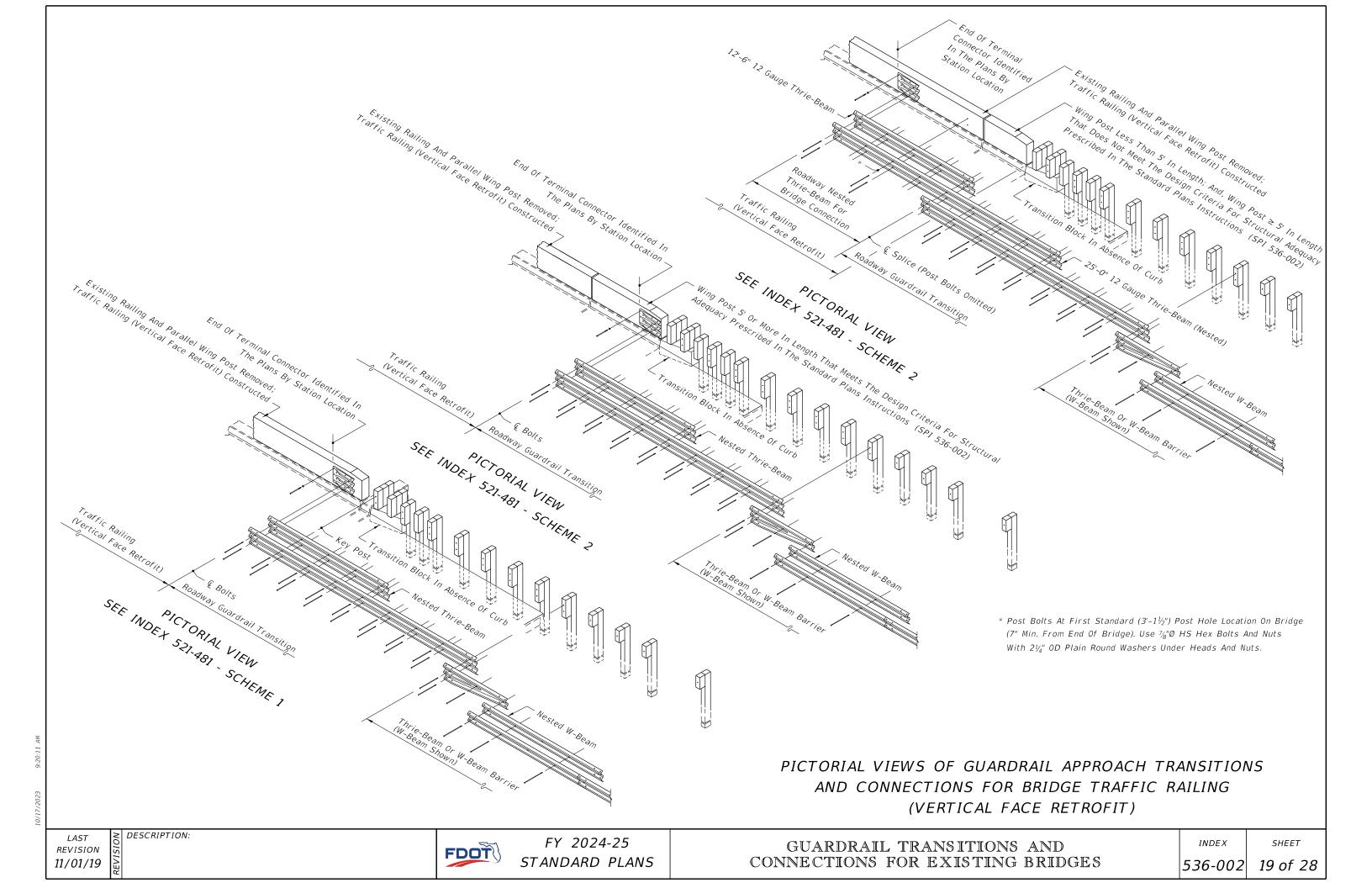
FY 2024-25 STANDARD PLANS

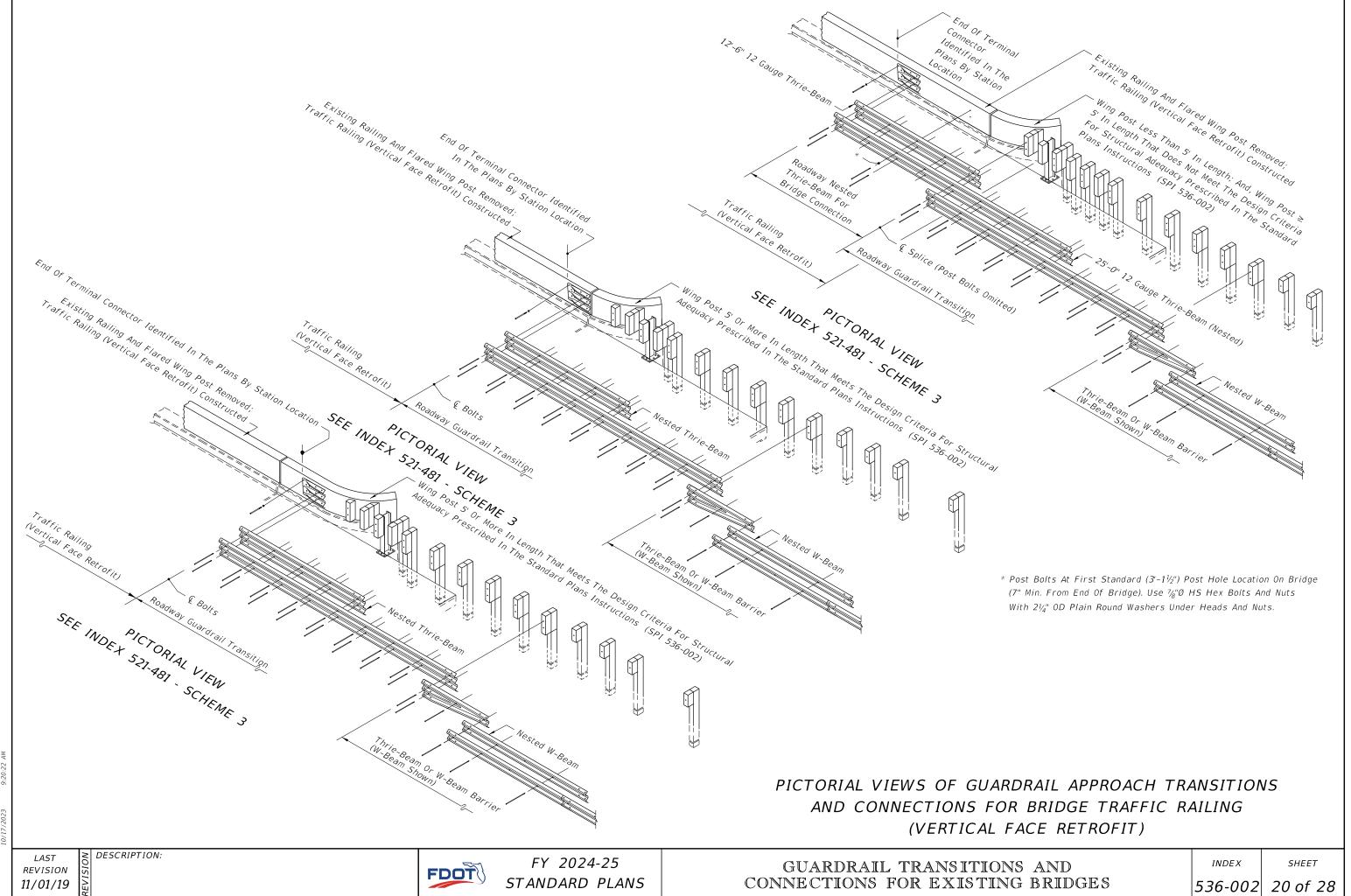
CONNECTIONS FOR EXISTING BRIDGES

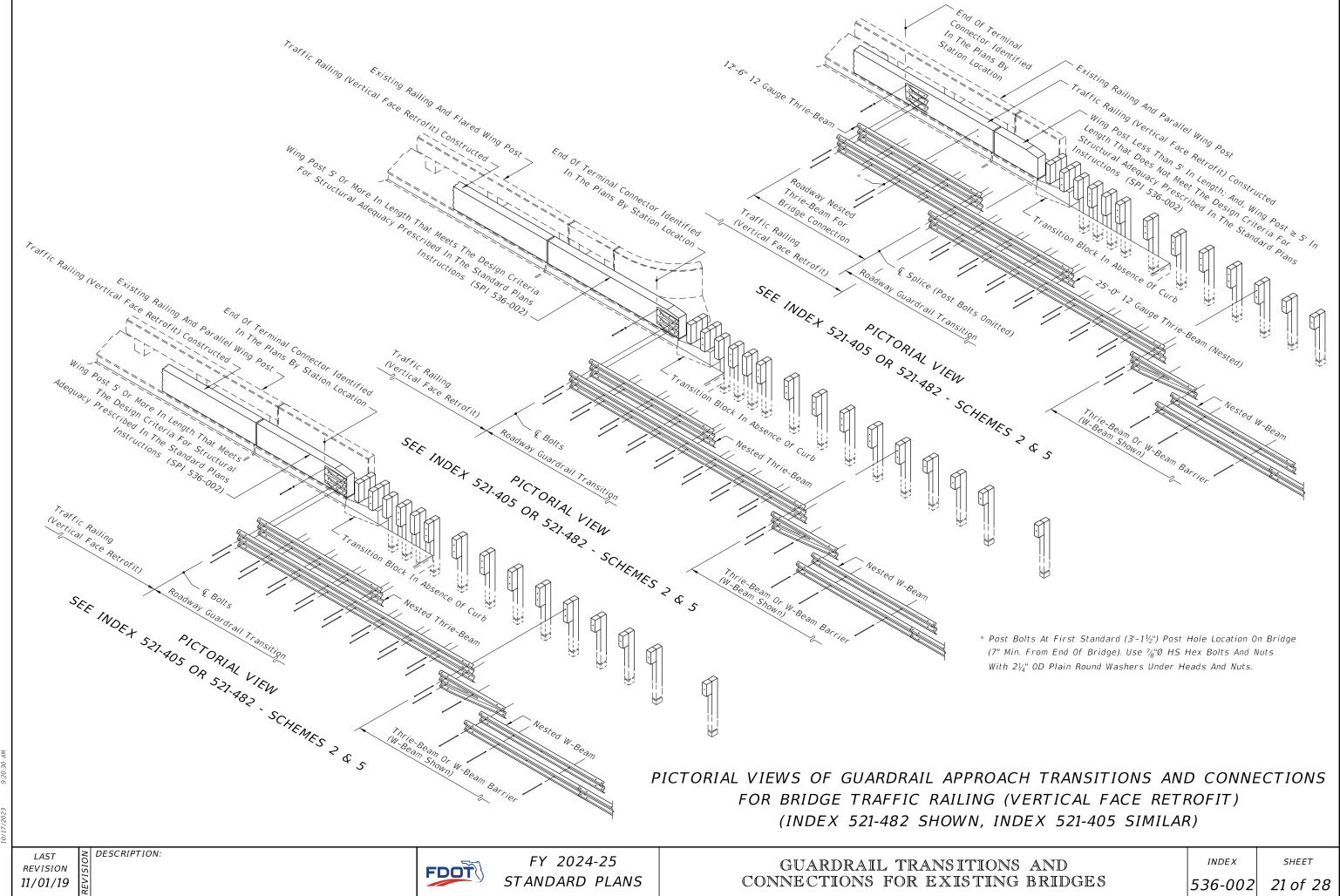
INDEX

SHEET

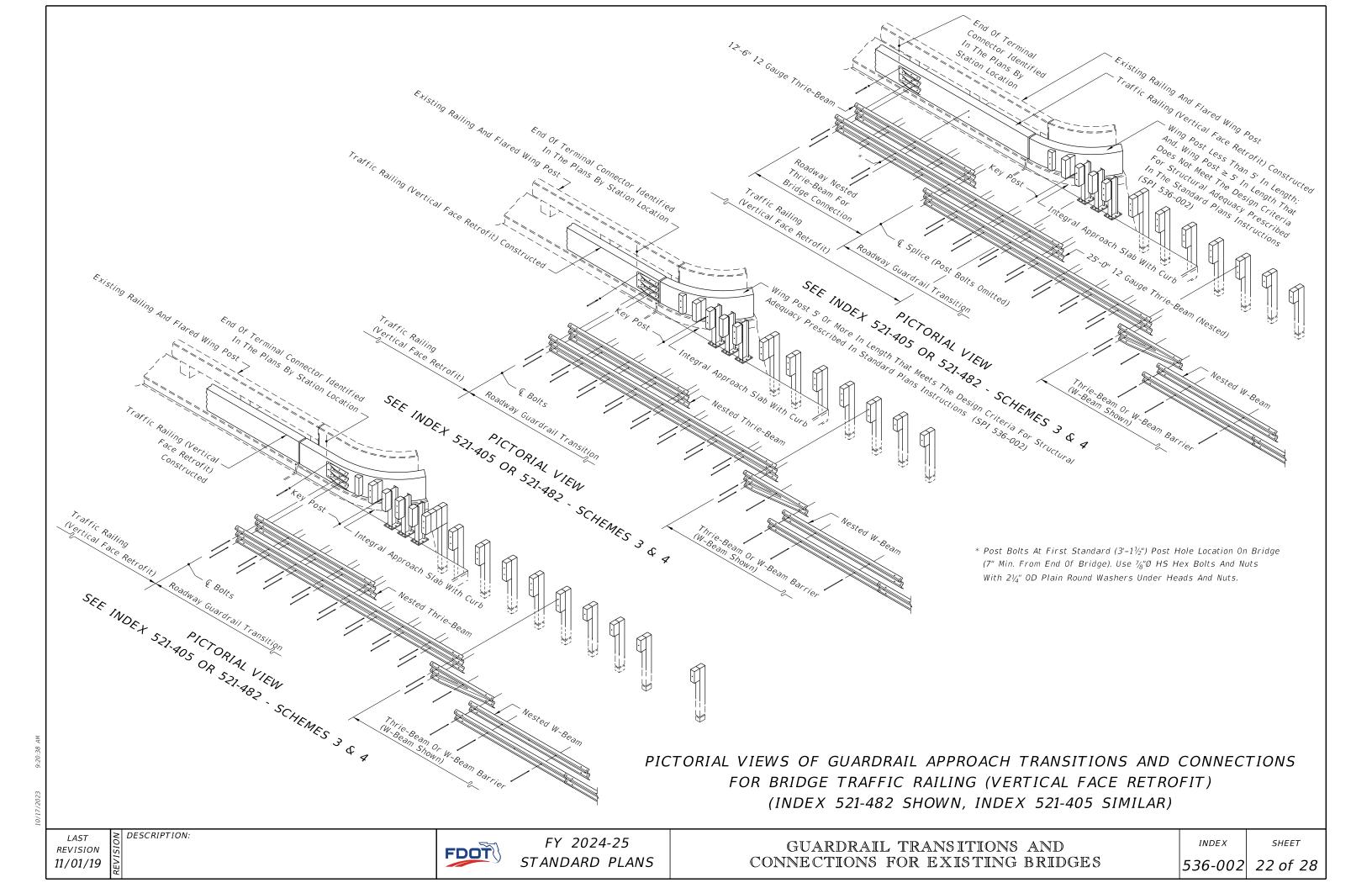
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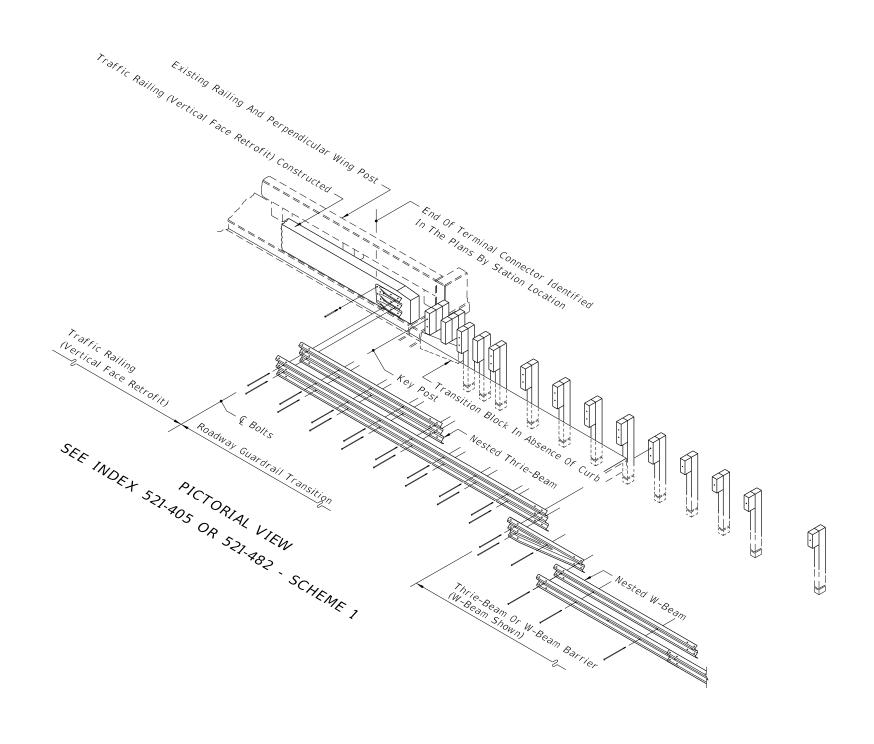






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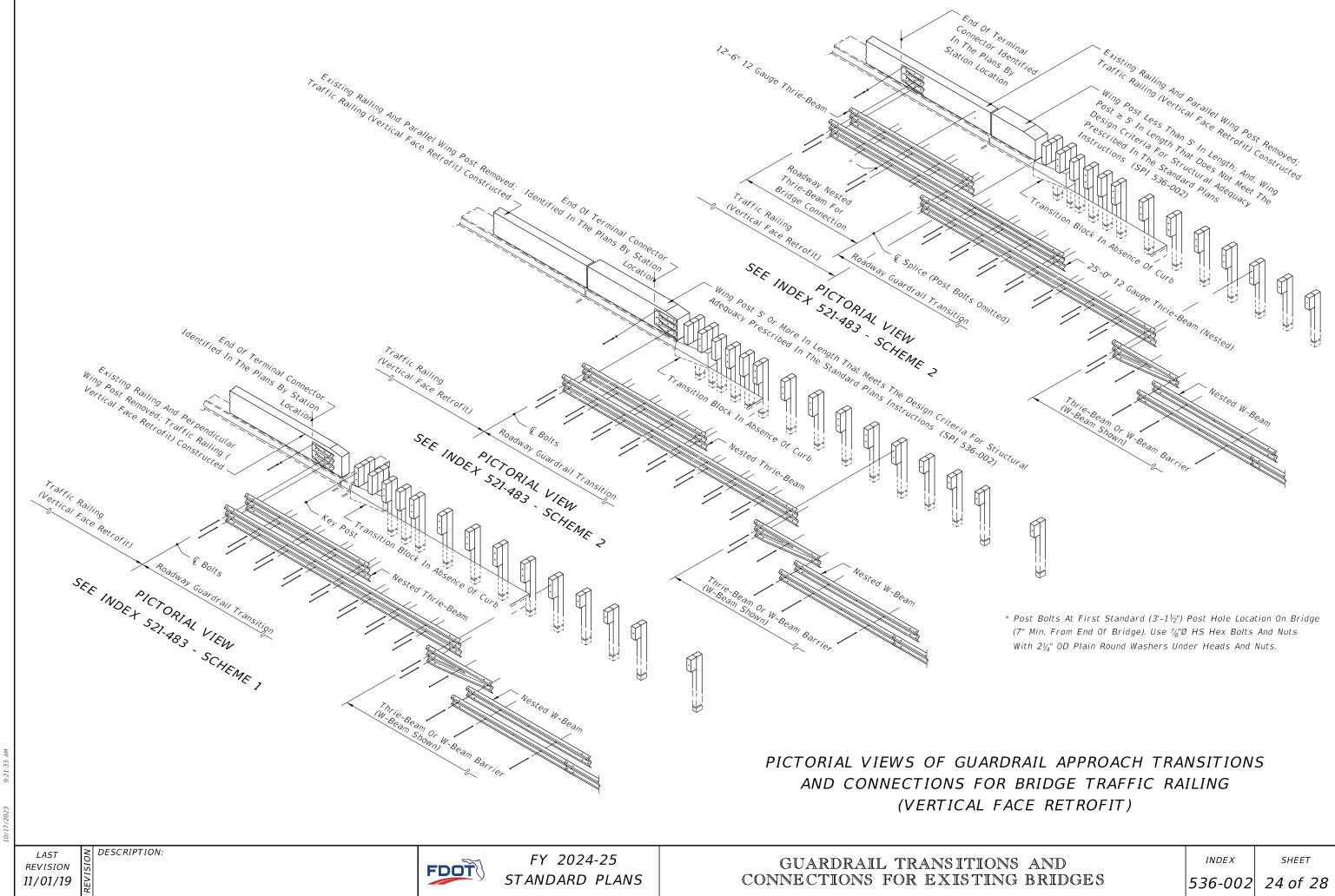


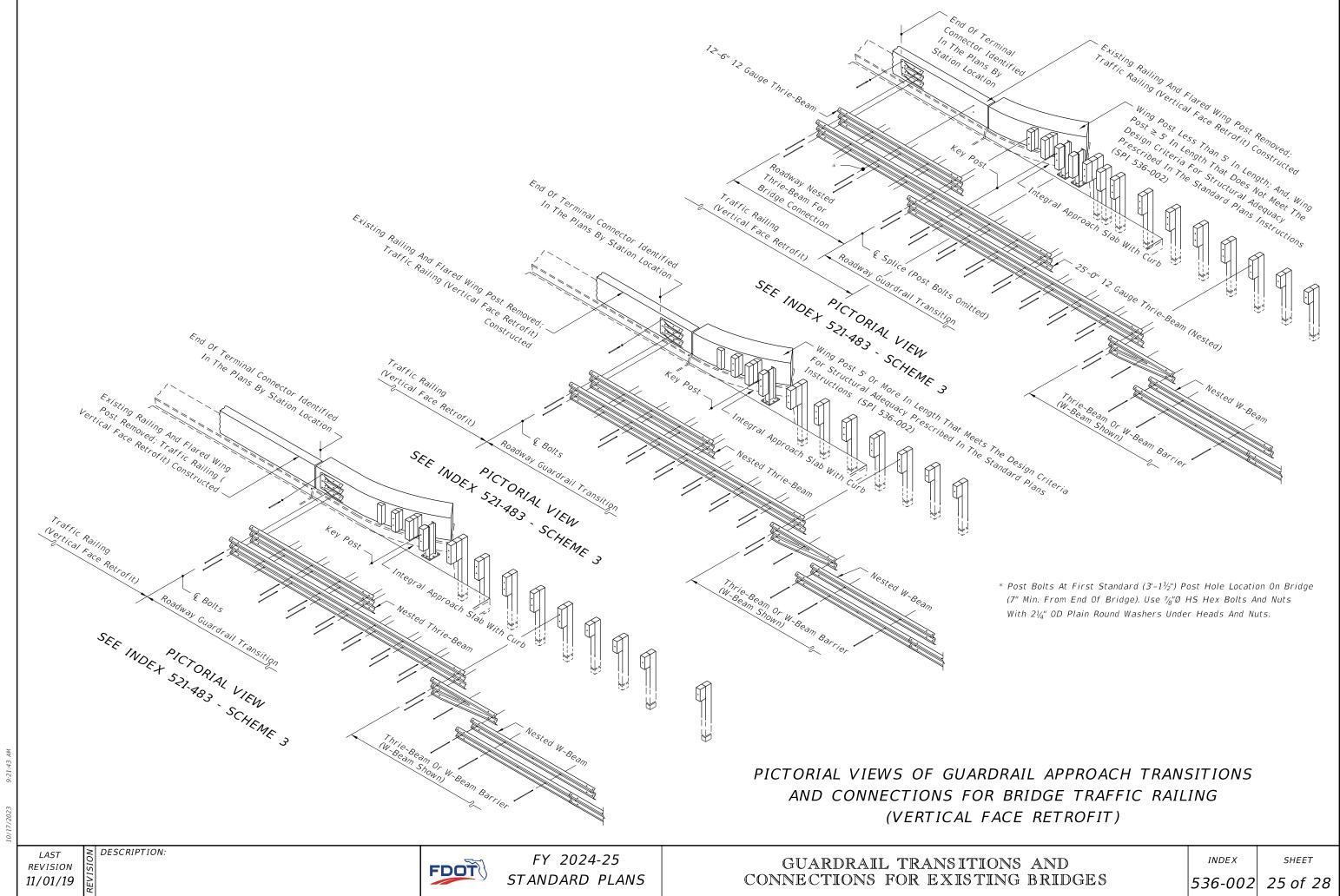
PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (VERTICAL FACE RETROFIT) (INDEX 521-482 SHOWN, INDEX 521-405 SIMILAR)

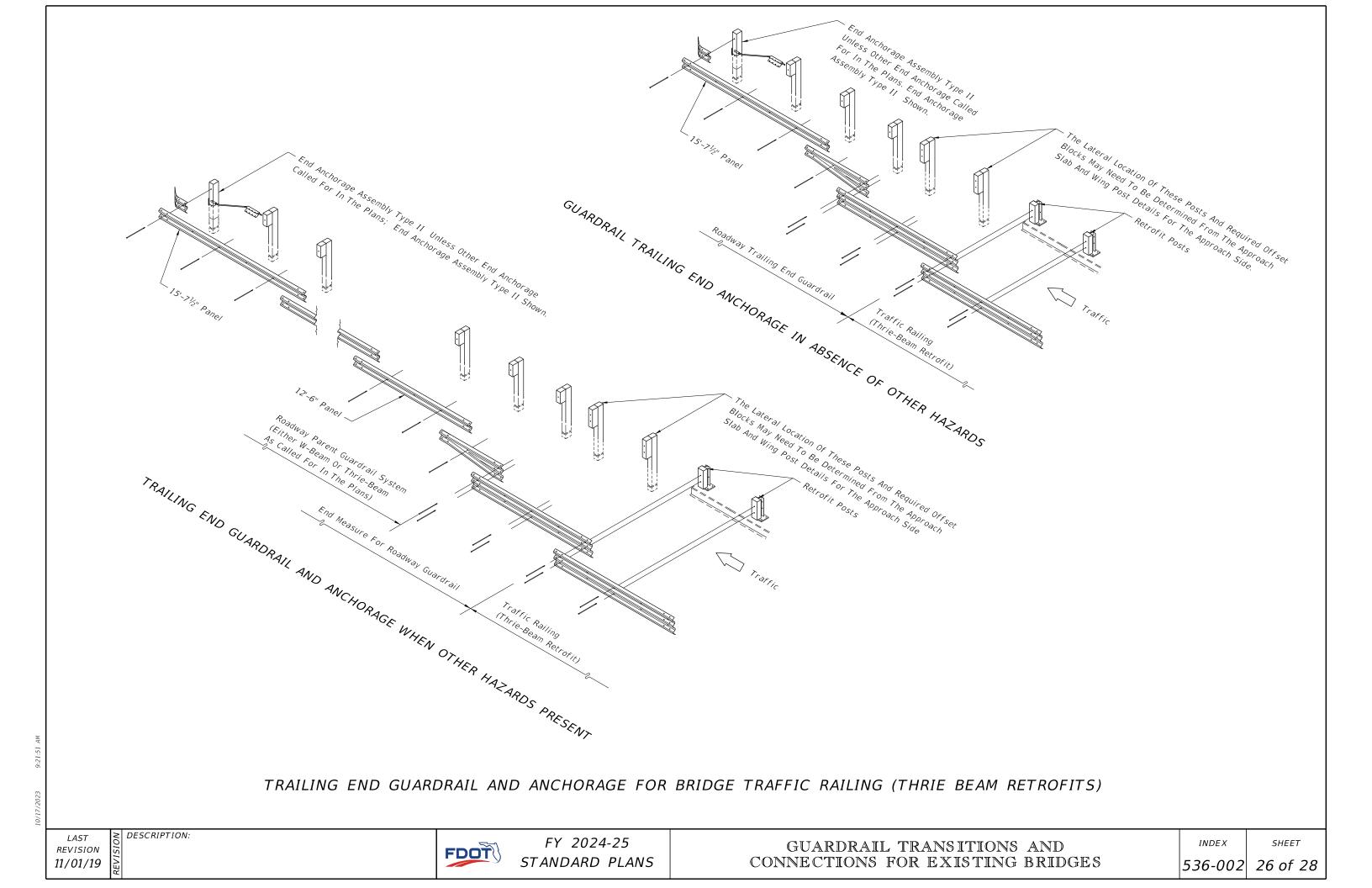
REVISION 11/01/19

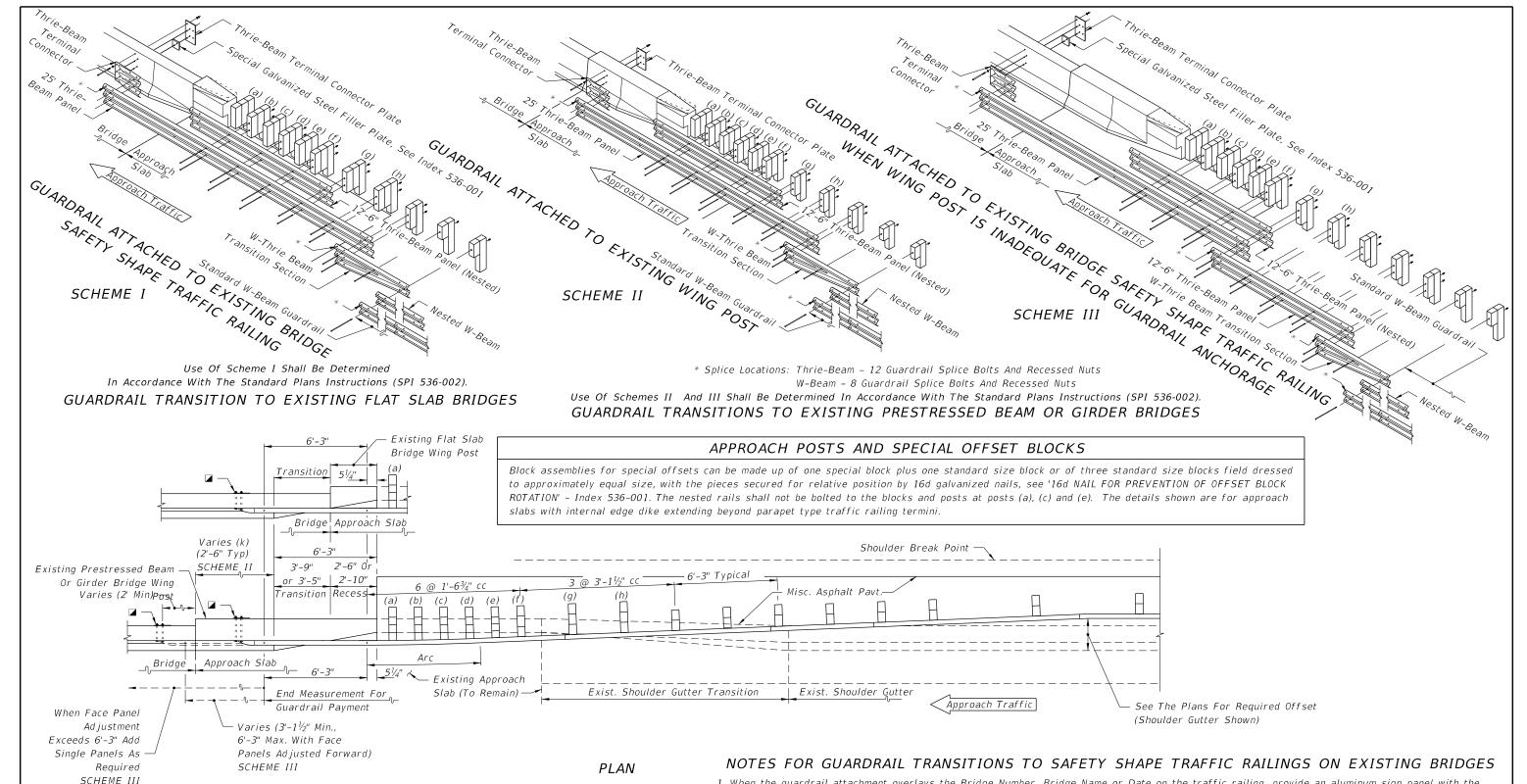
DESCRIPTION:











🖬 21"x12"x¾" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ¾"Ø x 18" Long [15" Long With 3½" Min. Thread Length For Bridge Safety Shape Railing] HS Hex Bolts And Nuts (5 Regd.) With 21/4" OD Plain Round Washers Under Heads And Nuts. [When Attaching Guardrail To Existing Wing Posts Or Bridge Rails, Care Should Be Exercised To Avoid Damaging Conduits And Their Utilities That May Be Routed Through Wing Posts Or Bridge Rails. When Conduits And Their Utilities Are Encountered, At Least Five $\frac{7}{8}$ " HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]

- 1. When the guardrail attachment overlays the Bridge Number, Bridge Name or Date on the traffic railing, provide an aluminum sign panel with the obscured information. Attach the sign panel to the face of the traffic railing adjacent to the Thrie-Beam Terminal Connector with 1/4"0 x 1" long concrete screws or expansion anchors at each corner, as approved by the Engineer. The sign panel shall be a minimum $\frac{1}{16}$ " thick and meet the requirements of Specification 700 with a white background and 3" tall black letters and sized appropriately to contain the information required. The cost of the sign panel shall be included in the cost of the Guardrail Bridge Anchorage Assembly.
- 2. When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction to be paid for under the contract unit price for Guardrail Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate(s) and bolts, nuts and washers.

GUARDRAIL APPROACH TRANSITION CONNECTIONS FOR EXISTING FLAT SLAB, PRESTRESSED BEAM AND GIRDER BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

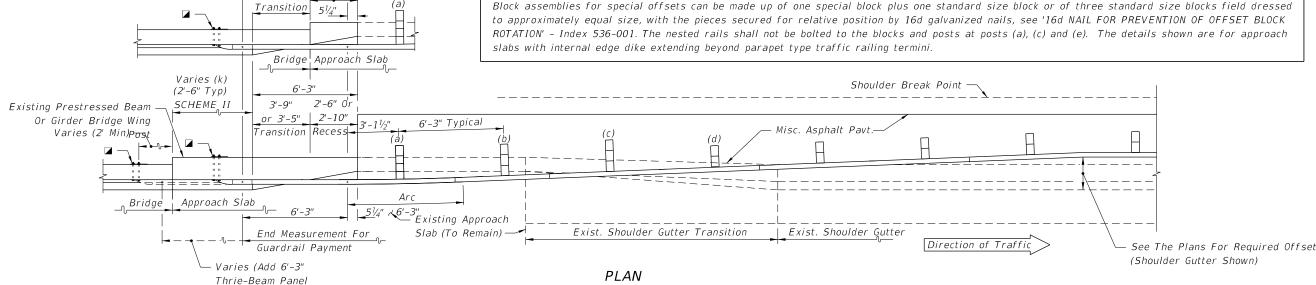
GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES INDEX

SHEET

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TRAILING END POSTS AND SPECIAL OFFSET BLOCKS

Block assemblies for special offsets can be made up of one special block plus one standard size block or of three standard size blocks field dressed to approximately equal size, with the pieces secured for relative position by 16d galvanized nails, see '16d NAIL FOR PREVENTION OF OFFSET BLOCK ROTATION' - Index 536-001. The nested rails shall not be bolted to the blocks and posts at posts (a), (c) and (e). The details shown are for approach slabs with internal edge dike extending beyond parapet type traffic railing termini.



🖬 21"x12"x¾" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ¾"Ø x 18" Long [15" Long With 3½" Min. Thread Length For Bridge Safety Shape Railing] HS Hex Bolts And Nuts (5 Reqd.) With $2\frac{1}{4}$ " OD Plain Round Washers Under Heads And Nuts. [When Attaching Guardrail To Existing Wing Posts Or Bridge Rails, Care Should Be Exercised To Avoid Damaging Conduits And Their Utilities That May Be Routed Through Wing Posts Or Bridge Rails. When Conduits And Their Utilities Are Encountered, At Least Five 1/8" HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]

if Read. to Extend to

Traffic Railing) SCHEME III

Bridge Wing Post

NOTES FOR GUARDRAIL TRANSITIONS TO SAFETY SHAPE TRAFFIC RAILINGS ON EXISTING BRIDGES

- 1. When the guardrail attachment overlays the Bridge Number, Bridge Name or Date on the traffic railing, provide an aluminum sign panel with the obscured information. Attach the sign panel to the face of the traffic railing adjacent to the Thrie-Beam Terminal Connector with ½"Ø x 1" long concrete screws or expansion anchors at each corner, as approved by the Engineer. The sign panel shall be a minimum $\frac{1}{16}$ " thick and meet the requirements of Specification 700 with a white background and 3" tall black letters and sized appropriately to contain the information required. The cost of the sign panel shall be included in the cost of the Guardrail Bridge Anchorage Assembly.
- 2. When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction to be paid for under the contract unit price for Guardrail Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate(s) and bolts, nuts and washers.

GUARDRAIL TRAILING END TRANSITION CONNECTIONS FOR EXISTING FLAT SLAB, PRESTRESSED BEAM AND GIRDER BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES INDEX

SHEET

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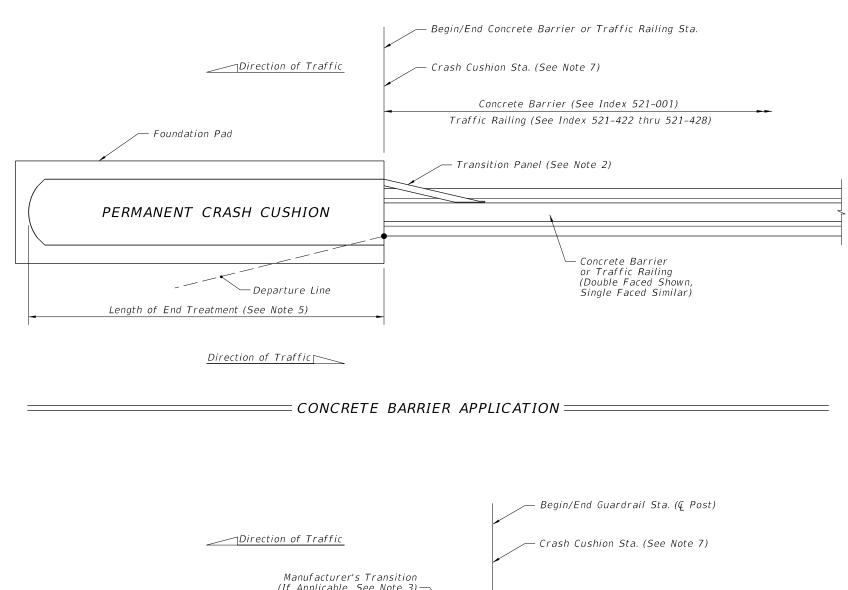
- 2. TRANSITION PANEL: Where crash cushions are placed between two-way traffic or adjacent to two-way two-lane traffic, place a Transition Panel from the Concrete Barrier to the Crash Cushion on the downstream side of the barrier end (as shown). Follow the requirements of the APL drawing.
- 3. MANUFACTURER'S TRANSITION: Construct the proprietary guardrail transition only if shown in the applicable APL drawing. See Note 4 below.
- 4. STANDARD GUARDRAIL TRANSITION: If the APL drawing does not provide a guardrail transition to w-beam guardrail, construct the Standard Guardrail Transition segment from thrie-beam to w-beam as shown per Sheet 2. This $21'-10^{1}$ /'' segment must remain parallel to the roadway.

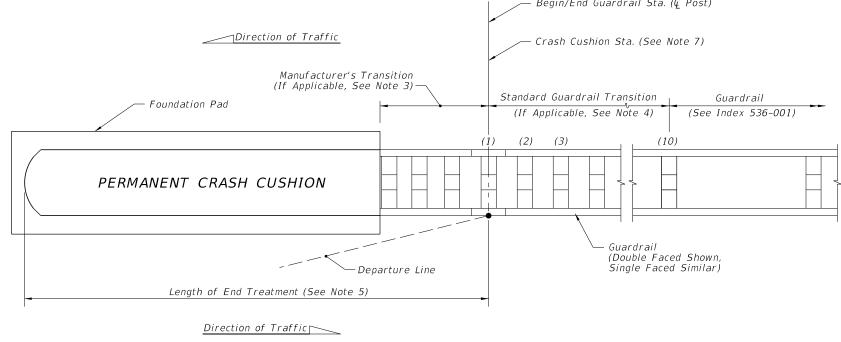
If the APL drawing does provide a guardrail transition to w-beam guardrail, replace the Standard Guardrail Transition segment with a w-beam guardrail segment at 6'-3'' post spacing, except that Post (10) will remain where shown herein if it is located at a guardrail begin or end taper station callout per the Plans. This $21'-10^{1/2}''$ segment must also remain parallel to the roadway.

5. LENGTH OF END TREATMENT: For Crash Cushions, the Length of End Treatment includes all proprietary elements of the design as shown in the APL drawing, including the manufacturer's transition of guardrail if applicable.

The actual Length of End Treatment varies per Crash Cushion type, but an estimated Length of End Treatment is generally shown in the Plans to provide sufficient space for the Contractor's option of differing Crash Cushion types.

- 6. LENGTH RESTRICTION: In the "Summary of Permanent Crash Cushions" table, if a value is provided in the Length Restriction column, then select a Crash Cushion from the APL which has a Length of End Treatment less than or equal to the value shown. If the table instead shows not applicable (N/A), then Crash Cushion selection is unrestricted regarding length.
- 7. CRASH CUSHION STATION: The Crash Cushion Station point shown herein corresponds to the station provided in the "Summary of Permanent Crash Cushions" table in the Plans.

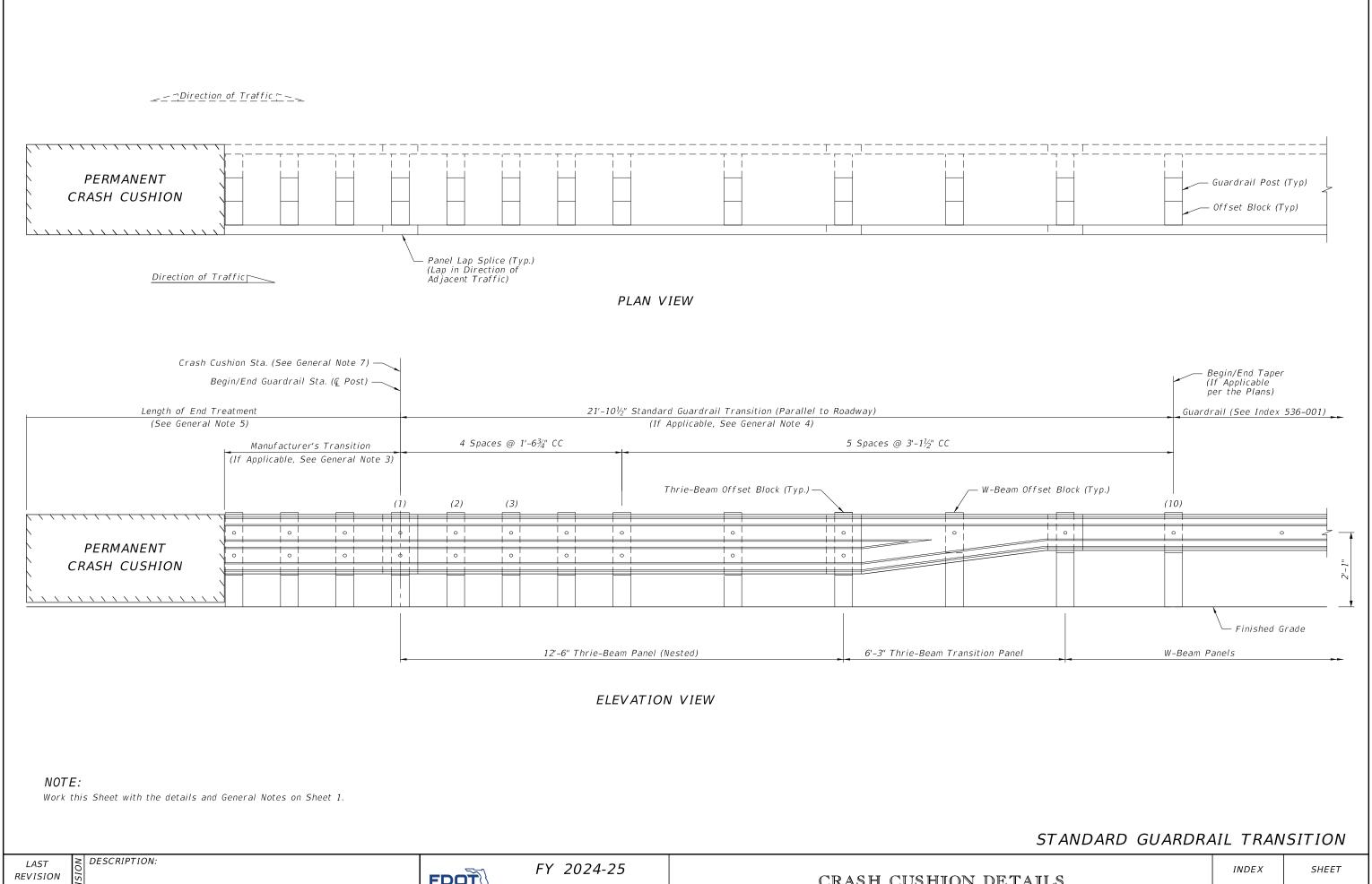




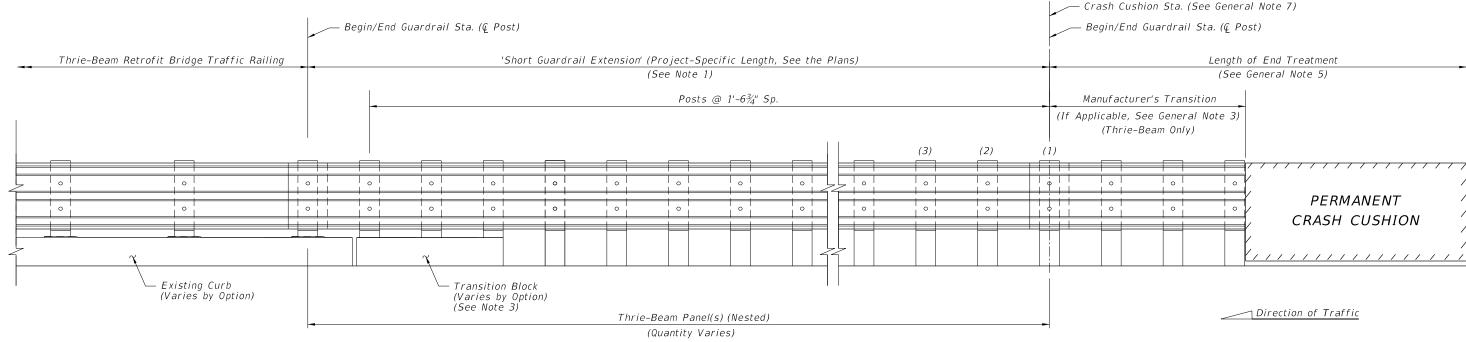
PERMANENT CRASH CUSHION APPLICATIONS

2/17/2023

= $GUARDRAIL\:\:APPLICATION$ =



11/01/19



ELEVATION - CONNECTION TO THRIE-BEAM RETROFIT (See Note 3)

NOTES:

1. GENERAL: Work this Sheet with the details and General Notes on Sheet 1.

Install short guardrail extension only where called for in the plans, using the project-specific length specified. Short guardrail extensions are typically used where adding length to a barrier system is warranted, but a full Approach Transition Connection to Rigid Barrier will not fit.

- 2. CONNECTION TO CONCRETE TRAFFIC RAILING: See Index 536-001 for connection details to rigid barrier, including the Thrie-Beam Terminal Connector and Alignment Curb details. Install the Alignment Curb section with no curb transition, and extend the curb to the crash cushion as shown. The crash cushion must laterally extend beyond the above-ground portion of the alignment curb to shield its end face from approaching traffic.
- 3. CONNECTION TO THRIE-BEAM RETROFIT: Provide Thrie-Beam Retrofit guardrail connection splice, curb, and Transition Block per Index 536-002 and the applicable Index 460-470 series.

ADDITIONAL BRIDGE CONNECTION OPTIONS SHORT GUARDRAIL EXTENSIONS

REVISION 11/01/19

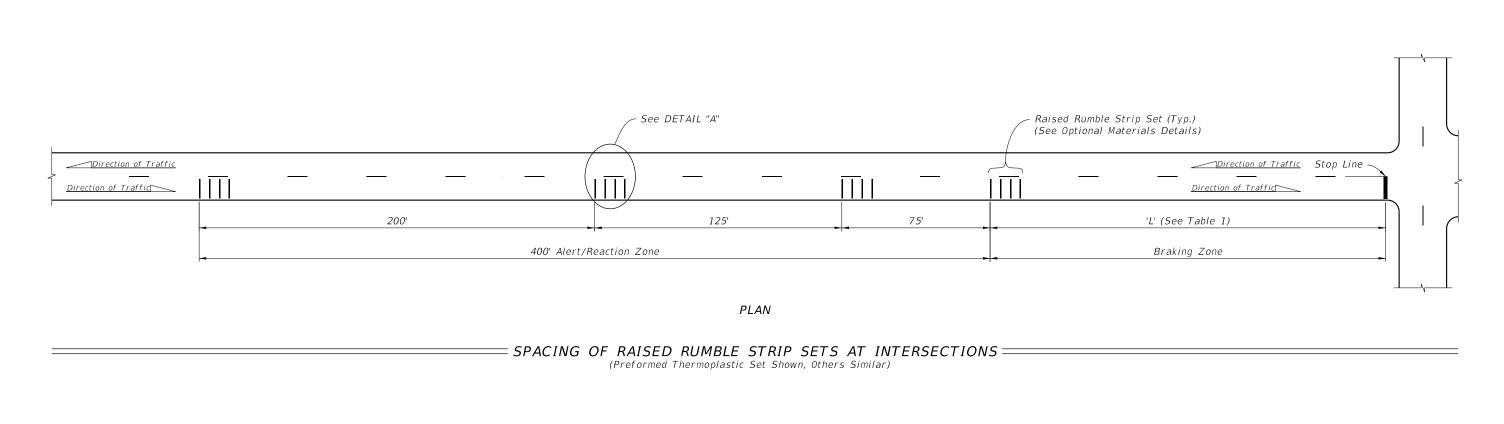
DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

INDEX 544-001

SHEET 3 of 3



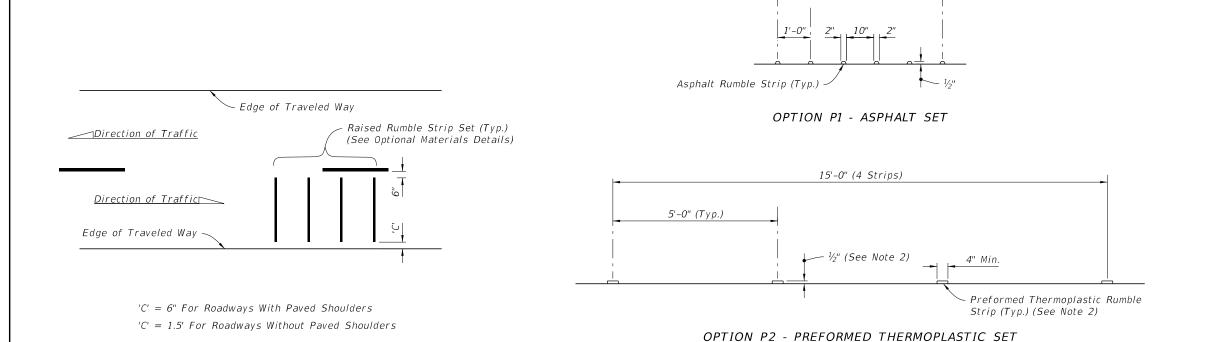


TABLE 1 - BF	RAKING ZONE							
Posted	12'							
Speed								
(mph)	(Feet)							
≤ 30	150							
35	200							
40	250							
45	300							
50	350							
55	410							
60	470							
65	550							

NOTES:

- 1. Construct permanent raised rumble strips where shown in the Plans and in accordance with Specification 546.
- 2. Use color white for preformed thermoplastic rumble strips.

= OPTIONAL MATERIALS DETAILS =

5'-0" (6 Strips)

PERMANENT RAISED RUMBLE STRIPS

REVISION 11/01/23

DESCRIPTION:

DETAIL "A"

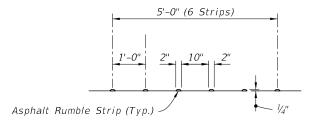
FY 2024-25 STANDARD PLANS

RAISED RUMBLE STRIPS

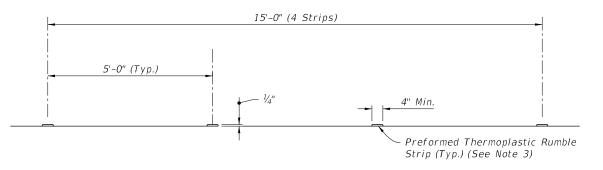
INDEX SHEET 1 of 2

FDOT

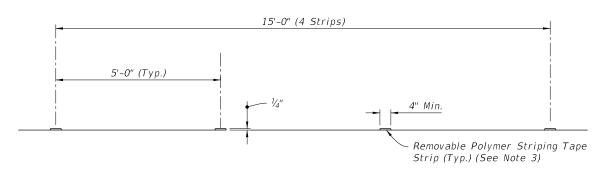
546-001



OPTION ST1 - ASPHALT SET



OPTION ST2 - PREFORMED THERMOPLASTIC SET



OPTION ST3 - REMOVABLE POLYMER STRIPING TAPE SET

= OPTIONAL MATERIALS DETAILS =

NOTES:

- 1. Construct short-term raised rumble strips where noted in the Plans and in accordance with Specification 546.
- 2. See Sheet 1 for placement and additional details.
- 3. Use color white for Preformed Thermoplastic and Removable Polymer Striping Tape Sets.

SHORT-TERM RAISED RUMBLE STRIPS

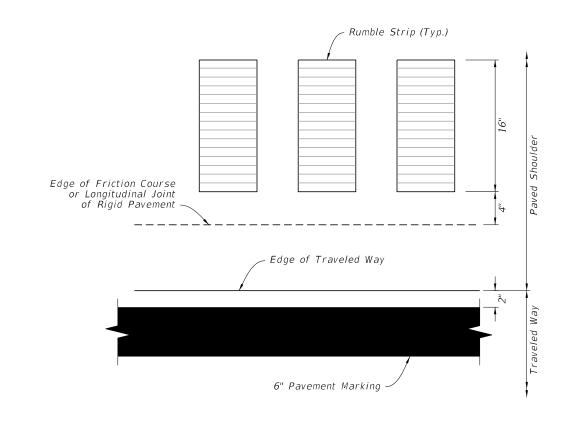
≥ DESCRIPTION: REVISION 04/23/18

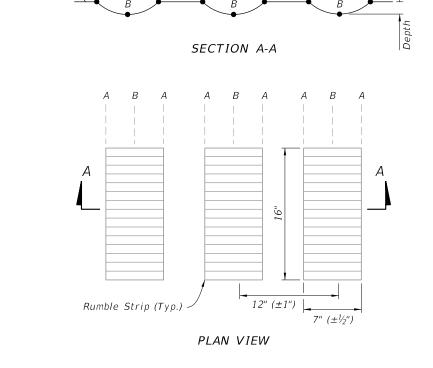
FDOT

RUMBLE STR	RIP DEPTH TABLE
LOCATION	DEPTH FROM SURFACE (IN.)
Α	0
В	% (±½)

NOTES:

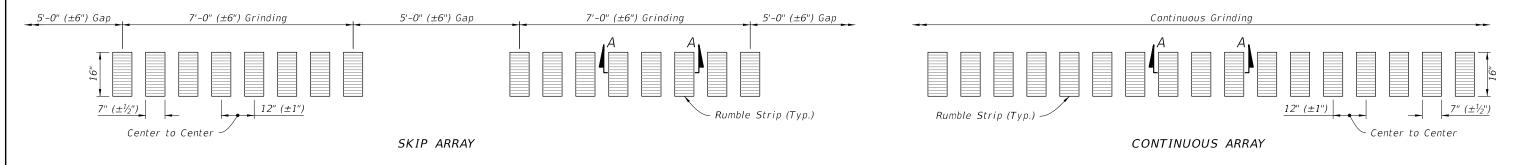
- 1. When friction course extends more than 8" beyond the edge of the traveled way, blade off the extended friction course to the 8" line prior to rumble strip grinding.
- 2. Use the continuous array on both inside and outside shoulders 1,000 feet in advance of bridge ends or back to the gore recovery area for mainline interchange bridges. Use the skip array for all other locations.
- 3. Exclude rumble strips at the following locations:
- A. At mainline tolling areas, terminate rumble strips at the end of the mainline normal section.
- B. At All Electronic Tolling (AET) facilities, terminate rumble strips within 50 feet of the centerline of the overhead gantry.
- C. On outside shoulders of entrance ramp terminals, terminate rumble strips at the point of the physical gore and resume at the end of the acceleration lane taper.
- D. On outside shoulders of exit ramp terminals, terminate rumble strips at the start of the deceleration lane taper and resume at the point of the physical gore.
- E. On approaches to bridges, terminate rumble strips at the approach slab joint.





RUMBLE STRIP PLACEMENT (Plan View)

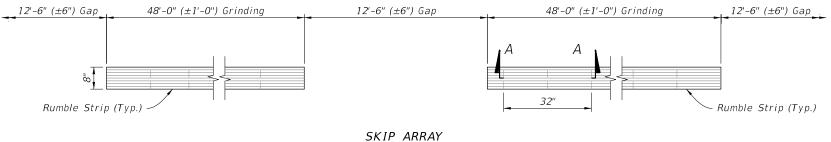
RUMBLE STRIP DETAILS



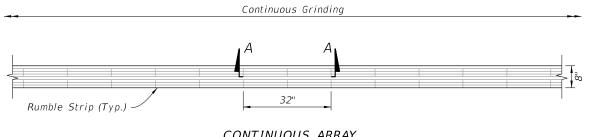
= RUMBLE STRIP ARRAY DETAILS =

REVISION 11/01/22

DESCRIPTION:



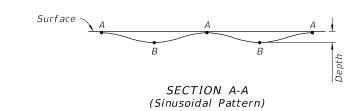


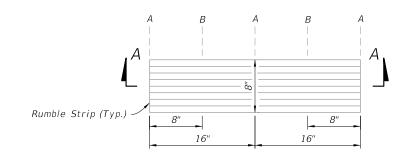


(Plan View)	

TABLE 1	
SKIP AND CONTINUOUS ARRAY APPLIC	ATIONS
Rumble Strip Placement	Array
Outside Shoulder with Buffered Bike Lane	Skip
Outside Paved Shoulder Width Greater than or Equal to 5'-0"	Skip
Outside Paved Shoulder Width Greater than O'-O" and Less Than 5'-O"	Skip
Outside Paved Shoulder Equal to 0'-0"	Skip
Inside Paved Shoulder Width Greater Than or Equal to 1'-0"	Continuous
Inside Paved Shoulder Width Greater Than O'-O" and Less Than 1'-O"	Skip
Inside Paved Shoulder Width Equal to 0'-0"	Skip
One - Direction Passing Centerline	Continuous (See Note 3)
Two - Direction Passing Centerline	Continuous (See Note 3)
Two - Direction No-Passing Centerline	Continuous

TABLE 2 RUMBLE STRIP DEPTH (Depth Tolerance = $\pm \frac{1}{16}$) DEPTH FROM LOCATION SURFACE (IN.) В %





= RUMBLE STRIP DETAILS ====

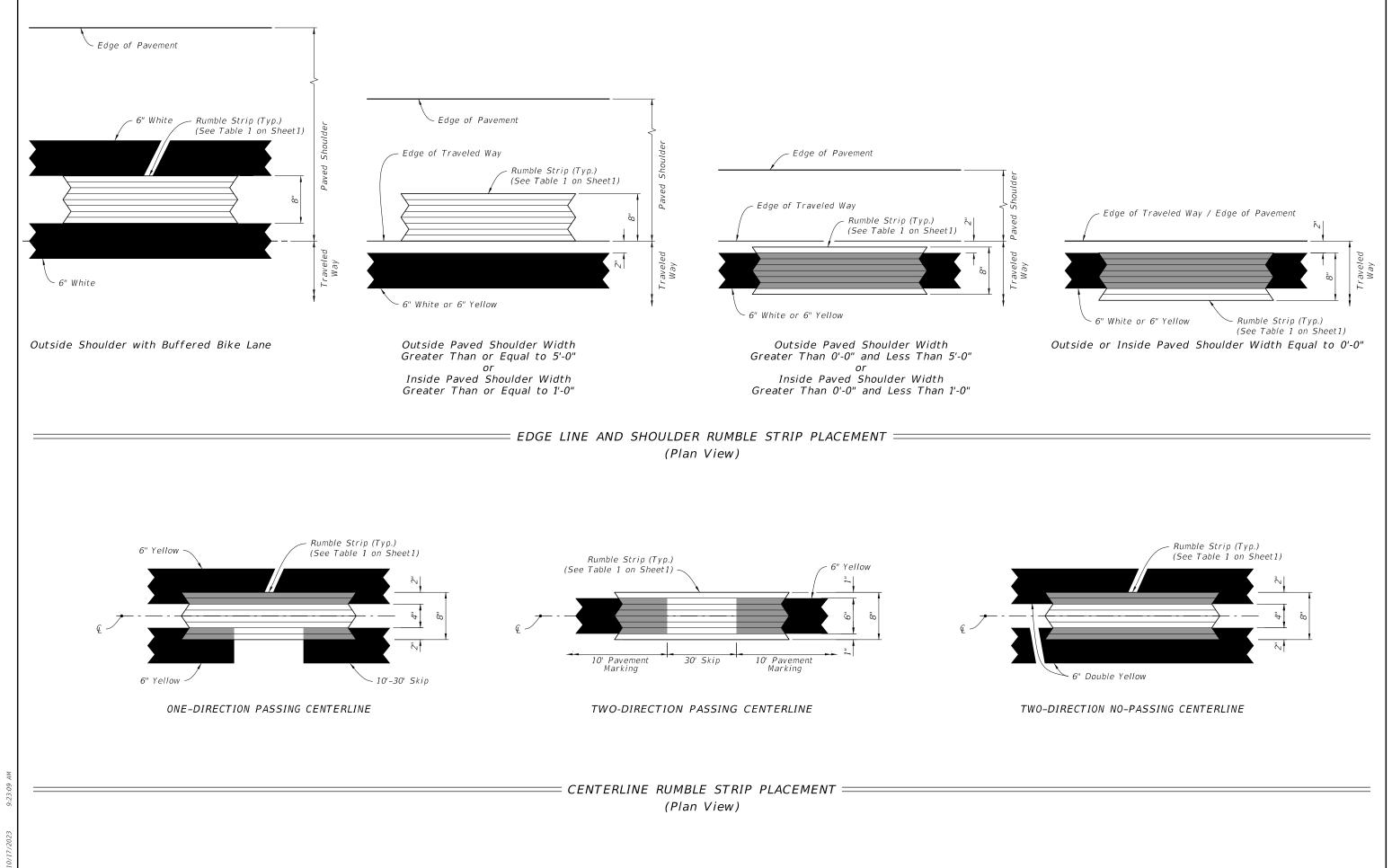
PLAN VIEW

= RUMBLE STRIP ARRAY DETAILS ==

GENERAL NOTES:

- 1. Straightness tolerance of ground-in rumble strips in the roadway longitudinal direction is plus or minus 1/2".
- 2. At intersections and major driveways:
 - A. Terminate outside shoulder rumble strips at the radius return.
 - B. Terminate median shoulder rumble strips at the radial return of median nose.
 - C. Terminate centerline rumble strips on undivided highways at the termination of centerline striping.
 - D. Terminate rumble strips at auxiliary lane tapers.
- 3. For Centerlines in passing zones, provide 2 foot gaps in the continuous array spaced at 40 feet and centered on RPM locations.

DESCRIPTION:



REVISION

11/01/22

DESCRIPTION:

FDOT

546-020

SOIL PARAMETERS:

- 1. See Wall Control Drawings for soil characteristics of foundation material to be used in the design of the wall system.
- 2. The Contractor will provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site.

1. See Specification Section 548 for material requirements.

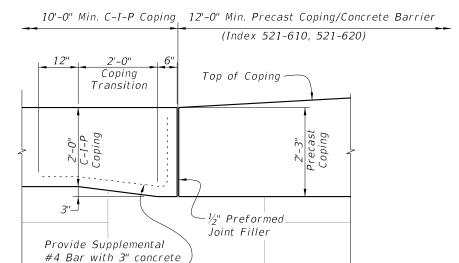
CONSTRUCTION:

- 1. Walls will be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
- 2. For location and alignment of retaining walls, see Wall Control Drawings.
- 3. If required, locate manholes and drop inlets as shown on wall elevations.
- 4. Refer to Wall Control Drawings of individual walls for minimum reinforcement strip/mesh length, factored bearing resistance's, minimum wall embedment and anticipated long term and differential settlements.
- 5. The Contractor is responsible for controlling water during storm events as needed during construction.
- 6. It is the Contractor's responsibility to determine the location of any quardrail posts behind retaining wall panels. Prior to placement of the top layer of soil reinforcement, individual reinforcing strips/mesh may be skewed (15° maximum) to avoid the post locations if authorized by the Engineer. No cutting of soil reinforcement is allowed unless shown on Shop Drawings and approved by the Engineer. Any damage done to the soil reinforcement due to installation of the quardrail will be repaired by the Contractor at the Contractor's expense. Repair method will be approved by the Engineer.
- 7. If existing or future structures, pipes, foundations or guardrail posts within the reinforced soil volume interfere with the normal placement of soil reinforcement and specific directions have not been provided on the plans, the Contractor will notify the Engineer to determine what course of action shall be taken.
- The Contractor is responsible for gradually displacing upper layer(s) of soil reinforcement downward (15° maximum from horizontal) to avoid cutting soil reinforcement and conflicts with paving and subgrade preparation. The Contractor's attention is directed especially to situations where roadway superelevation and/or soil mixing are anticipated.
- 9. For concrete facing panel surface treatment, see Wall Control Drawings. Extend surface treatment a minimum of 6" below final ground line.
- 10. Drive piles located within the soil volume prior to construction of the retaining wall, unless a method to protect the structure, acceptable to both the Engineer and Wall Company, is proposed and approved in writing. The portion of piles or drilled shafts extensions within the soil volume will be wrapped with polyethylene sheeting in accordance with Specification Section 459
- 11. A structural extension of the connection of the retaining wall panel to soil reinforcement will be used whenever necessary to avoid cutting or excessive skewing (greater than 15°) of the soil reinforcement around obstructions (i.e., piles, pipes, manholes, drop inlets, etc.).
- 12. Steps in leveling pads will occur at MSE Wall panel interfaces. Panels will not cantilever more than 2" past the end of the upper tier leveling pad.
- 13. The top of the leveling pad or footing will be 2'-0" minimum below final ground line.
- 14. Top of leveling pad elevations shown in the Wall Control Drawings are maximum elevations. The constructed leveling pad elevations may be deeper based on the panel layout shown in the shop drawings.
- 15. The height of panels in the bottom course of MSE Walls must not be less than half the height of a standard panel.
- 16. Work this Index with Index 521-600 thru 521-650.

DESCRIPTION:

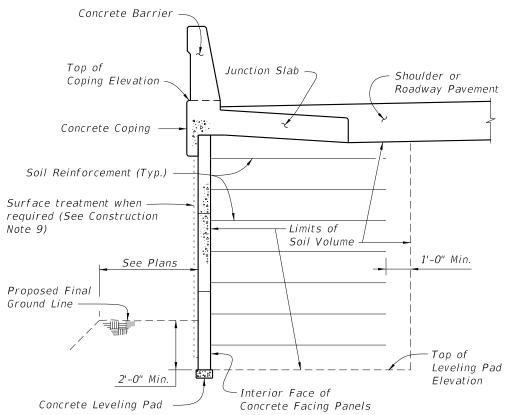
SHOP DRAWINGS:

See Specification Section 548 for shop drawing requirements.



ELEVATION VIEW OF COPING HEIGHT TRANSITION

cover



TYPICAL MSE RETAINING WALL SECTION WITH A CONCRETE BARRIER (Showing Limits of the Reinforced Soil Volume)

		FD	OT MSE	RETAINI	NG WALL	CLASSI	FICATION TAI	BLE							
Applicable		ility Requir n-Steel Rein			ity Require P Reinforcin		Soil	Other Allowable FDOT Wall Types							
FDOT Wall	Concrete	Concrete	Pozzolan	Concrete	ncrete Concrete Pozzolan		Concrete Concrete Pozzolan i		Reinforcement						
Type *	Cover	Class	Additions?	Cover	Class	Additions?	Туре	2A	2B	2C	2D	2E	2F		
	(in.)	for Panels	**	(in.)	for Panels	**									
Type 2A	2	II	No	1.5	II	No	Metal		1	1	/	1	/		
Type 2B	2	IV	No	1.5	IV	No	Metal			1	1	/	1		
Type 2C	3	IV	No	1.5	IV	No	Metal				1	/	1		
Type 2D	3	IV	Yes	2	IV	No	Metal						/		
Type 2E	3	IV	No	2	IV	No	Plastic						1		
Type 2F	3	IV	Yes	2	IV	No	Plastic								

- * See Data Table in Contract Plans.
- ** Highly Reactive Pozzolans.

GENERAL NOTES AND DETAILS

LAST REVISION 11/01/21



SHEET 1 of 1

DESIGN CRITERIA:

- 1. Design is based on the assumption that the material contained within the reinforced soil volume, methods of construction and quality of prefabricated materials are in accordance with Specification Section 548 and FDOT Structures Design Guidelines Section 3.13.2.
- 2. It is the responsibility of the Engineer to determine that the factored bearing pressure shown for the wall does not exceed the factored bearing resistance of the foundation for that specific wall location.
- 3. The Wall Company is responsible for internal stability of the wall. External stability design, including foundation and slope stability, is the responsibility of the Engineer.
- 4. If present, consider in design and analysis and locate manholes and drop inlets as shown on wall elevations.

SOIL PARAMETERS:

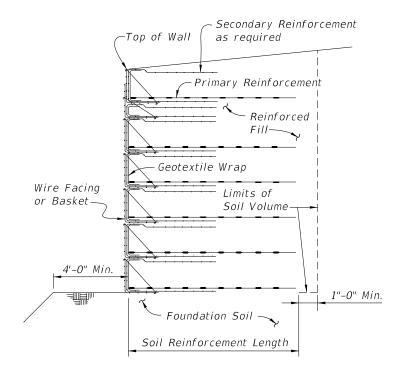
1. See wall control drawings for soil characteristics of foundation material to be used in the design of the wall system. The Contractor must provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site. Provide the values of unit weight, cohesion and internal friction angle in the Shop Drawings.

MATERIALS:

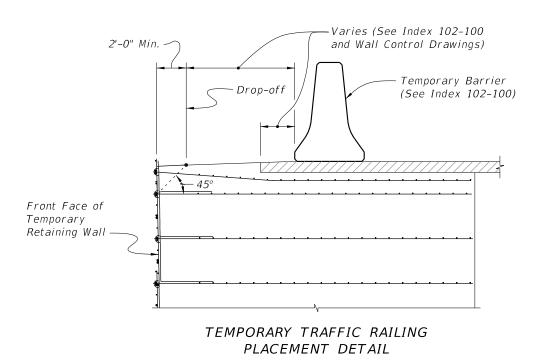
- 1. Provide soil reinforcement in accordance with Specification Section 548.
- 2. For additional material notes, see Wall Company General Notes.

CONSTRUCTION:

- 1. Walls must be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
- 2. For location and alignment of retaining walls, see Wall Control Drawings.
- 3. Refer to Plan and Elevation sheets of individual walls for minimum reinforcement strip/mesh length, factored bearing resistance's, minimum wall embedment and anticipated long term and differential settlements.
- 4. If existing or future structures, pipes, foundations or quardrail posts within the reinforced soil volume interfere with the normal placement of soil reinforcement and specific directions have not been provided on the plans, the Contractor must notify the Engineer to determine what course of action should be taken.
- 5. The Contractor is responsible for gradually deflecting upper layer(s) of soil reinforcement downward (15° maximum from horizontal) to avoid cutting soil reinforcement and conflicts with paving and subgrade preparation. The Contractor's attention is directed especially to situations where roadway superelevation and/or soil mixing are anticipated.



TYPICAL RETAINING WALL SECTION (Showing Limits of the Reinforced Soil Volume)



GENERAL NOTES AND DETAILS

REVISION 11/01/17

DESCRIPTION:



GENERAL NOTES:

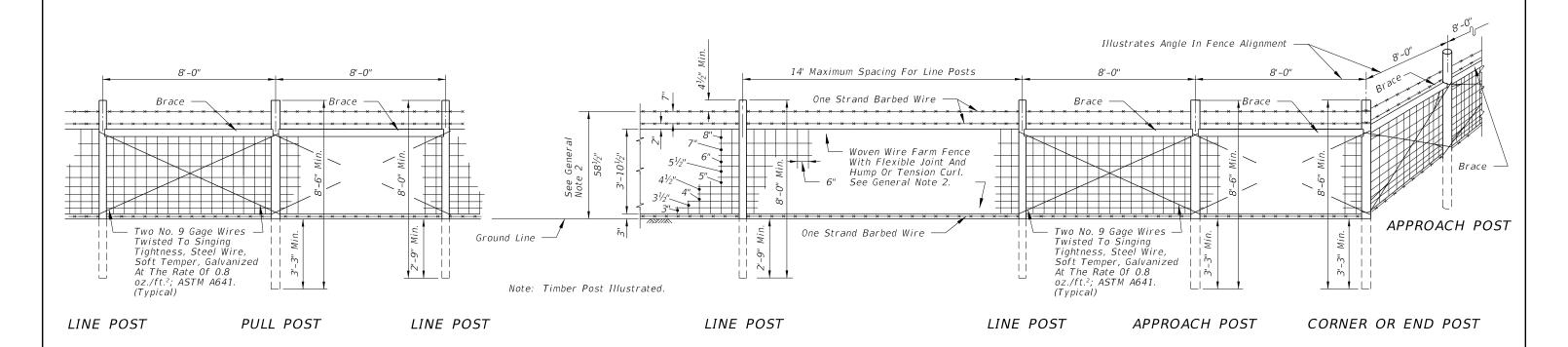
- 1. This fence to be provided generally in rural areas. For supplemental information see Specifications 550.
- 2. Fabric shall be woven wire, either galvanized steel, meeting the requirements of ASTM A116, No. 9 Grade 60, Design Number 1047-6-9, with Class 3 zinc coating; No. 12 ½ Grade 175, Design Number 1047-6-12 ½, with a 10 ½ gage top and bottom wire and with Class 3 zinc coating; or aluminum coated steel, meeting the requirements of ASTM A584, No. 9 Farm, Design Number 1047-6-9, with a minimum coating weight of 0.40 oz./ft.². For additional information see payment note below.
- 3. Fence shall be installed with wire side to private property except on horizontal curves greater than 3° the fence shall be installed so as to pull against all posts.
- 4. Posts may be either timber, steel, recycled plastic or concrete. Unless a specific post material is called for in the plans, the Contractor may elect to use either a single material or a combination of timber, steel, recycled plastic or concrete materials, but must comply with the electrical grounding requirements in Specification 550. Line posts of one material may be used with corner, pull and end post assemblies of a different material. Line posts of only one optional material and pull post assemblies of only one optional material will be permitted between corner and end post assemblies. Within individual corner and end post assemblies only one optional material will be permitted.
- 5. Timber posts shall meet the material requirements of Specification 954. Timber line posts are to be minimum 4" diameter. Timber corner, pull, approach and end posts are to be a minimum 5" diameter. Timber braces are to be minimum 4" diameter.

 - (B) Connections between timber posts and braces to be provided by dowels as shown in fastener details.
 - (C) Wire to be wrapped and tied, as shown in the splice details, at the following locations:
 - (a) All end posts, (b) Corner post, including the assemblies at vertical breaks of 15° or more and (c) Pull posts where the wire is not spliced and pulled through the assembly; see General Note 18.
- 6. Steel posts and braces shall be standard steel posts, galvanized at the rate of 2 oz./ft.², together with necessary hardware and wire clamps and meeting the following requirements:
 - (A) Line posts: 8' long; 1.33 lbs./ft.; hot rolled studded; anchor plate attached, ASTM A702 (18 in.2).
 - (B) Approach posts: $2^{1/2}$ " $x^{2^{1/2}}$ " $x^{2^{1/2}}$ " angles, 8' long; fabricated for attaching brace; with necessary hardware, clamps, etc.
 - (C) Pull, end and corner posts: $2\frac{1}{2}$ "x $2\frac{1}{2}$ "x $\frac{1}{4}$ " angles, 8' long; fabricated for attaching brace; with necessary hardware, clamps, etc.
 - (D) Braces: $2''x2''x^{1/4}''$ angles with necessary hardware and fabricated for attaching to post.
 - (E) The pull, corner, approach and end posts are to be set in concrete as per detail. (Also see General Note 15)
- 7. Recycled plastic posts shall meet the following material requirements: Line posts shall have a minimum section of 4" round or 4" square. Plastic posts shall not be used as corner, pull, end or approach posts unless such use is specifically detailed in the plans. The straightness of the post shall comply with Specification 954 for timber post. The flexural strength shall meet the requirements of the latest edition of the Southern Pine Inspection Bureau's Standard Grading Rules for Southern Pine Lumber for No. 2SR Stress Rated Grade Timber. Plastic posts can be set by either digging and tamped backfill or by driving into full depth preformed holes \(\frac{1}{2} \)" to \(\frac{1}{2} \)" smaller than cross section of post.
 - Staples for fabric and barbed wire connection to plastic line posts shall be the same size, count and location as that for timber posts.
- 8. The Contractor, at his option, may use any suitable precast or prestressed concrete posts; however, approval by the Engineer, of posts not shown on this index, will be required prior to construction of the fence. Precast posts shall be Class II concrete. Prestressed posts shall be Class III concrete. Lengths of concrete post to be as indicated for timber posts.
- 9. Aluminum post, braces and accessory framing hardware shall not be used unless the plans specifically detail their application or the Engineer specifically approves their incorporation in fence construction or repair. Aluminum framed gates are permitted as described in General Note 19.

- 10. The woven wire shall be attached to steel and concrete posts by a minimum of five tie wires. The single wire ties shall be applied to the top, bottom and three intermittent line wires. The ends of each tie wire shall have a minimum of two tight turns around the line wire. Tie wires shall be steel wire not less than 0.120" diameter, zinc coating Class 3, soft temper, in accordance with ASTM A641.
- 11. Steel Barbed Wire can be either of the following types:
 - Type I: This type shall conform to the requirements of ASTM A121, with two strands of $12\frac{1}{2}$ gage wire; four-point barbs, wire size 14 gage, twisted around both line wires; and, Class 3 coating, Design No. 12-4-5-14R.
 - Type IIA: This type same as Type I except the two strand wires are twisted in alternating directions between consecutive barbs.
 - Type IIB: This type shall conform to the requirements of ASTM A121 with two strands of 15 $\frac{1}{2}$ gage high tensile wire; four-point barbs, wire size 16 $\frac{1}{2}$ gage twisted around both line wires; and Class 3 coating, Design No. 15-4-5-16R.

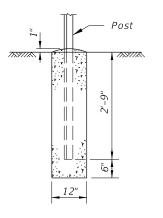
Aluminum Barbed Wire shall be fabricated of two strands of 0.110-inch wire with 0.08-inch diameter four-point barbs spaced at approximately $5\frac{1}{2}$ ", and at a maximum spacing of 6". The wire for the strands and for the barbs shall be of ASTM B211M Alloy 5052-H38 or equal.

- 12. The woven wire shall be stretched only until one-half the tension curl has been pulled out of the line wires.
- 13. Posts to be set by driving or digging. If by digging, the posts shall be set at the center of the hole and the soil tamped securely on all sides.
- 14. Longer posts than those indicated above may be required by the plans or for deeper installations.
- 15. Concrete bases for angular steel posts (pull, corner, end and approach) shall be Class NS in accordance with Specification 347. Materials for Class NS concrete may be proportioned by volume and/or by weight.
- 16. Pull post assemblies shall be installed at approximately 330' centers except that this maximum interval may be reduced by the Engineer on curves where the radius is less than 3°.
- 17. Corner post assemblies are to be installed at all horizontal and vertical breaks in fence of 15° or more.
- 18. A maximum length of 1320' of wire may be installed as a unit. For pulls through a pull post assembly the fabric shall be spliced by crimping sleeves only. Pulls through a corner post assembly will not be permitted.
- 19. Unless otherwise called for in the plans gates shall be commercially available metal swing gates assembled and installed in accordance with the manufacturer's specifications as approved by the Engineer. Chain link swing gates in accordance with Index 550-002 may be substituted for metal swing gates as approved by the Engineer. Gate size is full opening width whether single leaf or double leaves. Payment for gates shall include the gate, single or double, all necessary hardware for installation and any additional length and/or size for posts at the opening. Gates shall be paid for under the contract unit price for Fence Gates, EA.
- 20. For construction purposes, assemblies are defined as follows: End post assemblies shall consist of: one end post, one approach post, two braces, four diagonal tension wires and all necessary fittings and hardware. Pull post assemblies shall consist of: one pull post, two braces, four diagonal tension wires and necessary fittings and hardware. Corner post assemblies shall consist of: one corner post, two approach posts, four braces, eight diagonal tension wires and all necessary fittings and hardware.
- 21. All posts, braces, tension wires, fabric, tie wires, Class NS concrete, and all miscellaneous fittings and hardware to be included in the cost for Fencing, LF. Fencing shall be inclusive of the lengths of pull, end and corner post assemblies, but exclusive of gate widths.



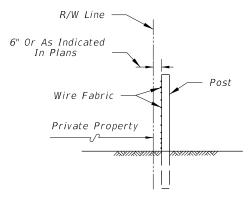
DESIGN NOTE:

This index details fencing that is constructed with farm fabric $46\frac{1}{2}$ " (47" nominal) in height and with specific ground clearance and specific barbed wire spacings. For fencing of different height or installation details, the fence shall be fully detailed in the Contract plans.



(Pull, Corner, End And Approach Posts)

CONCRETE BASE FOR ANGULAR STEEL POST



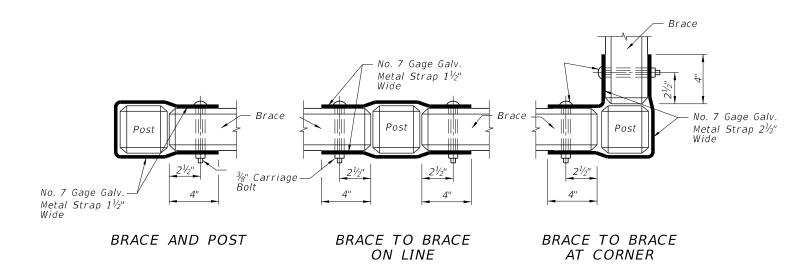
FENCE POSITION AT LOCATIONS WITHOUT FRONTAGE ROADS

(REFER TO DETAIL PLANS FOR FENCE POSITION AT LOCATIONS WITH FRONTAGE ROADS)

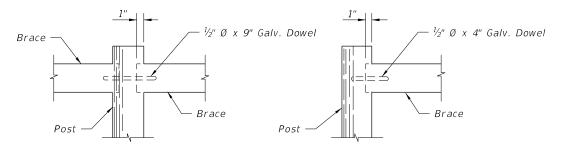
REVISION 11/01/17

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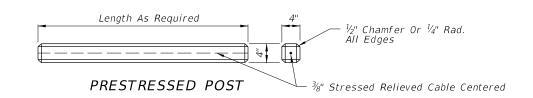
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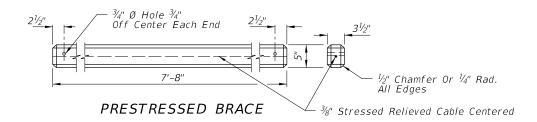


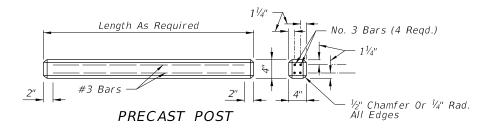
FASTENER FOR CONCRETE POST AND BRACES

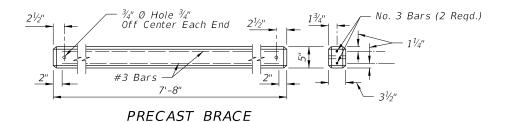


FASTENER FOR TIMBER POST AND BRACE

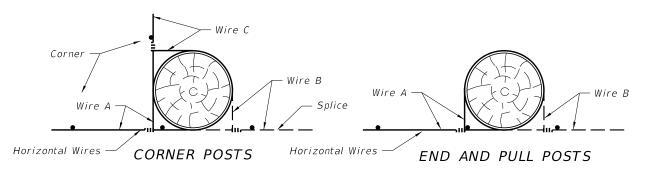








ALTERNATE CONCRETE POSTS AND BRACES



Each horizontal wire to be wrapped around corner, end and pull posts and tied to same wire. See General Notes 5 and 17. Timber post illustrated. These methods also apply to steel and concrete post illustrations.

SPLICES

10/17/2023 9:23:

LAST REVISION 11/01/17

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

FENCE TYPE A

INDEX

3 of 3

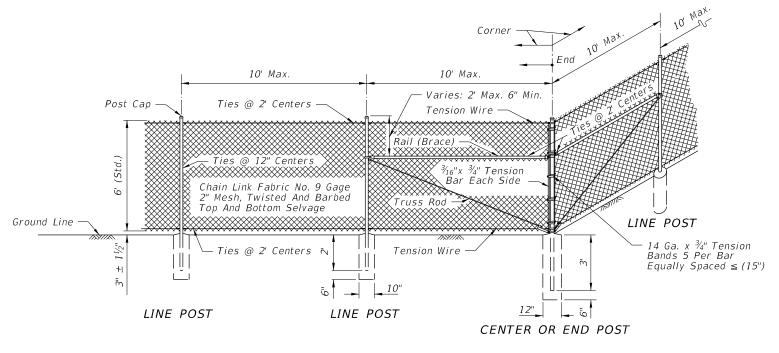
- 2. For supplemental information refer to Specification 550.
- Chain link fabric, post, truss rods, tension wires, tie wires, stretcher bars, gates and all miscellaneous fittings and hardware shall meet the requirements of AASHTO and ASTM signify current reference.
- 4. Fence Component Options:
 - A. Line post options:
 - (1) Galvanized steel pipe, Schedule 40- $1\frac{1}{2}$ " nominal dia. zinc galvanized at the rate of 1.8 oz./ft².: ASTM A53 Table 2 (Grade A or B), ASTM F1083, and AASHT0 M111.
 - (2) Aluminum coated steel pipe: ASTM A53, Table 2 (Grade A or B): Schedule 40- 1½" nominal dia., 1.90" OD; coated at the rate 0.40 oz./ft.: AASHTO M111.
 (3) Aluminum alloy pipe- 2" nominal dia.: ASTM B241 or B221, Alloy 6063, T6.

 - (4) Steel H-Beam- $1^{7}/8$ "x $1^{5}/8$ ": Zinc Galv. 1.8 oz./ft.: AASHTO M111 and Detail.
 - (5) Aluminum alloy H-Beam- 17/8"X 15/8" Detail
 - (6) Steel C- 17/8"X 15/8": Galv.: 1.8 oz/ft. zinc: AASHTO M111; OR, 0.9 oz./ft². zinc-5% aluminum-mischmetal: ASTM F1043 and Detail.
 - (7) Resistance welded steel pipe; 50,000 psi min. yield strength ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design); fence industry 2" 0D, $1\frac{1}{2}$ " NPS, 1.900" dec. equiv., 0.120" min. wall thick. and min. wt. 2.28 lb./ft.; with ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15µg/in². min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.

 - B. Corner, end, and pull post options:
 (1) Galvanized steel pipe, Schedule 40- 2" nominal dia. zinc galvanized at the rate of 1.8 oz./ft².: ASTM A53 Table X 2, ASTM F1083, and AASHTO M111.
 - (2) Aluminum coated steel pipe: ASTM A53 steel, X 2 Tables: Schedule 40; 2" nominal dia., 2.375" OD; coated at the rate 0.40 oz./ft.: AASHTO M111.
 - (3) Aluminum alloy pipe- 2½" nominal dia.: ASTM B241 or B221, Alloy 6063,T6.
 (4) Resistance welded steel pipe; 50,000 psi min. yield strength ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design); fence industry $2\frac{1}{2}$ " OD, 2" NPS, 2.375" dec. equiv., 0.130"min. wall thick. and min. wt. 3.117 lb./ft.; with ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15µg/in². min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.
 - C Rail ontions:
 - (1) Galvanized steel pipe, Schedule 40- 11#4" nominal dia. zinc galvanized at the rate of 1.8 oz./ft².: ASTM A53 Table X 2, ASTM F1083, and AASHTO M111.
 - (2) Aluminum coated steel pipe; ASTM A53 steel, X 2 Tables Schedule 40; 11#4" nominal dia., 1.660" OD; coated at the rate 0.40 oz./ft.: AASHTO M111.
 - (3) Aluminum alloy pipe- 11#4" nominal dia.: ASTM B241 or B221, Alloy 6063, T6.
 - (4) Resistance welded steel pipe; 50,000 psi min. yield strength ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design); fence industry 15#8" OD, 11#4" NPS, 1.660" dec. equiv., 0.11'1" min. wall thick. and min. wt. 1.836 lb./ft.; with ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15µg/in². min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.
 - D. Chain link fabric options (2" mesh with twisted and barbed selvage top and bottom for all options except as described in Note 10):
 - (1) AASHTO M181 Type I Zinc Coated Steel, No. 9 gage (coated wire diameter), coated at the rate of 1.8 oz/ft². (M181 Class D 2.0 oz./ft². modified to 1.8 oz./ft².).
 (2) AASHTO M181 Type II -Aluminum Coated Steel, No. 9 gage (coated wire diameter), coated
 - at the rate of 0.40 oz./ft2.
 - (3) AASHTO M181 Type IV- Polyvinyl Chloride (PVC) Coated Steel, No. 9 gage (coated core wire diameter), core wire-zinc coated steel. PVC coating: M181 Class A (either extruded or extruded and bonded) or Class B (bonded). See table right. Unless the plans call for M181 standard colors medium green, dark green or black the coating color shall be soft gray matching that of No. 36622 of Federal Standard 595a.
 - E. Tension wire options.
 - (1) Steel wire No. 7 gage zinc galvanized at the rate of 1.2 oz./ft².: AASHTO M181.
 - (2) Aluminum alloy wire with a diameter of 0.1875" or larger conforming to the requirements of ASTM B211, Alloy 5056 Temper H38, or, Alclad Alloy 5056 Temper H192.
 - (3) Aluminum coated steel wire No.7 gage coated at the rate of 0.040 oz./ft2: AASHTO M181.

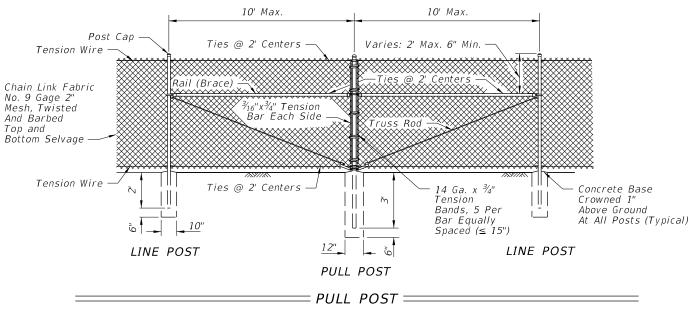
DESCRIPTION:

- F. Tie wire and hog ring options:
 (1) Steel wire No.9 gage zinc galvanized at the rate of 1.2 oz./ft².
 (2) Aluminum alloy wire with a diameter of 0.1443" or larger conforming to the requirements of ASTM B211, Alloy 5056 Temper H38, or, Alclad Alloy 5056 Temper H192.
 (3) Aluminum coated steel wire No. 7 gage coated at the rate of 0.040 oz./ft².



CORNER OR END POST =

NOTE: Tubular Post Illustrated



NOTE: Tubular Post Illustrated

(a) Only one fabric optional material will be permitted between corner and/or end post assemblies. (b) Only one line post optional material will be permitted between corner and/or end post assemblies.

- (c) Pull post assemblies shall be optional materials identical to either the line post optional material or the corner and end post assembly optional material; but, pull post assemblies shall be the same optional material between any set of corner and/or end post assemblies.
- 6. Concrete for bases shall be Class NS concrete as specified in Specification 347 or a packaged, dry material meeting the requirements of a concrete under ASTM C-387. Materials for Class NS concrete may be proportioned by volume and/or by weight.
- 7. Line post shall be 8'-6" long (Standard). Line post are to be set in concrete as described above or by the following methods:
 - (a) In accordance with special details and/or as specifically described in the Contract Plans and Specifications.
 - (b) In accordance with ASTM F567 Subsections 5.4 through 5.10 as approved by the Engineer. Line post installed in accordance with Section 5.8 shall be 9'-6" long.
 - (c) Post mounted on concrete structure or solid rock shall be mounted in accordance with the base plate detail "Fence Mounting On Concrete Endwalls And Retaining Wall", Sheet 3; or, by embedment in accordance with ASTM F567 Subsection 5.5.

End, pull and corner post assemblies shall be in concrete as detailed above for all soil conditions other than solid rock. Post within assemblies that are located on concrete structures or solid rock shall be set by base plate or by embedment as prescribed under (b) above for line post.

Line and assembly posts for 6' fence which must be lengthened due to a variation in the normal ground clearance, shall be set an additional 3" in depth for each 1' of of additional ground clearance.

- 8. Pull post shall be used at breaks in vertical grades of 15° or more, or at approximately 350' centers except that this maximum interval may be reduced by the Engineer on curves where the curve is
- 9. Corner post are to be installed at all horizontal breaks in fence at 15° or more and as required at vertical breaks over 15° as determined by the Engineer.
- 10. When fence has an installed top of fabric height less than 6' knuckled top and bottom selvages shall be used unless the plans specifically identify locations for twisted selvage fabrics.
- 11. Unless sliding gates or special gates are called for in the plans, all gates shall be chain link swing gates meeting the material requirements described and as approved by the Engineer. Payment shall include the gates, single or double, all necessary hardware for installation and any additional length and/or size for posts at the opening. Gates shall be paid for under the contract unit price for Fence Gates, EA.
- 12. For construction purposes corner post assemblies shall consist of one corner post, two braces, two truss rods, and all necessary fittings and hardware as detailed. End post assemblies shall consist of one end post, one brace, one truss rod and all necessary fittings and hardware as detailed.
- 13. In areas where there are physical constraints outside the right-of-way which restricts the fence construction, the fabric may be installed on the inside of the posts..

			TYPE	IV VINYL	COATED FABR	RIC							
		AA	SHTO M18	1 Table 4	Redefined As	Follows							
						PVC Thicki	ness Range						
	ied Dia tallic Co Wire				M181 Class A (Extruded Or Extruded And Bonded Coating) (Bonded Coating)								
in.	mm	gage	oz./ft².	g/m²	in.	mm	in.	mm					
0.148	3.77	9	0.30	6 g/m ² 0 92	0.015 to 0.025	0.38 to 0.64	0.006 to 0.010	0.15 to 0.25					

DESIGN NOTE

This index details fencing that is constructed with chain link fabric 6' (nominal) in height and with specific ground clearance. For fencing of different height or installation details, the fence shall be fully detailed

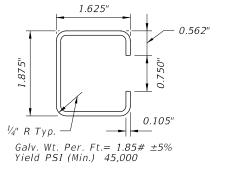
in the Contract plans.

LAST

REVISION

11/01/17





STANDARD WALL

THINWALL

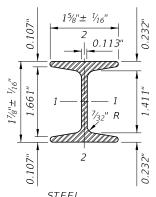
ALUMINUM

 $0.91 \pm 5\%$ 0.776 30,000

0.779 0.373

25,000

OPTIONAL "C" LINE POST



Area (Sq. In.)
Weight (Lb./Ft.)
Surface Area (SF/Ft.)
Tensile Strength (psi Min.)
Yielding Point (psi Min.)

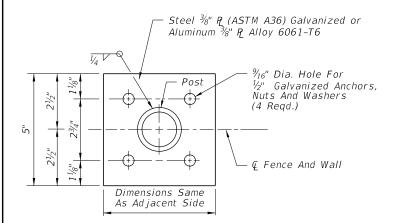
Moment Of Inertia Section Modulus Rad. Of Gyration

	JILLL	
	724	
	2.72 ± 5% (Galv.)	
	0.776	
)	80,000	
	48,000	

Ax	es	Ax	es
1 – 1	2-2	1 – 1	2-2
0.428	0.101	0.428	0.101
0.456	0.124	0.456	0.124

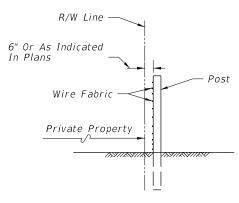
OPTIONAL 17/8" x 15/8" H-BEAM LINE POST

0.779 0.373



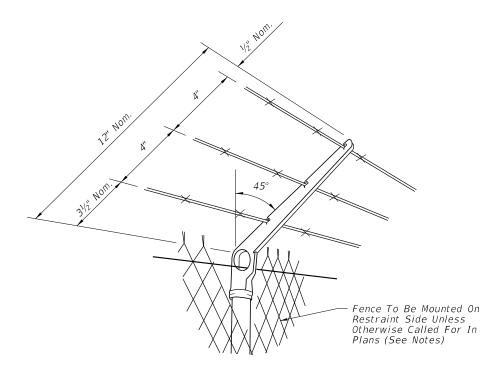
TOP VIEW FOUR ANCHOR PLATE OPTION

DESCRIPTION:



FENCE POSITION AT LOCATIONS WITHOUT FRONTAGE ROADS

(REFER TO DETAIL PLANS FOR FENCE POSITION AT LOCATIONS WITH FRONTAGE ROADS)



NOTES

Attachments to be used only when called for in the plans.
Attachments to extend in direction of restraint. Unless otherwise called for in plans, direction of restraint will be as follows:

(a.) Outward on limited access right of way line.

(b.) Outward on controlled access right of way line.

(c.) Outward from utilities and hazardous facilities located

- within highway right of way.
- (d.) Outward from lateral ditches, outfalls, retention basins, canals, borrow areas and similar support facilities.
- (e.) Inward on pedestrian ways.

The cap-arm shall be designed to provide a drive fit over the top of posts and to exclude moisture in posts with tubular sections.

BARB WIRE ATTACHMENT

BASE PLATE AND ANCHOR NOTES:

- 1. Base plate identical for line, pull, end and corner posts and shall be considered an integral part of the respective posts for basis of payment.
- 2. Post to be plumbed by grout shim under base plate.
- 3. Anchors (Galvanized Steel):

12" Cast In Place, $10\frac{1}{2}$ " Embedment:

Headed Bolts, U-Bolts or Cluster Plates. 8" Adhesive Anchors, 6" Min. Embedment.*

**Adhesive anchors shall be headless anchor bolts set in drilled holes with an Adhesive Material System in accordance with Specifications 416 and 937; drilled holes shall be $\frac{1}{8}$ "

larger in diameter than the anchor bolt.

Expansion Bolts Not Permitted.

FENCE MOUNTING ON CONCRETE ENDWALL AND RETAINING WALLS

© Fence And Wall

Steel 1/2" P (ASTM A36) Galvanized or Aluminum $\frac{1}{2}$ " P Alloy 6061-T6

REVISION 11/01/17



FY 2024-25 STANDARD PLANS

TOP VIEW

TWO ANCHOR PLATE OPTION

⁷⁄₈" Dia. Hole For ³⁄₄"Anchors, Nuts And Washers (2 Reqd.)

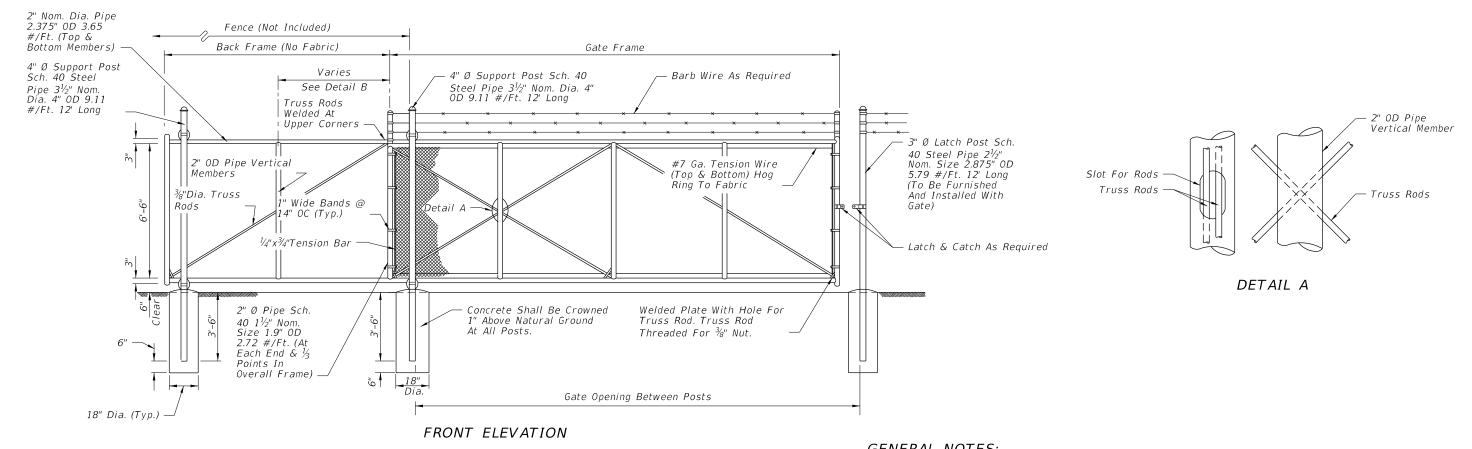
11/4"

INDEX

SHEET 3 of 3

550-002

FENCE TYPE B



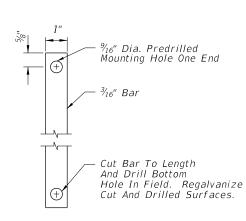
Heavy Duty Rollers Barb Wire Arm As Required Arm Clamp 4" OD Support Post Roller Spacer Bar

SUPPORT POST

DETAIL

DESCRIPTION:

GATE OPENING	<i>GATE FRAME</i>	BACK FRAME
12'	12'-3"	6'
16'	16'-3"	8'
20'	20'-3"	10'
24'	24'-3"	12'



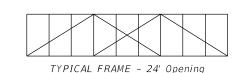
ROLLER SPACER BAR

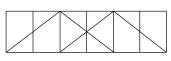
GENERAL NOTES:

1. Extruded, rolled or formed components that provide equal strength and stability may be used in lieu of the pipe components shown; and, internal rollers may be used in lieu of the external roller units shown.

Gate components shall meet or exceed the protective coatings specified on Index 550-002.

- 2. Steel gate frame shall be fabricated prior to galvanizing, except that truss rods may be fabricated following frame galvanizing provided surfaces damaged during welding are galvanized in accordance with Section 24 of AASHTO M36; or, fabricated from pipe components with protective coating meeting the requirements of Index 550-002 that are tolerant of welding (low burn back), and a protective coating applied to the weld and damaged pipe surfaces that is equivalent to the protective coating of the fabricated pipe
- 3. All fabric shall be knuckled top and bottom selvages.
- 4. Concrete for bases shall be either Class NS concrete in accordance with Specification 347 or a packaged, dry material meeting the requirements of a concrete under ASTM C-387. Materials for Class NS concrete may be proportioned by volume and/or by weight.
- 5. Cost of all gate components shall be included in the contract unit price for Sliding Fence Gate (Cantilever), EA.





TYPICAL FRAME - 12', 16' & 20' Opening

DETAIL B

REVISION 11/01/17

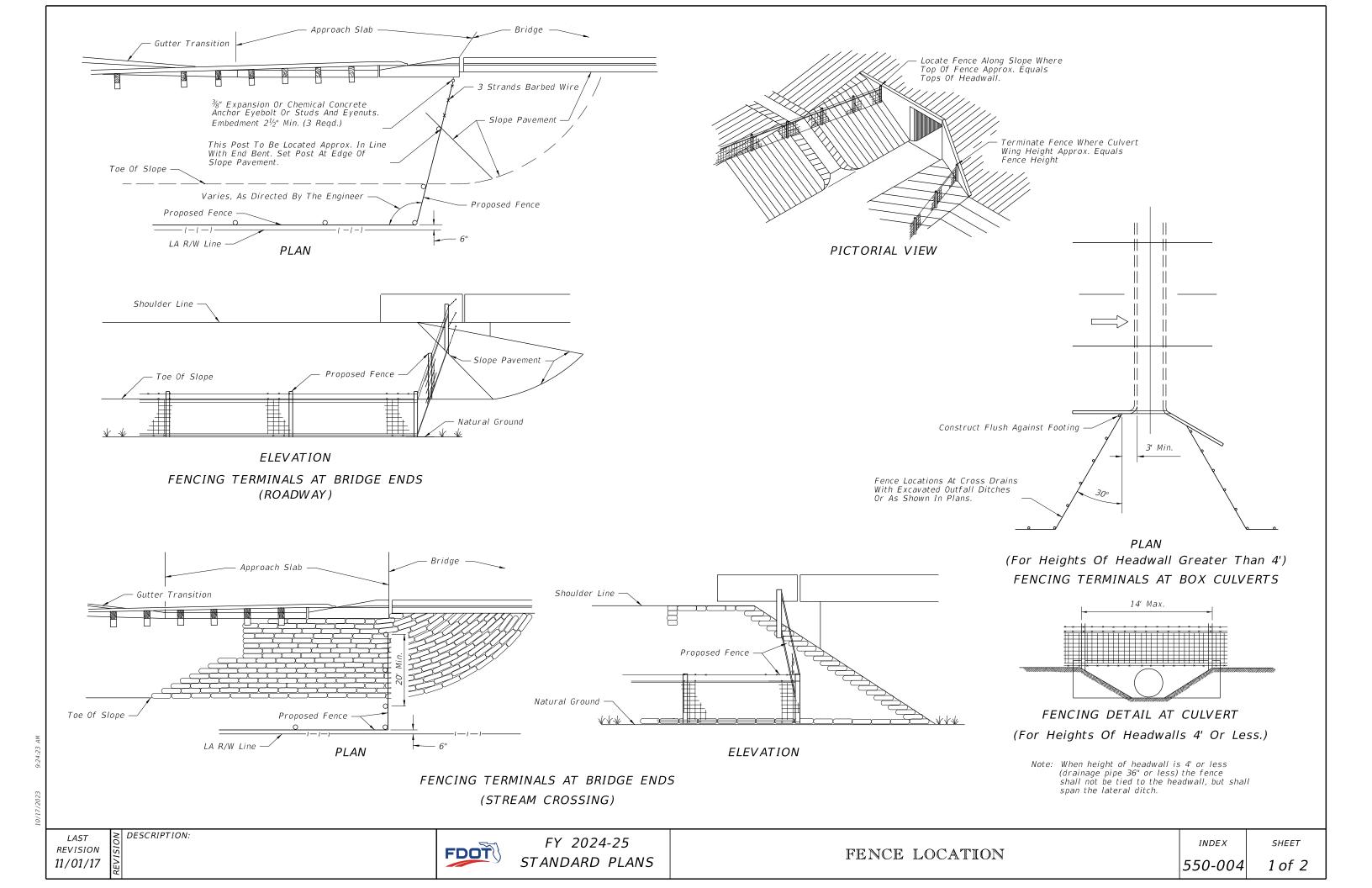
FDOT

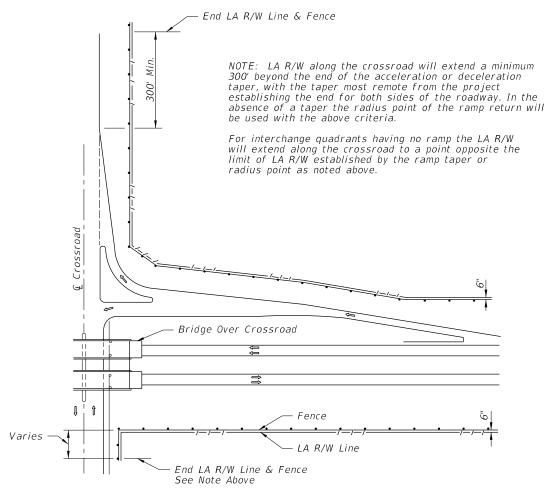
FY 2024-25 STANDARD PLANS

CANTILEVER SLIDE GATE TYPE B FENCE

INDEX

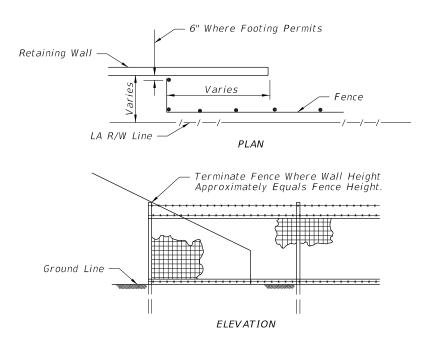
SHEET

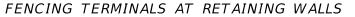




APPLIES TO BRIDGE OVER CROSSROAD AND CROSSROAD OVER FREEWAY (BRIDGE OVER CROSSROAD SHOWN)

FENCING TERMINALS AT RURAL INTERCHANGES





DESCRIPTION: REVISION 11/01/17

FDOT

INSET A

Fence Type

dimension, if practical.

LA R/W Line

Ramp

Fence Type "B"

50' Min. Overlap -

- Local Street —

Note A - The indicated distance shall be sufficient to provide satisfactory

Note B - The indicated distance shall be identical to the above noted

FENCING TERMINALS AT URBAN INTERCHANGES

sight distance for the traffic from the ramp.

See Inset A

LA R/W Line

Fence Type "B'

50' Min. Overlap

– ∉ Cross Street

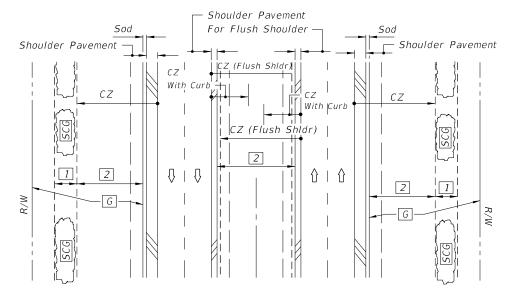
Sidewalk

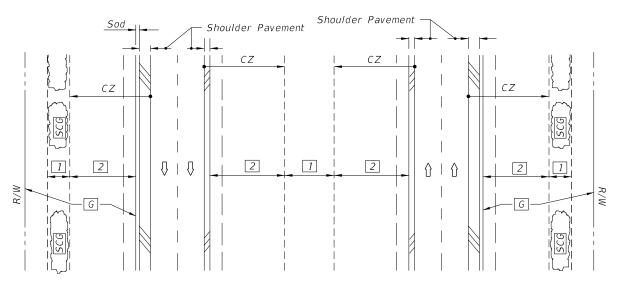
— See Note B

See Note A

End Fence & LA R/W Line

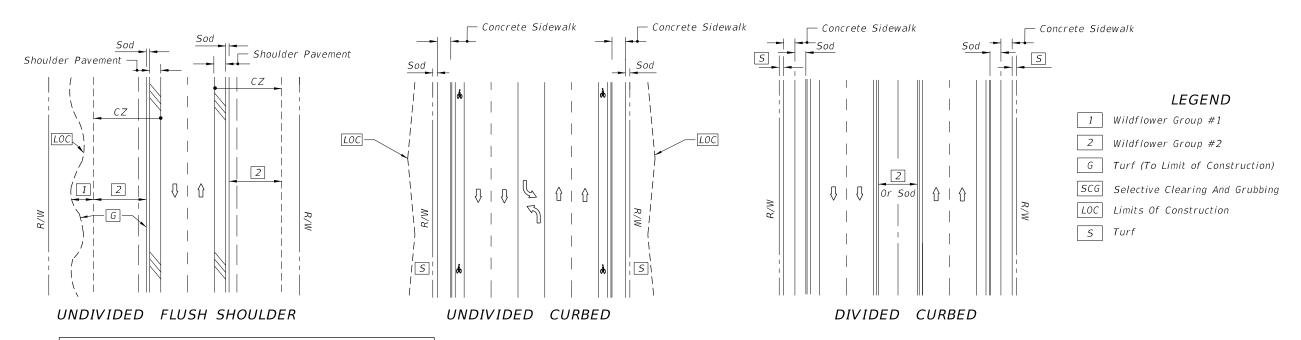
Radius Point





DIVIDED NARROW MEDIAN WITH OR WITHOUT CURBED MEDIAN

DIVIDED WIDE MEDIAN WITH OR WITHOUT CURBED MEDIAN



WILDFLOWER SEEDING RATES	
Common Name (Botanical Name)	lbs/ac
#1 Group	
Black-Eyed Susan (Rudbeckia hirta)	2
Lance-Leaf Tickseed (Coreopsis lanceolata)	10
Goldenmane Tickseed (Coreopsis basalis)	10
Leavenworth's Tickseed (Coreopsis leavenworthii)	10
Fire Wheel (Gaillardia pulchella)	10
Softhair Coneflower (Rudbeckia mollis)	2
Crimson Clover (Trifolium incarnatum)	15
#2 Group	
Annual Phlox (Phlox drummondii)	10
Moss Verbena (Verbena tenuisecta)	6
Leavenworth's Tickseed (Coreopsis leavenworthii)	10
Fire Wheel (Gaillardia pulchella)	10
Crimson Clover (Trifolium incarnatum)	15
Note: Wildflower seeding rates are for restoring impacted wildflower areas.	

GENERAL NOTES

- 1. All turf establishment shall be performed meeting the requirements of Specification 570.
- 2. Activities such as clearing, grading, and excavating that will disturb one or more acres of land require coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the Florida Department of Environmental Protection, and implementation of appropriate pollution prevention measures to minimize erosion and sedimentation and properly manage stormwater.
- 3. Confirm compatibility of wildflower with Seeding Zones.

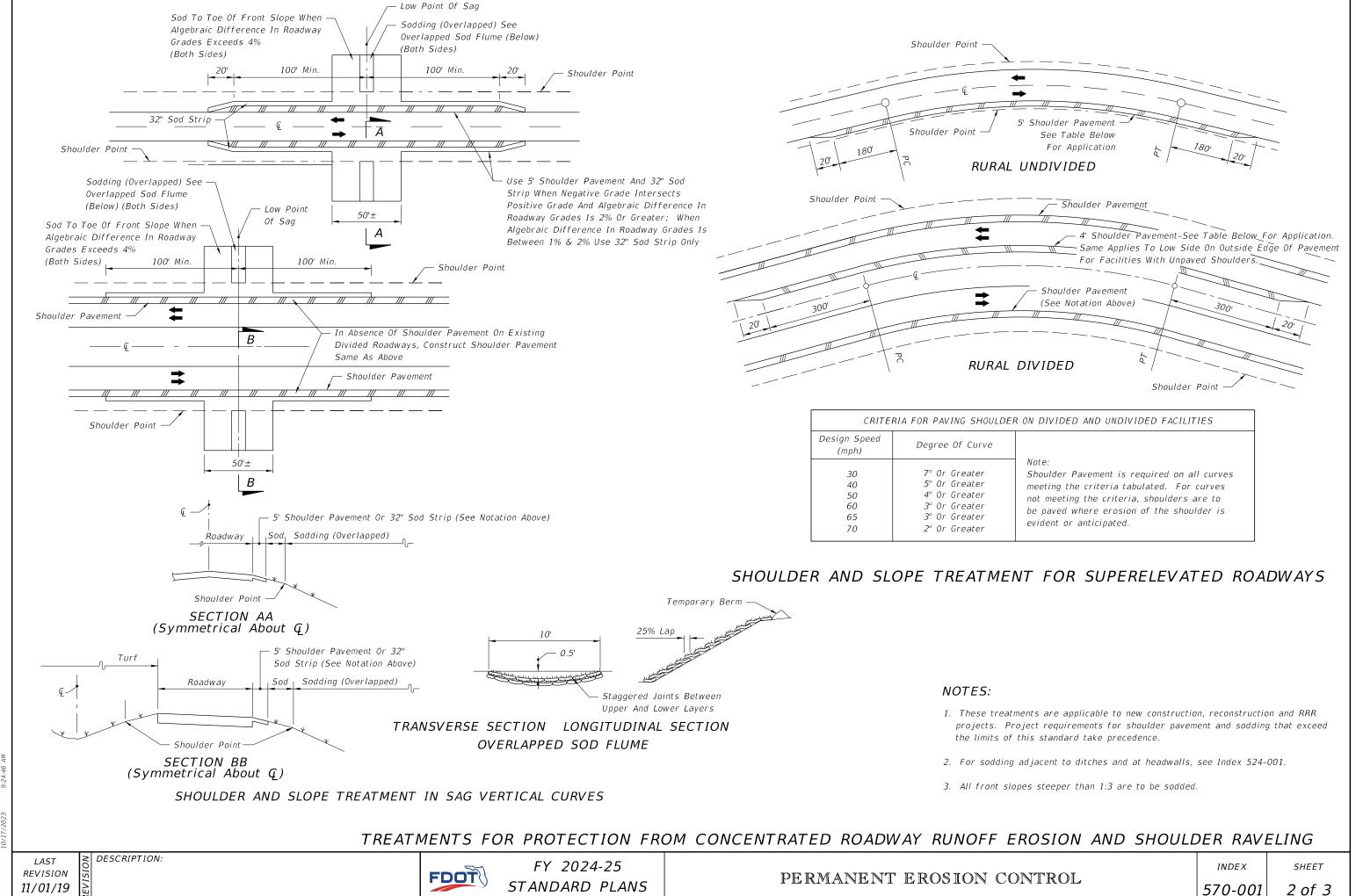


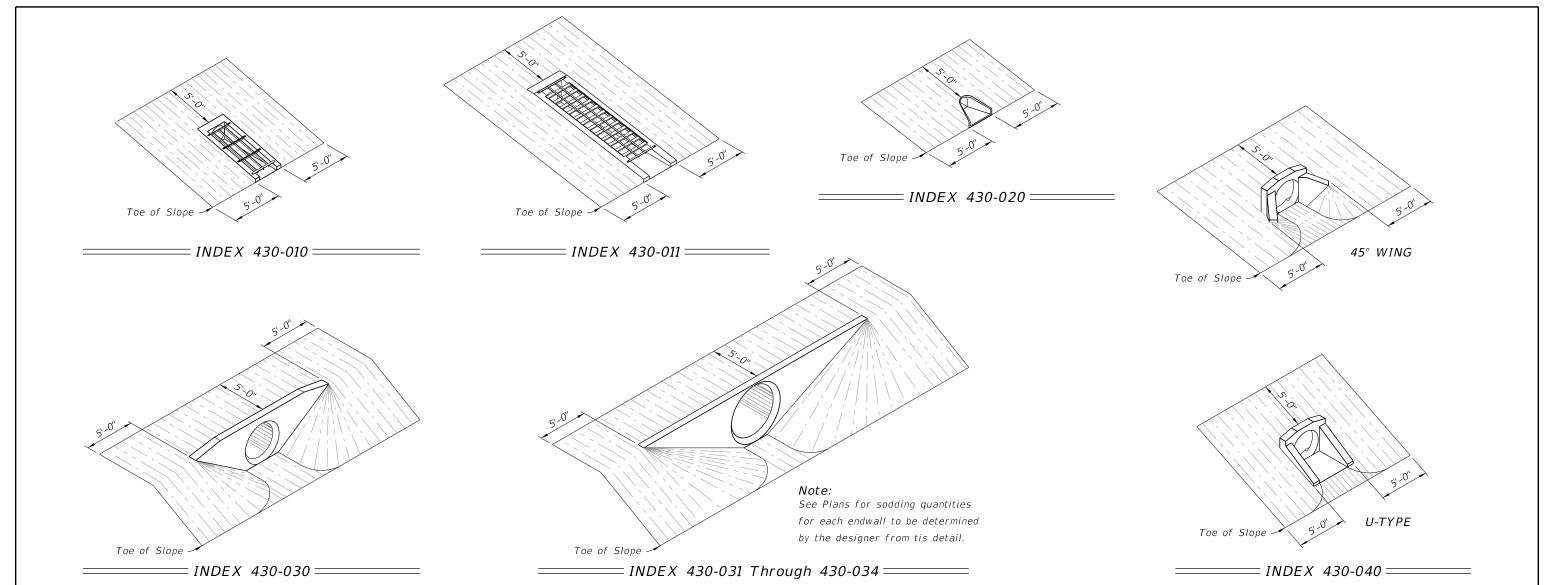


REVISION 11/01/19

DESCRIPTION:







	INDEX 430-010	0 INDEX 430-011				INDEX 430-020					IN	DEX	430-0	30					I	NDEX	430-04	40
			SLOF	OPE ALL SLOPES			SLOPE											SLOPE				
PIPE SIZE	1:4	1:2	1:3	1:4	1:6	ALL SLOPES		1:2			1:3			1:4			1:6		1:2	1:3	1:4	1:6
		PIPES			PIPES						PIP	'ES						PIPES				
	1	1	1	1	1	1	1	2	3	1	2	3	1	2	3	1	2	3	1	1	1	1
12"						10													14	15	18	22
15"	15	13 (15)	16	17	23	11	19	21	24	22	26	29	26	30	33	34	38	43	15	17	20	25
18"	16	14 (16)	17	19	25	11	21	24	27	25	29	33	30	34	38	39	44	50	16	18	22	28
21"						12																
24"	19	15 (17)	19	21	28	14	26	30	34	32	37	42	38	44	50	50	58	66	19	22	26	34
27"						15																
30"	21	17 (18)	21	24	32	16	31	37	42	39	46	53	46	55	63	62	74	85	21	25	30	40
36"						18	37	44	52	46	56	65	56	67	79	76	91	107	24	29	35	47
42"						19	43	53	62	55	67	79	67	82	96	91	111	132	27	32	39	54
48"						21	50	62	73	64	79	93	78	97	115	108	133	158	30	36	44	61
54"						21	57	71	85	74	92	110	91	113	136	126	157	188				
60"						22																
66"						25																
72"						26																

≥ DESCRIPTION: REVISION 11/01/19

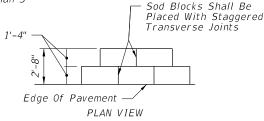
FDOT

COMPLETED SHOULDER

CRITERIA FOR USING TREATMENT I

Project

- is resurfacing, widening and resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is less than 3"



PATTERN DETAIL

GENERAL NOTES

1. Treatment I:

If trenching under sod is necessary to achieve the required Drop-Off, excavated topsoil is to be used for filling voids and low areas at the edge of pavement or for flushing along the edge of sod. Excess material to be uniformly distributed over the shoulder.

2. Treatment II:

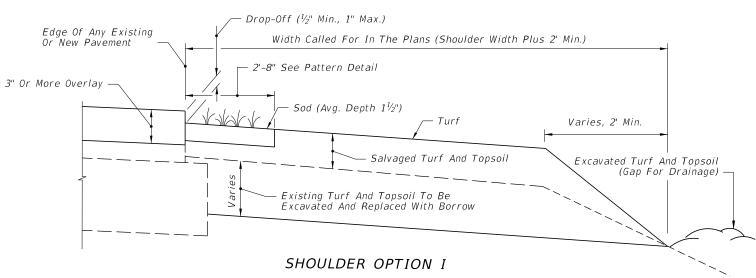
- A. Borrow must meet the requirements for a "Select" material in accordance with Index 120-001 and Specification 120.
- B. Borrow may be used in lieu of excavated turf and topsoil when economically feasible. There will be no additional payment for substituting borrow for excavated turf and topsoil
- 3. Special attention is to be directed at achieving the required Drop-Off at the edge of pavement, within the dimension range shown.
- 4. Activities such as clearing, grading, and excavating that will disturb one or more acres of land require coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the Florida Department of Environmental Protection, and implementation of appropriate pollution prevention measures to minimize erosion and sedimentation and properly manage stormwater.

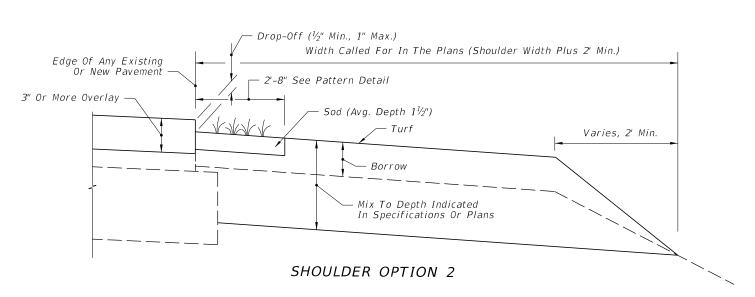
5. Turf Establishment:

DESCRIPTION:

- A. Wildflowers destroyed by shoulder sodding and turf operations are to be reestablished under the seeding rates prescribed for permanent wildflower #2 Group shown by table on Index 570-001.
- B. Establish turf in accordance with Specification 570.

TREATMENT II



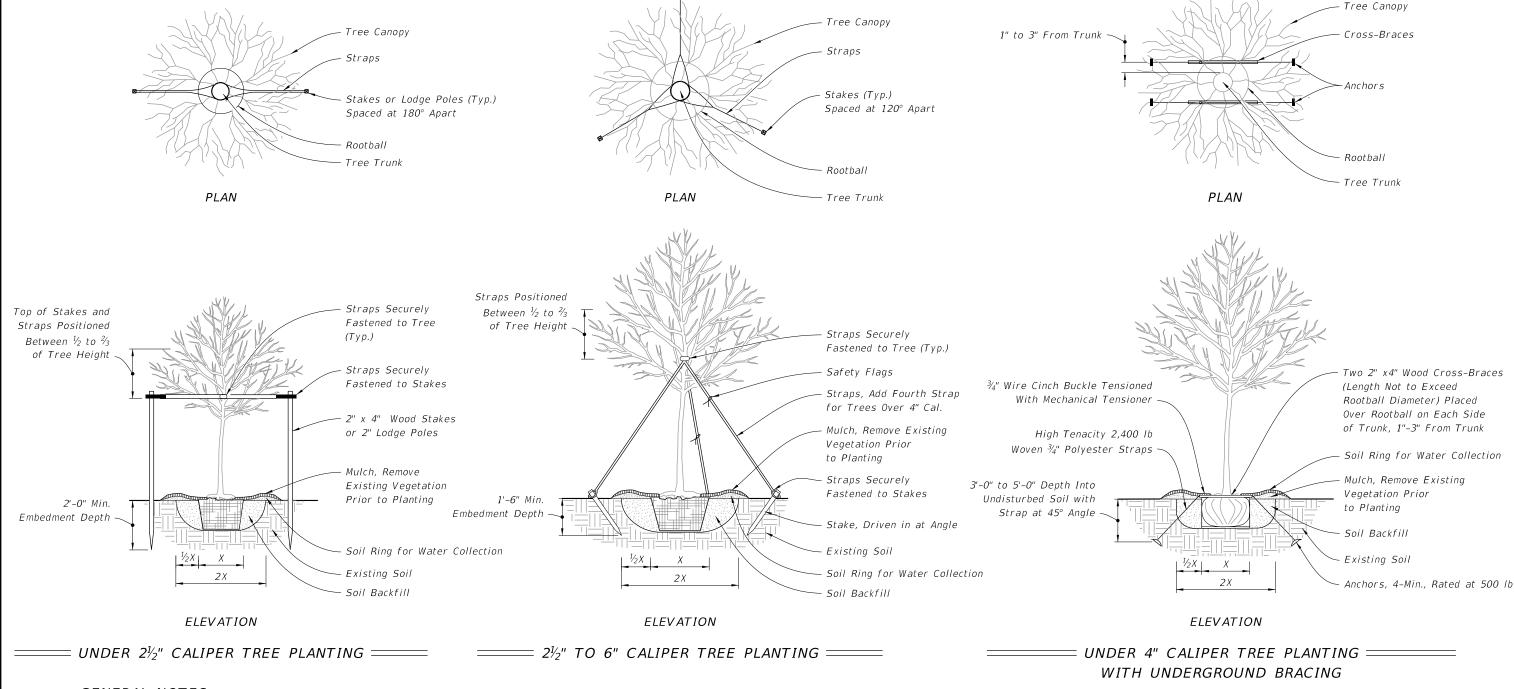


CRITERIA FOR USING TREATMENT II

Project

- is resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is 3" or more

A SIMILAR TREATMENT MAY BE USED FOR PROJECTS THAT REQUIRE SHOULDER WIDENING. DETAILS ARE TO BE SHOWN IN THE PLANS.



GENERAL NOTES:

DESCRIPTION:

- 1. Staking guidelines are based on standard horticultural requirements and are provided for plant establishment purposes only. Details not intended to apply when bracing is intended to address safety considerations. When bracing for safety, refer to Designer generated signed and sealed details. These guidelines are not intended to apply when the tree or palm is within falling distance of a roadway, pedestrian or bicycle route, under extreme wind loads, non-standard soil properties, non-standard plant dimensions, or when rootball is anticipated to be greater than 4 feet diameter and planted on 1:3 slope or steeper.
- 2. All dimensions 6" and less are exaggerated for illustrative purposes only. Dimensions shown for wood materials are nominal. Slopes shown are Vertical: Horizontal.
- 3. Remove plant containers prior to planting. Remove a minimum of the top 1/3 of burlap, fabric, or wire mesh for plants not
- 4. Allow no more than 1" of soil to cover the uppermost root on all trees. Set the top of rootball 1"-2" above finish grade after settling and set plumb to the horizon.
- 5. Backfill with loosened existing soil or as shown in the plans. Remove rocks, sticks, or other deleterious material greater than 1" in any direction prior to backfilling. Water and tamp to remove air pockets. Contact the Engineer prior to planting if existing soils contain excessive sand, clay, or other material not conducive to proper plant growth.

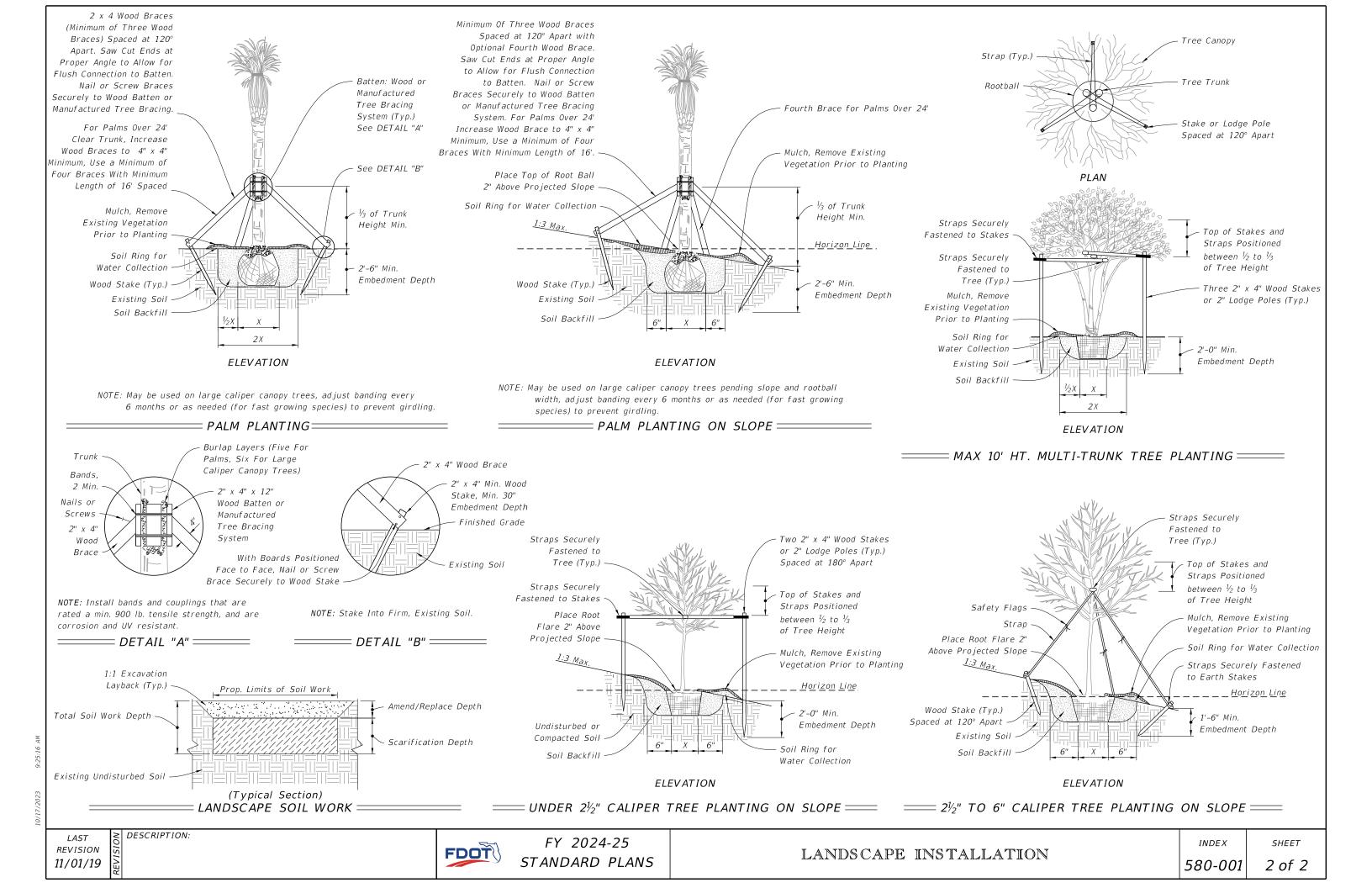
- 6. Construct soil rings at the outer edge of the planting pit with a height of 3" and gently sloping sides unless a permanent, subsurface or drip irrigation system is provided. Do not pile soil on top of rootball.
- 7. Construct a 3" deep layer of mulch placed 2" off the edge of the trunk flare, around the base of shrub, or solidly around ground cover. Never pile mulch against the tree trunk.
- 8. Install guying with minimum 1" wide nylon or polypropylene straps with a minimum 600 lb. break strength. Check straps monthly and adjust as required to eliminate girdling of tree. Locate all wood stakes beyond the edge of soil ring in existing soil and embed a minimum of 18" below finished grade unless otherwise specified. Alternate tree bracing and guying systems specified or approved by the Engineer may be used in lieu of the tree bracing and guying methods detailed on the Index.
- 9. Relocated Trees and Palms: Brace relocated trees and palms in accordance with the Contract Documents. Remove bracing at the conclusion of the contract or as directed by the Engineer. Bracing or straps must not damage or become embedded
- 10. Use 2" x 2" minimum wood stakes unless otherwise shown in the Plans or directed by the Engineer. Use wood meeting #2 Common or better in accordance with the Standard Grading Rules for Southern Pine.
- 11. Drive stakes into existing, undisturbed soil. Localized compaction may be provided to prevent displacement of the stakes for previously disturbed existing soils that do not provide sufficient stability.

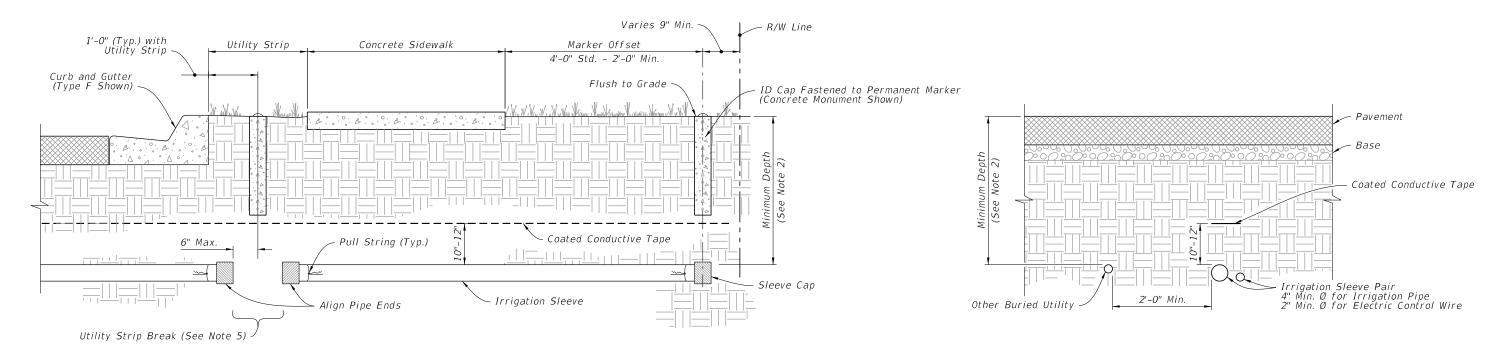
REVISION 11/01/19

FDOT

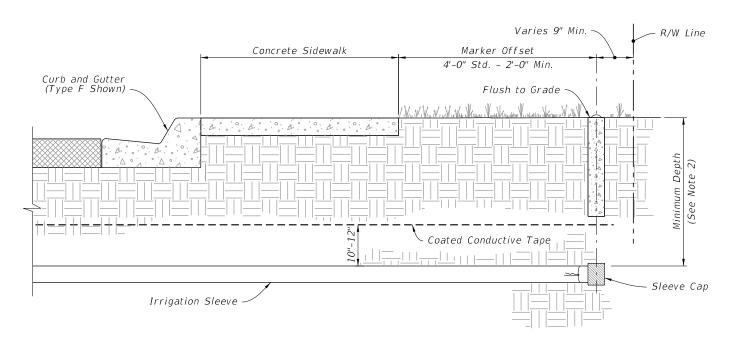
INDEX 580-001

SHEET 1 of 2





ROADWAY WITH UTILITY STRIP =

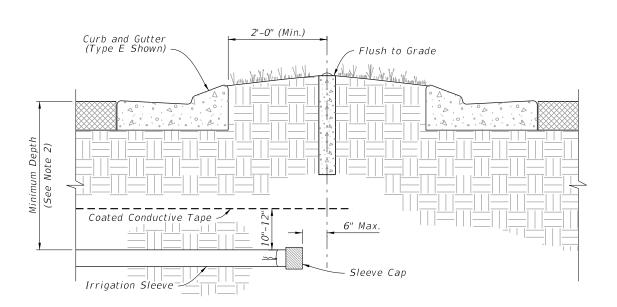


ROADWAY WITHOUT UTILITY STRIP =

NOTES:

DESCRIPTION:

- 1. Work this Index with Specification 591.
- 2. Install Sleeve with the minimum depth measured from the top of the Irrigation Sleeve as shown in the Plans or specified in Index 630-001.
- 3. When installing Irrigation Sleeves in a median crossover, place sleeves along the centerline.
- 4. Irrigation Sleeves for Electrical Control Wire and Irrigation Pipe must be no further than 12" apart.
- 5. Install Utility Strip Breaks only when shown in the Plans.



ROADWAY CROSS SECTION =

ROADWAY MEDIAN OR ROUNDABOUT =

LAST REVISION 11/01/19

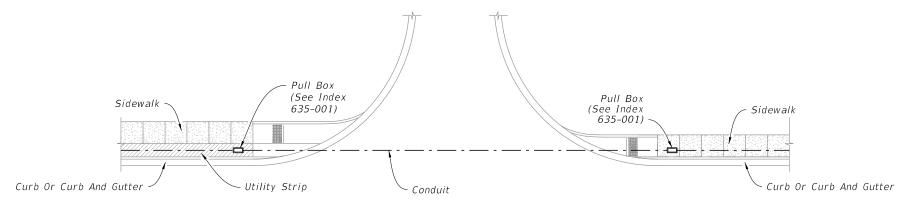


GENERAL NOTES:

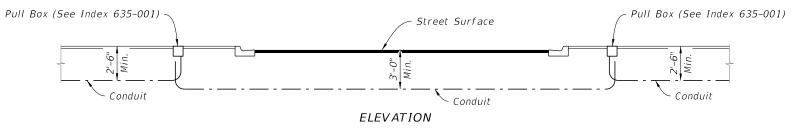
- 1. Install conduit in accordance with Specification 630.
- When sidewalk is damaged by conduit installation, replace entire sidewalk slab.
- 3. Trench not to be open more than 250' at a time when construction area is subject to vehicular or pedestrian traffic.
- 4. Sawcut asphalt at the edges of the trench to leave neat lines.
- 5. Provide route marker and route marker label in accordance with Specification 630.



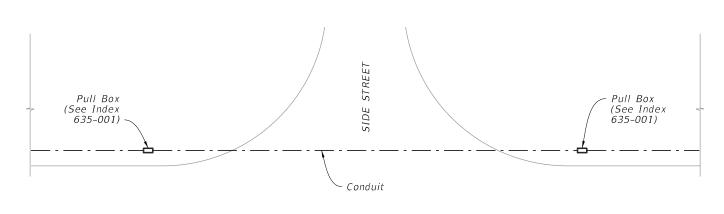




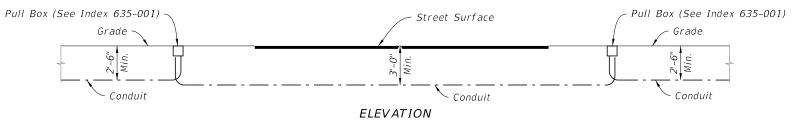
PLAN



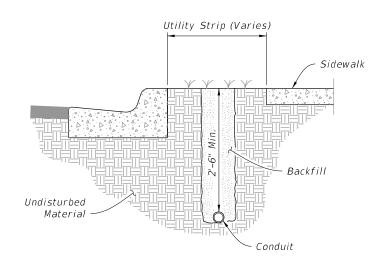
CURB AND GUTTER



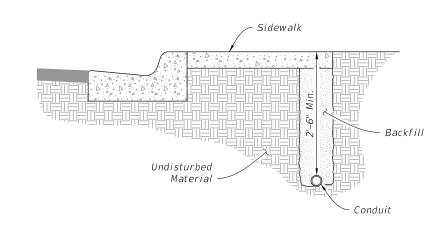
PLAN



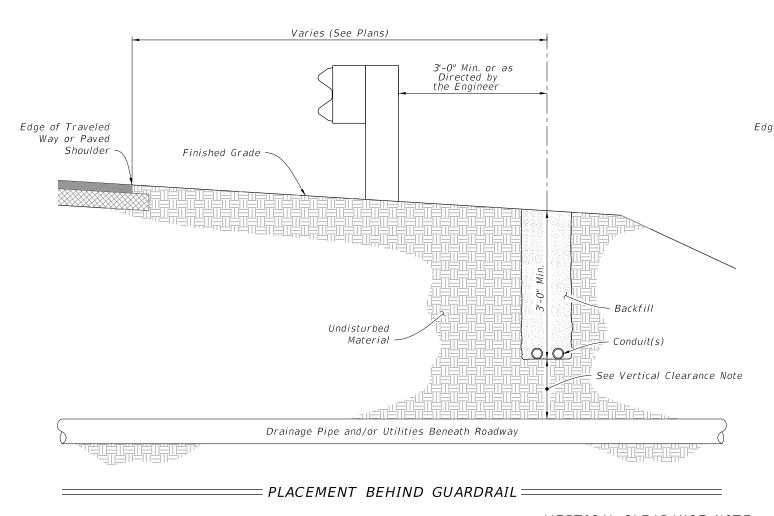
FLUSH SHOULDER=

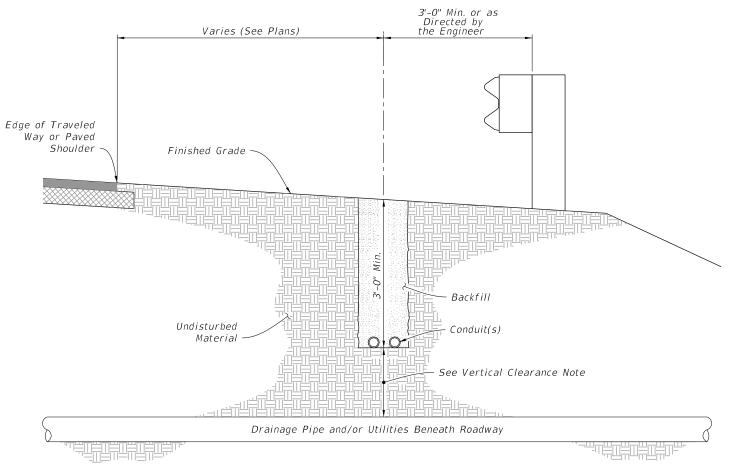


= PLACEMENT WITHIN THE UTILITY STRIP ======



=== PLACEMENT UNDER SIDEWALK ==





PLACEMENT IN FRONT OF GUARDRAIL=

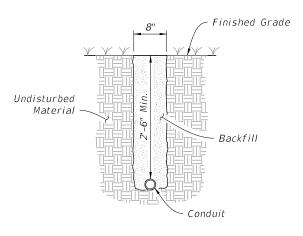
VERTICAL CLEARANCE NOTE:

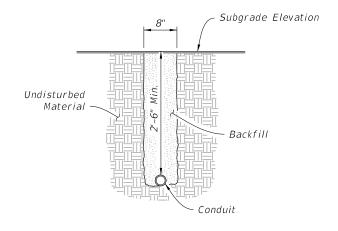
Maintain 1'-0" minimum vertical clearance when crossing over pipe and or utilities. If minimum vertical clearance cannot be maintained, conduit is to be routed under pipe maintaining 1'-0" minimum vertical clearance.

LAST REVISION 11/01/18

DESCRIPTION:

FDOT



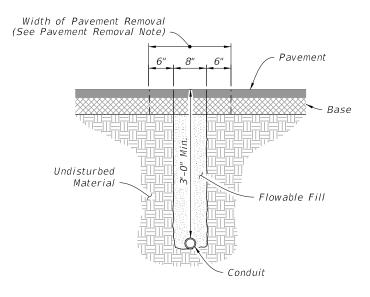


= PLACEMENT UNDER NEW ROADWAY === PRIOR TO INSTALLATION OF BASE AND PAVEMENT

PLACEMENT NOT EXPOSED = TO VEHICULAR TRAFFIC

NOTES:

- 1. Pavement Removal: The removal and replacement of the additional pavement width (i.e., 6" Width either side of trench) will not be required when the trench can be constructed without disturbing the asphalt surface on either side.
- 2. Placement Under Existing Pavement: Place conduit prior to installation of base and pavement, unless otherwise shown in the Plans or approved by the Engineer.



Width of Pavement Removal (See Pavement Removal Note) Pavement Base Undisturbed Flowable Fill Material

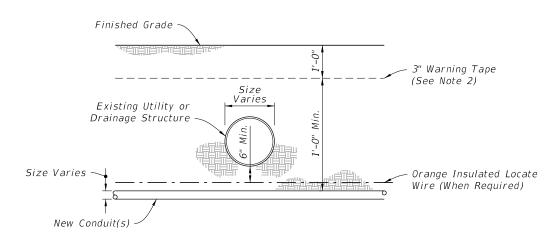
PLACEMENT UNDER EXISTING PAVEMENT= ADJACENT TO GUTTER

PLACEMENT UNDER EXISTING PAVEMENT= NOT ADJACENT TO GUTTER

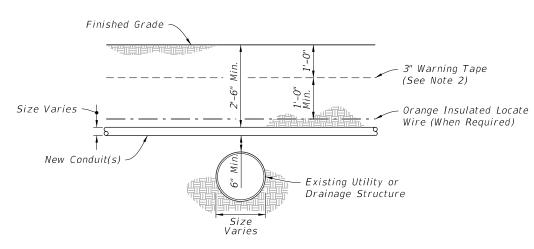
REVISION 11/01/18

DESCRIPTION:

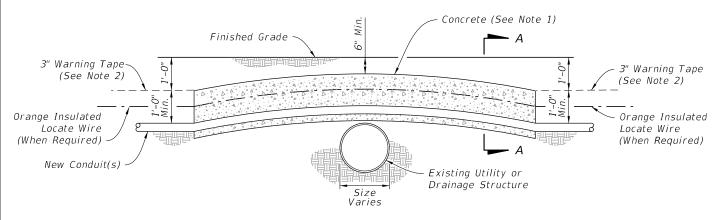
FDOT



BELOW EXISTING

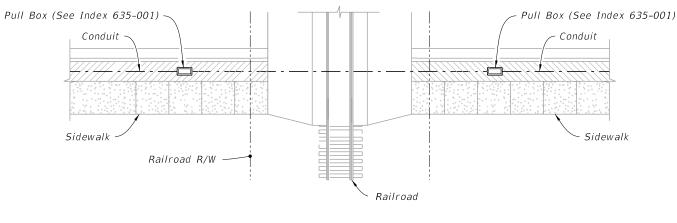


ABOVE EXISTING - DEPTH 2'-6" OR GREATER

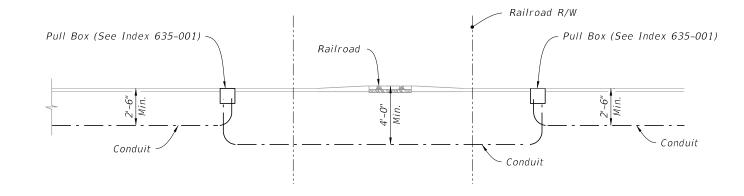


ABOVE EXISTING - DEPTH 2'-6" OR LESS

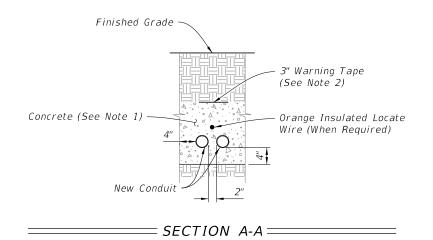
PLACEMENT ACROSS EXISTING DRAINAGE PIPES OR UTILITIES=



PLAN



PLACEMENT UNDER RAILROAD=



NOTES:

- 1. Where conduits are to be installed over existing underground structures (e.g., drainage pipes or utility lines) which are less than 2'-6" deep, encase the conduit in Class NS concrete for the entire length of conduit that is installed at a depth of less than 2'-6".
- 2. Place 3" Warning Tape when new conduit is installed at a depth of 1'-6" or greater, and the new conduit is not encased in concrete.

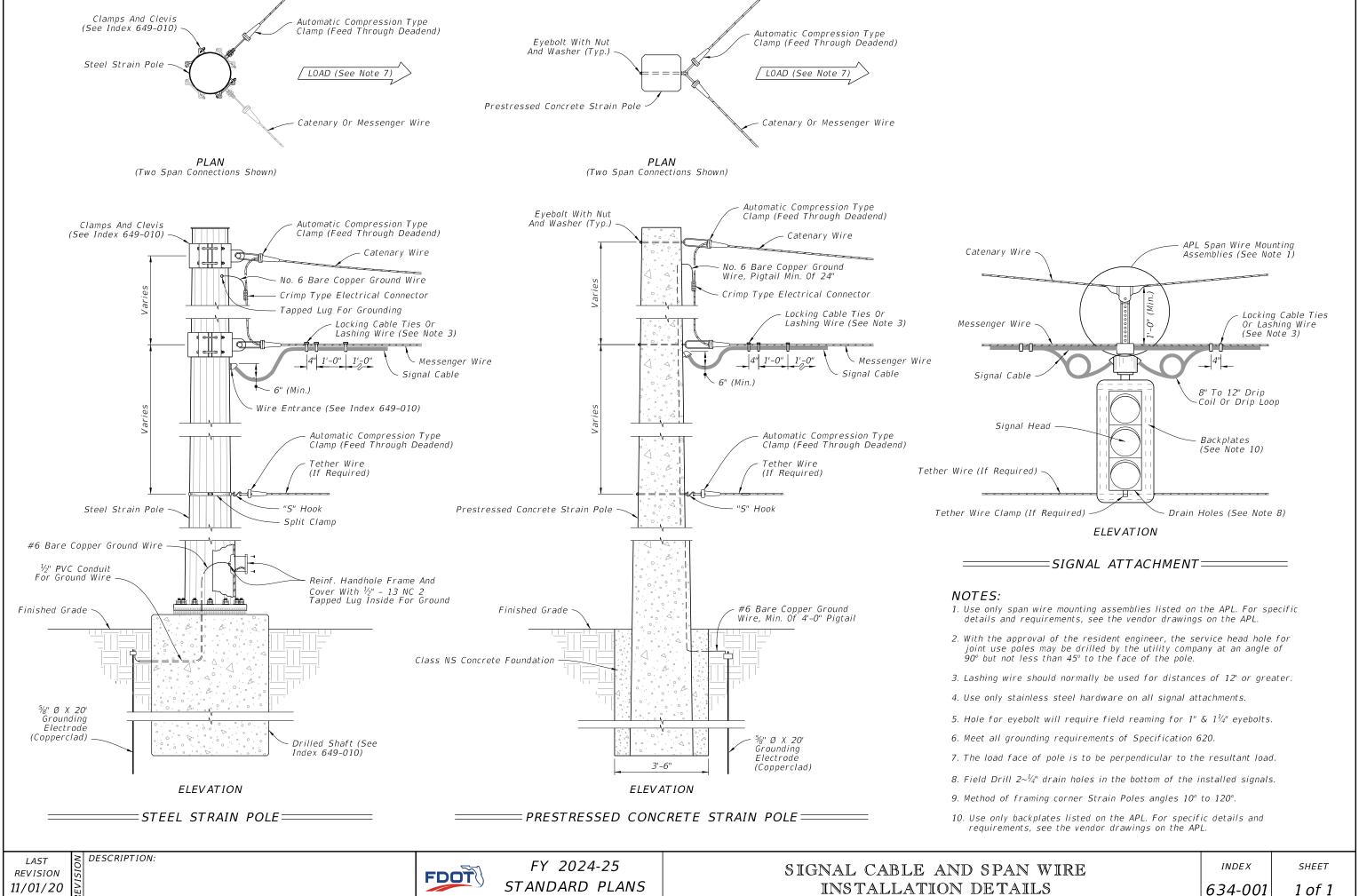
REVISION 11/01/18

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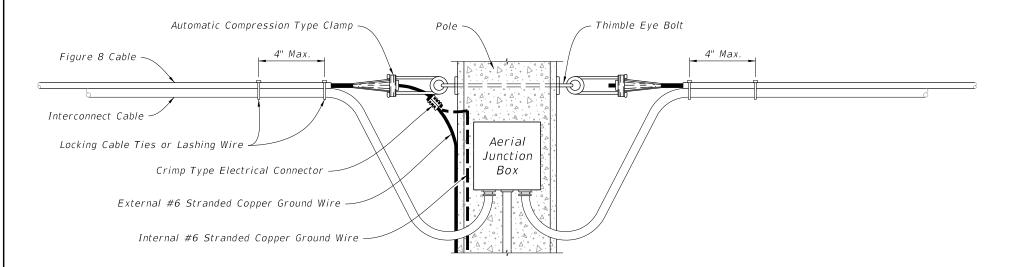
FY 2024-25 STANDARD PLANS INDEX

SHEET

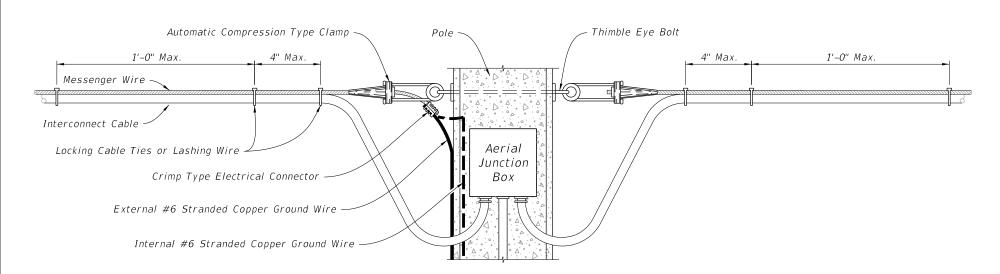
DESCRIPTION:



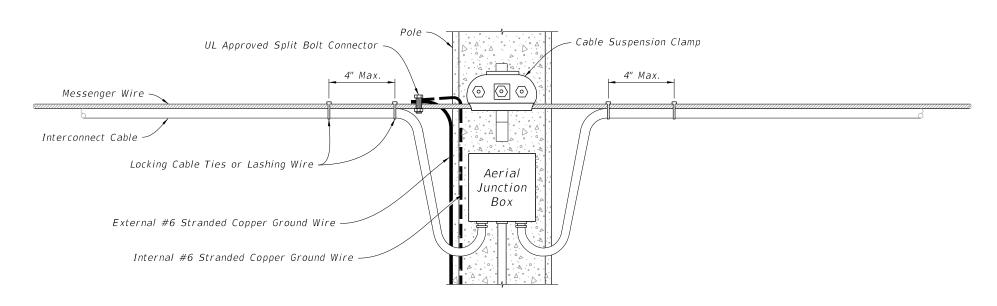
11/01/20



=CABLE DROP AND TERMINATION WITH FIGURE 8 CABLE =



CABLE DROP AND TERMINATION WITH MESSENGER WIRE AND COMPRESSION CLAMP=



CABLE DROP AND TERMINATION WITH MESSENGER WIRE AND SUSPENSION CLAMP ===

REVISION 11/01/18

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

AERIAL INTERCONNECT

NOTES:

extending down the pole.

1. Meet all grounding requirements of Specification 620.

2. If accessible, ground the messenger wire of the interconnect cables to the copper ground wire of the pole or to the external wire

conduit extending up 8' from the finish grade to protect the ground

4. Use either locking cable ties or lashing wire, placed no further than 12" apart. Except at the point of cable drop or terminations, place

one (1) at the point where the cables separate from the messenger wire and place another at a maximum distance of 4" from that tie.

5. When installing Figure 8 interconnect cable, only use locking cable ties. 6. Lashing wire should normally be used for distances of 12' or greater.

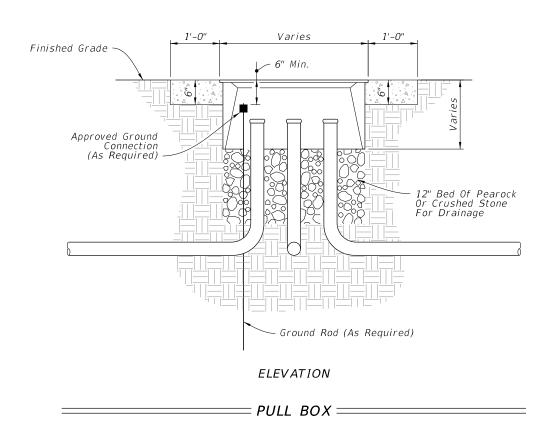
3. When utilizing the external ground wire, install a piece of $\frac{1}{2}$ "

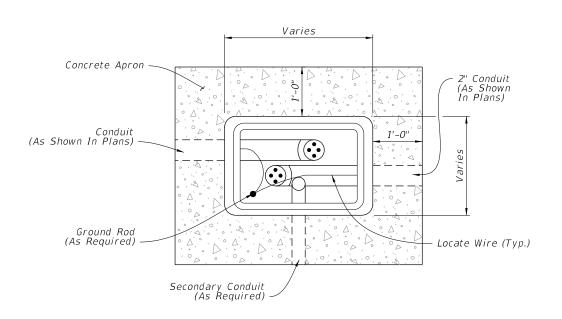
wire connecting the messenger wire to the ground rod.

INDEX 634-002 SHEET

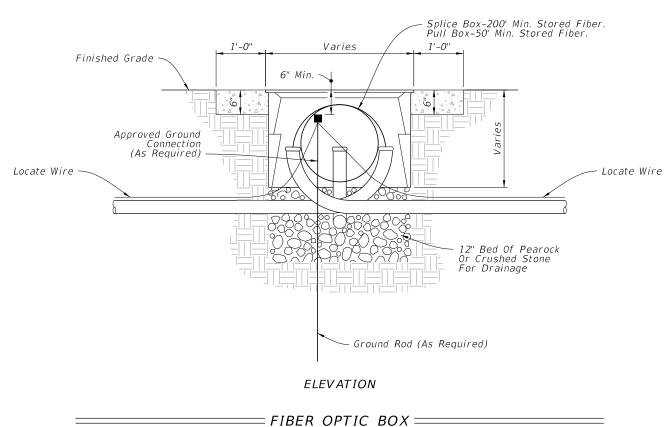
1 of 1

PLAN





PLAN



PULL AND SPLICE BOXES

NOTES:

- 1. Provide fiber optic splice boxes with cable hanger racks designed to support cables and splice enclosures.
- 2. Install a 1'-0" wide (Min.) concrete apron around all boxes using Class NS concrete. Slope the apron away from the box.
- 3. Where multiple pull boxes are placed side by side, maintain at least 8" between the pull boxes.
- 4. Rectangular boxes shown, others similar.

REVISION 11/01/18

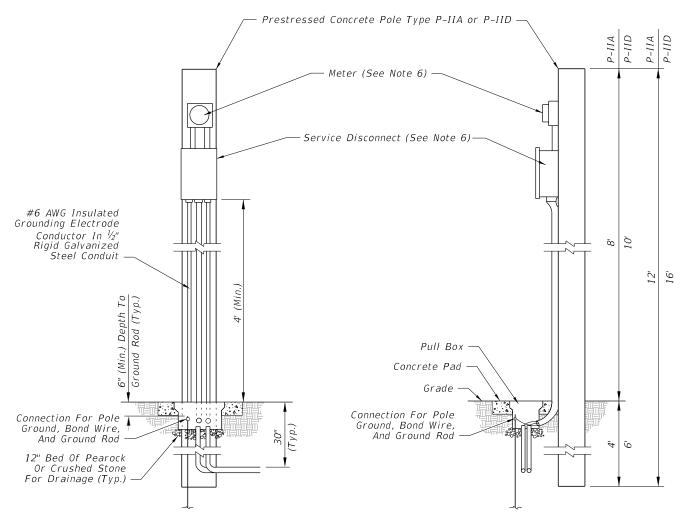
DESCRIPTION:



Prestressed Concrete Pole Type P-IIB — Clevis With Insulators Conductor Weatherhead Height As Required By Power Company Meter (See Note 6) Service Disconnect (See Note 6)-#6 AWG Insulated Grounding Electrode Conductor In ½" Rigid Galvanized Steel Conduit Pull Box Grade ,00 12" Bed Of Pearock Or Crushed Stone For Drainage (Typ.) U.L. Approved Ground Rod, 5/8" Dia. 40' Long Copper Clad (All Service Points) DETAIL A

GENERAL NOTES:

- 1. It shall be the contractors responsibility to provide a complete service assembly as per the plans and service specifications.
- 2. The service installation shall meet the requirements of the national electric code and applicable local codes.
- 3. Shop drawings are not required for service equipment, unless noted in the plans.
- 4. A pull box is required at each service point; see Index 635-001.
- 5. For prestressed concrete pole details, see Index 641-010. Use the service pole type called for in the Plans.
- 6. Place the meter and service disconnect at the height shown in the Plans or as required by the power company. The service disconnect may be placed above the meter.



DETAIL B UNDERGROUND FEED

REVISION 11/01/23

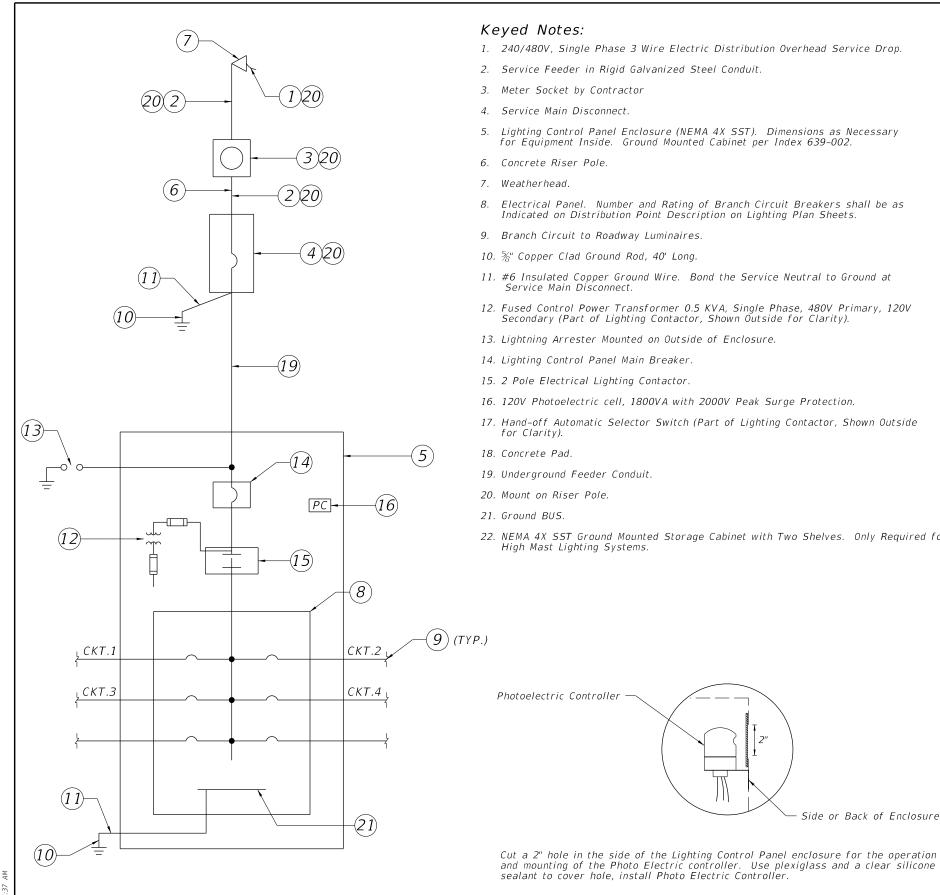
DESCRIPTION:

FDOT

AERIAL FEED

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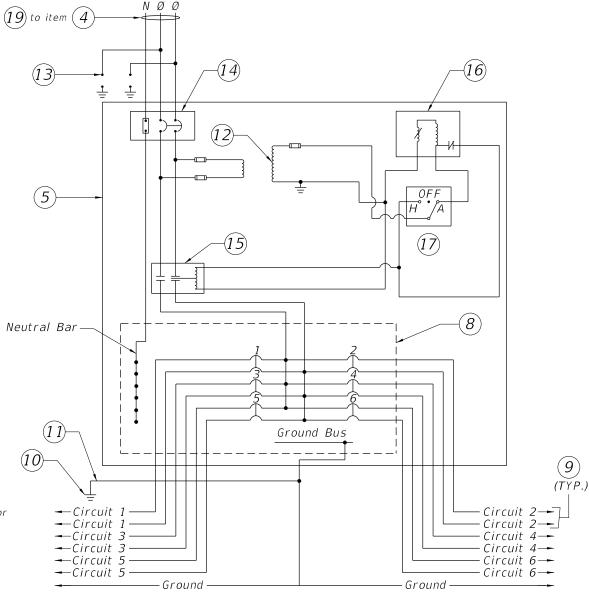
639-001



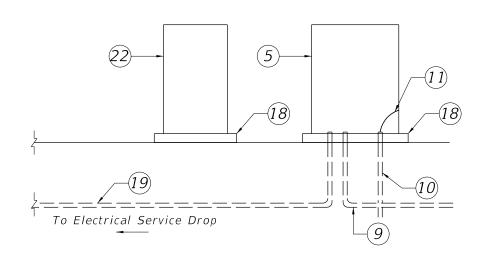
ONE LINE DIAGRAM DISTRIBUTION POINT

Keyed Notes:

- 1. 240/480V, Single Phase 3 Wire Electric Distribution Overhead Service Drop.
- 2. Service Feeder in Rigid Galvanized Steel Conduit.
- 3. Meter Socket by Contractor
- 4. Service Main Disconnect.
- 5. Lighting Control Panel Enclosure (NEMA 4X SST). Dimensions as Necessary for Equipment Inside. Ground Mounted Cabinet per Index 639-002.
- 6. Concrete Riser Pole.
- 7. Weatherhead.
- Electrical Panel. Number and Rating of Branch Circuit Breakers shall be as Indicated on Distribution Point Description on Lighting Plan Sheets.
- 9. Branch Circuit to Roadway Luminaires.
- 10. ½" Copper Clad Ground Rod, 40' Long.
- 11. #6 Insulated Copper Ground Wire. Bond the Service Neutral to Ground at Service Main Disconnect.
- 12. Fused Control Power Transformer 0.5 KVA, Single Phase, 480V Primary, 120V Secondary (Part of Lighting Contactor, Shown Outside for Clarity).
- 13. Lightning Arrester Mounted on Outside of Enclosure.
- 14. Lighting Control Panel Main Breaker
- 15. 2 Pole Electrical Lighting Contactor.
- 16. 120V Photoelectric cell, 1800VA with 2000V Peak Surge Protection.
- 17. Hand-off Automatic Selector Switch (Part of Lighting Contactor, Shown Outside for Clarity).
- 18. Concrete Pad.
- 19. Underground Feeder Conduit.
- 20. Mount on Riser Pole.
- 21. Ground BUS.
- 22. NEMA 4X SST Ground Mounted Storage Cabinet with Two Shelves. Only Required for High Mast Lighting Systems.



TYPICAL DISTRIBUTION POINT SCHEMATIC DETAIL



RISER DIAGRAM - TYPICAL DISTRIBUTION POINT

PHOTOELECTRIC CONTROLLER DETAIL

Side or Back of Enclosure

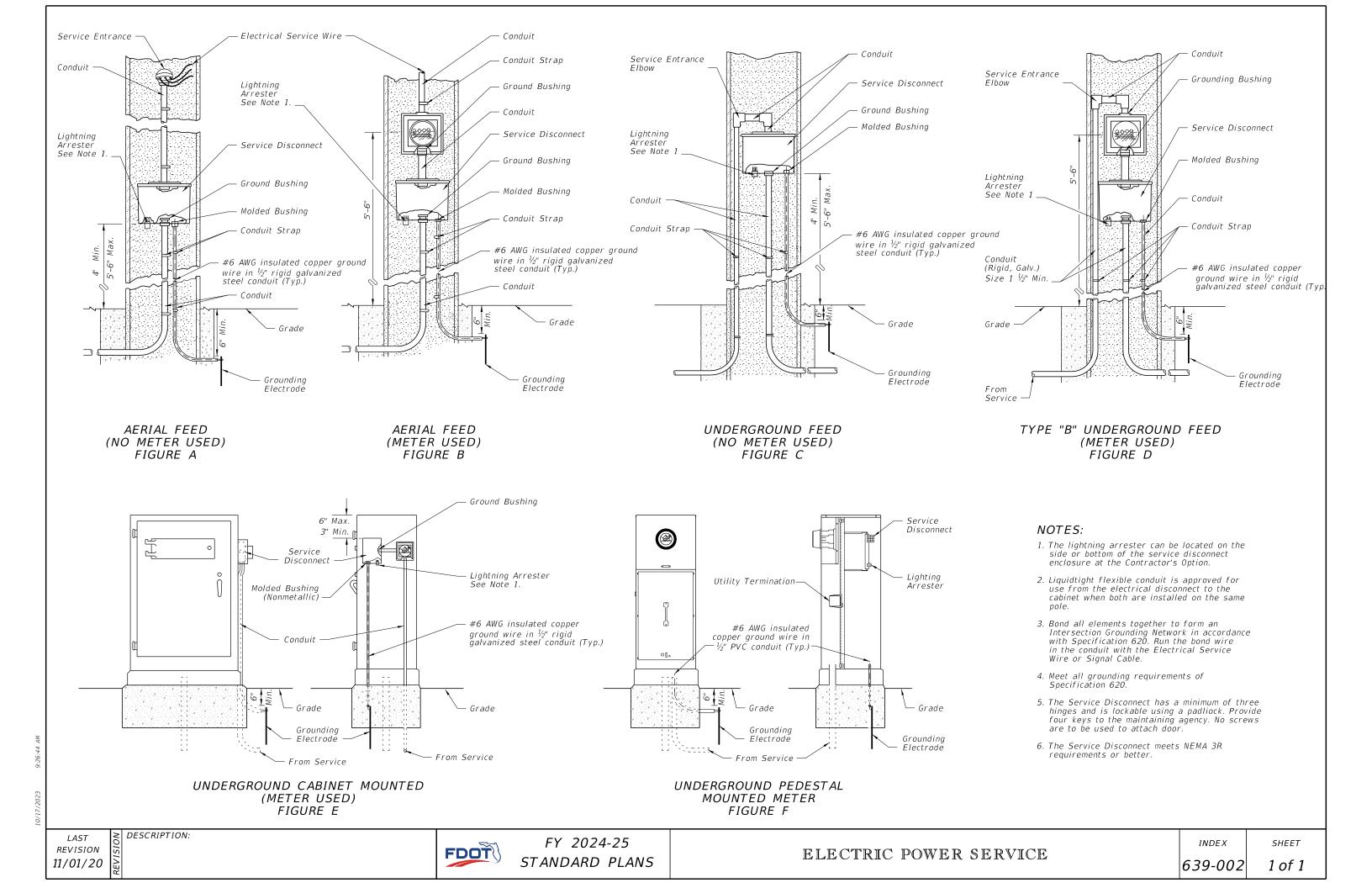
REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

INDEX



2. Shop Drawings:

This Index is considered fully detailed and no shop drawing are necessary. Submit shop drawings only for minor modifications not detailed in the Plans.

3. <u>Materials</u>:

Class V with 4 ksi minimum strength at transfer or A. Concrete:

Class VI with 6.5 ksi minimum strength at transfer

B.Prestress Strands & Spiral Reinforcing: Specification 641 C.Hand and coupler cover plates: Non-corrosive material D.Screws: Round headed, chrome plated

4. Fabrication:

A. Pole Total Taper shown is for pole width, strands, reinforcing and void (0.081 in/ft per face).

- B. Concrete Cover: 1" minimum.
- C. Spiral Reinforcing: Place as shown, and add one turn for splices and two turns at both the tip and butt ends of the pole.
- D. The design dimensions for Front Face (FF) and Back Face (BF) of the poles may vary transversely from the section shown by $\pm \frac{1}{4}$ " to assist with removal from forms. Balance addition and subtraction of the face widths to maintain section areas shown.
- E. Tie ground wires to the interior of reinforcing steel to prevent displacement during concreting operations.
- F. Cut the tip end of the prestressed strand either first or simultaneously with the butt end.
- G. Provide cover plates and screws for hand hole and couplers. Attach cover plates to the poles using lead anchors or embedded threaded inserts.
- H. Provide Aluminum Identification Tag on the pole with the following information:
- a. Financial Project ID.
- b. Pole Manufacturer
- c. Standard Pole Type Number
- d. Pole Length (L)

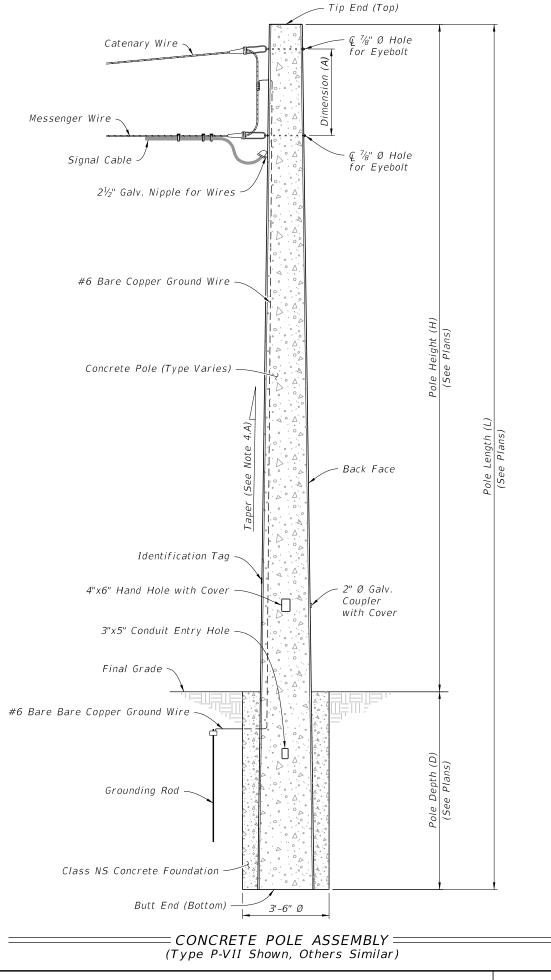
5. Support Points:

Support Points shown may vary within a tolerance of ± 3 ".

Horizontal Pole Support Points shown are for strand release, storage, handling and transport of the horizontal pole. Keep Back Face oriented downward until final erection.

- 6. Two point attachment: Provide an eye bolt hole for the messenger wire.
- 7. Tether Wire: When required, field-drill the eyebolt hole prior to installation.

	TABLE OF CONTENTS:						
Sheet	Description						
1	General Notes and Contents						
2	Service Pole – Type P-IIA (12 ft.)						
3	Service Pole – Type P-IIB (36 Ft.)						
4	Pedestal Pole - Type P-IIC (12 Ft.)						
5	Pedestal Pole - Type P-IID (16 Ft.)						
6	Pole - Type P-III						
7	Strain Pole – Type P-IV						
8	Strain Pole - Type P-V						
9	Strain Pole – Type P-VI						
10	Strain Pole - Type P-VII						
11	Strain Pole - Type P-VIII						



REVISION 11/01/22

DESCRIPTION:

FDOT

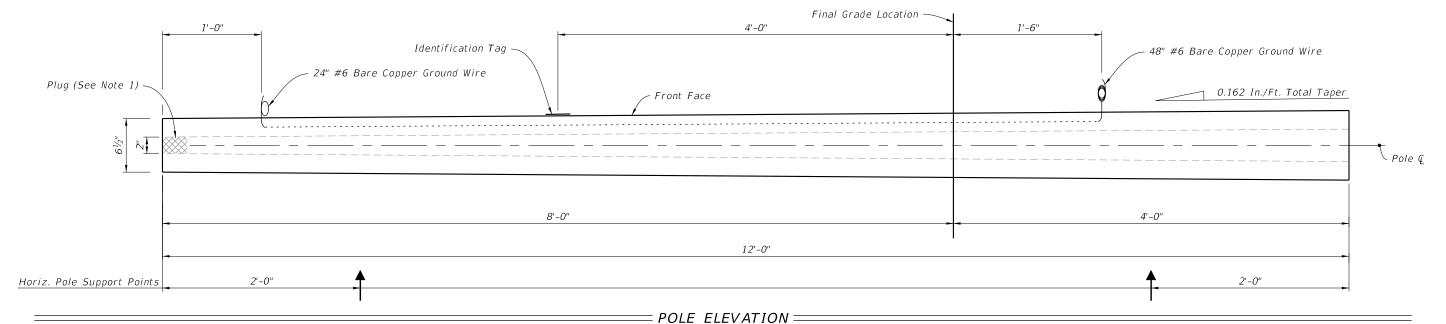
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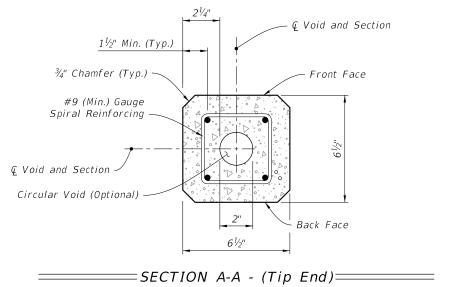
SHEET 1 of 11

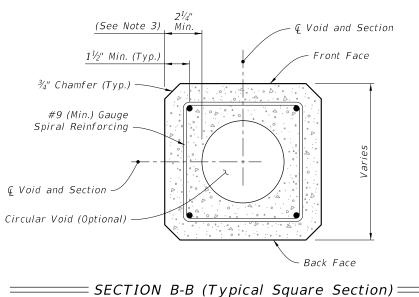
SPIRAL REINFORCING ELEVATION =

(Strands and Fixtures Not Shown)



(Strands and Reinforcing Not Shown)





NOTES:

- 1. Provide a minimum 3" concrete plug at the Tip End.
- 2. For final erection, tilt pole upright with single point attachment located a distance of 4 feet from the Tip End.
- 3. Dimension may vary from $2\frac{1}{4}$ " to $3\frac{1}{2}$ " to accommodate smaller radius of optional stepped (PVC) void. The minimum void diameter is 2".
- 4. Strands shown are continuous from Tip End to Butt End.
- 5. Strands are not shown in the elevation views for clarity.

LEGEND:

• Prestressed Strand: 0.5 in. ~ 24 kips before transfer or 0.375 in. ~ 14 kips before transfer (4 strands total)

SERVICE POLE - TYPE P-IIA (12 Ft.)

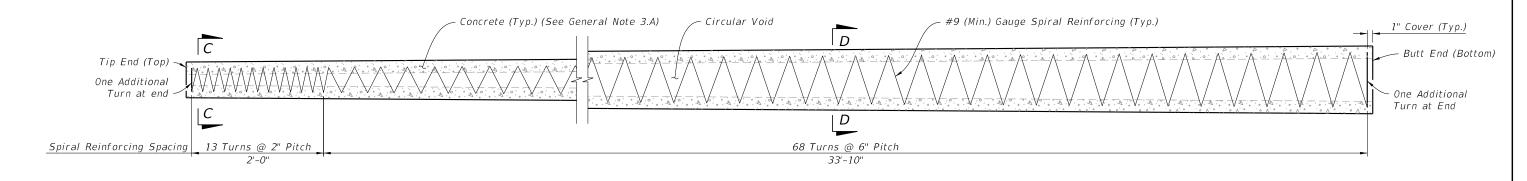
REVISION 11/01/22

DESCRIPTION:

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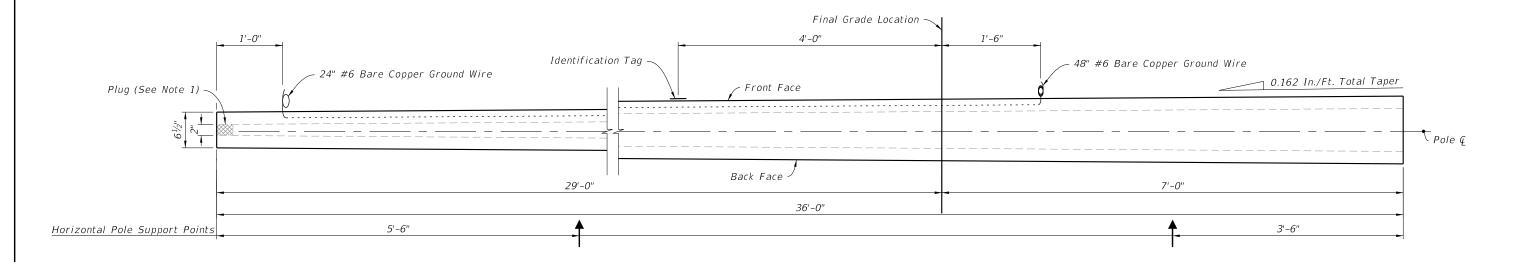
FY 2024-25 STANDARD PLANS

INDEX 641-010



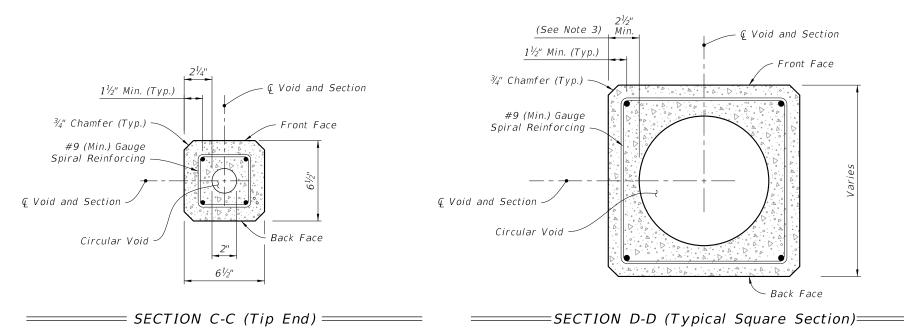
SPIRAL REINFORCING ELEVATION =

(Strands and Fixtures Not Shown)



= POLE $\,$ ELEVATION =

(Strands and Reinforcing Not Shown)



NOTES:

- 1. Provide a minimum 3" concrete plug at the Tip End.
- 2. For final erection, tilt pole upright with single point attachment located a distance of 10 feet from the Tip End.
- 3. Dimension may vary from $2\frac{1}{4}$ " to $3\frac{1}{2}$ " to accommodate smaller radius of optional stepped (PVC) void. The minimum void diameter is 2".
- 4. Strands shown are continuous from Tip End to Butt End.
- 5. Strands are not shown in the elevation views for clarity.

LEGEND:

• Prestressed Strand: 0.5 in. ~ 24 kips before transfer or 0.375 in. ~ 14 kips before transfer (4 strands total)

SERVICE POLE TYPE P-IIB (36 Ft.)

REVISION 11/01/22

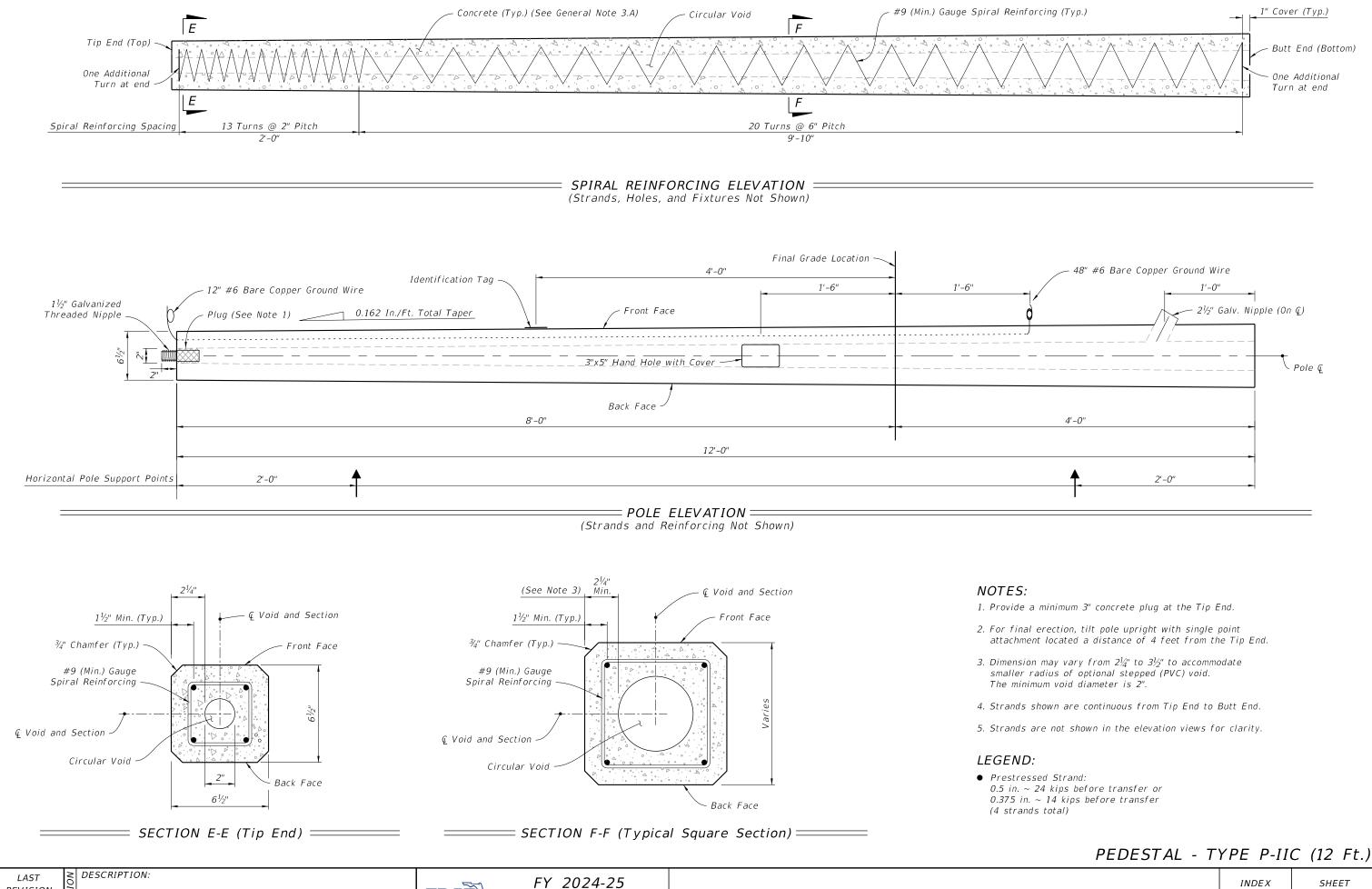
DESCRIPTION:

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FY 2024-25 STANDARD PLANS

CONCRETE POLES

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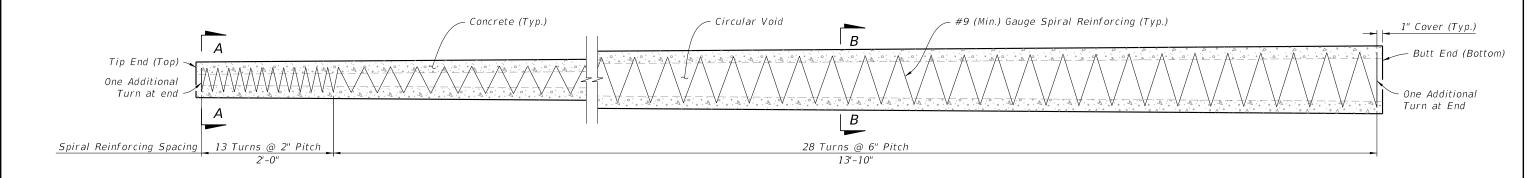
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FY 2024-25 STANDARD PLANS

CONCRETE POLES

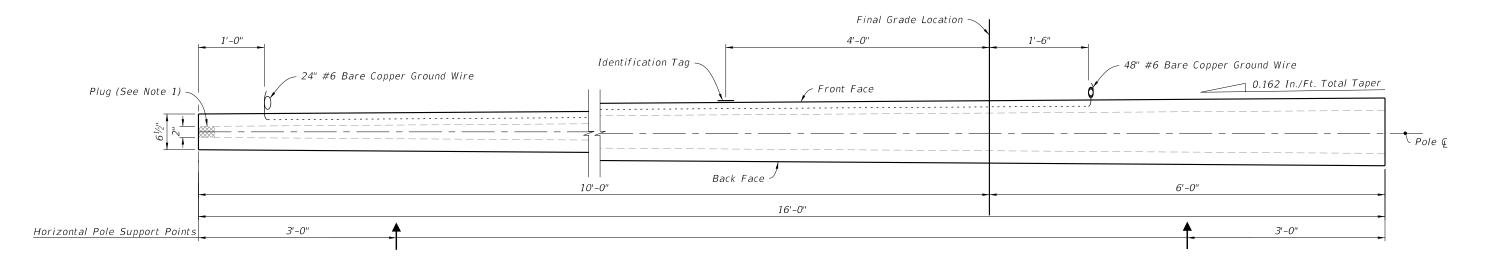
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SPIRAL REINFORCING ELEVATION

(Strands and Fixtures Not Shown)

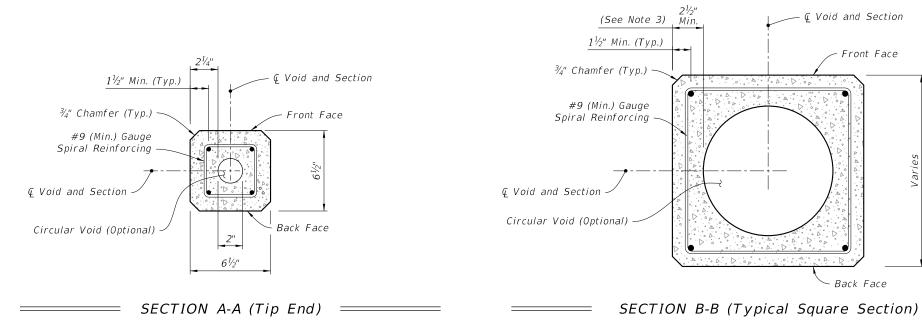


= POLE ELEVATION =

(Strands and Reinforcing Not Shown)

– & Void and Section

Front Face



NOTES:

- 1. Provide a minimum 3" concrete plug at the Tip End.
- 2. For final erection, tilt pole upright with single point attachment located a distance of 5 feet from the Tip End.
- 3. Dimension may vary from $2\frac{1}{4}$ " to $3\frac{1}{2}$ " to accommodate smaller radius of optional stepped (PVC) void. The minimum void diameter is 2".
- 4. Strands shown are continuous from Tip End to Butt End.
- 5. Strands are not shown in the elevation views for clarity.

LEGEND:

• Prestressed Strand: 0.5 in. ~ 24 kips before transfer or 0.375 in. ~ 14 kips before transfer (4 strands total)

SERVICE POLE TYPE P-IID (16 Ft.)

REVISION 11/01/22

DESCRIPTION:

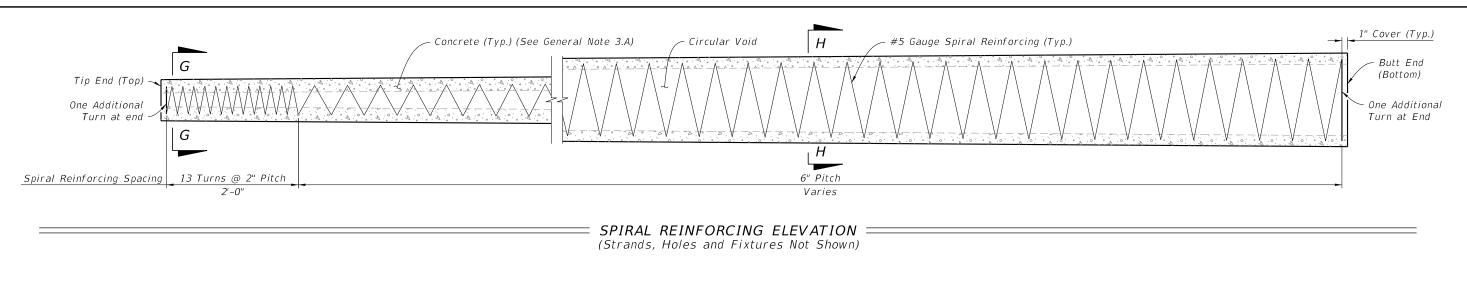
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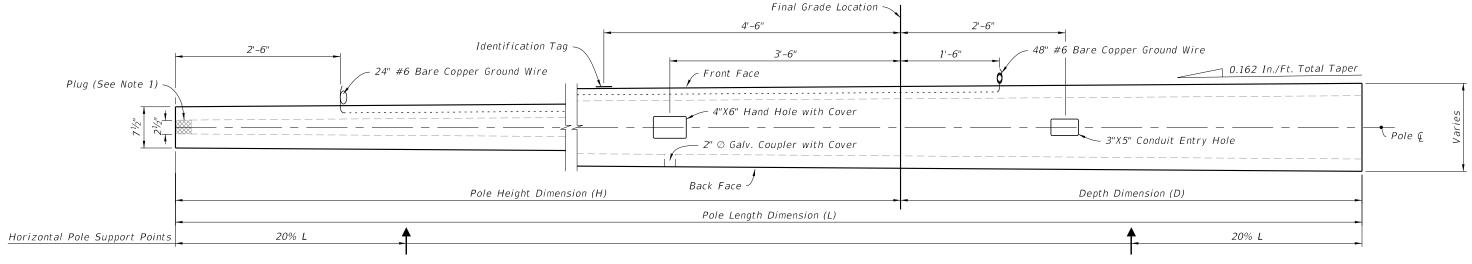
FY 2024-25 STANDARD PLANS

CONCRETE POLES

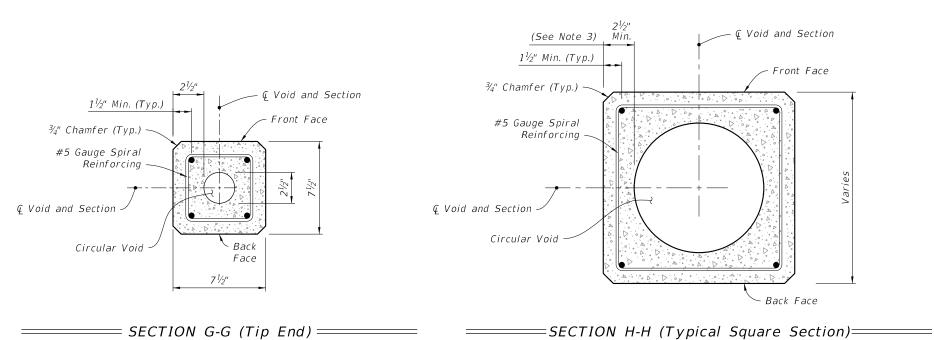
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(Strands and Reinforcing Not Shown)



NOTES:

- 1. Provide a minimum 3" concrete plug at the Tip End.
- 2. For final erection, tilt pole upright with single point attachment located a distance of 33% L from the Tip End.
- 3. Dimension may vary from $2\frac{1}{2}$ " to $3\frac{3}{4}$ " to accommodate smaller radius of optional stepped (PVC) void. The minimum void diameter is $2\frac{1}{2}$ ".
- 4. Strands shown are continuous from Tip End to Butt End.
- 5. Strands are not shown in the elevation views for clarity.

LEGEND:

Prestressed Strand:
 0.5 in. ~ 31 kips before transfer (4 strands total)

POLE TYPE P-III

LAST OF REVISION IN 11/01/22

DESCRIPTION:

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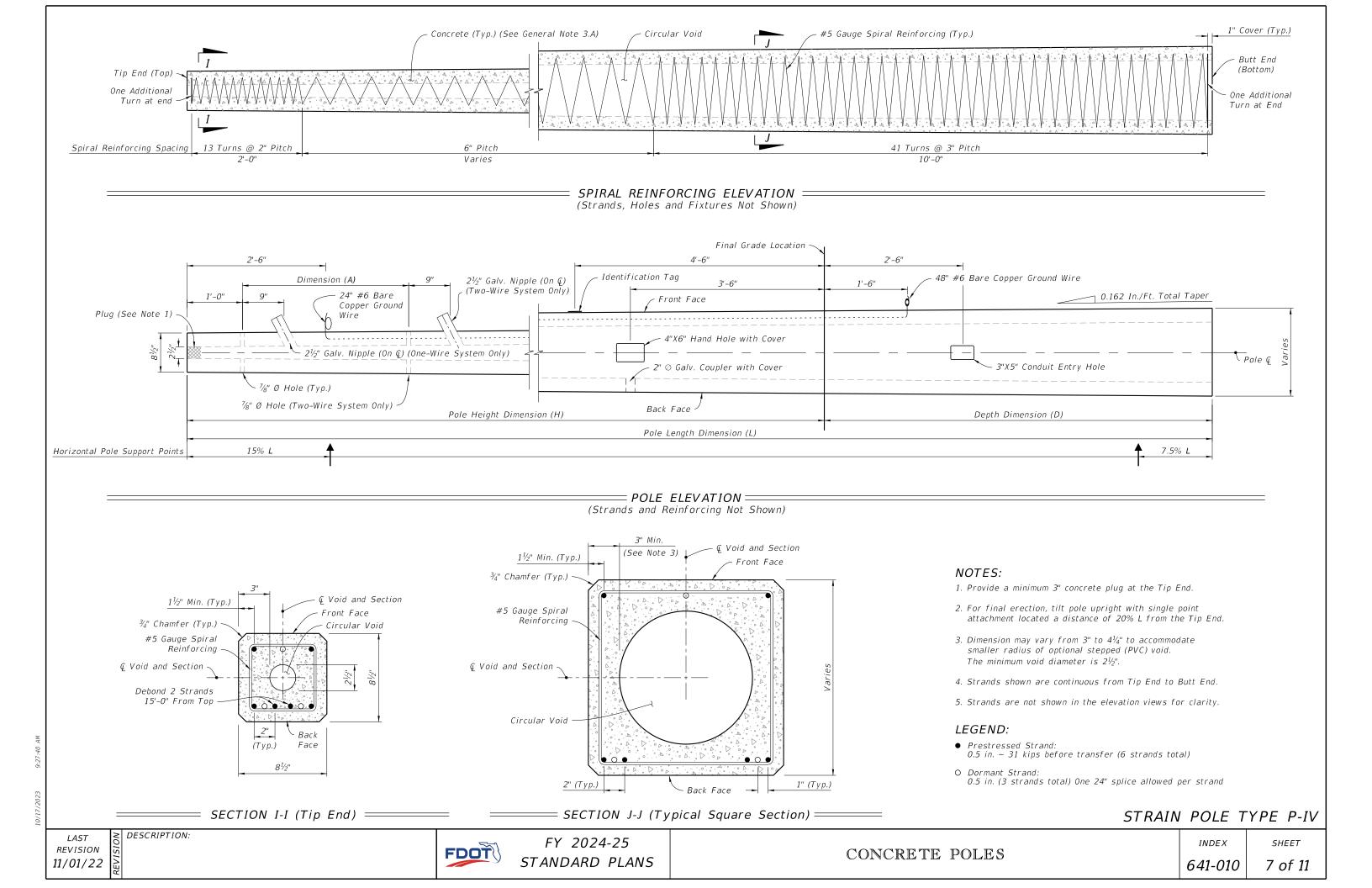
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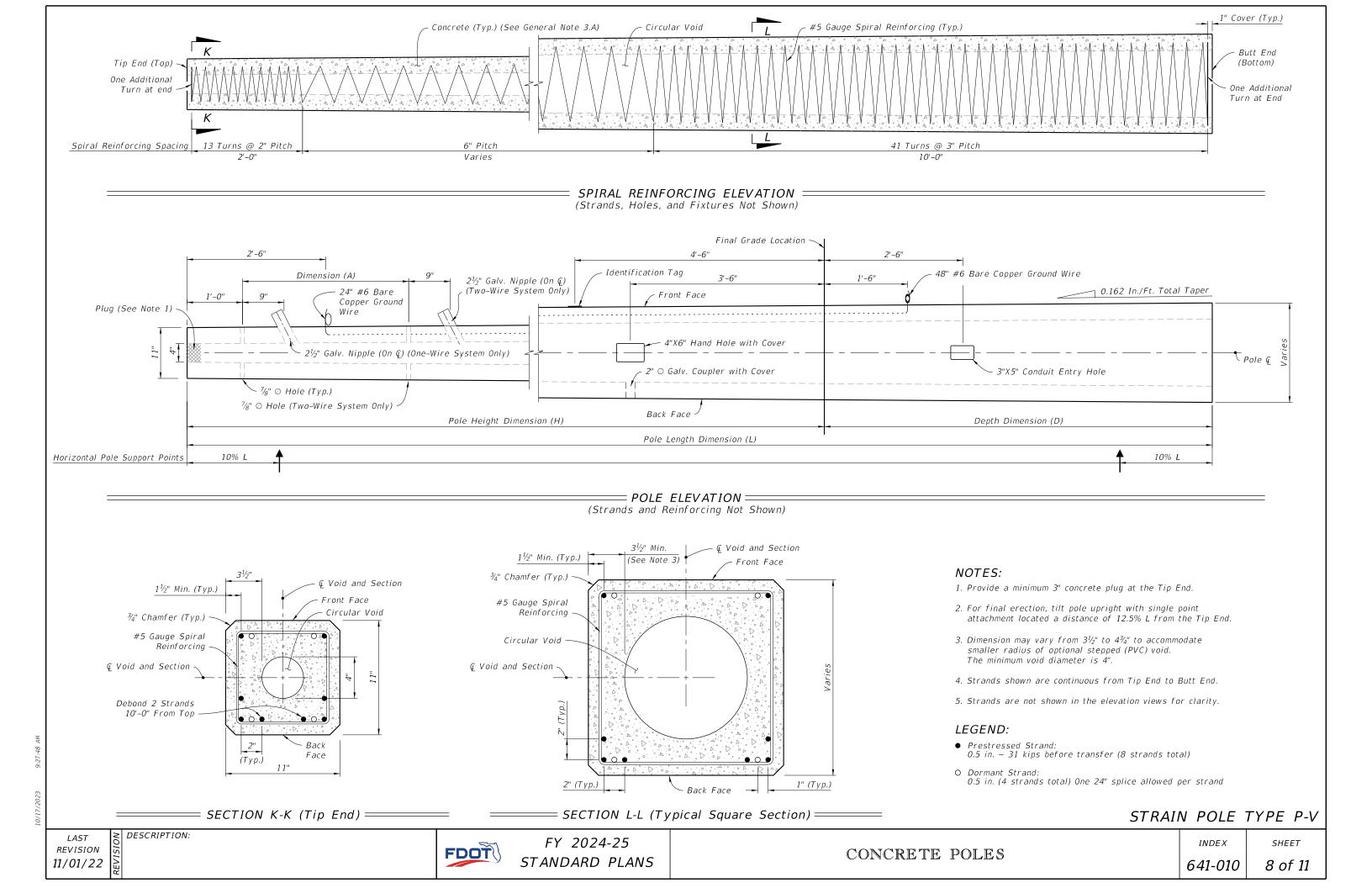
CONCRETE POLES

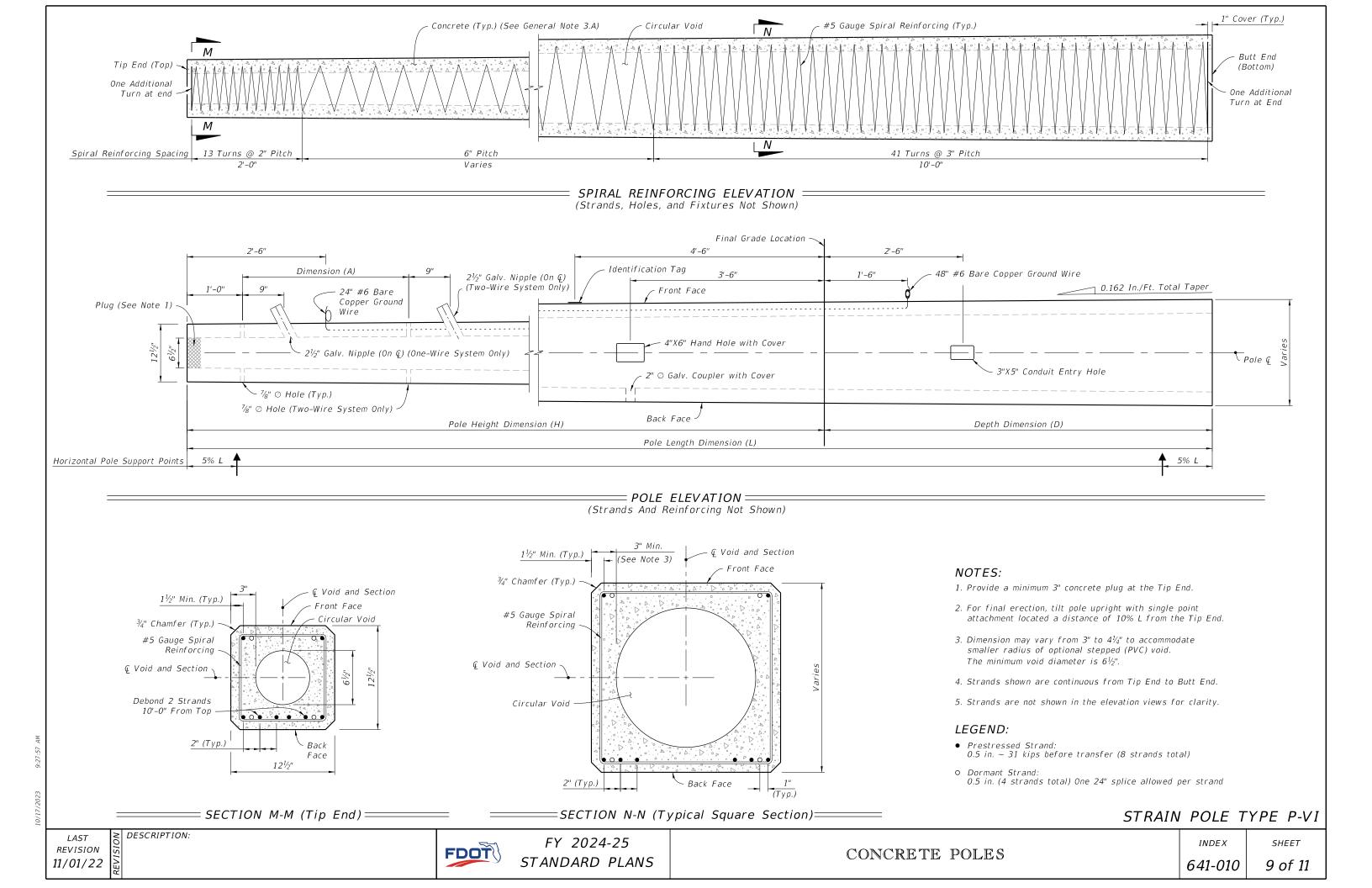
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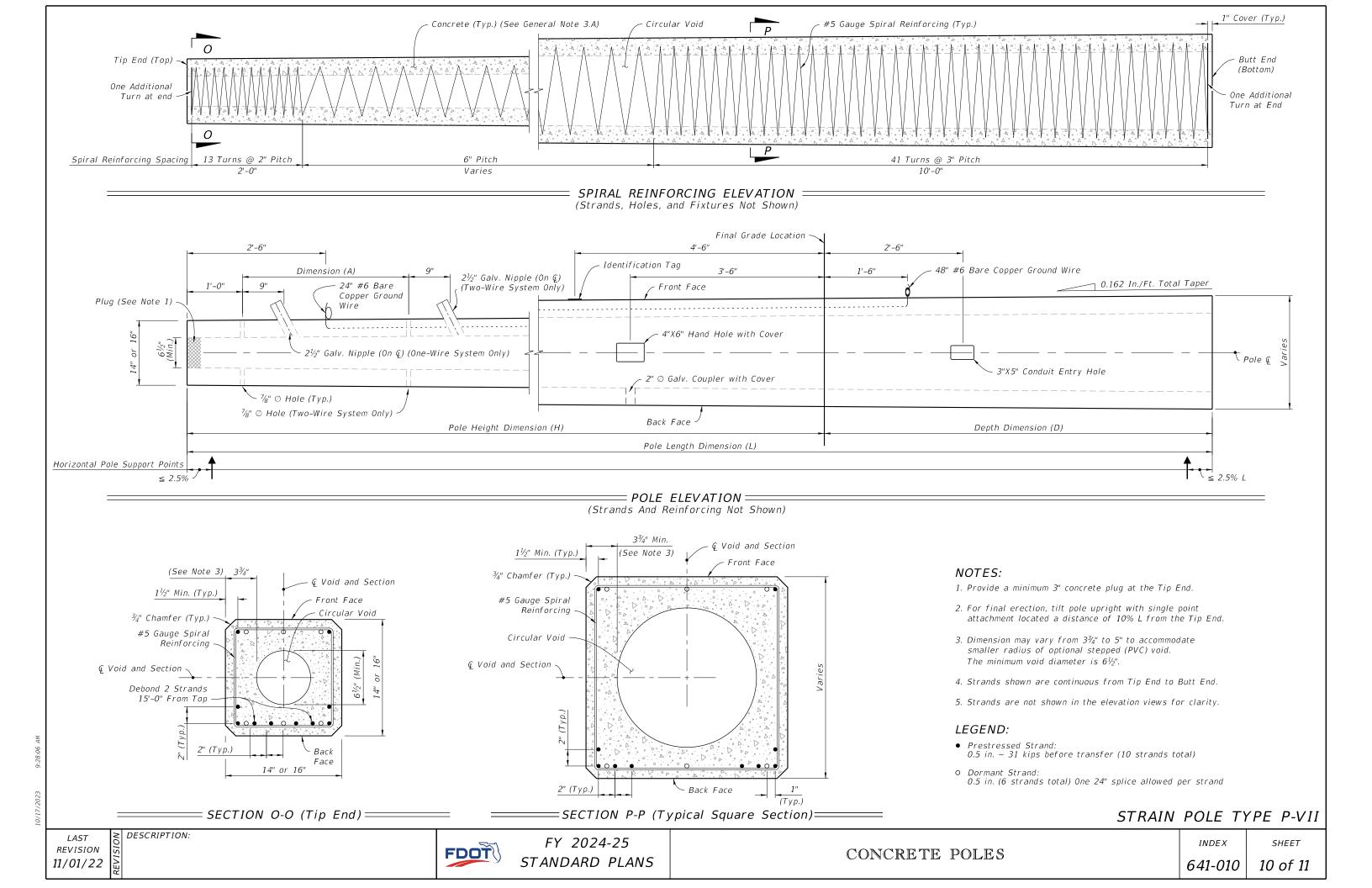
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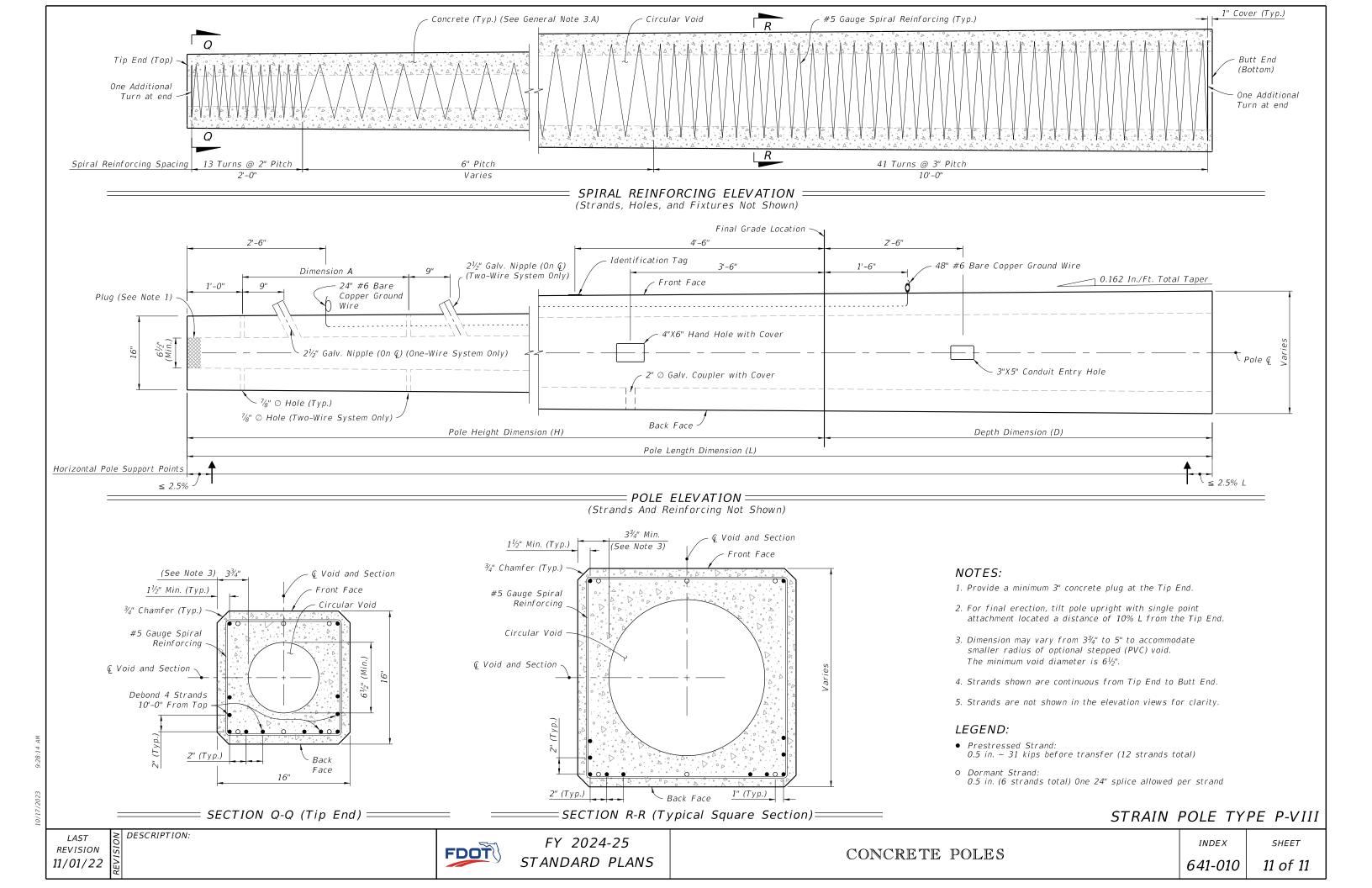
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GENERAL NOTES:

- 1. Work this Index with Specification 641.
- 2. This Index is considered fully detailed and no shop drawings are necessary. Submit Shop Drawings for minor modifications not detailed in the Plans.
- 3. Provide either round or 12-sided Poles.
- 4. See Index 635-001 for additional Pull Box details.
- 5. See Index 676-010 for cabinet installation details.
- 6. Materials:
- A. Pole: Use Class VI concrete with 6 ksi minimum strength at transfer.
- B. Prestressing Strands: ASTM A416, Grade 270 low relaxation. C. Reinforcing Steel: ASTM A615, Grade 60
- D. Spiral Reinforcing: ASTM A1064 Cold-Drawn E. Bolts: ASTM F1554, Grade 55
- Nuts: ASTM A563, Grade A Heavy Hex
- Washers: ASTM F436
- F. Steel plates and Pole Cap: ASTM A36 or ASTM A709, Grade 50 G. Galvanization: Bolts, nuts and washers: ASTM F2329
 - All other steel: ASTM A123

7. Fabrication:

- A. Cut the tip end of the prestressed strand first or simultaneously with the butt end.
- B. For spiral reinforcing, one turn is required for spiral splices and two turns are required at the top and bottom of poles.
- C. For Reinforcing Steel, lap splice to consist of a 3'-0" lap length at each splice. No more than two opposing rebar to be spliced at the same cross section. Stagger lap splices as needed. D. Provided a Class 3 surface finish in accordance with Specification 400.
- E. Provide a 1" minimum cover.
- F. Provide handhole and coupler cover plates made of non-corrosive materials. Attach cover plates to poles using lead anchors or threaded inserts embedded in the poles in conjunction with round headed chrome plated screws.
- G. Provide Identification Markings on the poles where indicated on the following sheets. Include the following information using inset numerals with 1" height or as approved in the Producers' Quality Control Program:

Financial Project ID Pole Manufacturer Pole Length

- H. Tie ground wires to the interior of reinforcing steel as necessary to prevent displacement during concreting operations.
- I. Storage, Handling and Erection locations shown may vary within \pm 3".

8. Pole Installation:

- A. Install the Pole plumb.
- B. Install Pole with the handhole located away from approaching traffic.

9. Cabinet Installation:

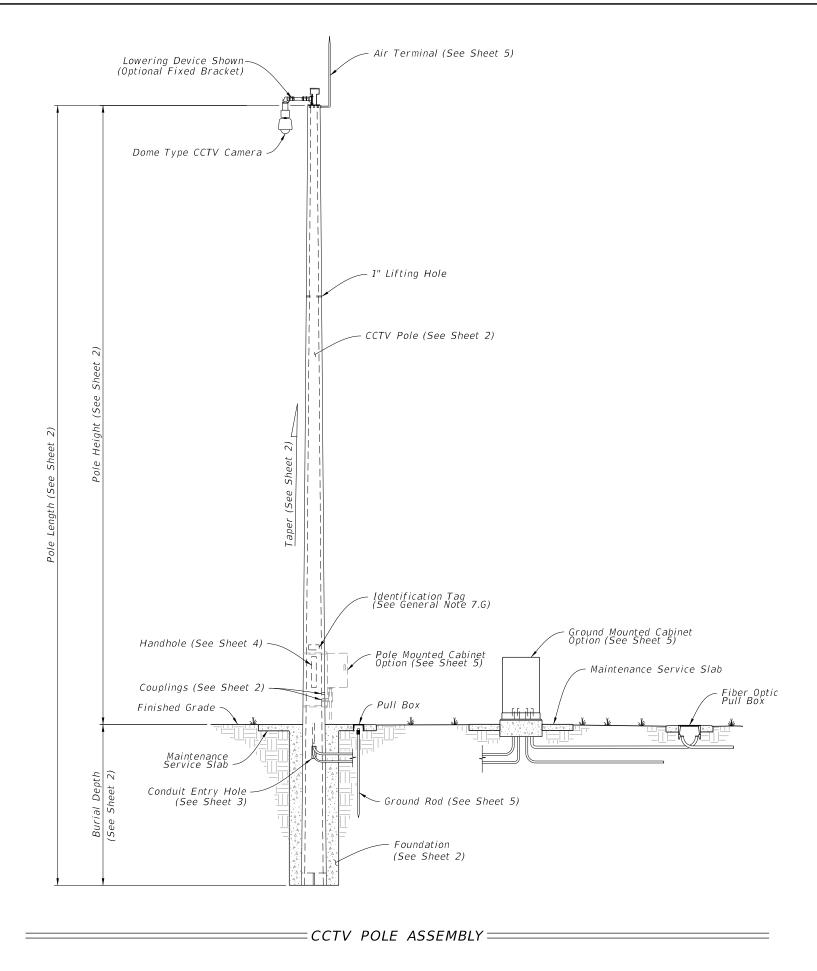
- A. Splice fiber optic cables in cabinet to preterminated patch panel.
- B. Furnish and install Surge Protection Devices (SPDs) on all cabling in cabinet.
- C. Furnish and install secondary SPDs protection on outlets for equipment in cabinet.
- D. Ensure that all electronic equipment power is protected and conditioned with SPDs.
- E. Ensure that equipment cabinet is bonded to CCTV pole grounding system. F. Install the pole mounted cabinet with the hinges next to the pole.
- G. Sizes and types of conduits and innerducts for network communications between the pullbox and cabinet are stated in the Contract Documents.

10. Lowering Device Installation:

DESCRIPTION:

- A. Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical
- wire within the pole is routed securely and free from slack.

 B. Mount lowering arm perpendicular to the roadway or as shown in the plans. Position CCTV pole so that the camera can be safely lowered without requiring lane closures.
- Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stand, etc.) with lowering device manufacturer.



CONCRETE CCTV POLE

REVISION 11/01/22

FDOT

Concrete Pole

NOTES:

- 1. Diameter of 12-sided poles are measured flat to flat.
- 2. Total Taper applies to pole, strands and reinforcing.
- 3. For 12-Sided Pole and Round Roles Option 2, Stress prestressed strand to 70% of Ultimate before transfer. For Round Pole Option 1, stress prestressed strand to 60% of Ultimate before transfer.
- 4. Pole Design Tables, Burial Depth is based on level ground (flatter than 1:5). Increase the burial depth in accordance with the Additional Burial Depth Due To Ground Slope table for foundations with slopes 1:5 and steeper. Use the higher value for slope or diameter values that fall between those shown on the table.

Air Terminal (See Sheet 5) -

1" Lifting Hole

(See Sheet 3)_

Camera Lowering Device—

Dome Type CCTV Camera -

Conduit Entry Hole

1" Lifting Hole_

(See Sheet 3)

Class NS Concrete

5. Strand Pattern 1 may be used in lieu of Strand Pattern 2 where required by fabrication to facilitate Handhole construction.

= ASSEMBLY =====

ADDITIONAL BURIAL DEPTH										
DUE TO GROUND SLOPE										
Ground Slope Additional Burial Depth (feet)										
1:5	3									
1:4	4									
1:3 5										
1:2	7									

	12-SIDED POLE DESIGN TABLE (See Note 1, 5)											
Pole Length (ft)	Pole Height (ft)	(EL)	Laner		Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter		
63	50	13	0.18	0.18	3	3	12	23.34	2	0.6"		
69	55	14	0.18	0.18	3	3	12	24.42	2	0.6"		
75	60	15	0.18	0.18	3	3	12	25.50	3	0.6"		
80	65	15	0.18	0.18	3	3	12	26.40	3	0.6"		
86	70	16	0.18	0.18	3	3	12	27.48	3	0.6"		

	ROUND POLE DESIGN TABLE											
Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Design Option	Total Taper (in/ft) (See Note 2)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter	
63	50	13	Option 1	0.216	0.192	3	3.76	12.15	25.76	4	0.5"	
05	50	13	Option 2	0.180	0.172	3	3.50	12.00	23.34	5	0.5"	
69	55	14	Option 1	0.216	0.192	3	3.83	12.15	27.05	4	0.5"	
03))		Option 2	0.180	0.173	3	3.50	12.00	24.42	5	0.5"	
7.5	60	15	Option 1	0.216	0.192	3	3.90	12.15	28.35	4	0.5"	
/3	00	00	15	Option 2	0.180	0.173	3	3.50	12.00	25.50	5	0.5"
80	G E	65 15	Option 1	0.216	0.192	3	3.96	12.15	29.43	4	0.5"	
00	65		Option 2	0.180	0.174	3	3.50	12.00	26.40	5	0.5"	
86	7.0	16	Option 1	0.216	0.192	3	4.03	12.15	30.73	4	0.5"	
00	70	10	Option 2	0.180	0.174	3	3.50	13.00	28.48	5	0.5"	

Conduit Entry Hole Ground Lug Handhole

Pole Identification Markings

Interior Conduit For Pole With Lowering Device 1" Lifting Hole 2" Coupling For Pole Without Lowering Device B 1" Lifting Hole 2" Couplings Camera Plane

> Conduit Entry Hole PLAN VIEW=

FY 2024-25 FDOT STANDARD PLANS Pole Identification Markings Handhole with Cover (See General Note 8) Pole And Foundation Details Same as "Camera Lowering Device" Detail 2~2" Couplings With Caps-At 90° To Handhole Box 4'-0" Ø CAMERA LOWERING DEVICE FIXED MOUNTING BRACKET ELEVATION = INDEX SHEET CONCRETE CCTV POLE 641-020 2 of 5

Fixed Mounting Bracket-

Dome Type CCTV Camera

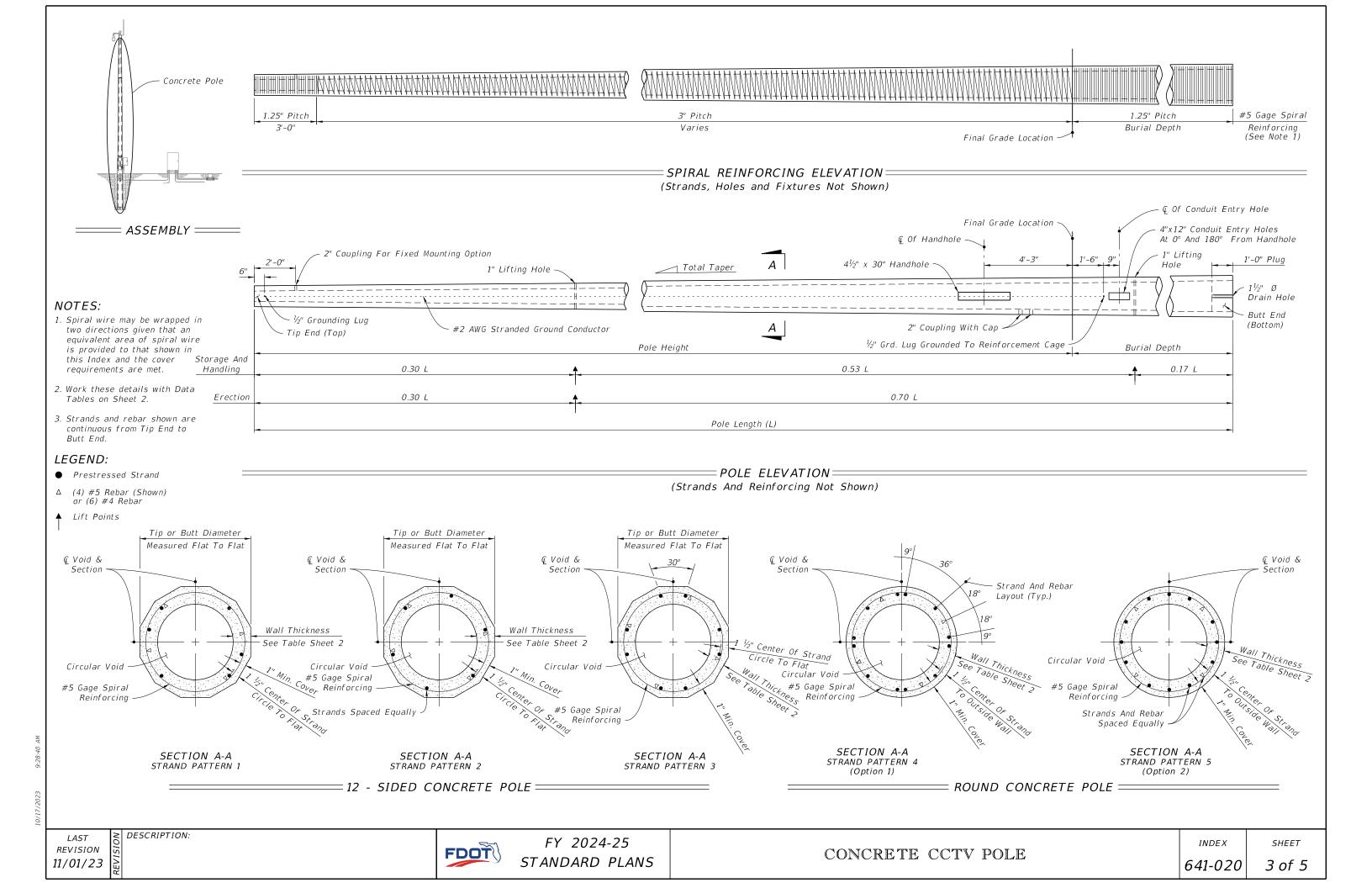
2" Coupling With Cap – At 90° To Handhole (Camera Cable Entry Point)

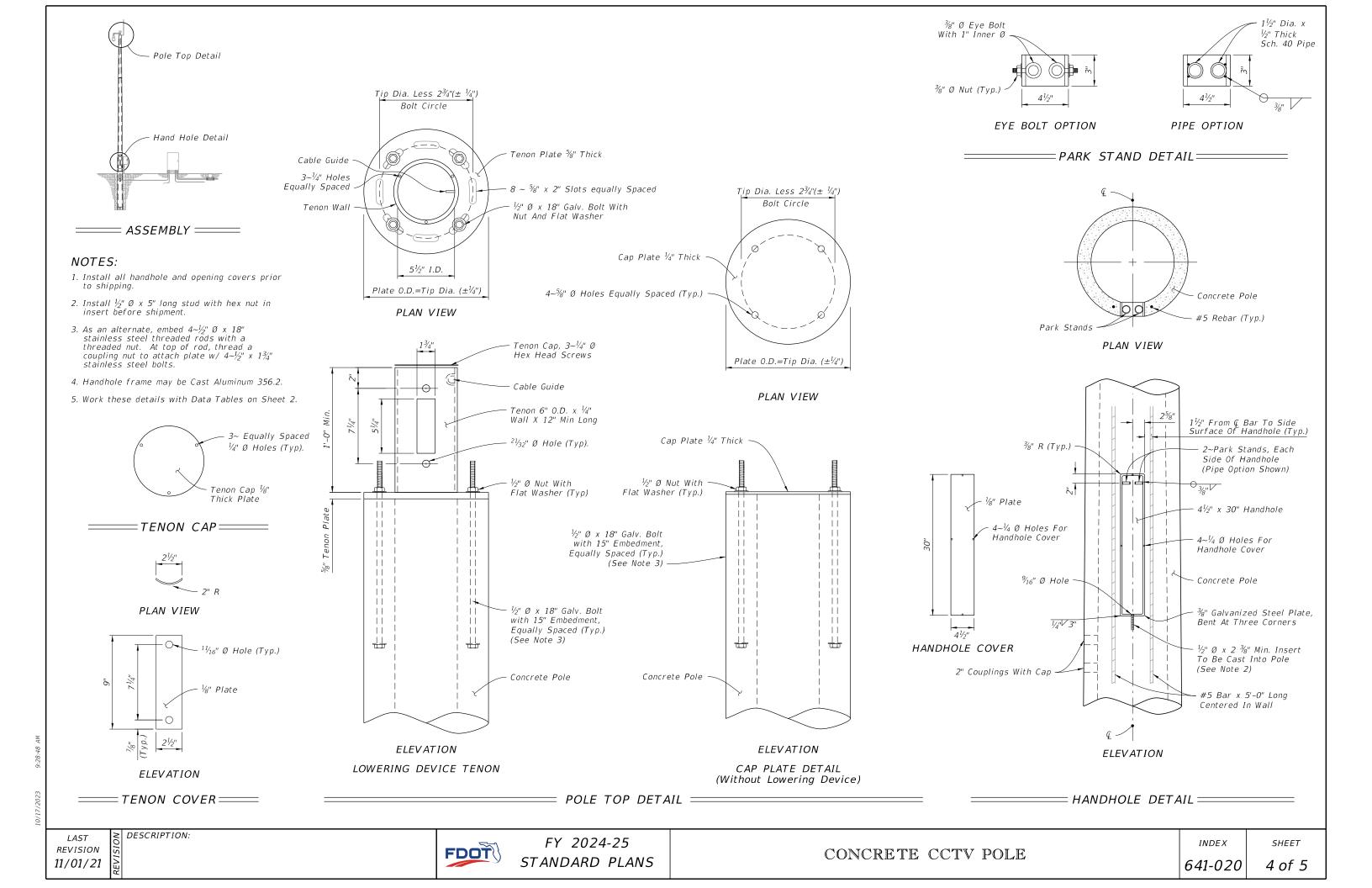
5½" Min. Inside Diameter Of

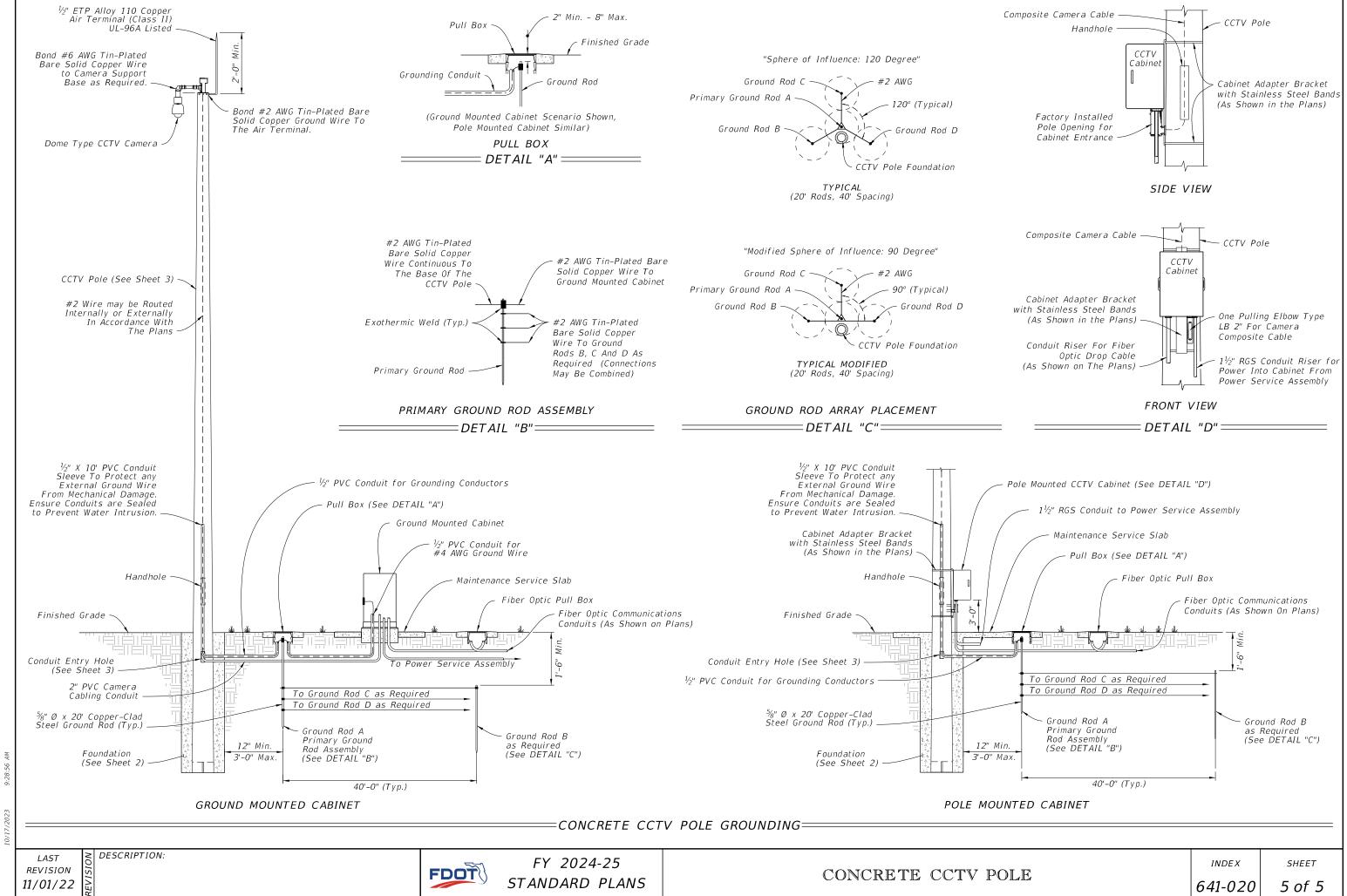
Pole Raceway

REVISION 11/01/23

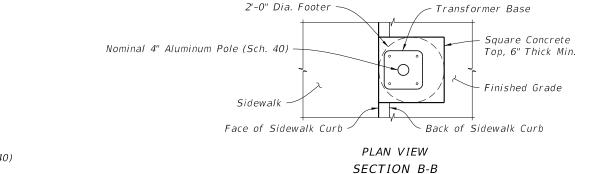
DESCRIPTION:

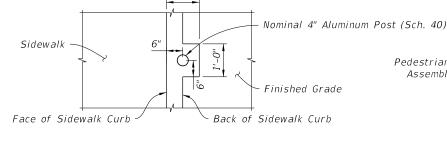






- 3. For Pedestrian Detector Assembly (i.e., Pushbutton and Sign) details see Index 665-001.
- 4. Footing may be Cast-In-Place (C-I-P) or Precast.
- 5. As an alternative to the direct buried "Post Mounted" Pedestrian Detector Assembly shown below, the post may be installed on a transformer base. Use a transformer base included on the APL approved as an alternative to a "Post Mounted" assembly,
- 6. In lieu of footing design shown, a Spread Footing may be used in accordance with Index 700-120.

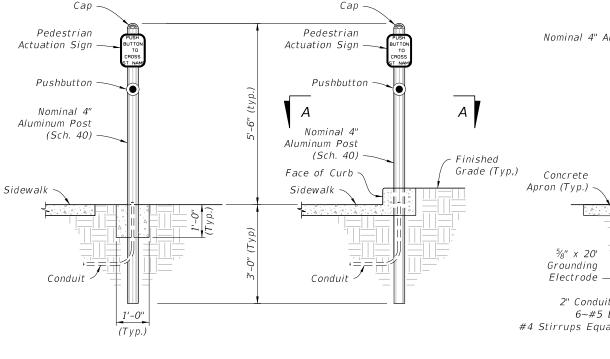


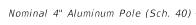




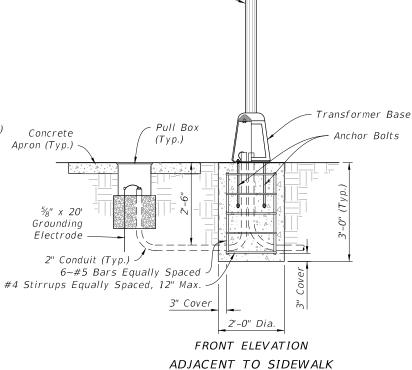
FRONT ELEVATION

IN SIDEWALK CURB

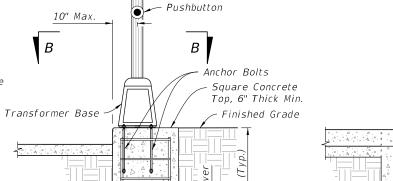




Pedestrian Signal Assembly (Typ.) -



10" Max.



SIDE ELEVATION

2'-0" (Dia.)

FRONT ELEVATION

Reinforcement

Not Shown

IN SIDEWALK CURB (Conduit And Grounding Not Shown)

6~#5 Bars Equally Spaced

#4 Stirrups Equally

Spaced, 12" Max.

Pedestrian Signal

Nominal 4" Aluminum Pole (Sch. 40)

Pedestrian Actuation Sign

Assembly (Typ.)

POST MOUNTED

PEDESTAL MOUNTED

3" Cover_

REVISION 11/01/23

FRONT ELEVATION

ADJACENT TO SIDEWALK

DESCRIPTION:

FDOT

Pedestrian Actuation Sign

Pushbutton

Transformer Base

646-001 1 of 1

This Index is considered fully detailed, only submit shop drawings for minor modifications not detailed in the Plans.

3. Materials:

- A. Strain Pole and Backing Rings:
 - a. Less than $\frac{3}{16}$ ": ASTM A1011 Grade 50, 55, 60 or 65
 - b. Greater than or equal to $\frac{3}{16}$ ": ASTM A572 Grade 50, 55, 60 or 65
 - c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
- B. Steel Plates: ASTM A36
- C. Weld Metal: E70XX
- D. Bolts, Nuts and Washers:
 - a. High Strength Bolts: ASTM F3125, Grade A325, Type 1 b. Nuts: ASTM A563 Grade DH Heavy-Hex

 - c. Washers: ASTM F436 Type 1, one under turned element
- E. Anchor Bolts, Nuts and Washers.
 - a. Anchor Bolts: ASTM F1554 Grade 55

 - b. Nuts: ASTM A563 Grade A Heavy–Hex (5 per anchor bolt) c. Plate Washers: ASTM A36 (2 per bolt). Split–lock washers and
 - self-locking nuts are not permitted
- F. Handhole Frame: ASTM A709 or ASTM A36, Grade 36
- G. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65 H. Aluminum Pole Caps and Nut Covers: ASTM B26 (319-F)
- . Stainless Steel Screws: AISI Type 316
- J. Threaded Bars/Studs: ASTM A36 or ASTM A307
- K. Concrete: Class IV (Drilled Shaft) for all environmental classifications.
- L. Reinforcing Steel: Specification 415

4. Fabrication:

- A. Pole Taper: Change diameter at a rate of 0.14 inches per foot, round or 12-sided (Min.)
- B. Upright splices are not permitted. Transverse welds are only permitted at the base.
- C. Provide bolt hole diameters as follows:
 - a. Bolts (except Anchor Bolts): Bolt diameter plus $\frac{1}{16}$, prior to galvanizing
 - b. Anchor Bolts: Bolt diameter plus ½", maximum.
- D. Locate handhole 180° from 2" wire entrance pipe. E. Identification Tag: (Submit details for approval.)
- a. 2"x 4" (Max.) aluminum identification tag.
- b. Locate on the inside of the pole and visible from the handhole.
- c. Secure to pole with V_0 " diameter stainless steel rivets or screws. d. Include the following information on the ID Tag:
- 1. Financial Project ID
 - . Pole Type

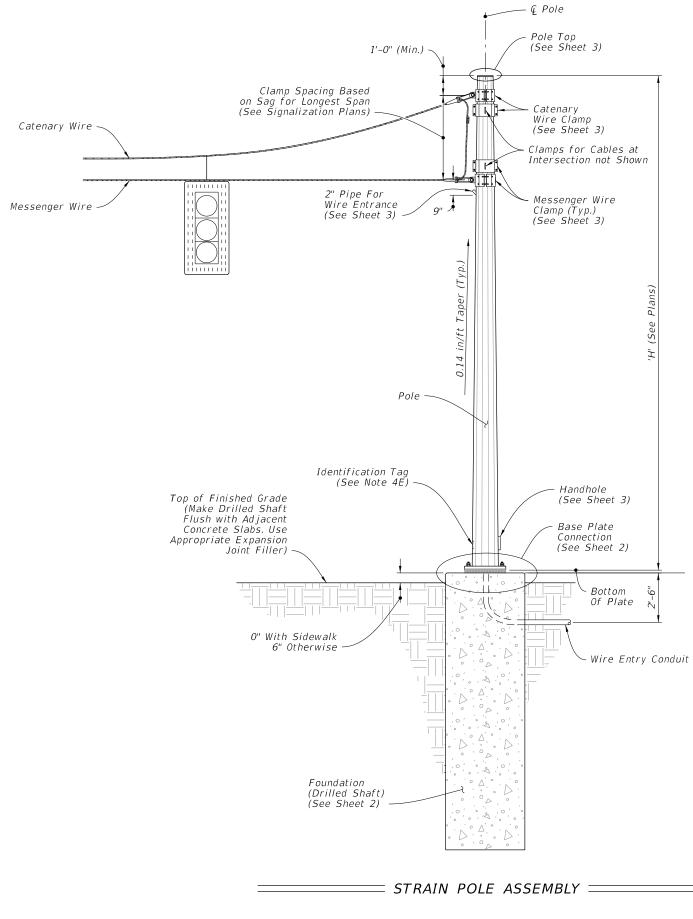
 - 3. Pole height 4. Manufacturers' Name
 - 5. Fy of Steel
 - 6. Base Wall Thickness
- F. Provide a 'J' or 'C' hook at the top of the pole for signal wiring support (See Sheet 3).
- G. Perform all welding in accordance with Specification 460-6.4.
- H. Fabricate longitudinal seam welds in pole with 60 percent minimum penetration or fusion welds except, within 6" of the base plate connection use complete joint penetration
- I. Hot Dip Galvanize after fabrication.

5. Coatings:

- A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329
- B. All other steel items including plate washers: ASTM A123

6. Construction:

- A. Foundation: Specification 455, except that payment is included in the cost of the strain pole.
- B. After installation, place wire screen between top of foundation and bottom of base plate in accordance with Specification 649-8.



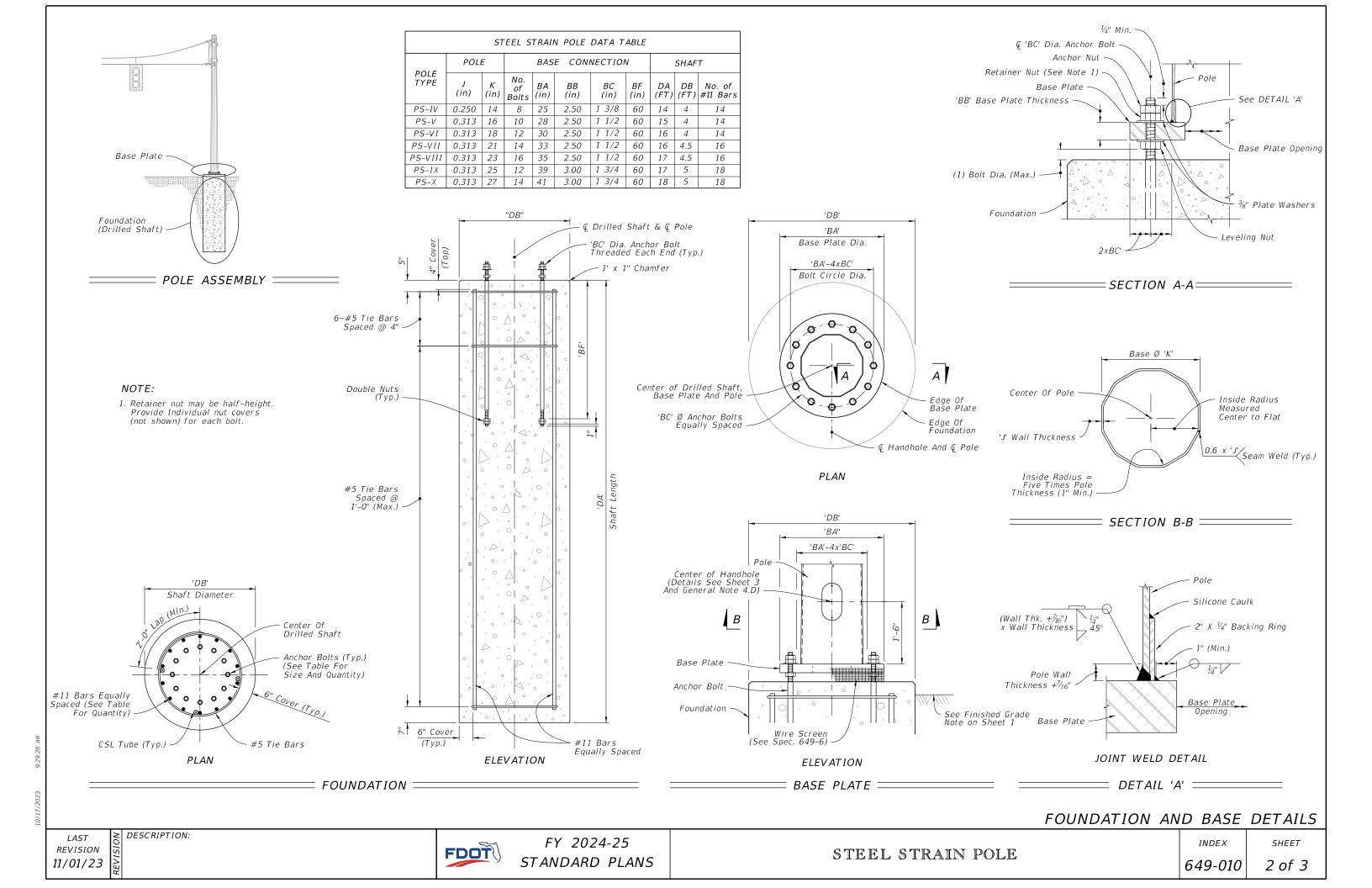
ELEVATION AND NOTES

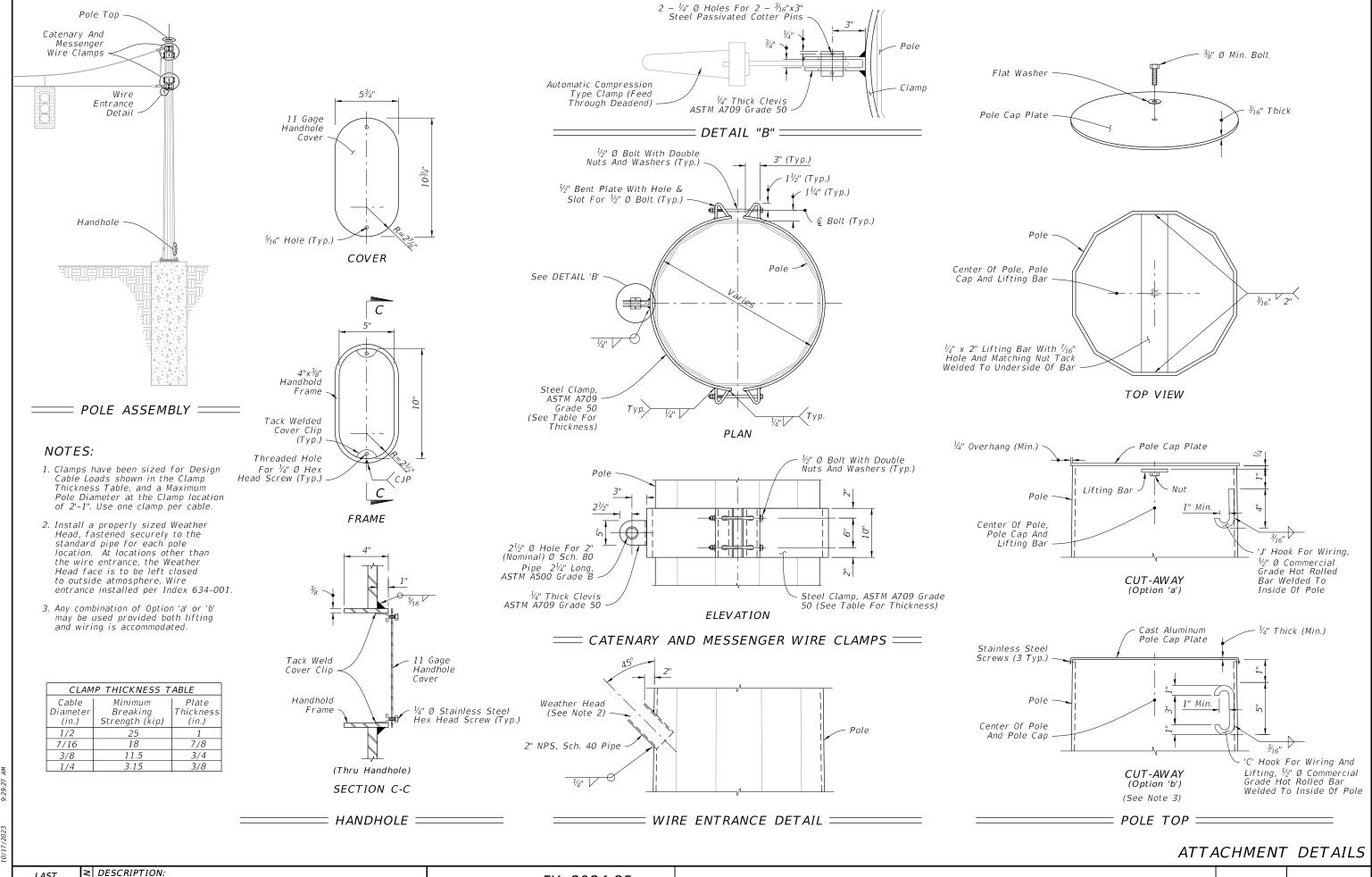
REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS





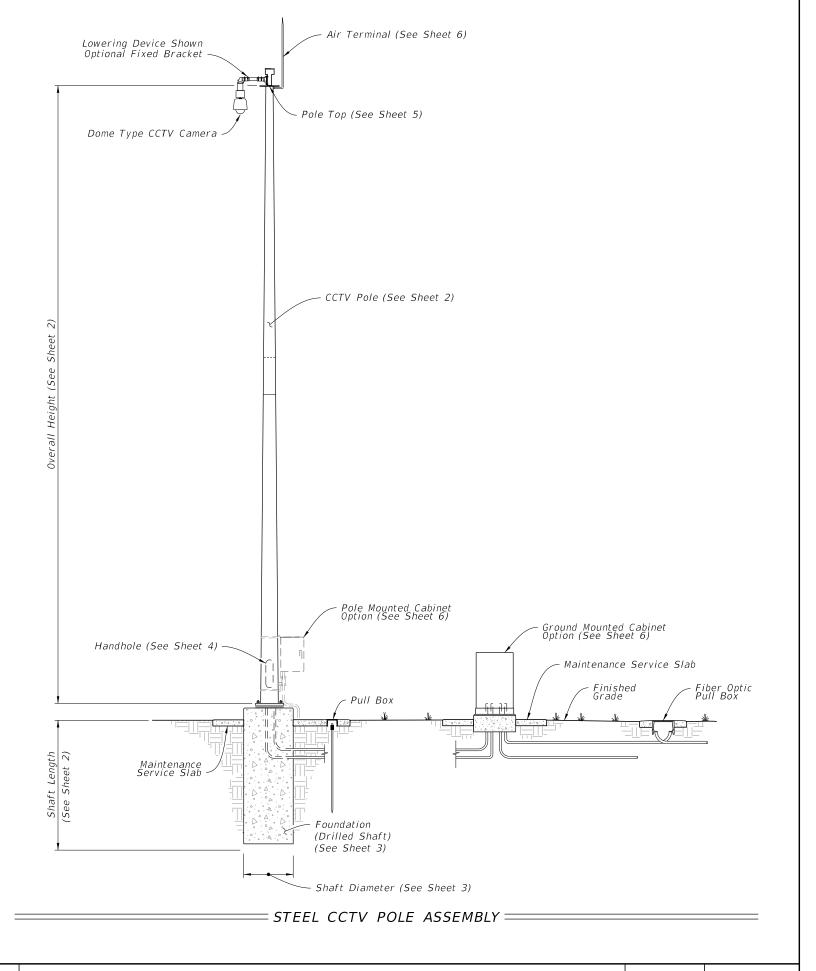
REVISION 11/01/23

FDOT

- 1. Work this Index with Specification 649.
- 2. This Index is considered fully detailed; only submit shop drawings for minor modifications not detailed in the Plans.
- 3. See Index 635-001 for additional Pull Box details.
- 4. See Index 676-010 for cabinet installation details.
- 5. Materials:
- A. Pole: ASTM A1011 Grade 50, 55, 60 or 65 (less than $\frac{1}{4}$ ") or ASTM A572 Grade 50, 60 or 65 (greater than or equal to $\frac{1}{4}$ ") or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
- B. Steel Plates and Pole Cap: ASTM A36 or ASTM A709 Grade 50.
- C. Weld Metal: E70XX.
- D. Bolts: ASTM F3125, Grade A325, Type 1.
- Nuts: ASTM A563.
- Washers: ASTM F-436
- E. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy-hex nuts and ASTM A36 plate washers.
- F. Handhole Frame: ASTM A709 Grade 36 or ASTM A36
- G. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65.
- H. Stainless Steel Screws: AISI Type 316.
- I. Reinforcing Steel: ASTM A615 Grade 60.
- J. Galvanization: Bolts, nuts and washers: ASTM F2329 All other steel including plate washer: ASTM A123
- K. Concrete: Class IV (Drilled Shaft) for all environment classifications.
- 6. Fabrication:
- A. Welding:
- a. Specification 460-6.4 and
- b. AASHTO RFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals Section 14.4.4.
- B. Poles:
- a. Round or 16-sided (Min.)
- b. Taper pole diameter at 0.14 inches per foot
- c. Fabricate Pole longitudinal seam welds (2 maximum) with 60 percent minimum penetration or fusion welds except as follows:
- 1. Use a complete joint penetration weld within 6 inches of the circumferential tube-to-plate connection and
- 2. Use complete joint penetration welds on the female end section of telescopic (i.e., slip type) field splices for a minimum length of one and one-half times the inside diameter of the female section plus 6 inches.
- d. Pole shaft may be either one or two sections (with telescopic field splice)
- e. Circumferentially welded pole shafts and laminated pole shafts are not permitted
- C. Identification Tag: (Submit details for approval)
- a. 2"x 4" (Max.) aluminum tag
- b. Locate on the inside of the pole and visible from the handhole
- c. Secure with $\frac{1}{8}$ " diameter stainless steel rivets or screws.
- d. Include the following information on the ID Tag:
 - 1. Financial Project ID
 - 2. Pole Type 3. Pole Height
 - 4. Manufacturers' Name
 - 5. Yield Strength (Fy of Steel)
 - 6. Base Wall Thickness
- D. Except for Anchor Bolts, bolt hole diameters are bolt diameter plus $\frac{1}{16}$ " and anchor bolt holes are bolt diameter plus $\frac{1}{2}$ " (Max) prior to galvanizing.
- A. Do not install additional wire access holes (not shown in this Index) with a diameter that exceeds 11/2" in diameter.
- B. Install Anchor Bolts in accordance with Specification 649-5.
- C. Cable Supports: Electrical Cable Guides and Eyebolts.
- a. Locate top and bottom cable guides within the pole aligned with each other.
- b. Position one cable guide 2" below the handhole.
- c. Position other cable guide 1" directly below the top of the tenon.
- d. Position Park Stands 2" below the top of the handhole.
- D. Install Pole with the handhole located away from approaching traffic.
- E. Install the Pole plumb.
- 8. Cabinet Installation:
- A. Splice fiber optic cables in cabinet to preterminated patch panel.
- B. Furnish and install Surge Protection Devices (SPDs) on all cabling in cabinet.
- C. Furnish and install secondary SPDs protection on outlets for equipment in cabinet.
- D. Ensure that all electronic equipment power is protected and conditioned with SPDs. E. Ensure that equipment cabinet is bonded to CCTV pole grounding system.
- F. Install the pole mounted cabinet with the hinges next to the pole.
- G. Sizes and types of conduits and inner ducts for network communications between the pull box and cabinet are stated in the Contract Documents.
- 9. Lowering Device Installation:

DESCRIPTION:

- A. Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.
- B. Mount lowering device perpendicular to the roadway or as shown in the plans. Position CC TV pole so that the camera can be safely lowered without requiring lane closures.
- C. Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stands, etc.) with lowering device manufacturer.



LAST REVISION 11/01/23



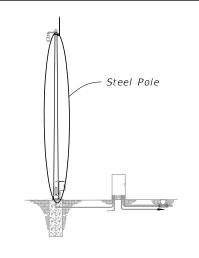
FY 2024-25 STANDARD PLANS

STEEL CCTV POLE

INDEX

649-020

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SHAFT DESIGN TABLE									
Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement						
50	4'-0"	11'-0"	(14) #11						
55	4'-0"	12'-0"	(14) #11						
60	4'-6"	13'-0"	(16) #11						
65	4'-6"	13'-0"	(16) #11						
70	5'-0"	14'-0"	(18) #11						

= ASSEMBLY =====

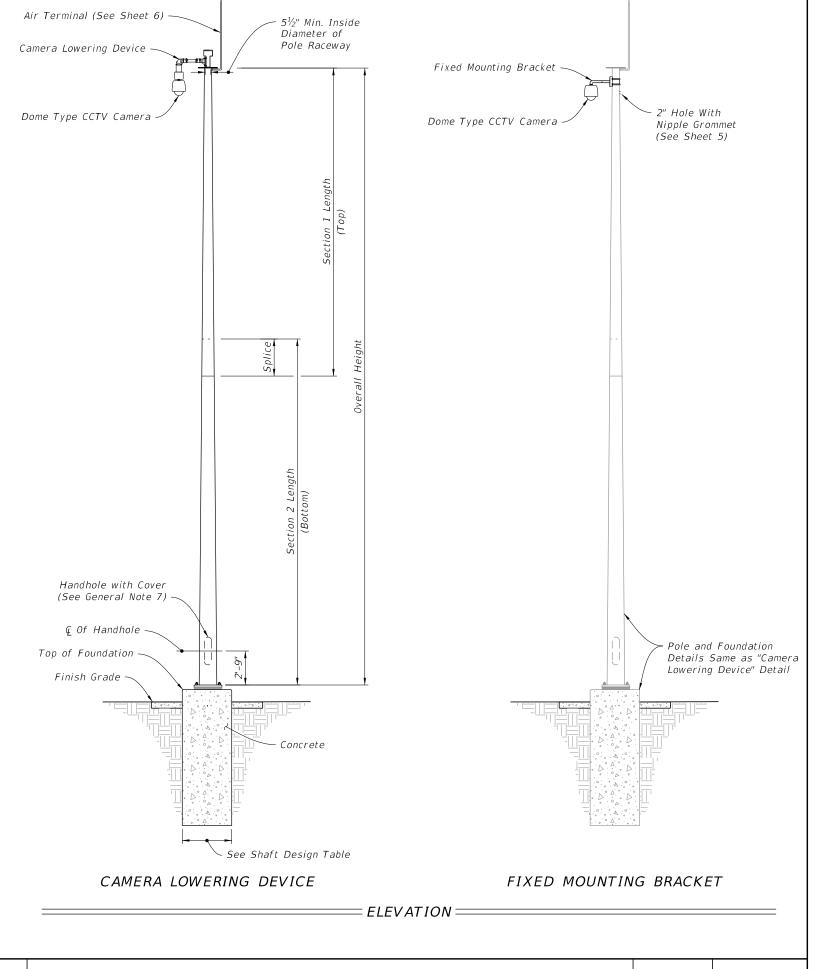
ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE								
Ground Slope	4'-0" Shaft Diameter	5'-0" Shaft Diameter						
1:5	3'-0"	4'-0"						
1:4	4'-0"	5'-0"						
1:3	5'-0"	6'-0"						
1:2	7'-0"	9'-0"						

FOUNDATION NOTES:

- 1. Shaft Length is based on 1'-0" height above the finished grade.
- 2. Shaft Design Table Shaft Length is based on level ground (flatter than 1:5). Increase the shaft depth in accordance with the Additional Shaft Depth Due To Ground Slope table for foundations with slopes 1:5 and steeper. Use the higher value for slope or diameter values that fall between those shown on the table.

BASE PLATE AND ANCHOR BOLT DESIGN TABLE										
Pole Overall Height (ft)		Base Plate Thickness (in.)		Number of Bolts			Minimum Anchor Bolt Projection (in.)			
50	27	2.5	22	6	1.25	31	8.5			
55	28	2.5	23	6	1.25	33	8.5			
60	33	2.5	27	6	1.50	34	9.5			
65	35	2.5	29	6	1.50	35	9.5			
70	40	2.5	33	6	1.75	38	10.5			

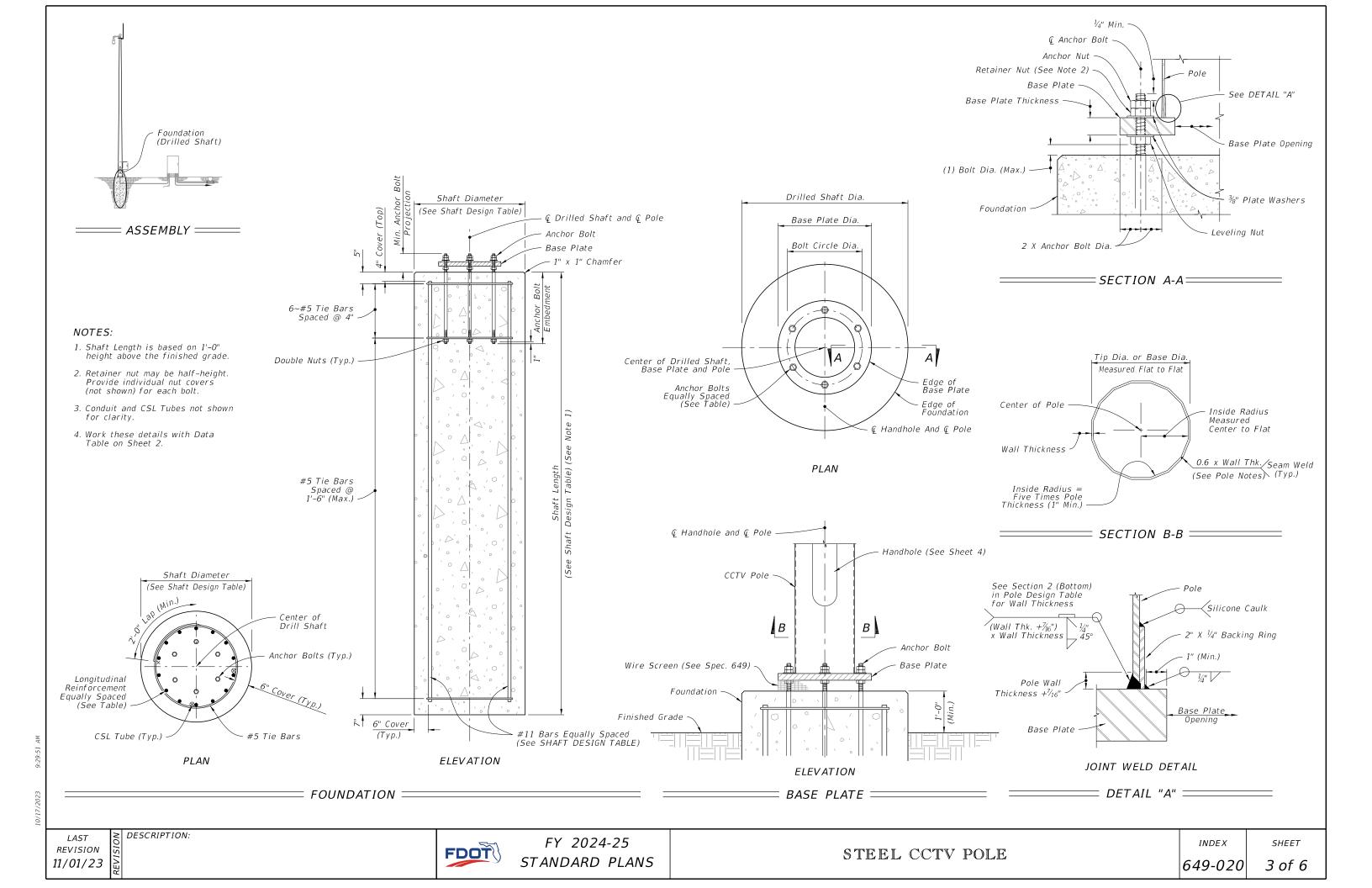
POLE DESIGN TABLE									
Pole Overall Height (ft)	S	ection 1 (To	p)	Se	ction 2 (Botto	Joint			
	Length	Wall Thickness (in.)	Base Diameter (in.)	Length	Wall Thickness (in.)	Base Diameter (in.)	Minimum Splice Length (in.)		
50				50'-0"	0.25	17			
30	25'-0"	0.25	14	28'-0"	0.25	17	27		
55	30'-0"	0.25	15	28'-0"	0.3125	18	30		
60	35'-0"	0.25	18	29'-0"	0.3125	21	33		
65	33'-0"	0.25	19	36'-0"	0.3125	23	33		
70	38'-0"	0.25	22	36'-0"	0.3125	26	39		

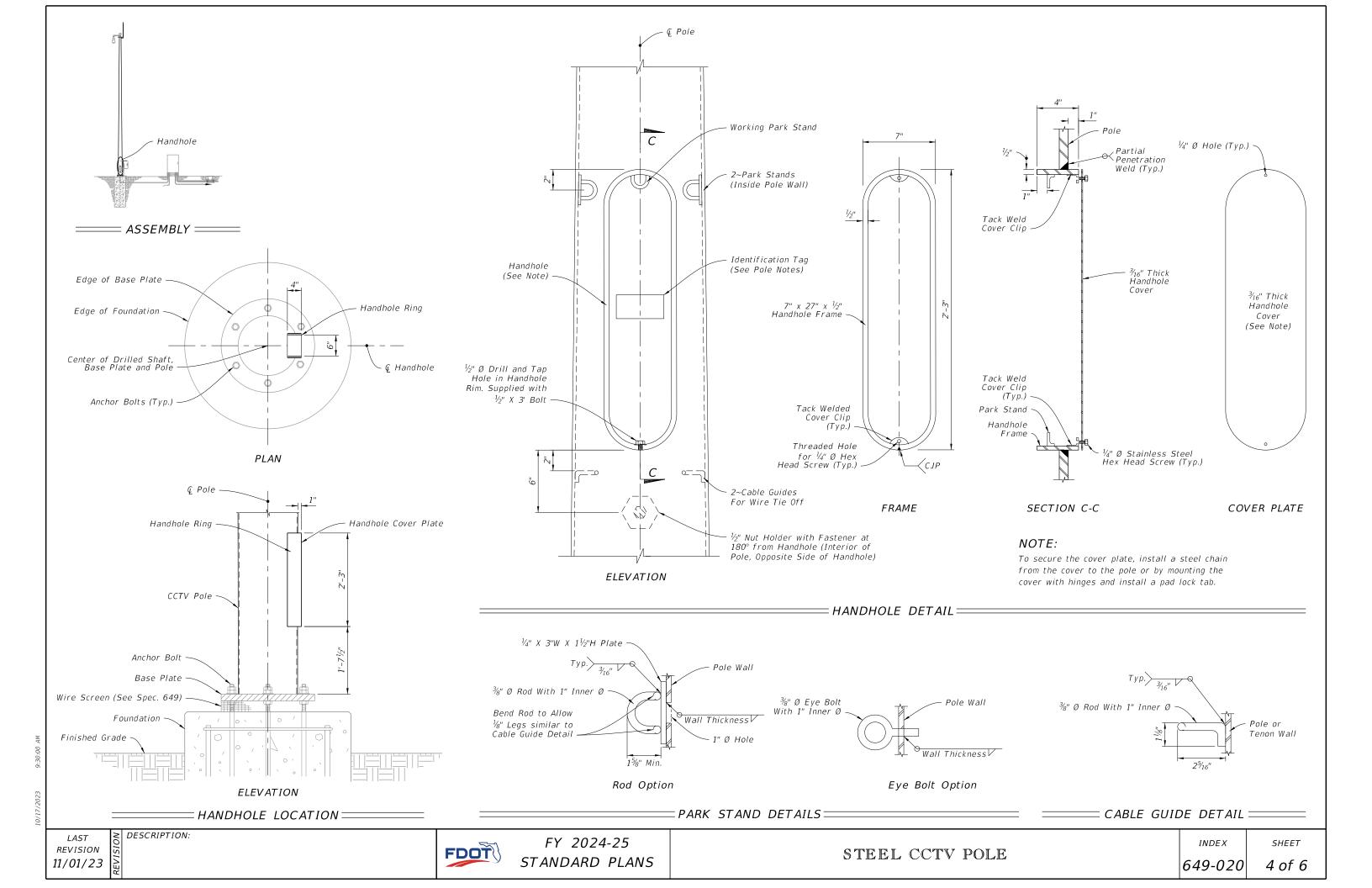


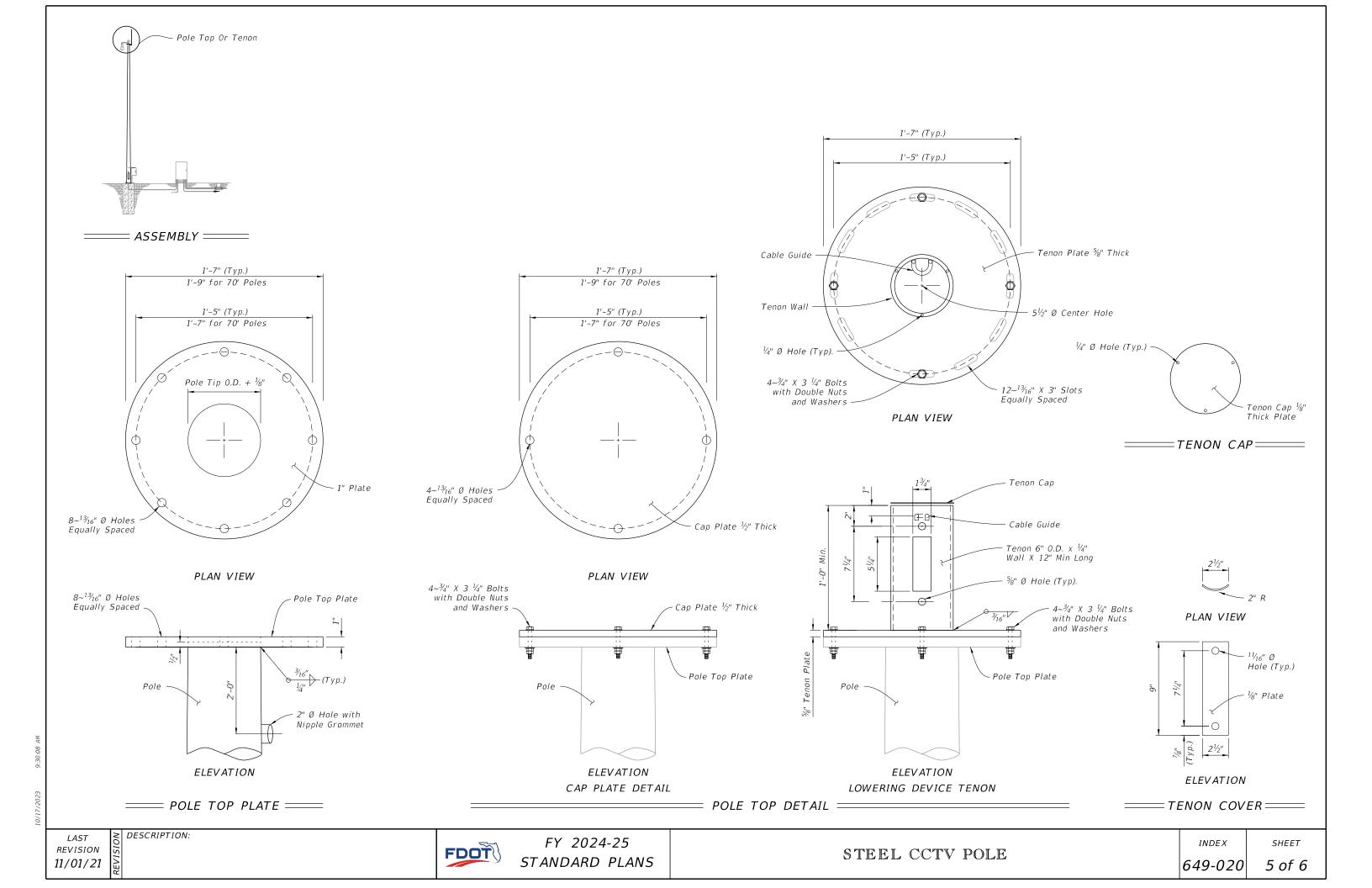
REVISION 11/01/22

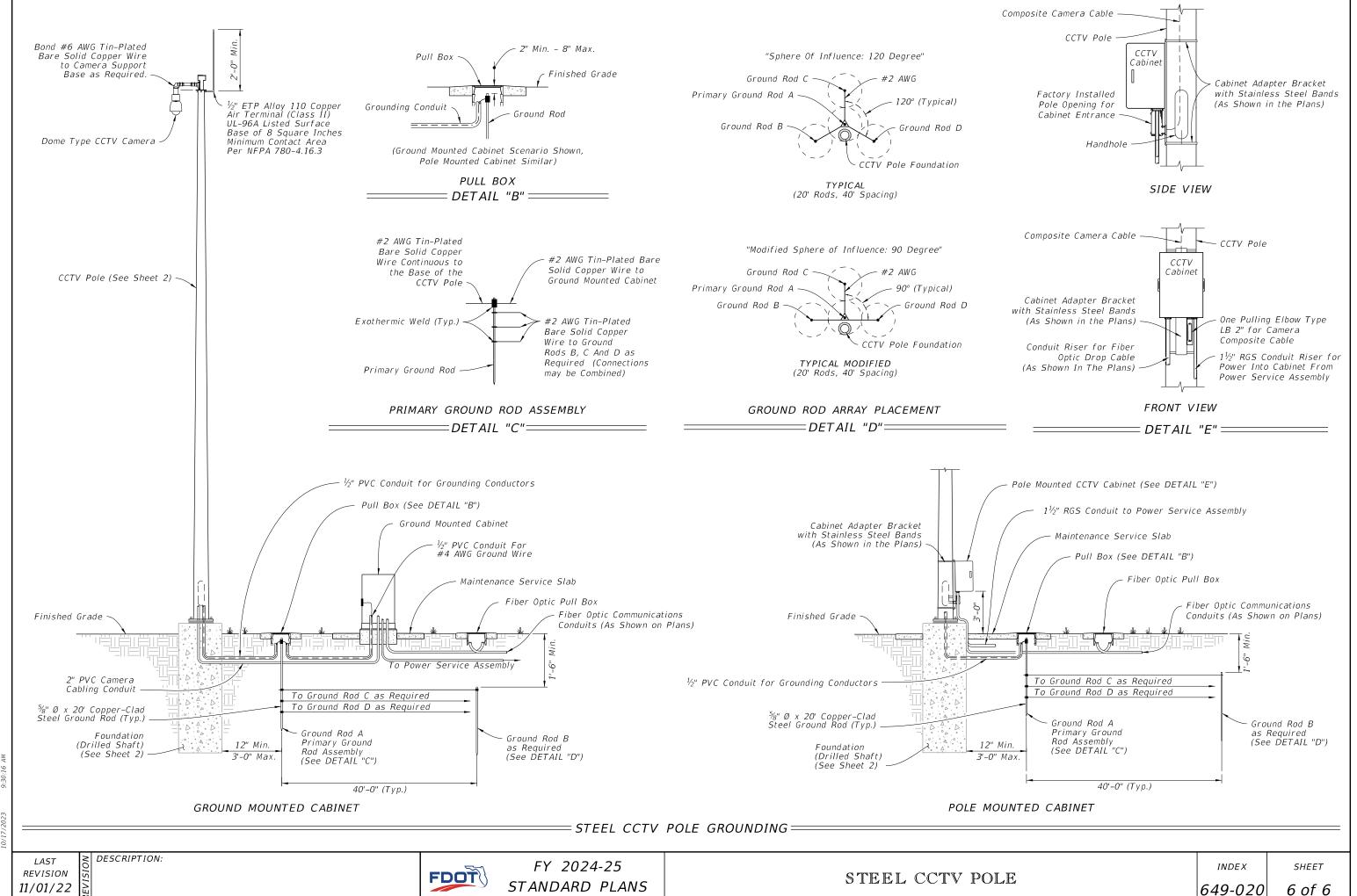
DESCRIPTION:

FDOT









ARM AND BASE PLATE										
Arm ID Axx-ArmLength	Total Arm		Arm		Arm Extension			Base Plate		
S-SingleArm D-DoubleArm H-HeavyDuty	Length (ft)	FA/SA (ft)	FC/SC (in)	FD/SD (in)	FE/SE (ft)	FG/SG (in)	FH/SH (in)	HT (in)	FJ/SJ (in)	FK/SK (in)
A30/S			11					22	25	
A30/S/H	30	30	12	0.25				22	23	. 3
A30/D] 30	11	0.23				30	36	
A30/D/H			12	30	30					
A40/S			13					22	27	
A40/S/H	40	40	14	0.25					21	3
A40/D] 40	40	13	0.23				30 36	36	
A40/D/H			14					50	50	
A50/S			12			14		22	29	
A50/S/H	50	32.5	13	0.25	20.5	15	0.313	22	29	. 3
A50/D		32.5	12	0.23	20.5	14	0.515	30	36	
A50/D/H			13			15				
A60/S			12			15				
A60/S/H	60	35.5	13	0.25	27.5	16	0.375	.30	36	3
A60/D		33.3	12	0.23	27.5	15	0.575	30	30	
A60/D/H			13			16				
A70/S			13			17				
A70/S/H	70	38	14	0.25	35	18	0.375	30	36	3
A70/D	70] 30	13	0.23	33	17	0.575	30	50	,
A70/D/H			14			18				
A78/S			13			18				
A78/S/H	78	39	15	0.25	42	20	0.375	30	36	3
A78/D] ′°		13	0.23	42	18		50	30	
A78/D/H			15			20				

						POLE,	BASE	PLATE	AND	ARM C	ONNEC	TION								
Pole ID Px-PoleNo							ase Pla	te		Arm-Upright Connection										
S-SingleArm D-DoubleArm L-Luminaire	UA (ft)	UD (in)	UE (in)	UG (ft)	No. Bolts	BA (in)	BB (in)	BC (in)	BF (in)	HT (in)	FJ/SJ (in)	FL/SL (in)	FN/SN (in)	F0/S0 (in)	FP/SP (in)	FR/SR (in)	FS/SS (in)	FT/ST (in)		
P1/S	25									22	25			14		2	8.5			
P1/S/L	39	16	0.375	37.5	6	32	2.5	2	40	22	23	0.75	0.438	14	1.25		0.5	0.438		
P1/D	25	10	0.575		U	32	2.5	_	40	30	36	0.75	0.430	23	1.23	2.75	12.5	0.430		
P1/D/L	39			37.5						50	50			23		2.75	12.5			
P2/S	25									22	27			1.5		2	8.5			
P2/S/L	39	18	0.375	37.5	6	34	2.5	2	40	22	27	0.75	0.438	13	1.25		0.5	0.438		
P2/D	25	10	0.373] "] 34	2.5		70	30	36	0.75		23	1.23	2.75	12.5	0.430		
P2/D/L	39			37.5						30	30					2., 3	12.3			
P3/S	25									22	29			16		2	8.5			
P3/S/L	39	20	20	20	0.375	37.5	6	36	2.5	2	40			0.75	0.438		1.25		0.5	0.438
P3/D	25	-	0,5,5		-			_	70	30	36			23		2.75	12.5	07,50		
P3/D/L	39			37.5													 			
P4/S	25		0.375			38	2.5	2	40			5 0.75	0.438	17		2.5	12.5	0.438		
P4/S/L	39	22		37.5	8					30	30 36				1.25					
P4/D	25															23				
P4/D/L	39			37.5																
P5/S	25													18						
P5/S/L	39	24	0.375	37.5	5 8	40	2.5	2	40	30	36	0.75	0.5		1.25	2.5	12.5	0.5		
P5/D	25			27.5										23						
P5/D/L	39			37.5																
P6/S	25			27.5										18						
P6/S/L	39	24	0.5	37.5	8	40	2.5	2	40	30	36	0.75	0.625		1.5	2.5	12	0.625		
P6/D	25 39			37.5										23						
P6/D/L				3/.5							-		-							
P7/S P7/S/L	25 39			37.5				2	40	30		0.75	0.625	19	9 1.5		12			
P7/S/L P7/D	25	26	0.5		8	42	2.5				36					2.5		0.625		
,	39	1		37.5										23						
P7/D/L	39			3/.5																

≥ DESCRIPTION:

1. Work this Index with Index 649-031.

DRILLED SHAFT											
Drilled Shaft ID	DA (ft)	DB (ft)	RA	RB	RC	RD (in)	RE	RF (in)			
DS/12/4.0	12	4.0	11	14	8	12					
DS/12/4.5	12	4.5	11	16	8	12					
DS/14/4.5	14	4.5	11	16	10	8					
DS/14/5.0	14	5.0	11	18	10	8					
DS/16/4.5	16	4.5	11	16	10	8					
DS/16/5.0	16	5.0	11	18	10	8					
DS/18/5.0	18	5.0	11	18	10	8					
DS/20/5.0	20	5.0	11	18	10	6	10	9			
DS/25/5.0	25	5.0	11	18	10	6	10	9			

LUMINAIRE AND CONNECTION											
LA (ft)	LB (ft)	LC (in)	LD (in)	LE	LF (ft)	LG (in)	LH (in)	LJ (in)	LK (in)	LL (deg)	UG (ft)
40	10	3	0.125	0.5	8	0.5	0.75	0.25	0.25	0	37.5

SHEET

1 of 1

3. Details for Signal and Sign locations, Signal Head attachment, Sign attachment, Pedestrian Head attachment, and Foundation Conduit are not shown for simplicity.

- 4. Materials:
 - A. Poles, Mast Arms and Backing Rings:
 - a. Less than $\frac{3}{16}$ ": ASTM A1011 Grade 50, 55, 60 or 65
 - b. Greater than or equal to $\frac{3}{16}$ ": ASTM A572 Grade 50, 55, 60 or 65
 - c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
 - B. Steel Plates: ASTM A36
 - C. Weld Metal: E70XX
 - D. Bolts, Nuts and Washers:
 - a. High Strength Hex Head Bolts: ASTM F3125, Grade A325, Type 1
 - b. Nuts: ASTM A563 DH Heavy-Hex
 - c. Washers: ASTM F436 Type 1, one under turned element
 - E. Anchor Bolts, Nuts and Washers:
 - a. Anchor Bolts: ASTM F1554 Grade 55
 - b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
 - c. Plate Washers: ASTM A36 (2 per bolt)
 - F. Threaded Bars/Studs: ASTM A36 or ASTM A307
 - G. Handhole Frame: ASTM A709 or ASTM A36, Grade 36
 - H. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65 I. Pole Caps and Nut Covers: Fabricate from cast aluminum
 - or galvanized carbon steel.
 - J. Stainless Steel Screws: AISI Type 316
 - K. Concrete: Class IV (Drilled Shaft) for all environmental classifications.
 - L. Reinforcing Steel: Specification 415

5. Fabrication:

- A. Welding:
- a. Specification 460-6.4 and
- b. AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals Section 14.4.4
- B. Poles and Mast Arms:
- a. Round or 12-sided (Min.)
- b. Taper pole diameter at 0.14 inches per foot
- c. Upright poles must be a single section. For arms and upright poles, circumferential welds and laminated sections are not permitted.
- d. Arms may be either one or two sections. See Sheet 4 for telescopic splice detail
- e. Fabricate longitudinal seam welds with 60 percent minimum penetration or fusion welds except:
 - 1. Use a complete joint penetration weld within 6 inches of the circumferential tube-to-plate connection.
 - 2. Use complete joint penetration welds on the female end section of telescopic (i.e., slip type) field splices for a minimum length of one and one-half times the inside diameter of the female section plus 6 inches.
- f. Locate longitudinal seams weld along the:
 - 1. Lower quadrant of the arms.
 - 2. Same side of the pole as the arm connections
- g. Face handhole perpendicular from arm on single arm poles, perpendicular from the first arm of double arms poles facing away from traffic or see special instructions on the Mast Arm Tabulation Sheet.
- h. Provide a 'J' or 'C' hook at the top of the pole for signal wiring support (See Sheet 6)
- i. First and Second arm camber angle = 2°
- j. Bolt holes diameters as follows:
 - 1. Bolts (except Anchor bolts): Bolt diameter plus $\frac{1}{16}$ " prior to galvanizing.
 - 2. Anchor Bolts: Bolt diameter plus $\frac{1}{2}$ " (Max.).

6. Coatings:

- A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329
- B. All other steel items including plate washers ASTM A123

7. Construction:

- A. Foundation: Specification 455 Drilled Shaft, except that payment is included in the cost of the Mast Arm.
- B. Install Pole vertically.

DESCRIPTION:

- C. Place structural grout pad with drain between top of foundation and bottom of baseplate in accordance with Specification 649-7.
- D. Attach Sign Panels and Signals centered on the elevation of the Mast Arm.
- E. Wire Access holes are $1\frac{1}{2}$ " or less in diameter.

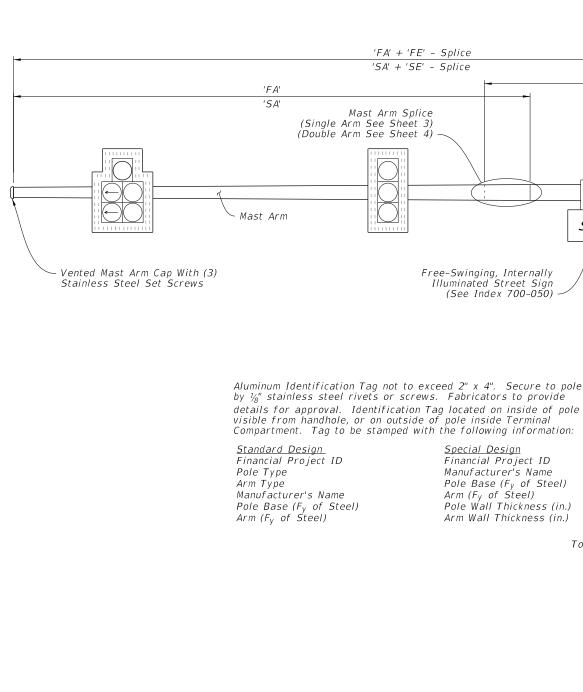


TABLE OF C	ONTENTS
SHEET	SUBJECT
1	Elevation and Notes
2	Foundation and Base Plate Details
3	Single Arm Connection and Splice Details
4	Double Arm Connection and Splice Details
5	Luminaire Arm and Connection Details
6	Handhole and Pole Top Details

O" With Sidewalk
6" Otherwise

1~2" Conduit Per Assembly
1~1" Additional Conduit in
Quadrant With Controller

Foundation
(Drilled Shaft)
(See Sheet 2)

Face Of Arm Base Plate At G Arm -

Pole Connection

0.14 in/ft Taper (Typ.)

Mast Arm

Extension

Pole

Handhole

(See Sheet 6)

(Single Arm See Sheet 3)

(Double Arm See Sheet 4)

Provide $\frac{1}{2}$ " Ø Weep Hole Located At Bottom Of Arm.

1'-0" From Arm Base Plate.

Base Plate Connection

Top of Finished Grade

(See Sheet 2)

'FF'

'SE'

Street Name

Single Arm Shown, Double Arm Similar (Luminaire Arm Not Shown)

MAST ARM ASSEMBLY

ELEVATION AND NOTES

- @ Pole

Pole Top

Mast Arm

Handhole

Note

Plans) (See

(See

UB'

Bottom

Signal Conduit

(For No. & Size

See Signal Plans)

Of Plate

(See Sheet 6)

(See Sheet 6)

'F0'

'50'

LAST REVISION 11/01/23

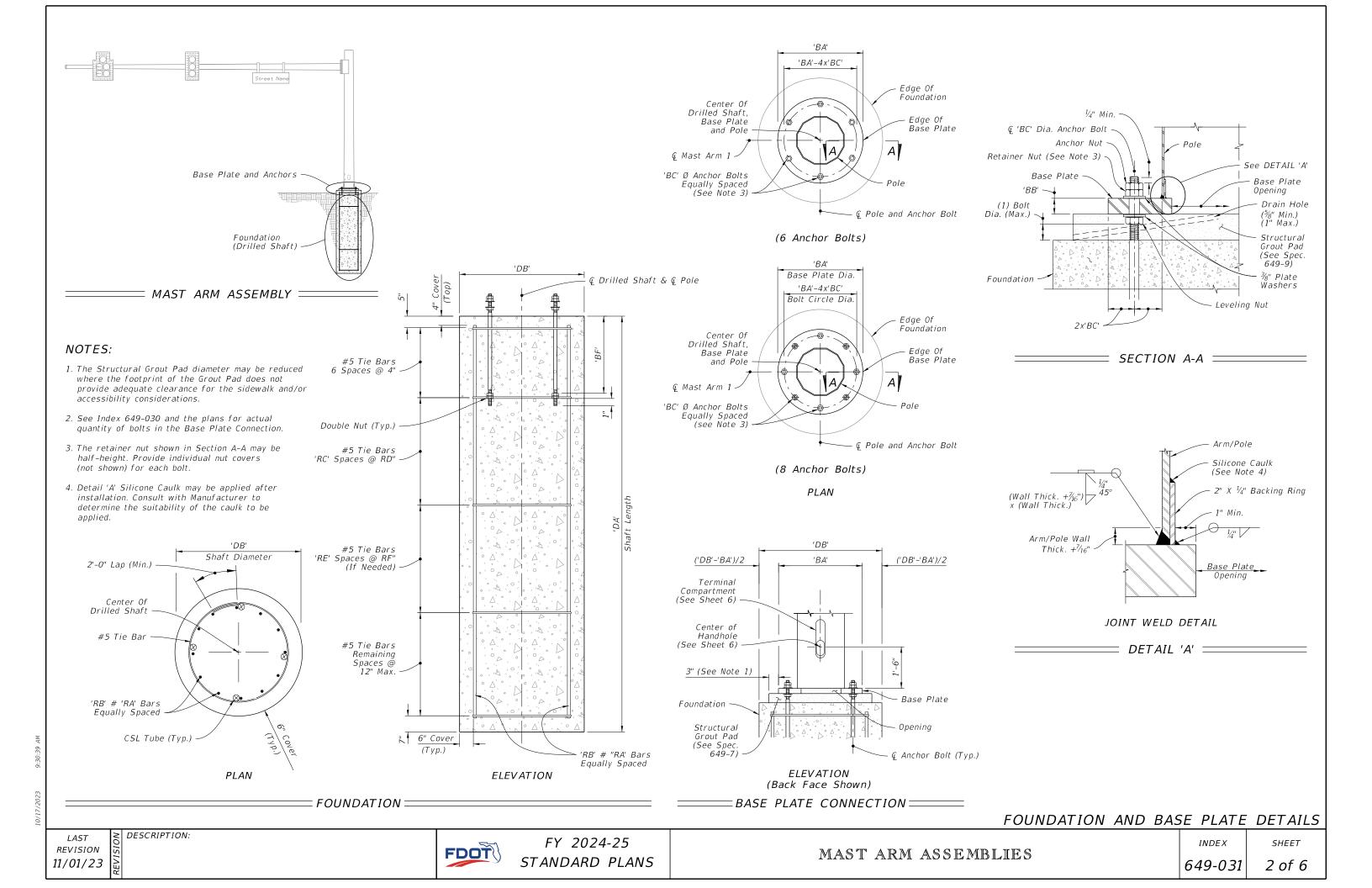


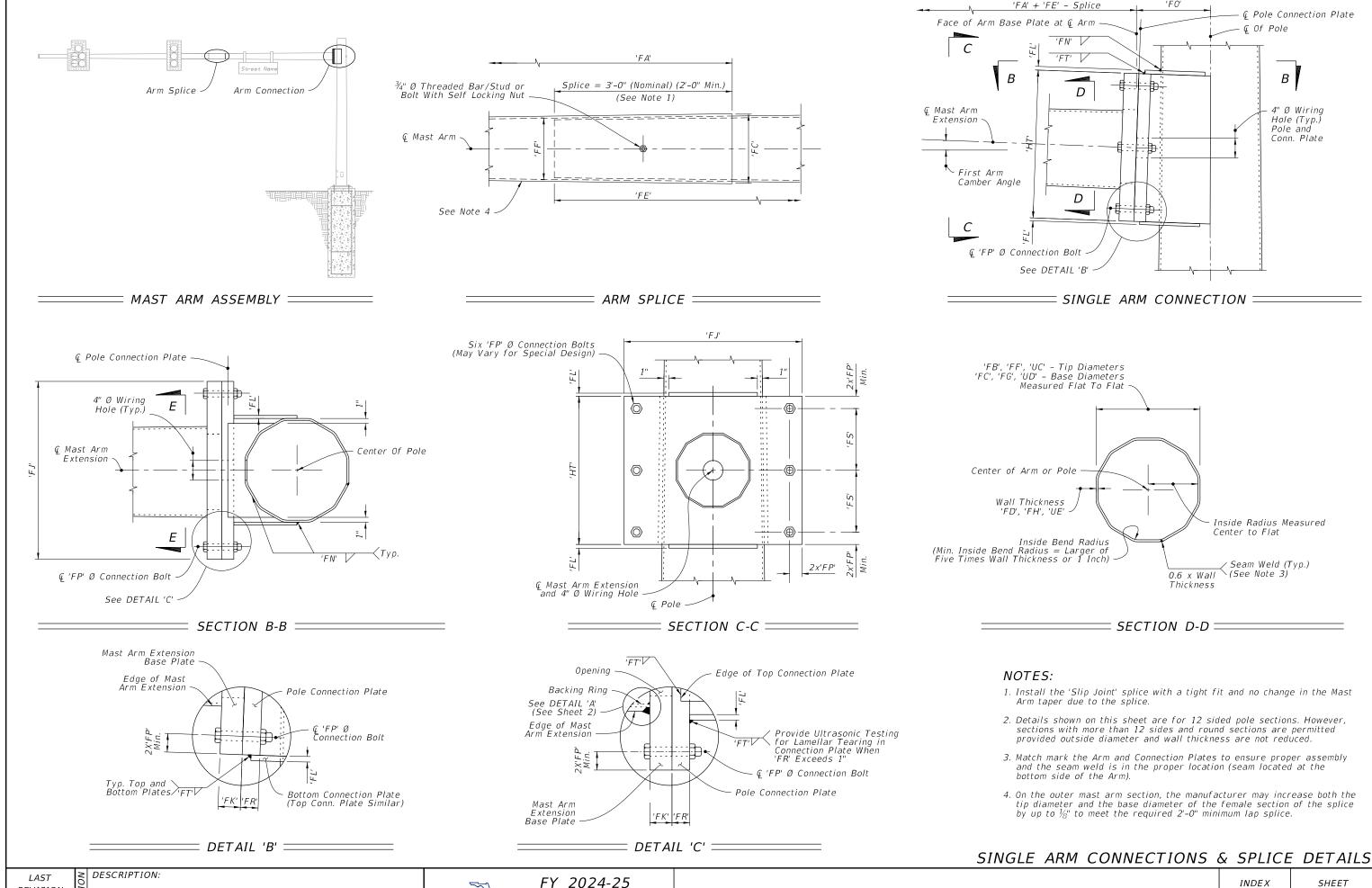
FY 2024-25 STANDARD PLANS

MAST ARM ASSEMBLIES

INDEX 649-031

^{SHEET} 1 of 6





REVISION 11/01/23

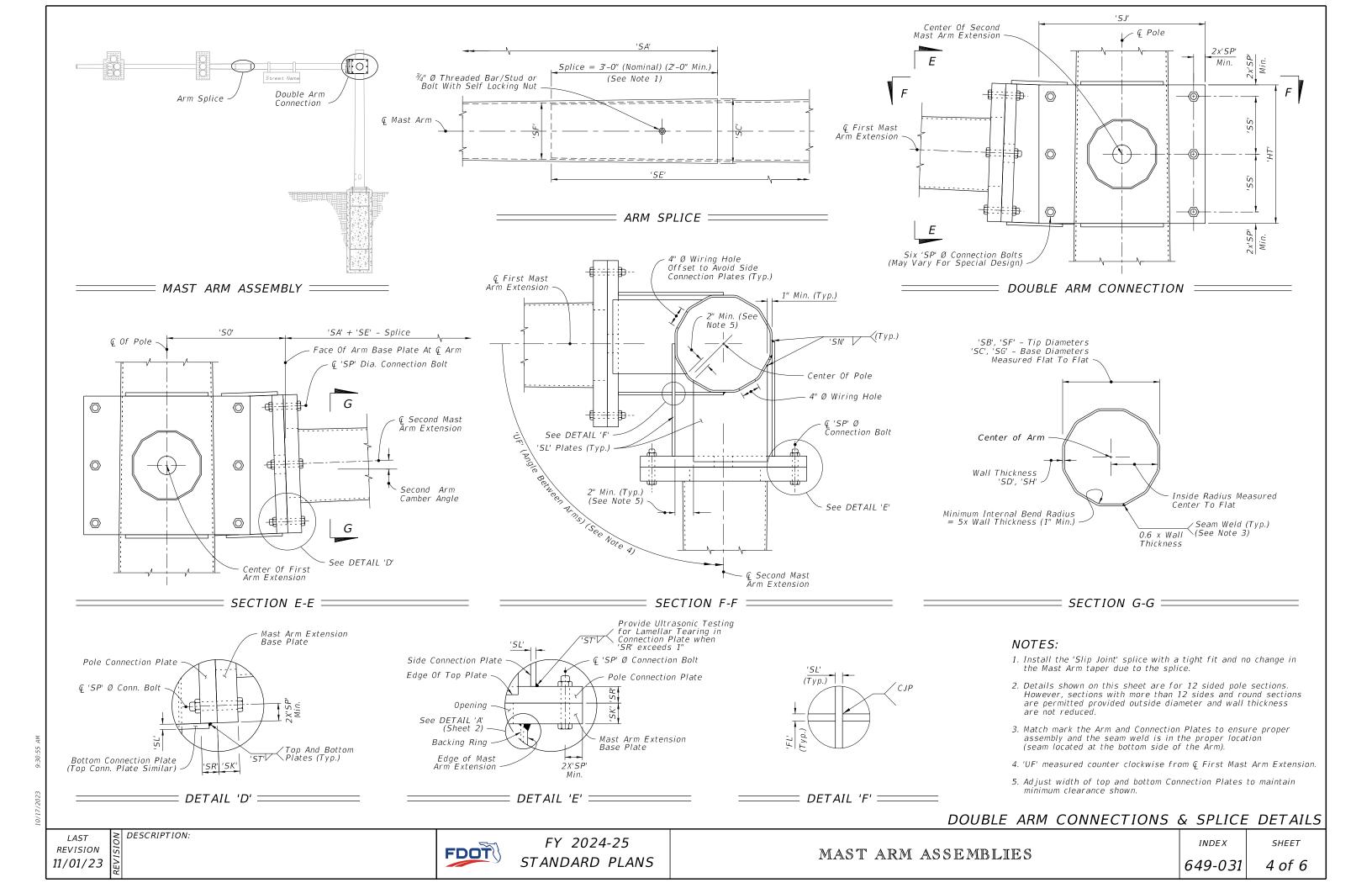
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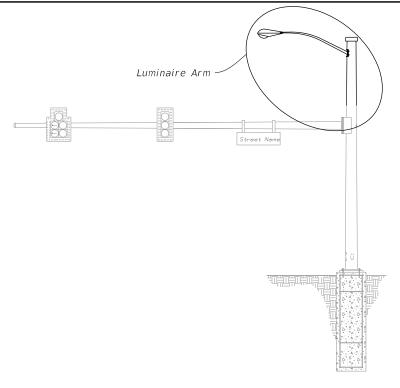
FY 2024-25 STANDARD PLANS

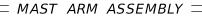
MAST ARM ASSEMBLIES

INDEX 649-031

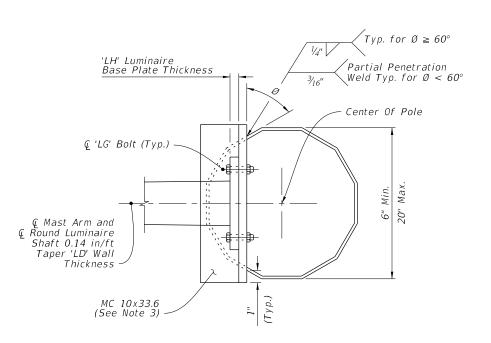
3 of 6



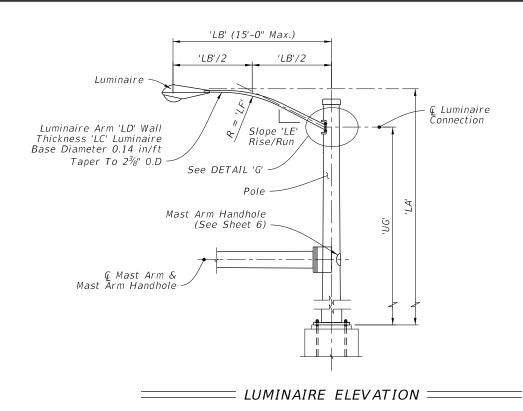


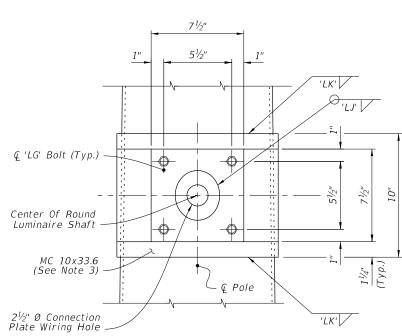


- 1. Galvanized steel luminaire type and luminaire length may be found in the Lighting Plans.
- 2. Align Luminaire Arm with Single Mast Arm or First Arm of Double Mast Arm unless indicated otherwise in the plans.
- 3. The fabricator may substitute a $\frac{1}{2}$ " thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.
- 4. 'LL' measure counter clockwise from First Mast Arm.



= SECTION H-H =





'LH' Luminaire Base Plate Thickness $\frac{1}{2}$ " (Pole Dia. > 10") $1\frac{1}{2}$ " (6" < Pole Dia. ≤ 10 ") Taper 'LD' Wall Thickness Н **Q** Luminaire Connection 6" Min. Pole € 'LG' Bolt (Typ.) Dia. At Luminaire Connection MC 10x33.6 (See Note 3) € Pole LUMINAIRE CONNECTION ELEVATION

 \equiv LUMINAIRE ORIENTATION \equiv

€ First Mast Arm

SECTION I-I =

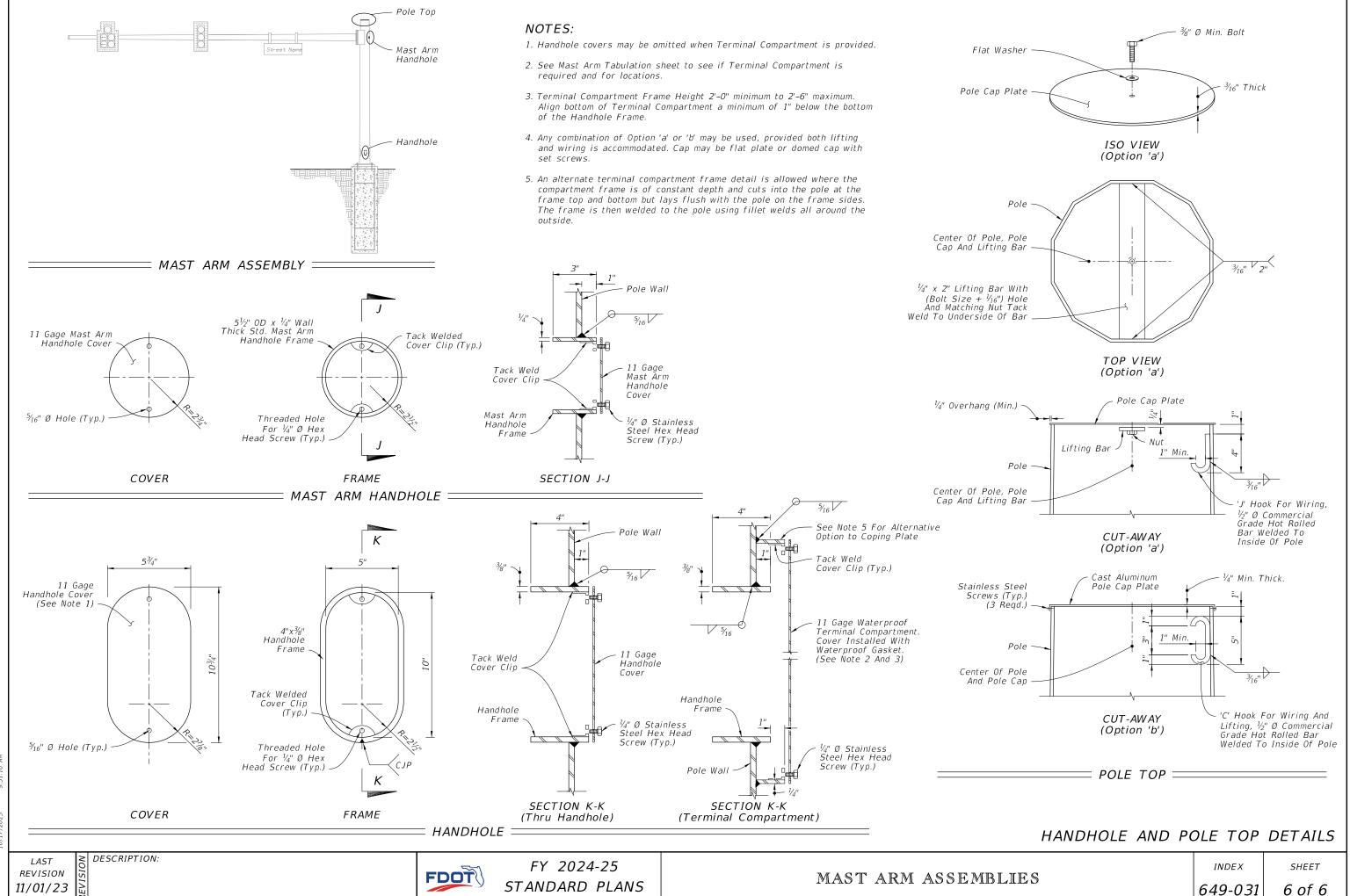
= DETAIL 'G' ==LUMINAIRE ARM AND CONNECTION DETAILS

REVISION 11/01/19

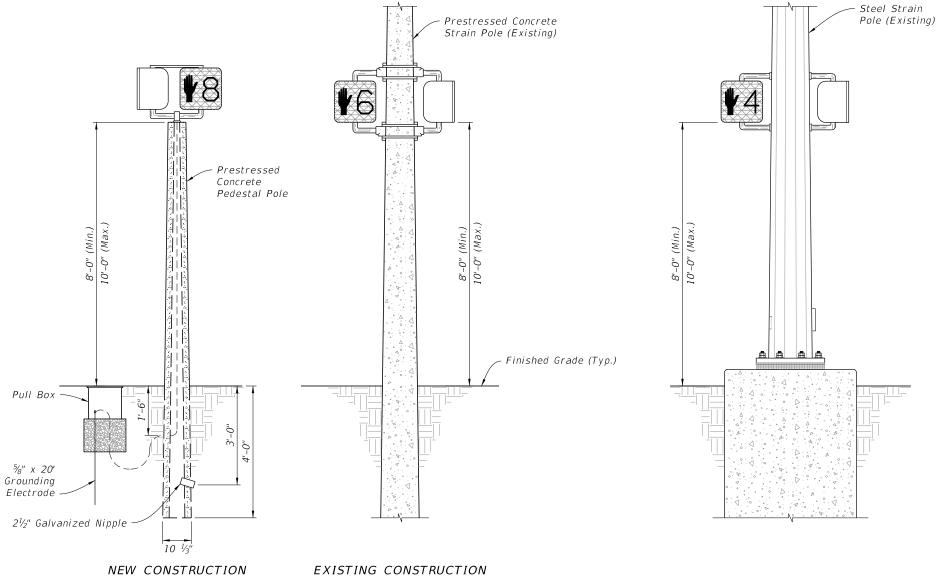
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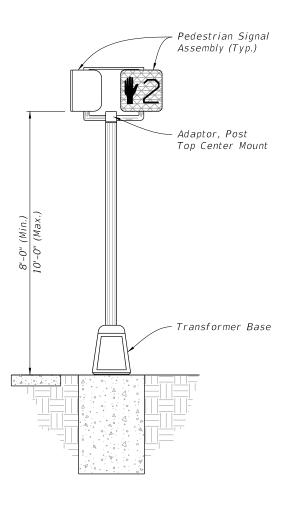


ℚ Luminaire Arm



- 1. As an option, pedestrian signals may be installed on concrete poles and pedestals using lead anchors (two bolts same size per hub) in lieu of the stainless steel bands.
- 2. Repair drilled or punched holes in galvanized steel poles or pedestals in accordance with Specification 562. Install grommets or bushings in each hole.
- 3. Meet grounding requirements of Specification 620.
- 4. See APL for Department-approved Pedestrian Signal Assemblies and hardware.
- 5. For Prestressed Concrete Poles see Index 641-010.
- 6. For Steel Strain Poles see Index 649-010.
- 7. For Pedestal Mounted Signal posts and foundations see Index 646-001





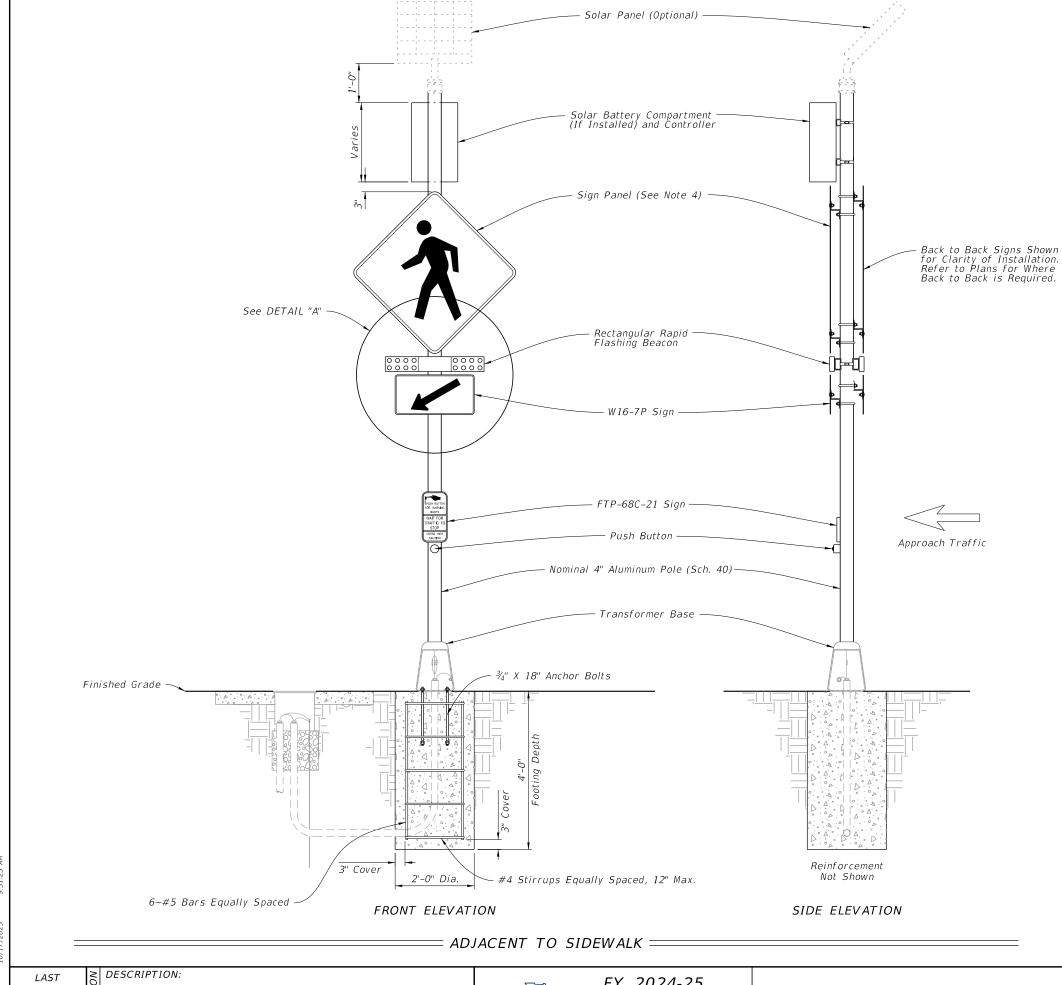
= CONCRETE POLE MOUNTED SIGNAL ===

= STRAIN POLE MOUNTED SIGNAL =======

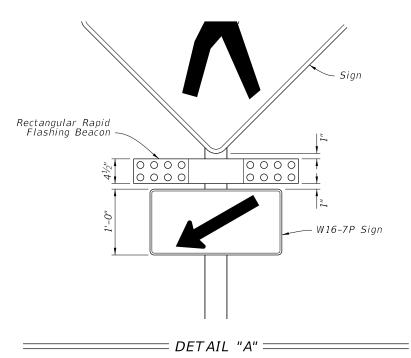
==== PEDESTAL MOUNTED SIGNAL ======

DESCRIPTION:

653-001



- 1. A transformer base is required for both conventionally-powered and solar-powered applications. Install pull box, conduit, wiring, and grounding in accordance with Index 700-120 based on the powering configuration called for in the Plans.
- 2. Install the RRFB in pairs, one on either side of approach traffic.
- 3. Install controller on the backside of post from approach traffic.
- 4. W11-2 sign panel shown, others similar. Use 30" X 30" sign panels for two-lane roadways and 36" X 36" sign panels on multilane roadways.
- 5. Install push button and FTP-68C-21 sign in accordance with
- 6. Engage all threads on the transformer base and post unless the aluminum post is fully seated into base.
- 7. Meet the requirements of Specification 646.
- 8. Install a concrete slab around all pull boxes. The minimum slab dimension is 4'-0" by 4'-0". In urban areas where space is limited slab dimensions may be adjusted as shown in the Plans.
- 9. For assemblies connected to conventional power, provide single pole non-fused watertight breakaway electrical connectors in the frangible transformer base.
- 10. When wire entry holes are drilled in the sign column, use a bushing or rubber grommet to protect conductors.
- 11. For solar-powered applications, orient solar panel to face South for optimal exposure to sunlight.
- 12. In lieu of footing design shown, a Spread Footing may be used in accordance with Index 700-120.



REVISION 11/01/23

FDOT

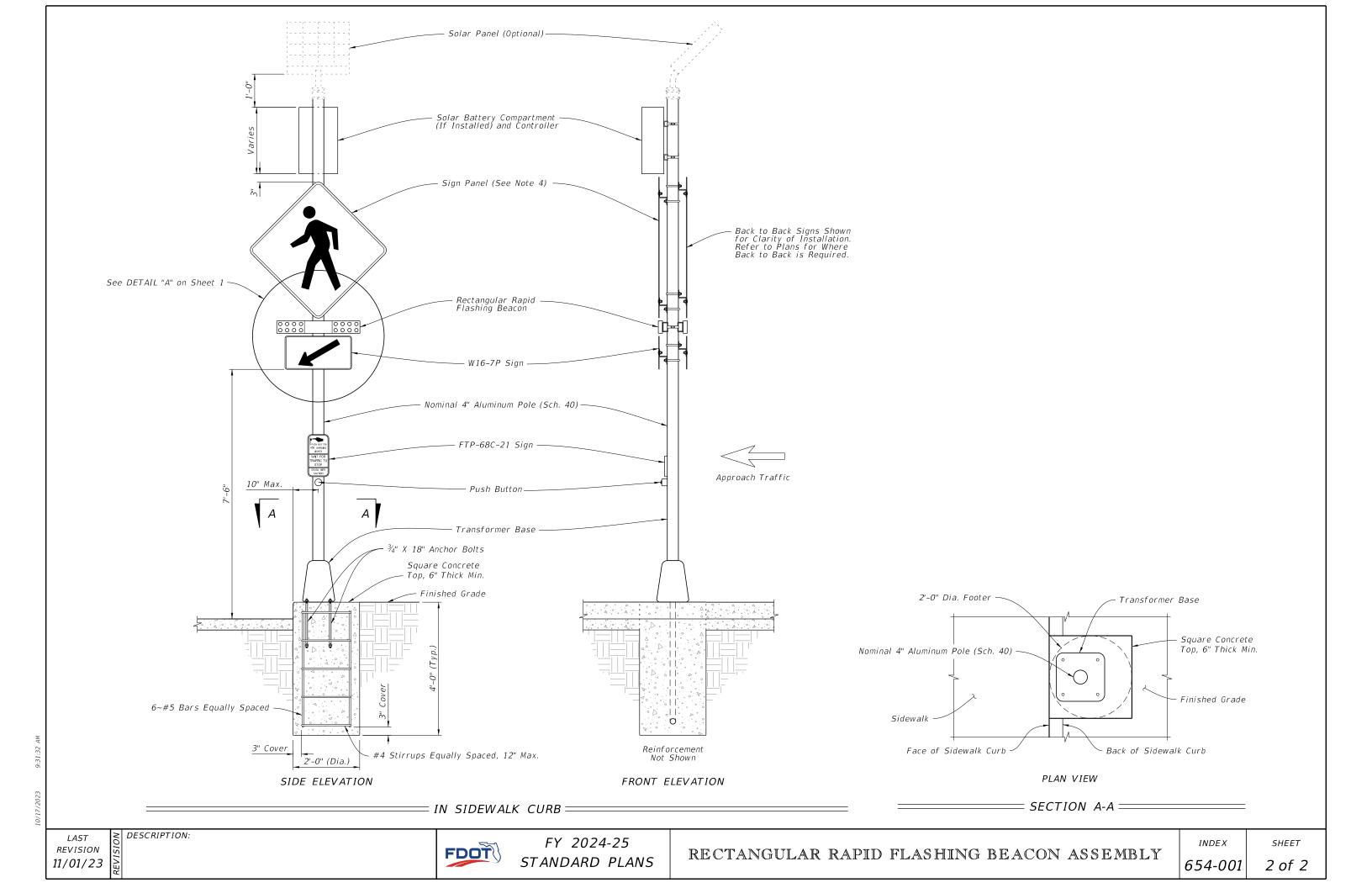
FY 2024-25 STANDARD PLANS

RECTANGULAR RAPID FLASHING BEACON ASSEMBLY

INDEX

SHEET

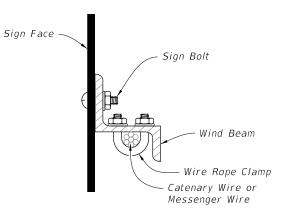
654-001 1 of 2



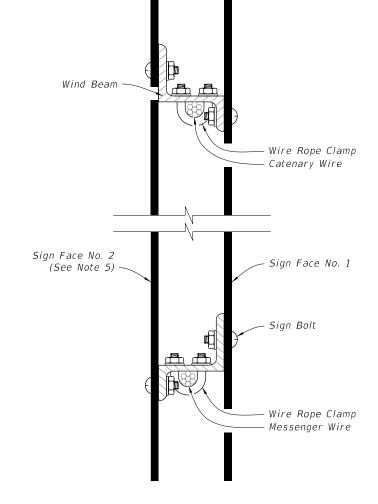
- 1. <u>Materials</u>:
- A. Sign panels, wind beams and associated hardware: See Index 700-020
- B. Sign adjustable hangers, wire rope clamps and associated hardware: See APL
- C. Wire and additional hardware requirements: See Specification 634
- 2. Type B and C Attachments:
- A. Extend wind beams to within 6" of the sign edge.
- B. Number of sign hangers required based on sign width:
- a. Sign width < 4'-0": One
- b. $4'-0'' \le sign \ width \le 8'-0''$: Two
- C. Number of wind beams required based on sign depth:
- a. Sign depth < 3'-6": One
- b. 3'-6" ≤ Sign depth ≤ 7'-0": Two
- 3. Type D Attachments:

 $Maximum \ sign \ width = 3'-0"$

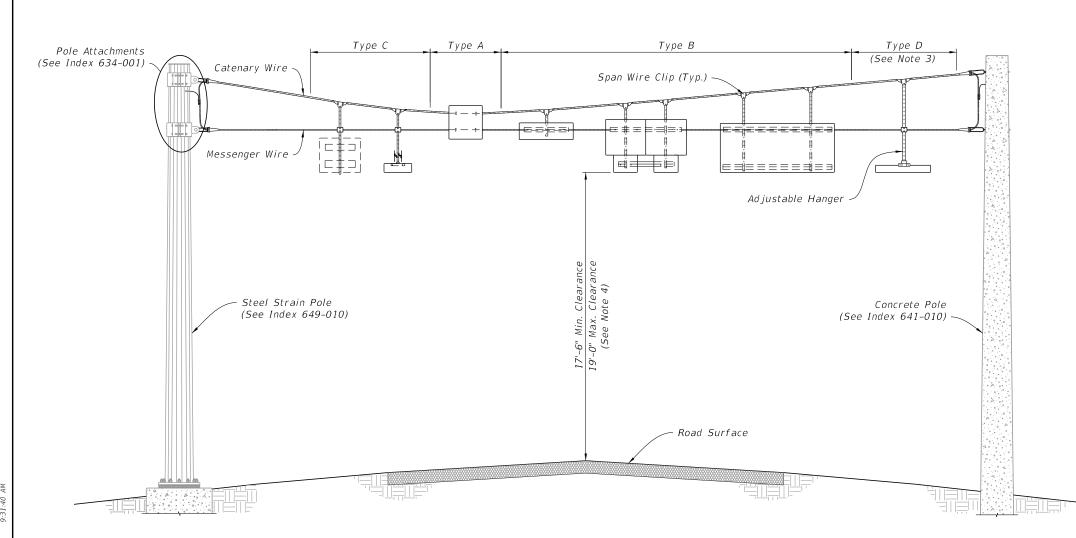
- 4. Align the bottom edges of signs to approximately the same elevation.
- 5. Use a minimum of 2 bolts with a minimum spacing of 2" for overlapped connection of the adjustable hangers.



====SIGN MOUNTING DETAIL=====



—OPPOSING SIGN MOUNTING DETAIL——



TYPICAL INSTALLATIONS FOR SIGN PANEL(S) MOUNTED ON SPAN WIRE

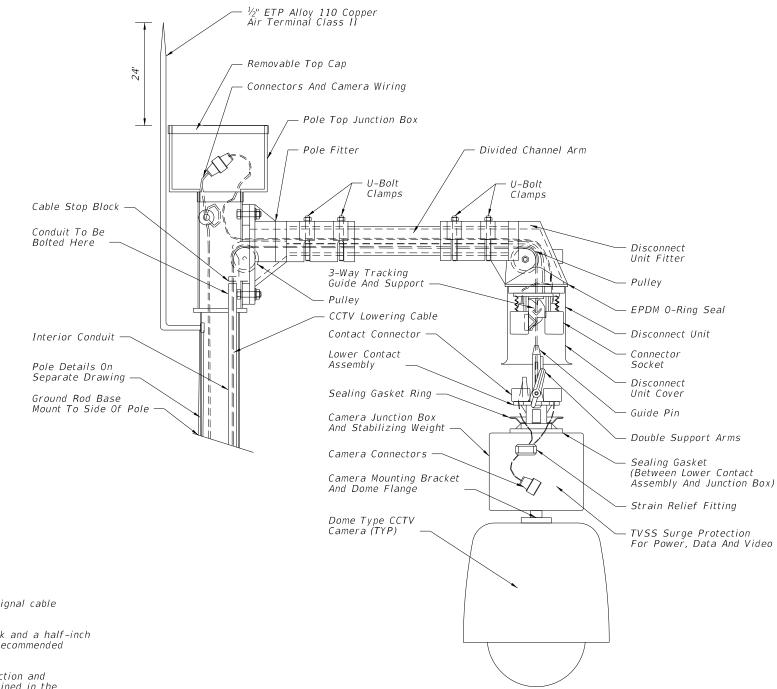
LAST REVISION 11/01/21 DESCRIPTION:











GENERAL NOTES:

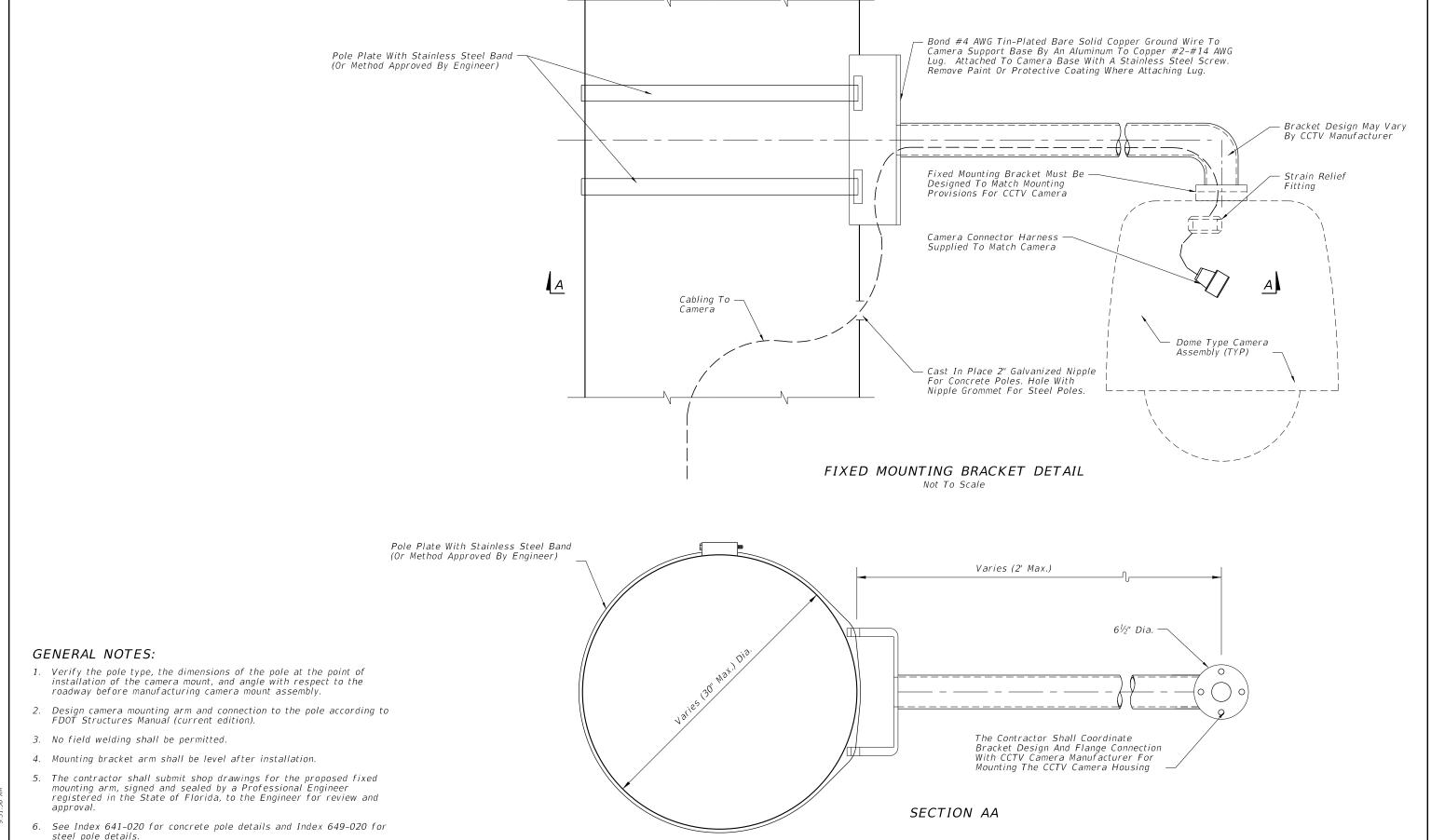
- 1. Lowering device to be shipped ready for pole attachment to include 100 ft. of composite power and signal cable prewired to lowering device at the factory.
- 2. The lowering device manufacturer shall supply both a portable lowering tool with a manual hand crank and a half-inch chuck variable-speed reversible industrial-duty electric drill that matches the winch's manufacturer-recommended revolutions per minute. One lowering tool per every 10 lowering devices is required.
- 3. The lowering device manufacturer shall provide an on-site installation inspection and operator instruction and certification. This ensures the product is assembled correctly and that all necessary persons are trained in the proper, safe operation of the system. Before erecting the first pole the contractor must contact the lowering device supplier and schedule a manufacturer's representative to be on-site.
- 4. Design camera mounting arm and connection to tenon according to FDOT Structures Manual (current edition).
- 5. Camera to be mounted to camera junction box and stabilizing weight via $1\frac{1}{2}$ " Standard NPT Pipe Thread.
- 6. Use air terminal extension when the pole top junction box is wider than top of pole.
- 7. The stainless steel device lowering cable shall be installed inside the pole within a 1 $\frac{1}{4}$ diameter PVC conduit.
- 8. All communication and power cables must be neatly bundled and secured.
- 9. Use a Camera Lowering Device listed on the Approved Product List (APL).
- 10. See Index 641-020 for concrete pole details and Index 649-020 for steel pole details.

CAMERA MOUNTING WITH LOWERING DEVICE

CAMERA LOWERING DEVICE DETAIL

SHEET

1 of 2



REVISION 11/01/17

DESCRIPTION:

accordance with Specification 630.

7. Galvanized pipe connections and conduit entry points shall be sealed in

FDOT

FY 2024-25 STANDARD PLANS CAMERA MOUNTING WITH FIXED BRACKET

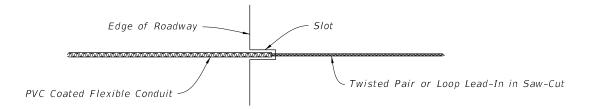
CAMERA MOUNTING DETAILS

INDEX 659-020

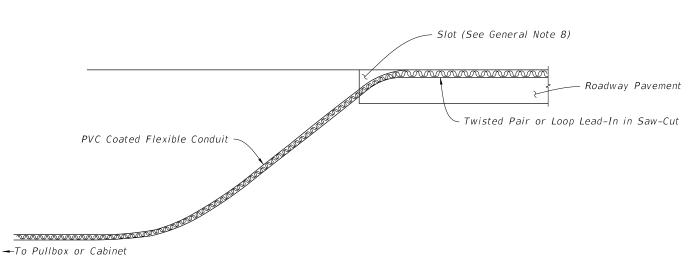
SHEET 2 of 2

GENERAL NOTES:

- 1. If the loop lead-in is 75' or less from the edge of the loop detector to controller cabinet, continue the twisted pair to the cabinet. If the loop lead-in is greater than 75' continue the twisted pair an Intermediate Pullbox, splice to shielded lead-in wire and continue to the controller cabinet.
- 2. Provide sufficient saw-cut width to allow unforced placement of loop wires or lead-in cables into the saw-cut. Except across expansion joints, saw-cut to a standard depth of 3", but no more than 4" below the top of the final surface.
- 3. On resurfacing or new roadway construction projects, install the loop wires and lead-in cables in the asphalt structural course prior to the placement of the asphalt friction course. Place the loop wires and lead-in cables in a saw cut in the structural course.
- 4. Use nonmetallic hold down material to secure loop wires and lead-ins to the bottom of saw-cuts. Place the hold down material approximately 12" intervals around loops and 24" intervals on lead-ins.
- 5. The minimum distance between the twisted pairs of loop lead-in wire is 6" from the loop to 12" from the pavement edge or curb.
- 6. Splice Connections in pull boxes with UL listed, watertight, insulated enclosures. Place one enclosure over the end of each conductor and place a third enclosure over the exposed end of the shielded cable. As an alternate, a larger diameter enclosure that will accommodate both the splices of the conductors and the exposed end of the shielded cable may be used.
- 7. Do not disturb more than a 6" x 6" area of asphalt. Restore asphalt as directed by the Engineer.
- 8. Alternative installations may be approved by the State Traffic Operations Engineer.



PLAN



NOTES:

- 1. Cut a slot in the edge of the roadway of sufficient size and depth to snugly place the end of the flexible conduit.
- 2. Install the conduit at least 6" into the roadway pavement and approximately 2" below the top of the roadway surface.
- 3. The departure angle of the conduit from the roadway is between 30° to 45°.

ELEVATION

:INSTALLATION WITHOUT CURB & GUTTER =

Twisted Pair or Loop Lead-In in Saw-Cut Intermediate Pullbox Gutter PVC Coated NOTES: Flexible Conduit 1. Drill a hole through the curb at the point which the required saw-cut depth is obtained just prior to cutting the top inside edge of the curb. 2. Install a section of flexible conduit at least 6" into the hole from the back side of the curb but not within 2" of the top of the hole. → To Pullbox or Cabinet 3. Insure the conduit fits snug within the drilled hole. 4. Fill the top of the hole with loop sealant to the level of the curb surface.

ALTERNATIVE 1

Twisted Pair or Loop Lead-In in Saw-Cut Intermediate Pullbox Slot (See General Note 8) ∽ Gutter NOTES: PVC Coated Flexible Conduit Rigid Conduit Connector

- 1. Drill a hole $\frac{1}{2}$ " to 1" larger in diameter than the rigid conduit to be used through the roadway asphalt (or concrete) surface and base at an appropriate angle to intercept the trench or pull box hole.
- 2. Install a molded bushing (nonmetallic) on the roadway
- 3. Place the top of the rigid conduit approximately 2" below the roadway surface.
- 4. Fill the hole with loop sealant to the level of the roadway surface.
- 5. Use a nonmetallic material to prevent excessive loop sealant from entering the rigid conduit.

ALTERNATIVE 2

→ To Pullbox or Cabinet

= INSTALLATION WITH CURB & GUTTER =

TWISTED PAIR AND LOOP LEAD-IN INSTALLATION

REVISION 11/01/18

DESCRIPTION:

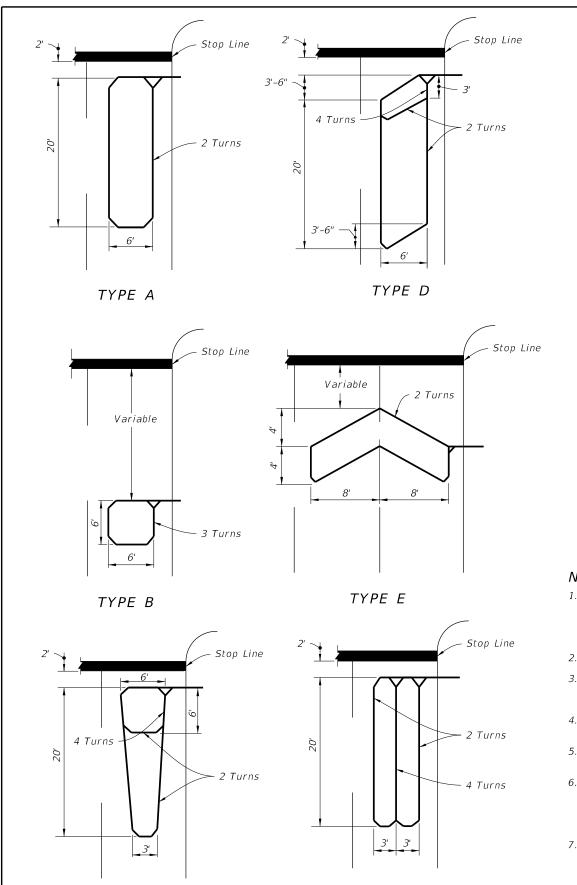
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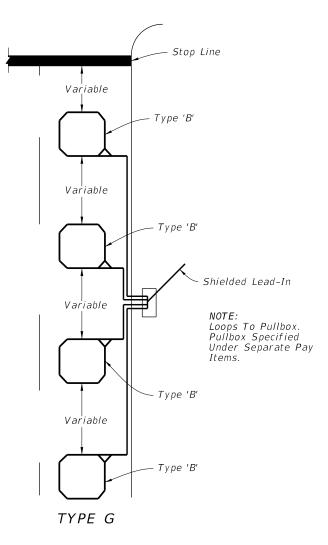
5. Use a nonmetallic material to prevent excessive loop sealant from entering the flexible conduit.

> FY 2024-25 STANDARD PLANS

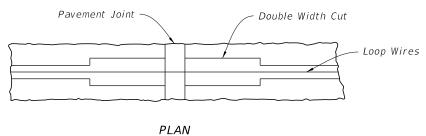
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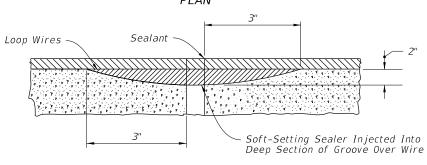
SHEET





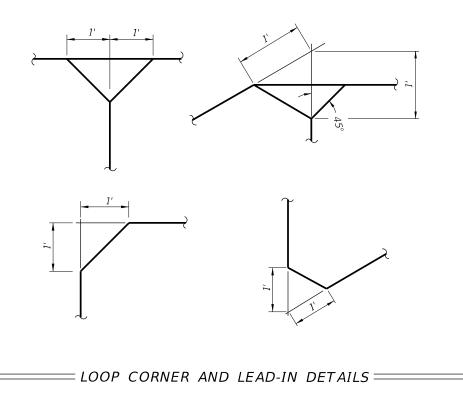
- 1. The number of "Turns" indicated at the specified point on the loop refers to the number of passes of loop wires which are placed in the saw-cut forming the complete loop.
- 2. Loop types or details not drawn to scale.
- 3. Loop Types are centered in a single lane except Type E which is centered on two lanes.
- 4. The number of individual loops in the Type G loop may vary up to a maximum of four (4).
- 5. Lead-in may be connected to either end of loop.
- 6. When shown in the Plans, the leading edge of loop Types A, C, D, & F may extend past the stop line a maximum of 10' and the length of these loops may be extended to a maximum of 60'.
- 7. Do not install loop lead-in wires in the same pull box with signal power cable.





———— CONCRETE PAVEMENT EXPANSION JOINTS

VERTICAL SECTION



LOOP TYPES, EXPANSION JOINTS, AND DETAILS

LAST REVISION 11/01/18 TYPEC

DESCRIPTION:

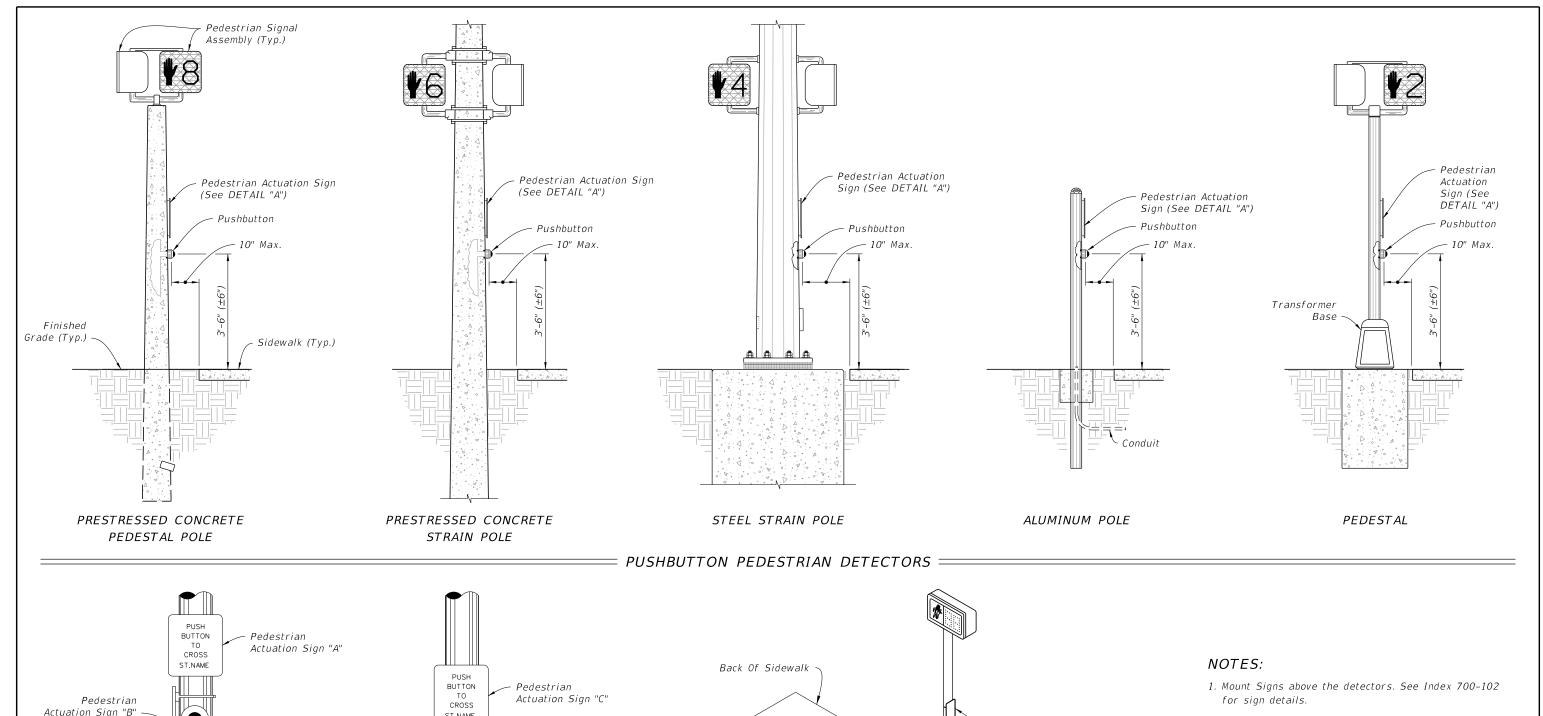
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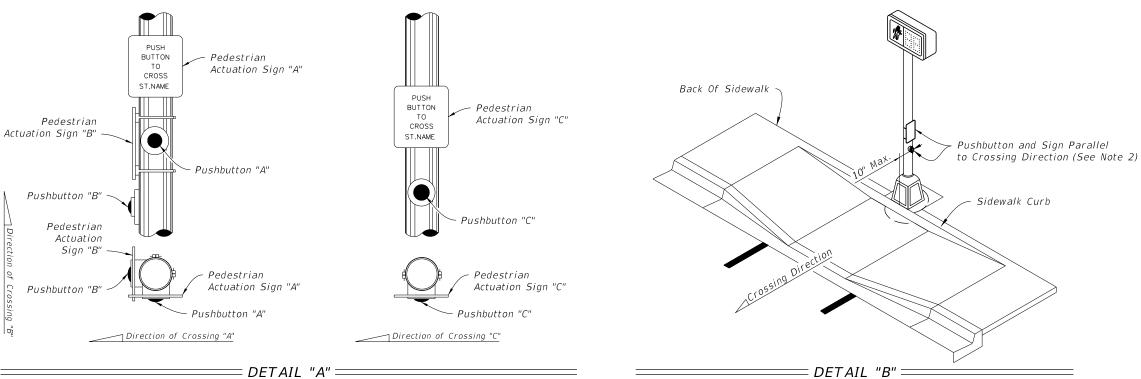
TYPE F

LOOP TYPES =

Loop conductors must follow saw-cut to bottom forming slack section at joint.

INDEX



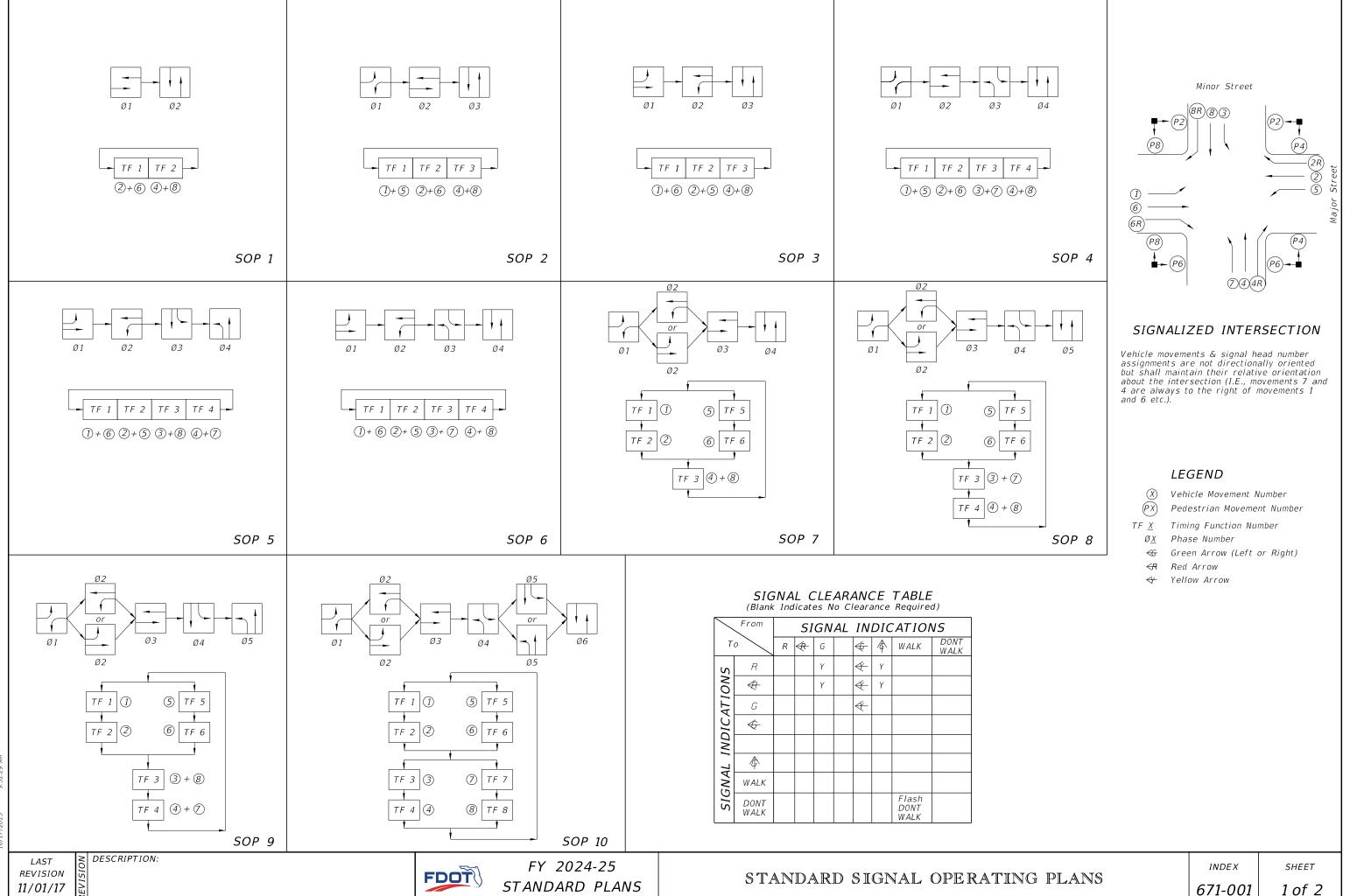


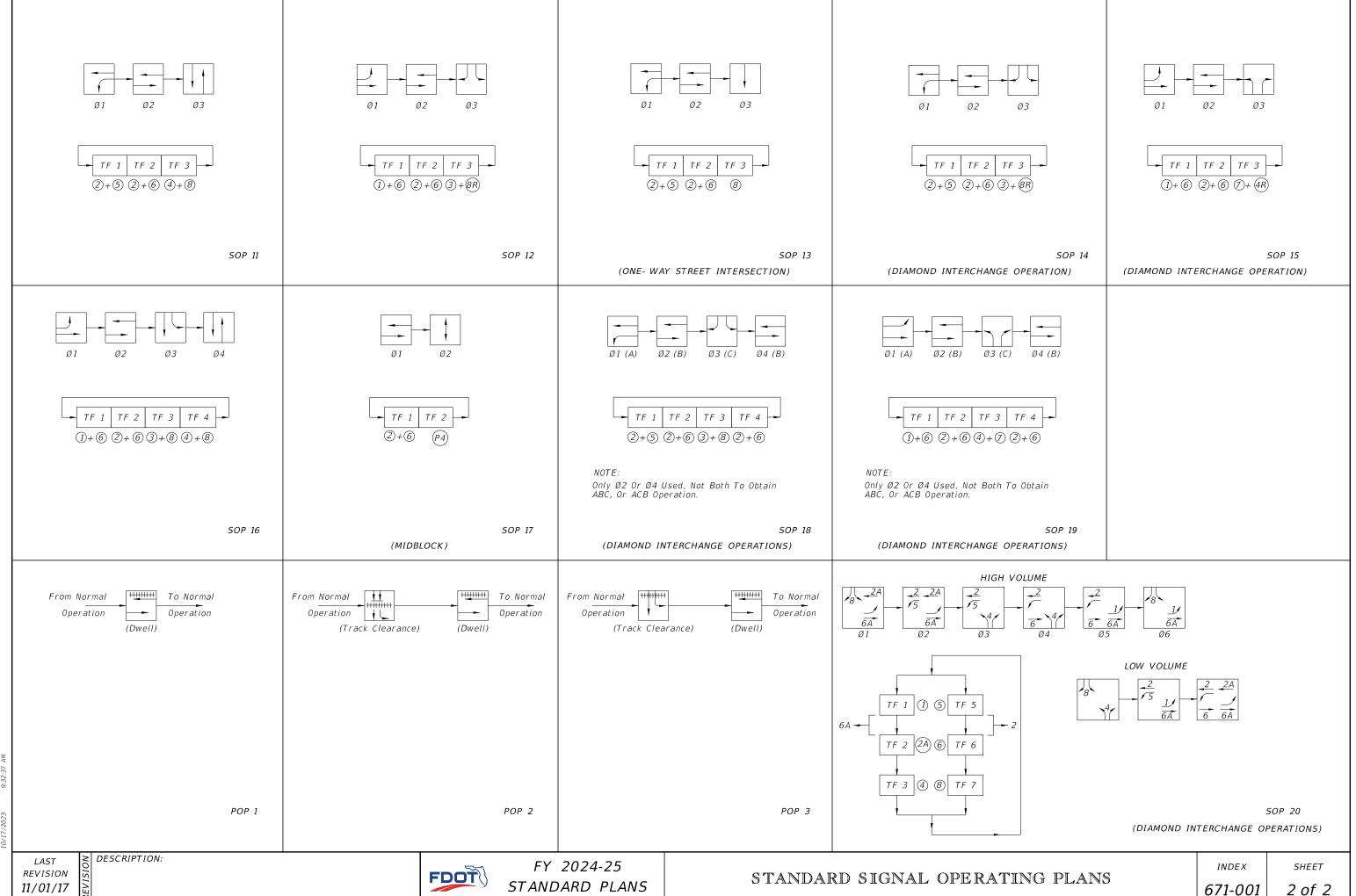
- 2. Install Pushbuttons and Pedestrian Actuation Signs with faces parallel to the crossing direction, see DETAIL "B".
- 3. Mount pushbuttons and Signs in accordance with Specification 665.
- 4. Pushbutton mounting height shown is taken at the center of the actuation switch.
- 5. for pedestrian control signal see index 653-001.
- 6. For Aluminum Pole and Pedestal supports see Index 646-001.

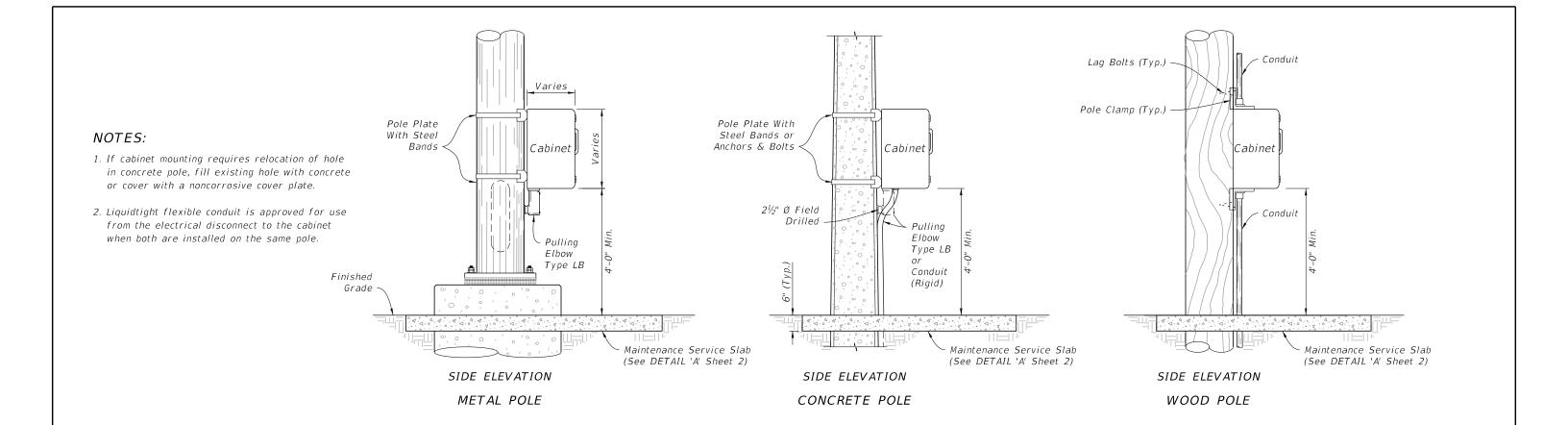
REVISION 11/01/20

DESCRIPTION:

FDOT



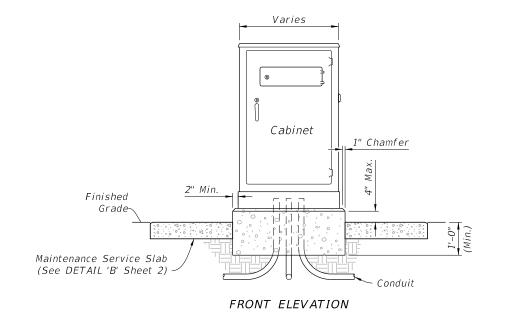


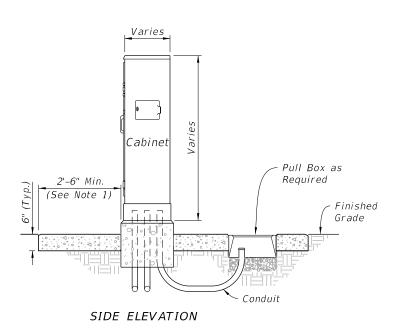


= POLE MOUNTED CONTROLLER CABINET

NOTES:

- 1. Maintenance Service Slab: Use Class NS concrete and slope $\frac{1}{4}$ " to 1" for drainage. Not required in sidewalk, pavement areas, or where R/W is restricted.
- 2. The number, size and orientation of conduit sweep will vary according to site condition or locations. Provide two spare 2" PVC conduits in all bases. Place the exits of the spare conduits in the direction of the center rear of the cabinet base and into a pull box. If obstructions prevent the spare conduit from exiting to the rear, or the rear of the cabinet is located on the R/W line, locate as directed by the Engineer. Cap all spare conduit sweeps with a weatherproof fitting.



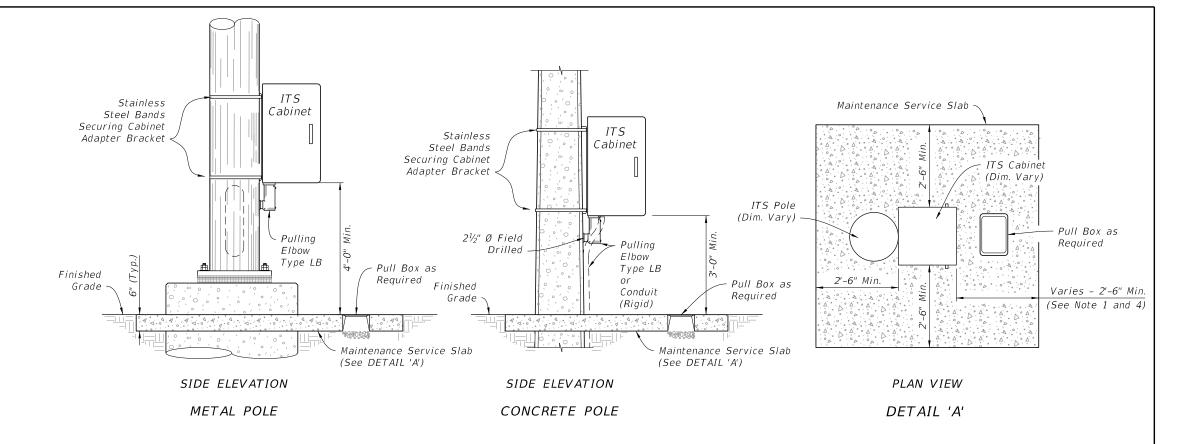


NEW CONTROLLER CABINET

GROUND MOUNTED CONTROLLER CABINET =

1 of 4

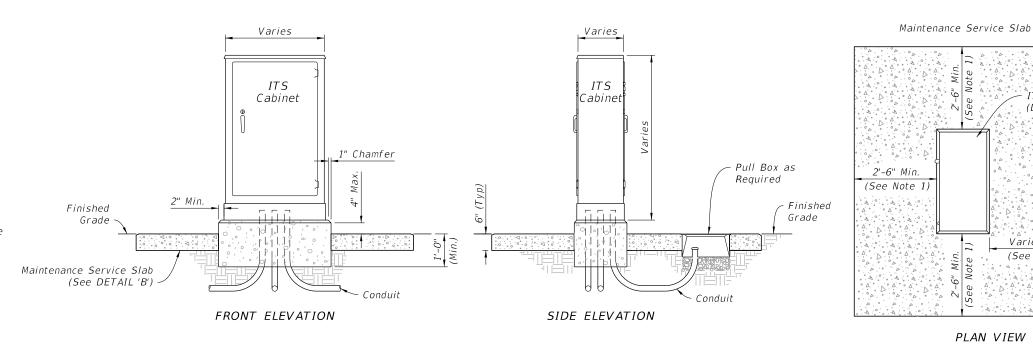
- 1. Maintenance Service Slab: Use Class NS concrete and slope ¼" to 1" for drainage. Not required in sidewalk, pavement areas, or where R/W is restricted.
- If cabinet mounting requires relocation of hole in concrete pole, fill existing hole with concrete or cover with a noncorrosive cover plate.
- 3. Liquidtight flexible conduit is approved for use from the electrical disconnect to the cabinet when both are installed on the same pole.
- 4. Where a pull box is to be placed within the maintenance service slab, the slab width must be extended to provide for the required pull box concrete apron as detailed in Index 635-001.
- Coordinate placement of maintenance service slab with proposed final grade. Grade and compact side slopes around the maintenance service slab to provide a stable and level working area and tie into the proposed embankment.



POLE MOUNTED INTELLIGENT TRANSPORTATION SYSTEMS (ITS) CABINET

NOTES:

- Maintenance Service Slab: Use Class NS concrete and slope ¹/₄" to 1" for drainage. Not required in sidewalk, pavement areas, or where R/W is restricted.
- 2. The number, size and orientation of conduit sweep will vary according to site condition or locations. Provide two spare 2" PVC conduits in all bases. Place the exits of the spare conduits in the direction of the center rear of the cabinet base and into a pull box. If obstructions prevent the spare conduit from exiting to the rear, or the rear of the cabinet is located on the R/W line, locate as directed by the Engineer. Cap all spare conduit sweeps with a weatherproof fitting.
- 3. When a pull box is to be placed within the maintenance service slab, the slab width must be extended to provide for the required pull box apron as detailed in Index 635-001.
- 4. Coordinate placement of maintenance service slab with proposed final grade. Grade and compact side slopes around the maintenance service slab to provide a stable and level working area and tie into the proposed embankment.



GROUND MOUNTED INTELLIGENT TRANSPORTATION SYSTEMS (ITS) CABINET

NEW ITS CABINET

LAST REVISION 11/01/23

DESCRIPTION:



ITS Cabinet

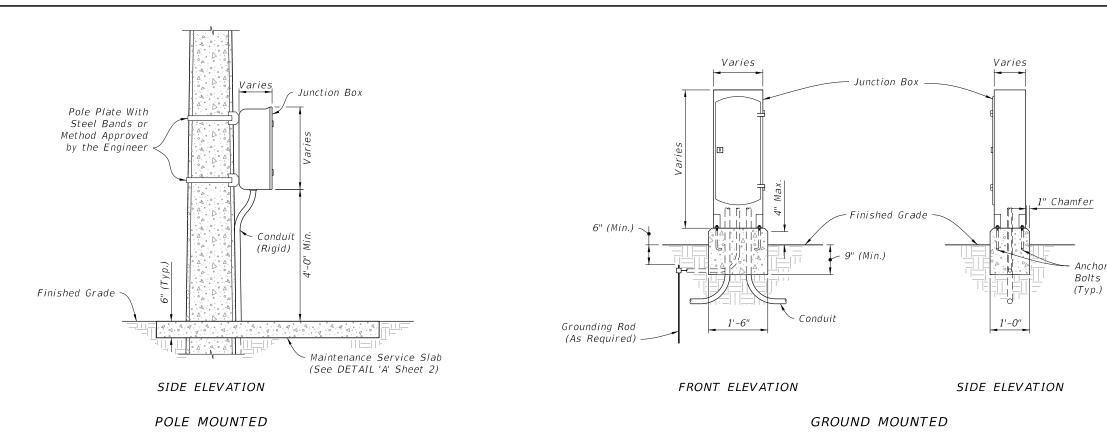
Varies - 2'-6" Min.

(See Note 1 and 3)

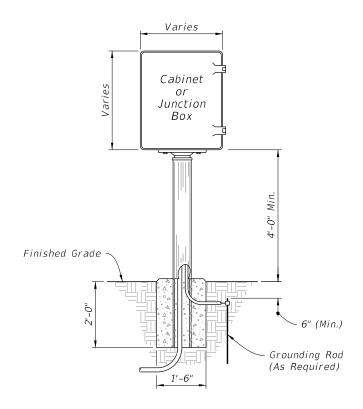
Pull Box as

Reauired

DETAIL 'B'



= INTERCONNECT JUNCTION BOX =



FRONT ELEVATION

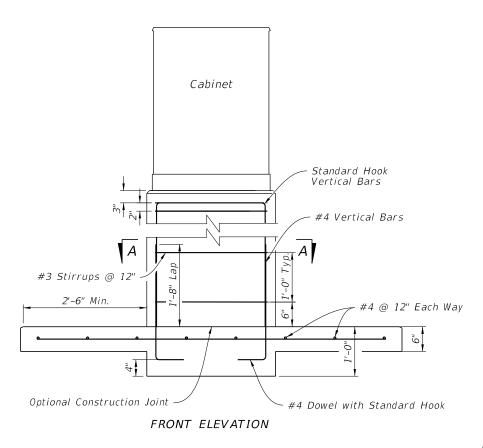
PEDESTAL MOUNTED CABINET ==

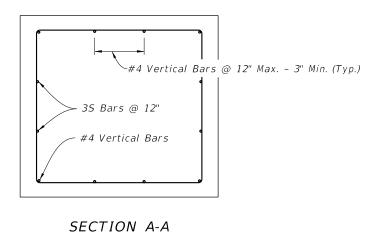
11/01/23

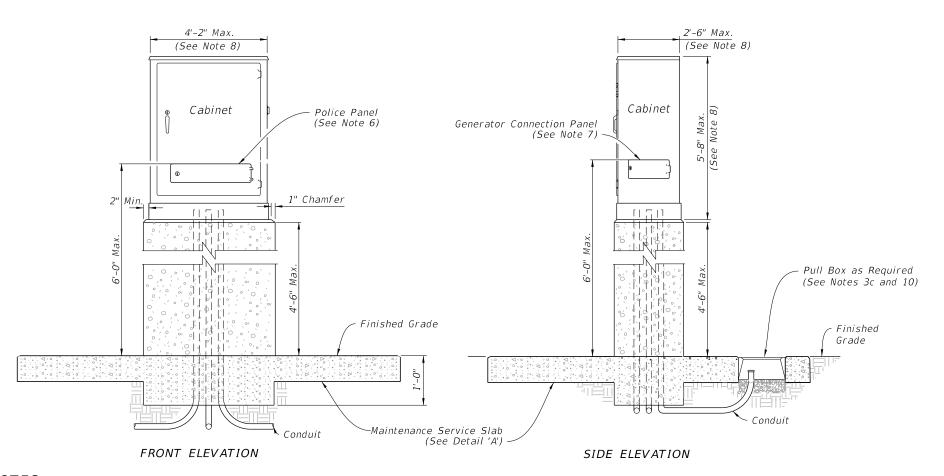
DESCRIPTION:

FDOT

REVISION

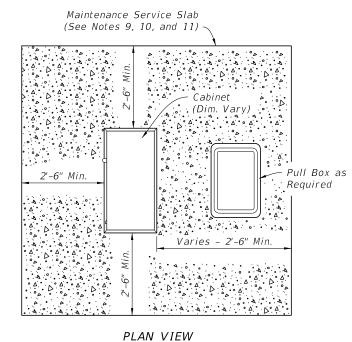






- 1. Install cabinet riser as called for in the Plans. Concrete riser shown, for other options, see Specification 676.
- - a. Concrete will be in accordance with Specification 346.
 - b. Concrete will be Class IV.
- 3. Reinforcing:
 - a. Reinforcing will be in accordance with Specification 415.

 - b. All reinforcing steel will have a 2" minimum cover unless noted otherwise.
 c. Adjust reinforcing to facilitate Pull Box. Add equal number of bars to to either side for each bar interrupted by Pull Box.
- 4. Generator connection cables will be extended by the same length as the riser's height.
- 5. Controller cabinet depicted. ITS cabinet similar.
- 6. Locate Police Panel at bottom of cabinet assembly.
- 7. Locate generator connection panel at bottom of cabinet assembly
- 8. Riser dimensions shown are based on maximum cabinet dimensions per the APL
- 9. Slope maintenance slab $\frac{1}{4}$ " to 1" for drainage. Not required in sidewalk, pavement areas, or where R/W is restricted.
- 10. When a pull box is to be placed within the maintenance service slab, the slab width must be extended to provide for the required pull box apron as detailed in Index 635-001.
- 11. Coordinate placement of maintenance service slab with proposed final grade. Grade and compact side slopes around the maintenance service slab to provide a stable and level working area and tie into the proposed embankment.
- 12. The number, size and orientation of conduit sweep will vary according to site condition or location. Provide two spare 2" PVC conduits in all bases. Place the exits of the two spare conduits in the direction of the center rear of the cabinet base and into a pull box. If obstructions prevent the spare conduit from existing to the rear, or the rear of the cabinet is located on the R/W line, locate as directed by the Engineer. Cap all spare conduit sweeps with a weatherproof fitting.



DETAIL 'A'

GROUND MOUNTED CONTROLLER CABINET RISER

DESCRIPTION: REVISION 11/01/23

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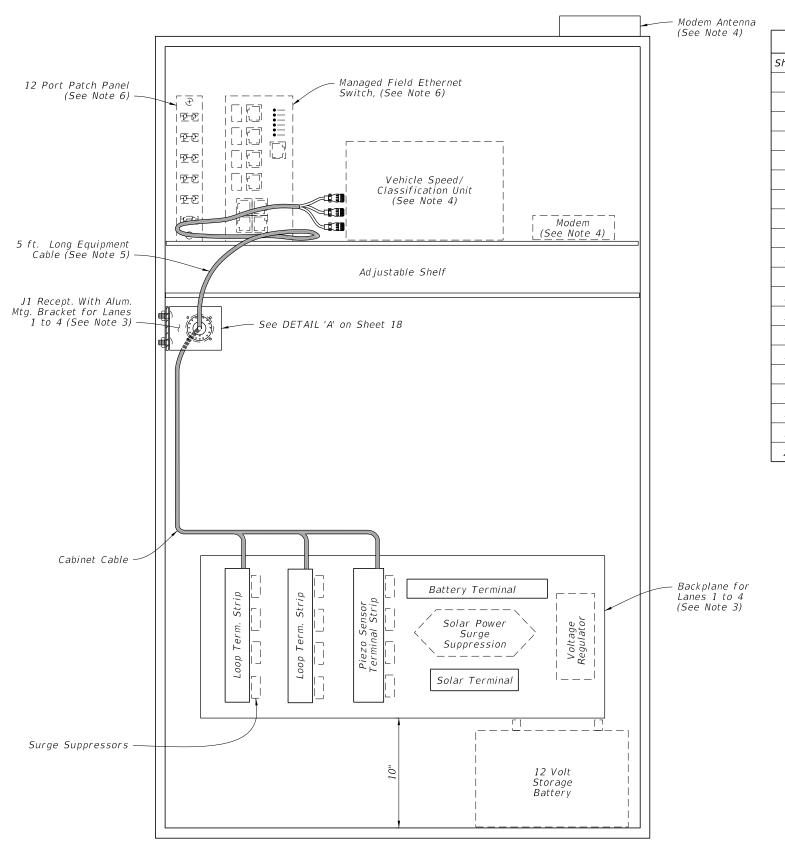


	TABLE OF CONTENTS:
Sheet	Description
1	Continuous Count Station Traffic Monitoring Site - TTMS/CCS - Cabinet Layout Details (Four Lanes or Less)
2	Continuous Count Station Traffic Monitoring Site - TTMS/CCS - Cabinet Layout Details (Five to Eight Lanes)
3	Continuous Count Station Traffic Monitoring site - TTMS/CCS - Cabinet Backplane Details
4	Continuous Count Station Traffic Monitoring Site - TTMS/CCS - Pinout Chart, Receptacle, and Plug Details
5	Continuous Count Station Traffic Monitoring Site - TTMS/CCS - Lane Layout for TMS Inductive Loop and Axle Sensors
6	Short Term Traffic Monitoring Site - PTMS - Cabinet Layout Details (Four Lanes or Less)
7	Short Term Traffic Monitoring Site - PTMS - Cabinet Layout Details (Five to Eight Lanes)
8	Short Term Traffic Monitoring Site - PTMS - Lane Layout for PTMS Inductive Loop and Axle Sensors
9	Weigh-In-Motion Monitoring Site - Cabinet Layout Details
10	Weigh-In-Motion Monitoring Site - Cabinet Backplane Details
11	Weigh-In-Motion Monitoring Site - Lane Layout for TTMS/CCS Inductive Loop and Weigh-In-Motion Sensors
12	Non-Motorized Monitoring Site - Cabinet Layout Details
13	Non-Motorized Monitoring Site - Cabinet Sideplane and Cabinet Backplane Details
14	Non-Motorized Monitoring Site - Narrow Side Path Configuration
15	Non-Motorized Monitoring Site - Large Shared Use Path Configurations
16	Non-Motorized Monitoring Site - Extra Large Shared Use Path Configurations
17	Non-Motorized Monitoring Site - Paved Sidewalk Configuration
18	Details 'A' thru 'F'
19	Non-Intrusive Vehicle Sensor
20	Solar Power Pole With Pole Mounted Cabinet and Pedestal Mounted Cabinet Details

- 1. Traffic monitoring site cabinet includes:
 - A. One adjustable shelf; (equipped as shown)
 - B. One backplane assembly; (equipped as shown)
 - C. One J1 receptacle with mounting bracket;
 - D. One P1 equipment cable 5 ft. long (See Sheet 4);
 - E. All associated wiring and wiring harnesses.
- 2. Basic backplane assembly consists of:
- A. Two inductive loop terminal strips; B. One piezo sensor terminal strip;
- C. One battery terminal strip;
- D. One solar panel terminal strip.
- 3. The contractor is responsible for contacting the TMS Manager at the Transportation Data and Analytics Office for lane number information and verification.
- 4. Provide and install a Speed/Classification Unit, Modem, and Antenna.
- 5. Cable ends must be fabricated to fit the vehicle speed/classification unit. See Sheet 4 for Pinout Charts, receptacle and plug details.
- 6. Provide and install a 12-fiber single mode cable, a 12-port patch panel, and a managed field ethernet switch.

CABINET LAYOUT DETAILS = (Four Lanes or Less)

CONTINUOUS COUNT STATION TRAFFIC MONITORING SITE - TTMS/CCS

LAST REVISION IN 11/01/23

DESCRIPTION:

FDOT

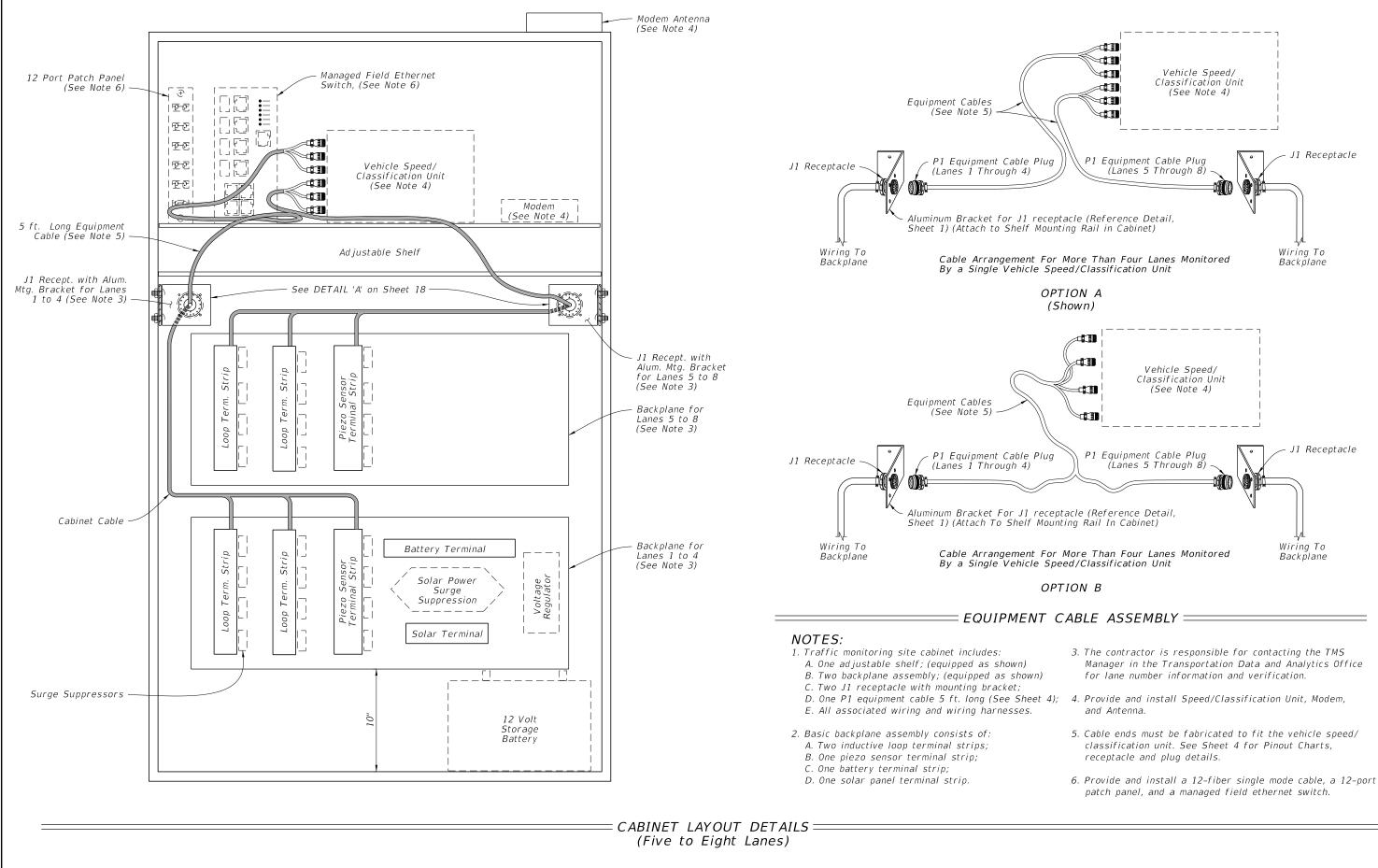
FY 2024-25 STANDARD PLANS

TRAFFIC MONITORING SITE

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NITORING SITE 695-001



CONTINUOUS COUNT STATION TRAFFIC MONITORING SITE - TTMS/CCS

REVISION 11/01/23 DESCRIPTION:

FDOT

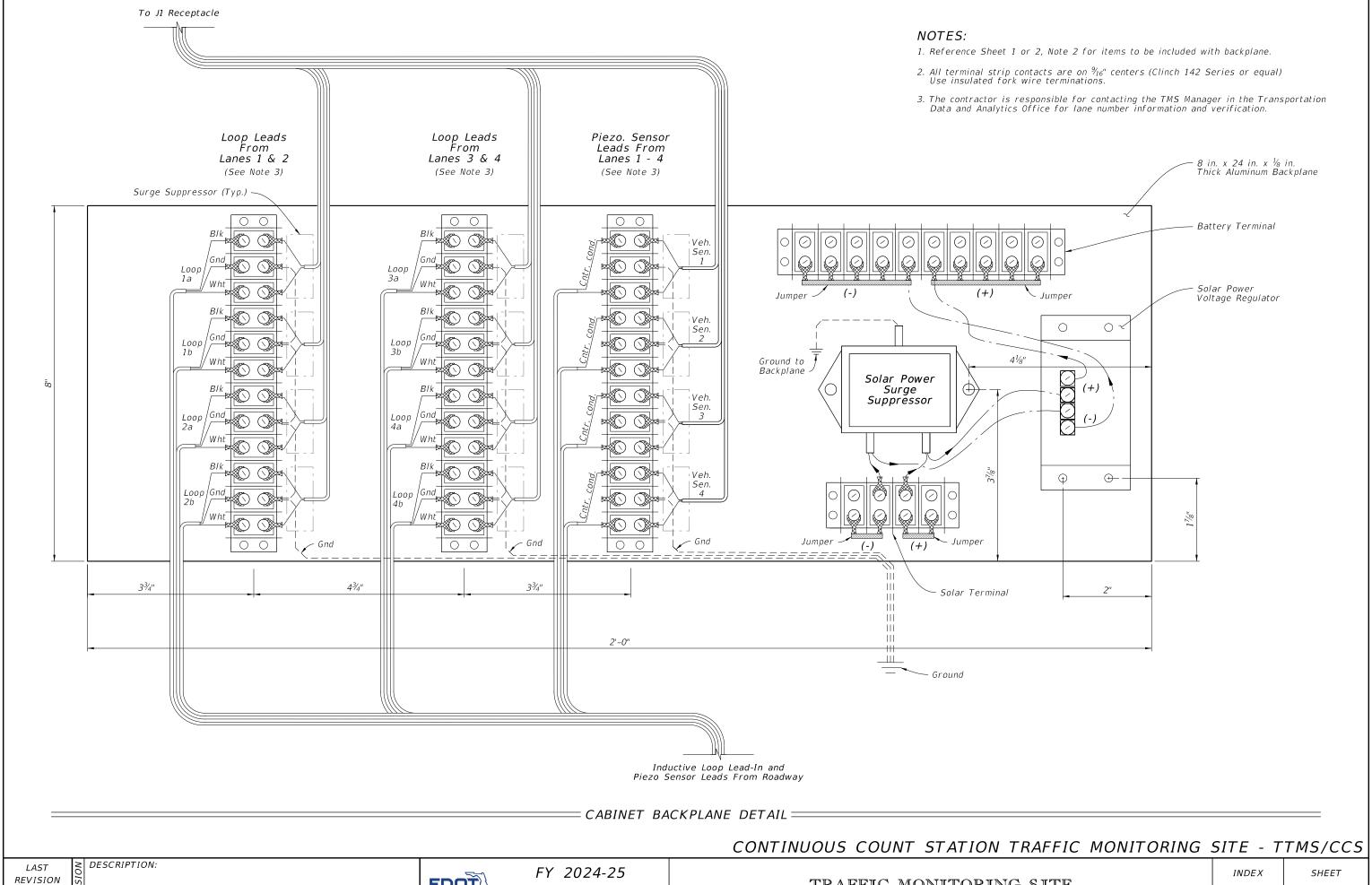
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11/01/23

FDOT

26 Recessed Male Pins Loop 1a (5a) white Loop 1a (5a) black

Loop 1b (5b) red

Loop 1b (5b) black Loop 2a (6a) green Loop 2a (6a) blue Loop 2b (6b) orange Loop 2b (6b) tan Loop 3a (7a) white

Loop 3a (7a) green

Loop 3b (7b) red

Loop 3b (7b) black

Loop 4a (8a) w/white

Loop 4a (8a) w/black

Loop 4b (8b) w/red

Loop 4b (8b) w/green

Piezo 1 (5) (+) w/blue

Piezo 1 (5) sh w/orange

Piezo 2 (6) (+) w/green

Piezo 2 (6) sh w/red

Piezo 3 (7) (+) w/black

Piezo 3 (7) sh w/red/blk

Piezo 4 (8) (+) red/ green

Piezo 4 (8) sh red/white

Gnd green

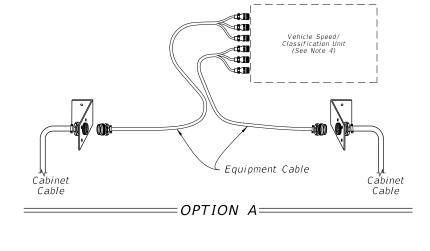
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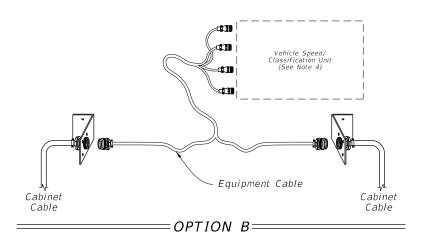
Aluminum Bracket for J1 Receptacle (Attach to Shelf Mounting Rail in Cabinet, See DETAIL 'A' on Sheet 18)

P1 Equipment Cable Plug (Amphenol 28-12 Plug with Female Pin Slots and MS Type Clamp, or Equal.)

Equipment Cables

P1	EQUIPMENT CABLE PLU	IG.							
'1	26 Female Pin Slots								
A	Loop 1a (5a)								
В	Loop 1a (5a)								
С	Loop 1b (5b)								
D	Loop 1b (5b)	o Unit							
E	Loop 2a (6a)	Connect To ectronics Ur							
F	Loop 2a (6a)	Ctroi							
G	Loop 2b (6b)	Ele							
Н	Loop 2b (6b)								
N	Gnd								
J	Loop 3a (7a)								
К	Loop 3b (7b)								
L	Loop 3b (7b)]							
М	Loop 3b (7b)	To Unit							
Р	Loop 4a (8a)	Connect To ectronics Un							
R	Loop 4a (8a)	Conn							
5	Loop 4b (8b)	ΕΙΘ							
Τ	Loop 4b (8b)								
d	Gnd								
U	Piezo 1 (5) (+)								
V	Piezo 1 sh								
W	Piezo 2 (6) (+)	ınit							
X	Piezo 2 sh	ct To							
Υ	Piezo 3 (7) (+)	Connect To ectronics U							
Z	Piezo 3 sh	CC							
а	Piezo 4 (8) (+)								
b	Piezo 4 sh								





NOTES:

- 1. The contractor is responsible for contacting the TMS Manager in the Transportation Data and Analytics Office for lane number information and verification.
- 2. The equipment cable can accommodate up to four lanes of inductive loop and piezo sensor inputs. (See Sheet 1 for cabinet layout)
- 3. For more than four lanes and up to eight lanes of inputs, the following options are available:
- A. Second Vehicle Speed/Classification Unit and separate equipment cable connecting to a second J1 receptacle; or
- B. Single Vehicle Speed/Classification Unit capable of up to eight lanes of inputs and a single equipment cable with split ends to fit two J1 receptacles. (See Sheet 2 detail)
- 4. Numbers in parenthesis in the pinout chart identify lane numbers when a second backplane for lanes 5 through 8 is required.
- 5. Cable Ends must be fabricated to fit the vehicle Speed/Classification Unit.

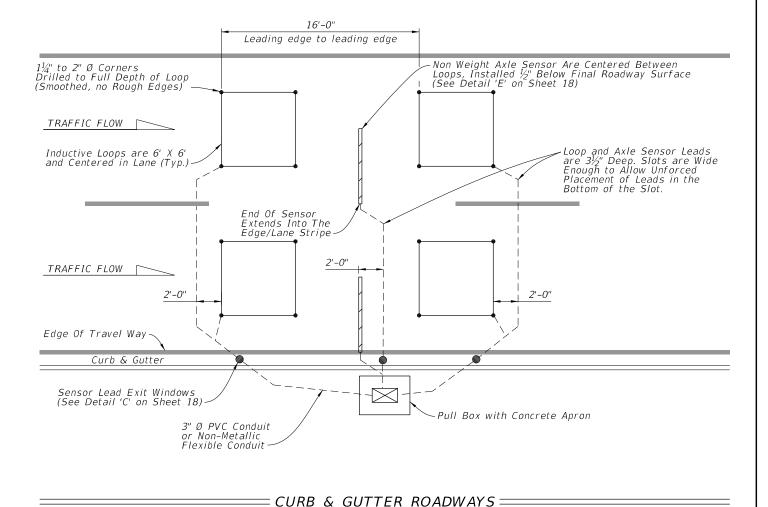
PINOUT, RECEPTACLE, AND PLUG DETAILS =

CONTINUOUS COUNT STATION TRAFFIC MONITORING SITE - TTMS/CCS

REVISION 11/01/23

DESCRIPTION:

FDOT



- 1. Install axle sensors and loops associated with axle sensors after placement of the friction course.
- 2. Cut a $3\frac{1}{2}$ " deep slot for the Inductive loops. Loop slots will be cut wide enough to allow unforced placement of the wire into the bottom of the slot. Four turns of #14 AWG, place the IMSA 51-7 copper wire in the slot. Place short pieces of backer rod (2" to 3" in length) every 18" to 24" to hold the loop wire in the bottom of the slot.
- 3. Twist loop leads at the rate of 8 to 16 twist per foot. Extend the twisted pair loop wire directly to the cabinet. No splicing of the loop leads will be permitted.
- 4. Marking will consist of two rounds of contrasting colored tape, one color for the lane number and the second color for the lead loop location in the lane. The first band closest to the cabinet will represent the lane number, one round of tape will be for lane 1 and two rounds will be lane 2, etc. The lead loop in lane one would have one round of tape and a second round of a contrasting colored tape for the lead loop in the lane. The trailing loop would not have a second contrasting colored band of tape.
- 5. See Index 635-001 for pull box and concrete apron details.

= ROADWAYS WITH PAVED SHOULDERS =

- 6. Use a chalk line or string and paint to layout the position of the sensor and lead-in cable slots. Ensure saw cuts do not deviate more than ½" from the chalk line. Use a single blade or ganged blade saw wide enough to cut the axle sensor slot at full width in a single pass. Cutting two slots and chipping out roadway material between them is not allowed.
- 7. All sensor slots and any cuts in the roadway will be thoroughly blown out to ensure there is no dust or debris prior to installation of sensors or leads.
- 8. Install Exit Windows at least 2' apart.

= LANE LAYOUT FOR TTMS/CCS INDUCTIVE LOOP AND AXLE SENSORS = (Typical for up to 4 Lanes of Sensor Leads Pulled to one Side of the Roadway)

CONTINUOUS COUNT STATION TRAFFIC MONITORING SITE - TTMS/CCS

REVISION 11/01/23

DESCRIPTION:

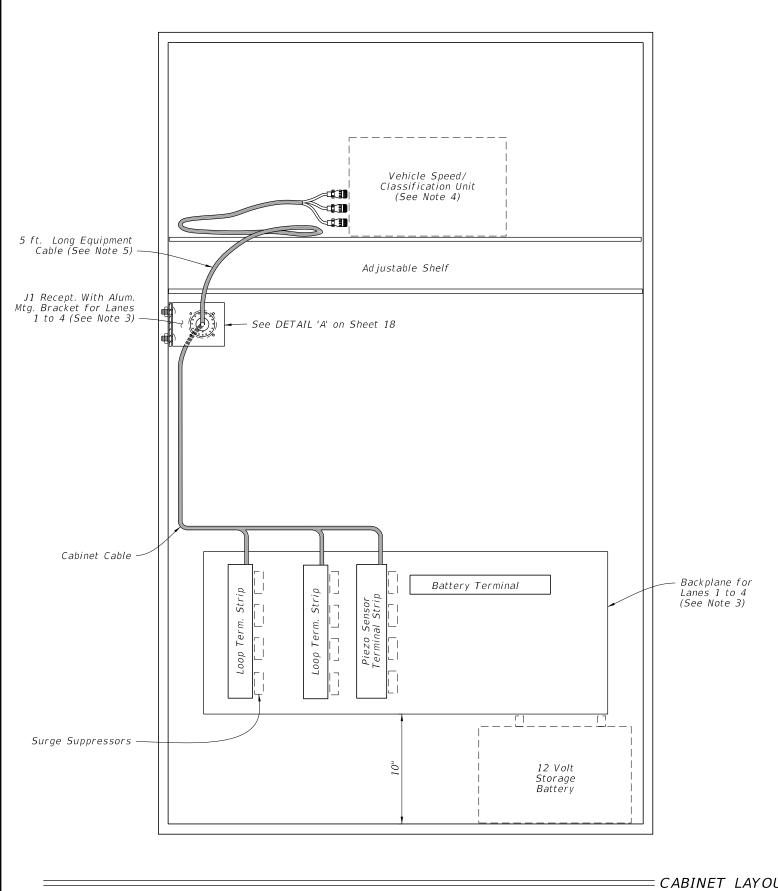
FDOT

FY 2024-25 STANDARD PLANS

TRAFFIC MONITORING SITE

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- 1. Traffic monitoring site cabinet includes:
 - A. One adjustable shelf; (equipped as shown)
- B. One backplane assembly; (equipped as shown)
- C. One J1 receptacle with mounting bracket;
- D. One P1 equipment cable 5 ft. long (See Sheet 4);
- E. All associated wiring and wiring harnesses.
- 2. Basic backplane assembly consists of: A. Two inductive loop terminal strips;
- B. One piezo sensor terminal strip;
- C. One battery terminal strip.
- 3. The contractor is responsible for contacting the District Data Collection Coordinator for lane numbering.
- 4. Proved and install a Speed/Classification Unit.
- 5. Cable ends must be fabricated to fit the vehicle speed/ classification unit. See Sheet 4 for Pinout Charts, receptacle and plug details.

CABINET LAYOUT DETAILS = (Four Lanes or Less)

SHORT TERM TRAFFIC MONITORING SITE - PTMS

DESCRIPTION: REVISION 11/01/23

FDOT

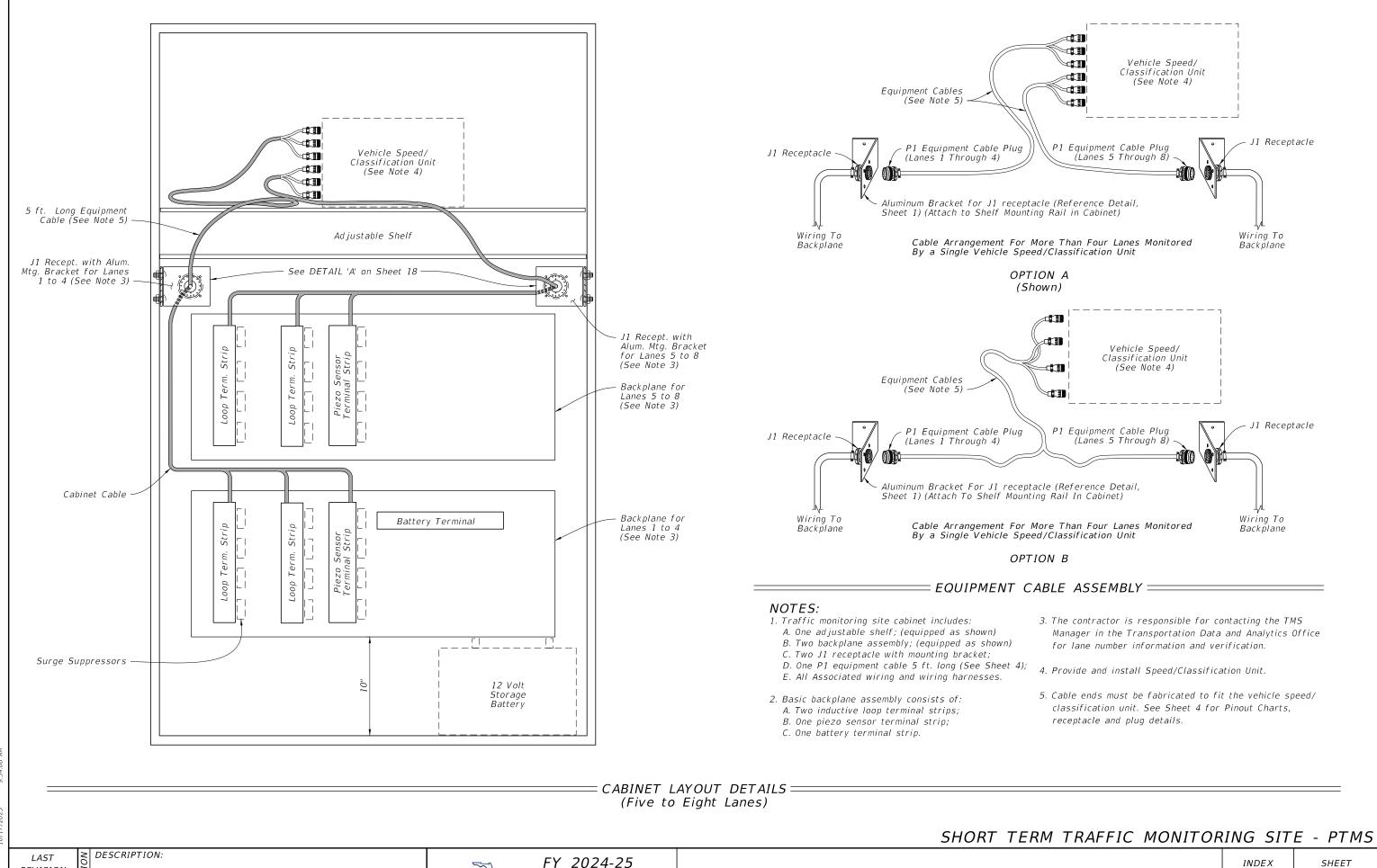
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TRAFFIC MONITORING SITE

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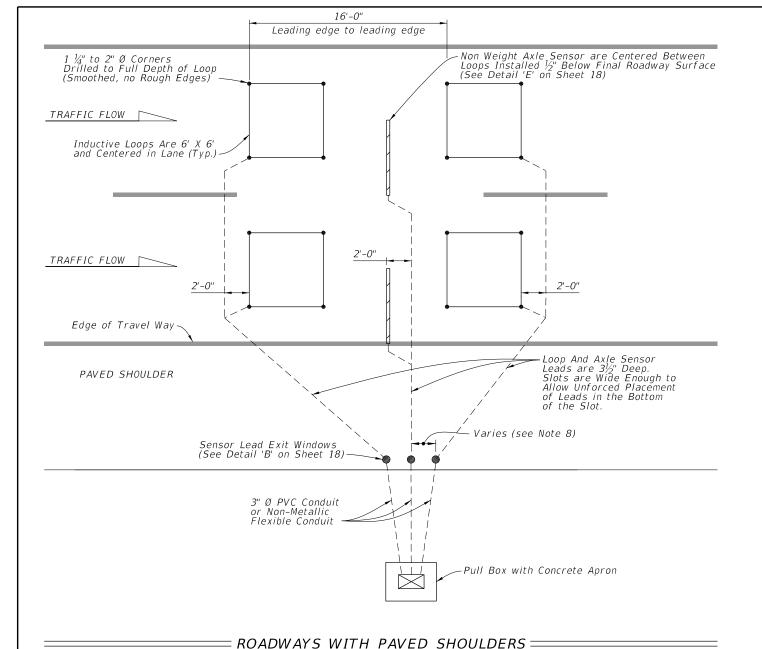
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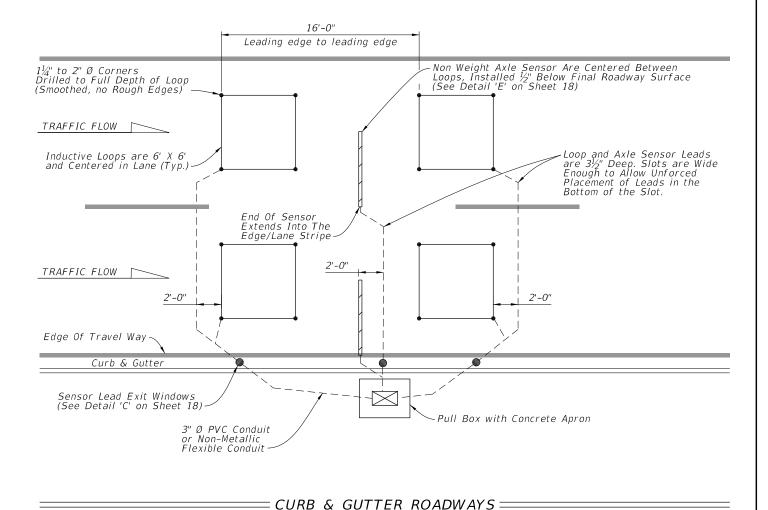
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- 1. Install axle sensors and loops associated with axle sensors after placement of the friction course.
- 2. Cut a 31/3" deep slot for the Inductive loops. Loop slots will be cut wide enough to allow unforced placement of the wire into the bottom of the slot. Place four turns of #14 AWG IMSA 51-7 copper wire in the slot. Place short pieces of backer rod (2" to 3" in length) every 18" to 24" to hold the loop wire in the bottom of the slot.
- 3. Twist loop leads at the rate of 8 to 16 twists per foot. Extend the twisted pair loop wire directly to the cabinet. No splicing of the loop leads will be permitted.
- 4. Marking will consist of two rounds of contrasting colored tape, one color for the lane number and the second color for the lead loop location in the lane. The first band closest to the cabinet will represent the lane number, one round of tape will be for lane 1 and two rounds will be lane 2, etc. The lead loop in lane one would have one round of tape and a second round of a contrasting colored tape for the lead loop in the lane. The trailing loop would not have a second contrasting colored band of tape.
- 5. See Index 635-001 for pull box and concrete apron details.
- 6. Use a chalk line or string and paint to layout the position of the sensor and lead-in cable slots. Ensure saw cuts do not deviate more than 1/2" from the chalk line. Use a single blade or ganged blade saw wide enough to cut the axle sensor slot at full width in a single pass. Cutting two slots and chipping out roadway material between them is not allowed.
- 7. All sensor slots and any cuts in the roadway will be thoroughly blown out to ensure there is no dust or debris prior to installation of sensors or leads.
- 8. Install Exit Windows at least 2' apart.

= LANE LAYOUT FOR PTMS INDUCTIVE LOOP AND AXLE SENSORS = (Typical for up to 4 Lanes of Sensor Leads Pulled to one Side of the Roadway)

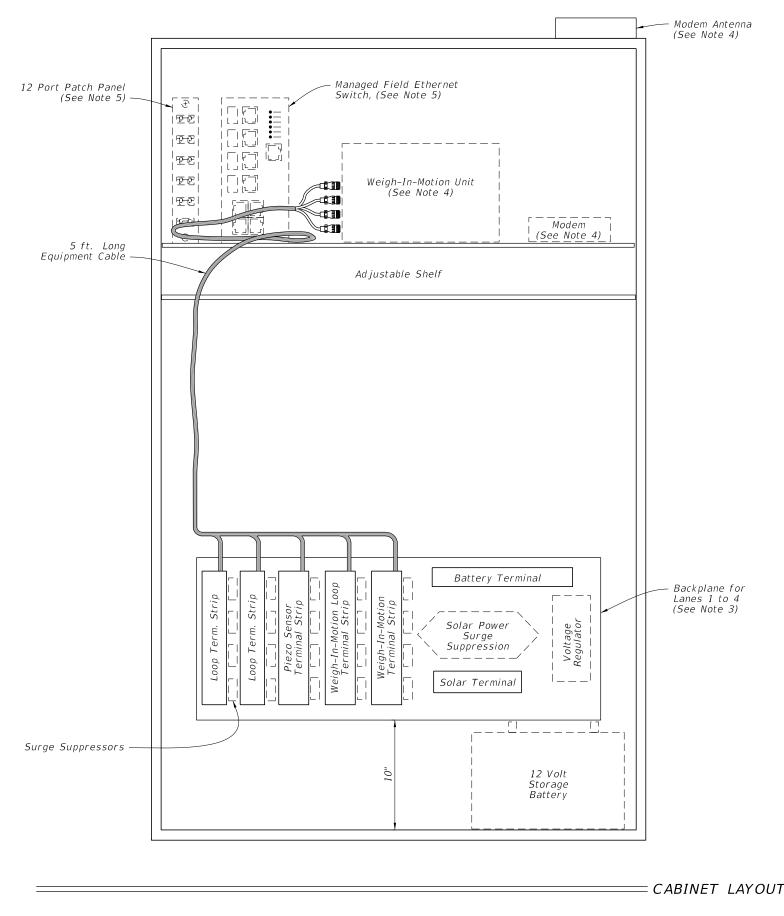
SHORT TERM TRAFFIC MONITORING SITE - PTMS

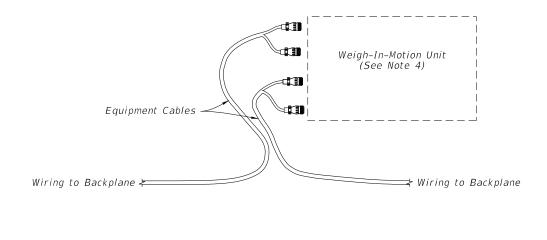
REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS





= EQUIPMENT CABLE ASSEMBLY ===

NOTES:

- 1. Traffic monitoring site cabinet includes:
 - A. One adjustable shelf; (equipped as shown)
 - B. One backplane assembly; (equipped as shown)
 - C. All associated wiring and wiring harnesses.
- 2. Basic backplane assembly consists of:
- A. Two inductive loop terminal strips;
- B. One piezo sensor terminal strip; C. Two weigh-in-motion terminal strips;
- D. One battery terminal strip;
- E. One solar panel terminal strip.
- 3. The contractor is responsible for contacting the TMS Manager at the Transportation Data and Analytics Office for lane number information and verification.
- 4. Provide and install a Weigh-In-Motion Unit, Modem, and Antenna.
- 5. Provide and install a 12-fiber single mode cable, a 12-port patch panel, and a managed field ethernet switch.

CABINET LAYOUT DETAILS =

WEIGH-IN-MOTION MONITORING SITE

REVISION 11/01/23

FDOT

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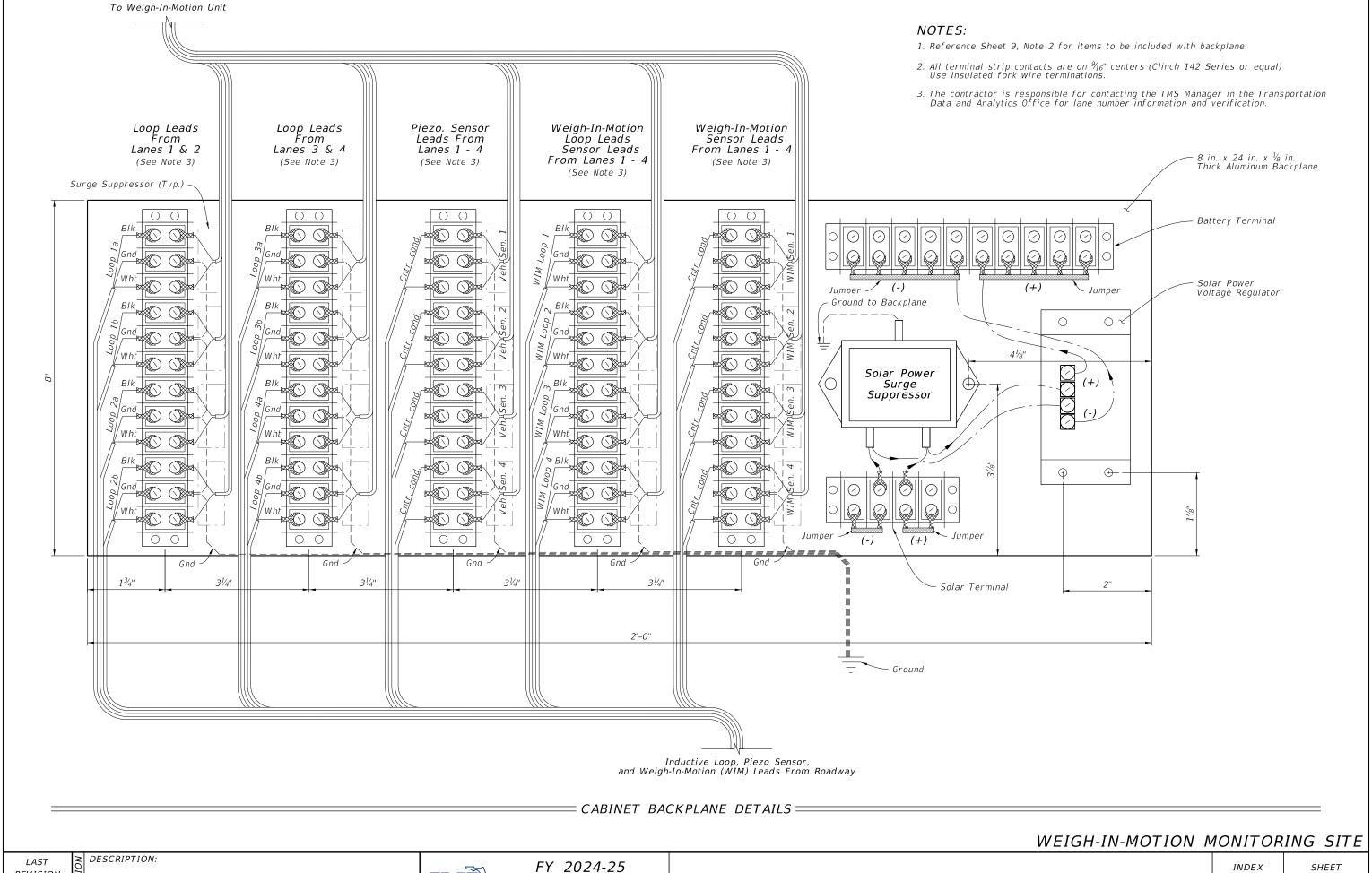
TRAFFIC MONITORING SITE

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DESCRIPTION:

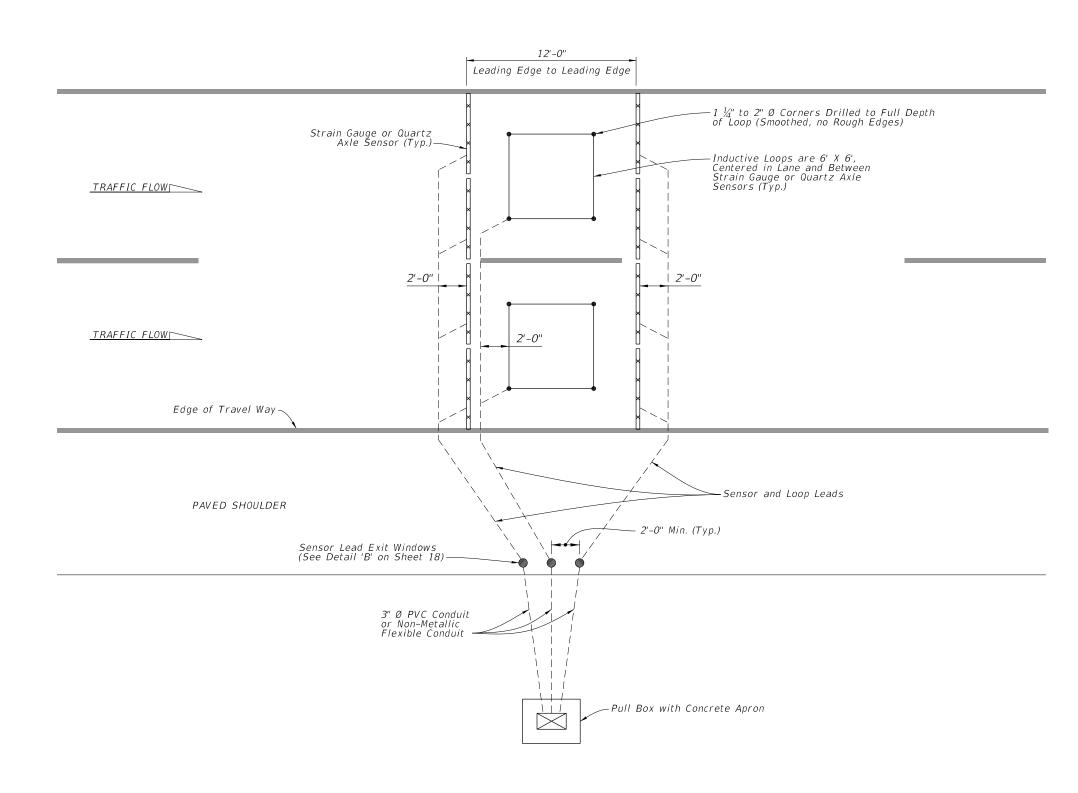


REVISION 11/01/23

FDOT

- 1. Install axle sensors and loops associated with axle sensors after placement of the friction course.
- 2. Cut a $3\frac{1}{2}$ " deep slot for the Inductive loops. Loop slots will be cut wide enough to allow unforced placement of the wire into the bottom of the slot. Place four turns of #14 AWG IMSA 51-7 copper wire in the slot. Place short pieces of backer rod (2" to 3" in length) every 18" to 24" to hold the loop wire in the bottom of the slot.
- 3. Twist loop leads at the rate of 8 to 16 twists per foot. Extend the twisted pair loop wire directly to the cabinet. No splicing of the loop leads will be permitted.
- 4. Marking will consist of two rounds of contrasting colored tape, one color for the lane number and the second color for the lead loop location in the lane. The first band closest to the cabinet will represent the lane number, one round of tape will be for lane 1 and two rounds will be lane 2, etc. The lead loop in lane one would have one round of tape and a second round of a contrasting colored tape for the lead loop in the lane. The trailing loop would not have a second contrasting colored band of tape.
- 5. See Index 635-001 for pull box and concrete apron details.
- 6. Use a chalk line or string and paint to layout the position of the sensor and lead-in cable slots. Ensure saw cuts do not deviate more than ½" from the chalk line. Install the sensor according to manufacturer's recommendations.
- 7. All sensor slots and any cuts in the roadway will be thoroughly blown out to ensure there is no dust or debris prior to installation of sensors or leads.
- 8. Install Exit Windows at least 2' apart.

DESCRIPTION:



= LANE LAYOUT FOR TTMS/CCS INDUCTIVE LOOP AND WEIGH-IN-MOTION SENSORS =

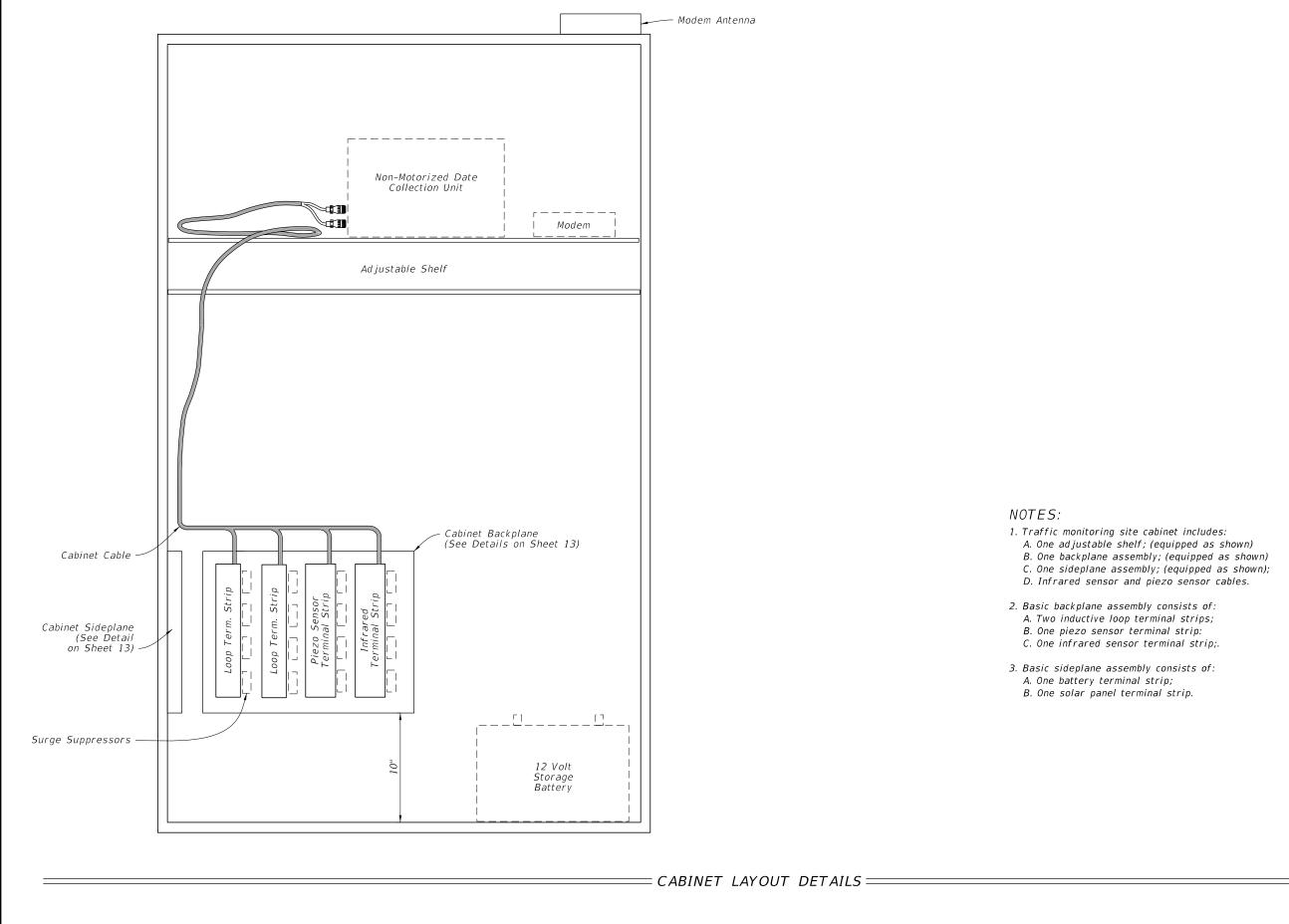
WEIGH-IN-MOTION MONITORING SITE

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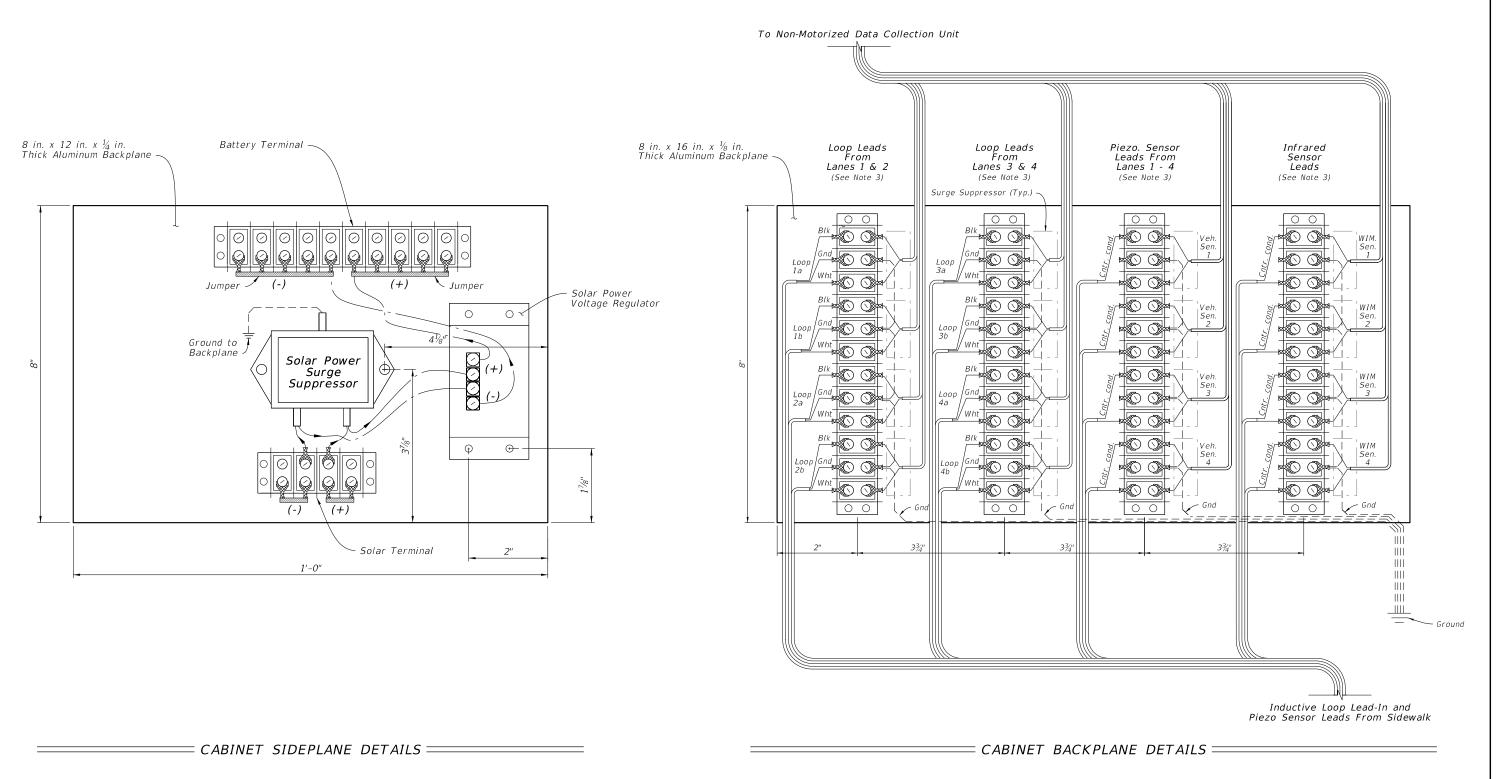
NON-MOTORIZED MONITORING SITE

REVISION 11/01/23 DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

- 1. Reference Sheet 12, Note 2 for items to be included with backplane.
- 2. All terminal strip contacts are on $\%_{16}$ " centers (Clinch 142 Series or equal) Use insulated fork wire terminations.
- 3. The contractor is responsible for contacting the TMS Manager in the Transportation Data and Analytics Office for lane number information and verification.

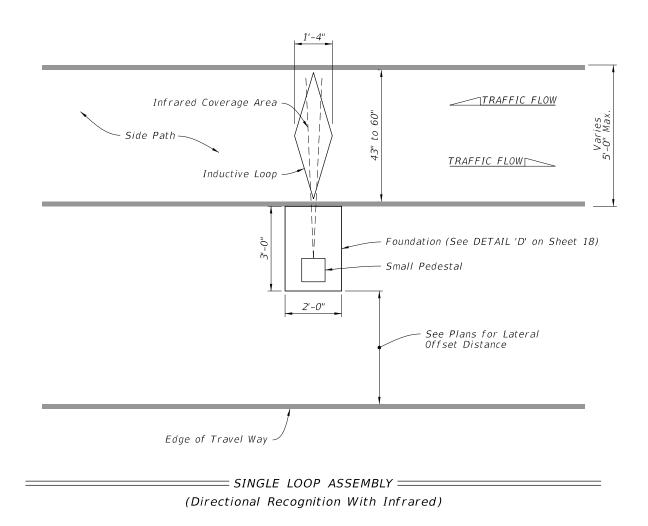


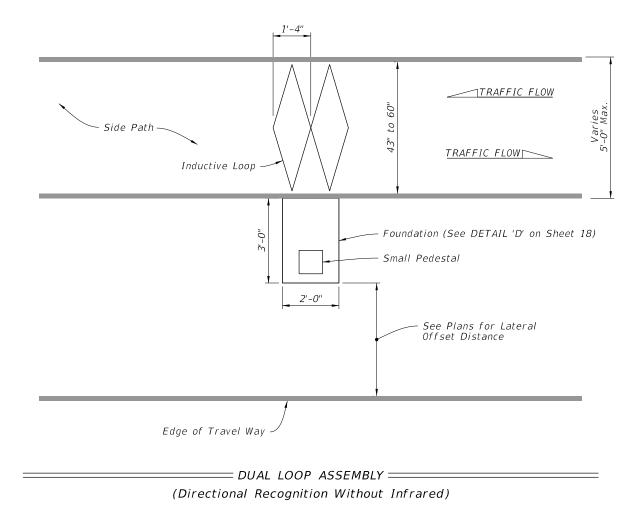
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LAST REVISION 11/01/23 DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS NON-MOTORIZED MONITORING SITE





NON-MOTORIZED MONITORING SITE NOTES:

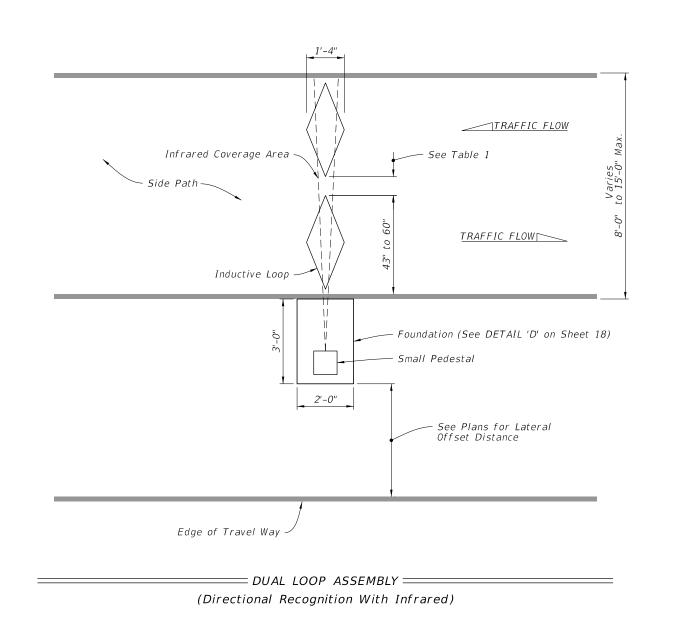
- 1. Use a chalk line or string and paint to layout the position of the sensor and lead-in cable slots. Ensure saw cuts do not deviate more than 0.5 inches from the chalk line. Use a single blade or ganged blade saw wide enough to cut the axle sensor at full width in a single pass. Cutting two slots and chipping out roadway material between them is not allowed.
- 2. Cut a $\frac{1}{4}$ " to $\frac{1}{2}$ " wide slot.
- 3. All sensor slots and any cuts in the pathway will be thoroughly blown out to ensure there is no dust or debris prior to installation of the loops and leads.
- 4. Place eight turns of loop wire in each slot.
- 5. Twist loop leads at the rate of 10 twists per foot.
- 6. Extend the twisted pair loop wire directly to the termination point with no splices.
- 7. For the side-by-side configuration, install the farthest loop lead through the near side loop slot.
- 8. At the termination point, for north-south pathways, mark the north piezometer and inductive loop sensor lead(s) with one tape. For east-west pathways, mark the east piezometer and inductive loop sensor lead(s) with one tape. Mark the south and west sensor lead(s) with two tapes.
- 9. Do not point infrared sensors towards a path where motor vehicles pass, a metallic or reflective surface, surfaces exposed to sunlight or vegetation that are likely to move.
- 10. Avoid placing infrared sensors near heat sources, steep surfaces, high voltage power cables, and telecommunications equipment.
- 11. If crossing pavement joints see DETAIL "F" on Sheet 18.

= NARROW SIDE PATH CONFIGURATIONS:

NON-MOTORIZED MONITORING SITE

LAST REVISION 11/01/23

DESCRIPTION:



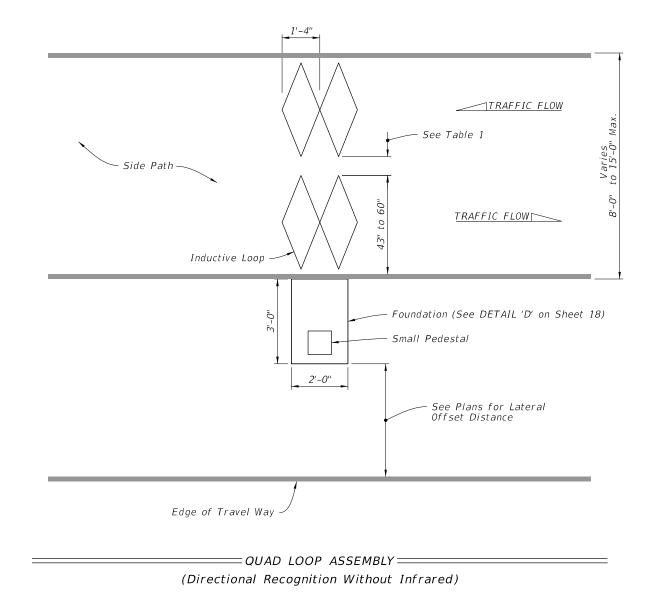


TABLE 1								
Loop Length	Loop Length Distance							
Greater than 59" Contact Manufacturer to evaluate the feasibilit								
59"	3.00"							
55"	4.00"							
51"	4.75"							
47"	5.50"							
43"	6.25"							
Less than 43"	Contact Manufacturer to evaluate the feasibility							

=LARGE SHARED USE PATH CONFIGURATIONS =

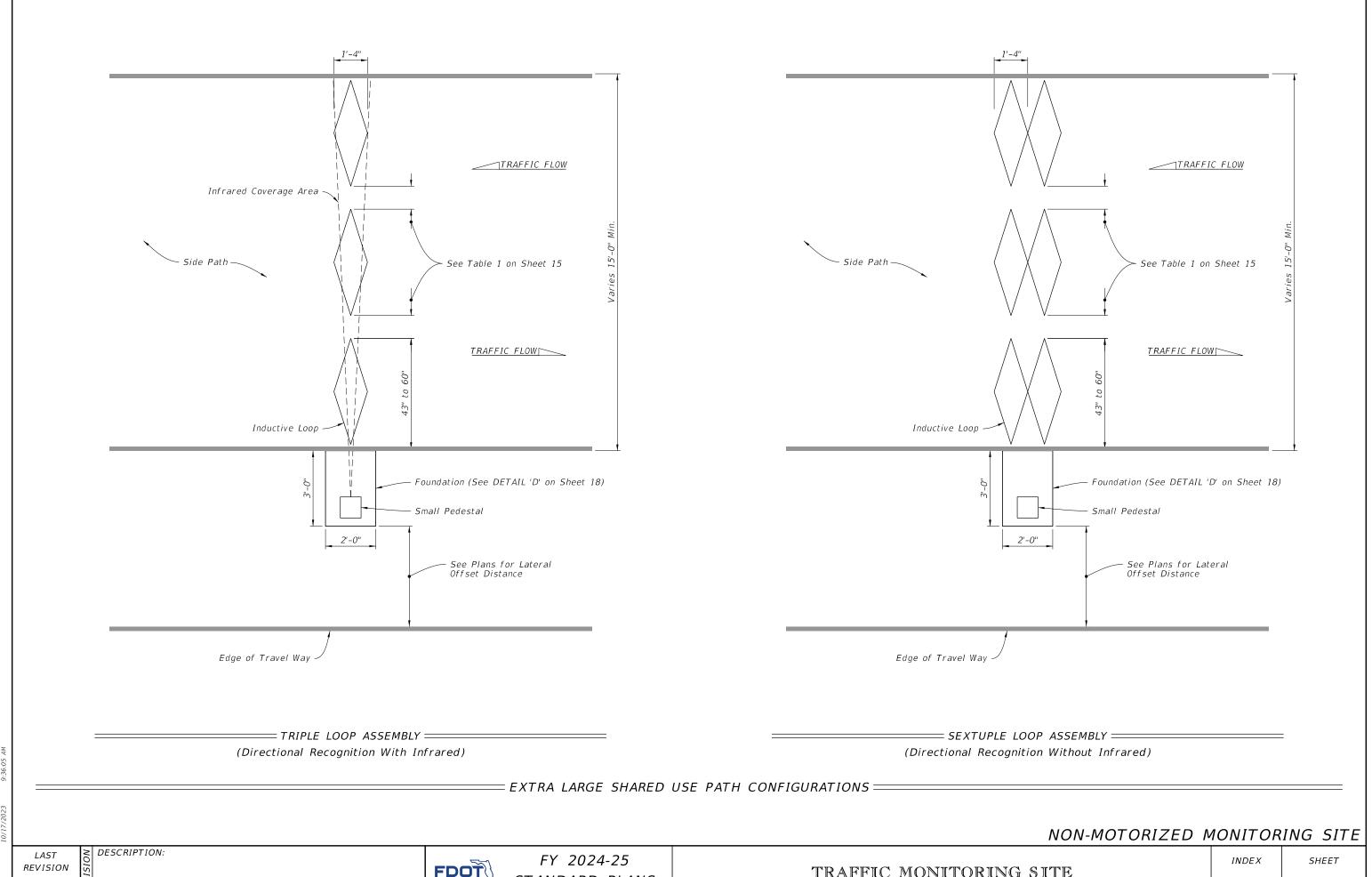
NON-MOTORIZED MONITORING SITE

≥ DESCRIPTION: REVISION 11/01/23

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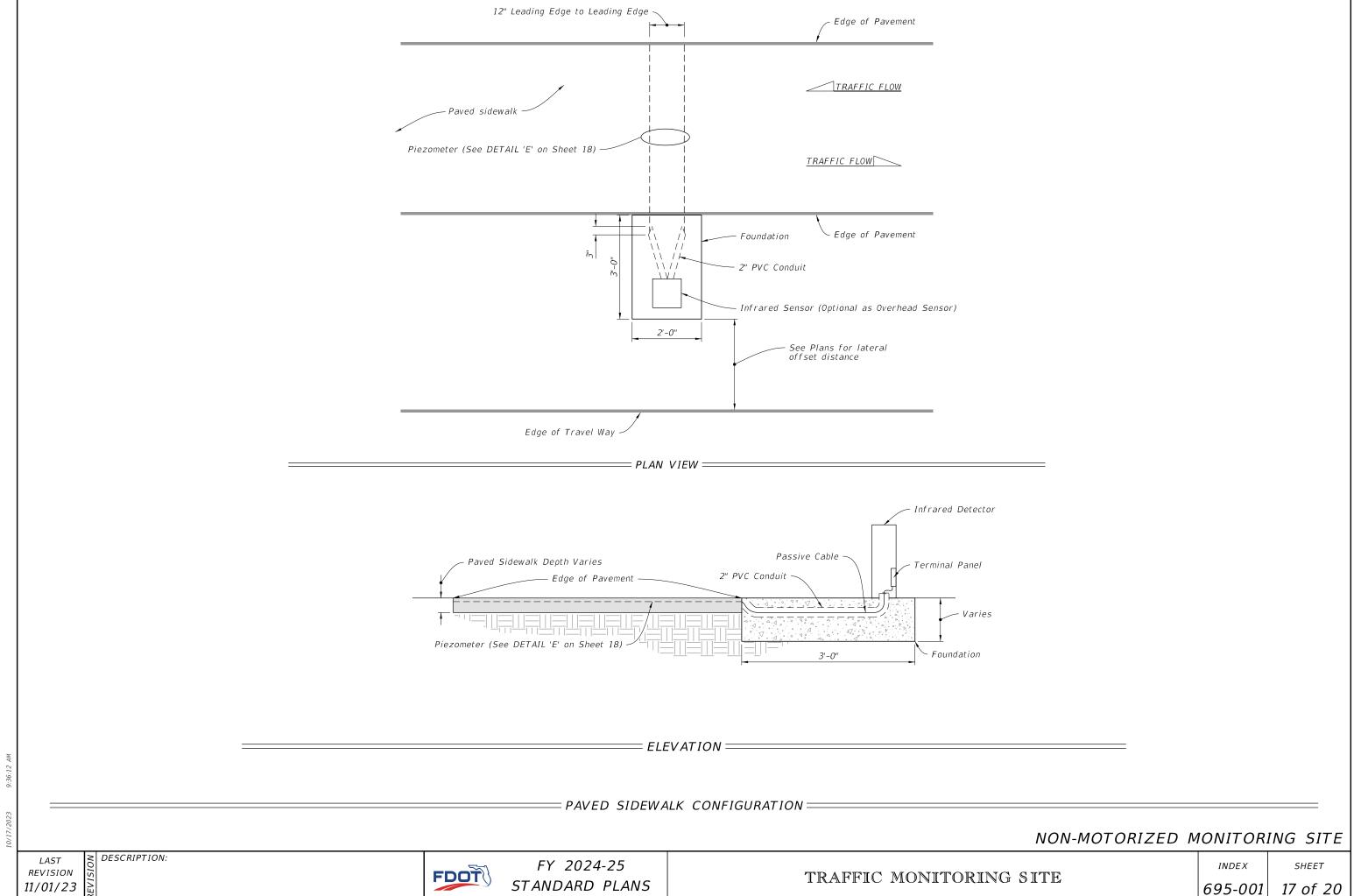


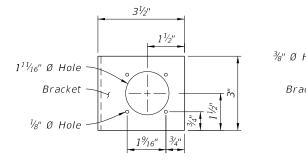
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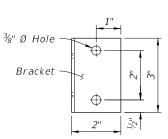
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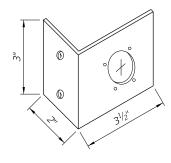
STANDARD PLANS

TRAFFIC MONITORING SITE









FRONT VIEW

SIDE VIEW

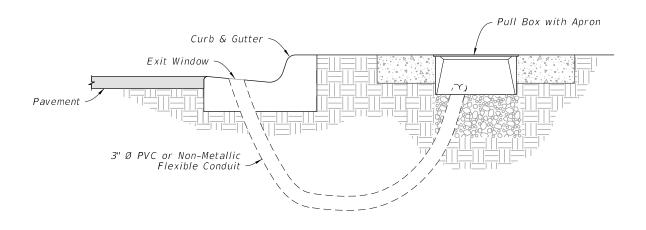
ISOMETRIC VIEW

NOTE:

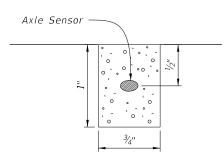
Fabricate bracket out of $\frac{3}{32}$ " - $\frac{1}{8}$ " inch thick aluminum. Dimensions may vary depending on the manufacturer of the J1 receptacle being furnished. The cabinet manufacturer will construct the mounting bracket to fit the receptacle.

J1 MOUNTING BRACKET

= DETAIL 'A" =

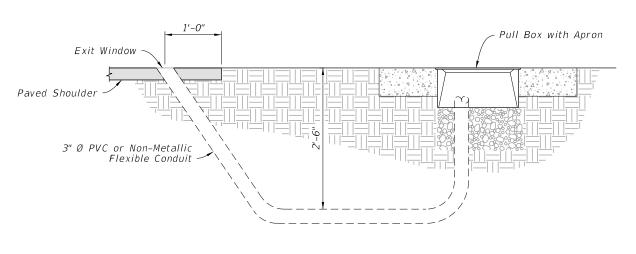


DETAIL 'C'=

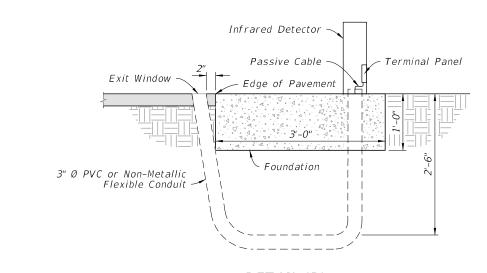


END VIEW (Axle Sensor Slot)

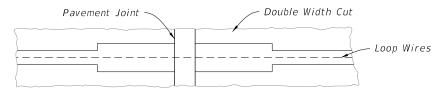
= *DETAIL 'E'* =



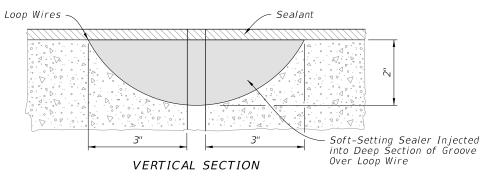
DETAIL 'B'



=DETAIL 'D'=



PLAN VIEW



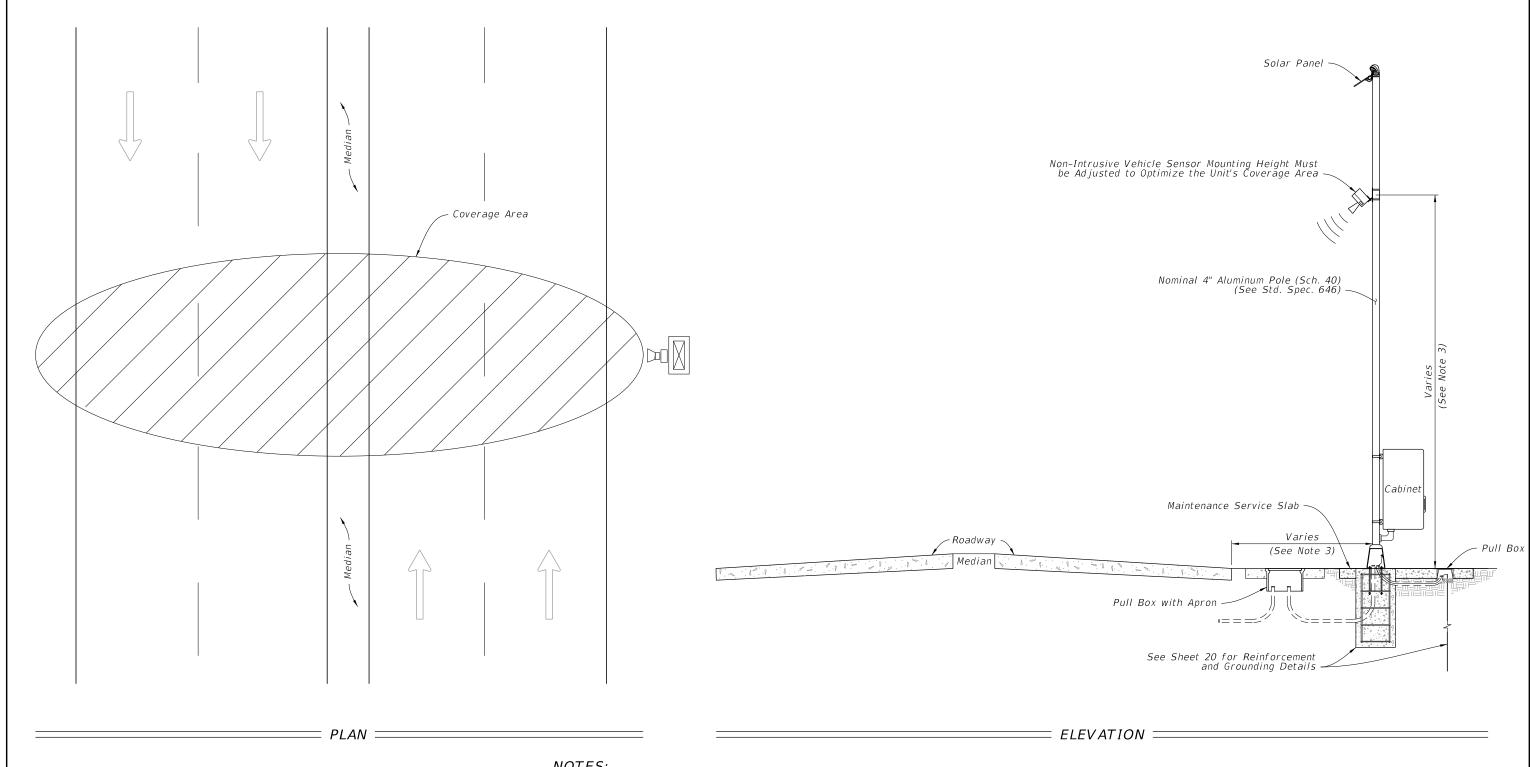
= DETAIL 'F'

DETAILS 'A' THRU 'F'

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS



NOTES:

- 1. The unit must be capable of detecting up to eight lanes of traffic (in either or both directions) when mounted perpendicular to the roadway.
- 2. Coverage area of the unit is affected by the roadway geometry: distance from the travel lanes, median type and width, barrier walls, etc.
- 3. Mounting height of the unit and offset from the roadway must be determined on a site-by-site basis, in accordance with the manufacturer's recommended guidelines. Offset of pole must be greater than or equal to minimum clear zone requirements.
- 4. Cabinet, ground rod pull box, and maintenance service slab installed per Index 676-010, except cabinet center will be 4 feet above grade.

NON-INTRUSIVE VEHICLE SENSOR

REVISION 11/01/23

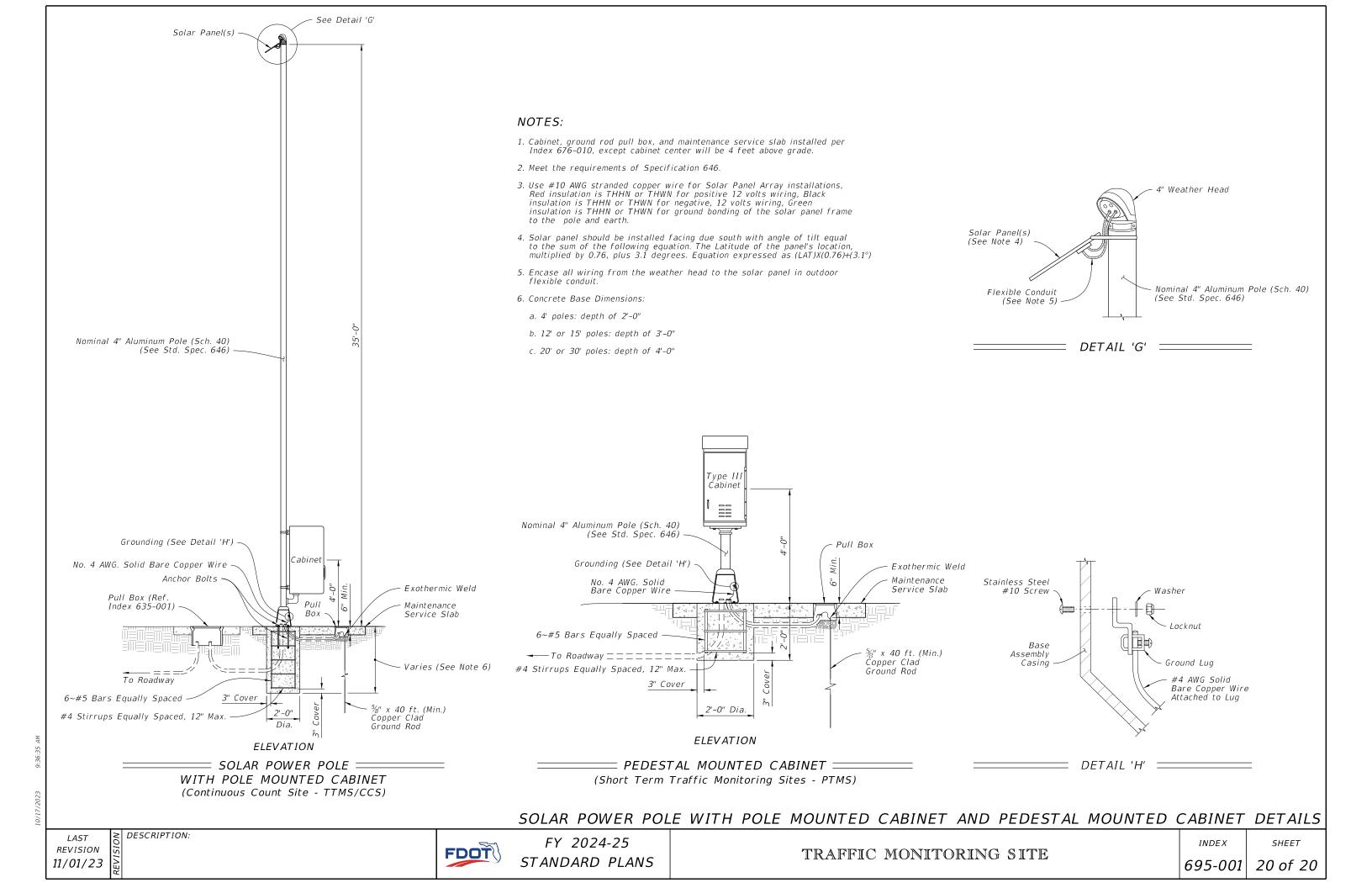
FDOT

FY 2024-25 STANDARD PLANS

TRAFFIC MONITORING SITE

INDEX 695-001

SHEET 19 of 20



2. Shop Drawings:

This Index is considered fully detailed. Submit Shop Drawings only for minor modifications not detailed in the Plans.

3. BREAKAWAY SUPPORTS REQUIREMENTS: Install non-frangible aluminum column (post) (larger than $3\frac{1}{2}$ ") with breakaway supports as shown on Sheet 4. Signs shielded by barrier wall or guardrail do not require breakaway support.

4. Aluminum Sign, Wind Beams and Column (Post) Materials:

A. Aluminum Plates: ASTM B209, Alloy 6061-T6

B. Aluminum Bars and Extruded Shapes: ASTM B221, Alloy 6061-T6

C. Aluminum Structural Shapes: ASTM B221 Alloy 6061-T6

D. Cast Aluminum: ASTM B26 Alloy A356-T6

5. Galvanized Steel Slip Base Stub Materials:

A. Steel Plate and Structural Shapes: ASTM A36 or ASTM A709, Grade 36

6. Sign Mounting Bolts, Nuts and Washers:

A. Aluminum Button Head and Flat Head Bolts: ASTM F468 Alloy 2024-T4

B. Aluminum Hex Nuts: ASTM F467 Alloy 6061-T6 or 6262-T9

C. Aluminum Washers: ASTM B221, Alloy 7075-T6

7. Stainless Steel Bolts, Nuts and Washers may be used in lieu of the Aluminum button head and flat head bolts as follows:

A. Stainless Steel Bolts: ASTM Ft 593 Alloy Group 2, Condition A, CW1 or SH1

B. Stainless Steel Nuts: ASTM F594

8. Sign Column (Post) Bolts, Nuts and Washers:

A. Galvanized U-Bolt (Column): ASTM A449 or ASTM A193 B7 according to ASTM F2329 with double nuts (nut and lock washer optional).

B .Aluminum Bolts (Sleeve): ASTM F468, Alloy 6061-T6 or 2024-T4 with Hex Nuts F467 6061-T6 or 6262-T9 and Washers B221, Al clad 2024-T4

C. Galvanized High Strength Hex Head Bolts (Base Bolts): ASTM F3125,

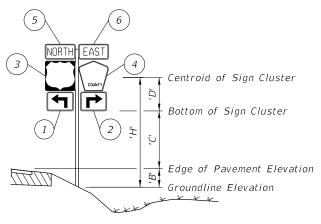
Grade A325, Type 1 D. Galvanized Hex Nuts: ASTM A563 Grade D

E. Galvanized Washers: ASTM F436

F. Galvanized Bolts (Sleeve): ASTM A307 with Galvanized Hex Nuts and Washers

SHEET	CONTENTS
1	General Notes and Design Example
2	Design Example – Centroid
3	Column and Foundation Tables
4	Slip Base and Foundation Details
5	Driven Post, Concrete Stub, and Soil Plate Details
6	Wind Beam Connection
7	Wind Beam Connection for Flip Down Sign
8	Slam-Latch Detail
9, 10, & 11	Frequently Used Sign Clusters

STEP 1: Calculate the area and the centroid for an individual sign or a sign cluster. Note that the centroid and areas have been calculated for frequently used sign clusters. These are shown on Sheets 7, 8, and 9.



	C:		Centroid					
	Size a x h Local 'Yn'		Gļobal X _n	Global 'Yn	'A'n	$ 'X'_n \times 'A'_n $	'Y' _n	
	(in. x in.)	(in.)	(in.)		(in.²)	(in.³)	(in.³)	
1	21 x 15	7.5	-10.5-1.5-1.5 = -13.5	7.5	315	-4,252.5	2,362.5	
2	21 x 15	7.5	10.5+1.5+1.5 = 13.5	7.5	315	+4,252.5	2,362.5	
3	24 x 24	12	-12-1.5 = -13.5	15+1+12 = 28	576	-7,776	16,128	
4	24 x 24	12	12+1.5 = 13.5	15+1+12 = 28	436	5,886	12,208	
5	24 x 12	6	-12-1.5 = -13.5	15+1+24+1+6 = 47	288	-3,888	13,536	
6	24 x 12	6	12+1.5 = 13.5	15+1+24+1+6 = 47	288	3,888	13,536	
				TOTALS	2,218	-1,890	60,133	

STEP 2: Determine the height 'H' from groundline to the centroid of the individual sign or sign cluster.

Assume: 'B' = 1 ft., 'C' = 7 ft.

Calculated: $X'_{c} = -0.1 \text{ ft., } 'Y'_{c} = 'D' 2.26 \text{ ft.}$

$$'H' = 'B' + 'C' + 'D' = 10.26 \ ft. ==> \boxed{USE \ 11 \ ft.} \qquad \Sigma \ ('A'_n) = 15.4 \ ft.^2 ==> \boxed{USE \ 16 \ ft.^2}$$

STEP 3: Refer to the Aluminum Column (Post) Selection Tables and find the intersection point. See Sheet 3.

	ALU	ALUMINUM COLUMN (POST) SELECTION TABLE												
		'H' (FT)												
		8 ft	9 ft	10 ft	11 ft	12 ft	13 ft		15 ft	16 ft	17 ft	18 ft	19 ft	20 ft
	3 sf	2	2.5	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5
	4 sf	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	5 sf	2.5	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
	6 sf	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4
	7 sf	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4
	8 sf	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4
	9 sf	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
_	10 sf	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5
(SF,	11 sf	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5
	12 sf	3.5	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5
AREA	13 sf	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5	5
I.R.E	14 sf	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5
	15 sf	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5	5
	16 sf	3.5	4	4	4	4	4	4	4.5	4.5	5	5	5	6
PANEL	17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
) d	18 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6
7	19 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6	6
TOTAL	20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
5	21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
'-	22 sf	4	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6
	23 sf	4	4	4	4.5	4.5	5	5	5	6	6	6	6	6
	24 sf	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6	6
	25 sf	4	4	4.5	4.5	5	5	5	6	6	6	6	6	8
	26 sf	4	4.5	4.5	4.5	5	5	5	6	6	6	6	8	8
	27 sf	4	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8
	28 sf	4	4.5	4.5	5	5	5	6	6	6	6	6	8	8
	29 sf	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8	8
	30 sf	4.5	4.5	5	5	5	6	6	6	6	6	8	8	8
		•												

STEP 4: For sign assemblies with signs oriented in two directions, only the sign with the largest area should be analyzed to determine the Column (Post) requirements.

For 'H' = 11 ft., Area = 16 ft.²

- Refer to the Aluminum Column (Post) Selection Table, from Sheet 3 and shown here for reference.
- To determine the required post size, find the intersection of the row labeled "16 SF" and the column labeled "11 FT". For the example the intersection value is "4" (4" OD).
- In the Column (Post) and Foundation Table, the value "4" shows the design requires a 4.0" diameter and 1/4" thick Aluminum Column (Post) and a 2.0' diameter and 3.5' deep Concrete Foundation and 3.0' Stub.

=GUIDE TO USE THIS INDEX=

GENERAL NOTES AND DESIGN EXAMPLE

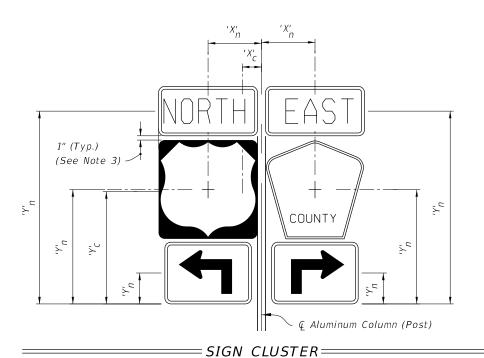
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FDOT

FY 2024-25 STANDARD PLANS

INDEX 700-010

SHEET



 ${}^{\prime}X_{C}^{\prime} = \frac{\sum \left({}^{\prime}X_{D}^{\prime} \times {}^{\prime}A_{D}^{\prime} \right)}{\sum {}^{\prime}A_{D}^{\prime}} \qquad {}^{\prime}C^{\prime} = {}^{\prime}Y_{C}^{\prime} = \frac{\sum \left({}^{\prime}Y_{D}^{\prime} \times {}^{\prime}A_{D}^{\prime} \right)}{\sum {}^{\prime}A_{D}^{\prime}}$

 $'A'_n = Area of individual sign$

 $^{\prime}B^{\prime}$ = Height of the edge of pavement from the mounting elevation

 ${}^{\prime}C^{\prime}$ = Height of the the bottom of the sign or cluster from the edge of pavement elevation

 $^{\prime}D^{\prime}$ = Height of the centroid of the sign or cluster from the bottom of the sign or cluster

h = Individual sign height

'H' = Height of sign or cluster centroid from groundline

a = Individual sign width

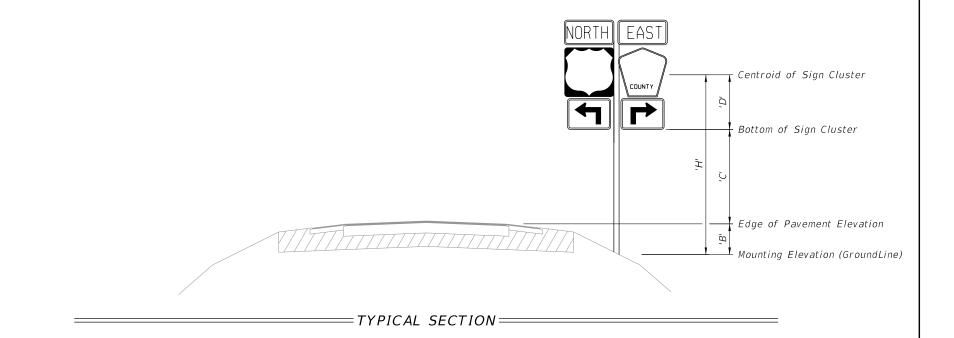
 $'X'_{C} = Centroid\ horizontal\ location\ of\ sign\ or\ cluster\ from\ Q\ Aluminum\ Column\ (Post)$

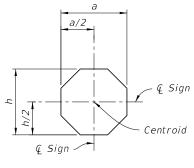
'Y' = Centroid height of sign or cluster from bottom of sign cluster

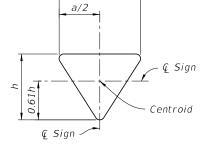
 $'X'_n = Individual \ sign \ centroid \ horizontal \ location \ from \ \ \ Aluminum \ Column \ (Post)$

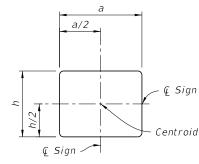
 $'Y'_n = Individual Sign centroid height from bottom of sign cluster$

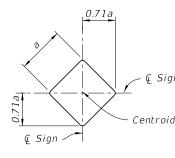
- 1. For 'B' & 'C' see Index 700-101 and Roadway Plans.
- 2. Do not exceed an area of 30 SF or a width of 60 inches for a sign or a sign cluster,
- 3. Vertical sign spacing (1" shown on Sign Cluster detail) also applies to rotated signs.

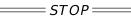






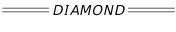


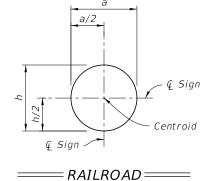


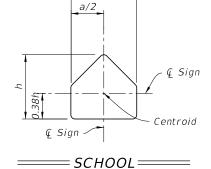


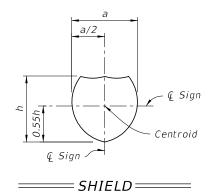


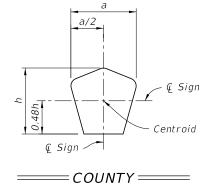












CALCULATION OF SIGN CLUSTER CENTROID

DESIGN EXAMPLE - CENTROID

REVISION 11/01/22

DESCRIPTION:

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REVISION

11/01/22

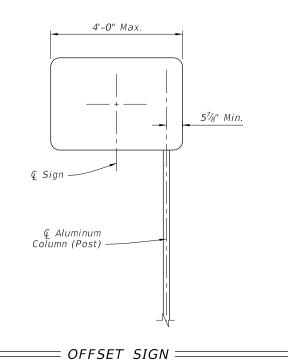
DESCRIPTION:

		ALUMINUM COLUMN (POST) SELECTION TABLE (O.D. in.)												
			'H' (FT)											
		8 ft	9 ft	10 ft	11 ft	12 ft	13 ft	14 ft	15 ft	16 ft	17 ft	18 ft	19 ft	20 ft
	3 sf	2	2.5	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5
	4 sf	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	5 sf	2.5	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
	6 sf	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4
	7 sf	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4
	8 sf	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4
	9 sf	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
	10 sf	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5
	11 sf	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5
()E	12 sf	3.5	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5
(3)	13 sf	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5	5
AREA (SF)	14 sf	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5
	15 sf	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5	5
PANEL	16 sf	3.5	4	4	4	4	4	4	4.5	4.5	5	5	5	6
\A\	17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
	18 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6
TOTAL	19 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6	6
7.0	20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
	21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
	22 sf	4	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6
	23 sf	4	4	4	4.5	4.5	5	5	5	6	6	6	6	6
	24 sf	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6	6
	25 sf	4	4	4.5	4.5	5	5	5	6	6	6	6	6	8
	26 sf	4	4.5	4.5	4.5	5	5	5	6	6	6	6	8	8
	27 sf	4	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8
	28 sf	4	4.5	4.5	5	5	5	6	6	6	6	6	8	8
	29 sf	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8	8
	30 sf	4.5	4.5	5	5	5	6	6	6	6	6	8	8	8

	FOUNDATION TABLE										
Column (Post)		Founda	Foundation Alternatives							
Size		Driven	Post *	Cond	rete (Class	II)					
Outside	Wall	Embedment	Depth (ft)	Diameter	Embedment	Stub					
Diameter (in)	Thk. (in)	without Soil Plate	with Soil Plate	(ft)	Depth (ft)	Length (ft)					
2.0	1/8	4.5	2.5								
2.5	1/8	5.0	3.0								
3.0	1/8	5.0	3.5								
3.5	³ / ₁₆	6.0	4.5								
4.0	1/4			2.0	3.5	3.0					
4.5	1/4			2.0	4.0	3.0					
5.0	1/4			2.0	4.5	3.0					
6.0	1/4			2.0	5.0	3.0					
8.0	1/4			2.0	5.5	3.0					

* INSTALLING FRANGIBLE COLUMN SUPPORTS:

Columns (posts) $3\frac{1}{2}$ " O.D. and less are considered frangible and may be installed either by driving the post or setting the posts in preformed holes. Backfill preformed holes with suitable material tamped in layers not thicker than 6" (to provide adequate compaction) or filled with flowable fill or bagged concrete.



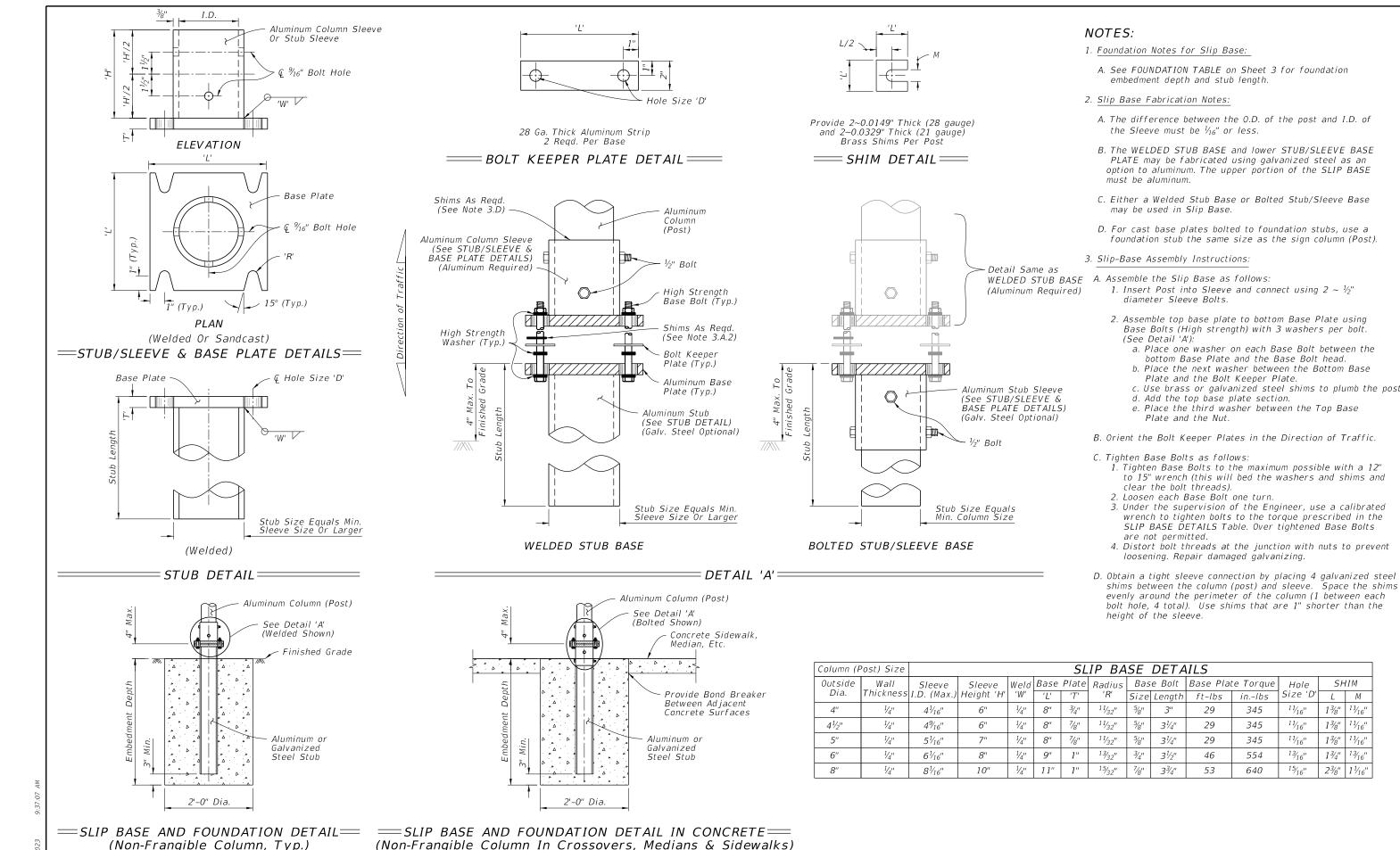
NOTES:

- 1. For offset sign placement see Index 700-101.
- 2. For signs with widths greater than 4' see Index 700-011.
- 3. Offset signs with driven posts require a soil plate.

COLUMN AND FOUNDATION TABLES

FDOT

SHEET



SLIP BASE AND FOUNDATION DETAILS

ft-lbs

29

29

29

46

53

in.-Ibs

345

345

345

554

640

DESCRIPTION: REVISION 11/01/22

FDOT

FY 2024-25 STANDARD PLANS

SINGLE COLUMN GROUND SIGNS

INDEX SHEET 700-010

Hole

Size 'D'

11/₁₆"

11/16"

¹½16"

¹³/₁₆"

¹⁵/₁₆"

4 of 11

SHIM

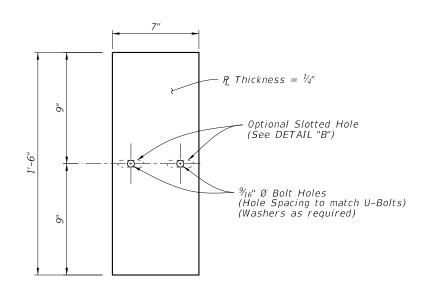
13/8" 11/16"

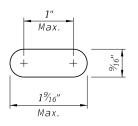
13/8" 11/16"

 $2\frac{3}{8}$ " $1\frac{1}{16}$

13/8"

13/4"

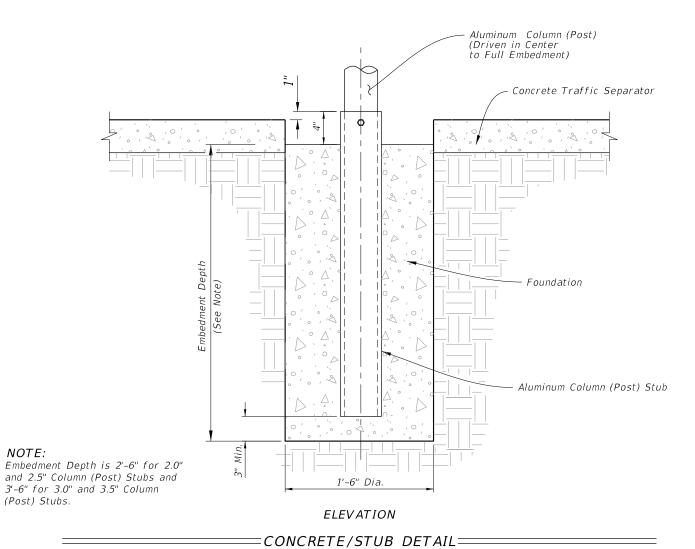




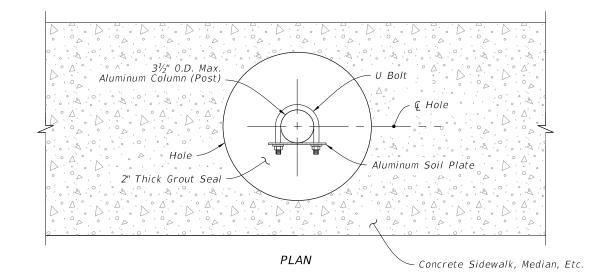
Optional Slotted Holes

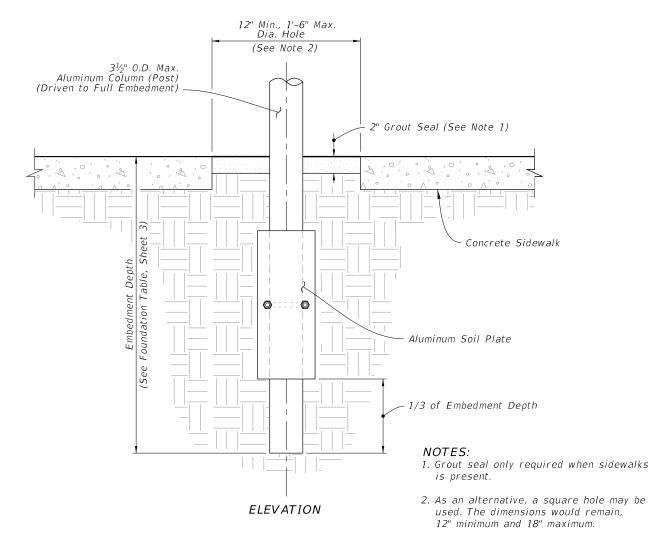
= ALUMINUM SOIL PLATE DETAIL ===

= DETAIL "B" ===



(Traffic Separator)





= DRIVEN POST DETAIL=

(Frangible Post In Through Sidewalk Shown Installations without Sidewalk Similar)

DRIVEN POST, CONCRETE/STUB, AND SOIL PLATE DETAILS

REVISION 11/01/23

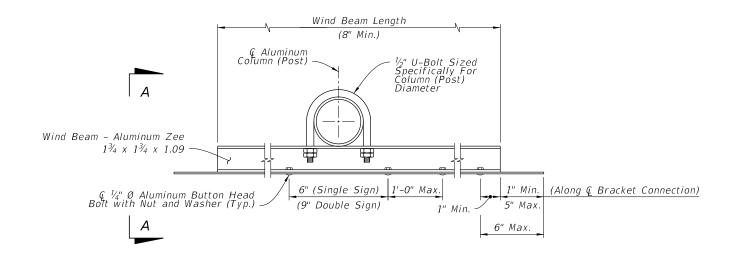
FDOT

FY 2024-25 STANDARD PLANS

SINGLE COLUMN GROUND SIGNS

INDEX 700-010

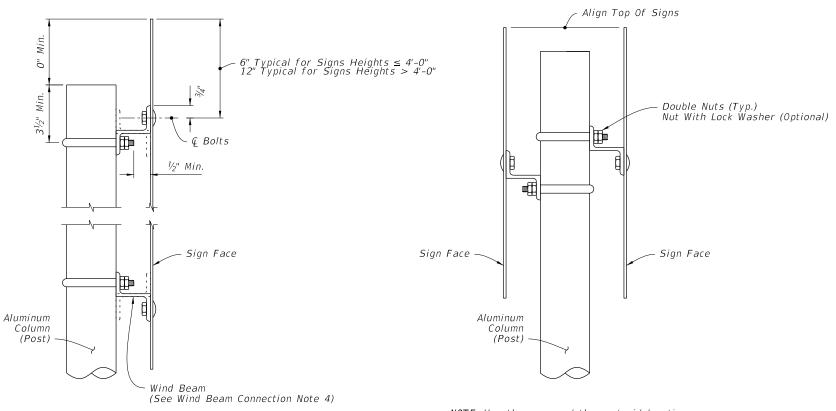
SHEET 5 of 11



WIND BEAM CONNECTIONS DETAILS =

NOTES:

- 1. $\frac{5}{16}$ " Ø stainless steel hex head bolts with nylon washer under head and washer under nut may be used in lieu of $\frac{1}{4}$ " Ø aluminum button or flat head bolts.
- 2. Use nylon washers (provided by the sheeting supplier) under the bolt heads to protect sign sheeting.
- 3. Slots up to 2" long are allowed in wind beams to accommodate U-Bolts for varying Column (Post) diameters.
- 4. Wind beams may be oriented in either direction.
- 5. For signs greater than 66" in height, install a third wind beam evenly spaced between the top and bottom wind beams. For signs up to 12" in height, use only one wind beam at Q Sign. Install two wind beams on signs with heights greater than 12" and less than or equal to 66".



NOTE: Use the area and the centroid location of the largest sign to determine aluminum column (post) size.

BACK-TO-BACK SIGN DETAIL

= VIEW A-A =

WIND BEAM CONNECTION

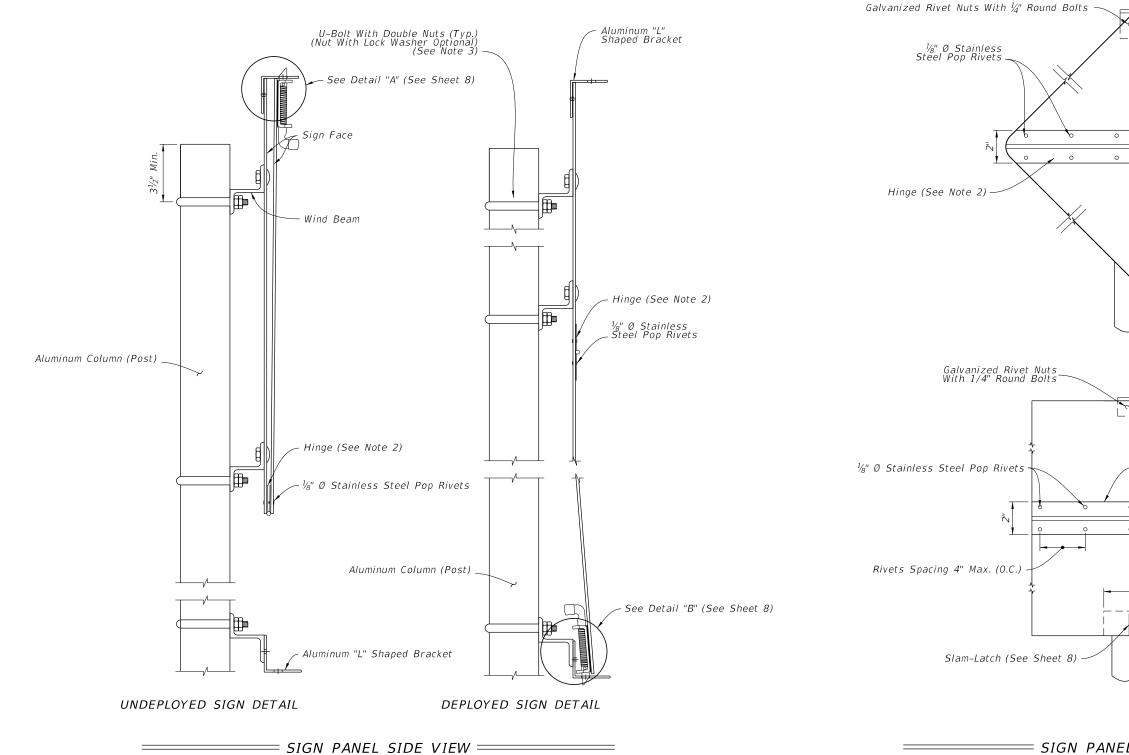
REVISION 11/01/22

DESCRIPTION:

FDOT

SINGLE SIGN DETAIL

FY 2024-25 STANDARD PLANS



= SIGN PANEL FRONT VIEW ===

Hinge (See Note 2)

8" Wind Beam

NOTES:

DESCRIPTION:

- 1. Install sign in the undeployed (up) position.
- 2. Provide a continuous stainless steel hinge with minimum 0.060" leaf thickness, 2" open width and 0.120" pin diameter. Stake the hinge at both ends to prevent pin movement.
- 3. Install Stainless Steel Spring Loaded Slam-Latch with cover to bottom face of flip sign per manufacturer's recommendations.
- 4. Punch or drill a 3/4" diameter hole in the "L" shaped bracket on site to match location of 1/2" wide slam-latch pin. Remove any burs or sharp edges.

WIND BEAM CONNECTION FOR FLIP DOWN SIGN

Aluminum "L" Shaped Bracket

Rivets Spacing 4" Max. (O.C.)

Aluminum "L" Shaped Bracket

REVISION 11/01/22

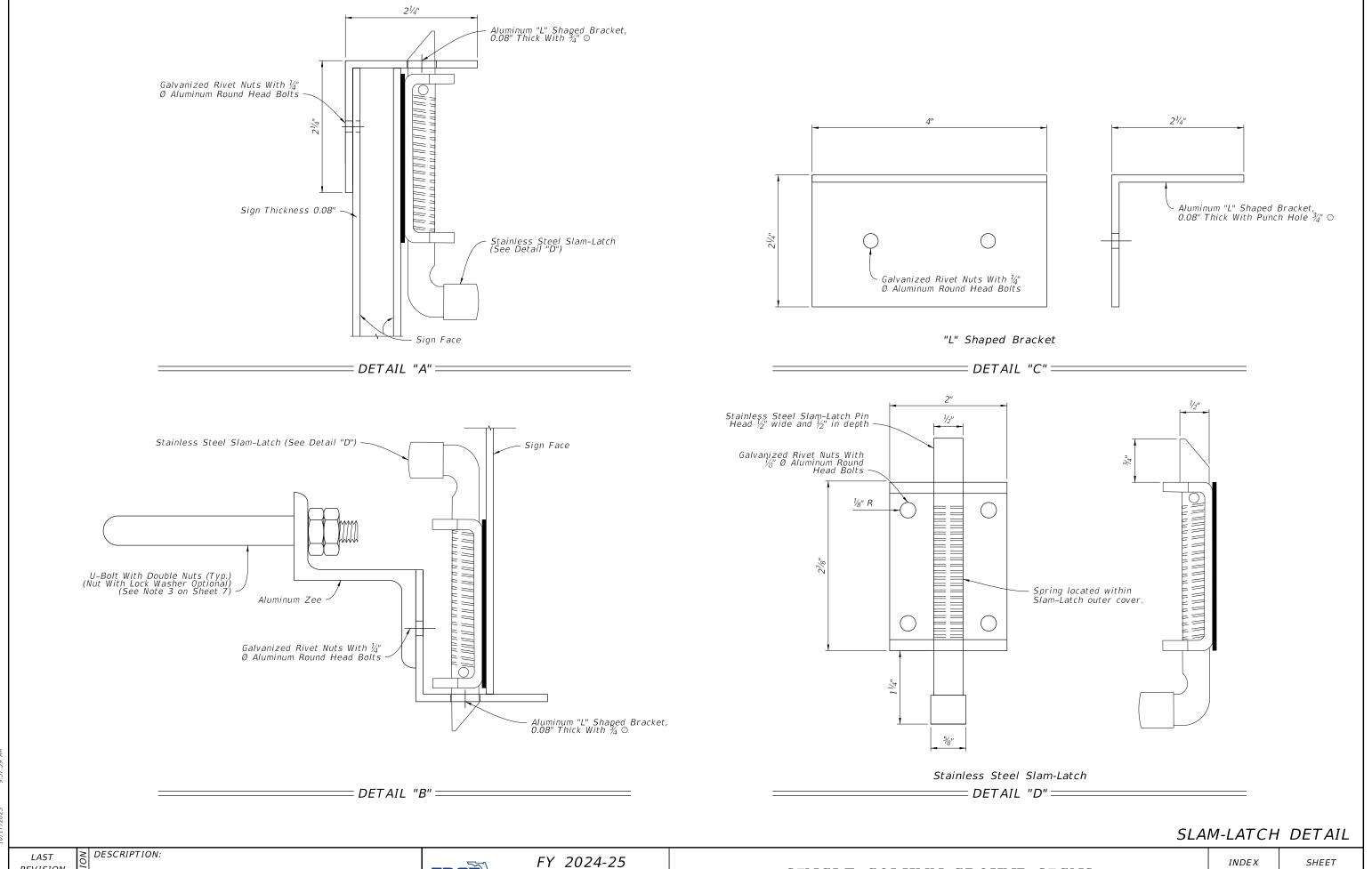
FDOT

FY 2024-25 STANDARD PLANS

SINGLE COLUMN GROUND SIGNS

INDEX 700-010

SHEET 7 of 11



REVISION 11/01/22

	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF		
STOP	24x24	3.31 SF	6.31 SF	1.75 Ft. ——————
	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF		
STOP	30x30	5.18 SF	8.18 SF	1.92 Ft.
	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	. 553. 711 64	Serier ord
THE ITAL	JUX 12	J.00 31	10.46 SF	 2.10 Ft.
STOP	36x36	7.46 SF	10.40 3F	2.10 Ft.
	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF		
			16.25 SF	
STOP	48x48	13.25 SF		
	Size	Area	Total Area	Centroid
STOP	24x24	3.31 SF	6.31 SF	
HIGHWAY	24x18	3.00 SF		
	Size	Area	Total Area	Centroid
STOP	30x30	5.18 SF	10.18 SF	 2.19 Ft.
DIVIDED	30x24	5.00 SF		
	Size	Area	Total Area	Centroid
STOP	36x36	7.46 SF	12.46 SF	
HIGHWAY	30×24	5.00 SF		

	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF	-	
STOP	30×30	5.18 SF	13.18 SF	2.87 Ft.
HIGHWAY	30x24	5.00 SF		
	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	_	
STOP	36×36	7.46 SF	15.46 SF	3.15 Ft.
DIVIDED	30×24	5.00 SF		
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF	6.19 SF	 1.60 Ft.
27	24x24	4.00 SF		
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF	7.19 SF	 1.52 Ft.
301	30×24	5.00 SF		
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24x12	2.00 SF		
27 27	24x24	4.00 SF	- 6.00 SF	1.53 Ft.
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24x12	2.00 SF		
301 301	30x24	5.00 SF	- 7.00 SF 	1.45 Ft. ———————
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	30×15	3.13 SF	+	
301 301	30x24	5.00 SF	- 8.13 SF 	1.66 Ft. ——————

	Size	Area	Total Area	Centroid
27	24×24	4.00 SF	6.19 SF	1.73 Ft.
 	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
301	30x24	5.00 SF	7.19 SF	1.81 Ft.
	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24x12	2.00 SF		
27 27	24x24	4.00 SF	8.19 SF	2.26 Ft.
	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24x12	2.00 SF		
301 301	30x24	5.00 SF	9.19 SF	2.27 Ft.
	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
BUSINESS EAST	30x15	3.13 SF		
301 ^{OR} 301	30×24	5.00 SF	10.32 SF	2.49 Ft.
	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST	24x12	2.00 SF		
BUSINESS	24x12	2.00 SF	- - 	
27	24x24	4.00 SF	10.19 SF	2.80 Ft.
—	21×15	2.19 SF		
		•		

10/17/2023 9.



	Size	Area	Total Area	Centroid
	3126	Area	TULAT ATEA	Centrola
EAST	24x12	2.00 SF		
BUSINESS	24×12	2.00 SF		
			11.19 SF	2.76 Ft.
301	30x24	5.00 SF		
—	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST	30x15	3.13 SF		
BUSINESS	30x15	3.13 SF		
301	30x24	5.00 SF	13.45 SF	3.16 Ft.
-	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF		
LEON 56 COUNTY	18×18	1.71 SF	3.90 SF	1.57 Ft.
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF		
LEON 56 COUNTY	24x24	3.03 SF	5.22 SF	1.72 Ft.
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF		
		-	6.95 SF	1.87 Ft.
LEON 56 COUNTY	30x30	4.76 SF		
	1		1	

	Size	Area	Total Area	Centroid
LEON 56 COUNTY	18×18	1.71 SF	3.90 SF	
—	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
LEON 56 COUNTY	24x24	3.03 SF	5.22 SF	 1.62 Ft.
-	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
LEON 56 COUNTY	30x30	4.76 SF		 1.97 Ft.
-	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
ТО	24x12	2.00 SF	-	
EAST	24×12	2.00 SF		
NTERSTATE 75	24x24	3.20 SF	9.39 SF	2.87 Ft.
-	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
ТО	24x12	2.00 SF	-	
EAST	24x12	2.00 SF		
NTERSTATE 295	30x24	3.99 SF	10.18 SF	2.84 Ft.
	21x15	2.19 SF		

	Size	Area	Total Area	Centroid
ТО	30x15	3.13 SF		
EAST	30×15	3.13 SF		
NTERSTATE 295	30x24	3.99 SF	12.44 SF	3.26 Ft. ——————
	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF		
NIERSTATE 75	24x24	3.20 SF	5.39 SF 	1.75 Ft.
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF	 	
NIERSTATE 295	30x24	3.99 SF	6.18 SF 	1.67 Ft.
	Size	Area	Total Area	Centroid
EAST TO	24x12	2.00 SF		
75 OR NITERSTATE 75	24x24	3.20 SF	5.20 SF	1.67 Ft. ——————
	Size	Area	Total Area	Centroid
EAST TO	24x12	2.00 SF		
NTERSTATE OR NTERSTATE 295	30x24	3.99 SF	5.99 SF	1.60 Ft.
	Size	Area	Total Area	Centroid
EAST TO	30x15	3.13 SF		
NTERSTATE OR NTERSTATE 295	30x24	3.99 SF	7.12 SF	1.81 Ft.
	Size	Area	Total Area	Centroid
EAST TO	30×15	3.13 SF		
75 OR INTERSTATE 75	36x36	7.20 SF	- 10.33 SF 	2.27 Ft. ——————

≥ DESCRIPTION: LAST REVISION 11/01/22



SHEET

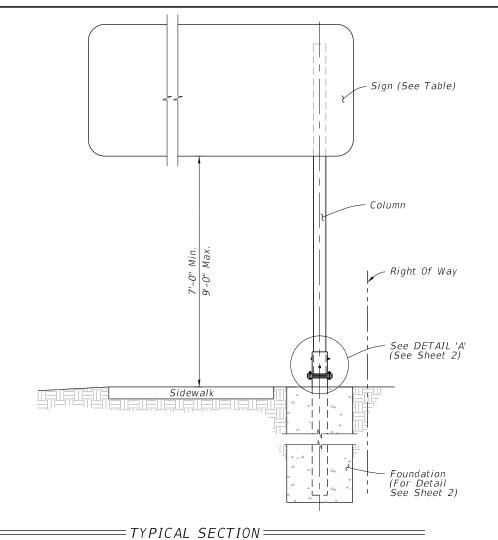
	Size	Area	Total Area	Centroid
EAST TO	30×15	3.13 SF		
NTERSTATE OR NTERSTATE 295	45×36	8.99 SF	12.12 SF	2.18 Ft.
	Size	Area	Total Area	Centroid
EAST TO	24×12	2.00 SF		
NTERSTATE TO NTERSTATE TO TO THE STATE TO TH	24x24	3.20 SF	7.39 SF	2.30 Ft.
→	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST TO	24x12	2.00 SF		
NTERSTATE 295	30x24	3.99 SF	8.18 SF	2.31 Ft.
\rightarrow	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST TO	30×15	3.13 SF		
NTERSTATE 295	30x24	3.99 SF	9.31 SF	2.55 Ft.
→	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
AN OR AN	30×30	4.69 SF	6.69 SF	1.61 Ft.
AHEAD 200 FT	24x12	2.00 SF		
	Size	Area	Total Area	Centroid
AN OR IN	30x30	4.69 SF	8.44 SF	1.77 Ft.
AHEAD 200 FT	30x18	3.75 SF		
	Size	Area	Total Area	Centroid
OR H	36×36	6.75 SF	10.50 SF	2.06 Ft.
AHEAD 200 FT	30x18	3.75 SF		

	Size	Area	Total Area	Centroid
(A)	30X30	4.69 SF	6.69 SF	1.61 Ft.
	24X12	2.00 SF		
	Size	Area	Total Area	Centroid
	30X30	4.69 SF	8.44 SF	1.77 Ft.
	30X18	3.75 SF		
	Size	Area	Total Area	Centroid
i	36X36	6.75 SF	10.50 SF	2.06 Ft.
	30X18	3.75 SF		
	Size	Area	Total Area	Centroid
OR OR	30X30	6.25 SF	8.25 SF	2.28 Ft.
AHEAD	24X12	2.00 SF		
	Size	Area	Total Area	Centroid
OR OR	36X36	9.00 SF	12.75 SF	2.84 Ft.
AHEAD	30X18	3.75 SF		
	Size	Area	Total Area	Centroid
	30X30	6.25 SF	10.25 SF	2.74 Ft.
35 MPH	24X24	4.00 SF		
	Size	Area	Total Area	Centroid
\Diamond	36X36	9.00 SF	15.25 SF	3.29 Ft.
35 MPH	30X30	6.25 SF		

	Size	Area	Total Area	Centroid
OR OR	30X30	6.25 SF	9.25 SF	2.51 Ft.
X MILES XXX FEET	24X18	3.00 SF		
	Size	Area	Total Area	Centroid
OR OR	36X36	9.00 SF	14.00 SF	 3.06 Ft.
X MILES FEET	30X24	5.00 SF		

LAST REVISION 11/01/22

≥ DESCRIPTION:

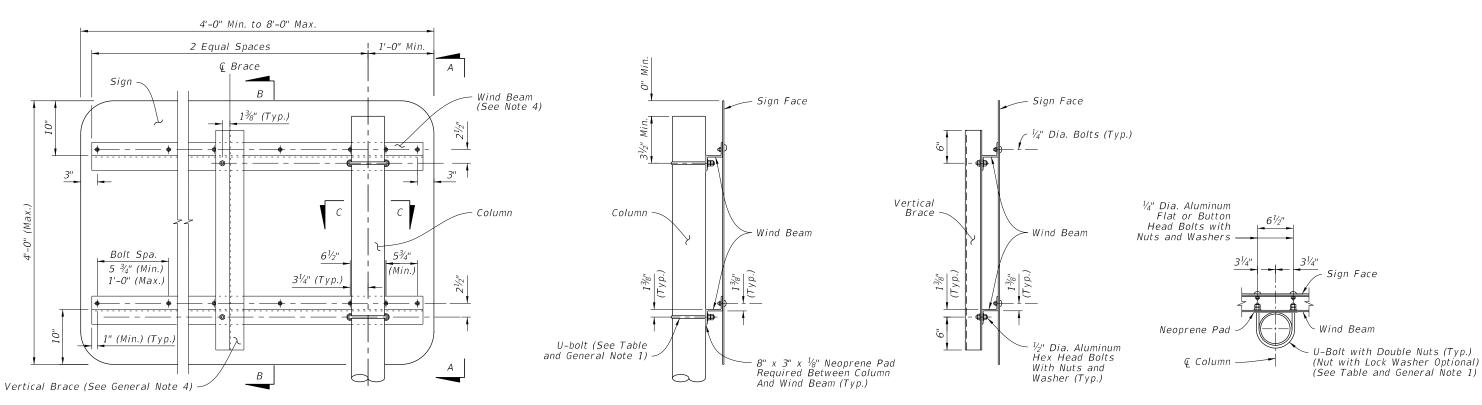


SIGN DETAIL=

GENERAL NOTES:

- 1. Work with Index 700-010 for additional notes and the assembly of base connection.
- 2. Meet the requirements of Specification 700.
- 3. Place galvanized steel shims between the Sleeve and Post to obtain a tight fit between the Post and Sleeve.
- 4. Wind Beam and Vertical Brace: Aluminum Z 3 x 2^{11} / $_{16}$ x 3.38. Install Vertical Brace on 7'-0" to 8'-0" signs only.
- 5. Use Brass shims to plumb the post.
- 6. Use nylon washers under the button bolt heads to protect sign sheeting. Use aluminum washers under nut.
- 7. Aluminum Columns: ASTM B429 Alloy 6061-T6.

COLUMN SELECTION AND FOOTING SIZE TABLE							
Sign Size Width x Height	Column Size Diameter x Thickness	Sleeve Size Diameter x Thickness	U-bolt Diameter	Base Bolt Diameter x Length	Torque Ibs./in	Base Plate Thickness	Footing Depth
5'-0" x 4'-0" 6'-0" x 4'-0"	4 NPS Schedule 80 (4.5" x 0.337")	5 NPS Schedule 120 (5.563" x 0.5")	1/2"	⁵ / ₈ " x 3 ¹ /₂"	270 ½ 45	1"	6'-0"
7'-0" x 4'-0" 8'-0" x 4'-0"	5 NPS Schedule 80 (5.563" x 0.375")	6 NPS Schedule 80 (6.625" x 0.432")	5/8"	³ / ₄ " x 4"	445 ^{+/} - 75	11/8"	6'-6" 7'-0"

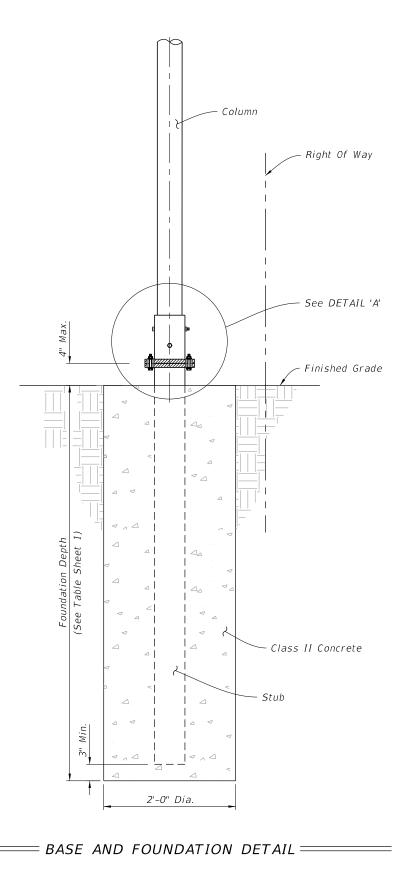


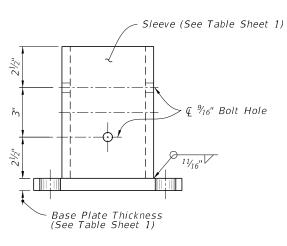
──VIEW A-A──

11/01/23

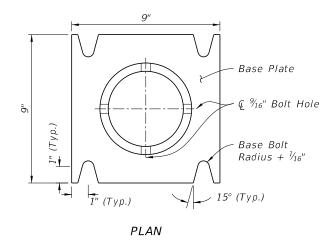
==== SECTION B-B===

==== SECTION C-C====

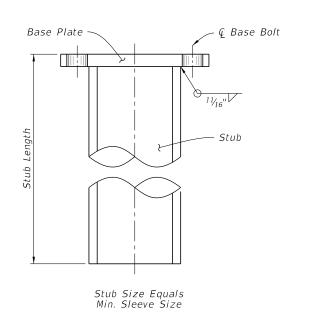


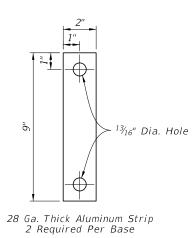


ELEVATION

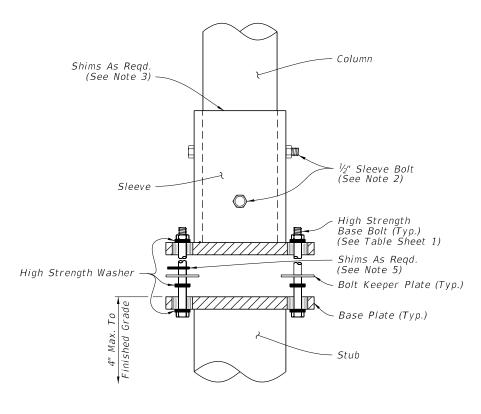








BOLT KEEPER PLATE DETAIL



= DETAIL 'A' ==

STUB DETAIL

DESCRIPTION: REVISION 11/01/21

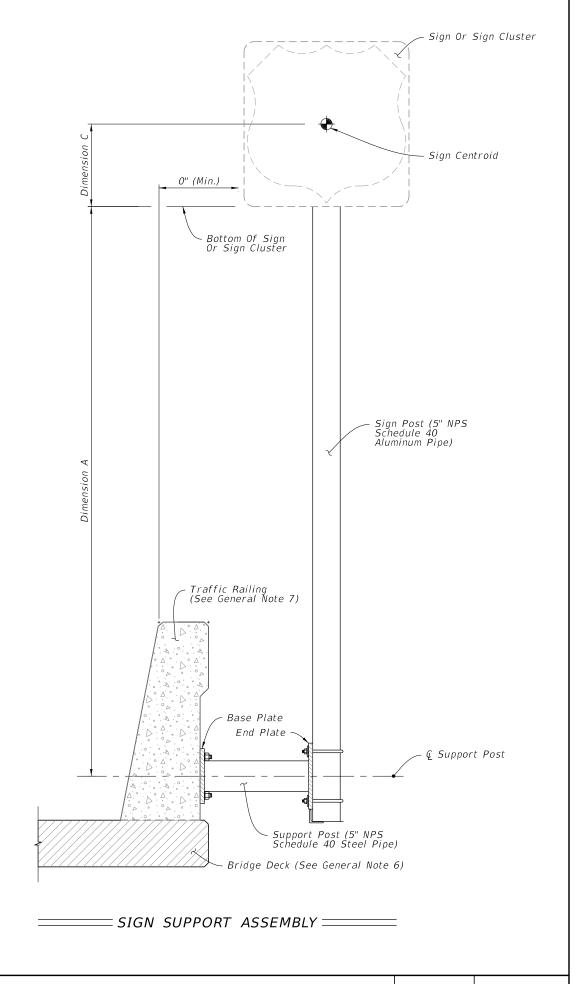
700-011

- 3. Shop Drawings: Not required.
- 4. Construction:
 - A. Locate Sign Support a minimum of 5 feet from an open joint or transition (sign stationing may be adjusted to accommodate this
 - B. Base plate must be flush with back of Traffic Railing
 - C. Anchors in Traffic Railings:
 - a. Install Adhesive Anchors in accordance with Specification 416 except perform field test on one anchor per sign support location.
 - b. Use templates and tie anchors as necessary to maintain correct placement of C-I-P Embedded Anchors c. Do not drill into existing conduit
 - D. Temporary Signs on Permanent Traffic Railings: Same as Permanent except Field testing of anchors is not required
- 5. Removal of Temporary Signs on Permanent Traffic Railings:
- A. Cut anchor rods flush with the top of the traffic railing
- B. Coat anchors with Type F-1 epoxy to prevent corrosion
- a. Extend coating 2 inches beyond edge of cut anchor rods
- b. Epoxy coating 1/16" thick minimum
- 6. Bridge deck shown. Approach slabs, junction slabs, and miscellaneous structures are similar.
- 7. Traffic railings are shown. Concrete barriers and parapets are similar.
- 8. Materials:
- A. Steel Plate: ASTM A36 or ASTM A709 Grade 36
- B. Steel Pipe (Support Post): ASTM A501 Schedule 40
- C. Aluminum Pipe: ASTM B429 Alloy 6061-T6
- D. Galvanized U-Bolts, Nuts and Plate Washer
- a. U-Bolts: ASTM A449
- b. Hex Nuts: ASTM A 563 Lock Nuts
- c. Plate Washer: ASTM A 36 or ASTM A709 Grade 36 or 50
- E. Galvanized Anchor bolts, Nuts and Washers:
- a. Anchor Rod: ASTM F1554 Grade 55 fully threaded (for Adhesive Anchors)
- b. Anchor Bolts: ASTM F1554 Grade 55 Grade A Hex
- c. Nuts: ASTM A563 Heavy Hex Locking
- d. Washers: ASTM F436

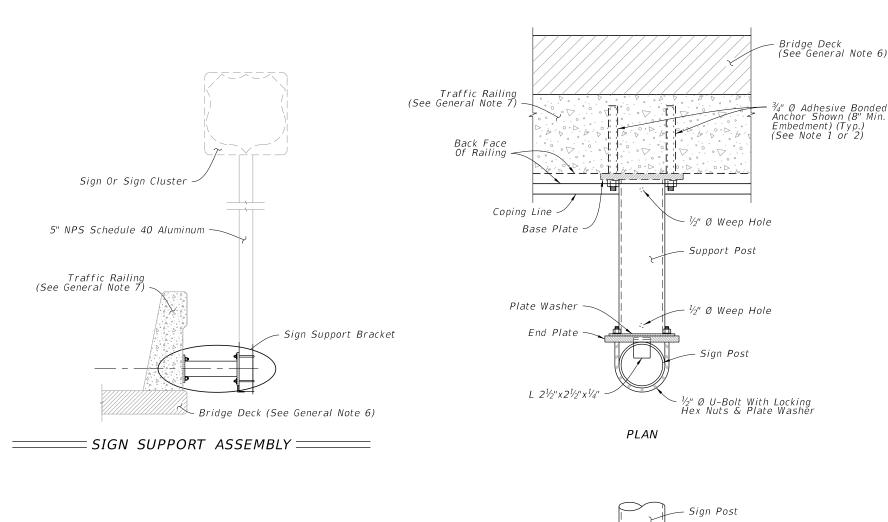
SIGN LIMITATIONS TABLE					
MAX. SIGN AREA MAX. SIGN CENTROID HEIGHT (SF) (DIM. A + DIM. C)					
25 9'-7"					

Dimension A = Distance from centerline of the Support Post to the bottom of the sign or sign cluster.

Dimension C = Vertical distance from the bottom of the sign or sign cluster to the Centroid of the sign or sign cluster.



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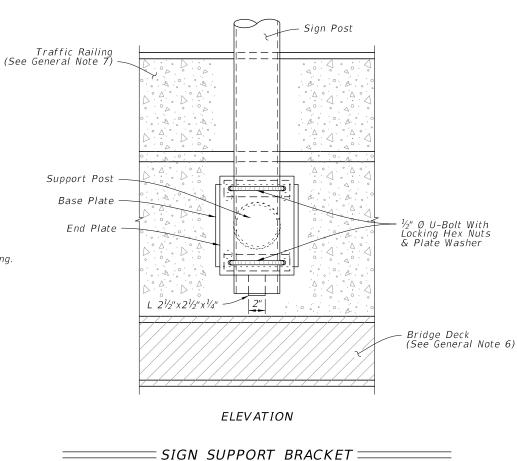


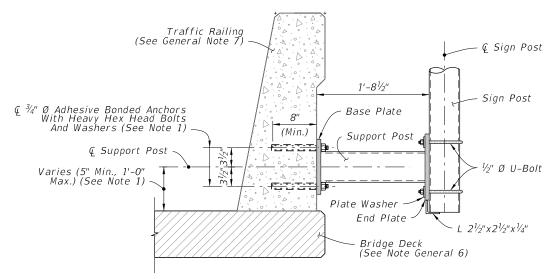


- 1. Existing Traffic Railings:
 - A. Locate existing conduit prior to drilling and adjust placement of base plate as necessary to avoid damaging existing conduit. Base plate must be flush with back of traffic railing. Maintain a minimum cover 2" from face of traffic railing to tip of Adhesive Anchor.
 - B. For concrete parapets less than 10" thick, through bolt 3/4" Ø Heavy Hex Head Bolts with Nuts and Washers in lieu of Adhesive Bonded Anchors. Bolt heads shall not protrude more than $1\frac{1}{2}$ " beyond traffic face of railing.
- C. For through bolting, countersink the nut and washer so that the bolt and nut does not extend beyond the face of the traffic railing. Do not exceed a countersink depth and diameter of $2\frac{1}{2}$ ".
- 2. New Traffic Railings:

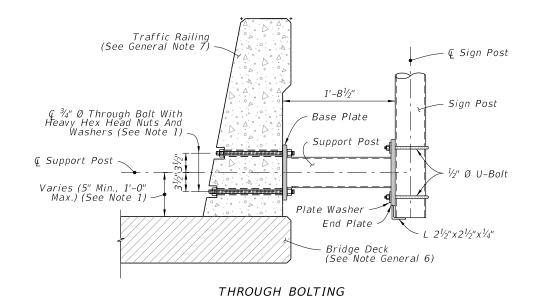
DESCRIPTION:

A. Optional Couplers are shown for slipforming; keep Anchor Bolt coupler threads free of concrete.

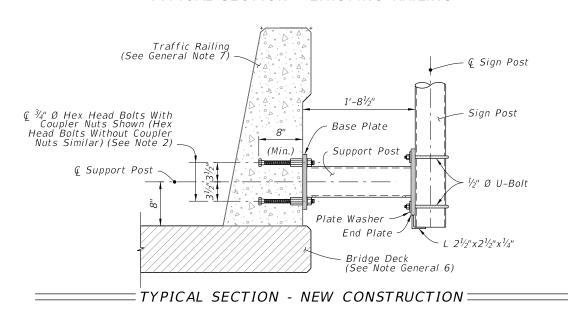




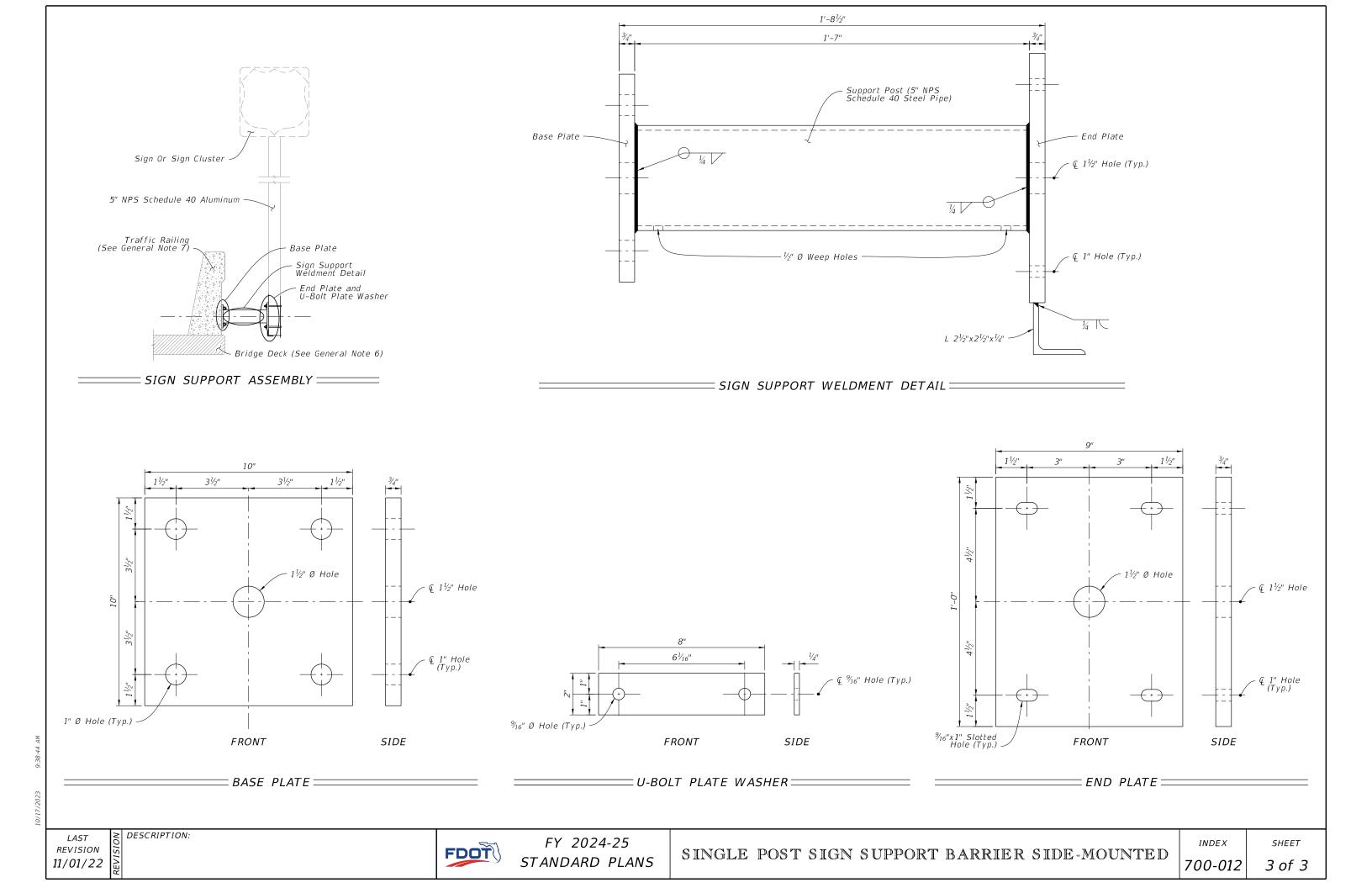
ADHESIVE BOND



TYPICAL SECTION - EXISTING RAILING



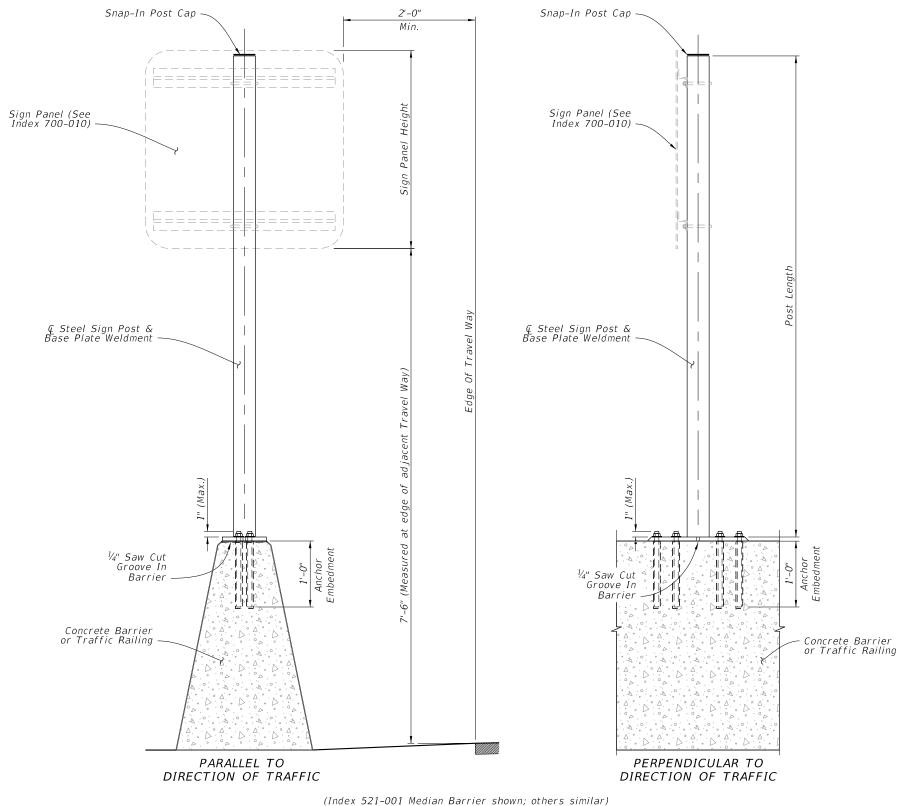
11/01/22



GENERAL NOTES:

- 1. Meet the requirements of Specification 700.
- 2. Work with Index 700-010.
- 3. Shop Drawings: Not required.
- 4. Construction:
- A. Locate Sign Support a minimum of 5 feet from an open joint or transition (sign stationing may be adjusted to accommodate this requirement B. Base plate must be flush with top of Railing
- C. Anchors in Traffic Railings:
 - a. Install Adhesive Anchors in accordance with Specification 416 except perform
- field test on one anchor per sign support location b. Use template and tie anchors as necessary to maintain correct placement of C-I-P Embedded Anchors
- c. Do not drill into existing reinforcing
 D. Temporary Signs on Permanent Traffic Railings, Same as Permanent except field testing of anchors is not required
- E. Temporary Signs on Temporary Railings/Barriers:
- a. Install Sign Supports at the midpoint along the length of a single segment b. Avoid drilling through existing reinforcement; use of metal detector not required.
- c. Field testing of anchors is not required
- 5. Removal of Temporary Signs on Permanent Traffic Railings:
- A. Cut anchor rods flush with the top of the railing
- B. Coat anchors with Type F-1 epoxy to prevent corrosion
 - a. Extend coating 2 inches beyond edge of cut anchor rods
 - b. Epoxy coating 1/16" thick minimum
- 6. Materials:
- A. Steel Plate: ASTM A36 or ASTM A709 Grade 36 B. Steel Pipe (Support Post): ASTM A53 Grade B Schedule 40 C. Galvanized U-Bolts, Nuts and Plate Washer
- a. U-Bolts: ASTM A449
- b. Hex Nuts: ASTM A 563 Lock Nuts c. Plate Washer: ASTM A 36 or ASTM A709 Grade 36 or 50
- D. Galvanized Anchor Bolts, Nuts and Washers:
 - a. Anchor Rod: ASTM F1554 Grade 55 fully threaded (for Adhesive Anchors) b. Anchor Bolts: ASTM F1554 Grade 55 Grade A Hex
 - c. Nuts: ASTM A563 Heavy Hex Locking
- d. Washers: ASTM F436

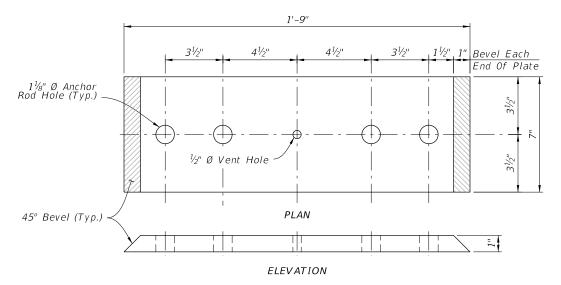
TABLE 1 - SIGN PANEL AND POST SIZING							
	Max. Sign Area (SF)	Post (NPS)					
Temporary Signs	≤ 24	3.0					
Permanent Signs	< 13.5	3.0					
Permanent Signs	13.5 < Sign < 20	3.5					



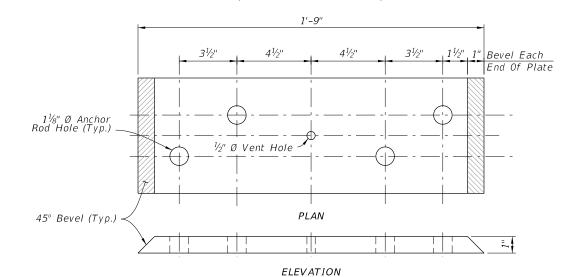
ELEVATION =

REVISION 11/01/22

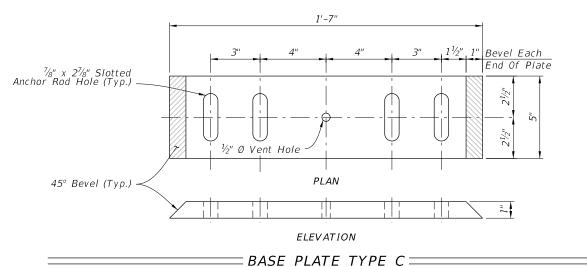
≥ DESCRIPTION:



BASE PLATE TYPE A = (Linear Anchor Rod Pattern)



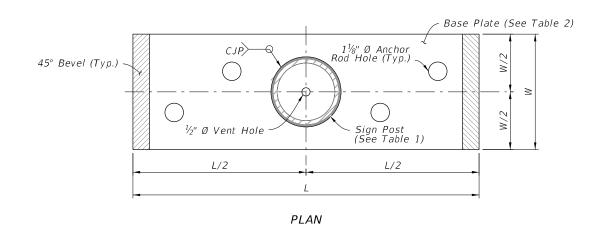
BASE PLATE TYPE B = (Staggered Anchor Rod Pattern)

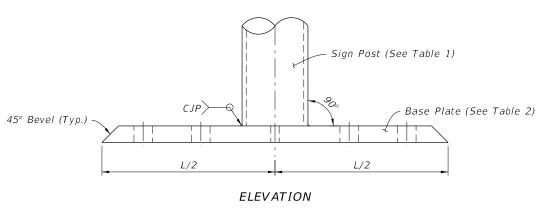


NOTES:

- 1. Place anchor rods in a staggered or linear pattern as necessary to avoid reinforcing.
- 2. Use a staggered pattern for all temporary barriers.

TABLE 2 - BASE PLATE TYPE AND ANCHOR ROD SIZING					
Index Type/Application Base Plate Type Anchor Rod Ø					
521-001	Full Wall	В	1"		
521-001	Cantilever or L-Wall	Α	<i>I</i>		
All listed above Plus 102-110 & 102-100	Temporary Signs	С	3/4"		





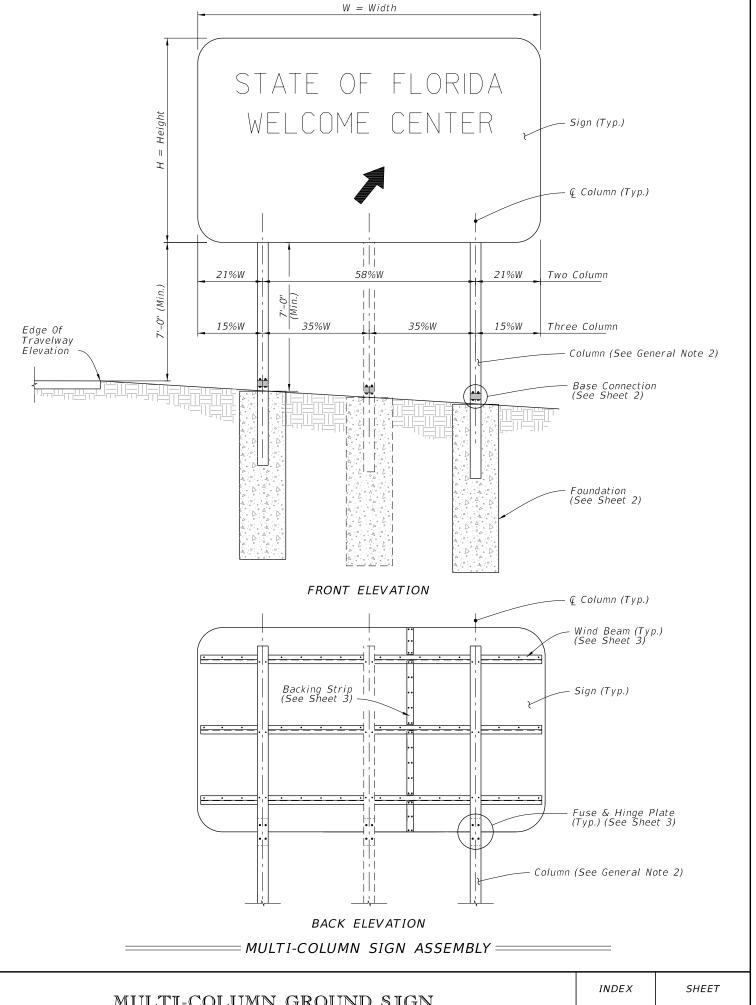
= SIGN SUPPORT WELDMENT DETAIL = (Staggered Anchor Rod Pattern shown)

DESCRIPTION:

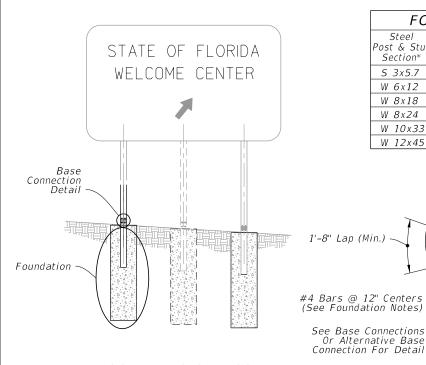
700-013 2 of 2

GENERAL NOTES:

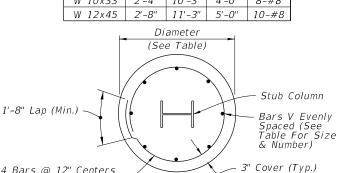
- 1. Meet the requirements of Specification 700.
- 2. Verify Column lengths in the field prior to fabrication.
- 3. Shop drawings:
- A. Sign Support Shop drawings are not required when fabricated in accordance with this Index and support columns do not exceed the width ("W") shown in the plans by more than 2'-0".
- B. Sign Panels: Horizontal panel splices are allowed at interior wind beams for sign panels with a height ("H") greater than 10 feet. Shop drawings required for horizontal panel splice details.
- C. When shop drawings are required, obtain approval prior to fabrication.
- 4. Materials:
- A. Sign Panel Mounting Materials:
 - a. Aluminum Bars, and Extruded Shapes: ASTM B221, Alloy 6061-T6 or Alloy 6351-T5
 - b. Aluminum Structural Shapes: ASTM B221, Alloy 6061-T6
- B. Sign Support Structure Materials:
 - a. Steel Plates and Structural Shapes: ASTM A36 or ASTM A709, Grade 36
- b. Steel Weld Metal: E70XX
- c. Shims: Brass ASTM B36 or Galvanized Steel
- C. Aluminum Bolts, Nuts and Washers:
 - a. Flat Head and Button Head Bolts: ASTM F 468, Alloy 2024-T4
 - b. Hex Nuts: ASTM F467, 2024-T4
 - c. Washers: ASTM B221, Alloy 2024-T4
- D. Stainless Steel Bolts, Nuts and Washers Alloy Group 2, Condition A, may be substituted for the Aluminum bolts as follows:
 - a. Bolts: ASTM F593, CW1 or SH1
 - b. Nuts: ASTM F594,
- E. High Strength (H.S.) Steel Bolts, Nuts and Washers:
 - a. Galvanized Hex Head Bolts: ASTM F3125, Grade A325, Type 1
 - b. Galvanized Nuts: ASTM A563 Hex, Grade DH
- c. Galvanized Washers: ASTM F436
- F. Concrete: Class II.



DESCRIPTION:

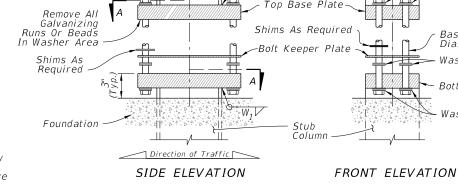


FO	FOUNDATION DATA						
Steel Post & Stub Section*	Dia.	Depth	Stub Column Length	Reinf. Bars V			
S 3x5.7	2'-0"	4'-0"	3'-0"	10-#6			
W 6x12	2'-0"	6'-0"	3'-0"	10-#6			
W 8x18	2'-4"	7'-6"	4'-0''	8-#8			
W 8x24	2'-4"	8'-6"	4'-0''	8-#8			
W 10x33	2'-4"	10'-3"	4'-0''	8-#8			
W 12x45	2'-8"	11'-3"	5'-0"	10-#8			



PLAN

- Ç Of Foundation & Stub Column



Steel

Post & Stul

Section*

S 3x5.7

W 6x12

W 8x18

W 8x24

W 6x12

W 8x18

W 8x24

W 10x33

8"

4"

5-1/2" | 12-1/2"

7/8"

3-1/4"

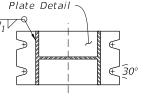
7/16"

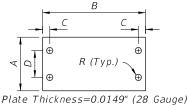
 $W_1 V$

H.S. Base Bolt With 3 Washers & Hex Nut on Each Bolt. See

Table for Bolt Dia. &

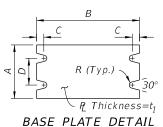
Torque. See Assembly Of Base Instructions.





SECTION A-A BOLT KEEPER PLATE DETAIL





SHIM DETAIL

BASE CONNECTION DATA SHIM Torque Μ В D (lbf*in) 90 ± 20 3/4" 5/16" 1/2" 1/4" -1/4" 9/16" 10" 3/4" 3/8" 1-5/8" 5/8" 1/4" 270 ± 45 1-3/8" | 11/16' 5-1/4" | 12-1/2" 7/8" 2-3/4" 7/16" 1-3/4" 3/4" 3/8" 445 ± 75 1-3/4" | 13/16'

3/4"

3/8"

445 ± 75

2-1/8" | 13/16'

Washer (Typ.,

Base Bolt

 $Dia. = L_2$

- Washer (Typ.)

- Bottom Base Plate

Washer (Typ.)

1-3/4"

1/2"

5/8"

3/4"

3/4"

3/4"

ALTERNATIVE BASE CONNECTION =

2-3/16"

2-3/8"

2-3/4"

5/8"

1"

== MULTI-COLUMN SIGN ASSEMBLY ===

FOUNDATION NOTES:

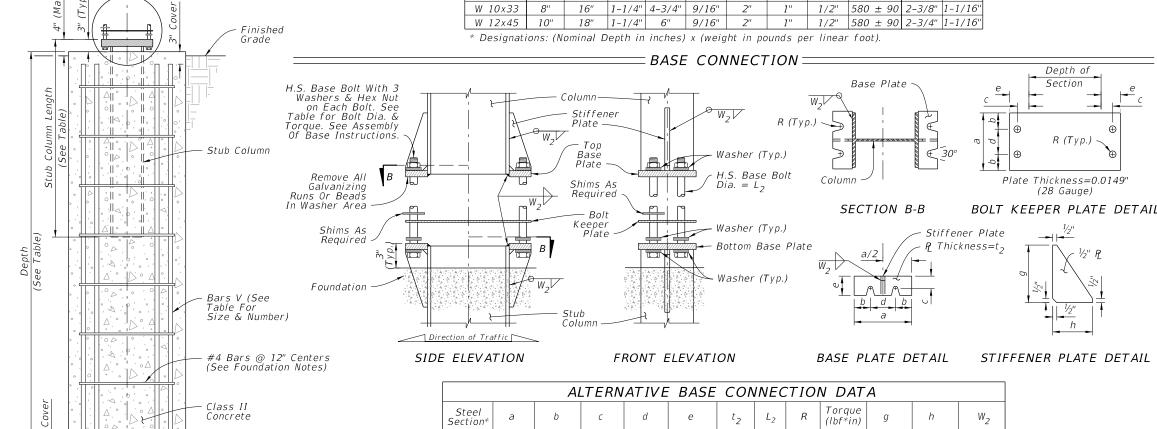
The foundation may be either precast or cast-in-place. Use Reinforcing bars or equivalent Welded Wire Reinforcement.

At the Contractor's option, the #4 tie bars at 12" o.c. may be replaced by D10 Spiral Wire @ 6" pitch, with three flat turns at the top and one flat turn at the bottom in accordance with Specification 415.

For precast foundations, the circular cross section shown may be substituted with an octagon shape. The out-to-out distance between parallel edges must be greater than or equal to the diameter in the Foundation Data table. Use the same reinforcing diameter with centered placement and a minimum 3" cover.

BASE CONNECTION NOTES:

- 1. Assembly of Base Instructions.
- A. Place one washer on each Base Bolt between the Bottom Base Plate and the head of high strength Base Bolt; place the next washer between the Bottom Base Plate and the Bolt Keeper Plate; add the Top Base Plate section and place the third washer between the Top Base
- B. Shim as required to plumb column. Provide 2-0.0149" thick (28 gauge) and 2-0.0329" thick (21 gauge) shims
- 2. H.S. Base Bolt L Tightening Instructions:
- A. Tighten Base Bolts to the maximum possible with a 12" to 15" wrench (this will bed the washers and shims and clear the bolt threads).
- B. Loosen each Base Bolt one turn
- C. Under the supervision of the Engineer, use a calibrated wrench to tighten bolts to the torque prescribed in the Table. Over tightened Base Bolts will not be permitted.
- D. Burr threads at junction with nut to prevent nut loosening. Treat damaged galvanizing.
- 3. Assemble Post to Stub with Base Bolts and three flat washers per bolt (See Base Connection Details). Tighten Base Bolts in accordance with Instructions with
- 4. Weld Base Plate to Post & Stub or if using the Alternate Connection Detail weld Base Plate and Stiffeners to Post
- 5. Orient Stub Post according to direction of traffic.



4-3/4" | 1-1/8" | 1-3/16" | 2-1/2"

1-3/8"

1-3/8"

1-9/16"

1-9/16"

2-3/4"

3-1/2"

arepsilon Designations: (Nominal Depth in inches) x (weight in pounds per linear foot).

DESCRIPTION:

FDOT

ELEVATION

FOUNDATION =

FY 2024-25 STANDARD PLANS FOUNDATION AND BASE CONNECTION DETAILS

3/8" | 270±45 | 5-1/8"

3/4" | 7/16" | 445±75 | 6-1/4"

9/16" | 580±90

9/16" | 580±90

3/4" | 7/16" | 445±75 |

MULTI-COLUMN GROUND SIGN

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1/4"

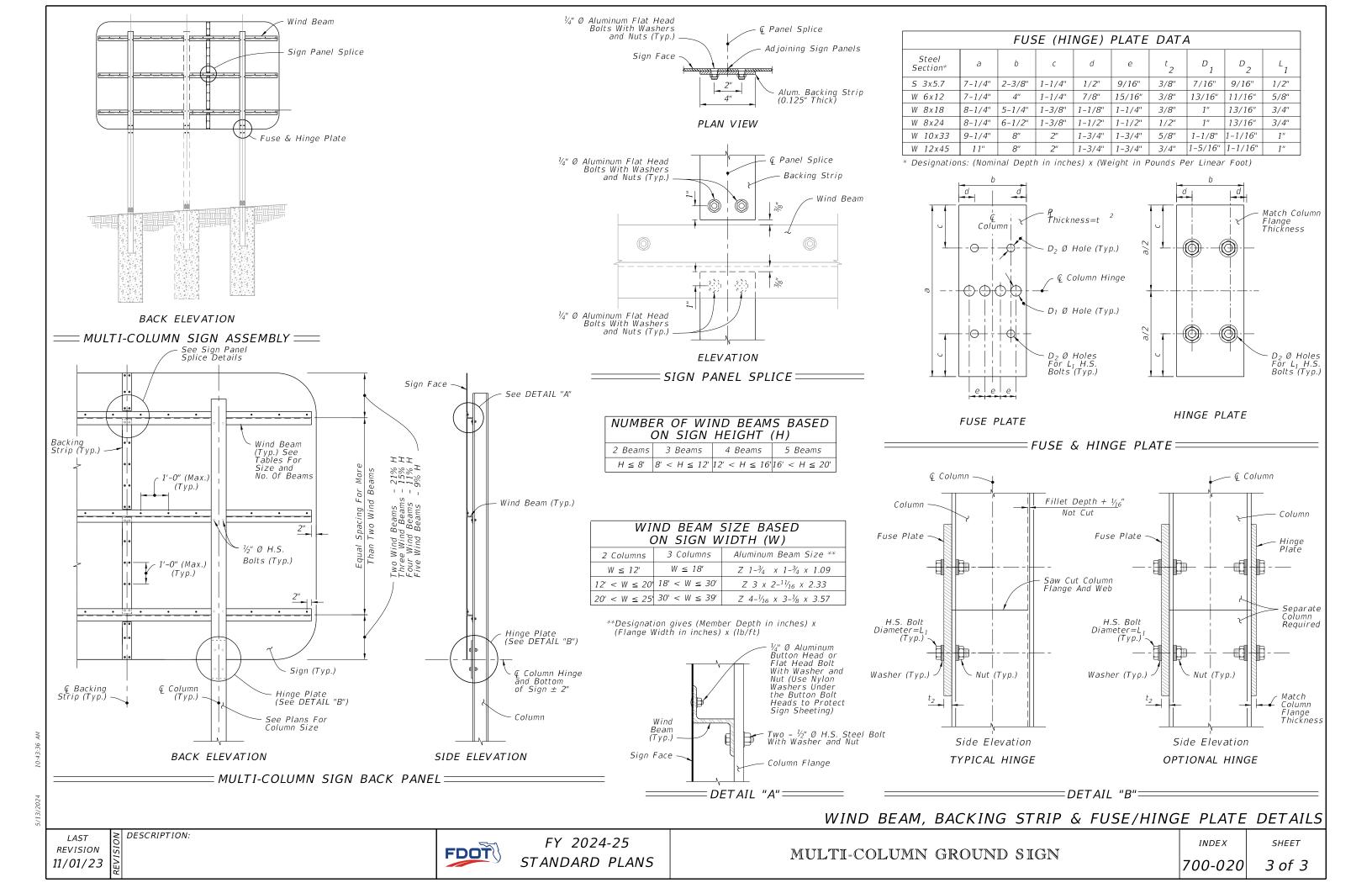
1/4"

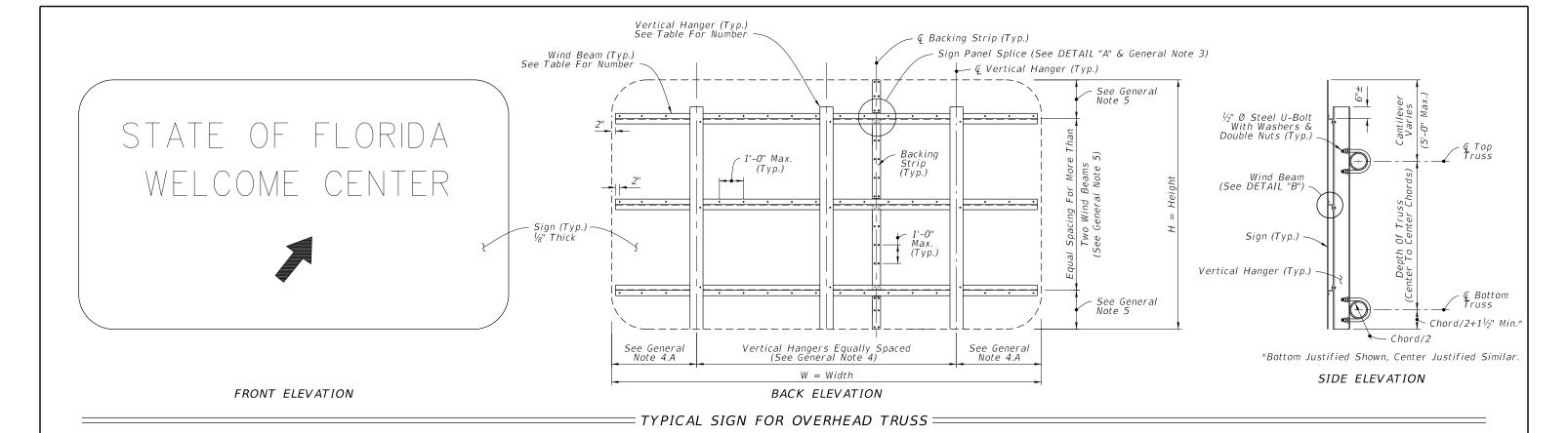
5/16"

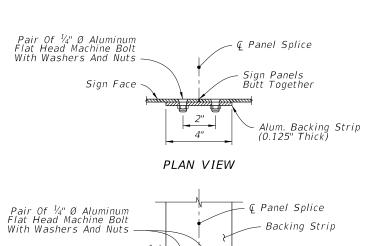
5/16"

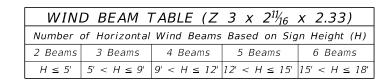
2-3/8"

2-3/4"



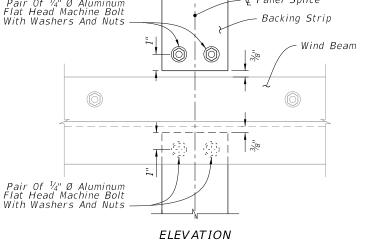






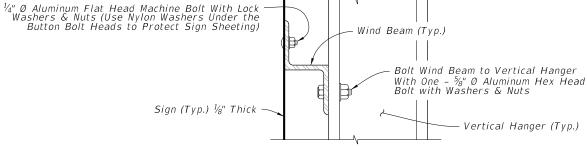
HANGE	R TABLE	(I 6 X 4)	(4.69 or 2	$Z = 5 \times 3\frac{1}{4}$	x 4.01)	
Number of	Number of Vertical Hanger Beams Based on Wind Speed and Sign Width (W)					
	2 Hangers	3 Hangers	4 Hangers	5 Hangers	6 Hangers	
130 mph	W ≤ 20'	$20' < W \le 30'$	$30' < W \le 40'$	$ 40' < W \le 50'$		
150 mph	W ≤ 18'	$18' < W \le 27'$	27' < W ≤ 35'	35′ < W ≤ 45′	$45' < W \le 50'$	
170 mph	W ≤ 15'	15' < W ≤ 20'	20′ < W ≤ 28′	28′ < W ≤ 35′	$35' < W \le 43'$	

NOTE: For Monroe County designs, use 170 mph values but with Z 5 x $3-\frac{1}{4}$ x 6.19 vertical hanger beams only.



SIGN PANEL SPLICE

DETAIL "A"=



DETAIL "B"

GENERAL NOTES

- 1. Meet the requirements of Specification 700.
- 2. Work this Index with Index 700-040 and 700-041.
- 3. The number and location of the Panel Splices are determined by the Sign Face supplier.
- 4. Spacing of Vertical Hangers:
- A. Two Vertical Hanger = 21.0% W Three Vertical Hanger = 15.0% W Four Vertical Hanger = 11.0% W Five Vertical Hanger = 9.0% W
- Six Vertical Hanger = 7.0% W

 B. Spacing of vertical hangers may be varied slightly as necessary to clear the truss struts and diagonals
- 5. Spacing of Wind Beams:

Two Wind Beams = 21.0% H Three Wind Beams = 15.0% H Four Wind Beams = 11.0% H Five Wind Beams = 9.0% H Six Wind Beams = 7.0% H

- 6. Shop Drawings:
- A. Required for Sign Panels deeper than 10'-0" with a horizontal panel splice.
- B. Splice must be located in between interior Zee Supports and only allowed on signs greater
- 7. Wind Speed by county: see Index 715-010.
- 8. Materials:
- - a. Bars, and Extruded Shapes: ASTM B221, Alloy 6061-T6 or Alloy 6351-T5 b. Structural Shapes: ASTM B221, Alloy 6061-T6 c. Flat Head and Hex Head Machine Bolts: ASTM F468, Alloy 2024-T4 d. Hex Nuts: ASTM F467, Alloy 6061-T6 or Alloy 6262-T9 e. Washers: ASTM B221, Alclad 2024-T4

- a. U-Bolts: ASTM A449 or ASTM A193 B7 b. Nuts: ASTM A563, 2 per leg c. Washers: ASTM F436, (Flat Washers)

REVISION 11/01/23

∠ DESCRIPTION:

FDOT

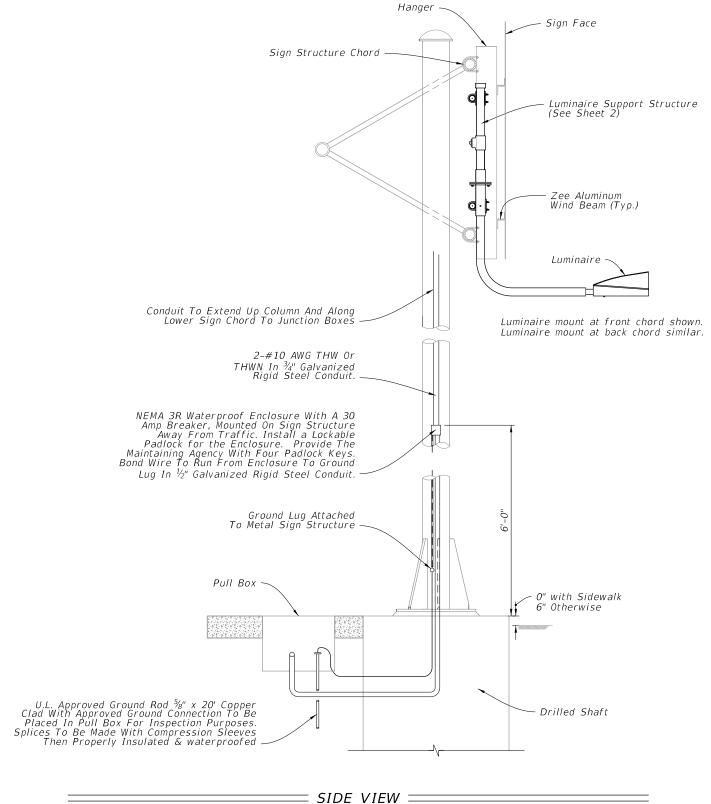
FY 2024-25 STANDARD PLANS

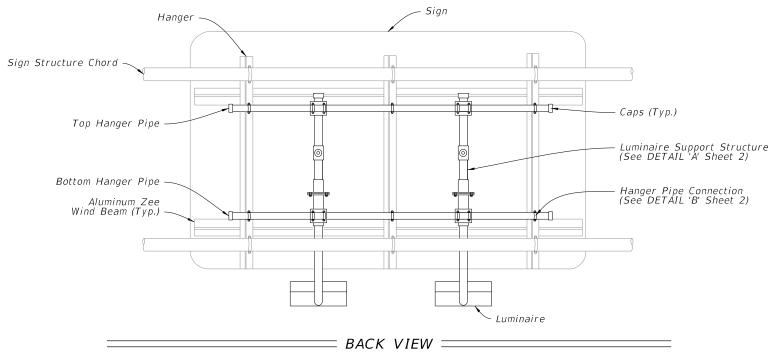
WIND AND HANGER BEAMS FOR OVERHEAD SIGNS

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SHEET

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PLACEMENT OF SIGN LIGHTS

- 1. This Index details a bottom luminaire support structure. For signs requiring top luminaire support structures, the detail can be reversed.
- 2. Luminaire spacing and arm length is shown on Guide Sign Worksheet.
- 3. The Guide Sign Worksheet indicates the sign luminaire used for basis of design. The contractor may propose a different luminaire by submitting photometric calculations for each lighted sign for review by the Engineer.

SIGN LIGHTING INSTALLATION

Roadway Lighting included in contract:

- 1. Power for the sign lighting provided from the roadway lighting circuit.
- 2. Indicate sign location and a pull box location for connection to the sign lights in the lighting plans.
- 3. Lighting contractor installs pull box and loop 2' of lighting circuit conductors in the pull box for connection by the signing contractor.
- 4. Signing contractor furnishes and installs the Luminaires, NEMA 3R enclosure, 30 amp breaker, conduit, conductors and all other electrical equipment necessary for connection to the lighting circuit.

Roadway Lighting not included in contract:

EXTERNAL LIGHTING FOR SIGNS

- 1. Signing plans include the pay item numbers to furnish and install conduit, conductors, ground rods, pull boxes and service point equipment.
- 2. Signing plans indicate the location of the service point equipment and circuit runs.
- Signing contractor provides all electrical equipment necessary for connection of the sign lights.

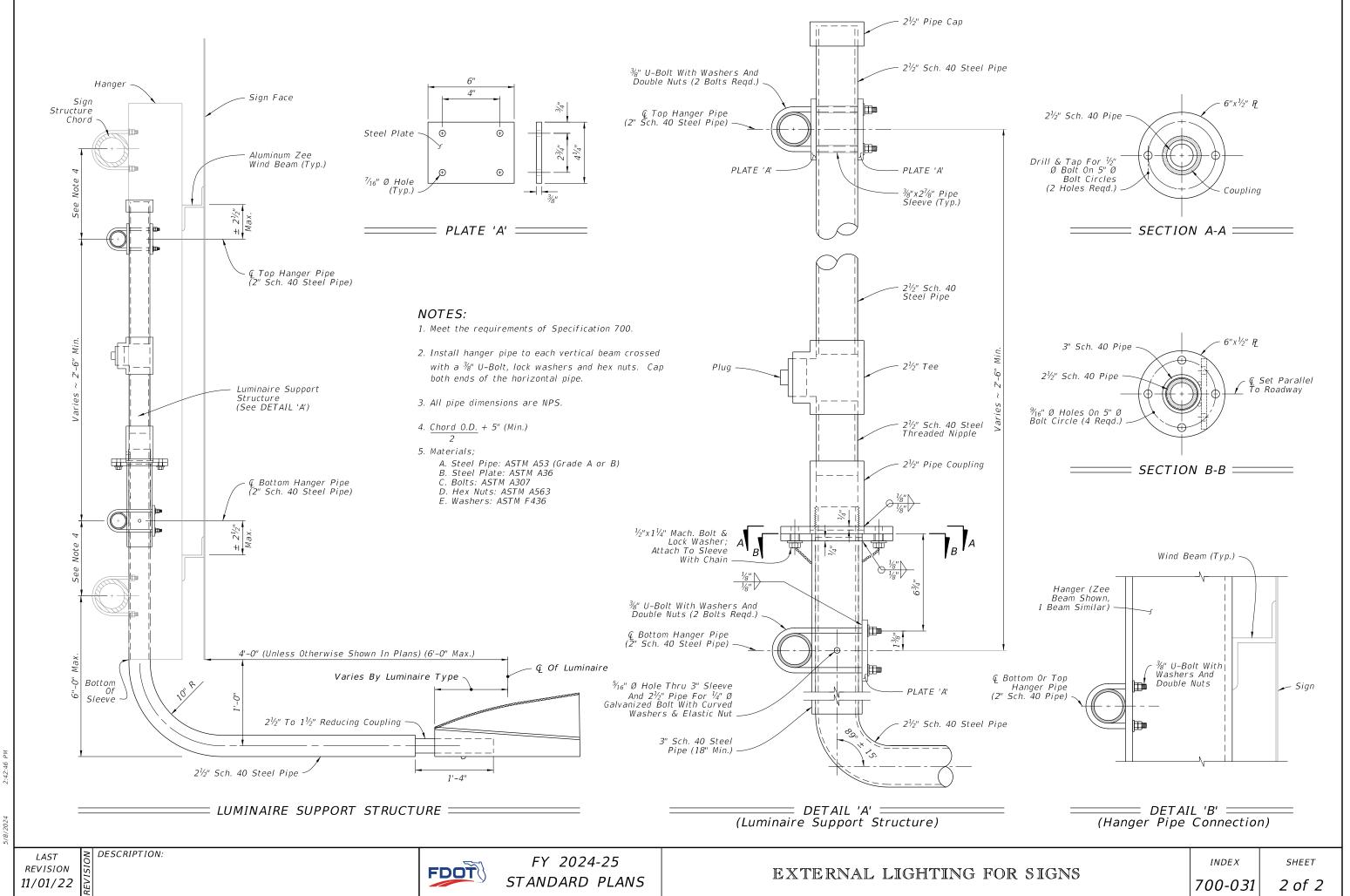
REVISION 11/01/17

DESCRIPTION:

FDOT

SHEET

1 of 2

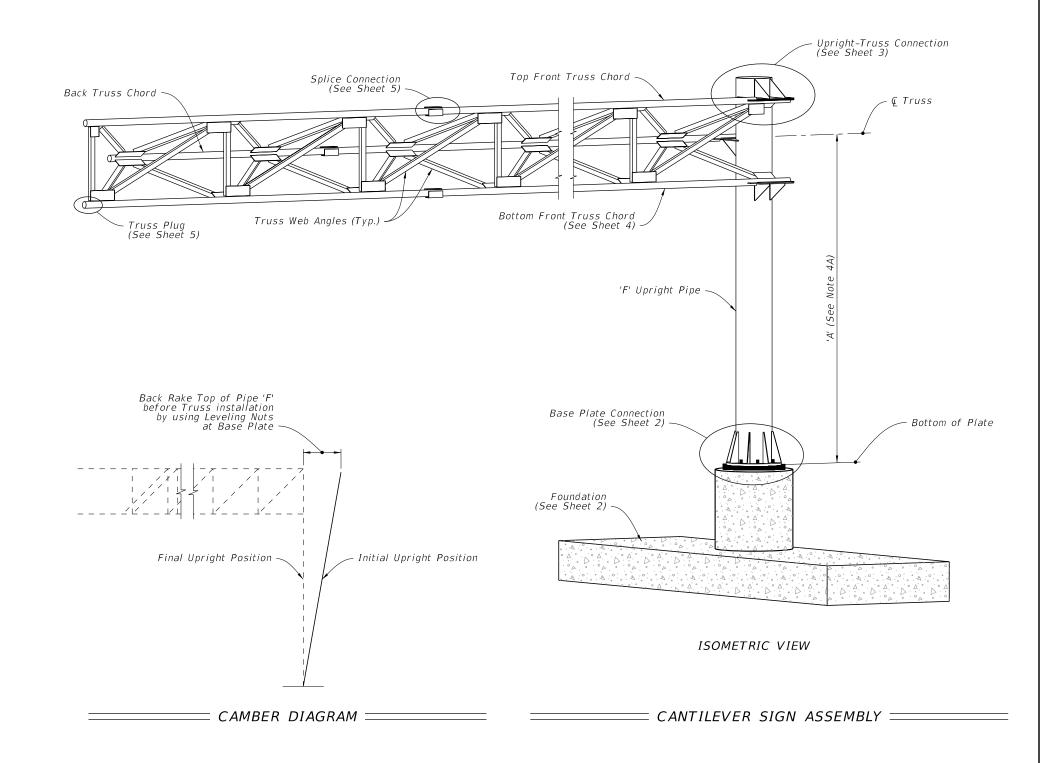


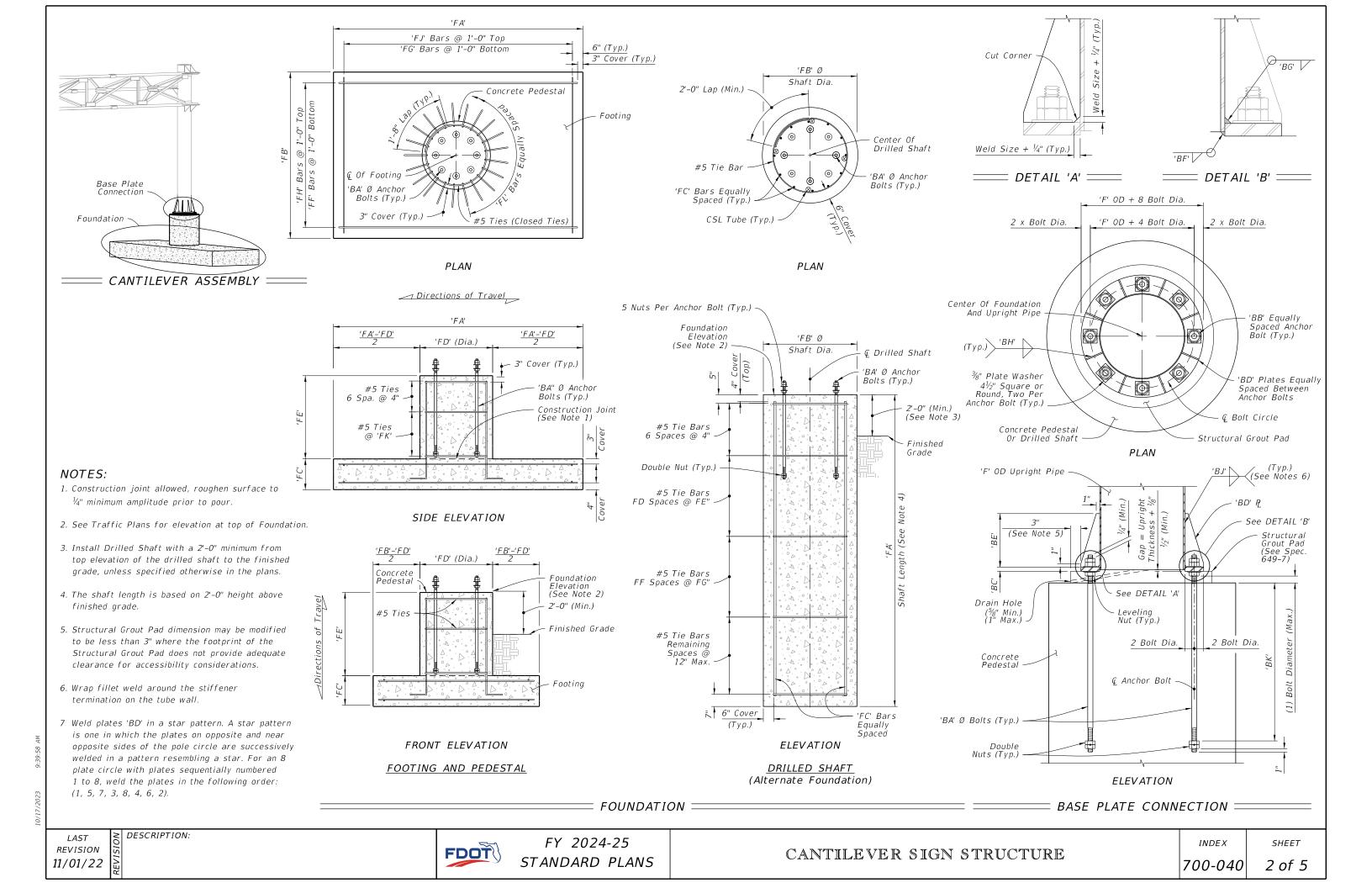
GENERAL NOTES:

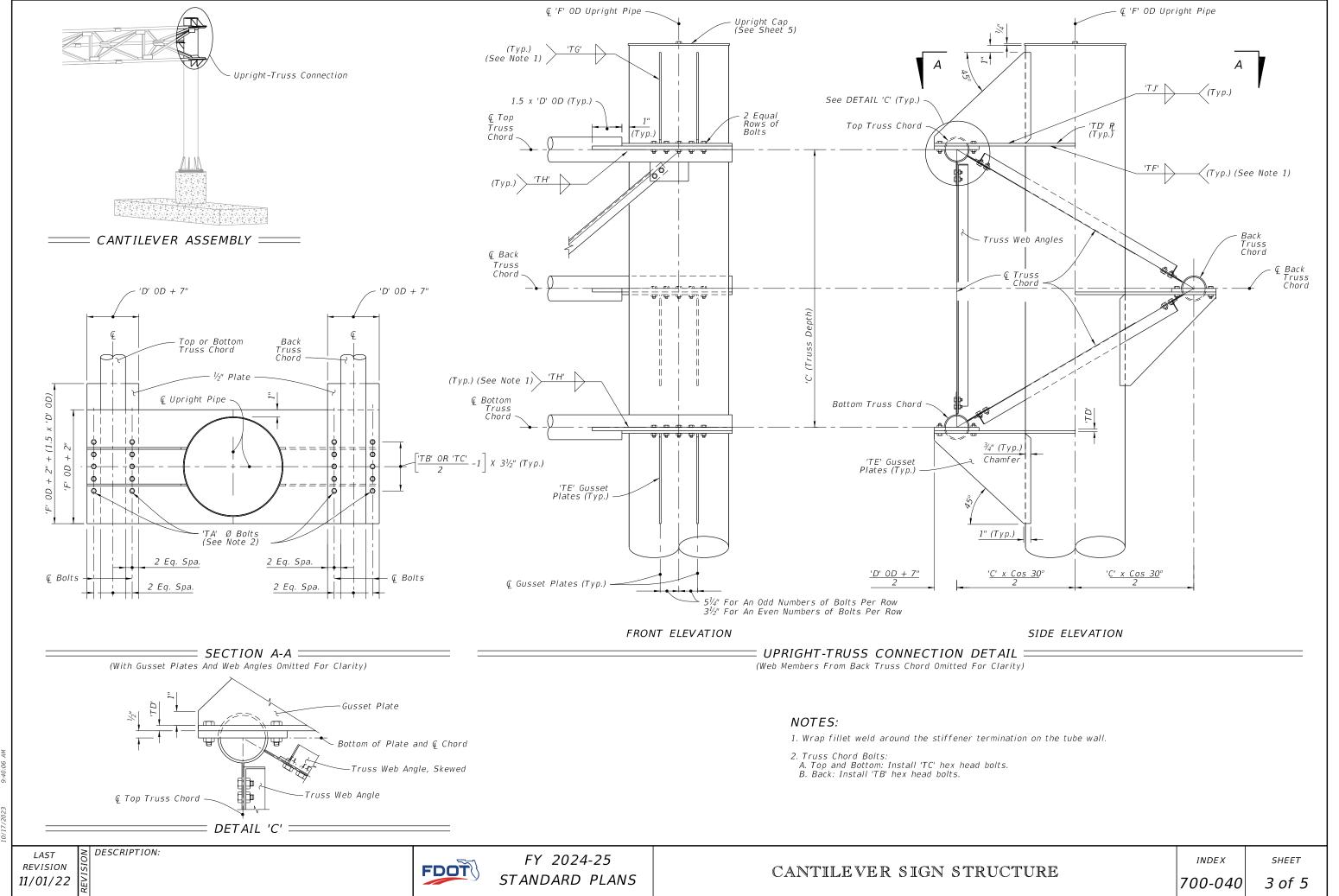
- 1. Meet the requirements of Specification 700.
- 2. Work this Index in conjunction with CANTILEVER SIGN STRUCTURE DATA TABLES in the Plans and Index 700-030.
- 3. Handholes are required at pole base for DMS Structures. Refer to Index 700-090 for Handhole Details.
- 4. Shop Drawings are required.

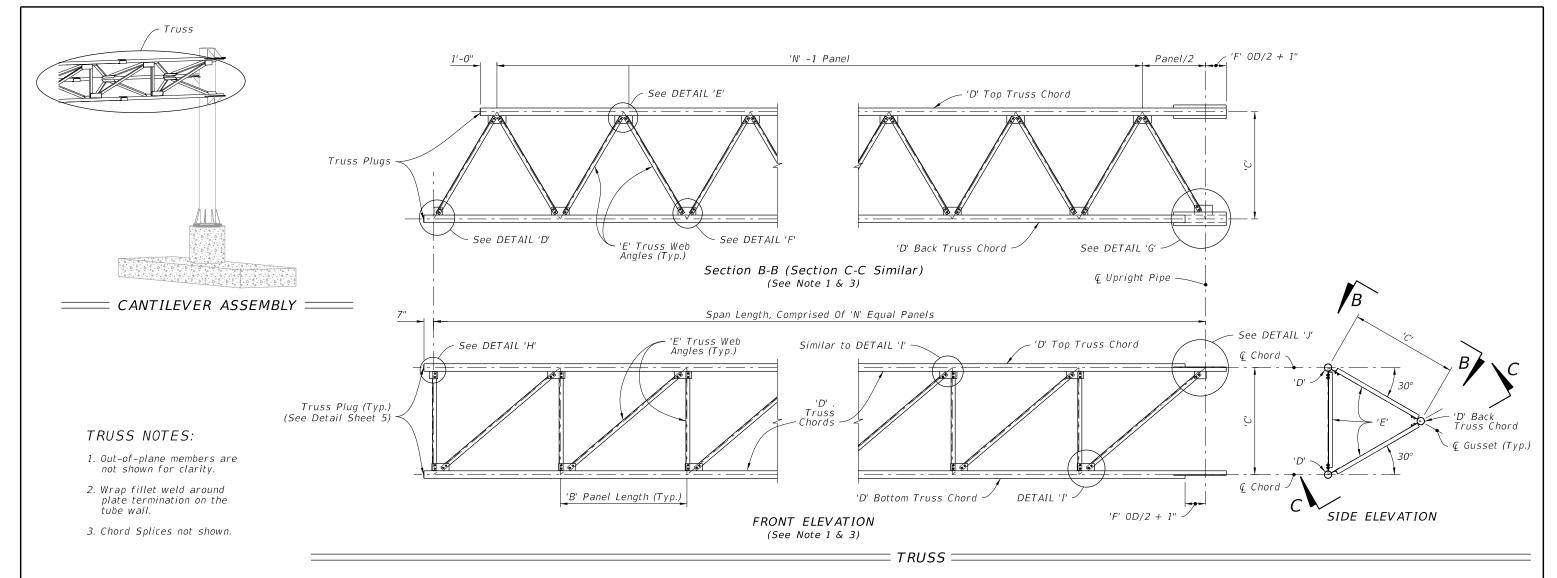
Obtain Shop Drawing approval prior to fabrication. Include the following:

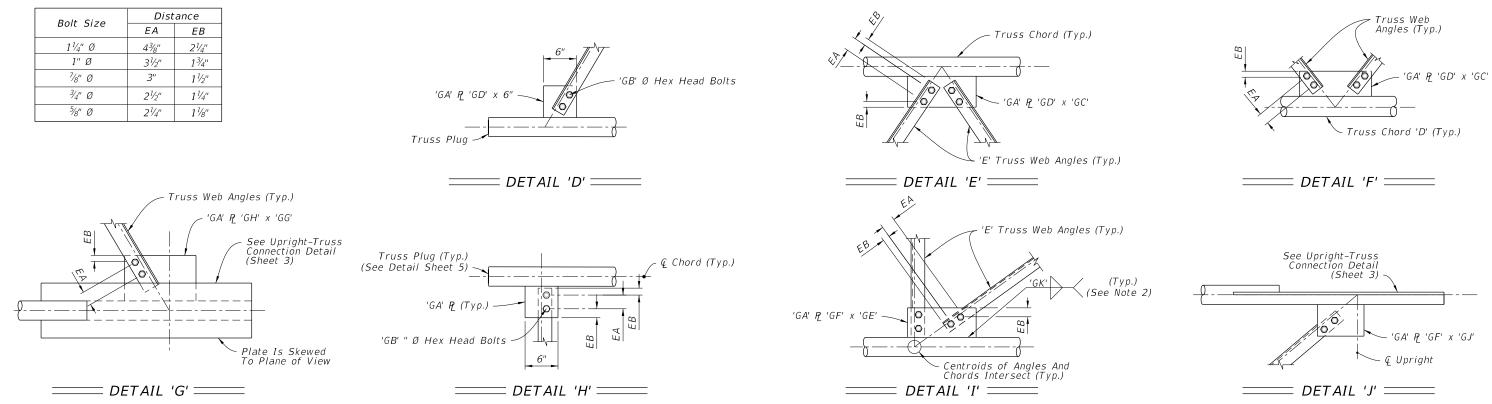
- A. Upright Pipe height ('A') and Foundation elevations: Verify dimension in the field prior to submittal to ensure minimum vertical clearances of the sign panel over the roadway.
- B. Height of the foundation above adjacent ground.
- C. Anchor bolt orientation with respect to centerline of truss and the direction of traffic.
- D. Chord Splices
- E. Handholes at pole base (when required).
- 5. Materials:
- A. Sign Structure:
- a. Upright and Chords (Steel Pipe): API 5L X42 PSL2, 42 ksi yield or ASTM A500, Grade B (Min.)
- b. Steel Angles and Structural Plates and Bars: ASTM A709 Grade 36
- B. Bolts, Nuts and Washers:
- a. High Strength Bolts: ASTM F3125, Grade A325 Type 1
- b. Nuts: ASTM A563 Grade DH Heavy-Hex
- c. Washers: ASTM F436 Type 1, one under turned element
- C. Anchor Bolts, Nuts and Washers
- a. Anchor Bolts: ASTM F1554 Grade 55
- b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per bolt)
- c. Plate Washers: ASTM A36 (2 per bolt)











CANTILEVER SIGN STRUCTURE

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700-040

SHEET

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FY 2024-25

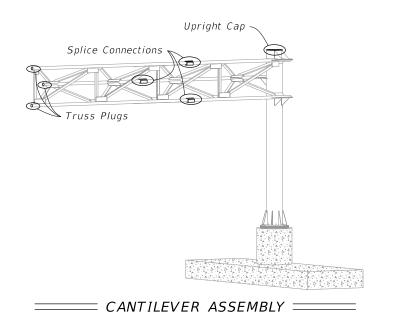
STANDARD PLANS

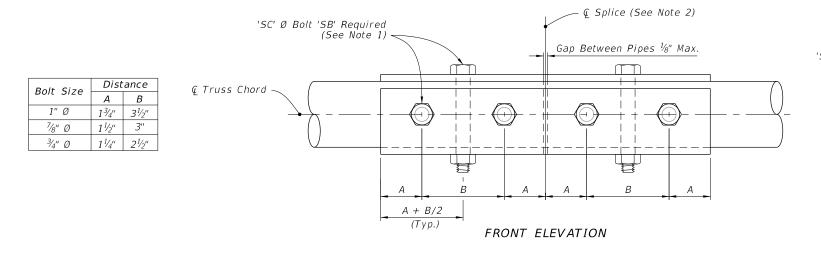
FDOT

DESCRIPTION:

REVISION

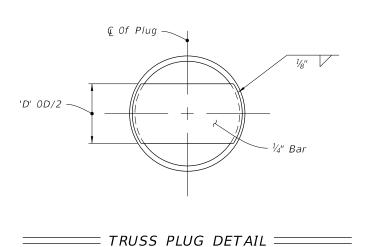
11/01/22

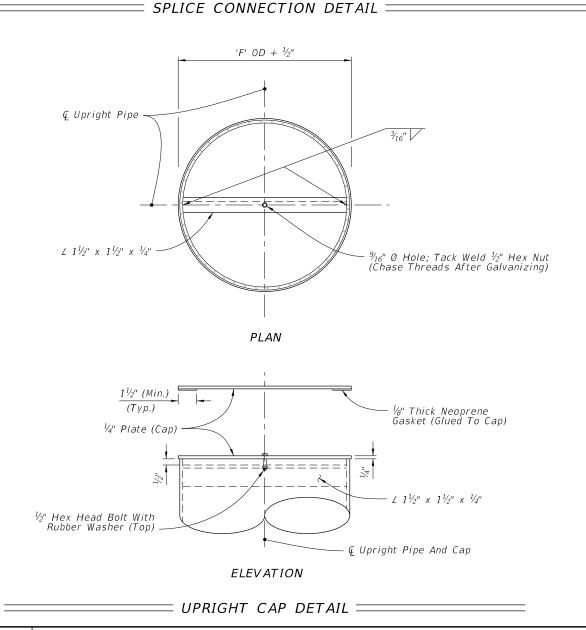




SPLICE CONNECTION NOTES:

- 1. Only 6 bolts are shown in detail for clarity. (One Half Each Side Of Splice)
- 2. Splices are not permitted for trusses less than or equal to 40', Splice optional for trusses greater than 40'.
- 3. Chord Splices: "SD" Panel from upright is the closest panel in which a chord splice may be used. See Plans for CANTILEVER SIGN STRUCTURE DATA TABLE. Minimum splice spacing is two truss panel lengths apart.





REVISION 11/01/22

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

CANTILEVER SIGN STRUCTURE

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SHEET

700-040

← Truss Chord

'SC' Ø Bolt (Typ.)

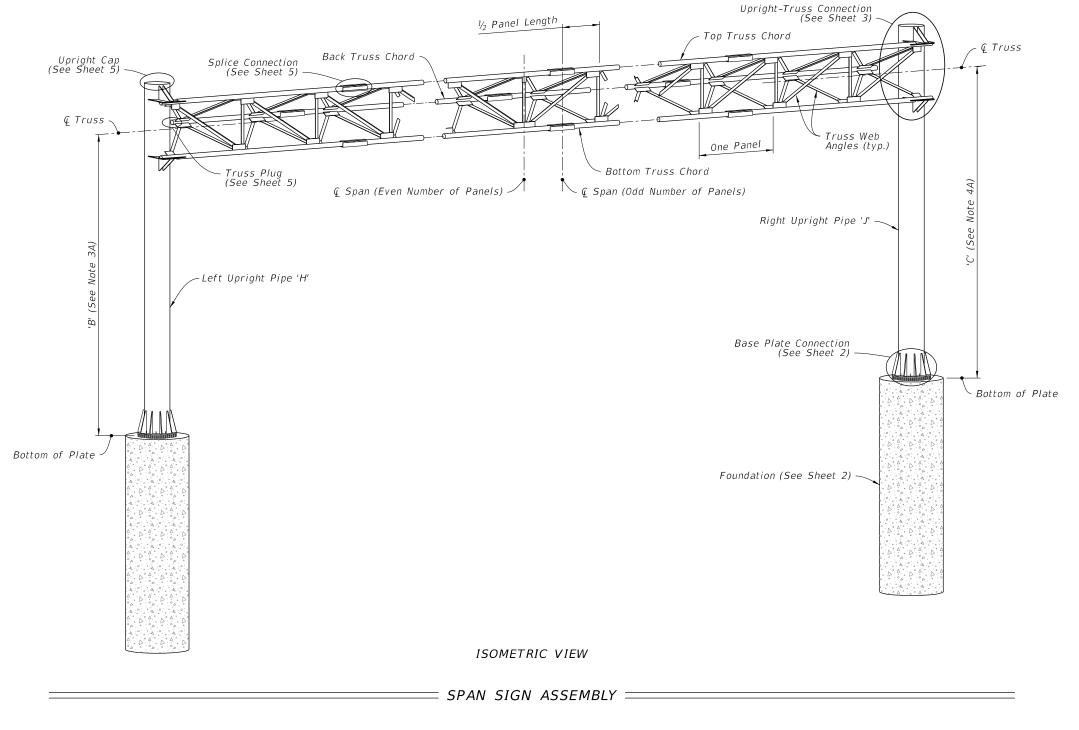
SIDE ELEVATION

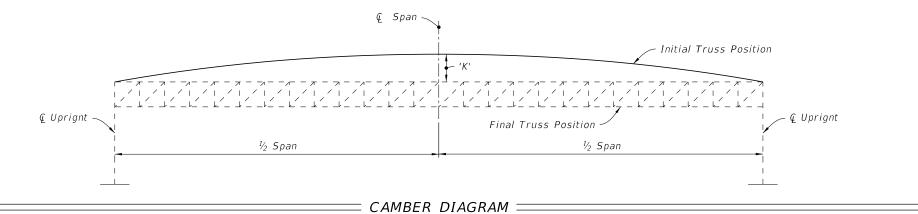
GENERAL NOTES:

- 1. Meet the requirements of Specification 700.
- 2. Work this Index in conjunction with SPAN SIGN STRUCTURE DATA TABLES in the Plans and Index 700-030.
- 3. Handholes at the pole base are required for DMS Structures. Refer to Index 700-090 for Handhole Details.
- 4. Shop Drawings are required.

Obtain Shop Drawing approval prior to fabrication. Include the following: A. Upright Pipe height ('C' & 'B') and foundation elevations: Verify dimensions in the field prior to submittal to ensure minimum vertical clearances of the sign panel over the roadway.

- B. Height of the foundation above adjacent ground.
- C. Anchor bolt orientation with respect to centerline of truss and the direction of traffic.
- D. Method to be used to provide the required parabolic camber (see Camber Diagram).
- E. Handholes at pole base (when required).
- 5. Provide a parabolic camber with the required upward deflection as shown on the Camber Diagram.
- 6. Materials:
- A. Sign Structure:
- a. Upright and Chords (Steel Pipe): API 5L X42 PSL2, 42 ksi yield or ASTM A500, Grade B (Min.)
- b. Steel Angles and Plates: ASTM A709 grade 36
- B. Bolts, Nuts and Washers:
- a. High Strength Bolts: ASTM F3125, Grade A325, Type 1
- b. Nuts: ASTM A563, Grade DH Heavy-Hex
- c. Washers: ASTM F436, Type 1, one under turned element
- C. Anchor Bolts, Nuts and Washers
- a. Anchor Bolts: ASTM F1554 Grade 55
- b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per bolt)
- c. Plate Washers: ASTM A36 (2 per bolt)





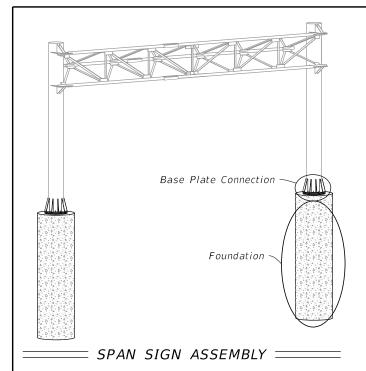
∠ DESCRIPTION: REVISION 11/01/22

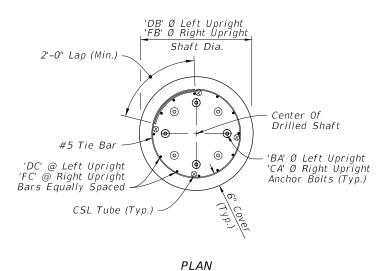
FDOT

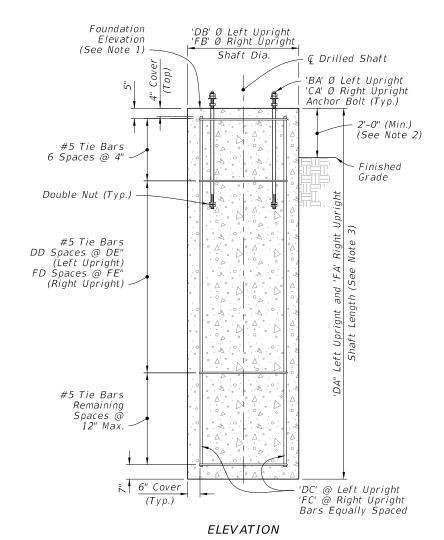
FY 2024-25 STANDARD PLANS

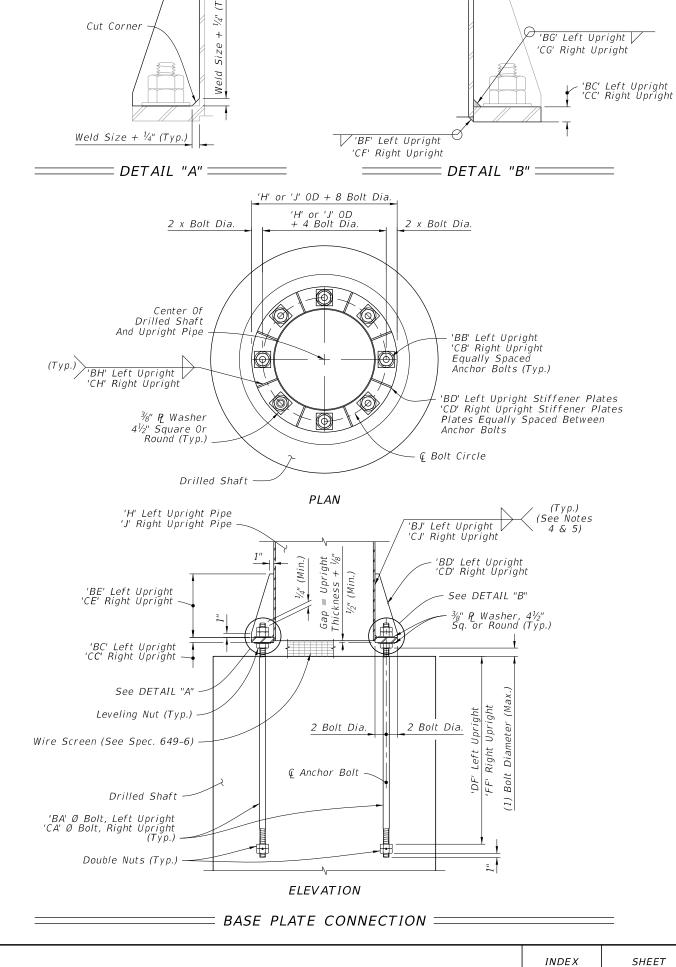
INDEX 700-041

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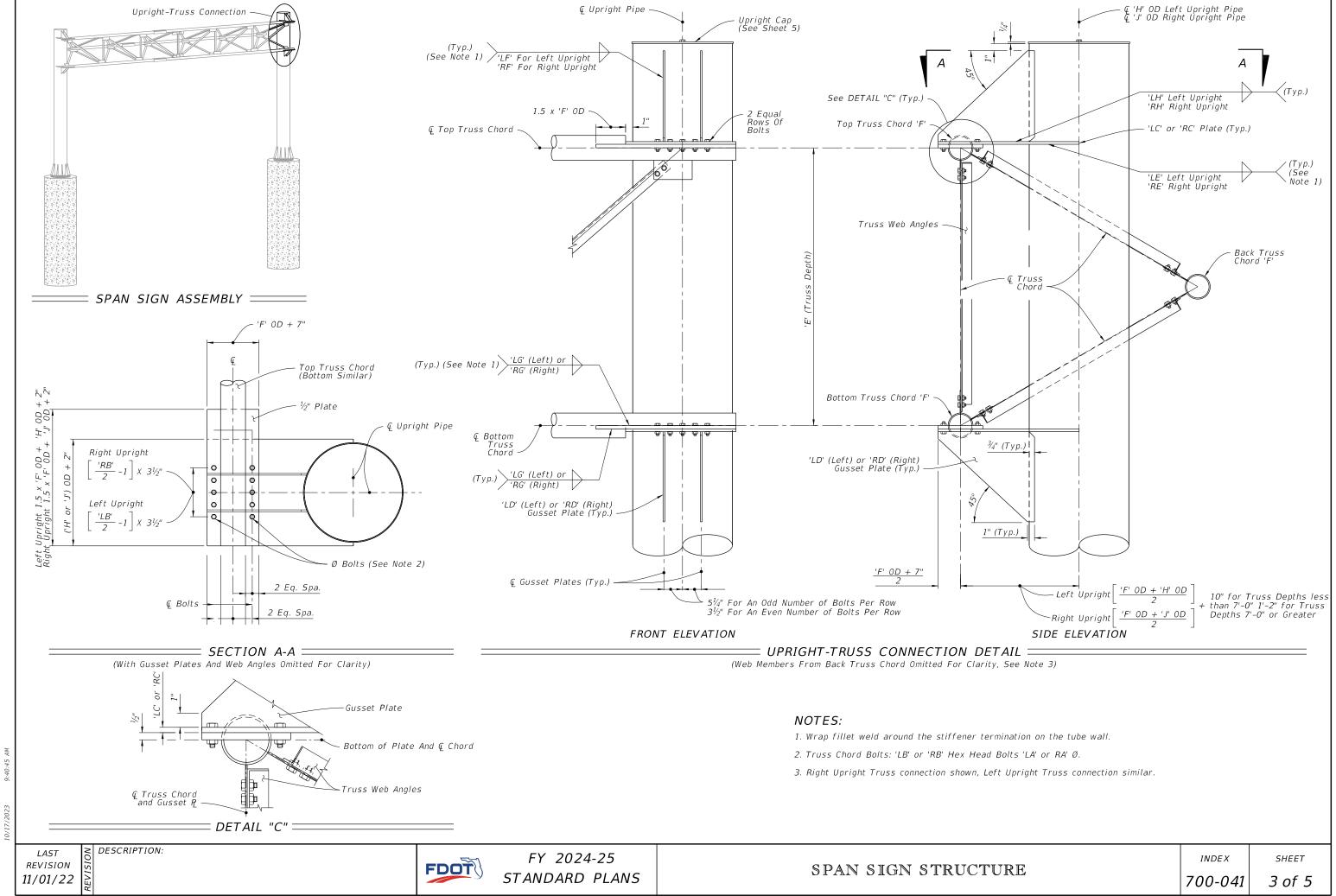


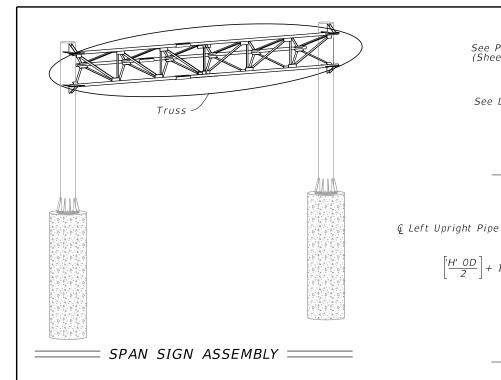
NOTES:

- 1. See Traffic Plans for elevation at top
- 2. Install Drilled Shaft with a 2'-0" minimum from top elevation of the drill shaft to the finished grade, unless specified otherwise in the plans.
- 3. The shaft length is based on 2'-0" height above finished grade.
- 4. Wrap fillet weld around the stiffener termination on the tube wall (Typ).
- 5. After galvanizing, provide magnetic particle testing on 100% of upright fillet welds.
- 6. Weld plates 'BD' and 'CD' in a star pattern. A star pattern is one in which the plates on opposite and near opposite sides of the pole circle are successively welded in a pattern resembling a star. For an 8 plate circle with plates sequentially numbered 1 to 8, weld the plates in the following order: (1, 5, 7, 3, 8, 4, 6, 2).

DRILLED SHAFT

FOUNDATION



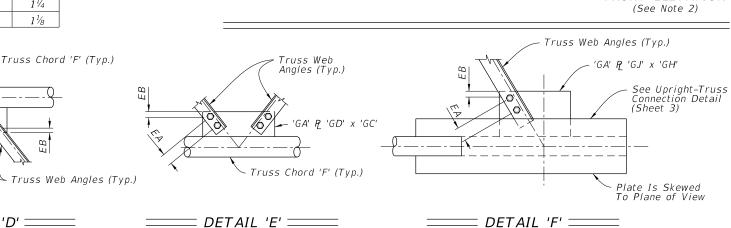


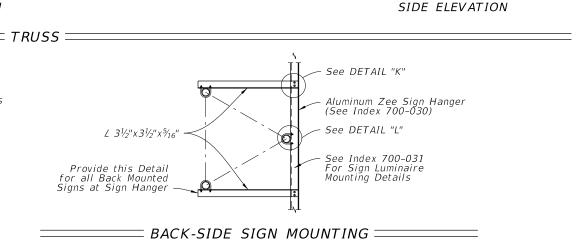
NOTES:

'GA' P_ 'GD' x 'GC'

- 1. Out-of-plane members are not shown for clarity.
- 2. Back truss chord and attached angles are not shown for clarity.
- 3. Wrap fillet weld around plate termination on the tube wall

Bolt Diameter	Distance (in.)			
(in.)	EA	EB		
1 1/4	4¾	21/4"		
1	31/2	13/4		
7/8	3	11/2		
3/4	21/2	11/4		
5/8	21/4	11/8		





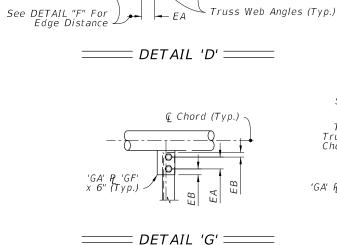
See DETAIL 'F'

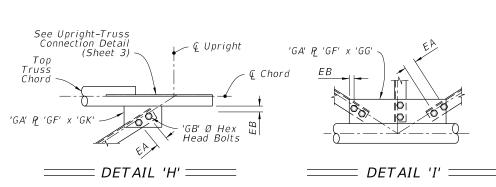
@ Right Upright Pipe

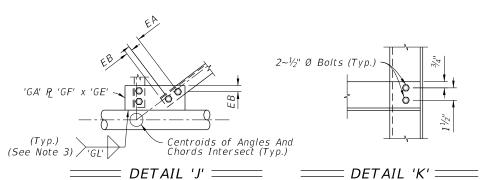
18

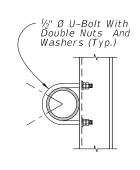
← Top Truss Chord

Bottom Truss Chord









DESCRIPTION: LAST REVISION

11/01/22

FDOT

See Plug Detail (Sheet 5) (Typ.)

See DETAIL 'D'

 $\left[\frac{H' \ OD}{2}\right] + 1''$

FY 2024-25 STANDARD PLANS

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SHEET

8

Ç Gusset And Back Truss

Chord

DETAIL 'L'

'D'-1 Panels

Section B-B (Section C-C Similar) (See Note 1)

Span Length, 'A', Comprised Of 'D' Equal Panels

FRONT ELEVATION

See DETAIL 'G'

'F' OD Back Truss Chord

'G' Truss Web Angles (Typ.)

 $\frac{1}{2}$ The Number of Panels For An Even Number Of Panels

 $\frac{1}{2}$ The Number Of Panels Rounded Down To the Closest

Whole Number For An odd Number Of Panels

'F' OD Bottom Truss Chord

See DETAIL 'E'

See DETAIL 'I

& Span (Even Number of Panels) -

___ @ Span (Even Number of Panels)

'F' OD Top Truss Chord

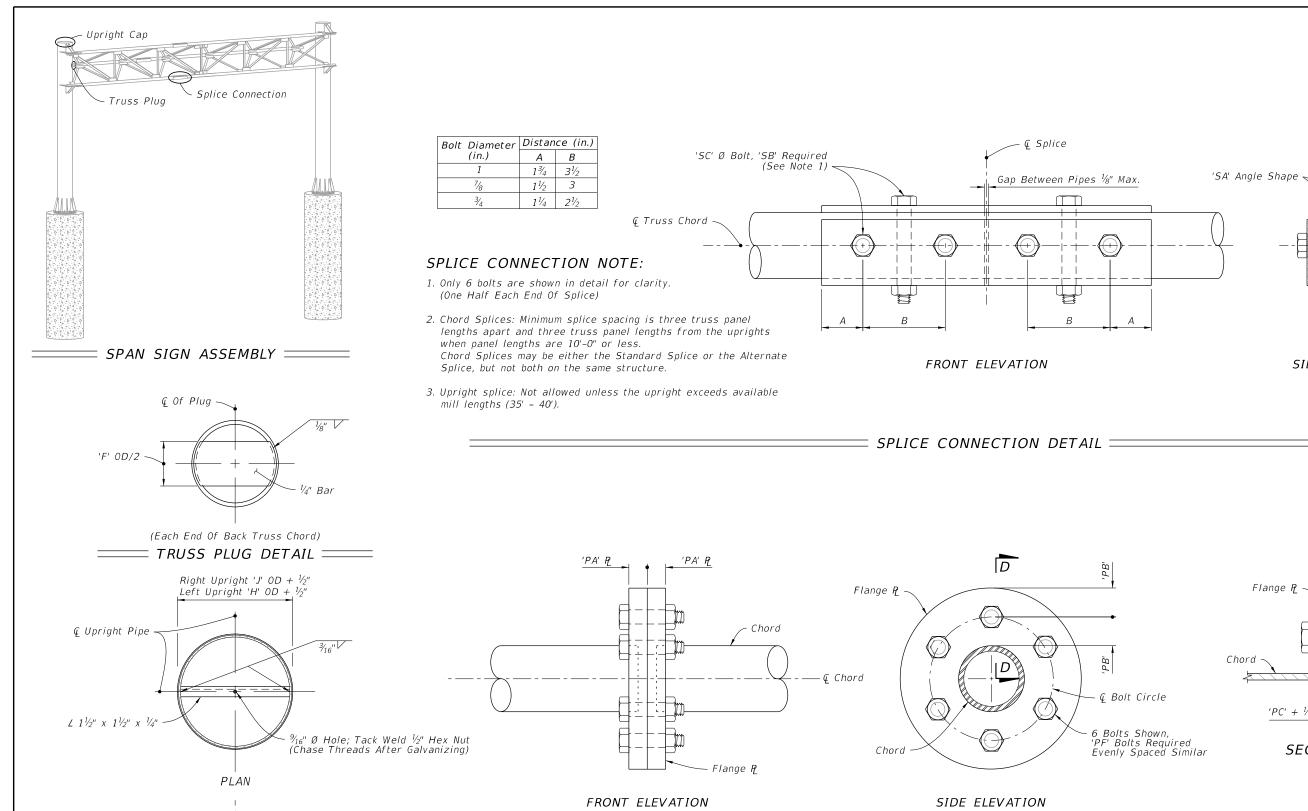
'F' OD Top Truss Chord

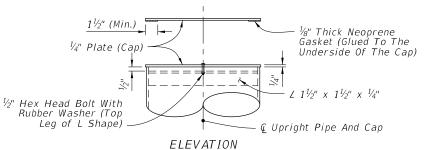
See DETAIL 'H'

See DETAIL 'J'

Q Span (Odd Number of Panels)

© Span (Odd Number of Panels)





ALTERNATE SPLICE CONNECTION DETAIL

UPRIGHT CAP DETAIL =

LAST REVISION 11/01/22

DESCRIPTION:

FDOT

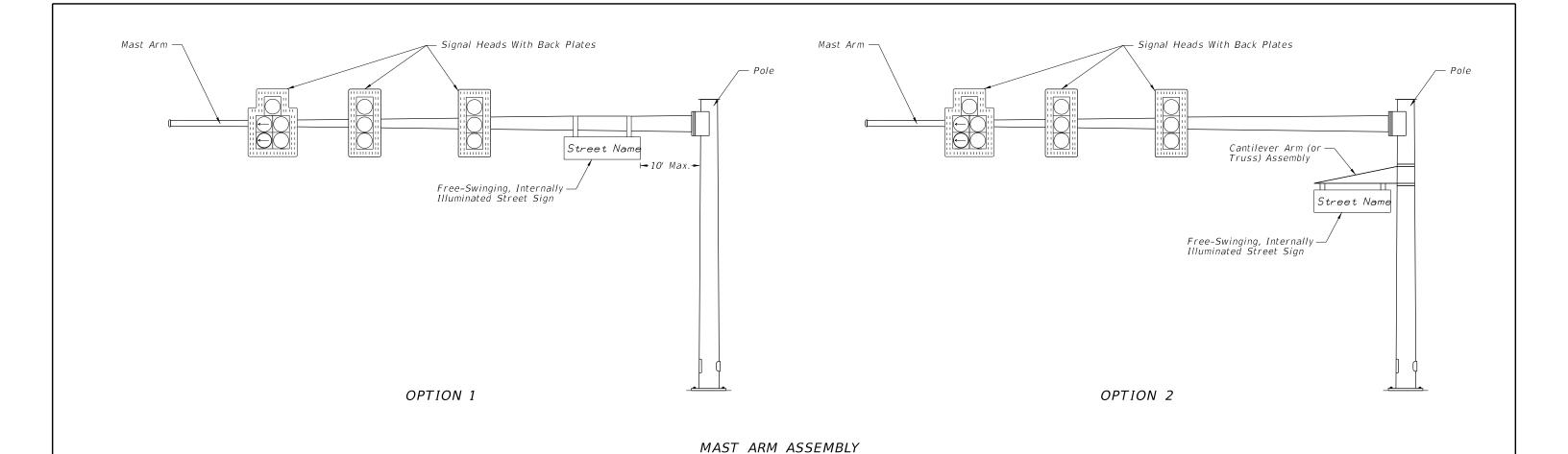
→ Q Truss Chord

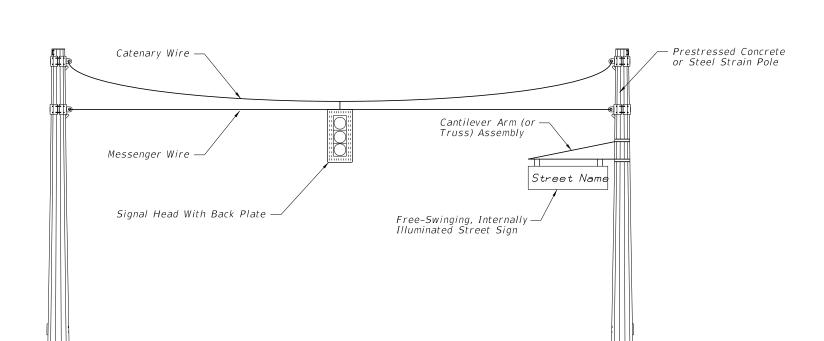
'PE' Dia. Bolts (Typ.)

SIDE ELEVATION

SECTION D-D

Flange R





NOTES:

- 1. Free-swinging, internally-illuminated street signs shall only be installed on the signal pole for span wire assemblies. For mast arm assemblies the street sign may be installed on the arm or pole.
- 2. Free-swinging, internally-illuminated street signs meet the requirements of Specification 700.
- 3. Pole attachments and cantilever arm (or truss) assemblies may be accepted by Contractor certification provided the signs being supported meet the weight and area limitations included in Specification 700 for "Acceptance by Certification".
- 4. Pole attachments and cantilever arm (or truss) assemblies supporting signs not meeting the weight or area limitations included in Specification 700 for "Acceptance by Certification" require the submittal of structural calculations and Shop Drawings that have been prepared by and sealed by the Specialty Engineer.

SPAN WIRE ASSEMBLY

REVISION 11/01/17

DESCRIPTION:



FY 2024-25 STANDARD PLANS

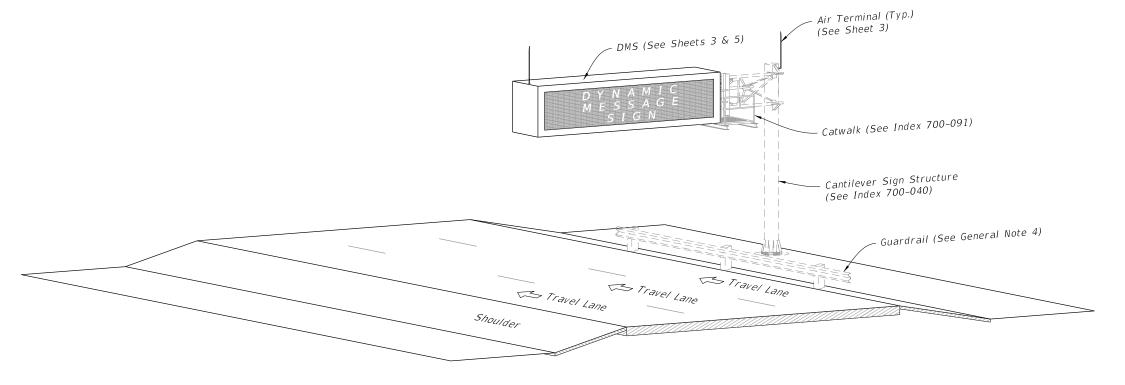
FREE-SWINGING, INTERNALLY-ILLUMINATED STREET SIGN ASSEMBLIES

INDEX

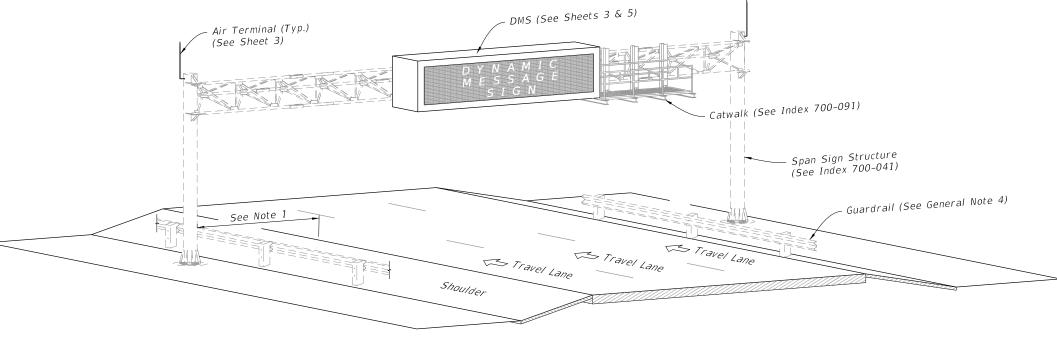
SHEET

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- 3. Shop Drawings are required:
- A. Include the DMS connection
- B. Do not start fabrication until the shop drawings are approved
- 4. If required, install guardrail at location show in the Plans and in accordance with Index 536-001.
- 5. Installation:
- A. See project requirements for location of DMS Cabinet.
- B. Field Adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel given site condition as directed by the Engineer. Avoid conflicts with stiffeners, handhole and maintenance of anchor bolts.
- C. Locate the sign horizontal on the structure as shown in the Plans. Vertically center the sign enclosure with the centerline
- D. Before erection, field drill the bolt holes in the vertical hangers and horizontal mounting member attached to the sign enclosure. Field locate holes to allow vertical hanger placement as shown on the Plans with no conflicts with gusset or splice plates.
- E. Locate threaded couplings on sign side of upright above the sign truss
- F. Connect grounding conductors to the steel framework that has been cleaned to base metal by use of bonding plates having contact area of not less than 8 square inches or by welding or brazing. Drilling and tapping the steel structure to accept a threaded connector is also an acceptable method
- G. If steel framework is to be drilled and tapped to accept threaded connector, the threaded connector shall be galvanized and have at least 5 threads fully engaged and secured with a jam nut to the steel framework.
- H. Bends in the conduit must be greater than the minimum bending radius for the cable contained in the conduit.
- I. Completely encase all data, fiber optic and power cables for the DMS within the sign structure or in conduit.
- J. Permanently stamp/mark foundation to indicate conduit locations.
- K. Transition conduit in foundation to indicate underground conduit with appropriate reducer outside the limits of the foundation.
- 6. Materials (Sign Mounting Components):
 - A. Aluminum Structural Shapes: ASTM B221, Alloy 6061-T6
 - B. Vertical Hangers: ASTM A709, Grade 36
 - C. U-Bolts: ASTM A449 or A193 B7
 - D. Steel Bolts, Nuts, and Washers:
 - 1. High Strength Bolts: ASTM F3125, Grade A325, Type 1
 - 2. Nuts: ASTM F563
 - 3. Washers: ASTM F463 (Flat Washer)



CANTILEVER ISOMETRIC VIEW



SPAN ISOMETRIC VIEW

DYNAMIC MESSAGE SIGN ASSEMBLY =

REVISION 11/01/22

∠ DESCRIPTION:

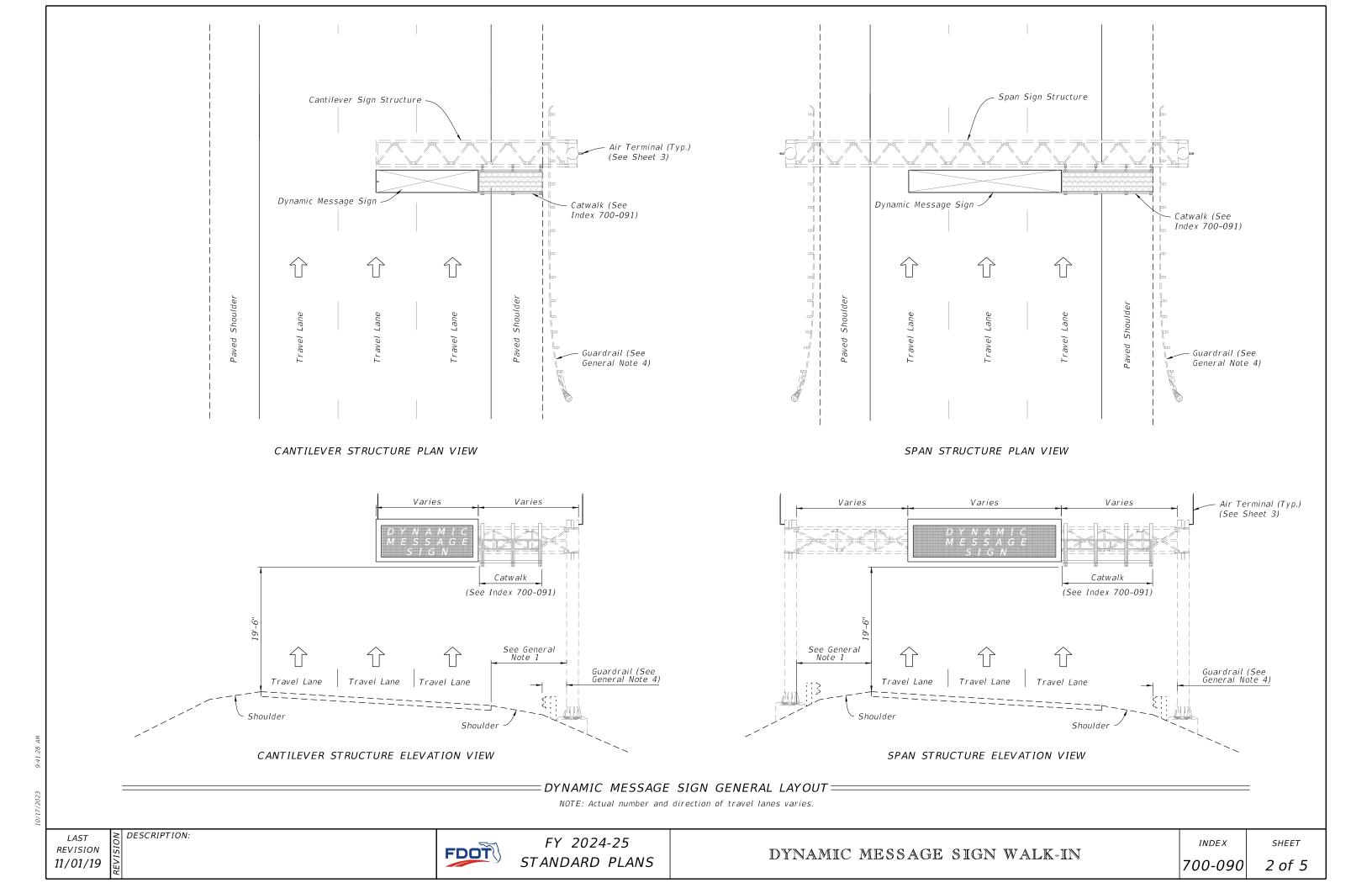


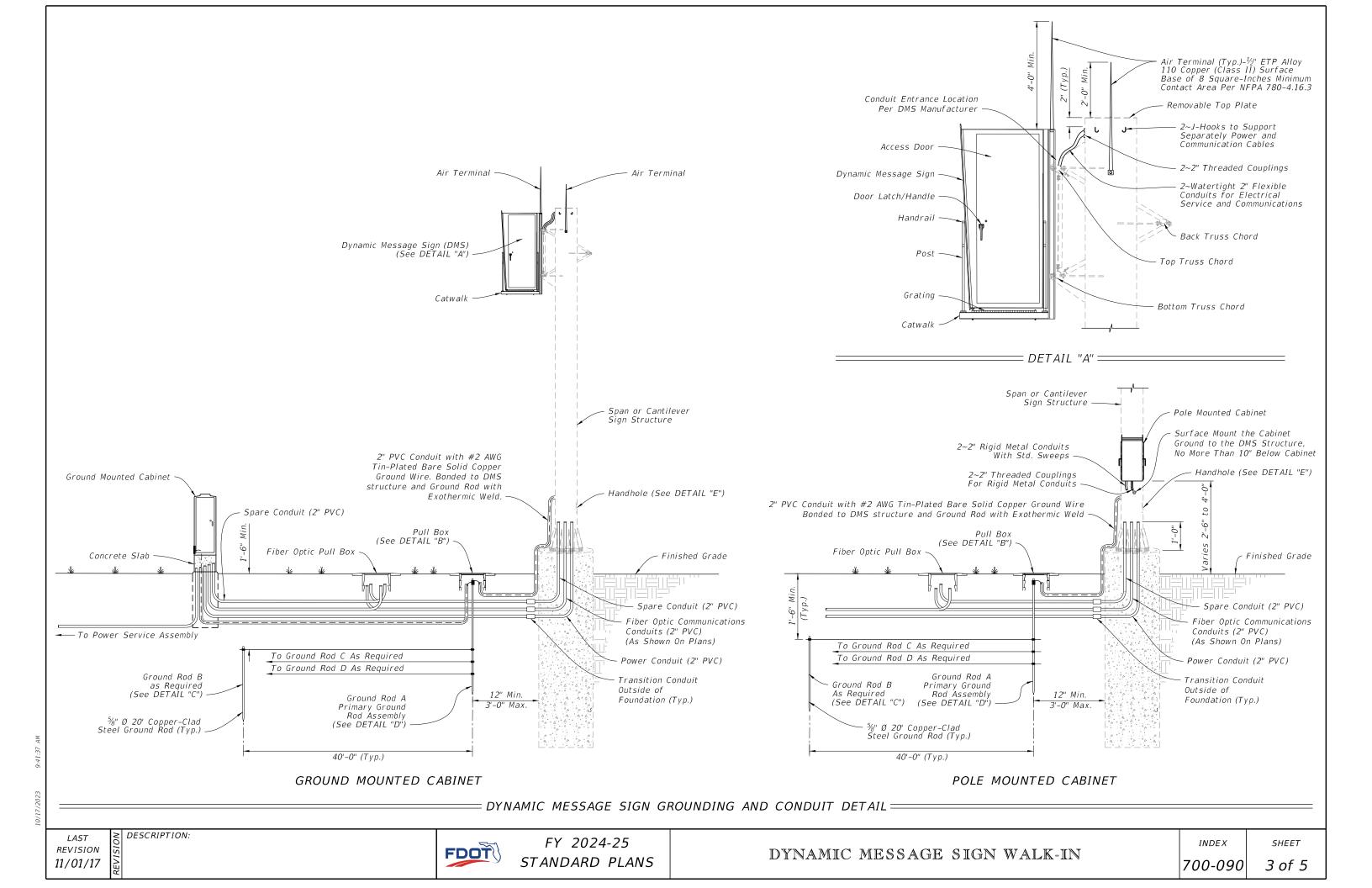
FY 2024-25 STANDARD PLANS

DYNAMIC MESSAGE SIGN WALK-IN

INDEX

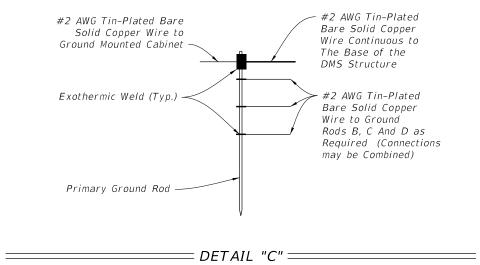
SHEET



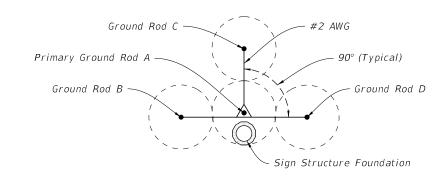


(Pole Mounted Cabinet Configuration Shown)

== DETAIL "B" ====



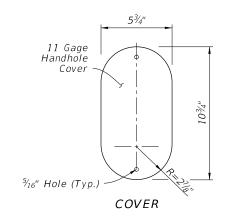
20' Radius Each "Sphere Of Influence"

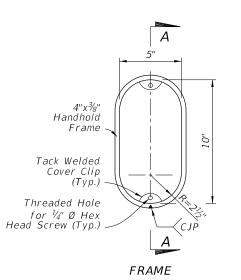


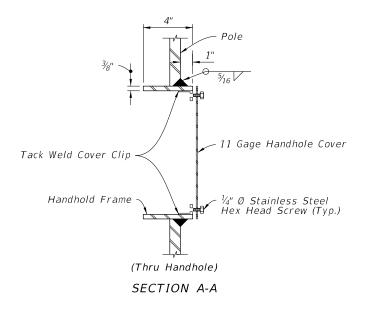
TYPICAL (20' Rods, 40' Spacing)

GROUND ROD ARRAY DETAIL

= DETAIL "D" =





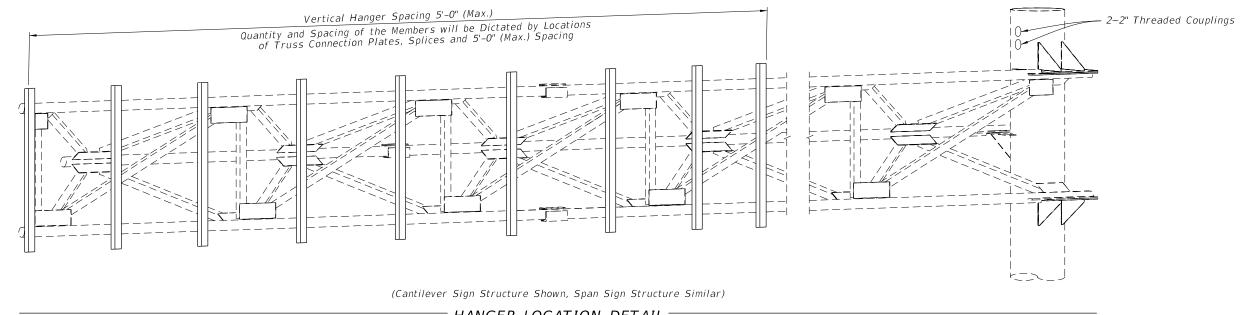


DETAIL "E"=

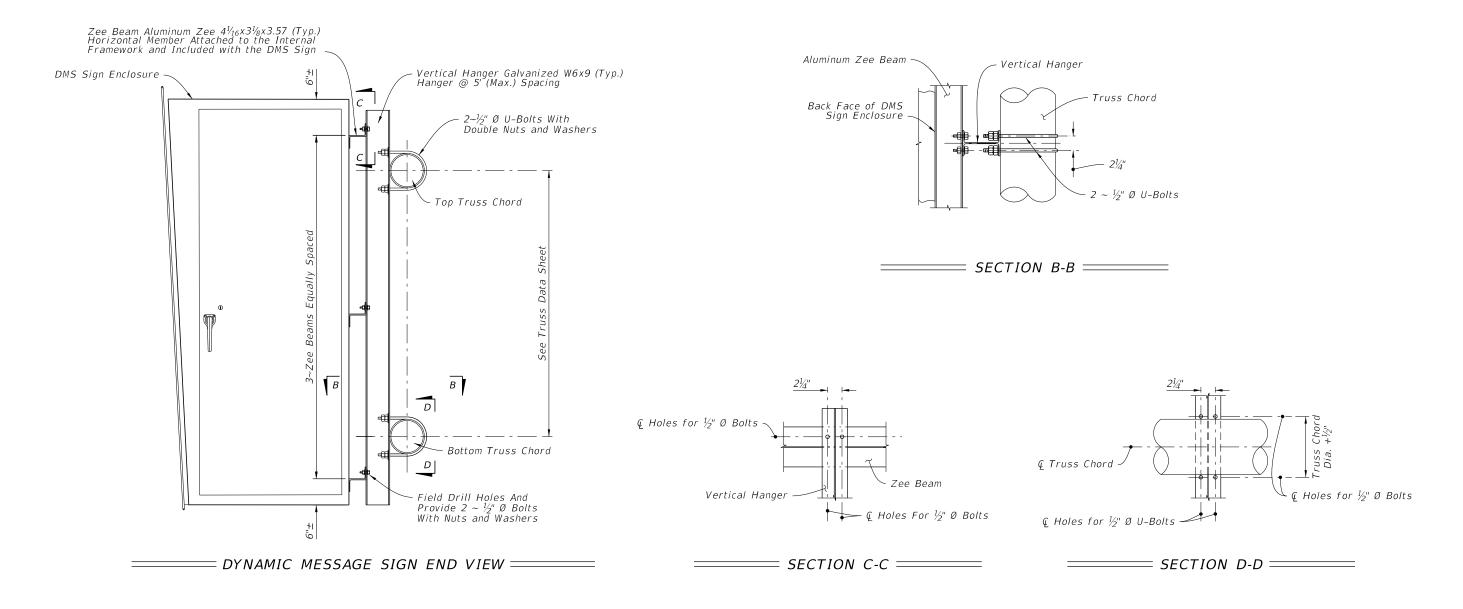
REVISION 11/01/23

DESCRIPTION:





= ${\it HANGER}$ ${\it LOCATION}$ ${\it DETAIL}$ =



10/17/2023

LAST O DESCRIPTION:
REVISION II/01/17



GENERAL NOTES:

- 1. Meet the requirements of Specification 700.
- 2. Shop Drawings are required:
- A. Provide length as shown in the Plans
- B. Design in accordance with AISC, AASHTO, and OSHA requirements
- B. Do not start fabrication until the shop drawings are approved
- 3. Catwalk hangers must be positioned to avoid conflicts with the sign structure truss and gusset plates. Place walkway close to the sign with a maximum open distance from walkway grate to DMS sign of ½".
- 4. Maximum spacing of Catwalk hanger supports is 5'-0". Cantilever ends of grating is 8".
- 5. Galvanized steel catwalk grating meeting the requirements of Specification 504-2.3. Must Support a 90 psf load and have a $3\frac{1}{2}$ " minimum toe kick. Attach grating in accordance with the manufacturer's instructions using stainless steel or galvanized fasteners.
- 6. Supply and install an OSHA 1910 compliant, self closing, hot dip galvanized safety gate Install per manufactures instructions.
- 7. Chain link fabric options (2" mesh with knuckled selvage top and bottom for all options)
 - A. AASHTO M181 Type I Zinc Coated Steel, No. 9 gage (coated wire diameter), coated at the rate of 1.8 oz/ft². (M181 Class D 2.0 oz./ft². modified to 1.8 oz./ft².).
 - B. AASHTO M181 Type II Aluminum Coated Steel, No. 9 gage (coated wire diameter), coated at the rate of 0.40 oz./ft².
- 8. Install 2" NPS (Sch. 40) guiderail and posts: ASTM A53 Grade B for standard weight pipe
- 9. Materials:
 - A. Steel plates ASTM A 36 or A709 Grade 36.
 - B. W-Sections: ASTM A572 Grade 36 or 50.

is 8".	
.3. Must ance s.	
y gate.	
otions):	
), coated meter),	Catwalk
ght pipe.	
	Cantilever Sign Structure (See Index 700-040)
	Paved Shoulder Travel Lane
	Travel Lane

DMS (See Index 700-090)

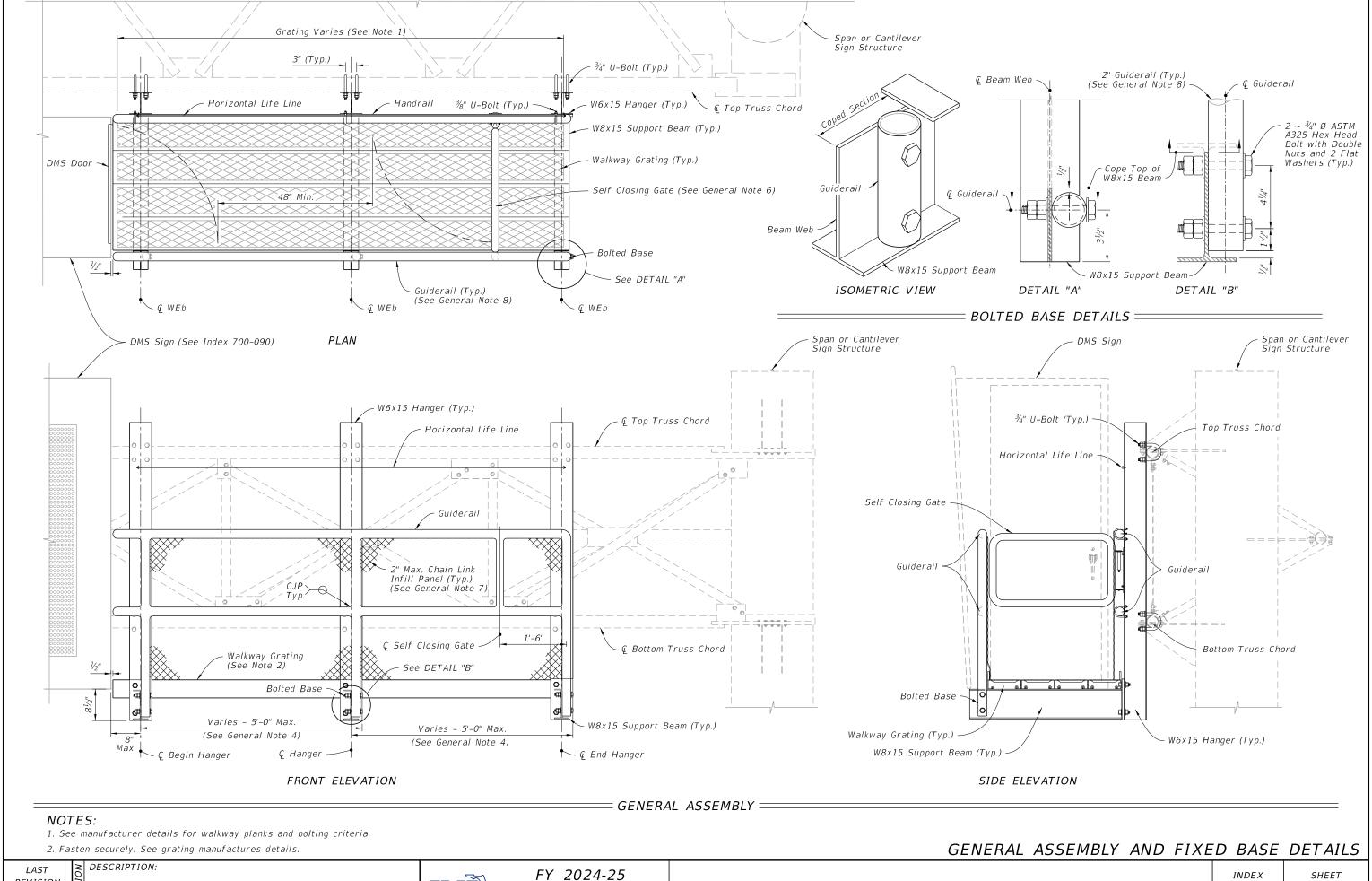
TABLE OF CONTENTS:				
Sheet	Description			
1	General Notes and Content			
2	General Assembly and Fixed Base Details			
3	Walkway Support Details			

— CATWALK ASSEMBLY — (Cantilever Shown, Span Similar)

LAST O DESCRIPTION:
REVISION IS 11/01/22

FDOT

5/9/2024



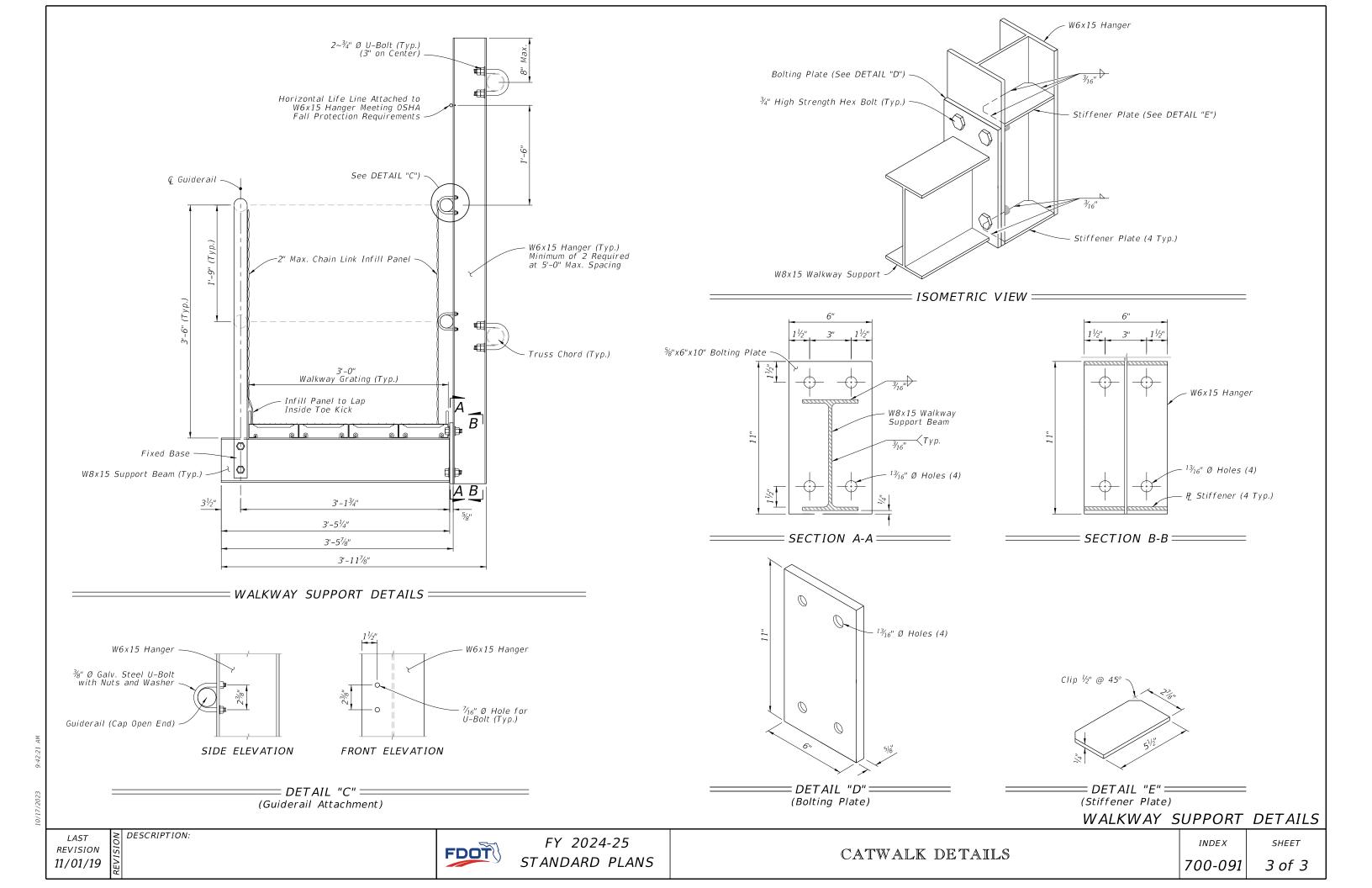
REVISION 11/01/19

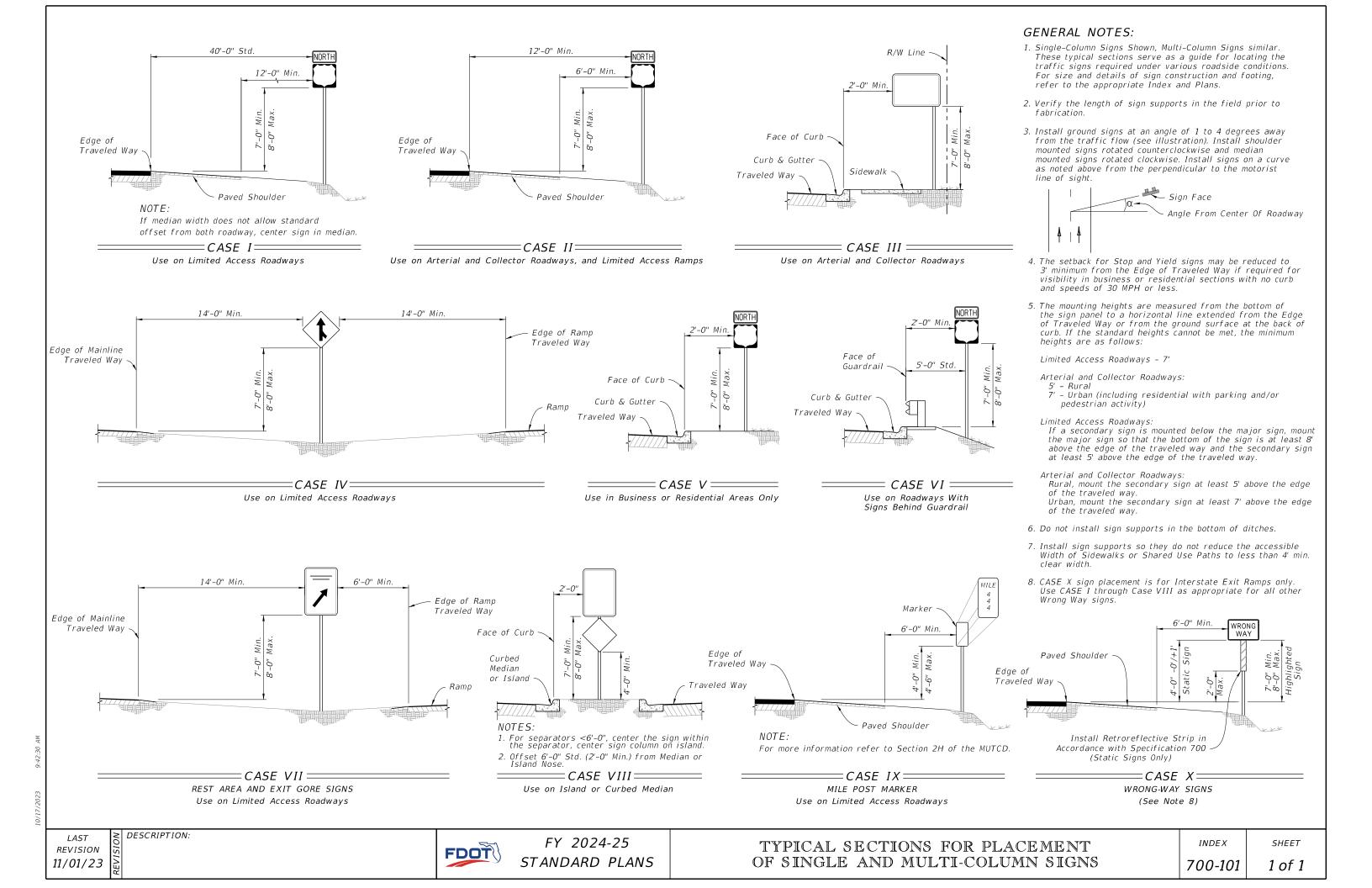
FDOT

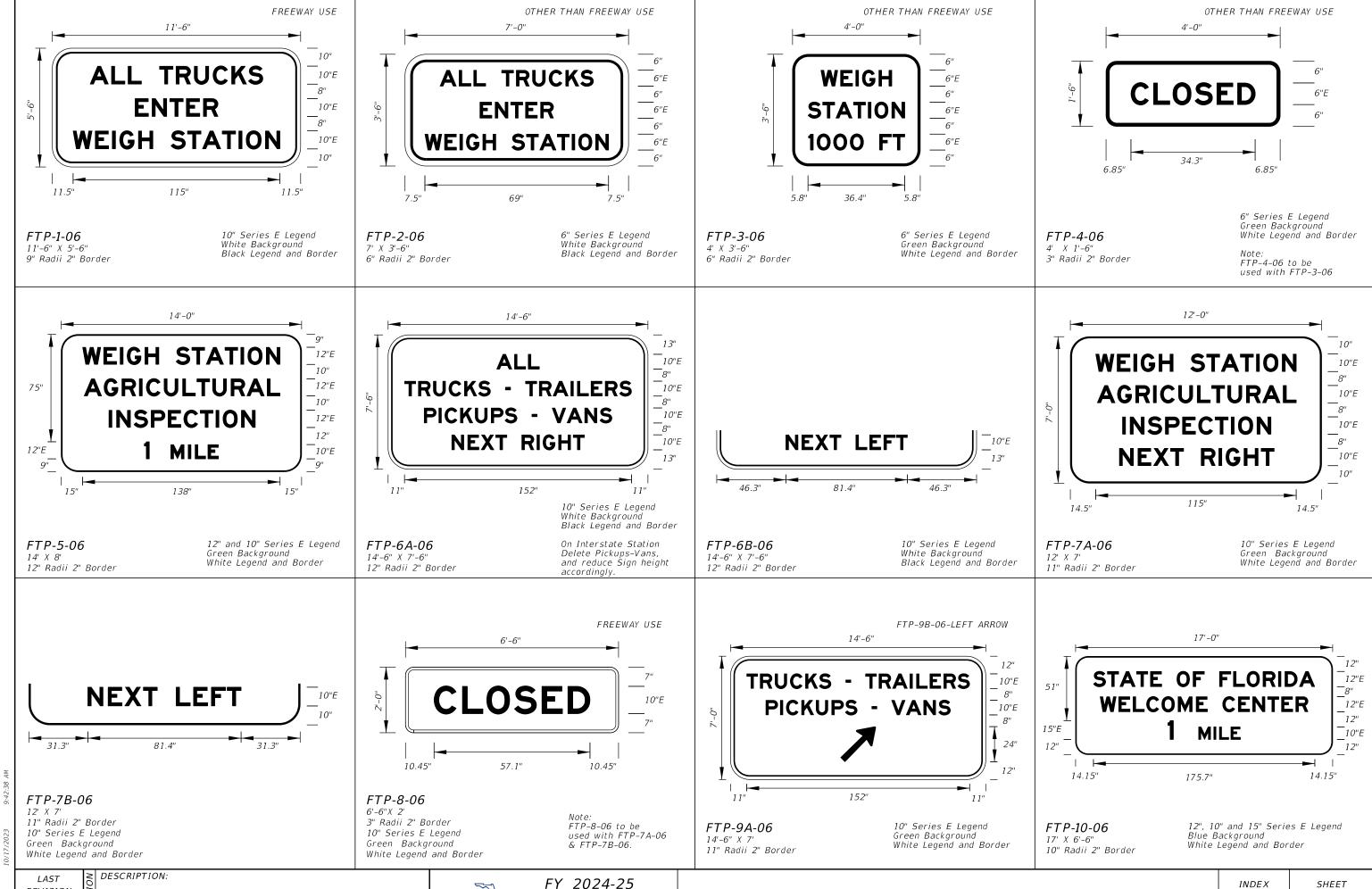
STANDARD PLANS

CATWALK DETAILS

700-091







SPECIAL SIGN DETAILS

700-102

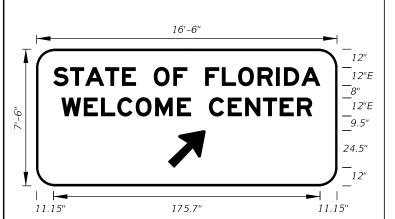
1 of 12

FDOT

STANDARD PLANS

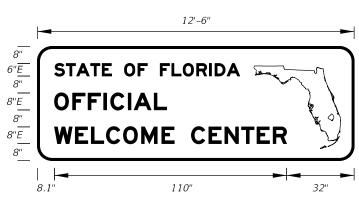
REVISION

11/01/20



FTP-11-06

16'-6" X 7'-6" 12" Radii 2" Border 12" Series E Legend Blue Background White Legend and Border



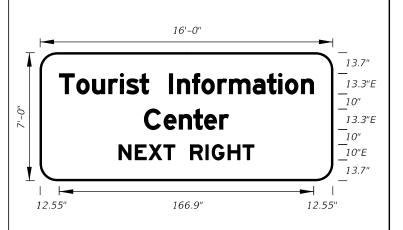
FTP-12-06 12'-6" X 4'-6"

12'-6" X 4'-6" 7" Radii 2" Border 6" and 8" Series E Legend Blue Background White Legend and Border



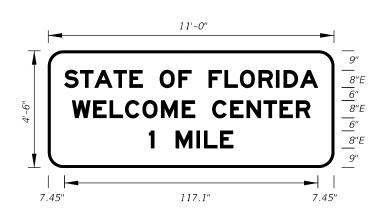
FTP-13-06

6' 0" X 5'-6" 9" Radii 2" Border 8" Series E Legend Blue Background White Legend and Border



FTP-14-06

16'-0" X 7'-0" 11" Radii 2" Border 13.3 and 10" Series E Legend Blue Background White Legend and Border



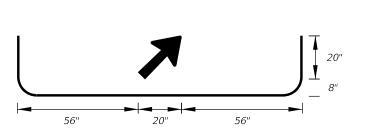
FTP-15A-06

FIF-13A-U0 11'-0" X 4'-6" 7" Radii 2" Border 8" Series E Legend Blue Background White Legend and Border



FTP-15B-06

11'-0" X 5'-0" 8" Radii 2" Border 8" and 12" Series E Legend Blue Background White Legend and Border



FTP-15C-06

11'-0" X 5'-6" 9" Radii 2" Border 8" Series E Legend Blue Background White Legend and Border



FTP-17-10 3'-0" X 4'-0" 1.5" Radii 3/4" Border 7" Series B Legend Green Background White Legend, Border, and Florida Symbol



FTP-18-10 4'-0" X 5'-0"

4'-0" X 5'-0" 3" Radii 1 1/4" Border 8" Series B Legend Green Background White Legend, Border, and Florida Symbol



FTP-16-10 2'-6" X 3'-0"

2'-6" X 3'-0" 1.5" Radii 3/4" Border 5" Series B Legend Green Background White Legend, Border, and Florida Symbol

DESCRIPTION:

FDOT

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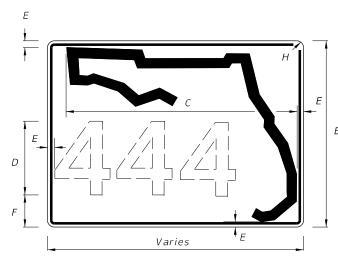
^{SHEET} 2 of 12

DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE
1-3	15"	С	48" x 36"
4	12"	С	48" x 36"

NOTES:

- 1. Stroke width of State Outline shall be 1".
- 2. 2½" Radii

INDEPENDENT USE FOR FREEWAY =



3 OR MORE DIGITS

NOTES:

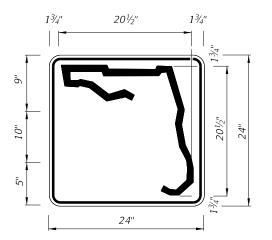
- 1. Florida marker shall have Black Legend with White Background.
- 2. Stroke width of State outline shall be 1¾" for Guide Sign.
- 3. Series D Legend.
- 4. %" Border

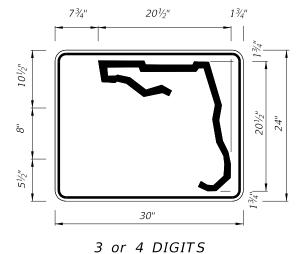
DESCRIPTION:

В D Ε G Н 30" 24" 26" 12" 11/4" 11/4" 23/4" 81/4" 36" 30" 32" 15" 31/4" 11/4" 36" 38" 15" 11" 11/4"

GUIDE SIGN USE

=FTP-17-06 - FLORIDA ROUTE MARKER=





1 or 2 DIGITS

DIGITS	NUMERAL	SERIES	PANEL
	SIZE	LEGEND	SIZE
1-2	10"	D	24" x 24"

DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE
3	8"	D	30" x 24"
4	8"	С	30" x 24"

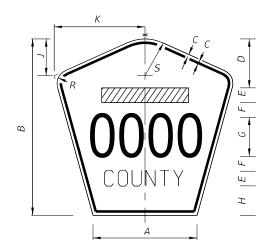
NOTES:

- 1. Stroke width of State Outline shall be 1".
- 2. The 24" X 24" panel shall only be used for a 3 digit route when the panel is to be used on a sign cluster with other 24" X 24" panels.
- 3. 1½" Radii

=INDEPENDENT USE OTHER THAN FREEWAY=

NOTES:

- 1. Series D Legend.
- 2. Color: Yellow Legend and Border on Blue Background.
- 3. When used on a guide sign, marker must be overlaid on a rectangular Yellow Background as shown in chart.
- 4. When two or more County Route Markers are mounted together, use the dimensions of the largest marker for all other markers.



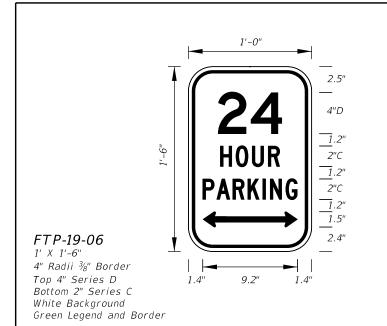
	DIMENSIONS							Rectangular					
SIGN	А	В	С	D	Ε	F	G	Н	J	К	R	S	Yellow Background
4 DIGIT POST MOUNTED	25½"	42"	3/4"	10"	4"	4"	8"	8"	8¾"	22"	5"	83/4"	Dimensions (See Note 3)
2 DIGIT OVERHEAD	21½"	36"	1/2"	7½"	3"	3"	12"	41/2"	71/8"	187/8"	41/4"	7½"	42"x 42"
3 DIGIT OVERHEAD	25½"	42"	3/4"	8"	4"	4"	12"	6"	83/8"	22"	5"	83/4"	48"x 48"
4 DIGIT OVERHEAD	297/8"	48"	3/4"	8"	5"	5"	12"	8"	93/4"	25 %"	5¾"	101/4"	52"x 52"

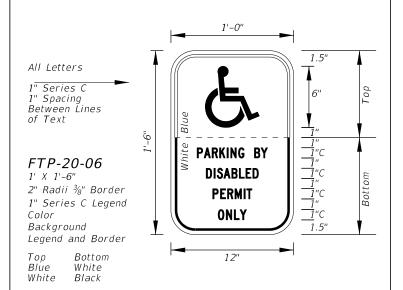
= FTP-18-06 - COUNTY ROUTE MARKER (M1-6) ====

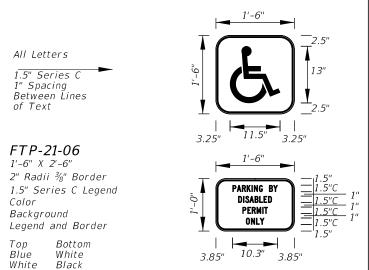
LAST REVISION 11/01/20

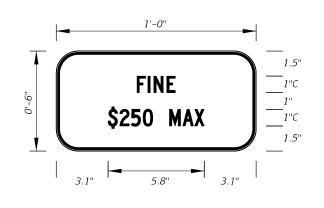


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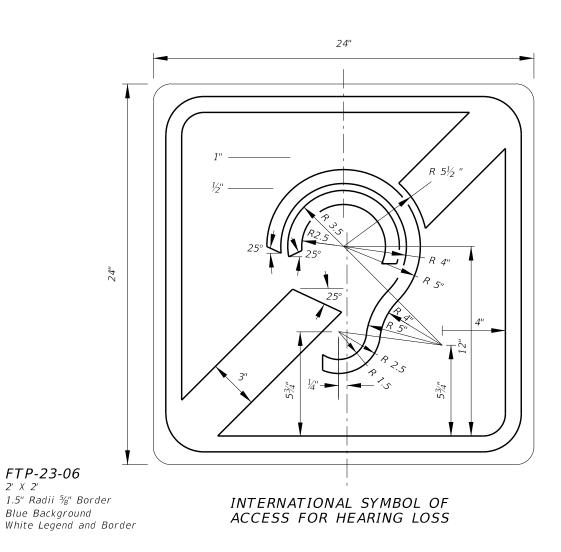


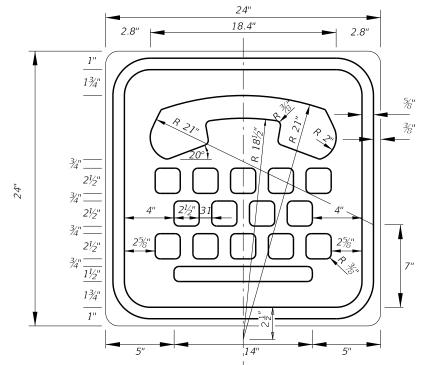
FTP-22-06

1' X 6"

1" Radii ¾" Border 1" Series C Legend White Background Black Legend and Border

Supplemental Panel for the FTP-20-06 and FTP-21-06 signs





FTP-24-06 2' X 2' 1.5" Radii ⅓" Border Blue Background White Legend and Border

INTERNATIONAL TDD SYMBOL

REVISION 11/01/20

FTP-23-06

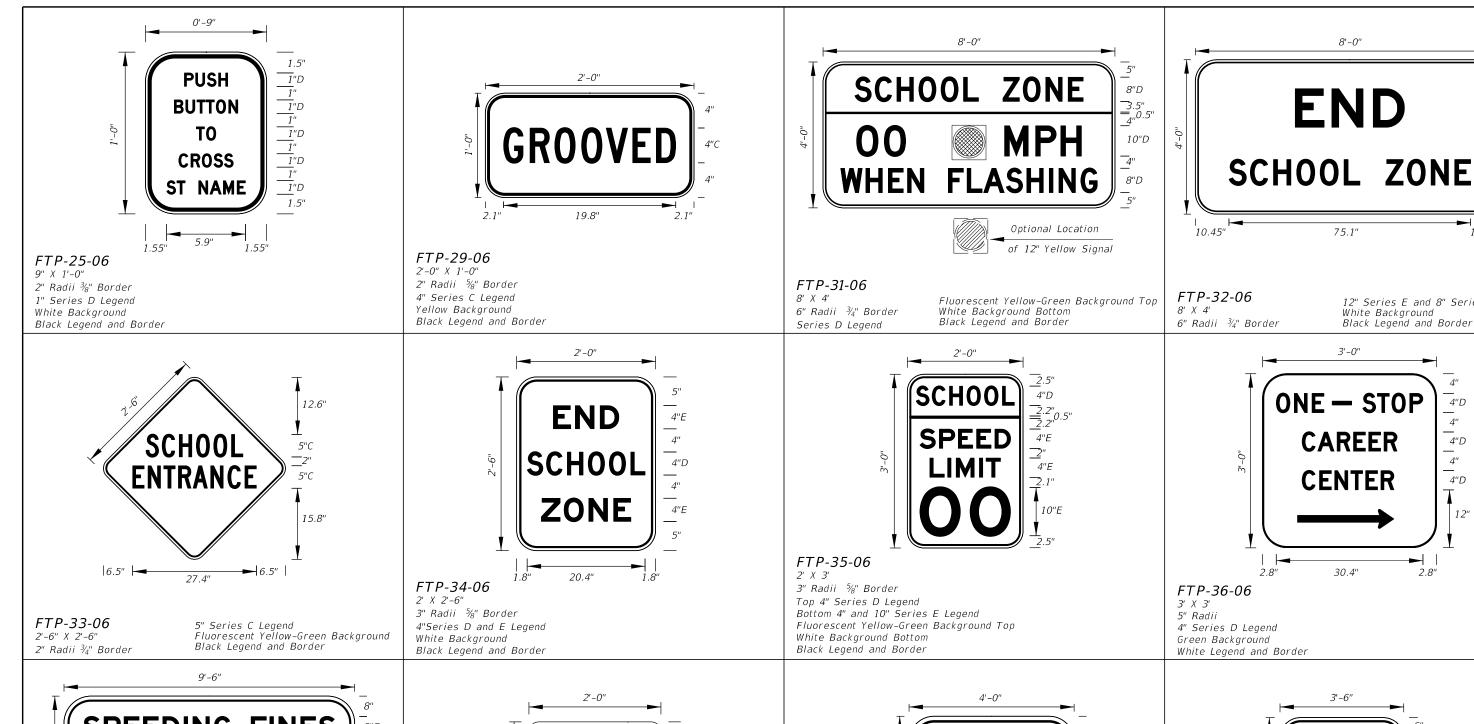
DESCRIPTION:

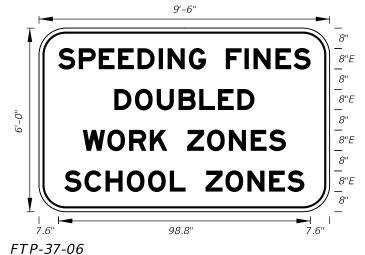
2' X 2'

FDOT

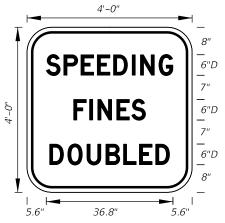
FY 2024-25 STANDARD PLANS

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SPEEDING FINES 4"C **DOUBLED** 4"C



3'-6" FLORIDA LITTER LAW FINE FOR I **I**⊸ 3.15" 35.7"

8'-0"

75.1"

3'-0"

ONE - STOP

CAREER

30.4"

10"

8"D

10.45"

12" Series E and 8" Series D Legend

4"D

4"D <u>4</u>"

4"D

12"

4"

White Background

Black Legend and Border

FTP-38-22 2' X 2'-6" 1.5" Radii ½" Border 4" Series C Legend 80% Spacing White Background Black Legend and Border

FTP-40-21 3'-6" X 4' 6" Radii ¾" Border

3" and 6" Series C Legend White Background Black Legend and Border

Black Legend and Border DESCRIPTION: REVISION

9'-6"X 6'

11/01/21

9" Radii 2" Border

8" Series E Legend

White Background

FDOT

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Freeway Sign

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State Line Sign

FTP-39-06

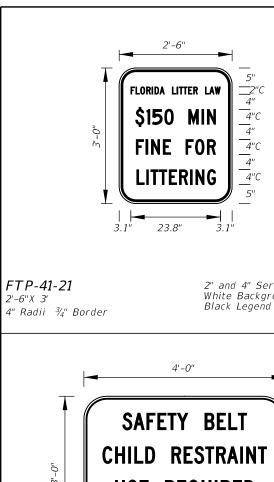
6" Radii ¾" Border

6" Series D Legend

Black Legend and Border

White Background

4' X 4'









2" and 4" Series C Legend White Background Black Legend and Border

FTP-42-06 4'X 2'-6" 3" Radii Top 4" Series C Legend

Bottom 2" Series EM Legend White Background Blue Legend and Border

FTP-43-06 4' X 4' 6" Radii 1" Border Top 4" Series D Legend

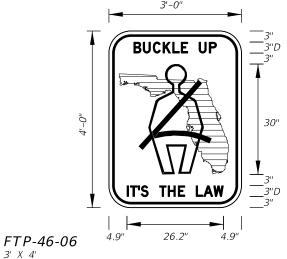
Bottom 6" Series D Legend Blue Background White Legend and Border

FTP-44-06 9' X 6' 9" Radii ¾" Border

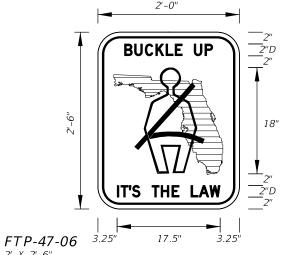
8" Series D Legend White Background Black Legend and Border



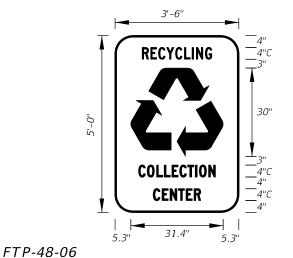
FTP-45-06 4' X 3' 5" Radii ¾" Border 4" Series C Legend White Background Black Legend and Border



3' X 4' 5" Radii ¾" Border 3" Series D Legend Green Florida Symbol White Background Black Legend, Border and Man Belt Symbol



2' X 2'-6" 3" Radii ¾" Border 2" Series D Legend Green Florida Symbol White Background Black Legend, Border and Man Belt Symbol

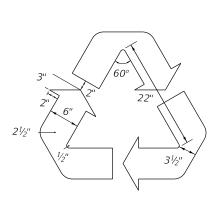


3'-6" X 5' 6" Radii 4" Series C Legend Green Background White Legend, Border and Symbol

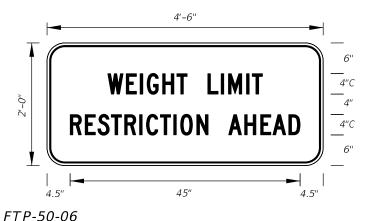
3'-6" XXXX XXXX RECYCLING COLLECTION CENTER 31.4"

FTP-49-06 3'-6" X 5'-6" 6" Radii 4" Series C Legend Green Background Municipality Name Optional White Legend, Border and Symbol

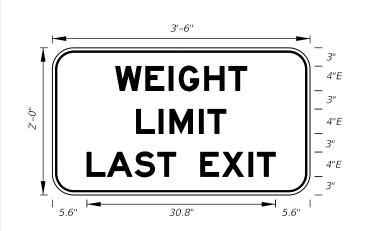
DESCRIPTION:



Detail for FTP-48-06 and FTP-49-06



4'-6" X 2' 3" Radii ¾" Border 4" Series C Legend Yellow Background Black Legend and Border



FTP-51-06 3' X 2'

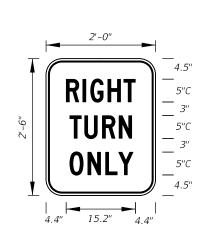
4" Series E Legend White Background Black Legend and Border

REVISION 11/01/21

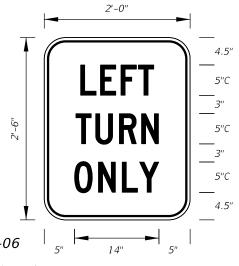
FDOT

FY 2024-25 STANDARD PLANS 3" Radii ¾" Border

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FTP-52-06 2' X 2'-6" 3" Radii ¾" Border 5" Series C Legend Black Legend and Border



FTP-53-06 2' X 2'-6" 3" Radii ¾" Border 8.8" 10"D

FTP-54L-06 FTP-54R-06 for 6" Radii ¾" Border (Right Turn Arrow) 10" Series D Legend White Background

4.5" 5"D FTP-55L-06 2' X 2'-6"

3" Radii ¾" Border 5" Series D Legend White Background Black Legend and Border

FTP-55R-06 for (Right Turn Arrow)

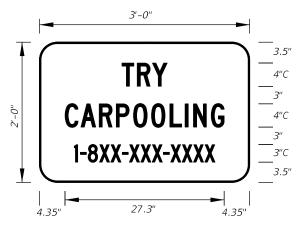


FTP-56-06

6'-6"X 4'

6" Radii ¾" Border 8" and 6" Series D Legend Blue Background White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX



FTP-56A-06

5" Series C Legend

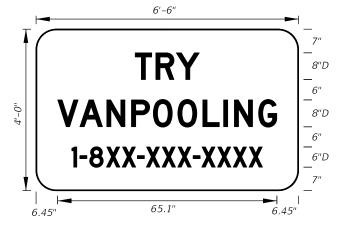
Black Legend and Border

White Background

3' X 2' 3" Radii

4" and 3" Series C Legend Blue Background White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX

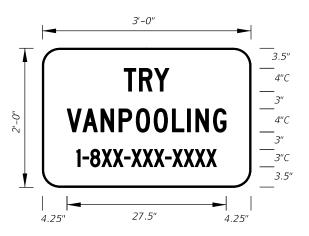


FTP-57-06

6'-6" X 4' 6" Radii 8"and 6" Series D Legend Blue Background White Legend and Border

Black Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX

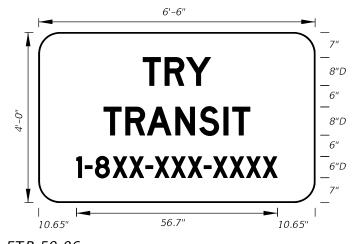


FTP-58-06

3' X 2' 3" Radii

4" and 3" Series C Legend Blue Background White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX



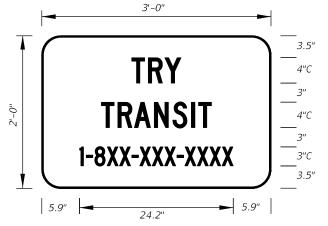
FTP-59-06

6'-6" X 4' 6" Radii 8" and 6" Series D Legend Blue Background

White Legend and Border

DESCRIPTION:

Design Project Manager or Transit Administrator will supply correct 1-8XX



FTP-60-06

3' X 2' 3" Radii 4"and 3" Series C Legend Blue Background White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX



FTP-61-06 3' X 2'

3" Radii ¾" Border 4" and 3" Series C Legend Yellow Background Black Legend and Border



FTP-62-06

3' X 3'

2" Radii ¾" Border 4"and 5" Series C Legend Yellow Background Black Legend and Border

REVISION 11/01/20

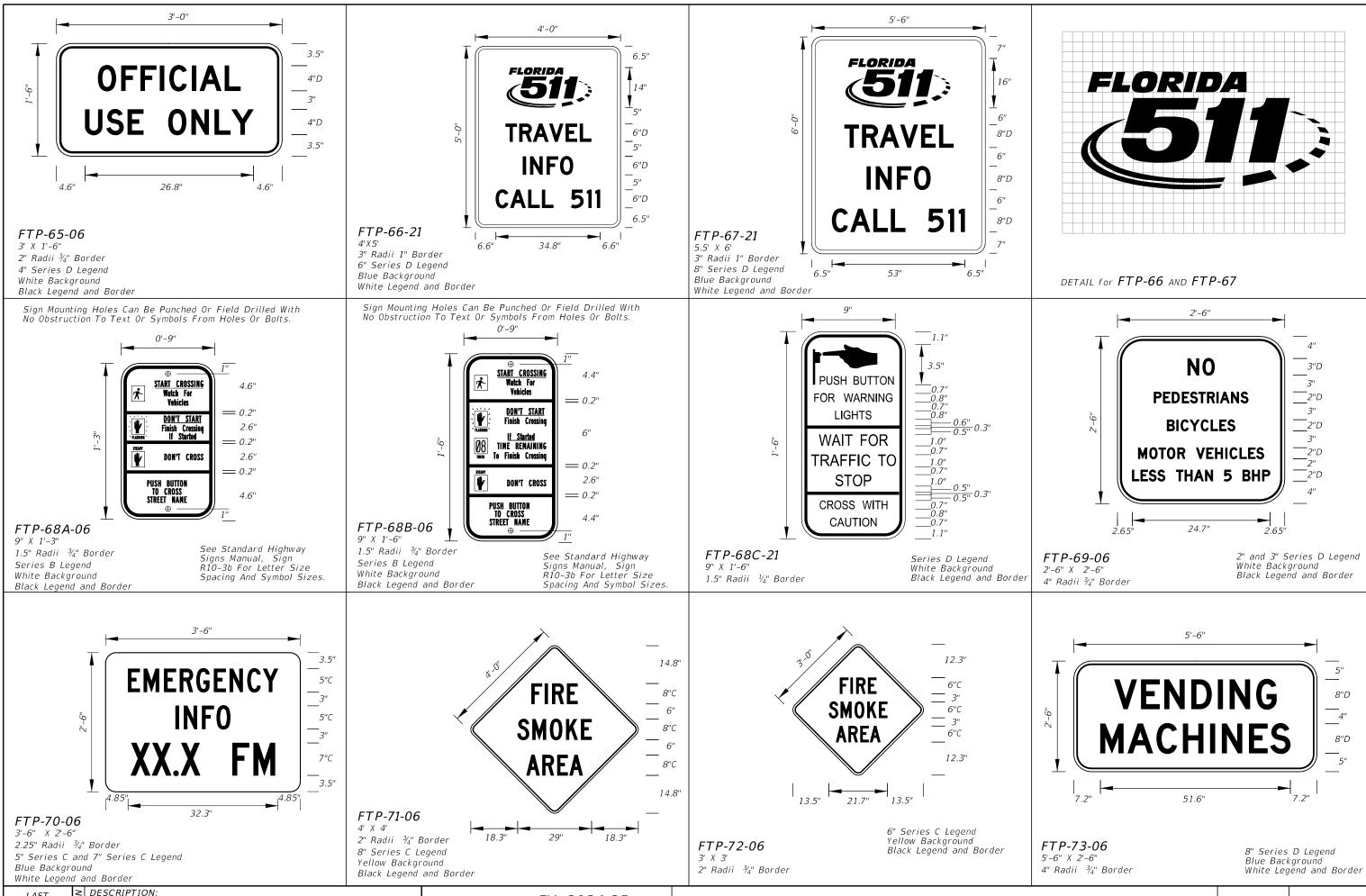
FDOT

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SPECIAL SIGN DETAILS



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FDOT

FY 2024-25 STANDARD PLANS

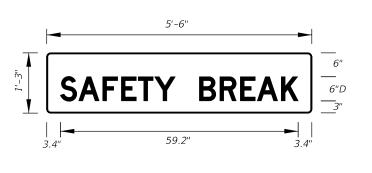
SPECIAL SIGN DETAILS

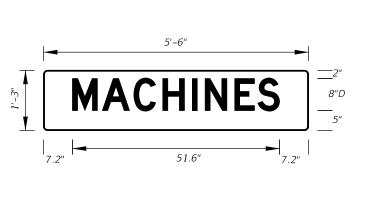
INDEX

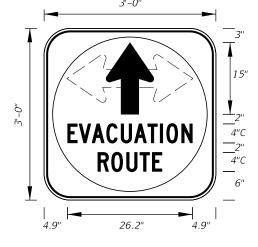
SHEET

700-102









FTP-74-06

5'-6" X 2'-6" 4" Radii ¾" Border 6" Series D Legend Blue Background White Legend and Border

3" Radii ¾" Border 2" Series D Legend

White Legend and Black Border

White Background with Blue Circle Background

DESCRIPTION:

FTP-75-06

5'-6" X 1'-3" 1" Radii 6" Series D Legend Blue Background White Legend

FTP-76-06

5'-6" X 1'-3" 1" Radii 8" Series D Legend Blue Background White Legend

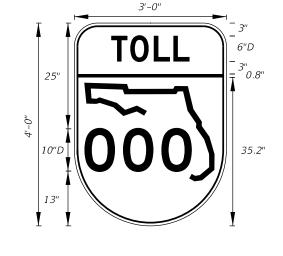
FTP-77-06 3' X 3'

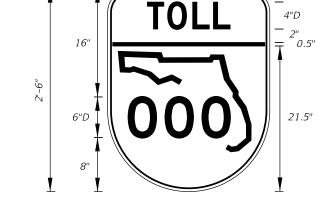
5" Radii ¾" Border 4" Series C Legend

White Background with Blue Circle Background White Legend and Black Border

EVACUATION 2"D **ROUTE** 2"D FTP-78-06 2' X 2'

4'-0" **TOLI** 6"D - ³"0.8" 28" 12"D 47.2" 20"





2'-0"

FTP-79-06 4' X 5'

6" Radii ¾" Border

6" and 12" Series D Legend

Top Yellow Background with Black Legend and Black Border Bottom White Background with Black Legend and Border

FTP-80-06 3' X 4'

5" Radii ¾" Border

6"and 10" Series D Legend

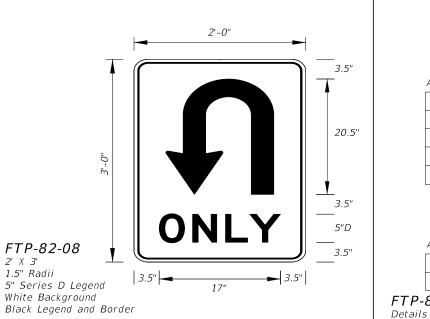
Top Yellow Background with Black Legend and Black Border Bottom White Background with Black Legend and Border

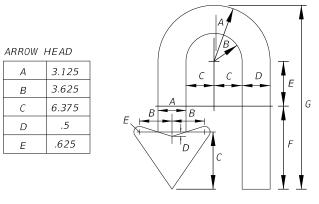
FTP-81-06 2' X 2'-6"

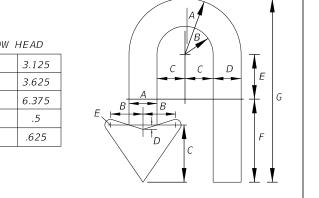
3" Radii ¾" Border

4" and 6" Series D Legend

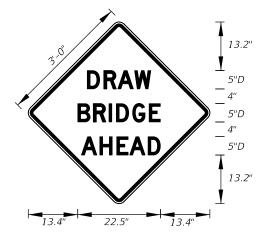
Top Yellow Background with Black Legend and Black Border Bottom White Background with Black Legend and Border







-	10'-0"	-
5'-0"	ALL TRUC	KS $ \frac{9.8"}{10"E} $ $ \frac{8"}{9.8"} $ $ 22.4" $ $ \frac{9.8"}{9.8"} $
11	1.95" 96.1"	11.95"



ARROW BODY

G 6.25 3.125 | 3.125 | 3.125 9.25 20.5 FTP-82-08

FTP-83-08 10'-0" X 5'-0" 8" Radii

10" Series E Legend Green Background White Legend

FTP-84-09 3' X 3' 1.5" Radii

5" Series D Legend Yellow Background Black Legend and

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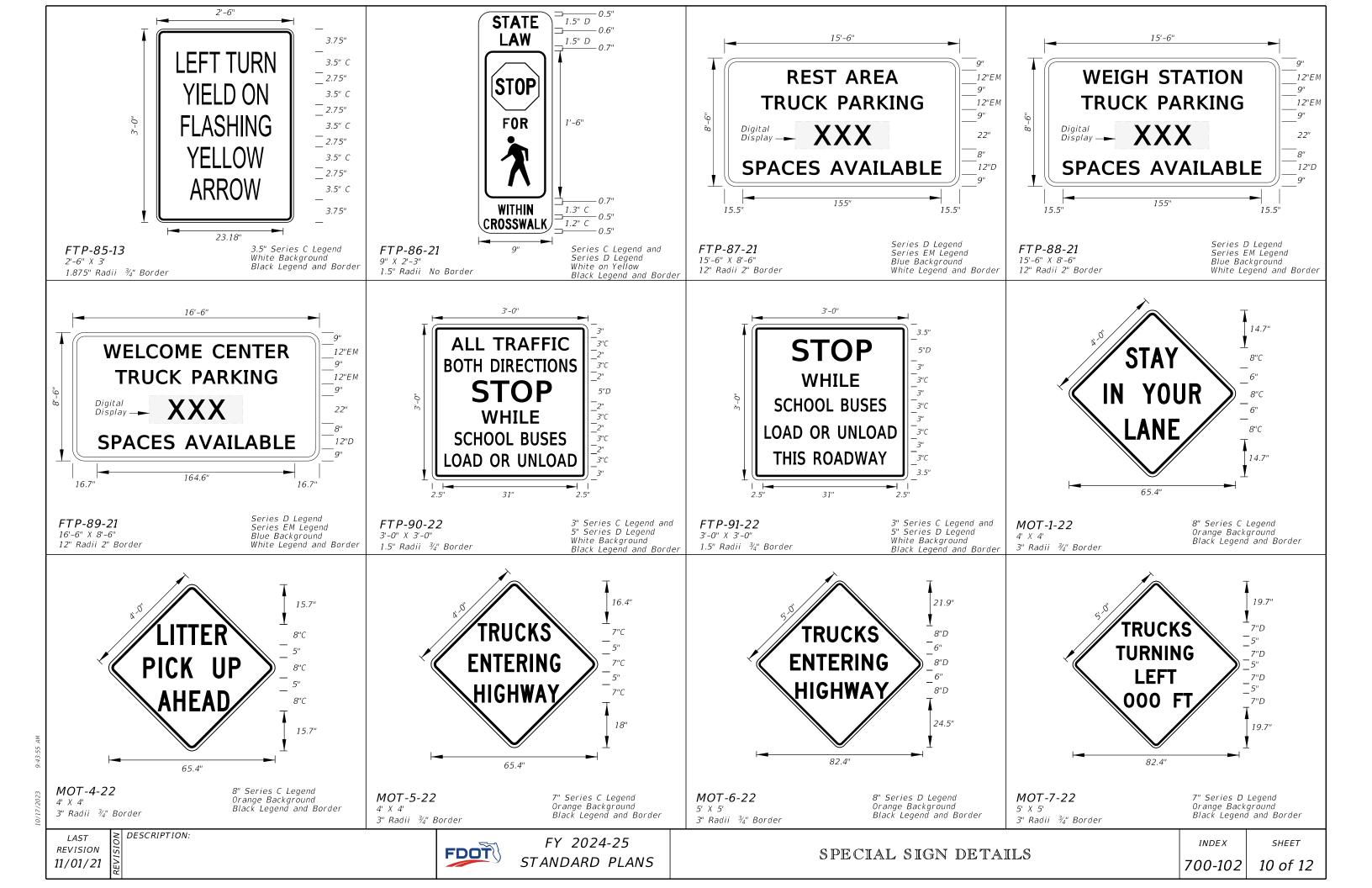
SPECIAL SIGN DETAILS

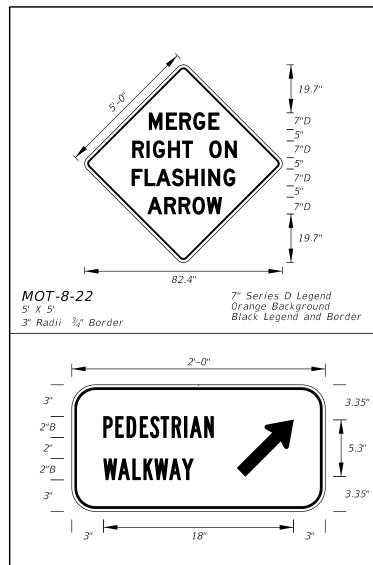
INDEX

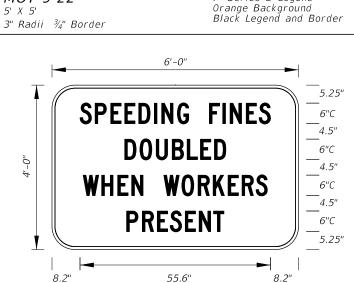
SHEET

FDOT

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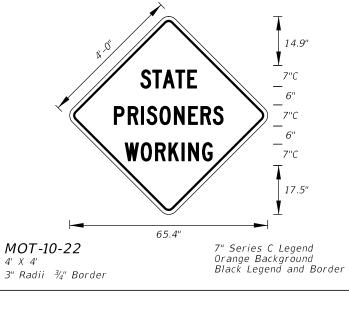
IGHTED.

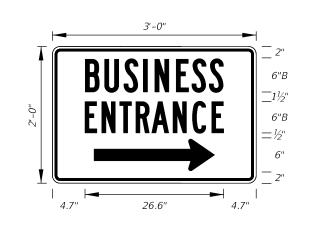
WORK

ZONE

AHEAD



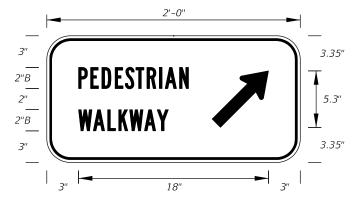




MOT-11-06 3' X 2' 2" Radii ¾" Border

2" Radii ¾" Border

6" Series B Legend Blue Background White Legend and Border



MOT-12R-06 2" Radii ¾" Border 2" Series B Legend

Black Legend and Border

White Background

MOT-12L-06 For Diversion to the left



21.2"

7"D

7"D

7"D

7"D

18.2"

_5"

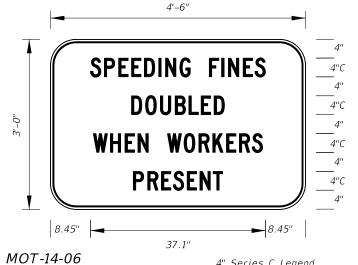
7" Series D Legend

Black Legend and Border

Arterial Sign

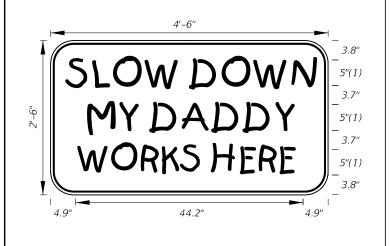
5" Radii ¾" Border

4'-6" X 3'



4" Series C Legend White Background Black Legend and Border

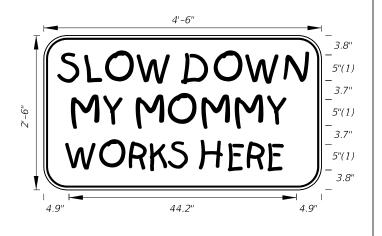




MOT-16-06 4'-6" X 2'-6" 4" Radii ¾" Border

DESCRIPTION:

5" Kids Series Legend Orange Background Black Legend and Border

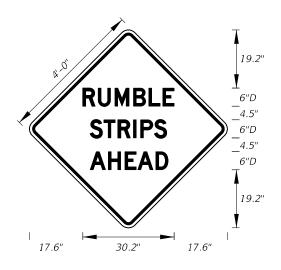


MOT-17-06 4'-6" X 2'-6" 4" Radii ¾" Border

MOT-9-22

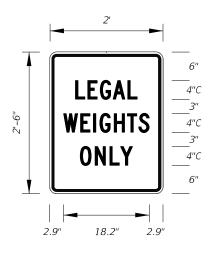
6' X 4'

5" Kids Series Legend Orange Background Black Legend and Border



MOT-18-10 4' X 4' 2" Radii ¾" Border

6" Series D Legend Orange Background Black Legend and Border



MOT-19-11 2' X 2'-6" 1.13" Radii ¾" Border 4" Series C Legend White Background Red Legend and Border

SHEET

Black Legend and Border

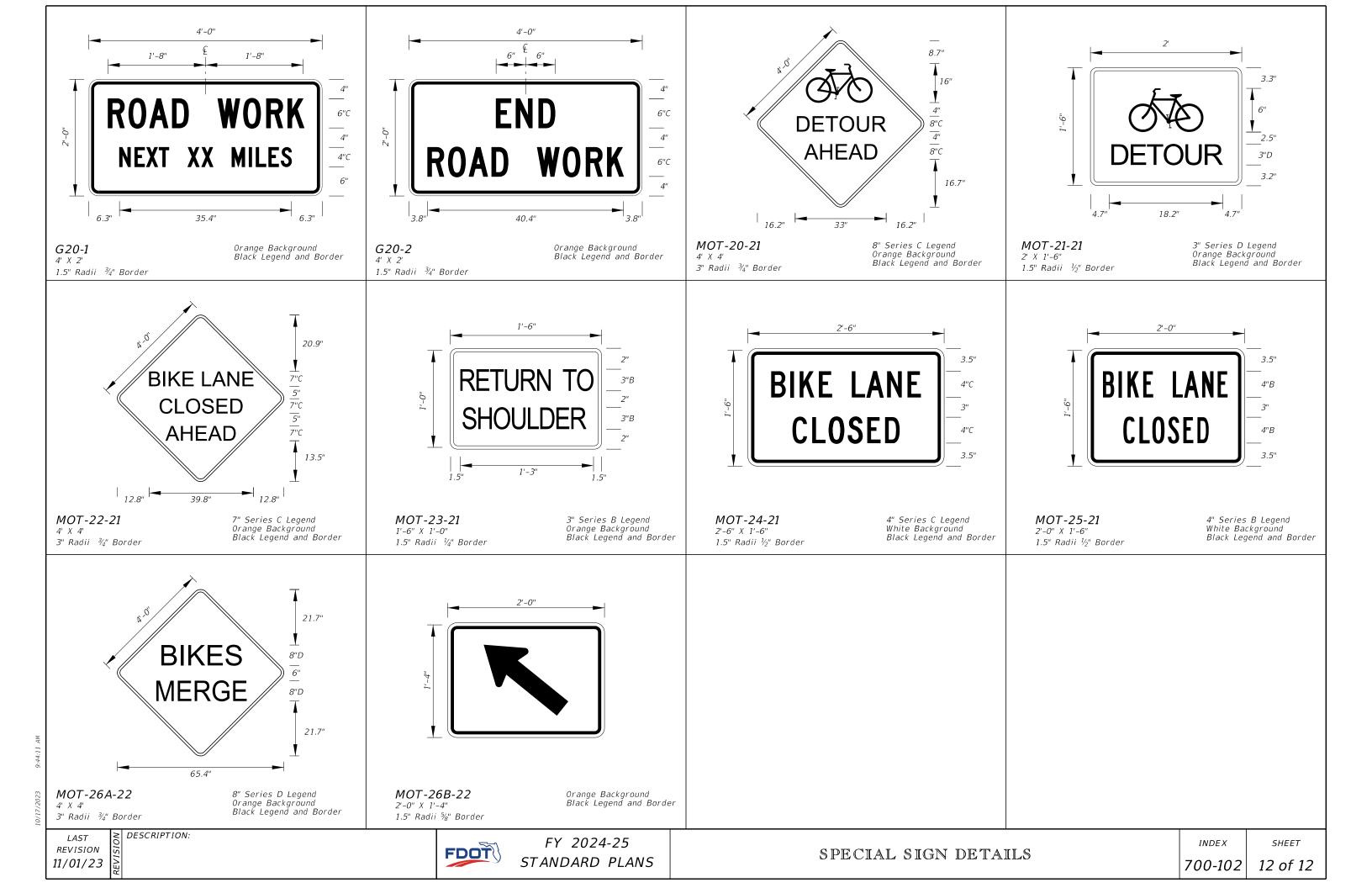
REVISION 11/01/21

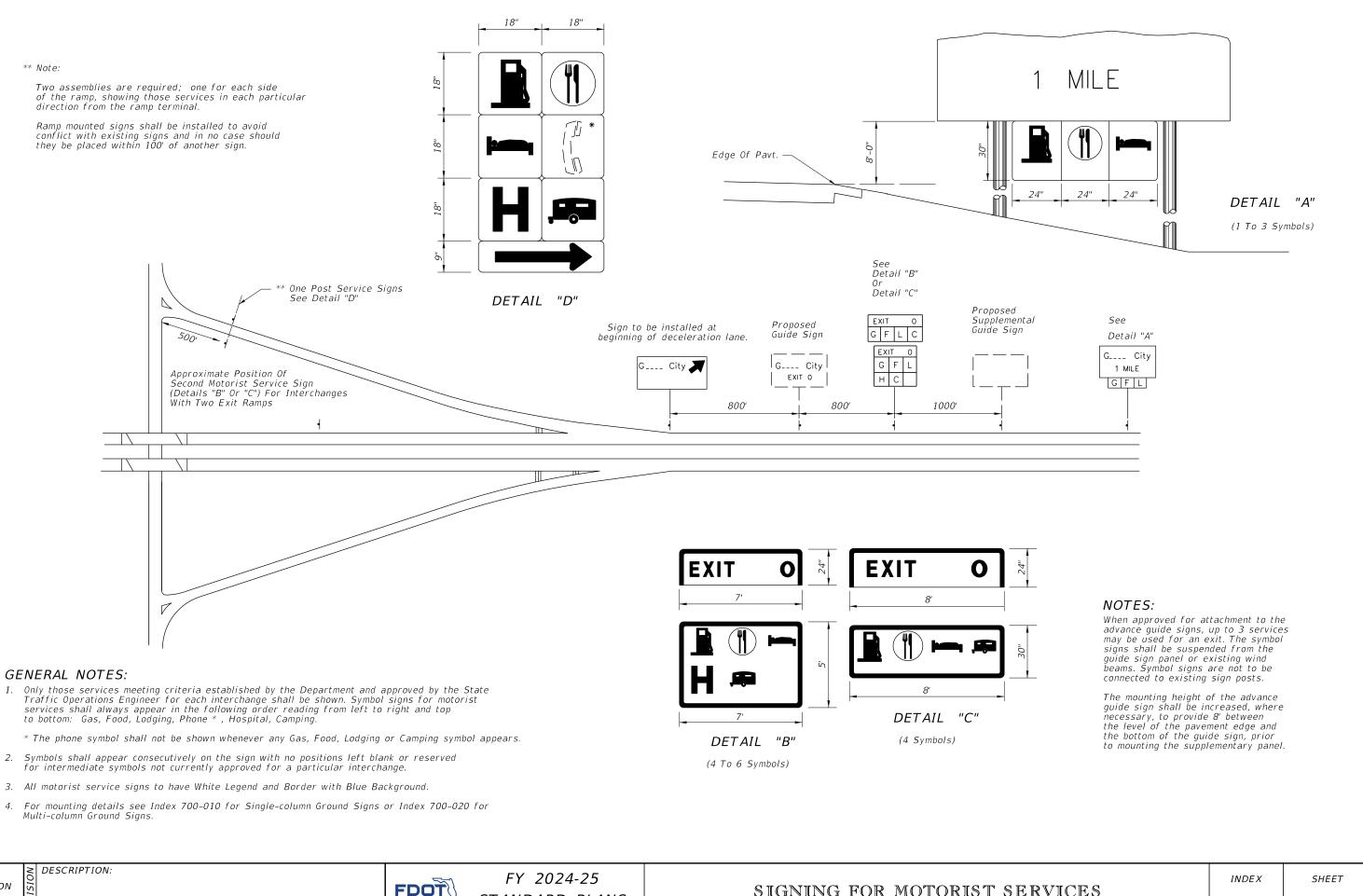
FDOT

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SPECIAL SIGN DETAILS





REVISION 11/01/19

STATE OF FLORIDA **WELCOME CENTER** MILE

STATE OF FLORIDA **WELCOME CENTER**

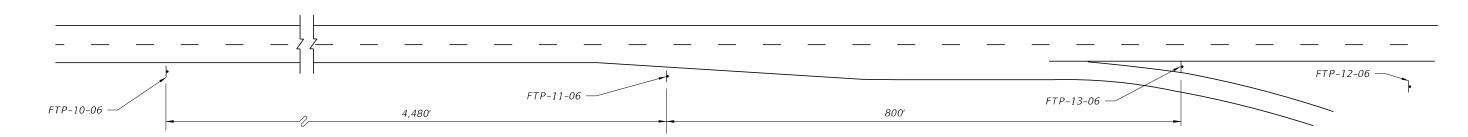
STATE OF FLORIDA **OFFICIAL WELCOME CENTER** WELCOME **CENTER**

Sign FTP-10-06

Sign FTP-11-06

Sign FTP-12-06

Sign FTP-13-06



Note: Roadway not drawn to scale Distances shown are adequate for driver communication but may be altered slightly if conditions require.

Tourist Information Center **NEXT RIGHT**

Sign FTP-14-06

Note: Sign FTP-14-06 shall be used as a supplemental guide sign at interchanges which have a Tourist Information Center approved for such signing (locate half-way between normal guide signs)

Notes:

- 1. Signs and sign structures shall be erected in accordance with the details shown on Index 700-020.
- 2. Sign FTP-12-06 shall be located on the Welcome Center grounds in proximity to the building and as far from the main line roadway as possible (2 signs back to back).
- 3. Sign FTP-10-06, 11-06, 12-06 shall be located as limited access highways only.
- 4. All legend to be Series E.
- 5. See Index 700-102 for sign details.

FOR LIMITED ACCESS HIGHWAYS

REVISION 11/01/17

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

WELCOME CENTER SIGNING

INDEX

SHEET 1 of 2

STATE OF FLORIDA **WELCOME CENTER** MILE

SIGN FTP-15A-06

STATE OF FLORIDA **OFFICIAL WELCOME CENTER**

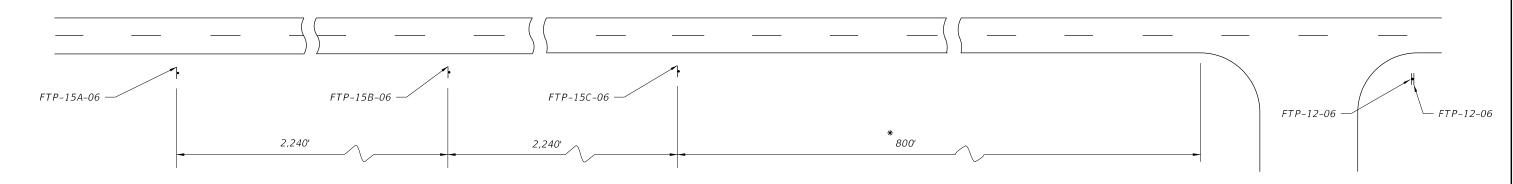
SIGN FTP-12-06

1/2 MILE

SIGN FTP-15B-06



SIGN FTP-15C-06



* 800' Maximum For Rural Conditions 50' Minimum For Rural Conditions

NOTES:

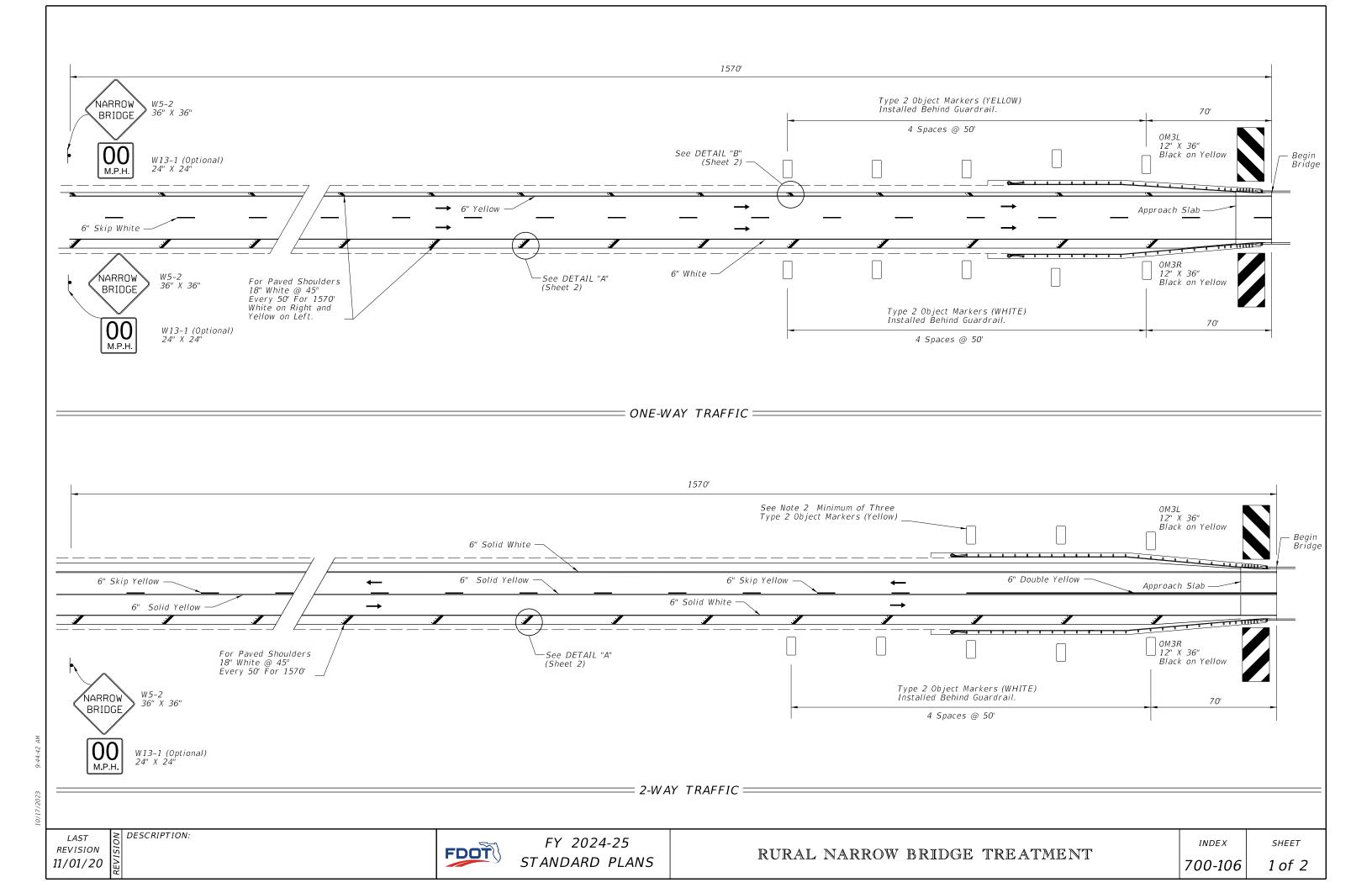
- 1. Signs and sign structures shall be erected in accordance with the details shown on Index 700-020.
- 2. Sign FTP-12-06 shall be located on the Welcome Center grounds in proximity to the building and as far from the Main Line Roadway as possible (2 signs back to back).
- 3. All legend to be Series E.
- 4. One sign FTP-15A-06 or 15B-06 should be used depending on speed, roadside development & geometric conditions.

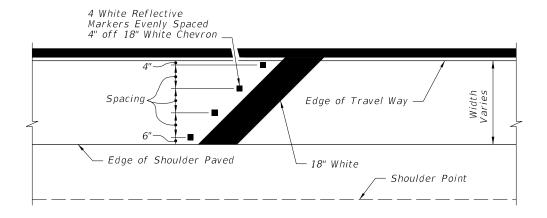
FOR PRIMARY HIGHWAYS

REVISION 11/01/17

DESCRIPTION:

FDOT



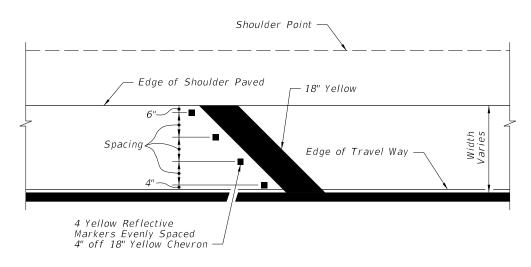


Direction of Travel

Outside Shoulder = DETAIL "A" =

NOTES:

- 1. Roadways with Two-Way Traffic: No passing zone should be extended 1570' in advance of narrow bridge.
- 2. If the bridge or the approach is on a curve, delineators shall be installed for a distance of 1570' in advance of narrow bridge on the outside portion of the roadway. Spacing shall be 100' between delineators. Delineators are to be placed not less than 2' or not more than 8' outside the outer edge of pavement.
- 3. Object markers and delineators on both sides of roadway shall face traffic approaching bridge
- 4. The OM-3R & OM-3L object markers shall be installed 4' above the roadway edge. The panels may be post mounted at the bridges.
- 5. Install Audible and Vibratory treatments (e.g., ground-in rumble strips or profiled thermoplastic) in accordance with the Plans.



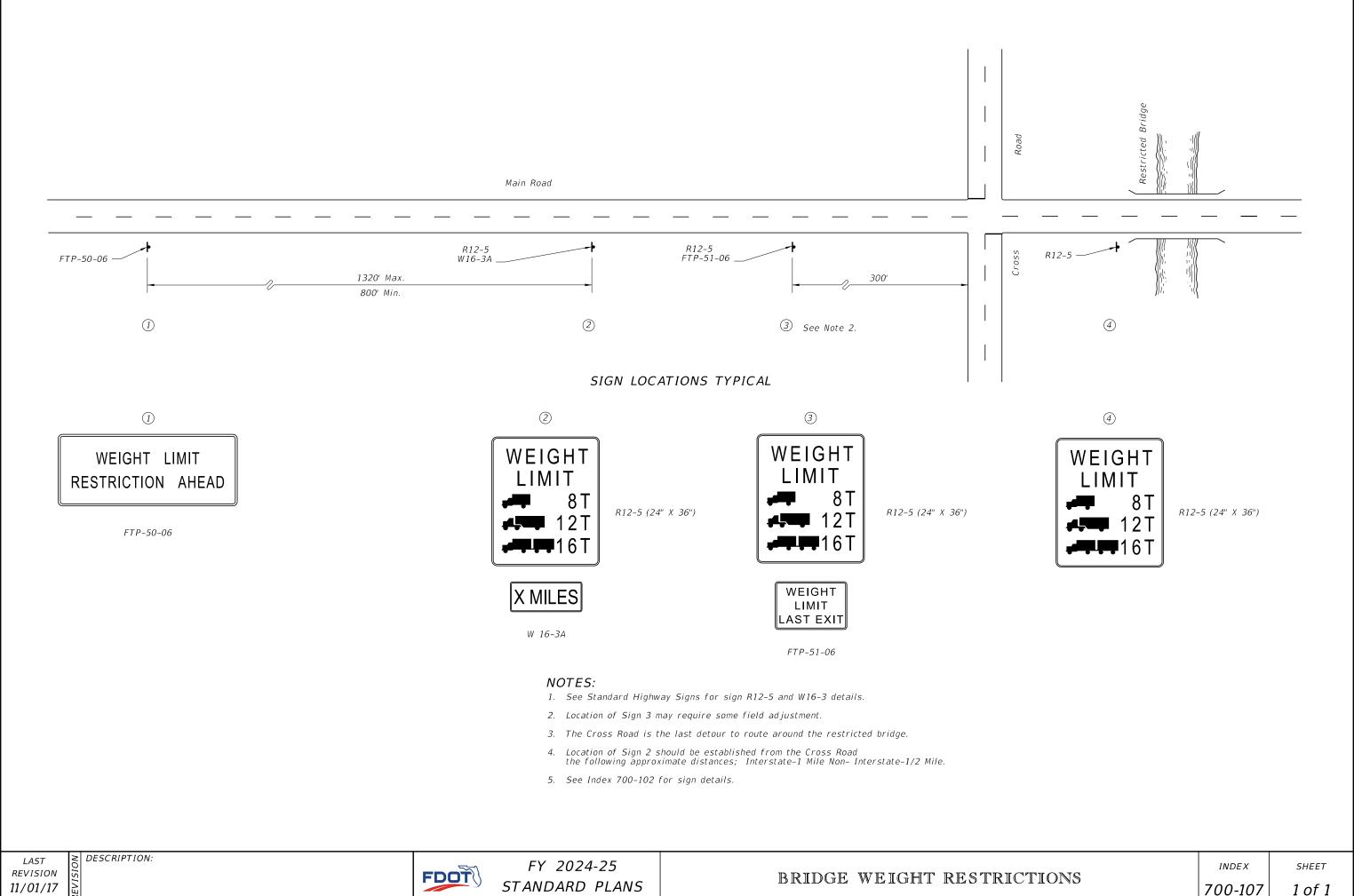
Direction of Travel

Median Shoulder = DETAIL "B" =

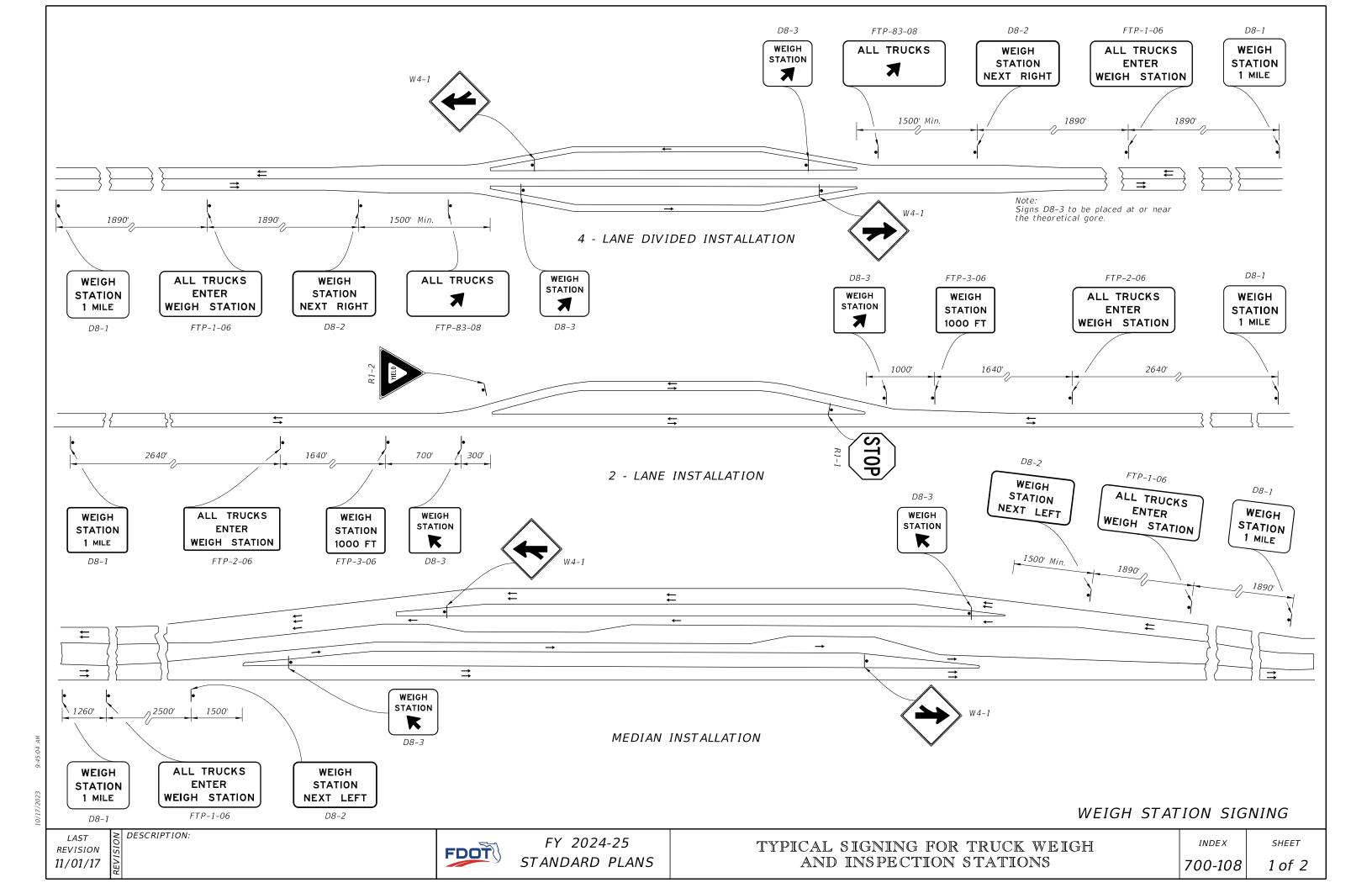
Shoulder Width	No. of RPM's	Spacing
2'	2	14"
3'	3	13"
4'	3	19"
5'	4	16.67"

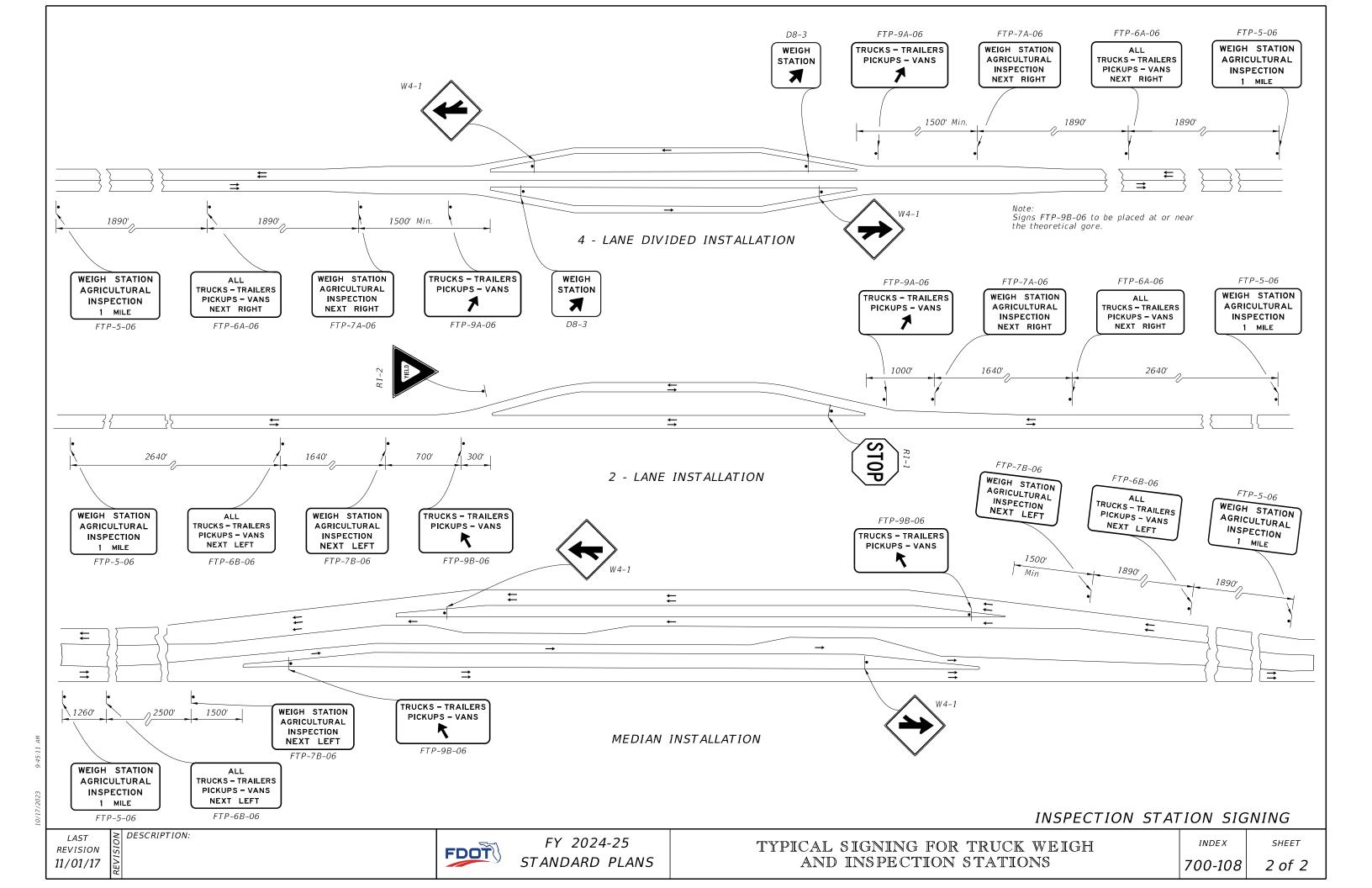
DESCRIPTION:





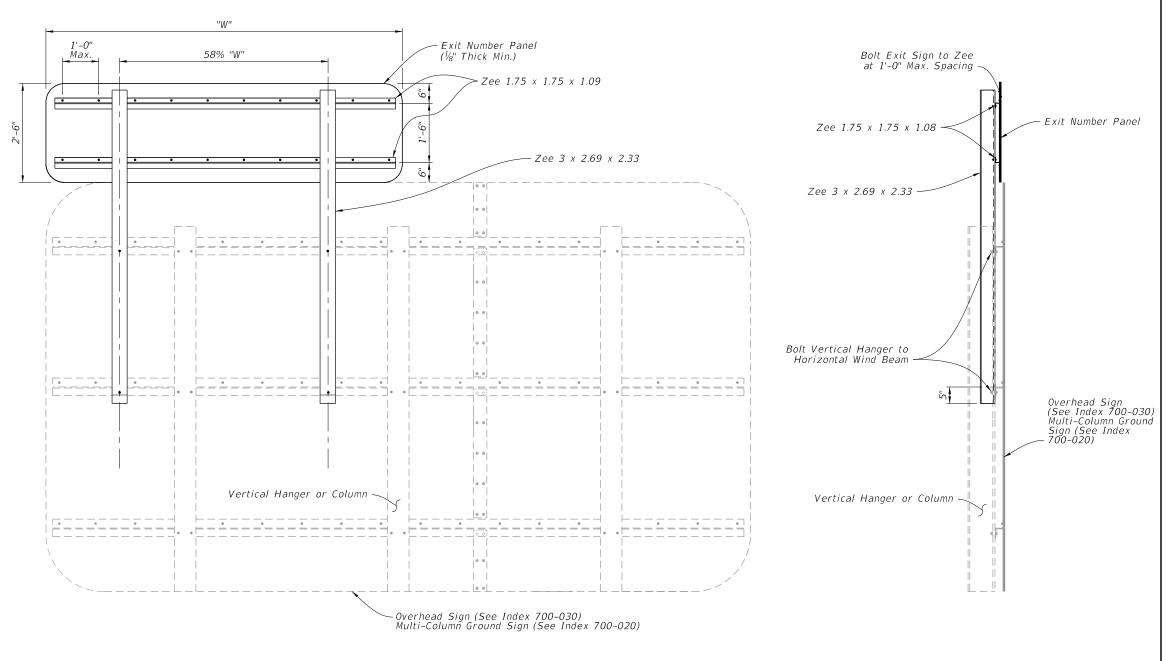
11/01/17





GENERAL NOTES:

- 1. Meet the requirements of Specification 700.
- 2. Work with Indexes 700-020 and 700-030.
- 3. Fabrication: See sign layout sheet for dimension "W" and sign face details in the Plans.
- 4. For right exits, install the Exit Numbering Panel to the top right side of the Highway Sign.
- 5. For left exits, install the Exit Numbering Panel to the top left side of the Highway Sign.
- 6. Materials (Aluminum):
- A Sheets and Plates: ASTM B209 Alloy 6061-T6
- B. Extruded and Standard Structural Shapes: ASTM B221 Alloy 6061-T6
- C. For Bolts, Nuts, and Washers requirements see Index 700-020 or 700-030.



BACK ELEVATION

SIDE ELEVATION

∠ DESCRIPTION: REVISION 11/01/23

SHEET

TABLE OF CONTENTS:

General Notes and Contents

Spread Footing Foundation

Conduit, Wiring, and Foundation Details

Description

Sheet

2

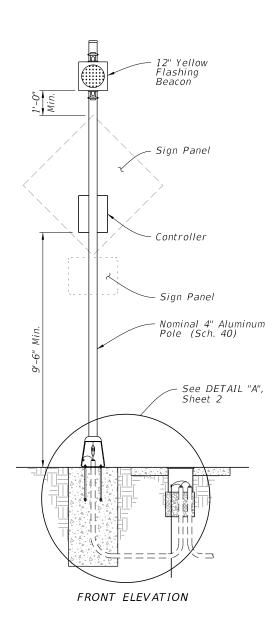
3

- 2. Engage all threads on the transformer base and post unless the aluminum post is fully seated into base.
- 3. Install a concrete slab around all roadside assemblies on slopes 6:1 or greater. The minimum slab dimension is 6" by 4'-0" by 5'-0".
- 4. When wire entry holes are drilled in the sign column, use a bushing or rubber grommet to protect conductors.

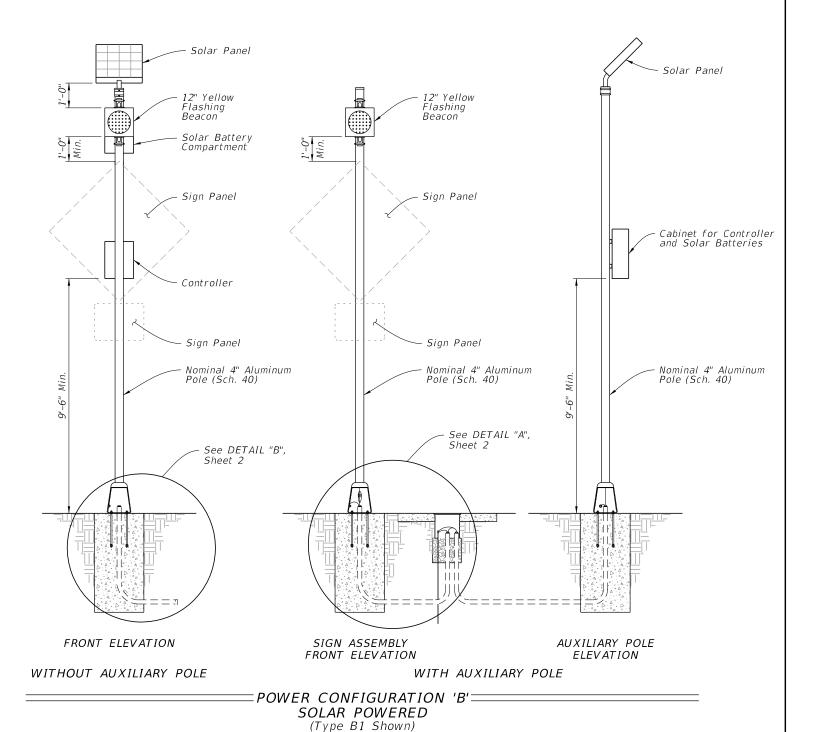
POWER CONFIGURATION 'B' NOTES:

- 1. Install a separate pole for mounting the solar panel, controller and batteries for all roadside assemblies with solar panels, controllers and batteries weighing more than 170 lbs.
- 2. Install the auxiliary pole as close to the right of way boundary as possible.
- 3. Install the auxiliary pole so that the height is the same as the column for the roadside assembly.
- 4. Orient solar panel to face South for optimal exposure to sunlight.
- 5. The controller and the solar batteries may be located in the same compartment.

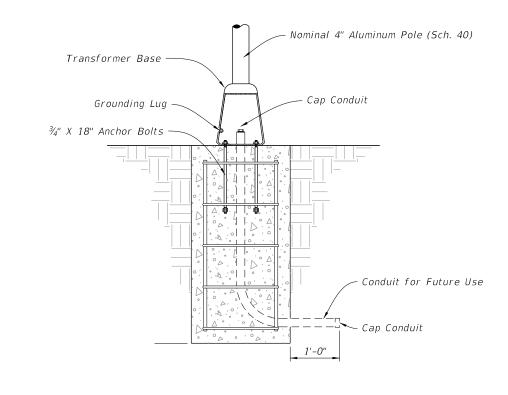
DESCRIPTION:







REVISION 11/01/23



_____ DETAIL "B" ___

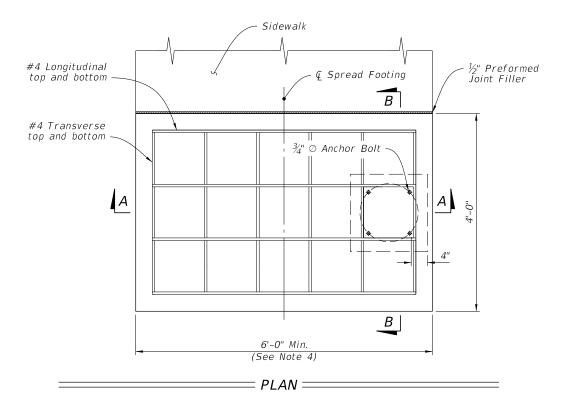
9:45:34

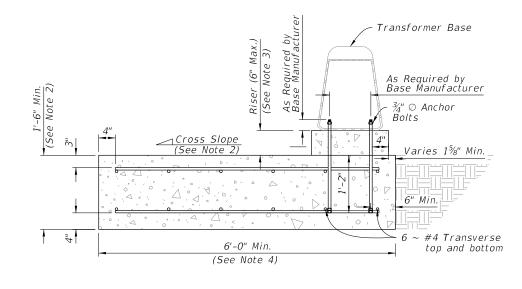
10/17/2023

LAST OF DESCRIPTION:
REVISION OF 11/01/23

FDOT

FY 2024-25 STANDARD PLANS CONDUIT, WIRING, AND FOUNDATION DETAILS





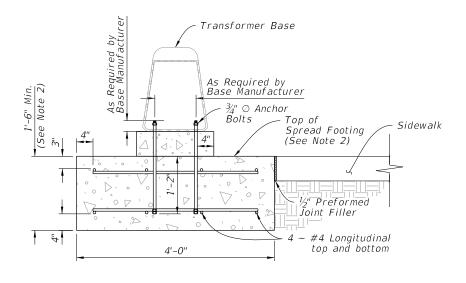
SECTION A-A=

NOTES:

1. Install the Spread Footing Foundation only where called for in the Plans.

2. SIDEWALK:

- a. When abutting sidewalk, match the cross slope of the adjacent sidewalk or curb ramp where applicable. Maintain the minimum depth of footing.
- b. $\frac{1}{2}$ " expansion preformed joint filler required between sidewalk and spread footing.
- c. Apply concrete surface finish to the top of the spread footing in accordance with Specification 522-7.
- d. Sidewalk placed on the other side or both sides of the spread footing is permitted where shown in the Plans.
- 3. Only use concrete riser when installed in-line with sidewalk curb that results in a drop off to the adjacent sidewalk.
- 4. For sidewalks greater than 6', match sidewalk width. Add one #4 transverse bar, top and bottom, per additional foot of spread footing to maintain at minimum the same reinforcement area per foot.
- 5. Base location can vary on spread footing. Location shown in Plans.



= SECTION B-B =====

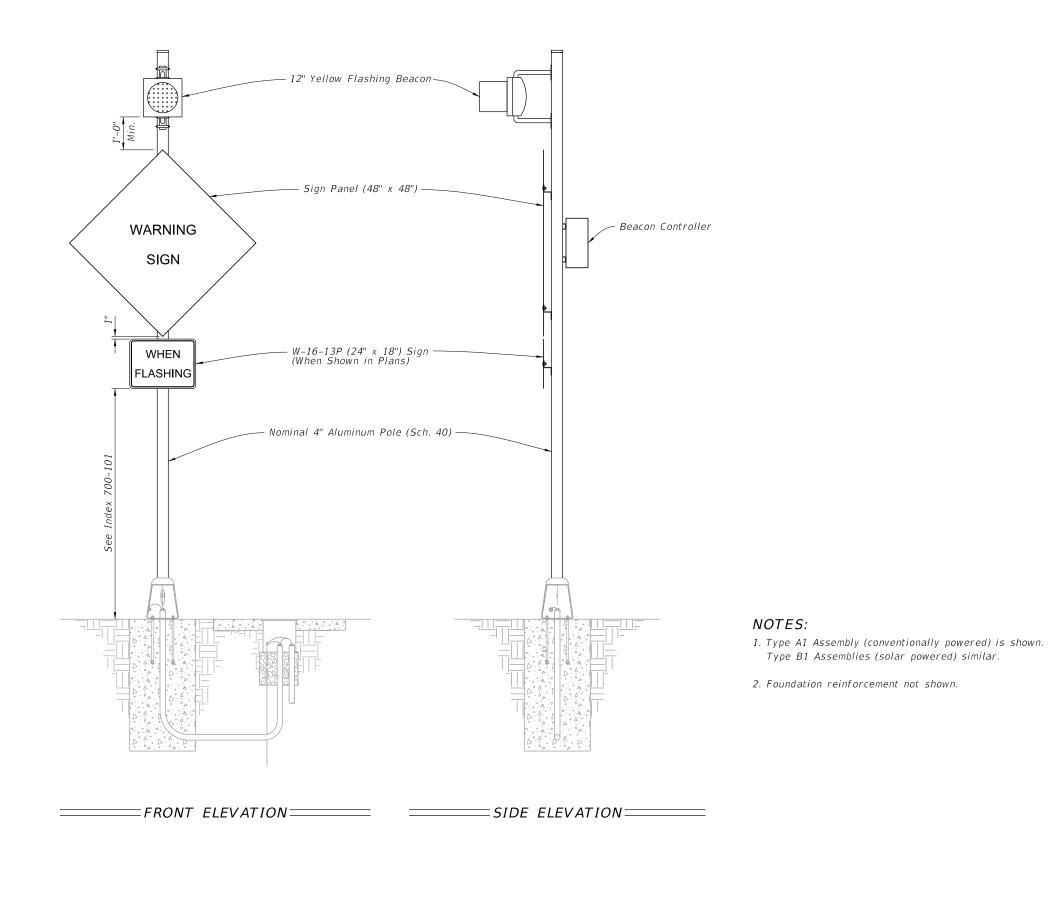
SPREAD FOOTING FOUNDATION

LAST REVISION 11/01/23

DESCRIPTION:

FDOT

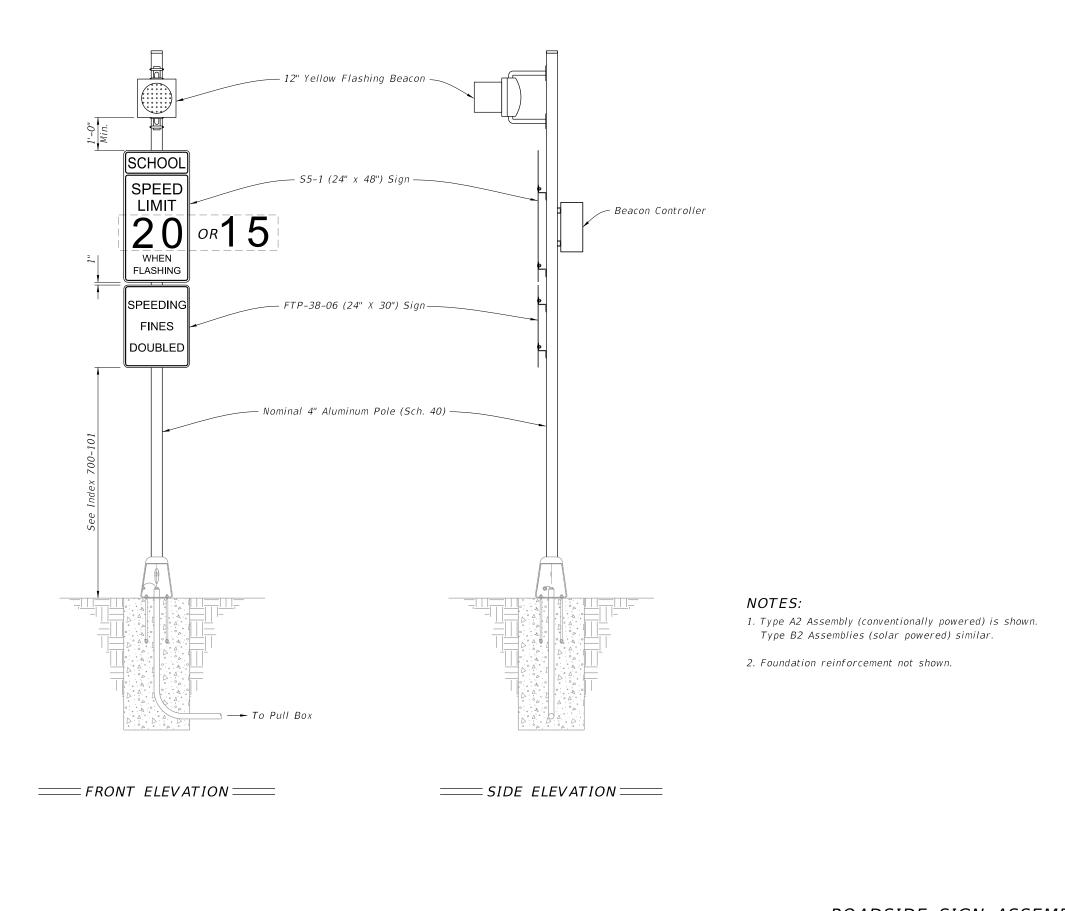
INDEX



ROADSIDE SIGN ASSEMBLY-1

Type B1 Assemblies (solar powered) similar.

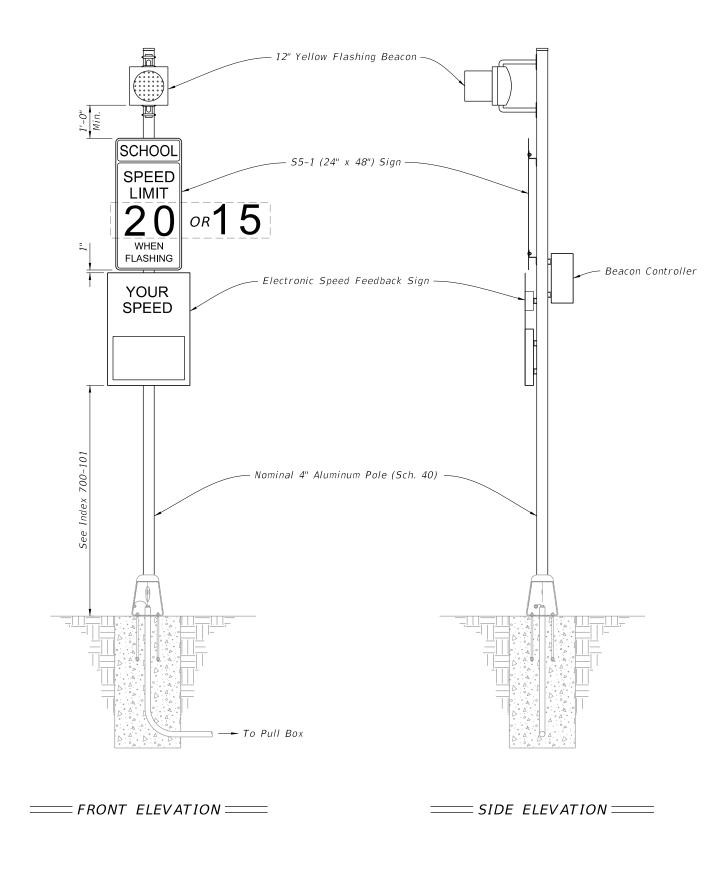
REVISION 11/01/23



REVISION 11/01/23 DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

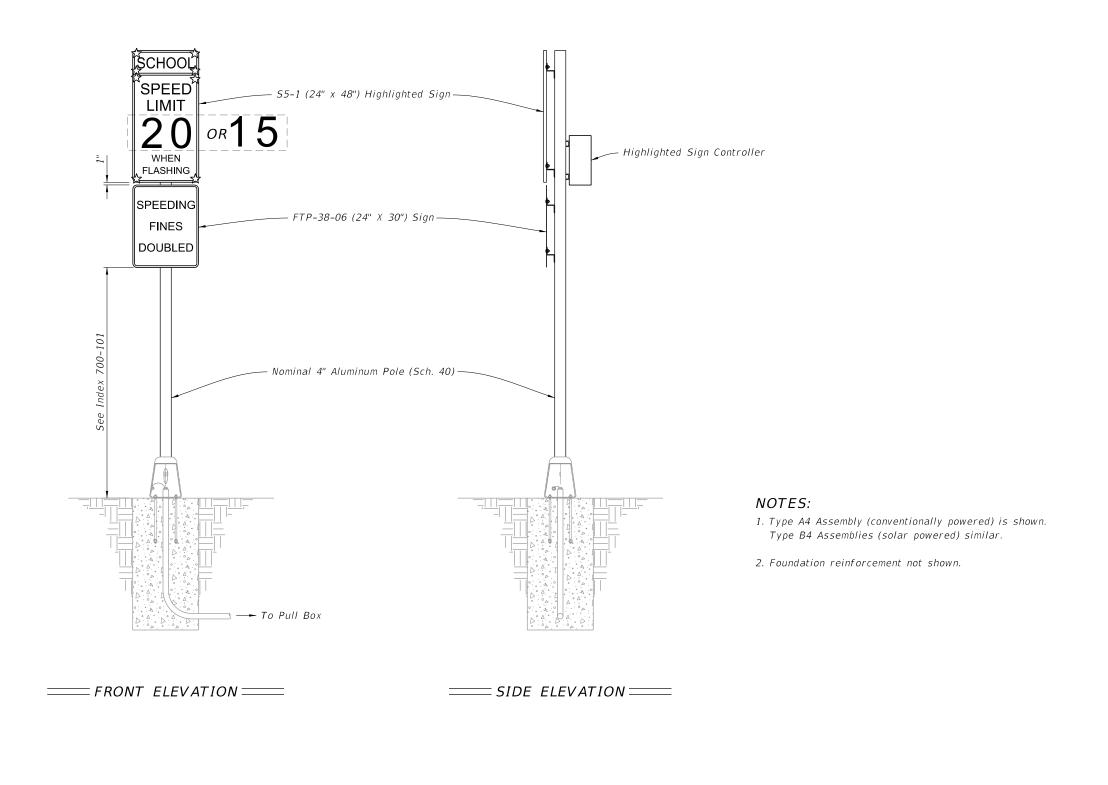


- 1. Type A3 Assembly (conventionally powered) is shown. Type B3 Assemblies (solar powered) similar.
- 2. Use electronic speed feedback sign with 15" high numerals for posted speed of 45 mph or less, and 18" high numerals for posted speeds greater than 45 mph.
- 3. Foundation reinforcement not shown.

ROADSIDE SIGN ASSEMBLY-3

LAST REVISION 11/01/23

DESCRIPTION:

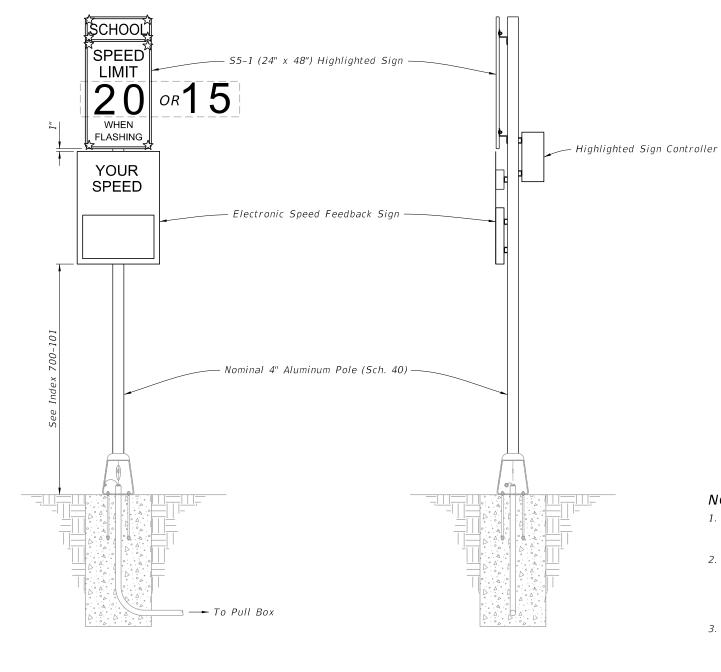


REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS ROADSIDE SIGN ASSEMBLY-4



- 1. Type A5 Assembly (conventionally powered) is shown. Type B5 Assemblies (solar powered) similar.
- 2. Use electronic speed feedback sign with 15" high numerals for posted speed of 45 mph or less, and 18" high numerals for posted speeds greater than 45 mph.
- 3. Foundation reinforcement not shown.

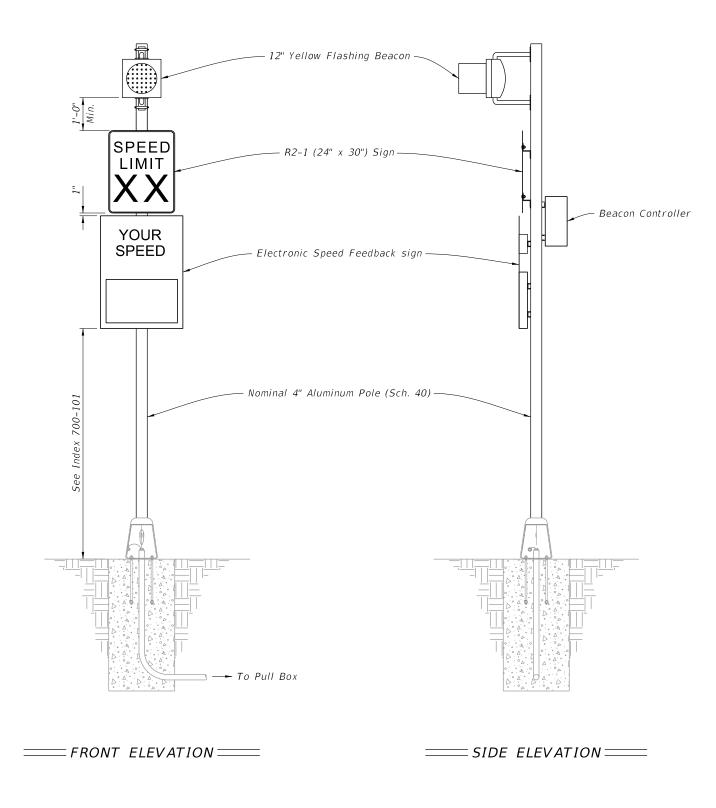
==== FRONT ELEVATION =====

==== SIDE ELEVATION ====

ROADSIDE SIGN ASSEMBLY-5

LAST REVISION 11/01/23

DESCRIPTION:

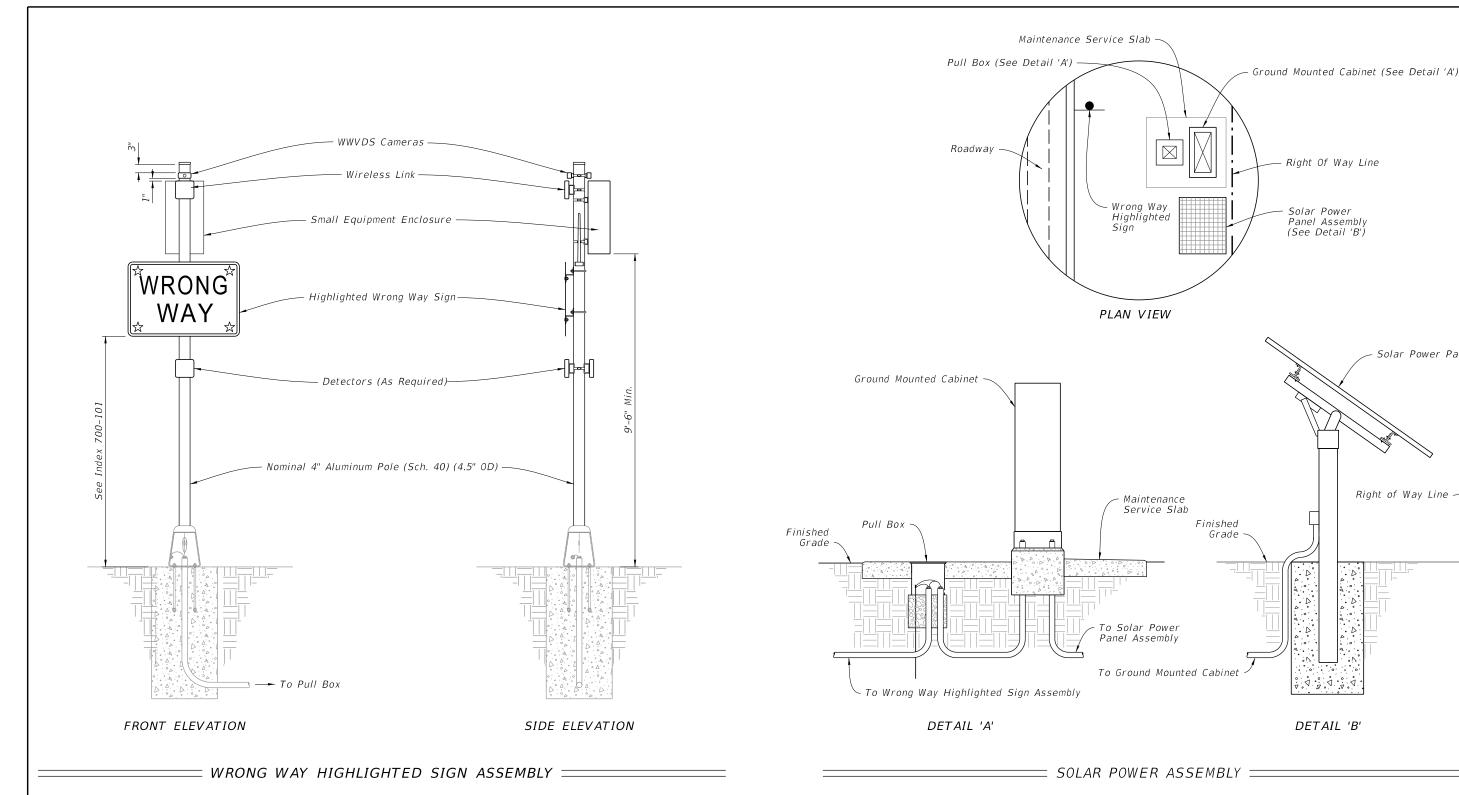


- 1. Type A6 Assembly (conventionally powered) is shown. Type B6 Assemblies (solar powered) similar.
- 2. Use electronic speed feedback sign with 15" high numerals for posted speed of 45 mph or less, and 18" high numerals for posted speeds greater than 45 mph.
- 3. Foundation reinforcement not shown.

ROADSIDE SIGN ASSEMBLY-6

REVISION 11/01/23

DESCRIPTION:



- 1. Install Wrong Way Vehicle Detection System (WWVDS) devices including cameras, detectors, wireless links, antennas, enclosures, and electronics in accordance with the manufacturer's instructions.
- 2. When a solar powered configuration (Type B7) is called for in the Plans, install a ground mounted cabinet and solar power panel assembly. Install the solar charge controller and batteries in the same ground mounted cabinet. Provide a separate pole for mounting the solar panel (DETAIL 'B' shown for illustration purposes only) and install in accordance with manufacturer's instructions. Locate the Solar Power Assembly as close to the right of way as possible. Orient the solar panel to face South.
- 3. Foundation reinforcement not shown.
- 4. Install cabinets in accordance with Index 676-010.

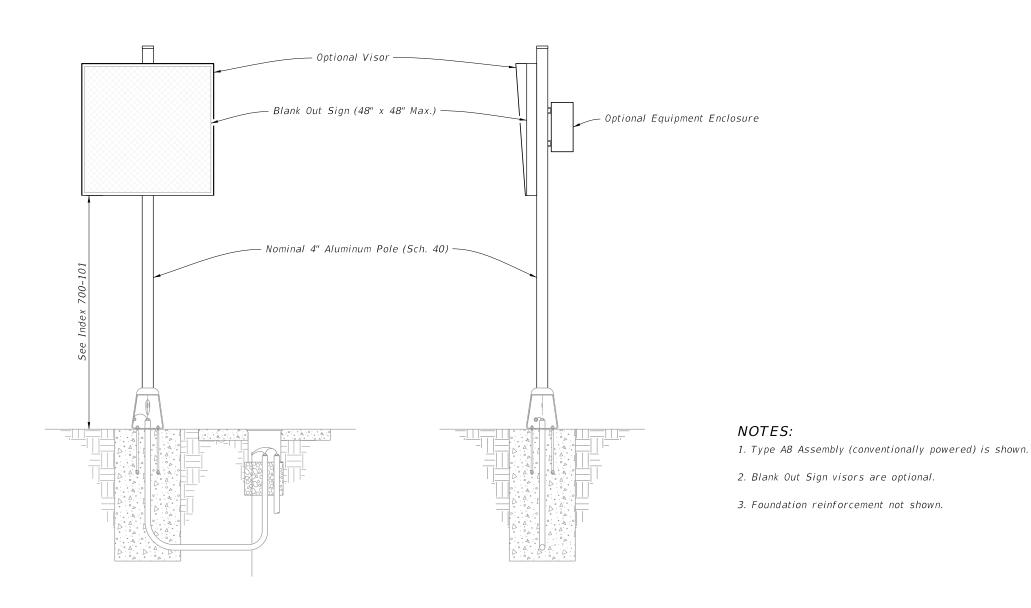
ROADSIDE SIGN ASSEMBLY-7

REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS Solar Power Panel Assembly



ROADSIDE SIGN ASSEMBLY-8

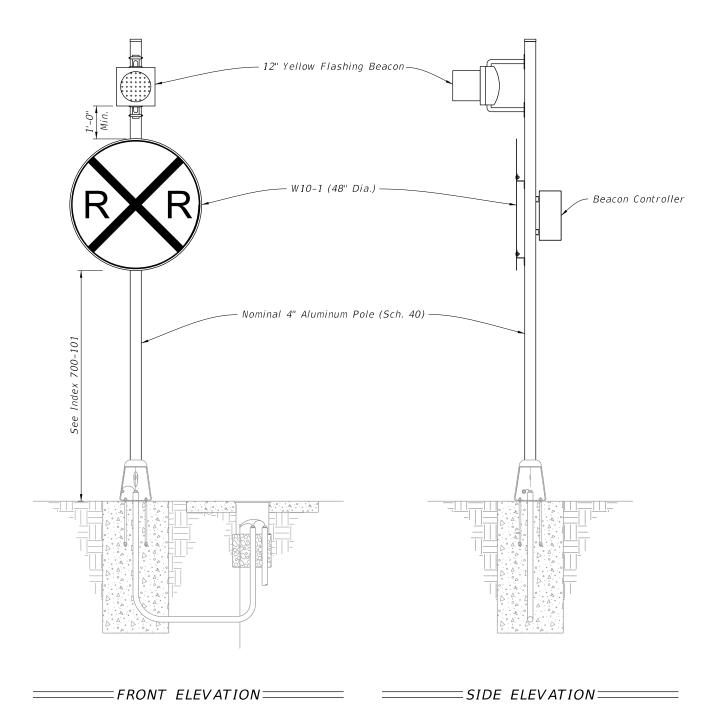
LAST REVISION 11/01/23

≥ DESCRIPTION:

FDOT

= FRONT ELEVATION ====

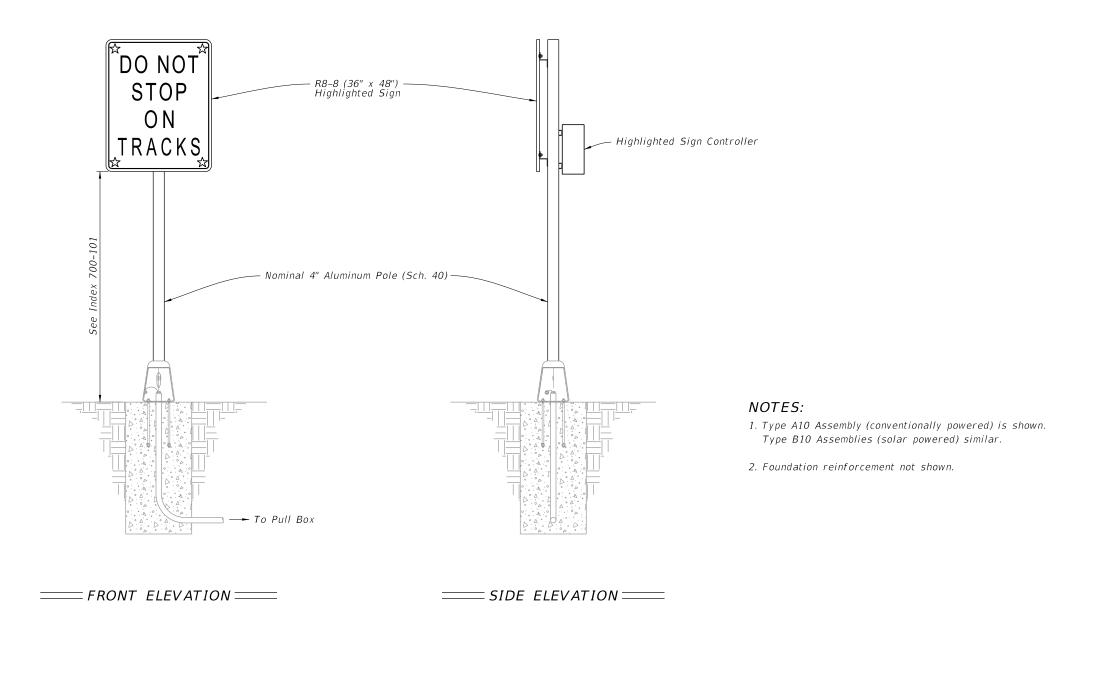
== SIDE ELEVATION ======



- 1. Type A9 Assembly (conventionally powered) is shown. Type B9 Assemblies (solar powered) similar.
- 2. Foundation reinforcement not shown.

ROADSIDE SIGN ASSEMBLY-9

DESCRIPTION: LAST REVISION 11/01/23



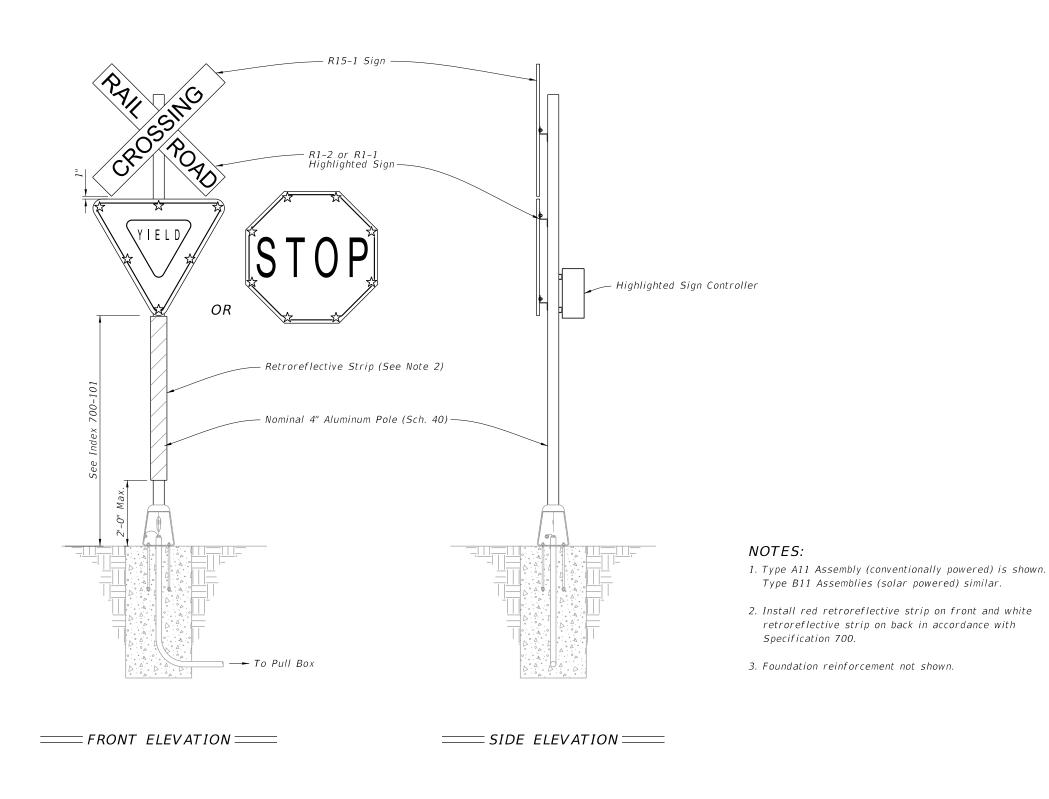
REVISION 11/01/23

DESCRIPTION:

FDOT

INDEX 700-120

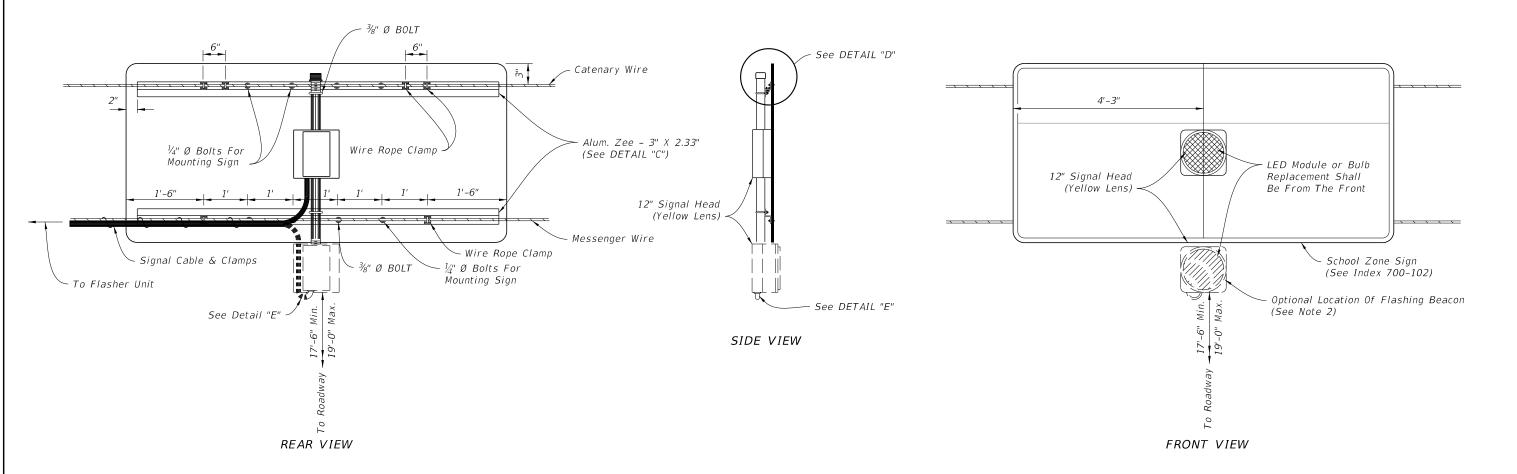
13 of 15

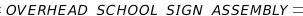


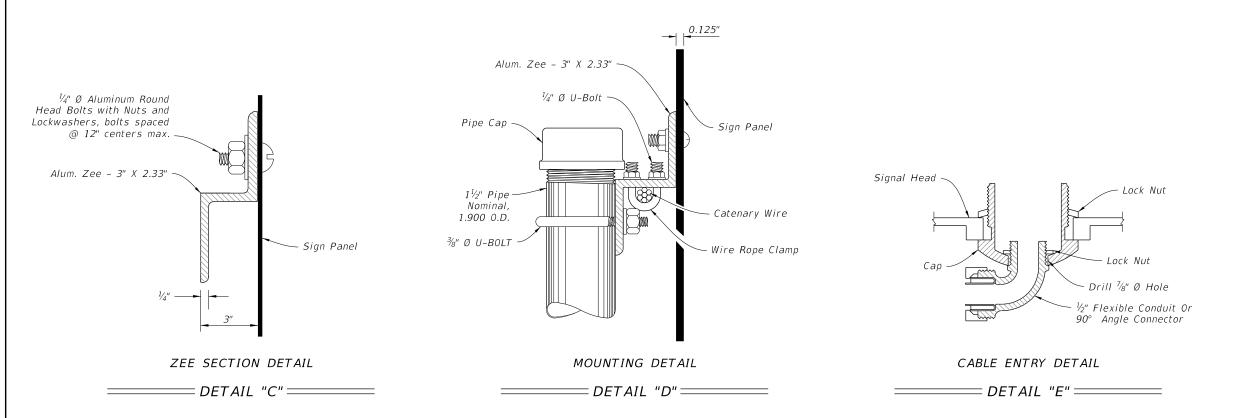
ROADSIDE SIGN ASSEMBLY-11

REVISION 11/01/23

DESCRIPTION:







- 1. Flasher unit and cabinet to be placed on the strain pole supporting overhead sign assembly or on service pole. The flasher unit not to overhang private property or sidewalk.
- 2. Optional flashing beacon will be called for in the Plans. They may be placed within or below the panel, or face to the rear.

OVERHEAD SIGN ASSEMBLY

REVISION 11/01/23

DESCRIPTION:

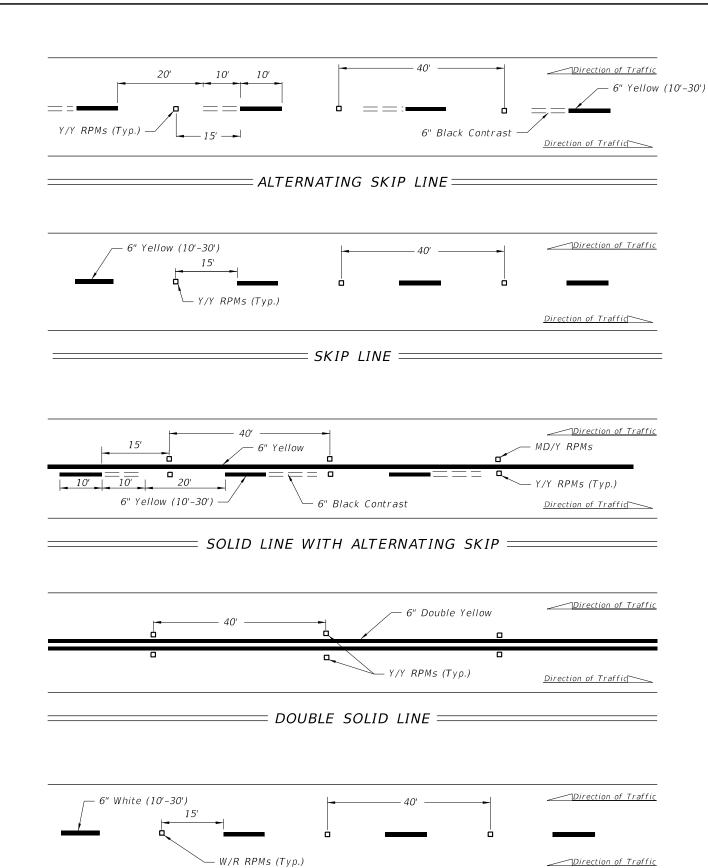
FDOT

FY 2024-25 STANDARD PLANS

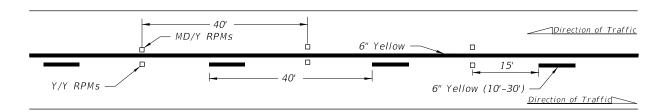
ENHANCED HIGHWAY SIGNING ASSEMBLIES

INDEX 700-120

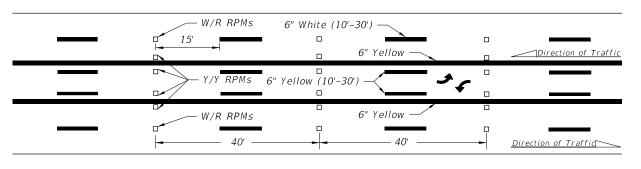
SHEET 15 of 15



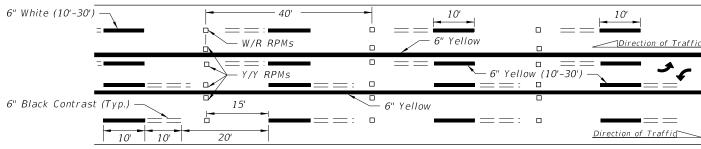
= MULTILANE ==



= SOLID LINE WITH SKIP =



= SKIP LINE WITH TWO-WAY LEFT TURN LANE =



NOTES:

- 1. Offset all RPMs 1" from solid longitudinal lines unless otherwise noted or shown.
- 2. Spacing may be reduced for sharp curves if required.
- 3. For placement of RPMs on ramps, see Index 711-003.
- 4. Make the traffic face of the RPM the same color as the pavement marking that it is supplementing.

LEGEND:

B/C = BACK OF CURB

EOP = EDGE OF PAVEMENT

RPM = RAISED PAVEMENT MARKER

W/R = WHITE/RED RPM

Y/Y = YELLOW/YELLOW RPM

Y/R = YELLOW/RED RPM

MD/Y = MONO-DIRECTIONALYELLOW RPM

REVISION 11/01/18

DESCRIPTION:

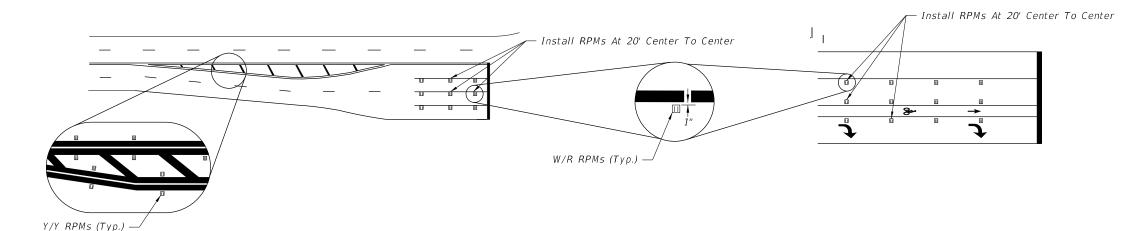
FDOT

FY 2024-25 STANDARD PLANS TYPICAL PLACEMENT OF

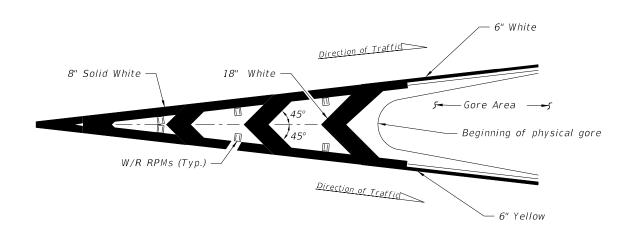
INDEX

SHEET 1 of 6

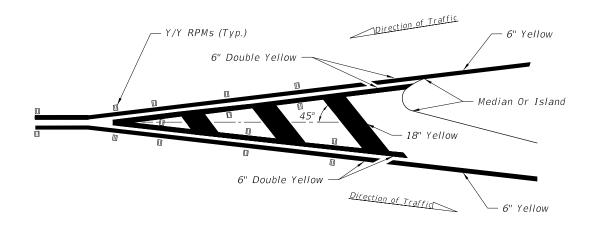
706-001



RPM PLACEMENT AT INTERSECTIONS =



===== RPM PLACEMENT AT TRAFFIC CHANNELIZATION AT GORE ====== (Traffic Flows In Same Direction)



= RPM PLACEMENT AT TRAFFIC SEPARATION =(Traffic Flows In Opposite Direction)

NOTE:

Center the Raised Pavement Markers between chevrons and crosshatching.

LEGEND:

B/C = BACK OF CURB

EOP = EDGE OF PAVEMENT

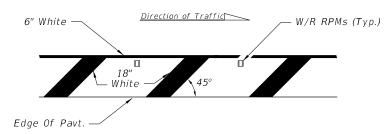
RPM = RAISED PAVEMENT MARKER

W/R = WHITE/RED RPM

Y/Y = YELLOW/YELLOW RPM

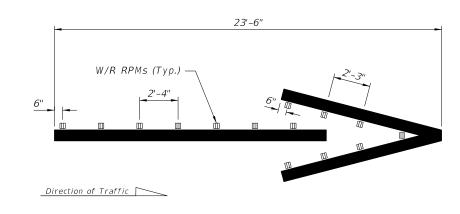
Y/R = YELLOW/RED RPM

MD/Y = MONO-DIRECTIONALYELLOW RPM



Right side of the roadway shown. For the left side of roadway, the pavement marking is yellow and oriented opposite hand.

= RPM PLACEMENT AT ROADSIDE CROSSHATCHING =====



= WRONG-WAY ARROW =

DESCRIPTION: LAST REVISION

FDOT

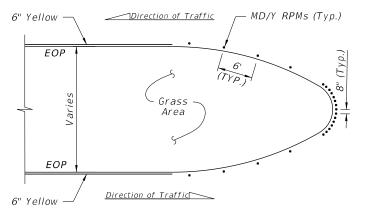
FY 2024-25 STANDARD PLANS

TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS INDEX

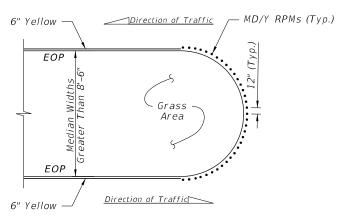
SHEET

11/01/21

DETAIL "A"



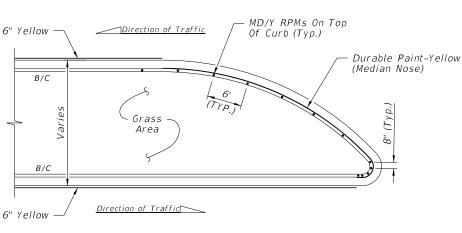
DETAIL "B'



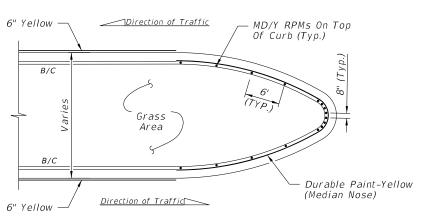
DETAIL "C"

FLUSH MEDIAN OPENINGS

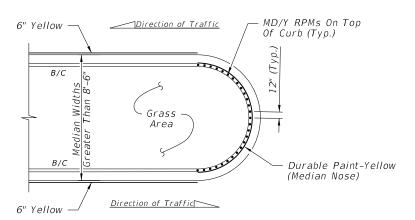
(Type "E" Curb Similar. See Note 1)



DETAIL "D"



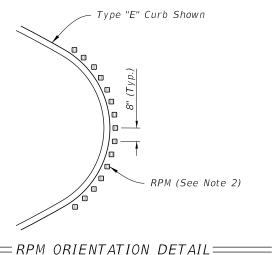
DETAIL "E"



DETAIL "F"

TYPE "D" OR "F" CURB

RPM PLACEMENT AT MEDIAN OPENINGS (When called for in the Plans)



POSTED SPEED LIMIT MPH	"Y" FEET	
30 OR LESS	10	
35	20	
40	20	
45	30	
50 OR MORE	40	

LEGEND:

B/C = BACK OF CURB

EOP = EDGE OF PAVEMENT

RPM = RAISED PAVEMENT MARKER

W/R = WHITE/RED RPM

Y/Y = YELLOW/YELLOW RPM

Y/R = YELLOW/RED RPM

MD/Y = MONO-DIRECTIONAL YELLOW RPM

NOTES:

- 1. For Type "E" Curb, install RPMs along the pavement edge marking using the same spacing shown.
- 2. Orient traffic faces of RPMs in curb median radii to be parallel to direction of travel lanes.
- 3. Use epoxy adhesive to install RPMs on concrete median nose curbs.
- 4. Install RPMs on clean, unpainted surface. Do not paint curb surface where RPMs will be placed.

REVISION 11/01/21

DESCRIPTION:

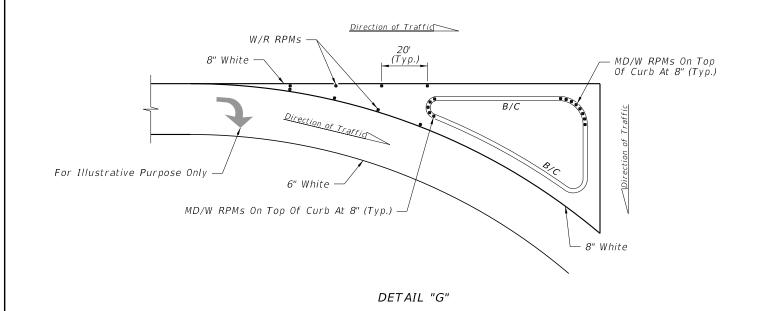


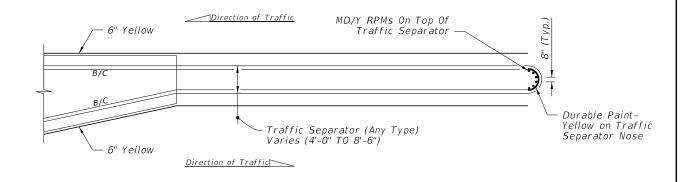
FY 2024-25 STANDARD PLANS

TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS INDEX

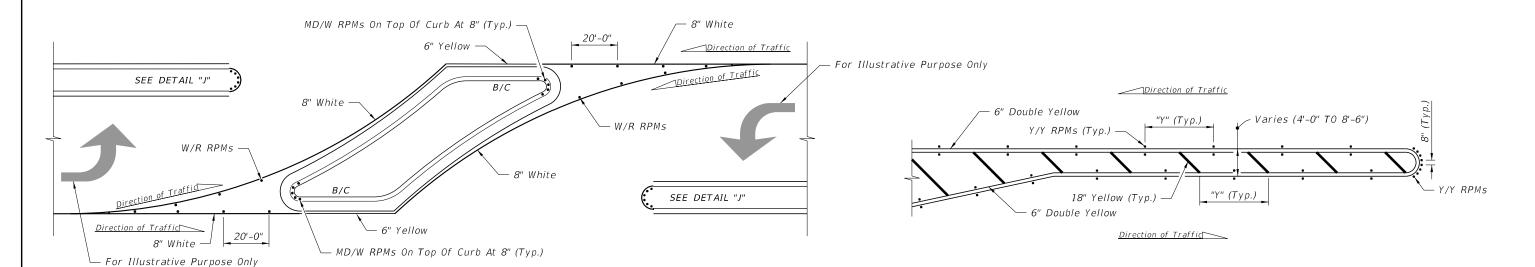
SHEET

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DETAIL "J"



RPM PLACEMENT AT ISLANDS = (When called for in the Plans)

DETAIL "H"

RPM PLACEMENT AT TRAFFIC SEPARATORS = (When called for in the Plans)

DETAIL "K"

POSTED SPEED LIMIT FEET 30 OR LESS 10 35 20 40 20

45

50 OR MORE

NOTES:

- 1. For Type "E" Curb install RPMs along the pavement edge marking using the same spacing shown.
- 2. Orient traffic faces of RPMs in median radii to be parallel to direction of travel lanes.

LEGEND:

B/C = BACK OF CURB

EOP = EDGE OF PAVEMENT

RPM = RAISED PAVEMENT MARKER

W/R = WHITE/RED RPM

Y/Y = YELLOW/YELLOW RPM

Y/R = YELLOW/RED RPM

MD/Y = MONO-DIRECTIONALYELLOW RPM

MD/W = MONO-DIRECTIONAL

REVISION 11/01/21

FDOT

30

40

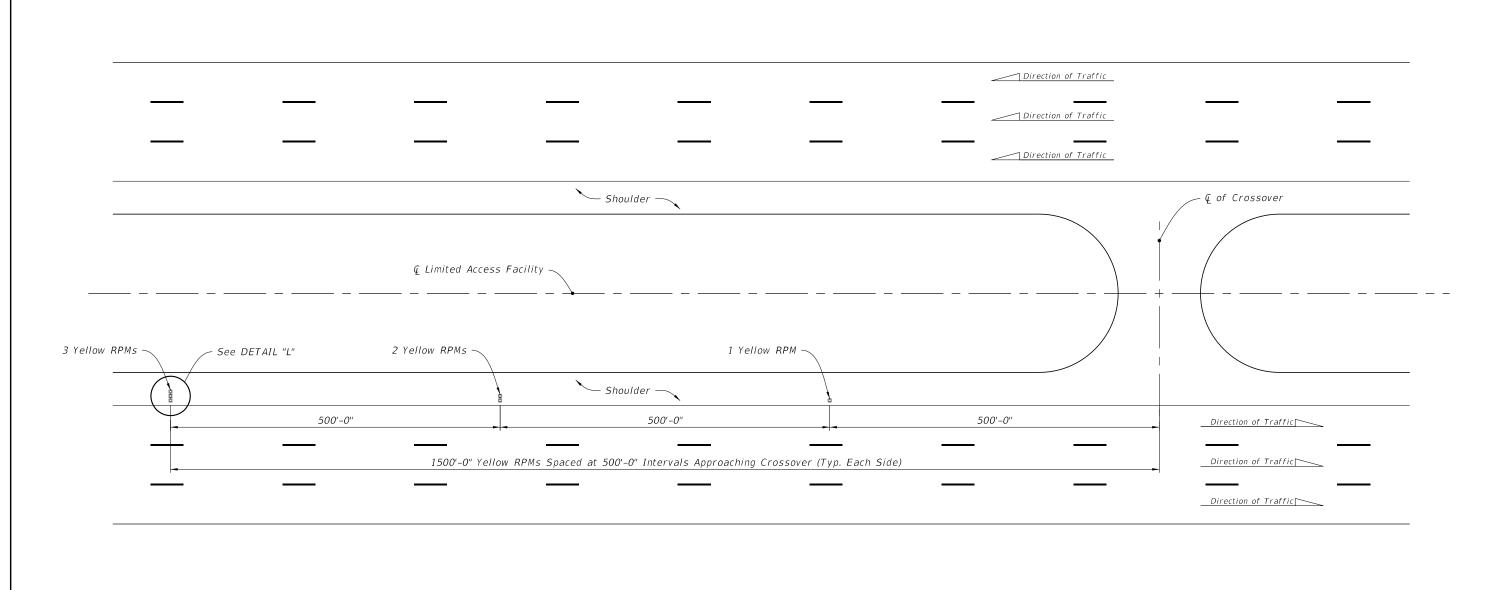
FY 2024-25 STANDARD PLANS

TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS INDEX

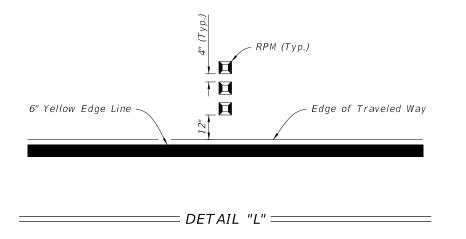
SHEET

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DESCRIPTION:

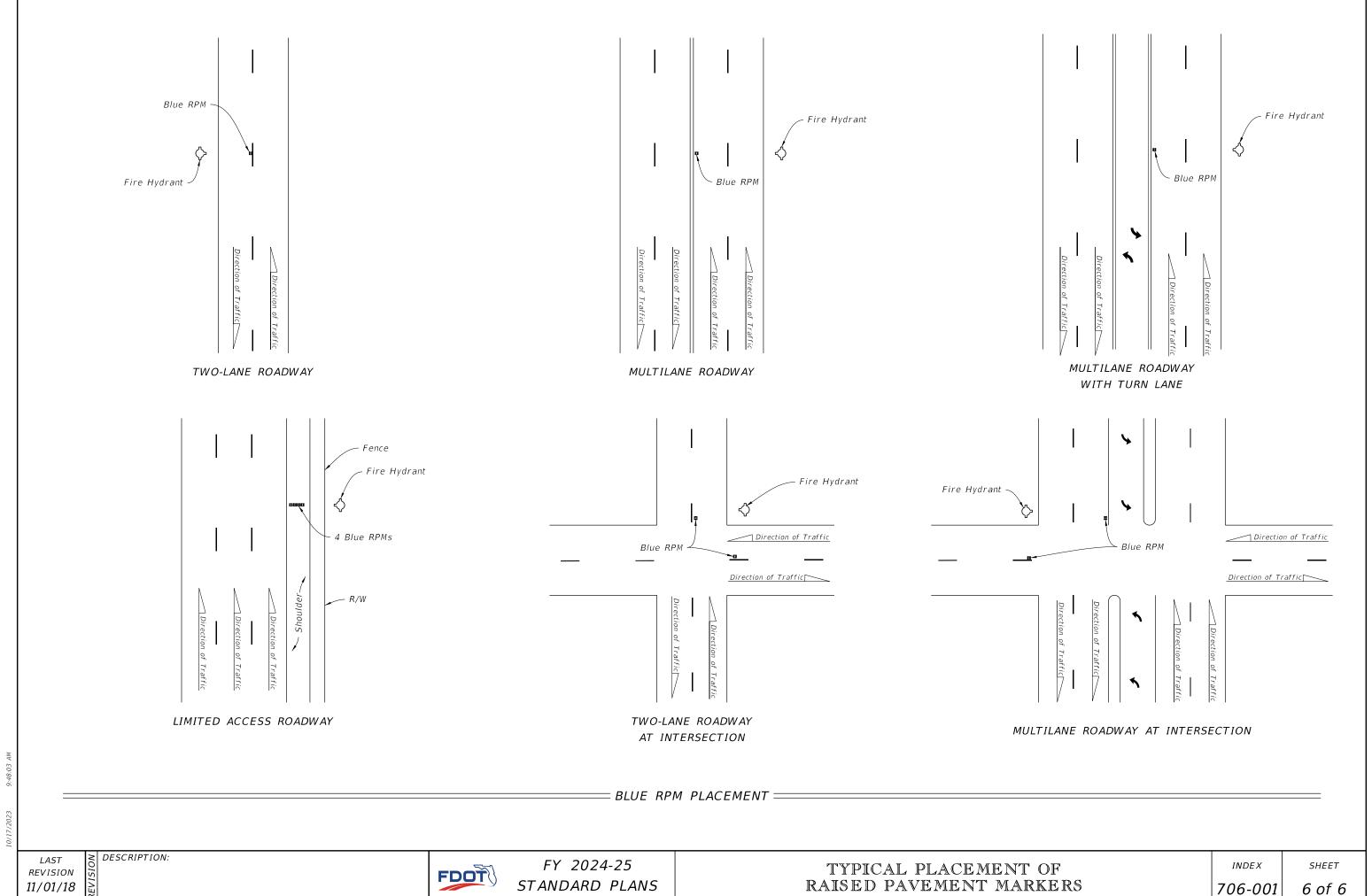


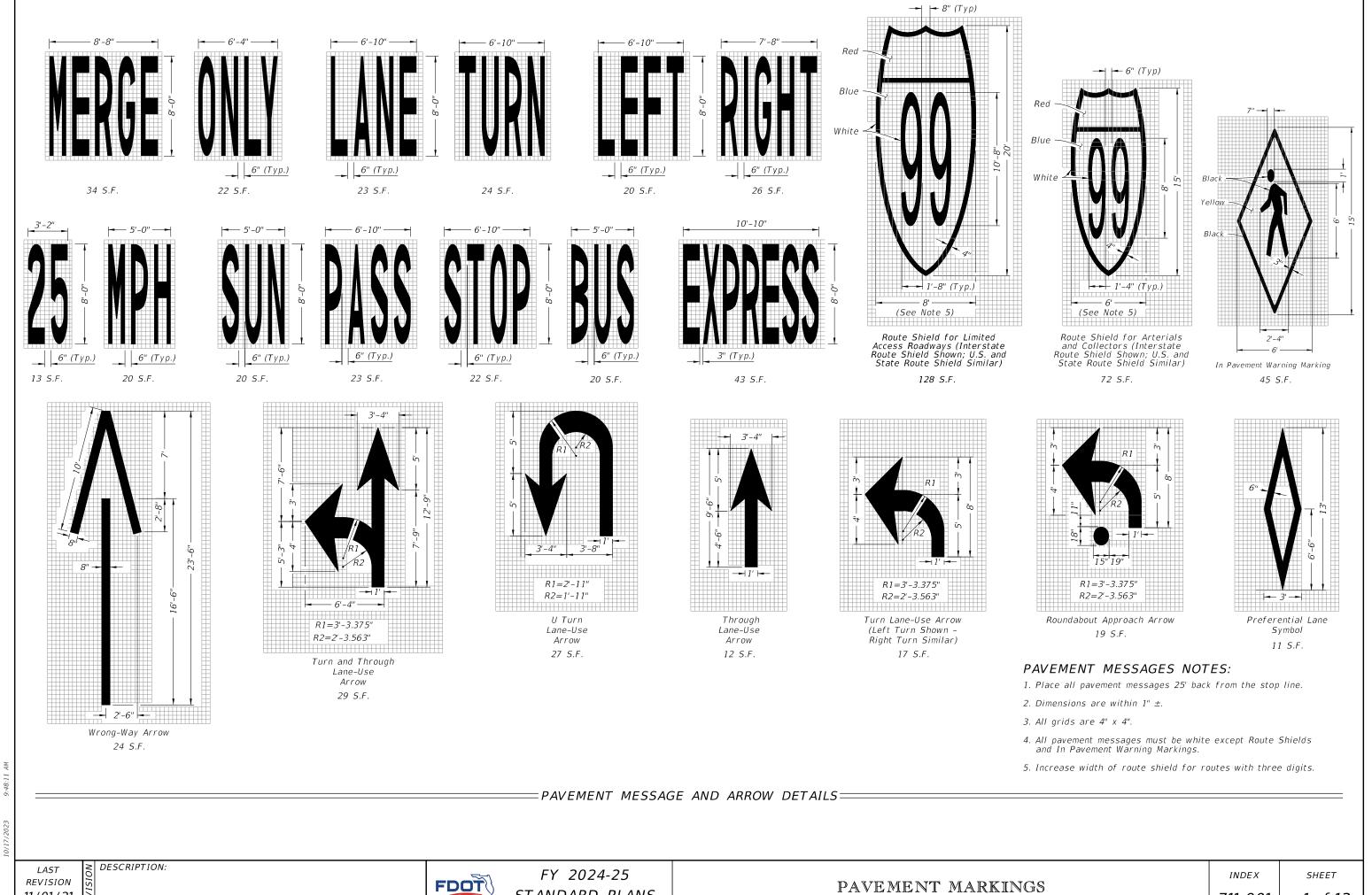
= RPM PLACEMENT FOR CROSSOVERS ON LIMITED ACCESS ROADWAYS =====



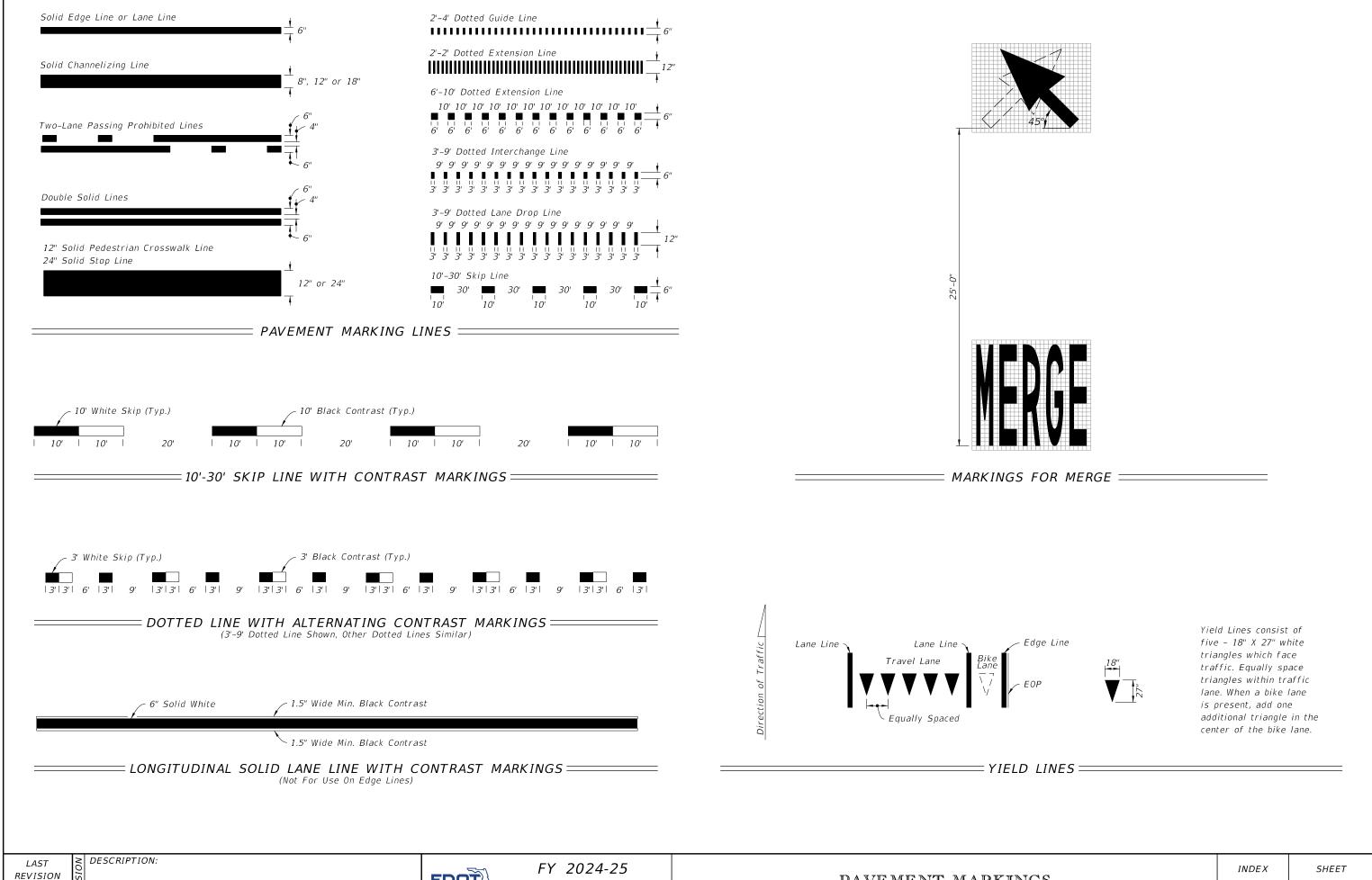
≥ DESCRIPTION: REVISION 11/01/18





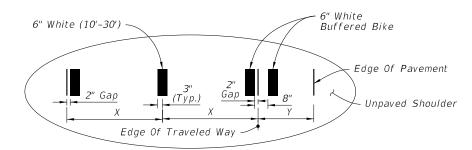


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11/01/22

CURB AND GUTTER

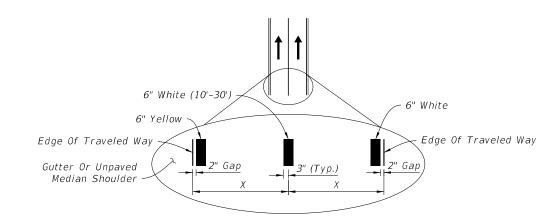


FLUSH SHOULDER

X = LANE WIDTH (FT.)

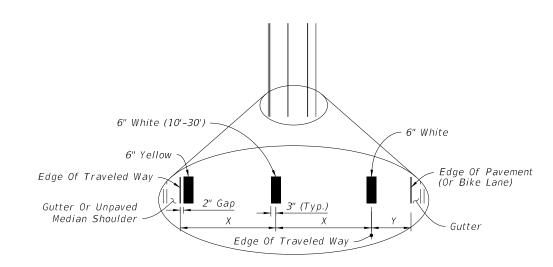
Y = BUFFERED BIKE LANE WIDTH (FT.)

= STRIPING FOR BUFFERED BIKE LANE =

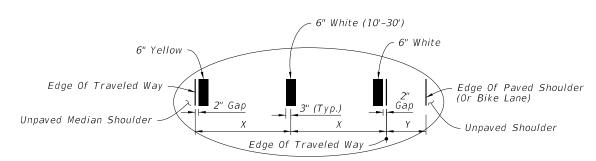


X = LANE WIDTH (FT.)

STRIPING WITH NO SHOULDER OR BIKE LANE =



CURB AND GUTTER



FLUSH SHOULDER

X = LANE WIDTH (FT.)

Y = PAVED SHOULDER / BIKE LANE

= STRIPING WITH SHOULDER OR NON-BUFFERED BIKE LANE ==

NOTES:

- 1. Lane widths (X) may not be same for each lane in the section.
- 2. For placement of RPMs, see Index 706-001.

PLACEMENT OF LONGITUDINAL PAVEMENT MARKINGS

DESCRIPTION:

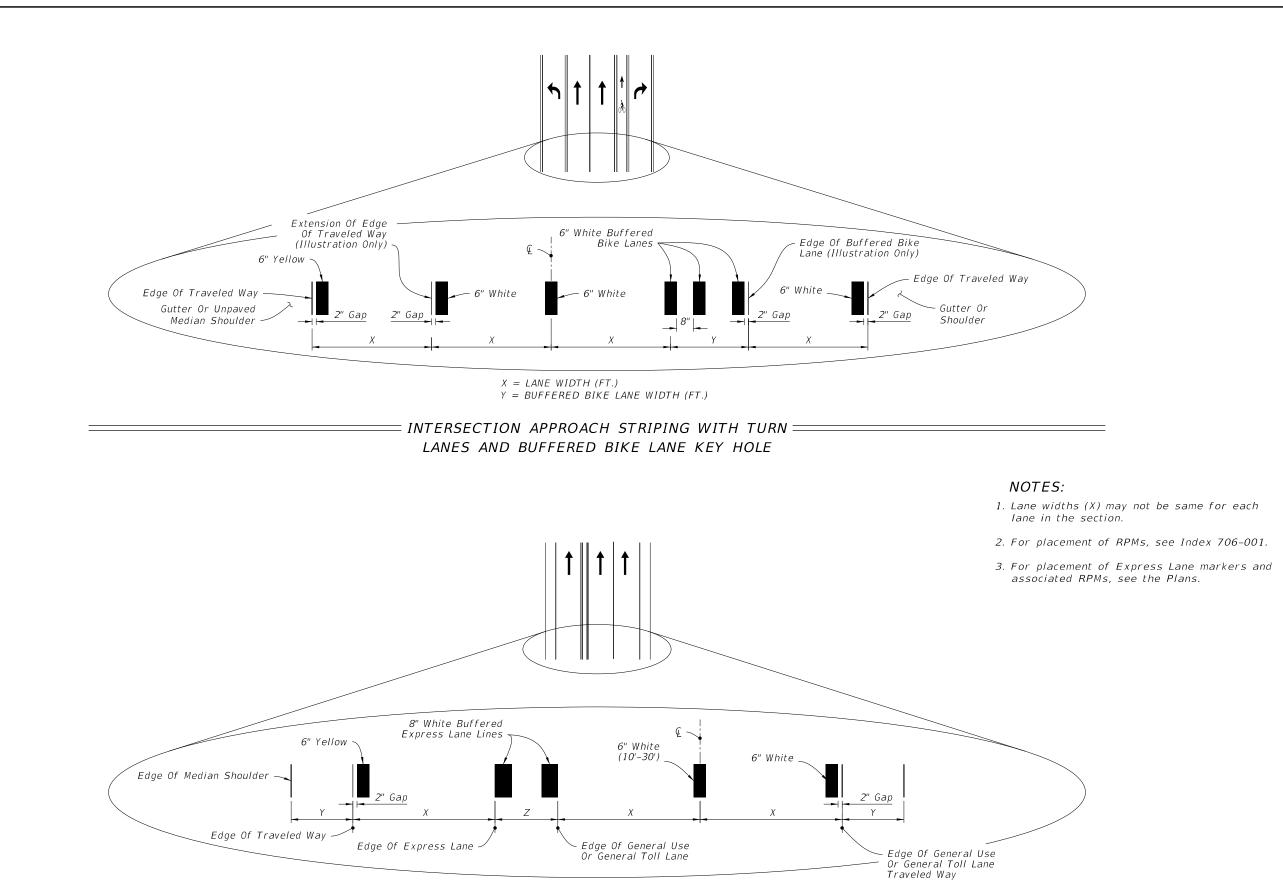
FDOT

FY 2024-25 STANDARD PLANS INDEX

SHEET

REVISION 11/01/21

PAVEMENT MARKINGS



X = LANE WIDTH (FT.)Y = PAVED SHOULDERZ = EXPRESS LANE BUFFER

BUFFERED EXPRESS LANE STRIPING =

PLACEMENT OF LONGITUDINAL PAVEMENT MARKINGS

REVISION 11/01/21

DESCRIPTION:

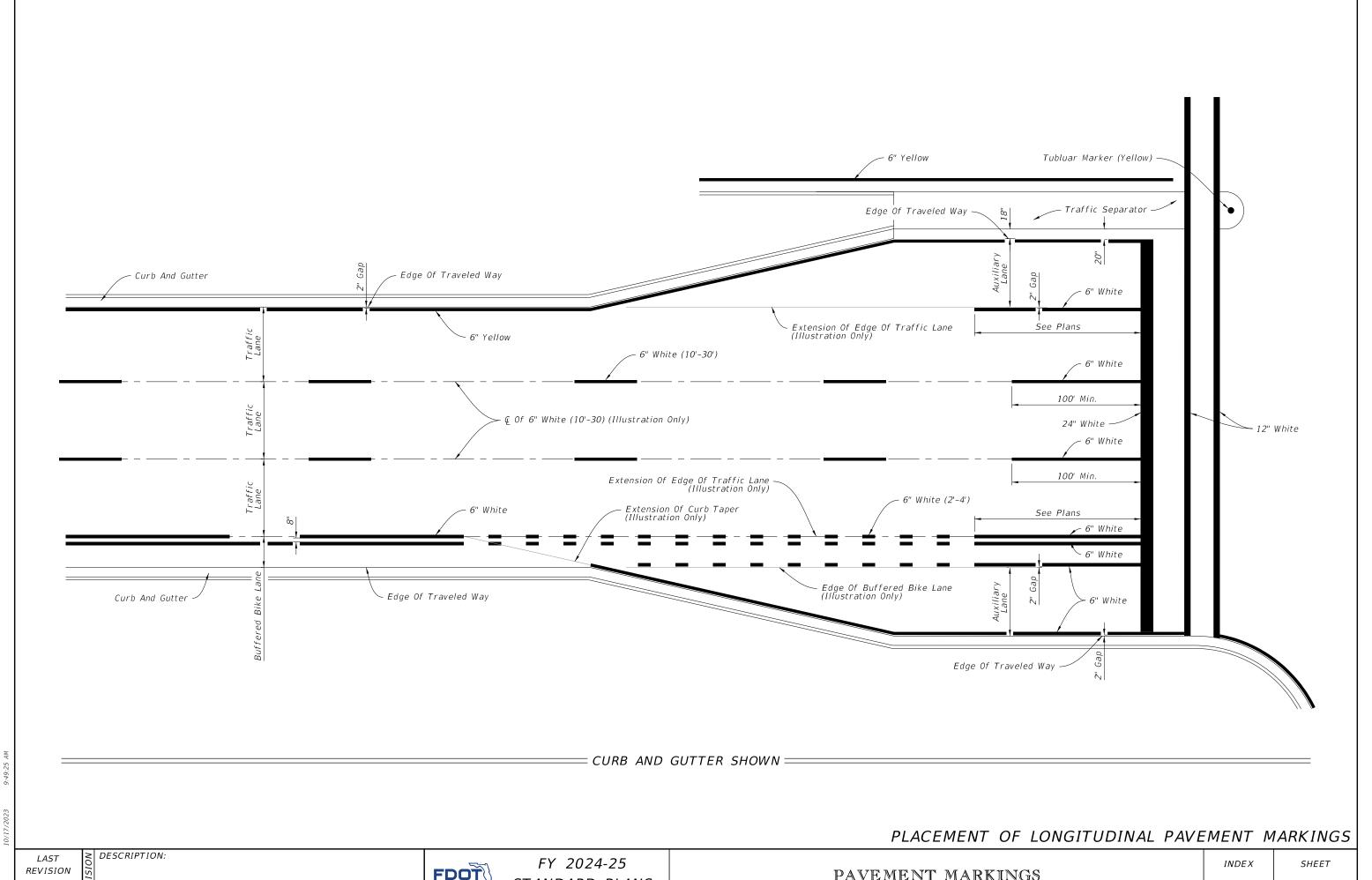
FDOT

FY 2024-25 STANDARD PLANS

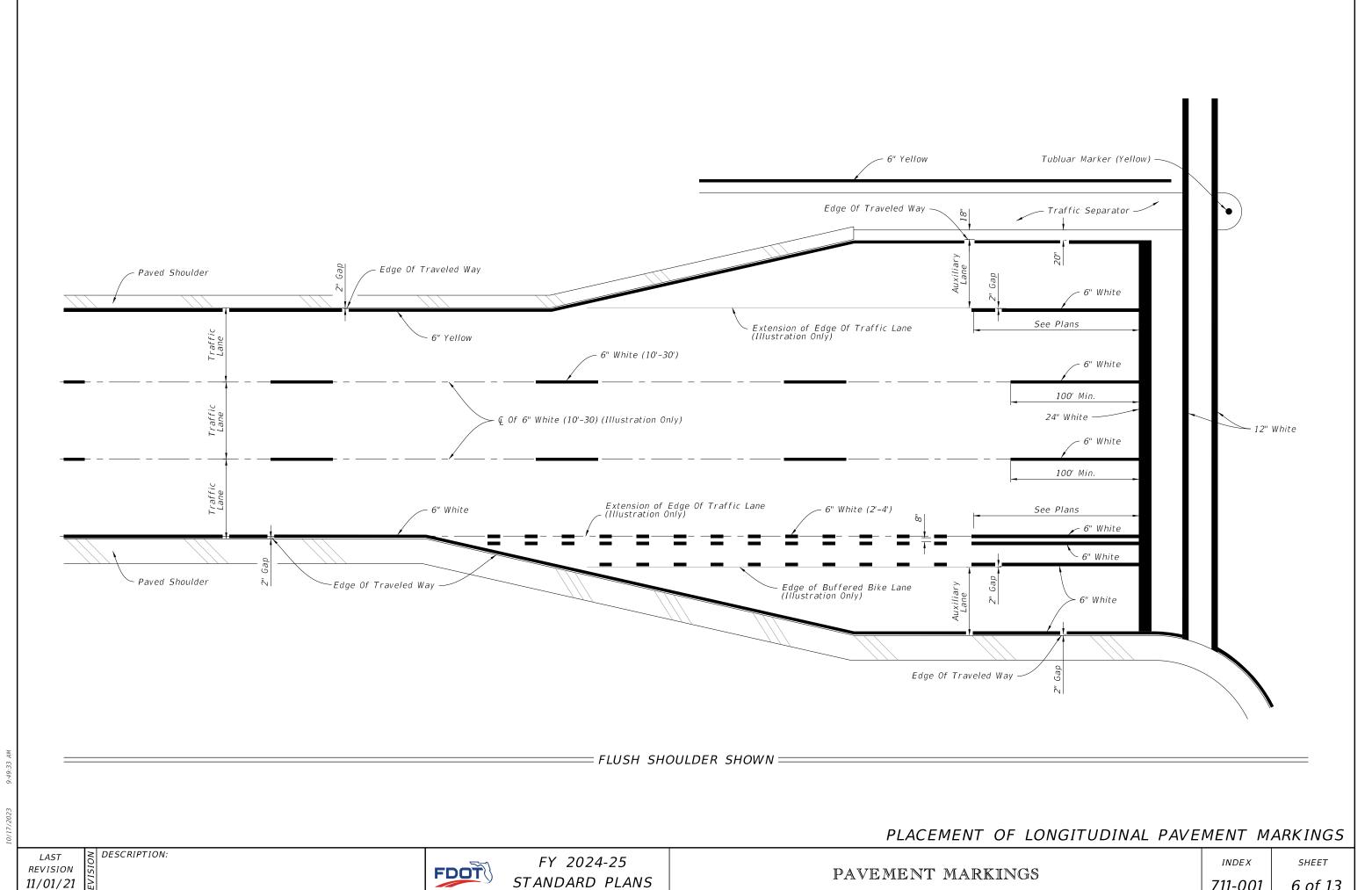
PAVEMENT MARKINGS

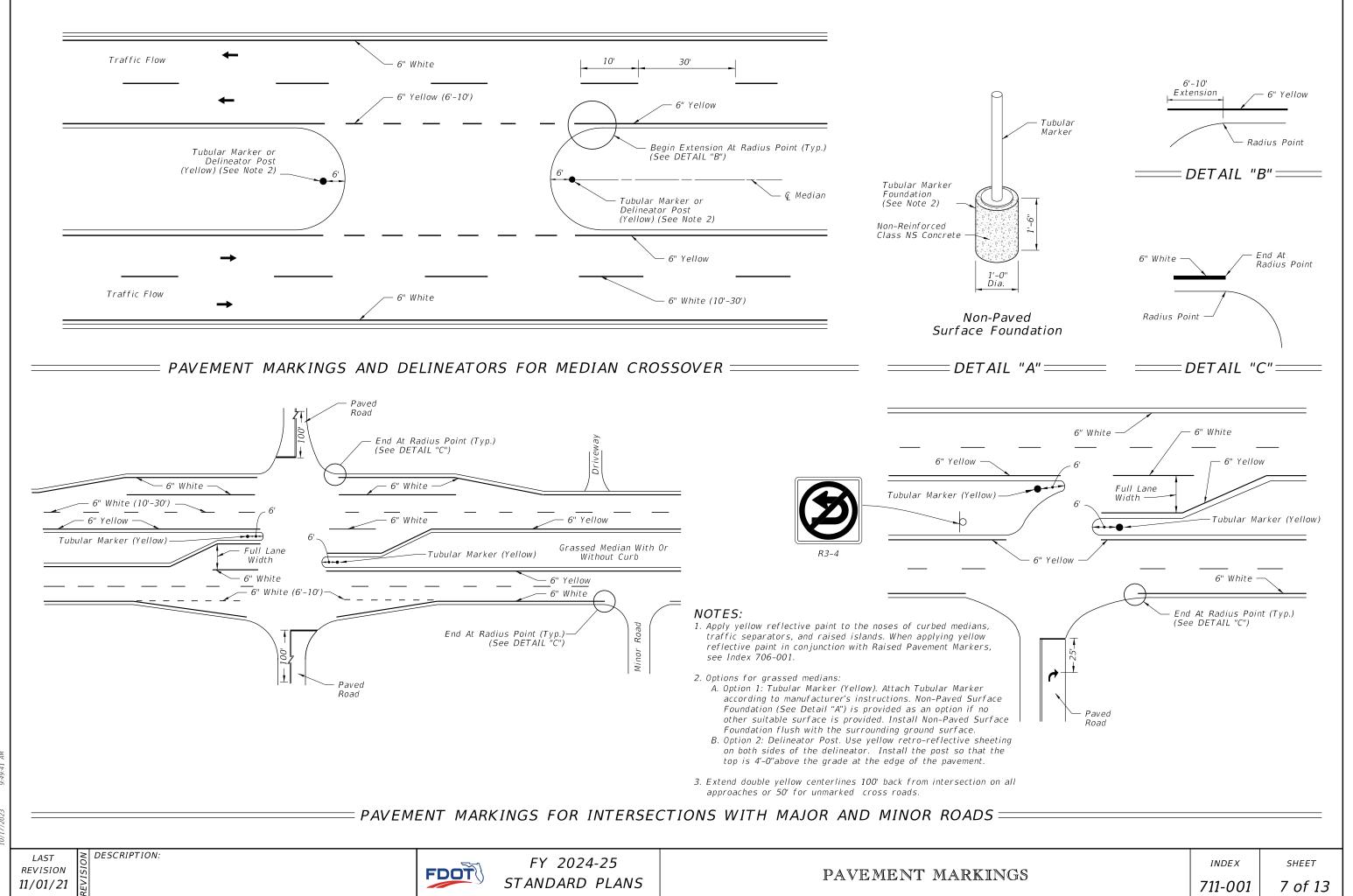
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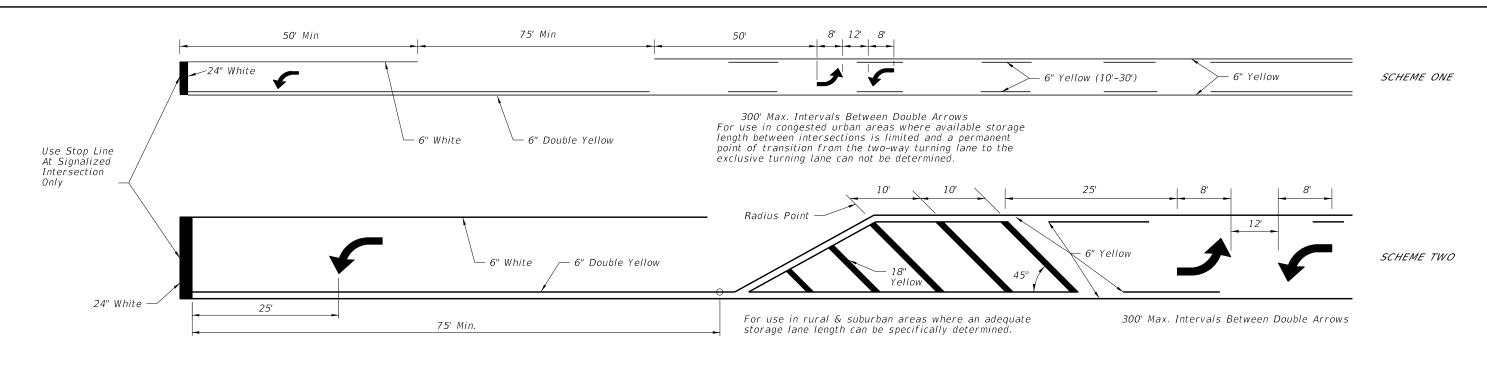
SHEET 4 of 13



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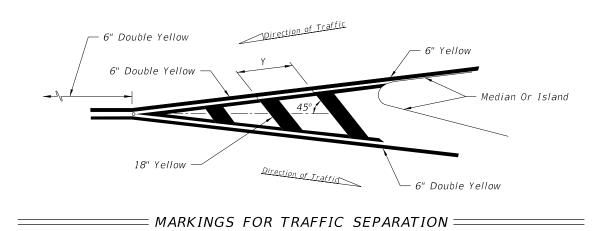


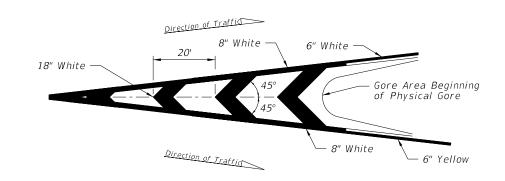


 \equiv TWO WAY LEFT TURN LANE \equiv

(With Single Lane Left Turn Channelization)

POSTED SPEED LIMIT MPH	"Y" (FT.)
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40



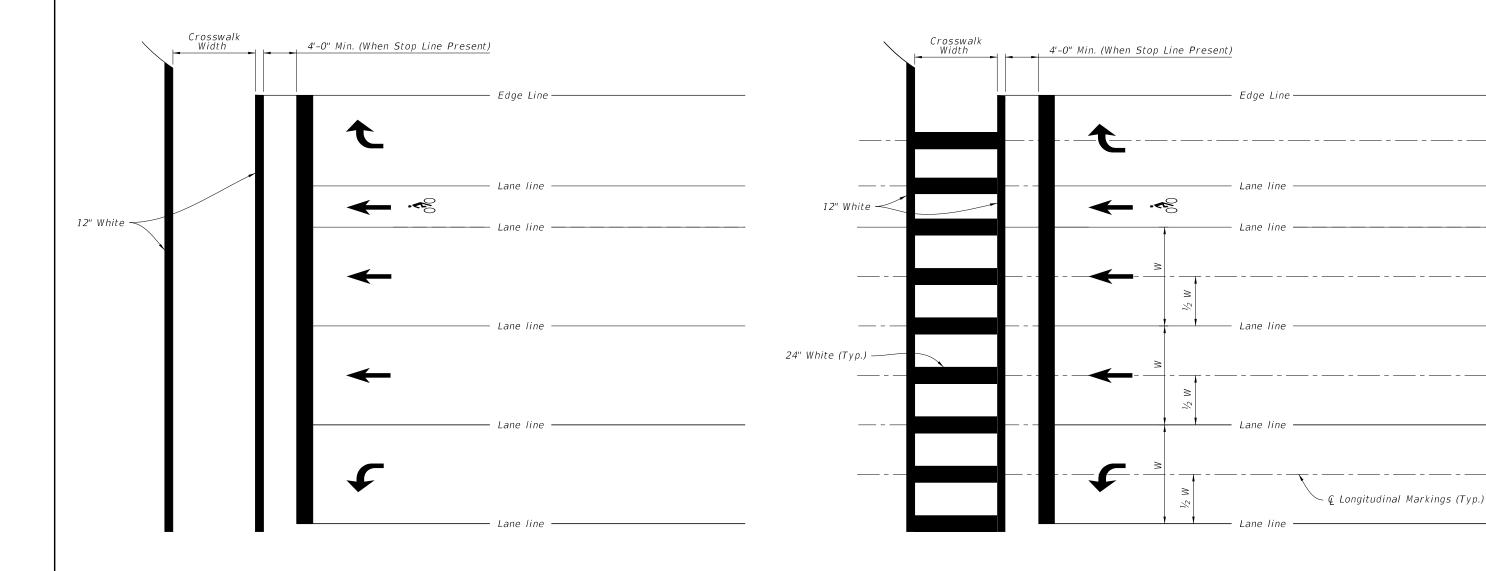


==== TRAFFIC CHANNELIZATION AT GORE ======

LAST REVISION 11/01/21

DESCRIPTION:





STANDARD CROSSWALK DETAILS =

- 1. For crosswalk width, exceed width of the adjacent sidewalk, but do not make width less than 6' for intersection crosswalks and 10' for midblock crosswalks. Measure width from the inside of the transverse crosswalk markings.
- 2. When the Special Emphasis Crosswalk is not perpendicular to the lane lines, make the longitudinal markings parallel to the lane lines.
- 3. Refer to Index 522-002 when Curb Ramps are present.

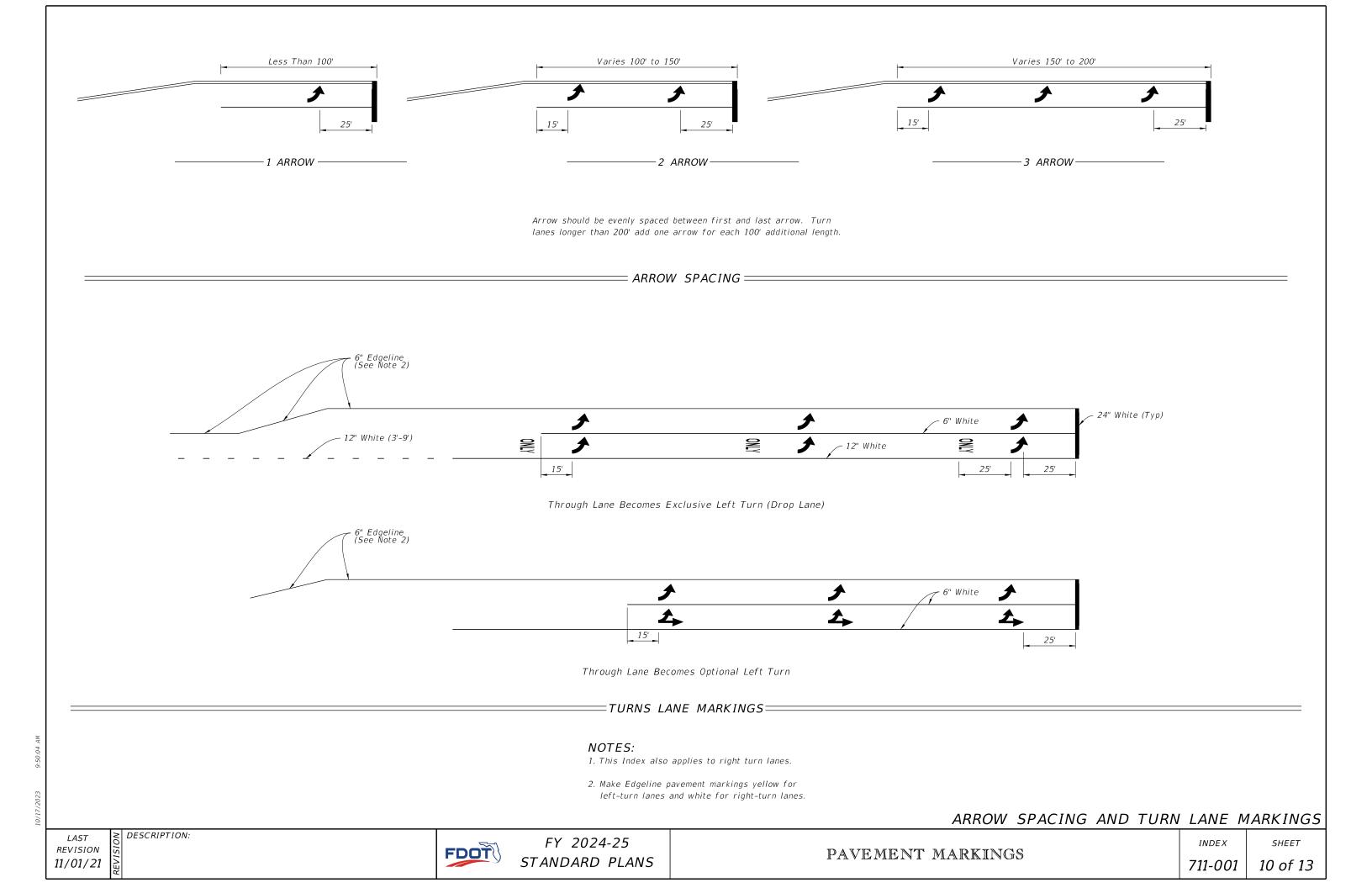
11/01/21

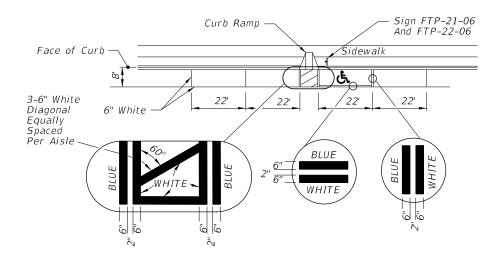
DESCRIPTION: REVISION

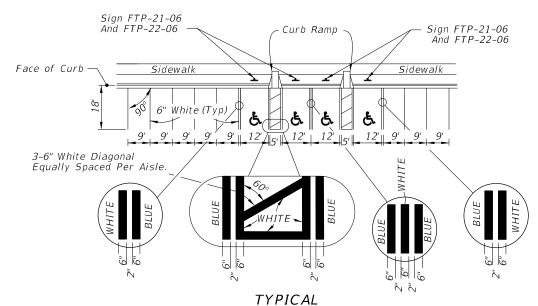


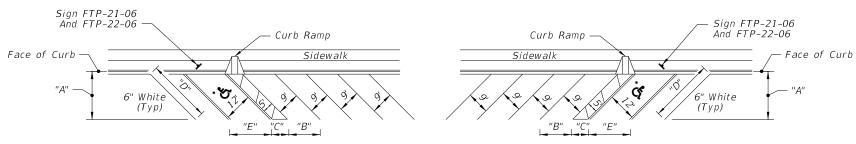
NOTES:

SPECIAL EMPHASIS CROSSWALK DETAILS









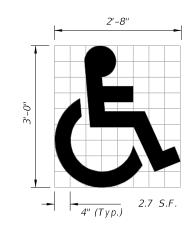
FORWARD-IN PARKING

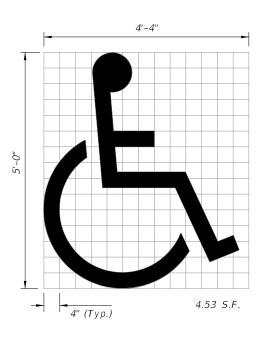
REVERSE-IN PARKING

*FOR ACCESSIBLE MARKINGS - SEE ABOVE

DIMENSIONS						
€ ∆	"A"	"B"	"C"	"D"	"E"	
45°	17'-0"	12'-9"	7'-0"	24'-0"	17'-0"	

PAVEMENT MARKING FOR PARKING





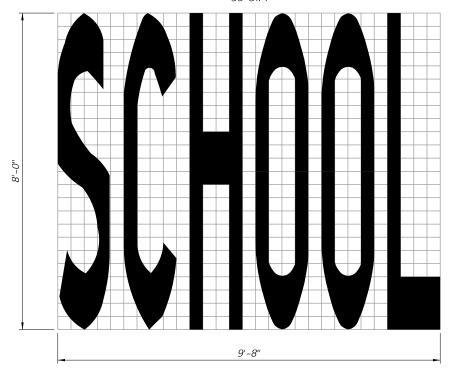
(See Note 5)

=UNIVERSAL SYMBOL OF ACCESSIBILITY ===

NOTES:

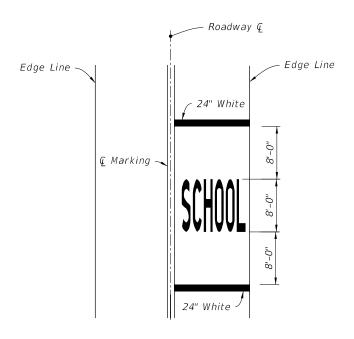
- 1. Dimensions are to the centerline of markings.
- 2. An Access Aisle is required for each accessible space when angle parking is used.
- 3. Criteria for pavement markings only, not public sidewalk curb ramp locations. For ramp locations refer to plans.
- 4. Mount FTP-22-06 sign below the FTP-21-06 sign.
- 5. Use of the pavement symbol in accessible parking spaces is optional. When pavement symbol is used, the symbol is either 3'-0" or 5'-0" high and white in color.

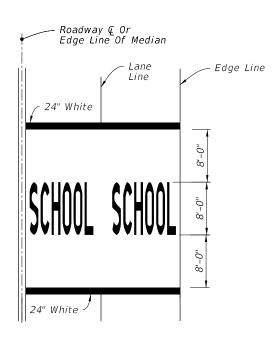
, 6.60.00

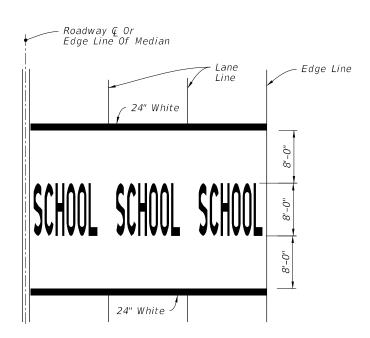


SCHOOL PAVEMENT MARKING

- 1. All grids are 4" x 4".
- 2. Pavement Marking Should Not Extend Into Opposing Lane.
- 3. Center School Pavement Marking in lane.







SINGLE-LANE APPROACH

TWO-LANE APPROACH

MULTI-LANE APPROACH (Three or More)

MARKINGS FOR SCHOOL ZONES =

REVISION 11/01/21

DESCRIPTION:

FDOT

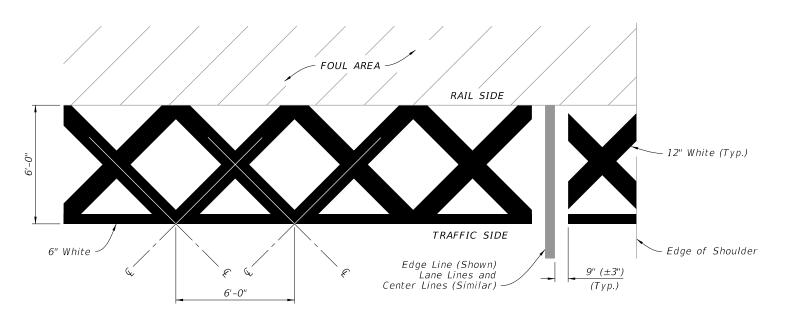
FY 2024-25 STANDARD PLANS

PAVEMENT MARKINGS

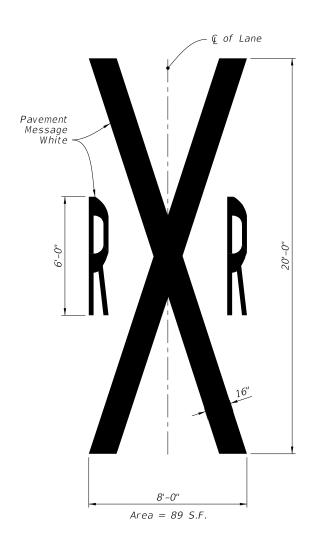
INDEX

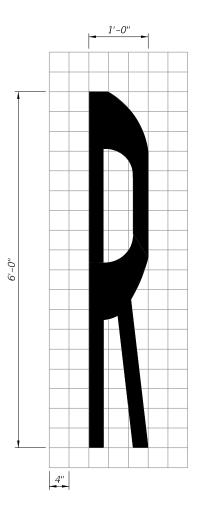
SHEET 12 of 13

Orient Railroad Dynamic Envelope Marking as shown in the Plans.



= RAILROAD DYNAMIC ENVELOPE (RDE) PAVEMENT MARKING DETAIL =





RAILROAD CROSSING PAVEMENT MESSAGE

REVISION 11/01/21 DESCRIPTION:

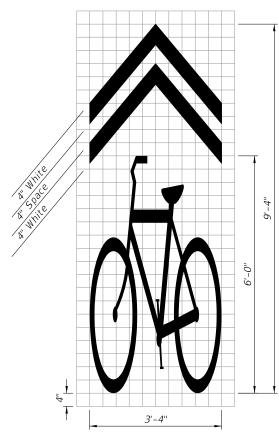
FDOT

FY 2024-25 STANDARD PLANS

PAVEMENT MARKINGS

INDEX 711-001

SHEET 13 of 13 8.1 S.F.



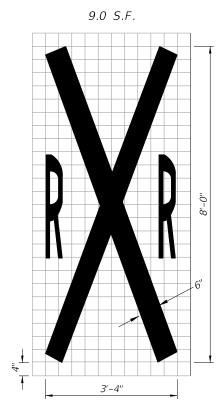
SHARED LANE MARKING (SLM)

6.3 S.F.

HELMETED BICYCLIST SYMBOL

4.2 S.F.

BIKE LANE ARROW



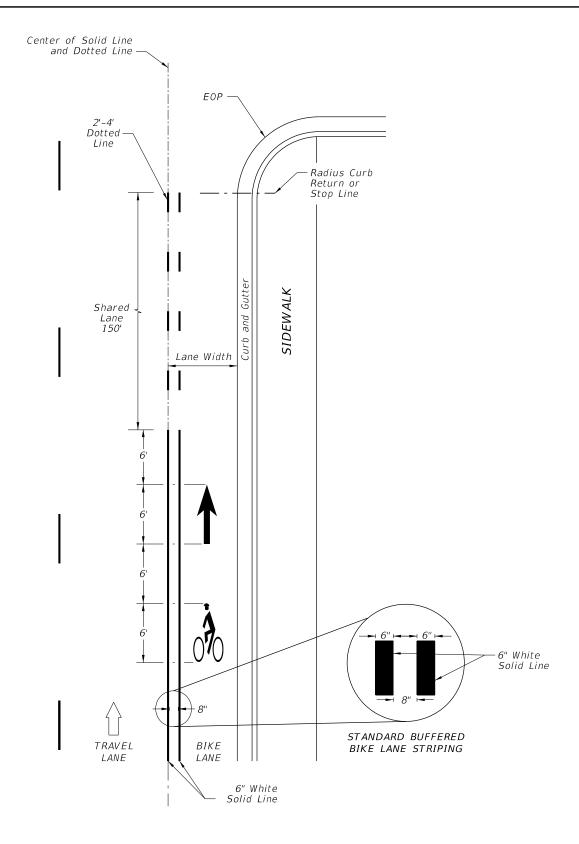
RAILROAD CROSSING

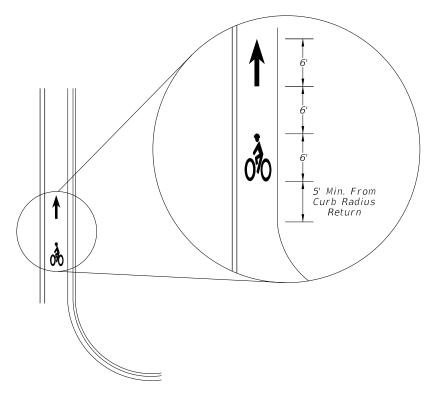
NOTES:

- 1. All bicycle markings and pavement messages shall be White.
- 2. All bicycle markings shall be preformed thermoplastic.
- 3. All grids are 4" x 4".

= STANDARD PAVEMENT MARKING MESSAGE LAYOUTS =

≥ DESCRIPTION:





FAR SIDE OF INTERSECTION DETAIL

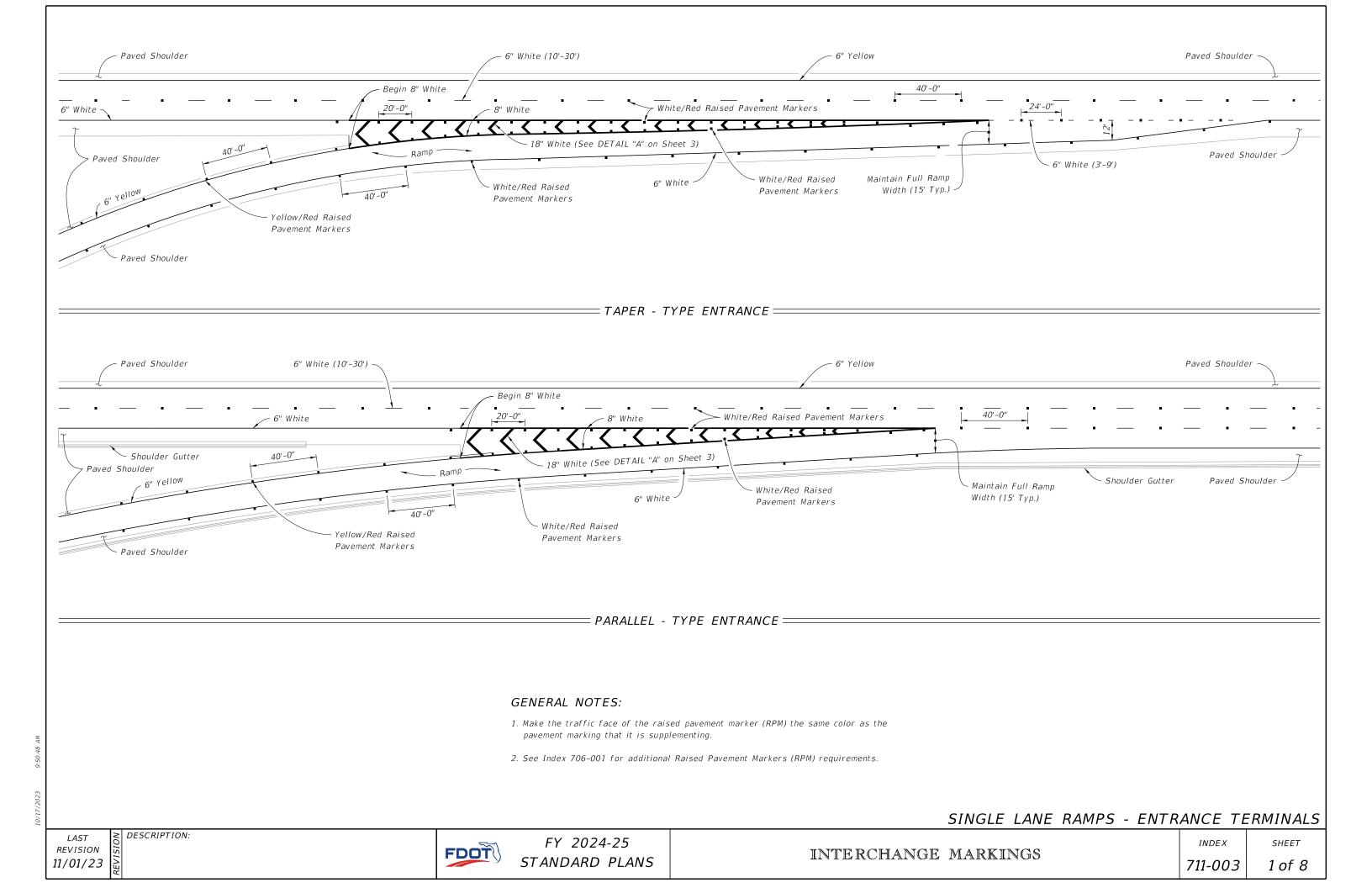
APPROACH TO INTERSECTIONS DETAILS

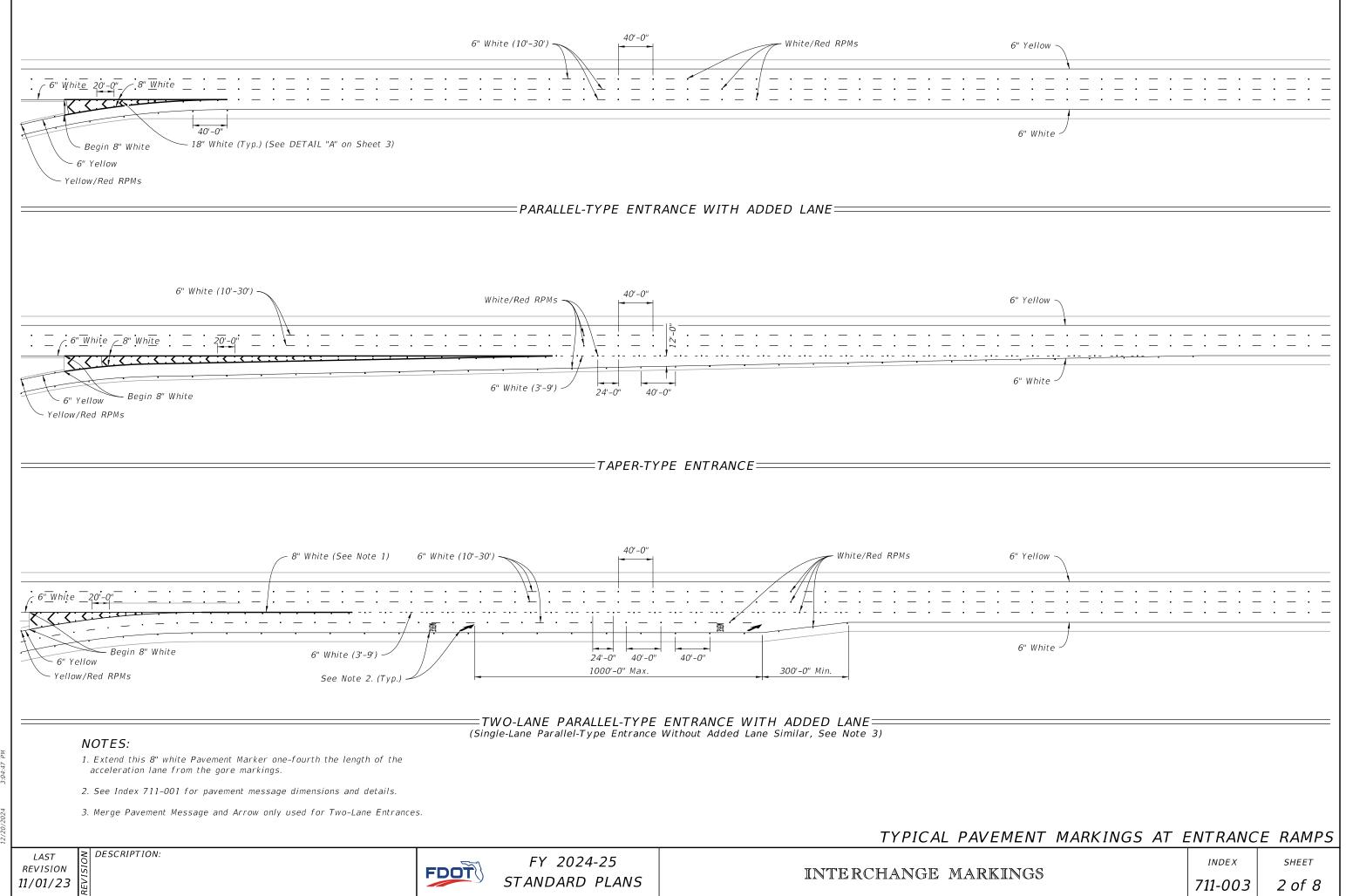
= BUFFERED BIKE LANES =

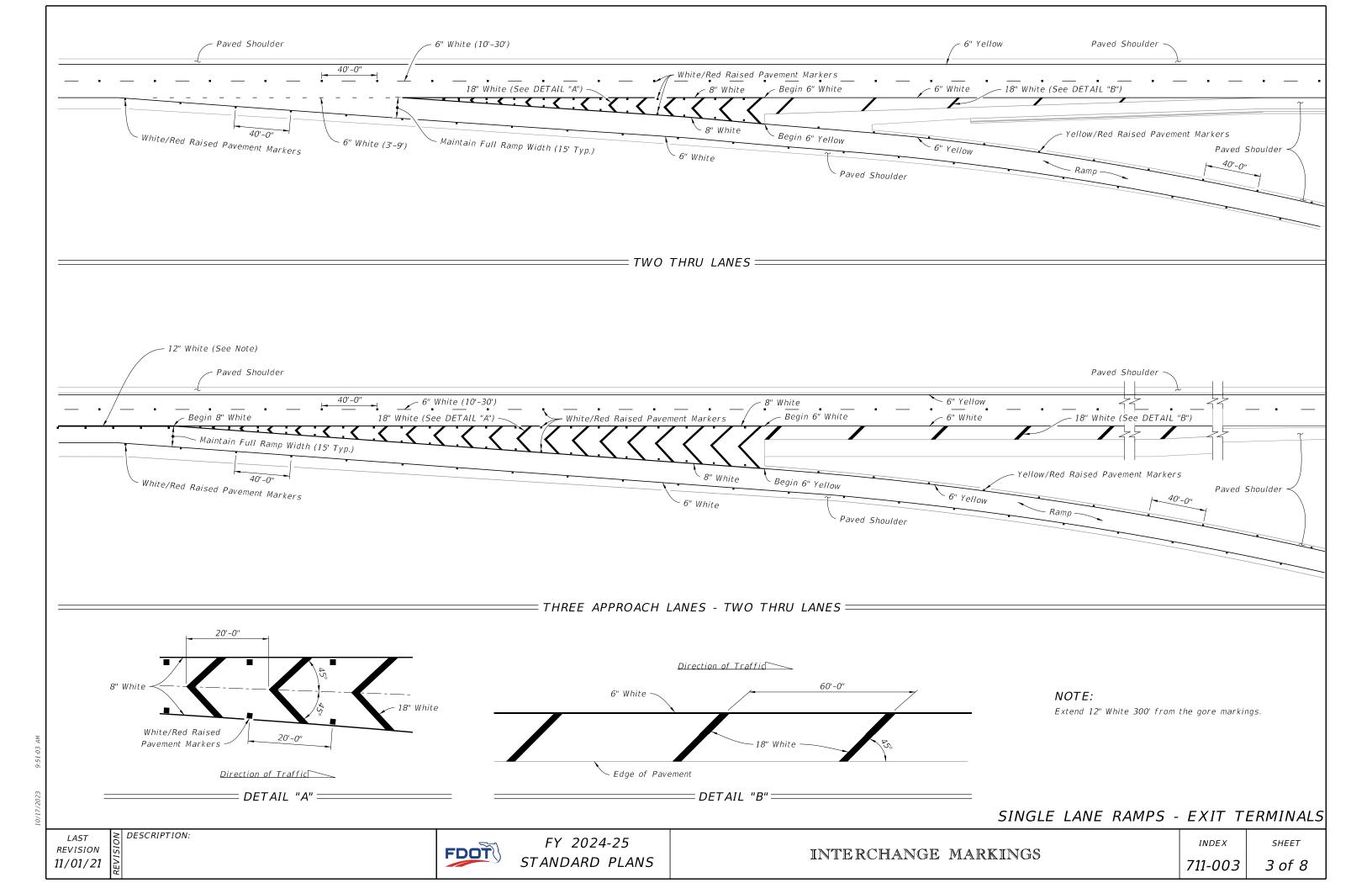
LAST REVISION 11/01/17

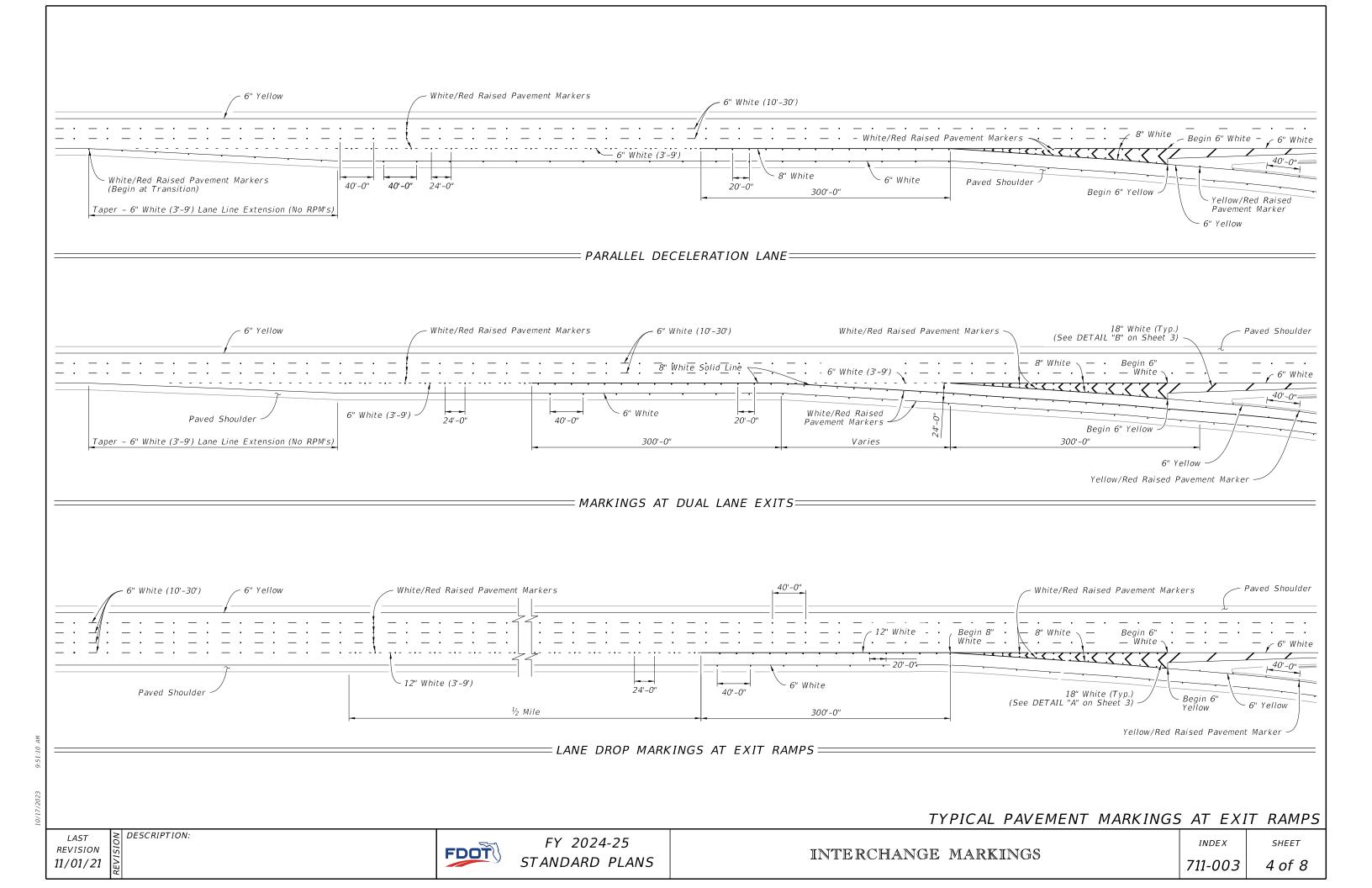
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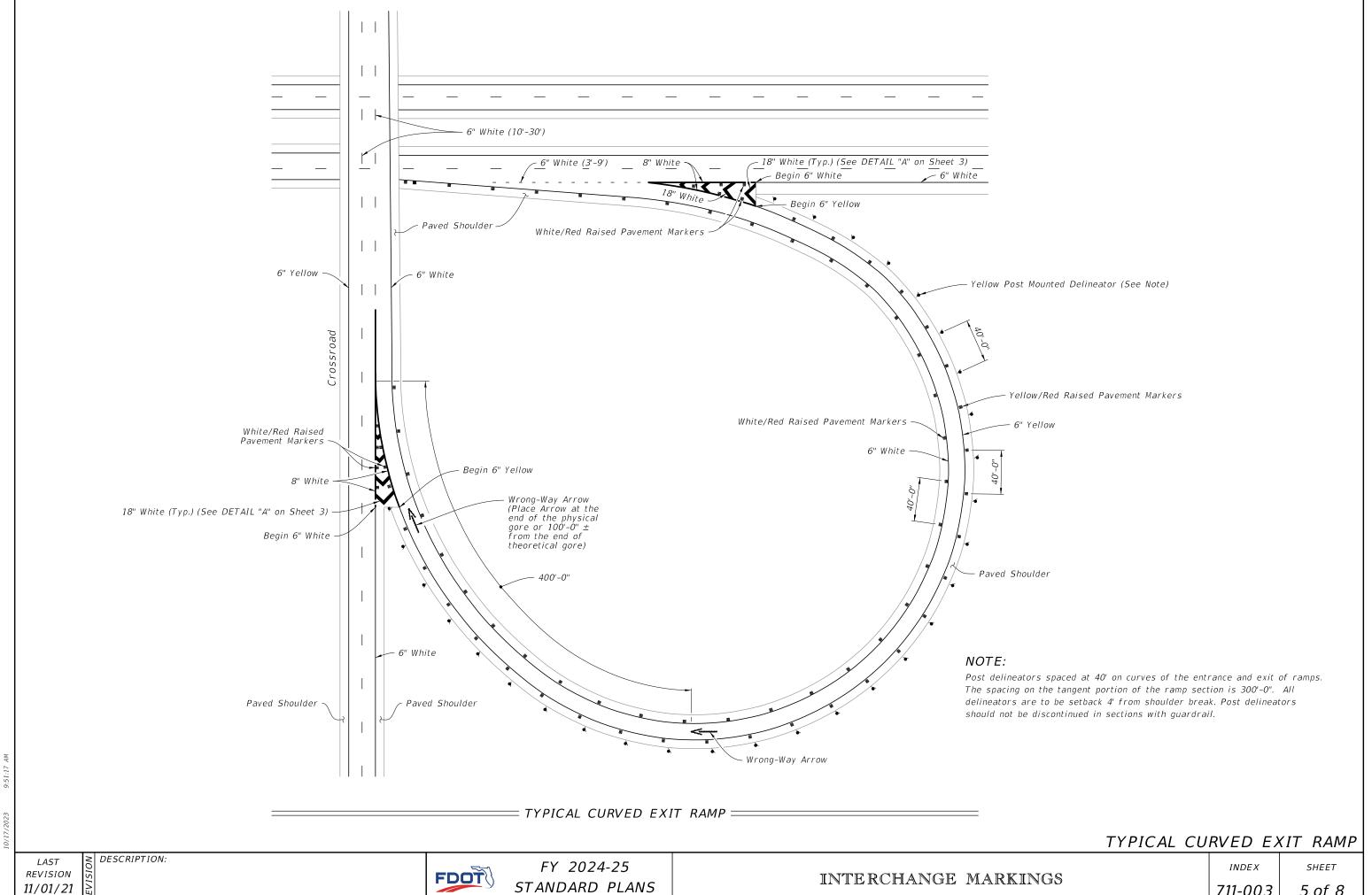


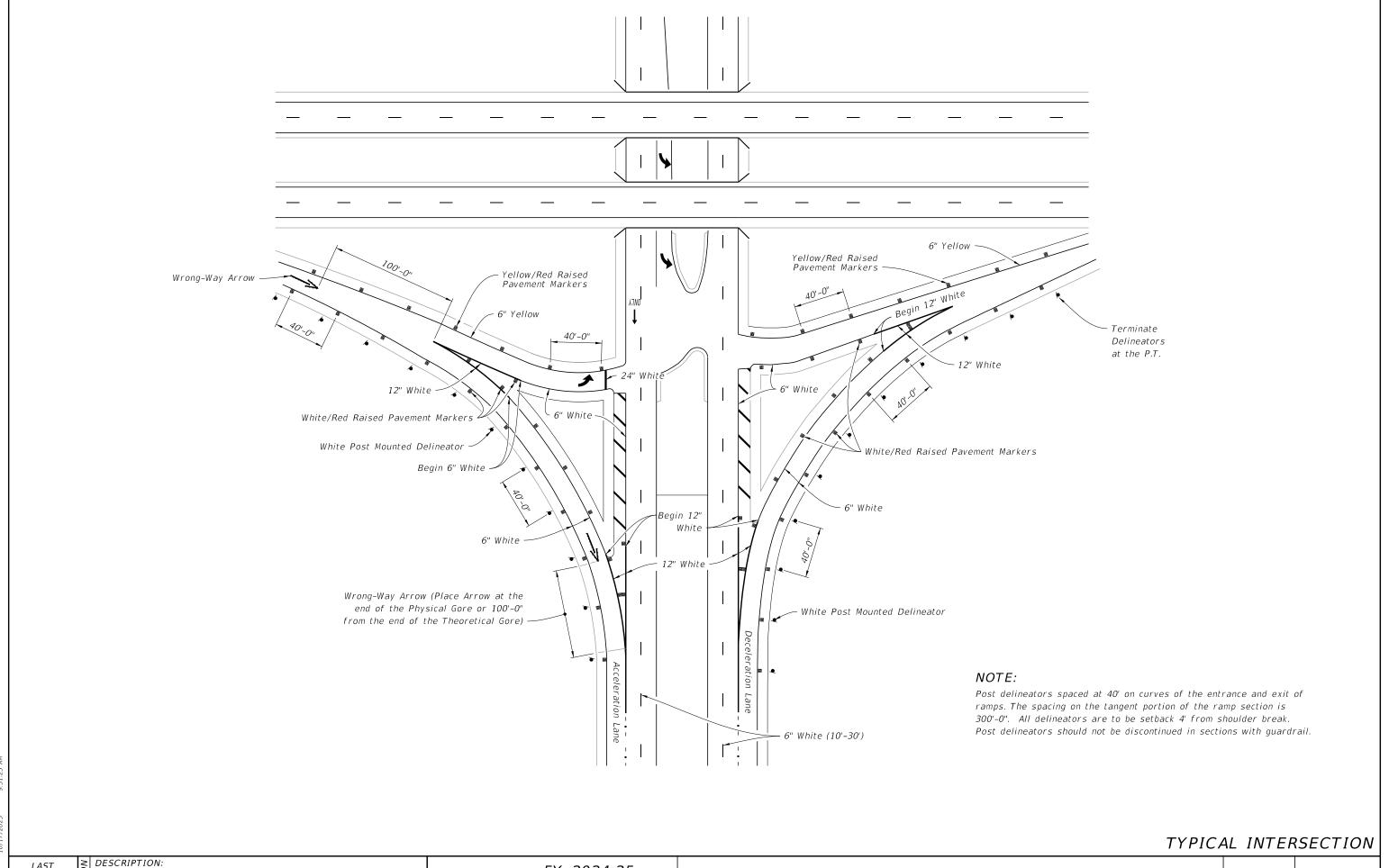










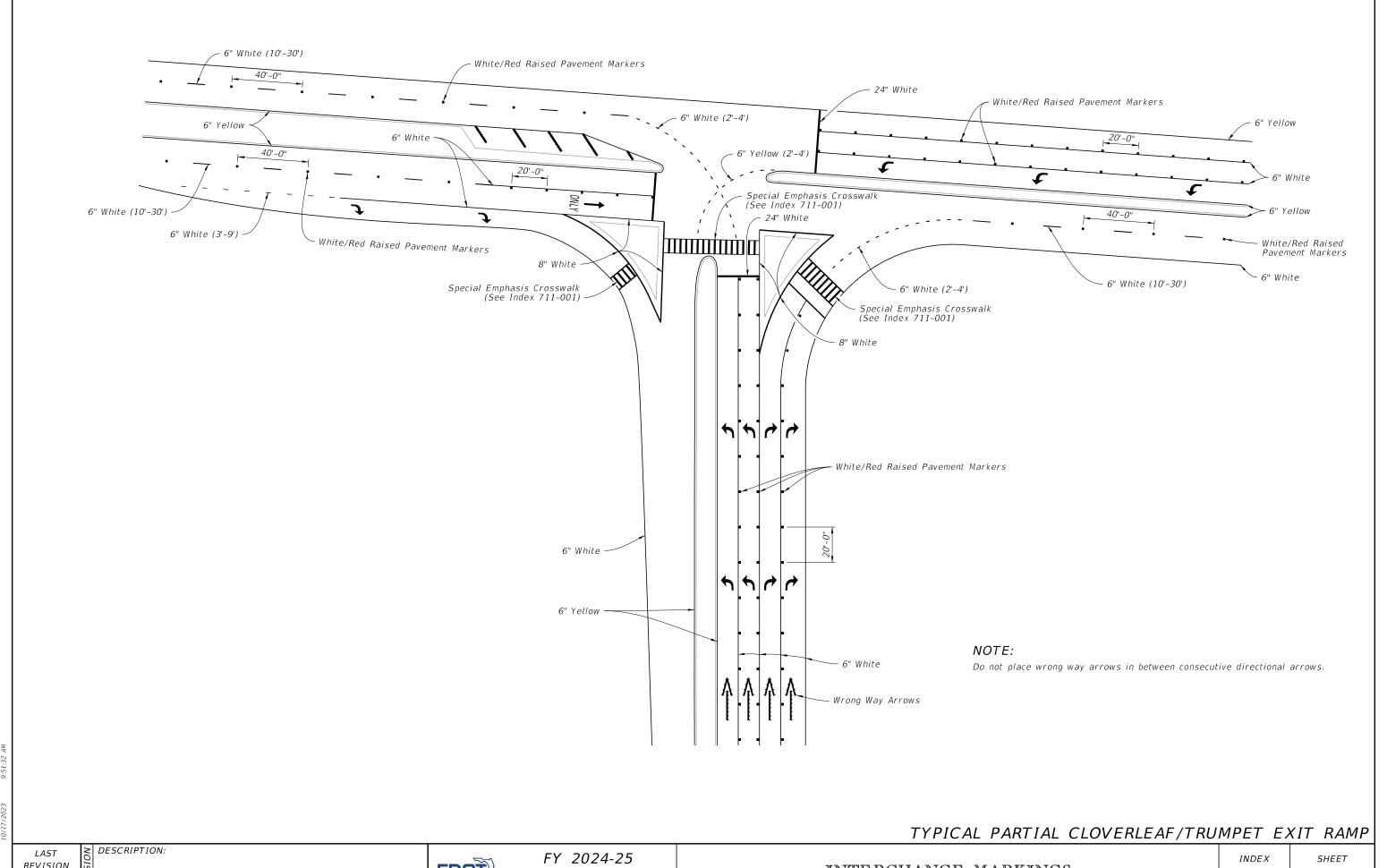


10/17/2023 9:51

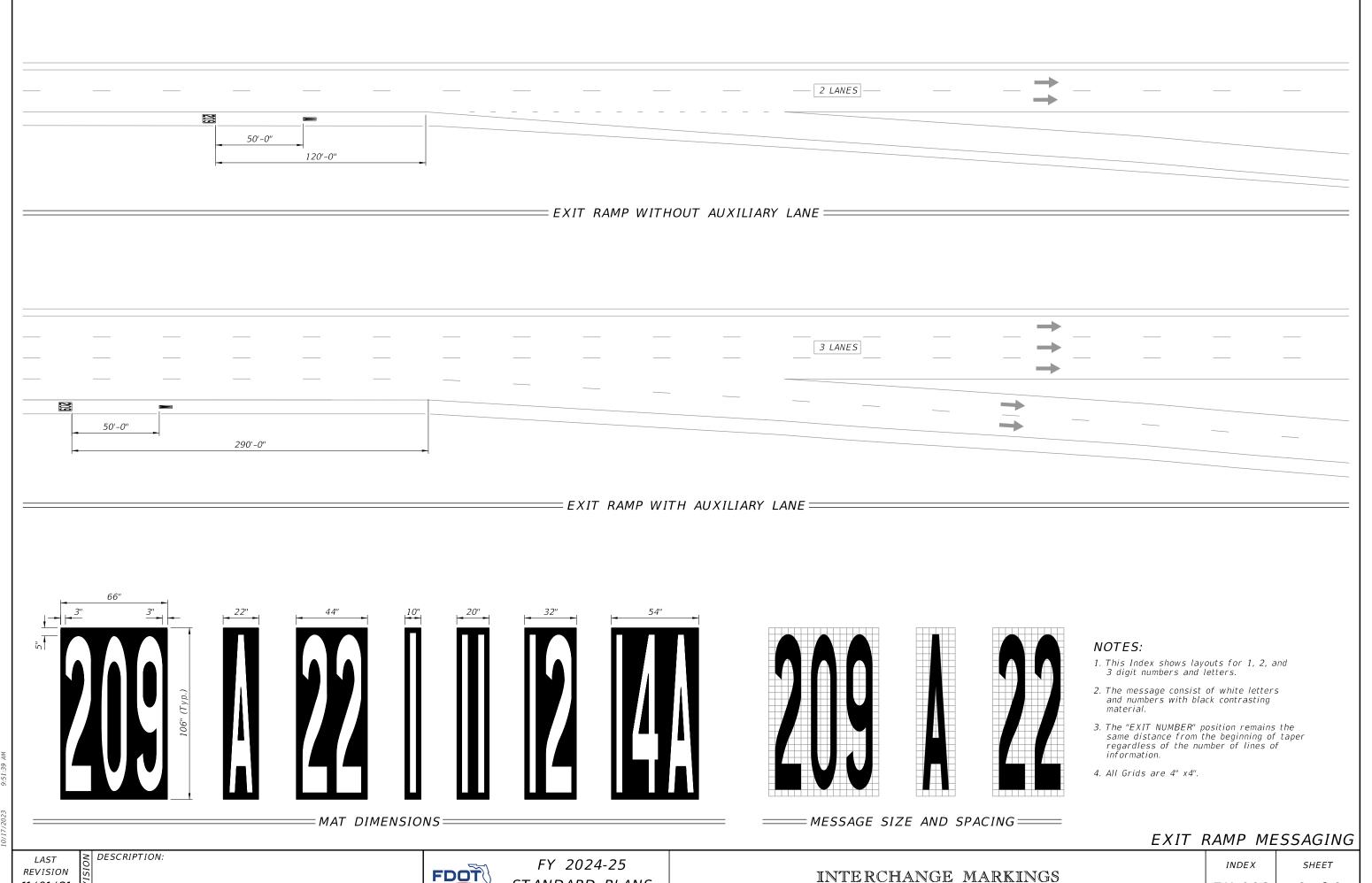
LAST REVISION 11/01/21

FDOT

FY 2024-25
STANDARD PLANS



REVISION 11/01/21



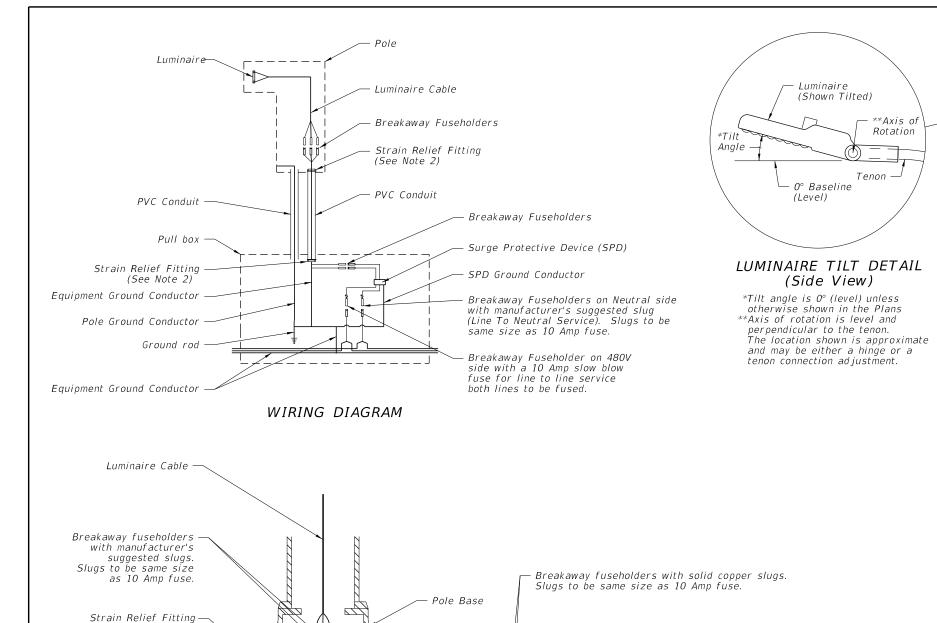
11/01/21

FDOT

STANDARD PLANS

711-003

8 of 8



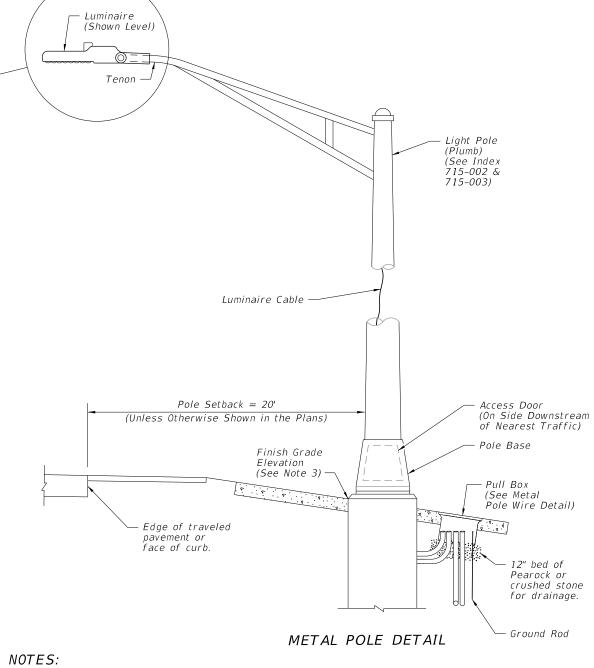
#6 TW Green

Ground Wire

#6 Solid

Copper

Ground



- 1. Concrete Barrier and Bridge Mounted Poles: Place wiring system following conduit layouts and requirements of Index 715-002. Follow additional requirements of Specification 992. For wiring and devices shown inside of pull boxes on this sheet, place inside of embedded junction boxes instead. Place the vertical breakaway fuseholders inside the pole, at the handhole location.
- 2. Provide enough cable length to allow for removal of fuseholders from the transformer base, pole base, or pullbox for maintenance. Remove slack from the luminaire cable to provide tension on the fuseholders in breakaway pole designs. Pull excess cable into pull box tighten strain relief fittings or cable clamps at both ends of conduit to prevent cable from slipping.
- 3. Align the top, outside edge of the concrete foundation with the finish grade elevation on the side nearest the traffic lane. Relative to the finish grade elevation, this foundation alignment has a vertical tolerance of plus 2 inches to minus 0 inches.

WIRING AND

REVISION 11/01/23 (See Note 2)

#6 Solid Copper

Grounding Lug

U.L. approved Ground Rod 5%" diameter 20' long copper—clad with approved ground connection (At all pull boxes)

METAL POLE WIRING DETAIL

Ground Wire (Bare)

PVC conduit with Type TC Cable

1" PVC conduit with #6 Solid

Copper Ground Wire (Bare)

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

— #6 TW Green Bonding Ground

Strain Relief Fitting (See Note 2)

Surge Protective Device (SPD)

Amp fuse.

Breakaway Fuseholder on 480V side with

Breakaway Fuseholders on Neutral side with manufacturer's suggested slug (Line To Neutral

a 10 Amp'slow blow fuse for line

to line service both lines to be fused.

Service). Slugs to be same size as 10

Circuit conductors in schedule 40 PVC

conduit. Circuit conductors and conduit

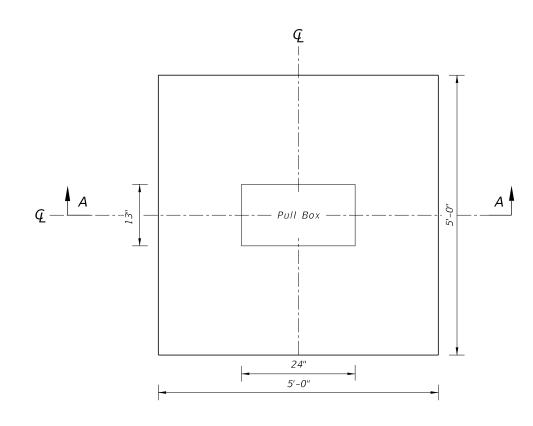
-12" bed of Pearock or crushed stone for drainage

size as shown in plans. (Typical)

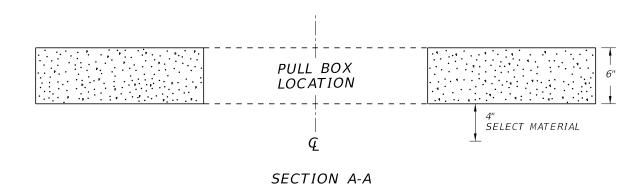
INSTALLATION DETAILS

INDEX SHEET

- 1. Use compacted select material in accordance with Index 120-001.
- 2. Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi.
- 3. Outside edge of slab shall be cast against formwork.
- 4. The pull box shown is 13" x 24"; others approved under Specification 635 may be used.
- 5. Slabs to be placed around all Poles and Pull Boxes in rural locations. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
- 6. Concrete for slabs around pull boxes shall be included in the price of pull box.



SLAB DIMENSIONS



SLAB DETAILS FOR INTERMEDIATE PULLBOX LOCATIONS

LAST REVISION 11/01/17

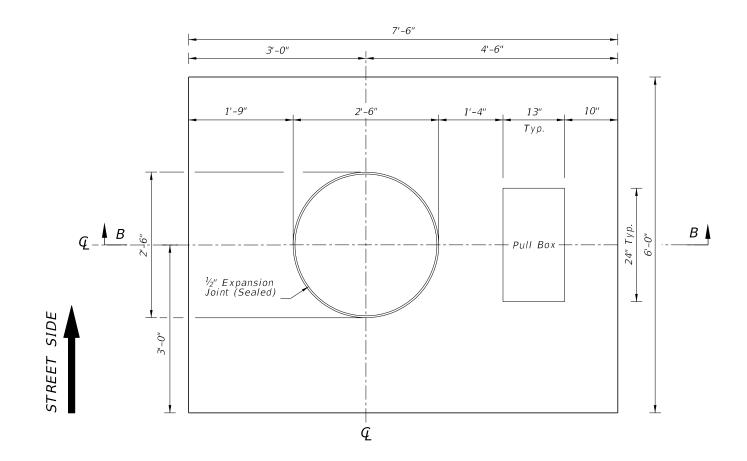
DESCRIPTION:

FDOT

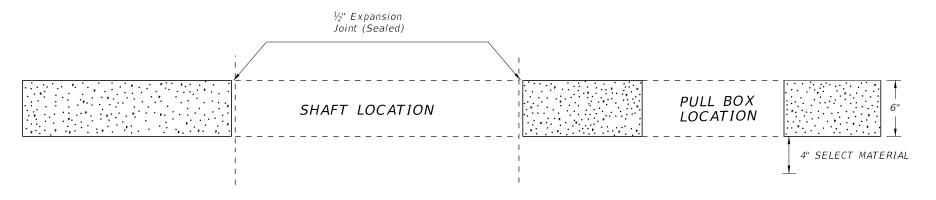
FY 2024-25 STANDARD PLANS

NOTES:

- 1. Use compacted select material in accordance with Index 120-001.
- 2. Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi.
- 3. Outside edge of slab shall be cast against formwork.
- 4. The pull box shown is 13" x 24"; others approved under Specification 635 may be used.
- 5. Slabs to be placed around all Poles and Pull Boxes. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
- 6. Concrete for slabs around poles and pull boxes shall be included in the price of pole or pull box.
- 7. The expansion joint shall consist of ½" of closed-cell polyethylene foam expansion material. The top ½" of expansion material shall be removed after pouring the slab and sealed with an APL approved Type A sealant meeting the requirements of Specification 932.



SLAB DIMENSIONS



SECTION B-B

SLAB DETAILS FOR POLE AND PULL BOX LOCATIONS

LAST REVISION 11/01/17

FDOT

FY 2024-25 STANDARD PLANS

CONVENTIONAL LIGHTING

INDEX 715-001

SHEET

DESCRIPTION:

- 2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not
- 3. Materials:
- A. Pole, Pole Connection Extrusions and Arm Extrusions: ASTM B221, Alloy 6063-T6 or Alloy 6061-T6
- B. Bars, Plates, Stiffeners and Backer Ring: ASTM B221, Alloy 6063-T6
- C. Caps and Covers: ASTM B-26, Alloy 319-F
- D. Steel Bearing Plate: ASTM A709 or ASTM A36 Grade 36
- E. Aluminum Weld Material: ER 4043
- . Transformer and Frangible Base Materials: ASTM B26 or ASTM B108, Alloy 356-T6
- G. Bolts, Nuts and Washers:
- a. Shoe Base Bolts: ASTM F3125, Grade A325, Type 1
- b. Nuts: ASTM A563 Grade DH Heavy-Hex
- c. Washer: ASTM F436 Type 1
- H. Anchor Bolts, Nuts, and Washers: a. Anchor Bolts: ASTM F1554 Grade 55 b. Nuts: ASTM A563 Grade A Heavy-Hex
- . Plate Washer: ASTM A36
- I. Stainless Steel Fasteners: ASTM F593 Alloy Group 2, Condition A, CW1 or SH1
- Nut Covers: ASTM B26 (319-F)
- K. Concrete: Class II
- L. Reinforcing Steel: Specification 415
- 4. Fabrication:
- A. Weld Arm and Pole (Alloy 6063) in the T4 temper using 4043 filler. Age the Arm and Pole artificially to the T6 temper after welding.
- B. Transverse welds are only allowed at the base.
- C. Roadway Light Pole Taper: Taper as required to provide a round top O.D. of 6" and a base O.D. of 8" for 20' and 25' mounting heights and 10" O.D. for poles with 30' to 50' mounting heights. Portions of the pole near the base shoe and at the arm connections may be held constant to simplify fabrication.
- D. Median Barrier Mounted Light Pole Taper: Taper as required to provide a 6" O.D. round top with an 11" x 7" O.D. oblong base. Portions of the pole near the base and at the arm connections may be held constant at 11"x 7" oblong and 6" round respectively to simplify fabrication.
- E. Provide 'J', 'S' or 'C' hook at top of pole for electrical wires.
- Equip poles located on bridges, walls and concrete median barriers/Traffic Railings with a vibration damper.
- G. Perform all welding in accordance with AWS D1.2.
- H. Embedded Junction Box (EJB):
- a. Weld all seams continuously and grind smooth.
- b. Hot Dip Galvanize after Fabrication.
- c. Provide a watertight cover with neoprene gasket and secure cover with galvanized screws.

 I. For Median Barrier Mounted Aluminum Light Poles, the fabricator must demonstrate the ability to produce a crack
- free pole. The fabricator's Department-approved QC Plan must contain the following information prior to
- a. Tests demonstrating a pole with a $\frac{1}{4}$ " wall thickness achieves and ultimate moment capacity of 36 kip*ft in the strong axis and 30 kip*ft in the weak axis. b. Tests demonstrating a pole with a $\frac{15}{16}$ " wall thickness achieves an ultimate moment capacity of 44 kip*ft in
- the strong axis and 37 kip*ft in the weak axis. c. Test results showing the pole does not buckle at the shape transition area under the ultimate moment
- capacity loads.
- d. Complete details and calculations for the reinforced 4"x 6" (Min.) handhole located 1'-6" above the base plate. J. Identification Tag: (Submit details for approval.)
- a. 2" x 4" (Max.) aluminum identification tag.
- b. Locate on the inside of the transformer base and visible from the door opening.
- c. Secure to transformer base with $lat{V_8}^{\prime\prime}$ diameter stainless steel rivets or screws. d. Include the following information on the ID Tag:
- 1. Financial Project ID
- 2. Pole Height

DESCRIPTION:

3. Manufacturer's Name

- 5. Coatings/Finish:
 - A. Pole and Arm Finish: 50 grit satin rubbed.
 - B. Galvanize Steel Bolts, Screws, Nuts and Washers: ASTM F2329
 - C. Hot Dip Galvanize EJB and other steel items including poles and plate washers: ASTM A123
- A. Foundation: Specification 455, except payment for the foundation is included in the cost of the pole.
- B. Frangible Base, Base Shoe, and Clamp.

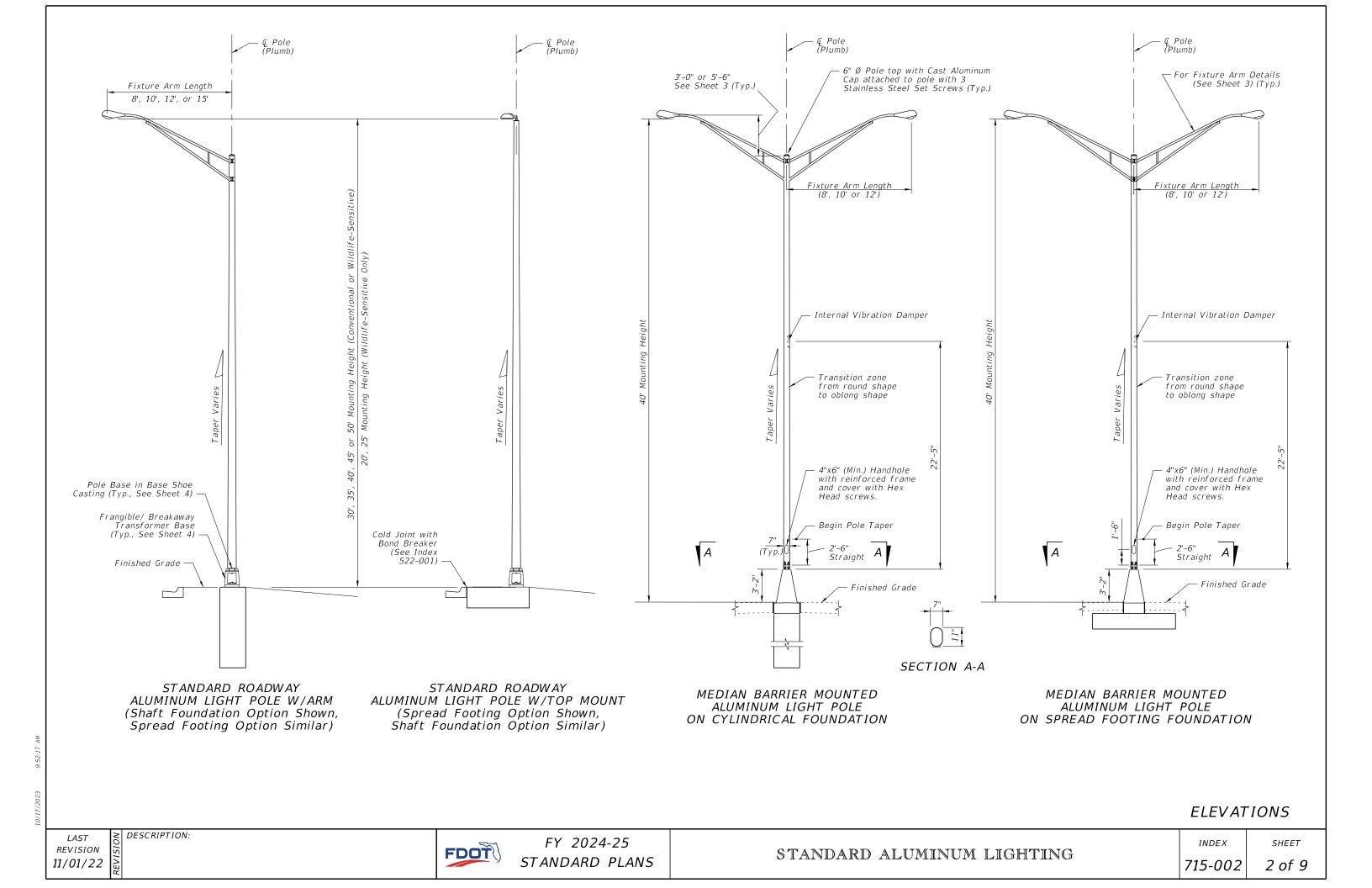
c. Do not erect pole without Luminaire attached.

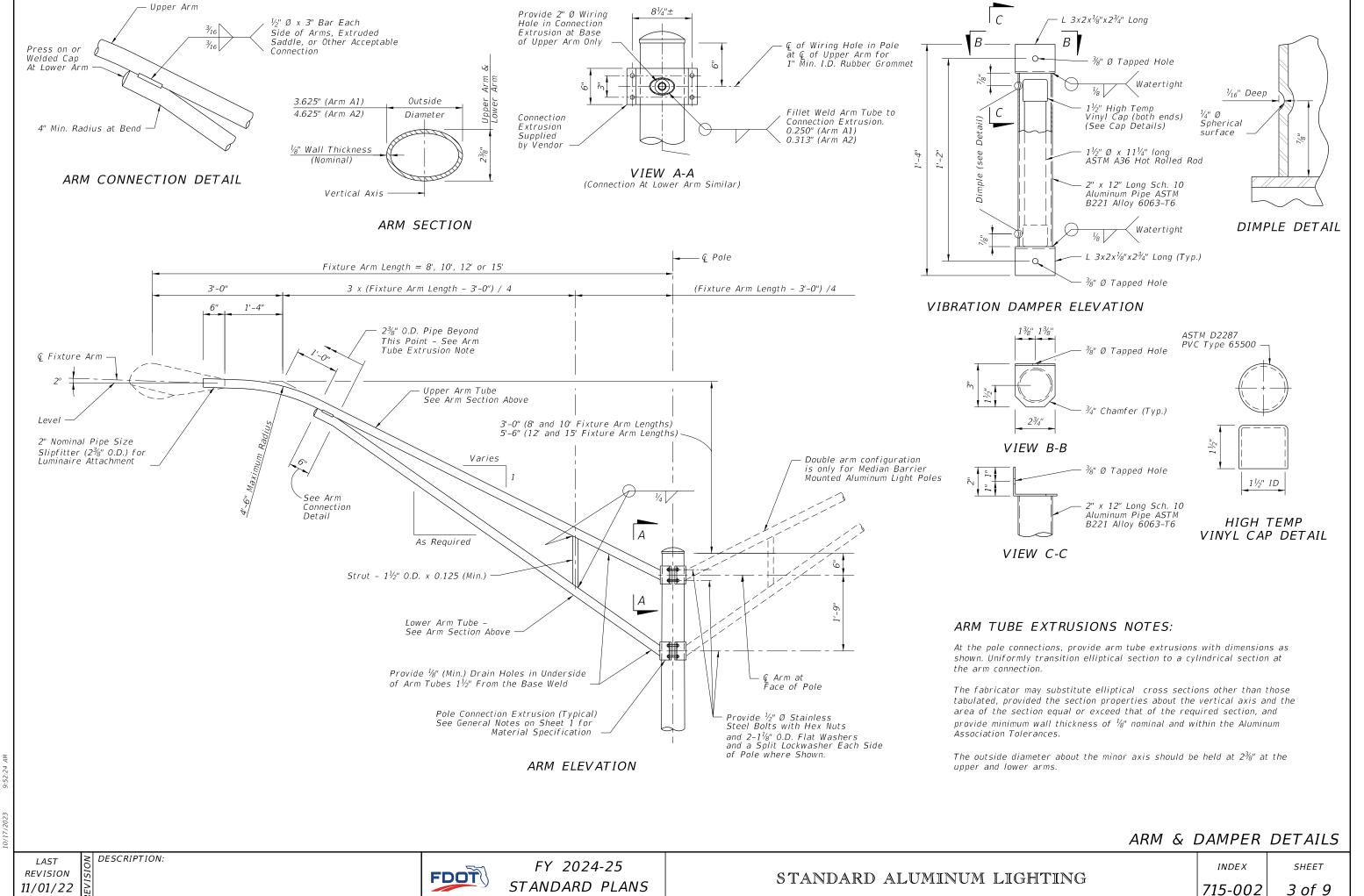
- a. Certify that the Clamp, Frangible Transformer Base, and Base Shoe Design are capable of providing the required capacity. b. Certify the Base conforms to the current FHWA required AASHTO Frangibility Requirements, tested under
- NCHRP Report 350 Guidelines (e.g. Akron Foundry TB1-17).
- 7. Embedded Junction Box (EJB): Install EJBs per Note 4 and in accordance with Specification 635, as shown on the following Sheets.
- 8. Wind Speed by County:

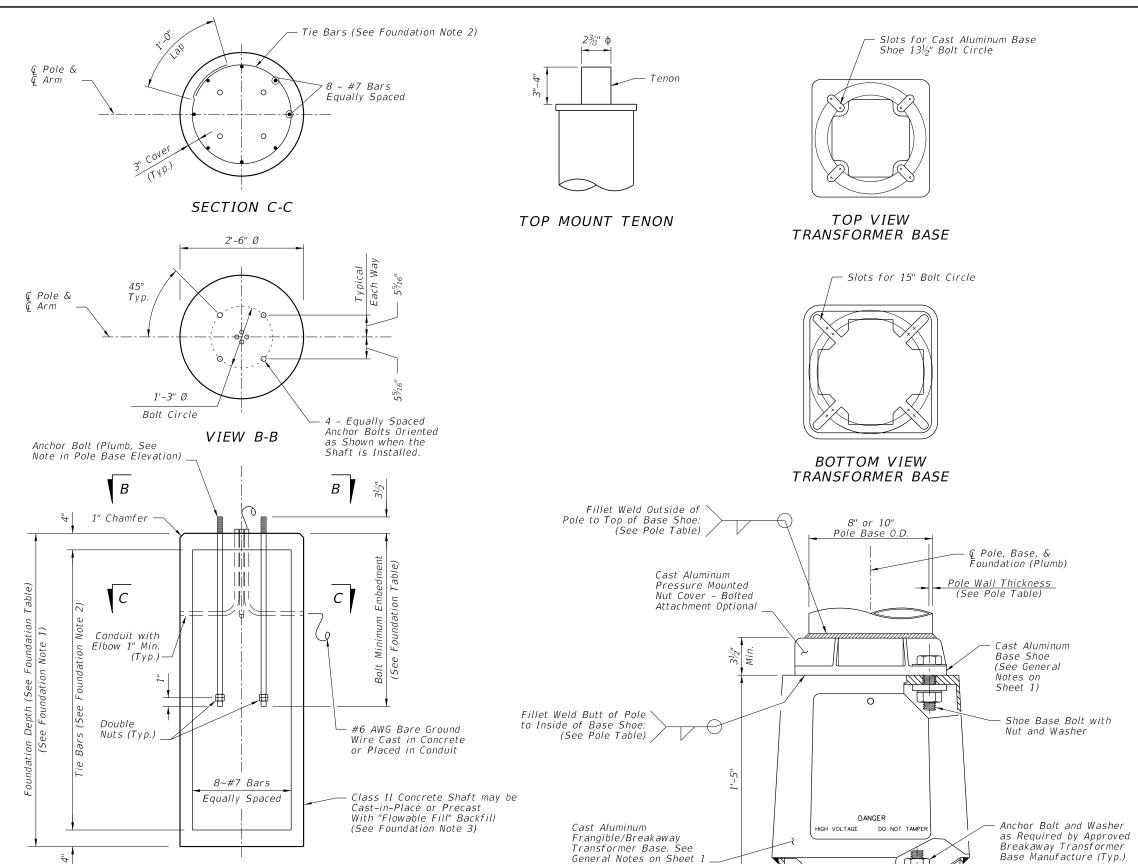
Alachua, Baker, Bradford, Calhoun, Clay, Columbia, Dixie, Duval, Gadsden, Gilchrist, Hamilton, Jackson, Jefferson, Lafayette, Leon, Liberty, Nassau, Madison, Putnam, Suwannee, Taylor, Union and Wakulla Counties.

Bay, Citrus, De Soto, Flagler, Franklin, Glades, Gulf, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lake, Levy, Manatee, Marion, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Santa Rosa, Seminole, St. Johns, Sumter, Volusia, Walton and Washington Counties.

Brevard, Broward, Charlotte, Collier, Escambia, Indian River, Lee, Martin, Miami-Dade, Monroe, Palm Beach, Sarasota and St. Lucie Counties







ARM-POLE TABLE

FOR STANDARD ALUMINUM LIGHT POLES WITH ARM

Mounting	Win	Wind Speed and Arm Lengths (Ft.)					
Height	120 mph	140	mph	160 mph			
(Ft.)	8, 10, 12, 15	8, 10, 12 15		8, 10	12, 15		
30				A1-P1	A2-P1		
35	A1-P1	A1-P1	A2-P1	AI-PI	A2-P1		
40	AI-PI			A1-P2	A2-P2		
45	A1-P2	41 02	A2-P2	AI-PZ	AZ-PZ		
50	A1-P2	A1-P2		A1-P3	A2-P3		

ARM POLE NOTES:

- 1. See ARM SECTION detail on Sheet 3 for all A1 and A2 Values.
- 2. See Pole Table for all P1, P2, and P3 values.
- 3. For Median Barrier Mounted Pole, Use Arm A1
- 4. For 20' and 25' assembly heights use only 8' or 10' arm A1 with P0.

POLE TABLE						
Pole	Pole Wall Thickness	Top of Base Shoe Weld	Inside of Base Shoe Weld			
P0	0.156	³ / ₁₆ "	⁵ / ₃₂ "			
P1	0.156	³ / ₁₆ "	⁵ / ₃₂ "			
P2	0.250	1/4"	1/4"			
Р3	0.313	⁵ / ₁₆ "	⁵ / ₁₆ "			

POLE NOTES:

- 1. Pole wall thicknesses shown are nominal and must be within the Aluminum Association tolerances.
- 2. Thicker walls are permitted and tapered walls may be used in accordance with the minimum Aluminum Association thicknesses.

TOP MOUNT POLE TABLE FOR STANDARD ALUMINUM LIGHT POLES WITH TOP MOUNT Mounting Wind Speed and Arm Lengths (Ft.) Height (Ft.) 120 mph 140 mph 160 mph 20 Pole PO Pole PO Pole P0 25 30 Pole P1 35 Pole P1 Pole P1 40 45 Pole P2 Pole P2 Pole P2 50

SHAFT FOUNDATION TABLE						
Pole	P0	P1	P2	Р3		
Depth	6'-0"	7'-0"	8'-0"	8'-0"		
Bolt Min. Embedment	2'-6"	3'-6"	3'-6"	3'-6"		

SHAFT FOUNDATION OPTION WITH LIGHT POLE & BASE DETAILS

LAST REVISION 11/01/23

SHAFT FOUNDATION NOTES:

to foundation depths shown.



3. For precast foundations, the circular cross section shown herein may be substituted with an octagon shape. The out-to-out distance between parallel edges of the octagon must be ≥ 2'-6". Use the same reinforcing diameter and centered placement with a minimum 3" cover.

POLE BASE ELEVATION

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SHAFT FOUNDATION ELEVATION

1. Depths shown are for slopes equal to or flatter than 1:4. For slope steeper than 1:4 and equal to or flatter than 1:2 add 2'-6"

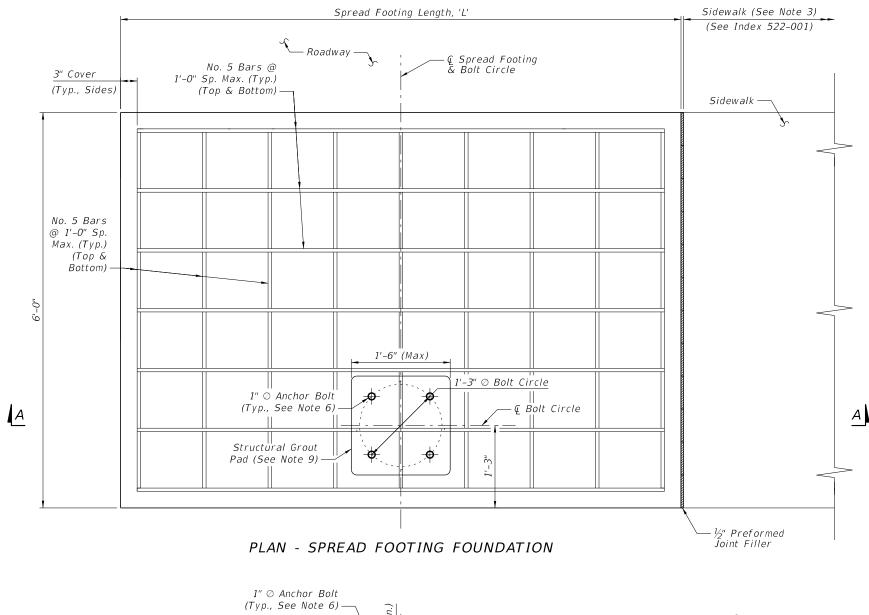
2. Foundation Tie Bars: #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn bottom.

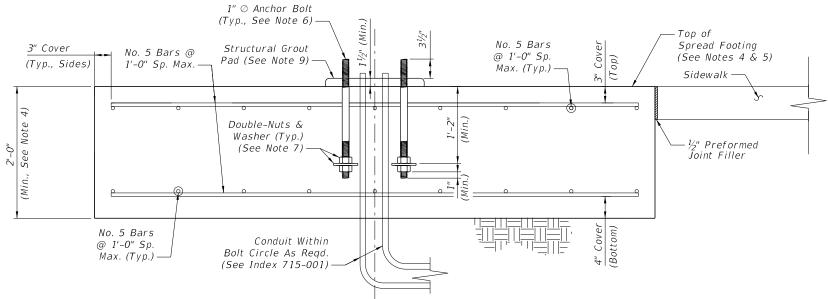
FY 2024-25 STANDARD PLANS

STANDARD ALUMINUM LIGHTING

INDEX 715-002

SHEET
4 of 9





SPREAD FOOTING LENGTH, 'L' Wind Speed (All Arm Lengths) Mounting Height (Ft.) 120 mph 140 mph 160 mph 4'-6" 5'-0" 6'-0" 20 25 4'-6" 5'-0" 6'-0" 30 7'-0" 7'-0" 7'-0" 7'-0" 7'-0" 7'-0" 35 40 7'-0" 7'-0" 10'-0" 45 8'-6" 10'-0" 10'-0" 50 8'-6" 10'-0" 11'-6"

NOTES:

- 1. Install the Spread Footing Foundation Option only where called for in the Plans.
- 2. The Spread Footing Foundation Option is only permitted for use with single arm or top mount light poles. Where applicable, the pole arm must be oriented towards the roadway side of the footing as shown. Double arm configurations are not permitted.
- 3. Sidewalk placed on the other side or both sides of the spread footing is permitted where shown in the Plans. The sidewalk connection to spread footing requires the $\frac{1}{2}$ " expansion joint shown regardless of the side.
- 4. The top of the spread footing must match the cross slope of the adjacent sidewalk where applicable per the Plans. The nominal bottom of the spread footing must remain level.
- 5. Apply concrete surface finish to the top of the spread footing in accordance with Specification 522-7.
- 6. Mount the anchor bolts plumb. For the corresponding pole base details, see Sheet 4.
- 7. Place galvanized or zinc-plated steel washers with a minimum thickness of 1/4". Use washers with a minimum size of $3\frac{1}{2}$ " \oslash round or 3"x3" square.
- 8. Where raised curb is called for in the Plans, provide a tooled cold joint with bond breaker between the foundation and back of raised curb. See Sheet 2 and the connection between concrete sidewalk and raised curb per Index 522-001.
- 9. Place a structural grout pad in accordance with Specification 934. The grout pad is square and centered on the bolt circle centerlines. Level the top of the grout pad and smooth the edges and corners per the approval of the Engineer. Install the transformer base in accordance with Sheet 4 and the manufacturer's specifications.

SPREAD FOOTING FOUNDATION OPTION

REVISION 11/01/23

FDOT

SECTION A-A - SPREAD FOOTING

FOUNDATION ELEVATION

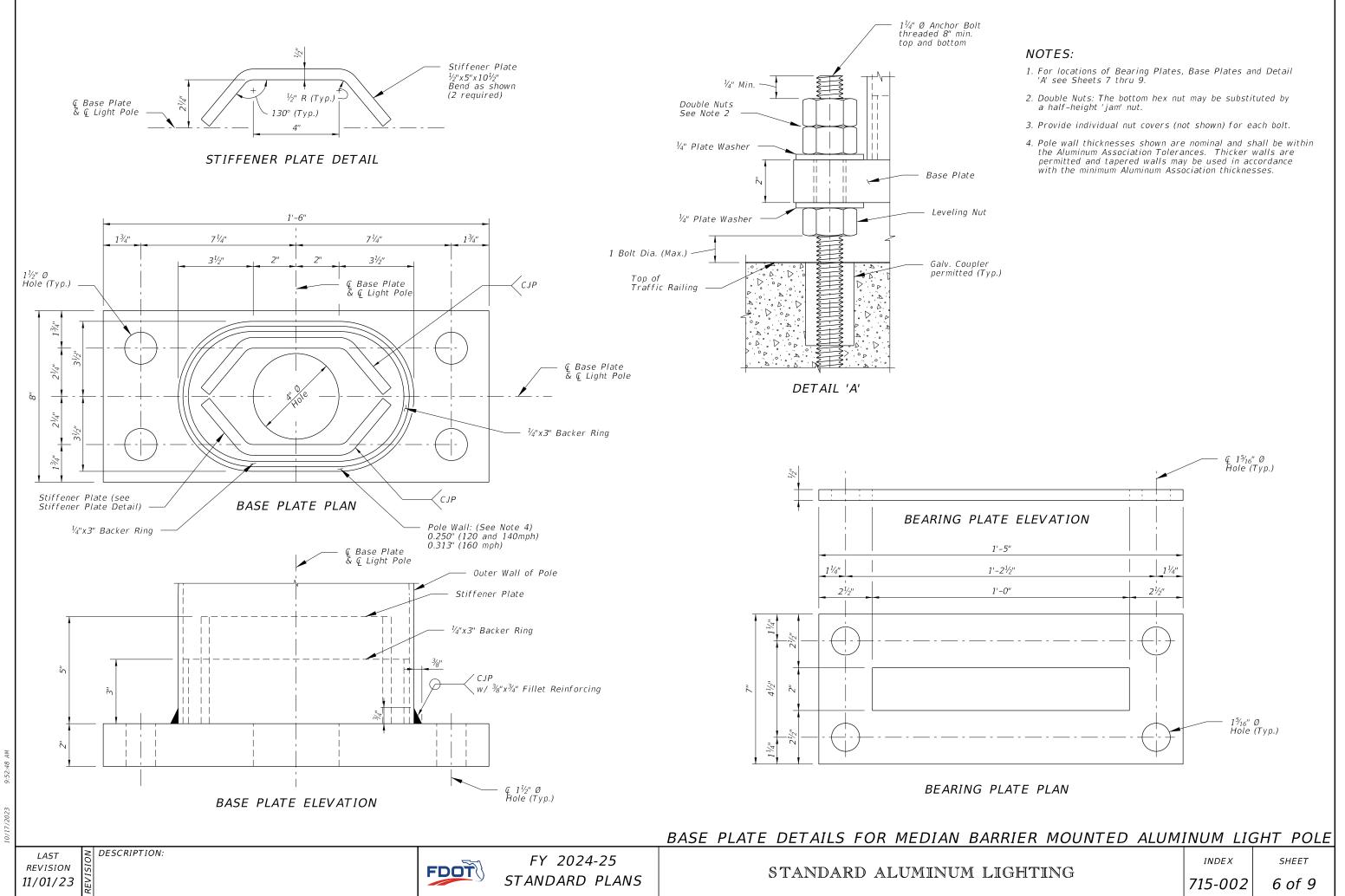
FY 2024-25 STANDARD PLANS

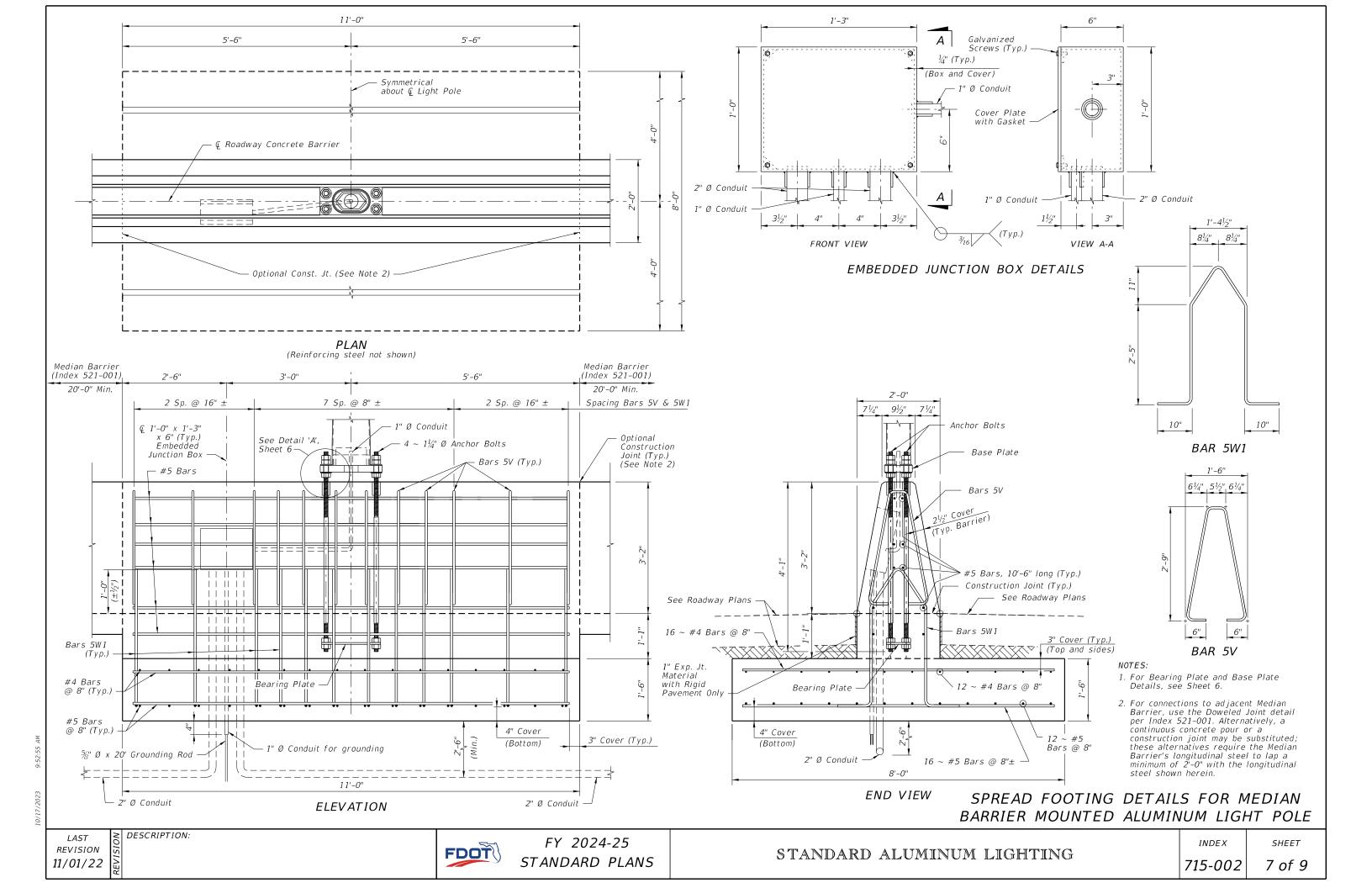
INDEX

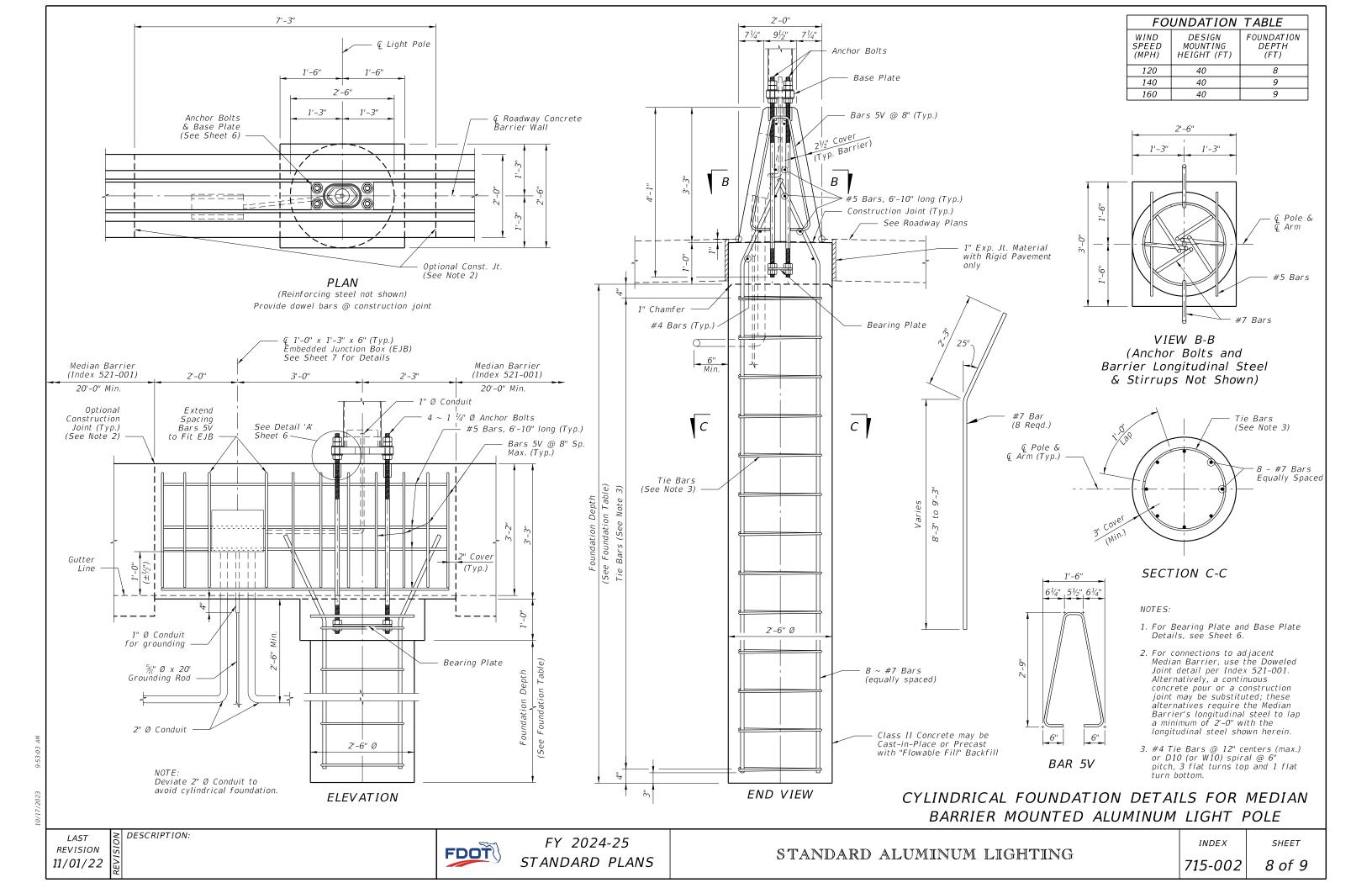
SHEET

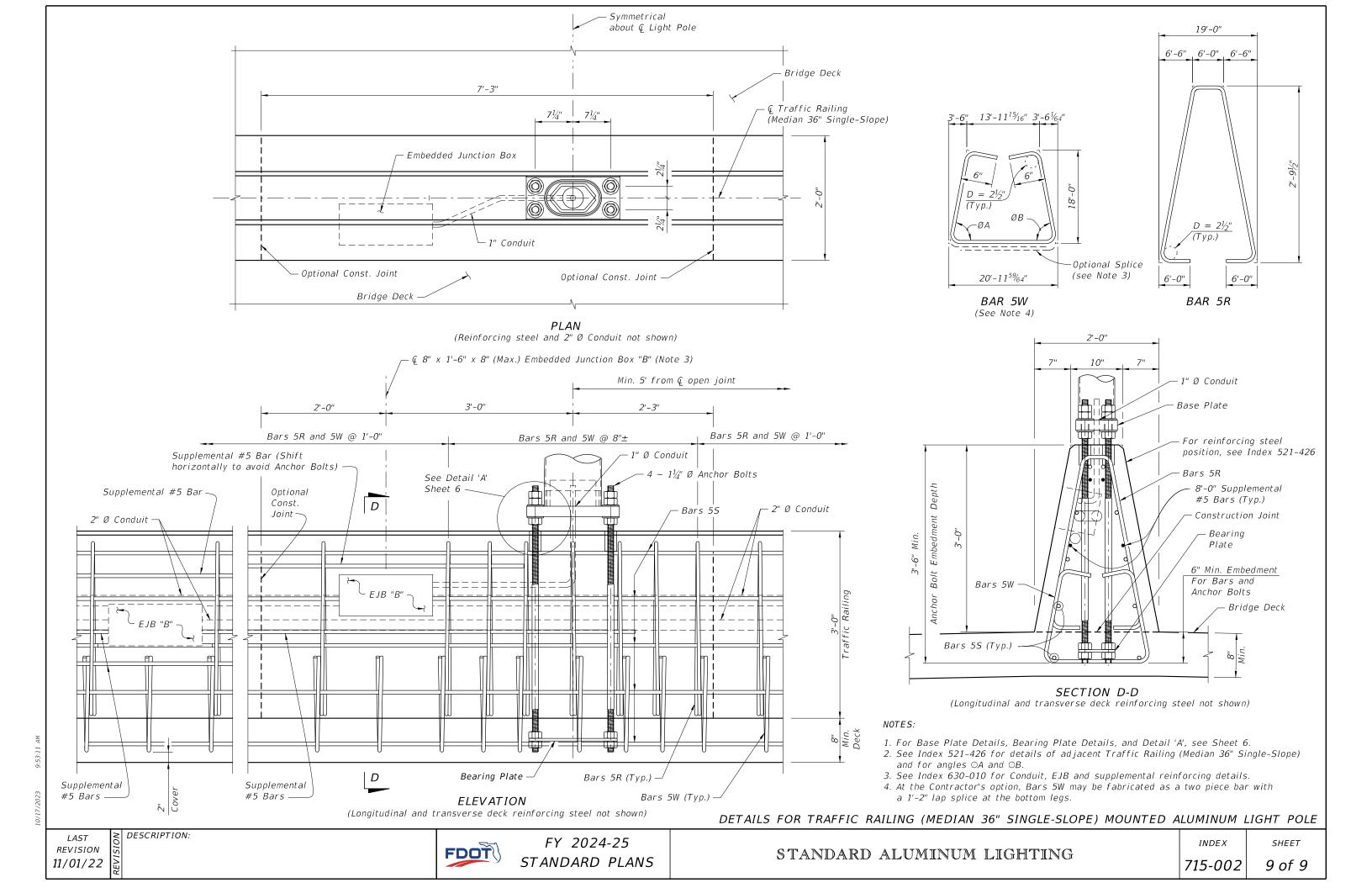
DESCRIPTION:

STANDARD ALUMINUM LIGHTING





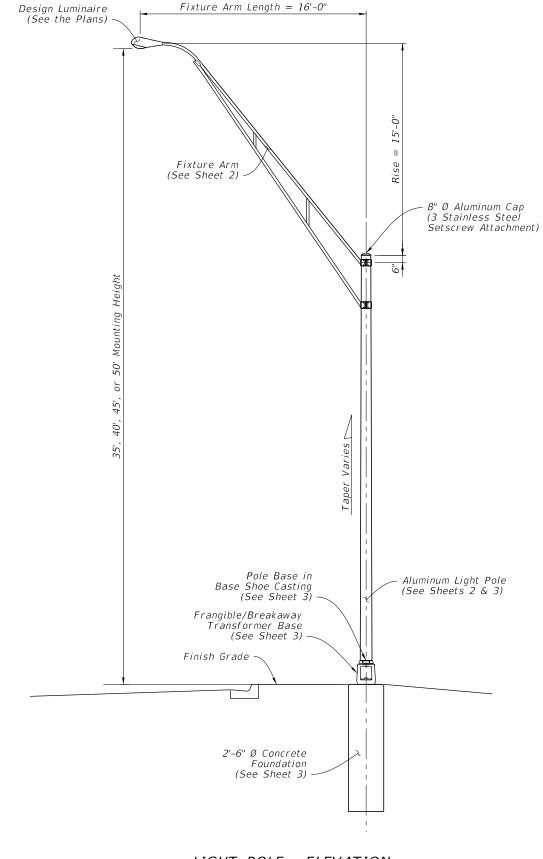




GENERAL NOTES:

- 1. LUMINAIRE LOAD: Poles are designed to support the following: A. Luminaire Effective Projected Area (EPA): 1.55 SF
- B. Luminaire Weight: 75 lb.
- 2. SHOP DRAWINGS: This Index is considered fully detailed; only submit shop drawings for minor modifications not included in the Plans.
- 3. MATERIALS:
- A. Pole, Arm Tubes, Strut Tubes, Bars, Plates, Stiffeners: ASTM B221, Alloy 6063-T6 or Alloy 6061-T6
- B. Pole Connection Extrusion Clamp: ASTM B221, Alloy 6061-T6 C. Caps and Covers: ASTM B-26, Alloy 319-F D. Aluminum Weld Material: ER 4043

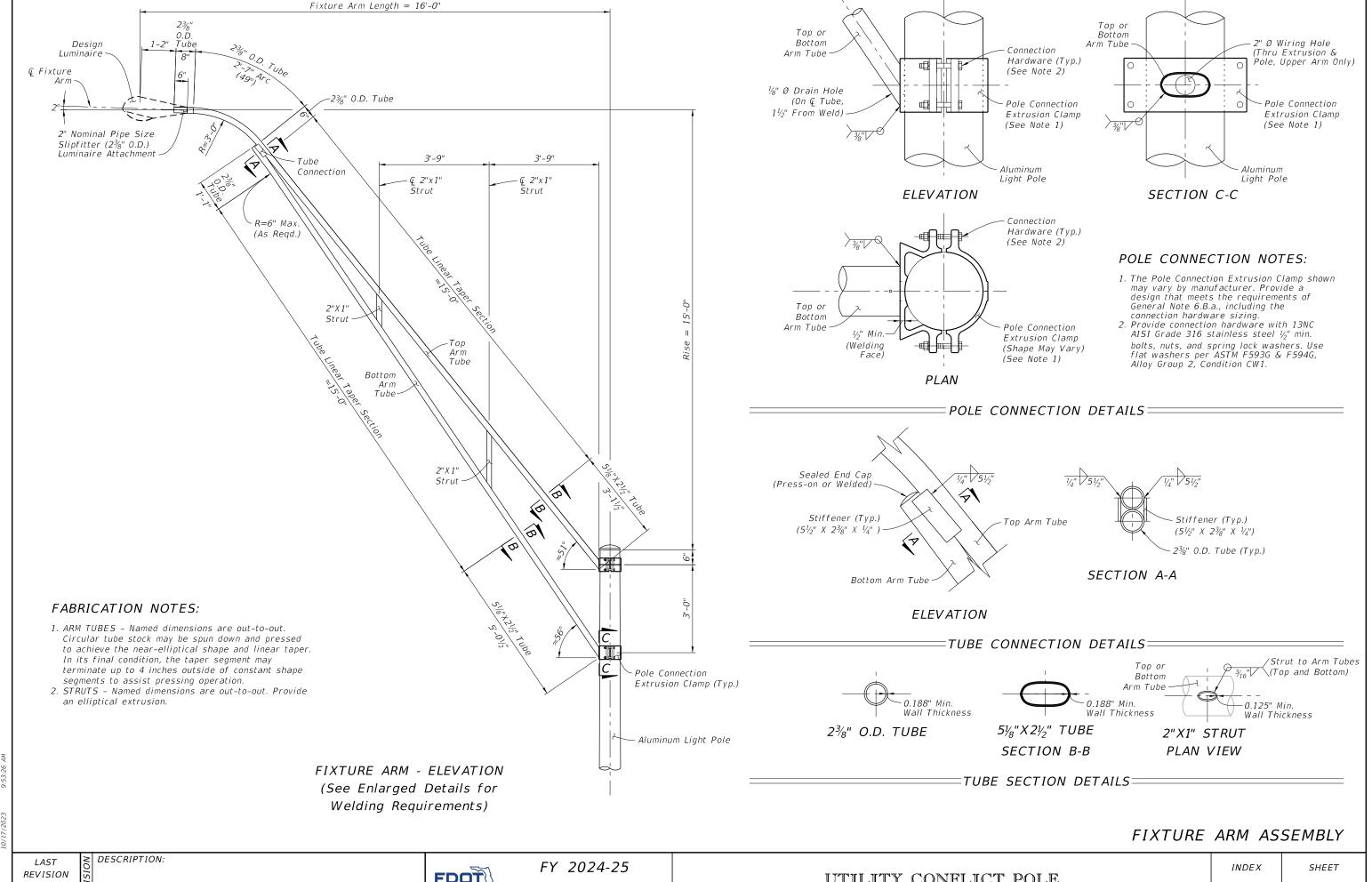
- E. Transformer and Frangible Base Materials: ASTM B26 or ASTM
- B108, Alloy 356-T6
 F. Base Bolts, Nuts and Washers:
- a. Shoe Base Bolts: ASTM F3125, Grade A325, Type 1
- b. Nuts: ASTM A563 Grade DH Heavy-Hex
- c. Washer: ASTM F436 Type 1
- G. Anchor Bolts, Nuts, and Washers:
- a. Anchor Bolts: ASTM F1554 Grade 55
- b. Nuts: ASTM A563 Grade A Heavy-Hex
- H. Clamp Hardware: See Sheet 2
- I. Stainless Steel Cap Fasteners: ASTM F593 Alloy
- Group 2, Condition A, CW1 or SH1
- J. Nut Covers: ASTM B26 (319-F)
- K. Concrete: Class II
- L. Reinforcing Steel: Specification 415
- 4. FABRICATION:
- A. Weld Arm and Pole Alloy in the T4 temper using 4043 filler. Age the Arm and Pole artificially to the T6 temper after welding.
- B. Transverse welds are only allowed at the base.
- C. Light Pole Properties: Taper as required to provide a round top O.D. of 8" and a base O.D. of 10" for all pole heights. Portions of the pole near the base shoe and at the arm connections may be held constant to simplify fabrication. Maintain pole wall thickness of 0.313" Min.
- D. Fixture Arm Tube Properties: See Sheet 2.
- E. Provide 'J', 'S' or 'C' hook at top of pole for electrical wires.
- Perform all welding in accordance with AWS D1.2.
- G. Identification Tag: (Submit details for approval.) a. 2" x 4" (Max.) aluminum identification tag.
- b. Locate on the inside of the transformer base and visible from the door opening.
- c. Secure to transformer base with $\mathcal{V}_{\!\!B}^{"}$ diameter stainless steel rivets or screws.
- d. Include the following information on the ID Tag: 1. Financial Project ID
- 2. Pole Height
- 3. Manufacturer's Name
- 5. COATINGS/FINISH:
- A. Pole and Arm Finish: 50 grit satin rubbed.
- B. Galvanize Steel Bolts, Screws, Nuts and Washers: ASTM F2329
- C. Hot Dip Galvanize miscellaneous steel items: ASTM A123
- 6. CONSTRUCTION:
- A. Foundation: Specification 455, except payment for the foundation is included in the cost
- B. Frangible Base, Base Shoe, and Pole Connection Extrusion Clamp.
- a. Certify that the Pole Connection Extrusion Clamp, Frangible Transformer Base, and Base Shoe Design are capable of providing the required capacity, assuming a design wind speed of 160 MPH.
- b. Certify the Base conforms to the FHWA required AASHTO Frangibility Requirements, tested under NCHRP Report 350 Guidelines (e.g. Akron Foundry TB1-17).
- c. Do not erect pole without Luminaire attached.



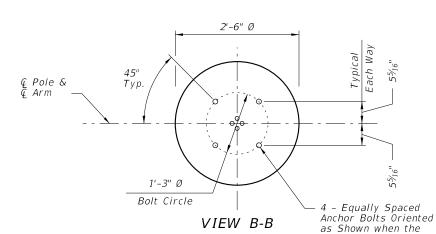
LIGHT POLE - ELEVATION

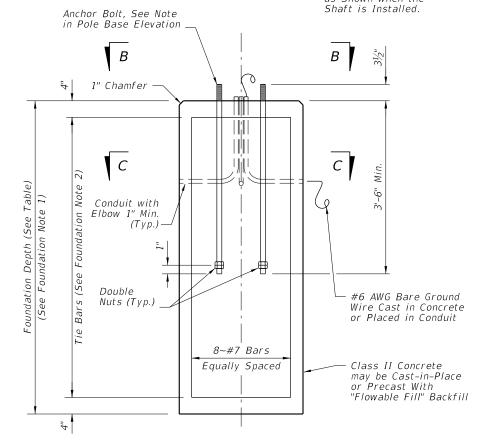
REVISION 11/01/21

DESCRIPTION:



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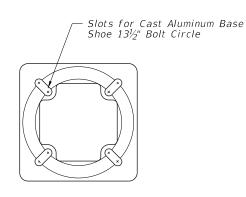


FOUNDATION ELEVATION

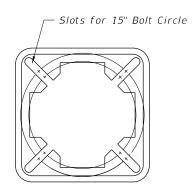
FOUNDATION DEPTHS					
Luminaire Mounting Height	≤ 40 Ft.	45-50 Ft.			
Depth	8'-0"	9'-0"			

FOUNDATION NOTES:

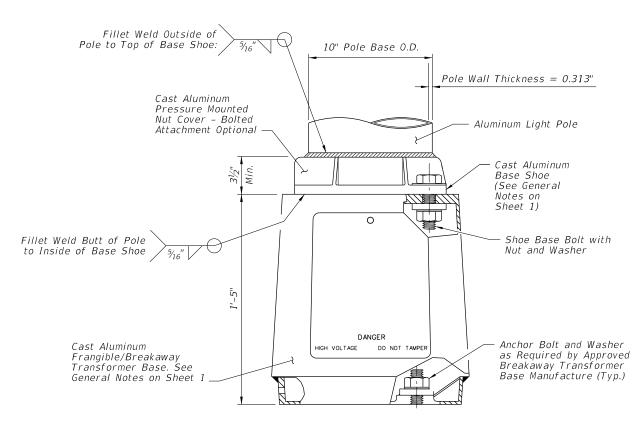
- 1. Depths shown are for slopes equal to or flatter than 1:4. For slopes steeper than 1:4 and equal to or flatter than 1:2 add 2'-6" to foundation depths shown.
- 2. Foundation Tie Bars: #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn
- 3. For precast foundations, the circular cross section shown may be substituted with an octagon shape. The out-to-out distance between parallel edges of the octagon must be $\geq 2'-6''$. Use the same reinforcing diameter and centered placement with a minimum 3" cover.



TOP VIEW TRANSFORMER BASE



BOTTOM VIEW TRANSFORMER BASE



POLE BASE ELEVATION

FOUNDATION AND BASE DETAILS

REVISION 11/01/23

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS A. One (1) cylindrical head assembly with a maximum effective projected area of 6 sf and 340 lbs (Max.) B. Eight (8) cylindrical luminaires with a maximum effective projected are of 1.5 sf and 77 lbs each.

- 2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not detailed in the Plans.
- 3. High Mast Structure Materials:
 - A. Poles and Backing Rings:
 - a. Less than $\frac{3}{16}$ ": ASTM A1011 Grade 50, 55, 60 or 65
 - b. Greater than or equal to $^{3}\!\!\!/_{16}$ ": ASTM A572 Grade 50, 55, 60 or 65 c. ASTM A595 Grade 4 (55 ksi yield) or Grade B (60 ksi yield)
 - B. Steel Plates: ASTM A709 or ASTM A36
 - C. Pole Caps: ASTM A1011 Grade 50, 55, 60, or 65 or ASTM B209
 - D. Weld Metal: E70XX
 - E. Stainless Steel Screws: AISI 316
 - F. Anchor Bolts, Nuts and Washers:
 - a. Anchor Bolts: ASTM F1554 Grade 55
 - b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
 - c. Plate Washer: ASTM A36 (2 per anchor bolt)
 - G. Nut Covers: ASTM B26 (319-F)
 - H. Concrete: Class IV (Drilled Shaft)
 - I. Reinforcing Steel: Specification 415
- 4. Fabrication:
 - A. Welding:
 - a. Specification Section 460–6.4 and b. AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals Section 14.4.4
 - B Poles
 - a. Round or 16-sided (Min.)
 - b. Taper pole diameter at 0.14 inches per foot

 - c. Pole shaft may be up to three sections (using telescopic field splices)
 - d. Circumferentially welded pole shafts and laminated pole shafts are not permitted
 - e. Fabricate Pole longitudinal seam welds (2 maximum) with 60 percent minimum penetration or fusion welds except as follows:
 - i. Use a complete joint penetration weld within 6 inches of the circumferential tube-to-plate connection and ii. Use complete joint penetration welds on the female end section of telescopic (i.e., slip type) field
 - splices for a minimum length of 42 inches.
 - C. Identification Tag: (Submit details for approval)
 - a. 2"x 4" (Max.) aluminum tag
 - b. Locate on the inside of the pole and visible from the handhole
 - c. Secure with 1/8" diameter stainless steel rivets or screws.
 - d. Include the following information on the ID Tag:
 - 1. Financial Project ID
 - 2. Pole Type
 - 3. Pole Height
 - 4. Manufacturers' Name 5. Yield Strength (Fy of Steel) 6. Base Wall Thickness
 - D. Except for Anchor Bolts, bolt hole diameters are bolt diameter plus 1/16" and anchor bolts holes are bolt diameter plus ½ (Max) prior to galvanizing. E. Hot Dip Galvanize after fabrication
- 5. Coating:
 - A. Galvanize Anchor Bolts, Nuts and Washers: ASTM F2329
 - B. Hot Dip Galvanize all other steel items including plate washers: ASTM A123
- - A. Foundation: Specification 455 Drilled Shaft, except that payment is included in the cost of the Structure. B. After Installation: Place wire screen between top of foundation and bottom of baseplate in accordance with Specification 649-6.
- 7. Wind Speed by County:

Alachua, Baker, Bradford, Calhoun, Clay, Columbia, Dixie, Duval, Gadsden, Gilchrist, Hamilton, Jackson, Jefferson, Lafayette, Leon, Liberty, Nassau, Madison, Putnam, Suwannee, Taylor, Union and Wakulla Counties.

Bay, Citrus, De Soto, Flagler, Franklin, Glades, Gulf, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lake, Levy, Manatee, Marion, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Santa Rosa, Seminole, St. Johns, Sumter, Volusia, Walton and Washington Counties.

Brevard, Broward, Charlotte, Collier, Escambia, Indian River, Lee, Martin, Miami-Dade, Monroe, Palm Beach, Sarasota and St. Lucie Counties.

STANDARD POLE DESIGN NOTES

REVISION 11/01/23

DESCRIPTION:

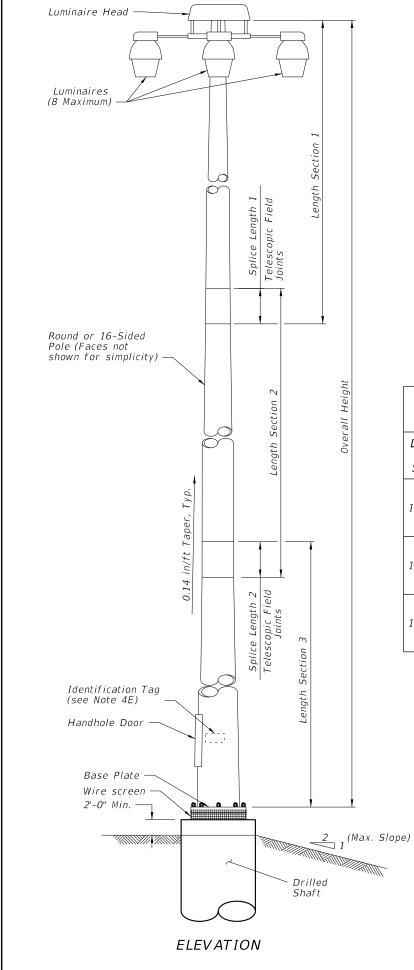


TABLE 1 POLE DESIGN TABLE*

		SECTION 1 (TOP)			SECTION 2 SECTION 3					3		
Design Wind Speed	Pole Overall Height (ft)	Length	Wall Thickness (in.)	Minimum Splice Length 1	Base Dia. (in.)	Length	Wall Thickness (in.)	Minimum Splice Length 2	Base Dia. (in.)	Length	Wall Thickness (in.)	Base Dia. (in.)
	80	41'-0"	0.250	2'-0"	11	42'-0"	0.250		16	_	_	_
130 mph	100	23'-0"	0.179	2'-0"	10	41'-0"	0.250	2'-6"	15	43'-0"	0.250	20
	120	41'-0"	0.250	2'-0"	12	43'-0"	0.250	2'-9"	17	43'-0"	0.313	22
	80	41'-0"	0.250	2'-0"	11	42'-0"	0.313		16			
150 mph	100	23'-0"	0.179	2'-0"	10	41'-0"	0.250	2'-6"	15	43'-0"	0.313	20
	120	41'-0"	0.250	2'-6"	16	43'-0"	0.250	3'-0"	21	44'-0"	0.375	26
	80	40'-0"	0.250	2'-3"	13	43'-0"	0.313		18			_
170 mph	100	23'-0"	0.250	2'-0"	11	42'-0"	0.313	2'-6"	16	44'-0"	0.375	21
	120	41'-0"	0.250	3'-0"	18	44'-0"	0.313	3'-6"	23	45'-0"	0.375	28

^{*} Diameter Measured Flat to Flat

TABLE 2 BASE PLATE AND BOLTS DESIGN TABLE

Design Wind Speed	Pole Overall Height (ft)	Base Plate Diameter (in.)	Base Plate Thickness (in.)	Bolt Circle (in.)	No. Bolts	Bolt Diameter (in.)	Bolt Embedment (in.)
	80	30.0	3.000	23.0	8	1.75	38
130 mph	100	34.0	3.000	27.0	8	1.75	42
	120	38.0	3.875	30.0	8	2.00	48
	80	30.0	3.000	23.0	8	1.75	43
150 mph	100	36.0	3.875	28.0	8	2.00	47
	120	44.0	3.875	35.0	8	2.25	<i>52</i>
	80	32.0	3.000	25.0	8	1.75	47
170 mph	100	37.0	3.000	29.0	8	2.00	54
	120	46.0	3.875	37.0	10	2.25	58

TABLE 3							
SHAF	T DESIGN	TABLE					
Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement				
80	4'-0"	13'-0"	14-#11				
100	4'-6"	14'-0"	16-#11				
120	4'-6"	16'-0"	16-#11				
80	4'-0"	14'-0"	14-#11				
100	4'-6"	16'-0"	16-#11				
120	5'-0"	18'-0"	18-#11				
80	4'-6"	15'-0"	16-#11				
100	4'-6"	17'-0"	16-#11				
	Pole Overall Height (ft) 80 100 120 80 100 120	SHAFT DESIGN Pole Overall Height (ft) Shaft Diameter 80 4'-0" 100 4'-6" 120 4'-6" 80 4'-0" 120 5'-0" 80 4'-6"	SHAFT DESIGN TABLE Pole Overall Height (ft) Shaft Diameter Shaft Length 80 4'-0" 13'-0" 100 4'-6" 14'-0" 120 4'-6" 16'-0" 80 4'-0" 14'-0" 100 4'-6" 16'-0" 120 5'-0" 18'-0" 80 4'-6" 15'-0"				

NOTE:

Shaft Design Table Shaft Length is based on level ground (flatter than 1:5). Increase the shaft depth in accordance with the Additional Shaft Depth Due to Ground Slope table for foundations with slopes 1:5 and steeper. Use the higher value for slope or diameter values that fall between those shown on the table.

20'-0"

18-#11

5'-0"

TABLE 4							
ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE							
Ground Slope	4'-0" Shaft Diameter	5'-0" Shaft Diameter					
1:5	3'-0"	4'-0"					
1:4	4'-0"	5'-0"					
1:3	5'-0"	6'-0"					
1:2	7'-0"	9'-0"					

120

POLE DESIGN TABLES

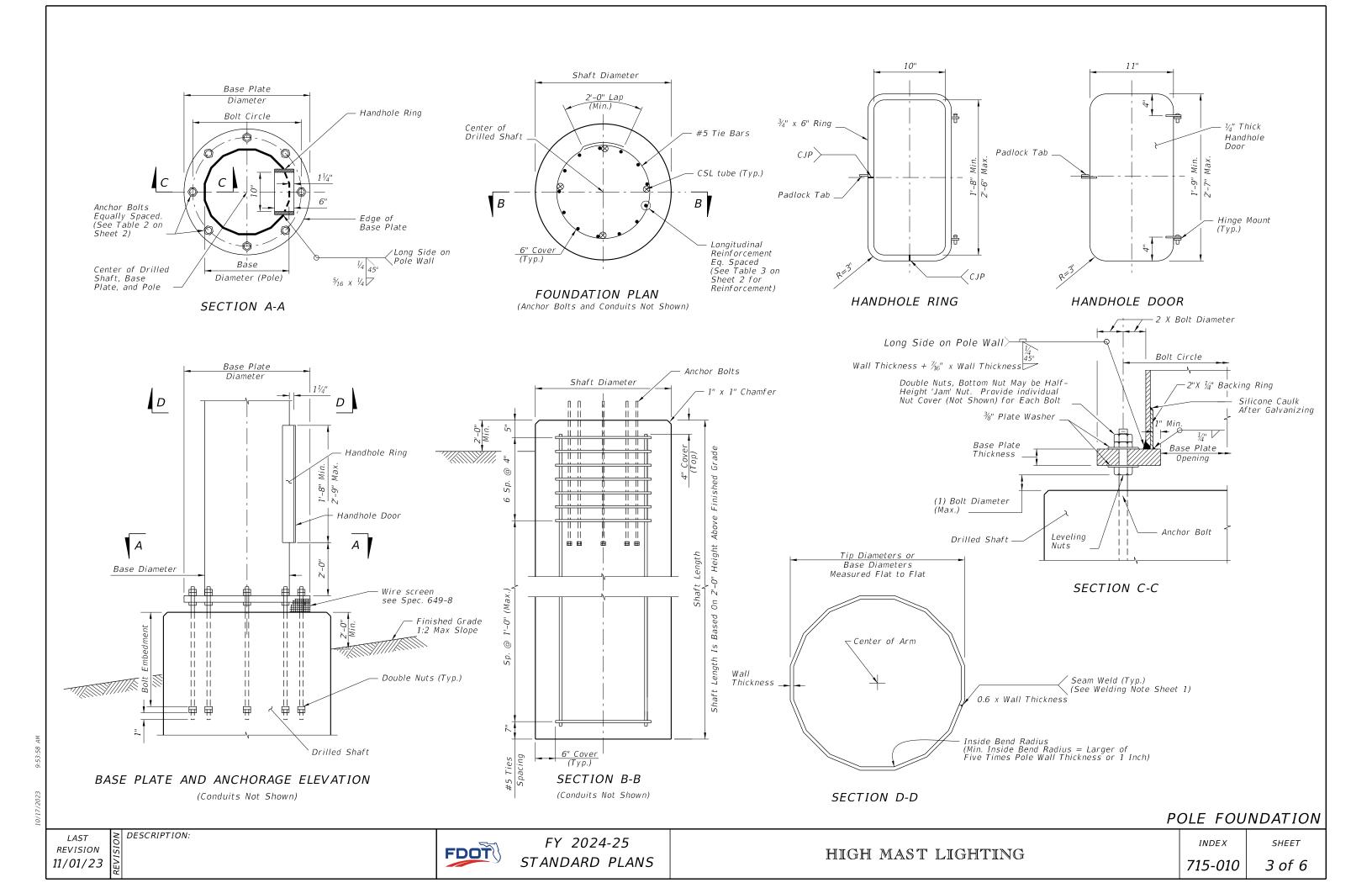
LAST REVISION 11/01/23

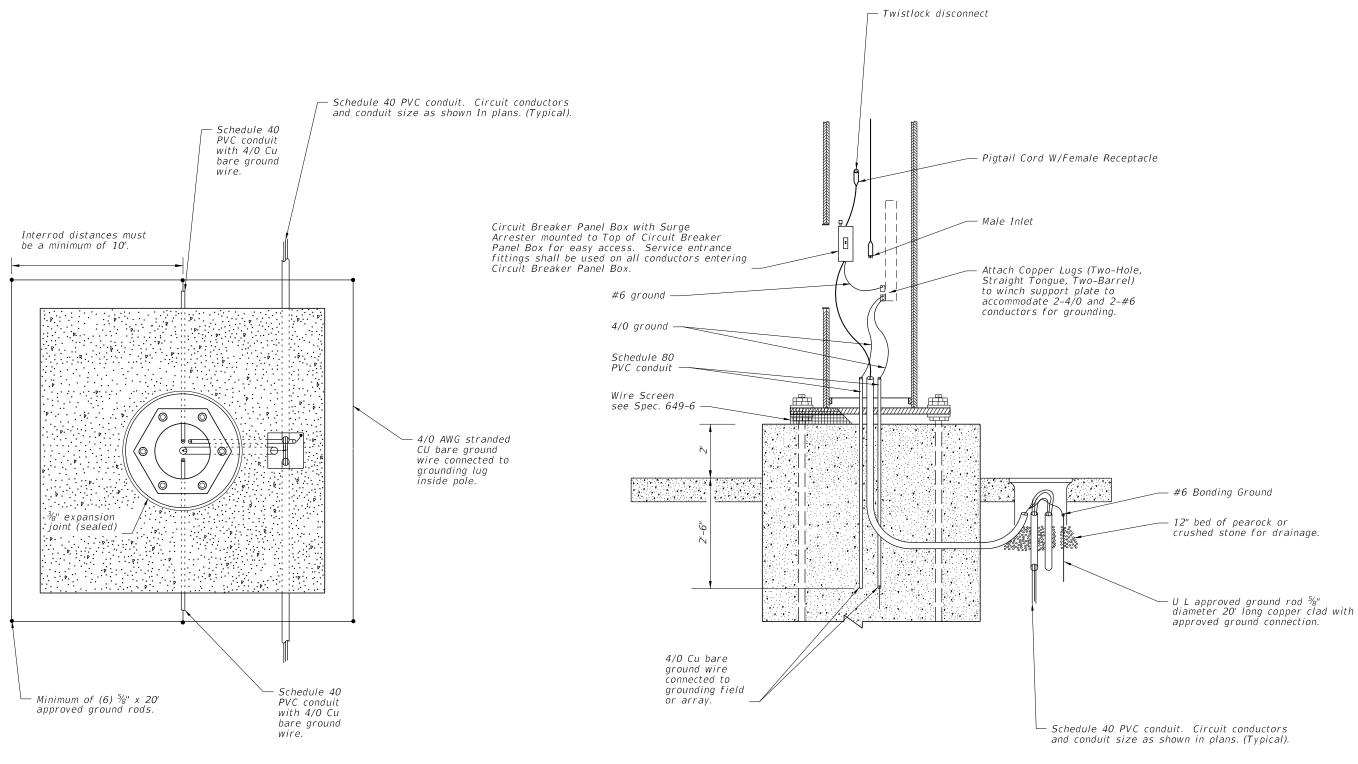
DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS HIGH MAST LIGHTING

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NOTES:

- 1. At all pull boxes and pole bases, ends of conduit shall be sealed in accordance with Specification 630.
- 2. Slabs to be placed around all Poles and Pull Boxes.
- 3. For Pull Boxes between Poles refer to Index 715-001.

WIRING DETAILS

LAST REVISION 11/01/17

DESCRIPTION:

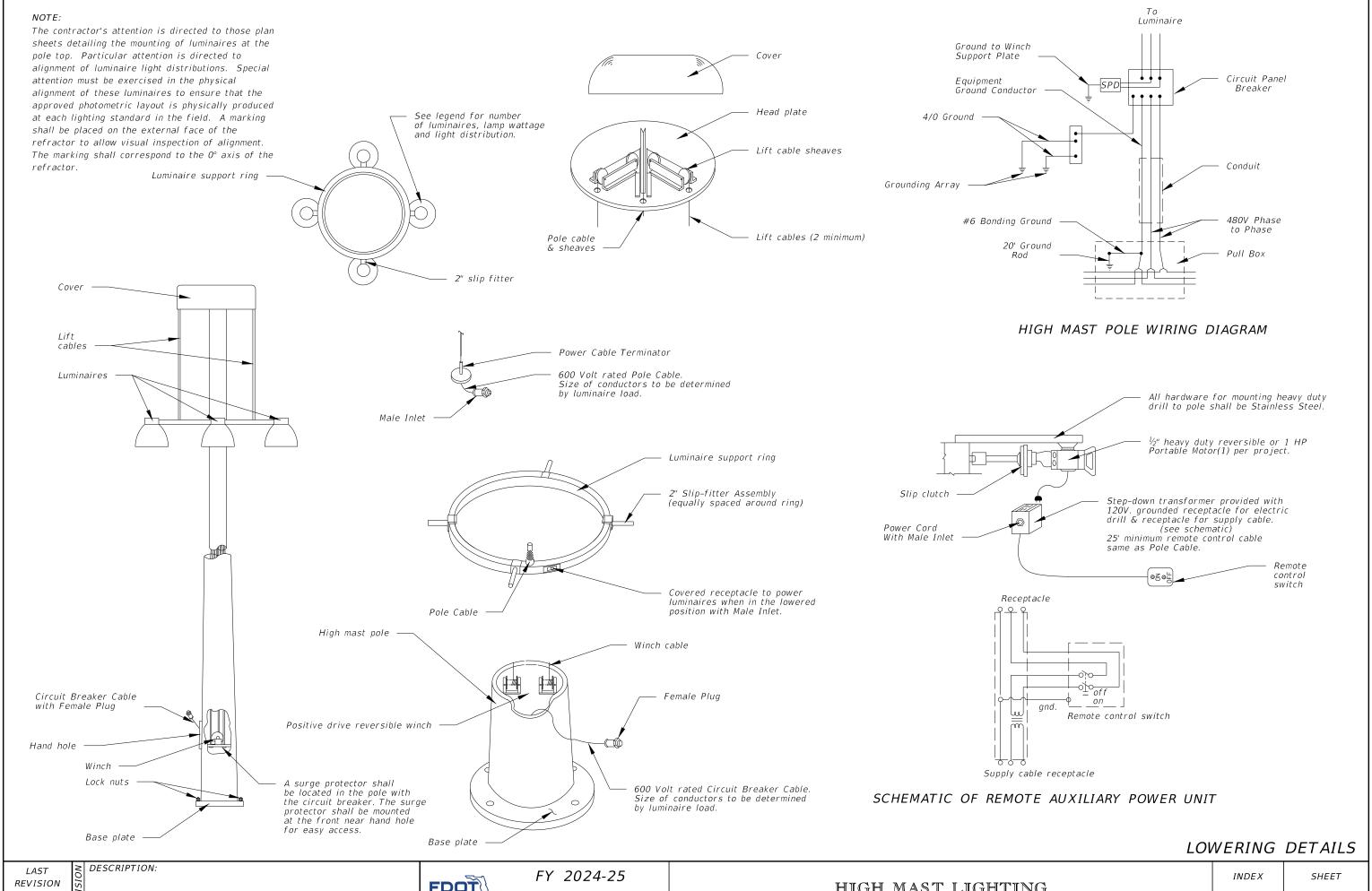
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FY 2024-25 STANDARD PLANS

HIGH MAST LIGHTING

INDEX

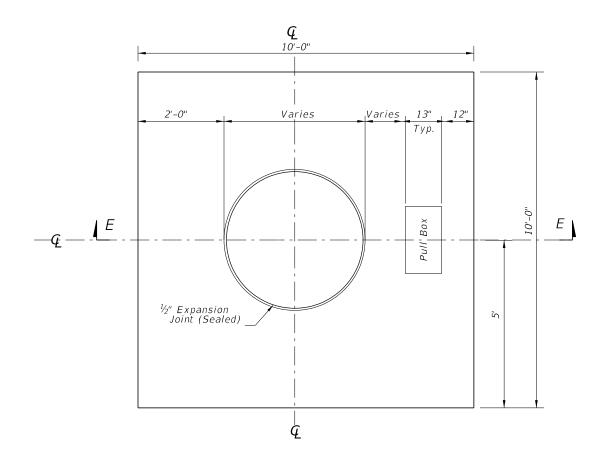
SHEET 4 of 6



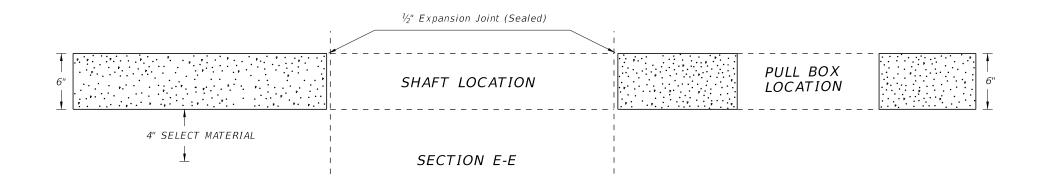
11/01/17

NOTES:

- 1. Use compacted select material in accordance with Index 120-001.
- 2. Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi.
- 3. Outside edge of slab shall be cast against formwork.
- 4. The pull box shown is 13" x 24"; others approved under Specification 635 may be used.
- 5. Slabs to be placed around all Poles and Pull Boxes. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
- 6. Concrete for slabs around poles and pull boxes shall be included in the price of pole or pull box.
- 7. The expansion joint shall consist of $\frac{1}{2}$ " of closed-cell polyethylene foam expansion material. The top $\frac{1}{2}$ " of expansion material shall be removed after pouring the slab and sealed with an APL approved Type A sealant meeting the requirements of Specification 932.



SLAB DIMENSIONS



SLAB DETAILS

REVISION 11/01/17

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

HIGH MAST LIGHTING

INDEX 715-010

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CROSSING SURFACES				
Туре	Definition			
С	Concrete			
R	Rubber			
RA	Rubber/Asphalt			
TA	Timber/Asphalt			

STOP ZONE FOR	RUBBER CROSSING
Design Speed (mph)	Zone Length (Distance From Stop)
45 Or Less	250'
50 - 55	350'
60 - 65	500'
70	600'

Notes:

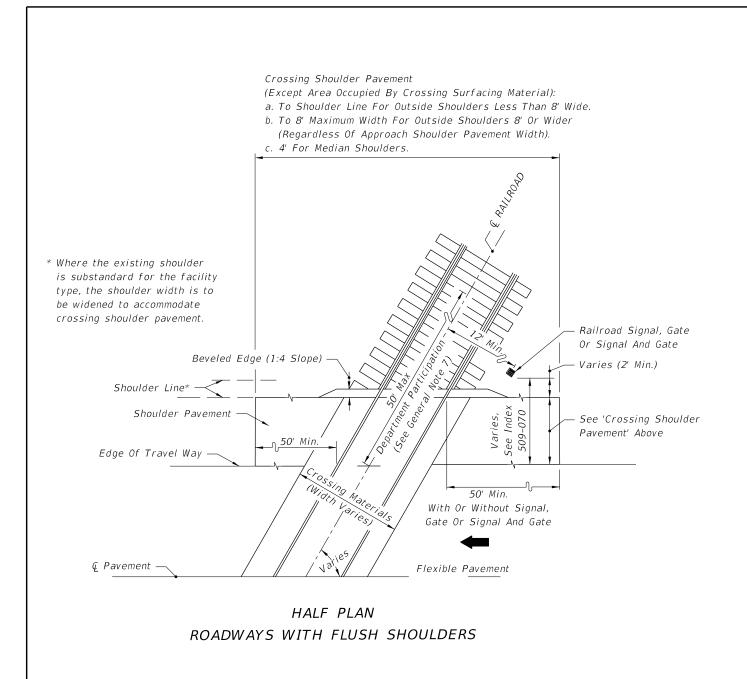
- 1. Type R Crossings are NOT to be used for multiple track crossings within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.
- 2. Single track Type R Crossings within the zones on the chart may be used unless engineering or safety considerations dictate otherwise.

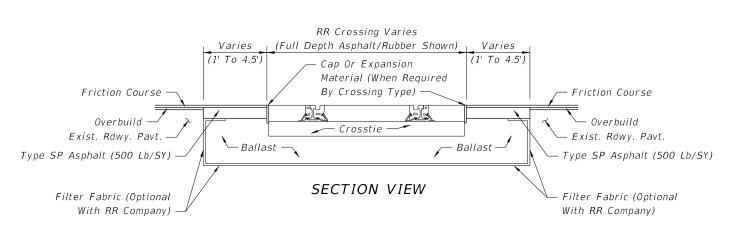
GENERAL NOTES:

- 1. The Railroad Company will furnish and install all track bed (ballast), crossties, rails, crossing surface panels and accessory components. All pavement material, including that through the crossing, will be furnished and installed by the Department or its Contractor, unless negotiated otherwise.
- 2. When a railroad grade crossing is located within the limits of a highway construction project, a transition pavement will be maintained at the approaches of the crossing to reduce vehicular impacts to the crossing. The transition pavement will be maintained as appropriate to protect the crossing from low clearance vehicles and vehicular impacts until the construction project is completed and the final highway surface is constructed.
- 3. The Central Rail Office will maintain a list of currently used Railroad Crossing Products and will periodically distribute the current list to the District Offices as the list is updated.
- 4. The Railroad Company shall submit engineering drawings for the proposed crossing surface type to the Construction Project Engineer and/or the District Rail Office for concurrence along with the List of Railroad Crossing Products. The approved engineering drawings of the crossing surface type shall be made a part of the installation agreement.
- 5. Sidewalks shall be constructed through the crossing between approach sidewalks of the crossing. Sidewalks shall be constructed with appropriate material to allow unobstructed travel through the crossing in accordance with ADA requirements.
- 6. Install pavement in accordance with the Specifications.
- 7. The Department will participate in crossing work, that requires adjustments to rail outside of the crossing, no more than 50 feet from the edge of the travel way.

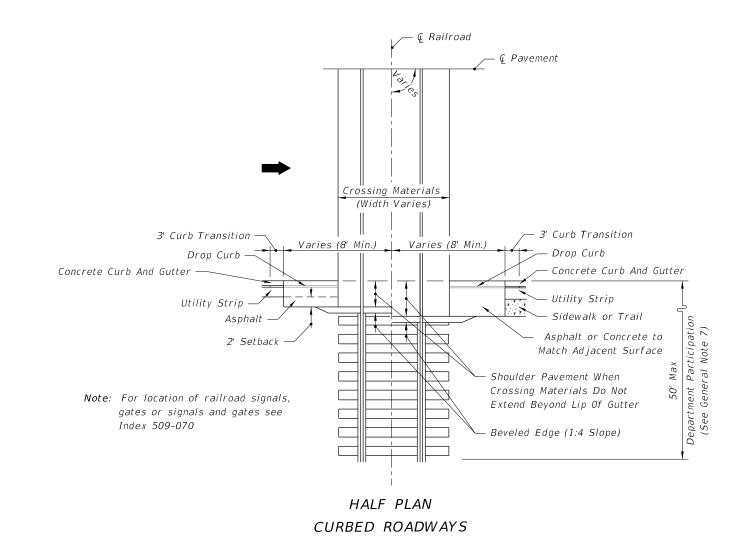
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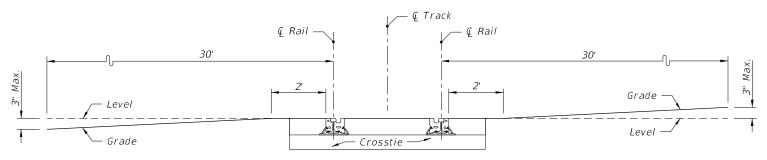
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TYPICAL CROSSING MATERIAL REPLACEMENT AT RR CROSSINGS





To prevent low-clearance vehicles from becoming caught on the tracks, the crossing surface should be at the same plane as the top of the rails for a distance of 2 feet outside the rails. The surface of the highway should also not be more than 3 inches higher or lower than the top of the nearest rail at a point 30 feet from the rail unless track superelevation makes a different level appropriate. Vertical curves should be used to traverse from the highway grade to a level plane at the elevation of the rails. Rails that are superelevated, or a roadway approach section that is not level, will necessitate a site specific analysis for rail clearances.

VERTICAL ROADWAY ALIGNMENT THROUGH A RAILROAD CROSSING

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2024-25 STANDARD PLANS

RAILROAD (GRADE) CROSSING

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SHEET