

FY 2022-23 STANDARD PLANS FOR ROAD CONSTRUCTION

Effective for Projects with Lettings in the Fiscal Year (FY) from July 1, 2022 through June 30, 2023

FY 2022-23 Standard Plans for Road and Bridge Construction Topic No. 625-010-003 State of Florida Department of Transportation
Office of Design
Mail Station 32
605 Suwannee Street
Tallahassee, Florida 32399-0450

FDOT FY 2022-23 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 Derwood Sheppard. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Derwood C. Sheppard, Jr. M.Eng., 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 KEVIN J. THIBAULT, P.E. SECRETARY

October 15, 2021

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

Re: Office of Design

FY 2022-23 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 2022-23 Standard Plans for Road and Bridge Construction (Standard Plans) for use on federal aid projects. Copies of all revised Indexes for the FY 2022-23 Standard Plans were previously provided to the Florida Division Office for review and approval. All comments from the reviews have been addressed.

Sincerely,

Derwood Sheppard, P.E.

State Standard Plans Engineer

For FHWA Florida Division Office use:

Approved for Use on Federal Aid Projects:

BREN I GEORGE Date: 2021.10.25 13:37:40

James Christian, P.E.

Division Administrator

ABBREVIATIONS

FY 2022-23 STANDARD PLANS

Abbreviation	Meaning	Abbreviation	Meaning	Abbreviation	Meaning
AASHTO	A American Association Of State Highway And Transportation Officials	(CSIP	Cost Savings Initiative Proposal	(G	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	L)	Grd.	Ground
AISC	American Institute Of Steel Construction	D	Depth, Distance or Diameter	/	Н
AISI	American Iron and Steel Institute	Dia. or Ø	Diameter	Hd.	Head
Alt.	Alternate	Db1.	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	E		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
[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
(C	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	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
Q	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 2022-23 STANDARD PLANS

			2-23 STANDARD PLANS			
<u>reviation</u>	Meaning	<u>Abbreviation</u>	Meaning	Abbreviation	Meaning	
M m	Meter	I Pen.	P Penetration	 St. or ST.	S Street	
m ²	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 (AASHTO)	PRS	Portable Regulatory Sign	StJ.	Steel	
Max.	Maximum	psf	Pounds Per Square Foot	SW.	Skewed Angle	
MES	Mitered End Section	PSI or psi	Pounds Per Square Inch	Swk.	Sidewalk	
M.H.	Manhole or Mounting Height	PT	Point of Tangency or Pressure Treated	SYM	Symmetrical	
MHW	Mean High Water	PTFE	Polytetrafluoroethylene	JIM	T	
Mid.	Middle	PVC	Polyvinyl Chloride	T or t	Thickness, Tangent Distance or Time	
Mil or Mils	One-Thousandth Of An Inch		0	Tan	Tangent Distance of Time	
Min.	Minimum or Minute	(Q	Flow Volume	T&G	Tangent 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		And Heat Resistant Thermoplastic)	
MUTCD	Manual On Uniform Traffic Control Devices	RCP	Reinforced Concrete Pipe	TMA	Truck/Trailer Mounted Attenuator	
N	·	Rd.	Road or Round	TN	Ton	
N	Standard Penetration Number	Rdwy.	Roadway	Trans.	Transition or Transverse	
NA or N/A	Not Available or Not Applicable	Rect.	Reticuline or Rectangular	TTC	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		S		V	
NS	Non-Structural	S or s	Speed, Spacing or Second	Veh.	Vehicle	
NTS	Not To Scale	Sch.	Schedule	Vert.	Vertical	
0		SHBR	Special Height Bicycle Railing	VPD or Vpd.	Vehicles Per Day	
0.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	
OD or 0.D.	Outside Diameter	SP SP	Superpave	WWM	Welded Wire Mesh	
0z.	Ounce	Spa., Spcg. or Sp.	Space(ing)(s)	WWR	Welded Wire Reinforcing	
P)		· -		Y	
•		Spec.	Specification		•	
Pavt.	Pavement Reductrian/Ricycle Pailing	Sq. Et. SE. cf. or S.E.	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			
P.E. or PE	Professional Engineer	55	Stainless Steel			

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400	 536-001	Guardrail	500	120-002	Removal of Organic and Plastic Material (Renamed: Subsoil Excavation)	
402	536-002	Guardrail Transitions and Connections for Existing Bridges	505	120-001	Embankment Utilization	
404	521-404	Guardrail Transitions – Existing Post & Beam Bridge Railings (Narrow & Recessed Curbs)	506	160-001	Miscellaneous Earthwork Details	
405	521-405	Guardrail Transitions - Existing Post & Beam Bridge Railings (Wide Curbs)	510	000-510	Superelevation - Rural Highways, Urban Freeways and High Speed Urban Highways	
410	521-001	Concrete Barrier	511	000-511	Superelevation - Urban Highways and Streets	
411	521-002	Pier Protection Barrier	515	330-001 522- 003	Turnouts	
412	102-120	Low Profile Barrier	516	330-001 522- 003	Turnouts - Resurfacing Projects	
414	102-110	Type K Temporary Concrete Barrier System	517	546-001	Raised Rumble Strips	
415	102-100	Temporary Concrete Barrier Renamed: Temporary Barrier	518	546-010	Shoulder Rumble Strips	
420	Deleted	Traffic Railing – (32" F Shape)	521	400-021	Concrete Steps	
421	Deleted	Traffic Railing - (Median 32" F Shape)	525	000-525	Ramp Terminals	
422	521-422	Traffic Railing – (42" Vertical Shape)	526	Deleted*	Roadway Transitions [*Content moved to the FDM]	
423	521-423	Traffic Railing – (32" Vertical Shape)	527	Deleted*	Directional Median Opening [*Content moved to the FDM]	
424	Deleted	Traffic Railing – (Corral Shape)	530	Deleted	Rest Area Pavilion	
425	Deleted	Traffic Railing – (42" F Shape)	532	110-200	Mailboxes	
426	521-426	Traffic Railing - (Median 36" Single-Slope)	535	Deleted	Tractor Crossing	
427	521-427	Traffic Railing - (36" Single-Slope)	540	141-T01	Settlement Plate	
428	521-428	Traffic Railing - (42" Single-Slope)	542	110-100	Tree Protection and Preservation	
430	544-001	Crash Cushion Details	544	580-001	Landscape Installation	
461	521-010	Opaque Visual Barrier	N/A	591-001	Landscape Irrigation Sleeves	
470	460-470	Traffic Railing - (Thrie-Beam Retrofit) General Note & Details	546	Deleted*	Sight Distance at Intersections [*Content moved to the FDM]	
471	460-471	Traffic Railing – (Thrie-Beam Retrofit) Narrow Curb	560	830-T01	Railroad Crossings	
472	460-472	Traffic Railing - (Thrie-Beam Retrofit) Wide Strong Curb Type 1	Traffic Conti	rol Through Wor	rk Zones	
473	460-473	Traffic Railing - (Thrie-Beam Retrofit) Wide Strong Curb Type 2	600	102-600	General Information for Traffic Control Through Work Zones	
474	460-474	Traffic Railing - (Thrie-Beam Retrofit) Intermediate Curb	601	102-601	Two-Lane, Two-Way, Work Outside Shoulder Renamed: Two-Lane and Multilane	
475	460-475	Traffic Railing - (Thrie-Beam Retrofit) Wide Curb Type 1			Roadway, Work Beyond Shoulder	
476	460-476	Traffic Railing – (Thrie-Beam Retrofit) Wide Curb Type 2	602	102-602	Two-Lane, Two-Way, Work On Shoulder Renamed: Two-Lane and Multilane,	
477	460-477	Thrie-Beam Panel Retrofit (Concrete Handrail)			Work on Shoulder	
N/A	460-490	Traffic Railing – (Rectangular Tube Retrofit)	603	102-603	Two-Lane, Two-Way, Work Within The Travel Way	
480	521-480	Traffic Railing - (Vertical Face Retrofit) General Notes & Details	604	102-604	Two-Lane, Two-Way, Work in Intersection Renamed: Two-Lane, Two-Way, Intersection Wo	
481	521-481	Traffic Railing - (Vertical Face Retrofit) Narrow Curb	605	Deleted*	Two-Lane, Two-Way, Work Near Intersection [*Combined with 102-604]	
482	521-482	Traffic Railing – (Vertical Face Retrofit) Wide Curb	606	102-606	Two-Lane, Two-Way, Work Within the Travel Way - Signal Control Renamed: Two-Lane	
483	521-483	Traffic Railing - (Vertical Face Retrofit) Intermediate Curb			Roadway, Lane Closure Using Temporary Traffic Signals	
484	521-484	Traffic Railing – (Vertical Face Retrofit) Spread Footing Approach	607	102-607	Two-Lane, Two-Way, Mobile Operation, Work On Shoulder and Work Within the Travel Way Renamed: Mobile Operations	

Design Standards Index	Standard Plans Index	Index Title	Design Standards Index	Standard Plans Index	Index Title
Traffic Contro	ol Through Wor	k Zones (Cont.)	Traffic Contr	ol Through Wo	rk Zones (Cont.)
608	102-608	Two-Lane, Two-Way, Temporary Diversion Connection	667	Deleted	Toll Plaza, Traffic Control Standards
611	Deleted*	Multilane, Work Outside Shoulder [*Combined with 102-601]	670	Deleted*	Motorist Awareness System [*Combined with 102-613]
612	Deleted*	Multilane, Work on Shoulder [*Combined with 102-602]	N/A	102-680	Haul Road Crossing (New Index)
613	102-613	Multilane, Work Within Travel Way-Median or Outside Lane Renamed: Multilane	Fencing and I	Pedestrian Rail	lings
		Roadway, Lane Closures	800	550-004	Fence Location
614	Deleted*	Multilane, Work Within Travel Way-Center Lane [*Combined with 102-613]	801	550-001	Fence - Type A
615	102-615	Multilane, Work in Intersection Renamed: Multilane Roadway, Intersection Work	802	550-002	Fence - Type B
616	Deleted*	Multilane, Work Near Intersection-Median or Outside Lane	803	550-003	Cantilever Slide Gate – Type B Fence
		[*Combined with 102-615]	810	550-010	Bridge Fencing (Vertical)
617	Deleted*	Multilane, Work In Intersection [*Combined with 102-615]	811	550-011	Bridge Fencing (Curved Top)
618	Deleted*	Multilane, Work In Intersection – Two Lanes Closed-45mph or Less	812	550-012	Bridge Fencing (Enclosed)
		[*Combined with 102-615]	820	521-820	27" Concrete Parapet with Pedestrian/Bicycle Bullet Railing
619	Deleted*	Multilane, Mobile Operations Work on Shoulder, Work Within Travel Way	821	515-021	Bridge Aluminum Pedestrian/Bicycle Bullet Railing for Traffic Railing
		[*Combined with 102-607]	822	515-022	Bridge Aluminum Pedestrian/Bicycle Bullet Railing Details
620	102-620	Multilane, Divided, Temporary Diversion Connection Renamed: Multilane	825	521-825	42" Concrete Pedestrian/Bicycle Railing
		Roadway, Temporary Diversion	851	515-051	Bridge Pedestrian/Bicycle Railing (Steel)
621	Deleted*	Multilane Undivided, Temporary Diversion Connection [*Combined with 102-620]	852	515-052	Steel Pedestrian/Bicycle Railing
622	Deleted	Multilane, Work Near Intersection – Temporary Diversion Connection 35mph or Less	861	515-061	Bridge Pedestrian/Bicycle Railing (Aluminum)
623	Deleted*	Multilane, Work Within the Travel Way Double Lane Closure [*Combined with 102-613]	862	515-062	Aluminum Pedestrian/Bicycle Railing
625	102-625	Temporary Road Closure - 5 Minutes or Less Renamed: Temporary Road Closure	870	515-070	Aluminum Pipe Guiderail
628	102-628	Two Way Left Turn Lane Closure Renamed: Two-Way Left-Turn Lanes	880	515-080	Steel Pipe Guiderail
630	Deleted	Crossover for Paving Train Operations, Rural	Noise And Pe	rimeter Wall S	ystems
631	Deleted	Temporary Crossover	5200	534-200	Precast Noise Walls
640	Deleted	Converting Two-Lanes to Four-Lanes Divided, Rural	5210	521-510	Traffic Railing/Noise Wall (8'-0")
641	Deleted	Converting Two-Lanes to Four-Lanes Divided, Urban	5211	521-511	Traffic Railing/Noise Wall (14'-0")
642	Deleted*	Transitions for Temporary Concrete Barrier Wall on Freeway Facilities [*Combined with 102-100]	5212	521-512	Traffic Railing/Noise Wall (8'-0") Junction Slab Renamed: Concrete Barrier/Noise Wall-Junction Slab
650	Deleted	Two-Lane Two-Way, Rural Structure Replacement	5213	521-513	Traffic Railing/Noise Wall T-Shaped Spread Footing Renamed: Concrete
651	Deleted	Multilane Divided, Maintenance and Construction			Barrier/Noise Wall T-Shaped Spread Footing
655	102-655	Traffic Pacing	5214	521-514	Traffic Railing/Noise Wall L-Shaped Spread Footing Renamed: Concrete
660	102-660	Pedestrian Control for Closure of Sidewalks Renamed: Sidewalk Closure			Barrier/Noise Wall L-Shaped Spread Footing
N/A	102-661	Bicycle Facility Closures (New Index)	5215	521-515	Traffic Railing/Noise Wall Trench Footing Renamed: Concrete
665	102-665	Limited Access, Temporary Opening			Barrier/Noise Wall Trench Footing
			5250	534-250	Perimeter Walls

Design Standards Index	Standard Plans Index	Index Title	Design Standards Index	Standard Plans Index	Index Title
Wall Systems			Signing and	Marking (Cont.)	
6010	400-010	C-I-P Cantilever Retaining Wall	17354	Deleted*	Tourist Oriented Directional Signs [*Content moved to the FDM]
6011	400-011	Gravity Wall	17355	700-102	Special Sign Details
6020	548-020	Permanent MSE Retaining Wall Systems	17356	659-010	Span Wire Mounted Sign Details
6030	548-030	Temporary MSE Retaining Wall Systems	17357	700-107	Bridge Weight Restrictions
6040	455-400	Precast Concrete Sheet Pile Wall	17359	700-106	Rural Narrow Bridge Treatment
6100	521-600	MSE Wall Coping (Precast or C-I-P)	Roadway Ligi	hting_	
6110	521-610	Wall Coping With Traffic Railing/Junction Slab	17500	715-001	Conventional Lighting
N/A	521-611	Concrete Barrier/Junction Slab-Wall Coping (FRP) (New Index)	New	715-003	Utility Conflict Pole
6120	521-620	Wall Coping With Traffic Railing/Raised Sidewalk	17502	715-010	High Mast Lighting
6130	521-630	Wall Coping/Parapet with C-I-P Sidewalk	17504	639-001	Service Point Details
6200	521-650	Coping Mounted Light Pole Pedestal	17505	700-031	External Lighting For Signs
6201	521-640	Junction Slab at Drainage Inlet Openings	17515	715-002	Standard Aluminum Lighting
Signing and Ma	arkin <u>g</u>		Traffic Sign	al and Equipmen	<u>t</u>
11200	700-020	Multi-Column Ground Sign	17700	635-001	Pull & Splice Box
11300	700-030	Steel Overhead Sign Structures	17721	630-001	Conduit Installation Details
11310	700-040	Cantilever Sign Structure	17723	649-010	Steel Strain Pole
11320	700-041	Span Sign Structure	17725	641-010	Concrete Poles
11860	700-010	Single Column Ground Signs	17727	634-001	Signal Cable & Span Wire Installation Details
11861	700-011	Single Column Cantilever Ground Mounted Sign	17733	634-002	Aerial Interconnect
11862	700-120	Roadside Flashing Beacon Assembly	17736	639-002	Electrical Power Service
11862	654-001	Rectangular Rapid Flashing Beacon Assembly	N/A	646-001	Aluminum Post and Pedestal Mounted Pedestrian Detectors and Signals (New Index)
11870	700-012	Single Post Bridge Mounted Sign Support	17743	649-030	Standard Mast Arm Assemblies
11871	700-013	Single Post Median Barrier Mounted Sign Support	17745	649-031	Mast Arm Assemblies
13417	700-110	Mounting Exit Number Panels To Highway Signs	17748	700-050	Free-Swinging Internally-Illuminated Street Sign Assemblies
17302	700-101	Typical Sections For Placement of Single & Multi-Column Signs	17764	653-001	Pedestrian Control Signal Installation Details
17328	700-108	Typical Signing for Truck Weigh & Inspection Stations	17781	660-001	Vehicle Loop Installation Details
17344	Deleted*	School Signs & Markings [*Content moved to Speed Zone Manual]	17784	665-001	Pedestrian Detector Assembly Installation Details
17345	711-003	Interchange Markings	17841	676-010	Cabinet Installation Details
17346	711-001	Pavement Markings	17870	671-001	Standard Signal Operating Plans
17347	711-002	Bicycle Markings	17881	509-100	Advance Warning For R/R Crossing
17349	Deleted*	Traffic Controls For Street Terminations *See to FDM 230/Specification 705	17882	509-070	Railroad Grade Crossing Traffic Control Devices
17350	700-104	Signing For Motorist Services	17890	508-T01	Traffic Control Devices For Movable Span Bridge Signals
17351	700-105	Welcome Center Signing	Planning		
17352	706-001	Typical Placement Of Reflective Pavement Markers	17900	695-001	Traffic Monitoring Site

Design Standards Index	Standard Plans Index	Index Title	Design Standards Index	Standard Plans Index	Index Title
Intelligent Tr	ransportation S	ystems (ITS)	Bridge Beari	ings	
18100	Deleted	CCTV Pole Placement	20502	450-502	Beveled Bearing Plate Details - Prestressed Florida-U Beams
18101	Deleted*	Typical CCTV Site [*Combined with CCTV Indexes]	20510	400-510	Composite Elastomeric Bearing Pads-Prestressed Florida-I & AASHTO Type II Beams
18102	Deleted*	Grounding And Lightning Protection [*Combined with CCTV and DMS Indexes]	20511	450-511	Bearing Plates (Type I) - Prestressed Florida-I & AASHTO Type II Beams
18104	Deleted	Typical CCTV Cabinet Equipment Layout	20512	450-512	Bearing Plates (Type 2) - Prestressed Florida-I & AASHTO Type II Beams
18105	Deleted	CCTV Block Diagram	Square and I	Round Concrete	Piles (With Carbon Steel)
18107	Deleted*	Ground Mounted CCTV Cabinet [*Combined with CCTV Indexes]	20600	455-001	Notes and Details For Square Prestressed Concrete Piles
18108	Deleted*	Pole Mounted CCTV Cabinet [*Combined with CCTV Indexes]	20601	455-002	Square Prestressed Concrete Pile Splices
18110	659-020	Camera Mounting Details	20602	455-003	EDC Instrumentation For Square Prestressed Concrete Piles
18111	649-020	Steel CCTV Pole	20612	455-012	12" Square Prestressed Concrete Pile
18113	641-020	Concrete CCTV Pole	20614	455-014	14" Square Prestressed Concrete Pile
18300	700-090	Dynamic Message Sign Walk-In	20618	455-018	18" Square Prestressed Concrete Pile
N/A	700-091	Catwalk Details	20620	Deleted	20" Square Prestressed Concrete Pile
Prestressed	Concrete Beam	<u>s</u>	20624	455-024	24" Square Prestressed Concrete Pile
20010	450-010	Typical Florida-I Beam Details and Notes	20630	455-030	30" Square Prestressed Concrete Pile
20036	450-036	Florida-I 36 Beam - Standard Details	20631	455-031	High Moment Capacity 30" Square Prestressed Concrete Pile
20045	450-045	Florida-I 45 Beam - Standard Details	20654	455-054	54" Precast/Post- Tensioned Concrete Cylinder Pile
20054	450-054	Florida-I 54 Beam - Standard Details	20660	455-060	60" Prestressed Concrete Cylinder Pile
20063	450-063	Florida-I 63 Beam - Standard Details	Approach Sla	abs	
20072	450-072	Florida-I 72 Beam - Standard Details	20900	400-090	Approach Slabs (Flexible Pavement Approaches)
20078	450-078	Florida-I 78 Beam - Standard Details	20910	400-091	Approach Slabs (Rigid Pavement Approaches)
20084	450-084	Florida-I 84 Beam - Standard Details	Bridge Expai	nsion Joints	
20096	450-096	Florida-I 96 Beam - Standard Details	21100	458-100	Strip Seal Expansion Joint
20120	450-120	AASHTO Type II Beam	21110	458-110	Poured Joint With Backer Rod Expansion Joint System
20199	450-199	Build-Up & Deflection Data For Prestressed I-Beams	Structures A	access and Light	ting
20210	450-210	Typical Florida-U Beam Details and Notes	21200	521-660	Light Pole Pedestal
20248	450-248	Florida-U 48 Beam - Standard Details	21210	630-010	Conduit Details
20254	450-254	Florida-U 54 Beam - Standard Details	21220	510-001	Navigation Light System Details (Fixed Bridges)
20263	450-263	Florida-U 63 Beam - Standard Details	21240	715-240	Maintenance Lighting For Box Girders
20272	450-272	Florida-U 72 Beam - Standard Details	21250	460-250	Access Hatch Assembly For Steel Box Sections
20299	450-299	Build-Up and Deflection Data For Florida-U Beams	21251	460-251	Access Hatch Assembly For Concrete Box Sections
N/A	450-450	Florida Slab Beam Typical Details and Notes (New Index)	21252	460-252	Access Door Assembly For Concrete Box Sections
N/A	450-451	12" Florida Slab Beam (New Index)	Standard Bai	r Bending Detai	ils
N/A	450-452	15" Florida Slab Beam (New Index)	21300	415-001	— Standard Bar Bending Details Renamed: Bar Bending Details (Steel)
N/A	450-453	18" Florida Slab Beam (New Index)	N/A	415-010	Bar Bending Details (FRP) (New Index)

Design Standards Index	Standard Plans Index	Index Title
Temporary D	etour Bridges	
21600	102-200	Temporary Detour Bridge General Notes and Details Renamed: Temporary Acrow 300 Series Detour Bridge General Notes and Details
N/A	102-201	Temporary Acrow 700XS Series Detour Bridge General Notes and Details (New Index)
21610	102-210	Temporary Detour Bridge Details - Timber Pile Foundations
21620	102-220	Temporary Detour Bridge Details - Steel H Pile Foundations
21630	102-230	Temporary Detour Bridge Details - Steel Pipe Pile Foundations
21640	102-240	Temporary Detour Bridge Thrie-Beam Guardrail
Post-Tension	ing	
21801	462-001	Post-Tensioning Vertical Profile
21802	462-002	Post-Tensioning Anchorage Protection
21803	462-003	Post-Tensioning Anchorage and Grouting Details
Fender Syste	em Details	
21930	471-030	Fender System - Prestressed Concrete Piles
22440	455-440	Precast Concrete CFRP/GFRP & HSSS/GFRP Sheet Pile Wall
Square and I	Round Concrete	Piles (Corrosion Resistant)
22600	455-101	Notes and Details for Square CFRP & SS Prestressed Concrete Piles
22601	455-102	Square CFRP and SS Prestressed Concrete Pile Splices
22612	455-112	12" Square CFRP and SS Prestressed Concrete Pile
22614	455-114	14" Square CFRP and SS Prestressed Concrete Pile
22618	455-118	18" Square CFRP and SS Prestressed Concrete Pile
22624	455-124	24" Square CFRP and SS Prestressed Concrete Pile
22630	455-130	30" Square CFRP and SS Prestressed Concrete Pile
22654	455-154	54" Square CFRP and SS Prestressed Concrete Pile
22660	455-160	60" Square CFRP and SS Prestressed Concrete Pile

Standard Plans Index	Description
000-510	Sheet 1: Added directional arrows to SECTION AA; Updated the Table to match FDM; Added 2-Lane option to pavement with median to be consistent with FDM.
000-511	Sheet 1: Updated Note 4 to match values in FDM; Added ONE Lane option to the Facilities to be consistent with FDM. Sheet 2: Update table to match FDM; Changed ratio in the PROFILE views for clarity.
102-600	Sheet 5: Changed the Height reference Note and deleted the 60" Width in the 3 POST SUPPORT MOUNTING DETAILS; Moved TEMPORARY SIGN SUPPORT NOTE 9 to TABLE 7, as Note 5; Deleted the 60x64 and the 120x60*Rectangle sign sizes and associated note from TABLE 7; Deleted "(See Note 7)" reference from the Diamond sign in TABLE 7. Sheet 6: Rearranged all signs; Added signs: R4-11, W11-1, and W16-1p; Deleted all the "MOT" signs. Sheet 7: Added the SIDE ROAD INTERSECTING THE WORK ZONE details from Index 102-606.
102-602	Sheet 1: Updated Note 3 to "Only the Road Work Ahead sign is required when the work operation is in place 60 minutes or less"; Updated Note 6 to read as work operation instead of temporary condition.; Deleted Note 8 and added new Note "When there is no paved shoulder, the "Worker" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a)." Sheet 2: Updated Note 9 references to Note 8.
102-603	Sheet 1: Changed Note 6 - "work zone" to "work operations"; Deleted Note 8B, and re-organized 8A; Deleted Note 9.
102-604	Sheet 1: Deleted Note 9 and added new Note "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."; Moved Flagger from the center of the westbound lane to the shoulder. Sheet 2: Moved the Flagger and associated dimension on the Southern lanes of the detail, from the southbound lane to the northbound lane.
102-606	Sheet 1: Changed Note 5 - "work zone" to "work operation"; Deleted Note 8; Moved Side Street detail to 102-600.
102-607	Sheet 1: Note 4: Deleted "provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating" and changed "delete" to "omit".
102-613	Sheet 1: Changed Note 5 and 7 - "work zone" to "work operation"; Deleted Note 8. Sheet 5: Added Note with MAS requirements for lane closures of 5 days or more (consecutive or not) for roads 55 mph or greater; Revised Note 1.

Standard Plans Index	Description				
102-615	Sheet 1: Changed Note 5 - "work zone" to "work operation"; Deleted Note 8. Sheet 4: Moved buffer space to not include TMA and added arrow board callout to TMA.				
102-620	Sheet 1: Deleted Note 5. Sheet 2: Changed Note - "work zone" to "work operation".				
102-628	Sheet 1: Changed Note 3 - "work zone" to "work operation"; Moved buffer zone and the associated dimension "B" before the Truck Mounted Attenuator in the work zone. Sheet 3: Changed the Arrow Board Mode to "CAUTION" in the approach traffic lanes.; Changed WZ sign 20-5aR to W1-4L.				
102-660	Sheet 2: Changed Note 4 - "work zone" to "work operations"; Added Note 5 - "Pedestrian Diversion Option 2 may only be used for work zone speeds of less than or equal to 35 mph and when called for in the Plans or as approved by an Engineer"; Changed title "TEMPORARY PEDESTRIAN WAY" to "PEDESTRIAN SPECIAL DETOUR"; Changed title "TEMPORARY PEDESTRIAN WAY DIVERTING TRAFFIC INTO THE TRAVELED WAY" to "PEDESTRIAN DIVERSION - OPTION 1"; Added new detail "PEDESTRIAN DIVERSION - OPTION 2".				
102-661	All Sheets: Title Change to "BICYCLE FACILITY CLOSURES". Sheet 1: Changed Note 4 - "work zone" to "work operation". Sheet 2: Added Notes; Updated Symbols; Added Typical PCMS Display; Changed TEMPORARY BICYCLE DIVERSION to "BICYCLE SPECIAL DETOUR" and TEMPORARY BICYCLE WAY DIVERTING TRAFFIC INTO THE TRAVELED WAY to "BICYCLE FACILITY SHIFT (With Lane Closure)"; Added "BICYCLE FACILITY SHIFT (Work Zone Speed of 35 mph or Less)".				
102-680	Sheet 1: Changed Note 6 - "work zone" to "work operation".				
350-001	Sheet 1: Updated Note 3.B (Deleted "standard load transfer" and changed Spacing of #5 bars from 38"); Updated Note 7 to revise reference to Specification 350 and Specification 931; Correct line work to extend to the bottom of the pavement in the BUTT CONSTRUCTION JOINT details; Added "Relation of Dowels to Tie Bars" detail.				
370-001	Sheet 1: Changed "Class I" to "Class II" in SECTION A-A; Revised Note 1 to read " For asphalt base, use four expansion joints, spaced at 15-ft, per Index 350-001."				
425-060	Sheet 3: Changed "Class I" to "Class II" in Table 1. Sheet 4: Changed "Class I" to "Class II" in the SHALLOW DITCHES - INLET VIEW detail.				

Standard Plans Index	Description
425-061	Sheet 2: Remove reference to Dimension "D" in SPI and change text in SPI and Index to "Flume Length" to allow for this to be called for in the Plans. The "varies" callouts were deleted from the section references and note because the sections as shown are not variable.
430-001	Sheet 4: Moved "Joining Mainline Pipe to Stub Pipe Details" and Notes 2 and 3 to the Standard Plans Instructions: Deleted Notes 5-7.
430-010	Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II". Sheet 2: Changed "Class I" to "Class II" in TABLE 2.
	Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II". Sheet 2: Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR ONE U-ENDWALL TABLE and added TABLE 1 to the title.
430-011	Sheet 3: Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR ONE U-ENDWALL TABLE and added TABLE 2 to the title. Sheet 4: Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR BAFFLES TABLE and added TABLE 3 to the title; Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR ONE U-ENDWALL TABLE and added TABLE 4 to the title. Sheet 5: Added TABLE 5 to the title of the TABLE OF DIMENSION AND QUANTITIES FOR ONE GRATE.
430-012	Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II".
430-020	Sheet 1: Changed GENERAL NOTE 3 - Cast Toe Walls in place using Class II Concrete. Sheet 2: Changed "Class I" to "Class II" in the TABLE; Corrected the Dimension "B" in the Plan View of the Straight Flare Detail to "P".
430-030	Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II". Sheet 2: Changed "Class I" to "Class II" in both Tables.
430-040	Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II". Sheet 2: Changed "Class I" to "Class II" in the DIMENSION AND ESTIMATED QUANTITIES TABLES.
430-090	Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II". Sheet 2: Changed "Class I" to "Class II" TABLE 1 - U-ENDWALL DIMENSIONS AND QUANTITIES.
440-002	Sheet 1: Changed GENERAL NOTE 2 from "Class I" to "Class II".
450-010	Sheet 1: Updated language concerning N type strands in the notes for clarity.

Standard Plans Index	Description				
450-199	Sheet 1: Changed the camber tolerance 1" from 1/2".				
509-070	Sheet 1: Renumbered Sheet 2: Renumbered Sheet 3: Moved the RAILROAD CROSSING AT TWO-LANE ROADWAY and the RAILROAD CROSSING AT MULTILANE ROADWAY details to the FDOT Design Manual (FDM); Moved the RELATIVE LOCATION OF CROSSING TRAFFIC CONTROL DEVICES detail to New Sheet 3; Moved the RAILROAD DYNAMIC ENVELOPE (RDE) PAVEMENT MARKING DETAIL and the RAILROAD CROSSING PAVEMENT MESSAGE detail to Index 711-001. Sheet 4: Renumbered; Added the RELATIVE LOCATION OF CROSSING TRAFFIC CONTROL DEVICES detail.				
509-100	Sheet 1: Changed "Class I" to "Class II" in the Front View of the ACTIVE STATE Detail.				
515-052	Sheet 5: Added knuckled selvage as an option to the chain-link railing option.				
515-062	Sheet 6: Added knuckled selvage as an option to the chain-link railing option.				
520-001	Sheet 1: (NEW SHEET) General Note and Overview. Sheet 2: (Old Sheet 1) Renumbered, rearranged, and updated notes. Sheet 3: (Old Sheet 2) Renumbered, rearranged and moved General Notes to new Sheet 1.				
520-005	Deleted notes; redrew details.				
520-010	Redeveloped Index; Redrew details; Rewrote Notes				
521-610	Sheet 1: Note 15: Added reference to Index 630-001 (Conduit Details - Embedded) for information on embedded junction boxes and conduits.				
521-650	Sheet 1: Note 5: Added reference to Index 630-010 (Conduit Details- Embedded) for information on embedded junction boxes and conduits.				
521-660	Sheet 1: Added a pedestal design to allow slip forming of the traffic railing. Reconfigured sheet layout.				
522-002	Sheet 1: Added Note 2.C. Sheet 4: Changed back of sidewalk in CR-D detail to accommodate 4'-0" minimum dimension.				
548-020	Sheet 1: Deleted alternative allowable wall type 2E from 2D.				
550-001	Sheet 1: Changed GENERAL NOTE 8 from "Class I" to "Class II".				

Standard Plans Index	Description				
630-001	Sheet 1: Added fiber optic cable route marker label detail; Revised General Note 2 to read "When sidewalk is damaged by conduit installation, replace entire sidewalk slab".				
641-010	Redeveloped Index Sheet 1: (NEW SHEET) General Note, Table of Contents, and added Concrete Pole Assembly. Sheet 2: (NEW SHEET) Service Pole P-IIA. Sheet 3: (NEW SHEET) Service Pole P-IIB. Sheet 4: (NEW SHEET) Pedestal Pole P-IIC. Sheet 5: Previously Sheet 3 - Updated Notes and Legend. Sheet 6: Previously Sheet 4 - Updated Notes and Legend. Sheet 7: Previously Sheet 5 - Updated Notes and Legend. Sheet 8: Previously Sheet 6 - Updated Notes and Legend. Sheet 9: Previously Sheet 7 - Updated Notes and Legend. Sheet 10: Previously Sheet 8 - Updated Notes and Legend.				
641-020	Sheet 1: Moved Note 3 to new Note 7; Added Note 7; Renumbered General Notes; Dashed the Identification Tag and the handhole in the CCTV POLE ASSEMBLY detail. Sheet 2: Updated the Assembly detail to match Sheet 1; Realigned the PLAN VIEW detail to match the Pole direction; Dashed the Identification Tag and the Handhole in the ELEVATION detail. Sheet 3: Updated the Assembly detail to match Sheet 1; Moved the Spiral wire note in the SPIRAL REINFORCING ELEVATION detail to the Notes and added See Note 1 to the Spiral Reinforcing call out; Dashed the Conduit Entry Holes in the POLE ELEVATION detail to be consent with the Pole's view. Sheet 4: Updated the Assembly Detail to match Sheet 1; Added Note 5. Sheet 5: Added Handhole to the CONCRETE CCTV POLE GROUNDING detail and to DETAIL "D"-SIDE VIEW detail.				
646-001	Changed Note 4 to remove concrete type since specified in Spec 646; Added Note 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."; Updated the PEDESTAL MOUNTED detail – to show in the ADJACENT TO SIDEWALK detail "Tie Bars" callout as a #4 Stirrups equally spaced, with a 12" maximum spacing; Changed all references "4" Nominal Aluminum Pole" to "Nominal 4" Aluminum Post (Sch.40)".				
649-010	Sheet 3: Changed weld on Handhole.				

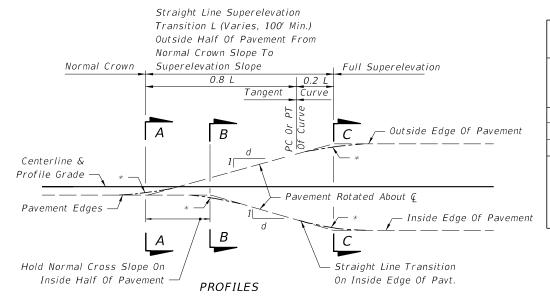
Standard Plans Index	Description
649-020	Sheet 1: Added Note 3 to the GENERAL NOTES; Renumbered Notes; Deleted Note B and Added Note C and D to new Note 6; Added the Cabinet Adapter Bracket and dashed the Handhole in the STEEL CCTV POLE ASSEMBLY detail. Sheet 2: Updated the Assembly Detail to match Sheet 1; Dashed the Handhole in the ELEVATION detail. Sheet 3: Updated the Assembly detail to match Sheet 1. Sheet 4: Updated the Assembly detail to match Sheet 1. Update callout to "See Note" on Handhole Detail. Sheet 5: Updated the Assembly detail to match Sheet 1. Sheet 6: Dashed the Handhole in the CONCRETE CCTV POLE GROUNDING detail and added the Handhole to DETAIL "E"-SIDE VIEW detail.
649-031	Sheet 1: Note 4 added optional other materials. Sheet 2: Added note 4. Sheet 3 and 4: Added bolt as option for splice connection. Sheet 6: Clarified that domed shape top cap is permissible.
654-001	Sheet 1: Reorganized to show the Beacon Assembly adjacent to the sidewalk; Update Note 1 to reference Index 700-120 for pull box, conduit, wiring and grounding installation requirements; Updated Note 7; Change all references "4" Nominal Aluminum Pole" to "Nominal 4" Aluminum Pole (Sch. 40)"; Updated anchor bolts; Updated callouts. Sheet 2: (NEW SHEET) showing the Beacon Assembly in the Sidewalk Curb.
659-010	Changed Note 2.B.b. updated width to greater than or equal to 8'.

Standard Plans Index	Description					
695-001	All Sheets: Renumbered Sheets 1 through 7: Due to introduction of two new sheets, updated the total sheet number from 7 to 9. Sheets 1, 2, 3, 4: Updated the name of the office from "Transportation Statistics" to "Transportation Data and Analytics". Sheet 1: Added 12 Port Patch Panel, Managed Field Ethernet Switch, and Note 6 for installation. Sheet 2: Added 12 Port Patch Panel, Managed Field Ethernet Switch, and Note 6 for installation. Sheet 4: Changed color scheme to vendor provided color scheme Sheet 6: (NEW SHEET) described the quartz piezoelectric weigh-in-motion installation for Type I Configuration. Sheet 7: (NEW SHEET) described the quartz piezoelectric weigh-in-motion installation for two distinct Type III Configurations. Added a note to contact the Transportation Data and Analytics office for correct layout based on vehicle classification unit. Sheet 6 (NEW SHEET 8): Updated Elevation View to match foundation details on Sheet 7 (NEW SHEET 9); Changed "4" Nominal Aluminum Pole" to ""Nominal 4" Aluminum Pole (Shc. 40)"; Added Solar Panel callout. Sheet 7 (NEW SHEET 9): Updated Foundation Details to show bars and stirrups; Updated note 2 to reference Spec 646; Updated Note 6; Changed all references "4" Nominal Aluminum Pole" to "Nominal 4" Aluminum Pole (Shc. 40)".					
700-010	Sheet 4: Changed NOTE 1 from "Class I" to "Class II".					
700-011	Sheet 2: Changed "Class I" to "Class II" in the BASE AND FOUNDATION DETAIL.					
700-020	Sheet 2: Changed "Class I" to "Class II" in the FOUNDATION Detail.					
700-040	Sheet 2: Changed the 2'-2" lap splice for the #5 tie bars on the spread footing plan view to 1'-8". Revised Note 5 to read "After galvanizing, provide magnetic particle testing on 100% of upright fillet welds."					
700-041	Updated Note 5 to read "After galvanizing, provide magnetic particle testing on 100% of upright fillet welds."					
700-091	Sheet 1: Updated GENERAL NOTE 6 with more specific language to include hot dip galvanized safety gate and to install per manufacturer's instructions.					
700-101	Added offset from median or island nose to Case VIII Detail.					

Standard Plans Index	Description				
700-102	Sheet 5: Updated FTP-38-06 fort, dimension, and numbering; Changed the fine amount on FTP-40-06. Sheet 6: Changed the fine amount on FTP-41-06. Sheet 10: Added FTP-90-22 and FTP-91-22; Updated MOT-1-06, MOT-4-06, MOT-5-06 MOT-6-06, MOT-7-06, MOT-8-06, and MOT-9-06 font size, dimension, and numbering; Shifted to accommodate new signs; Moved MOT-8-06 (MOT-8-22) and MOT-9-06 (MOT-9-22) to Sheet 11. Sheet 11: Updated MOT-10-06 font size, dimension, and numbering; Shifted to accommodate new signs; Moved G20-1 and G20-2 to Sheet 12. Sheet 12: Shifted signs: Added MOT-26A-22 and MOT-26B-22.				
700-109	Deleted Index.				
700-120	All Sheets: Renumbered Sheet 1: Updated General Note 4; Change all references "4" Nominal Aluminum Pole" to "Nominal 4" Aluminum Pole (Sch. 40)"; Updated anchor bolts. Deleted the ground wire from the FRONT VIEW in the POWER CONFIGURATION 'B' - WITHOUT AUXILIARY POLE. Sheet 2: Added new detail to show foundation reinforcement; Change all references "4" Nominal Aluminum Pole" to "Nominal 4" Aluminum Pole (Sch. 40)"; Updated anchor bolts. Deleted the ground wire and strain relief fitting from DETAIL "B". Sheets 3 through 11: Updated callouts to point to both details; Changed all references "4" Nominal Aluminum Pole to "Nominal 4" Aluminum Pole (Sch. 40)"; Updated anchor bolts; Added Note "Foundation reinforcement not shown". Sheet 9: Changed "Point to Point Microwave" to "Wireless" from the FRONT VIEW and from Note 2; Removed "Microwave" from the FRONT VIEW and from Note 2. New Sheet 10: Added Roadside Sign Assembly-8, Blank Out Signs. Sheet 10: Renumbered as Sheet 11.				
706-001	Sheet 3: Added - Note 3: "Use epoxy adhesive to install RPMs to concrete median nose curbs"; Added Note 4: "Install RPMs on clean, unpainted concrete surface. Do not paint curb surface where RPMs will be placed"; Changed all references to Yellow Reflective Durable Paint-Yellow. Sheet 4: Revise Detail "G" to remove yellow paint from nose and call for white RPMs to be consistent with MUTCD.				

Standard Plans Index	Description
711-001	All Sheets: Renumbered Sheet 1: Deleted Note 1 for Pavement Messages; Changed Note 5 (New Note 4) to "All pavement messages must be white except Route Shields and In Pavement Warning Markings"; Deleted Pavement Message Spacing Table; Deleted the General Notes; Added Pavement Warning Marking. Sheet 2: Moved the MARKING FOR MERGE detail from Sheet 8. Sheet 8: Deleted Right Turn Lane Drop and Island Details and DETAIL "C" from Index. Moved to the FDM, Combined with Signing Details shown in 230-5; Deleted the Traffic Channelization at Gore detail Note; Moved the Instructions associated with the TWO-WAY LEFT TURN LANE details to the SPI. Sheet 9: Deleted Schemes for Transition details and DETAIL "D" from Index. Moved to FDM, Combined with Signing Details shown in Exhibit 230-05; Changed Detail "E" to " Markings for Merge" and Deleted the NOTE; Moved Details to Sheet 2; Moved the "Markings for Traffic Separation" to Sheet 8; Deleted Sheet 9. Sheet 11: New Sheet 10: Revert to previous FY 2018-19 Index and delete redundant information shown in FDM Exhibit 212-1. Sheet 12: (New Sheet 11) Deleted Note 4; Changed reference to "See Note 5" in the UNIVERSAL SYMBOL OF ACCESSIBILITY detail. Sheet 14: (NEW SHEET) Added RAILROAD DYNAMIC ENVELOPE (RDE) PAVEMENT MARKING DETAILS and RAILROAD CROSSING PAVEMENT MESSAGE from Index 509-070 and RAILROAD CROSSING PAVEMENT MESSAGE from Index 509-070.
711-003	Sheet 1: Added 18" white Chevrons to both entrance ramps. Dotted line for lane extension to extend to end of taper. Sheet 2: Added 18" white Chevrons to both entrance ramps. Dotted line for lane extension to extend to end of taper. Sheet 5: Added 18" white Chevrons to entrance ramp gore; Moved Detail "C" from sheet 5 to Sheet 3 of Index 706-001; Moved Note 1 to the Wrong-Way Arrow callout at the Gore; Deleted Note 2; Deleted the "See Note 3" reference from the Yellow Post Mounted Delineator callout. Sheet 6: Moved Note 1 to the Wrong-Way Arrow callout at the Gore; Deleted the note reference and the Detail "C" reference for the Wrong-Way Arrow callout on the off ramp.
715-001	Sheet 1: Updated fuse holder slug (blank) requirement from solid copper to manufacturer's suggested in three drawing locations.

Standard Plans Index	Description
715-002	Sheets 1, 4, & 7: Changed general concrete requirement from Class I to Class II. Sheet 2: Added clarification to callout. Wildlife-Sensitive lighting may also be used with standard mounting heights 30 feet through 50 feet (original intent).
715-003	NEW INDEX: "Utility Conflict Pole", light pole with a 15' rise X 16' length arm.

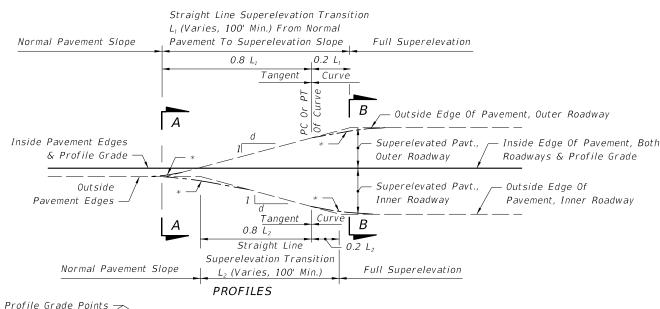


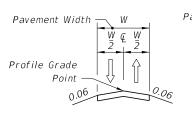
SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS

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

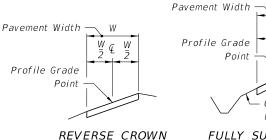
The length of superelevation transition is to be determined by the relative slope between the travel way edge of pavement and the profile grade, except that the minimum length of transition shall be 100 ft.

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









0.06 (Or Steeper To Match Pavt. Slope) FULLY SUPERELEVATED SECTION CC

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

1. Curves of insufficient length.

See SHOULDER CONSTRUCTION

WITH SUPERELEVATION

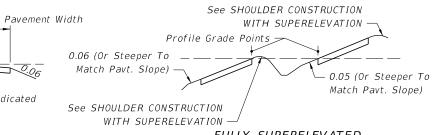
- 2. Insufficient tangent length between curves.
- 3. Deficient transition distance between a curve and other control point(s). 4. At PCC's or PRC's (Runoff rates are applicable).

NORMAL SECTION SECTION AA

Slope As Indicated

On Plans

Median



FULLY SUPERELEVATED SECTION BB

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

SECTION BB

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

Pavement Width

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

SUPERELEVATION TRANSITIONS =

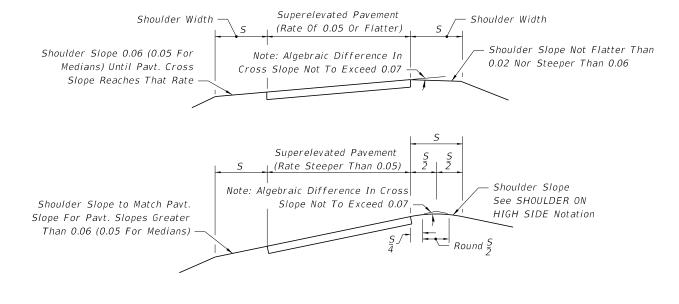
SYMBOL:

□□□ 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 =

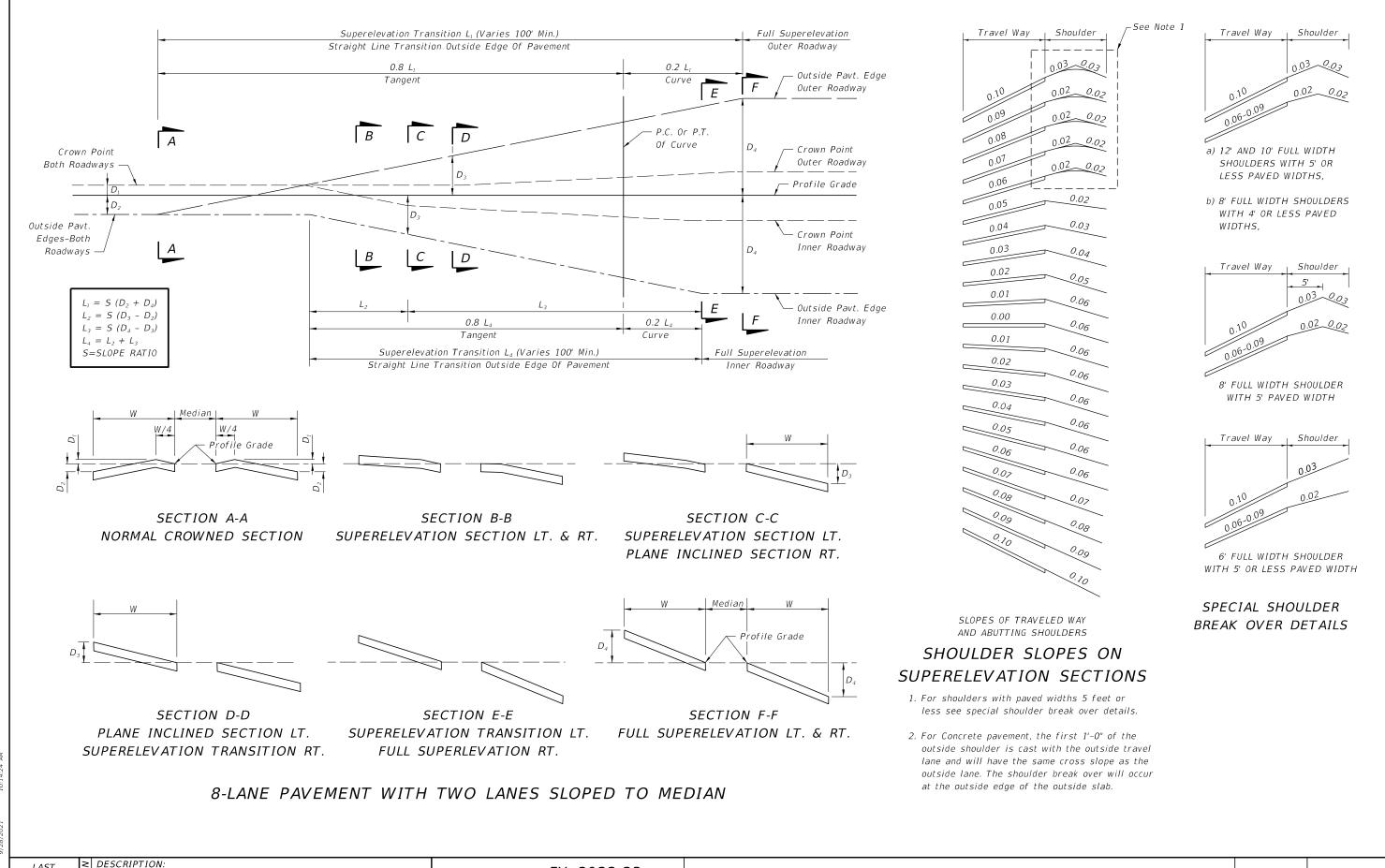
REVISION 11/01/21

FDOT

FY 2022-23 STANDARD PLANS

SUPERELEVATION TRANSITIONS -HIGH SPEED ROADWAYS

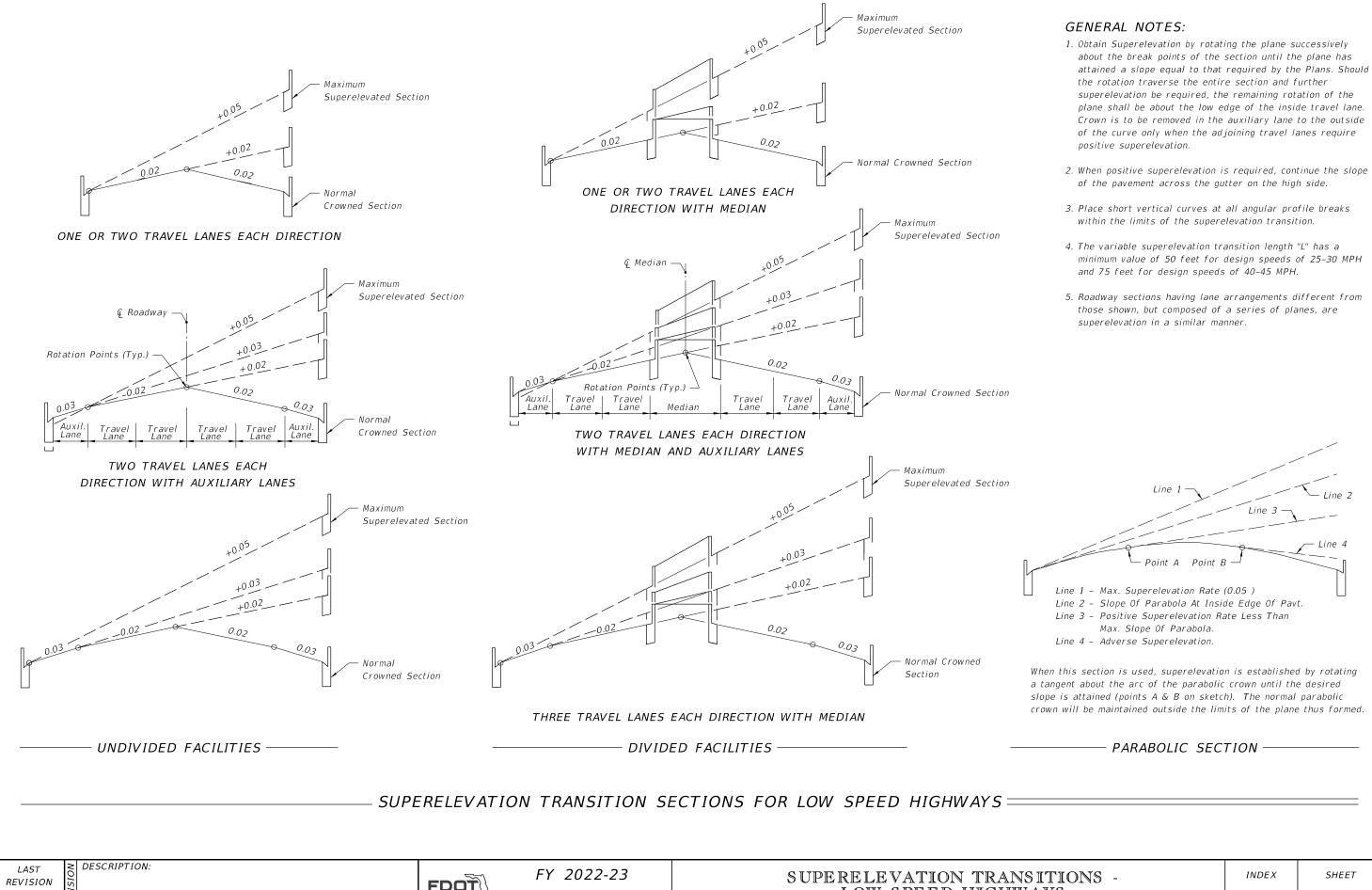
INDEX 000-510 SHEET



9/28/2021

LAST REVISION 11/01/18

FDOT

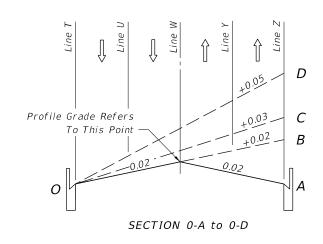


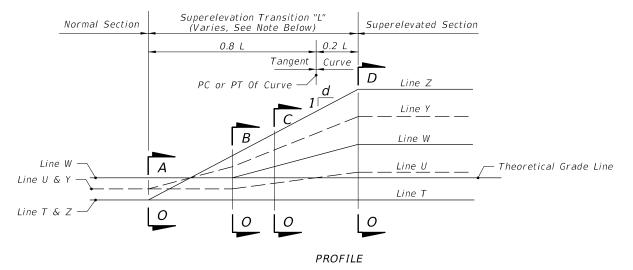
11/01/21

NOTE:

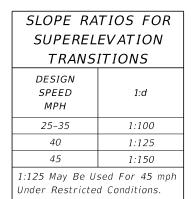
The sections and profiles shown are examples of superelevation transitions. Similar schemes should be used for roadways having other sections.

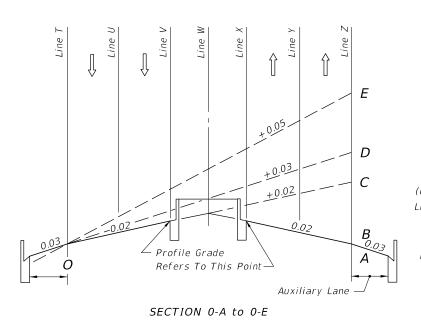
LINE	DESCRIPTION			
T	Inside Travel Lane			
U	Inside Lane Line			
V	Inside Median Edge Pavement			
W	← Construction			
X	Outside Median Edge Pavement			
Y	Outside Lane Line			
Z	Outside Travel Lane			
Inside And Outside Are Relative				
To Cur	To Curve Center			

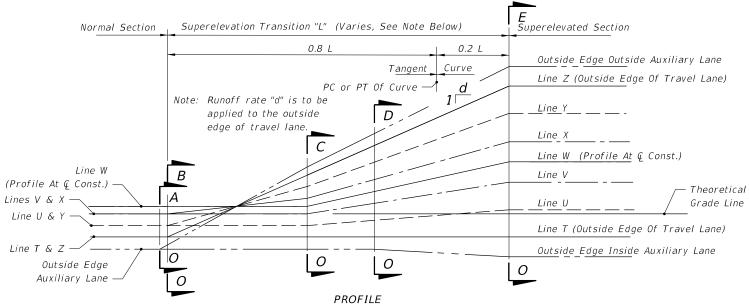




TWO LANES EACH DIRECTION





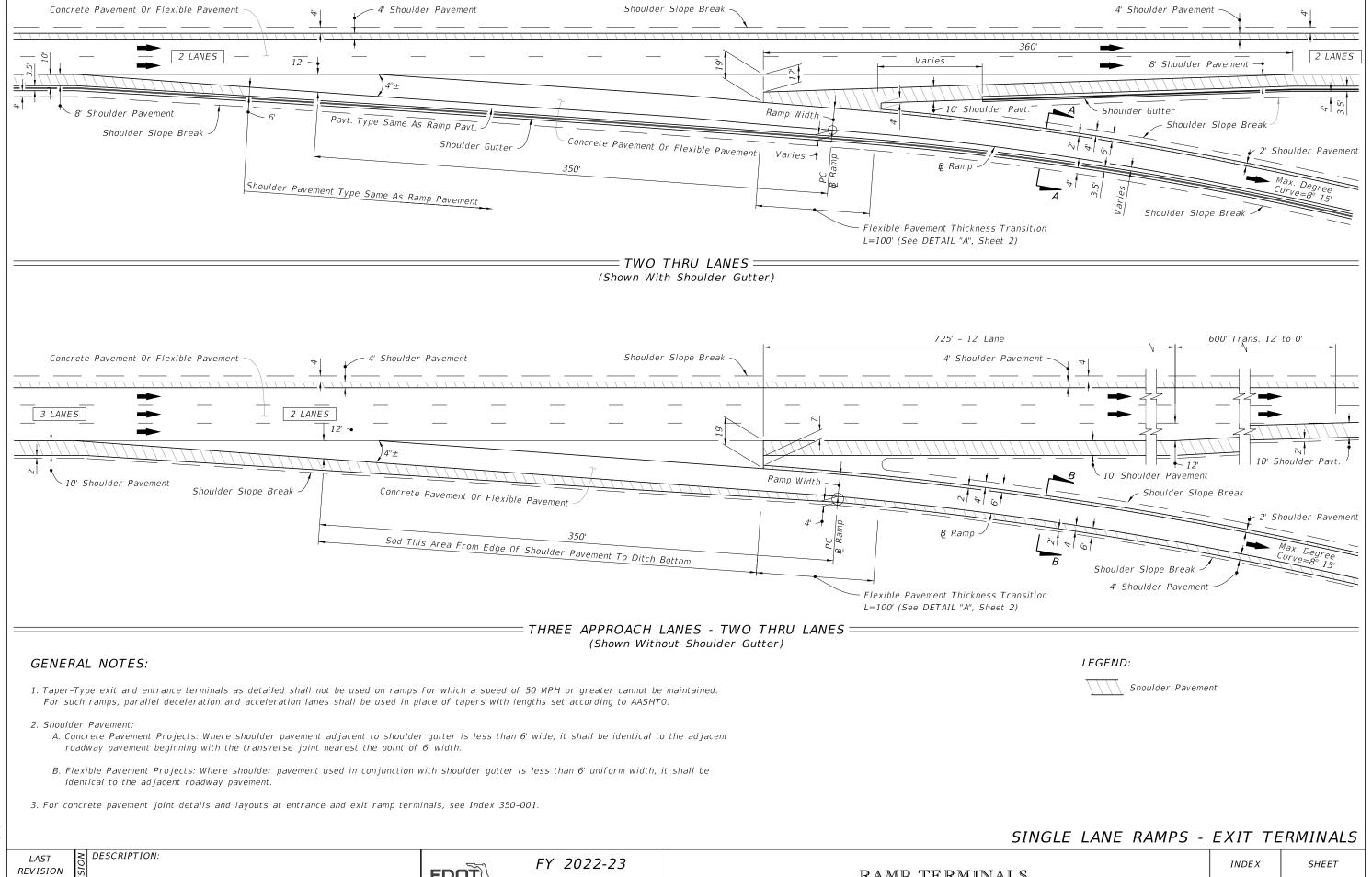


TWO LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANE

EXAMPLE SUPERELEVATION SECTIONS AND PROFILES FOR LOW SPEED HIGHWAYS =

REVISION 11/01/21

DESCRIPTION:



11/01/17

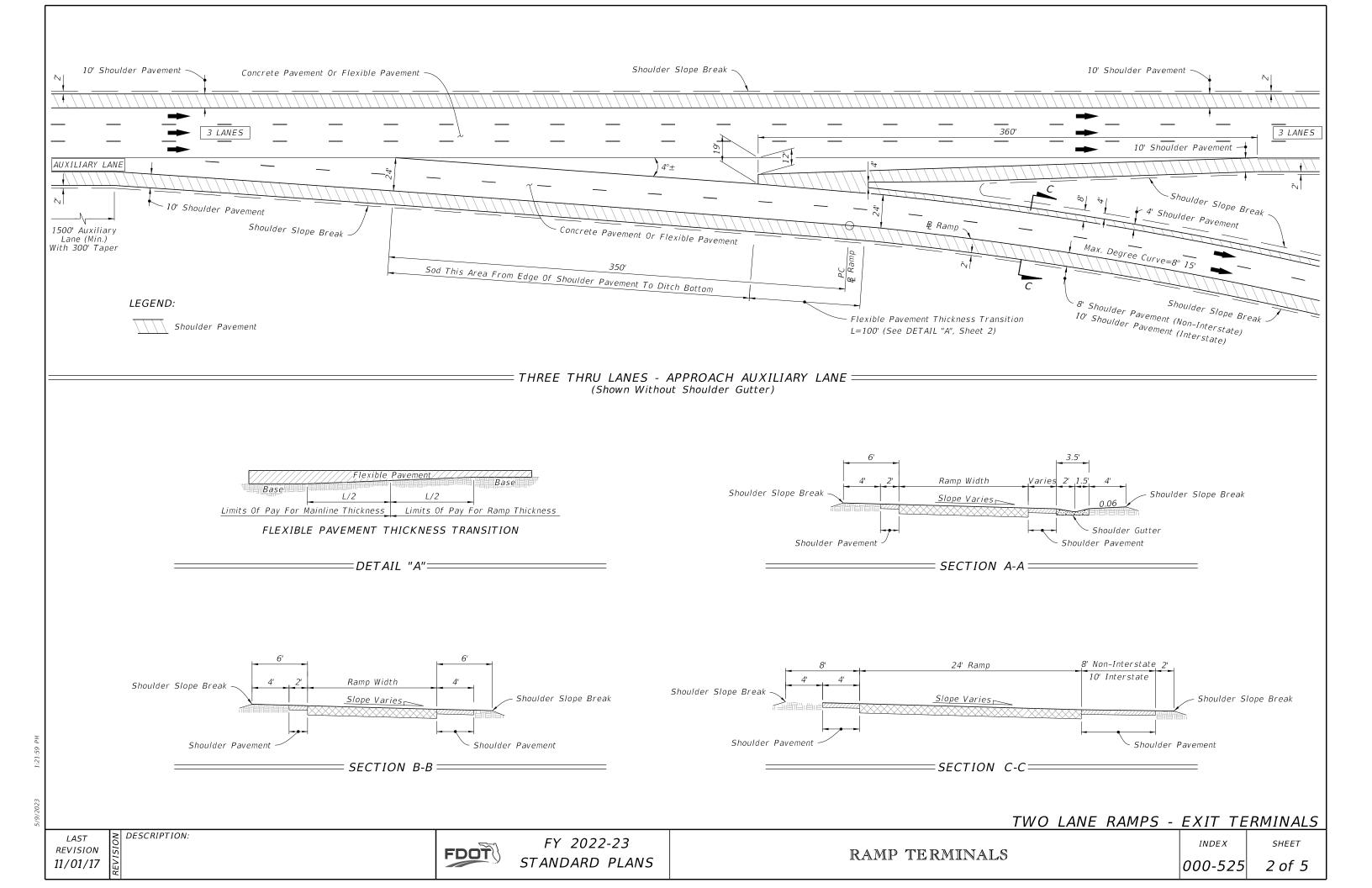
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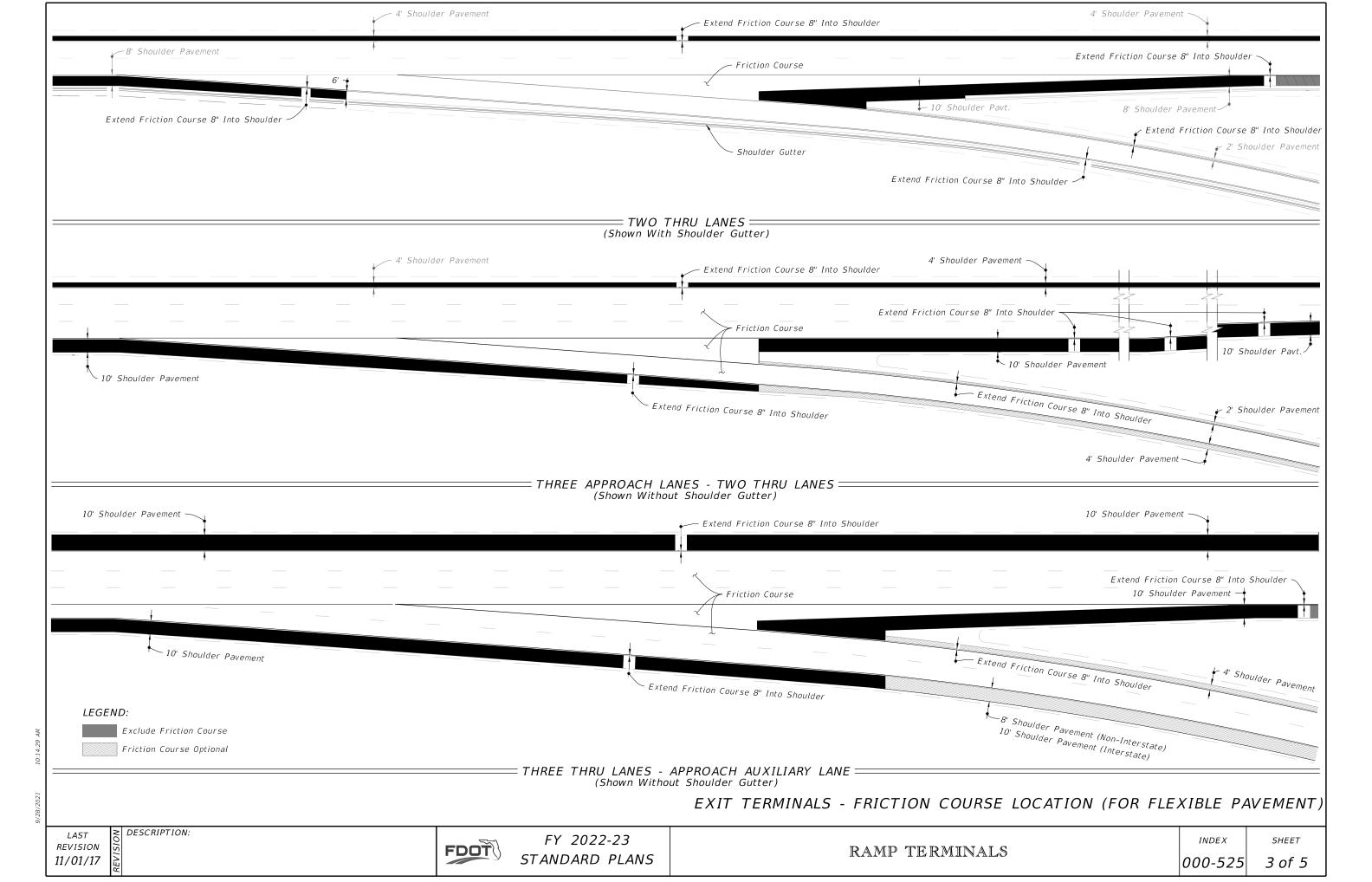
STANDARD PLANS

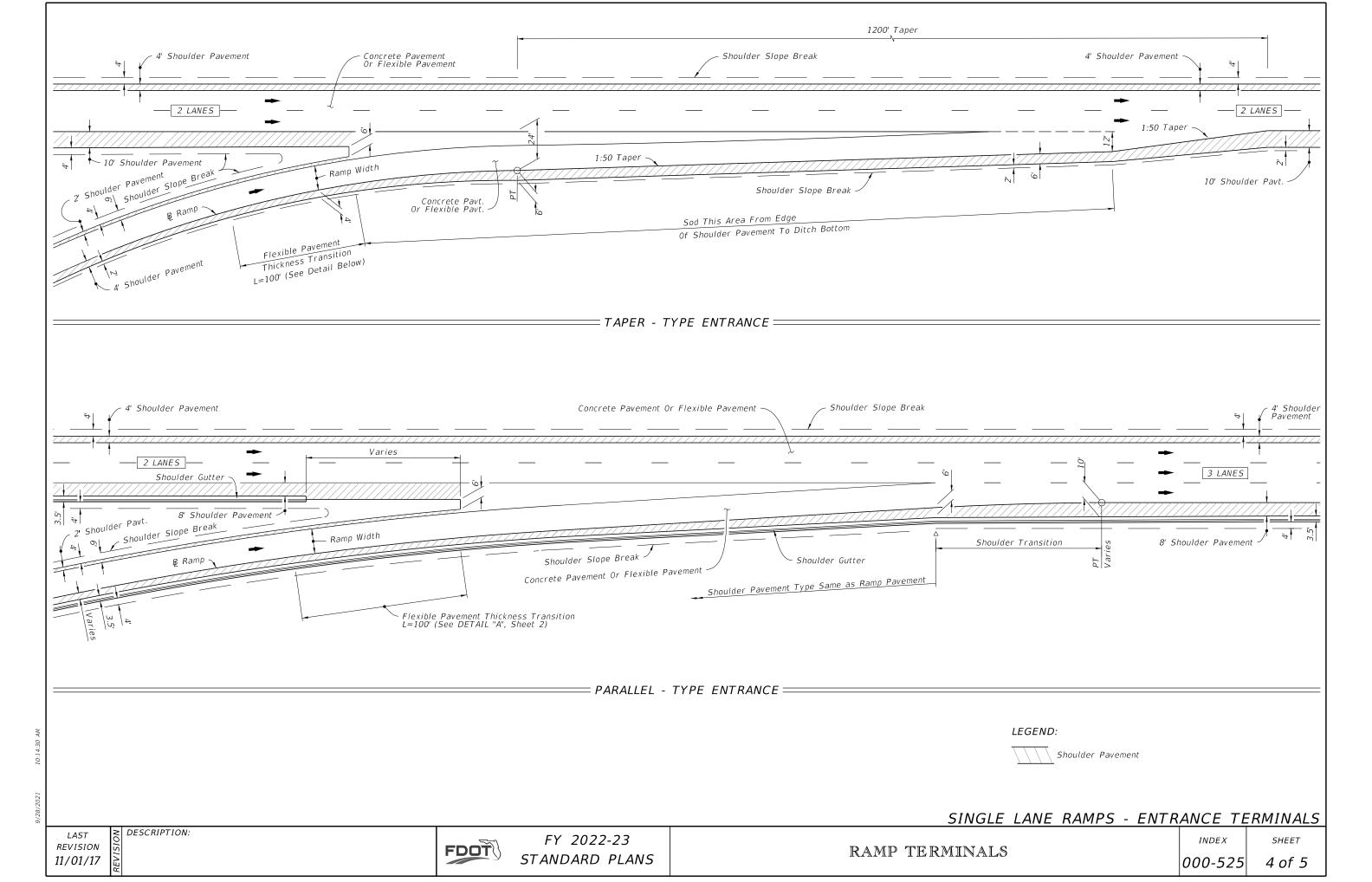
RAMP TERMINALS

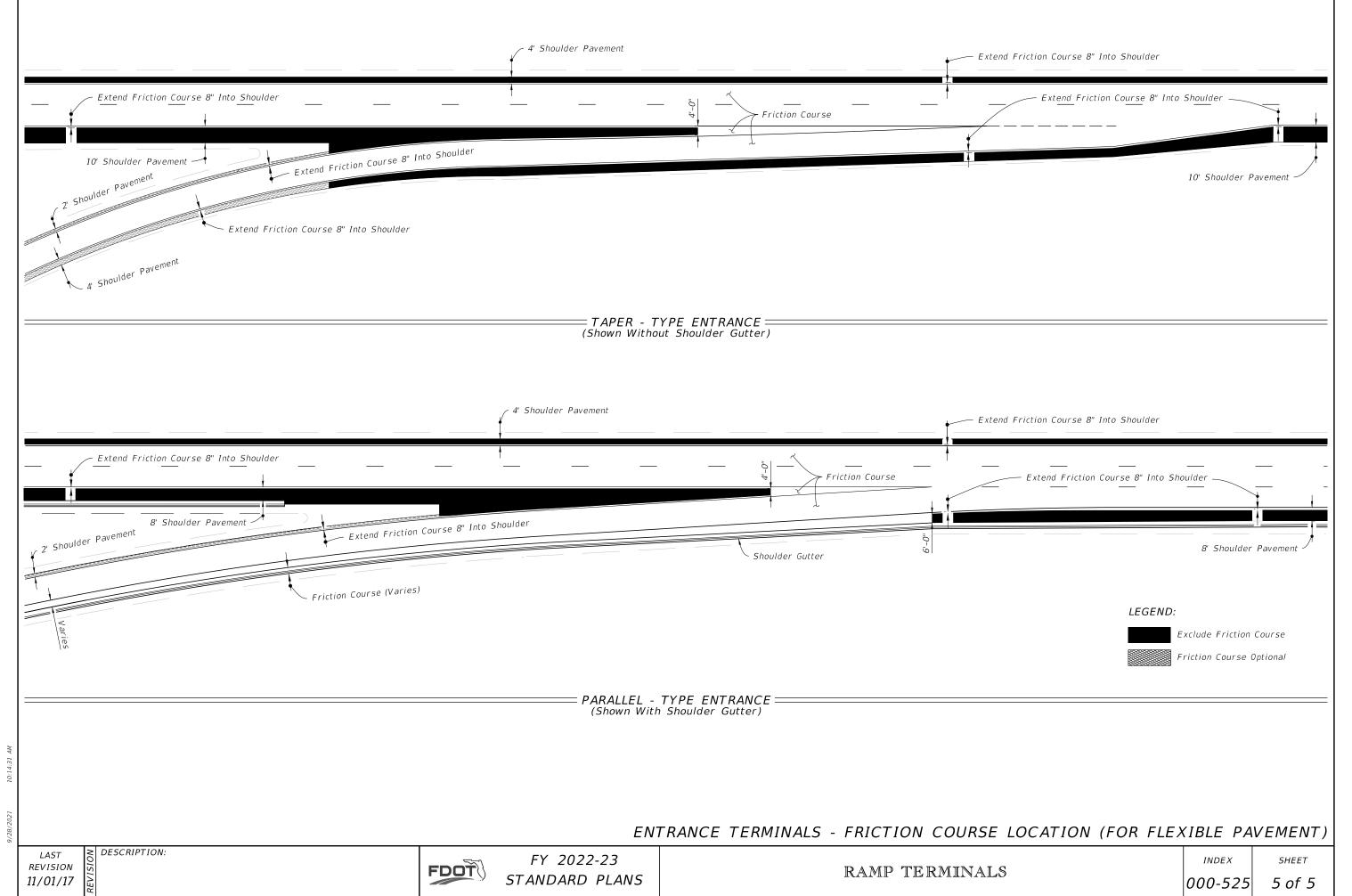
000-525

1 of 5





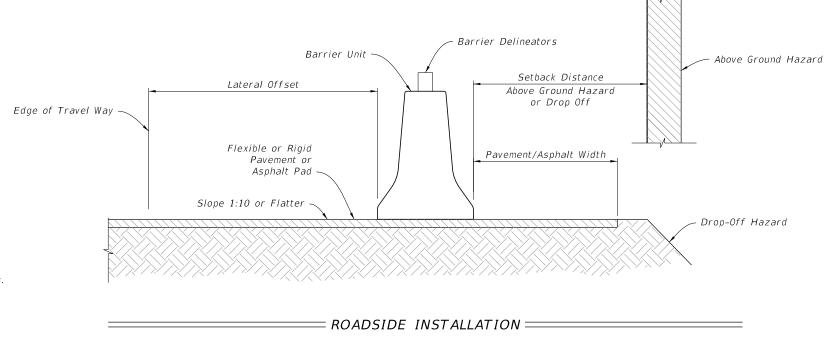


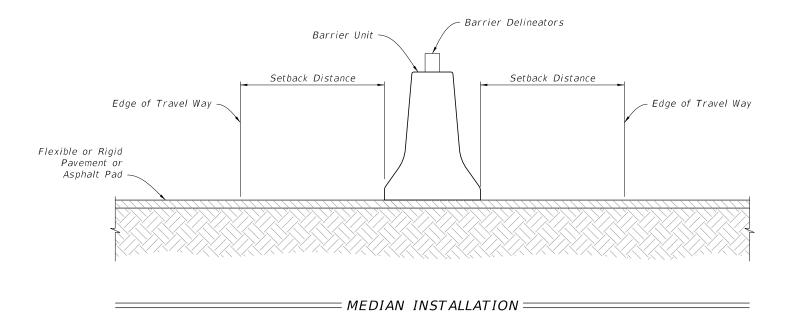


GENERAL NOTES:

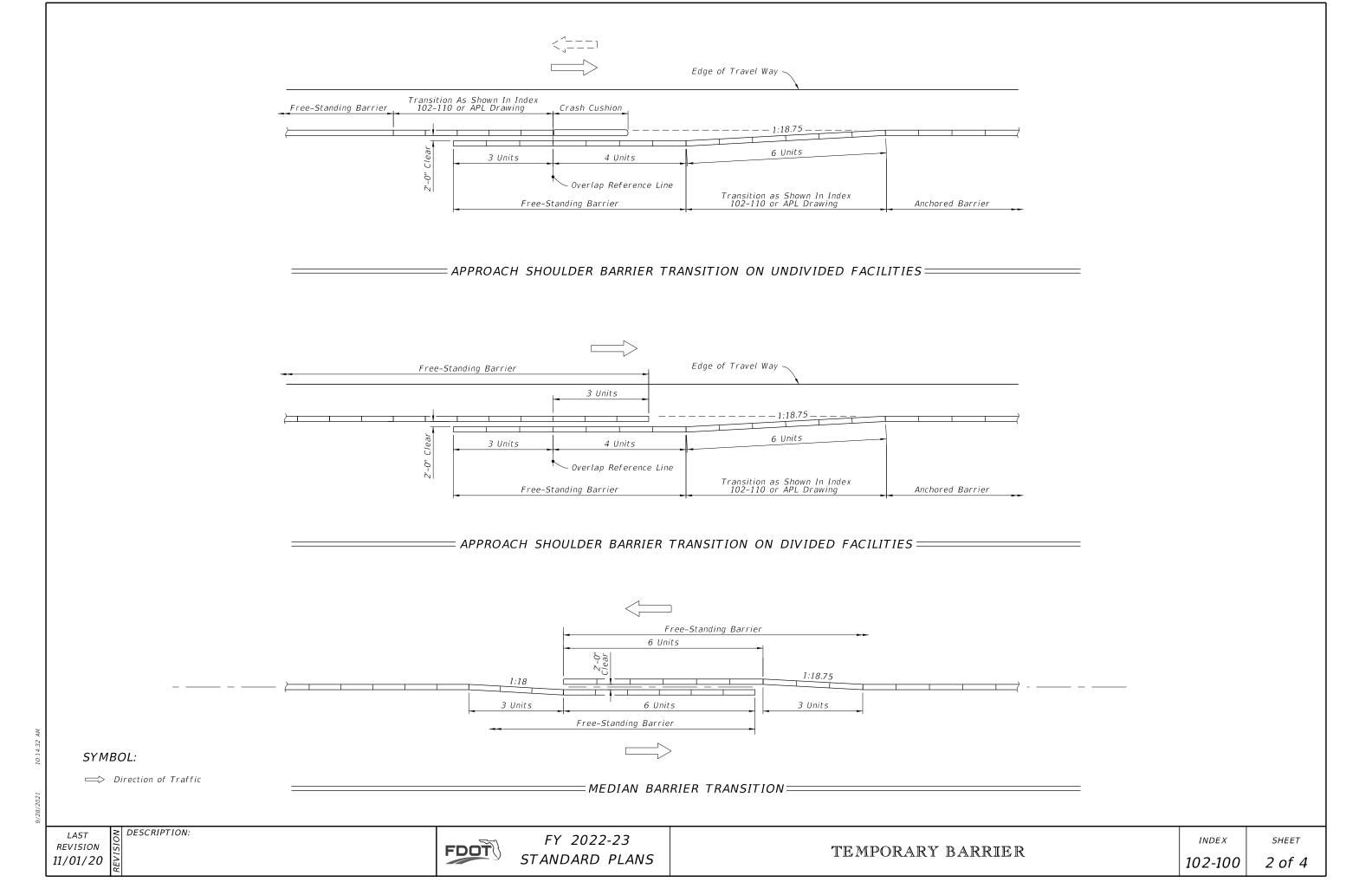
- 1. Temporary barrier systems may be any of the following:
 - A. Type K Temporary Concrete Barrier System (Index 102-110) installed as either Free-Standing or Anchored.
 - B. Proprietary Temporary Barrier Systems on the Approved Product List (APL).
 - a. Concrete Barrier (Free-Standing or Anchored)
 - 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.

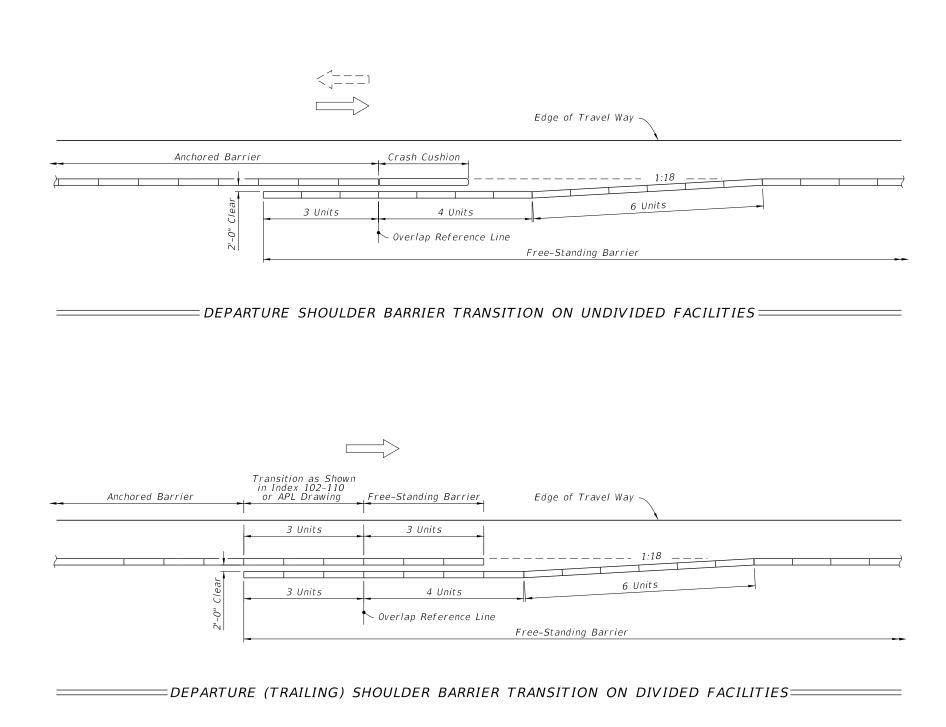
INSTALLATION DATA				
CONDITION	LATERAL OFFSET	SETBACK DISTANCE	PAVEMENT/ ASPHALT WIDTH	
Anchored	2' Min.	2' Min. (See Note)	1' Min.	
Free-standing	2' Min.	4' Min.	4' Min.	
NOTE: For Bridge Decks see Index 102-110 or APL.				





DESCRIPTION:



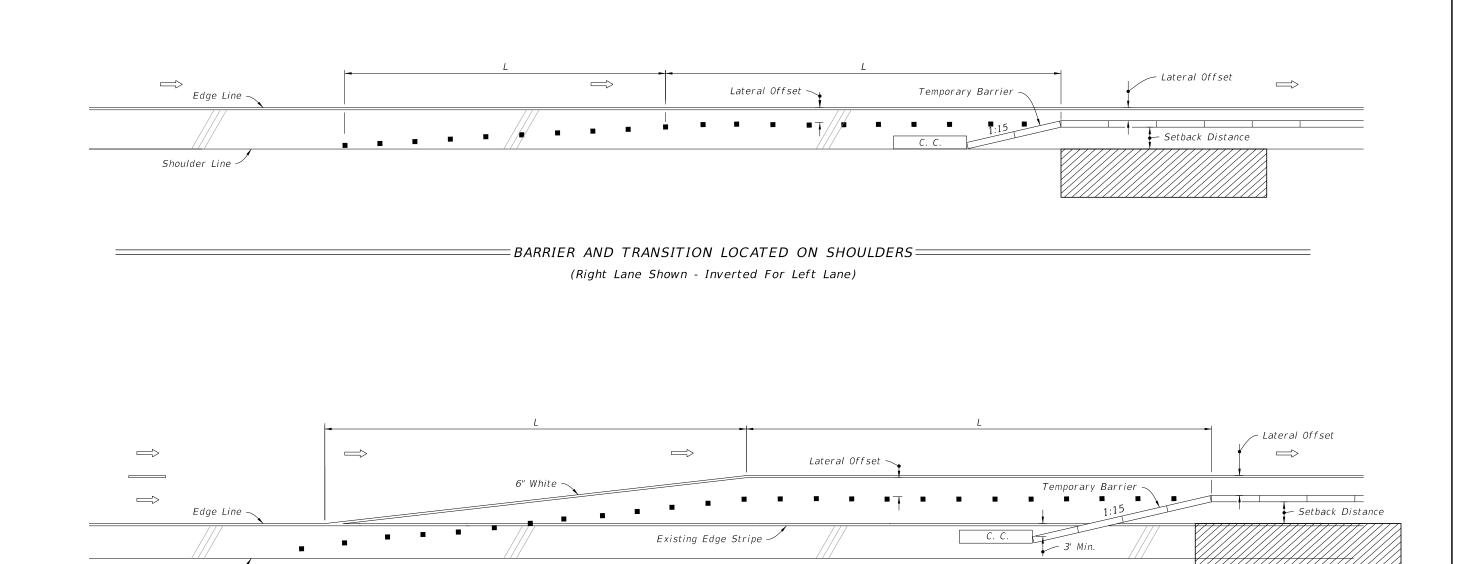


SYMBOL:

□⇒ Direction of Traffic

≥ DESCRIPTION: LAST REVISION 11/01/20

FDOT



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.

Shoulder Line /

SYMBOLS:

■ Channelizing Device (See Index 102-600)

C.C. Crash Cushion

≥ DESCRIPTION:

Lane Identification and Direction of Traffic

REVISION 11/01/20

FDOT

INDEX 102-100

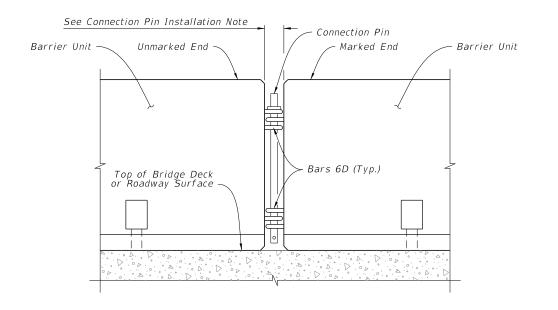
SHEET 4 of 4

GENERAL NOTES:

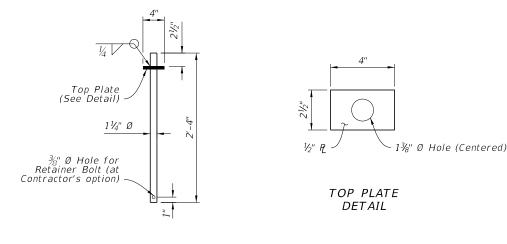
- 1. Meet the requirements of Index 102-100.
- 2. For fabrication details see Sheets 15 thru 17.
- 3. HANDLING: Do not lift or move the Barrier Units by using Bars 6D that extend from the ends of the units. Approximate weight of one unit equals 2.7 tons.
- 4. CONNECTION PIN ASSEMBLY: Use steel for Connection 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 💥 diameter hole may be provided at the bottom of the Connection Pin, as shown, for the installation of a vandal resistance bolt.
- 5. CONNECTION PIN INSTALLATION: Initially set Barrier Units by using a 35% 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. REMOVAL OF BOLTS, STAKES AND KEEPER PINS: 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. TYPE K ANCHORED TO FREE-STANDING TRANSITIONS: 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:

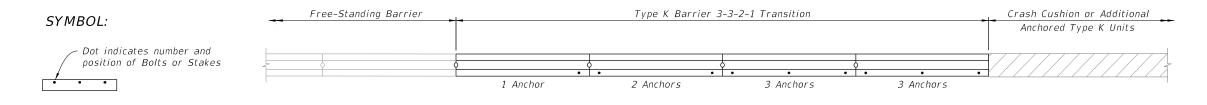
- 1. THRIE-BEAM GUARDRAIL: Provide Thrie-Beam Guardrail for splices meeting the requirements of specification 967 and as follows: Two panels per splice (One panel per side) of Class B (10 Gauge), or Four panels per splice (Two nested panels per side) of Class A (12 Gauge). Use a 12'-6" guardrail panel. 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. GUARDRAIL OFFSET BLOCKS: 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. CONCRETE FOR FILLING TAPERED TRAFFIC RAILING TOES: 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 ======



= CONNECTION PIN DETAIL ====



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

REVISION 11/01/20

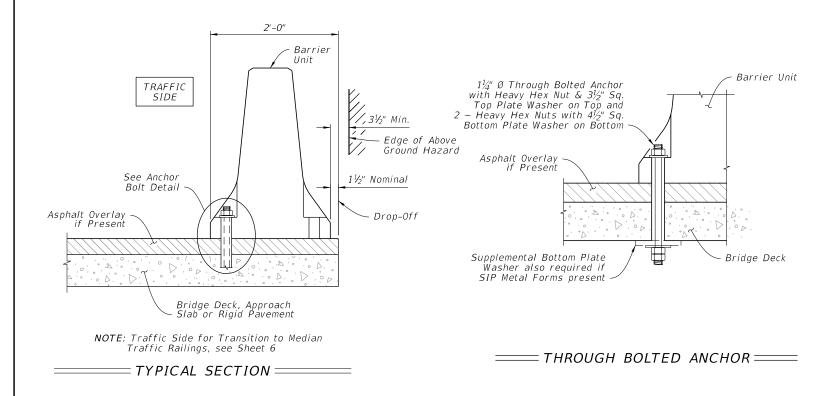
DESCRIPTION:



FY 2022-23 STANDARD PLANS

INDEX 102-110

SHEET



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.

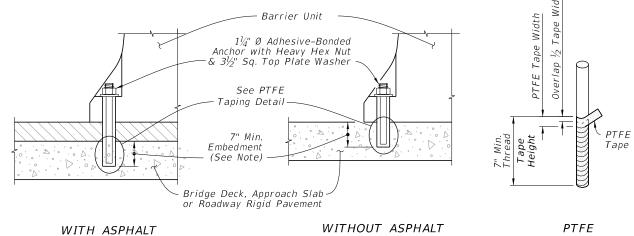
ANCHOR BOLTS, NUTS AND WASHERS: When using Adhesive-Bonded Anchor Bolts, use fully threaded rods in accordance with ASTM F 1554 Grade 36. Install Anchor Bolts for through bolting in accordance with ASTM A 307 or ASTM F 1554 Grade 36. Install nuts in accordance with ASTM A 563 or ASTM A 194. Install Flat 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 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 Type HSHV in accordance with Specification 937 and installed them in accordance with Specification 416. Prior to installation of the Barrier Units in the Plan location(s), install a demonstration Barrier Unit using the proposed production installation method, at a location approved by the Engineer In lieu of the production test requirements of Specification 416, install six (6) Adhesive-Bonded Anchor Bolts in the demonstration Barrier Unit and test each Anchor Bolt with a 29,800 pound tensile proof load. Install and test additional demonstration Barrier Units when requested by the Engineer. Remove the demonstration Barrier Unit prior to testing the Anchor Bolts. Remove the test Anchor Bolts after testing as directed by the Engineer.

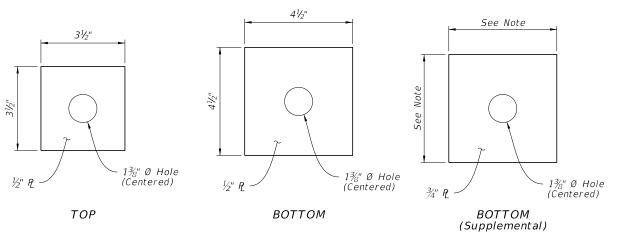


NOTE: Wrap threads with a single overlapping layer of PTFE tape to facilitate removal of anchors.

OVERLAY

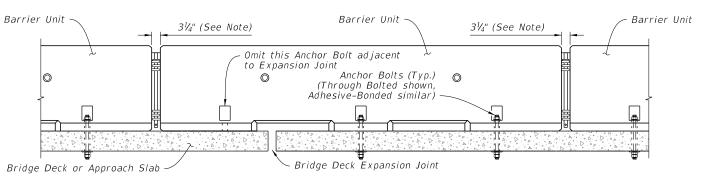
= ADHESIVE BONDED ANCHOR INSTALLATION =

OVERLAY



NOTE: Dimension as required to span SIP Metal Form Corrugations plus V_2 " Minimum overlap each side.

PLATE WASHER DETAIL =



NOTE:To accommodate movement at Expansion Joint, set Barrier Units with 33/4" gap at locations shown.

TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC

= ANCHORED INSTALLATIONS - BOLTED =

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DESCRIPTION:

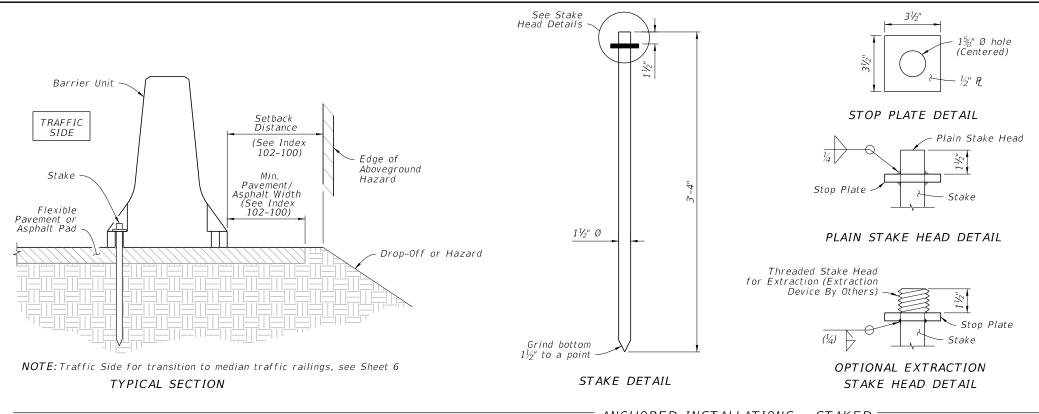
FDOT!

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TAPING DETAIL



STAKED INSTALLATION NOTES:

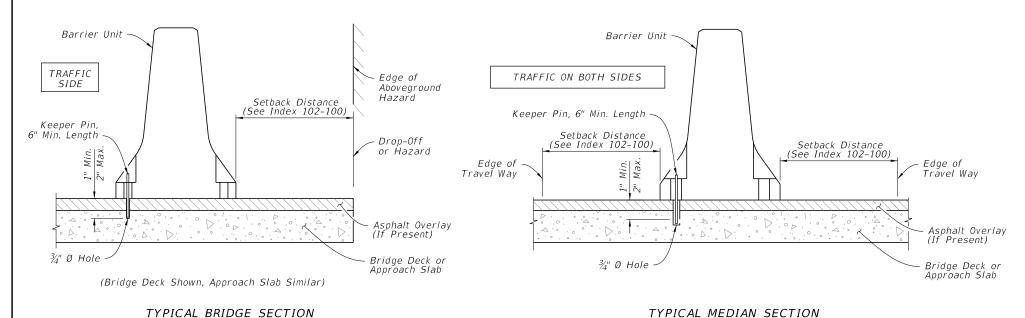
LIMITATION OF USE: This installation technique can only be used on flexible pavement or an Asphalt Pad as shown. Stakes must not be installed on both sides of the Barrier Units.

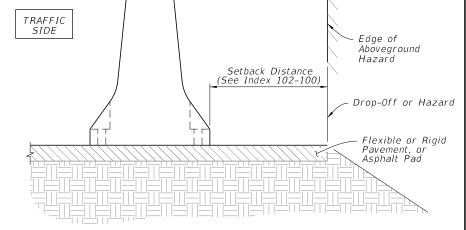
STAKES: Provide steel for Stake assemblies in accordance with ASTM A 36 or ASTM A 709 Grade 36. Weld in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Welding metal are E60XX or E70XX. Nondestructive testing of welds is not required.

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.

<u>BURIED UTILITIES:</u> 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





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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FDOT

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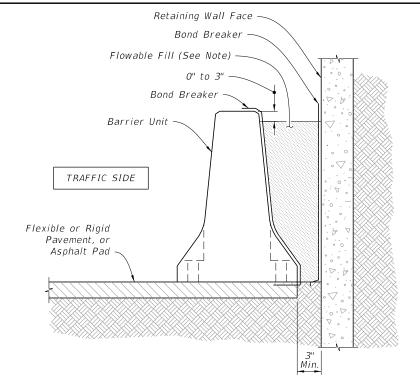
TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

Barrier Unit

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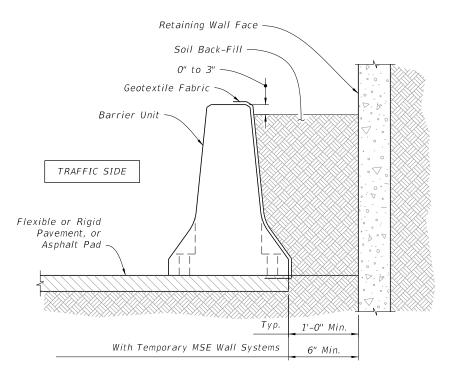


NOTE:

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:

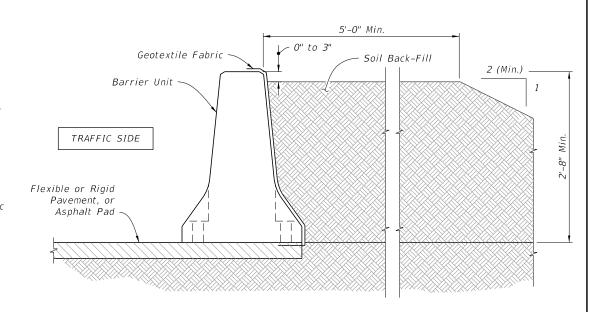


TYPICAL SECTION ADJACENT TO RETAINING WALL WITH SOIL BACK-FILL

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 tomaintain the integrity of the Back Fill embankment.

GEOTEXTILE FABRIC: Provide Type D-5 Geotextile Fabric in accordance with Specification 985 to contain Back Fill Material behind Barrier Units. Geotextile Fabric 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 =

LAST REVISION 11/01/17

DESCRIPTION:

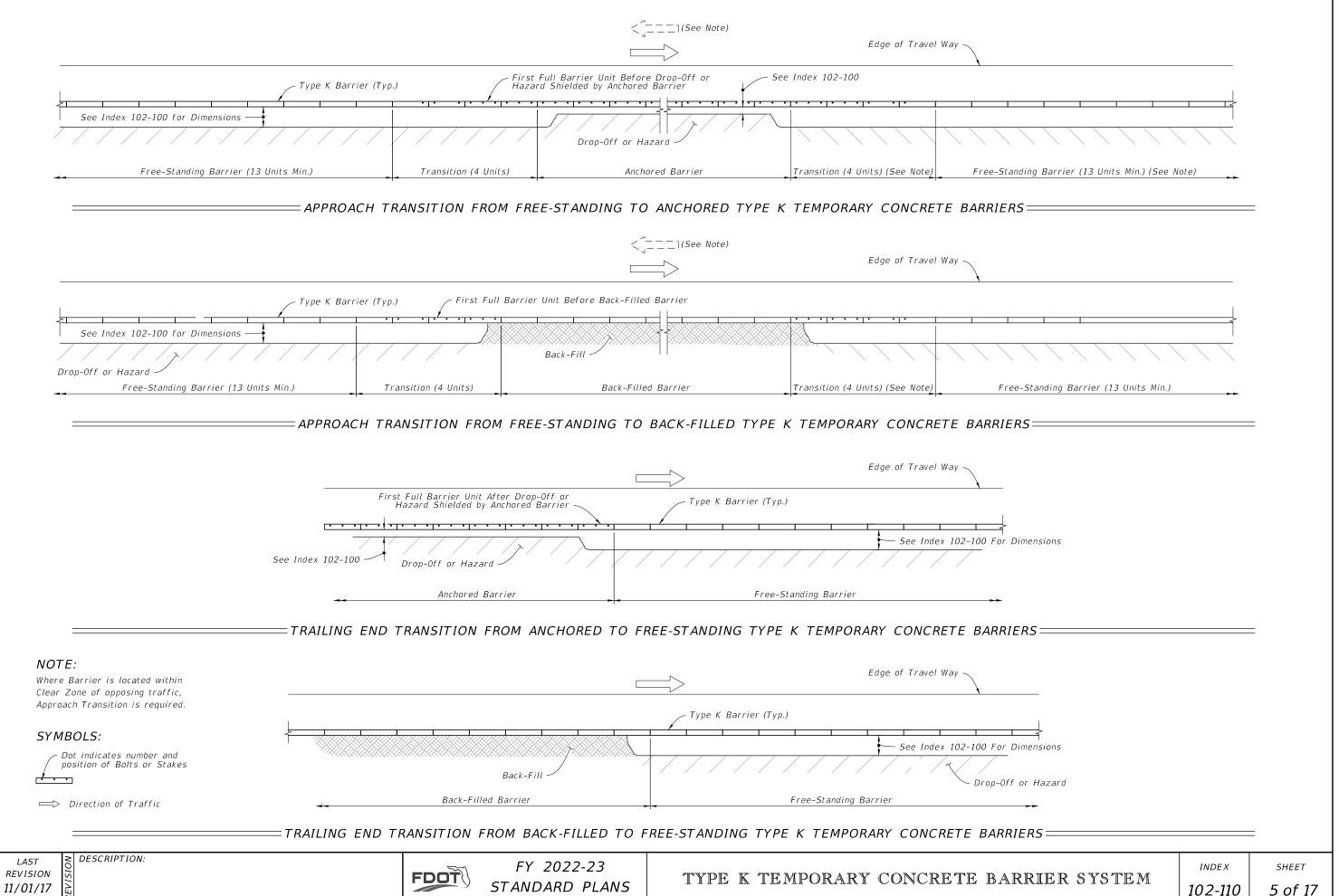


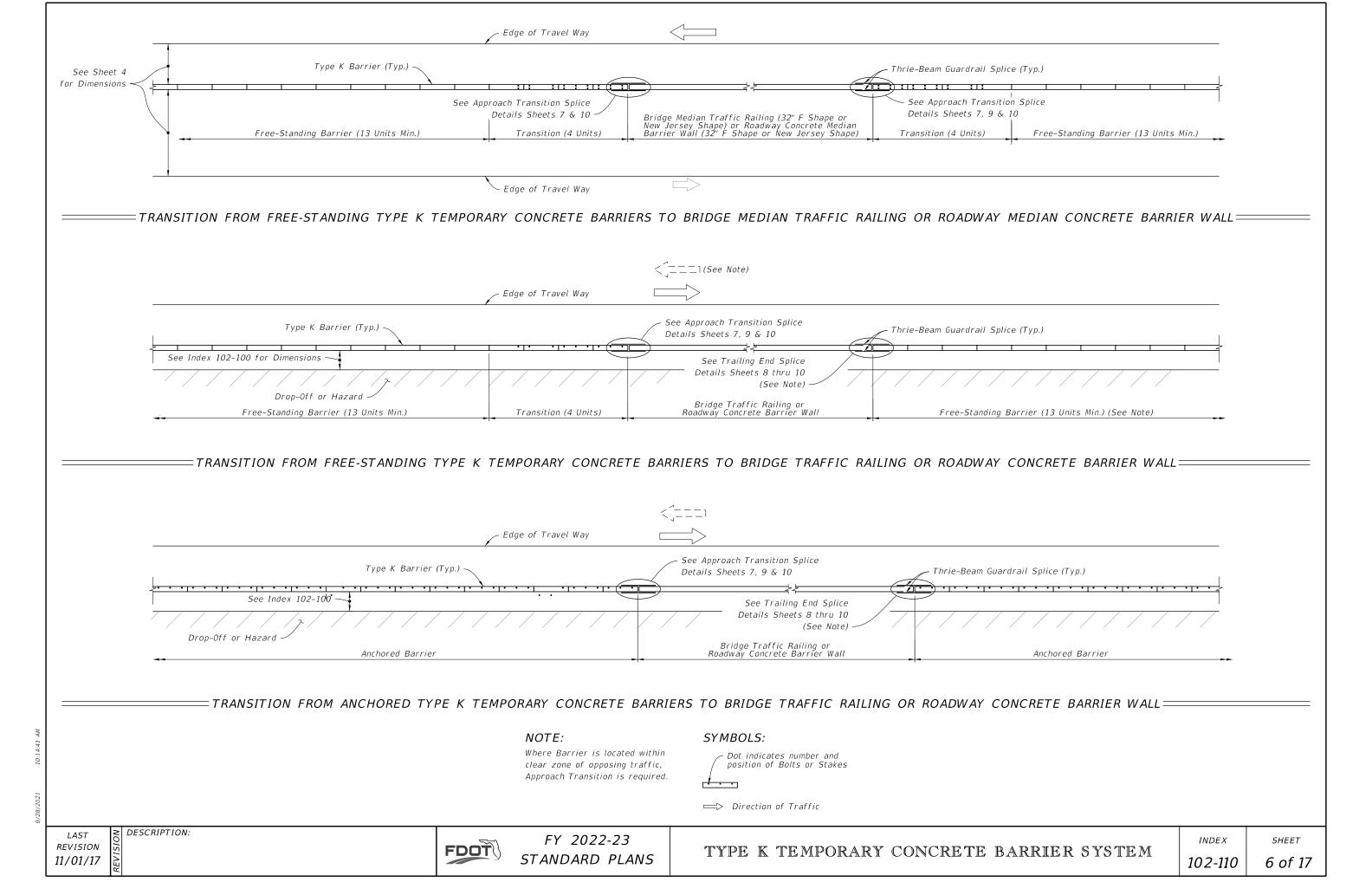
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TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

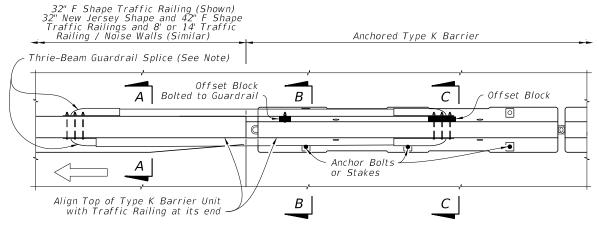
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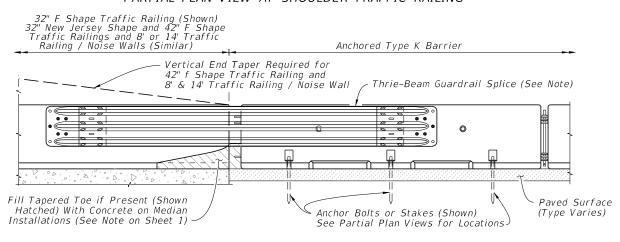




PARTIAL PLAN VIEW AT MEDIAN TRAFFIC RAILING



PARTIAL PLAN VIEW AT SHOULDER TRAFFIC RAILING



PARTIAL ELEVATION VIEW

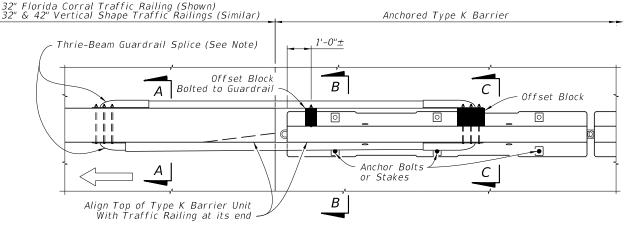
= APPROACH TRANSITION SPLICE DETAIL= FOR F AND NEW JERSEY SHAPE TRAFFIC RAILINGS AND 8' & 14' TRAFFIC RAILING / NOISE WALLS (CONCRETE BARRIER WALL SIMILAR)

SYMBOL:

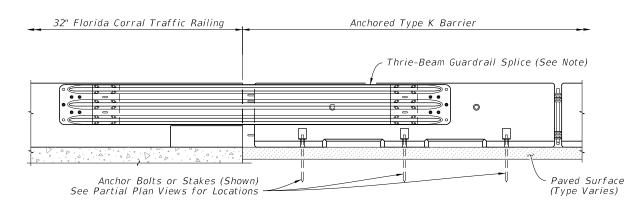
□⇒ Direction of Traffic

NOTE:

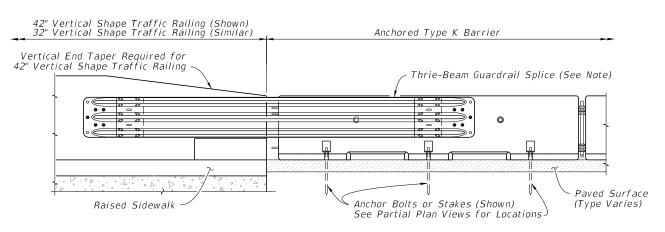
See Thrie-Beam Guardrail Positioning Detail, Sheet 10 and Notes for Thrie-Beam Guardrail Splice Installations, Sheet 1.



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.

LAST **REVISION** 11/01/17

DESCRIPTION:

FDOT

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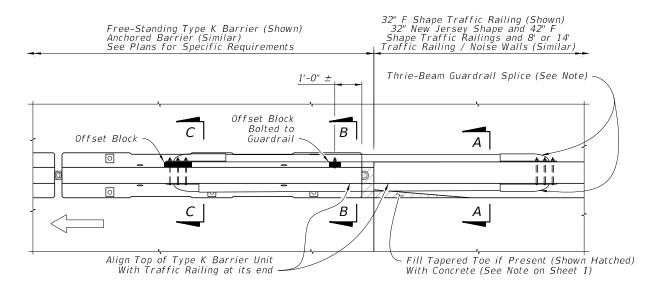
FY 2022-23

TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

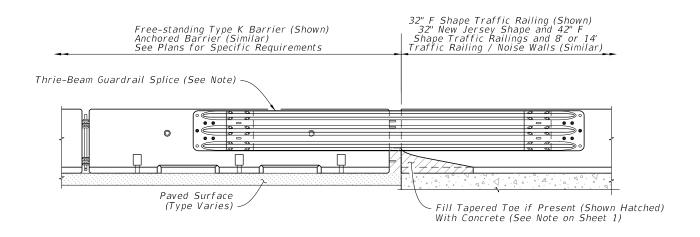
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PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

FOR F AND NEW JERSEY SHAPE TRAFFIC RAILINGS
AND 8' & 14' TRAFFIC RAILING / NOISE WALLS

SYMBOL:

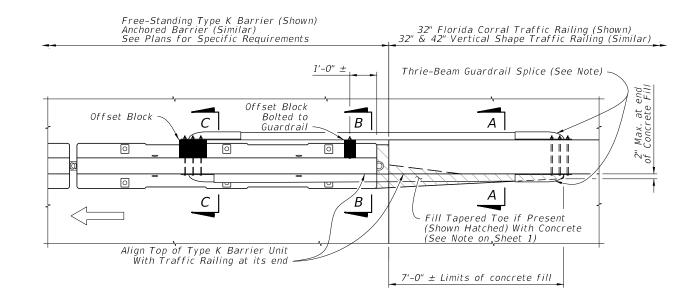
□⇒ Direction of Traffic

NOTE:

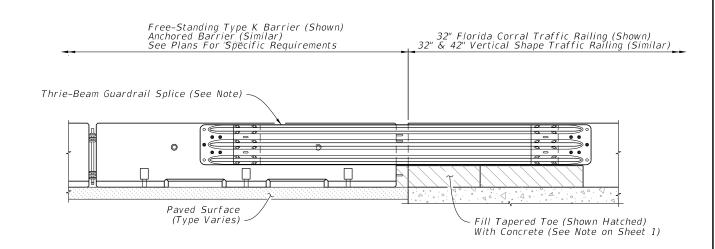
See Thrie-Beam Guardrail Positioning Detail, Sheet 10 and Notes for Thrie-Beam Guardrail Splice Installations, Sheet 1.

CROSS REFERENCES:

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



PARTIAL PLAN VIEW



PARTIAL ELEVATION VIEW

TRAILING END SPLICE DETAIL

FOR FLORIDA CORRAL AND VERTICAL

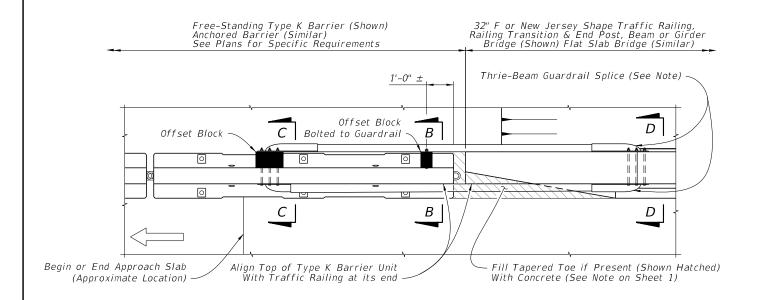
SHAPE TRAFFIC RAILINGS

LAST REVISION 11/01/17

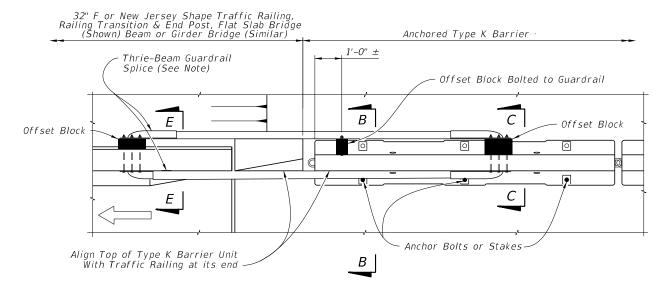
DESCRIPTION:

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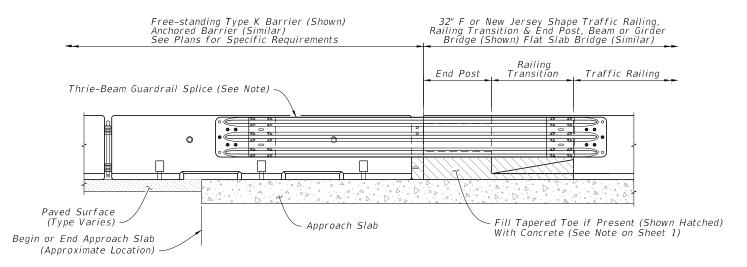
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STANDARD PLANS



PARTIAL PLAN VIEW



PARTIAL PLAN VIEW



CROSS REFERENCES:

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

PARTIAL ELEVATION VIEW

=TRAILING END SPLICE DETAIL=

FOR 32" F AND NEW JERSEY SHAPE TRAFFIC RAILINGS

WITH RAILING TRANSITION AND END POST

Traffic Railing End Post Transition Thrie-Beam Guardrail Splice (See Note) Approach Slab (Shown) Anchor Bolts (Shown) or Stakes Paved Surface (Similar, See Partial Plan View for Locations Begin or End Bridge

Anchored Type K Barrier

PARTIAL ELEVATION VIEW

CROSS REFERENCES:

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

= 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 Splice Installations, Sheet 1.

32" F or New Jersey Shape Traffic Railing, Railing Transition & End Post, Flat Slab Bridge

(Shown) Beam or Girder Bridge (Similar)

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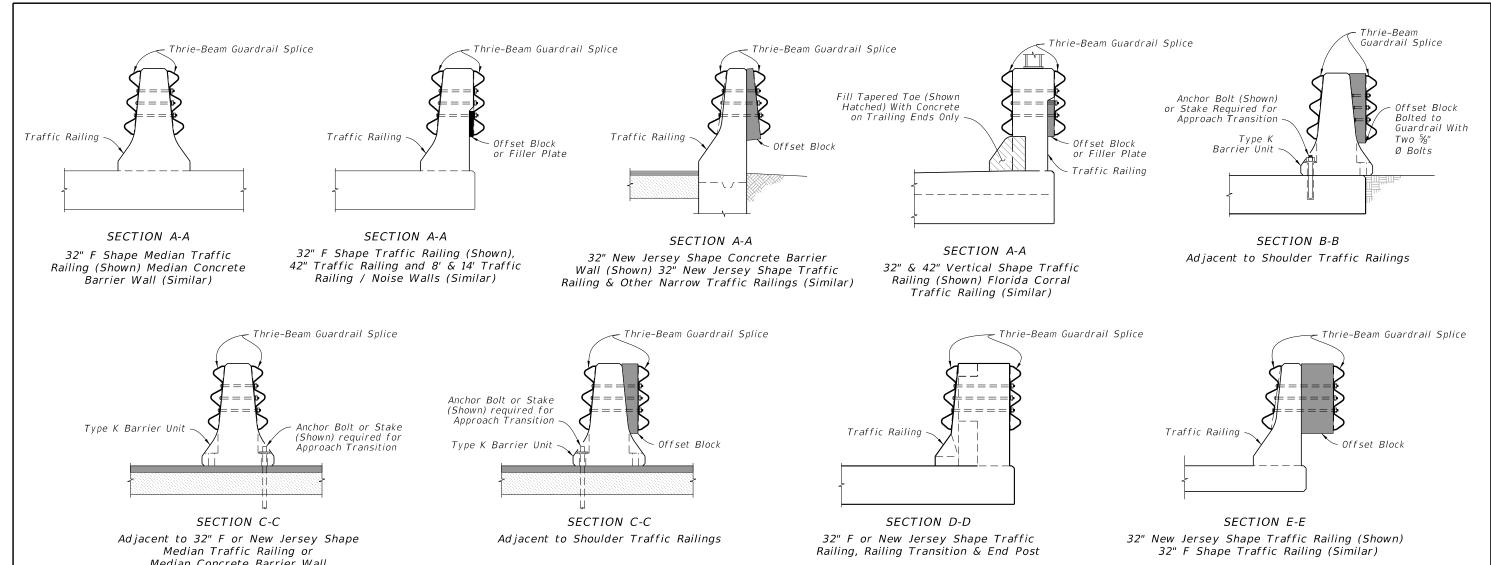
FDOT

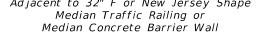
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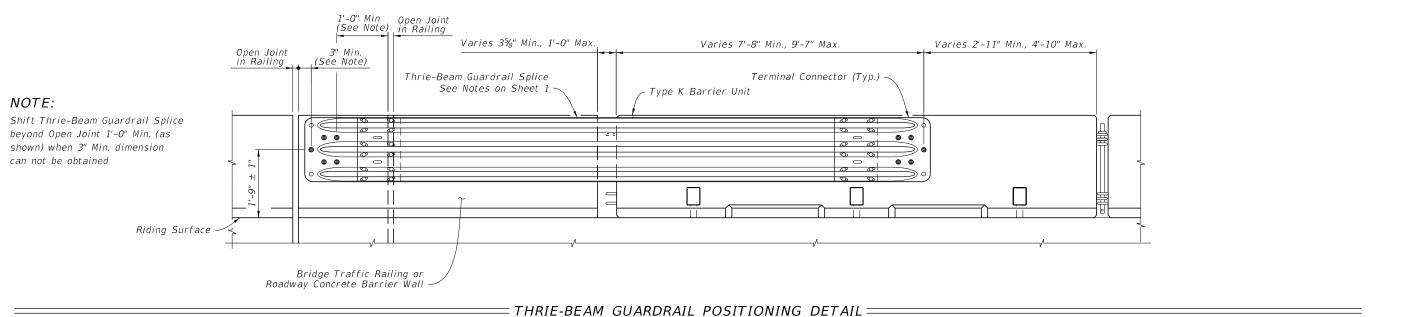
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CROSS SECTIONS



REVISION 11/01/17

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

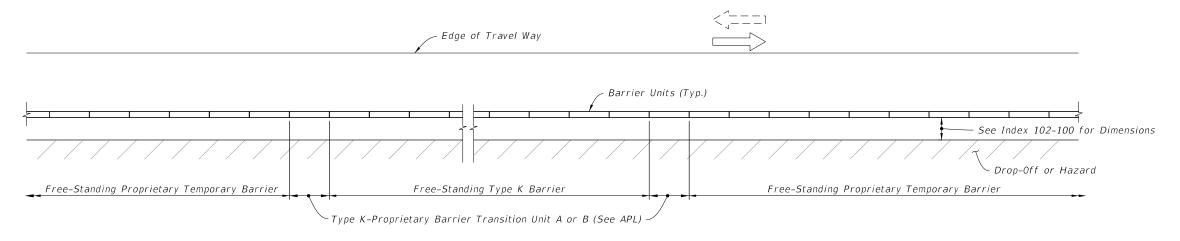
TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

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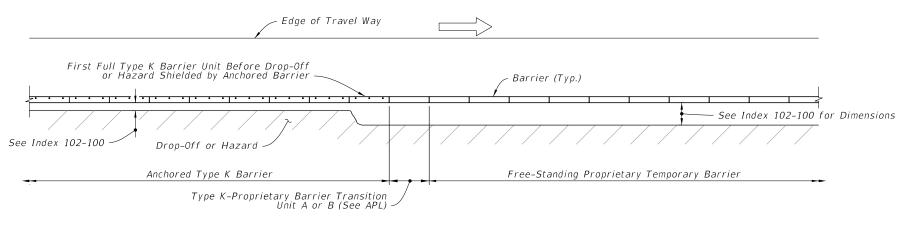
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APPROACH TRANSITION FROM FREE-STANDING PROPRIETARY TEMPORARY BARRIERS TO ANCHORED TYPE K TEMPORARY CONCRETE BARRIERS



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

LAST REVISION 11/01/17

DESCRIPTION:

F

FY 2022-23 STANDARD PLANS NOTE:

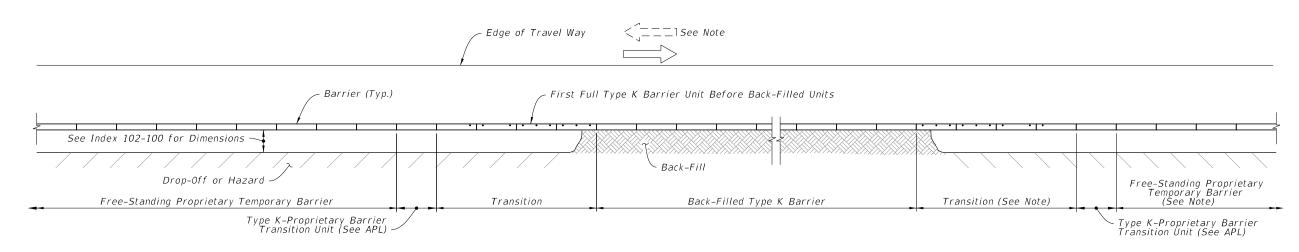
SYMBOLS:

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

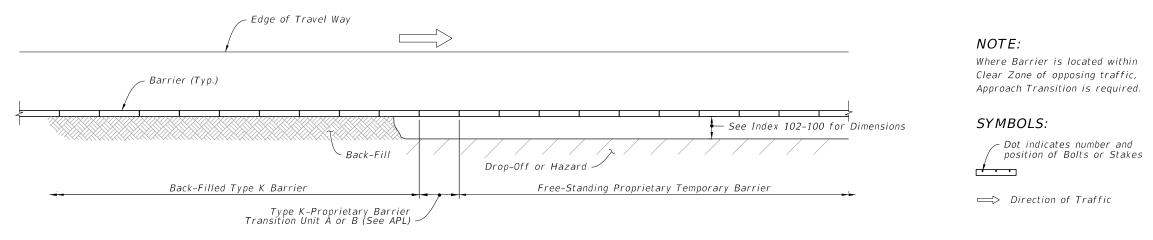
Dot indicates number and

□⇒ Direction of Traffic

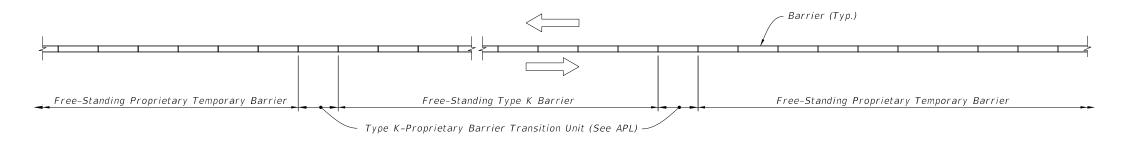
position of Bolts or Stakes



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



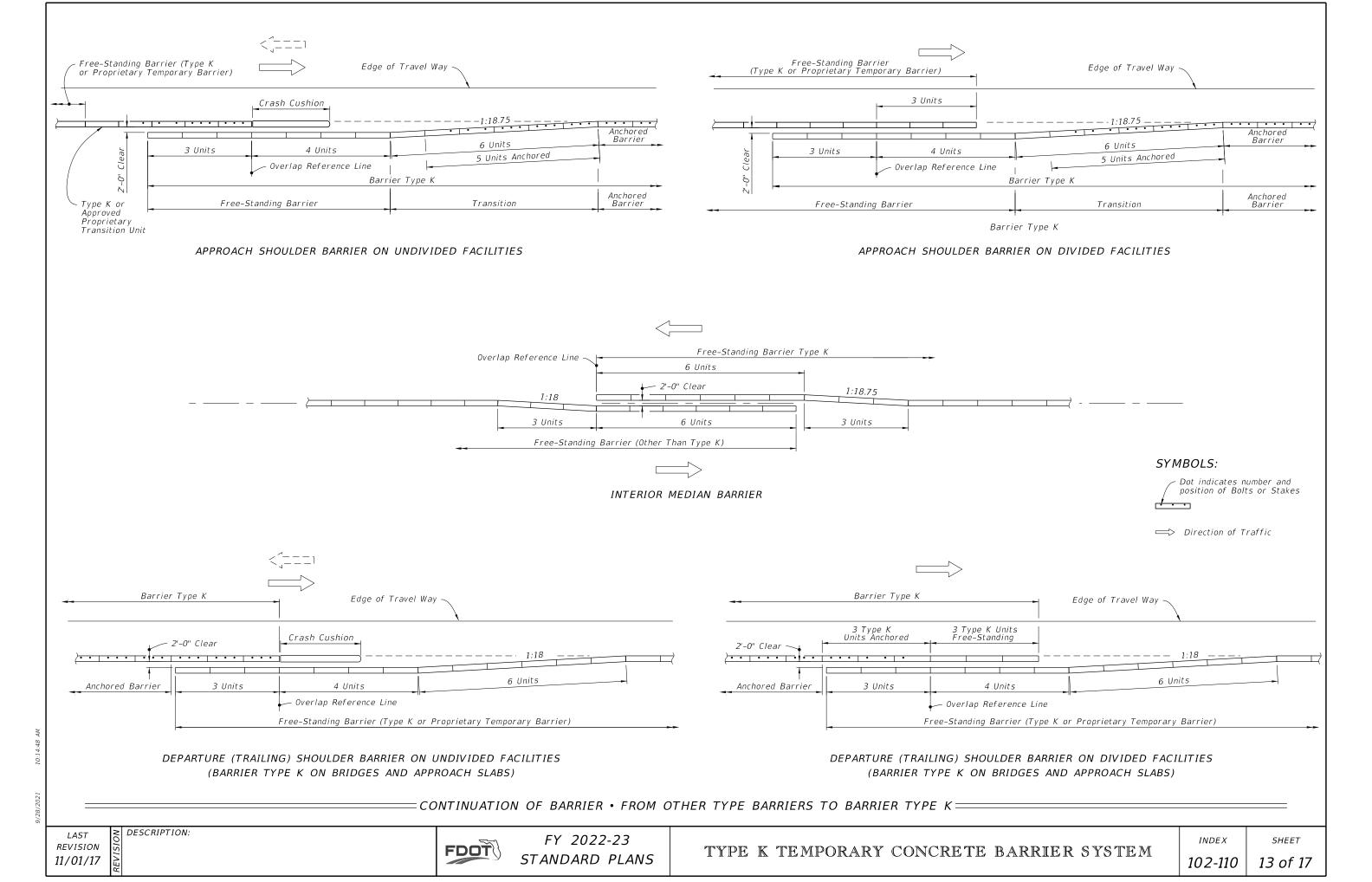
MEDIAN APPROACH AND TRAILING END TRANSITIONS FROM FREE-STANDING TYPE K TEMPORARY CONCRETE BARRIERS TO FREE-STANDING PROPRIETARY TEMPORARY BARRIERS

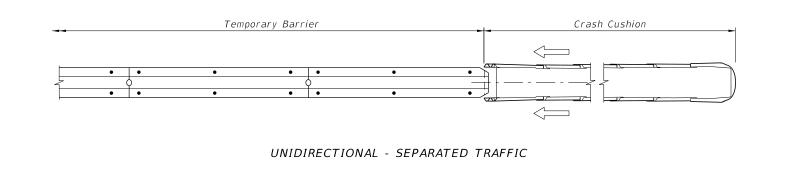
TYPE K-PROPRIETARY TEMPORARY CONCRETE BARRIER TRANSITIONS

LAST REVISION 11/01/17

DESCRIPTION:

FDOT





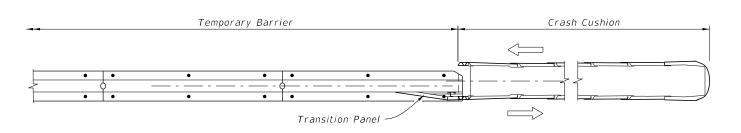


When subjected to reverse direction hits, construct Transition Panels from Temporary Barrier to Crash Cushions; for additional details refer to the applicable crash cushion drawings on the APL.

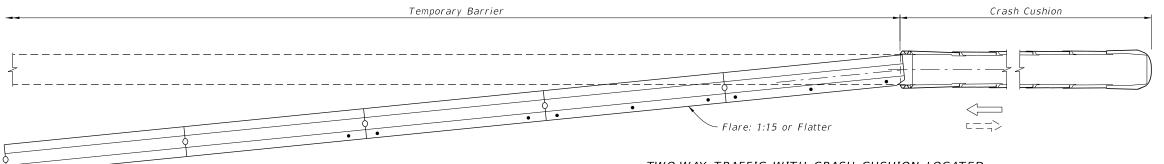
SYMBOLS:

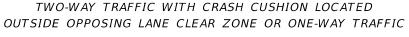
Dot indicates number and position of Bolts or Stakes

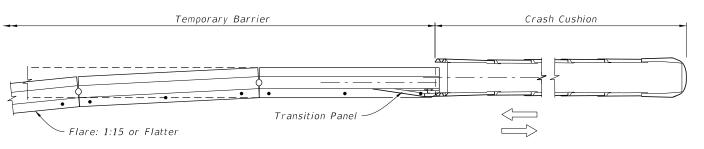
□⇒ Direction of Traffic



BIDIRECTIONAL - SEPARATED 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)

LAST REVISION 11/01/17

DESCRIPTION:

FDOT

SHEET

FABRICATION NOTES:

In order to maintain crashworthiness of the Barrier System, do not substitute different grades, sizes, shapes or types of reinforcing steel for those shown for constructing Type K Barrier Units. Also, do not substitute different type, size, length or material grade anchor bolts, nuts, washers, adhesives, connector pins, stakes, keeper pins, or guardrail components for installing Type K Barrier Units.

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:

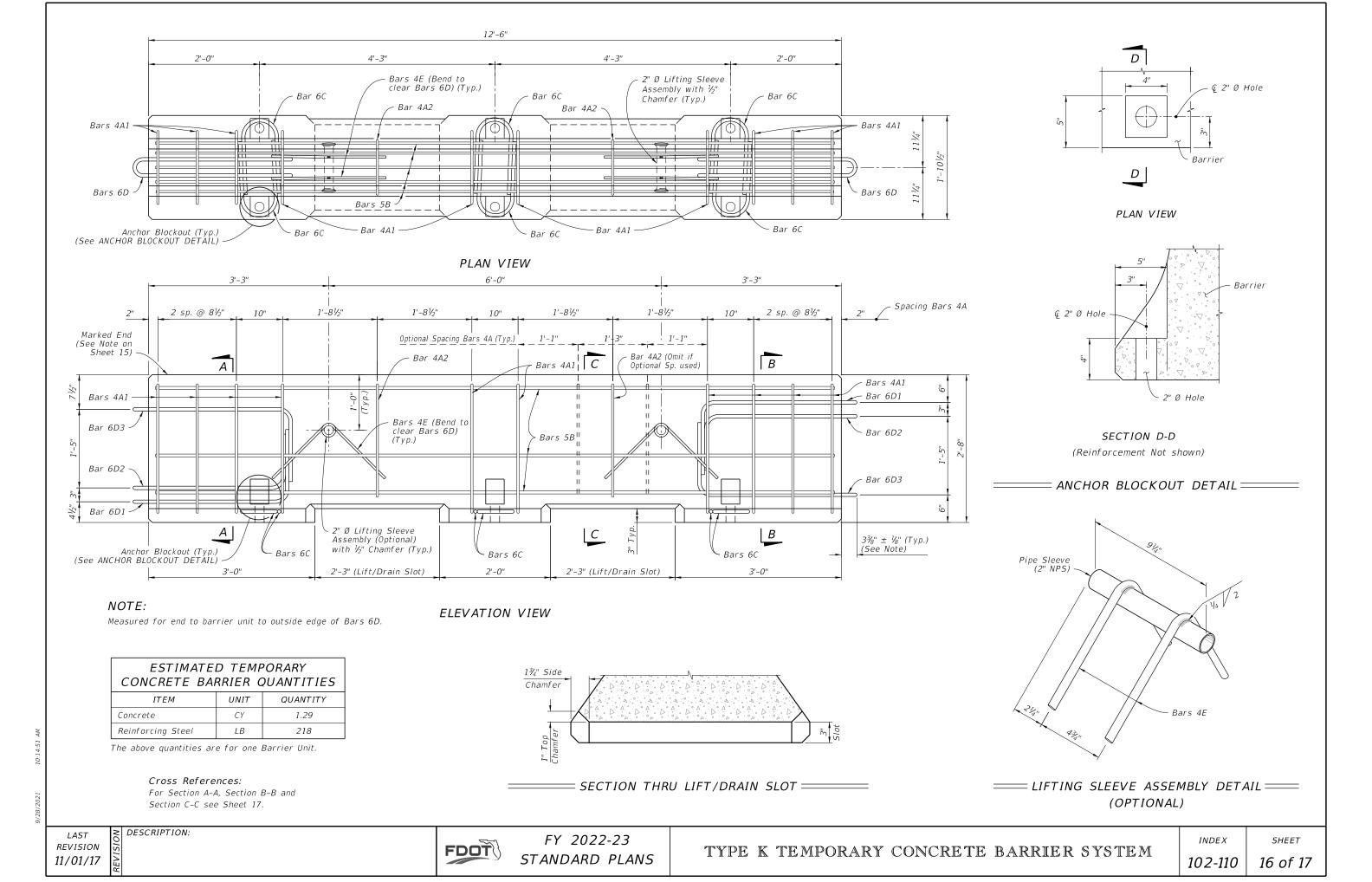
- A. Construct Barrier Units in accordance with Specifications 400 and 521.
- B. Finish the top and sides of the Barrier Units with a General Surface Finish.
- C. Finish the bottom of the Barrier Units to a dense uniform surface by floating in lieu of the General Surface Finish.
- D. Use stationary metal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

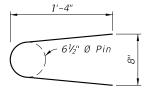
MARKING:

- 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:

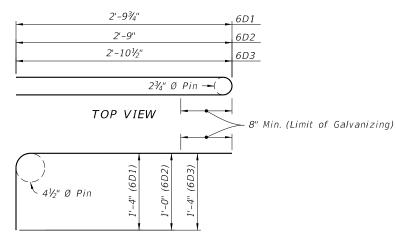




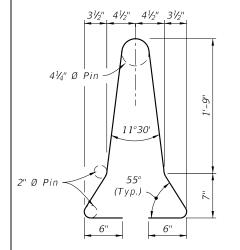


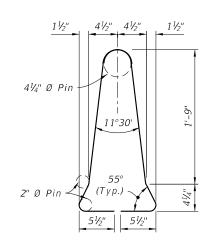
BAR 6C

BAR 4E



SIDE VIEW BARS 6D1, 6D2 & 6D3





STIRRUP BAR 4A1

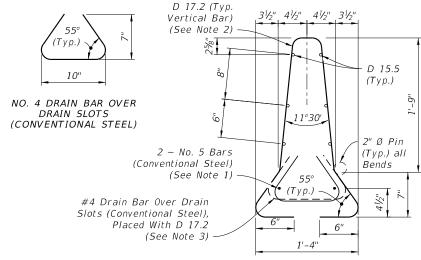
STIRRUP BAR 4A2

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"
Ε	4	4	2'-0"

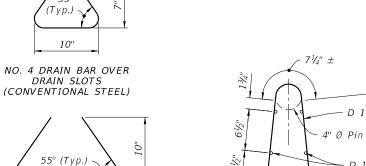
CONVENTIONAL REINFORCING:

STEEL BENDING DIAGRAMS

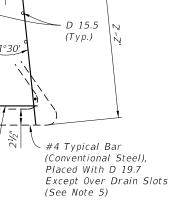




CONFIGURATION ONE



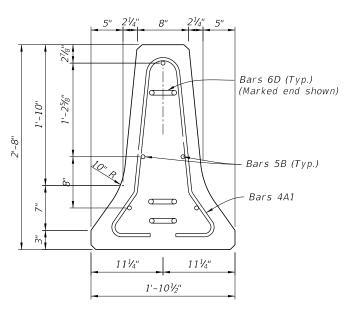




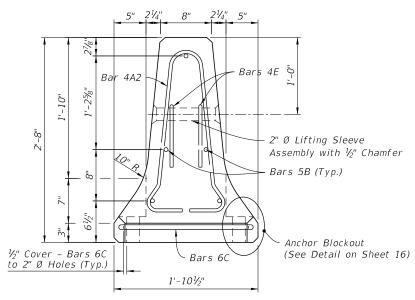
CONFIGURATION TWO

NOTES:

- 1. Place 2 ~ No. 5 Bars (12'-3" long) in bottom of Welded Wire Reinforcement cage as shown.
- 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 $2 \sim No. 5$ 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 ¾" 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.

= CROSS SECTION =

REVISION 11/01/17

DESCRIPTION:



FY 2022-23 STANDARD PLANS

TYPE K TEMPORARY CONCRETE BARRIER SYSTEM

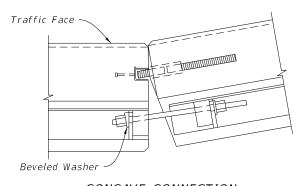
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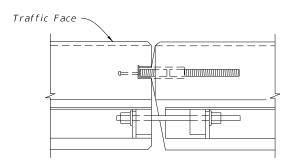
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GENERAL NOTES: 1. Pursuant to 35 United States Code, Chapter 18, also known as the Bayh Dole Act of 1980, the non mountable curb was developed through federal funding. The 'Portable Temporary Low Profile Barrier For Roadside Safety' is a licensed design 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 permitted. 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: FY 2022-23 SHEET INDEX **REVISION** FDOT LOW PROFILE BARRIER

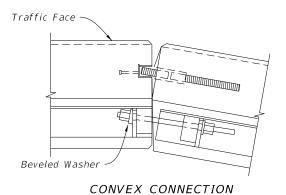
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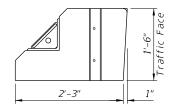
CONCAVE CONNECTION



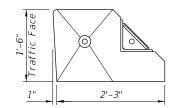
PARALLEL CONNECTION



== PLAN VIEWS OF CONNECTIONS =====

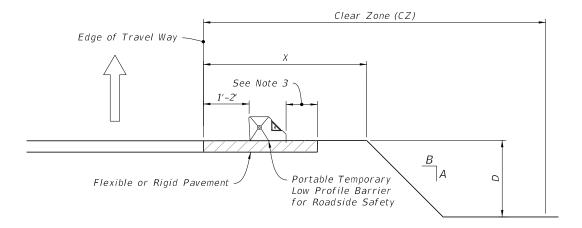


FLAT FACE FEMALE END



BEVELED FACE MALE END

== END VIEWS ====



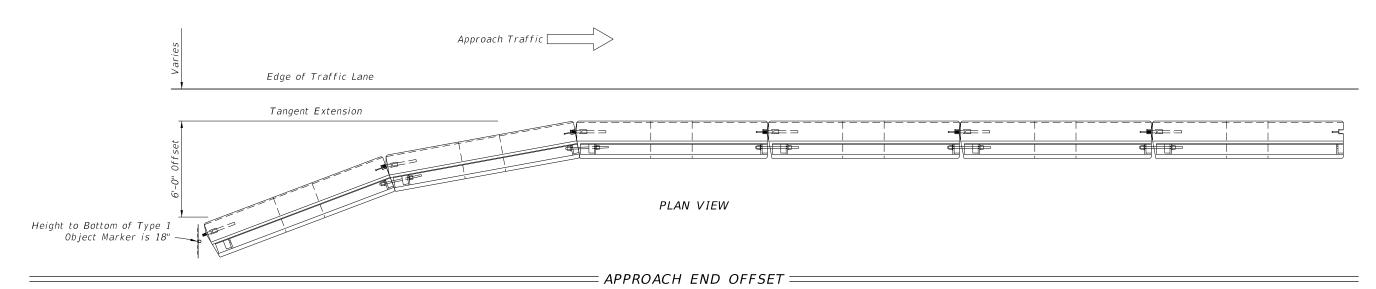
NOTES:

- 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 X 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	9"



LAST REVISION 11/01/19

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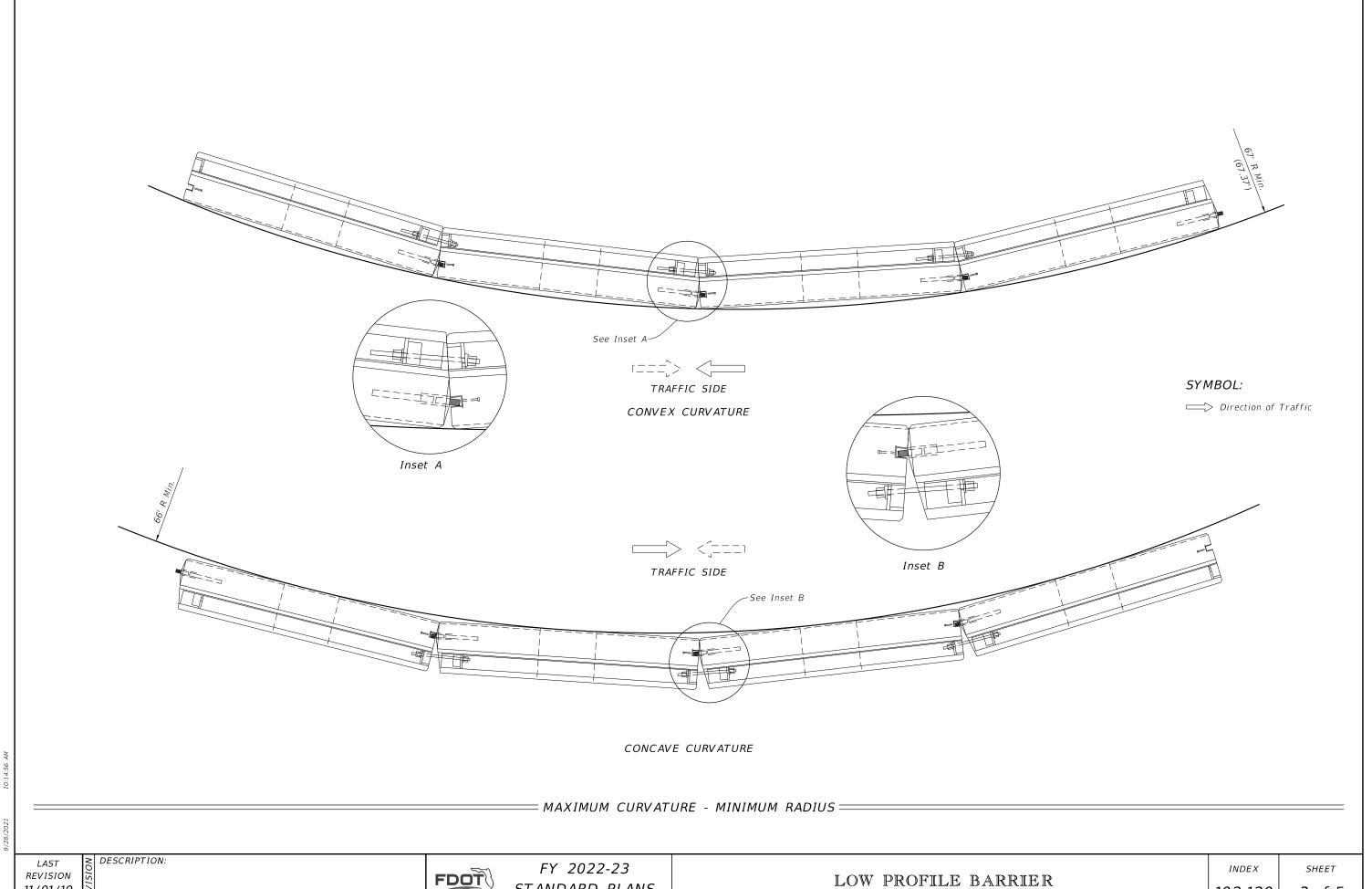


FY 2022-23 STANDARD PLANS

LOW PROFILE BARRIER

INDEX 102-120 SHEET

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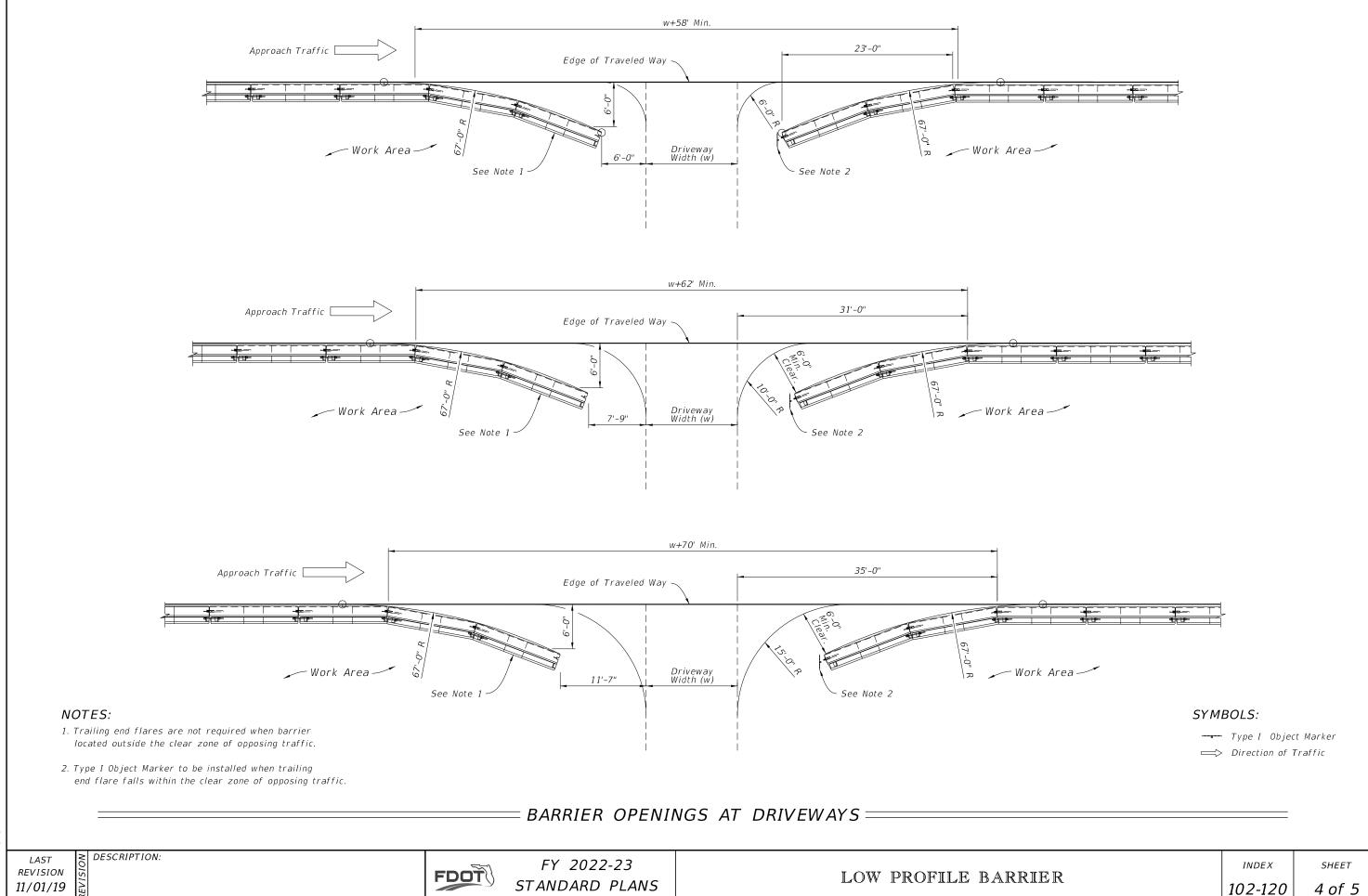


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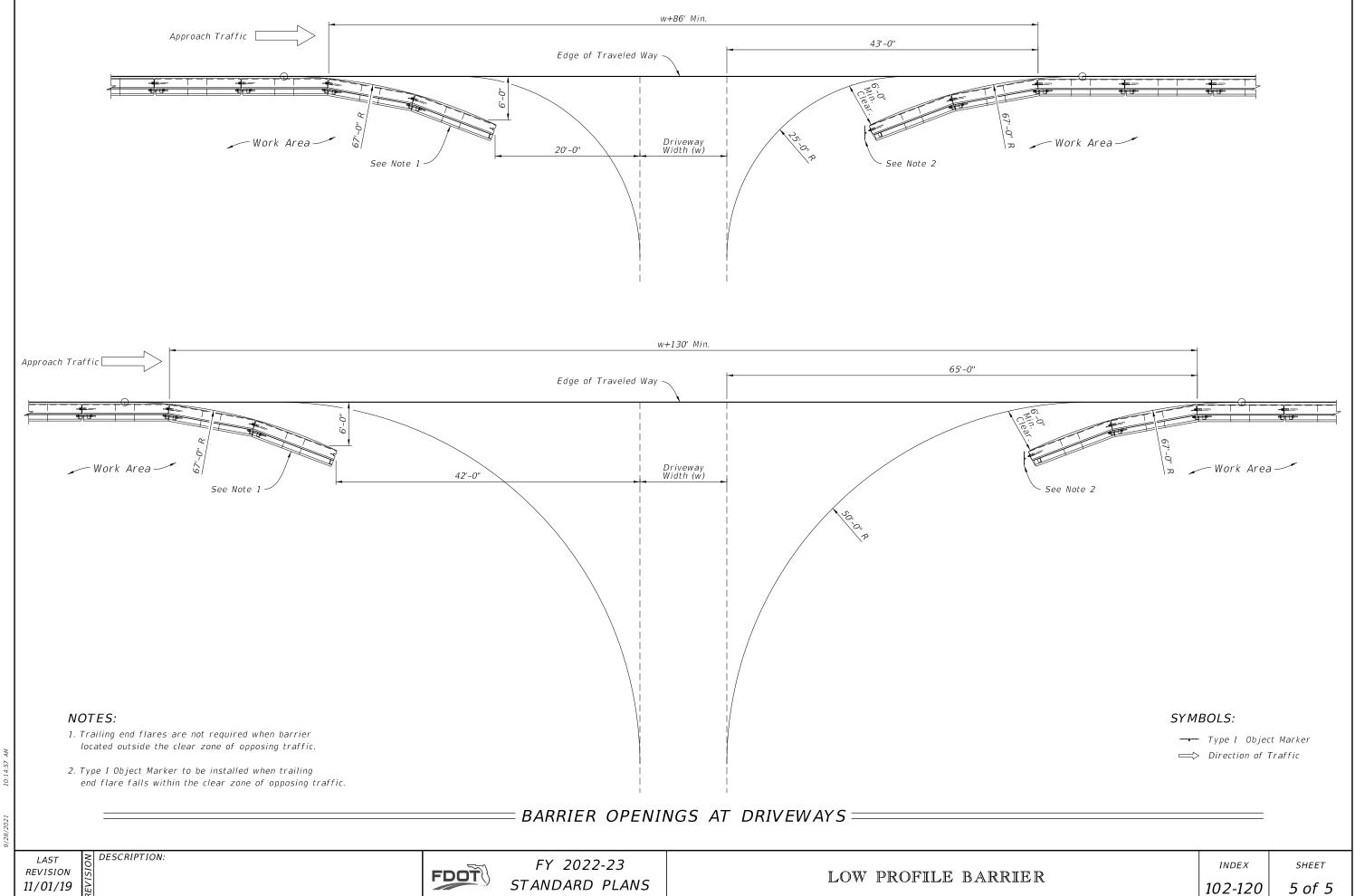
STANDARD PLANS

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STANDARD PLANS



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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	orary		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		

TABLE 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		

TABLE 4		
BUFFER LI	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 Buf	fer Length "B"	

cannot be attained due to geometric constraints, use the greatest length possible, but not less than 155 feet.

≥ DESCRIPTION:

DEFINITIONS:

Regulatory Speed (In Work Zones)

The maximum permitted travel speed posted for the work zone is indicated by the regulatory speed limit signs. The work zone speed must be shown or noted in the plans. This speed should be used as the minimum design speed to determine runout lengths, departure rates, flare rates, lengths of need, clear zone widths, taper lengths, crash cushion requirements, marker spacings, superelevation and other similar features.

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.

CLEAR ZONE WIDTHS FOR WORK ZONES:

The term 'clear zone' describes the unobstructed relatively flat area, impacted by construction, extending outward from the edge of the traffic lane. The table below gives clear zone widths in work zones for medians and roadside conditions other than for roadside canals; where roadside canals are present. clear zone widths are to conform with the distances to canals as described in the FDOT Design Manual 215.2.

TABLE 5					
CLEAR ZONE WIDTHS FOR WORK ZONES					
VORK ZONE SPEED (MPH)	TRAVEL LANES & MULTILANE RAMPS (feet)	AUXILIARY LANES & SINGLE LANE RAMPS (feet)			
60-70	30	18			
55	24	14			
45-50	18	10			

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

4' BEHIND FACE

OF CURB

14

4' BEHIND FACE

OF CURB

SUPERELEVATION:

30-40

ALL SPEEDS

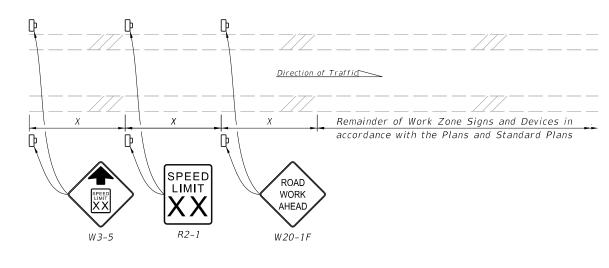
CURB & GUTTER

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.

FLAGGER CONTROL:

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.

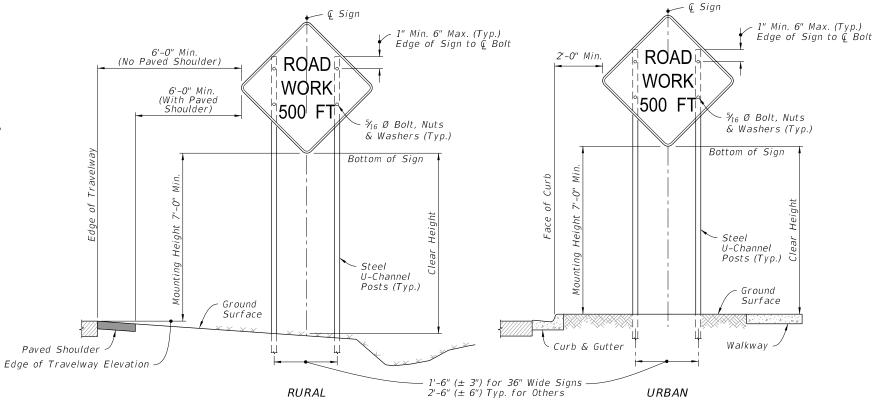
END ROAD WORK SIGN

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
- 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)

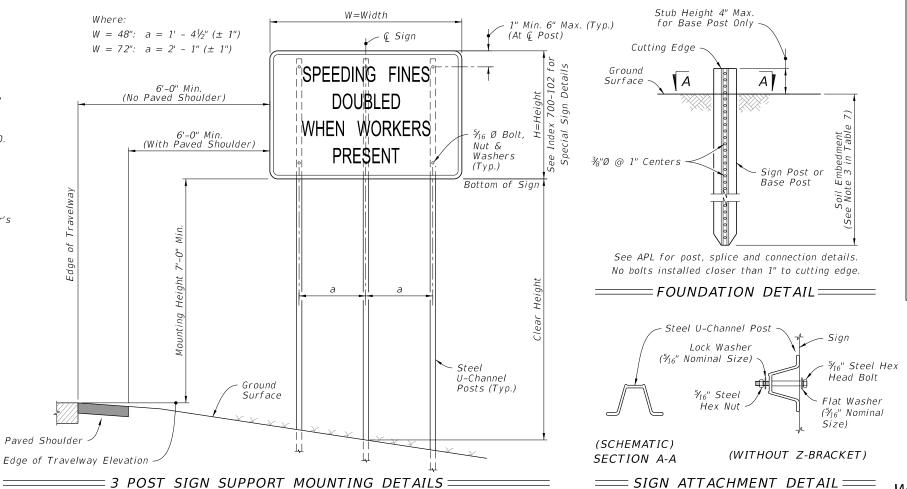


TABLE 7 POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS

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

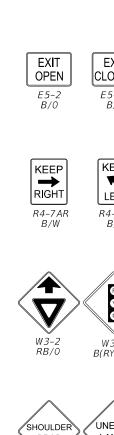
FY 2022-23

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

INDEX 102-600

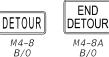
SHEET 5 of 11

STANDARD PLANS





END PILOT CAR FOLLOW ME ROAD WORK G20-2 G20-4







B/0



0/B













PASS WITH CARE R4-2

TRUCKS USE RIGHT LANE R4-5





KEEP K LEFT R4-7BL











B/0

B/0

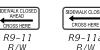


B/0





B/0







B/0



W1-3RB/0

W1-4R

W1-4b

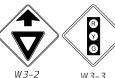
W1-4c

B/0



















W5-2

B/0





B/0





DIP





B/0

B/0





B/0



B/0



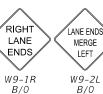
B/0

B/0













ONE LANÈ

ROAD

W20-4

B/0



B/0



B/0







B/0



W20-7

B/0



B/0







ROAD WORK 500 FT W20-1A



B/0





B/0

B/0







B/0







B/0



B/0



W20-5C



W20-7A













B/0



AHEAD W22-1

B/0



W22-2



B/0

DETOUR

AHEAD

B/0

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:

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

LAST REVISION 11/01/21

DESCRIPTION:



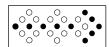
INDEX

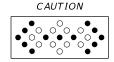












MOVE/MERGE LEFT

MOVE/MERGE RIGHT

MOVE/MERGE RIGHT OR LEFT

Minimum Required LampsAdditional Lamps Allowed

MODES -

NOTES:

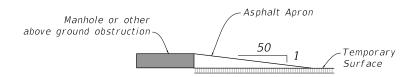
An arrow board in the arrow or chevron mode shall be used only for stationary or moving lane closures on multilane roadways.

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 =====



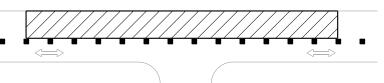
NOTES:

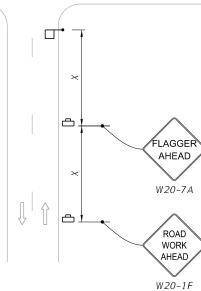
Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than V_4 " shall have a temporary asphalt apron constructed as shown above.

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:

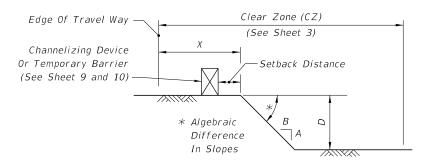
Barricades, vertical panels, cones, tubular markers and drums shall not be intermixed within either the lateral transition or within the tangent alignment.

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.

DROP-OFF CONDITION NOTES

- 1. These conditions and treatments can be applied only in work areas that fall within a properly signed work zone.
- 2. When drop-offs occur within the clear zone due to construction or maintenance activities, protection devices are required (See Table 8). A drop-off is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slope (A:B) steeper than 1:4. In superelevated sections, the algebraic difference in slopes should not exceed 0.25 (See Drop-off Condition Detail).
- 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
- 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.

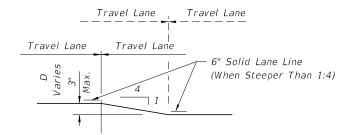


DROP-OFF CONDITION DETAIL

Table 8 Drop-off Protection Requirements			
Condition	X (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 ⅓ 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

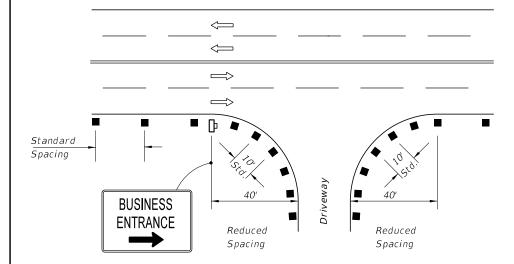
PEDESTRIAN WAY DROP-OFF CONDITION NOTES

- 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

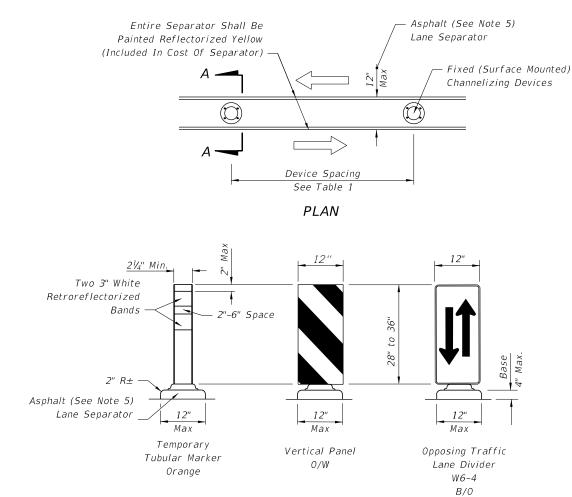
11/01/20

DESCRIPTION:



- 1. For single business entrances, place one 24" x 36" business sign for each driveway entrance affected. Signs shall show specific business names. Logos may be provided by business owners. Standard BUSINESS ENTRANCE sign in Index 700-102 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 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.

PLACEMENT OF BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES AT BUSINESS ENTRANCE



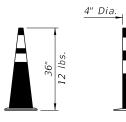
FIXED (SURFACE MOUNTED) CHANNELIZING DEVICES

SECTION AA

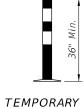
- 1. Temporary lane separators shall be supplemented with any of the following approved fixed (surface mounted) channelizing devices: temporary tubular markers, vertical panels, or opposing traffic lane divider panels. Opposing traffic lane divider panels (W6-4) shall only be used as center lane dividers 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.

TEMPORARY LANE SEPARATOR

8/2021 10



CONES

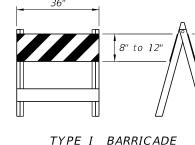


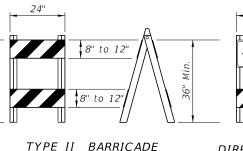
TUBULAR

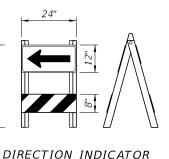
MARKER



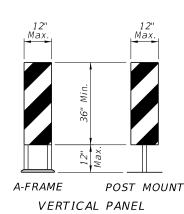
DRUMS

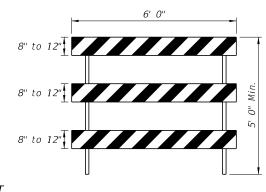






BARRICADE



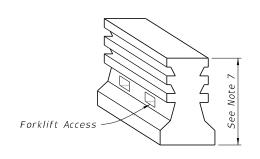


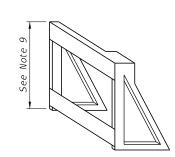
TYPE III BARRICADE

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 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.





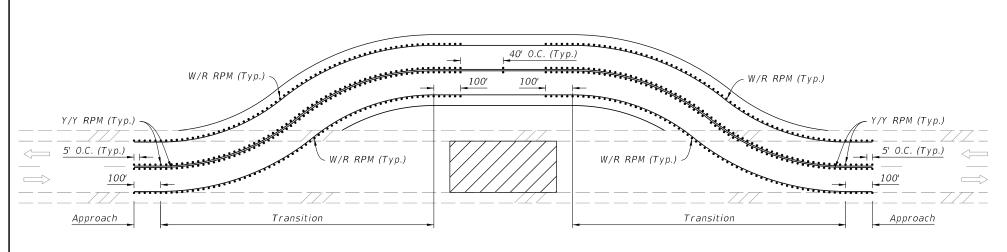
= PEDESTRIAN LONGITUDINAL CHANNELIZING DEVICES =

TEMPORARY BARRIER NOTES:

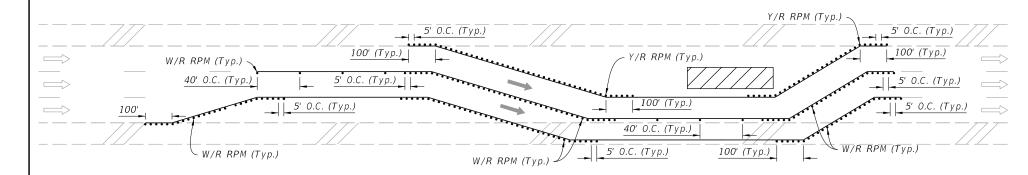
1. Where a barrier is specified, any of the types below may be used in accordance with the applicable Index:

Index	Description
102-100	Temporary Barrier
102-120	Low Profile Barrier
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)

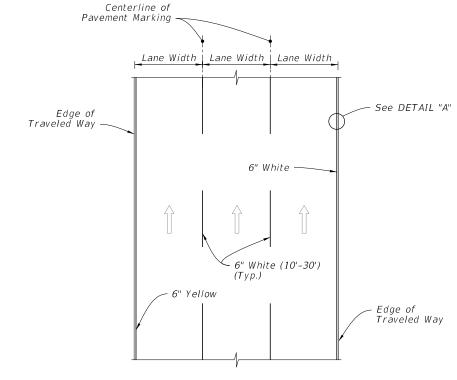
NOTES:

- 1. Install RPMs as a supplement to:
- a. All lane lines
- 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.

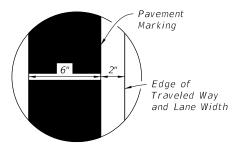
SYMBOLS:

Work Are

Lane Identification and Direction of Traffic



PLAN VIEW



DETAIL "A"

= PAVEMENT MARKINGS PLACEMENT =

WORK ZONE PAVEMENT MARKINGS

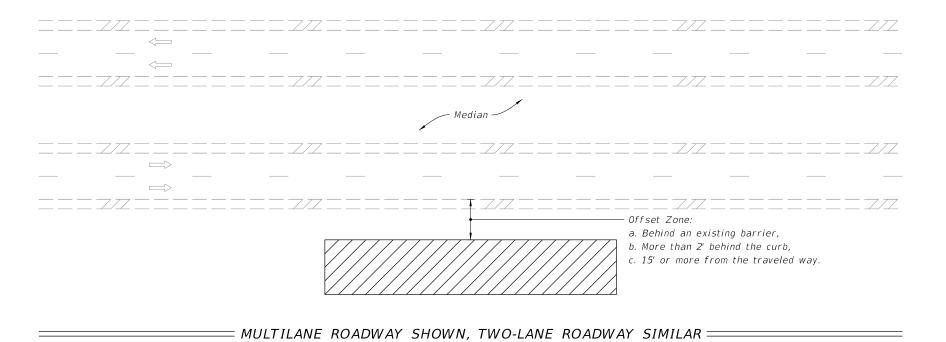
LAST REVISION 11/01/20

DESCRIPTION:

FDOT

RPM PLACEMENT IN WORK ZONES =

FY 2022-23 STANDARD PLANS



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:





Lane Identification and Direction of Traffic

LAST REVISION 11/01/20

≥ DESCRIPTION:

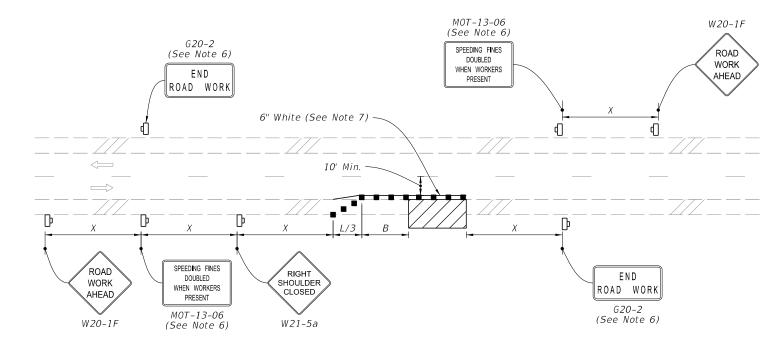
NOTE:

- 1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work on the shoulder.
- 2. L = Taper LengthX = Work Zone Sign Spacing
- B = Buffer Length
- See 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 or less.
- 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).

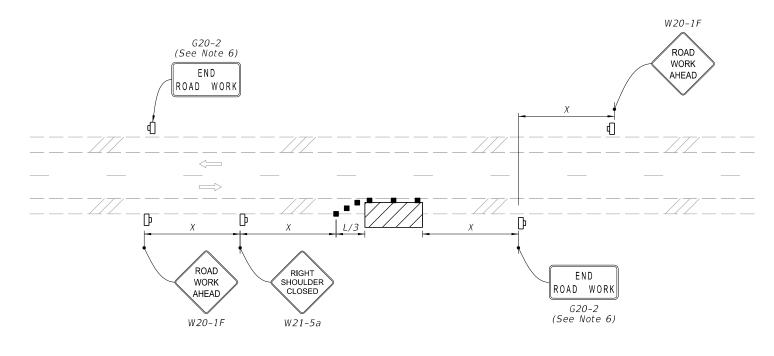
SYMBOLS:



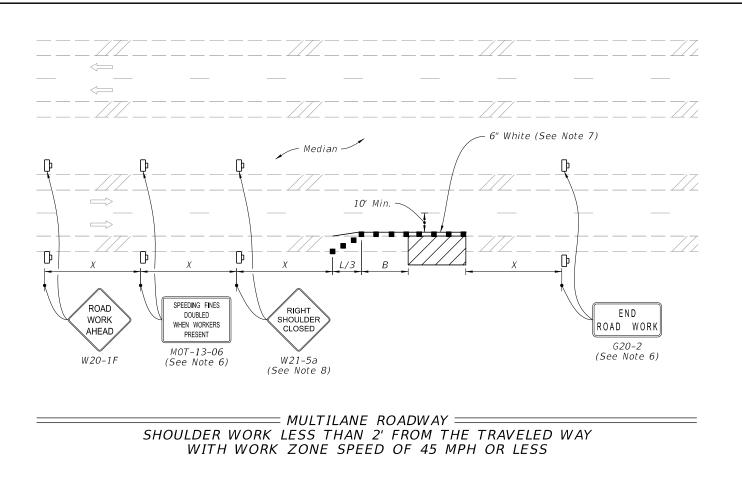
- Channelizing Device (See Index 102-600)
- ₩ork Zone Sign
- Lane Identification and Direction of Traffic

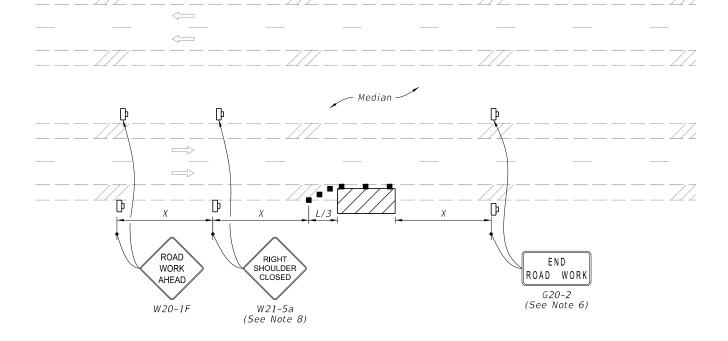


TWO-LANE ROADWAY = SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY WITH WORK ZONE SPEED OF 45 MPH OR LESS



= TWO-LANE ROADWAY =SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY





= $extit{MULTILANE}$ $extit{ROADWAY}$ =SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

SYMBOLS:

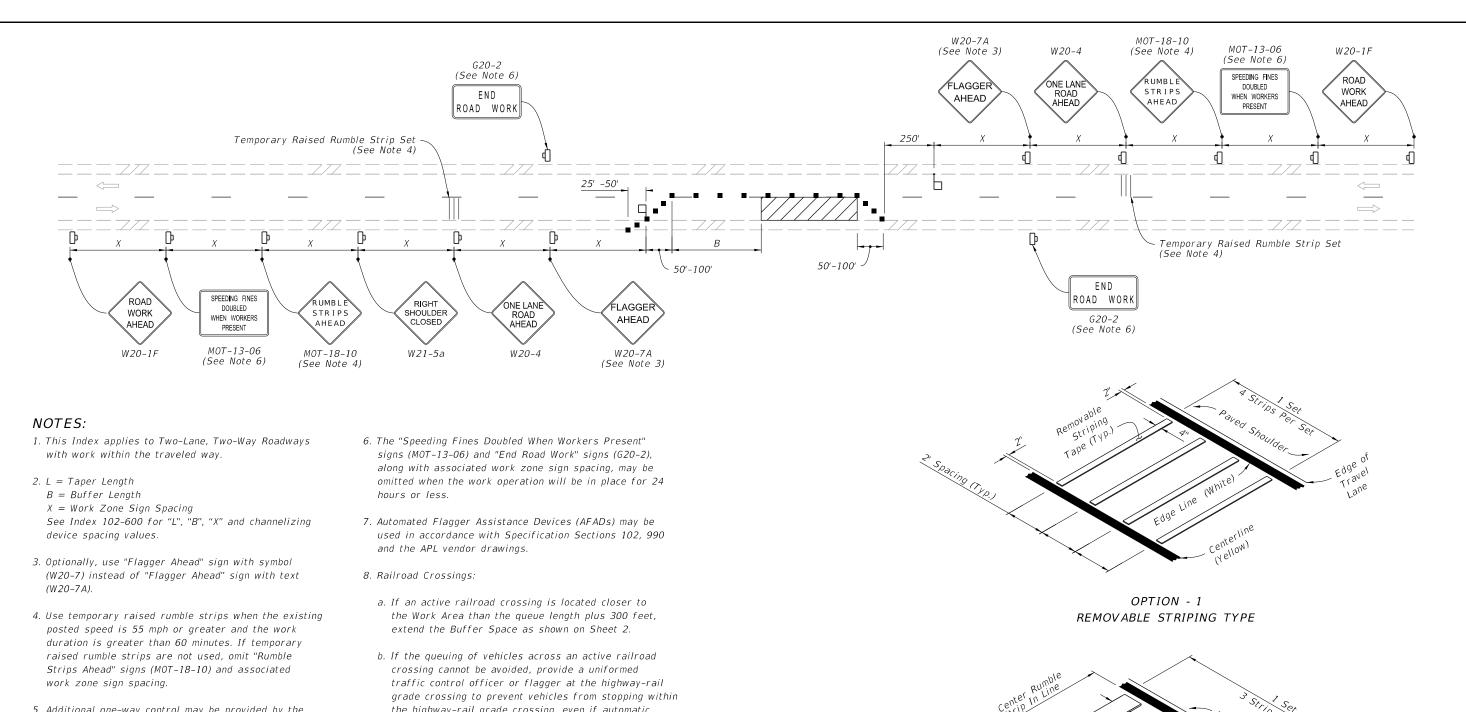
Work Area

■ Channelizing Device (See Index 102-600)

Work Zone Sign

Lane Identification and Direction of Traffic

DESCRIPTION:



- 5. Additional one-way control may be provided by the following means:
- a. Flag-carrying vehicle
- b. Official vehicle
- c. Pilot vehicles
- d. Traffic signals

When flaggers are the sole means of one-way control, the flaggers must be in sight of each other or in direct communication at all times.

SYMBOLS:

Work Area

- Channelizing Device (See Index 102-600)
- ₩ork Zone Sign
- ☐ Flagger

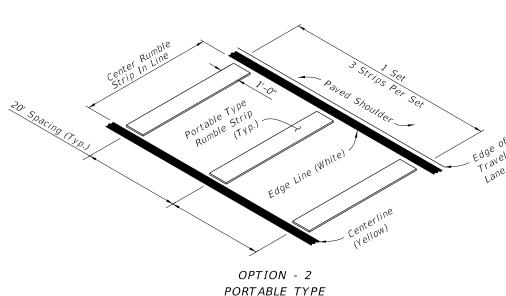
LAST

REVISION

11/01/21

Lane Identification and Direction of Traffic

the highway-rail grade crossing, even if automatic train warning devices are in place.



= RUMBLE STRIP SETS ===

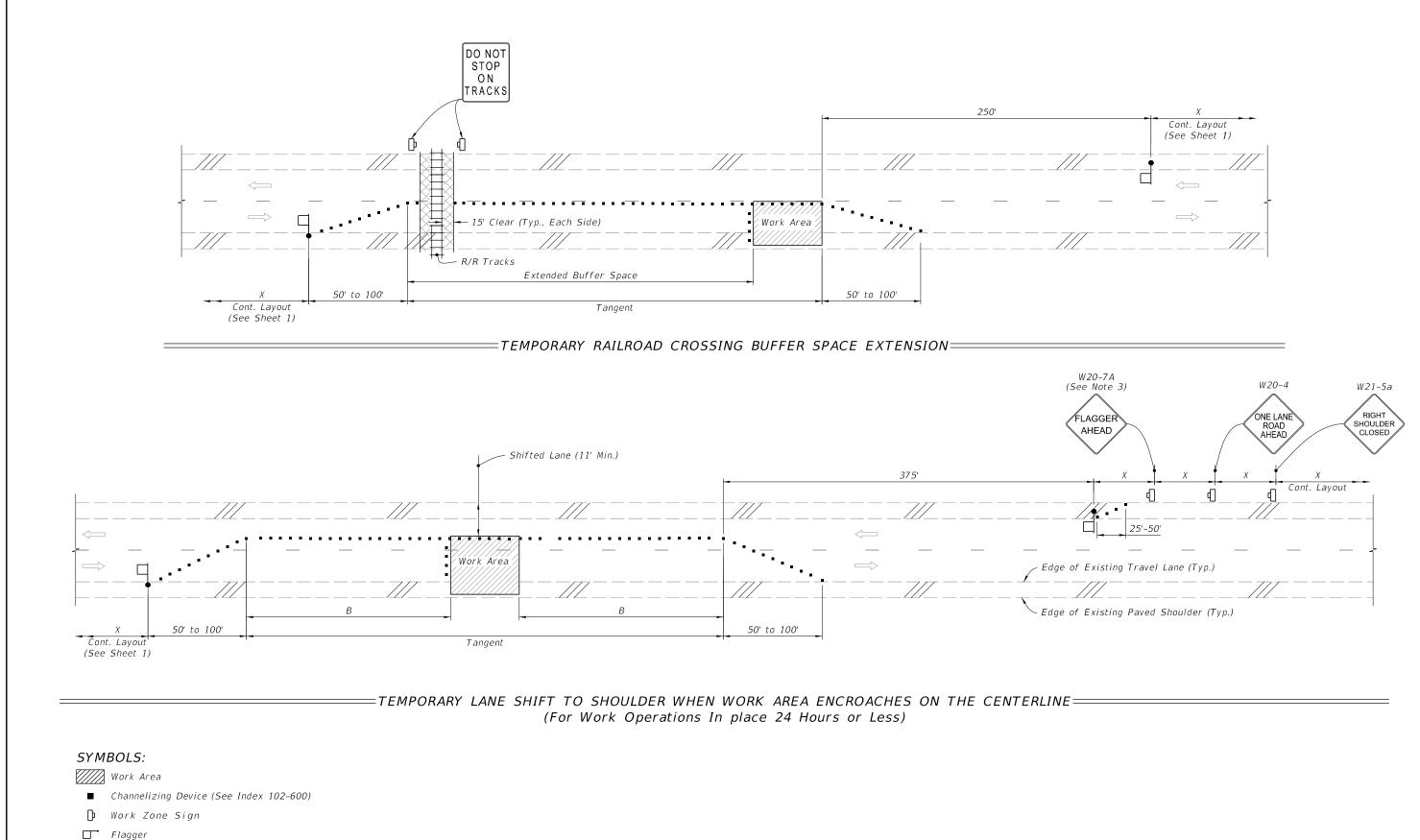
DESCRIPTION:

FY 2022-23 FDOT STANDARD PLANS

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

INDEX 102-603

SHEET 1 of 2



≥ DESCRIPTION: LAST REVISION 11/01/21

Lane Identification and Direction of Traffic

FDOT

FY 2022-23 STANDARD PLANS

WORK WITHIN THE TRAVEL WAY

INDEX 102-603

SPECIAL CONDITIONS

TWO-LANE, TWO-WAY

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 Spacing See 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. District Traffic Operations Engineer must approve temporary signal phasing modifications prior to beginning of work
- 7. 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.
- 8. 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.
- 9. 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.





■ Channelizing Device (See Index 102–600)

₩ork Zone Sign

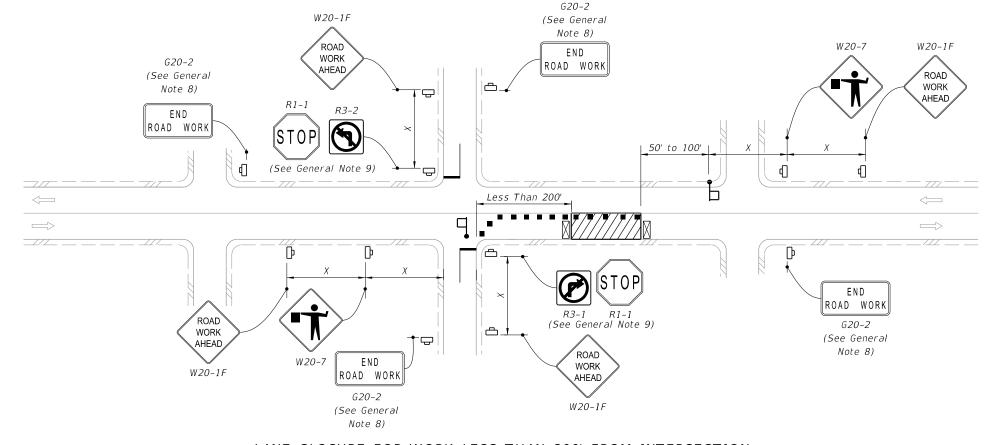
Type III Barricade

DESCRIPTION:

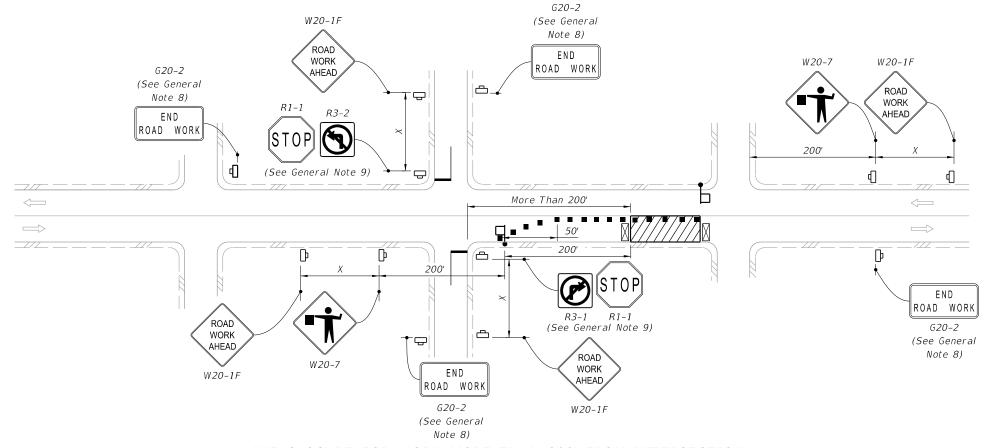
Stop Bar

☐ Flagger

Lane Identification and Direction of Traffic

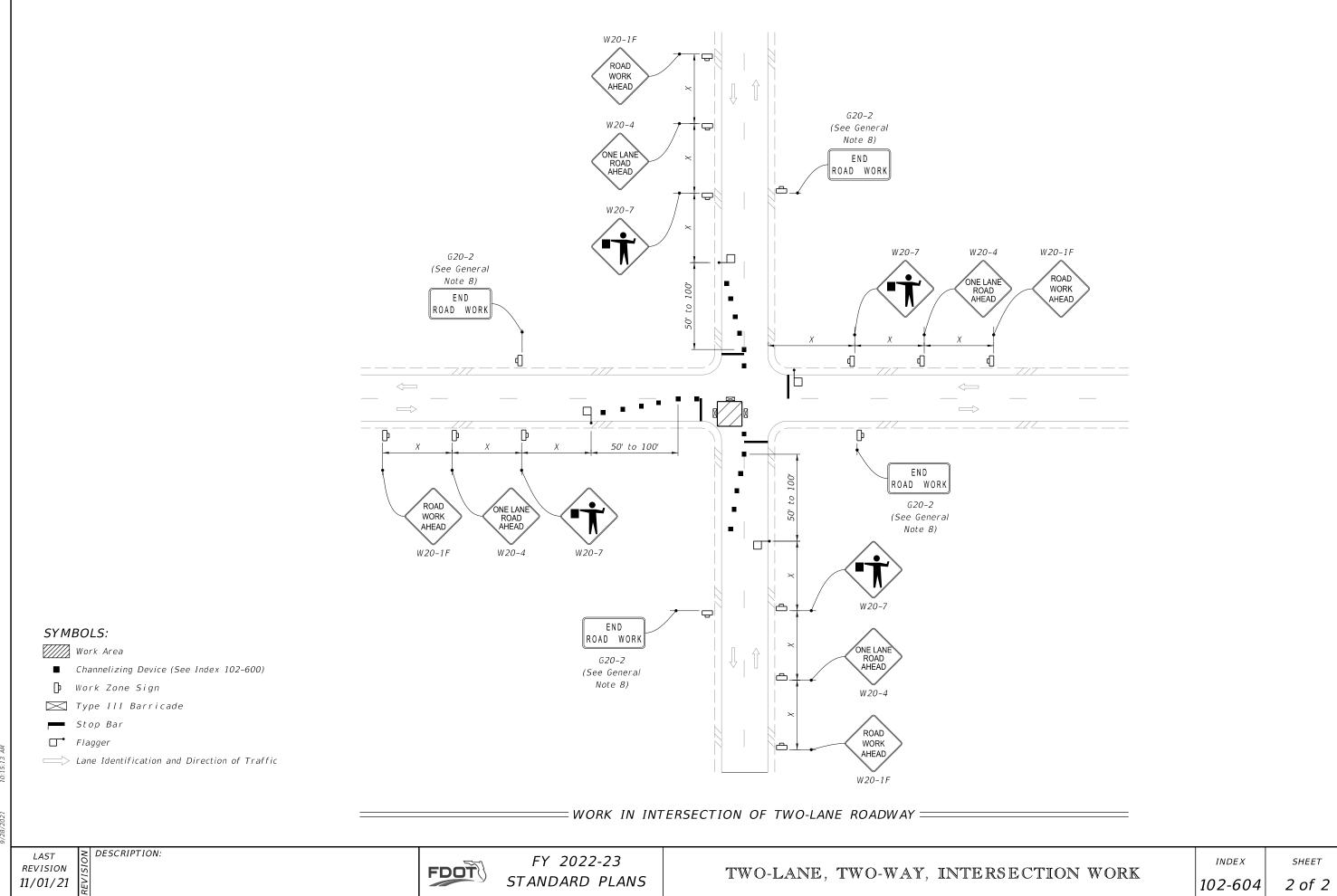


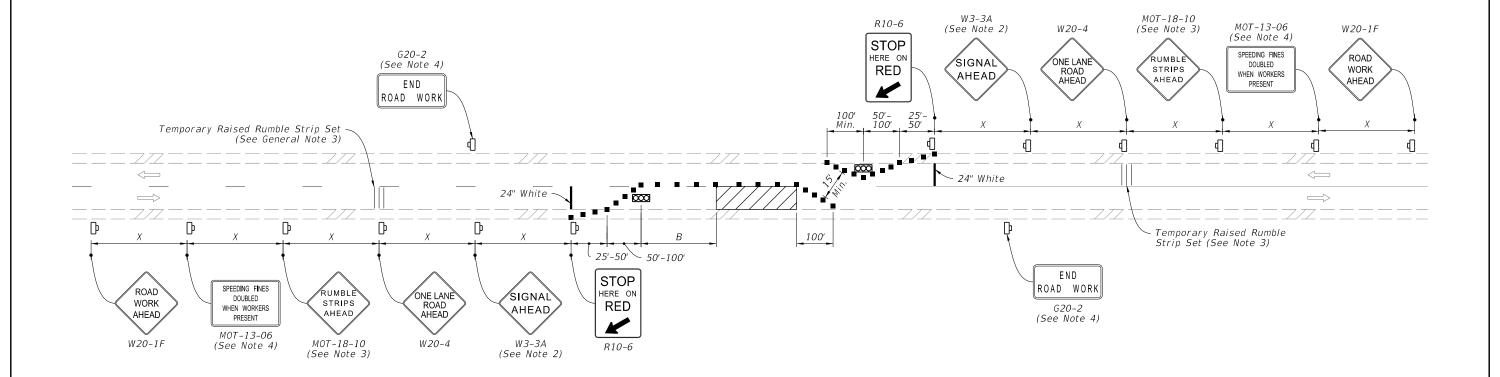
LANE CLOSURE FOR WORK LESS THAN 200' FROM INTERSECTION:



= LANE CLOSURE FOR WORK MORE THAN 200' FROM INTERSECTION =

LAST REVISION 11/01/21





NOTES:

- 1. L = Taper Length
- B = Buffer Length

DESCRIPTION:

- 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:



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

7.05.52 AM

7/13/2022

LAST REVISION 11/01/22



102-606 1 of 1

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:

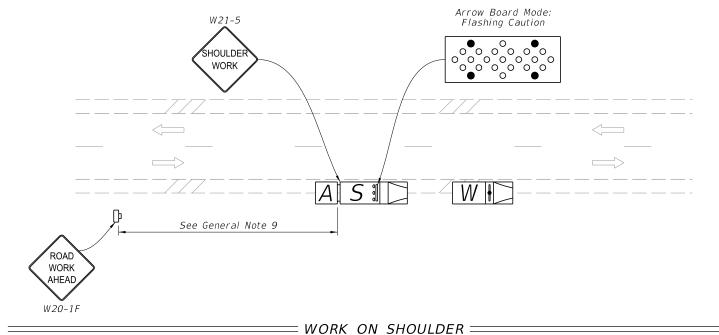
Lane Identification and Direction of Traffic

A Truck/Trailer Mounted Attenuator (TMA)

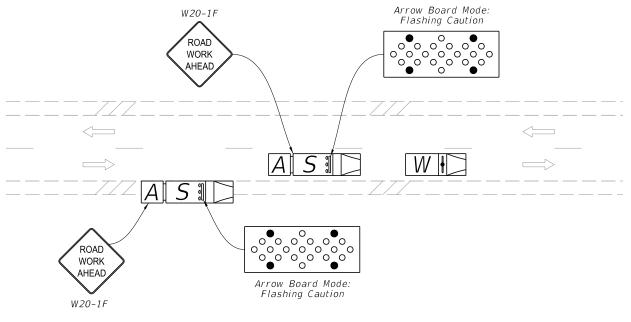
W W Work Vehicle With Warning Lights

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

Work Zone Sign



(Two-Lane Roadway Shown, Multilane Roadway Similar)



= WORK IN TRAVELED WAY - TWO-LANE ROADWAY. LANE CLOSURE ===========

REVISION 11/01/21

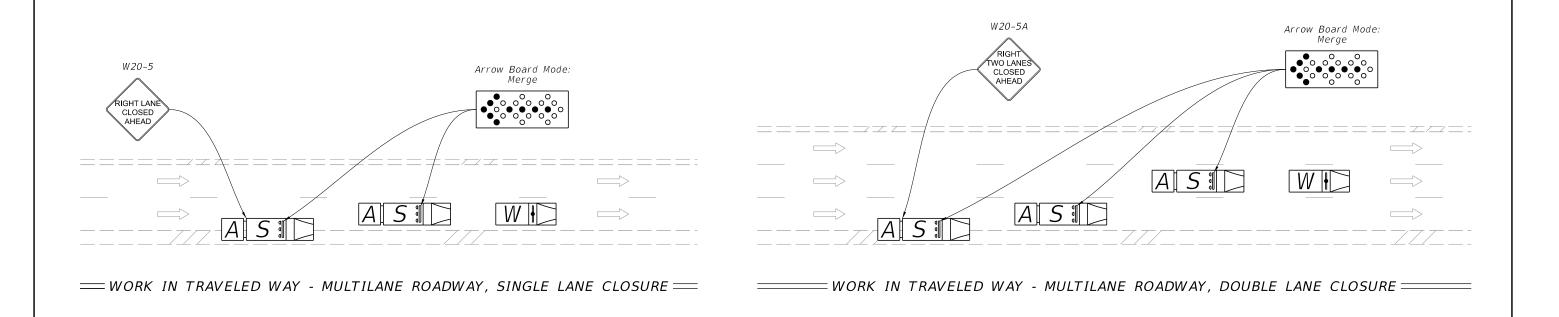
DESCRIPTION:

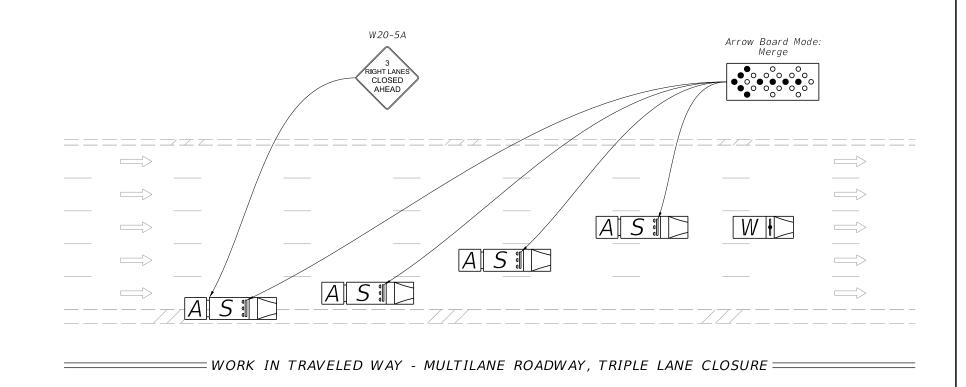


FY 2022-23 STANDARD PLANS

INDEX 102-607

SHEET





SYMBOLS:

DESCRIPTION:

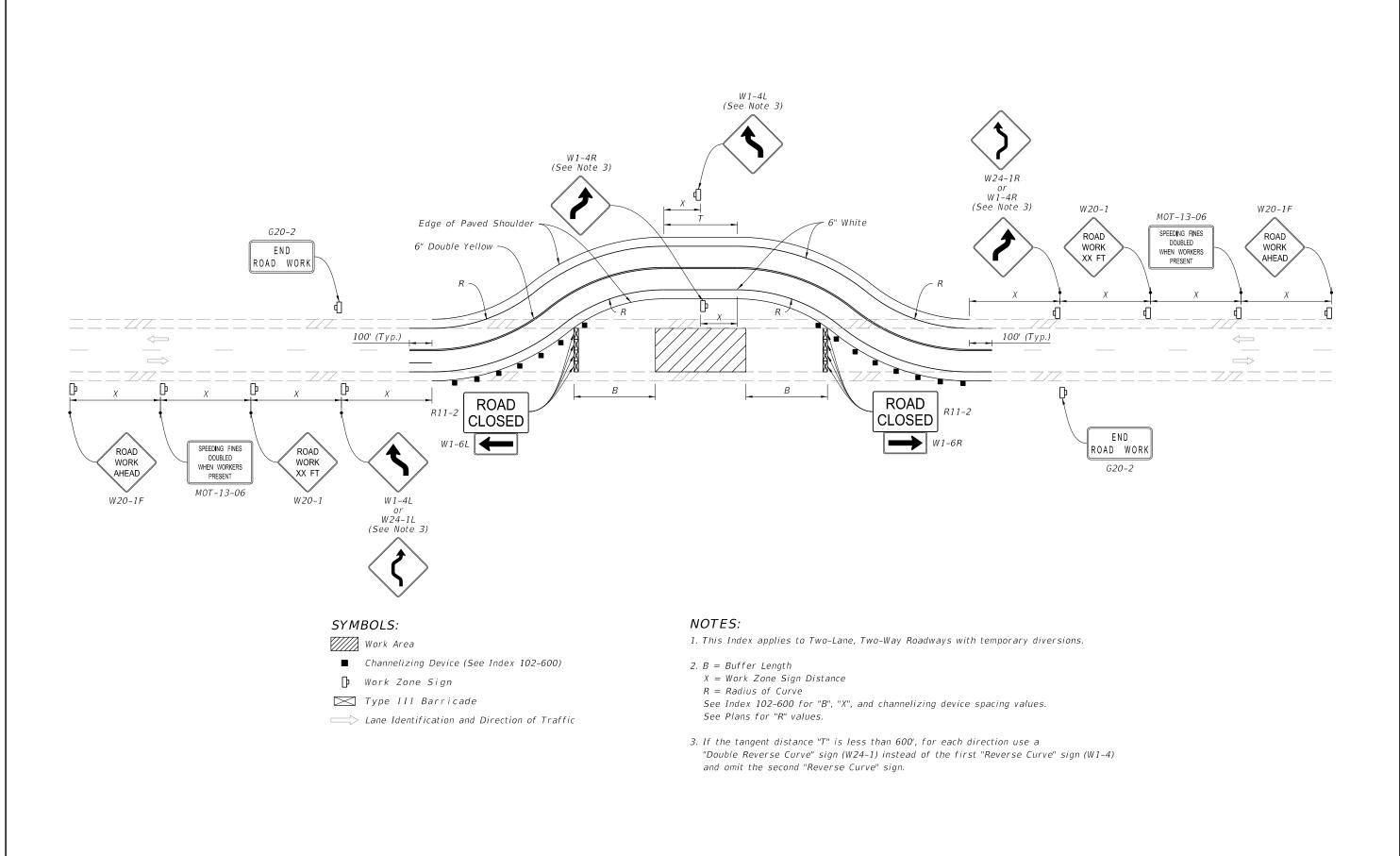
WHD Work Vehicle With Warning Lights

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

A Truck/Trailer Mounted Attenuator (TMA)

Lane Identification and Direction of Traffic

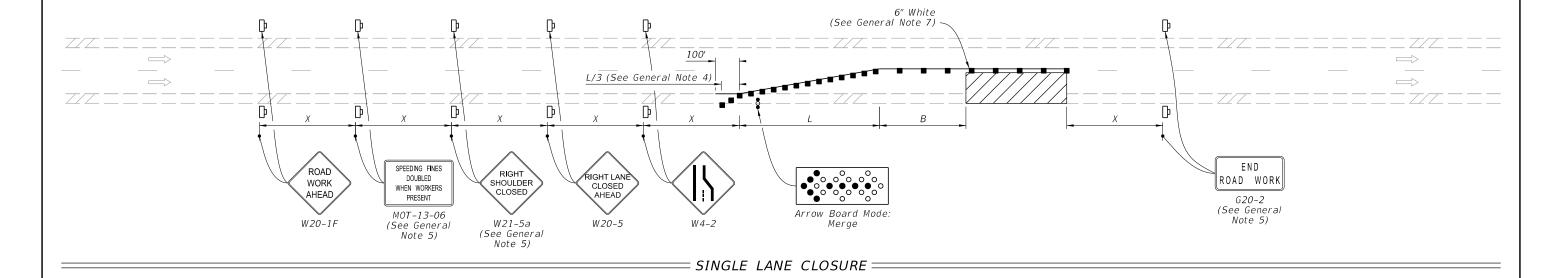
LAST **REVISION** 11/01/20



REVISION 11/01/20

DESCRIPTION:

FDOT



SYMBOLS:



■ Channelizing Device (See Index 102-600)

Work Zone Sign

Arrow Board

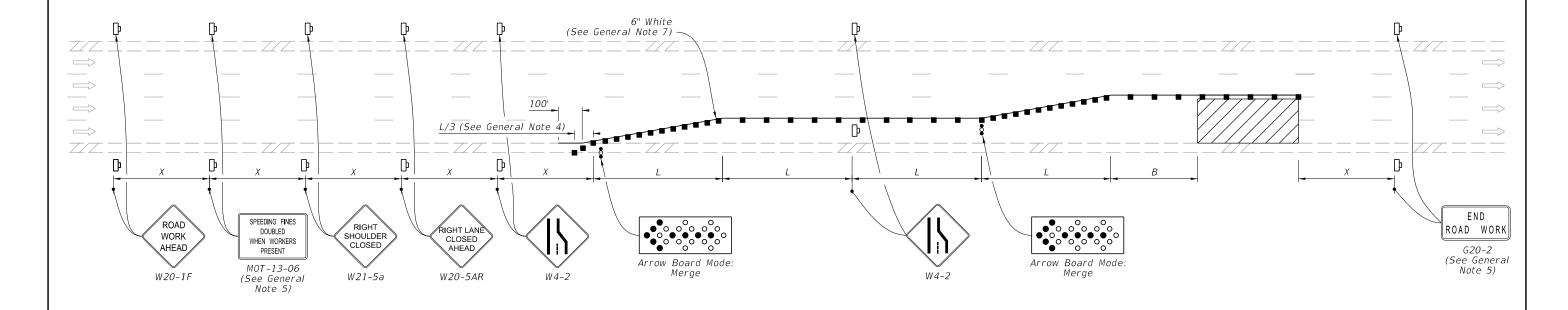
Lane Identification and Direction of Traffic

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.



DOUBLE LANE CLOSURE =

SYMBOLS:



■ Channelizing Device (See Index 102-600)

Work Zone Sign

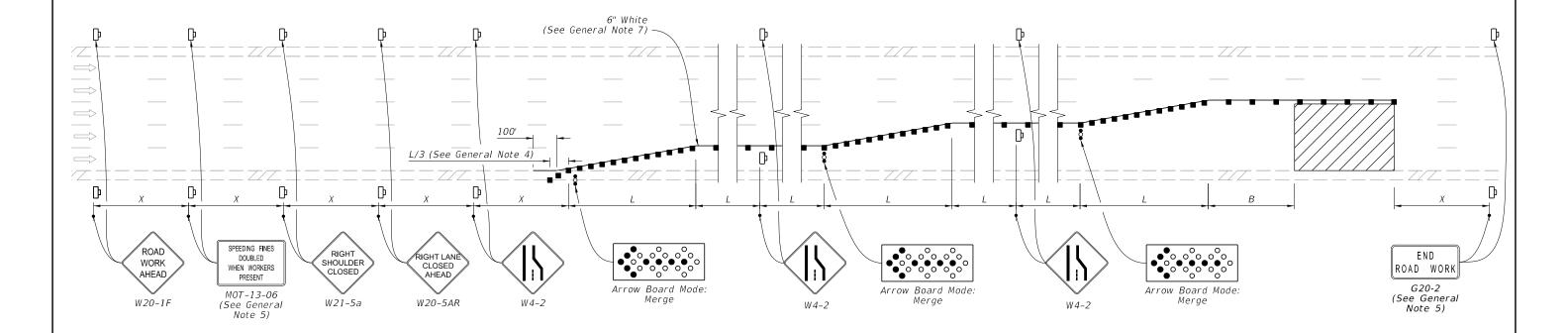
Arrow Board

Lane Identification and Direction of Traffic

LAST REVISION IS 11/01/20



SHEET



= TRIPLE LANE CLOSURE =

SYMBOLS:



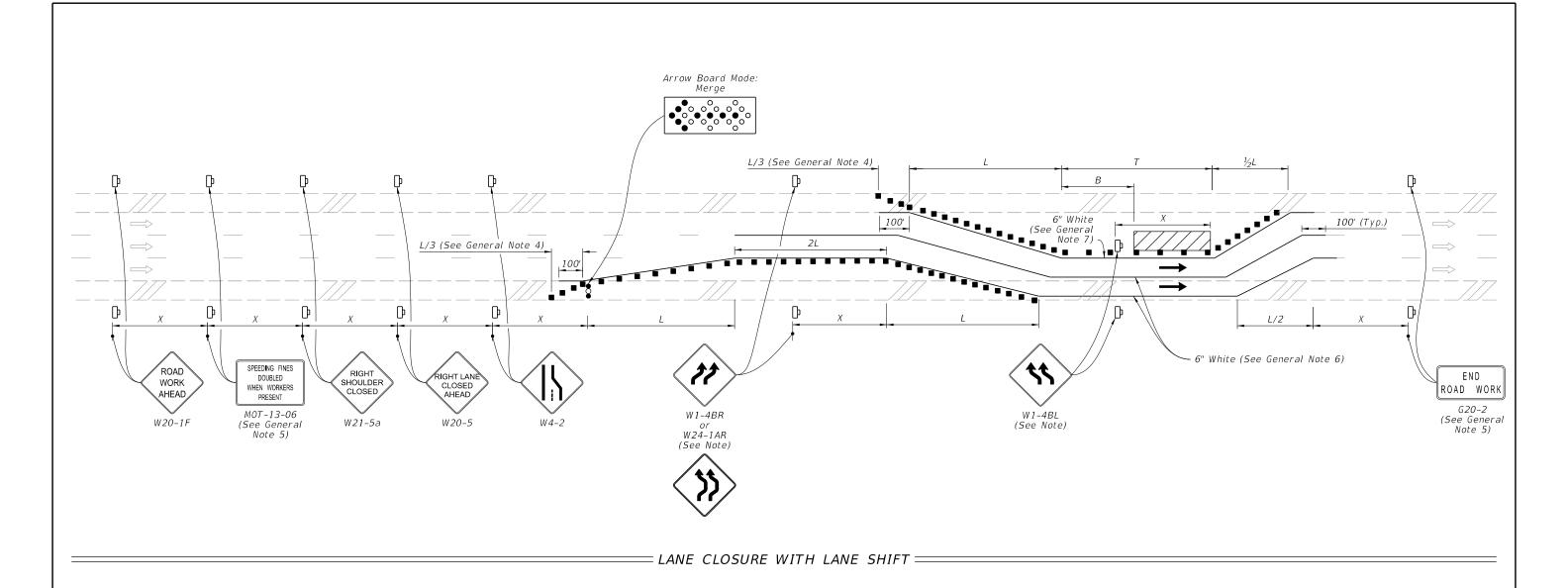
Channelizing Device (See Index 102-600)

Work Zone Sign

Arrow Board

Lane Identification and Direction of Traffic

DESCRIPTION: 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:

Work Area

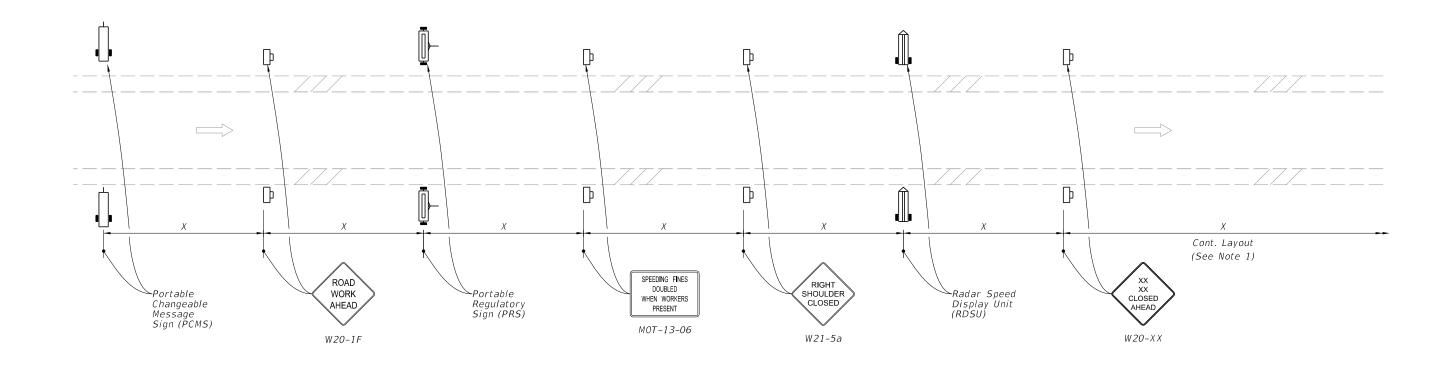
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Arrow Board

Lane Identification and Direction of Traffic

REVISION

DESCRIPTION:

FDOT



= MOTORIST AWARENESS SYSTEM =

SYMBOLS:

Work Zone Sign

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

(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 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. District Traffic Operations Engineer must approve temporary signal phasing modifications prior to beginning of work.
- 4. Use temporary "STOP" sign (R1-1) where the existing stop bar is more than 30' from the taper, remove or cover existing sign.
- 5. 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 limit is 45 mph or less.
- 6. If the work area extends across a crosswalk, close the crosswalk in accordance with Index 102-660.
- 7. Dual signs are required for divided roadways.

SYMBOLS:

Work Area

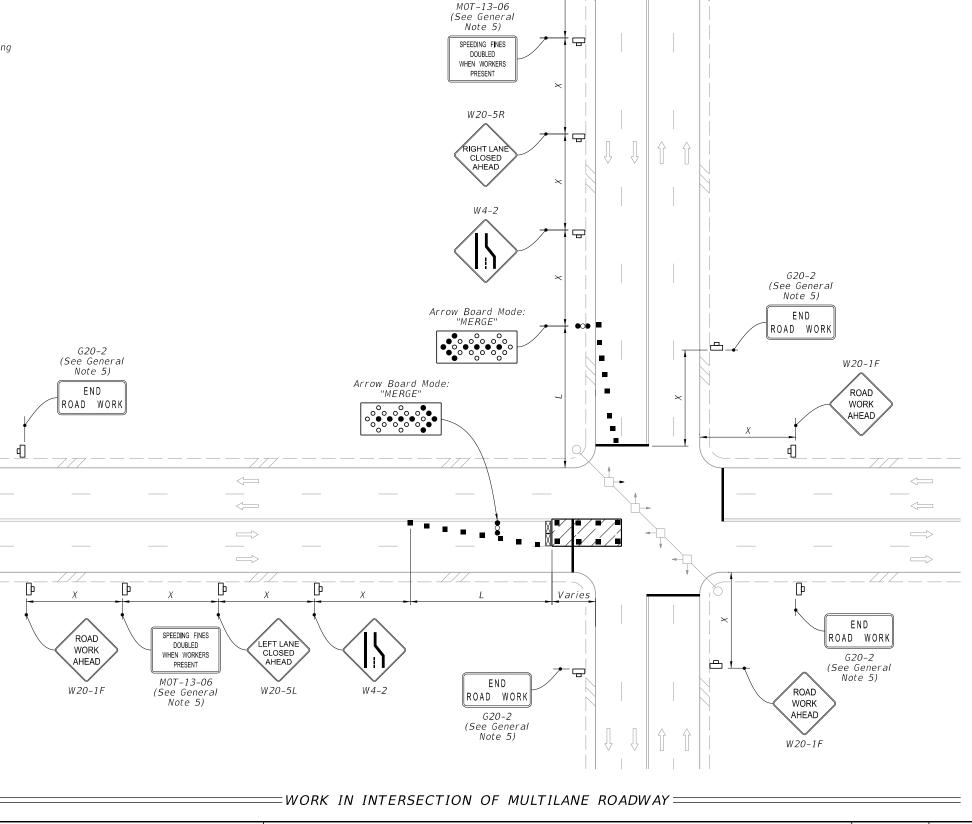
■ Channelizing Device (See Index 102-600)

Work Zone Sign

Type III Barricade

Arrow Board Stop Bar

Lane Identification and Direction of Traffic



W20-1F

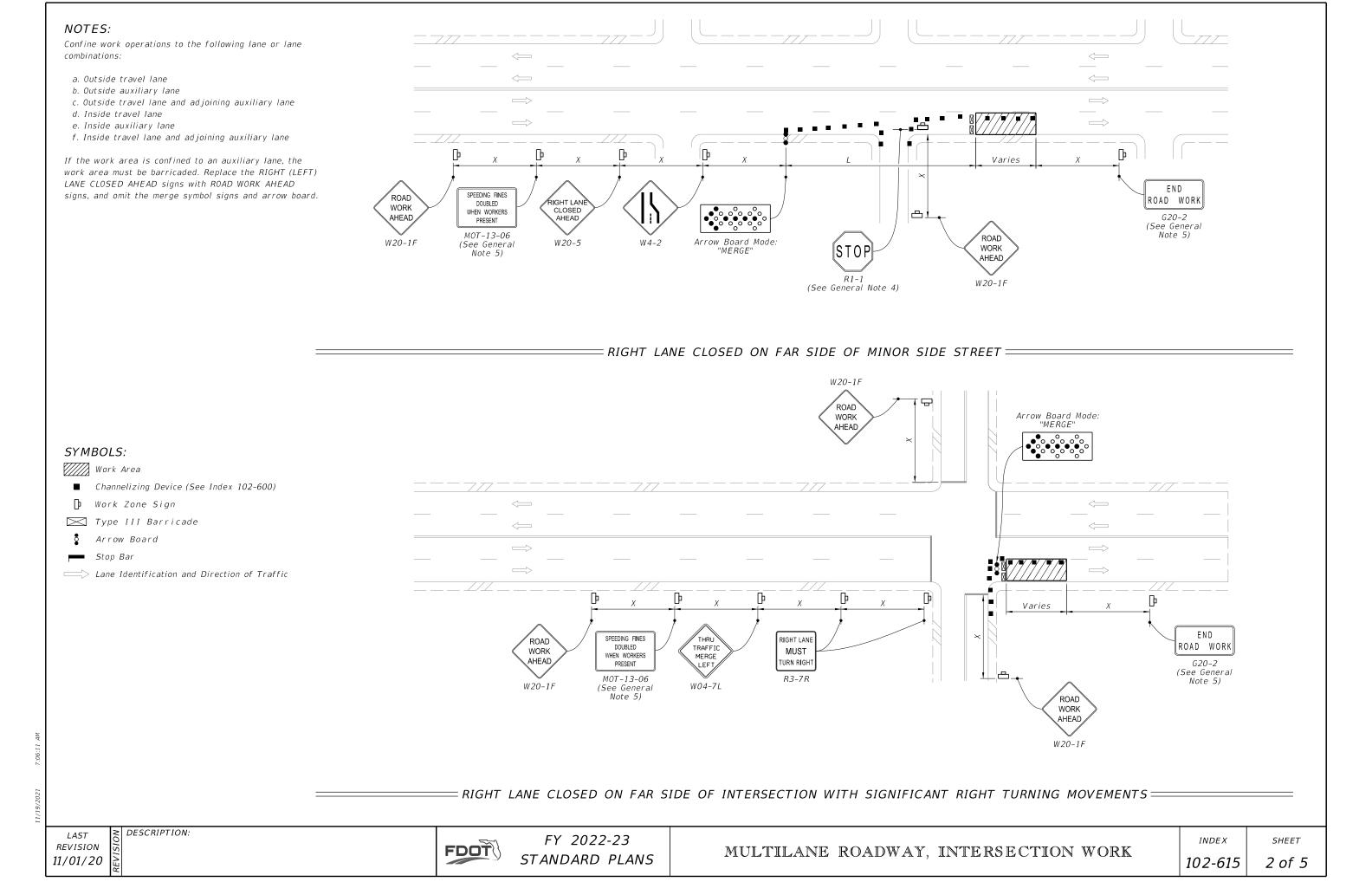
ROAD

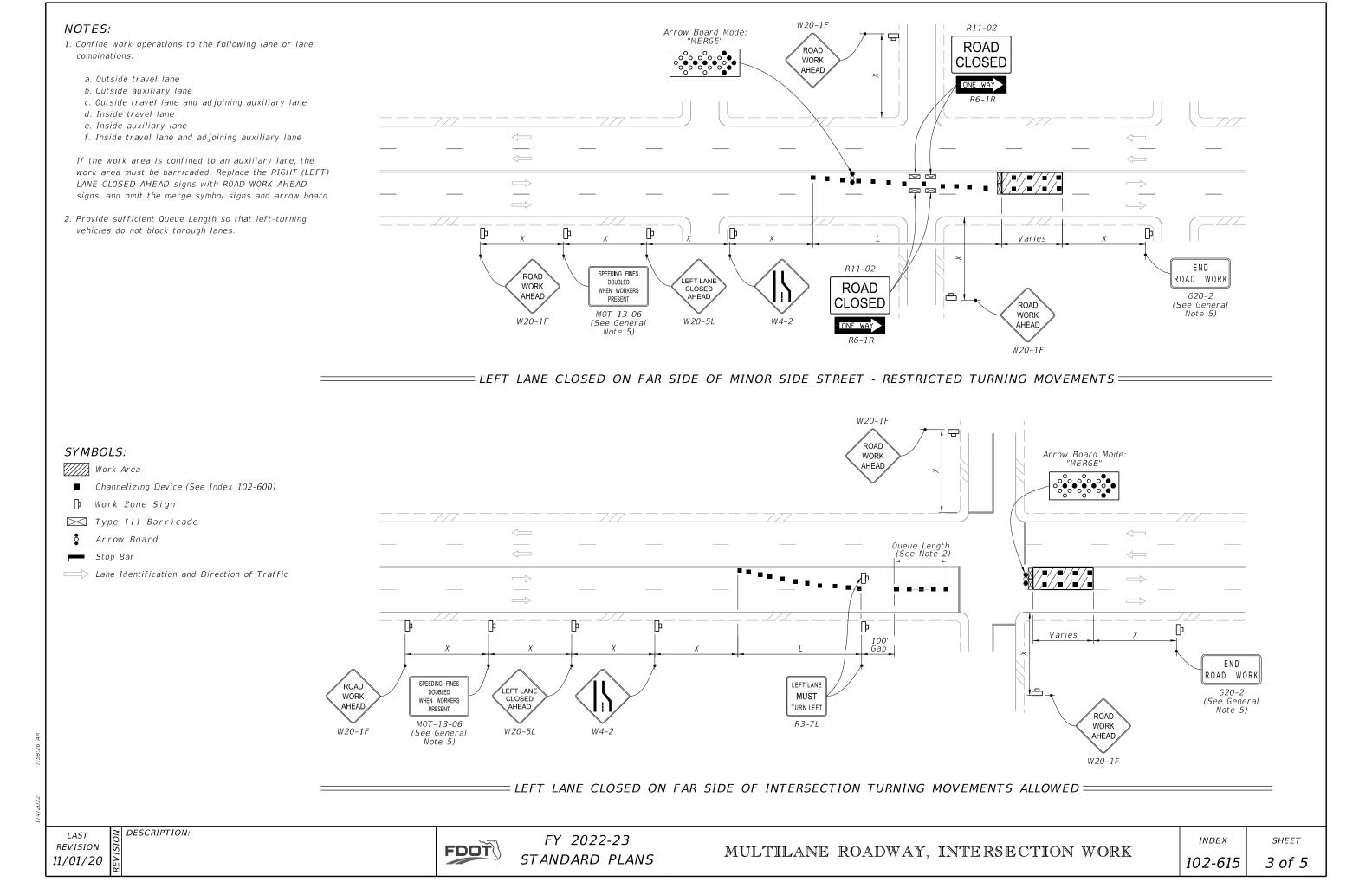
WORK

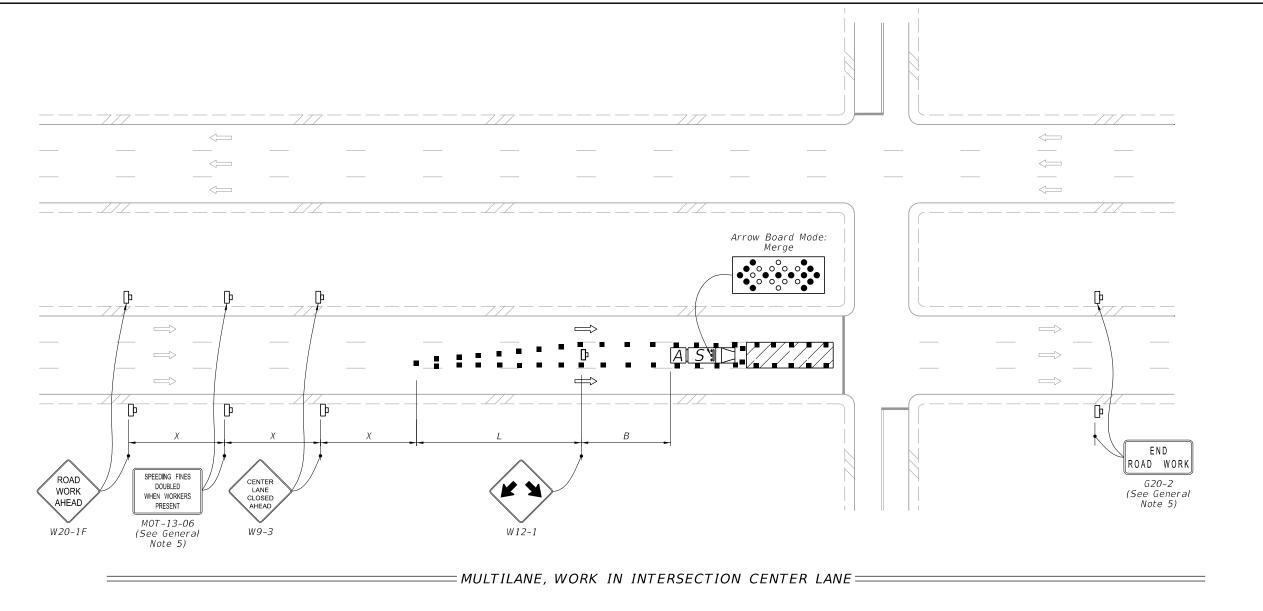
AHEAD

REVISION 11/01/21

DESCRIPTION:







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)

₩ork Zone Sign

Type III Barricade

Arrow Board

Stop Bar

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

A Truck/Trailer Mounted Attenuator (TMA)

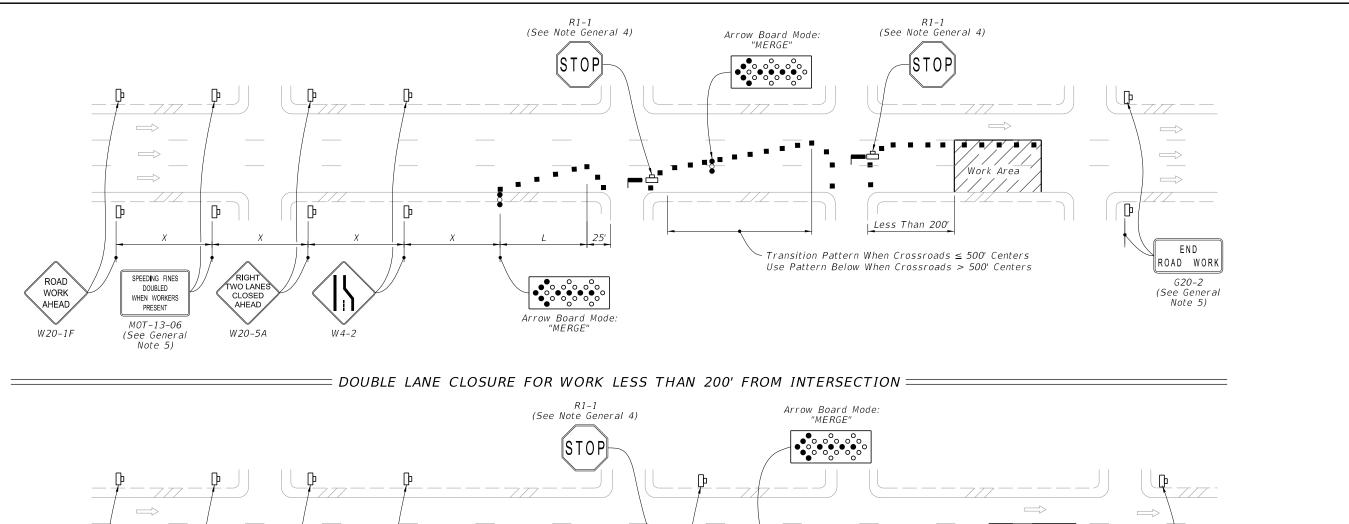
Lane Identification and Direction of Traffic

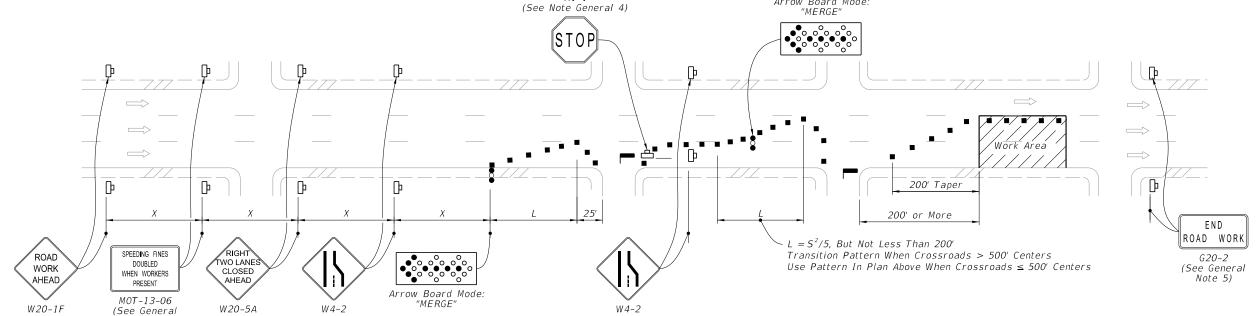
9/28/2021 10

LAST REVISION 11/01/21

DESCRIPTION:

FDOT





SYMBOLS:

(See General Note 5)

Note 5)

Work Area

DOUBLE LANE CLOSURE FOR WORK MORE THAN 200' FROM INTERSECTION =

Channelizing Device (See Index 102-600)

Work Zone Sign

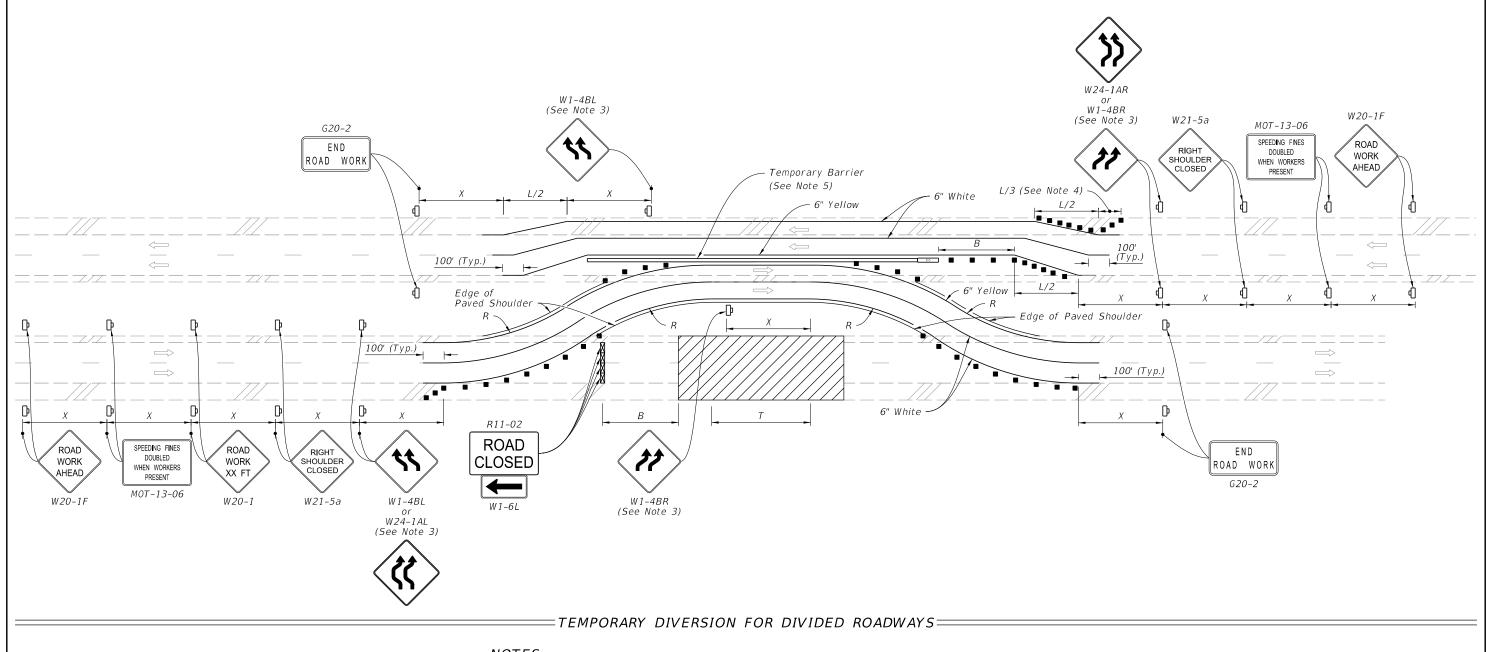
Arrow Board

Stop Bar

Lane Identification and Direction of Traffic

DESCRIPTION:

REVISION 11/01/20



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.

REVISION 11/01/21 SYMBOLS:

DESCRIPTION:

Work Area

Work Zone Sign

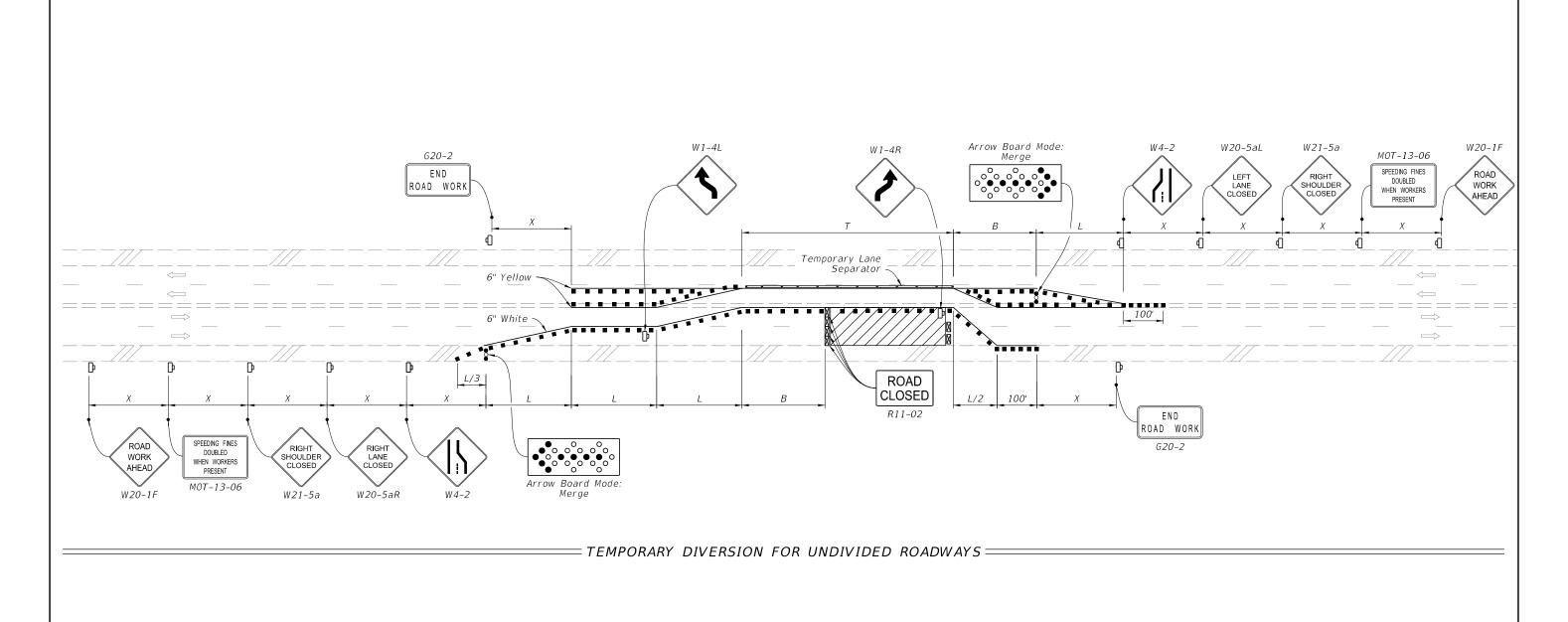
□ Crash Cushion

∑ Type III Barricade

■ Channelizing Device (See Index 102-600)

Lane Identification and Direction of Traffic

FDOT



NOTE:

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)

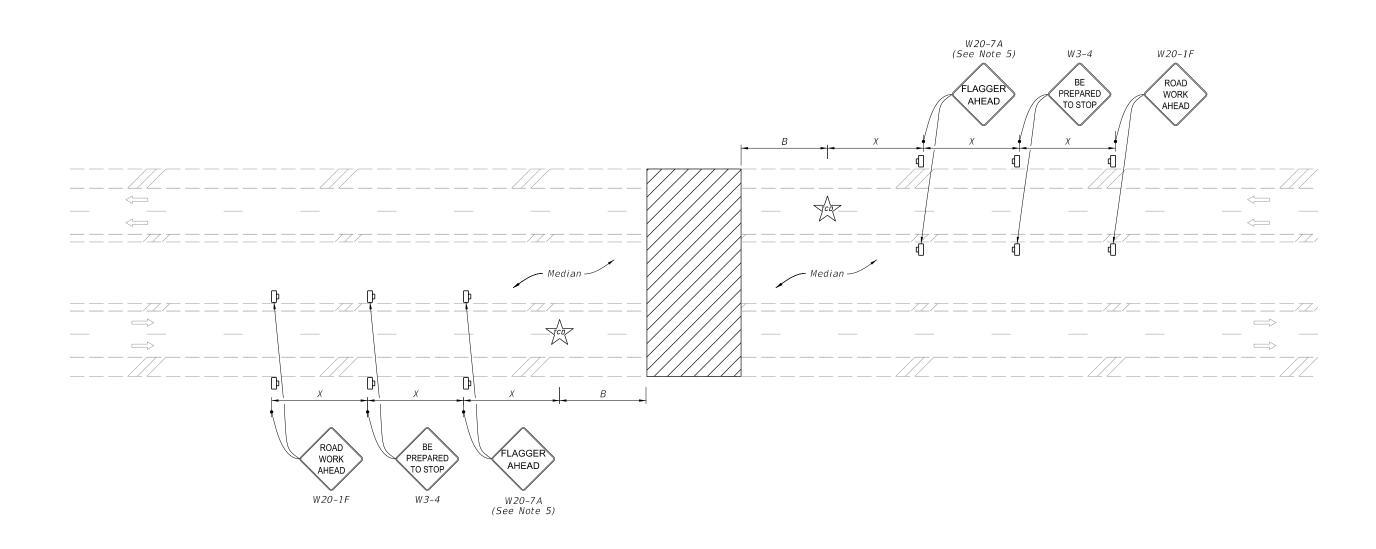
Work Zone Sign

Type III Barricade

□ Crash Cushion

Lane Identification and Direction of Traffic

DESCRIPTION:

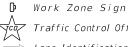


(Multilane Roadway Shown, Two-Lane Roadway Similar)

SYMBOLS:



Work Area



Traffic Control Officer

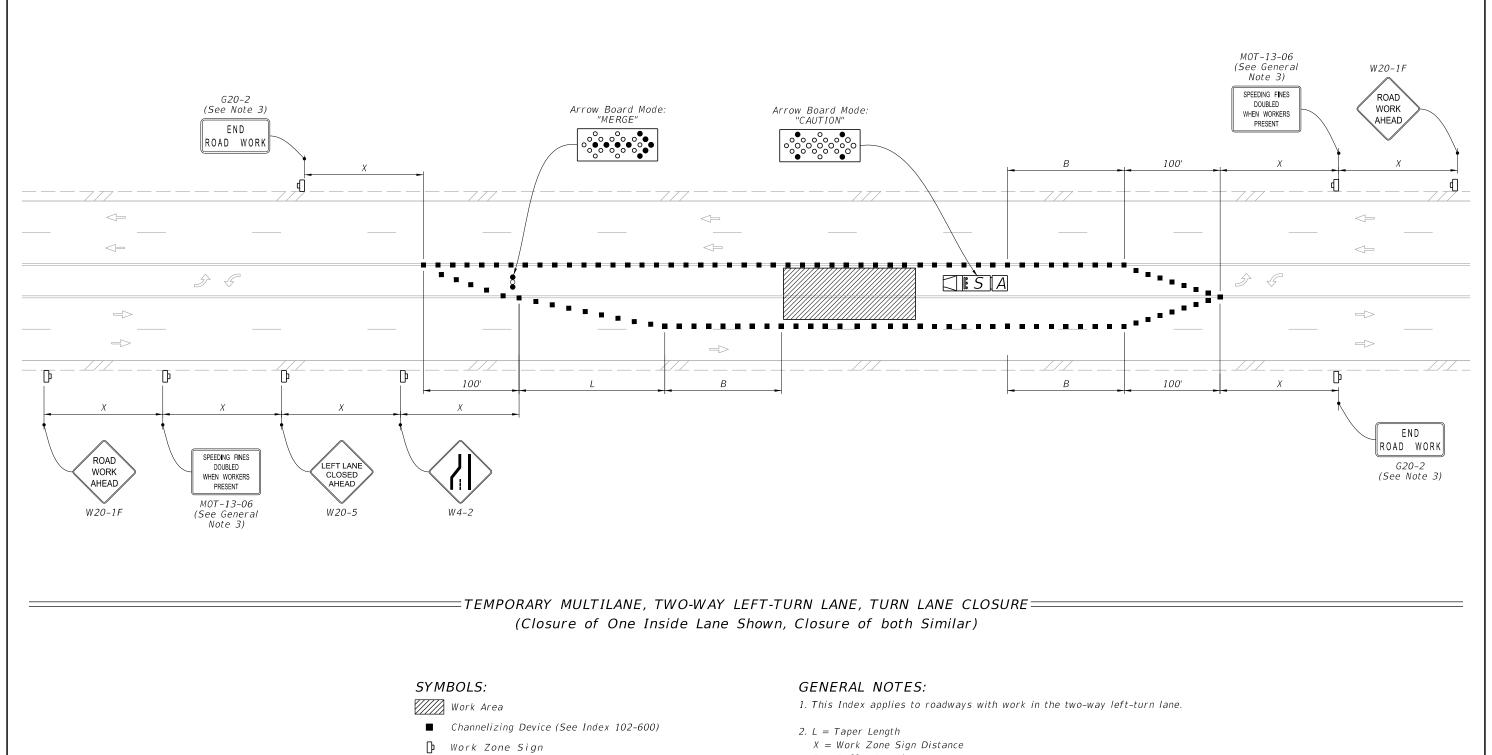
NOTES:

- 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 Distance See Index 102-600 for "B" and "X" values.
- 3. For Two-Lane Roadways, a Flagger may substitute the traffic control office 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.

LAST REVISION 11/01/20

DESCRIPTION:





Arrow Board

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

A Truck/Trailer Mounted Attenuator (TMA)

Lane Identification and Direction of Traffic

- 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

FDOT

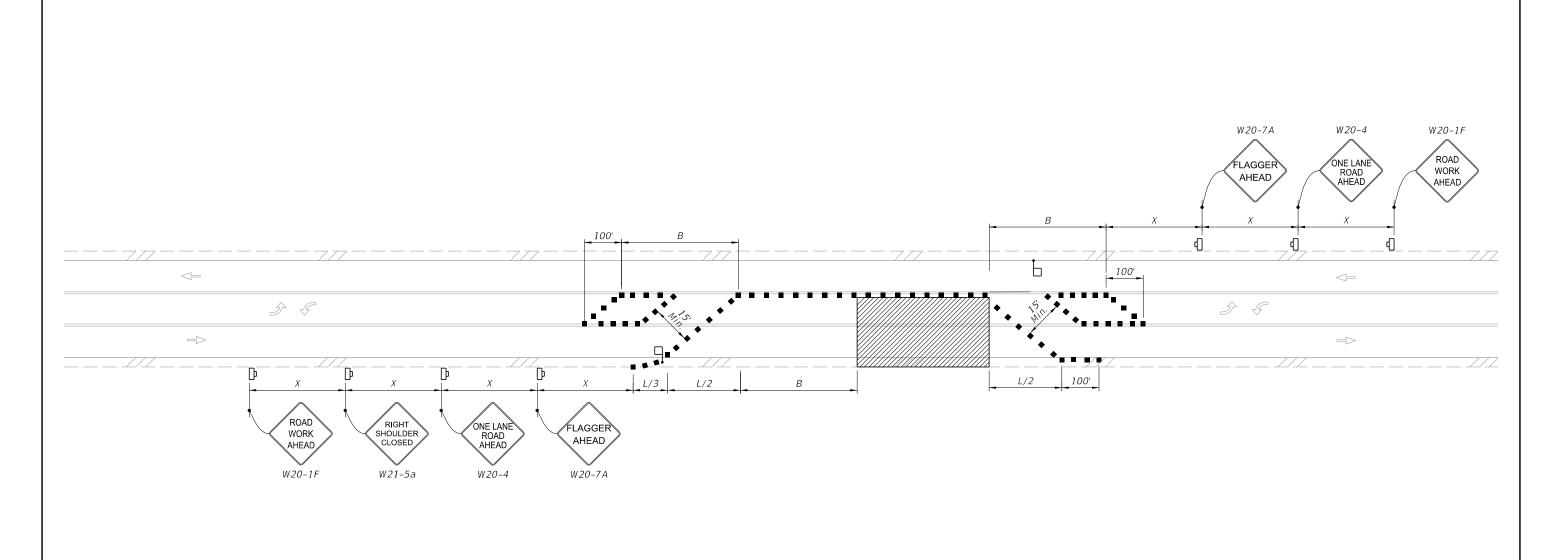
FY 2022-23 STANDARD PLANS

TWO-WAY LEFT-TURN LANES

INDEX

SHEET

102-628 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:

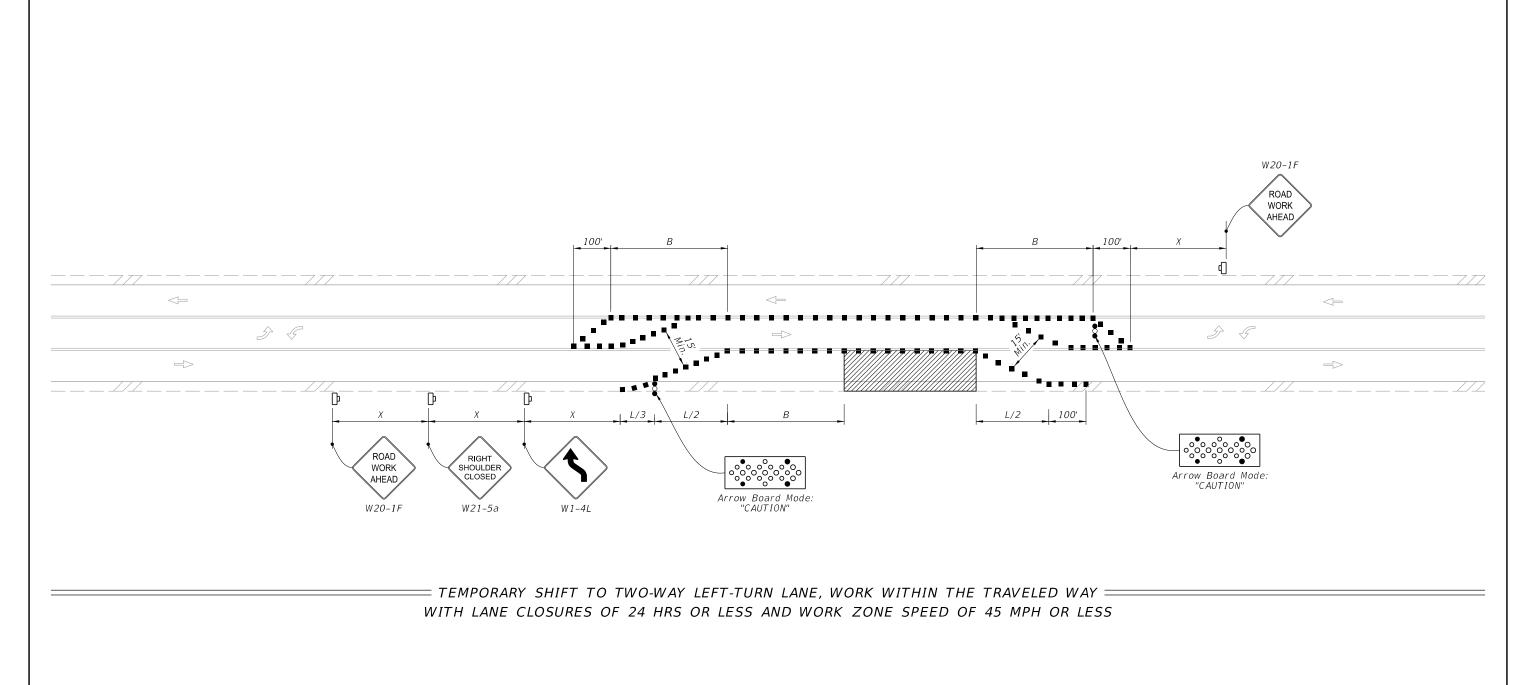
Work Area

Channelizing Device (See Index 102-600)

₩ork Zone Sign

□⇒ Lane Identification and Direction of Traffic

≥ DESCRIPTION: REVISION 11/01/20



SYMBOLS:

Work Area

Channelizing Device (See Index 102-600)

Work Zone Sign

Arrow Board

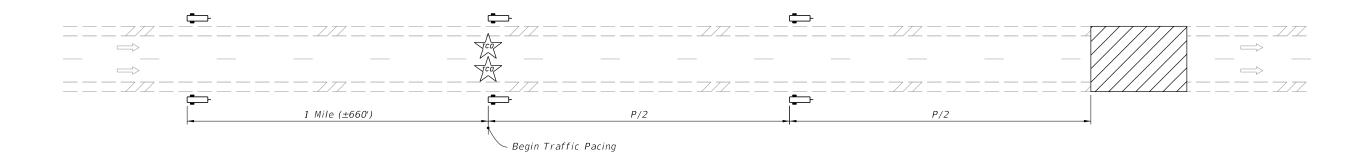
≥ DESCRIPTION:

Flagger

Lane Identification and Direction of Traffic

REVISION 11/01/21

FDOT



TYPICAL PCMS DISPLAY:

During day of pacing operation:

Message 2: (Month Day Time)

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

SYMBOLS:



Work Area



Portable Changeable Message Sign (PCMS)

Traffic Control Officer

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.
- 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 Speed (mph)	Work Duration (minutes)					
	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

$$P_C = \left(\frac{\frac{t_W}{60} \times S_p^2}{S_W - S_p}\right)$$

 $P_W = distance paced vehicles travel while work is performed$

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

LAST REVISION 11/01/20

NOTES:

- 1. Cover or deactivate pedestrian traffic signal display(s) controlling
- 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).

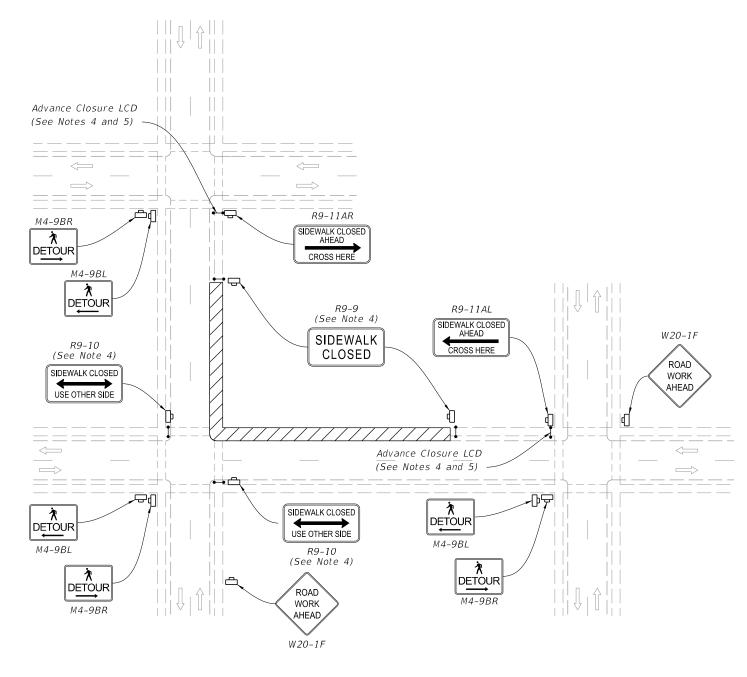
SYMBOLS:



Work Zone Sign

•• Pedestrian Longitudinal Channelizing Device (LCD)

Lane Identification and Direction of Traffic



PEDESTRIAN DETOUR =

REVISION 11/01/20

DESCRIPTION:

FDOT



- 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)

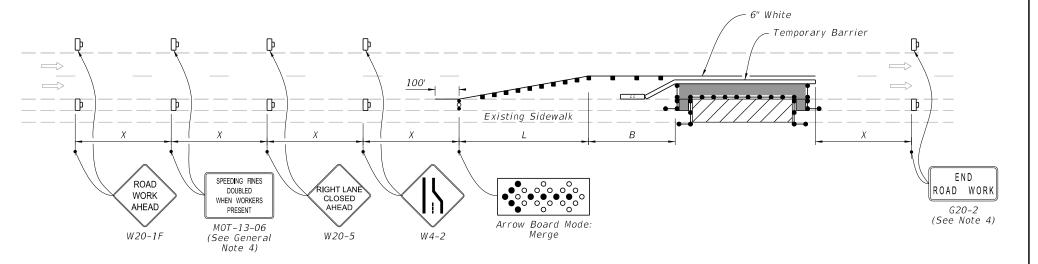
Pedestrian Longitudinal Channelizing Device (LCD) Work Zone Sign

DESCRIPTION:

Arrow Board

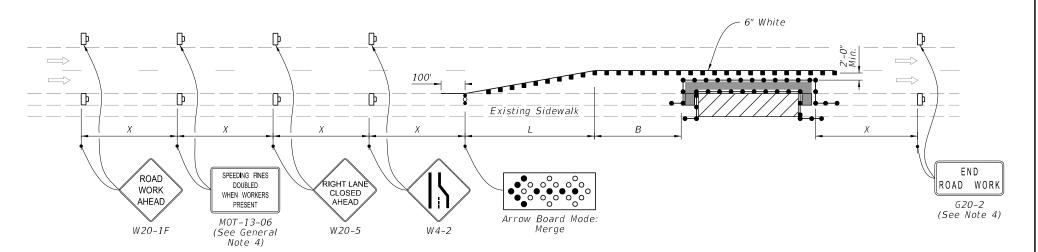
Crash Cushion

Lane Identification and Direction of Traffic

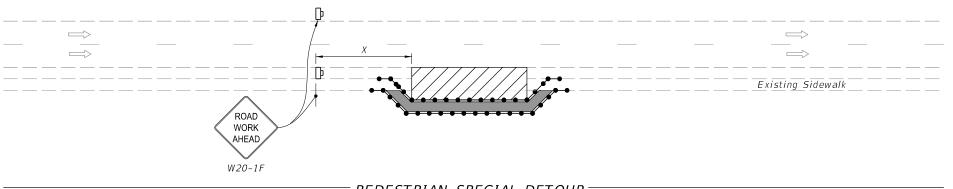


= <code>PEDESTRIAN DIVERSION - OPTION 1=</code>

(Temporary Barrier Shown, Low Profile Barrier Similar)



PEDESTRIAN DIVERSION - OPTION 2= (Work Zone Speed 35 mph or Less)



= PEDESTRIAN SPECIAL DETOUR =

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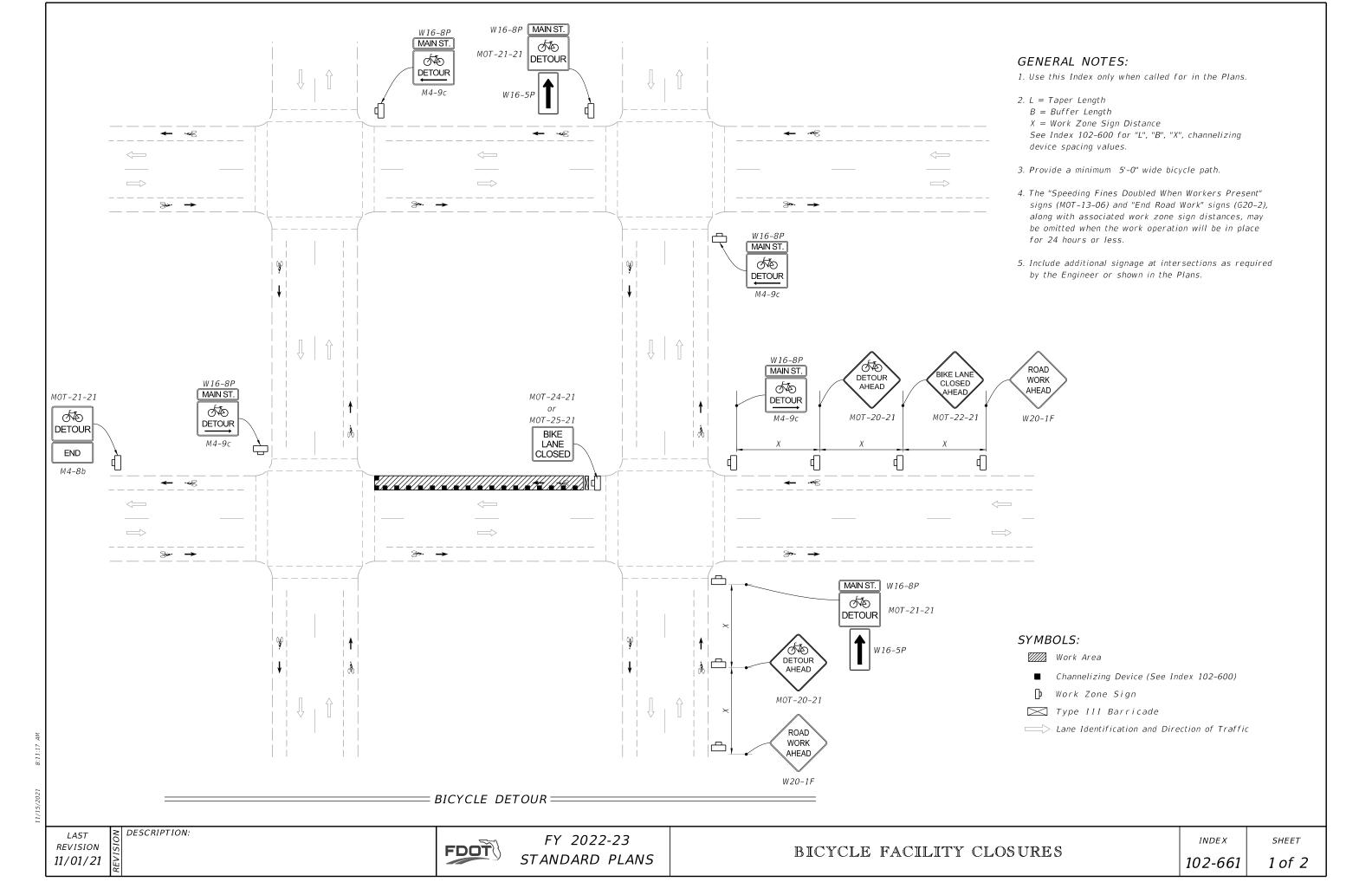
FDOT

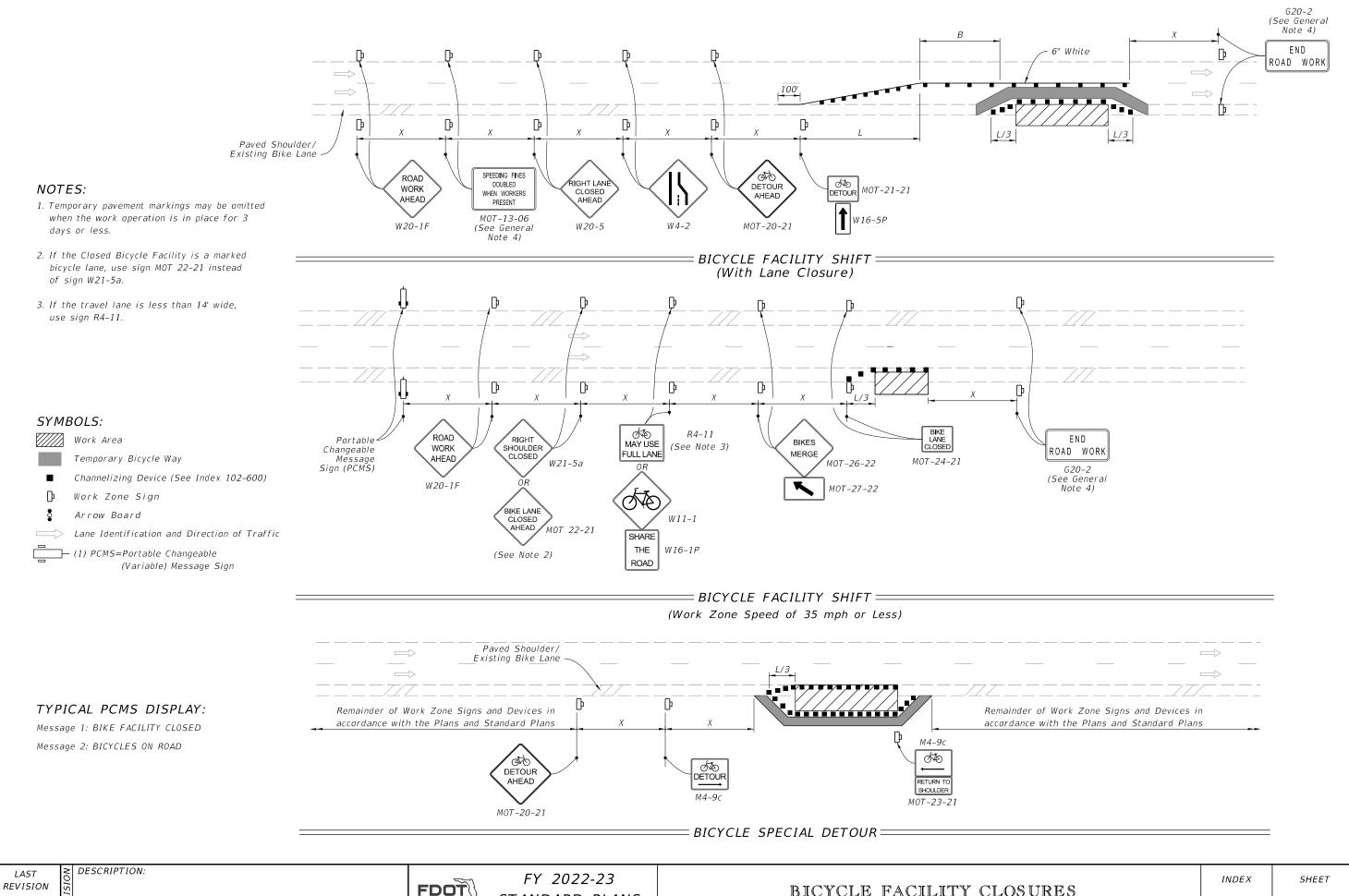
FY 2022-23 STANDARD PLANS

SIDEWALK CLOSURE

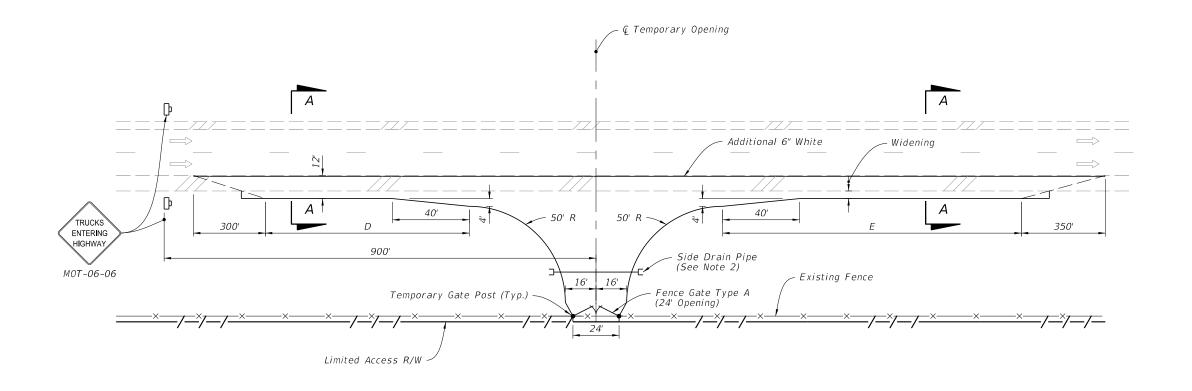
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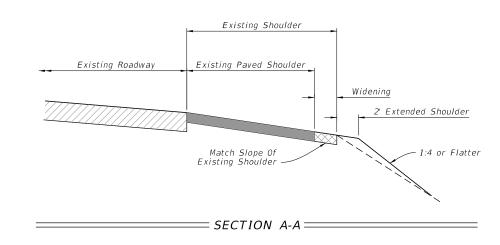
NOTES:

- 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.

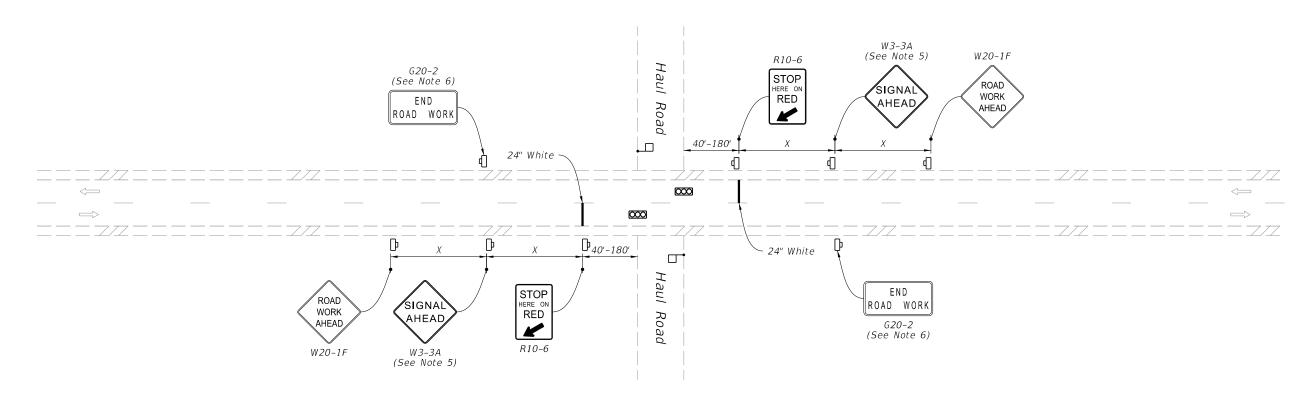
SYMBOLS:

- ₩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:



(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. District Traffic Operations Engineer must approve the installation and timing of temporary signals prior to beginning of work. Adjust timing based on changing field conditions as approved by the Worksite Traffic Supervisor. Obtain approval from the District Traffic Operations Engineer for any timing changes that are either reoccurring or last longer than 24 hours.
- 3. X=Work Zone Sign Distance, see Index 102-600 for "X" values.
- 4. 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.
- 5. Optionally, use "Signal Ahead" signs with symbols (W3-3) instead of "Signal Ahead" signs with text (W3-3A).
- 6. The "End Road Work" signs (G20-2) may be omitted when the work operation is in place for 24 hours or less.
- 7. Optionally, use temporary traffic signals for control of the haul road.

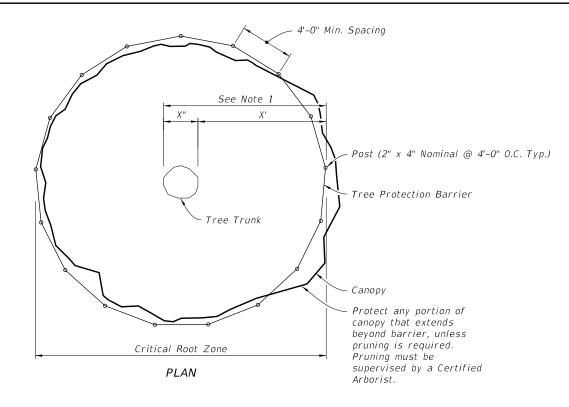
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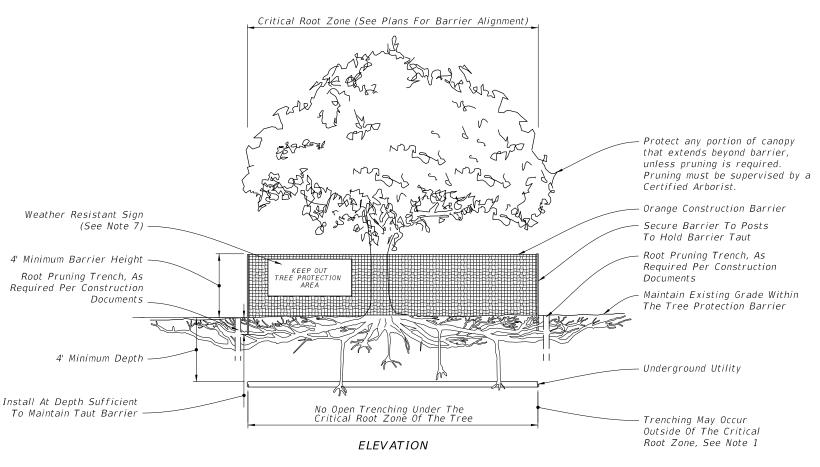
DESCRIPTION:

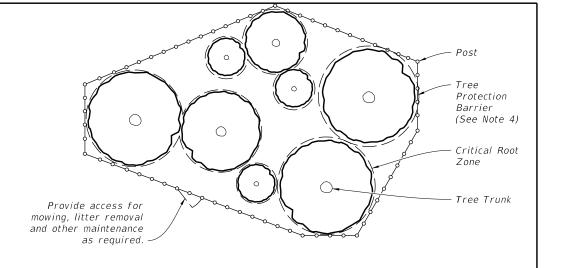


NOTES:

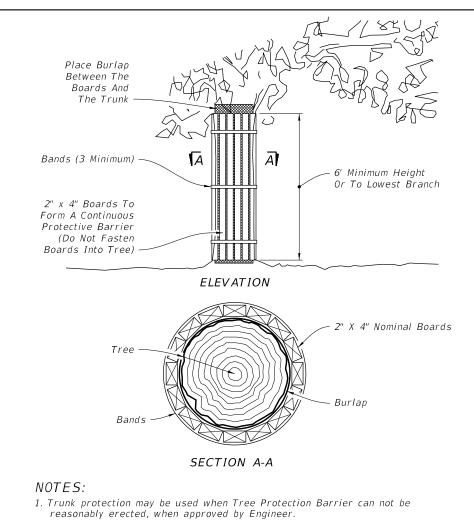
- 1. Critical Root Zone: Extends in all directions from trunk of tree to a distance equal to one foot per inch of trunk diameter at breast height.
- 2. Staging, storage, dumping, washing and operation of equipment is not permitted within the limits of the tree protection barrier, including during barrier 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, when applicable.
- 3. Adjust bands to allow tree growth (inspect quarterly to prevent girdling).

= TRUNK $\mathit{PROTECTION}$ =

REVISION 11/01/18

DESCRIPTION:



=TREE PROTECTION BARRIER=

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GENERAL NOTES:

- 1. The location and construction of mailboxes shall conform to the rules and regulations of the United States Postal Service as modified by this Index.
- 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

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

When a mailbox is installed within the limits of quardrail 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.

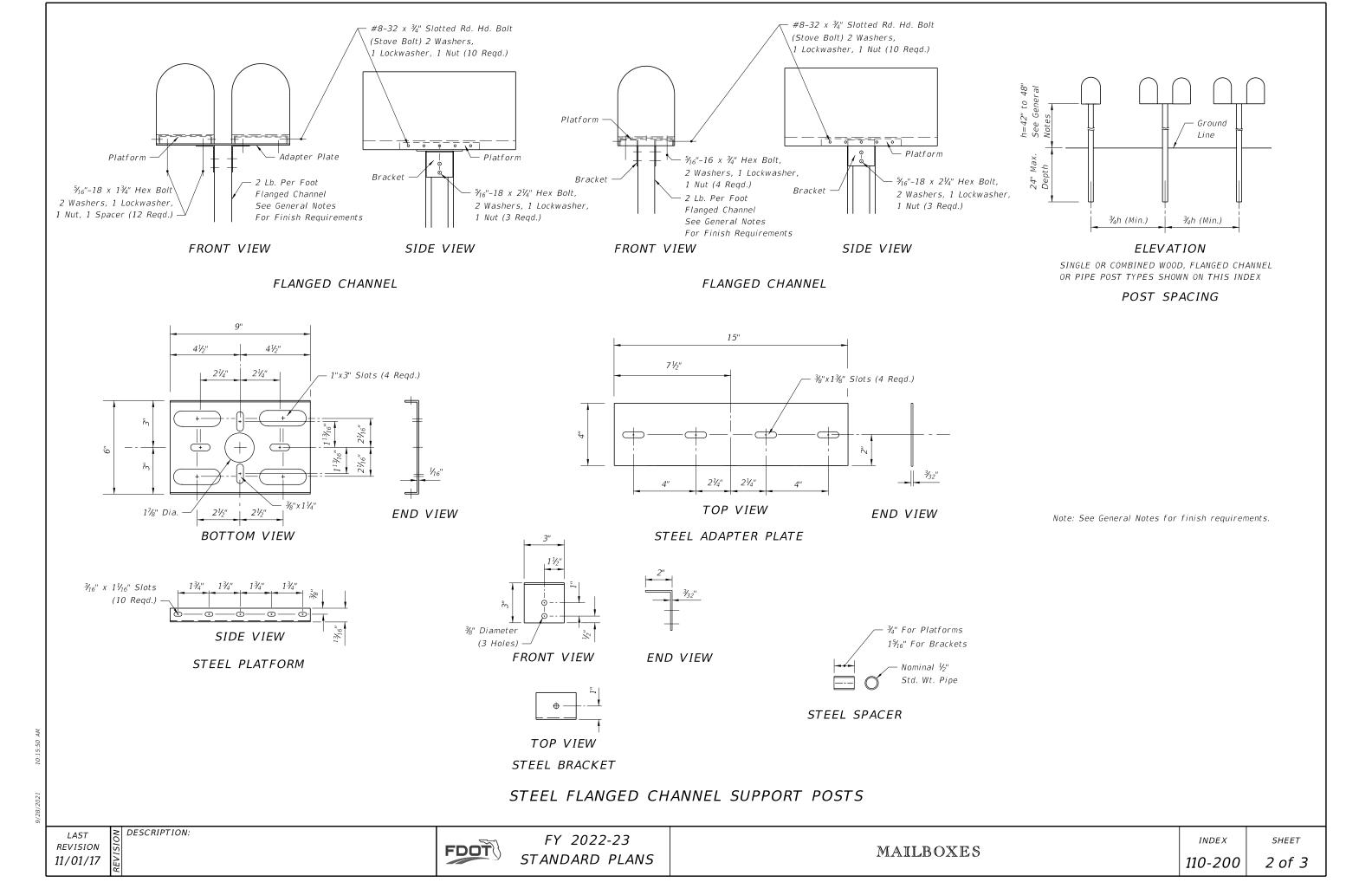
12. Mailboxes shall be paid for under the contract unit price for Mailboxes, Each. Payment shall be full compensation for boxes, posts and accessory items essential for installation in accordance with this standard; erection; adjustments to suit construction needs; and, for identification letters and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

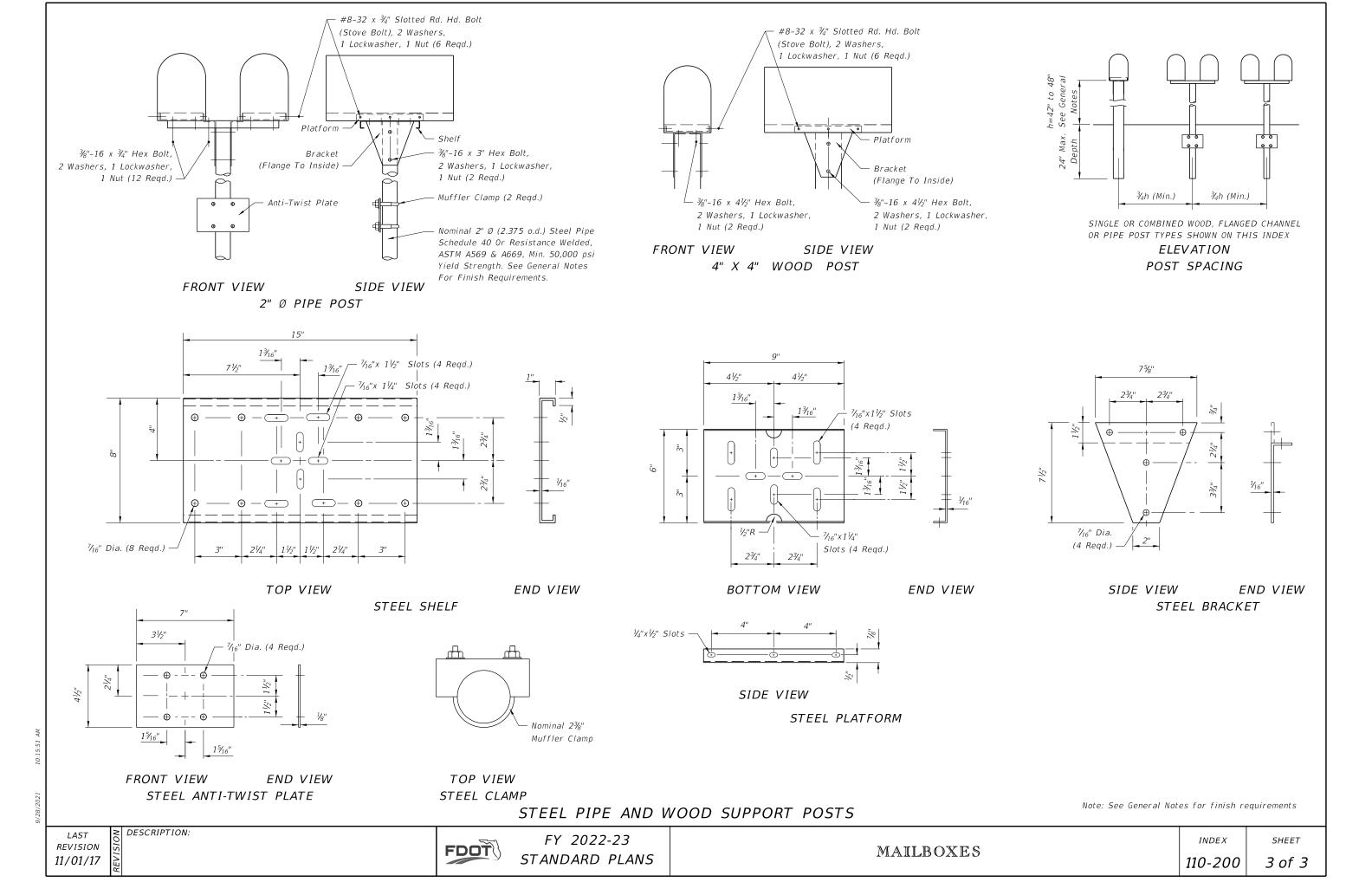
Payment shall be limited to one mailbox per patron address whether the mailbox is new, reused, salvaged, reset or relocated. Payment shall be per mailbox regardless of the number of mailboxes per support or grouping arrangement.

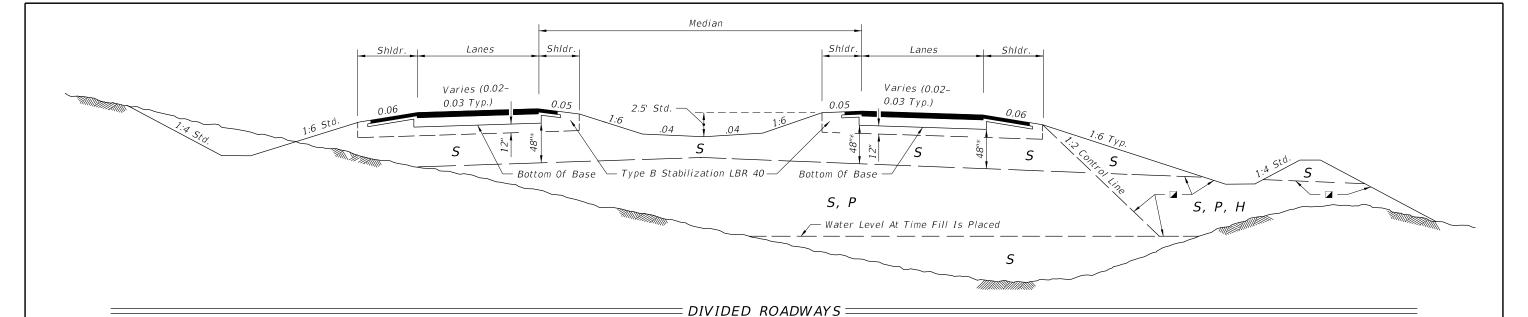
The above compensation shall include any work and cost incurred by the contractor for removal and disposal of existing mailboxes.

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

110-200



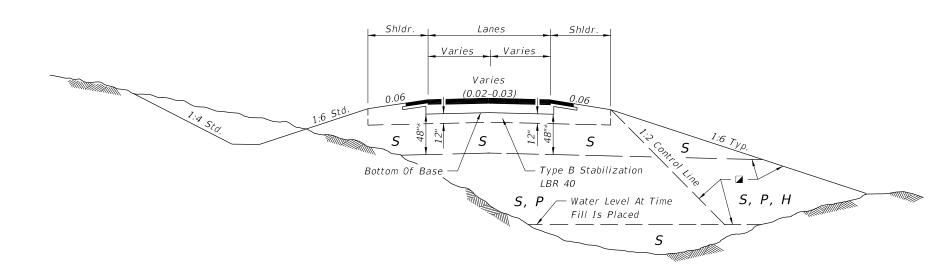




Excess Base

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 AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
- 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.



= UNDIVIDED ROADWAY =

<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".

NOTES:

Friction Course ~ Surface Course

Base

- 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.

Neat Edge

Actual Limits of Base

= REMOVAL OF EXCESS BASE MATERIAL ==

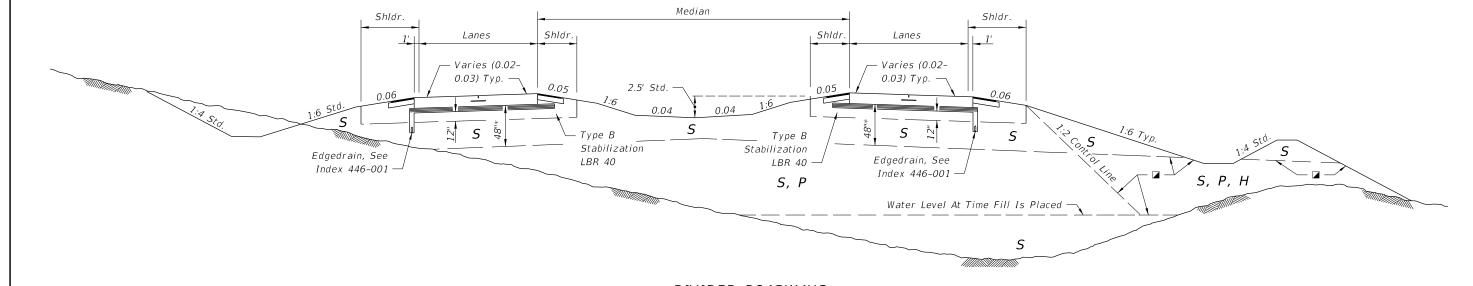
REVISION

DESCRIPTION:

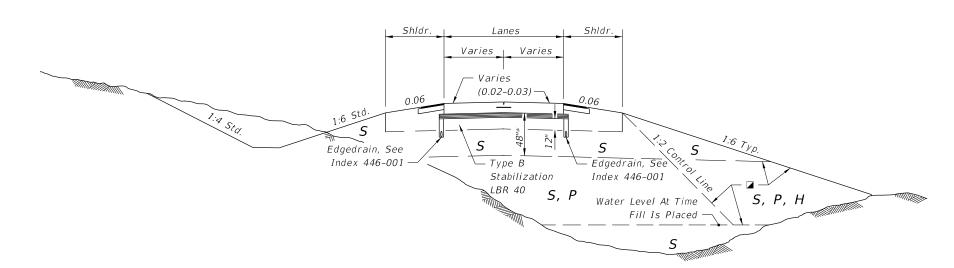
FDOT

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GENERAL NOTES AND FLEXIBLE PAVEMENT



= DIVIDED ROADWAYS=



= UNDIVIDED ROADWAY =

<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

REVISION 11/01/18

DESCRIPTION:

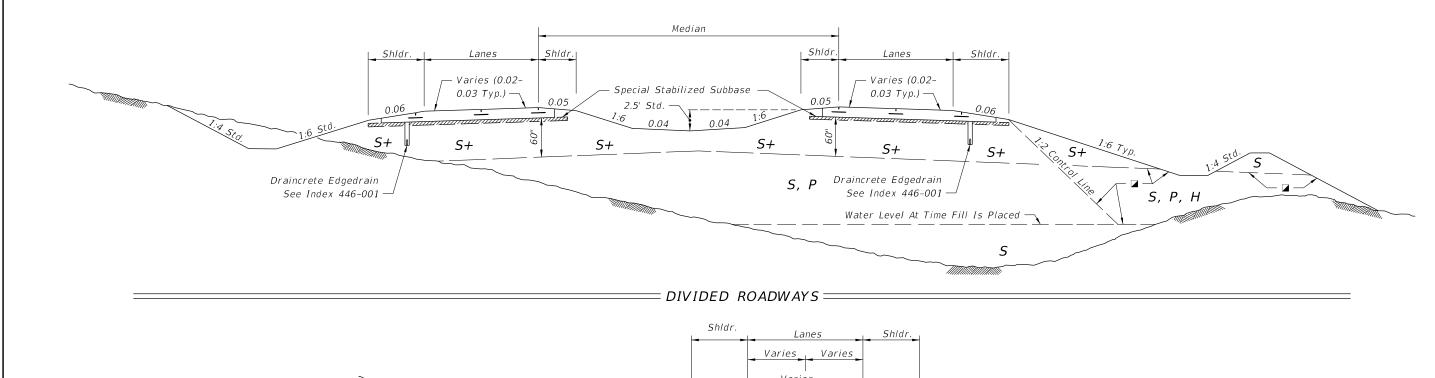
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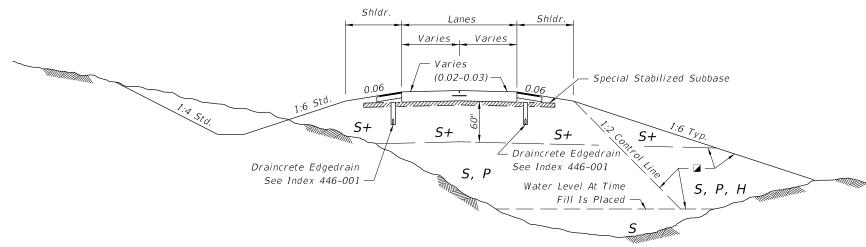
FY 2022-23 STANDARD PLANS

EMBANKMENT UTILIZATION

INDEX 120-001

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= UNDIVIDED ROADWAY =

<u>SYMBOL</u>	SOIL	CLASSIFICATION (AASHTO M 145)	
S	Select	A-1, A-3, A-2-4 **	
S+	Special Select	A-3 *** With Minimum Average Lab Permeability of 5×10^{-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 - SPECIAL SELECT SOIL OPTION

REVISION 11/01/18

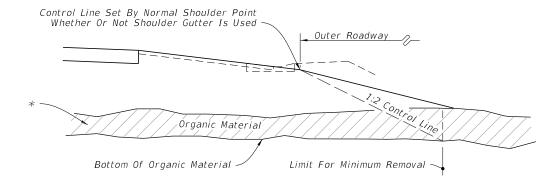
DESCRIPTION:

FDOT

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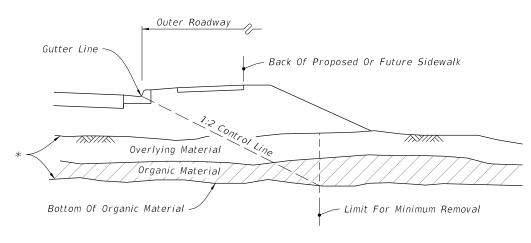


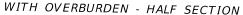
WITH OVERBURDEN - HALF SECTION

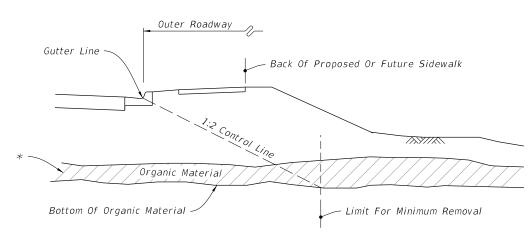
WITHOUT OVERBURDEN - HALF SECTION

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

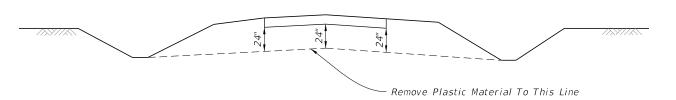
REVISION 11/01/17

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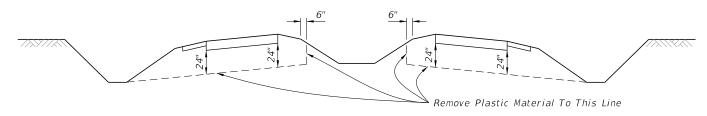
SUBSOIL EXCAVATION

INDEX 120-002

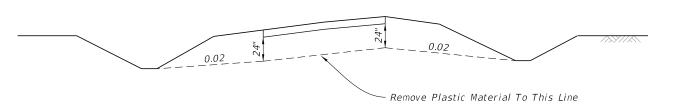
SHEET 1 of 2



TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON TANGENT



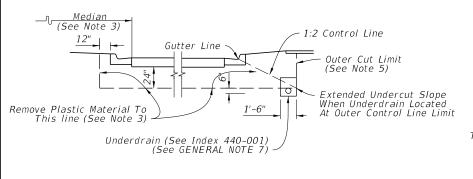
TYPICAL CUT SECTION ON SUPERELEVATION

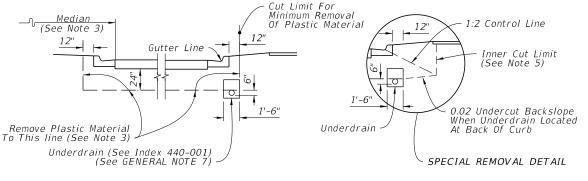
0.02 Remove Plastic Material To This Line

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





PREFERABLE REMOVAL

MINIMUM REMOVAL

NOTES:

- 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 indicate total removal of this material. If during construction it becomes apparent, due to normal required construction procedures, that it is impractical to leave the plastic material in the median, total removal of this material shall be approved by the Engineer.
- 4. Refer to roadway cross sections to determine whether minimum or preferable removal is used.
- 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 place underdrain at location shown for 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.

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

REMOVAL OF PLASTIC MATERIAL

REVISION 11/01/17

DESCRIPTION:

FDOT

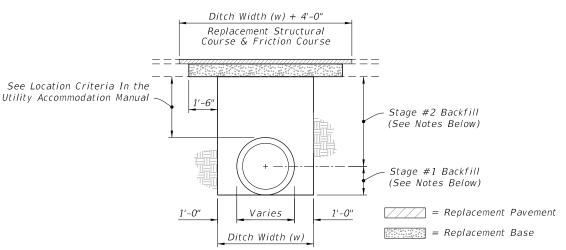
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SUBSOIL EXCAVATION

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SHEET

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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
- 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.

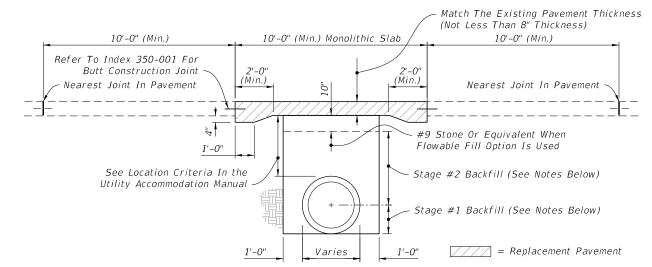
=FLEXIBLE PAVEMENT CUT=

GENERAL NOTES

- 1. The details provided in this Index apply to cases in which jack and bore or directional boring methods are not required
- 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 prevent pavement settlement
- 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 granular material.



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. (See Index 350-001)

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

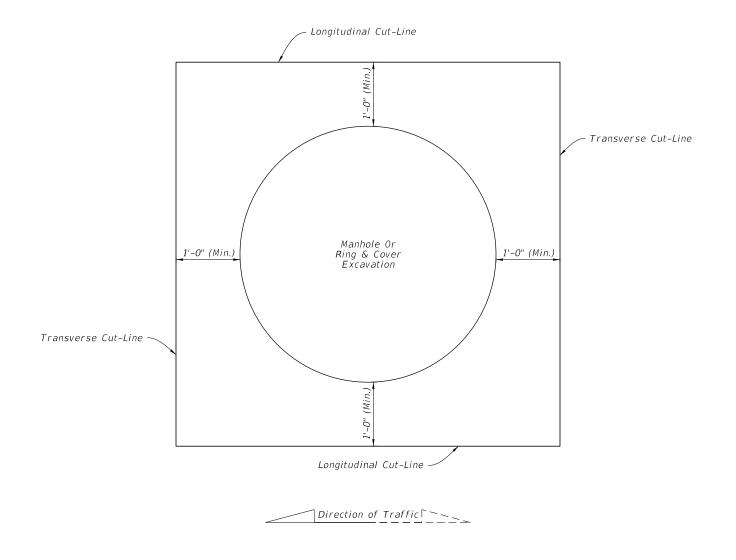
LAST REVISION 11/01/17



UTILITY ADJUSTMENTS THRU EXISTING PAVEMENT

INDEX 125-001

SHEET 1 of 2



= 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

LAST REVISION 11/01/17

DESCRIPTION:

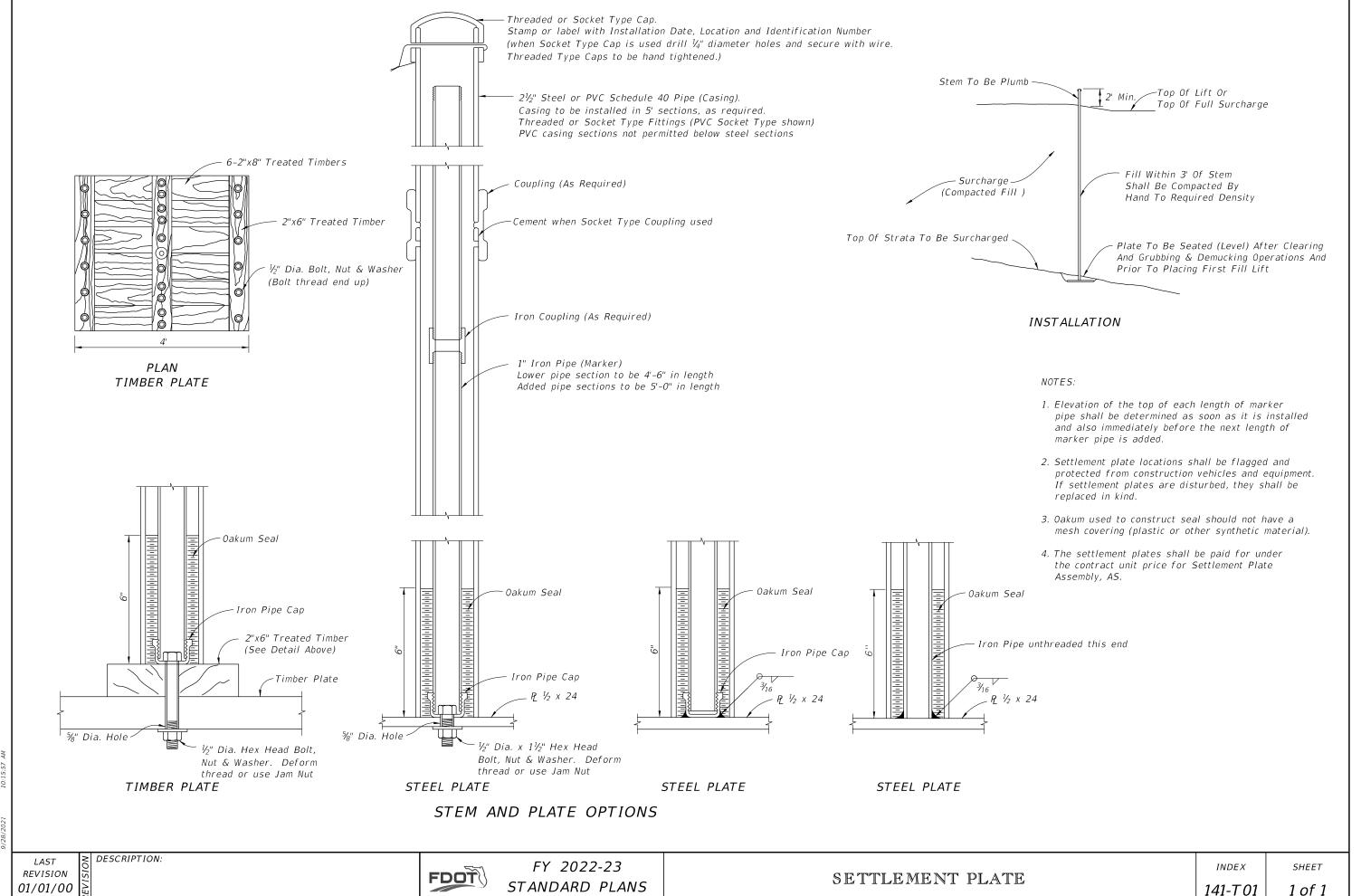
FY 2022-23 STANDARD PLANS

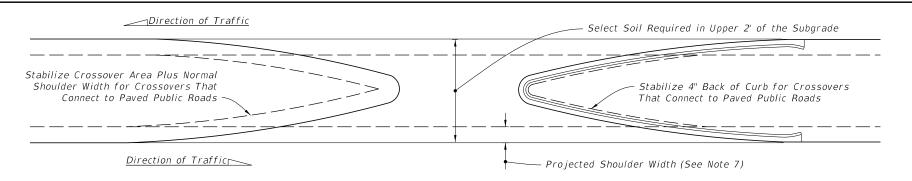
UTILITY ADJUSTMENTS THRU EXISTING PAVEMENT

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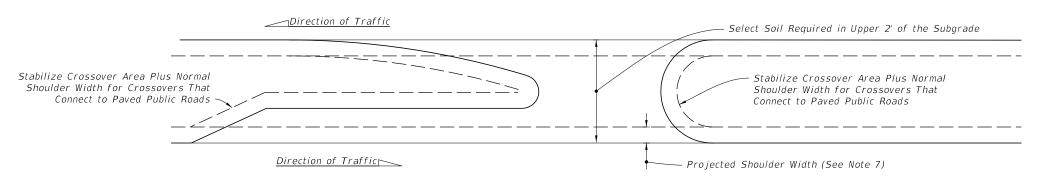
SHEET

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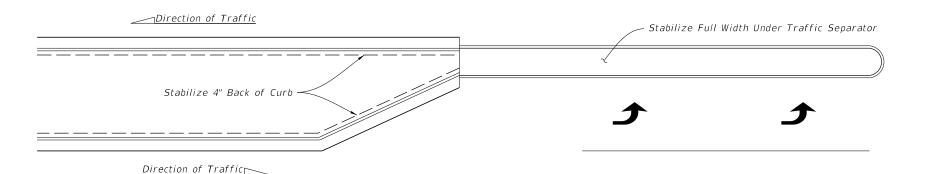




TYPICAL CROSSOVER



TURN LANE

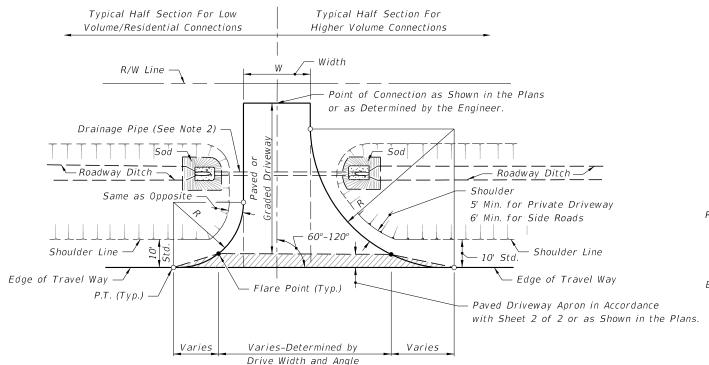


TRAFFIC SEPARATOR

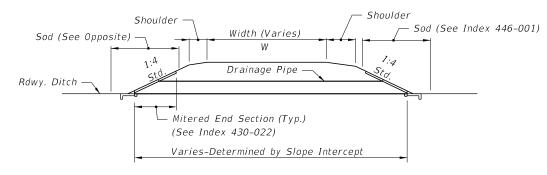
NOTES:

- 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.

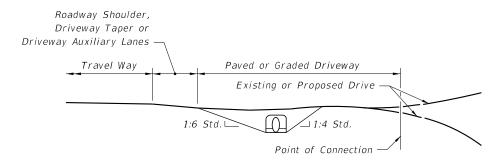
DESCRIPTION:



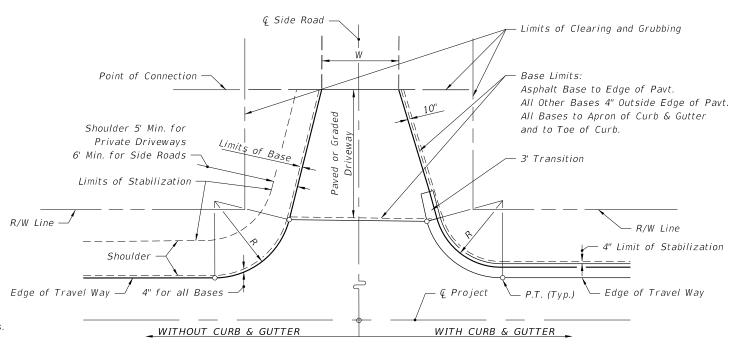
PLAN



DRAINAGE SECTION



DRIVEWAY PROFILE AND END VIEW



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

PLAN

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.

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DESCRIPTION:

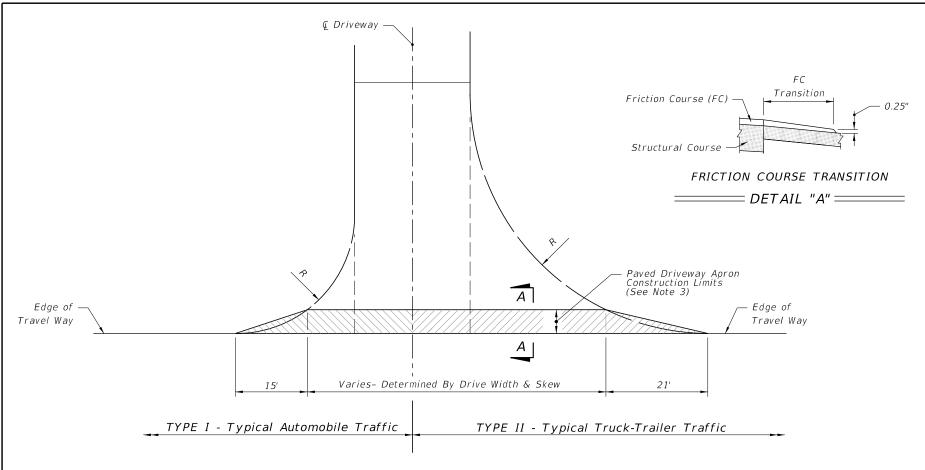
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PAVED AND GRADED DRIVEWAYS

INDEX

SHEET



DRIVEWAY TYPES =

AREAS FOR ONE 5' DEEP DDIVEWAY ADDOM (CV)

DRIVEWAY APRON (SY)									
Drive	Intersection								
Width	Nor	-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					
<i>32</i>	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					

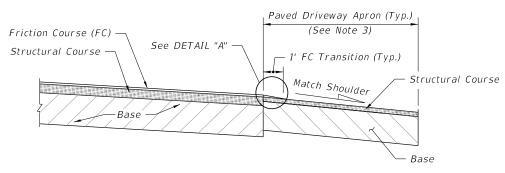
MATERIAL TYPES AND THICKNESSES FOR PAVED CONNECTIONS

Cauraa	Materials	Minimum Thickness (in.)				
Course	Materiais	Connections	Roadway*			
Structural	Asphaltic Concrete	1 1/2"	11/2"			
Bases	Optional Base (See Specification 285)	0.B.G. 2	0.B.G. 3			

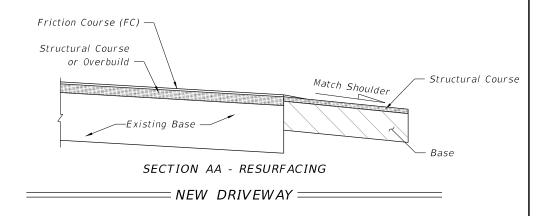
* Travel way flares (bypass lanes), auxiliary lanes serving more than a single connection, and all median crossovers including their auxiliary lanes and/or transition tapers.

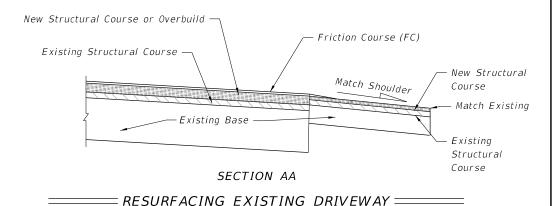
NOTES

- 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.

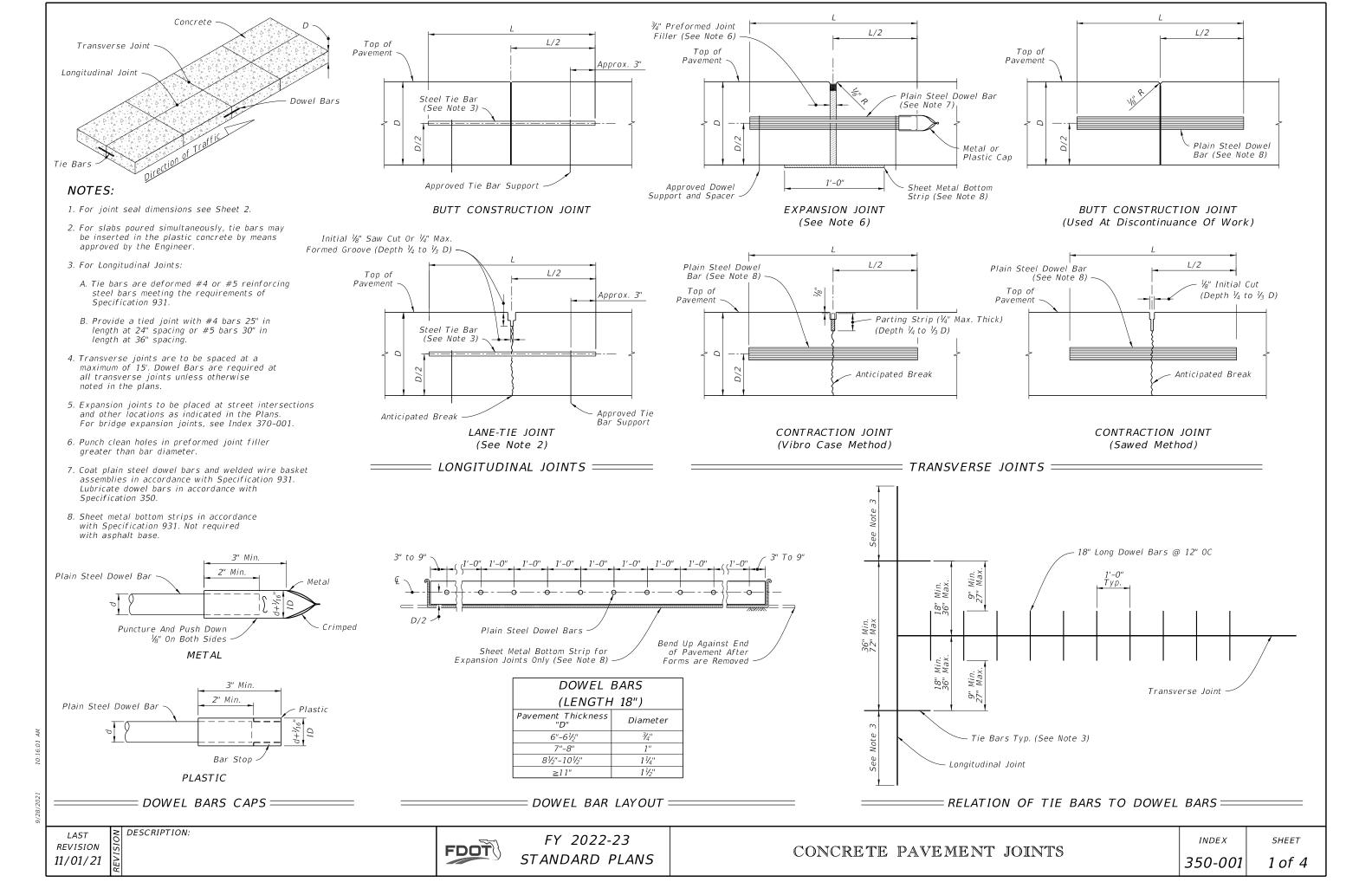
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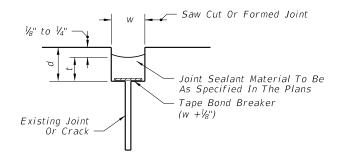
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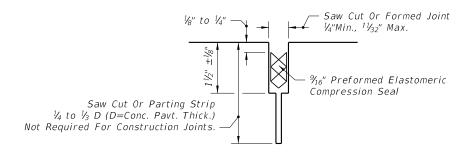
PAVED AND GRADED DRIVEWAYS

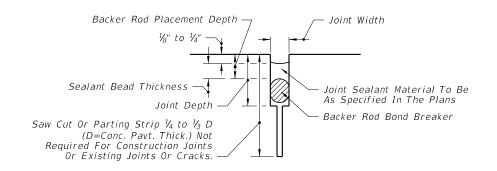
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Note: Dimension w will be shown in the plans or established by the Engineer based on field conditions. Dimension d will be constructed so that the shape factor w/t has a maximum value of 2.0 and a minimum value of 1.0.

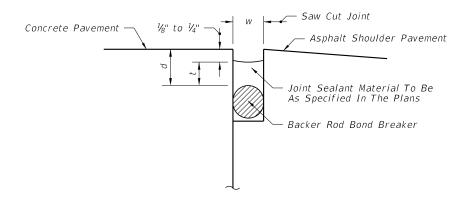
FOR NEW PROJECTS PREFORMED ELASTOMERIC COMPRESSION SEAL

FOR NEW AND REHABILITATION PROJECTS BACKER ROD BOND BREAKER

FOR REHABILITATION PROJECTS TAPE BOND BREAKER

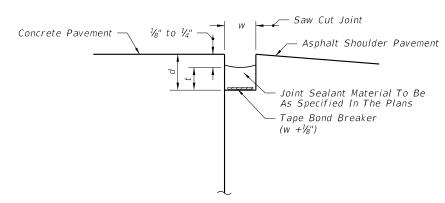
CONCRETE-CONCRETE JOINTS

 $d = w = \frac{3}{4}$ " Unless Specified Otherwise In The Plans



BACKER ROD BOND BREAKER

 $d = w = \frac{3}{4}$ " Unless Specified Otherwise In The Plans



TAPE BOND BREAKER

FOR NEW AND REHABILITATION PROJECTS; EITHER TAPE OR BACKER ROD BOND BREAKER REQUIRED; SHOULDER MUST BE REPAIRED IF PROPER JOINT SHAPE CAN NOT BE ATTAINED

CONCRETE-ASPHALT SHOULDER JOINTS

JOINT SEAL DIMENSIONS

BACKER ROD BOND BREAKER (CONCRETE-CONCRETE JOINTS)

	JOINT	DIMENSION	S (INCHES)	
JOINT	SEALANT BEAD	BACKER	MINIMUM JOINT	BACKER ROD PLACEMENT
WIDTH	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
1/2	1/4	5/8	1 1/4	1/2
5/8	⁵ / ₁₆	3/4	11/2	% ₁₆
3/4	3/8	1	13/4	5/8
7/8	7∕ ₁₆	11/8	13/4	11/16
1	1/2	1 1/4	2	3/4
>1	1/2	11/4+	2+	3/4

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.

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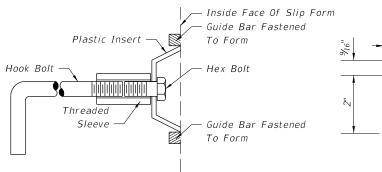
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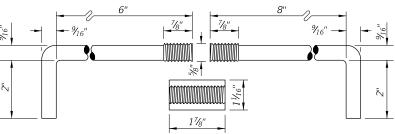
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SHEET

DESCRIPTION:

CONCRETE PAVEMENT JOINTS





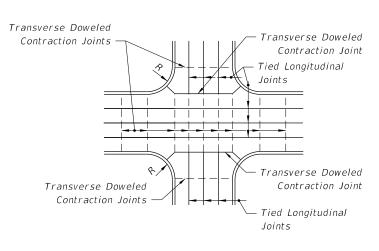
Note: After the concrete has set to the extent that the Keyway will retain its shape, the hex bolt and plastic insert shall be removed. The remaining portion of the hook bolt assembly shall be installed immediately prior to placing of concrete in the adjacent lane.

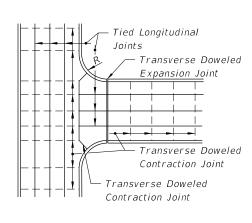
Anchor bolts shall be Grade C in accordance with ASTM A 307.

Threaded sleeves shall develop the full strength of the bolt and meet the material and thread requirements of ASTM A 563.

ALTERNATE KEYWAY AND HOOK BOLT

STEEL HOOK BOLT ASSEMBLY





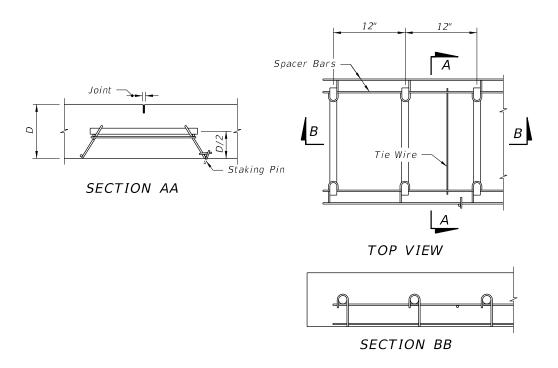
JOINT LAYOUT AT THRU INTERSECTION

JOINT LAYOUT AT 'T' INTERSECTIONS

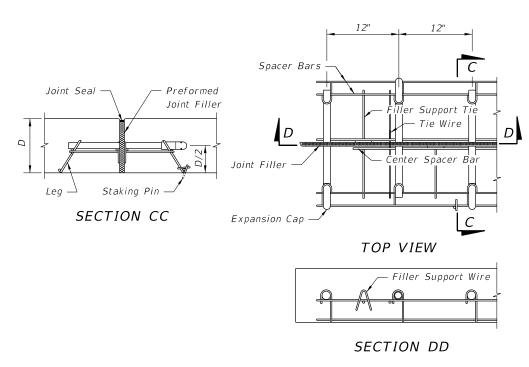
JOINT ARRANGEMENT

NOTES

- 1. Longitudinal joints will not be required for single lane pavement 14' or less in width. For entrance and exit ramp joint details, see Sheet 4.
- 2. Arrangement of longitudinal joints are to be as directed by the Engineer.
- 3. All manholes, meter boxes and other projections into the pavement shall be boxed-in with ½" preformed expansion joint material.



CONTRACTION ASSEMBLY



EXPANSION ASSEMBLY

Note: Proprietary contraction and expansion assemblies may be used. Products shall be introduced to the State Construction Office in accordance with section (C) of the Product Evaluation Procedure.

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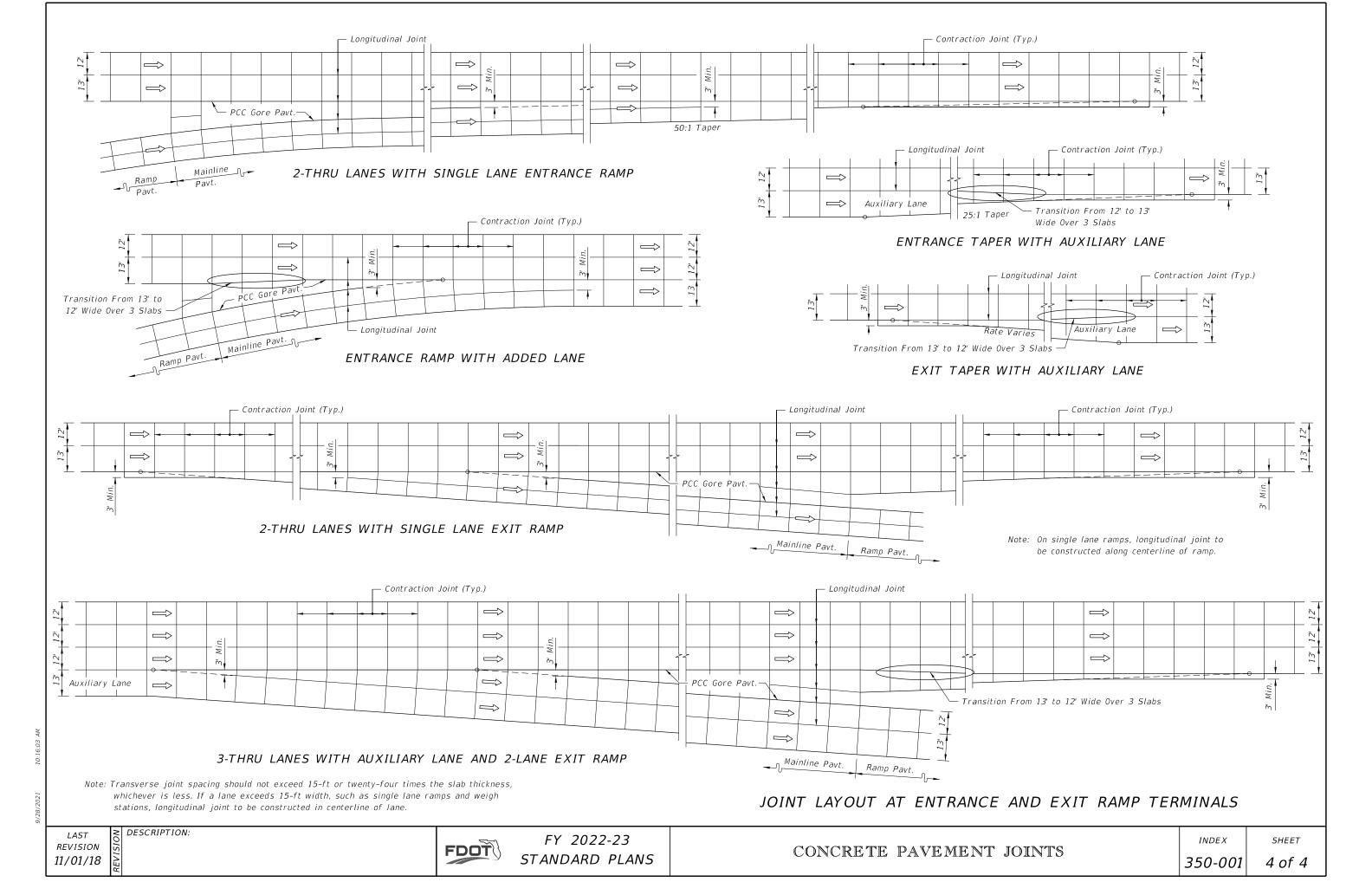
DESCRIPTION:



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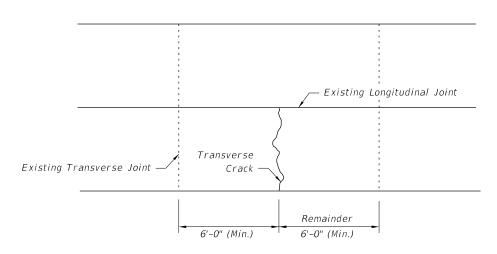


FIGURE 10.2 - REPAIR METHOD: NONE OR CLEAN AND SEAL

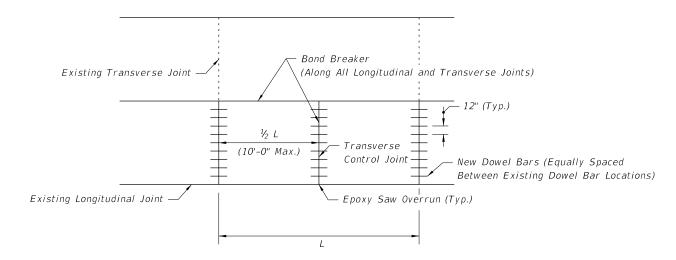


FIGURE 10.3 - FULL SLAB FULL DEPTH REPLACEMENT

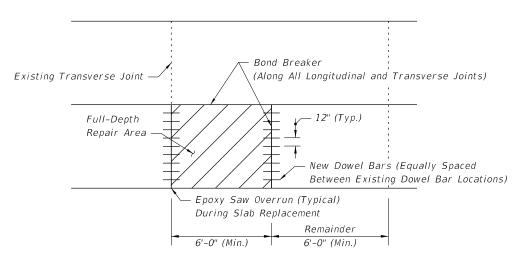


FIGURE 10.4 - PARTIAL SLAB FULL DEPTH REPLACEMENT

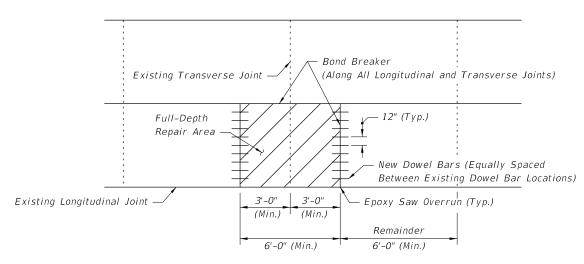


FIGURE 10.5 - FULL-DEPTH REPAIR ON BOTH SIDES OF THE JOINT

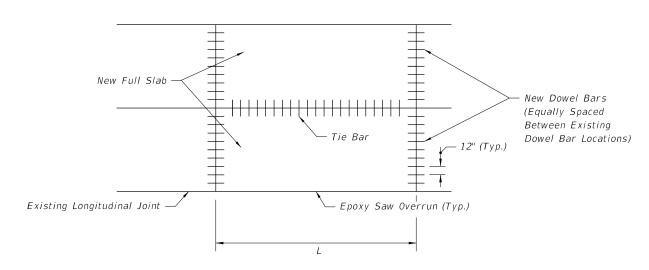


FIGURE 10.6 - MULTIPLE SLAB FULL DEPTH REPLACEMENT

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.

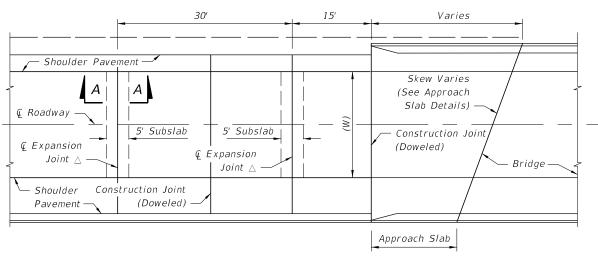
9/28/2021

DESCRIPTION:

SLAB REPAIR AND REPLACEMENT CRITERIA

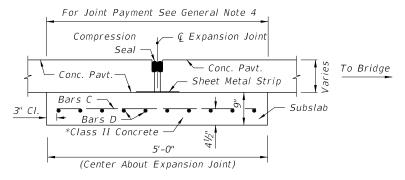
DISTRESS PATTERN		SEVERITY/DESCRIPTION	REPAIR METHOD	REFERENCE
CRACKING				
	Light	$<\!$	None	Figure 10.2
Longitudinal	Moderate	$\frac{1}{8}$ " <width <3"="" <\frac{1}{2}",="" spalling="" td="" wide<=""><td>Clean and Seal</td><td>Figure 10.2</td></width>	Clean and Seal	Figure 10.2
	Severe	width $>\frac{1}{2}$ ", spalling >3 " faulting $>\frac{1}{2}$ "	Replace	Figure 10.3
	Light	$<\!V_{\!8}$ ", no faulting, spalling $<\!V_{\!2}$ " wide	None	Figure 10.2
Transverse	Moderate	$\frac{1}{8}$ " <width <<math="">\frac{1}{2}", spalling <3" wide</width>	Clean and Seal	
	Severe	width $>\frac{1}{2}$ ", spalling >3 " faulting $>\frac{1}{2}$ "	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 ith the direction of traffic.	Full Depth	Figure 10.4 and 10.5
Intersecting Random Cracks (Shattered Slab)	Cracking pa	tterns 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	$1\frac{1}{2}$ " <spall <="" <3",="" <math="" width="">\frac{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 width < 3", < $\frac{1}{3}$ slab depth, < 12" in length		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	1	s of surface pavement broken loose, normally ranging in. diameter and $lac{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		s of surface pavement broken loose, normally er 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	
-	Moderate	4 <faulting 32"<="" <16="" td=""><td>Grind</td><td></td></faulting>	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	
Water Bleeding Or Pumping	Seeping or ejection of water through joints or cracks.		Install appropriate drainage, edge drain, permeable subbase, reseal joints, etc.	N/A
Blowups		rement 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.



	REIN	FOR	CING	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.

Concrete Rigid Shoulder Pavt. Pavt. Sheet Metal Strip

Sheet Metal Strip

RIGID SHOULDER PAVEMENT

SODDED SHOULDER OR FLEXIBLE SHOULDER PAVEMENT

Subslab

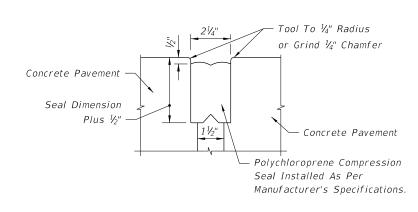
= EXPANSION JOINT =

NOTES:

- 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.
- Use a minimum 16 gage steel, 12" wide sheet metal strip, Galvanized in accordance with ASTM A-526, Coating Designation G90.

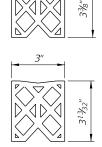
Compression Seal

Concrete Pavt.



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

Subslab



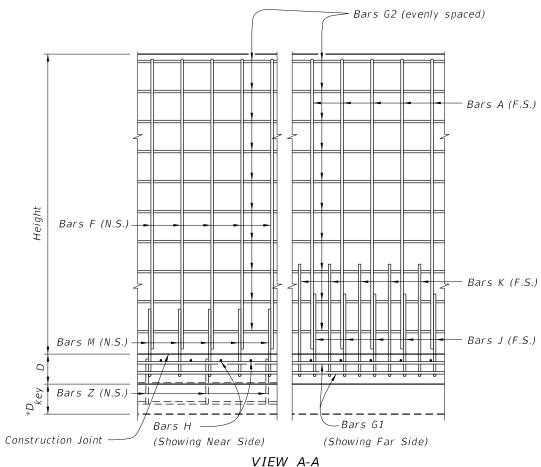
FY 2022-23
STANDARD PLANS

BRIDGE APPROACH EXPANSION JOINT CONCRETE PAVEMENT WITH SPECIAL SELECT SOIL BASE

INDEX

SHEET

370-001 1 of 1



(Shear key shown dashed)

NOTES

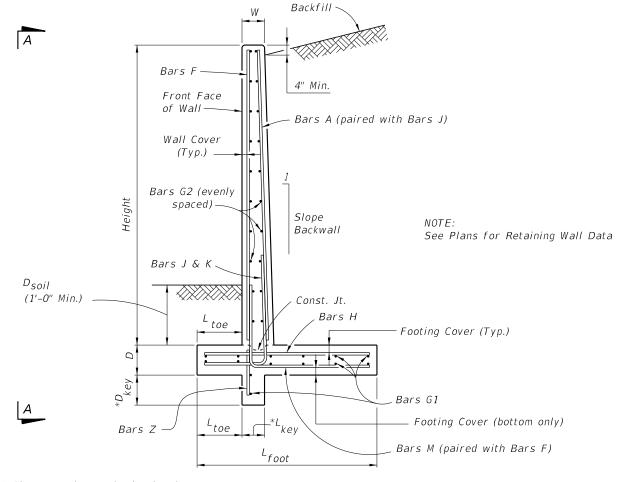
TRAFFIC RAILINGS OR PARAPETS:

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:

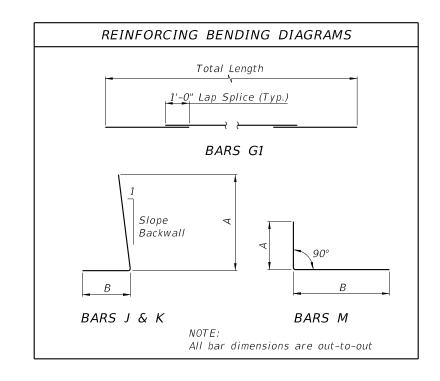
DESCRIPTION:

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

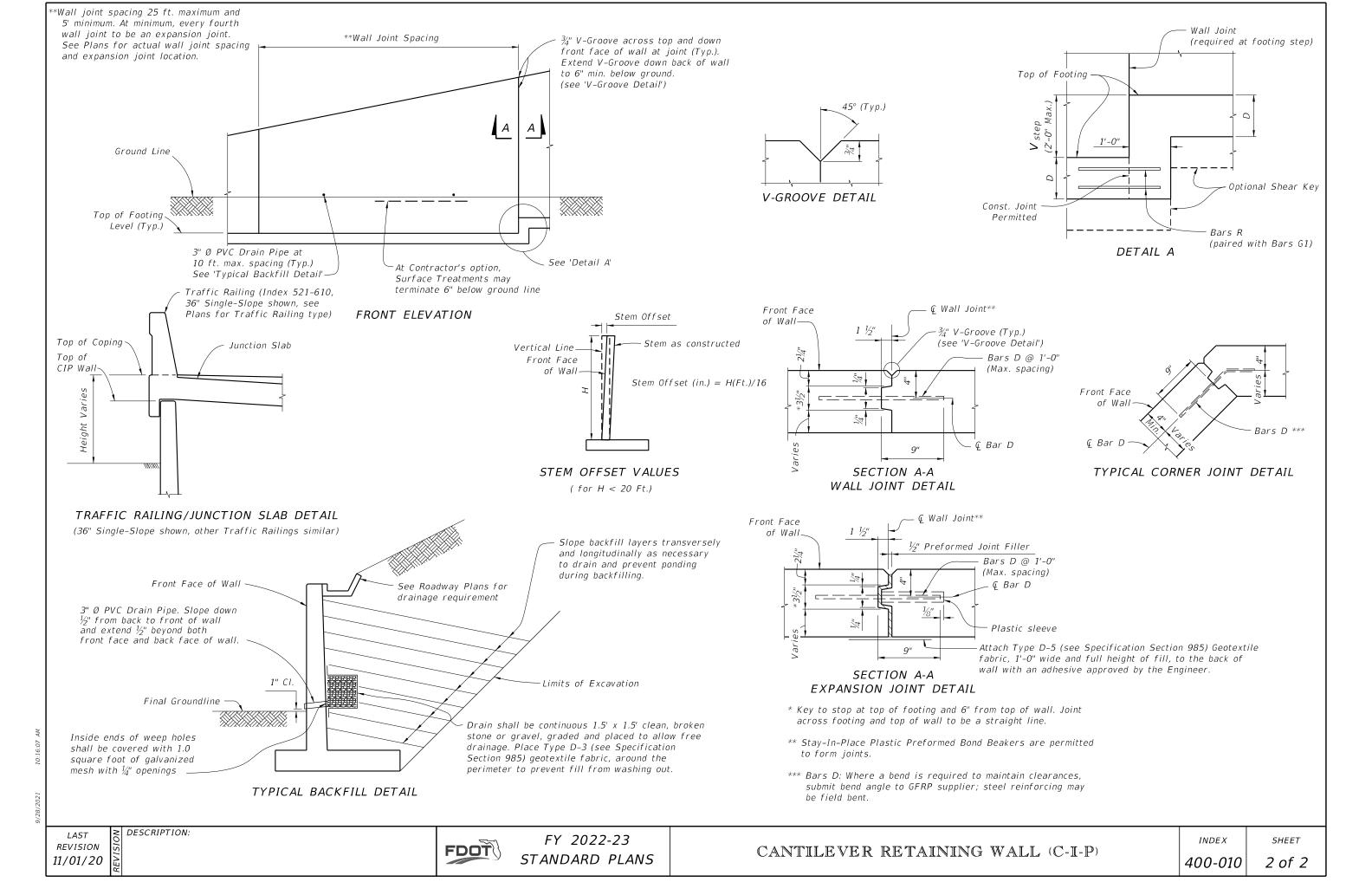


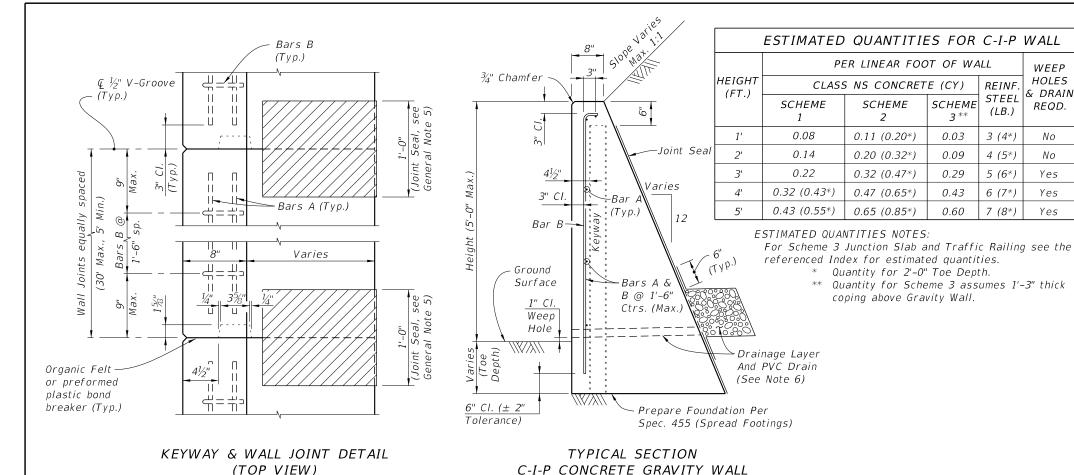
LAST **REVISION** 11/01/20

FDOT

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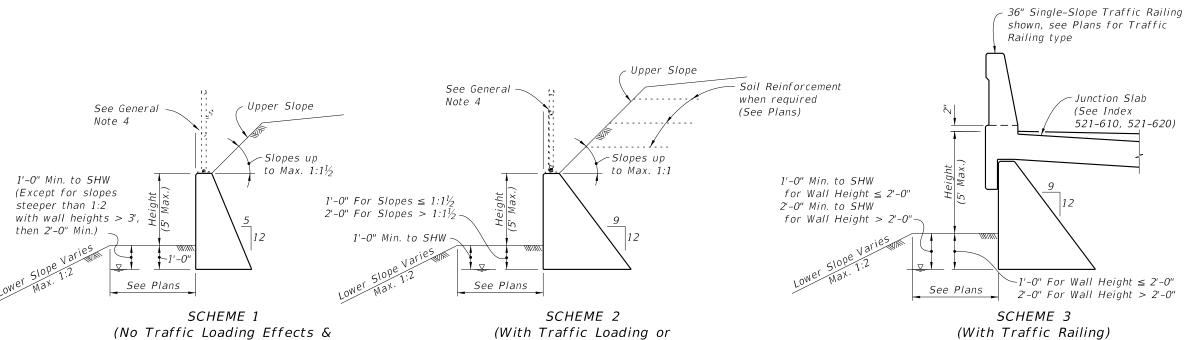
SHEET



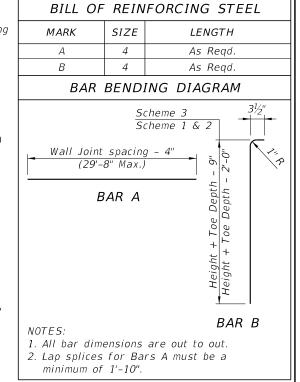


GENERAL NOTES

- 1. C-I-P Gravity Walls constructed as extensions of reinforced concrete retaining walls, except walls of proprietary designs, shall have the same face texture and finish as the reinforced concrete retaining wall.
- 2. Concrete for Gravity Wall shall be Class NS per Section 347. Concrete for Scheme 3 Junction Slab and Traffic Railing shall be Class II per Section 346, unless otherwise specified in the plans.
- 3. Reinforcing steel shall meet the requirements of Specification Section 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.
- When required, for adjunct guiderail, see Index 515-070 or 515-080 as appropriate. For adjunct Type B fence see Index 550-002.
- Joint Seal: Organic Felt bond breaker in accordance with Specification Section 400 or Type D-5 geotextile fabric in accordance with Specification Section 985. Mop all contact surfaces of concrete and Organic Felt or geotextile fabric with cut-back asphalt. Stop Organic Felt or geotextile fabric 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 fabric in accordance with Specification Section 985. 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 fabric 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.



Upper Slopes $> 1:1\frac{1}{5}$)



REVISION 11/01/17

DESCRIPTION:

Upper Slopes $\leq 1:1\frac{1}{2}$)

FDOT

FY 2022-23 STANDARD PLANS

INDEX 400-011

SHEET

GRAVITY WALL

WEEP

HOLES

& DRAIN

REQD.

No

No

Yes

Yes

Yes

REINF.

STEEL

(LB.)

3 (4*)

4 (5*)

5 (6*)

6 (7*)

7 (8*)

SCHEME

3 **

0.03

0.09

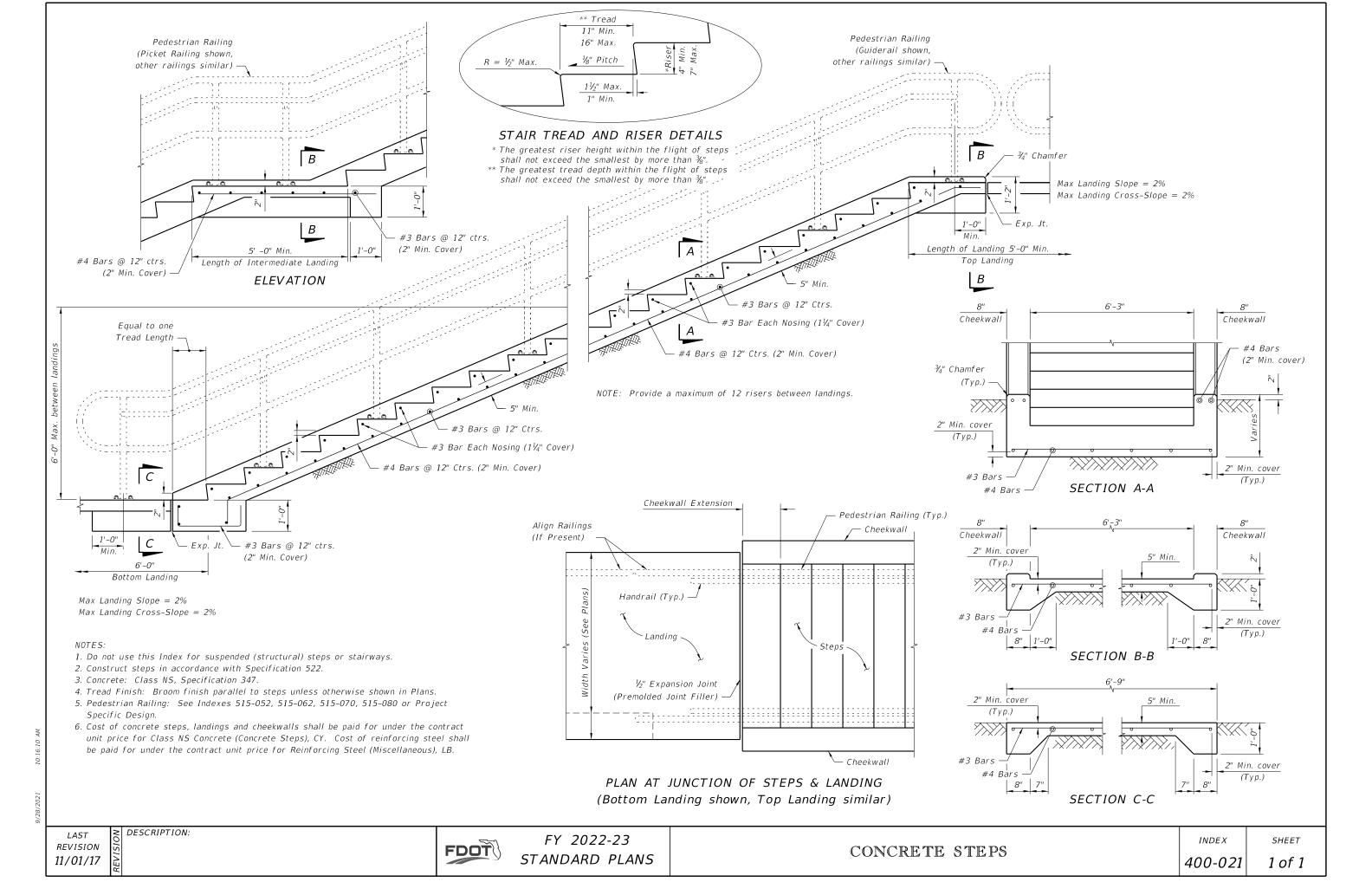
0.29

0.43

0.60

2

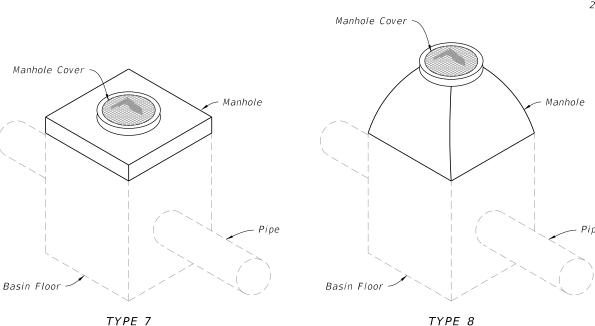
1 of 1

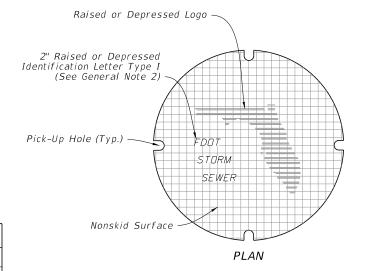


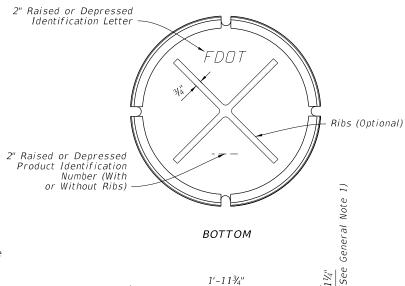
GENERAL NOTES:

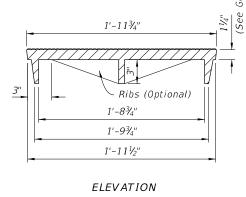
- 1. Use a 1-piece cover, unless the 2-piece cover is called for in the Plans, except at inlets and manholes with sump bottoms. Use the 2-piece cover when the sump depth exceeds 2', unless otherwise noted.
- 2. Include "Adjustable" on the cover for Type I manhole adjustable frames.
- 3. For square or 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 0D 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 Filter Fabric 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						

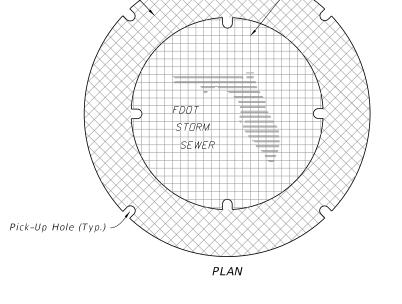


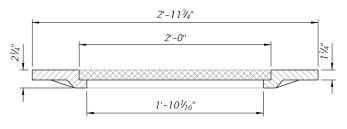






1-PIECE COVER





ELEVATION

2-PIECE COVER

Nonskid Surface

MANHOLE TOPS =

= MANHOLE COVERS =

REVISION 11/01/20

DESCRIPTION:



FY 2022-23 STANDARD PLANS

SUPPLEMENTARY DETAILS

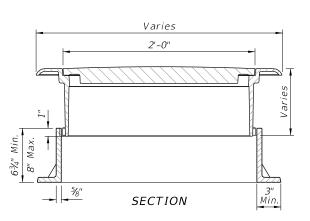
INDEX 425-001 SHEET

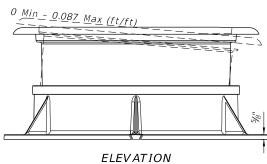
Standard Cover

	V V L 1	0111 01	CASI	11103	(10)					
Framo	2'-0"	OPENING		3'-0" OPENING						
Frame Type	Eramo	Cover (Std.)	Eramo	2	Piece Co	ver				
rype	rranie	Cover (3ta.)	rranne	Inside	Out side	Total				
I	155	190	220	190	220	410				
ΙΙ	145	190	255	190	220	410				
III	90	190	180	190	220	410				

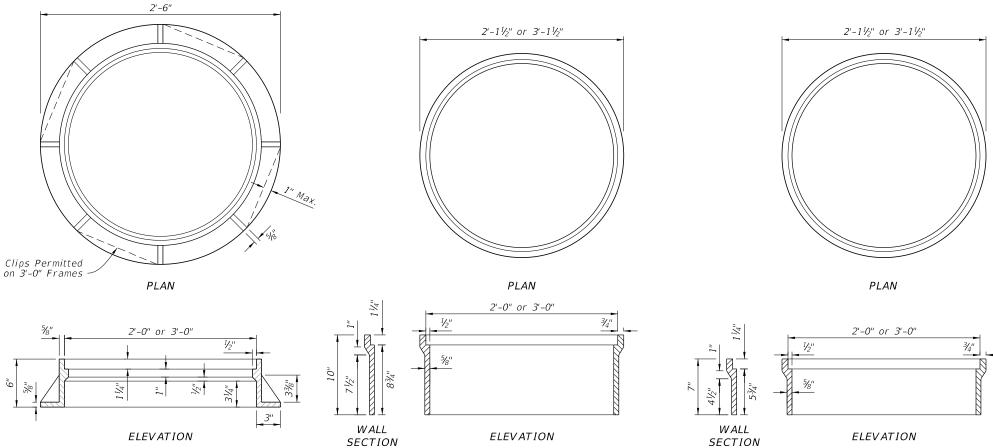
Frame Type I in Table 1, includes Adjustable frames.

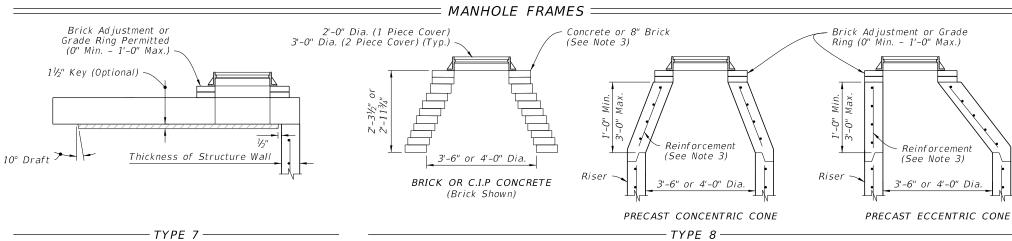






TYPE I ADJUSTABLE FRAME





TYPE II

(For Curb Inlets Types 1, 2, 3, & 4)

NOTES:

TYPE I

(For Manholes)

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 slab openings when 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 11/01/20

DESCRIPTION:

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SUPPLEMENTARY DETAILS

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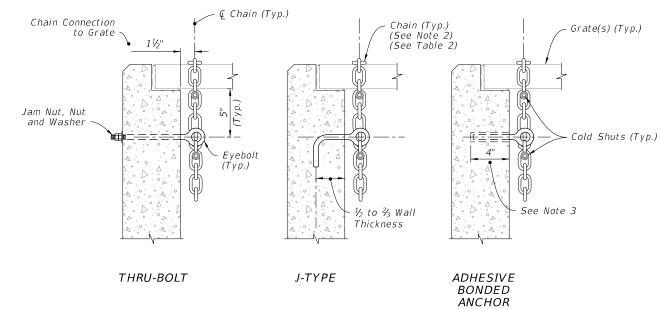
TYPE III

(For Curb Inlets Types 7 & 8)

SHEET

REVISION

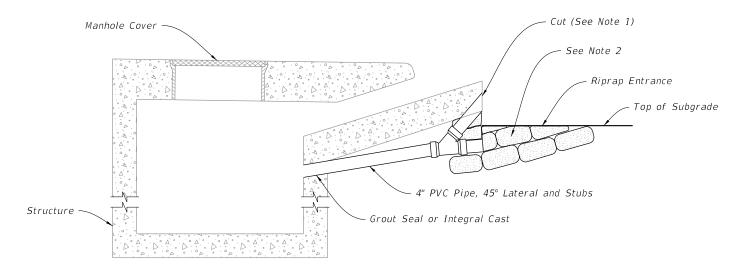
FOR DRAINAGE STRUCTURES



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 $\%_{16}$ " Chain and $\%_{16}$ " 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.

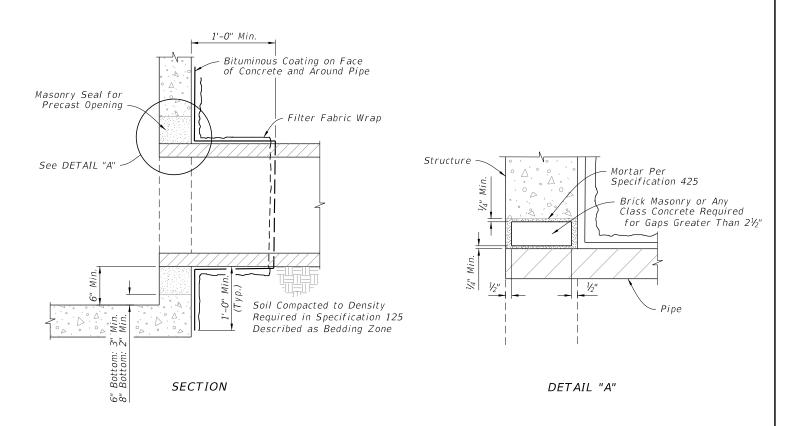
TABLE 2 EYEBOLT AND CHAIN REQUIREMENTS							
Index Number	Inlet Type	Eye- Bolts	Length of Chain	Handling & Remarks			
425 020	1	1	4'-0"	Slide & Spin			
425-030	2	2	2 @ 4'-0"	Slide & Spin			
425-031	N/A	1	3'-8"	Slide or Slide & Spin			
425-032	N/A	1	4'-0"	Slide & Spin			
425-040	S	1	4'-0"	Slide & Spin			
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			



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 =



= PIPE TO STRUCTURE FILTER FABRIC WRAP =

LOCKING GRATES TO INLETS

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

REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

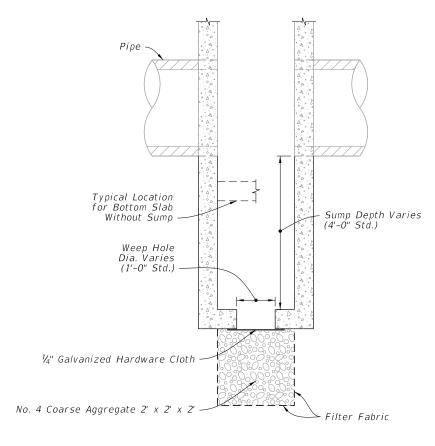
SUPPLEMENTARY DETAILS

INDEX 425-001

SHEET

NOTE: For all structures unless excluded by special detail.

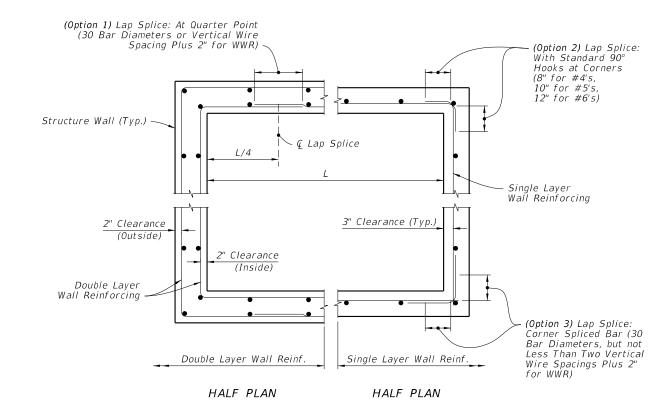
= DRAINAGE STRUCTURE INVERT =



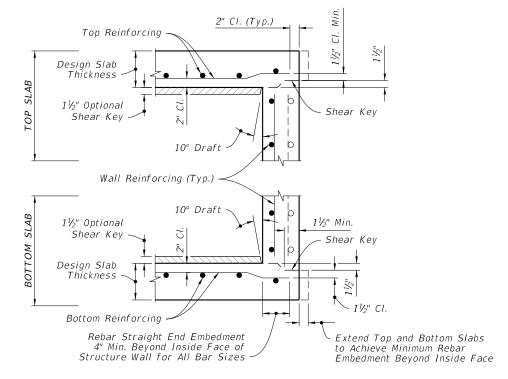
NOTES:

- 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.

= 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

LAST REVISION 11/01/20

DESCRIPTION:



FY 2022-23 STANDARD PLANS SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES

INDEX 425-001 SHEET

001 4 of 8

			EXAMPLE TABLE	OF EQ	UIVALENT STEEL	AREA			
SCHEDULE	GRADE 60 REINFORCING BAR		EQUIVALENT GRAD REINFORCING B		EQUIVALENT 65 KSI WELDED WIRE REINFO		EQUIVALENT 70 KSI DEFORMED WELDED WIRE REINFORCEMENT		
	Bar Size & Spacing	Steel Area (in²/ft)	Bar Size & Spacing	Steel Area (in²/ft)	Style Designation	Steel Area (in²/ft)	Style Designation	Steel Area (in²/ft)	
А	#3 @ 6½" Ctrs. #4 @ 12" Ctrs.	0.20	#3 @ 4½" Ctrs. #4 @ 8" Ctrs. #5 @ 12" Ctrs.	0.30	3"x3"-W4.6xW4.6 4"x4"-W6.2xW6.2 6"x6"-W9.2xW9.2	0.1846	3"x3"-D4.3xD4.3 4"x4"-D5.7xD5.7 6"x6"-D8.6xD8.6	0.1714	
В	#3 @ 5½" Ctrs. #4 @ 10" Ctrs.	0.24	#3 @ 3½" Ctrs. #4 @ 6½" Ctrs. #5 @ 10" Ctrs.	0.36	3"x3"-W5.5xW5.5 4"x4"-W7.4xW7.4 6"x6"-W11.1xW11.1	0.2215	3"x3"-D5.1xD5.1 4"x4"-D6.9xD6.9 6"x6"-D10.3xD10.3	0.2057	
Special 1	#3 @ 5" Ctrs #4 @ 9" Ctrs.	0.267	#3 @ 3" Ctrs. #4 @ 6" Ctrs. #5 @ 9" Ctrs.	0.40	3"x3"-W6.2xW6.2 4"x4"-W8.2xW8.2 6"x6"-W12.3xW12.3	0.2465	3"x3"-D5.7xD5.7 4"x4"-D7.6xD7.6 6"x6"-D11.4xD11.4	0.2289	
С	#3 @ 3½" Ctrs. #4 @ 6½" Ctrs. #5 @ 10" Ctrs.	0.37	#4 @ 4" Ctrs. #5 @ 6½" Ctrs. #6 @ 9½" Ctrs.	0.555	3"x3"-W8.5xW8.5 4"x4"-W11.4xW11.4 6"x6"-W17.1xW17.1	0.3415	3"x3"-D7.9xD7.9 4"x4"-D10.6xD10.6 6"x6"-D15.9xD15.9	0.3171	
D	#4 @ 4½" Ctrs. #5 @ 7" Ctrs. #6 @ 10" Ctrs.	0.53	#4 @ 3" Ctrs. #5 @ 4½" Ctrs. #6 @ 6½" Ctrs.	0.795	3"x3"-W12.2xW12.2 4"x4"-W16.3xW16.3 6"x6"-W24.5xW24.5	0.4892	3"x3"-D11.4xD11.4 4"x4"-D15.1xD15.1 6"x6"-D22.7xD22.7	0.4543	
Е	#4 @ 3" Ctrs. #5 @ 5" Ctrs. #6 @ 7" Ctrs.	0.73	#5 @ 3½" Ctrs. #6 @ 4½" Ctrs. #7 @ 6½" Ctrs.	1.095	3"x3"-W16.8xW16.8 4"x4"-W22.5xW22.5 6"x6"-W33.7xW33.7	0.6738	3"x3"-D15.6xD15.6 4"x4"-D20.9xD20.9 6"x6"-D31.3xD31.3	0.6257	
F	#5 @ 3½" Ctrs. #6 @ 5" Ctrs. #7 @ 7" Ctrs.	1.06	#6 @ 3" Ctrs. #7 @ 4½" Ctrs. #8 @ 6" Ctrs.	1.59	3"x3"-W24.5xW24.5 4"x4"-W32.6xW32.6 6"x6"-W48.9xW48.9	0.9785	3"x3"-D22.7xD22.7 4"x4"-D30.3xD30.3 6"x6"-D45.4xD45.4	0.9086	
Special 2	#5 @ 3" Ctrs. #6 @ 4" Ctrs. #7 @ 5½" Ctrs.	1.24	#7 @ 4" Ctrs. #8 @ 5" Ctrs.	1.86	3"x3"-W28.6xW28.6 4"x4"-W38.2xW38.2 6"x6"-W57.2xW57.2	1.1446	3"x3"-D26.6xD26.6 4"x4"-D35.4xD35.4 6"x6"-D53.1xD53.1	1.0629	
G	#6 @ 3½" Ctrs. #7 @ 5" Ctrs.	1.46	#7 @ 3" Ctrs. #8 @ 4" Ctrs.	2.19	3"x3"-W33.7xW33.7 4"x4"-W44.9xW44.9	1.3477	3"x3"-D31.3xD31.3 4"x4"-D41.7xD41.7	1.2514	

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

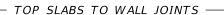
When an increased area of reinforcing is provided, the maximum bar spacing may be increased by the squared ration of increased steel area, but not to exceed 12":

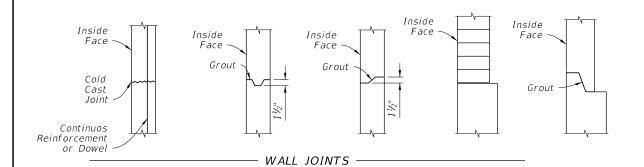
Max. Bar Spacing Provided ≤=Max. Bar Spacing Required x $\left(\frac{Steel\ Area\ Provided}{Min.\ Steel\ Area\ Required}\right)^2$

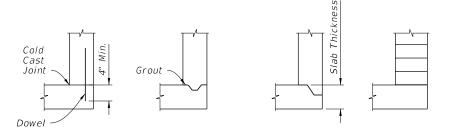
Use wire no smaller than than W3.1 or D4.0, or larger and with spacing 8" or less. Use bar reinforcement displaying the minimum yield designation grade mark, or either the number 60 or one (1) grade mark line to be acceptable at the higher value. Use maximum bar spacing no greater than two (2) times 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







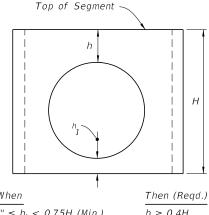
NOTES:

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.

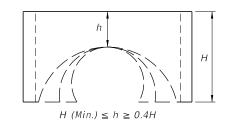
BOTTOM SLAB TO WALL JOINTS

- 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 =



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

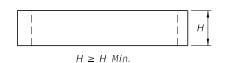
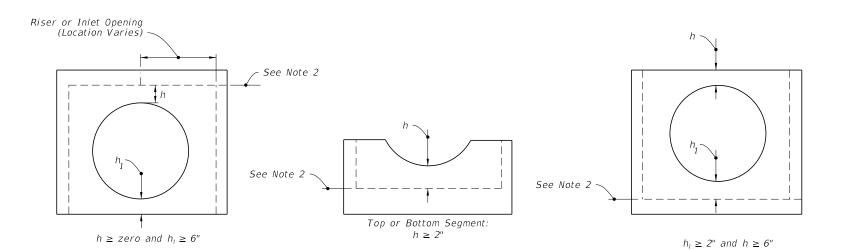


TABLE 3						
Minimum Value for H						
H (min.)	Box or Riser Diameter					
1'-0"	3'-6" & 4'-0"					
1'-6"	5'-0" & 6'-0"					
2'_0"	>6'-0"					

RISER SEGMENTS OTHER THAN DOWEL



NOTES:

- 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

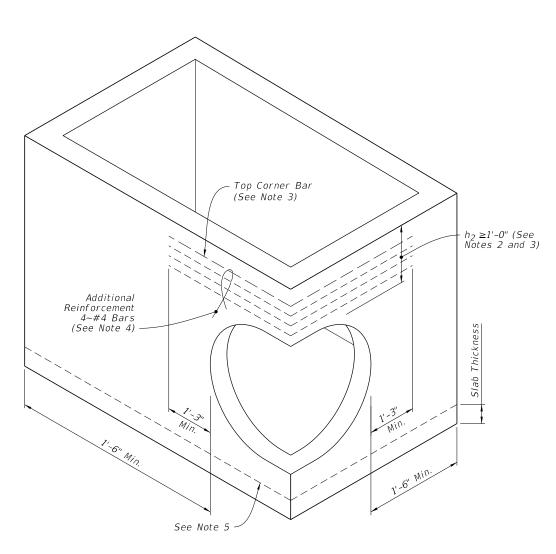
DESCRIPTION:

FY 2022-23 STANDARD PLANS

SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES

INDEX 425-001

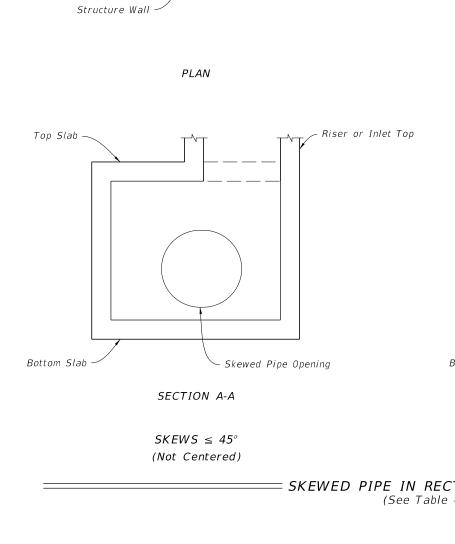
SHEET 6 of 8





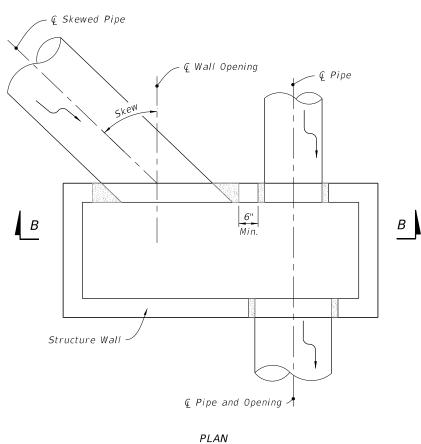
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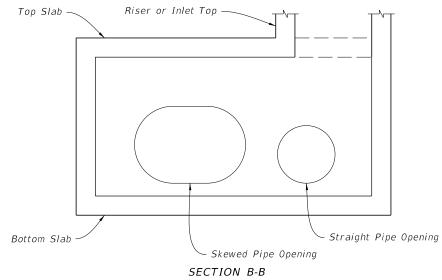
- 1. Submit Shop Drawings of corner openings for approval by the Engineer.
- 2. h₂ may be less than 1'-0" when a minimum 1'-0" deep segment, 8" slab or curb inlet is provided above the corner opening.
- 3. For inlet segments at finish grade elevation, substitute a #8 Bar for the top corner bar when $1'-0'' \le h_2 < 2'-0''$.
- 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.



© Pipe and Structure

<u>A</u>





SKEWS > 45° (Not Centered)

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

= PIPE OPENING AT CORNER =

SKEWED PIPE IN RECTANGULAR STRUCTURES

REVISION 11/01/20

FDOT

FY 2022-23 STANDARD PLANS

SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES

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€ Skewed Pipe

Α

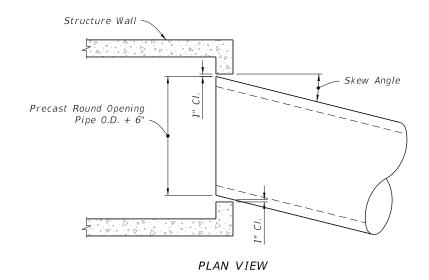


TABLE 4 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS													
	WALL		PIPE SIZE										
	THICKNESS	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM	8"	19°	17°	16°	16°	15°	14°	14°	13°	13°	13°	12°	12°
SKEW ANGLE	6"	21°	20°	18°	17°	17°	16°	15°	15°	14°	14°	13°	13°

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 =

Horizontal Wall Reinforcement
(Vertical Wall Reinforcement
Not Shown for Clarity)

Precast Opening
Pipe 0.D. + 6"

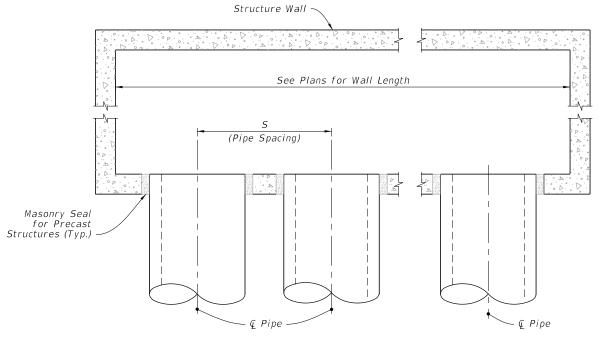
PLAN VIEW

NOTE:

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.

= MULTIPLE PIPE CONNECTIONS - PRECAST ROUND STRUCTURES =





SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS						
PIPE	PIPE					
SIZE	SPACING					
JIZL	<i>(S)</i>					
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"					

TABLE 5 - MINIMUM

PLAN VIEW

MULTIPLE PARALLEL PIPE CONNECTIONS - RECTANGULAR STRUCTURES =

MISCELLANEOUS PIPE CONNECTION DETAILS

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

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SUPPLEMENTARY DETAILS FOR DRAINAGE STRUCTURES

INDEX 425-001

SHEET

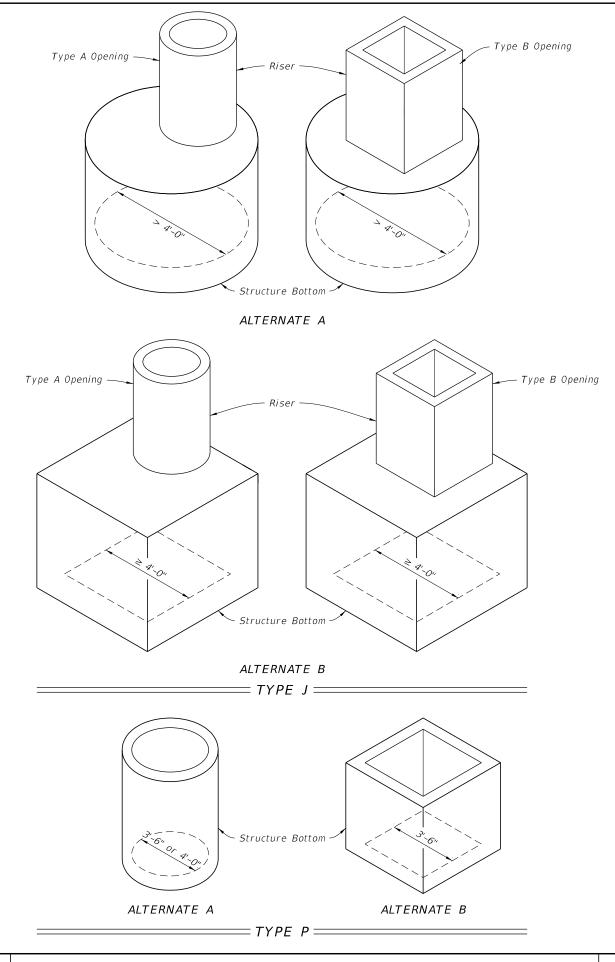
GENERAL NOTES:

- 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



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DESCRIPTION:



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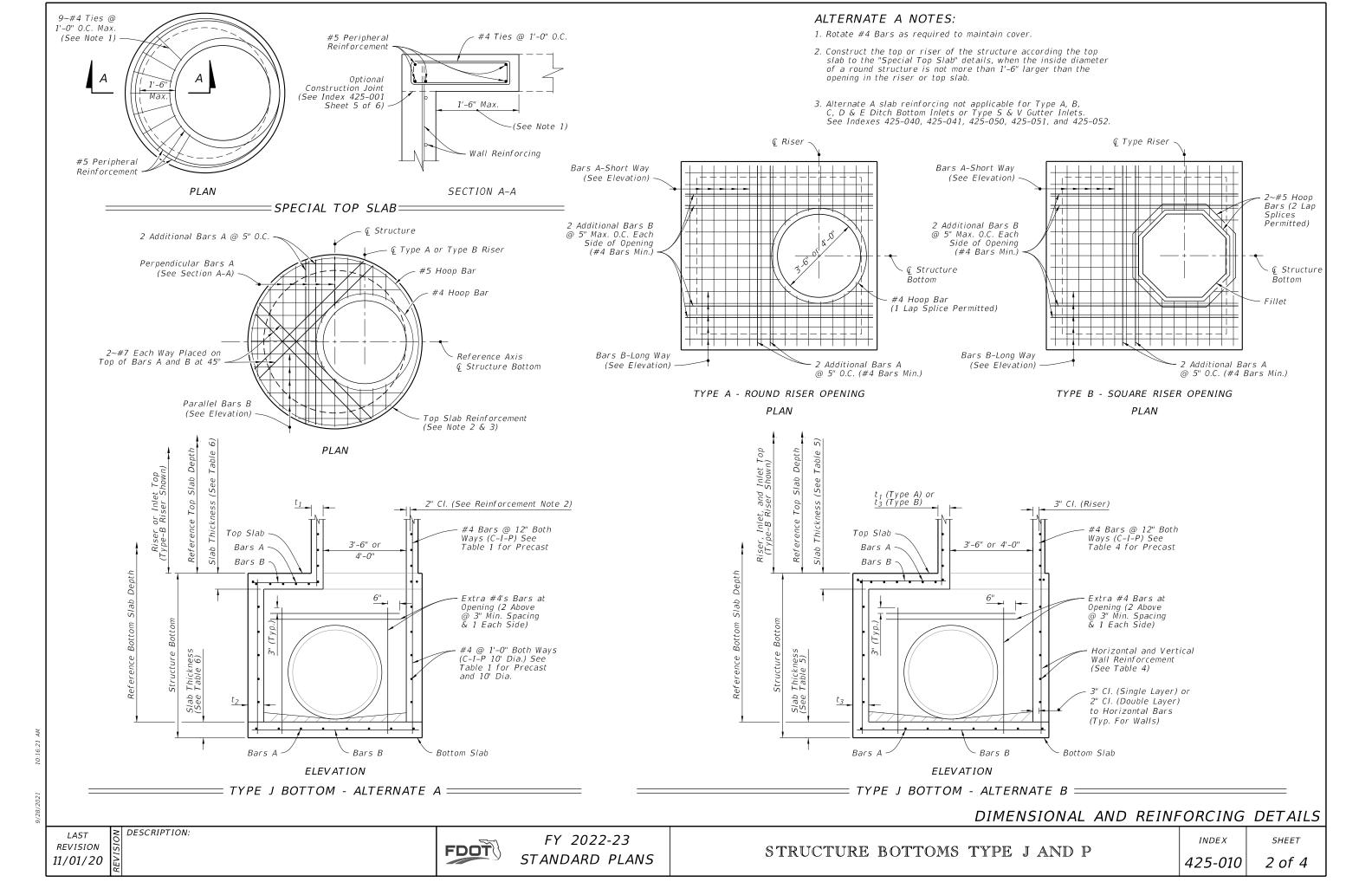


	TABLE 1 - ALTERNATE A - STRUCTURES									
		CAST-IN-PLACE ITEMS				PRECAST ITEMS				
	STRUCTURE/RISER		S II CON	ICRETE	CLAS	S II CON	ICRETE	ASTM	1 C478	
TYPE	DIAMETER (ft)	t ₁	t ₂	A 5	t ₁	t ₂	A 5	t1 or t2	A 2***	
		RISER (in.)	BOTTOM (in.)	(in ² /ft.)	RISER (in.)	BOTTOM (in.)	(in ² /ft.)	(in.)	(in 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	. 1	8	0.20	6	0.180	
J	7'-0"	_	8	0.20	-	8	0.20	7	0.210	
J	8'-0"	-	8	0.20	1	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.

As- Vertical and horizontal areas of reinforcement.

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

**Modified minimum wall thickness.

***Min. total circumferential reinforcement for continuous steel hoops:

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.

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

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

TABLE 2 - ALTERNATE B SOUARE AND RECTANGULAR STRUCTURES

300	SQUARE AND RECTANODEAR STRUCTURES					
TV.05	WALL	MAX.	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		

See Table 4 for Reinforcing Schedule.

TABLE 3	3 - REINF	ORCIN	G SCH	IEDULE			
	GRADE 60 BARS OR 65 KSI & 70 KSI WELDED WIRE REINFORCING						
		MA	XIMUM SP	ACING			
SCHEDULE	GRADE 60 AREA	GR 60	WWR EQU	JIV. AREA			
	(in ² /ft)	BARS (in.)	65 KSI (in.)	70 KSI (in.)			
A12	0.20	12	8	8			
A6	0.20	6	5	41/2			
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	31/2	3	2½			
D7	0.53	7	6	5			
D4.5	0.53	$4\frac{1}{2}$	4	31/2			
E5	0.73	5	4	4			
E3	0.73	3	3	3			
F5	1.06	5	4	4			
F3.5	1.06	3½ 5	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	DESI		RECTANO	GULAF	R STR	RUCTURE:	S
	RTICAL FORCIN	G		ZONT A FORCIN		WALL THICKNESS		VERTICAL REINFORCING		HORI REINI	
W ALL DEPT H	SCHI	DULE	WALL DEPTH	SCH	EDULE	W THIC	WALL DEPTH	SCHE	EDULE	WALL DEPTH	:
		SIZE:	3'-6" & RISE	R						-0" (Precast	0 <i>n</i>
≥1.17' - 40'	A	12	≥1.17' < 10'	Б	10	6"/8"		Inside	Outside		In
			10' < 18'	В	5.5	6"/8"	26' - 40'	D7	D7	26' - 40'	
			18' < 29'	С	6.5	6"/8"			SI	ZE: 12'-0"	
			29' - 40'	С	3.5	6"/8"		Inside	Outside		In
		5	IZE: 4'-0"				≥1.17' < 14'	B10	B10	≥1.17' < 10'	' C
≥1.17' - 40'	A	12	≥1.17' < 6'	Б	10	6"/8"	14' < 25'	C6.5	C6.5	10' < 17'	
			6' < 10'	В	5.5	6"/8"	25' - 40'	D7	D7	17' < 24'	
			10' < 20'	С	6.5	6"/8"				24' - 40'	П
			20' < 28'	С	3.5	6"/8"		51	ZE: 12'	-0" (Precast	0r
			28' - 40'	D	4.5	6"/8"		Inside	Outside		Ir.
		S	IZE: 5'-0"				≥1.17' < 12'		B10	≥1.17' < 10'	-
≥1.17' - 40'	Δ	12	≥1.17' < 5'	B	5.5	6"/8"	12' < 24'	C6.5	C6.5	10' < 17'	E
	†		5' < 9'		6.5	6"/8"	24' - 40'	D7	D7	17' < 23'	Ť
			9' < 15'		3.5	6"/8"				23' < 32'	
			15' < 22'		4.5	6"/8"				32' - 40'	\vdash
			22' - 40'		:3	8"			CI	ZE: 16'-0"	
	1	5	IZE: 6'-0"					Incida	Outside		In
-1 17' - 26'	Ι 4	12			3.5	611 / 011	≥1.17' < 11'				+
≥1.17' < 26'	A	12	≥1.17' < 9' 9' < 15'			6"/8"				≥1.17' < 13'	⊢
			9 < 15 15' < 26'		4.5 E3	6"/8" 8"	11' < 20' 20' < 28'	D7 E5	D7 E5	13' < 20'	╁
	Incido	0				- 0		F5		20' < 28'	\vdash
26' - 40'		Outside			Outside	8"	28' - 40'		F5	28' - 40'	
26 - 40	A12	A12	26' - 40'	D7	D7	8"				-0" (Precast	
			IZE: 7'-0"						Outside		Ir.
		Outside			Outside		≥1.17' < 10'	C6.5	C6.5	≥1.17' < 9'	
≥1.17' < 25'		A12	≥1.17' < 7'	B10	B10	8"	10' < 18'	D7	D7	9' < 13'	E
26' - 40'	B10	B10	7' < 10'	B5.5	B5.5	8"	18' < 25'	E5	E5	13' < 19'	
			10' < 20'	C6.5	C6.5	8"	25' - 35'	F5	F 5	19' < 27'	
			20' < 30'	D7	D7	8"				27' - 35'	L
			30' - 40'	E5	E5	8"			SI	ZE: 20'-0"	
		5	IZE: 8'-0"					Inside	Outside		In
	Inside	Outside		Inside	Outside		≥1.17' < 10'	C6.5	C6.5	≥1.17′ < 8′	
≥1.17' < 20'	A12	A12	≥1.17′ < 6′	B5.5	B5.5	8"	10' < 17'	D7	D7	8' < 12'	
										121 - 201	
20' - 40'	C6.5	C6.5	6' < 13'	C6.5	C6.5	8"	17' - 30'	E5	E5	12' < 20'	
20' - 40'	C6.5	C6.5	6' < 13' 13' < 22'	C6.5 D7	C6.5 D7		17' - 30'	E5	E5	20' - 30'	
20' - 40'	C6.5	C6.5				8"	17' - 30'				Or
20' - 40'	C6.5	C6.5	13' < 22'	D7	D7	8" 8"	17' - 30'	SI	ZE: 20'	20' - 30' -0" (Precast	
20' - 40'	C6.5		13' < 22' 22' < 31'	D7 E5	D7 E5	8" 8" 8"	17' - 30' ≥1.17' < 8'	SI		20' - 30' -0" (Precast	In
20' - 40'		S	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0"	D7 E5 F5	D7 E5 F5	8" 8" 8" 8"		SI Inside	ZE: 20' Outside	20' - 30' -0" (Precast ≥1.17' < 8'	In
20' - 40' ≥1.17' < 12'	Inside		13' < 22' 22' < 31' 31' - 40' IZE: 9'-0"	D7 E5 F5	D7 E5	8" 8" 8" 8"	≥1.17' < 8'	SI Inside C6.5	ZE: 20' Outside C6.5	20' - 30' -0" (Precast	In
	Inside	S Outside	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0"	D7 E5 F5	D7 E5 F5 Outside	8" 8" 8"	≥1.17' < 8' 8' < 13'	SI Inside C6.5	ZE: 20' Outside C6.5 D7	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12'	In
≥1.17' < 12'	Inside A12	S Outside A12	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0" ≥1.17' < 8' 8' < 15'	D7 E5 F5 Inside C6.5	D7 E5 F5 Outside C6.5	8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25'	SI Inside C6.5 D7 E5	ZE: 20' Outside C6.5 D7 E5	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19'	In
≥1.17' < 12' 12' < 28'	Inside A12 C6.5	S Outside A12 C6.5	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0" ≥1.17' < 8' 8' < 15' 15' < 23'	D7 E5 F5 Inside C6.5 D7	D7 E5 F5 Outside C6.5	8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13'	SI Inside C6.5 D7 E5	ZE: 20' Outside C6.5 D7 E5	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19'	In
≥1.17' < 12' 12' < 28'	Inside A12 C6.5	S Outside A12 C6.5 D7	$ \begin{array}{c cccc} 13' < 22' \\ 22' < 31' \\ 31' - 40' \\ IZE: 9'-0" \\ & \geq 1.17' < 8' \\ 8' < 15' \\ 15' < 23' \\ 23' - 40' \\ \end{array} $	D7 E5 F5 Inside C6.5 D7 E5	D7 E5 F5 Outside C6.5 D7 E5	8" 8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25' TABLE 4 1. Wall dep	SI Inside C6.5 D7 E5	ZE: 20' Outside C6.5 D7 E5 TES: easured	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19' 19' - 25'	of
≥1.17' < 12' 12' < 28'	Inside A12 C6.5 D7	S Outside A12 C6.5 D7	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0" ≥1.17' < 8' 8' < 15' 15' < 23' 23' - 40' ZE: 10'-0"	D7 E5 F5 Inside C6.5 D7 E5 F5	D7 E5 F5 Outside C6.5 D7 E5 F5	8" 8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25' TABLE 4 1. Wall dep	SI Inside C6.5 D7 E5	ZE: 20' Outside C6.5 D7 E5 TES: easured	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19' 19' - 25'	of
≥1.17' < 12' 12' < 28' 28' - 40'	Inside A12 C6.5 D7	S Outside A12 C6.5 D7 SI	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0" ≥1.17' < 8' 8' < 15' 15' < 23' 23' - 40' ZE: 10'-0"	D7 E5 F5 Inside C6.5 D7 E5 F5	D7 E5 F5 Outside C6.5 D7 E5 F5	8" 8" 8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25' TABLE 4 1. Wall depand to the	Inside C6.5 D7 E5 A NOT	Outside C6.5 D7 E5 TES: easured of the i	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19' 19' - 25'	In E
$\geq 1.17' < 12'$ $12' < 28'$ $28' - 40'$ $\geq 1.17' < 10'$	Inside A12 C6.5 D7 Inside B10	S Outside A12 C6.5 D7 SI Outside B10	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	D7 E5 F5 Inside C6.5 D7 E5 F5 Inside	D7 E5 F5 Outside C6.5 D7 E5 F5 Outside	8" 8" 8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25' TABLE 2 1. Wall deprand to to 2. Wall height of upper	SII Inside C6.5 D7 E5 A NO? th is more top of the stab.	Outside C6.5 D7 E5 TES: easured of the i he dista	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19' 19' - 25' I to the top on Intermediate the sance between I wall heigh	In Control
$\geq 1.17' < 12'$ $12' < 28'$ $28' - 40'$ $\geq 1.17' < 10'$ $10' < 21'$	Inside	S Outside A12 C6.5 D7 SI Outside B10 C6.5	13' < 22' 22' < 31' 31' - 40' IZE: 9'-0" ≥1.17' < 8' 8' < 15' 15' < 23' 23' - 40' ZE: 10'-0" ≥1.17' < 10' 10' < 17'	D7 E5 F5 Inside C6.5 D7 E5 F5 Inside D7 E5 E5 E5 E5 E5 E5 E5 E	D7 E5 F5 Outside C6.5 D7 E5 F5 Outside D7 E5 F5	8" 8" 8" 8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25' TABLE 2 1. Wall deprand to to 2. Wall height of upper	SII Inside C6.5 D7 E5 A NO? th is more top of the stab.	Outside C6.5 D7 E5 TES: easured of the i he dista	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19' 19' - 25' I to the top on the top on the the top on the top on the top on the	In Control
$\geq 1.17' < 12'$ $12' < 28'$ $28' - 40'$ $\geq 1.17' < 10'$	Inside A12 C6.5 D7 Inside B10	S Outside A12 C6.5 D7 SI Outside B10	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	D7 E5 F5 Inside C6.5 D7 E5 F5 Inside	D7 E5 F5 Outside C6.5 D7 E5 F5 Outside	8" 8" 8" 8" 8" 8" 8"	≥1.17' < 8' 8' < 13' 13' - 25' TABLE 4 1. Wall dep and to	Inside C6.5 D7 E5 A NOT th is more top of the stab. g 5', or other exerts.	Outside C6.5 D7 E5 TES: easured of the i Maximu 10' for	20' - 30' -0" (Precast ≥1.17' < 8' 8' < 12' 12' < 19' 19' - 25' I to the top on Intermediate the sance between I wall heigh	of slant in the second state of the second s

_	ΛDI		, ,	107	TES:	_
1.	ADL	C 4	- //	U	ES.	
1	Wall	don	- h :			

SIZE: 12'-0" (Precast Only)

SIZE: 16'-0" (Precast Only)

- 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

LAST **REVISION** 11/01/20

DESCRIPTION:



SHEET *INDEX* 425-010 3 of 4

WALL THICKNESS

10"

10"

10"

10"

9"

9"

9"

9"

9"

10"

10"

10"

10"

9"

9"

9"

9"

9"

10"

10"

10"

10"

9"

9"

9"

HORIZONTAL

REINFORCING

SCHEDULE

Inside Outside

F5 F5

Inside Outside

Inside Outside

Inside Outside

Inside Outside

Inside Outside

Inside Outside

D7

E5

F5

D7

D4.5

E5

F5

G5

D7

E5

F5

G5

D7

D4.5

E5

F5

G5

D7

E5

F5

G5

E5

F5

G5

≥1.17' < 8' D4.5 D4.5

C6.5

D7

E5

F 5

D7

D4.5

E5

F5

G5

D7

E5

F5

G5

D7

D4.5

E5

F5

G5

D7

E5

F5

G5

E5

F5

G5

DEPTH SIZE: 10'-0" (Precast Only)

B10 |≥1.17' < 10' | C6.5 |

SIZE: 20'-0" (Precast Only)

TABLE 5 - SLAB DESIGNS - SQUARE AND RECTANGULAR STRUCTURES (ALL SLABS 8" THICK EXCEPT AS NOTED - REINFORCING PARALLEL TO SHORT WAY AND LONG WAY)

SHOR	T-WAY	LONG-WAY		
SLAB	SCHEDULE	SLAB	SCHEDULE	
DEPTH	(Bars A)	DEPTH	(Bars B)	
<i>DEI III</i>			(Bars B)	
	ı	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	
	SIZE:	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'	F5			
		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	
	_			
		UNLIMITED		
≥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'	F5	34'-40'	C3.5	

SHOR	T-WAY	LONG	G-WAY
SLAB	SCHEDULE	SLAB	SCHEDUL
DEPTH	(Bars A)	DEPTH	(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
2, 3,	03	25'-34'	E5
	1	UNLIMITED	Γ
≥0.5′ < 8′	D7	≥0.5' < 8'	B5.5
8' < 14'	E5	8' < 14'	C6.5
14' < 24'	F 5	14' < 21'	C3.5
24'-34'	G5	21' < 25'	D4.5
		25'-34'	E5
	SIZE:	7' x 7'	l
≥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
	SIZE:	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'	F5	13' < 22'	E3
30'-40'	G5	22' < 30'	F3.5
		30'-40'	G3.5
	SIZE:	7' x 9'	
≥0.5′ < 9′	D7	≥0.5′ < 7′	C6.5
9' < 15'	E5	7' < 10'	C3.5
15' < 25'	F5	10' < 14'	D4.5
25' - 34'	G5	14' < 21'	E5
		21' < 29'	F5
	1	29'-34'	F3.5

SHORT	Γ-WAY	LONG	G-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'	F5
		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'	F5	9' < 15'	E3
23'-31'	G3.5	15' < 20'	F5
		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
SIZ	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'	F5
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'	F5	14' < 22'	F5
25'-35'	G5	22' < 30'	G5
		30'-35'	H4

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.
- 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 top of slab.
- 5. Reinforcing schedules with larger areas of steel may be substituted for schedules with smaller bar 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.

	5 - SLAB D D STRUCT	
SLAB DEPTH	SLAB THICKNESS	REINF. (2-WAY) SCHEDULE
SIZ	E: 3'-6" DIAMET	
2'-15'	6" Precast	C6.5
0.5' < 30'	8"	A6
30'-40'	8"	B5.5
SIZ	E: 4'-0" DIAMET	
≥0.5' < 19'	8"	A6
19' < 30'	8"	B5.5
30'-40'	8"	C6.5
SIZ	E: 5'-0" DIAMET	rer
≥0.5′ < 15′	8"	B5.5
15' < 26'	8"	C6.5
26' < 35'	8"	D7
35'-40'	8"	D4.5
	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"	F 5
	: 10'-0" DIAME	
≥0.5′ < 12′	10"	D4.5
12' < 20'	10"	E5
20' < 28'	10"	F5
	10"	G3.5
	: 12'-0" DIAME	
≥0.5' < 8'	10"	D4.5
8' < 13'	10"	E5
13' < 18'	10"	F 5
18' < 26'	10"	G3.5
26'-40'	12"	G3.5
26'-40'	12"	<u> 63.5</u>

TABLES 5 AND 6

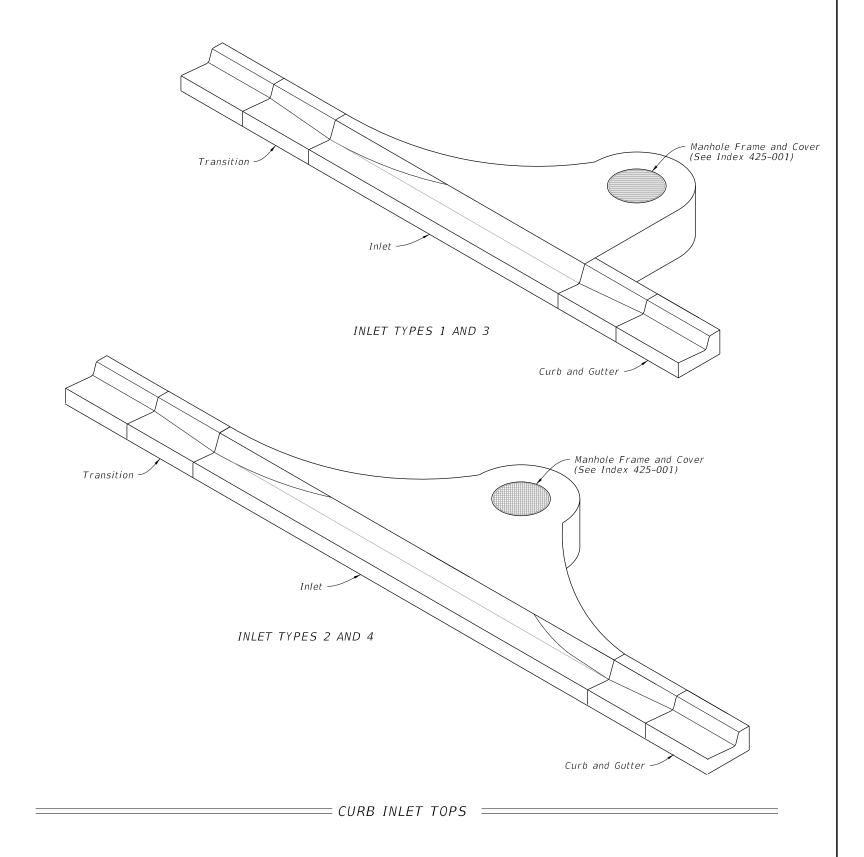
LAST REVISION 11/01/20

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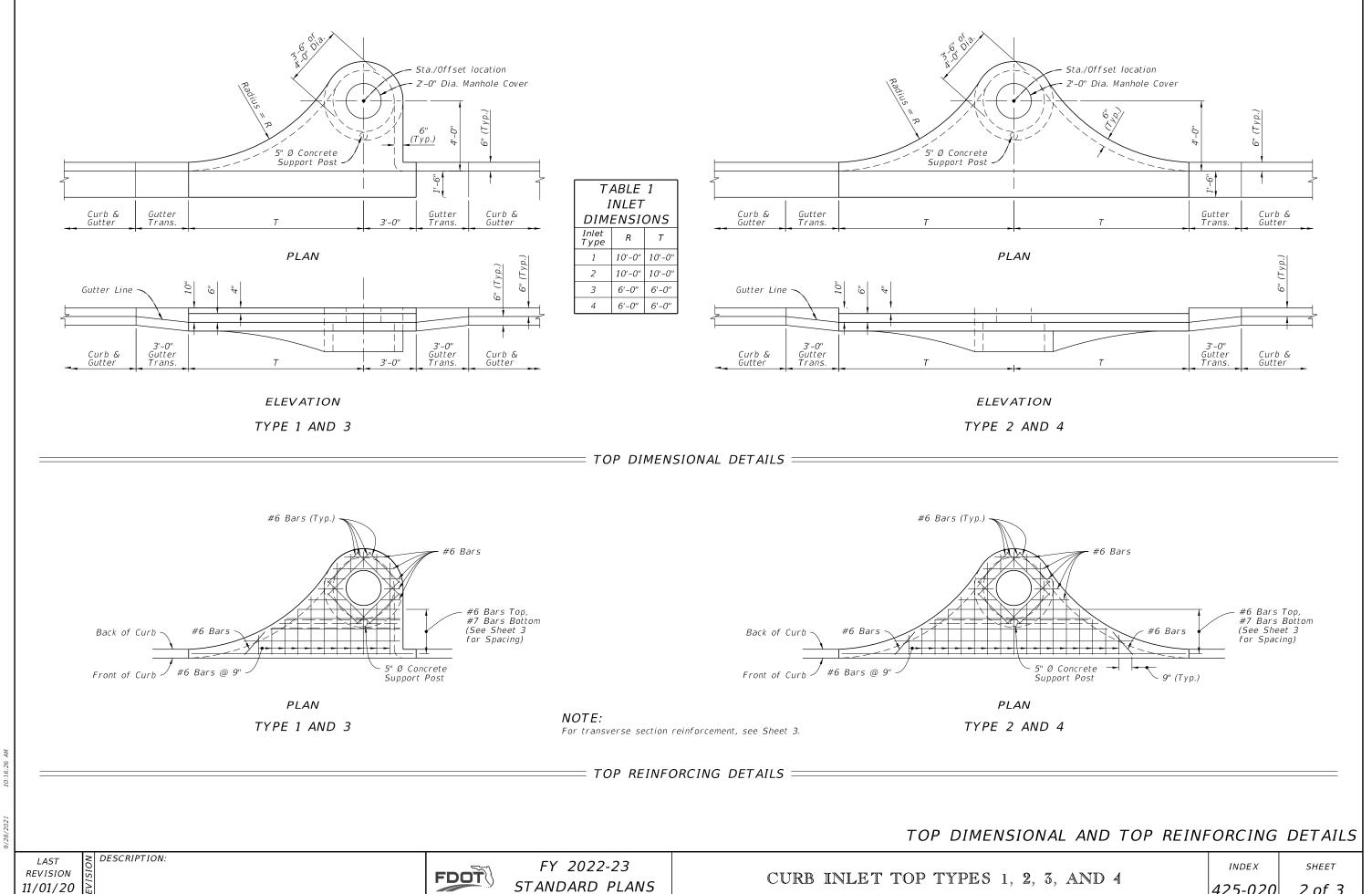
GENERAL NOTES:

- 1. Work this Index with Index 425-001 and Index 425-010.
- 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:

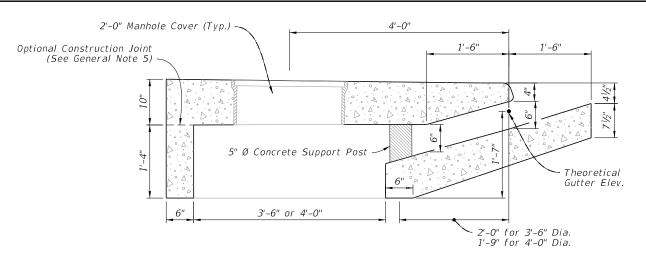


STANDARD PLANS

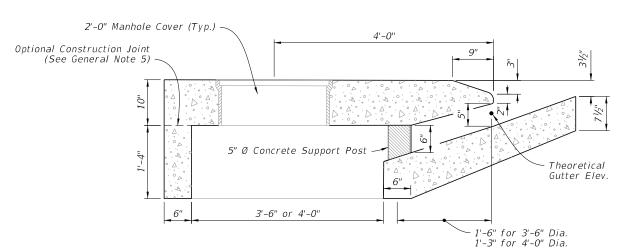
CURB INLET TOP TYPES 1, 2, 3, AND 4

425-020

2 of 3

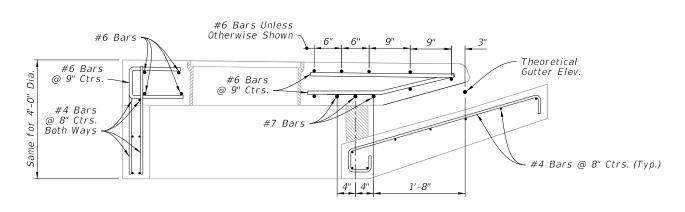


INLET SECTION WITH TYPE F CURB AND GUTTER

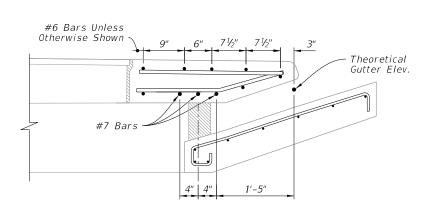


INLET SECTION WITH TYPE E CURB AND GUTTER

TRANSVERSE DIMENSIONAL DETAILS:

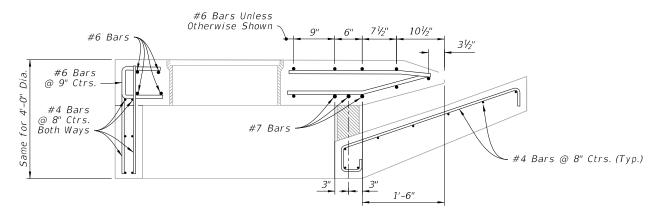


3'-6" DIA. STRUCTURE BOTTOM

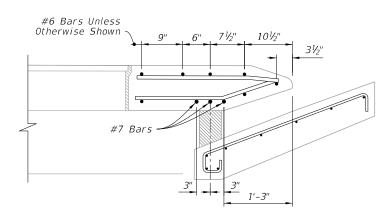


4'-0" DIA. STRUCTURE BOTTOM

INLET SECTION WITH TYPE F CURB AND GUTTER



3'-6" DIA. STRUCTURE BOTTOM



4'-0" DIA. STRUCTURE BOTTOM

INLET SECTION WITH TYPE E CURB AND GUTTER

TRANSVERSE REINFORCING DETAILS =

TRANSVERSE DIMENSIONAL AND REINFORCING DETAILS

LAST **REVISION** 11/01/20

DESCRIPTION:

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FY 2022-23 STANDARD PLANS

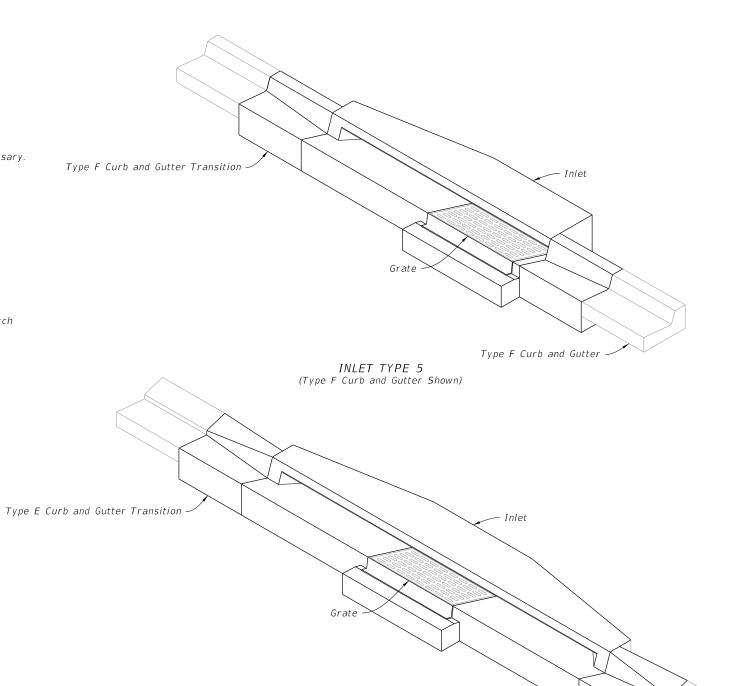
CURB INLET TOP TYPES 1, 2, 3, AND 4

INDEX SHEET 425-020 3 of 3

GENERAL NOTES:

- 1. Work this Index with Index 425-001 and Index 425-010.
- 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



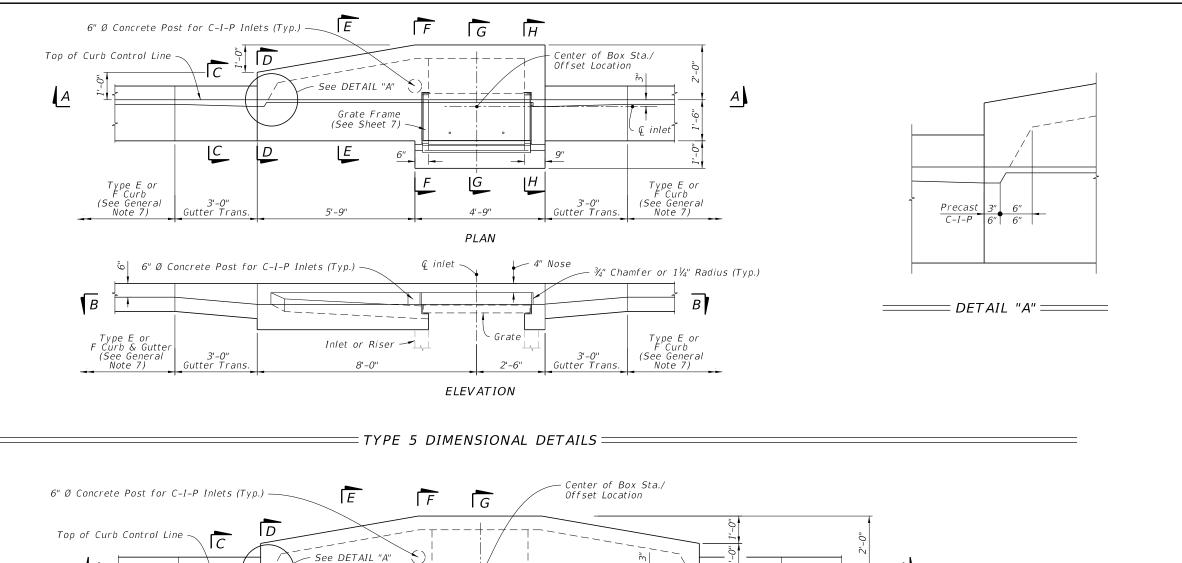
INLET TYPE 6 (Type E Curb and Gutter Shown)

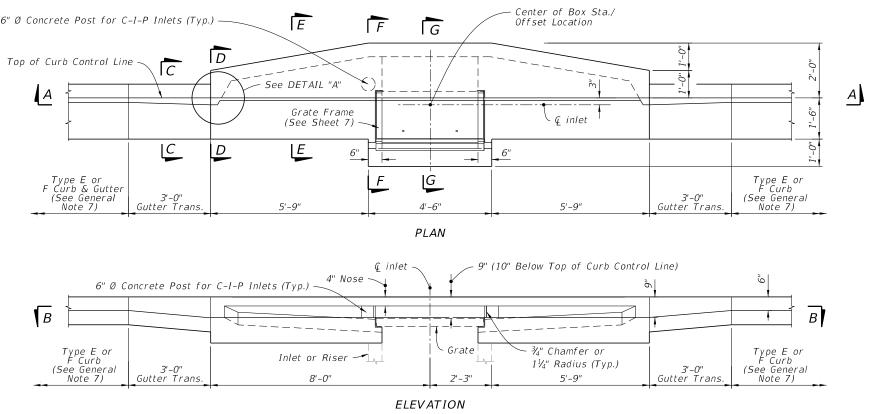
= CURB INLETS TOPS ===

REVISION 11/01/20

DESCRIPTION:

Type E Curb and Gutter —





= TYPE 6 DIMENSIONAL DETAILS =

TYPE 5 AND 6 DIMENSIONAL DETAILS

DESCRIPTION: LAST **REVISION** 11/01/20

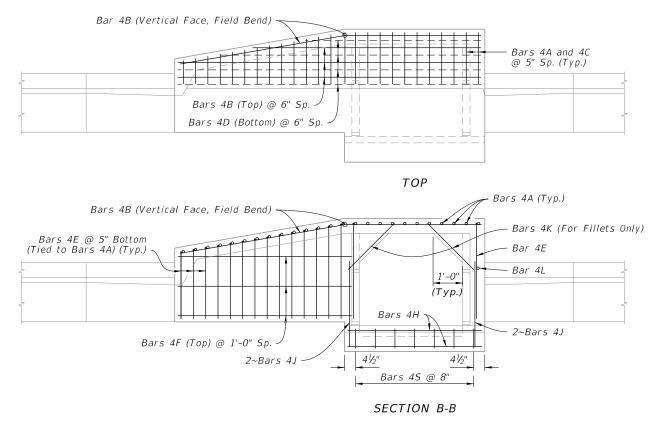
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FY 2022-23 STANDARD PLANS

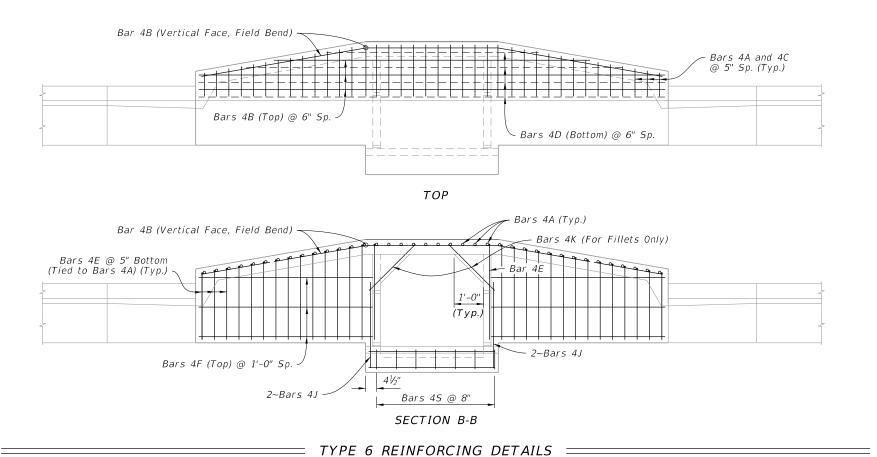
CURB INLET TOP TYPES 5 AND 6

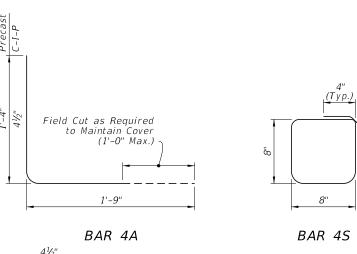
INDEX 425-021

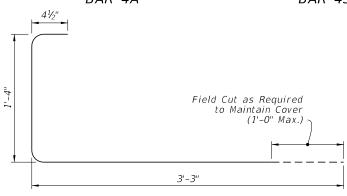
SHEET 2 of 7



TYPE 5 REINFORCING DETAILS







BAR 4E

BILL OF REINFORCING STEEL					
MARK	SIZE	TYPE 5 INLET		TYPE 6 INLET	
		NO.	LENGTH	NO.	LENGTH
A (Precast)	4	25	3'-1"	38	3'-1"
A (C-I-P)	4	25	2'-11/2"	38	2'-11/2"
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'-1111/2"
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

REVISION 11/01/20

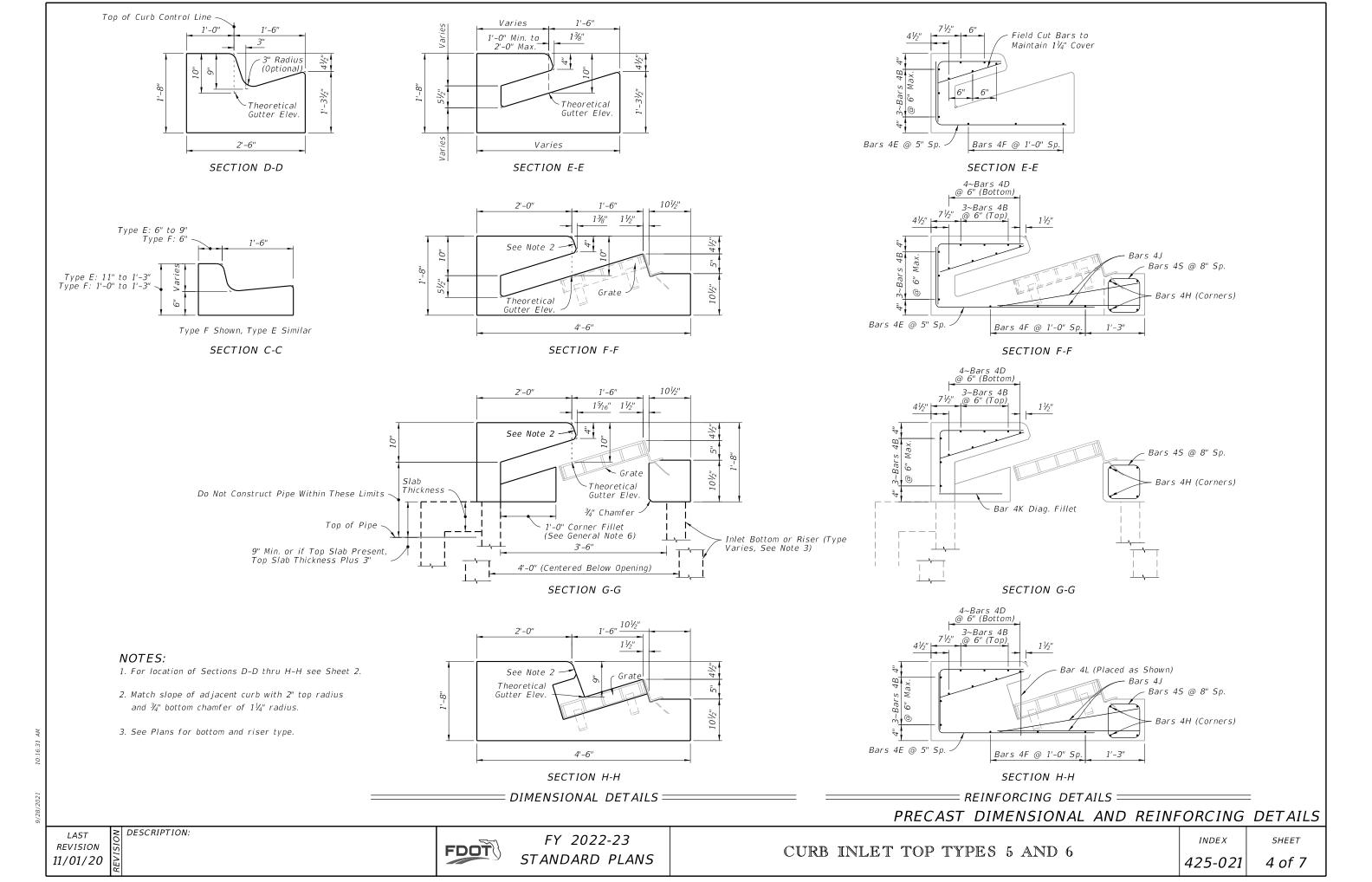
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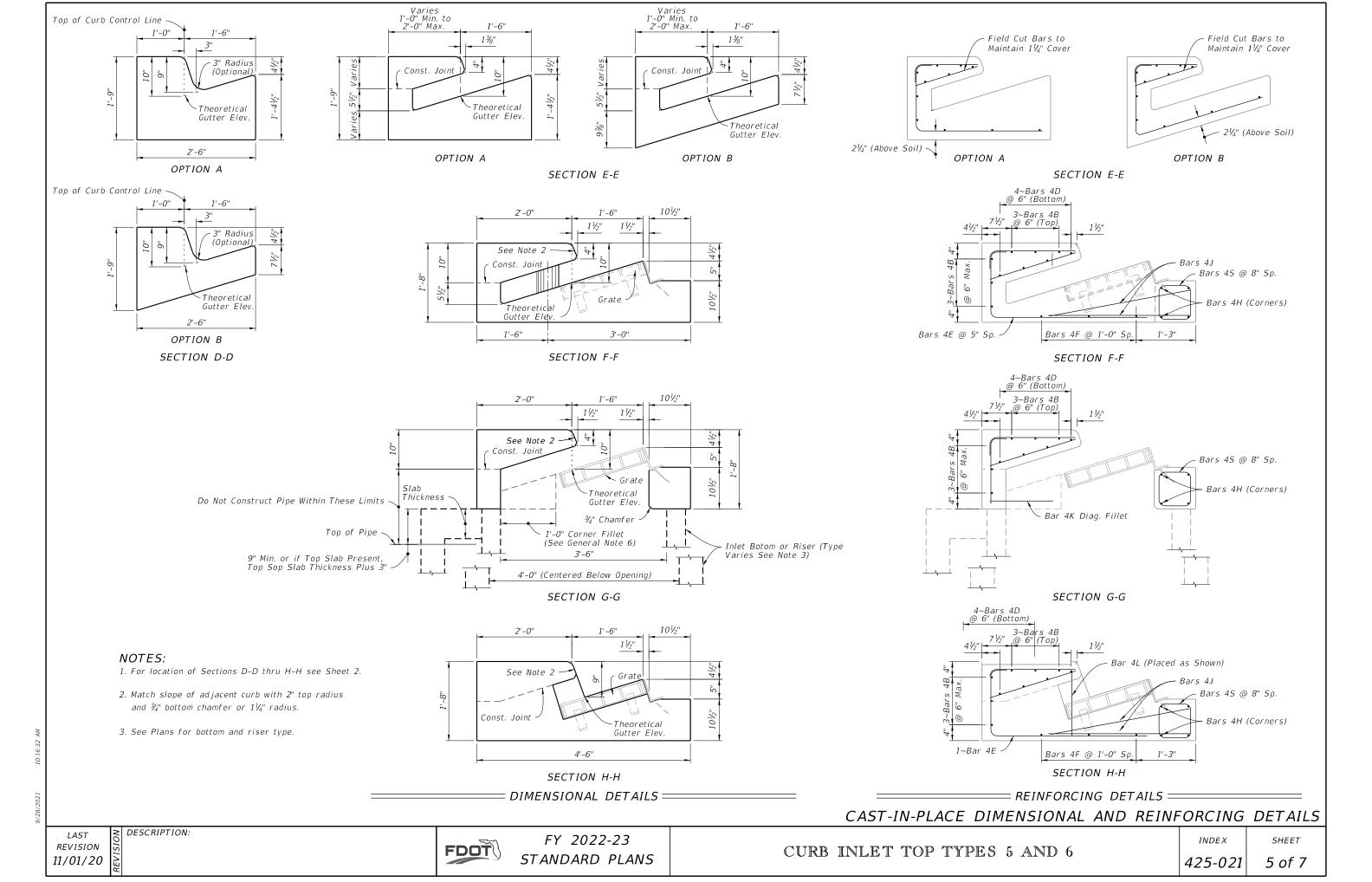
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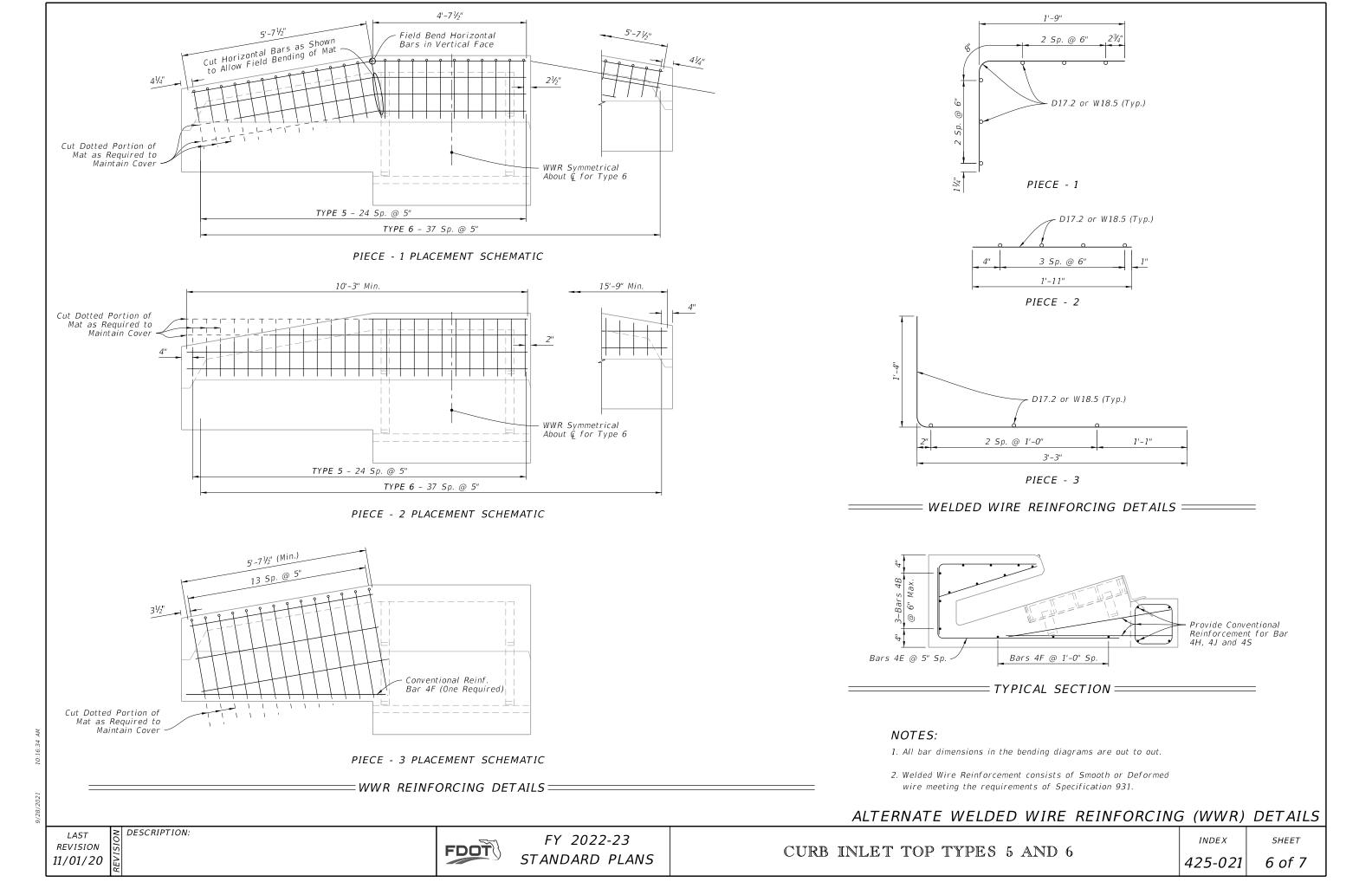
FY 2022-23 STANDARD PLANS

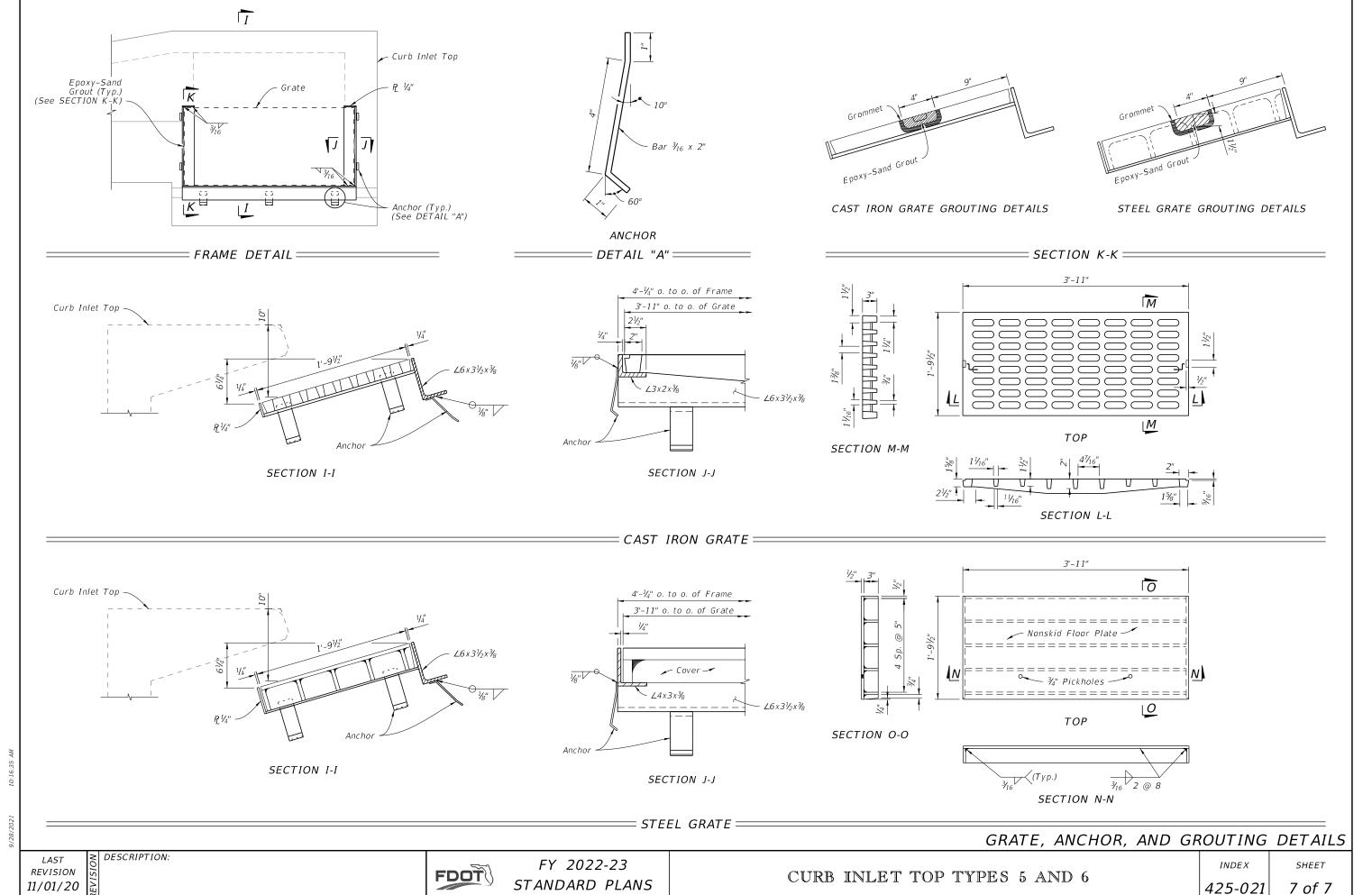
CURB INLET TOP TYPES 5 AND 6

INDEX SHEET 425-021 3 of 7





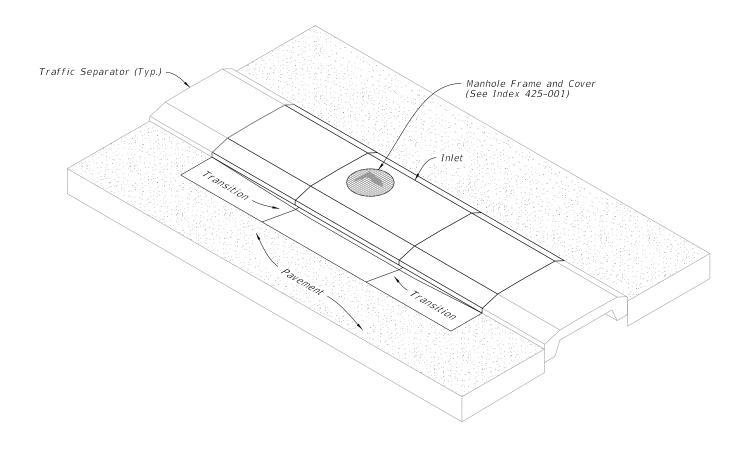




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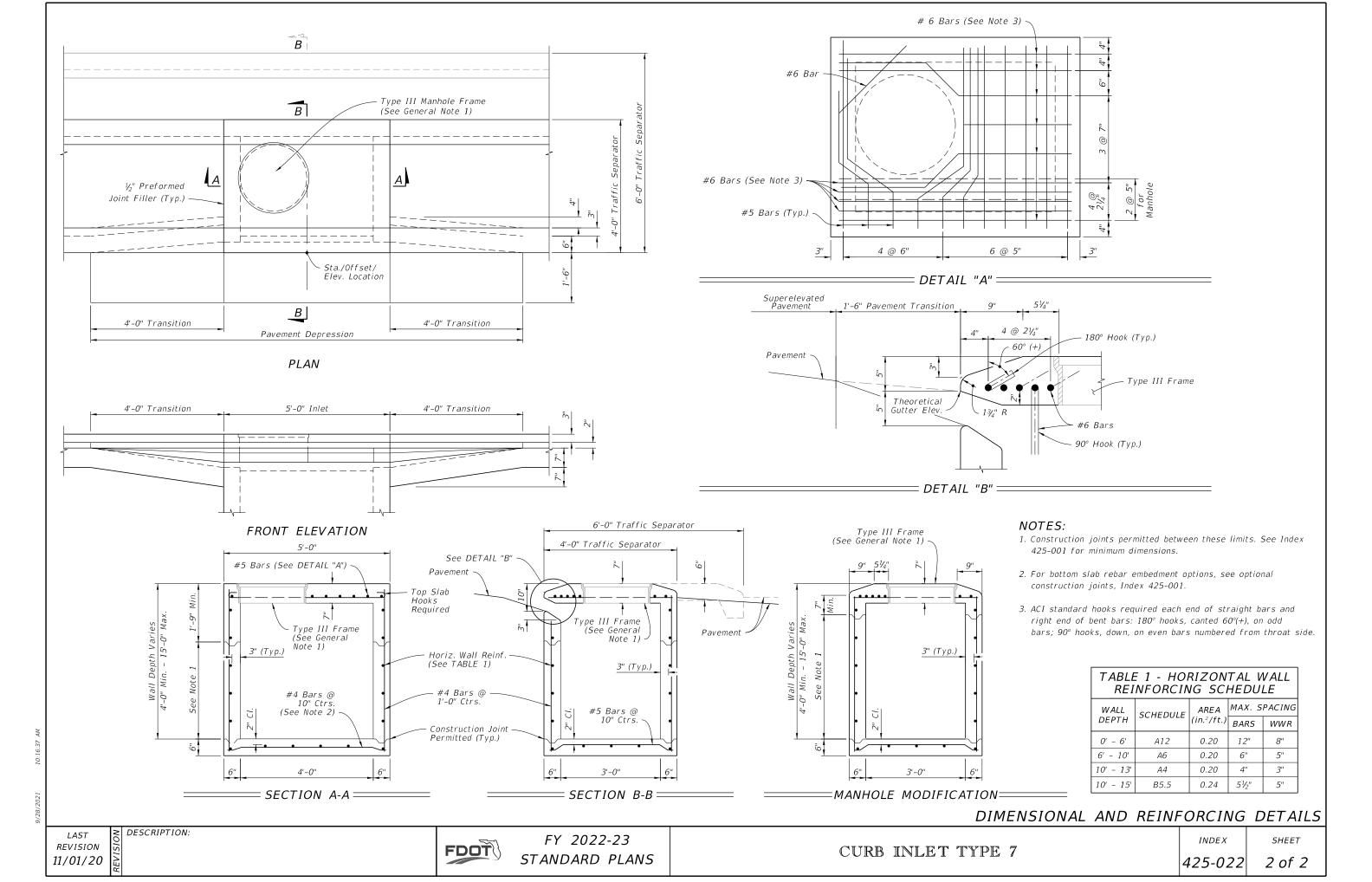
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Use Grade 60 reinforcing bars with 2" minimum cover unless otherwise shown. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary. Bars to clear pipe by $1\frac{1}{2}$ ".
- 3. Recommended 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	



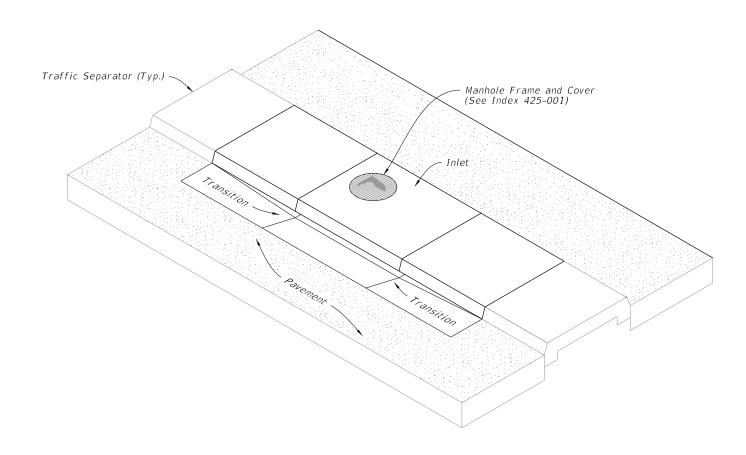
= CURB INLET TYPE 7 === (Bottom Not Shown)

≥ DESCRIPTION: 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 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 1½".
- 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	



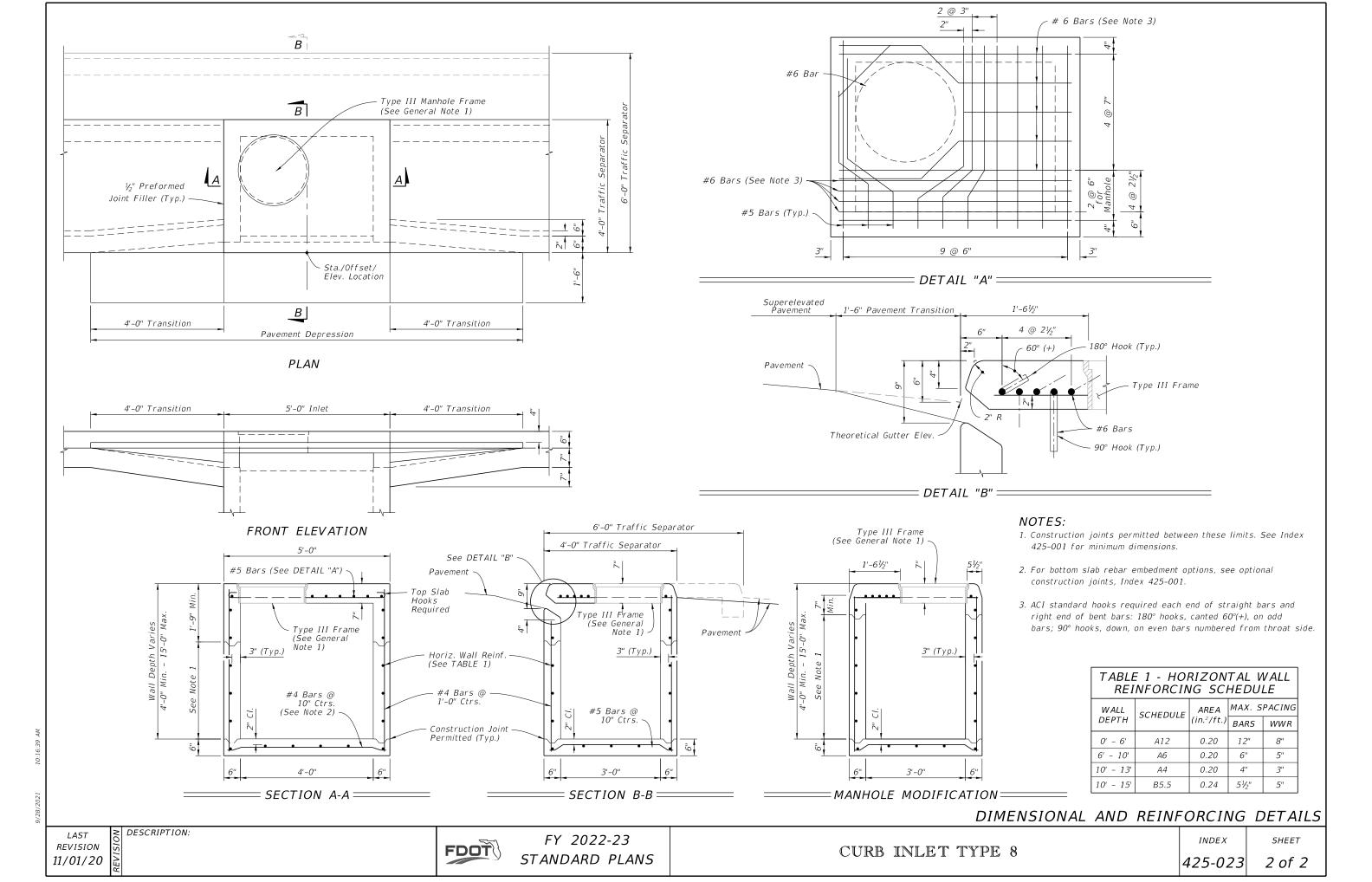
CURB INLET TYPE 8 =

(Bottom Not Shown)

3/28/2021 1

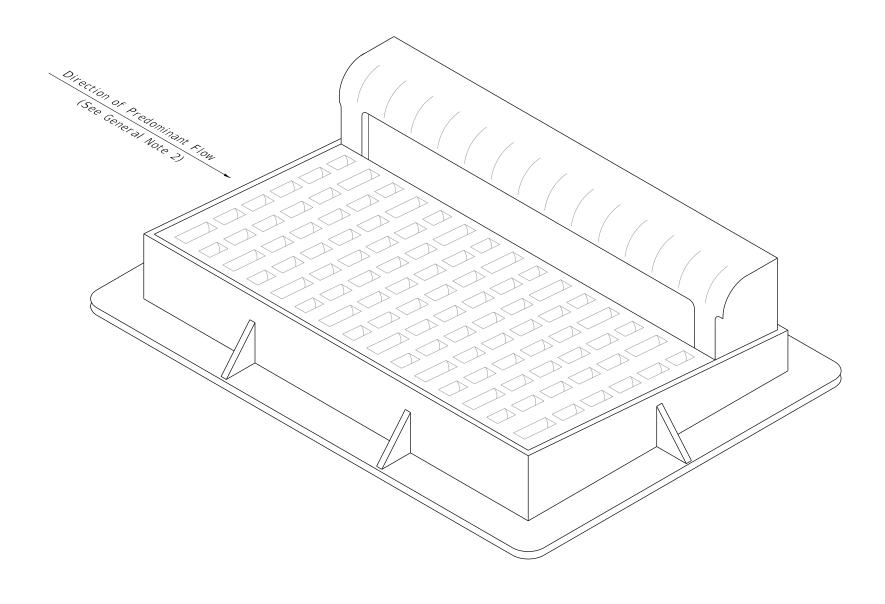
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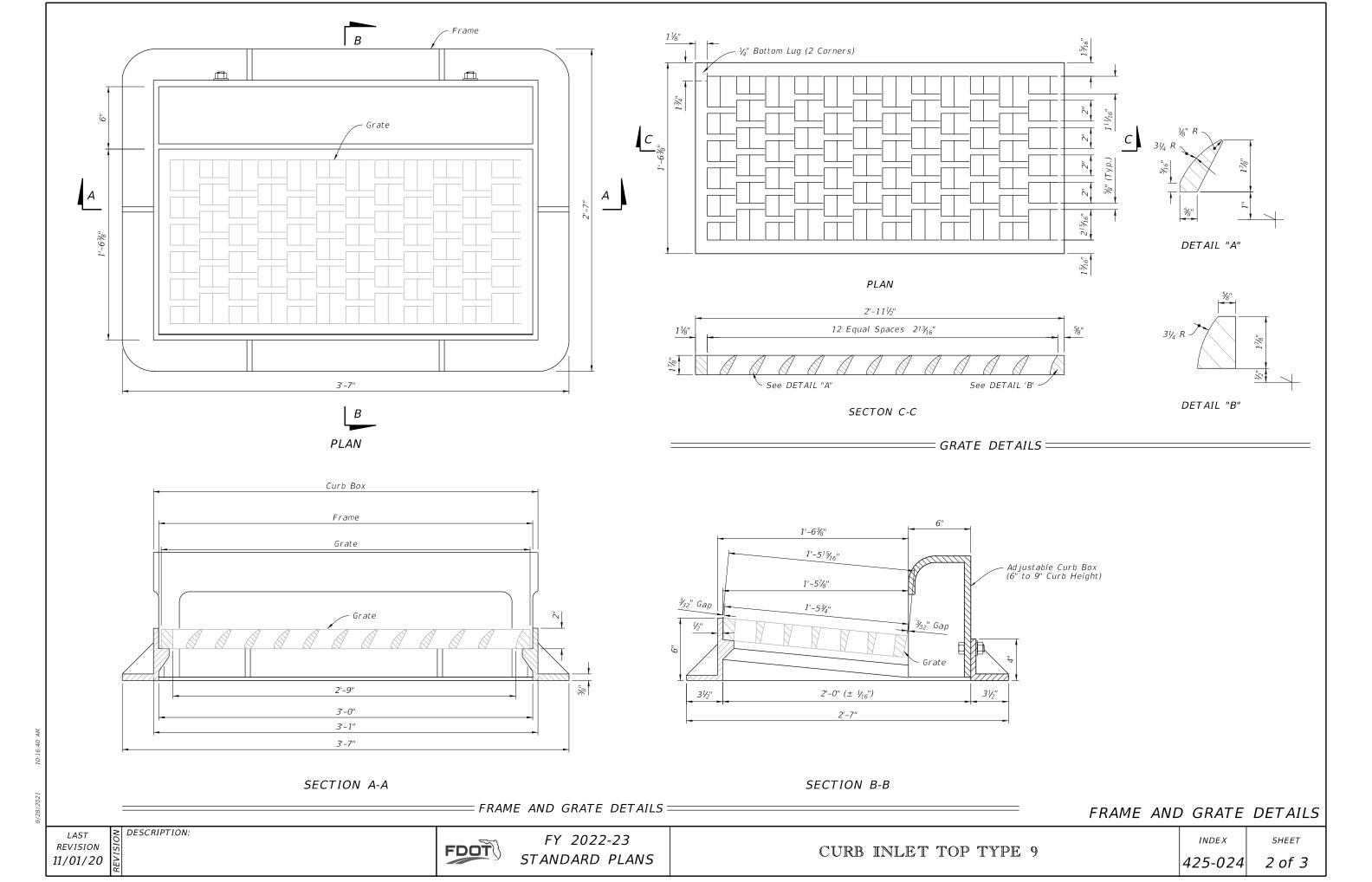


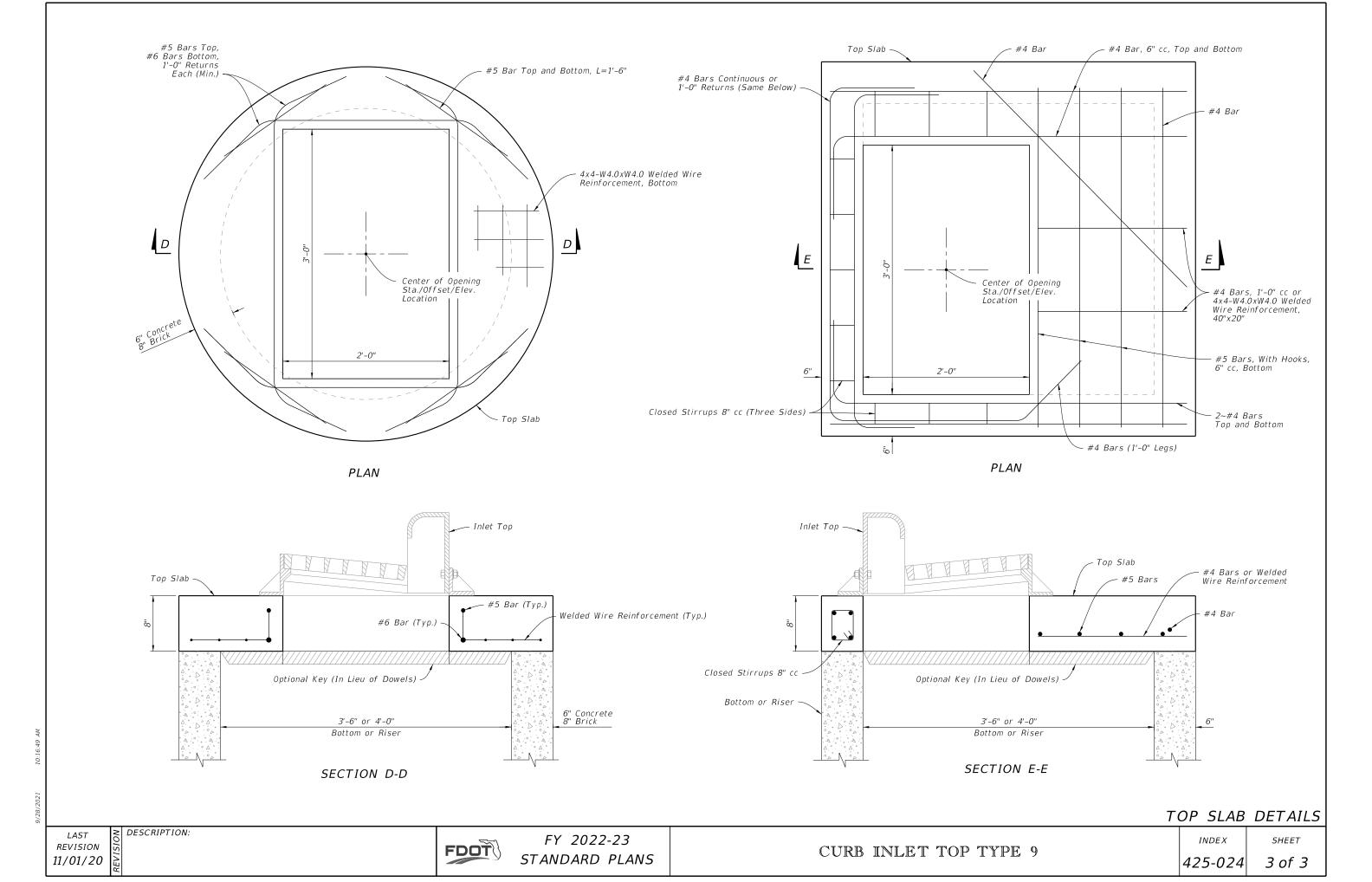
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Orient grate with vanes directed toward predominant flow.
- 3. Provide 1¼" minimum cover for steel in slab tops unless otherwise shown. Tops may be either cast-in-place or precast concrete.
- 4. Place top slab openings such that 2 edges 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	



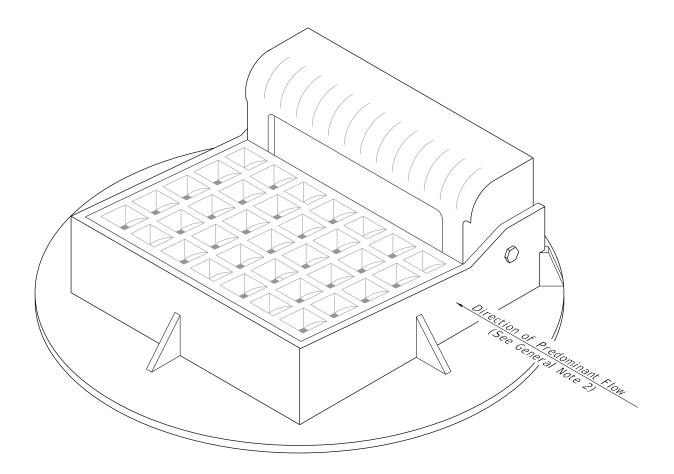
— CURB INLET TOP TYPE 9 ———





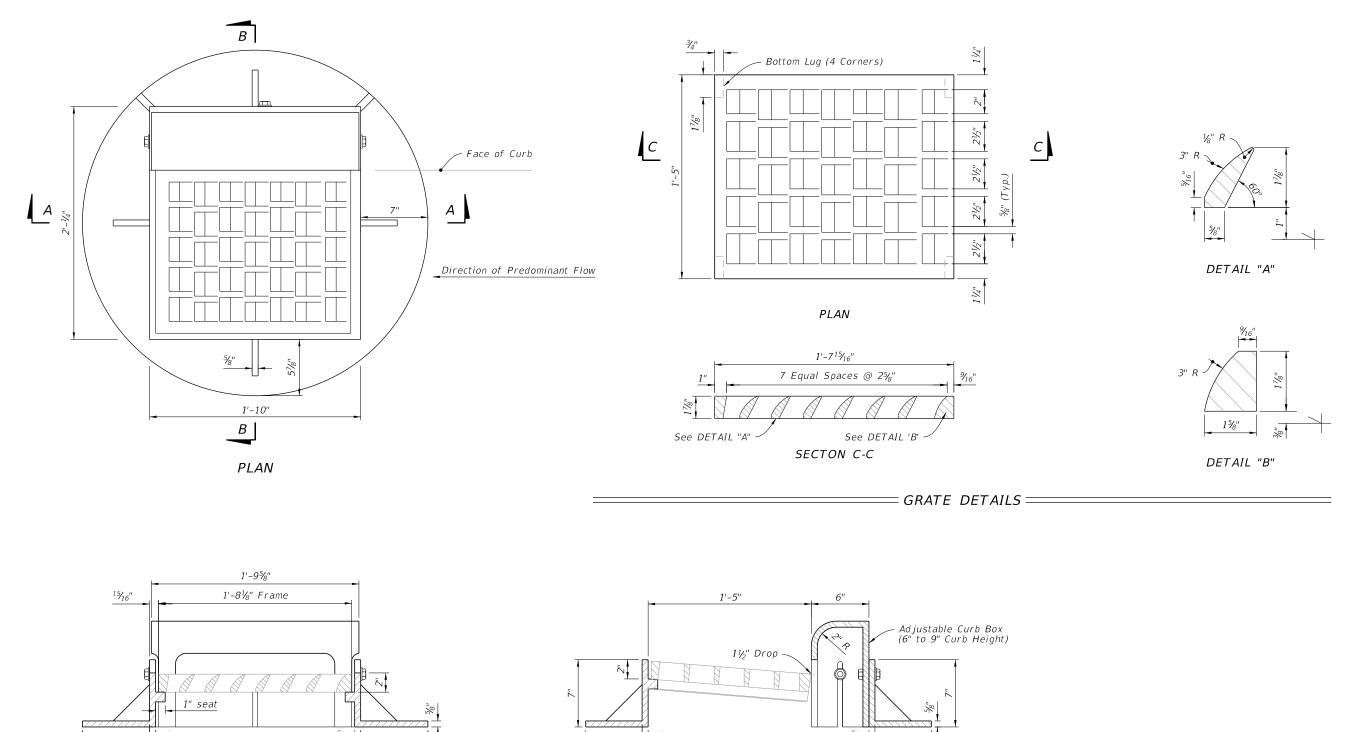
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Orient grate with vanes directed toward predominant flow.
- 3. Provide 11/4" minimum cover for steel in slab tops unless otherwise shown. Tops may be either cast-in-place or precast concrete.
- 4. Place top slab openings such that 2 edges 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.

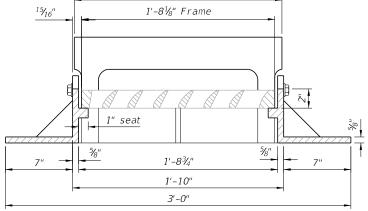
TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Frame and Grate Details	
3	Top Slab Details	



= CURB INLET TOP TYPE 10 ======

DESCRIPTION:





-- 57/8" 1'-11" 3'-0"

SECTION A-A SECTION B-B

FRAME AND GRATE DETAILS

FRAME AND GRATE DETAILS

REVISION 11/01/20

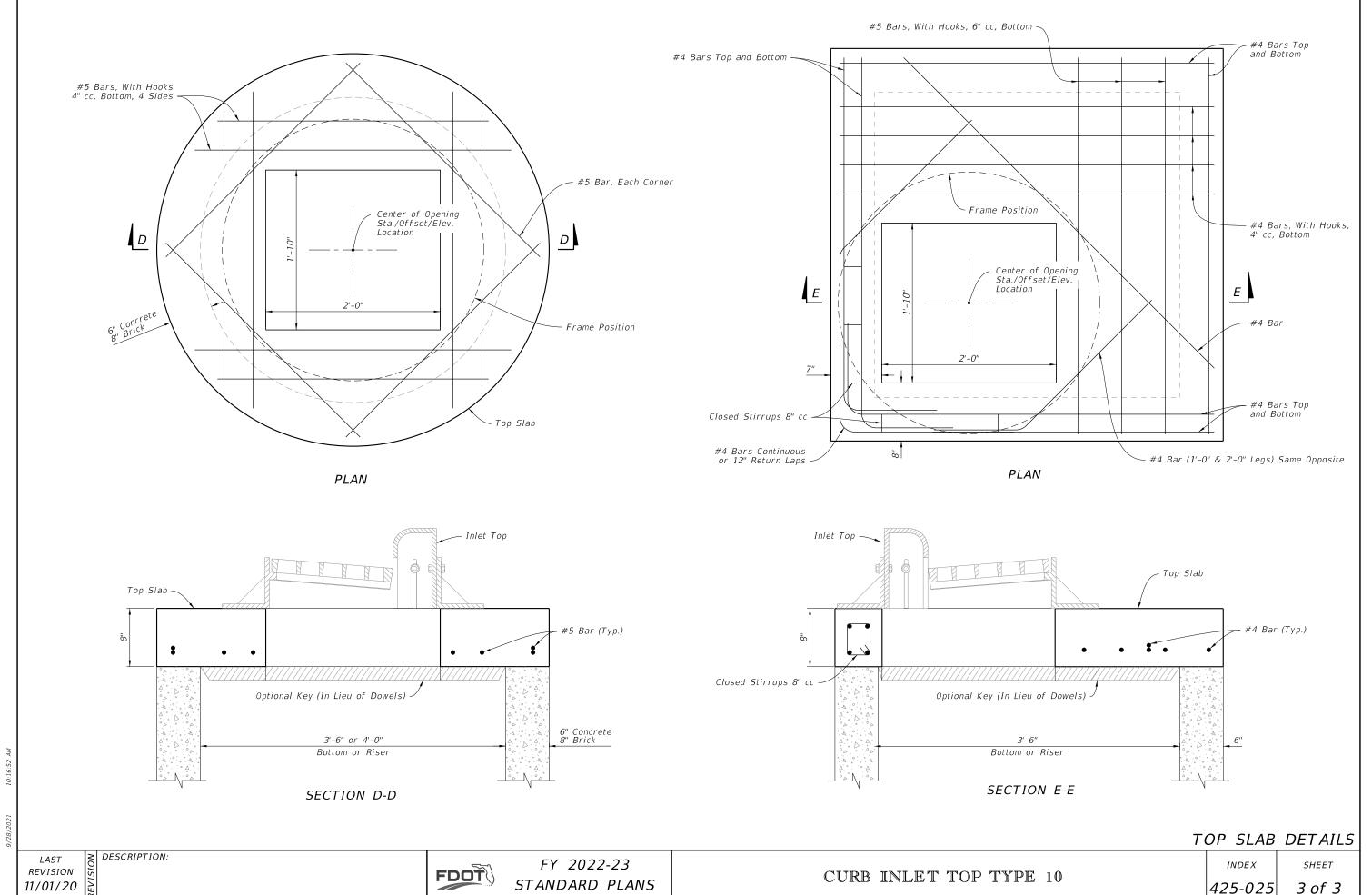
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FY 2022-23 STANDARD PLANS

CURB INLET TOP TYPE 10

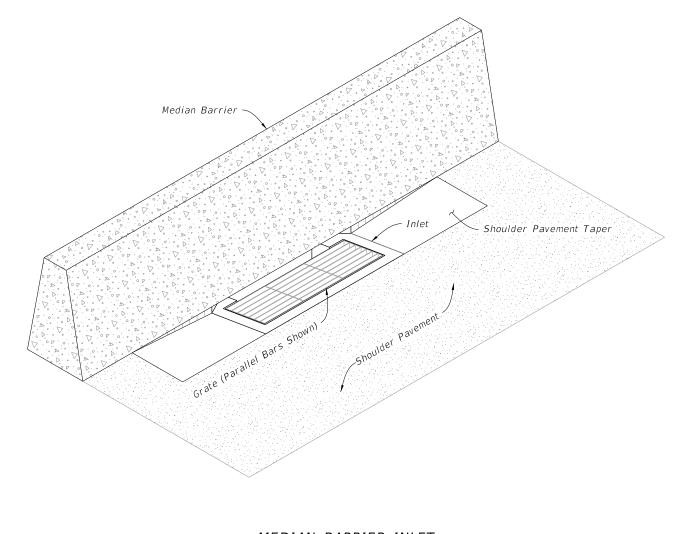
INDEX 425-025

SHEET 2 of 3



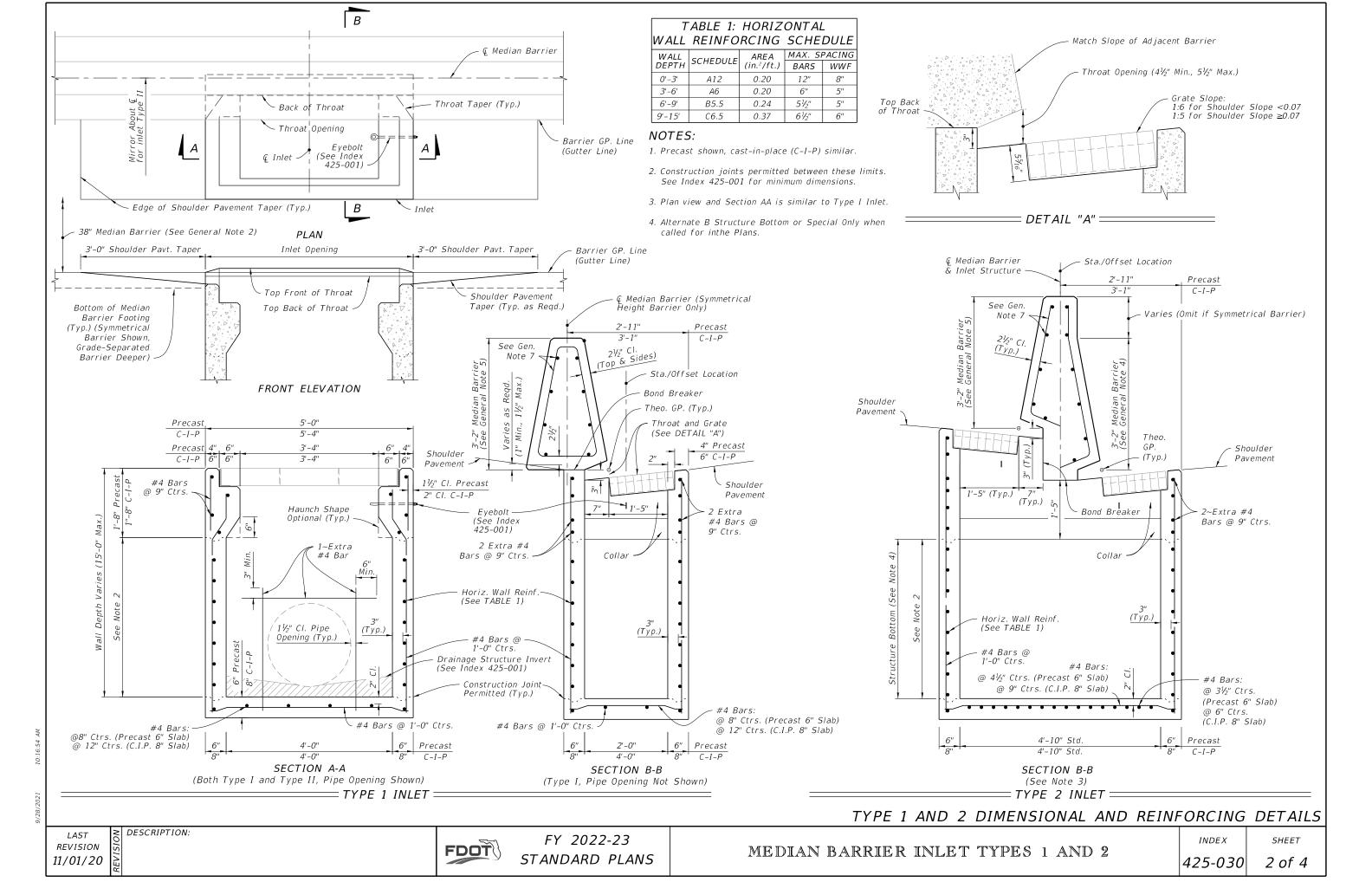
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Where called for in the Plans, use this inlet in conjunction with Median Barrier per Index 521-001.
- 3. Inlet Descriptions:
- Type 1: Inlet on one side of Median Barrier
- Type 2: Inlet on both sides of Median Barrier
- 4. See Index 425-040 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.

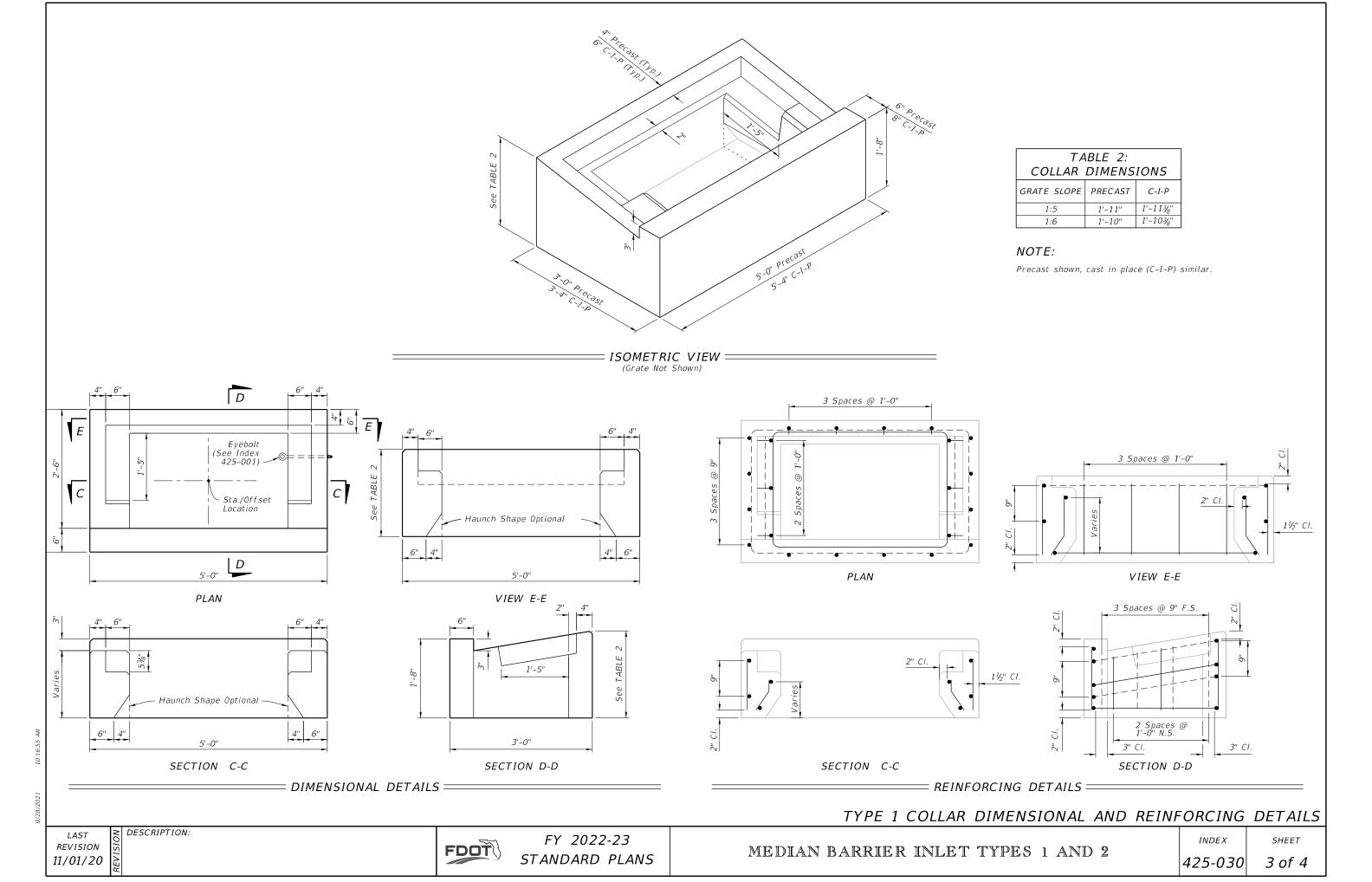
TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Type 1 and 2 Dimensional and Reinforcing Details	
3	Type 1 Collar Dimensional and Reinforcing Details	
4	Type 2 Collar Dimensional and Reinforceing Details	

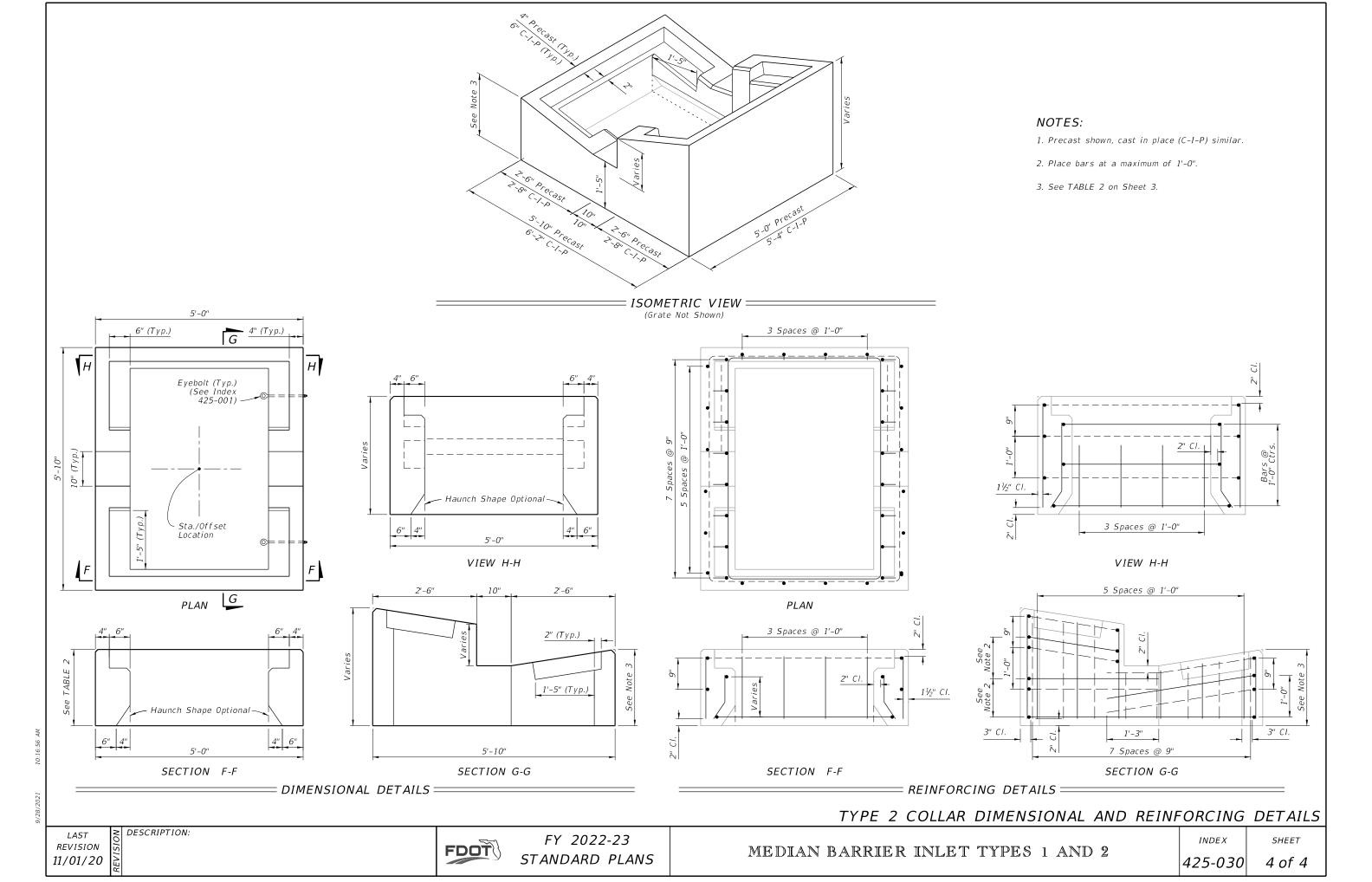


— MEDIAN BARRIER INLET — (Type 1 Shown, Type 2 Similar)



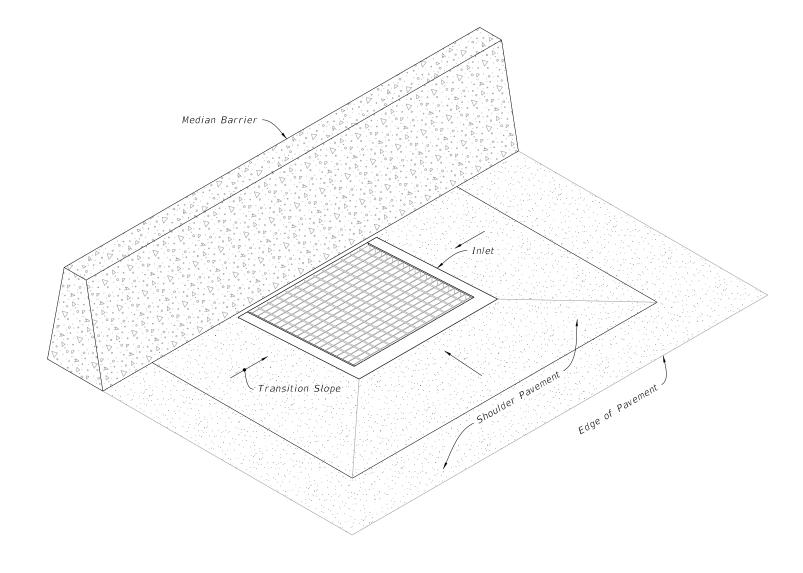






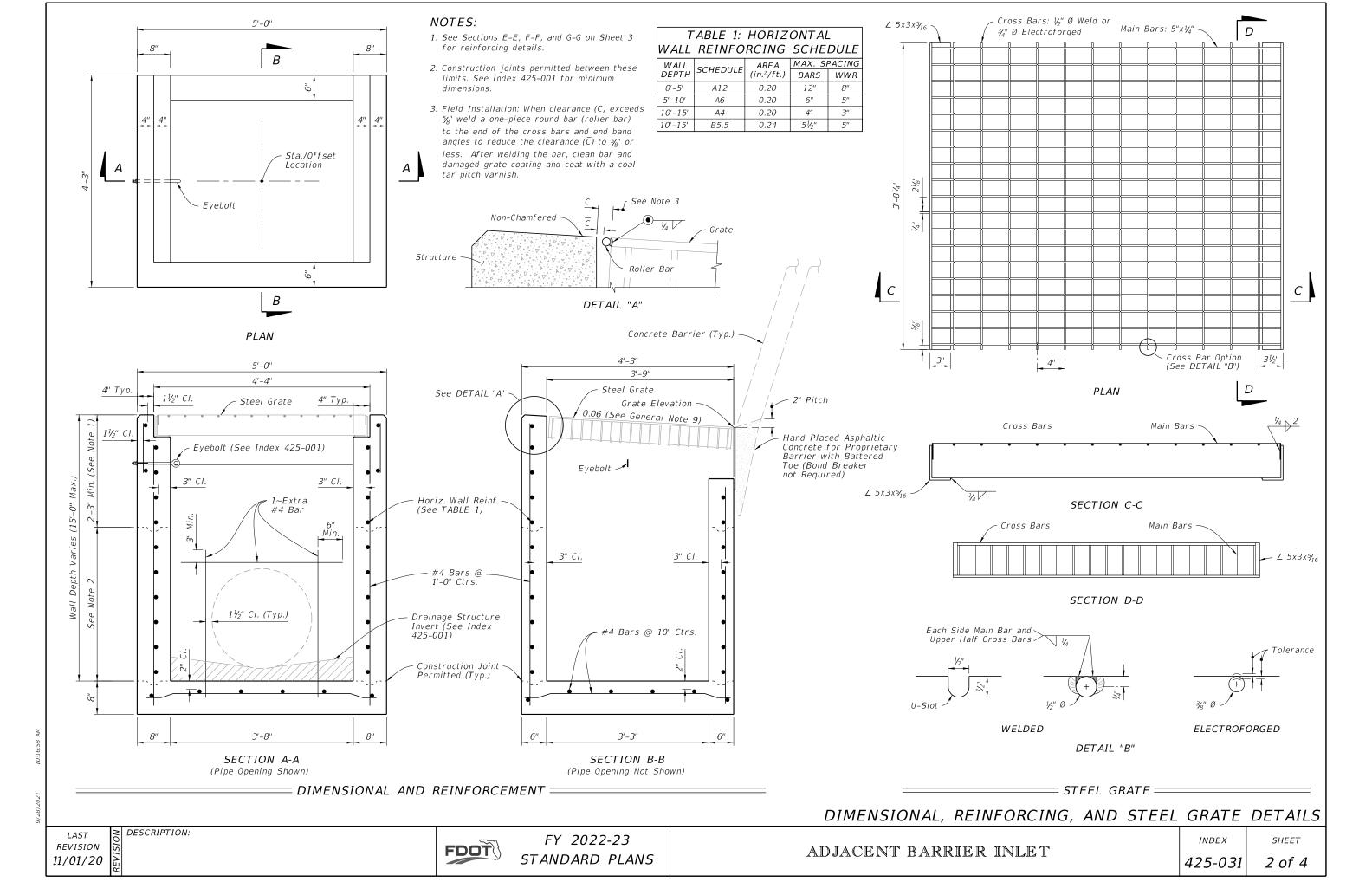
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. When called for in the Plans, use this inlet in conjunction with median or shoulder barrier per Index 521-001 or a barrier with junction slab and wall coping per Index 521-610.
- 3. Reinforce the upper 2'-3" of the inlet in accordance with 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. Field installation of a roller bar will not be permitted. 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.

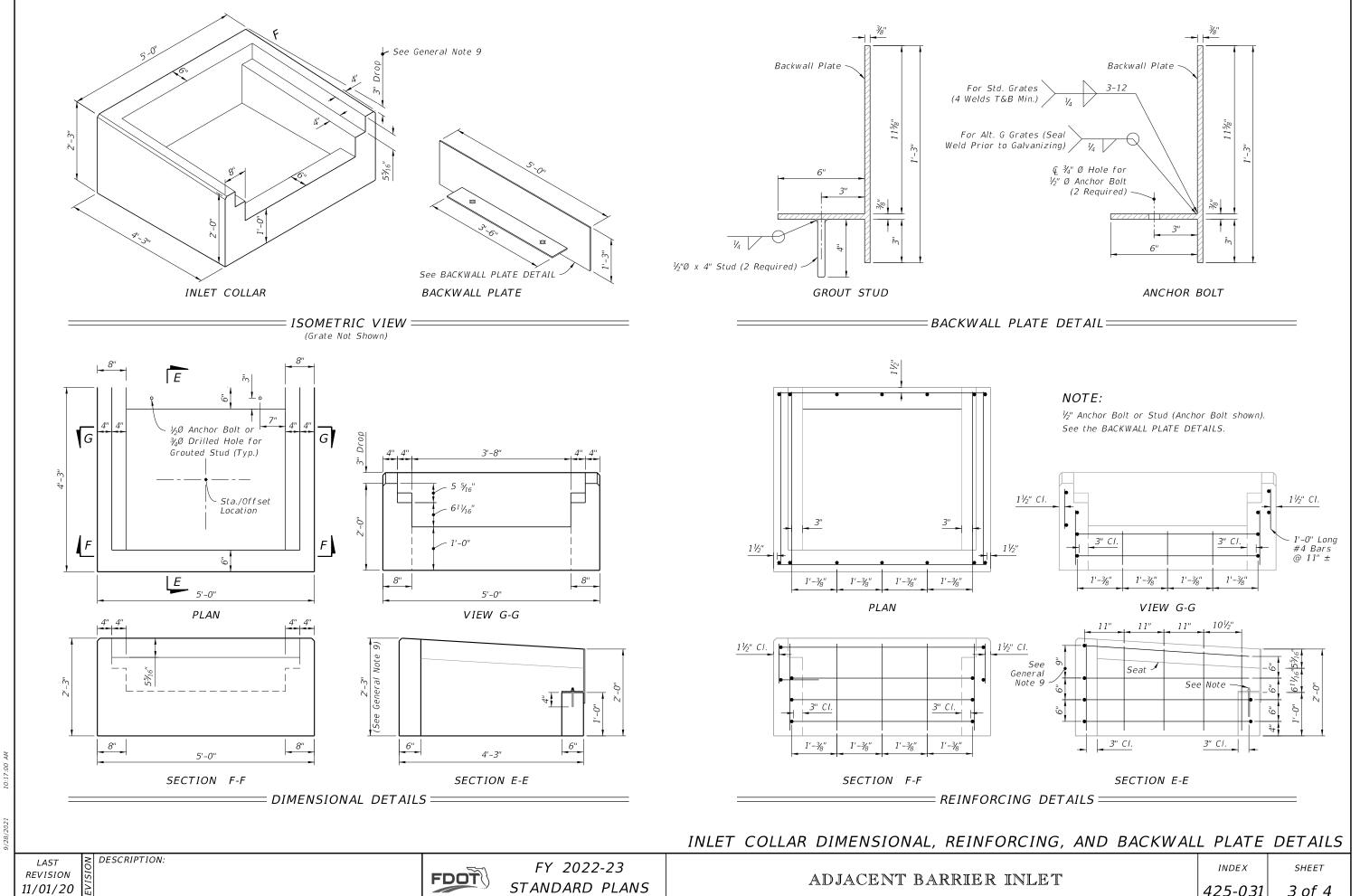
TABLE OF CONTENTS:		
Sheet	Description	
1	General Notes and Contents	
2	Dimensional, Reinforcing, and Steel Grate Details	
3	Inlet Collar Dimensional, Reinforcing, and Backwall Plate Details	
4	Shoulder Pavement Wrap, Barrier Type Examples, and Structure Bottoms	



ADJACENT BARRIER INLET = (Shoulder Barrier Similar)

DESCRIPTION:

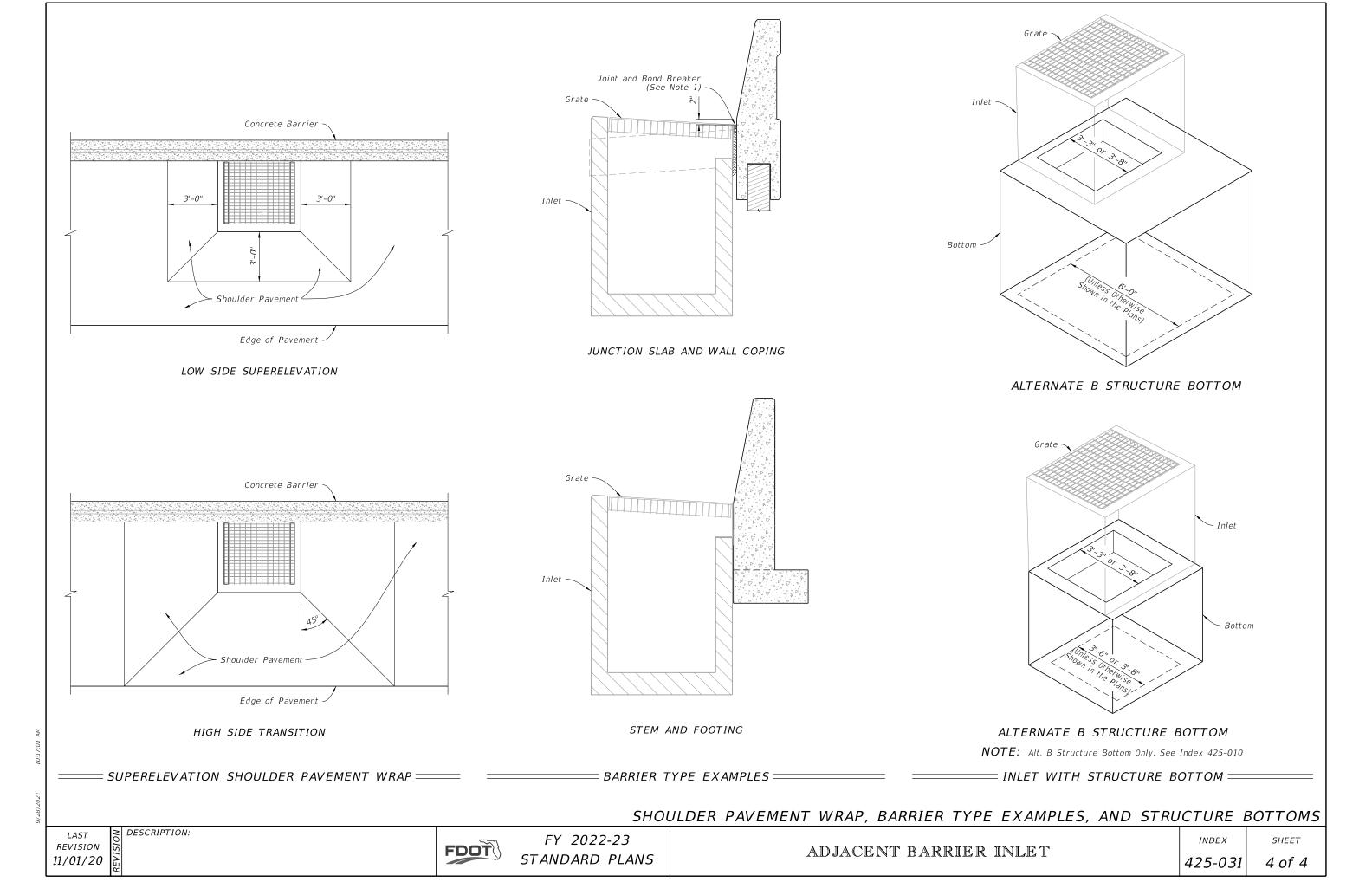




STANDARD PLANS

425-031

3 of 4

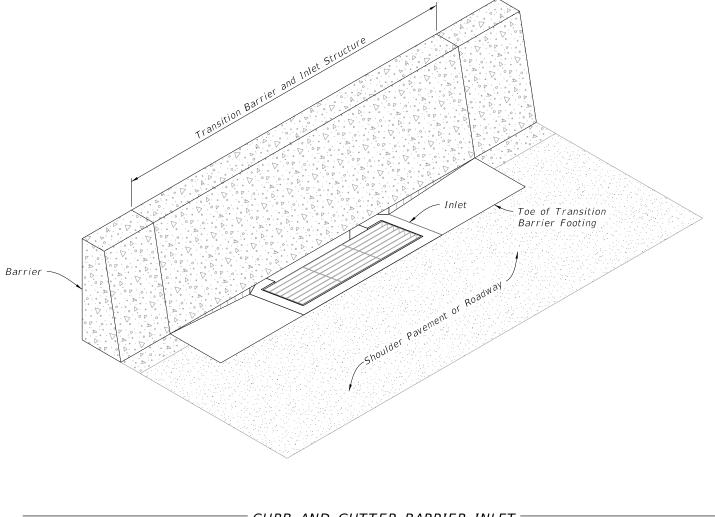


- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Where called for in the Plans, use this inlet in conjunction with Curb and Gutter Barrier per Index 521-001. Construct Barrier segments shown herein in accordance with requirements of Index 521-001, including connections to adjacent barrier 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.

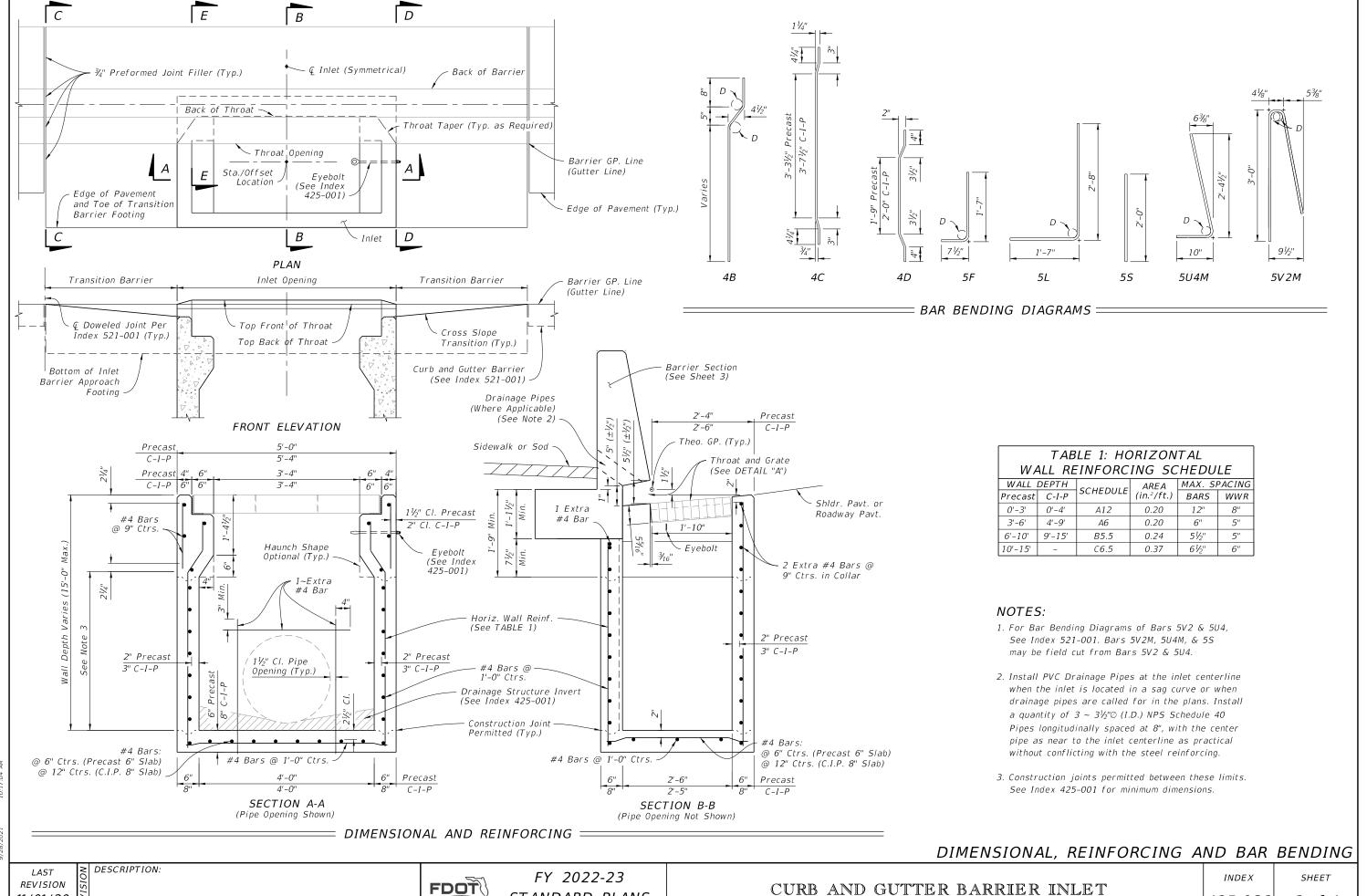
- 4. Apply a $\frac{3}{4}$ " chamfer or $\frac{1}{4}$ " radius to all exposed concrete edges.
- 5. Grates may be fabricated with reticuline bars or with either $\frac{1}{2}$ welded or $\frac{1}{6}$ electroforged cross bars and bearing bars as detailed on Sheet 3.
- 6. All dimensions are for both precast 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	



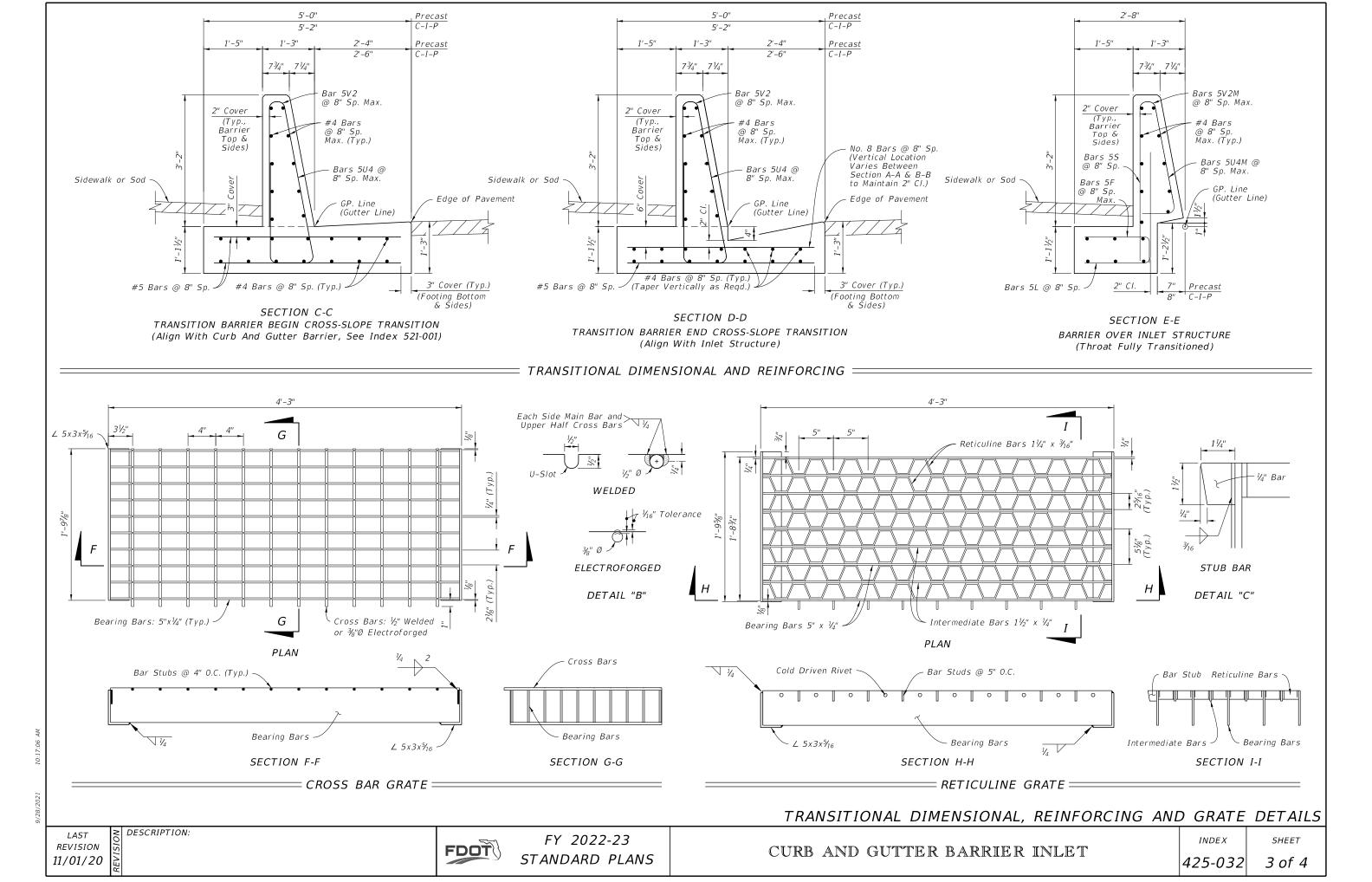
= CURB AND GUTTER BARRIER INLET ======

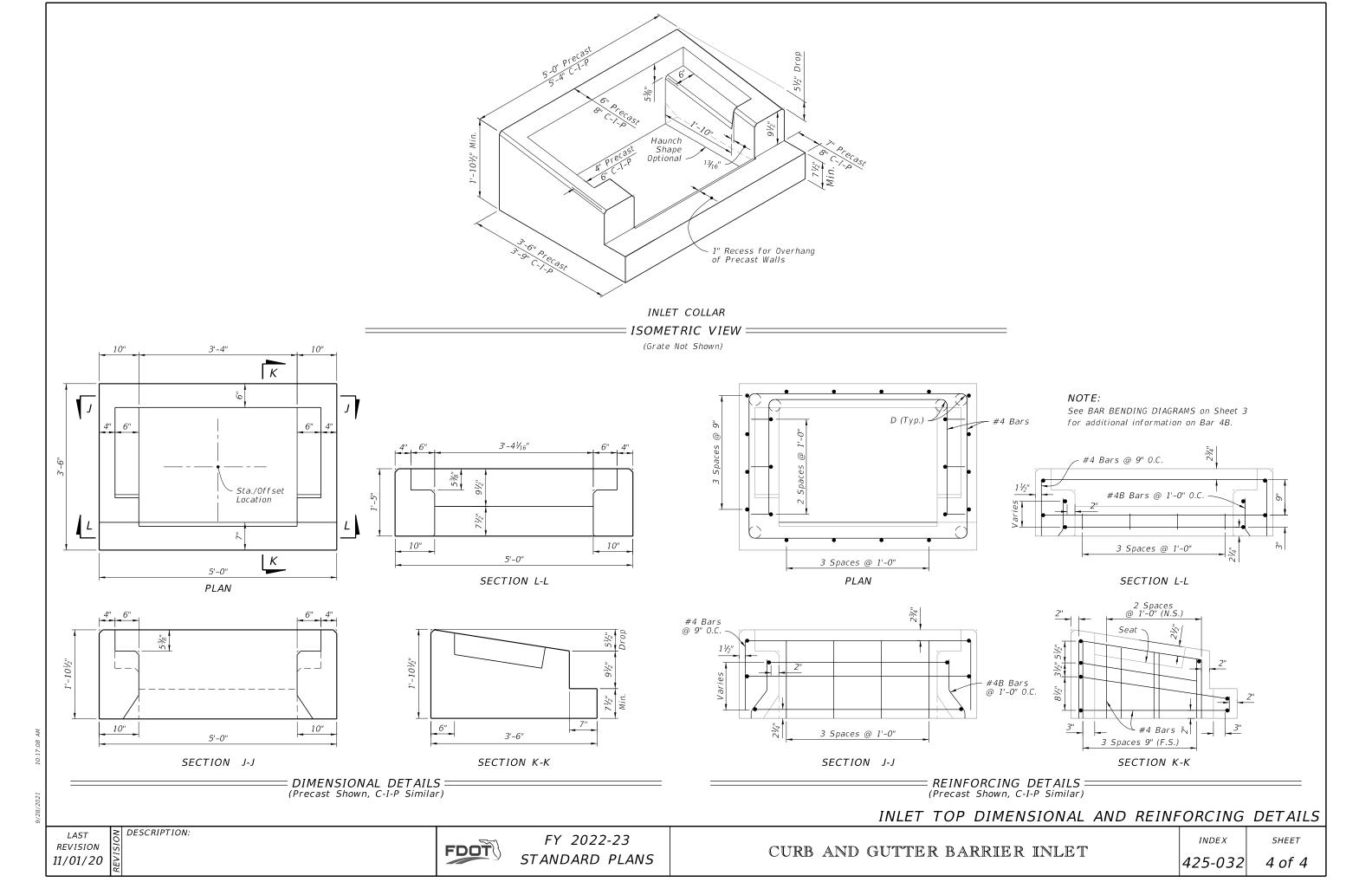
DESCRIPTION:



STANDARD PLANS

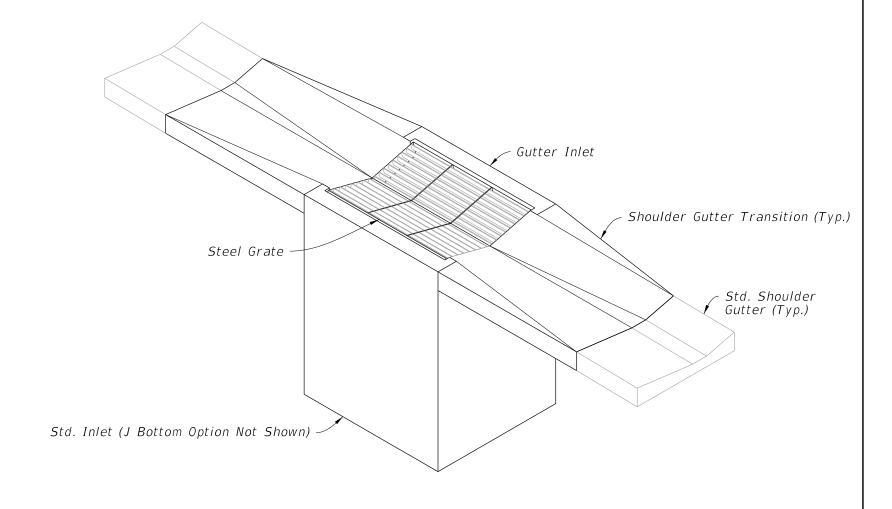
11/01/20





- 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 11/2" 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	

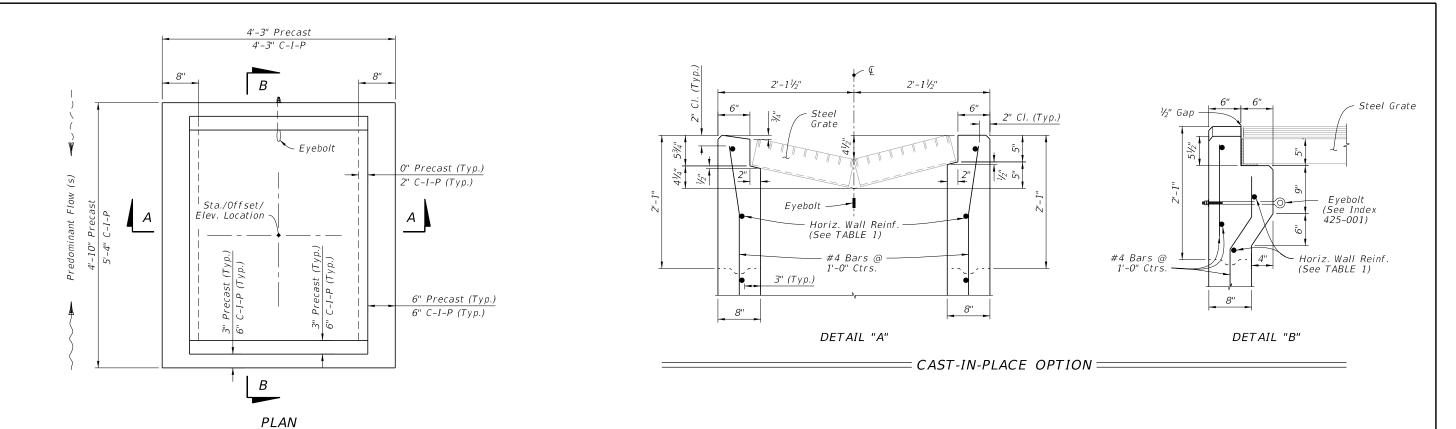


=GUTTER INLET TYPE S====

(Pipe Opening Not Shown)

REVISION 11/01/20

≥ DESCRIPTION:



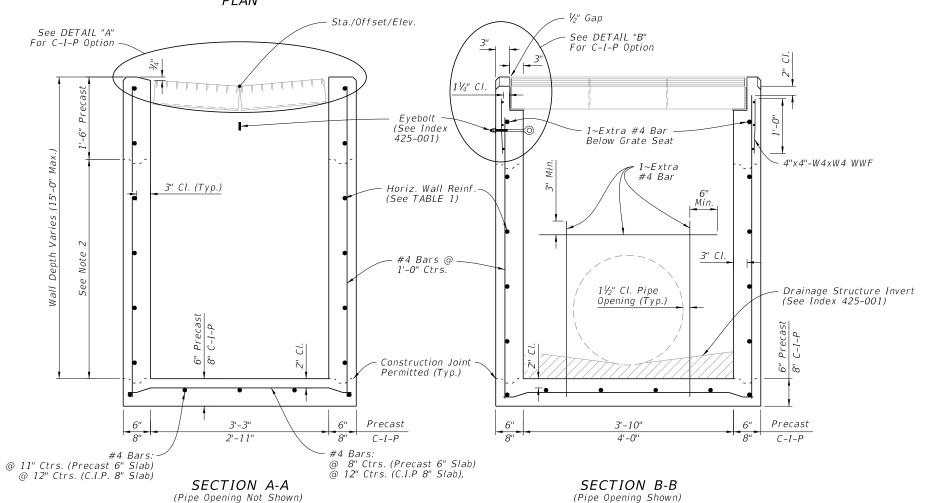


TABLE 1 HORIZONTAL WALL REINFORCING SCHEDULE				
WALL	SCHEDULE	AREA	MAX. SPACING	
DEPTH	JCHLDOLL	(in.²/ft.)	BARS	WWR
0' - 5'	A12	0.20	12"	8"
5' - 9'	A6	0.20	6"	5"
9' - 12'	A4	0.24	4"	3"
9' - 15'	B5.5	0.24	5½"	5"

NOTES:

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

DIMENSIONAL AND REINFORCING DETAILS

LAST REVISION 11/01/20

DESCRIPTION:

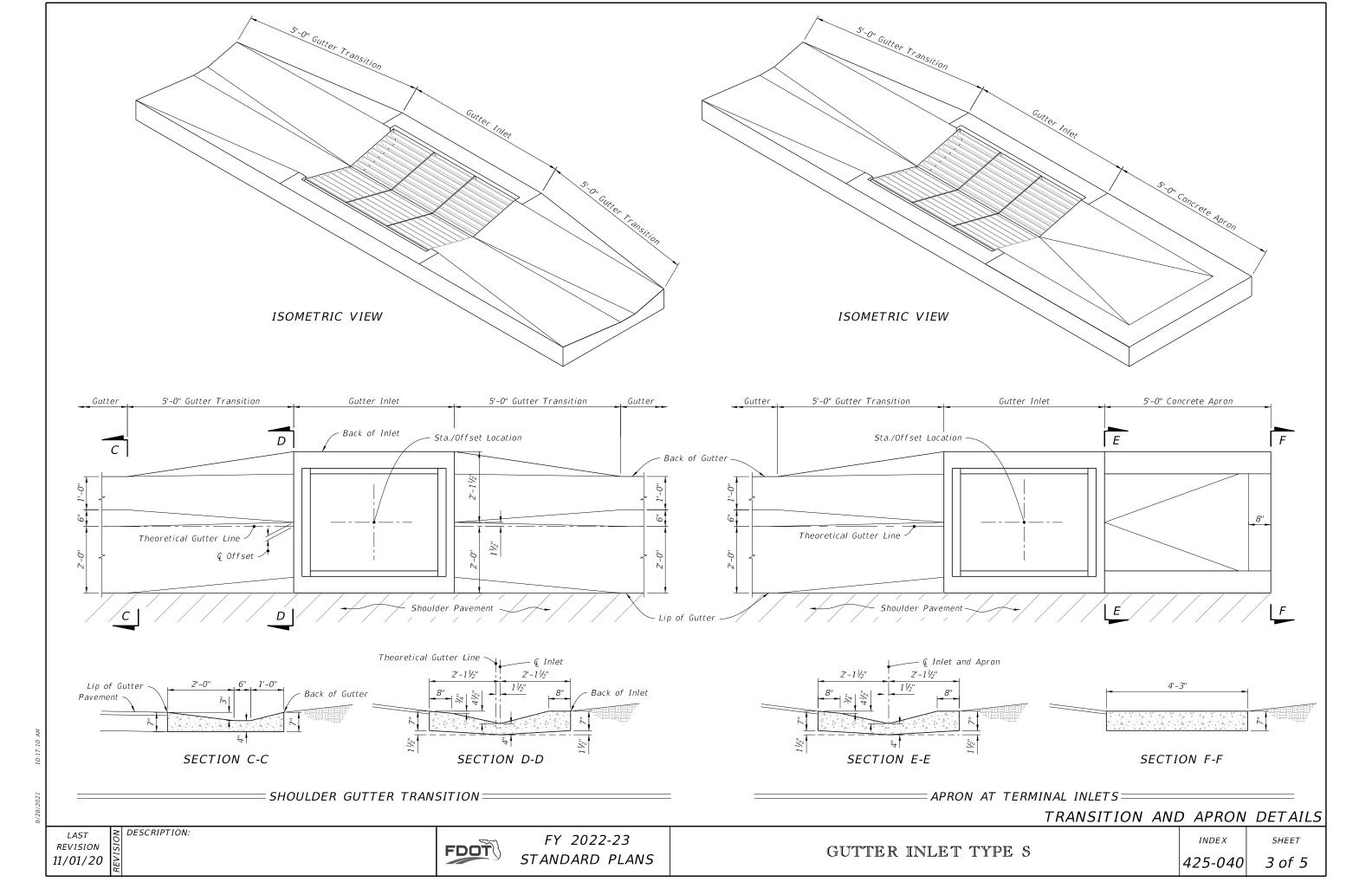
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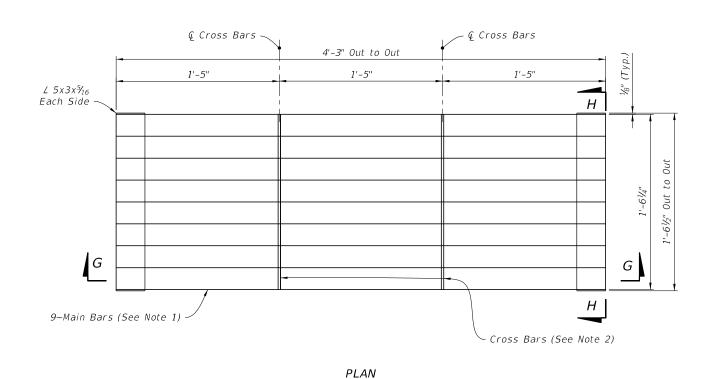
FY 2022-23 STANDARD PLANS

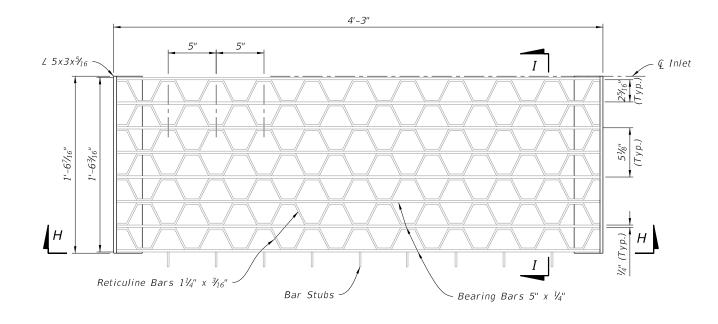
GUTTER INLET TYPE S

INDEX
425-040

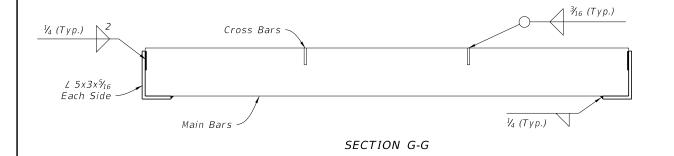
SHEET 2 of 5







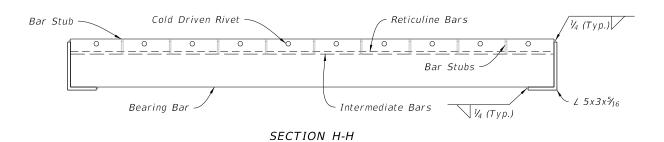
PLAN

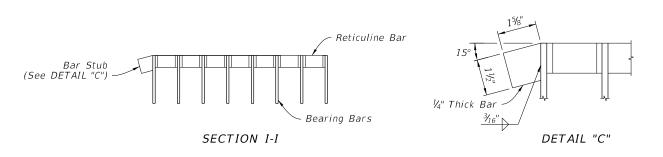


PARALLEL BARS

NOTES:

- 1. Main Bars are $5"xV_4"$, 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 :

STEEL GRATE DETAILS

DESCRIPTION: LAST REVISION 11/01/20

FDOT

FY 2022-23 STANDARD PLANS

GUTTER INLET TYPE S

INDEX 425-040

SHEET 4 of 5

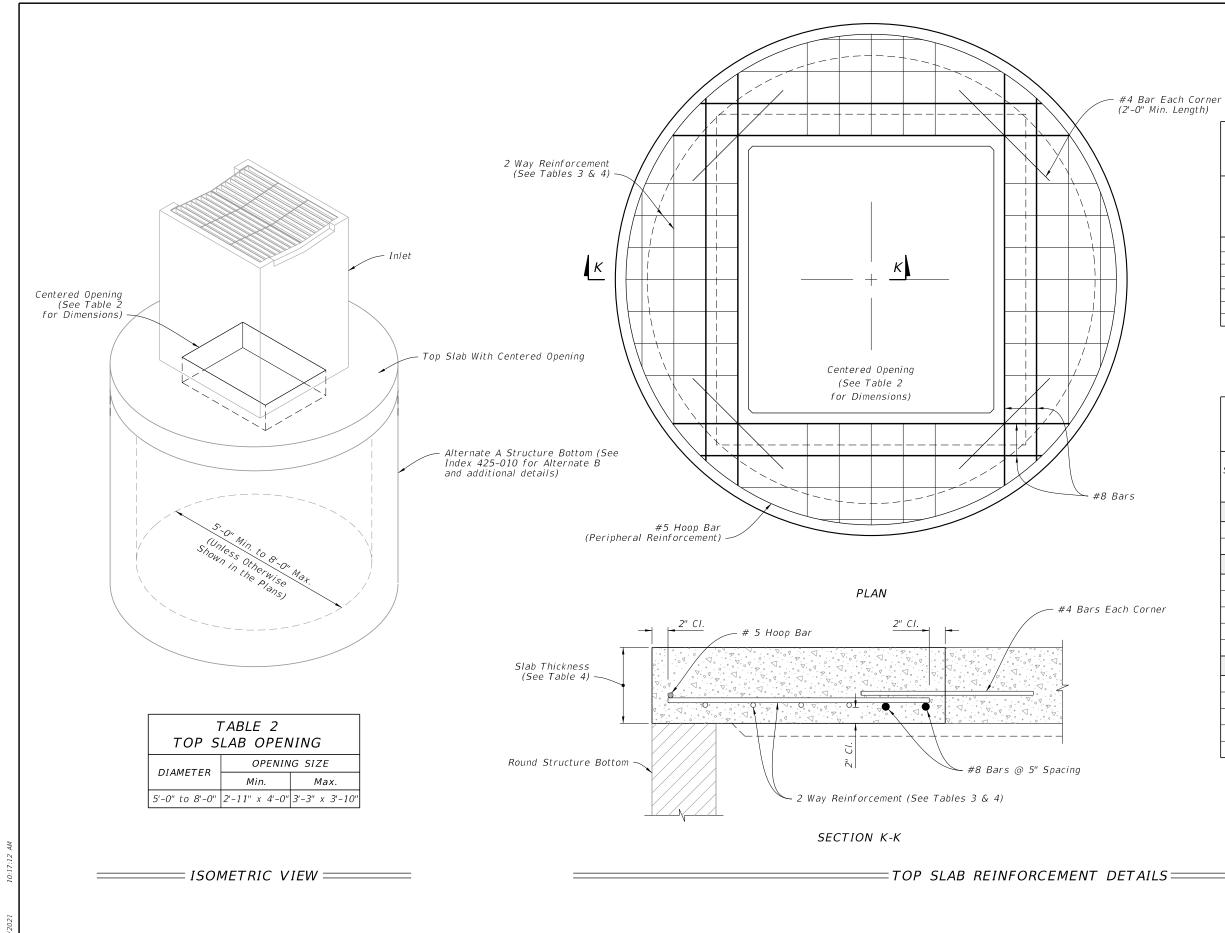


TABLE 3 TOP SLAB REINFORCING SCHEDULE

KLINI OKCING SCHLDOLL		
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'	91/2"	D
	SIZE: 6'-0"	
≥0.5′<8′	9½"	В
8'<18'	91/2"	С
18'<30'	91/2"	D
30'<37'	91/2"	Е
37'-40'	9½"	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'	111/2"	G

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

LAST REVISION 11/01/20

DESCRIPTION:

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FY 2022-23 STANDARD PLANS

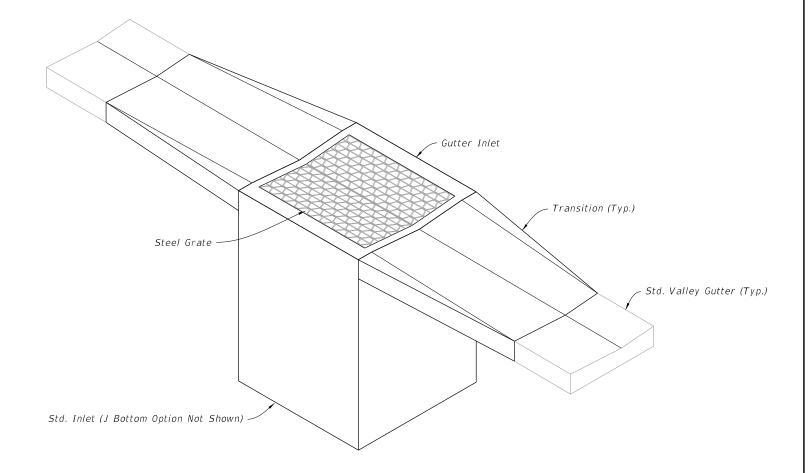
GUTTER INLET TYPE S

INDEX 425-040 5

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	

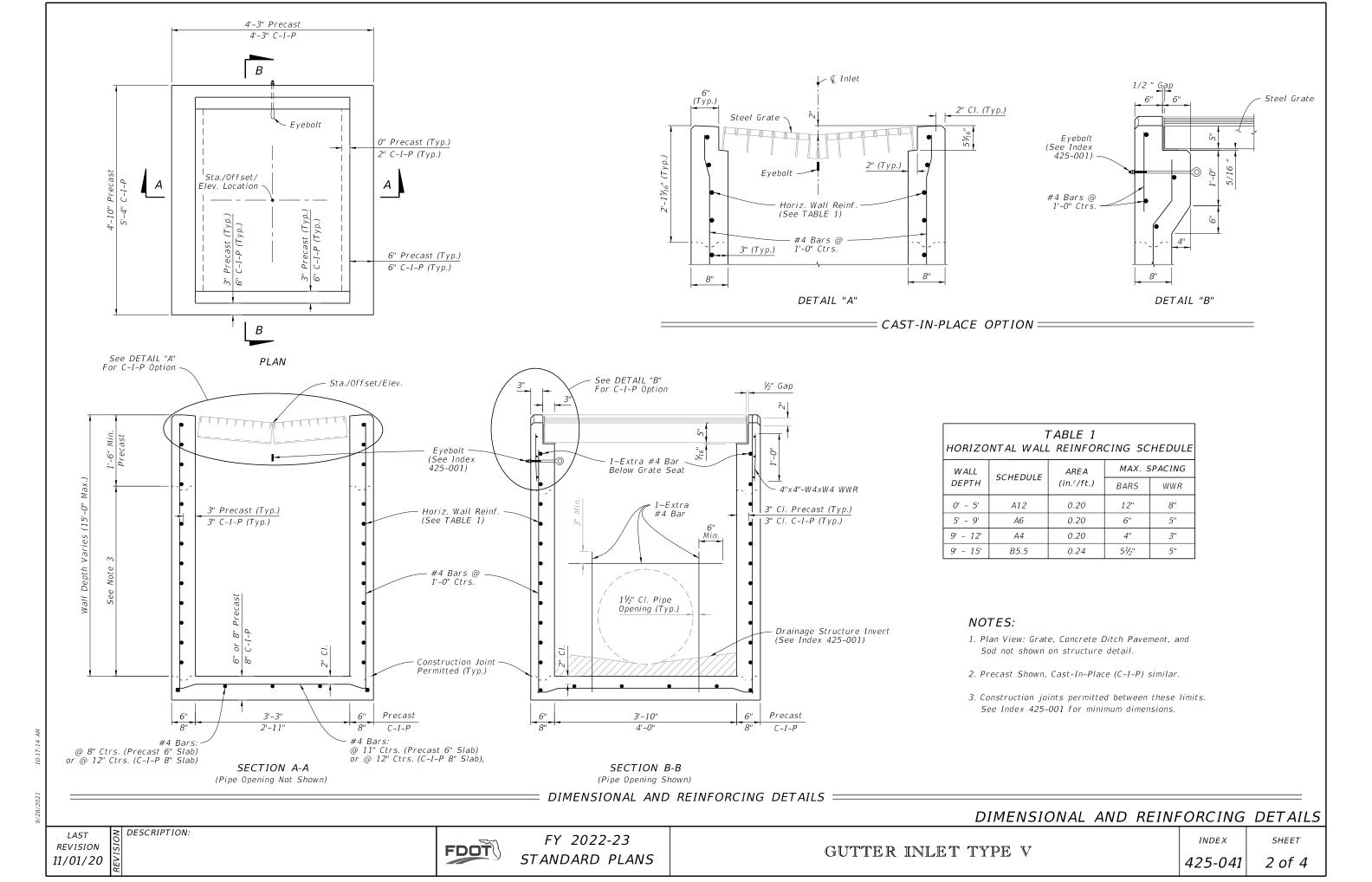


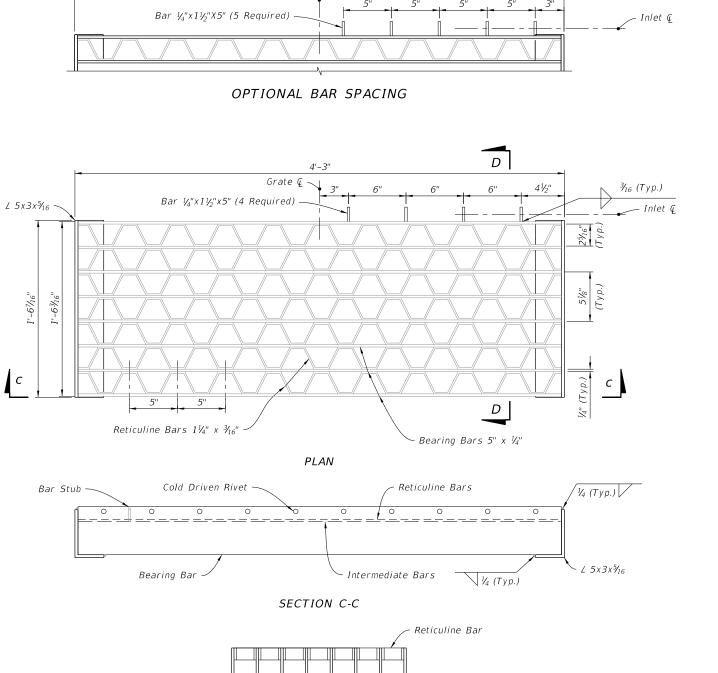
GUTTER INLET TYPE V ===

(Pipe Opening Not Shown)

REVISION 11/01/20

≥ DESCRIPTION:





Grate €



SECTION D-D

Bearing Bars

STEEL GRATE DETAILS

LAST O DESCRIPTION:
REVISION IS 11/01/20

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FY 2022-23 STANDARD PLANS

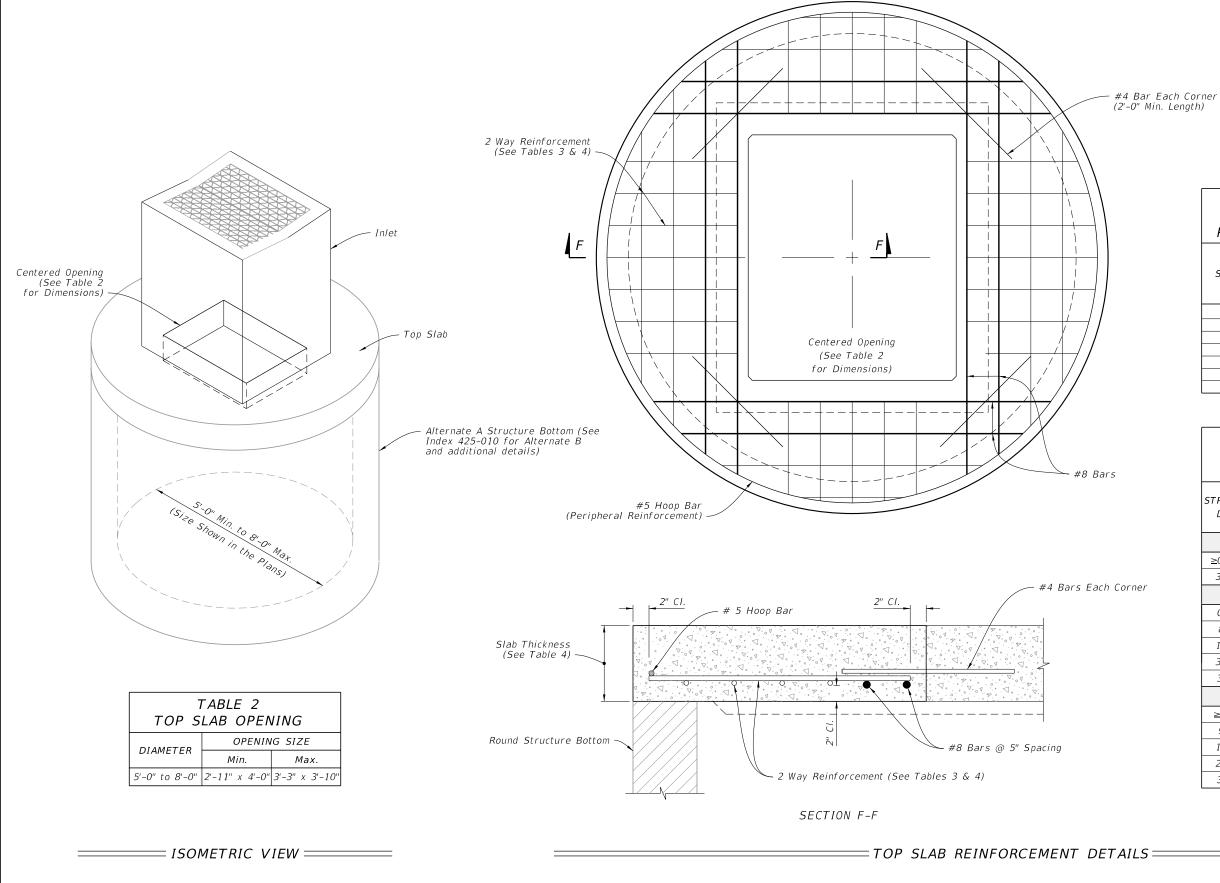


TABLE 3 TOP SLAB					
REINFOR	REINFORCING SCHEDULE				
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) In.²/ft.				
Α	0.20				
В	0.24				
С	0.37				
D	0.53				
Е	0.73				
F	1.06				
G	1 45				

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' 91/2"		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'	11½"	E						
23'<33'	11½"	Е						
33'-40'	11½"	G						

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

LAST REVISION 11/01/20

≥ DESCRIPTION:

FDOT

FY 2022-23
STANDARD PLANS

GUTTER INLET TYPE V

1NDEX 425-041

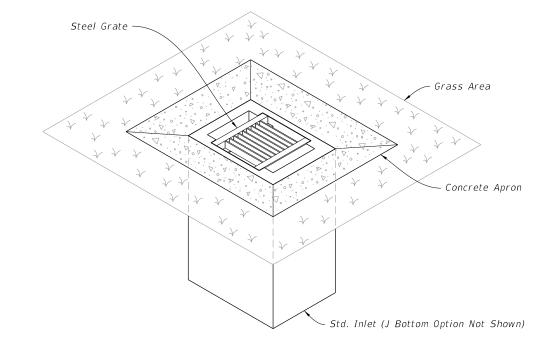
SHEET

4 of 4

9/28/2021

- 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				

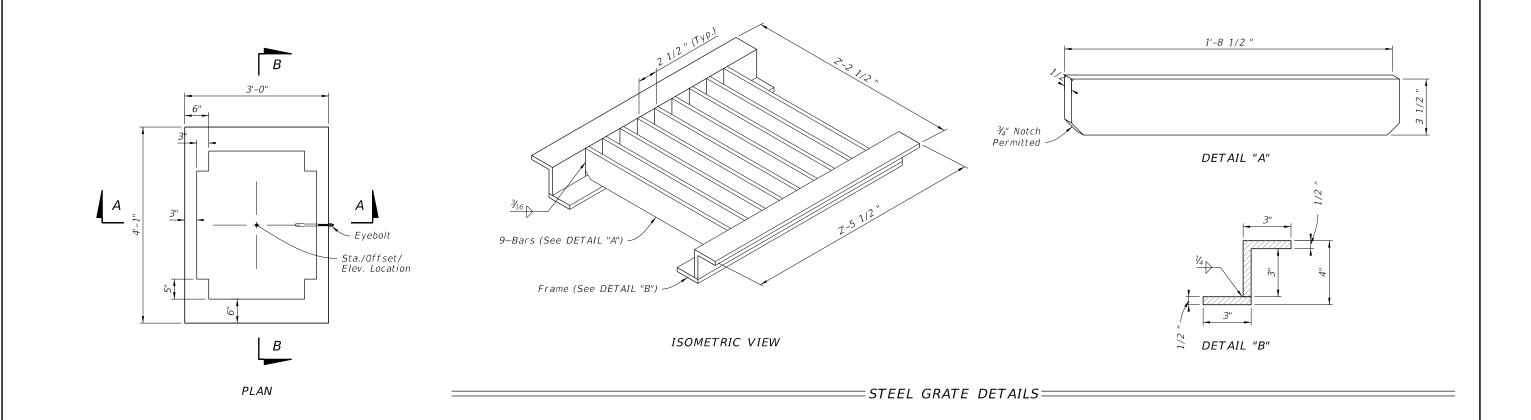


=DITCH BOTTOM INLET TYPE A

(Pipe Opening Not Shown)

REVISION 11/01/20

≥ DESCRIPTION:



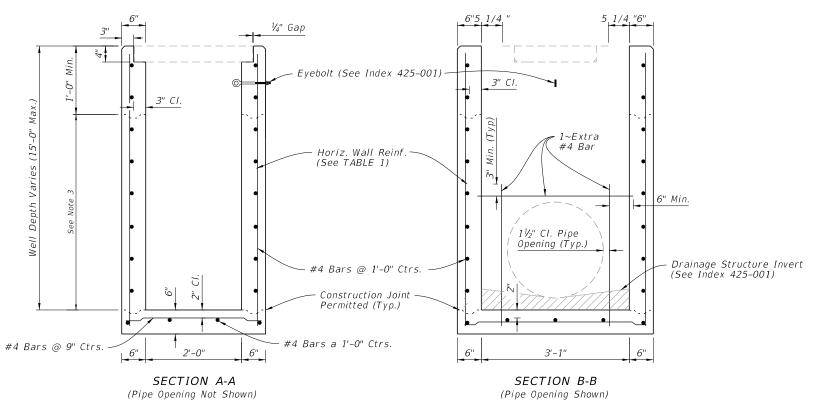


TABLE 1 HORIZONTAL WALL REINFORCING SCHEDULE								
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS WWR					
0' - 10'	A12	0.20	12"	8"				
10' - 15'	A6	0.20	6"	5"				

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

LAST REVISION 11/01/20

DESCRIPTION:

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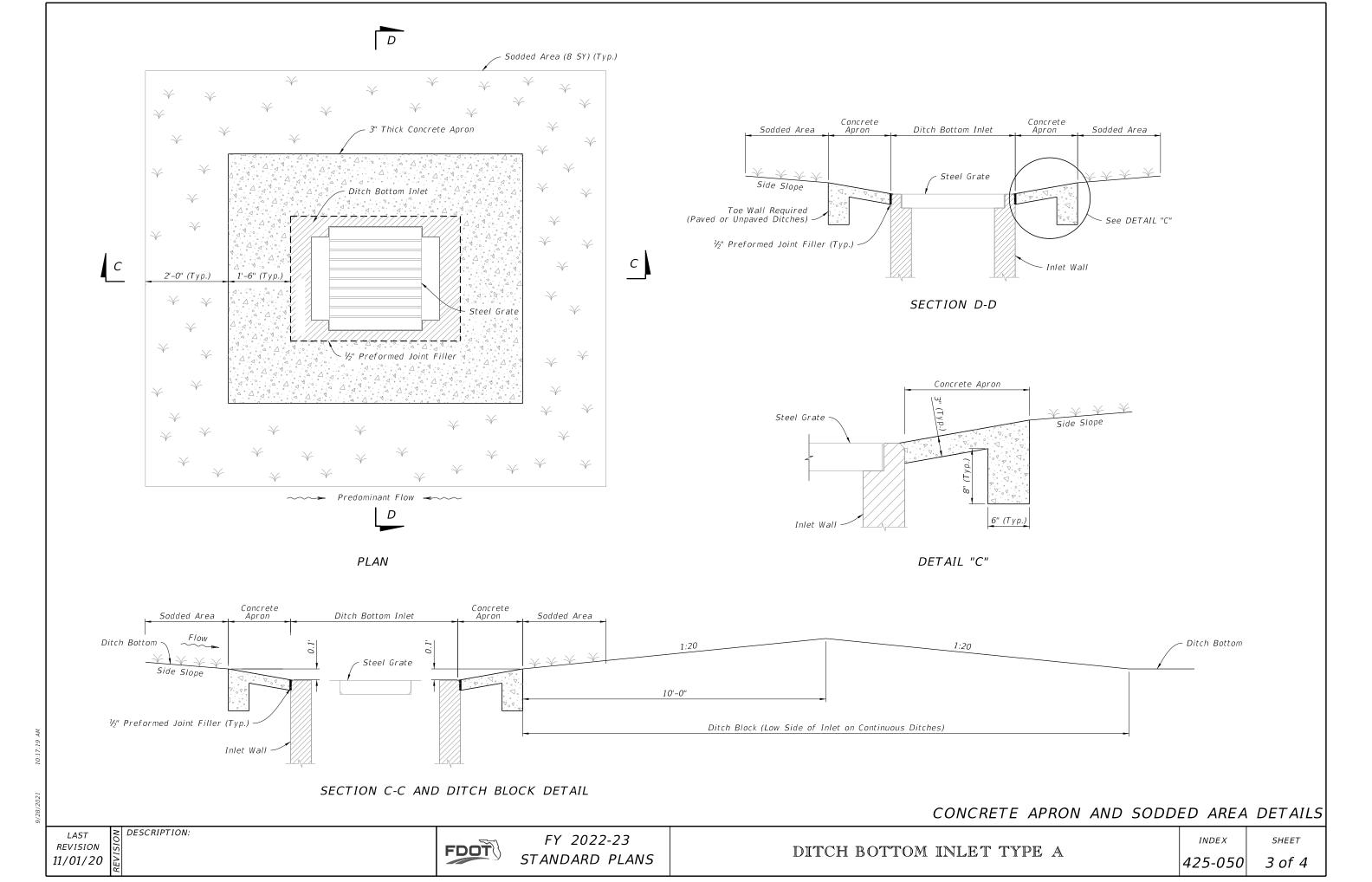
FY 2022-23 STANDARD PLANS

DITCH BOTTOM INLET TYPE A

INDEX 425-050

0 2 of 4

SHEET



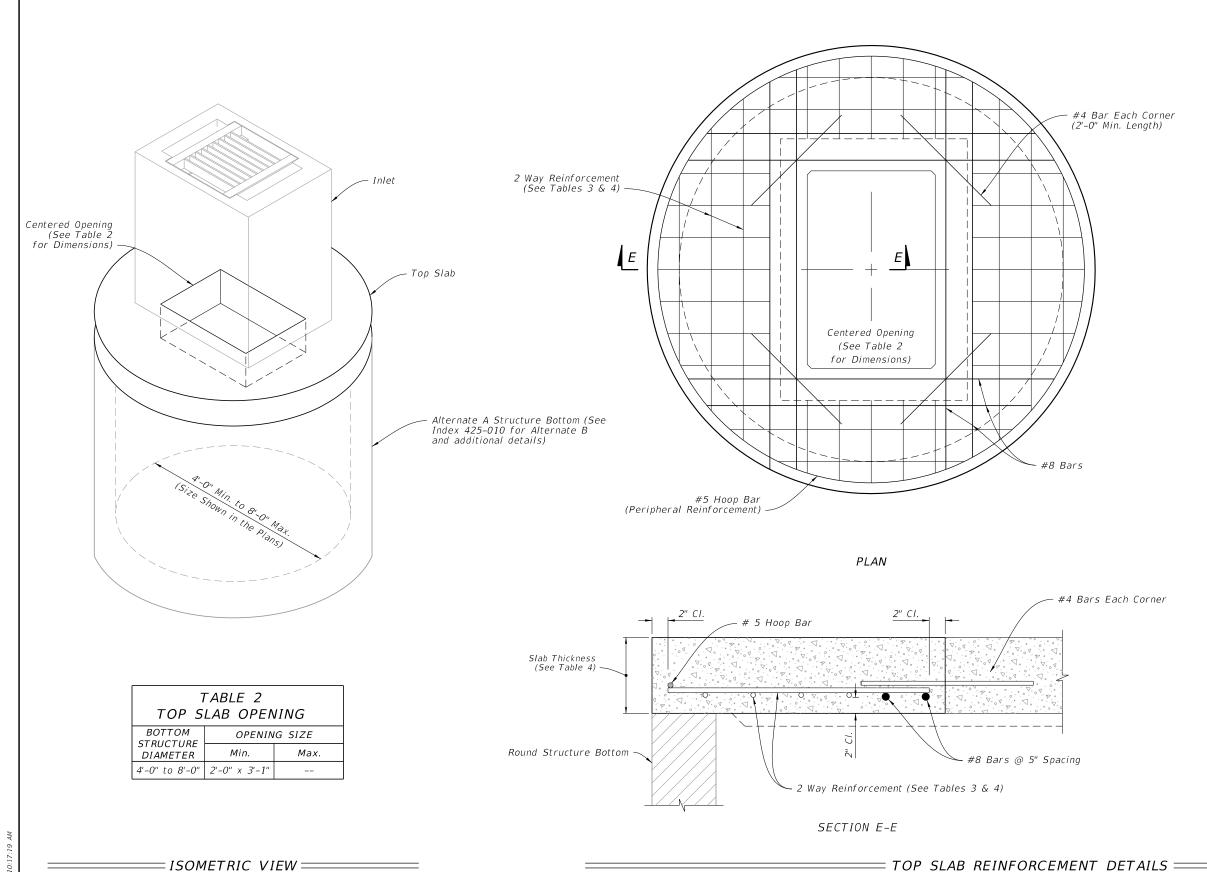


TABLE 3						
TOP SLAB						
REINFOR	CING SCHEDULE					
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) In.²/ft.					
Α	0.20					
В	0.24					
С	0.37					
D	0.53					
Е	0.73					
F	1.06					
G	1.45					

TABLE 4

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

= TOP SLAB REINFORCEMENT DETAILS =

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

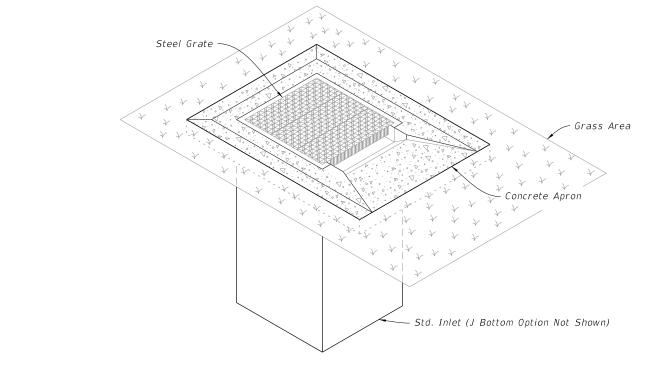
REVISION 11/01/20

DESCRIPTION:

FY 2022-23 STANDARD PLANS

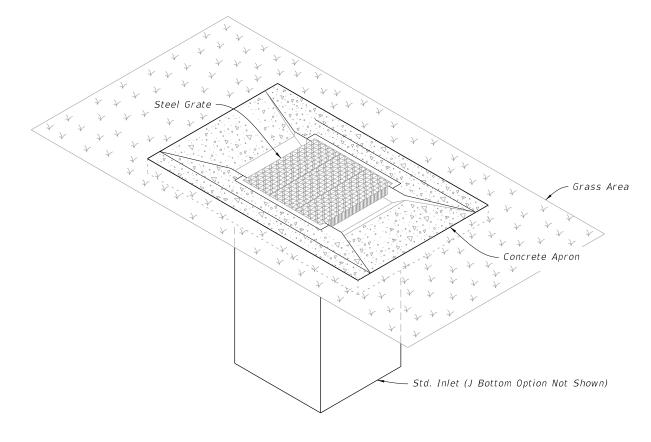
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. All reinforcing is Grade 60 bars with 2" minimum cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire fabric. Bars to be cut or bent for min. 1½" clearance around pipe.
- 3. Chamfer all exposed edges and corners $\frac{3}{4}$ " 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)

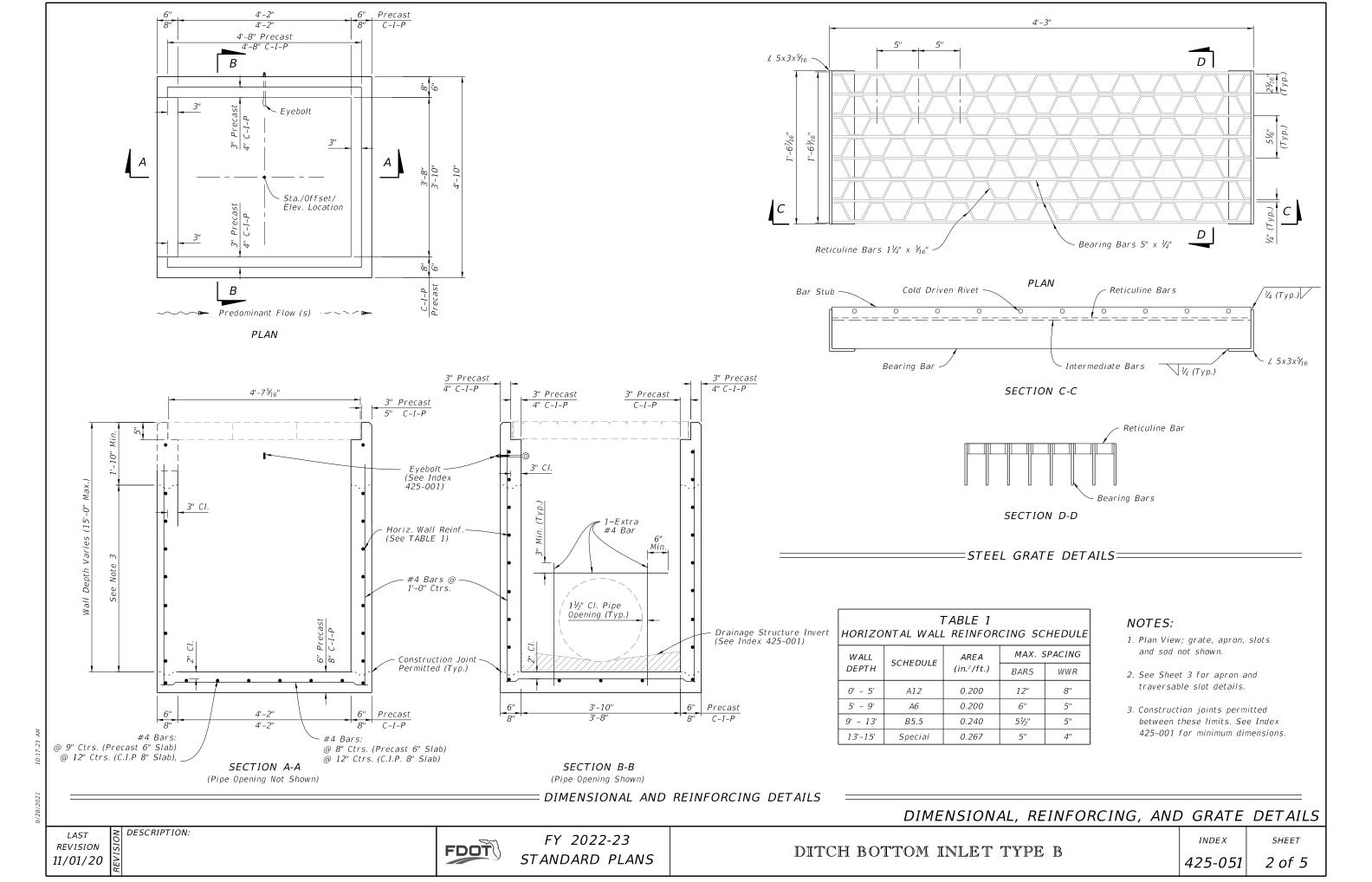


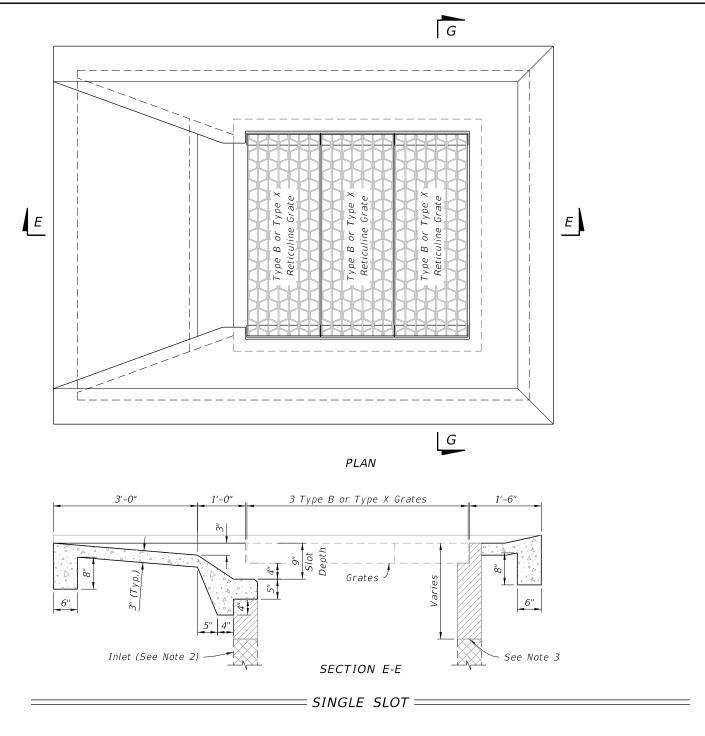
DOUBLE SLOT INLET =

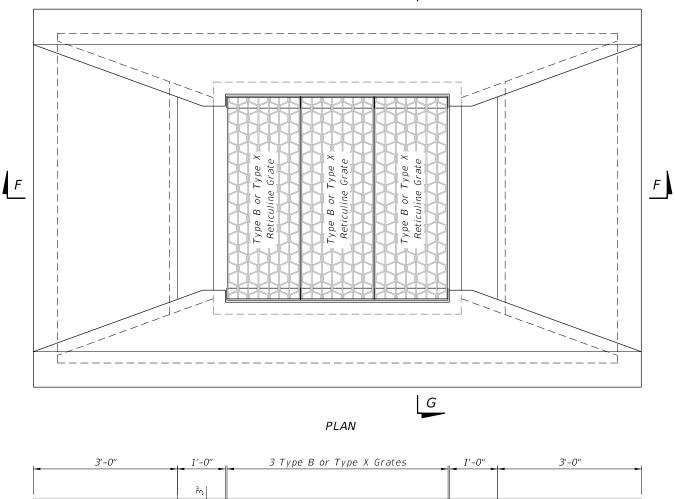
(Pipe Connection Not Shown)

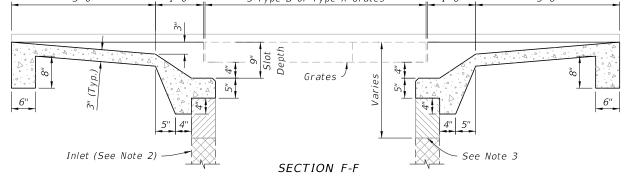
9/28/2021







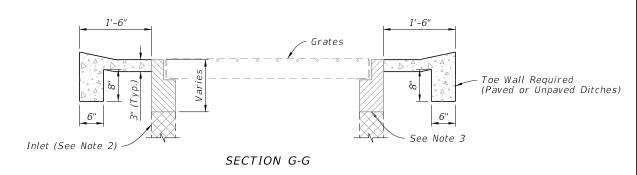




DOUBLE SLOT

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

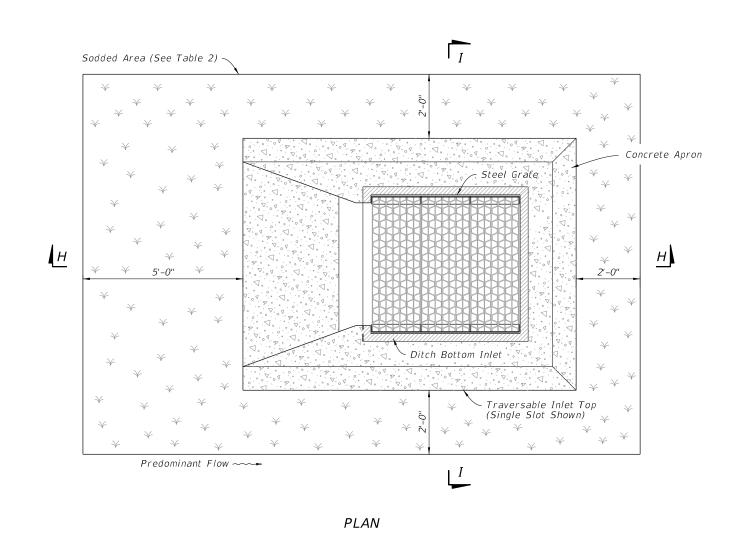
≥ DESCRIPTION: REVISION 11/01/20

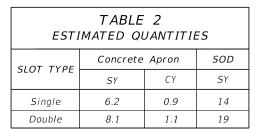
FY 2022-23 STANDARD PLANS

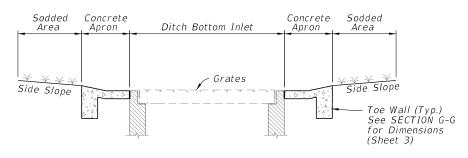
DITCH BOTTOM INLET TYPE B

INDEX 425-051

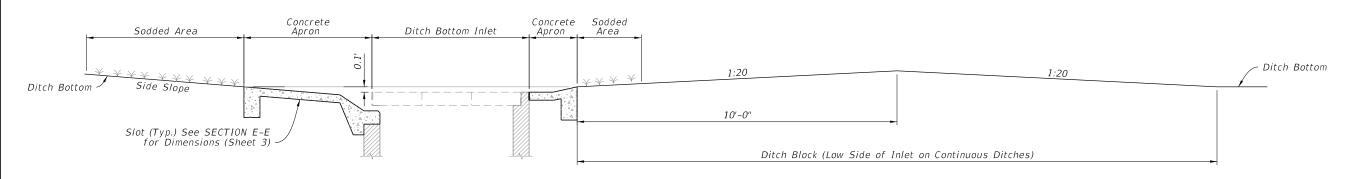
SHEET 3 of 5







SECTION I-I



SECTION H-H AND DITCH BLOCK

CONCRETE APRON AND SODDED AREA DETAILS

DESCRIPTION: REVISION 11/01/20

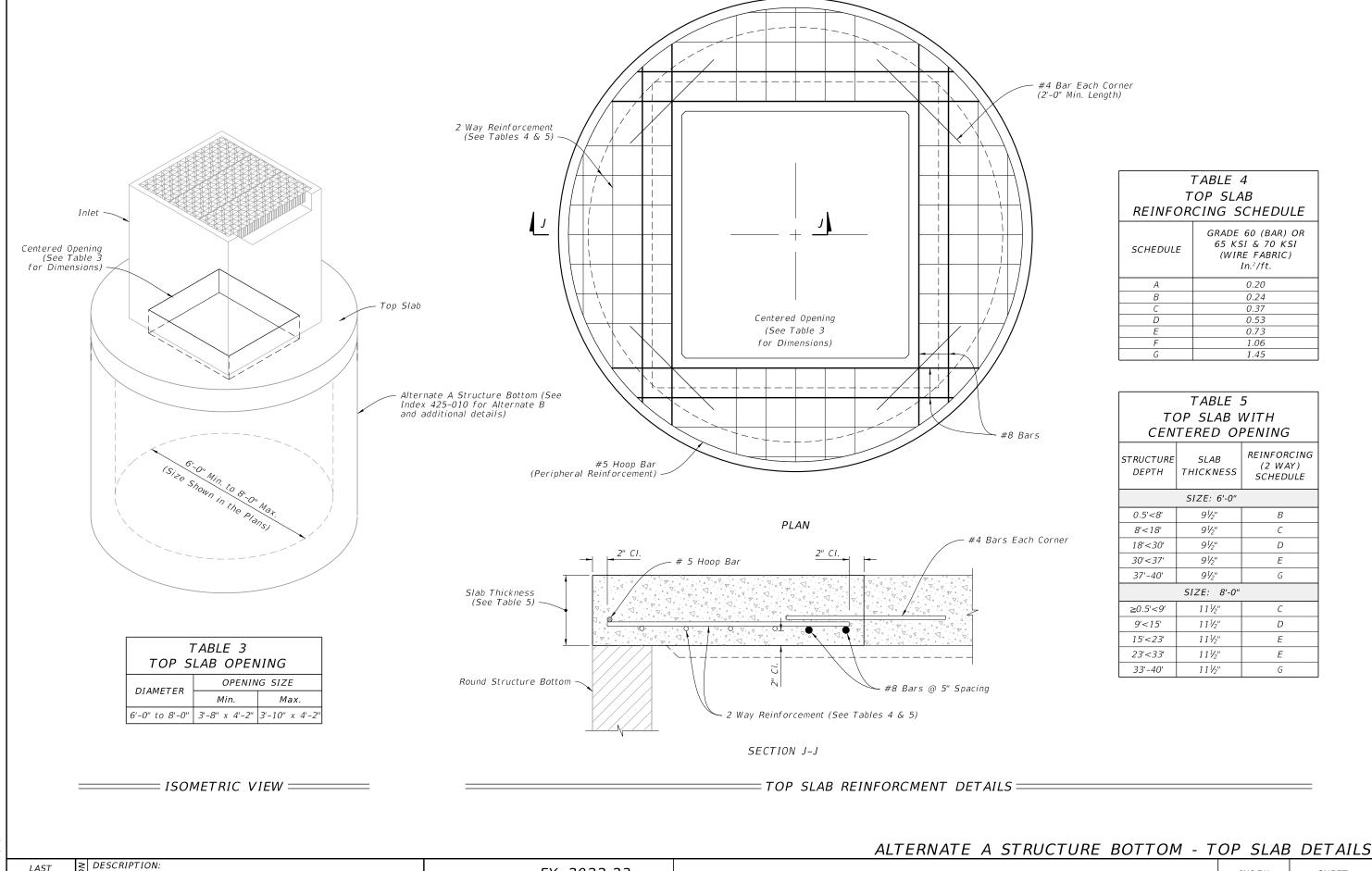
FDOT

FY 2022-23 STANDARD PLANS

DITCH BOTTOM INLET TYPE B

INDEX SHEET 425-051

4 of 5



REVISION 11/01/20

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FY 2022-23 STANDARD PLANS DITCH BOTTOM INLET TYPE B

INDEX 425-051

В

С

D

Ε

G

D

Ε

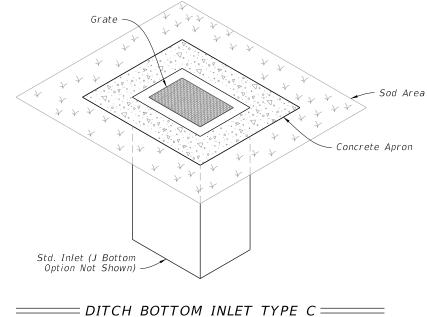
Ε

G

SHEET 5 of 5

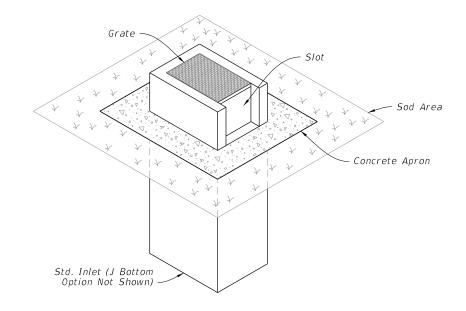
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Chamfer all exposed edges and corners $\frac{3}{4}$ " chamfer or tooled to $\frac{1}{4}$ " radius.
- 3. All reinforcing is Grade 60 bars with 2" minimum. cover unless otherwise noted. Cut or bend bars for 11/2" clearance around pipe opening. 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.

	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



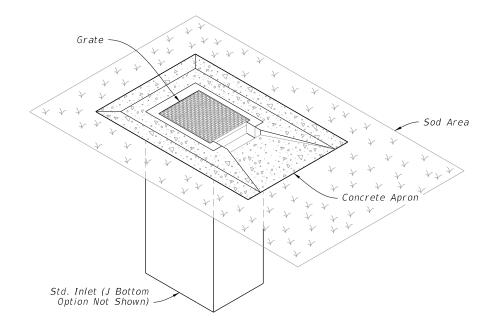
TRAVERSABLE

(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)

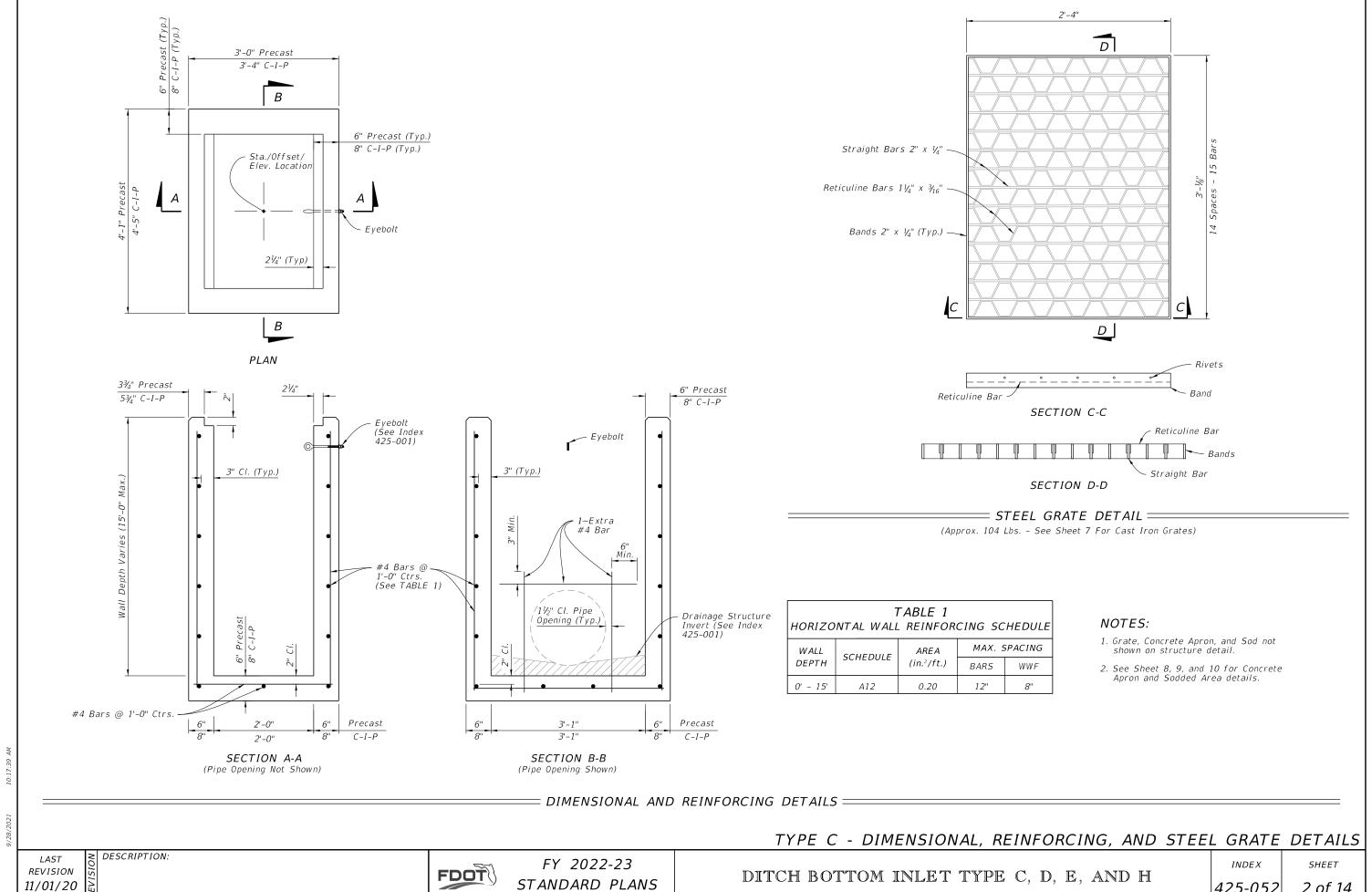


= DITCH BOTTOM INLET TYPE C ==TRAVERSABLE

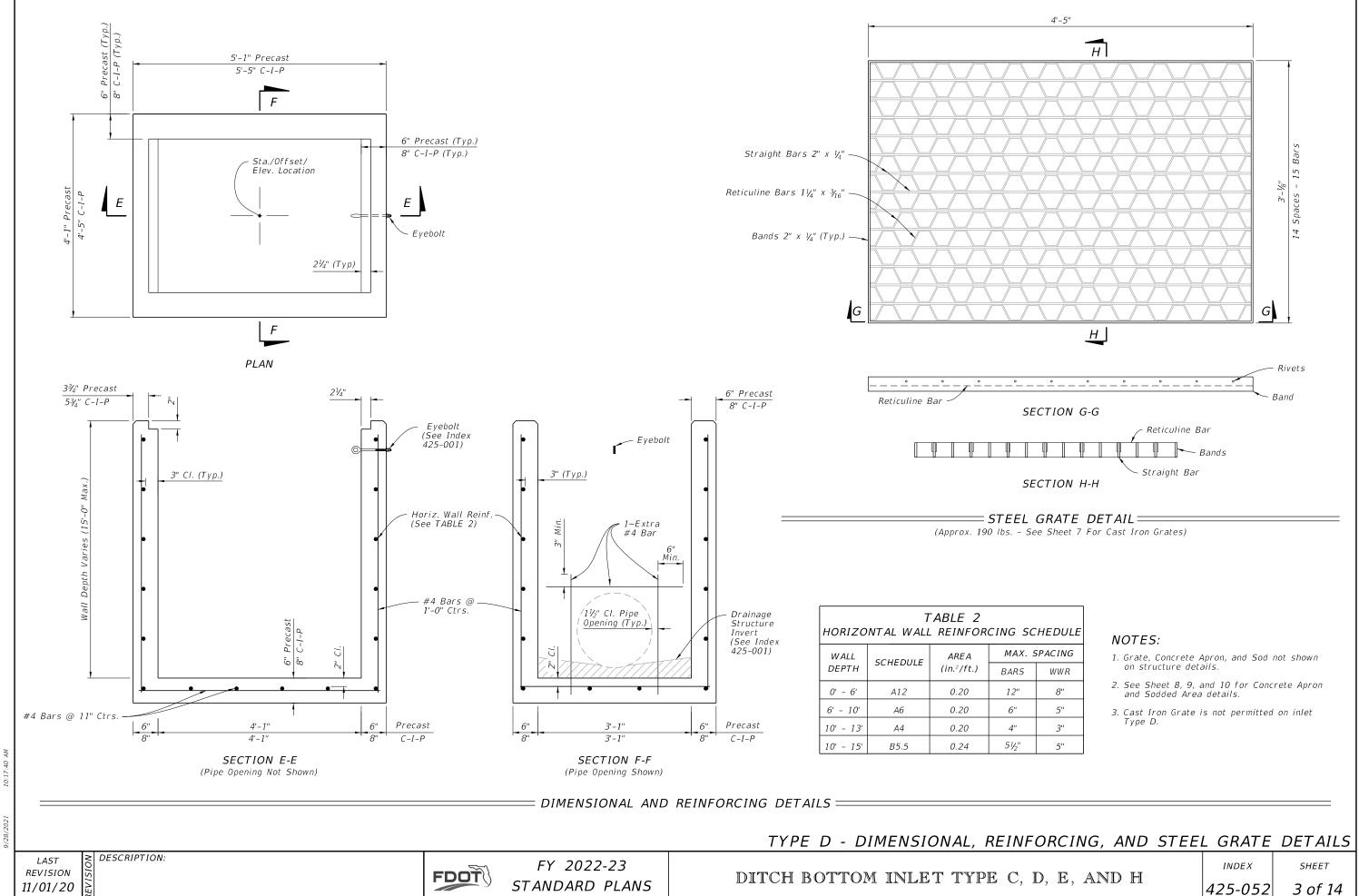
(Single Slot < 7" Shown, Double Slot, Type D, and E Similar, Pipe Connection Not Shown)

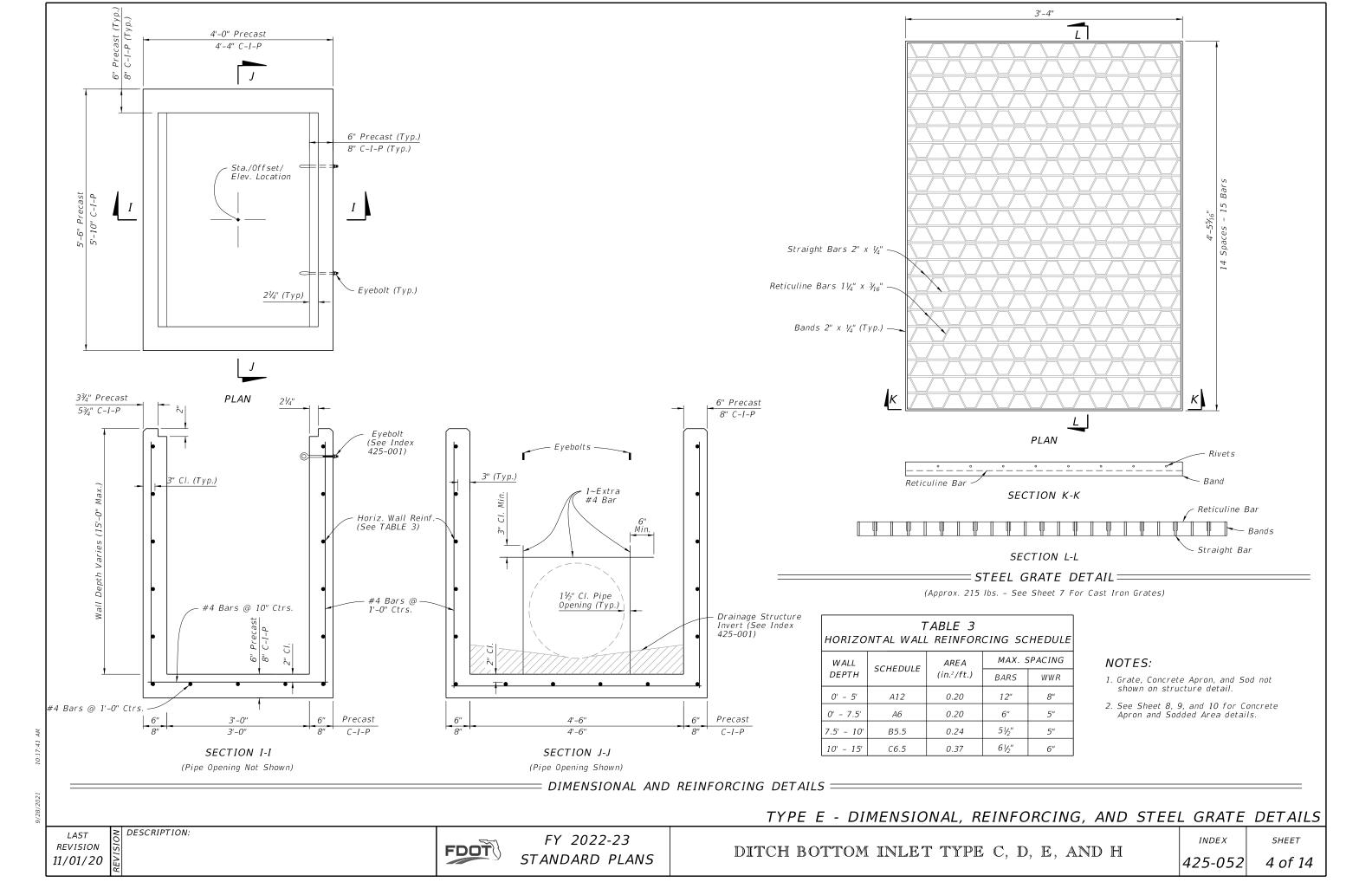
LAST **REVISION** 11/01/20

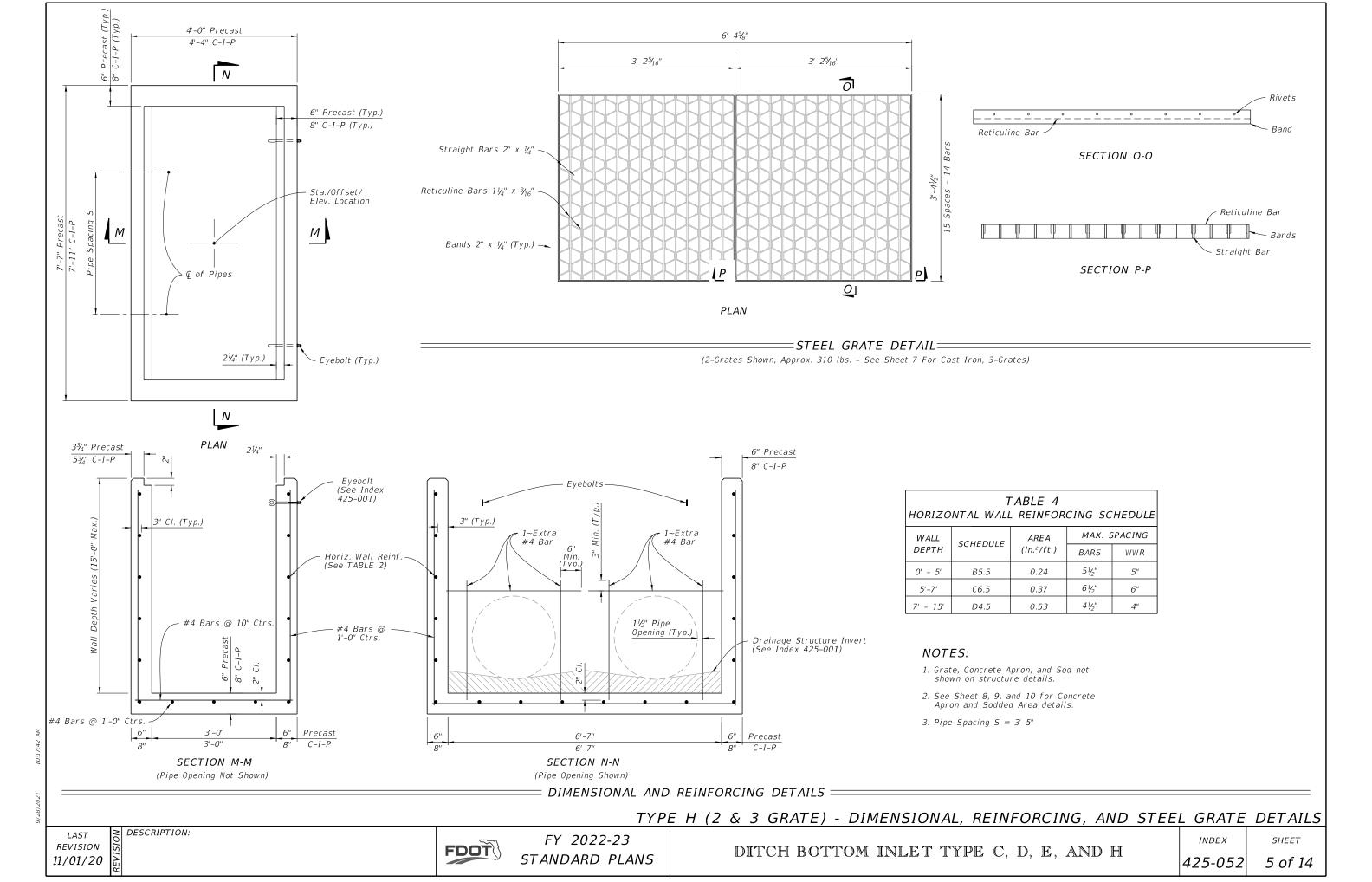
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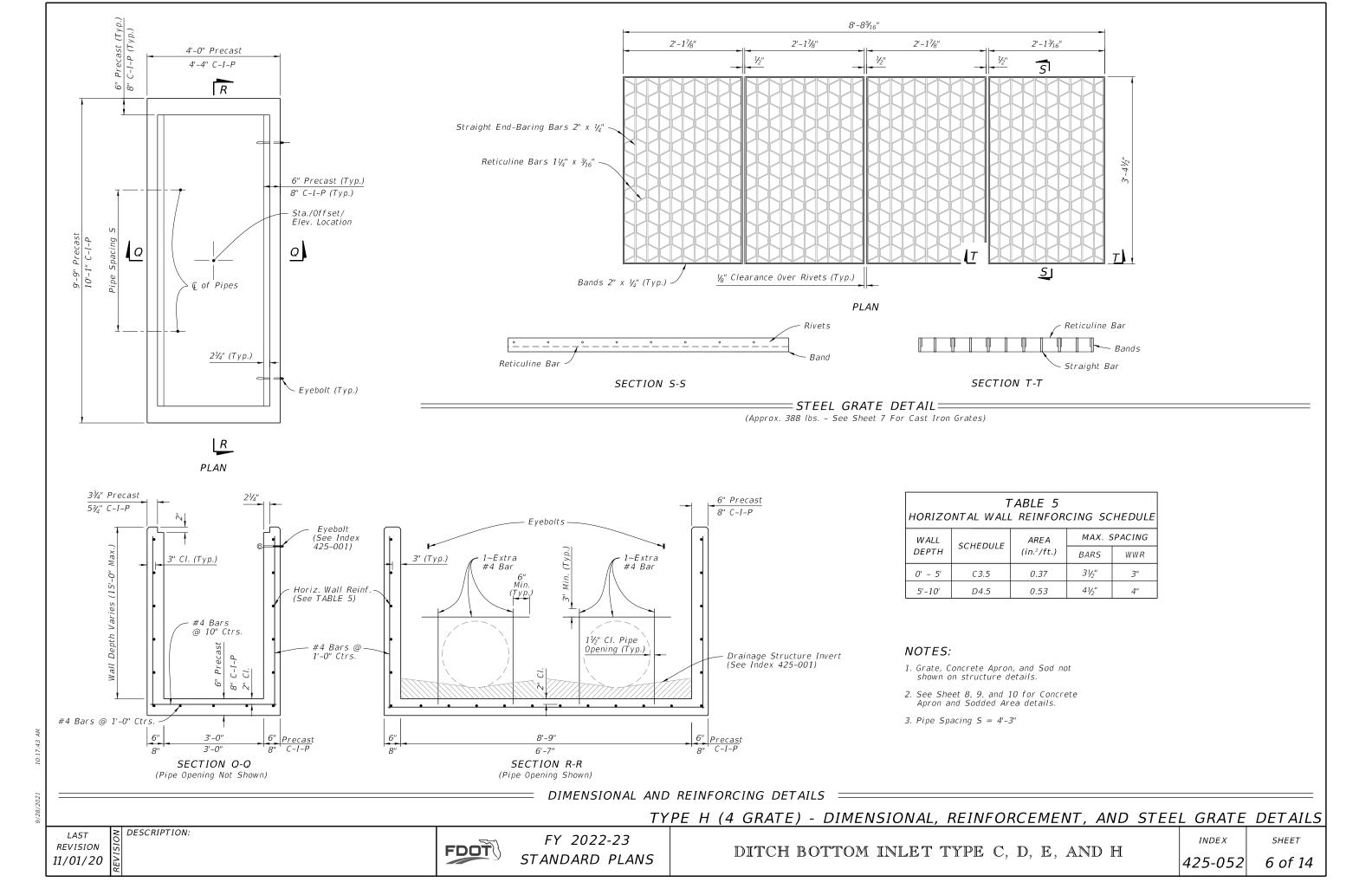


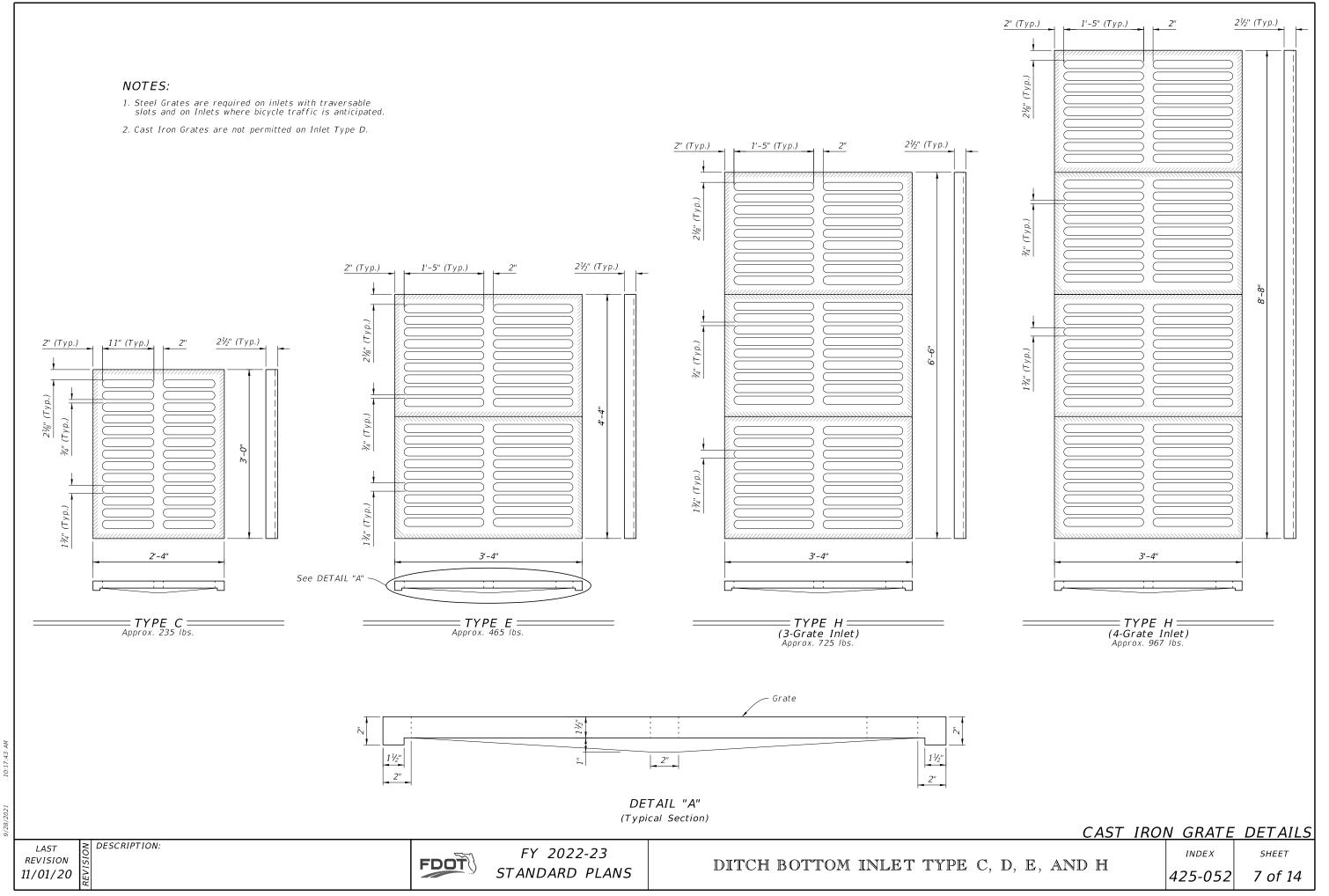
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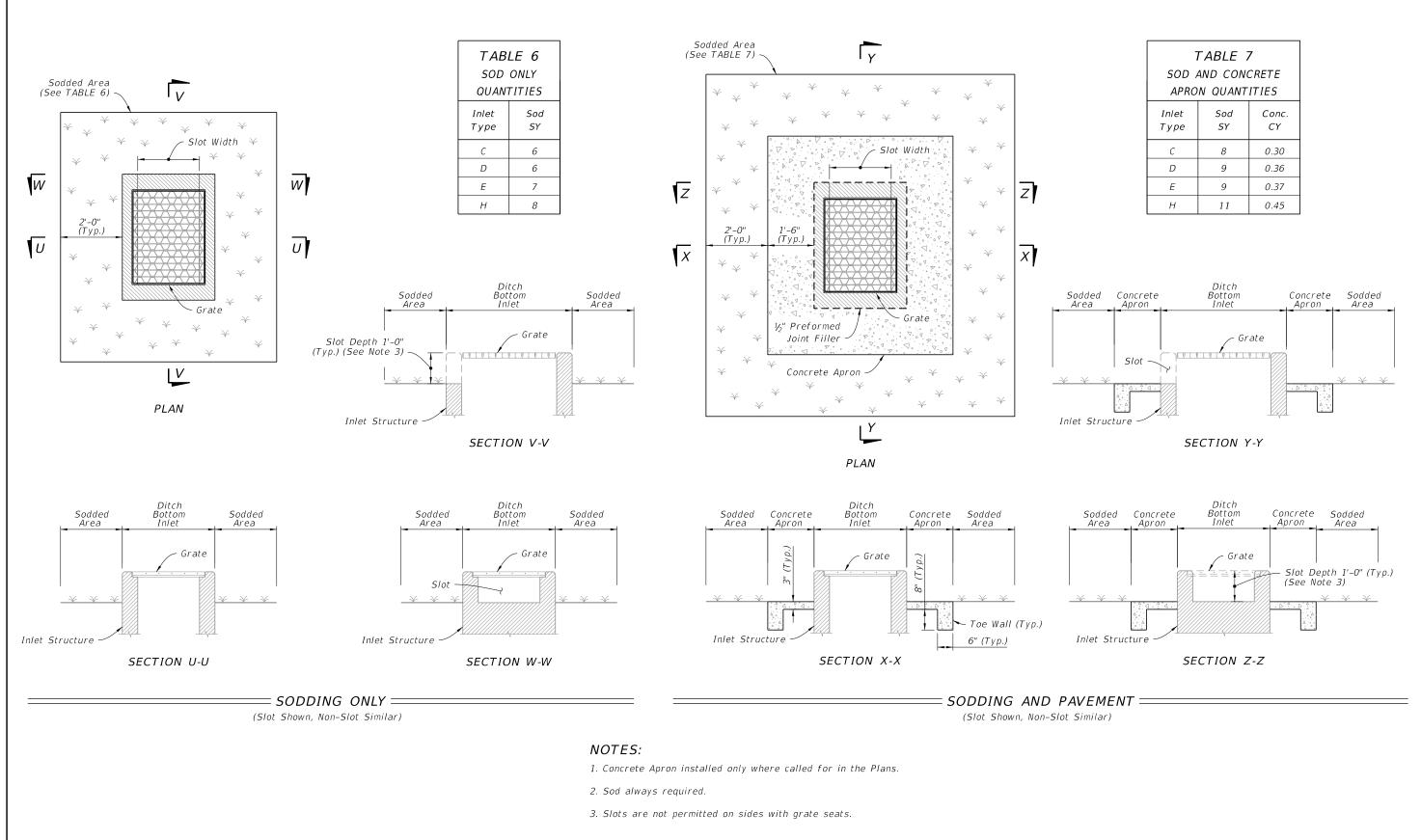










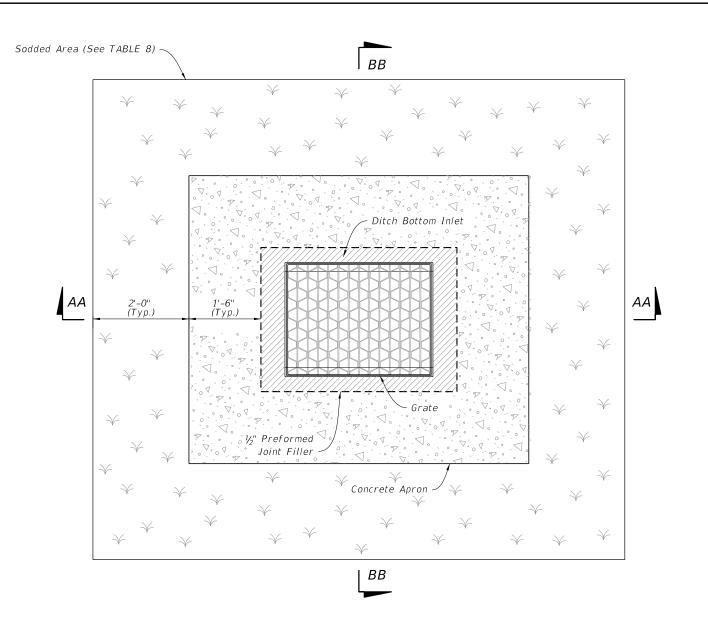


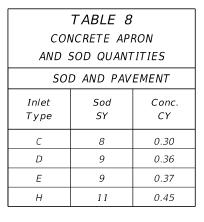
9/28/2021

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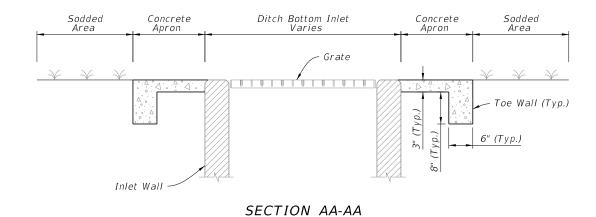
FY 2022-23 STANDARD PLANS NON-TRAVERSABLE INLET DETAILS

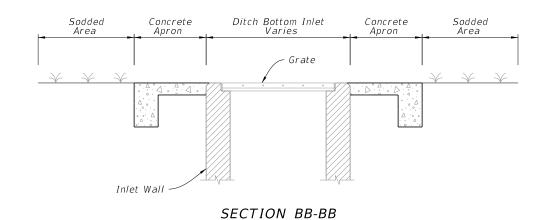




NOTES:

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



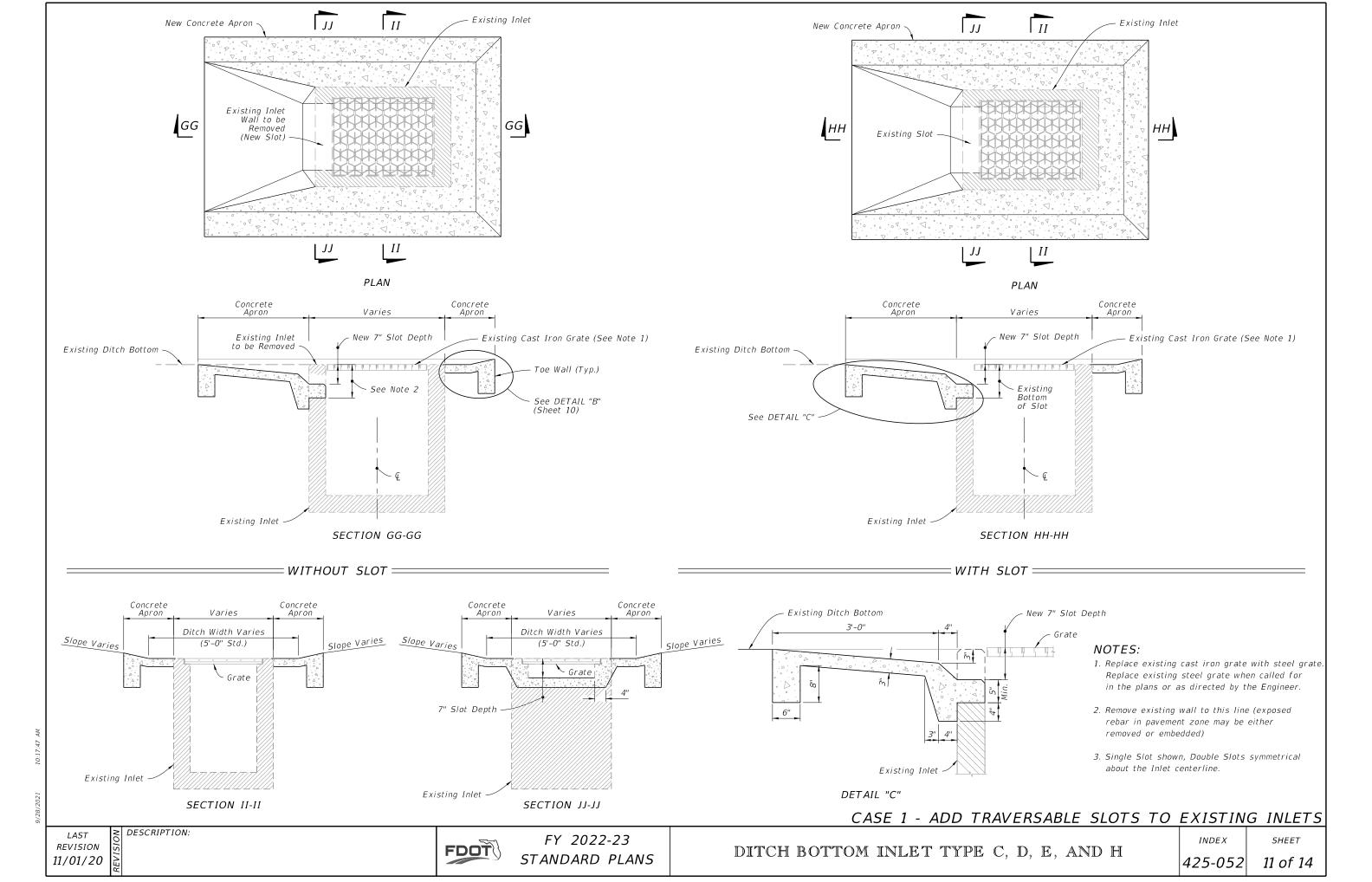


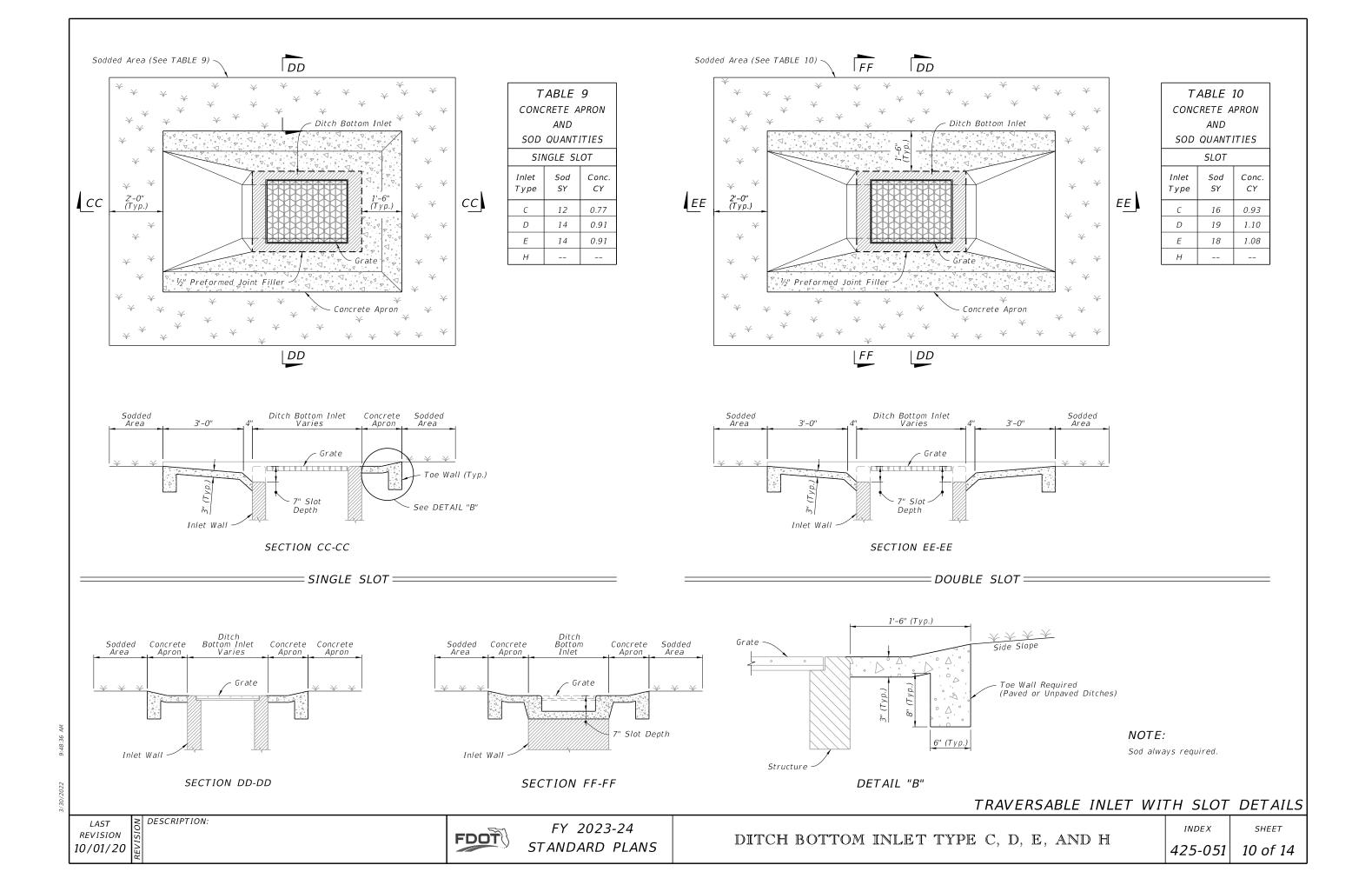
TRAVERSABLE INLET WITHOUT SLOT DETAILS

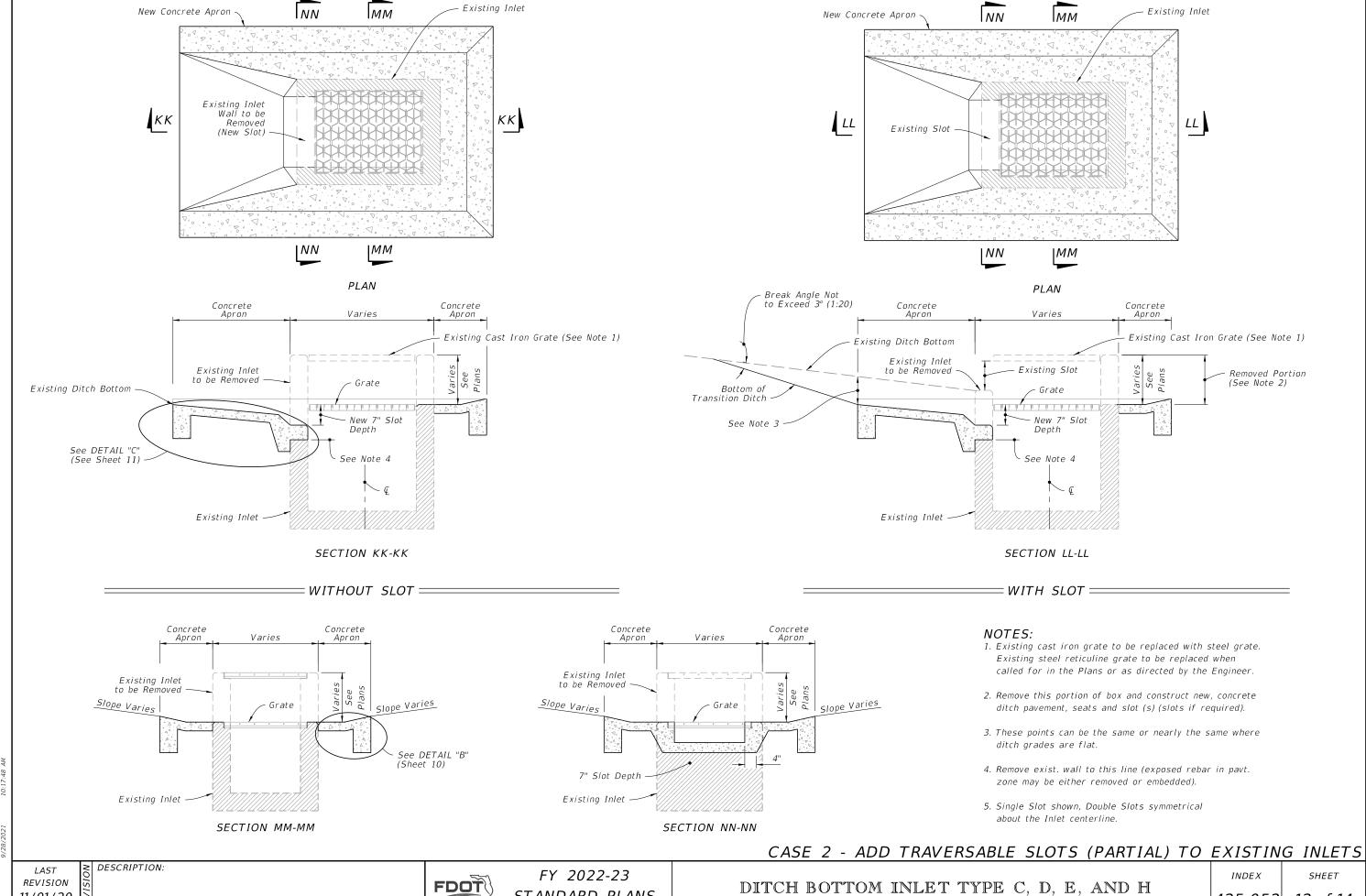
LAST REVISION 11/01/20

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FY 2022-23 STANDARD PLANS





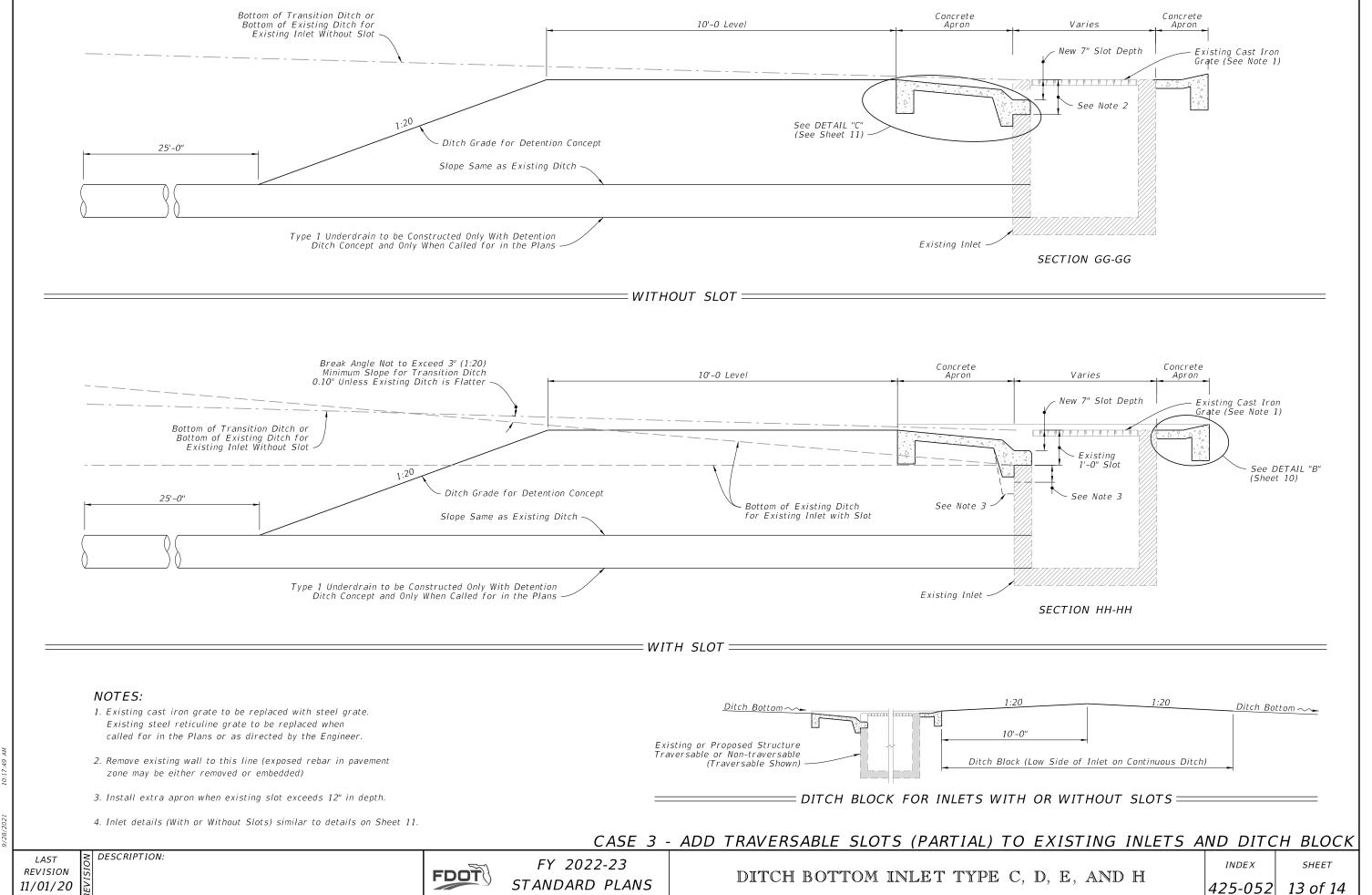


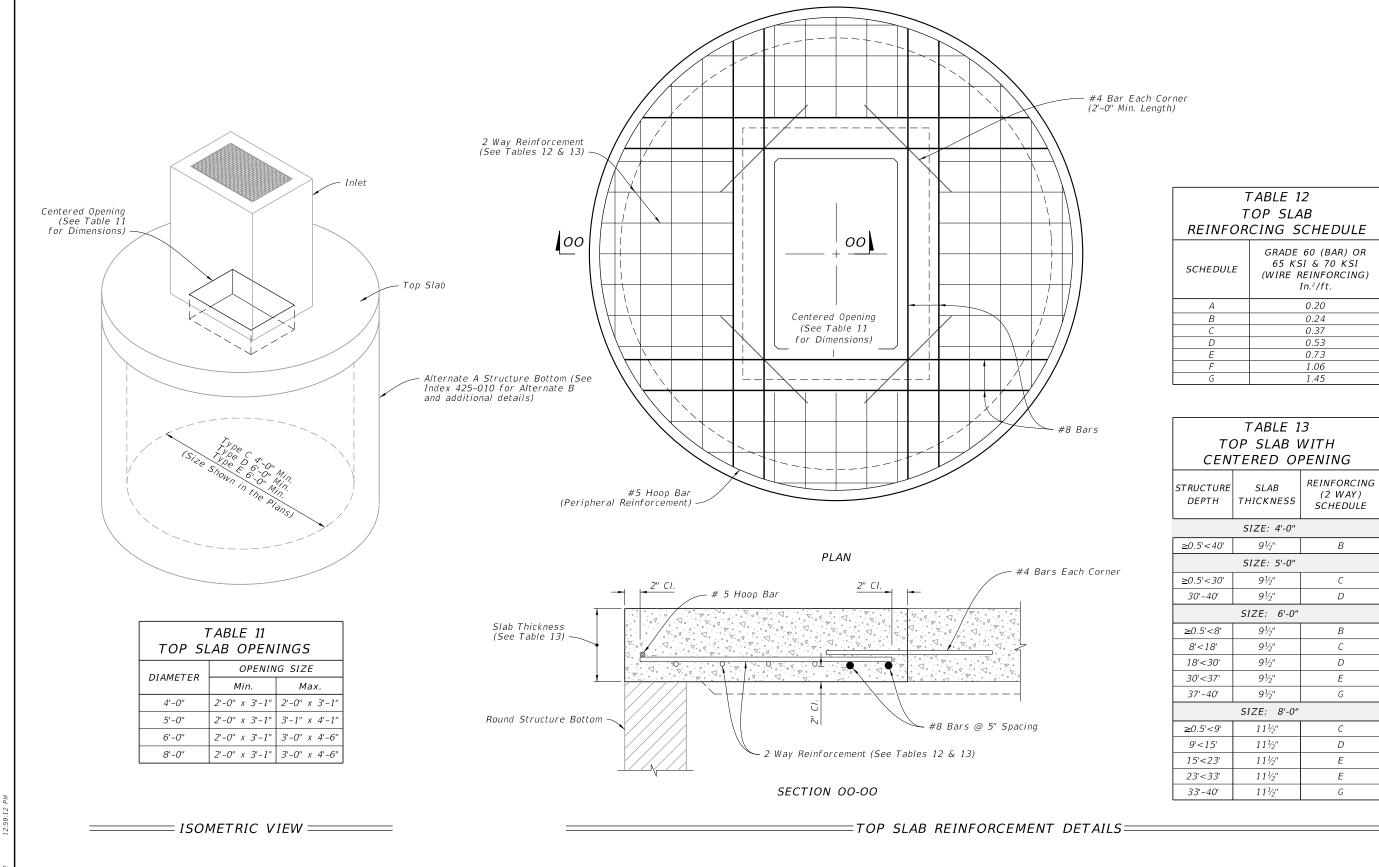
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STANDARD PLANS

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≥ DESCRIPTION: LAST REVISION 10/01/20

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FY 2022-23 STANDARD PLANS ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

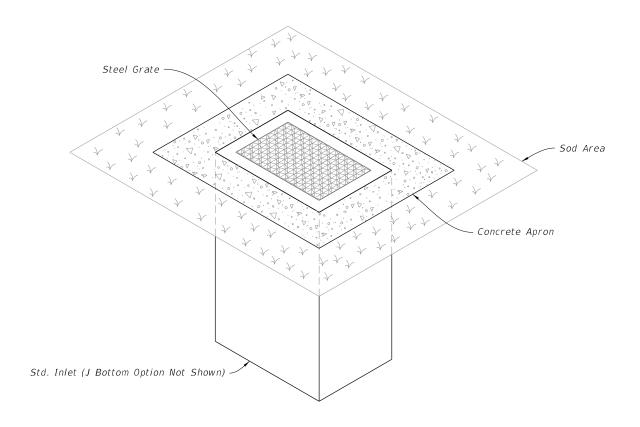
DITCH BOTTOM INLET TYPE C, D, E, AND H

INDEX

SHEET |425-052| 14 of 14

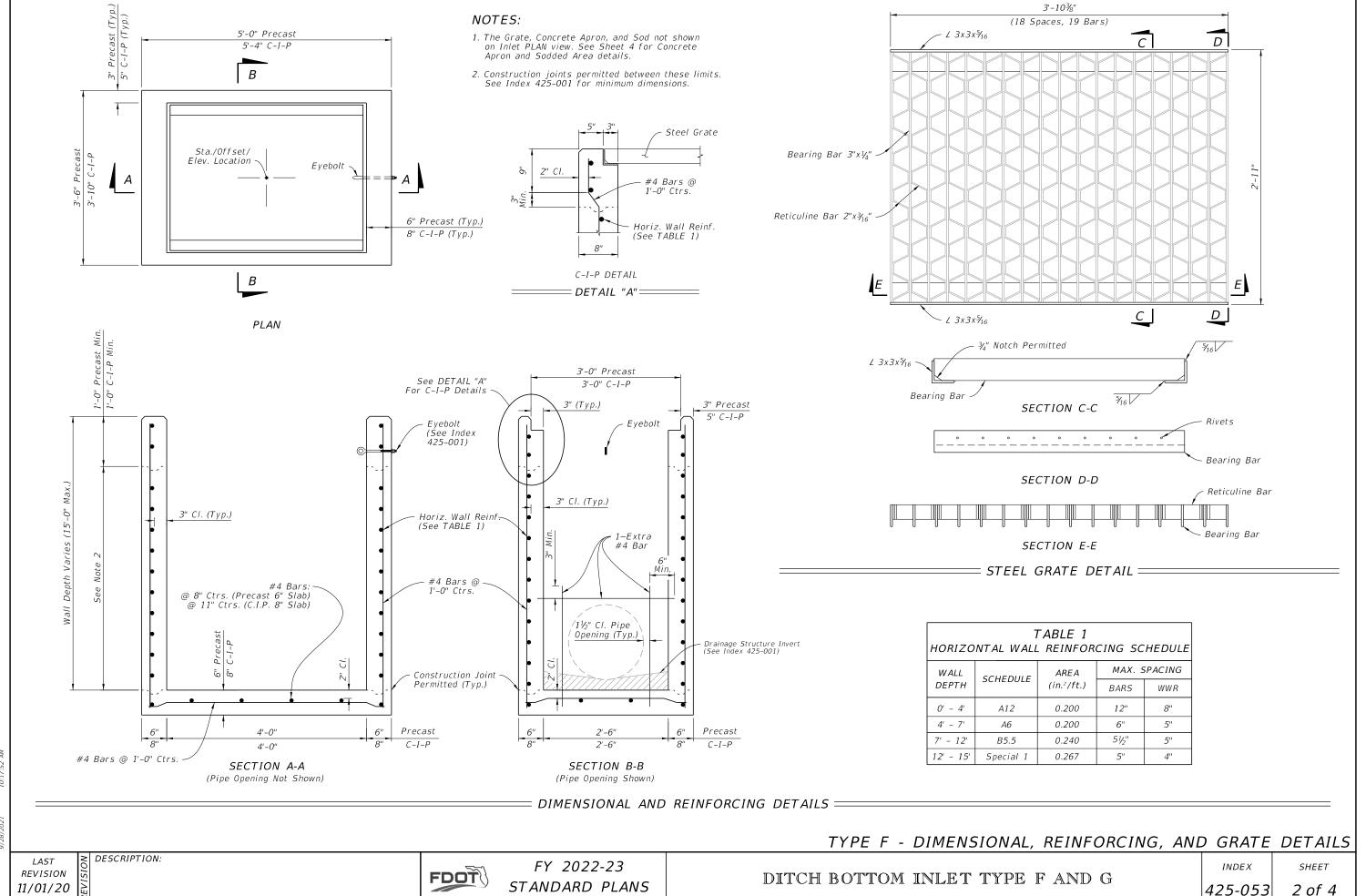
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. When inlet is placed in areas subject to bicycle traffic, install filler bar when clearance or gap is greater than $\frac{5}{8}$ " as shown in Index 425-031.
- 3. These inlets may be used with Alternate B structure bottoms, Index 425-010.
- 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				

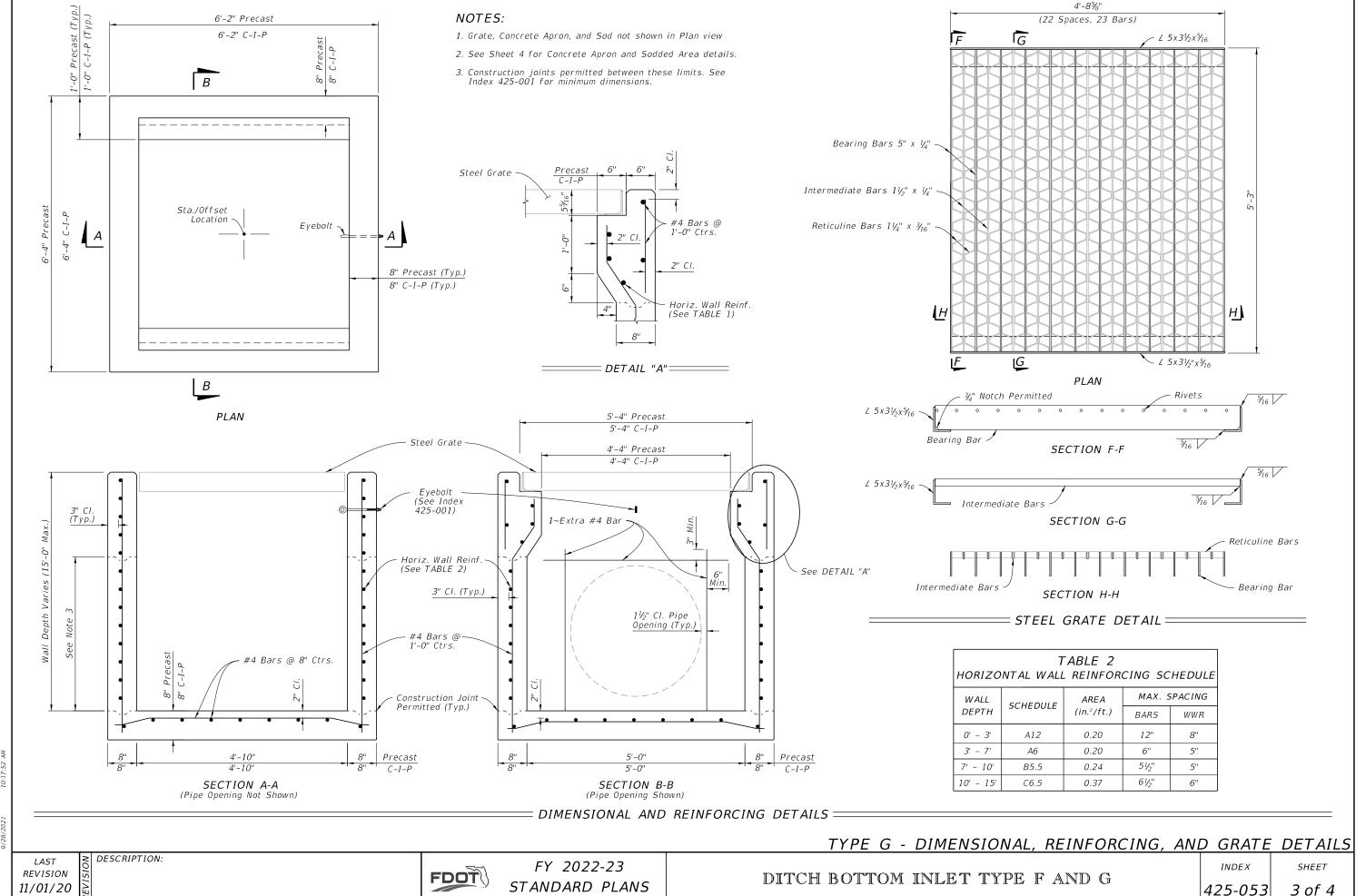


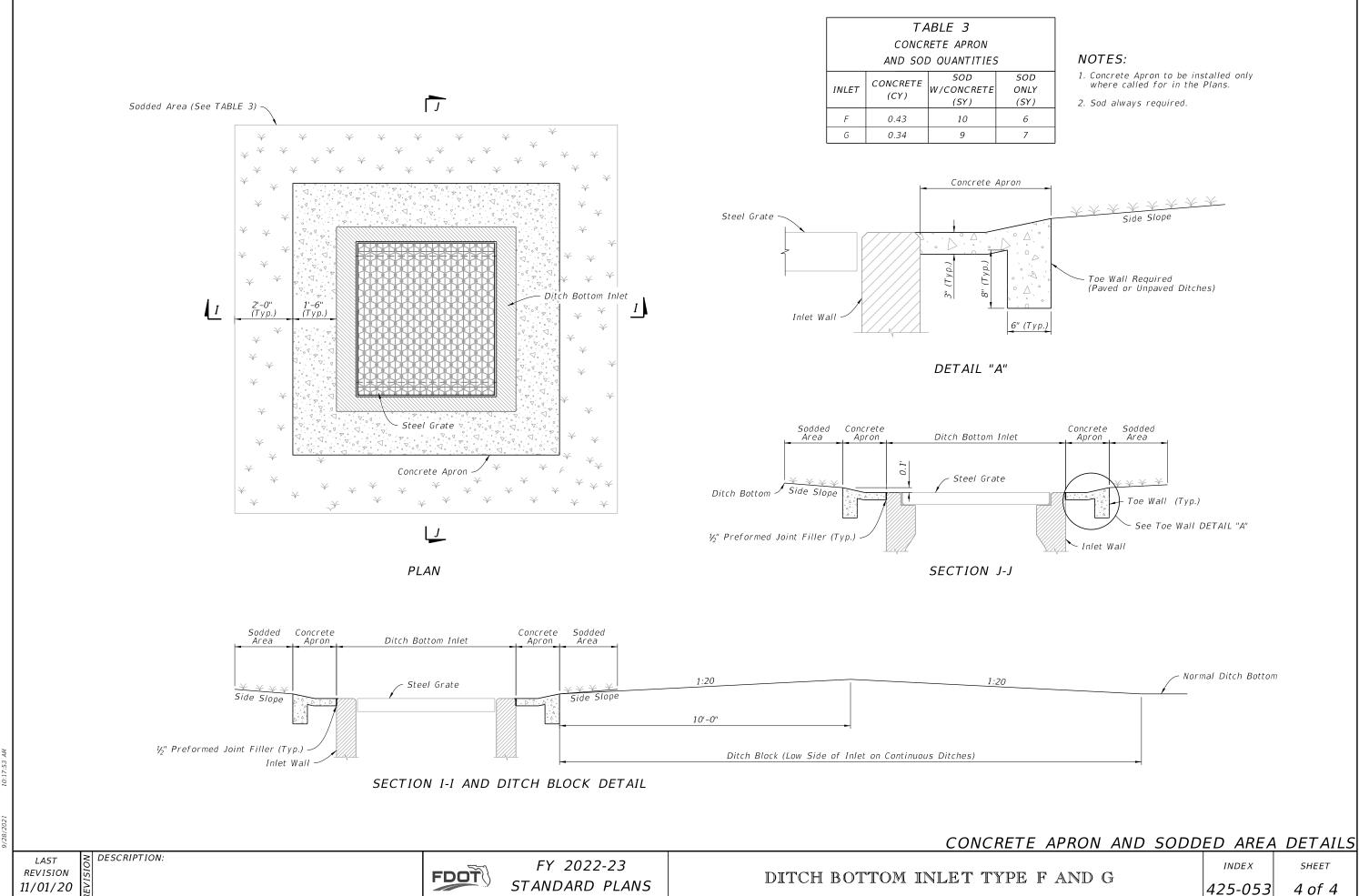
= DITCH BOTTOM INLET TYPE F ======

(Type G Similar, Pipe Connection Not Shown)



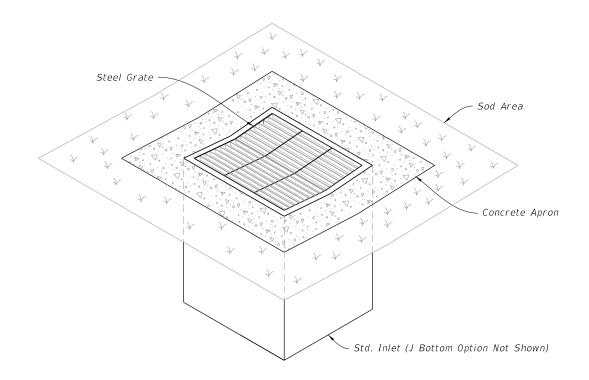
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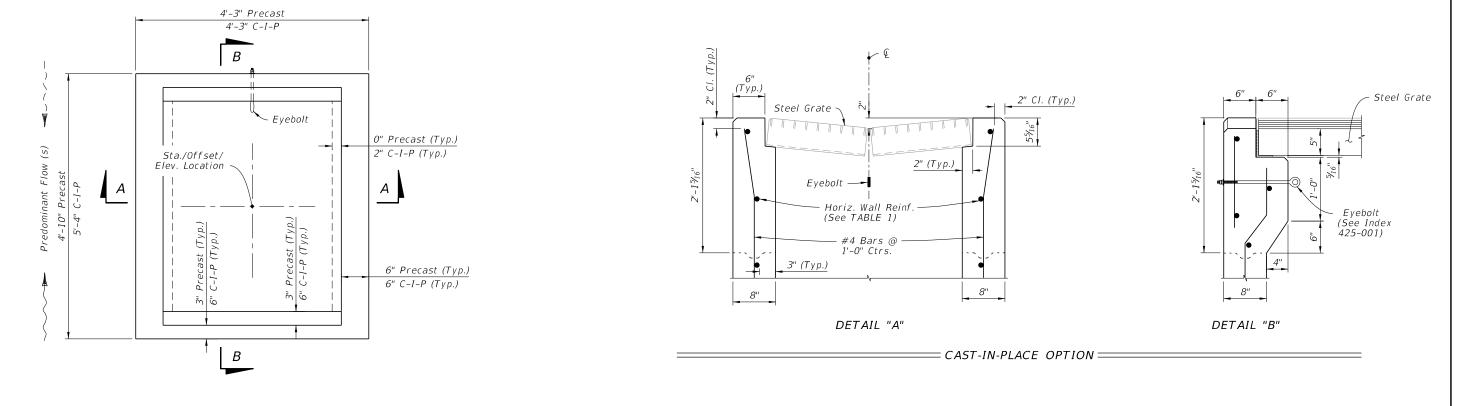
- 1. Work this Index with Index 425-001 and Index 425-010.
- 2. Reinforcing bars are Grade 60 bars with 2" minimum cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary; bars to clear pipe by 11/2".
- 3. Chamfer all 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	Dimensional and Reinforcing Details					
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:



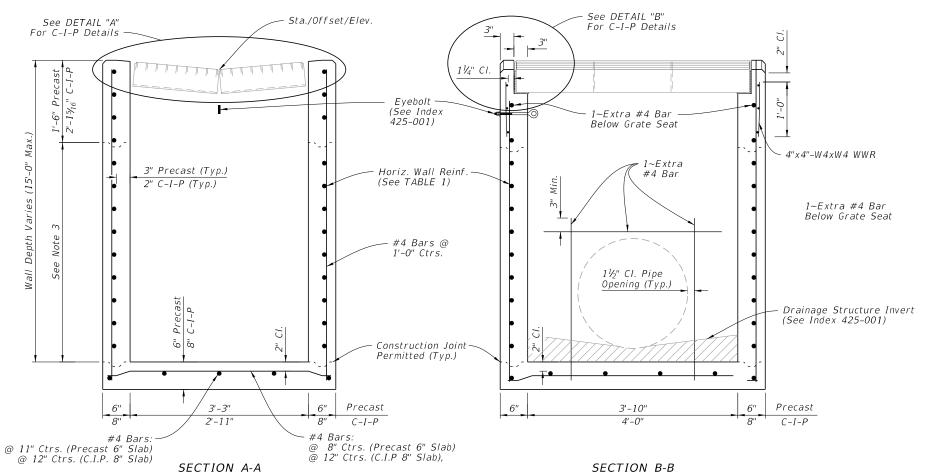


TABLE 1 HORIZONTAL WALL REINFORCING SCHEDULE					
WALL	SCHEDULE	AREA	MAX. SPACING		
DEPTH	JCHEDULE	(in.²/ft.)	BARS	WWR	
0' - 4'	A12	0.20	12"	8"	
4' - 9'	A6	0.20	6"	5"	
9' - 12'	A4	0.24	4"	3"	
9' - 15'	B5.5	0.24	5½"	5"	

NOTES:

- 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 =

(Pipe Opening Shown)

DIMENSIONAL AND REINFORCING DETAILS

LAST **REVISION** 11/01/20

DESCRIPTION:

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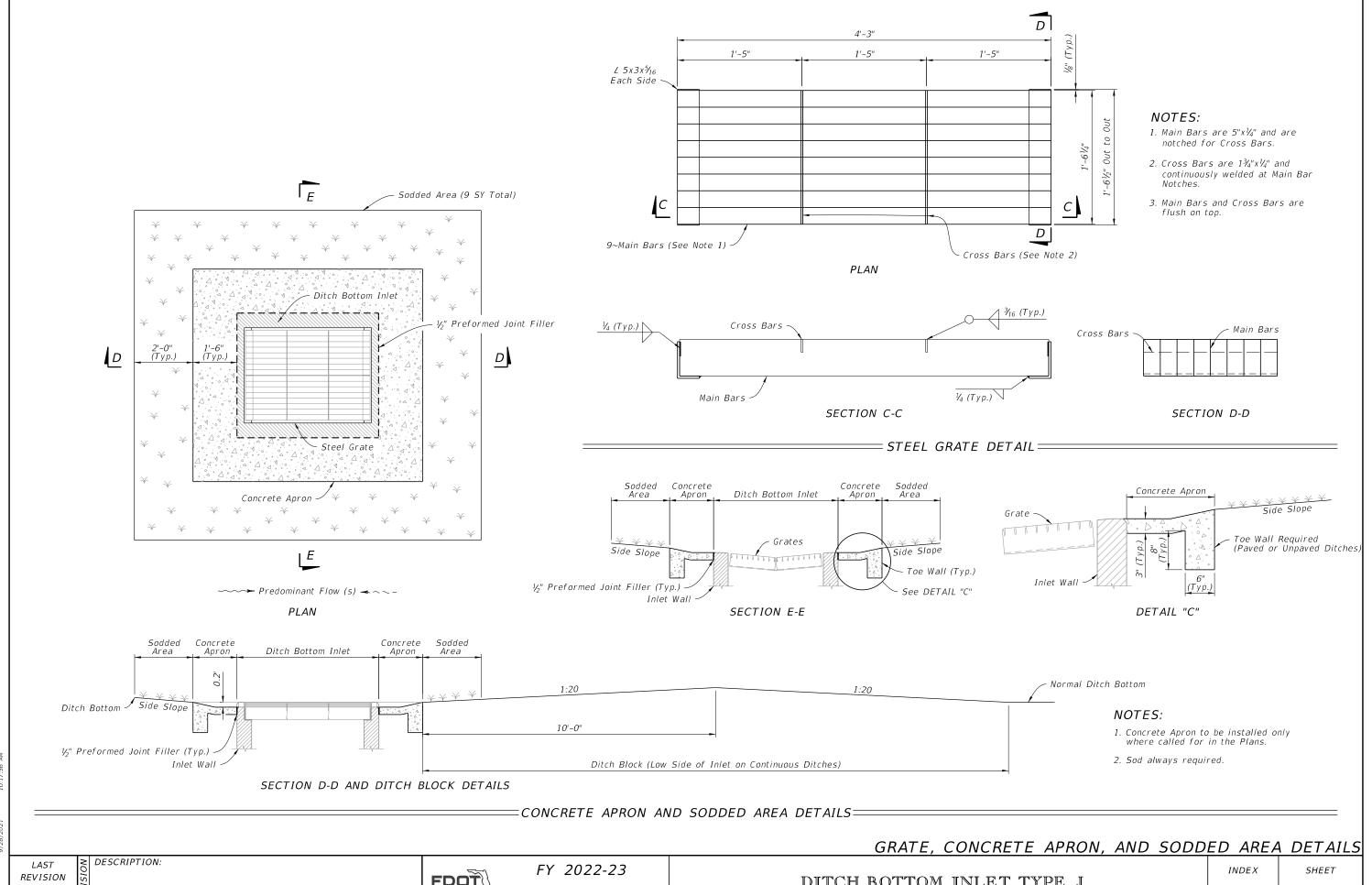
(Pipe Opening Not Shown)

FY 2022-23 STANDARD PLANS

DITCH BOTTOM INLET TYPE J

INDEX 425-054

SHEET 2 of 4



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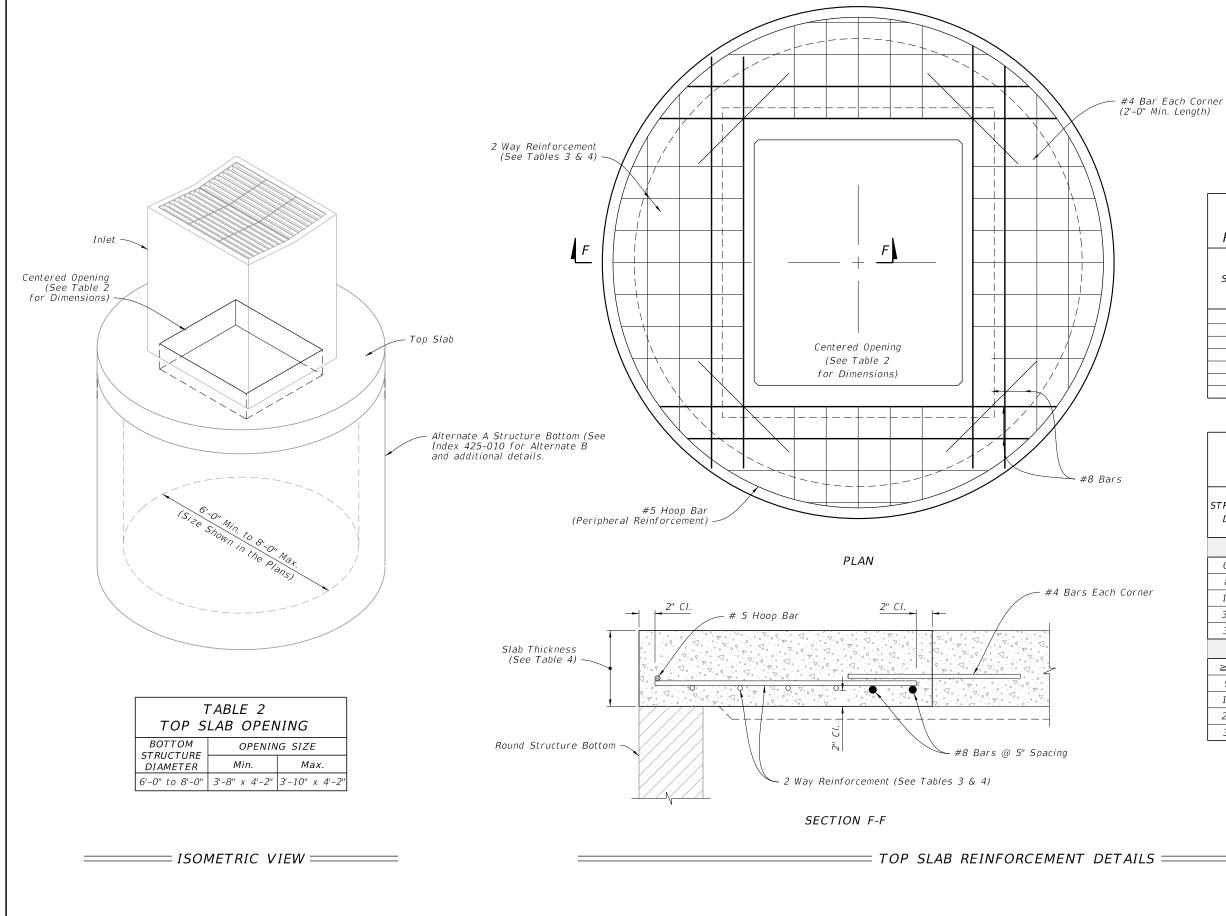
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STANDARD PLANS

DITCH BOTTOM INLET TYPE J

425-054

3 of 4



T	TABLE 3 TOP SLAB REINFORCING SCHEDULE					
KEINFUK	CING SCHEDULE					
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE REINFORCING) In.²/ft.					
А	0.20					
В	0.24					
С	0.37					
D	0.53					
Ε	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'	91/2"	В			
8'<18'	91/2"	С			
18'<30'	91/2"	D			
30'<37'	9½"	Е			
37'-40'	9½"	G			
	SIZE: 8'-0"				
≥0.5′<9′	11½"	С			
9'<15'	11½"	D			
15'<23'	11½"	E			
23'<33'	11½"	Е			
33'-40' 11½" G					

TABLE 4

ALTERNATE A STRUCTURE BOTTOM - TOP SLAB DETAILS

≥ DESCRIPTION: REVISION 11/01/20

FY 2022-23 STANDARD PLANS

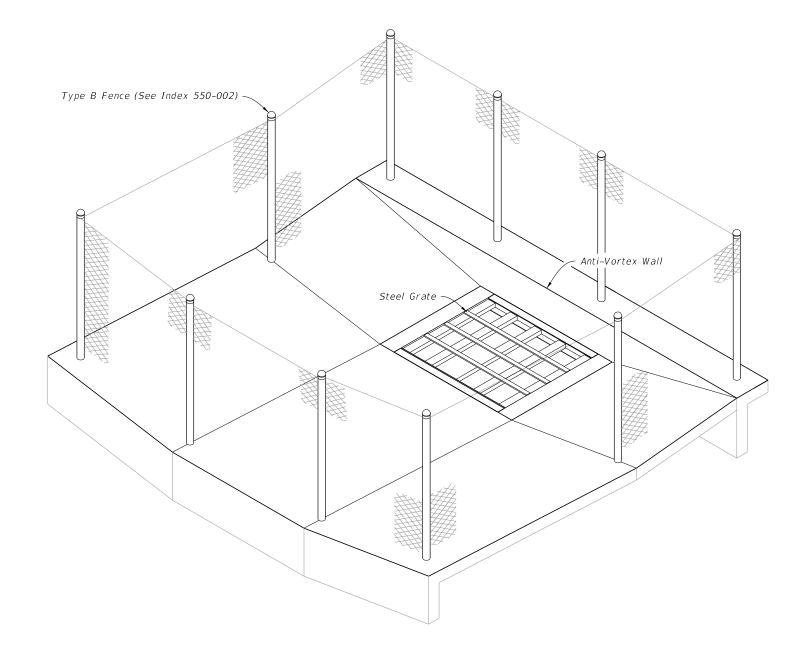
DITCH BOTTOM INLET TYPE J

INDEX 425-054

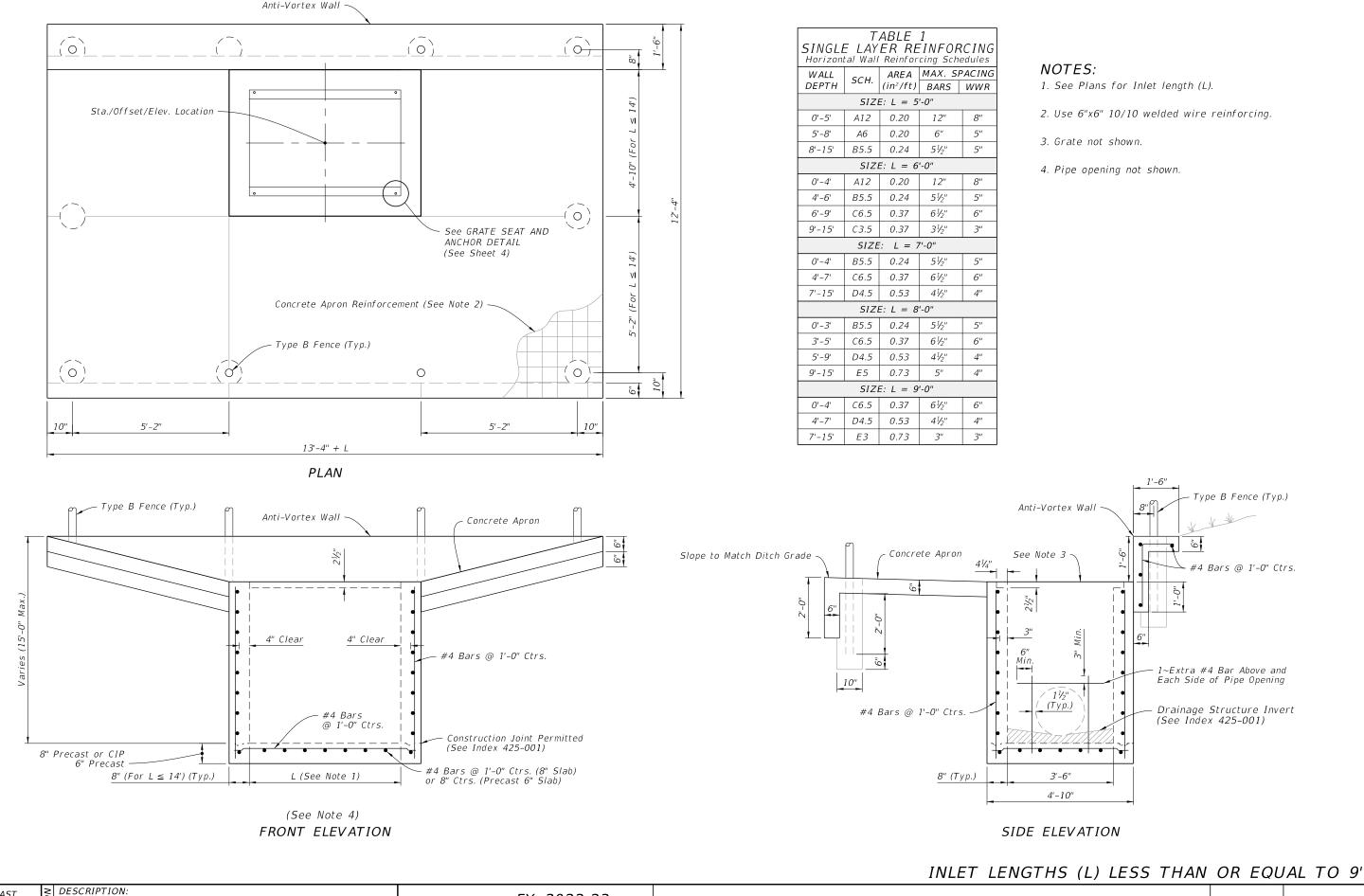
SHEET 4 of 4

- 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 ½" 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	Description			
1	General Notes and Contents			
2	Inlet Lengths (L) Less Than or Equal to 9'			
3	Inlet Lengths (L) Greater Than or Equal to 9'			
4	Steel Grate Details			



= INLET FENCE ENCLOSURE =



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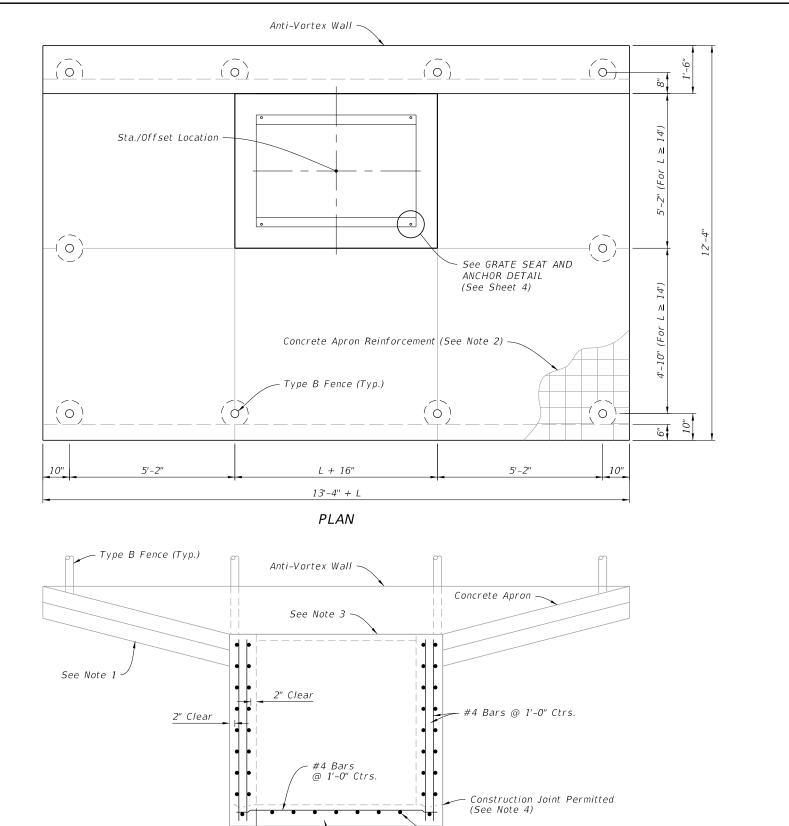
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FY 2022-23 STANDARD PLANS

DITCH BOTTOM INLET TYPE K

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(See Note 5) FRONT ELEVATION

See Note 1

TABLE 2 DOUBLE LAYER REINFORCING Horizontal Wall Reinforcing Schedules AREA MAX. SPACING SCH. DEPTH (in²/ft) BARS WWR SIZE: L = 9'-0"A12 0.20 12" 8" A6 0.20 B5.5 0.24 5½" 5" 8'-15' C6.5 0.37 6½" SIZE: L = 10'-0"0'-3' A12 0.20 12" 8" 3'-5' A6 0.20 6" 5'-8' C6.5 0.37 6½" 8'-15' C3.5 0.37 3½" SIZE: L = 12'-0"0'-4' B5.5 0.24 5½" C6.5 0.37 6½" 0.53 41/2" D4.5 SIZE: L = 14'-0''

0.37

0.53

0.73

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

0.37

0.53

0.73

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

0.37

61/2"

41/2"

5"

61/2"

 $4\frac{1}{2}$

5"

61/2"

C6.5

D4.5

E5

C6.5

D4.5

E5

C6.5

4'-7'

8'-15'

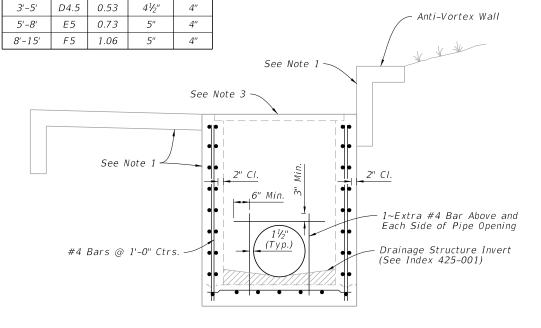
6"

4"

4"

NOTE:

- 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'

LAST REVISION 11/01/20

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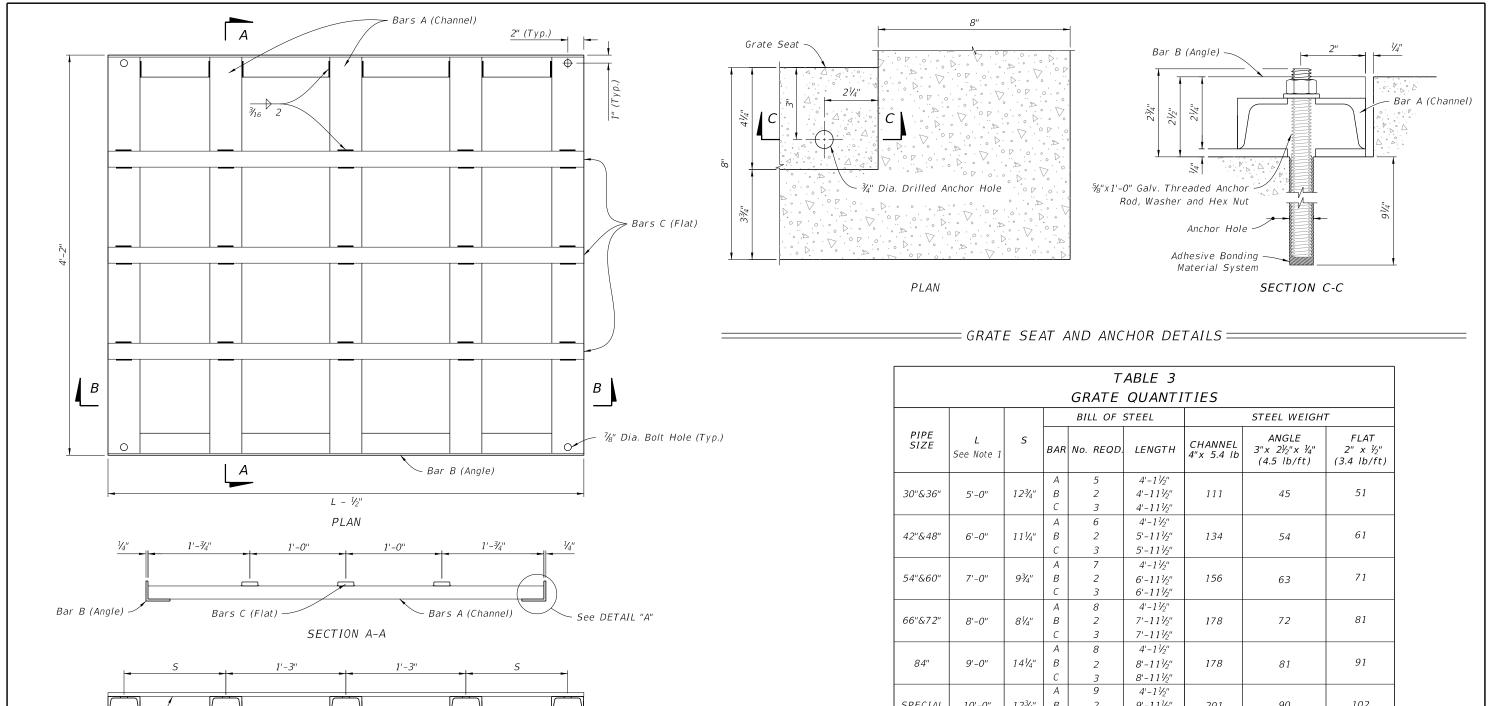
10'' (For L > 14'-0'') (Typ.)

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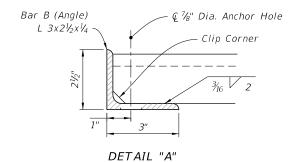
FY 2022-23 STANDARD PLANS

#4 Bars @ 1'-0" Ctrs. (8" Slab)

or 8" Ctrs. (Precast 6" Slab)



Bars C (Flat) - Bars A (Channel) SECTION B-B



NOTES:

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

PIPE SIZE	L See Note 1	S	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)
			Α	5	4'-11/2"			
30"&36"	5'-0"	123/4"	В	2	4'-11½"	111	45	51
			С	3	4'-11½"			
			Α	6	4'-1½''			
42"&48"	6'-0"	111/4"	В	2	5'-11 ¹ / ₂ "	134	54	61
			С	3	5'-11 ¹ / ₂ "			
			Α	7	4'-1½"			
54"&60"	7'-0"	9¾"	В	2	6'-11 ¹ / ₂ "	156	63	71
			С	3	6'-11½"			
			A	8	4'-11/2"			
66"&7 <i>2</i> "	8'-0"	81/4"	В	2	7'-11½"	178	72	81
			С	3	7'-11½"			
			A	8	4'-11/2"			
84"	9'-0"	141/4"	В	2	8'-11 ¹ / ₂ "	178	81	91
			С	3	8'-11 ¹ / ₂ "			
			A	9	4'-1½"			
SPECIAL	10'-0"	12¾"	В	2	9'-11½"	201	90	102
			С	3	9'-111½"			
			A	11	4'-1½"			
SPECIAL	12'-0"	9¾"	В	2	11'-11½"	245	108	122
			С	3	11'-11½"			
			A	12	4'-1½"			
SPECIAL	14'-0"	141/4"	В	2	13'-11½"	267	126	142
			С	3	13'-111/2"			
			A	14	4'-11/2"			
SPECIAL	16'-0"	1111/4"	В	2	15'-11½"	312	144	163
			С	3	15'-11½"			
			A	16	4'-11/2"			
SPECIAL	18'-0"	81/4"	В	2	17'-11½"	356	162	183
			С	3	17'-11 ¹ / ₂ "			

STEEL GRATE DETAILS

REVISION 11/01/20

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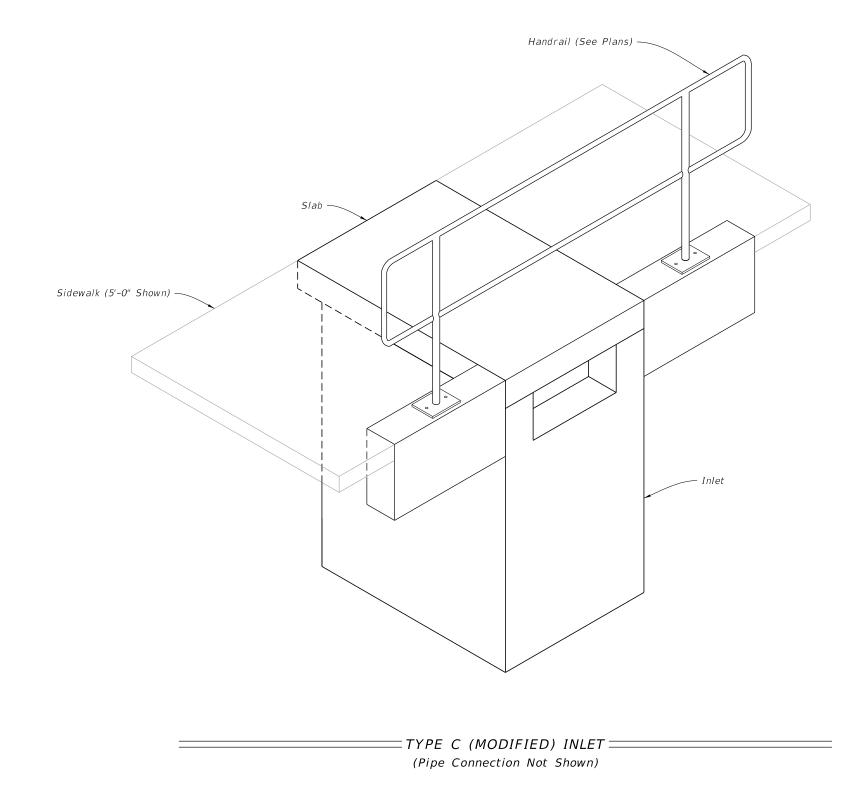
FY 2022-23 STANDARD PLANS

DITCH BOTTOM INLET TYPE K

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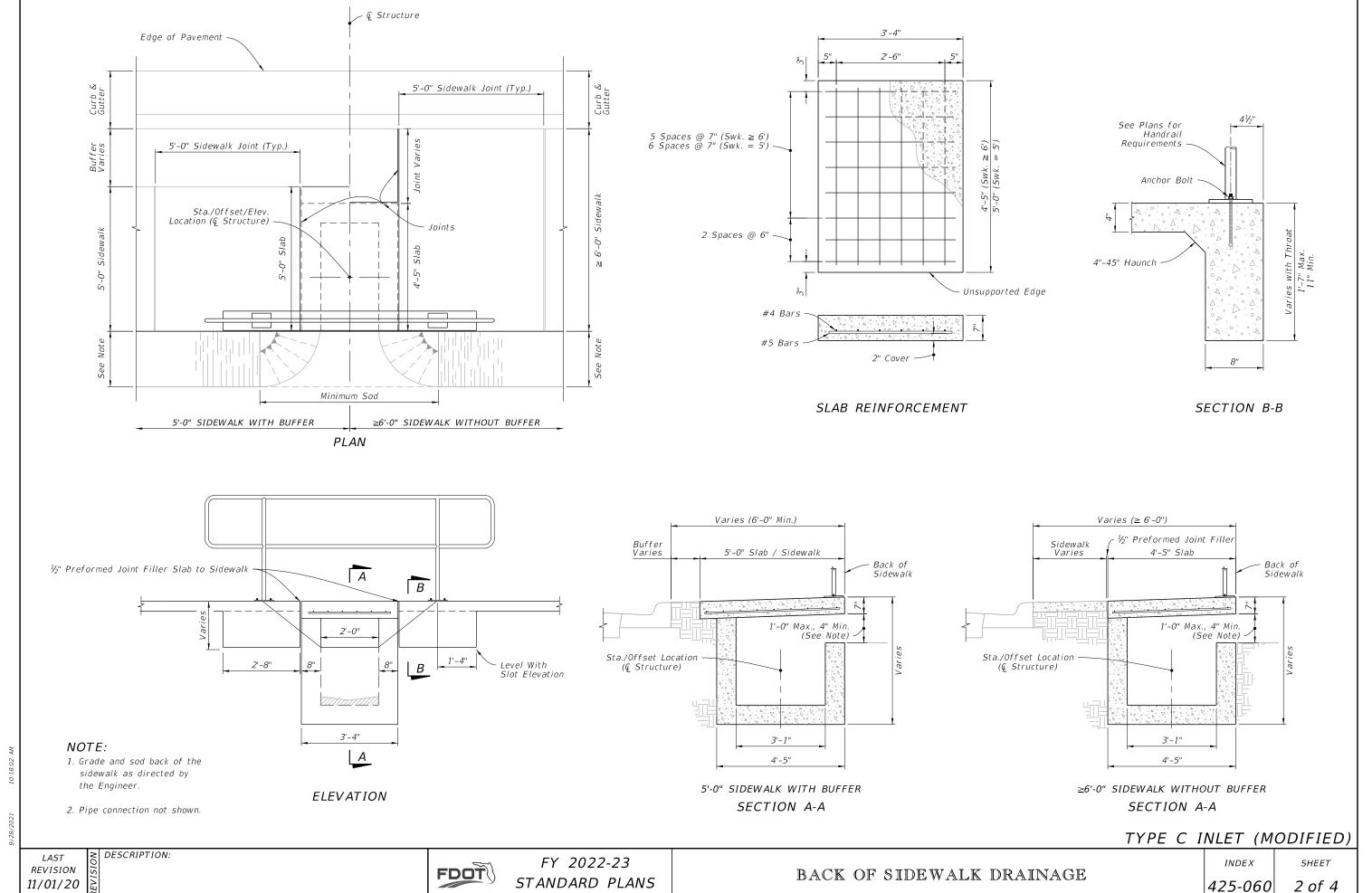
- 1. Work this Index with Index 425-052.
- 2. Quantities are for informational and estimating purposes only.

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				



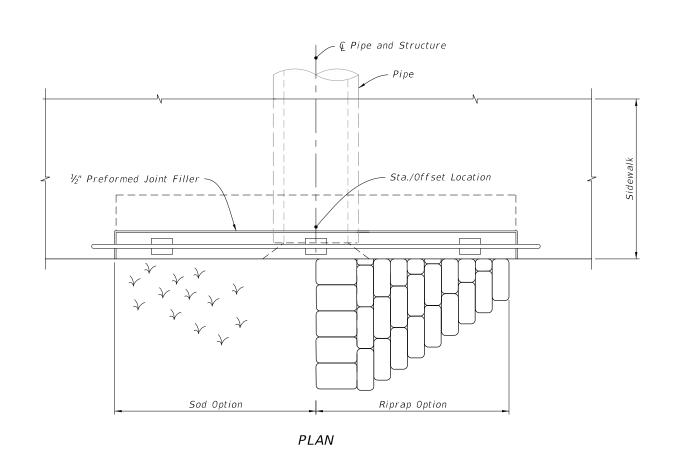
REVISION 11/01/20

≥ DESCRIPTION:



STANDARD PLANS

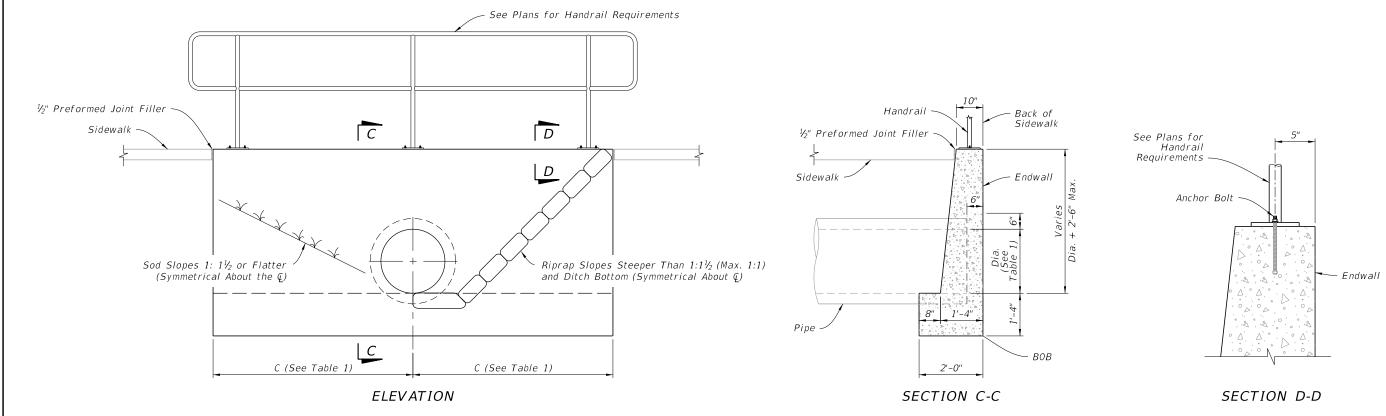
425-060



NOTES:

- 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



9/28/2021

LAST REVISION 11/01/21

DESCRIPTION:

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FY 2022-23
STANDARD PLANS

SPECIAL CONCRETE ENDWALL

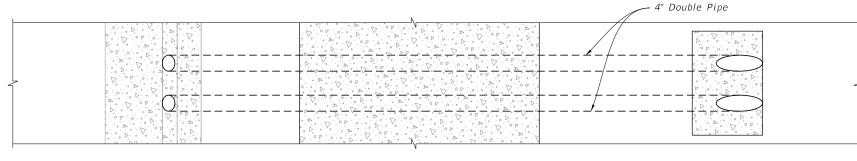
425-060

SHEET

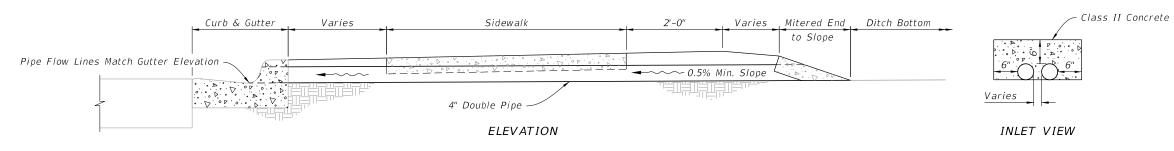
3 of 4

NOTES:

- 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.



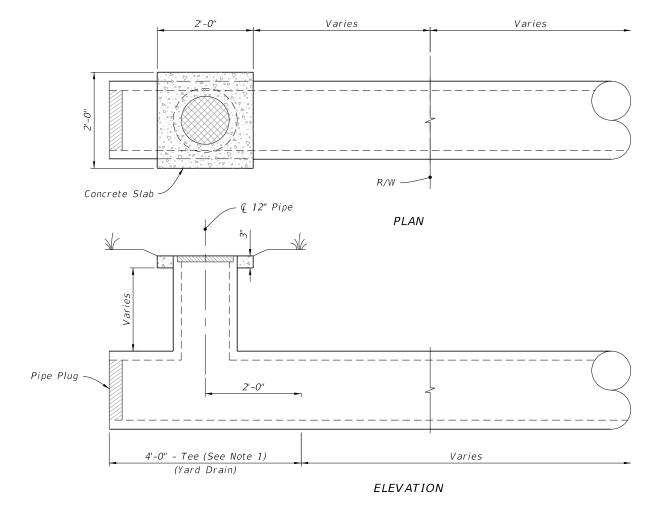
PLAN



SHALLOW DITCHES =

NOTES:

- 1. Tee will be either concrete or PVC, 15"x15"x12".
- 2. Grate will have diameter of 14¼", 2½" thick, minimum 45 square inches flow area, and be light duty cast iron in accordance Specification 962.



= YARD DRAINS =

SHALLOW DITCHES AND YARD DRAINS

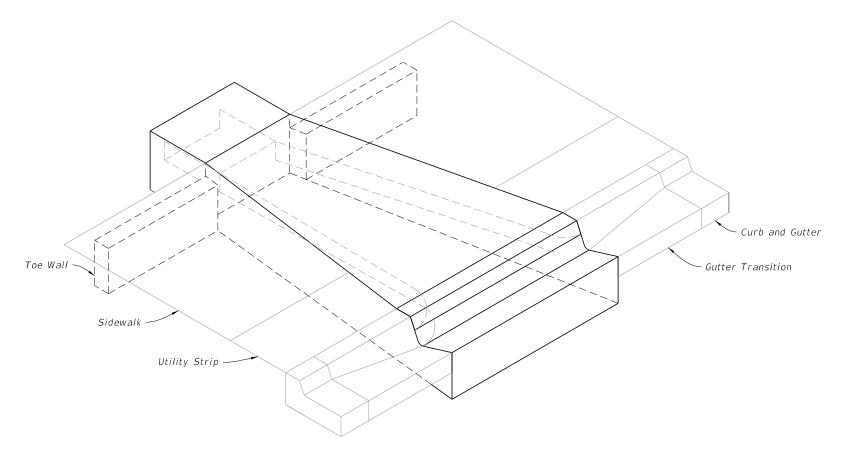
LAST REVISION 11/01/21

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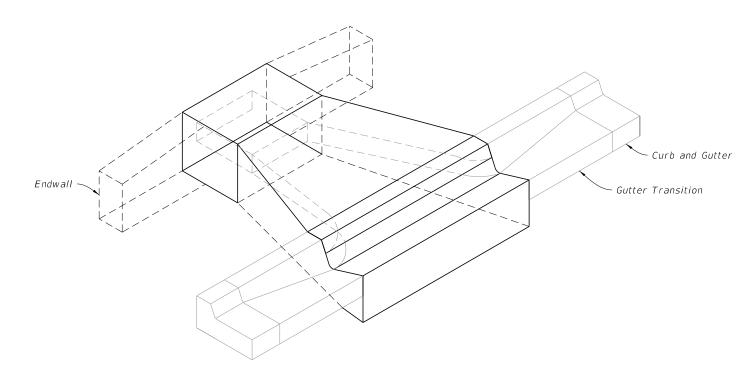
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- 1. The finished grade and slope of the inlet top are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
- 2. When inlets are to be constructed on a curve, refer to the plans to determine the radius. Bend steel when necessary.
- 3. Inlets can be either cast-in-place or precast concrete. Chamfer all exposed edges ¾".
- 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					



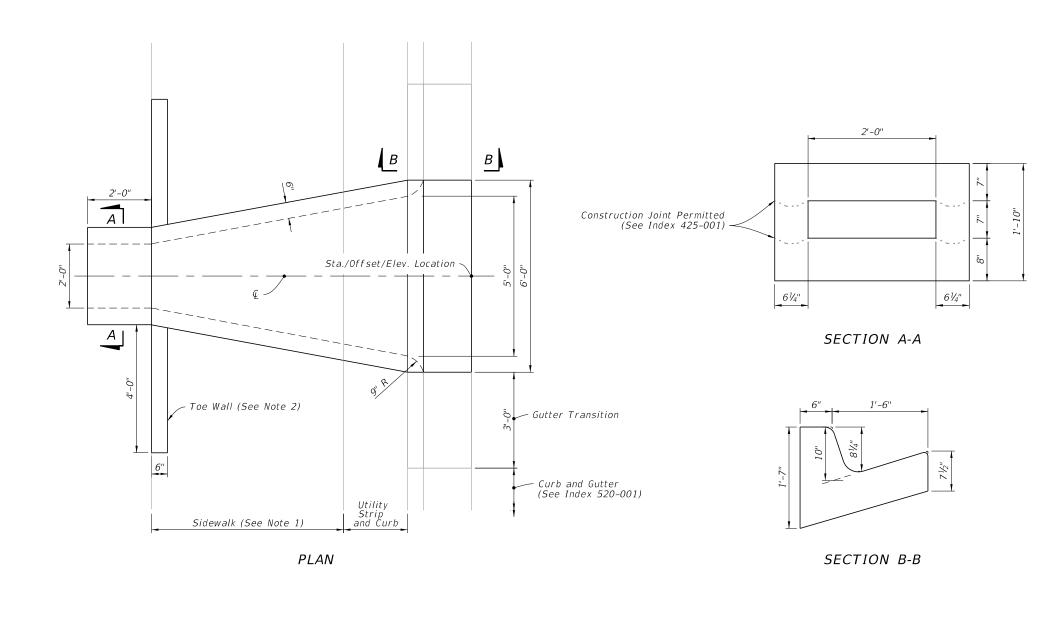
=TYPE I CLOSED FLUME INLET WITH SIDEWALK =
Single Barrel Flume Shown



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

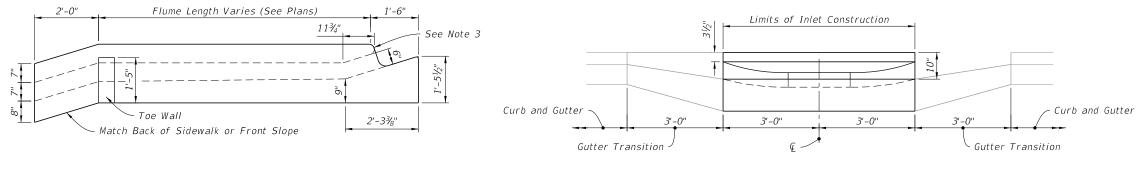
REVISION 11/01/20





NOTES:

- 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.



SIDE ELEVATION FRONT ELEVATION

TYPE-I DIMENSIONAL DETAILS

REVISION 11/01/21

DESCRIPTION:

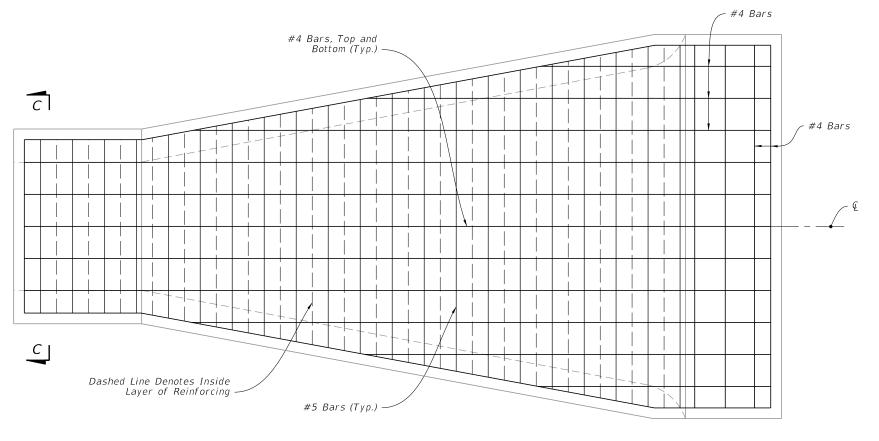
FDOT

FY 2022-23 STANDARD PLANS

CLOSED FLUME INLET

INDEX 425-061

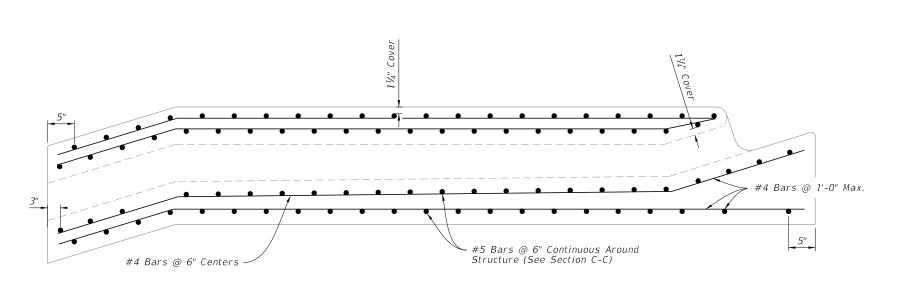
SHEET 2 of 5

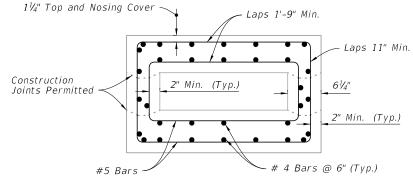


NOTE:

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

PLAN





SECTION C-C

SIDE ELEVATION

REINFORCING DETAILS

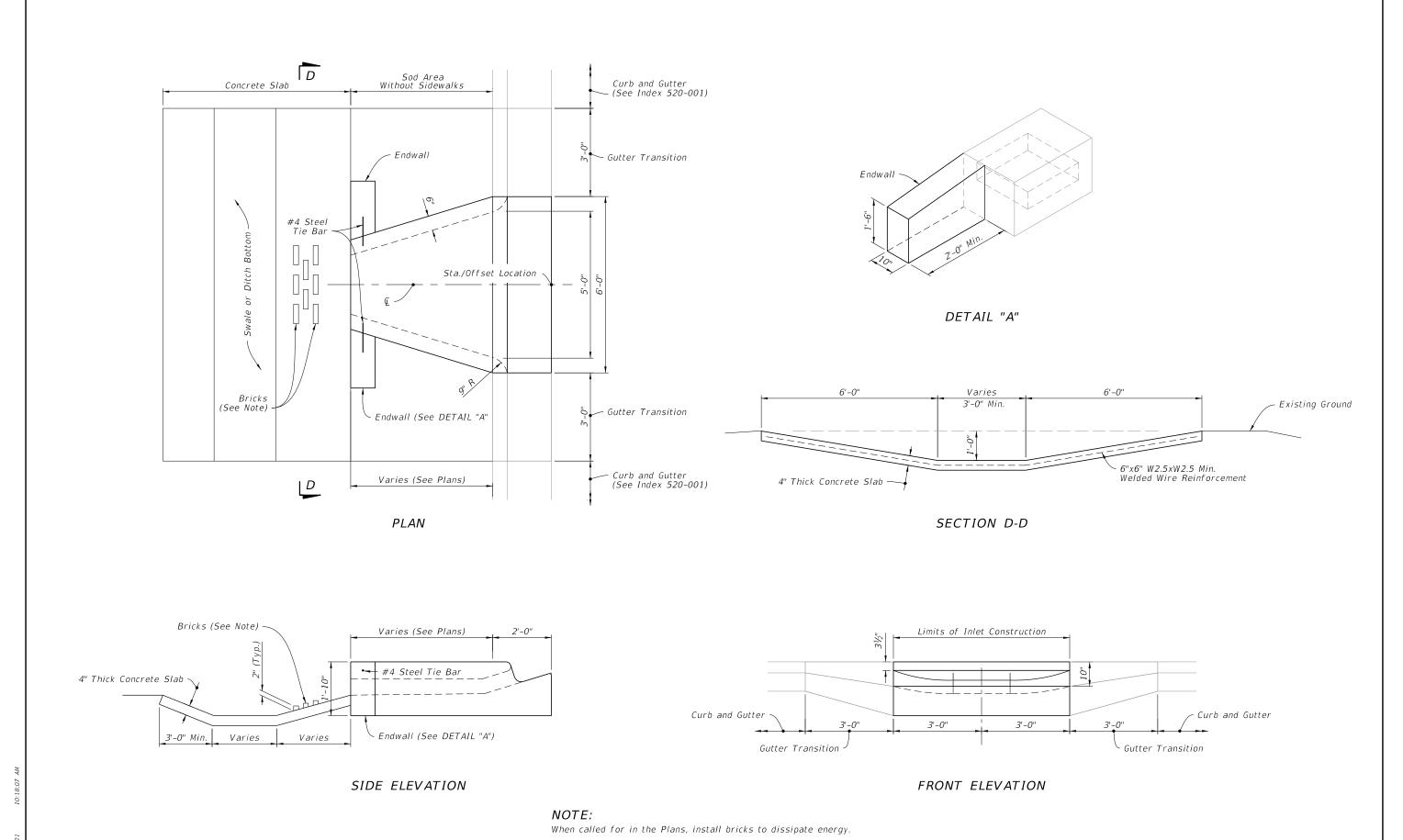
≥ DESCRIPTION: LAST REVISION 11/01/20

FY 2022-23 STANDARD PLANS

CLOSED FLUME INLET

INDEX 425-061

SHEET 3 of 5



LAST REVISION 11/01/20

DESCRIPTION:

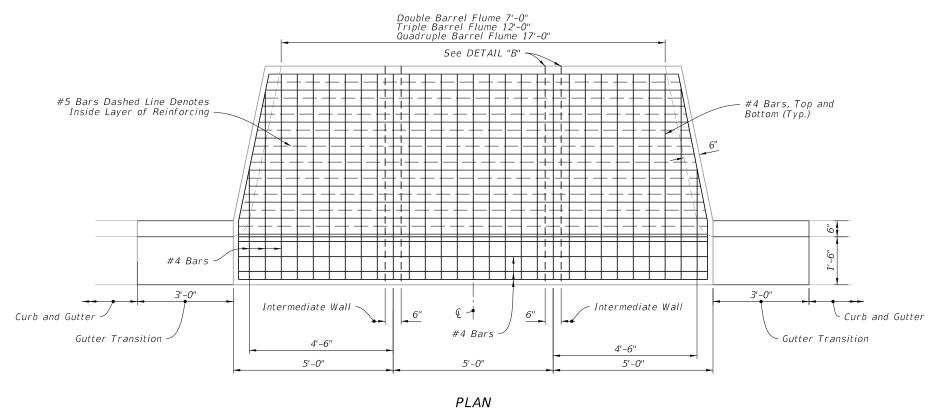
FDOT

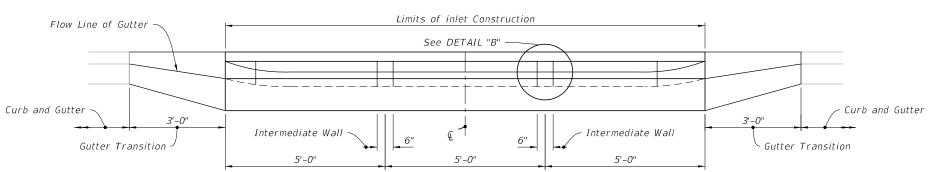
FY 2022-23 STANDARD PLANS INDEX

INDEX

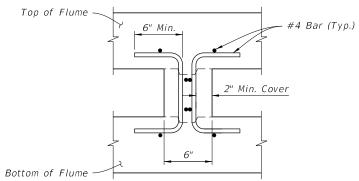
TYPE II DIMENSIONAL DETAILS

^{SHEET}
4 of 5









Intermediate Wall Reinforcing DETAIL "B"

NOTE:

Triple barrel flume shown, double and quadruple similar.

MULTIPLE BARREL FLUMES

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

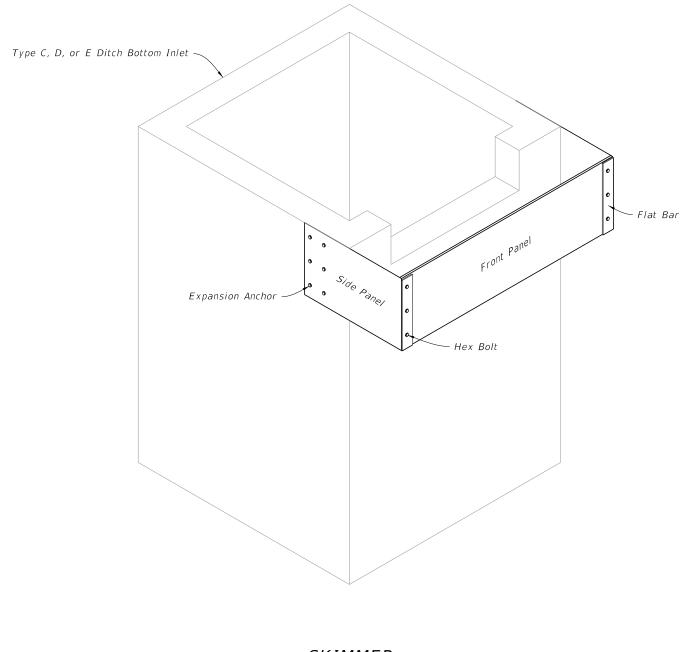
FY 2022-23 STANDARD PLANS

INDEX 425-061

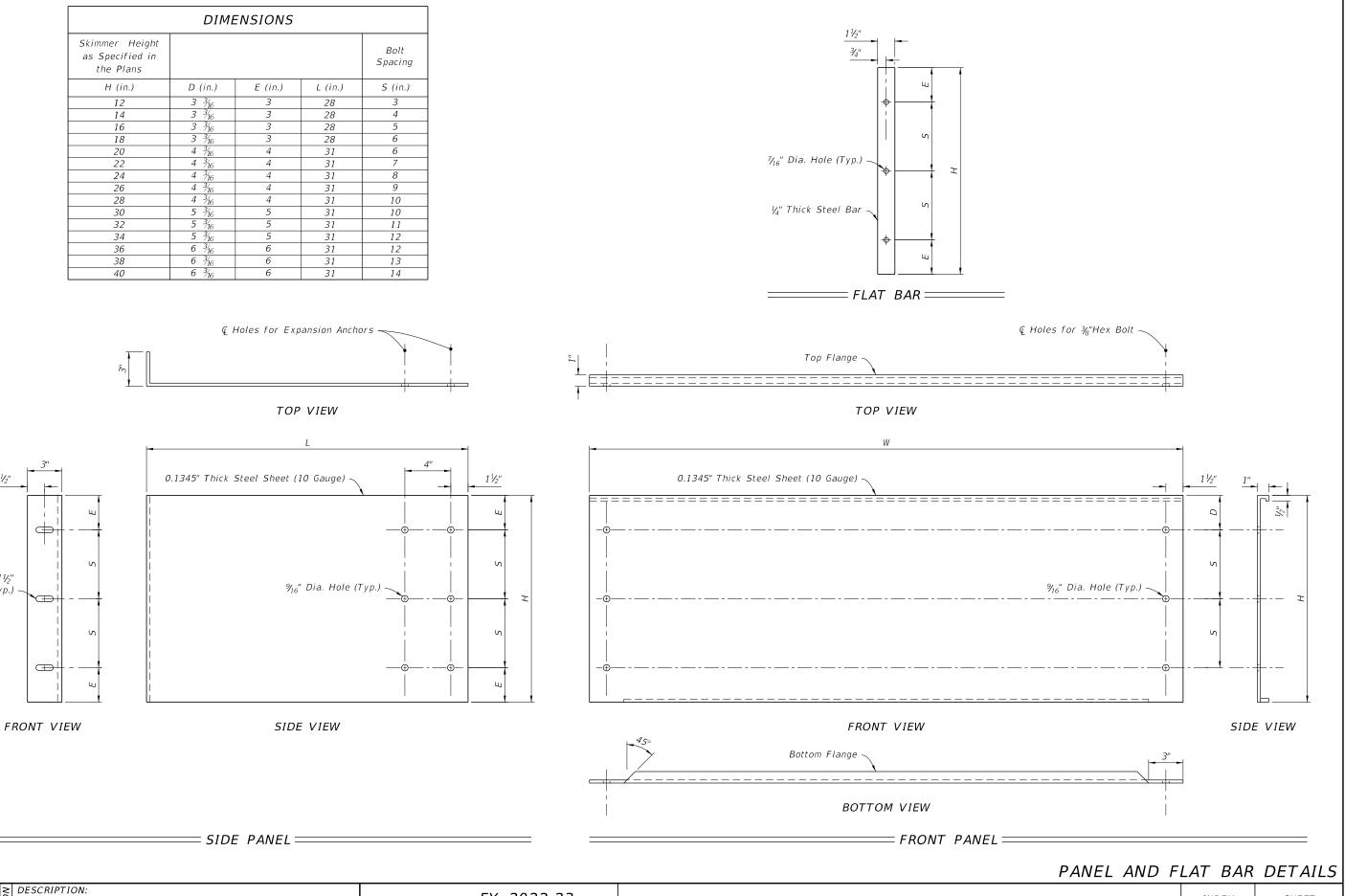
SHEET 5 of 5

- 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					



= SKIMMER =====

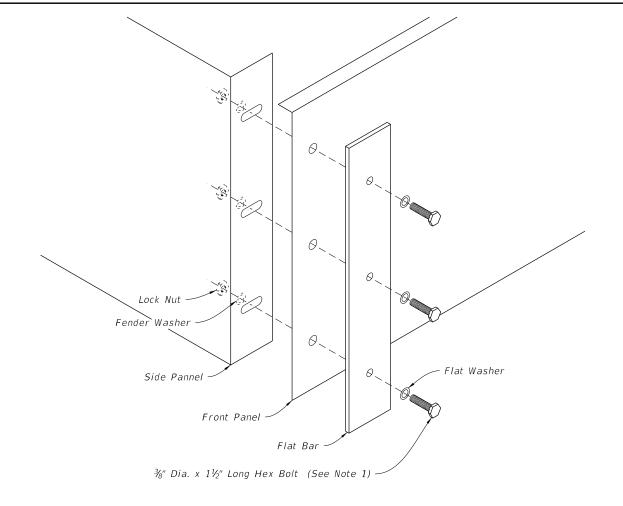


9/28/2021

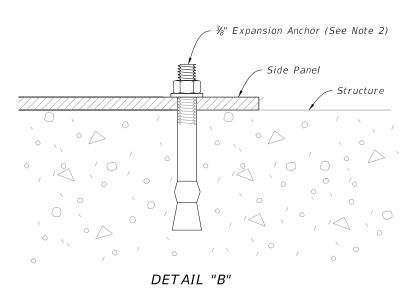
LAST NO D REVISION IS 11/01/20

½" x 1½" Slot (Typ.)

FDOT

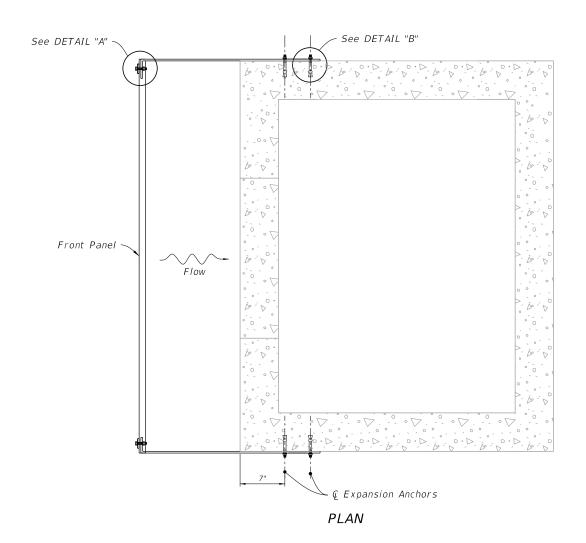


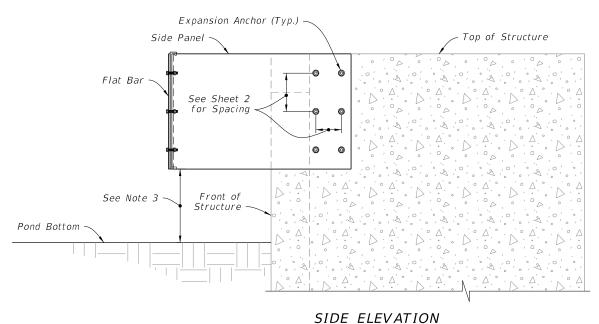
DETAIL "A"



NOTES:

- 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 = $2\frac{1}{2}$ ". 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

LAST REVISION 11/01/20

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FY 2022-23 STANDARD PLANS

3 of 3

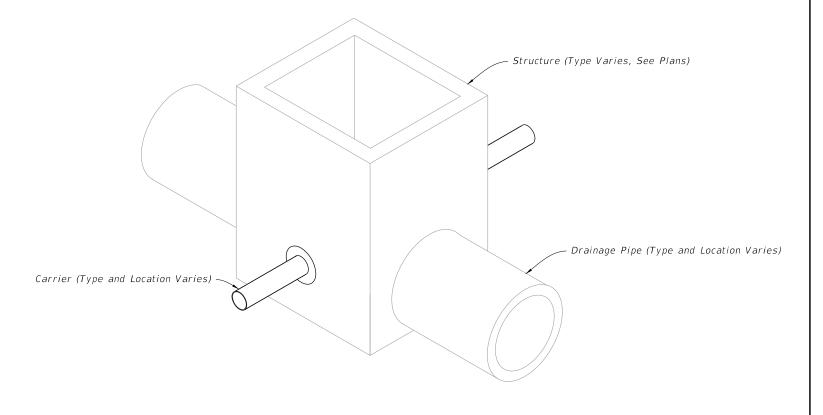
SHEET

- 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.

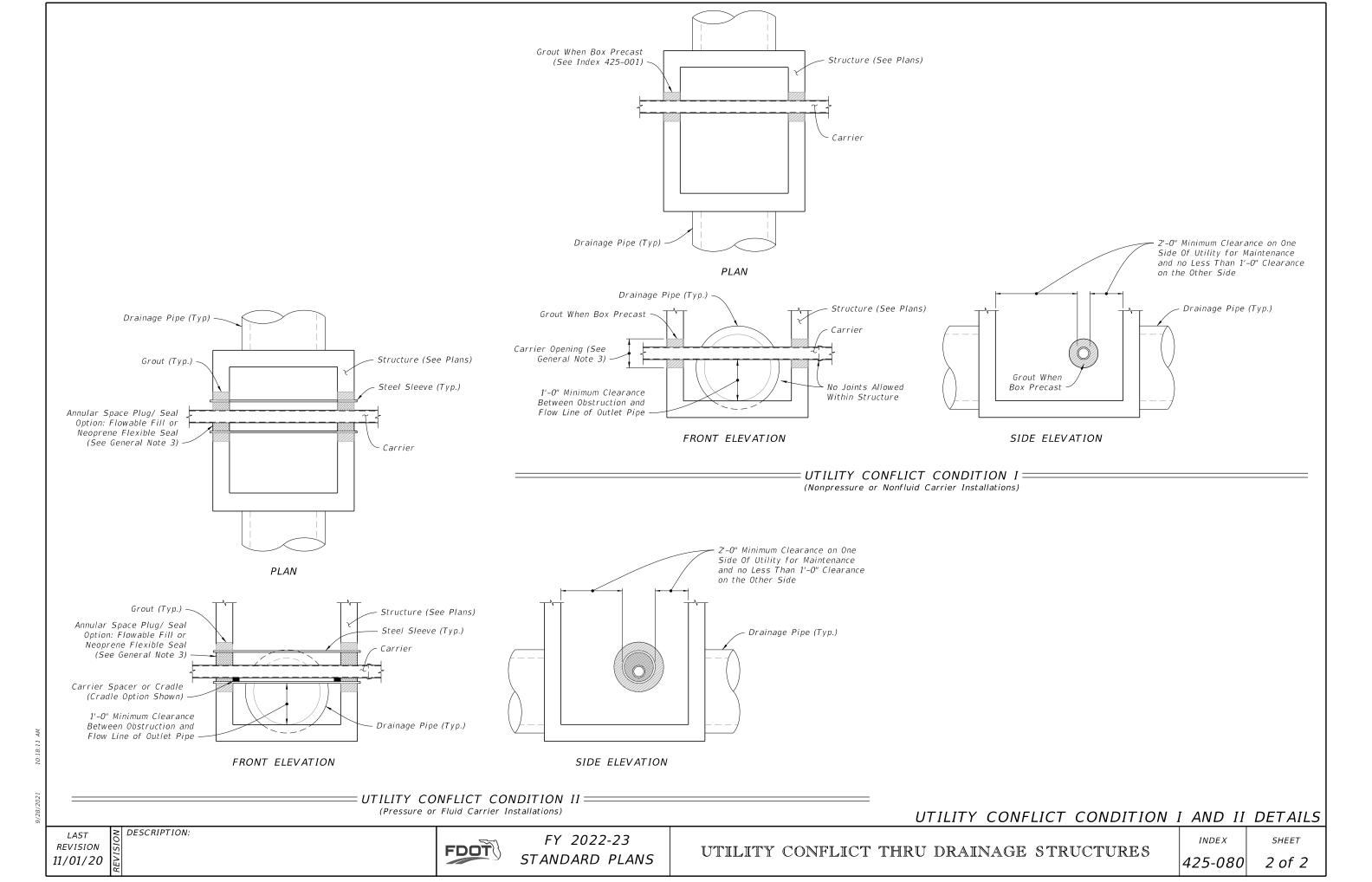
Website for District FDEP Drinking Water Contacts: https://floridadep.gov/water/source-drinking-water/content/organization-drinking-water-program

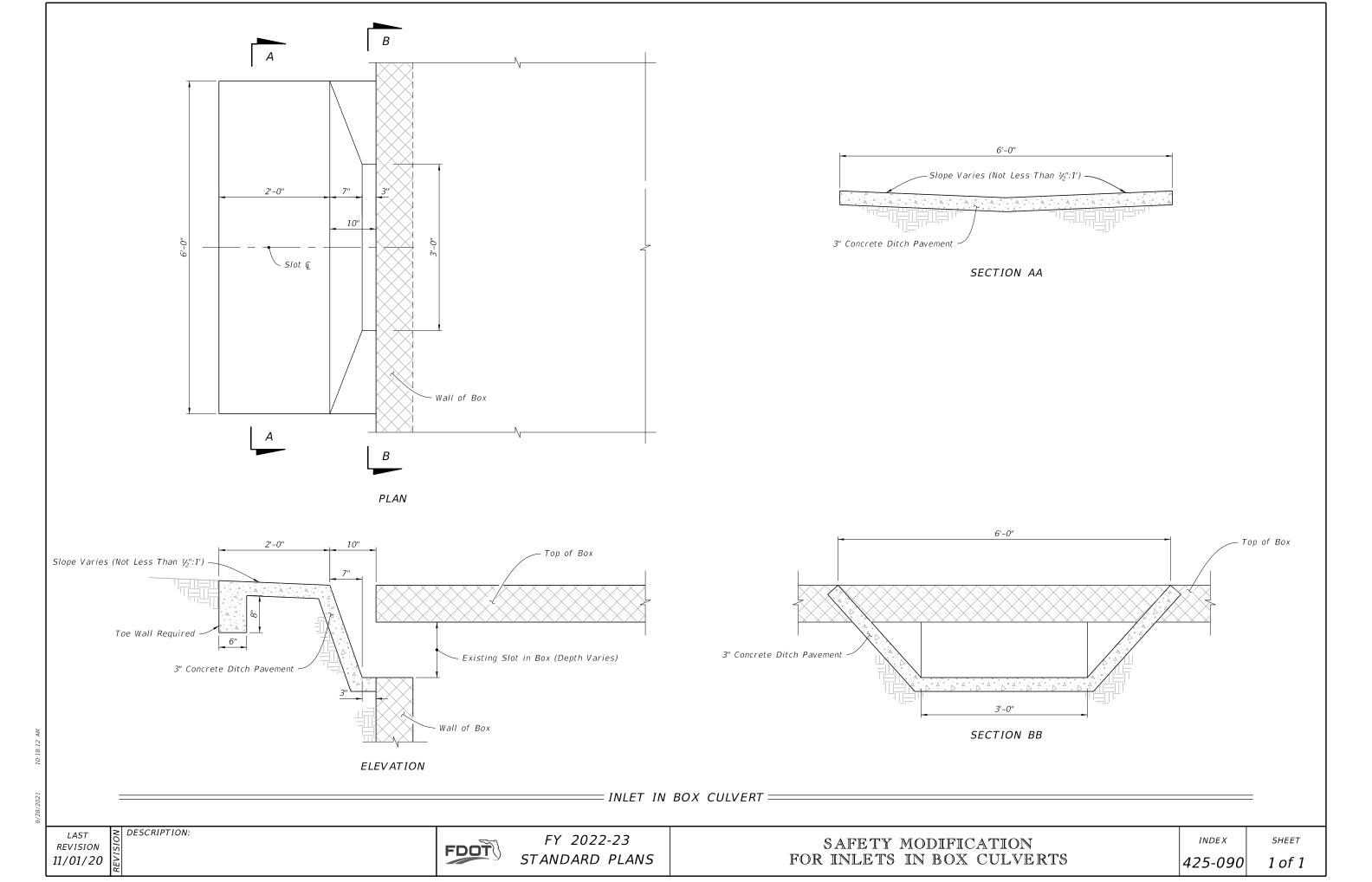
	TABLE OF CONTENTS:					
Sheet	Description					
1	General Notes and Contents					
2	Utility Conflict Condition I and II Details					

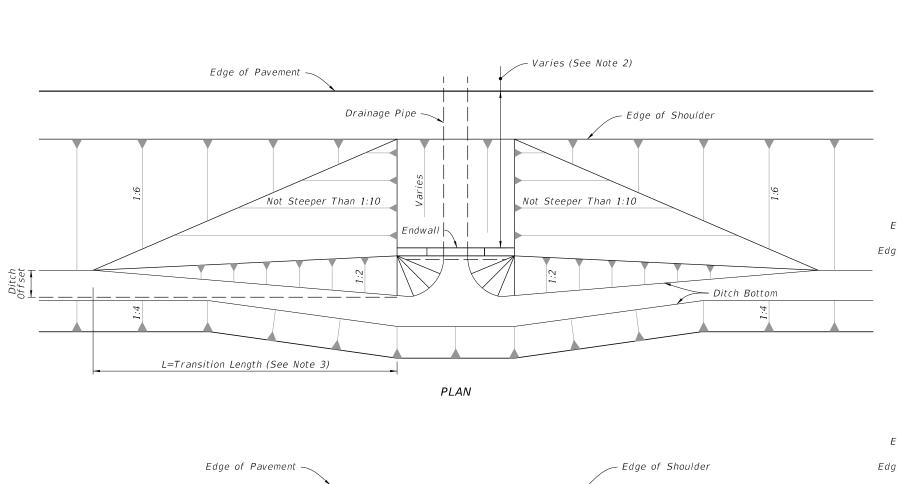


=UTILITY CONFLICT =

(Condition I Shown, Condition II Similar)

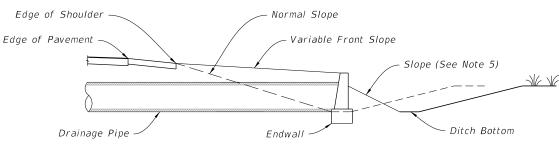






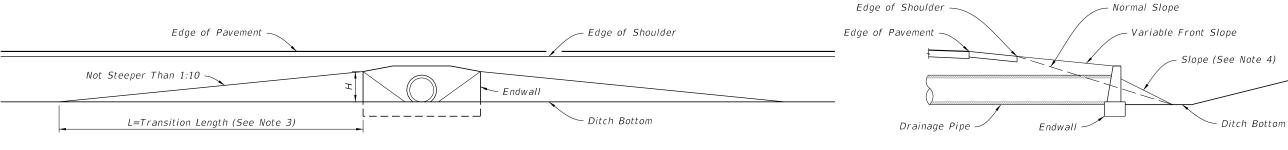
NOTES:

- 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	Filter Fabric 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

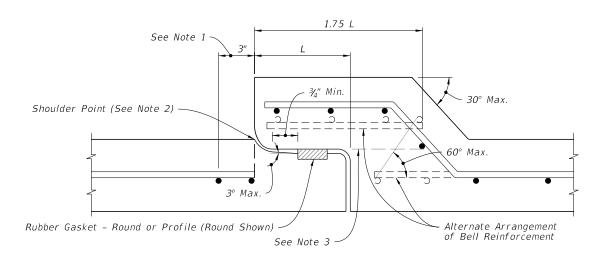
LAST REVISION 11/01/20

DESCRIPTION:

FDOT

END ELEVATION

SHEET

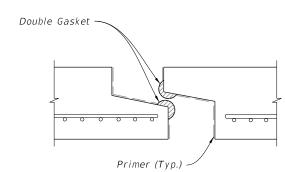


Nominal Pipe Diameter Design Reinforcement Maximum Reinforcement Under Tolerance 15" 0.07 0.010 18" 0.07 0.010 24" 0.09 0.010 30" 0.12 0.010 36" 0.14 0.010 42" 0.16 0.010 48" 0.19 0.011 54" 0.21 0.012 60" 0.23 0.0135 66" 0.26 0.015 72" 0.28 0.0165 78" 0.30 0.018 84" 0.33 0.0195 90" 0.35 0.021 96" 0.37 0.0225 102" 0.40 0.024 108" 0.42 0.0255	SCHEDULI Class	TABLE 1 SCHEDULE OF BELL REINFORCEMENT Classes II,III,IV,V; Wall A,B,C						
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 72" 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	Pipe	BeĬĬ	Reinforcement					
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 72" 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		in² per foot	in² per foot					
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 72" 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	15"	0.07	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 72" 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	18"	0.07	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 72" 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	24"	0.09	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 72" 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	30"	0.12	0.010					
48" 0.19 0.011 54" 0.21 0.012 60" 0.23 0.0135 66" 0.26 0.015 72" 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	36"	0.14	0.010					
54" 0.21 0.012 60" 0.23 0.0135 66" 0.26 0.015 72" 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	42"	0.16	0.010					
60" 0.23 0.0135 66" 0.26 0.015 72" 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	48"	0.19	0.011					
66" 0.26 0.015 72" 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	54"	0.21	0.012					
72" 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	60"	0.23	0.0135					
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	66"	0.26	0.015					
84" 0.33 0.0195 90" 0.35 0.021 96" 0.37 0.0225 102" 0.40 0.024	72"	0.28	0.0165					
90" 0.35 0.021 96" 0.37 0.0225 102" 0.40 0.024	78"	0.30	0.018					
96" 0.37 0.0225 102" 0.40 0.024	84"	0.33	0.0195					
102" 0.40 0.024	90"	0.35	0.021					
	96"	0.37	0.0225					
108" 0.42 0.0255	102"	0.40	0.024					
	108"	0.42	0.0255					

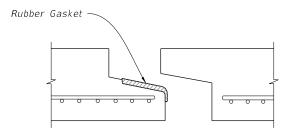
NOTES:

- 1. Allowable Tolerance for the last full wrap of reinforcing when using single elliptical cage.
- 2. Extend the last full wrap of reinforcing to the shoulder point and meet ASTM C-76 requirements.
- 3. 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

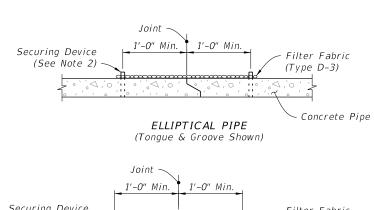
NOTES:

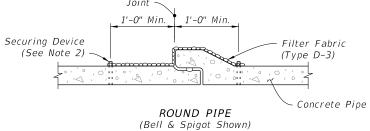
- 1. Filter Fabric Jacket is required on both type of joints.
- 2. Details shown before pull-up.

=ELLIPTICAL CONCRETE PIPE JOINT DETAIL ===

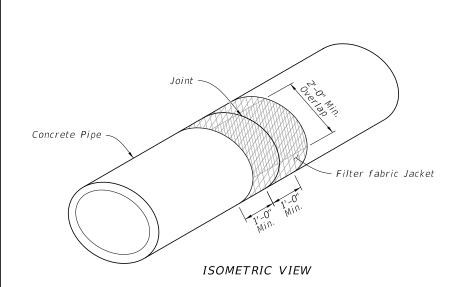
ROUND AND ELLIPTICAL CONCRETE PIPE JOINT

REVISION 11/01/20



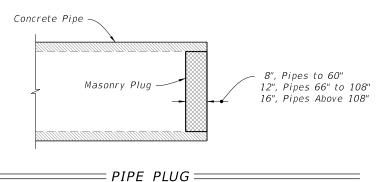


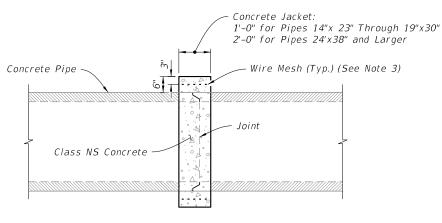
SECTION VIEW



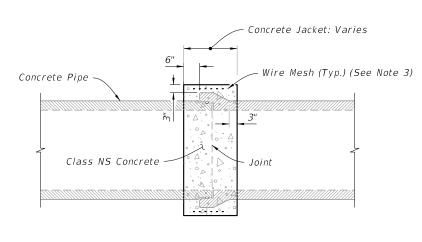
(For All Pipe Types - Concrete Elliptical Pipe Shown)

= <code>FILTER FABRIC JACKET</code> =





ELLIPTICAL PIPE



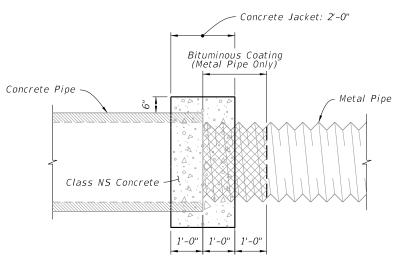
ROUND PIPE

SIMILAR TYPES (Only When Called For In The Plans)

Wire Mesh (Typ.) (See Note 3) Concrete Pipe ELLIPTICAL PIPE (Tongue & Groove Shown) Concrete Jacket (See Note 5) Class NS Concrete Wire Mesh (Typ.) (See Note 3) Concrete Pipe ROUND PIPE (Bell & Spigot Shown) DISSIMILAR JOINTS

Class NS Concrete

Concrete Jacket (See Note 6)



CONCRETE AND METAL PIPE SHOWN (Others Similar) DISSIMILAR TYPES

CONCRETE JACKET =

NOTES:

- 1. Alternate connection must be approved by the Engineer.
- 2. Install securing device in accordance with Specification 985.
- 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.

FILTER FABRIC JACKET, CONCRETE JACKET, AND PIPE PLUG

LAST **REVISION** 11/01/20

DESCRIPTION:

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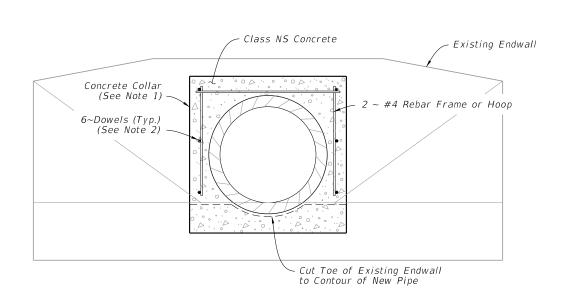
FY 2022-23 STANDARD PLANS

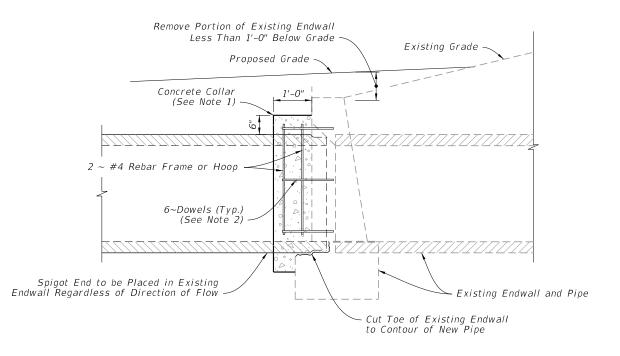
MISCELLANEOUS DRAINAGE DETAILS

INDEX

SHEET 3 of 7

430-001





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 1/2"x16" dowels in adhesive bond material.

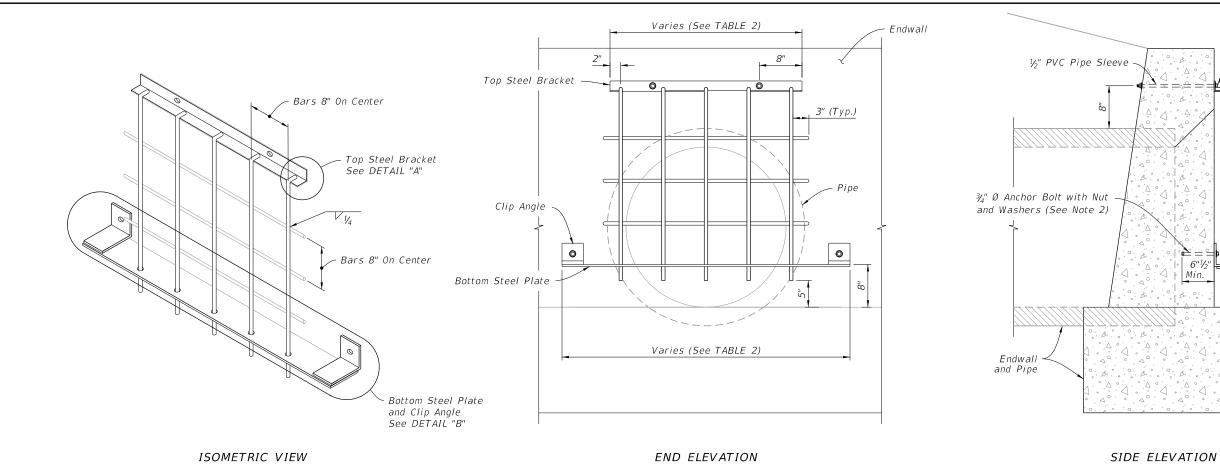
CONCRETE COLLARS

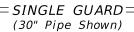
LAST REVISION 11/01/21

DESCRIPTION:



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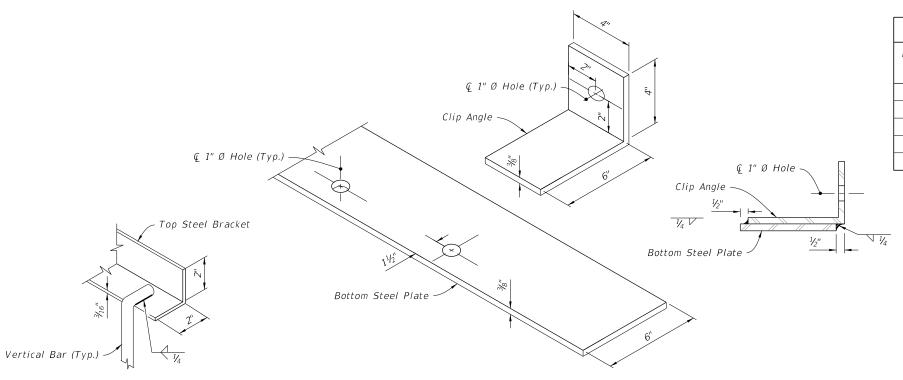


	TABLE 2 - SINGLE GUARD								
Pipe Dia. (in)	Top Steel Bracket	Bottom Steel Plate	Number of Holes	Number of Vert. Bars	Vertical Bars Size	Number of Horiz. Bars	Horizontal Bars Size	Weight Ibs.	
18	2'-4"	3'-6"	4	4	1/2"	1	1/2"	48	
24	3'-0"	4'-0"	5	5	1/2"	2	1/2"	58	
30	3'-0"	4'-6"	5	5	5⁄8"	3	5%"	74	
36	3'-8"	5'-0"	6	6	5/8"	4	5%"	90	
42	4'-4"	5'-6"	7	7	5/8"	5	5⁄8″	111	

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.

SINGLE PIPE END GUARD

1/2" x 14" Bolt with

Guard Bars

Bottom Steel Plate

Clip Angle

·Nut and Washers

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

DESCRIPTION:

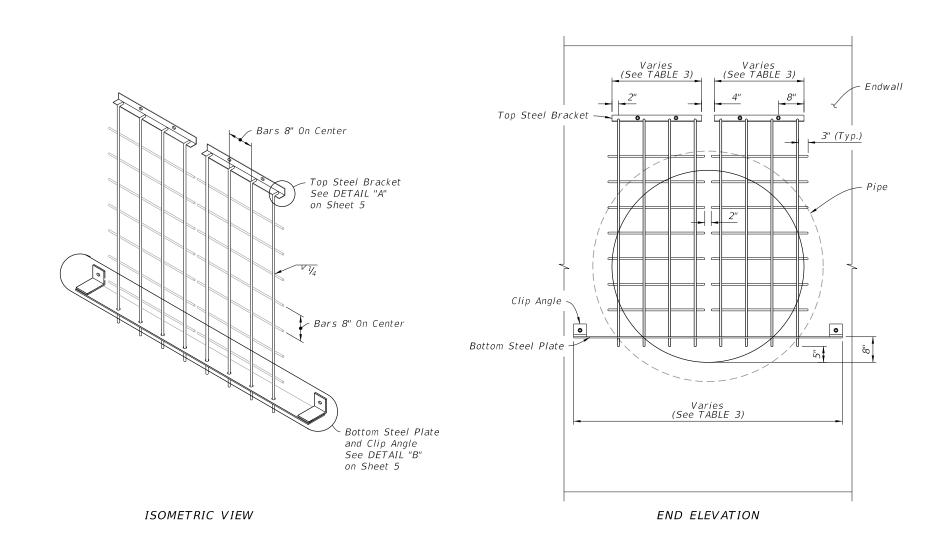
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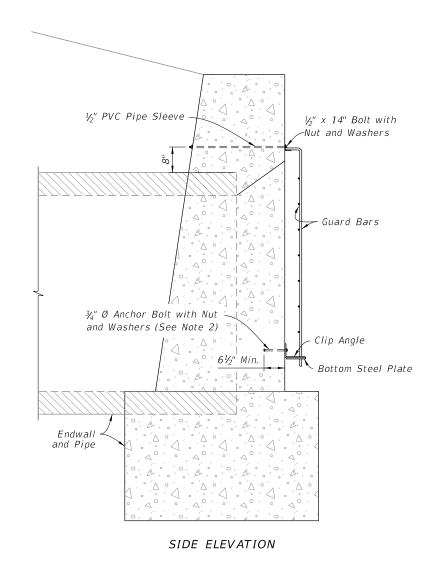
FY 2022-23 STANDARD PLANS

MISCELLANEOUS DRAINAGE DETAILS

SHEET INDEX 430-001

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 - DOUB	LE GUARI)			
Pipe Dia. (in)	Top Steel Bracket Grate 1	Top Steel Bracket Grate 2	Bottom Steel Plate	Number of Total Holes	Number of Vert. Bars Grate 1	Number of Vert. Bars Grate 2	Vertical Bars Size	Number of Horiz. Bars (each grate)	Horizontal Bars Size	Weight Ibs.
48	2'-4"	2'-4"	6'-0"	8	4	4	5/8"	5	5/8"	127
54	2'-4"	2'-4"	6'-6"	8	4	4	3/4"	6	5/8"	157
60	2'-4"	2'-4"	7'-0"	8	4	4	3/4"	7	5/8"	172

DOUBLE PIPE END GUARD

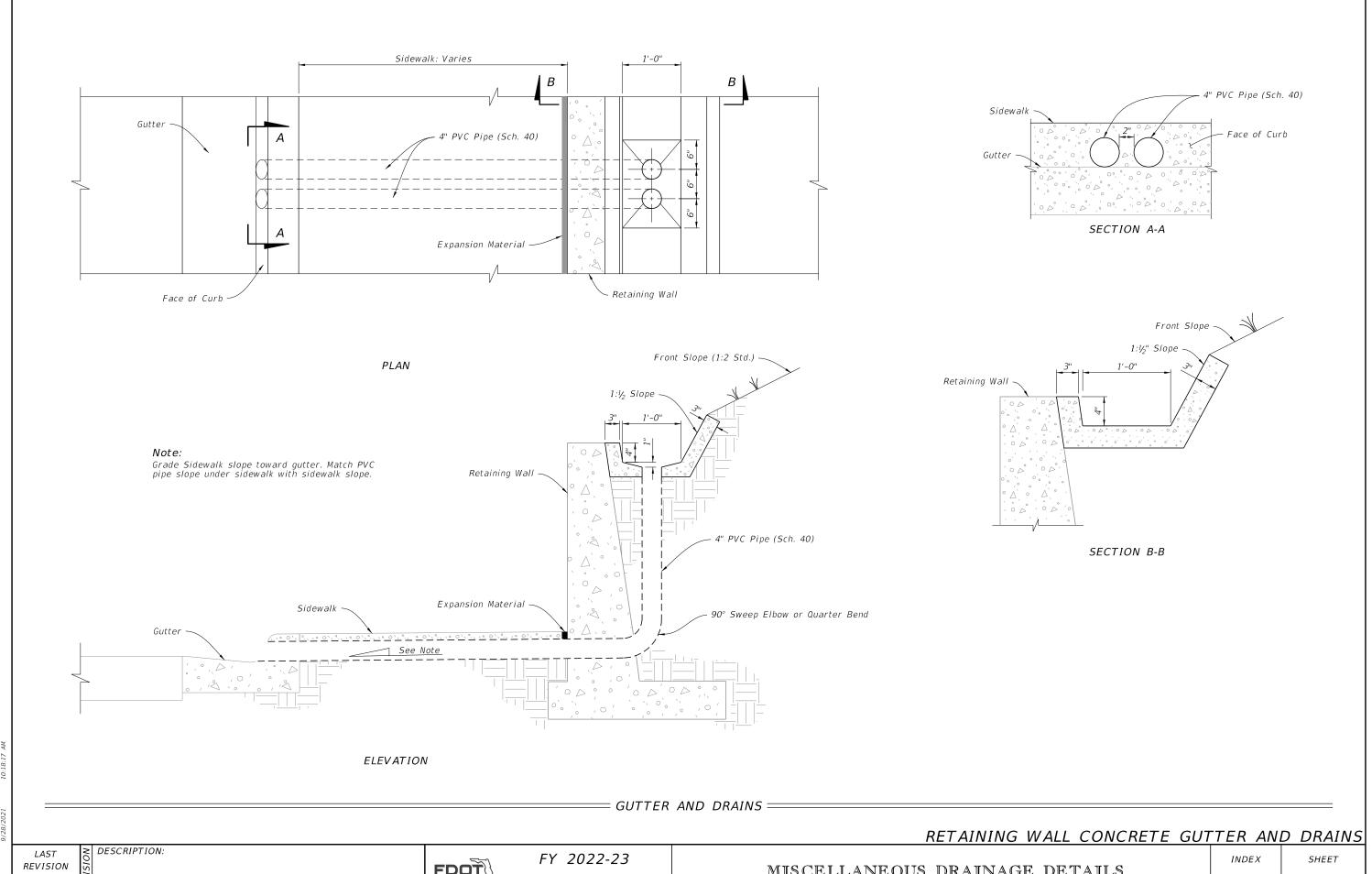
REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

SHEET



11/01/20

FDOT

STANDARD PLANS

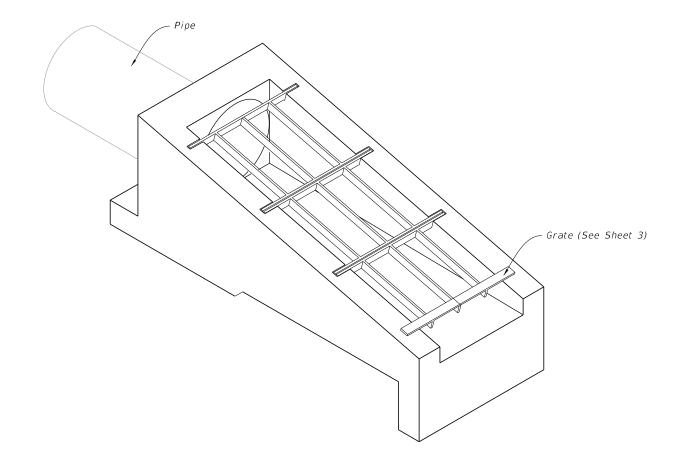
MISCELLANEOUS DRAINAGE DETAILS

430-001

7 of 7

- 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)

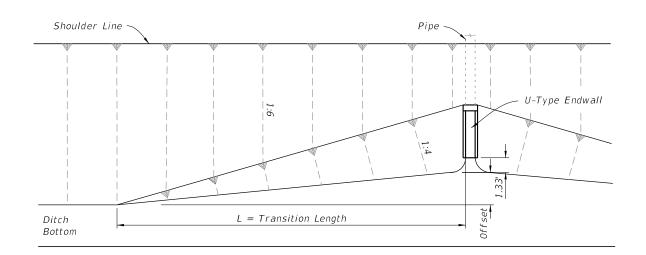


	TABLE 1						
	SLOPE TRANSITIONS						
	Pipe Dia.	Offset (Ft.)	L (Ft.)				
Slope 1:4	15"	4.2	42				
1:4	18"	4.8	48				
	24"	5.8	58				
	30"	6.9	69				

= FRONT SLOPE TRANSITION AT ENDWALL =

REVISION 11/01/21

≥ DESCRIPTION:



FY 2022-23 STANDARD PLANS

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

INDEX 430-010

SHEET

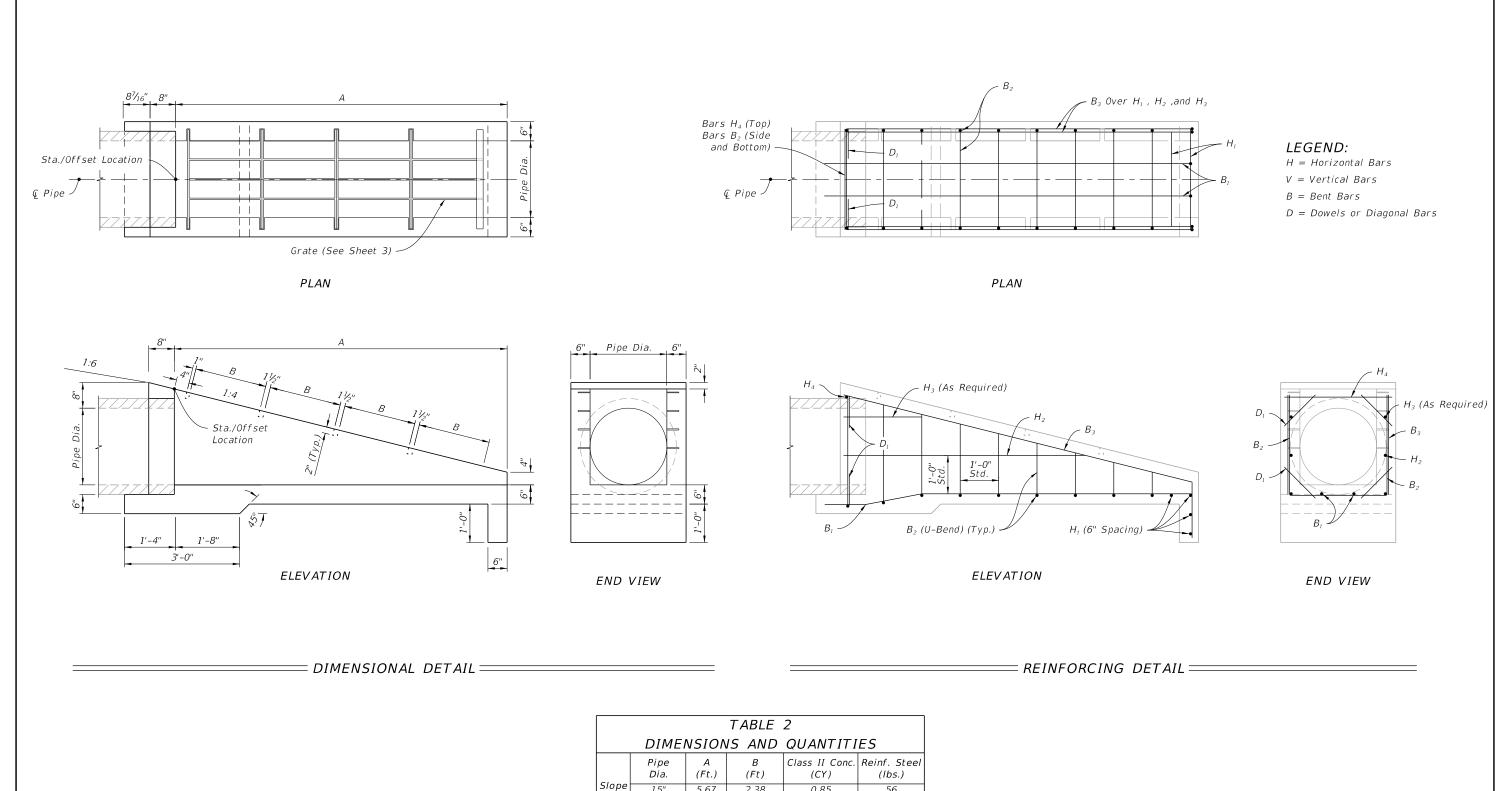


	TABLE 2							
	DIMENSIONS AND QUANTITIES							
	Pipe Dia.	A (Ft.)	B (Ft)	Class II Conc. (CY)	Reinf. Steel (lbs.)			
Slope 1:4	15"	5.67	2.38	0.85	56			
1:4	18"	6.67	1.875	1.01	73			
	24"	8.67	1.875	1.65	97			
	30"	10.67	1.875	2.33	129			

DIMENSIONAL AND REINFORCING DETAILS

REVISION 11/01/21 ≥ DESCRIPTION:

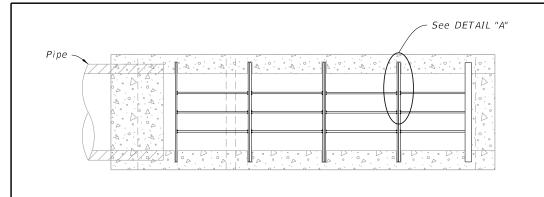
FDOT

STANDARD PLANS

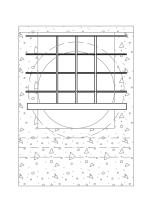
U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES

INDEX 430-010

SHEET 2 of 3



PLANSlope Pipe -



END VIEW

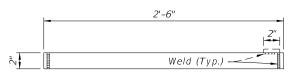
NOTES:

1. Install grate bars evenly spaced across dimension D.

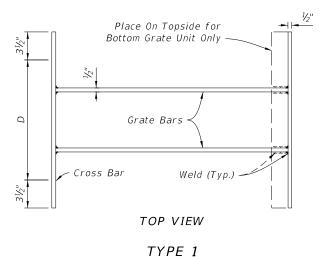
ELEVATION

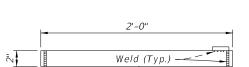
2. All bars and grate bars are $\frac{1}{2}$ " x 2".

	TABLE 3							
	NUMBER OF GRATE BARS AND GRATES REQUIRED							
Pipe Dia.	Grate Ba	rs Reqd.	Grate	Grate	Reqd.	Total		
D D	Type No. 1	Type No. 2	Wt. (lbs.)	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	43.63	0	4	174.52		
30"	0	5	53.55	0	5	267.75		

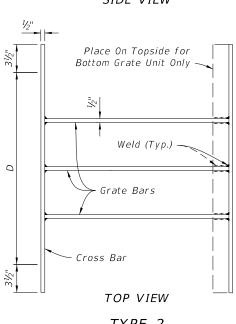


SIDE VIEW

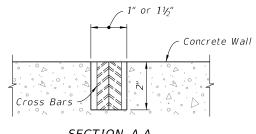




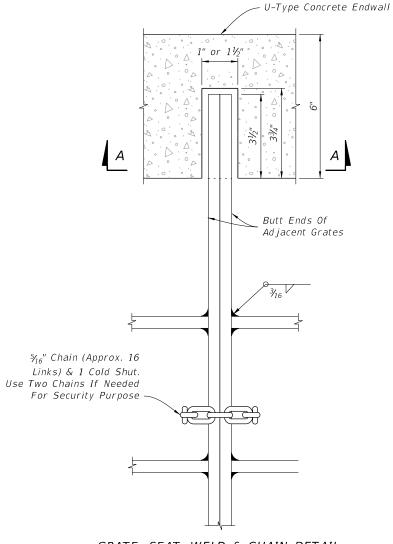
SIDE VIEW



TYPE 2



SECTION A-A



GRATE, SEAT, WELD & CHAIN DETAIL

= DETAIL "A" =

= TYPE 1 AND TYPE 2 GRATE DETAILS =

TYPE 1 AND TYPE 2 GRATE DETAILS

REVISION 11/01/19

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STANDARD PLANS

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

INDEX 430-010

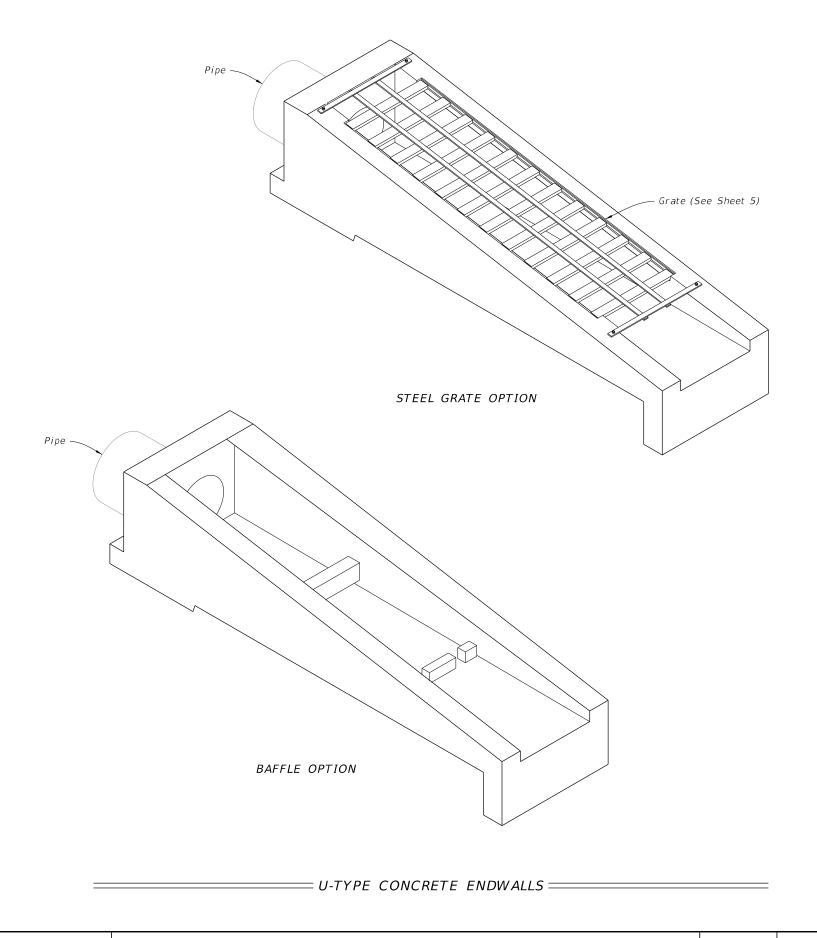
SHEET 3 of 3

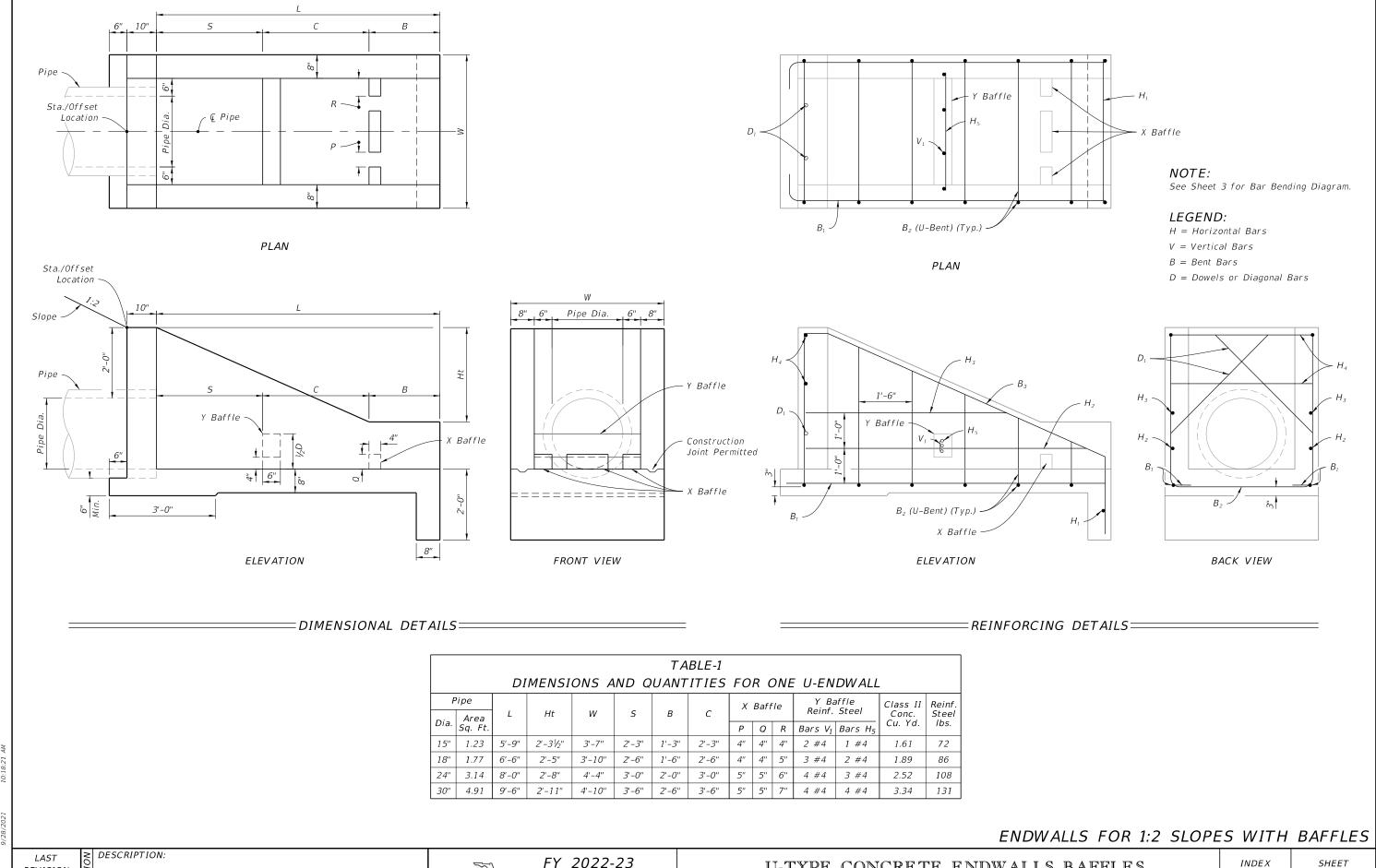
≥ DESCRIPTION:

FY 2022-23

- 1. Use Class II concrete.
- 2. Construct Baffles only when called for in Plans.
- 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					





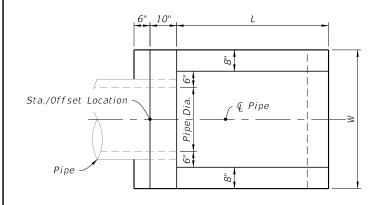
LAST O DESCRIPT
REVISION S 11/01/21

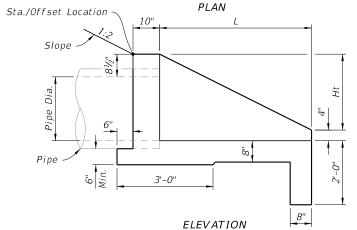
FDOT

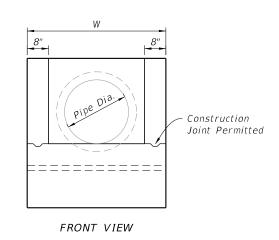
FY 2022-23 STANDARD PLANS

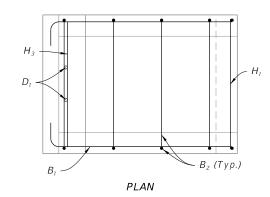
U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE 430-011

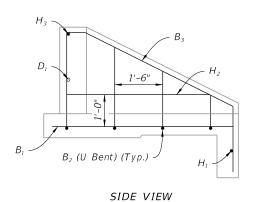
2 of 5











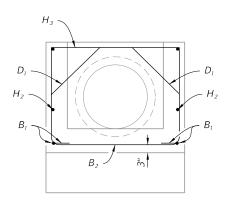
LEGEND:

H = Horizontal Bars

V = Vertical Bars

B = Bent Bars

D = Dowels or Diagonal Bars



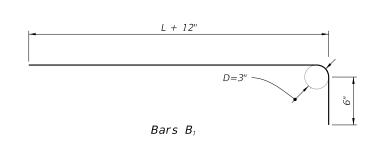
BACKWALL SECTION

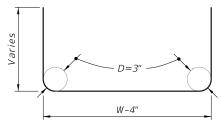
DIMENSIONAL DETAILS

REINFORCING DETAILS

	TABLE-2														
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL															
Piņ	oe				Class II	Reinf.									
Dia.	Area Sq. Ft.	L	Ht	W	Conc. Cu. Yd.	Steel Ibs.									
15"	1.23	3'-3"	1'-7½"	3'-7"	0.89	39									
18"	1.77	3'-9"	1'-10½"	3'-10"	1.05	43									
24"	3.14	4'-9"	2'-41/2"	4'-4"	1.40	55									
30"	4.91	5'-9"	2'-10½"	4'-10''	1.88	64									

= ENDWALL WITHOUT BAFFLES =





Bars B_2

BENDING DIAGRAM =

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

REVISION 11/01/21

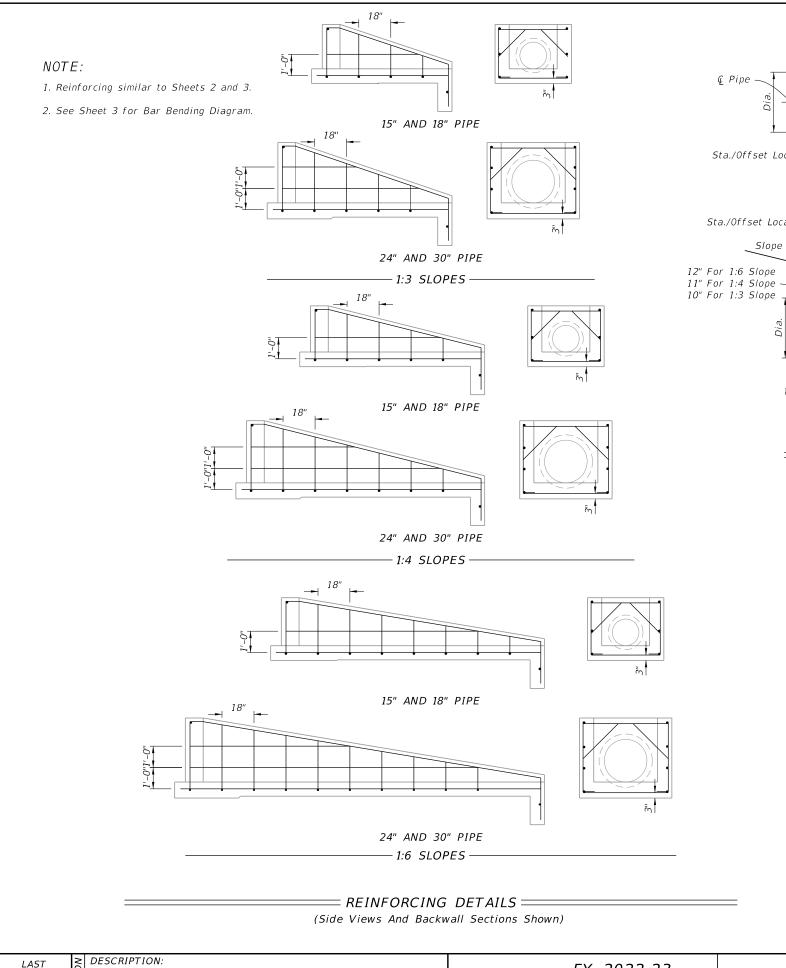
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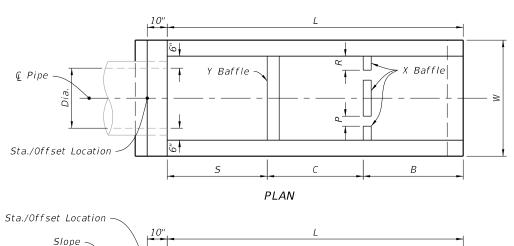
FY 2022-23 STANDARD PLANS

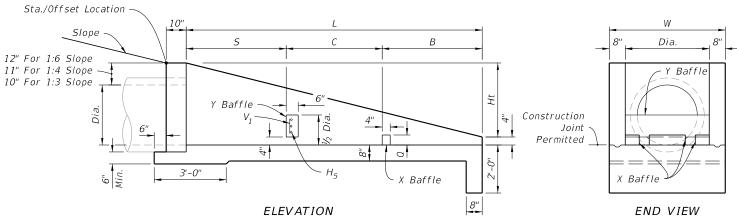
U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE

INDEX 430-011

SHEET 3 of 5







			TA	ABLE-3										
DIMENSIONS AND QUANTITIES FOR BAFFLES														
Pipe		X Baffle			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"				4- #4	3- #4	0.10	12							
30"	5"	5"	7"	4- #4	4- #4		16							

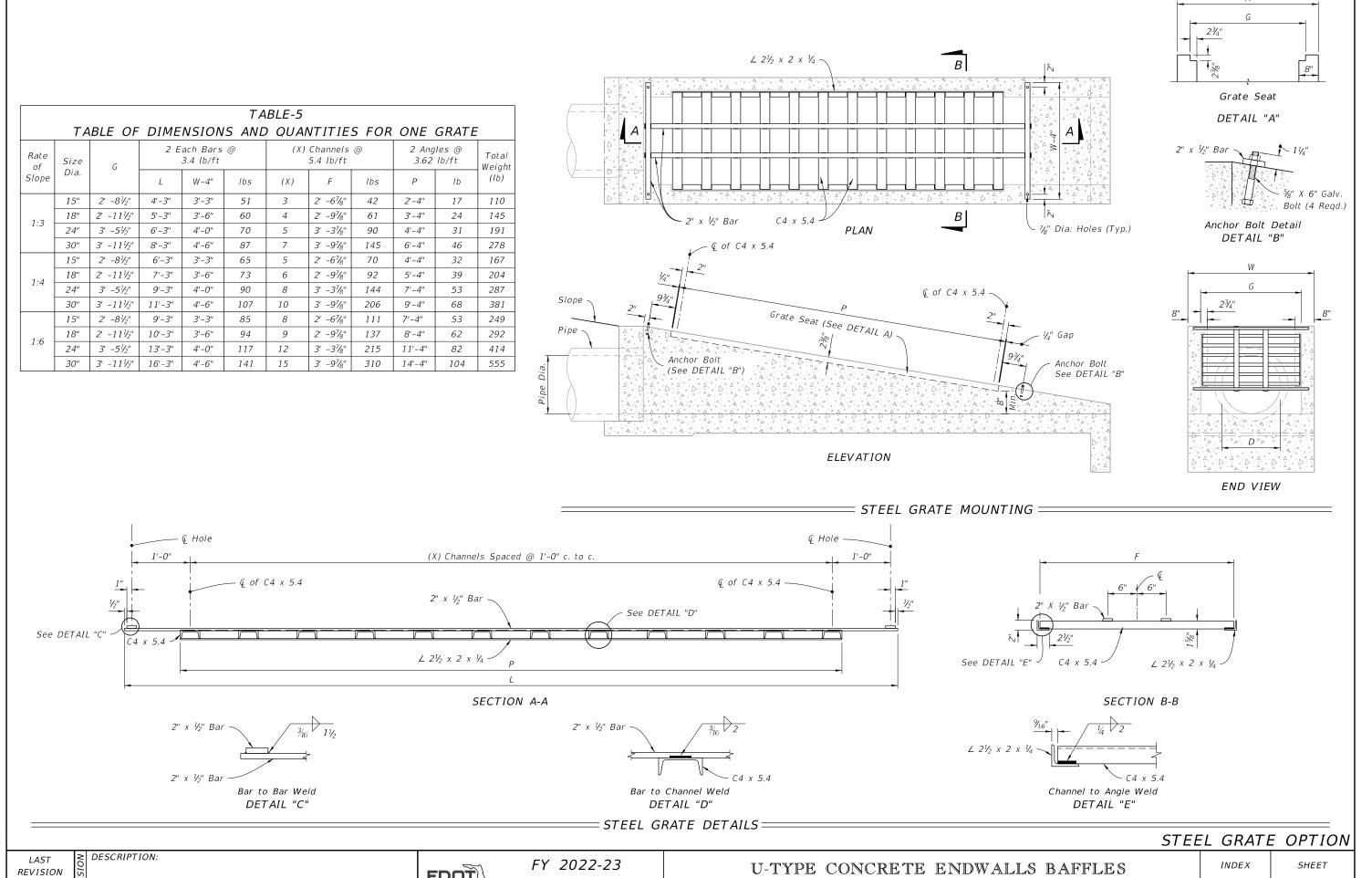
=== DIMENSIONAL DETAILS =

				TA	ABLE-4										
	DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL														
Rate Of	Р	ipe	L	Ht	w		fle Locat. en Requii		Class II Concrete	Reinf. Steel					
Slope	Dia.	Area (Sq. Ft.)		770	VV	S	В	С	Cu. Yd.	Ibs.					
	15"	15" 1.23		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					
1:4	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

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

SHEET INDEX



11/01/21

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STANDARD PLANS

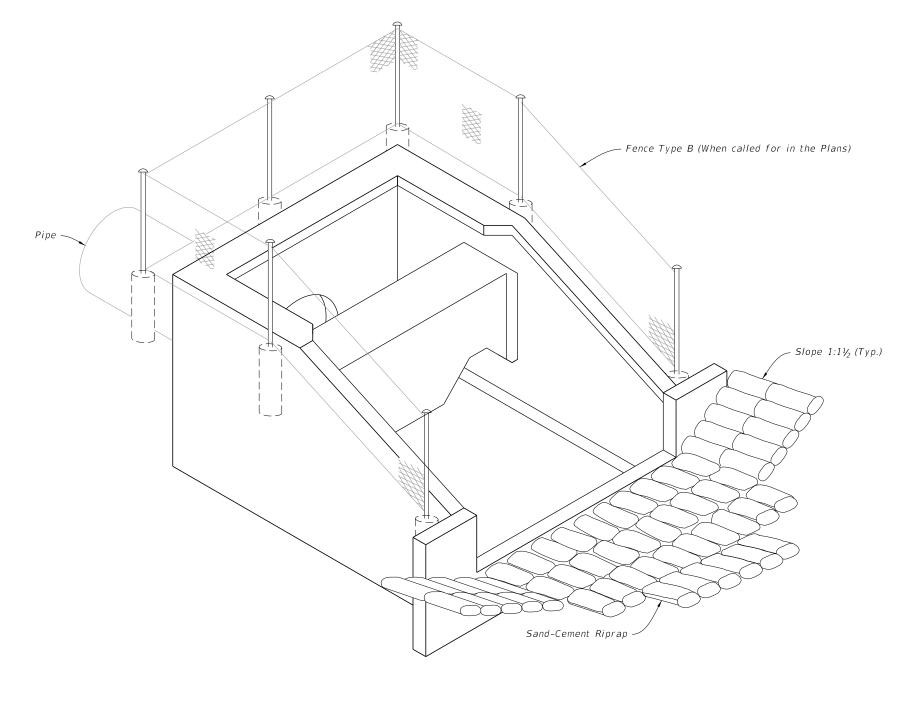
& GRATE OPTIONAL 15" TO 30" PIPE

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.

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

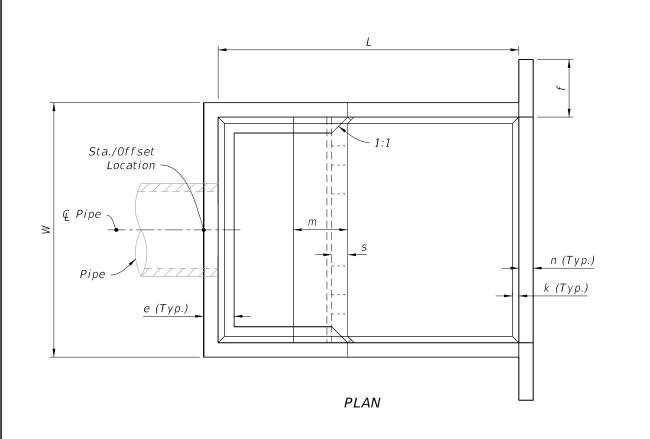


=== U-TYPE CONCRETE ENDWALLS ===

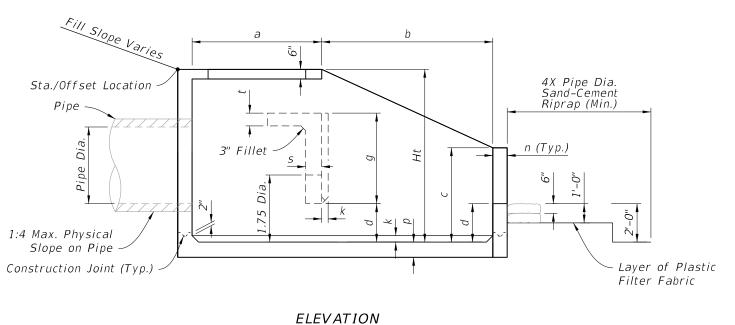
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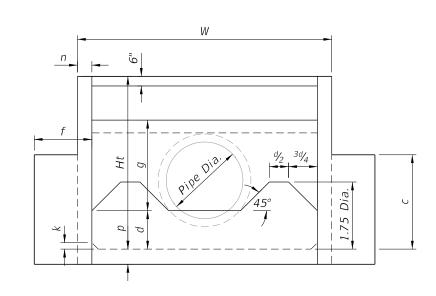
LAST REVISION 11/01/21





P	ipe	DIMENSION TABLE																	Sand-Cement	
Dia.	Area		Feet - Inches													5		Concrete (CY)	Reinf. Steel (Ib)	Riprap (Nom.)
Dia. (S	(SF)	W	Ht	L	а	b	С	d	е	f	g	m	n	р	S	t	k		(15)	(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	61/2	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	121/2	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	121/2	12	8	6	50.68	5,426	44.5





FRONT VIEW

DIMENSIONAL DETAILS=

DIMENSIONAL DETAILS

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≥ DESCRIPTION:

FDOT

STANDARD PLANS

U-TYPE CONCRETE ENDWALL ENERGY DISSIPATOR 30" TO 72" PIPE

INDEX 430-012 SHEET

2 of 3

NOTES:

- 1. All bar dimensions are measured out to out.
- 2. All Bars are size #4 unless otherwise noted.
- 3. Install reinforcing steel with a minimum of 2" cover
- 4. Bars B6 and B7 (N.S. and F.S.) equivalent in size to
- B₅ (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.

				ВЕ	NT	BARS	TAE	BLE					
		B ₁		B_z		B ₃		B_4		B ₅	B_{10}		
Pipe		Spacing (FtIn.)		Spacing (FtIn.)	l	, ,	l	Spacing (FtIn.)	l	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	

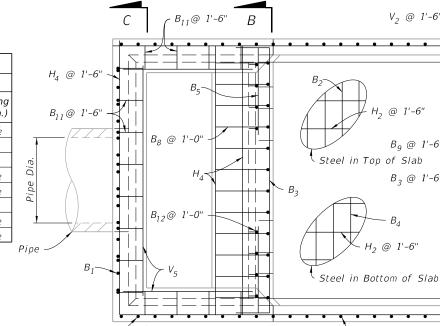
LEGEND:

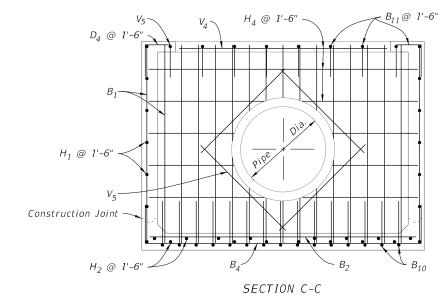
H = Horizontal Bars

D = Dowels or Diagonal Bars

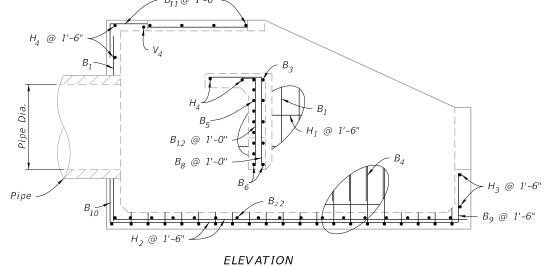
V = Vertical Bars

B = Bent Bars





B3 (N.S.) B₈ @ 1'-0" (N.S.) B₇ (See Note 4) $B_{12}@~1'-0''~(F.S.)$ H₁@ 1'-6" B₆ (See Note 4) Construction Joint SECTION B-B



PLAN

V₂ @ 1'-6'

B₃ @ 1'-6"

H₃ @ 1'-6" – H₂ @ 1'-6" Construction Joint

SECTION A-A

 $BAR B_4$

W-4

2d+9"

g-4"

p+k+18"

2'-0"

BARS B₅ B₈ B₁₀ B₁₁ B₁₂

 B_8 , B_{12}

BENDING DIAGRAM =

REINFORCING DETAILS

REINFORCING DETAILS AND BENDING DIAGRAM

REVISION 11/01/19

FDOT

FY 2022-23 STANDARD PLANS

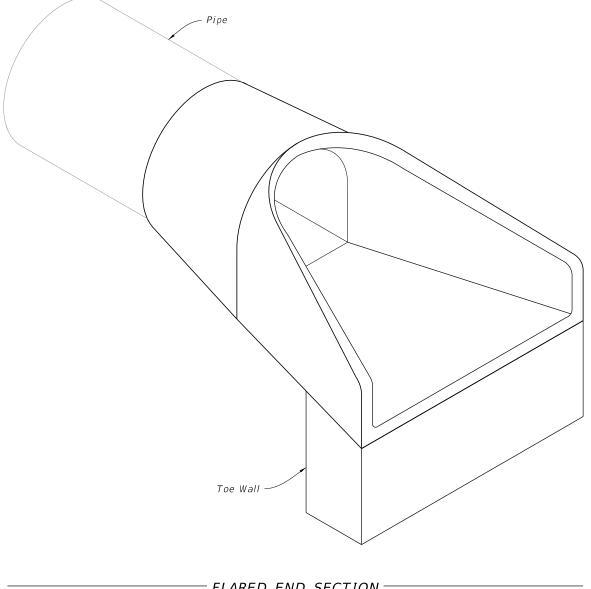
U-TYPE CONCRETE ENDWALL ENERGY DISSIPATOR 30" TO 72" PIPE

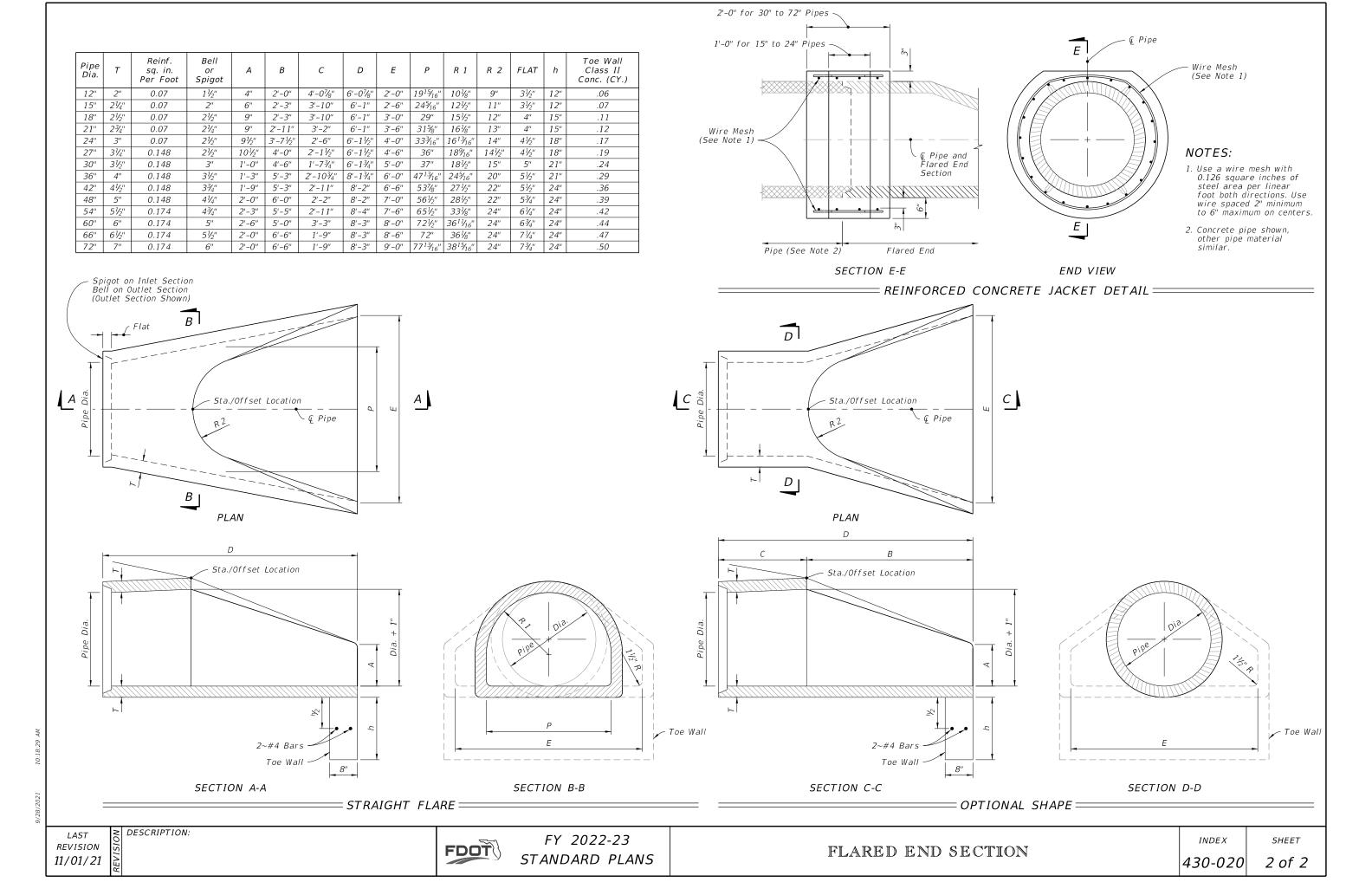
INDEX 430-012

SHEET

- 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





- 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 5½" 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.

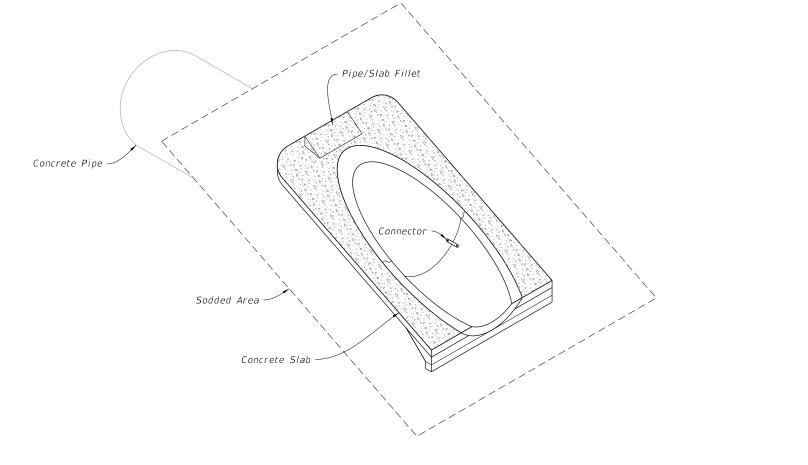
Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger. Slope to the span line for pipe arch 28"x20" or smaller and 1:2 for pipe arch 35"x24" or larger.

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.

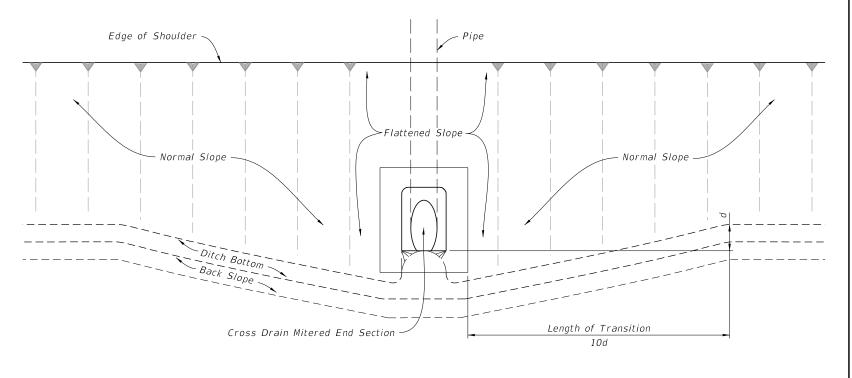
8. Quantities shown are for estimating purposes only.

	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 =

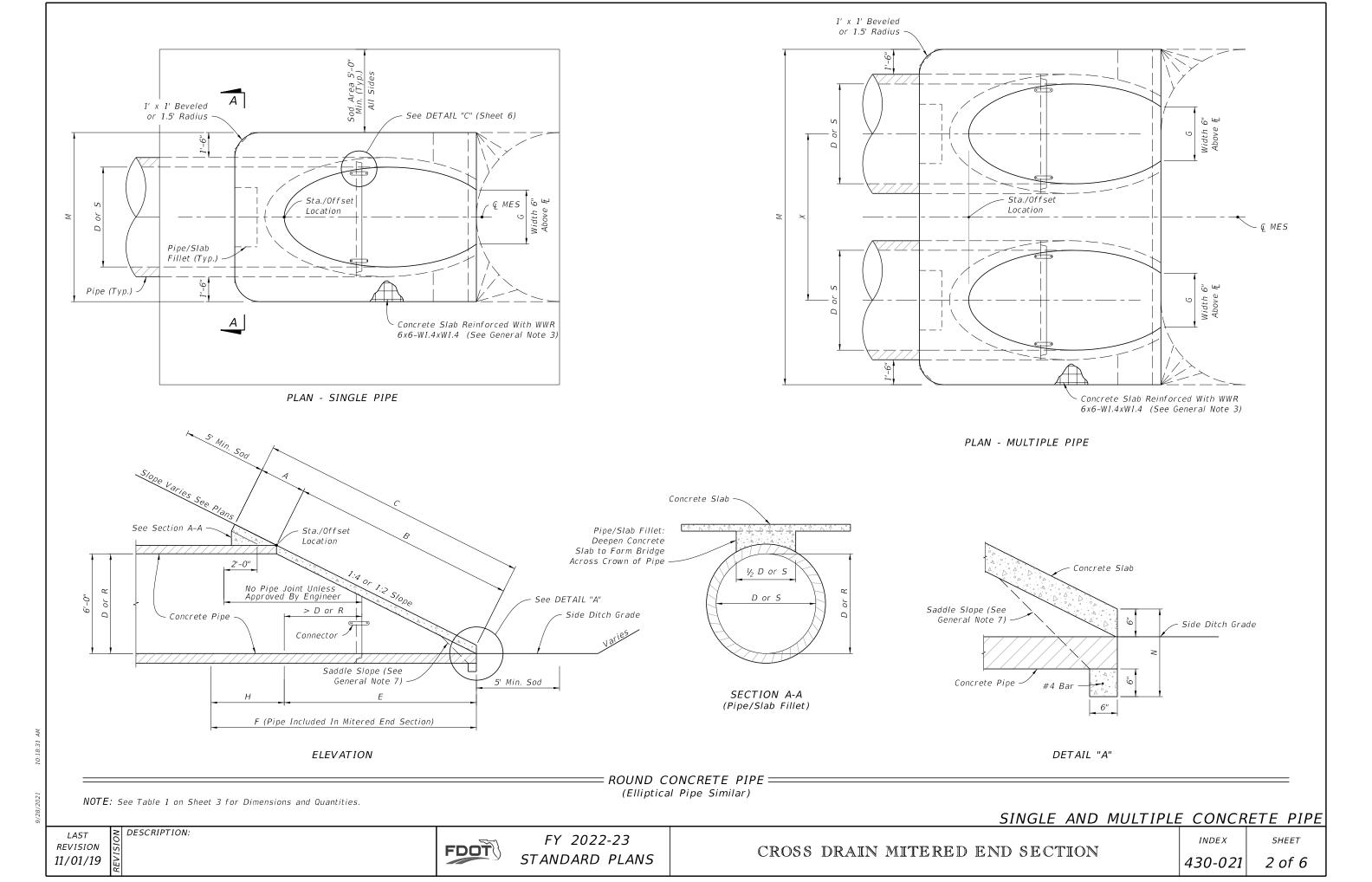
(Concrete Pipe Shown, Corrugated Metal Pipe Similar)



= SLOPE AND DITCH TRANSITIONS =

LAST REVISION 11/01/19





															TAE	BLE 1	!												
							SIN	GLE	AND	M	ULT I	<i>IPLE</i>	CO	NCR	ETE	PIPE	. DI	MEN	SION	IS Al	ND (QUAN	ITITI	IES					
		Dia.	Rise	Span	Х	A	В	С	Е	F	G	Н			М		.,	5½" (Seε		SLAB (C) al Note .	′		CONC. S Genera			SODDING (SY)			
		D	R	5	^				L	,	G	,,	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	"	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"	1.92'	2.18'	4.10'	2.06'	5'	1.22'	2.9'	4.63'	7.21'	9.79'	12.37'	1.19'	0.38	0.58	0.77	0.96	0.27	0.41	0.54	0.67	21	24	27	30
		18"	_	_	2'-10"	1.97'	2.74'	4.71'	2.56'	6'	1.41'	3.4'	4.92'	7.75'	10.58'	13.42'	1.21'	0.44	0.65	0.87	1.09	0.31	0.45	0.60	0.75	22	25	28	31
		24"	 	_	3'-5"	2.06'	3.85'	5.91'	3.56'	7'	1.73'	3.4'	5.50'	8.92'	12.33'	15.75'	1.25'	0.54	0.83	1.12	1.42	0.39	0.59	0.79	1.00	24	28	32	35
		30"	_	_	4'-3"	2.15'	4.95'	7.10'	4.56'	8'	2.00'	3.4'	6.08'	10.33'	14.58'	18.83'	1.29'	0.66	1.09	1.50	1.91	0.46	0.76	1.04	1.32	26	31	35	40
	1:2	36"	_	_	5'-1"	2.25'	6.08'	8.33'	5.56'	9'	2.24'	3.4'	6.67'	11.75'	16.83'	21.92'	1.33'	0.81	1.38	1.95	2.51	0.55	0.94	1.33	1.71	28	34	39	45
۵,	Slope	42"	-		6'-0" 6'-9"	2.34' 2.43'	7.21' 8.33'	9.55' 10.76'	6.56'	10' 11'	2.45' 2.65'	3.4' 3.4'	7.25' 7.83'	13.25' 14.58'	19.25'	25.25' 28.08'	1.38' 1.42'	0.97	1.70 2.04	2.45 2.93	3.19 3.84	0.66 0.76	1.15 1.37	1.66 1.96	2.15 2.57	30 32	37 39	43 47	50 54
Pipe		54"	$\vdash =$		7'-8"	2.43	9.44'	11.96'	7.56' 8.56'	12'	2.83'	3.4	8.42'	16.08	21.33' 23.75'	31.42'	1.42	1.13 1.31	2.44	3.58	4.72	0.76	1.62	2.38	3.14	34	42	51	59
P		60"	1		8'-6"	2.62'	10.56'	13.18'	9.56'	14'	3.00'	4.4'	9.00'	17.50'	26.00'	34.50'	1.50'	1.51	2.89	4.28	5.68	0.99	1.02	2.38	3.73	36	45	55	64
ete		66"	l —	l — I	9'-2"	2.71'	11.68'	14.39'	10.56'	15'	3.18'	4.4'	9.58'	18.75'	27.92'	37.08'	1.54'	1.68	3.25	4.84	6.43	1.11	2.15	3.21	4.27	38	48	58	68
:re		72"	l —		10'-0"	2.80'	12.80'	15.60'	11.56'	16'	3.30'	4.4'	10.16'	20.16'	30.16'	40.16'	1.58'	1.89	3.74	5.59	7.45	1.24	2.46	3.68	4.90	40	51	62	73
oncr		15"	1—		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'	0.57	0.87	1.15	1.44	0.40	0.61	0.80	1.00	23	26	29	32
ŭ		18"	1—		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'	0.66	0.99	1.31	1.65	0.47	0.69	0.91	1.14	25	28	31	35
ρι		24"			3'-5"	2.53'	7.18' △	9.71'	7.03' A	11'	1.73'	4.0'	5.50'	8.92'	12.33'	15.75'	1.25'	0.85	1.30	1.75	2.20	0.60	0.90	1.21	1.52	28	32	36	40
Round		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'	1.10	1.74	2.39	3.05	0.76	1.19	1.63	2.07	31	36	41	46
Re	1:4	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'	1.32	2.21	3.08	3.96	0.89	1.48	2.05	2.63	34	40	46	52
	Slope	42"	<u> </u>		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'	1.58	2.76	3.91	5.09	1.05	1.82	2.57	3.34	38	44	51	58
	Jope	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'	1.85	3.30	4.73	6.17	1.21	2.15	3.07	4.00	41	48	56	63
		54"	<u> </u>	_	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'	2.14	3.95	5.77	7.58	1.39	2.55	3.72	4.88	44	52	61	69
		60"	1-	_	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'	2.45	4.66	6.87	9.07	1.59	3.02	4.44	5.86	47	56	66	75
		66"	1-	_	9'-2"	3.73'	21.62'	25.35'	21.03'	25'	3.18'	4.0'	9.58'	18.75'	27.92'	37.08'	1.54'	2.88	5.54	8.18	10.84	1.91	3.66	5.40	7.15	49	59	69	80
		72"	12//	10"	10'-0"	3.91'	23.68'	27.59'	23.03'	27'	3.30'	4.0'	10.16' 4.92'	20.16'	30.16'	40.16'	1.58'	3.54	6.61	9.87	13.13	2.12	<i>4.18</i> <i>0.33</i>	6.24	8.30	52	63	74	85
		_	12" 14"	18" 23"	2'-10" 3'-4"	1.97'	1.62'	3.59'	1.56' 1.89'	4' 5'	1.50' 1.90'	2.4'	5.38'	7.75' 8.71'	10.58' 12.04'	13.42'	1.21' 1.23'	0.30	0.49 0.59	0.67	0.85 1.02	0.19		0.45 0.55	0.57	21 22	24	27	30 33
		=	19"	30"	3 -4 4'-0"	2.01' 2.11'	1.99' 2.92'	4.00' 5.03'	2.73'	<i>6'</i>	2.37'	3.1' 3.3'	6.04'	10.04'	14.04	15.38' 18.04'	1.23	0.37	0.39	0.81 1.09	1.02	0.25	0.40	0.33	0.69	24	26 28	29 33	33
			24"	38"	5'-0"	2.20'	3.85'	6.05'	3.56'	7'	2.85'	3.4'	6.79'	11.79'	16.79'	21.79'	1.31'	0.62	1.03	1.45	1.86	0.43	0.33	1.00	1.28	26	31	37	42
			29"	45"	5'-11"	2.34'	4.79'	7.13'	4.39'	8'	3.19'	3.6'	7.50'	13.42'	19.33'	25.25'	1.38'	0.75	1.30	1.84	2.39	0.52	0.90	1.27	1.65	28	34	41	47
	1:2		34"	53"	7'-0"	2.43'	5.72'	8.15'	5.23'	9'	3.57'	3.8'	8.25'	15.25'	22.25'	29.25'	1.42'	0.90	1.61	2.32	3.03	0.62	1.11	1.60	2.09	30	37	45	53
Pipe	Slope	_	38"	60"	7'-10"	2.52'	6.46'	8.98'	5.89'	9'	3.95'	3.1'	8.92'	16.75'	24.58'	32.42'	1.46'	1.03	1.89	2.74	3.60	0.70	1.29	1.87	2.46	31	40	49	57
P		_	43"	68"	8'-11"	2.62'	7.39'	10.01'	6.73'	10'	4.28'	3.3'	9.67'	18.58'	27.50'	36.42'	1.50'	1.19	2.26	3.33	4.40	0.81	1.54	2.26	2.99	33	43	53	63
ete		_	48"	76"	9'-11"	2.71'	8.33'	11.04'	7.56'	11'	4.59'	3.4'	10.42'	20.33	30.25'	40.17'	1.54'	1.38	2.65	3.93	5.21	0.93	1.79	2.66	3.53	35	46	57	68
re			53"	83"	10'-8"	2.80'	9.26'	12.06'	8.39'	12'	4.77'	3.6'	11.08'	21.75'	32.42'	43.08'	1.58'	1.55	3.03	4.50	5.96	1.04	2.04	3.03	4.02	37	49	61	73
Concr		_	58"	91"	11'-8"	2.90'	10.19'	13.09'	9.23'	13'	5.01'	3.8'	11.83'	23.50'	35.17'	46.83'	1.63'	1.75	3.47	5.20	6.93	1.17	2.33	3.49	4.66	39	<i>52</i>	65	78
CC		_	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'	0.45	0.68	0.92	1.14	0.30	0.45	0.61	0.76	23	26	29	32
al		_	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'	0.53	0.83	1.13	1.42	0.36	0.56	0.76	0.95	24	28	32	35
ř.		_	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'	0.74	1.15	1.57	1.98	0.51	0.79	1.08	1.36	27	32	36	40
Elliptic			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'	0.97	1.57	2.19	2.81	0.68	1.10	1.53	1.96	30	36	41	47
E11	1:4	_	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'	1.22	2.07	2.92	3.77	0.86	1.45	2.04	2.63	33	40	46	53
	Slope		34"	53"	7'-0"	3.22'	10.62'	13.84'	10.36'	13'	3.57'	2.6'	8.25'	15.25'	22.25'	29.25'	1.42'	1.48	2.62	3.77	4.92	1.02	1.81	2.60	3.39	36	44	52	59
	´ -		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'	1.72	3.12	4.53	5.92	1.18	2.14	3.10	4.05	38	47	56	65
			43"	68" 76"	8'-11" 9'-11"	3.56' 3.73'	13.71' 15.43'	17.27' 19.16'	13.36' 15.03'	17' 19'	4.28' 4.59'	3.6' 4.0'	9.67' 10.42'	18.58' 20.33'	27.50 ['] 30.25 [']	36.42' 40.17'	1.50' 1.54'	2.02	3.78 4.49	5.56 6.64	7.32 8.79	1.38 1.59	2.58 3.05	3.79 4.51	4.99 5.97	41	51 55	61 66	71 77
			53"	83"	10'-8"	3.73	17.15'	21.06'	16.70'	20'	4.59	3.3'	11.08'	21.75'	30.23	43.08'	1.54	2.34	5.17	7.66	8.79 10.16	1.80	3.50	5.19	6.88	47	59	71	83
		H	58"	91"	10 -8 11'-8"	4.08'	18.87'	22.95'	18.36'	22'	5.01'	3.6'	11.83'	23.50'	35.17'	46.83	1.58	3.02	5.98	8.95	11.90	2.04	4.04	6.05	8.05	50	63	76	89
ш			1 50	91	11 -0	4.00	10.07	22.33	10.50	22	5.01	٥.٥	11.03	1 23.30	33.17	40.03	1.05	3.02	J.30	0.95	11.50	2.04	4.04	0.05	0.03	1 50	0.5		03

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.

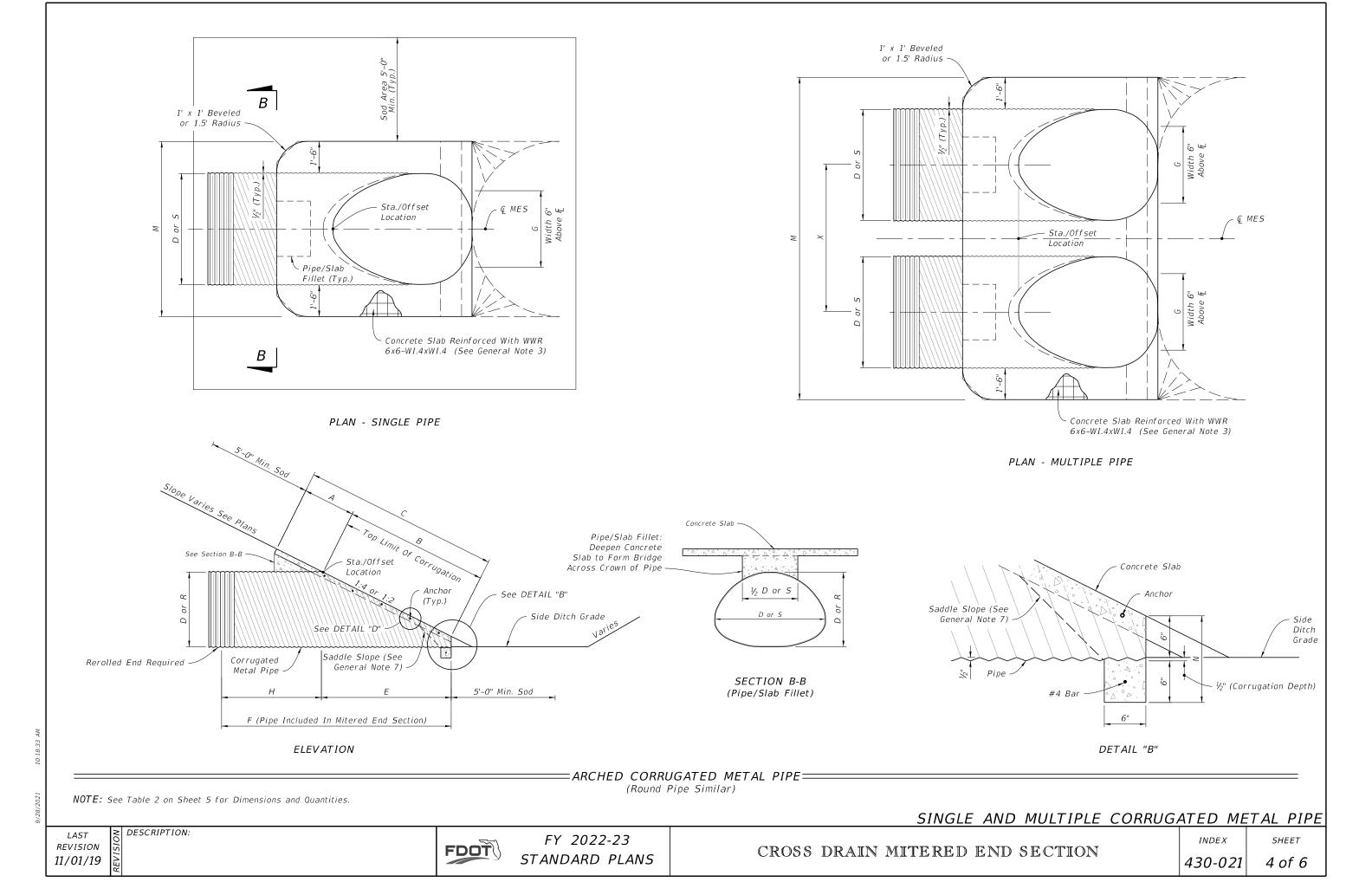
CONCRETE PIPE DIMENSIONS AND QUANTITIES

LAST REVISION 11/01/19

≥ DESCRIPTION:

FDOT

SHEET



															TAB	BLE 2	?												
						SIN	GLE .	AND	MU	LTIF	LE	COF	RRUG	ATEL) ME	ETAL	PIF			<i>ISIOI</i>		AND	QUA	NTIT	IES				
		Dia	Span	Pico										N	1		٨/	_	CONC. Genera	SLAB (CY al Note 3	() 3)		CONC. S Genera		* .		SODDIN	VG (SY)	
		Dia. D	S	R	X	А	В	С	Ε	F	G	Н	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	70	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
o		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
g'.	1.7	30"			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
"	Slope	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
ta	STOPE	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
Metal		48"	_		6'-9"	2.5'	7.83'	10.33'	7.0'	11.0'	2.65'	4.0'	7.08'	13.83'	20.58'	27.33 ^t	1.04'	0.89	1.71	2.54	3.36	0.57	1.09	1.63	2.15	31	38	46	53
pə		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
ate		60"	_	_	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
lg ē		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
14.		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
10		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
~	1:4	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'	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"			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
~		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"		—	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
7.	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
bе	Jiope	—	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
Pij			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
l 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
Metä		—	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
N			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
rug	1:4	_	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
orri	Slope		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
00	Jiope		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
1		_	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

8:43:52 /

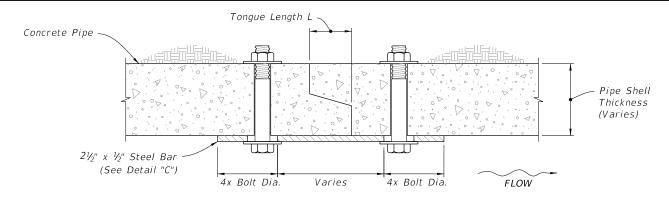
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LAST O DESCRIPTION:
REVISION II/01/19

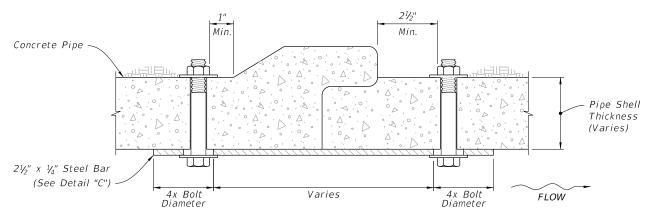
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FY 2022-23 STANDARD PLANS

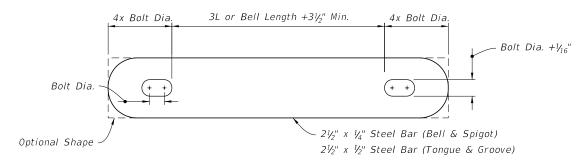
CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES



TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



STEEL BAR

DESCRIPTION:

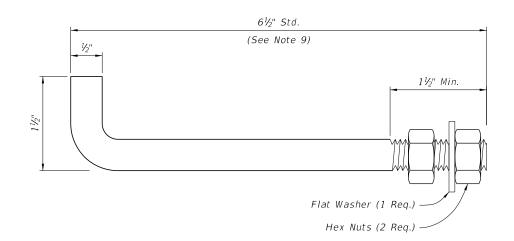
- 1. Use galvanized steel for all bars, bolts, nuts, and washers.
- 2. Two connectors required per joint, located 60° right and left of bottom center of pipe.
- Bolt Dia.
 Pipe Dia.

 ¾"
 15" to 36"

 ½"
 42" to 72"

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

CONCRETE PIPE CONNECTION DETAIL DETAIL "C"



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" x $\frac{1}{2}$ " 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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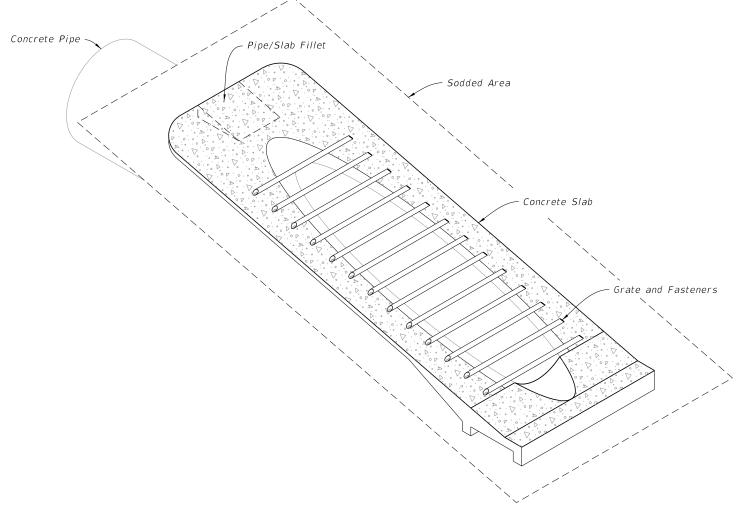
FY 2022-23 STANDARD PLANS

- 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.
- 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 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 © 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.

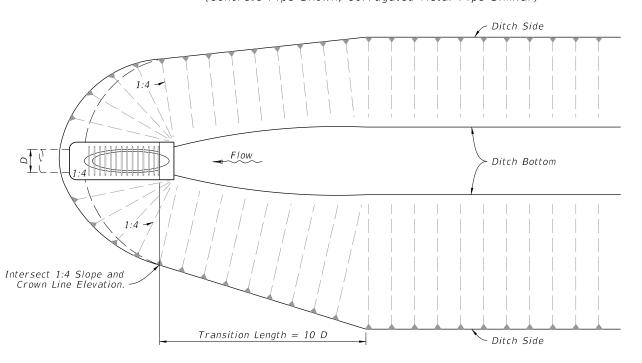
Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger. Slope to the span line for pipe arch 28"x20" or smaller and 1:2 for pipe arch 35"x24" or larger.

- 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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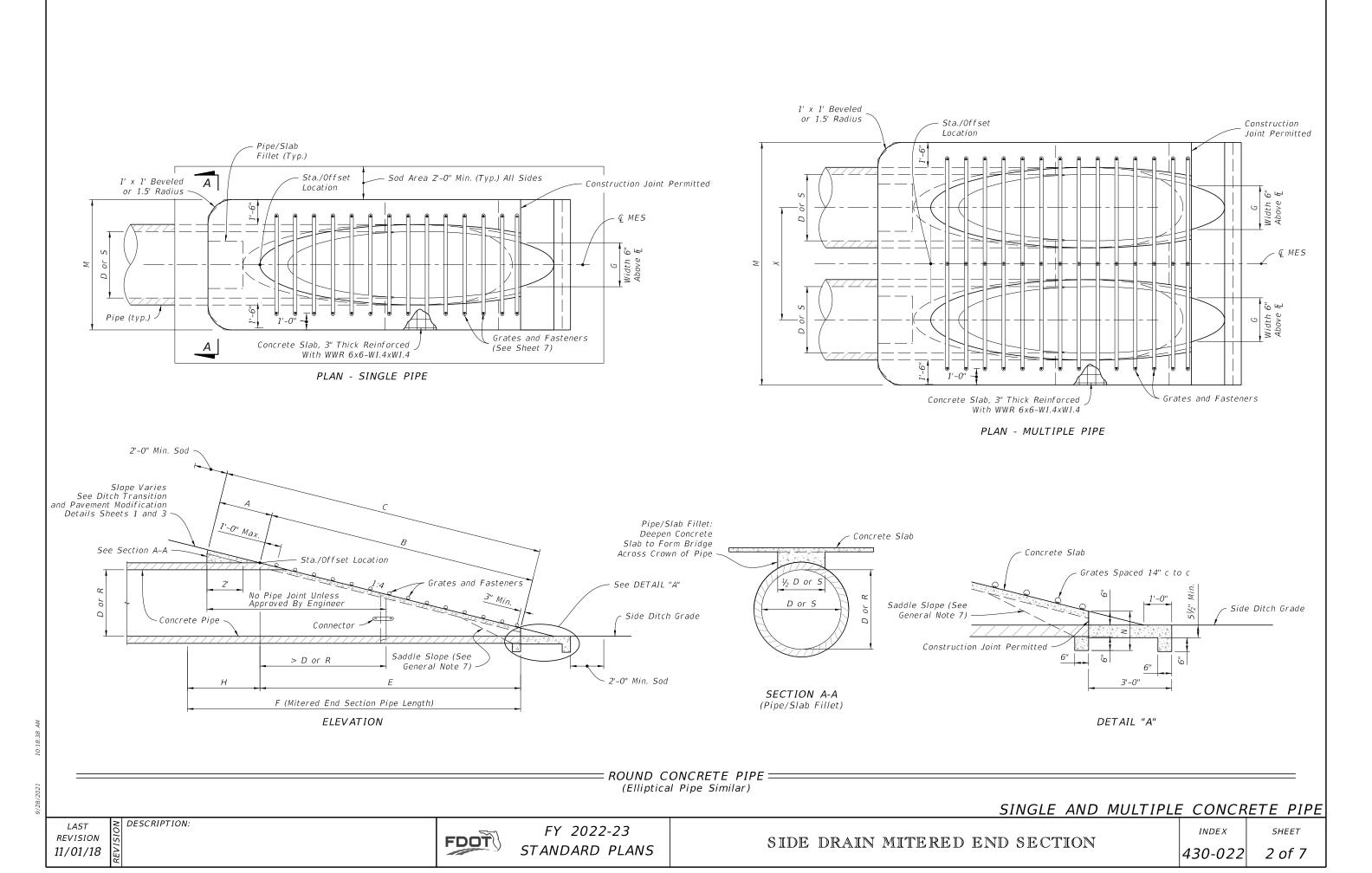
FY 2022-23 STANDARD PLANS

INDEX

SHEET

REVISION

11/01/19



								SINGL	E /	ND I	MULT	IPLE	CONC	RETE	PIPE	DIN	TENSIONS A	AND QUANT	TITIES	 5						
0)	<u> </u>	5.	_											1			GRATE S	SIZES	3" (CONC. S	LAB (CY	′)		SODDIN	IG (SY)	
Pipe	Dia. D	RISE R	Span S	X	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'	7.03' <u></u>	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
ncr	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
7	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'	21/2"	<i>3½</i> "	1.60	2.83	4.04	5.26	14	17	19	22
pur	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"	<i>3½"</i>	1.81	3.26	4.70	6.14	15	18	21	24
Rou	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
a.	_	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
rei	_	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'	21/2"	3"	0.95	1.52	2.09	2.65	10	12	13	15
nc	_	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'	21/2"	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'	3.57'	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
i,	_	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
ipt	_	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"	3.73'	15.43'	19.16'	15.03'	19'	4.59'	4.0'	10.42'	20.33'	30.25'	40.17'	1.54'	3"	HSS 5"x½ ₁₆ "	2.37	4.54	6.73	8.92	17	21	26	30
E	\vdash	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
	<u> — </u>	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

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

1:12 or Steeper 1'-0"

= ${\it PERMISSIBLE \; PAVEMENT \; MODIFICATION}$ =

CONCRETE PIPE DIMENSIONS AND QUANTITIES AND PERMISSIBLE PAVEMENT MODIFICATION

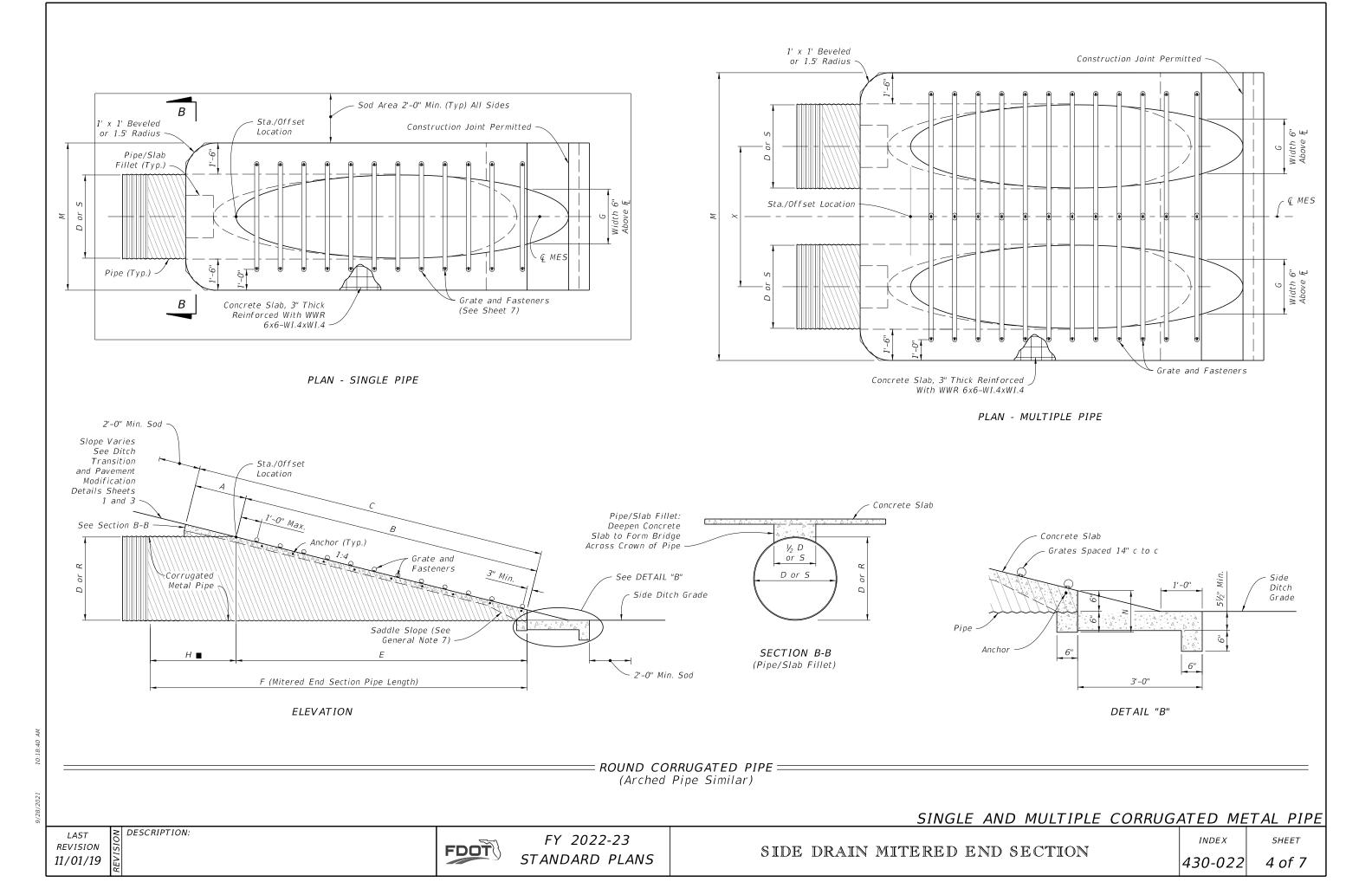
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≥ DESCRIPTION:

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∆6.42′

◊10.40′



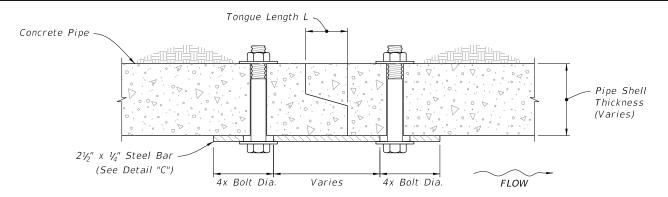
							SING	LE A	ND N	1ULT I	IPLE	CORF	RUGAT	ED N	1ET AL	PIPE	DIMENSI	ONS AND C	DUANT	ITIES	•					
a	Dia	Dico	Cnan										- 1	И			GRATE .	SIZES	3"	CONC. S	LAB (CY	<u></u>		SODDIN	IG (SY)	
ipe	Dia.	Rise	Span	X	Α	В	С	E	F	G	Н	Single	Double	Triple	Quad.	Ν	STANDARD	EXTRA	Single	Double	Triple	Quad.	Single	Double	Triple	Quad
Ь		_ K	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
рә	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
gn	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
r T	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
CC	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'	2½"	3"	0.96	1.63	2.32	2.99	11	13	15	17
ρι	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'	21/2"	3"	1.08	1.92	2.77	3.62	12	14	17	19
ınc	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
Ro	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"		<u> </u>	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
1	_	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
ital	_	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 Ch	<u> </u>	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	<u> </u>	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
ate _	_	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'	2½"	3½"	1.06	1.76	2.46	3.16	11	13	15	17
igi Be		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'	2½"	3½"	1.19	2.02	2.84	3.68	12	14	17	19
7.1	<u> </u>	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
00	_	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
_	I	7 111	17"	71 1011	2 5'	1 1 1 1 1 1 1	16 50	12671	10	1 1 1 1	5 ン	1 0 000	16 02	21671	22 501	1 0 1	ווכ	///	162	201	1 27	5 50	1 =	10	22	2 -

LAST REVISION

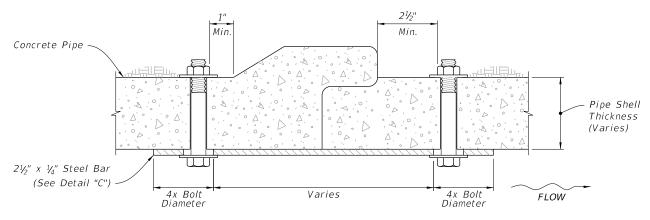
11/01/19

≥ DESCRIPTION:

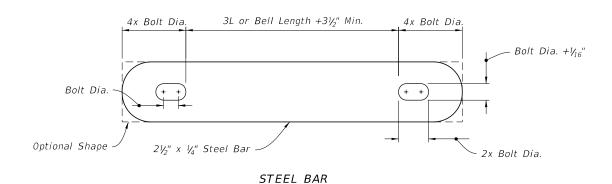
CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES FY 2022-23 STANDARD PLANS



TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



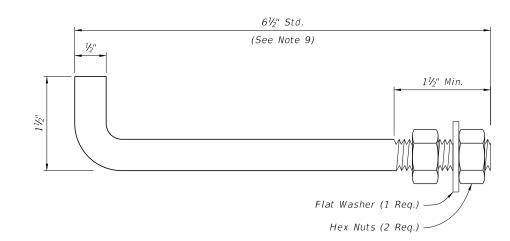
DESCRIPTION:

- 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.

CONCRETE PIPE CONNECTION DETAIL = DETAIL "C" ===



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" x $\frac{1}{2}$ " bolt substitution is permitted.

CORRUGATED METAL PIPE (CMP) ANCHOR DETAIL = $extit{DETAIL}$ " $extit{D}$ " =

CONCRETE PIPE CONNECTION AND CORRUGATED PIPE ANCHOR DETAILS

REVISION 11/01/19

FDOT

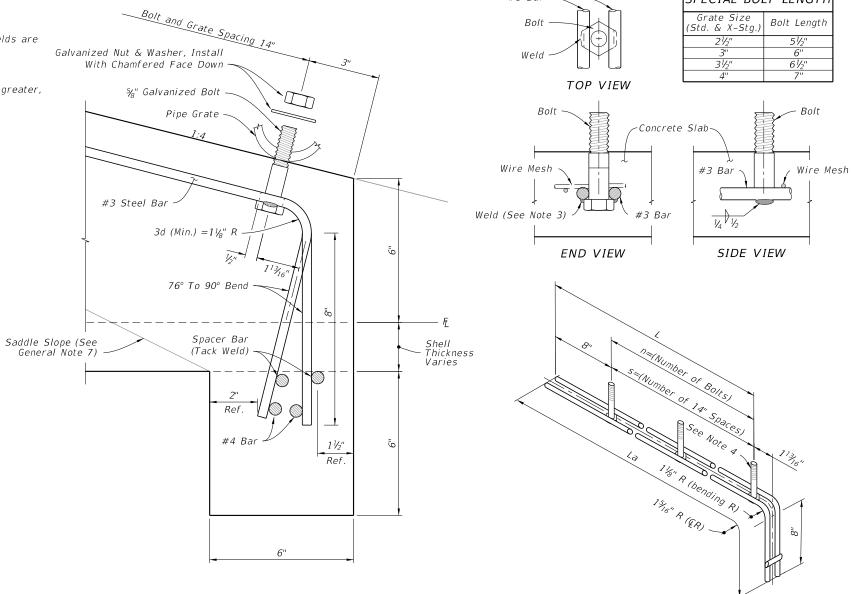
FY 2022-23 STANDARD PLANS

- 1. $\frac{9}{8}$ " x 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.

			С	ONCR	ETE PI	PE			
	F	ROUND	PIPE			ELL	IPTICA	L PIPE	
Pipe Dia.	S	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"
	•	•			53"x83"	14	15	16'-10"	17'-9"
					58"x91"	15	16	18'-0"	18'-11"

			CORRL	IGATE	D MET	AL P	IPE		
	R	OUND	PIPE			AR	CHED	PIPE	
Pipe Dia.	S	n	L	La	Drain Size	5	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



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

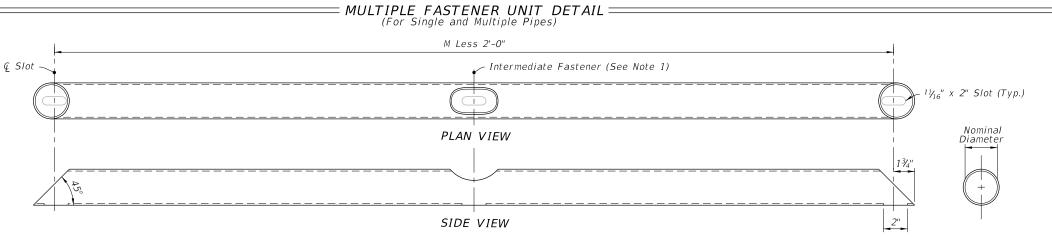
Options for top opening:

a. 4" of 6" mill head cut, 1" deep b. 2" diameter drilled hole

c. 11/16" x 2" slot

Bottom opening: ${}^{1}\mathcal{V}_{16}$ " x 2" slot.

DESCRIPTION:



GRATE DETAIL=

(For Single and Multiple Pipes)

FASTENER UNIT AND GRATE DETAILS

REVISION 11/01/20

FDOT

FY 2022-23 STANDARD PLANS

SIDE DRAIN MITERED END SECTION

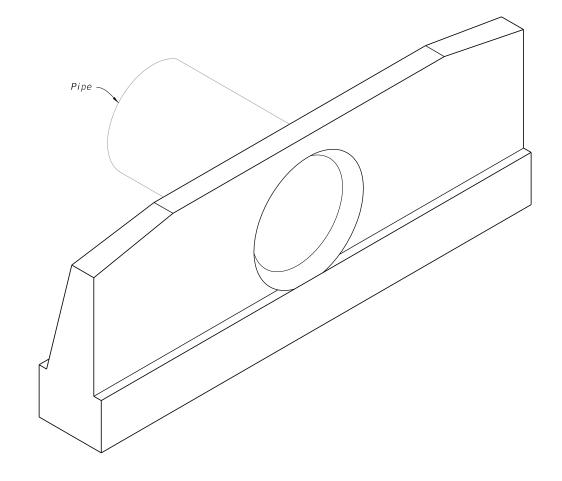
430-022

SPECIAL BOLT LENGTH

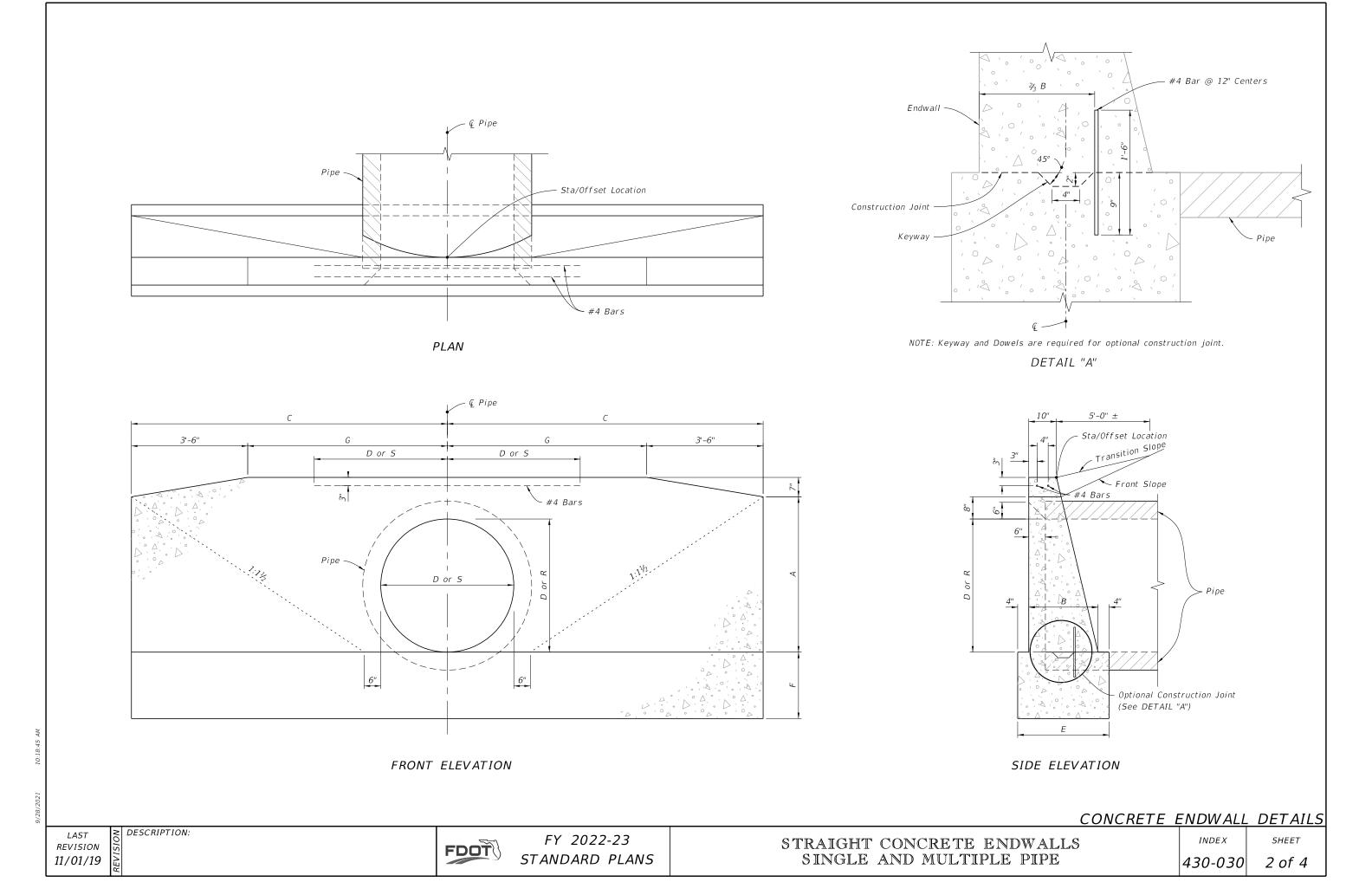
SHEET 7 of 7

- 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 ======



											ROU	ND C	ONCR.	ETE A	AND C	ORRU	GATED	MET	AL PI	PE										
			pening ,	Aras (SA	=)						imensio	nc										lass II								
be	Dia.		, ,		·						1111611310									Numl	ber Of I	Pipe And	d Skew	Angle C	Of Pipe	(α)				Dia.
Ρį	D	٨	lumber	Of Pipe.	5	Δ	R	C	F	F	G	Y			X		Single		Dοι					ple			Quad	ruple		D
		1	2	3	4					,		_ ′	0°	15°	30°	45°	0°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	
	15"	1.23	2.46	3.69	4.92	1'-11"	1'-2"	4'-0"	1'-10"	1'-2"	0'-6"	2'-7"	2'-7"	2'-8"	3'-0"	3'-8"	1.23	1.59	1.60	1.65	1.74	1.94	1.96	2.05	2.23	2.30	2.34	2.47	2.74	15"
	18"	1.77	3.54	5.31	7.08	2'-2"	1'-3"	4'-6"	1'-11"	1'-3"	1'-0"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.56	1.99	2.01	2.06	2.17	2.43	2.46	2.56	2.79	2.86	2.91	3.06	3.40	18"
	21"	2.41	4.82	7.23	9.64	2'-5"	1'-4"	5'-0"	2'-0"	1'-4"	1'-6"	3'-2"	3'-2"	3'-3"	3'-8"	4'-6"	1.97													21"
te	24"	3.14	6.28	9.42	12.56	2'-8"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	2.24	2.82	2.84	2.91	3.06	3.39	3.43	3.57	3.87	3.97	4.03	4.24	4.69	24"
ιre	27"	3.98	7.96	11.94	15.92	2'-11"	1'-5"	6'-0"	2'-1"	1'-5"	2'-6"	3'-10"	3'-10"	4'-0"	4'-5"	5'-5"	2.73													27"
Juc	30"	4.91	9.82	14.73	19.64	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-3"	4'-3"	4'-5"	4'-11"	6'-0"	3.26	4.13	4.16	4.26	4.49	4.98	5.04	5.25	5.69	5.84	5.93	6.24	6.91	30"
Ü	36"	7.07	14.14	21.21	28.28	3'-8"	1'-8"	7'-6"	2'-4"	1'-8"	4'-0"	5'-1"	5'-1"	5'-3"	5'-10"	7'-2"	4.53	5.73	5.77	5.92	6.23	6.92	7.00	7.29	7.91	8.13	8.26	8.69	9.62	36"
	42"	9.62	19.24	28.86	38.48	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"	6.33	8.11	8.17	8.39	8.85	9.90	10.02	10.45	11.38	11.68	11.87	12.51	13.89	42"
	48"	12.57	25.14	37.71	50.28	4'-8"	2'-1"	9'-6"	2'-9"	2'-0"	6'-0"	6'-9"	6'-9"	7'-0"	7'-10"	9'-7"	8.15	10.40	10.48	10.75	11.33	12.64	12.80	13.34	14.50	14.89	15.13	15.93	17.68	48"
	54"	15.90	31.80	47.70	63.60	5'-2"	2'-6"	10'-6"	3'-2"	2'-3"	7'-0"	7'-8"	7'-8"	7'-11"	8'-10"	10'-10"	11.71	15.23	15.35	15.78	16.69	18.77	19.02	19.86	21.69	22.29	22.66	23.93	26.67	54"
	15"	1.23	2.46	3.69	4.92	1'-11"	1'-2"	4'-0"	1'-10"	1'-2"	0'-6"	2'-7"	2'-7"	2'-8"	3'-0"	3'-8"	1.24	1.62	1.63	1.68	1.78	1.99	2.02	2.11	2.30	2.37	2.41	2.75	2.84	15"
le	18"	1.77	3.54	5.31	7.08	2'-2"	1'-3"	4'-6"	1'-11"	1'-3"	1'-0"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.59	2.04	2.06	2.11	2.23	2.51	2.54	2.65	2.89	2.96	3.01	3.17	3.53	18"
let	21"	2.41	4.82	7.23	9.64	2'-5"	1'-4"	5'-0"	2'-0"	1'-4"	1'-6"	3'-2"	3'-2"	3'-3"	3'-8"	4'-6"														21"
2	24"	3.14	6.28	9.42	12.56	2'-8"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	2.29	2.91	2.93	3.01	3.17	3.52	3.56	3.71	4.03	4.14	4.20	4.43	4.91	24"
ea.	27"	3.98	7.96	11.94	15.92	2'-11"	1'-5"	6'-0"	2'-1"	1'-5"	2'-6"	3'-10"	3'-10"	4'-0"	4'-5"	5'-5"														27"
)at	30"	4.91	9.82	14.73	19.64	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-3"	4'-3"	4'-5"	4'-11"	6'-0"	3.34	4.28	4.31	4.43	4.67	5.20	5.27	5.49	5.97	6.13	6.23	6.56	7.29	30"
150	36"	7.07	14.14	21.21	28.28	3'-8"	1'-8"	7'-6"	2'-4"	1'-8"	4'-0"	5'-1"	5'-1"	5'-3"	5'-10"	7'-2"	4.64	5.95	6.00	6.15	6.49	7.25	7.34	7.65	8.33	8.57	8.71	9.18	10.20	36"
17.	42"	9.62	19.24	28.86	38.48	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"	6.49	8.43	8.50	8.73	9.23	10.38	10.52	10.98	11.99	12.32	12.52	13.22	14.73	42"
ŭ	48"	12.57	25.14	37.71	50.28	4'-8"	2'-1"	9'-6"	2'-9"	2'-0"	6'-0"	6'-9"	6'-9"	7'-0"	7'-10"	9'-7"	8.38	10.85	10.94	11.23	11.87	13.34	13.51	14.11	15.39	15.82	16.08	16.97	18.90	48"
	54"	15.90	31.80	47.70	63.60	5'-2"	2'-6"	10'-6"	3'-2"	2'-3"	7'-0"	7'-8"	7'-8"	7'-11"	8'-10"	10'-10"	11.77	15.35	15.48	15.90	16.83	18.93	19.18	20.04	21.89	22.51	22.89	24.17	26.96	54"

											ELLI	PTIC	AL CO	NCRE	TE AI	VD C	ORRUG	GATED	META	L PIPI	E ARC	CH											
ЭС	Rise	Span	0	pening ,	Area (S	F)					D	imensio	ns								Numl			Concre d Skew		of Pipe	(α)				Rise .	Span	Approx.
Ρiξ	R	s i	/	lumber	Of Pipe	·s				_			V			X		Single		Dou			.,		ple		()	Quad	ruple		$\mid R \mid$, 5	Equiv.
			1	2	3	4	1 A	В	C	E	<i>-</i>	G	Υ	O°	15°	30°	45°	<i>0°</i>	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	1	_	Round
	12"	18"	1.3	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"	15"
	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'-11/2"	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"
o	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"
et	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"
וטנ	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"
10.	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"
	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"	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		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"
	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"		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"
_	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"
it â	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"
Me	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"
ρ_{i}	24"	35"	4.3	8.6	12.9	17.2	2'-8"	1'-4"	5'-111/2"	2'-0"	1'-4"	2'-51/2"		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"
эtе	29"	42"	5.9	11.8	17.7	23.6	3'-1"	1'-5"	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"
gr	33"	49"	8.4	16.8	25.2	33.6	3'-5"	1'-6"	7'-8"	2'-2"	1'-6"	4'-2"	5'-6"	5'-6"	5'-8"	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"
rr	38"	57"	10.6	21.2	31.8	42.4	3'-10"	1'-7"	8'-71/2"	2'-3"	1'-7"	5'-11/2"	6'-4"	6'-4"	6'-7"	7'-4"	8'-11"	4.87	6.31	6.36	6.53	6.91	7.74	7.84	8.18	8.93	9.18	9.33	9.85	10.96	38"	57"	48"
0	43"	64"	13.2	26.4	39.6	52.8	4'-3"	1'-8"	9'-61/2"	2'-4"	1'-8"	6'-01/2"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"	5.88	7.64	7.70	7.91	8.37	9.40	9.52	9.94	10.86	11.15	11.33	11.97	13.33	43"	64"	54"
لـــّـا	47"	71"	16.9	33.8	50.7	67.6	4'-7"	1'-10"	10'-4"	2'-6"	2'-0"	6'-10"	7'-10"	7'-10"	8'-1"	9'-1"	11'-1"	7.80	10.15	10.23	10.51	11.12	12.49	12.65	13.22	14.43	14.85	15.10	15.94	17.77	47"	71"	60"

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

End Skew to Pipe Use Tabulated Value

0° to 5° 0° 15° 30° 6° to 15° 16° to 30° 31° or Over 45°

CONCRETE AND METAL PIPE TABLES

REVISION 11/01/21

FDOT

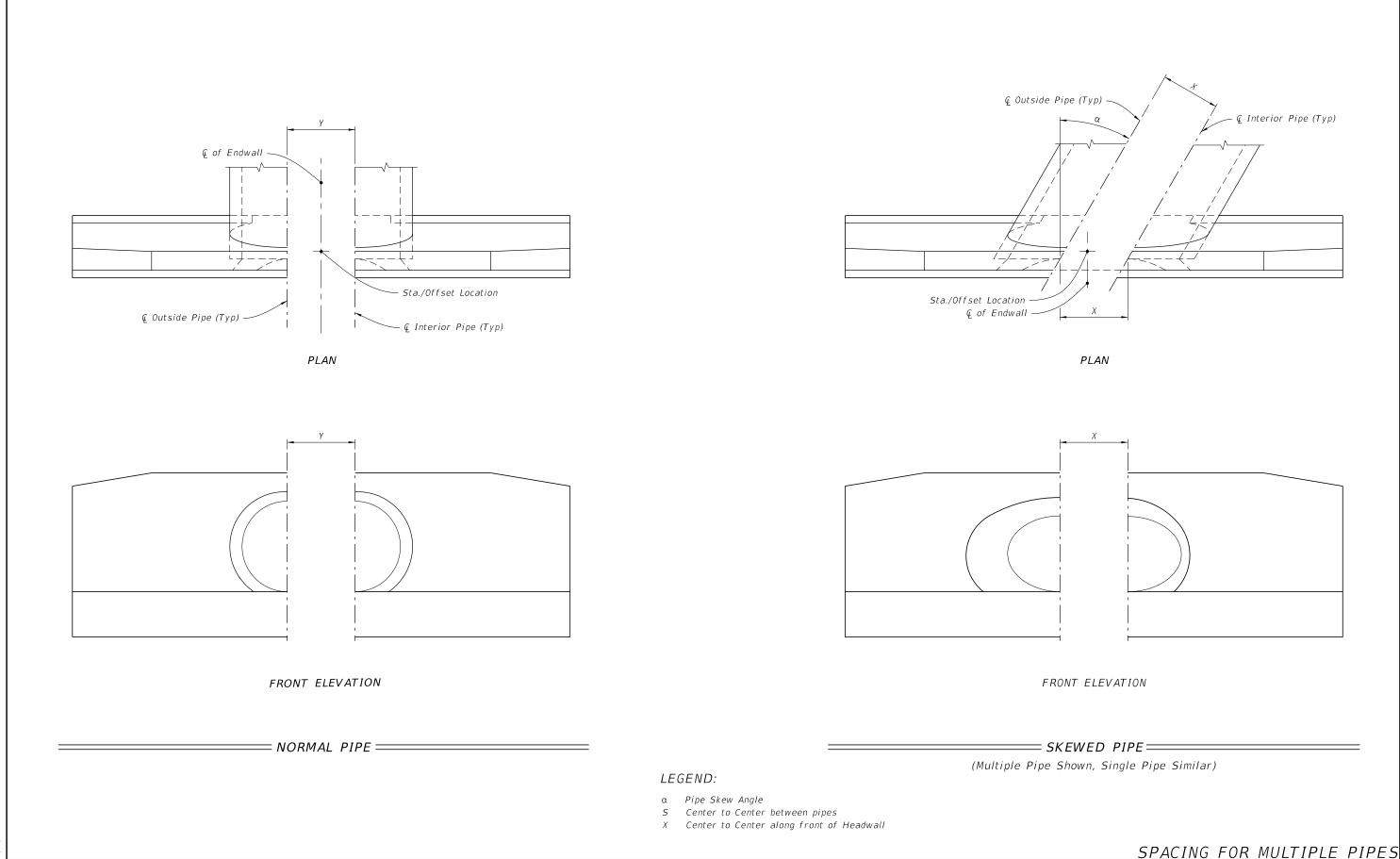
FY 2022-23 STANDARD PLANS

STRAIGHT CONCRETE ENDWALLS

INDEX 430-030

SHEET 3 of 4

≥ DESCRIPTION:



≥ DESCRIPTION: REVISION 11/01/19

FDOT

FY 2022-23 STANDARD PLANS STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE

INDEX

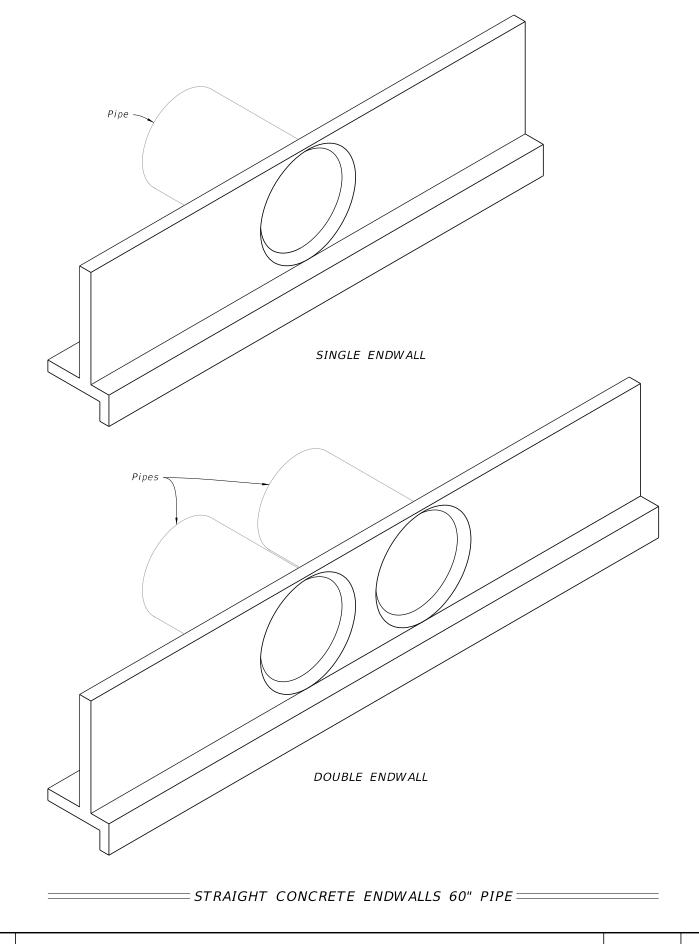
SHEET

430-030

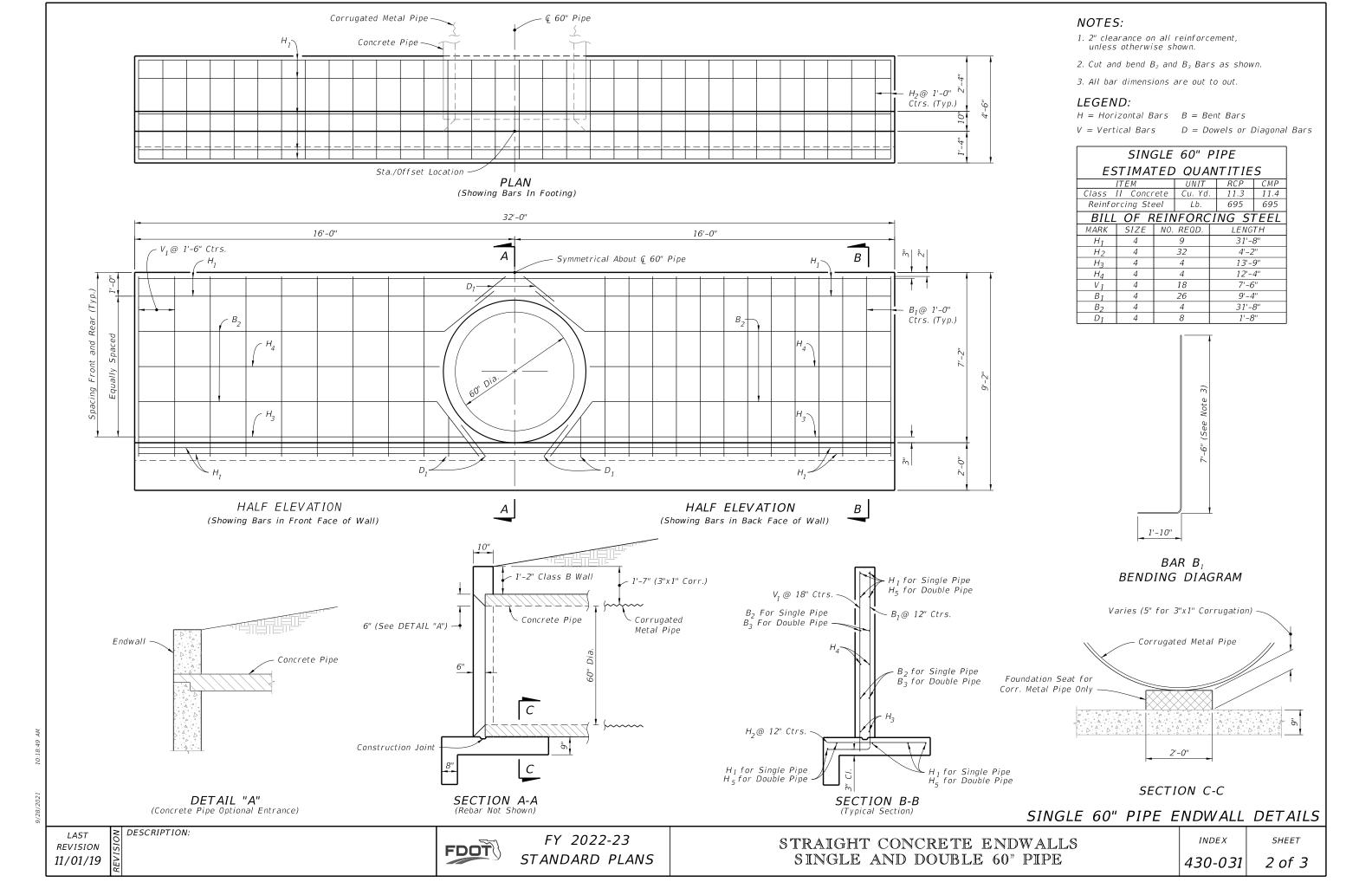
4 of 4

- 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.

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



LAST REVISION 11/01/19



- 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 60" PIPE

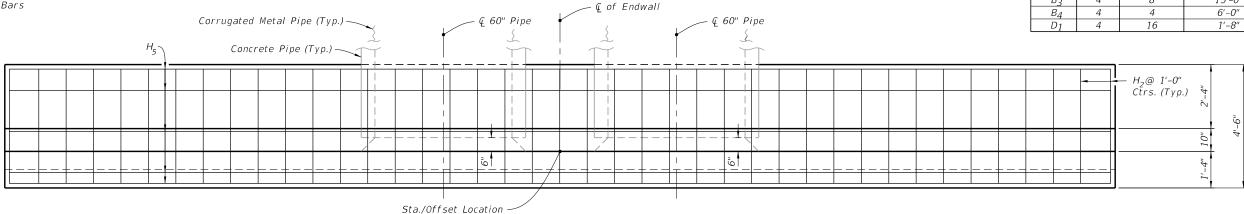
ESTIMATED QUANTITIES

ITEM UNIT RCP CM

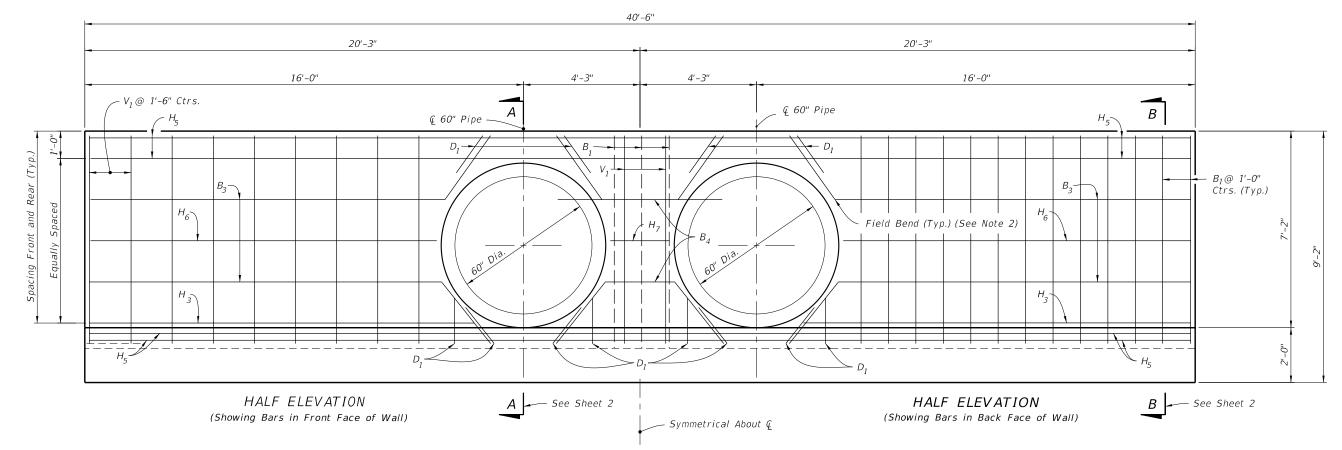
Class II Concrete Cu. Yd. 13.7 13.8
Reinforcing Steel Lb. 824 824

BILL OF REINFORCING STEEL

DILL	OI N	LINI ONC	INO SILLE
MARK	SIZE	NO. REQD.	LENGTH
H_2	4	41	4'-2"
H3	4	4	13'-9"
H_5	4	9	40'-2"
H ₆	4	4	12'-6"
H_7	4	2	2'-2"
V 1	4	20	7'-6"
В1	4	29	9'-4"
В3	4	8	15'-0"
B_4	4	4	6'-0"



PLAN
(Showing Bars In Footing)



DOUBLE 60" PIPE ENDWALL DETAILS

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

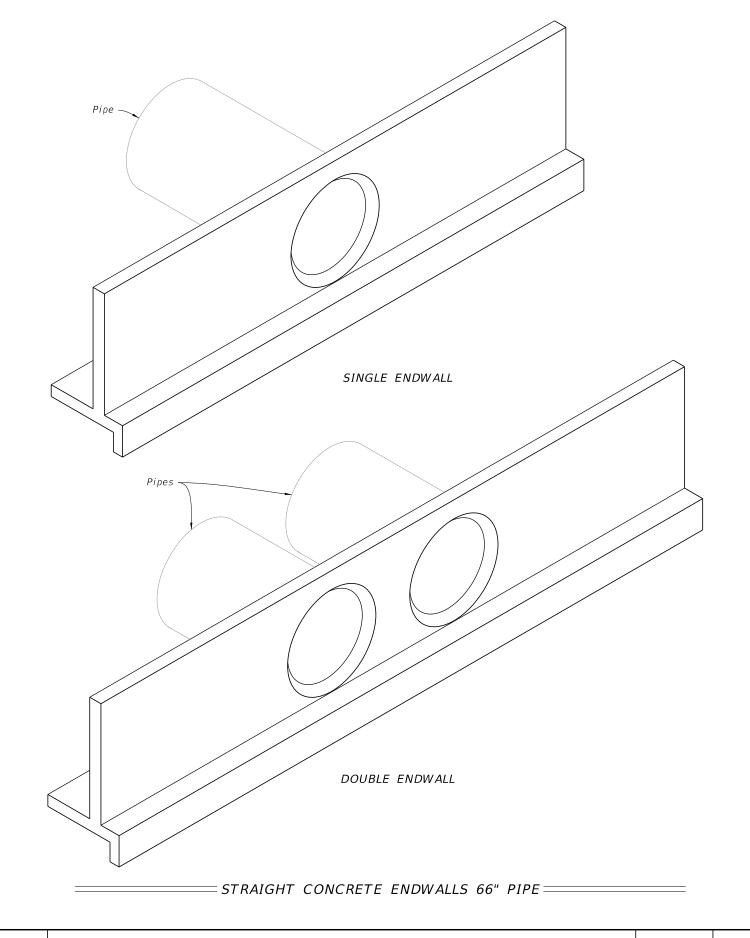
STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 60" PIPE

INDEX 430-031

SHEET 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.

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

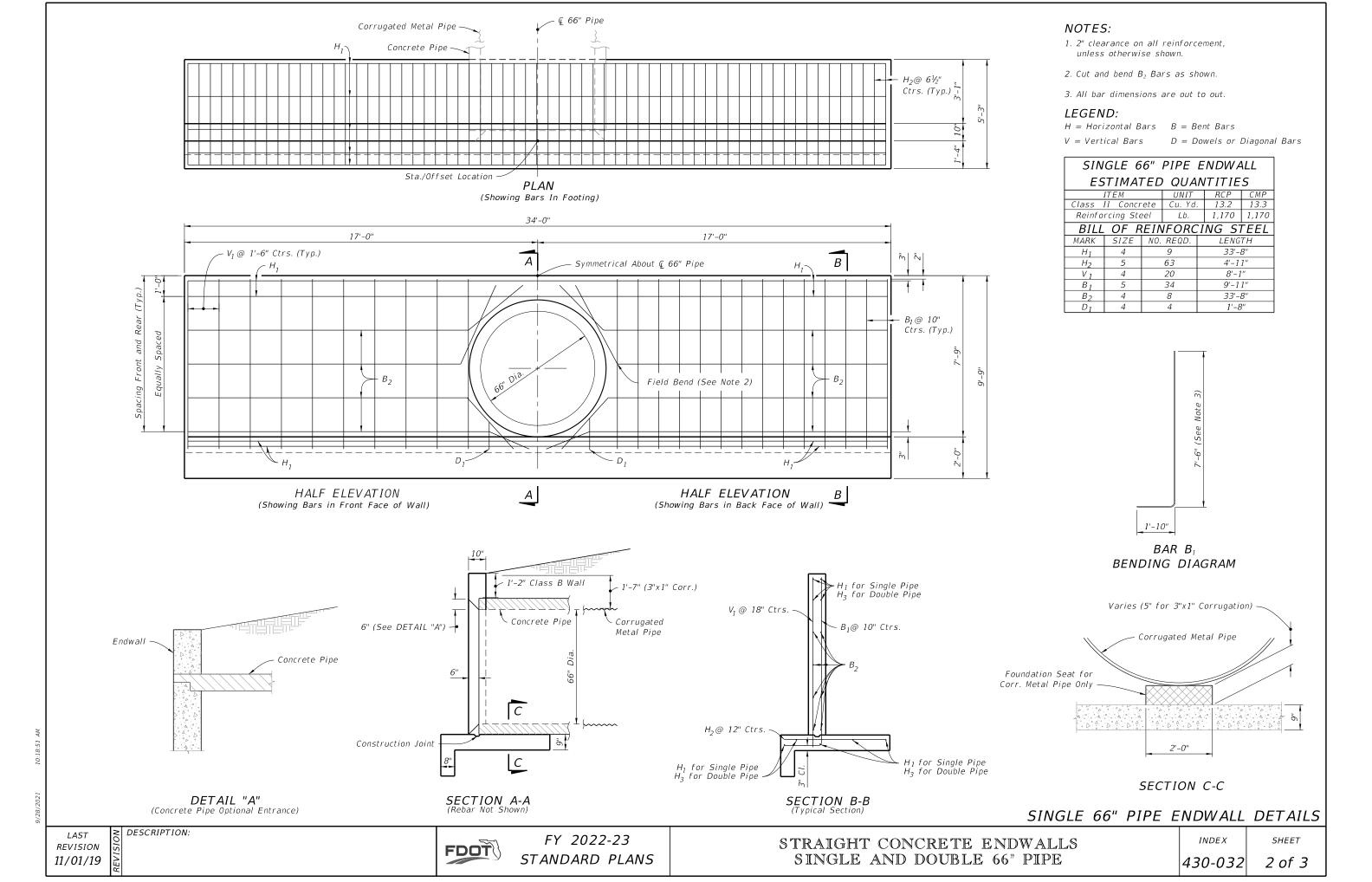


10:18:

LAST REVISION 11/01/19

DESCRIPTION:





- 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.

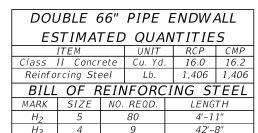
LEGEND:

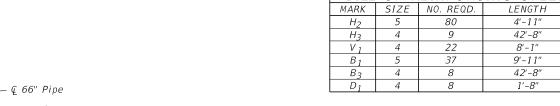
H = Horizontal Bars

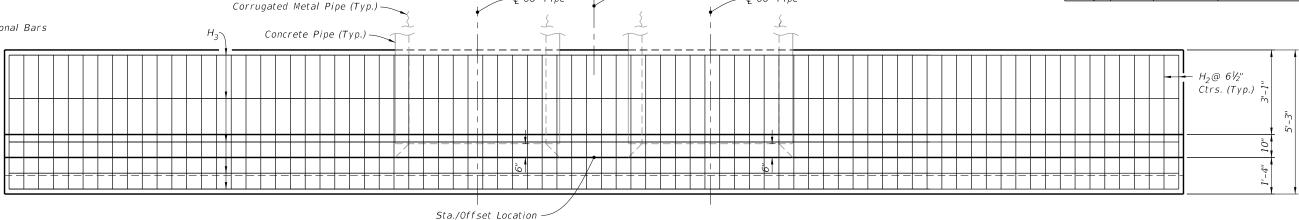
V = Vertical Bars

B = Bent Bars

D = Dowels or Diagonal Bars



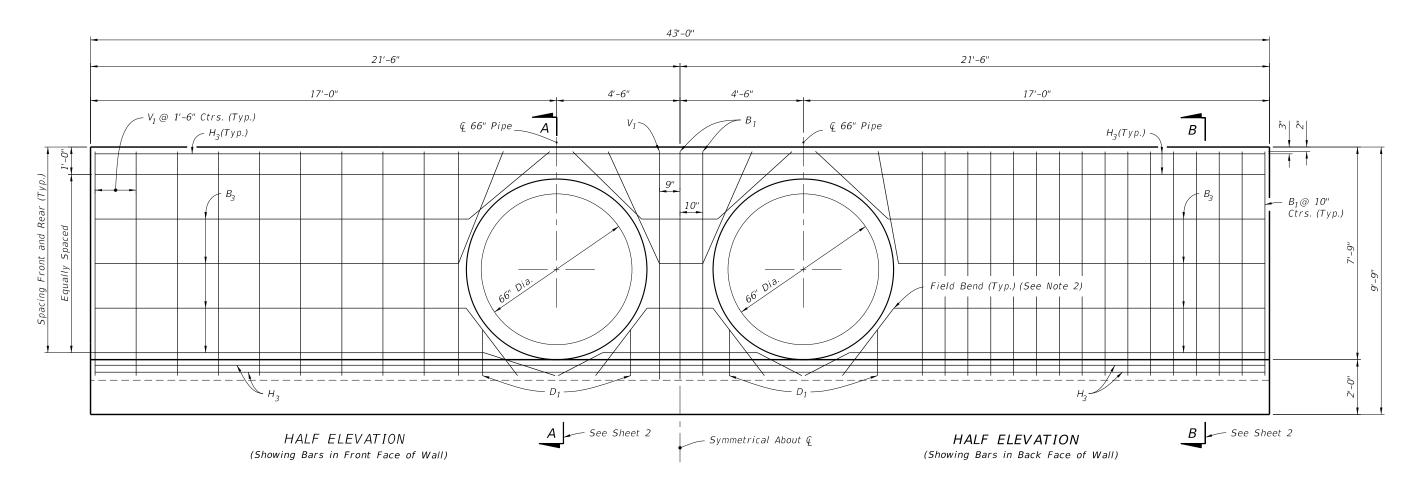




€ of Endwall

PLAN (Showing Bars In Footing)

€ 66" Pipe



DOUBLE 66" PIPE ENDWALL DETAILS

LAST REVISION 11/01/19

FDOT

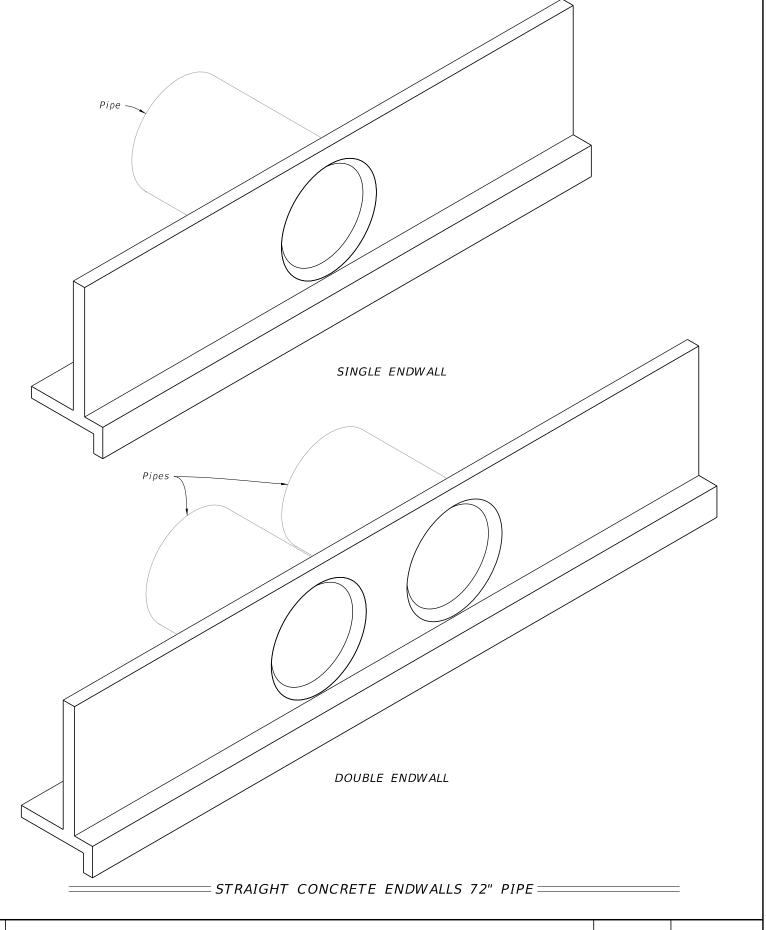
FY 2022-23 STANDARD PLANS

STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 66" PIPE

1NDEX SHEET 3 of 3

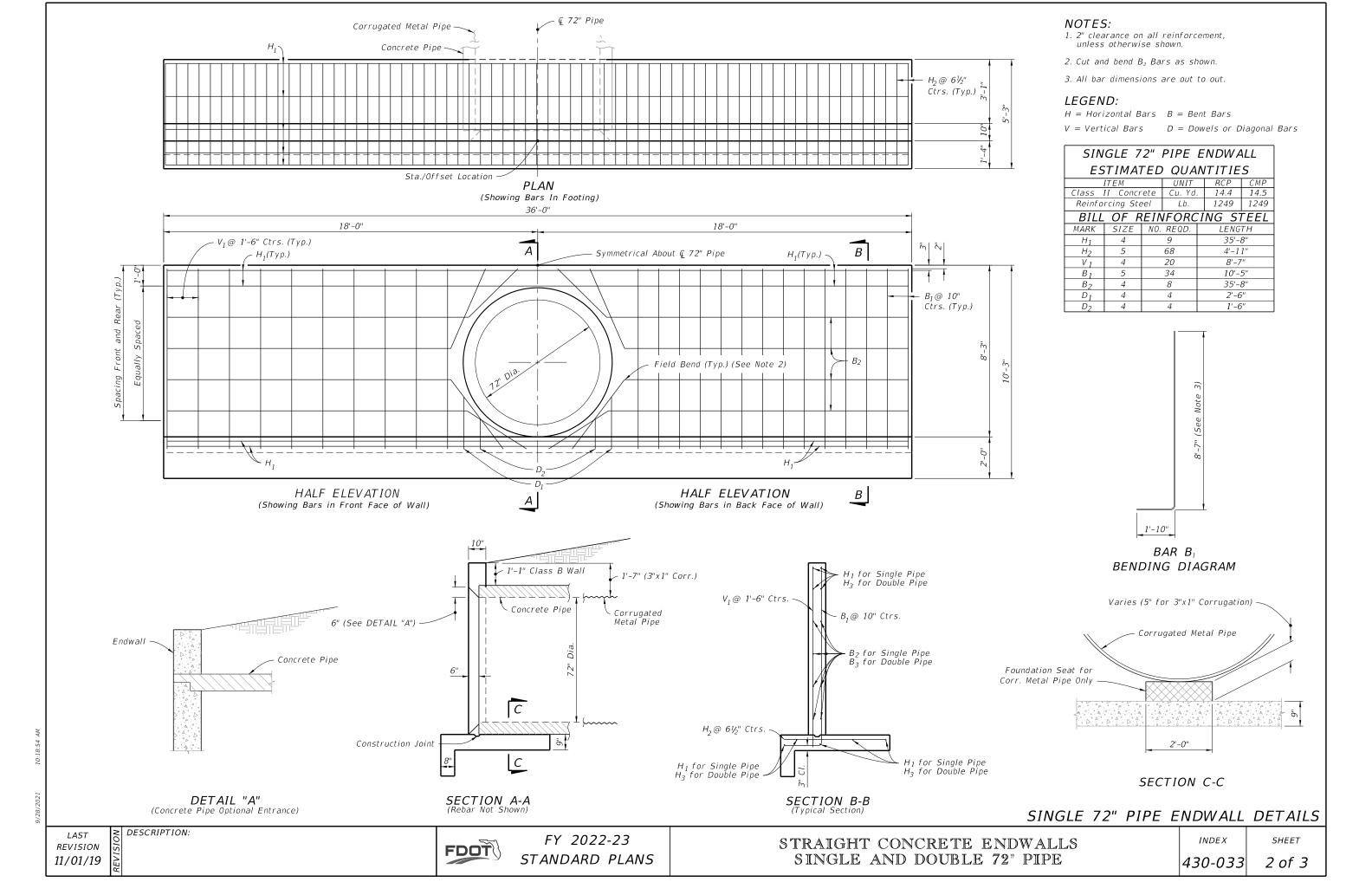
- 1. Use Class II concrete.
- 2. Reinforcing steel is either Grade 40 or 60.
- 3. Endwalls may be cast in place or precast concrete. The Contractor or the Supplier will determine the additional reinforcement necessary for handling precast units.
- 4. Chamfer all exposed edges and corners $\frac{3}{4}$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

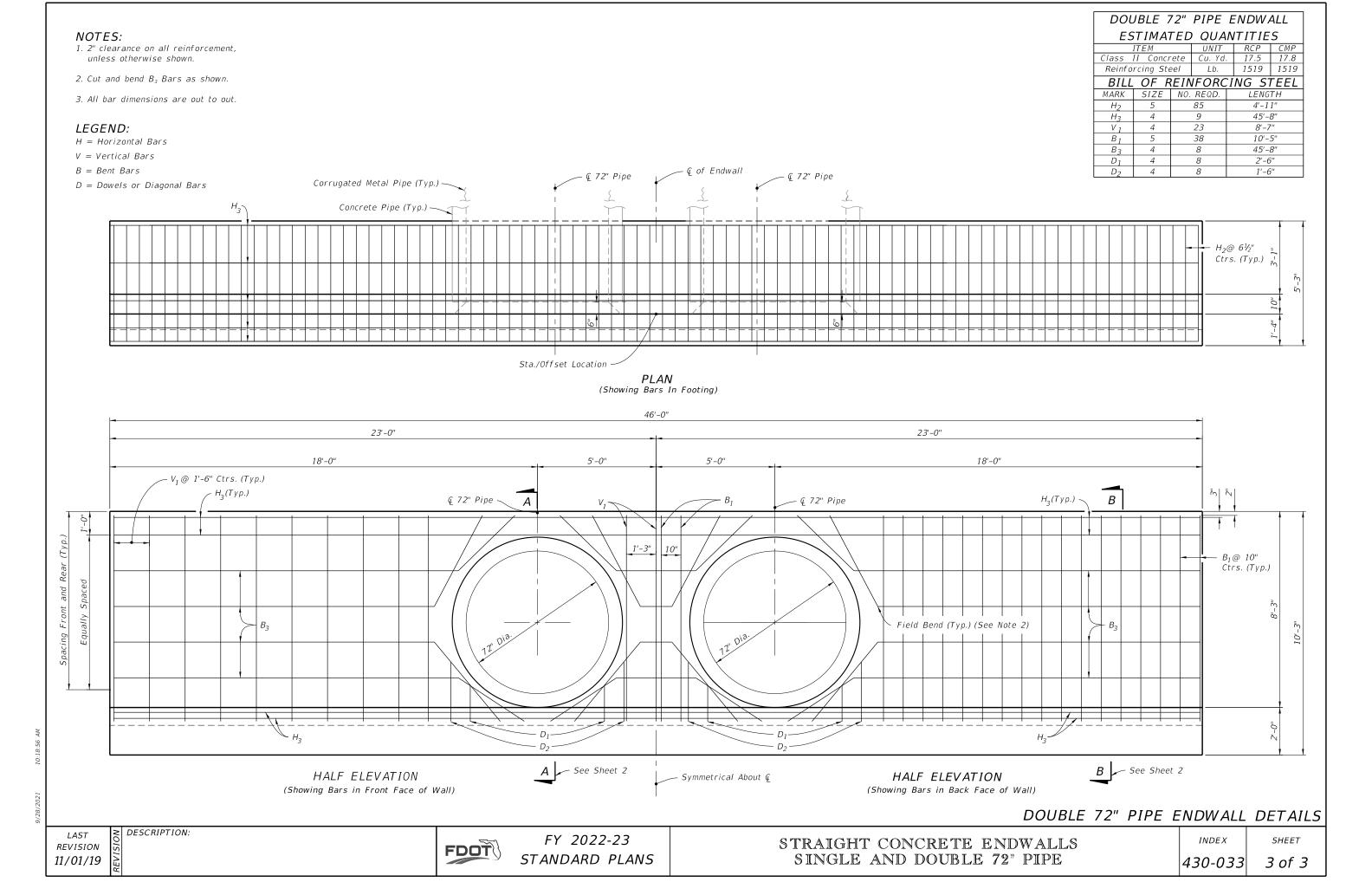
TABLE OF CONTENTS:					
Sheet	Description				
1	General Notes and Contents				
2	Single 72" Pipe Endwall Details				
3	Double 72" Pipe Endwall Details				



/28/2021

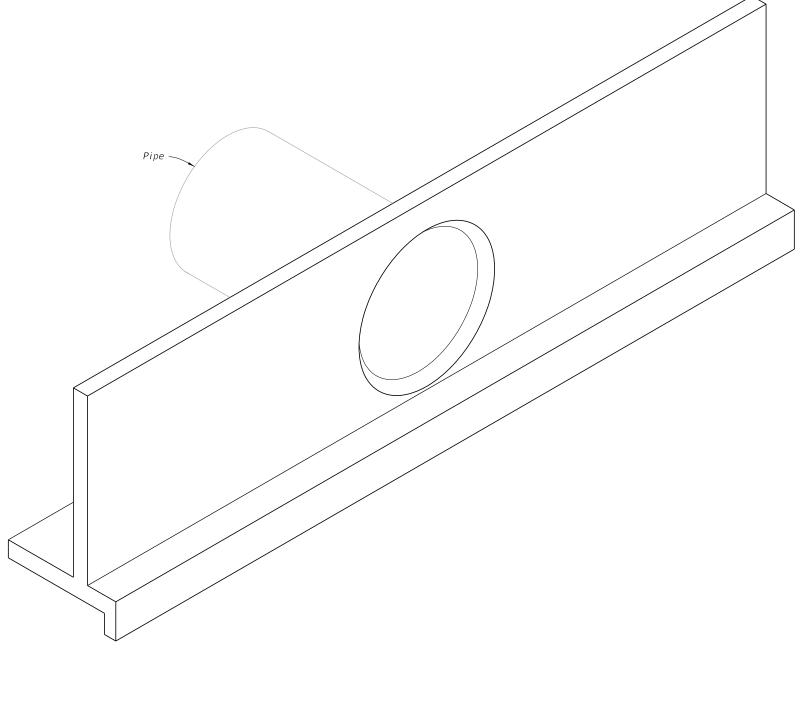
LAST REVISION 11/01/18





- 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.

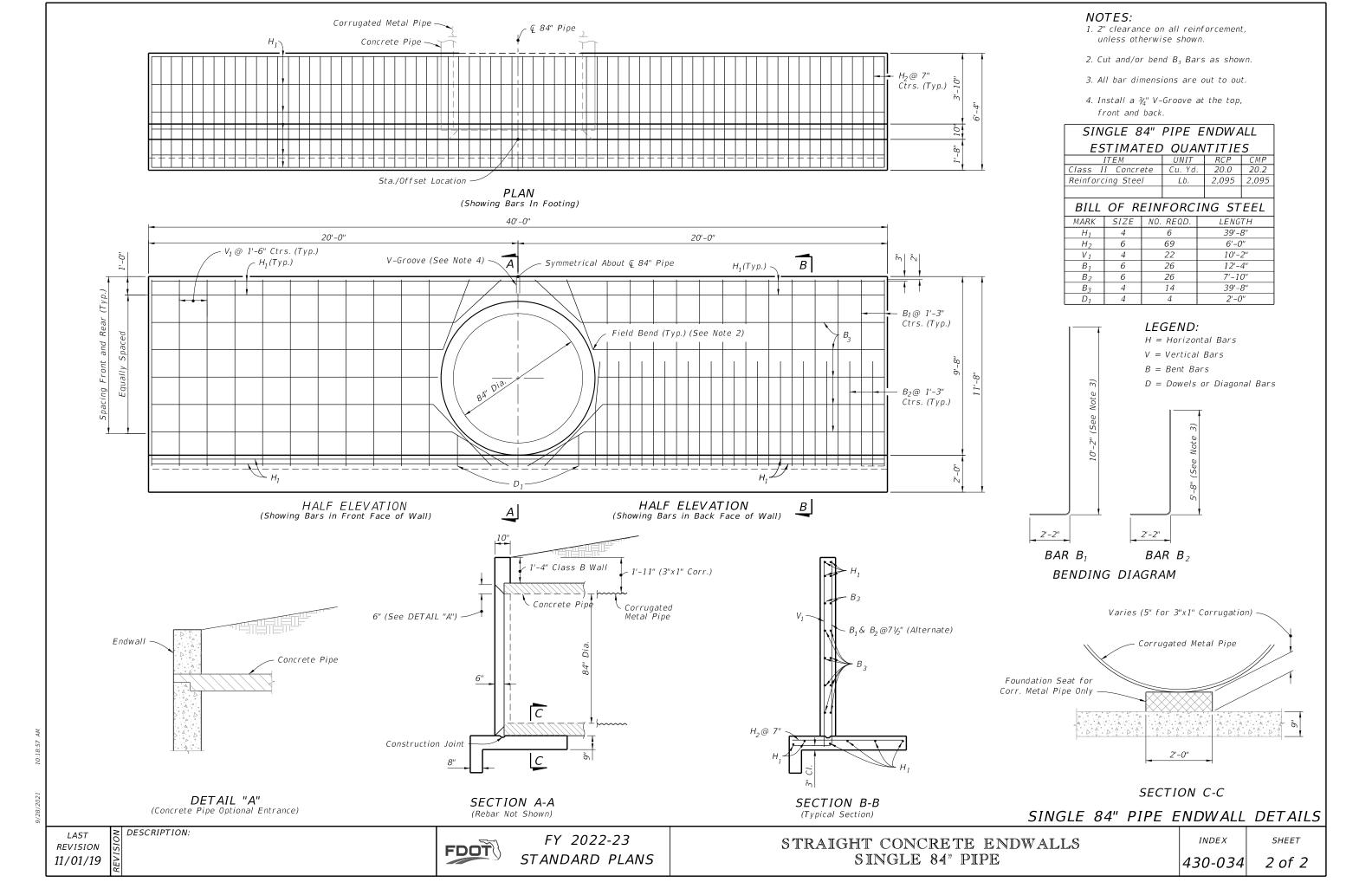
TABLE OF CONTENTS:						
Sheet	Description					
1	General Notes and Contents					
2	Single 84" Pipe Endwall Details					



== STRAIGHT CONCRETE ENDWALL SINGLE 84" PIPE ====

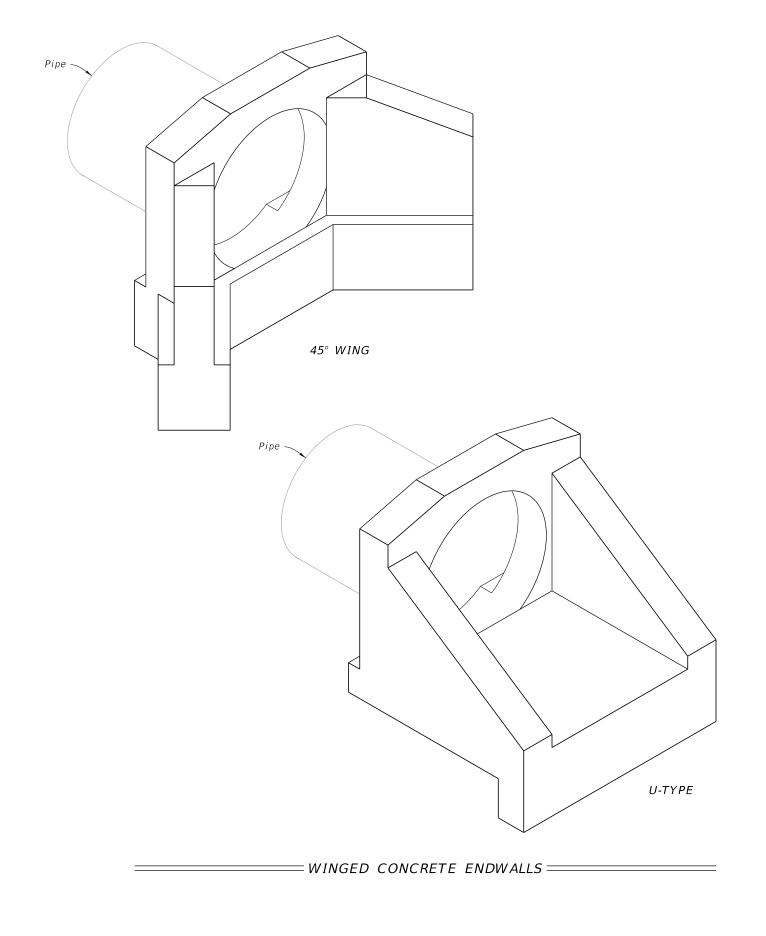
REVISION 11/01/19

≥ 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.

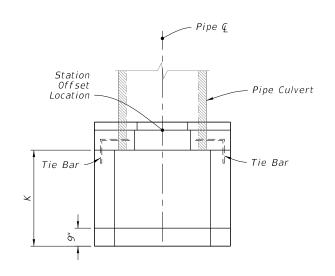
TABLE OF CONTENTS:					
Sheet	Description				
1	General Notes and Contents				
2	U-Type and 45° Endwalls				



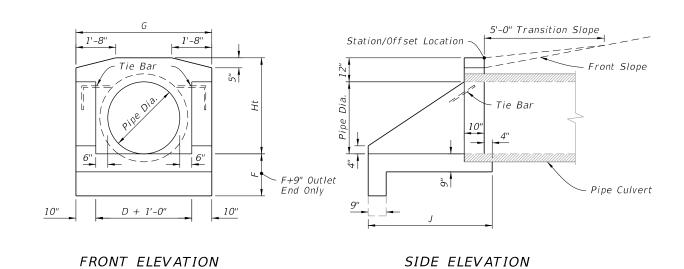
REVISION 11/01/21

≥ DESCRIPTION:

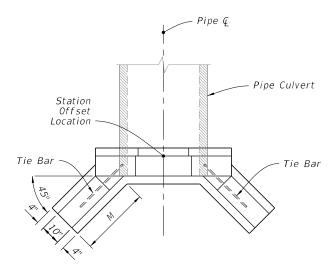
FDOT



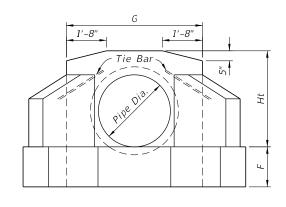
PLAN

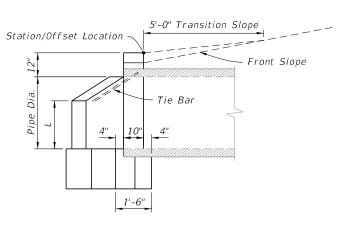


	DIMENSIONS AND ESTIMATED QUANTITIES PIPE CULVERT ENDWALLS WITH U-TYPE WINGS												
	DIMENSIONS								QL	JANTITIE.	S IN ON	IE ENDW.	4LL
F	Pipe		Wall		Foc	ting		Concrete, Class II, Total (CY)					Steel
Dia.	Area	G Ht		К	F	,	F	CP	С	MP	C	CIP	Tie Bars
D	(f t²)	J G	пι	^	,	J	Inlet	Outlet	Inlet	0ut/et	Inlet	Outlet	THE Dais
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"



PLAN





FRONT ELEVATION

SIDE ELEVATION

	DIMENSIONS AND ESTIMATED QUANTITIES PIPE CULVERT ENDWALLS WITH 45° WINGS									
			DIMENSI	ONS				QUANTIT	IES IN O	NE ENDWALL
F	Pipe		W	all		Footing	Concrete, Class II			
Dia.	Area	Ht	G	,	M	F	Tot	otal (CY)		Steel Tie Bars
D	(ft²)	П	G	L	M F		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 $^{\circ}$ WINGS =

U-TYPE AND 45° ENDWALLS

REVISION 11/01/21

≥ DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

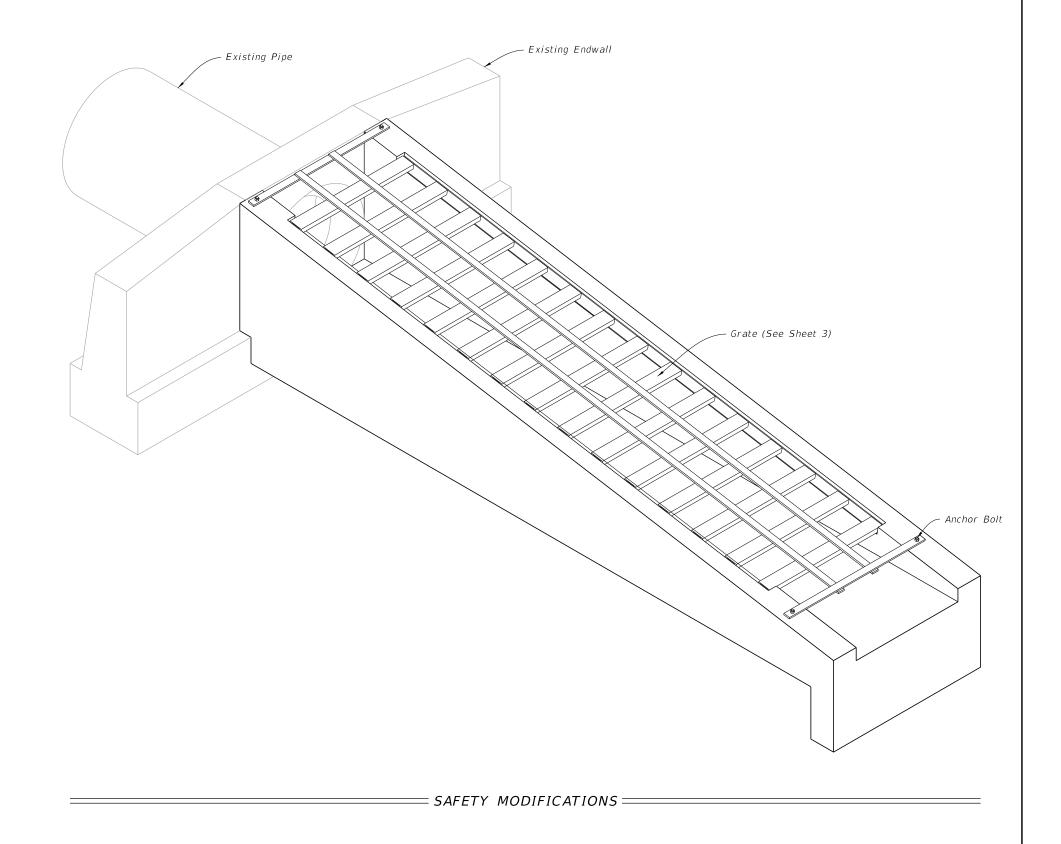
WINGED CONCRETE ENDWALLS

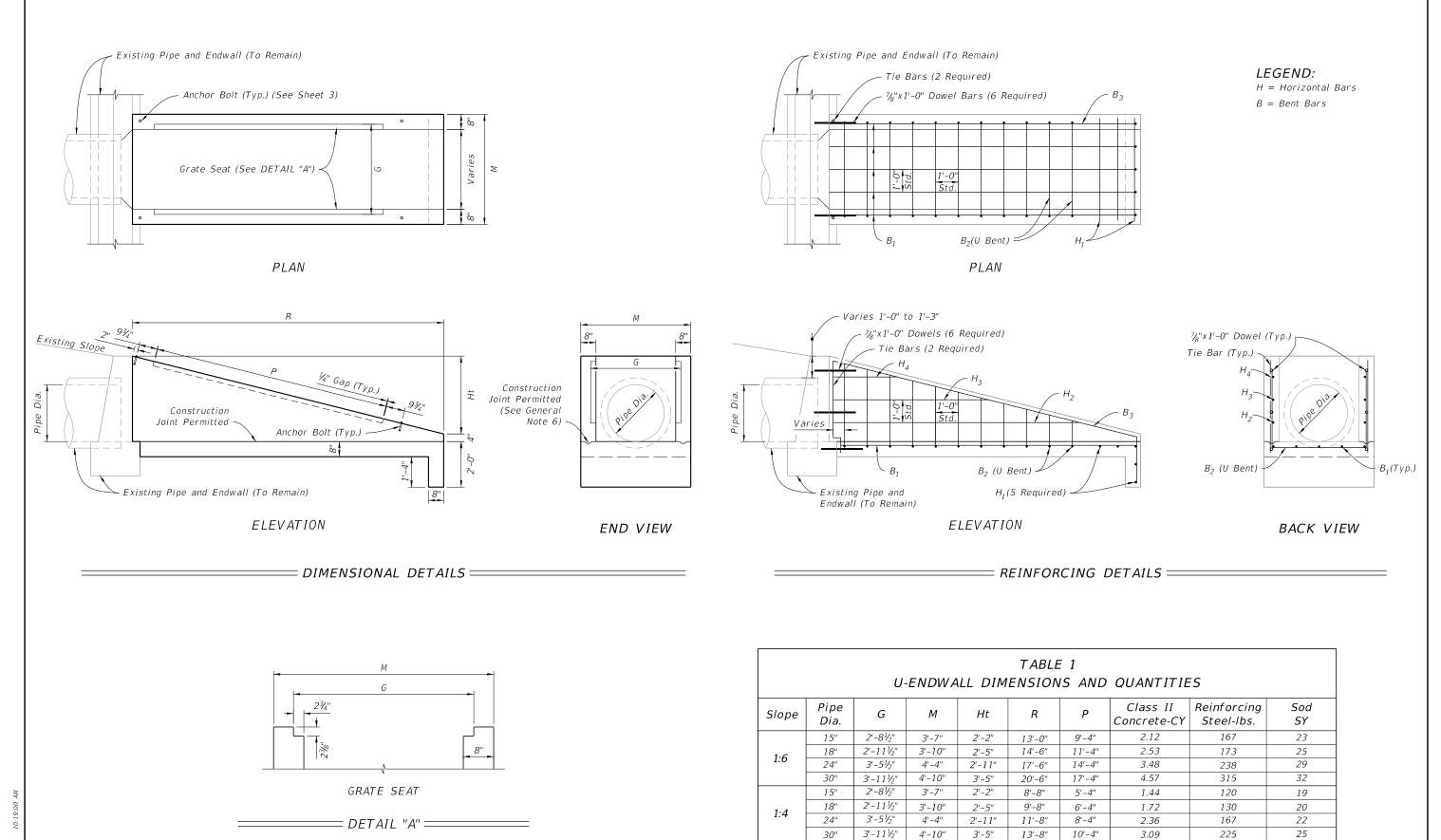
INDEX 430-040

SHEET 2 of 2

- 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 1½" 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				





9/28/2021

LAST REVISION 11/01/21

DESCRIPTION:

FDOT

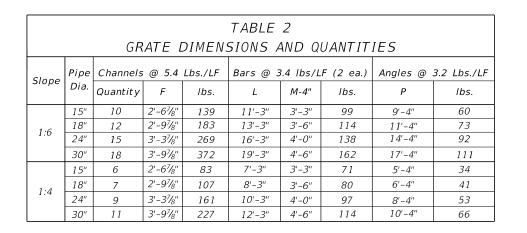
FY 2022-23
STANDARD PLANS

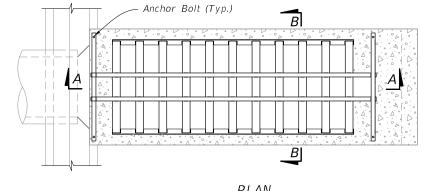
ENDWALLS FOR 1:4 AND 1:6 SLOPES

SAFETY MODIFICATIONS FOR ENDWALLS

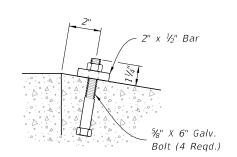
INDEX 430-090

^{SHEET} 2 of 3

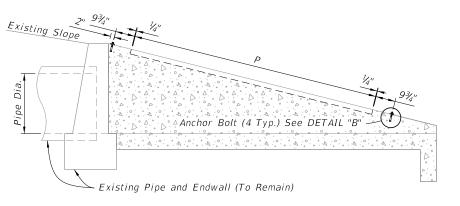




PLAN



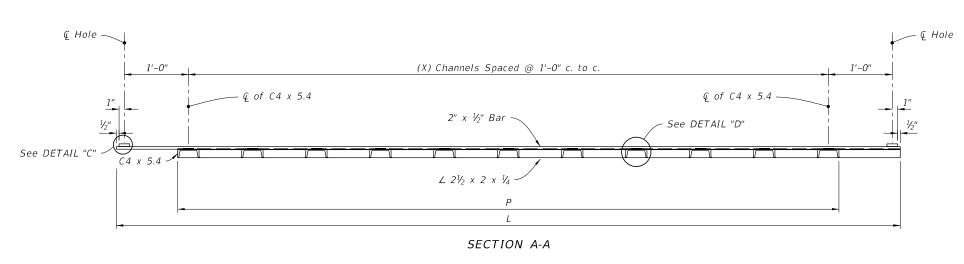
Anchor Bolt Detail DETAIL "B"

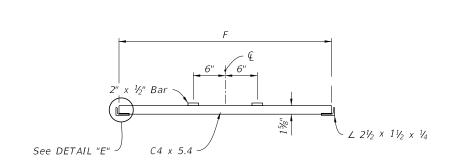


ELEVATION

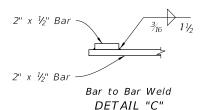


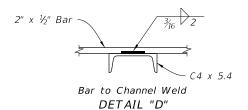
STEEL GRATE MOUNTING

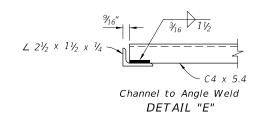




SECTION B-B







STEEL GRATE DETAILS =

STEEL GRATE

REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

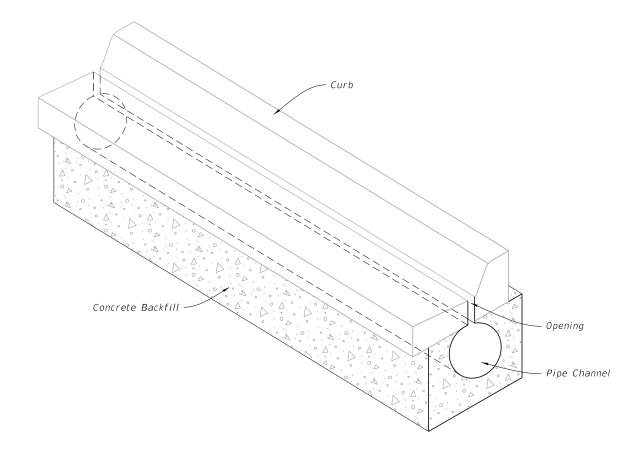
SAFETY MODIFICATIONS FOR ENDWALLS

INDEX 430-090

SHEET 3 of 3

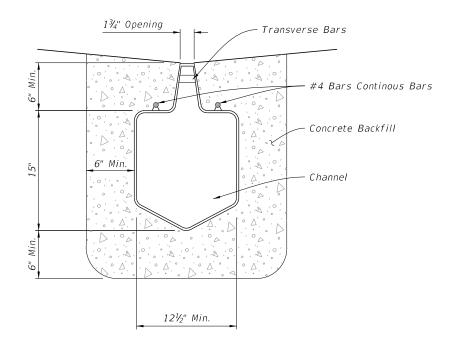
- 1. Install outlet pipes and preformed channel inverts with a slope of 0.6% or steeper toward the outlet regardless of the surface slope, unless shown different in the Plans.
- 2. Stub trench drain directly into drainage structures or install outlet pipes to connect trench drain to drainage structures.
- 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:



Grate Consisting of Vertical Bars and Transverse Bars (Web Spacers)

Concrete Backfill

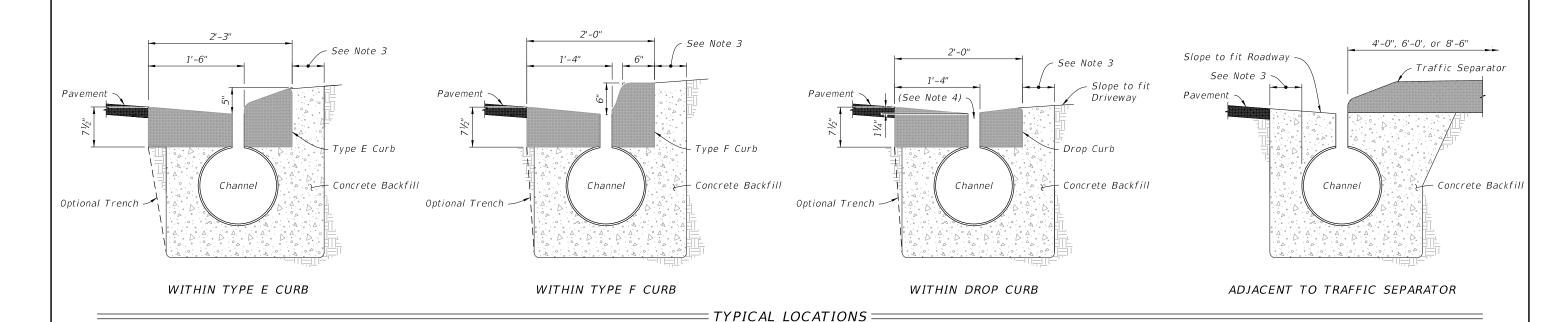
Channel

15" (Typ.)

(See Note 2)

= PREFORMED POLYETHYLENE CHANNEL ===

= ROUND PIPE CHANNEL =



(Round Channel Shown, Preformed Polyethylene Similar)

NOTES:

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

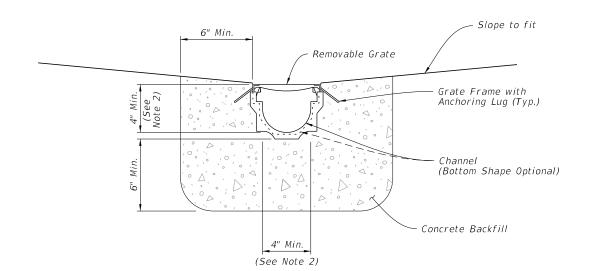
FY 2022-23 STANDARD PLANS

TRENCH DRAIN

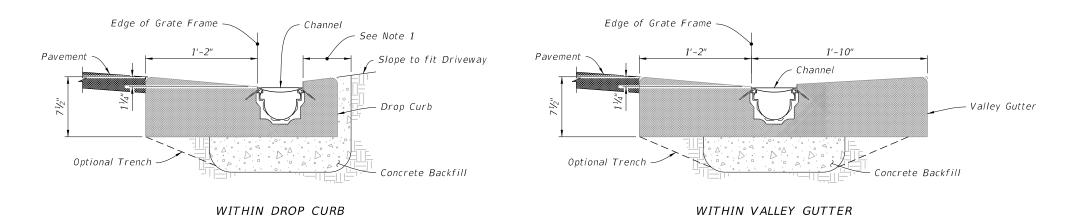
INDEX 436-001

2 of 3

SHEET



 $=\!=\!=\!=\!$ PREFORMED CHANNEL WITH REMOVABLE GRATE $=\!=\!=\!=\!=$



= TYPICAL LOCATIONS =

NOTES:

≥ DESCRIPTION:

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

TYPE II - REMOVABLE GRATE

LAST REVISION 11/01/19

FDOT

FY 2022-23
STANDARD PLANS

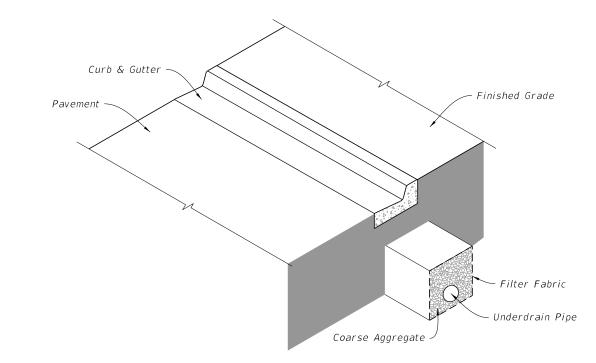
TRENCH DRAIN

INDEX 436-001

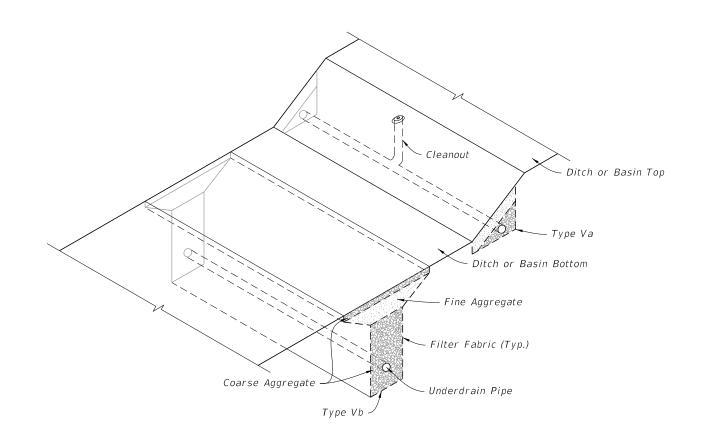
^{SHEET} 3 of 3

- 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 filter fabric Type D-3 in accordance with Specifications 985. The internal filter fabric 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 filter fabric 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 filter fabric joints with a overlap a minimum of 1'. Install the internal filter fabric 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					



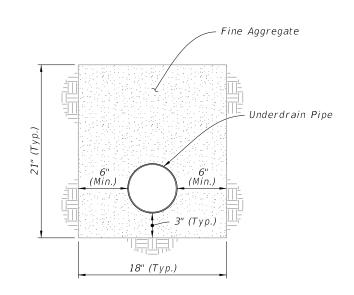
UNDERDRAIN TYPE I, II, AND III ASSEMBLY = (Type II Shown, Others Similar)

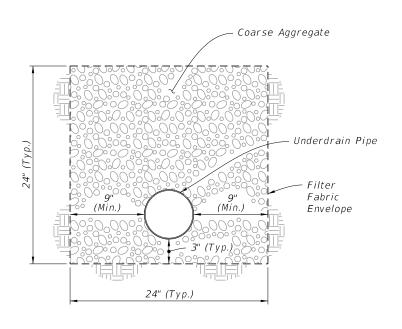


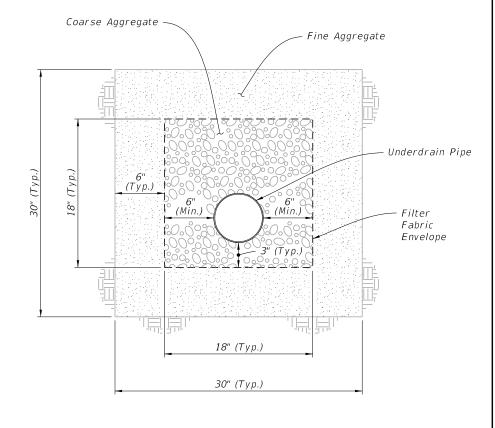
= UNDERDRAIN TYPE Va AND Vb ASSEMBLY =

22 8:36:47

11/01/19







=TYPE I==

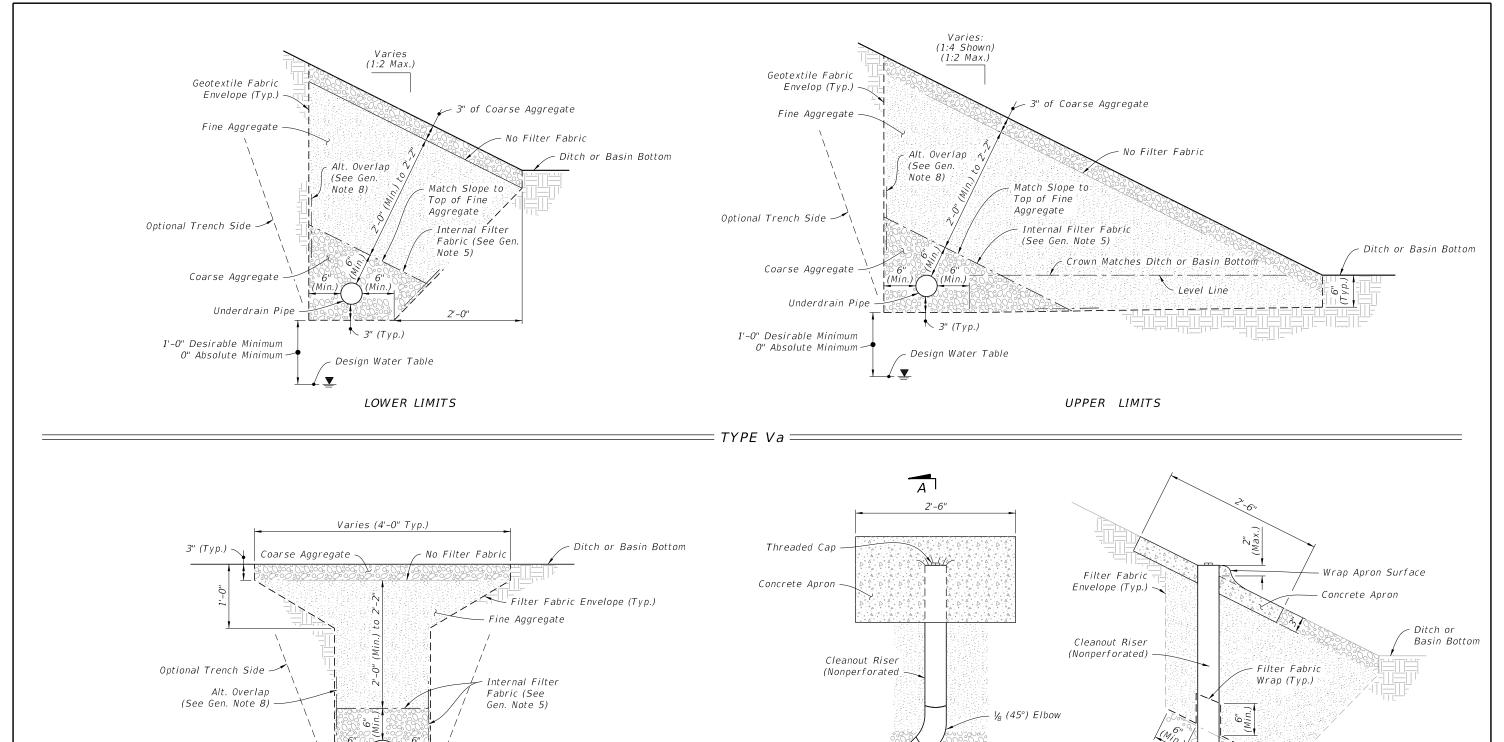
=TYPE II===

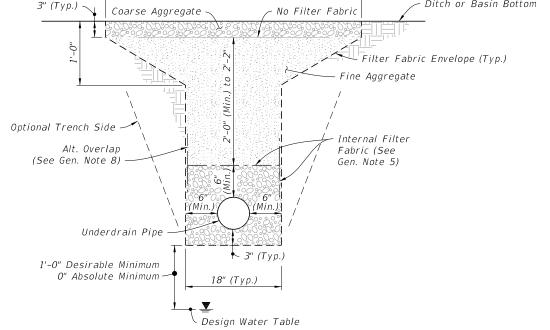
=TYPE III=

≥ DESCRIPTION: LAST REVISION 11/01/19

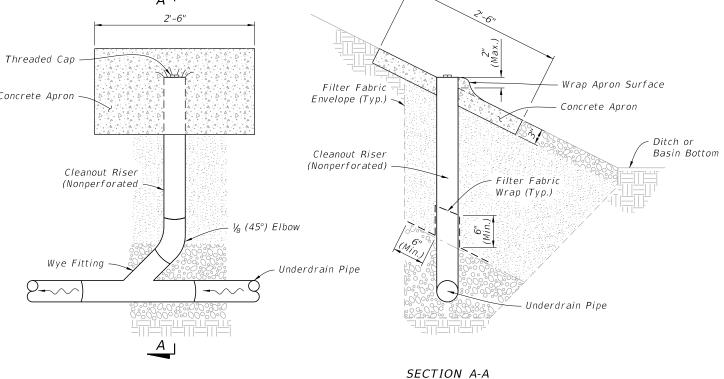
FDOT

SHEET





TYPE Vb



= TYPE ${ t V}$ CLEANOUT =

TYPE Va, Vb, AND CLEANOUT

REVISION 11/01/19

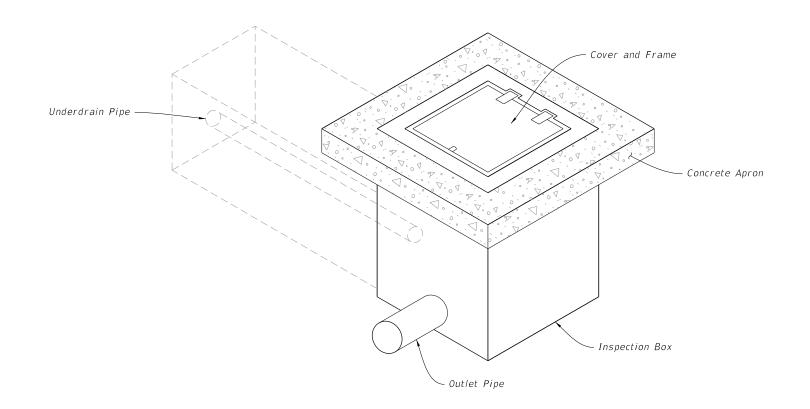
DESCRIPTION:

FDOT

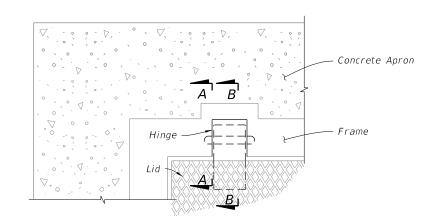
FY 2022-23 STANDARD PLANS

- 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.

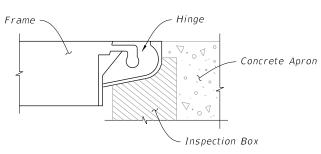
TABLE OF CONTENTS:					
Sheet	Description				
1	General Notes and Contents				
2	Typical Inspection Box Installation				
3	Typical Urban, Slope, and Top Adjustment Installations				



=UNDERDRAIN INSPECTION BOX ASSEMBLY ===



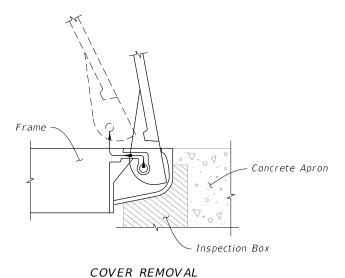
PLAN VIEW



SECTION A-A (Frame)



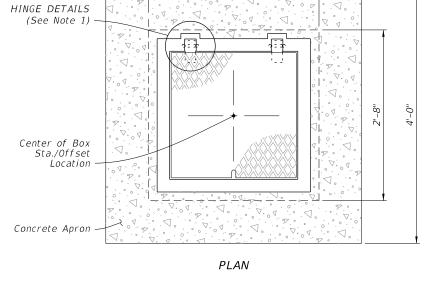
SECTION B-B (Lid)



HINGE DETAIL

NOTES:

- 1. Cast or field cut 2 \sim 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.



4'-0"

2'-8"

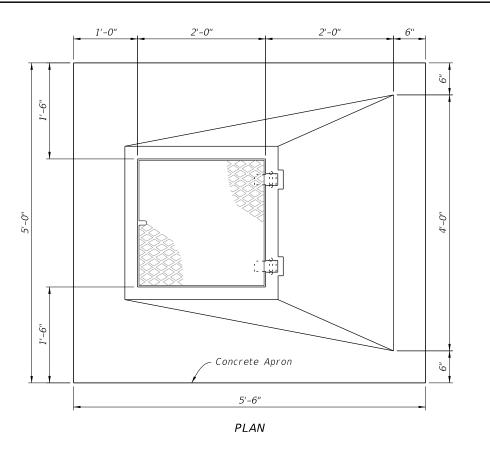
28½" or 28¾" 28½" or 28¾" Inspection Box Lid -21½" or 23½" 21½" or 23½" Frame Finished Grade Concrete Apron ¾" Chamfer -Opening (Typ.) (See Note 2) #3 Bars - Optional Construction Joint Permitted (See General Note 2) 11/2" Inspection Box 1'-0" Max. 2'-0" ELEVATION ELEVATION (FRONT VIEW) (SIDE VIEW)

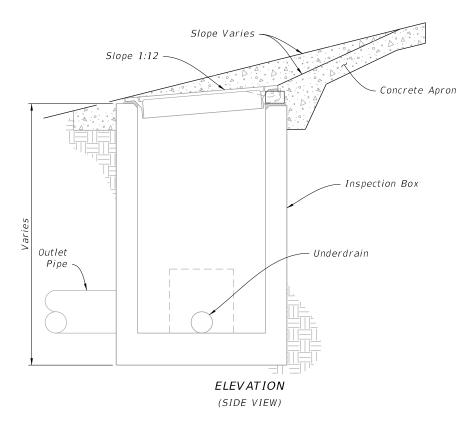
TYPICAL INSPECTION BOX INSTALLATION

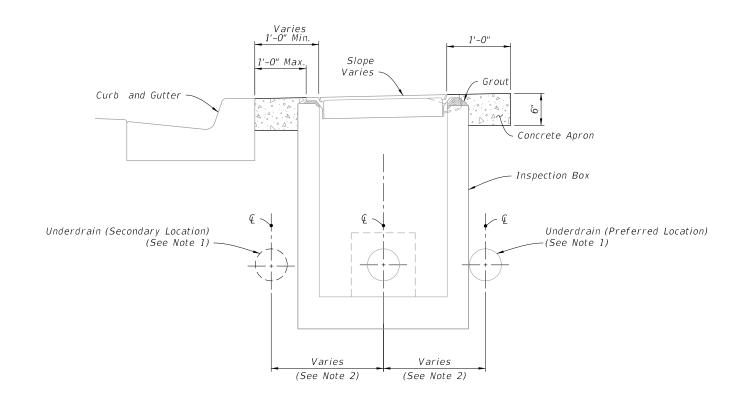
REVISION 11/01/19

FDOT

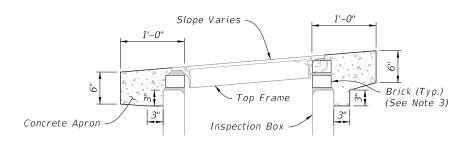
FY 2022-23 STANDARD PLANS = $INSPECTION \; BOX \; DETAILS <math>=$







= 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

= INSTALLATION ON SLOPE ==

FY 2022-23 STANDARD PLANS

UNDERDRAIN INSPECTION BOX

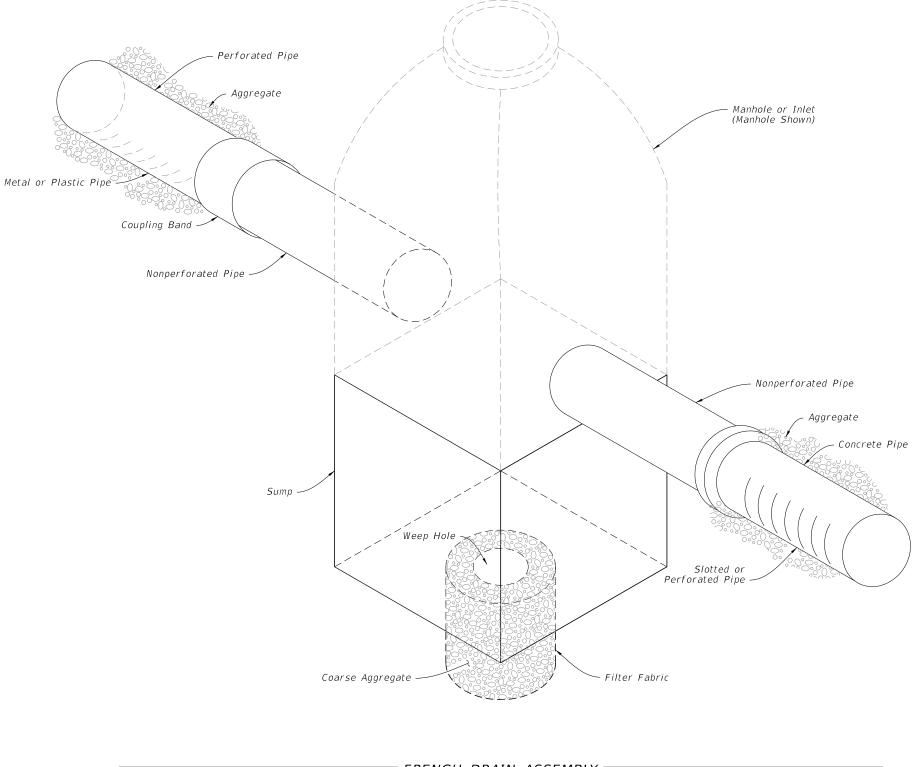
INDEX 440-002

SHEET 3 of 3

GENERAL NOTES:

- 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 filter fabric in accordance with Specification 985. Lap all filter fabric 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 ===

REVISION 11/01/19

Manhole/Sump Filter Fabric Envelope Filter Fabric Envelope Coupling Band NOTES: 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. PLANManhole or Inlet (Manhole With Sump Shown) Bituminous Coating for Metal Pipe Only (Field Applied) Over Lap 1'-0" (Min.) No. 4 Coarse Aggregate Filter Fabric Filter Fabric Envelope Filter Fabric Envelope Envelope Coupling Band Typical Location for Bottom Slab Without Sump Varies, As Varies, As -Shown in 1'-0" Shown in (Typ., 1'-0" Ø (Typ.)the Plans the Plans Weep Hole (See 1'-0" No. 4 Coarse Aggregate Note 3) (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) Filter Fabric 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)

REVISION 11/01/19

DESCRIPTION:

FDOT

FRENCH DRAIN SYSTEM

Sleeve (See Note 5)

Utility (See Note 4)

No. 4 Coarse Aggregate

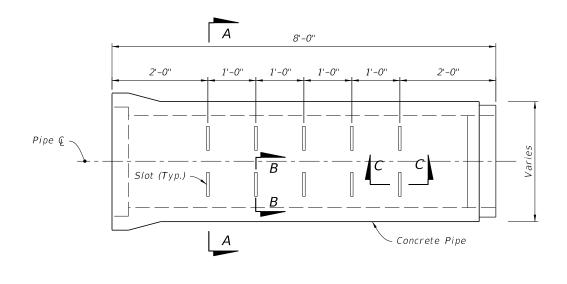
Varies, As

Shown in

the Plans

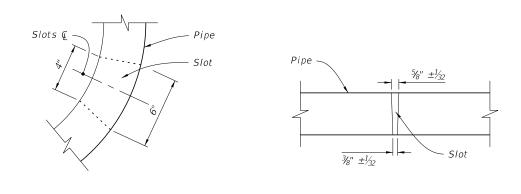
Utility Pipe

(See Note 4)



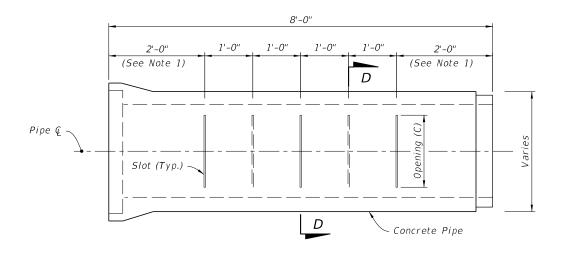
SIDE VIEW Concrete Pipe Concrete Pipe - Slot (Typ.) Slot (Typ.) Slots Q 15" to 30" 36" to 72"

SECTION A-A

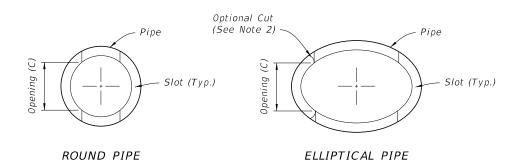


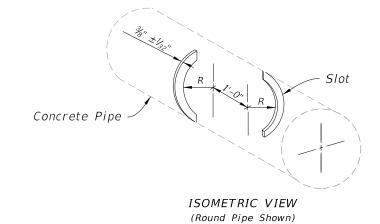
= OPTION A - ROUND PIPE =

SECTION B-B



SIDE VIEW





SECTION D-D

= OPTION B - ROUND OR ELLIPTICAL PIPE =

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		ning 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"						

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"				

CONCRETE SLOTTED PIPE OPTIONS

REVISION 11/01/19

DESCRIPTION:

FDOT

SECTION C-C

FY 2022-23 STANDARD PLANS

FRENCH DRAIN

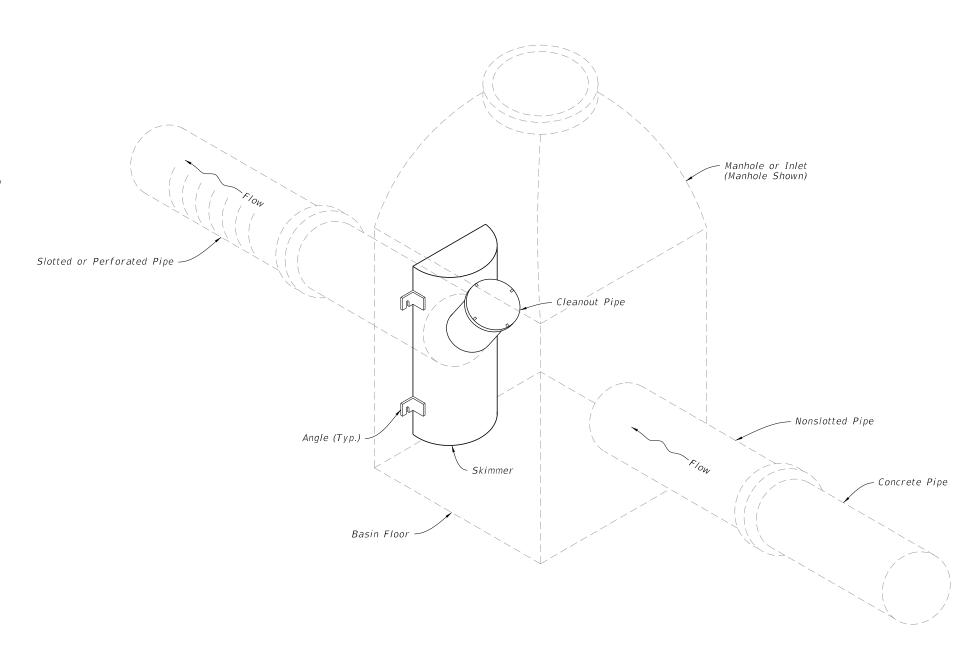
INDEX

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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
- 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.

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



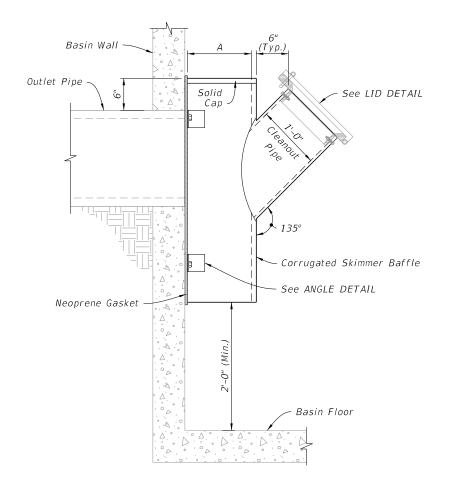
=SKIMMER FOR FRENCH DRAIN OUTLETS ASSEMBLY==

REVISION 11/01/19



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

PLAN

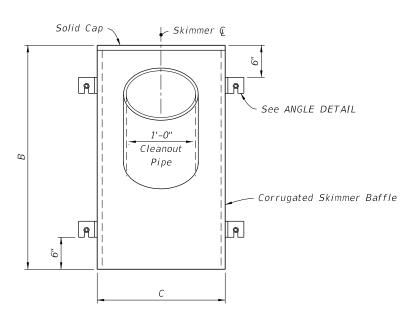


SIDE ELEVATION

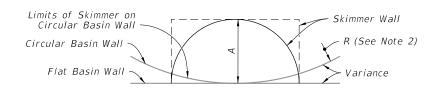
NOTES:

- 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"					

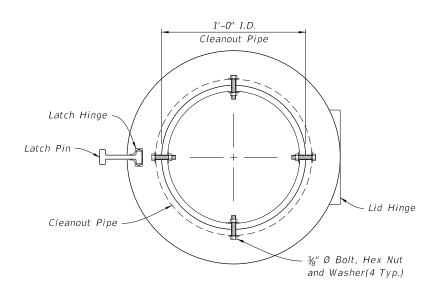


FRONT ELEVATION

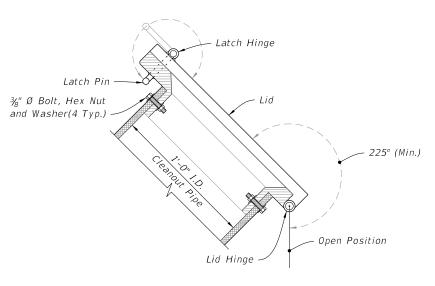


SCHEMATIC VIEW

= TYPE I DETAILS =

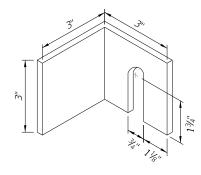


PLAN



SIDE ELEVATION

=LID DETAIL===



= ANGLE DETAIL ==

TYPE I SKIMMERS

2 of 3

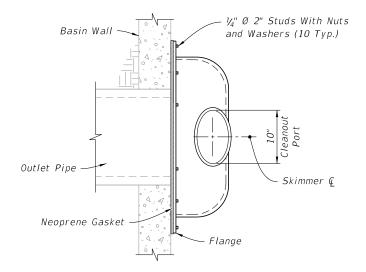
REVISION 11/01/19

DESCRIPTION:

FDOT

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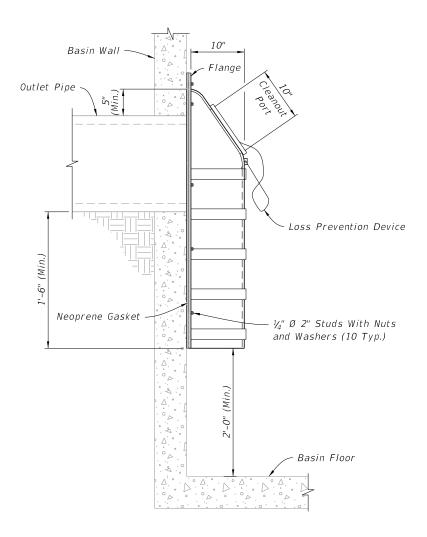
443-002



PLAN

NOTE:

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



√ Skimmer € 10" Dia. Cleanout Port With Neoprene Gasket $\frac{1}{4}$ " Ø 2" Studs With Nuts and Washers (10 Typ.) Loss Prevention Device 1/2" Dia. Hole (Typ.) 1'-0" Center to Center 3" Flange (Min.) 2'-6" 2'-10" 3'-0"

FRONT ELEVATION

SIDE ELEVATION

=TYPE II DETAILS =

TYPE II SKIMMERS

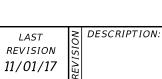
REVISION 11/01/19

≥ DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS





24" STEEL WELL GRATE

Total Opening: 1.7 sq ft minimum

For 24" well, outer diameter = 29"

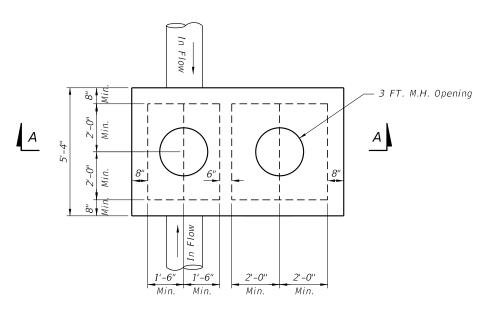
Steel well grate to be installed over 24" deep well.

Steel grate to be hot dipped galvanized after

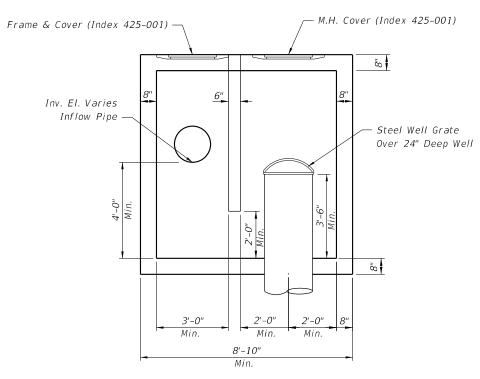
fabrication, see Specification Section 962.

Heavy duty "bee hive" grate

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

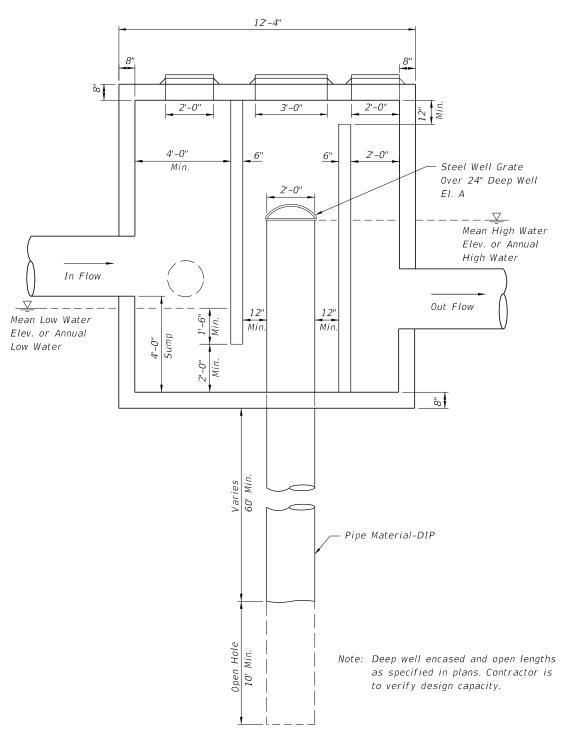


TOP SLAB PLAN



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 2022-23 STANDARD PLANS

GENERAL NOTES:

- 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 filter fabric.
- 5. Submit a procedure for holding the filter fabric 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.

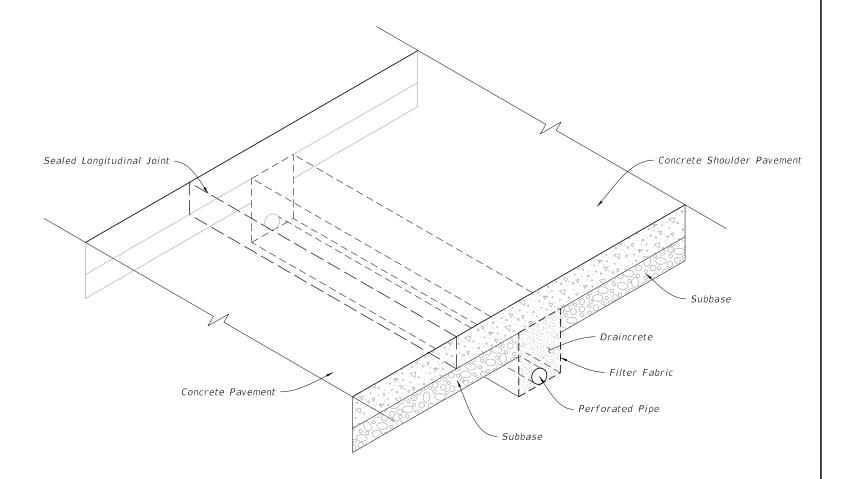
Stub outlet pipes into existing inlets or into existing ditch pavements at an elevation 6" above the inlet flowline or ditch bottom when directed by the Engineer. Concrete apron and bordering sod are not required for stubbed outlets, but replacement sodding will be required at trenches for pipes stubbed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

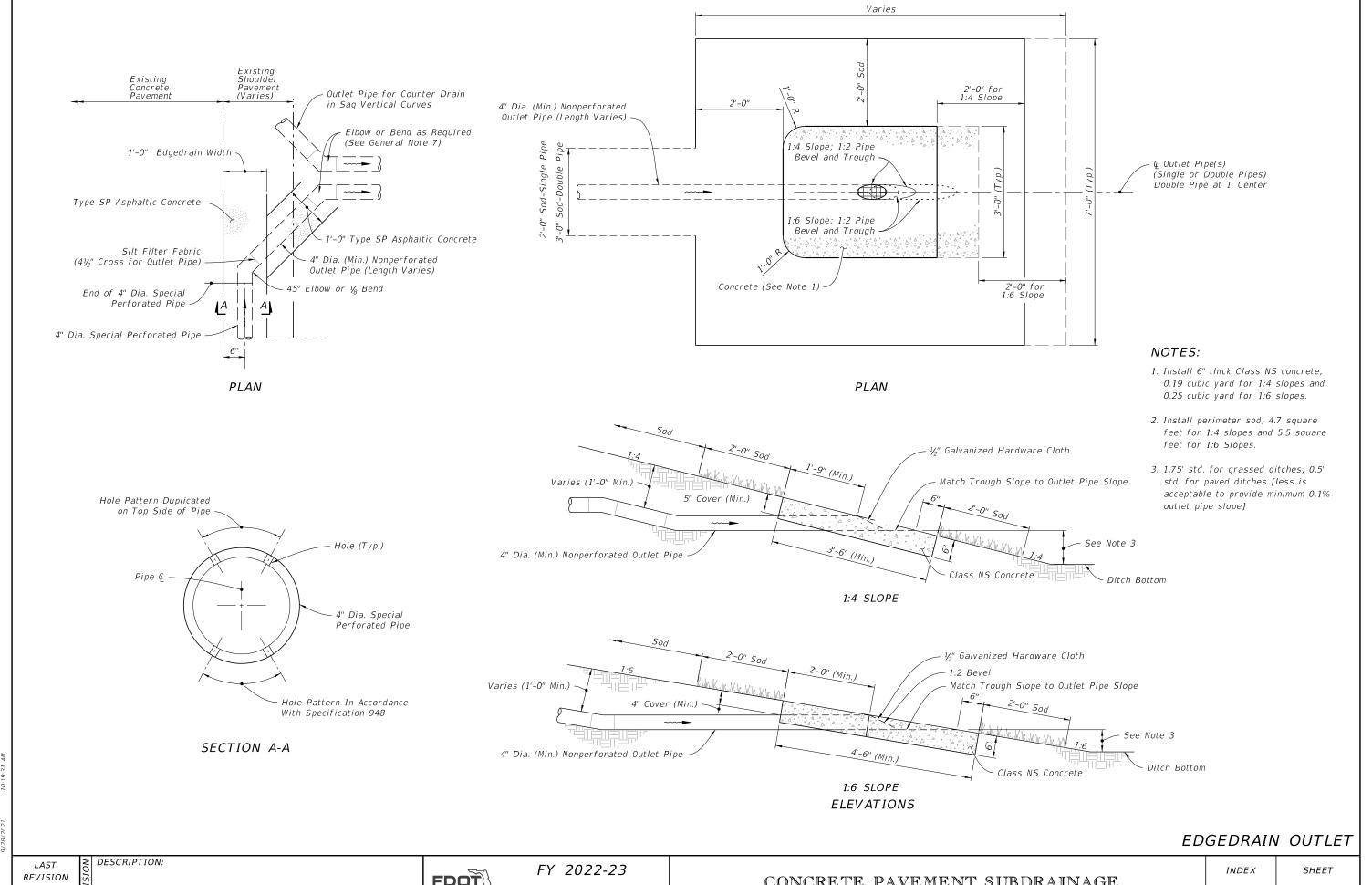
8. Replace existing paved shoulder removed for the construction of outlet pipes with Type SP asphaltic concrete at the rate of 500 LB per SY.

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



DRAINCRETE SUBDRAINAGE

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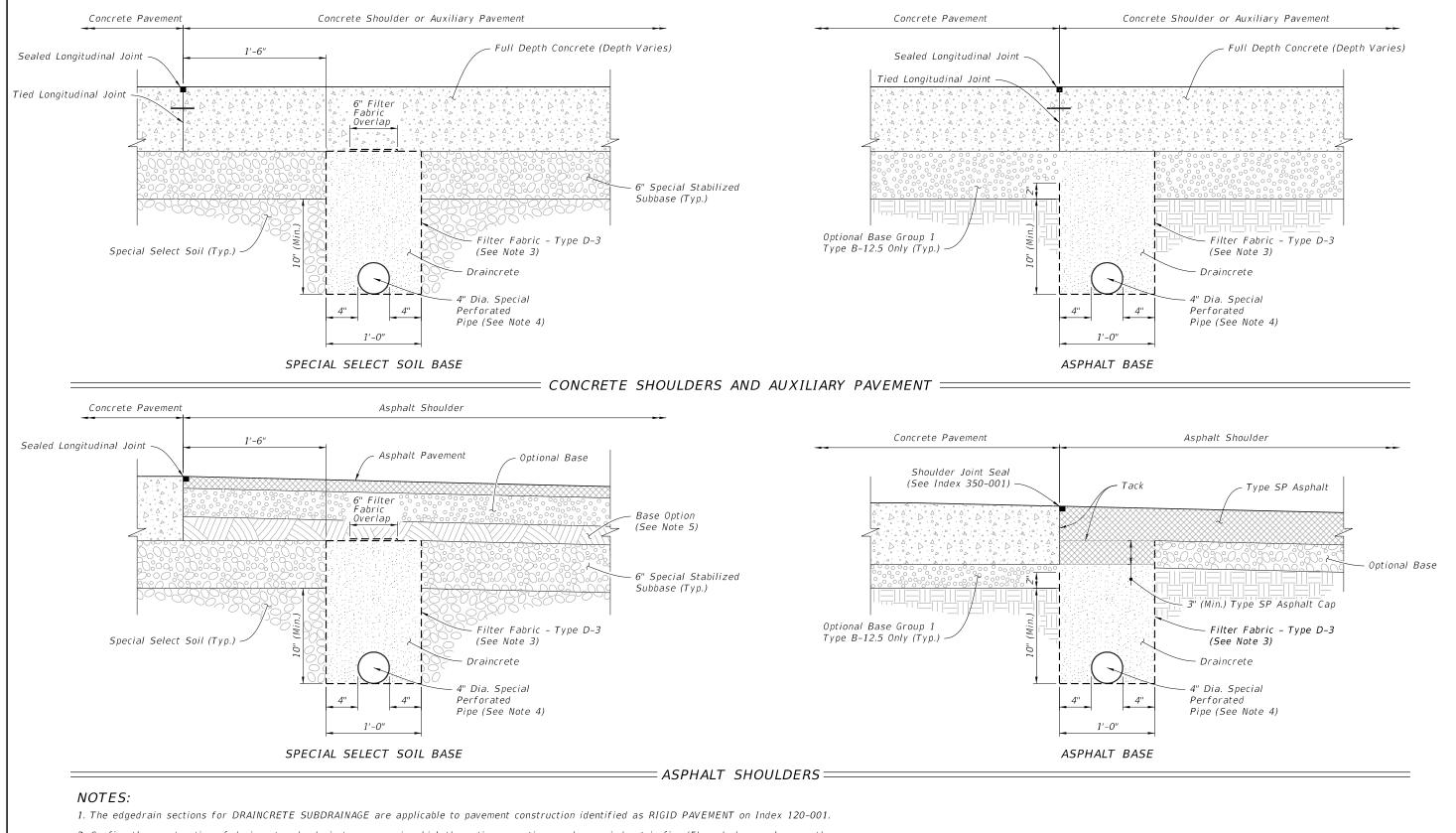


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FDOT

STANDARD PLANS

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- 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 the filter fabric in accordance with Specification 514.
- 4. Install only noncorrugated or smooth lined corrugated pipe.
- 5. At the Contractor's option this area may be constructed of Optional Base material (Specification 285) or special stabilized subbase.

NEW CONSTRUCTION

LAST REVISION 11/01/19

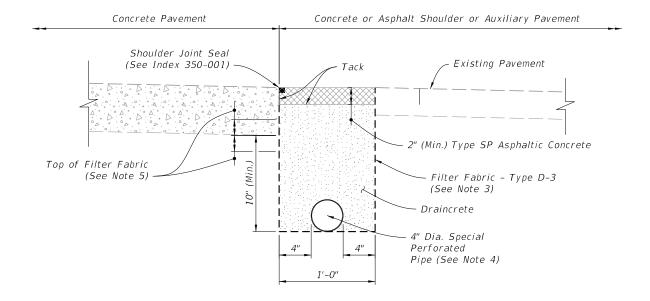
DESCRIPTION:

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FY 2022-23 STANDARD PLANS INDEX 446-001

SHEET

3 of 4

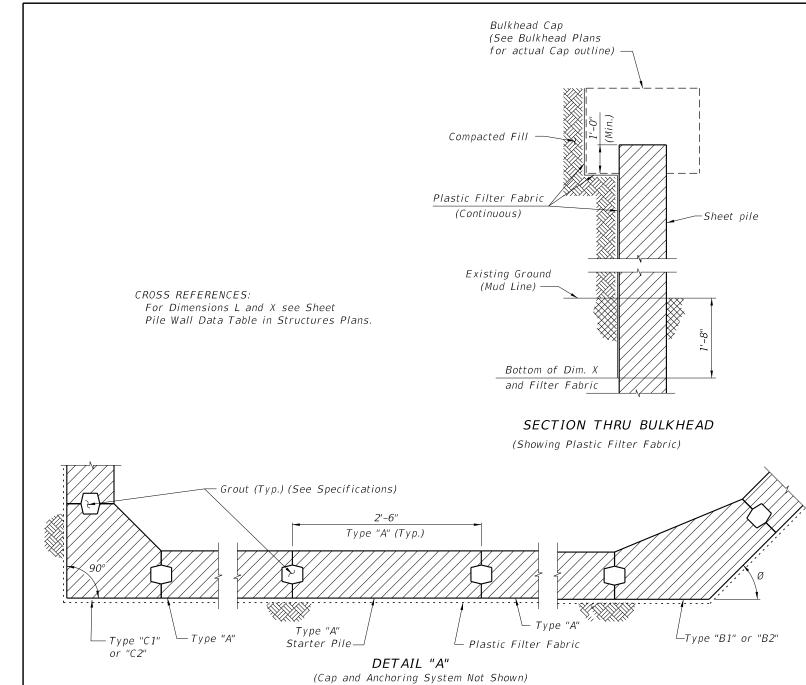


= EXISTING SHOULDERS =

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 the filter fabric in accordance with Specification 514.
- 4. Install only noncorrugated or smooth lined corrugated pipe.
- 5. Install Filter Fabric 2" below bottom of pavement for cement stabilized, soil cement and econocrete subbases and 2" above bottom of pavement for other subbases.

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 (Special) for slightly and moderately aggressive environments

V (Special) with Highly Reactive Pozzolans for

extremely aggressive environments

Unit weight:

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 $f'ci \ge 4000$ psi required.

ENVIRONMENT:

The pile designs are applicable to all Environments.

PLASTIC FILTER FABRIC:

The plastic filter fabric shall extend to the bottom of the "X" dimension.

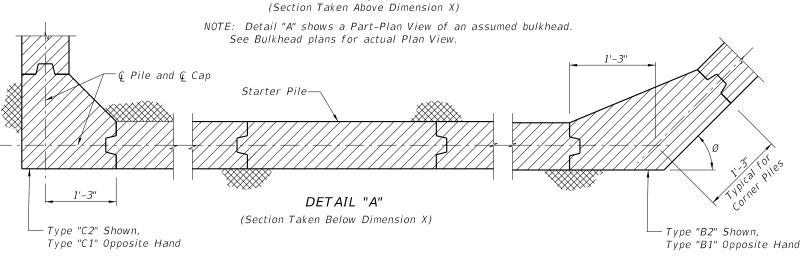
PILE PICK-UP AND HANDLING:

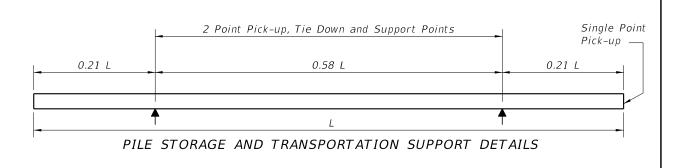
Type "A"

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

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'-5\\'2". No changes shall be made to the tongues or grooves.





NOTES AND DETAILS

REVISION 11/01/20

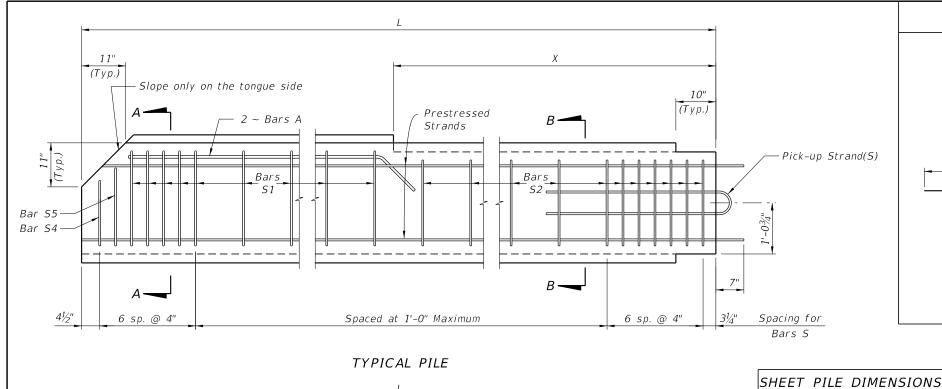
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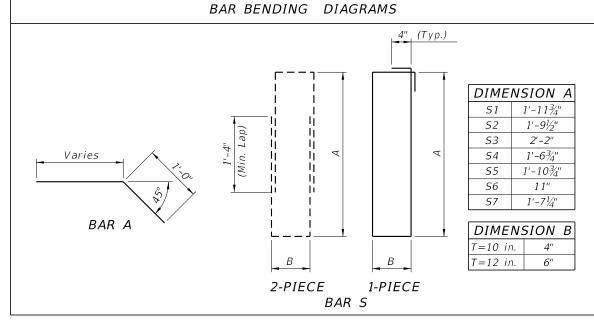
FY 2022-23 STANDARD PLANS

PRECAST CONCRETE SHEET PILE WALL (CONVENTIONAL)

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SHEET 1 of 4



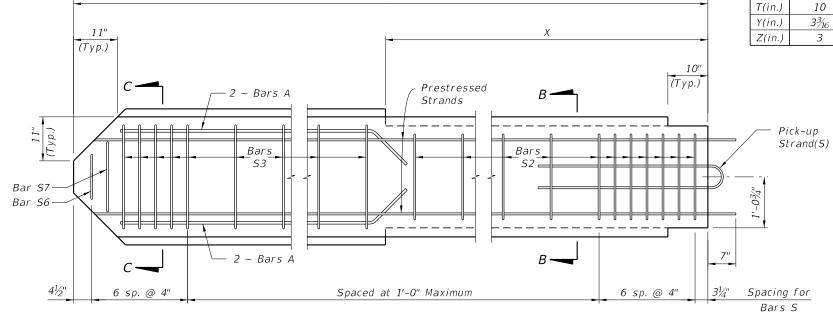


NOTES:

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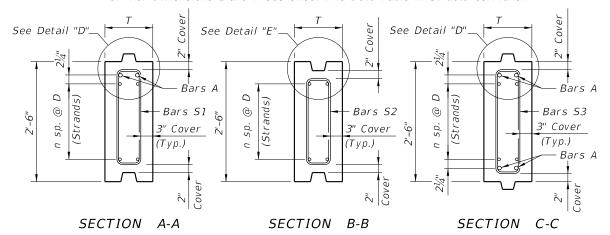
 $4\frac{3}{16}$

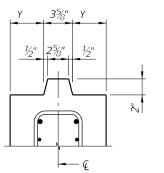
- 1. Intermediate Prestress Strands not shown in Elevations and Sections.
- 2. All bar dimensions are out-to-out.
- 3. Bars A are #5 and Bars S are #4.
- 4. At the Contractor's option Bars S may be fabricated as a two piece bar as shown in the Bar Bending Diagram.
- 5. The Contractor may use Deformed 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.



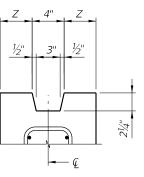


WALL THICKNESS		MAXIMUM L	n	D (in.)	TOTAL # OF STRANDS	INITIAL (JACKING) FORCE (Kip)
T=10 in.	0.5	28'-0"	6	31/4	14	31
	0.6	27'-0"	4	5	10	44
T=12 in.	0.5	31'-0"	7	2%	16	31
	0.6	30'-0"	5	4	12	44





DETAIL "D" (Typical Tongue)



DETAIL "E" (Typical Groove)

TYPE "A" STANDARD SECTION

LAST REVISION 11/01/18

DESCRIPTION:

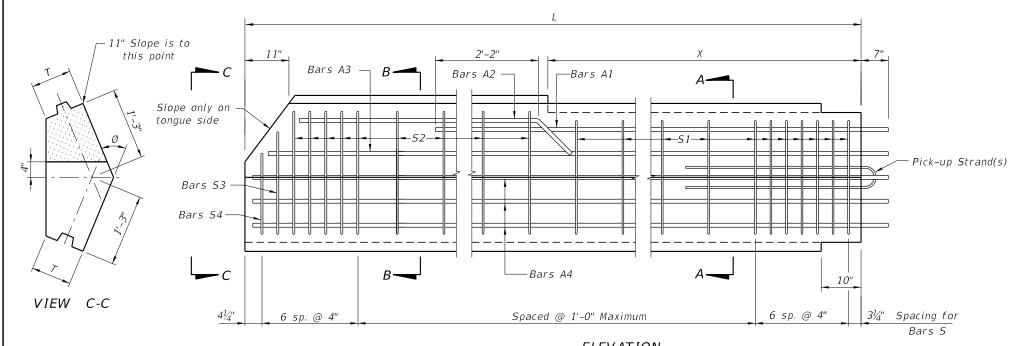
FDOT

FY 2022-23 STANDARD PLANS

PRECAST CONCRETE SHEET PILE WALL (CONVENTIONAL)

INDEX 455-400

2 of 4

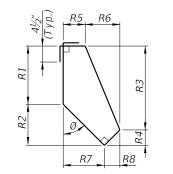


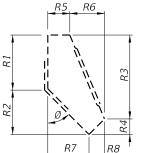
ELEVATION (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

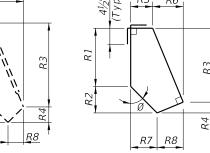
BAR BENDING DIAGRAMS

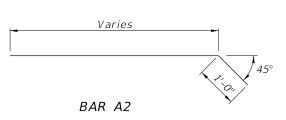
STIRRUP DIMENSIONS (T = 10")										
Ø	BAR MARK	R1	R:2	R:3	R4	R:5	R6	R7	R:8	
	S1	111/4"	9¾"	1'-6½"	2½"	5"	4¾"	5½"	41/4"	
30°	S-2	1'-1½"	9¾"	1'-8¾"	2½"	4½"	5½"	5¾"	41/4"	
30	53	1 1½"	8"	1'-6"	11/4"	5"	4½"	4½"	5"	
	54	1 1½"	41/4"	1'-13/4"	1¾"	5"	3¾"	2½"	6¼"	
	S1	11½"	8"	1'-4"	4"	5½"	6½"	8"	4"	
45°	52	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"	
	51	1'-0"	6"	1'-03/4"	5½"	6"	7½"	10½"	3"	
600	S:2	1'-2"	6"	1'-2¾"	5½"	43/4"	8¾"	10½"	3"	
60°	53	1'-0"	43/4"	1'-1½"	31/4"	6"	8"	8¾"	5½"	
	S4	1'-0"	2½"	10"	4½"	6"	5¾"	4"	7½"	

STIRRUP DIMENSIONS $(T = 12")$										
Ø	BAR MARK	R1	R2	R3	R4	R:5	R:6	R7	R8	
	S1	11½"	10"	1'-6"	3½"	7"	43/4"	5¾"	6"	
30°	S-2	1'-1¾"	10"	1'-81/4"	3½"	6½"	5½"	5¾"	6"	
30	53	11½"	81/4"	1'-5¾"	2"	7"	4¾"	4½"	7½"	
	<i>S4</i>	11½"	4"	1'-11/4"	2½"	7"	33/4"	2½"	8¼"	
	S1	1'-0"	8½"	1'-31/4"	5½"	7½"	6½"	8½"	5½"	
45°	52	1'-2½"	8½"	1'-5½"	5½"	6½"	71/4"	8½"	5½"	
45	53	1'-0"	7"	1'-4"	3"	7½"	6¾"	7"	71/4"	
	54	1'-0"	3½"	1 1 ³ / ₄ "	33/4"	7½"	5"	3½"	9"	
	S1	1'-01/2"	$6\frac{1}{4}$ "	1 1 ¾"	7"	8"	6¾"	10¾"	4"	
60°	52	1'-2 ³ / ₄ ''	61/4"	1'-2"	7"	6¾"	8"	10¾"	4"	
	<i>S3</i>	1'-0½"	5"	1'-1½"	4"	8"	8"	9"	7"	
	54	1'-01/2"	21/2"	9½"	5½"	8"	5½"	41/4"	91/4"	











2 - PIECE BARS 53 & 54

DESCRIPTION:

FY 2022-23 STANDARD PLANS



INDEX SHEET

SECTION A-A SECTION B-B SHEET PILE DIMENSIONS T (in.) $3\frac{3}{16}$ $4\frac{3}{16}$ Y (in.) Z (in.) 4 Bars S Bars Al or

See Detail "D"

Bars A1

Bars A3

Bars A4

3" Cover

(Typ.)

Bars A3

Bars A4

Bars S1

Bars A4

Bars A4

Bars A2

Bars A3

Bars A4

See Detail "D"

Bars S2

Bars A4

Bars A4

²Bars A2

Bars A3

Bars A4

Bars A4

Bars A4

3" Cover Typ.

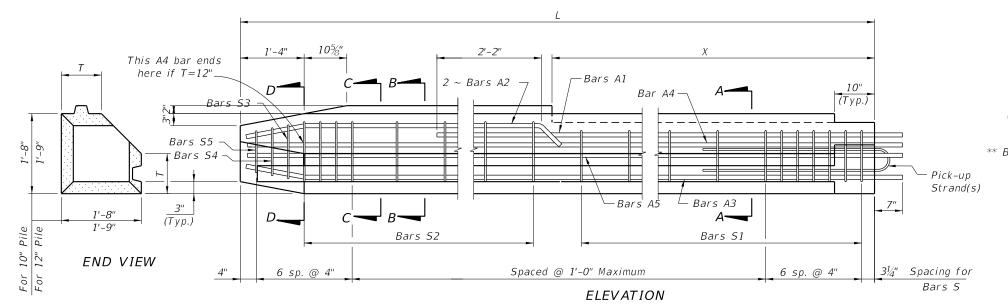
DETAIL "D" (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

- 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

455-400

FDOT

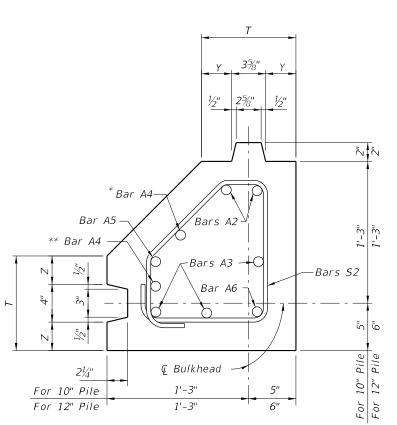


(TYPE "C1" PILE SHOWN, TYPE "C2" PILE OPPOSITE HAND)

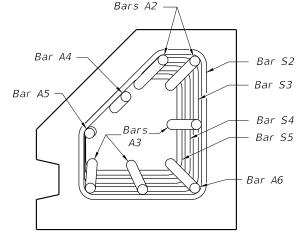
Pile Pile Section C-C 3" Cover Bars A1 * Bar A4 Bar A5 Bar A5 Bars A2 ** Bar A4 ** Bar A4 2" (Typ.) - 3" Cover See Section C-C For 10" Pile For 12" Pile SECTION A-A SECTION B-B

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

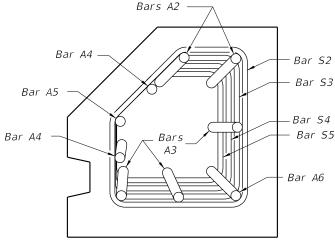
** This Bar A4 (not shown in elevation) is included only if T = 12".



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



SECTION D-D (T=10")



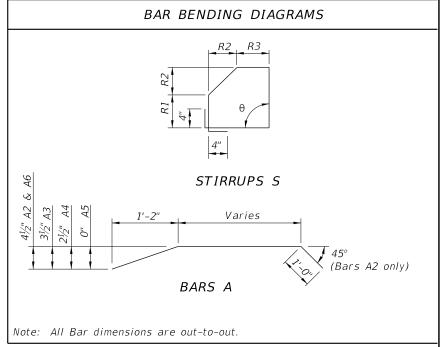
SECTION D-D (T=12")

STIRRUP DIMENSIONS								
θ	T (in.)	BAR MARK	R1	R:2	R:3			
		51	7"	5¾"	7"			
		52	7"	8"	4¾"			
	10	53	6½"	71/4"	4¾"			
		54	5½"	6½"	4¾"			
90°		<i>S5</i>	43/4"	5¾"	4¾"			
90		S1	9"	43/4"	9"			
		52	9"	7"	6¾"			
	12	53	81/4"	$6\frac{1}{4}$ "	6¾"			
		54	7½"	5½"	6¾"			
		<i>S5</i>	6¾"	43/4"	6¾"			

SHEET PILE DIMENSIONS T (in.) 10 12 $3\frac{3}{16}$ Y (in.) $4\frac{3}{16}$

Z (in.)

3



NOTES:

- 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 shop drawings.
- 5. If tongue must be on opposite side (Groove Side) from that shown, all dimensions and reinforcement shall follow the corresponding Tongue
- 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

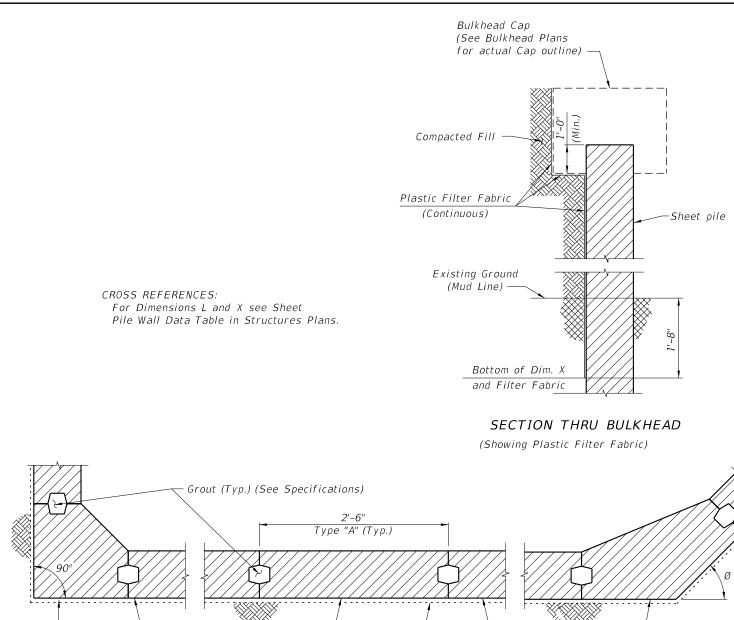
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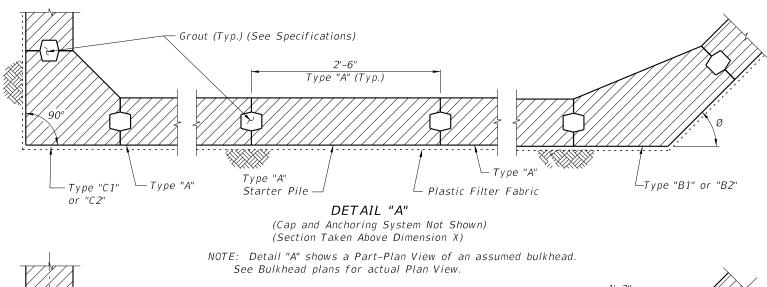
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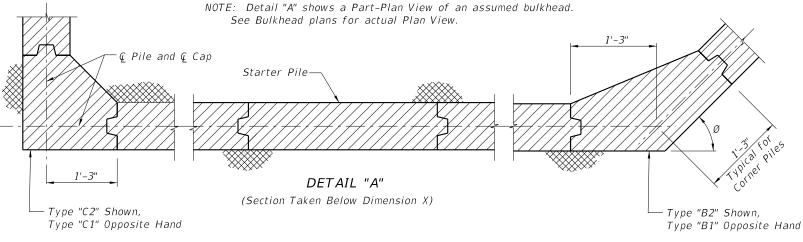
FY 2022-23 STANDARD PLANS PRECAST CONCRETE SHEET PILE WALL

INDEX 455-400

SHEET







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 (Special)

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: Uniform compression after prestressing losses:

Pick-up, Storage and Transportation:

4000 psi minimum 700 psi minimum

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.

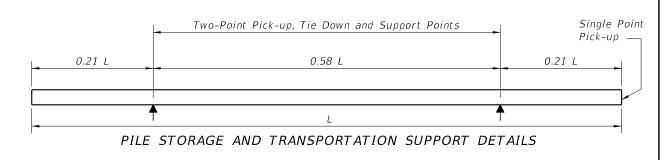
PLASTIC FILTER FABRIC:

The plastic filter fabric shall extend 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'-5\\'/. No changes shall be made to the tongues or grooves.



NOTES AND DETAILS

REVISION 11/01/20

DESCRIPTION:

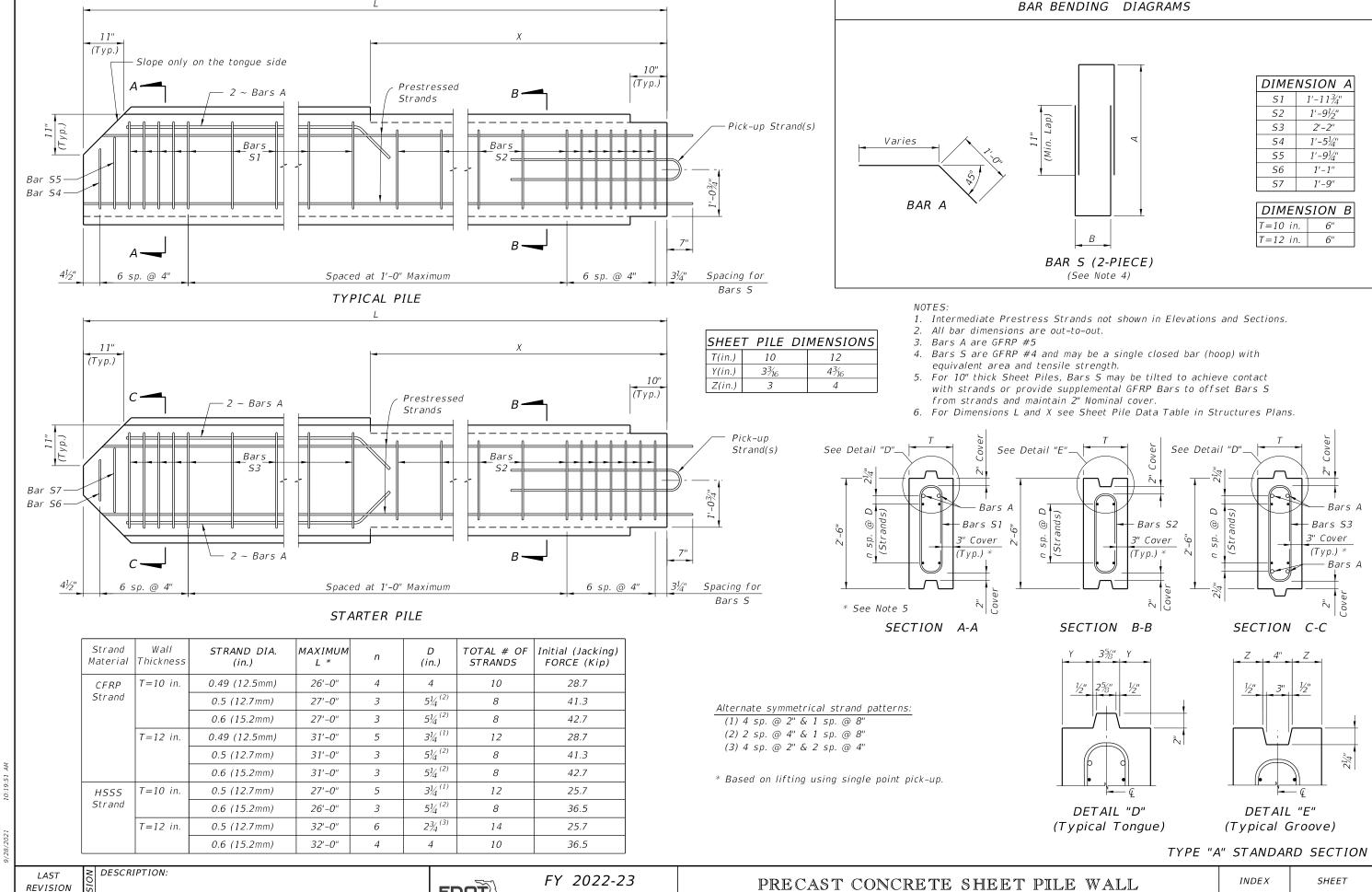
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FY 2022-23 STANDARD PLANS

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

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SHEET 1 of 4



11/01/19

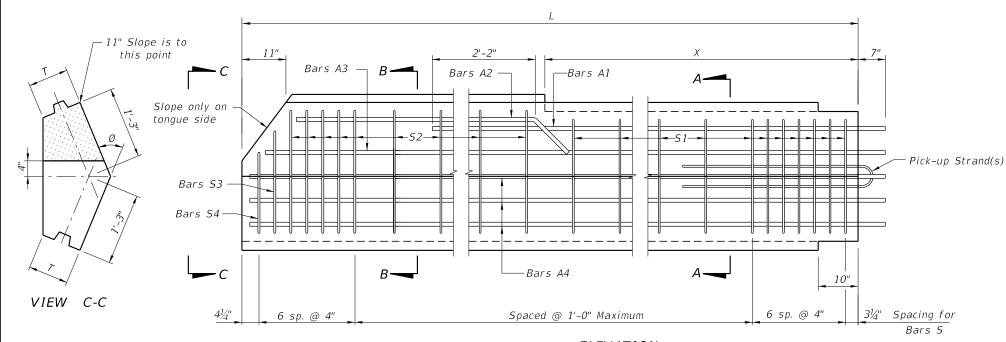
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STANDARD PLANS

(CFRP/GFRP & HSSS/GFRP)

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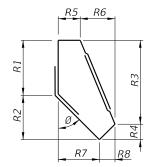


ELEVATION (TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

BAR BENDING DIAGRAMS

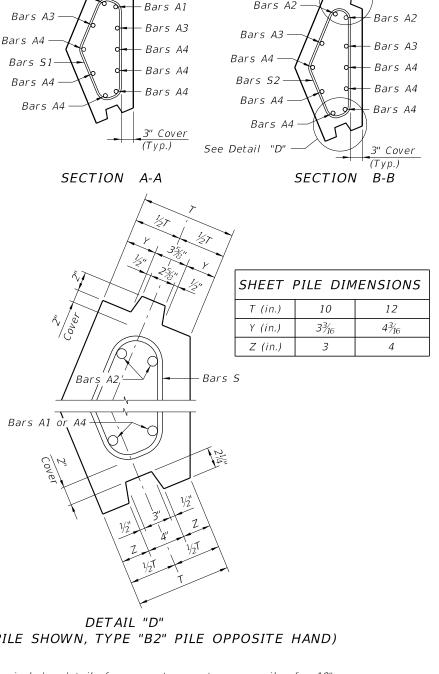
STIRRUP DIMENSIONS (T = 10")										
Ø	BAR MARK	R1	R2	R:3	R:4	R:5	R:6	R:7	R8	
30°	<i>S1</i>	111/4"	9¾"	1'-6½"	2½"	5"	43/4"	5½"	41/4"	
	S:2	1'-1½"	9¾"	1'-8¾"	2½"	4½"	5½"	5¾"	41/4"	
30	<i>S3</i>	111/4"	8"	1'-6"	11/4"	5"	4½"	4½"	5"	
	54	111/4"	41/4"	1'-13/4"	1¾"	5"	33/4"	2½"	6¼"	
	S1	11½"	8"	1'-4"	4"	5½"	6½"	8"	4"	
4.5°	S-2	1'-13/4"	8"	1'-5¾"	4"	4½"	7½"	8"	4"	
43	53	11½"	6¾"	1'-4"	21/4"	5½"	6¾"	6¾"	5½"	
	<i>S4</i>	111½"	3½"	1'-0"	3"	5½"	5"	3½"	7"	
	<i>S1</i>	1'-0"	6"	1'-03/4"	5½"	6"	71/4"	101/4"	3"	
C 00	<i>S</i> :2	1'-2"	6"	1'-2¾"	5½"	43/4"	8¾"	10½"	3"	
60°	53	1'-0"	43/4"	1'-1½"	31/4"	6"	8"	8¾"	5½"	
	C 1	11 011	21/11	1.0"	A1/_"	CII	E 3/11	4"	71/"	

STIRRUP DIMENSIONS $(T = 12")$										
Ø	BAR MARK	R1	R2	R3	R4	R:5	R:6	R7	R8	
	S1	11½"	10"	1'-6"	3½"	7"	43/4"	5¾"	6"	
30°	S-2	1'-1¾"	10"	1'-81/4"	3½"	6½"	5½"	5¾"	6"	
30	53	11½"	81/4"	1'-5¾"	2"	7"	4¾"	4½"	7½"	
	<i>S4</i>	11½"	4"	1'-11/4"	2½"	7"	33/4"	2½"	8½"	
	S1	1'-0"	8½"	1'-31/4"	5½"	7½"	6½"	8½"	5½"	
45°	52	1'-2½"	8½"	1'-5½"	5½"	6½"	71/4"	8½"	5½"	
45	53	1'-0"	7"	1'-4"	3"	7½"	6¾"	7"	71/4"	
	54	1'-0"	3½"	1 1 ³ / ₄ "	33/4"	7½"	5"	3½"	9"	
	S1	1'-01/2"	$6\frac{1}{4}$ "	1 1 ¾"	7"	8"	6¾"	10¾"	4"	
60°	52	1'-2 ³ / ₄ ''	61/4"	1'-2"	7"	6¾"	8"	10¾"	4"	
	<i>S3</i>	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 S1 & S2 (2 - PIECE)





See 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.
- All bar dimensions are out-to-out.
- Bars A are GFRP #8 and Bars S are GFRP #4.
- 5. Values for Stirrup Dimensions are shown for \emptyset 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

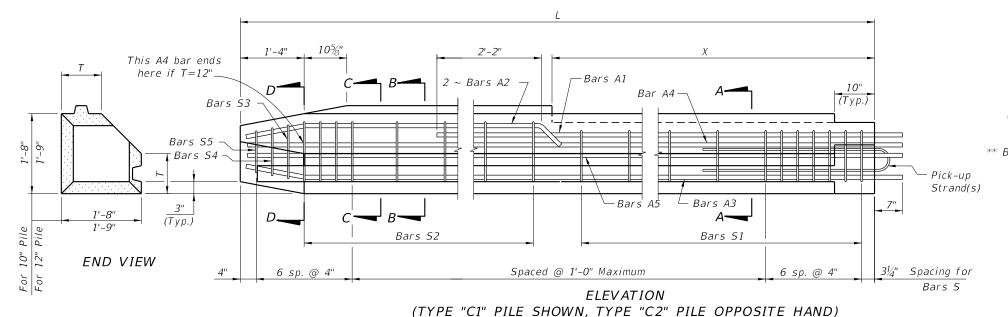
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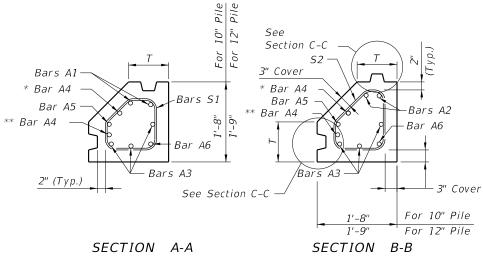
FDOT

FY 2022-23 STANDARD PLANS

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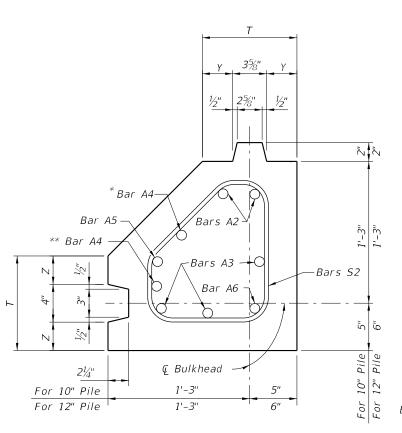
SHEET

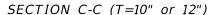


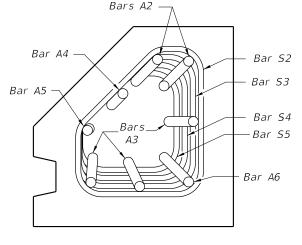


* This Bar A4 shall be 1'-2'' shorter than other A4 bars for T = 12''.

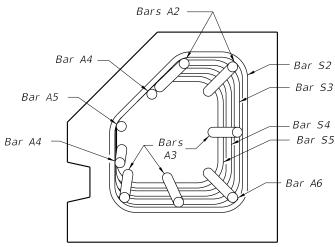
** This Bar A4 (not shown in elevation) is included only if T = 12".







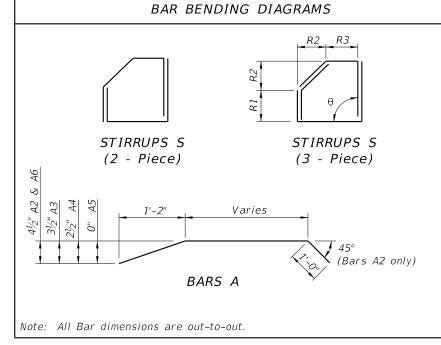
SECTION D-D (T=10")



SECTION D-D (T=12")

STIRRUP DIMENSIONS							
θ	T (in.)	BAR MARK	R1	R2	R:3		
	10	51	7"	5¾"	7"		
		52	7"	8"	4¾"		
		53	6½"	71/4"	4¾"		
		54	5½"	6½"	4¾"		
90°		<i>S5</i>	43/4"	5¾"	4¾"		
90	12	S1	9"	43/4"	9"		
		52	9"	7"	6¾"		
		53	81/4"	6½"	6¾"		
		54	7½"	5½"	6¾"		
		<i>S5</i>	6¾"	43/4"	6¾"		

SHEET PILE DIMENSIONS T (in.) 10 12 $3\frac{3}{16}$ Y (in.) $4\frac{3}{16}$ 3 Z (in.)



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
- 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

FY 2022-23 STANDARD PLANS

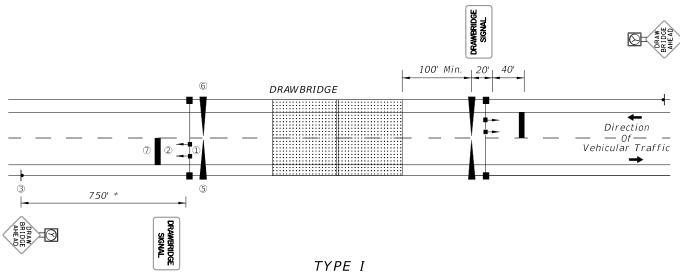
PRECAST CONCRETE SHEET PILE WALL

INDEX

SHEET

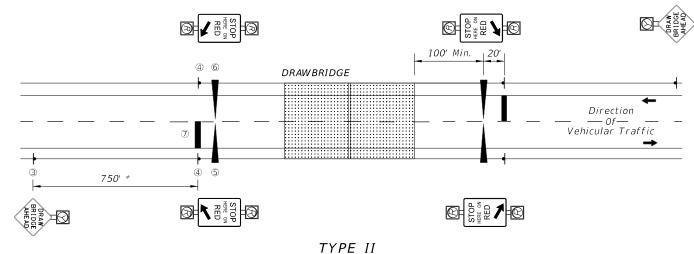
(CFRP/GFRP & HSSS/GFRP)





TO BE USED WHERE BRIDGE

OPERATORS ARE FULL TIME OR A DAILY BASIS.



TO BE USED WHERE TYPE I IS NOT APPLICABLE (USUALLY WHEN THE BRIDGE OPERATOR IS "ON CALL").

LEGEND:

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



SLIPPERY WHEN WET SIGN See Note 11

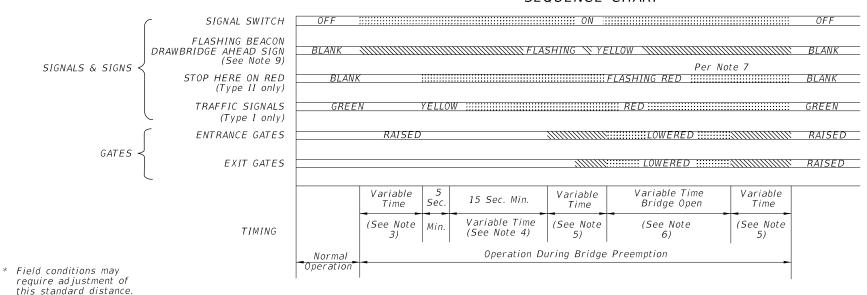
NOTES:

- 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
- 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.

DESCRIPTION:

- 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
- 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 Section 4I of the "Manual on Uniform Traffic Control Devices".
- 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."

SEQUENCE CHART



Ground Mounted

LAST **REVISION** 11/01/17

FDOT

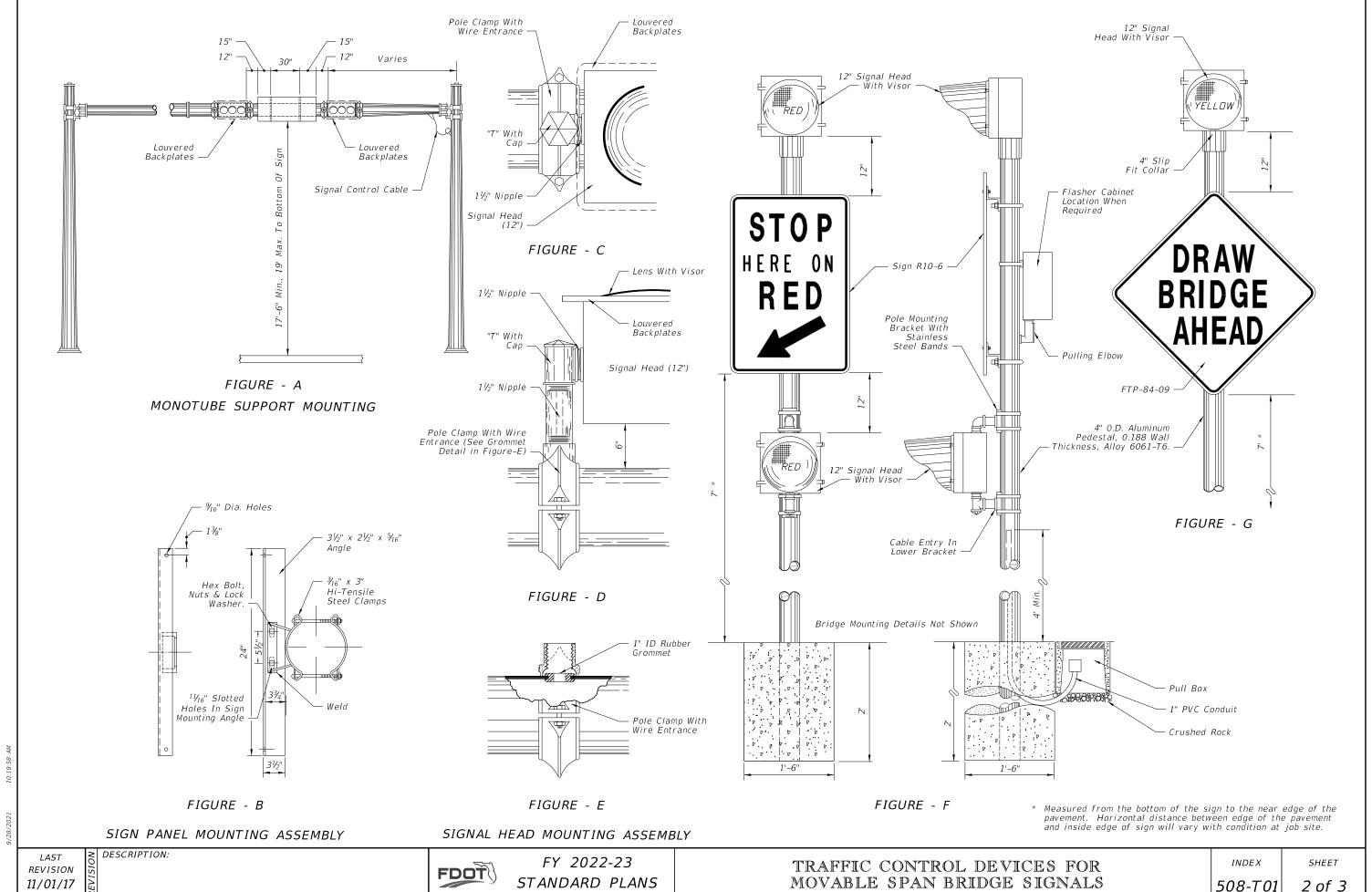
FY 2022-23 STANDARD PLANS

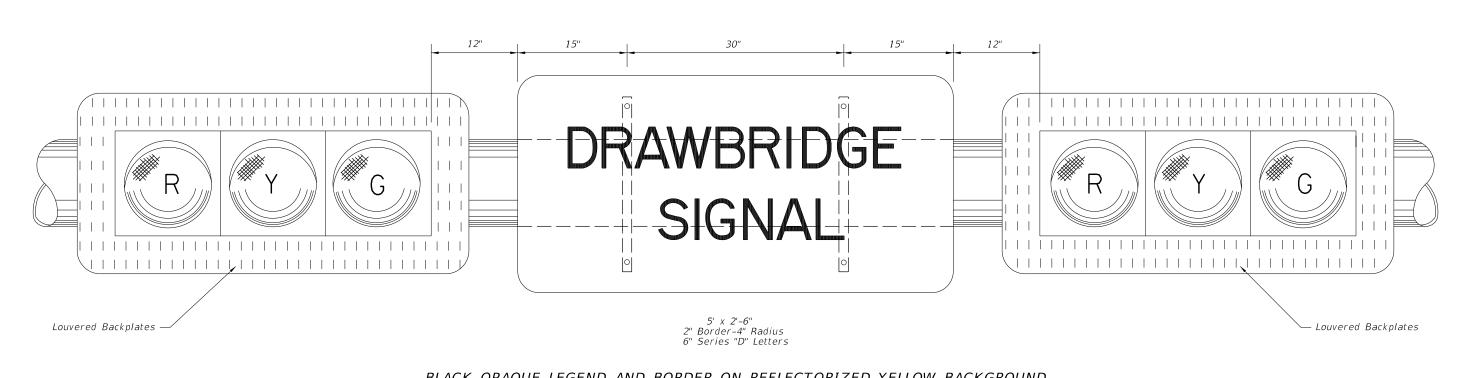
TRAFFIC CONTROL DEVICES FOR

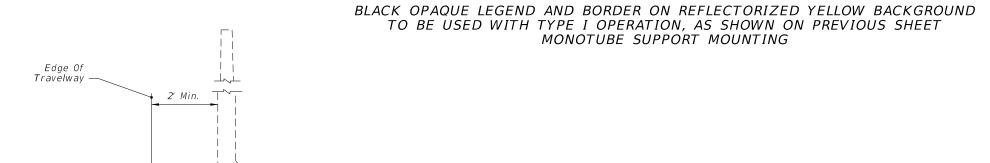
INDEX 508-T01

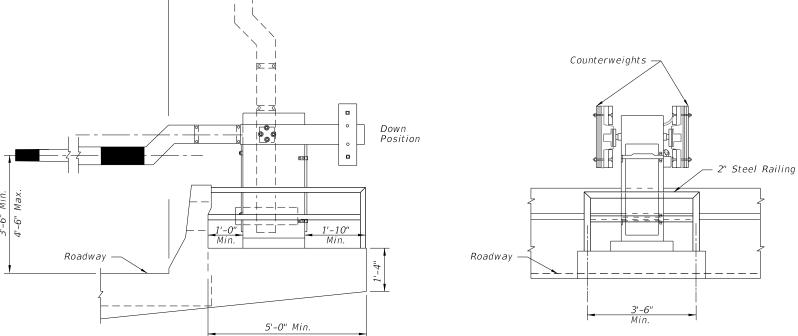
1 of 3

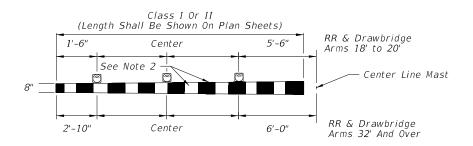
SHEET











NOTES:

- 1. 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

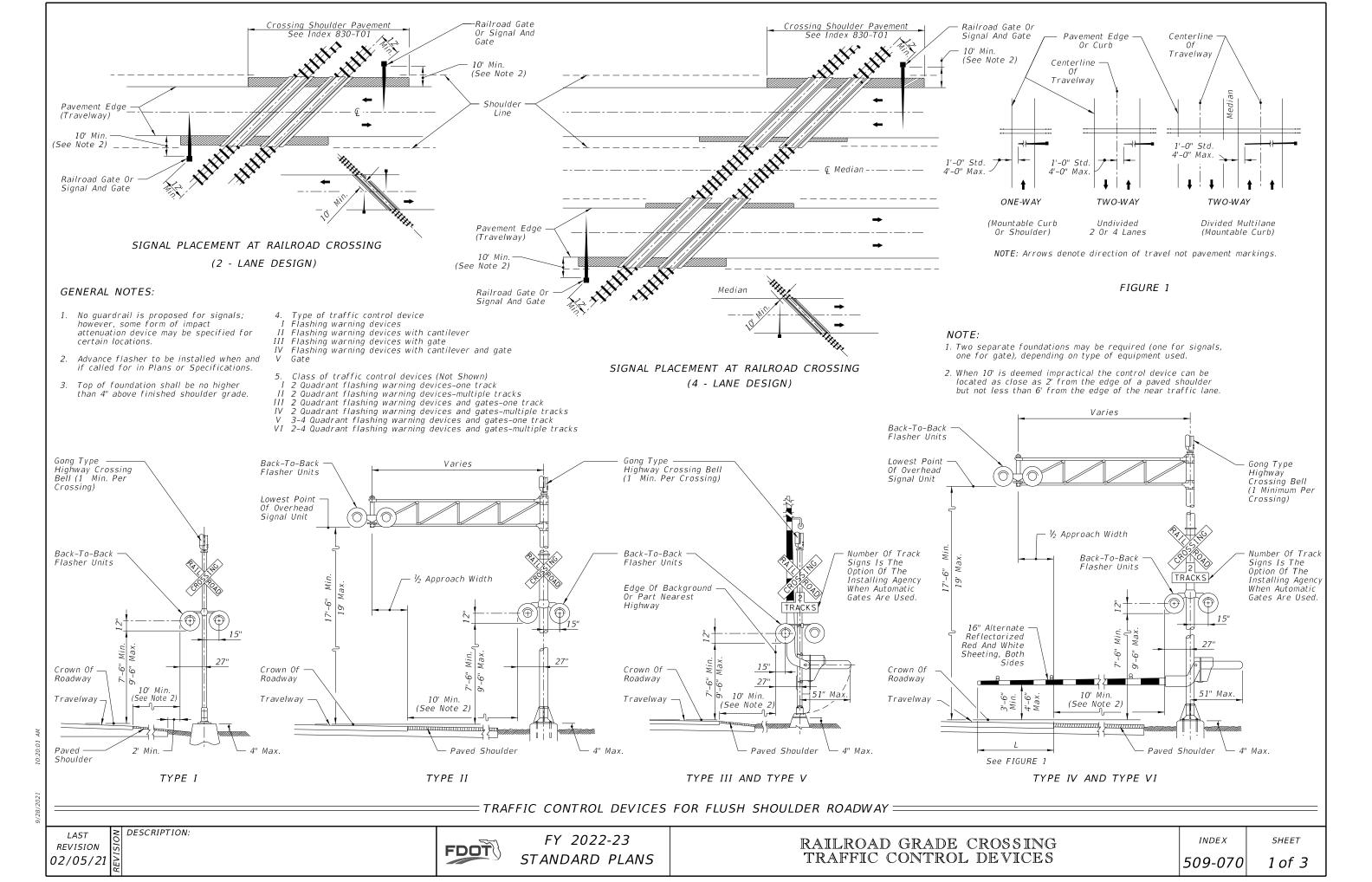
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TRAFFIC CONTROL DEVICES FOR MOVABLE SPAN BRIDGE SIGNALS

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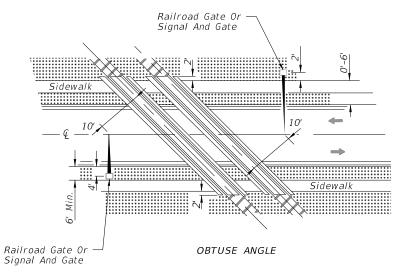
Railroad Gate Or Signal And Gate Sidewalk Sidewalk Sidewalk Sidewalk ACUTE ANGLE (AND RIGHT ANGLE)

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

DESCRIPTION:

REVISION

02/05/21



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

NOTES:

RAILROAD GRADE CROSSING

TRAFFIC CONTROL DEVICES

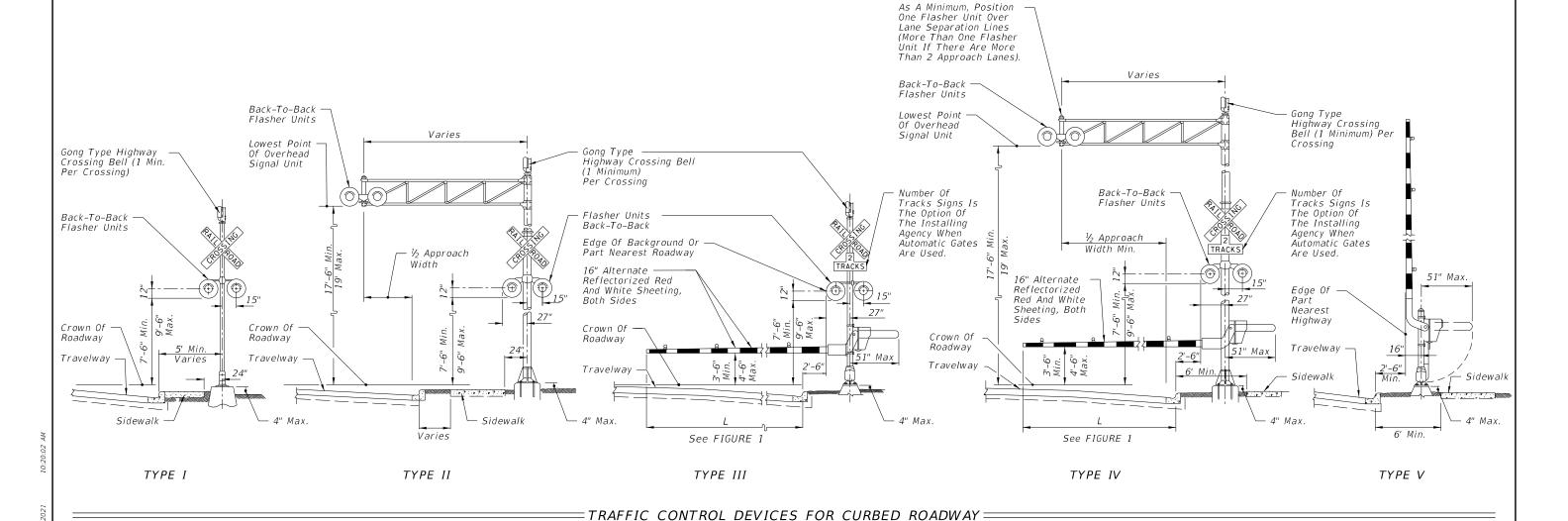
- 1. The location of flashing warning devices and stop lines shall be established based on future (or present) installation of gate with appropriate track clearances.
- 2. Where plans call for railroad traffic control devices to be installed in curbed medians, the minimum median width shall be 12'-6".
- 3. Location of railroad traffic control device is based on the distance available between face of curb & sidewalk. O' 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.
- 5. 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.

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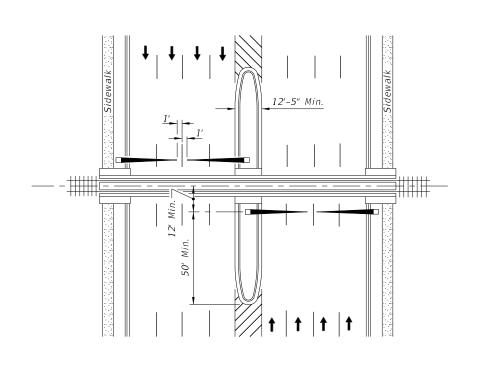
509-070



FY 2022-23

STANDARD PLANS

FDOT

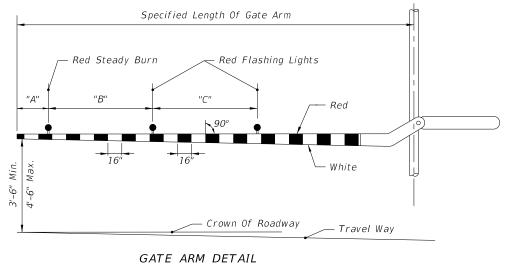


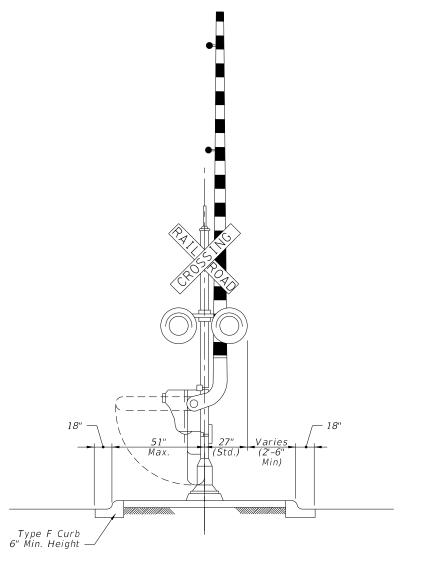
RAILROAD GATE ARM LIGHT SPACING						
Specified Length Of Gate Arm	Dimension "A"	Dimension "B"	Dimension "C"			
14 Ft.	6"	36"	5'			
15 Ft.	18"	36"	5'			
16-17 Ft.	24"	36"	5'			
18-19 Ft.	28"	41"	5'			
20-23 Ft.	28"	4'	5'			
24-28 Ft.	28"	5'	5'			
29-31 Ft.	36"	6'	6'			
32-34 Ft.	36"	7'	7'			
35-37 Ft.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

PLAN

NOTE:

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

Stop Line -

6" White —

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

REVISION 02/05/21

≥ DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES

INDEX

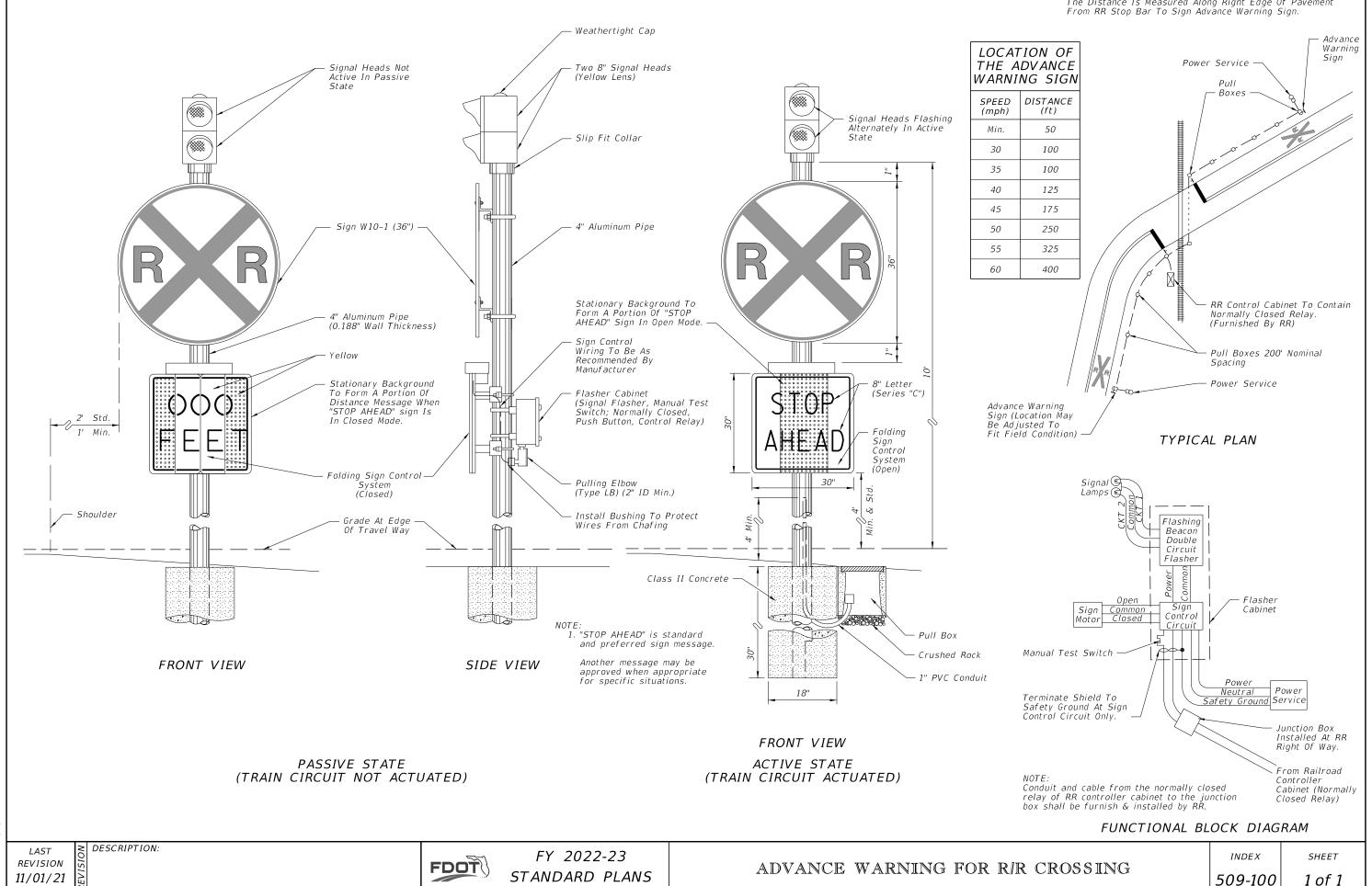
Gate or Flashing Signal With Gates

- Flashing Signal (If Not with Gate)

As Required

Edge of Traveled Way

SHEET





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

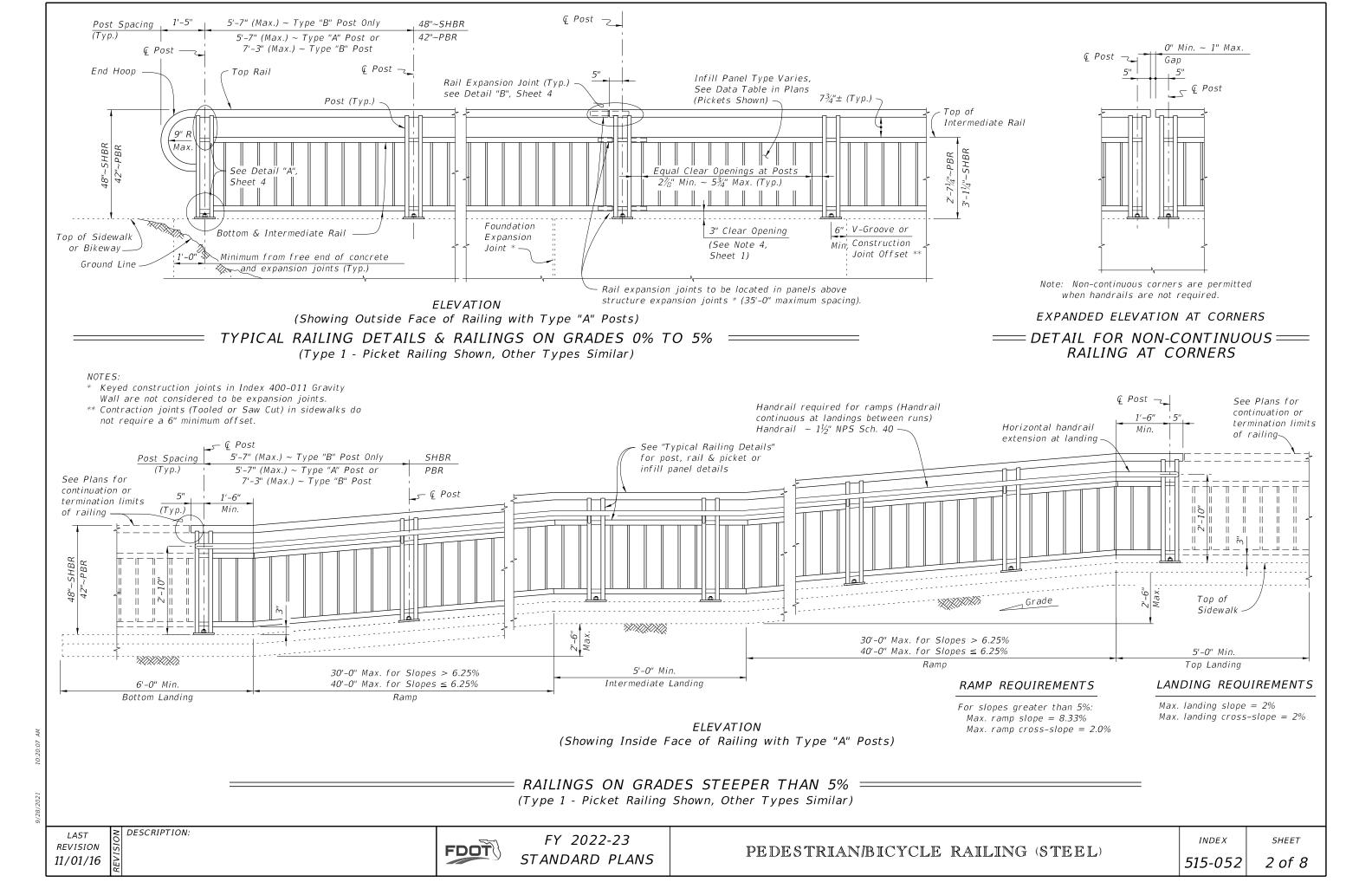
TABLE 1 - RAILING MEMBERS					
MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS		
Post "A"	HSS 2½ x 1½ x½	2.50" x 1.50"	0.125"		
Post "B"	HSS 2½ x 1½ x¾ ₆	2.50" x 1.50"	0.188"		
Tan Bail	2½" NPS (Sch. 10)	2.875"	0.120"		
Top Rail	HSS 3.000 x 0.120	3.000"	0.120"		
5 1 11	2½" NPS (Sch. 10)	2.875"	0.120"		
End Hoops	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/Calina 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	d Bar 0.750"			
Infill Panel Members (Types 2 - 5)	Varies (See Details)	Varies	Varies		

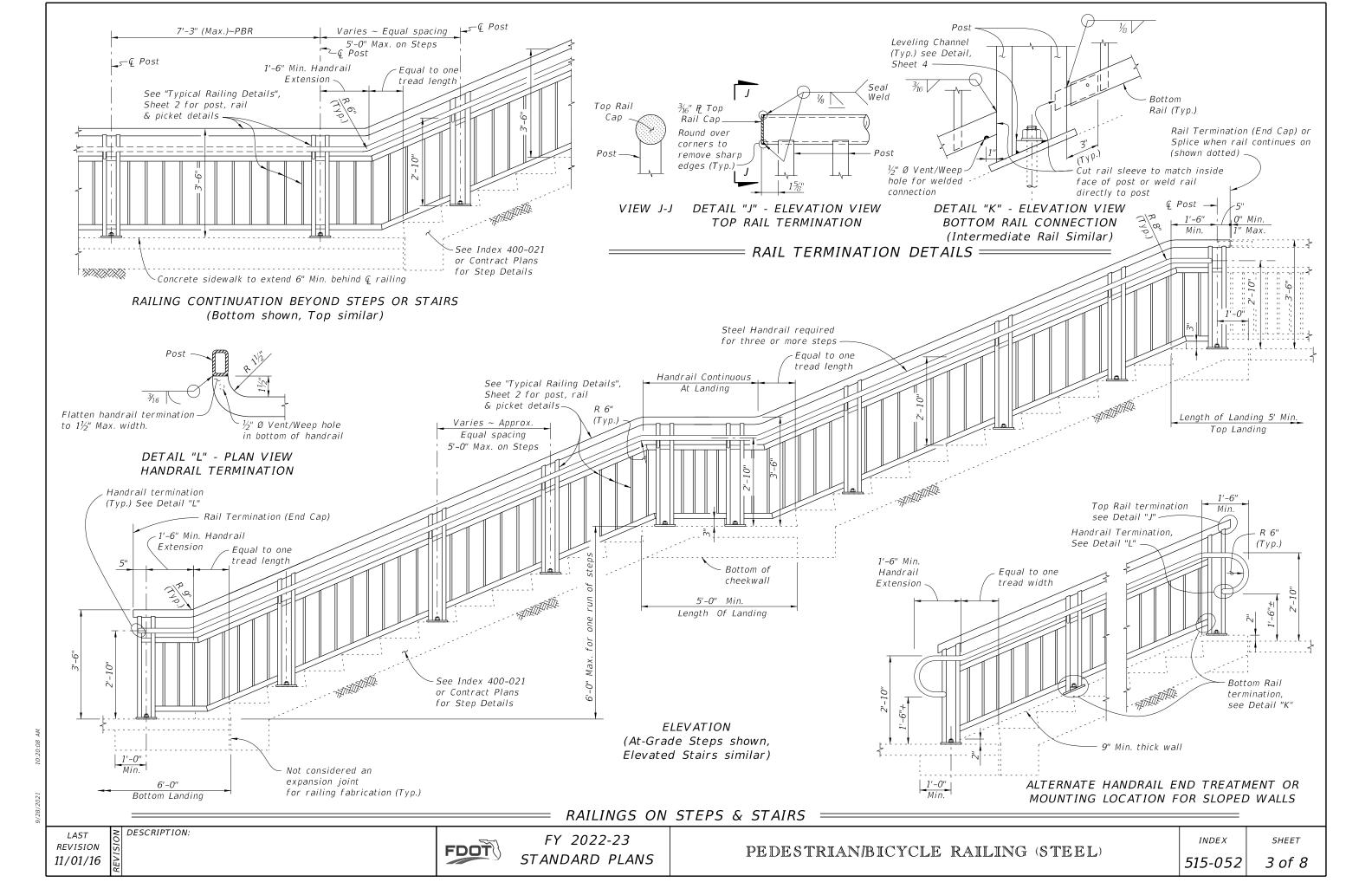
TABLE 1 NOTES:

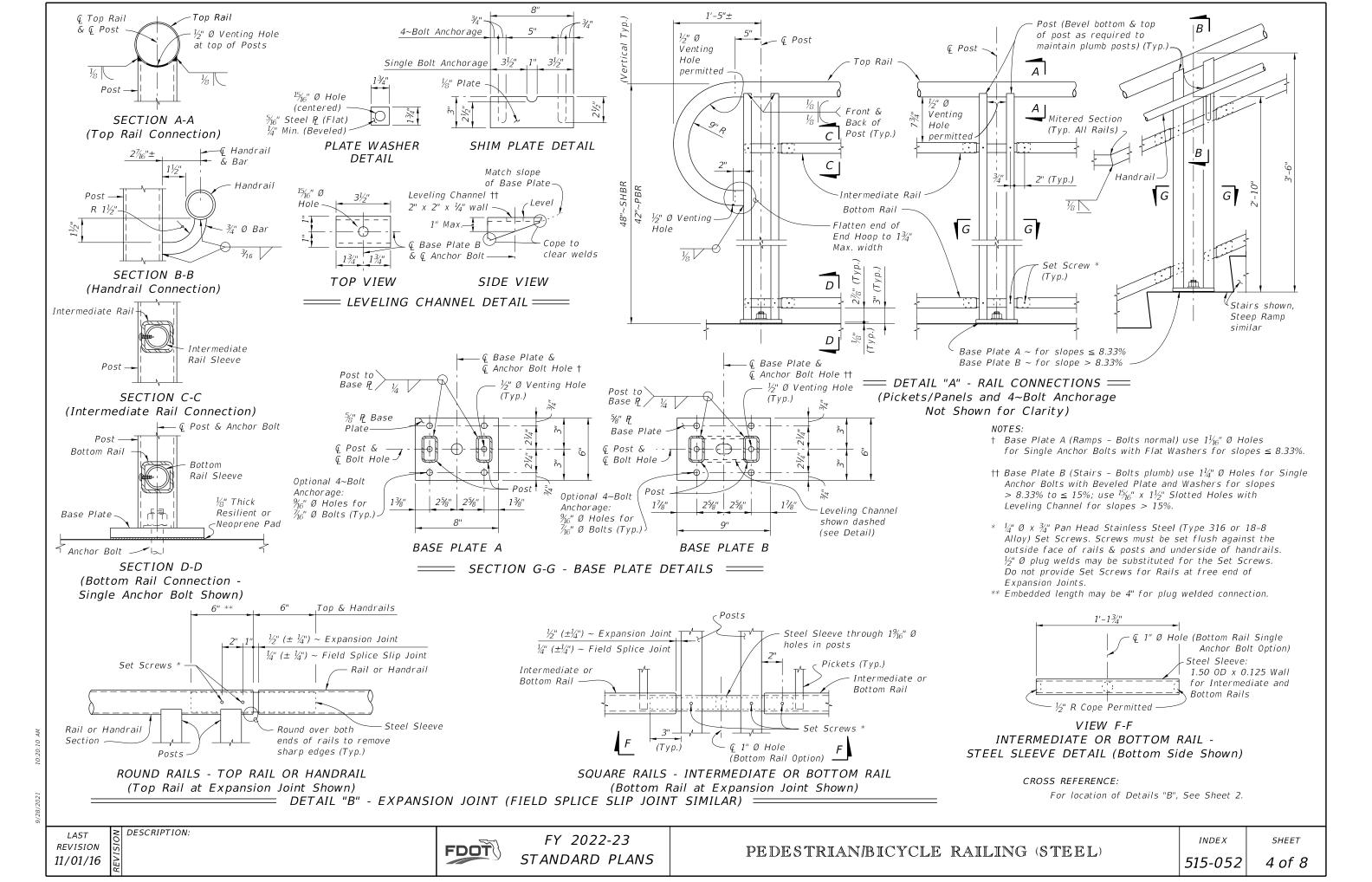
(1) 0.125" wall thickness permitted for rails with post spacings less than 5'-8", except that Post Connection Sleeve must be $1\frac{1}{4}$ " NPS (Sch. 40).

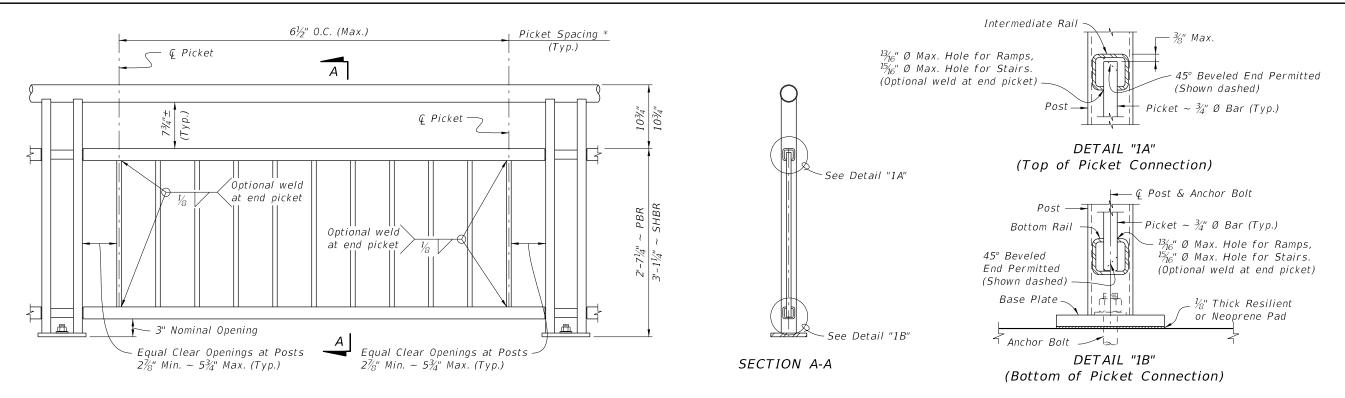
NOTES =

- 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
- - 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. $\frac{1}{8}$ " diameter single bolt option, Grade 36
 - 2. $\frac{1}{16}$ " 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.





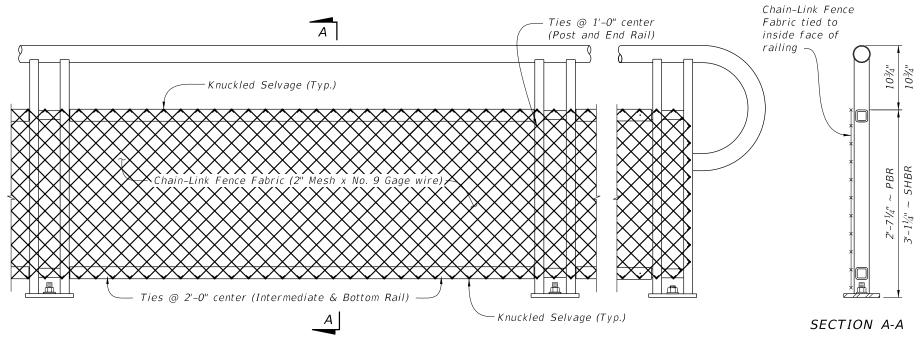




TYPE 1 - PICKET INFILL PANEL

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).



TYP	F 2 -	CHAIN-LINK	(Continuous	Infill	Panel.

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	$\frac{3}{16}$ " (Min. thickness) x $\frac{3}{4}$ " (Min. width) x 2'-3' (Min. height) Steel Bars		
Miscellaneous Fence Components	F 626	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.

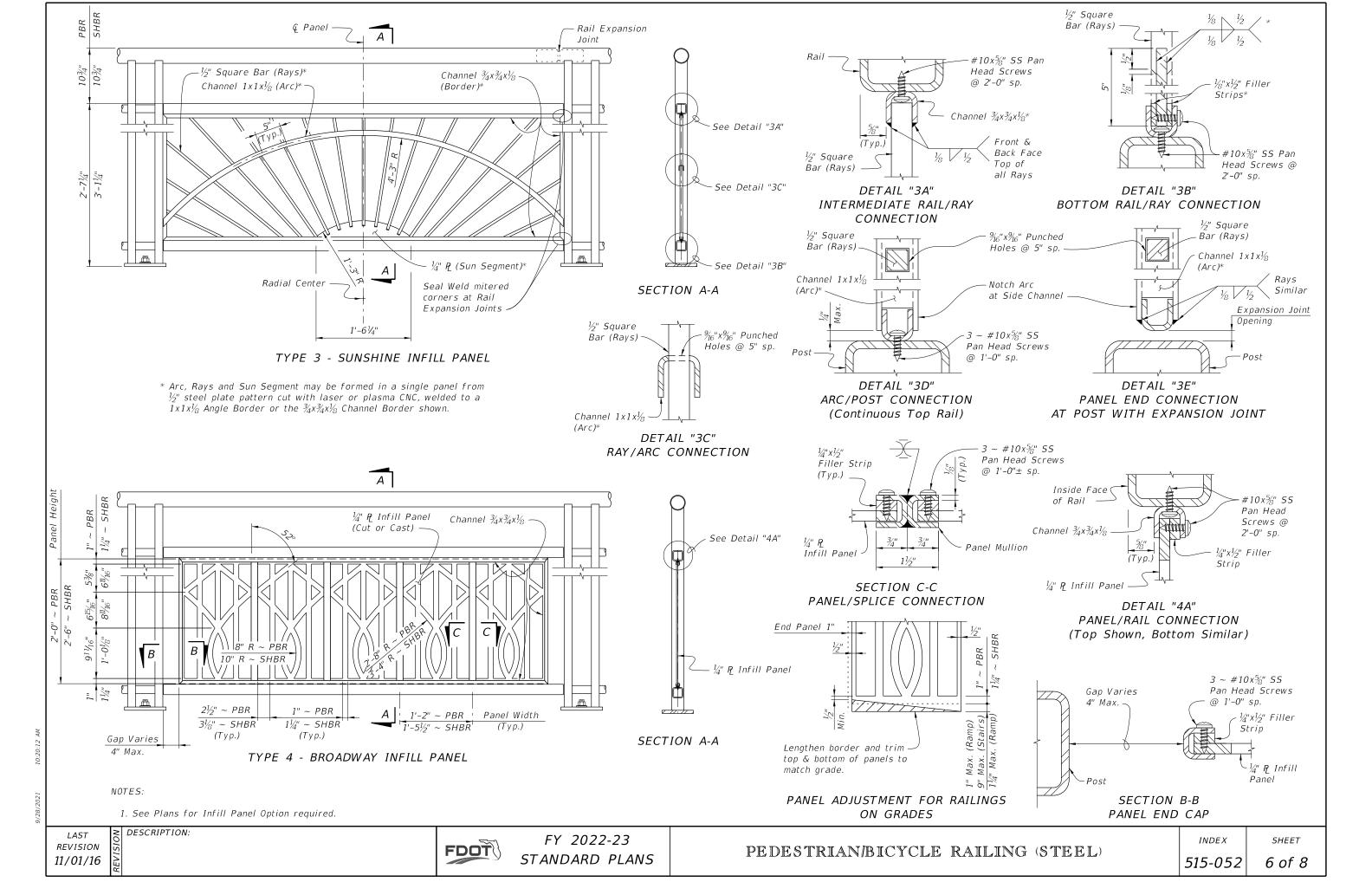
REVISION 11/01/21

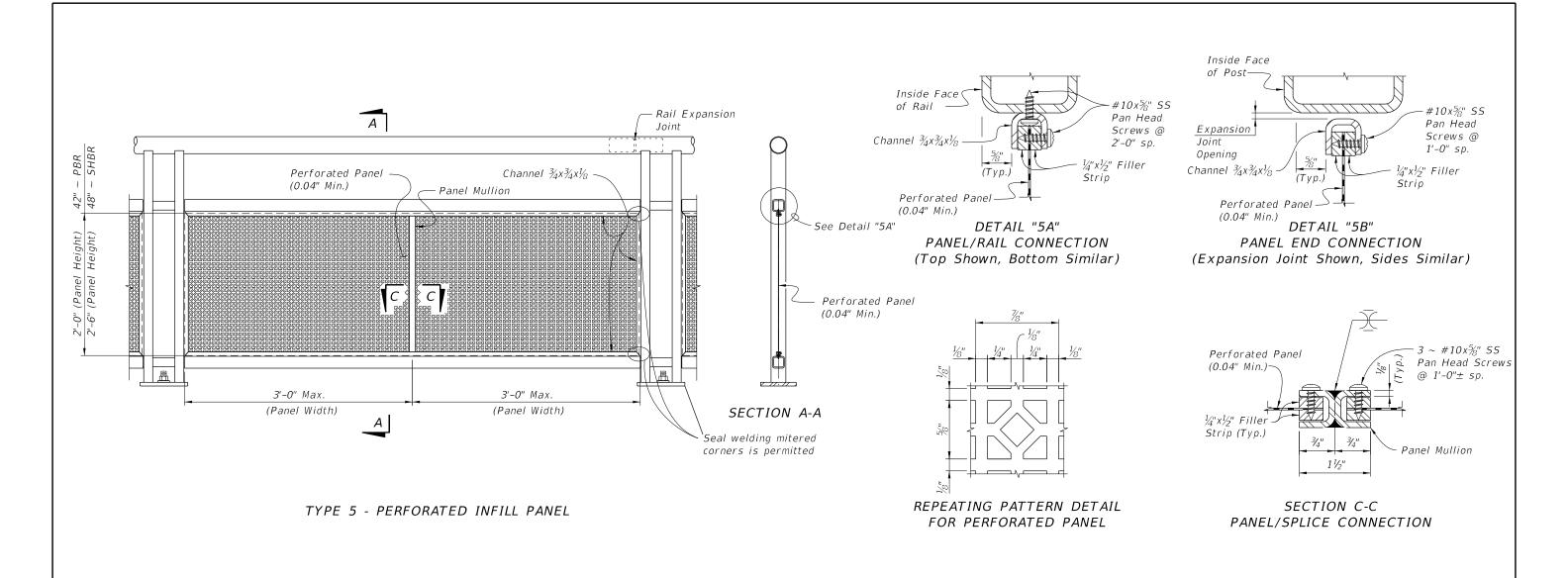
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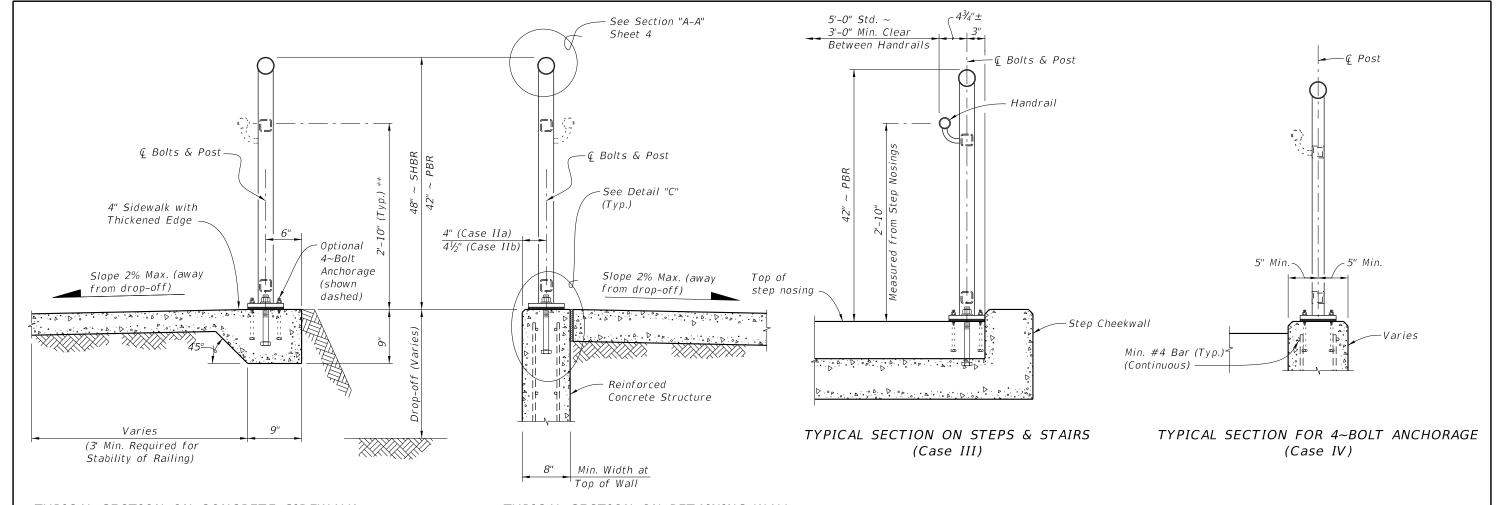
NOTES:

DESCRIPTION:

1. See Plans for Infill Panel Type required.

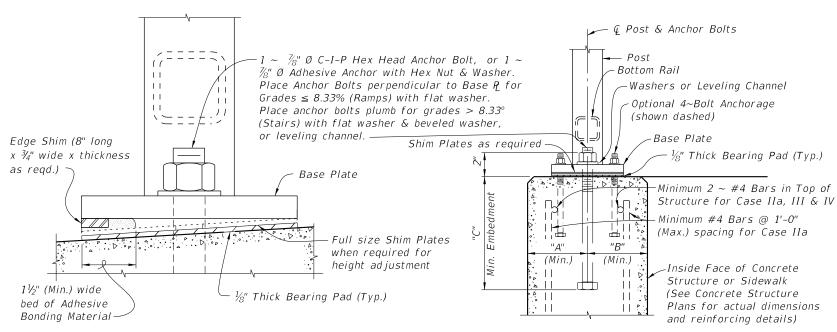
REVISION 11/01/16

FDOT



TYPICAL SECTION ON CONCRETE SIDEWALK (Case I)

TYPICAL SECTION ON RETAINING WALL (Case II)



	ANCHOR BOLT TABLE						
CASE	STRUCTURE TYPE	DIMENSIONS			ANCHOR LENGTH		
		A Edge Dist.	B Edge Dist.	C Embedment	C-I-P Hex Head Bolt		ANCHOR
I	Unreinforced Concrete	6"	1'-2"	6"	7½"	8"	%" Ø
IIa	Reinforced Concrete	4"	4"	9"	10½"	11"	%" Ø
IIb	Gravity Wall Index 400-011	4½"	3½" @ top	9"	10½"	11"	7%" Ø
III	Step Cheekwall	4½"	4½"	9"	101/2"	11"	%" Ø
IV	Varies	5"	5"	5"	6½"	7"	7₁6" Ø

^{**} When required; measured from top of sidewalk.

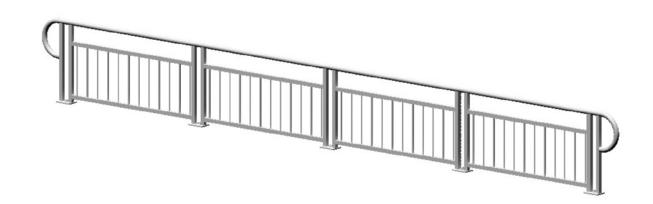
DETAIL "D" (OPTIONAL SHIMMING DETAIL FOR CROSS SLOPE CORRECTION) (Used in lieu of Beveled Shim Plates)

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

REVISION 11/01/20

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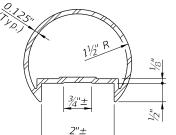


3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL (42" Height shown, 48" Height Similar)

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
Torr. Dall	6061 T6	2½" NPS (Sch. 10)	2.875"	0.120"
Top Rail	6061-T6	3" Round Top Cap Rail	3.000"	0.125"
5.1.4	6063-T5	2½" NPS (Sch. 10)	2.875"	0.120"
End Hoops		3.00 OD x 0.125 Wall	3.000"	0.125"
T. D. I. L. I. G. I. G.	6063-T5	2.50 OD x 0.125 Wall	2.500"	0.125"
Top Rail Joint/Splice Sleeves		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"
	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:

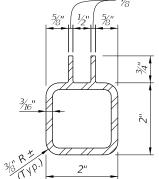
- (1) Alloy 6061-T6 or 6063-T52 & T6 may be substituted for Alloy 6063-T5.
- (2) 0.188" wall thickness permitted for rails with post spacings less than 5'-9".
- (3) 1" NPS (Sch. 40) non-slit rail sleeves may be substituted when welded connection Detail "K" is utilized.



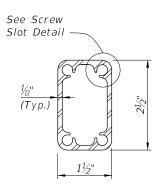
1"±

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

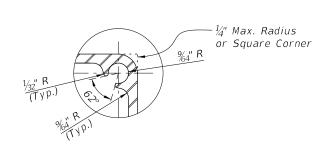




ALTERNATIVE BOTTOM & INTERMEDIATE RAIL SECTION FOR TYPE 3, 4 & 5 RAILINGS



POST TYPE "C" SCREW SLOT SECTION



SCREW SLOT DETAIL

NOTES:

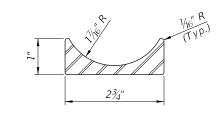
- 1. Shop Drawings are required, see Specification Section 515.
- 2. For bridge mounted railings, work this Index with Index 515-061 Bridge Bicycle/Pedestrian Railing (Aluminum)
- 3. Materials:
 - A. Structural Extrusions, Tube, Pipe and Bars: Table 1 and ASTM B221 or ASTM B429
 - a. Top, bottom and 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 $\frac{1}{2}$ " 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



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

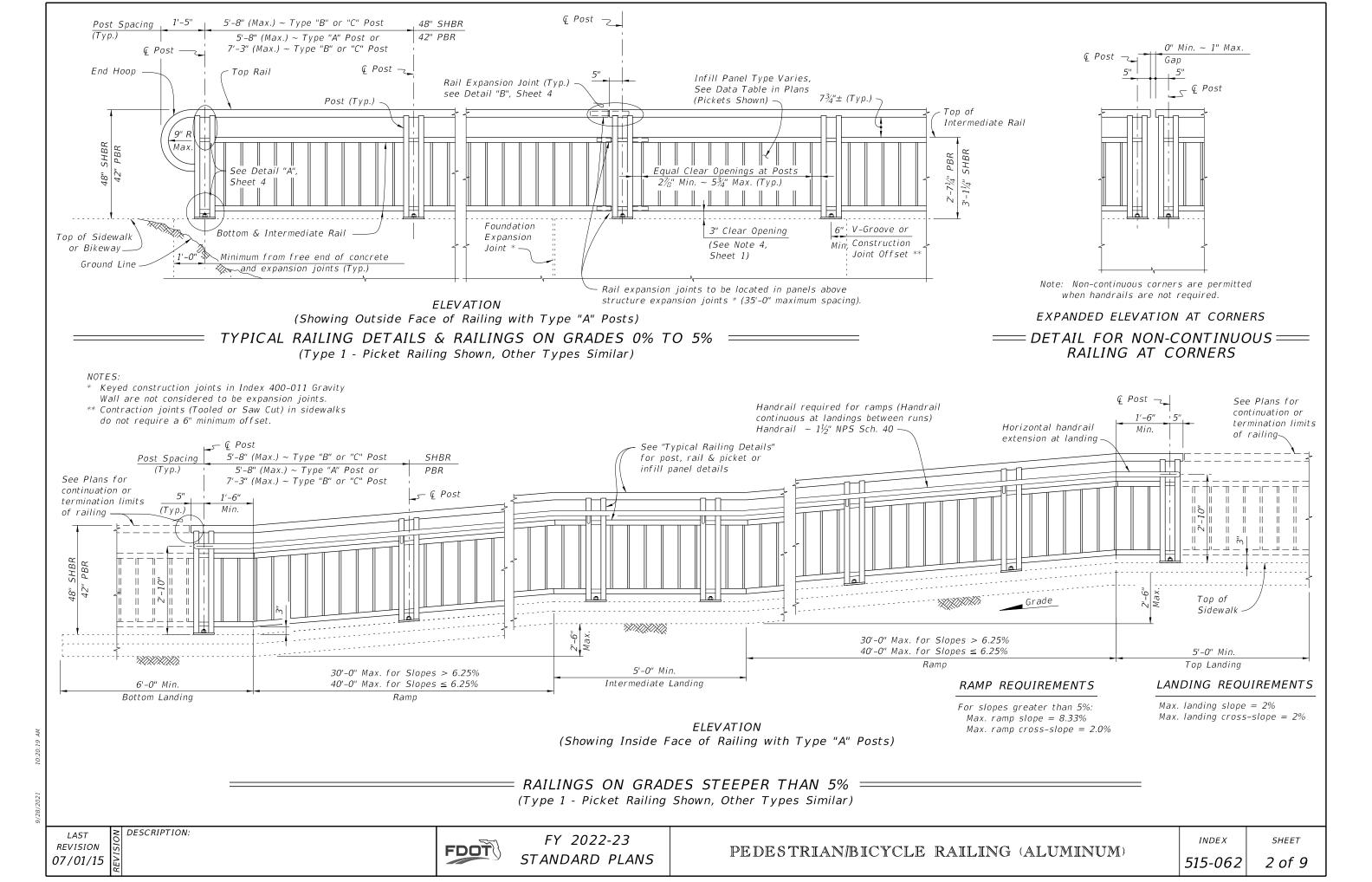
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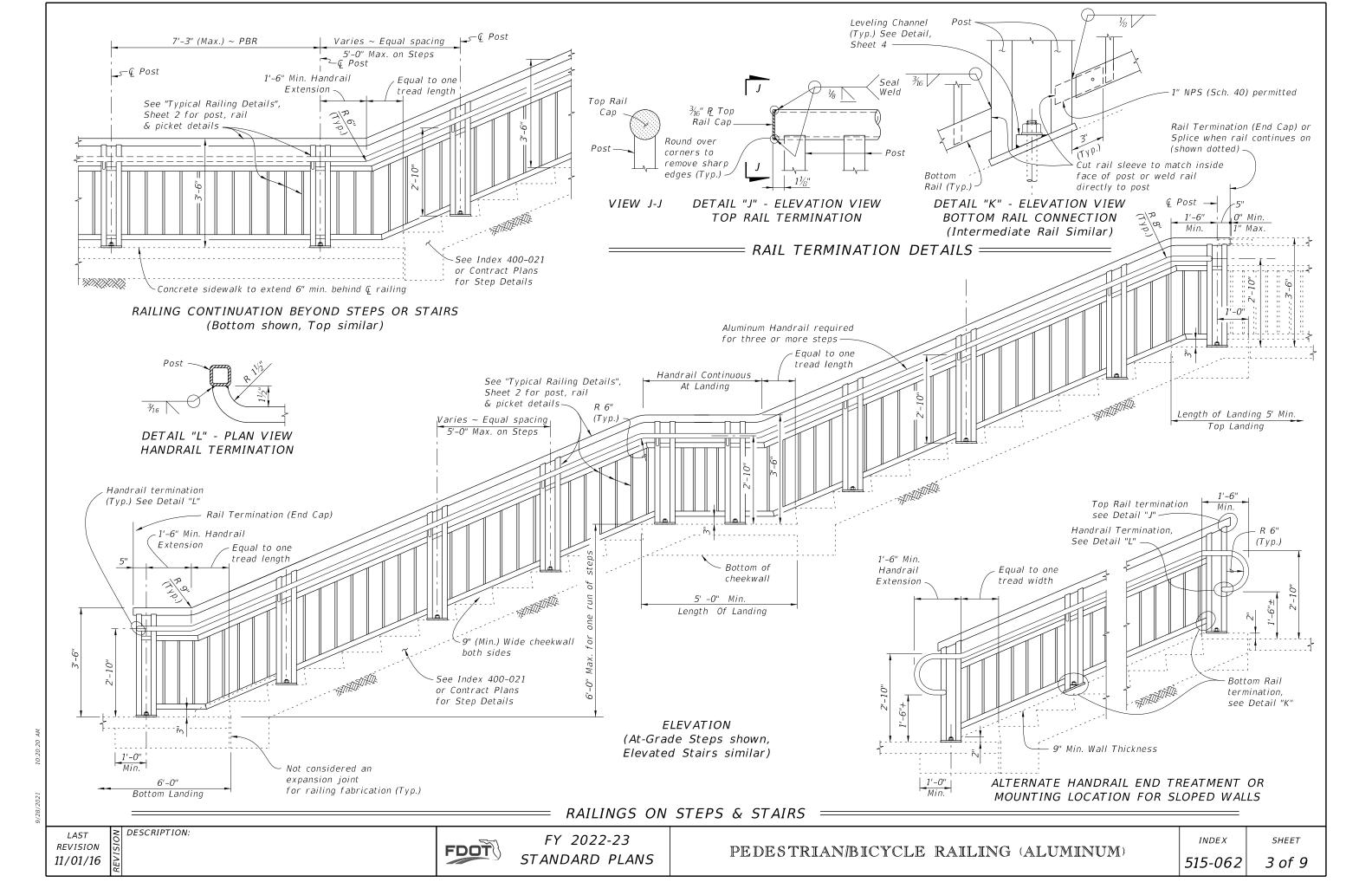
FY 2022-23 STANDARD PLANS PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

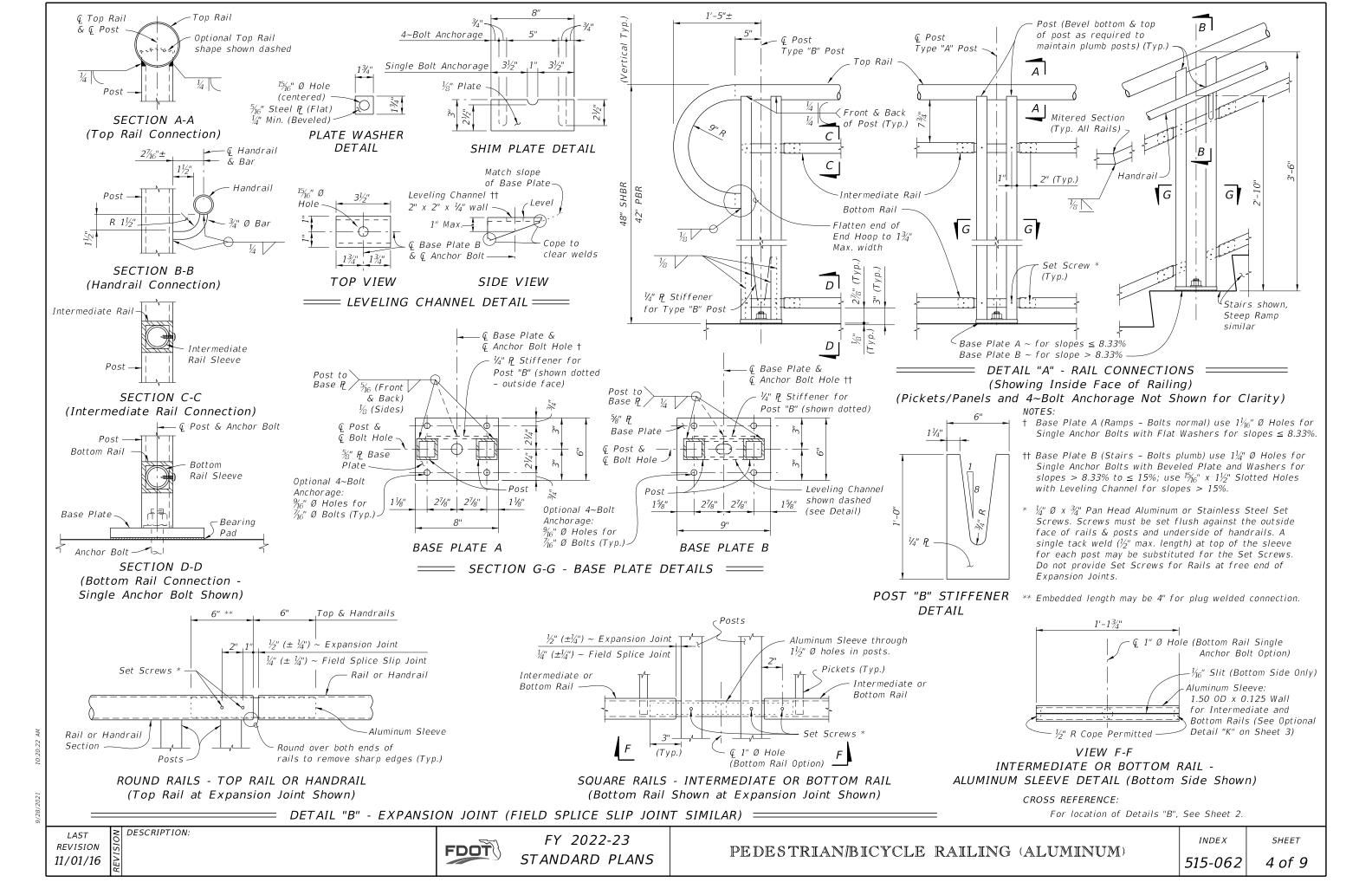
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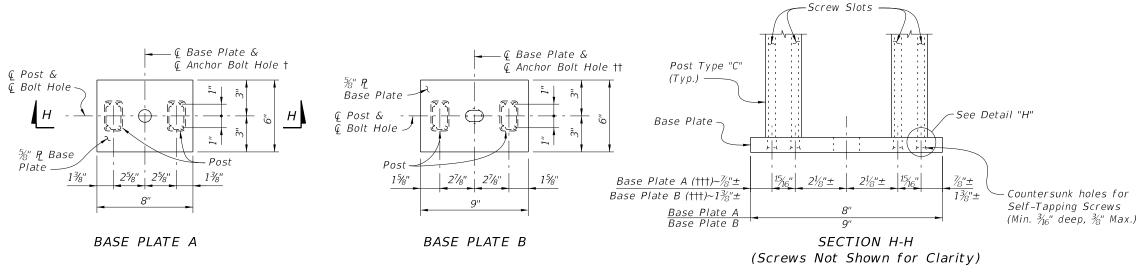
515-062

SHEET

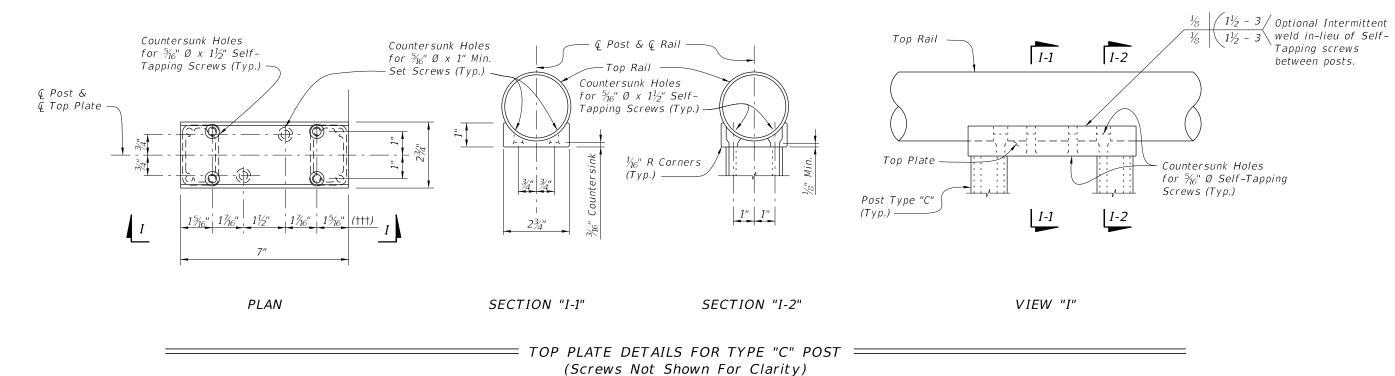












- See Sheet 4 for Notes.
- See Sheet 4 for Notes.
- Length varies for beveled posts on grades. Holes must be drilled plumb to align with screw slot.

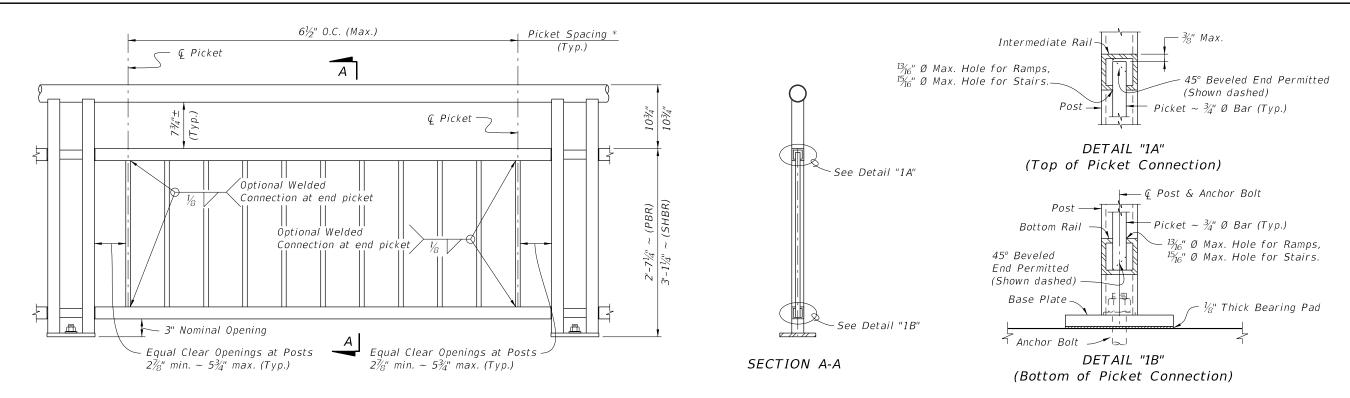
DESCRIPTION: REVISION 11/01/16

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FY 2022-23 STANDARD PLANS

PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

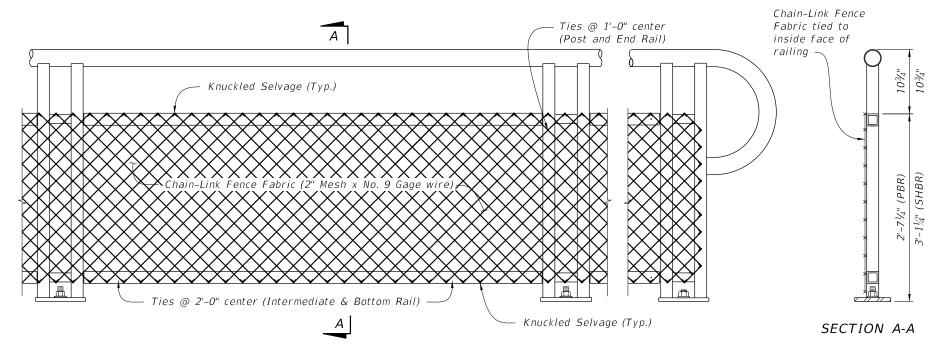
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TYPE 1 - PICKET INFILL PANEL

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)
	_	CITI III LIIVIN	(Continuous	1111111	, arrer,

DESCRIPTION:

1. See Plans for Infill Panel option required.

TABLE 2 - CHA	NIN-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	$\frac{3}{16}$ " (min. thickness) x $\frac{3}{4}$ " (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.

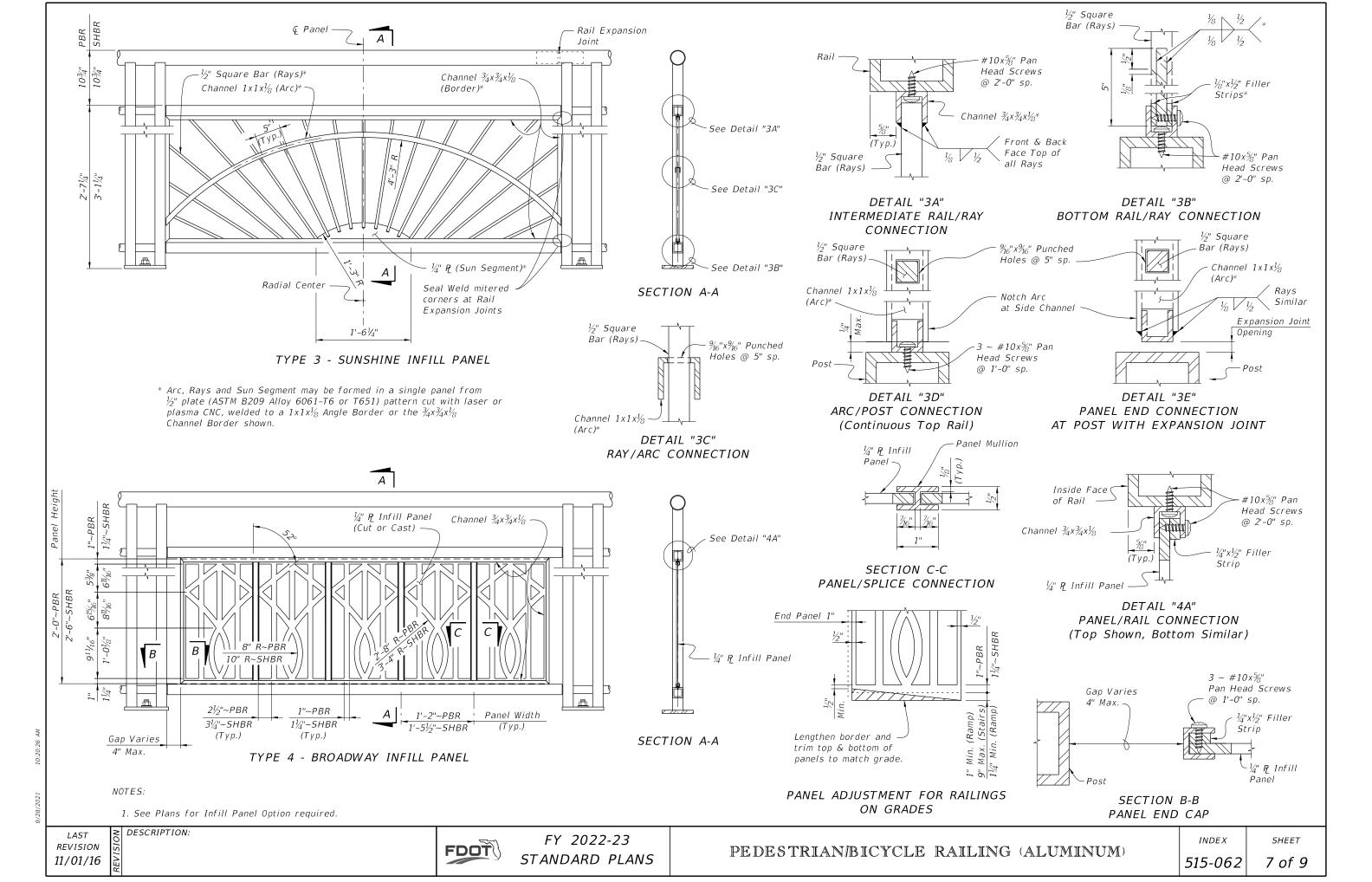
REVISION 11/01/21

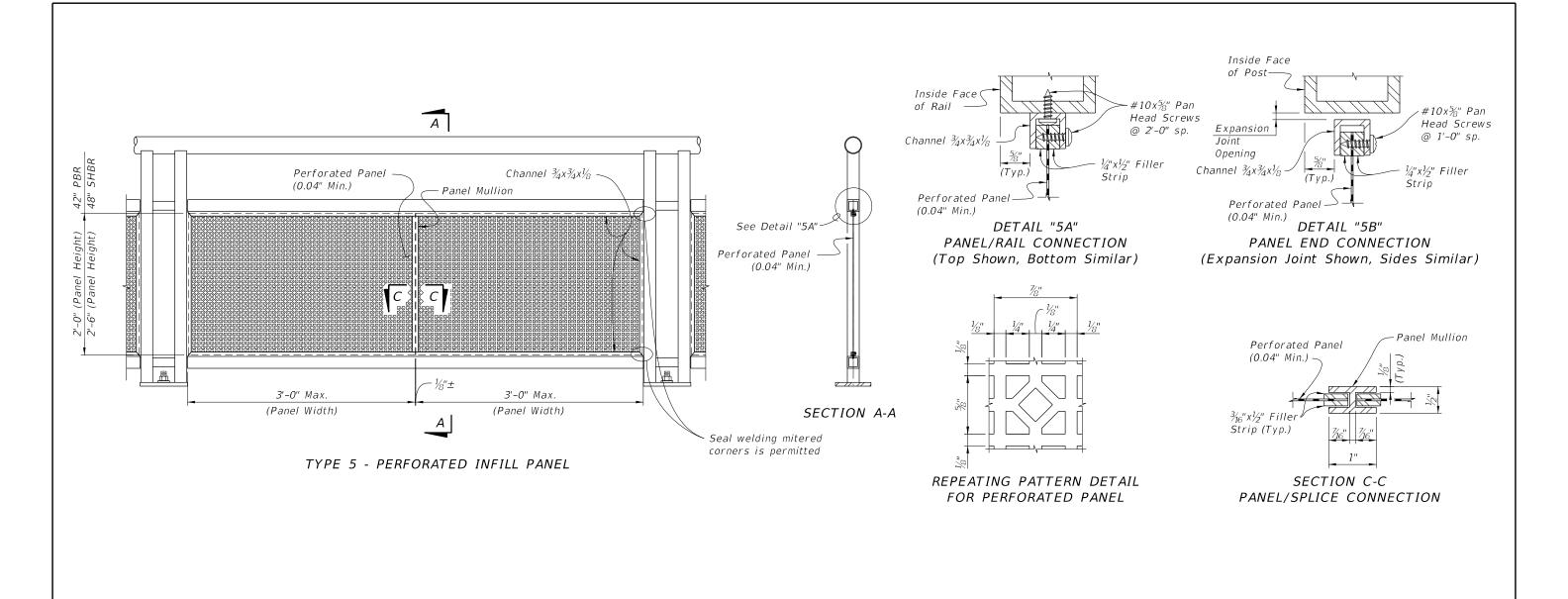
FDOT

FY 2022-23 STANDARD PLANS

PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

INDEX

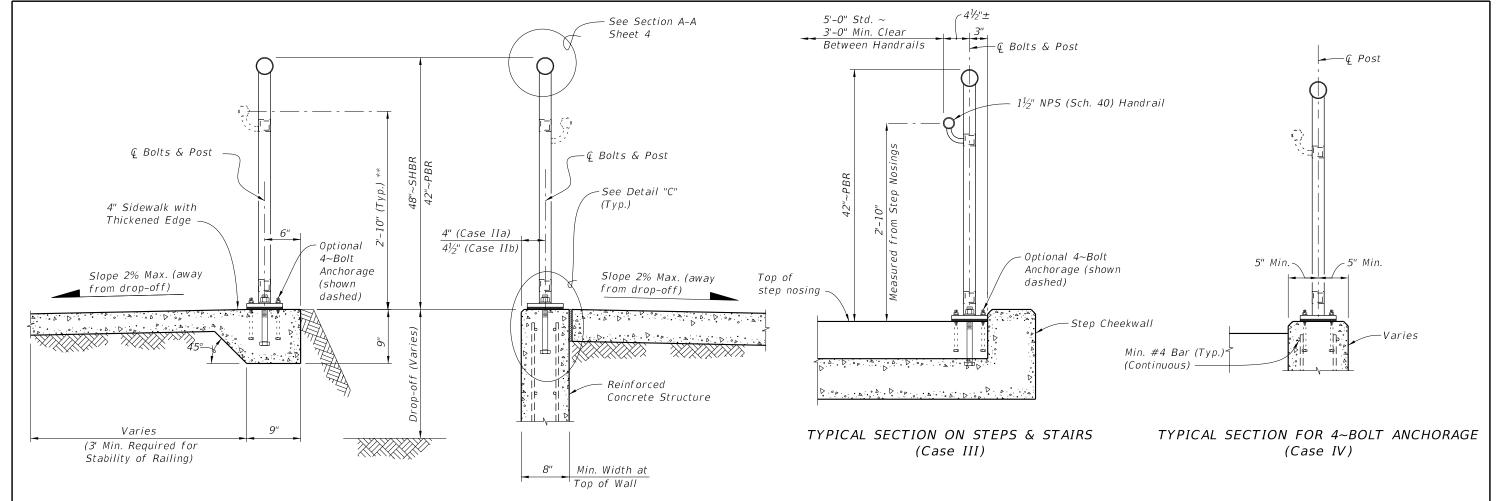




REVISION 11/01/16

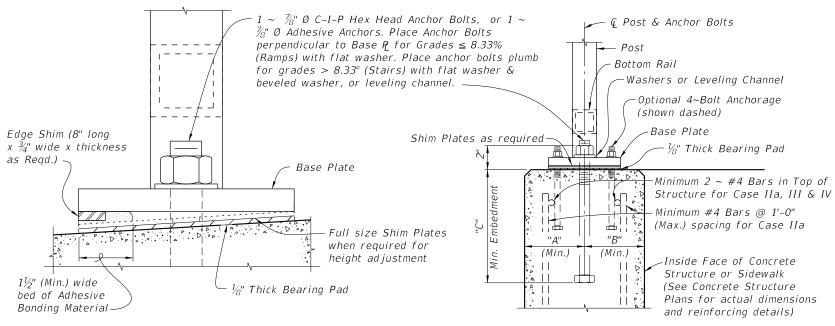
DESCRIPTION:

FDOT



TYPICAL SECTION ON CONCRETE SIDEWALK (Case I)

TYPICAL SECTION ON RETAINING WALL (Case II)



	ANCHOR BOLT TABLE						
CASE	CTDUCTURE	DIMENSIONS			ANCHOR LENGTH		ANGUOD
CASE STRUCTURE TYPE		"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"	11"	%" Ø
IIb	Gravity Wall Index 400–011	4 ¹ / ₂ "	3½" @ top	9"	10½"	11"	7⁄8" Ø
III	Step Cheekwall	4½"	4½"	9"	10½"	11"	%" Ø
IV	Varies	5"	5"	5"	6½"	7"	7∕16" Ø

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

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)

LAST REVISION 11/01/20

FDOT

FY 2022-23 STANDARD PLANS

PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

INDEX 515-062

NOTES:

- 1. Shop Drawings are required.
- 2. Work with Specification 515.
- 3. <u>Materials:</u>
- 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	DESIGNATION	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	

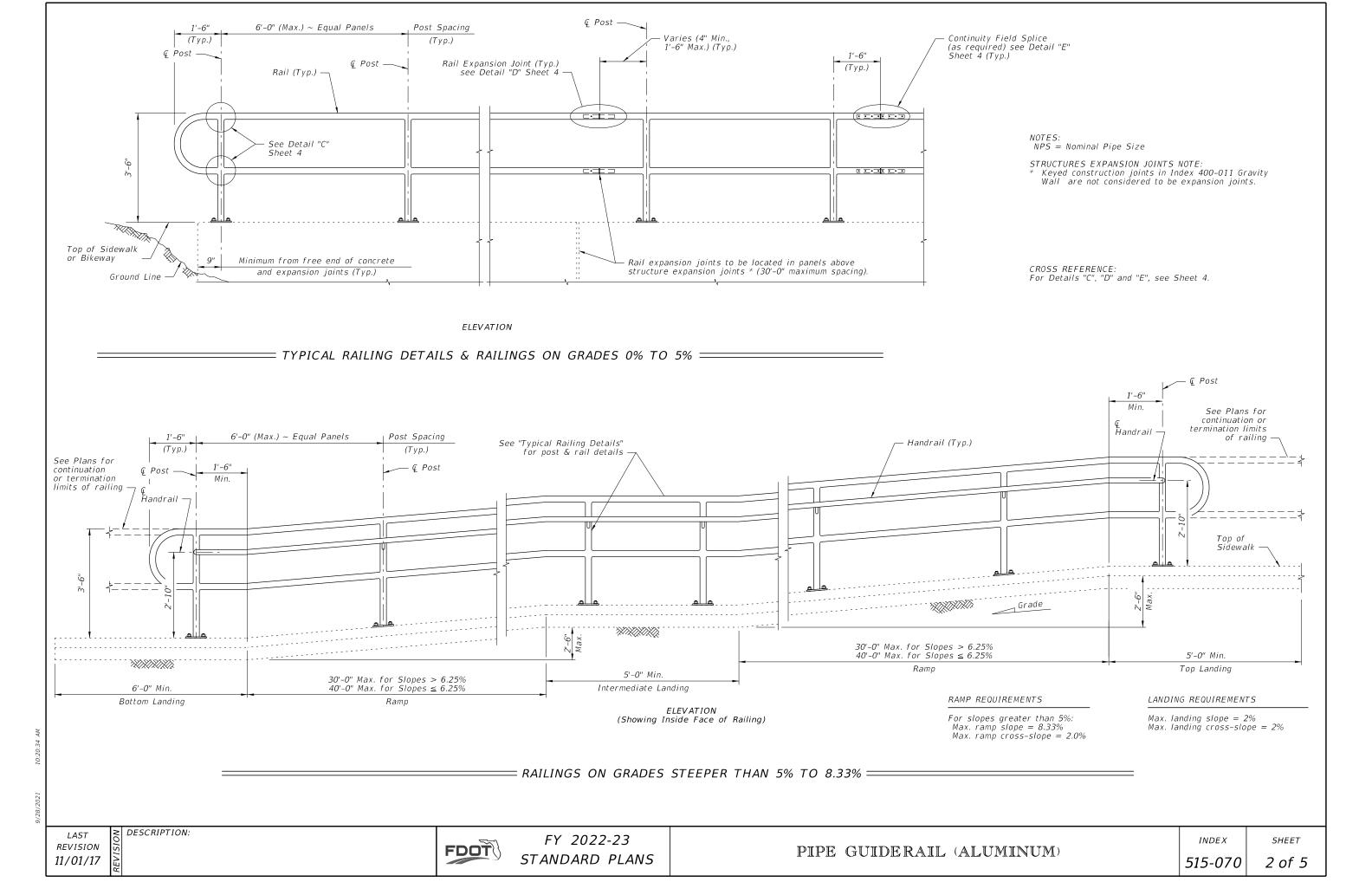
- E. Galvanized Steel Fasteners:
- a. Hex Head Bolts: ASTM A 307 Type 1 or ASTM F1554 Grade 36
- b. Adhesive Anchors: ASTM F1554 Grade 36 fully threaded rods
- c. Hex Nuts: ASTM A563
- d. Flat Washers: ASTM F436
- F. Aluminum Shims: ASTM B209, Alloy 6061
- G. Bearing Pads: Plain, Fabric Reinforced, or 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

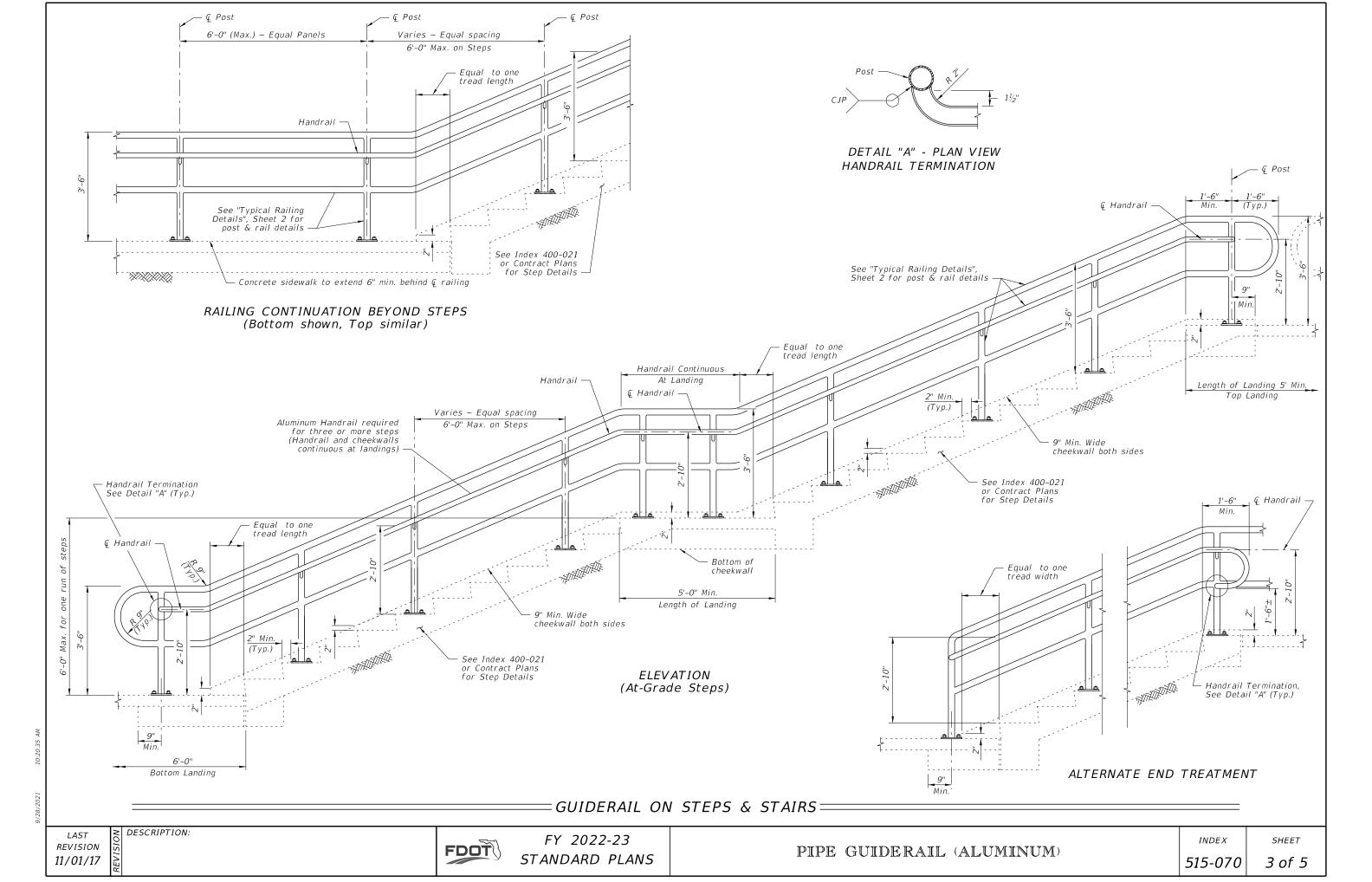
- D. Corners and changes in tangential longitudinal alignment may be made continuous with a 9" bend radius or terminated at adjoining sections with a standard end hoop when handrails are not required.

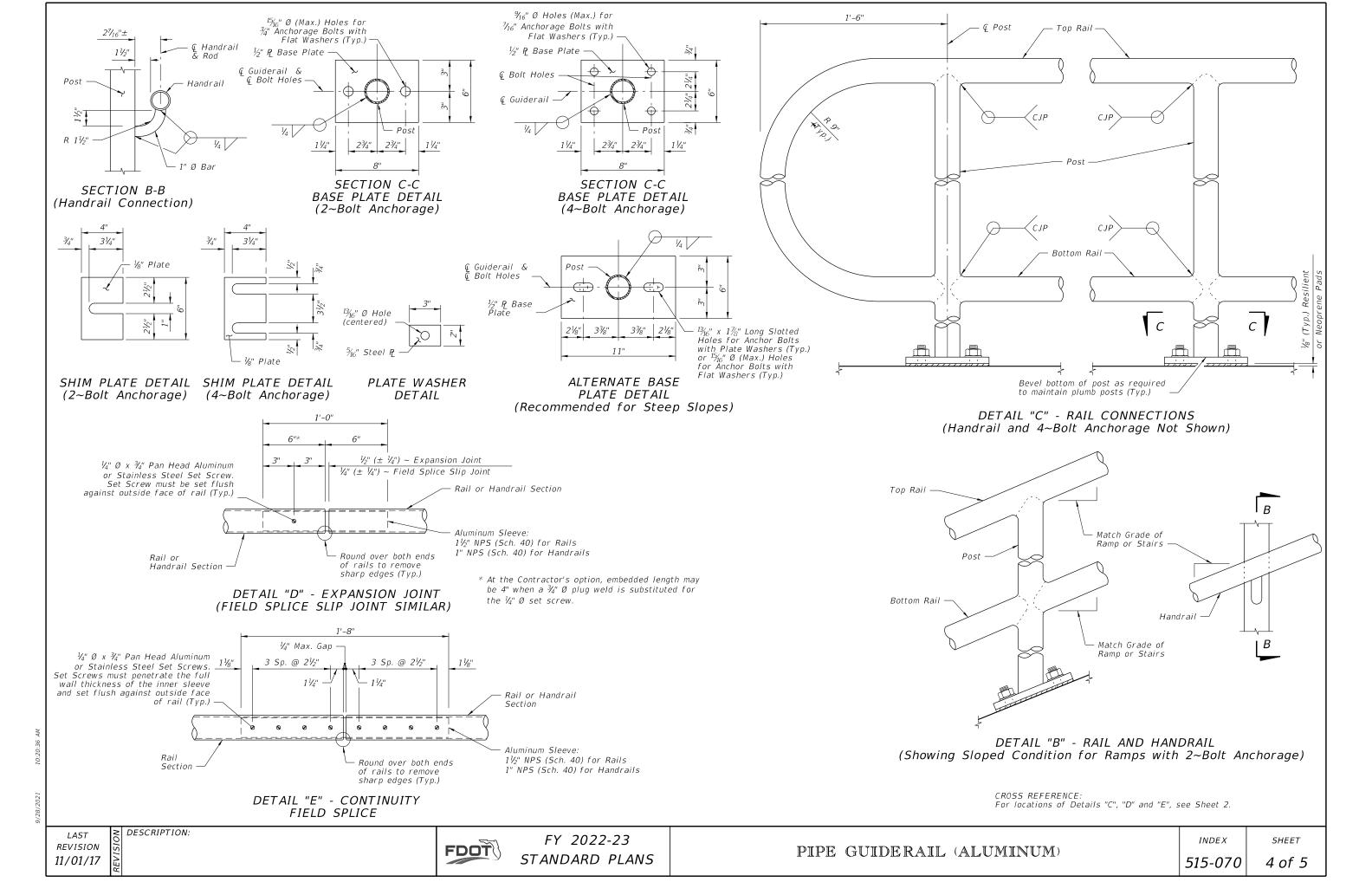
 E. For curved longitudinal alignments, shop bend top and bottom rails and handrails to match the alignment radius.

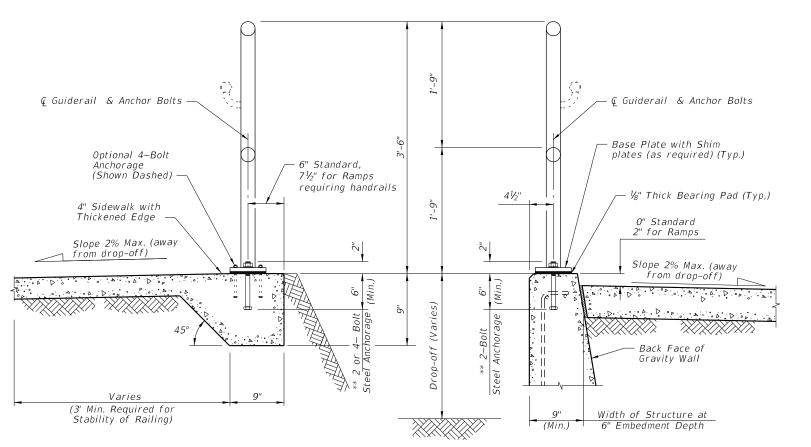
 F. For changes in tangential longitudinal alignment greater than 45°, position posts a maximum of 2'-0" each side of the corner, not at the corner apex.
- 5. Handrails are required and must be continuous at landings for:
- A. Grades Steeper than 5%
- B. Three or more steps
- 6. Cutting of reinforcing steel is permitted for post installed anchor bolts.

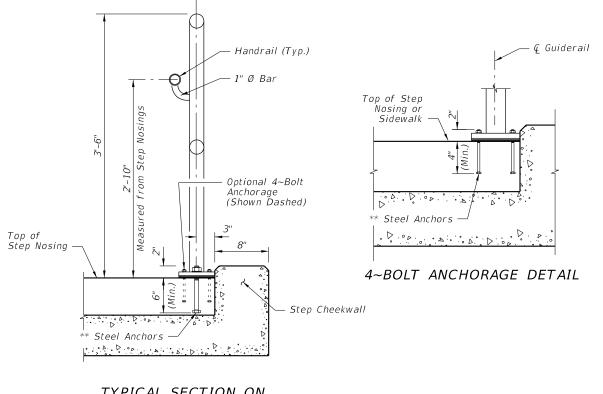
DESCRIPTION:











⊊ Guiderail &

Änchor Bolts

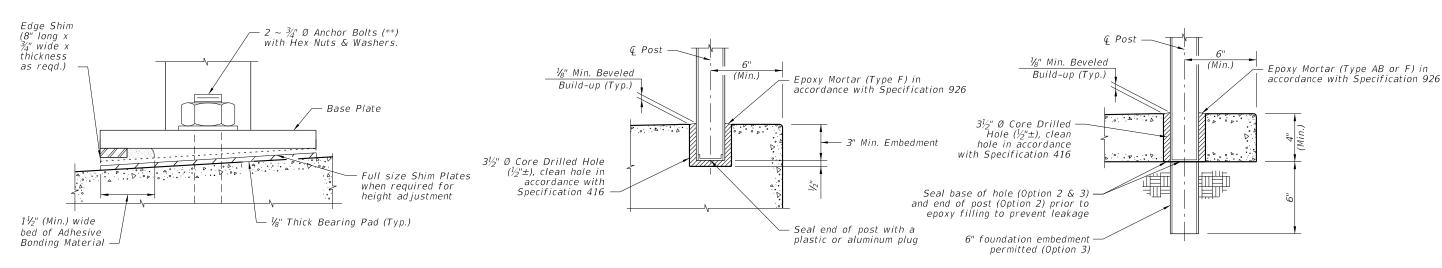
TYPICAL SECTION ON CONCRETE SIDEWALK

TYPICAL SECTION ON GRAVITY WALL (Other Retaining Walls Similar)

TYPICAL SECTION ON STEPS & STAIRS

5'-0" Std. ~ 3'-0" Min. Clear |

Between Handrails



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

Permitted (C-I-P); Galvanized Adhesive Anchors Permitted

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

REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

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SHEET 5 of 5

515-070

NOTES:

- 1. Shop Drawings are required, refer to Specification 515.
- 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

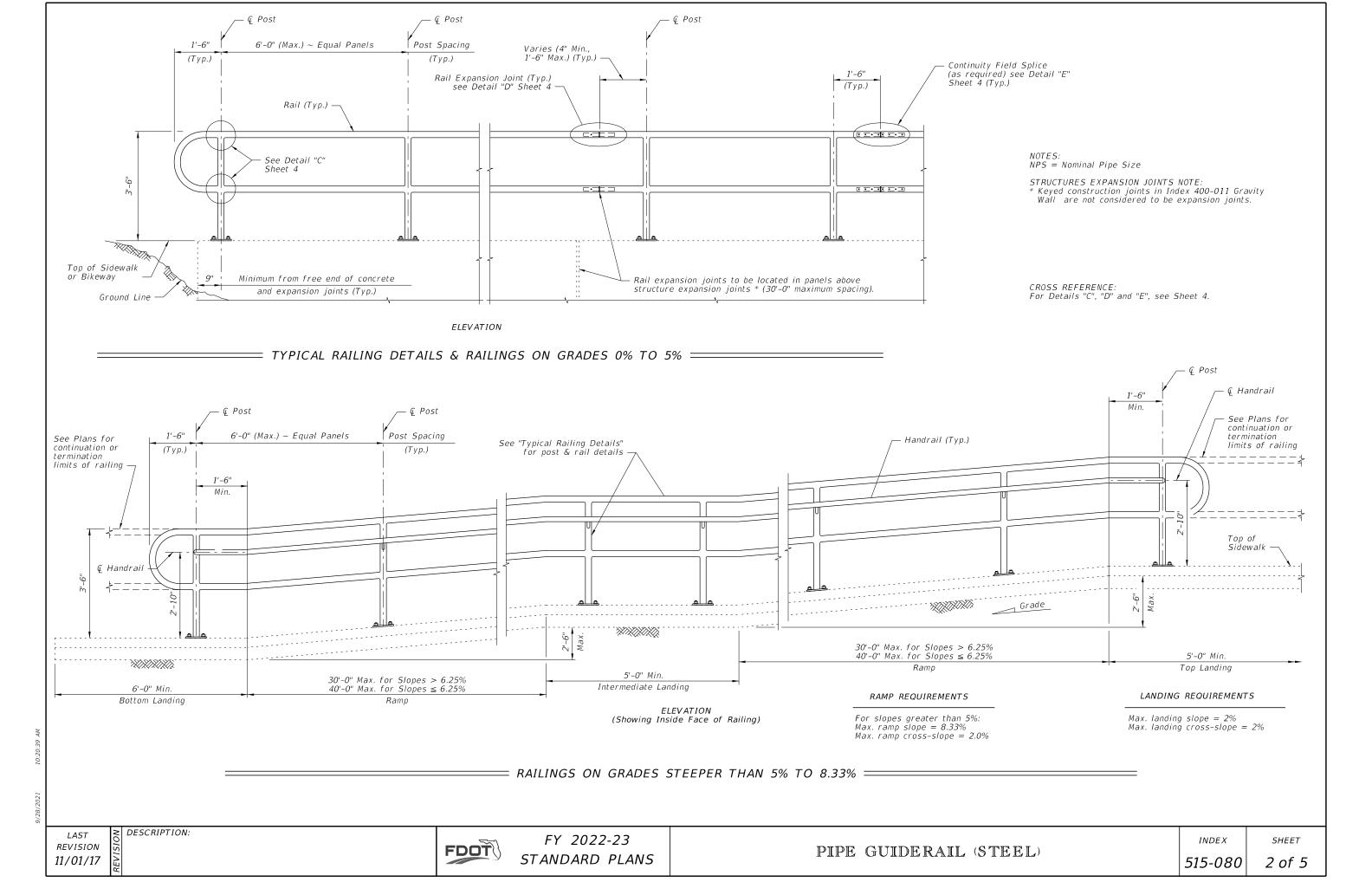
RAILING MEMBER DIMENSIONS TABLE				
MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS	
Posts	2" NPS (Sch. 40)	2.375"	0.154"	
Rails	2" NPS (Sch. 40)	2.375"	0.154"	
Rail Joint/Splice Sleeves	1½" NPS (Sch. 40)	1.900"	0.145"	
Handrails Joint/Splice Sleeves	1" NPS (Sch. 40) HSS1.500x0.125	1.315" 1.500"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

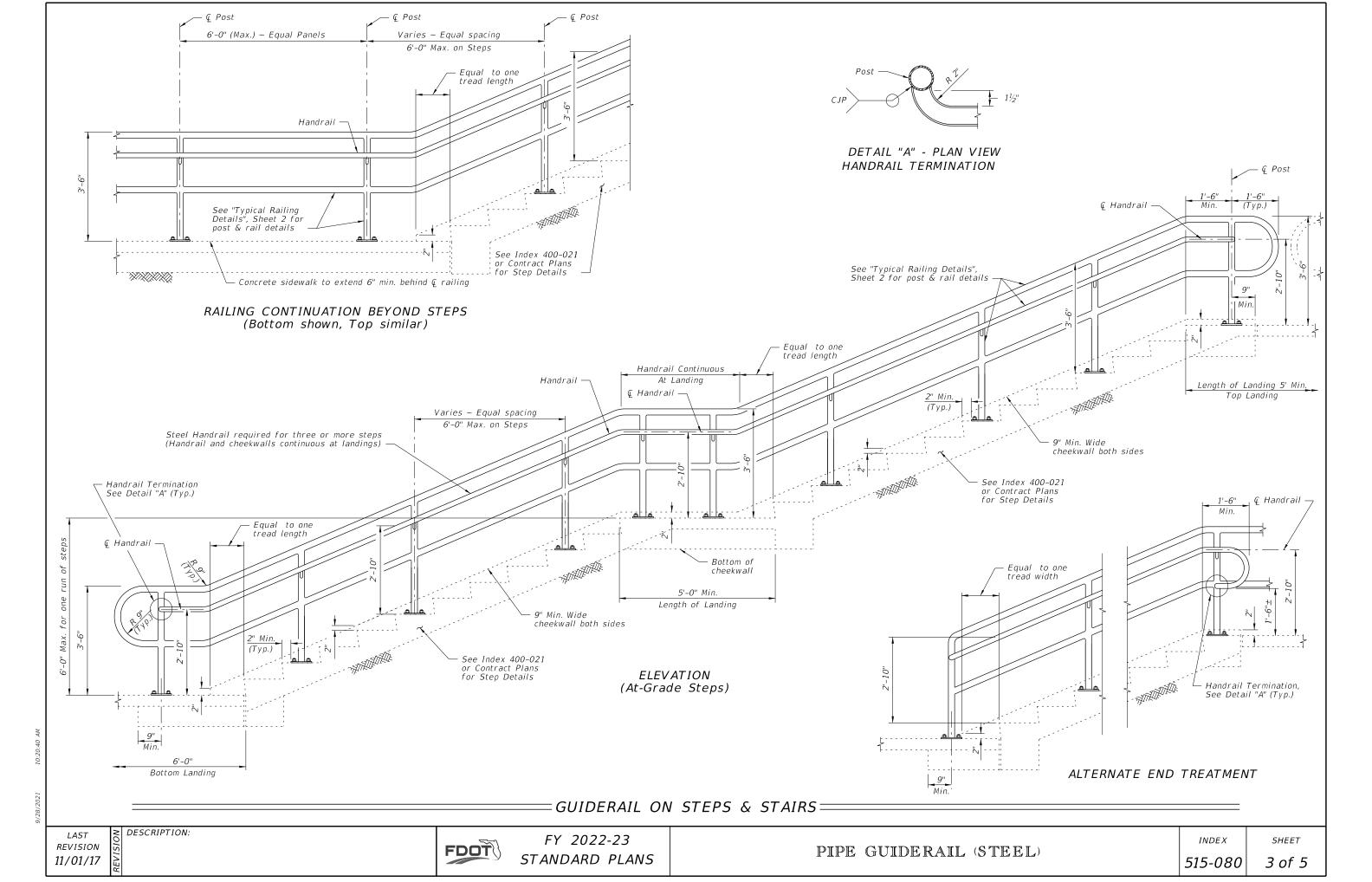
- D. Galvanized Steel Fasteners:
- a. Hex Head Bolts: ASTM A307 Type 1 or ASTM F1554 Grade 36 b. Adhesive Anchors: ASTM F1554 Grade 36 fully threaded rods
- c. Hex Nuts: ASTM A563
- d. Flat Washers: ASTM F436
- E. Aluminum Shims: ASTM B209, Alloy 6061
- F. Bearing Pads: Plain, Fabric Reinforced, or Fabric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

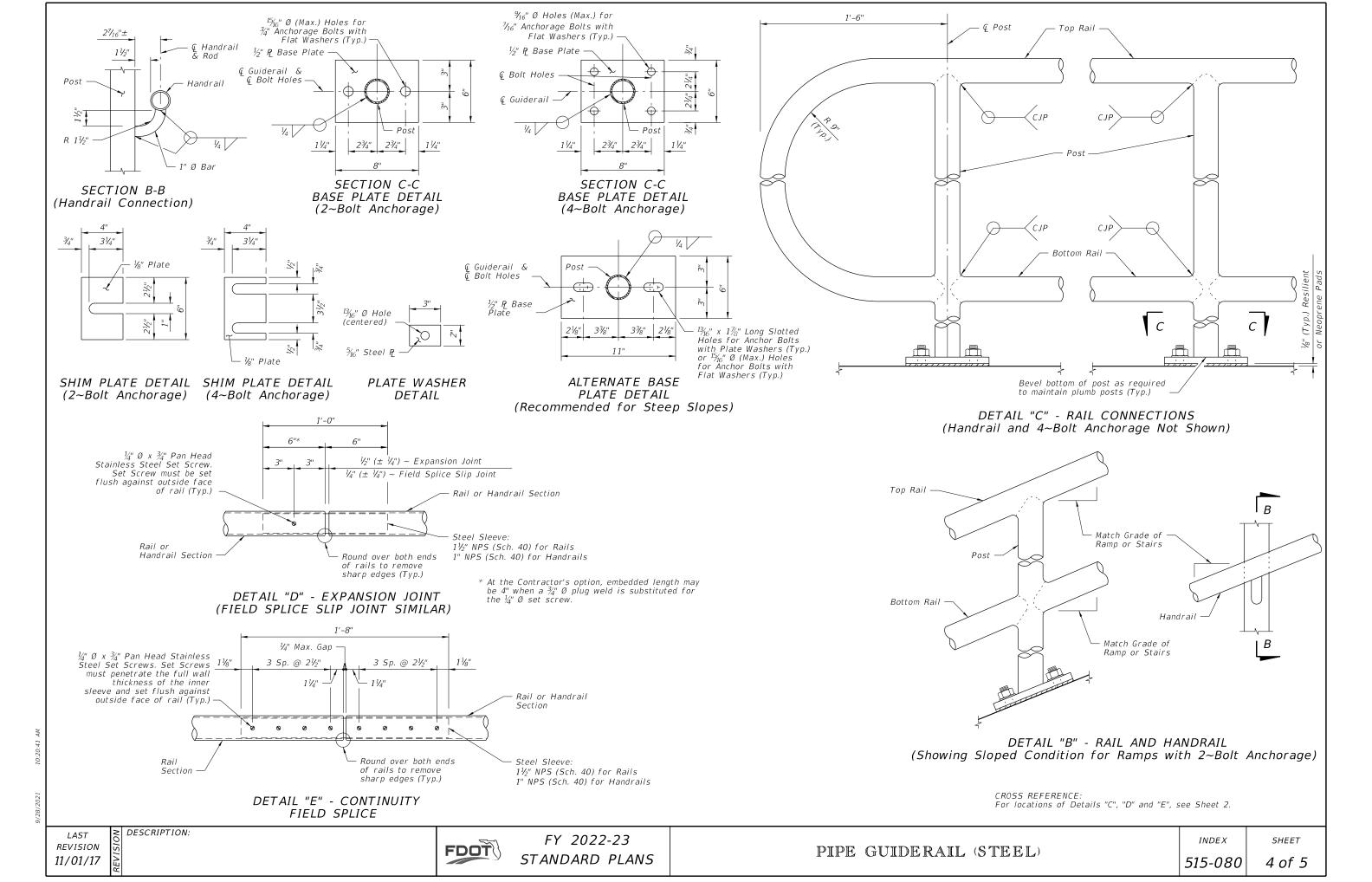
3. Fabrication:

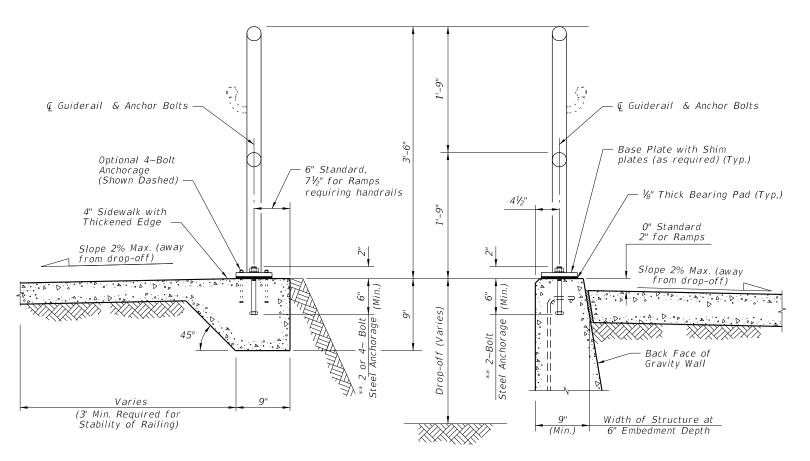
- A. Place expansion joints at a maximum of 30'-0"spacing.
- B. Field splices are similar to the expansion joint detail and may be approved by the Engineer to facilitate handling; but top rail must be continuous across a minimum of two posts.
- C. Continuity field splice (Detail "E") only use to make 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.

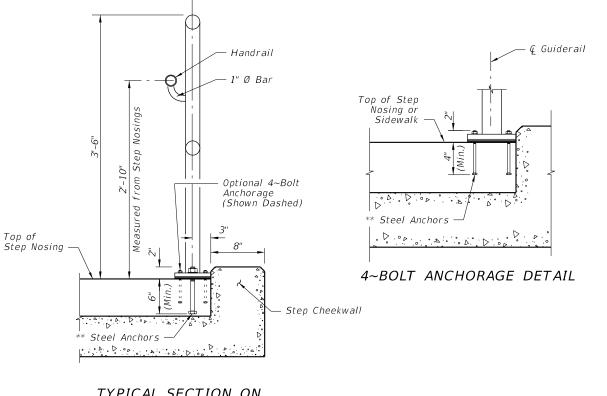
DESCRIPTION:











Guiderail &

Änchor Bolts

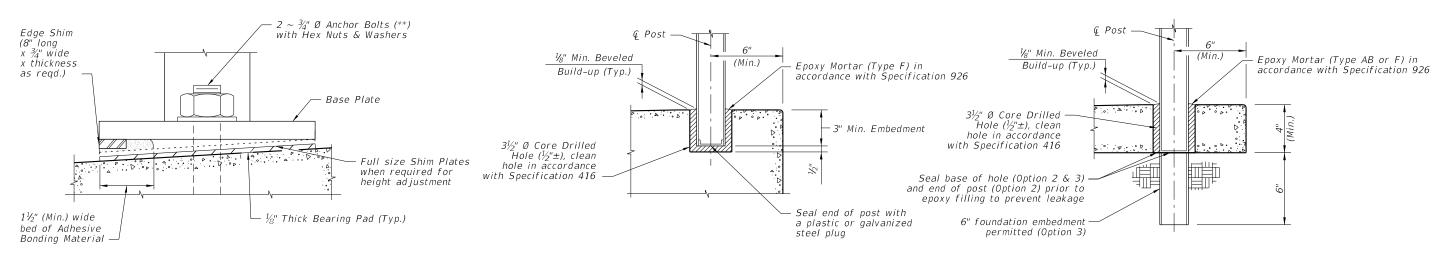
TYPICAL SECTION ON CONCRETE SIDEWALK

TYPICAL SECTION ON GRAVITY WALL (Other Retaining Walls Similar)

TYPICAL SECTION ON STEPS & STAIRS

5'-0" Std. ~ 3'-0" Min. Clear |

Between Handrails



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 $\sim \frac{3}{4}$ " 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 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.

REVISION 11/01/20

DESCRIPTION:

FDOT

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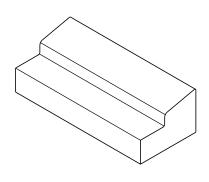
SHEET 5 of 5

515-080

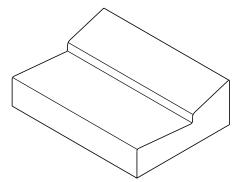
GENERAL NOTES:

- 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.

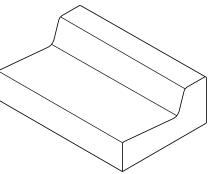
	TABLE OF CONTENTS:
Sheet	Description
1	General Notes and Contents
2	Concrete Curb and Gutter
3	Curb and Gutter Joints and Endings, Concrete Bumper Guard, and Asphaltic Concrete Curb



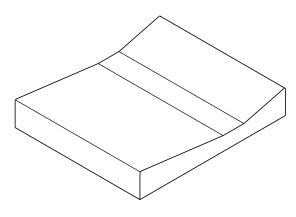




TYPE E

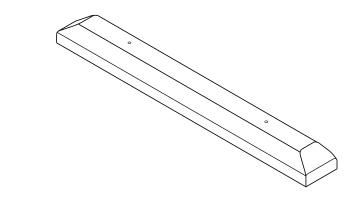


TYPEF



SHOULDER GUTTER

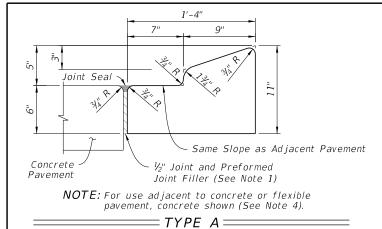
TYPE A, TYPE E, TYPE F, AND SHOULDER GUTTER (Other Types Similar)

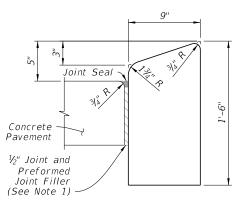


====== CONCRETE BUMPER GUARD ====

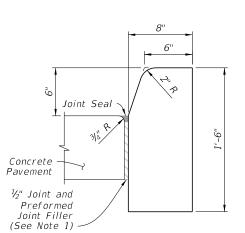
11/01/21

≥ DESCRIPTION:





NOTE: For use adjacent to concrete or flexible pavement, concrete shown. TYPE B=



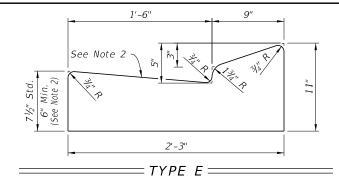
NOTE: For use adjacent to concrete or flexible pavement, concrete shown.

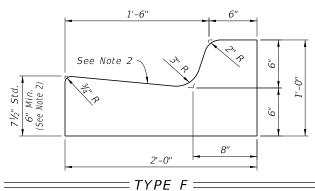
= TYPE D=

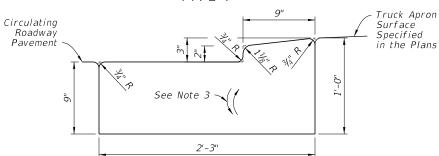
NOTES:

- 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.

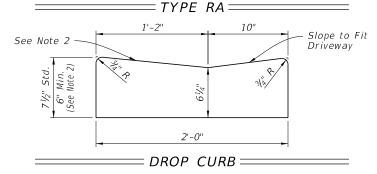
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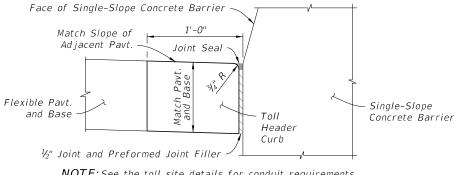




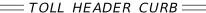


NOTE: Traffic Bearing Sections for use in Roundabout Central Island Construction.

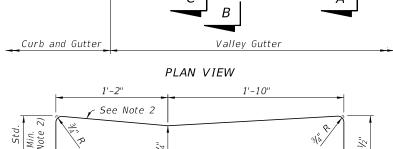


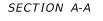


NOTE: See the toll site details for conduit requirements.

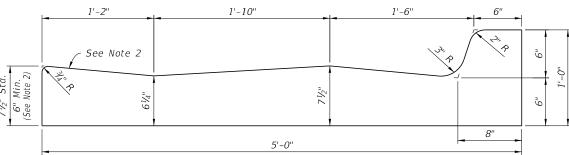


20' R or As Shown in Plans ½" Expansion Joint

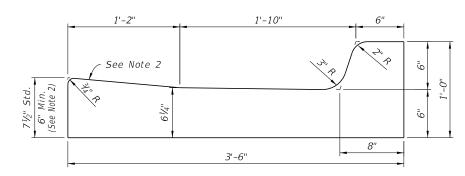




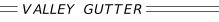
3'-0"

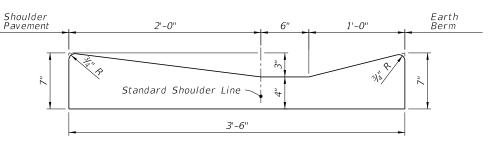


SECTION B-B



SECTION C-C





SHOULDER GUTTER ==

CONCRETE CURB AND GUTTER

REVISION 11/01/21

FDOT

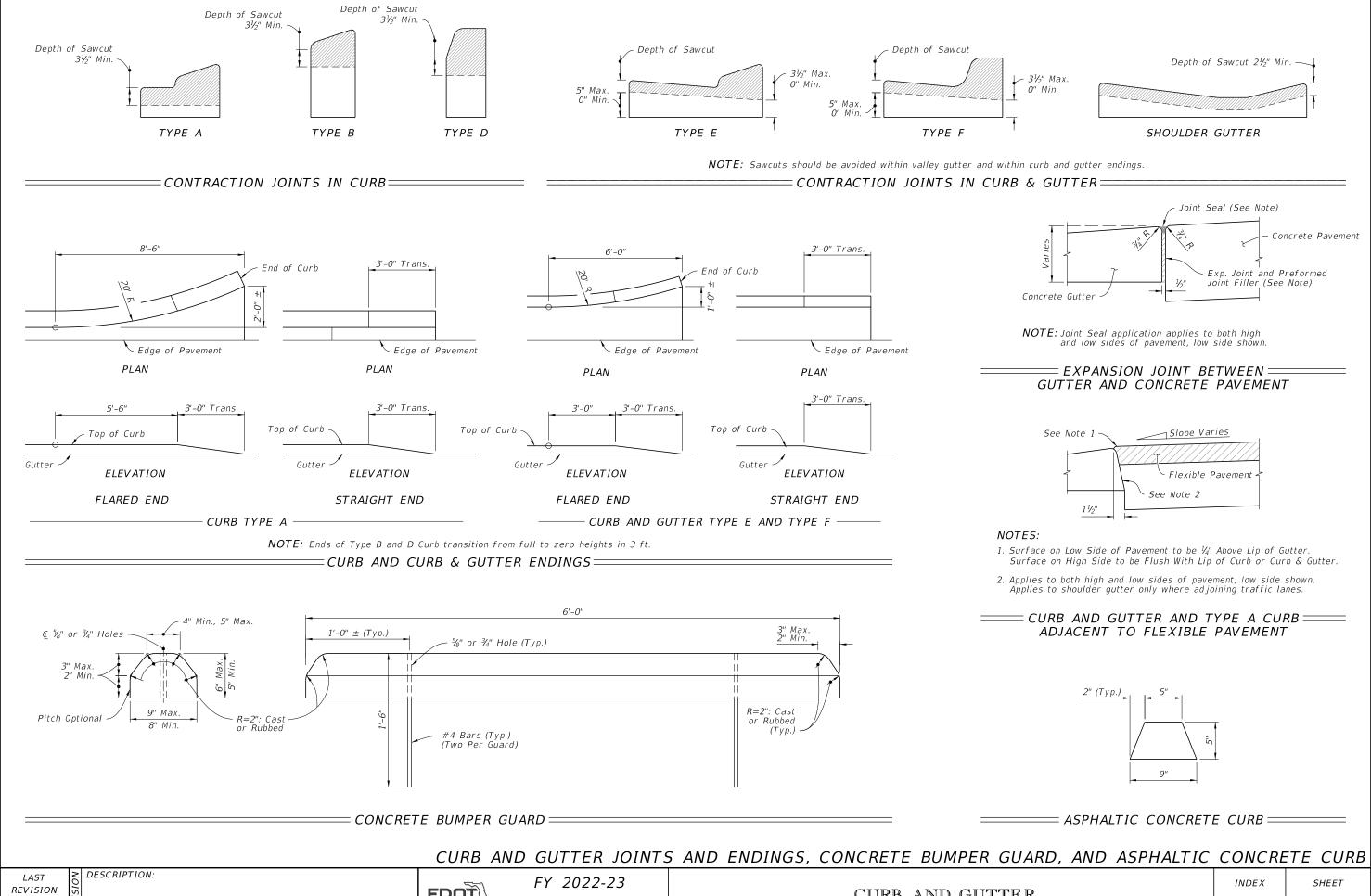
FY 2022-23 STANDARD PLANS

CURB AND GUTTER

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Future Curb and Gutter Construction

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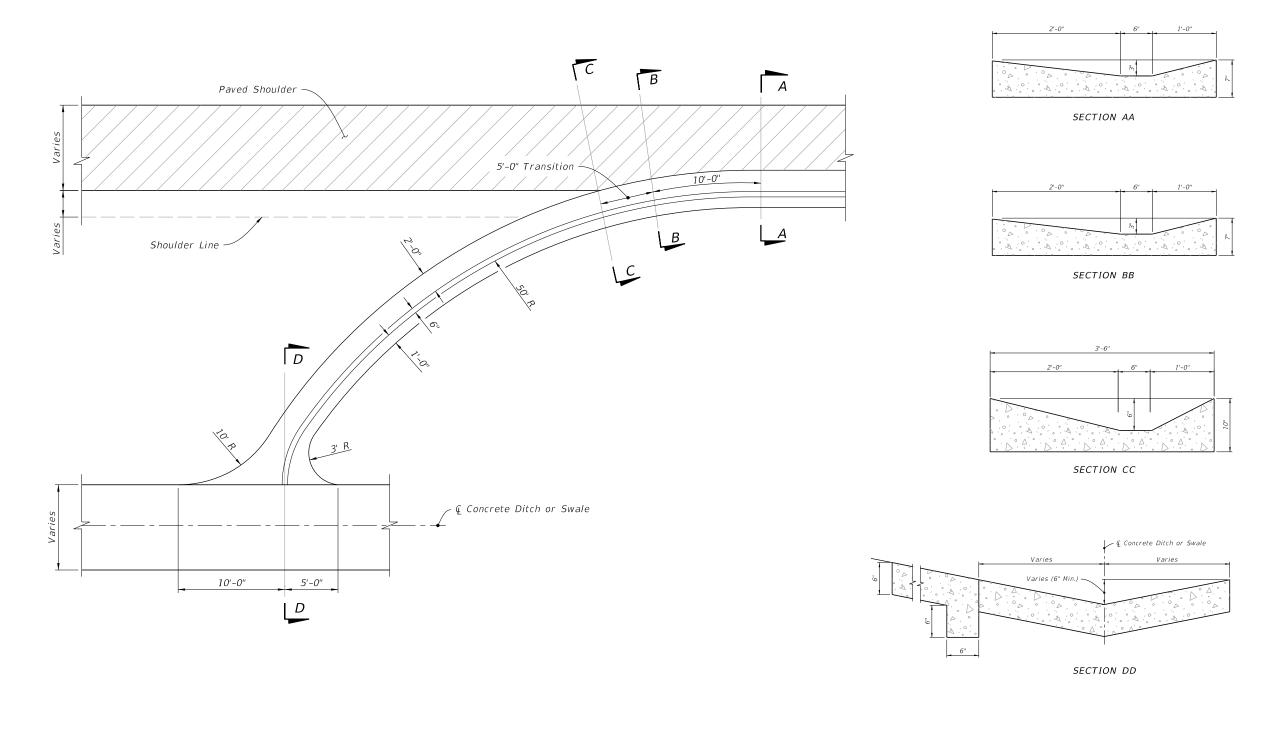
11/01/21

FDOT

STANDARD PLANS

CURB AND GUTTER

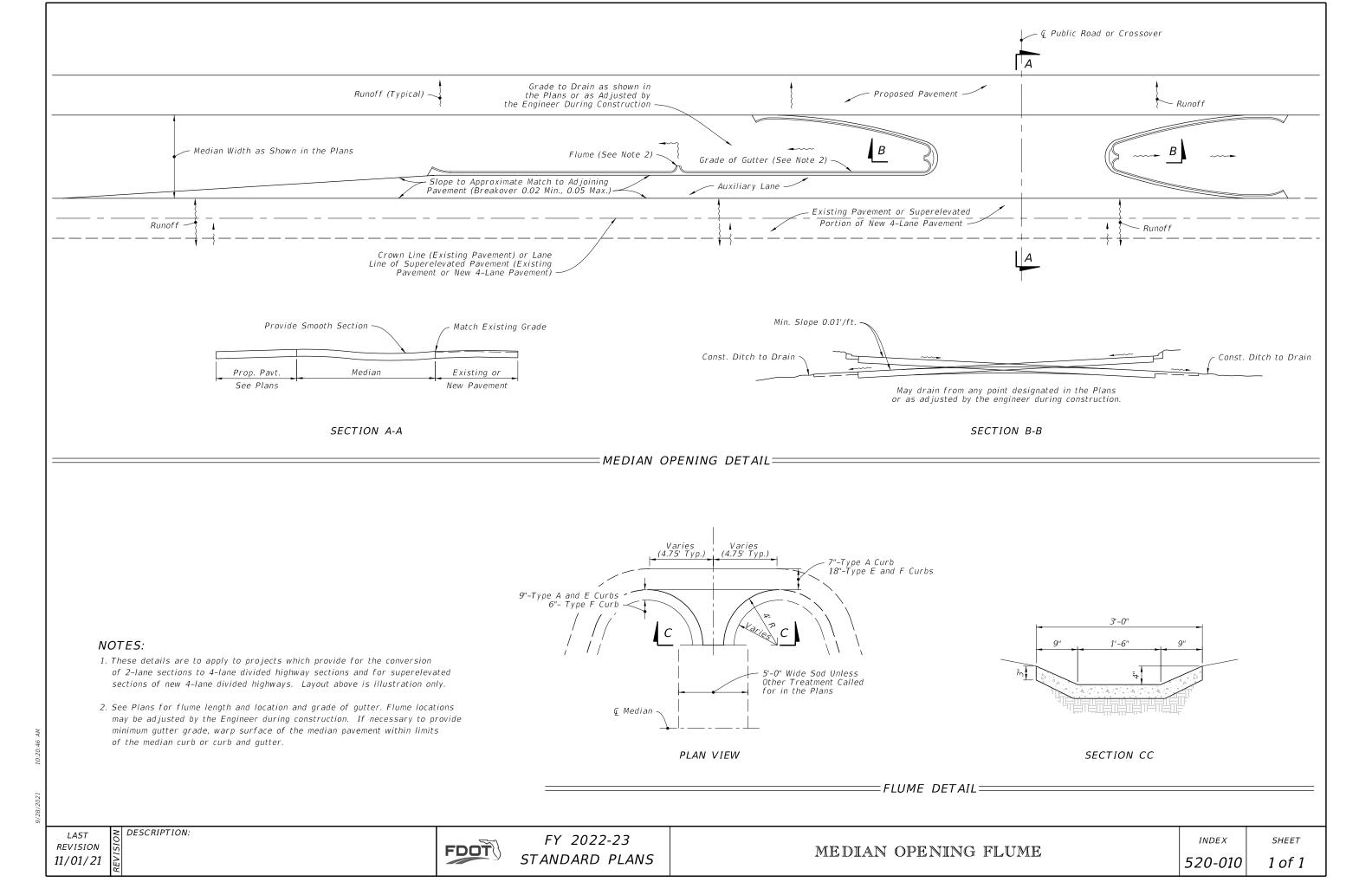
520-001

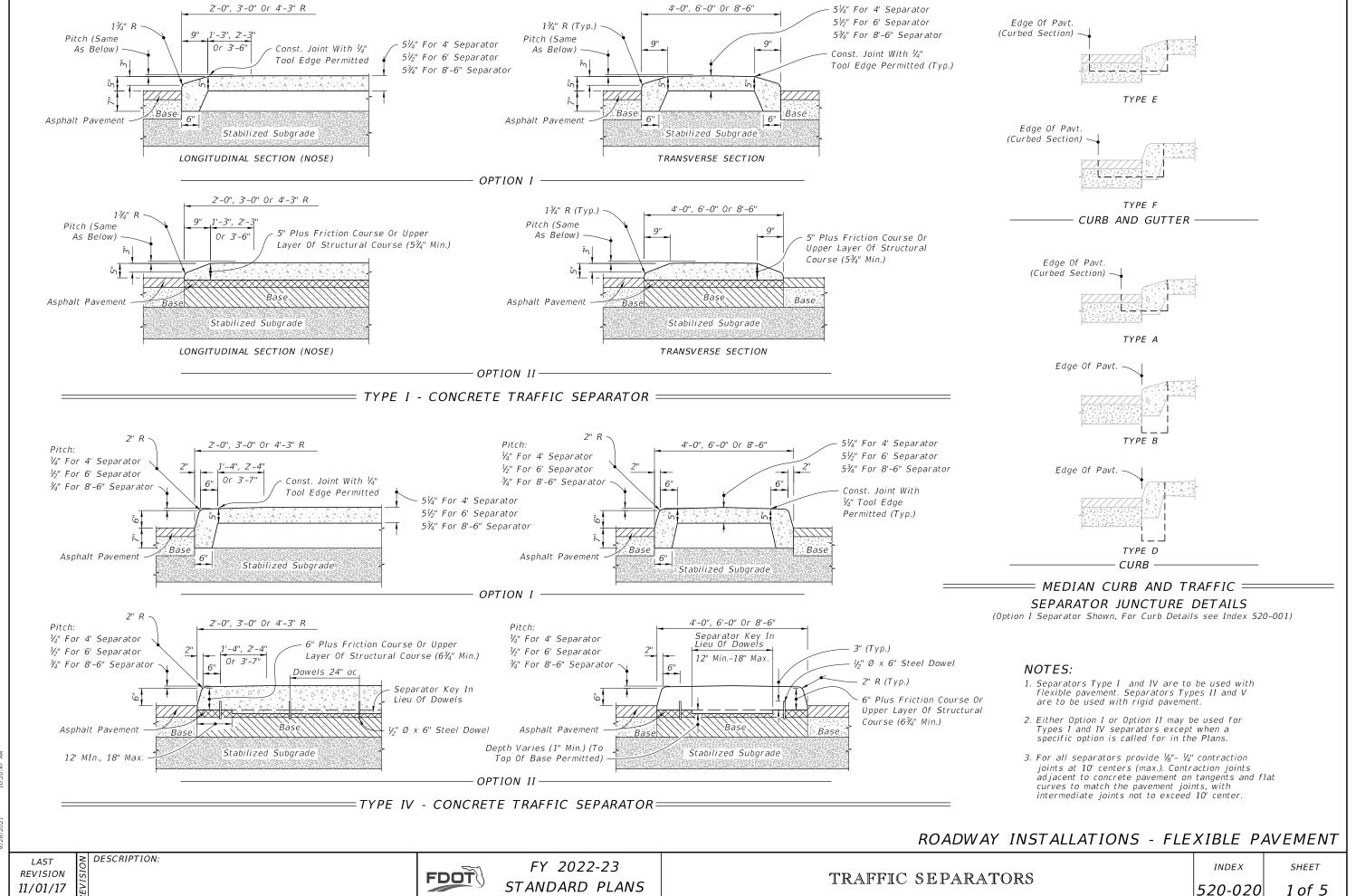


= CONCRETE SPILLWAY AT END OF SHOULDER GUTTER DETAILS =

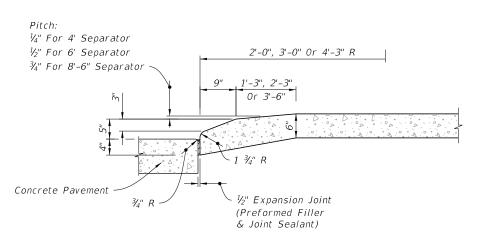
LAST REVISION 11/01/21

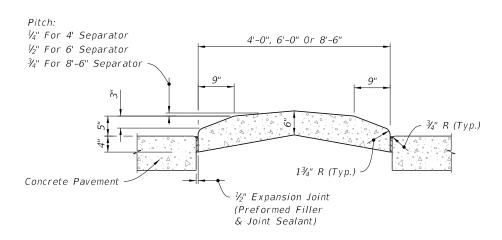
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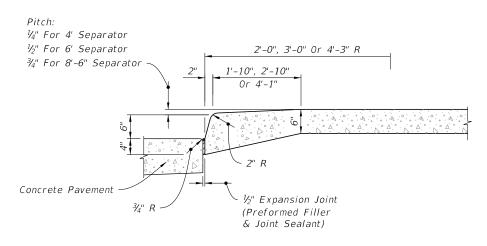


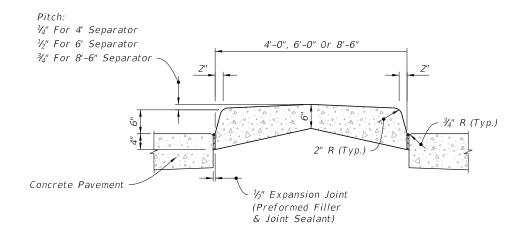


LONGITUDINAL SECTION (NOSE)

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

DESCRIPTION:

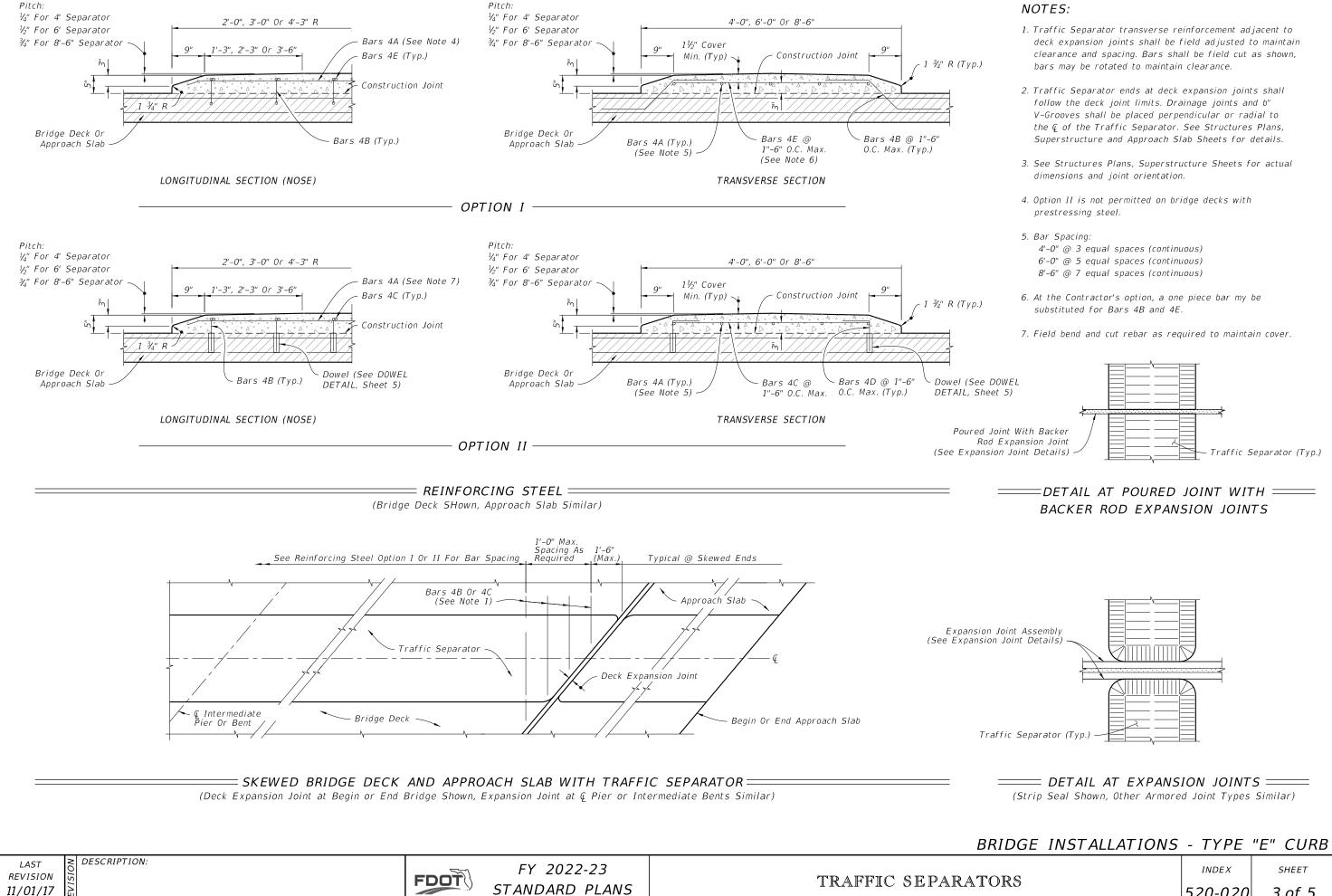
FDOT

FY 2022-23 STANDARD PLANS

TRAFFIC SEPARATORS

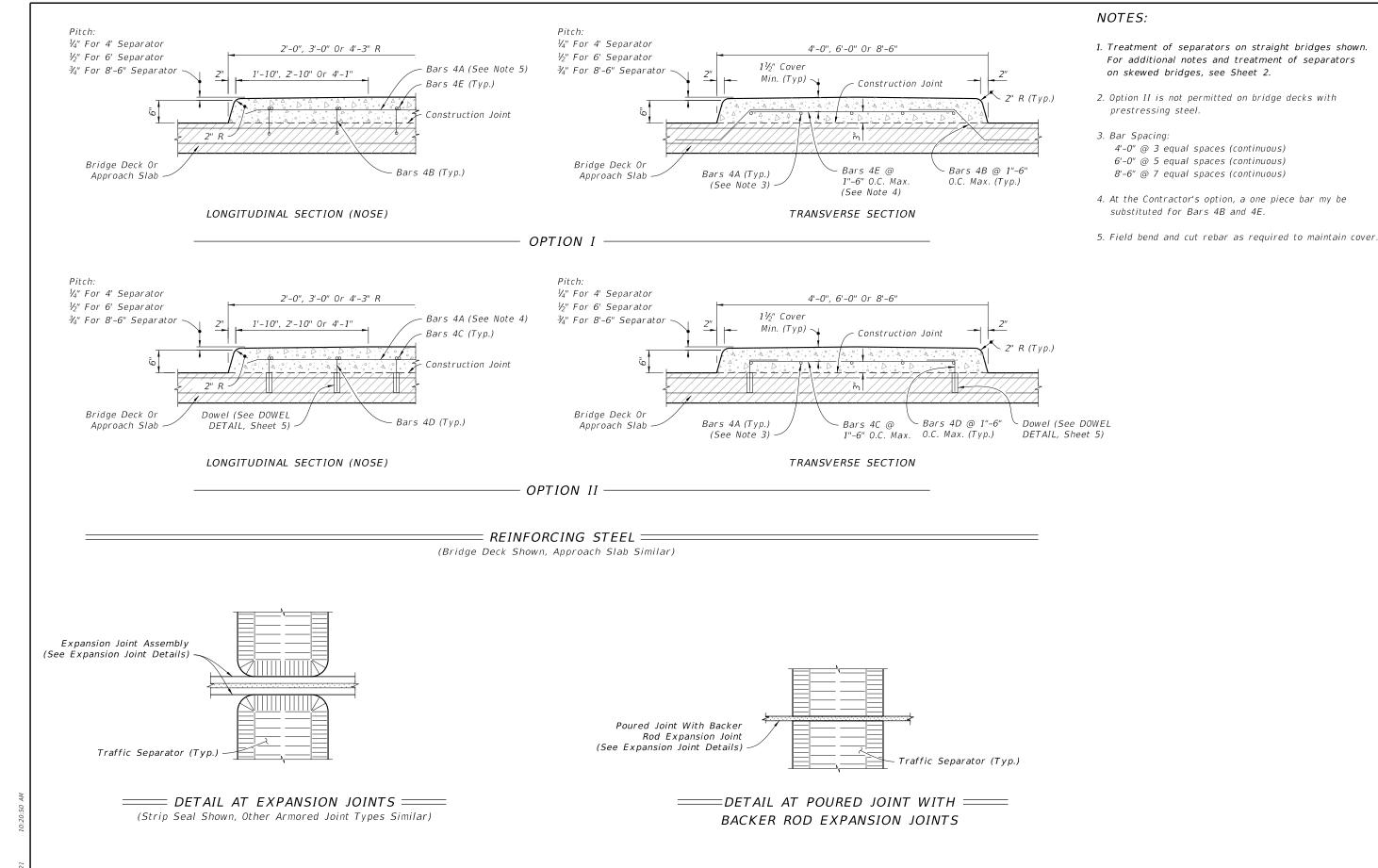
INDEX 520-020

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STANDARD PLANS

520-020



BRIDGE INSTALLATIONS - TYPE "F" CURB

REVISION 11/01/17

DESCRIPTION:

FDOT

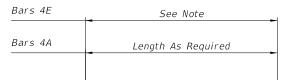
FY 2022-23 STANDARD PLANS

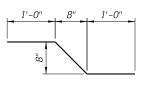
TRAFFIC SEPARATORS

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SHEET

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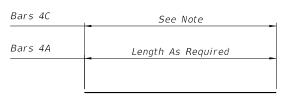


Bars 4A & 4E

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 —

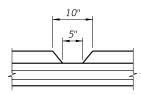
REINFORCING STEEL NOTES:

1. All dimensions are out to out.

DESCRIPTION:

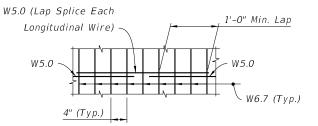
2. The 8" vertical dimension shown for Bars 4B and 4D are based on a slab $8\frac{1}{2}$ " thick or greater without a wearing surface. If slab thickness is less than 81/3", decrease this dimension by an amount equal to the difference in thickness. If a wearing surface is to be provided, increase this 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)



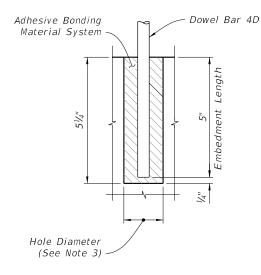
SPLICE DETAIL (Between WWR 3 x 4 - W5.0 x W6.7 Sections)

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 Et	_	0.164 CY ner Et

NOSE:

	<i>TYPE "E"</i>		TYPE "F
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

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TRAFFIC SEPARATORS

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5	Median Barrier - Grade Separated
6	Median Barrier - 56" Height Section for Barrier-Mounted Sign Support Shielding - Symmetrical
7	Median Barrier - 56" Height Section for Barrier-Mounted Sign Support Shielding - Asymmetrical
8	Median Barrier - 56" Height Section for Barrier-Mounted Dual Sign Support Shielding - Min. Width
9	Median Barrier - 38" Height Split Section for Stand-Alone Sign Support Shielding
10	Median Barrier - 44" Height Split Section for Pier Shielding
11	Median Barrier - 44" Height Split Section for Pier Shielding - Details
12	Median Barrier - Connection to F-Shape
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20	Curb and Gutter Barrier
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24	Wall Shielding Barrier – 38" Height Section – Guardrail Connection
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26	Reinforcing Bar Bending Diagrams

GENERAL NOTES:

SHEET CONTENTS

- 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 Class 3 surface finish in accordance with Specification 400.
- 2. STEEL BAR REINFORCEMENT: Where required to maintain continuity, provide lap splices of at least 18 inches for No. 4 bars and 20 inches for No. 5 bars, unless otherwise shown herein (including shorter splices as provided by the default bar bending diagrams).

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

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

GENERAL NOTES (CONTINUED):

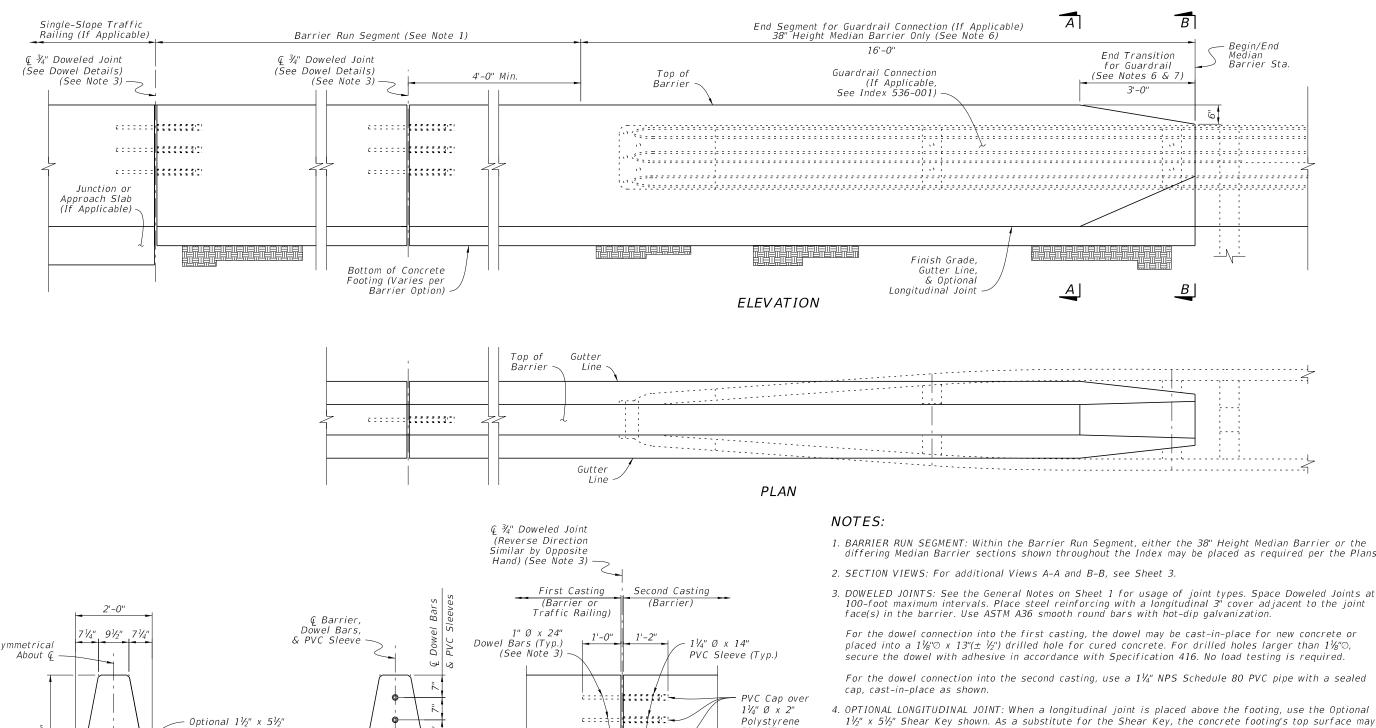
- 4. TOP FACE LONGITUDINAL REINFORCEMENT: Unless otherwise specified, the longitudinal reinforcement shown closest to the top face of the barrier has a maximum cover of $4\frac{1}{2}$, measured from the top face of the barrier.
- 5. MINIMUM BARRIER LENGTH: Unless otherwise shown in the Plans, the minimum 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 Pier Protection Barrier and Traffic Railings. Doweled Joints are also required for expansion mitigation in Median Barrier as defined per Sheets 2 & 5. Doweled Joints are not permitted within Grade-Separated Median Barrier.
- 8. CRACK CONTROL V-GROOVES: At 20-foot intervals, place $\frac{3}{6}$ " depth V-grooves that run vertically and/or transversely in the front, top, and back faces of barriers. The V-grooves can be either molded or scored while the concrete is still plastic.
- 9. SUBGRADE: Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).
- 10. FOOTING BOTTOM CONCRETE COVER: At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.
- 11. FINISH GRADE ELEVATION: At the barrier face location, the finish grade pavement has a vertical position tolerance of ± ½" from the locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.
- 12. DRAINAGE INLETS: Where called for in the Plans, install corresponding inlets per Indexes 425-030 thru 425-032.
- 13. LIGHT POLE MOUNTING: Where called for in the Plans, install aluminum light poles per Index 715-002.
- 14. OPAQUE VISUAL BARRIER: Where called for in the Plans, install Opaque Visual Barrier per Index 521-010.
- 15. BARRIER END MARKERS: For all free ends of concrete barriers that are not shielded with an end treatment or connection to another barrier or traffic railing type, install a Type 3 Object Marker on the end face per Specification 705.
- 16. BARRIER DELINEATORS: Install Barrier Delineators in accordance with Specification 705. For median barriers, mount the delineator on the top of the barrier, at the centerline of barrier, with reflective sheeting facing traffic on both approaches. For shoulder barriers and split sections, mount the delineators on the top of the barrier, with the roadway side of the delineator located 2" from the front face of the barrier and the reflective sheeting facing traffic of the nearest approach.
- 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 41/2" 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.



Symmetrical Polystyrene Plug (Typ.) (Min.) Shear Key (See Note 4) Shoulder Pavement Gutter Line (Typ.)(Typ. Ea. Face) **ELEVATION** SECTION DOWEL PLACEMENT DOWEL BAR & PVC CONNECTION Concrete Longitudinal Joint (See Note 4)

- differing Median Barrier sections shown throughout the Index may be placed as required per the Plans.

For the dowel connection into the second casting, use a 11/4" NPS Schedule 80 PVC pipe with a sealed

- $1\frac{1}{2}$ " x $5\frac{1}{2}$ " Shear Key shown. As a substitute for the Shear Key, the concrete footing's top surface may be raked to provide additional shear friction. Rake the fresh concrete surface so that about half of the surface area consists of approximately ½" depth longitudinal grooves, distributed evenly and approved by the Engineer.
- 5. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the 3/4" Doweled Joint.
- 6. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with the 16'-0" End Segment for Guardrail shown herein.
- 7. CRASH CUSHION CONNECTIONS: Connect Crash Cushions per Index 544-001 in conjunction with the 3'-0" End Transition for Guardrail as shown herein.
- 8. FREE ENDS: When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, Crash Cushion Connection, or Sloped End Treatment as called for in the Plans, terminate in accordance with the Free End Reinforcing detail on Sheet 3.

MEDIAN BARRIER

REVISION 11/01/20 SECTION A-A

38" HEIGHT MEDIAN BARRIER

(See Sheet 3 for Steel Reinforcing Details)

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

DOWEL DETAILS=

CONCRETE BARRIER

INDEX

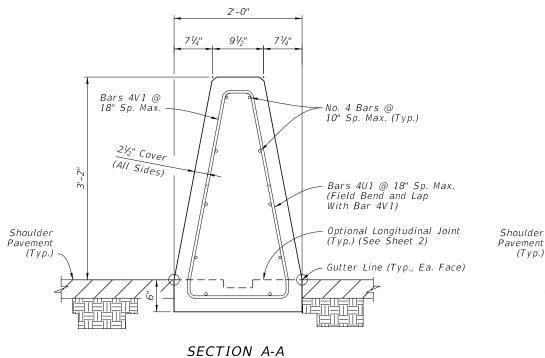
SHEET

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

No. 4 Bars (Only Top And Bottom Bars - Field Cut Bars 4V1 & 4U1 Shown For Clarity, \overline{A} Others Similar) 3" Cover B91/2" Bars 4V1 & 4U1 @ 18" Sp. Max. 4 Sp. @ 8" (±½") 3'-0" End Transition for Guardrail

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





Steel Qty. = 11.8 LB/FT

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

1'-6"

11¾"

No. 4 Bars Tapered

with Barrier Height

Cover Varies

(Diagonal

Segment)

Shoulder

(Typ.)

Bars 4V1

(Field Cut to Fit Vertically as Reqd. & Field Bend to

No. 4 Bars @ 10" Sp. Max.

(Field Cut To Fit

Transversally As

Reqd. & Field

Bend To Lap

With 4V1)

21/2" Cover

Lap with Bars 4U1)

NOTES:

- 1. GENERAL: Work with the Plan and Elevation Views on Sheet 2.
- 2. BAR BENDING DIAGRAMS: For additional information on Bars 4V1 and 4U1, see the details on Sheet 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

2½" Cover

REVISION 11/01/18

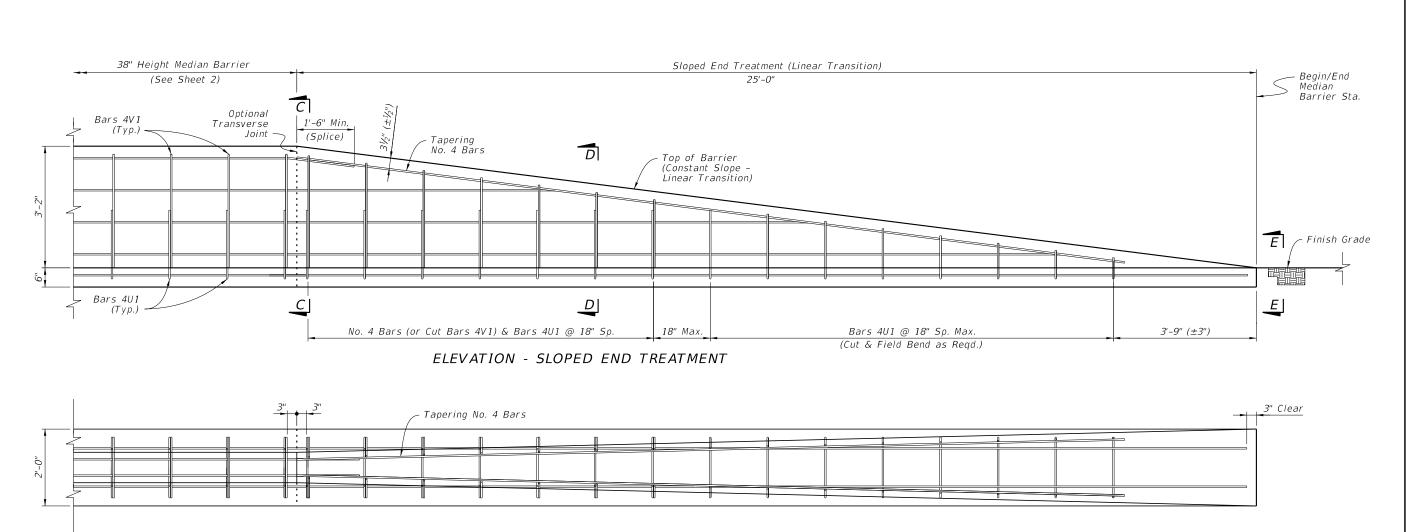
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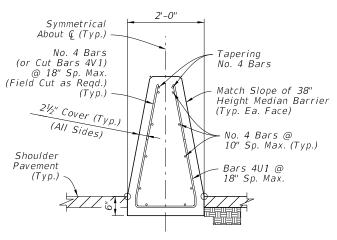
FY 2022-23 STANDARD PLANS

CONCRETE BARRIER

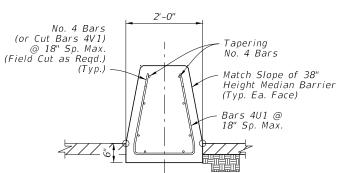
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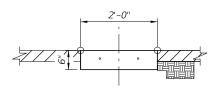
PLAN - SLOPED END TREATMENT (Only Top & Bottom Longitudinal Bars Shown for Clarity, See Section Views for All Longitudinal Steel Locations)



SECTION C-C **BEGIN TRANSITION** REINFORCING (Height Varies Linearly per Elevation View)



SECTION D-D INTERMEDIATE TRANSITION REINFORCING (Height Varies Linearly per Elevation View)



VIEW E-E **END TRANSITION**

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.

MEDIAN BARRIER -SLOPED END TREATMENT

REVISION 11/01/18

DESCRIPTION:

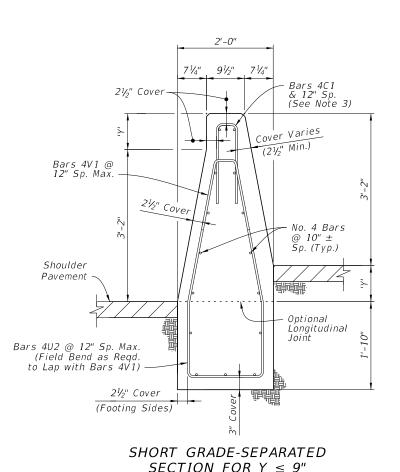
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CONCRETE BARRIER

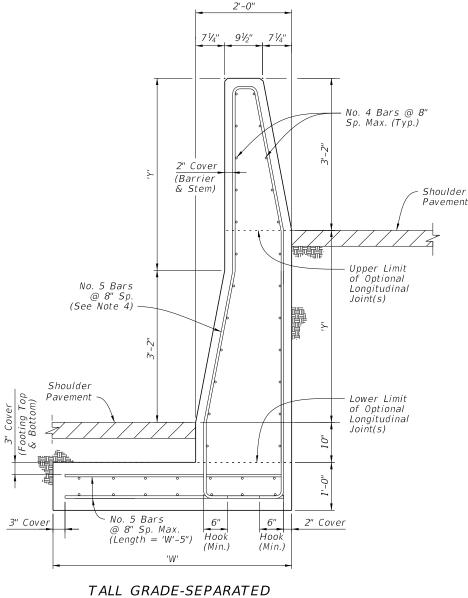
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SHEET



2'-0" 71/4" 91/2" 71/4" No. 4 Bars @ 8" Sp. Max. (Typ.) 2" Cover (Barrier & Stem) Shoulder Pavement of Optional No. 5 Bars Longitudinal @ 8" Sp. (See Note 4) Shoulder Pavement Lower Limit of Optional Longitudinal Joint(s) No. 5 Bars 2" Cover 3" Cover @ 8" Sp. Max. Hook Hook (Length = 'W'-5")(Min.) (Min.)

TALL GRADE-SEPARATED HEEL FOOTING SECTION $FOR Y \leq 4'-0''$



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.
- 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
- 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 $Y \leq 9$ " 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:

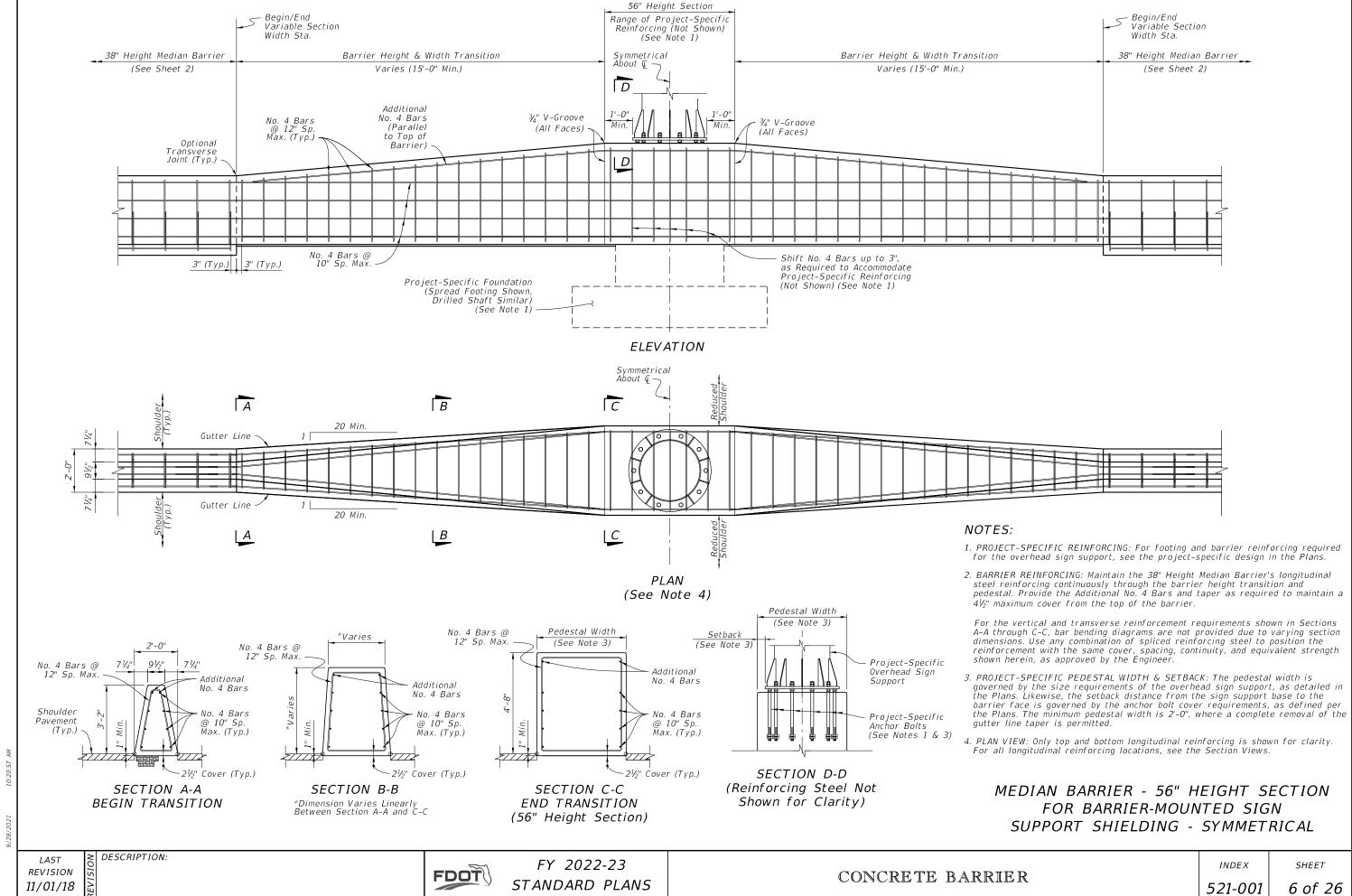
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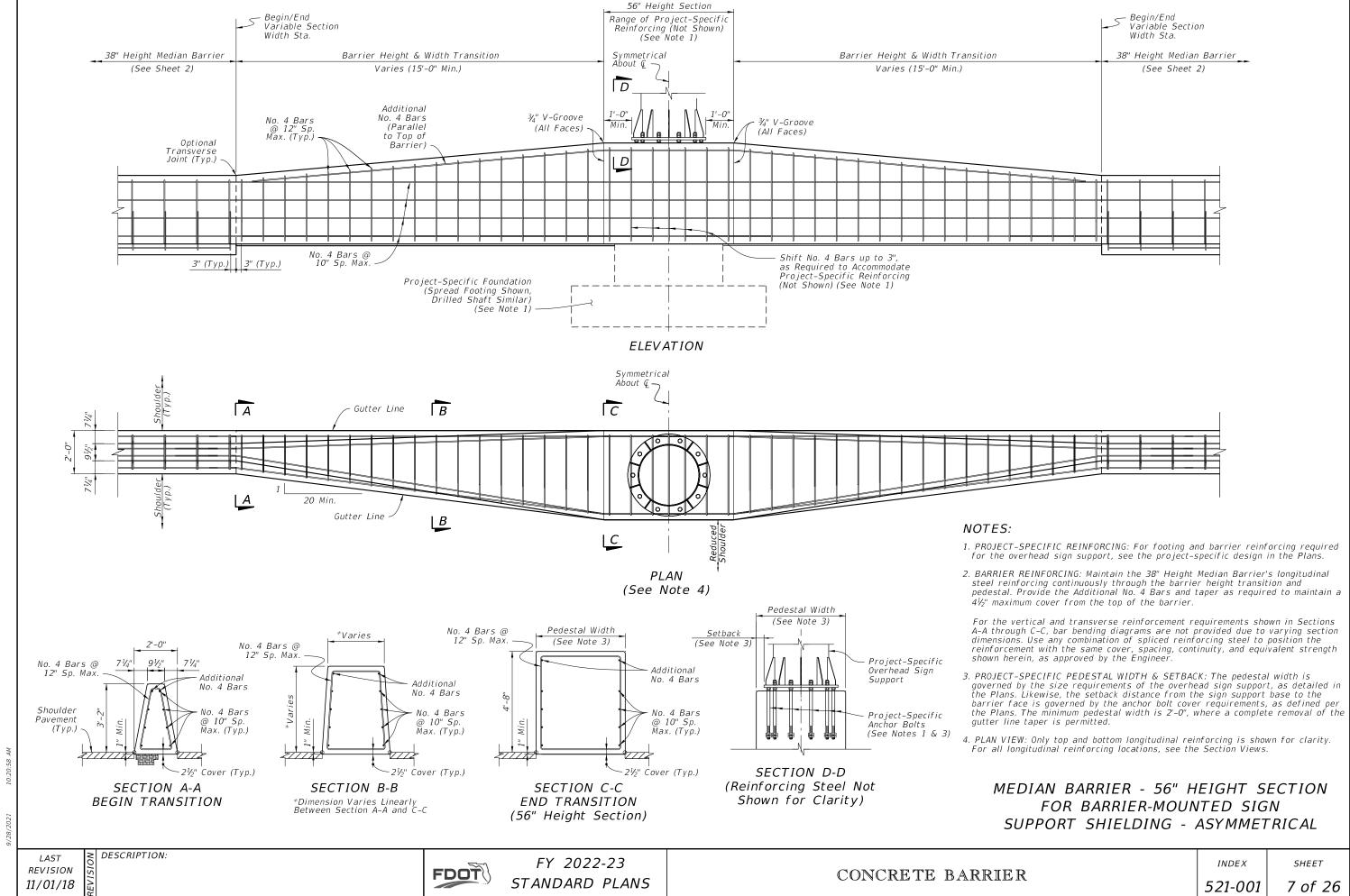
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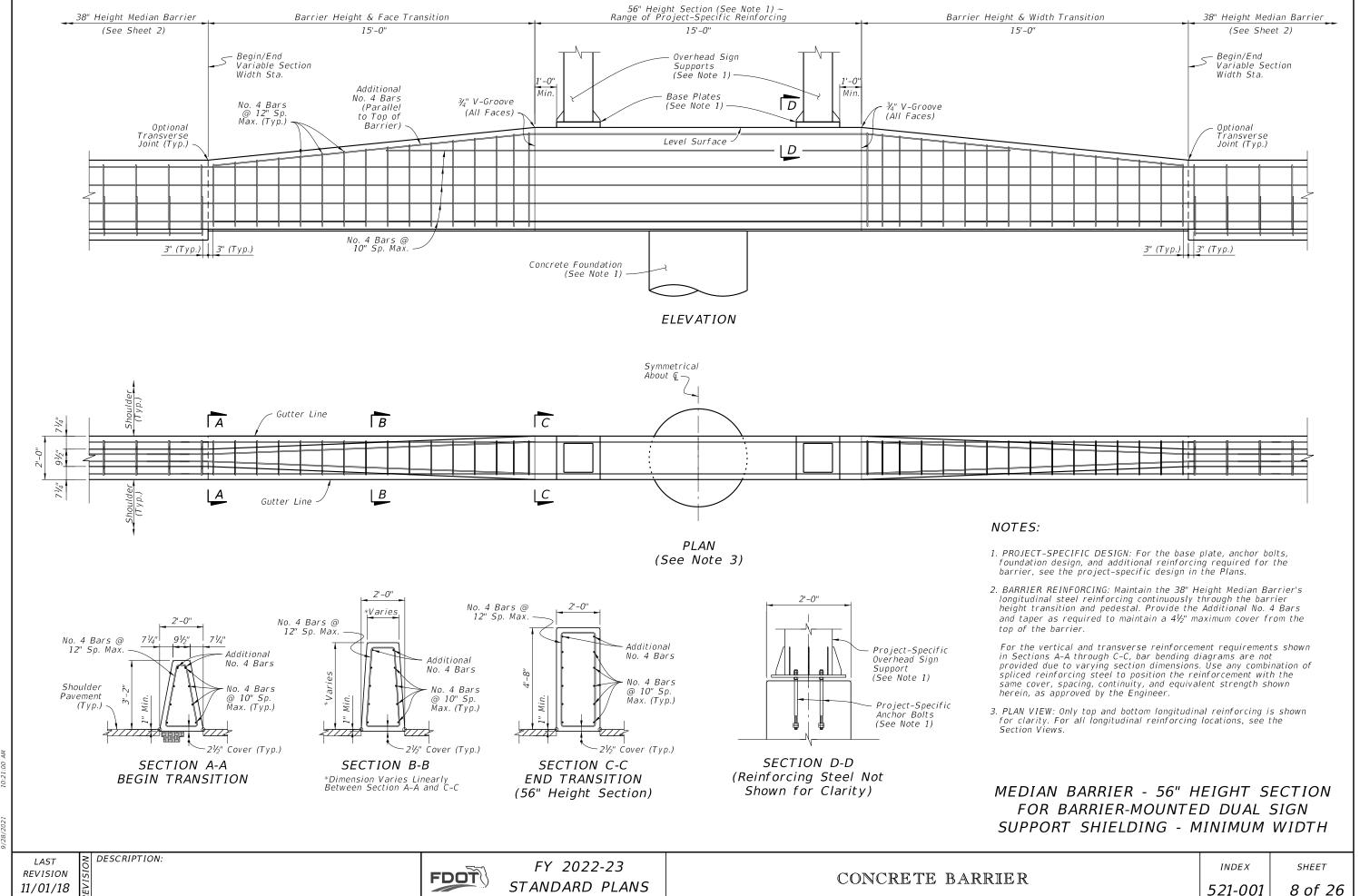
CONCRETE BARRIER

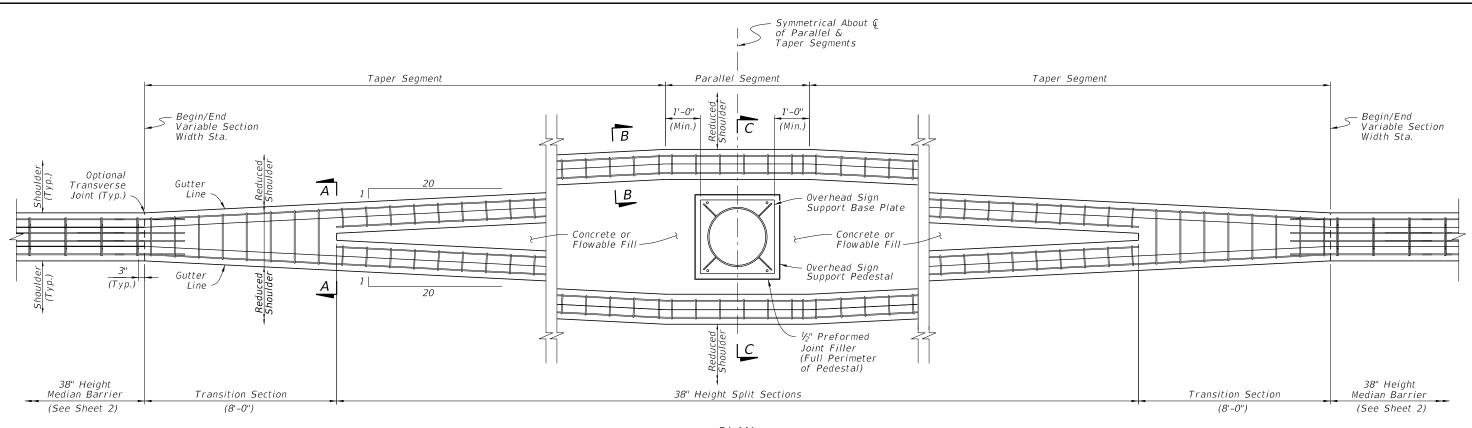
INDEX *521-001*

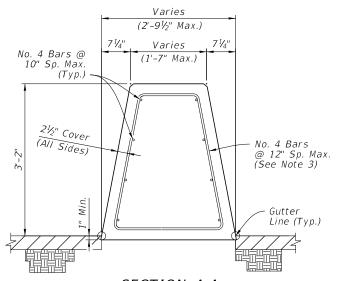
SHEET 5 of 26







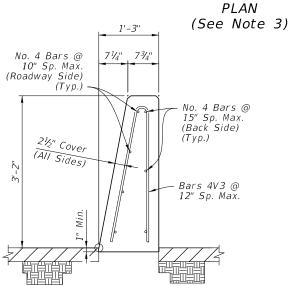




SECTION A-A TRANSITION SECTION (AT BEGIN SPLIT SECTIONS)

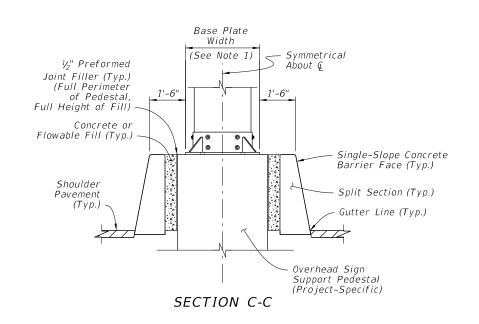
NOTES:

- 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

DESCRIPTION:

FDOT

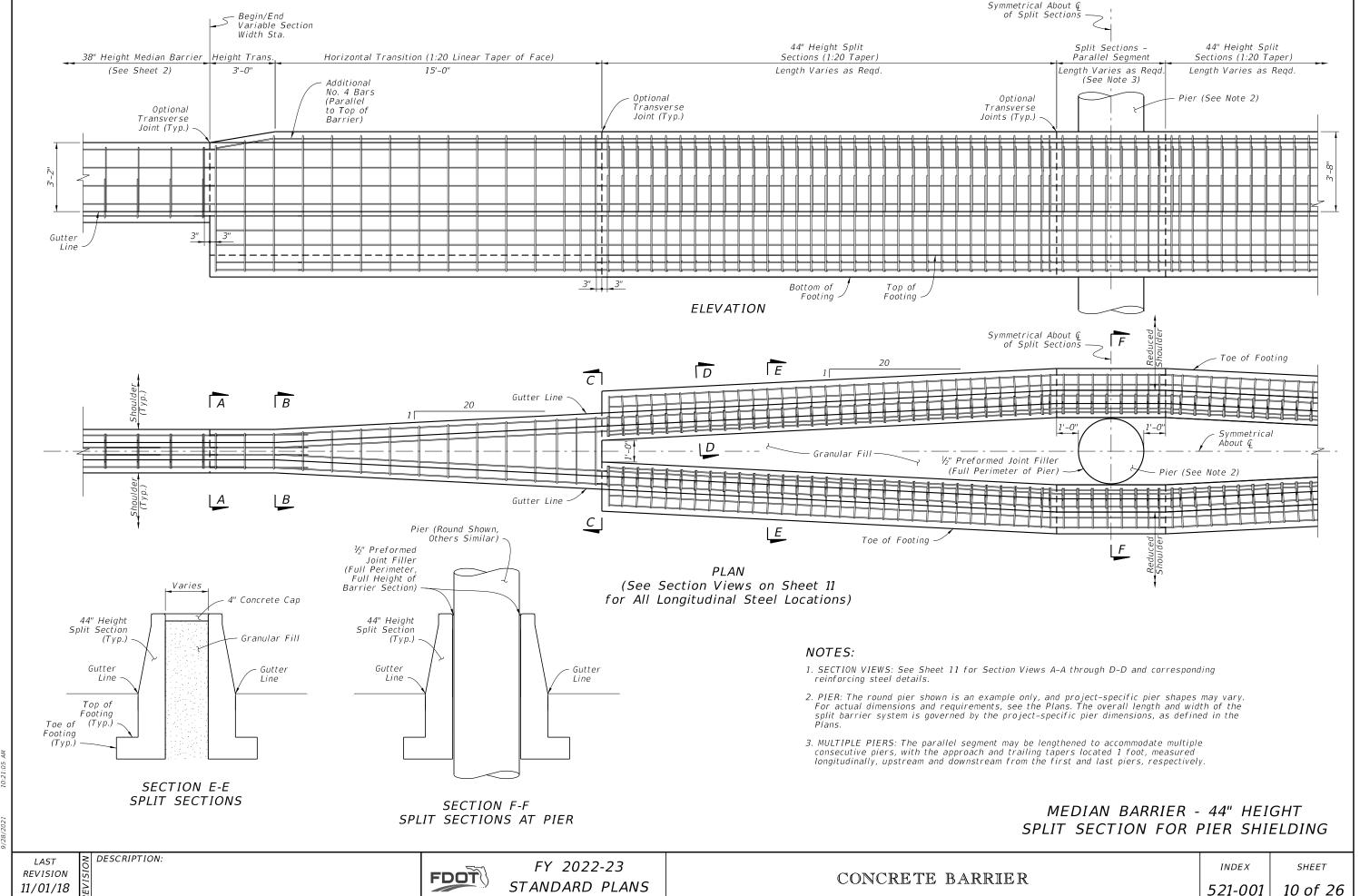
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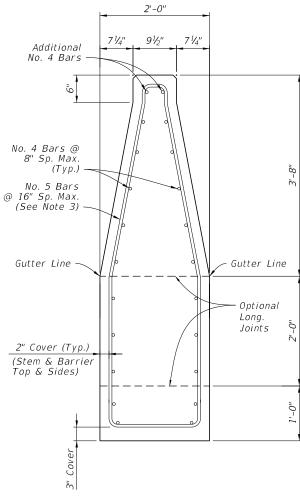
CONCRETE BARRIER

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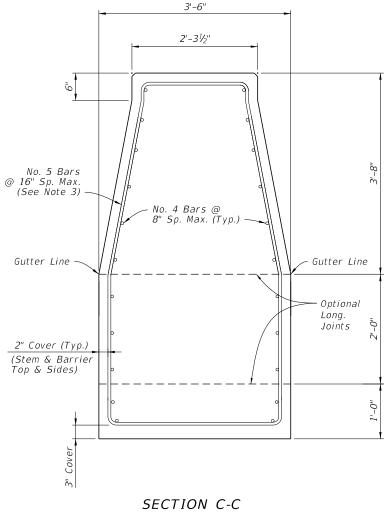


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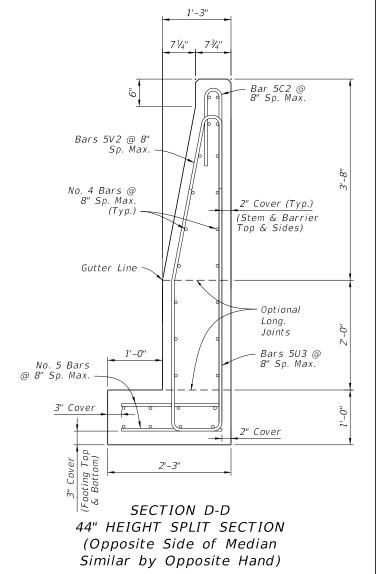
BEGIN HEIGHT TRANSITION (show spliced bars)



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:

DESCRIPTION:

- 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

FDOT

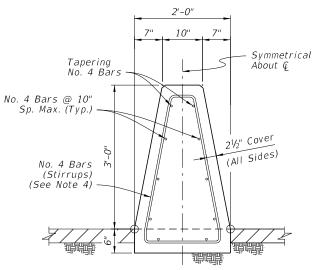
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CONCRETE BARRIER

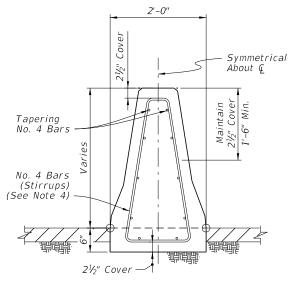
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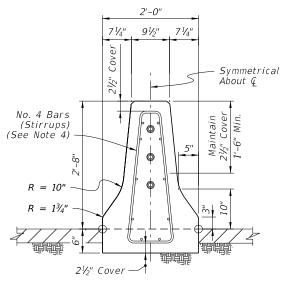
SECTION A-A BEGIN TRANSITION - OPTION 'A' MATCH SINGLE-SLOPE 38" HEIGHT MEDIAN BARRIER



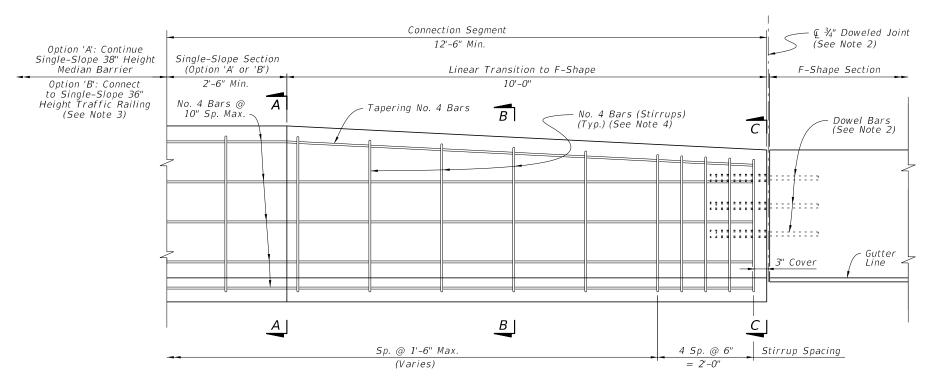
SECTION A-A BEGIN TRANSITION - OPTION 'B' MATCH SINGLE-SLOPE 36" HEIGHT TRAFFIC RAILING (Bridge Applications)



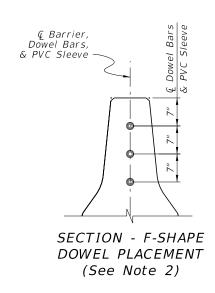
SECTION B-B INTERMEDIATE SECTION OF LINEAR TRANSITION



SECTION C-C **END TRANSITION** MATCH 32" HEIGHT F-SHAPE SECTION



ELEVATION (Reverse Direction Similar by Opposite Hand)



NOTES:

- 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

REVISION 11/01/18

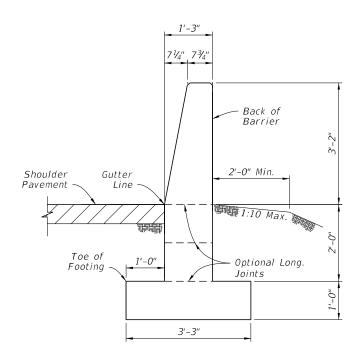
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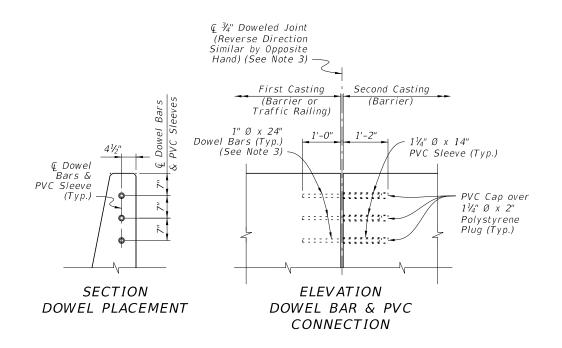
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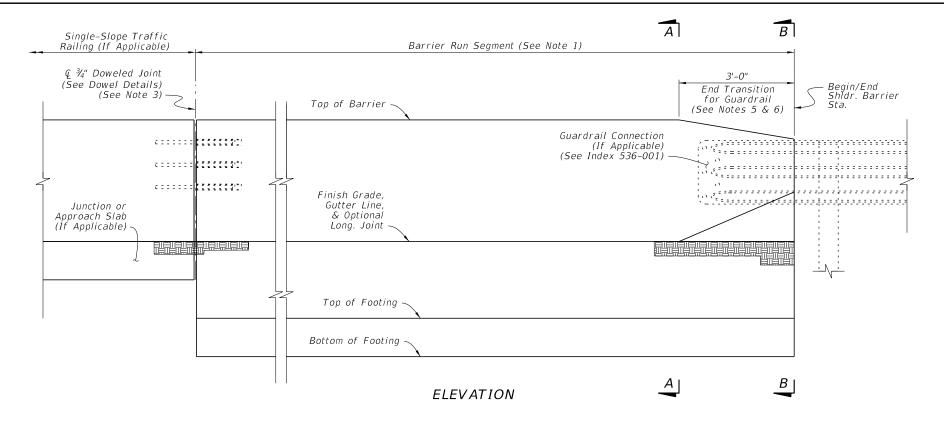
SHEET

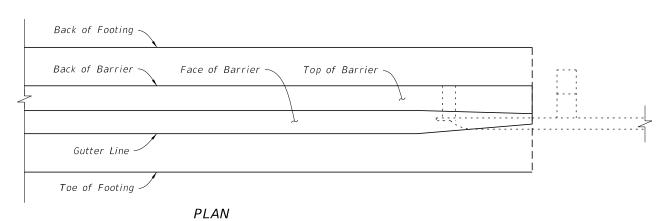


SECTION A-A 38" HEIGHT SHOULDER BARRIER (See Sheet 14 for Reinforcing Steel Details)



DOWEL DETAILS





NOTES:

- 1. BARRIER RUN SEGMENT: Either the 38" Height Shoulder Barrier or the differing Shoulder Barrier sections shown throughout the Index may be placed within this segment as required per the Plans.
- 2. SECTION VIEWS: For additional Views A-A and B-B, see Sheet 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 $1\frac{1}{6}$ " \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 1½" NPS Schedule 80 PVC pipe with a sealed cap, cast-in-place as shown.

- 4. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the ¾" Doweled Joint.
- 5. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001.
- 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

LAST **REVISION** 11/01/20

DESCRIPTION:

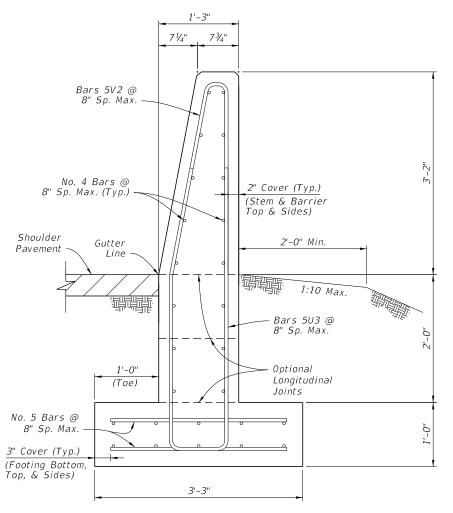
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CONCRETE BARRIER

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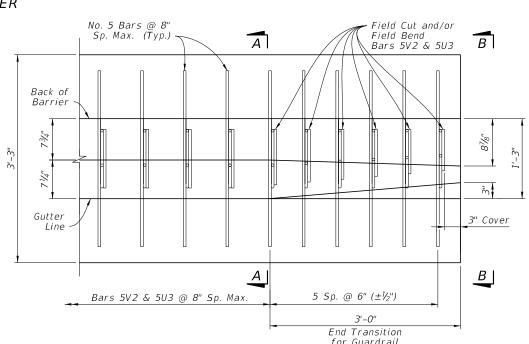


SECTION A-A 38" HEIGHT SHOULDER BARRIER

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)

3'-3"

6½"

Bars 5V2 @ 6" Sp. (Field Bend Top & Cut Bottom to Lap

Shoulder

Pavement

No. 5 Bars @ 6" Sp.

3" Cover (Typ.)

(Footing Bottom,

Top, & Sides)

with Bars 5U3)

Cover Varies | |

21/2" Cover

2" Cover (Min.)

1'-0"

(Toe)

87/8"

No. 4 Bars Tapered Down with Barrier Height

No. 4 Bars

2'-0" Min.

Optional Property

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:

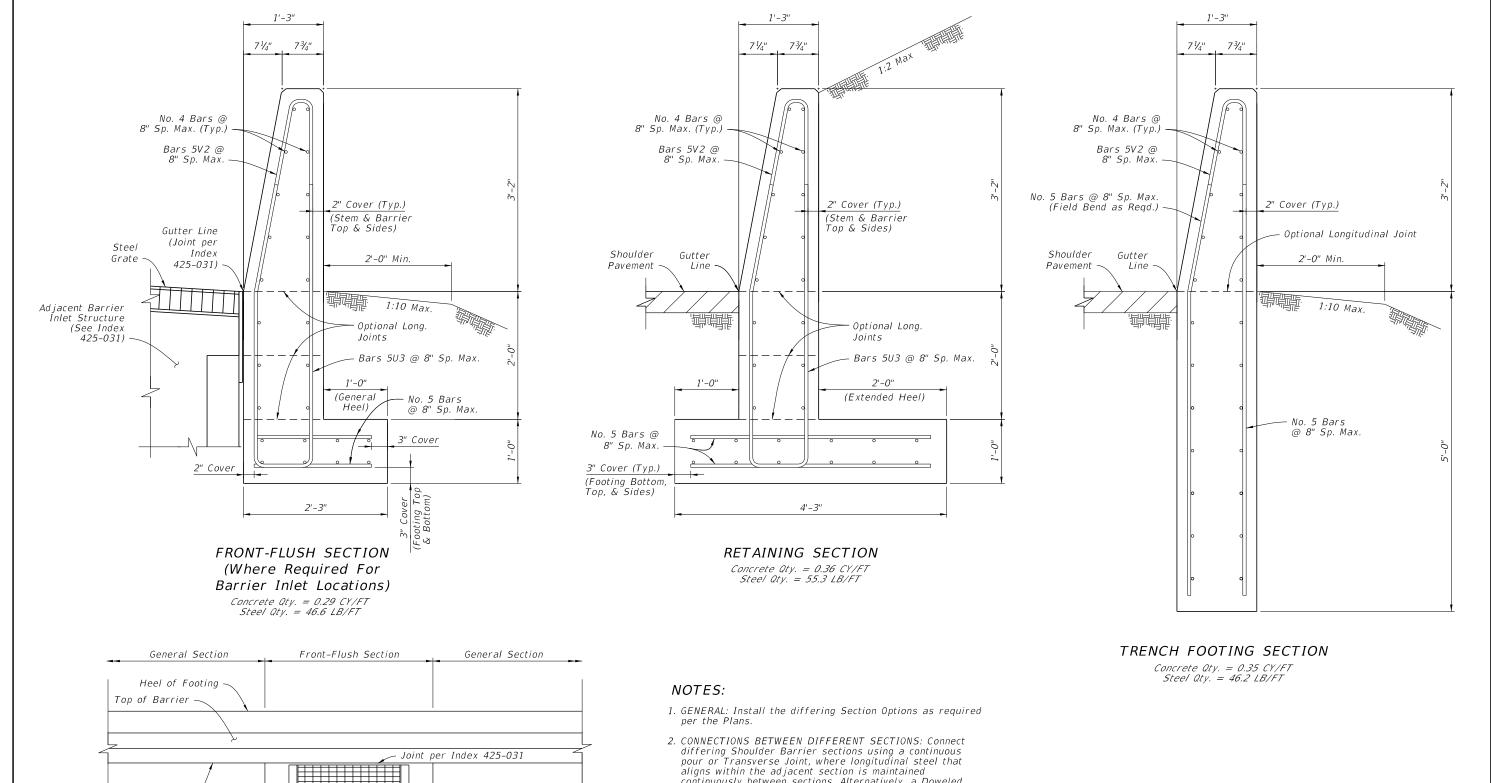
FDOT

FY 2022-23 STANDARD PLANS

CONCRETE BARRIER

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- continuously between sections. Alternatively, a Doweled 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.

SHOULDER BARRIER - SECTION OPTIONS

LAST **REVISION** 11/01/19 Gutter Line

Toe of Footing -

FDOT

Adjacent Barrier

per Index 425-031

Inlet Structure

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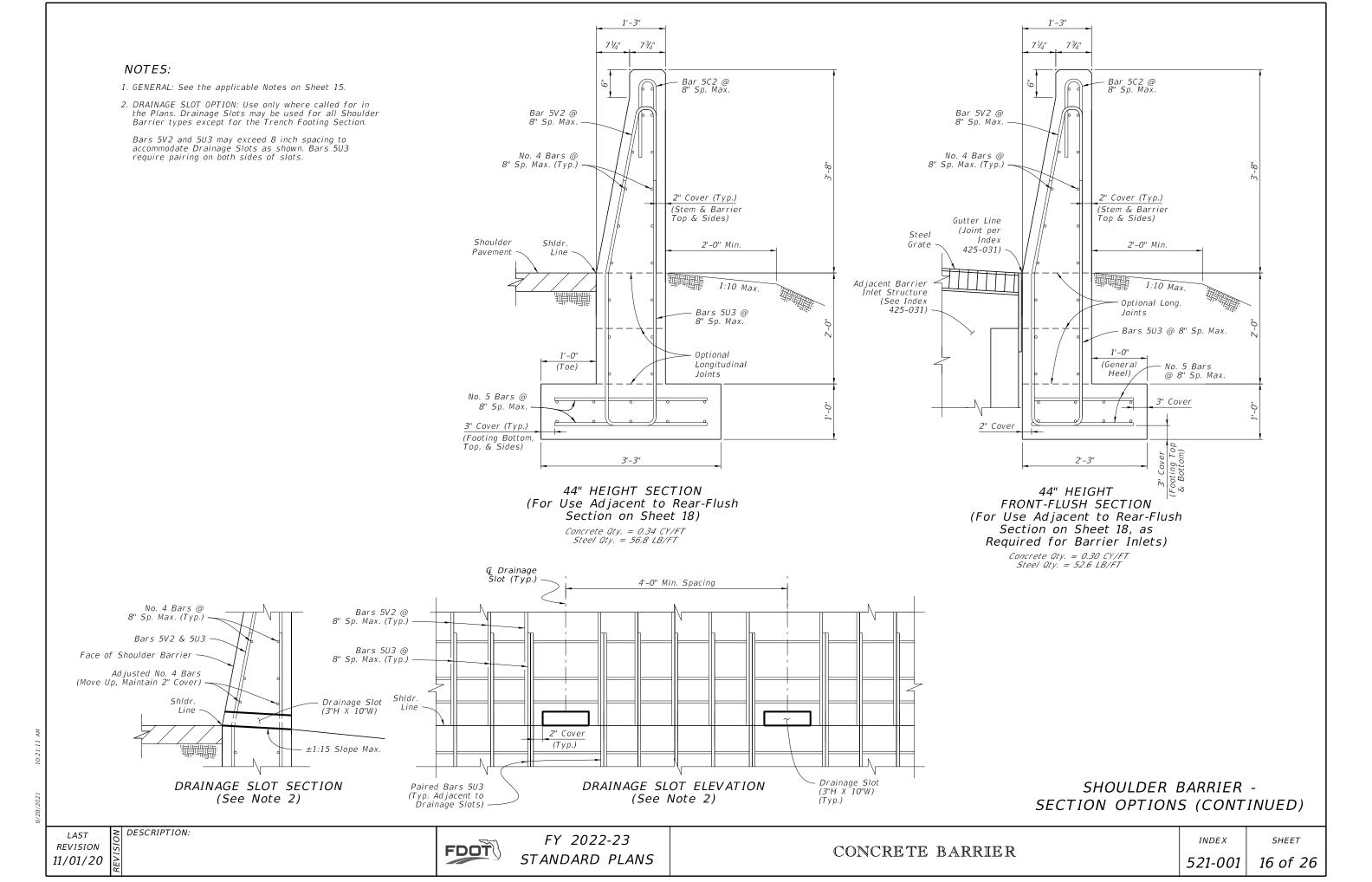
SHEET

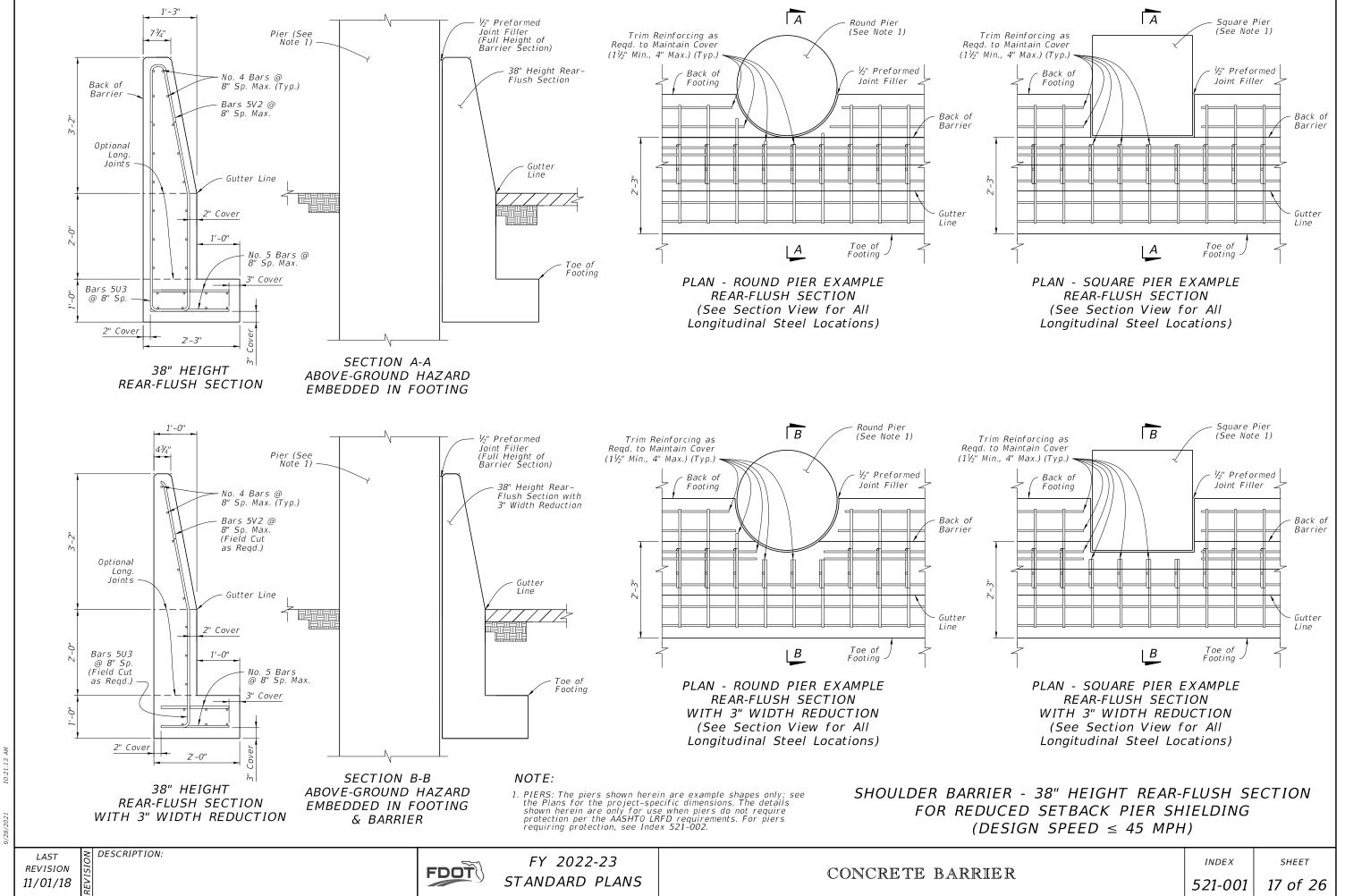
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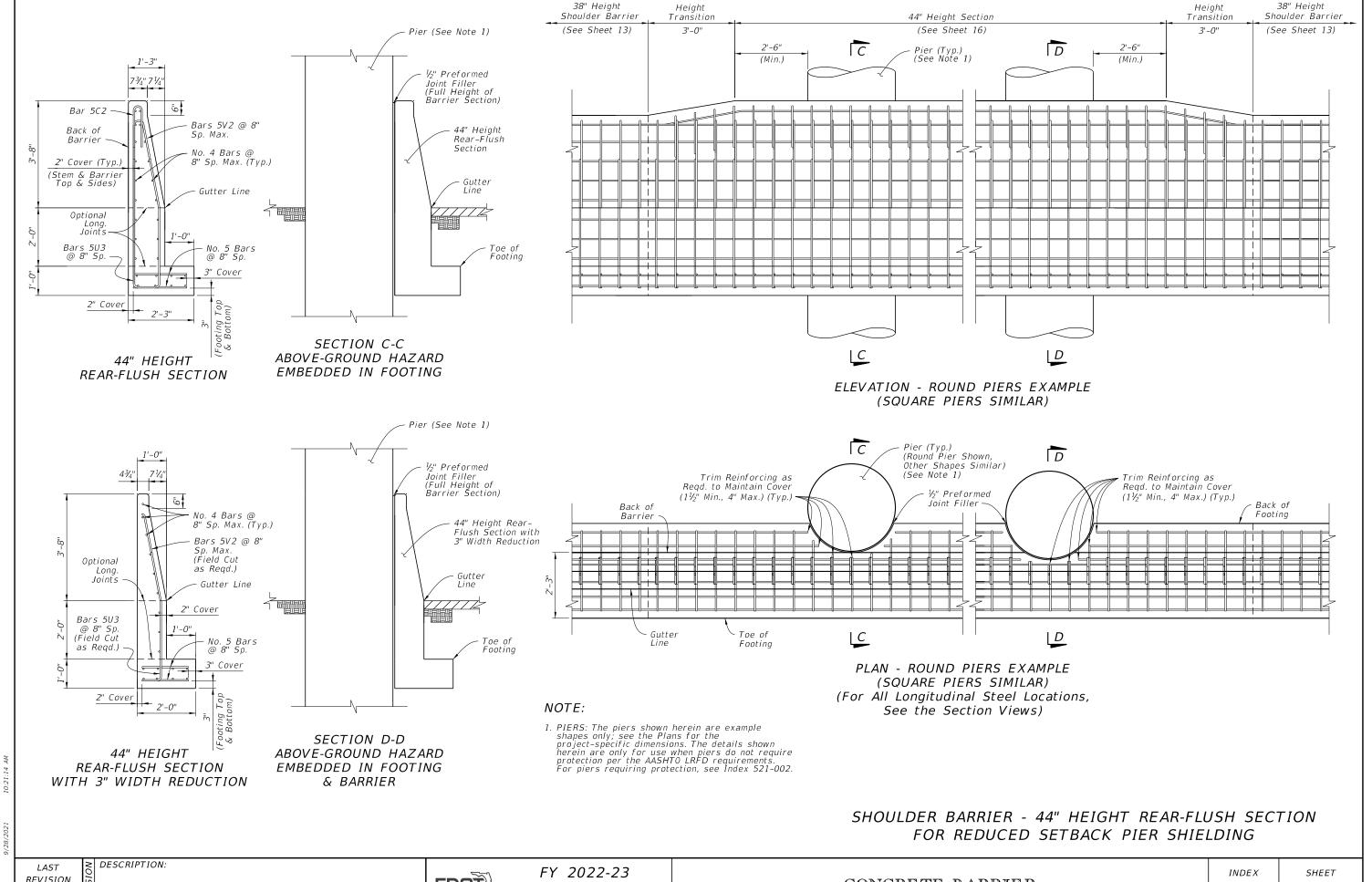
FRONT-FLUSH SECTION - PLAN VIEW

(Not Applicable for Trench Footing Sections)

CONCRETE BARRIER

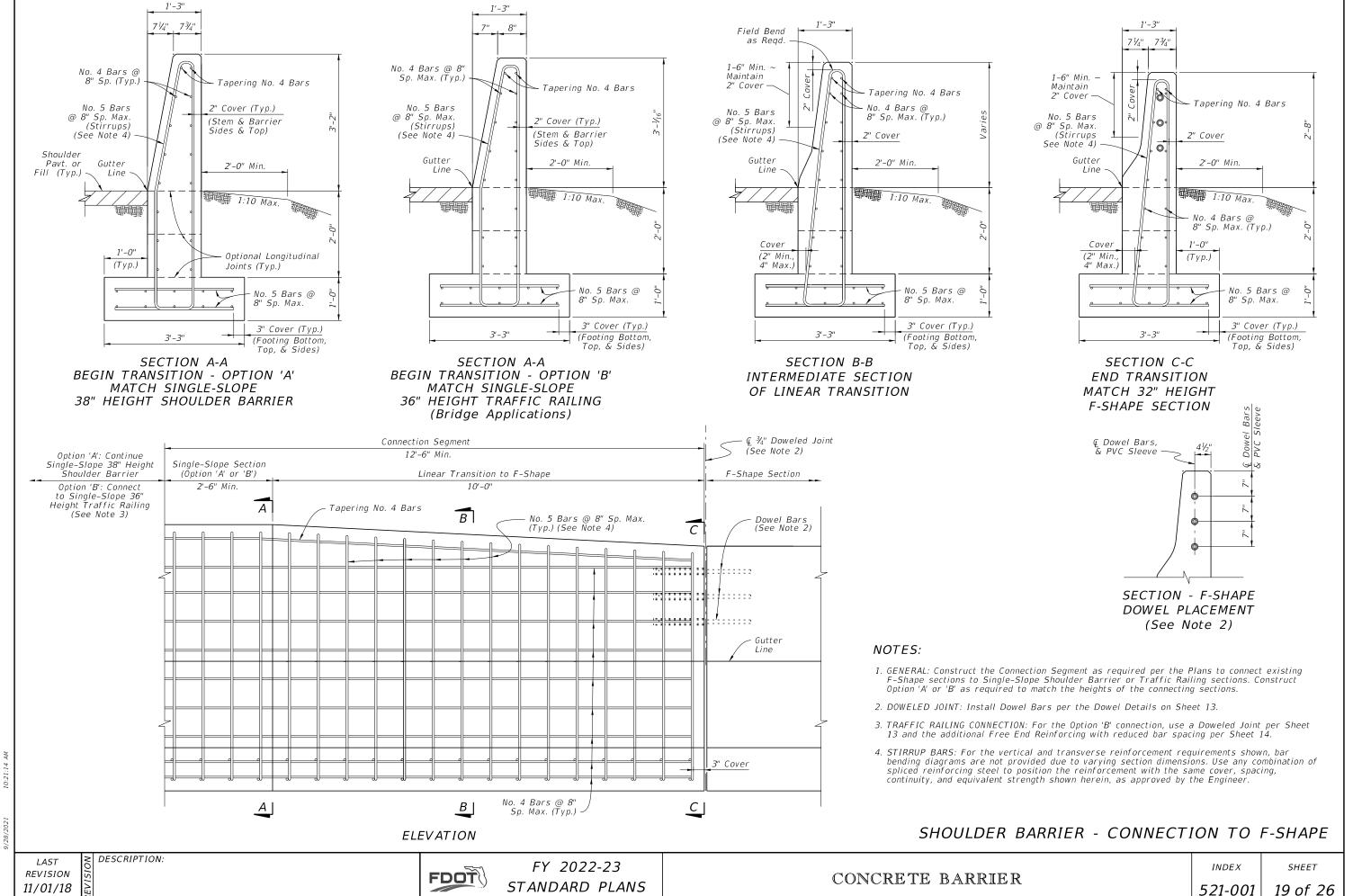




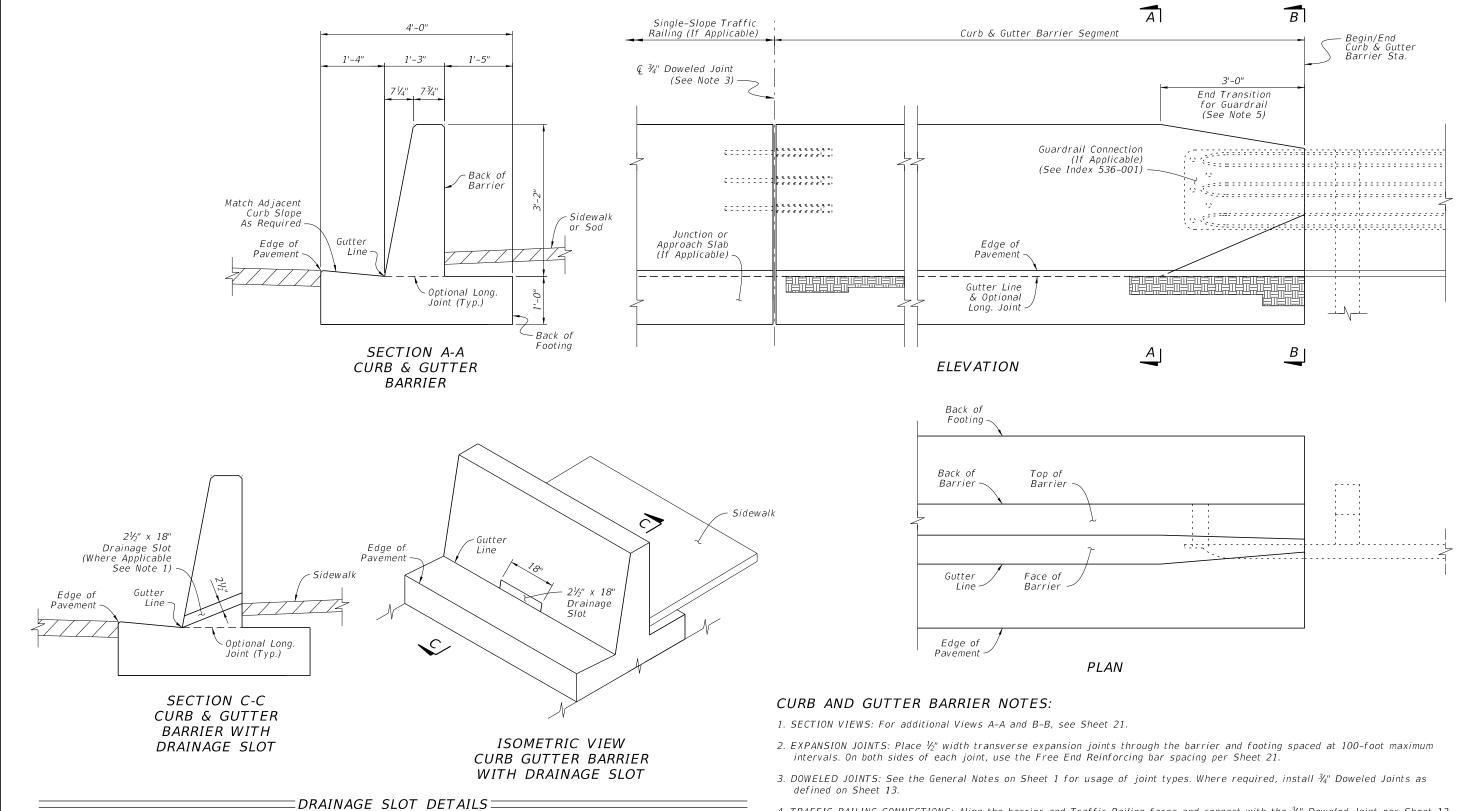


38" Height

REVISION 11/01/18 38" Height



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DRAINAGE SLOT NOTES:

- 1. GENERAL: Place 2½" 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 $2\frac{1}{2}$ "(± $\frac{1}{2}$ ") 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).
- 4. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the ¾" Doweled Joint per Sheet 13.
- 5. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction 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 11/01/20

DESCRIPTION:

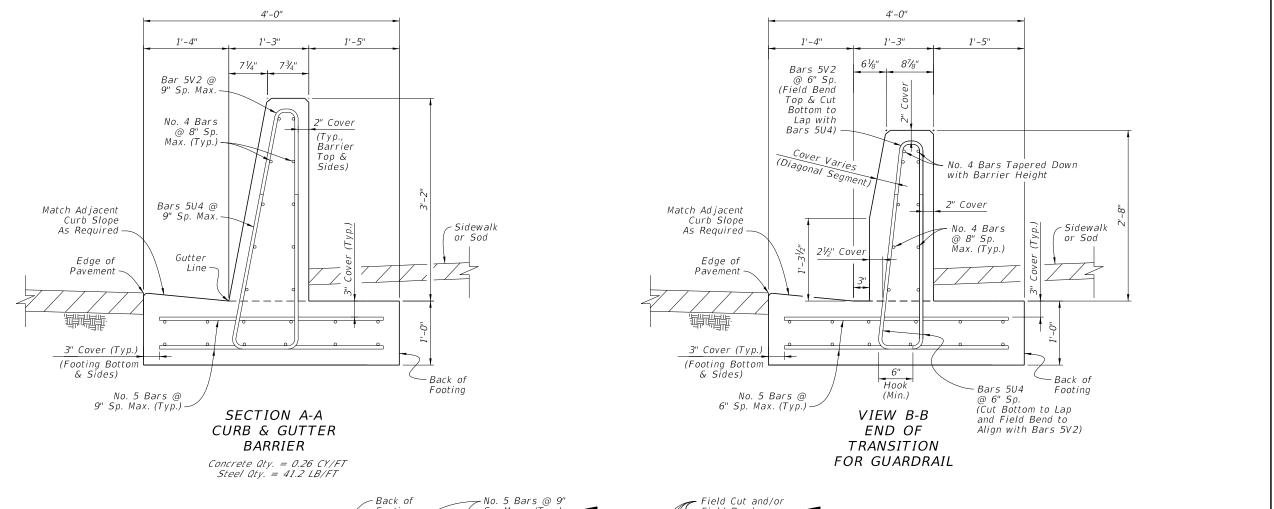
FDOT

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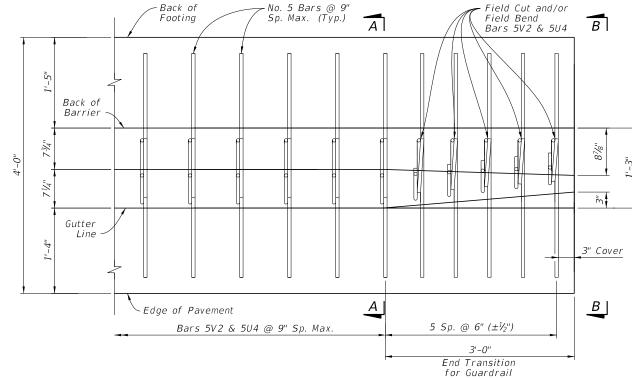
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DESCRIPTION:

- 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
- 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

LAST **REVISION** 11/01/18

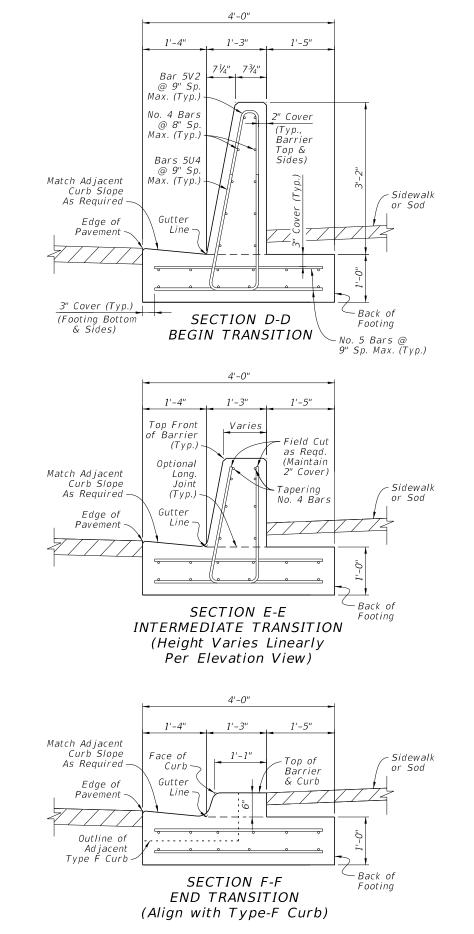
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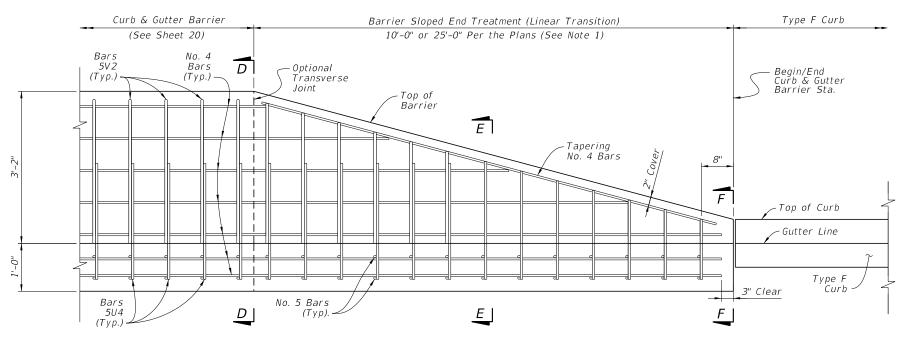
FY 2022-23 STANDARD PLANS

CONCRETE BARRIER

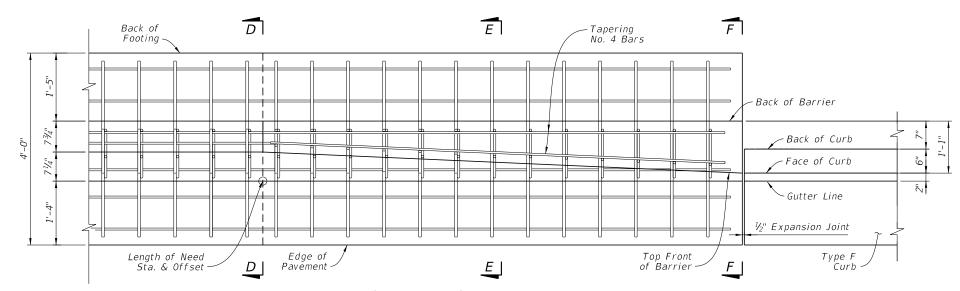
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ELEVATION - CURB AND GUTTER BARRIER SHOWING SLOPED END TREATMENT (Approach and Trailing End Similar by Opposite Hand)



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'-O" length option is shown herein, while the 25'-O" 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.

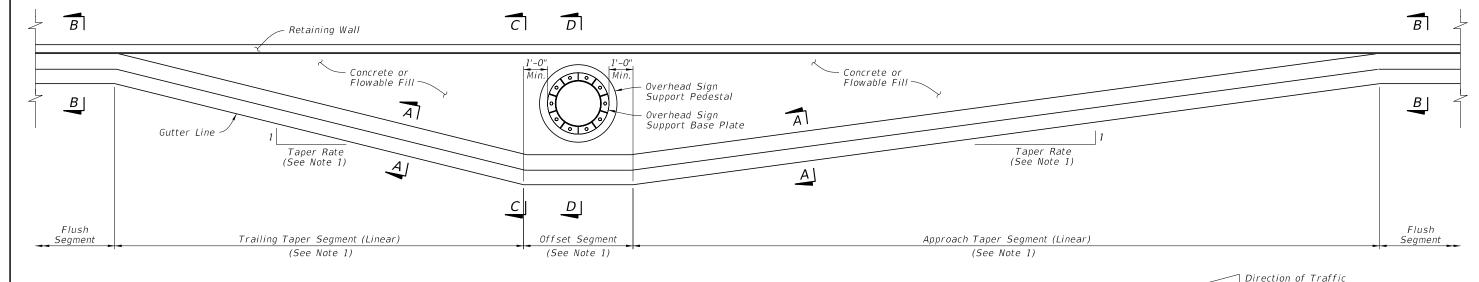
CURB AND GUTTER BARRIER -SLOPED END TREATMENT

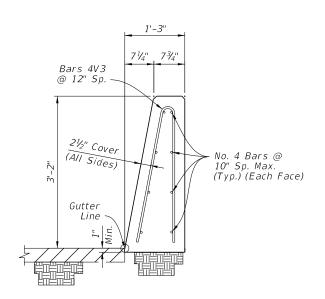
REVISION 11/01/18

DESCRIPTION:

FDOT

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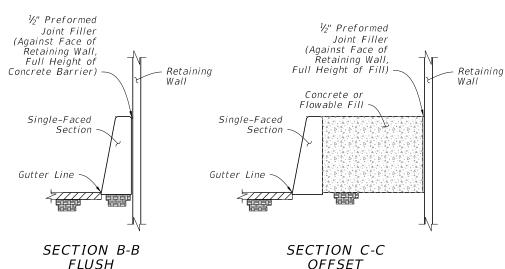


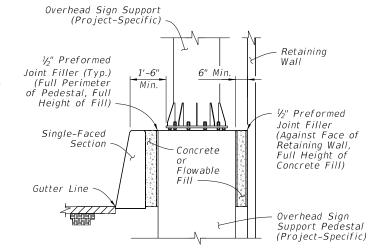


SECTION A-A 38" HEIGHT SINGLE-FACED SECTION (Reverse Side Similar by Opposite Hand)

PLAN(See Section A-A for Barrier Reinforcing)

SEGMENT





SECTION D-D 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 information in the Plans.
- 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.

SEGMENT

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

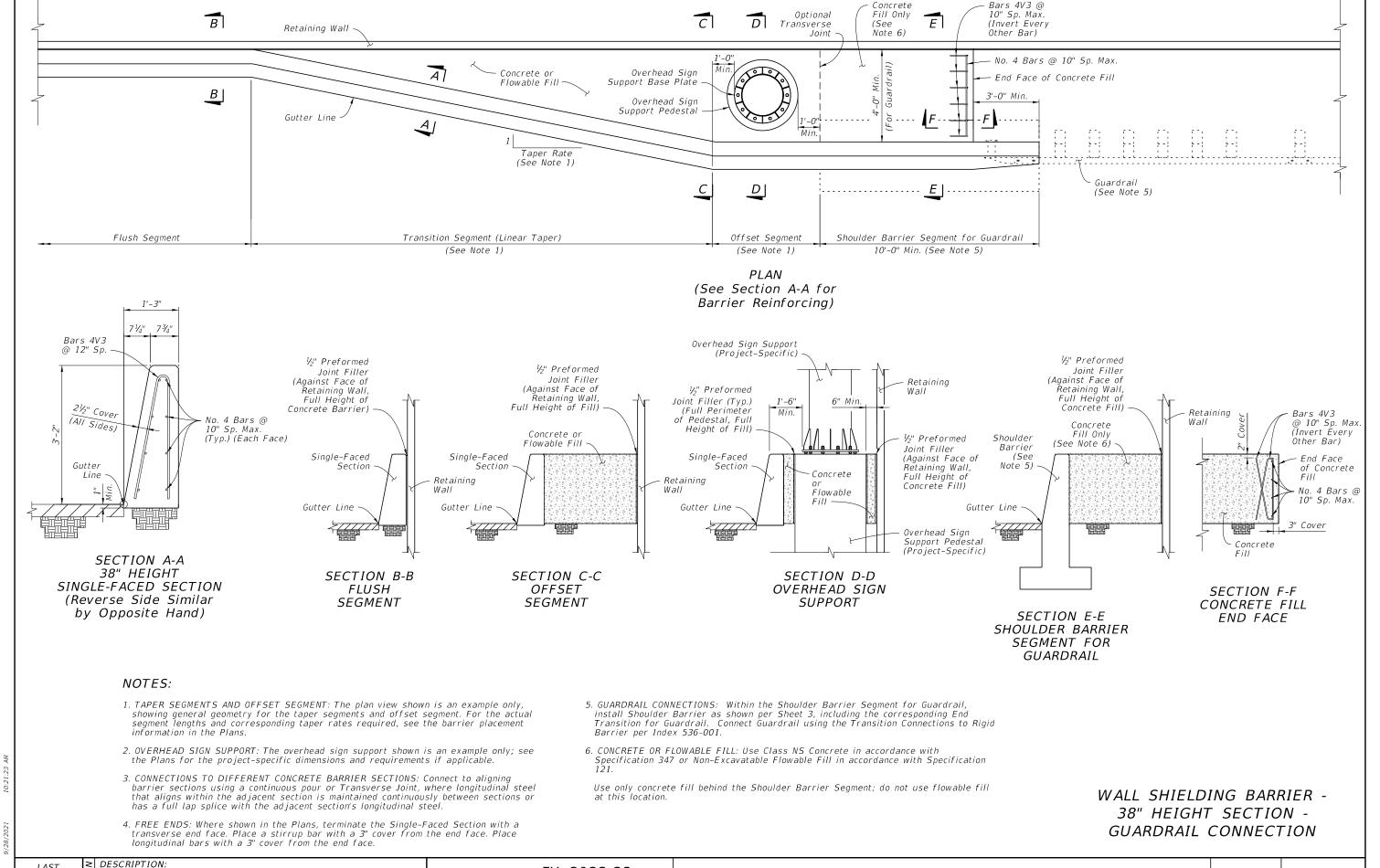
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CONCRETE BARRIER

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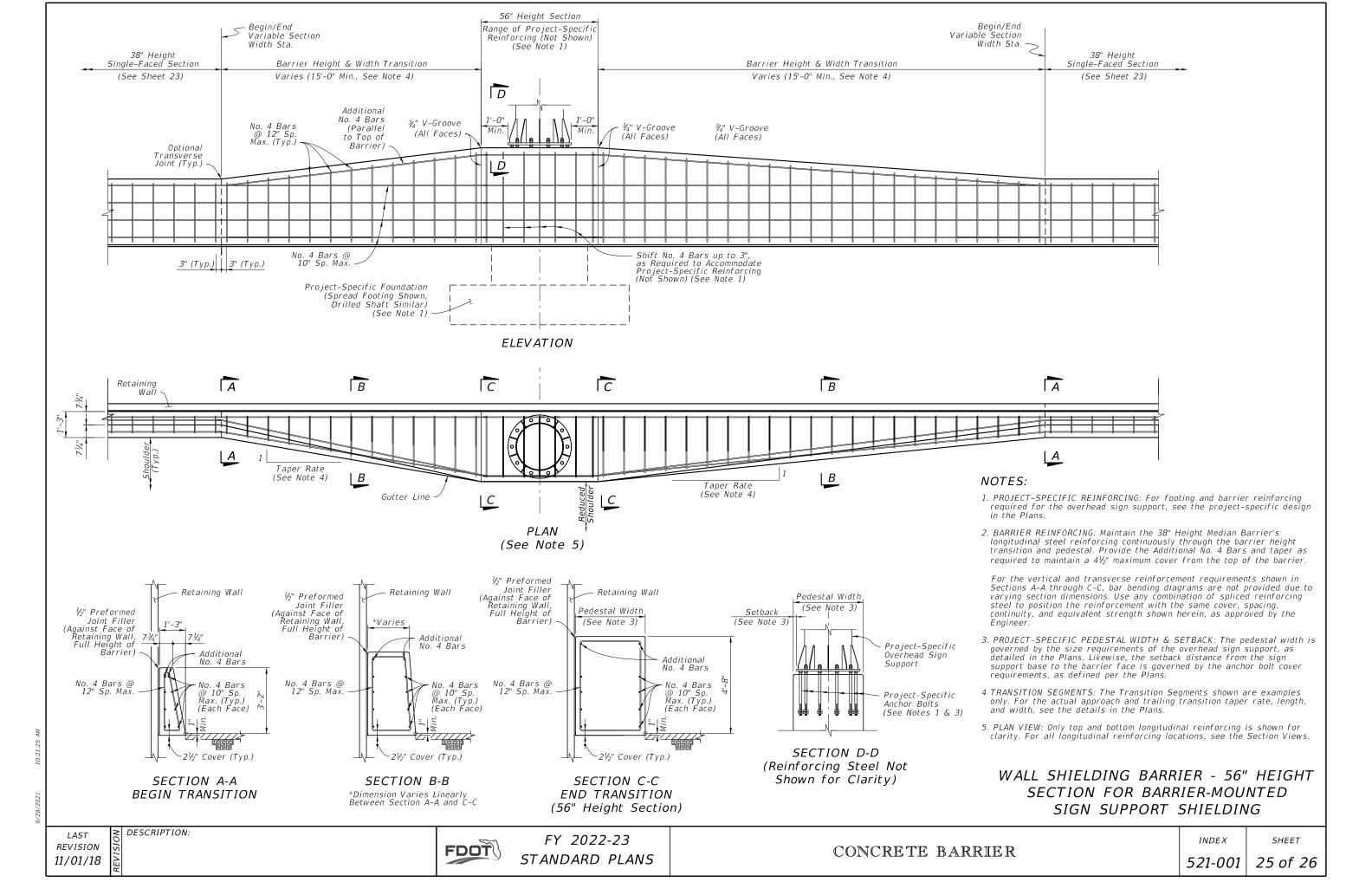
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FY 2022-23 STANDARD PLANS

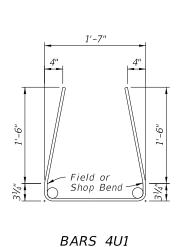
CONCRETE BARRIER

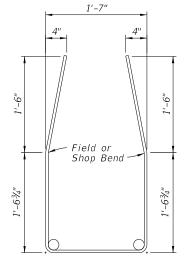
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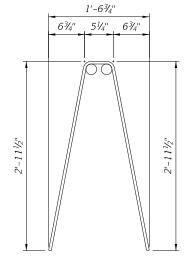
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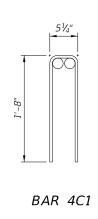


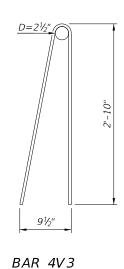
BILL OF REINFORCING STEEL				
SIZE	LENGTH			
4	3'-8"			
5	3'-0"			
4	5'-1"			
4	7'-8"			
5	9'-7"			
5	5'-9"			
4	6'-4"			
5	6'-3"			
4	5'-10"			
	SIZE 4 5 4 5 4 5 4 5 5 5 4 5			







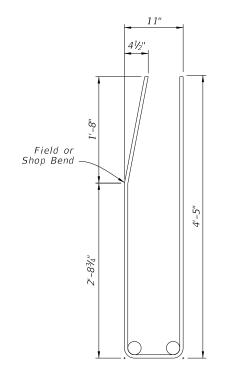




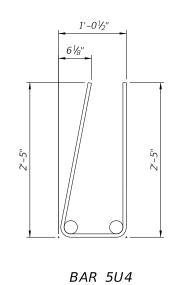
BAR 4U2 BAR 4V1

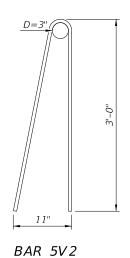
NOTES:

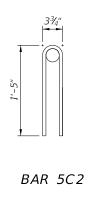
- 1. Work with the Standard Bar Bending Details per Index 415-001.
- 2. All bar dimensions in the bending diagrams are out to out.
- 3. Use standard inner diameters for bar bending unless otherwise shown.



BAR 5U3







REINFORCING BAR BENDING DIAGRAMS

REVISION 11/01/18

DESCRIPTION:

FDOT

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CONCRETE BARRIER

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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.

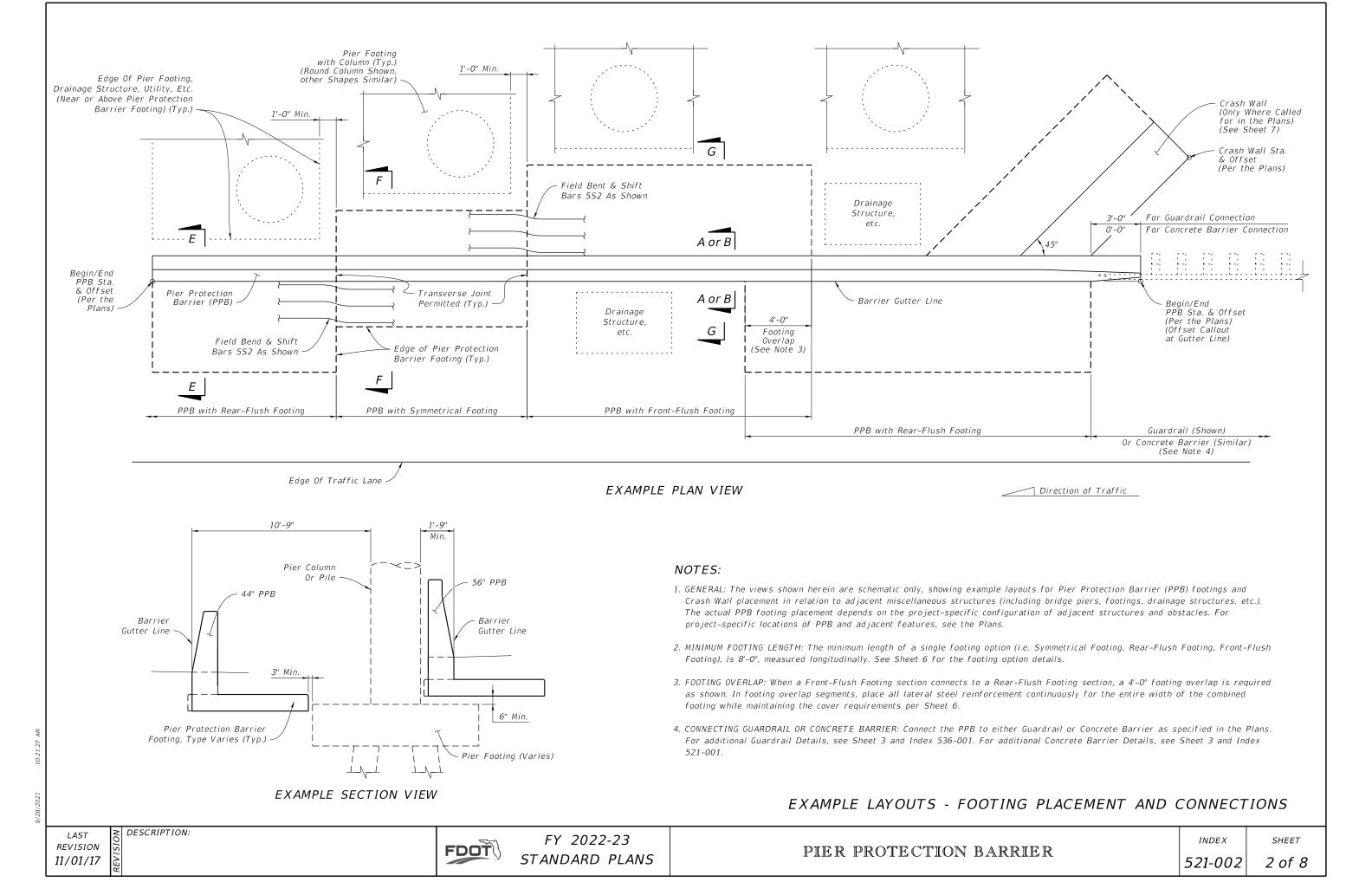
Longitudinal Joints may only be installed where indicated in the following details and notes, with a location tolerance of \pm 1" from the locations shown.

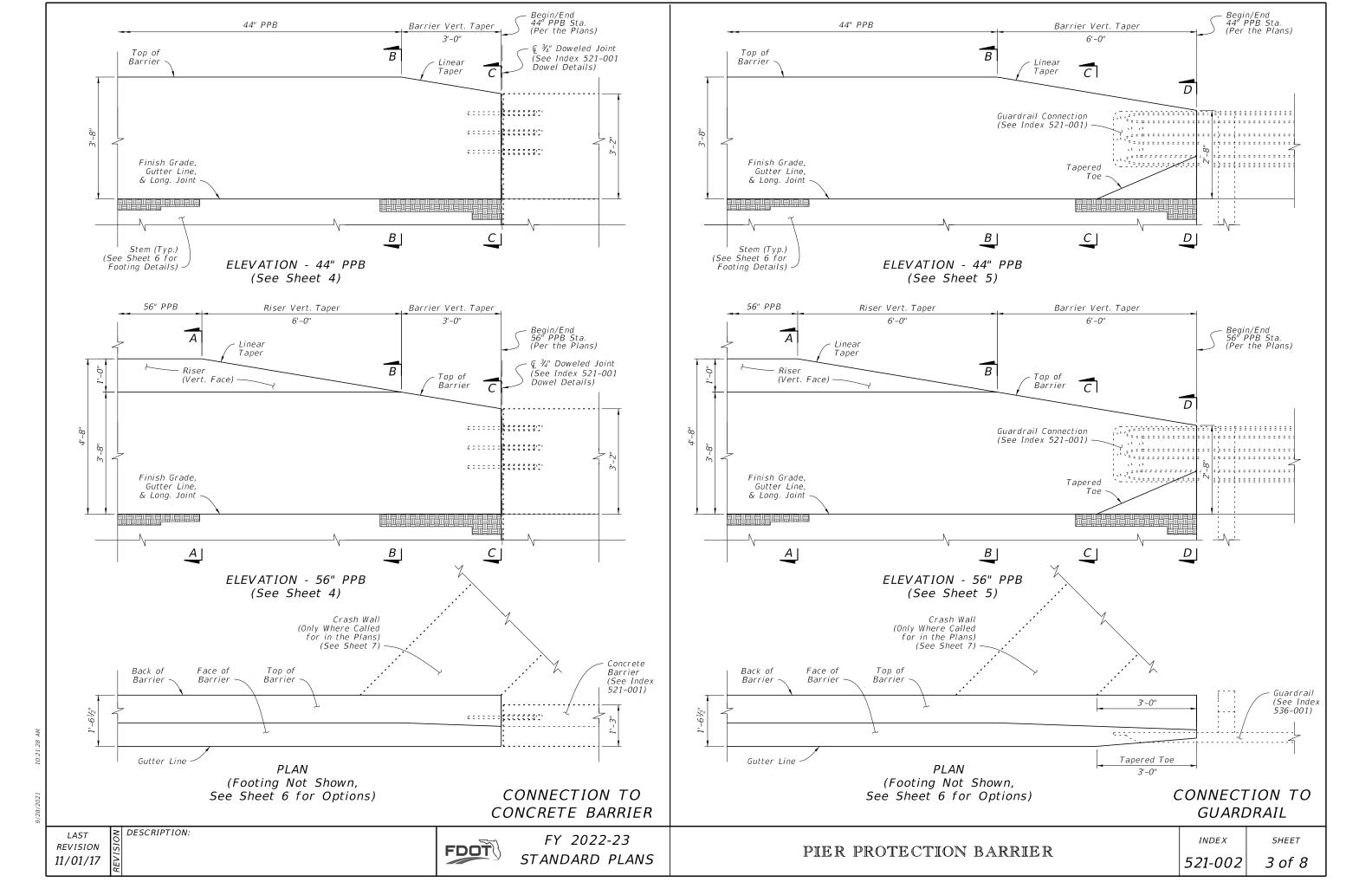
- 3. FOUNDATION: Compact the top 12 inches of the subgrade to at least 98% of the maximum density determined by FM 1-T 180, Method D.
- 4. DRAINAGE INLETS: See Index 425-031 for Adjacent Barrier Inlets, and isolate these structures from Pier Protection Barriers and Footings with 1" Preformed Joint Filler.
- 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 1/2" 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.

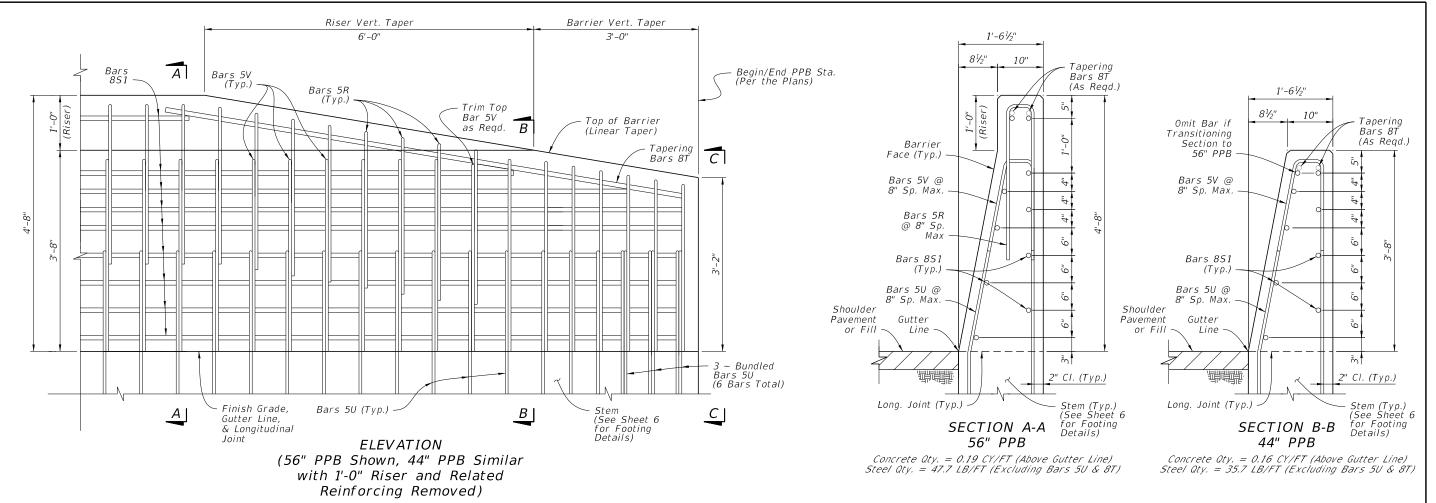
DESCRIPTION: **REVISION**

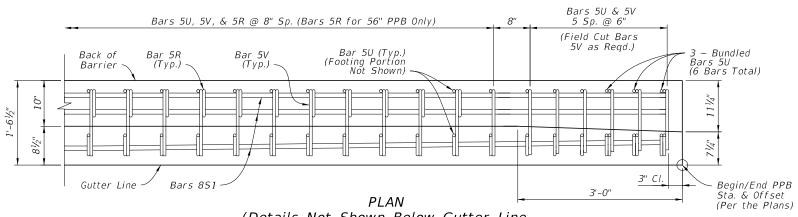
11/01/19









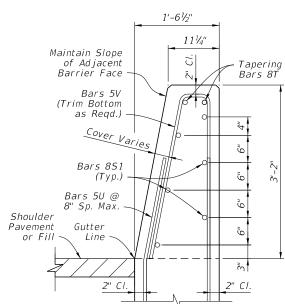


(Details Not Shown Below Gutter Line, See Sheet 6 for Footing and Stem Details) (Only Top & Bottom Longitudinal Steel Shown, See Section Views for All Steel Locations)

NOTES:

DESCRIPTION:

- 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 11/01/17

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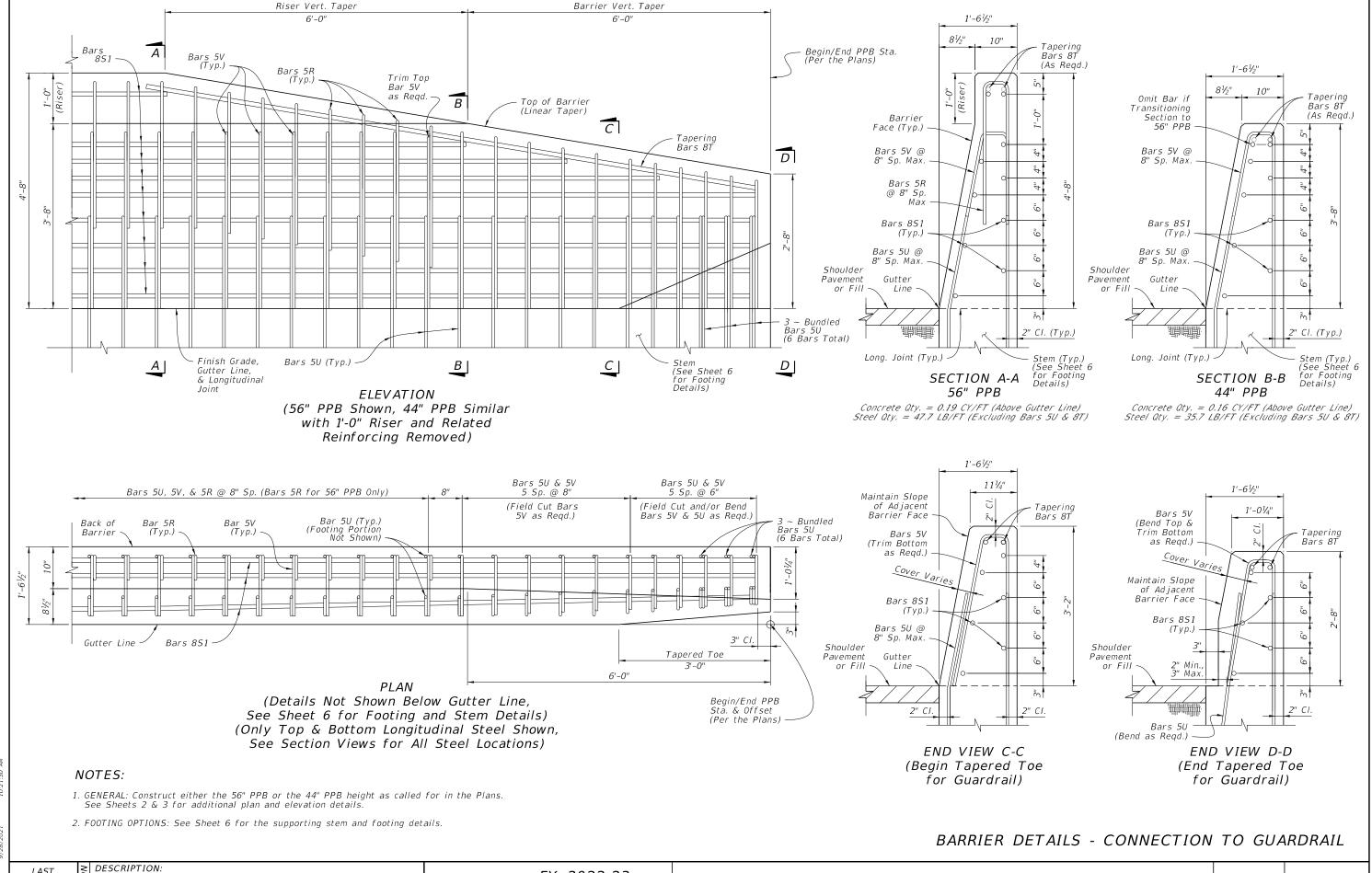
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REVISION

PIER PROTECTION BARRIER



REVISION

11/01/17

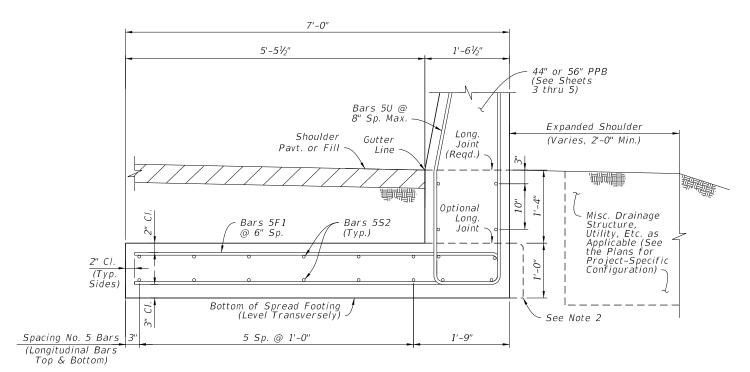
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FY 2022-23 STANDARD PLANS

PIER PROTECTION BARRIER

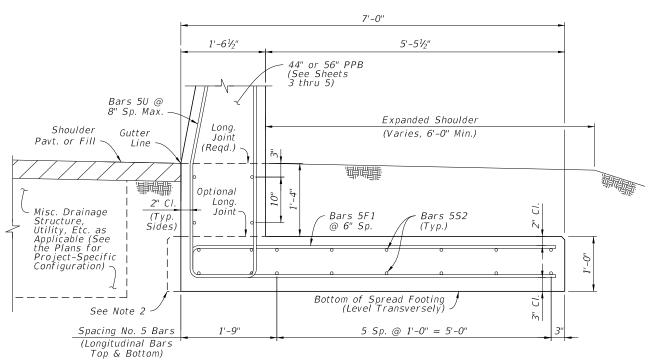
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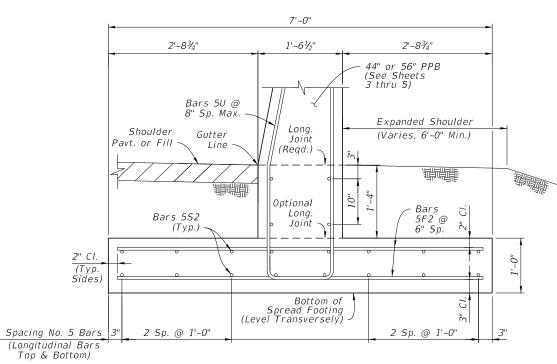
SECTION E-E REAR-FLUSH FOOTING OPTION

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 Oty. = 0.34 CY/FT (Below Gutter Line) Steel Oty. = 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

LAST **REVISION** 11/01/17

DESCRIPTION:

FDOT

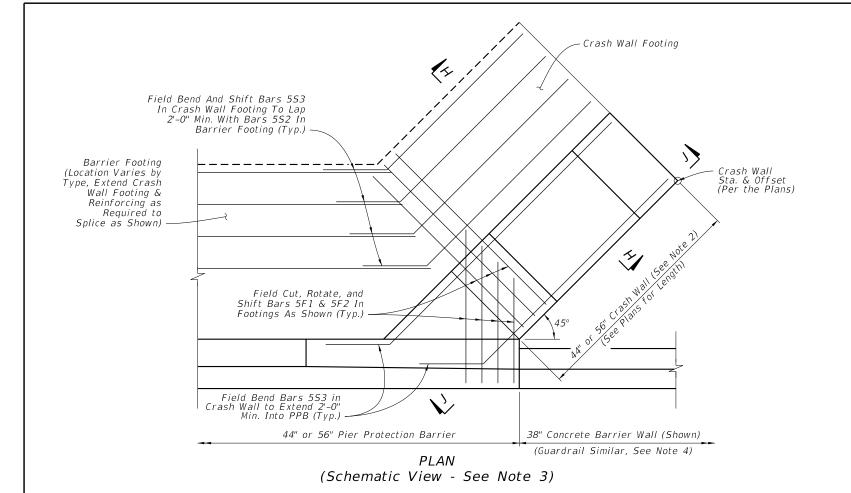
FY 2022-23 STANDARD PLANS

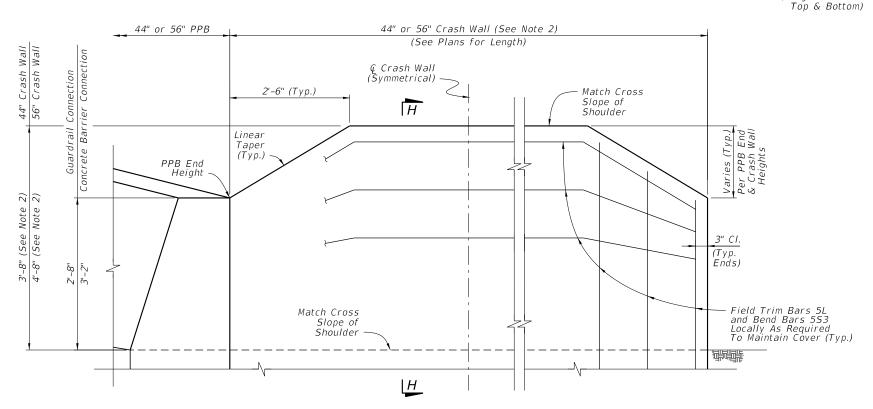
PIER PROTECTION BARRIER

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7'-0" Crash Wall Crash Wall 4'-0" 3'-0" 44" 56" Bars 5E @ 1'-0" Sp. Max. (With Bars 5L) 553 (Typ., Wall & (Typ.)Stem) 3'-8" 1'-0" Bars 5L @ Bars 5L @ @ @ @ 1'-0" Sp. 1'-0" Sp. Sp. Sp. Max. Max. Long. Match Cross Joint Slope of Reqd. Shoulder Optional Bars 5F1 Bars 5S3 Joint @ 6" Sp. (Typ.)2" CI. Spacing Bars 5S3 (Typ. Sides) (Longitudinal Bars Each Face) Bottom of Spread Footing (Level Transversely) See Note 5 Spacing Bars 5S3 3 Sp. @ 1'-0" (Longitudinal Bars

CRASH WALL 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

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

REVISION 11/01/17

DESCRIPTION:

FDOT

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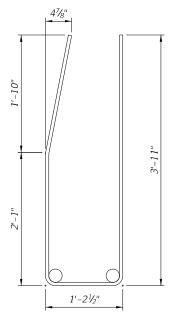
521-002

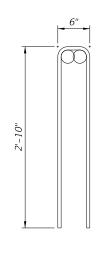
SHEET 7 of 8

BILL OF REINFORCING STEEL			
MARK	SIZE	LENGTH	
V	5	7'-5"	
U	5	8'-11"	
R	5	6'-0"	
F1	5	13'-9"	
F2	5	Varies (Straight)	
L	5	6'-5" / 7'-5"	
E	5	4'-6"	
S1	8	Varies (Straight)	
52, 53	5	Varies (Straight)	

	1'-2½" 8½" 6¾"
36"	

BARS 5V



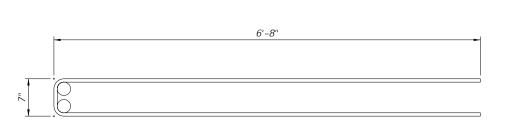


BARS 5R

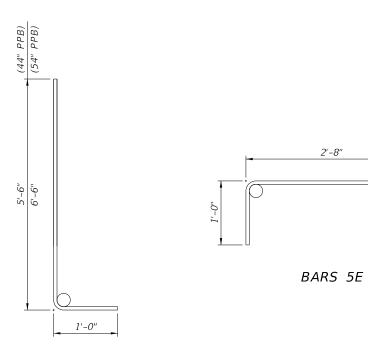
BARS 5U

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

REVISION 11/01/17

≥ DESCRIPTION:

FDOT

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GENERAL NOTES:

- 1. GENERAL: Construct Opaque Visual Barrier (OVB) in accordance with Specification 521. Use either cast-in-place 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
- 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 $\frac{6}{8}$ 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 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.

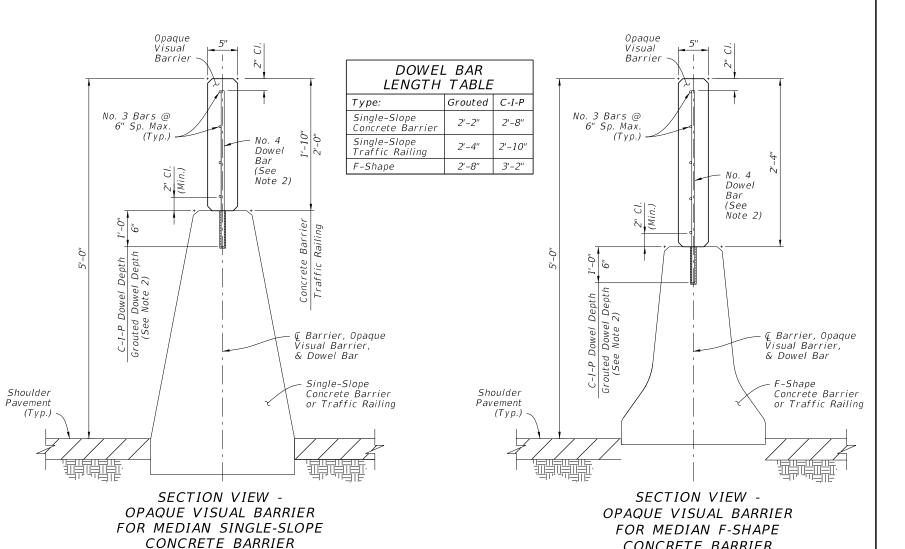
- 4. SLOPED END TREATMENTS: Regardless of the traffic direction, place Sloped End Treatments on all exposed ends of OVB, excluding leave-outs for barrier-mounted signs and light poles. See Note 7 below
- 5. BARRIER-MOUNTED SIGNS AND LIGHT POLES: Where signs and barrier-mounted light pole structures conflict with placement of OVB, end and restart the OVB with a transverse vertical face located a longitudinal distance of 2" $(\pm \frac{1}{2})$ " 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
- 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. Longitudinally overlapping OVB runs are permitted where called for in the Plans, which are designated with overlapping Begin and End Station OVB
- 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

OR TRAFFIC RAILING



LAST **REVISION** 11/01/20

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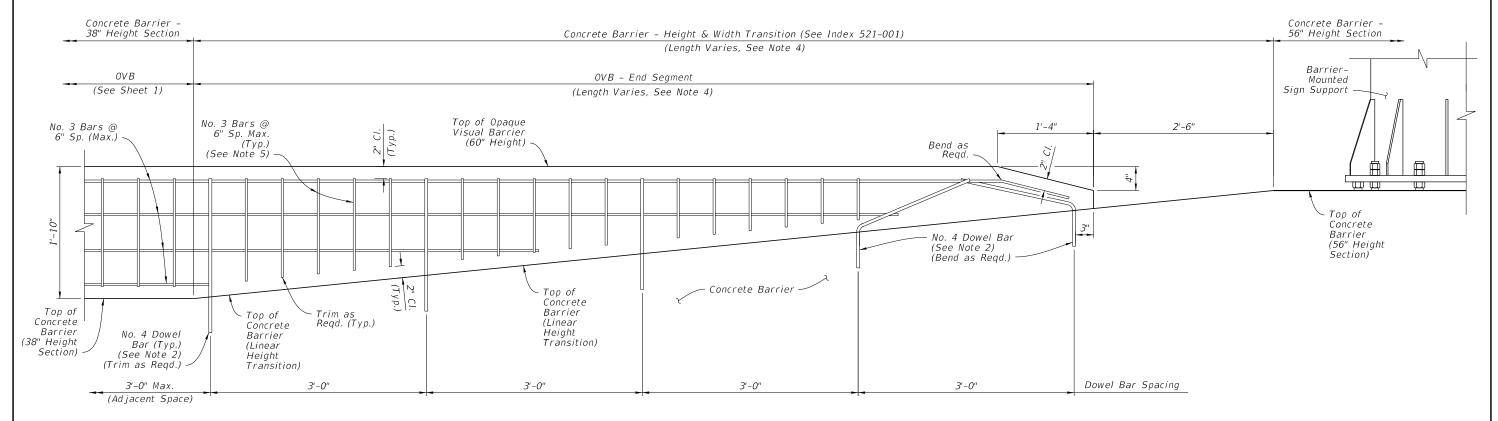
FY 2022-23 STANDARD PLANS

INDEX *521-010*

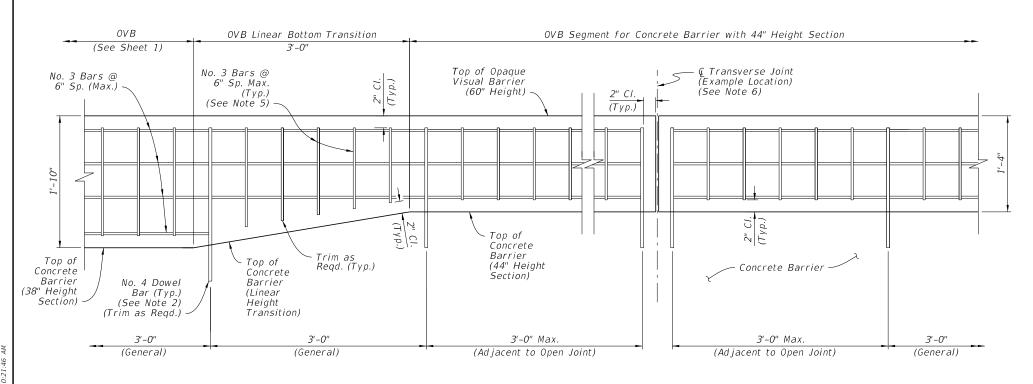
CONCRETE BARRIER

OR TRAFFIC RAILING

SHEET 1 of 2



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 required.

LAST REVISION 11/01/18

DESCRIPTION:

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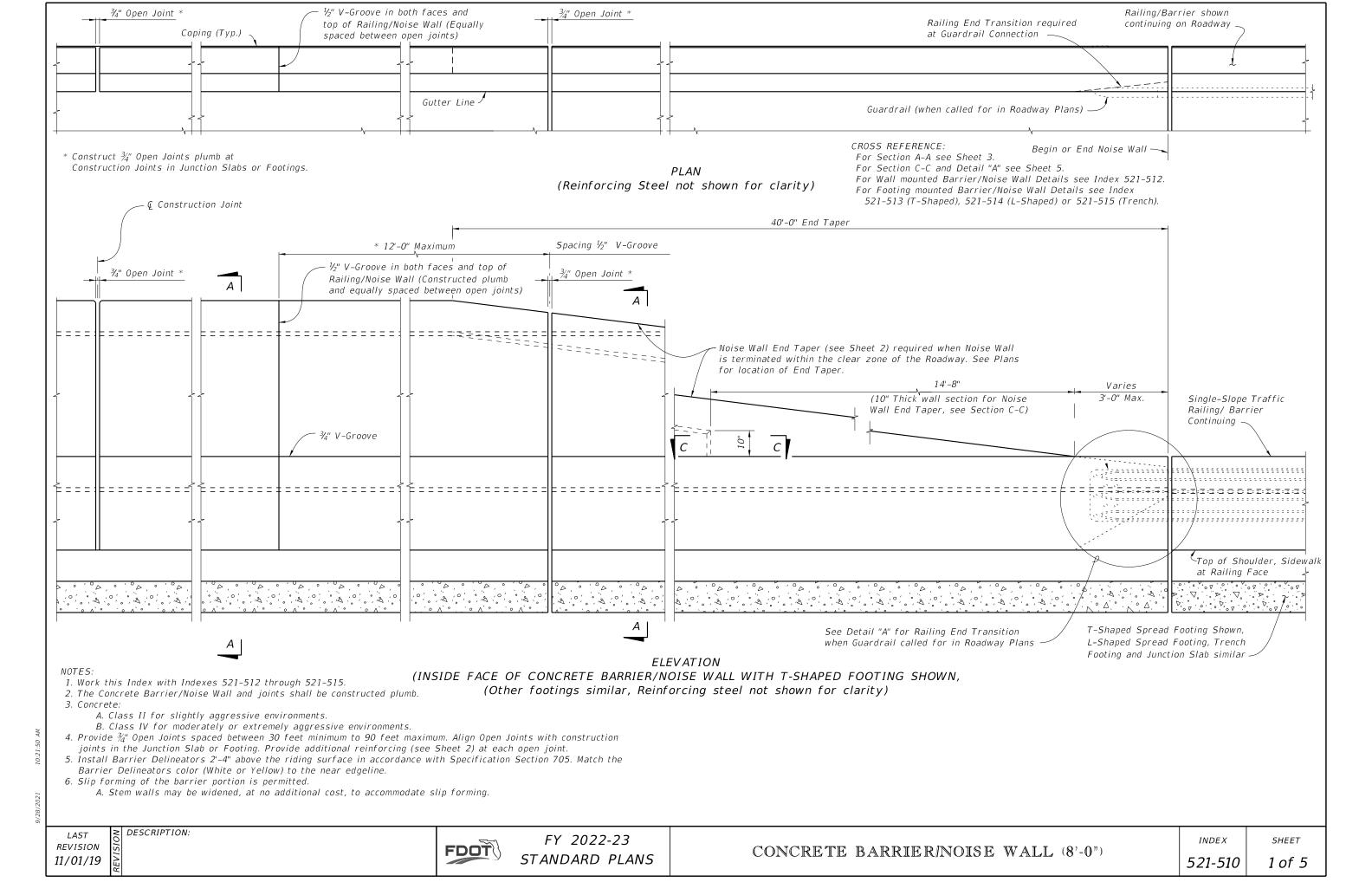
FY 2022-23 STANDARD PLANS

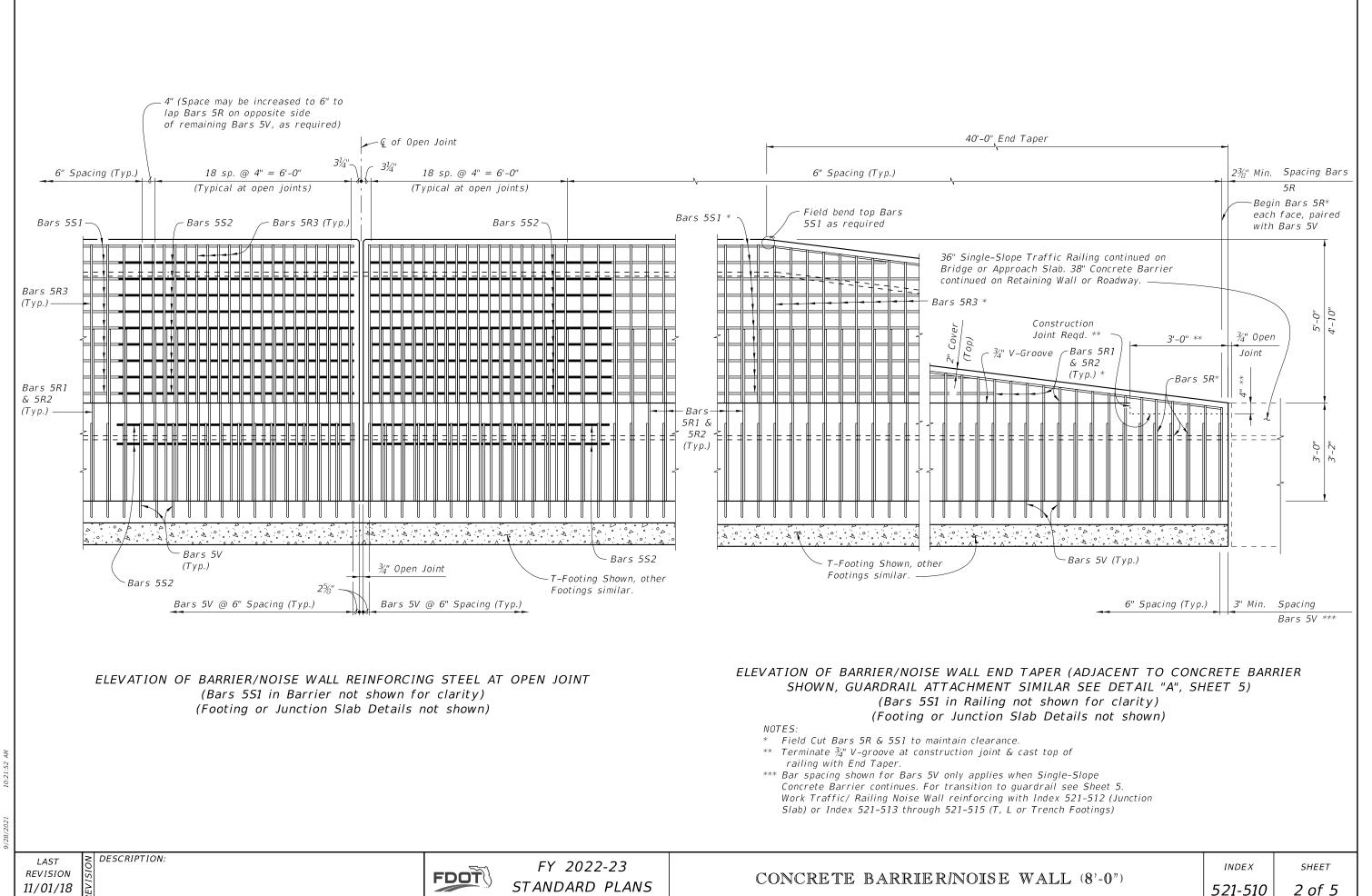
OPAQUE VISUAL BARRIER

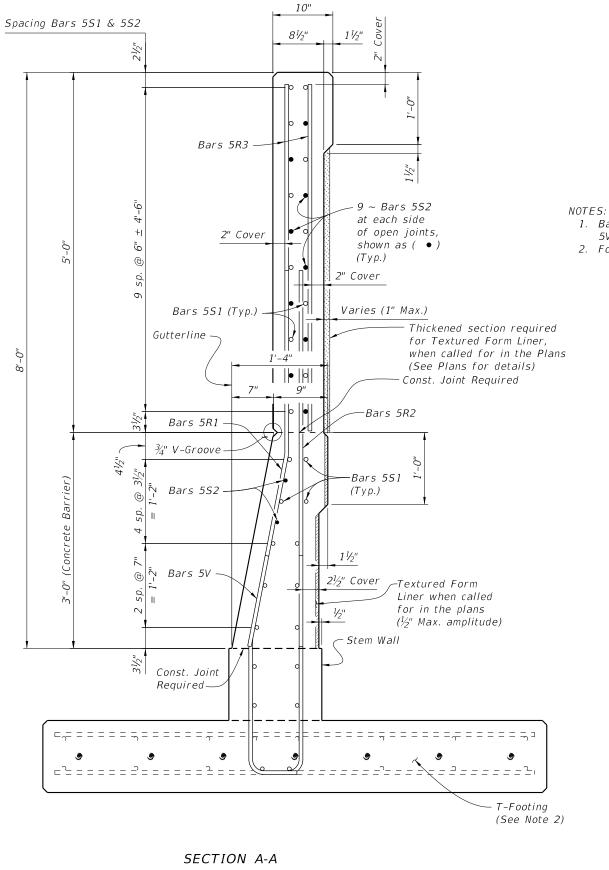
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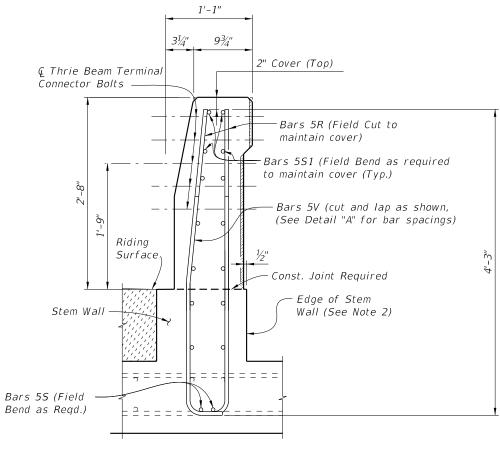
TYPICAL SECTION THRU CONCRETE BARRIER/NOISE WALL AT OPEN JOINT (Section Thru T-Footing Shown, Section Thru Junction Slab, L or Trench Footings similar)

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

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:

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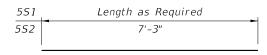
521-510

ESTIMATED TRAFFIC RAILING/NOISE WALL QUANTITIES			
ITEM	UNIT	QUANTITY	
Concrete (Railing)	CY/LF	0.107	
Concrete (Noise Wall)	CY/LF	0.136	
Reinforcing Steel (Typical)	LB/LF	69.36	
Additional Reinf. @ Open Joint	LB	226.85	

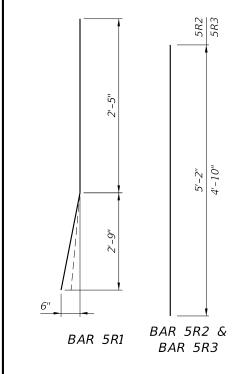
(The above quantities are based on the Concrete Barrier/ Noise wall typical section, (excluding junction slab or footing)

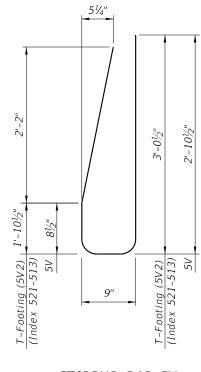
REINFORCING STEEL BENDING DIAGRAMS

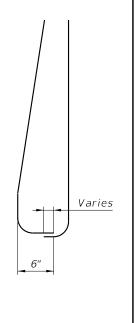
BILL OF REINFORCING STEEL				
MARK	SIZE	LENGTH		
R1	5	5'-2"		
R2	5	5'-2½"		
R3	5	4'-10"		
<i>S1</i>	5	As Reqd.		
<i>52</i>	5	7'-3"		
V (Wall)	5	6'-61/2"		
V (T-Footing)	5	7'-8½"		



BARS 5S1 & 5S2







for Railing End Transition) REINFORCING STEEL NOTES:

(Field Cut and Bend

STIRRUP BAR 5V

END STIRRUP BAR 5V To Be Field Cut (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.

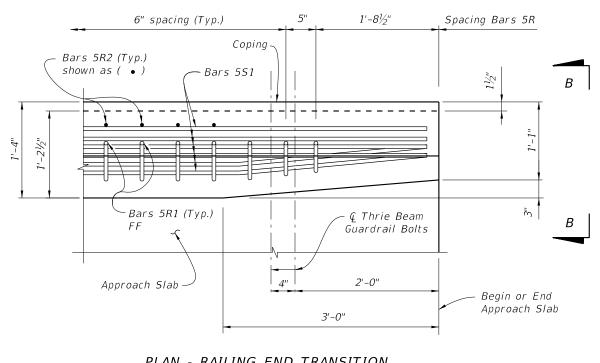
CROSS REFERENCE: See Index 521-512 for Junction Slab Details and Indexes 521-513 thru 521-515 for additional footing details.

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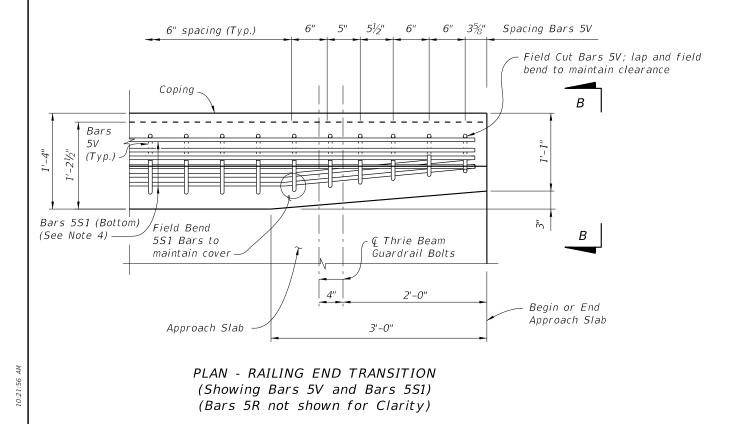
DESCRIPTION:

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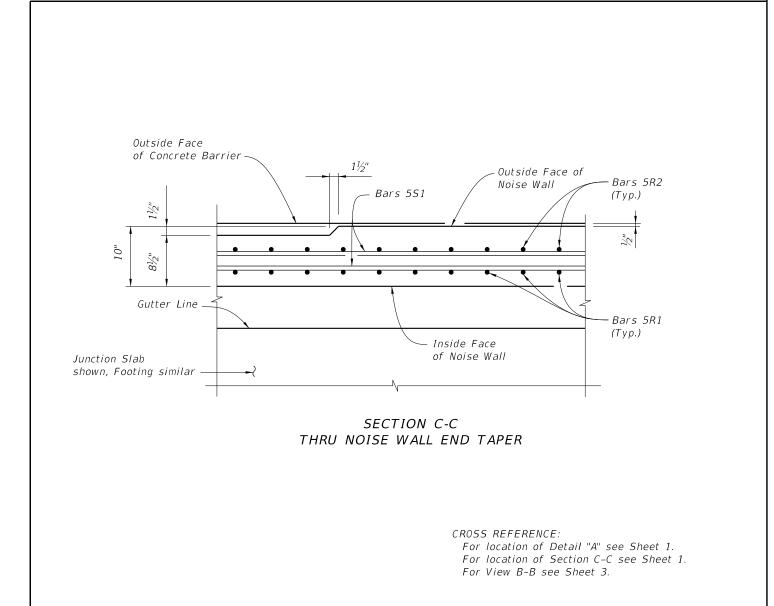
PLAN - RAILING END TRANSITION (Showing Bars 5R, and Bars 5S1) (Bars 5V not shown for Clarity)



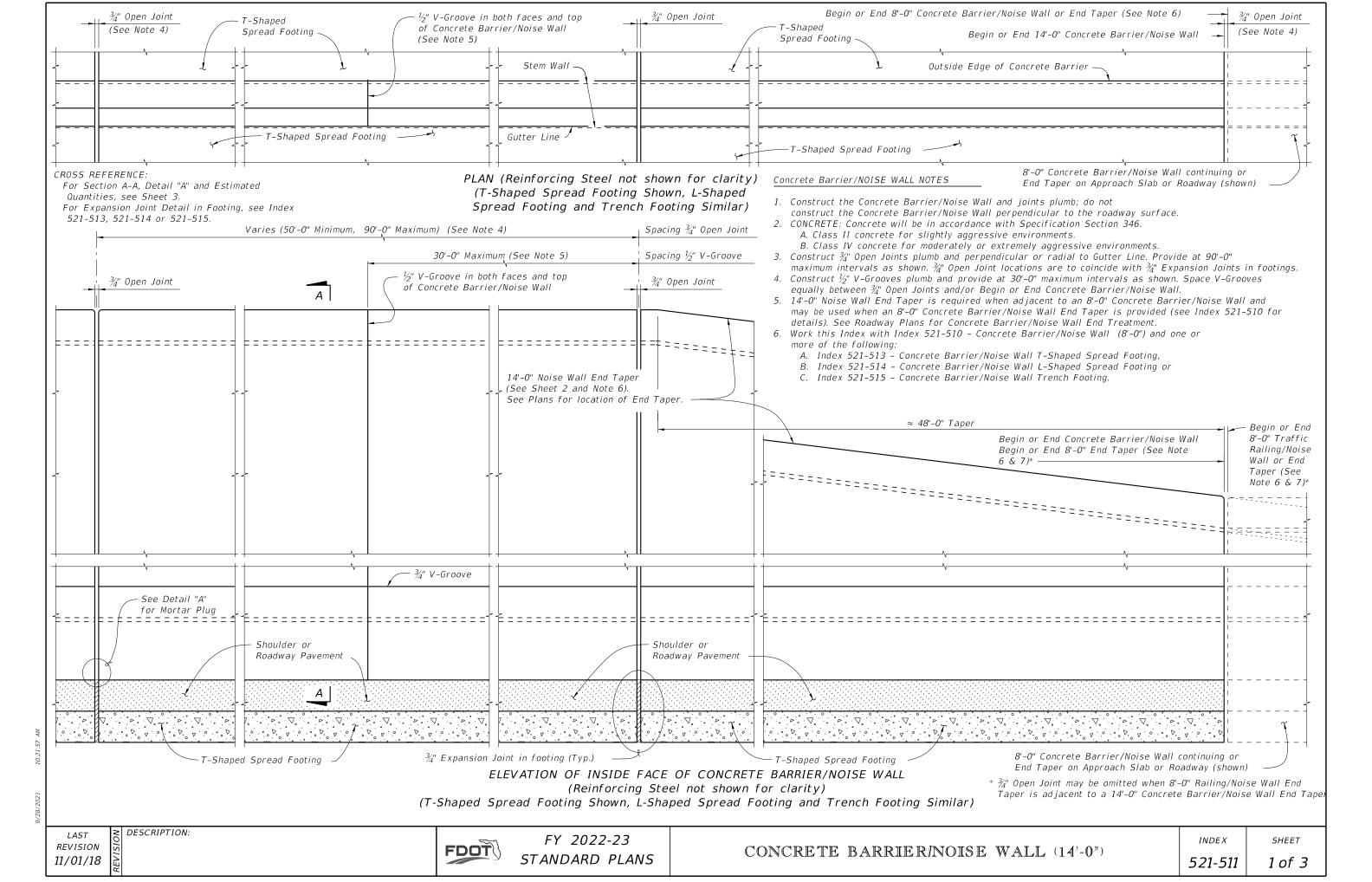
= DETAIL "A" ====

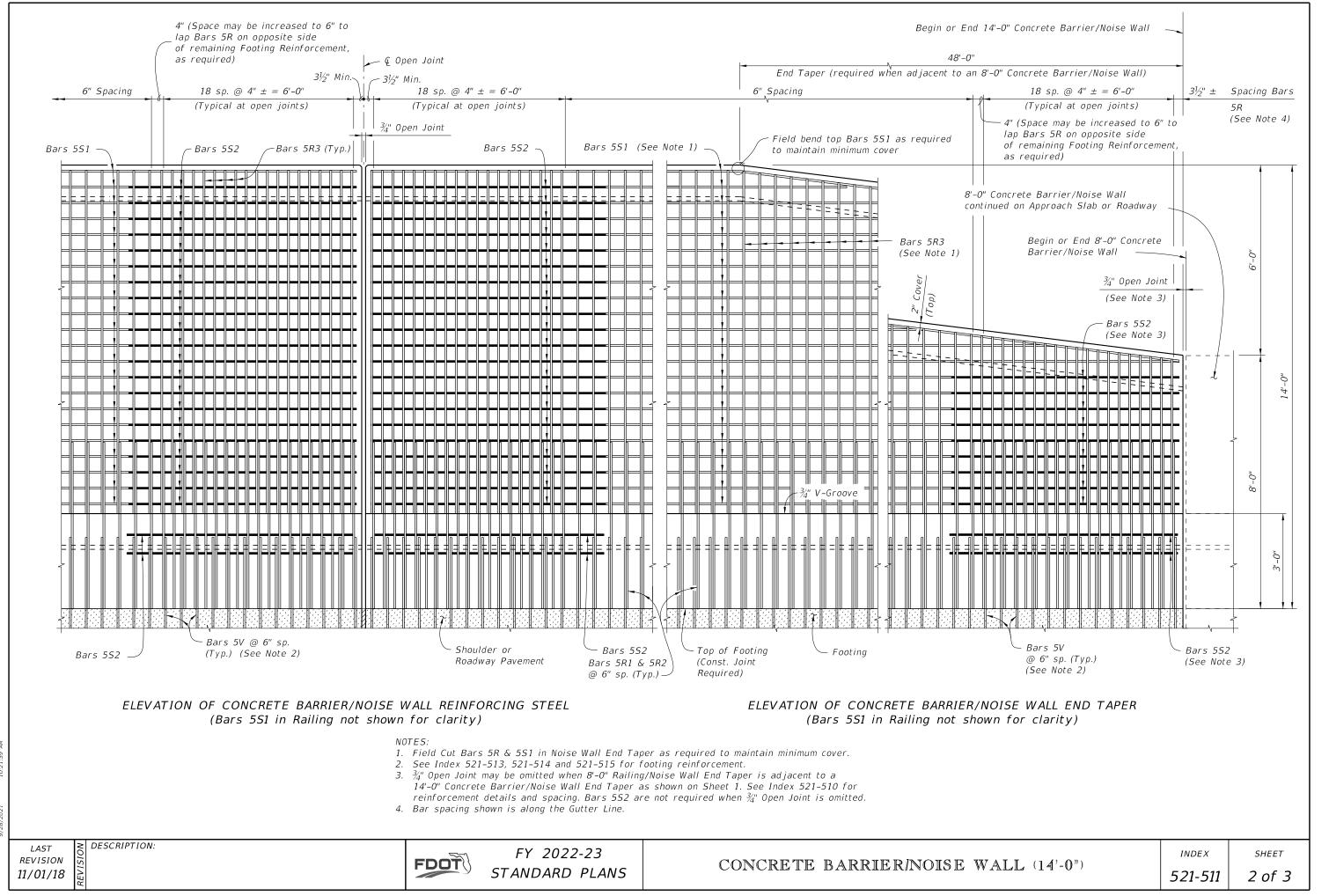
DETAIL "A" NOTES:

- 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.
- 3. 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)

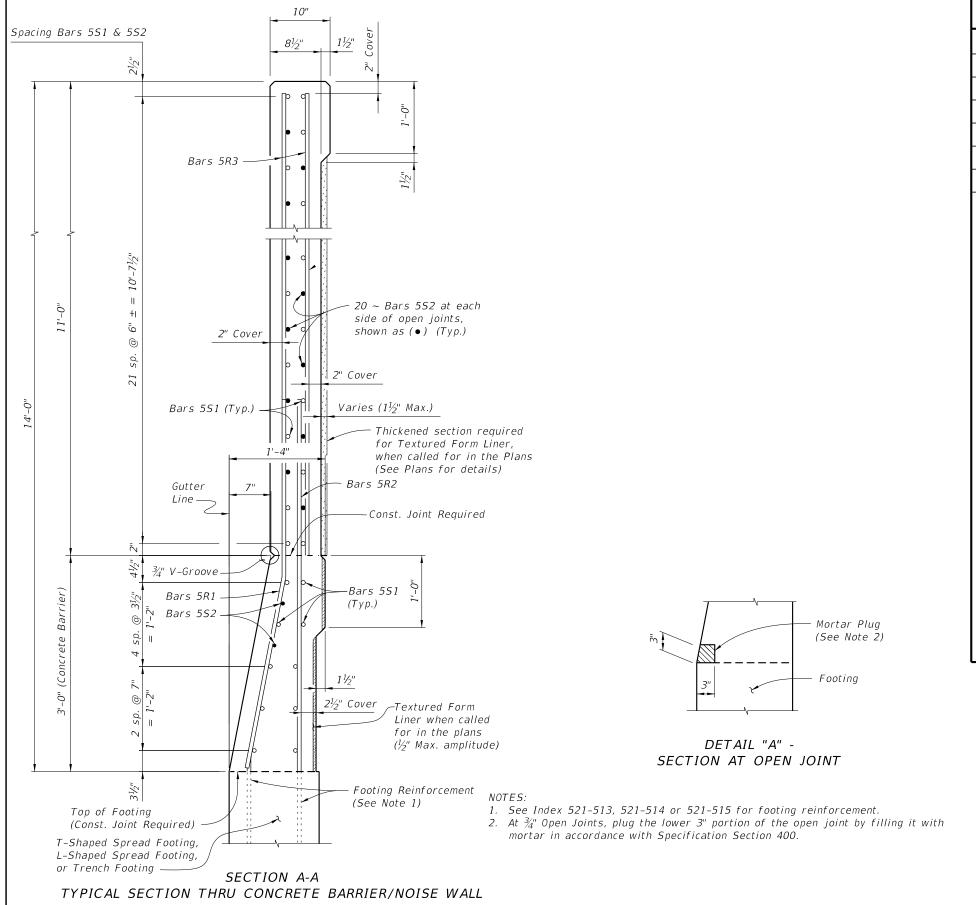


DESCRIPTION:



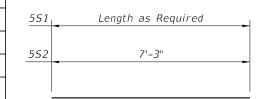


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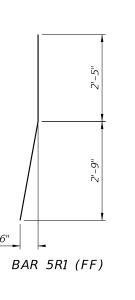


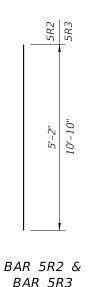
REINFORCING STEEL BENDING DIAGRAMS

BILL OF	REINFORC	CING STEE
MARK	SIZE	LENGTH
R1	5	5'-2"
R2	5	5'-2½"
R3	5	10'-10"
<i>51</i>	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	100.31
Additional Reinf. @ Open Joint (Railing/Noise Wall)	LB	397.38

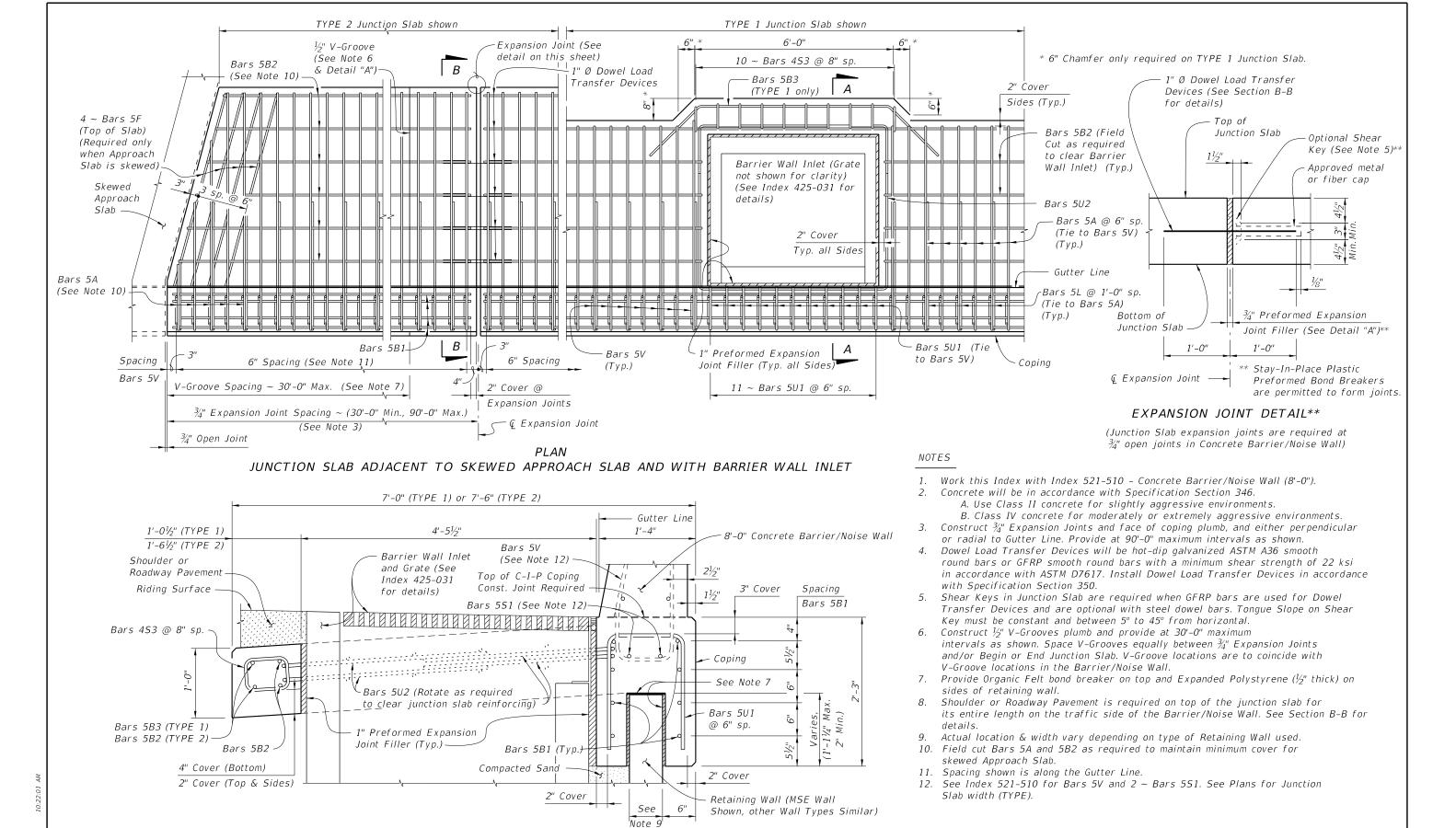
CROSS REFERENCE.

For locations of Section A-A and Detail "A", see Sheet 1.

LAST REVISION 11/01/18

DESCRIPTION:





SECTION A-A SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL (TYPE 1 Junction Slab Shown, TYPE 2 Similar)

CROSS REFERENCE:

For Section B-B and Detail "A", see Sheet 2.

REVISION 11/01/20

DESCRIPTION:

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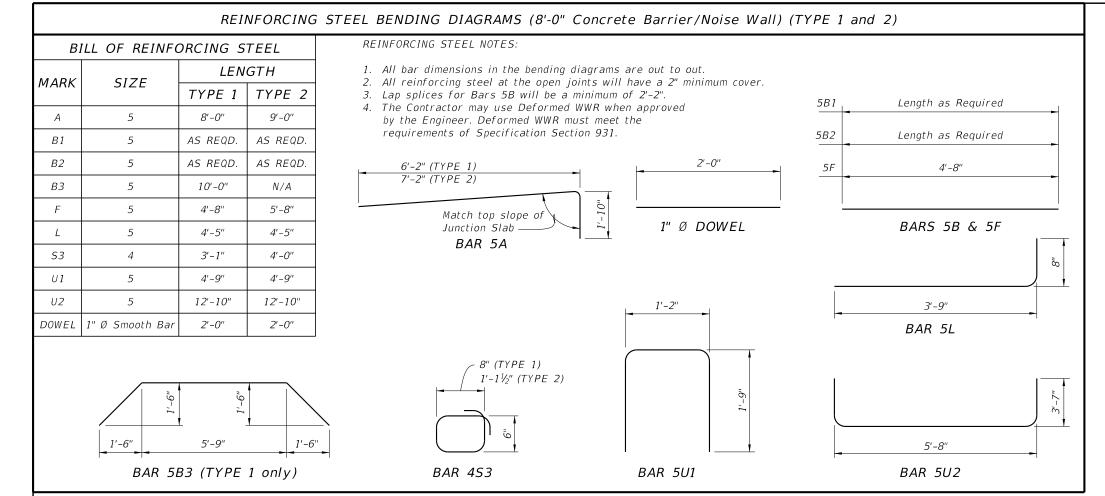
FY 2022-23

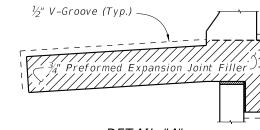
CONCRETE BARRIER/NOISE WALL JUNCTION SLAB

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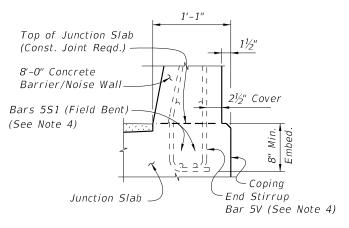
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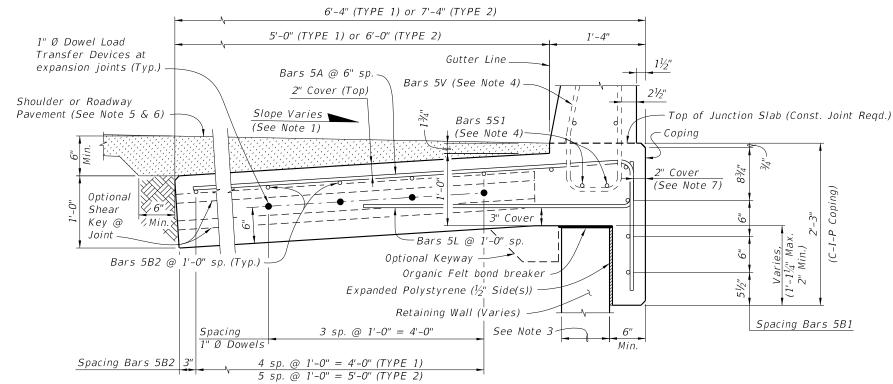
DETAIL "A"

(Showing Locations of $\frac{1}{2}$ " V-Grooves and $\frac{3}{4}$ " 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.



SECTION B-B
TYPICAL SECTION THRU JUNCTION SLAB AND RETAINING WALL
(8'-0" Concrete Barrier/Noise Wall)

ESTIMATED JUNCTION SLAB QUANTITIES QUANTITY ITEM UNIT TYPE 1 TYPE 2 0.268 0.305 Concrete (Junction Slab) CY/FT Reinforcing Steel (Typical) LB/FT 31.72 34.85 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.

LAST REVISION 11/01/20

DESCRIPTION:

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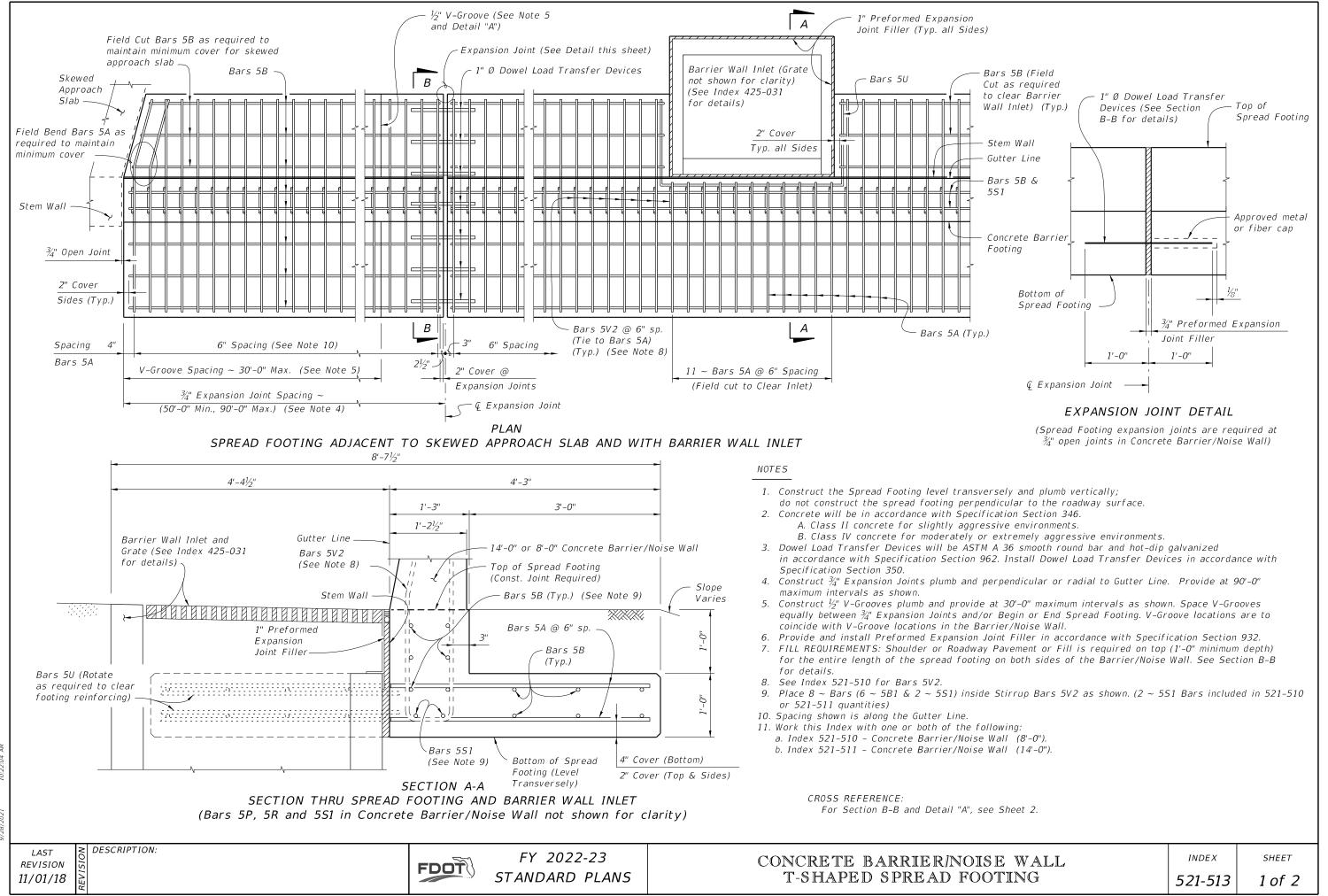
FY 2022-23 STANDARD PLANS

CONCRETE BARRIER/NOISE WALL JUNCTION SLAB

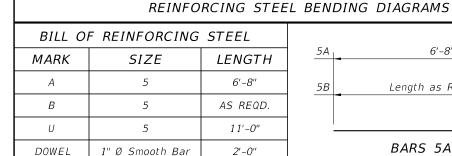
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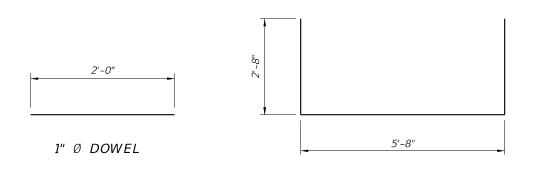
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5A	6'-8"	
5B	Length as Required	

BARS 5A & 5B

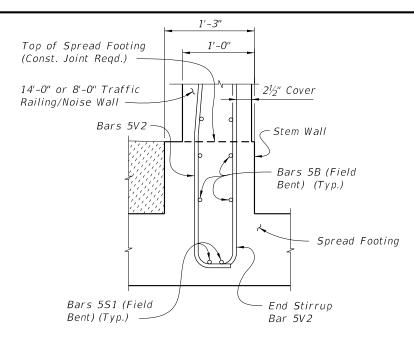
BAR 5U



- 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".

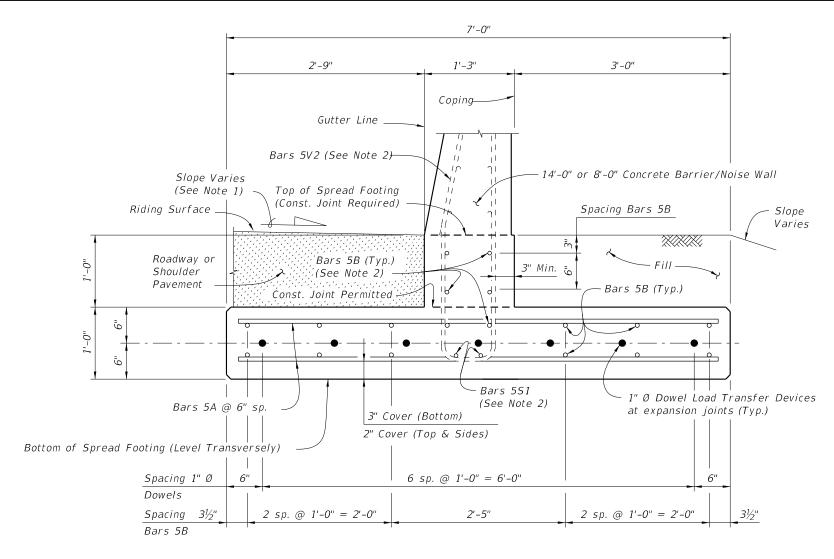
REINFORCING STEEL NOTES:

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)

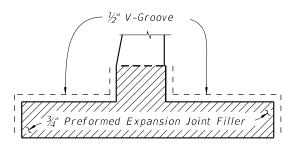
NOTE: See Index 521-510, Detail "A" for details.



SECTION B-B TYPICAL SECTION THRU SPREAD FOOTING (Bars 5R and 5S1 in Concrete Barrier/Noise Wall not shown for clarity)

NOTES:

- 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	25.90		
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.

REVISION 11/01/17

DESCRIPTION:

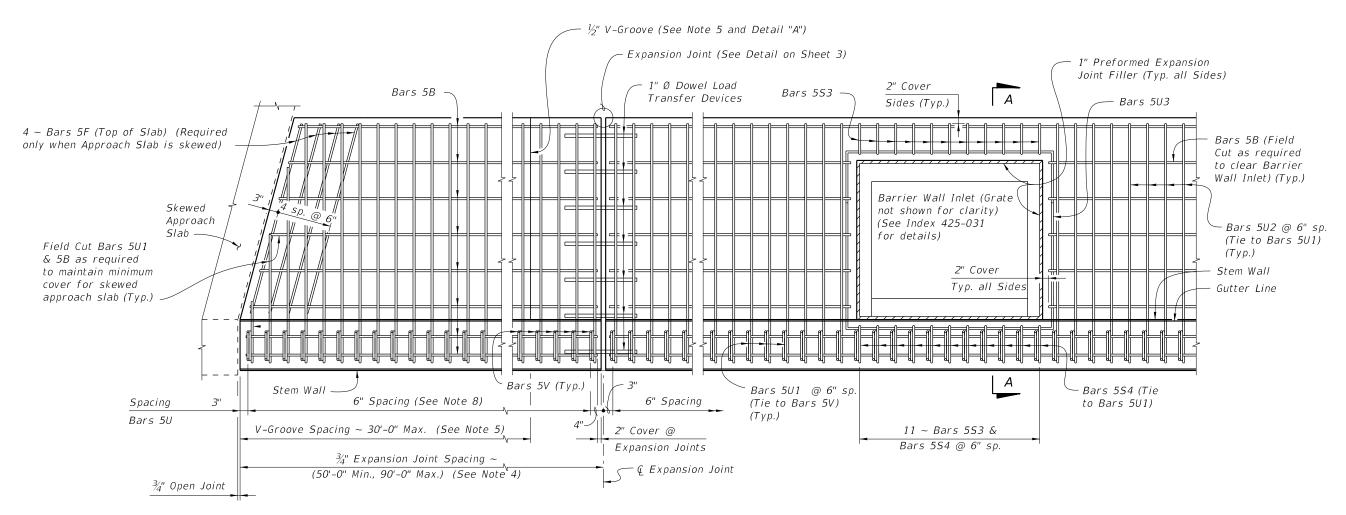
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FY 2022-23 STANDARD PLANS CONCRETE BARRIER/NOISE WALL T-SHAPED SPREAD FOOTING

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PLAN - OPTION B SPREAD FOOTING ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET (Option A Similar) (Bars S1 Not Shown)

NOTES

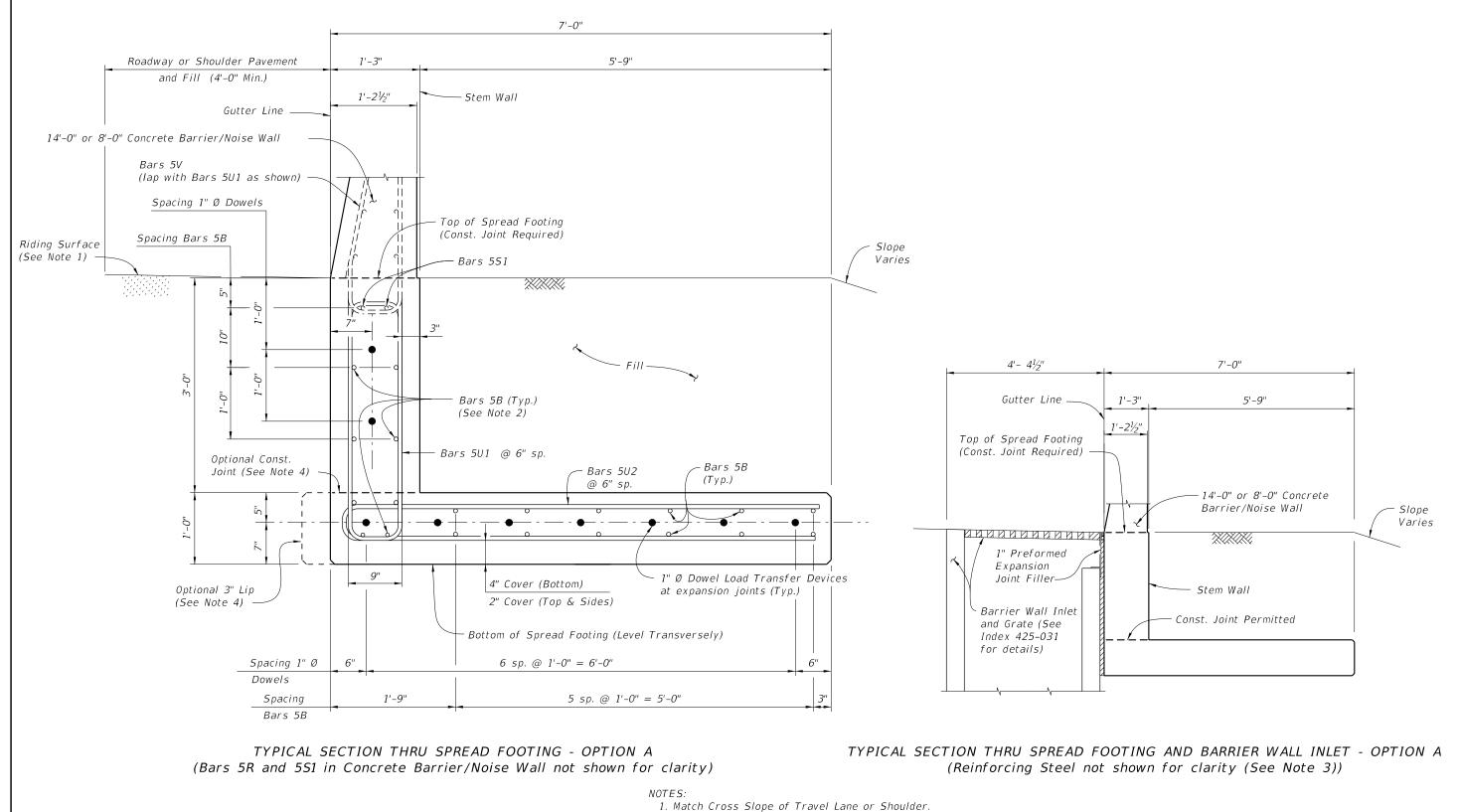
- 1. Construct the Spread Footing level transversely; do not construct the spread footing perpendicular to the roadway surface.
- 2. Concrete will be in accordance with Specification Section 346.
 - A. Class II concrete for slightly aggressive environments.
 - B. Class IV concrete for moderately or extremely 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 ¾" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
- 5. Construct ½" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between ¾" 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.

9/28/2021

DESCRIPTION:



- 2. Place 10 ~ Bars (8 ~ Bars 5B and 2 ~ Bars 5S1) inside Bars 5U1 as shown, (2 ~ 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.

11/01/17

DESCRIPTION:

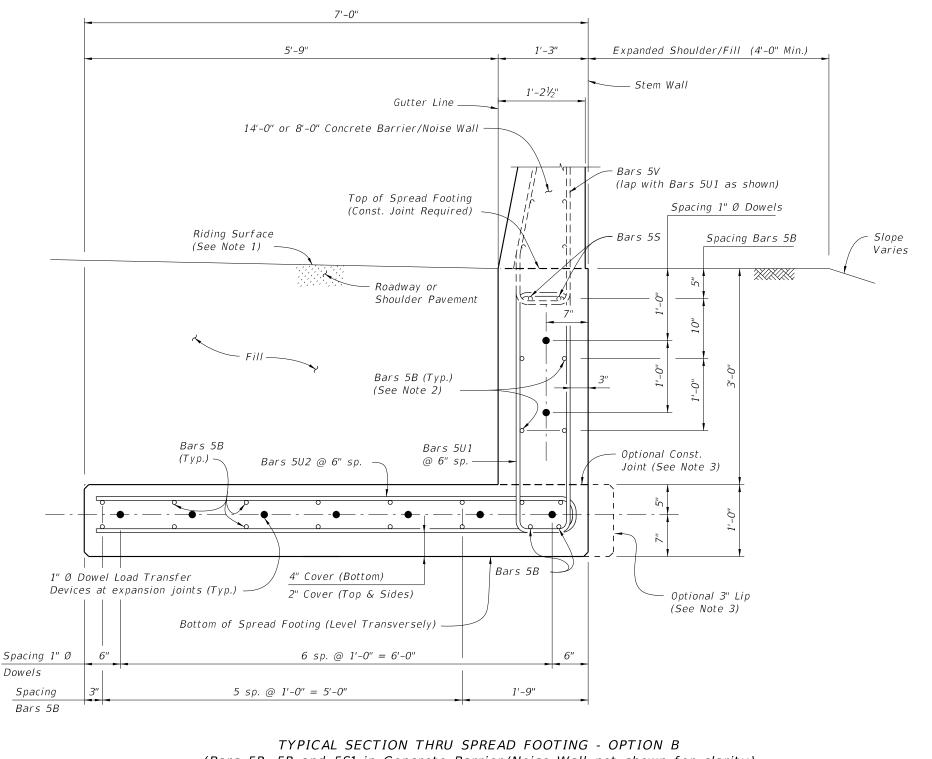
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L-SHAPED SPREAD FOOTING

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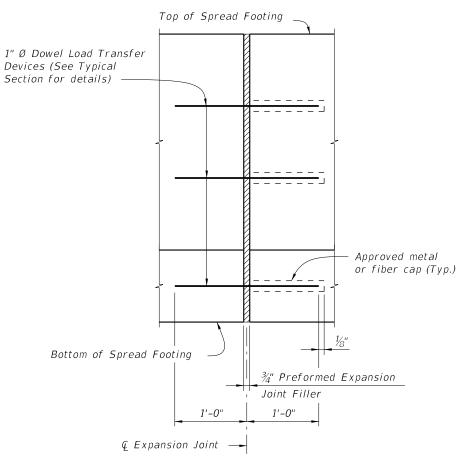
SHEET 2 of 4



(Bars 5P, 5R and 5S1 in Concrete Barrier/Noise Wall not shown for clarity)

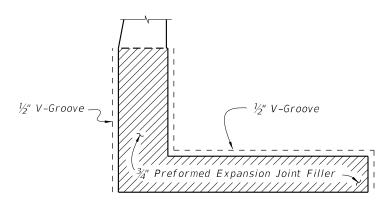
NOTES:

- 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

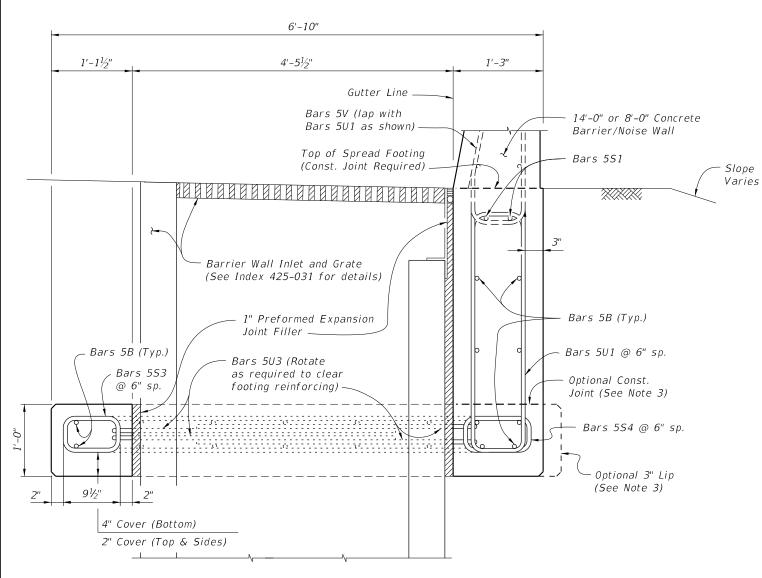
(Spread Footing expansion joints are required at 3/4" open joints in Concrete Barrier/Noise Wall)



DETAIL "A" (Option A Shown, Option B Similar)

(Showing Locations of $\frac{1}{2}$ " V-Grooves and 3/4" Preformed Expansion Joint Filler)

DESCRIPTION:



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		

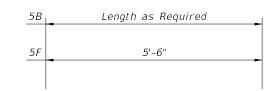
* Bars 5V and 5S1 are included in Index 521-510 or 521-511 quantities.

CROSS REFERENCE:

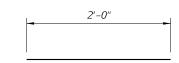
For location of Section A-A, see Sheet 1.

REINFORCING STEEL BENDING DIAGRAMS

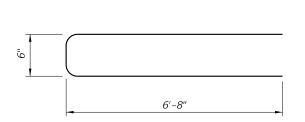
BILL OF REINFORCING STEEL				
MARK	SIZE	LENGTH		
В	5	AS REQD.		
F	5	5'-6"		
<i>S3</i>	5	3'-7"		
54	5	3'-10"		
U 1	5	9'-2"		
U2	5	13'-10"		
U3	5	12'-10"		
DOWEL	1" Ø Smooth Bar	2'-0"		

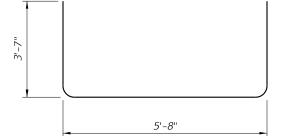


BARS 5B & 5F



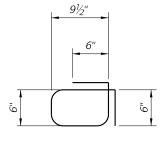
1" Ø DOWEL



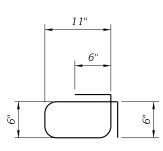


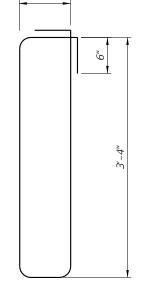
BAR 5U2

BAR 5U3



BAR 5S3





BAR 5S4

REINFORCING STEEL NOTES:

BAR 5U1

- 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.

REVISION 11/01/17

DESCRIPTION:

FDOT

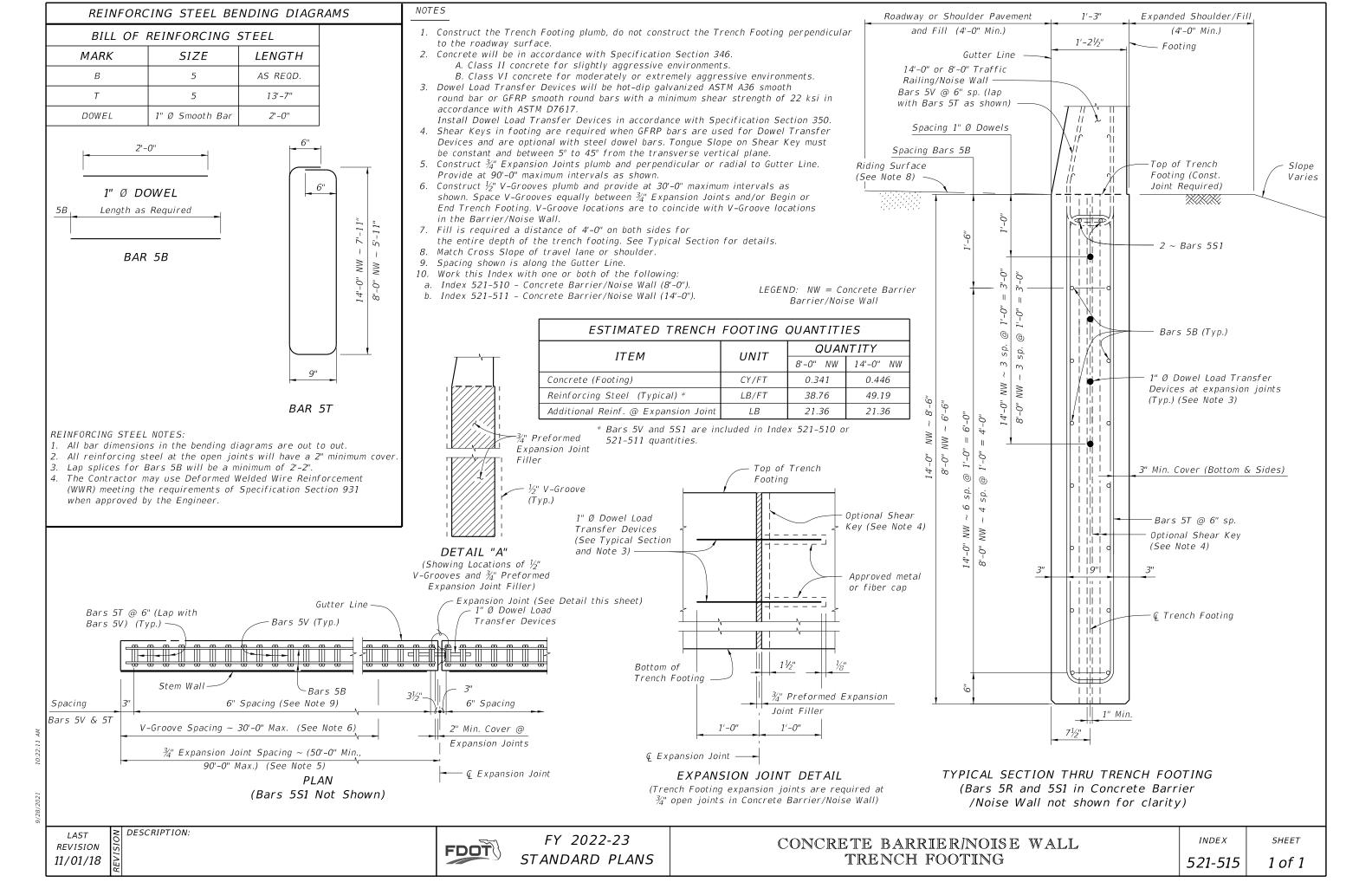
FY 2022-23 STANDARD PLANS

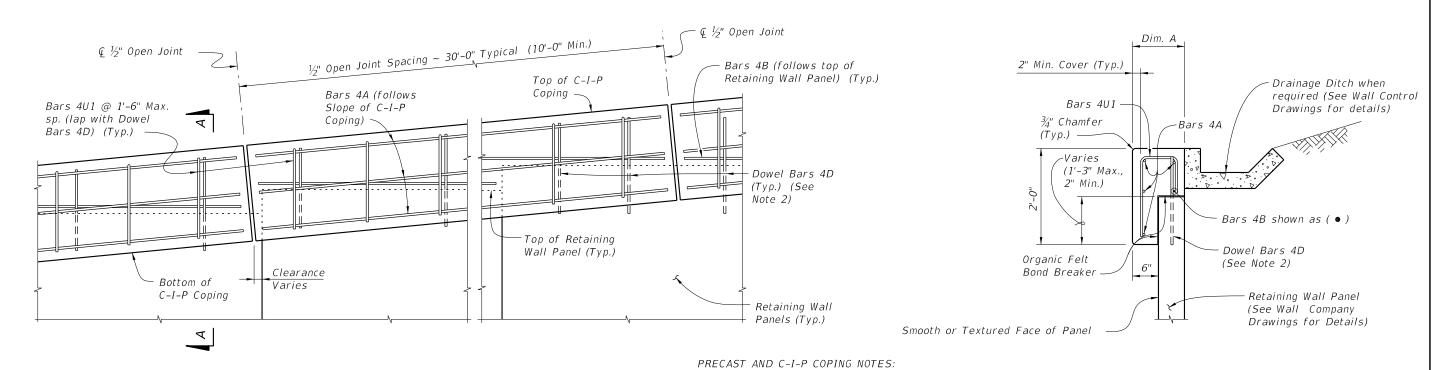
CONCRETE BARRIER/NOISE WALL L-SHAPED SPREAD FOOTING

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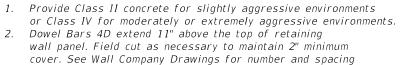
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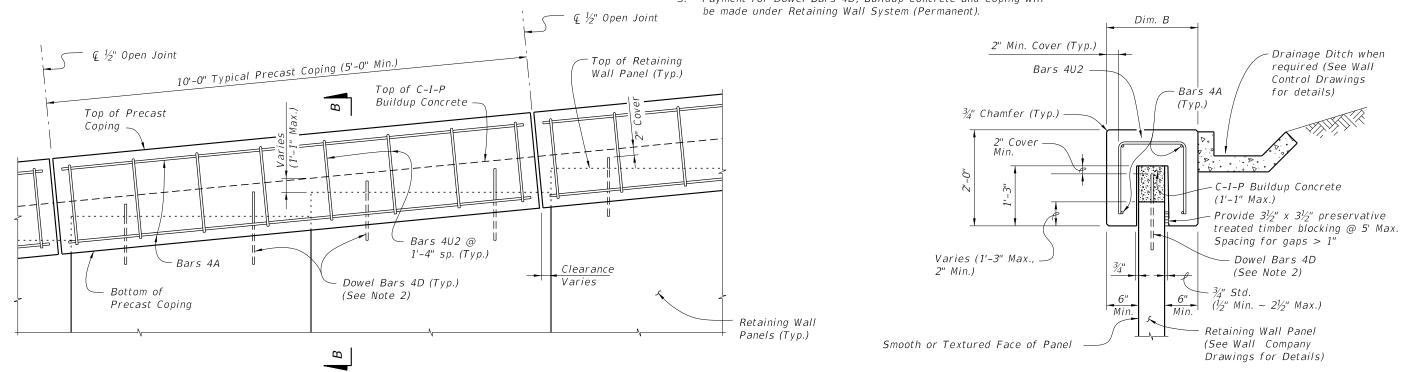
C-I-P COPING - PARTIAL ELEVATION VIEW



of Dowel Bars 4D.

3. Payment for Dowel Bars 4D, Buildup Concrete and Coping will be made under Retaining Wall System (Permanent).





PRECAST COPING - PARTIAL ELEVATION VIEW

SECTION B-B PRECAST COPING

LAST REVISION 11/01/19

FDOT

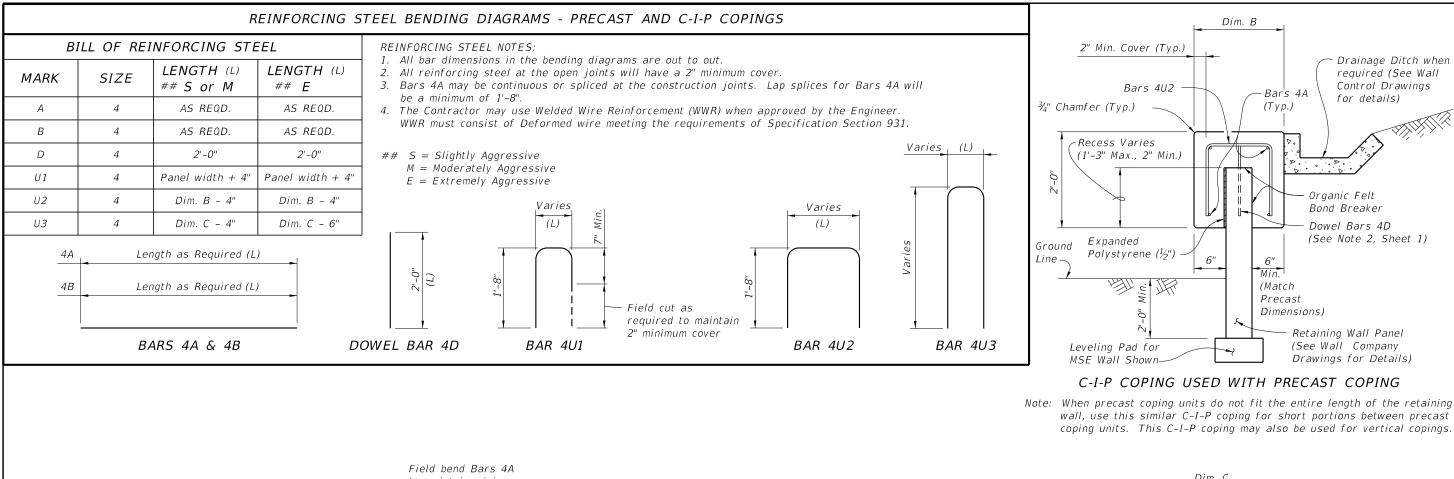
FY 2022-23 STANDARD PLANS

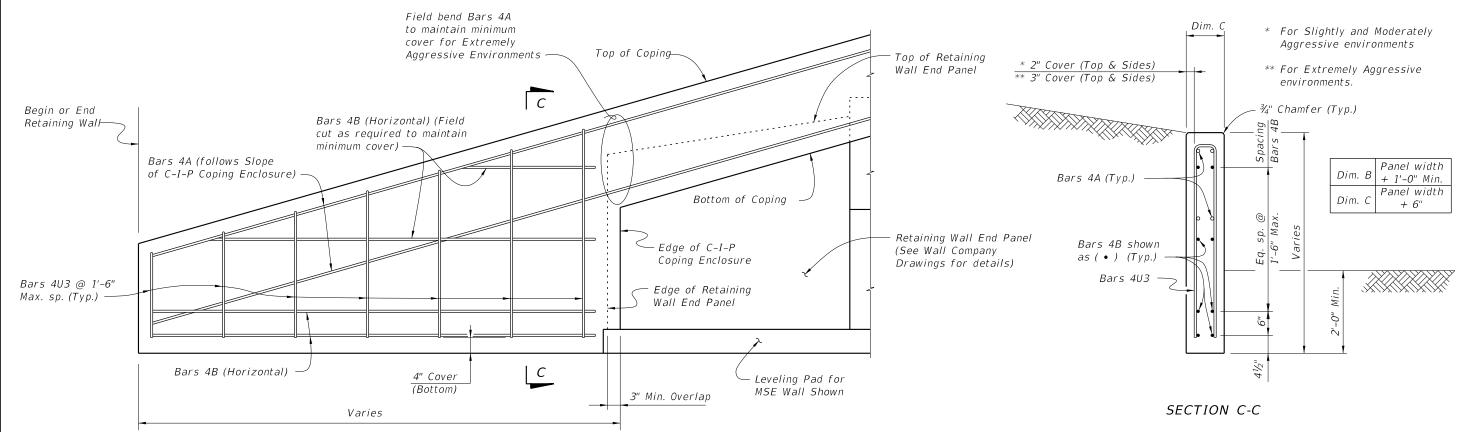
MSE WALL COPING (PRECAST OR C-I-P)

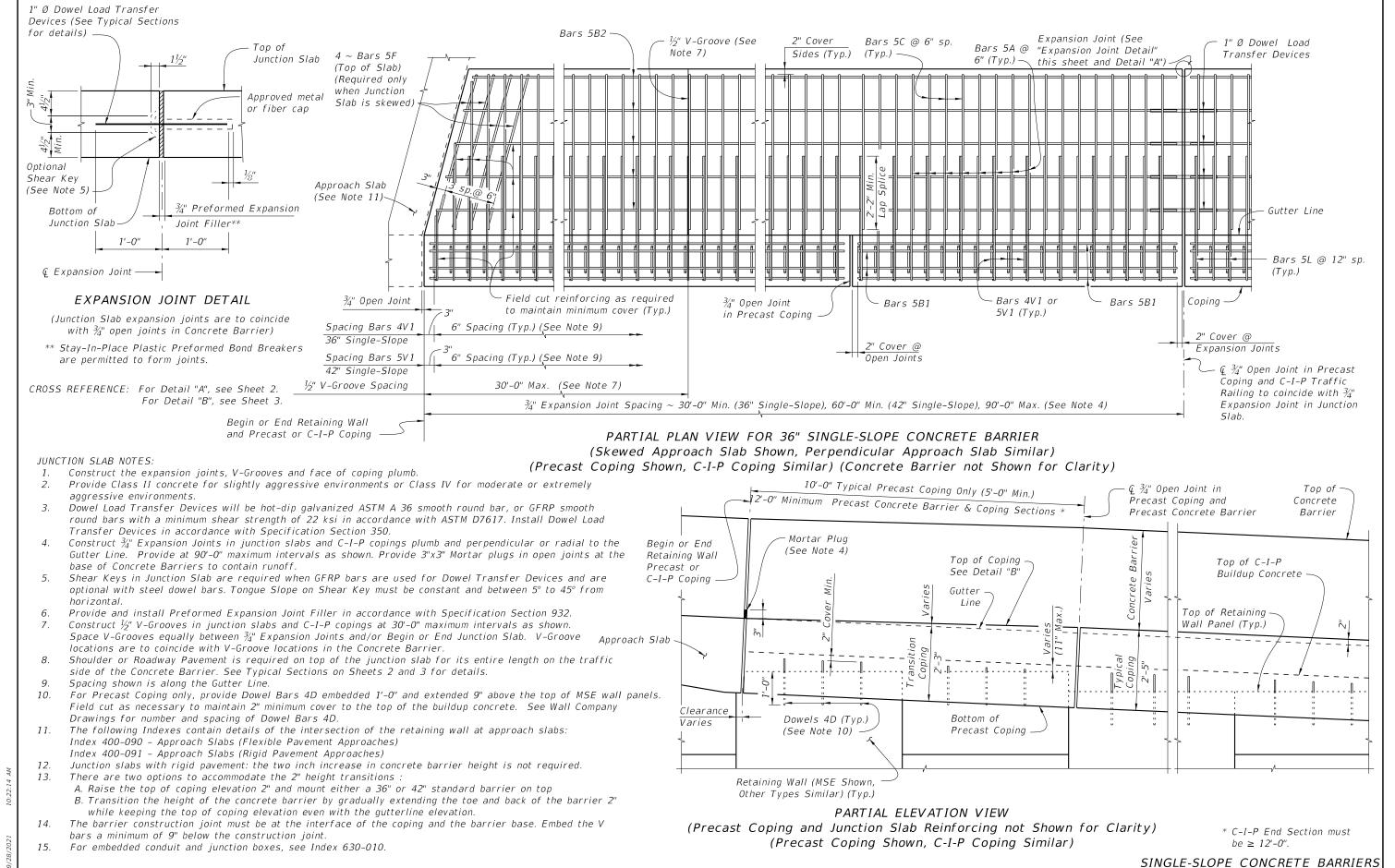
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REVISION

11/01/21

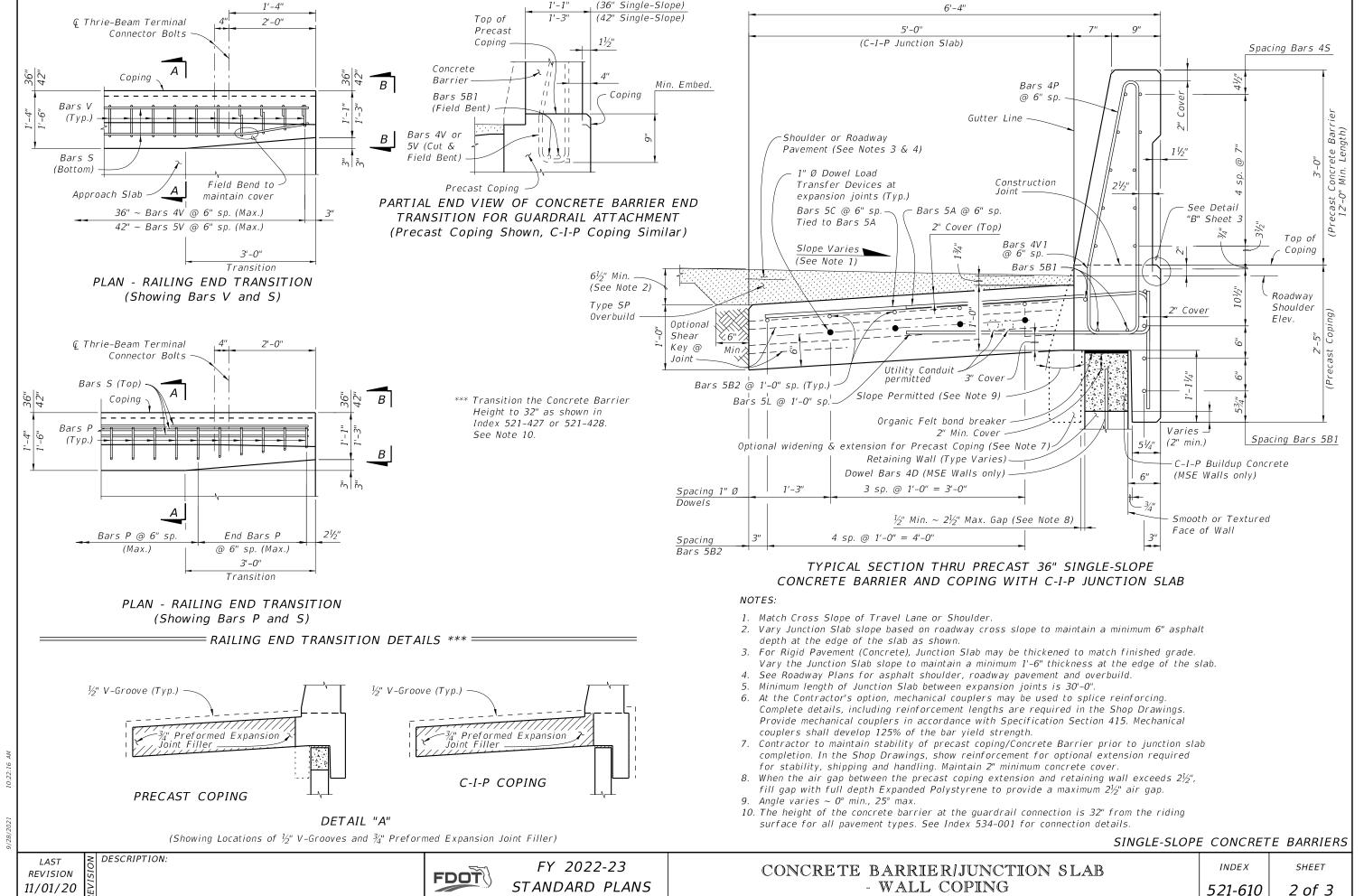
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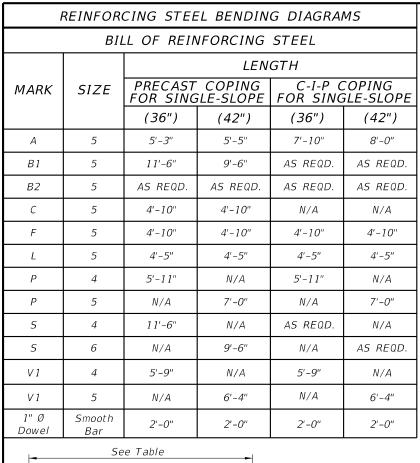
FY 2022-23 **FDOT** STANDARD PLANS

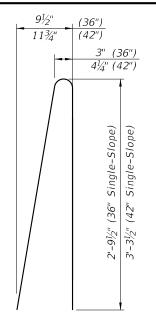
CONCRETE BARRIER/JUNCTION SLAB - WALL COPING

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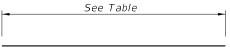
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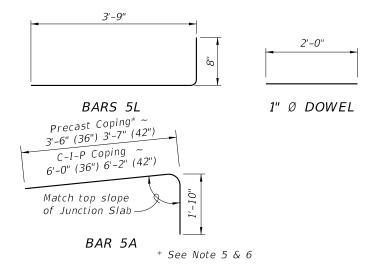


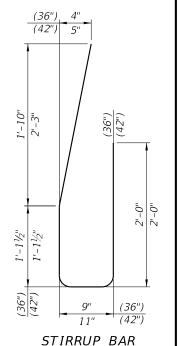


STIRRUP BAR 4P (36") 5P (42")



BARS 5B1, 5B2, 5C, 5F, 4S, & 6S



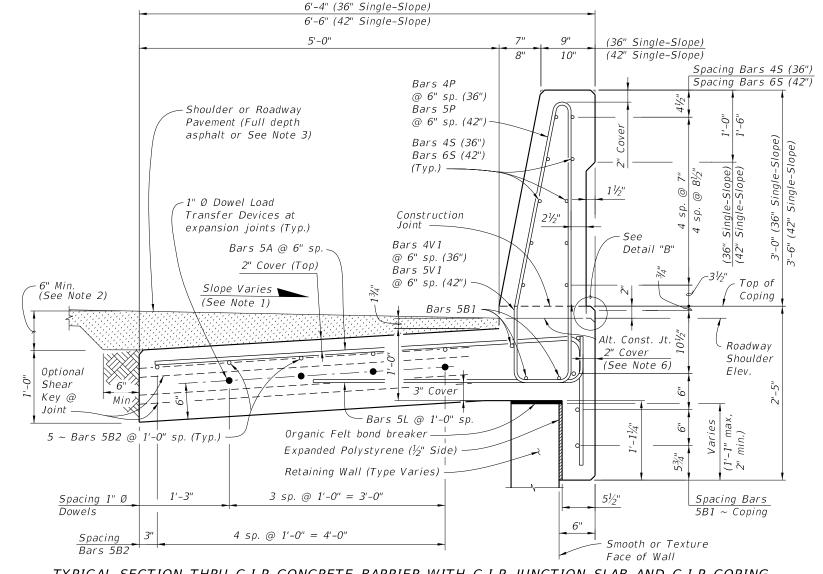


4V1 (36") 5V1 (42")

REINFORCING STEEL NOTES:

DESCRIPTION:

- 1. All bar dimensions in the bending diagrams are out to out.
- 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 for C-I-P Copings.
- 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 #5 stirrup in lieu of two bars for 4P and 4V1.

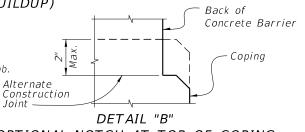


TYPICAL SECTION THRU C-I-P CONCRETE BARRIER WITH C-I-P JUNCTION SLAB AND C-I-P COPING (PRECAST COPING SIMILAR WITH C-I-P BUILDUP)

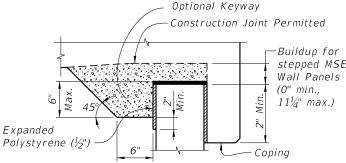
- 1. Match Cross Slope of Travel Lane or Shoulder
- Vary the Junction Slab slope based on the roadway cross slope to maintain a minimum 6" asphalt depth at the edge of the slab.
- 3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade. Vary the Junction Slab slope to maintain 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 (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



BUILDUP FOR STEPPED MSE WALL PANELS AND C-I-P COPING

SINGLE-SLOPE CONCRETE BARRIERS

REVISION 11/01/20

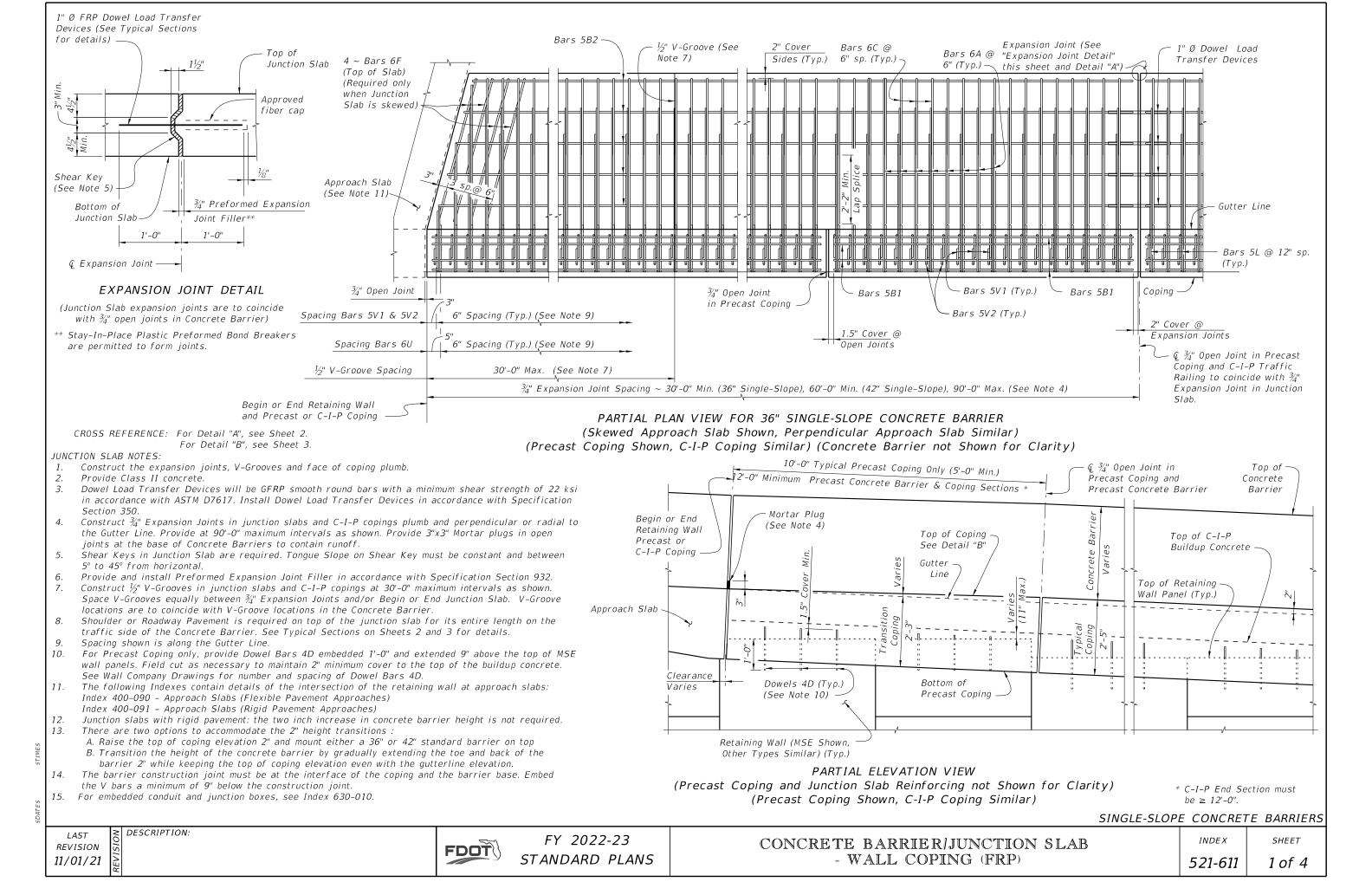


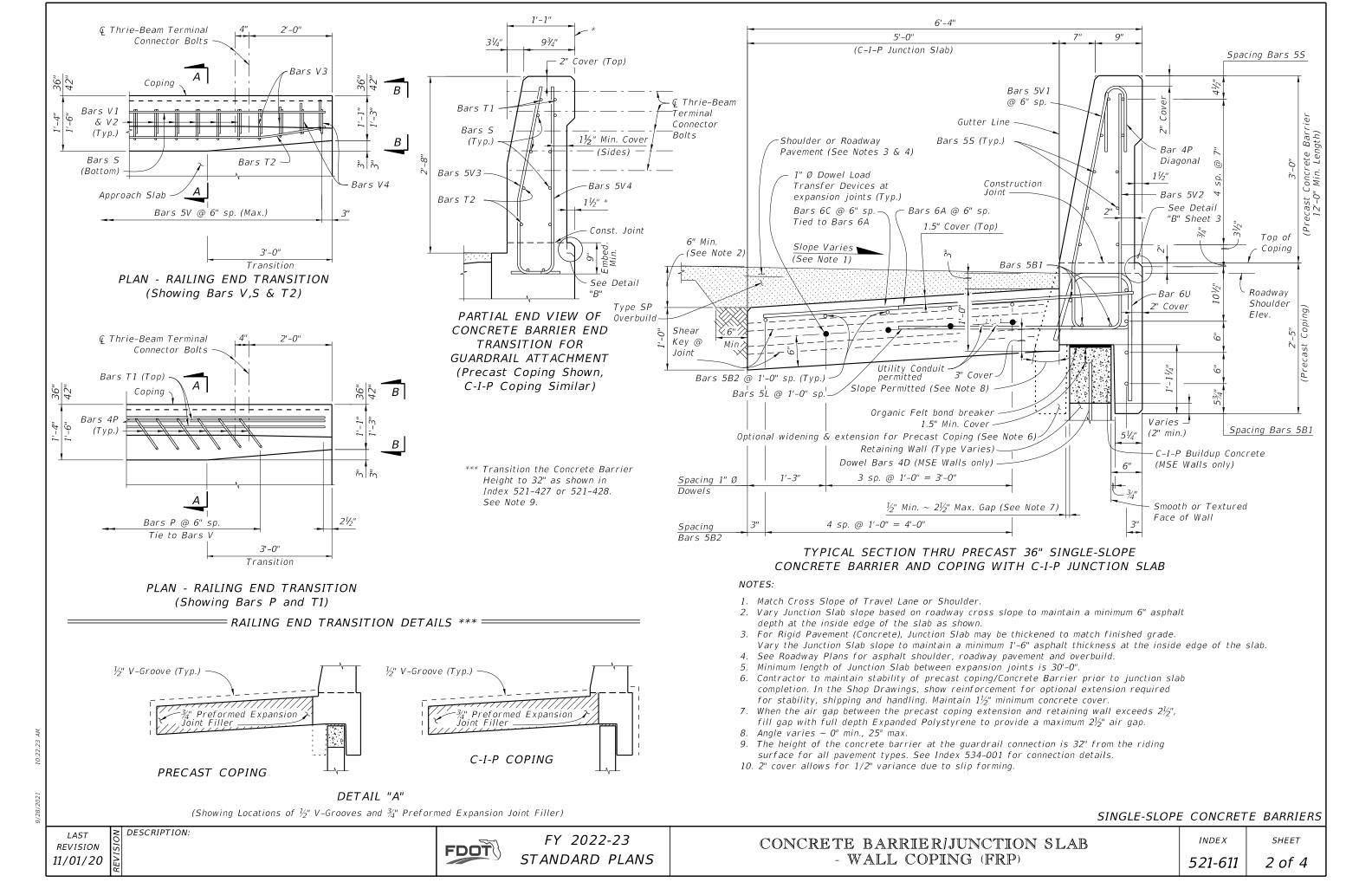
FY 2022-23 STANDARD PLANS

NOTES:

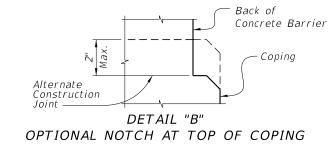
- WALL COPING

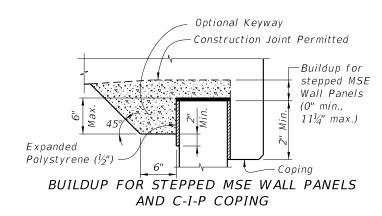
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NOTES:

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 $\frac{1}{2}$ " variance due to slip forming.

ESTIMATED QUANTITIES FOR C-I-P				
ITEM UNIT QUANTITY QUANT (36") (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

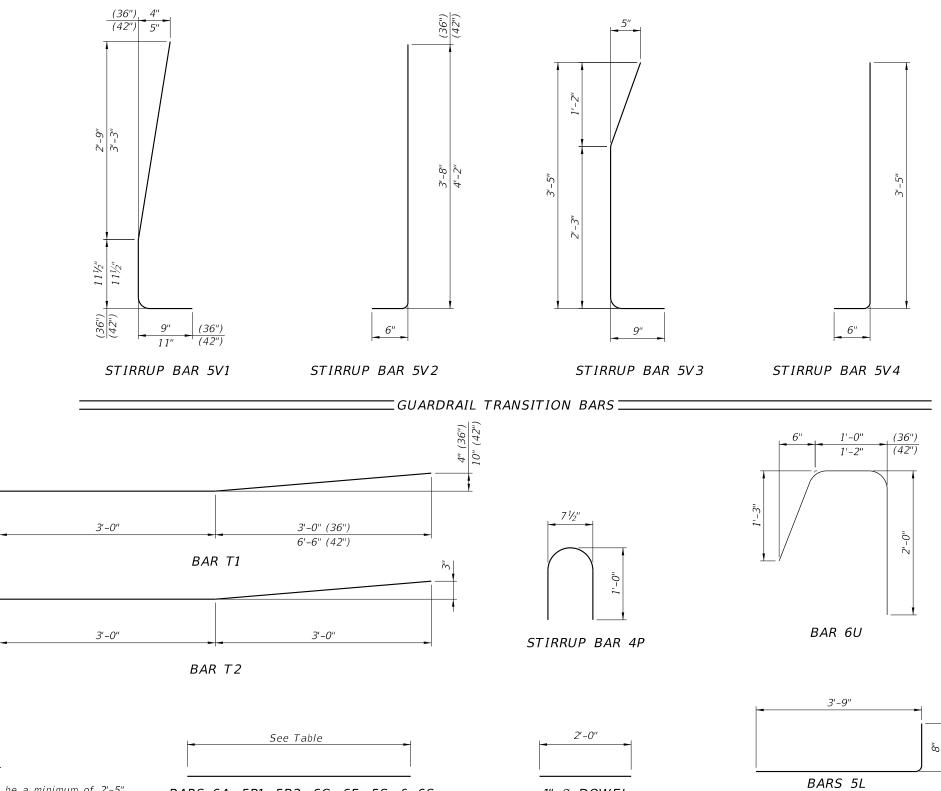
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FY 2022-23 STANDARD PLANS

CONCRETE BARRIER/JUNCTION SLAB - WALL COPING (FRP)

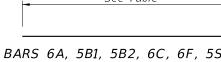
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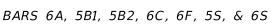
		FRP BENDI FRP RF	INFORCING				
	LENGTH						
MARK	SIZE	PRECAST FOR SING	COPING SLE-SLOPE	C-I-P C FOR SING	COPING SLE-SLOPE		
		(36")	(42")	(36")	(42")		
Α	6	5'-3"	5'-5"	7'-10"	8'-0"		
В1	5	11'-6"	9'-6"	AS REQD.	AS REQD.		
B2	5	AS REQD.	AS REQD.	AS REQD.	AS REQD.		
С	6	4'-10"	4'-10''	N/A	N/A		
F	6	4'-10''	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"		
S	5	11'-6"	N/A	AS REQD.	N/A		
S	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"		
Т2	5	6'-1"	N/A	6'-1"	N/A		
T2	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"		



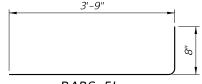
REINFORCING STEEL NOTES:

- 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.







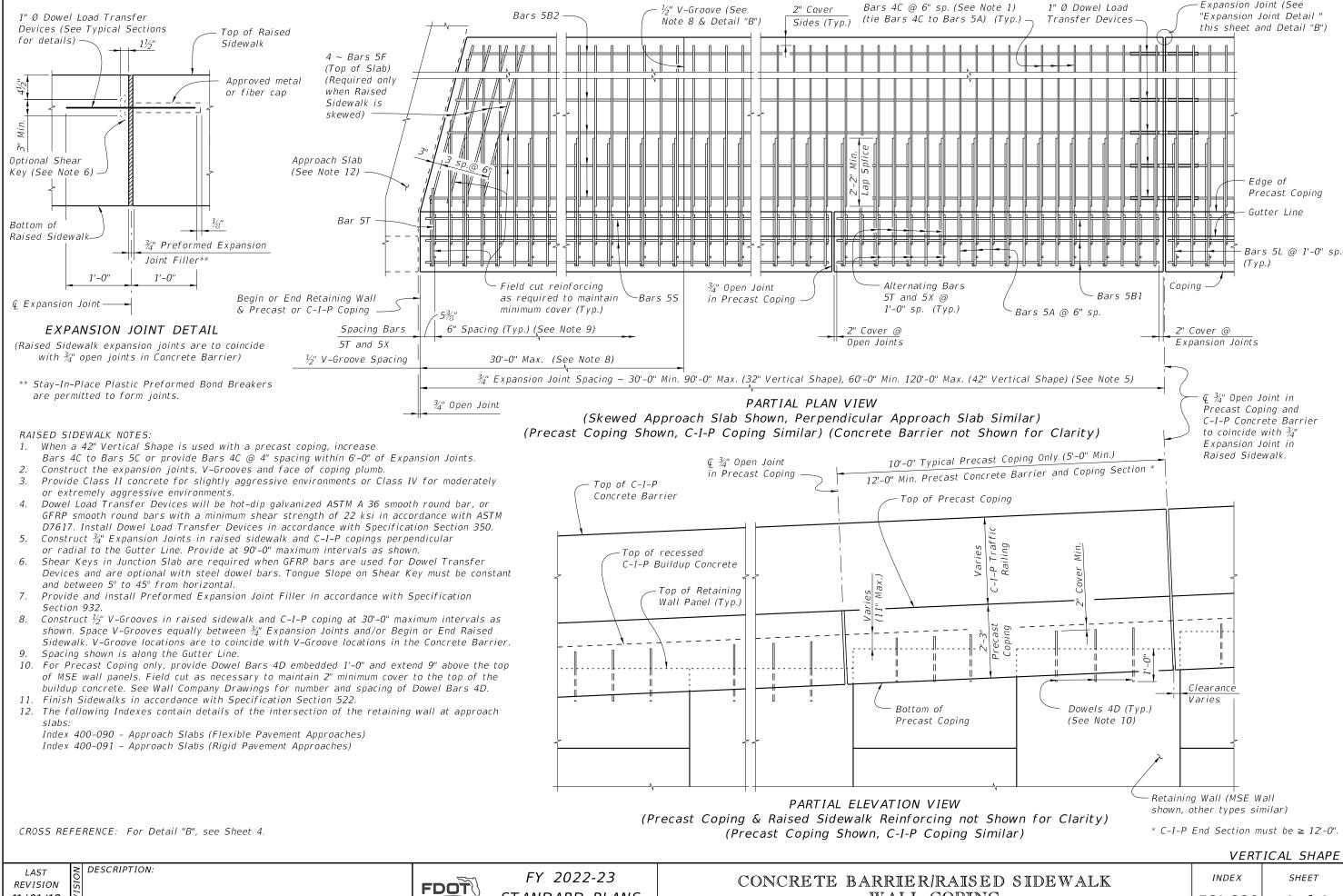


DESCRIPTION: LAST REVISION 11/01/20

FDOT

FY 2022-23 STANDARD PLANS CONCRETE BARRIER/JUNCTION SLAB

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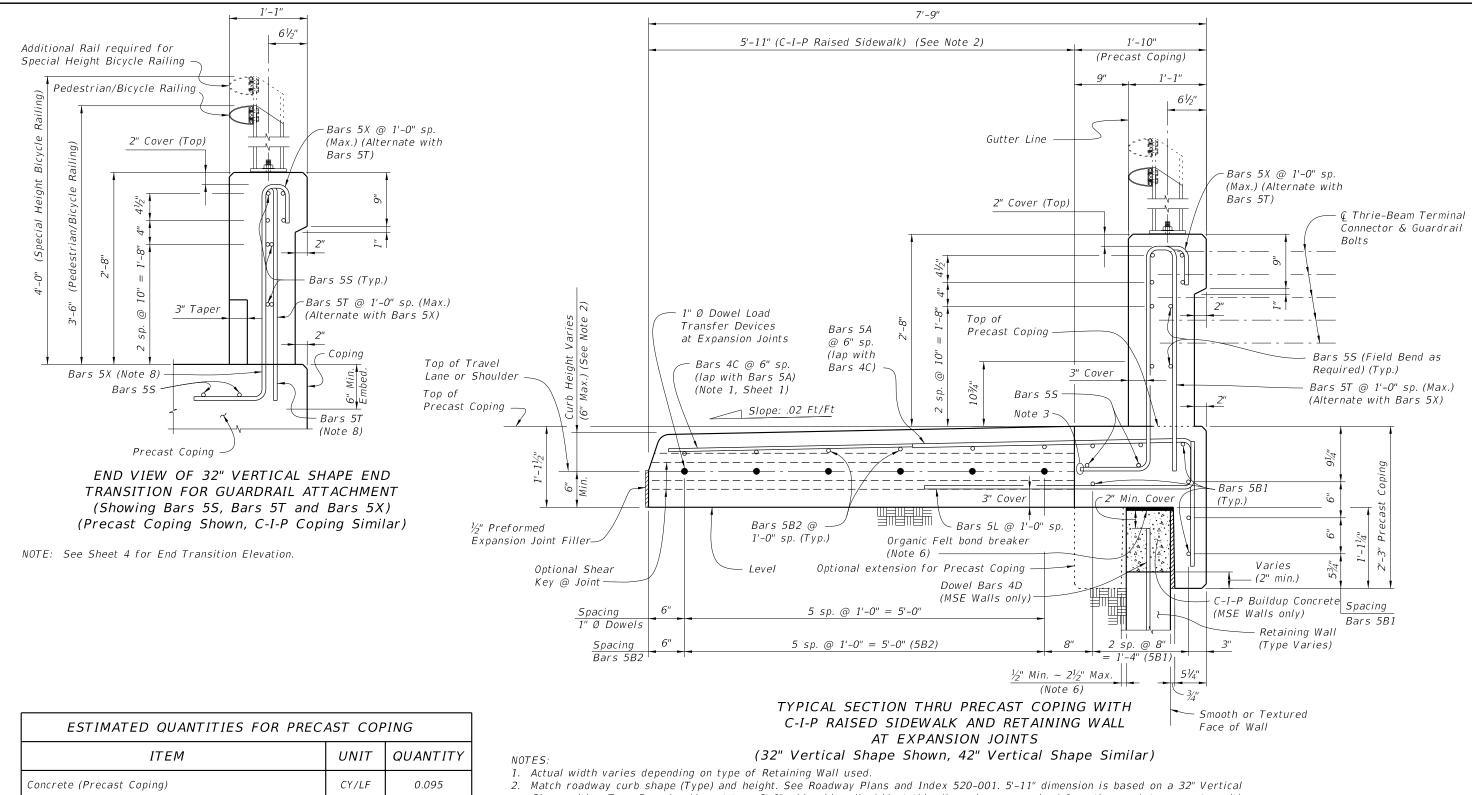


11/01/18

STANDARD PLANS

- WALL COPING

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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).

- Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions
- 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 2½", 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 guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5T and 5X shall be made immediately adjacent to Begin or End Bridge. Cut, shift and rotate Bars 5T and 5X as required to maintain cover in End Transition.

32" VERTICAL SHAPE

DESCRIPTION: 11/01/18

FDOT

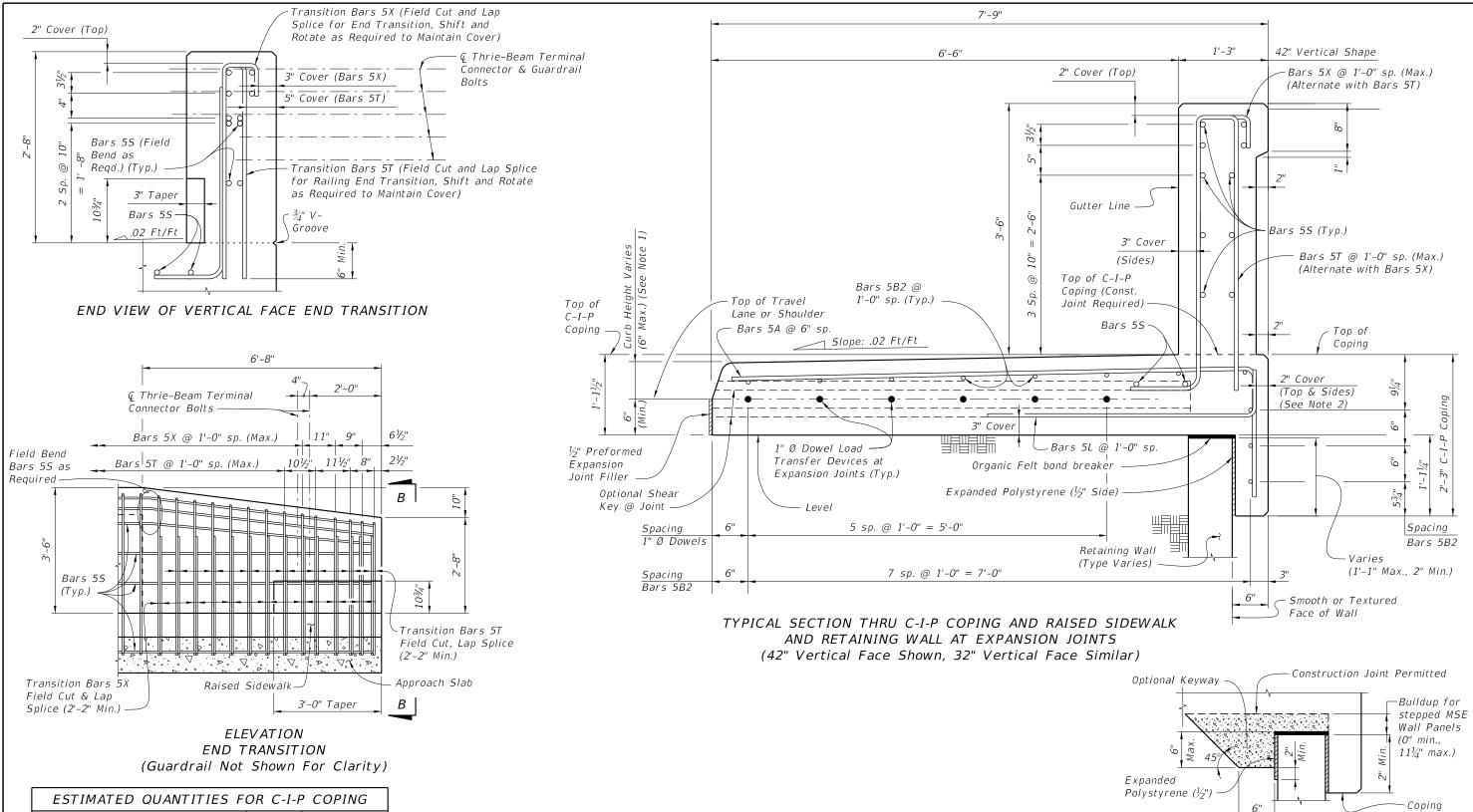
FY 2022-23 STANDARD PLANS

at Begin or End Retaining Wall.

CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING

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ESTIMATED QUANTITIES FOR C-I-P COPING				
ITEM	UNIT	QUANTITY		
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:

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.
- 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

FDOT

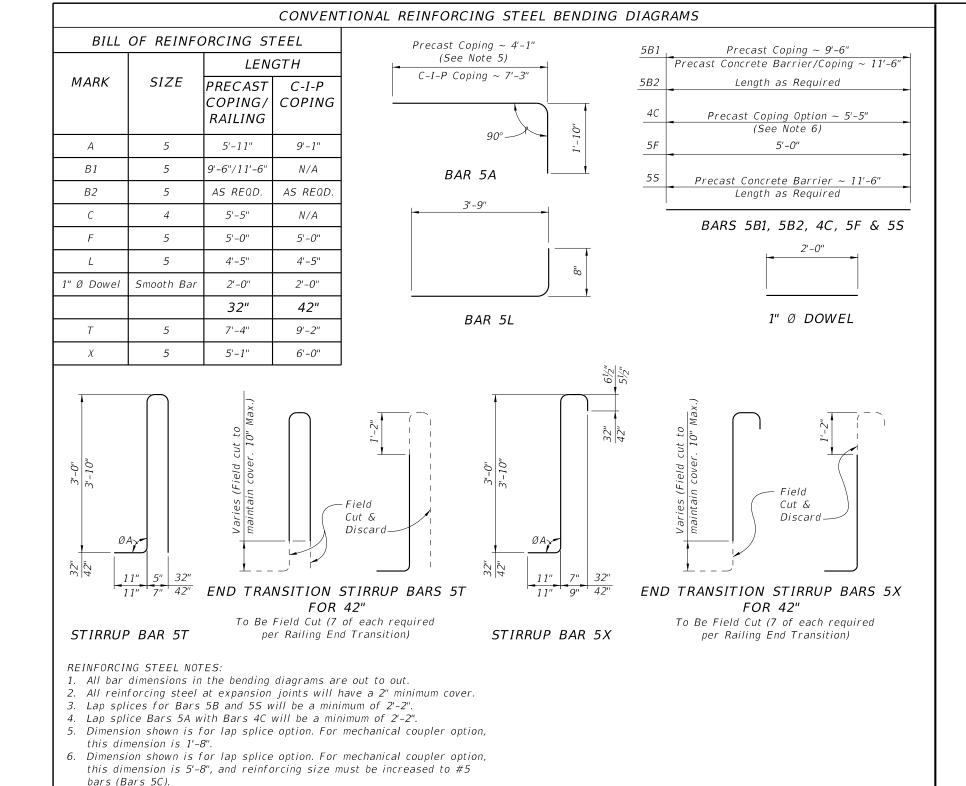
FY 2022-23 STANDARD PLANS CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING

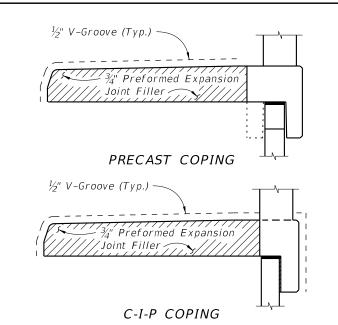
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BUILDUP FOR STEPPED MSE WALL PANELS AND C-I-P COPING

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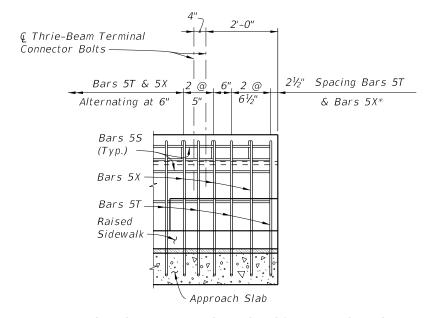
REVISION 11/01/18





DETAIL "B"

(Showing Locations of ½" 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"					
CY/LF	0.095	0.145			
LB/LF	23.38	28.33			
	UNIT CY/LF	QUAN QUAN QUAN 32"			

VERTICAL SHAPE

REVISION 11/01/18

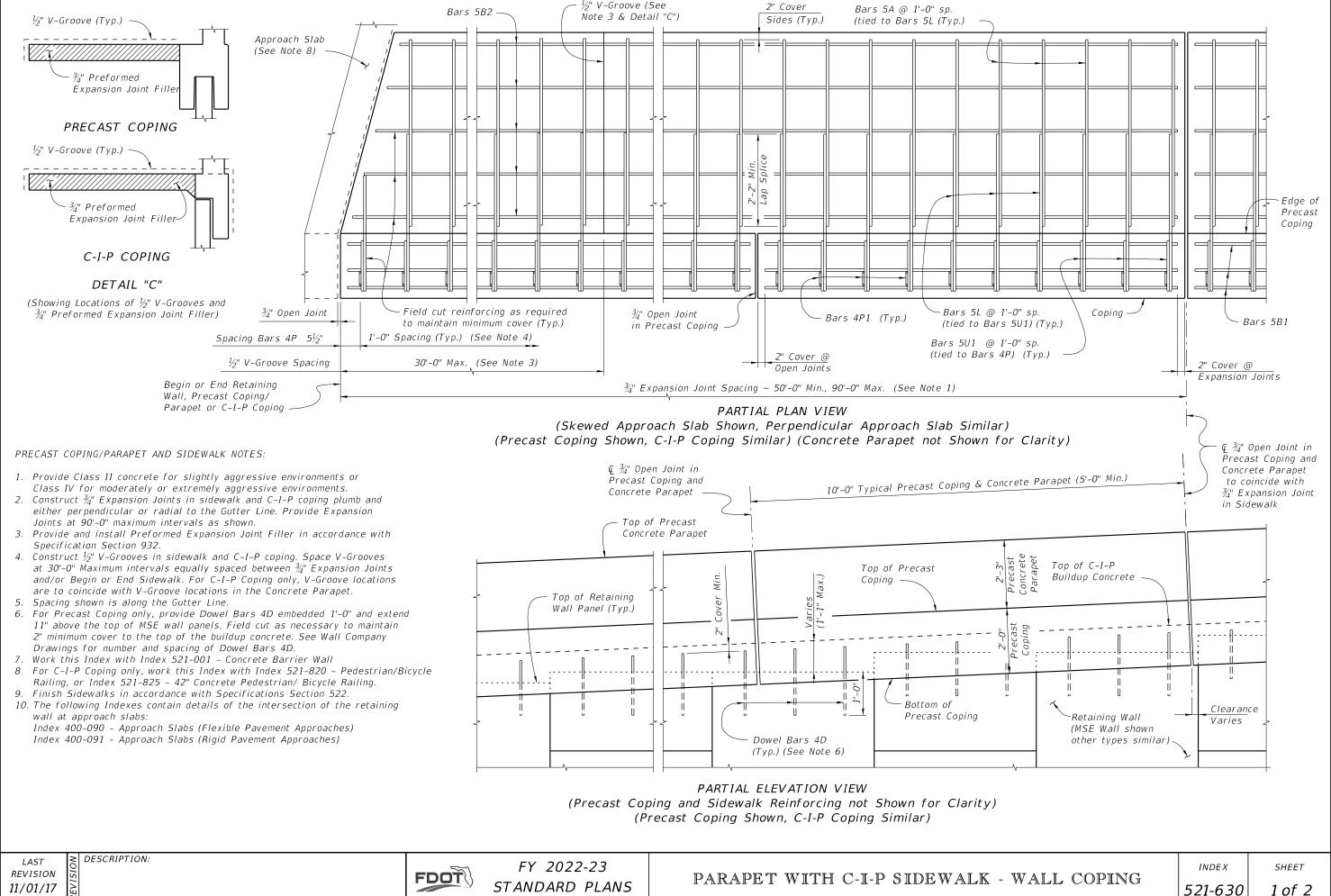
* See Sheet 3 Note 3.

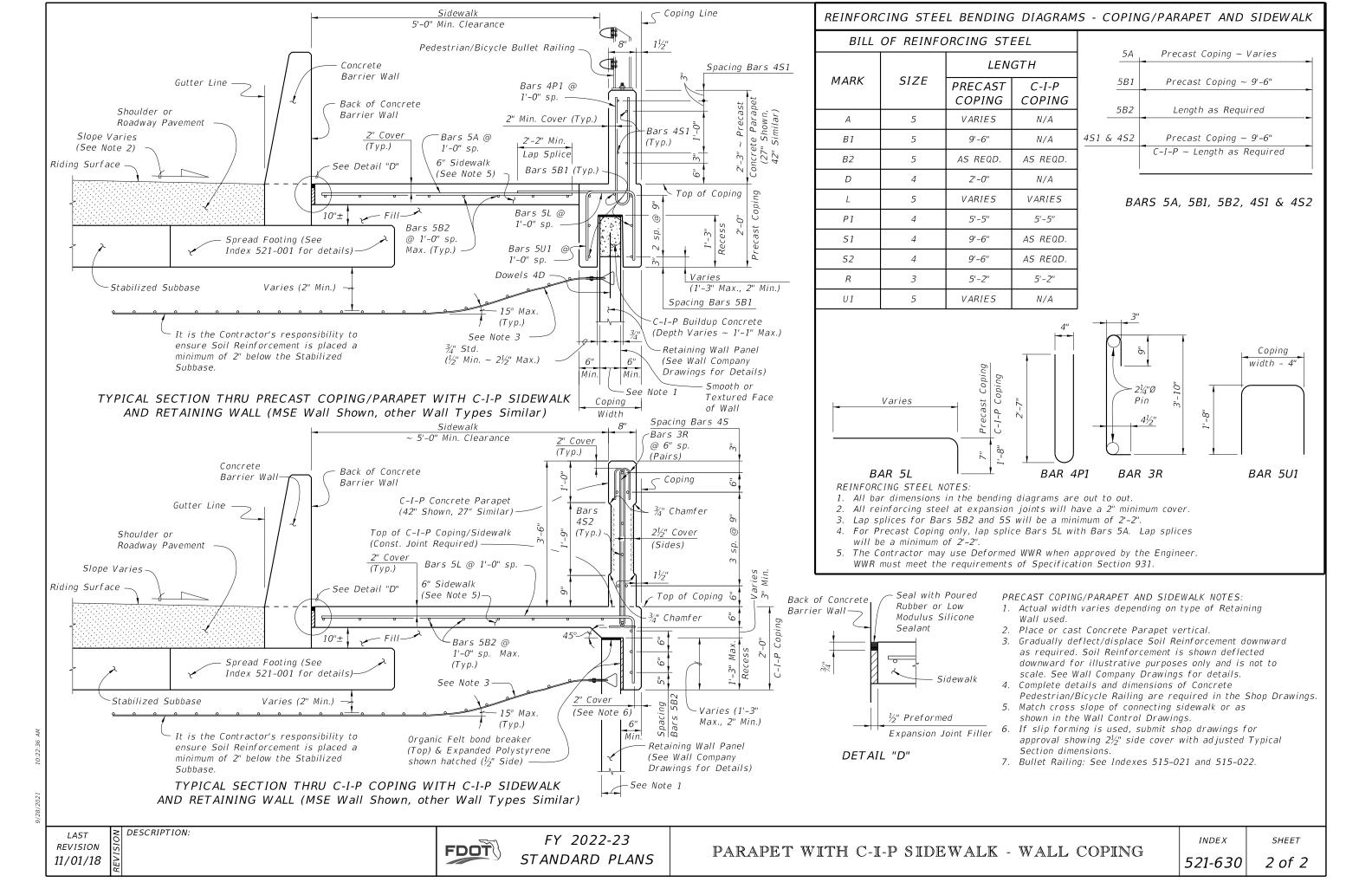
7. The Contractor may use deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.

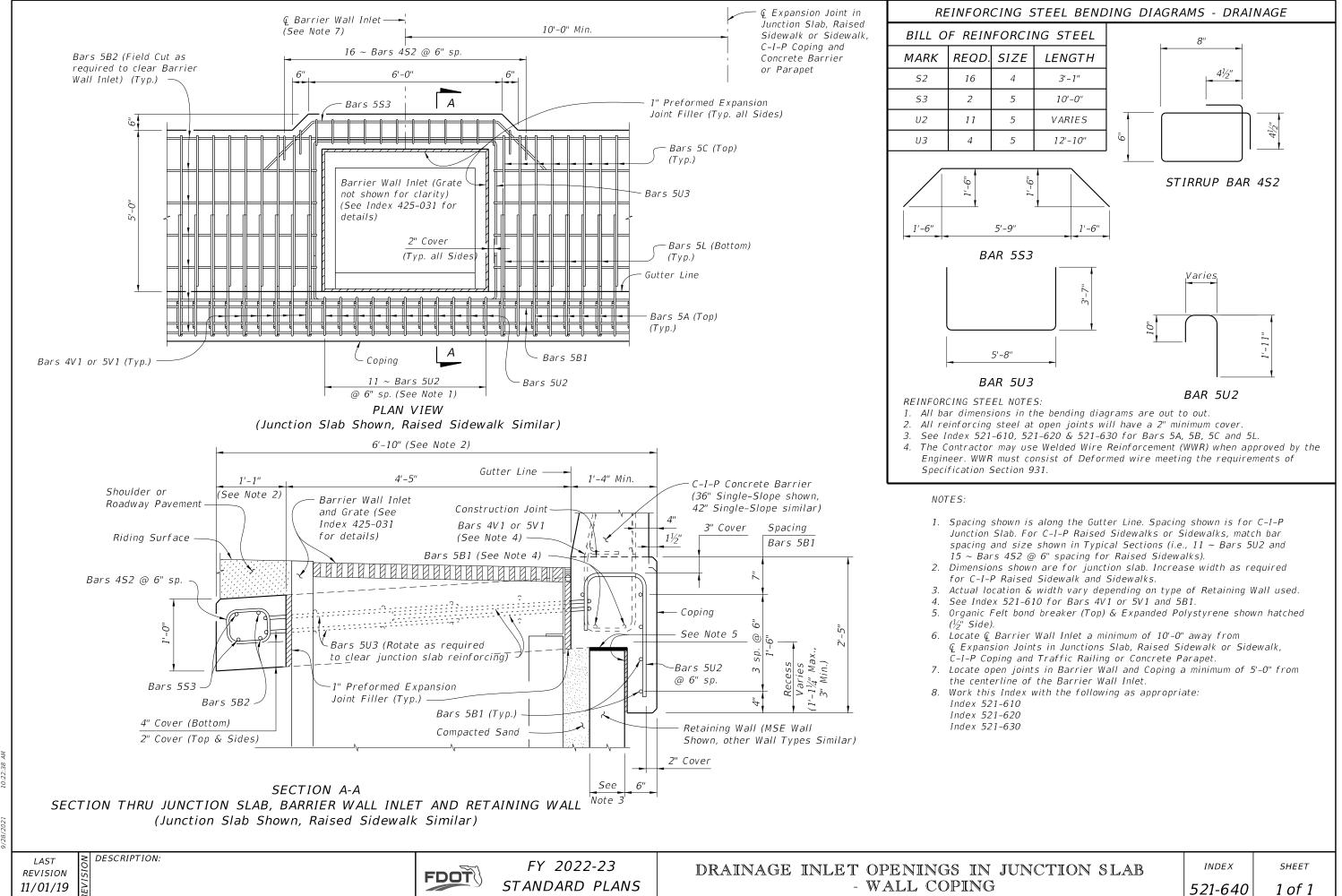
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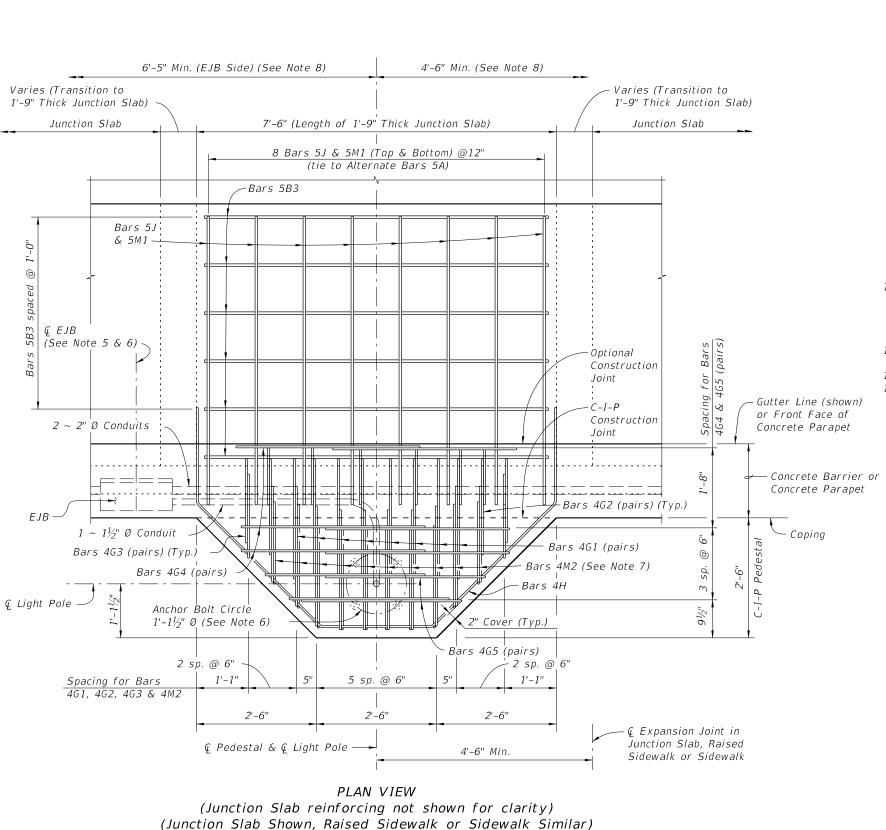
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DESCRIPTION: FY 2022-23 CONCRETE BARRIER/RAISED SIDEWALK FDOT STANDARD PLANS - WALL COPING 521-620









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 521-610 Index 521-620

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.

TABLE 1 DESIGN LIMITATION FOR ANCHOR BOLTS (1" Dia.)						
Wind Speed			BASE OF POLE 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'.

LAST ODESCRIPTION:
REVISION 15
11/01/21

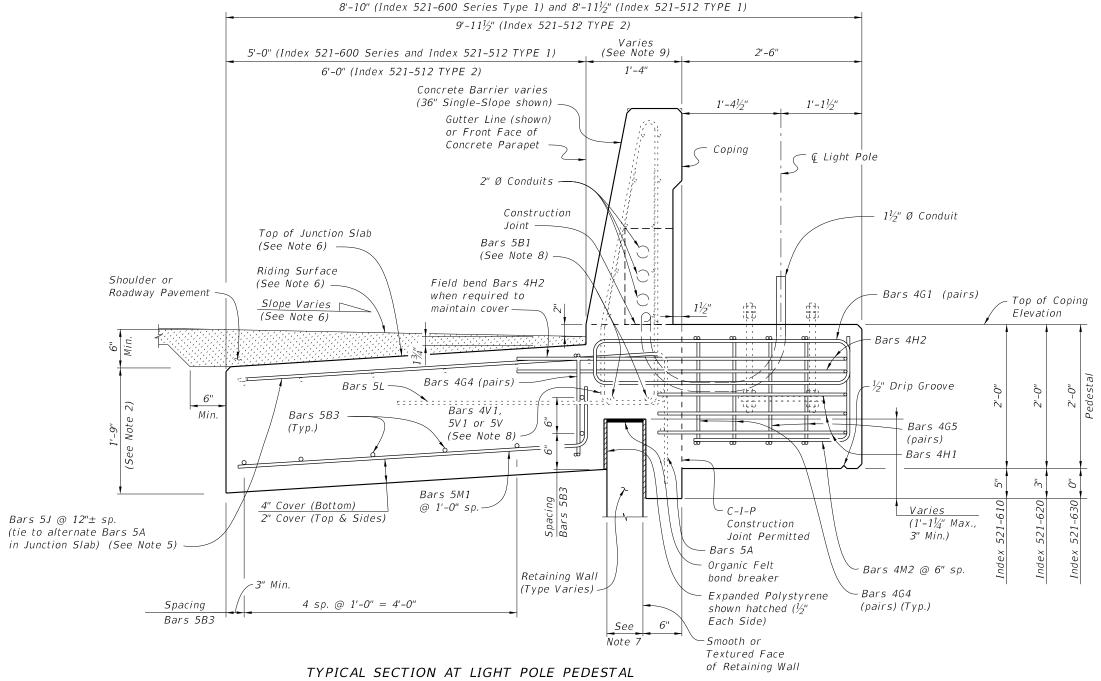
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FY 2022-23 STANDARD PLANS

STAL - WALL COPING

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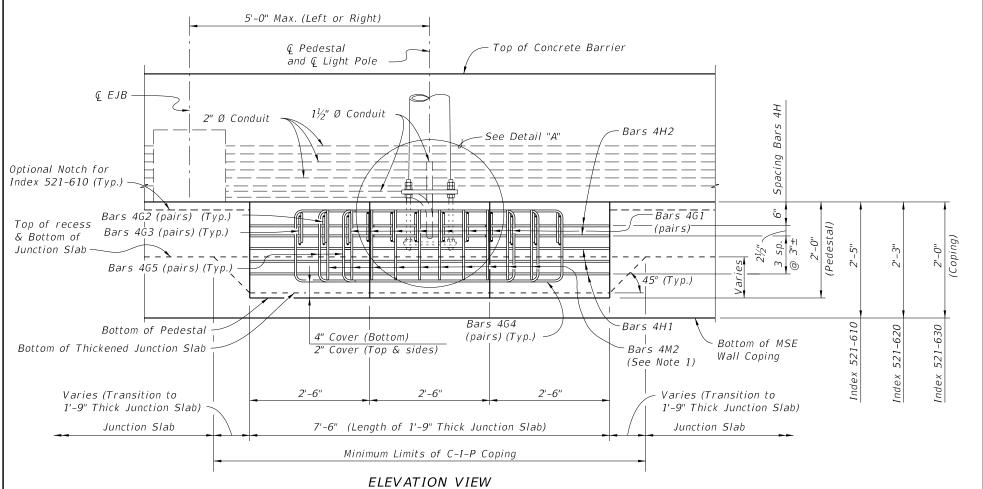
(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar) (36" Single-Slope Concrete Barrier shown, other railings similar)

NOTES:

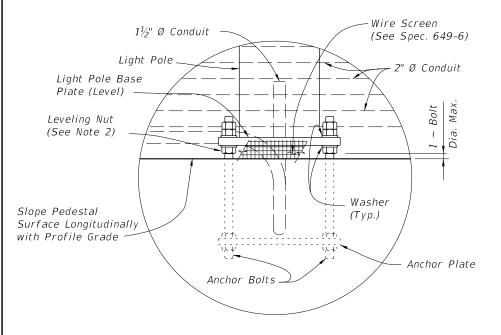
- 1. Provide Concrete Class to match adjacent coping.
- 2. For junction slabs, increase the 1'-0" depth dimension to 1'-9".
- 3. For Parapet with sidewalk see Index 521-630, but increase 6" sidewalk depth to 1'-6". For raised sidewalk see Index 521-620.
- 4. The minimum length of the Junction Slabs, 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.
- 6. 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).
- 7. Actual width varies depending on type of retaining wall used.
- 8. See Index 521-610 for Bars 4V1, 5V1 and 5B, or Index 521-512 for Bars 5V and 5B1.
- 9. 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).

9/28/2021

DESCRIPTION:



(Junction Slab Reinforcing & Bars 4J not Shown for Clarity) (Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)



DETAIL "A"

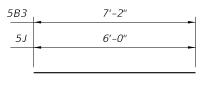
- 1. Field Cut Bars 4M2 as required to maintain minimum cover.
- 2. Maximum clearance between leveling nut and top of pedestal will not exceed anchor bolt diameter.

ESTIMATED QUANTITIES				
ITEM	UNIT	QUANTITY		
Concrete (Pedestal)	CY	0.926		
Concrete (Thickened Junction Slab)	CY	1.222		
Reinforcing Steel	LB	334.09		

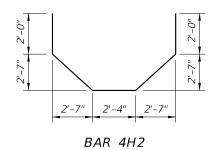
(The quantities above are for one C-I-P Light Pole Pedestal. The concrete quantity for the thickened junction slab is based on a 5'-0" length, 9" increase in thickness and a 5" wide retaining wall panel. Adjust thickened concrete quantity as required.

REINFORCING STEEL BENDING DIAGRAMS - LIGHT POLE PEDESTAL

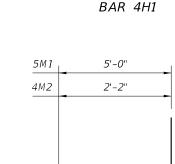
BILL OF REINFORCING STEEL						
MARK	SIZE	NO. REQD.	LENGTH			
В3	5	7	7'-2"			
G 1	4	16	5'-8"			
G2	4	4	4'-8"			
G3	4	4	4'-2"			
G4	4	6	8'-10"			
G5	4	4	7'-4"			
H1	4	3	9'-8"			
H2	4	2	13'-8"			
J	5	8	6'-0"			
M 1	5	8	5'-10"			
M2	4	10	3'-8"			



BARS 5B3 & 5J



2'-4"



BARS 4G1, 4G2, 4G3, 4G4 & 4G5

2'-6" 2'-0"

1'-9"

3'-8"

2'-11"

BAR 5M1 & 4M2

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.

4G1

4G3

4G4

4G5

- 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.

REVISION 11/01/17

DESCRIPTION:

FDOT

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LIGHT POLE PEDESTAL - WALL COPING

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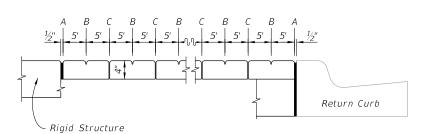
SHEET 3 of 3

5M1 4M2

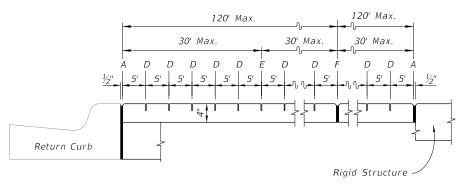
10"

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

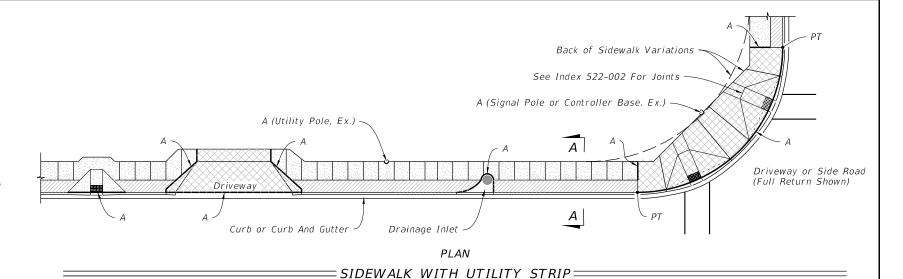
LEGEND:

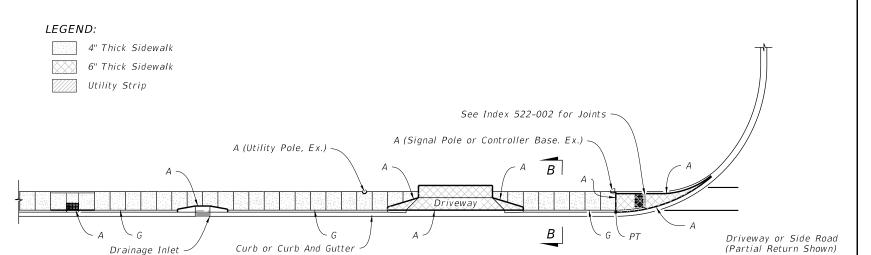
- A- $\frac{1}{2}$ " Expansion Joints (Preformed Joint Filler) between the sidewalk and; driveways, sidewalk-intersections, and all other fixed objects (e.g. drainage inlets and utility poles).
- B- 1/8" Dummy Joints, Tooled
- C- 1/8" Formed Open Joints

∠ 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- $\frac{1}{2}$ " 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



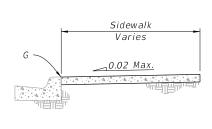


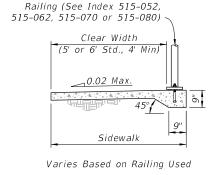


PLAN

SIDEWALK WITHOUT UTILITY STRIP:







=SECTION B-B====

=== RAILING DETAIL ====

GENERAL NOTES AND CONCRETE SIDEWALK ON CURBED ROADWAYS

LAST **REVISION** 11/01/18

FDOT

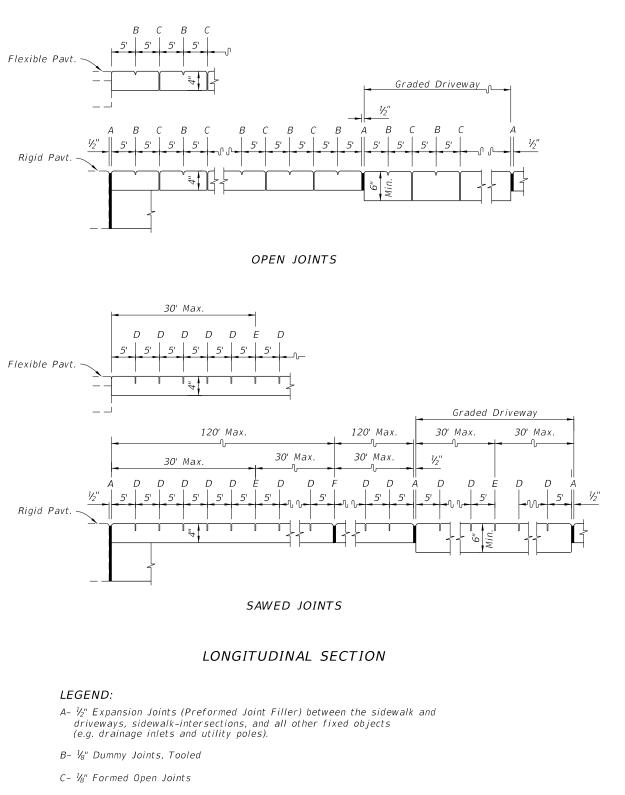
FY 2022-23 STANDARD PLANS

=SECTION A-A=

CONCRETE SIDEWALK

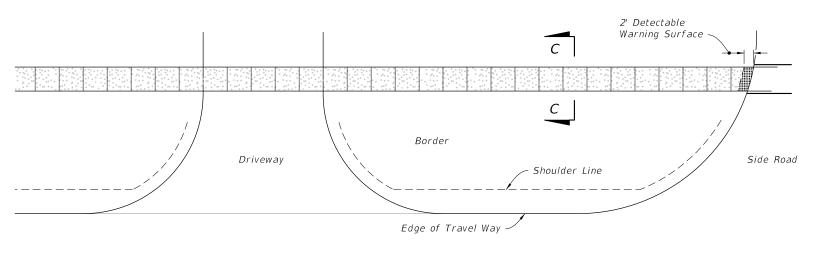
INDEX 522-001

1 of 2



- D- ¾₁₆" Saw Cut Joints, 1½" 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- ${\cal V}_2$ " Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

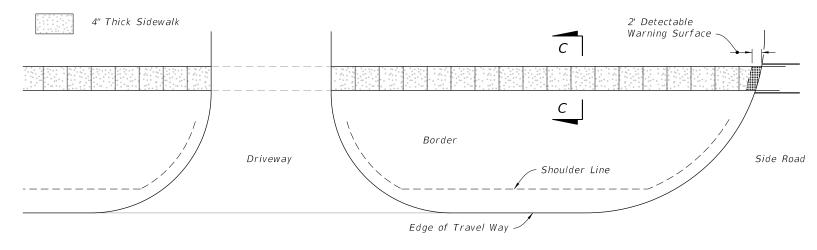




PLAN

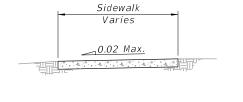
CONTINUOUS SIDEWALK

LEGEND:



PLAN

= DISCONTINUOUS SIDEWALK =



====SECTION C-C====

CONCRETE SIDEWALK ON FLUSH SHOULDER ROADWAYS

LAST REVISION 11/01/18

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

CONCRETE SIDEWALK

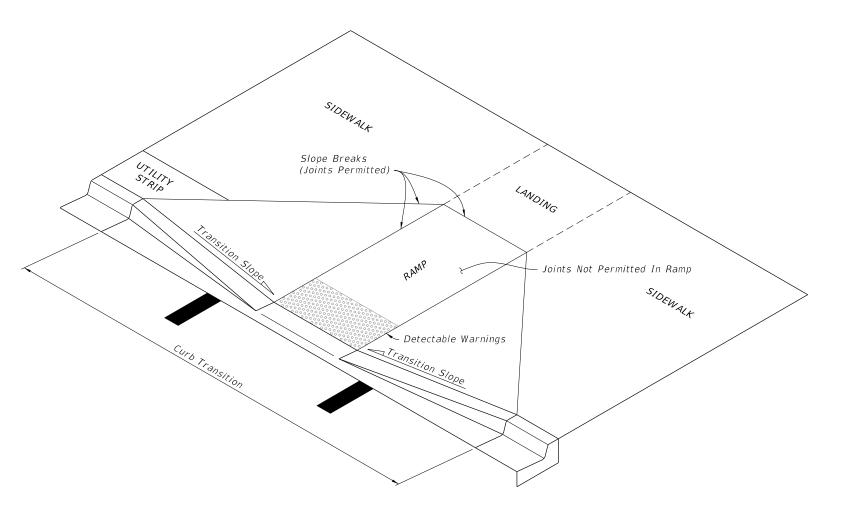
INDEX **522-001** *SHEET*2 of 2

9/28/2021

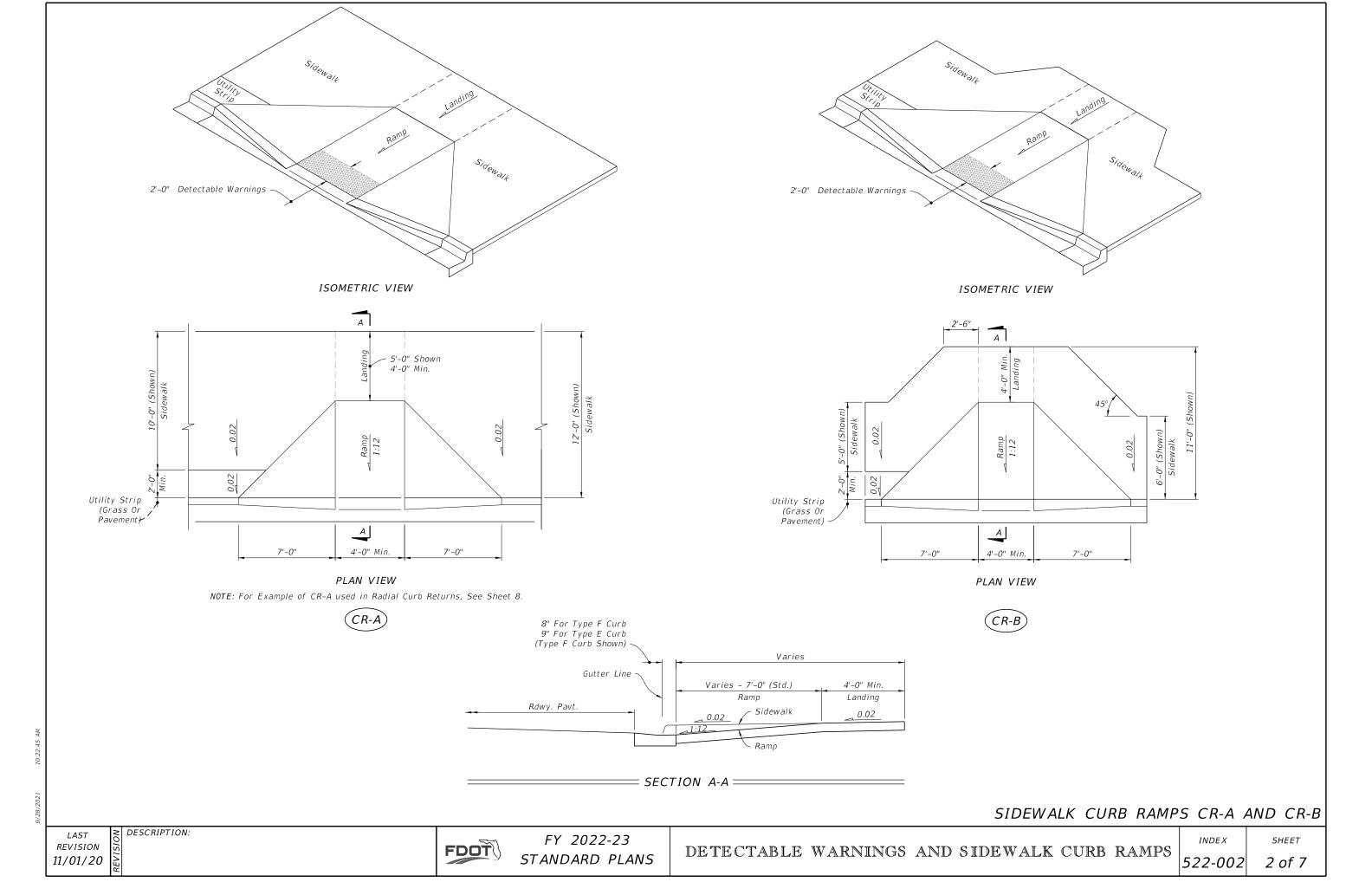
GENERAL NOTES:

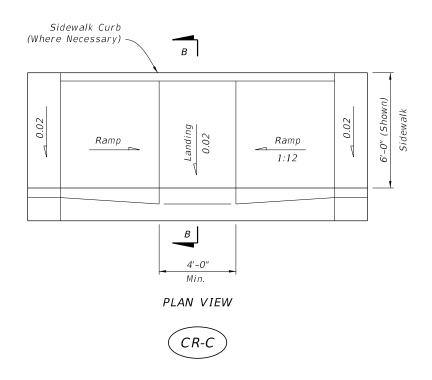
1. Cross Slopes and Grades:

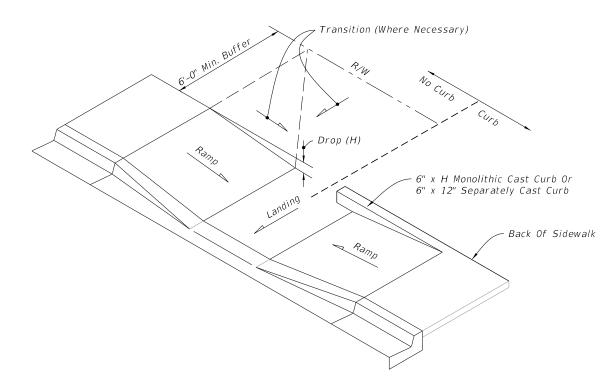
- A. Sidewalk, ramp, and landing slopes (i.e. 0.02, 0.05, and 1:12) shown in this Index are maximums. With approval of the Engineer, provide the minimum feasible slope where the requirements cannot be met.
- B. Landings must have cross-slopes less than or equal to 0.02 in any direction.
- C. Maintain 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.



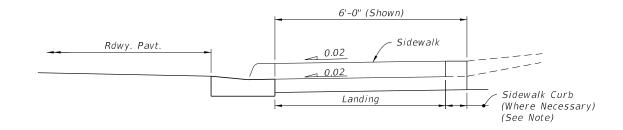
= CURB RAMP NOMENCLATURE =





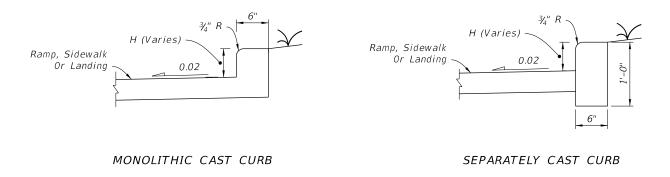


CONSTRUCTION OF SIDEWALK CURB IN CUT SECTIONS



NOTE: For additional information on sidewalk curb construction, see SIDEWALK CURB OPTIONS details.

=SECTION B-B=

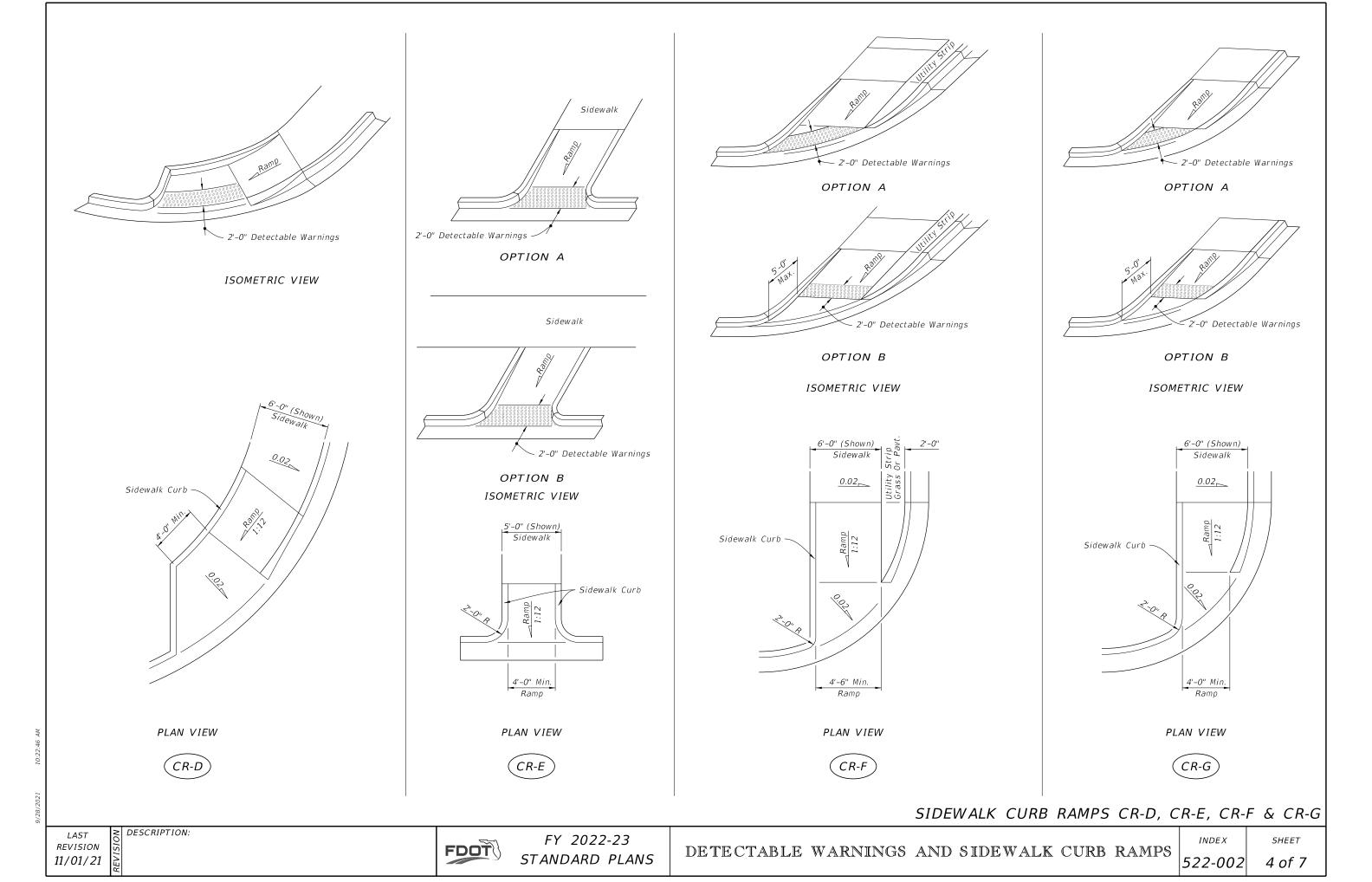


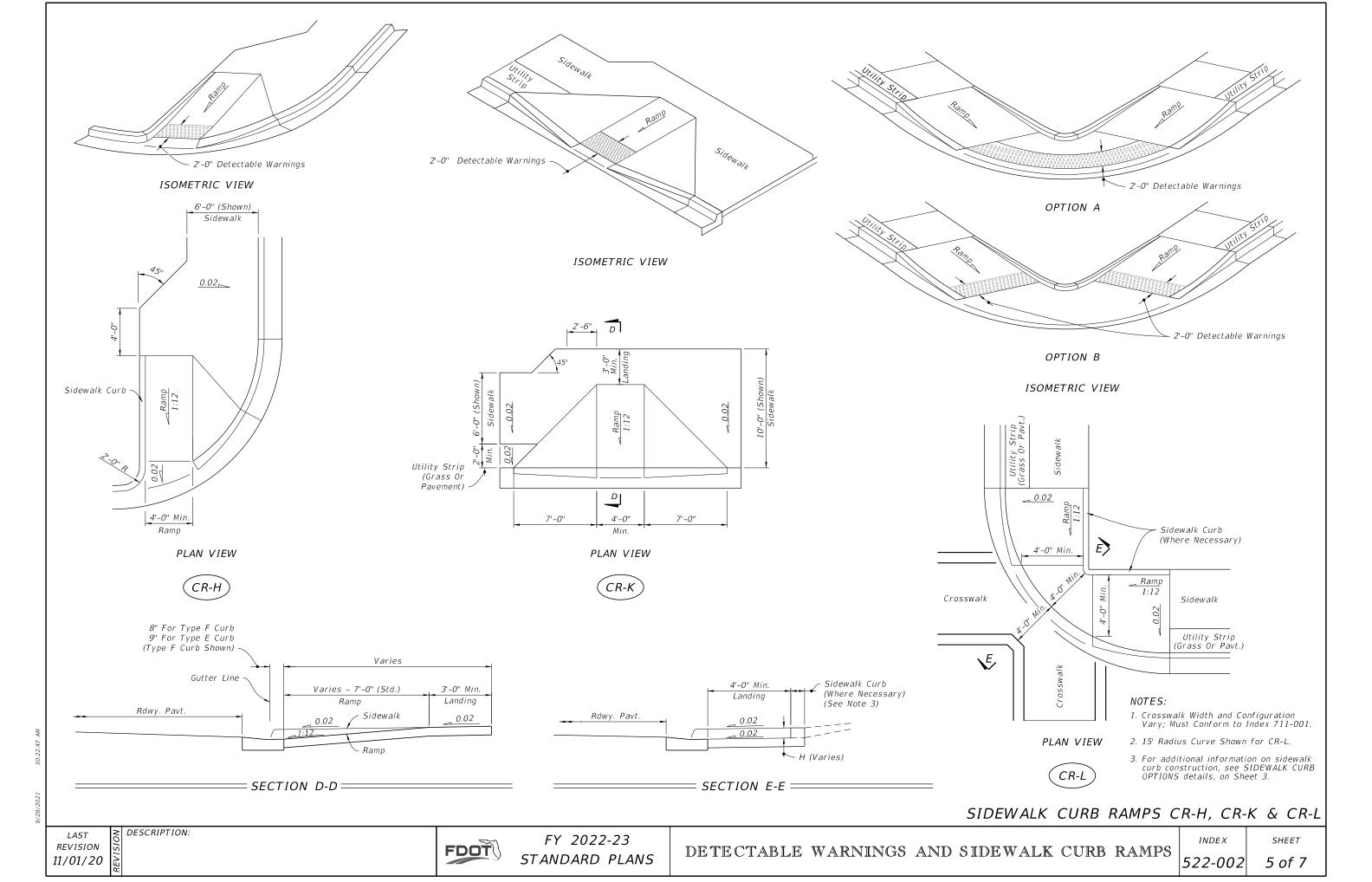
= SIDEWALK CURB OPTIONS=

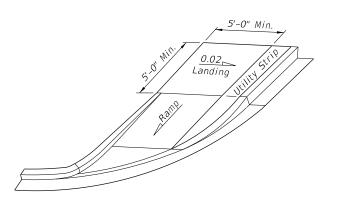
SIDEWALK CURB RAMPS CR-C AND SIDEWALK CURB

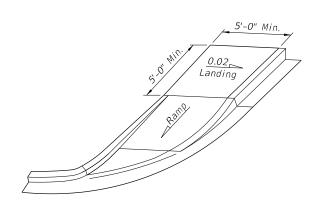
DESCRIPTION: REVISION 11/01/20

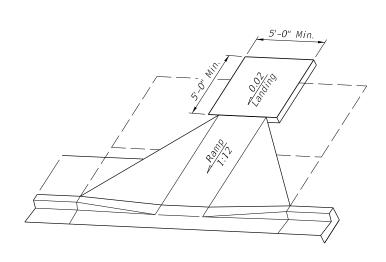
FY 2022-23 STANDARD PLANS





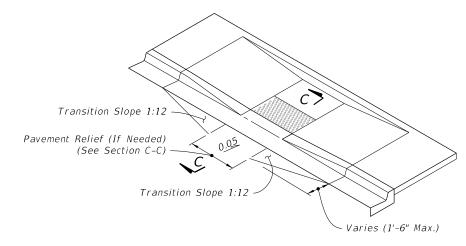




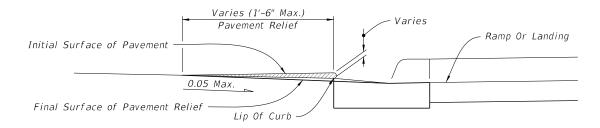


LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS:

(See CR-F, CR-G & CR-K Respectively For Detectable Warning Details/Options)



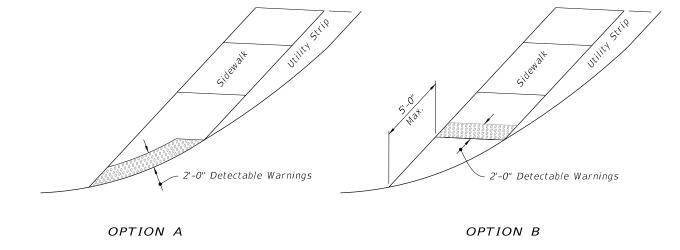
ISOMETRIC VIEW (CR-C Shown, Other Similar)



NOTE: Remove Elevated Pavement By Spading And Rolling, Smooth Milling, or Grinding.

SECTION C-C

PAVEMENT RELIEF DETAILS



= DETECTABLE WARNING ON FLUSH SHOULDER SIDEWALKS ==

CURB RAMPS WITHOUT SIDEWALKS AND FLUSH SHOULDER SIDEWALKS

≥ DESCRIPTION: LAST REVISION 11/01/20



FY 2022-23 STANDARD PLANS

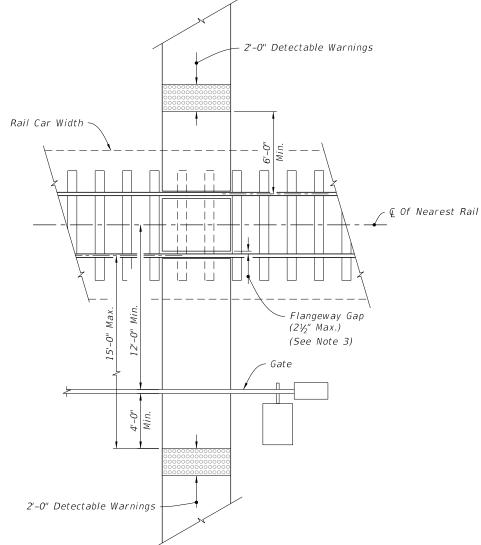
DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

INDEX

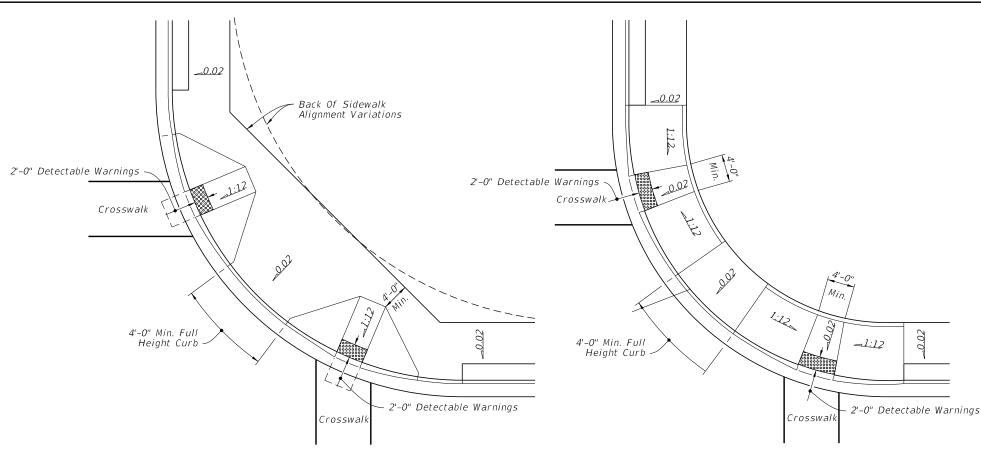
6 of 7 522-002

NOTES:

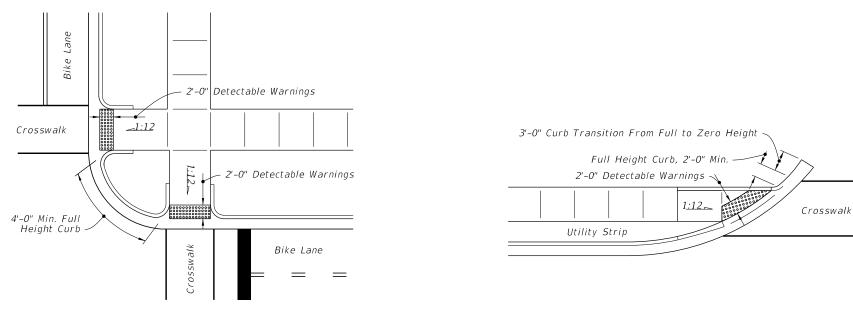
- 1. Where crosswalk markings are used, ramps must fall within the crosswalk limits. A clear space of 48" minimum is required at the bottom of the ramp within a marked crosswalk. If crosswalk markings are not present, a clear space of 48" minimum is required at the bottom of the ramp outside of active 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.



= RAILROAD CROSSING =



CURB RAMPS WITHIN RADIAL RETURN



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

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

522-002

_{SHEET} **7 of 7**

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. <u>Longitudinal Join</u>ts:

Construct V_B 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:

 $\overline{\text{Construct } \mathscr{V}''_8 \text{ open }}$ joints @ 10' Centers and $\mathscr{V}''_2 \text{ expansion joints with preformed joint filler every 5th joint.$

- 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. <u>Alpha-Nu</u>meric Identification:

Concrete Flared Driveway Alpha-Numeric Identifications (e.g. G4) are provided for reference purposes in the Plans.

LEGEND:

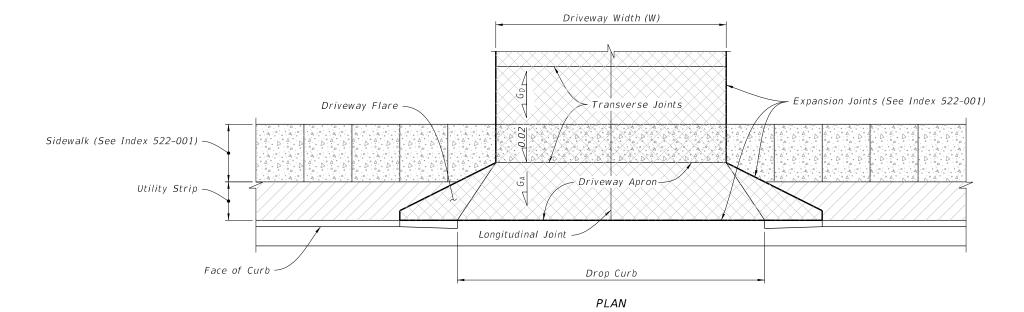
Sidewalk

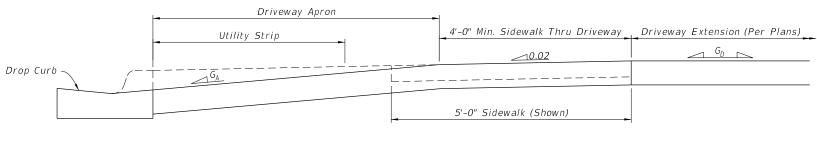
Flared Driveway (6" Thick Concrete)

Sidewalk Thru Driveway (6" Thick Concrete)

Utility Strip

- G_A Grade of Apron
- G_D Grade of Driveway (Per Plans)



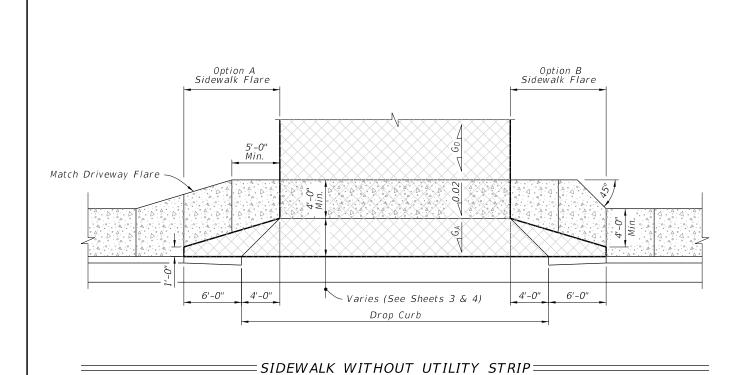


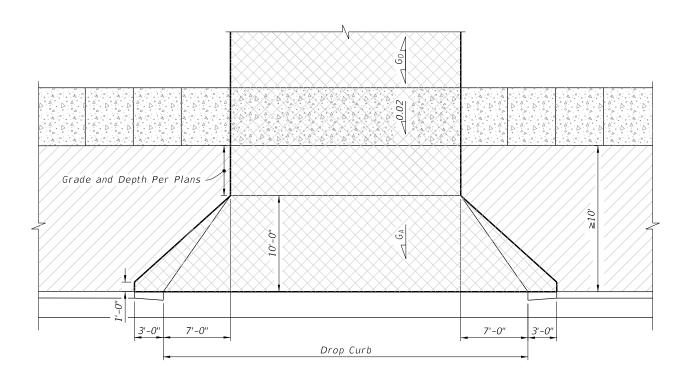
ELEVATION

CONCRETE FLARED DRIVEWAY NOMENCLATURE =

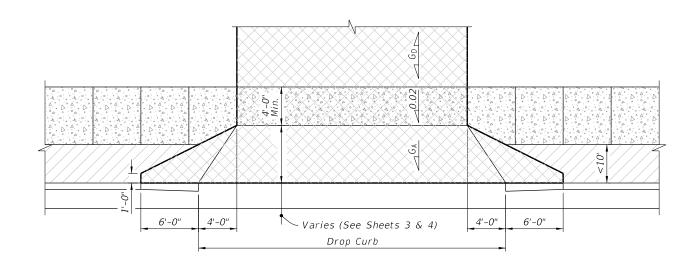
LAST **REVISION** 11/01/18

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

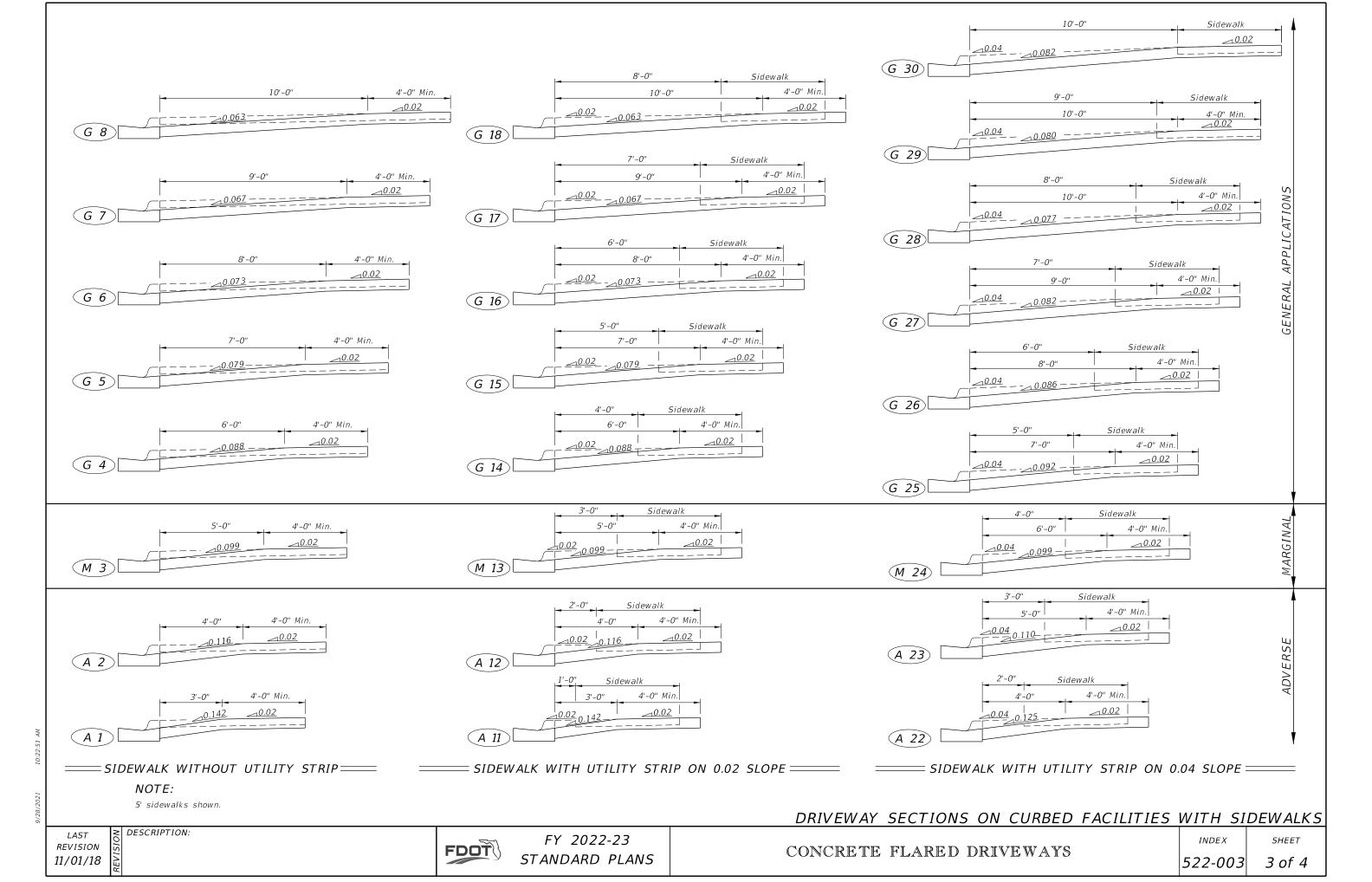
≥ DESCRIPTION:

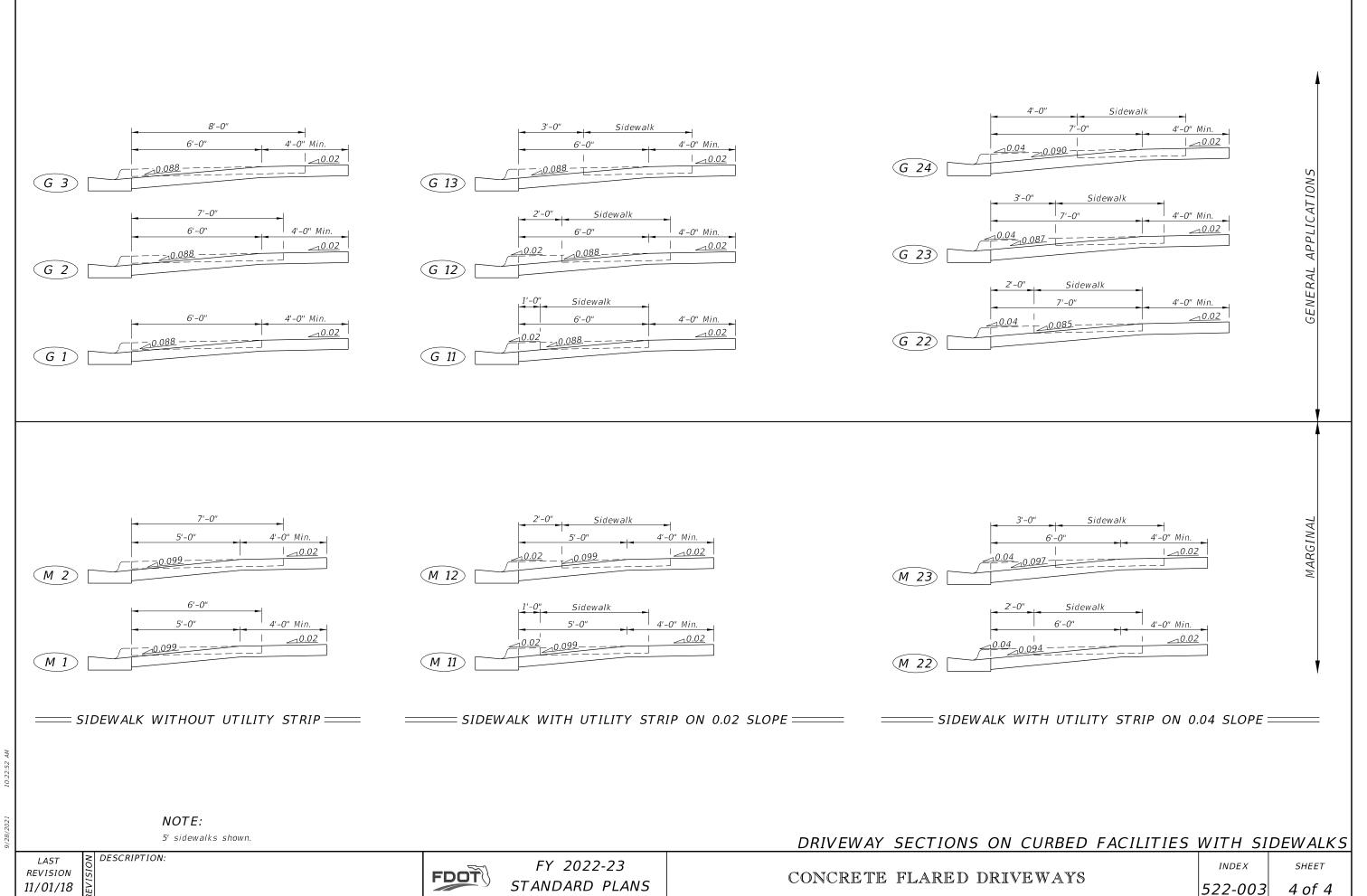
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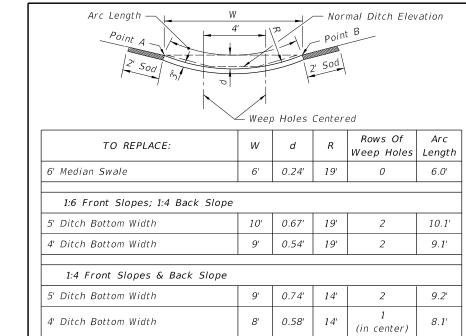
FY 2022-23 STANDARD PLANS

INDEX 522-003

SHEET 2 of 4







For use only where side slopes are 1:4 or flatter. Point "A" and "B" are to be the same elevation and should be used to locate the paved section.

- Roadway Ditch

- Back Slope As

Shown On Plans

Ditch Slope

construction.

* Misc. asphalt will not be

permitted for this type of

ALTERNATE DITCH PAVEMENT

Front Slope

JUNCTION OF ROADWAY DITCH*

AND LATERAL DITCH

10' C. to C. 50' Max. Erosion Stops Staples Not More Than 3' Centers 6" Min. Overlap One Row One Row Of Staples **PLAN** Each Edge Of Overlaps, When "x"= 1' To 4' Const. 1 Row (Centered) Each Side Of Stops And "x"= 5' To 7' Const. 2 Rows On Outer Edges At Not Matting "x"= 8' To 12' Const. 3 Rows More Than 18" Centers "x"= 13' To 17' Const. 4 Rows (Typical) "x"= 18' To 22' Const. 5 Rows 6" Typical

LONGITUDINAL SECTION

1:1.5 Slope

5' Min.

Ditch Width Varies

Front And Back

___ 6" Overlap

SECTION

MATTING FOR DITCH

Front Slope

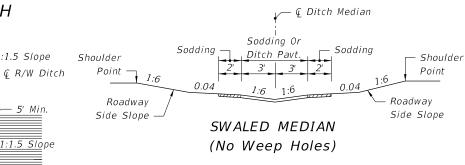
Note: All weep holes to be 3"x4" rectangle or 4" or 5" dia. circle hole. $\frac{1}{2}$ cu. ft. (12" x 12" x 6") of No. 6 aggregate to be placed under each hole. 1 sq. ft. of galv. wire mesh ($\frac{1}{4}$ " openings) shall be placed between the aggregate and the ditch pavement. Cost of holes, aggregate and wire mesh to be included in the cost of ditch pavement.

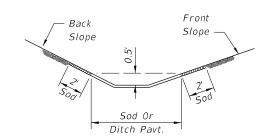
When Width Is Greater Than 4',

Const. Weep Holes Half-Way Up The

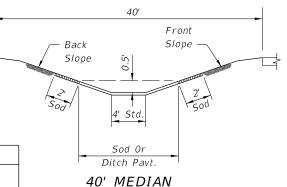
Side In Line With Bottom Weep Holes

WEEP HOLE ARRANGEMENT





ROADWAY SIDE DITCH



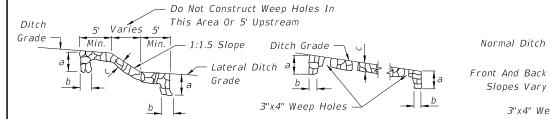
AND LATERAL DITCH

JUNCTION OF R/W DITCH*

3"x4" Weep Holes —

Normal Ditch Elev.

Slopes Vary



≣5′ Min.**≡**

SECTION AA PROFILE OF DITCH PAVEMENT TYPICAL SECTION

AT LOCATIONS OTHER THAN JUNCTION WITH LATERAL DITCH

					TABLE 1:	DITCH PA	<i>AVEMENT</i>	
Pavement Type	Din	nensi	ons	Payment	Basis Of	Filter Fabric	Velocity	References & Remarks
ravement Type	а	b	С	Unit	Estimate	Туре	Range	References & Remarks
Concrete	24"	6"	Varies	SY	SY	D-4	Low-High	Specification 524
Miscellaneous Asphalt	24"	12"	4"	TN	0.2 TN/SY	None	Low-Moderate	Specification 339
Riprap (Sand-Cement)	24"	12"	4"	CY	0.11 CY/SY	D-4	Low-Moderate	Specification 530, Grouting of joints required
Riprap (Ditch Lining)				TN	TN	D-2	Moderate-High	Specification 530

SECTION EE 10' 10' Standard Paved Ditch 10' Sodded Ditch Paved Ditch Sodded Ditch Pavement 1.5' Deep 1.0' Deep 1.0' Deep Sod

Lip (3" Rise)

Flow Line

— Varies (25' Min.)

PLAN PAVED DITCH END TREATMENT

GENERAL NOTES

- 1. Type of ditch pavement shall be as shown on plans.
- 2. In concrete ditch pavement, contraction joints are to be spaced at 25' maximum intervals, or as directed by the Engineer. Contraction joints may be either formed (construction joint) or tooled. No open joints will be permitted in concrete ditch pavement.

Expansion joints with ½" preformed joint filler shall be constructed at all inlets, endwalls, and at intervals of not more than 200'.

- 3. Lip at end of ditch pavement shall normally be located downstream of DPI or on flatter grades where there is a decrease in ditch velocity.
- 4. Toewalls are to be used with all ditch paving. A toewall is not required adjacent to drainage structures.
- 5. When directed by the Engineer, weep hole spacing may be reduced to 5' minimum.
- 6. For junction of R/W ditch spillway and lateral ditch, sides of paving to be 1' high minimum.
- 7. Filter fabric is required under all ditch pavement, except for miscellaneous asphalt, regardless of the pavement thickness. Place the filter fabric directly beneath the pavement for the entire length and width of the pavement. See Specification 985 for fabric requirements and application.
- 8. When weep holes with aggregate are used, place filter fabric below the aggregate to form a mat continuous with the pavement filter fabric or underlapping the pavement filter fabric, if present.
- 9. Ditch pavement requiring reinforcement shall be detailed in the plans.
- 10. Cost of plastic filter fabric to be included in the contract unit price for ditch pavement.
- 11. Sodding to be paid for under contract unit price for Performance Turf. SY

REVISION 11/01/19

DESCRIPTION:

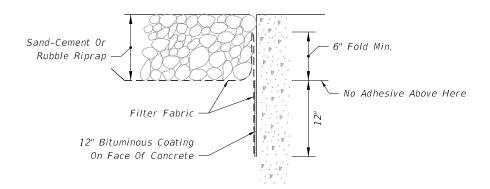
FDOT

FY 2022-23 STANDARD PLANS

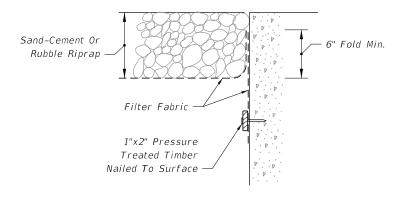
DITCH PAVEMENT AND SODDING

INDEX 524-001

SHEET 1 of 2



BONDED OPTION



NAILED OPTION

Note: Either option may be used unless otherwise called for in the plans.

FILTER FABRIC PLACEMENT AT CONCRETE STRUCTURE

≥ DESCRIPTION: REVISION 11/01/19



NOTES

- 1. Work this Index with the Noise Wall Data Tables, and Wall Control Drawings in the Plans.
 - 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.
- 6. Panels:
 - 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 face of the wall.
 - 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
 - 2,000 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 intersection.
 - 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: $\pm 1/-\frac{1}{4}$ "
 - 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.

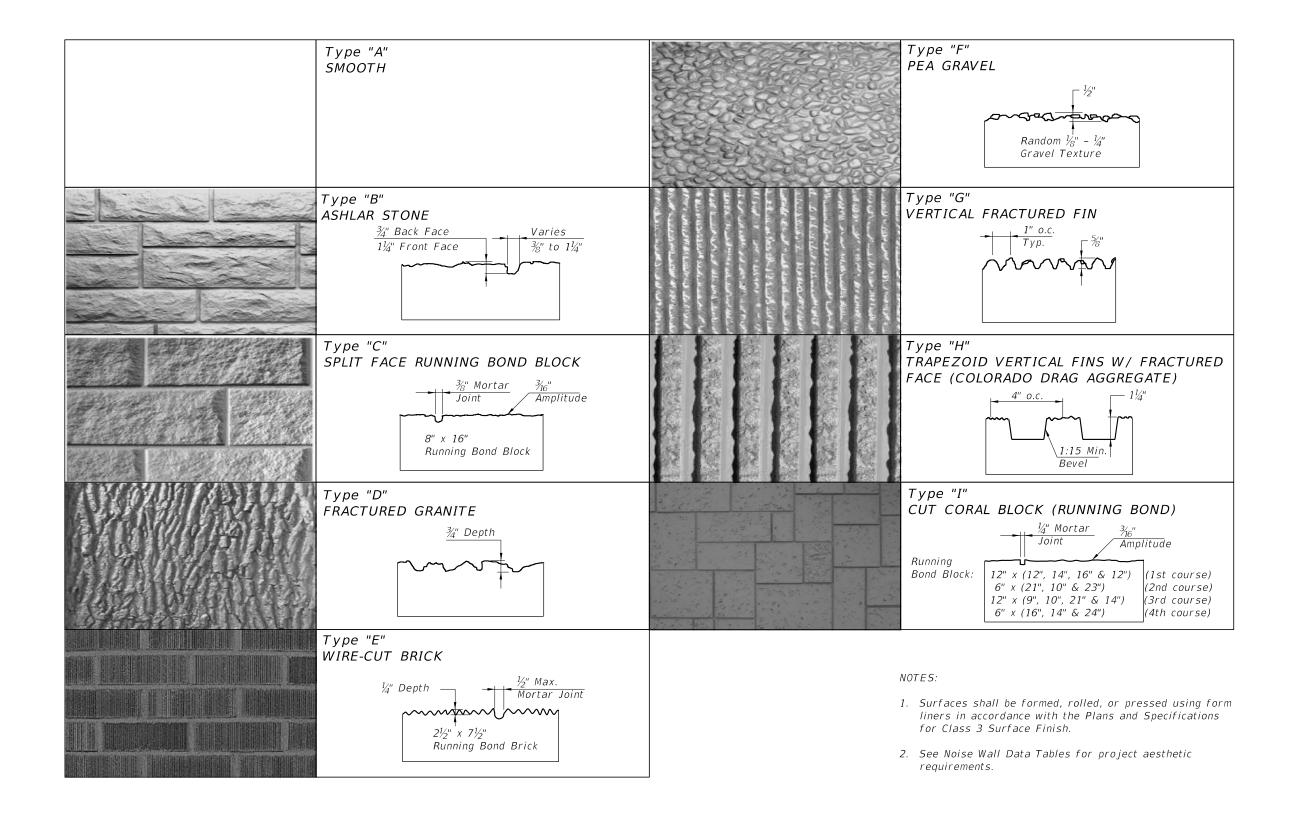
GENERAL NOTES

9/20/2021

LAST REVISION 11/01/19



INDEX



TEXTURE OPTIONS

REVISION 07/01/13

DESCRIPTION:

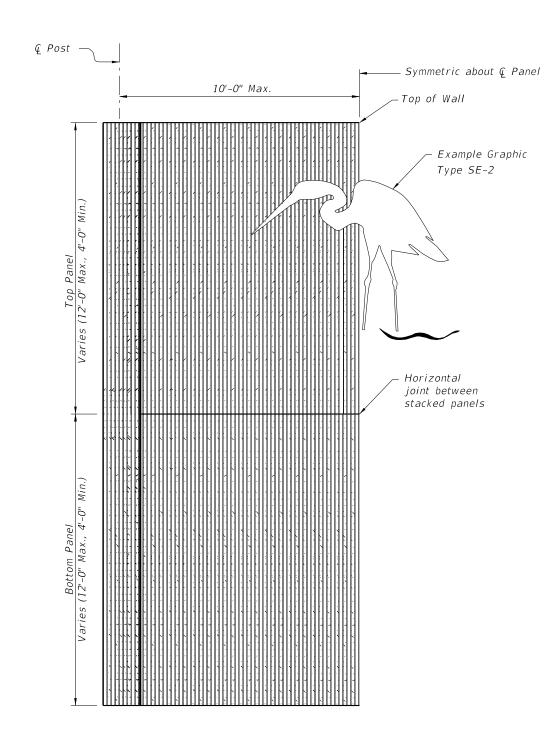
FDOT

FY 2022-23 STANDARD PLANS

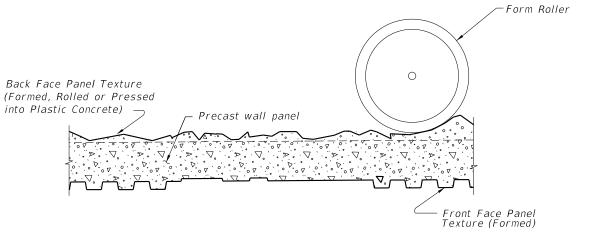
NOISE WALLS - (PRECAST)

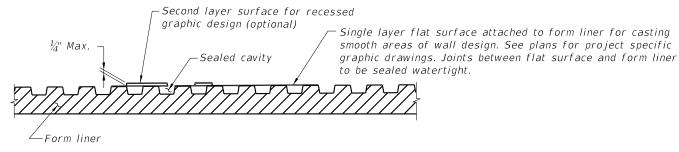
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HALF ELEVATION
(Front Face Post and Panel Texture Type "H" shown)
(Graphic Type SE-2 shown)
(Two stacked panels shown, three stacked panels similar)





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.

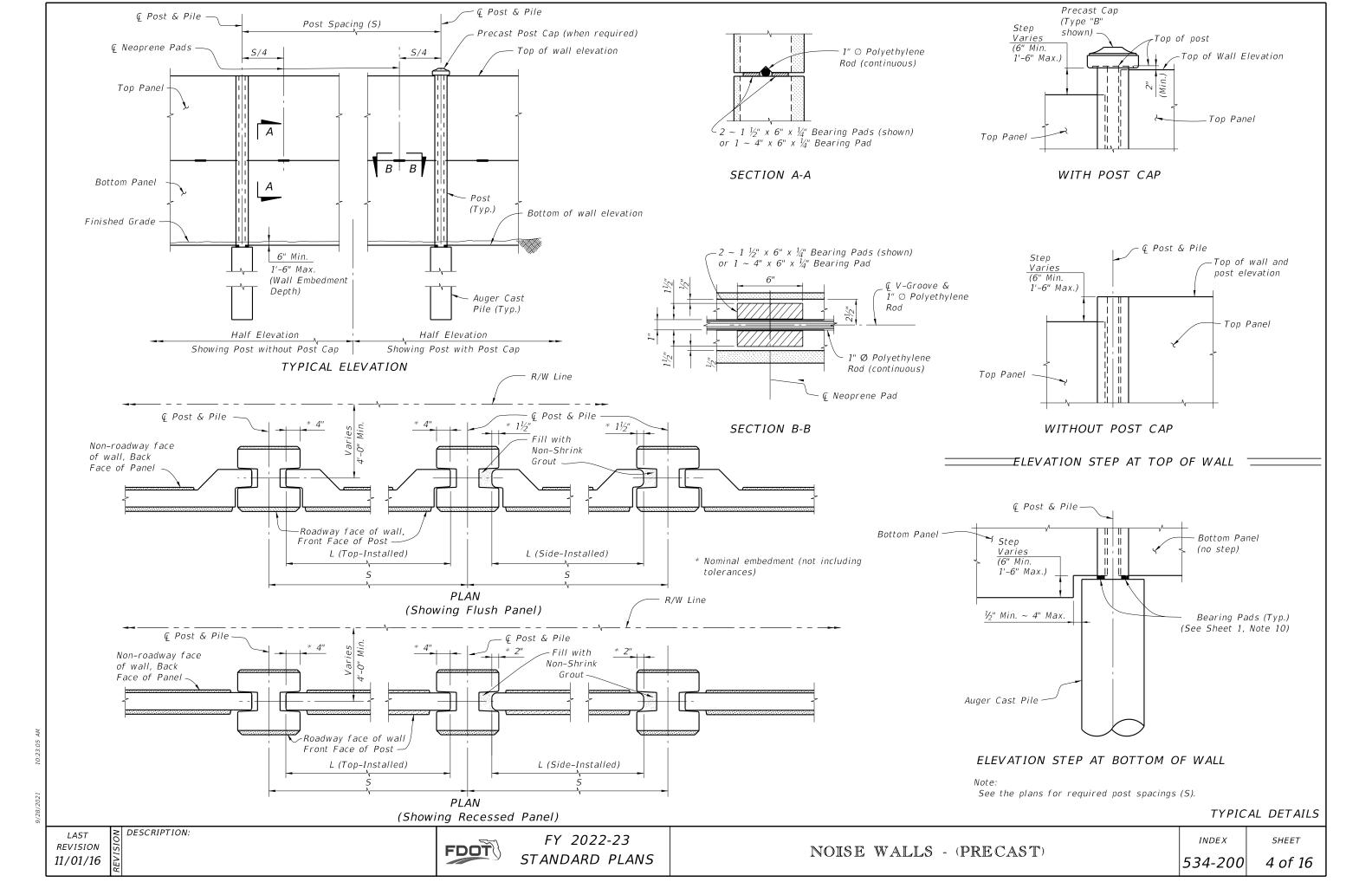
GRAPHICS & TEXTURE DETAILS

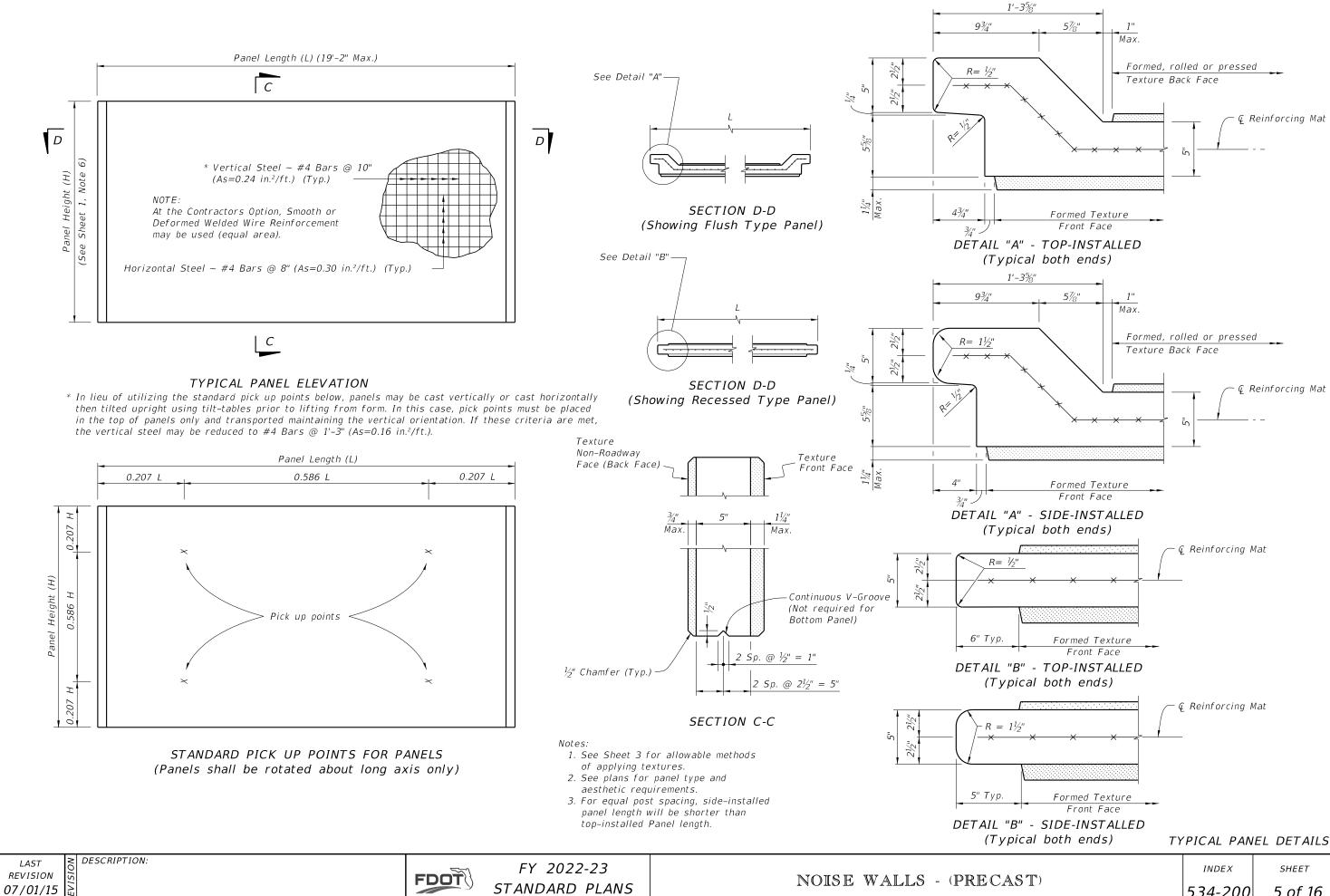
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DESCRIPTION:

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FY 2022-23 STANDARD PLANS



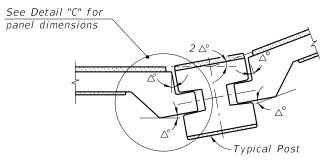


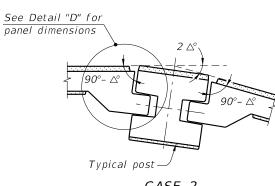
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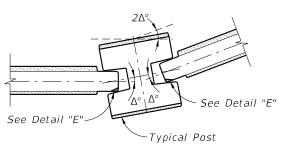
STANDARD PLANS

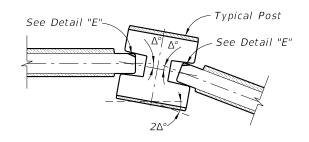
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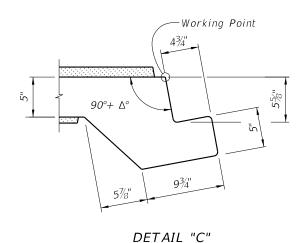


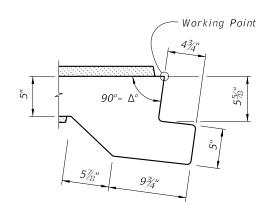
CASE 1 (Interior Angle)

CASE 2 (Exterior Angle)

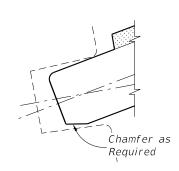
CASE 1 (Interior Angle)

CASE 2 (Exterior Angle)





DETAIL "D"



DETAIL "E" (Back Face Chamfer Shown Front Face Chamfer Similar)

NOTE

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)

NOTE:

The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle $(2\Delta^\circ)$ between panels exceeds 20° .

— PIVOTING DETAILS — (Recessed Type Panel)

TYPICAL PANEL DETAILS

LAST REVISION 07/01/13

DESCRIPTION:



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NOISE WALLS - (PRECAST)

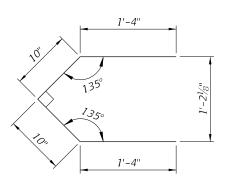
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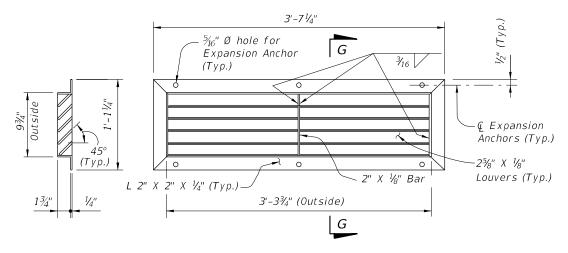
DRAINAGE HOLES TYPES A, B, C & D (Front Face of Wall Shown) (Two Holes Shown, One Hole Similar)

to center of opening. See Wall Control Drawings in the plans.



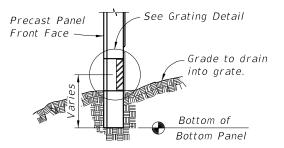
BAR A2 (Pair) Bar Length = 4'-4''

🗆 BAR BENDING DETAILS (#3 Bars) 💳



SECTION G-G

GRATING DETAIL



SECTION F-F

GRATING NOTES:

- 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

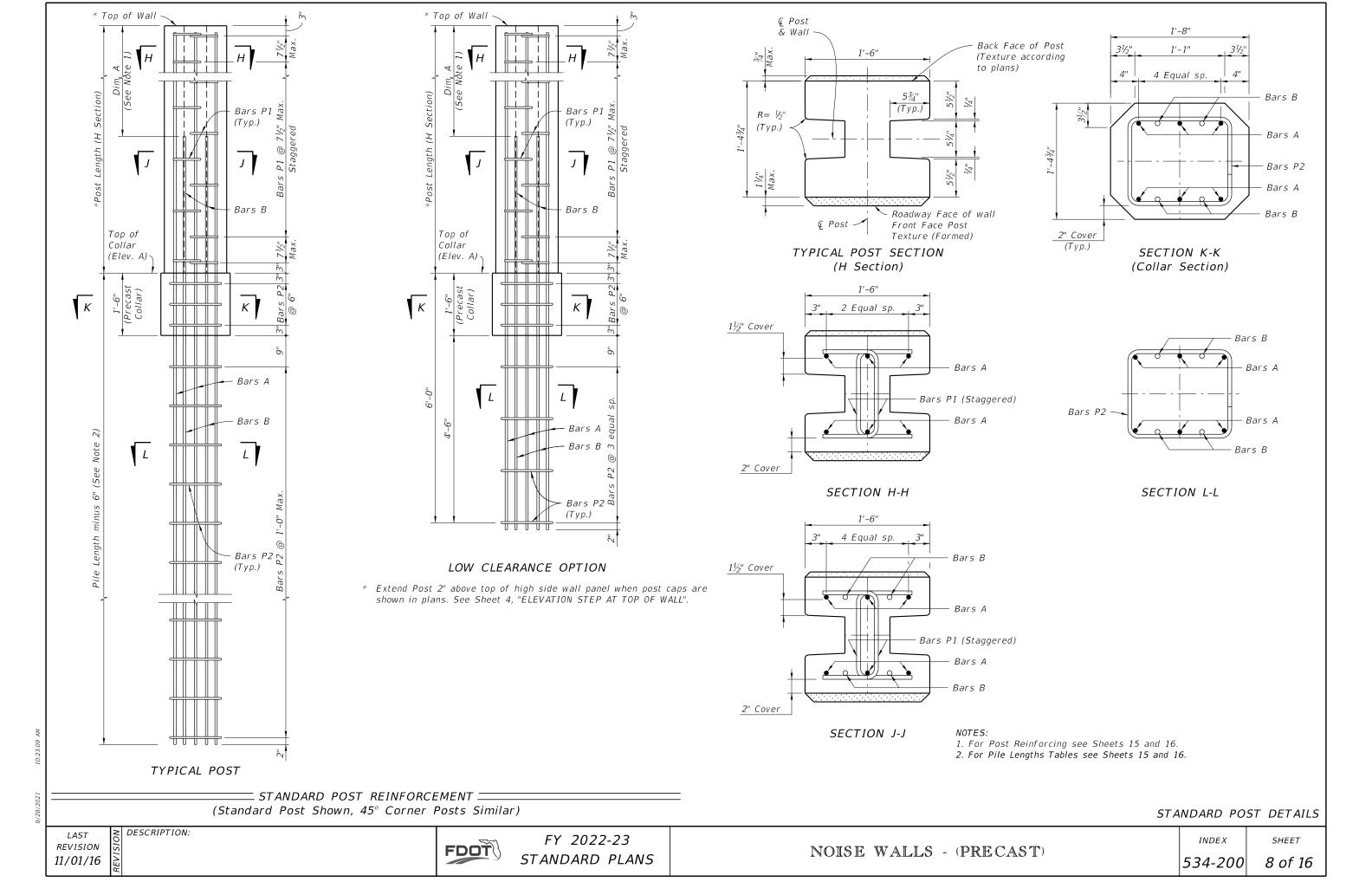
REVISION

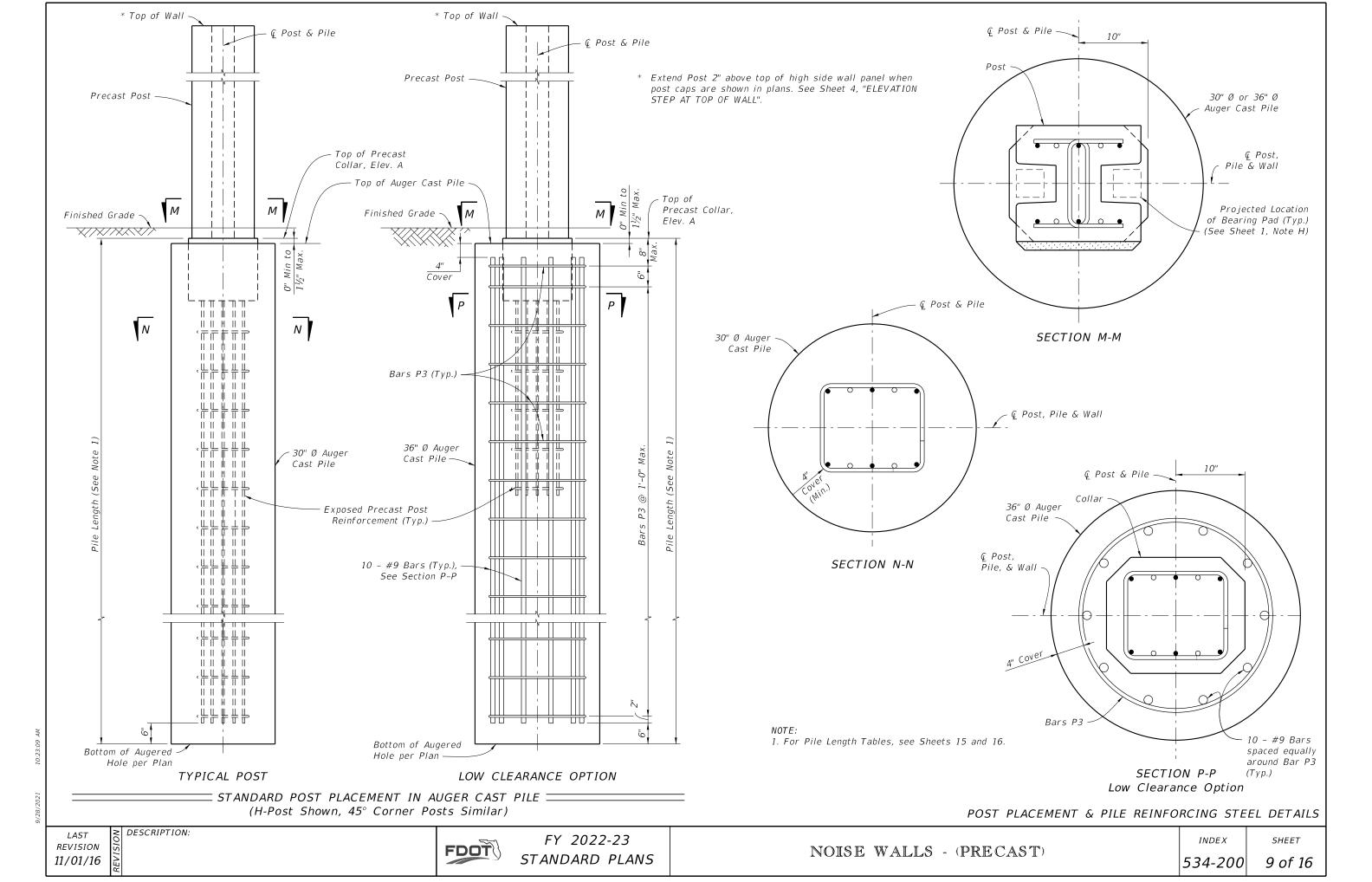
DESCRIPTION:

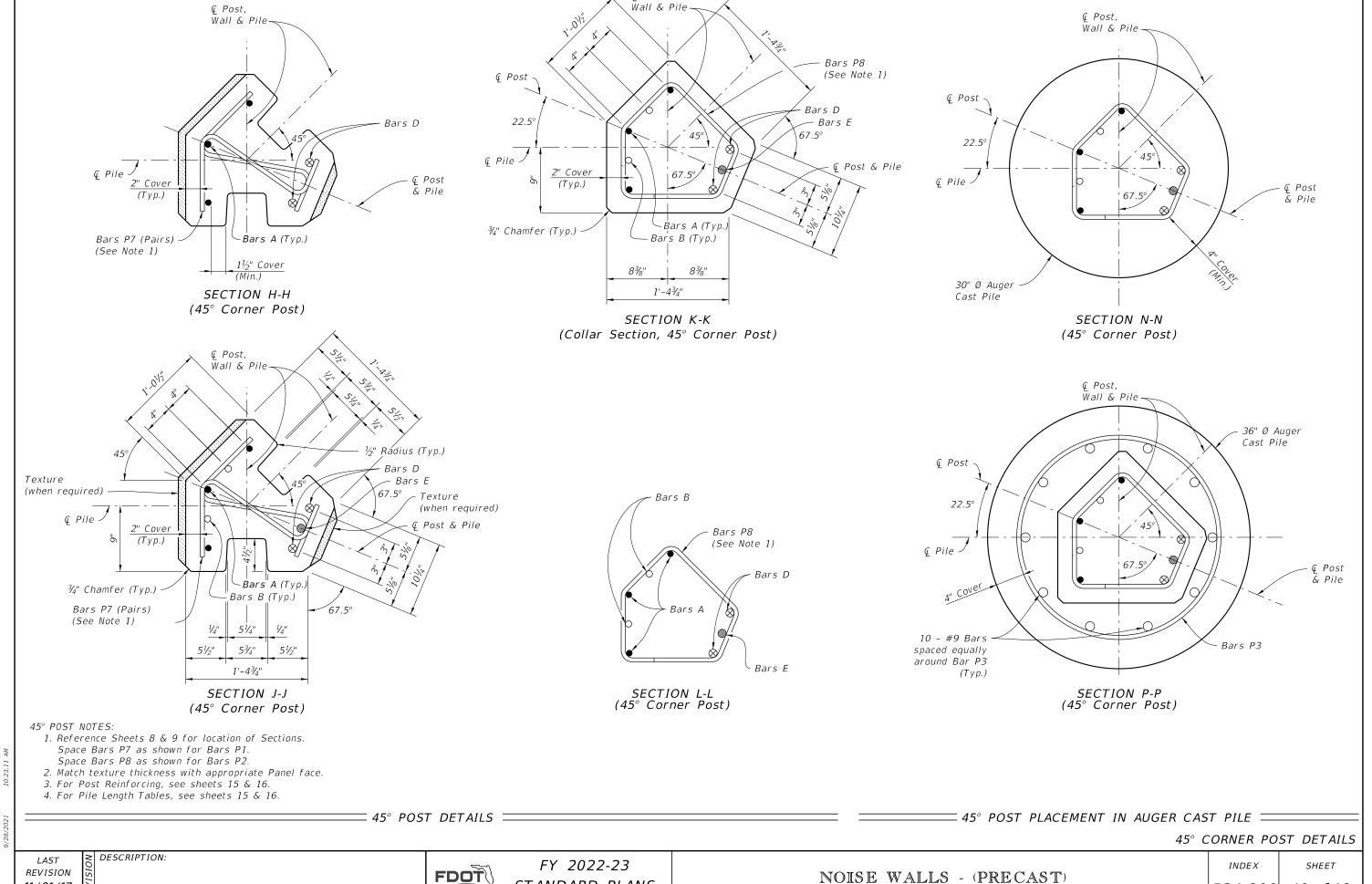
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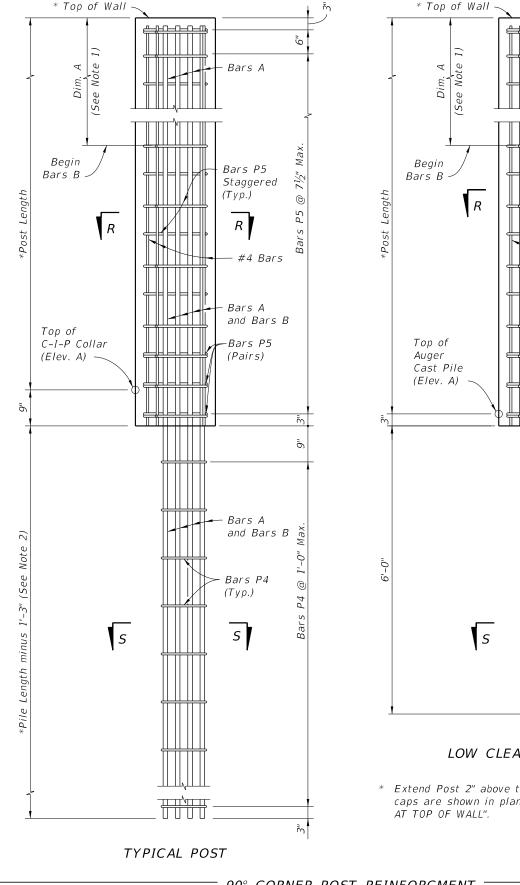


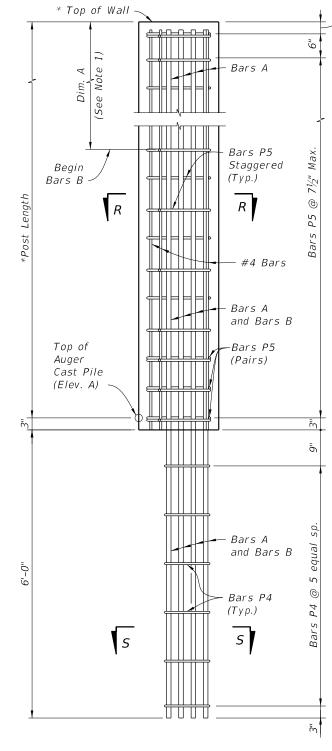




€ Post,

11/01/17

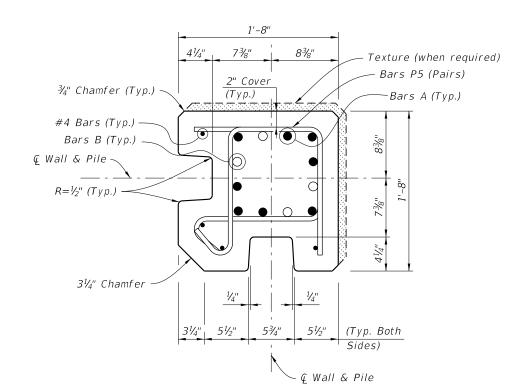




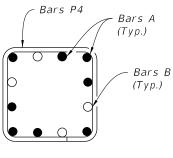
LOW CLEARANCE OPTION

* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP

 \equiv 90 $^{\circ}$ CORNER POST REINFORCMENT \equiv (Post Surface Features Not Shown For Clarity)



SECTION R-R



SECTION S-S

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

DESCRIPTION:

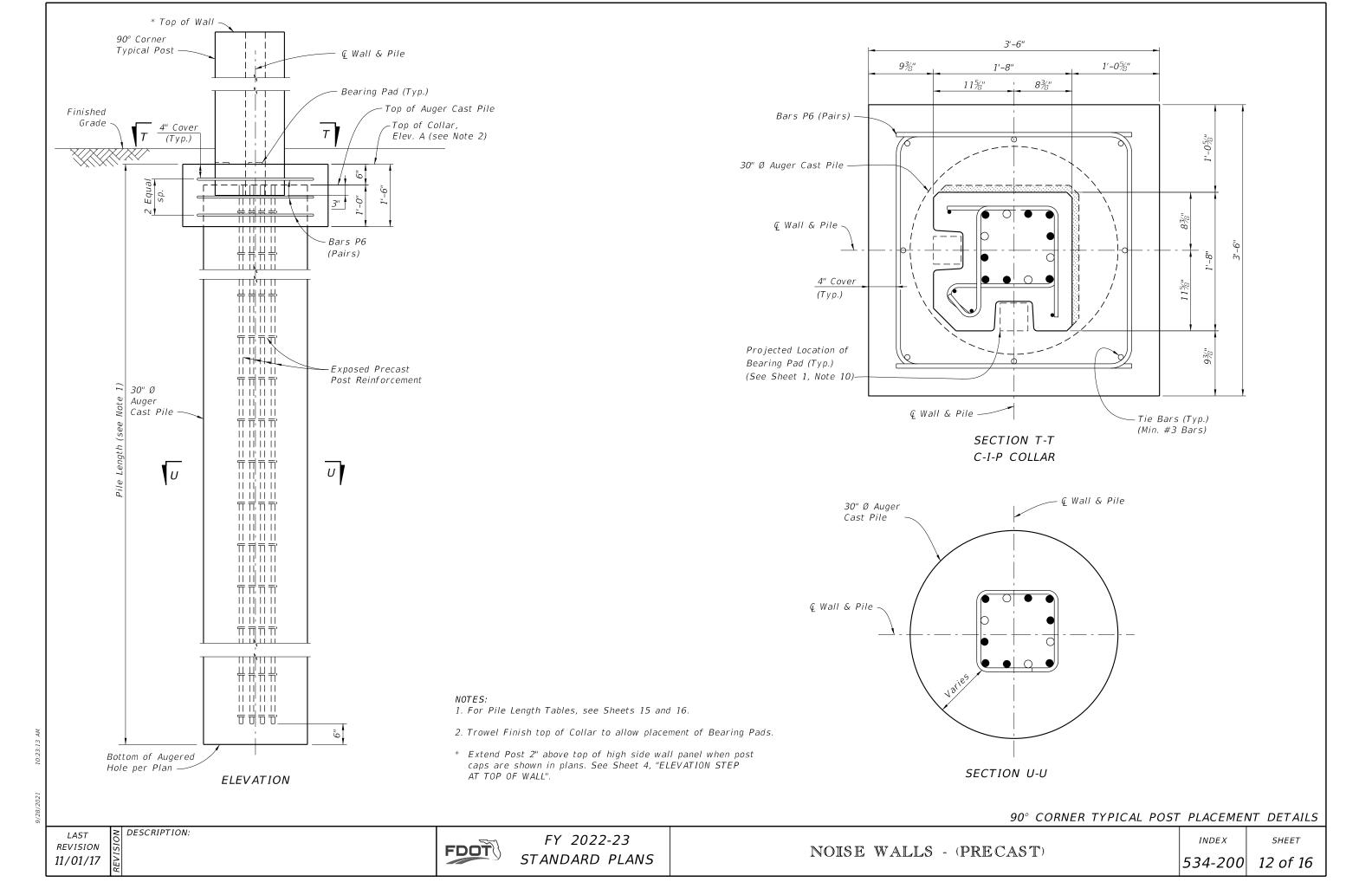
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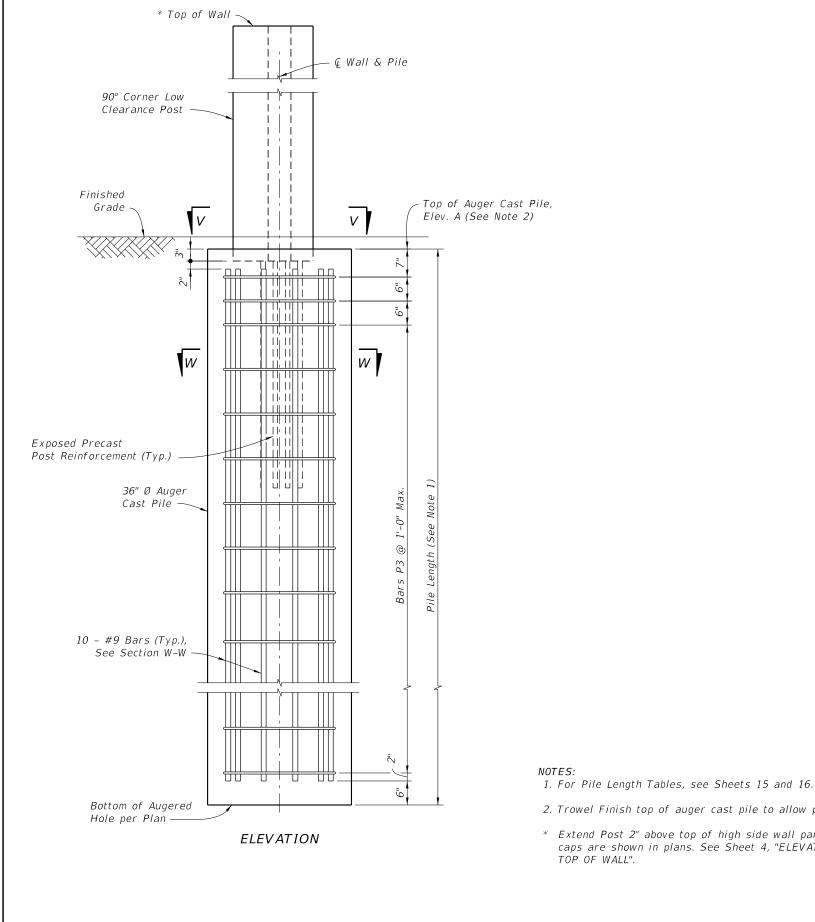
FY 2022-23 STANDARD PLANS

NOISE WALLS - (PRECAST)

INDEX SHEET

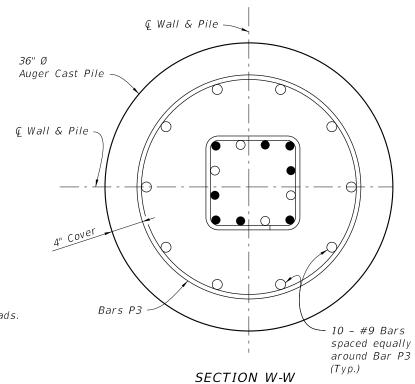
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36" Ø Auger Cast Pile ∕ Ç Wall & Pile Projected Location of Bearing Pad (Typ.)

SECTION V-V



- 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

90° CORNER LOW CLEARANCE POST PLACEMENT & PILE REINFORCING STEEL DETAILS

DESCRIPTION: REVISION 07/01/12

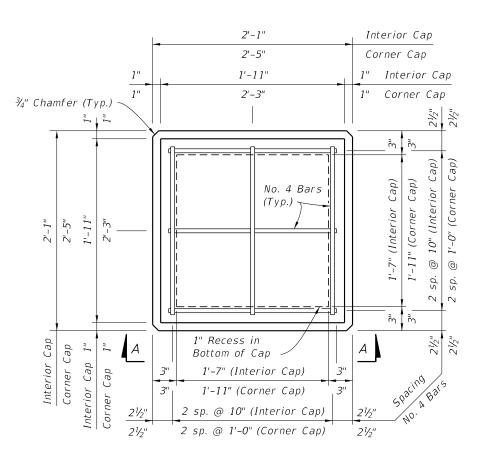
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FY 2022-23 STANDARD PLANS

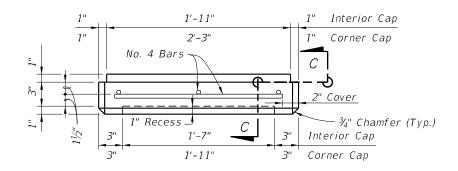
NOISE WALLS - (PRECAST)

INDEX

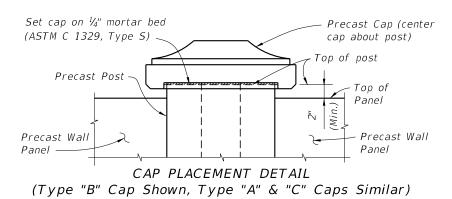
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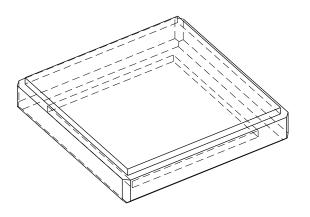
PLAN VIEW (Type "A" Cap Shown, Type "B" & "C" Caps Similar)



VIEW A-A SHOWN, VIEW B-B SIMILAR (Type "A" Cap Shown, Type "B" & "C" Caps Similar)



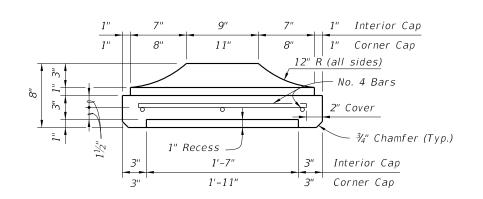
1'-11" 1" Interior Cap 2'-3" 1" Corner Cap No. 4 Bars 2" Cover 3/4" Chamfer (Typ.) 1" Recess Interior Cap 1'-11" Corner Cap

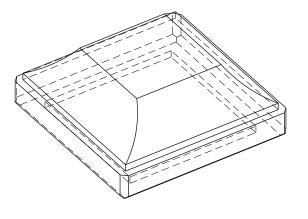


SECTION C-C

PICTORIAL VIEW

= TYPE "A" CAP DETAILS =

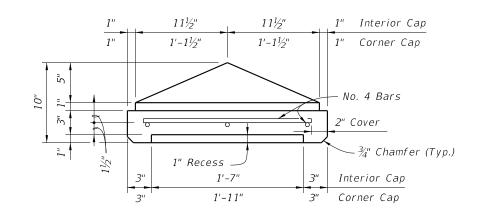


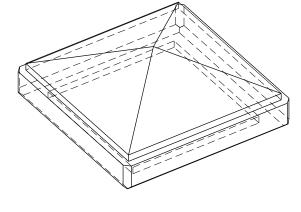


SECTION C-C

PICTORIAL VIEW

TYPE "B" CAP DETAILS =





SECTION C-C

PICTORIAL VIEW

= TYPE "C" CAP DETAILS ==

PRECAST POST CAPITAL

REVISION 07/01/14

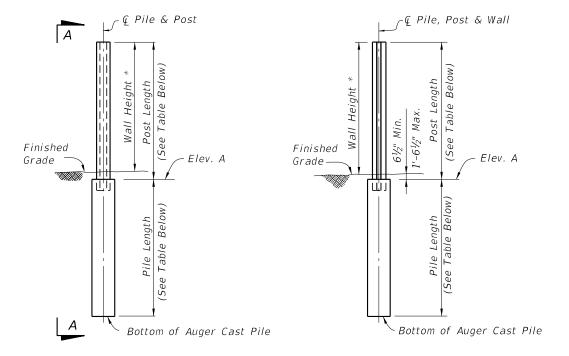
DESCRIPTION:

FDOT

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NOISE WALLS - (PRECAST)

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PILE/POST ELEVATION

VIEW A-A

* See Sheet 1, Note 4.

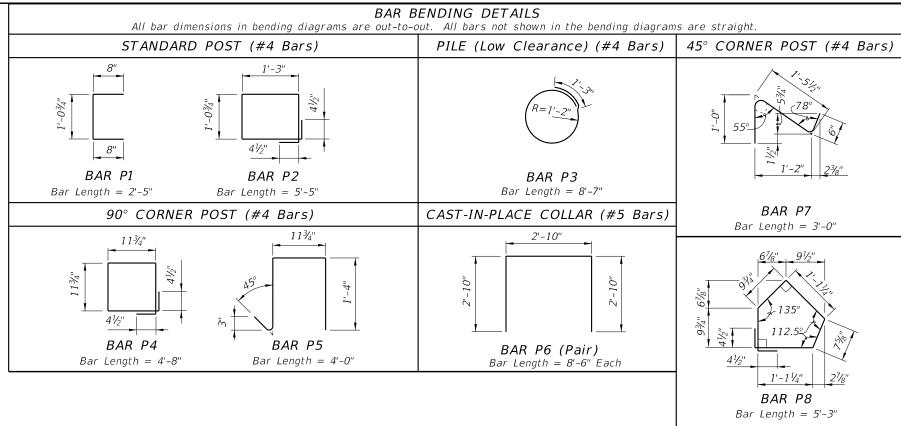


	TABLE 1A - TABLE OF POST REINFORCING STEEL														TABLE 1B - PILE LENGTHS (Feet) - WIND SPEED = 130 MPH																
	POST LE	ENGTHS					WIND	SPEEL) = 13	O MPH	1							10)'-0" POS	T SPAC.	ING		20'-0" POST SPACING								
NOMINAL WALL						'-0" SPACING						'-0" SPACING			NOMINAL WALL		H-P	0 <i>STS</i>			CORNER	R POSTS			H-P	0STS			CORNER	R POSTS	
HEIGHT (Feet)	WITHOUT CAP	WITH CAP	BARS A	ВА	ARS B	BARS D	B/	ARS E	BARS A	BA	NRS B	BARS D	BA	ARS E	HEIGHT (Feet)	50.	IL 1	50.	IL 2	50	IL 1	50.	IL 2	501	IL 1	50.	!L 2	50	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'-0½"	13'-2½"	#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'-2½"	#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'-0½"	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'-2½"	#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

LAST REVISION 11/01/16

DESCRIPTION:

FDOT

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	TABLE 2A - TABLE OF POST REINFORCING STEEL														TABLE 2B - PILE LENGTHS (Feet) - WIND SPEED = 150 MPH																
	POST LI	ENGTHS					WIND	SPEEL) = 15	O MPH	1							10	0'-0" POS	T SPAC	ING					20	'-0" P05	T SPACI	NG		
NOMINAL WALL						'-0" SPACING			20'-0" POST SPACING				NOMINAL WALL	H-POSTS		CORNER POSTS					H-P	0STS			CORNER	₹ POSTS					
HEIGHT (Feet)	WITHOUT CAP	WITH CAP	BARS A	B/	NRS B	BARS D	BA L	RS E	BARS A	BA E	RS 3	BARS D	BA	ARS E	HEIGHT (Feet)	501	L 1	50.	IL 2	50.	IL 1	501	L 2	501	IL 1	501	L 2	501	L 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> " ⊘	30" ∅	<i>36</i> " ⊘	<i>30</i> " ∅	<i>36</i> " ∅	<i>30</i> " ∅	<i>36</i> " ⊘	<i>30</i> " ∅	36" ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘
12	13'-01/2"	13'-2 ¹ / ₂ "	#4	#4	9'-11"	#5	#5	9'-8"	#6	#6	9'-4"	#6	#6	8'-4"	12	12	12	11	10	12	11	11	10	17	15	15	14	16	15	14	13
13	14'-0½"	14'-21/2"	#4	#4	9'-11"	#5	#5	10'-8"	#6	#6	9'-4"	#7	#7	8'-8"	13	13	12	11	11	13	12	11	10	17	16	15	14	17	15	15	14
14	15'-0½"	15'-2½"	#5	#5	11'-8"	#5	#5	10'-8"	#7	#7	10'-8"	#7	#7	8'-8"	14	13	12	12	11	13	12	12	11	18	17	16	15	17	16	15	14
15	16'-0 ¹ / ₂ "	16'-2 ¹ / ₂ "	#5	#5	11'-8"	#6	#6	12'-4"	#7	#7	10'-8"	#8	#7	10'-8"	15	14	13	12	11	13	13	12	11	19	17	16	15	18	17	16	15
16	17'-0½"	17'-2½"	#5	#5	11'-8"	#6	#6	12'-4"	#7	#7	10'-8"	#8	#8	10'-0"	16	14	13	13	12	14	13	12	12	19	18	17	16	19	17	16	15
17	18'-0 ¹ / ₂ "	18'-2 ¹ / ₂ "	#6	#6	14'-4"	#6	#6	12'-4"	#7	#8	10'-0"	#9	#8	11'-0"	17	15	14	13	12	14	13	13	12	20	18	17	16	19	18	17	16
18	19'-0½"	19'-2½"	#6	#6	14'-4"	#7	#7	13'-8"	#8	#8	12'-0"	#9	#10	9'-4"	18	15	14	14	13	15	14	13	12	20	19	18	17	20	18	17	16
19	20'-0 ¹ / ₂ "	20'-2 ¹ / ₂ "	#6	#6	14'-4"	#7	#7	13'-8"	#8	#9	11'-3"	#10	#9	12'-3"	19	16	15	14	13	15	14	14	13	21	19	19	17	20	19	18	17
20	21'-0½"	21'-2 ¹ / ₂ "	#6	#6	14'-4"	#7	#8	13'-0"	#9	#9	13'-3"	#10	#10	11'-4"	20	16	15	14	13	16	15	14	13	22	20	19	18	21	19	18	17
21	22'-0½"	22'-2 ¹ / ₂ "	#7	#7	16'-8"	#7	#7	13'-8"	#9	#10	12'-4"	#11	#10	13'-4"	21	17	15	15	14	16	15	14	13	22	21	20	18	21	20	19	18
22	23'-0 ¹ / ₂ "	23'-2 ¹ / ₂ "	#7	#7	16'-8"	#8	#8	16'-0"	#10	#9	14'-3"	#11	#11	12'-5"	22	17	16	15	14	17	15	15	14	23	21	20	19	22	20	19	18

		Τ	ABLE 3	8A - T.	ABLE (OF PO	ST RE	INFOR	CING	STEEL								TAE	BLE 3B	B - PIL	E LEN	GTHS	(Feet)	- WIN	ID SPI	EED =	170 M	IPН			
	POST LI	ENGTHS					WIND	SPEEL) = 17	O MPH	1							10)'-0" POS	ST SPACE	ING					20	'-0" P0S	T SPAC.	ING		
NOMINAL WALL						"-0" SPACING						'-0" SPACING			NOMINAL WALL		H-P(OSTS			CORNE	R POSTS			H-P()STS			CORNEF	R POSTS	
HEIGHT (Feet)	WITHOUT CAP	WITH CAP	BARS A	BA	iRS B	BARS D	BA	ARS E	BARS A	BA	ARS B	BARS D	В	ARS E	HEIGHT (Feet)	50.	L 1	50.	IL 2	50	IL 1	501	L 2	501	L 1	501	L 2	50	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> " ⊘	30" ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ∅	<i>30</i> " ∅	36" ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	<i>30</i> " ⊘	<i>36</i> " ⊘	30" ⊘	<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'-0½"	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'-0½"	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'-2½''	#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'-0½"	17'-2½"	#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'-2½"	#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

LAST REVISION 11/01/16

FDOT

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NOISE WALLS - (PRECAST)

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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 steep grades.
- 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.
 - 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: +/- 1/4"
- C. Plane of side mold: $\pm 1/-\frac{1}{16}$ "
- D. Openings: $+/-\frac{1}{2}"$
- 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
- 11. PILING

Construct Auger Cast Piling in accordance with the Plans and Specification Section 455.

MASONRY OPTION NOTES:

- 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 tooled joints.
- 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.):

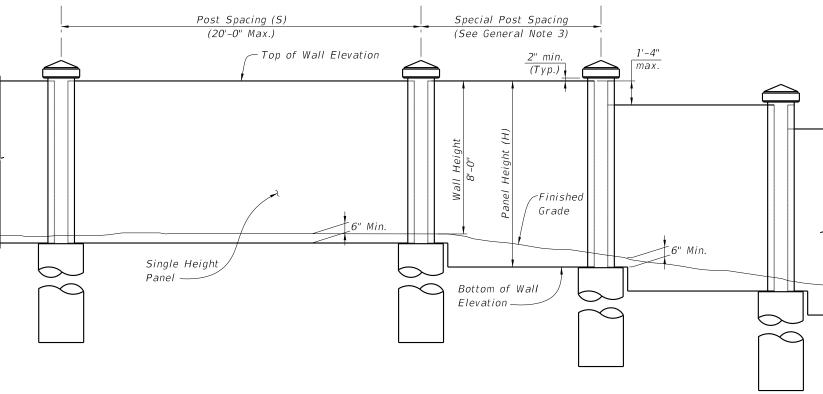
- D. Fully Grout all cells with horizontal or vertical reinforcing bars.
- E. Use reinforcing bar positioners to maintain vertical and horizontal bar placement.
- F. Fully grout first three courses of the wall.
- G. Joint Reinforcement: Use W 1.7 (9mm) galvanized ladder reinforcing spaced at 16" vertically. 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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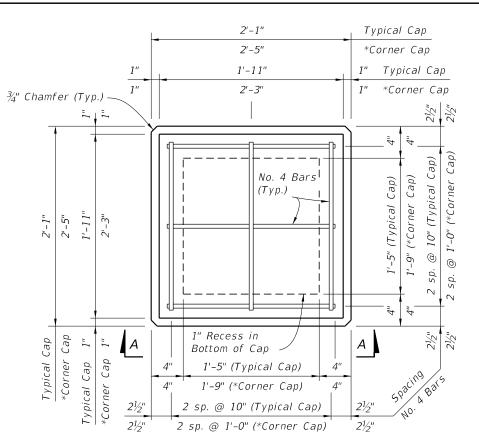


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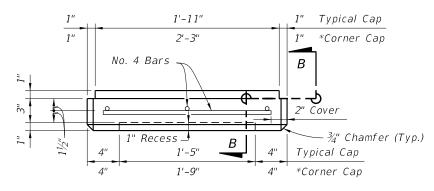
PERIMETER WALLS

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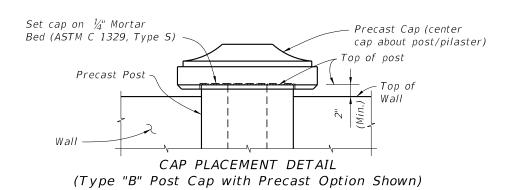
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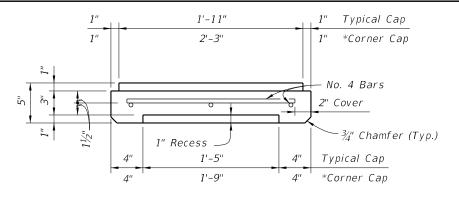


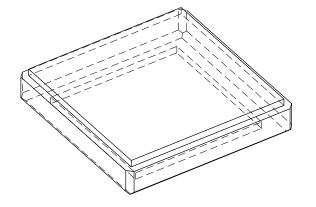
PLAN VIEW (Type "A" Cap Shown, Type "B" & "C" Caps Similar)



VIEW A-A (Type "A" Cap Shown, Type "B" & "C" Caps Similar)





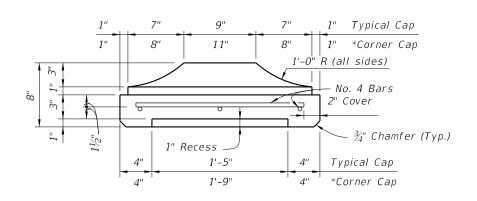


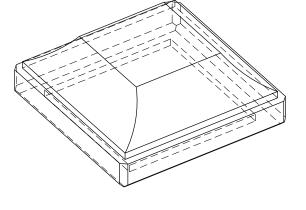
SECTION B-B

PICTORIAL VIEW

= TYPE "A" CAP DETAILS =

*Precast Option only

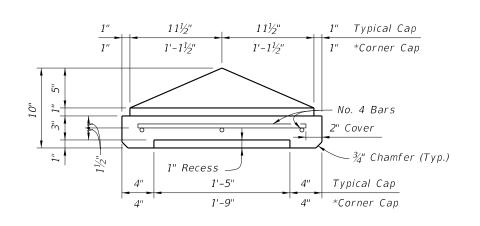


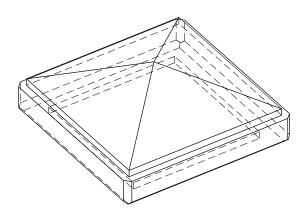


SECTION B-B

PICTORIAL VIEW

TYPE "B" CAP DETAILS





SECTION B-B

PICTORIAL VIEW

= TYPE "C" CAP DETAILS =

POST CAP DETAILS

REVISION 01/01/14

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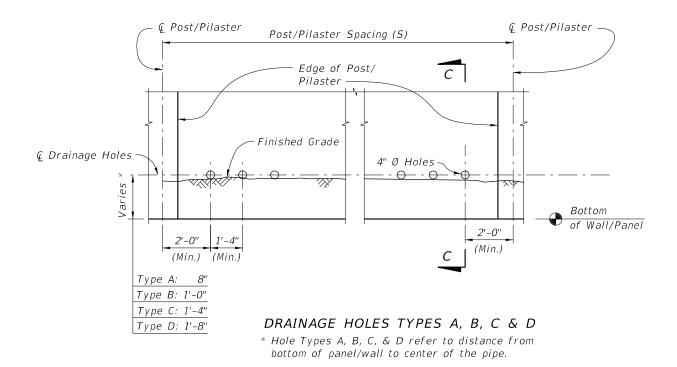
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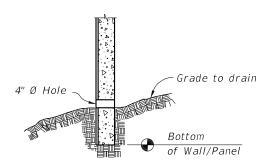
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PERIMETER WALLS

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SECTION C-C (Precast Option Shown, Masonry Option Similar)

NOTES

- 1. Drainage holes may be formed with 4" NPS PVC pipe that may remain in place.
- See Wall Control drawings for number, Type and location/ spacing of drainage holes.

DRAINAGE DETAILS

LAST REVISION 01/01/14

≥ DESCRIPTION:

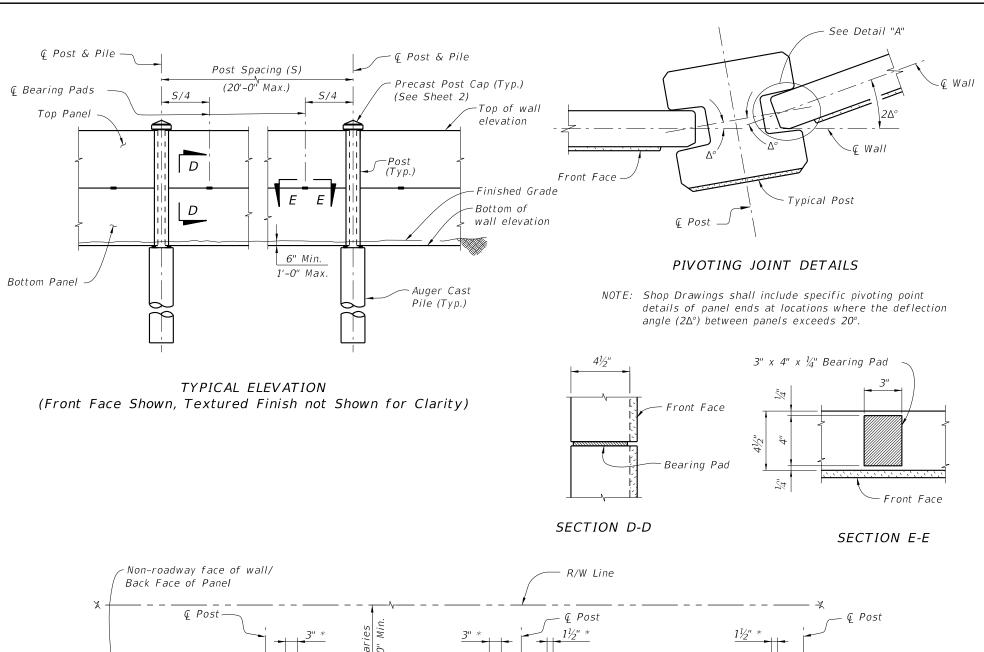
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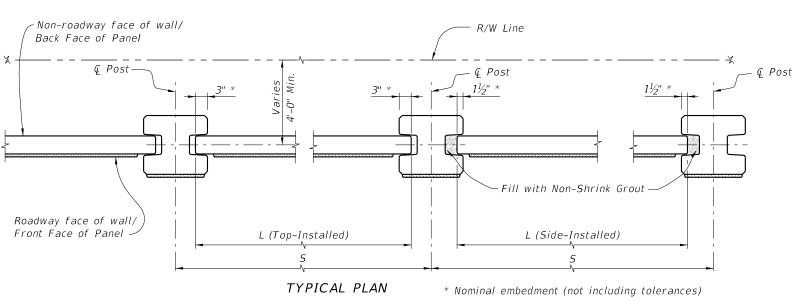
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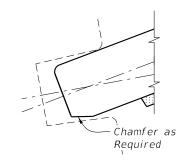
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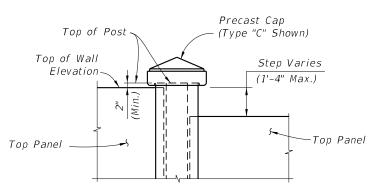
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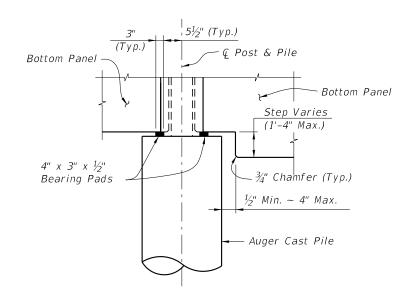




DETAIL "A" (Back Face Chamfer Shown Front Face Chamfer Similar)



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

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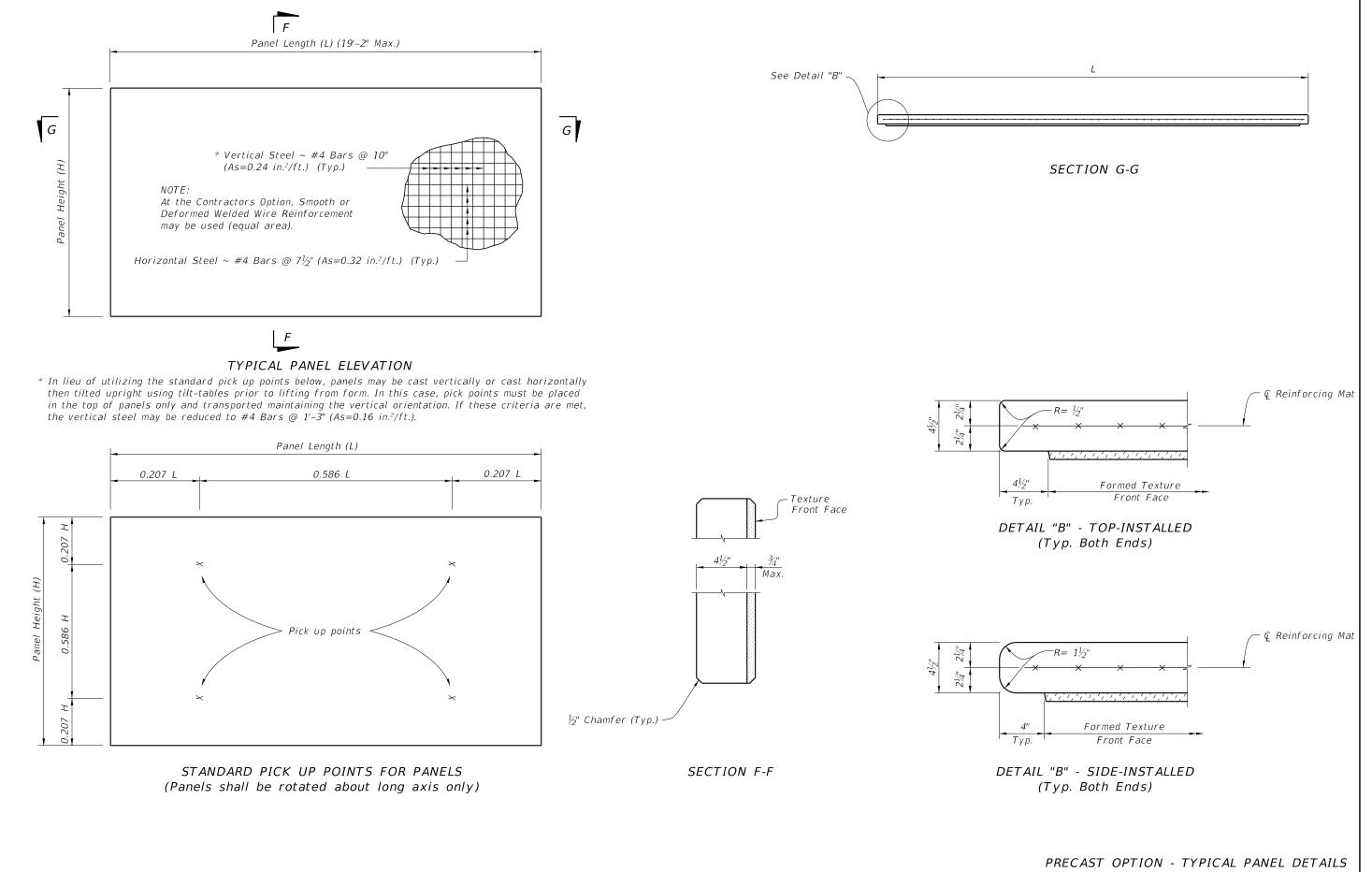
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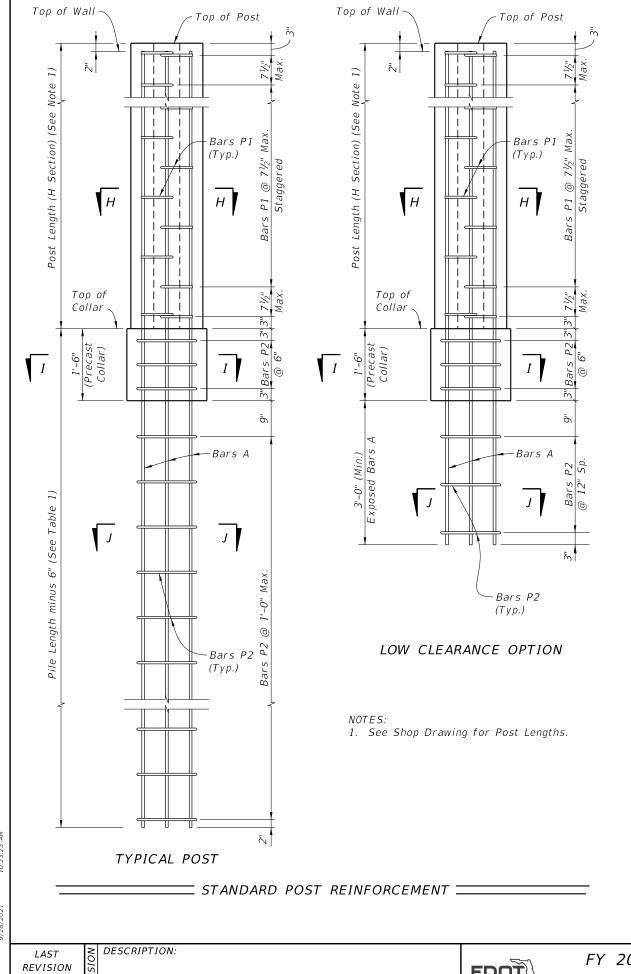
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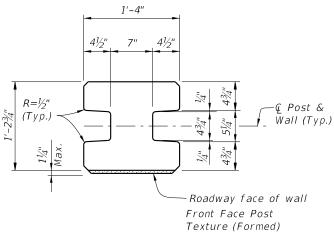
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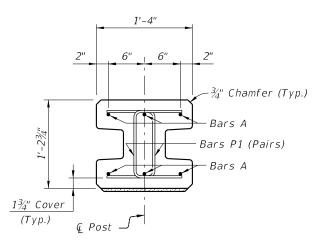
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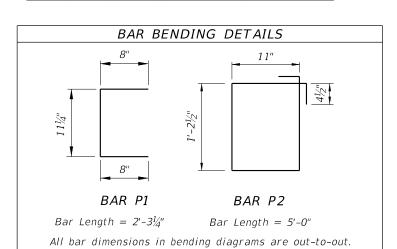


TYPICAL POST SECTION (H Section)



SECTION H-H (H Section - Above Collar)

		T	ABLE 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 bars not shown in the bending diagrams are straight.

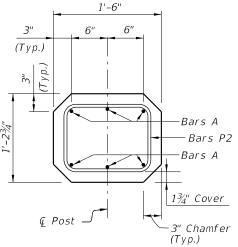
SECTION I-I Precast Collar

¾" chamfer (Typ.) —

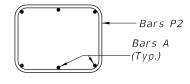
1'-6"

_ Bars A

Bars P2



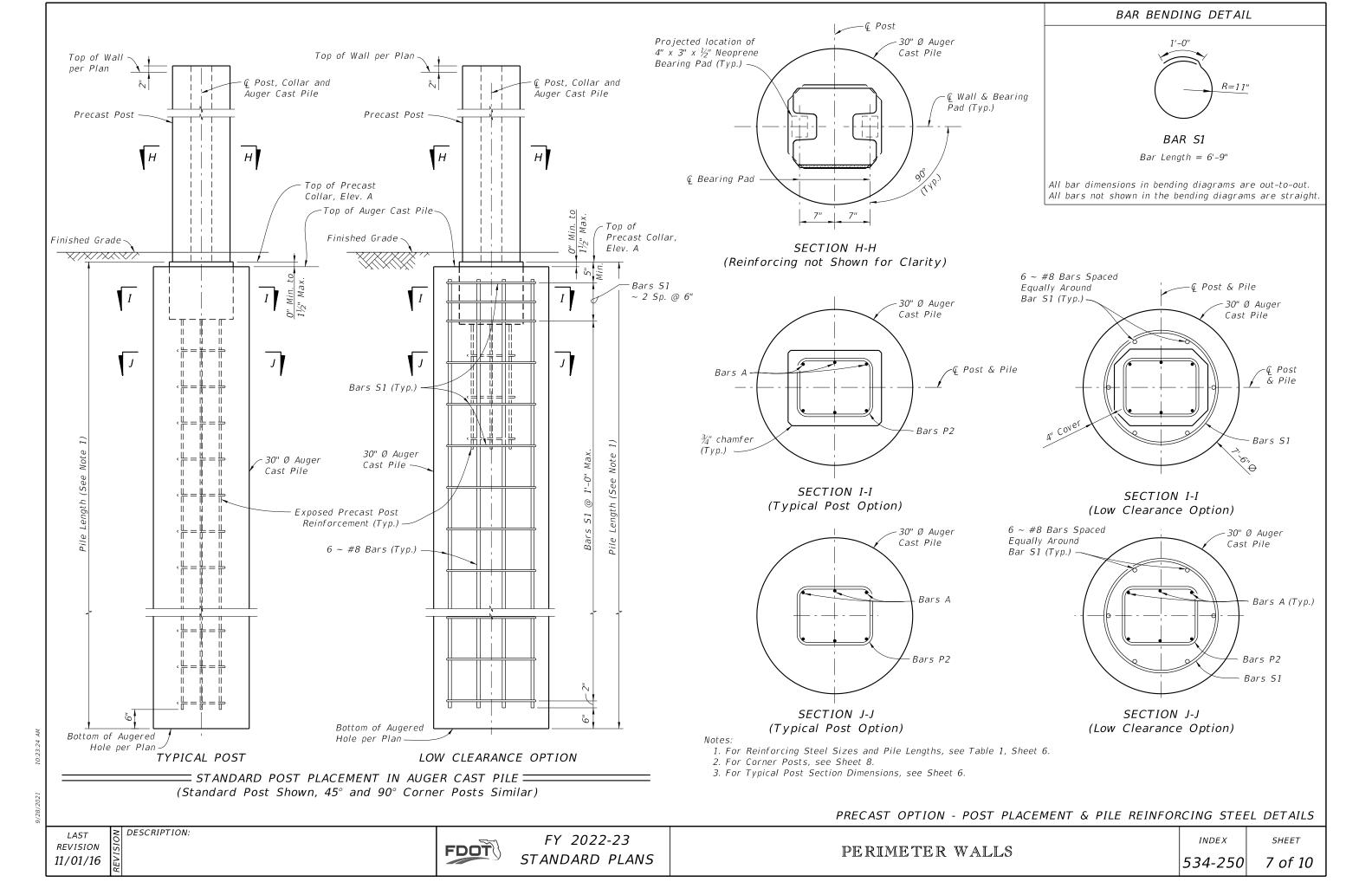
SECTION I-I (for Low Clearance Option)

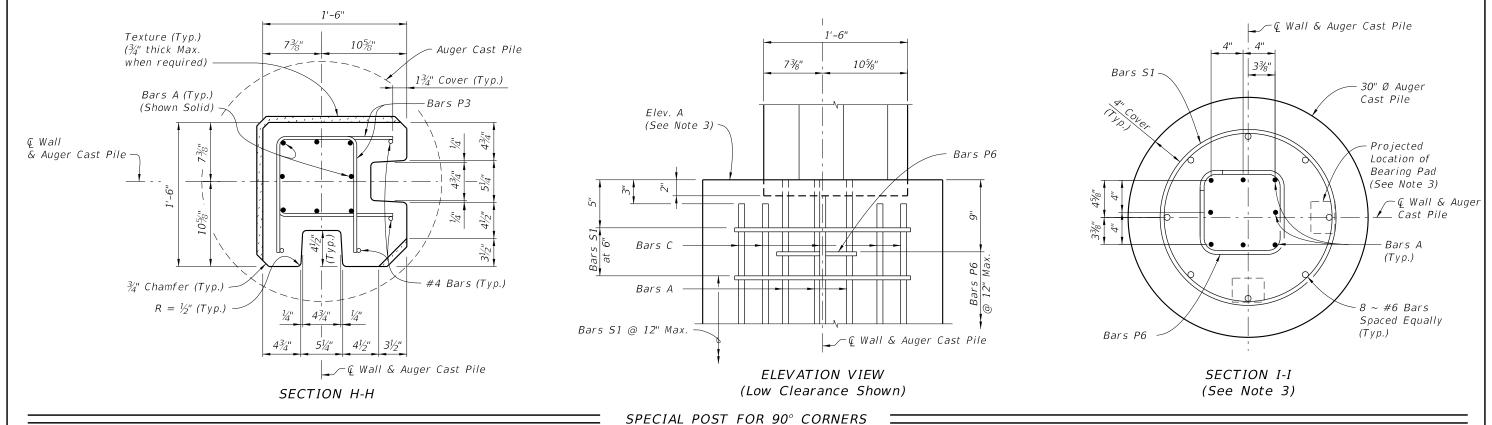


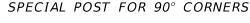
SECTION J-J

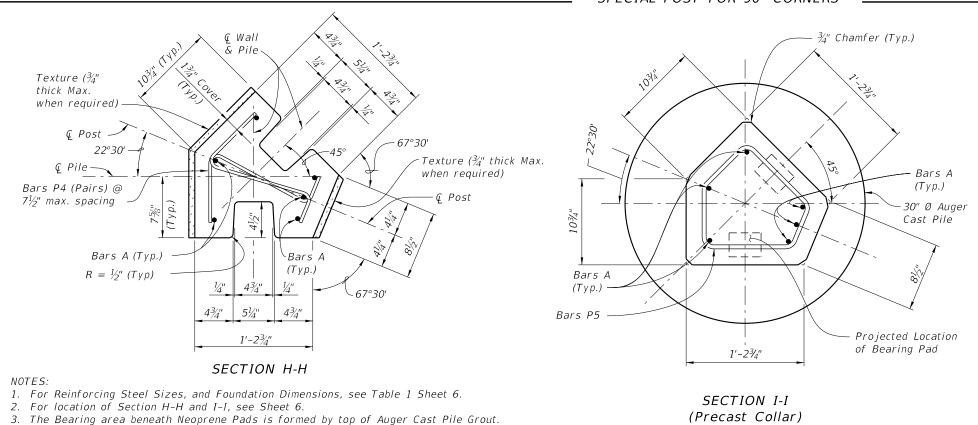
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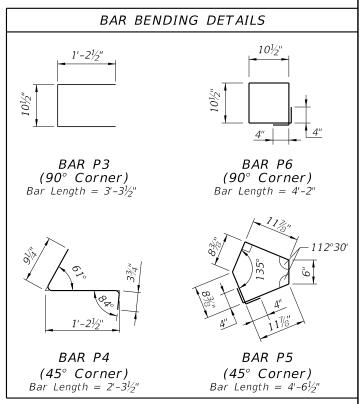
FY 2022-23 STANDARD PLANS PRECAST OPTION - STANDARD POST DETAILS











All bar dimensions in bending diagrams are out-to-out. All bars not shown in the bending diagrams are straight.

SPECIAL POSTS FOR 45° CORNERS

PRECAST OPTION - SPECIAL CORNER POSTS

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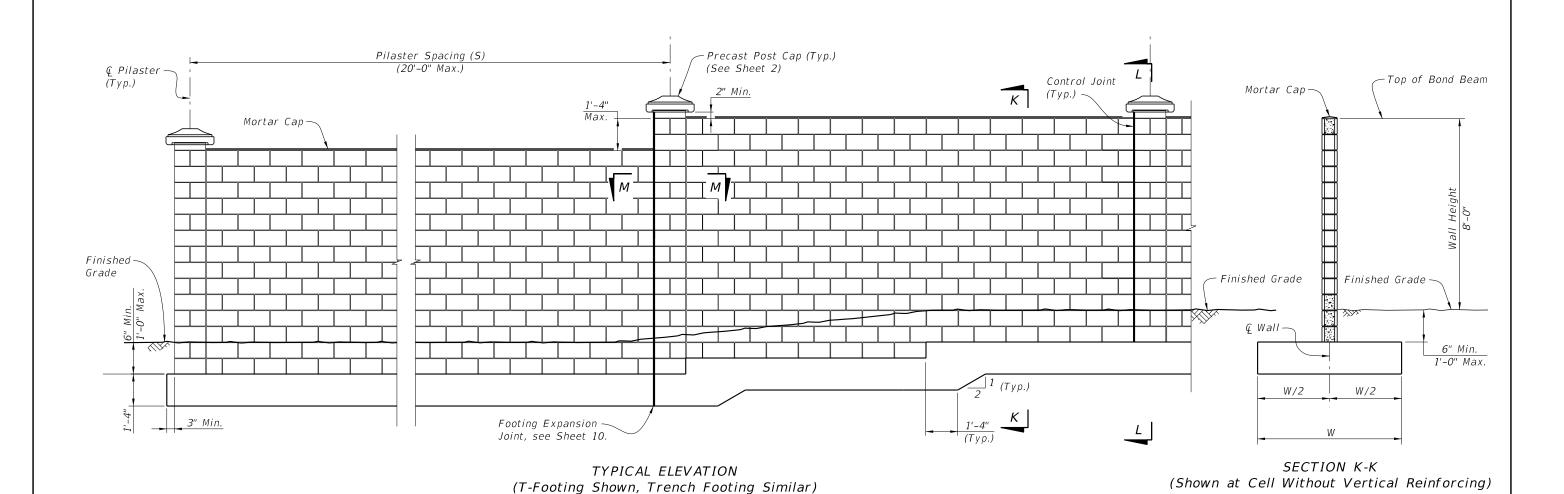
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PERIMETER WALLS

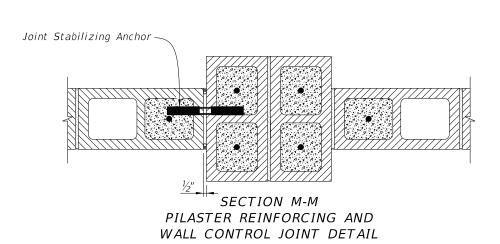
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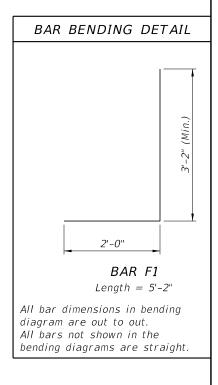
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		Tab	le 2		
Wind	Masonry	walls		Foundatior	ns
Speed Category	(8x8)	x16)	Bars	T-Footing Width	Trench Footing
	Bars V1	SV Spacing	F1 & F2	(W)	Depth (D)
130	#5	2'-8"	#5	4'-4"	5'-6"
150	#5	2'-0"	#5	5'-0"	6'-4"
170	#5	1'-4"	#5	6'-0"	7'-0"

- 1. End vertical reinforcing bars $1\frac{1}{2}$ " 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.





MASONRY OPTION

REVISION 11/01/17

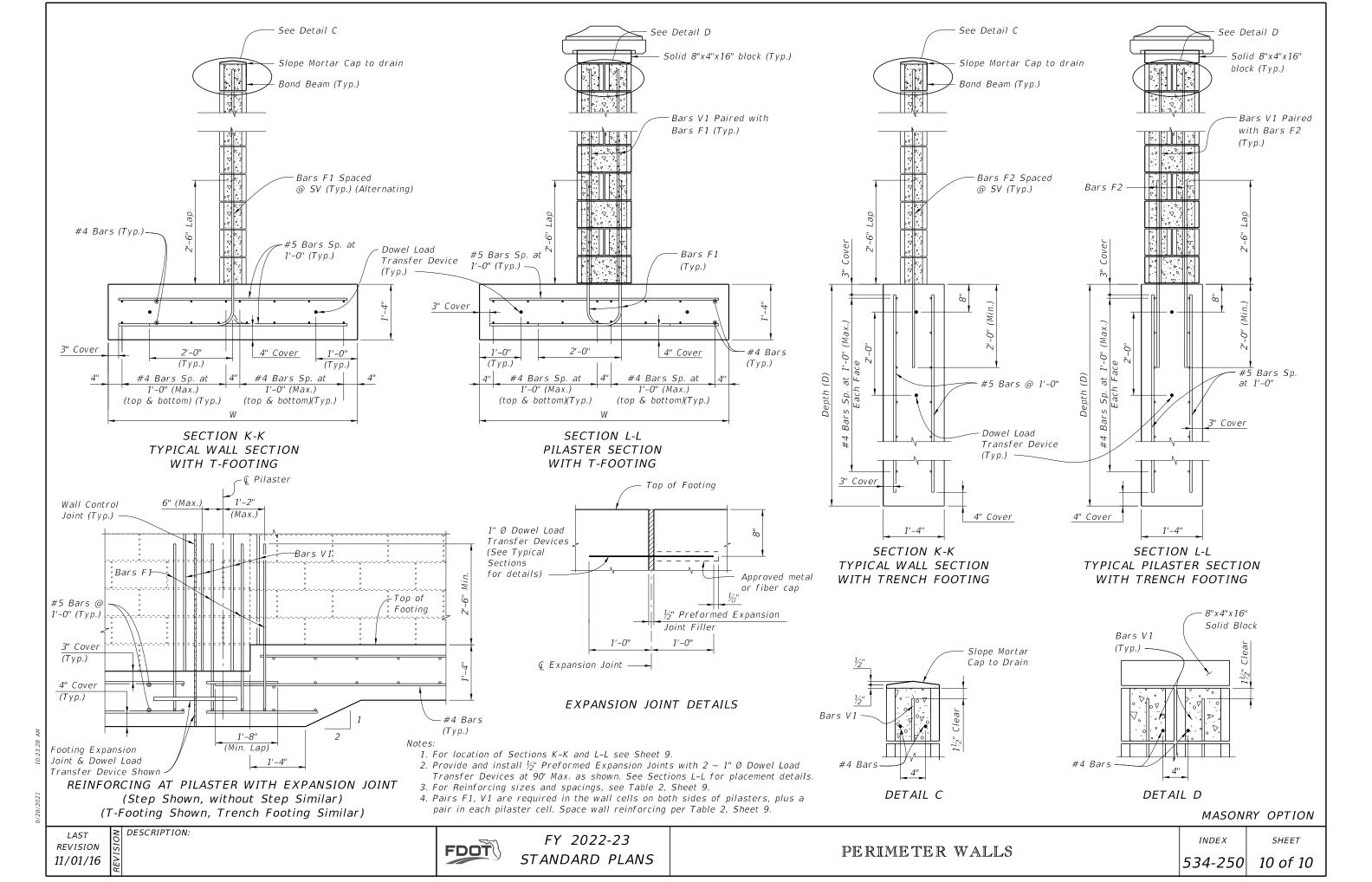
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PERIMETER WALLS

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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 11 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 - Curb Connections 15 Approach Transition Connection to Rigid Barrier - Low-Speed, TL-2 16 Approach Transition Connection to Rigid Barrier - Low-Speed, TL-2 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 19 Layout to Rigid Barrier - Approach Ends 19 Layout to Rigid Barrier - Trailing Ends 19 Trailing End Transition Connection to Rigid Barrier 20 Layout to Rigid Barrier - Trailing Ends 21 Trailing End Transition Connection to Rigid Barrier 22 Pedestrian Safety Treatment - Pipe Rail 23 Modified Mount - Special Steel Post for Concrete Structure Mount; 24 Modified Mount - Frangible Leave-Out for Concrete Surface Mount 24 Barrier Delineators - Post Mounted; 25 Clear Space - Reduced Post Spacing for Hazards;	5	Post and Offset Block Details
8 End Treatment - Approach Terminal Geometry, Curbed and Double Faced 9 End Treatment - Trailing Anchorage 10 End Treatment - Component Details 11 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 - Curb Connections 14 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 19 Layout to Rigid Barrier - Approach Ends 19 Layout to Rigid Barrier - Trailing Ends 19 Trailing End Transition Connection to Rigid Barrier 20 Layout to Rigid Barrier - Trailing Ends 10 Trailing End Transition Connection to Rigid Barrier 21 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail 19 Modified Mount - Special Steel Post for Concrete Structure Mount; 10 Modified Mount - Encased Post for Shallow Mount; 11 Modified Mount - Frangible Leave-Out for Concrete Surface Mount 12 Barrier Delineators - Post Mounted; 13 Clear Space - Reduced Post Spacing for Hazards;	6	Guardrail Sections – Heights and Adjacent Slopes
9 End Treatment - Trailing Anchorage 10 End Treatment - Component Details 11 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 19 Layout to Rigid Barrier - Approach Ends 19 Layout to Rigid Barrier - Approach Ends 19 Layout to Rigid Barrier - Trailing Ends 19 Trailing End Transition Connection to Rigid Barrier 20 Layout to Rigid Barrier - Pipe Rail 20 Modified Mount - Special Steel Post for Concrete Structure Mount; 21 Modified Mount - Frangible Leave-Out for Concrete Surface Mount 22 Barrier Delineators - Post Mounted; 23 Clear Space - Reduced Post Spacing for Hazards;	7	End Treatment - Approach Terminal Geometry, Parallel
10 End Treatment - Component Details 11 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 19 Layout to Rigid Barrier - Approach Ends 19 Layout to Rigid Barrier - Approach Ends 19 Layout to Rigid Barrier - Trailing Ends 10 Trailing End Transition Connection to Rigid Barrier 20 Rub Rail Details 21 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail 23 Modified Mount - Special Steel Post for Concrete Structure Mount; 24 Modified Mount - Frangible Leave-Out for Concrete Surface Mount 25 Barrier Delineators - Post Mounted; 26 Clear Space - Reduced Post Spacing for Hazards;	8	End Treatment - Approach Terminal Geometry, Curbed and Double Faced
11 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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	9	End Treatment - Trailing Anchorage
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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	10	End Treatment - Component Details
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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	1 1	End Treatment - Controlled Release Terminal (CRT) System
Approach Transition Connection to Rigid Barrier - General, TL-3 - Curb Connections 15	12	Layout for CRT System - Side Roads and Driveways
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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	13	Approach Transition Connection to Rigid Barrier – General, TL–3
Approach Transition Connection to Rigid Barrier - Low-Speed, TL-2 - Curb Connections Approach Transition Connection to Rigid Barrier - Details Approach Transition Connection to Rigid Barrier - Double Faced Guardrail Layout to Rigid Barrier - Approach Ends Layout to Rigid Barrier - Approach Ends with Double Faced Guardrail Layout to Rigid Barrier - Trailing Ends Trailing End Transition Connection to Rigid Barrier Rub Rail Details Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	14	Approach Transition Connection to Rigid Barrier – General, TL–3 – 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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	15	Approach Transition Connection to Rigid Barrier - Low-Speed, TL-2
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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	16	Approach Transition Connection to Rigid Barrier - Low-Speed, TL-2 - Curb Connections
Layout to Rigid Barrier - Approach Ends Layout to Rigid Barrier - Approach Ends with Double Faced Guardrail Layout to Rigid Barrier - Trailing Ends Trailing End Transition Connection to Rigid Barrier 21 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	17	Approach Transition Connection to Rigid Barrier – Details
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 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	18	Approach Transition Connection to Rigid Barrier – Double Faced Guardrail
20 Layout to Rigid Barrier - Trailing Ends Trailing End Transition Connection to Rigid Barrier 21 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	19	Layout to Rigid Barrier – Approach Ends
Trailing End Transition Connection to Rigid Barrier 21 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;		Layout to Rigid Barrier - Approach Ends with Double Faced Guardrail
21 Rub Rail Details 22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	20	Layout to Rigid Barrier - Trailing Ends
22 Pedestrian Safety Treatment - Pipe Rail Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;		Trailing End Transition Connection to Rigid Barrier
Modified Mount - Special Steel Post for Concrete Structure Mount; Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;	21	Rub Rail Details
23 Modified Mount - Encased Post for Shallow Mount; Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; 24 Clear Space - Reduced Post Spacing for Hazards;	22	Pedestrian Safety Treatment - Pipe Rail
Modified Mount - Frangible Leave-Out for Concrete Surface Mount Barrier Delineators - Post Mounted; Clear Space - Reduced Post Spacing for Hazards;		Modified Mount - Special Steel Post for Concrete Structure Mount;
Barrier Delineators – Post Mounted; 24 Clear Space – Reduced Post Spacing for Hazards;	23	Modified Mount - Encased Post for Shallow Mount;
24 Clear Space - Reduced Post Spacing for Hazards;		Modified Mount - Frangible Leave-Out for Concrete Surface Mount
		Barrier Delineators - Post Mounted;
3/8" Button-Head Bolt System	24	Clear Space - Reduced Post Spacing for Hazards;
		⅓" Button-Head Bolt System

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 24. Place washers under nuts. 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 22.

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 11/3" 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 22.

- 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.

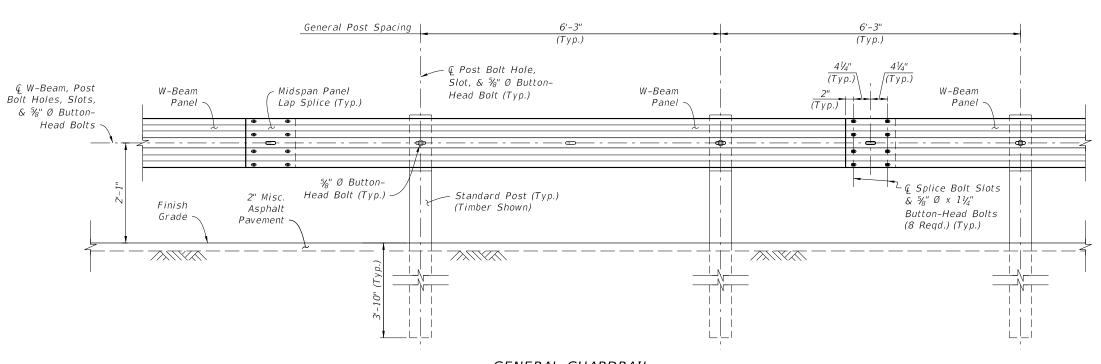
10. CONNECTION TO EXISTING GUARDRAIL: Where a transition to existing guardrail at 27" height is required, linearly transition the new guardrail height over a distance ranging from 25'-0" to 31'-3". Height transitions must occur outside of End Treatment and Approach Transition segments.

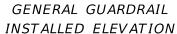
Provide an immediate transition to the required midspan panel splice using the available panel options on Sheet 4 (9'- $4\frac{1}{2}$ " or 15'- $7\frac{1}{2}$ " panel). Alternatively, this transition to midspan panel splice may be achieved by installing a single reduced post spacing of 3'- $1\frac{1}{2}$ " within the new guardrail, immediately adjacent to the connection location.

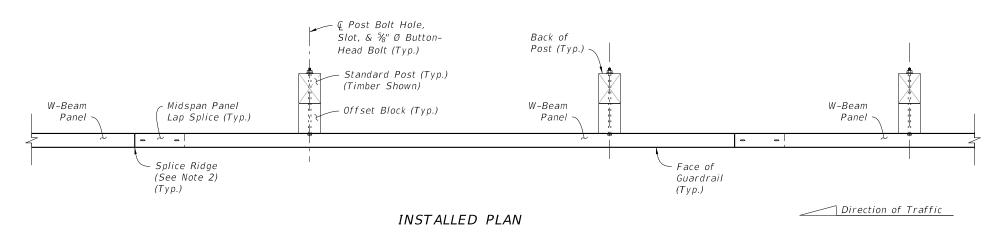
11. PLANS CALLOUTS: Begin/End Station labels are shown throughout this Index as they correspond to the station and offset callouts specified in the plans.

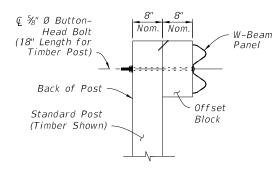
In the plans, Begin/End Guardrail Station refers to the General TL-3 Guardrail Pay Item, and it may be abbreviated as Begin/End GR. Station. Where the Low-Speed TL-2 Guardrail Pay Item is specifically required, the callout in the plans will then specify Begin/End TL-2 GR. Station.

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 Q of the panel's post bolt slots at the approach/trailing ends).









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 23 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 11/01/19

DESCRIPTION:

FDOT

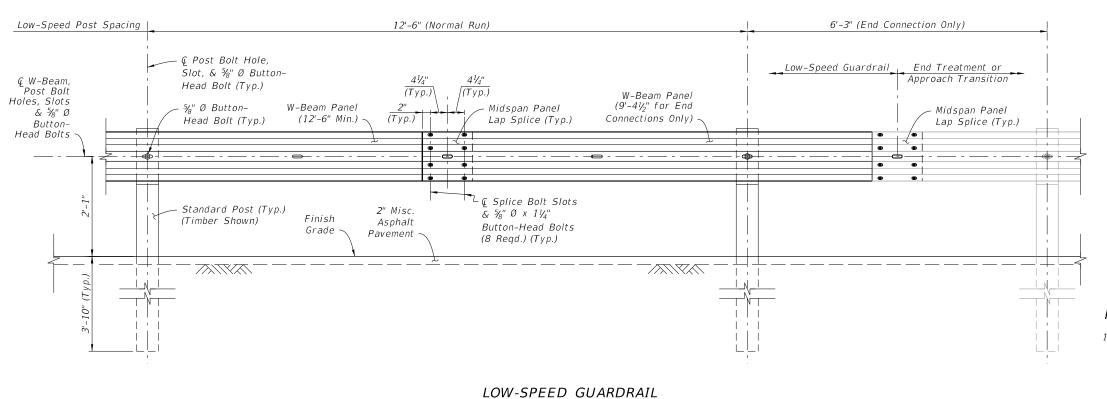
FY 2022-23 STANDARD PLANS

INDEX 536-001

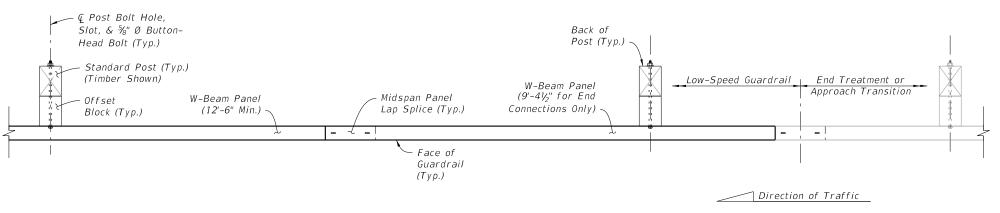
SHEET

GUARDRAIL

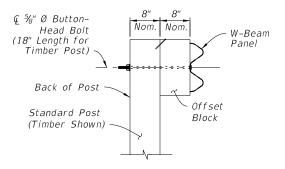
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INSTALLED ELEVATION



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 23 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 11/01/19

DESCRIPTION:

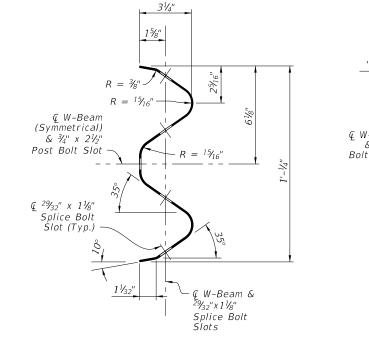
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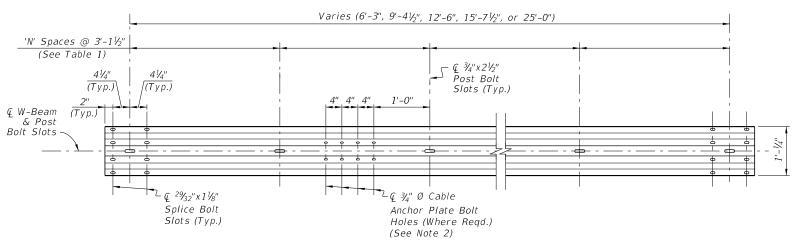
FY 2022-23 STANDARD PLANS

INDEX 536-001

SHEET

GUARDRAIL



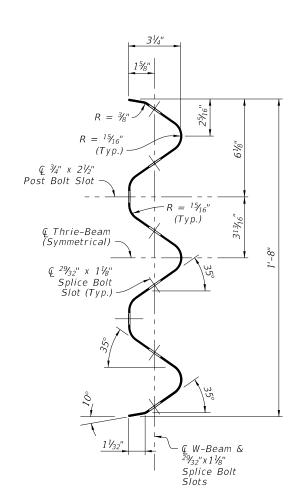


W-BEAM PANEL ELEVATION

PANEL SUMMARY TABLE:

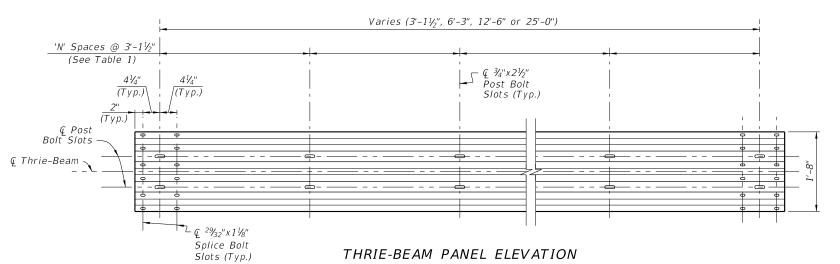
Panel Type	Number of Spaces 'N'	Gauge	
6'-3" W-Beam	2	12	
9'-4½" W-Beam	3	12	
12'-6" W-Beam	4	12	
15'-7½" W-Beam	5	12	
25'-0" W-Beam	8	12	
3'-1½" Thrie-Beam	1	10	
6'-3" Thrie-Beam	2	12	
12-6" Thrie-Beam	4	12	
25-0" Thrie-Beam	8	12	
Thrie-Beam Trans.	2	10	

W-BEAM PANEL SECTION



THRIE-BEAM PANEL SECTION

DESCRIPTION:



3'-11/2" $3'-1^{1}/2''$ - € ¾"x2½" Post Bolt Slots (Typ.) ∉ Post Bolt Slots W-Beam € Thrie-Beam -

6'-3"

THRIE-BEAM TRANSITION PANEL ELEVATION (Reverse Direction Similar by Opposite Hand)

NOTES:

1. MATERIALS:

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.

 $^{2}\%_{32}$ " x 1%" slots may substitute for the $^{3}4$ " Ø holes shown.

> W-BEAM AND THRIE-BEAM PANEL DETAILS

LAST **REVISION** 11/01/19

FDOT

FY 2022-23 STANDARD PLANS

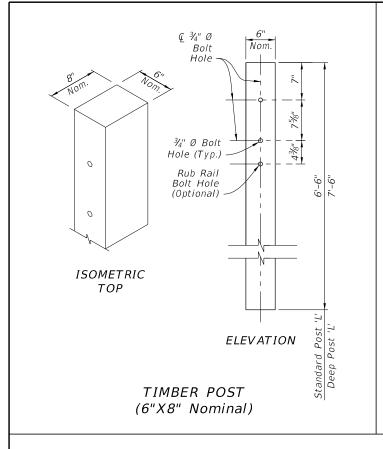
~~ Q 29/32" x 1 1/8"

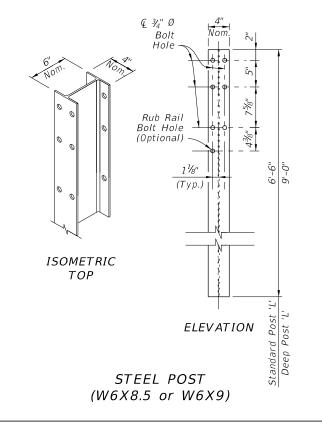
Splice Bolt Slots (Typ.)

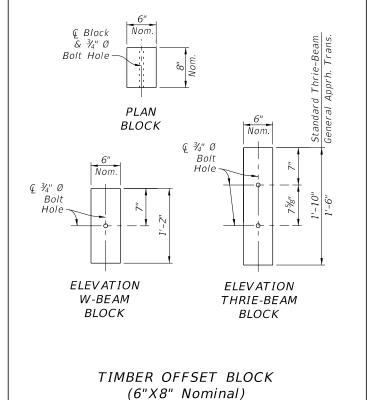
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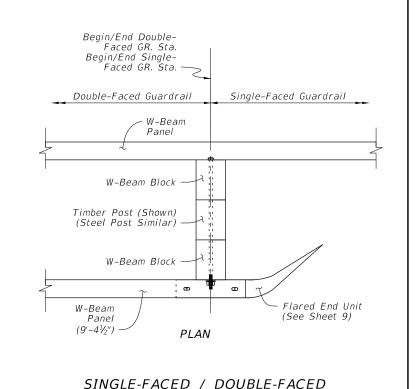
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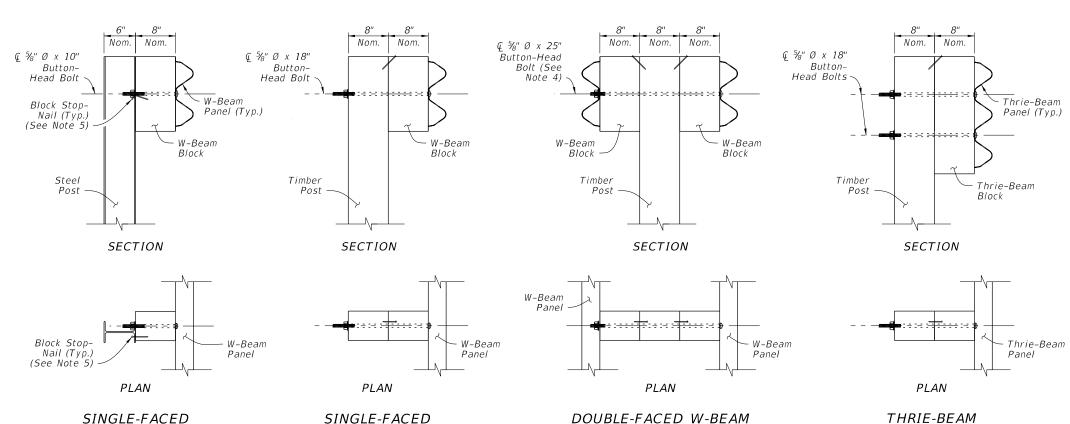
GUARDRAIL











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 shown on Sheet 6.

GUARDRAIL CONNECTION

- 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: ¾" 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 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. Steel offset blocks are only permitted for Modified Thrie Beam.

POST AND OFFSET BLOCK DETAILS

REVISION 11/01/19 W-BEAM

STEEL POST

DESCRIPTION:

FDOT

W-BEAM

TIMBER POST

FY 2022-23 STANDARD PLANS

TIMBER POST

(Thrie-Beam Similar)

(Steel Post Similar)

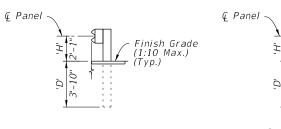
TIMBER POST

(Steel Post Similar)

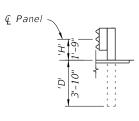
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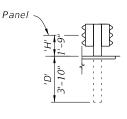
GUARDRAIL



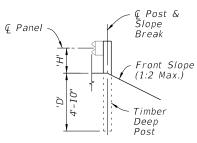
DOUBLE FACED W-BEAM W-BEAM



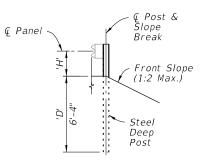
THRIE-BEAM



DOUBLE FACED THRIE-BEAM



SLOPE BREAK CONDITION TIMBER DEEP POST

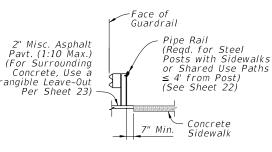


SLOPE BREAK CONDITION STEEL DEEP POST

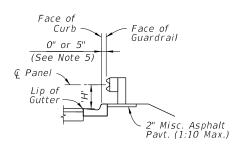
GUARDRAIL TYPES - MOUNTING HEIGHTS & POST DEPTHS=



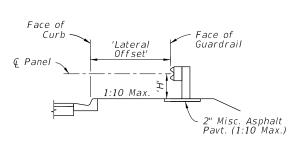
TYPICAL GRADING & PAVT. PLACEMENT DETAIL (See Note 2)



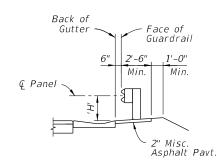
TYPICAL SIDEWALK DETAIL (Work with Other Sections as Read.)



ADJACENT TO CURB (Type F Curb Shown)



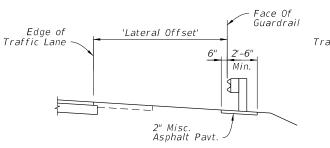
BEHIND CURB (Type F Curb Shown)



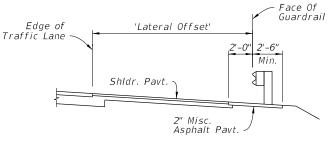
ADJACENT TO SHOULDER GUTTER

GUARDRAIL SECTIONS - TYPICAL=

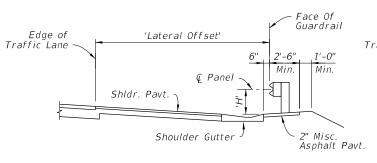
GUARDRAIL SECTIONS - CURB & GUTTER:



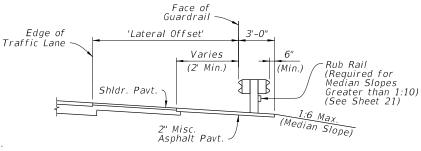
UNPAVED OR PARTIALLY PAVED SHOULDER



FULLY PAVED SHOULDER



SHOULDER GUTTER



DOUBLE FACED GUARDRAIL (Shown In Median)

GUARDRAIL SECTIONS - SHOULDERS:

NOTES:

- GUARDRAIL HEIGHT SUMMARY TABLE: Type: Min. Depth 'D': | Mounting Height 'H': | Post Length 'L'. W-Beam 6'-6" 3'-10" 2'-1" (Single and Double Faced) Thrie-Beam 3'-10" 1'-9" 6'-6" (Single and Double Faced) Timber Deep Post 4'-10" See Above 7'-6" Steel Deep Post See Above 9'-0"
- 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 quardrail 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 @ 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 11/01/20

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

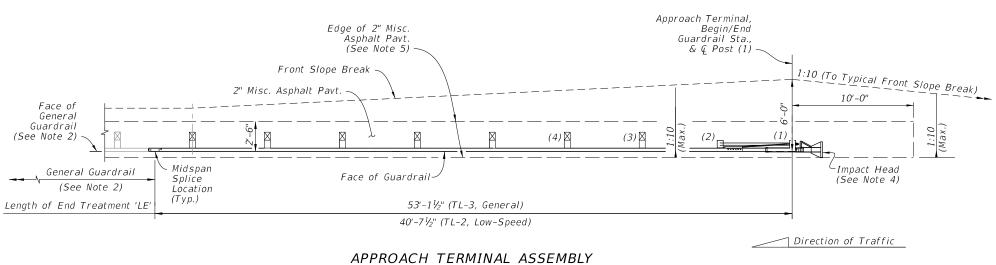
GUARDRAIL

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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 plans.

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. Forward-anchoring 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 23, 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.

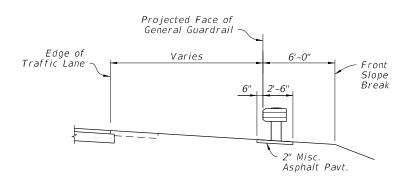
2. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments.

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.

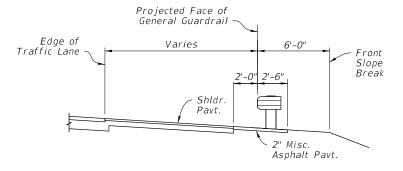
- 3. APPROACH TERMINAL TEST LEVEL: Install either a Test Level 3 (TL-3) or Test Level 2 (TL-2) Approach Terminal as specified in the plans. TL-3 Approach Terminals may substitute for TL-2 Approach Terminals unless the substitution is specifically prohibited in the plans. TL-2 Approach Terminals may not 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.

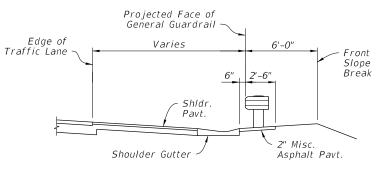
- 6. CLEAR AREA REQUIREMENT: Do not place any permanent aboveground installations within the areas shown with 1:10 maximum grading. For the finished condition, keep this area free of all aboveground obstructions, including dense vegetation and trees.
- 7. 'CURBED' AND 'DOUBLE FACED' GUARDRAIL SEGMENTS: 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

LAST REVISION 11/01/20

DESCRIPTION:

FDOT

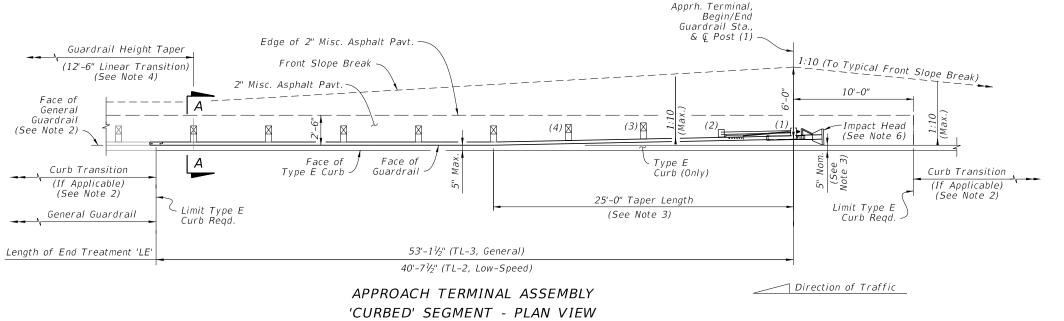
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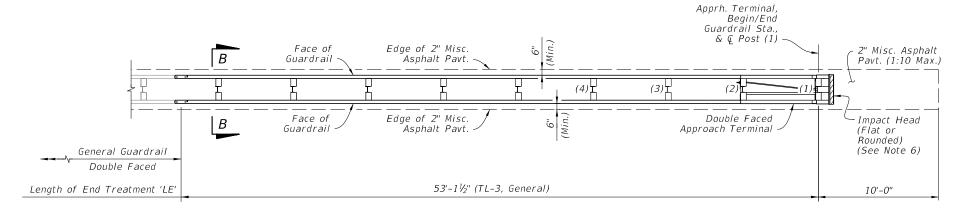
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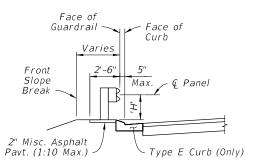
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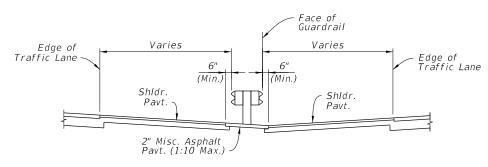




APPROACH TERMINAL ASSEMBLY 'DOUBLE FACED' SEGMENT - PLAN VIEW



'CURBED' SECTION A-A (Height, 'H', Measured from Misc. Asphalt Pavt.)



'DOUBLE FACED' SECTION B-B (1:10 Slope or Flatter Reqd.)

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 10"-0"
- 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

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

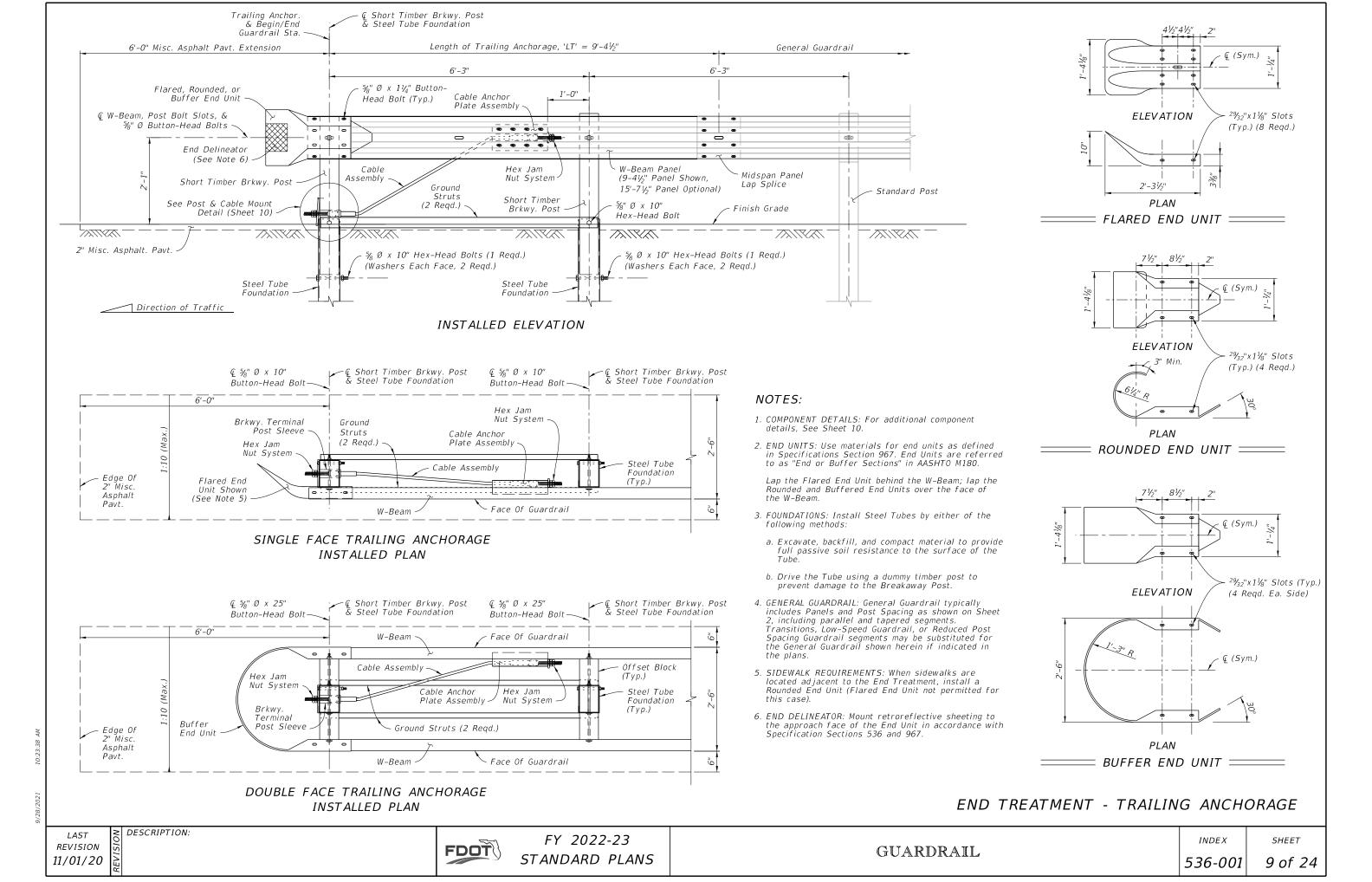
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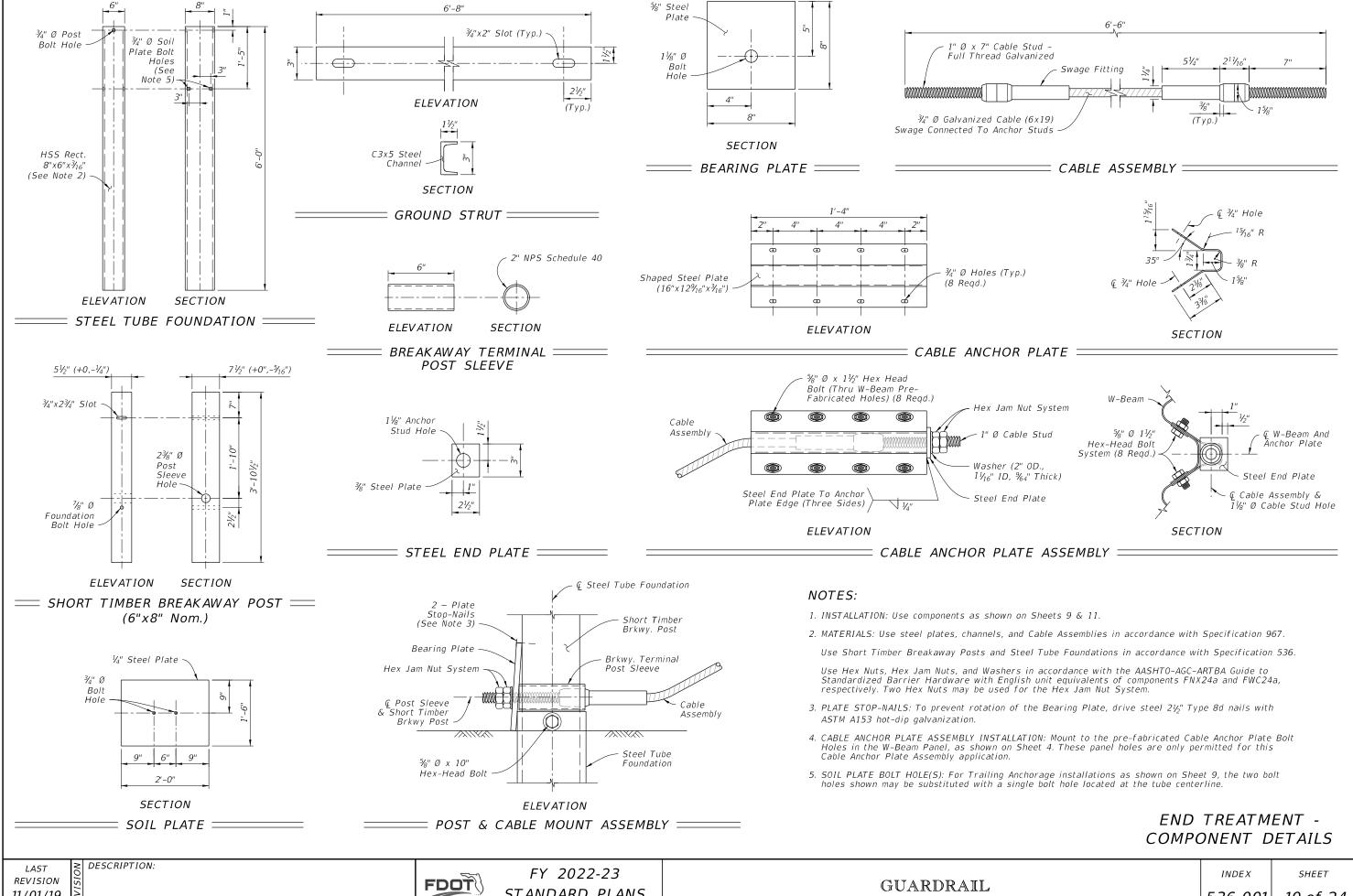
GUARDRAIL

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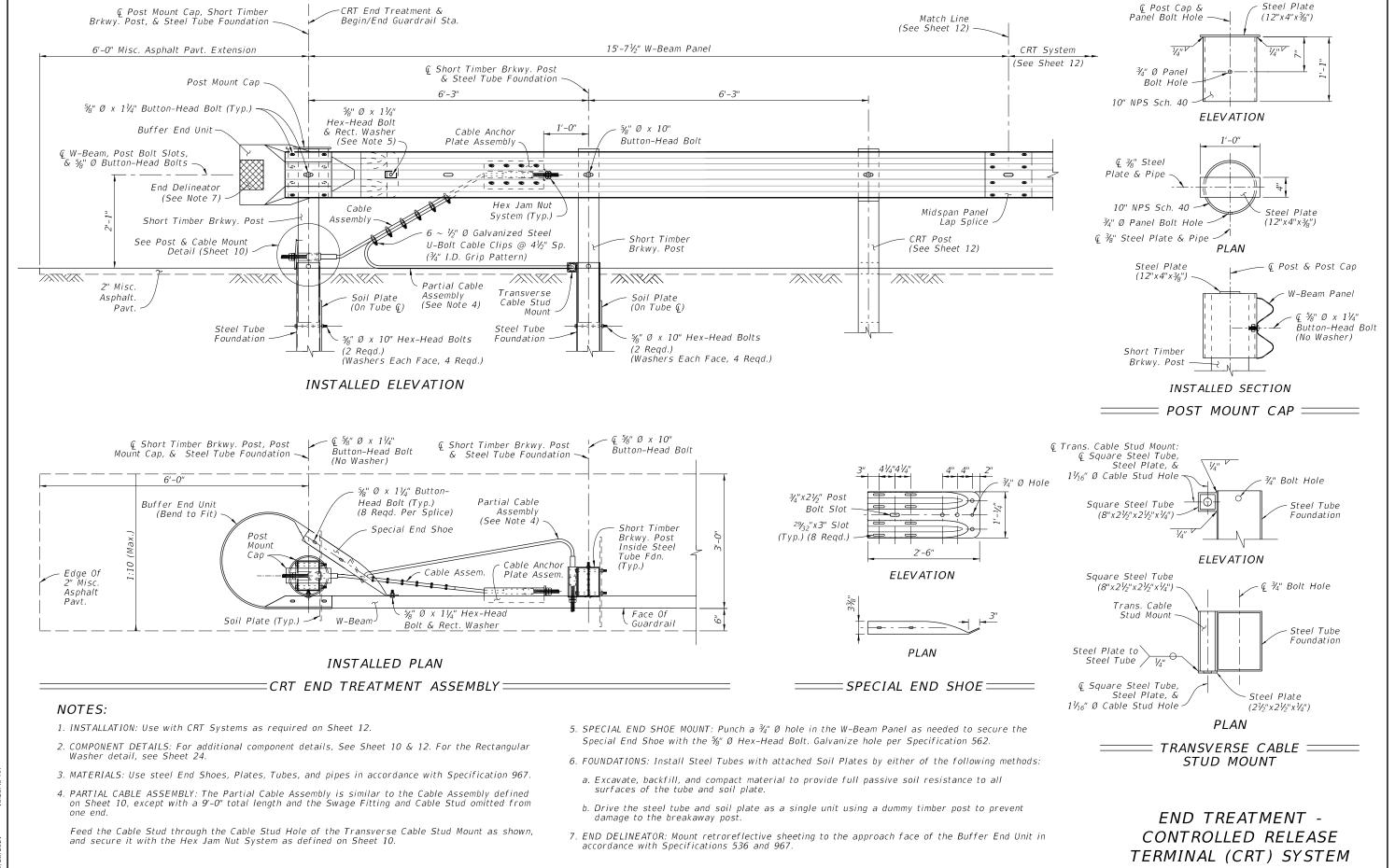


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LAST REVISION 11/01/19

DESCRIPTION:

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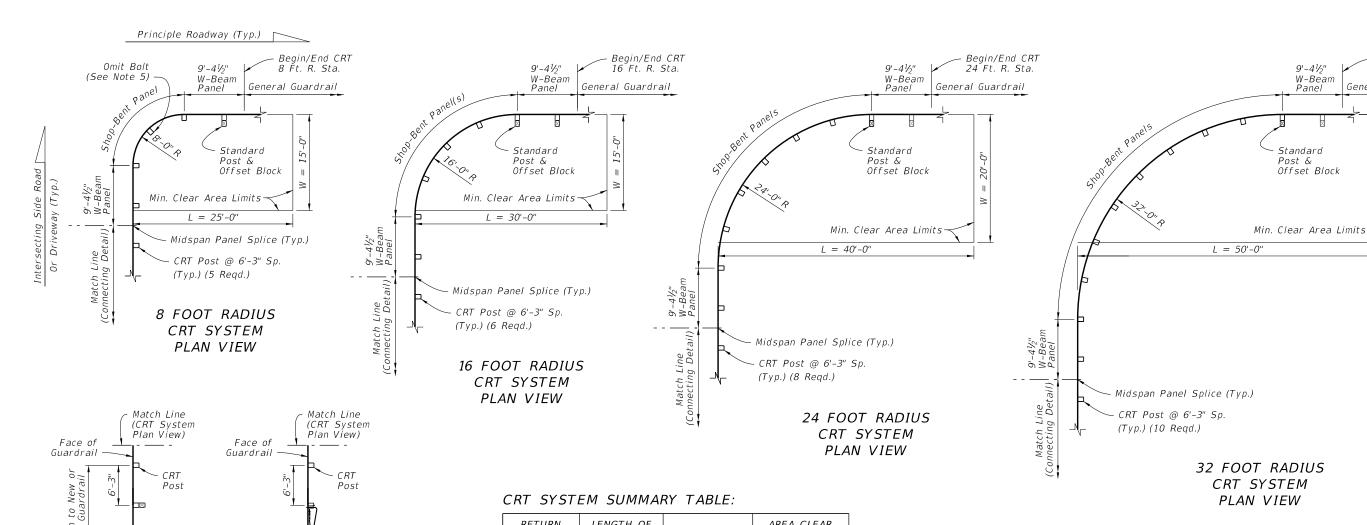
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GUARDRAIL

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SHEET

DRAIL



CONTINUING OPTION

END TREATMENT OPTION

RETURN RADIUS (FT.)	LENGTH OF SHOP-BENT PANEL(S) (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=

CRT End Treatment & Begin/End

Guardrail Sta.

NOTES:

DESCRIPTION:

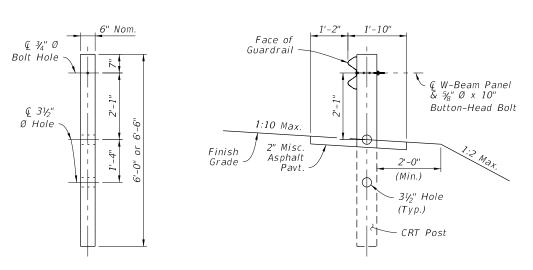
1. INSTALLATION: Construct the specified radius layout and Connecting Detail option as shown in the plans.

Treatment

Assembly

(See Sheet 11)

- 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 \(\frac{\pi}{8} \)" 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 $\frac{9}{8}"$ 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 11/01/19

FDOT

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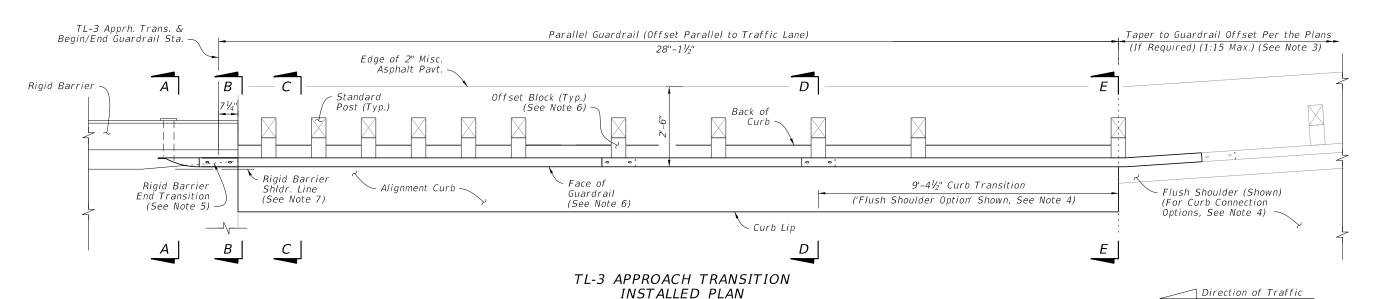
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Begin/End CRT

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.
- 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 shown herein, taper the guardrail to the connecting quardrail 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

REVISION 11/01/19

DESCRIPTION:

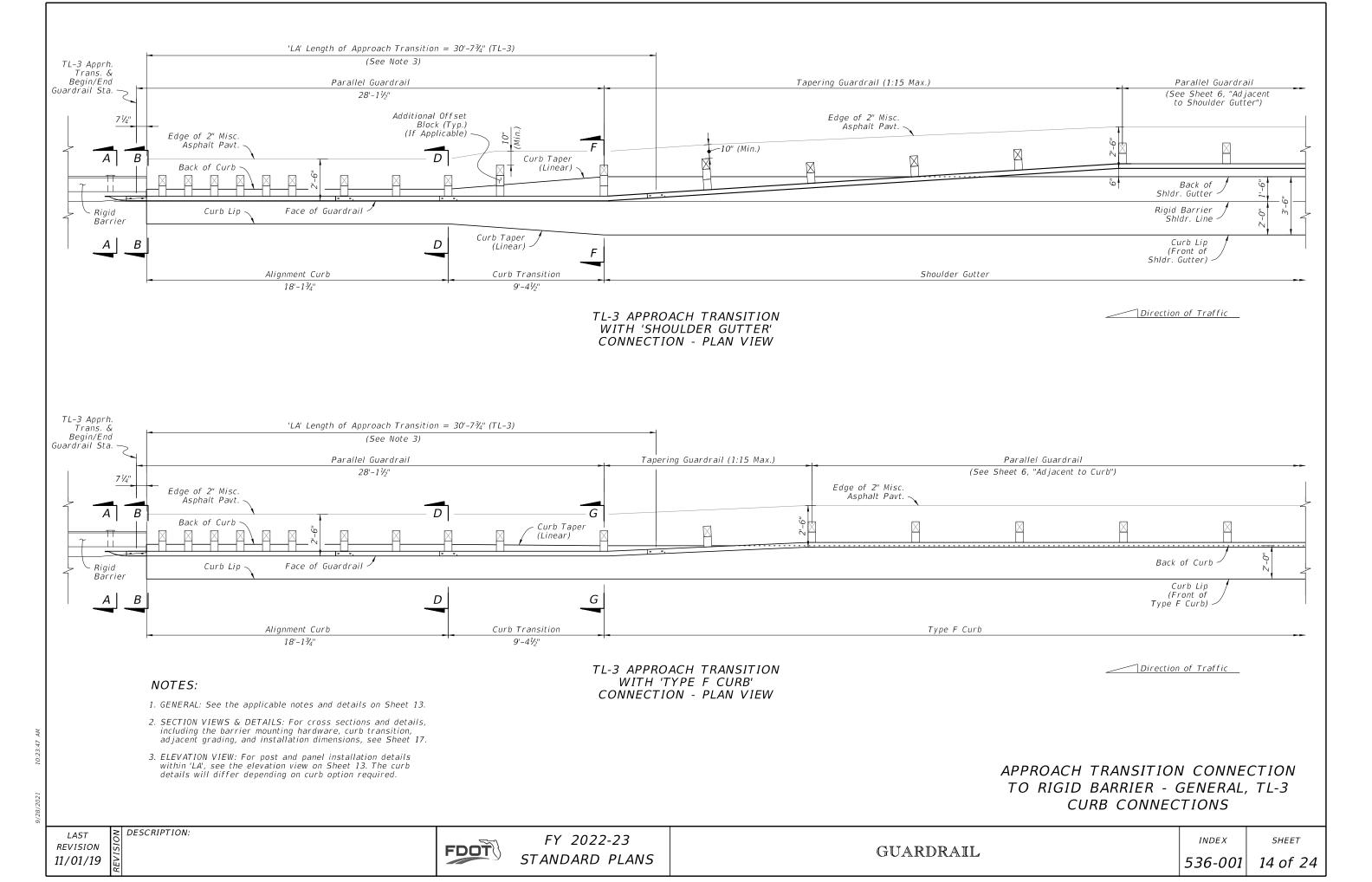
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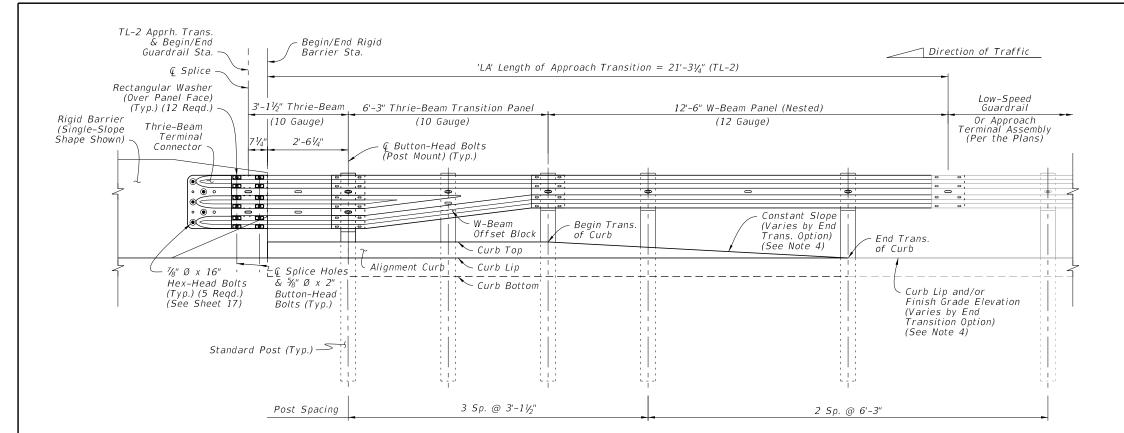
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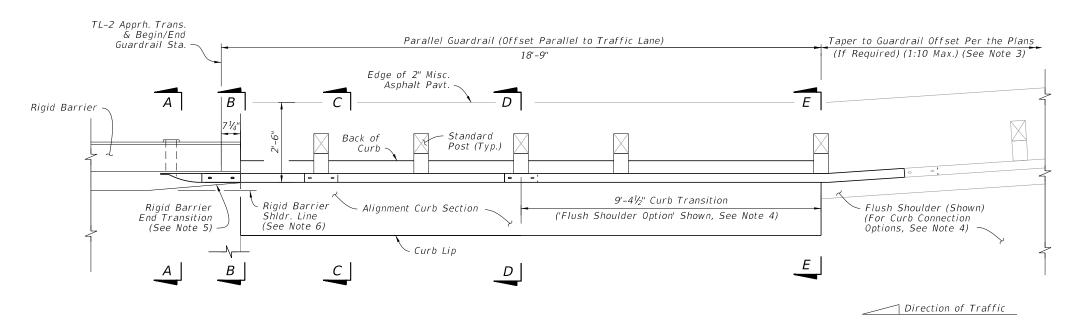
SHEET

GUARDRAIL





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

REVISION 11/01/19

DESCRIPTION:

FDOT

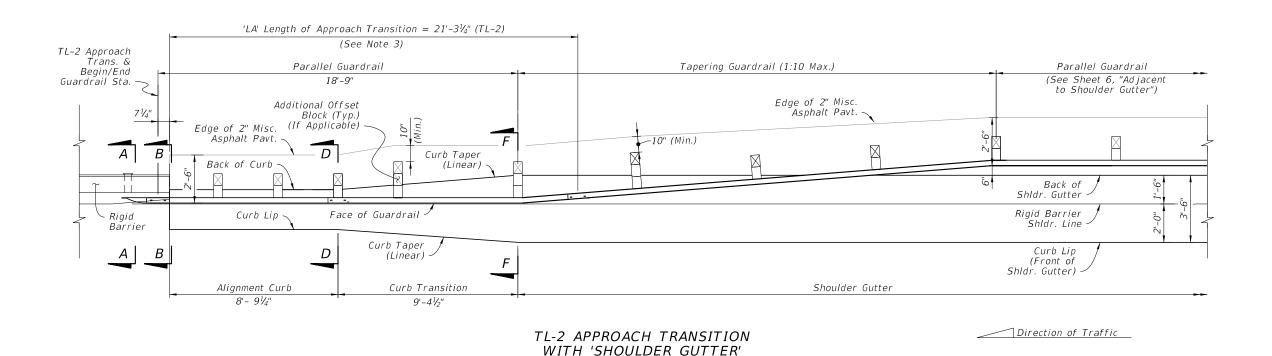
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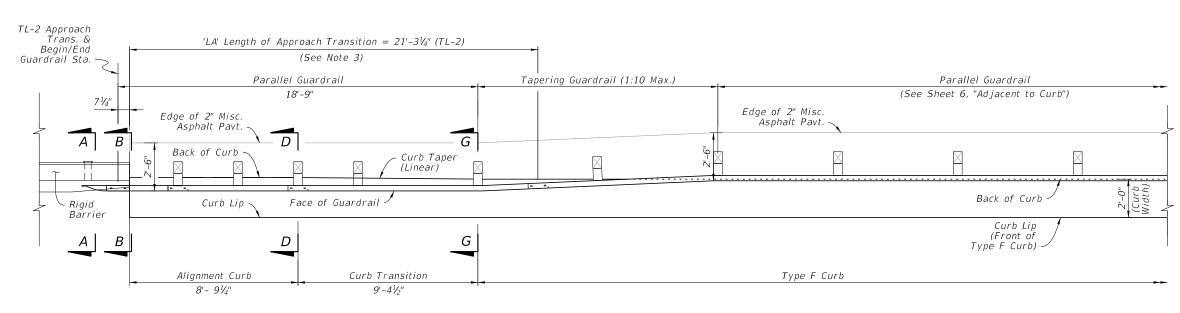
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GUARDRAIL



CONNECTION - PLAN VIEW



NOTES:

DESCRIPTION:

- 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

> APPROACH TRANSITION CONNECTION TO RIGID BARRIER - LOW-SPEED, TL-2 CURB CONNECTIONS

LAST **REVISION** 11/01/19

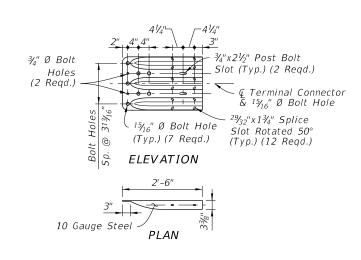
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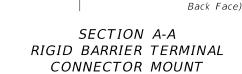
GUARDRAIL

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SHEET



THRIE-BEAM TERMINAL CONNECTOR DETAIL



Q 7/8" Ø x 16" Hex-Head Bolts

& 1" Ø Holes

Sp. @ 313/16

(See General

Terminal

Connector

Note 5)

(5 Regd.,

*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.

Rigid Barrier (Single-Slope

Traffic Railing

Shown, Concrete

Barrier Similar)

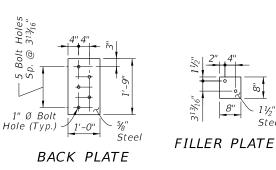
(21"x12"x5%")

Filler Plate

(8"x8"x11/2")(Omit for

Barriers

with a Flat





Single-Slope Barrier

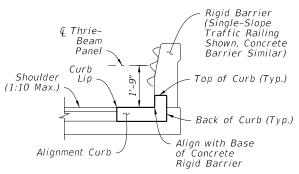
F-Shape Barrier

ALIGNMENT CURB SECTION

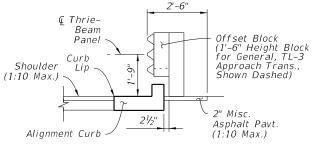
2'-21/5"

Concrete

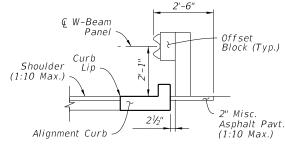
(See Note 4)



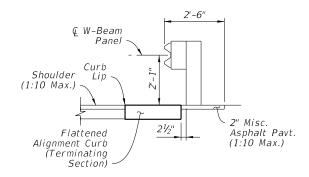
SECTION B-B BEGIN ALIGNMENT CURB (Mate to Rigid Barrier)



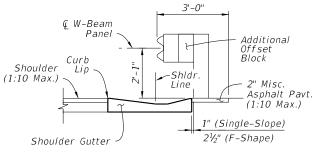
SECTION C-C ALIGNMENT CURB (Intermediate)



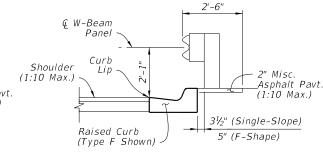
SECTION D-D **BEGIN TRANSITION** (End Alignment Curb)



SECTION E-E **END TRANSITION** FLUSH SHOULDER OPTION

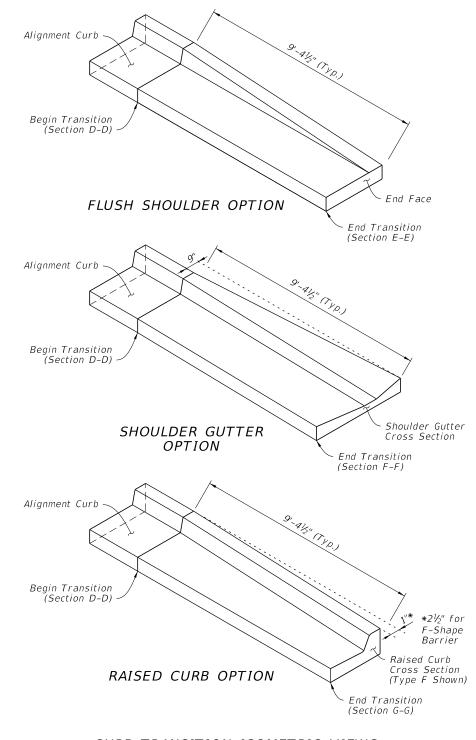


SECTION F-F **END TRANSITION** SHOULDER GUTTER OPTION



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 11/01/20

DESCRIPTION:

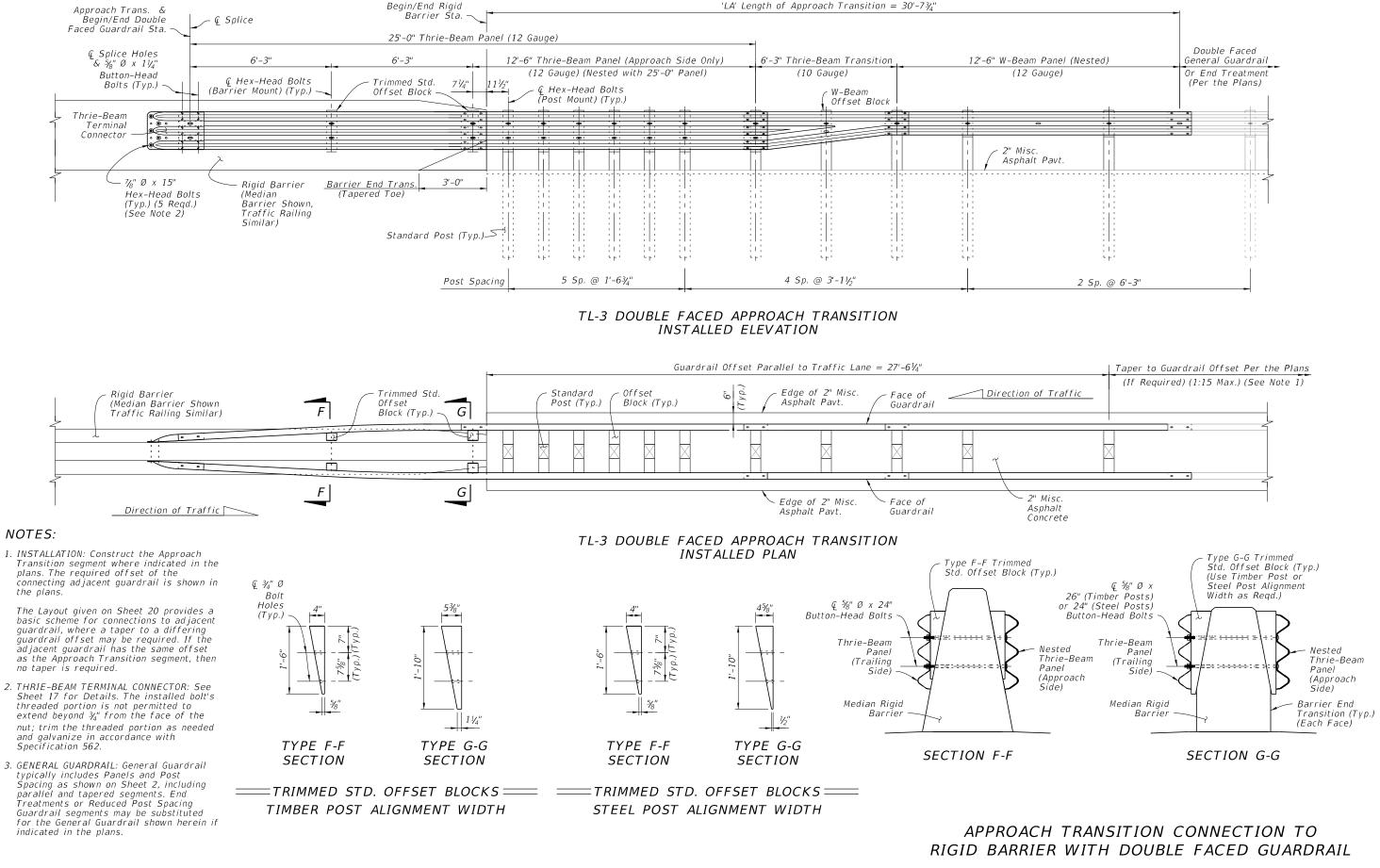
FDOT

FY 2022-23 STANDARD PLANS

INDEX 536-001

SHEET

GUARDRAIL



LAST REVISION 11/01/19

DESCRIPTION:

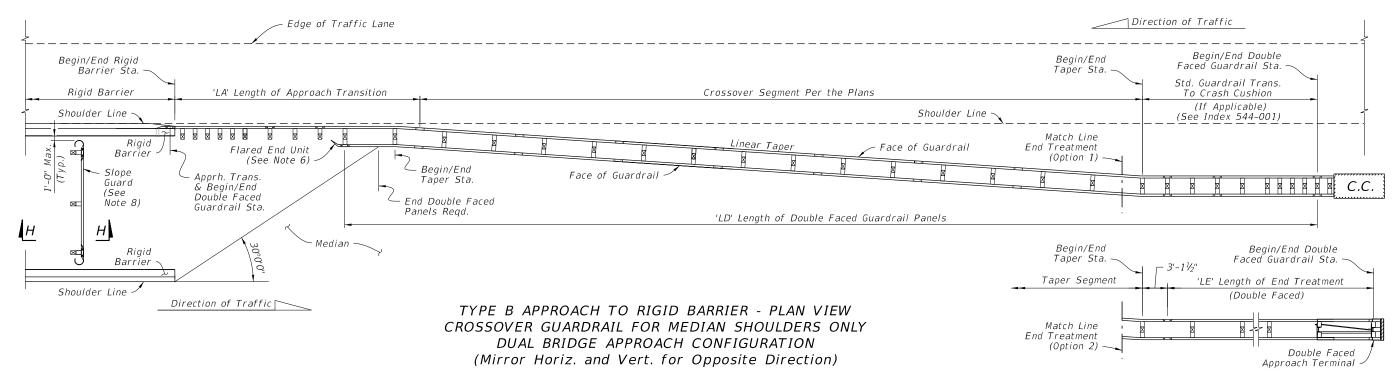
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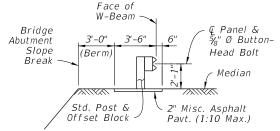
FY 2022-23 STANDARD PLANS

GUARDRAIL

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SECTION H-H BRIDGE ABUTMENT SLOPE GUARD (Between Bridges)

DESCRIPTION:

NOTES:

- 1. INSTALLATION: The Plan Views shown are schematic only, showing example geometry for connecting quardrail 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'-11/3" or 6'-3", as needed to correctly fit system between barriers. 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

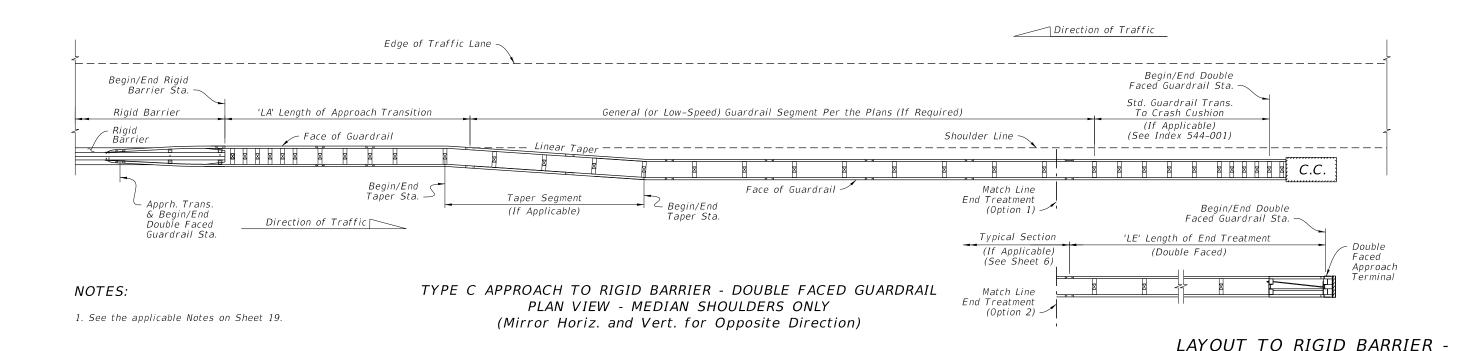
LAST **REVISION** 11/01/19

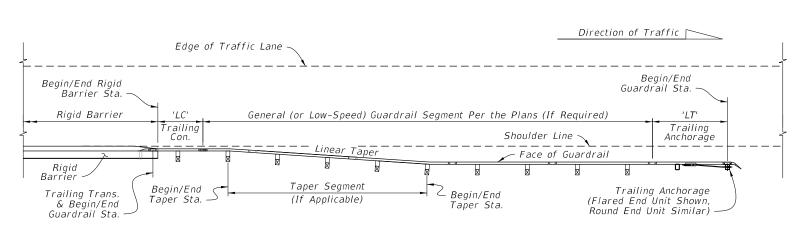
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GUARDRAIL

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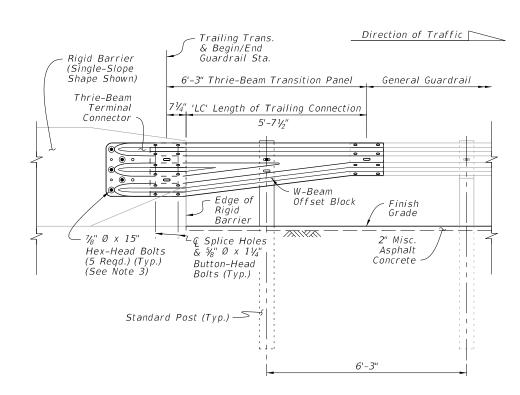


TYPE D TRAILING CONNECTION FROM RIGID BARRIER PLAN VIEW - MEDIAN OR OUTSIDE SHOULDER (Mirror Horiz. and/or Vert. for Opposite Direction and/or Side of Road)

NOTES:

DESCRIPTION:

- 1. See the applicable Notes on Sheet 19.
- 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

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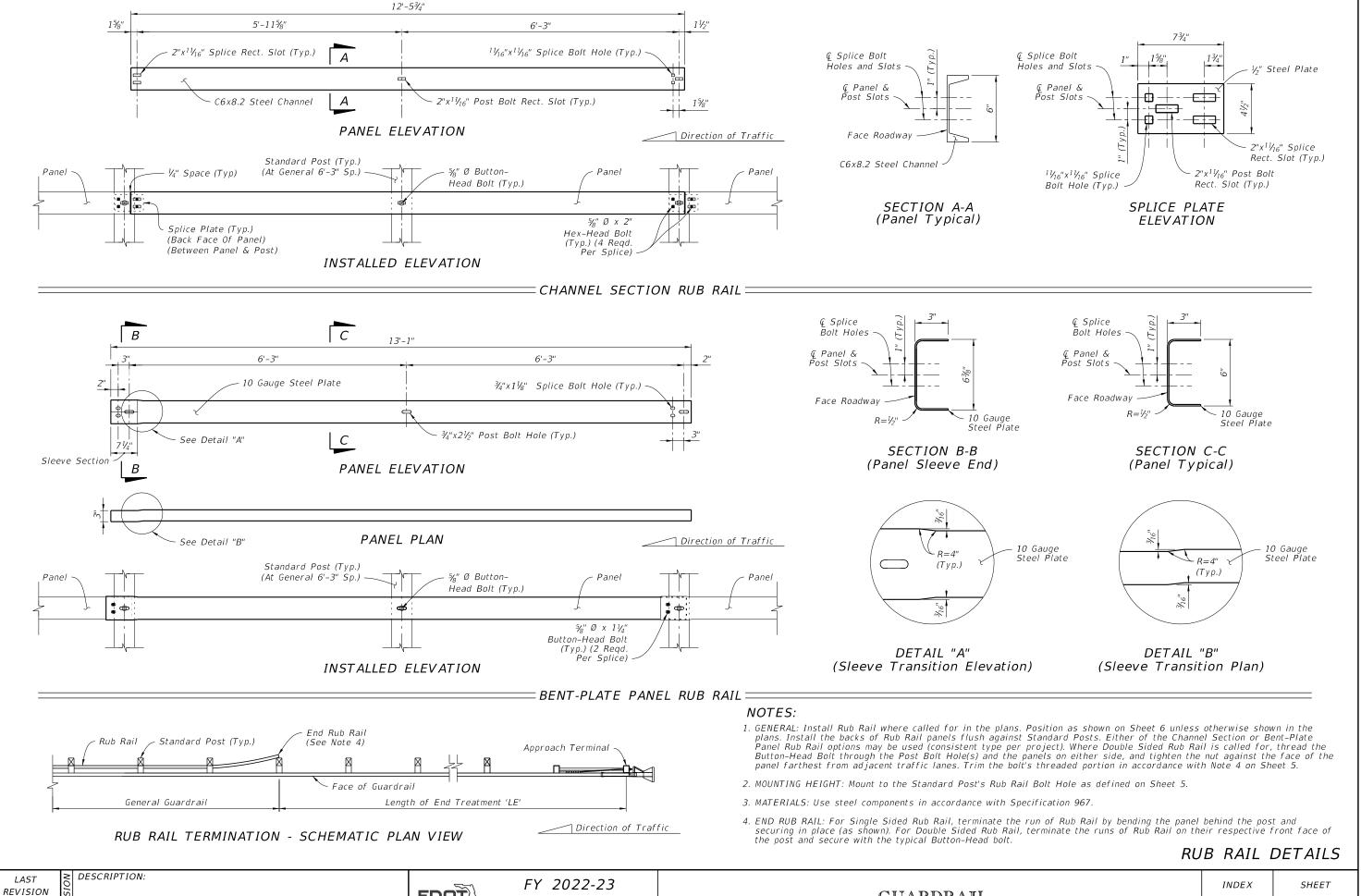
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FY 2022-23 STANDARD PLANS

GUARDRAIL

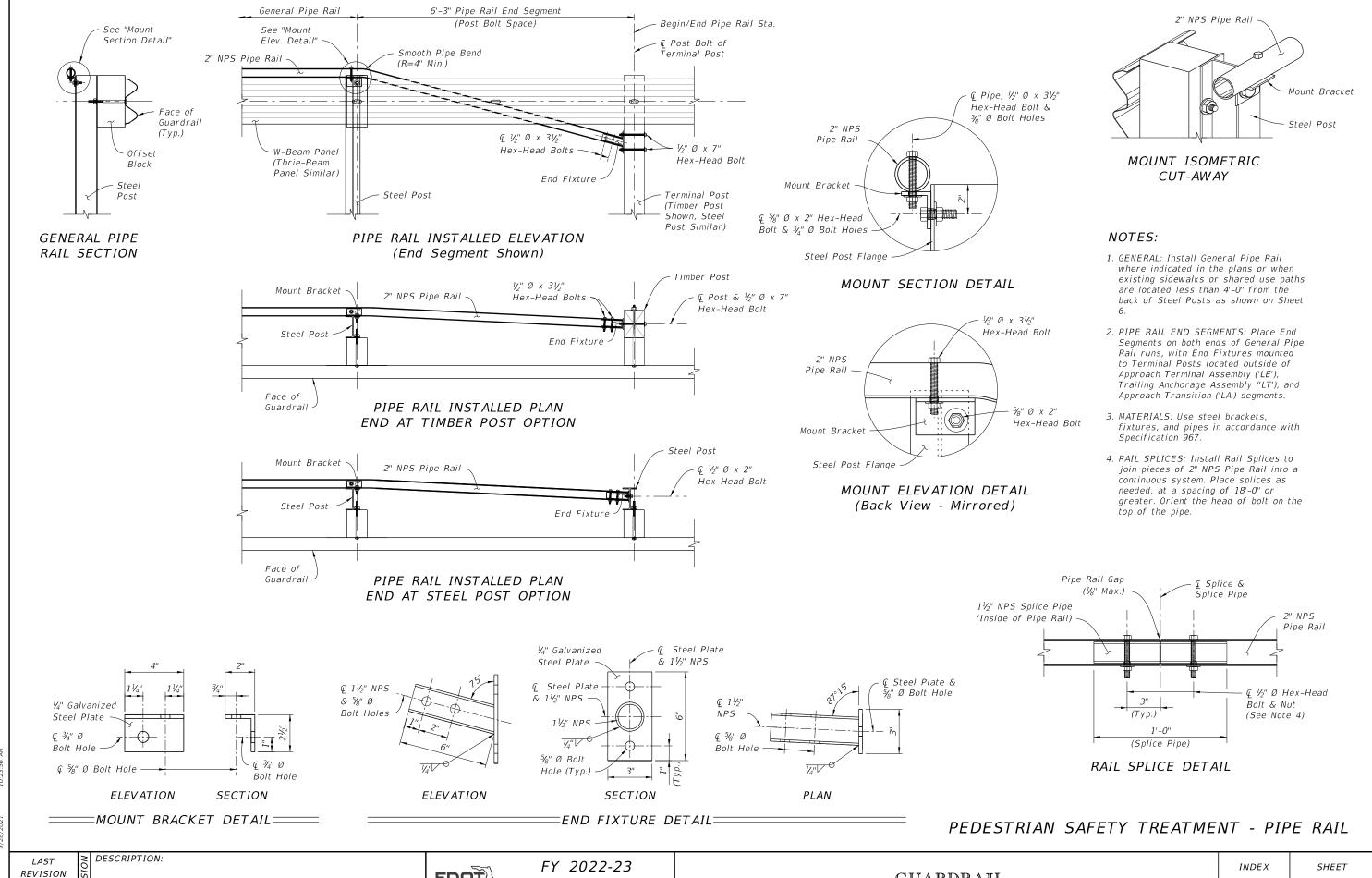
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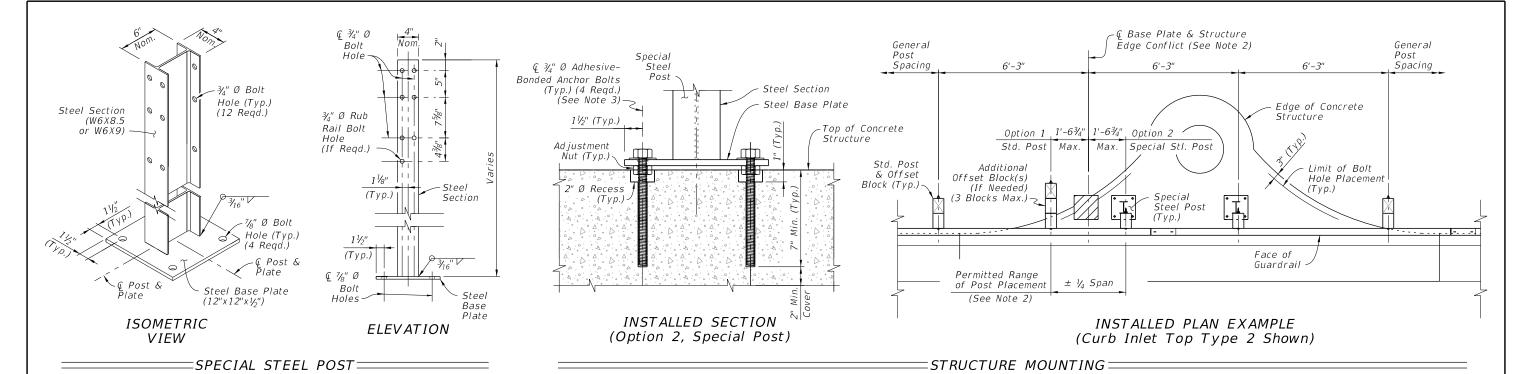
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STANDARD PLANS

GUARDRAIL

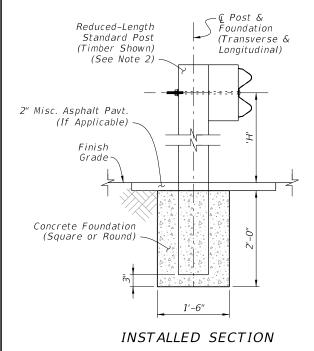
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NOTES:

- 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'-6¾" (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 3/4" Hex-Head Bolts for structures less than 9" deep as defined in the Specification.
- 4. PANEL MOUNT TO ADJUSTED POST: Punch additional ¾"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.

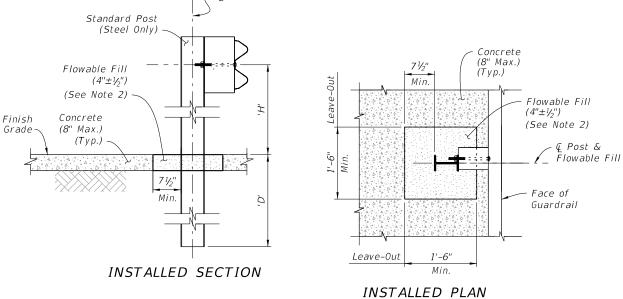
SPECIAL STEEL POST FOR CONCRETE STRUCTURE MOUNT



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.



NOTES:

1. INSTALLATION: When the construction of Guardrail at the required post spacing results in post(s) placed within a concrete surface (typically a sidewalk), use a Frangible Leave-Out around the post base as shown. Install where shown in the plans and/or as-needed, in accordance with Specification 536.

Use Standard steel posts. Timber posts are not permitted for frangible

For the required 1'-6" x 1'-6" Leave-Out, smoothly cut the existing concrete surface or form-up the square shape when an application has new surrounding concrete.

Ensure Flowable Fill surface is smooth and even with the adjacent concrete surface.

2. MATERIALS: Use Non-Excavatable Flowable Fill in accordance with Specification 121, not to exceed 150 psi.

ENCASED POST FOR SHALLOW MOUNT

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FY 2022-23 STANDARD PLANS FRANGIBLE LEAVE-OUT FOR CONCRETE SURFACE MOUNT

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GUARDRAIL

536-001

- 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

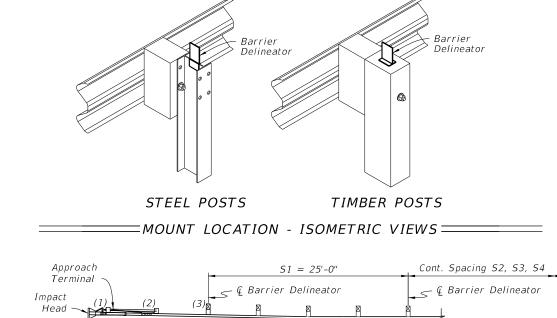
 $S1 = 25' \times 1 \ Space$

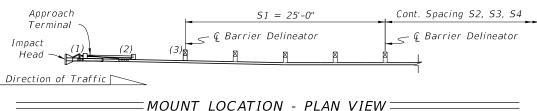
 $S2 = 50' \times 1 \ Space$ $53 = 75' \times 1 \text{ Space}$

 $S4 = 100' \times for$ 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 medians.





BARRIER DELINEATORS

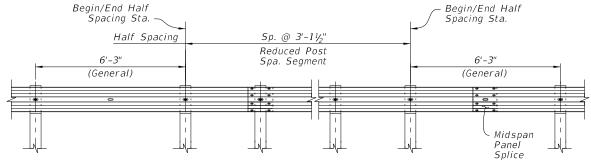
NOTES:

1. INSTALLATION: Work these details with the plans, where Stationing for Begin/End Half Spacing and Begin/End Quarter Spacing are indicated if required.

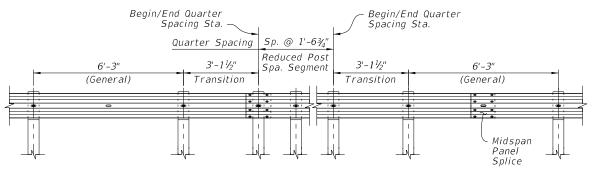
Where the Begin/End Stations indicated in the plans do not correspond exactly to post locations in construction, extend the Reduced Post Spacing segment to the nearest post(s) before the Begin Station and/or after the End Station called for.

- 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'-41/2" or 15'-71/2") 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'-11/3"
- 4. PANEL POST BOLT SLOTS: For Quarter Spacing configurations, punch additional 3/4"x21/2" Post Bolt Slots in the panels only where required for mounting and in accordance with Specification 536.

DESCRIPTION:

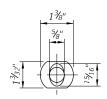


DETAIL 'S' - HALF SPACING ELEVATION (AS REQD. PER THE PLANS)

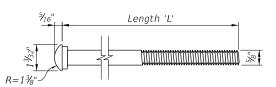


DETAIL 'S' - QUARTER SPACING ELEVATION (AS REQD. PER THE PLANS)

REDUCED POST SPACING FOR HAZARDS





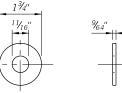


ELEVATION OPTION 1

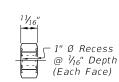
ELEVATION OPTION 2

PROFILE (Option 1 Shown)

BUTTON-HEAD BOLT =



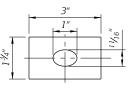




ELEVATION PROFILE *──WASHER ──*

ELEVATION **PROFILE**

===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.

5/8" BUTTON-HEAD BOLT SYSTEM

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GUARDRAIL

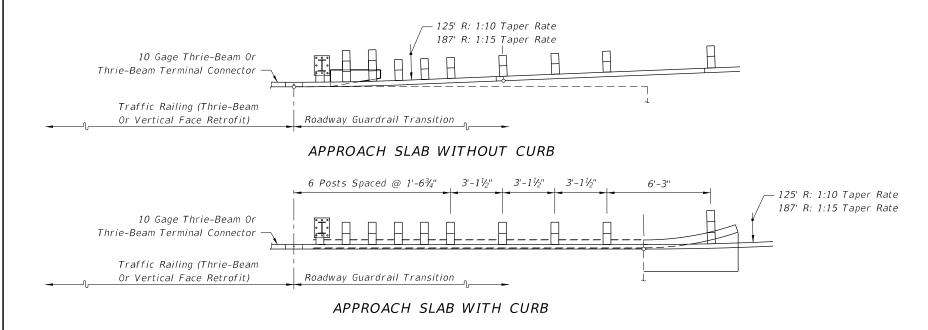
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SIDE VIEW

SPECIAL STEEL POST FOR ROADWAY THRIE-BEAM TRANSITIONS TO BRIDGE TRAFFIC RAILING RETROFITS



Longitudinal Location Of Transition Blocks And Curb End Flares Will Vary With Scheme Type PARTIAL PLAN VIEWS

GENERAL NOTES

- 1. This index provides quardrail transition details for approach and trailing end quardrail 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 and connections where called for in the plans.
- 2. For miscellaneous quardrail components and construction details that are not provided in this Index, refer to Index 536-001.

NOTES FOR GUARDRAIL TRANSITIONS CONNECTING TO TRAFFIC RAILING RETROFITS ON EXISTING BRIDGES

- 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.

GUARDRAIL TRANSITION ALIGNMENTS FOR BRIDGE THRIE-BEAM AND VERTICAL FACE TRAFFIC RAILING RETROFIT

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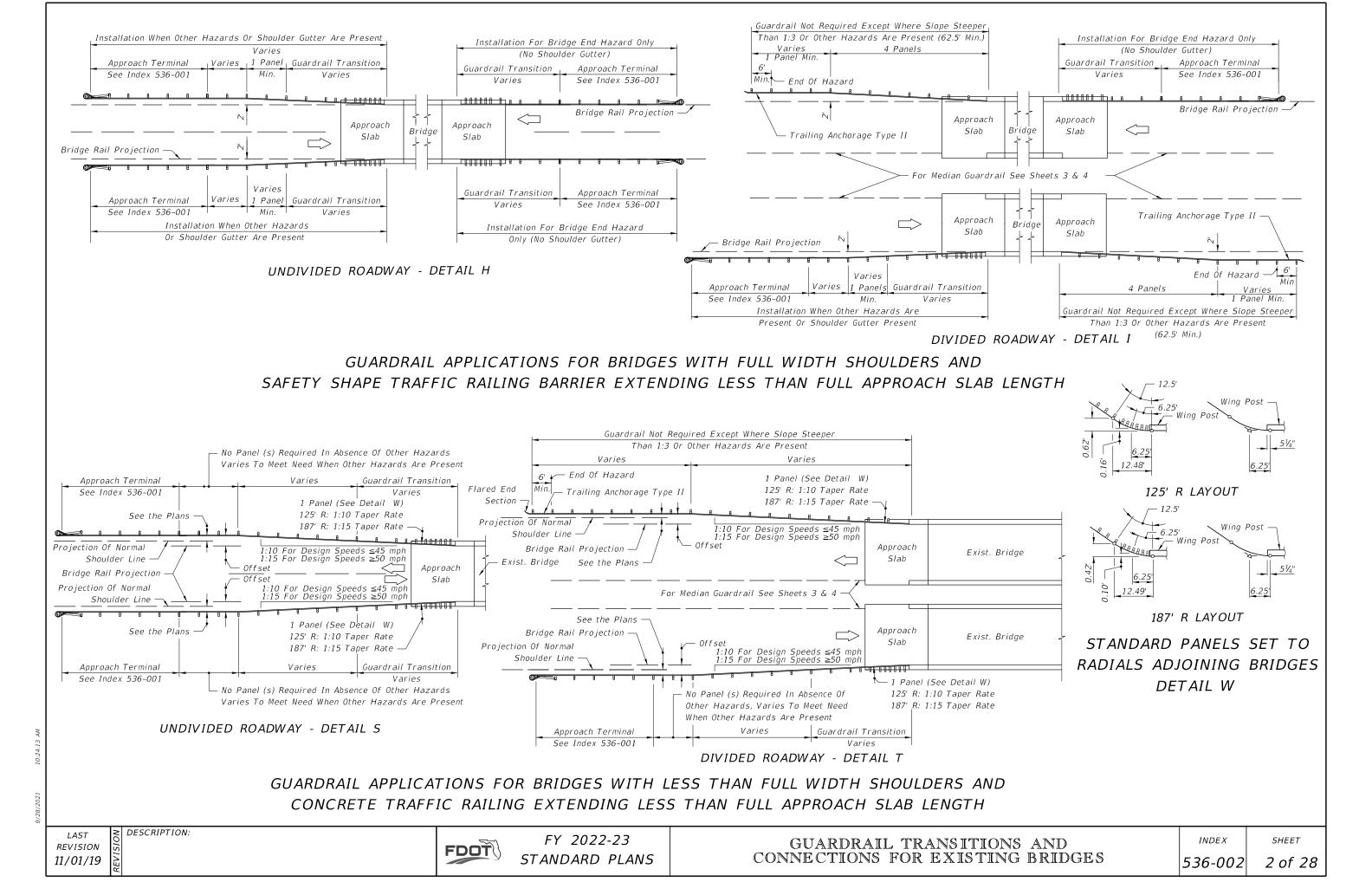
GUARDRAIL TRANSITIONS AND

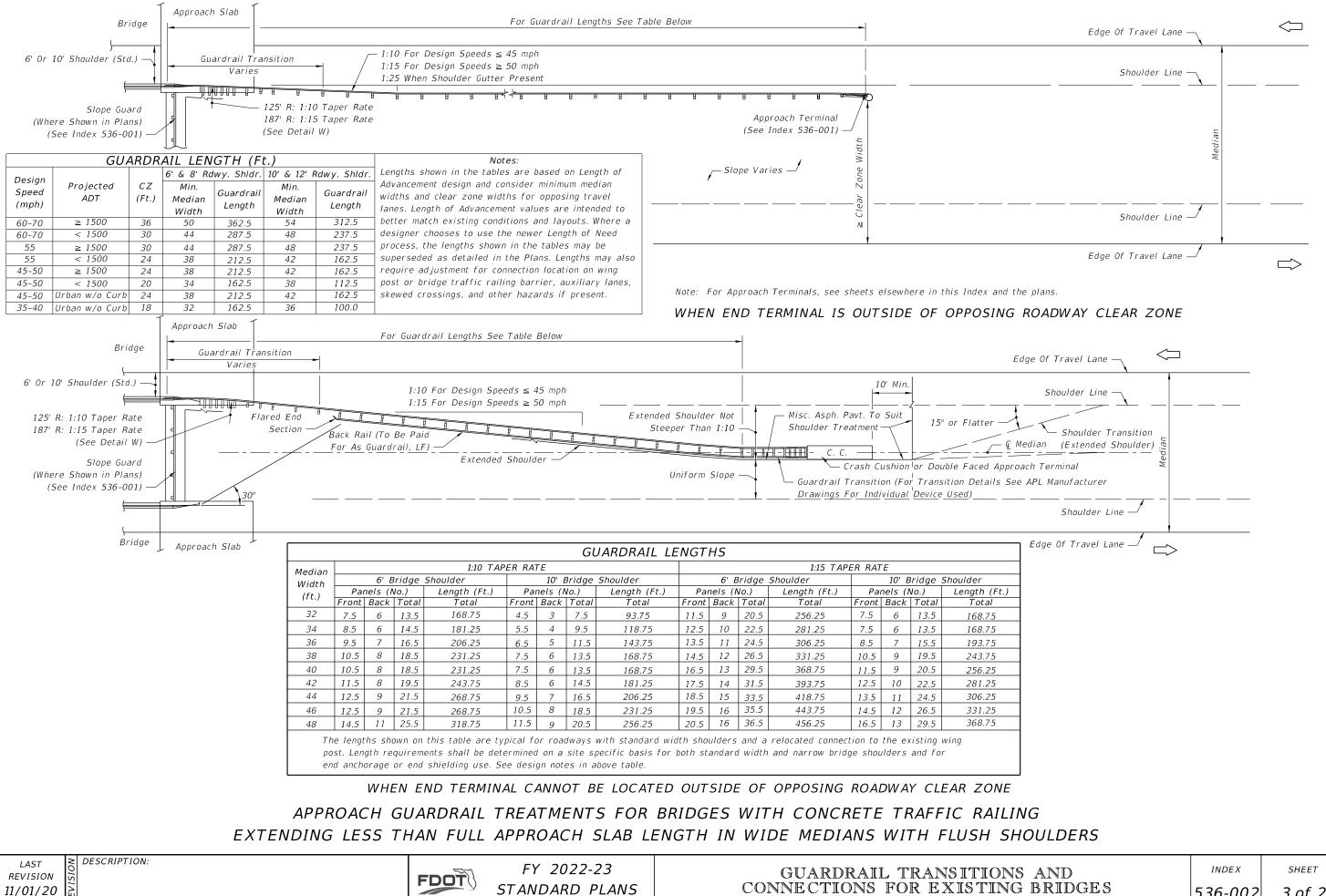
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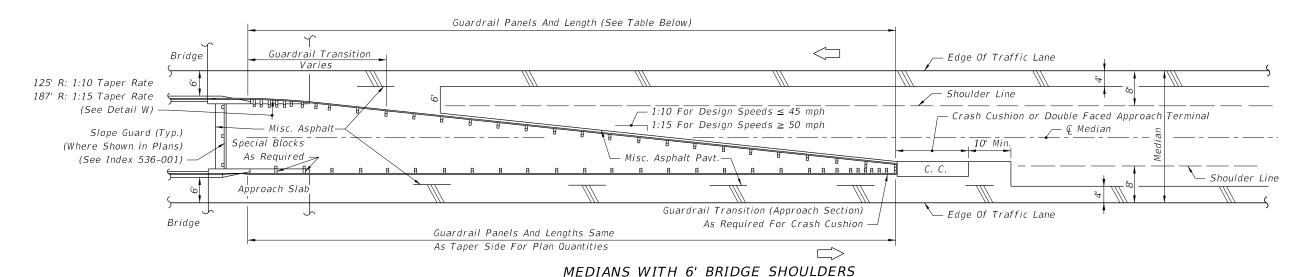
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TOP VIEW





MEDIANS WITH 10' BRIDGE SHOULDERS



Note: The guardrail configurations shown apply only to parallel or near parallel bridges with open medians.

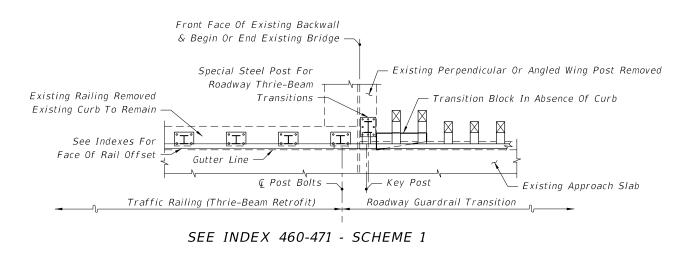
GUARDRAIL LENGTHS								
MEDIAN	6' BRIDGE SHOULDERS			10' BRIDGE SHOULDERS				
WIDTH	1:10 TAP	ER RATE	1:15 TAP	ER RATE	1:10 TAPER RATE		1:15 TAPER RATE	
(Ft.)	PANELS (No.)	LENGTH (Ft.)	PANELS (No.)	LENGTH (Ft.)	PANELS (No.)	LENGTH (Ft.)	PANELS (No.)	LENGTH (Ft.)
30	12.5	156.25	18.5	231.25	6.5	81.25	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

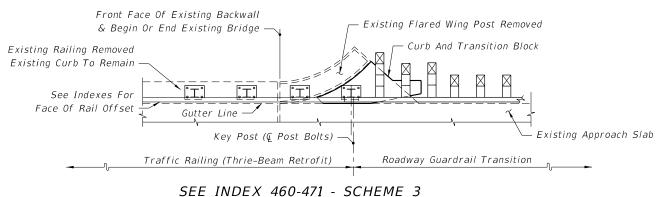
The lengths shown in this table are based on standard widths for roadway and bridge median shoulders. Length requirements for both standard width and narrow bridge shoulders and end anchorage or end shielding requirements shall be determined on a site specific basis. The number of panels may be reduced when installing a crash cushion more than 2.5' in width; see * below.

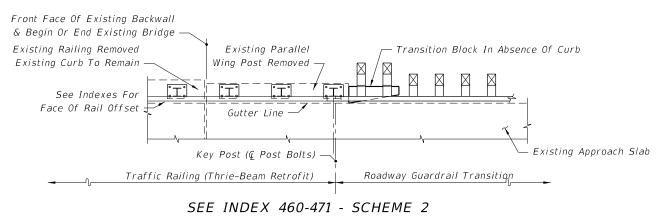
*Number shown is the minimum number of panels plus a W-Thrie beam transition panel; single faced guardrail must have a length of five (5) or more panels.

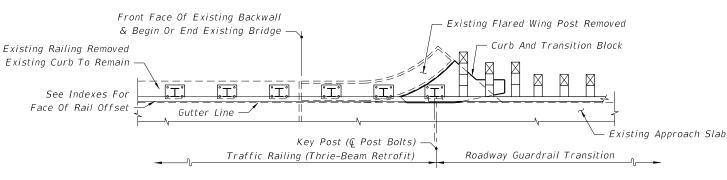
APPROACH GUARDRAIL TREATMENTS FOR BRIDGES WITH CONCRETE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH IN NARROW MEDIANS WITH FLUSH SHOULDERS

DESCRIPTION:







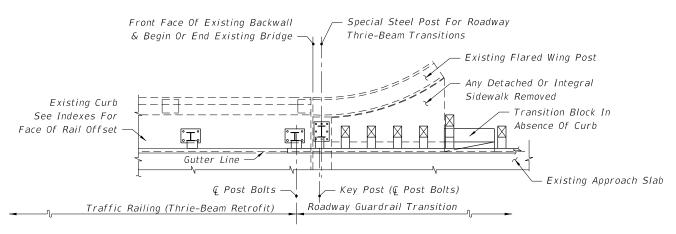


SEE INDEX 460-471 - SCHEME 3

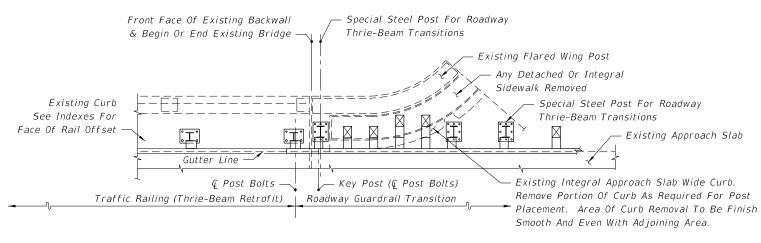
PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

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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)

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DESCRIPTION:

Front Face Of Existing Backwall

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

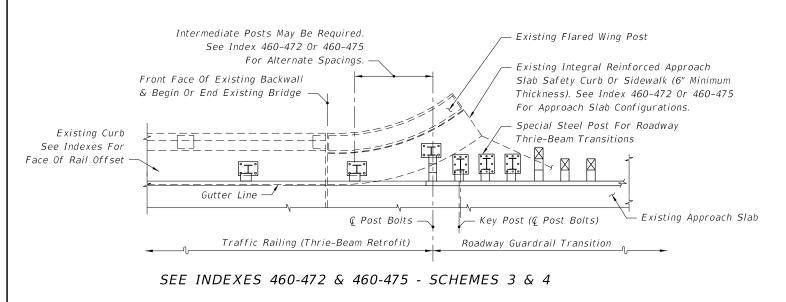
Special Steel Post For Roadway

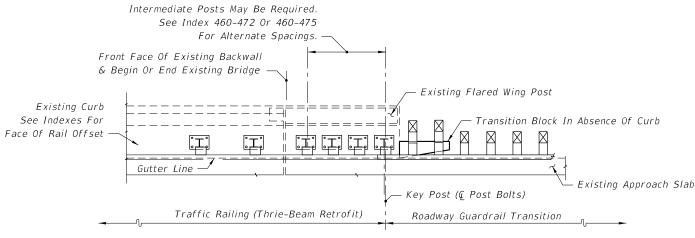
Thrie-Beam Transitions

– Key Post (& Post Bolts)

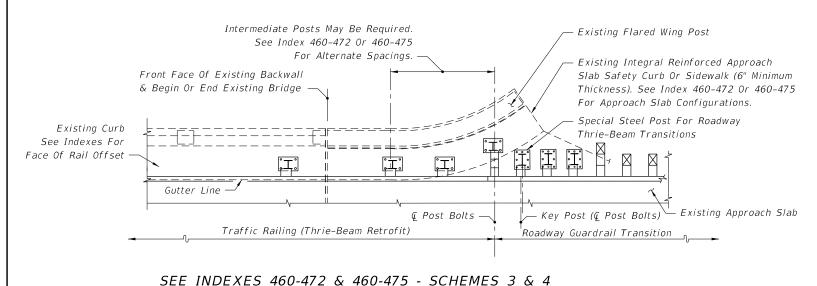
Roadway Guardrail Transition

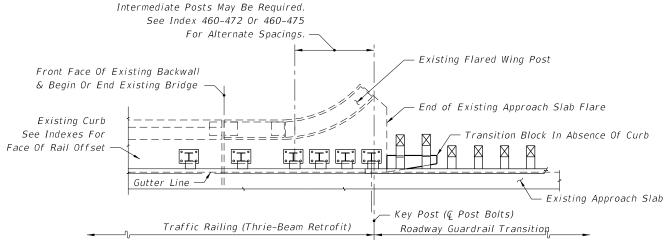
FY 2022-23 STANDARD PLANS





SEE INDEXES 460-472 & 460-475 - SCHEMES 5 & 6





SEE INDEXES 460-472 & 460-475 - SCHEMES 5 & 6

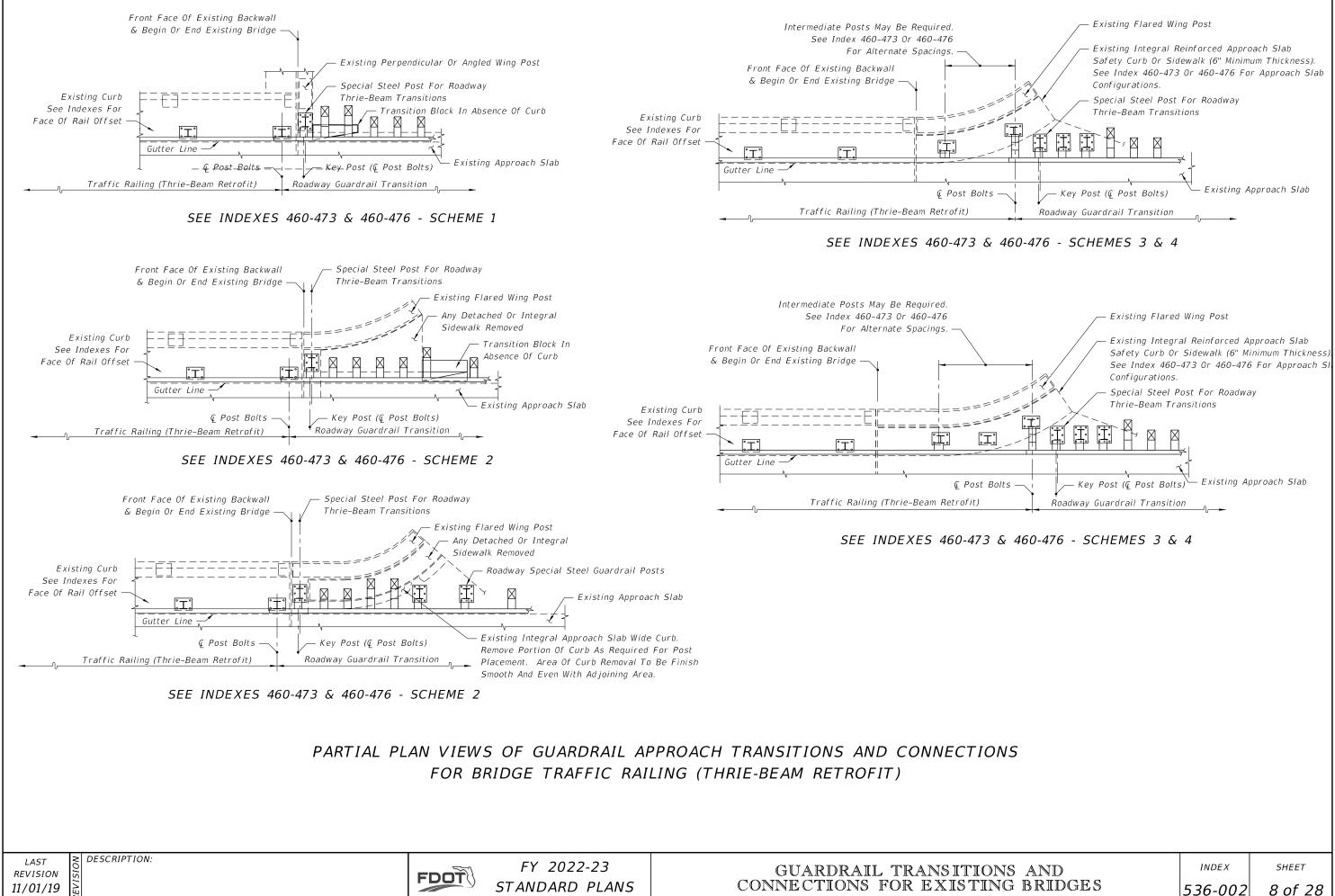
PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

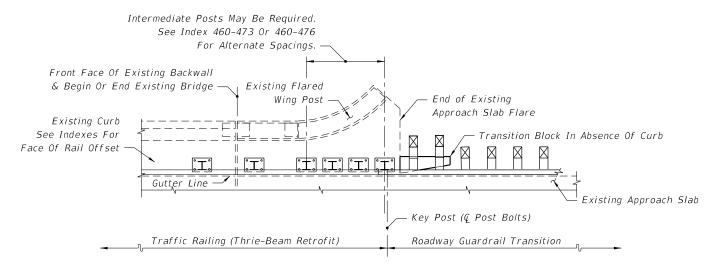
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LAST REVISION 11/01/19

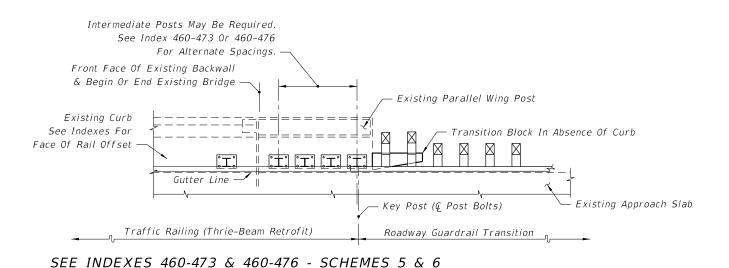
DESCRIPTION:

FDOT





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)

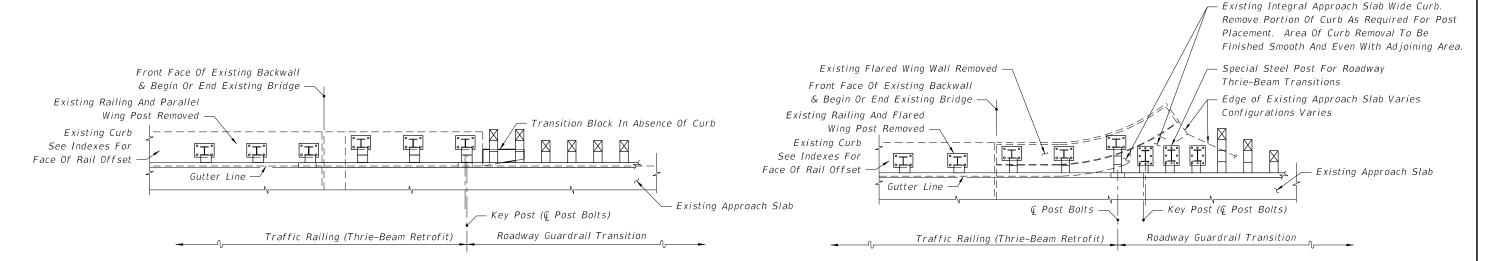
LAST **REVISION** 11/01/19

DESCRIPTION:

FDOT

SEE INDEX 460-474 - SCHEME 1

SEE INDEX 460-474 - SCHEME 2



SEE INDEX 460-474 - SCHEME 3

SEE INDEX 460-474 - SCHEME 3

PARTIAL PLAN VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

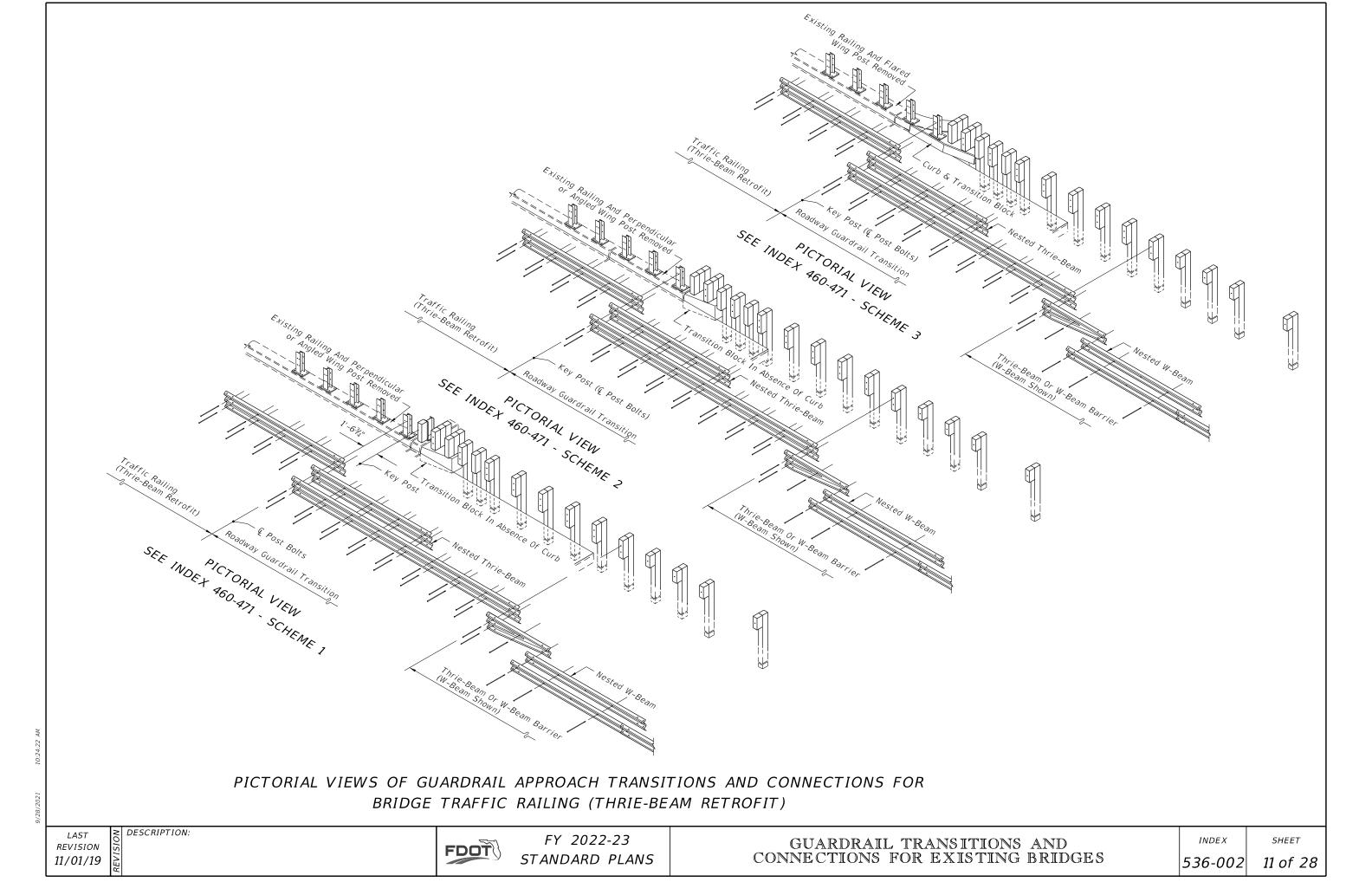
9/28/2021 10:2

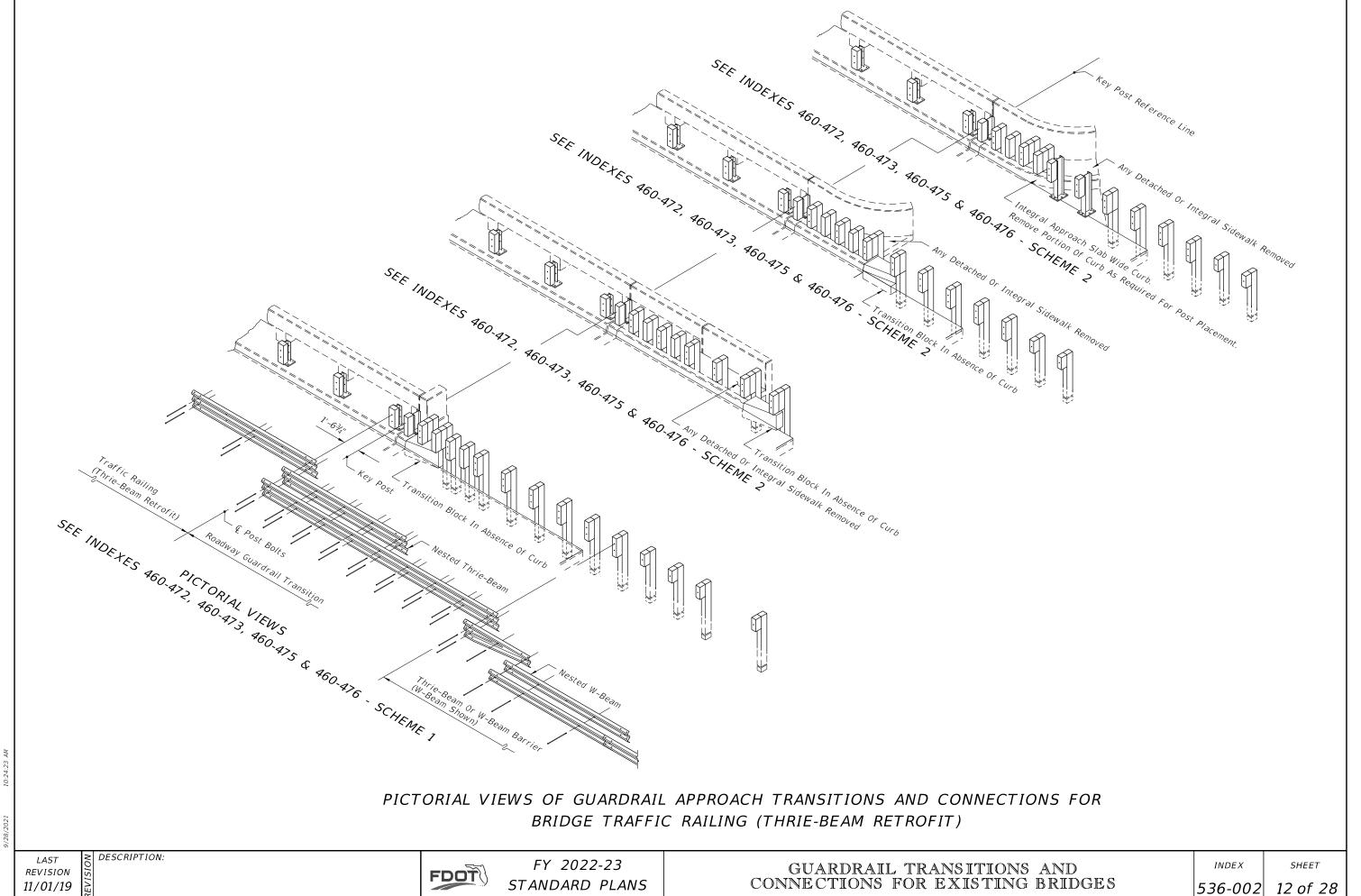
LAST REVISION 11/01/19

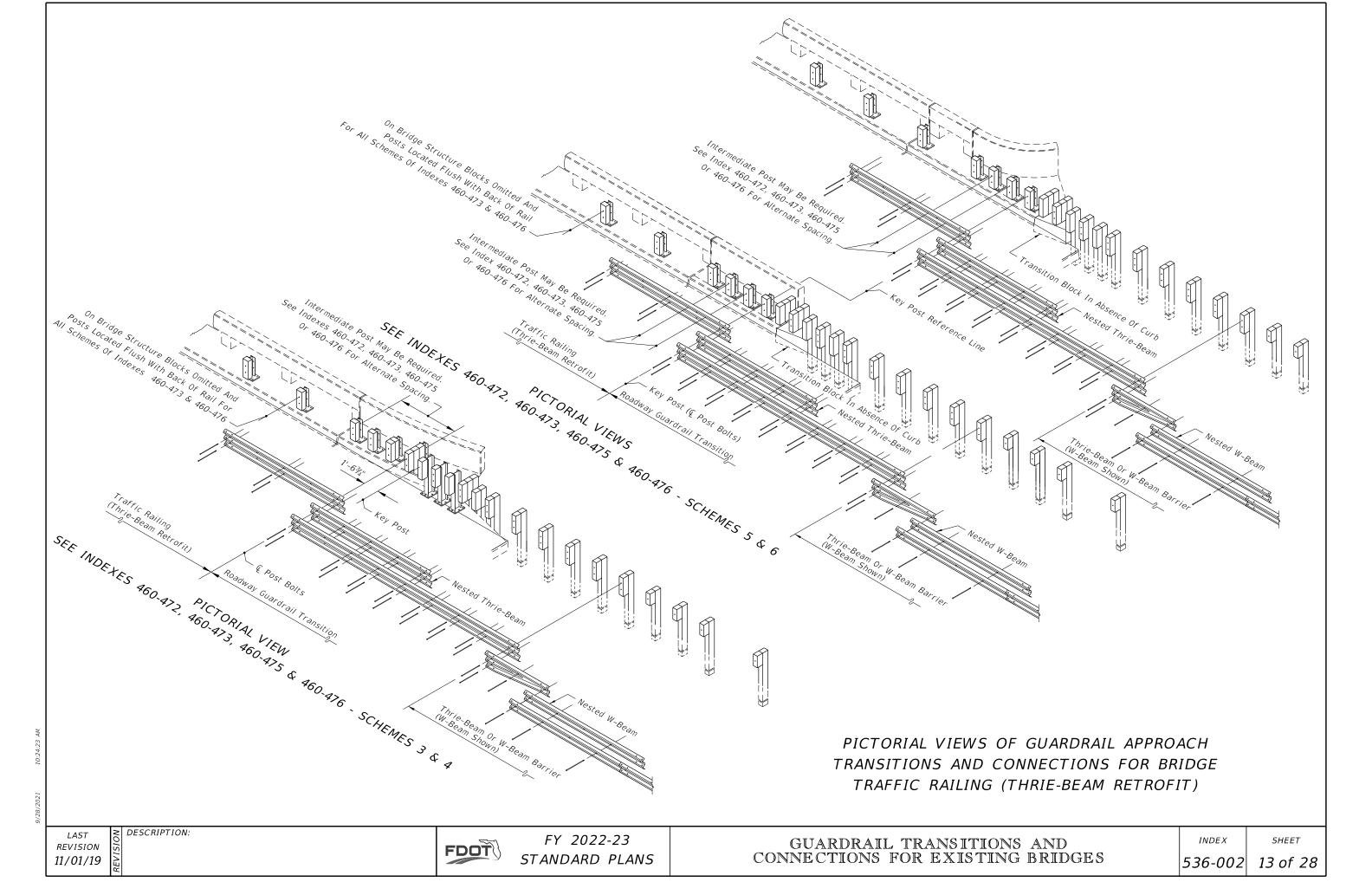
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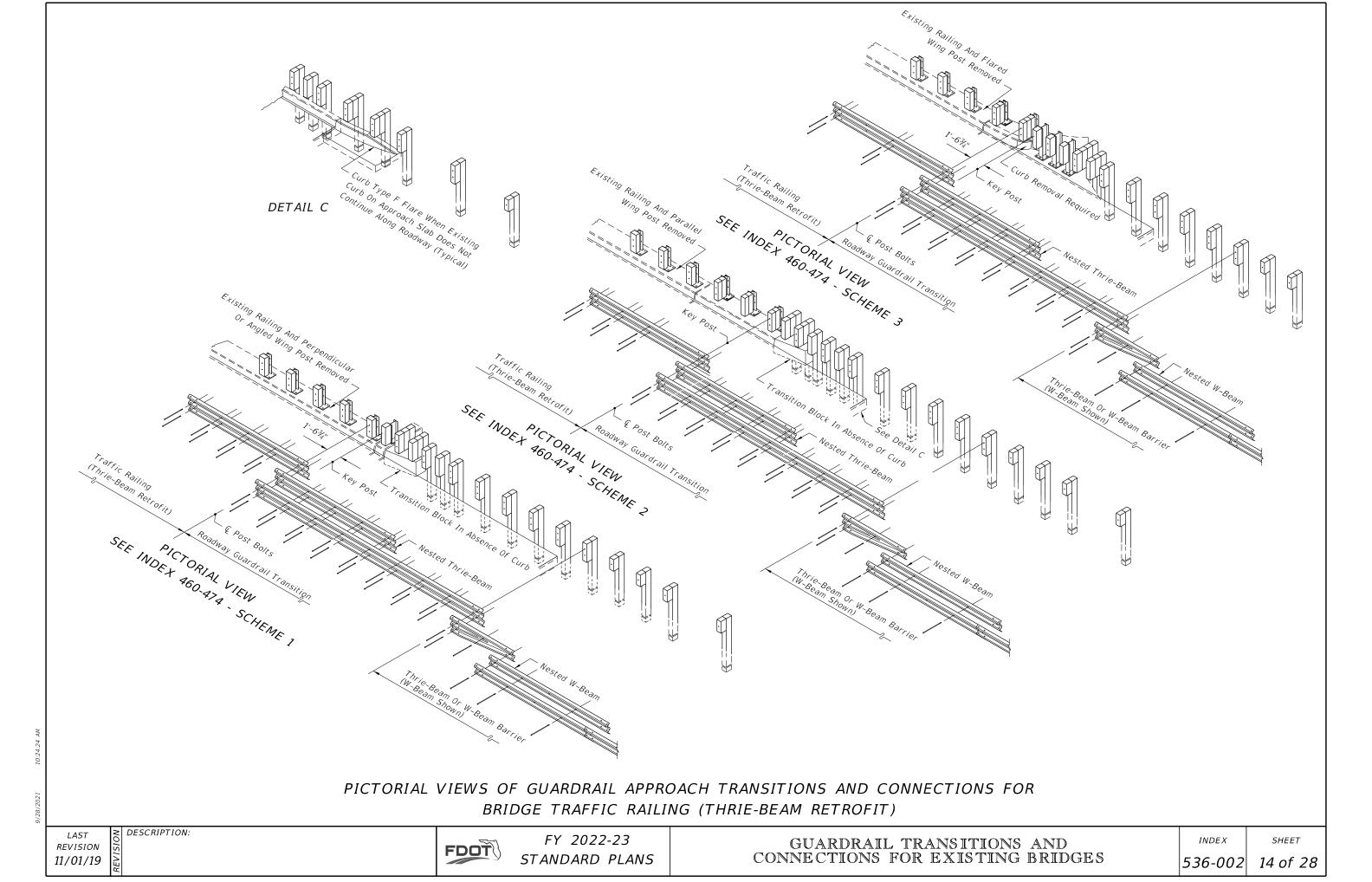
FDOT

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STANDARD PLANS





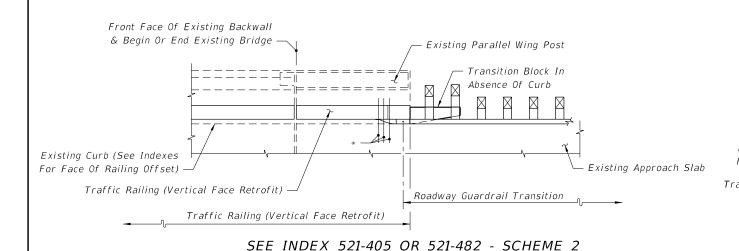


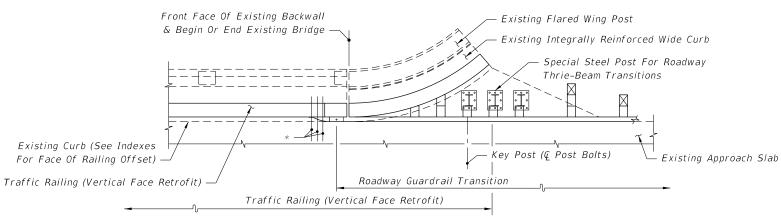


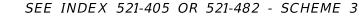
536-002

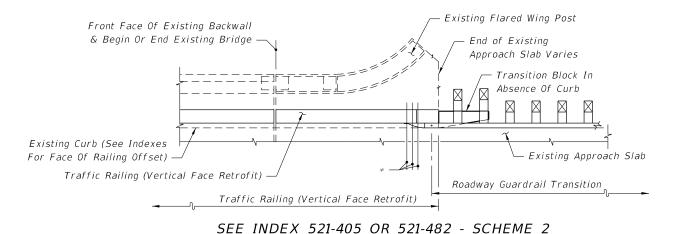
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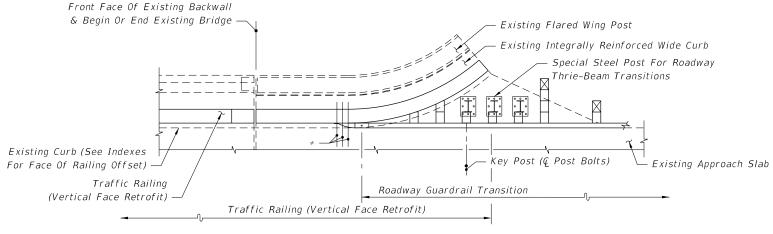
11/01/19











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 $\frac{7}{6}$ " Ø x 12" Long HS Hex Bolts And Nuts (5 Reqd.) With $\frac{2}{4}$ " 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)

9/28/2021

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

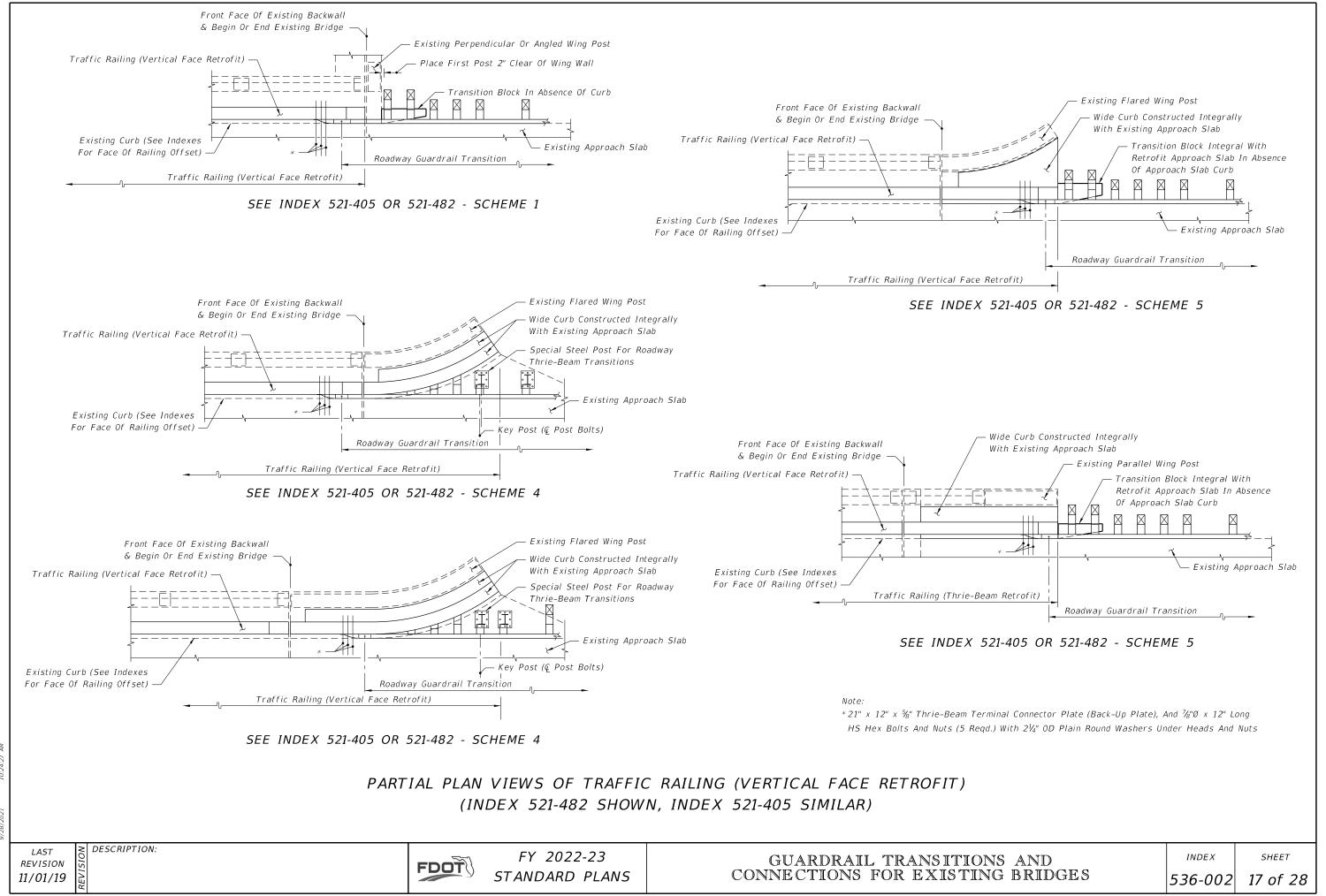
FY 2022-23
STANDARD PLANS

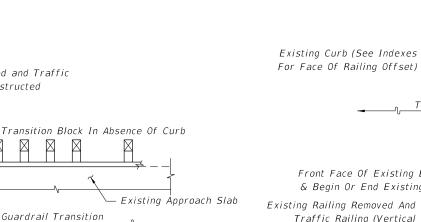
GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES

INDEX

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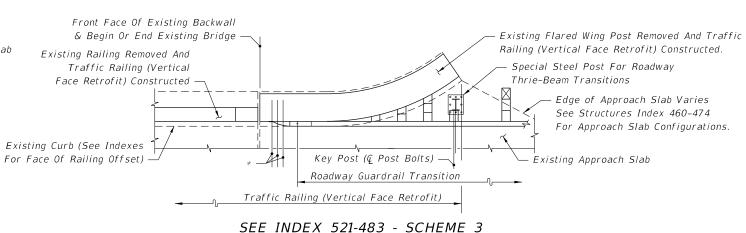
SEE INDEX 521-483 - SCHEME 2

Roadway Guardrail Transition

SEE INDEX 521-483 - SCHEME 2

Existing Parallel Wing Post Removed and Traffic

Railing (Vertical Face Retrofit) Constructed



Key Post (@ Post Bolts) —

SEE INDEX 521-483 - SCHEME 3

Traffic Railing (Vertical Face Retrofit)

Roadway Guardrail Transition

*21" x 12" x %" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ½"Ø HS Hex Bolts And Nuts (12" Long For Scheme 1 And Length To Fit For Schemes 2 And 3) (5 Reqd.) With 21/4" OD Plain Round Washers Under Heads And Nuts

PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)

REVISION 11/01/19

DESCRIPTION:

Front Face Of Existing Backwall

Existing Railing Removed

Traffic Railing (Vertical

Face Retrofit) Constructed

Existing Curb (See Indexes For Face Of Railing Offset)

Front Face Of Existing Backwall

& Begin Or End Existing Bridge

Existing Railing Removed

Traffic Railing (Vertical

Face Retrofit) Constructed

Existing Curb (See Indexes

For Face Of Railing Offset)

& Begin Or End Existing Bridge -

Traffic Railing (Vertical Face Retrofit)

Traffic Railing (Vertical Face Retrofit)



Roadway Guardrail Transition

Existing Parallel Wing Post Removed and Traffic

Transition Block In Absence Of Curb

Existing Approach Slab

Railing (Vertical Face Retrofit) Constructed

FY 2022-23 STANDARD PLANS

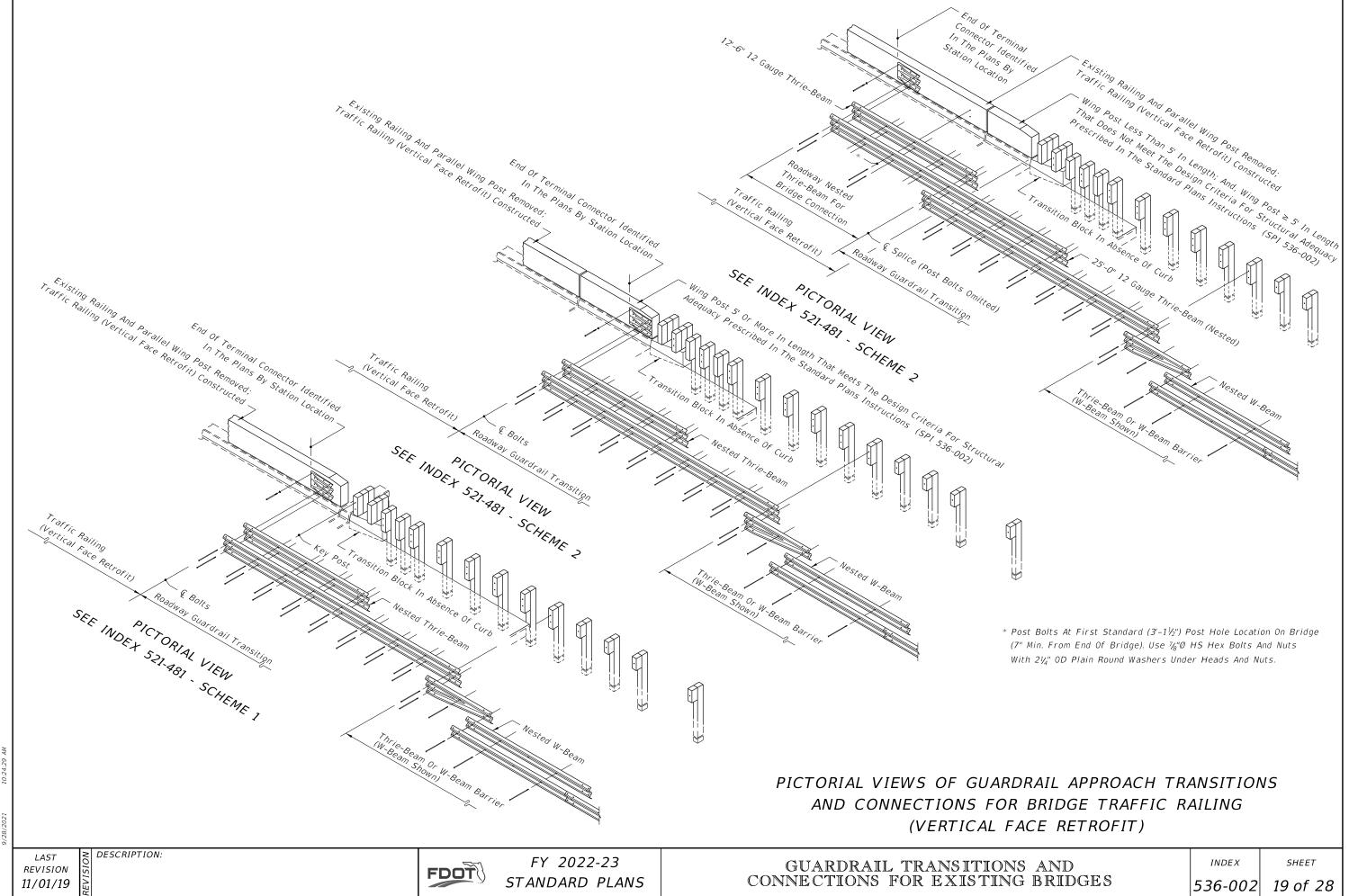
GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES

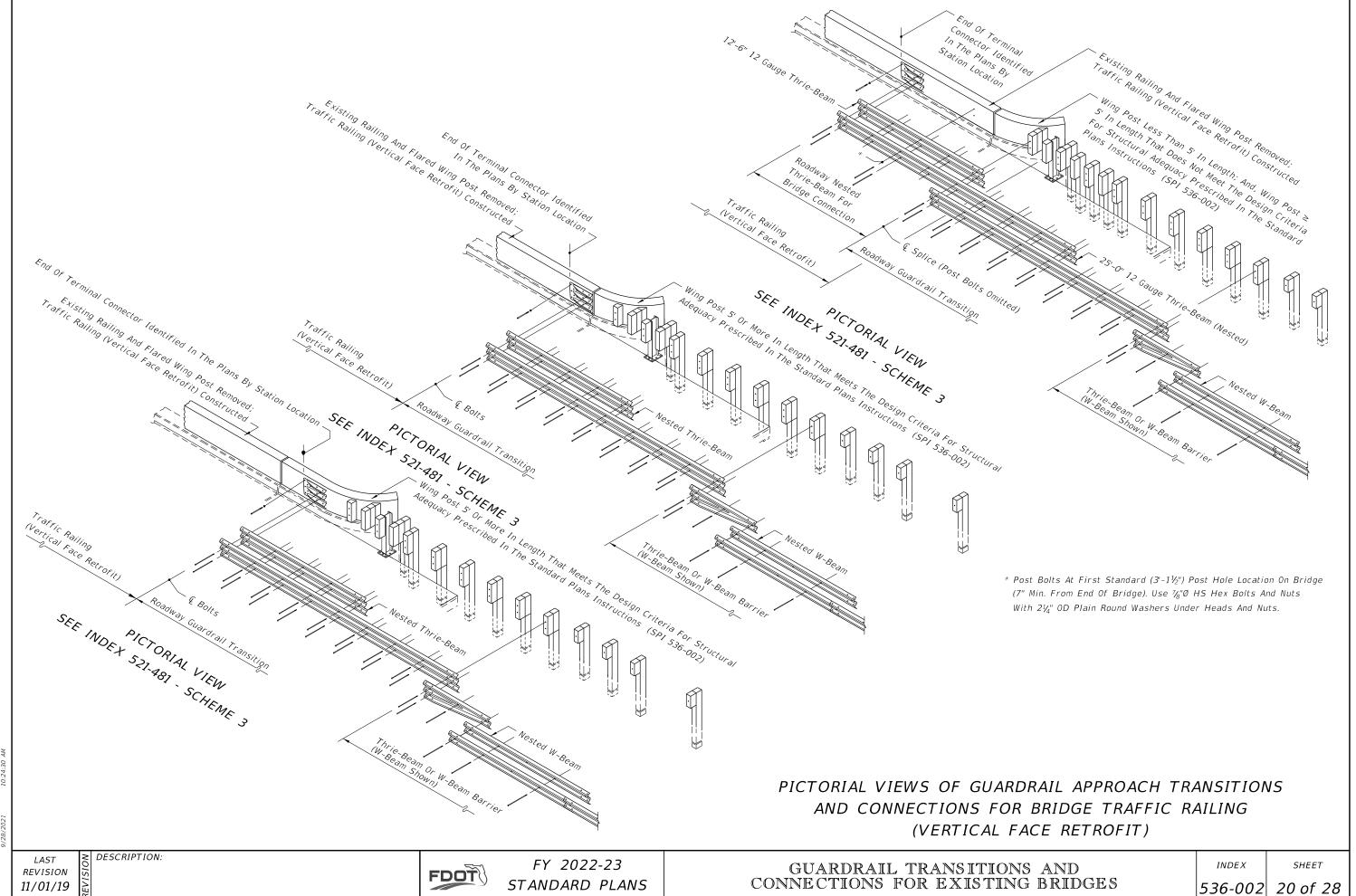
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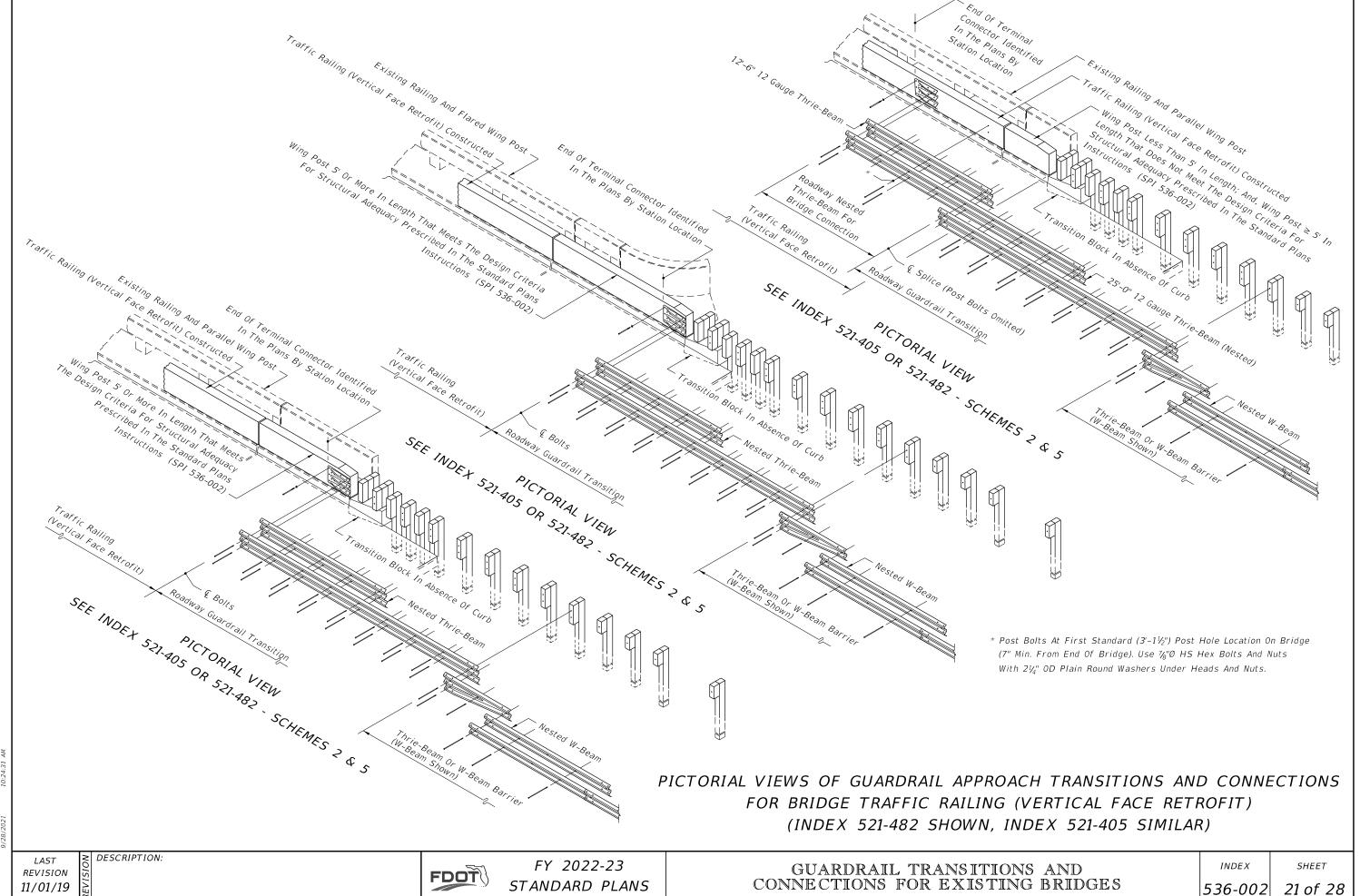
Existing Approach Slab

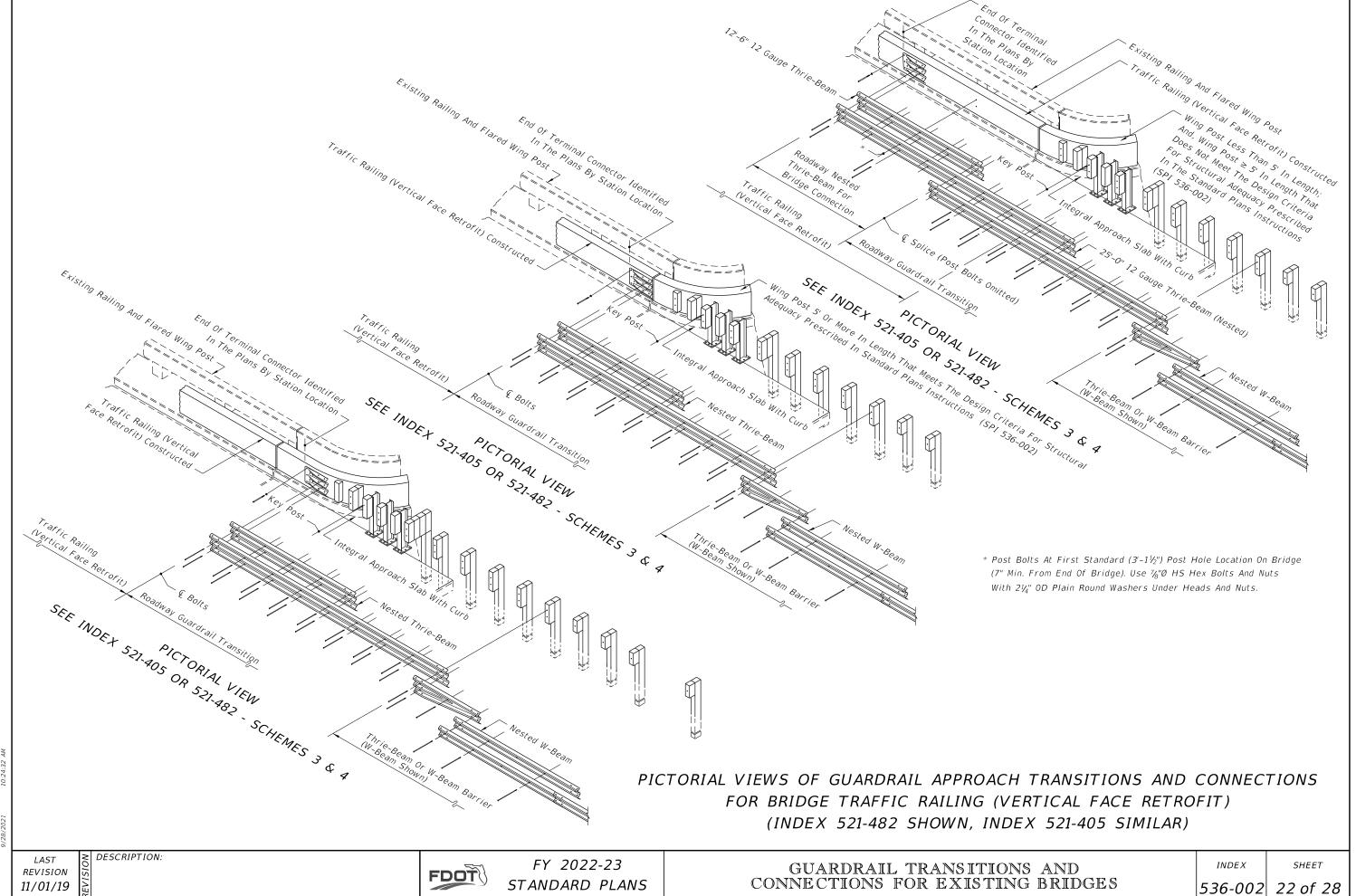
SHEET

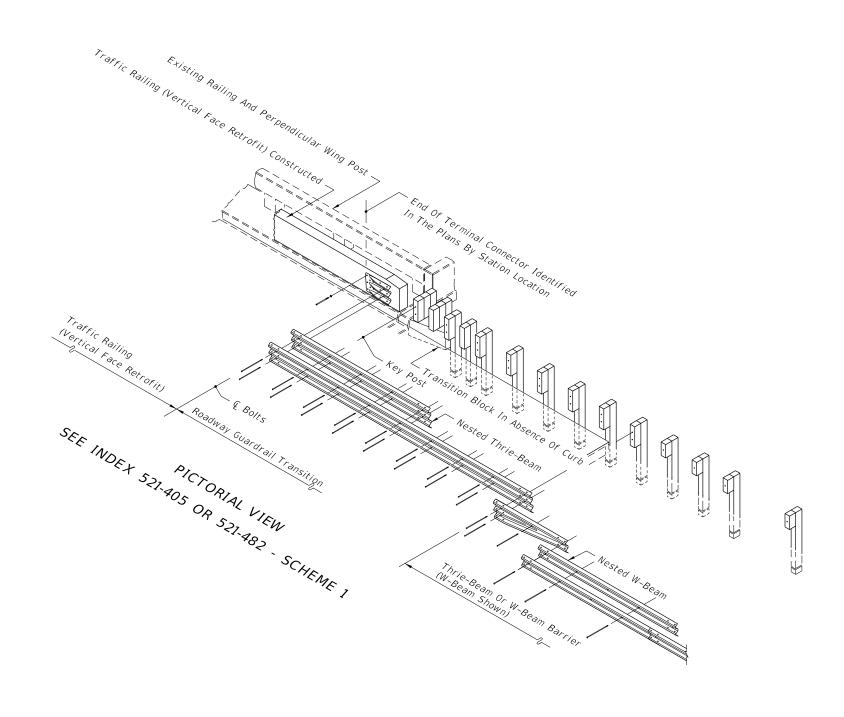
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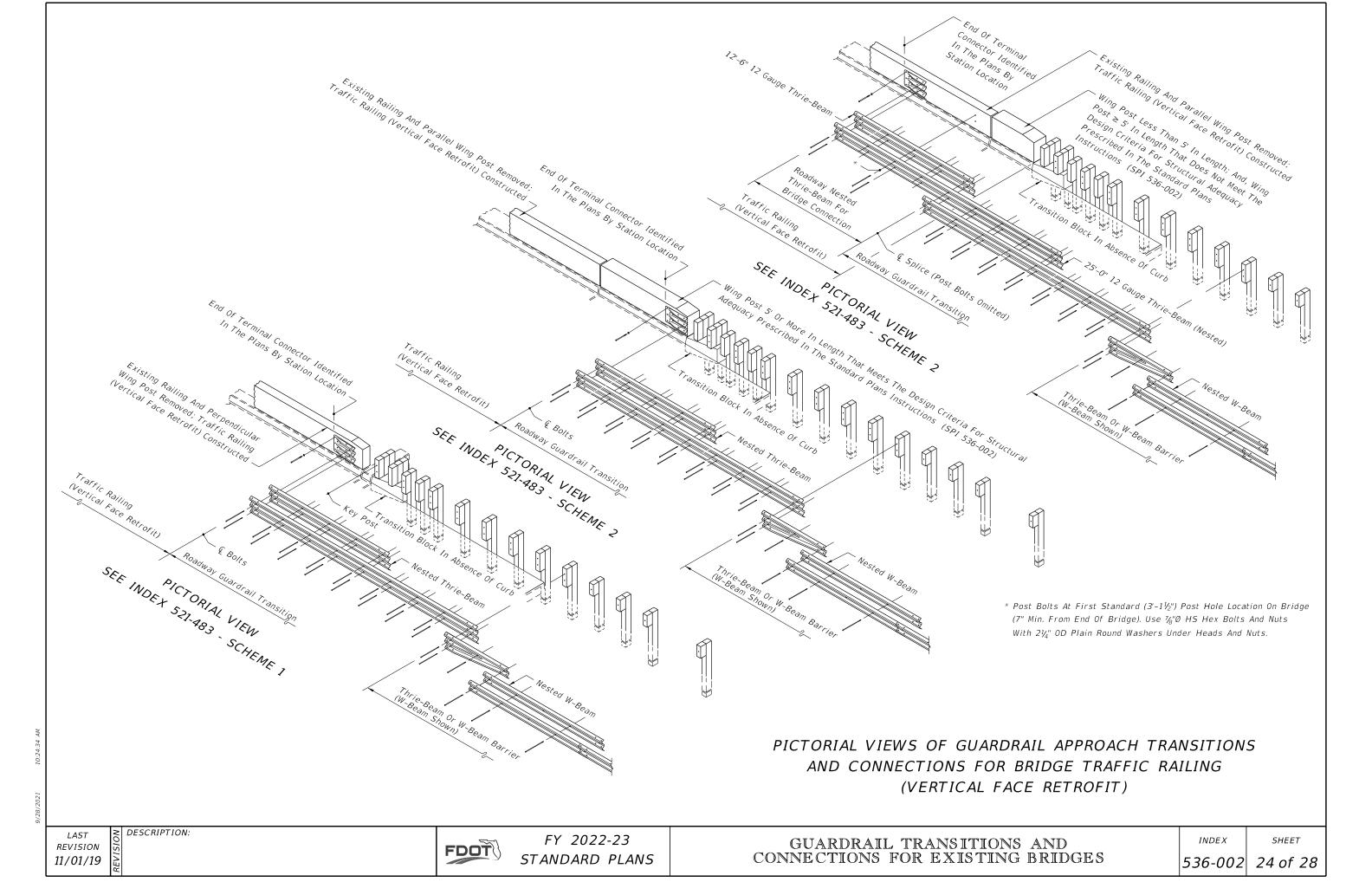


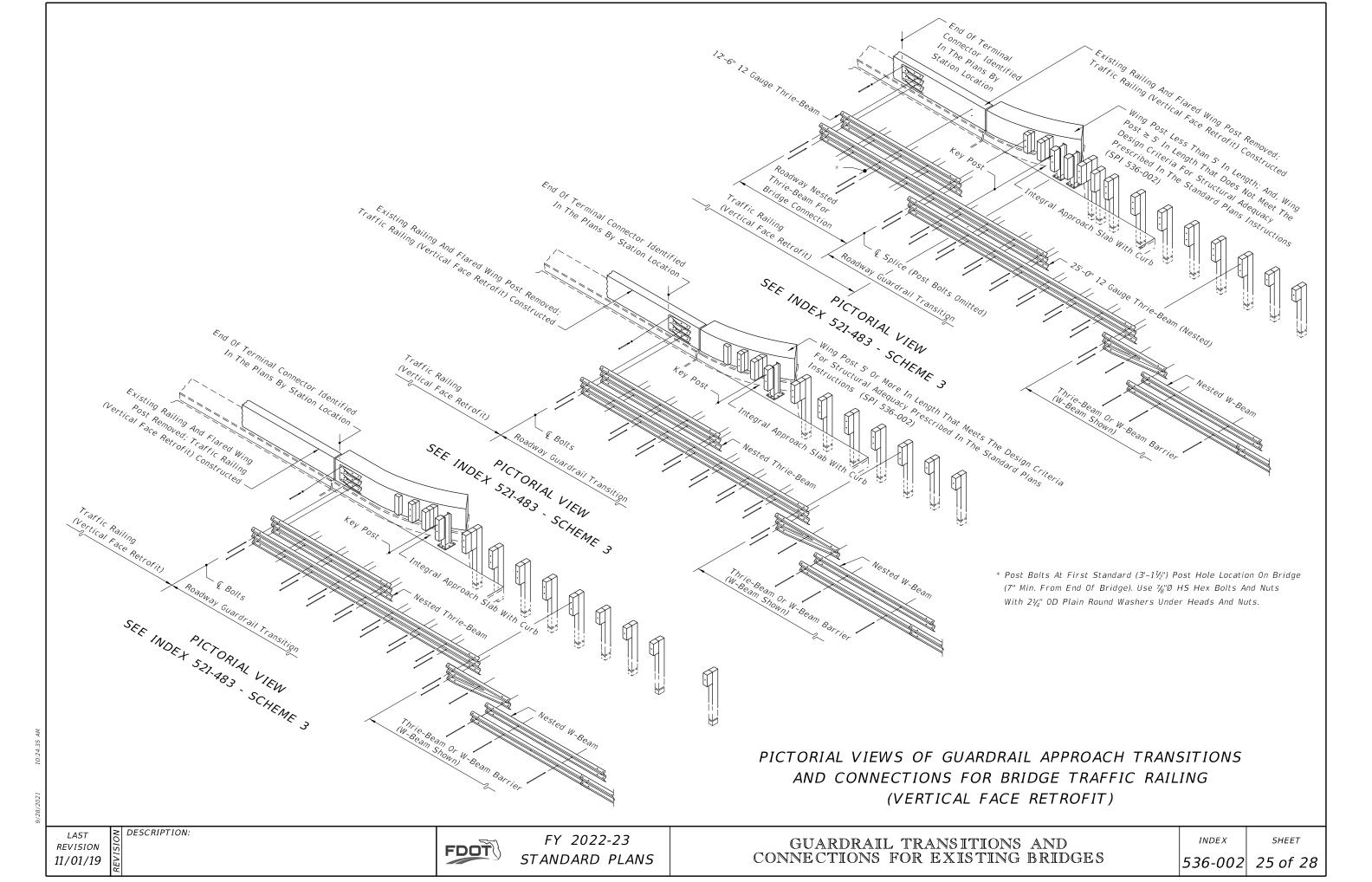


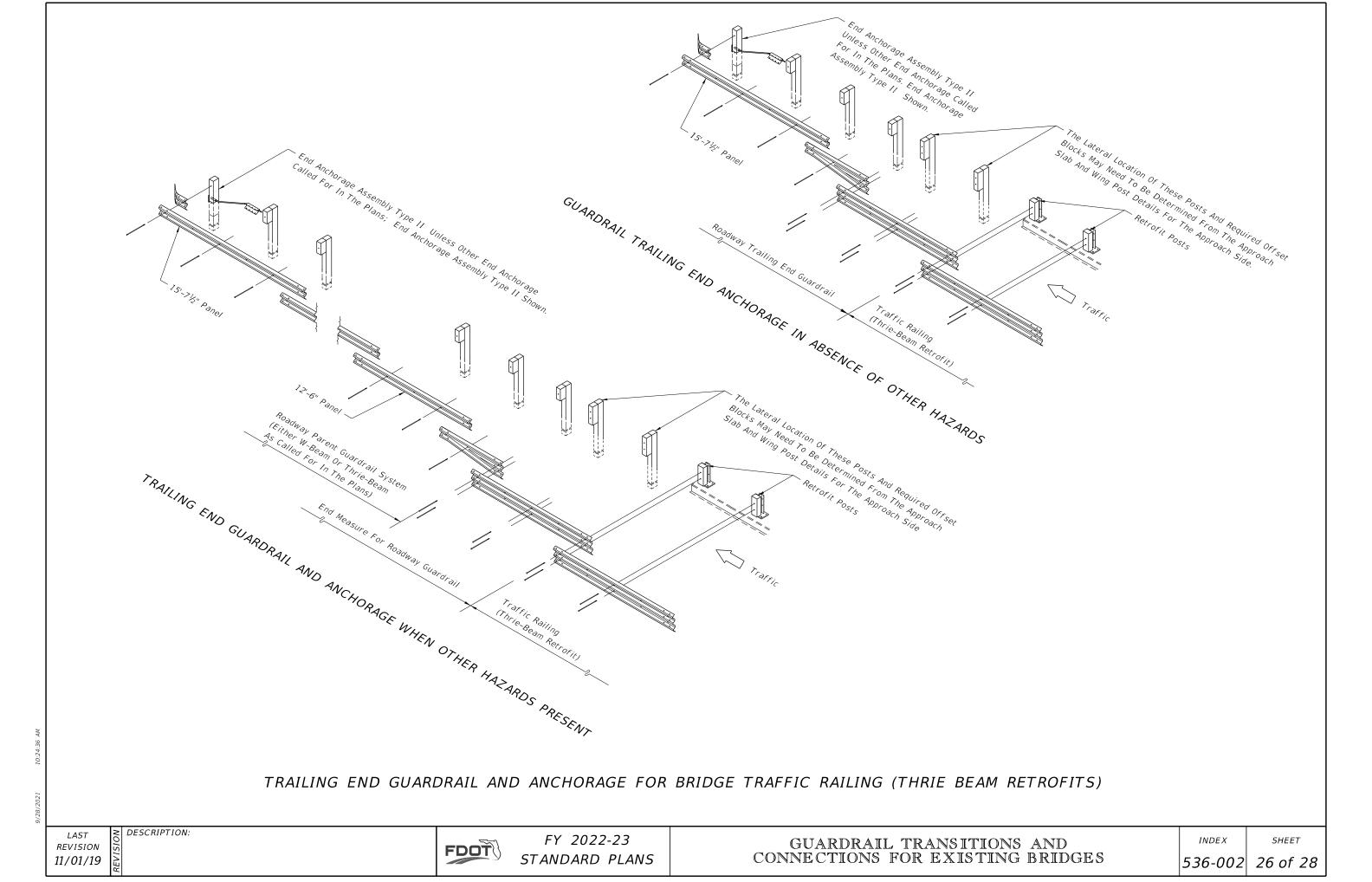
PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (VERTICAL FACE RETROFIT) (INDEX 521-482 SHOWN, INDEX 521-405 SIMILAR)

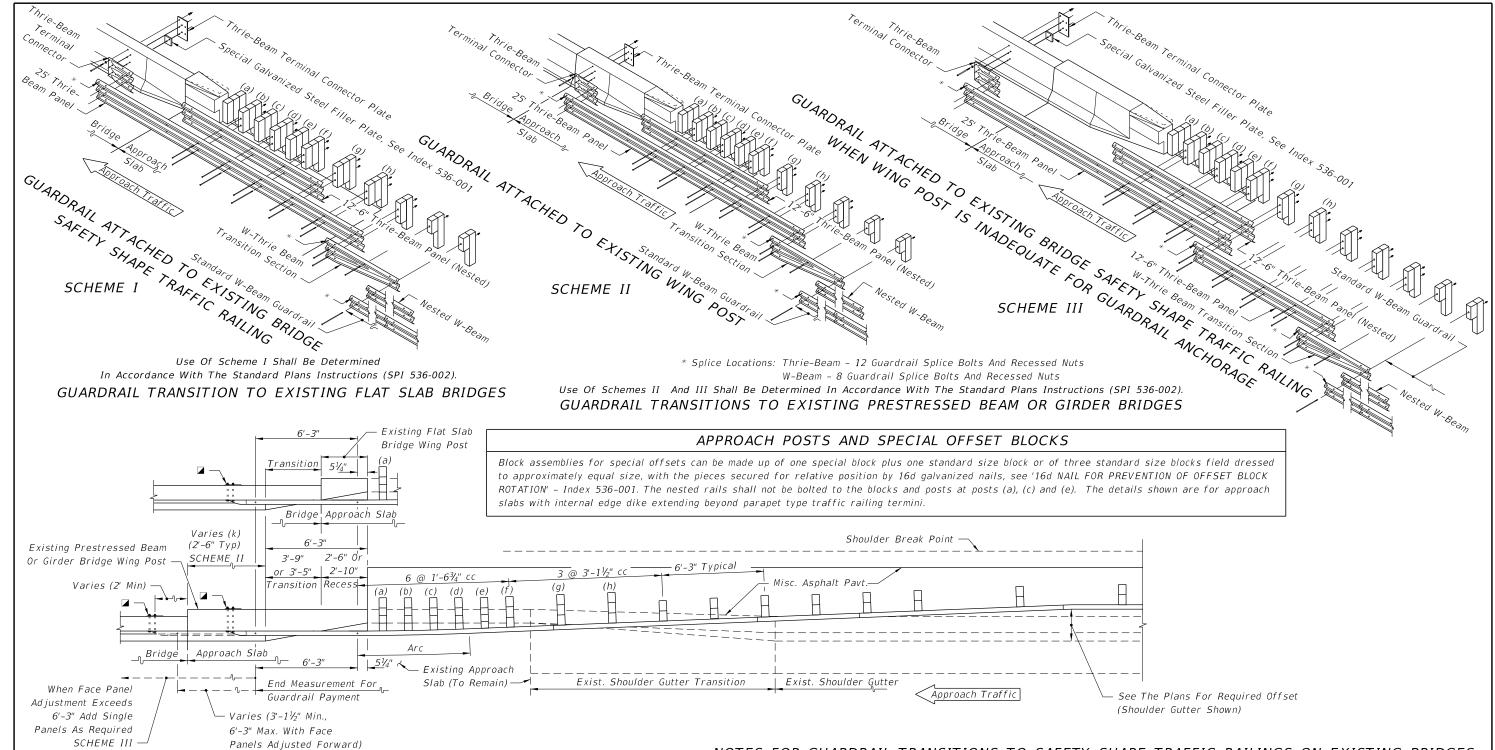
REVISION 11/01/19

DESCRIPTION:









■ 21"x12"x¾" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ¾"0 x 18" Long [15" Long With 3½" Min. Thread Length For Bridge Safety Shape Railing] HS Hex Bolts And Nuts (5 Reqd.) With 2½" 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 ¾" HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]

SCHEME III

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 ½0 x 1" long concrete screws or expansion anchors at each corner, as approved by the Engineer. The sign panel shall be a minimum ½6" 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

LAST REVISION 11/01/19

DESCRIPTION:

FDOT

FY 2022-23
STANDARD PLANS

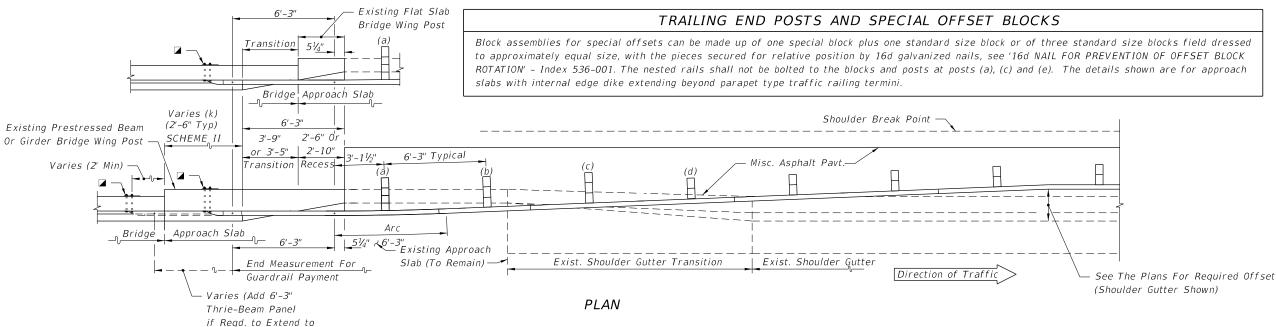
PLAN

GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES

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🖬 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 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 1/8" HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]

Traffic Railing) SCHEME III

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 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 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

FY 2022-23 STANDARD PLANS

GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES INDEX

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GENERAL NOTES:

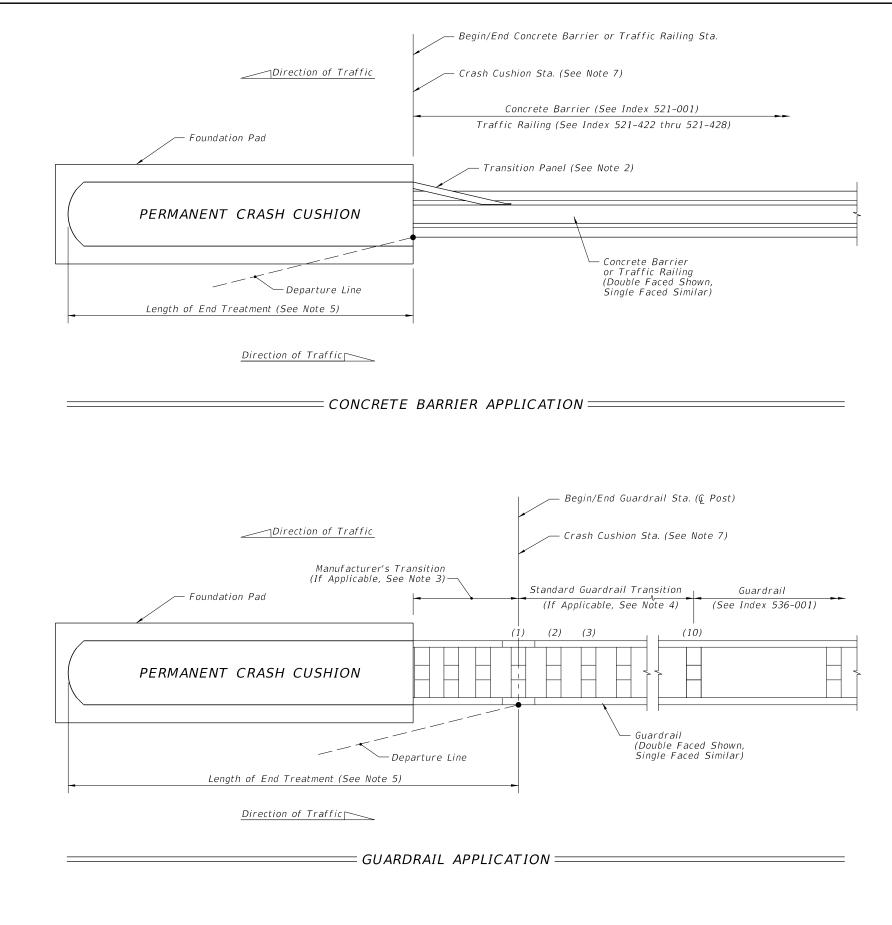
- 1. GENERAL: Work this Index in accordance with Specification 544 and the "Summary of Permanent Crash Cushions" table in the Plans. Where applicable, use Guardrail components and panel lap splices in accordance with Index 536-001.
- 2. TRANSITION PANEL: Where crash cushions are placed between two-way 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 quardrail 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 $21'-10\frac{1}{2}''$ 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 $21'-10\frac{1}{2}''$ 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.

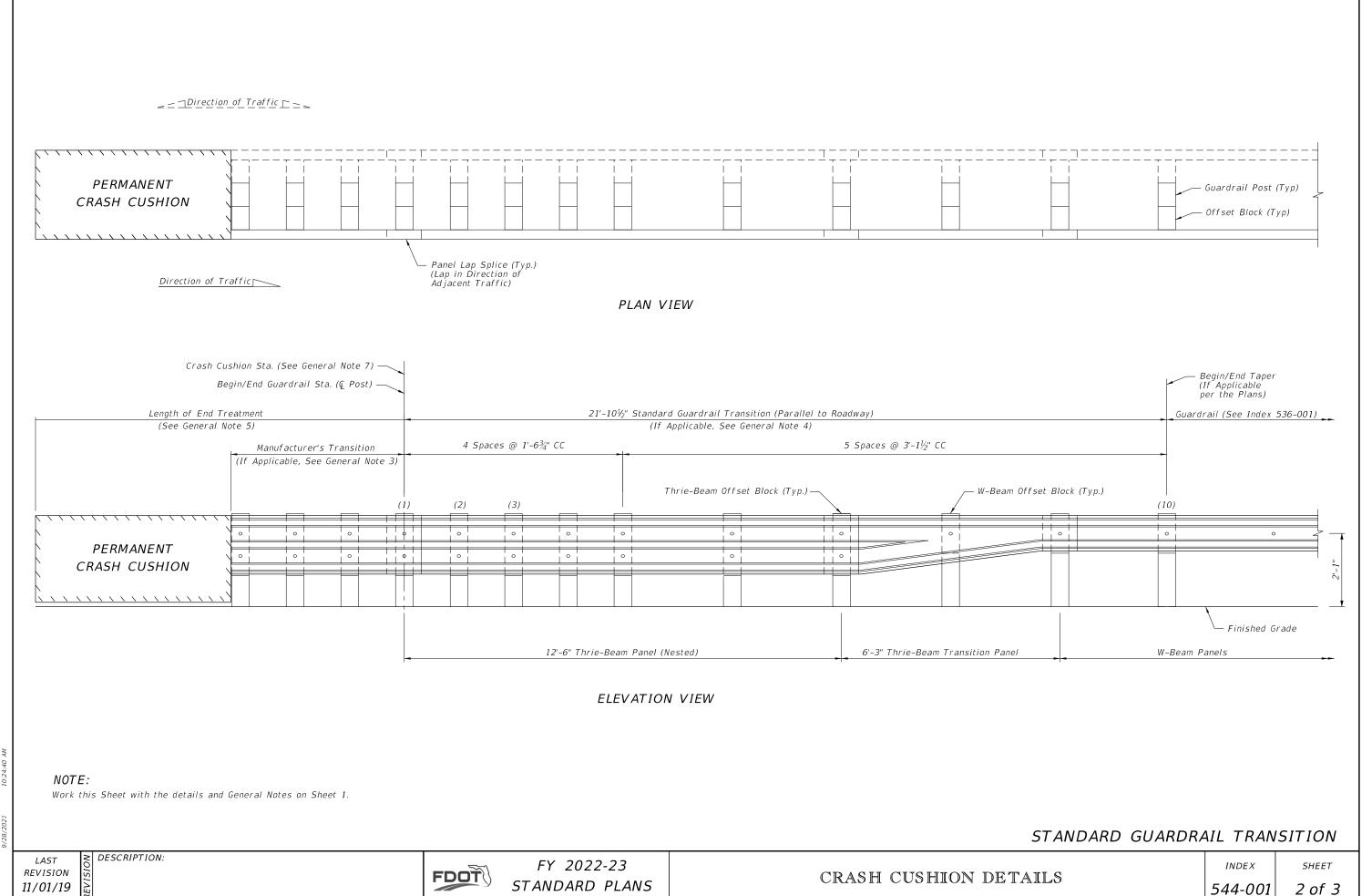


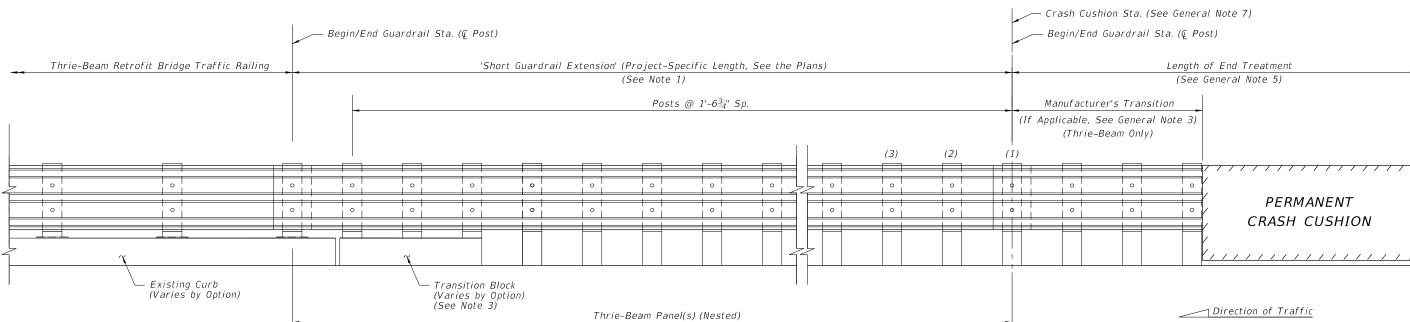
PERMANENT CRASH CUSHION APPLICATIONS

REVISION 11/01/19

DESCRIPTION:

FDOT





ELEVATION - CONNECTION TO THRIE-BEAM RETROFIT (See Note 3)

(Quantity Varies)

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

LAST REVISION 11/01/19

DESCRIPTION:

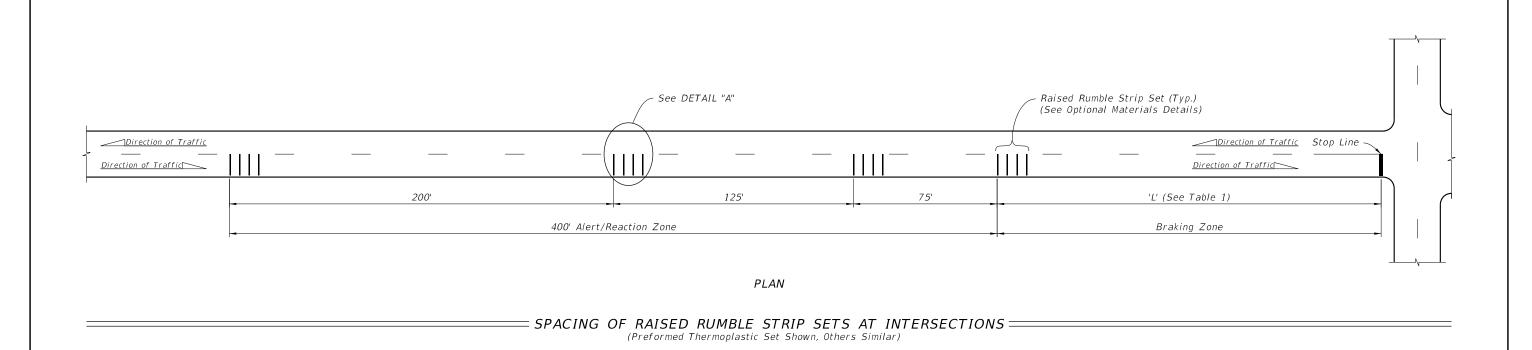
FDOT

FY 2022-23 STANDARD PLANS

CRASH CUSHION DETAILS

INDEX **544-001**

SHEET 3 of 3



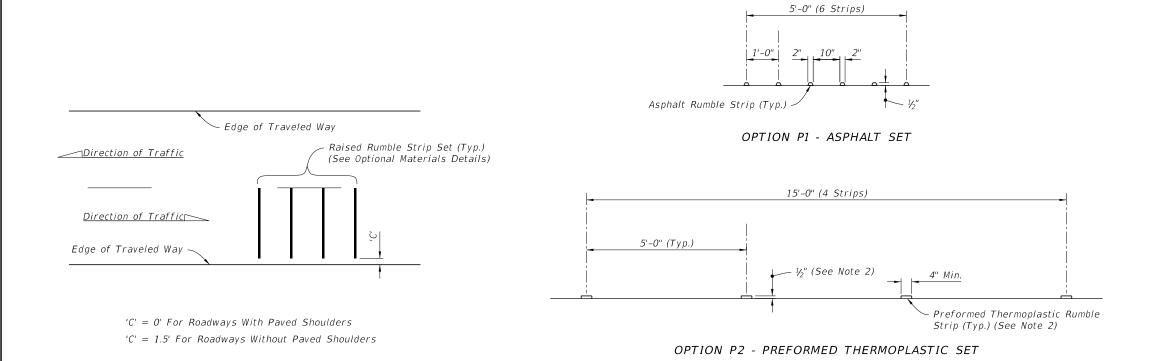


TABLE 1 - BR	AKING ZONE
Posted Speed (mph)	'L' (Feet)
≤ 30	150
35	200
40	250
45	300
50	350
55	410
60	470
65	550

NOTES:

- 1. Construct permanent raised rumble strips where shown in the Plans and in accordance with Specification 546.
- 2. Preformed Thermoplastic Set:
- a. Use multiple applications to achieve desired ½" thickness.
- b. Use color white.

PERMANENT RAISED RUMBLE STRIPS

LAST REVISION 04/23/18

F

DETAIL "A" ===

FDOT

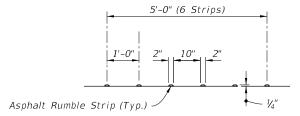
FY 2022-23 STANDARD PLANS

RAISED RUMBLE STRIPS

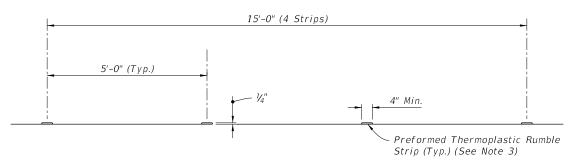
OPTIONAL MATERIALS DETAILS =

INDEX 546-001

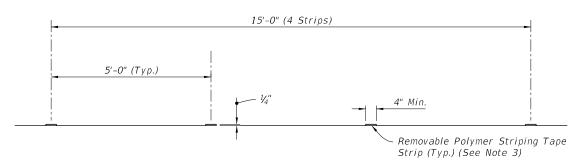
SHEET 1 of 2



OPTION ST1 - ASPHALT SET



OPTION ST2 - PREFORMED THERMOPLASTIC SET



OPTION ST3 - REMOVABLE POLYMER STRIPING TAPE SET

OPTIONAL MATERIALS DETAILS

NOTES:

- 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

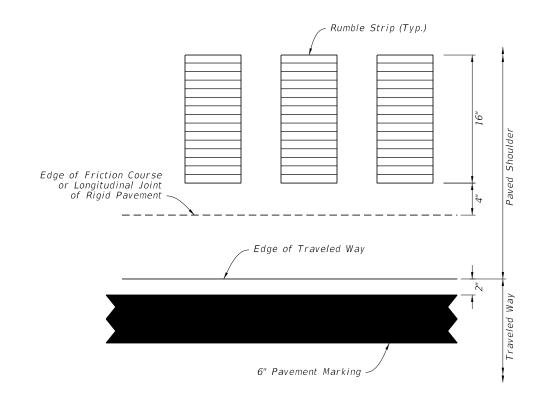
LAST O DESCRIPTION:
REVISION 51/14
04/23/18

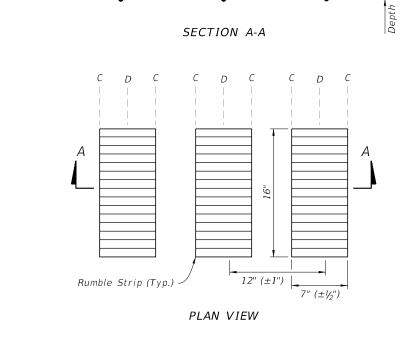
FDOT

RUMBLE STR	NIP DEPTH TABLE
LOCATION	DEPTH FROM SURFACE (IN.)
Α	0
В	% (±1/16)

NOTES:

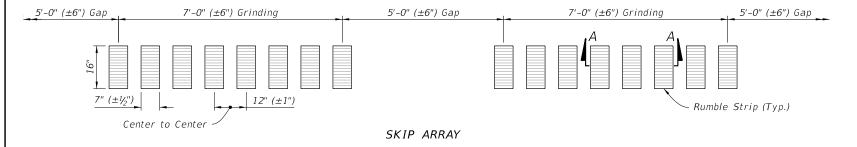
- 1. When friction course extends more than 8" beyond the edge of the traveled way, blade off the extended friction course to the 8" line prior to rumble strip grinding.
- Use the continuous array on both inside and outside shoulders
 1,000 feet in advance of bridge ends or back to the gore recovery
 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.
- F. On either side of median crossover openings, terminate rumble strips within 400 feet.

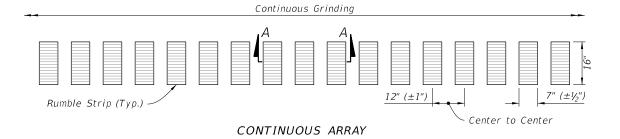




RUMBLE STRIP PLACEMENT (Plan View)

RUMBLE STRIP DETAILS





= RUMBLE STRIP ARRAY DETAILS =

LIMITED ACCESS ROADWAYS

LAST REVISION 04/04/18

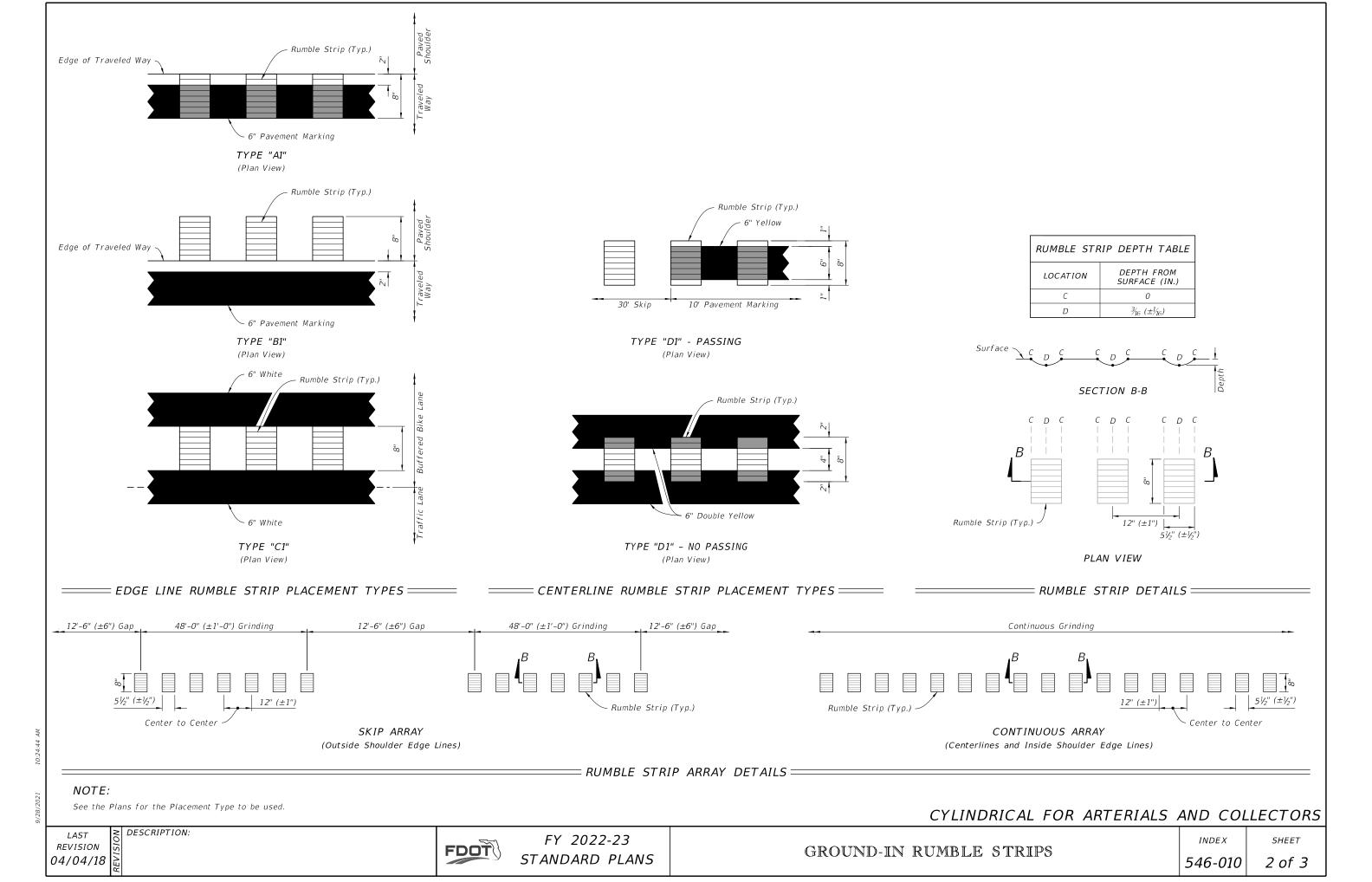
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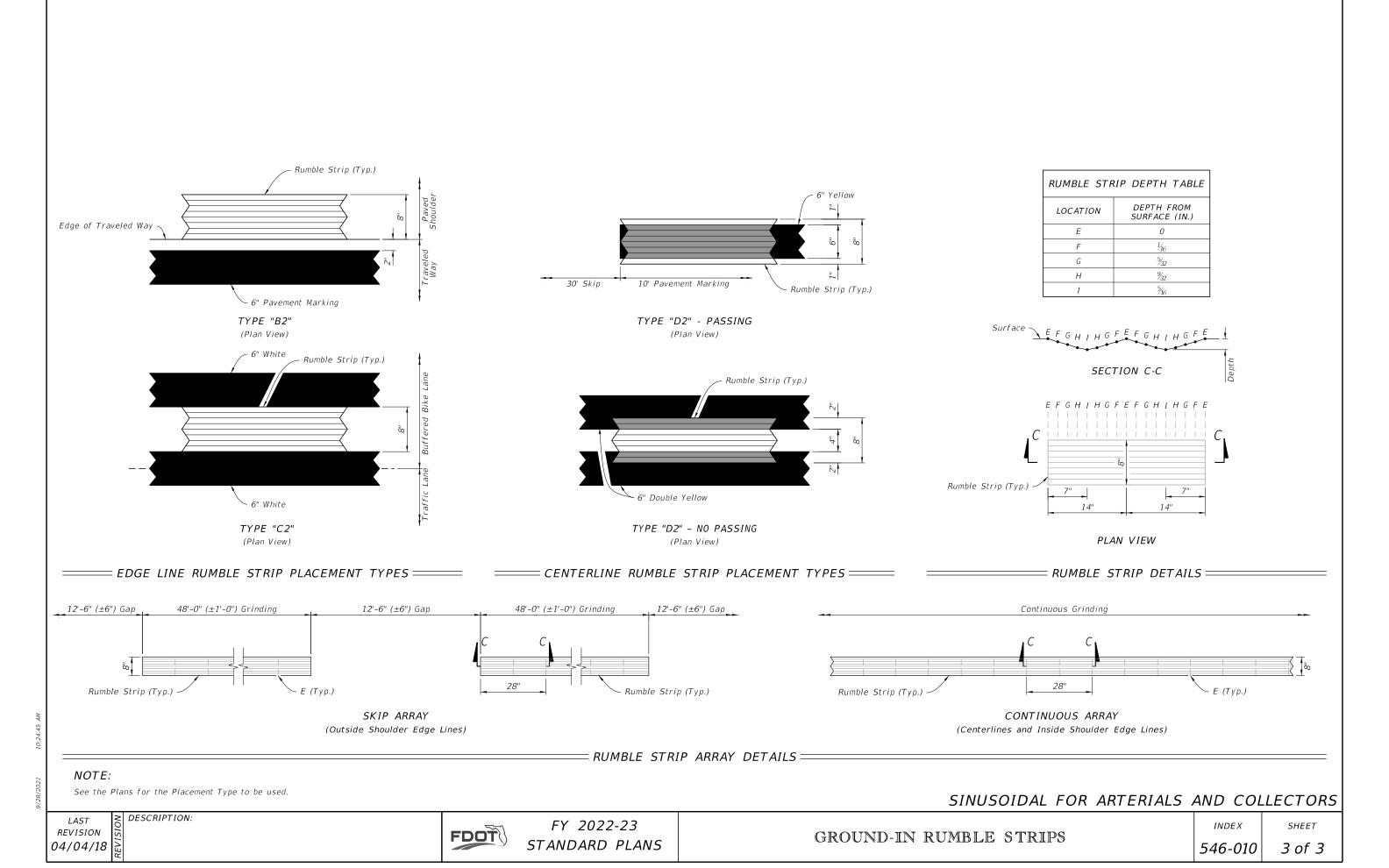
FDO

FY 2022-23 STANDARD PLANS

GROUND-IN RUMBLE STRIPS

INDEX **546-010** *SHEET*1 of 3





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.

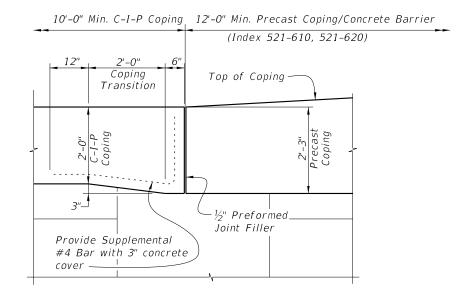
CONSTRUCTION:

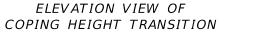
- 1. Walls will be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
- 2. For location and alignment of retaining walls, see Wall Control Drawings.
- 3. If required, locate manholes and drop inlets as shown on wall elevations.
- 4. Refer to Wall Control Drawings 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 guardrail 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 guardrail 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.

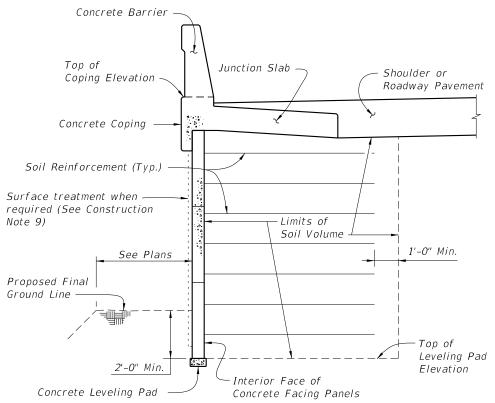
DESCRIPTION:

SHOP DRAWINGS:

See Specification Section 548 for shop drawing requirements.







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 Reinforcir	Soil	Other Allowable FDOT Wall Types							
FDOT Wall	Concrete	Concrete	Pozzolan	Concrete	crete Concrete Pozzolan Re		Reinforcement							
Type *	Cover	Class	Additions?	Cover	Class	Additions?	Type	2A	2B	2C	2D	2E	2F	
	(in.)	for Panels	**	(in.)	for Panels **									
Type 2A	2	II	No	1.5	II	No	Metal		/	1	/	/	/	
Type 2B	2	IV	No	1.5	IV	No	Metal			/	/	/	/	
Type 2C	3	IV	No	1.5	IV	No	Metal				/	/	1	
Type 2D	3	IV	Yes	2	IV	No	Metal						1	
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

REVISION 11/01/21

FDOT

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:

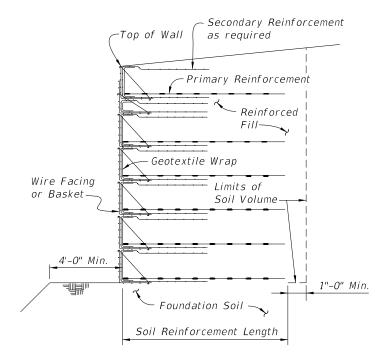
1. See wall control drawings for soil characteristics of foundation material to be used in the design of the wall system. The Contractor must provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site. Provide the values of unit weight, cohesion and internal friction angle in the Shop Drawings.

MATERIALS:

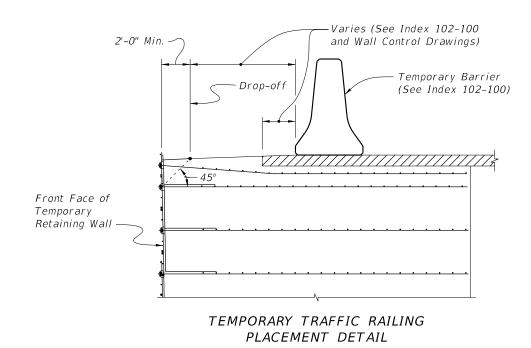
- 1. Provide soil reinforcement in accordance with Specification Section 548.
- 2. For additional material notes, see Wall Company General Notes.

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.
- 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 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

DESCRIPTION: REVISION 11/01/17



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?. 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.
 - (A) Staples for line posts to be $1\frac{1}{4}$ " minimum length; for approach, corner and pull posts $1\frac{1}{2}$ " minimum length. At approach, corner and pull posts, staple every line wire. At line posts, staple every line wire in top half and alternate line wires in bottom half. Staples shall be driven diagonally across the line wire with the points in separate grains.
 - (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: 2½"x2½"x½" 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"x1/4" 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
- 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 1/4" to 1/5" smaller than cross section of
 - 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.

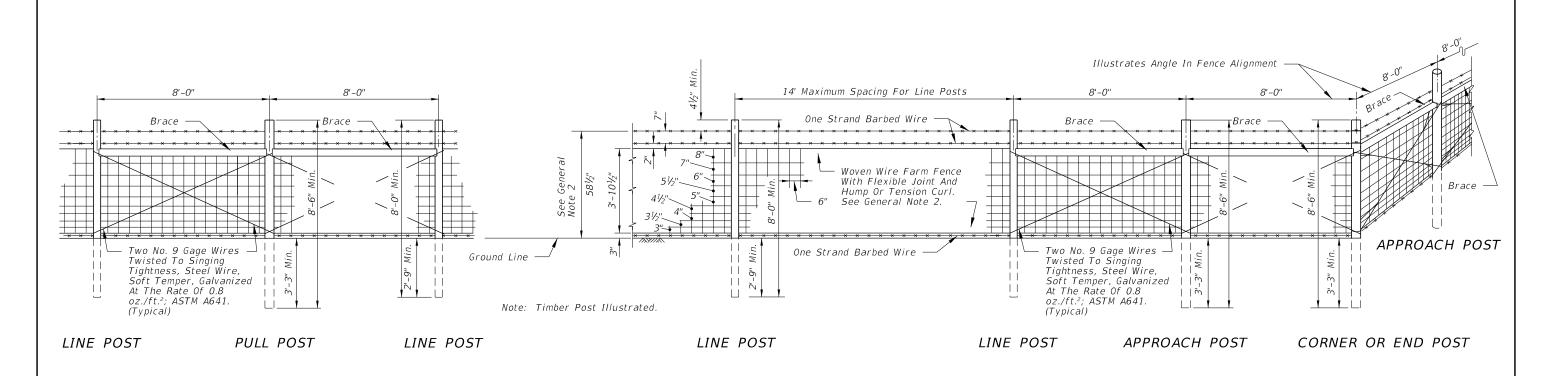
- 10. The woven wire shall be attached to steel and concrete posts by a minimum of five tie wires. The single wire ties shall be applied to the top, bottom and three intermittent line wires. The ends of each tie wire shall have a minimum of two tight turns around the line wire. Tie wires shall be steel 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 1: This type shall conform to the requirements of ASTM A121, with two strands of 12½ 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 ½ gage high tensile wire; four-point barbs, wire size 16 ½ gage twisted around both line wires; and Class 3 coating, Design No. 15-4-5-16R.

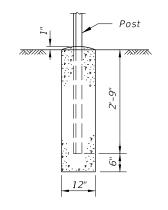
Aluminum Barbed Wire shall be fabricated of two strands of 0.110-inch wire with 0.08-inch diameter four-point barbs spaced at approximately 5½", and at a maximum spacing of 6". The wire for the strands and for the barbs shall be of ASTM B211M Alloy 5052-H38 or equal.

- 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.

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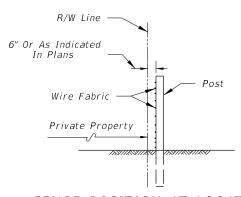
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(Pull, Corner, End And Approach Posts)

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)

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.

REVISION 11/01/17

DESCRIPTION:

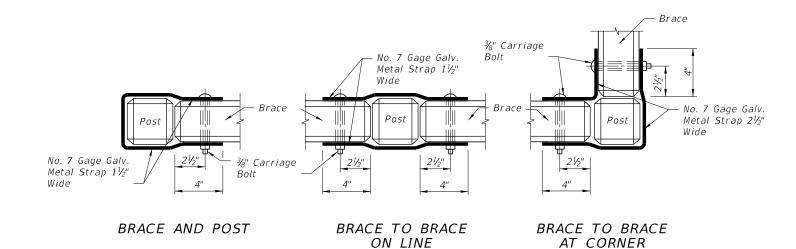
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FY 2022-23 STANDARD PLANS

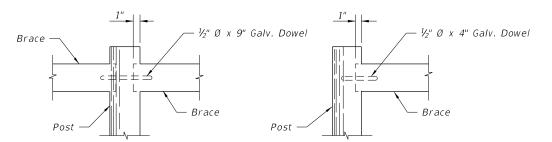
INDEX 550-001

SHEET

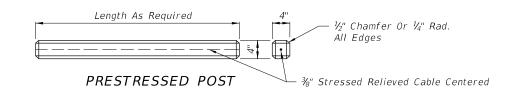
2 of 3

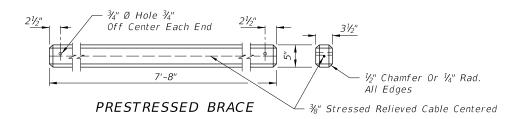


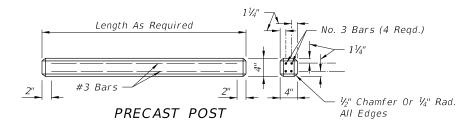
FASTENER FOR CONCRETE POST AND BRACES

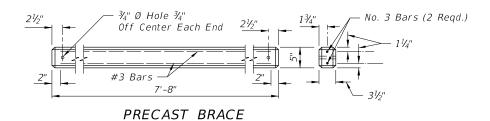


FASTENER FOR TIMBER POST AND BRACE

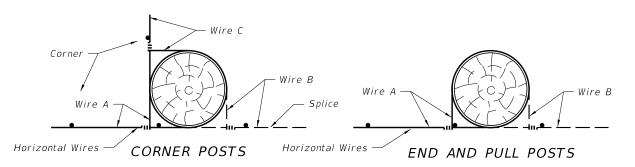








ALTERNATE CONCRETE POSTS AND BRACES



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

REVISION 11/01/17

DESCRIPTION:

FDOT

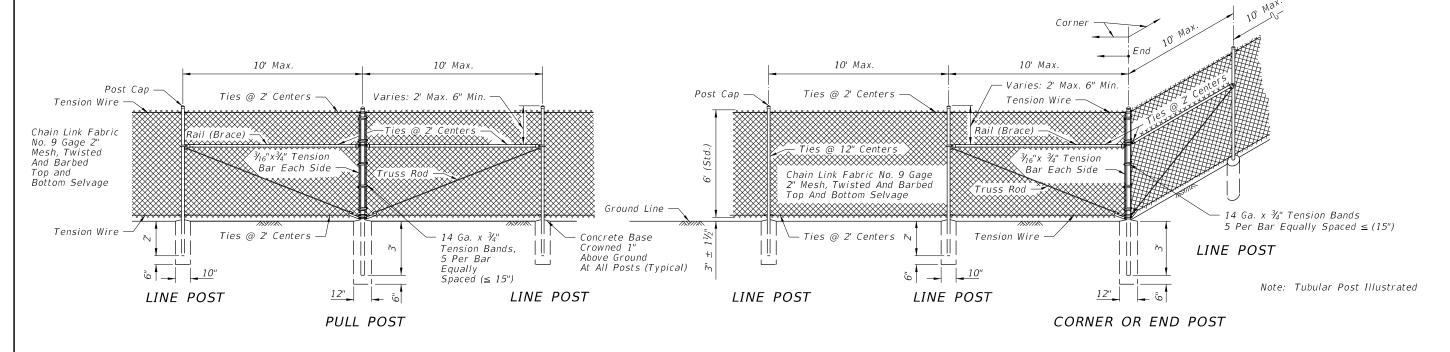
FY 2022-23 STANDARD PLANS

FENCE TYPE A

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GENERAL NOTES

- This fence to be used generally in urban areas.
- 2. For supplemental information refer to Specification 550.
- 3. 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 AASHTO M111.
 - (2) Aluminum coated steel pipe: ASTM A53, Table 2 (Grade A or B): Schedule 40- 11/2" 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- 11/8" x 15/8": Zinc Galv. 1.8 oz./ft.: AASHTO M111 and Detail.
 - (5) Aluminum alloy H-Beam- 17/8" X 15/8" Detail.
 - (6) Steel C- 1%"X 15%": Galv.: 1.8 oz/ft. zinc: AASHTO M111; OR , 0.9 oz./ft². zinc-5% aluminummischmetal: 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" OD, 11/2" 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- $2\frac{1}{2}$ " 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 2½" 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 $15\mu g/in^2$. 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 options:

- (1) Galvanized steel pipe, Schedule 40- $1\frac{1}{4}$ " 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., 0.111" 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 $15\mu g/in^2$. min. and the polymer film topcoat shall have a thickness of 0.003" 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
- (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.

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.

DESCRIPTION:

GENERAL NOTES CONTINUED

- 5. Unless a specific material is called for in the plans the Contractor may elect to use either a single type of material or a combination of material types from the component options listed in note 4. Combinations of optional materials are restricted as follows:
 - (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 greater than 3°.
- 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 FABRIC AASHTO M181 Table 4 Redefined As Follows PVC Thickness Range Specified Diameter Of Metallic Coated Core Wire Minimum Weight Of Zinc Coating Minimum Weight Of Zinc Coating M181 Class A (Extruded Or Extruded And Bonded Coating) in. mm gage oz./ft². g/m² in. mm in. mm O.118 3.77 O. 0.30 0.30 0.015 0.38 0.006 0.15										
AASHTO M181 Table 4 Redefined As Follows PVC Thickness Range										
						PVC Thicki	ness Range			
Of Me	tallic Co	meter pated			(Extruded (Or Extruded				
in.	mm	gage	oz./ft².	g/m²	in.	mm	in.	mm		
0.148	3.77	9	0.30	92						

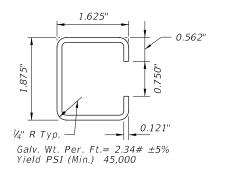
DESIGN NOTE

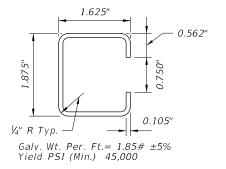
This index details fencing that is constructed with chain link fabric 6' (nominal) in height and with specific ground clearance.

For fencing of different height or installation details, the fence shall be fully detailed in the Contract plans.

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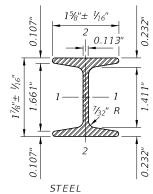




STANDARD WALL

THINWALL

OPTIONAL "C" LINE POST



Area (Sg. In.)
Weight (Lb./Ét.)
Surface Area (SF/Ft.)
Tensile Strength (psi Min.)
Yielding Point (psi Min.)

Moment Of Inertia

Section Modulus

Rad. Of Gyration

2.72 ± 5% (Galv.) 80,000

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

ALUMINUM

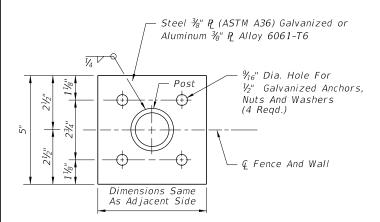
 $0.91 \pm 5\%$ 0.776

0.779 0.373

30,000

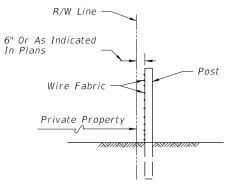
OPTIONAL 17/8" x 15/8" H-BEAM LINE POST

0.779 0.373



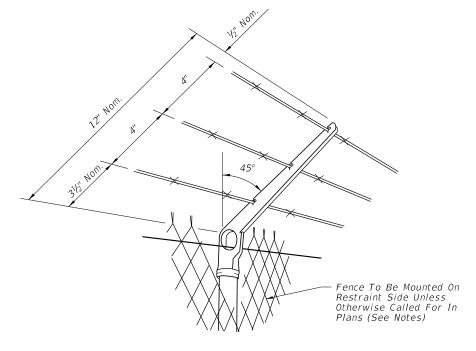
TOP VIEW FOUR ANCHOR PLATE OPTION

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.

- 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, 10½" 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.

TOP VIEW TWO ANCHOR PLATE OPTION

7/8" Dia. Hole For ¾"Anchors,

Nuts And Washers (2 Regd.)

11/4"

FENCE MOUNTING ON CONCRETE ENDWALL AND RETAINING WALLS

└─ Steel ½" ॡ (ASTM A36) Galvanized or

Aluminum 1/2" P2 Alloy 6061-T6

REVISION 11/01/17



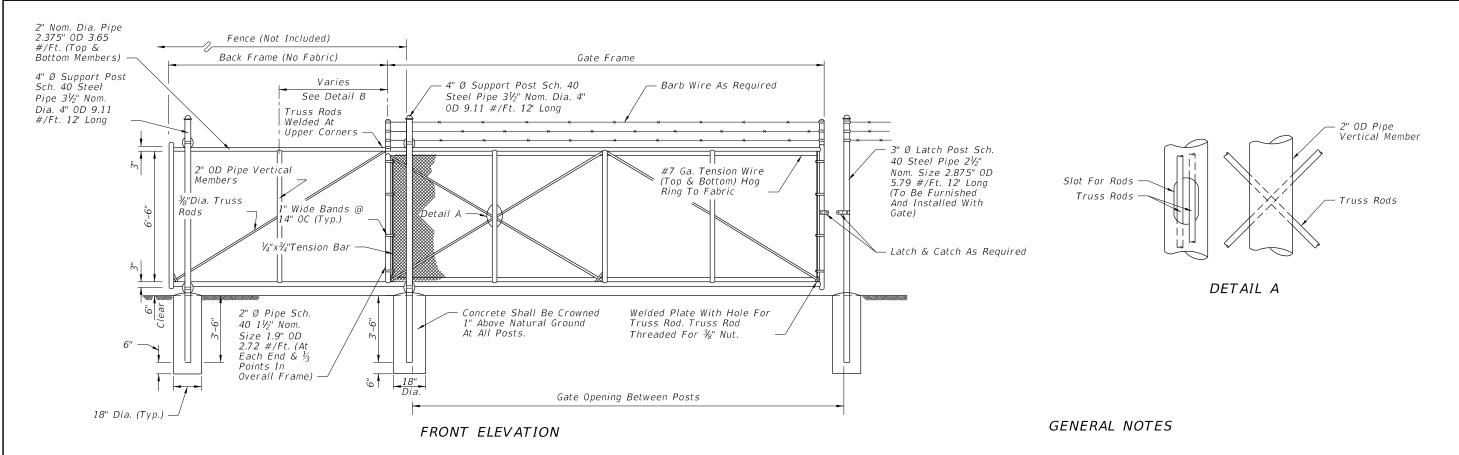
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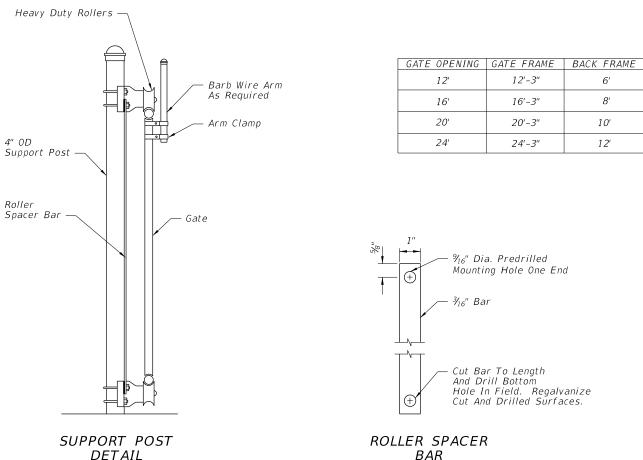
FENCE TYPE B

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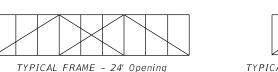


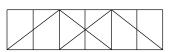


1. Extruded, rolled or formed components that provide equal strength and stability may be used in lieu of the pipe components shown; and, internal rollers may be used in lieu of the external roller units shown.

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 stock.
- 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

LAST REVISION 11/01/17

DESCRIPTION:

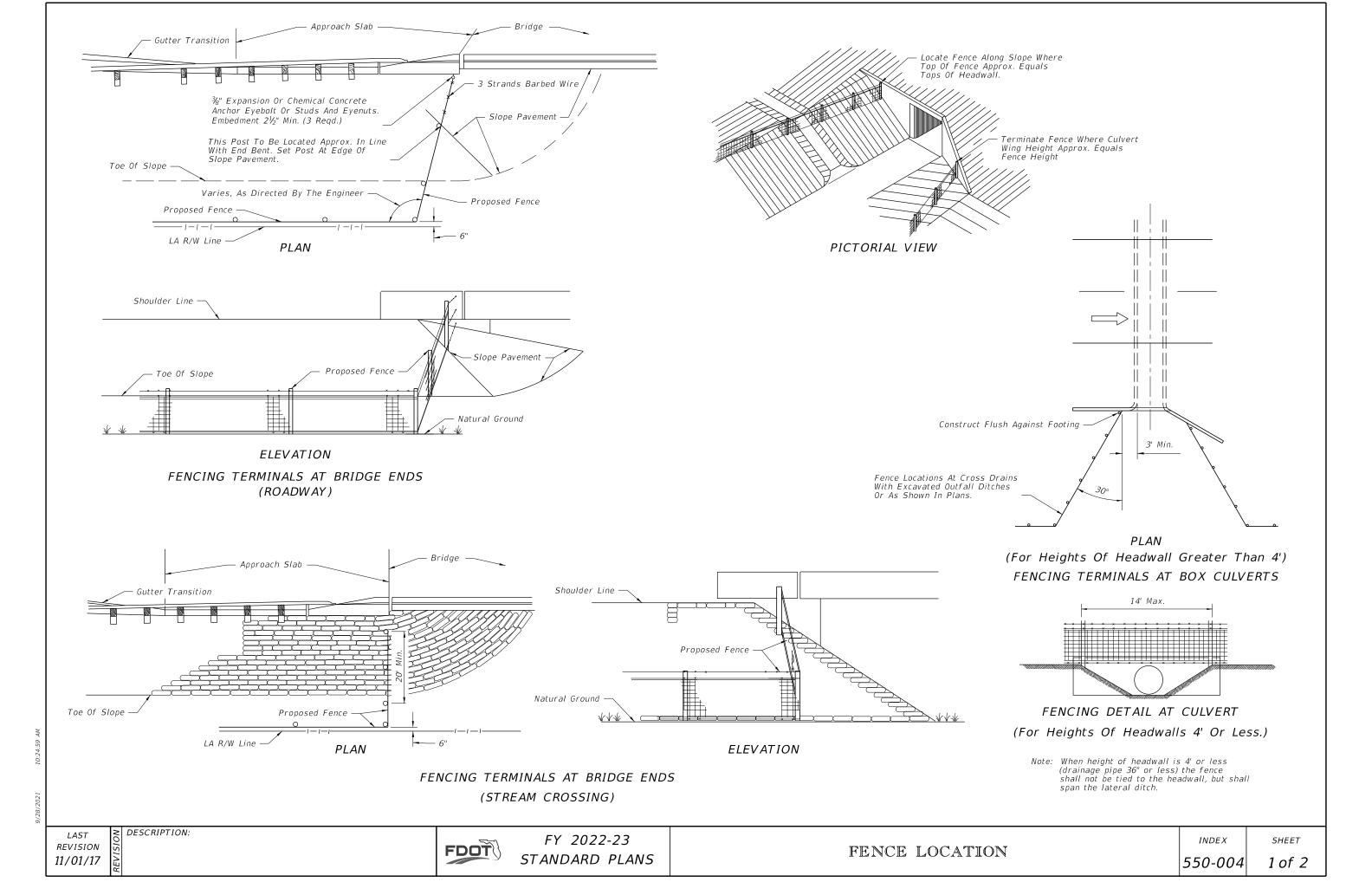
FDOT

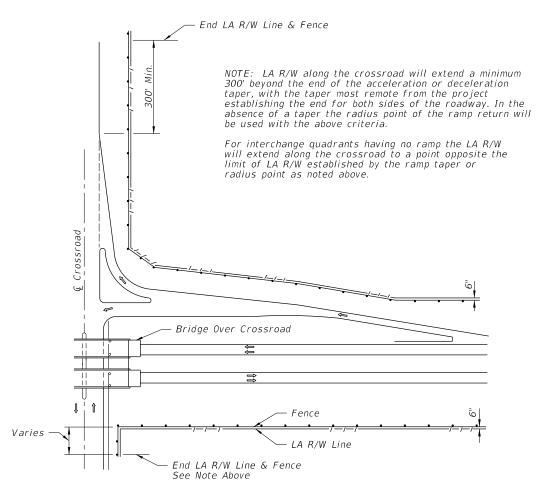
FY 2022-23 STANDARD PLANS

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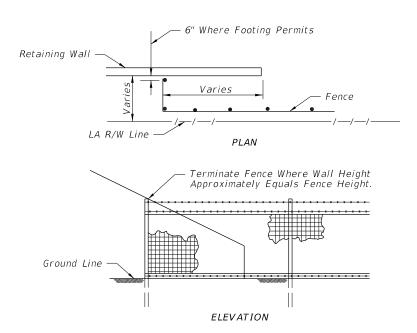
CANTILEVER SLIDE GATE TYPE B FENCE



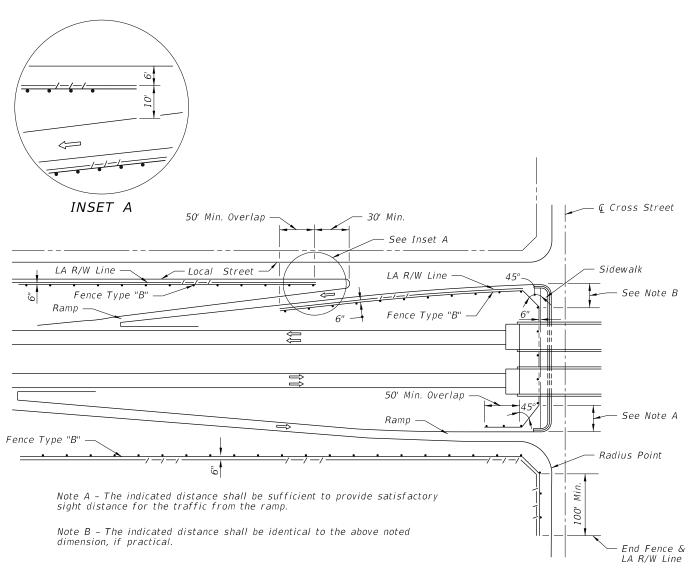


APPLIES TO BRIDGE OVER CROSSROAD AND CROSSROAD OVER FREEWAY (BRIDGE OVER CROSSROAD SHOWN)

FENCING TERMINALS AT RURAL INTERCHANGES



FENCING TERMINALS AT RETAINING WALLS



FENCING TERMINALS AT URBAN INTERCHANGES

DESCRIPTION: LAST **REVISION** 11/01/17

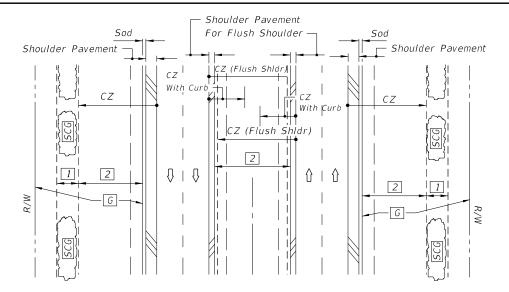
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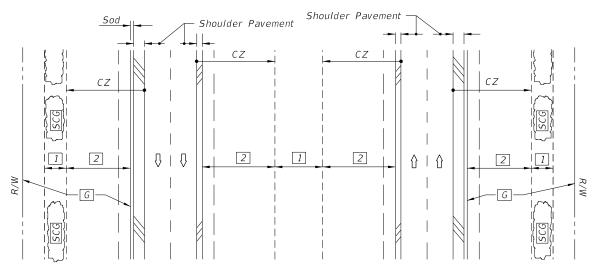
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FENCE LOCATION

INDEX

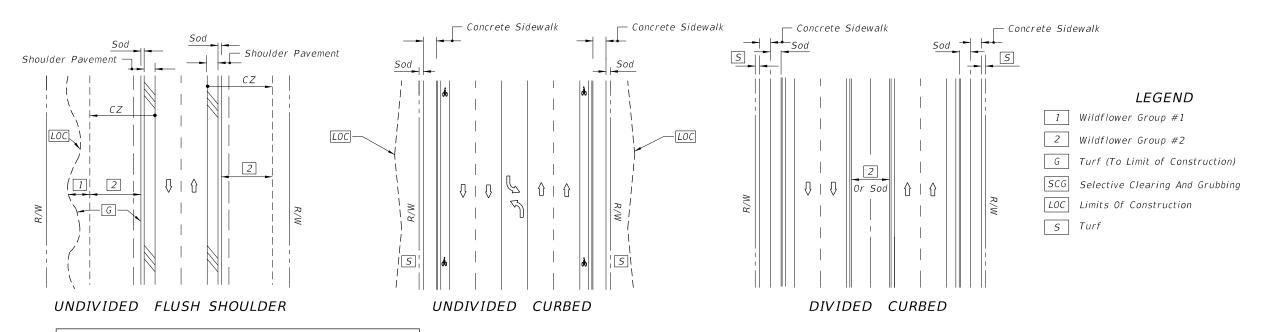
SHEET





DIVIDED NARROW MEDIAN WITH OR WITHOUT CURBED MEDIAN

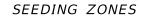
DIVIDED WIDE MEDIAN WITH OR WITHOUT CURBED MEDIAN



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)										
Crimson Clover (Trifolium incarnatum) 15 #2 Group										
#2 Group Annual Phlox (Phlox drummondii)										
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.

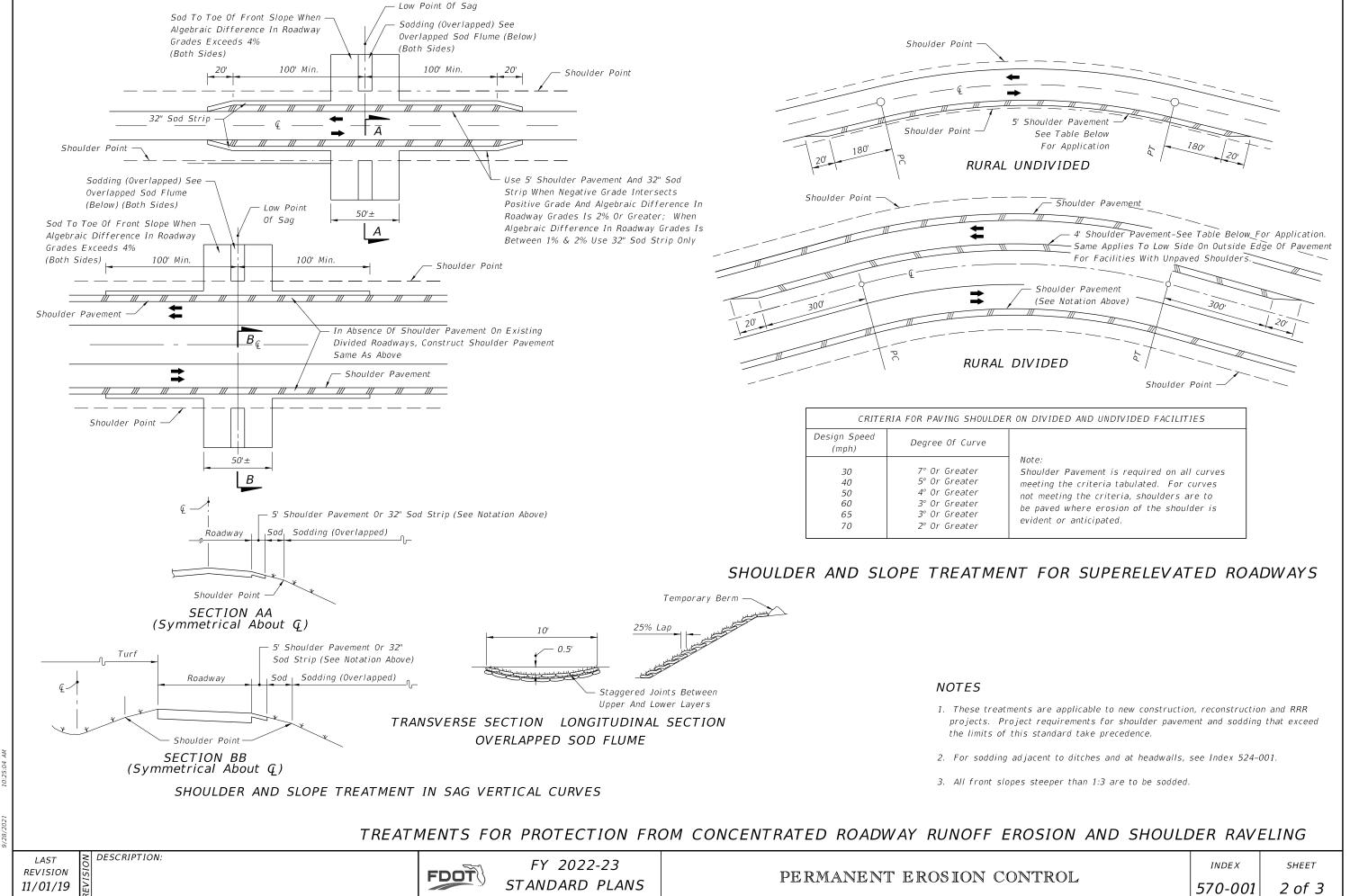


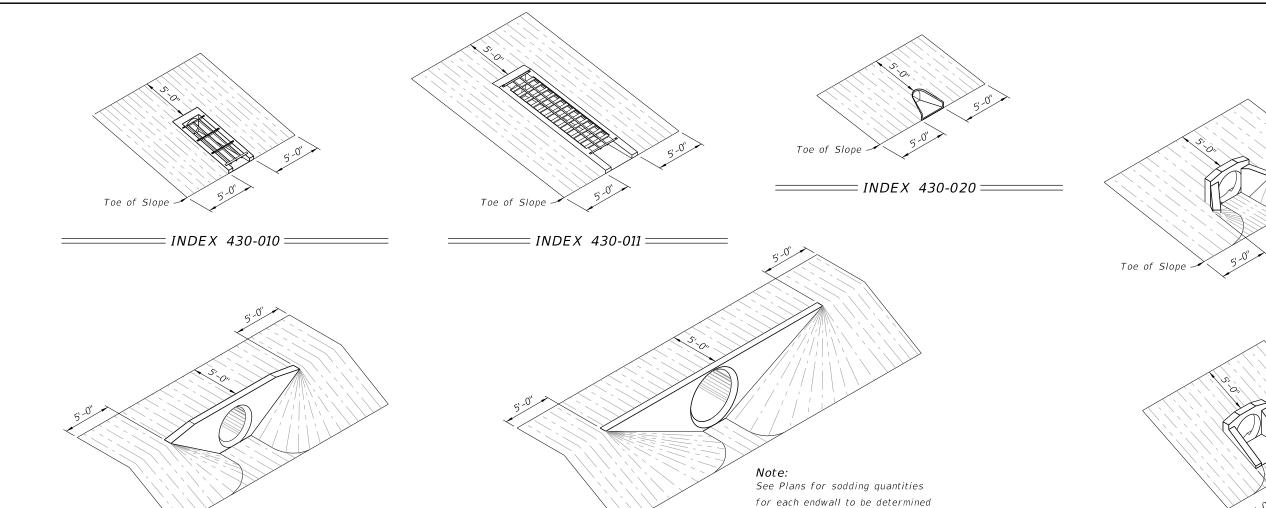


REVISION 11/01/19

DESCRIPTION:

FDOT





	T					TABLE 2: SO	DD (QUA	NTI	TIES		-											
	INDEX 430-010	INI	DEX 4	30-011		INDEX 430-020					IN	DEX	430-0	30					INDEX 430-040				
		SLOPE				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	1:2 1:3 1:4		1:6	
		PIPES			PIPES						PIF	'ES							PIF	PES			
	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																<u> </u>	
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																	
		() Endu	all Wi	th Bai	ffles																		

== INDEX 430-031 Through 430-034 =======

by the designer from tis detail.

REVISION 11/01/19

≥ DESCRIPTION:

Toe of Slope

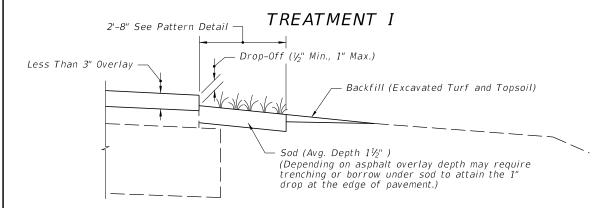
== INDEX 430-030 =

45° WING

U-TYPE

== INDEX 430-040 =

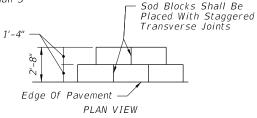
SOD PLACEMENT AT PIPE/CULVERT END TREATMENTS



COMPLETED SHOULDER

CRITERIA FOR USING TREATMENT I

- 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:

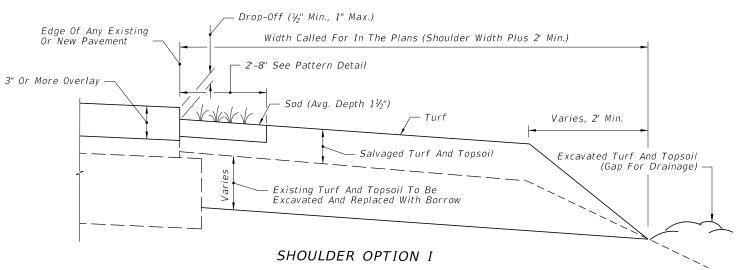
- A. Borrow must meet the requirements for a "Select" material in accordance with Index 120-001 and Specification 120.
- B. Borrow may be used in lieu of excavated turf and topsoil when economically feasible. There will be no additional payment for substituting borrow for excavated turf and topsoil.
- 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.

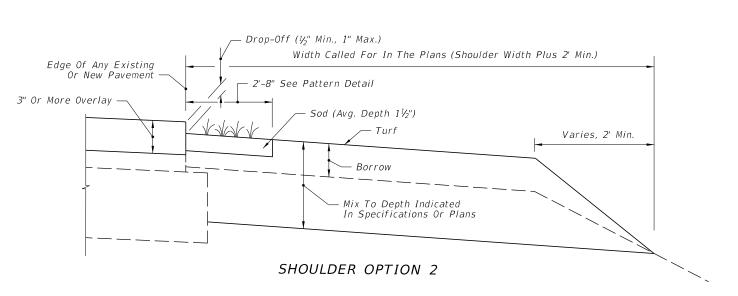
5. Turf Establishment:

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

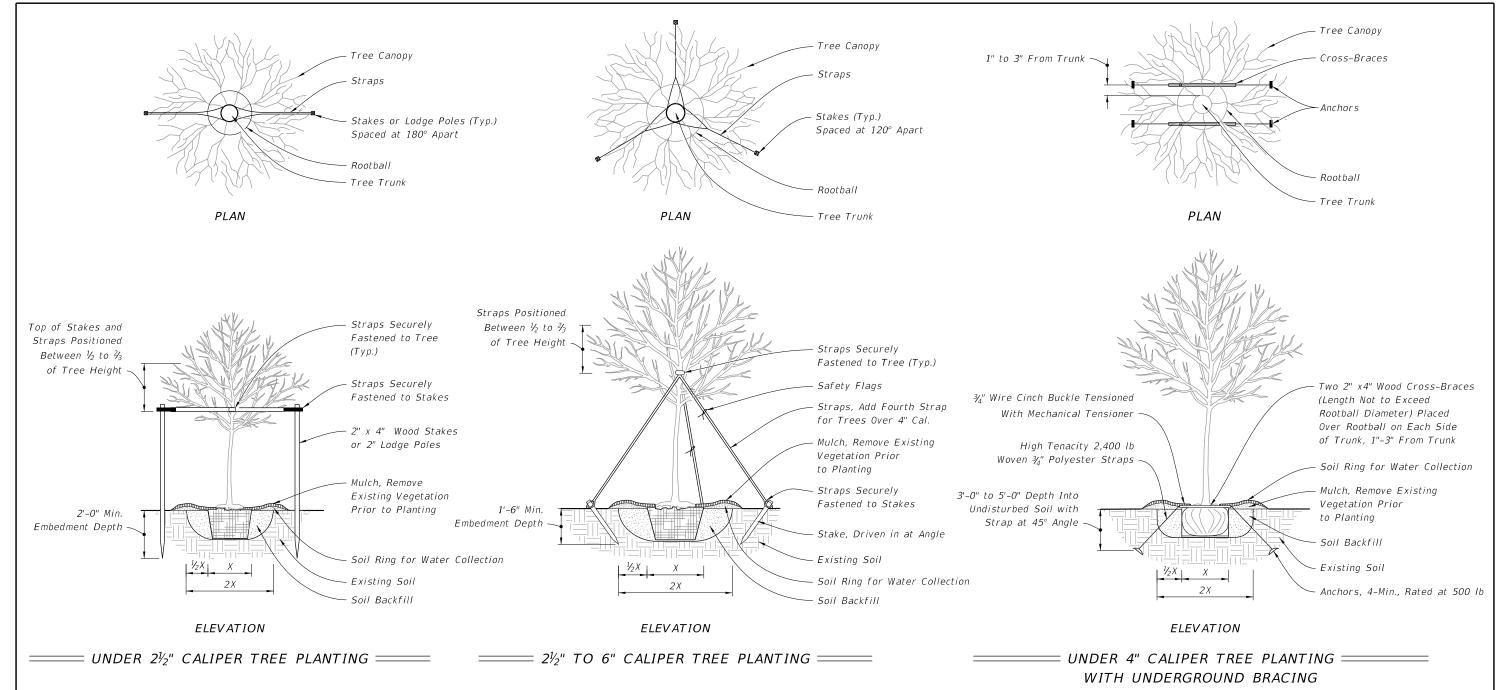
Project

- 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.

LAST **REVISION** 11/01/18

FDOT



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
- 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 grown in containers.
- 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
- 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 in the tree bark.
- 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.

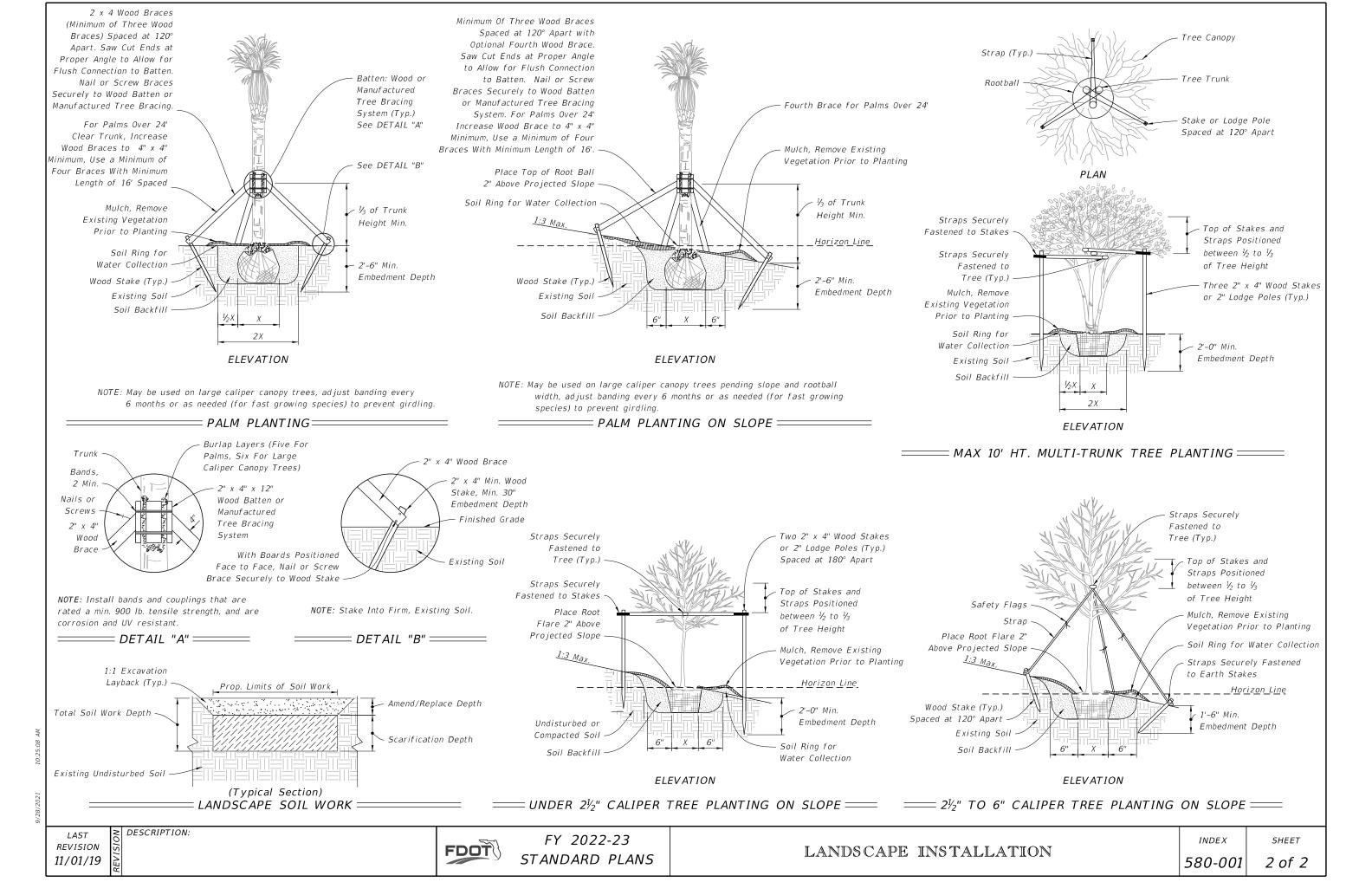
REVISION 11/01/19

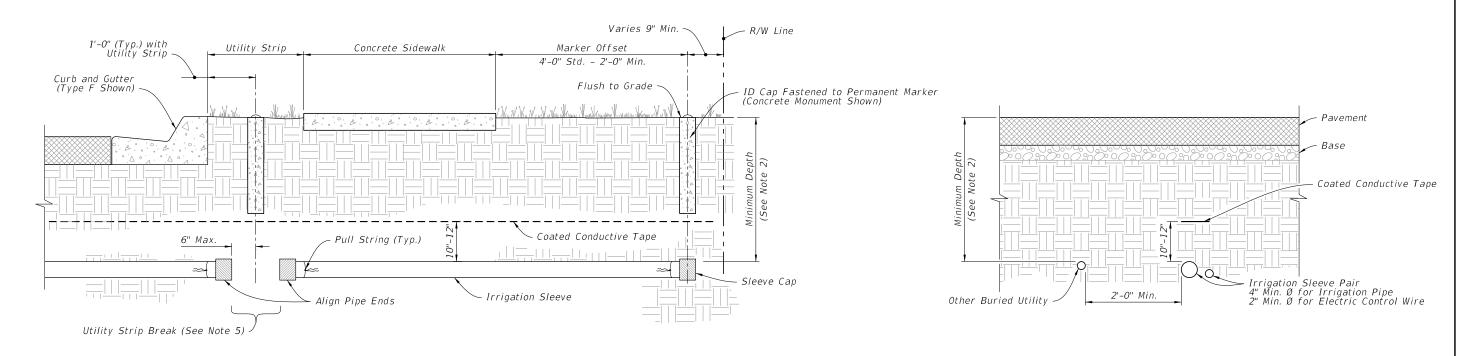
FY 2022-23 STANDARD PLANS

LANDSCAPE INSTALLATION

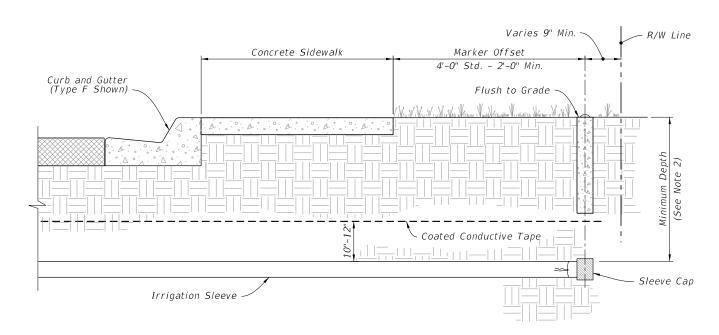
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= ROADWAY WITH UTILITY STRIP =

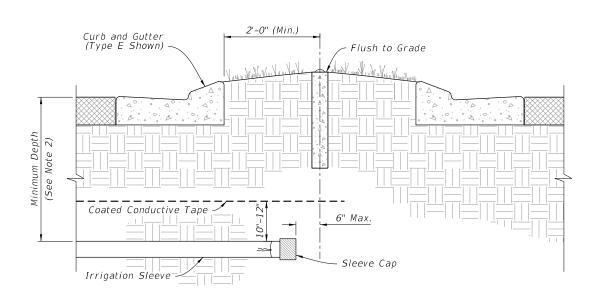


ROADWAY WITHOUT UTILITY STRIP =

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

FDOT

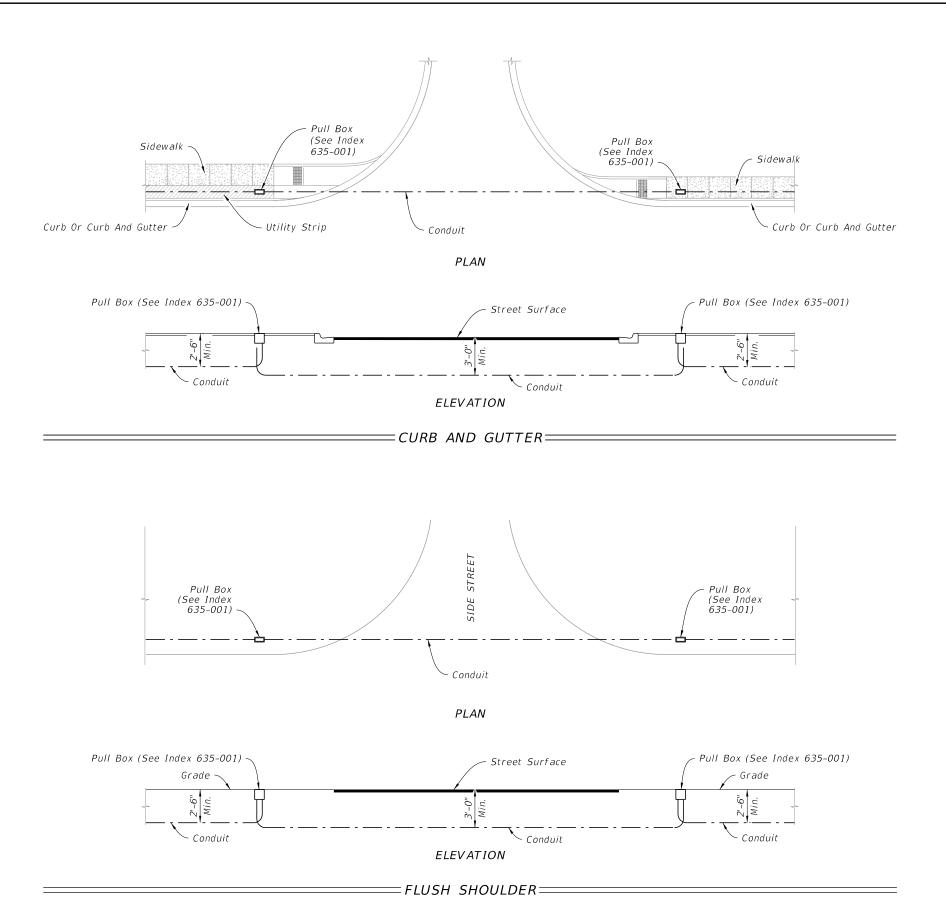
FY 2022-23 STANDARD PLANS INDEX

SHEET 1 of 1

GENERAL NOTES:

- 1. Install conduit in accordance with Specification 630.
- 2. 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.

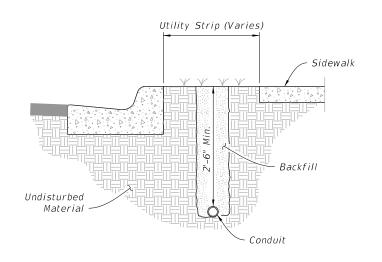




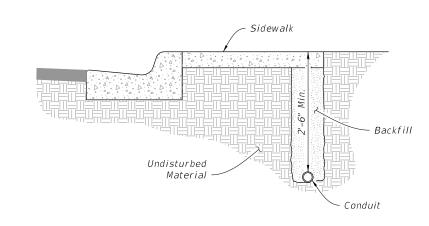
= ROUTE MARKER DETAIL ====

REVISION

DESCRIPTION:



= PLACEMENT WITHIN THE UTILITY STRIP $=\!=\!=\!=\!=$



3'-0" Min. or as Directed by the Engineer

Backfill

Conduit(s)

See Vertical Clearance Note

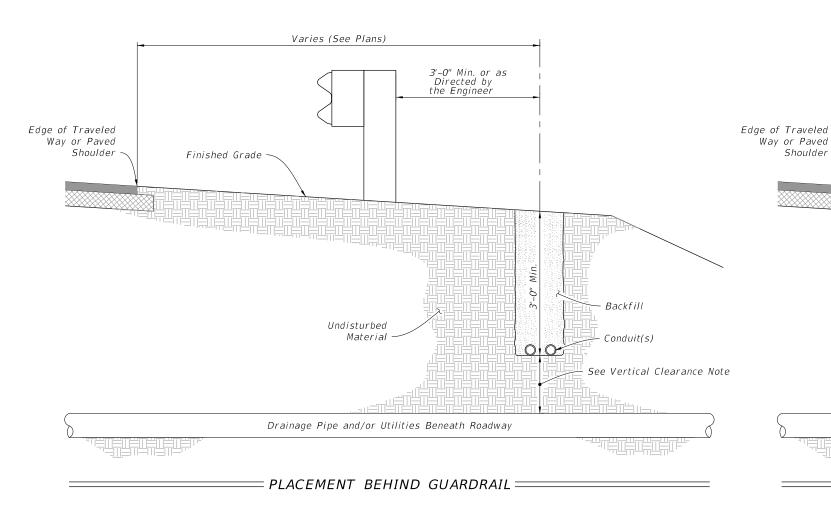
= PLACEMENT UNDER SIDEWALK ===

Varies (See Plans)

Finished Grade

Undisturbed

Material



:PLACEMENT IN FRONT OF GUARDRAIL=

Drainage Pipe and/or Utilities Beneath Roadway

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.

Shoulder

REVISION 11/01/18

DESCRIPTION:

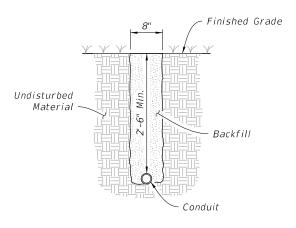
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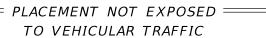
FY 2022-23 STANDARD PLANS

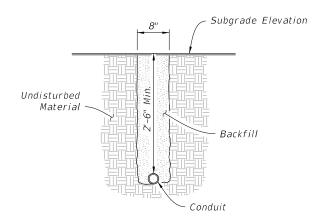
CONDUIT INSTALLATION DETAILS

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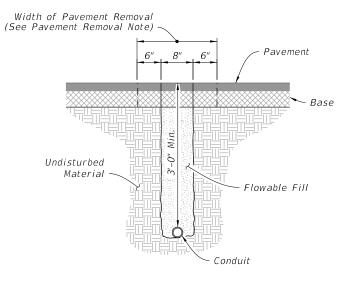




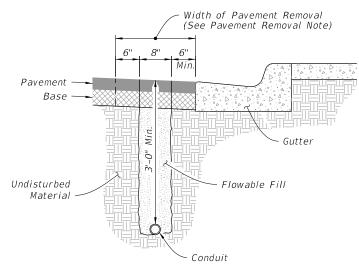
= PLACEMENT UNDER NEW ROADWAY ==PRIOR TO INSTALLATION OF BASE AND PAVEMENT

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.



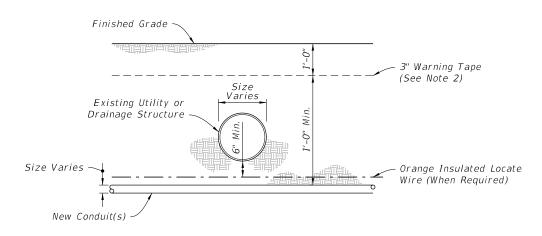
=PLACEMENT UNDER EXISTING PAVEMENT=NOT ADJACENT TO GUTTER



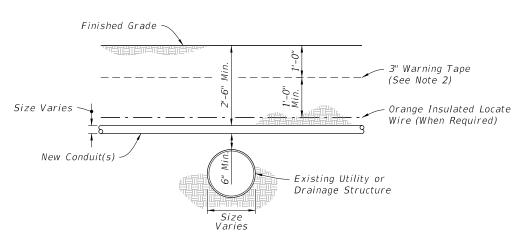
PLACEMENT UNDER EXISTING PAVEMENT ADJACENT TO GUTTER

REVISION 11/01/18

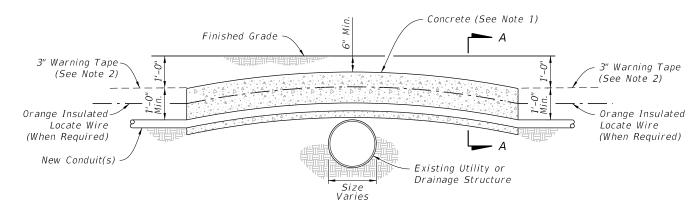
DESCRIPTION:



BELOW EXISTING

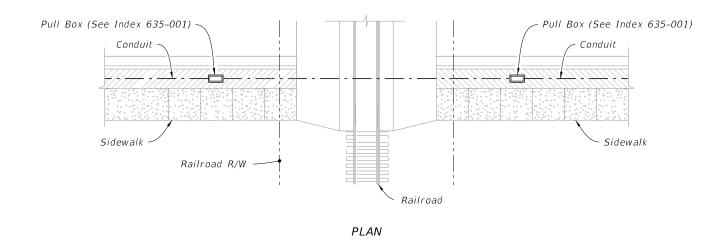


ABOVE EXISTING - DEPTH 2'-6" OR GREATER



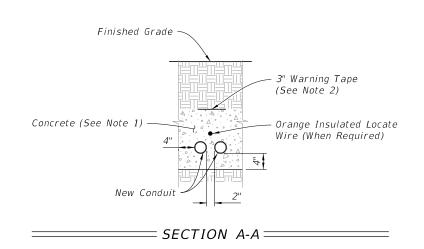
ABOVE EXISTING - DEPTH 2'-6" OR LESS

PLACEMENT ACROSS EXISTING DRAINAGE PIPES OR UTILITIES



Railroad R/W Pull Box (See Index 635-001) Pull Box (See Index 635-001) Railroad Conduit Conduit

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.

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DESCRIPTION:

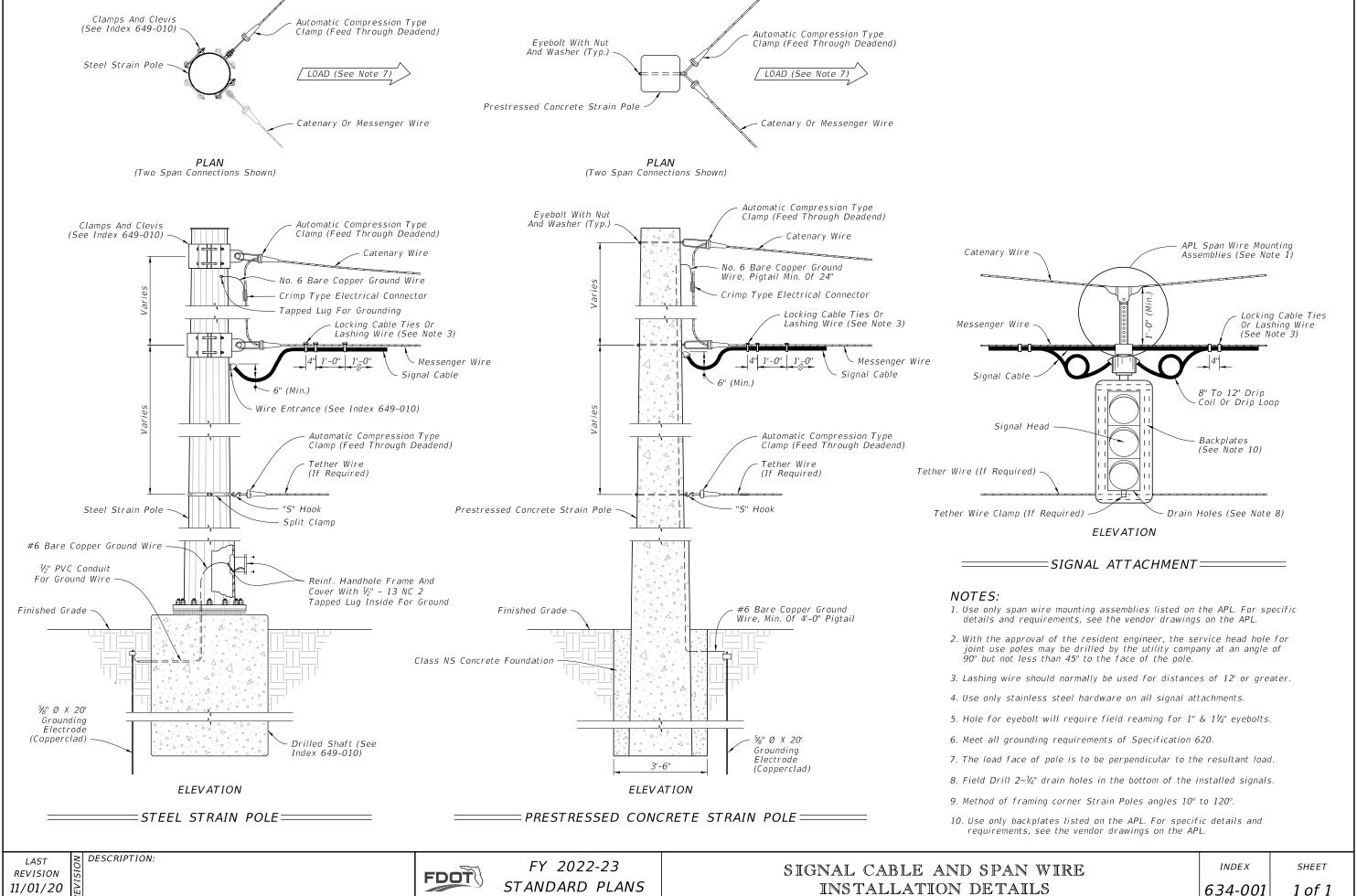


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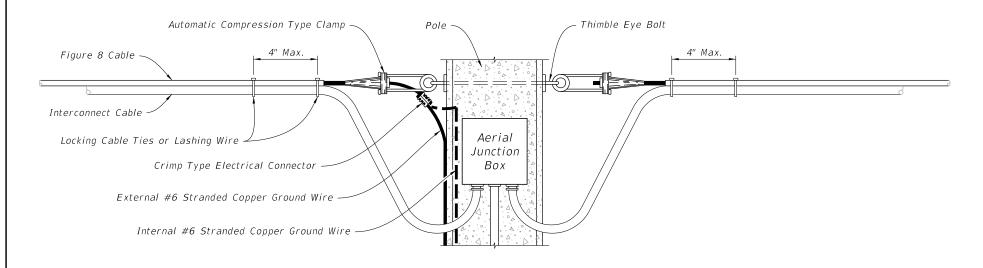
630-001 4 of 4



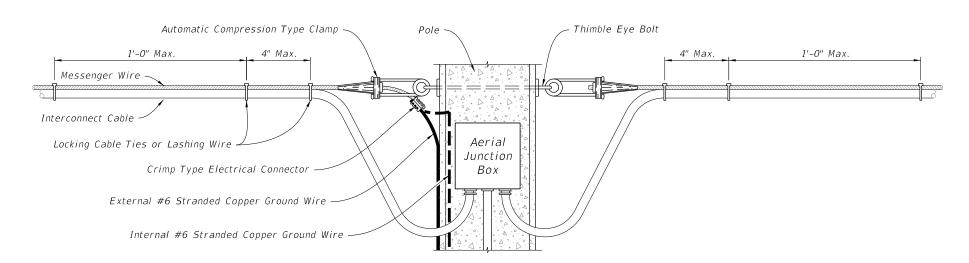
STANDARD PLANS

INSTALLATION DETAILS

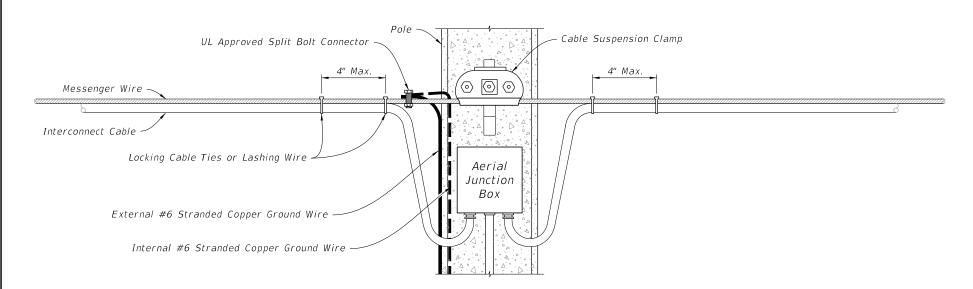
1 of 1



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 ==

LAST **REVISION** 11/01/18

DESCRIPTION:

FDOT

FY 2022-23 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.

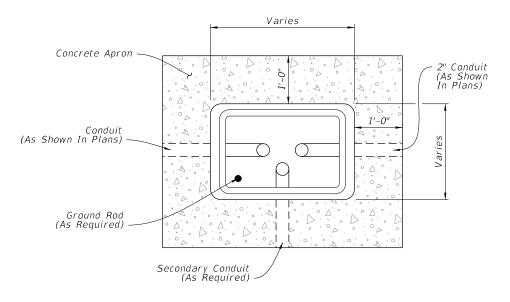
5. When installing Figure 8 interconnect cable, only use locking cable ties. 6. Lashing wire should normally be used for distances of 12' or greater.

3. When utilizing the external ground wire, install a piece of 1/2"

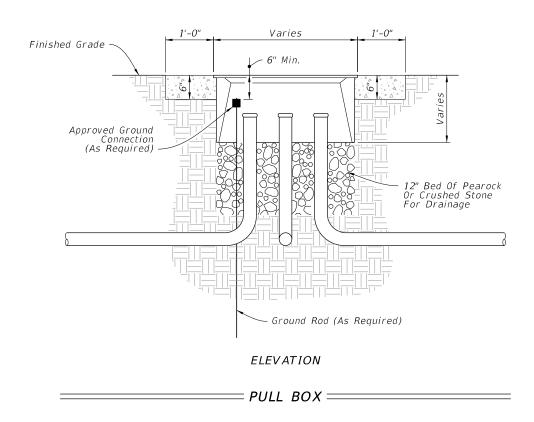
wire connecting the messenger wire to the ground rod.

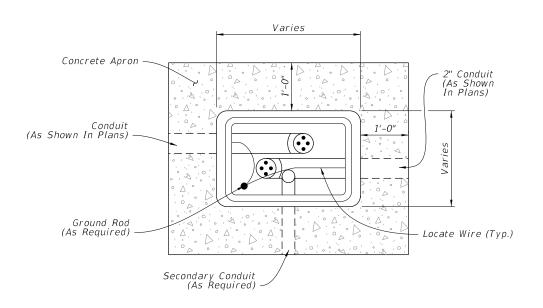
INDEX |6*34-002*|

SHEET 1 of 1

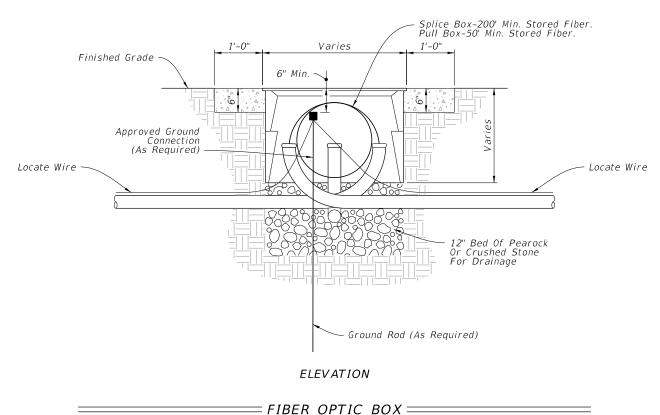


PLAN





PLAN



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.

LAST **REVISION** 11/01/18

DESCRIPTION:

FDOT

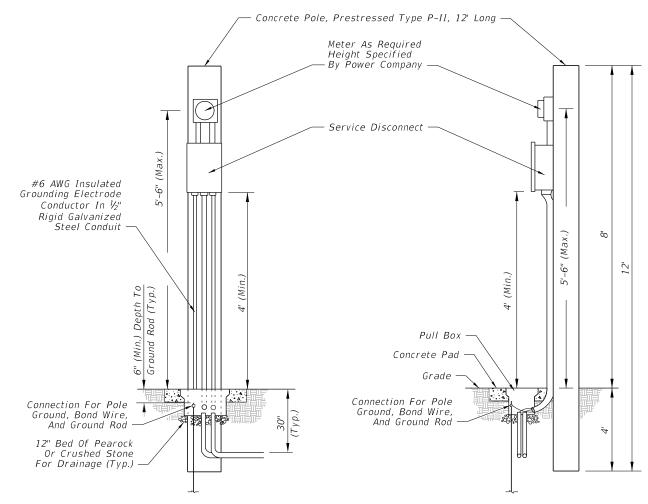
FY 2022-23 STANDARD PLANS

Clevis With Insulators Conductor Weatherhead Height As Required By Power Company Meter As Required Height Specified By Power Company Service Disconnect #6 AWG Insulated Grounding Electrode (Max.) Conductor In 1/2" Rigid Galvanized Steel Conduit 2,-6" Pull Box Concrete Pad Grade 12" Bed Of Pearock Or Crushed Stone For Drainage (Typ.) U.L. Approved Ground Rod, ⅓" Dia. 40' Long Copper Clad (All Service Points)

Concrete Pole Prestressed Type P-II, 36' Long -

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.



DETAIL B UNDERGROUND FEED

DESCRIPTION: **REVISION**

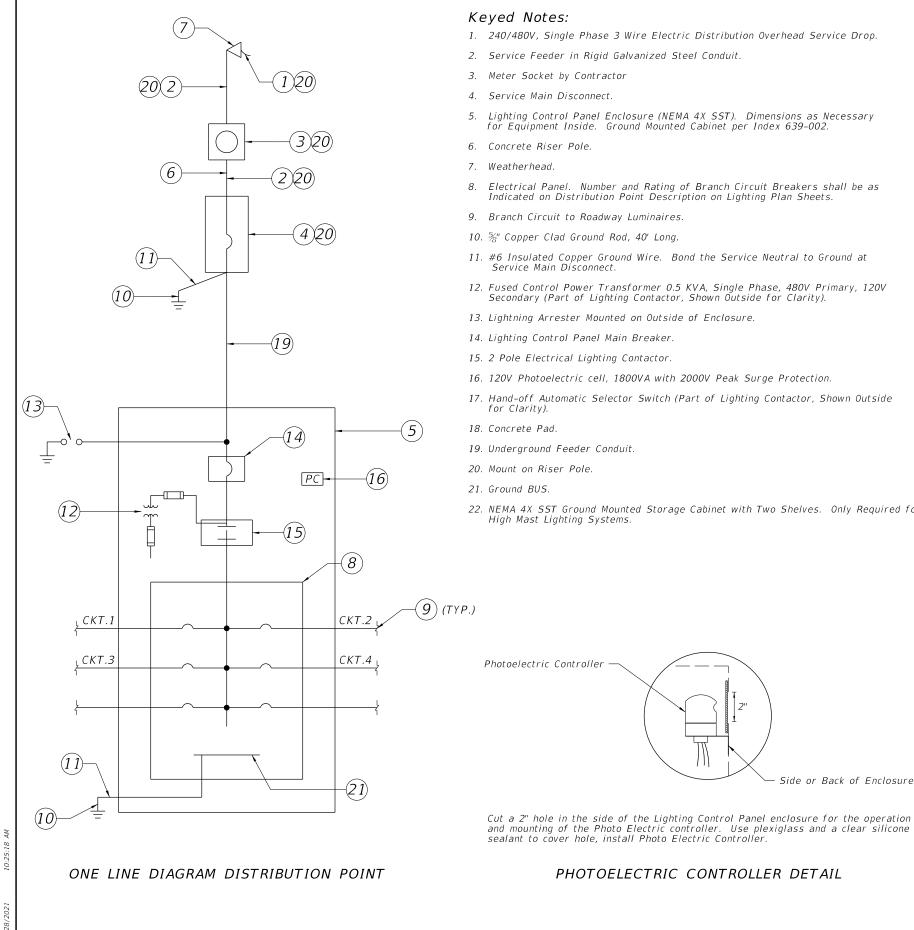
11/01/17

DETAIL A

AERIAL FEED

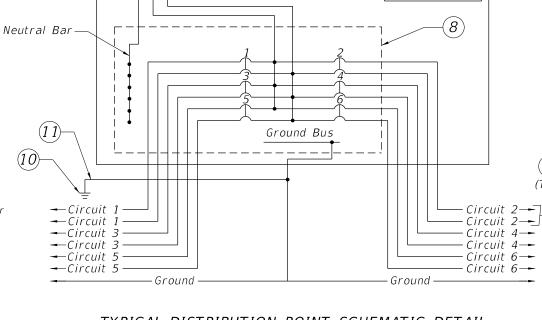
FY 2022-23 STANDARD PLANS INDEX

SHEET

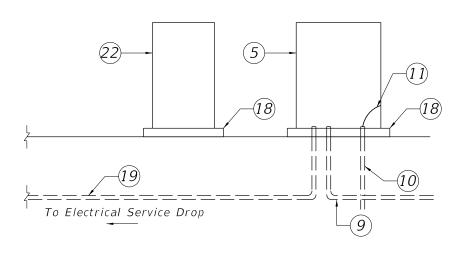


Keyed Notes:

- 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.
- 8. 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. %" 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
- 18. Concrete Pad.
- 19. Underground Feeder Conduit.
- 20. Mount on Riser Pole.
- 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 2022-23 STANDARD PLANS

SERVICE POINT DETAILS

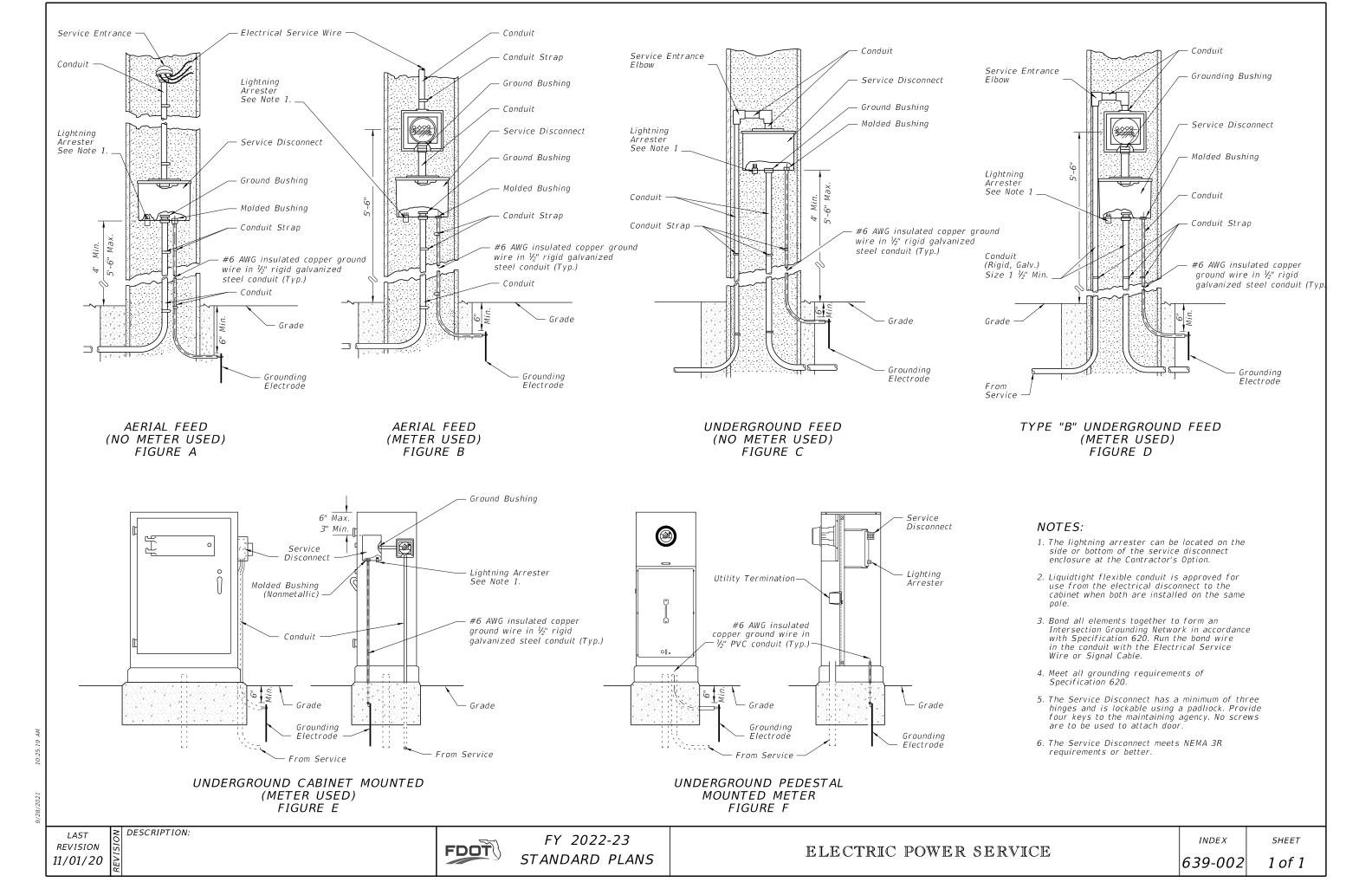
(5)

INDEX 639-001

(17)

SHEET

(TYP.)



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 Special 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 Round headed, chrome plated D.Screws:

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)

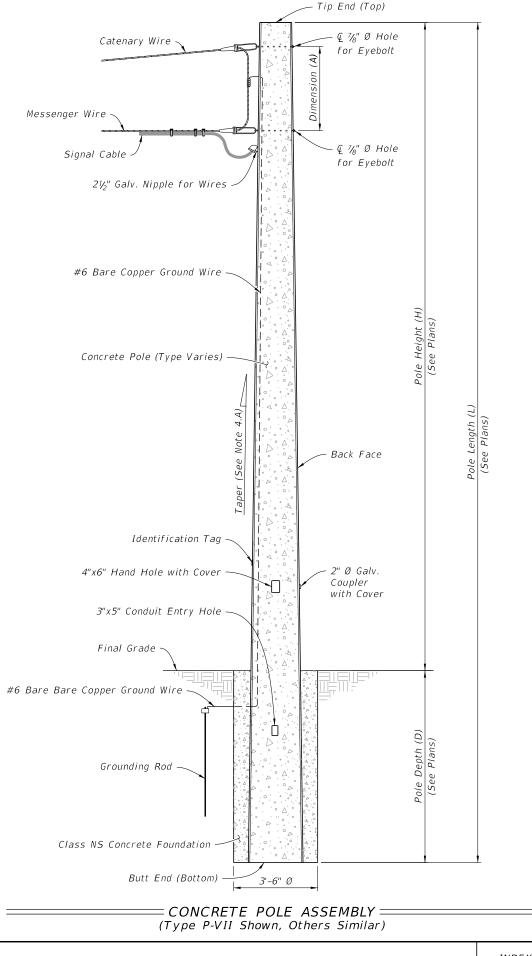
5. Support Points:

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	Pole - Type P-III
6	Strain Pole – Type P–IV
7	Strain Pole – Type P–V
8	Strain Pole – Type P–VI
9	Strain Pole – Type P–VII
10	Strain Pole - Type P-VIII



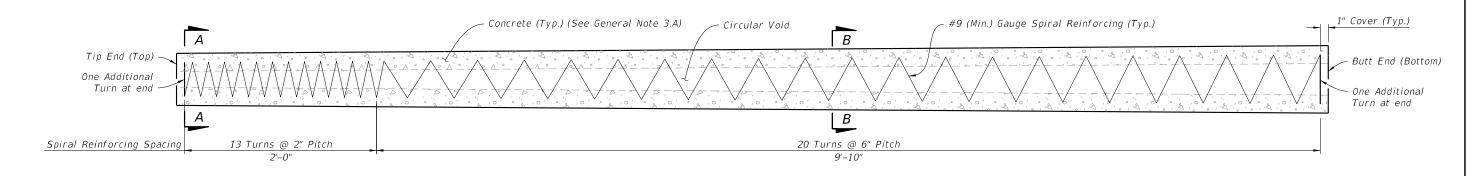
REVISION 11/01/21

DESCRIPTION:

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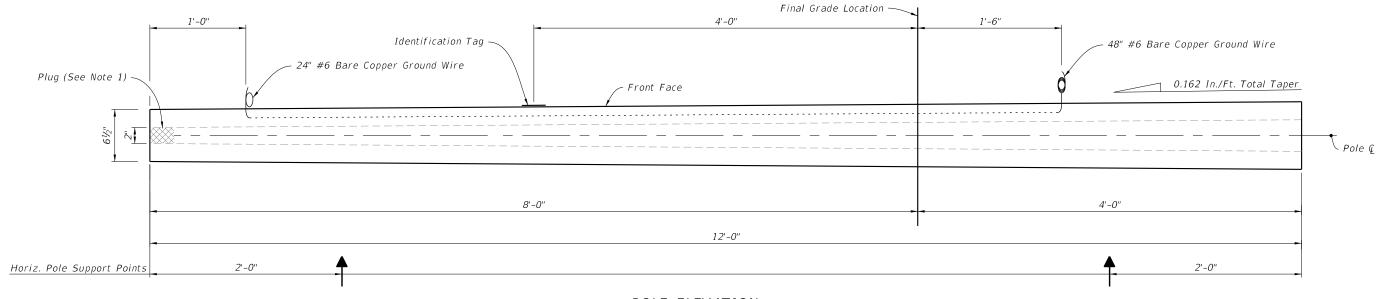
FY 2022-23 STANDARD PLANS

INDEX 641-010 SHEET



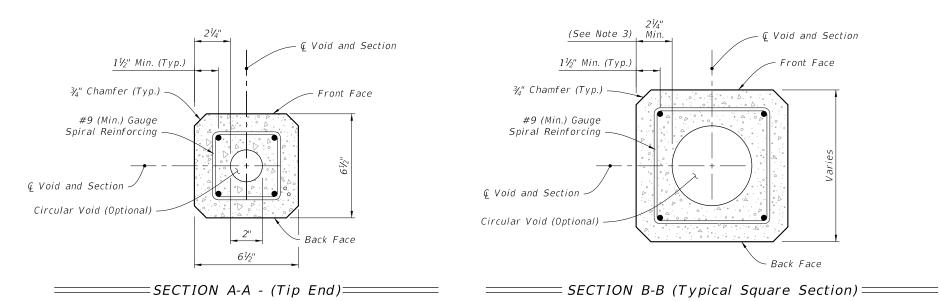
SPIRAL REINFORCING ELEVATION

(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 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 11/01/21

DESCRIPTION:

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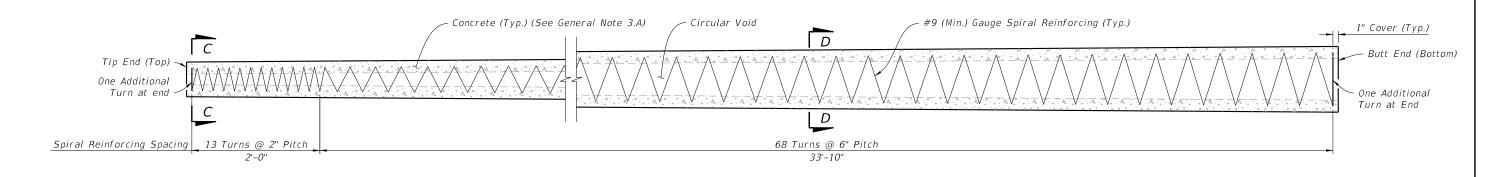
FY 2022-23 STANDARD PLANS

CONCRETE POLES

INDEX

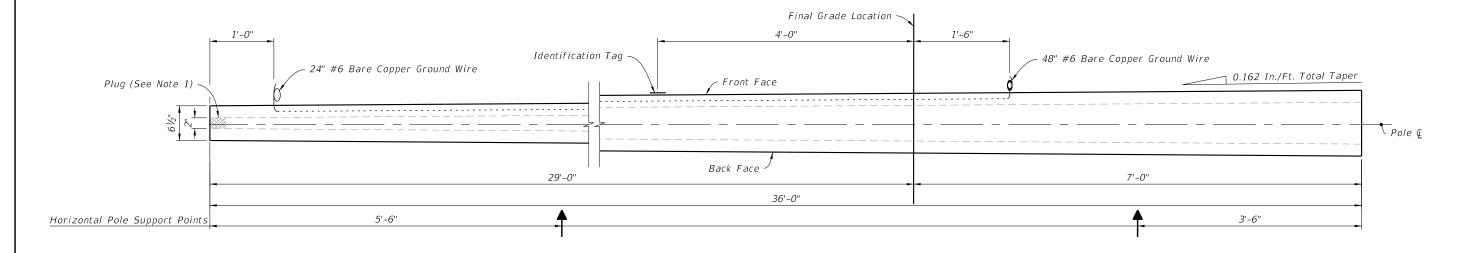
SHEET

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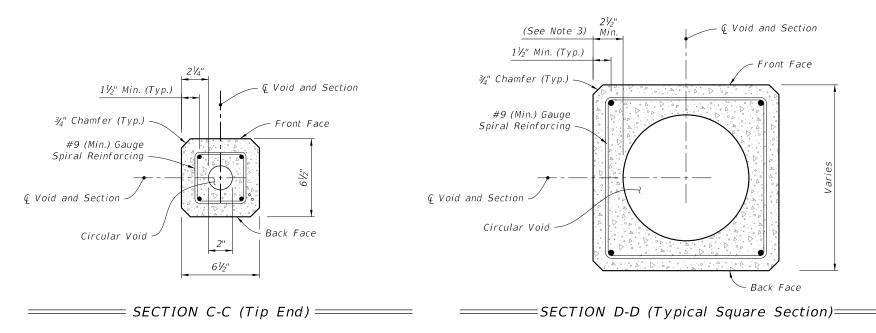
SPIRAL REINFORCING ELEVATION

(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 2½" to 3½" 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.)

LAST REVISION 11/01/21

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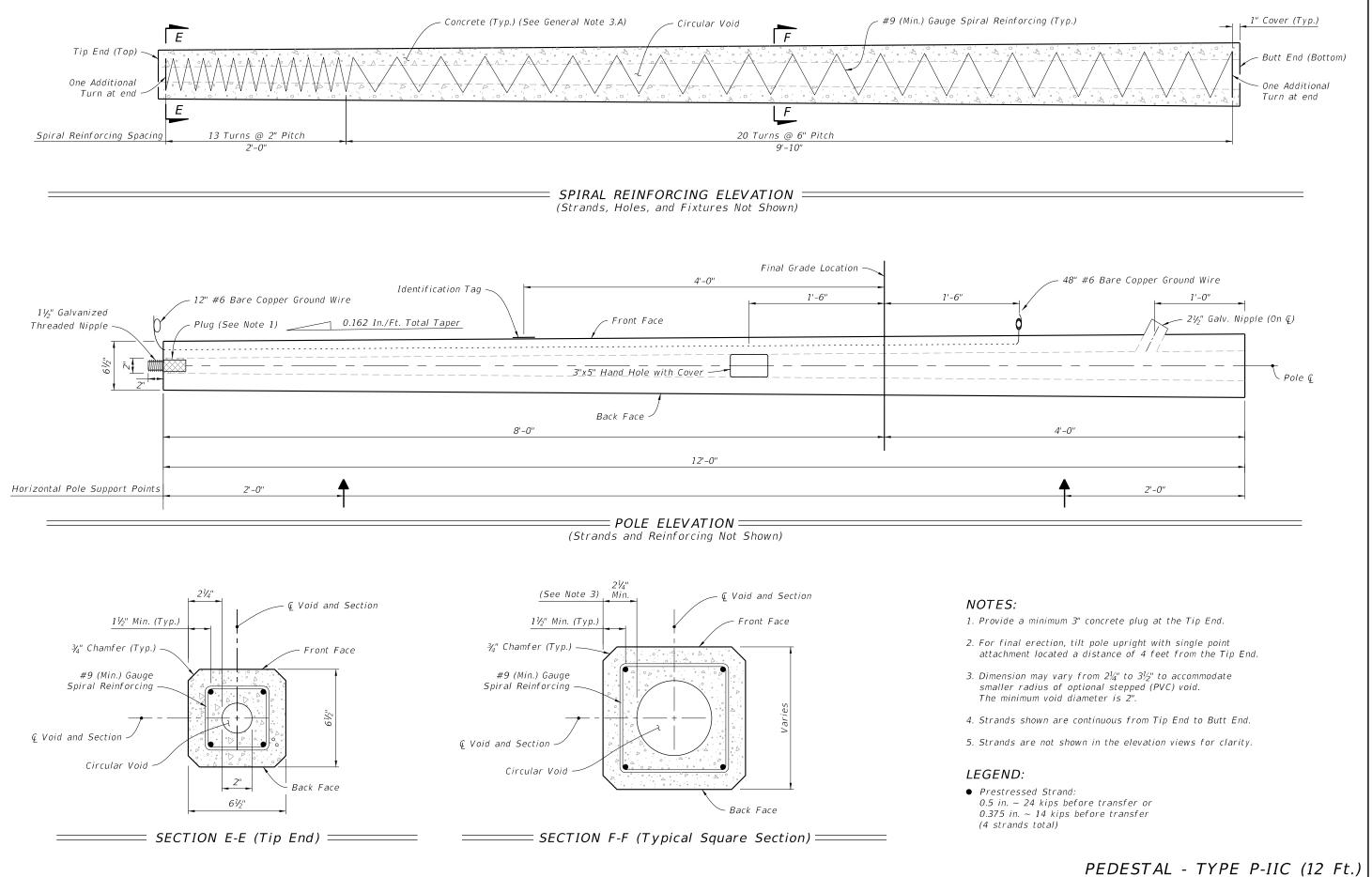
FY 2022-23 STANDARD PLANS

CONCRETE POLES

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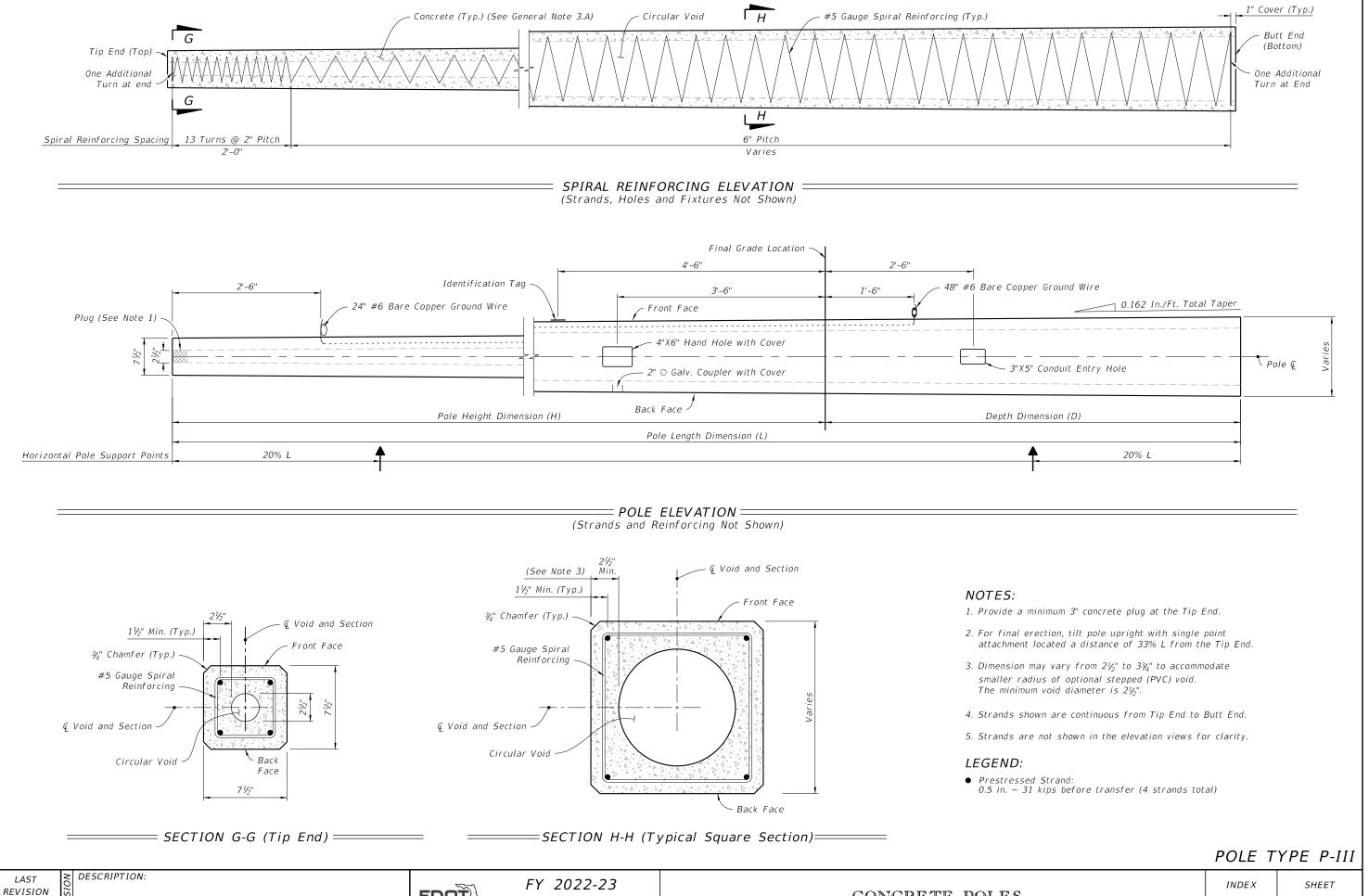
REVISION 11/01/21

DESCRIPTION:

FY 2022-23 FDOT STANDARD PLANS

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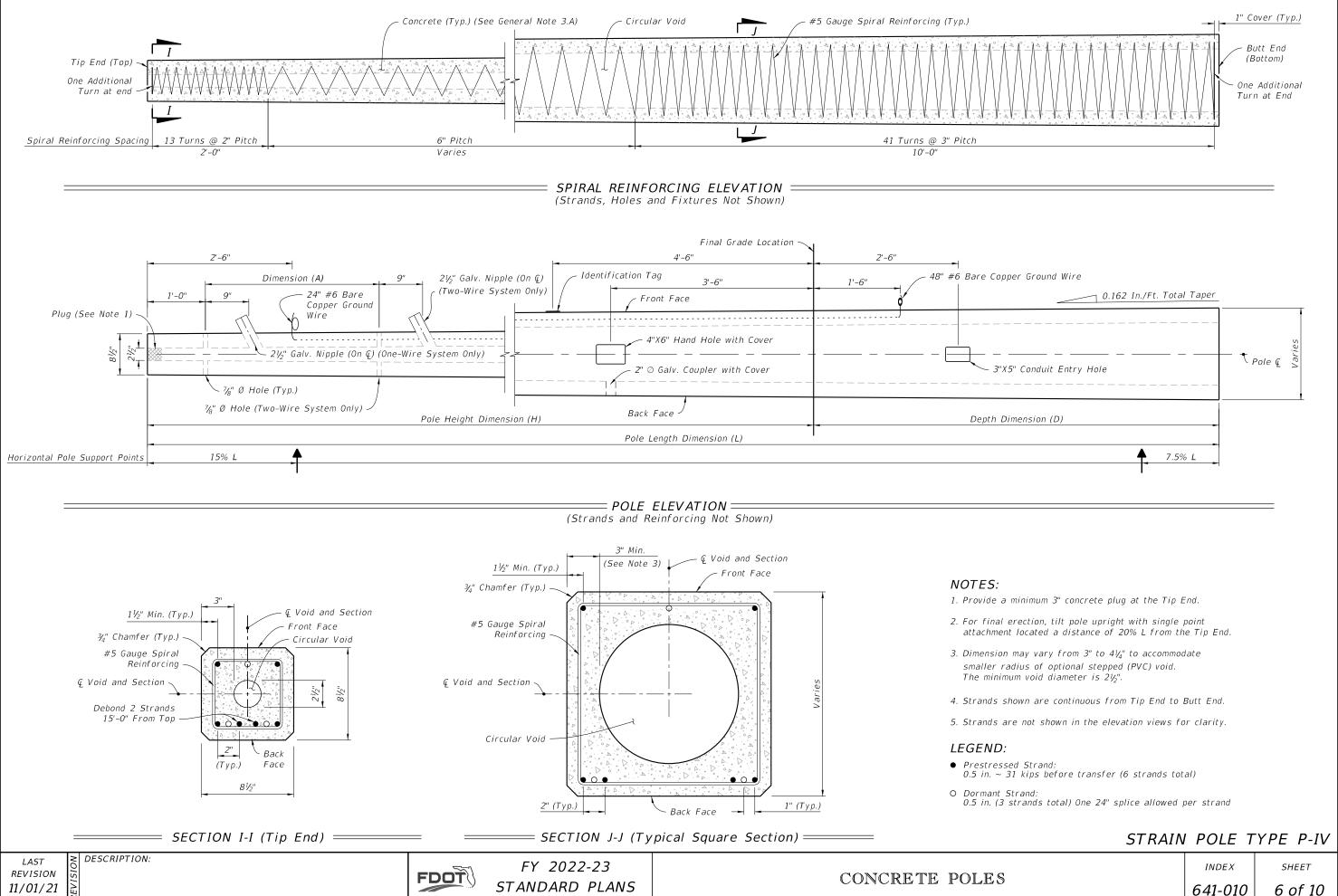
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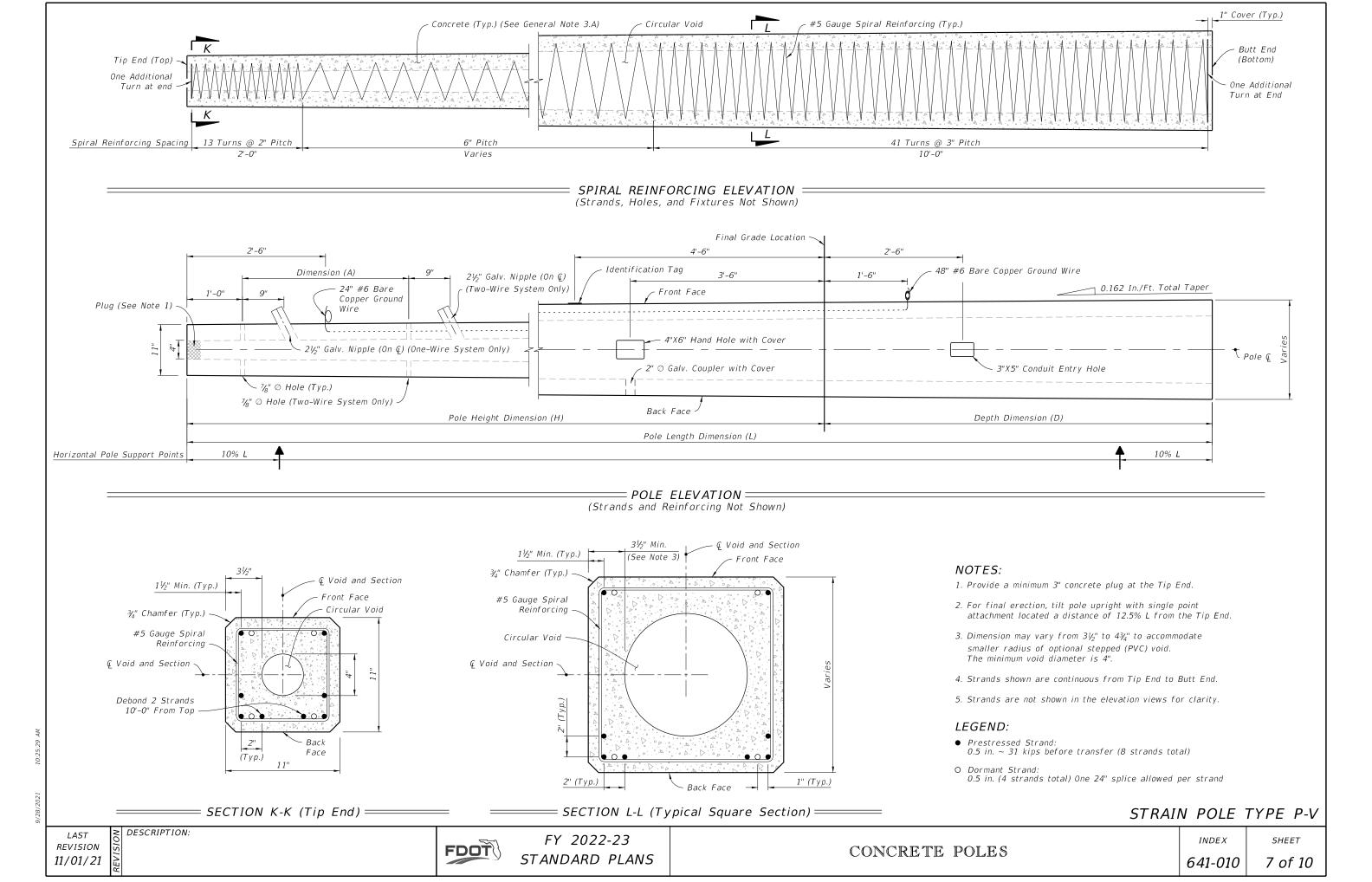
STANDARD PLANS

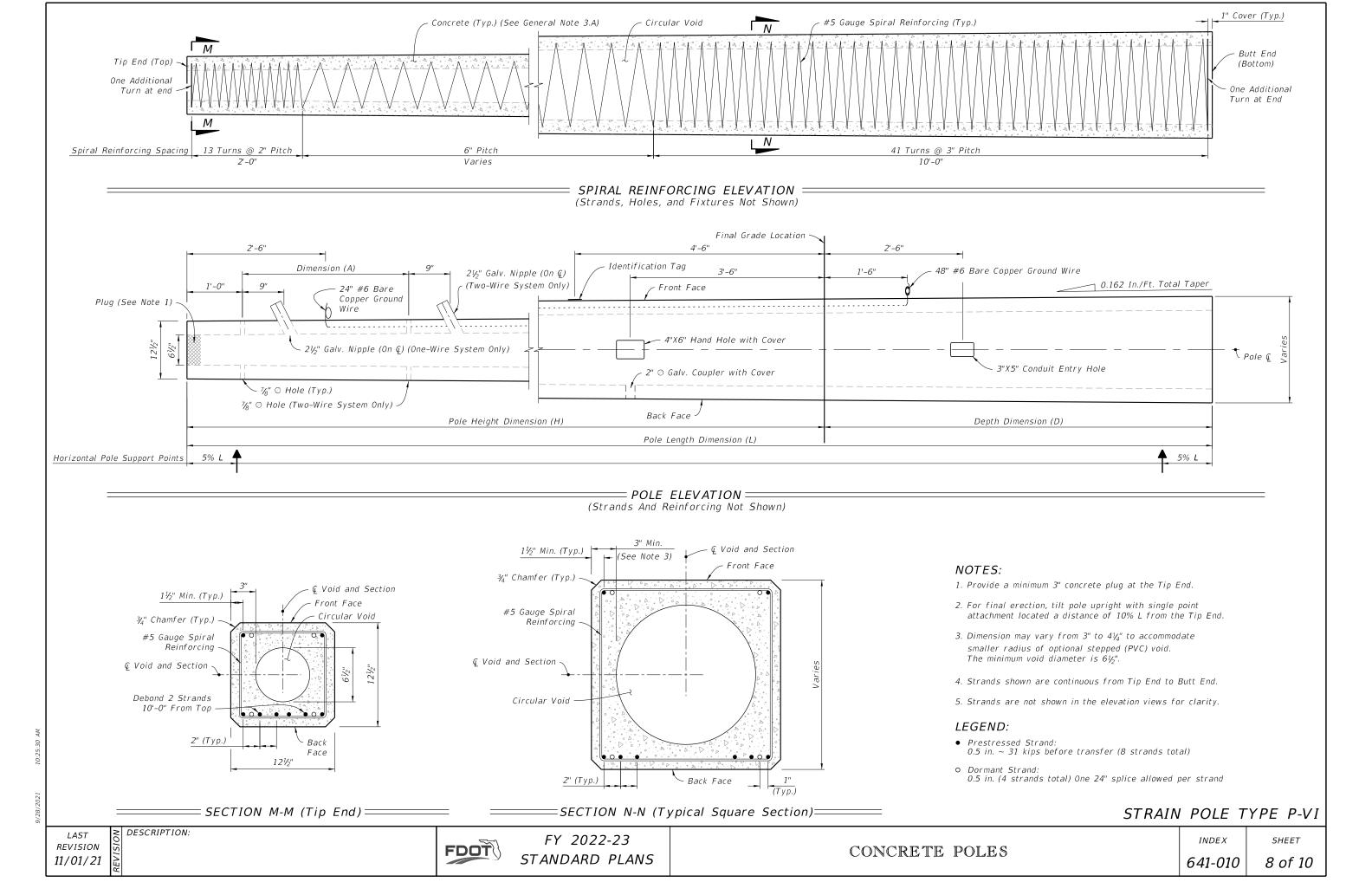
CONCRETE POLES

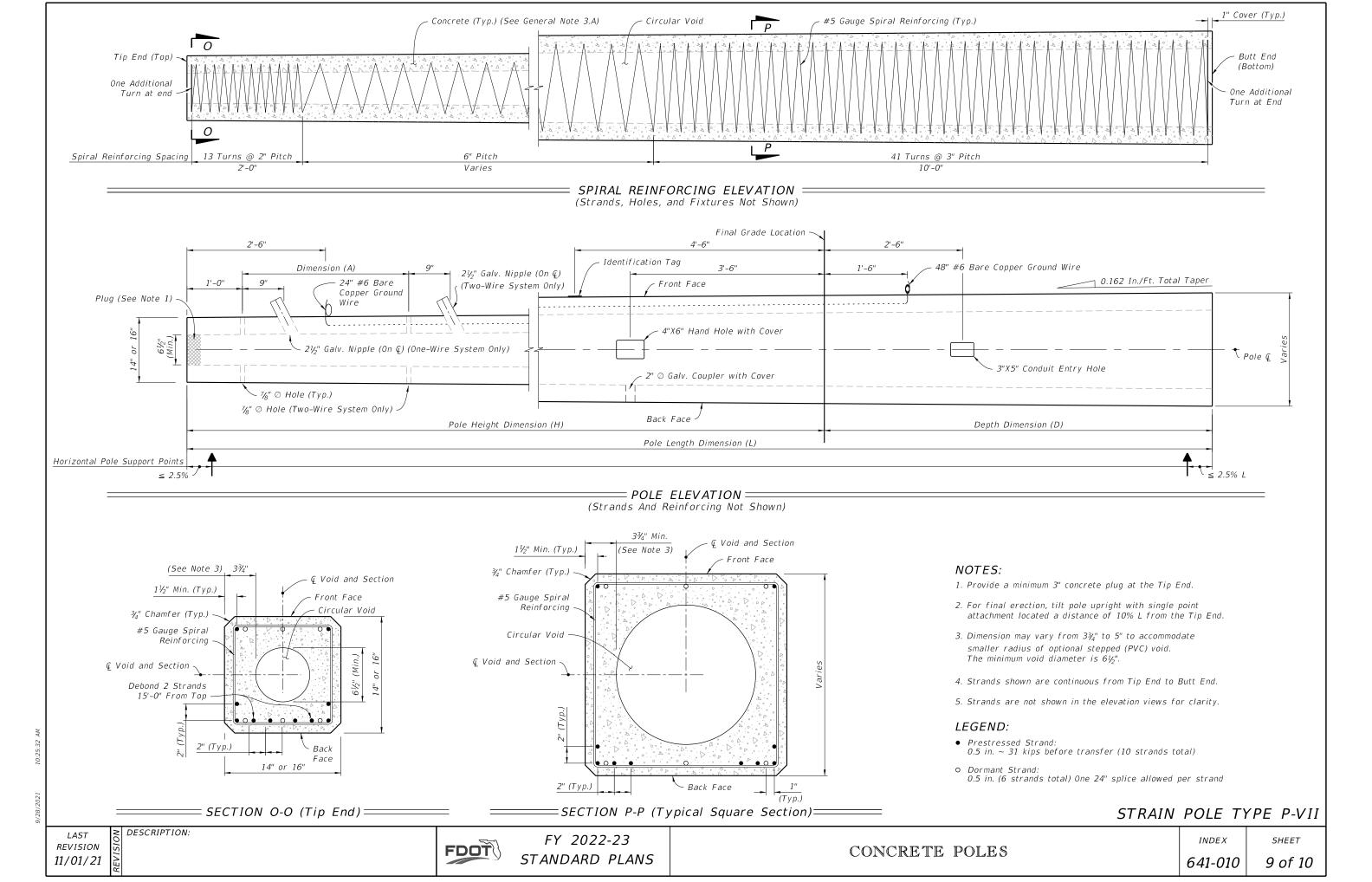
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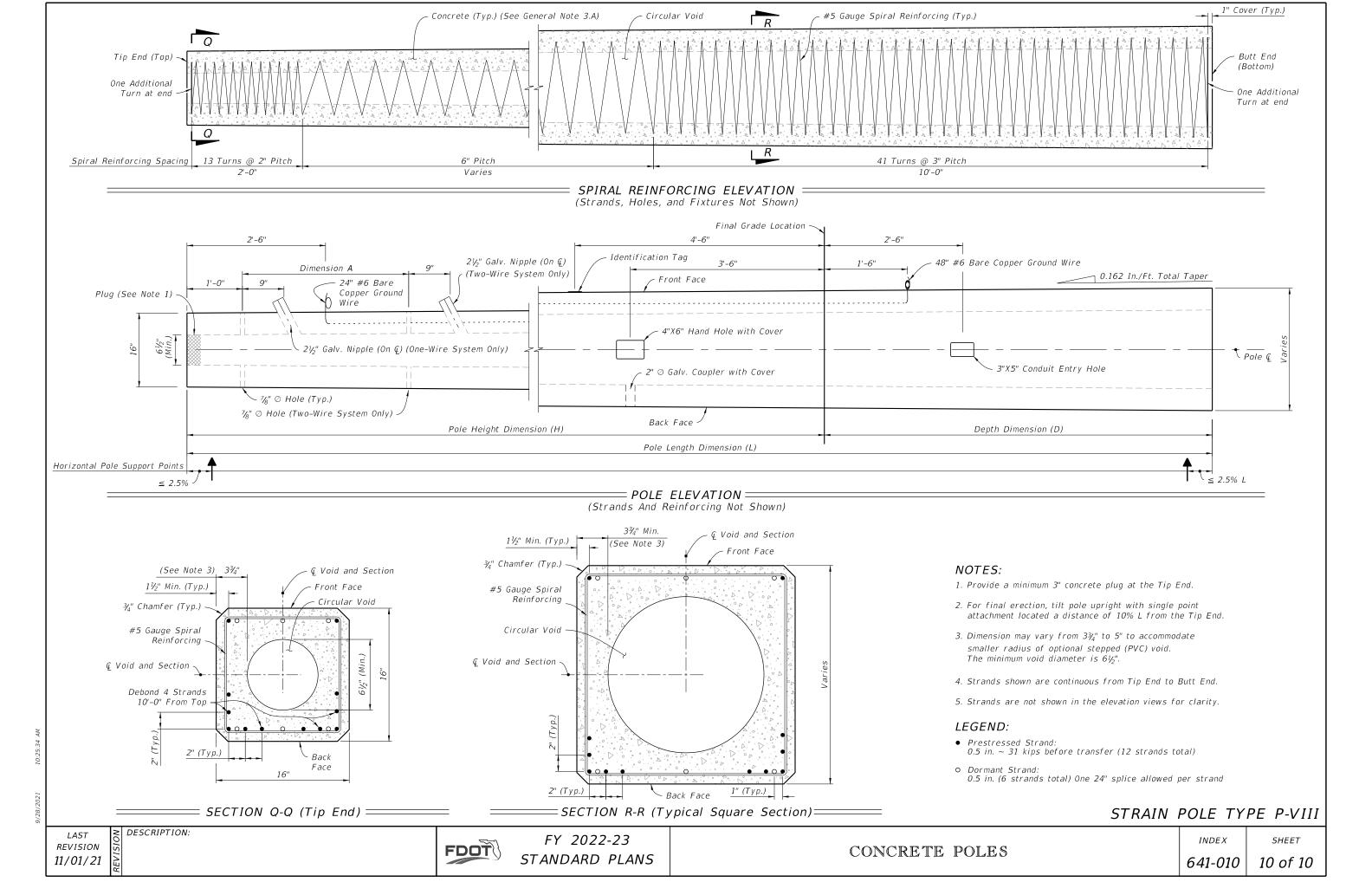
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GENERAL NOTES:

- 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 details for Pull Boxes.

5. 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

6. 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".

7. Pole Installation:

- A. Install the Pole plumb.
- B. Install Pole with the handhole located away from approaching traffic.

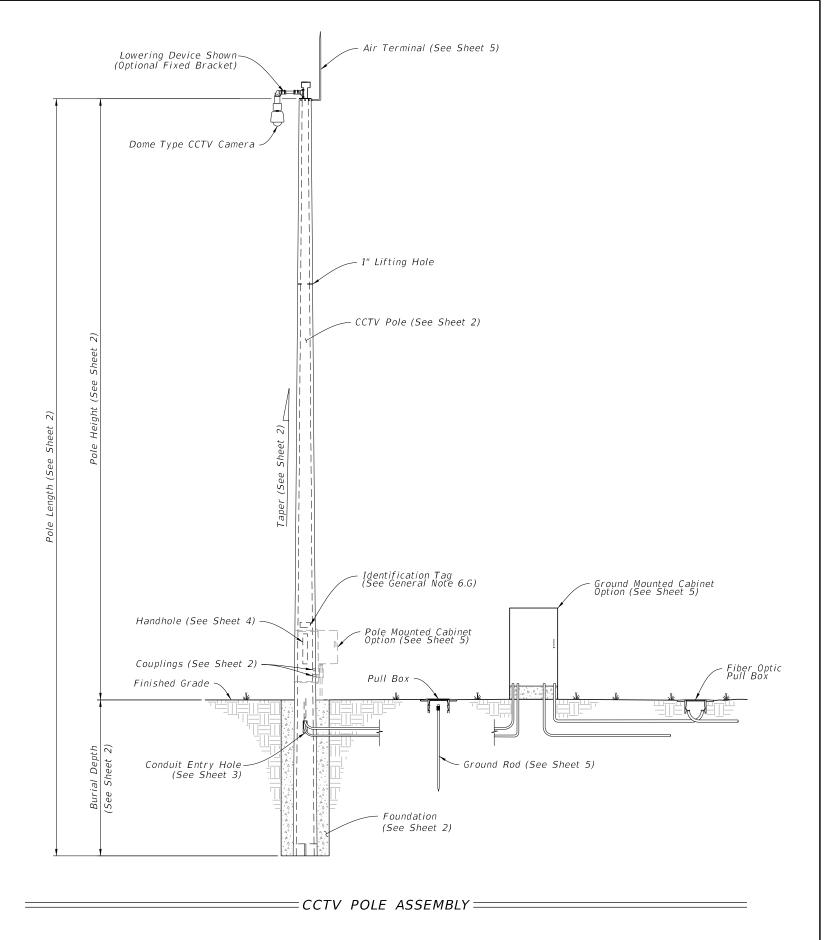
8. Cabinet Installation:

- 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 innerducts for network communications between the pullbox and cabinet are stated in the Contract Documents.

9. Lowering Device Installation:

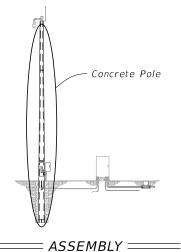
DESCRIPTION:

- 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 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.
- C. Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stand, etc.) with lowering device manufacturer.



REVISION 11/01/21

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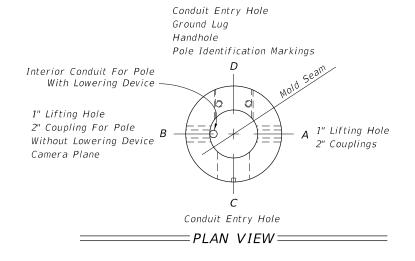
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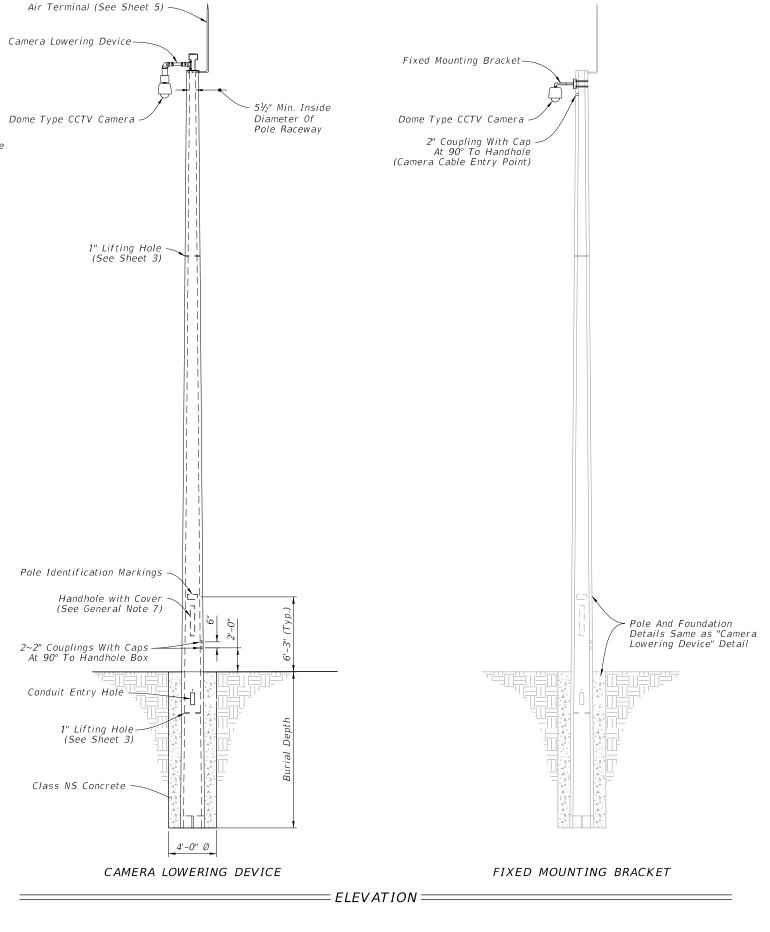
- 1. Diameter of 12-sided poles are measured flat to flat.
- 2. Total Taper applies to pole, strands and reinforcing.
- 3. For 12-Sided Pole and Round Roles Option 2, Stress prestressed strand to 70% of Ultimate before transfer. For Round Pole Option 1, stress prestressed strand to 60% of Ultimate before 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.

ADDITIONAL BURIAL DEPTH								
DUE T	O 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)										
Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Laner	Taper	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	1	0.6"	
69	55	14	0.18	0.18	3	3	12	24.42	1	0.6"	
75	60	15	0.18	0.18	3	3	12	25.50	2	0.6"	
80	65	15	0.18	0.18	3	3	12	26.40	2	0.6"	
86	70	16	0.18	0.18	3	3	12	27.48	2	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)	T1: 1	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	3	0.5"
0.3	30	1.5	Option 2	0.180	0.172	3	3.50	12.00	23.34	4	0.5"
69	5.5	14	Option 1	0.216	0.192	3	3.83	12.15	27.05	3	0.5"
09	ر ر		Option 2	0.180	0.173	3	3.50	12.00	24.42	4	0.5"
7.5		15	Option 1	0.216	0.192	3	3.90	12.15	28.35	3	0.5"
/3	60	15	Option 2	0.180	0.173	3	3.50	12.00	25.50	4	0.5"
80	6.5	1.5	Option 1	0.216	0.192	3	3.96	12.15	29.43	3	0.5"
00	65	15	Option 2	0.180	0.174	3	3.50	12.00	26.40	4	0.5"
86	70	16	Option 1	0.216	0.192	3	4.03	12.15	30.73	3	0.5"
00	///	10	Option 2	0.180	0.174	3	3.50	13.00	28.48	4	0.5"



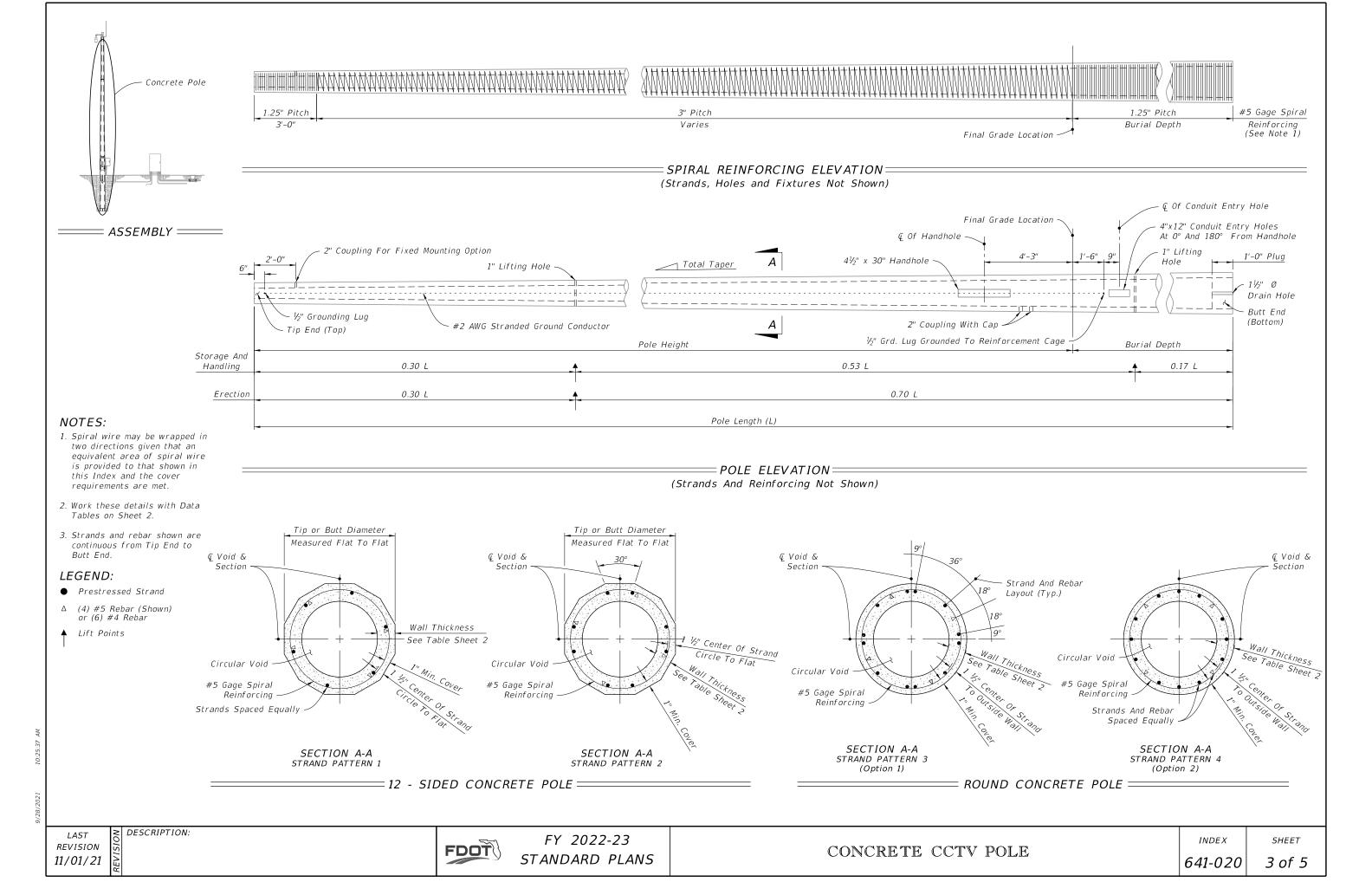


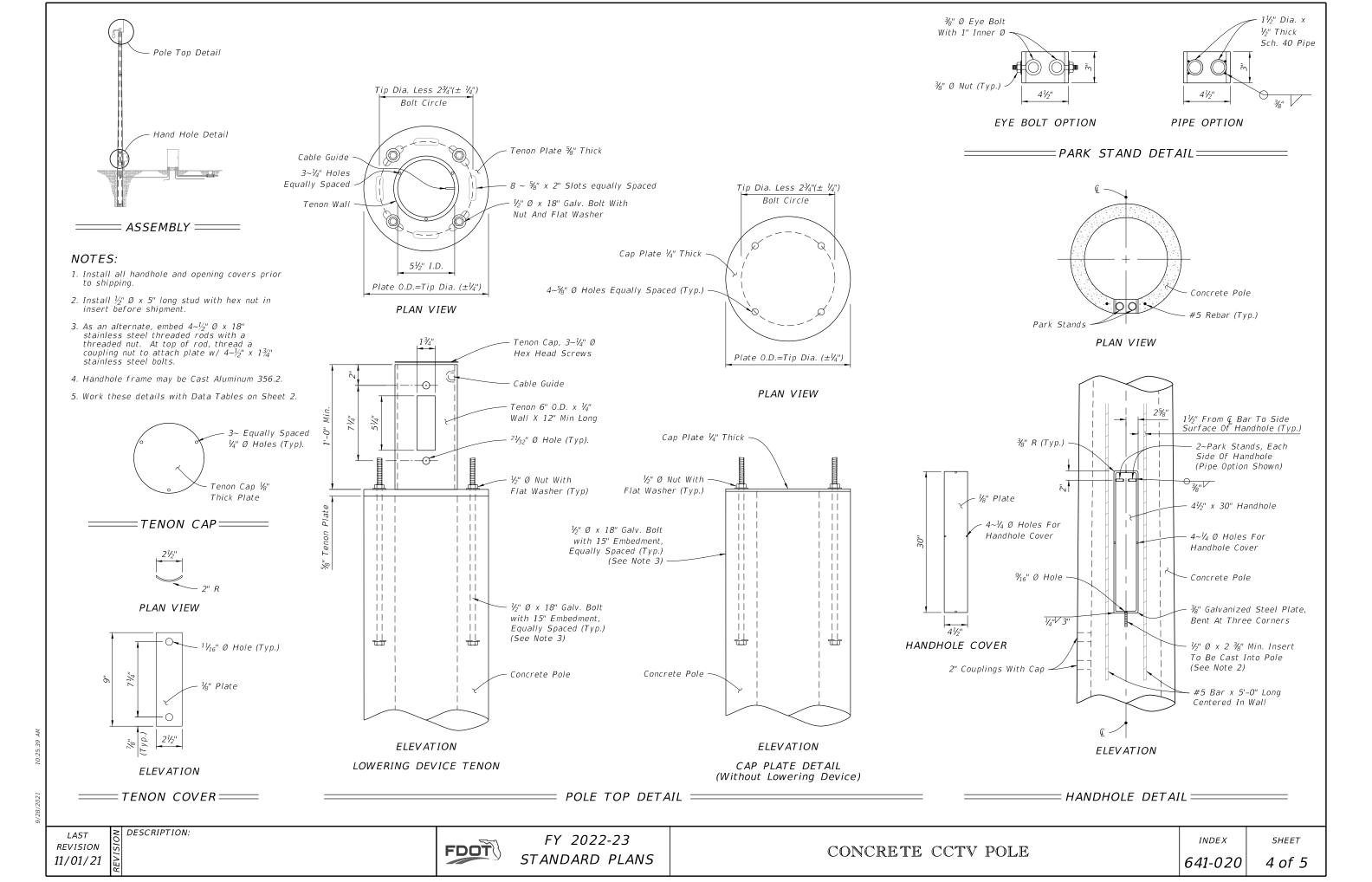
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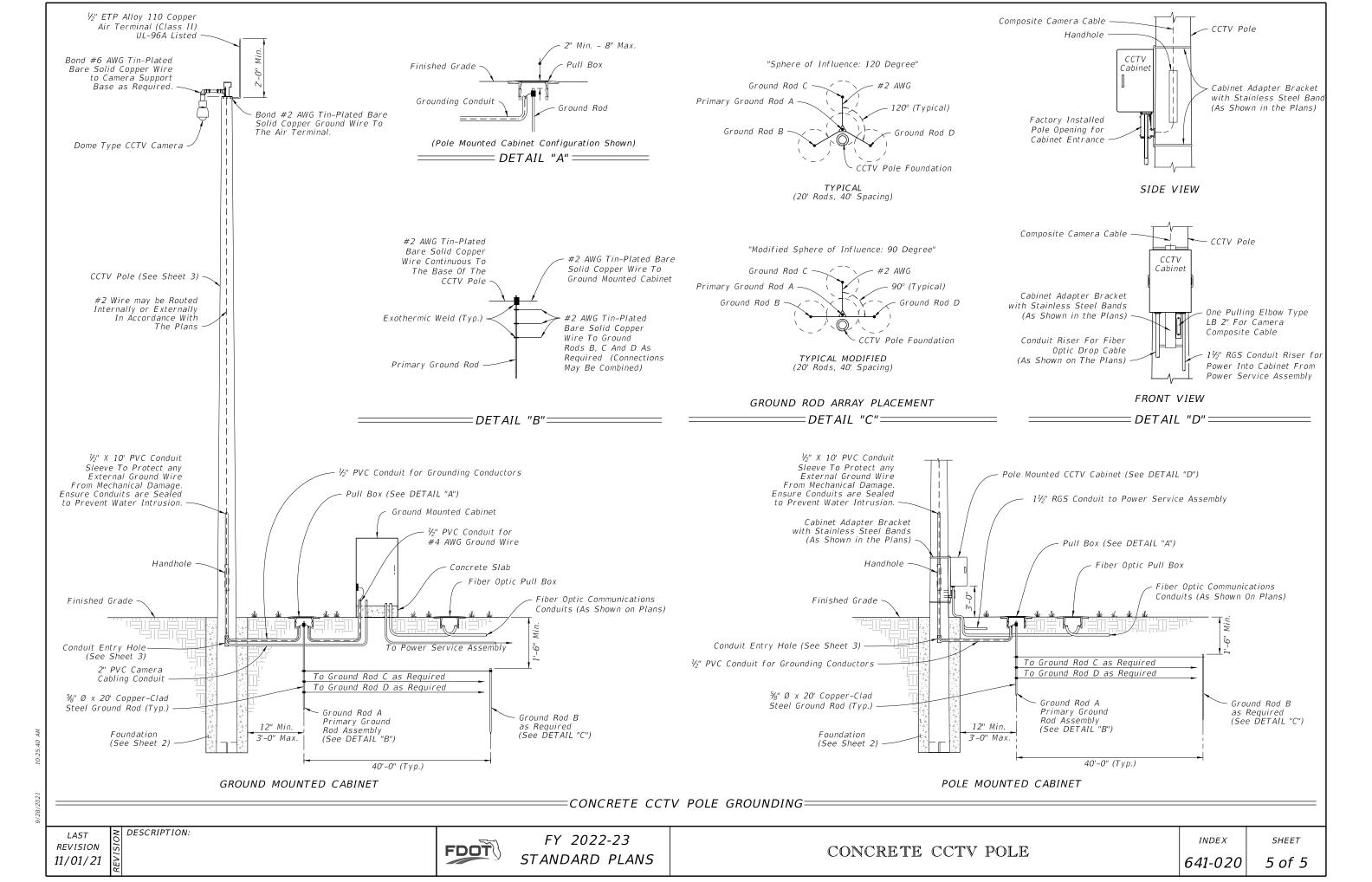
LAST REVISION 11/01/21

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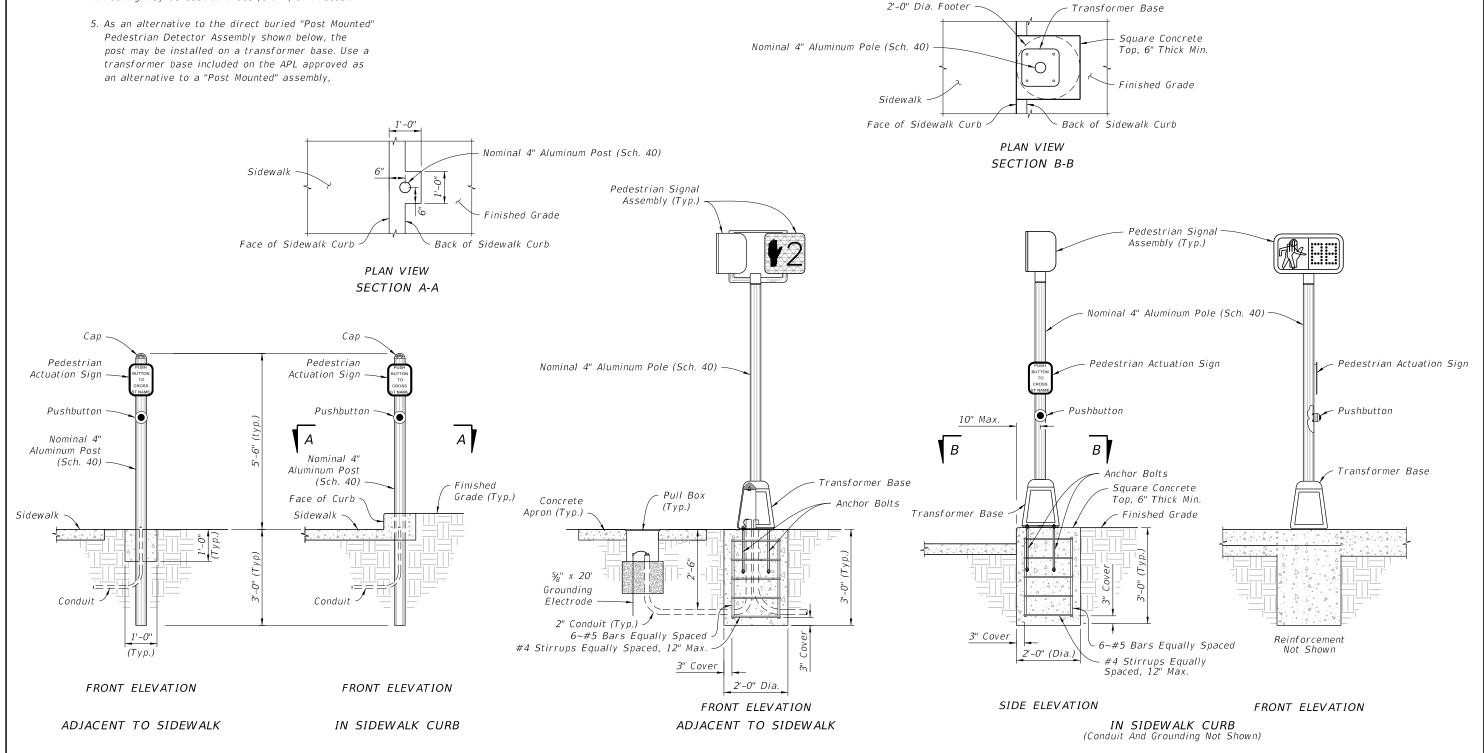




NOTES:

- 1. Work this Index with Specification 646.
- 2. For Pedestrian Signals see Index 653-001.
- 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.

= ${ t POST \; MOUNTED}$ \Longrightarrow



1200/00/

LAST REVISION 11/01/21

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

ALUMINUM POST AND PEDESTAL MOUNTED PEDESTRIAN DETECTORS AND SIGNALS

PEDESTAL MOUNTED:

INDEX

*SHEET*1 of 1

NOTES:

- 1. Work with Index 634-001 for grounding and span wire details. See the Plans for clamp spacing, cable sizes and forces, signals and sign mounting locations and details.

This Index is considered fully detailed, only submit shop drawings for minor modifications not detailed in the Plans.

- - 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)
 - I. 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

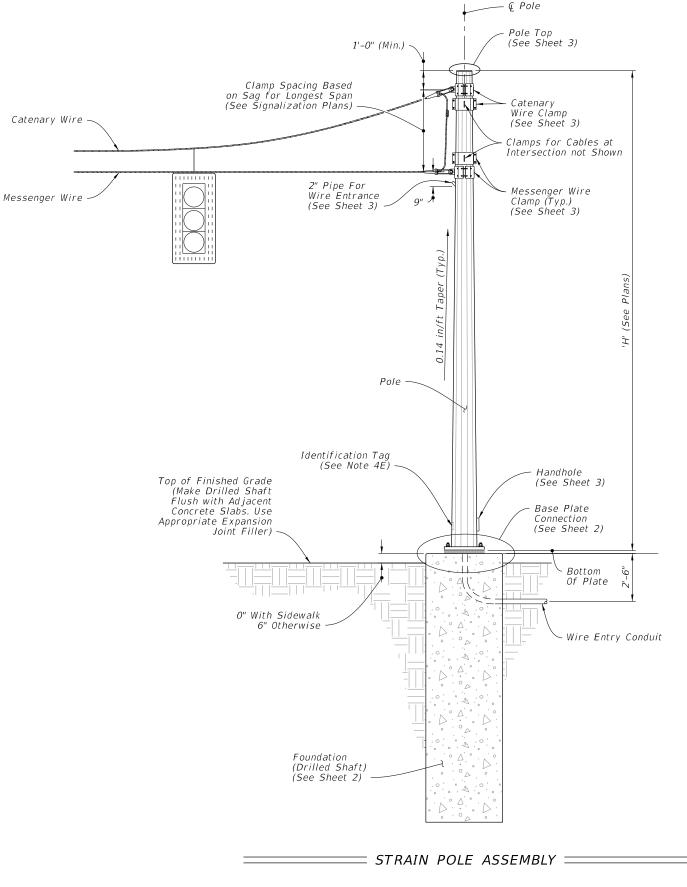
4. Fabrication:

- 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 V_{16} ", prior to galvanizing.
 - b. Anchor Bolts: Bolt diameter plus 1/2", 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 $\frac{1}{8}$ " 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. 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 full-penetration aroove welds
- 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 649-6.



ELEVATION AND NOTES

LAST **REVISION** 11/01/19

DESCRIPTION:

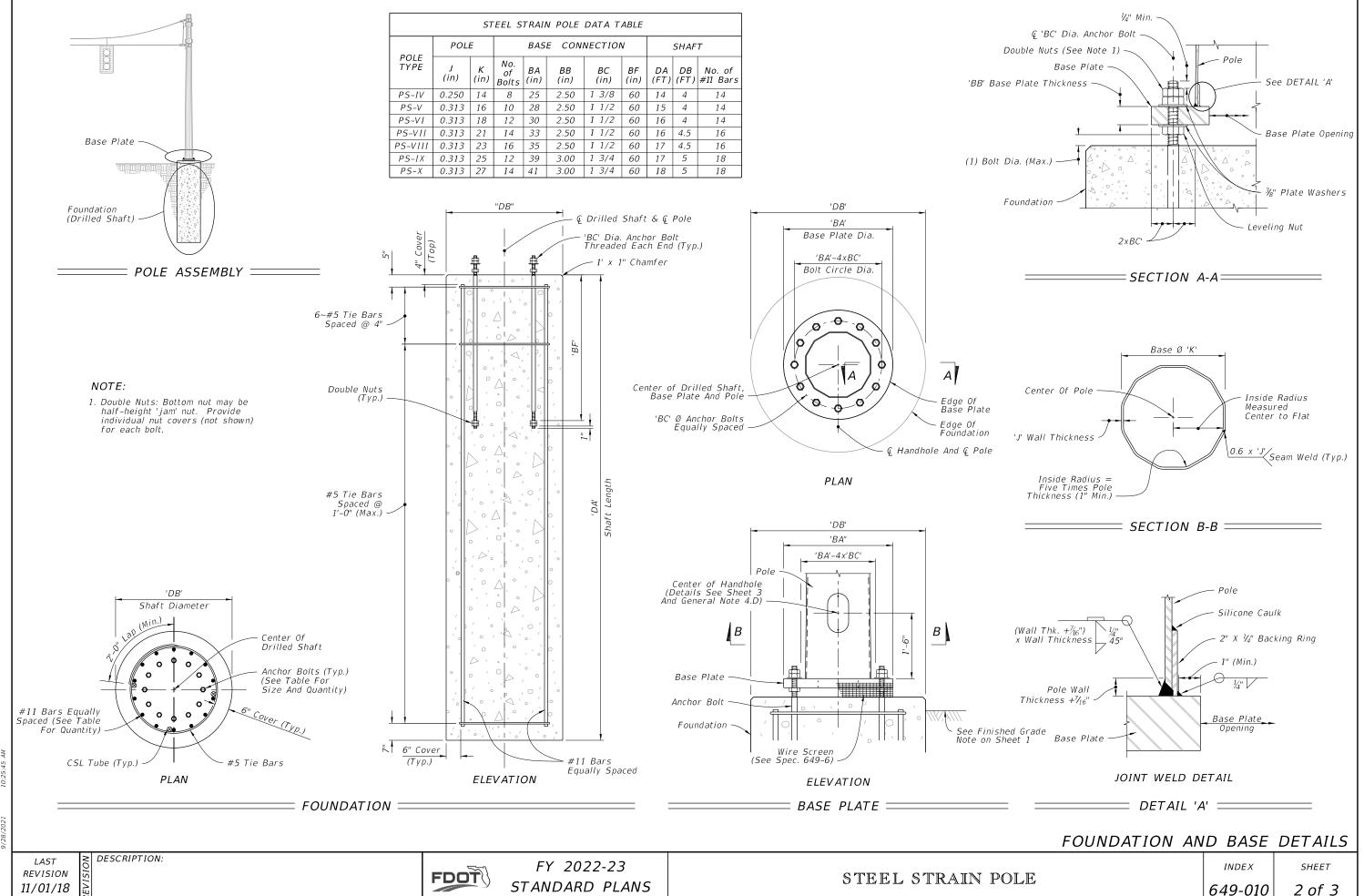
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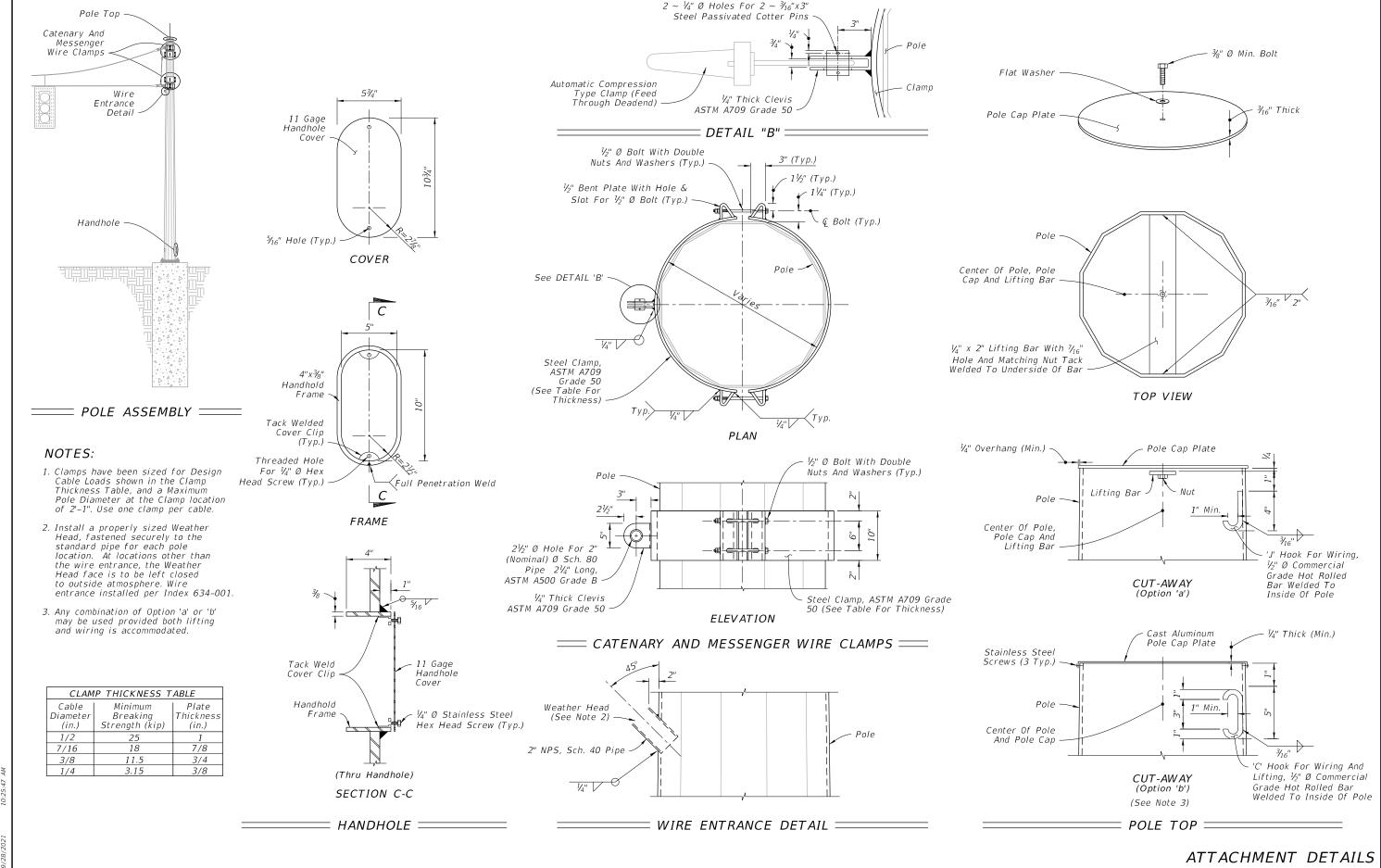
STEEL STRAIN POLE

INDEX 649-010

SHEET 1 of 3



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REVISION 11/01/21

DESCRIPTION:

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STEEL STRAIN POLE

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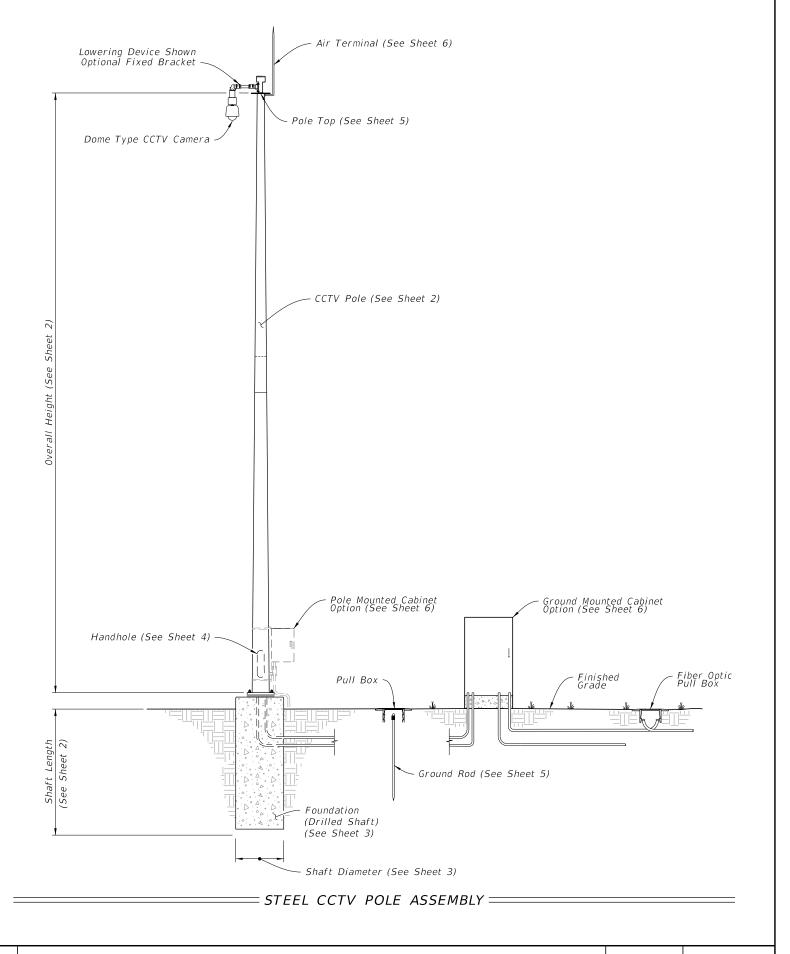
649-010

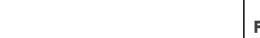
GENERAL NOTES:

- 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 details for Pull Boxes.
- A. Pole: ASTM A1011 Grade 50, 55, 60 or 65 (less than V_4 ") or ASTM A572 Grade 50, 60 or 65 (greater than or equal to V_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.
- 5. 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.
- 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 full-penetration groove weld within 6 inches of the circumferential tube-to-plate connection and
- 2. Use full-penetration groove 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 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 $\frac{1}{2}$ and anchor bolt holes are bolt diameter plus $\frac{1}{2}$ " (Max) prior to galvanizing.
- 6. Pole Installation:
- A. Do not install additional wire access holes (not shown in this Index) with a diameter that exceeds $1\frac{1}{2}$ " 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.
- 7. 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 pullbox and cabinet are stated in the Contract Documents.
- 8. 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.







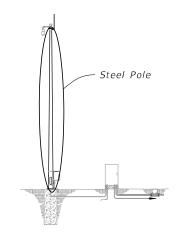
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STEEL CCTV POLE

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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 =====

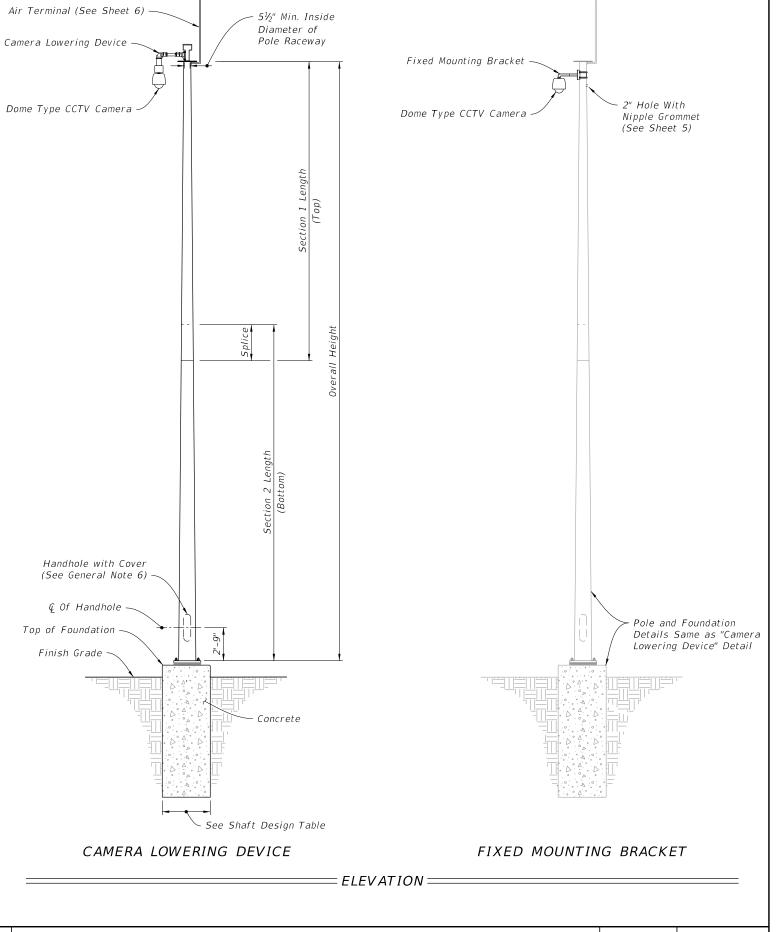
	ONAL SHAFT O GROUND	
Ground Slope	4'-0" Shaft Diameter	5'-0" Shaft Diameter
1:5	3'-0"	4'-0"
1:4	4'-0"	5'-0"
1:3	5'-0"	6'-0"
1:2	7'-0"	9'-0"

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 Diameter (in.)	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		
50	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	

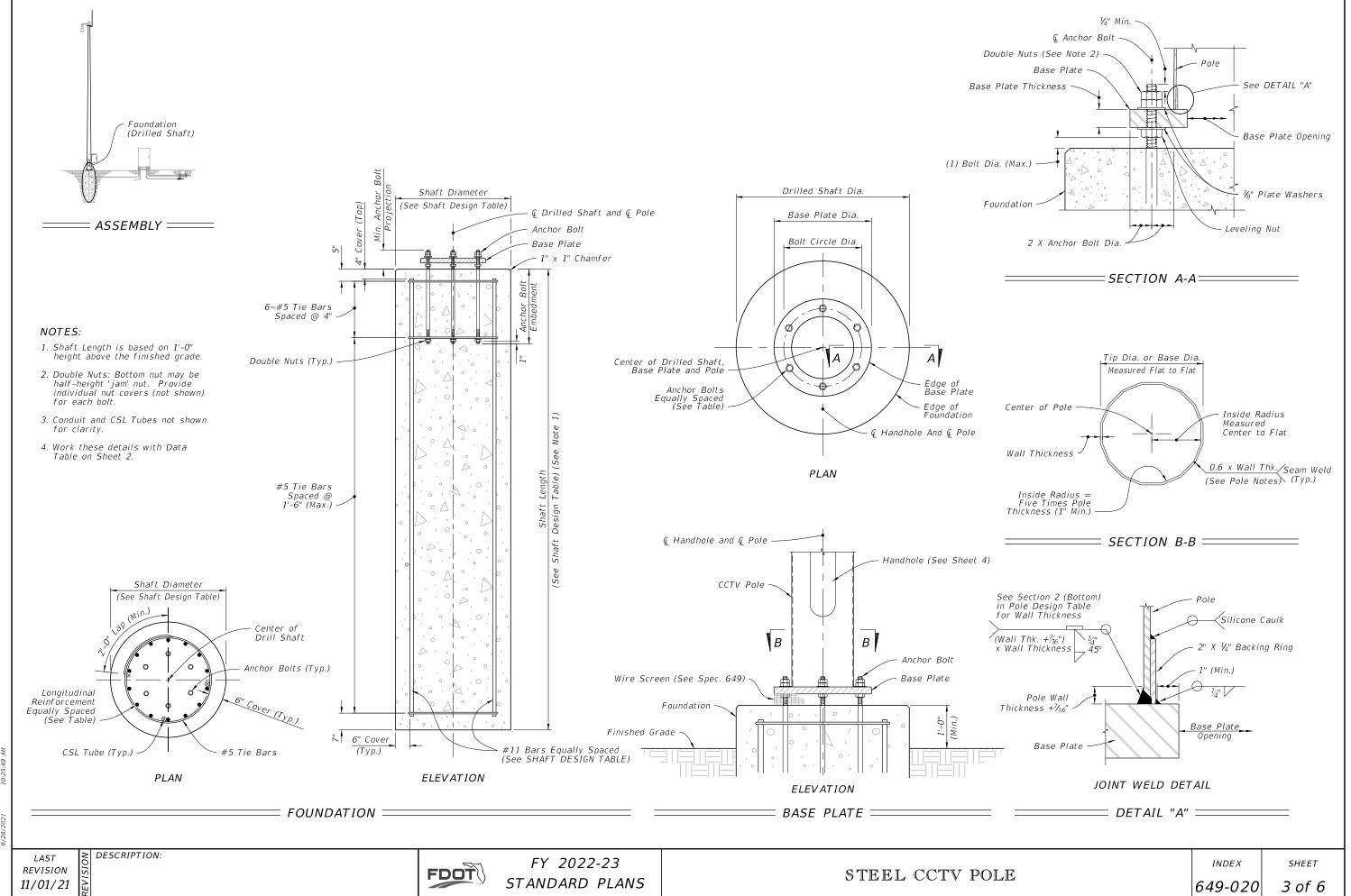


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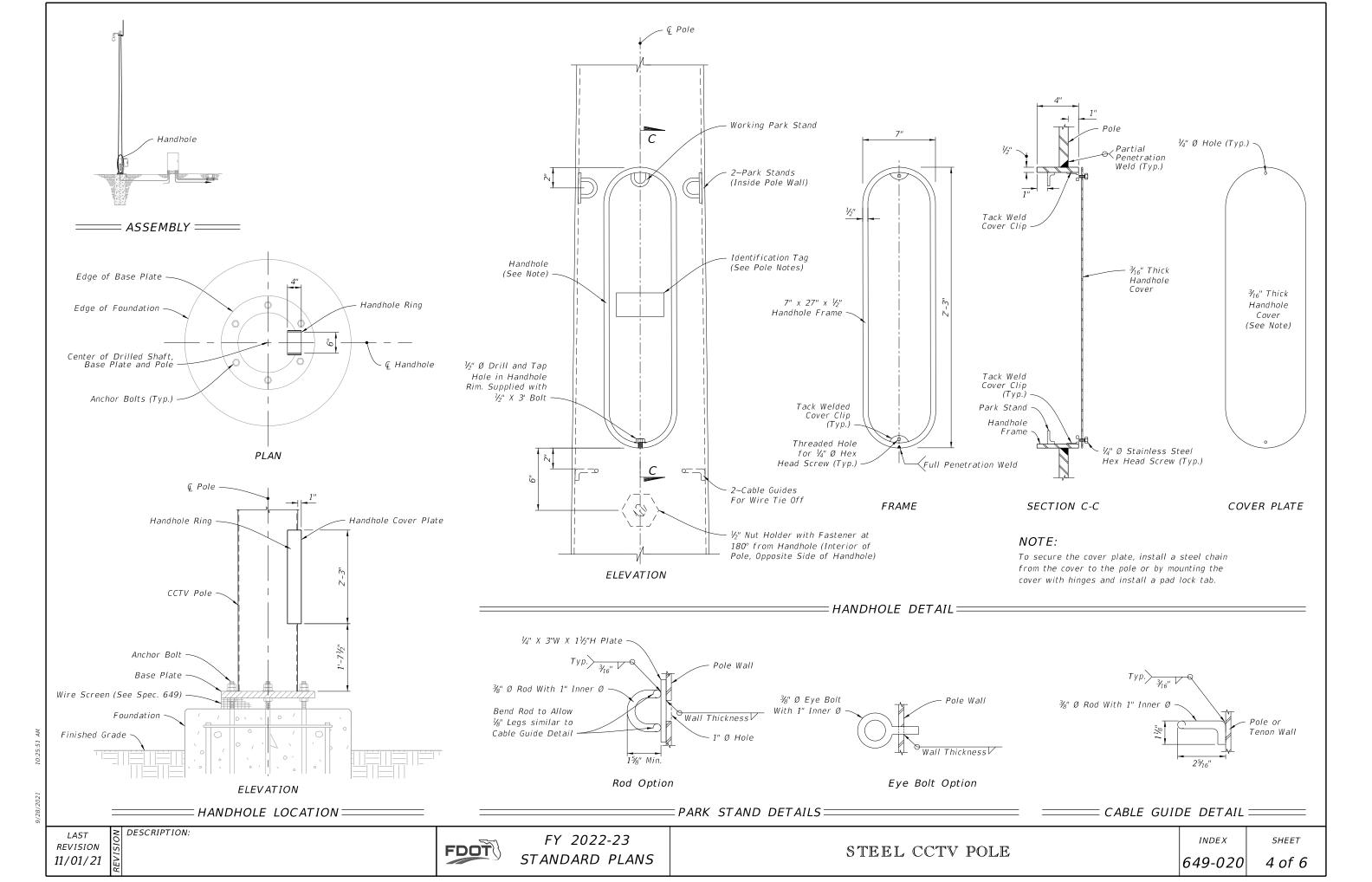
LAST REVISION 11/01/21

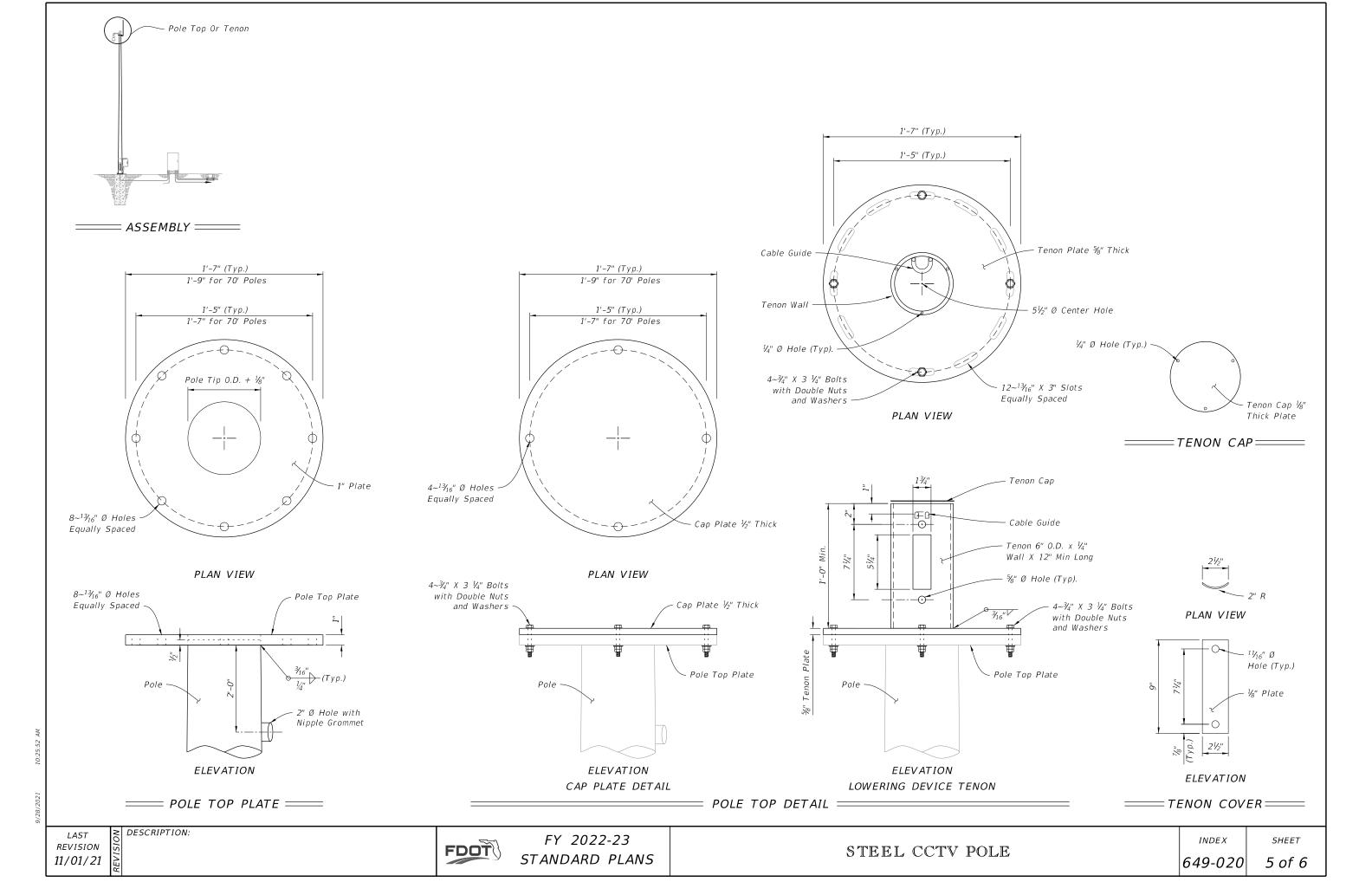
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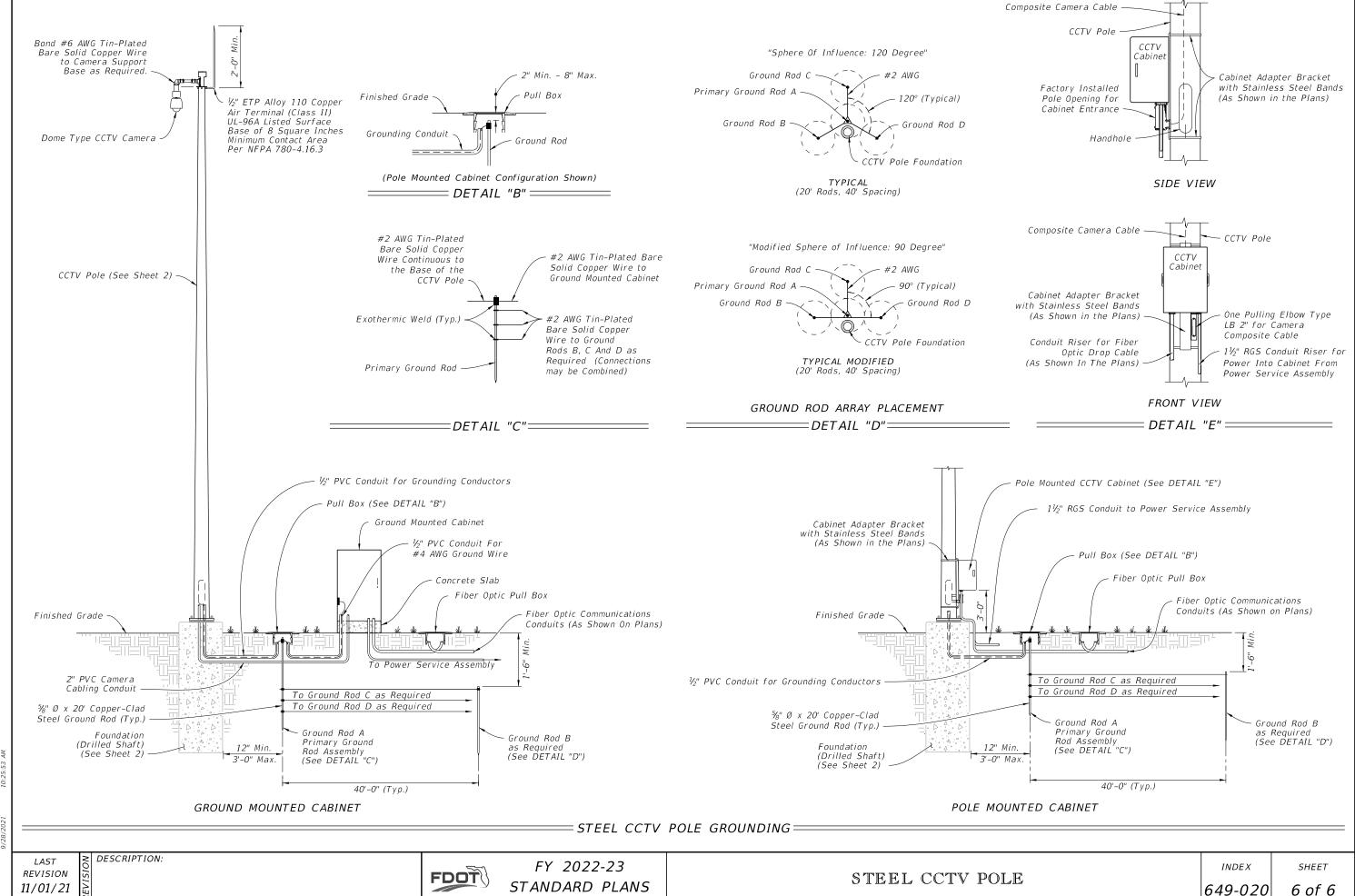




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		,	ARM A	ND BA	SE PL	4 <i>TE</i>				
Arm ID Axx-ArmLength	Total Arm		Arm		Arn	n Extens	sion	Е	Base Pla	te
S-SingleArm D-DoubleArm H-HeavyDuty	Length (ft)	FA/SA (ft)	FC/SC (in)	FD/SD (in)	FE/SE (ft)	FG/SG (in)	FH/SH (in)	HT (in)	FJ/SJ (in)	FK/SK (in)
A30/S		30	11	0.250				22	25	
A30/S/H	30	30	12	0.250				22	25	3
A30/D] 30	30	11	0.250				30 36	ا ا	
A30/D/H		30	12	0.250				30	50 30	
A40/S		40	13	0.250				22	27	
A40/S/H	40	40	14	0.250				22	27	3
A40/D] 40	40	13	0.250				30	36	ا ا
A40/D/H		40	14	0.250				30	30	
A50/S		32.5	12	0.250	20.5	14		22	29	
A50/S/H	50	32.5	13	0.250	20.5	15	0.313		29	3
A50/D] 30	32.5	12	0.250	20.5	14		30	36] 3
A50/D/H		32.5	13	0.250	20.5	15				
A60/S		35.5	12	0.250	27.5	15				
A60/S/H	60	35.5	13	0.250	27.5	16	0.375	30	36	.3
A60/D	1 60	35.5	12	0.250	27.5	15	0.373	30	30	3
A60/D/H	1	35.5	13	0.250	27.5	16				
A70/S		38	13	0.250	35	17				
A70/S/H	70	38	14	0.250	35	18	0.375	30	36	3
A70/D] //	38	13	0.250	35	17	0.373	30	30	3
A70/D/H	1	38	14	0.250	35	18				
A78/S		39	13	0.250	42	18				
A78/S/H	70	39	15	0.250	42	20	0 275	20	76	3
A78/D	78	39	13	0.250	42	18	0.375	30	36	ک
A78/D/H		39	15	0.250	42	20				

						POLE,	BASE	PLATE	AND .	ARM C	ONNEC	TION						
Pole ID Px-PoleNo		Upr	ight			В	ase Plat	te					Arm-Up	right Co	nnection			
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		25	0.75	0.438	14	1.25		0.5	0.438
P1/D	25	10	0.575		Ü	32	2.5	_	10	30	36	0.73	0.750	23	1.23	2.75	12.5	0.750
P1/D/L	39			37.5						30						2.73	12.3	
P2/S	25									22	27			15		2	8.5	
P2/S/L	39	18	0.375	37.5	6	34	2.5	2	40			0.75	0.438		1.25	_		0.438
P2/D	25				_			_		30	36			23		2.75	12.5	
P2/D/L	39			37.5														
P3/S	25									22	29			16		2	8.5	
P3/S/L	39	20	0.375	37.5	6	36	2.5	2	40			0.75	0.438		1.25			0.438
P3/D	25									30	36			23		2.75	12.5	
P3/D/L	39			37.5														
P4/S	25			27.5										17				
P4/S/L P4/D	39 25	22	0.375	37.5	8	38	2.5	2	40	30	36	0.75	0.438		1.25	2.5	12.5	0.438
P4/D P4/D/L	39			37.5										23				
P5/S	25			37.3														
P5/S/L	39			37.5										18				
P5/D	25	24	0.375	37.3	8	40	2.5	2	40	30	36	0.75	0.5		1.25	2.5	12.5	0.5
P5/D/L	39			37.5										23				
P6/S	25			37.3														
P6/S/L	39			37.5										18				
P6/D	25	24	0.5	57.5	8	40	2.5	2	40	30	36	0.75	0.625		1.5	2.5	12	0.625
P6/D/L	39	1		37.5										23				
P7/S	25																	
P7/S/L	39			37.5										19				
P7/D	25	26	0.5		8	42	2.5	2	40	30	36	0.75	0.625		1.5	2.5	12	0.625
P7/D/L	39	1		37.5										23				

≥ 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

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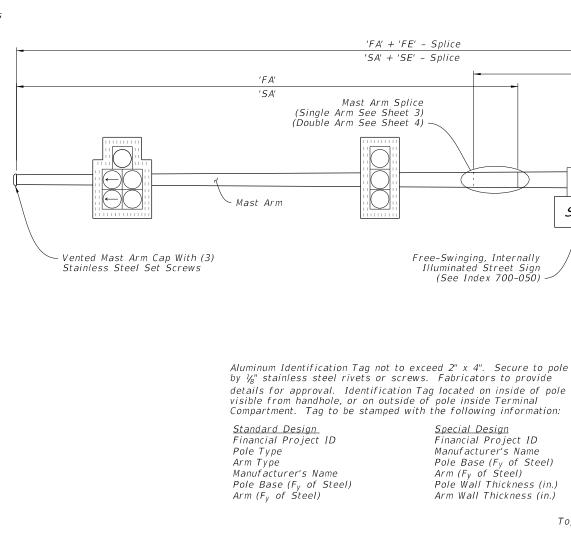
- 2. Prior to Fabrication: Verify the installed foundation elevation will result in the required signal elevation and adjust the Pole height as needed.
- 3. Details for Signal and Sign locations, Signal Head attachment, Sign attachment, Pedestrian Head attachment, and Foundation Conduit are not shown for simplicity.
- 4. Materials:
 - A. Poles, Mast Arms and Backing Rings:
 - a. Less than 3/16": ASTM A1011 Grade 50, 55, 60 or 65
 - b. Greater than or equal to ¾₁₆": 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. <u>Fabrication:</u>

- 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
- 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 full-penetration groove weld within 6 inches of the circumferential tube-to-plate connection.
 - 2. Use full-penetration groove 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 1/16" prior to galvanizing.
 - 2. Anchor Bolts: Bolt diameter plus ½" (Max.).
- - A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329
 - B. 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 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 1½" or less in diameter.



<u>Special Design</u>
Financial Project ID
Manufacturer's Name
Pole Base (F _V of Steel)
Arm (F _V of Śteel)
Pole Wall Thickness (in.
Arm Wall Thickness (in.)

Free-Swinging, Internally
Illuminated Street Sign

(See Index 700-050)

'FA' + 'FE' - Splice

'SA' + 'SE' - Splice

Mast Arm Splice

(Single Arm See Sheet 3) (Double Arm See Sheet 4)

'FA'

'SA'

(See Pole Handhole (See Sheet 6) Base Plate Connection (See Sheet 2) Bottom Top of Finished Grade Of Plate O" With Sidewalk 6" Otherwise Signal Conduit 1~2" Conduit Per Assembly (For No. & Size 1~1" Additional Conduit in See Signal Plans) 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

(Single Arm See Sheet 3)

(Double Arm See Sheet 4)

Provide 1/2" Ø Weep Hole

Located At Bottom Of Arm.

1'-0" From Arm Base Plate.

'FE'

'SE'

Street Name

€ Pole

Pole Top

Mast Arm

Handhole

(See Sheet 6)

(See Sheet 6)

649-030)

Plans) (See

'F0'

'S0'

Single Arm Shown, Double Arm Similar (Luminaire Arm Not Shown)

= MAST ARM ASSEMBLY ===

ELEVATION AND NOTES

LAST **REVISION** 11/01/21

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FY 2022-23 STANDARD PLANS

TABLE OF CONTENTS

SUBJECT

Elevation and Notes

Foundation and Base Plate Details Single Arm Connection and Splice Details

Handhole and Pole Top Details

Double Arm Connection and Splice Details

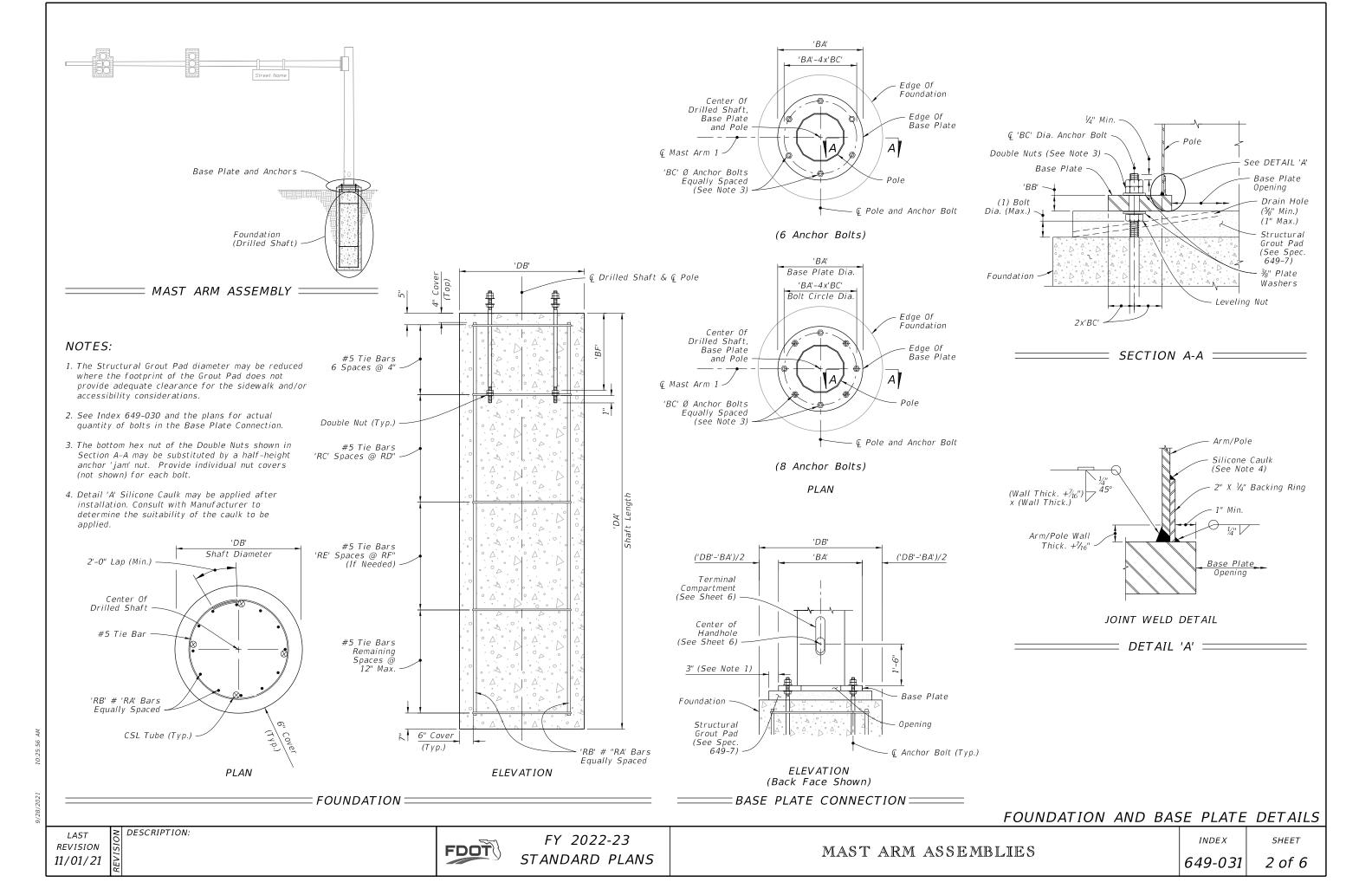
Luminaire Arm and Connection Details

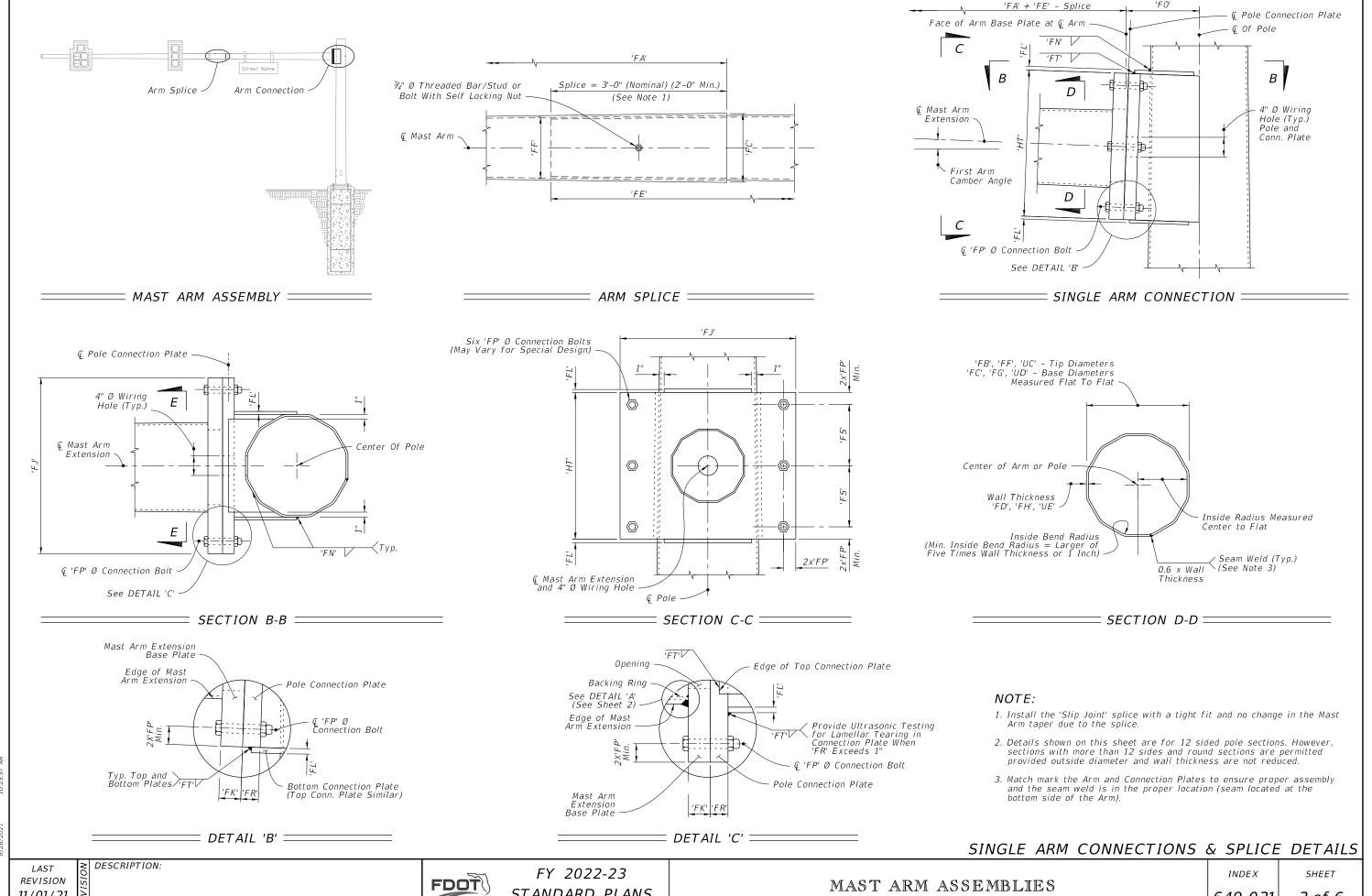
SHEET

3

MAST ARM ASSEMBLIES

INDEX 649-031





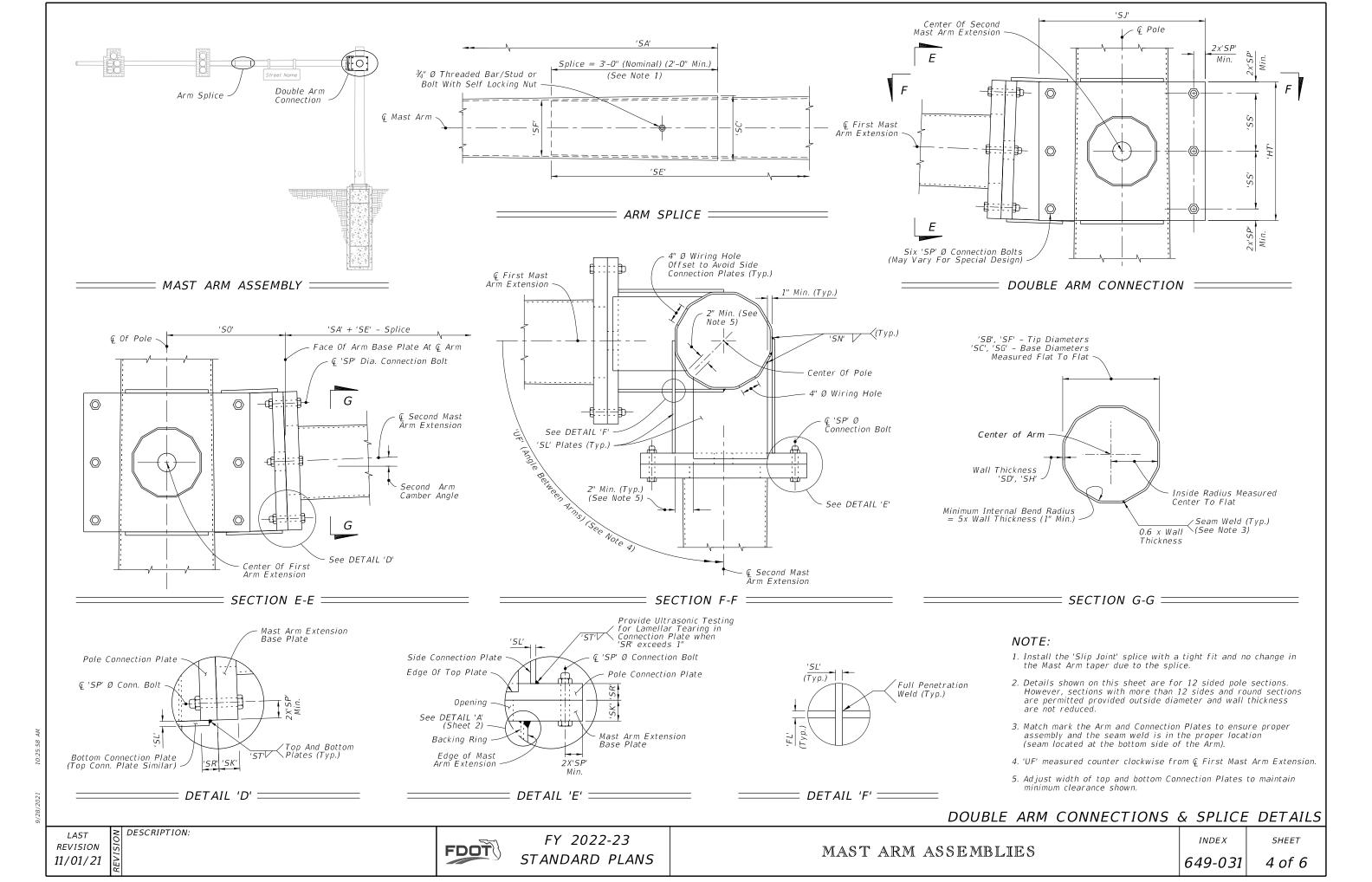
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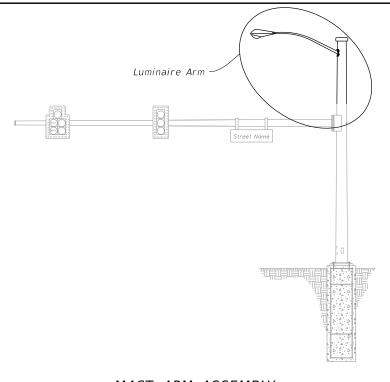
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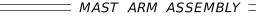
STANDARD PLANS

649-031

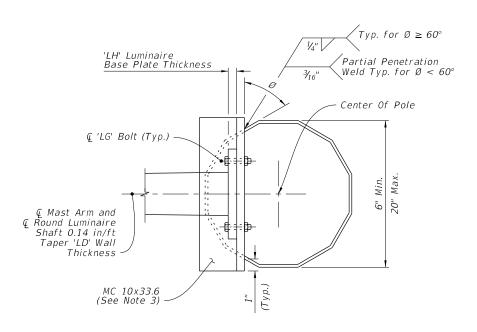
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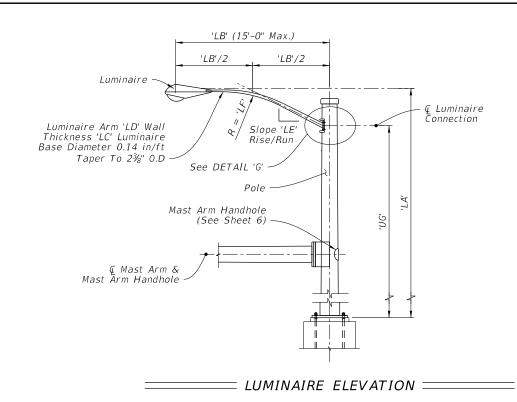


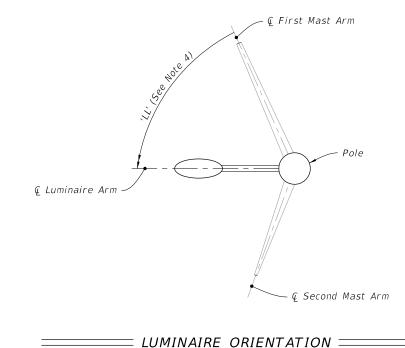


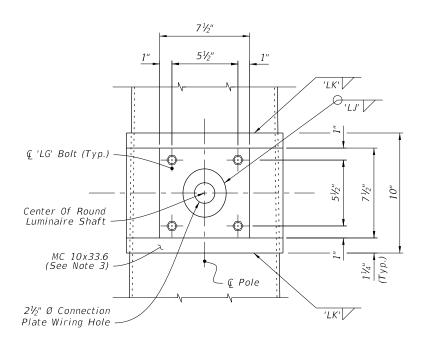
- Galvanized steel luminaire type and luminaire length may be found in the Lighting Plans.
- 2. Align Luminaire Arm with Single Mast Arm or First Arm of Double Mast Arm unless indicated otherwise in the plans.
- 3. The fabricator may substitute a $\frac{1}{2}$ " thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.
- 4. 'LL' measure counter clockwise from First Mast Arm.



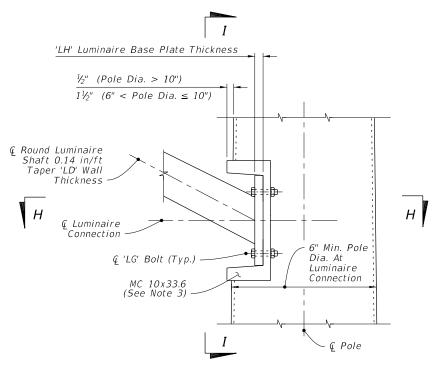
= SECTION H-H =







= SECTION I-I =



LUMINAIRE CONNECTION ELEVATION

DETAIL 'G'

LUMINAIRE ARM AND CONNECTION DETAILS

LAST REVISION 11/01/19

DESCRIPTION:

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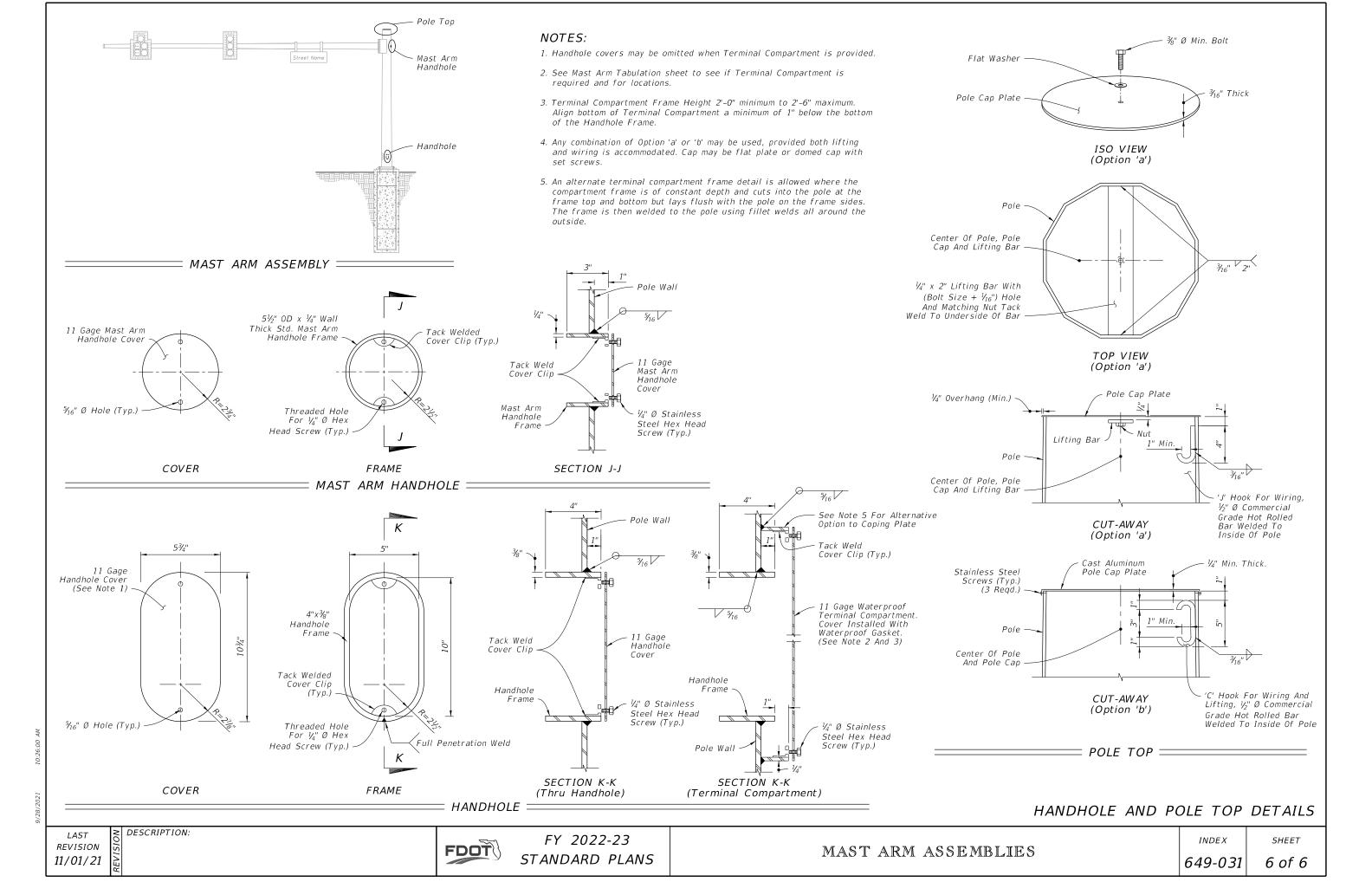
FY 2022-23 STANDARD PLANS

MAST ARM ASSEMBLIES

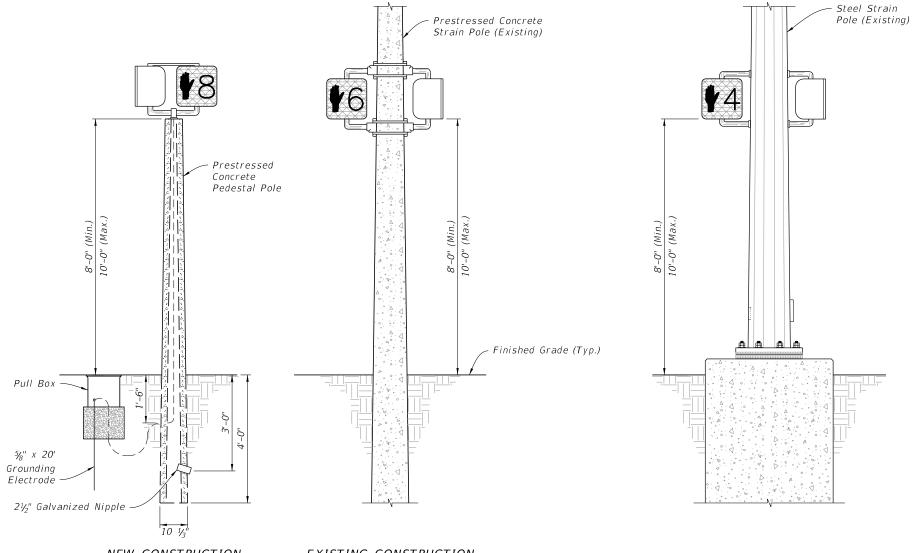
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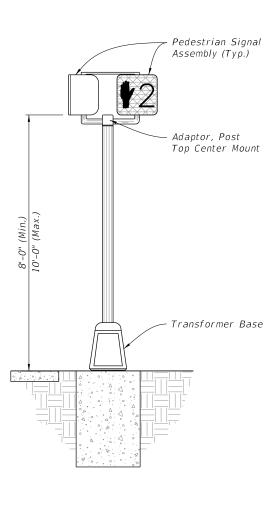
SHEET

MAST AR



- 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.
- 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





NEW CONSTRUCTION

EXISTING CONSTRUCTION

=== CONCRETE POLE MOUNTED SIGNAL ======

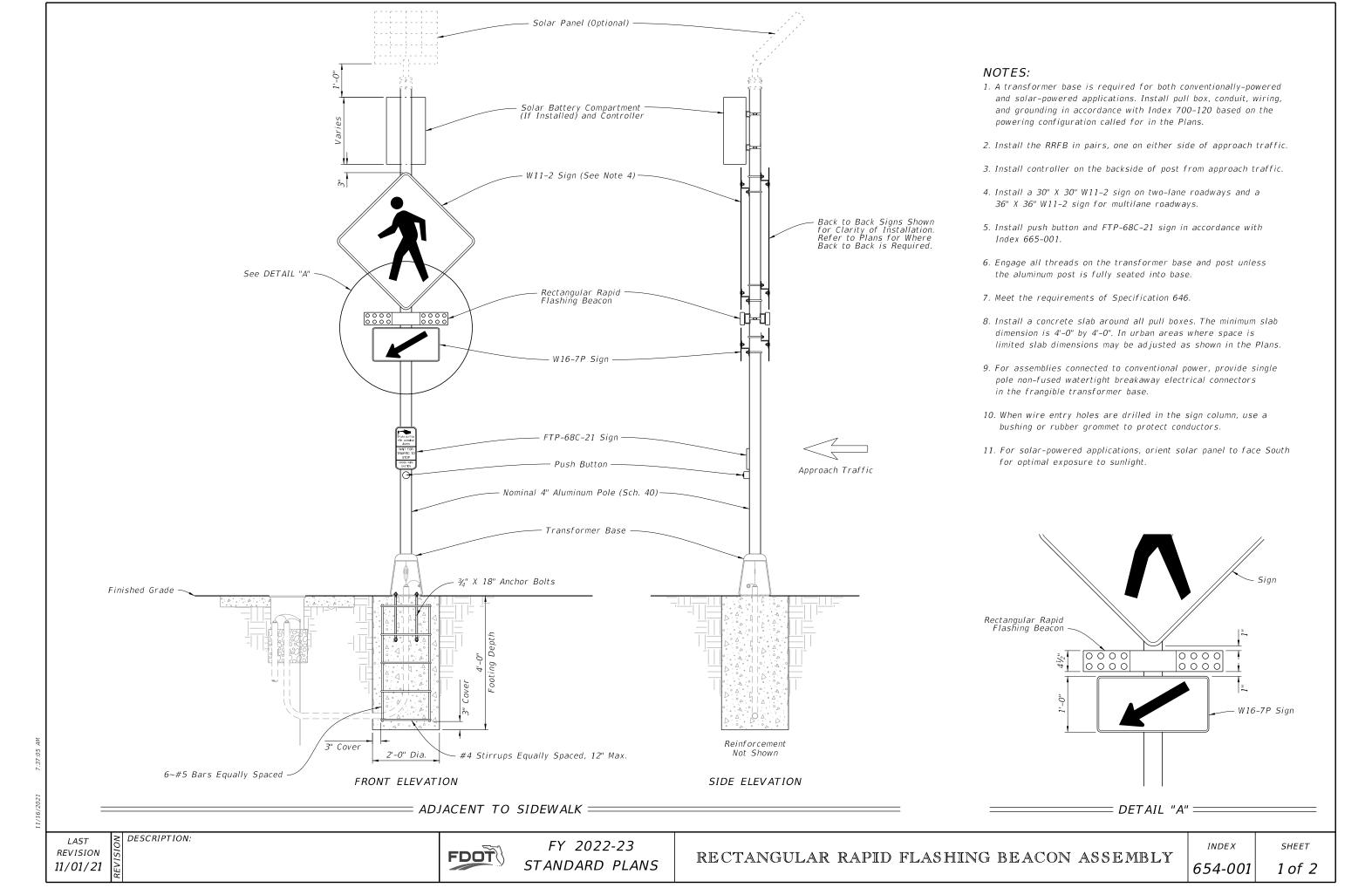
=== STRAIN POLE MOUNTED SIGNAL =======

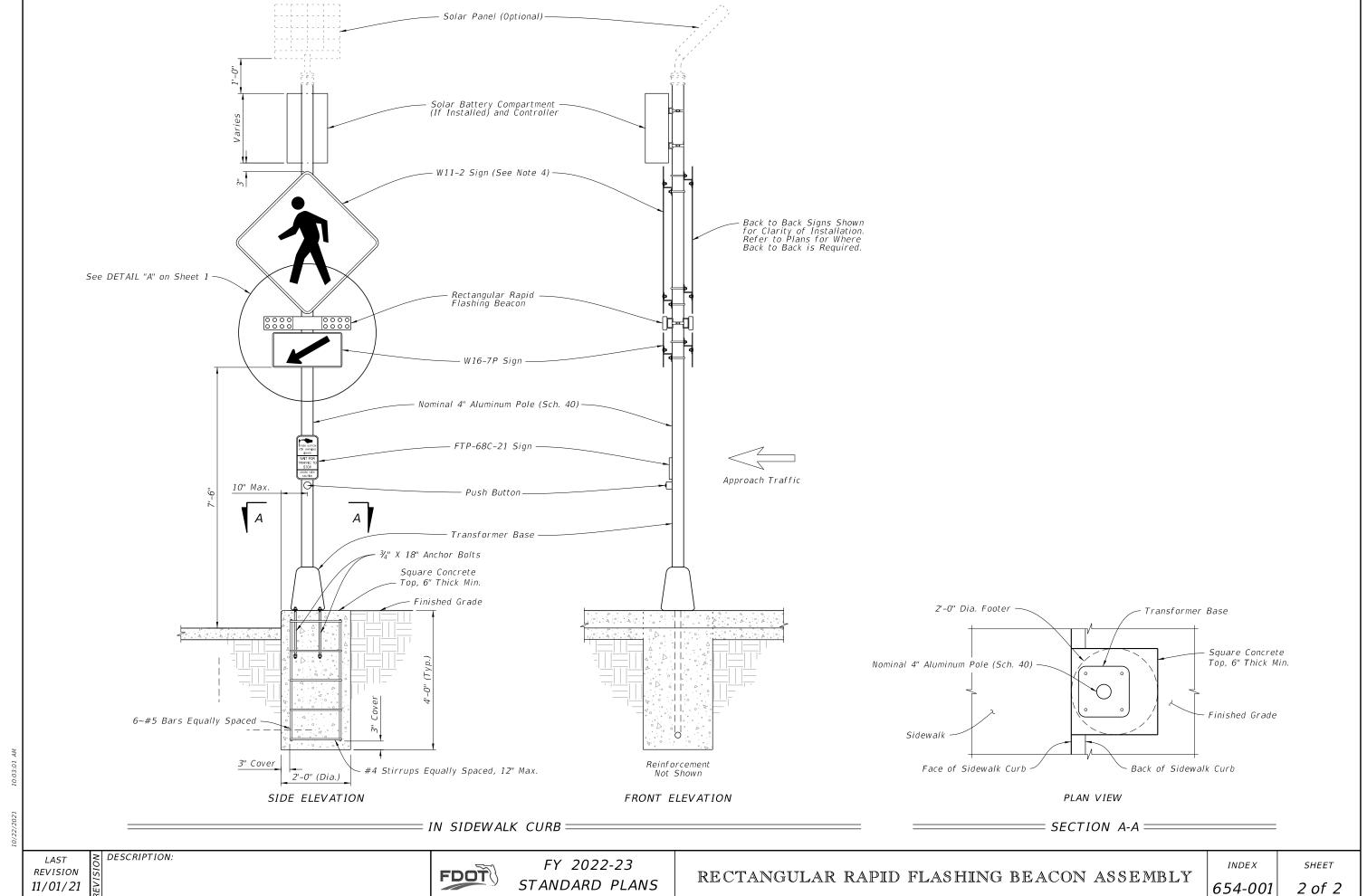
===== PEDESTAL MOUNTED SIGNAL ======

REVISION 11/01/20

DESCRIPTION:



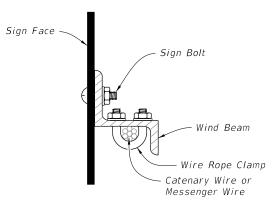




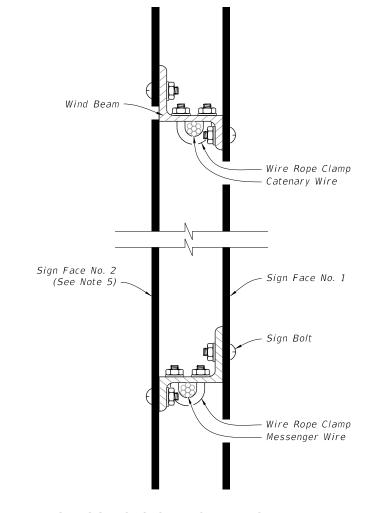
- 1. Materials:
- A. Sign panels, wind beams and associated hardware: See Index 700-020
- B. Sign adjustable hangers, wire rope clamps and associated hardware: See APL
- C. Wire and additional hardware requirements: See Specification 634
- 2. Type B and C Attachments:
- A. Extend wind beams to within 6" of the sign edge.
- B. Number of sign hangers required based on sign width:
- a. Sign width < 4'-0": One
- b. 4'-0" ≤ sign width ≤ 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"

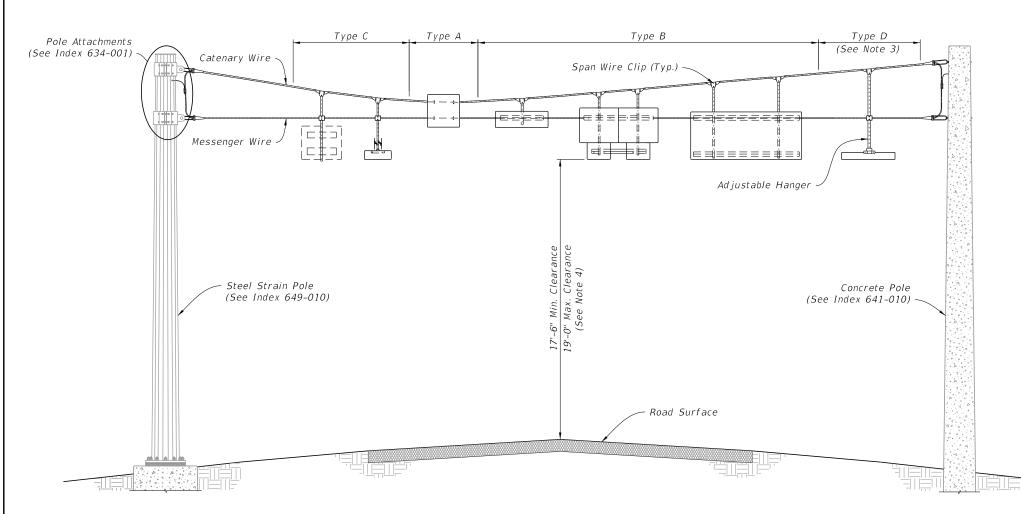
- 4. Align the bottom edges of signs to approximately the same elevation.
- 5. Use a minimum of 2 bolts with a minimum spacing of 2" for overlapped connection of the adjustable hangers.



====SIGN MOUNTING DETAIL====



=OPPOSING SIGN MOUNTING DETAIL====



= TYPICAL INSTALLATIONS FOR SIGN PANEL(S) MOUNTED ON SPAN WIRE =

9:17:06

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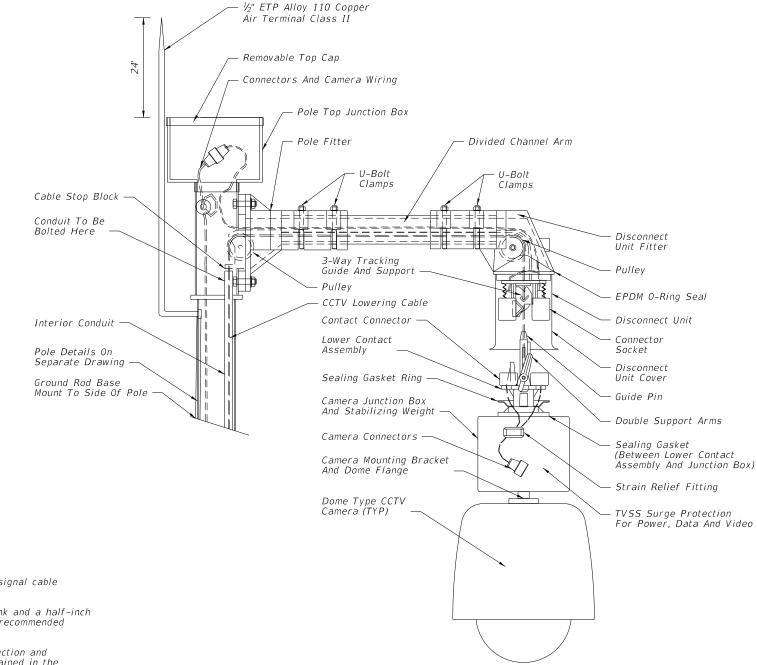
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LAST





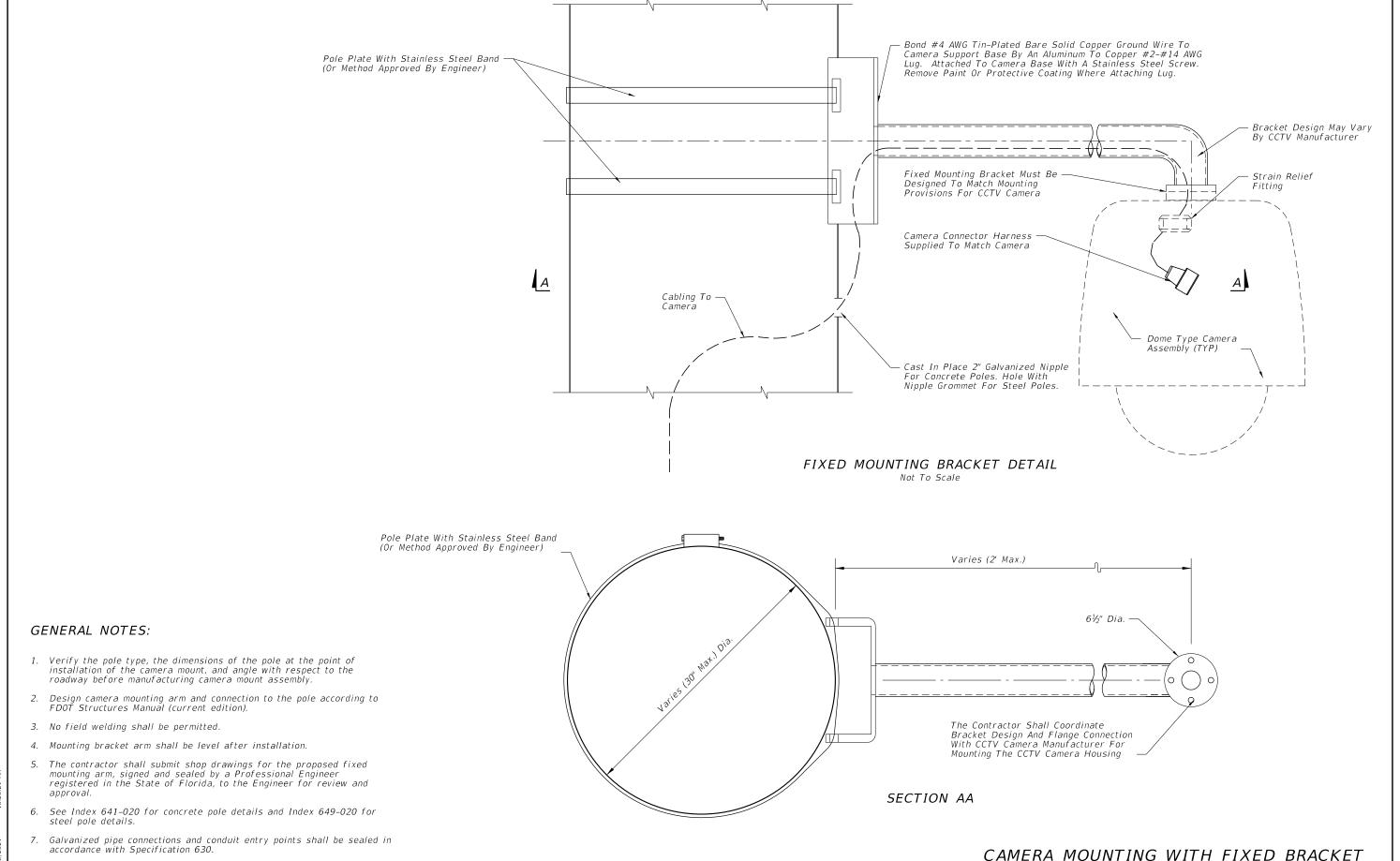
GENERAL NOTES:

- 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 1½" 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 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

STANDARD PLANS

CAMERA LOWERING DEVICE DETAIL



REVISION 11/01/17

DESCRIPTION:

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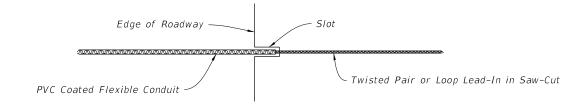
FY 2022-23 STANDARD PLANS

CAMERA MOUNTING DETAILS

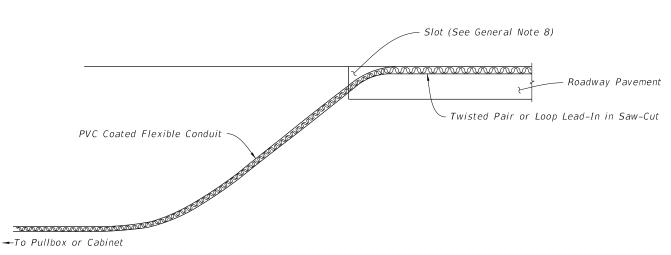
INDEX

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

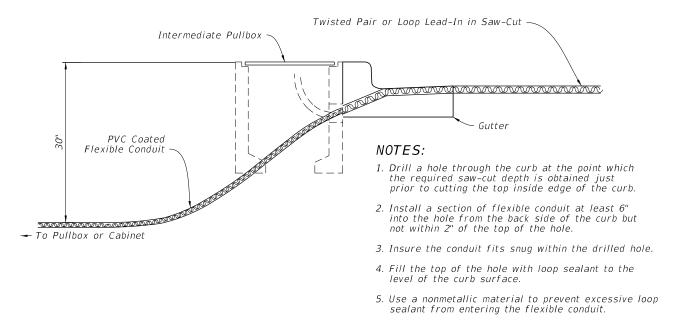


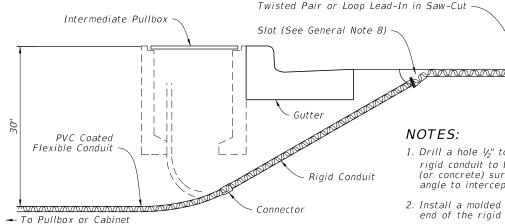
NOTES:

- 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 =





- 1. Drill a hole ½" 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 end of the rigid conduit.
- 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 1 ALTERNATIVE 2

INSTALLATION WITH CURB & GUTTER

TWISTED PAIR AND LOOP LEAD-IN INSTALLATION

LAST REVISION 11/01/18

DESCRIPTION:

FDOT

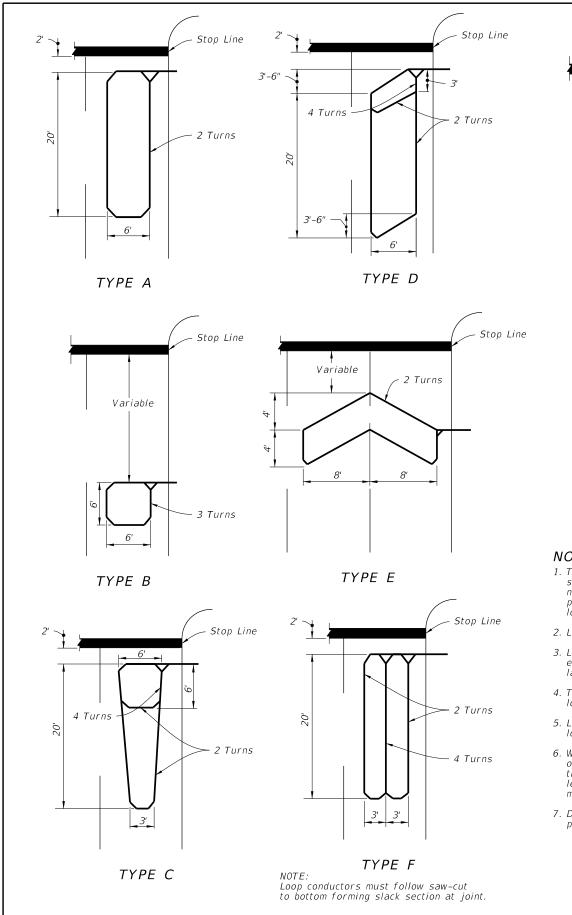
FY 2022-23 STANDARD PLANS

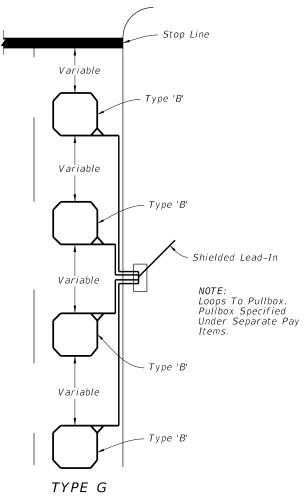
VEHICLE LOOP INSTALLATION DETAILS

INDEX

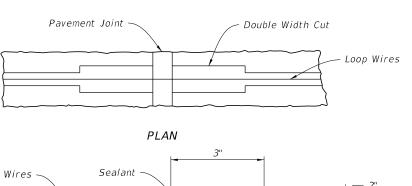
SHEET

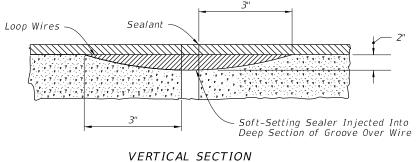
660-001 1 of 2



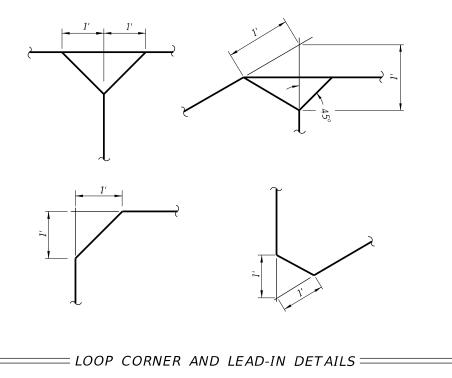


- 1. The number of "Turns" indicated at the specified point on the loop refers to the number of passes of loop wires which are placed in the saw-cut forming the complete
- 2. Loop types or details not drawn to scale.
- 3. Loop Types are centered in a single lane except Type E which is centered on two 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 =====



LOOP TYPES, EXPANSION JOINTS, AND DETAILS

REVISION 11/01/18

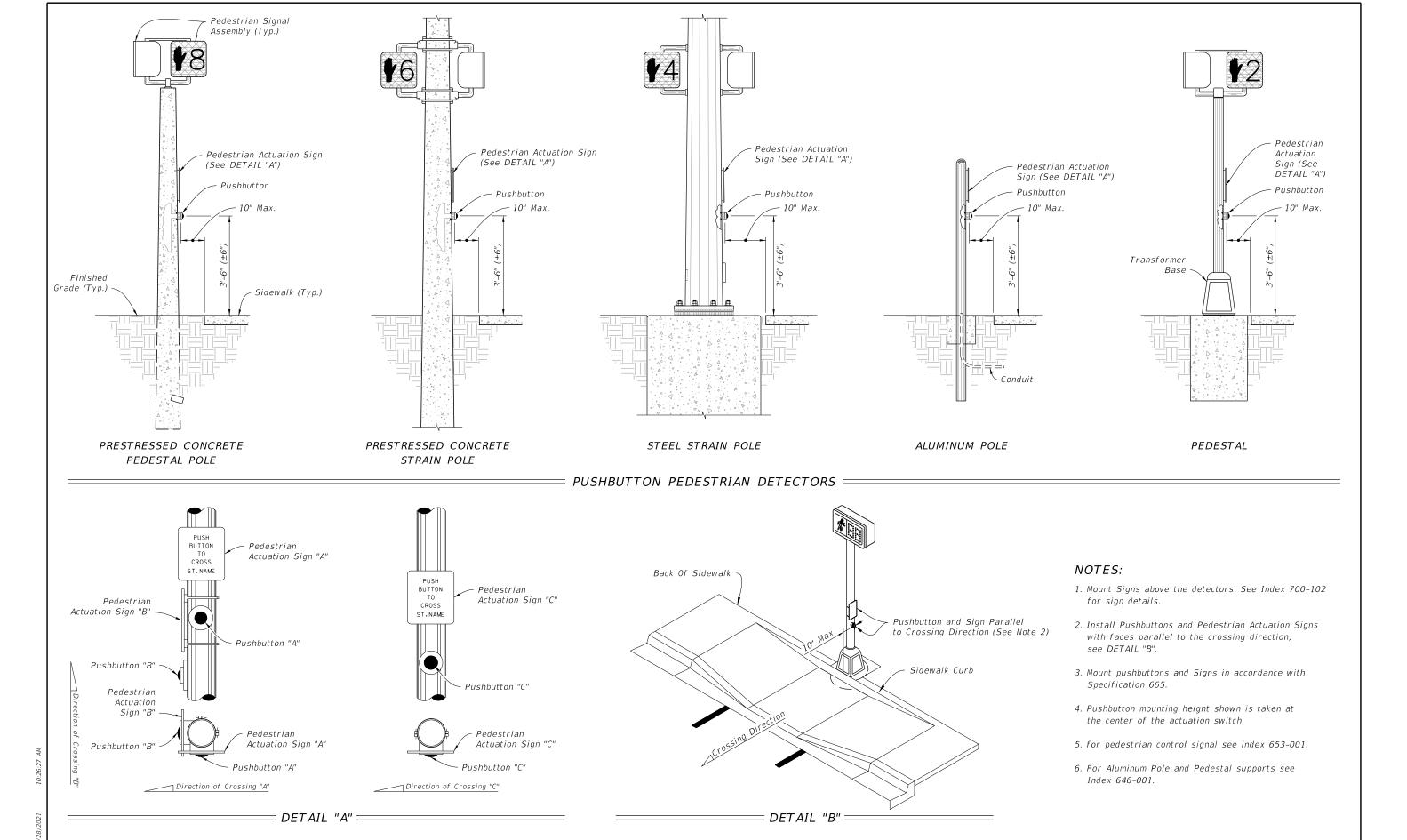
DESCRIPTION:

FDOT

LOOP TYPES =

FY 2022-23 STANDARD PLANS

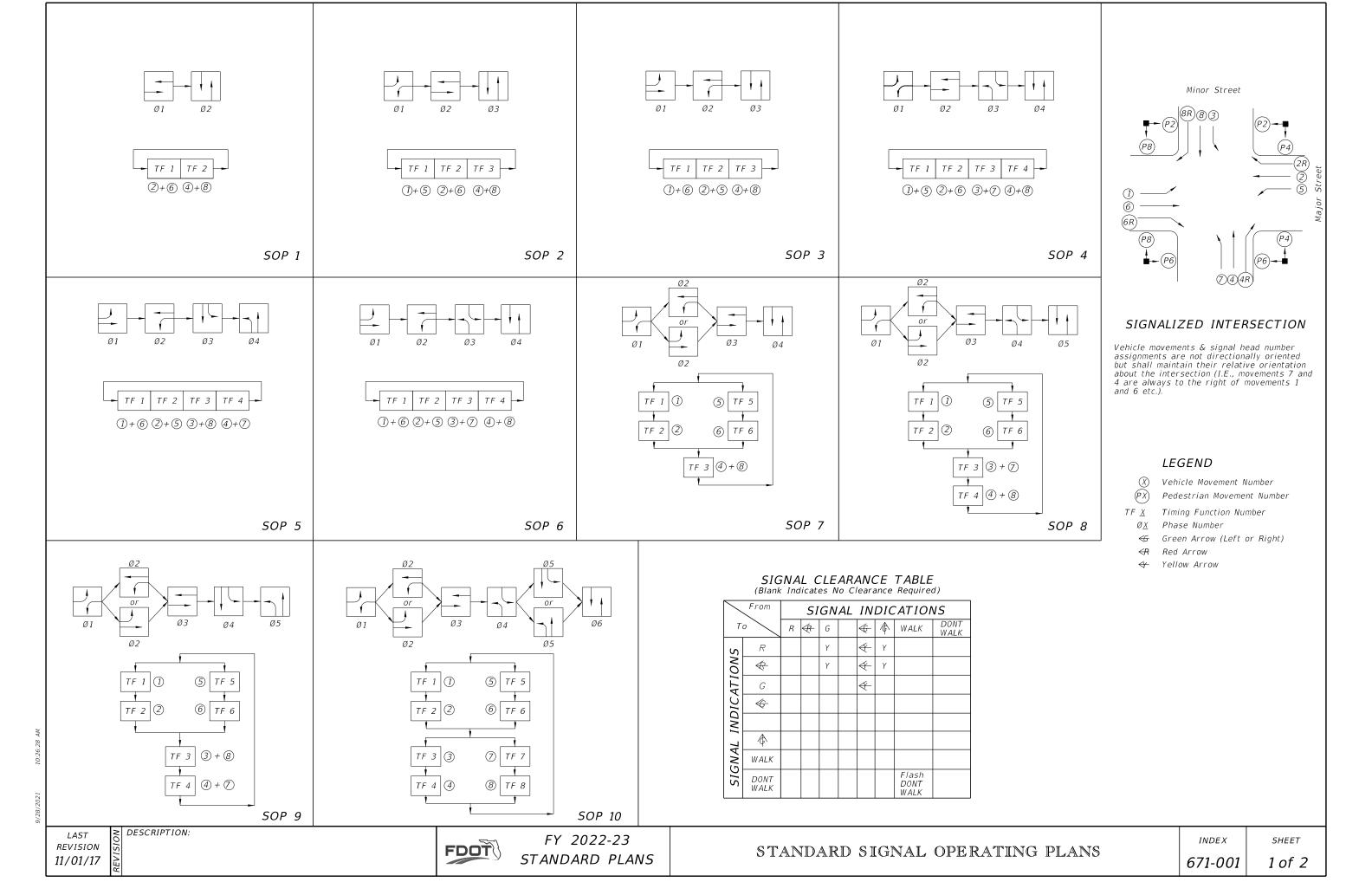
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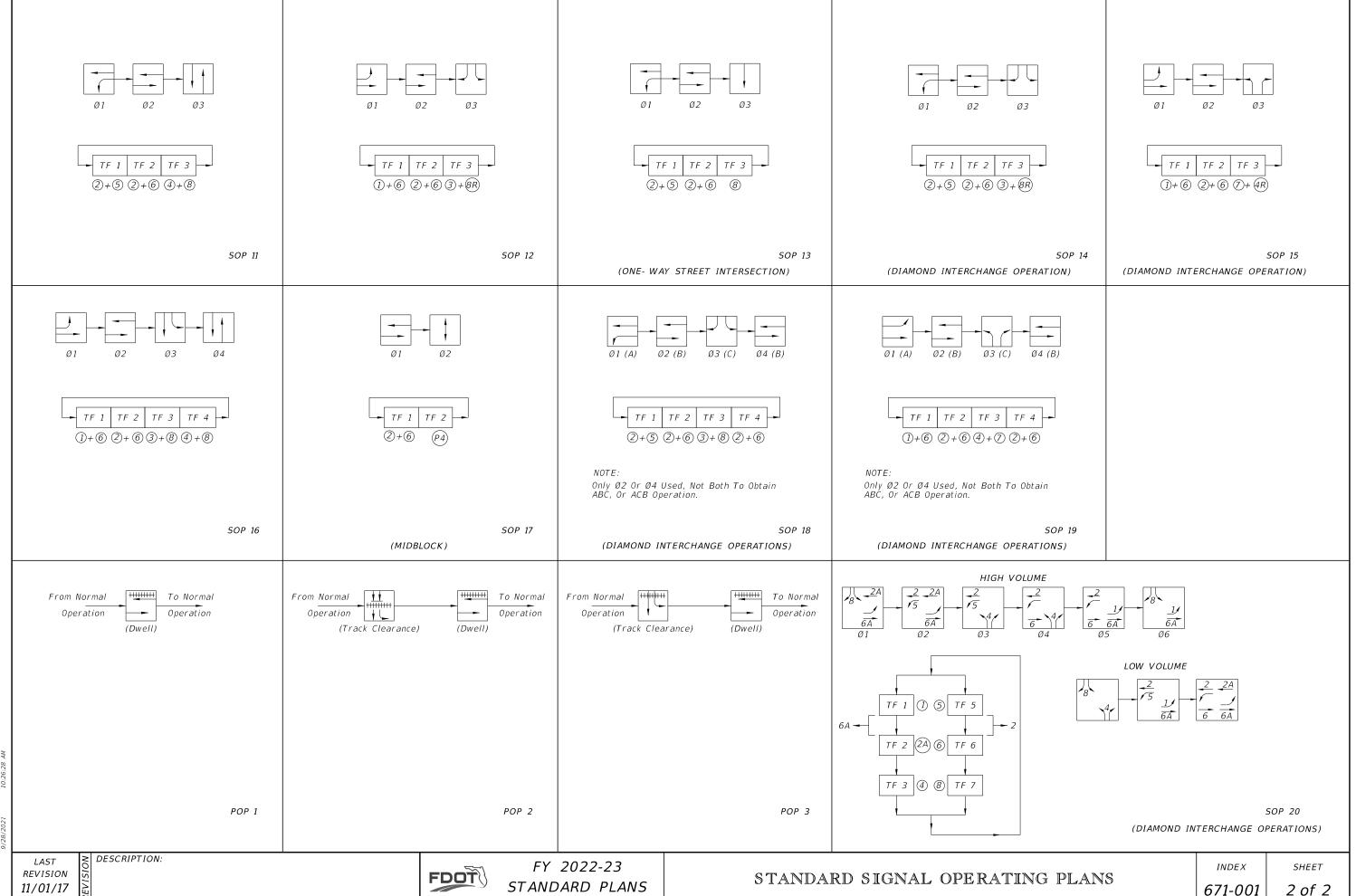


LAST REVISION 11/01/20

DESCRIPTION:

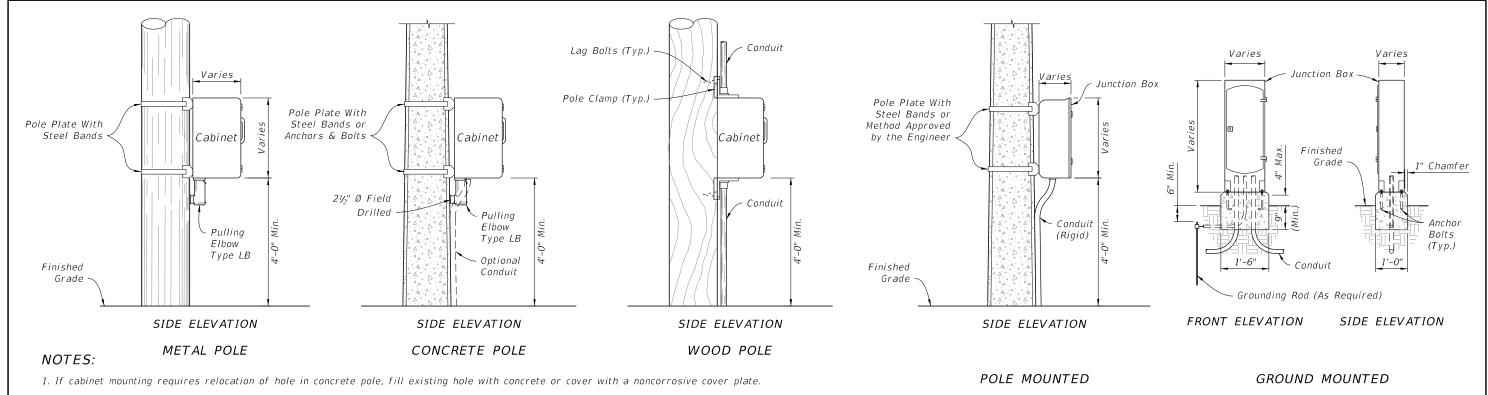
FDOT





STANDARD PLANS

671-001

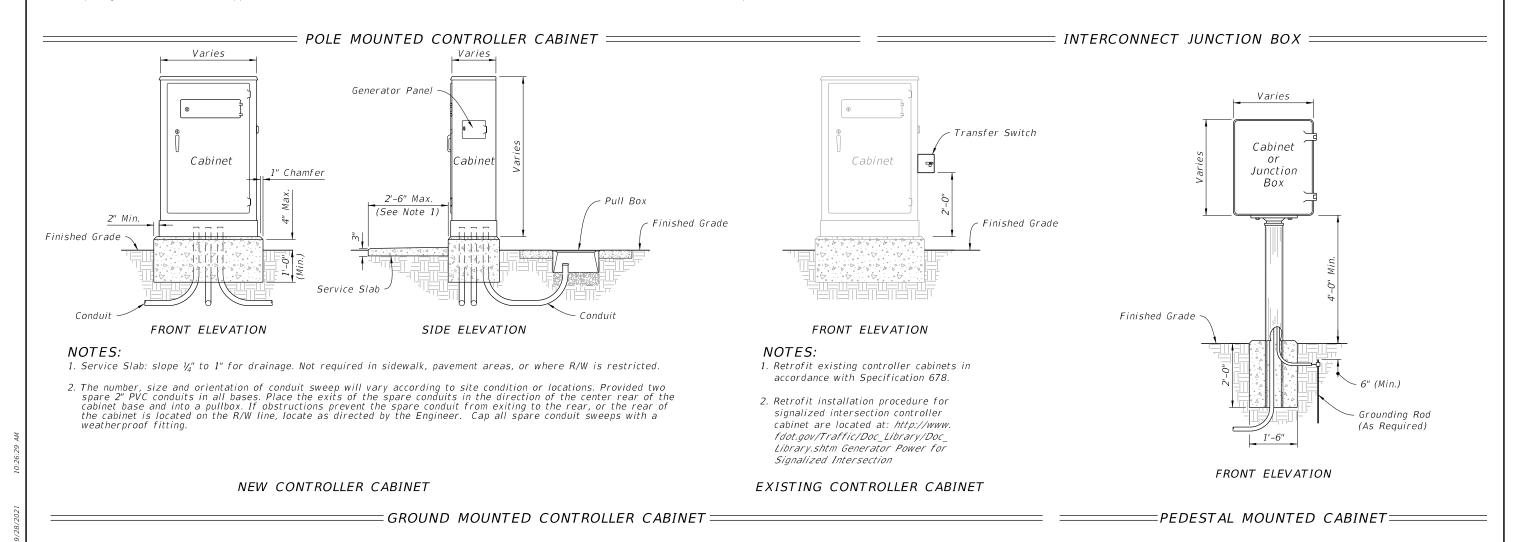


2. Liquidtight flexible conduit is approved for use from the electrical disconnect to the cabinet when both are installed on the same pole.

DESCRIPTION:

REVISION

11/01/18



INDEX

676-010

CABINET INSTALLATION DETAILS

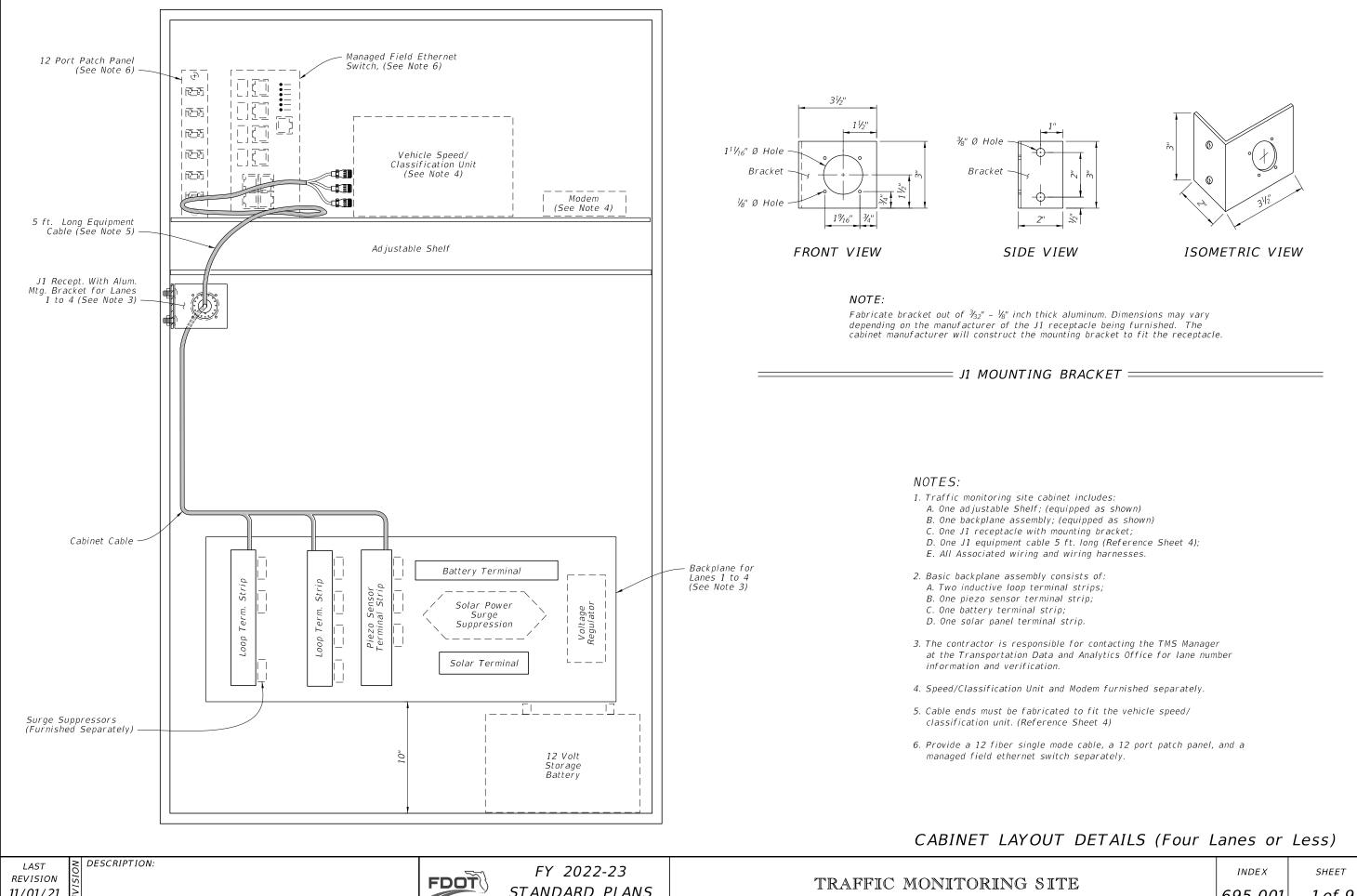
SHEET

1 of 1

FY 2022-23

STANDARD PLANS

FDOT



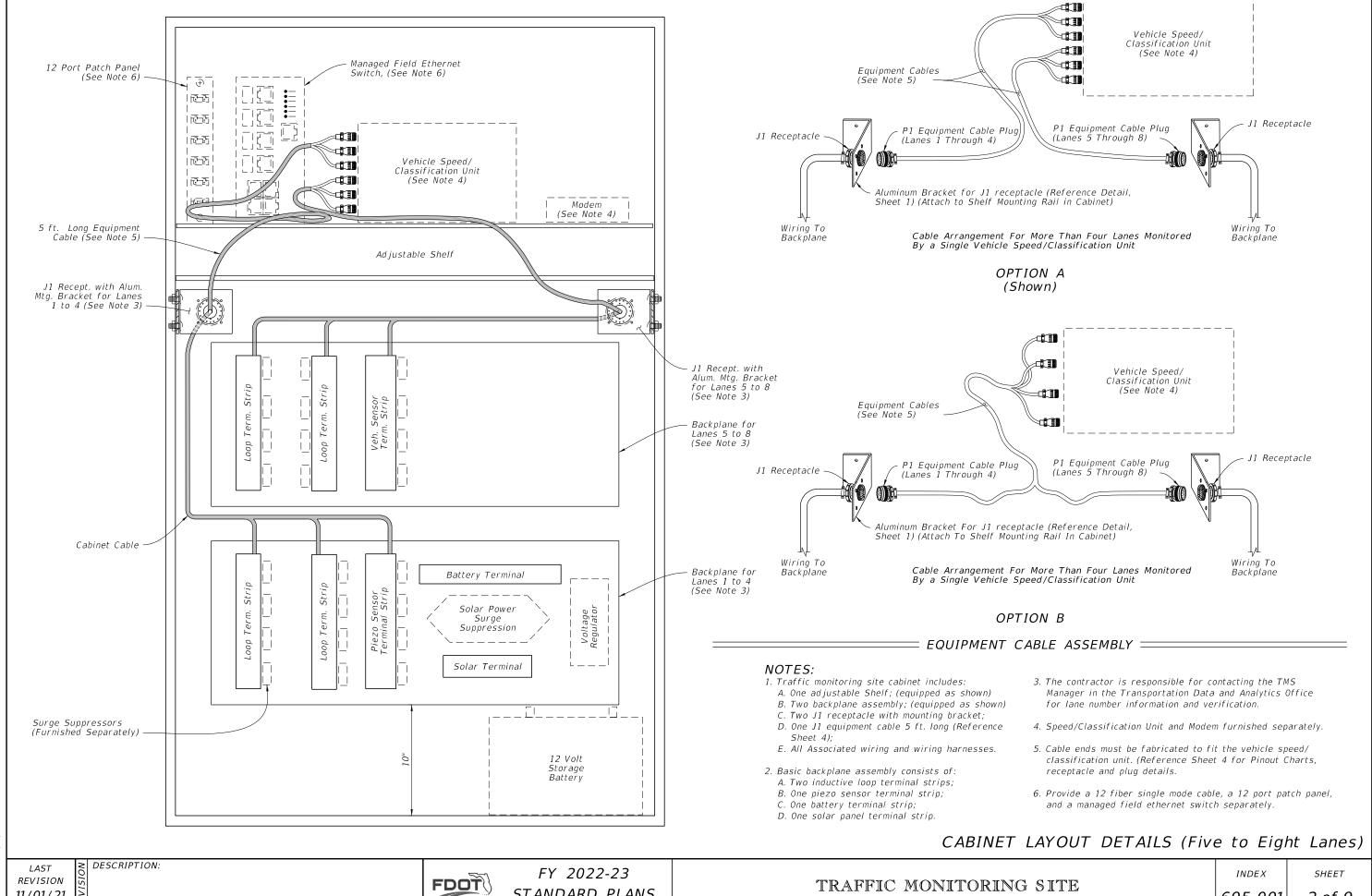
STANDARD PLANS

11/01/21

TRAFFIC MONITORING SITE

695-001

1 of 9



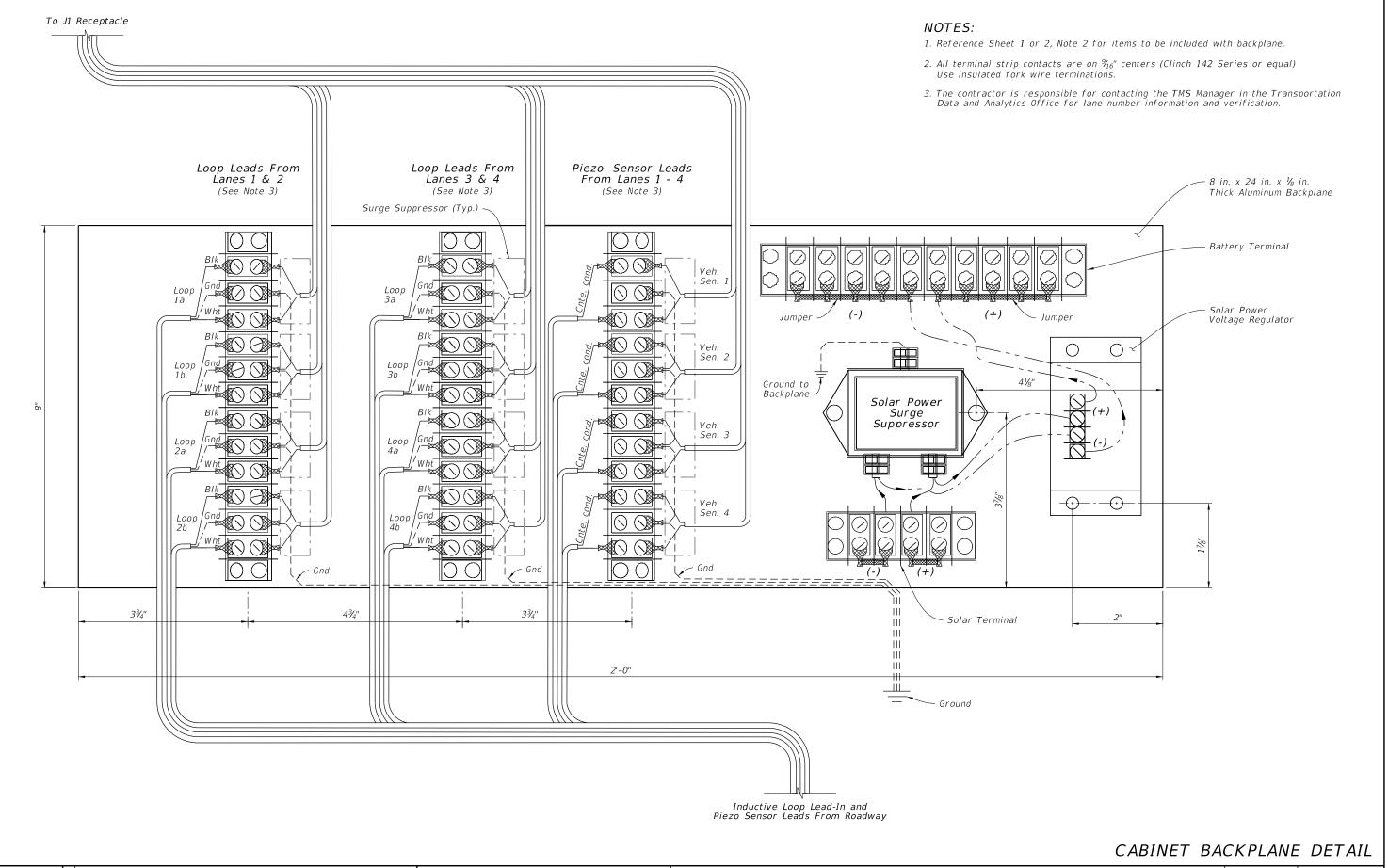
11/01/21

FDOT

STANDARD PLANS

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REVISION

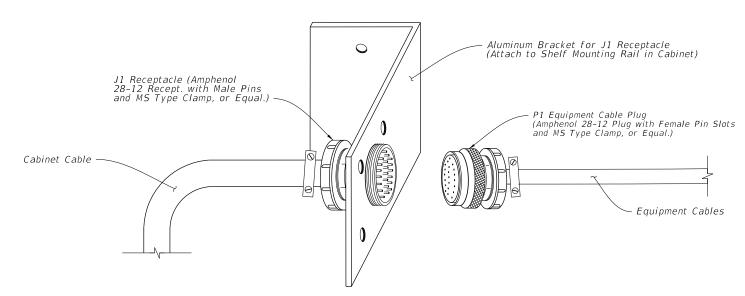
DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

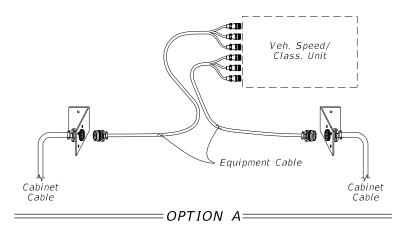
INDEX 695-001

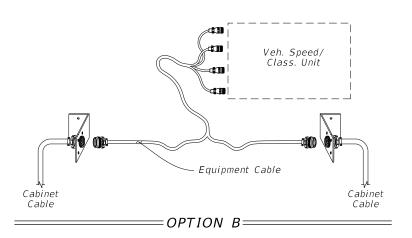
SHEET 3 of 9



	J1 RECEPTACLE PINOUT
	26 Recessed Male Pins
А	Loop 1a (5a) white
В	Loop 1a (5a) black
С	Loop 1b (5b) red
D	Loop 1b (5b) black
Ε	Loop 2a (6a) green
F	Loop 2a (6a) blue
G	Loop 2b (6b) orange
Н	Loop 2b (6b) tan
J	Loop 3a (7a) white
К	Loop 3a (7a) green
L	Loop 3b (7b) red
М	Loop 3b (7b) black
N	Gnd
Р	Loop 4a (8a) w/white
R	Loop 4a (8a) w/black
S	Loop 4b (8b) w/red
T	Loop 4b (8b) w/green
U	Piezo 1 (5) (+) w/blue
V	Piezo 1 (5) sh w/orange
W	Piezo 2 (6) (+) w/green
Х	Piezo 2 (6) sh w/red
Y	Piezo 3 (7) (+) w/black
Z	Piezo 3 (7) sh w/red/blk
а	Piezo 4 (8) (+) red/ green
b	Piezo 4 (8) sh red/white
d	Gnd green

J1	EQUIPMENT CABLE PL	IJG
	26 Female Pin Slots	
А	Loop 1a (5a)	
В	Loop 1a (5a)	
С	Loop 1b (5b)]
D	Loop 1b (5b)	To Unii
Ε	Loop 2a (6a)	ect nnics
F	Loop 2a (6a)	Connect To ectronics Uni
G	Loop 2b (6b)	E/e
Н	Loop 2b (6b)	
N	Gnd	
J	Loop 3a (7a)	
К	Loop 3b (7b)	
L	Loop 3b (7b)	<u>.</u>
М	Loop 3b (7b)	To S Uni
Р	Loop 4a (8a)	Connect To lectronics U
R	Loop 4a (8a)	Con
S	Loop 4b (8b)	E/
T	Loop 4b (8b)	
d	Gnd	
U	Piezo 1 (5) (+)	
V	Piezo 1 sh	
W	Piezo 2 (6) (+)	o Unit
X	Piezo 2 sh	ct T ics (
Y	Piezo 3 (7) (+)	Connect To lectronics Un
Z	Piezo 3 sh	C E/ec
a	Piezo 4 (8) (+)	-
b	Piezo 4 sh	

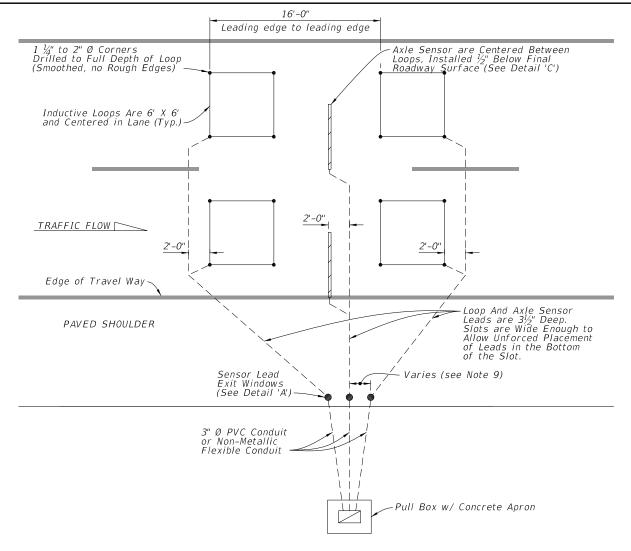




- The contractor is responsible for contacting the TMS Manager in the Transportation Data and Analytics Office for lane number information and verification.
- 2. The equipment cable can accommodate up to four lanes of inductive loop and piezo sensor inputs. (Reference Sheet 1 for cabinet layout)
- 3. For more than four lanes and up to eight lanes of inputs, the following options are available:
- A. Second Vehicle Speed/Class. Unit and separate equipment cable connecting to a second J1 receptacle; or
- B. Single Vehicle Speed/Class. Unit capable of up to eight lanes of inputs and a single equipment cable with split ends to fit two J1 receptacles. (Reference 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.

LAST **REVISION** 11/01/21

DESCRIPTION:

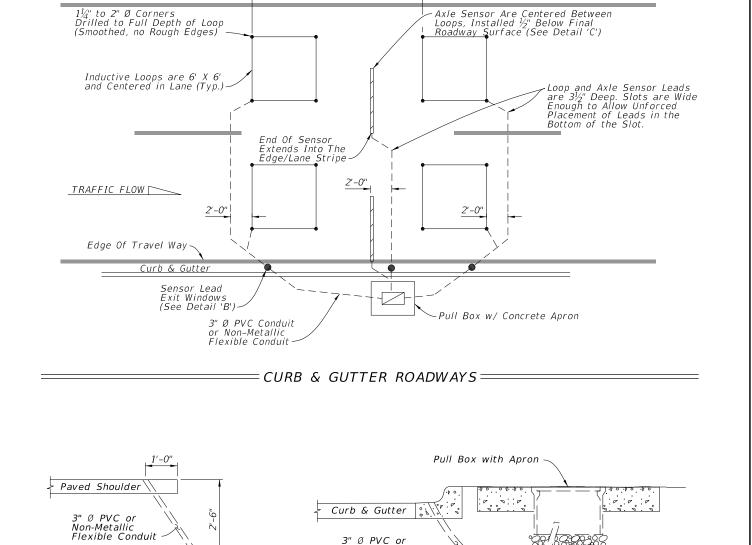


ROADWAYS WITH PAVED SHOULDERS =

NOTES:

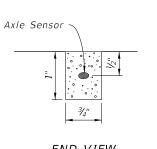
- 1. Install axle sensors and loops associated with axle sensors after placement of the friction course.
- 2. Cut a $3\frac{1}{2}$ " deep slot for the Inductive loops. Loop slots will be cut wide enough to allow unforced placement of the wire into the bottom of the slot. Four turns of #14 AWG, place 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 twists per foot. Loops that are within 150' of the cabinet, extend the twisted pair loop wire directly to the cabinet. For distances over 150', #14 IMSA 50-2 shielded lead-in cable must be spliced to the loop wire twisted pair at the first pull box to which the loop wire is pulled.
- 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 apron details.
- 6. All splices will be performed using splice kits designed for direct burial. Splice kits will include screw on wire connectors and a housing with sufficient sealant to fully encapsulate the spliced connections. Taped splices are not permitted.
- 7. 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 slot at full width in a single pass. Cutting two slots and chipping out roadway material between
- 8. 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.
- 9. Install Exit Windows at least 2' apart.

DESCRIPTION:



16'-0"

Leading edge to leading edge



Non-Metallic Flexible Conduit

EXIT WINDOW

= DETAIL 'B' =

END VIEW (Axle Sensor Slot) _____ DETAIL 'C' ____

= TYPICAL FOR UP TO 4 LANES OF SENSOR LEADS PULLED TO ONE SIDE OF THE ROADWAY ==

LANE LAYOUT FOR TMS INDUCTIVE LOOP AND AXLE SENSOR

REVISION 11/01/21

FDOT

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TRAFFIC MONITORING SITE

INDEX

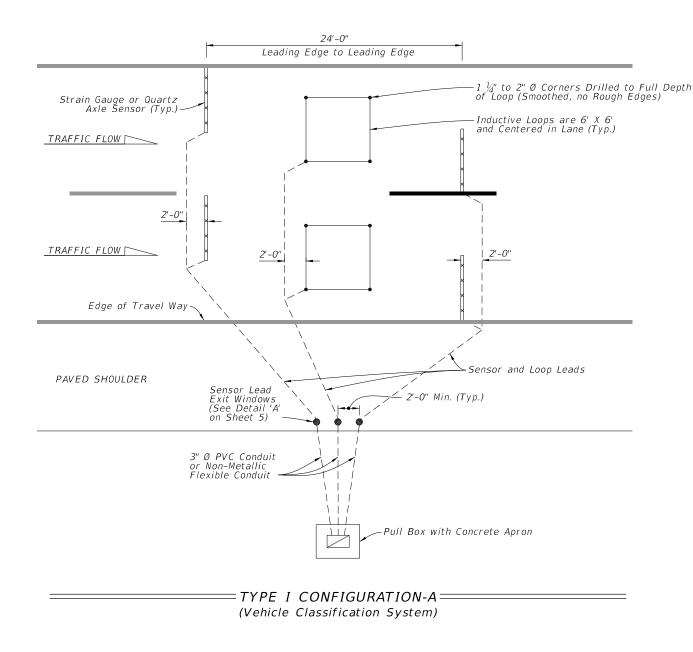
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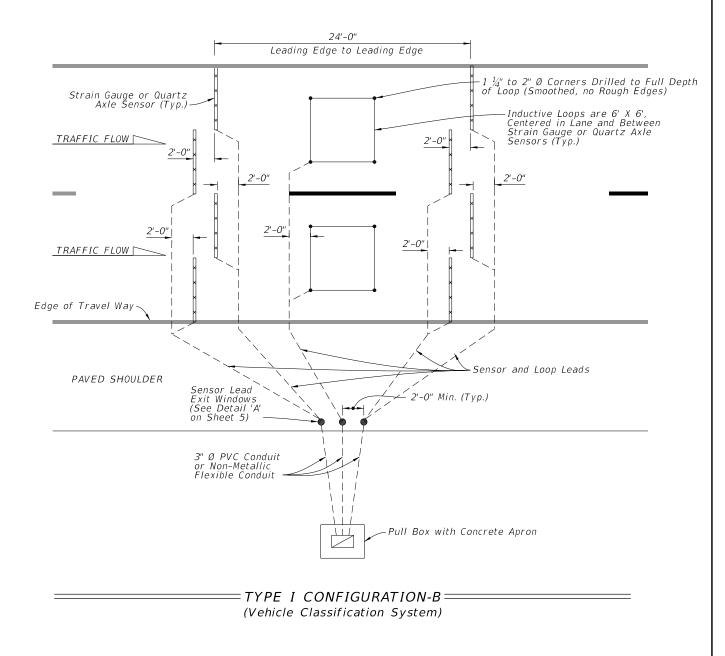
SHEET 5 of 9

To Pull Box -

EXIT WINDOW

== DETAIL 'A' ====





Configuration-A and Configuration-B are based on the vehicle Speed/classification unit. Contact the TMS Manager in the Transportation Data and Analytics Office for the correct configuration.

LANE CONFIGURATION FOR TMS INDUCTIVE LOOP AND STRAIN GAUGE/QUARTZ AXLE SENSOR

REVISION 11/01/21

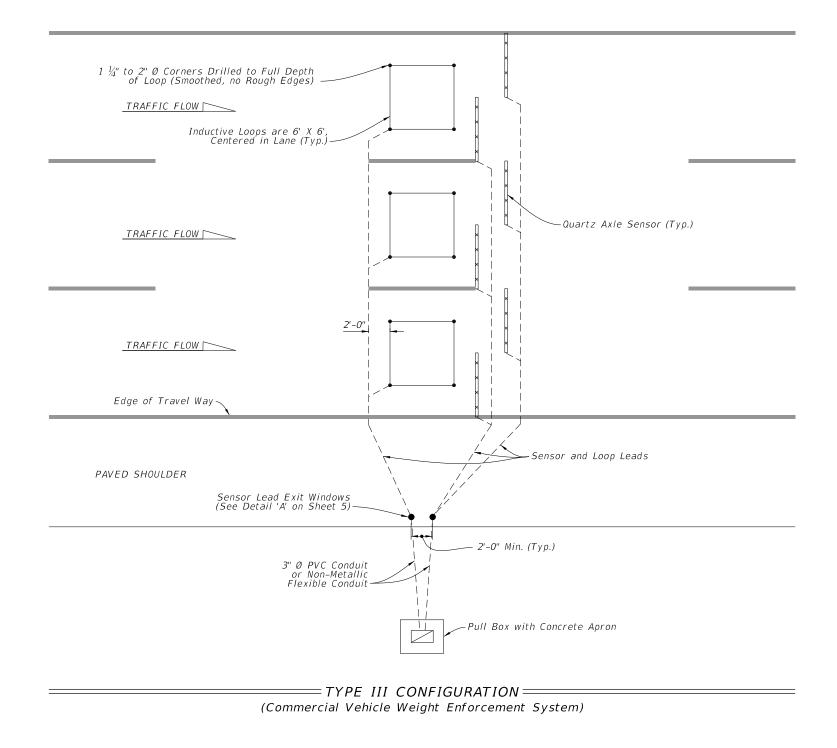
FY 2022-23 FDOT STANDARD PLANS

TRAFFIC MONITORING SITE

INDEX 695-001

SHEET 6 of 9

DESCRIPTION:



27/2021 10:24:3

REVISION

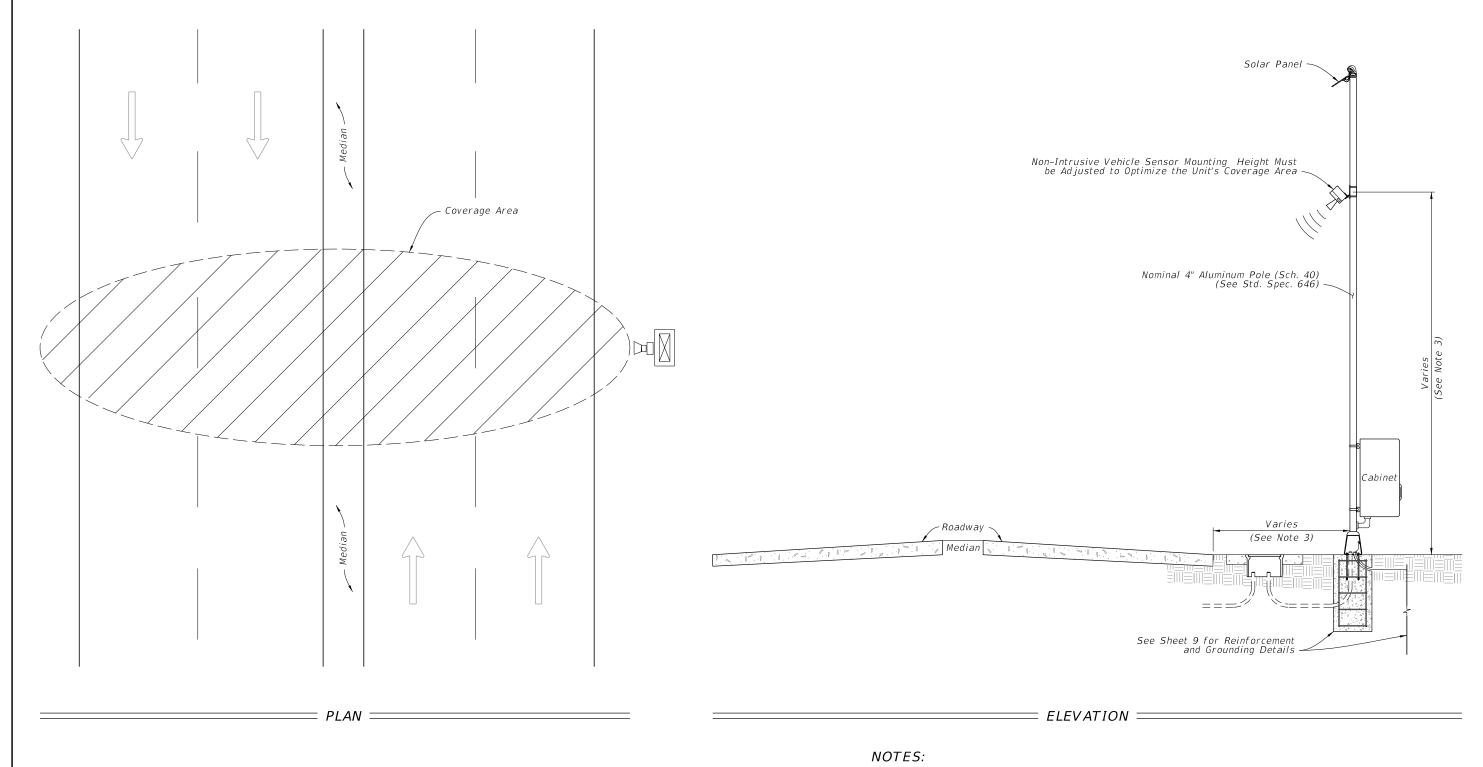
11/01/21

≥ DESCRIPTION:

FDOT

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STANDARD PLANS



- 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.

NON-INTRUSIVE VEHICLE SENSOR

REVISION 11/01/21

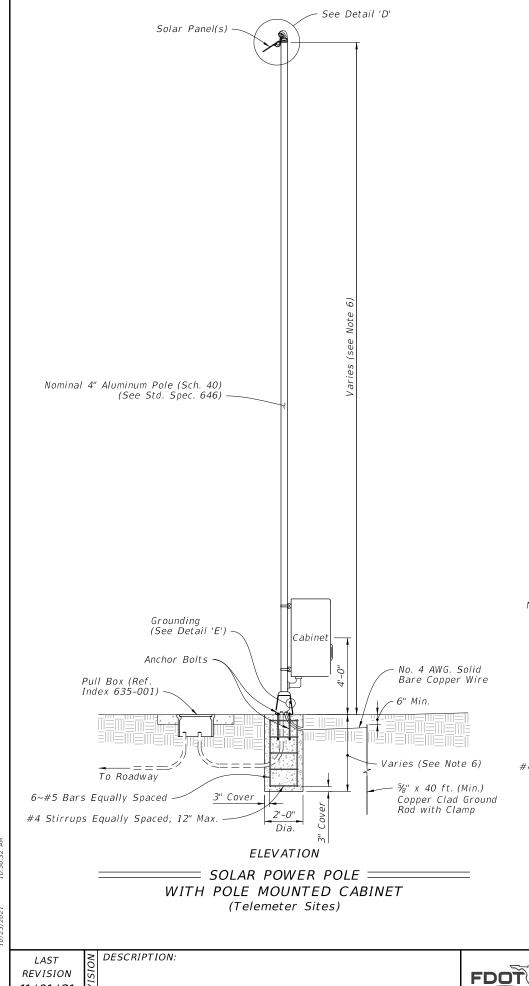
DESCRIPTION:

FY 2022-23 STANDARD PLANS

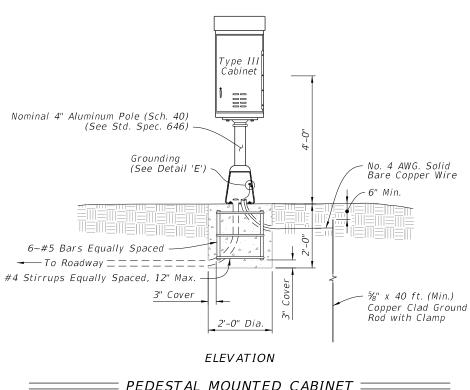
TRAFFIC MONITORING SITE

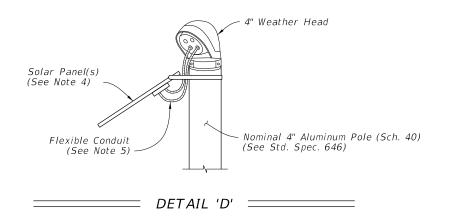
INDEX 695-001

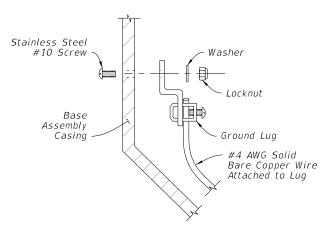
SHEET 8 of 9



- 1. Cabinet installed per Index 676-010 except cabinet center will be 4 feet above grade.
- 2. Meet the requirements of Specification 646.
- 3. Use #10 AWG stranded copper wire for Solar Panel Array installations, Red insulation is THHN or THWN for positive 12 volts wiring, Black insulation is THHN or THWN for negative, 12 volts wiring, Green insulation is THHN or THWN for ground bonding of the solar panel frame to the pole and earth.
- 4. Solar panel should be installed facing due south with angle of tilt equal to the sum of the following equation. The Latitude of the panel's location, multiplied by 0.76, plus 3.1 degrees. Equation expressed as (LAT)X(0.76)+(3.1°)
- 5. Encase all wiring from the weather head to the solar panel in outdoor flexible conduit.
- 6. Concrete Base Dimensions:
- a. 4' poles: depth of 2'-0"
- b. 12' or 15' poles: depth of 3'-0"
- c. 20' or 30' poles: depth of 4'-0"







= DETAIL 'E'

PEDESTAL MOUNTED CABINET (Portable Traffic Monitoring Sites)

11/01/21

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INDEX

,,, _	niccis 7, 0	, and J.					
	Size		Centroid				
	a x h Local		Global 'Xn'	Global 'Y _n '	'A'n	'X' _n x 'A' _n	'Y' _n x 'A' _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

 $\Sigma ('A'_{n}) = 2,218 \text{ in.}^{2} = 15.4 \text{ ft.}^{2} \qquad \Sigma ('X'_{n} \times 'A'_{n}) = -1,890 \text{ in.}^{3} = -1.09 \text{ ft.}^{3} \qquad \Sigma ('Y'_{n} \times 'A'_{n}) = 60,133 \text{ in.}^{3} = 34.8 \text{ ft.}^{3}$ $'X'_{c} = \frac{\Sigma ('X'_{n} \times 'A'_{n})}{\Sigma 'A'_{n}} = -0.1 \text{ ft.} \qquad 'Y'_{c} = \frac{\Sigma ('Y'_{n} \times 'A'_{n})}{\Sigma 'A'_{n}} = 2.26 \text{ ft.}$

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	MIN	IUM	CC	۱LU۱	1N (POS	ST)	SEL	.EC1	ΓΙΟΙ	V T	4 <i>BLl</i>	=
						i	H' (F	T)						
		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
(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.	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
\$	17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
9	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
1	20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
TOTAL	21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
1	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

For $'H' = 11 \text{ ft.}, Area = 16 \text{ ft.}^2$

- 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.

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, 8 & 9	Frequently Used Sign Clusters

GENERAL NOTES:

1. Shop Drawings:

This Index is considered fully detailed. Submit Shop Drawings only for minor modifications not detailed in the Plans.

- 2. 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
 - E. Aluminum Weld Material: ER 5556 or 5356
- 3. Galvanized Steel Slip Base Stub Materials:
 - A. Steel Plate and Structural Shapes: ASTM A36 or ASTM A709, Grade 36
 - B. Steel Weld Metal: E70XX
- 4. 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
- 5. 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
- 6. 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 (BaseBolts): 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
- 7. Coatings:
 - A. Aluminum Fasteners: Anodic coating (0.0002 inches mint.) and chromate sealed
 - B. High Strength Steel Bolts Nuts and Washers: ASTM F2329
- C. All other steel items (excluding stainless steel): Hot-dip Galvanize-ASTM A123
- D. Repair damaged galvanizing in accordance with Specification 562
- 8. 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.

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.	

GUIDE TO USE THIS INDEX

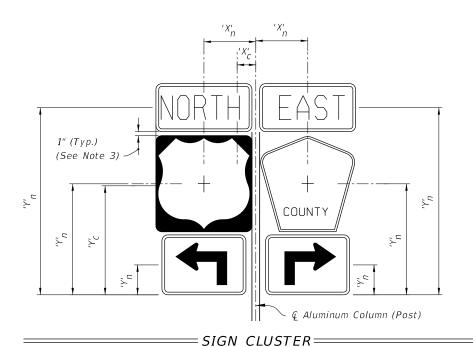
GENERAL NOTES AND DESIGN EXAMPLE

LAST REVISION 11/01/20

DESCRIPTION:



FY 2022-23 STANDARD PLANS



 $'X'_{C} = \frac{\sum \left(\begin{array}{ccc} X'_{n} \times A'_{n} \right)}{\sum A'_{n}} \qquad C' = Y'_{C} = \frac{\sum \left(\begin{array}{ccc} Y'_{n} \times A'_{n} \right)}{\sum A'_{n}} \end{array}$

 $'A'_n = Area of individual sign$

 $^{\prime}B^{\prime}$ = 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

DESCRIPTION:

 $'X'_{C} = Centroid\ horizontal\ location\ of\ sign\ or\ cluster\ from\ \ \ \ Aluminum\ Column\ (Post)$

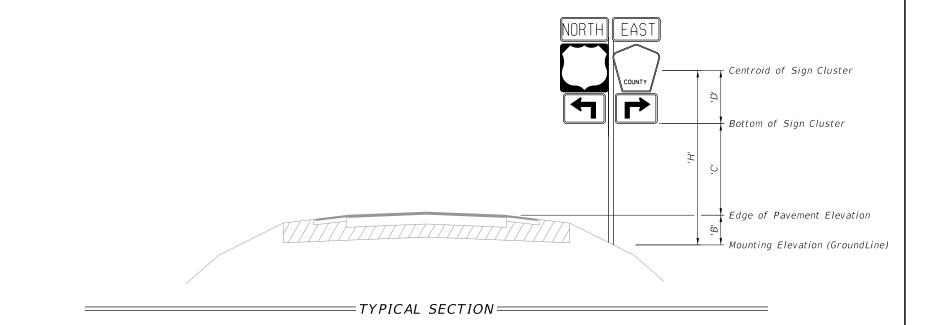
 $'Y'_{c}$ = Centroid height of sign or cluster from bottom of sign cluster

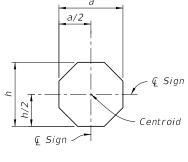
 $'X'_n = Individual \ sign \ centroid \ horizontal \ location \ from \ \ \ \ Aluminum \ \ Column \ (Post)$

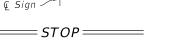
 $'Y'_n = Individual Sign centroid height from bottom of sign cluster$

- 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, including rotated sign panels.
- 3. Vertical sign spacing (1" shown on Sign Cluster detail) also applies to rotated signs.

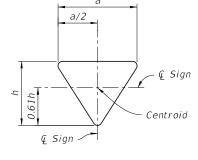
=CALCULATION OF SIGN CLUSTER CENTROID==

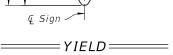






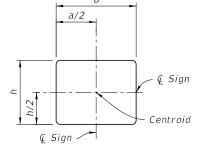
_ € Sign



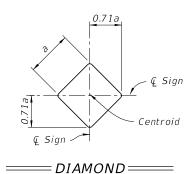


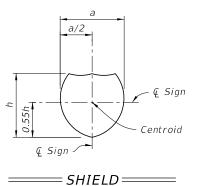
€ Sign ∕

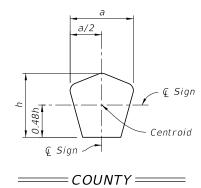
==== SCHOOL=====











DESIGN EXAMPLE - CENTROID

REVISION 11/01/19

FDOT

FY 2022-23 STANDARD PLANS

===== RAILROAD =====

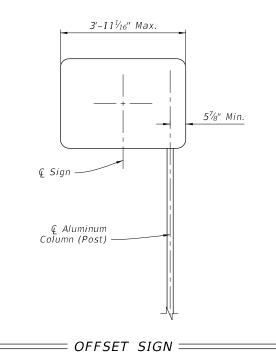
SINGLE COLUMN GROUND SIGNS

INDEX

		FC	UNDATION	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) $3\frac{1}{2}$ " 0.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.



- 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

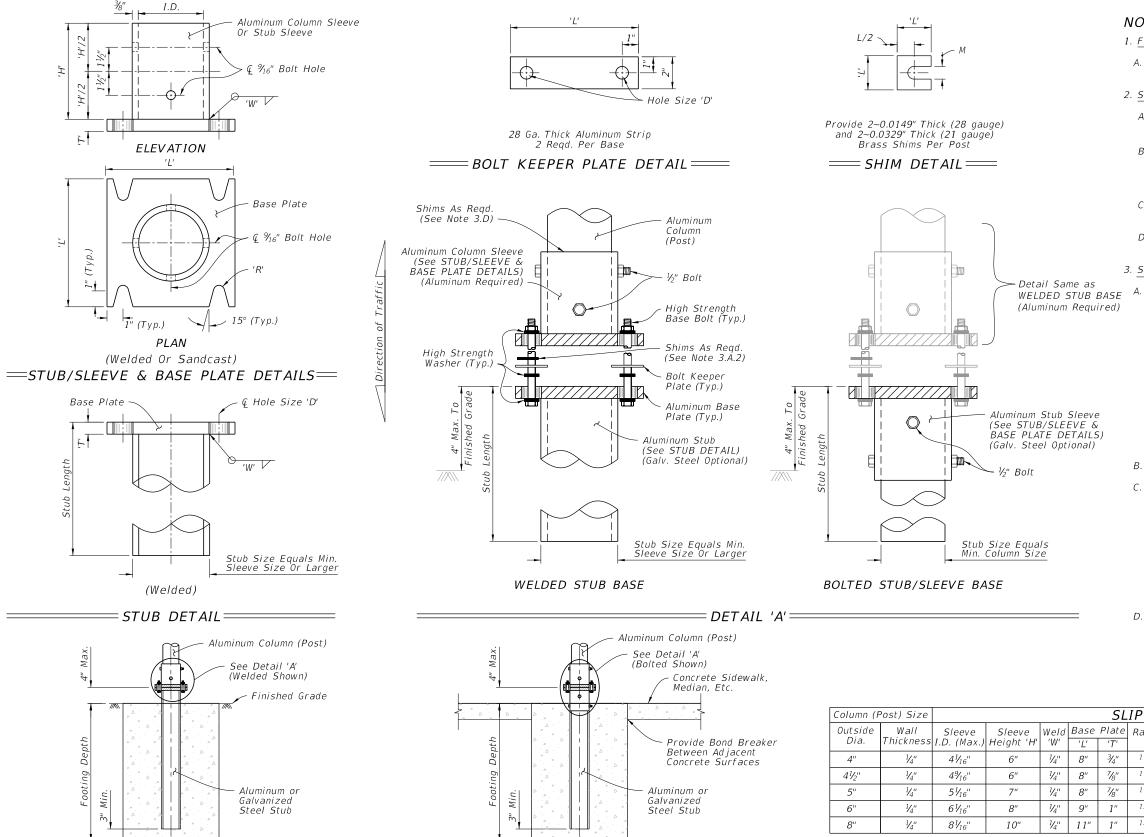
LAST REVISION 11/01/19

DESCRIPTION: Renumbered Sheet.



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- 1. Foundation Notes for Slip Base:
- A. Place Stub into concrete foundation given in the FOUNDATION TABLE using Class II Concrete.
- 2. Slip Base Fabrication Notes:
- A. The difference between the O.D. of the post and I.D. of the Sleeve must be $\frac{1}{16}$ " or less.
- B. The WELDED STUB BASE and lower STUB/SLEEVE BASE PLATE may be fabricated using galvanized steel as an option to aluminum. The upper portion of the SLIP BASE must be aluminum.
- C. Either a Welded Stub Base or Bolted Stub/Sleeve Base may be used in Slip Base.
- D. For cast base plates bolted to foundation stubs, use a foundation stub the same size as the sign column (Post).
- 3. Slip-Base Assembly Instructions:
- A. Assemble the Slip Base as follows:
 - 1. Insert Post into Sleeve and connect using $2 \sim \frac{1}{2}$ " diameter Sleeve Bolts.
 - 2. Assemble top base plate to bottom Base Plate using Base Bolts (High strength) with 3 washers per bolt. (See Detail 'A'):
 - a. Place one washer on each Base Bolt between the bottom Base Plate and the Base Bolt head.
 - b. Place the next washer between the Bottom Base Plate and the Bolt Keeper Plate.
 - c. Use brass or galvanized steel shims to plumb the post
 - d. Add the top base plate section.
 - e. Place the third washer between the Top Base Plate and the Nut.
- B. Orient the Bolt Keeper Plates in the Direction of Traffic.
- C. Tighten Base Bolts as follows:
 - 1. 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).
 - 2. Loosen each Base Bolt one turn.
 - 3. Under the supervision of the Engineer, use a calibrated wrench to tighten bolts to the torque prescribed in the SLIP BASE DETAILS Table. Over tightened Base Bolts are not permitted.
 - 4. Distort bolt threads at the junction with nuts to prevent loosening. Repair damaged galvanizing.
- D. Obtain a tight sleeve connection by placing 4 galvanized steel shims between the column (post) and sleeve. Space the shims evenly around the perimeter of the column (1 between each bolt hole, 4 total). Use shims that are 1" shorter than the height of the sleeve.

Column (Post) Size		SLIP BASE DETAILS												
Outside Dia.	Wall Thickness	Sleeve I.D. (Max.)	Sleeve Height 'H'		Base Plate			Base Bolt		Base Plate Torque] ,,,,,	SHIM	
					'L'	'T'	'R'	Size	Length	ft-Ibs	inIbs	Size 'D'	L	М
4"	1/4"	4½ ₁₆ "	6"	1/4"	8"	3/4"	1 1/ ₃₂ "	5/8"	3"	29	345	11/ ₁₆ "	13/8"	11/16"
41/2"	1/4"	4% ₁₆ "	6"	1/4"	8"	7/8"	1 1/ ₃₂ "	5/8"	31/4"	29	345	¹ 1⁄ ₁₆ "	13/8"	11/ ₁₆ "
5"	1/4"	5⅓ ₁₆ "	7"	1/4"	8"	7/8"	1 1/ ₃₂ "	5/8"	31/4"	29	345	11/ ₁₆ "	13/8"	11/16"
6"	1/4"	6⅓ ₁₆ "	8"	1/4"	9"	1"	13/ ₃₂ "	3/4"	31/2"	46	554	13/ ₁₆ "	1¾"	13/16"
8"	1/4"	8½ ₁₆ "	10"	1/4"	11"	1"	15/ ₃₂ "	7/8"	3¾"	53	640	15/ ₁₆ "	23/8"	11/16"

■ SLIP BASE AND FOUNDATION DETAIL ■ SLIP BASE AND FOUNDATION DETAIL IN CONCRETE (Non-Frangible Column In Crossovers, Medians & Sidewalks)

2'-0" Dia.

SLIP BASE AND FOUNDATION DETAILS

REVISION 11/01/21 2'-0" Dia.

(Non-Frangible Column, Typ.)

DESCRIPTION:

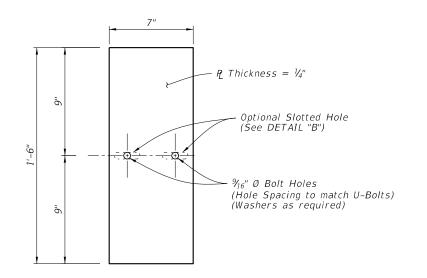
FDOT

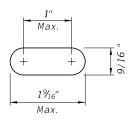
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SINGLE COLUMN GROUND SIGNS

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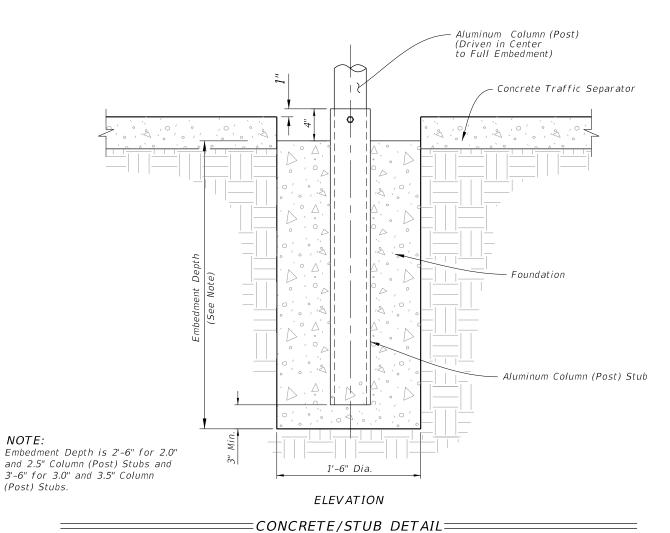




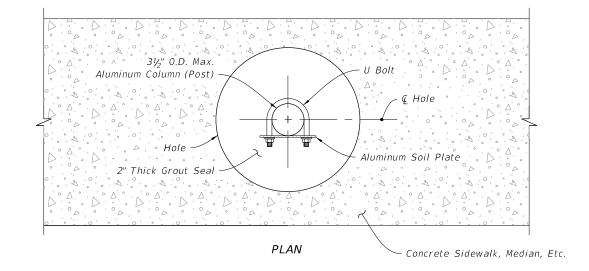
Optional Slotted Holes

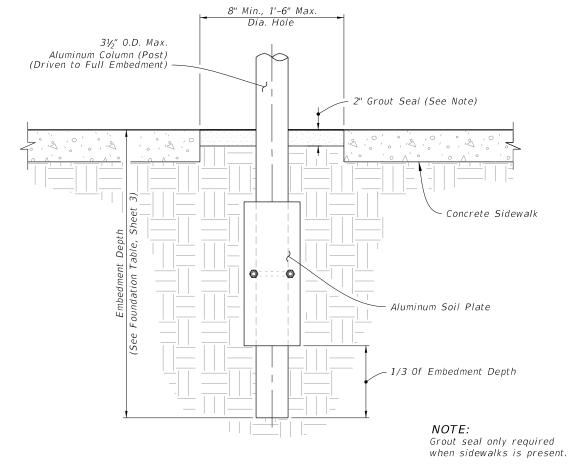
= ALUMINUM SOIL PLATE DETAIL ===

== DETAIL "B" ====



(Traffic Separator)





ELEVATION

= DRIVEN POST DETAIL =

(Frangible Post In Through Sidewalk Shown Installations without Sidewalk Similar)

DRIVEN POST, CONCRETE/STUB, AND SOIL PLATE DETAILS

REVISION 11/01/20

(Post) Stubs.

DESCRIPTION:

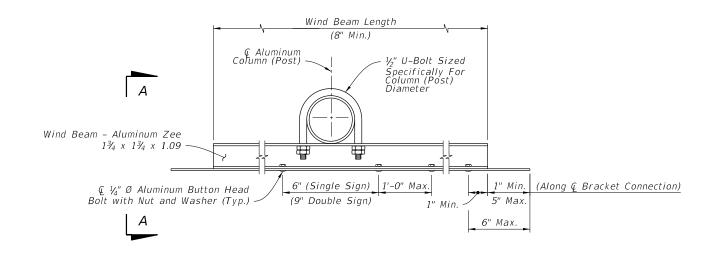
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FY 2022-23 STANDARD PLANS

SINGLE COLUMN GROUND SIGNS

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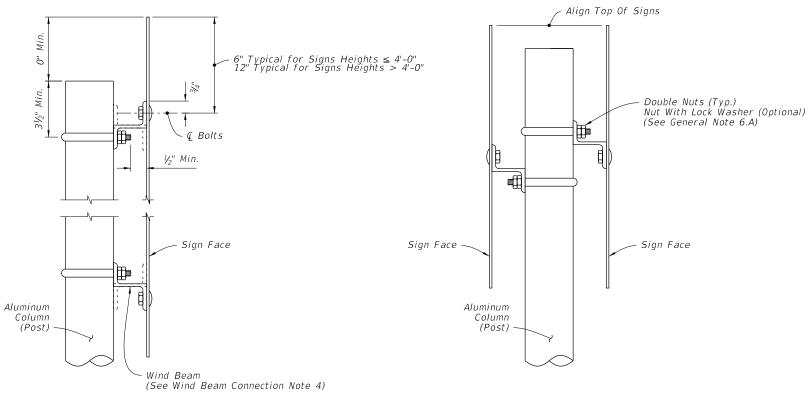
SHEET 5 of 10



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 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 & 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.

SINGLE SIGN DETAIL

BACK-TO-BACK SIGN DETAIL

= VIEW A-A =

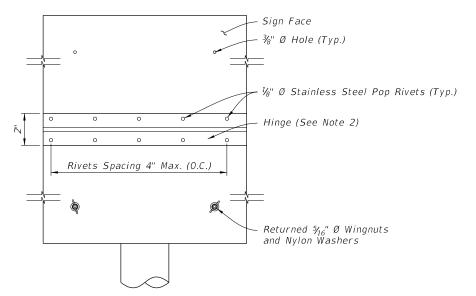
WIND BEAM CONNECTION

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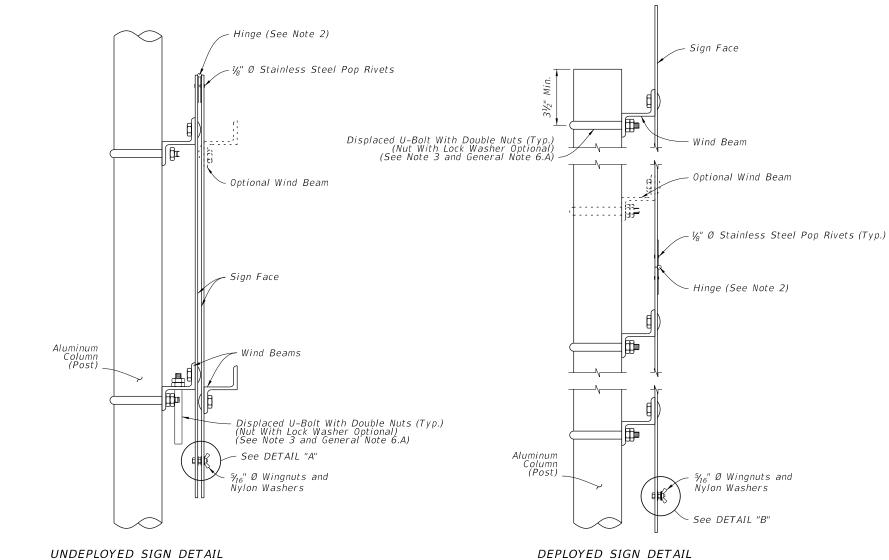
DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

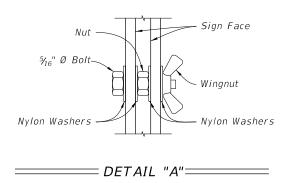


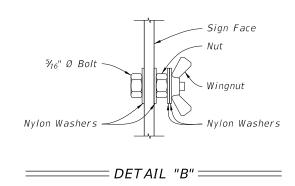
SIGN PANEL FRONT VIEW



NOTES:

- 1. Install sign in the undeployed (down) 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. Stowed 1 or 2 pcs of U-Bolt sized specifically for column (post) diameter. Stowed on Wind Beam and displaced while deploying the sign.
- 4. Bolts, Wingnuts, and washers at the bottom corners of the sign hold the sign panels closed when in the undeployed (down) position. Store bolts, wingnuts, and washers in the bottom corner of the sign when in the deployed (up) position.





= SIGN PANEL SIDE VIEW =

WIND BEAM CONNECTION FOR FLIP UP SIGN

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DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

SINGLE COLUMN GROUND SIGNS

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	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF	_	
ONE WAY	30112	3.00 31		
STOP	24×24	3.31 SF	6.31 SF	1.75 Ft.
	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF	_	
STOP	30x30	5.18 SF	8.18 SF	1.92 Ft.
	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF	-	
OIL WAT	JUX12	5.00 31	10.46.65	
STOP	36×36	7.46 SF	10.46 SF	2.10 Ft.
	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF		
	30 × 12	3.00 31	16.25 SF	2.48 Ft.
STOP	48x48	13.25 SF	10.25 3F	2.40 FL.
	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	
HIGHWAY	30x24	5.00 SF		
	Size	Area	Total Area	Centroid
STOP	36x36	7.46 SF	12.46 SF	 2.55 Ft.
DIVIDED	30x24	5.00 SF	-	

	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF		
STOP	30x30	5.18 SF	13.18 SF	
DIVIDED	30x24	5.00 SF		
	Size	Area	Total Area	Centroid
ONE WAY	36×12	3.00 SF		
STOP	36x36	7.46 SF	15.46 SF	
DIVIDED	30x24	5.00 SF		
	Size	Area	Total Area	Centroid
JCT	21×15	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	24×12	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.
$\qquad \qquad \longleftarrow$	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
27	30×24	5.00 SF	7.19 SF	1.81 Ft.
$\qquad \qquad \blacksquare$	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24×12	2.00 SF		
27 27	24×24	4.00 SF	8.19 SF	2.26 Ft.
	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24×12	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		
301 301	30x24	5.00 SF	10.32 SF	2.49 Ft.
	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST	24×12	2.00 SF		
BUSINESS	24x12	2.00 SF	- - - -	
27	24×24	4.00 SF	10.19 SF	2.80 Ft.
	21x15	2.19 SF		

≥ DESCRIPTION: LAST REVISION 11/01/19



	Size	Area	Total Area	Centroid
	3720		-	centrora
EAST	24x12	2.00 SF		
BUSINESS	24x12	2.00 SF		
			11.19 SF	2.76 Ft.
301	30x24	5.00 SF		
-	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST	30×15	3.13 SF		
BUSINESS	30×15	3.13 SF		
301	30×24	5.00 SF	13.45 SF	3.16 Ft.
	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF	_	
			3.90 SF	1.57 Ft.
LEON 56 COUNTY	18×18	1.71 SF		
	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF		
			5.22 SF	1.72 Ft.
LEON 56 COUNTY	24x24	3.03 SF		
	Size	Area	Total Area	Centroid
JCT	21×15	2.19 SF		
			6.95 SF	1.87 Ft.
LEON 56 COUNTY	30x30	4.76 SF		
	H	+	⊣	

	Size	Area	Total Area	Centroid
LEON 56 COUNTY	18×18	1.71 SF	3.90 SF	1.26 Ft.
—	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
LEON 56 COUNTY	24x24	3.03 SF	5.22 SF	
-	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
LEON 56 COUNTY	30x30	4.76 SF	6.95 SF	1.97 Ft.
-	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
ТО	24x12	2.00 SF	-	
EAST	24x12	2.00 SF		
75	24x24	3.20 SF	9.39 SF	2.87 Ft.
-	21×15	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. - — — — — — —
—	21×15	2.19 SF		

	Size	Area	Total Area	Centroid
ТО	30x15	3.13 SF		
EAST	30x15	3.13 SF		
NTERSTATE 295	30x24	3.99 SF	12.44 SF	3.26 Ft.
	21×15	2.19 SF		
	Size	Area	Total Area	Centroid
JCT	21×15	2.19 SF		
NTERSTATE 75	24x24	3.20 SF	5.39 SF	1.75 Ft.
	Size	Area	Total Area	Centroid
JCT	21×15	2.19 SF		
NTERSTATE 295	30x24	3.99 SF	6.18 SF	1.67 Ft.
	Size	Area	Total Area	Centroid
EAST TO	24x12	2.00 SF		
OR INTERSTATE 75	24x24	3.20 SF	5.20 SF	1.67 Ft.
	Size	Area	Total Area	Centroid
EAST TO	24x12	2.00 SF		
NTERSTATE OR NERSTATE 295	30x24	3.99 SF	5.99 SF 	1.60 Ft.
	Size	Area	Total Area	Centroid
EAST TO	30×15	3.13 SF		
NTERSTATE OR NTERSTATE 295	30x24	3.99 SF	7.12 SF	1.81 Ft.
	Size	Area	Total Area	Centroid
EAST TO	30x15	3.13 SF		
75 OR INTERSTATE 75	36x36	7.20 SF	10.33 SF	2.27 Ft.

9/28/2021

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FDOT

FY 2022-23 STANDARD PLANS

	Size	Area	Total Area	Centroid
EAST TO	30x15	3.13 SF		
INTERSTATE INTERSTATE			12.12 SF	2.18 Ft.
295/ 295/	45x36	8.99 SF		
	Size	Area	Total Area	Centroid
EAST TO	24x12	2.00 SF		
75 OR INTERSTATE 75	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.
	21x15	2.19 SF		
	Size	Area	Total Area	Centroid
EAST TO	30x15	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
AR AR	30x30	4.69 SF	6.69 SF	 1.61 Ft.
AHEAD 200 FT	24x12	2.00 SF		
	Size	Area	Total Area	Centroid
AR AR	30x30	4.69 SF	8.44 SF	1.77 Ft.
AHEAD 200 FT	30x18	3.75 SF		
	Size	Area	Total Area	Centroid
AR AR	36x36	6.75 SF	10.50 SF	2.06 Ft.
AHEAD 200 FT	30×18	3.75 SF		

	Size	Area	Total Area	Centroid
M	30X30	4.69 SF	 6.69 SF	
	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
A	36X36	6.75 SF	10.50 SF	2.06 Ft.
	30X18	3.75 SF		
	Size	Area	Total Area	Centroid
	30X30	6.25 SF	8.25 SF	2.28 Ft.
OR AHEAD	24X12	2.00 SF		
	Size	Area	Total Area	Centroid
	36X36	9.00 SF	12.75 SF	
AHEAD	30X18	3.75 SF		
	Size	Area	Total Area	Centroid
\Diamond	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		
35 MPH	30X30	6.25 SF	-	

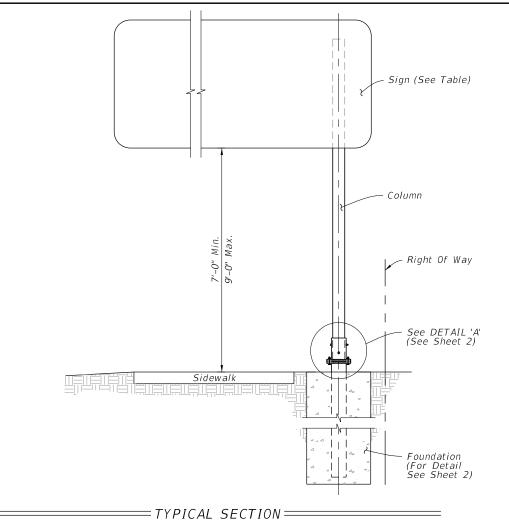
	Size	Area	Total Area	Centroid
	30X30	6.25 SF	9.25 SF	2.51 Ft.
X MILES XXX FEET	24X18	3.00 SF		
	Size	Area	Total Area	Centroid
	36 X 36	9.00 SF	14.00 SF	3.06 Ft.
X MILES XXX FEET	30X24	5.00 SF		

LAST REVISION 11/01/19

≥ DESCRIPTION:

FDOT

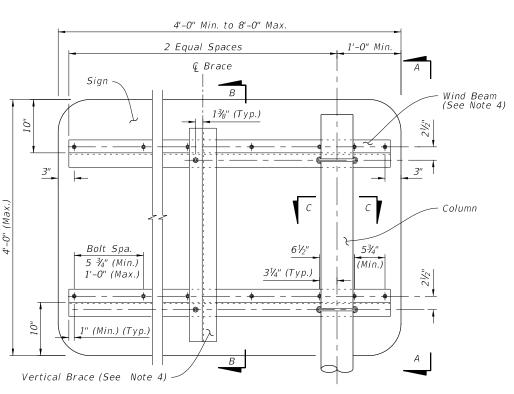
FY 2022-23 STANDARD PLANS

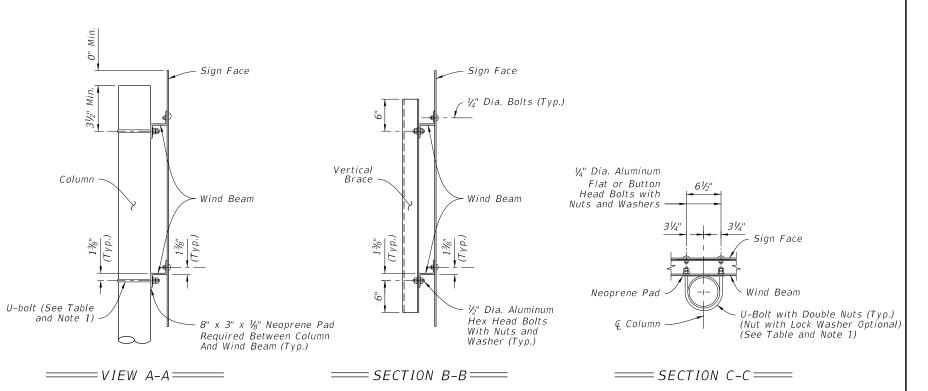


GENERAL NOTES:

- 1. Refer to Index 700-010 for additional notes, assembly of base connection and material specifications not given in this Index.
- 2. Aluminum Columns: ASTM B429 Alloy 6061-T6.
- 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 $2^{1}V_{16}$ x 3.38. Install Vertical Brace on 7'-0" to 8'-0" signs only.
- 5. Provide 2 ~ 0.0149" Thick (28 gauge) and 2 ~ 0.0329" Thick (21 gauge) Brass Shims Per Post. Used brass shims to plumb the post.
- 6. Use nylon washers under the button bolt heads to protect sign sheeting. Use aluminum washers under nut.

COLUMN SELECTION AND FOOTING SIZE TABLE							
Sign Size Height x Length	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
4'-0" x 5'-0" 4'-0" x 6'-0"	4 NPS Schedule 80 (4.5" x 0.337")	5 NPS Schedule 120 (5.563" x 0.5")	1/2"	5½" x 3½"	270 ½ 45	1"	6'-0"
4'-0" x 7'-0" 4'-0" x 8'-0"	5 NPS Schedule 80 (5.563" x 0.375")	6 NPS Schedule 80 (6.625" x 0.432")	5/8"	³/ ₄ " × 4"	445 ½ 75	11/8"	6'-6" 7'-0"

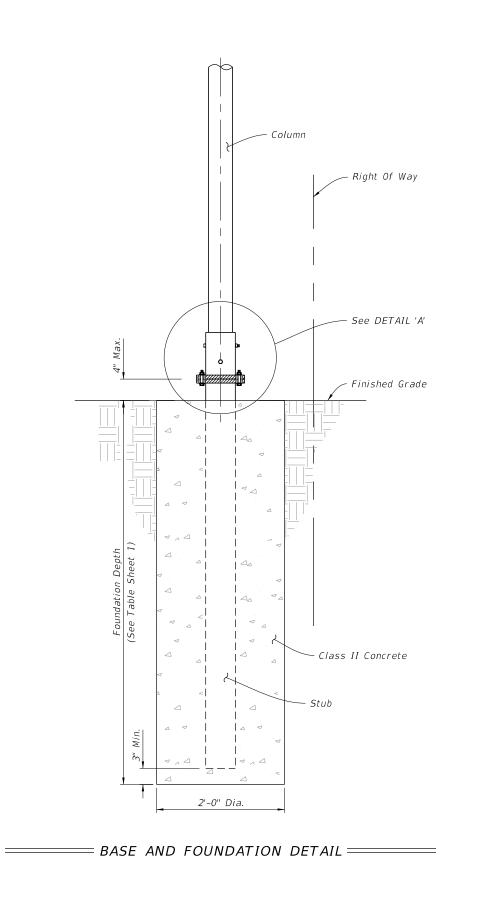


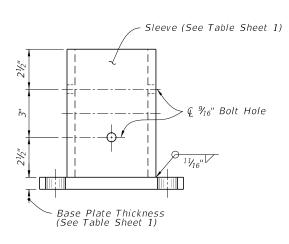


DESCRIPTION:

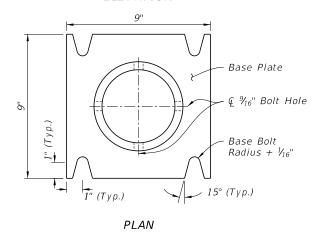
= SIGN DETAIL=

FDOT

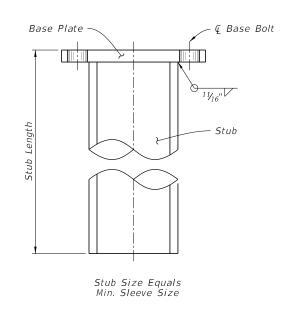


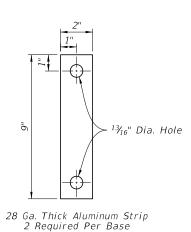


ELEVATION

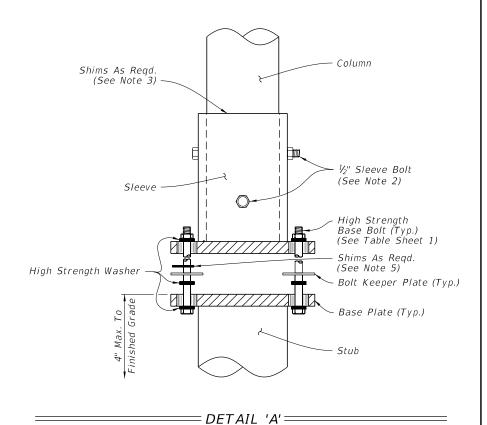


= SLEEVE & BASE PLATE DETAILS =





=BOLT KEEPER PLATE DETAIL ===



=STUB DETAIL===

LAST REVISION 11/01/21

FDOT

FY 2022-23 STANDARD PLANS

SINGLE COLUMN CANTILEVER GROUND MOUNTED SIGN

INDEX 700-011

SHEET 2 of 2

- 1. Work with Index 700-010.
- 2. Shop Drawings: Not required.

3. <u>Materials:</u>

- 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
- F. Adhesive Anchor Bonding Material: Specification 931 Type HV Adhesive.
- G. Weld Material: E70XX
- H. Snap-In Post Cap: UV and weather-resistant glass-filled polyester cap

4. Coating:

- A. U-Bolts, Threaded Rods, Nuts and Washers: ASTM F2329
- B. Other Steel: ASTM A123

5. <u>Fabrication:</u>

- A. Weld: Specification 460-6.4
- B. Hot dip galvanize after fabrication

6. 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 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

7. 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

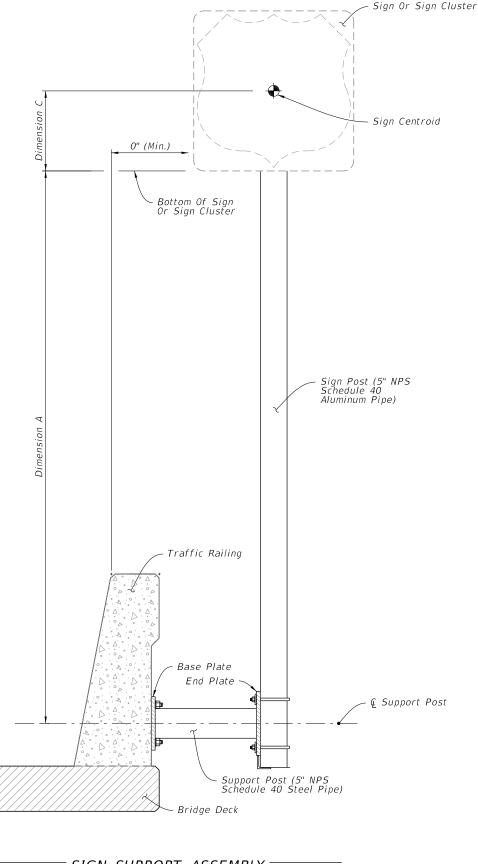
8. <u>Payment:</u>

Include the cost of all materials and labor in the cost of the single post sign assembly.

SIGN LIMITATIONS TABLE				
MAX. SIGN AREA (SF)	MAX. SIGN CENTROID HEIGHT (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.

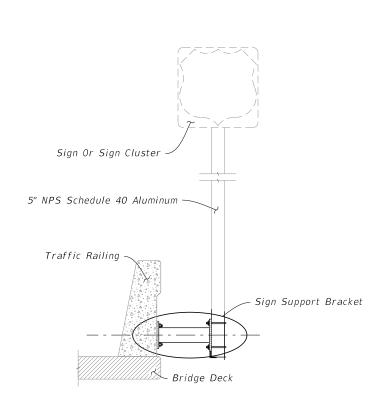
Dimension $C = Vertical \ distance \ from \ the \ bottom \ of \ the \ sign \ or \ sign \ cluster$ to the Centroid of the sign or sign cluster.

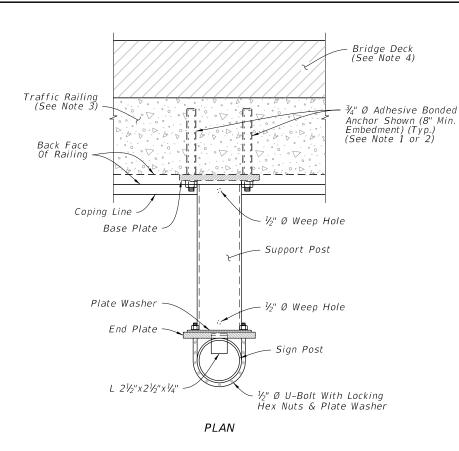


==== SIGN SUPPORT ASSEMBLY ======

LAST OF DESCRIPTION:
REVISION 15
11/01/18

FDOT





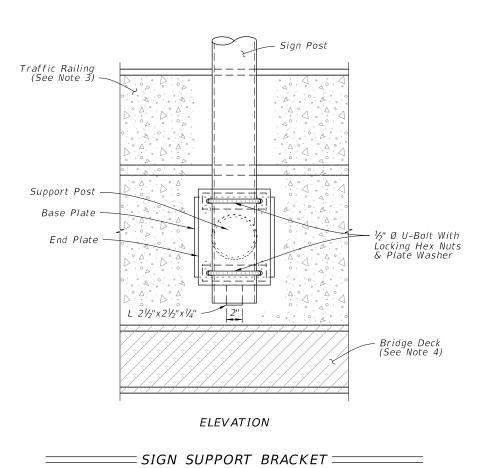
1. Existing Traffic Railings:

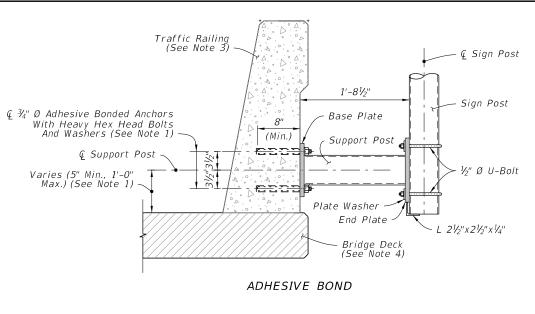
- A. Locate existing conduit prior to drilling and adjust placement of base plate as necessary to avoid damaging existing conduit. Base plate must be flush with back of traffic railing. Maintain a minimum cover 2" from face of traffic railing to tip of Adhesive Anchor.
- B. For concrete parapets less than 10" thick, through bolt ¾" 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 $2\frac{1}{2}$ ".

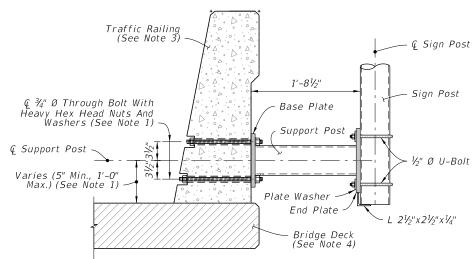
2. New Traffic Railings:

A. Optional Couplers are shown for slipforming; keep Anchor Bolt coupler threads free of concrete.

- 3. 36" Single-Slope Traffic Railing shown, other Traffic Railings and Parapets are similar.
- 4. Bridge Deck shown, Approach Slab and Retaining Wall are similar

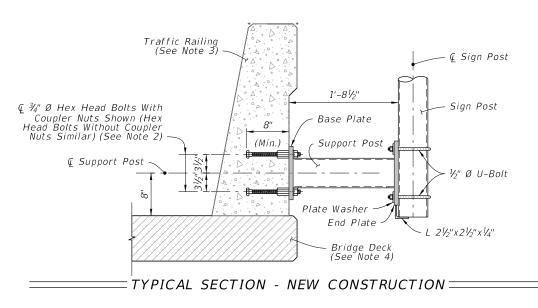


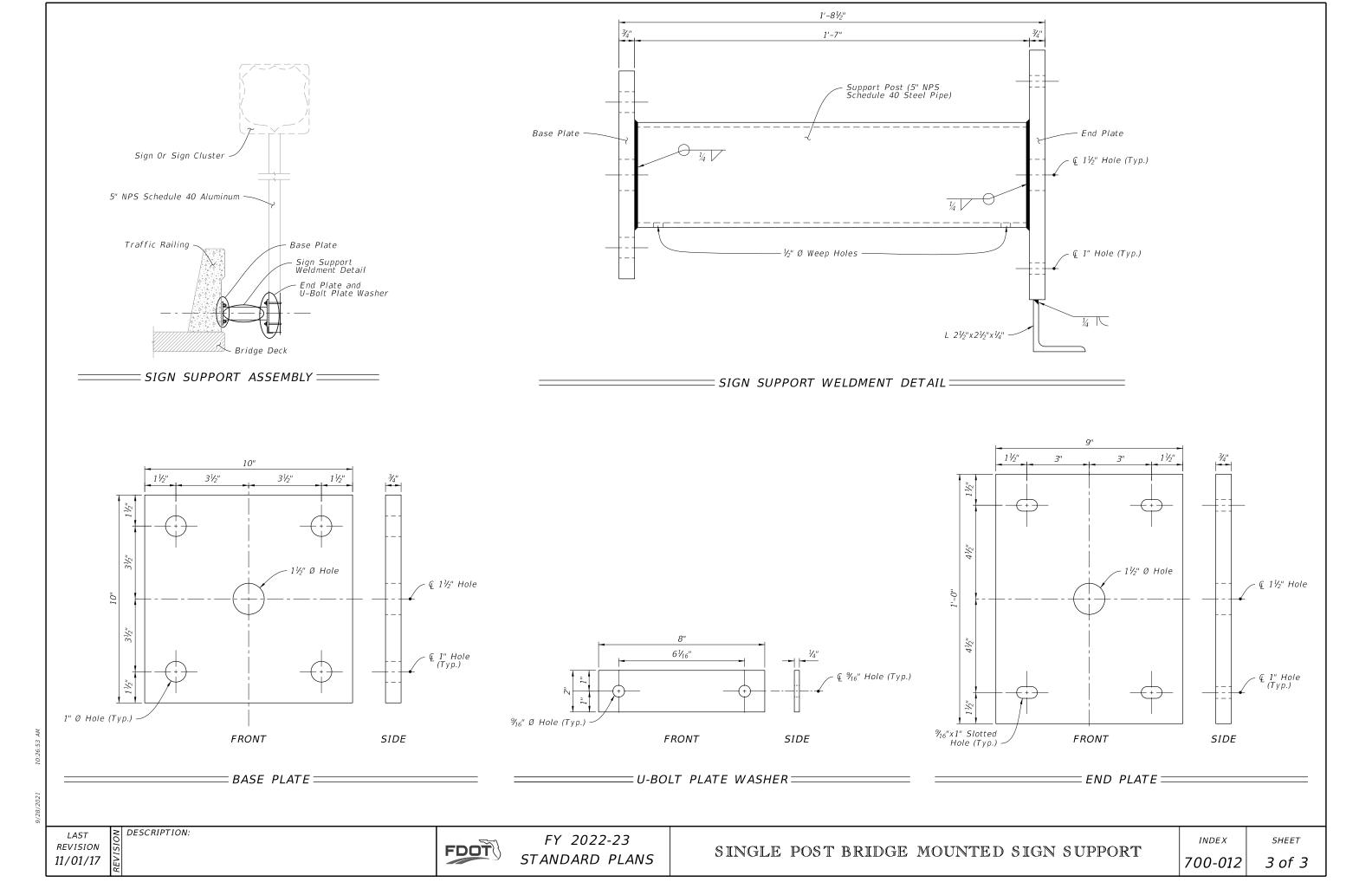




TYPICAL SECTION - EXISTING RAILING

THROUGH BOLTING





- 1. Work with Index 700-010.
- 2. Shop Drawings: Not required.

3. 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
- E. Adhesive Anchor Bonding Material: Specification 937 Type HV Adhesive
- F. Weld Material: E70XX
- G. Snap-In Post Cap: UV and weather-resistant glass-filled polyester cap

- A. U-Bolts, Threaded Rods, Nuts and Washers: ASTM F2329
- B. Other Steel: ASTM A123

5. Fabrication:

- A. Weld: Specification 460-6.4 B. Hot dip galvanize after fabrication

6. Construction:

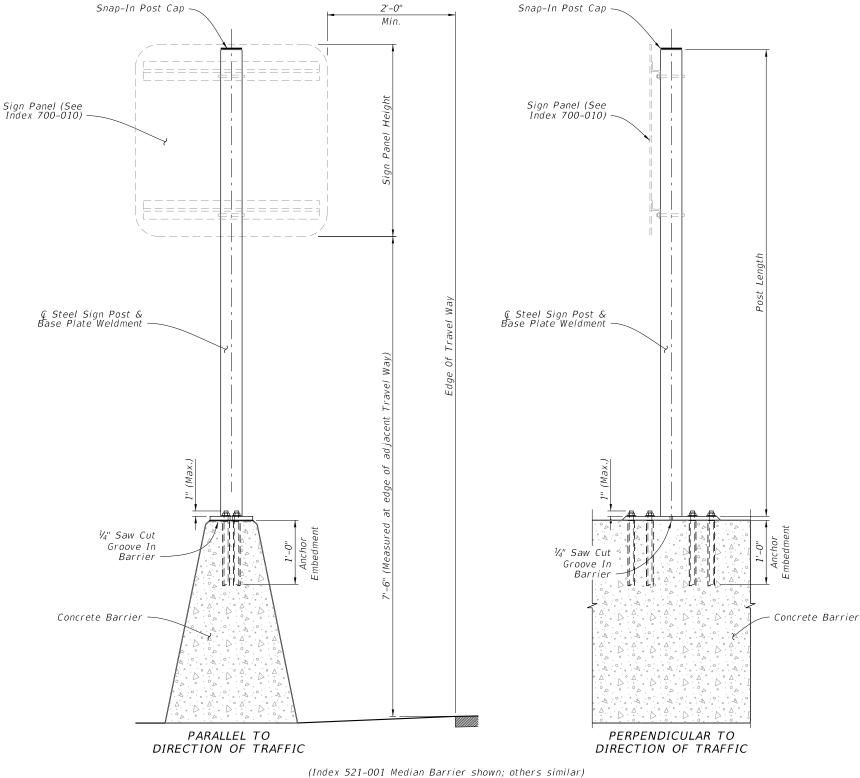
- A. Locate Sign Support a minimum of 5 feet from an open joint or transition (sign stationing may be adjusted to accommodate this requirement B. Base plate must be flush with top of Railing
- C. Anchors in Traffic Railings:
- a. Install Adhesive Anchors in accordance with Specification 416 except perform 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

7. 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

Include the cost of all materials and labor in the cost of the single post sign assembly.

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 =

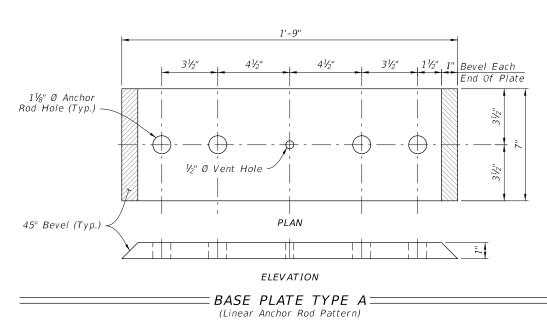
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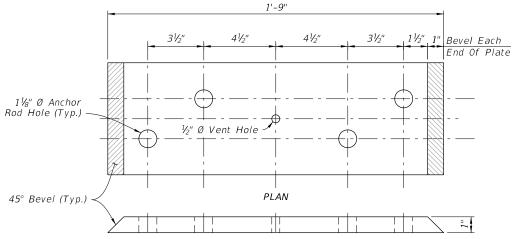
FY 2022-23 STANDARD PLANS

SINGLE POST MEDIAN BARRIER

INDEX 700-013

SHEET

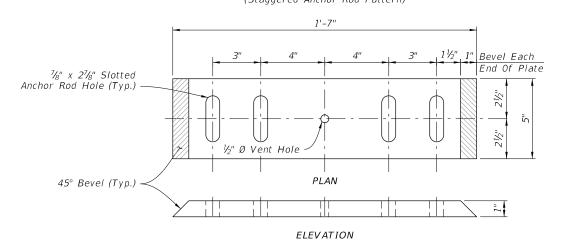




BASE PLATE TYPE B (Staggered Anchor Rod Pattern)

ELEVATION

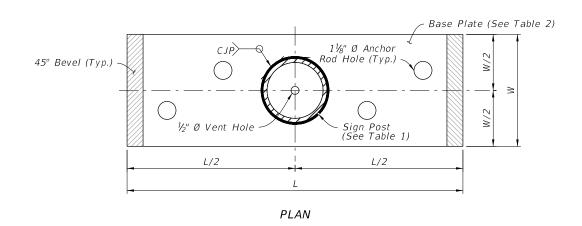
BASE PLATE TYPE C

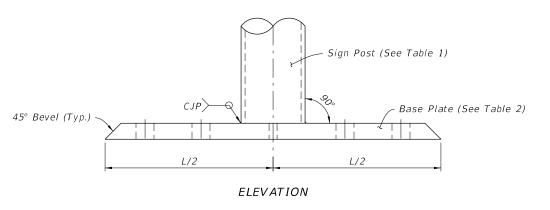


NOTES:

- 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	Ι".			
All listed above Plus 102-110 & 102-100	Temporary Signs	С	3/4"			





\equiv SIGN SUPPORT WELDMENT DETAIL \equiv

(Staggered Anchor Rod Pattern shown)

REVISION 11/01/17

DESCRIPTION:



FY 2022-23 STANDARD PLANS

SINGLE POST MEDIAN BARRIER MOUNTED SIGN SUPPORT

INDEX 700-013

SHEET 2 of 2

GENERAL NOTES:

1. Verify Column lengths in the field prior to fabrication.

- A. Sign Support Shop drawings are not required when fabricated in accordance with this Index and support columns do not exceed the length 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 depth ("D") greater than 10 feet. Shop drawings required for horizontal panel splice details.
- C. When shop drawings are required, obtain approval prior to fabrication.

3. 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.
- G. Reinforcing Bars or Welded Wire Reinforcement (WWR): Specification 415

4. Coatings:

- A. Aluminum Fasteners: Anodic coating (0.0002 inches min.) and chromate sealed
- B. Galvanize High Strength Steel Bolts Nuts and Washers: ASTM F2329
- C. Galvanize all other steel items (excluding stainless steel): Hot-dip ASTM A123
- D. Treat damaged galvanizing in accordance with Specification 562

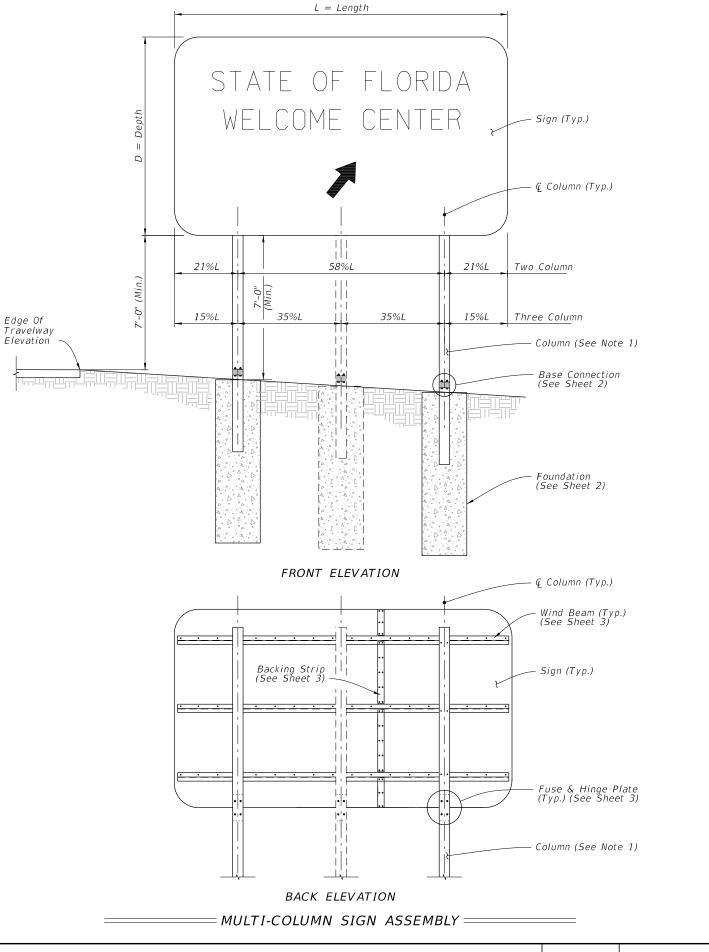
5. Fabrication:

- A. All Base Connections and Stub Column materials are steel unless otherwise
- B. Drill or sub-punch and ream holes in Fuse Plates and Hinge Plates
- C. Weld Base Plate to Post & Stub or if using the Alternate Connection Detail weld Base Plate and Stiffeners to Post and Stub (Sheet 2)
- D. Hot dip galvanize after fabrication; Remove all drips, runs or beads on base plate within washer contact areas (Including saw cuts)

6. Construction:

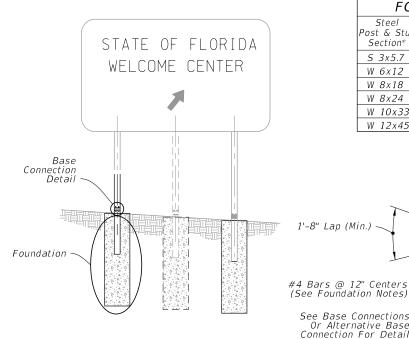
DESCRIPTION:

- A. Install the Sign Structure foundation in accordance with Specification 455. Orient Stub Post according to direction of traffic (Sheet 2)
- B. Tighten all high strength bolts except Base Bolts in accordance with Specification 700.
- C. Assemble Post to Stub with Base Bolts and three flat washers per bolt (See Base Connection Details, Sheet 2). Tighten Base Bolts in accordance with Instructions Notes on Sheet 2.

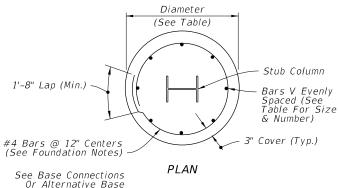


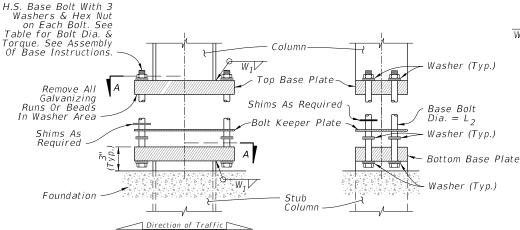
LAST REVISION 11/01/20



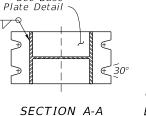


FOUNDATION DATA							
Steel Post & Stub Section*	Dia.	Depth	Stub Column Length	Reinf. Bars V			
S 3x5.7	2'-0"	4'-0"	3'-0"	10-#6			
W 6x12	2'-0"	6'-0"	3'-0"	10-#6			
W 8x18	2'-4"	7'-6"	4'-0"	8-#8			
W 8x24	2'-4"	8'-6"	4'-0"	8-#8			
W 10x33	2'-4"	10'-3"	4'-0"	8-#8			
W 12x45	2'-8"	11'-3"	5'-0"	10-#8			





SIDE ELEVATION



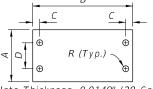
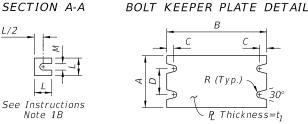


Plate Thickness=0.0149" (28 Gauge)



SHIM DETAIL

BASE PLATE DETAIL

	BASE CONNECTION DATA							SH	'IM		
Steel Post & Stub Section*	А	В	С	D	R	t ₁	L ₂	W ₁	Torque (Ibf*in)	L	М
S 3x5.7	4"	7"	3/4"	2"	5/16"	1"	1/2"	1/4"	90 ± 20	1-1/4"	9/16"
W 6x12	4"	10"	3/4"	2"	3/8"	1-5/8"	5/8"	1/4"	270 ± 45	1-3/8"	11/16"
W 8x18	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"
W 8x24	6-1/2"	12-1/2"	7/8"	3-1/4"	7/16"	1-3/4"	3/4"	3/8"	445 ± 75	2-1/8"	13/16"
W 10x33	8"	16"	1-1/4"	4-3/4"	9/16"	2"	1"	1/2"	580 ± 90	2-3/8"	1-1/16"
W 12x45	10"	18"	1-1/4"	6"	9/16"	2"	1"	1/2"	580 ± 90	2-3/4"	1-1/16"
									-		

BASE CONNECTION:

Washer (Typ.)

H.S. Base Bolt

- Washer (Typ.)

Washer (Typ.)

Bottom Base Plate

 $Dia. = L_2$

* Designations: (Nominal Depth in inches) x (weight in pounds per linear foot).

FRONT ELEVATION

FOUNDATION NOTES:

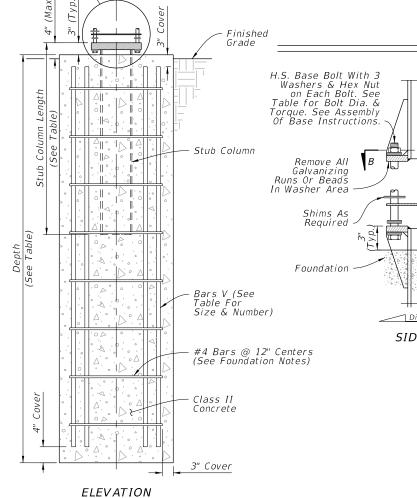
The Contractor may use Welded Wire Reinforcement (WWR) for foundation reinforcing.

== MULTI-COLUMN SIGN ASSEMBLY ===

At the Contractors 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.

INSTRUCTIONS 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 Plate
- B. Shim as required to plumb column. Provide 2-0.0149" thick (28 gauge) and 2-0.0329" thick (21 gauge) shims per column.
- 2. H.S. Base Bolt L₂ 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.



- Q Of Foundation & Stub Column

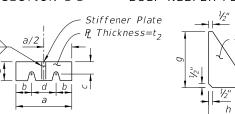
Base Plate W R (Typ.)

Section R (Typ.) Plate Thickness=0.0149" (28 Gauge)

SECTION B-B

BOLT KEEPER PLATE DETAIL

Depth of



SIDE ELEVATION FRONT ELEVATION

Stiffener

Plate

Base Plate

Shims As

Required

Keeper Plate

Wol

BASE PLATE DETAIL

STIFFENER PLATE DETAIL

	ALTERNATIVE BASE CONNECTION DATA											
Steel Section*	а	b	С	d	Ф	t_2	L ₂	R	Torque (Ibf*in)	g	h	W_2
W 6x12	4-3/4"	1-1/8"	1-3/16"	2-1/2"	2"	1/2"	5/8"	3/8"	270±45	5-1/8"	2"	1/4"
W 8x18	5-3/4"	1-1/2"	1-3/8"	2-3/4"	2-3/16"	5/8"	3/4"	7/16"	445±75	6-1/4"	2-3/16"	1/4"
W 8x24	7"	1-3/4"	1-3/8"	3-1/2"	2-3/8"	3/4"	3/4"	7/16"	445±75	8"	2-3/8"	5/16"
W 10x33	8"	2"	1-9/16"	4"	2-3/4"	3/4"	1"	9/16"	580±90	8"	2-3/4"	5/16"
W 12x45	8"	2"	1-9/16"	4"	3"	3/4"	1"	9/16"	580±90	8"	3"	5/16"

^{*} Designations: (Nominal Depth in inches) x (weight in pounds per linear foot).

ALTERNATIVE BASE CONNECTION =

FOUNDATION AND BASE CONNECTION DETAILS

REVISION 11/01/21

FDOT

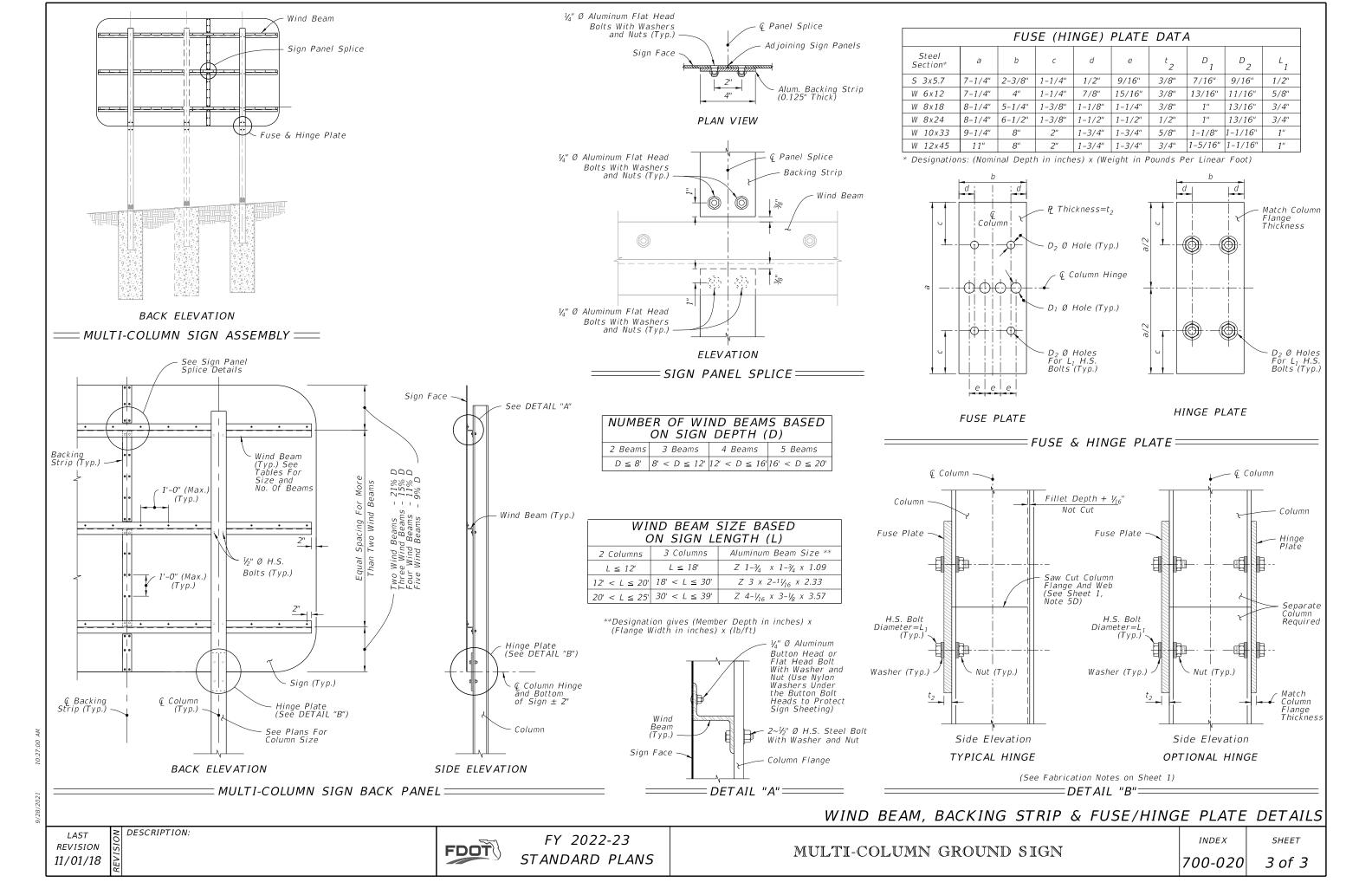
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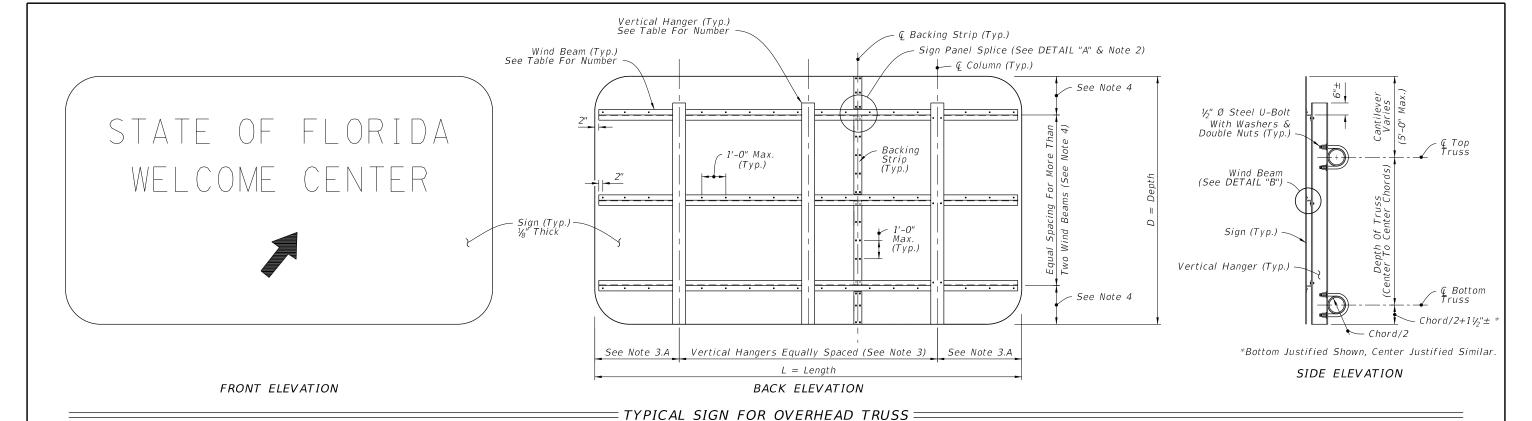
FY 2022-23 STANDARD PLANS

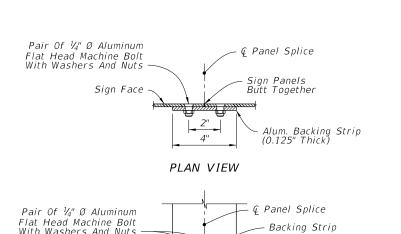
MULTI-COLUMN GROUND SIGN

INDEX 700-020

SHEET 2 of 3



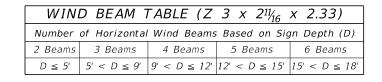




ELEVATION

SIGN PANEL SPLICE

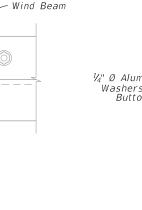
DETAIL "A"=

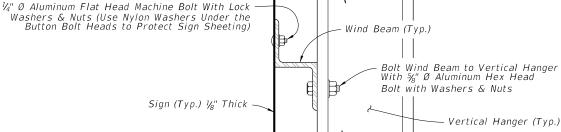


HANGE	R TABLE	(I 6 X 4)	4.69 or 2	Z 5 x 3½	x 4.01)
Number of	f Vertical Han	ger Beams Bas	sed on Wind S	peed and Sign	Length (L)
	2 Hangers	3 Hangers	4 Hangers	5 Hangers	6 Hangers
130 mph	L ≤ 20'	20′ < L ≤ 30′	$30' < L \le 40'$	$40' < L \le 50'$	
150 mph	L ≤ 18′	18' < L ≤ 27'	27' < L ≤ 35'	$35' < L \le 45'$	$45' < L \le 50'$
170 mph	L ≤ 15′	$15' < L \le 20'$	20′ < L ≤ 28′	28' < L ≤ 35'	35' < L ≤ 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.

DETAIL "B"





GENERAL NOTES

- 1. Work this Index with Index 700-040 and 700-041.
- 2. The number and location of the Panel Splices are determined by the Sign
- 3. Spacing of Vertical Hangers:
- A. Two Vertical Hanger = 21.0% Three Vertical Hanger = 15.0% L Four Vertical Hanger = 11.0% L Five Vertical Hanger = 9.0% L Six Vertical Hanger = 7.0% L
- B. Spacing of vertical hangers may be varied slightly as necessary to clear the truss struts and diagonals at panel points
- 4. Spacing of Wind Beams:

Two Wind Beams = 21.0% D Three Wind Beams = 15.0% D Four Wind Beams = 11.0% D Five Wind Beams = 9.0% D Six Wind Beams = 7.0% D

- 5. 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 than 10'-0".
- 6. Materials:
- A. Aluminum.
- Alumnum:
 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)
- 7. Coatings:
 - A. Aluminum Bolts, Nuts and Washers: Anodic (0.0002 inches min) and chromate sealed
 - B. Galvanized Steel Bolts, Nuts and Washers: ASTM F2329
- 8. Wind Speed by county: see Index 715-010.

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Pair Of 1/4" Ø Aluminum

Flat Head Machine Bolt

With Washers And Nuts

DESCRIPTION:

FDOT

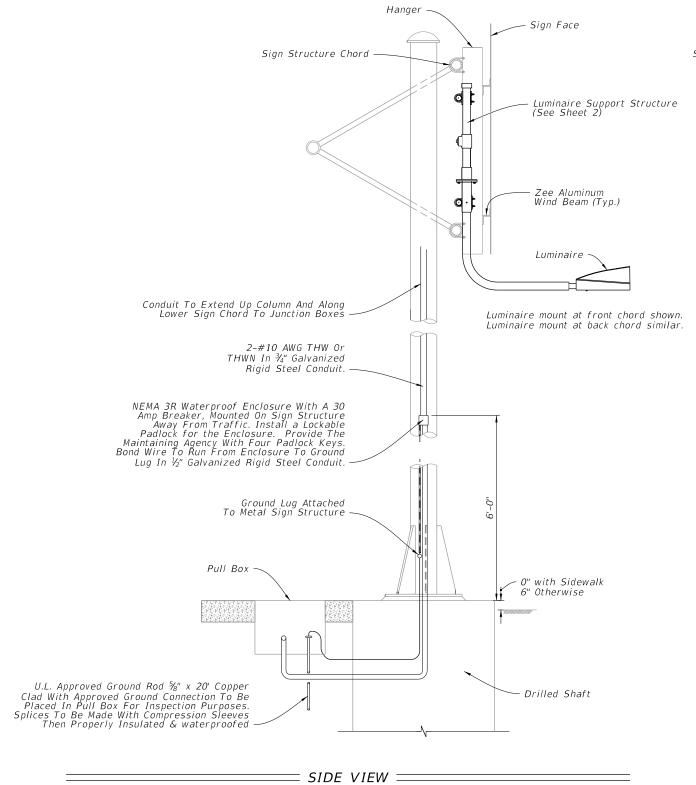
FY 2022-23 STANDARD PLANS

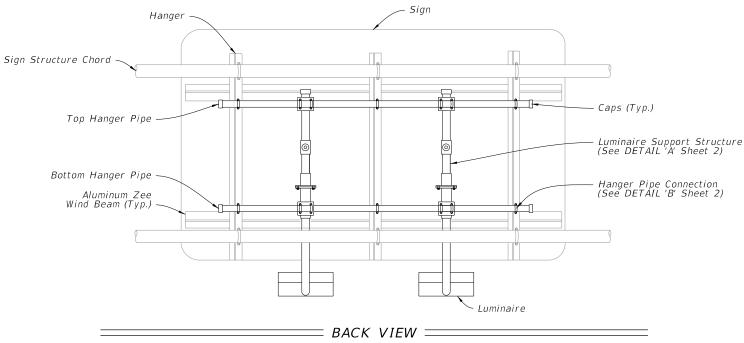
WIND AND HANGER BEAMS FOR OVERHEAD SIGNS

INDEX

SHEET 1 of 1

700-030





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

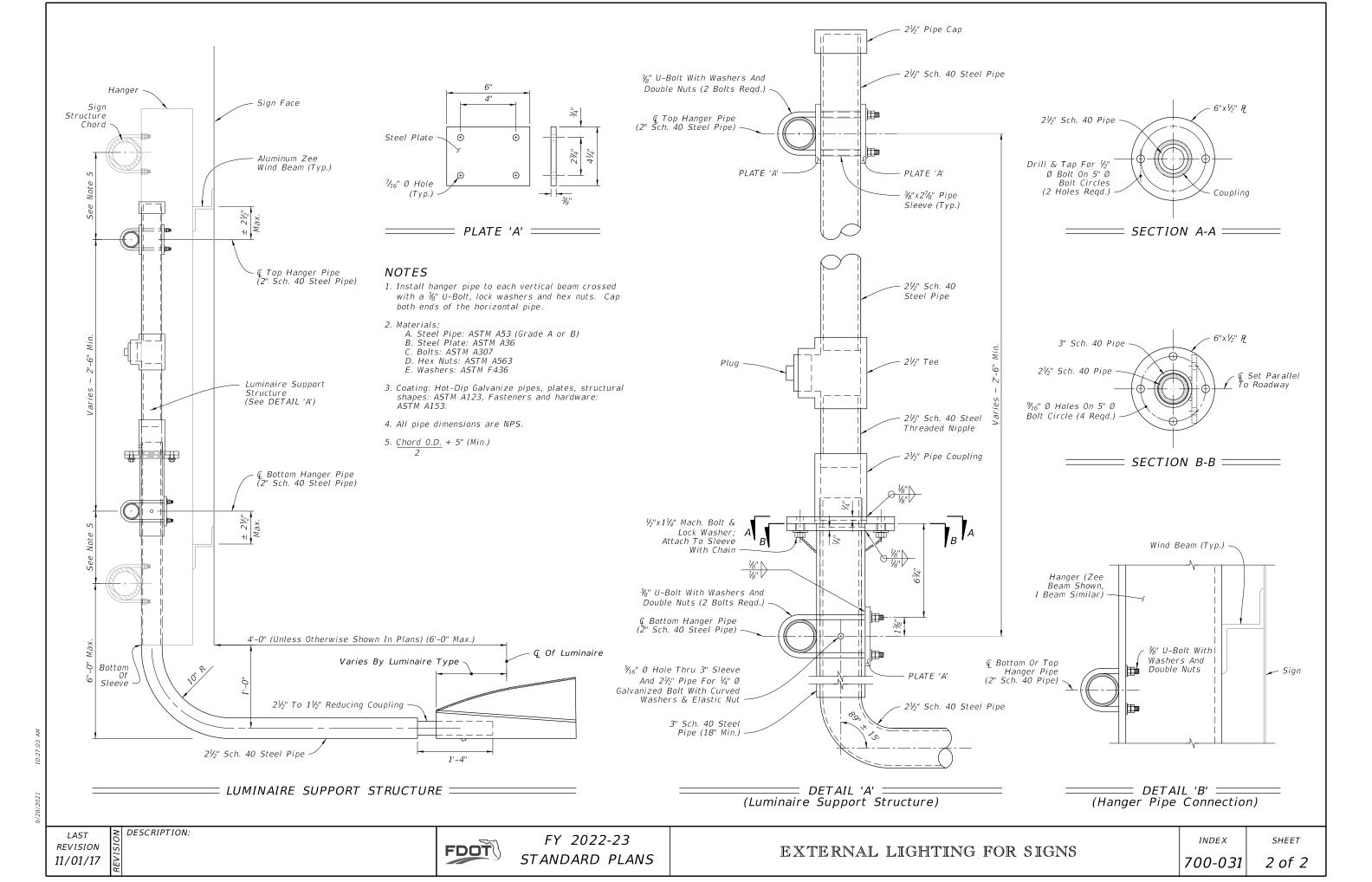
Roadway Lighting included in contract:

- 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:

- 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.

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- 1. Work this Index in conjunction with CANTILEVER SIGN STRUCTURE DATA TABLES in the Plans and Index 700-030.
- 2. Handholes are required at pole base for DMS Structures. Refer to Index 700-090 for Handhole Details.
- 3. 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).

4. 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 c. Weld Material: E70XX
- 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)
- D. Concrete:
- a. Spread Footing Concrete: Class IV b. Drilled Shaft concrete: Class IV (Drilled Shaft)
- E. Reinforcing Steel: Specification 415

5. Fabrication:

- A. Welding: Specification 460-6.4
- B. 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.
- C. Upright splices: Not allowed
- D. Structural bolt hole diameters: Bolt diameter plus 1/16"
- E. Anchor bolt hole diameters: Bolt diameter plus 1/5"
- F. Hot Dip Galvanize after fabrication.
- G. Shop assemble the entire structure after galvanizing to validate/document alignment and clearance for bolted connections as well as contact between connecting plates. Take remedial action, if necessary, prior to shipment.
- H. Disassemble, as necessary, and secure components for shipment.

6. Coatings:

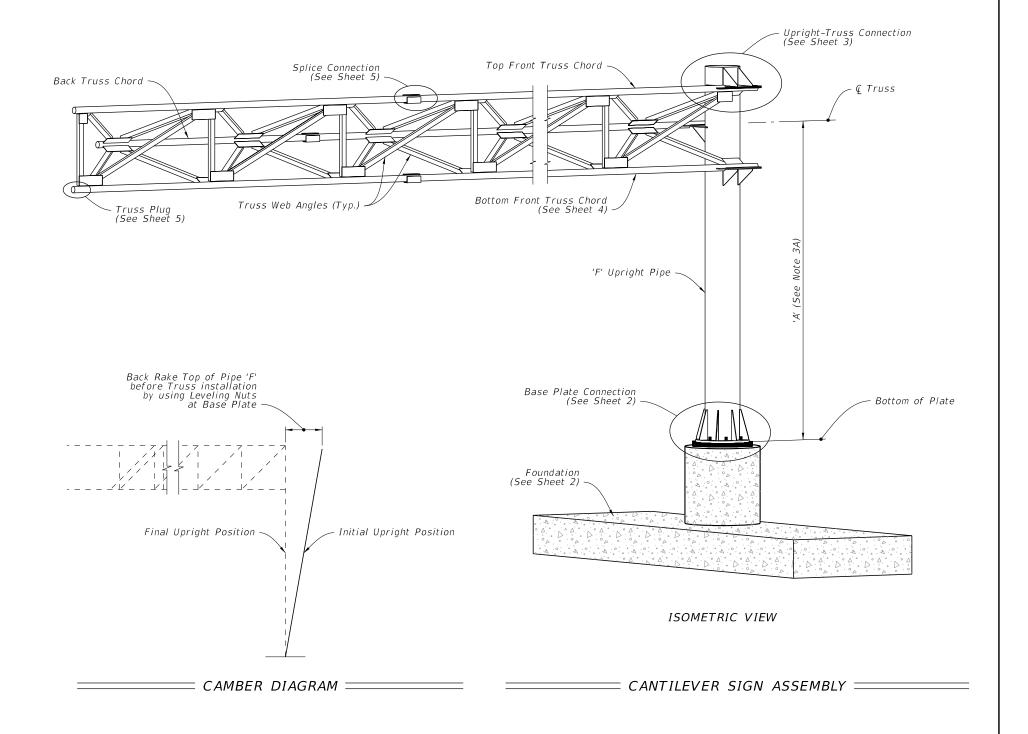
A. Bolts, Nuts and Washers: ASTM F2329

DESCRIPTION:

B. All other steel, including Plate Washers, hot dip galvanize: ASTM A123

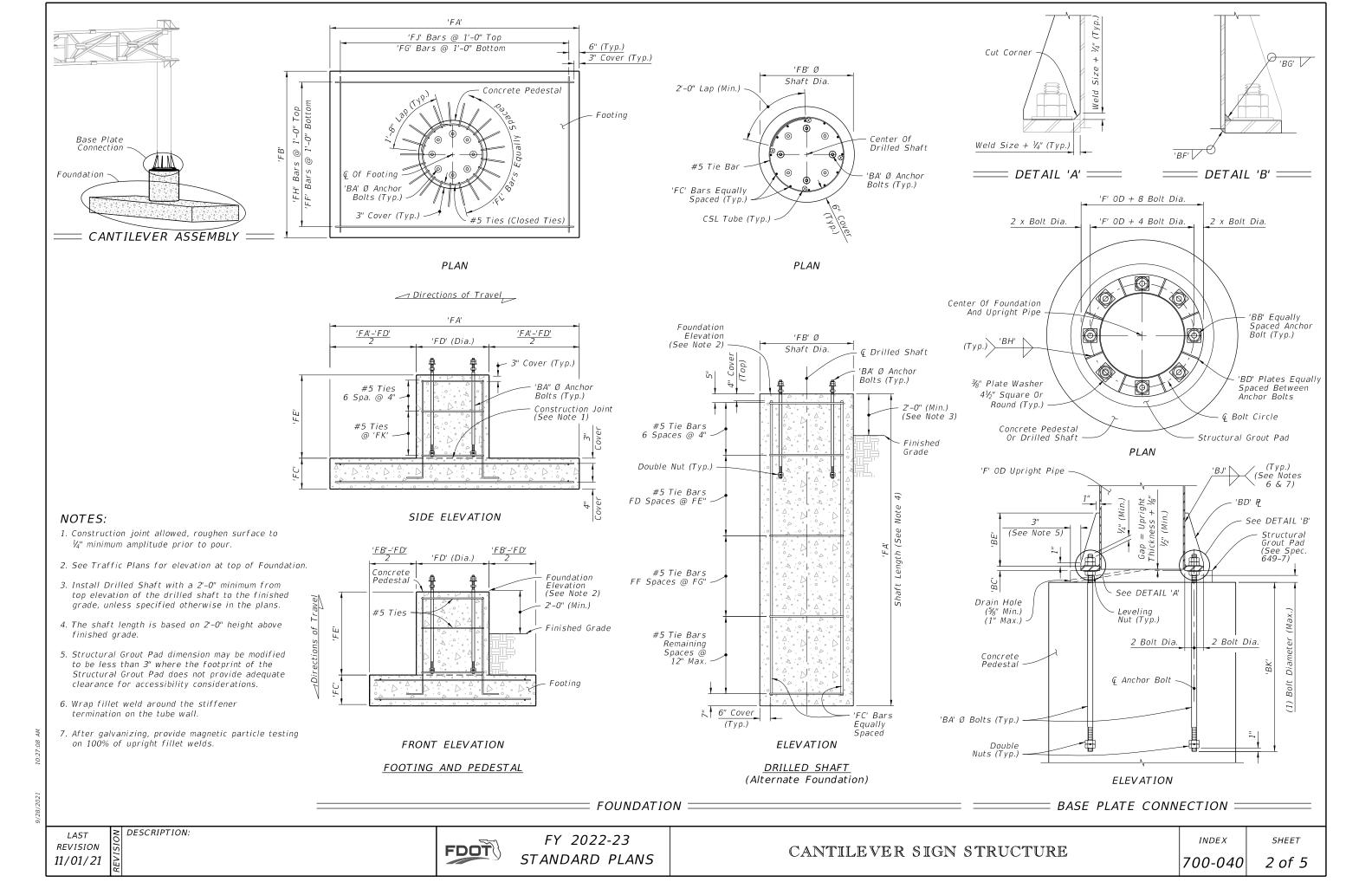
7. Construction:

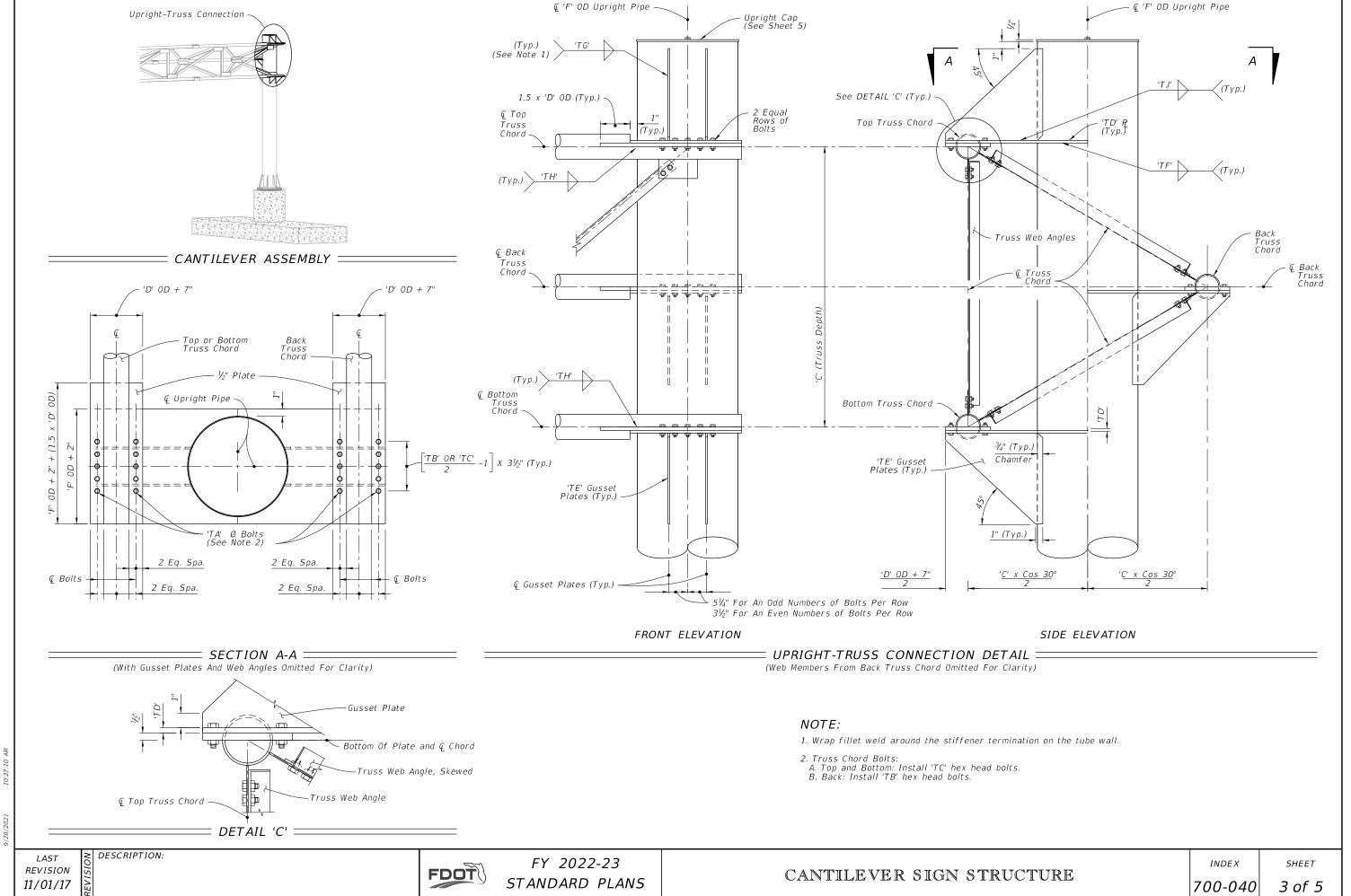
- A. Construct foundation in accordance with Specification 455, except payment is included in the cost of the structure.
- B. Prior to erection, record the as-built anchor locations and submit to
- C. Place backfill above spread footings prior to installation of the sign panels. Do not remove or reduce backfill without prior approval of the Engineer.
- D. Tighten nuts and bolts in accordance with Specification 700. Split-Lock Washers are not permitted.
- E. Install Aluminum Sign Panels as shown in the Plans.
- F. Place structural grout pad with drain between top of foundation and bottom of baseplate in accordance with Specification 649-7.

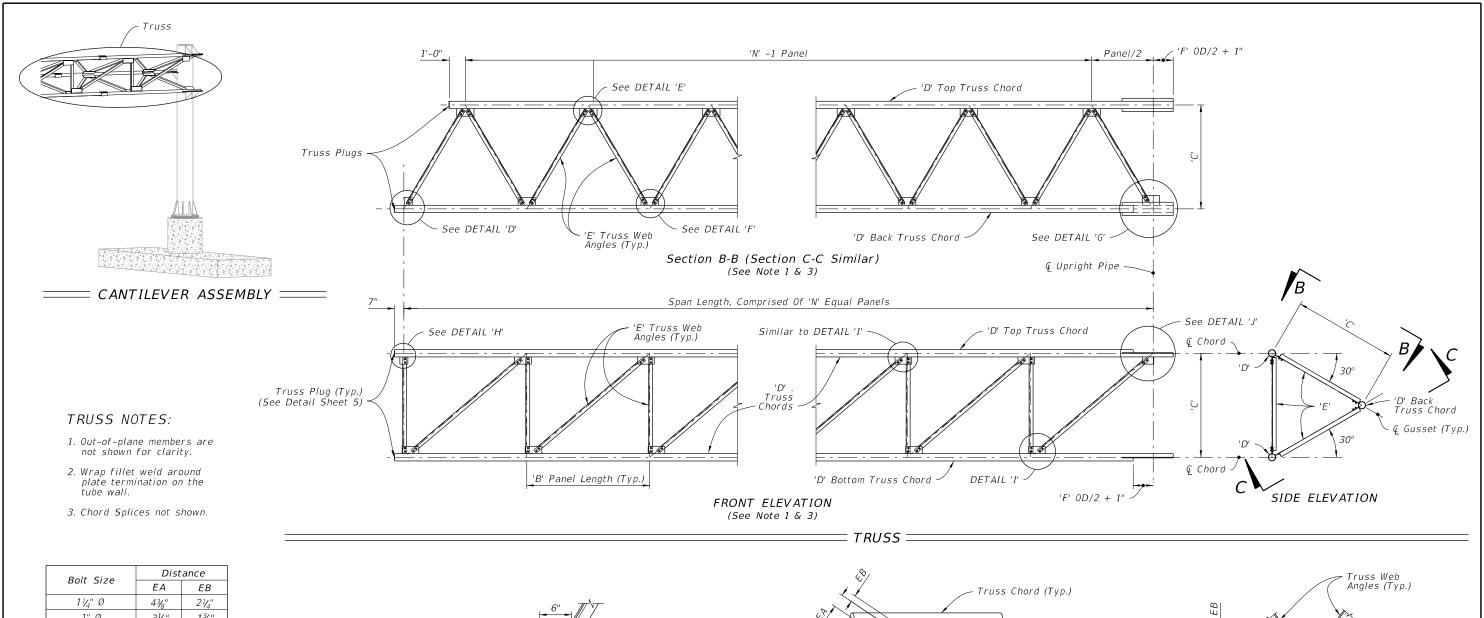


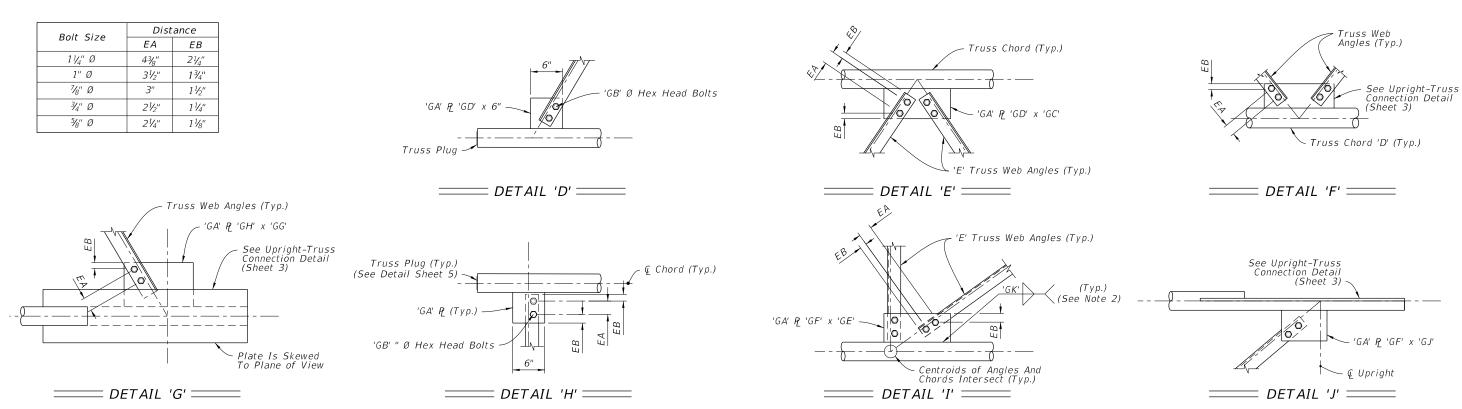
REVISION 11/01/17

FDOT









CANTILEVER SIGN STRUCTURE

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FY 2022-23

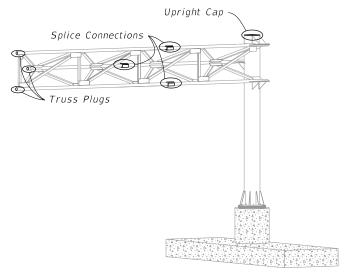
STANDARD PLANS

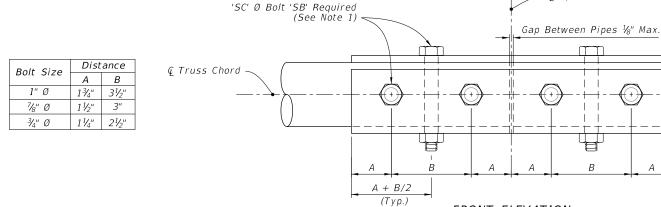
FDOT

DESCRIPTION:

REVISION

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'SA'

© Truss Chord

'SC' Ø Bolt (Typ.)

SIDE ELEVATION

= CANTILEVER ASSEMBLY =

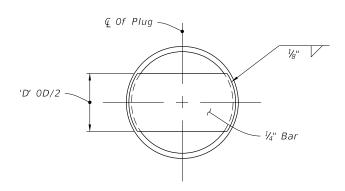
= SPLICE CONNECTION DETAIL =

FRONT ELEVATION

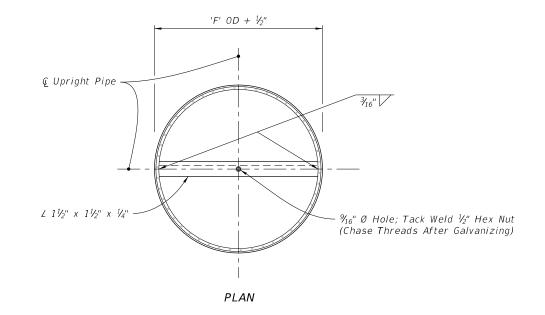
- @ Splice (See Note 2)

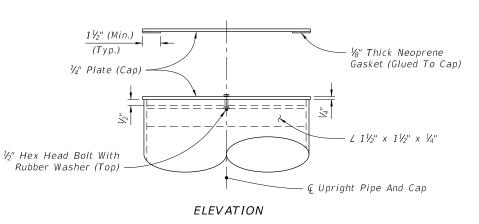
SPLICE CONNECTION NOTES:

- 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'.



= TRUSS PLUG DETAIL ==





 \equiv UPRIGHT CAP DETAIL \equiv

LAST REVISION 11/01/17

DESCRIPTION:

FDOT

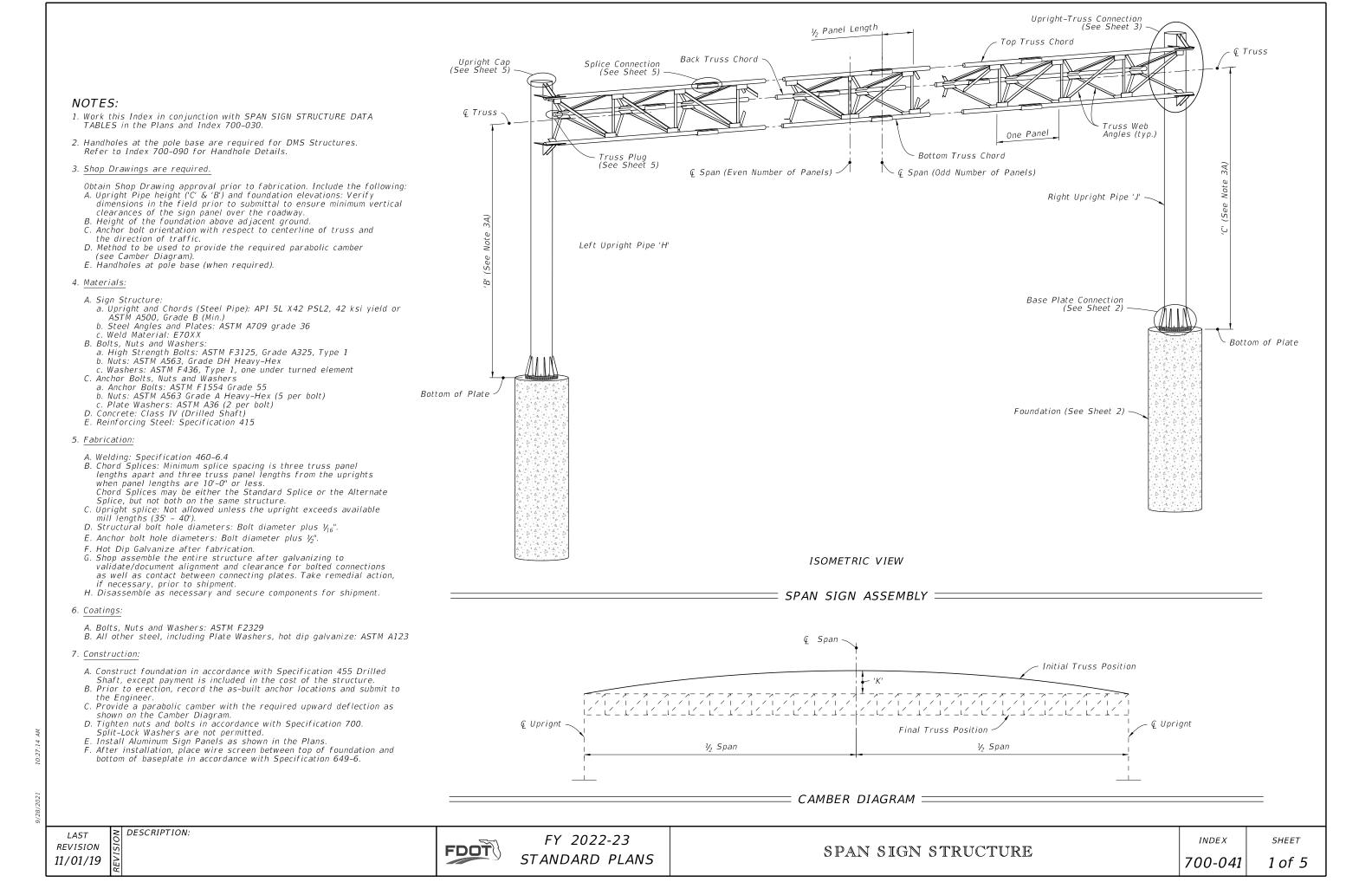
FY 2022-23 STANDARD PLANS

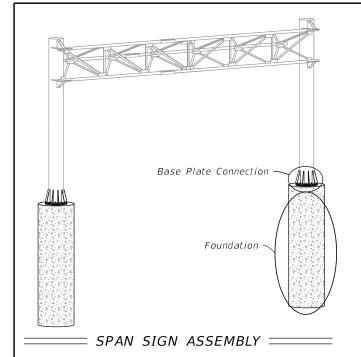
CANTILEVER SIGN STRUCTURE

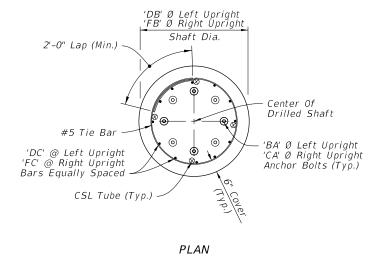
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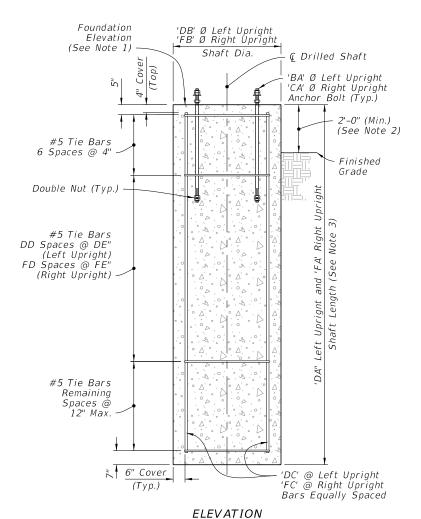
SHEET

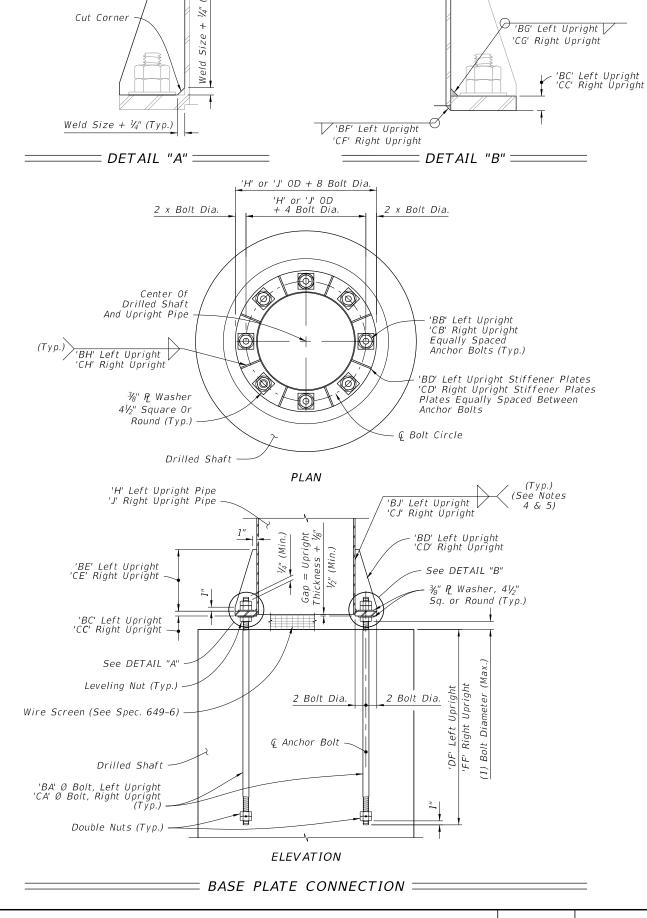
9/20/2021









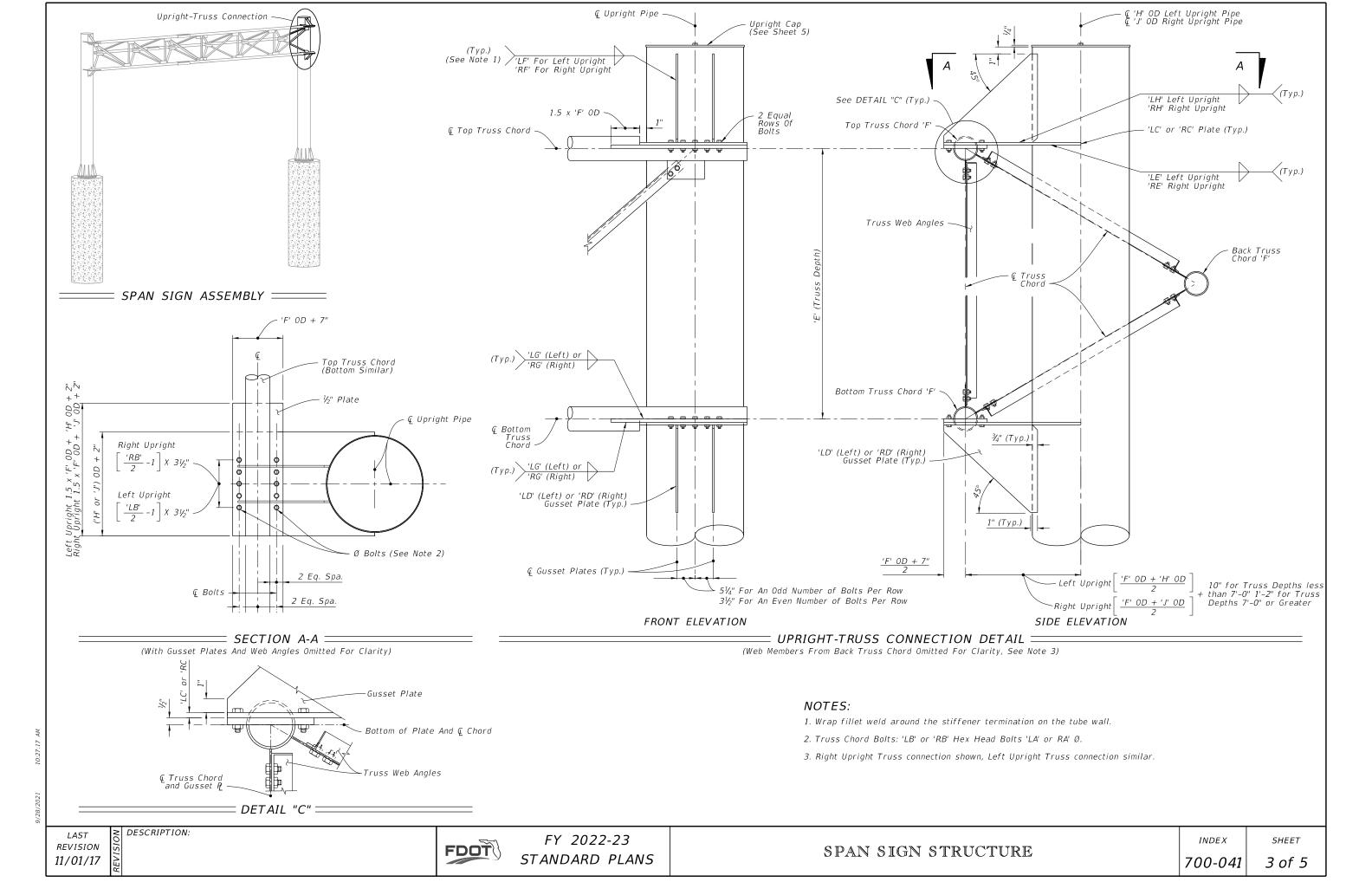


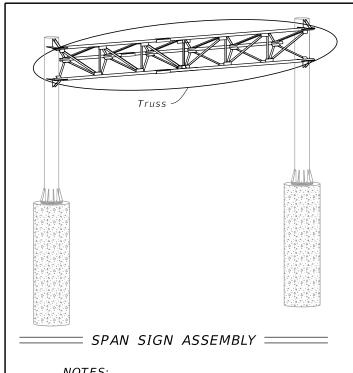
- 1. See Traffic Plans for elevation at top of Foundation.
- 2. Install Drilled Shaft with a 2'-0" minimum from top elevation of the drill shaft to the finished grade, unless specified otherwise in the plans.
- 3. The shaft length is based on 2'-0" height above finished grade.
- 4. Wrap fillet weld around the stiffener termination on the tube wall (Typ).
- 5. After galvanizing, provide magnetic particle testing on 100% of upright fillet welds.

DRILLED SHAFT

FOUNDATION =

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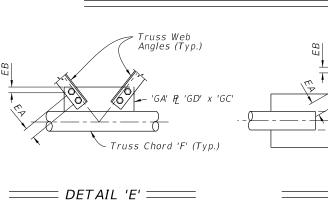


- 1. Out-of-plane members are not shown for clarity.
- 2. Back truss chord and attached angles are not shown for clarity.

Truss Chord 'F' (Typ.)

3. Wrap fillet weld around plate termination on the tube wall

Bolt Diameter	Distance (in.)		
(in.)	EA	EB	
11/4	4¾ ₈	21/4"	
1	31/2	13/4	
7/8	3	11/2	
3/4	21/2	11/4	
5/8	21/4	11/8	

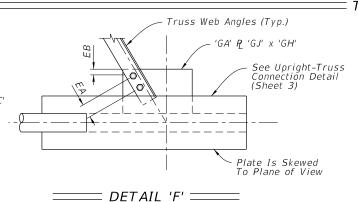


See Plug Detail (Sheet 5) (Typ.)

See DETAIL 'D'

← Left Upright Pipe

 $\left[\frac{H' \ OD}{2}\right] + 2$



'D'-1 Panels

Section B-B (Section C-C Similar) (See Note 1)

Span Length, 'A', Comprised Of 'D' Equal Panels

FRONT ELEVATION

(See Note 2)

See DETAIL 'G'

'F' OD Back Truss Chord

'G' Truss Web Angles (Typ.)

1/2 The Number of Panels For An Even Number Of Panels

Whole Number For An odd Number Of Panels

'F' OD Bottom Truss Chord

See DETAIL 'E'

© Span (Even Number of Panels) -

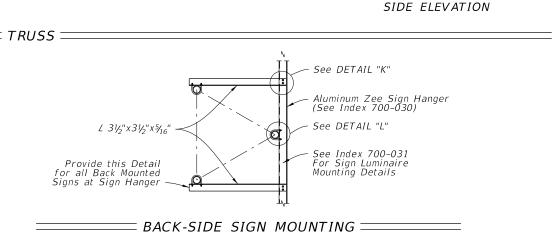
— ← Span (Even Number of Panels)

'F' OD Top Truss Chord

F' OD Top Truss Chord

See DETAIL 'H'

Span (Odd Number of Panels)



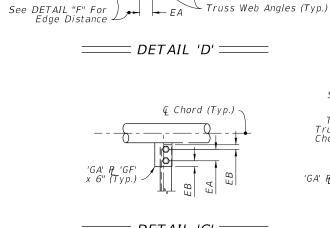
See DETAIL 'F'

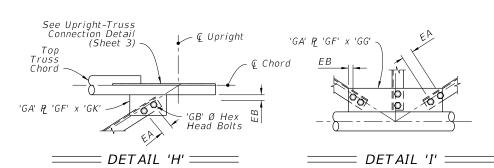
- Ç Right Upright Pipe

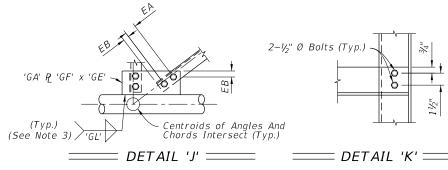
18

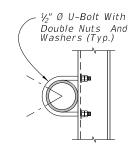
← Top Truss Chord

Bottom Truss Chord









DETAIL 'L'

DETAIL 'G' =

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

SPAN SIGN STRUCTURE

INDEX 700-041

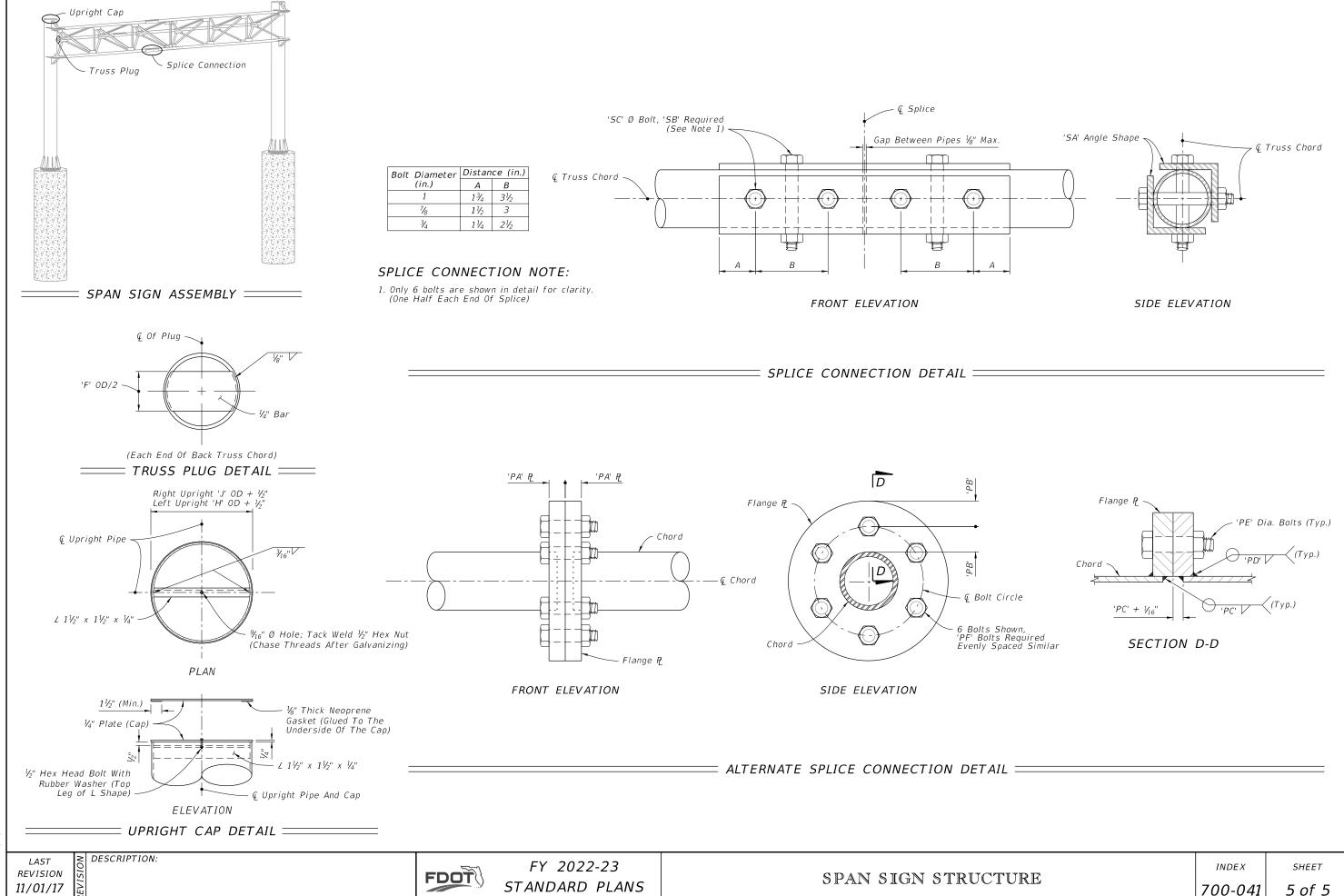
SHEET 4 of 5

8

Gusset And Back Truss Chord

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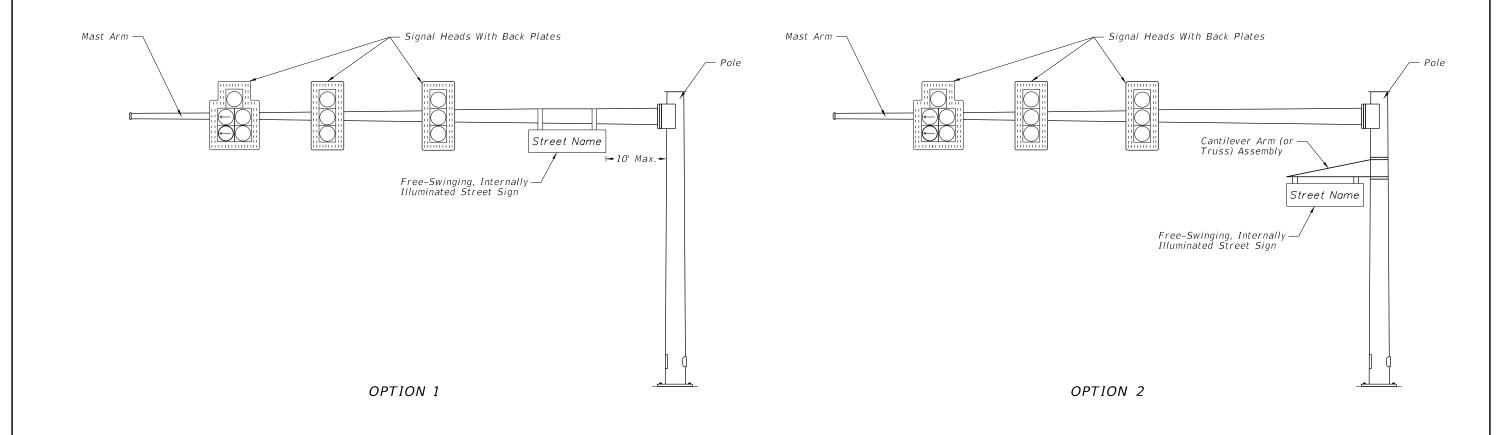
'GA' P2 'GD' x 'GC



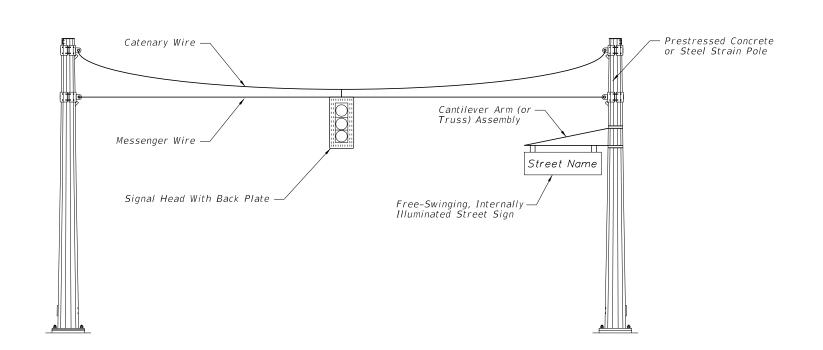
11/01/17

STANDARD PLANS

700-041



MAST ARM ASSEMBLY



SPAN WIRE ASSEMBLY

NOTES:

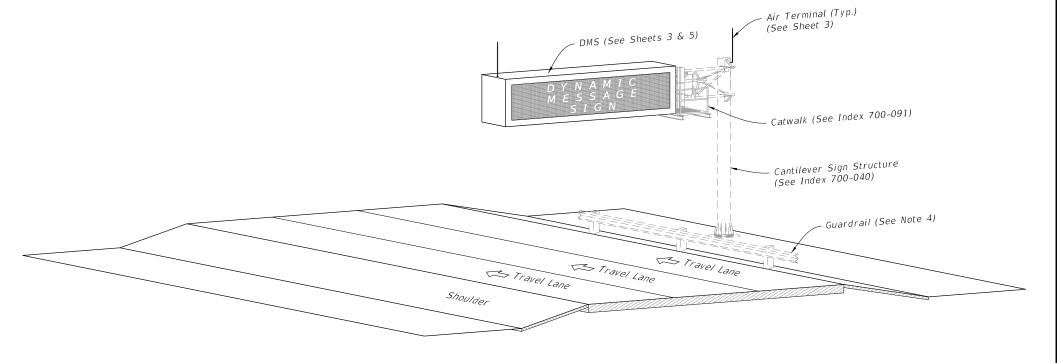
- Free-swinging, internally-illuminated street signs shall only be installed on the signal pole for span wire assemblies. For mast arm assemblies the street sign may be installed on the arm or pole.
- 2. Free-swinging, internally-illuminated street signs meet the requirements of Specification 700.
- 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.

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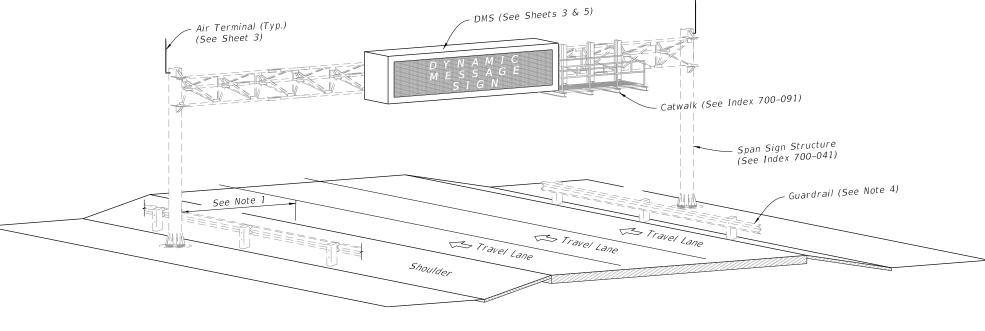
DESCRIPTION:

- 1. Work this Index with Specification 700.
- 2. Furnish and install the Dynamic Message Sign (DMS), sign structure in accordance with Index 700-040 or 700-041. Locate foundations at locations shown in the Plans.
- 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. Materials:
- A. 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)
- B. Coatings:
- a. All nuts, bolts and washers ASTM F2329
- b. All other steel items ASTM A123
- c. Bolt hole Diameters: Bolt plus $\frac{1}{16}$ " before galvanizing

- 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 of the truss.
- 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
- 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 iam 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.



CANTILEVER ISOMETRIC VIEW



SPAN ISOMETRIC VIEW

DYNAMIC MESSAGE SIGN ASSEMBLY =

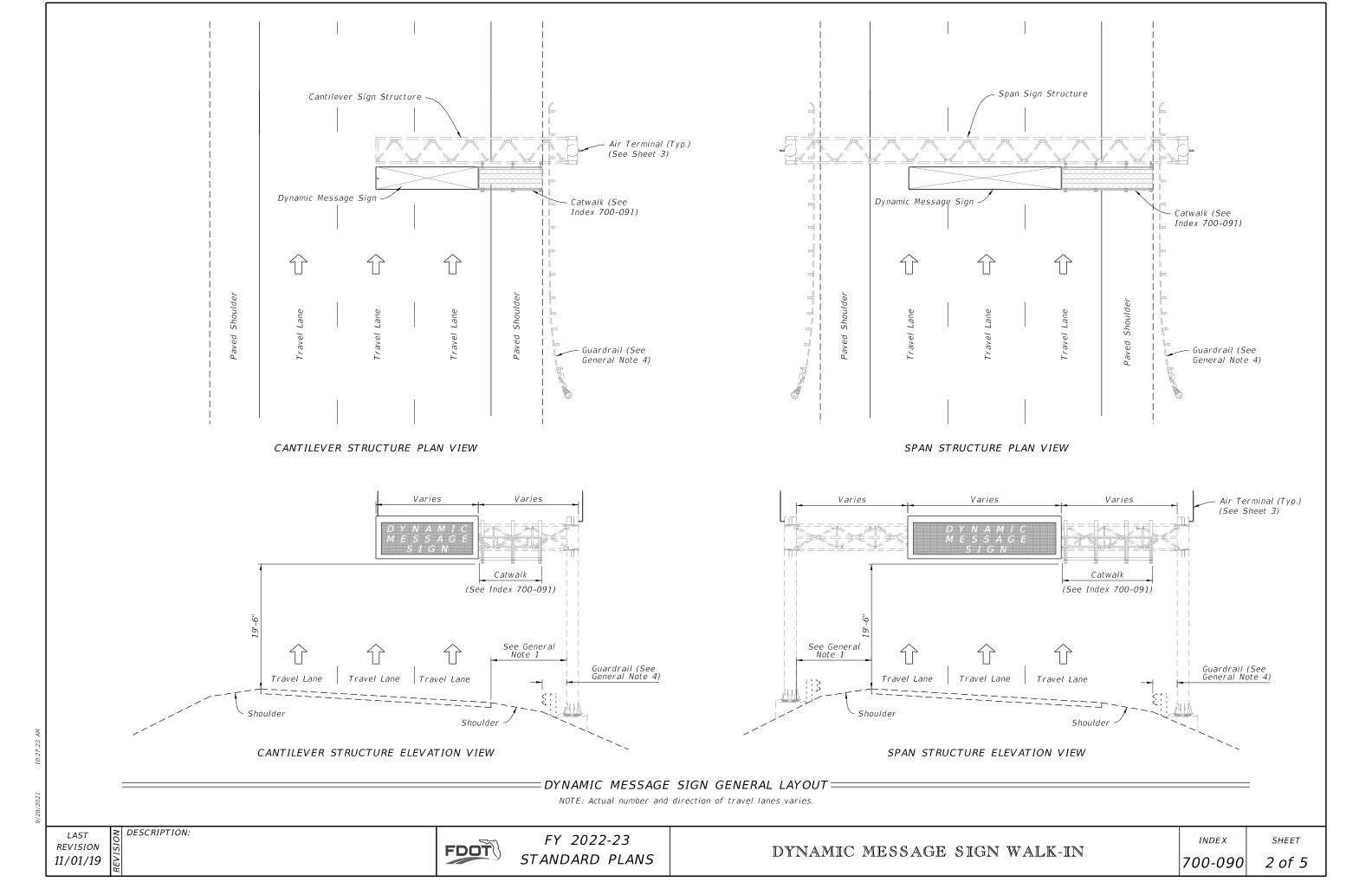
LAST REVISION 11/01/20

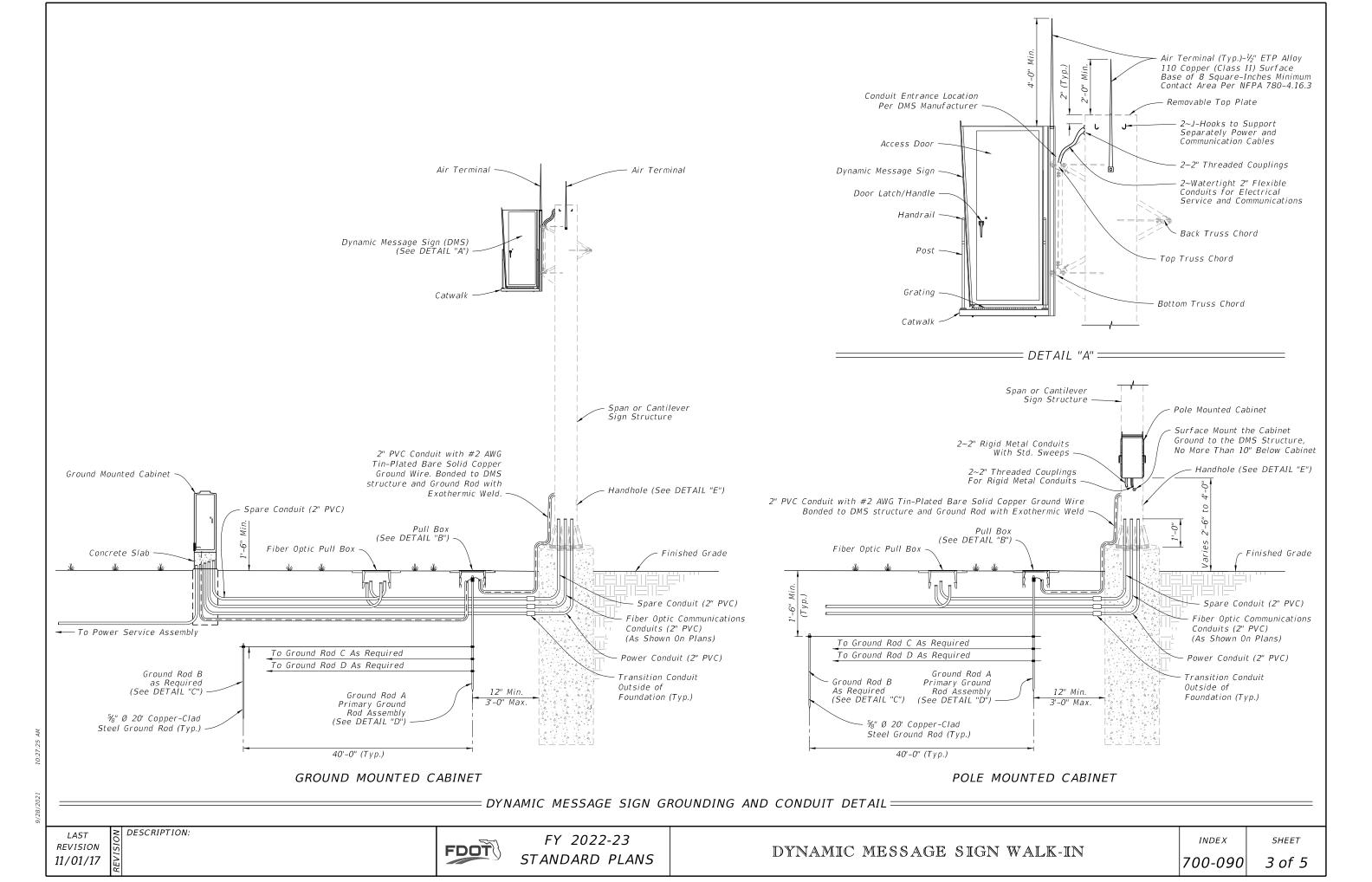
≥ DESCRIPTION:

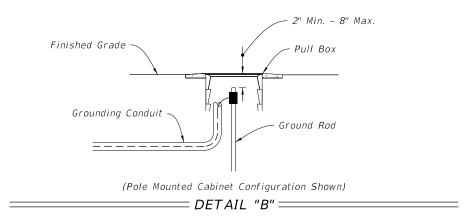
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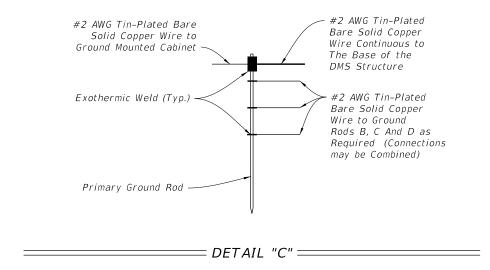
FY 2022-23 STANDARD PLANS

INDEX 700-090 SHEET

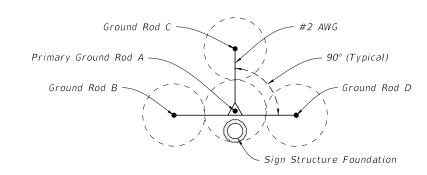








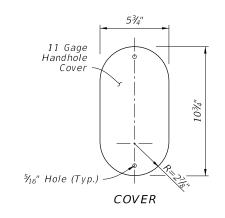
20' Radius Each "Sphere Of Influence"

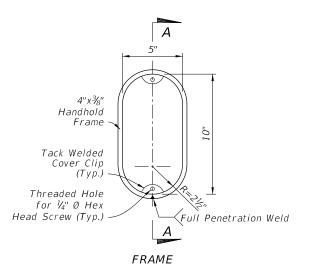


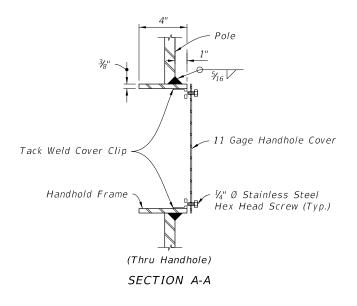
TYPICAL (20' Rods, 40' Spacing)

GROUND ROD ARRAY DETAIL

= DETAIL "D" =





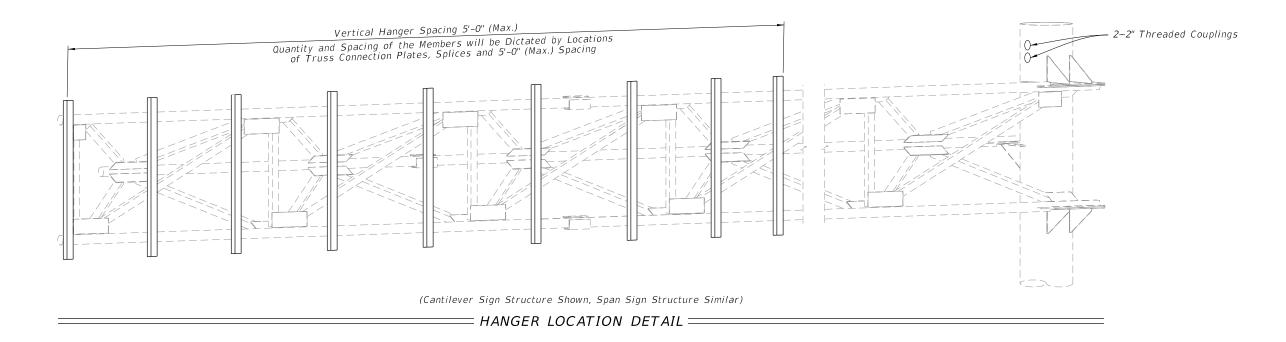


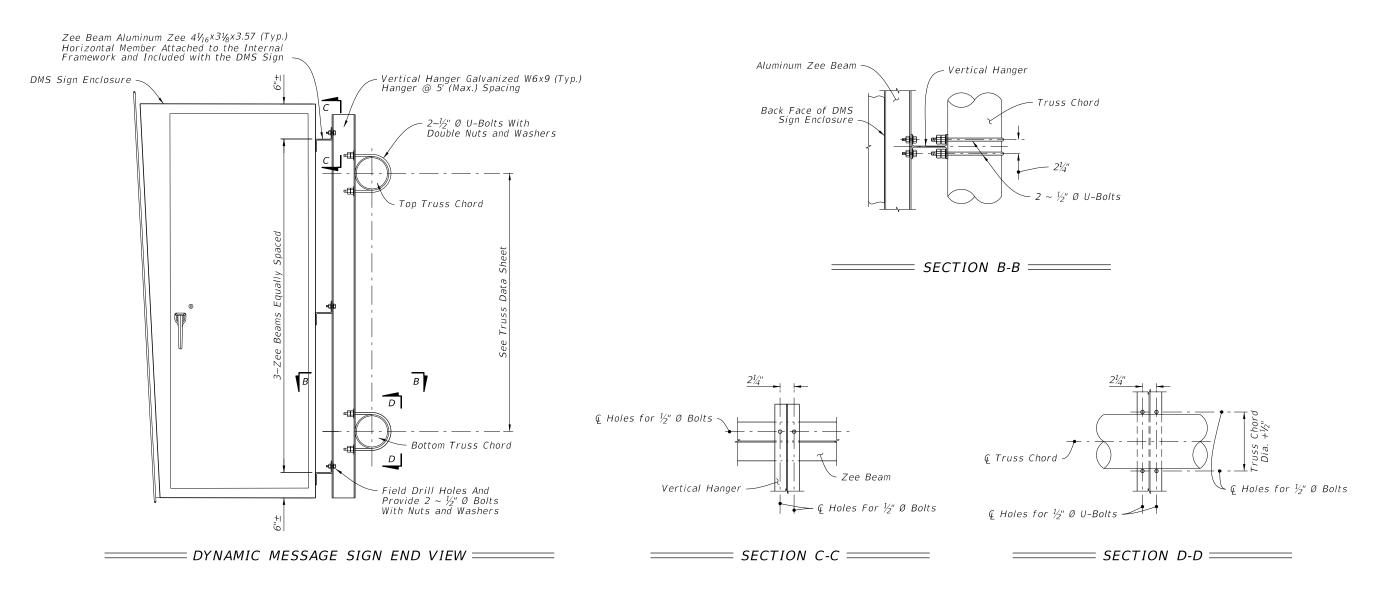
DETAIL "E"=

LAST REVISION 11/01/20

DESCRIPTION:

FDOT





9/28/2021

REVISION

11/01/17

DESCRIPTION:

FDOT

GENERAL NOTES:

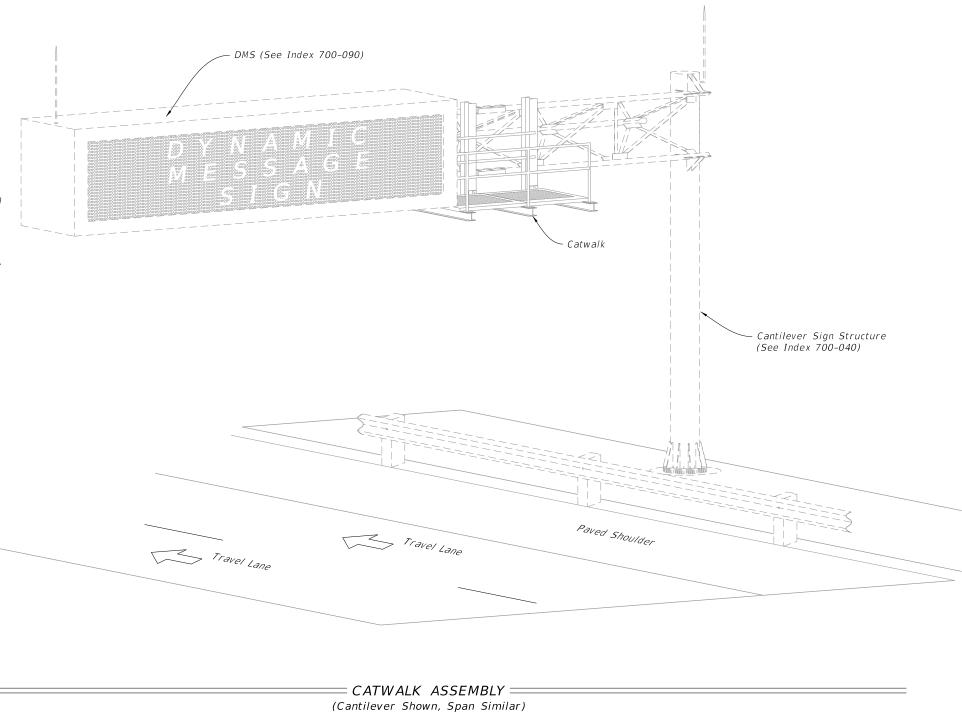
- 1. Work this Index with Specification 700.
- 2. Shop Drawings are required:
- A. Provide length as shown in the Plans
- B. Design in accordance with AISC, AASHTO, and OSHA requirements
- B. Do not start fabrication until the shop drawings are approved
- 3. Catwalk hangers must be positioned to avoid 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. Welding

E70XX

- 10. <u>Materials:</u>
- A. Steel Plates ASTM A 36 or A709 Grade 36.
- B. W- Sections: ASTM A572 Grade 36 or 50.
- C. Steel Pipe Railings or Structural Tubing: Specification 962
- D. High Strength Bolts, Nuts and Washers: Specification 962
- E. U-Bolts, nuts and washers: Specification 962
- 11. <u>Coatings/Galvaniz</u>ing:

Hot dip galvanize support frame after fabrication and galvanize non-stainless steel fasteners in accordance with Specification 962.

	TABLE OF CONTENTS:			
Sheet	Description			
1	1 General Notes and Content			
2	General Assembly and Fixed Base Details			
3	Walkway Support Details			



10:27:28 4

LAST REVISION 11/01/21

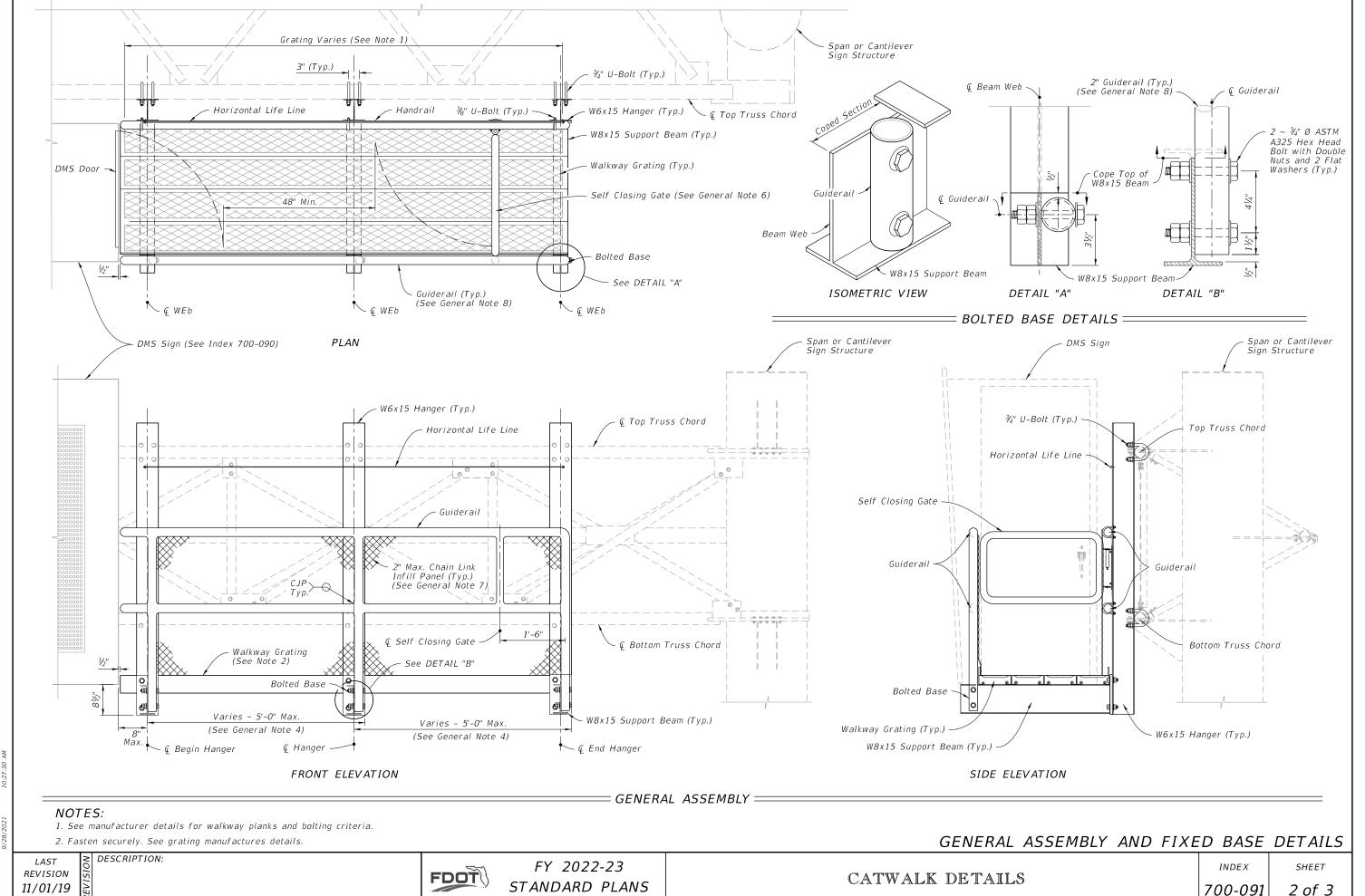
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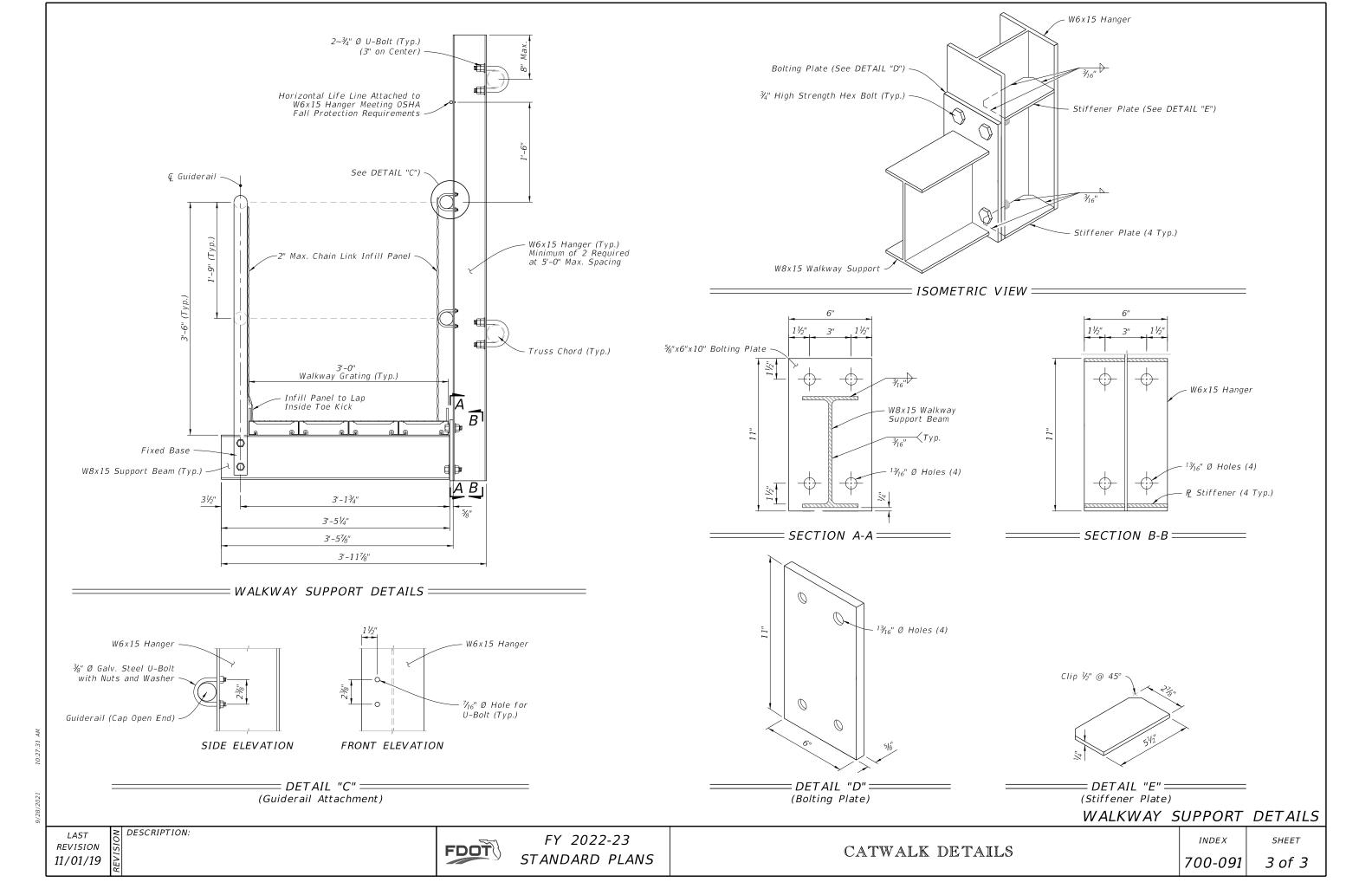
FDOT

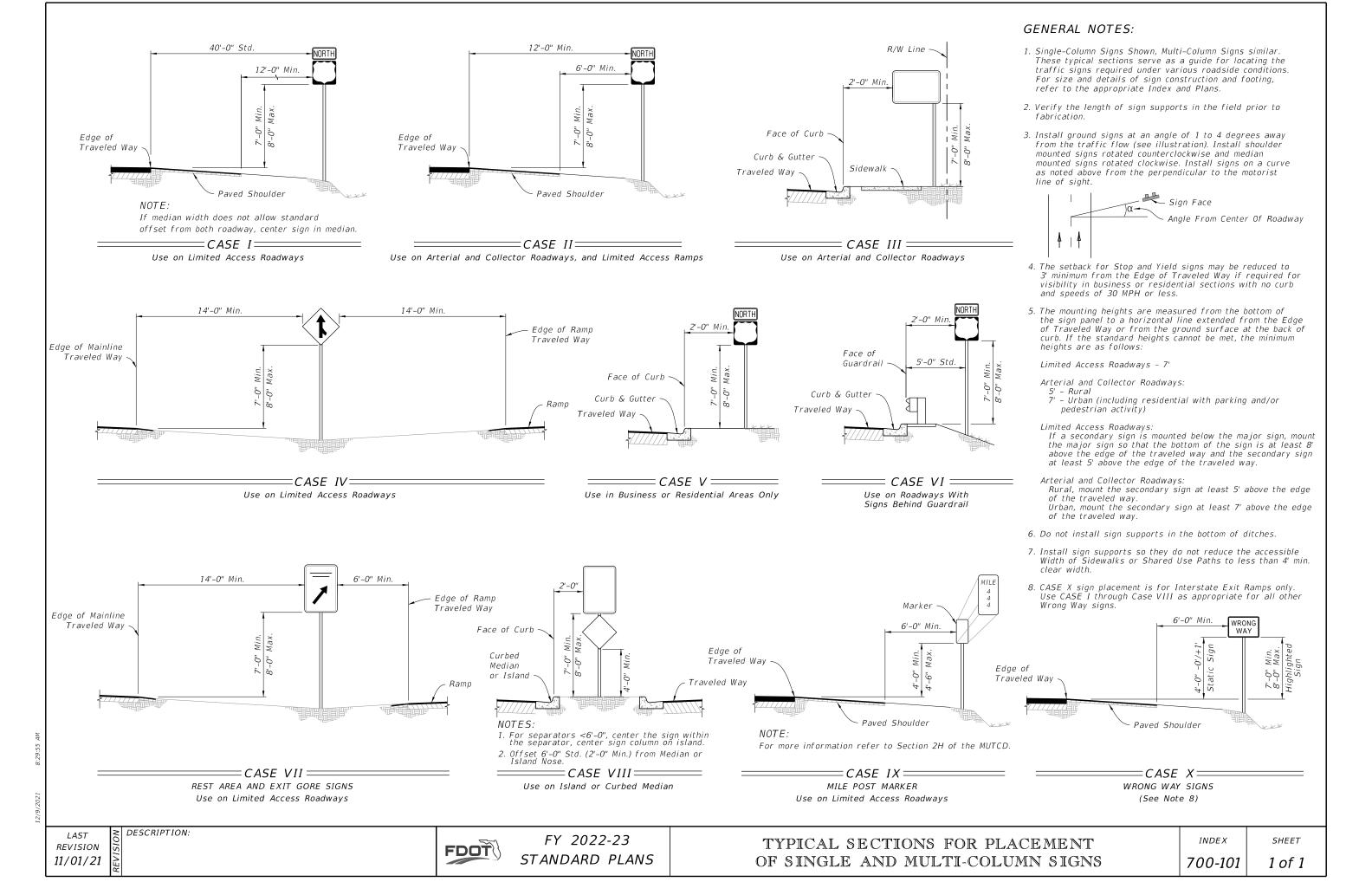
FY 2022-23 STANDARD PLANS

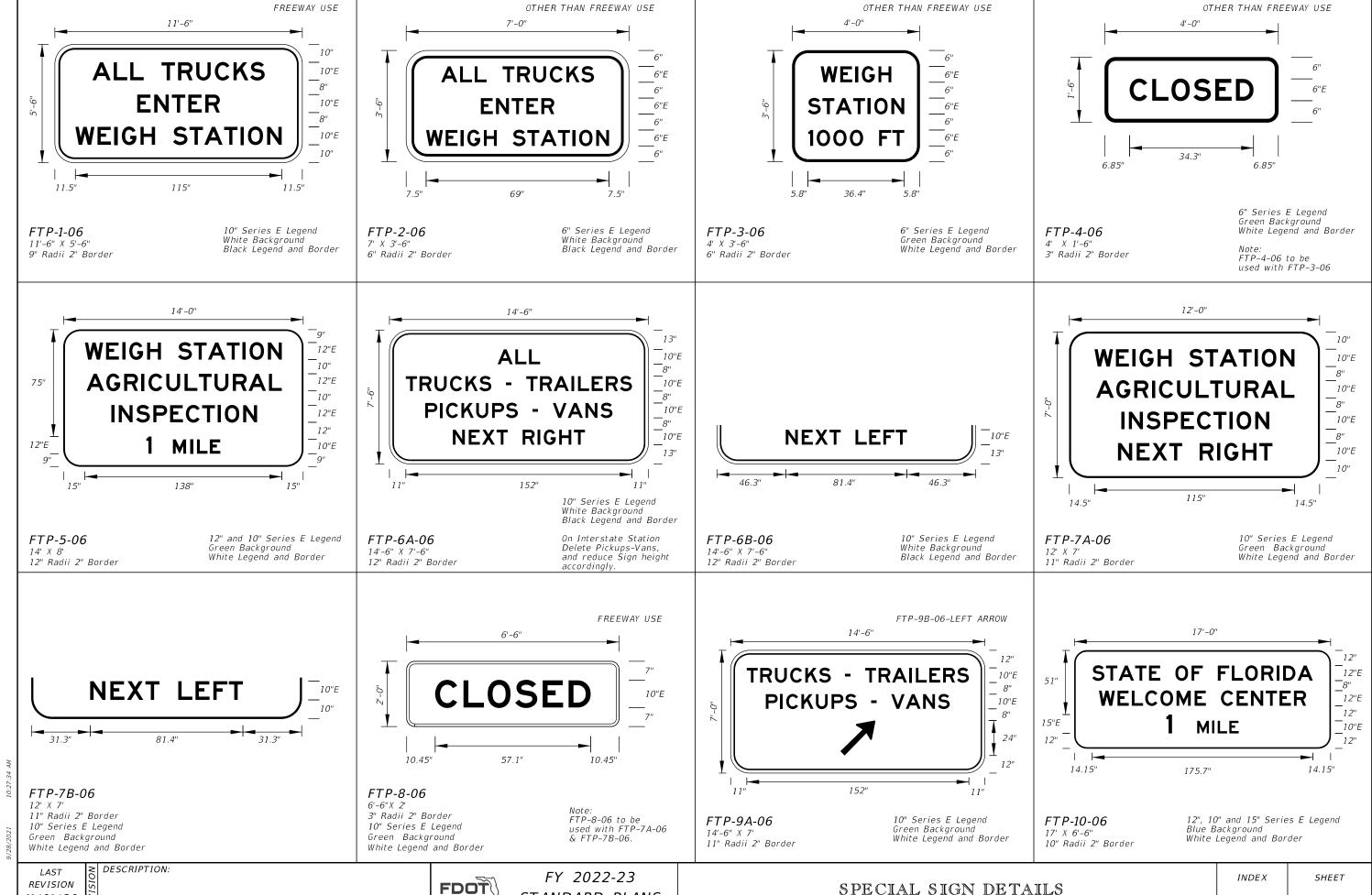
CATWALK DETAILS

INDEX 700-091 SHEET









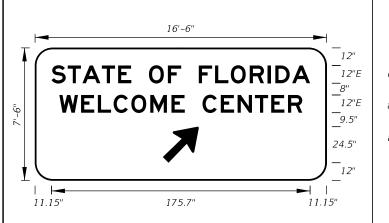
11/01/20

STANDARD PLANS

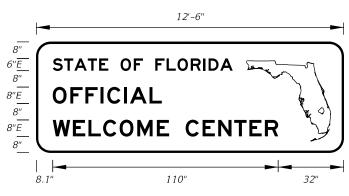
SPECIAL SIGN DETAILS

700-102

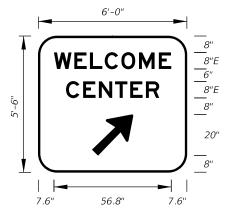
1 of 12



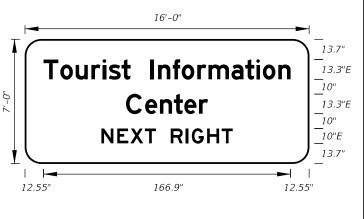
FTP-11-06 16'-6" X 7'-6" 12" Radii 2" Border 12" Series E Legend Blue Background White Legend and Border



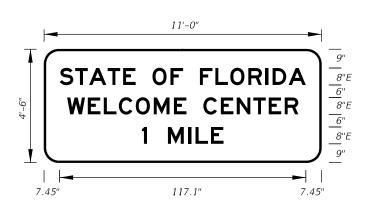
FTP-12-06 12'-6" X 4'-6" 7" Radii 2" Border 6" and 8" Series E Legend Blue Background White Legend and Border



FTP-13-06 6' 0" X 5'-6" 9" Radii 2" Border 8" Series E Legend Blue Background White Legend and Border



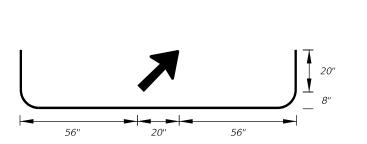
FTP-14-06 16'-0" X 7'-0" 11" Radii 2" Border 13.3 and 10" Series E Legend Blue Background White Legend and Border



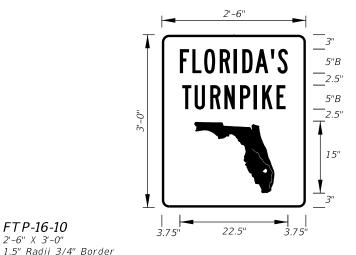
FTP-15A-06 11'-0" X 4'-6" 7" Radii 2" Border 8" Series E Legend Blue Background White Legend and Border



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





and Florida Symbol REVISION 11/01/20

FTP-16-10

2'-6" X 3'-0"

5" Series B Legend

White Legend, Border,

DESCRIPTION:

Green Background

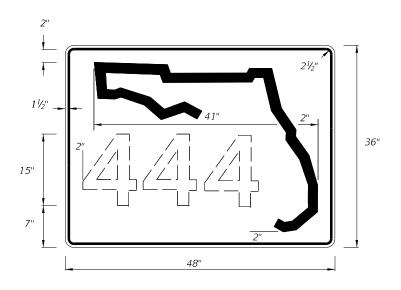
FDOT

FY 2022-23 STANDARD PLANS 4'-0" X 5'-0" 3" Radii 1 1/4" Border 8" Series B Legend Green Background White Legend, Border, and Florida Symbol

FTP-18-10

INDEX 700-102

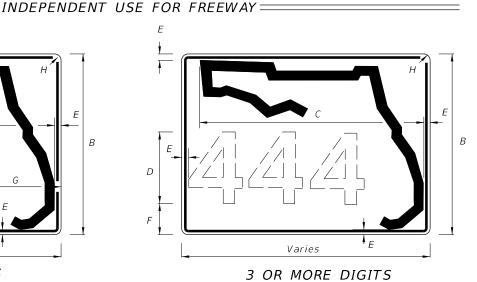
SHEET



DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE		
1-3	15"	С	48" x 36"		
4	12"	С	48" x 36"		

- 1. Stroke width of State Outline shall be 1".
- 2. 2½" Radii

INDEPENDEN E C A 1 OR 2 DIGITS



NOTES:

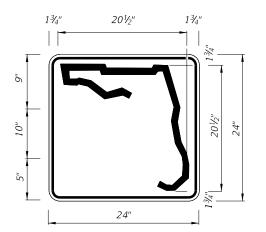
- Florida marker shall have Black Legend with White Background.
- 2. Stroke width of State outline shall be 1¾" for Guide Sign.
- 3. Series D Legend.
- 4. ⅓" Border

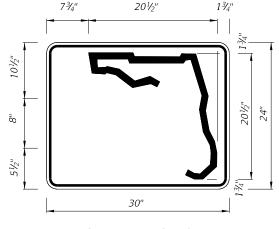
DESCRIPTION:

A B C D E F G H $30^{\circ\prime\prime}$ $24^{\circ\prime\prime}$ $26^{\circ\prime\prime}$ $12^{\circ\prime\prime}$ $1\frac{1}{4^{\circ\prime\prime}}$ $2\frac{3}{4^{\circ\prime\prime}}$ $8\frac{1}{4^{\circ\prime\prime}}$ $1\frac{1}{4^{\circ\prime\prime}}$ $36^{\circ\prime\prime}$ $30^{\circ\prime\prime}$ $32^{\circ\prime\prime}$ $15^{\circ\prime\prime}$ $1\frac{1}{4^{\circ\prime\prime}}$ $3\frac{1}{4^{\circ\prime\prime}}$ $8\frac{3}{4^{\circ\prime\prime}}$ $1\frac{1}{4^{\circ\prime\prime}}$ $42^{\circ\prime\prime}$ $36^{\circ\prime\prime}$ $38^{\circ\prime\prime}$ $15^{\circ\prime\prime}$ $1\frac{1}{4^{\circ\prime\prime}}$ $6\frac{1}{4^{\circ\prime\prime}}$ $11^{\circ\prime\prime}$ $1\frac{1}{4^{\circ\prime\prime}}$

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"

3 or 4 DIGITS

DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE		
3	8"	D	30" x 24"		
4	8"	С	30" x 24"		

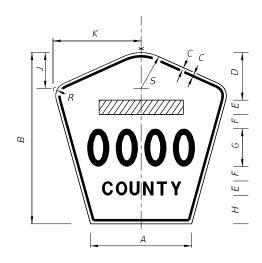
NOTES:

- 1. Stroke width of State Outline shall be 1".
- 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.
- 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	5	Yellow Background
4 DIGIT POST MOUNTED	251/8"	42"	3/4"	10"	4"	4"	8"	8"	83/8"	22"	5"	8¾"	Dimensions (See Note 3)
2 DIGIT OVERHEAD	21½"	36"	1/2"	71/2"	3"	3"	12"	41/2"	71/8"	187/8"	41/4"	7½"	42"x 42"
3 DIGIT OVERHEAD	251/8"	42"	3/4"	8"	4"	4"	12"	6"	83/8"	22"	5"	8¾"	48"x 48"
4 DIGIT OVERHEAD	29 ⁷ /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)=

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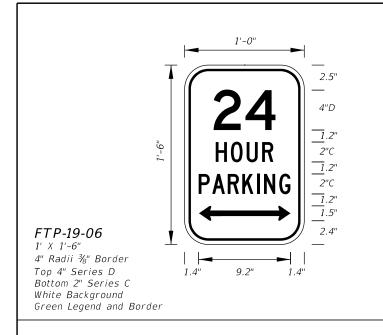
FDOT

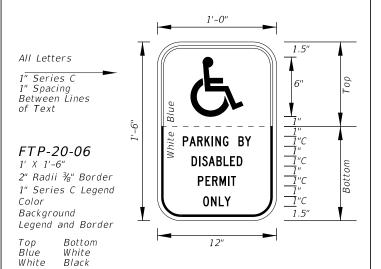
FY 2022-23 STANDARD PLANS

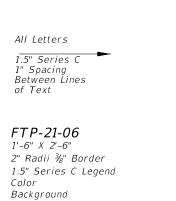
SPECIAL SIGN DETAILS

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*SHEET*3 of 12







Legend and Border

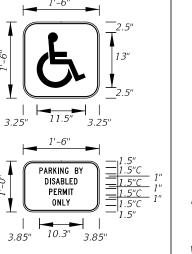
Blue

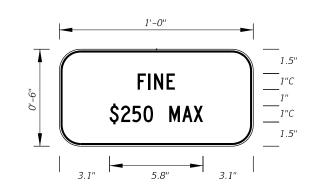
White

Bottom

White

Black

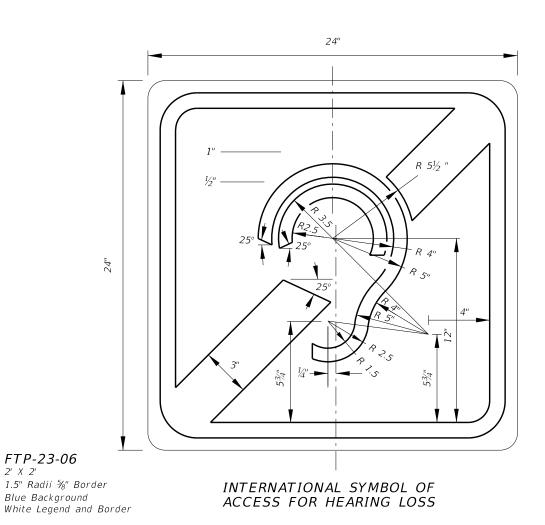


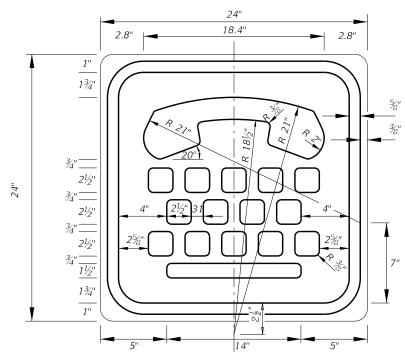


FTP-22-06

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 ¾" Border Blue Background White Legend and Border

INTERNATIONAL TDD SYMBOL

REVISION 11/01/20

FTP-23-06 2' X 2'

DESCRIPTION:

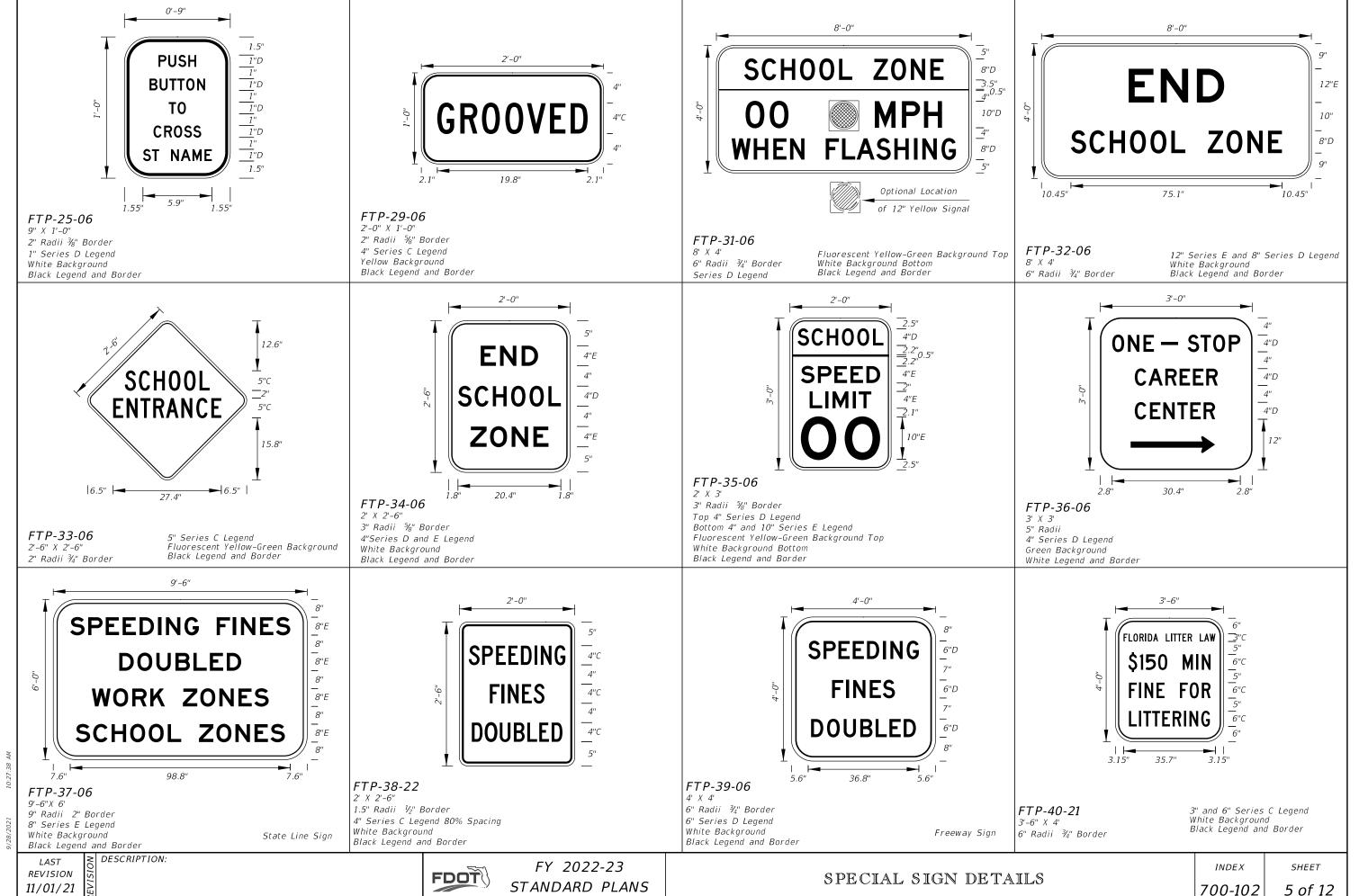
FDOT

FY 2022-23 STANDARD PLANS

SPECIAL SIGN DETAILS

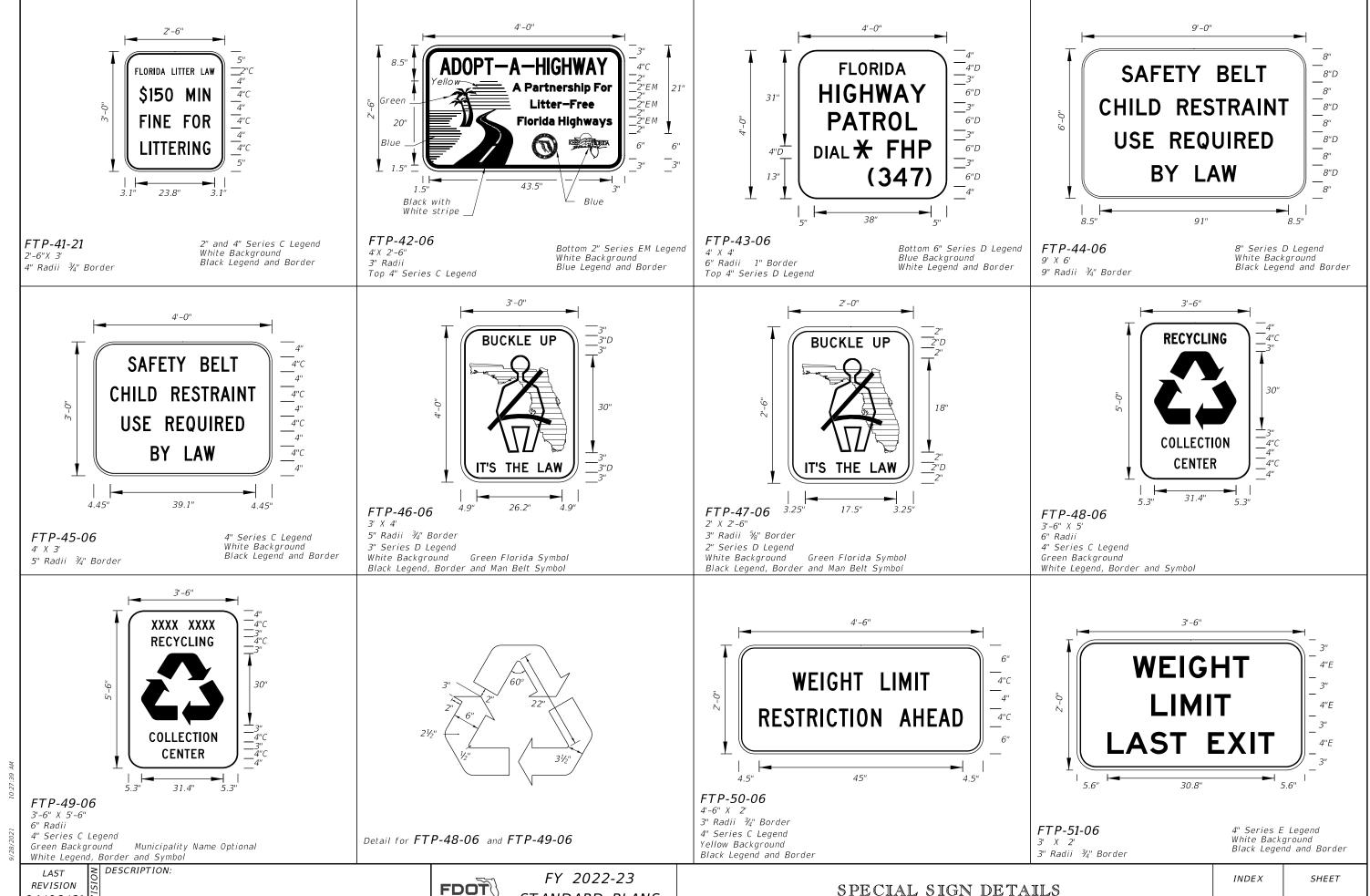
INDEX 700-102

SHEET



STANDARD PLANS

700-102



STANDARD PLANS

04/06/21



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DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

SPECIAL SIGN DETAILS

INDEX

SHEET

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4.5"

5"D

FTP-55R-06 for

(Right Turn Arrow)

3.5"

4"C

4"C

3"C

3.5"

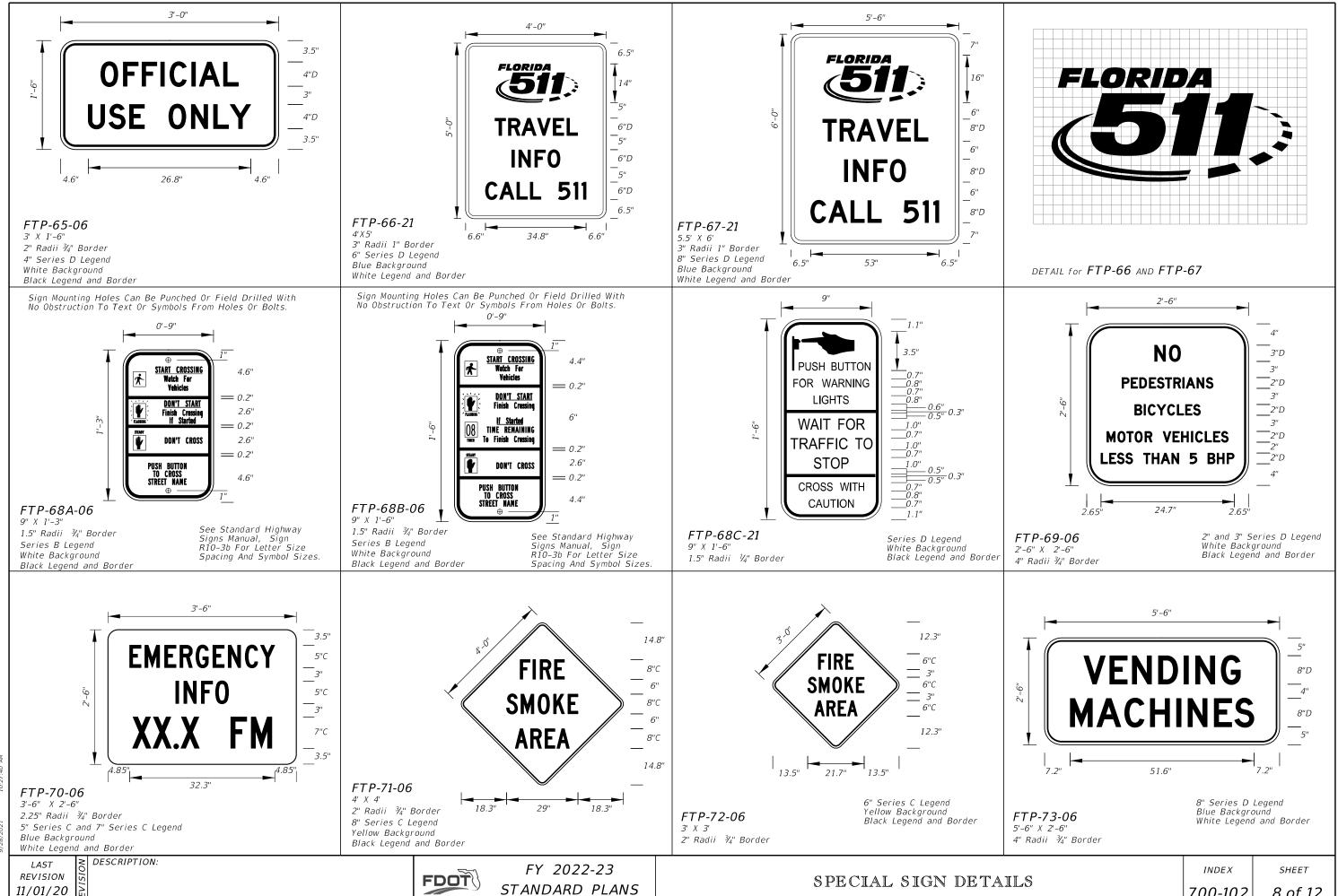
4.25"

Design Project Manager

or Transit Administrator

will supply correct 1-8XX

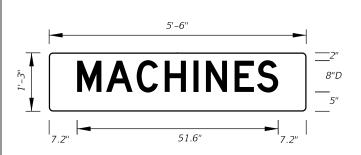
5"C

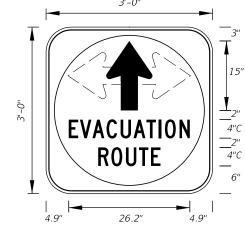


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BREAK 6"D 59.2"





5" Radii ¾" Border

4" Series C Legend White Background with Blue Circle Background

FTP-77-06 3' X 3'

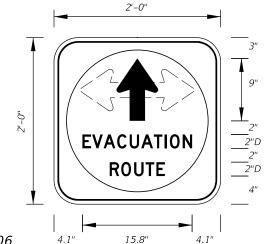
White Legend and Black Border

FTP-74-06

5'-6" X 2'-6" 4" Radii ¾" Border

6" Series D Legend Blue Background White Legend and Border FTP-75-06 5'-6" X 1'-3"

1" Radii 6" Series D Legend Blue Background White Legend



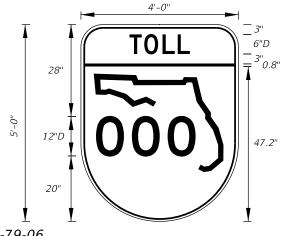
FTP-78-06 2' X 2'

3" Radii ¾" Border

2" Series D Legend

White Background with Blue Circle Background White Legend and Black Border

DESCRIPTION:

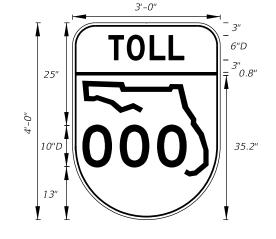


FTP-79-06

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'

FTP-76-06 5'-6" X 1'-3"

8" Series D Legend

Blue Background

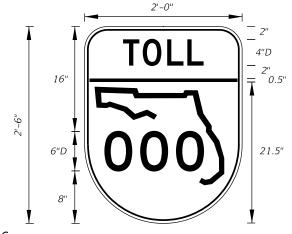
White Legend

1" Radii

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

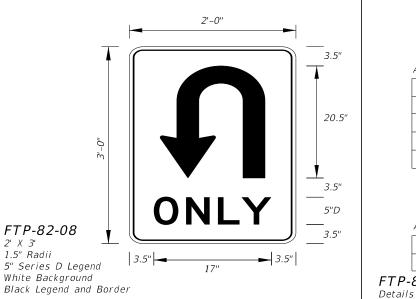


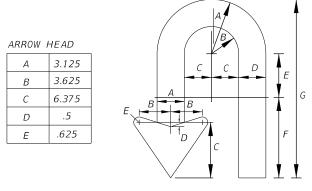
FTP-81-06 2' X 2'-6"

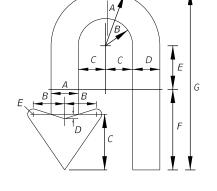
3" Radii ¾" Border

4" and 6" Series D Legend

Top Yellow Background with Black Legend and Black Border Bottom White Background with Black Legend and Border





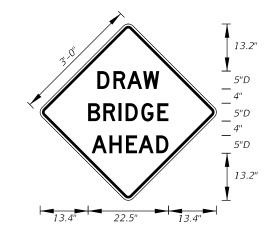


	ARROW I	BODY					
	Α	В	С	D	E	F	G
	6.25	3.125	3.125	3.125	5	9.25	20.5
FTP-	82-08						

10'-0" **TRUCKS** 10"E B" 22.4" 9.8" 96.1" 11.95" 11.95"

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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2' X 3' 1.5" Radii

FDOT

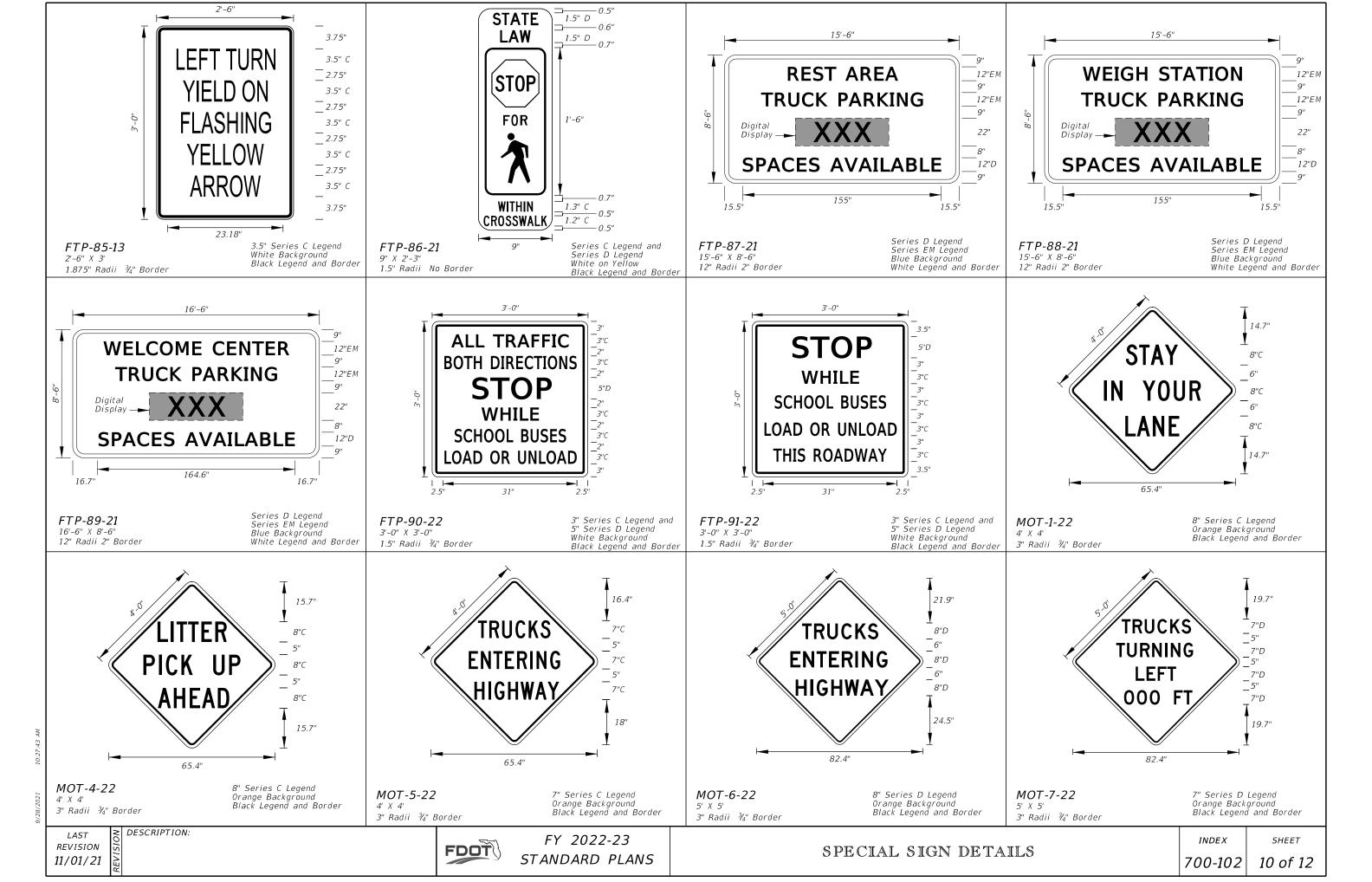
FY 2022-23 STANDARD PLANS

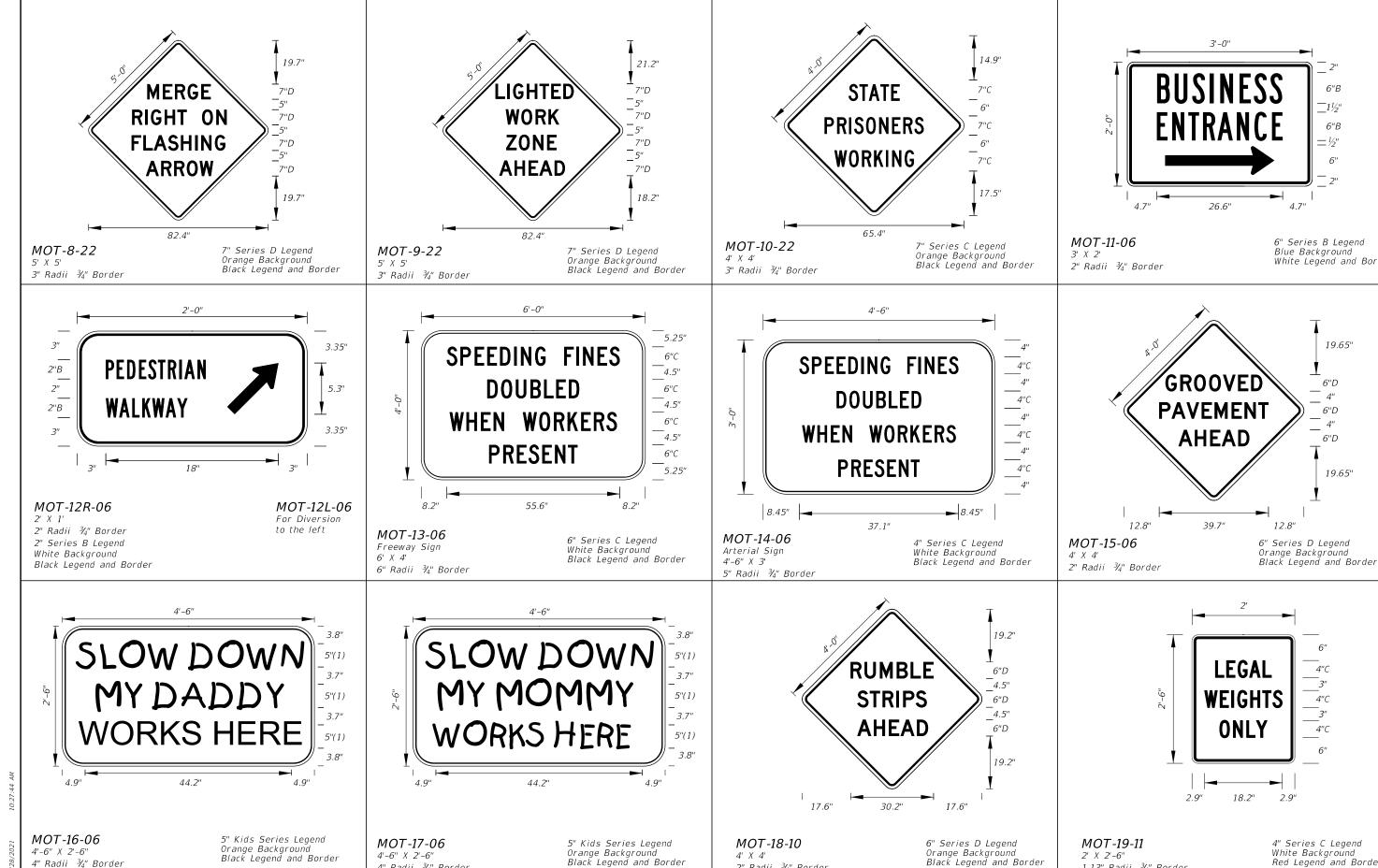
SPECIAL SIGN DETAILS

INDEX SHEET

700-102

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4" Radii ¾" Border

REVISION

11/01/21

DESCRIPTION:

FDOT

4'-6" X 2'-6"

4" Radii ¾" Border

Black Legend and Border

FY 2022-23 STANDARD PLANS 4' X 4'

2" Radii ¾" Border

SPECIAL SIGN DETAILS

INDEX 700-102

SHEET

2' X 2'-6"

1.13" Radii ¾" Border

11 of 12

4" Series C Legend White Background Red Legend and Border

6" Series B Legend

White Legend and Border

19.65"

6"D

6"D

6"D

4"C

__ 3"

4"C

_ 3"

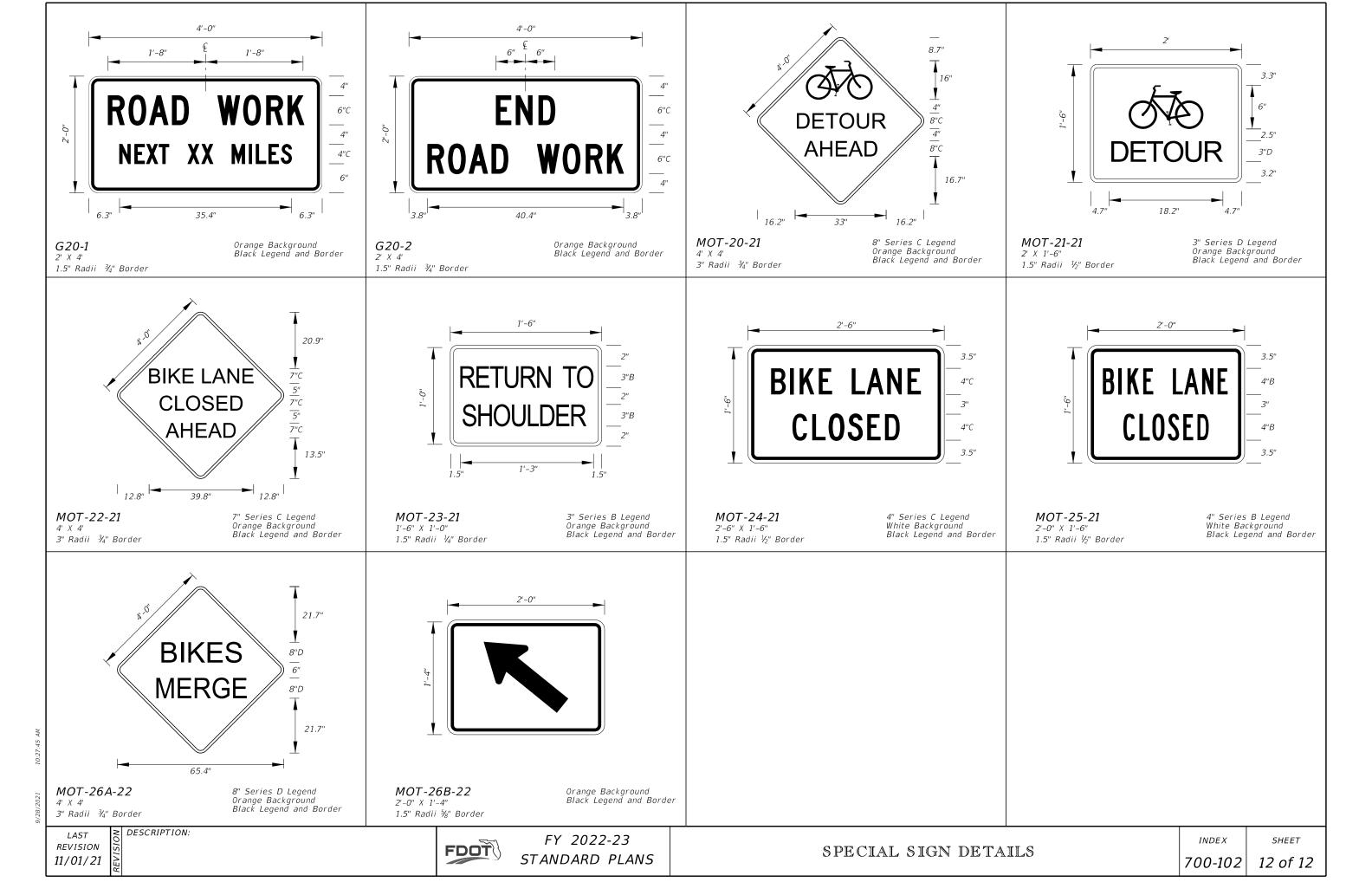
4"C

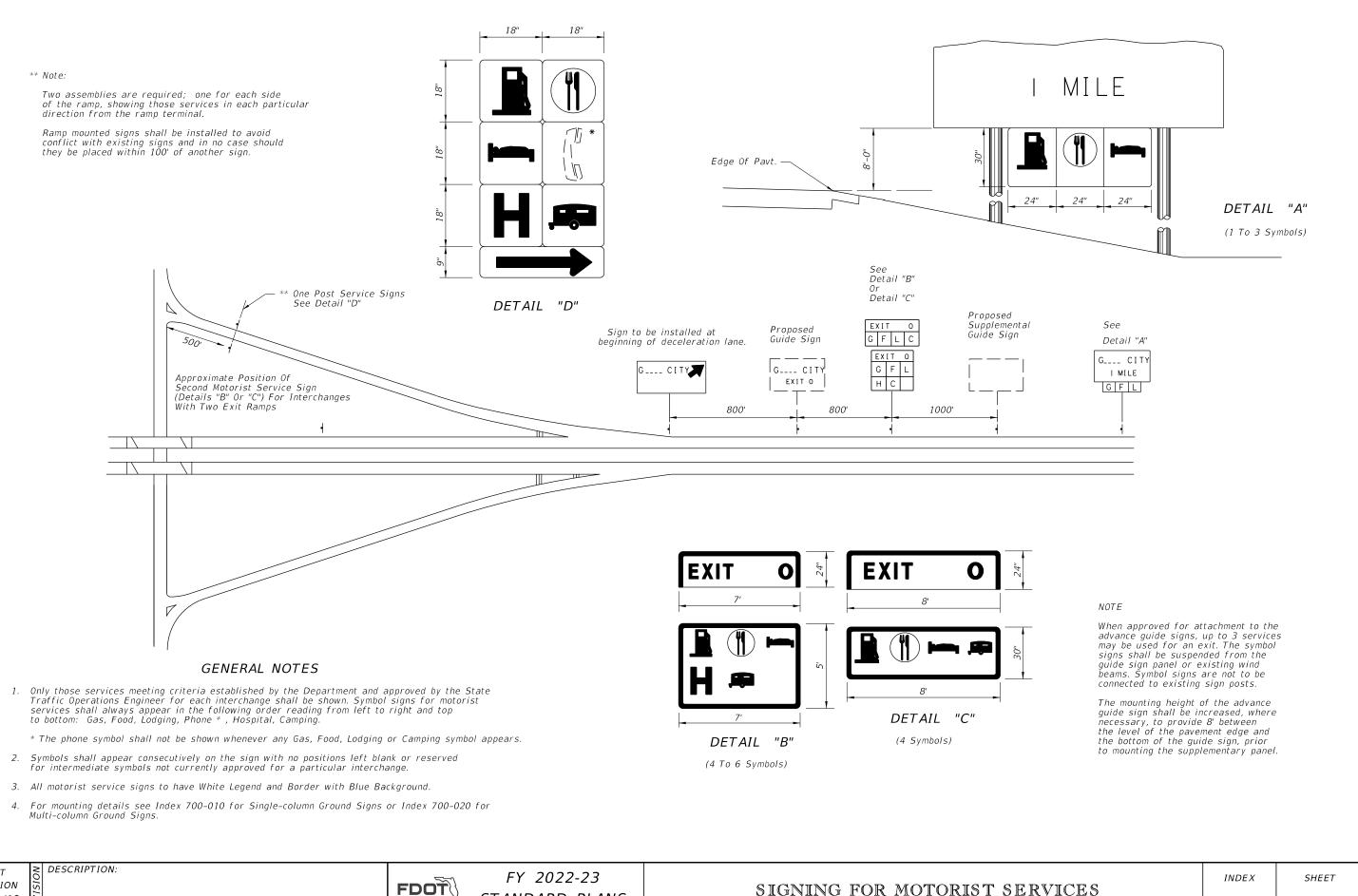
6"

12.8"

19.65"

Blue Background





REVISION 11/01/19

FDOT

STATE OF FLORIDA **WELCOME CENTER** MILE

STATE OF FLORIDA **WELCOME CENTER**

STATE OF FLORIDA **OFFICIAL WELCOME CENTER**

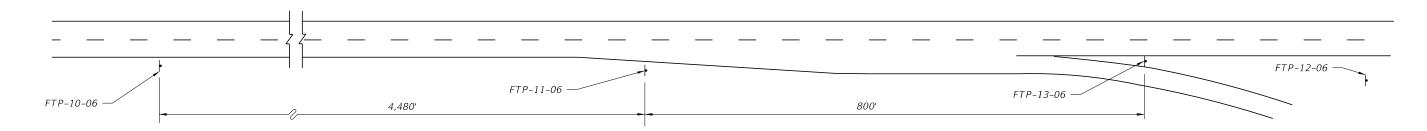


Sign FTP-10-06

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 2022-23 STANDARD PLANS INDEX

700-105 1 of 2

STATE OF FLORIDA **WELCOME CENTER** 1 MILE

STATE OF FLORIDA 🖘 **OFFICIAL WELCOME CENTER**

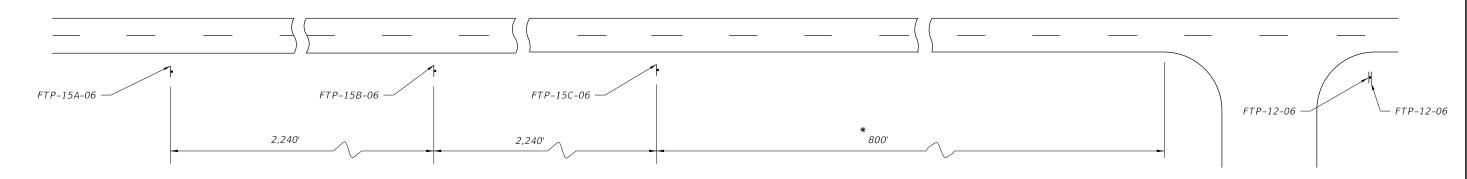
1/2 MILE

SIGN FTP-15B-06

SIGN FTP-15C-06

SIGN FTP-15A-06

SIGN FTP-12-06



* 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.
- 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:

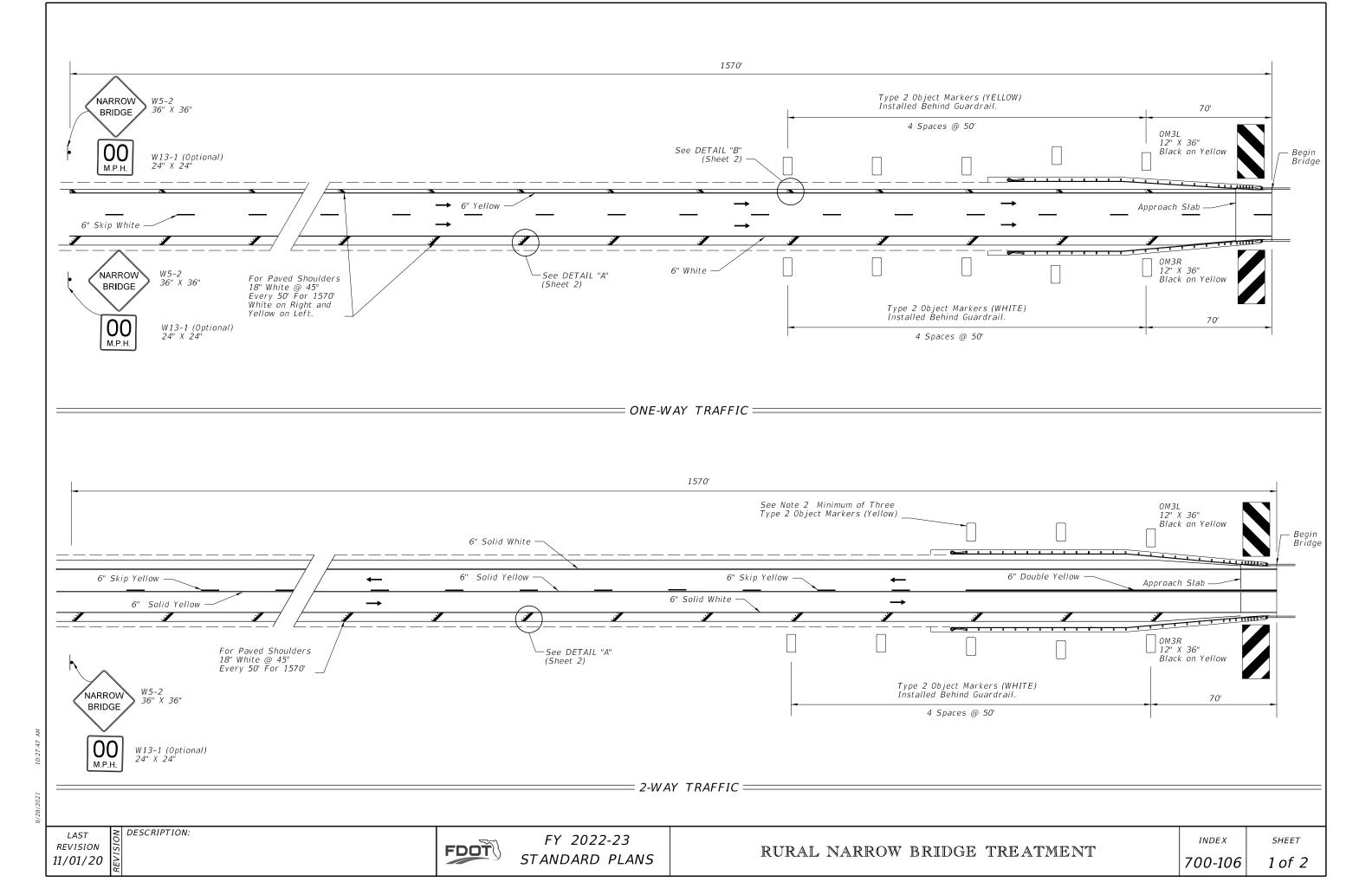
FDOT

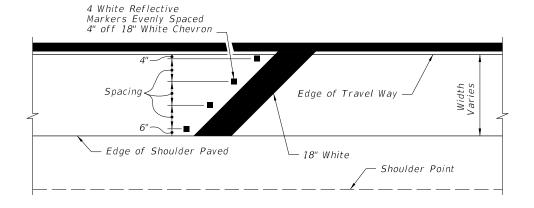
FY 2022-23 STANDARD PLANS

WELCOME CENTER SIGNING

INDEX 700-105

SHEET



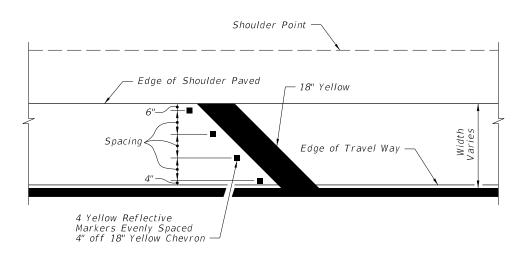


Direction of Travel

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.

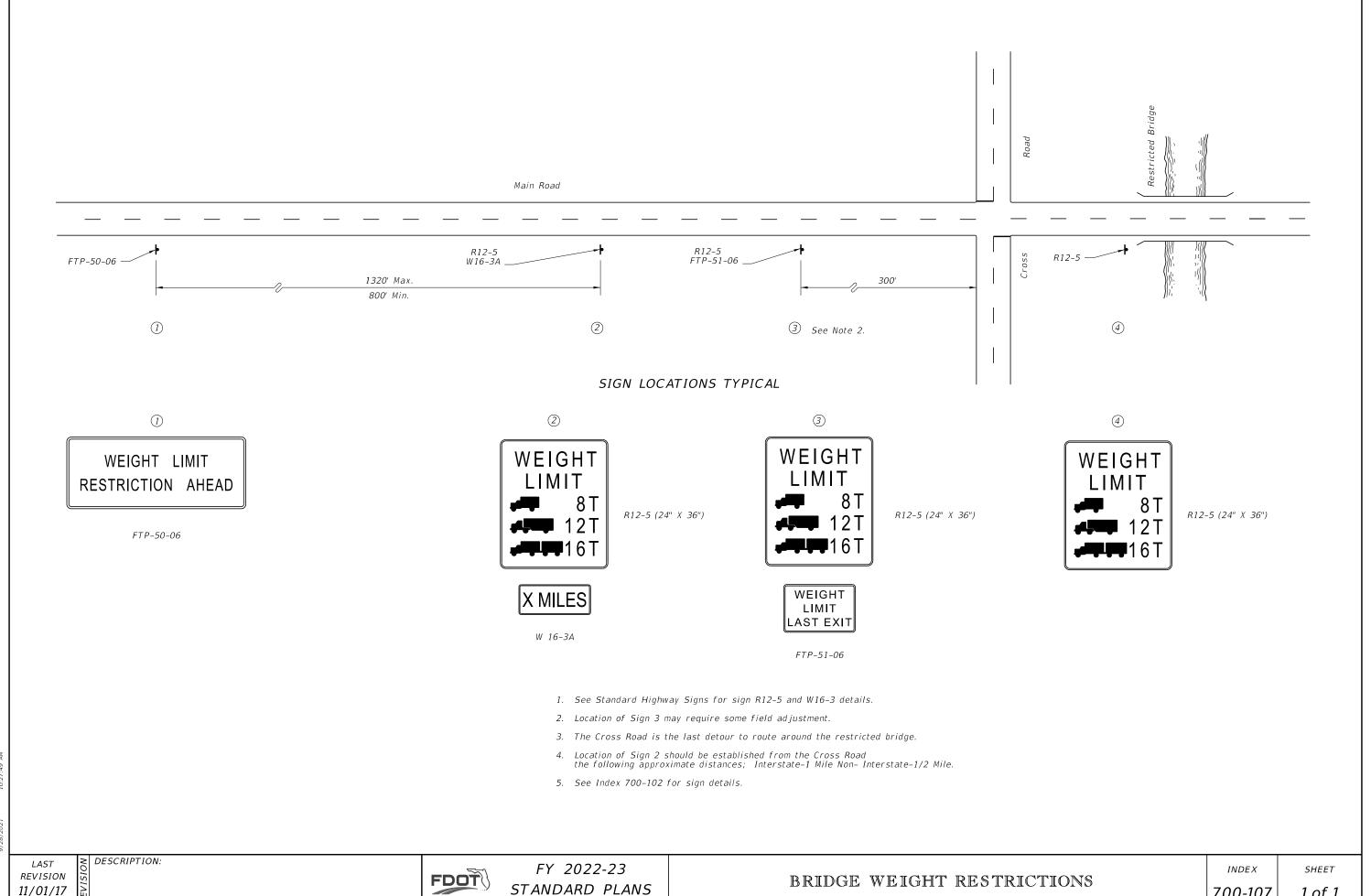


Direction of Travel

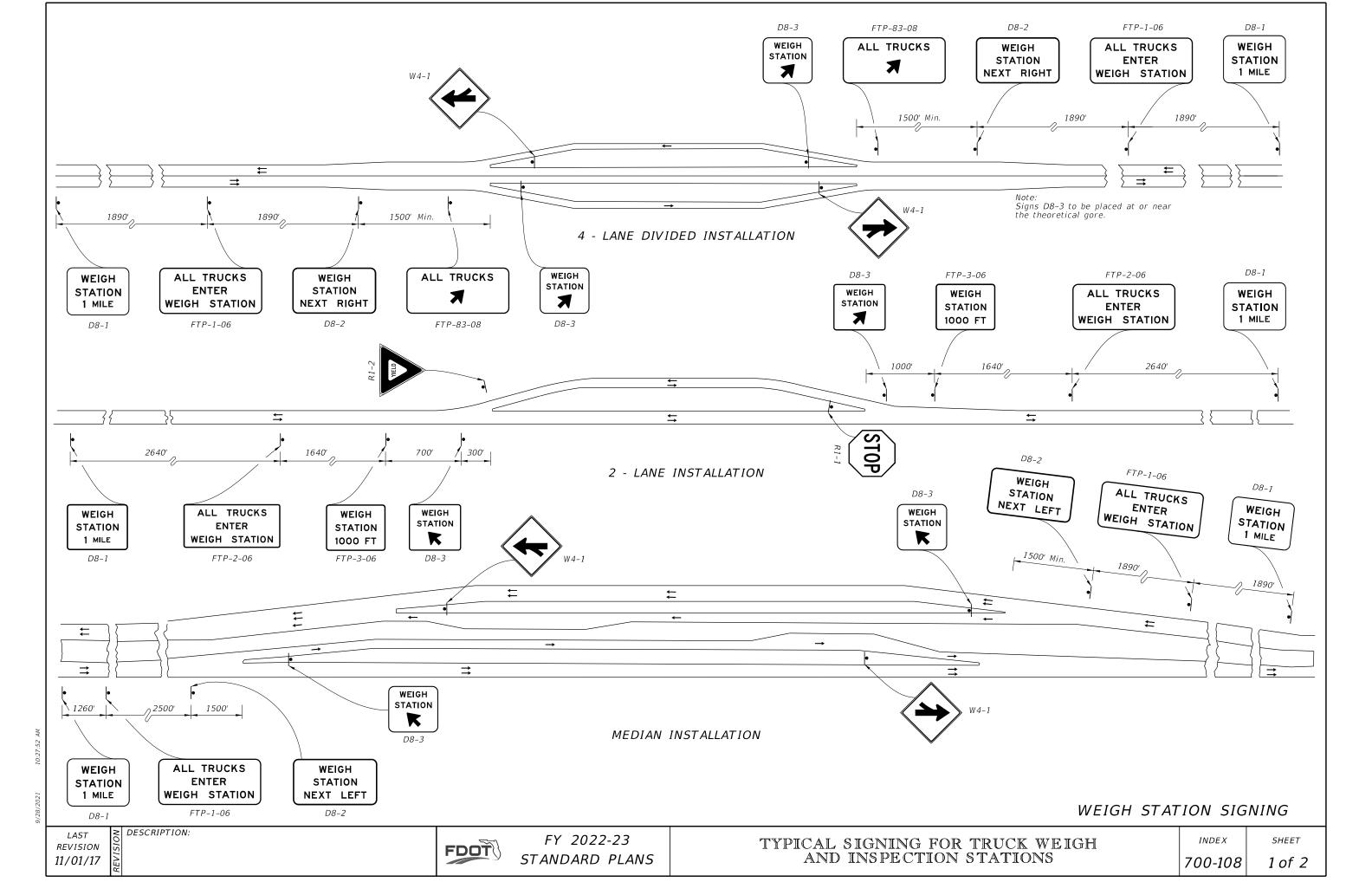
Median Shoulder = DEATIL "B" =

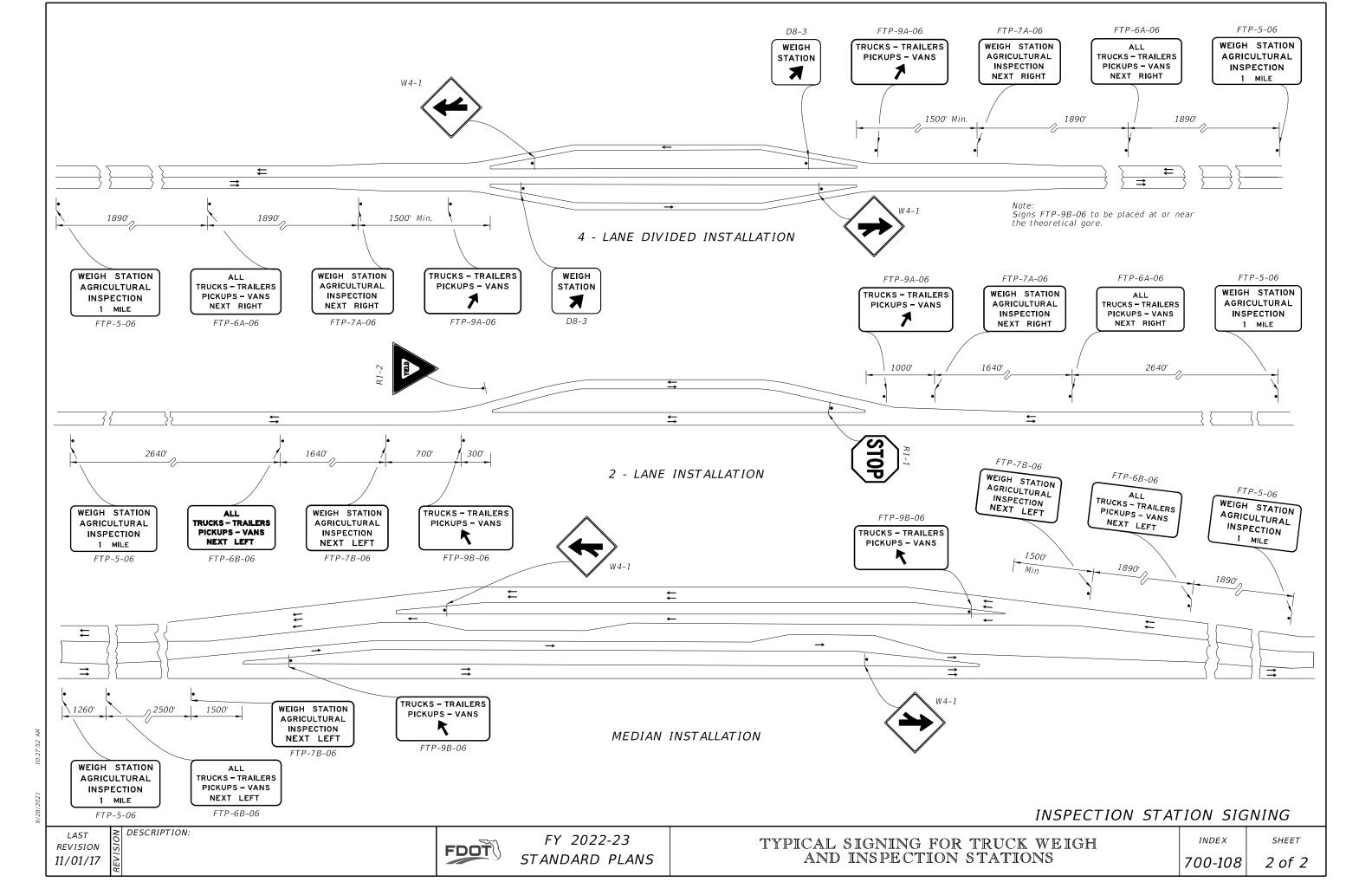
Shoulder Width	No. of RPM's	Spacing		
2'	2	1 4"		
3'	3	13"		
4'	3	19"		
5'	4	16.67"		

DESCRIPTION:



11/01/17





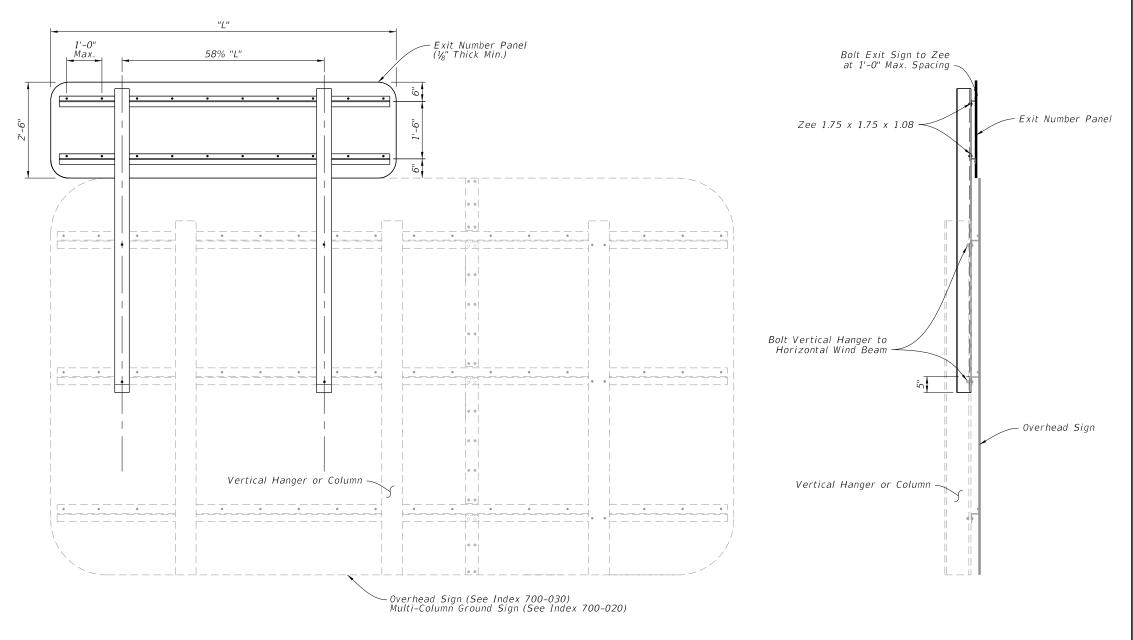
1. Work with Indexes 700-020 and 700-030.

2. Materials (Aluminum):

- A Sheets and Plates: ASTM B209 Alloy 6061-T6
- B. Standard Structural Shapes: ASTM B221 Alloy 6061-T6
- C. Extruded Shapes: ASTM B221 Alloy 6061-T6
- D. For Bolts, Nuts, and Washers requirements see Index 700-020 or 700-030.

3. Fabrication

- A. See sign layout sheet for dimension "L" and sign face details in the Plans.
- B. Round all sign corners.
- 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.



BACK ELEVATION

SIDE ELEVATION

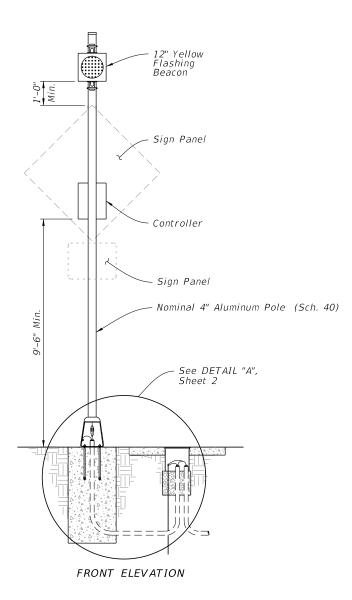
28/2021 10

LAST REVISION 11/01/20

DESCRIPTION:



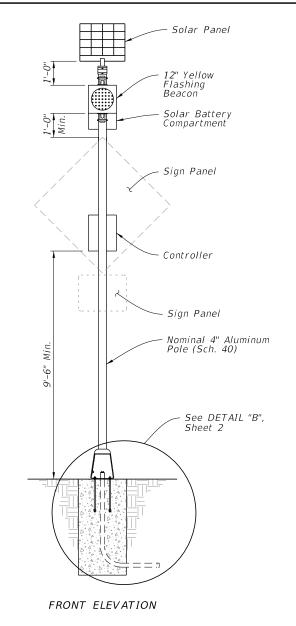


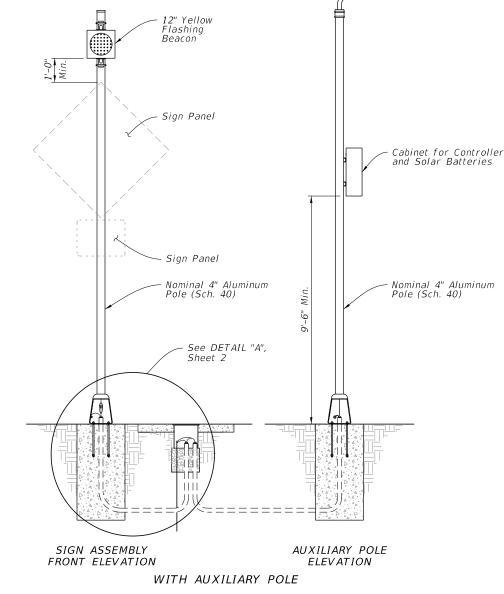




GENERAL NOTES:

- 1. Install sign assemblies based on Alpha-Numeric Type designation shown in the Plans (e.g., Type A1). Assembly Type is based on Power Configuration 'Alpha' Identification shown above and Numerical Identification shown on Sheet 3 thru 8.
- 2. Install sign panel and wind beam in accordance with Index 700-010 and Specification 700.
- 3. Engage all threads on the transformer base and post unless the aluminum post is fully seated into base.
- 4. Meet the requirements of Specification 646.
- 5. 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".
- 6. When wire entry holes are drilled in the sign column, use a bushing or rubber grommet to protect conductors.





WITHOUT AUXILIARY POLE

POWER CONFIGURATION 'B' SOLAR-POWERED

(Type B1 Shown)

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
- 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.

TABLE OF CONTENTS:						
Sheet	Description					
1	General Notes and Contents					
2	Conduit, Wiring, and Foundation Details					
3	Roadside Sign Assembly-1					
4	Roadside Sign Assembly-2					
5	Roadside Sign Assembly-3					
6	Roadside Sign Assembly-4					
7	Roadside Sign Assembly-5					
8	Roadside Sign Assembly-6					
9	Roadside Sign Assembly-7					
10	Roadside Sign Assembly-8					
11	Overhead Sign Assembly					

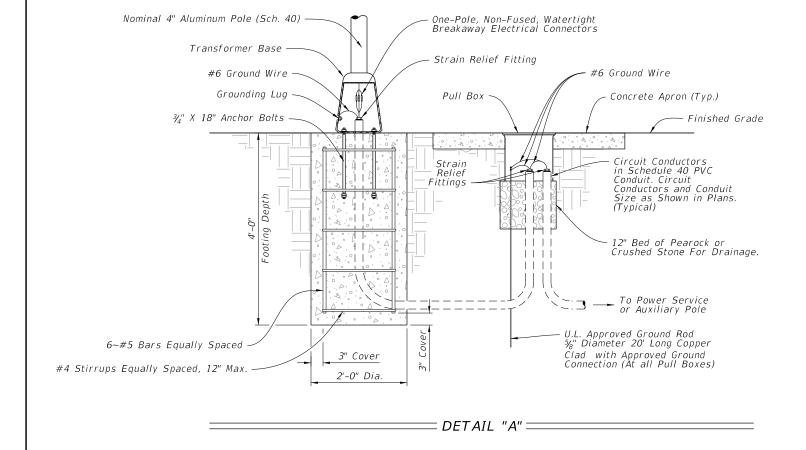
DESCRIPTION: LAST **REVISION**

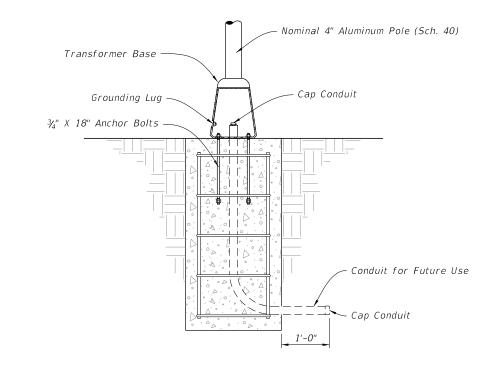
11/01/21



FY 2022-23 STANDARD PLANS INDEX

SHEET 1 of 11





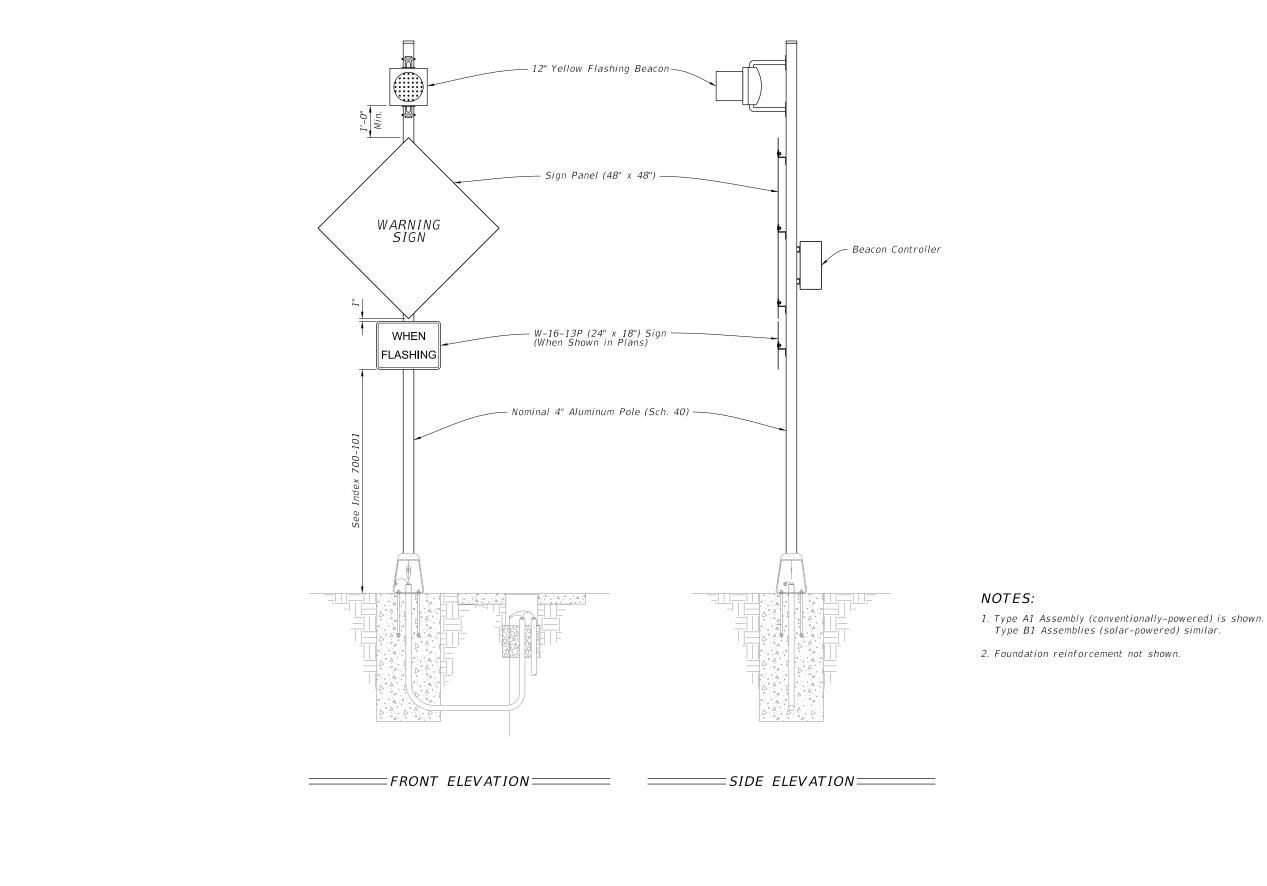
DETAIL "B" =

CONDUIT, WIRING, AND FOUNDATION DETAILS

REVISION 11/01/21

DESCRIPTION:

FDOT

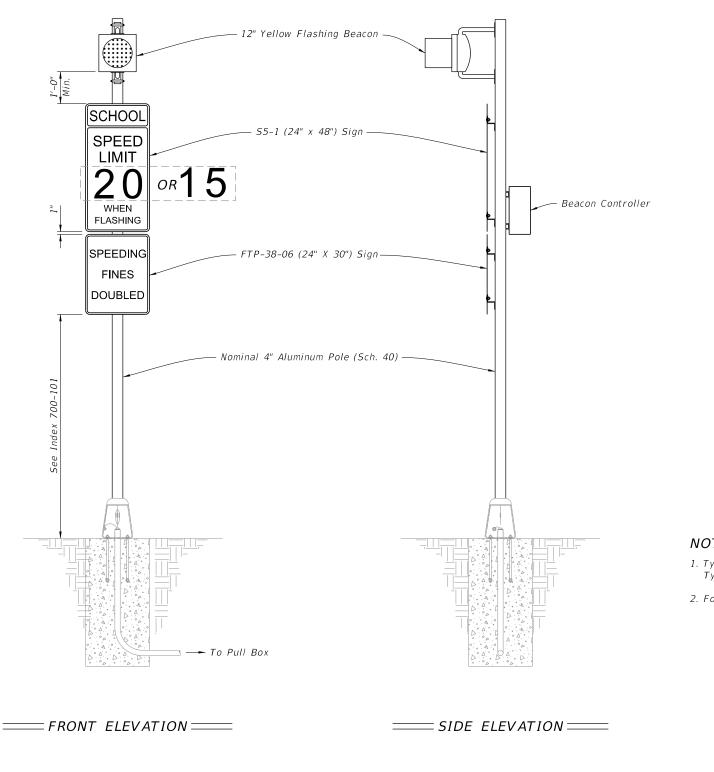


ROADSIDE SIGN ASSEMBLY-1

REVISION 11/01/21

DESCRIPTION:

FDOT



- 1. Type A2 Assembly (conventionally-powered) is shown. Type B2 Assemblies (solar-powered) similar.
- 2. Foundation reinforcement not shown.

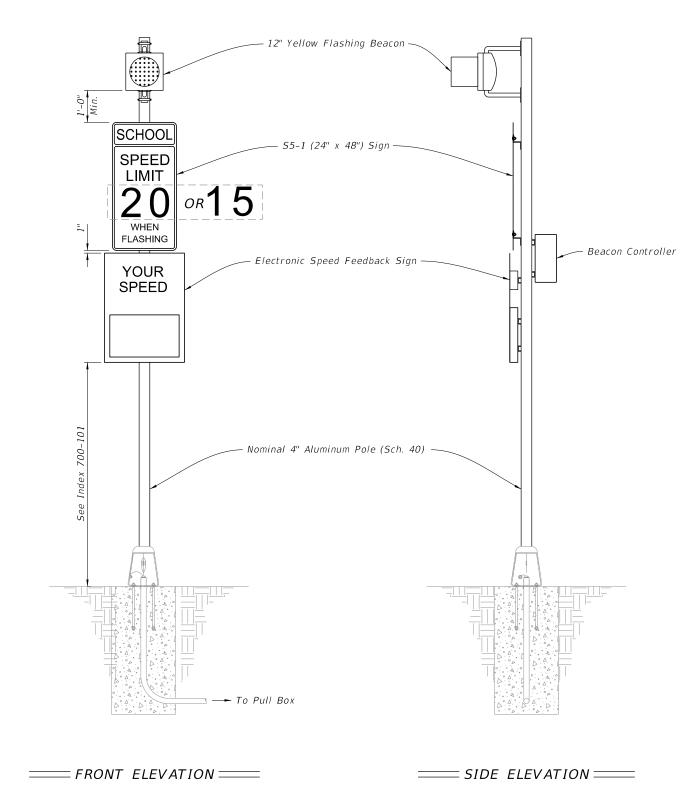
ROADSIDE SIGN ASSEMBLY-2

LAST REVISION 11/01/21

DESCRIPTION:

FDOT

SHEET



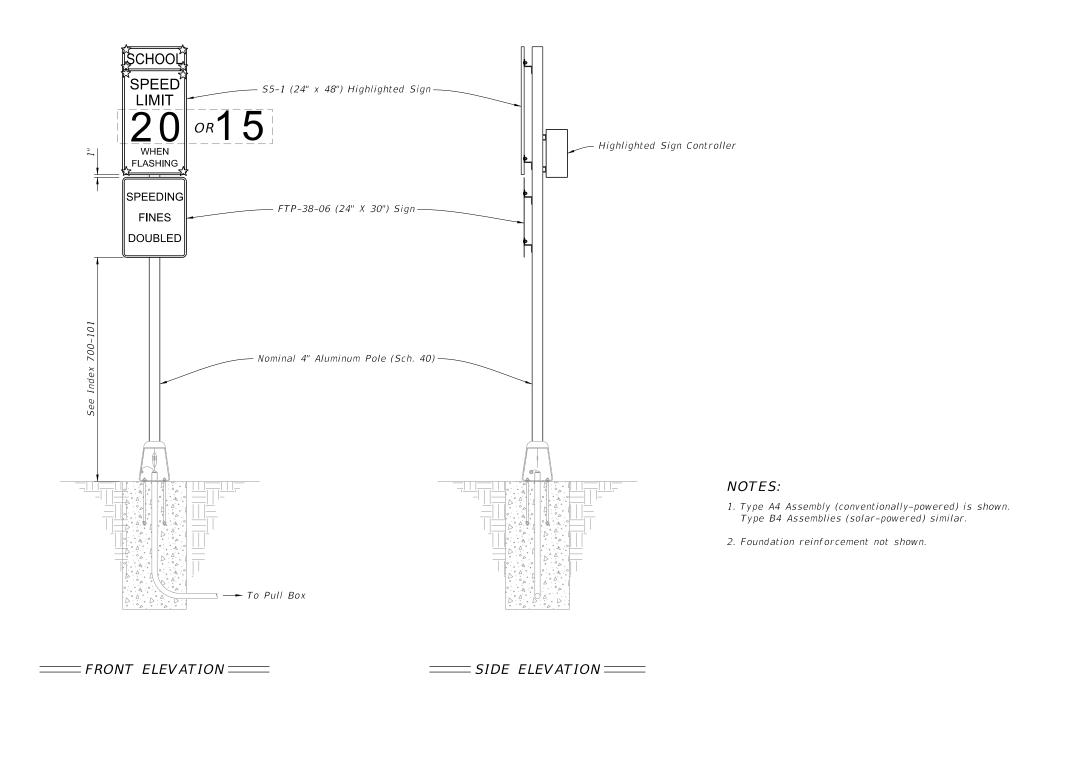
- 1. Type A3 Assembly (conventionally-powered) is shown. Type B3 Assemblies (solar-powered) similar.
- 2. Use electronic speed feedback sign with 15" high numerals for posted speed of 45 mph or less, and 18" high numerals for posted speeds greater than 45 mph.
- 3. Foundation reinforcement not shown.

ROADSIDE SIGN ASSEMBLY-3

DESCRIPTION: REVISION 11/01/21

FDOT

FY 2022-23 STANDARD PLANS

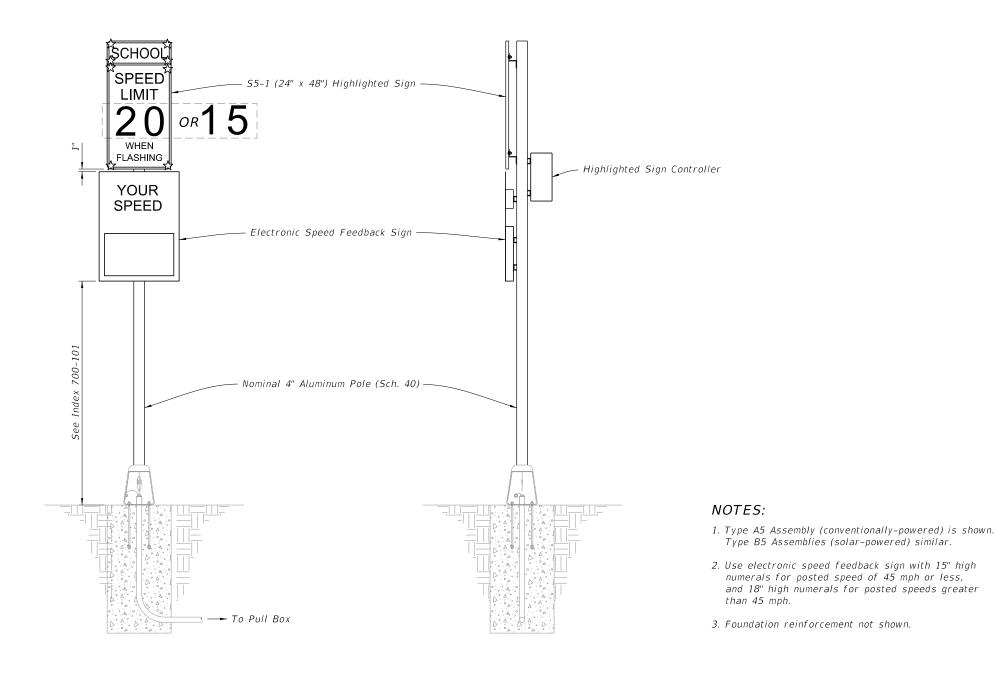


REVISION 11/01/21

DESCRIPTION:

FDOT

ROADSIDE SIGN ASSEMBLY-4



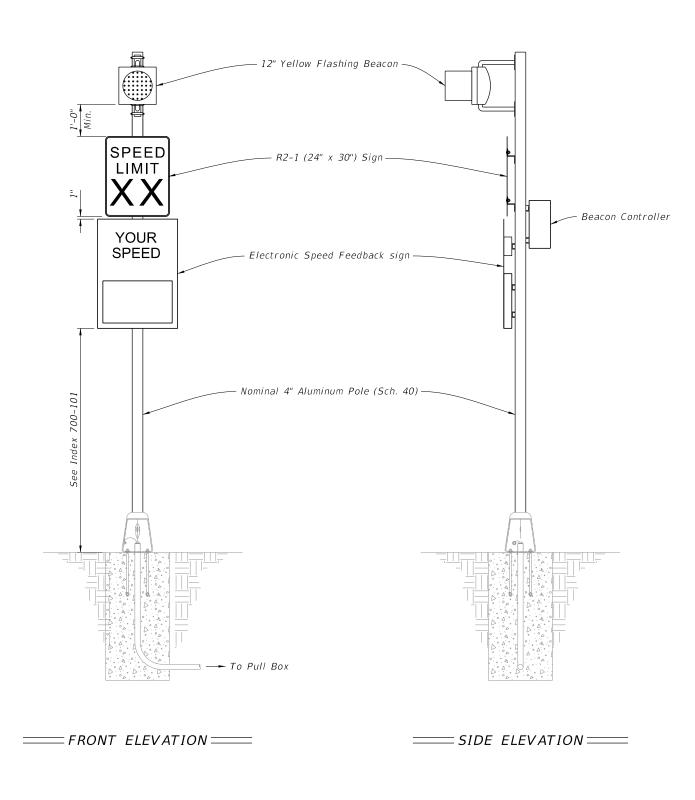
ROADSIDE SIGN ASSEMBLY-5

DESCRIPTION: REVISION 11/01/21

FDOT

==== FRONT ELEVATION =====

FY 2022-23 STANDARD PLANS ==== SIDE ELEVATION ====



- 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.

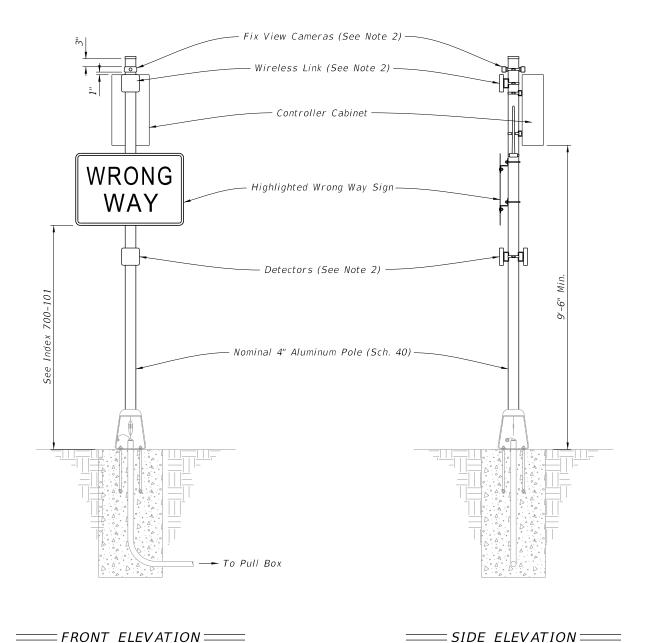
ROADSIDE SIGN ASSEMBLY-6

DESCRIPTION: REVISION 11/01/21

FDOT

FY 2022-23 STANDARD PLANS

SHEET



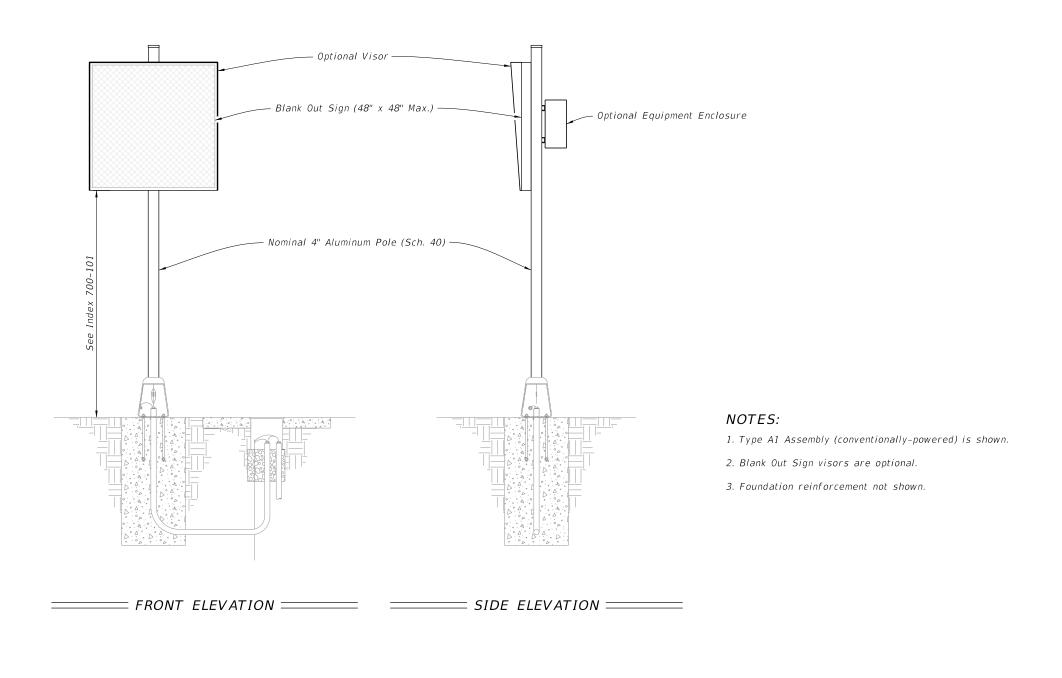
- 1. Type A7 Assembly (Conventionally-Powered) is shown.
- 2. Install cameras, wireless link, detectors, and antennas in accordance with the manufacturer's instructions.
- 3. For solar powered assemblies, install controller and batteries in the same ground mounted cabinet. Install a separate pole for mounting the solar panel. Install the solar panel pole and cabinet as close to the right of way boundary as possible. Orient solar panel to face South.
- 4. Foundation reinforcement not shown.

ROADSIDE SIGN ASSEMBLY-7

REVISION 11/01/21

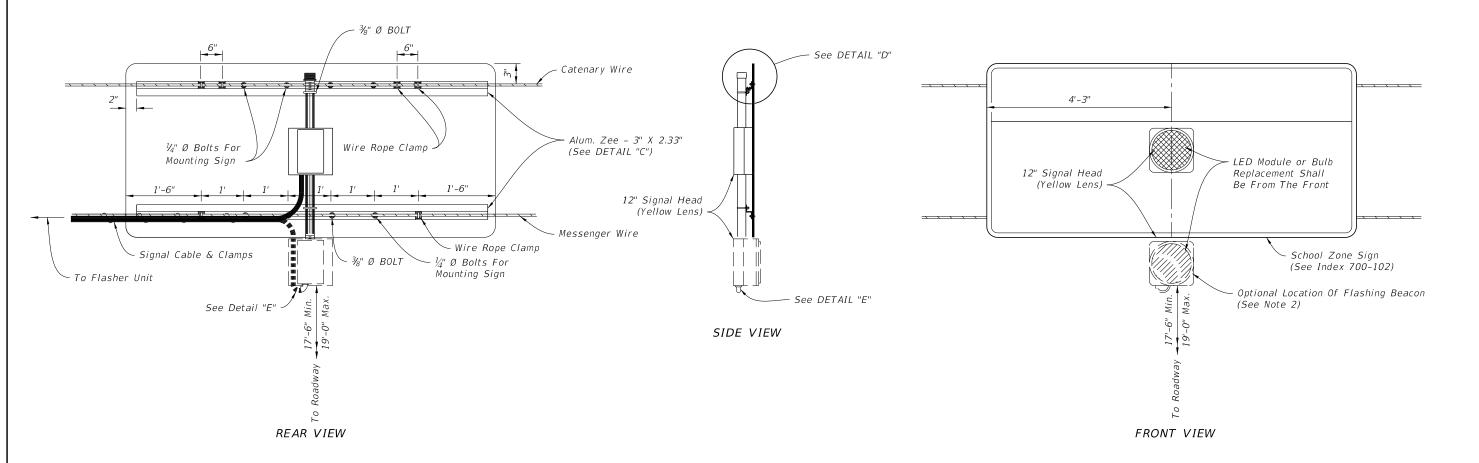
DESCRIPTION:

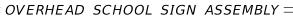
FY 2022-23 STANDARD PLANS

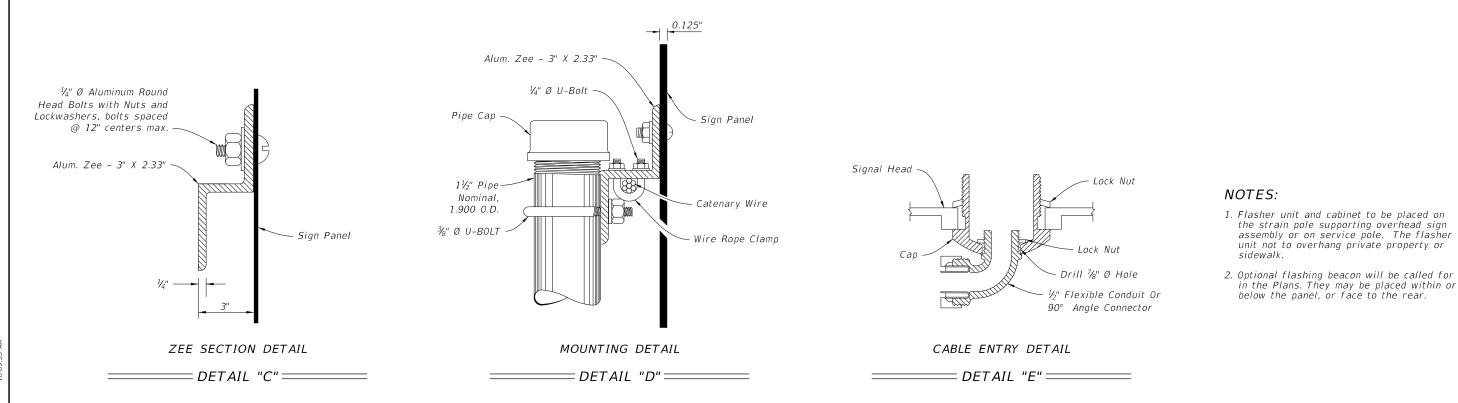


ROADSIDE SIGN ASSEMBLY-8

≥ DESCRIPTION: REVISION 11/01/21







OVERHEAD SIGN ASSEMBLY

REVISION 11/01/21

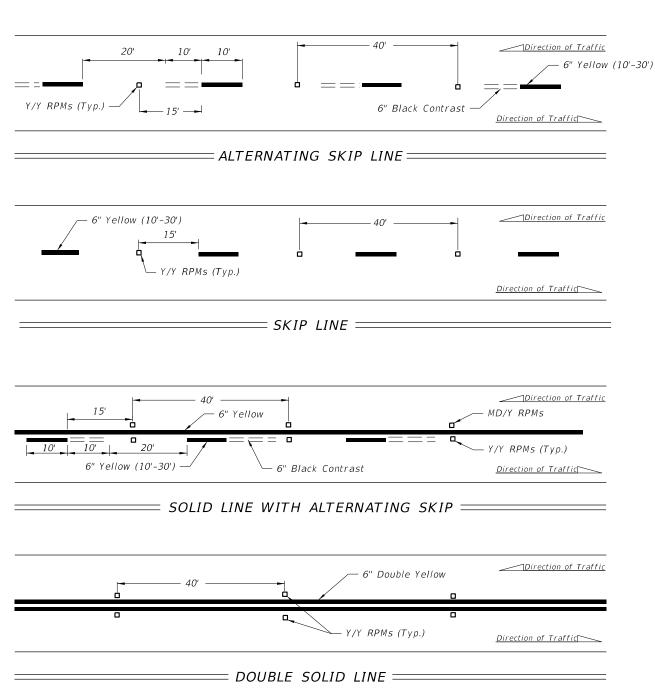
DESCRIPTION:

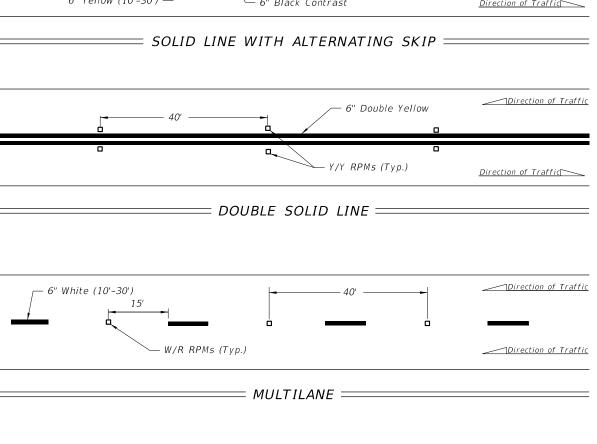
FDOT

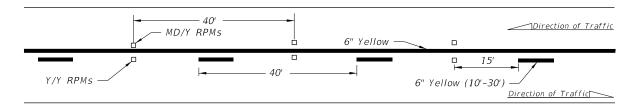
FY 2022-23 STANDARD PLANS

INDEX 700-120

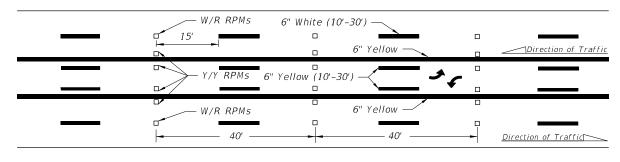
SHEET 11 of 11



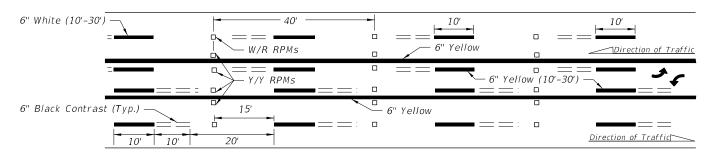




= SOLID LINE WITH SKIP ===



= SKIP LINE WITH TWO-WAY LEFT TURN LANE =



== ALTERNATING 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:

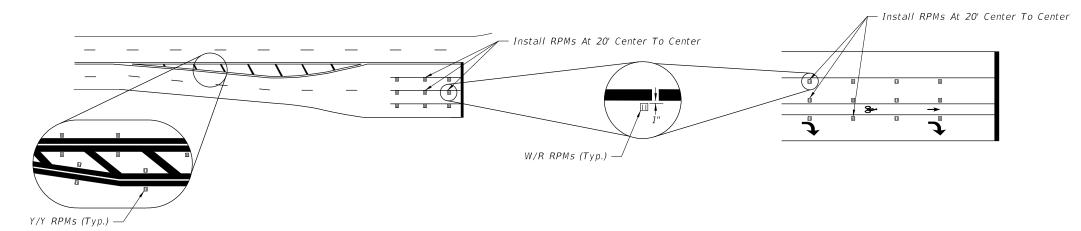
FDOT

FY 2022-23 STANDARD PLANS

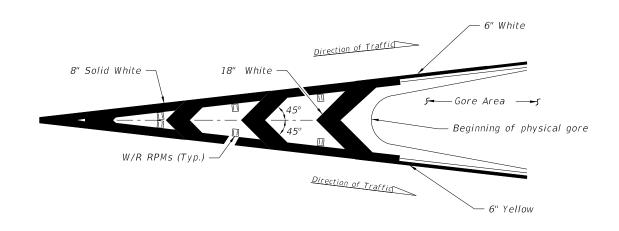
TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS INDEX

SHEET 1 of 6

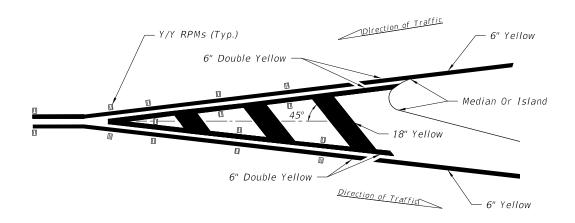
706-001



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

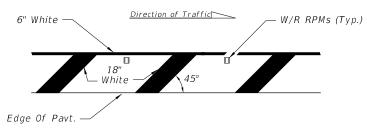
RPM = RAISED PAVEMENT MARKER

W/R = WHITE/RED RPM

Y/Y = YELLOW/YELLOW RPM

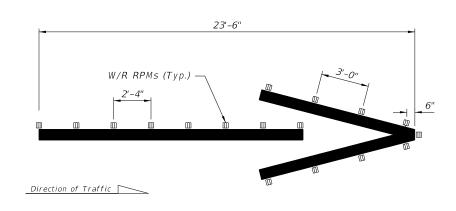
Y/R = YELLOW/RED RPM

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 =

REVISION 11/01/21

DESCRIPTION:

FDOT

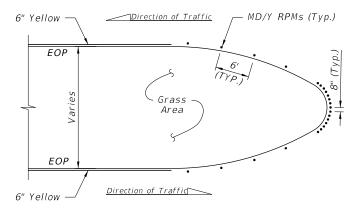
FY 2022-23 STANDARD PLANS

TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS INDEX

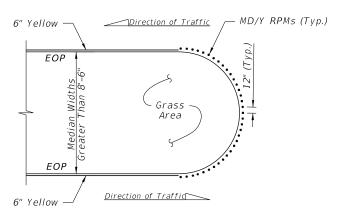
SHEET

706-001

DETAIL "A"

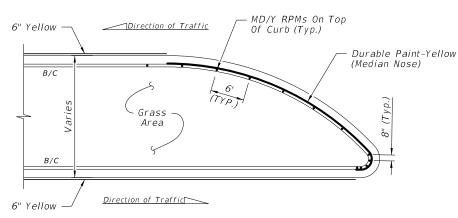


DETAIL "B'

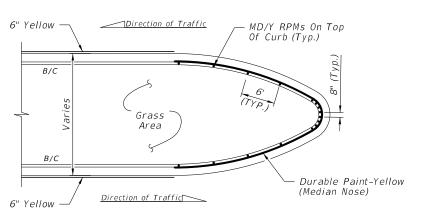


DETAIL "C"

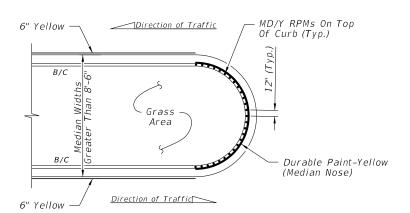
FLUSH MEDIAN OPENINGS (Type "E" Curb Similar. See Note 1)



DETAIL "D"



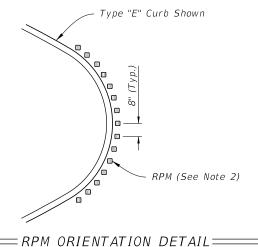
DETAIL "E"



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

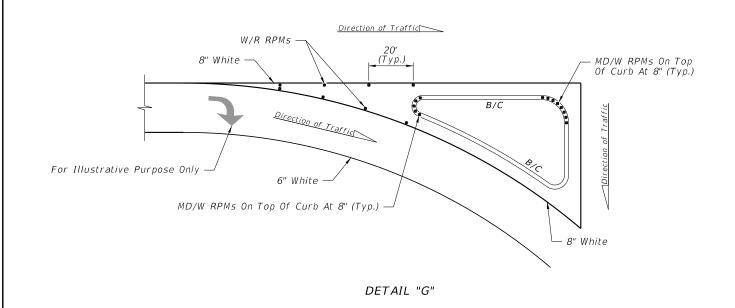
MD/Y = MONO-DIRECTIONALYELLOW RPM

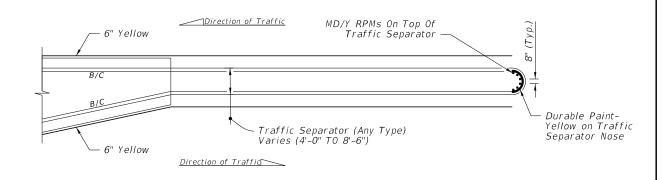
NOTES:

- 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.

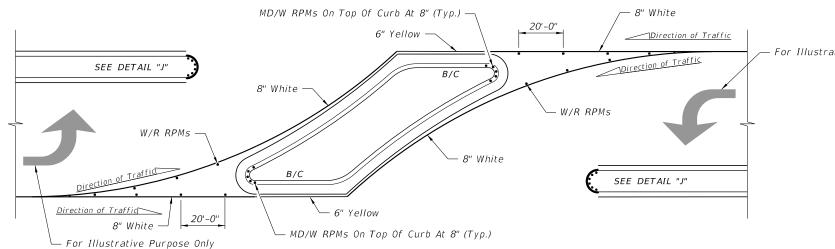


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DETAIL "J"



For Illustrative Purpose Only ____Direction of Traffic 6" Double Yellow - Varies (4'-0" TO 8'-6") "Y" (Typ.) Y/Y RPMs (Typ.) - Y/Y RPMs "Y" (Typ.) 18" Yellow (Typ., 6" Double Yellow Direction of Traffic

DETAIL "H" DETAIL "K"

RPM PLACEMENT AT ISLANDS = (When called for in the Plans)

RPM PLACEMENT AT TRAFFIC SEPARATORS = (When called for in the Plans)

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-DIRECTIONAL YELLOW RPM

MD/W = MONO-DIRECTIONALWHITE RPM

POSTED SPEED LIMIT MPH	"Y" FEET
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40

REVISION 11/01/21

DESCRIPTION:

FDOT

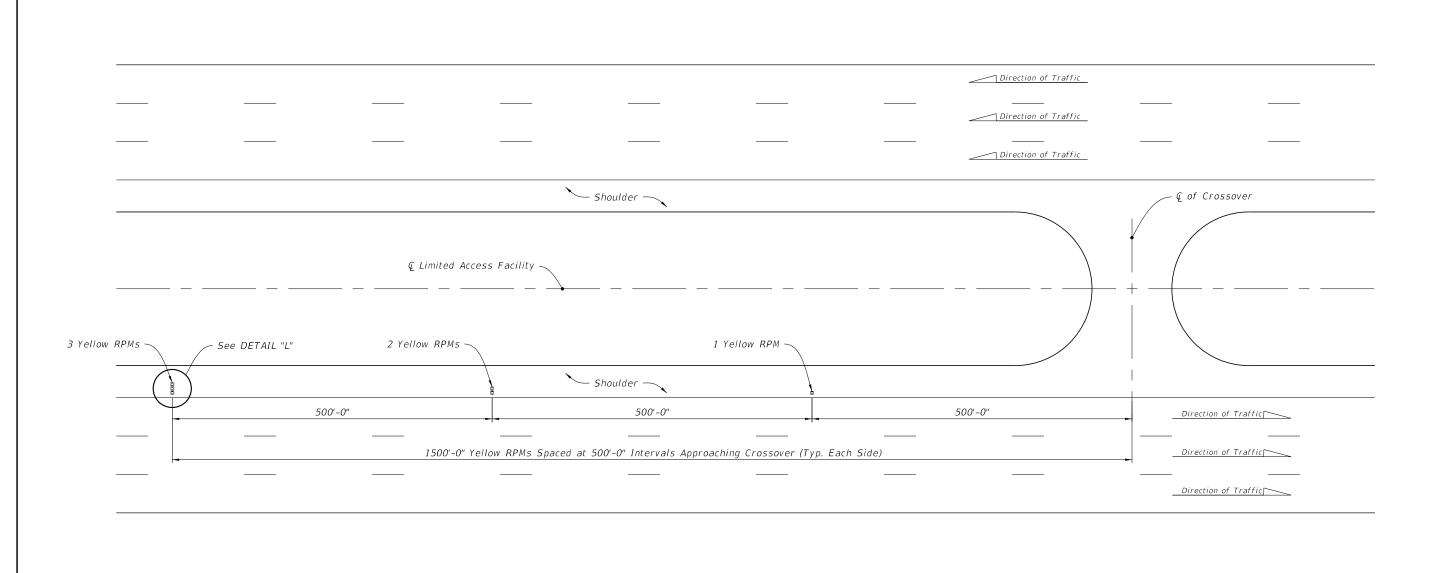
FY 2022-23 STANDARD PLANS

TYPICAL PLACEMENT OF

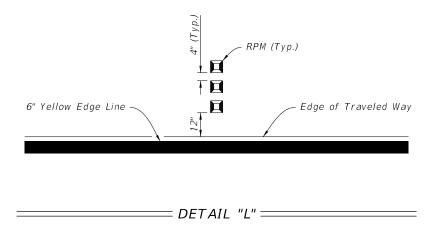
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=== RPM PLACEMENT FOR CROSSOVERS ON LIMITED ACCESS ROADWAYS ======



≥ DESCRIPTION: LAST REVISION 11/01/18

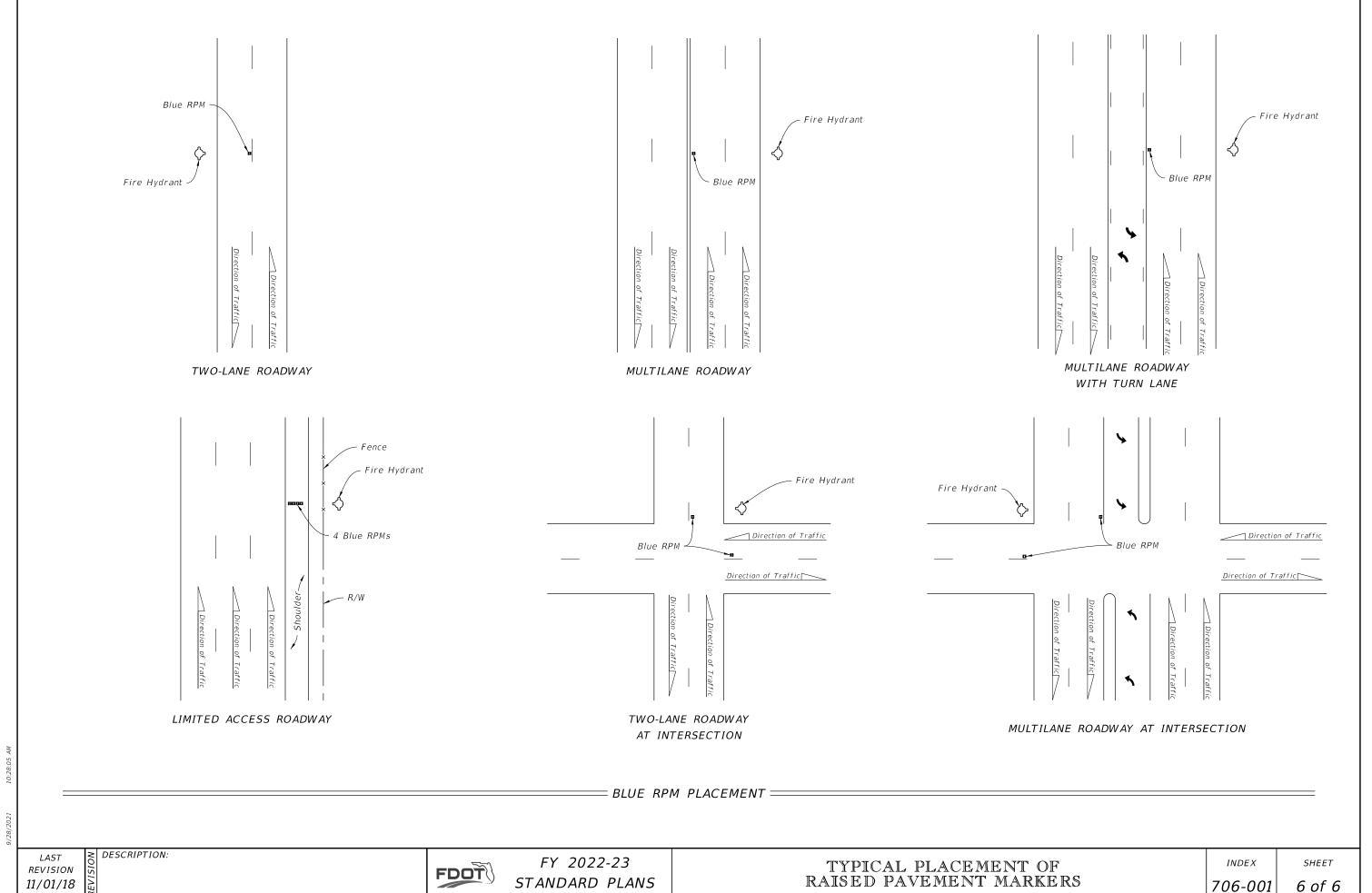


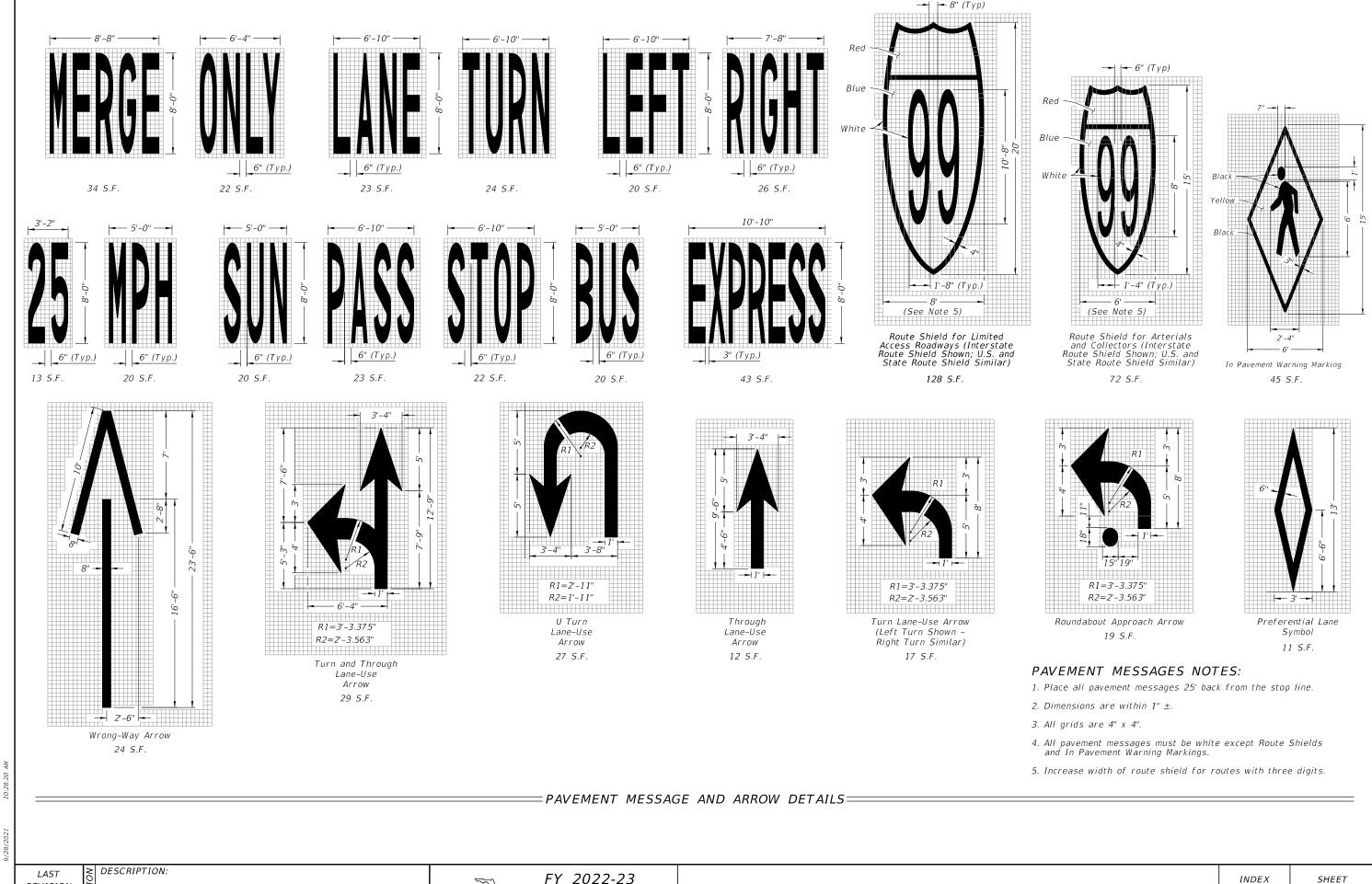
FY 2022-23 STANDARD PLANS

TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS INDEX

SHEET 5 of 6

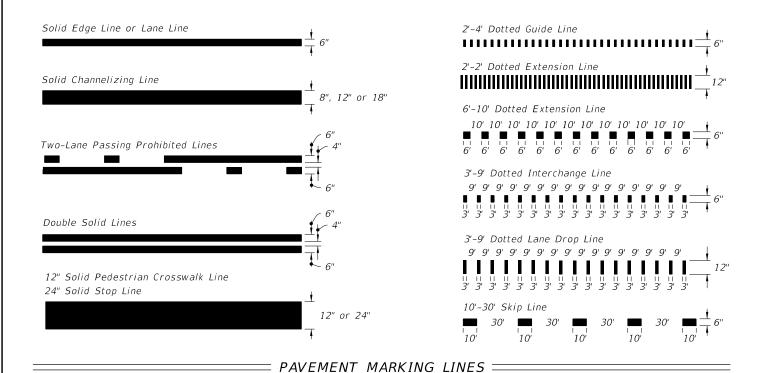
706-001

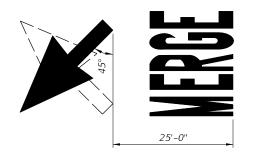




REVISION 11/01/21

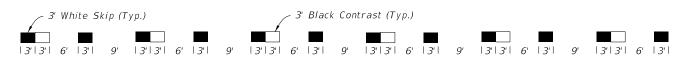
FDOT



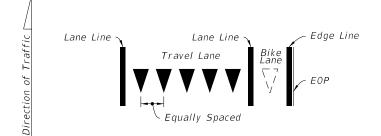


=MARKINGS FOR MERGE====





DOTTED LINE WITH ALTERNATING SHADOW MARKINGS (3'-9' Dotted Line Shown, Other Dotted Lines Similar)





Yield Lines consist of five - 18" X 27" white triangles which face traffic. Equally space triangles within traffic lane. When a bike lane is present, add one additional triangle in the center of the bike lane.

= YIELD LINES ===

REVISION 11/01/21

DESCRIPTION:

FDOT

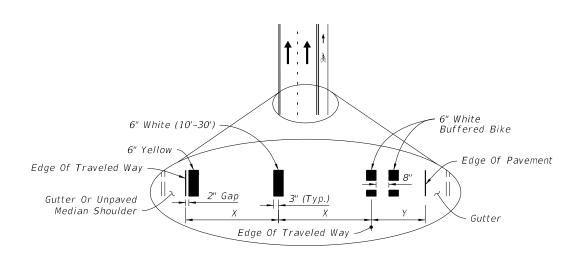
FY 2022-23 STANDARD PLANS

PAVEMENT MARKINGS

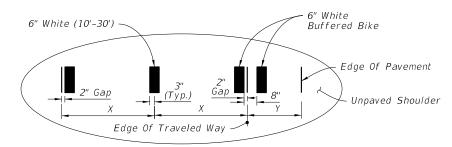
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711-001



CURB AND GUTTER

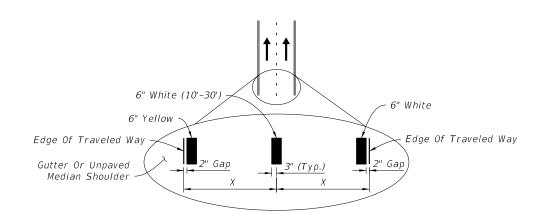


FLUSH SHOULDER

X = LANE WIDTH (FT.)

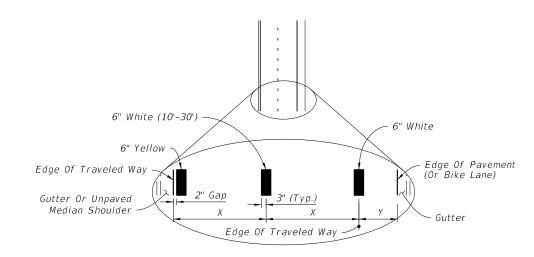
Y = BUFFERED BIKE LANE WIDTH (FT.)

= STRIPING FOR BUFFERED BIKE LANE =

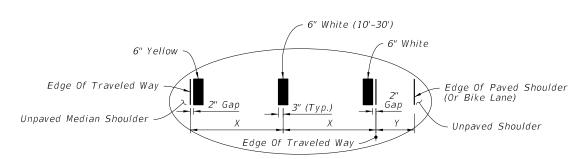


X = LANE WIDTH (FT.)

= 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

REVISION 11/01/21

DESCRIPTION:

FDOT

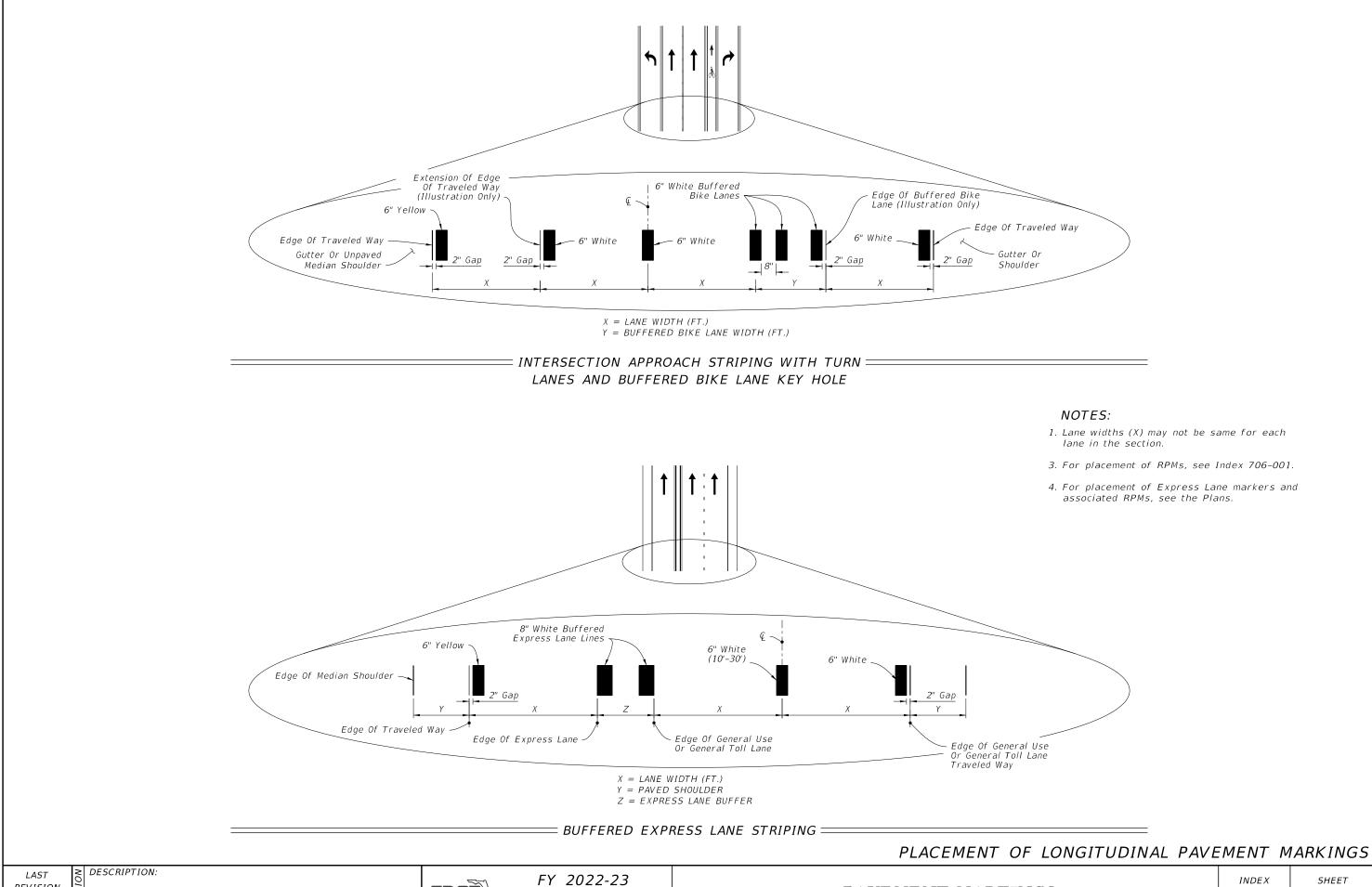
FY 2022-23 STANDARD PLANS

PAVEMENT MARKINGS

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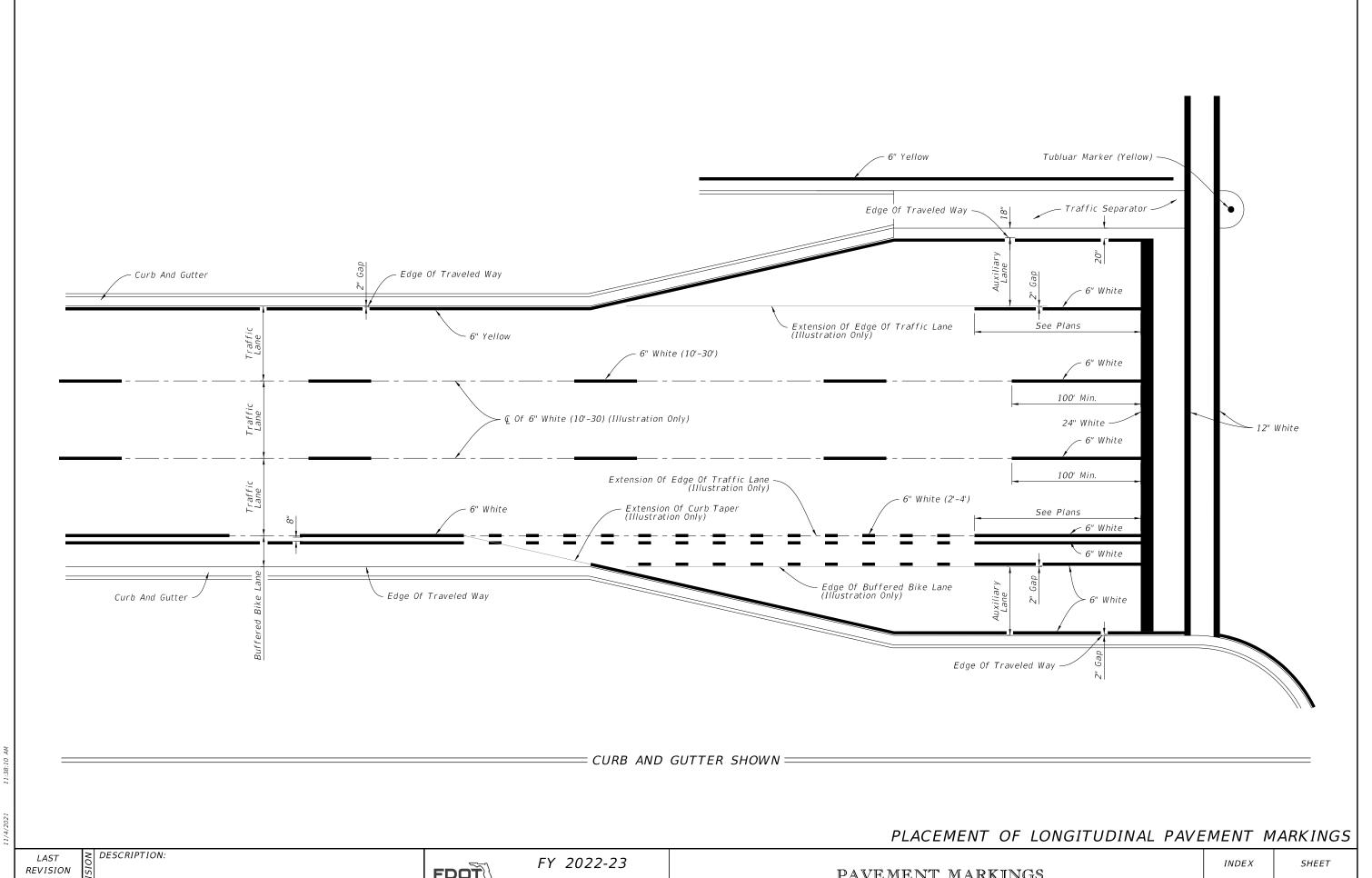
FDOT

STANDARD PLANS

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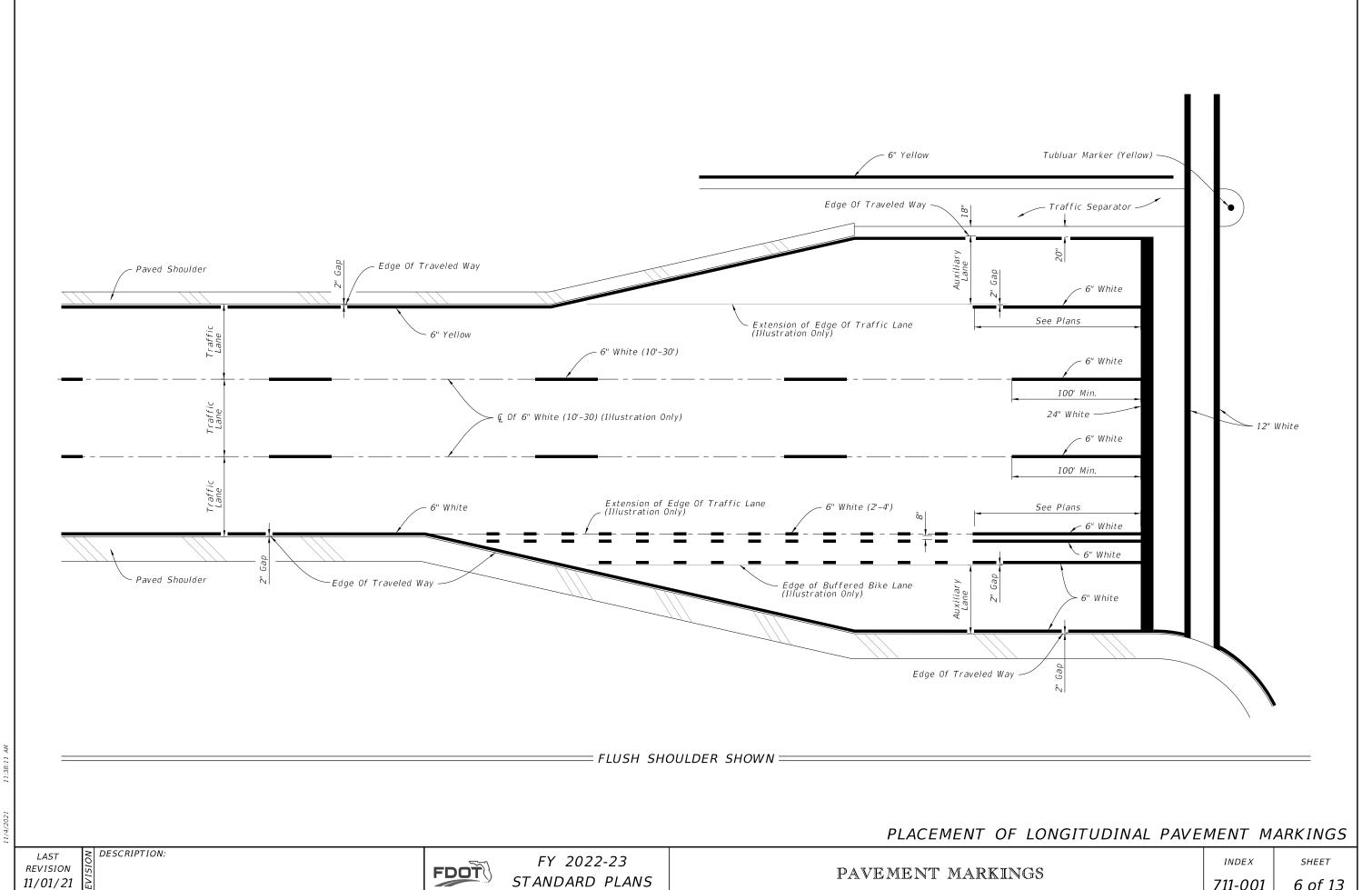
FDOT

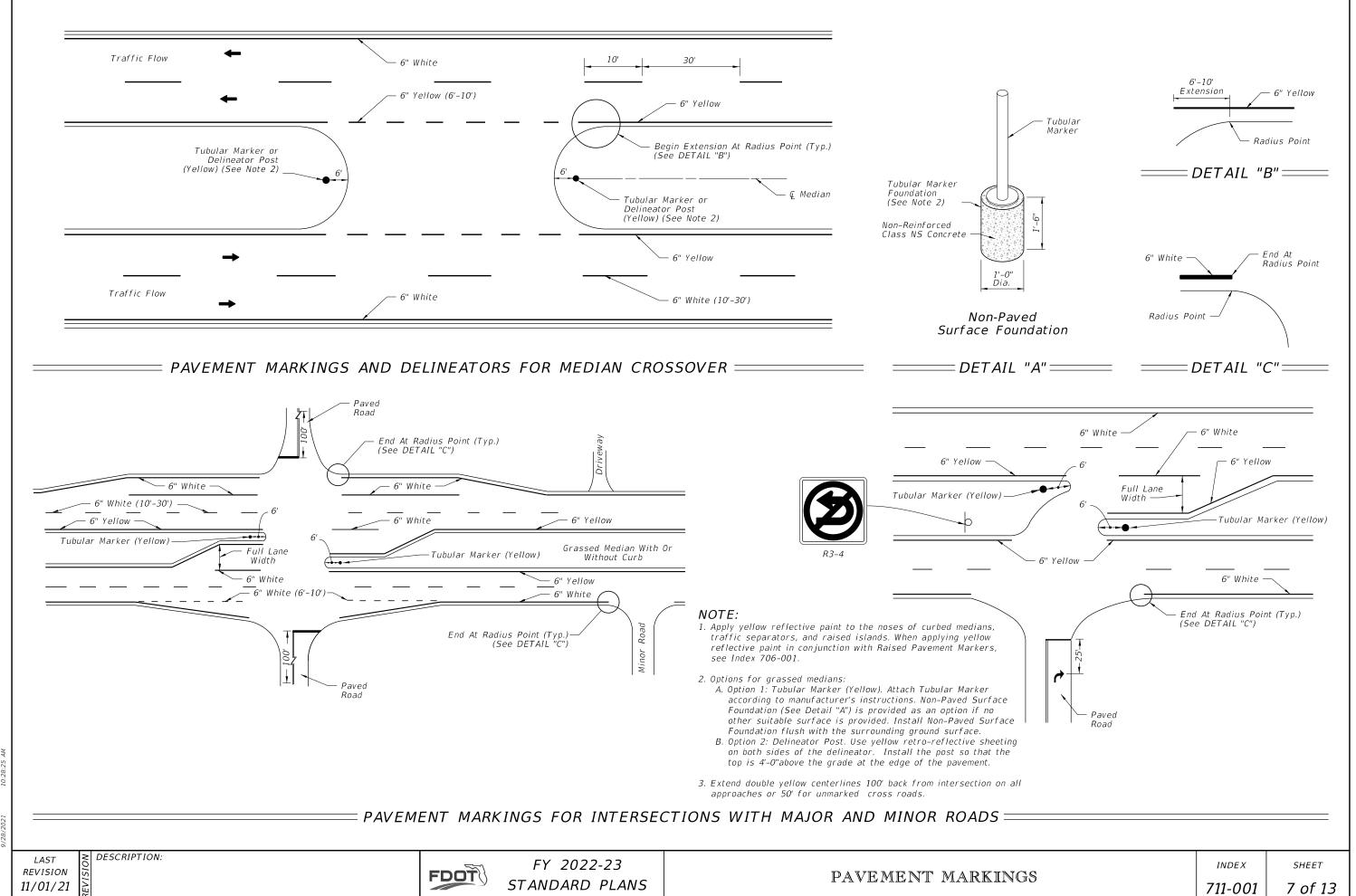
STANDARD PLANS

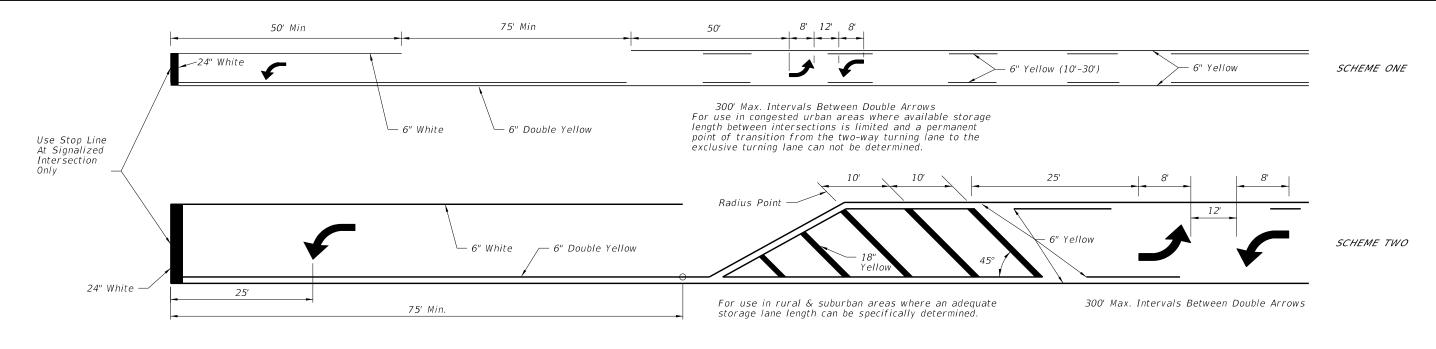
PAVEMENT MARKINGS

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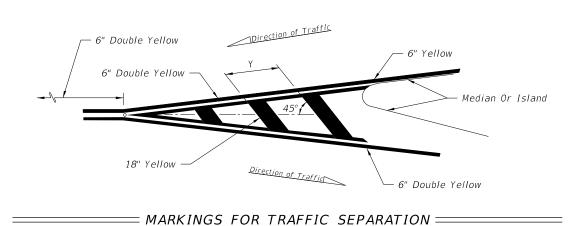


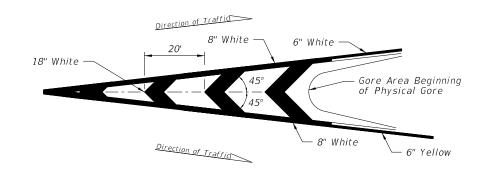


= TWO WAY LEFT TURN LANE =

(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 ====

REVISION 11/01/21

DESCRIPTION:

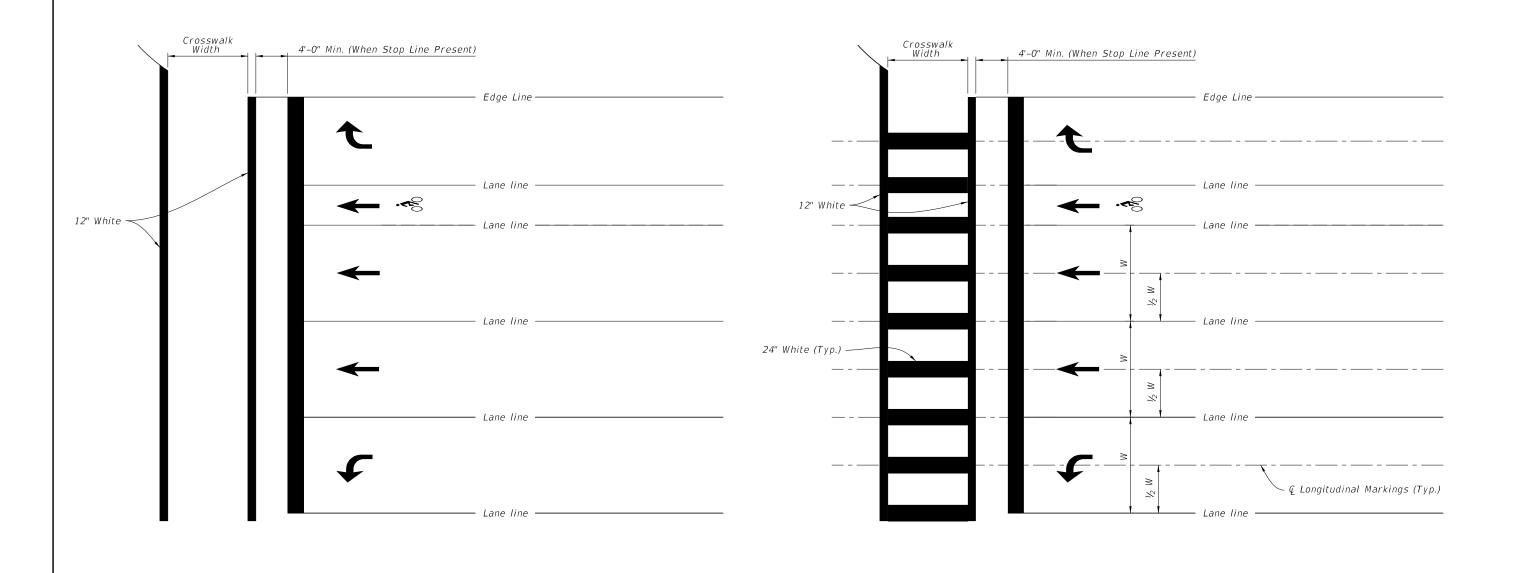
FDOT

FY 2022-23 STANDARD PLANS

PAVEMENT MARKINGS

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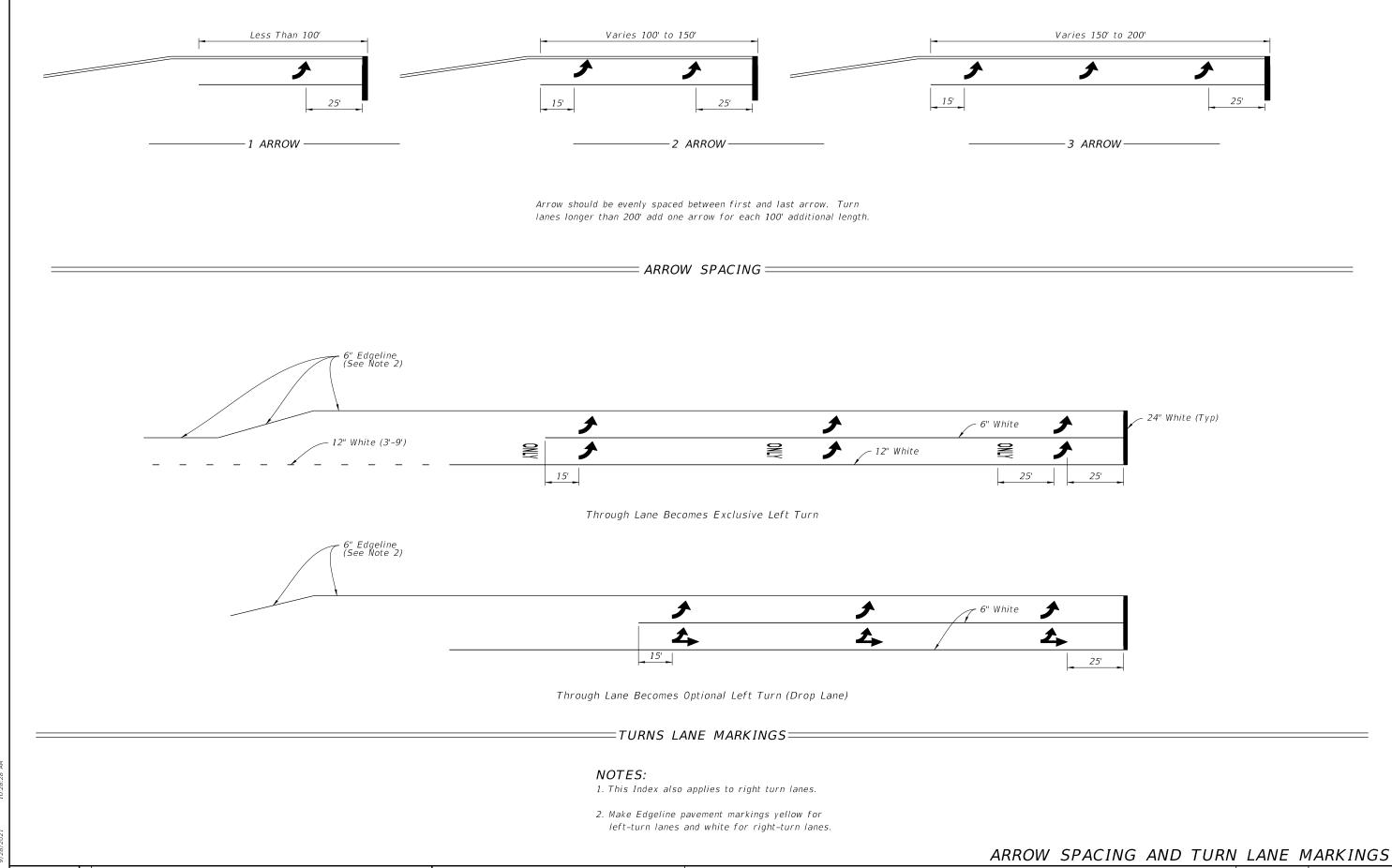
= STANDARD CROSSWALK DETAILS =

- 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.

REVISION 11/01/21

DESCRIPTION:

=SPECIAL EMPHASIS CROSSWALK DETAILS ====



1000,00,0

LAST O DESCRIPTION:
REVISION II/01/21

FDOT

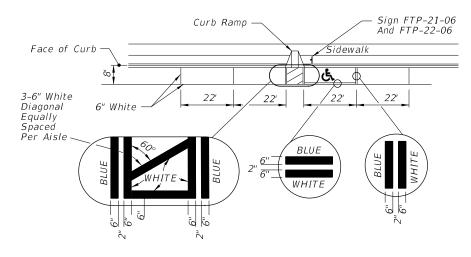
FY 2022-23 STANDARD PLANS

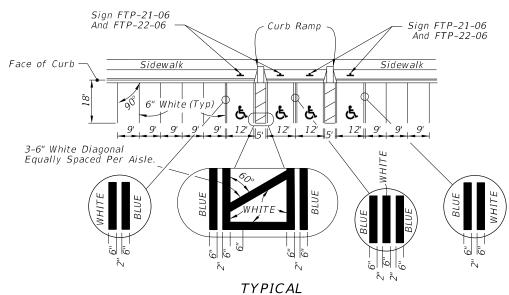
PAVEMENT MARKINGS

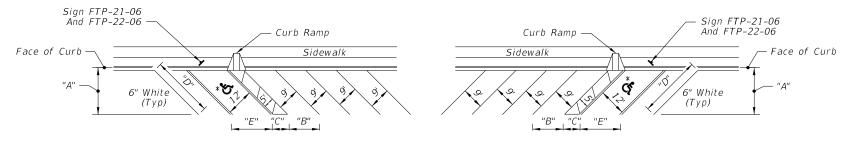
INDEX **711-001**

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SHEET







FORWARD-IN PARKING

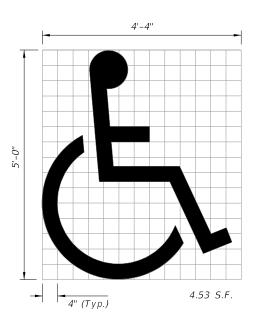
REVERSE-IN PARKING

*FOR ACCESSIBLE MARKINGS - SEE ABOVE

DIMENSIONS					
Δ θ "A" "B" "C" "D" "E"					
45°	17'-0"	12'-9"	7'-0"	24'-0"	17'-0"

= PAVEMENT MARKING FOR PARKING =





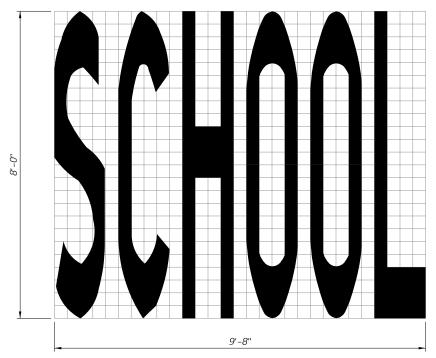
(See Note 5)

=UNIVERSAL SYMBOL OF ACCESSIBILITY==

NOTES:

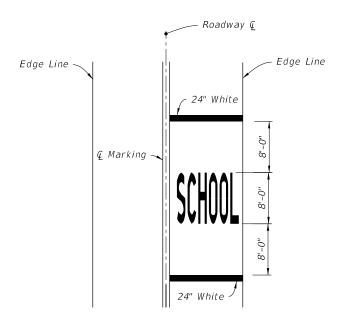
- 1. Dimensions are to the centerline of markings.
- 2. An Access Aisle is required for each accessible space when angle parking is used.
- 3. Criteria for pavement markings only, not public sidewalk curb ramp locations. For ramp locations refer to plans.
- 4. Mount FTP-22-06 sign below the FTP-21-06 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.

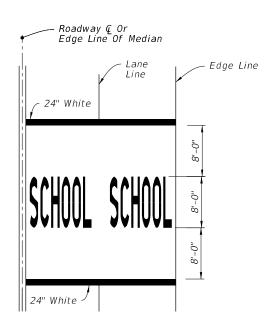
9/28/2021

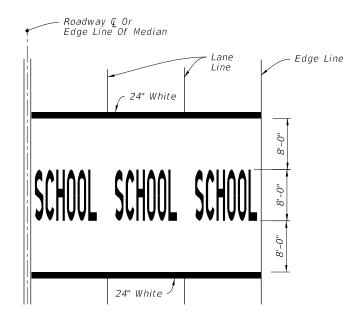


SCHOOL PAVEMENT MARKING

- 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)

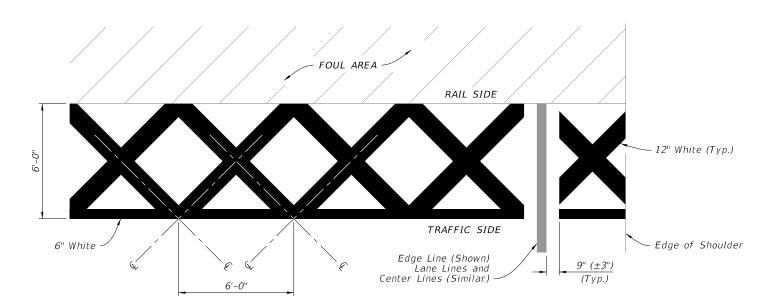
= MARKINGS FOR SCHOOL ZONES =

REVISION 11/01/21

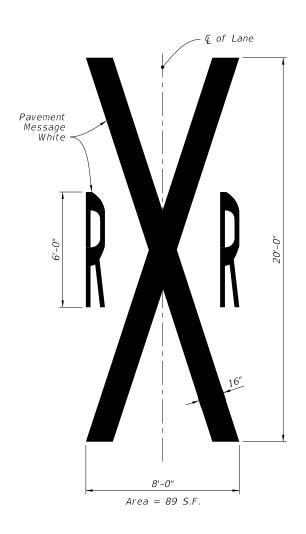
DESCRIPTION:

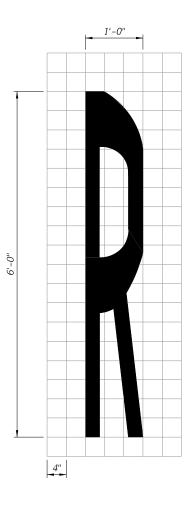
FDOT





= RAILROAD DYNAMIC ENVELOPE (RDE) PAVEMENT MARKING DETAIL =





RAILROAD CROSSING PAVEMENT MESSAGE =

REVISION 11/01/21

DESCRIPTION:

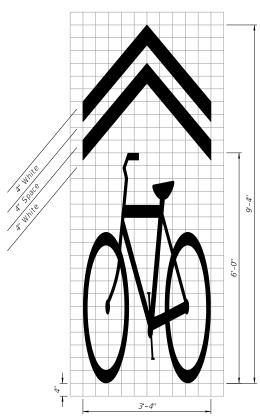
FY 2022-23 STANDARD PLANS

PAVEMENT MARKINGS

INDEX

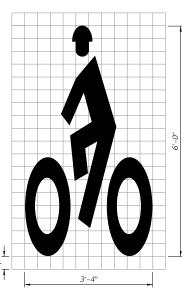
SHEET

8.1 S.F.



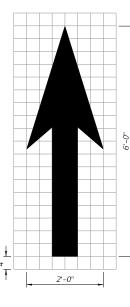
SHARED LANE MARKING (SLM)

6.3 S.F.



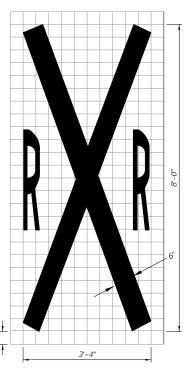
HELMETED BICYCLIST SYMBOL

4.2 S.F.



BIKE LANE ARROW

9.0 S.F.



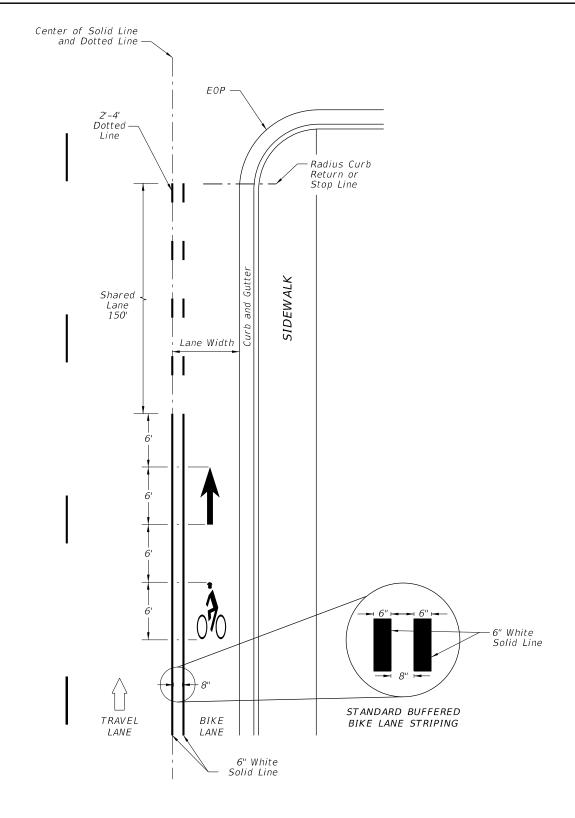
RAILROAD CROSSING

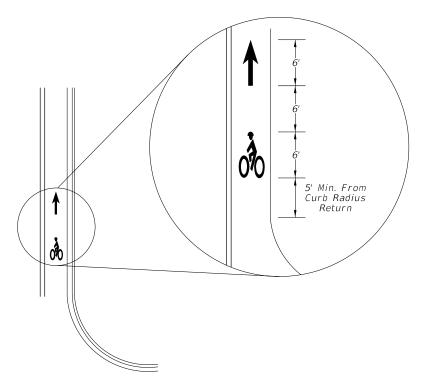
NOTES:

- 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 =

≥ DESCRIPTION: REVISION 11/01/17

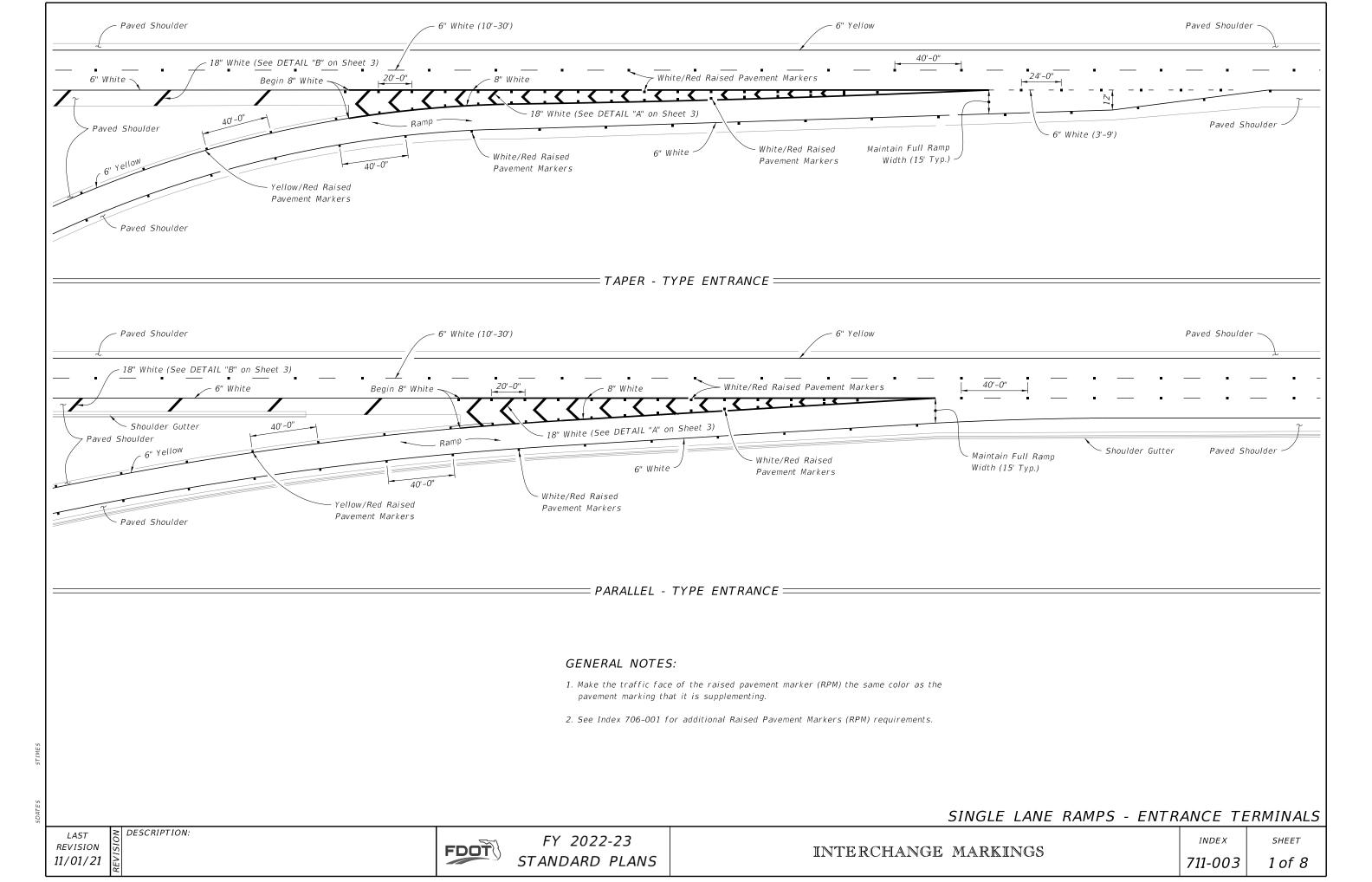
FDOT

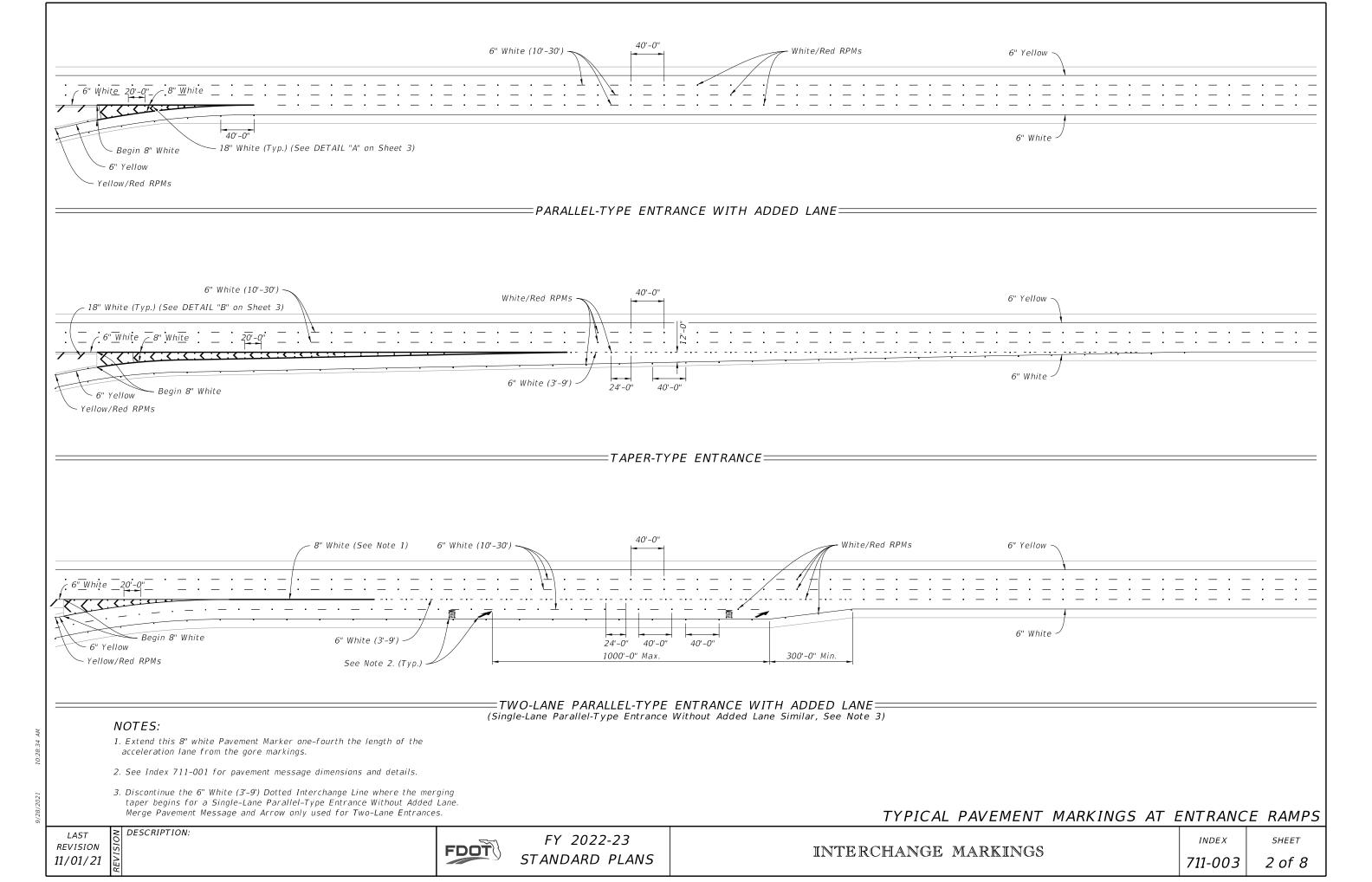
FY 2022-23 STANDARD PLANS

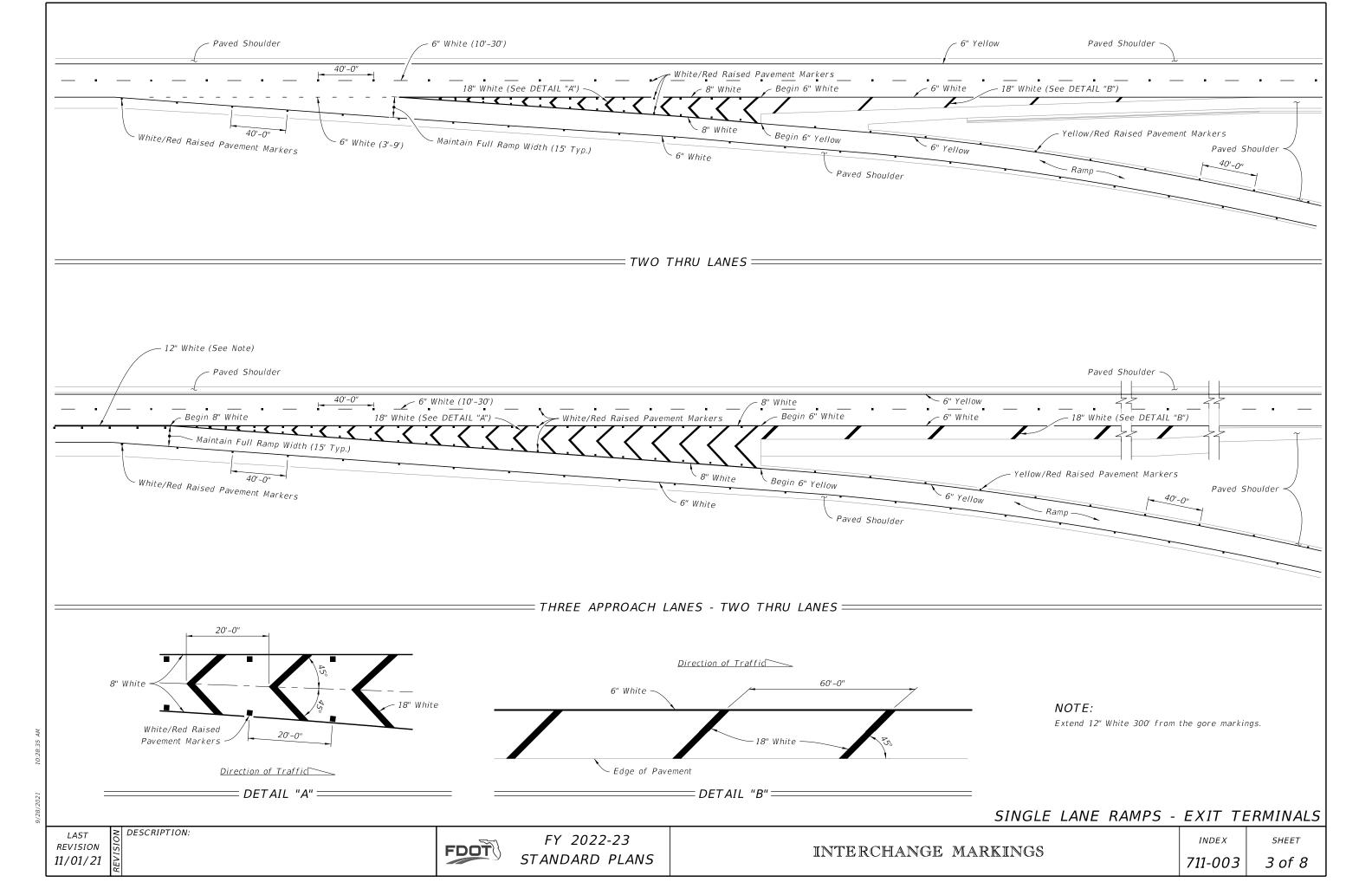
BICYCLE MARKINGS

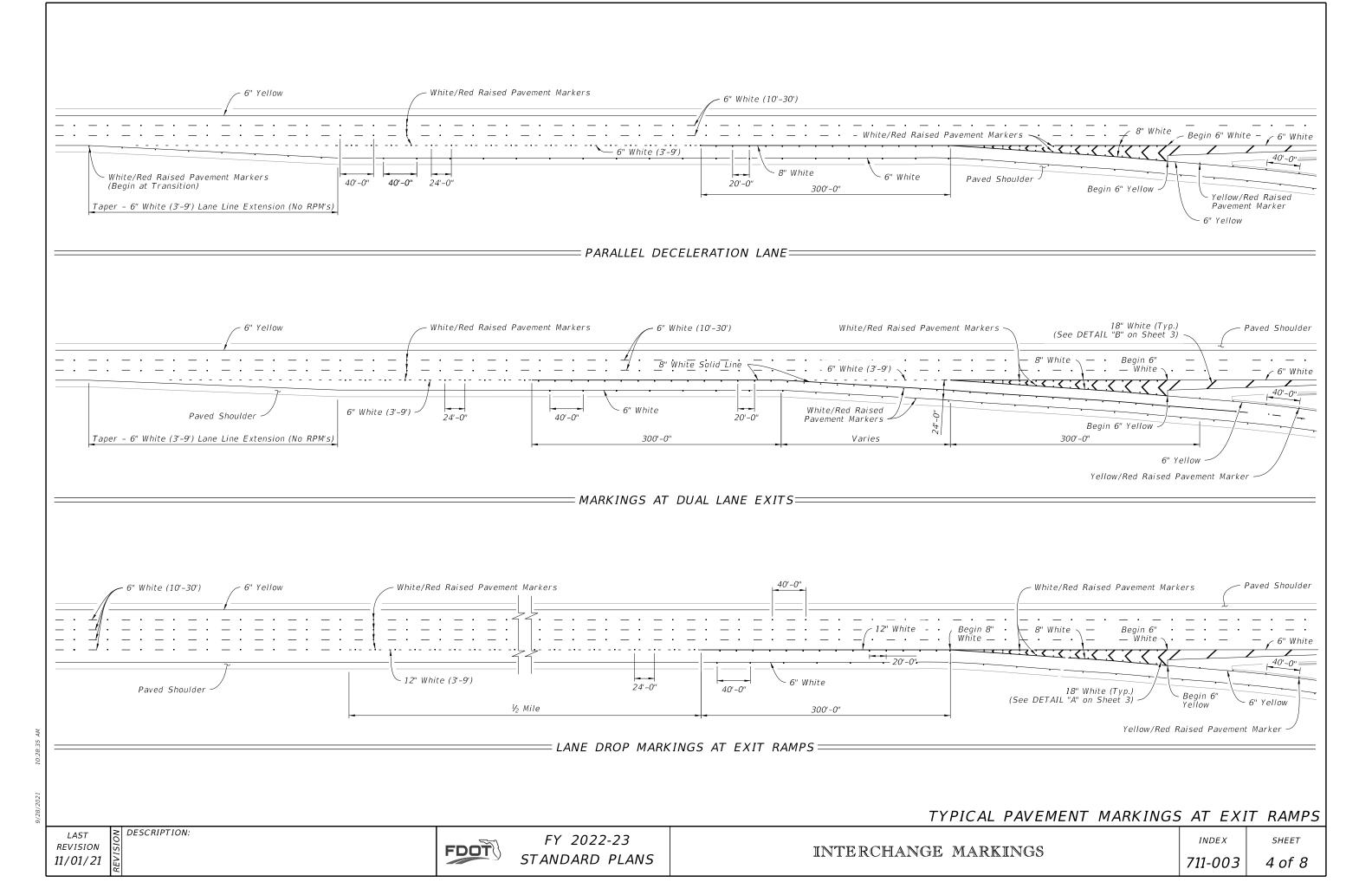
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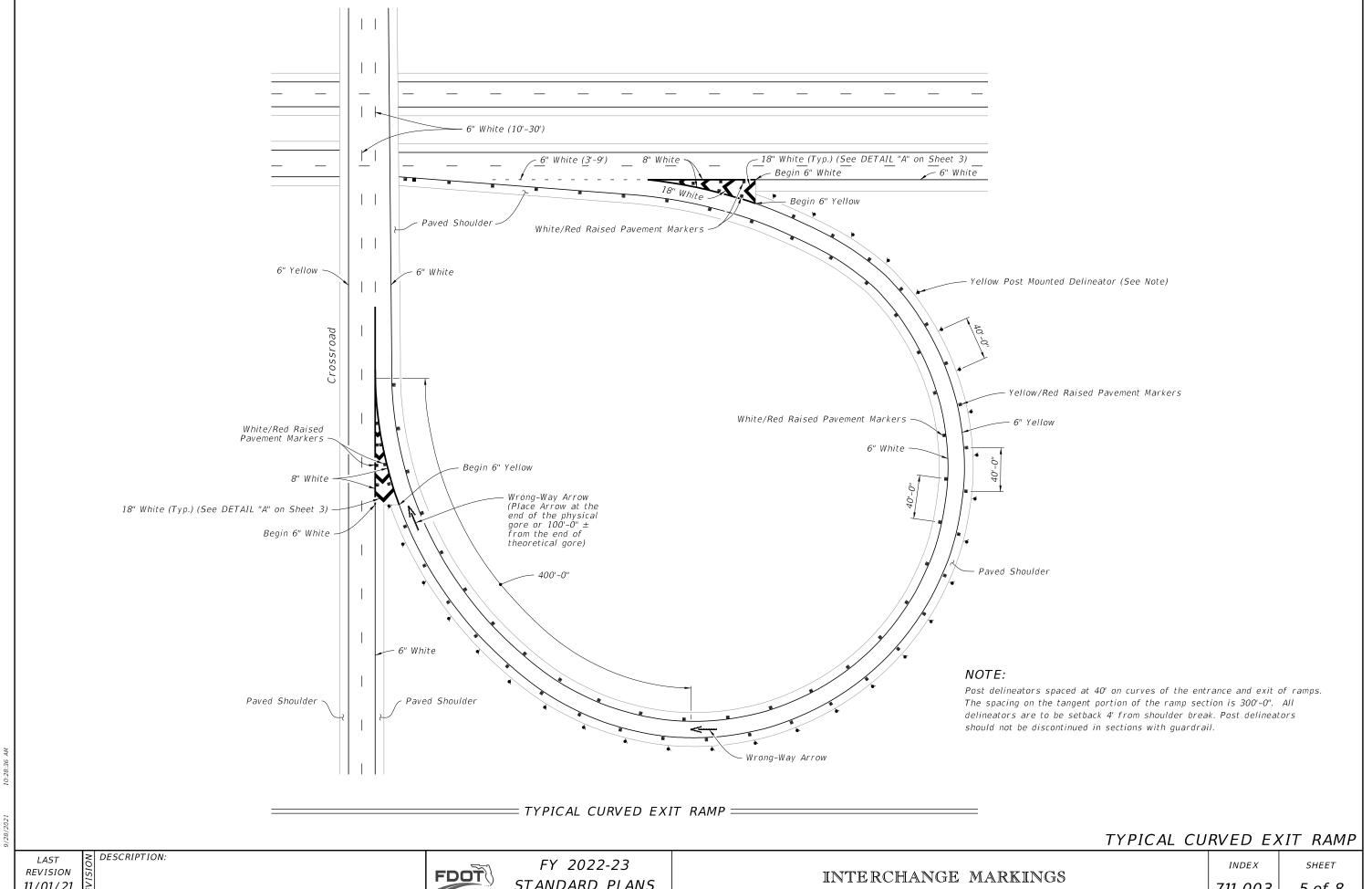
SHEET



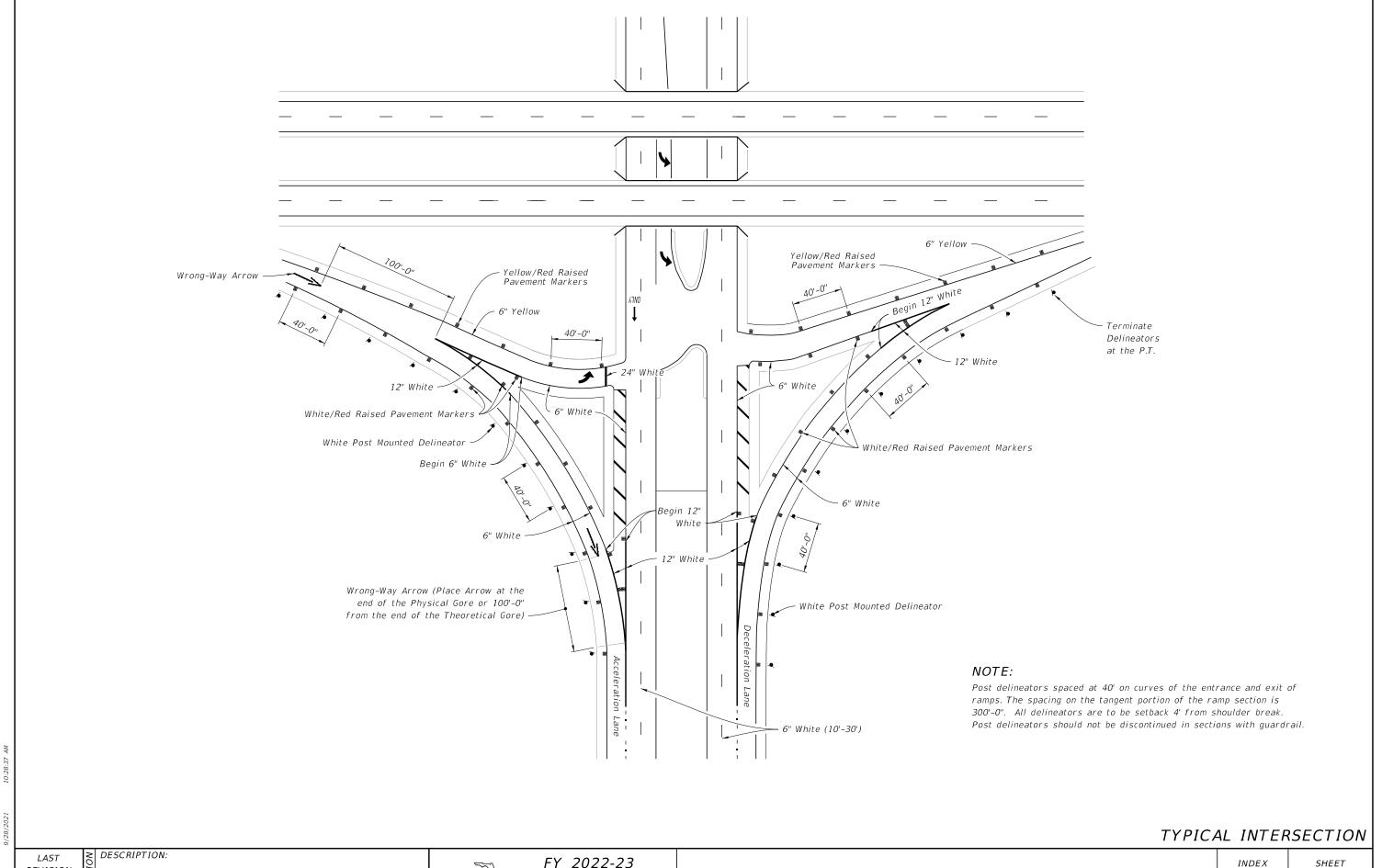








11/01/21



REVISION 11/01/21

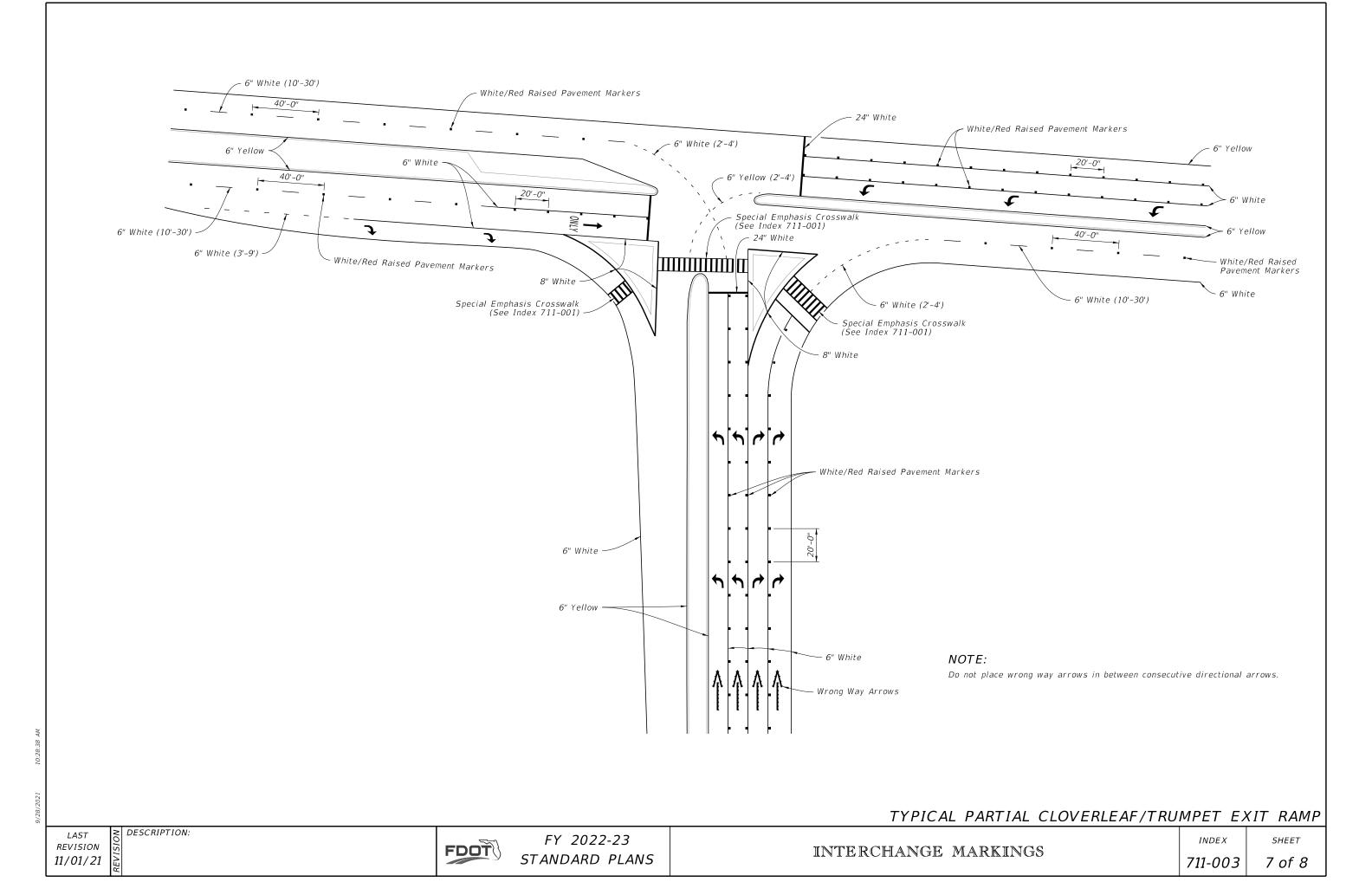
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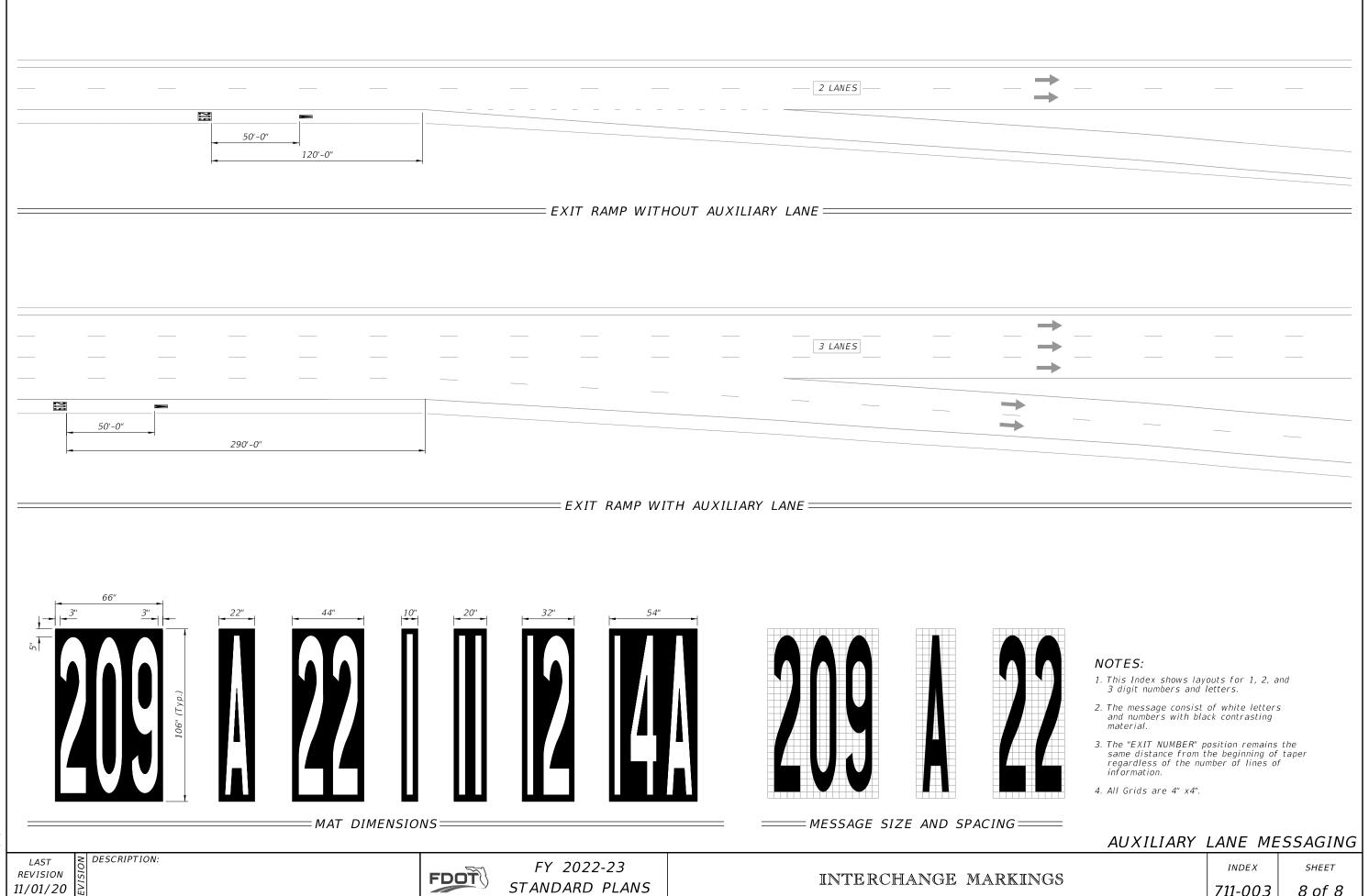
FY 2022-23 STANDARD PLANS

INTERCHANGE MARKINGS

INDEX 711-003

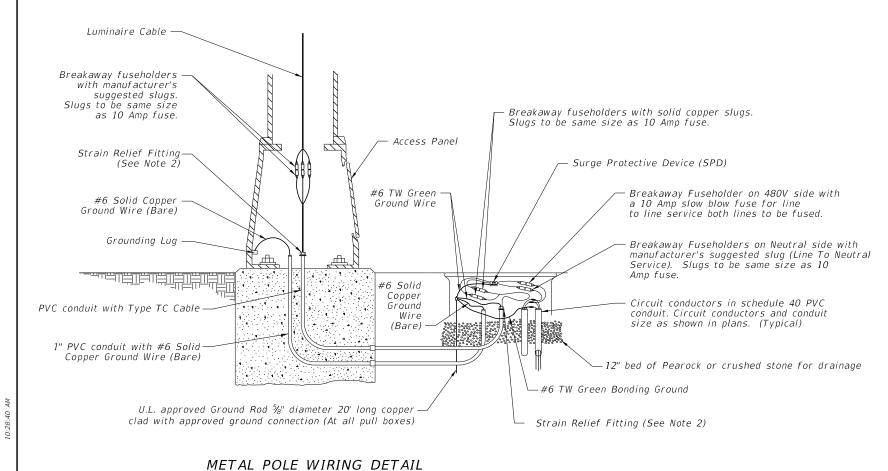
6 of 8

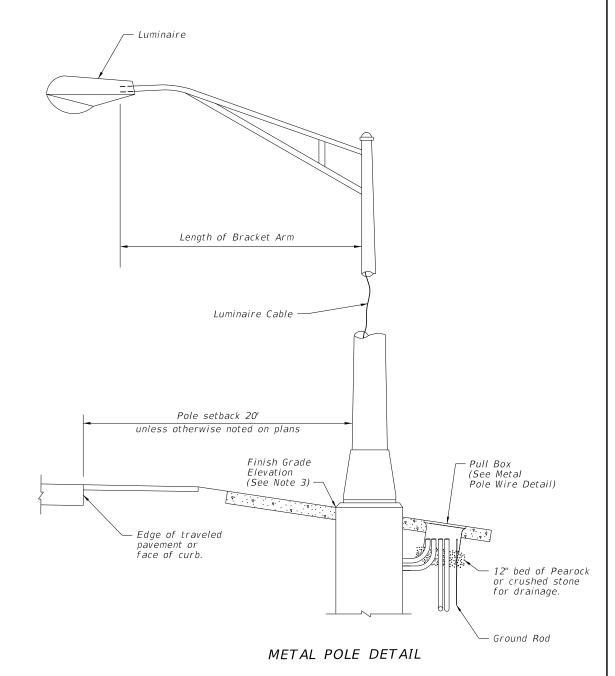




711-003

8 of 8





- 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 DETAILS

REVISION 11/01/21

DESCRIPTION:

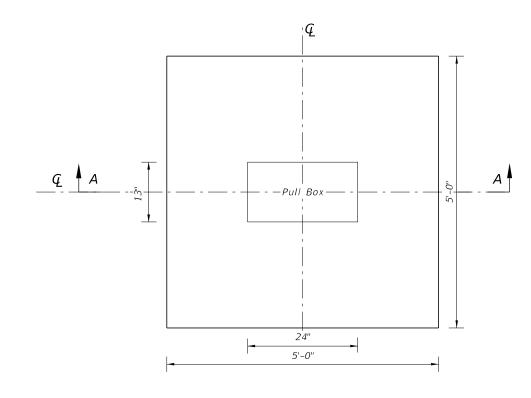


FY 2022-23 STANDARD PLANS INDEX

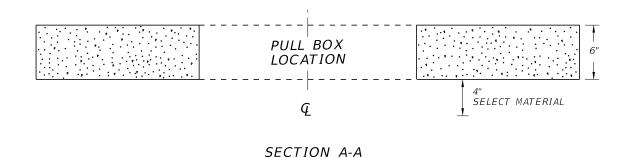
SHEET

715-001 1 of 3

- 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.
- 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

REVISION 11/01/17

DESCRIPTION:

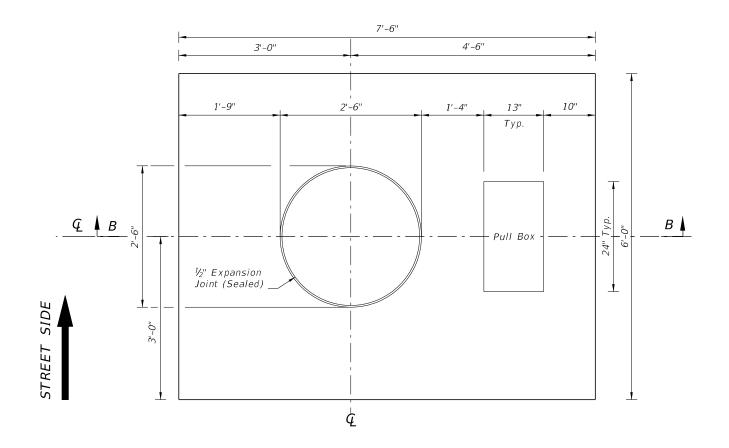
FY 2022-23 STANDARD PLANS

CONVENTIONAL LIGHTING

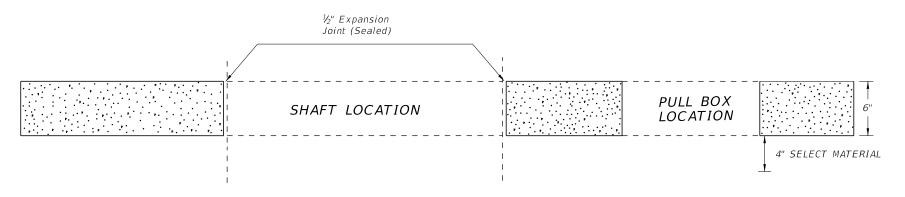
INDEX 715-001

SHEET 2 of 3

- 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

DESCRIPTION:

FY 2022-23 STANDARD PLANS

INDEX 715-001

SHEET 3 of 3

- 2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not
- 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 c. Plate Washer: ASTM A36
- 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
- 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 0.D. of 6" and a base 0.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 ¼" 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 5#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
- 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 1/2" diameter stainless steel rivets or screws.
- d. Include the following information on the ID Tag:
- 1. Financial Project ID
- 2 Pole Height

DESCRIPTION:

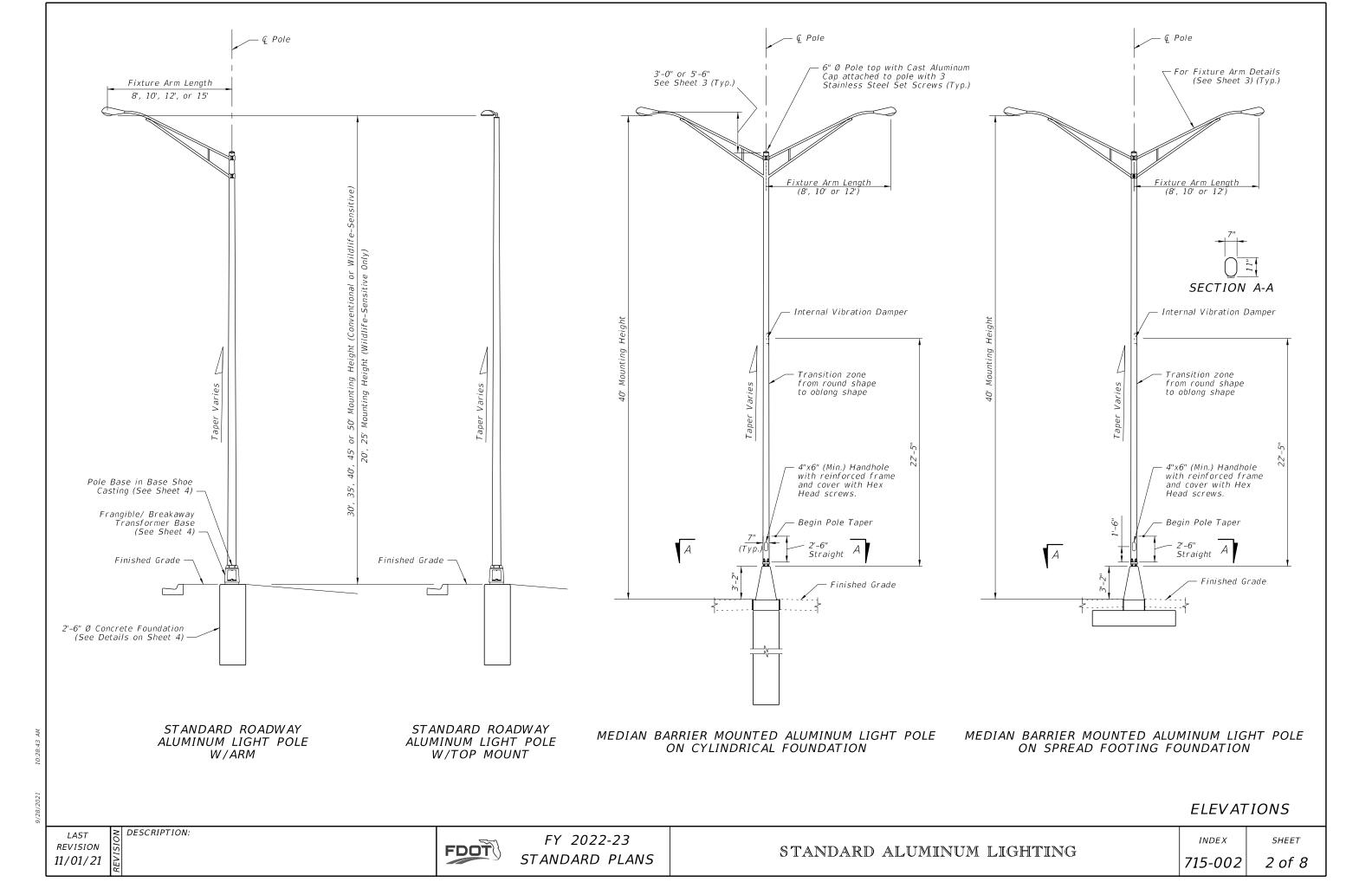
3. Manufacturer's Name

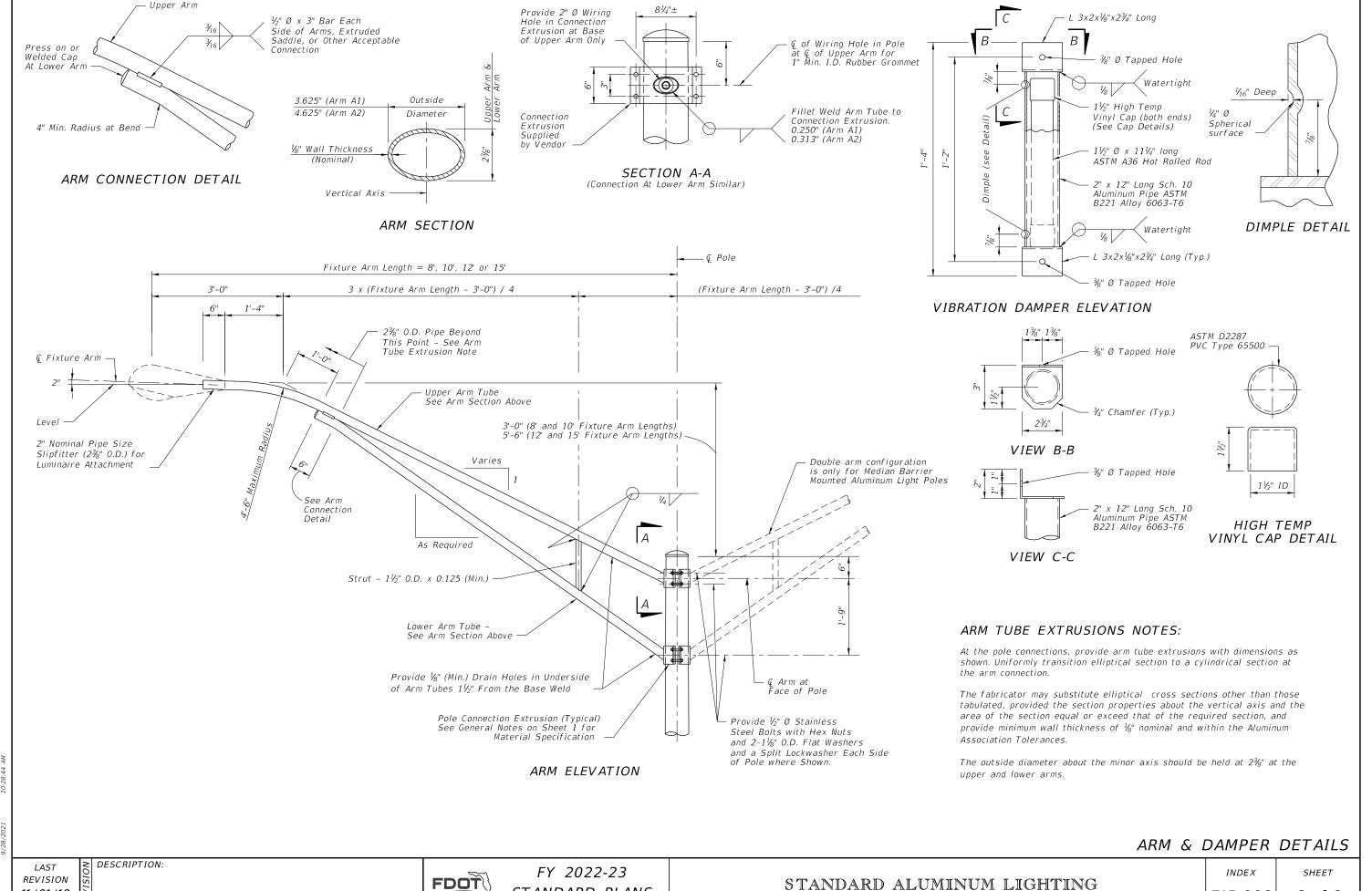
- 5. Coatings/Finish:
- A. Pole and Arm Finish: 50 grit satin rubbed. B. Galvanize Steel Bolts, Screws, Nuts and Washers: ASTM F2329
- C. Hot Dip Galvanize EJB and other steel items including poles and plate washers: ASTM A123
- 6. Construction:
 - A. Foundation: Specification 455, except payment for the foundation is included in the cost of the pole.
- B. Frangible Base, Base Shoe, and Clamp:
- 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).
- c. Do not erect pole without Luminaire attached.
- 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.

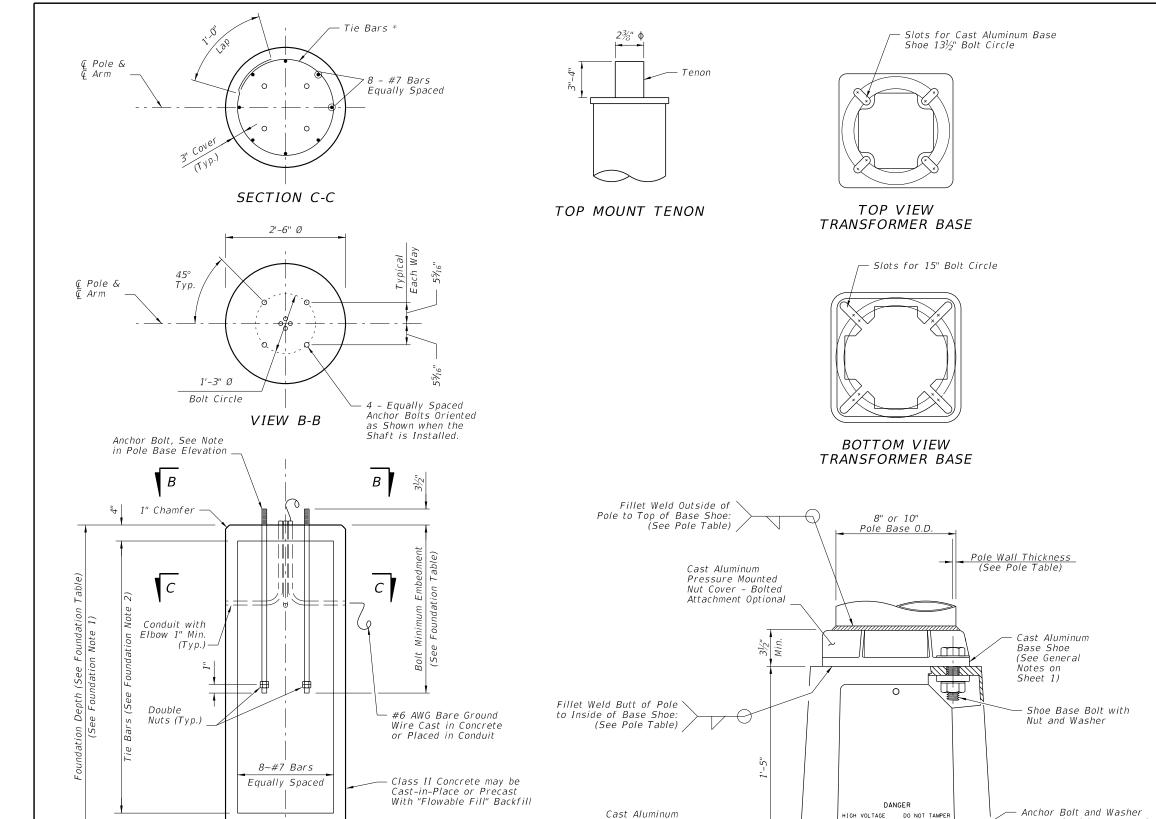
Bay, Citrus, De Soto, Flagler, Franklin, Glades, Gulf, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lake, Levy, Manatee, Marion, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Santa Rosa, Seminole, St. Johns, Sumter, Volusia, Walton and Washington Counties.

Brevard, Broward, Charlotte, Collier, Escambia, Indian River, Lee, Martin, Miami-Dade, Monroe, Palm Beach,





11/01/19



ARM-POLE TABLE

FOR STANDARD ALUMINUM LIGHT POLES WITH ARM

Assembly Wind Speed and Arm Len					engths (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-FI	AZ-FI
	40	AI-PI			A1-P2	A2-P2
	45	A1-P2	A1-P2	A2-P2	A1-P2	HZ-PZ
	50	A1-P2	AI-PZ	AZ-PZ	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

POLE TABLE				
Pole Pole Wall Top of Inside of Base Shoe Base Shoe Weld Weld				
P0	0.156	³ / ₁₆ "	5/ ₃₂ "	
P 1	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				
Assembly	Wind Sp	eed and Arm Len	gths (ft)	
Height (ft)	120 mph	140 mph	160 mph	
20	Pole PO	Pole PO	Pole PO	
25	role ro	role ro		
30			Pole P1	
35	Pole P1	Pole P1	FOIE FI	
40				
45	Pole P2	Pole P2	Pole P2	
50	FUIE PZ	Fule P2		

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"	

POLE BASE ELEVATION

FOUNDATION

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.

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.

FOUNDATION NOTES:

DESCRIPTION:

POLE AND BASE DETAILS FOR ROADWAY ALUMINUM LIGHT POLE

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FDOT

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Frangible/Breakaway Transformer Base. See

General Notes on Sheet 1

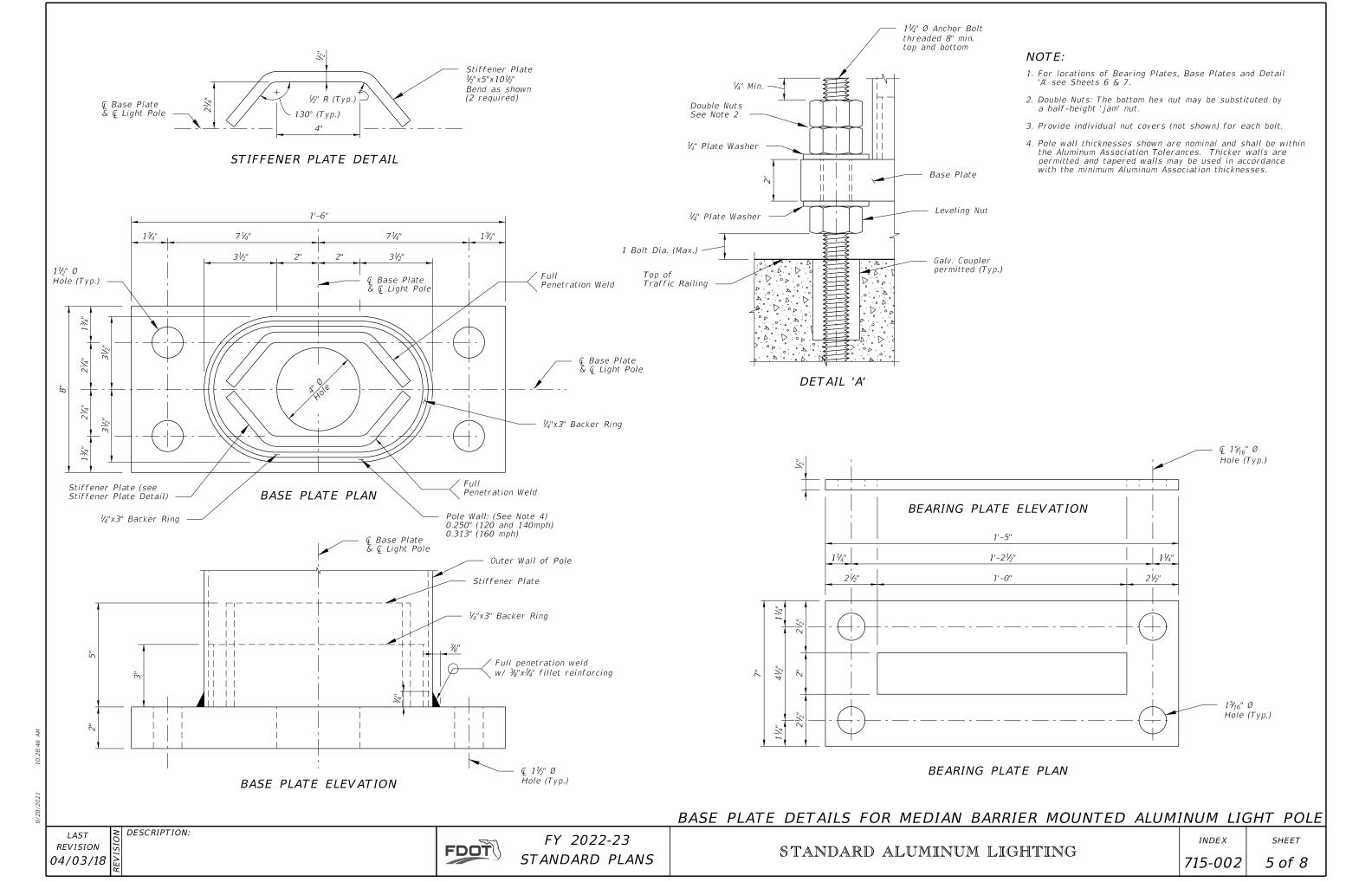
STANDARD ALUMINUM LIGHTING

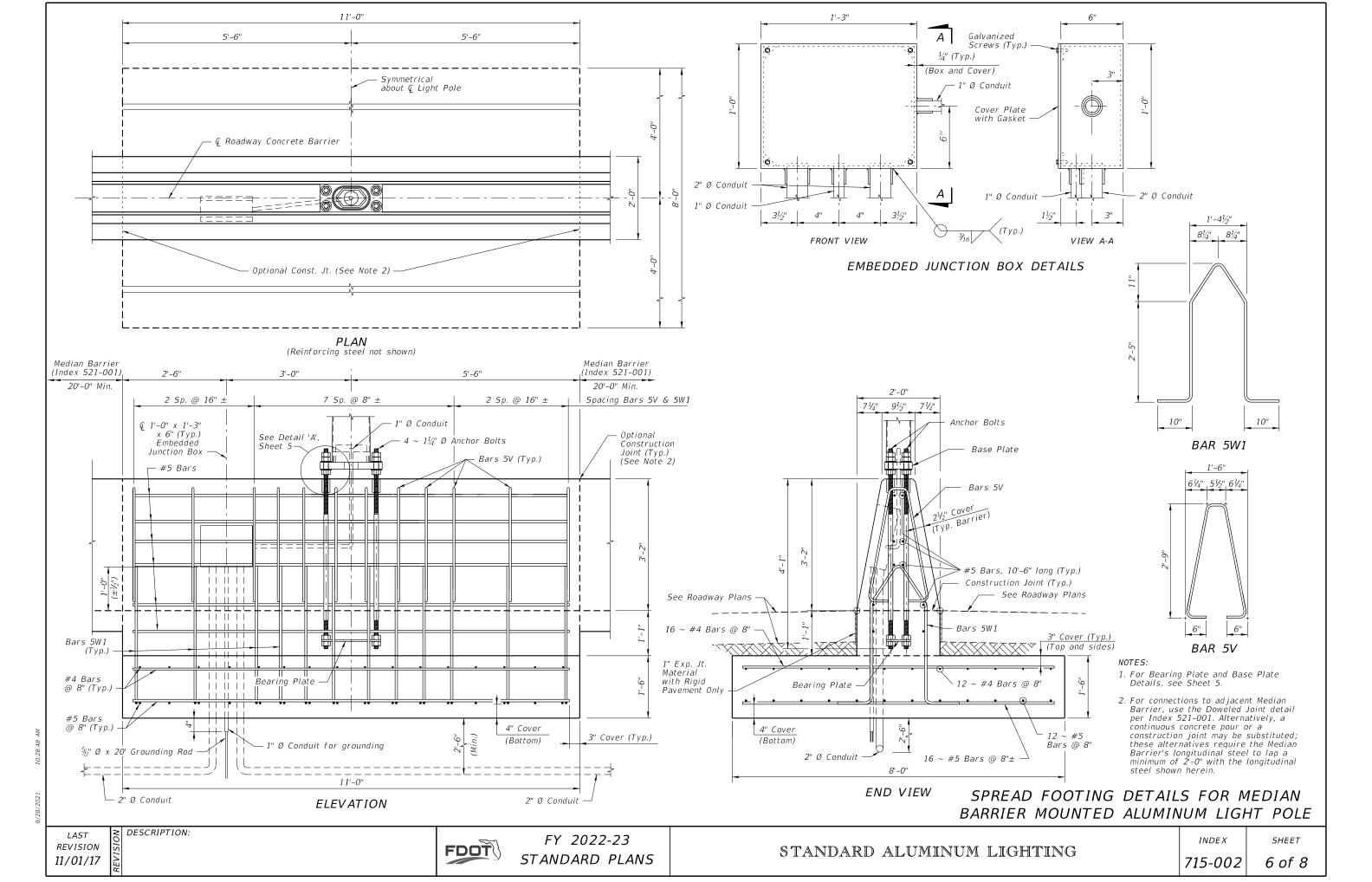
as Required by Approved Breakaway Transformer

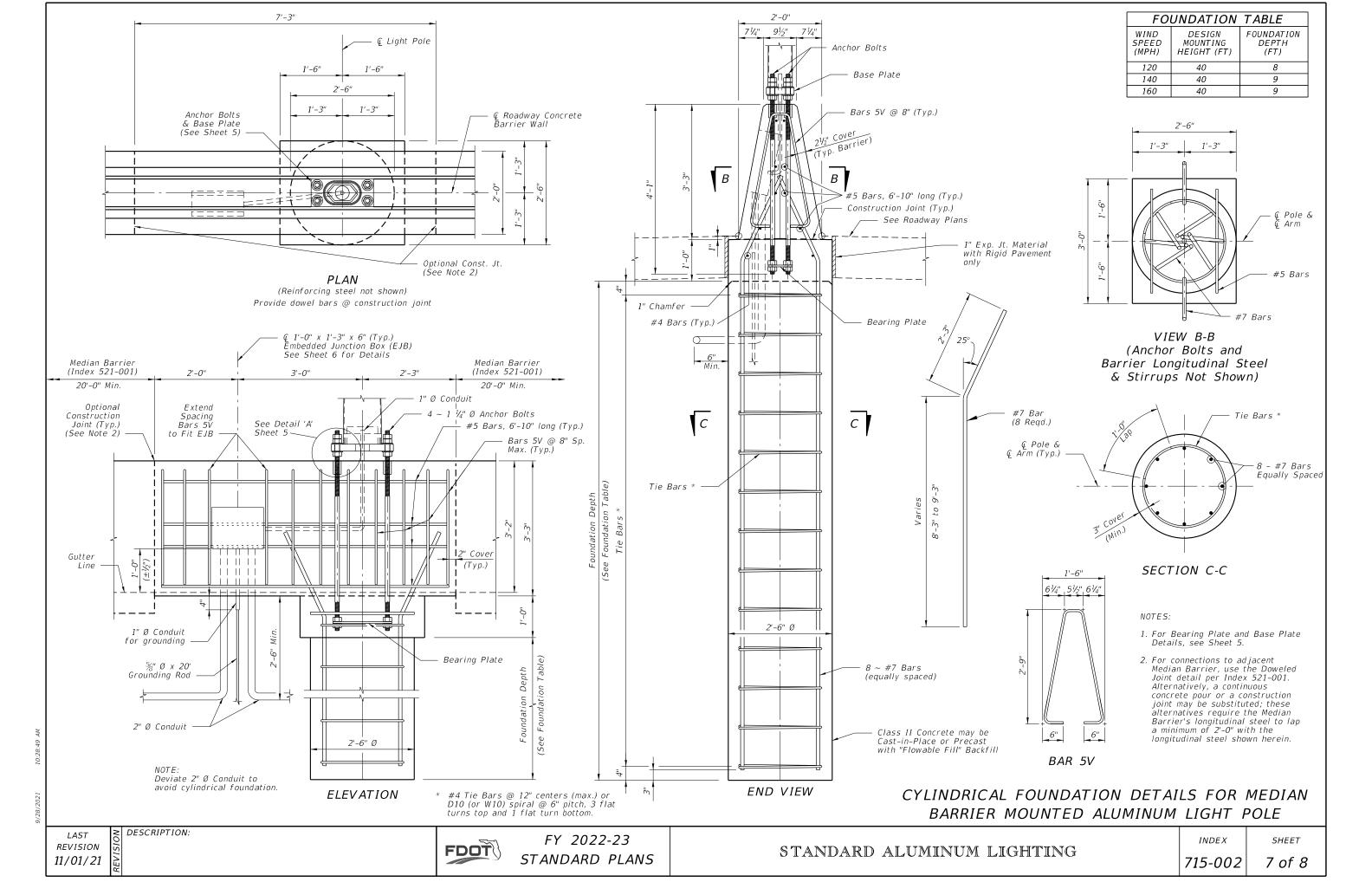
Base Manufacture (Typ.)

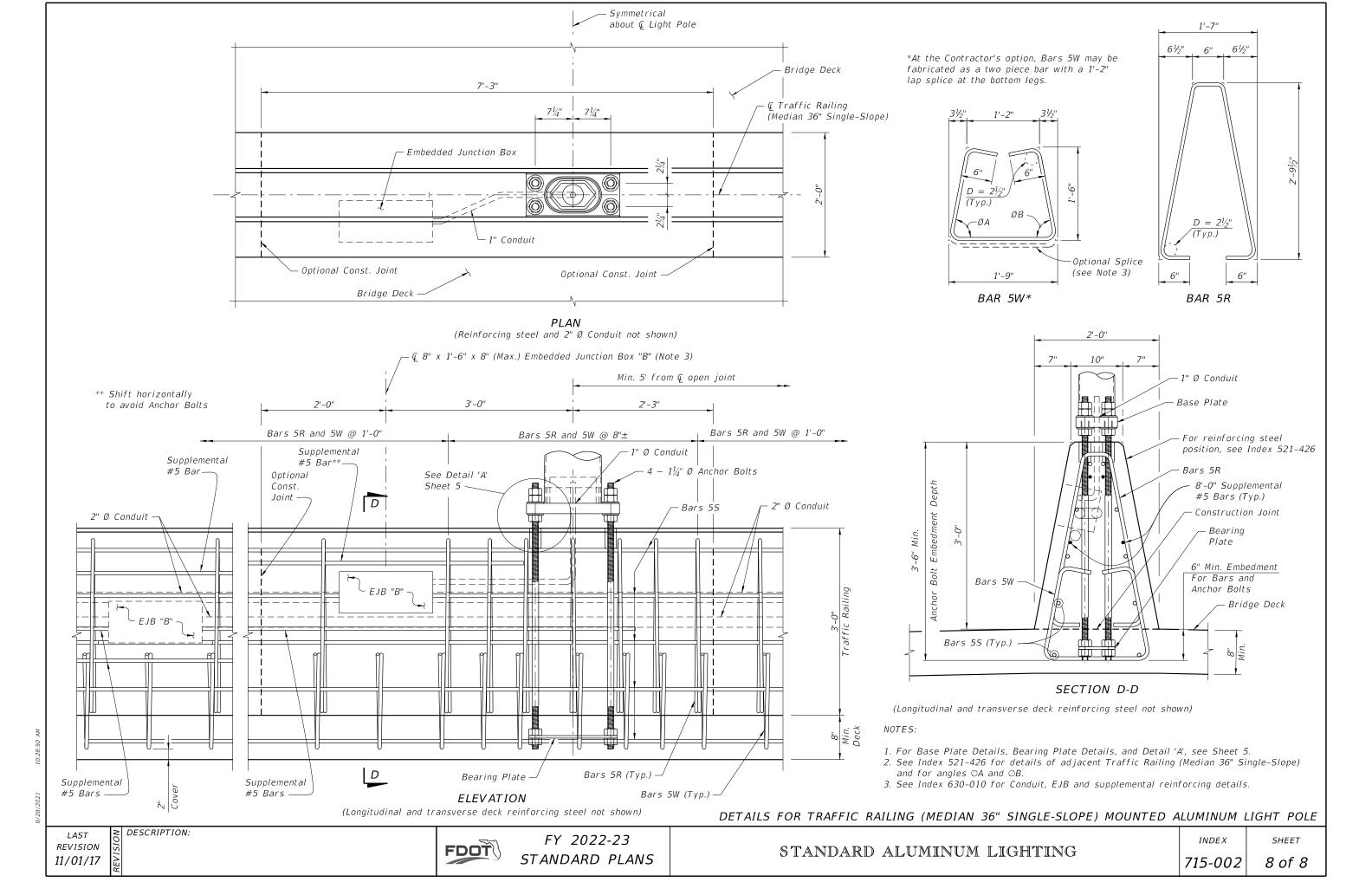
SHEET

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2. SHOP DRAWINGS: This Index is considered fully detailed; only submit shop drawings for minor modifications not included in the Plans.

A. Pole, Arm Tubes, Strut Tubes, Bars, Plates, Stiffeners: ASTM B221, Alloy 6063-T6 or

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.

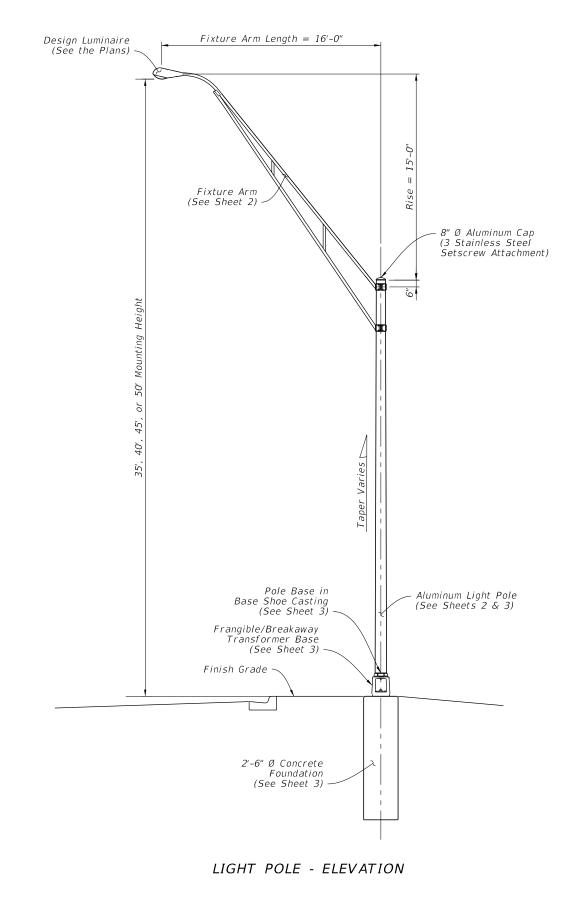
- C. Light Pole Properties: Taper as required to provide a round top O.D. of 8" and a base O.D. of 10" for all pole heights. Portions of the pole near the base shoe and at the arm connections may be held constant to simplify fabrication. Maintain pole wall thickness
- D. Fixture Arm Tube Properties: See Sheet 2.
- 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 V_8 " 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:

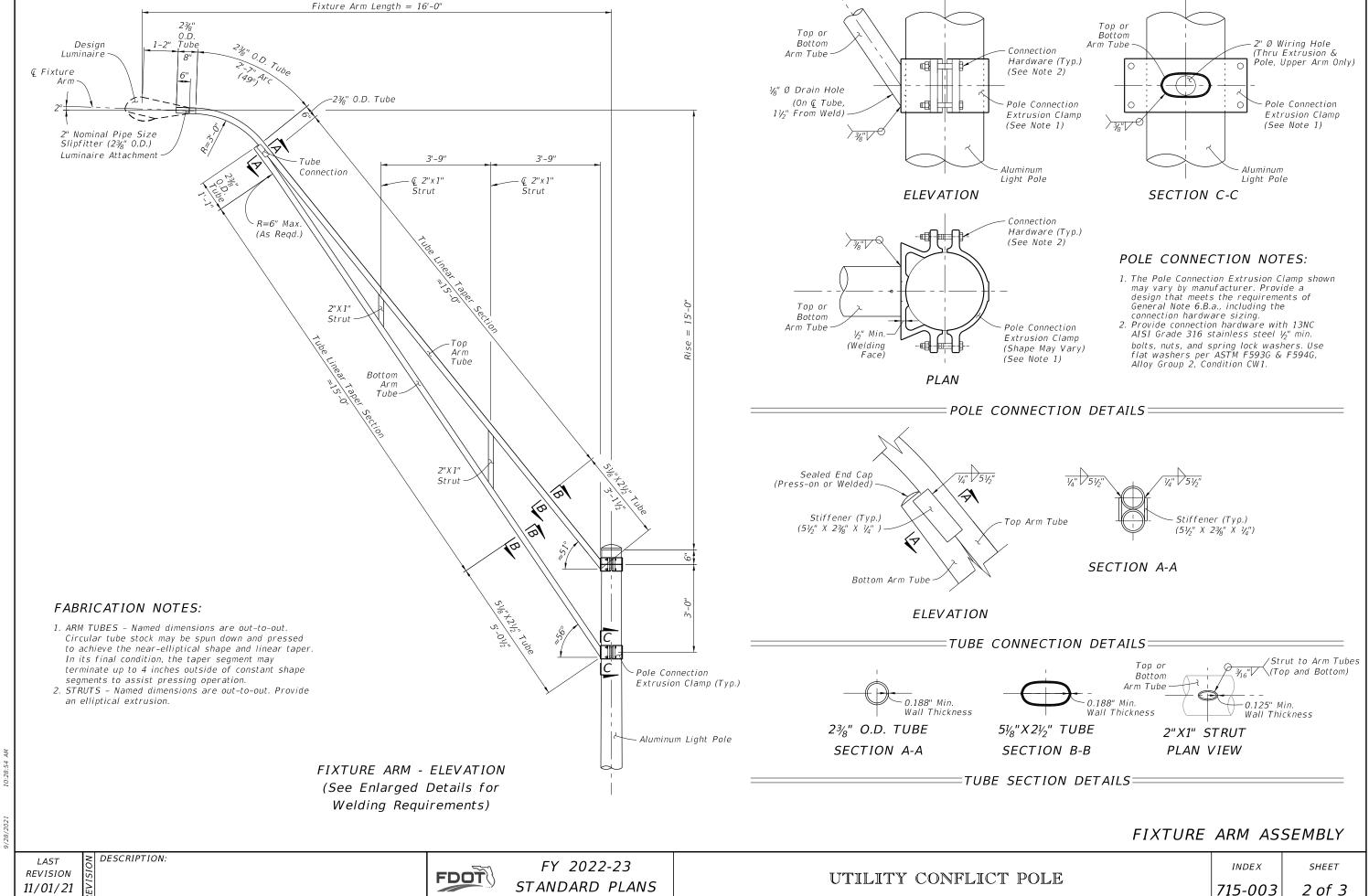
- A. Foundation: Specification 455, except payment for the foundation is included in the cost
- B. Frangible Base, Base Shoe, and Pole Connection Extrusion Clamp: a. Certify that the Pole Connection Extrusion Clamp, Frangible Transformer Base, and Base Shoe Design are capable of providing the required 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.

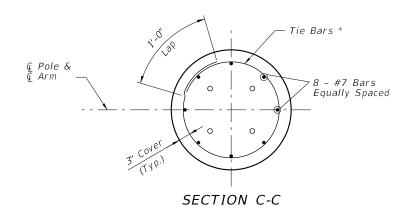


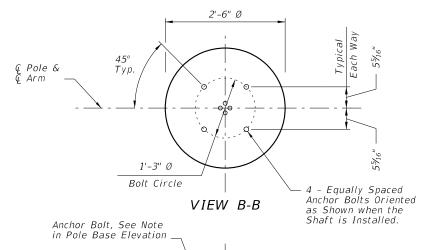
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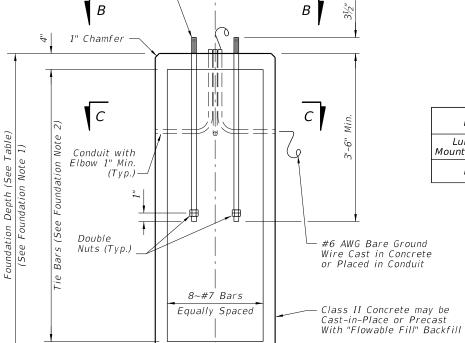
FDOT

FY 2022-23 STANDARD PLANS







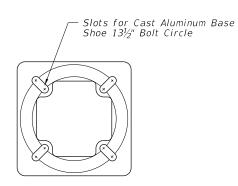


FOUNDATION ELEVATION

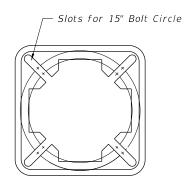
FOUNDATION DEPTHS				
Luminaire Mounting Height	≤ 40 Ft.	45-50 Ft.		
Depth	8'-0"	9'-0"		

FOUNDATION NOTES:

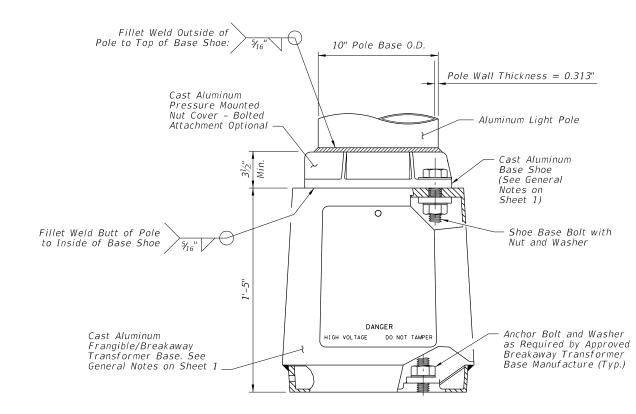
- 1. Depths shown are for slopes equal to or flatter than 1:4. For slopes steeper than 1:4 and equal to or flatter than 1:2 add 2'-6" to foundation depths
- 2. Foundation Tie Bars: #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn bottom.



TOP VIEW TRANSFORMER BASE



BOTTOM VIEW TRANSFORMER BASE



POLE BASE ELEVATION

FOUNDATION AND BASE DETAILS

REVISION 11/01/21

DESCRIPTION:

FDOT

FY 2022-23 STANDARD PLANS

UTILITY CONFLICT POLE

INDEX

SHEET

- 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 $\frac{3}{16}$ ": 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 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

 - 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 full-penetration groove weld within 6 inches of the circumferential tube-to-plate connection and
 - ii. Use full-penetration groove 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
- - 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, Hólmes, 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

LAST **REVISION** 11/01/18

DESCRIPTION:

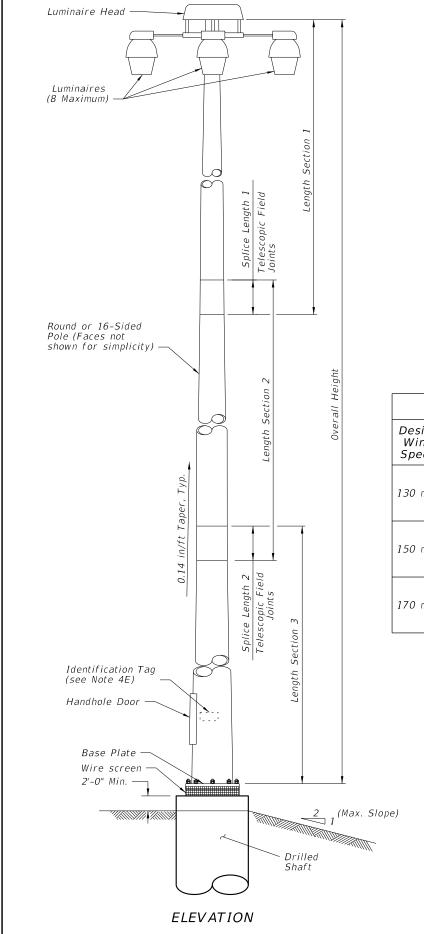
FDOT

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POLE DESIGN TABLE*												
		SECTION 1 (TOP)			SECTION 2			SECTION 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

	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	52
	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

	SHAFT DESIGN TABLE					
Design Wind Speed	Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement		
	80	4'-0"	13'-0"	14-#11		
130 mph	100	4'-6"	14'-0"	16-#11		
	120	4'-6"	16'-0"	16-#11		
	80	4'-0"	14'-0"	14-#11		
150 mph	100	4'-6"	16'-0"	16-#11		
	120	5'-0"	18'-0"	18-#11		
	80	4'-6"	15'-0"	16-#11		
170 mph	100	4'-6"	17'-0"	16-#11		
	120	5'-0"	20'-0"	18-#11		

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.

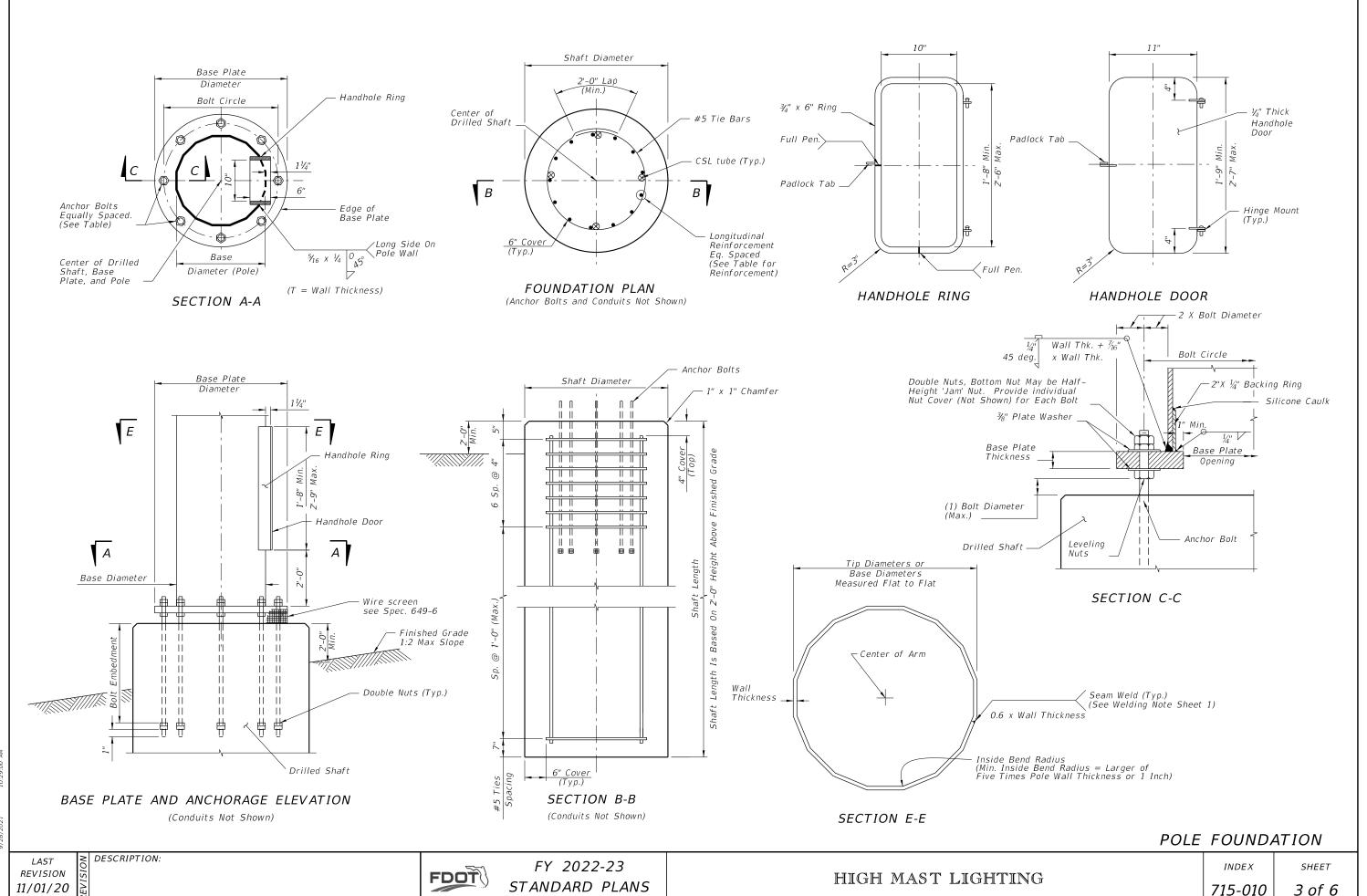
	IONAL SHAFT TO GROUND S	
Ground Slope	4'-0" Shaft Diameter	5'-0" Shaft Diameter
1:5	3'-0"	4'-0"
1:4	4'-0"	5'-0"
1:3	5'-0"	6'-0"
1:2	7'-0"	9'-0"

POLE DESIGN TABLES

LAST REVISION 11/01/18

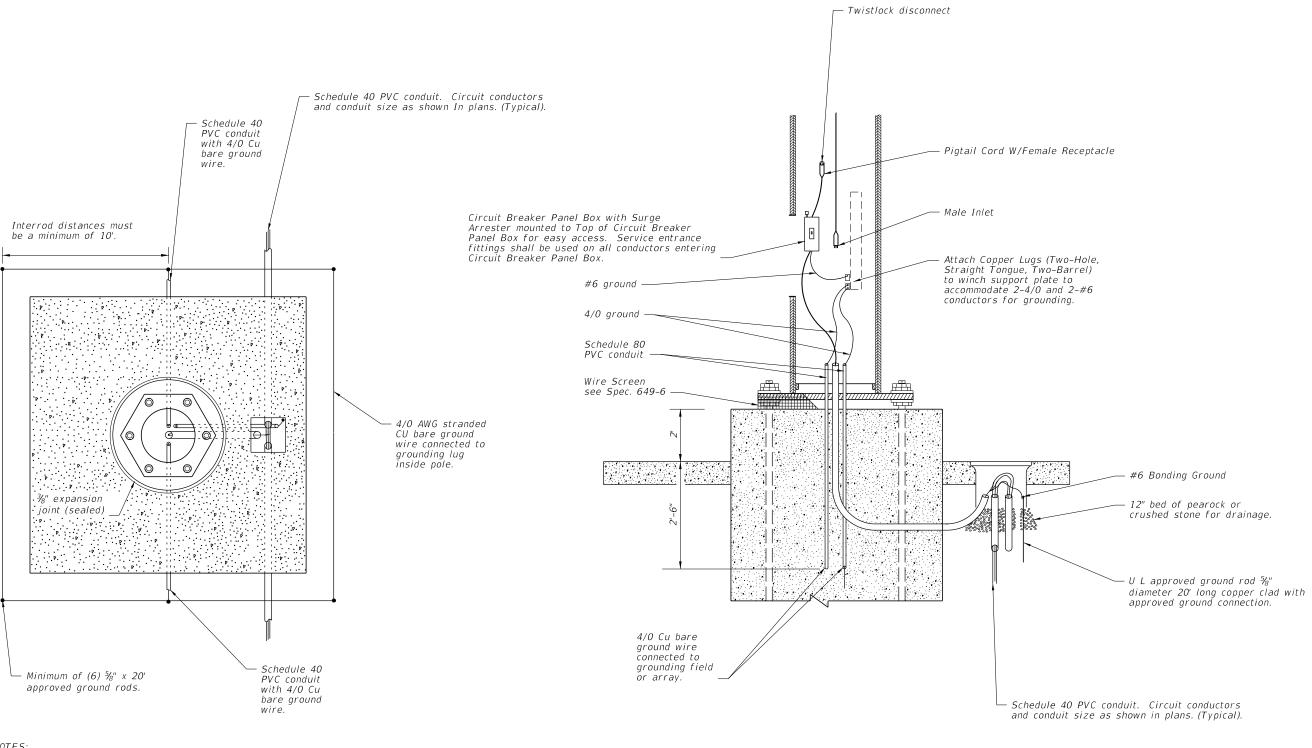
DESCRIPTION:

FDOT



STANDARD PLANS

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NOTES:

DESCRIPTION:

- 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

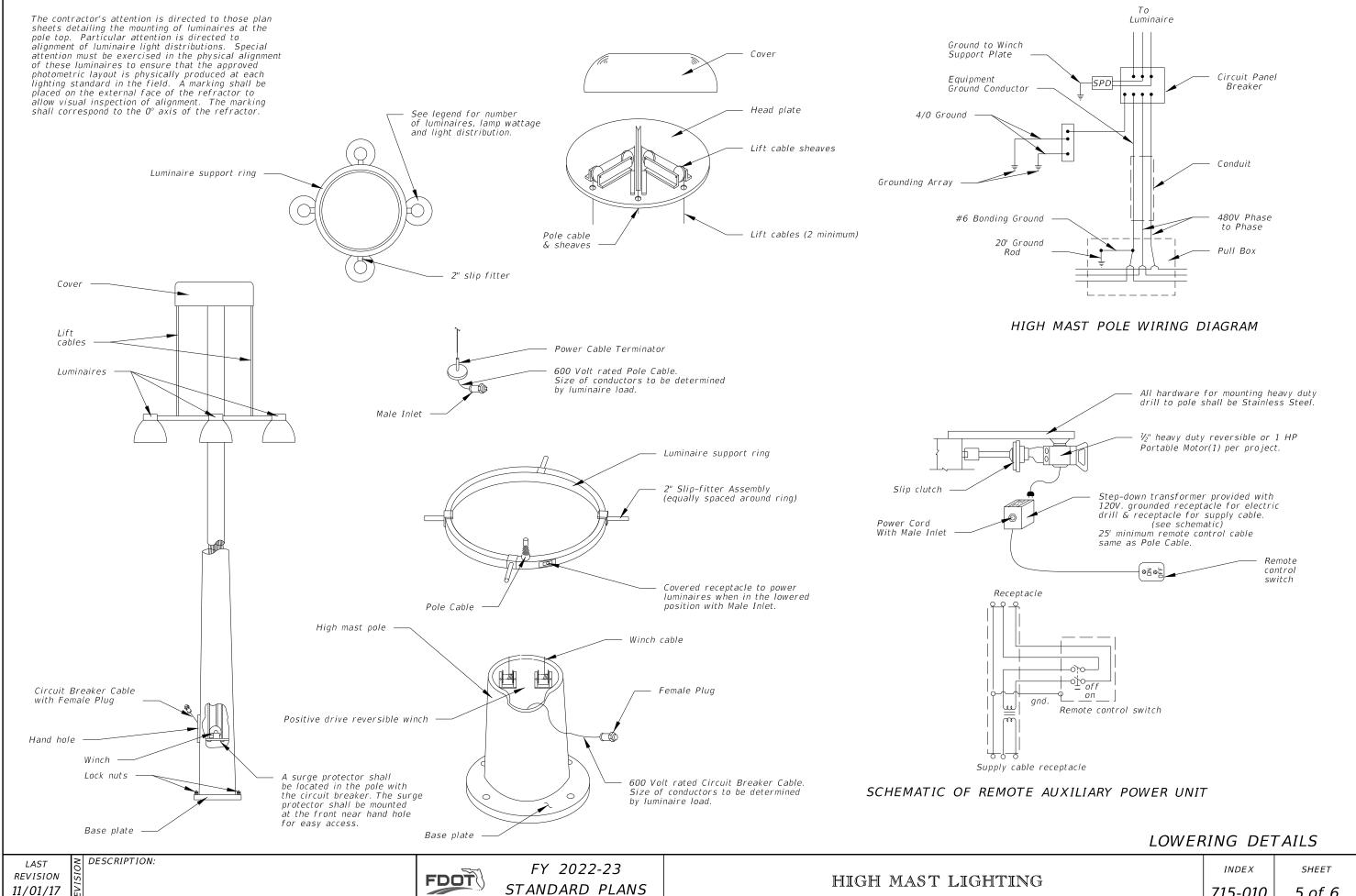
LAST **REVISION** 11/01/17

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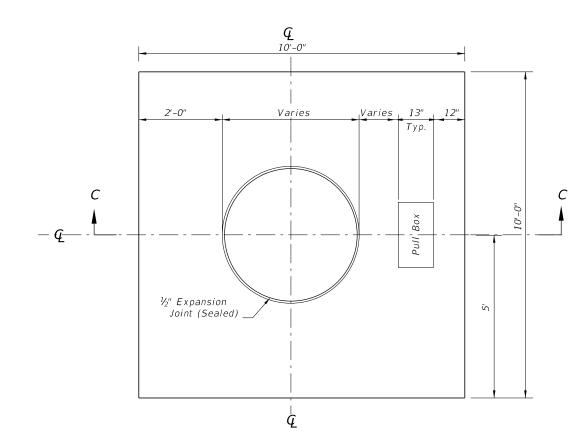
STANDARD PLANS

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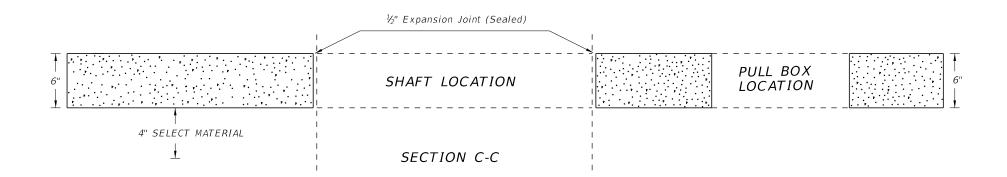
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NOTES:

- 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:

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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.

