FY 2020-21 STANDARD PLANS FOR ROAD CONSTRUCTION

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

July 1, 2020 through June 30, 2021

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

FY 2020-21 Standard Plans for
Road and Bridge Construction
Topic No. 625-010-003

FDOT FY 2020-21 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.

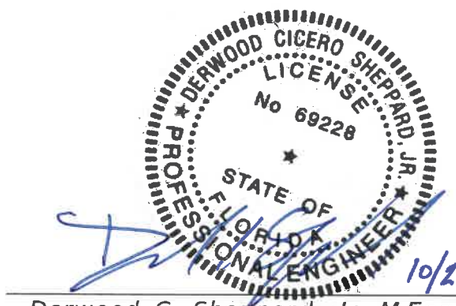
Structure is defined in Section 334.03(27), F.S., as "a bridge, viaduct, tunnel, causeway, approach, ferry slip, culvert, toll plaza, gate, or other similar facility used in connection with a transportation facility" which would include related pipes and pipe systems. However, for the purpose of the 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.



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:

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

FDOT

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

October 24, 2019

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

Re: Office of Design
FY 2020-21 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* the Department has provided the ***FY 2020-21 Standard Plans for Road and Bridge Construction (Standard Plans)*** for review. Copies of all revised Indexes for the ***FY 2020-21 Standard Plans*** were provided to the Florida Division Office in three different submittal packages between August 22nd and September 19th and all comments have been addressed to the satisfaction of the reviewer(s). Consequently, the Department is requesting approval of the ***FY 2020-21 Standard Plans*** for use on federal-aid projects.

Sincerely,

10/24/19

Derwood Sheppard, P.E.
State Standard Plans Engineer

For *FHWA Florida Division Office* use:

Approved for Use on Federal Aid Projects:

Bren George-Nwabuguwu Sr. 10/28/19

For James Christian, P.E.
Division Administrator

ABBREVIATIONS

FY 2020-21 STANDARD PLANS

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

ABBREVIATIONS

FY 2020-21 STANDARD PLANS

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

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20254	450-254	Florida-U 54 Beam - Standard Details
20263	450-263	Florida-U 63 Beam - Standard Details
20272	450-272	Florida-U 72 Beam - Standard Details
20299	450-299	Build-Up and Deflection Data For Florida-U Beams
Bridge Bearings		
20502	450-502	Beveled Bearing Plate Details - Prestressed Florida-U Beams
20510	400-510	Composite Elastomeric Bearing Pads-Prestressed Florida-I & AASHTO Type II Beams
20511	450-511	Bearing Plates (Type I) - Prestressed Florida-I & AASHTO Type II Beams
20512	450-512	Bearing Plates (Type 2) - Prestressed Florida-I & AASHTO Type II Beams
Square and Round Concrete Piles (With Carbon Steel)		
20600	455-001	Notes and Details For Square Prestressed Concrete Piles
20601	455-002	Square Prestressed Concrete Pile Splices
20602	455-003	EDC Instrumentation For Square Prestressed Concrete Piles
20612	455-012	12" Square Prestressed Concrete Pile
20614	455-014	14" Square Prestressed Concrete Pile
20618	455-018	18" Square Prestressed Concrete Pile
20620	455-020	20" Square Prestressed Concrete Pile
20624	455-024	24" Square Prestressed Concrete Pile
20630	455-030	30" Square Prestressed Concrete Pile
20631	455-031	High Moment Capacity 30" Square Prestressed Concrete Pile
20654	455-054	54" Precast/Post- Tensioned Concrete Cylinder Pile
20660	455-060	60" Prestressed Concrete Cylinder Pile
Approach Slabs		
20900	400-090	Approach Slabs (Flexible Pavement Approaches)
20910	400-091	Approach Slabs (Rigid Pavement Approaches)
Bridge Expansion Joints		
21100	458-100	Strip Seal Expansion Joint
21110	458-110	Poured Joint With Backer Rod Expansion Joint System
Structures Access and Lighting		
21200	521-660	Light Pole Pedestal
21210	630-010	Conduit Details
21220	510-001	Navigation Light System Details (Fixed Bridges)
21240	715-240	Maintenance Lighting For Box Girders
21250	460-250	Access Hatch Assembly For Steel Box Sections
21251	460-251	Access Hatch Assembly For Concrete Box Sections
21252	460-252	Access Door Assembly For Concrete Box Sections
Standard Bar Bending Details		
21300	415-001	Standard Bar Bending Details
Temporary Detour Bridges		
21600	102-200	Temporary Detour Bridge General Notes and Details
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-Tensioning		
21801	462-001	Post-Tensioning Vertical Profile
21802	462-002	Post-Tensioning Anchorage Protection
21803	462-003	Post-Tensioning Anchorage and Grouting Details
Fender System Details		
21930	471-030	Fender System - Prestressed Concrete Piles
Wall Systems (Corrosion Resistant)		
22440	455-440	Precast Concrete CFRP/GFRP & HSSS/GFRP Sheet Pile Wall
Square and 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

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Standard Plans Index	*Description*
102-110	*Sheet 15: Updated CONCRETE Note "B" to reference Specification 346-10.*
102-120	***Sheet 1:*** *Changed General Note 10 to Setback Distance.* ***Sheet 2:*** *Changed Table to Lateral Offset and Setback Distance; Changed "Deflection Space at Drop-Offs" to "Setback Distance at Drop-Offs".*
160-001	*Changed Index Title to: "Median Stabilizing Details".*
350-001	***Sheet 1:*** *Clarified Note 8.*
370-001	*Changed Index Title to: "Bridge Approach Expansion Joint Concrete Pavement With Special Select Soil Base"; Deleted Design Notes; Updated General Notes.*
425-010	***Sheet 1:*** *Added a 4'-0" diameter option in ALTERNATE B SECTION B-B and ROUND RISER OPENING detail.*
425-031	***All Sheets:*** *Changed Index Title to "Adjacent Barrier Inlet".* ***Sheet 1:*** *Changed General Note 1 to include median barriers with usage; Updated section detail labels to include median barriers.*
430-001	*Reorganized Index; Added additional Sheets.* ***Sheet 1:*** *Limits of Variable Front Slopes at Drainage Structures.* ***Sheet 2:*** *Round and Elliptical Concrete Pipe Joints.* ***Sheet 3:*** *Filter Fabric Jacket, Concrete Jacket, and Pipe Plug.* ***Sheet 4:*** *Concrete Collars.* ***Sheet 5:*** *Pipe End Guard.* ***Sheet 6:*** *Retaining Wall Concrete Gutter and Drains.*
430-010	*Reorganized Index; Added additional Sheets; Moved Sodding quantities to Index 570-001.* ***Sheet 1:*** *General Notes and Overview; Front Slope Transition at Endwall; Moved General Note 1 to the SPI; Moved specification and payment information to Specifications; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Dimensional and Reinforcing Details.* ***Sheet 3:*** *Type 1 and Type 2 Grate Details.*
430-011	*Reorganized Index; Added additional Sheets.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Endwalls for 1:2 Slopes with Baffles; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.* ***Sheet 3:*** *Endwalls for 1:2 Slopes Without Baffles and Bar Bending Diagram; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.* ***Sheet 4:*** *Endwalls with and Without Baffles for 1:3, 1:4, and 1:6 Slopes.* ***Sheet 5:*** *Steel Grate Option; Steel Grating Use Criteria Moved to SPI.*
430-012	*Reorganized Index; Added additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Dimension Details.* ***Sheet 3:*** *Reinforcing Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.*
430-020	*Reorganized Index; Added additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved payment information to Specifications; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Straight Flare and Optional Shape.*
430-021	*Reorganized Index; Moved payment information to Specifications.* ***Sheet 1:*** *General Notes and Overview and Slope And Ditch Transitions. Design Notes to the Drainage Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Combined details for Round and Elliptical Concrete Pipe; Added Section A-A "Pipe/Slab Fillet"; Added DETAIL "A".* ***Sheet 3:*** *Combined Tables of Quantities for Round and Elliptical Concrete Pipe.* ***Sheet 4:*** *Combined details for Arched and Round Corrugated Metal Pipe.* ***Sheet 5:*** *Combined Tables of Quantities for Arched and Round Corrugated Metal Pipe.* ***Sheet 6:*** *Moved Connection and Anchor Details.*

Standard Plans Index	*Description*
430-022	*Reorganized Index; Moved payment information to Specifications.* ***Sheet 1:*** *General Notes and Overview and Ditch Transitions; Moved Design Notes to the SPI; Deleted information already in the Drainage Design Guide; Added General Note on Saddle Slope; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Combined details for Round and Elliptical Concrete Pipe; Added Section A-A "Pipe/Slab Fillet"; Added DETAIL "A".* ***Sheet 3:*** *Combined Tables of Quantities for Round, Elliptical Concrete Pipe, and Permissible Pavement Modification detail.* ***Sheet 4:*** *Combined details for Arched and Round Corrugated Metal Pipe.* ***Sheet 5:*** *Combined Tables of Quantities for Arched and Round Corrugated Metal Pipe.* ***Sheet 6:*** *Moved Connection and Anchor Details.* ***Sheet 7:*** *Moved Fastener and Grate Details.*
430-030	*Reorganized Index; Added additional Sheet.* ***Sheet 1:*** *General Notes and overall view; Moved specification and payment information to Specifications; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Concrete Endwall Details; Added Sta,/Offset Location.* ***Sheet 3:*** *Combined Quantities Tables; Elliptical Concrete and Elliptical/ Arched Corrugated Metal Pipe tables.* ***Sheet 4:*** *Moved Spacing for Multiple Pipes Details.*
430-031	*Reorganized Index; Added additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Deleted design information covered in the Design Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Single 60" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.* ***Sheet 3:*** *Double 60" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.*
430-032	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Deleted design information covered in the Design Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Single 66" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.* ***Sheet 3:*** *Double 66" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.*
430-033	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Deleted design information covered in the Design Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Single 72" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.* ***Sheet 3:*** *Double 72" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.*
430-034	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Deleted design information covered in the Design Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Single 84" Endwall Details; Updated bar naming conventions to reflect Horizontal, Vertical, and Bent Bars.*
430-040	*Reorganized Index; Renamed Index to: "Winged Concrete Endwalls"; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Deleted design information covered in the Design Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Endwall With U-Type Wings and Endwall With 45 Degree Wings.*

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Standard Plans Index	*Description*
430-090	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved specification and payment information to Specifications; Deleted design information covered in the Design Manual; Added General Note on quantities for estimating purposes only.* ***Sheet 2:*** *Endwalls for 1:4 and 1:6 Slopes; Split detail into Dimensional and Reinforcing Details.* ***Sheet 3:*** *Steel Grate Details.*
436-001	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved Design Notes to the Drainage Manual, Drainage Design Guide, and the FDOT Design Manual.* ***Sheet 2:*** *Type I - Nonremovable Grate.* ***Sheet 3:*** *Type II - Removable Grate.*
440-001	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved Design Notes to the SPI.* ***Sheet 2:*** *Type I, II, and III Underdrains.* ***Sheet 3:*** *Type Va, Vb, Underdrains and Cleanout.*
440-002	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Updated Notes.* ***Sheet 2:*** *Typical Inspection Box Installation.* ***Sheet 3:*** *Typical Urban, Slope, and Adjustment Installations.*
443-001	*Reorganized Index; Added Additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Updated Notes; Removed Design Notes and moved to the SPI and Drainage Manual.* ***Sheet 2:*** *French Drain System.* ***Sheet 3:*** *Concrete Slotted Pipe Options.*
443-002	*Reorganized Index; Added additional Sheet.* ***Sheet 1:*** *General Notes and Overview; Moved Design Notes to SPI and Drainage Manual.* ***Sheet 2:*** *Type I Skimmers.* ***Sheet 3:*** *Type II Skimmers.*
446-001	*Reorganized Index; Moved payment information to Specifications; Deleted Treated Permeable Base Subdrainage.* ***Sheet 1:*** *General Notes and Overview.* ***Sheet 2:*** *Sudrainage and Outlet.* ***Sheet 3:*** *New Construction.* ***Sheet 4:*** *Rehabilitation.*
450-010	***Sheet 2:*** *Removed INSERT DETAIL.*
450-036	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-045	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-054	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-063	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-072	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-084	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-096	***Sheet 1:*** *Deleted Intermediate Diaphragm Inserts.*
450-120	***Sheet 2:*** *Deleted INSERT DETAIL.* ***Sheet 3:*** *Deleted Intermediate Diaphragm Inserts.*
455-440	***Sheet 2:*** *Changed bend diameter of GFRP stirrups; Added new Note 5 and renumbered Notes.*
458-100	*Changed Elastomeric Seal to Strip Seal throughout Index.*
460-470	***Sheet 1:*** *Changed Barrier Delineator note.*
515-052	***Sheet 8:*** *Changed embedment depths and anchor lengths for Case I and Case IIb.*
515-062	***Sheet 9****: Changed embedment depths and anchor lengths for Case I and Case IIb.*
521-001	***Sheets 15 & 16:*** *Changed "Shoulder Barrier Inlet" to "Adjacent Barrier Inlet" callout.*

Standard Plans Index	*Description*
521-002	***Sheet 1:*** *Updated Note 4 to refer to Index 425-031 for "Adjacent Barrier Inlets" (number correction and Index name update).*
521-404	***Sheet 1:*** *Changed Payment Note.*
521-405	***Sheet 1:*** *Changed Payment Note.*
521-427	***Sheets 1 - 4****: Renumbered.* ***Sheet 5:*** *(NEW SHEET) Drainage Slot Details.*
521-428	***Sheet 1:*** *Added reference to drainage slot detail.* ***Sheet 3:*** *Added transition from 42" on Bridge to 36" or 38" traffic railing on approaches.*
521-480	***Sheet 1:*** *Removed Barrier Delineator Spacing table; Changed Barrier Delineator note to refer to specification 705 instead of table.*
521-510	***Sheet 1:*** *Changed 10' maximum spacing for 1/2" V-Groove in consideration of 12' precast sections.*
521-600	***Sheet 1:*** *Added organic felt bond breaker on surfaces of wall between C-I-P coping to prevent cracking of the coping and wall.* ***Sheet 2****: Added bond breakers between face of wall and C-I-P coping.*
521-610	***Sheet 1:*** *Corrected Note referenced in Partial Plan View for Approach Slab,* ***Sheet 2:*** *Clarified Note 4; Added Overbuild to Typical Section; Changed Title to End Transition Details.* ***Sheet 3:*** *Changed Detail "A" to Details "B"; Clarified alternate construction joint for Detail "B".*
521-620	***Sheet 1:*** *Corrected reference to Approach Slab Note in Partial Plan View; Changed maximum spacing of 3/4" expansion joints.*
521-640	*Added Note 7 and renumbered Notes; Locate Open Joints in Barrier & Coping a minimum of 5'-0 from CL of Barrier Wall Inlet.*
521-660	***Sheets 1, 2 & 4:*** *Removed notes to slope concrete pedestal surface.*
522-002	*Deleted General Note 2 regarding parallel grade break; Renumbered General Notes based on the deletion of Note 2.*
524-001	*Removed Sodding information from Sheet 2 and Added to new Sheet 3 in Index 570-001.*
534-200	***Sheet 1:*** *Changed Note 6.C.1.*
536-001	***All Sheets:*** *Renumbered for additional Sheets 14 and 16.* ***Sheet 1:*** *Added Trailing End Transition Connection to Rigid Barrier to Table of Contents; Added Sheets 14 & 16 to TOC and renumbered; Removed flared approach terminal from TOC; Note 10, allow for single-reduced post spacing for connections to existing guardrail.* ***Sheets 2 & 3:*** *Removed modified thrie beam from Note 8.* ***Sheet 5****: Removed modified thrie beam details and Note 5; Added single-faced to double-faced guardrail connection detail.* ***Sheet 6:*** *Removed modified thrie-beam section and post information from table.* ***Sheet 7:*** *Removed flared approach terminal; Added note 6 "clear area requirement"; Added approach terminal callout at begin/end guardrail location; Added new information to Note 5 to allow substitution for miscellaneous asphalt pavement placed upstream of post 1.* ***Sheet 8:*** *Renumbered Note 7 to Note 9 and deleted reference to flare; Added a new Note "Clear Area Requirement"; Added approach terminal callout at begin/end guardrail location; Added new Note 8 to allow substitution for miscellaneous asphalt pavement placed upstream of post 1.* ***Sheet 9:*** *Added trailing anchorage callout to being/end guardrail station location.* ***Sheet 11 & 12:*** *Added CRT End Treatment callout to Begin/End Guardrail Station location.* ***Sheet 13:*** *Changed default curb option shown to "Flush Shoulder Option", added TL-3 approach transition callout at begin/end GR. location.* ***Sheet 14:*** *(NEW SHEET): Added full TL-3 Approach Transition Connection layout for both curb continuation options; show guardrail tapers.* ***Sheet 15****: (Previously Sheet 14): Changed default curb option shown to "Flush Shoulder Option"; added TL-2 approach transition callout at begin/end GR. Location.* ***Sheet 16:*** *(NEW SHEET): Added full TL-2 Approach Transition Connection layout for both curb continuation options; show Guardrail tapers.*

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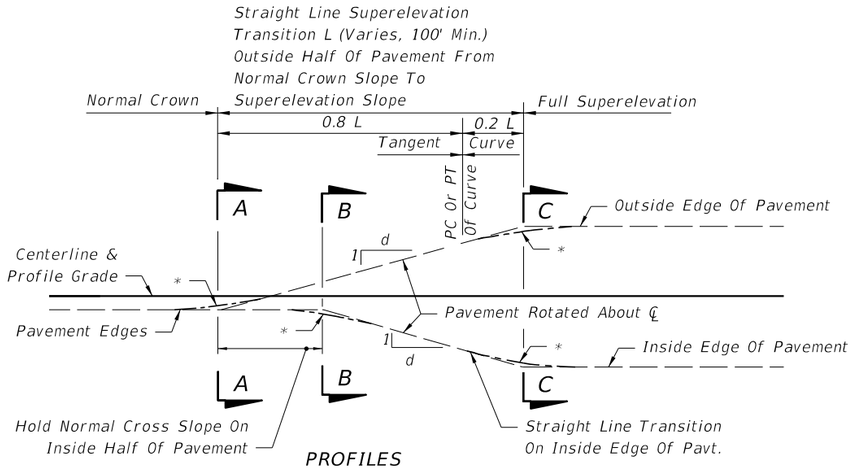
Standard Plans Index	Description
536-001	**Sheet 17:** (Previously Sheet 15): Updated alignment curb dimensions for best fit; Changed "Flat No Curb" option to "Flush Shoulder Option". **Sheet 19:** (Previously Sheet 17); Terminal updated from flared to parallel in Plan View; Added approach transition callout at begin/end guardrail location. **Sheet 20:** (Previously Sheet 18): Added approach transition callout at begin/end guardrail location. **Sheet 21:** (Previously Sheet 19): Updated terminal from flared to parallel in Plan View. **Sheet 23:** (Previously Sheet 21): Updated Frangible Leave-out details to show steel post; Changed Note 1 to explain that only steel posts are permitted. **Sheet 24:** (Previously Sheet 22): Removed modified-thrie beam from Button-Head Bolt Length table.
536-002	**Sheet 1:** Updated Note 2 to remove trailing end transition information; Reference Index 536-001 for new trailing end transition connection details on New Sheet 28. **Sheet 2:** Removed Detail K references in details (typo from old Standard version). **Sheet 3:** Changed approach terminals from flared to parallel. **Sheet 27**: Removed Payment Information; Updated detail title to sync with Pay Item title, "Guardrail Approach Transition Connections...". **Sheet 28:** (NEW SHEET) Developed for Trailing End Transition Connections.
544-001	**Sheet 1:** Added callout notes to rigid barrier connection detail to include traffic railing and concrete barrier standards. **Sheet 3:** (NEW SHEET) Added Thrie Beam retrofit connection detail; Short guardrail extension options from crash cushion to rigid barrier.
570-001	**All Sheets:** Renumbered for additional New Sheet. **Sheet 3:** (NEW SHEET) Added sodding information from Index 524-001.
580-001	Updated bracing Detail, overall clarifications; Clarified that bracing is intended for plant establishment purposes only; Clarified on lumber grade; Clarified band strength.
591-001	NEW INDEX – Previously Developmental Standard Plan D591-001.
639-001	Corrected TYPICAL DISTRIBUTION POINT SCHEMATIC DETAIL Callout and "OFF" position location.
649-010	Added Longitudinal Seam weld note 4H; Changed Note 4H to 4I.
649-031	**Sheet 2:** Change "jam nut" to anchor nut to match spec language. **Sheet 4:** Clarified splice length (to match Sheet 3 splice). **Sheet 5:** Clarified that the luminaire arms are galvanized steel.
695-001	**Sheet 5:** Changed the PVC Conduit or Non-Metallic Flexible Conduit from 1.5" to 3".
700-010	**All Sheets:** Renumbered. **Sheet 6:** Note 5: Clarified number of wind beams required. **Sheet 7:** (NEW SHEET) – WIND BEAM CONNECTION FOR FLIP UP SIGN.
700-041	**Sheet 1:** Added information to Note 5B and Note 5C.
700-090	Deleted Catwalk Notes and references and added to New Index 700-091.
700-091	NEW INDEX – Catwalk Details.
700-101	Changed lateral offsets to more closely correspond with the MUTCD.
700-104	Note 4: Updated terminology for sign posts to match current naming.
700-110	Deleted 30 degree cut of Z mounting beams and added bolt diameters to drawing (See Index 700-030).
706-001	Changed striping limits in detail.

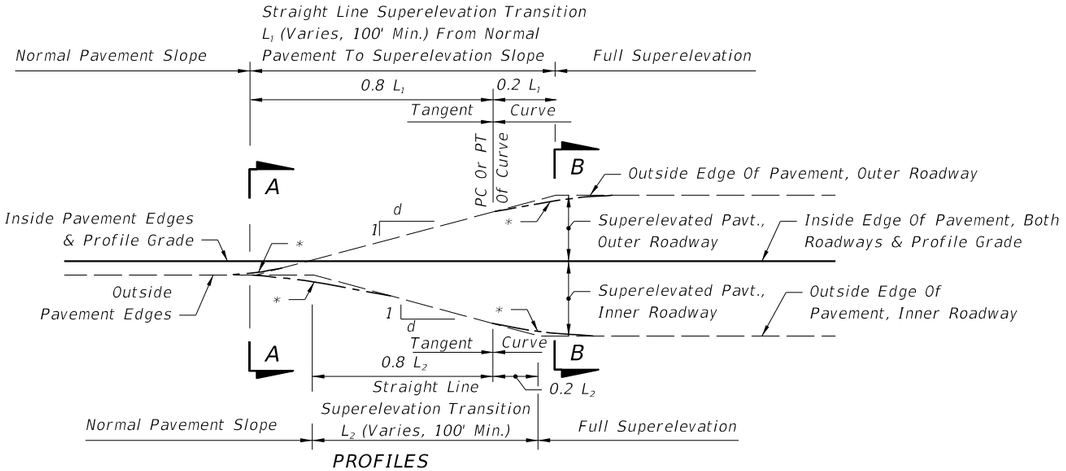
Standard Plans Index	Description
711-001	**Sheet 1:** Clarified "Notes for Pavement Message". **Sheet 2:** Changed "Contrast Markings with Alternating Skip Pattern" to "10'-30' Skip Line with Shadow Markings". Added "Dotted Line with Alternating Shadow Markings" with detail. **Sheet 5 & 6:** Deleted the 6" Yellow marking from the nose of the Traffic Separator. **Sheet 8:** Revised right turn lane details. **Sheet 11:** Revised all details and notes.
715-002	**Sheet 1**: Changed Note 4C. **Sheet 2:** Added 20' & 22' mounting heights. **Sheet 3:** Changed Strut weld size in ARM ELEVATION Detail. **Sheet 4:** Added Pole P0.
715-010	**Sheet 3:** Updated handhole ring and door dimensions to allow variation/increase in handhole size; increase distance from baseplate to bottom of handhole.
830-001	**Sheet 2:** Added a line indicating the curb continuing to the junction with the crossing; Remove the label about shoulder pavement in lieu of curb; Added a label for drop curb; Modified label "shoulder pavement" to "asphalt pavement" on the left half; Added "or trail" label to sidewalk on right half; Changed "shoulder pavement" on right to asphalt or concrete pavement to match adjacent surface.



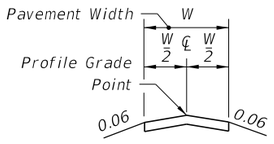
PROFILES

SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS			
SECTION	DESIGN SPEED, MPH		
	45-50	55-60	65-70
	1 : d		
2 Lane & 4 Lane	1:200	1:225	1:250
6 Lane	1:160	1:180	1:200
8 Lane	1:150	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.			

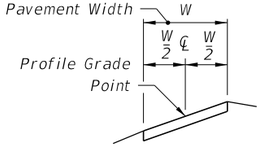
* Short Vertical Curves Are To Be Used On Construction To Avoid Angular Breaks In Edge Profiles



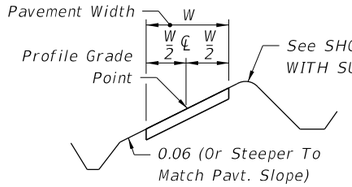
PROFILES



NORMAL CROWN SECTION AA



REVERSE CROWN SECTION BB

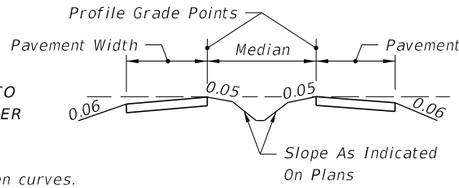


FULLY SUPERELEVATED SECTION CC

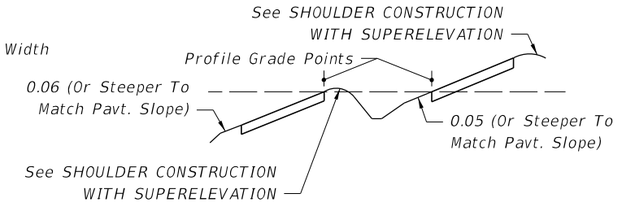
THESE TRANSITION DETAILS ARE TO APPLY IN ALL CASES, EXCEPT UNDER THE FOLLOWING CONDITIONS:

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

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



NORMAL SECTION SECTION AA



FULLY SUPERELEVATED SECTION BB

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

4-LANE OR 6-LANE PAVEMENT WITH MEDIAN

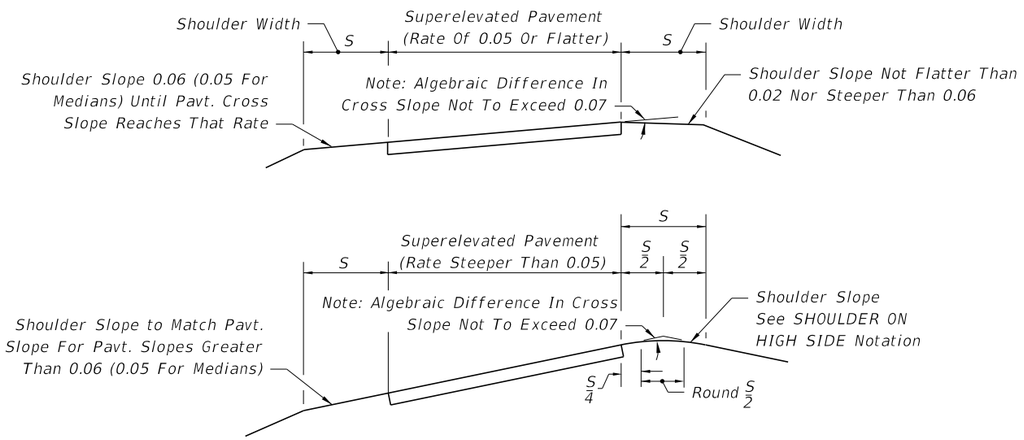
SUPERELEVATION TRANSITIONS

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.*

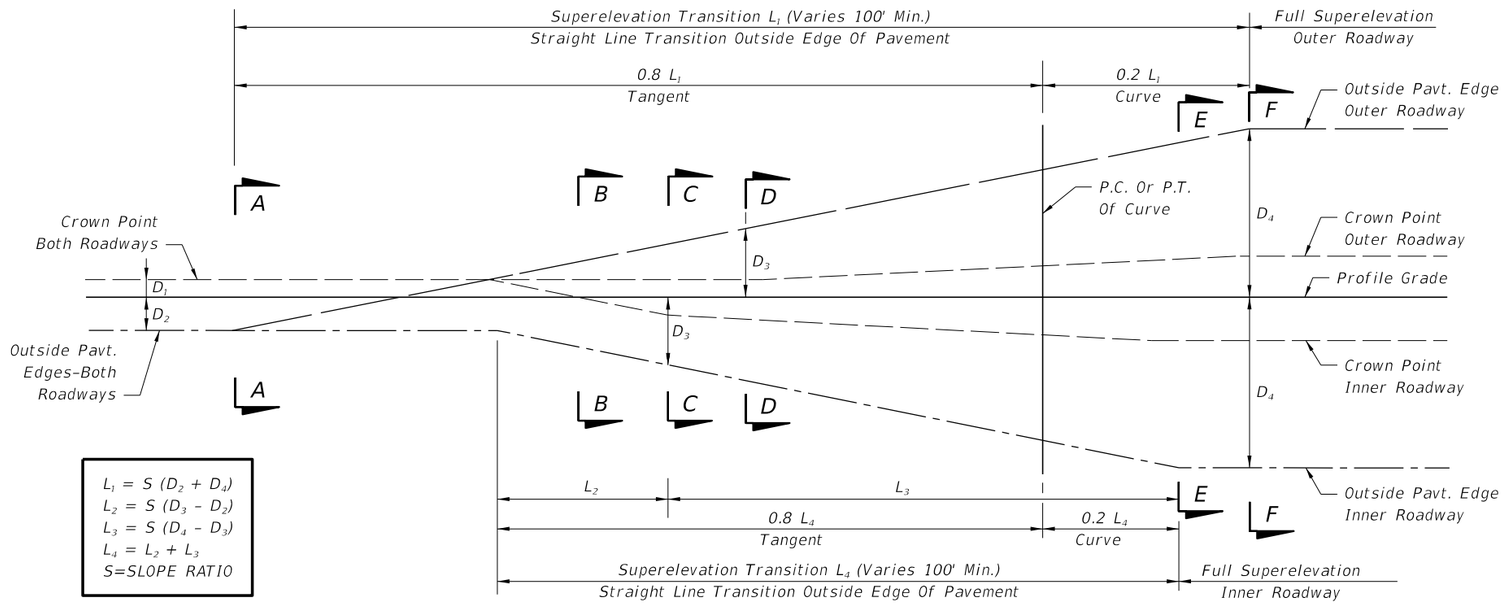
3. *SHOULDER ON LOW SIDE: Maintain 0.06 cross slope across shoulder until pavement cross slope reaches 0.06. For pavement cross slopes greater than 0.06, shoulder to have same slope as pavement. See SHOULDER SLOPES ON SUPERELEVATION SECTION (Sheet 2).*

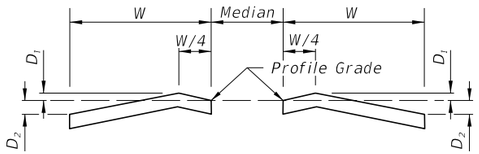


SHOULDER CONSTRUCTION WITH SUPERELEVATION

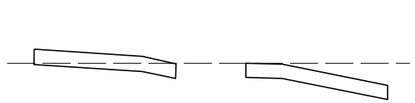
10/29/2019 8:13:42 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SUPERELEVATION TRANSITIONS - HIGH SPEED ROADWAYS	INDEX	SHEET
11/01/18						000-510	1 of 2

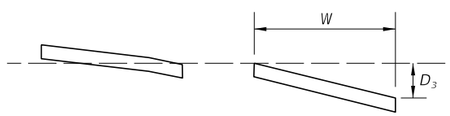




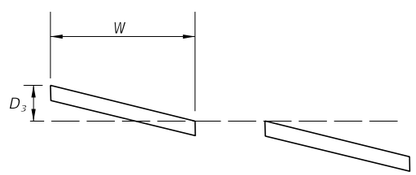
SECTION A-A
NORMAL CROWNED SECTION



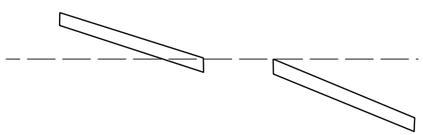
SECTION B-B
SUPERELEVATION SECTION LT. & RT.



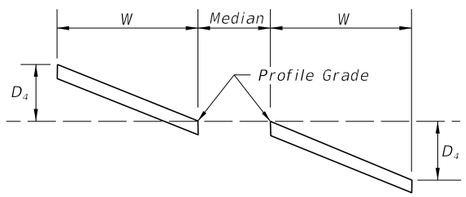
SECTION C-C
SUPERELEVATION SECTION LT.
PLANE INCLINED SECTION RT.



SECTION D-D
PLANE INCLINED SECTION LT.
SUPERELEVATION TRANSITION RT.

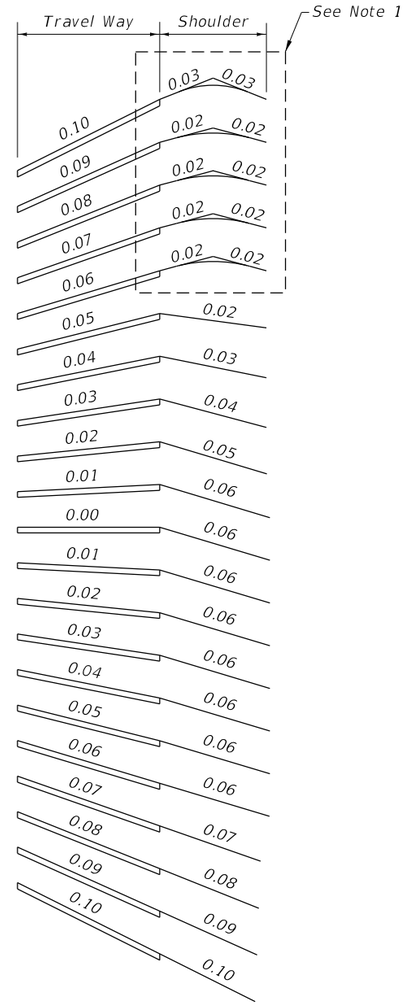


SECTION E-E
SUPERELEVATION TRANSITION LT.
FULL SUPERLEVATION RT.



SECTION F-F
FULL SUPERELEVATION LT. & RT.

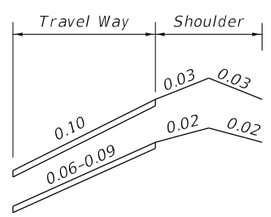
8-LANE PAVEMENT WITH ONE LANE SLOPED TO MEDIAN



SLOPES OF TRAVELED WAY
AND ABUTTING SHOULDERS

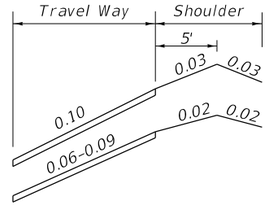
SHOULDER SLOPES ON SUPERELEVATION SECTIONS

1. For shoulders with paved widths 5 feet or less see special shoulder break over details.
2. For Concrete pavement, the first 1'-0" of the outside shoulder is cast with the outside travel lane and will have the same cross slope as the outside lane. The shoulder break over will occur at the outside edge of the outside slab.

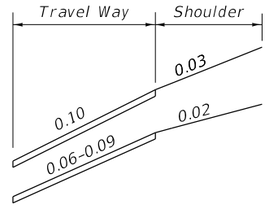


a) 12' AND 10' FULL WIDTH SHOULDERS WITH 5' OR LESS PAVED WIDTHS,

b) 8' FULL WIDTH SHOULDERS WITH 4' OR LESS PAVED WIDTHS,



8' FULL WIDTH SHOULDER
WITH 5' PAVED WIDTH



6' FULL WIDTH SHOULDER
WITH 5' OR LESS PAVED WIDTH

SPECIAL SHOULDER BREAK OVER DETAILS

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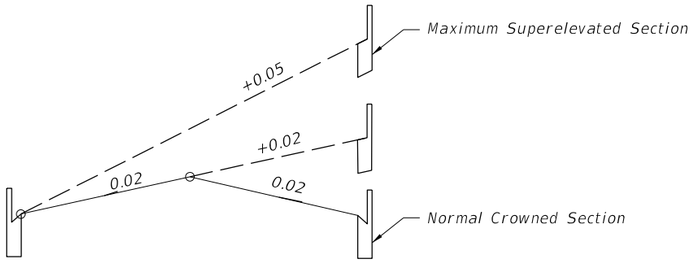
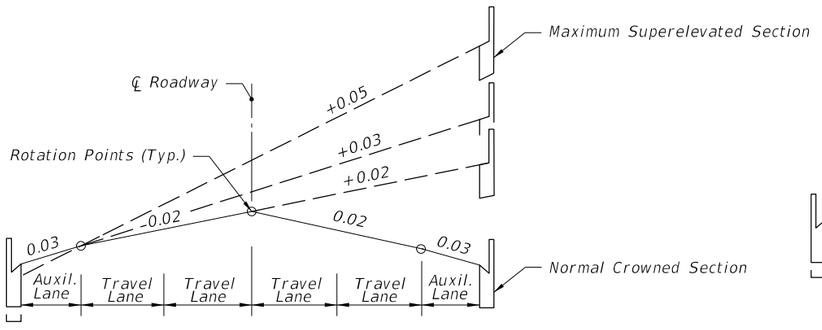
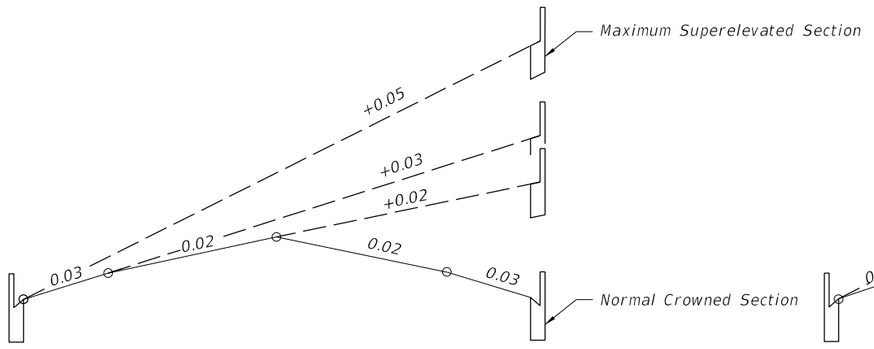
11/01/18						000-510	2 of 2



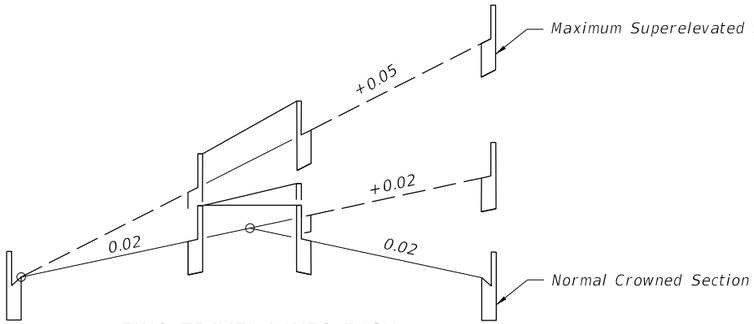
TWO TRAVEL LANES EACH DIRECTION



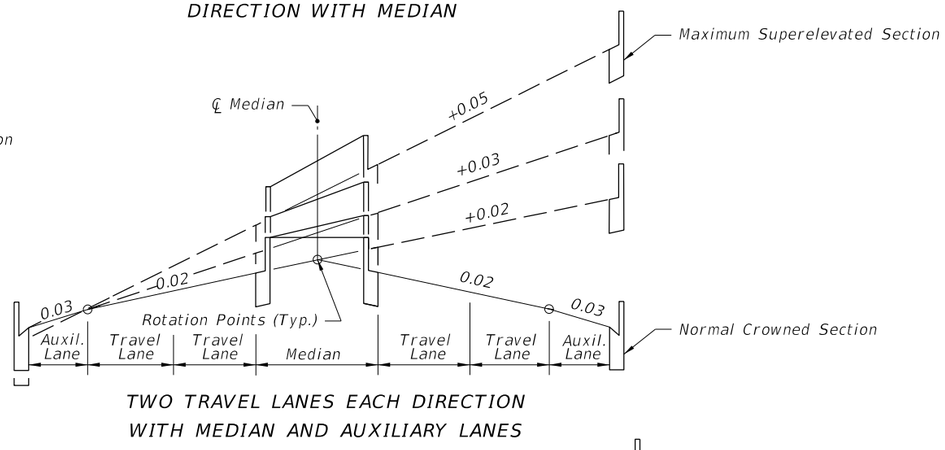
TWO TRAVEL LANES EACH DIRECTION WITH AUXILIARY LANES



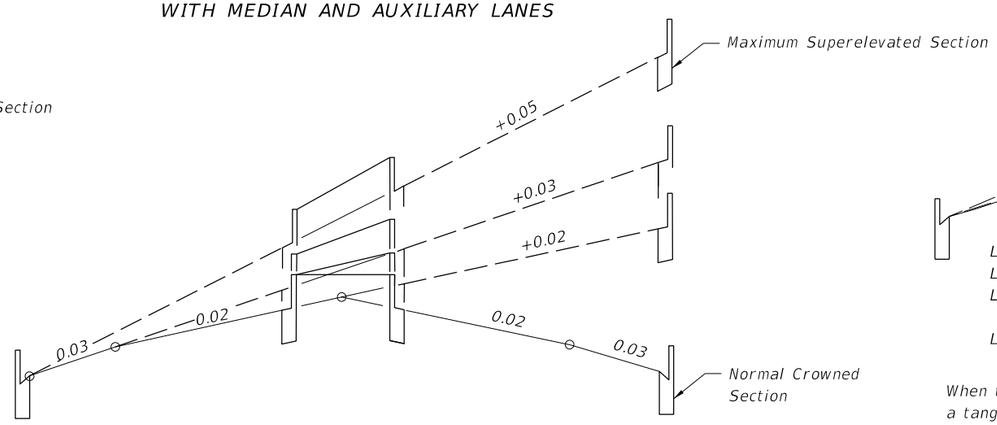
UNDIVIDED FACILITIES



TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN



TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANES

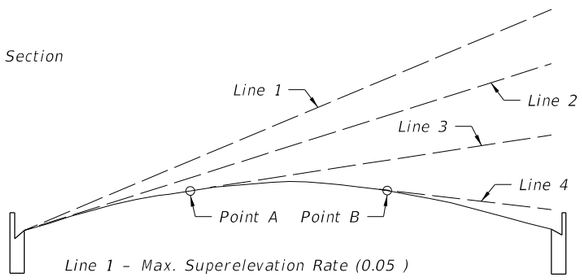


THREE TRAVEL LANES EACH DIRECTION WITH MEDIAN

DIVIDED FACILITIES

GENERAL NOTES:

1. Obtain Superelevation by rotating the plane successively about the break points of the section until the plane has attained a slope equal to that required by the Plans. Should the rotation traverse the entire section and further superelevation be required, the remaining rotation of the plane shall be about the low edge of the inside travel lane. Crown is to be removed in the auxiliary lane to the outside of the curve only when the adjoining travel lanes require positive superelevation.
2. When positive superelevation is required, continue the slope of the pavement across the gutter on the high side.
3. Place short vertical curves at all angular profile breaks within the limits of the superelevation transition.
4. The variable superelevation transition length "L" has a minimum value of 50 feet for design speeds under 40 MPH and 75 feet for design speeds of 40 MPH or greater.
5. Roadway sections having lane arrangements different from those shown, but composed of a series of planes, are superelevation in a similar manner.



Line 1 – Max. Superelevation Rate (0.05)
Line 2 – Slope Of Parabola At Inside Edge Of Pavt.
Line 3 – Positive Superelevation Rate Less Than Max. Slope Of Parabola.
Line 4 – Adverse Superelevation.

When this section is used, superelevation is established by rotating a tangent about the arc of the parabolic crown until the desired slope is attained (points A & B on sketch). The normal parabolic crown will be maintained outside the limits of the plane thus formed.

PARABOLIC SECTION

SUPERELEVATION TRANSITION SECTIONS FOR LOW SPEED HIGHWAYS

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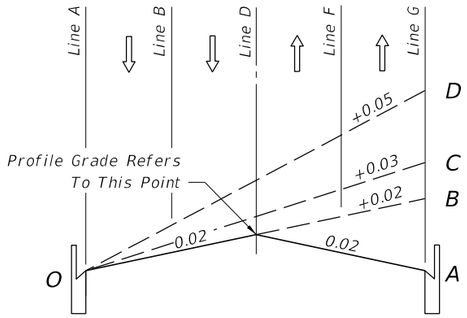
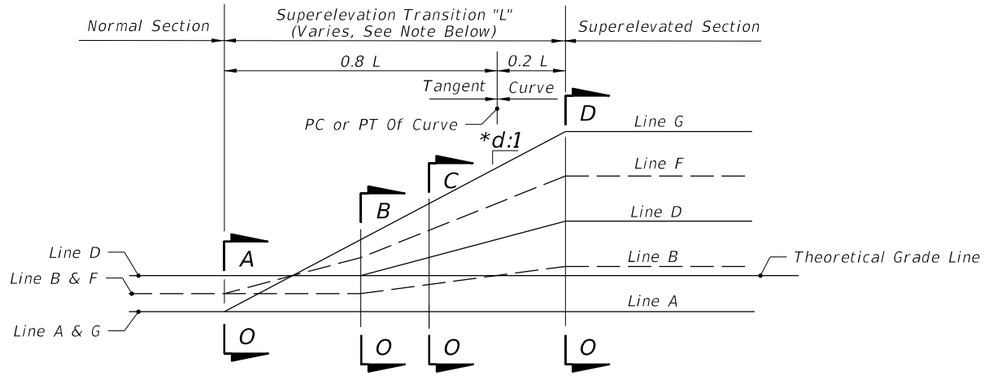
11/01/18			FDOT FY 2020-21 STANDARD PLANS	SUPERELEVATION TRANSITIONS - LOW SPEED HIGHWAYS	000-511	1 of 2



SECTION 0-A to 0-D

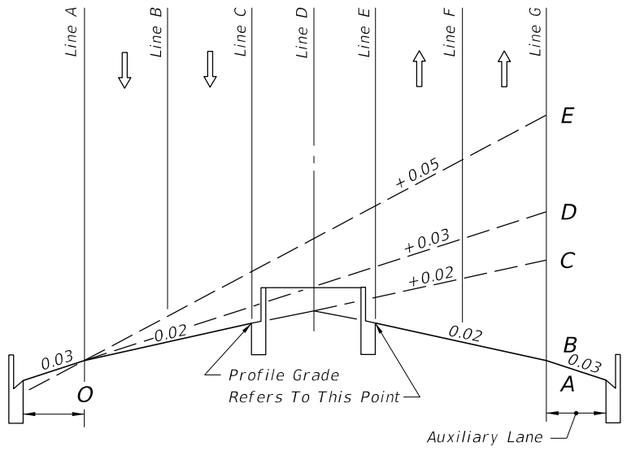


PROFILE

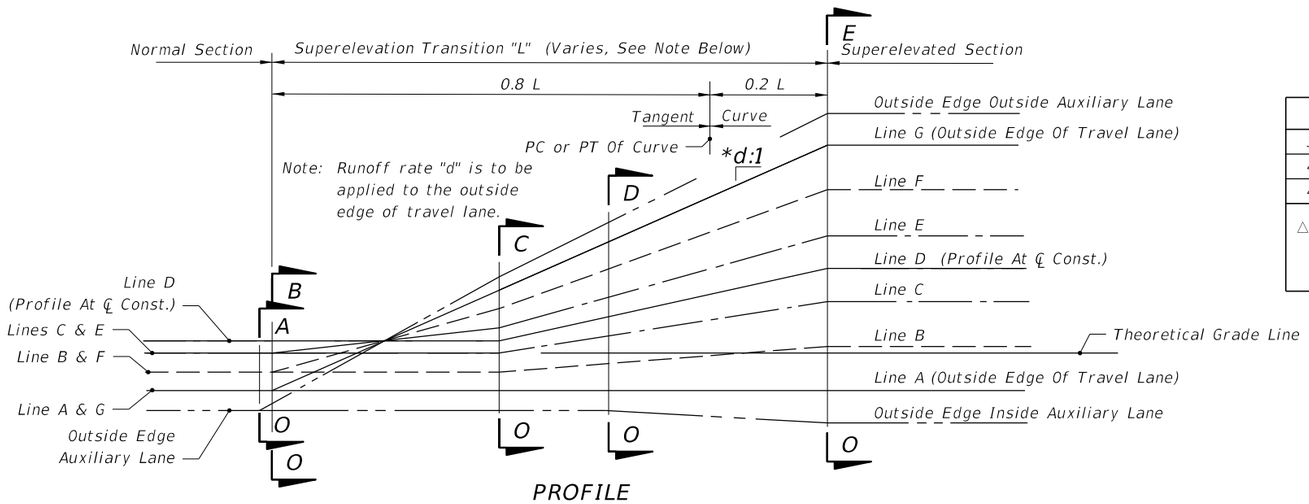
TWO LANES EACH DIRECTION

LINE	DESCRIPTION
A	Inside Travel Lane
B	Inside Lane Line
C	Inside Median Edge Pavement
D	℄ Construction
E	Outside Median Edge Pavement
F	Outside Lane Line
G	Outside Travel Lane

Inside And Outside Are Relative To Curve Center



SECTION 0-A to 0-E



PROFILE

*d (Slope Ratio)	
30 MPH	1: 100
40 MPH	1: 125
45-50 MPH △	1: 150

△ 1: 125 May Be Used For 45 MPH Under Restricted Conditions.

TWO LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANE

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

EXAMPLE SUPERELEVATION SECTIONS AND PROFILES FOR LOW SPEED HIGHWAYS

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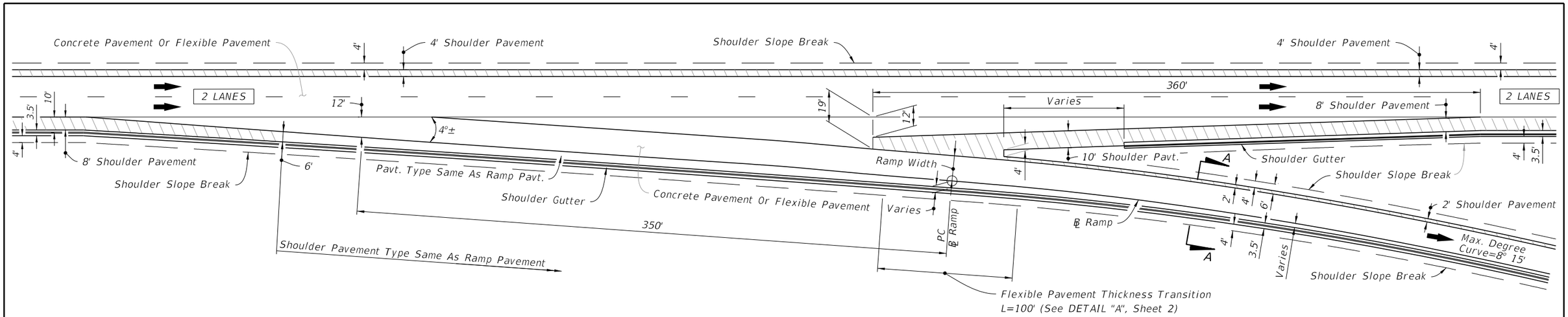
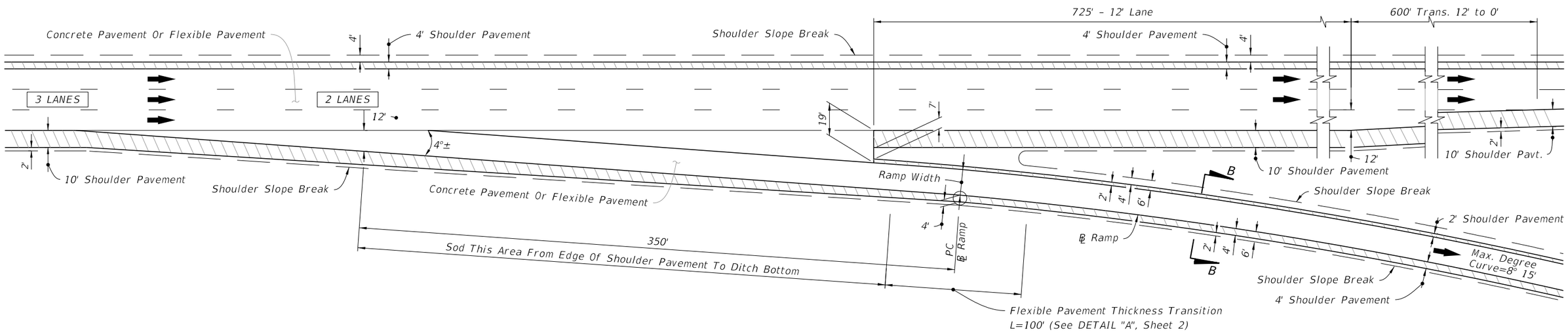
11/01/18			FDOT FY 2020-21 STANDARD PLANS	SUPERELEVATION TRANSITIONS - LOW SPEED HIGHWAYS	000-511	2 of 2



TWO THRU LANES
(Shown With Shoulder Gutter)



THREE APPROACH LANES - TWO THRU LANES
(Shown Without Shoulder Gutter)

GENERAL NOTES:

1. Taper-Type exit and entrance terminals as detailed shall not be used on ramps for which a speed of 50 MPH or greater cannot be maintained. For such ramps, parallel deceleration and acceleration lanes shall be used in place of tapers with lengths set according to AASHTO.

2. Shoulder Pavement:
   A. Concrete Pavement Projects: Where shoulder pavement adjacent to shoulder gutter is less than 6' wide, it shall be identical to the adjacent roadway pavement beginning with the transverse joint nearest the point of 6' width.

   B. Flexible Pavement Projects: Where shoulder pavement used in conjunction with shoulder gutter is less than 6' uniform width, it shall be identical to the adjacent roadway pavement.

3. For concrete pavement joint details and layouts at entrance and exit ramp terminals, see Index 350-001.

LEGEND:

Shoulder Pavement

SINGLE LANE RAMPS - EXIT TERMINALS

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11/01/17					000-525	1 of 5

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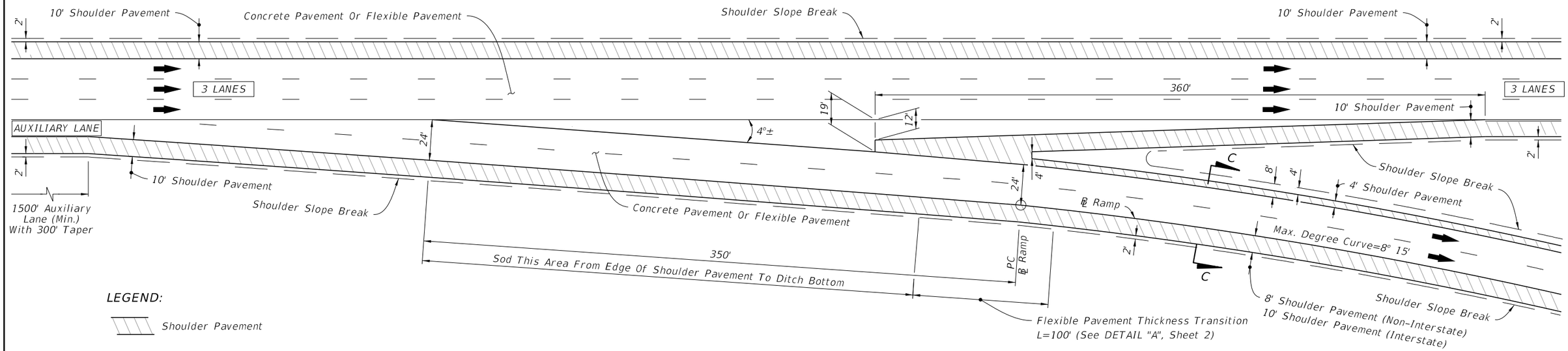
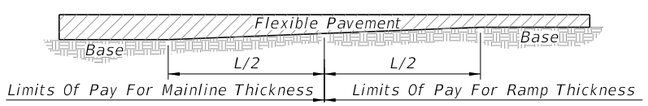
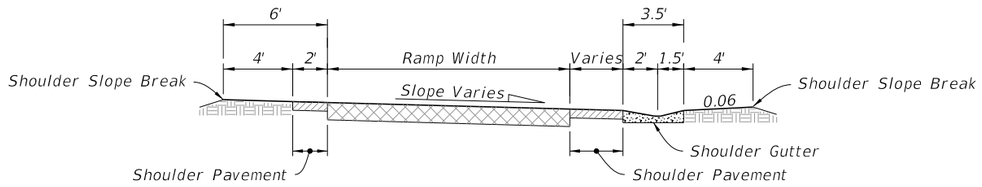


THREE THRU LANES - APPROACH AUXILIARY LANE
(Shown Without Shoulder Gutter)

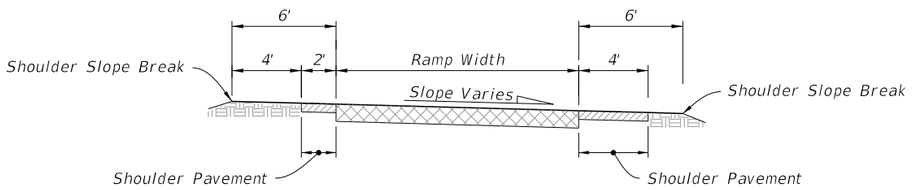


FLEXIBLE PAVEMENT THICKNESS TRANSITION

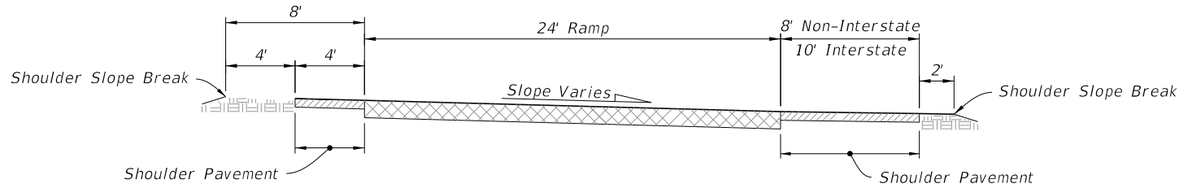
DETAIL "A"



SECTION A-A



SECTION B-B



SECTION C-C

TWO LANE RAMPS - EXIT TERMINALS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	RAMP TERMINALS	000-525	2 of 5

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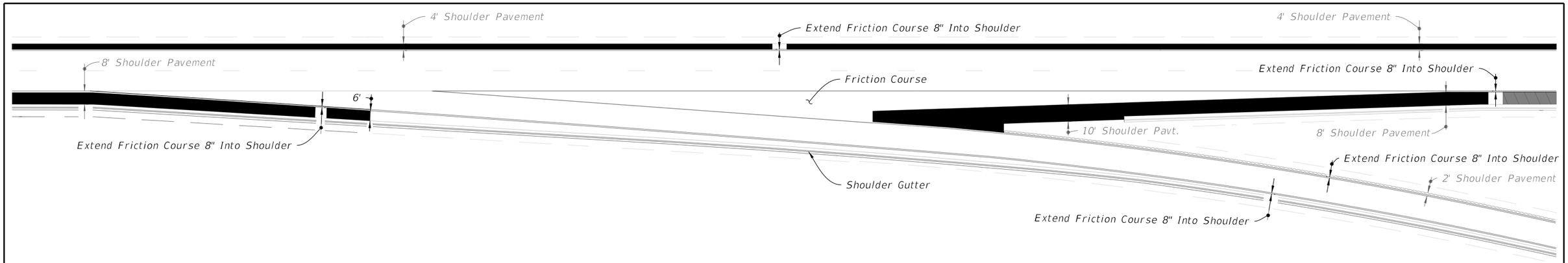
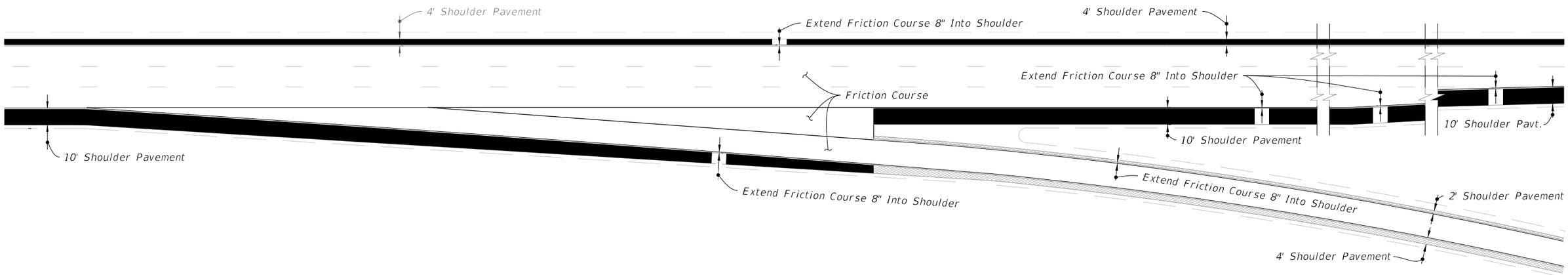
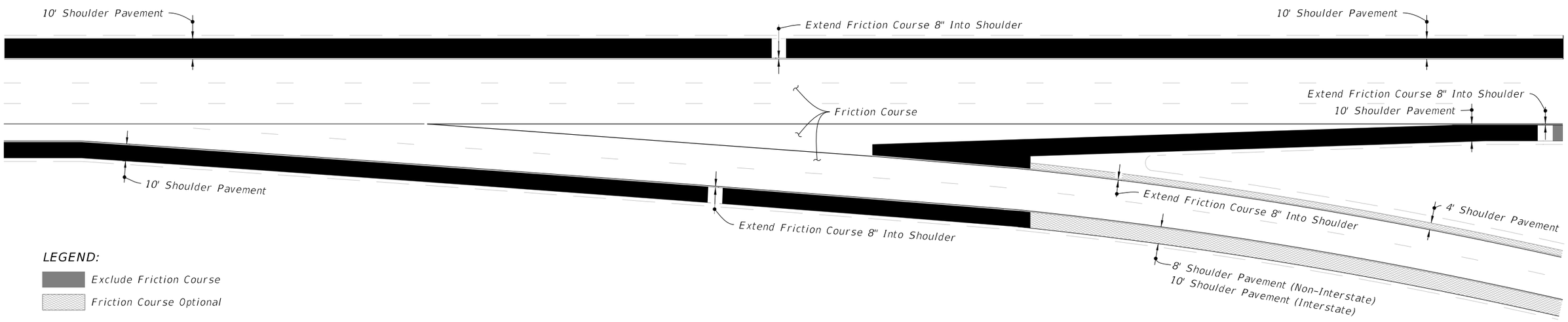


TWO THRU LANES
(Shown With Shoulder Gutter)



THREE APPROACH LANES - TWO THRU LANES
(Shown Without Shoulder Gutter)



THREE THRU LANES - APPROACH AUXILIARY LANE
(Shown Without Shoulder Gutter)

EXIT TERMINALS - FRICTION COURSE LOCATION (FOR FLEXIBLE PAVEMENT)

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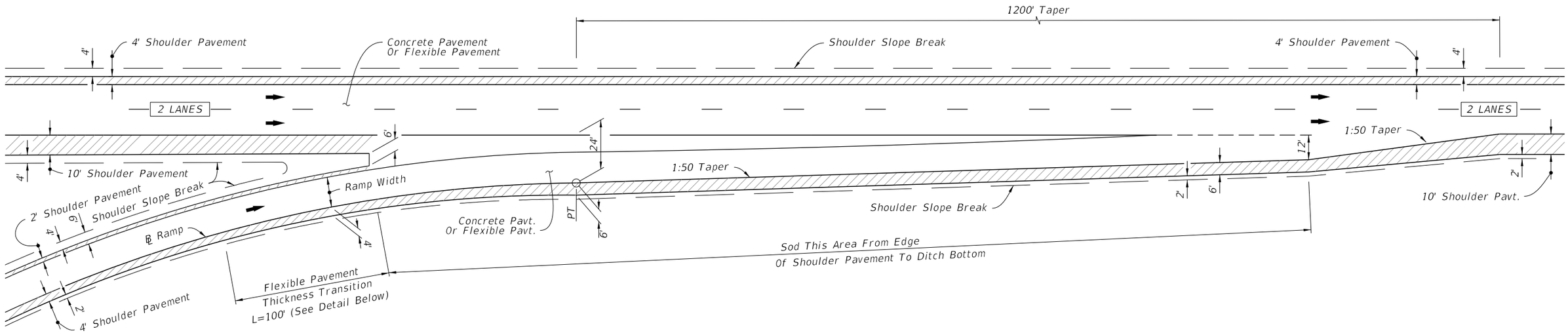
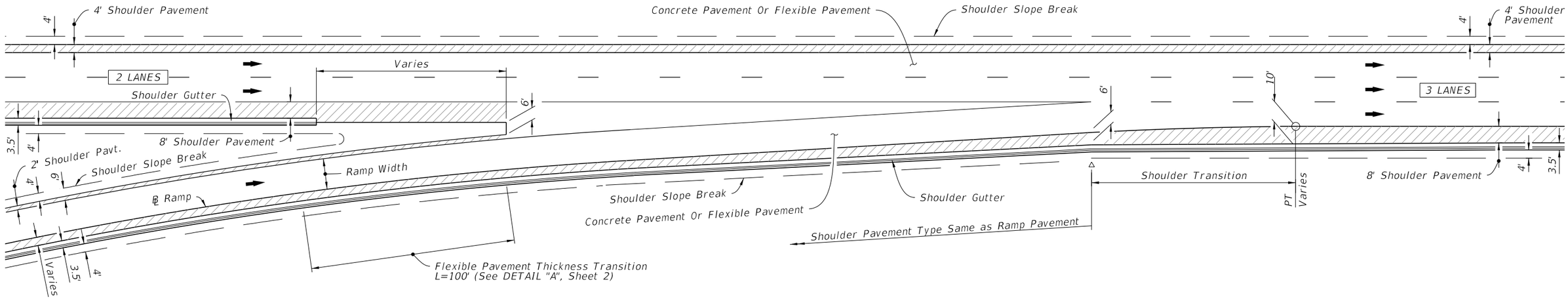
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	RAMP TERMINALS	INDEX	SHEET
11/01/17						000-525	3 of 5



TAPER - TYPE ENTRANCE



PARALLEL - TYPE ENTRANCE

LEGEND:

Shoulder Pavement

SINGLE LANE RAMPS - ENTRANCE TERMINALS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	RAMP TERMINALS	INDEX	SHEET
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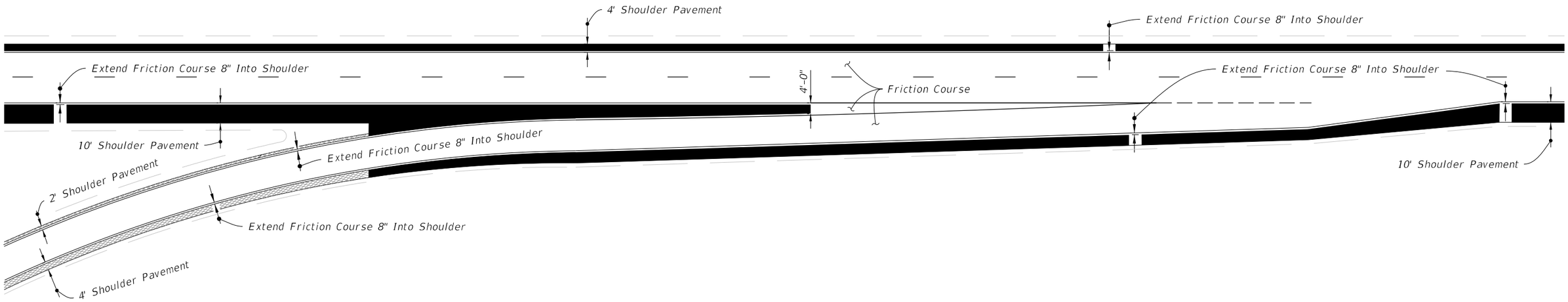
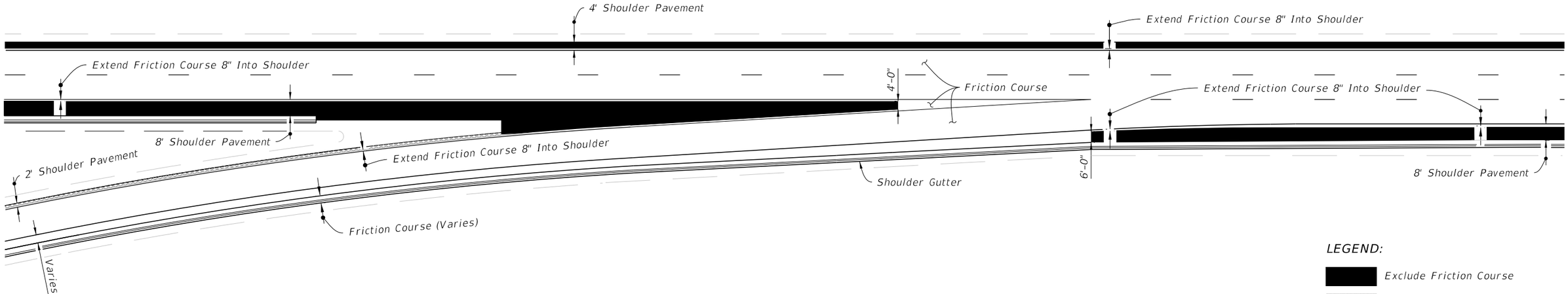


TAPER - TYPE ENTRANCE
(Shown Without Shoulder Gutter)



PARALLEL - TYPE ENTRANCE
(Shown With Shoulder Gutter)

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ENTRANCE TERMINALS - FRICTION COURSE LOCATION (FOR FLEXIBLE PAVEMENT)

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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.

6. Ensure the setback distance is clear of any grass, construction debris, stockpiled materials, equipment, and objects.

7. 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.

8. 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.

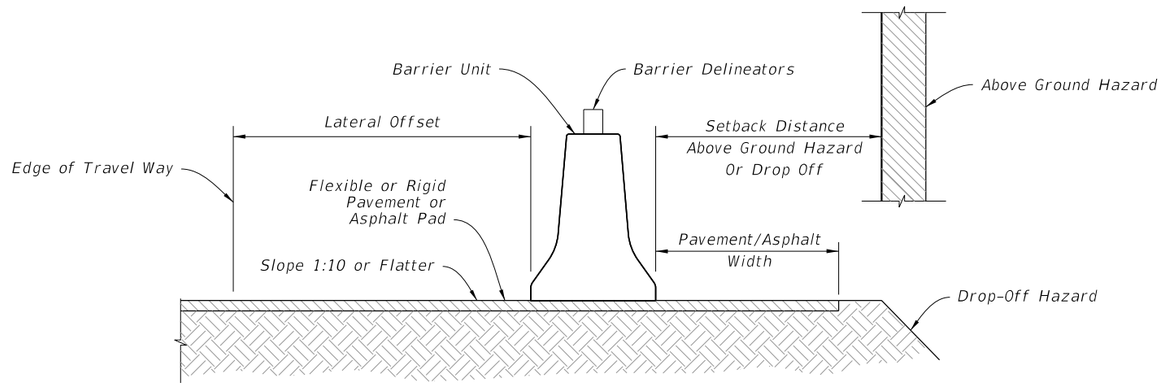
9. Anchor abutting segments of temporary barrier terminated with a Crash Cushion as shown in Index 102-110 or the APL.

10. The requirements of this Index do not apply to Temporary Low Profile Barrier, See Index 102-120.

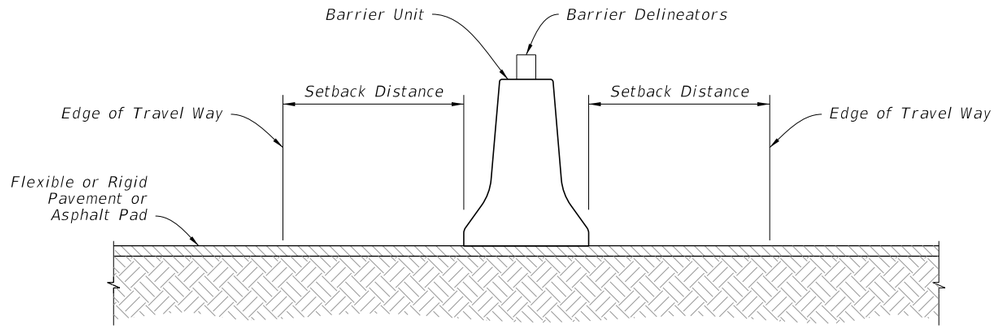
11. Setback requirements below cover most Temporary Barrier options. Provide additional setback distance for APL products that require additional setback (deflection) space.

INSTALLATION DATA			
CONDITION	LATERAL OFFSET	SETBACK DISTANCE	PAVEMENT/ ASPHALT WIDTH
Anchored	2' Min.	2' Min.*	1' Min.
Free-standing	2' Min.	4' Min.	4' Min.

* For Bridge Decks see Index 102-110 or APL.



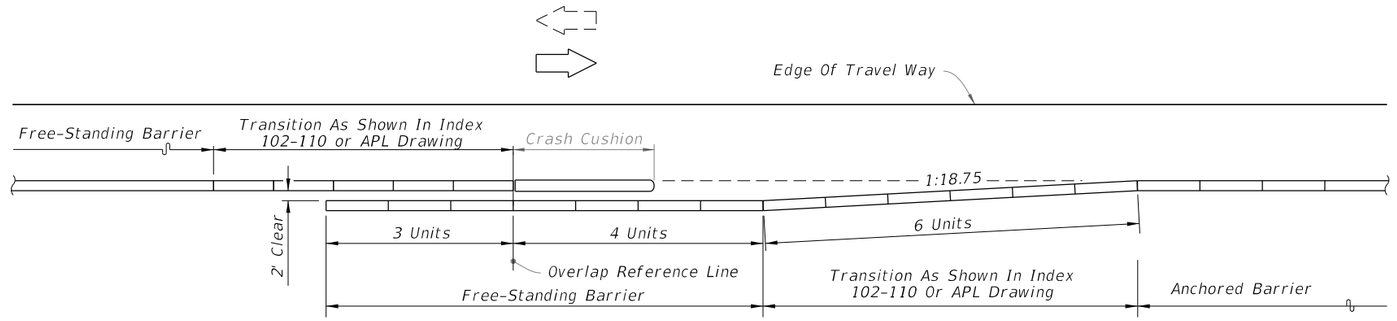
ROADSIDE INSTALLATION



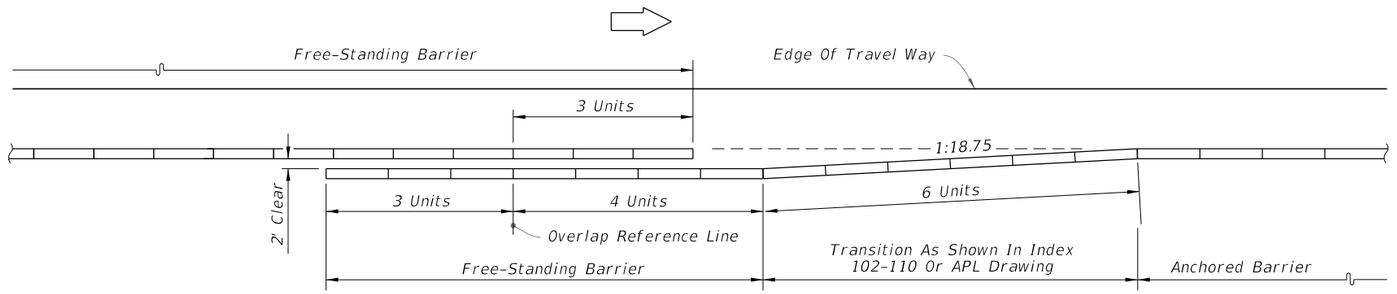
MEDIAN INSTALLATION

2/26/2020 12:57:48 PM

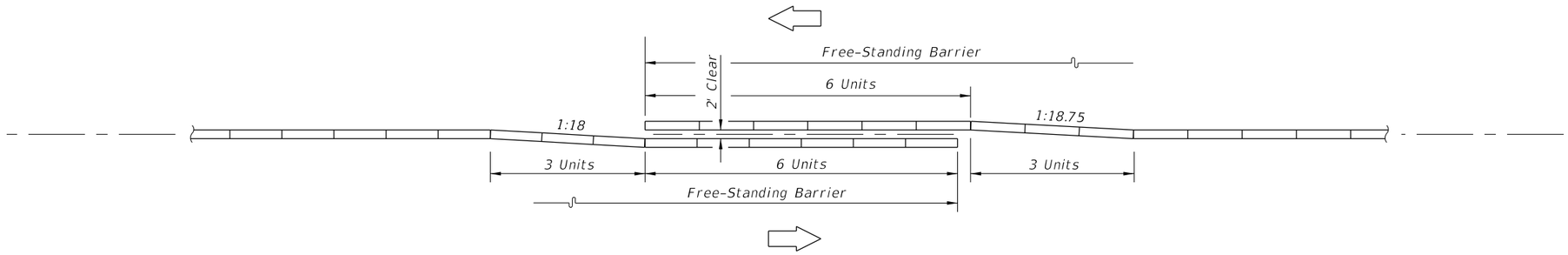
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TEMPORARY BARRIER	INDEX	SHEET
11/01/17						102-100	1 of 3



APPROACH SHOULDER BARRIER TRANSITION ON UNDIVIDED FACILITIES



APPROACH SHOULDER BARRIER TRANSITION ON DIVIDED FACILITIES



MEDIAN BARRIER TRANSITION

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LAST REVISION	REVISION	DESCRIPTION:				
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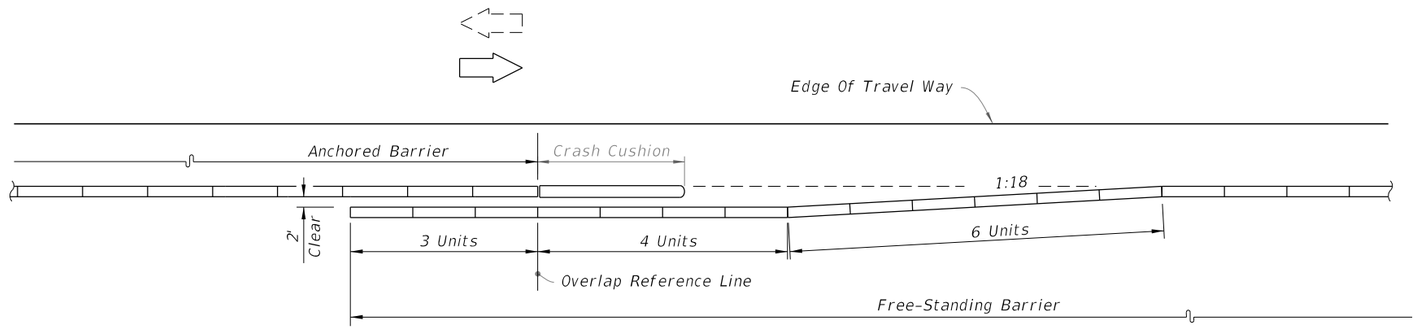
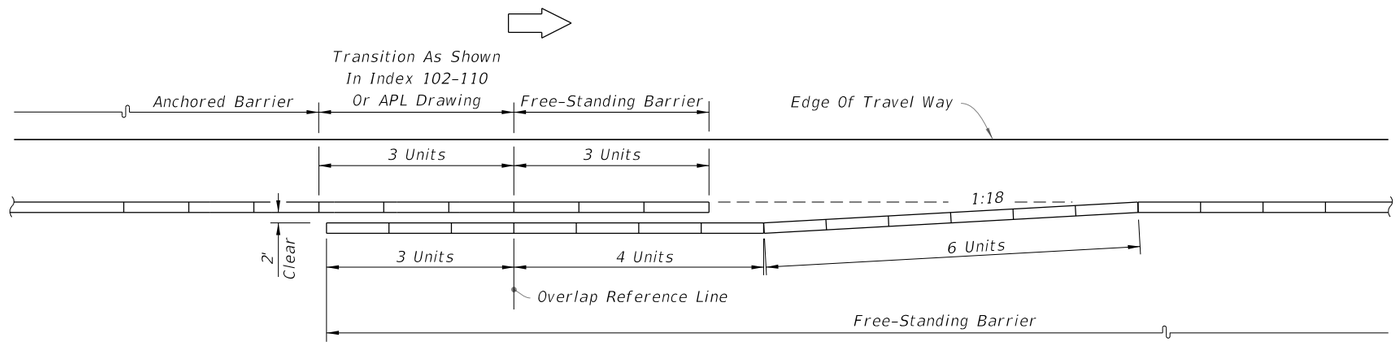


DEPARTURE SHOULDER BARRIER TRANSITION ON UNDIVIDED FACILITIES



DEPARTURE (TRAILING) SHOULDER BARRIER TRANSITION ON DIVIDED FACILITIES

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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 $\frac{3}{8}$" 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 $3\frac{5}{8}$" 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.

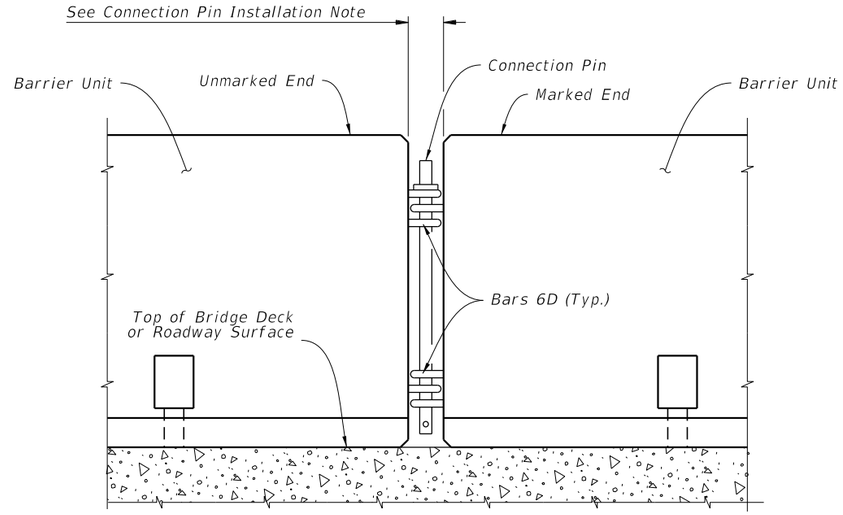
8. Type K Anchored to Free-Standing transitions: Use the 3-3-2-1 Anchorage Transition Detail when transitioning Free-Standing and Anchored Units or when connecting Free-Standing runs to Crash Cushions, as shown in this Index.

NOTES FOR THRIE-BEAM GUARDRAIL SPLICE INSTALLATIONS:

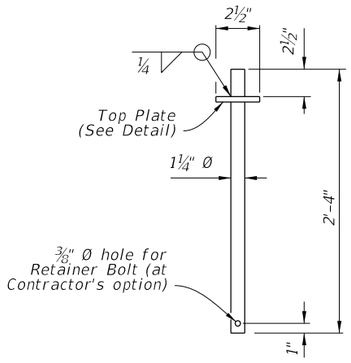
1. THRIE-BEAM GUARDRAIL: Provide Thrie-Beam Guardrail for splices meeting the requirements of specification 967 and as follows: Two panels per splice (One panel per side) of Class B (10 Gauge), or Four panels per splice (Two nested panels per side) of Class A (12 Gauge). Use a 12'-6" guardrail panel.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

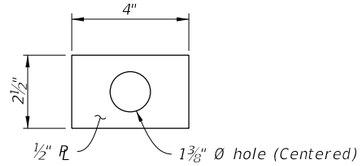
2. GUARDRAIL OFFSET BLOCKS: Provide and install timber Offset Blocks meeting the requirements of Specification 967. Field trim Offset Blocks as required for proper fit. Utilize Offset Blocks as shown and required in order to prevent bending or kinking of Thrie-Beam Guardrail panels.

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

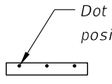


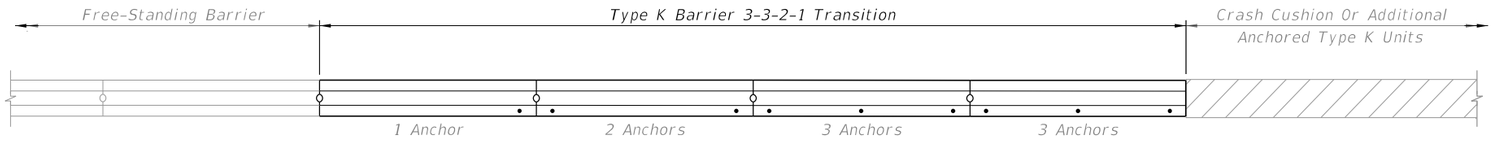


TOP PLATE DETAIL

CONNECTION PIN DETAIL

LEGEND:





3-3-2-1 ANCHORAGE TRANSITION DETAIL

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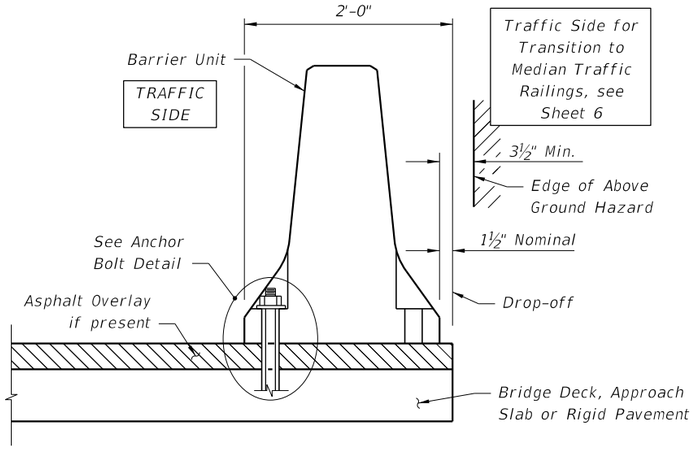
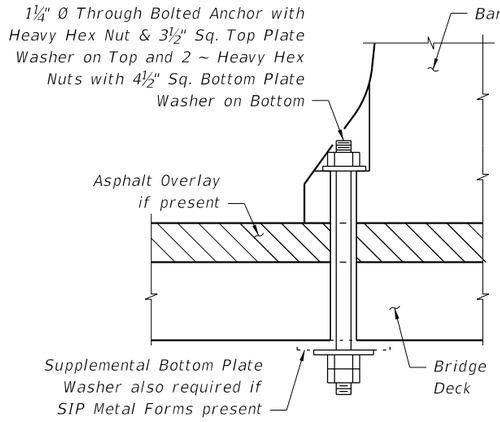
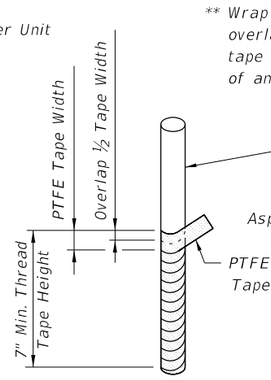


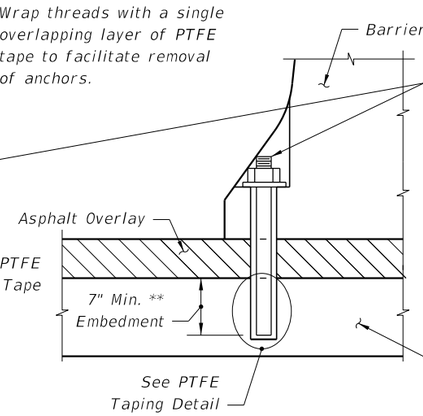
TYPICAL SECTION



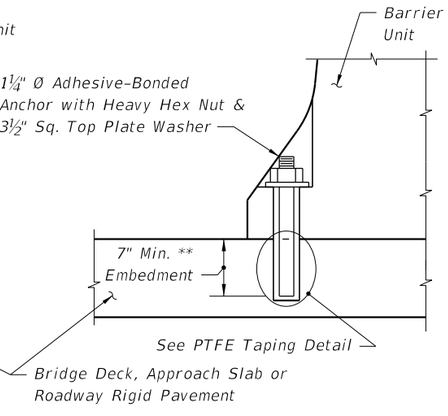
THROUGH BOLTED ANCHOR



PTFE TAPING DETAIL



WITH ASPHALT OVERLAY



WITHOUT ASPHALT OVERLAY

ADHESIVE BONDED ANCHOR INSTALLATION

NOTES FOR BOLTED INSTALLATIONS:

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.

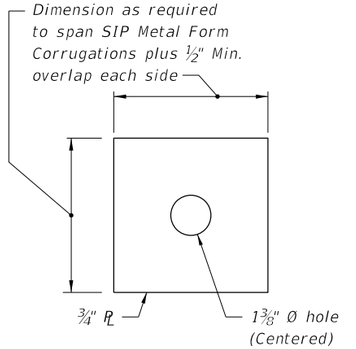
ANCHOR BOLTS, NUTS AND WASHERS: When using Adhesive-Bonded Anchor Bolts, use fully threaded rods in accordance with ASTM F 1554 Grade 36. Install Anchor Bolts for through bolting in accordance with ASTM A 307 or ASTM F 1554 Grade 36. Install nuts in accordance with ASTM A 563 or ASTM A 194. Install Flat 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 ½". 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.

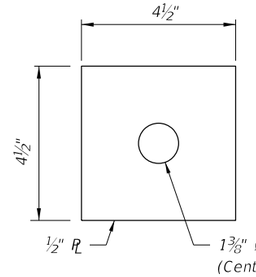
Omit one (1) Anchor Bolt within a single Barrier Unit if a conflict exists between the Anchor Bolt location and a bridge deck expansion joint or drain. The adjacent Barrier Units must each be installed with the standard three (3) Anchor Bolts.

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.

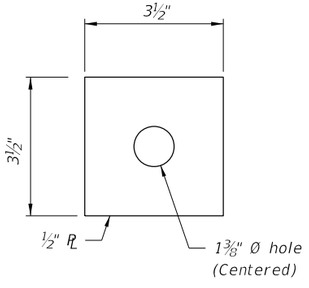
ADHESIVE-BONDING MATERIAL SYSTEMS: When using Adhesive Bonding Material Systems for Anchor Bolts, Use Type HSHV in accordance with Specification 937 and installed them in accordance with Specification 416. Prior to installation of the Barrier Units in the Plan location(s), install a demonstration Barrier 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.



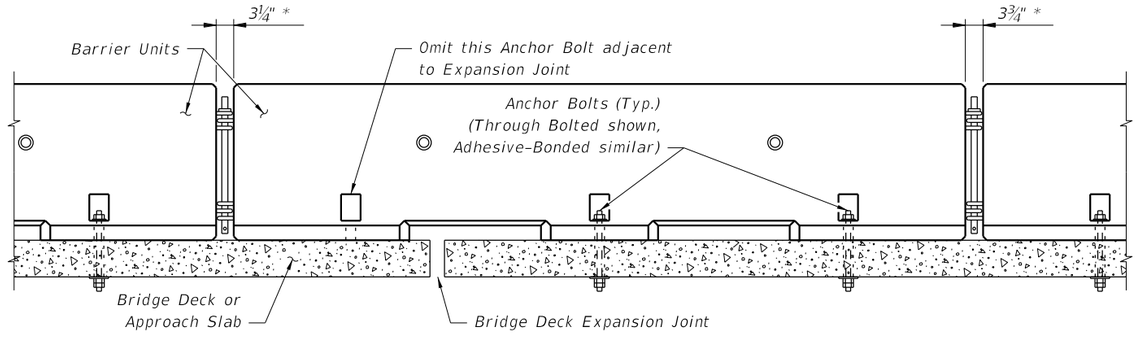
SUPPLEMENTAL BOTTOM PLATE WASHER DETAIL



BOTTOM PLATE WASHER DETAIL



TOP PLATE WASHER DETAIL



* To accommodate movement at Expansion Joint, set Barrier Units with 3¾" gap at locations shown.

TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC

ANCHORED INSTALLATIONS - BOLTED

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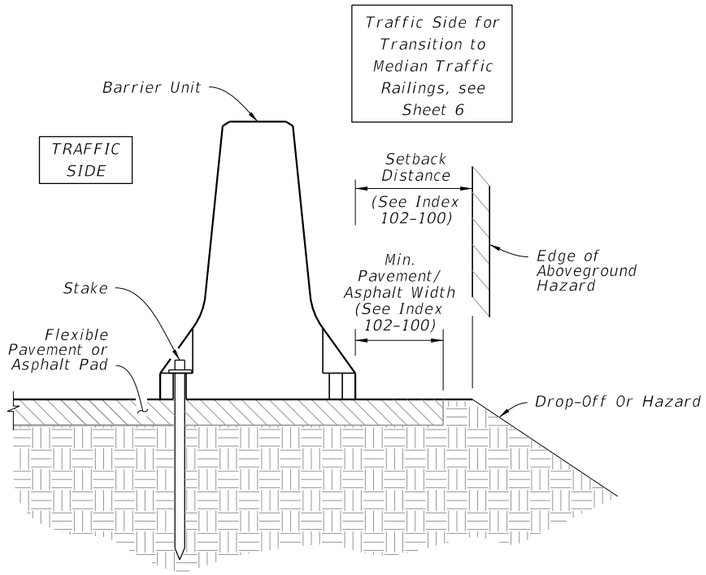
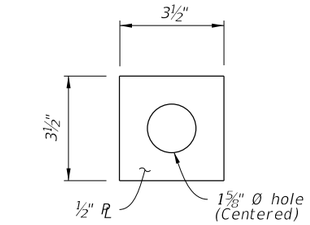
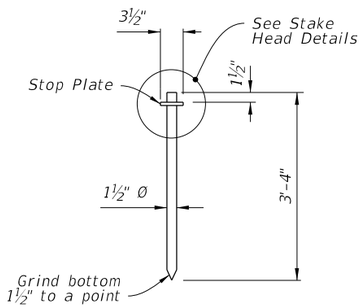


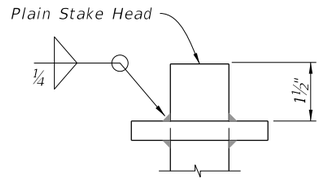
TYPICAL SECTION



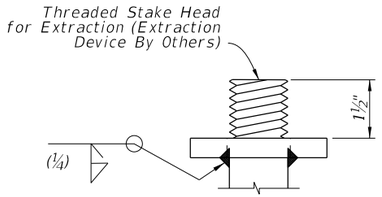
STOP PLATE DETAIL



STAKE DETAIL



PLAIN STAKE HEAD DETAIL



OPTIONAL EXTRACTION STAKE HEAD DETAIL

NOTES FOR STAKED INSTALLATIONS:

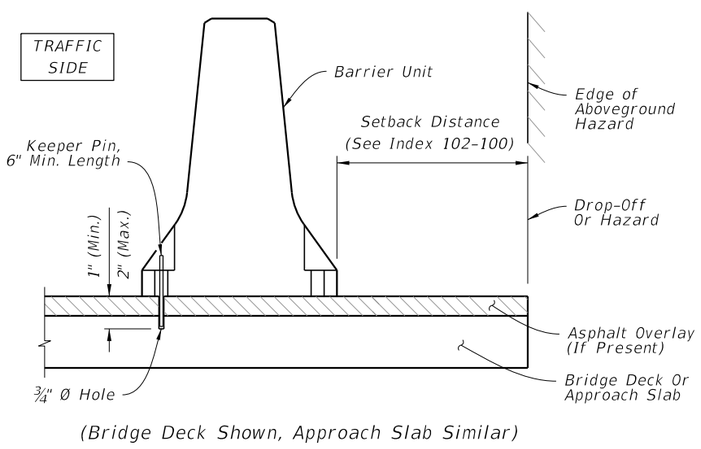
LIMITATION OF USE: This installation technique can only be used on flexible pavement or an Asphalt Pad as shown. Stakes must not be installed on both sides of the Barrier Units.

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

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

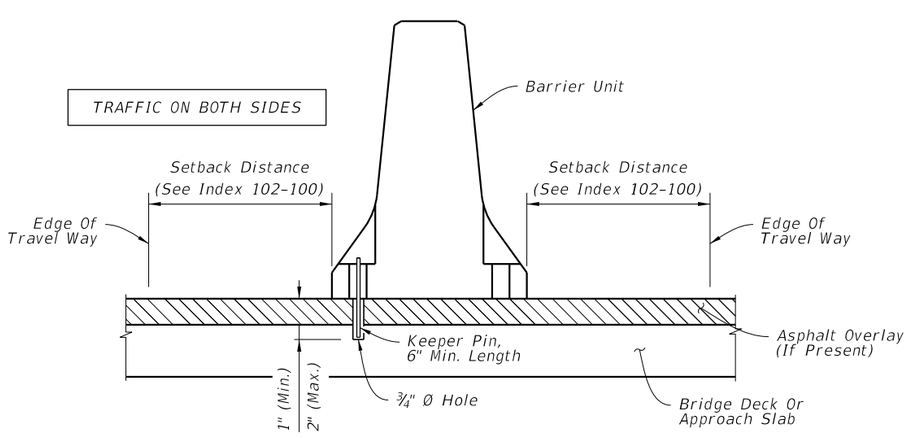
BURIED UTILITIES: Prior to installation of Stakes verify locations of all adjacent buried utilities, drainage structures, pipes, etc. If conflicts between Stake locations and buried elements exist, a maximum of two (2) Stakes within a single Barrier Unit may be omitted if the adjacent Barrier Units are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

ANCHORED INSTALLATIONS - STAKED

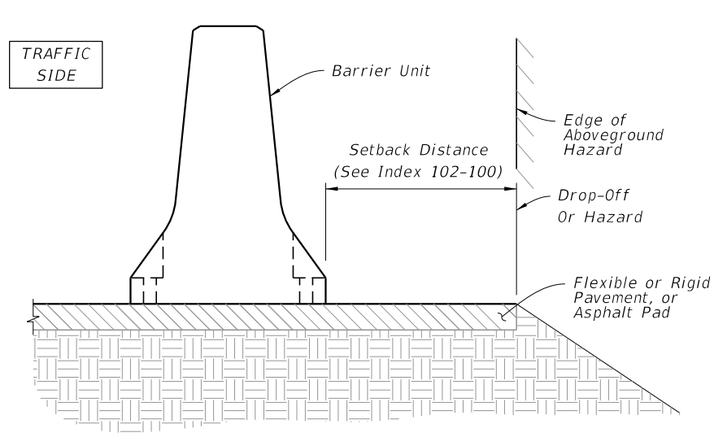


(Bridge Deck Shown, Approach Slab Similar)

TYPICAL BRIDGE SECTION



TYPICAL MEDIAN SECTION



TYPICAL ROADWAY SECTION

NOTES FOR FREE-STANDING INSTALLATION:

1. For Bridge Decks only, use Keeper Pins that are ½" 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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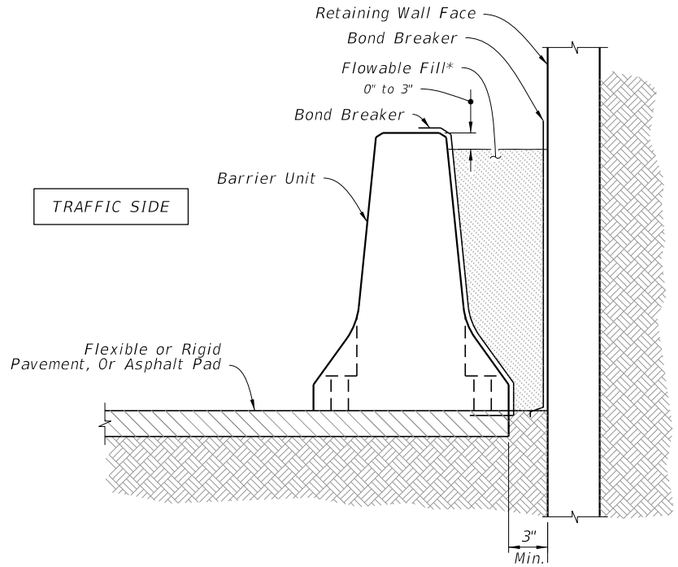
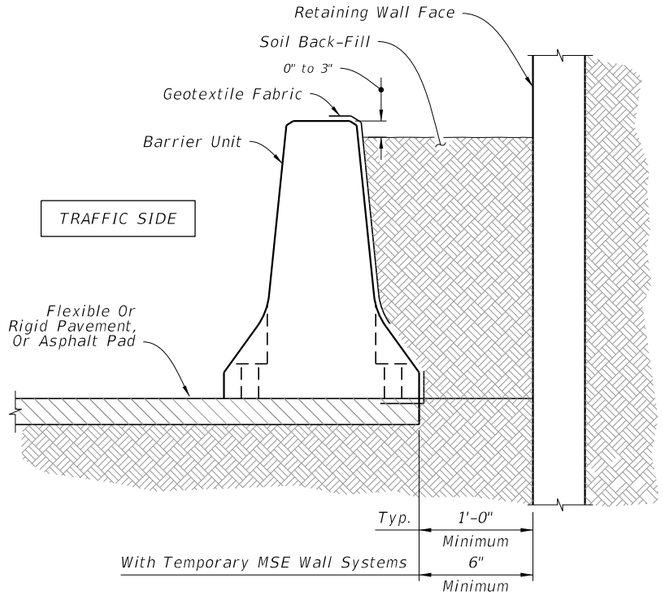


TYPICAL SECTION
ADJACENT TO RETAINING WALL WITH FLOWABLE FILL BACK-FILL

*FLOWABLE FILL: Provide Excavatable Flowable Fill in accordance with Specification 121.

FLOWABLE FILL BACK-FILL ROADSIDE INSTALLATIONS

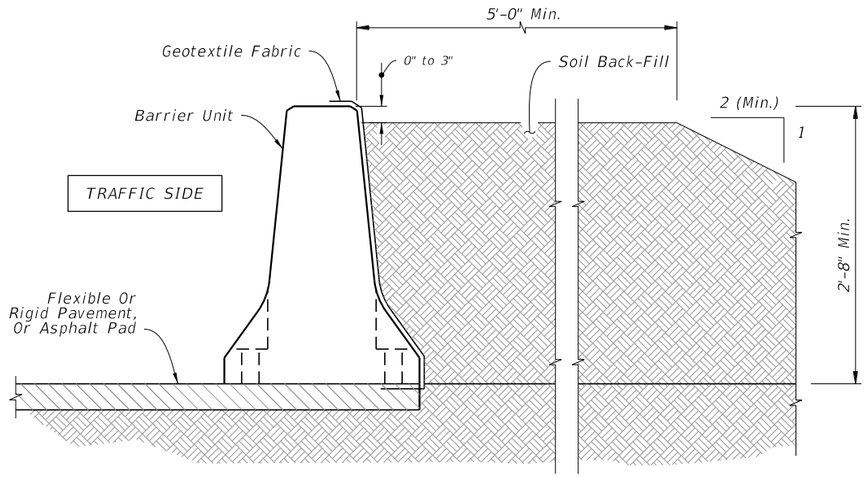


TYPICAL SECTION
ADJACENT TO RETAINING WALL WITH SOIL BACK-FILL

NOTES FOR SOIL BACK-FILLED ROADWAY INSTALLATIONS:

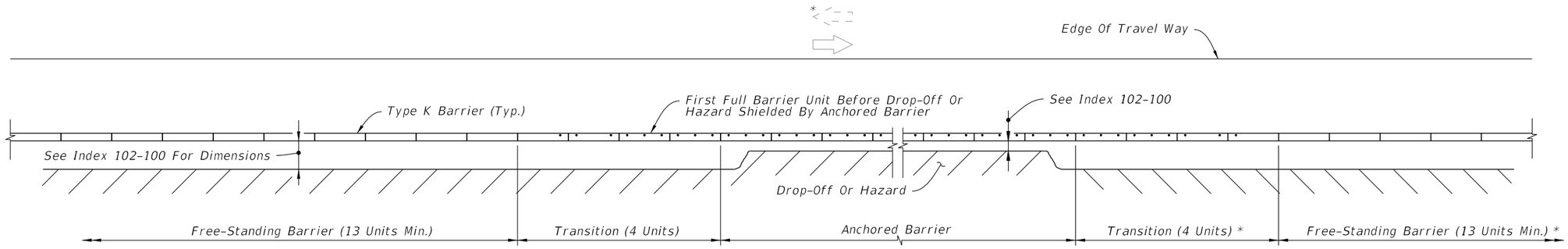
SOIL BACK-FILL MATERIAL: Provide Back-Fill Material consisting of any available clean soil. Compact Back-Fill Material until the soil mass is firm and unyielding. Provide erosion control as specified in the Plans. If none is specified in the Plans, provide erosion control as required to maintain the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

GEOTEXTILE 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 / Drain Slots and open vertical joints between Barrier Units.

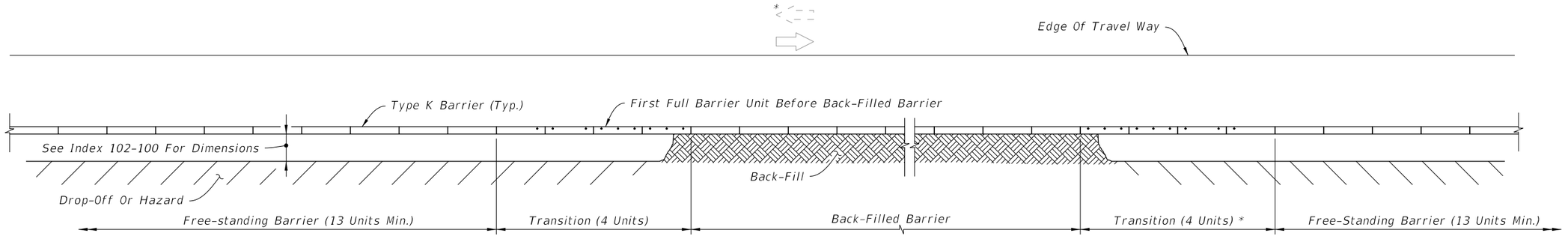


TYPICAL SECTION
WITH SOIL BACK-FILL

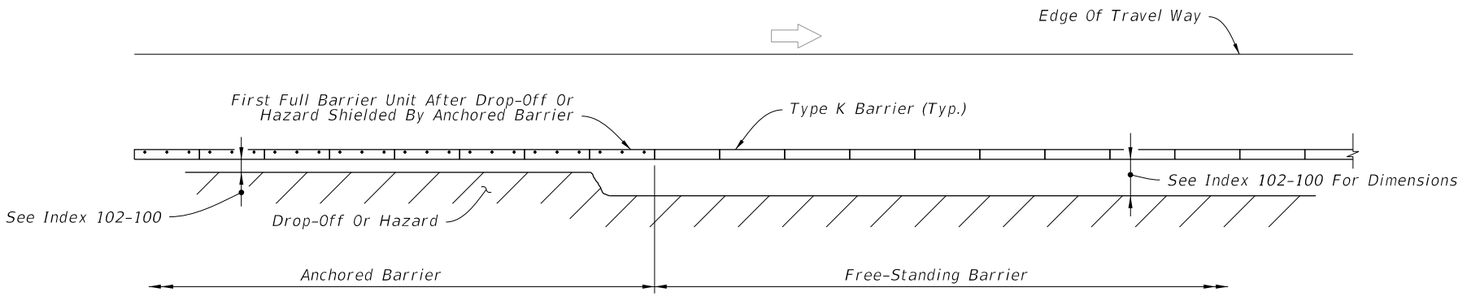
SOIL BACK-FILLED ROADSIDE INSTALLATIONS



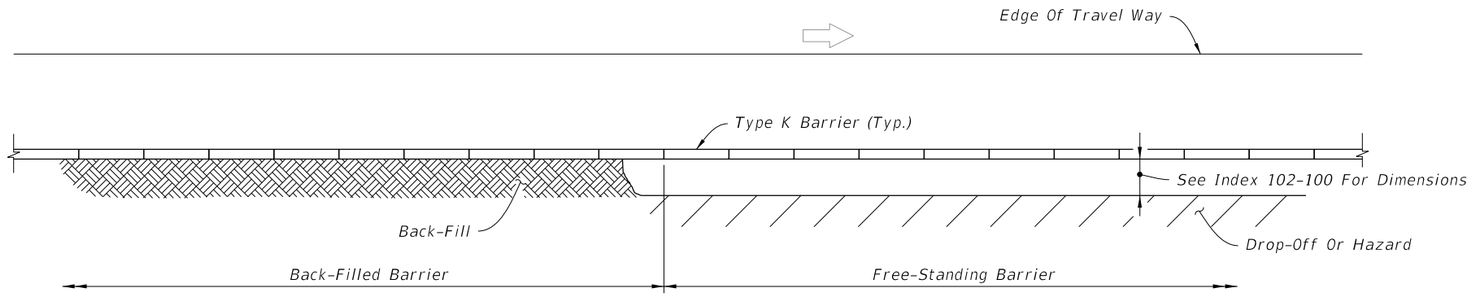
APPROACH TRANSITION FROM FREE-STANDING TO ANCHORED TYPE K TEMPORARY CONCRETE BARRIERS



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



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



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

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

LEGEND:

Dot indicates number and position of Bolts or Stakes

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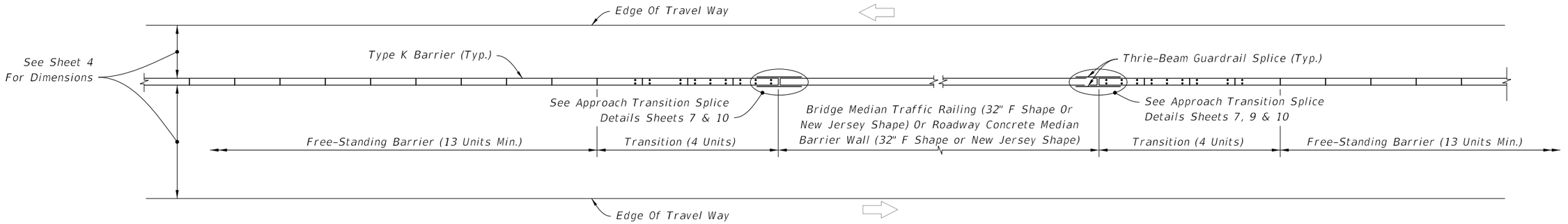
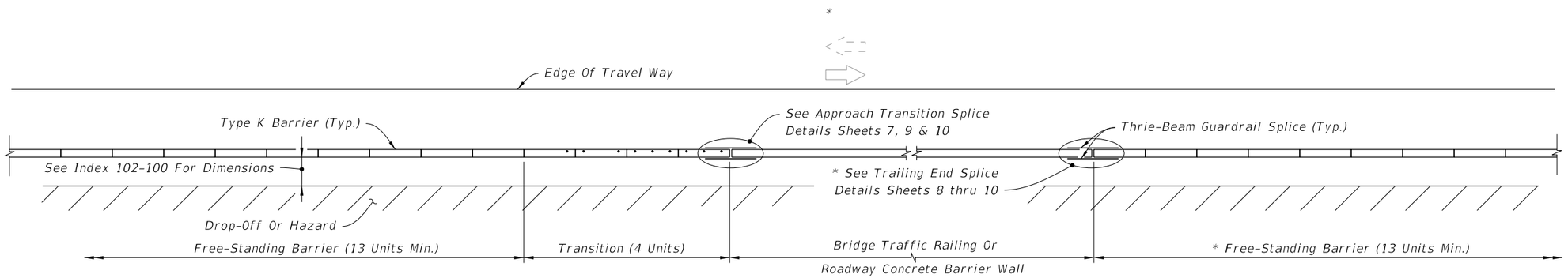
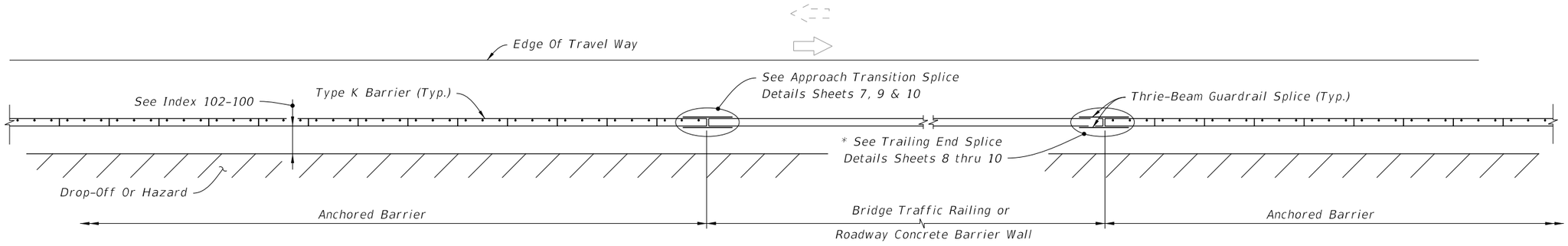


TRANSITION FROM FREE-STANDING TYPE K TEMPORARY CONCRETE BARRIERS TO BRIDGE MEDIAN TRAFFIC RAILING OR ROADWAY MEDIAN CONCRETE BARRIER WALL



TRANSITION FROM FREE-STANDING TYPE K TEMPORARY CONCRETE BARRIERS TO BRIDGE TRAFFIC RAILING OR ROADWAY CONCRETE BARRIER WALL



TRANSITION FROM ANCHORED TYPE K TEMPORARY CONCRETE BARRIERS TO BRIDGE TRAFFIC RAILING OR ROADWAY CONCRETE BARRIER WALL

* **NOTE:**
Where barrier is located within clear zone of opposing traffic, approach transition is required.

LEGEND:

Dot indicates number and position of Bolts or Stakes

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TYPE K TEMPORARY CONCRETE BARRIER SYSTEM	INDEX	SHEET
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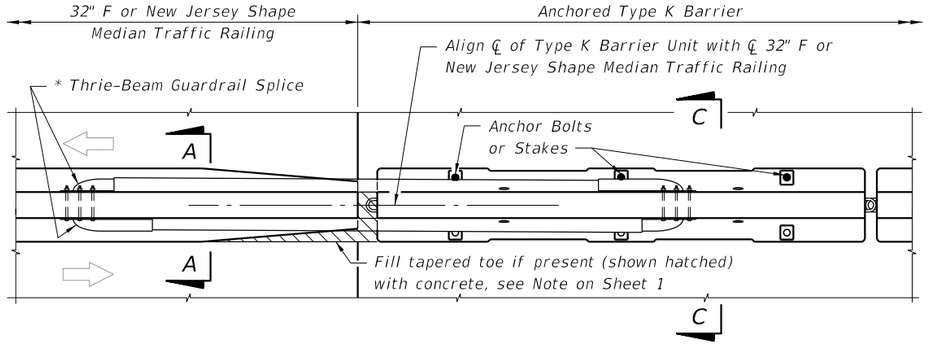
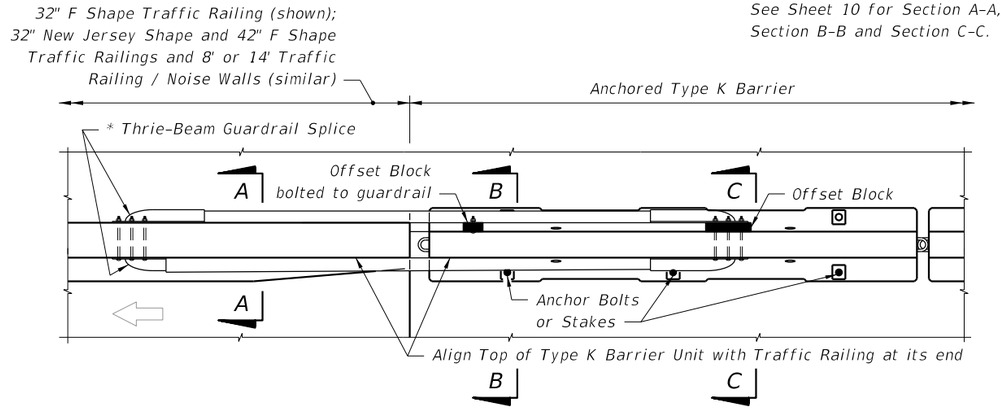
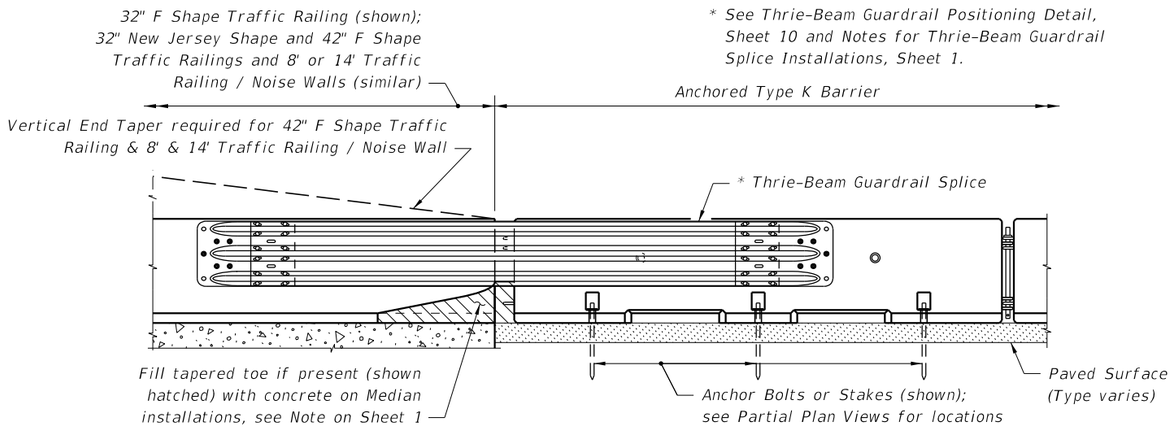


PARTIAL PLAN VIEW AT MEDIAN TRAFFIC RAILING



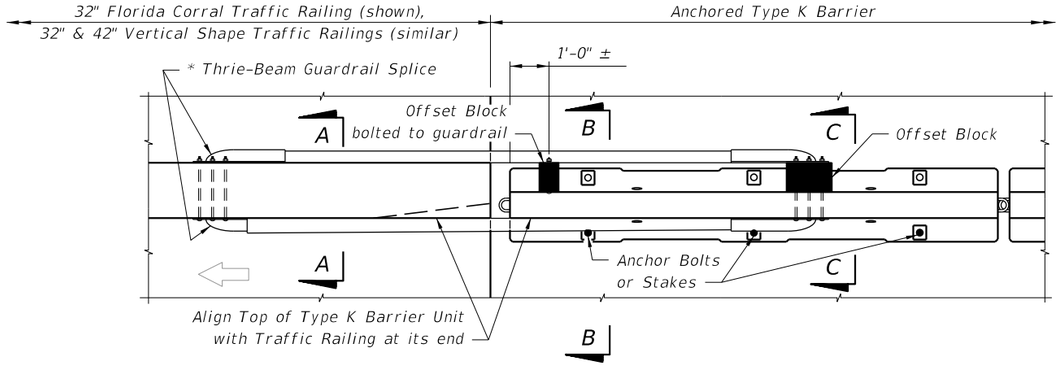
Cross References:
See Sheet 10 for Section A-A,
Section B-B and Section C-C.

PARTIAL PLAN VIEW AT SHOULDER TRAFFIC RAILING



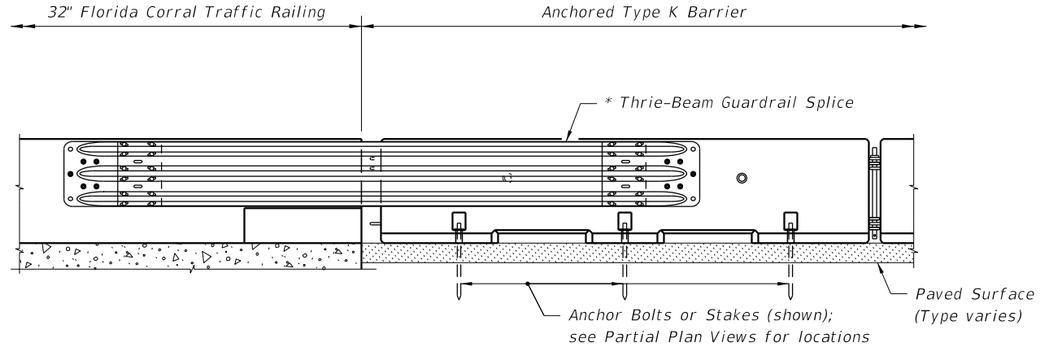
PARTIAL ELEVATION VIEW

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

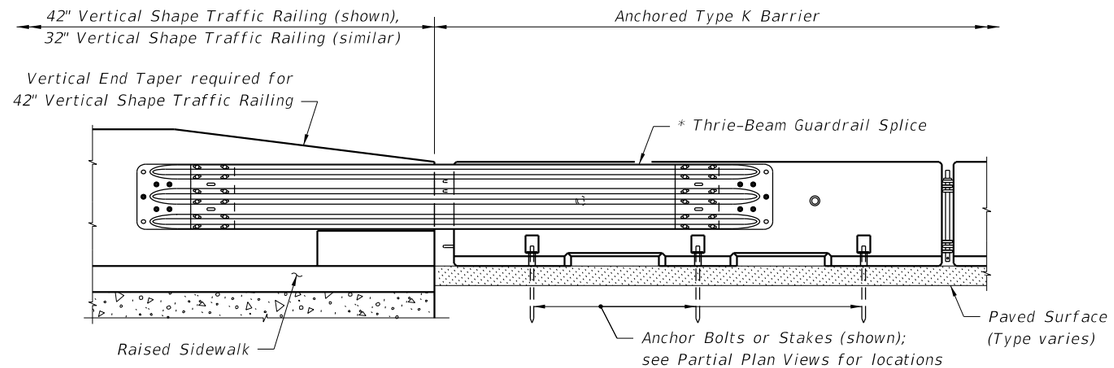


PARTIAL PLAN VIEW

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



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

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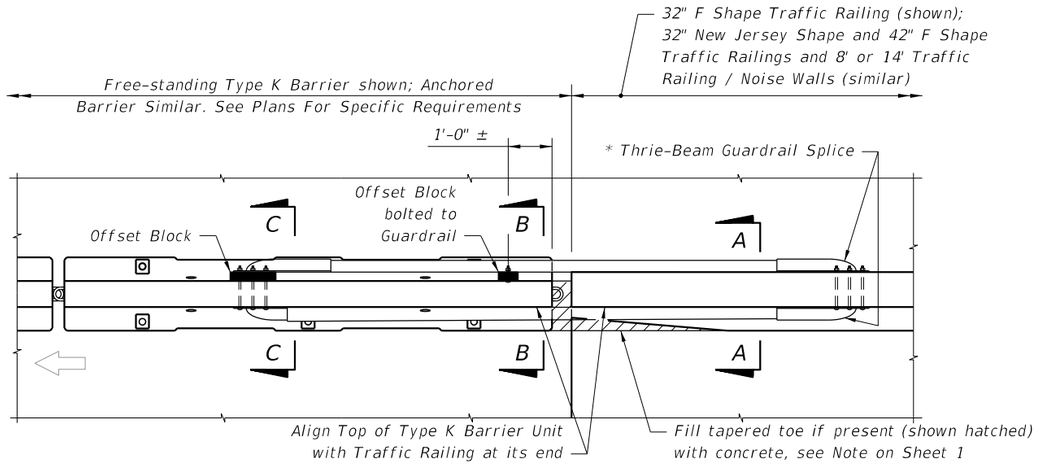
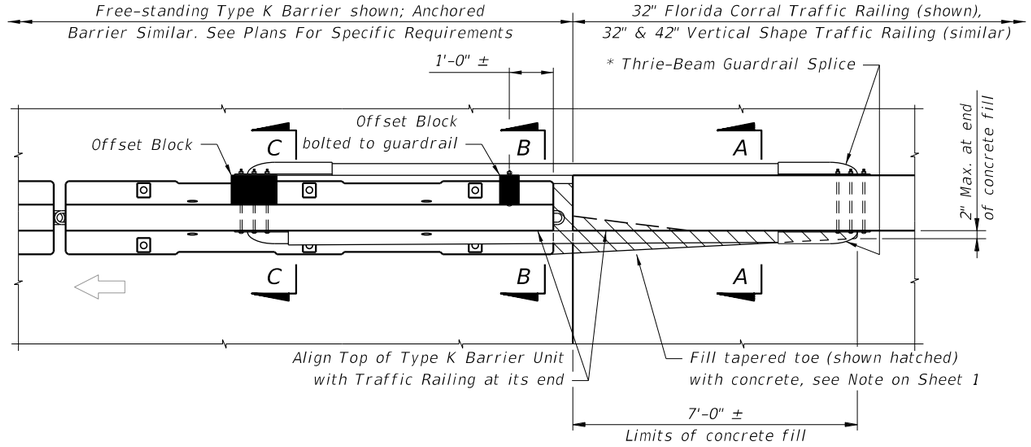
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TYPE K TEMPORARY CONCRETE BARRIER SYSTEM	102-110	7 of 17

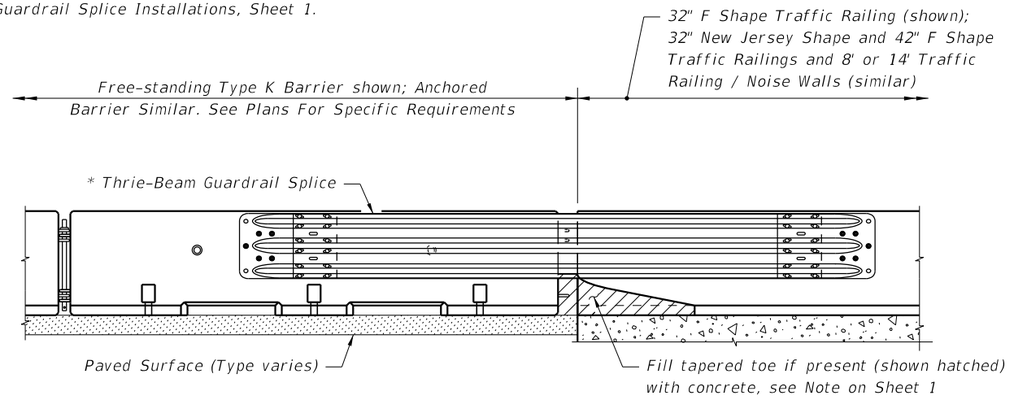


PARTIAL PLAN VIEW



PARTIAL PLAN VIEW

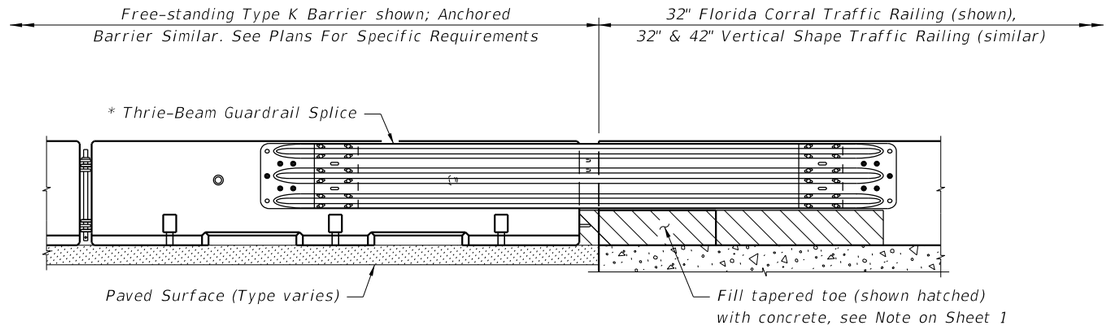
* See Thrie-Beam Guardrail Positioning Detail, Sheet 10 and Notes for Thrie-Beam Guardrail Splice Installations, Sheet 1.



PARTIAL ELEVATION VIEW

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

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



PARTIAL ELEVATION VIEW

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

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

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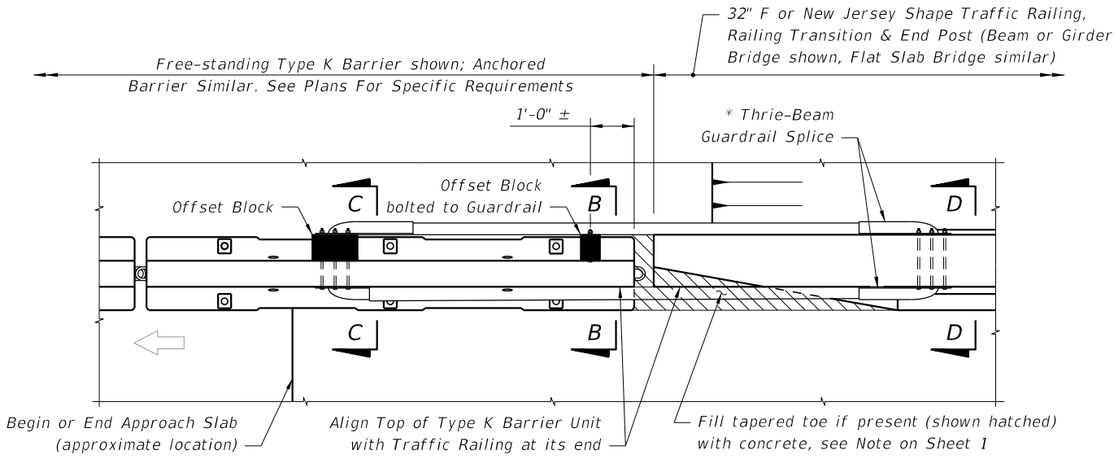
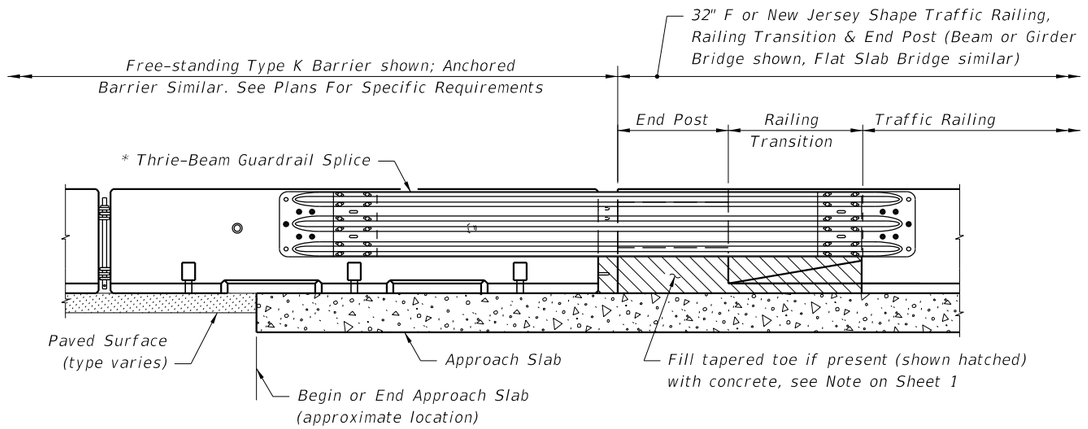
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	TYPE K TEMPORARY CONCRETE BARRIER SYSTEM	INDEX 102-110	SHEET 8 of 17



PARTIAL PLAN VIEW

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

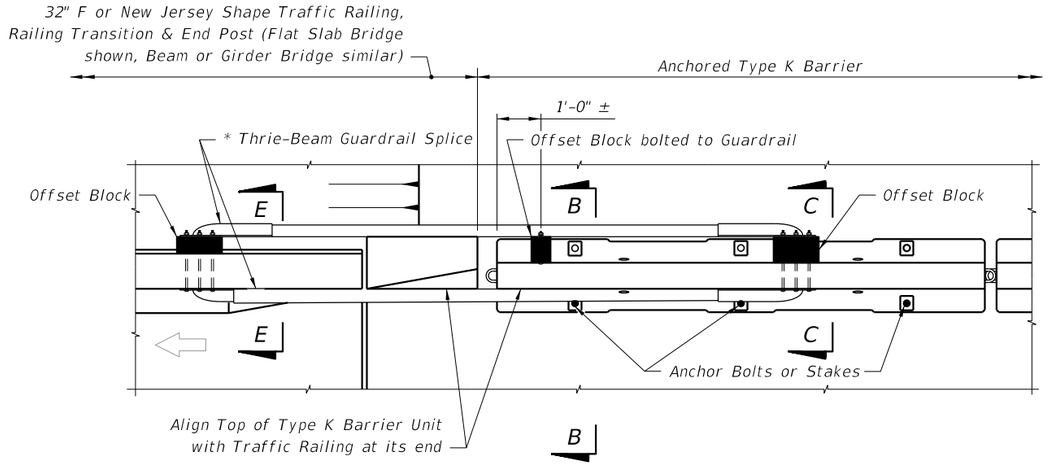


PARTIAL ELEVATION VIEW

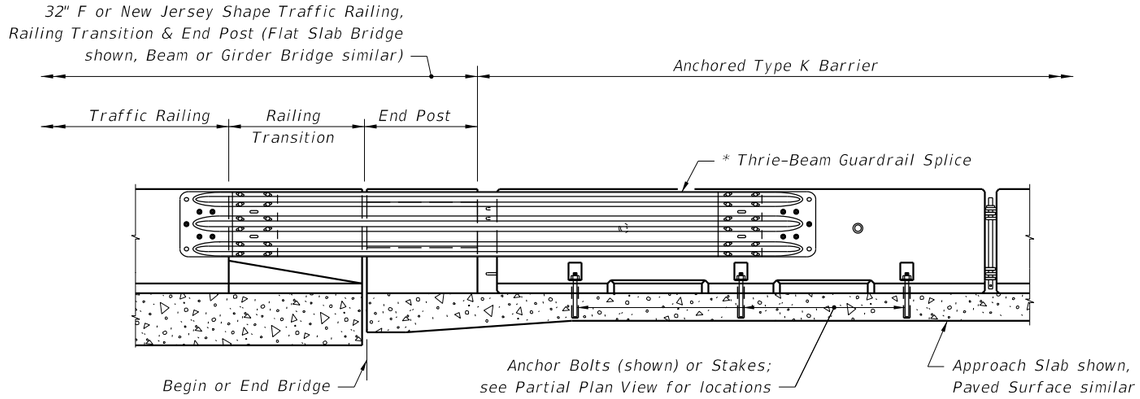
Cross References:
See Sheet 10 for Section B-B,
Section C-C and Section D-D.

TRAILING END SPLICE DETAIL

FOR 32" F AND NEW JERSEY SHAPE TRAFFIC RAILINGS
WITH RAILING TRANSITION AND END POST



PARTIAL PLAN VIEW



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

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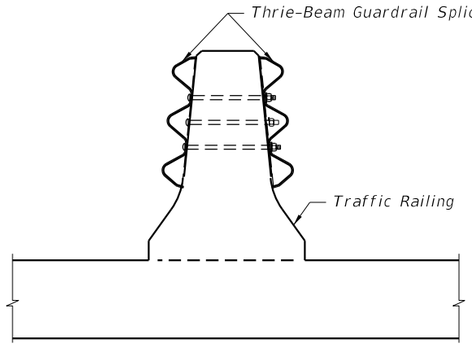
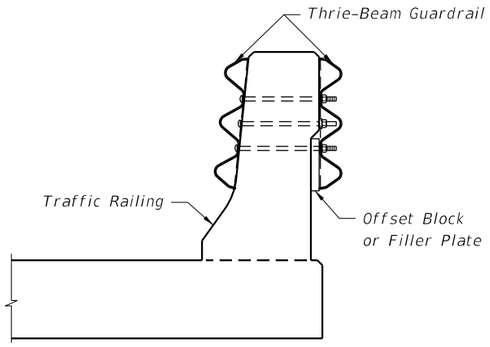
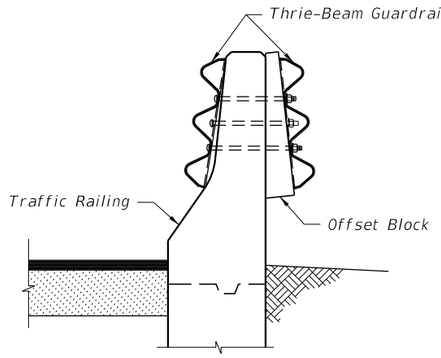
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	TYPE K TEMPORARY CONCRETE BARRIER SYSTEM	INDEX 102-110 / SHEET 9 of 17



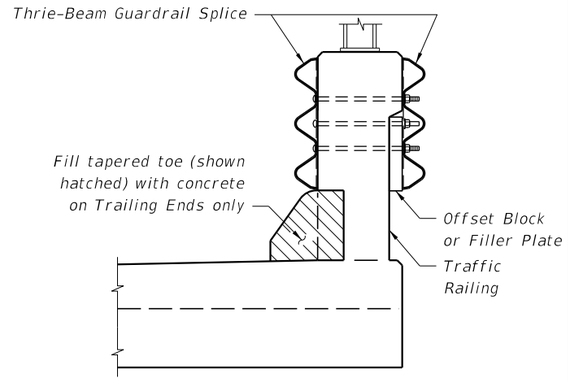
SECTION A-A
32" F Shape Median Traffic Railing (shown), Median Concrete Barrier Wall (similar)



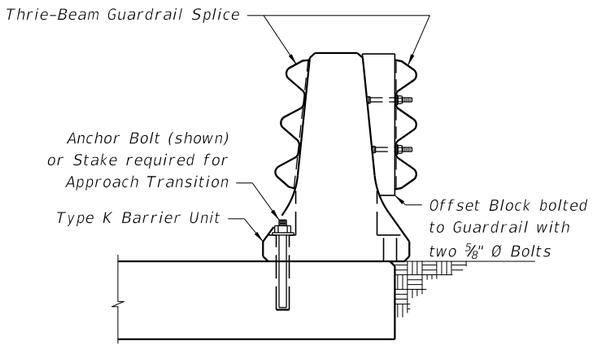
SECTION A-A
32" F Shape Traffic Railing (shown), 42" Traffic Railing and 8' & 14' Traffic Railing / Noise Walls (similar)



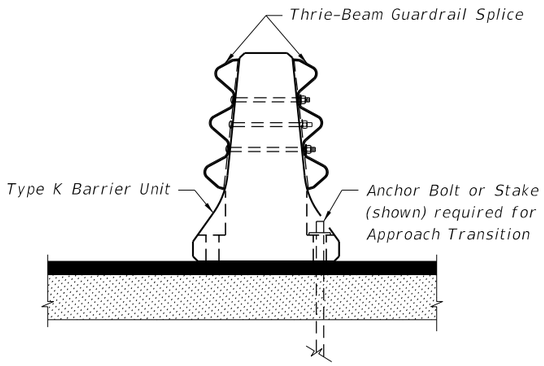
SECTION A-A
32" New Jersey Shape Concrete Barrier Wall (shown), 32" New Jersey Shape Traffic Railing & other Narrow Traffic Railings (similar)



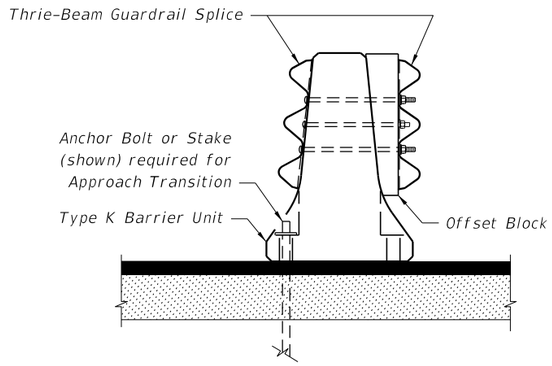
SECTION A-A
32" & 42" Vertical Shape Traffic Railing (shown), Florida Corral Traffic Railing (similar)



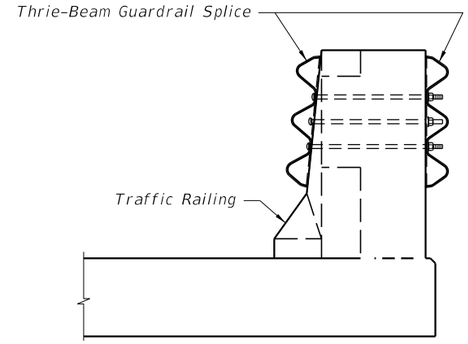
SECTION B-B
Adjacent to Shoulder Traffic Railings



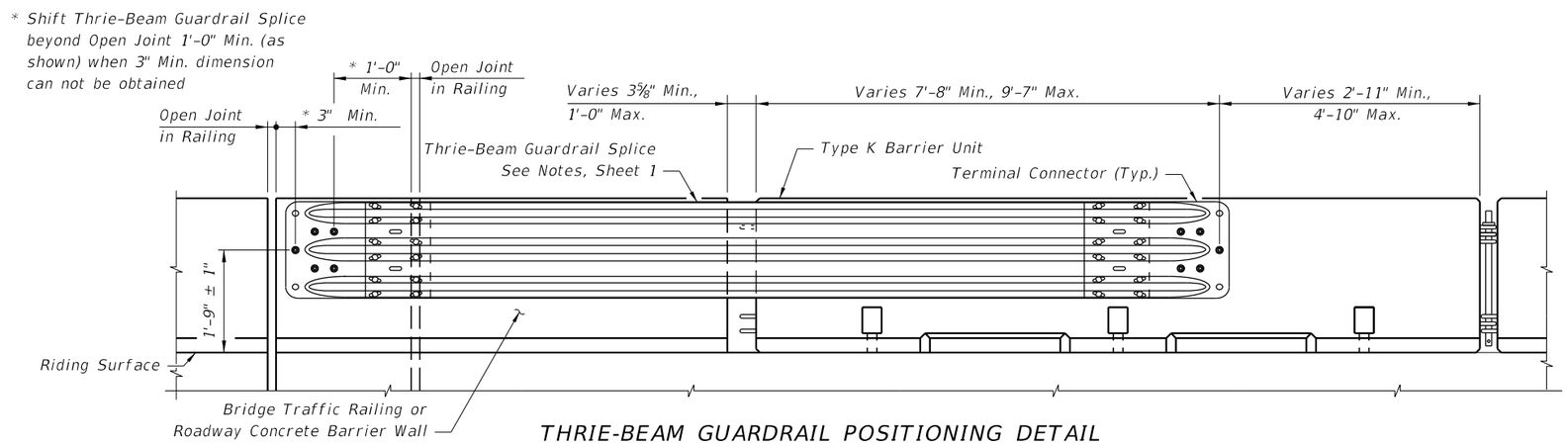
SECTION C-C
Adjacent to 32" F or New Jersey Shape Median Traffic Railing or Median Concrete Barrier Wall



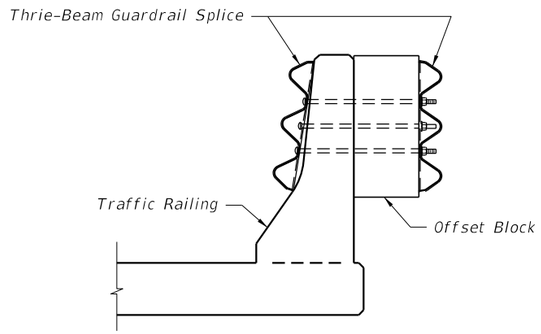
SECTION C-C
Adjacent to Shoulder Traffic Railings



SECTION D-D
32" F or New Jersey Shape Traffic Railing, Railing Transition & End Post



THRIE-BEAM GUARDRAIL POSITIONING DETAIL



SECTION E-E
32" New Jersey Shape Traffic Railing (shown), 32" F Shape Traffic Railing (similar)

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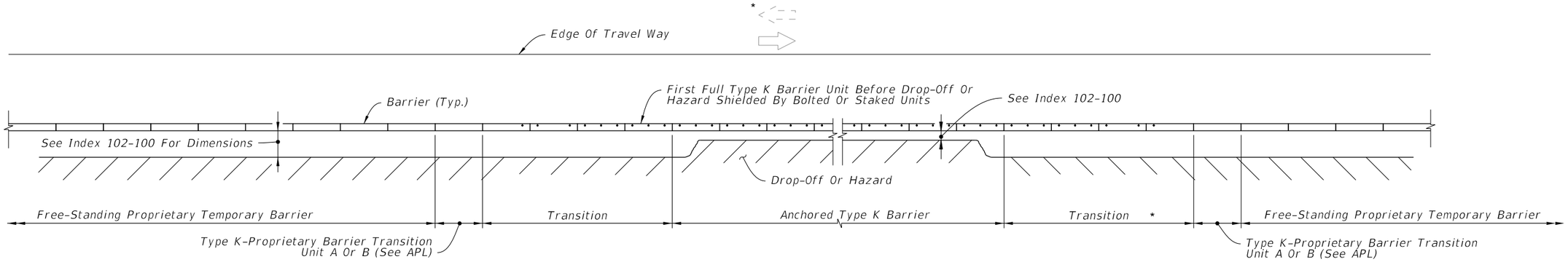
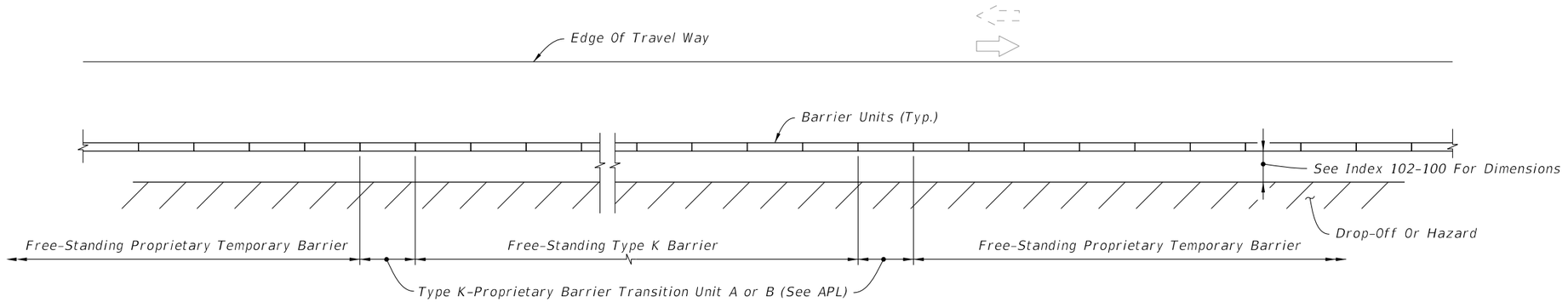
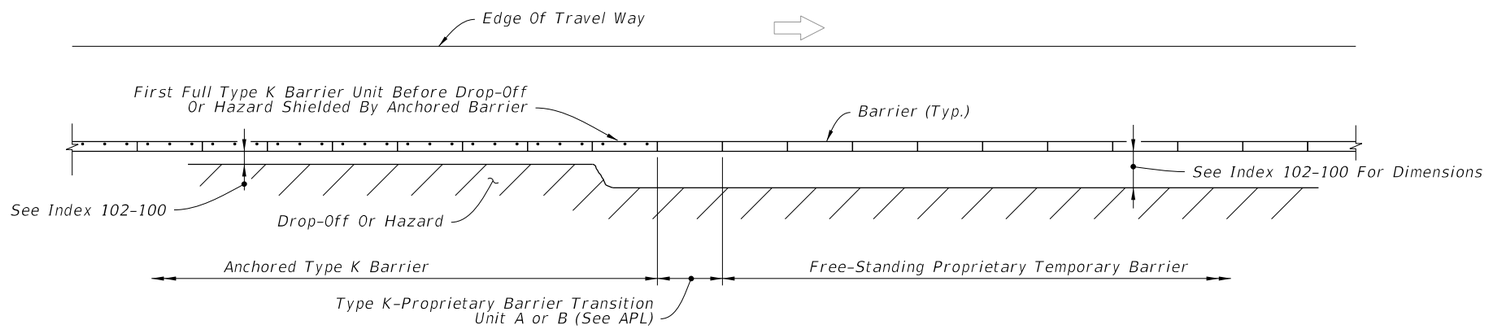


APPROACH TRANSITION FROM FREE-STANDING PROPRIETARY TEMPORARY BARRIERS TO ANCHORED TYPE K TEMPORARY CONCRETE BARRIERS



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

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

LEGEND:

TYPE K-PROPRIETARY TEMPORARY CONCRETE BARRIER TRANSITIONS

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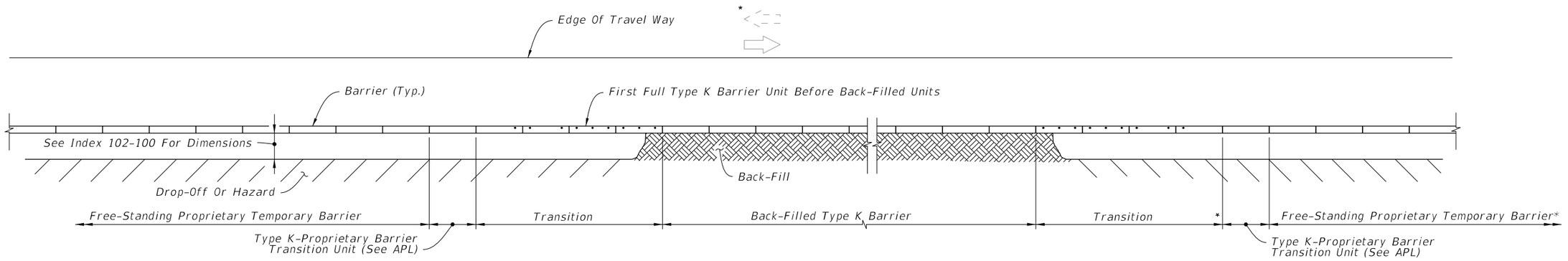
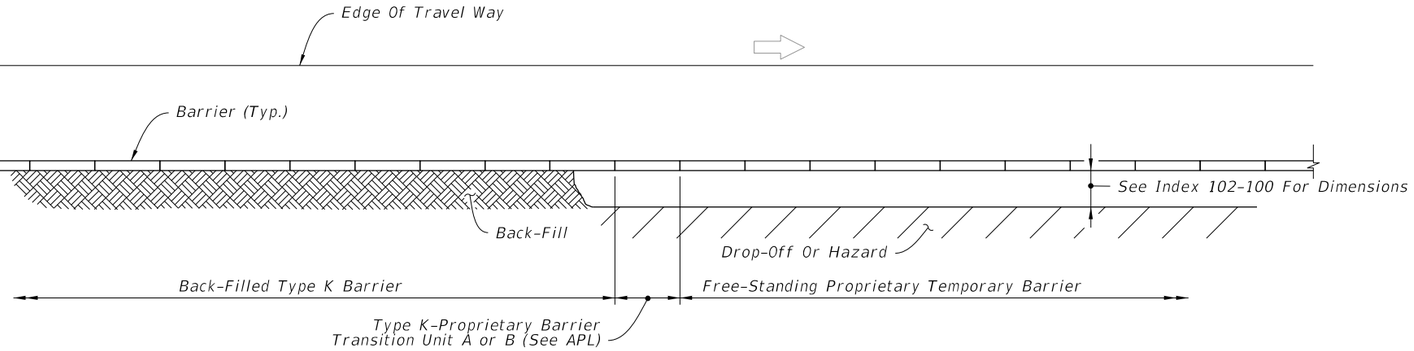
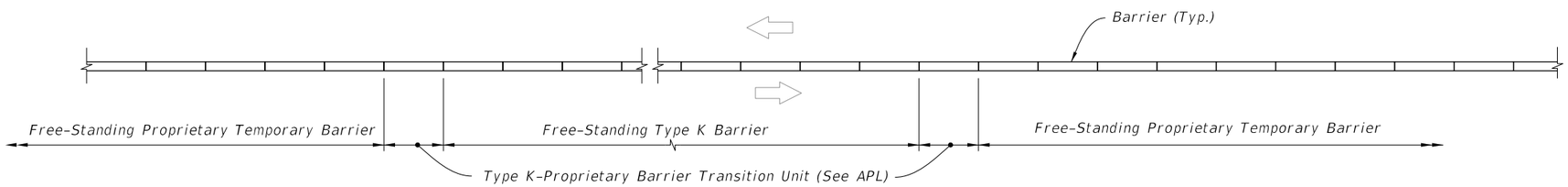


APPROACH TRANSITION FROM FREE-STANDING PROPRIETARY TEMPORARY BARRIERS TO BACK-FILLED TYPE K TEMPORARY CONCRETE BARRIERS



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

NOTE:

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

LEGEND:

Dot indicates number and position of Bolts or Stakes

TYPE K-PROPRIETARY TEMPORARY CONCRETE BARRIER TRANSITIONS

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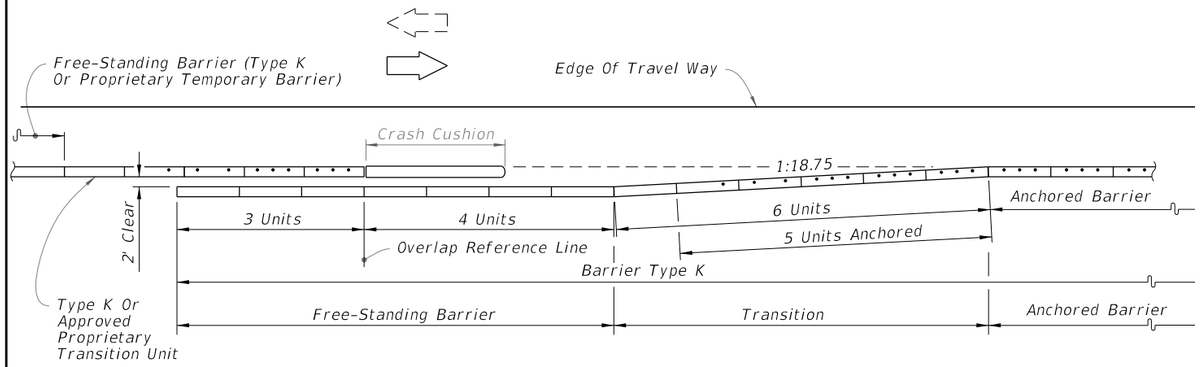
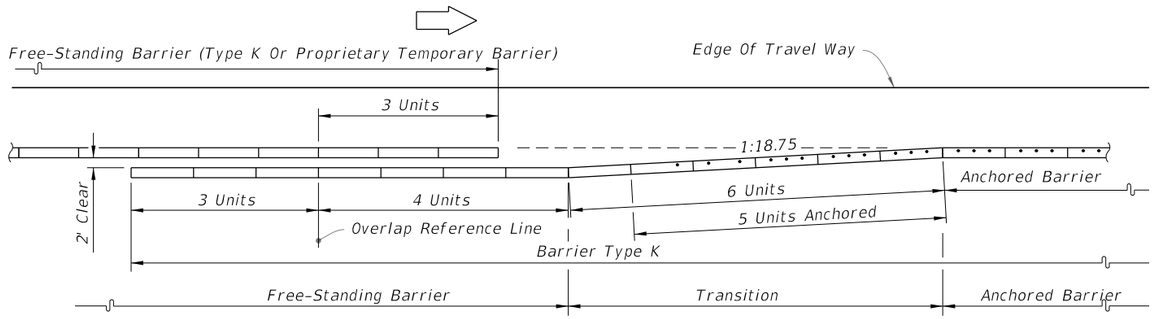
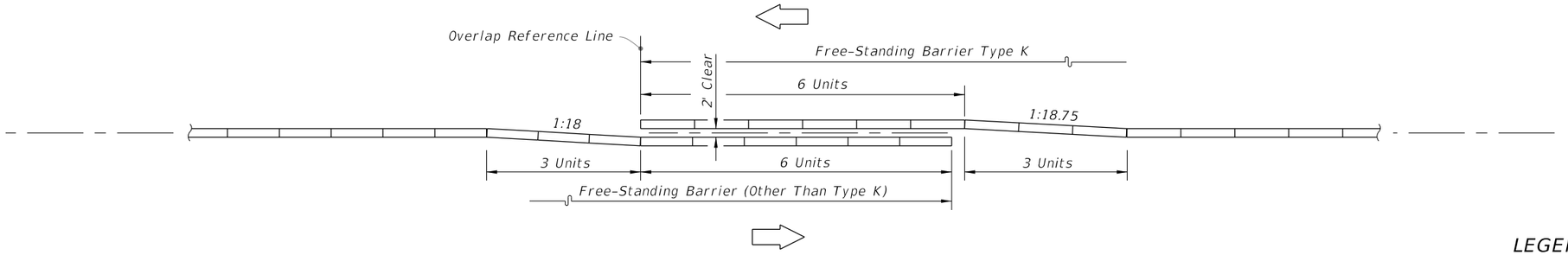


APPROACH SHOULDER BARRIER ON UNDIVIDED FACILITIES

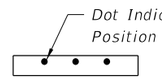


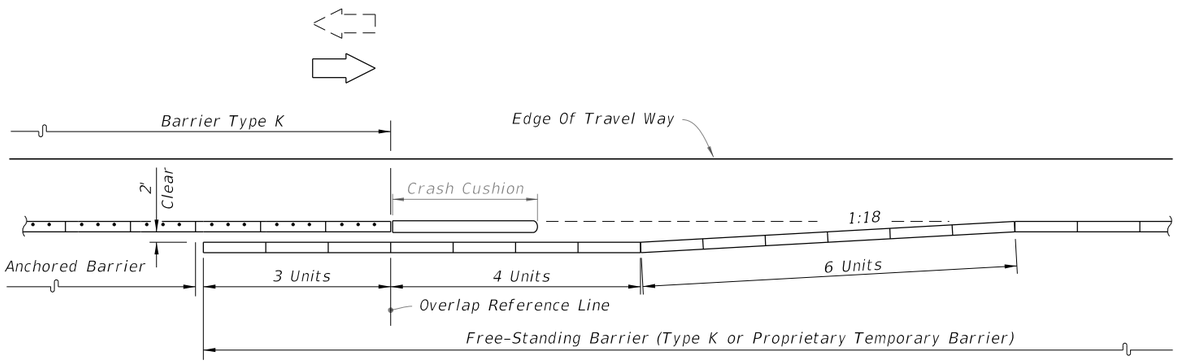
APPROACH SHOULDER BARRIER ON DIVIDED FACILITIES



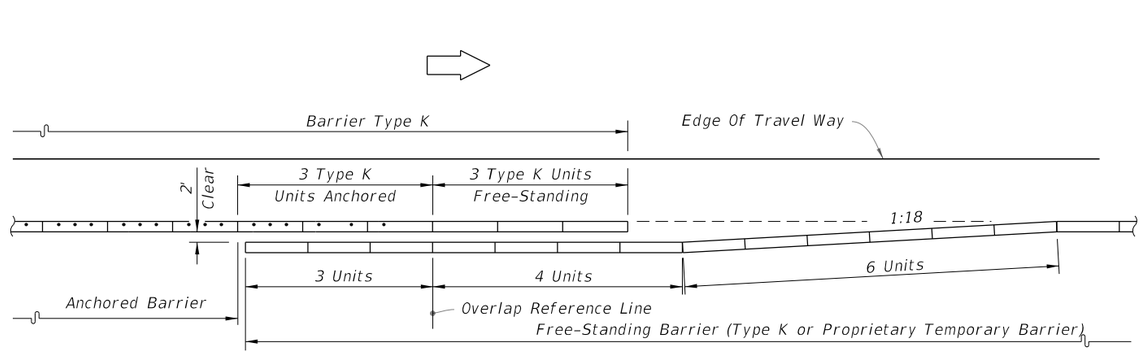
INTERIOR MEDIAN BARRIER

LEGEND





DEPARTURE (TRAILING) SHOULDER BARRIER ON UNDIVIDED FACILITIES
(BARRIER TYPE K ON BRIDGES AND APPROACH SLABS)



DEPARTURE (TRAILING) SHOULDER BARRIER ON DIVIDED FACILITIES
(BARRIER TYPE K ON BRIDGES AND APPROACH SLABS)

CONTINUATION OF BARRIER • FROM OTHER TYPE BARRIERS TO BARRIER TYPE K

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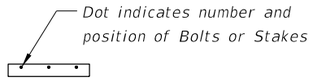
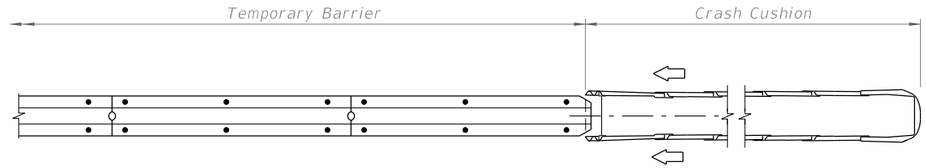
NOTE:

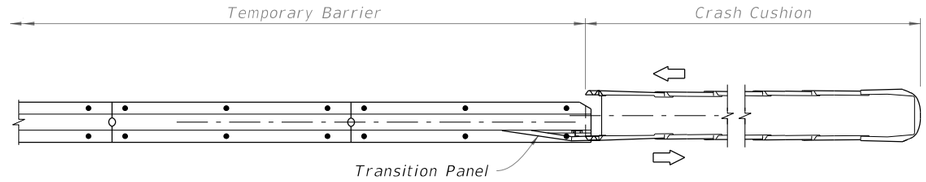
When subjected to reverse direction hits, construct Transition Panels from Temporary Barrier to Crash Cushions; for additional details refer to the applicable crash cushion drawings on the APL.

LEGEND:

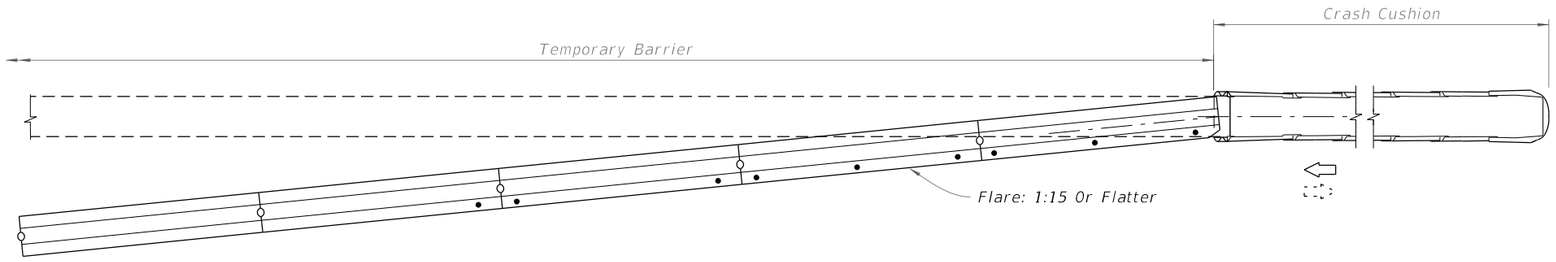




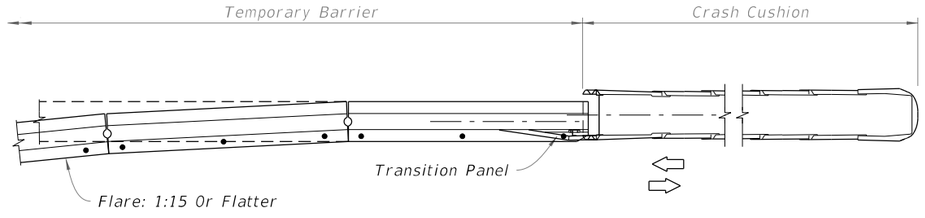
UNIDIRECTIONAL - SEPARATED TRAFFIC



BIDIRECTIONAL - SEPARATED TRAFFIC



TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED
OUTSIDE OPPOSING LANE CLEAR ZONE OR ONE-WAY TRAFFIC



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

END TREATMENT WHEN SHIELDED BY A CRASH CUSHION

SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)

SHIELDING ENDS WITH REDIRECTIVE CRASH CUSHIONS (REDIRECTIVE OPTION)

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 2¾" 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 ⅛" 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:

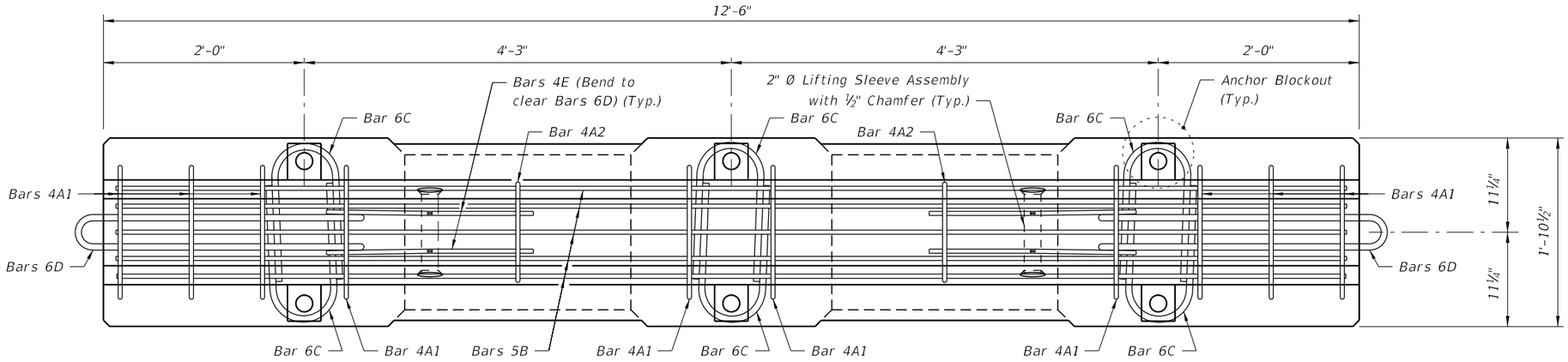
A. Inclusion of the Lifting Sleeve Assemblies is optional.
B. Use steel in accordance with ASTM A 53 for the Pipe Sleeve.
C. Hot-dip galvanize the Lifting Sleeve Assemblies after their fabrication in accordance with the Specifications.

SURFACE FINISH:

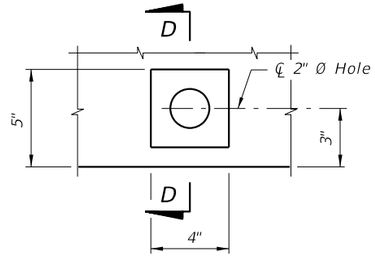
A. Construct Barrier Units in accordance with Specifications 400 and 521.
B. Finish the top and sides of the Barrier Units with a General Surface Finish.
C. Finish the bottom of the Barrier Units to a dense uniform surface by floating in lieu of the General Surface Finish.
D. Use stationary metal forms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

MARKING:

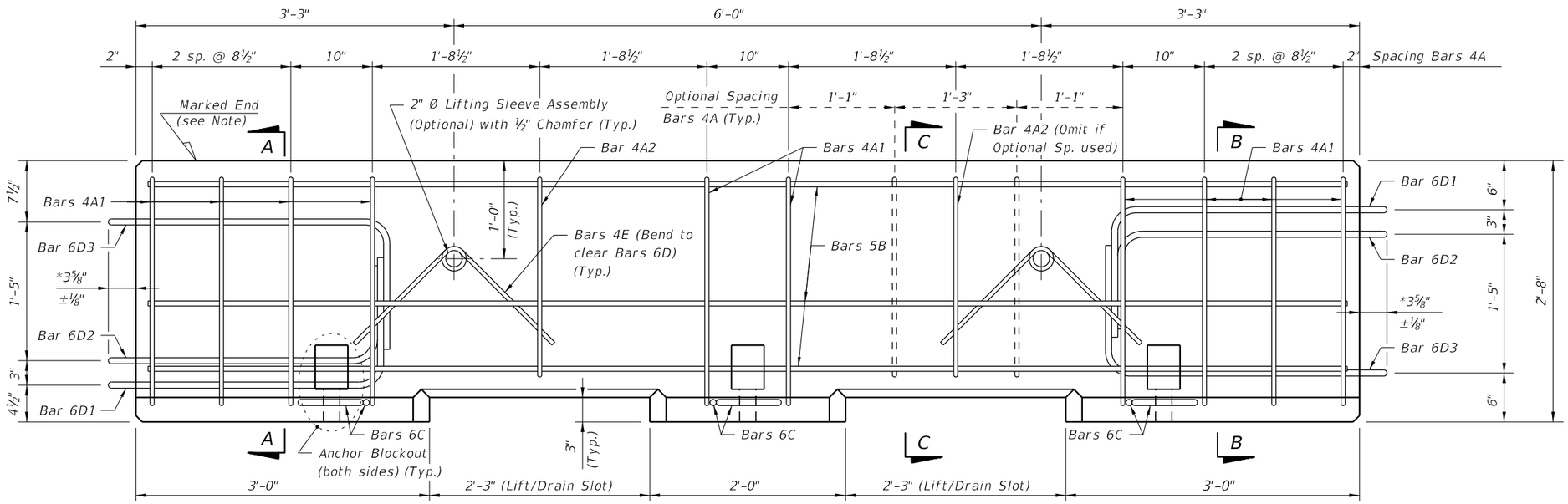
A. Permanently mark the top left end of each Barrier Unit by the use of an embedded and anchored metallic plate with letters and figures a minimum of 0.5" tall.
B. Ink stamps are not allowed.
C. Permanently mark with the following information:
   - Type K1
   - Fabricator's name or symbol
   - Date of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



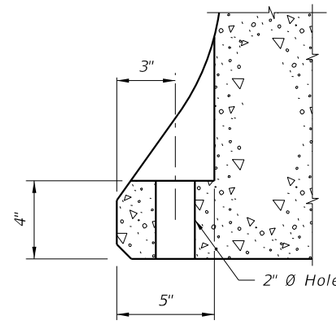
PLAN VIEW



ANCHOR BLOCKOUT DETAIL

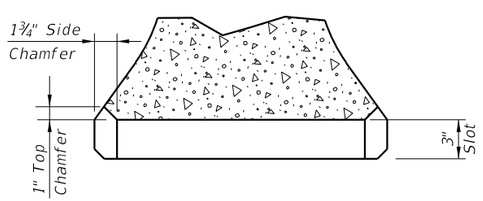


ELEVATION VIEW



SECTION D-D
(Reinforcement not shown for clarity)

* Measured from end of Barrier Unit to outside edge of Bars 6D.

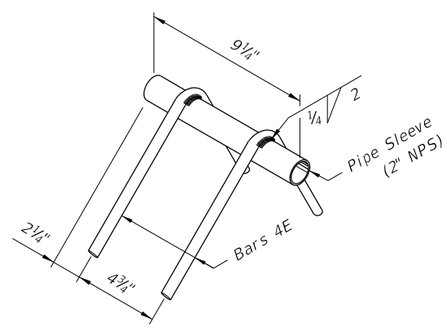


SECTION THRU LIFT/DRAIN SLOT

ESTIMATED TEMPORARY CONCRETE BARRIER QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete	CY	1.29
Reinforcing Steel	LB	218

The above quantities are for one Barrier Unit.

Cross References:
For Section A–A, Section B–B and Section C–C see Sheet 16.



LIFTING SLEEVE ASSEMBLY DETAIL (OPTIONAL)

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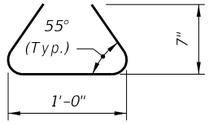
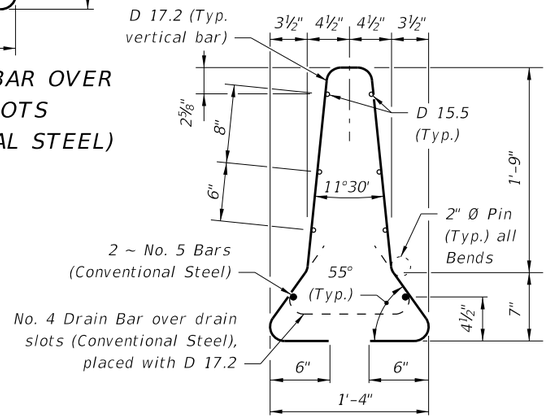
ALTERNATE REINFORCING STEEL DETAIL
WELDED WIRE REINFORCEMENT

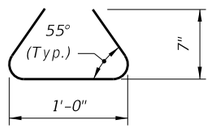


NO. 4 DRAIN BAR OVER DRAIN SLOTS (CONVENTIONAL STEEL)

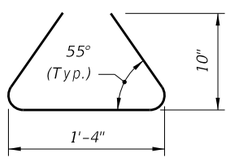


NOTES:
Place 2 ~ No. 5 Bars (12'-3" long) in bottom of Welded Wire Reinforcement cage as shown.
Match D17.2 spacing to Bars 4A in the Elevation View, Sheet 15.
Field trim D17.2 to clear drain slot by 2".

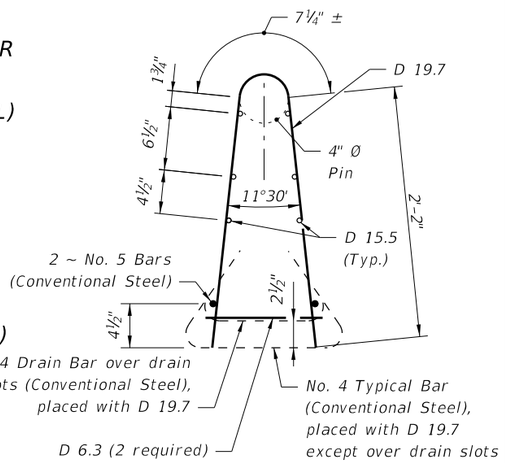
CONFIGURATION ONE



NO. 4 DRAIN BAR OVER DRAIN SLOTS (CONVENTIONAL STEEL)



NO. 4 TYPICAL BAR (CONVENTIONAL STEEL)



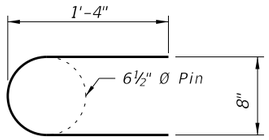
NOTES:
Place 2 ~ No. 5 Bars (12'-3" long) tied to D 19.7 inside of bottom Welded Wire Reinforcement cage as shown.
Match D19.7 spacing to Bars 4A in the Elevation View, Sheet 15.
Field trim D19.7 to clear drain slot by 2".

CONFIGURATION TWO

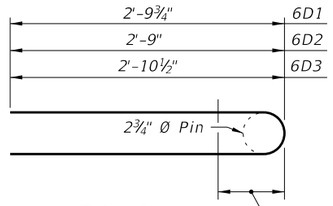
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

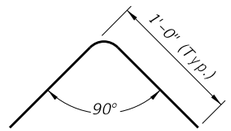
MARK	SIZE	NUMBER	LENGTH
A1	4	10	6'-1"
A2	4	2	5'-5"
B	5	5	12'-3" (Straight)
C	6	6	3'-1"
D1	6	2	8'-4"
D2	6	2	7'-6"
D3	6	2	8'-6"
E	4	4	2'-0"



BAR 6C

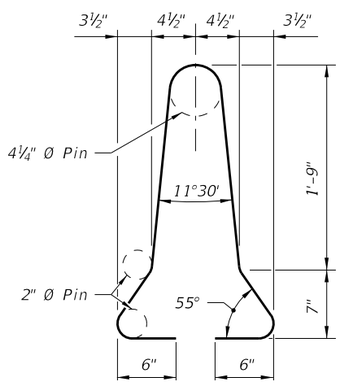


TOP VIEW
BARS 6D1, 6D2 & 6D3

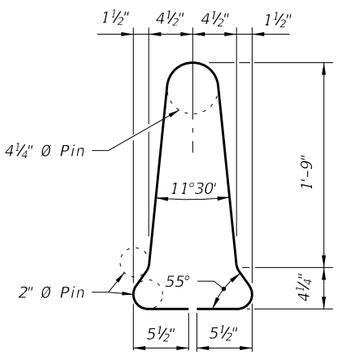


BAR 4E

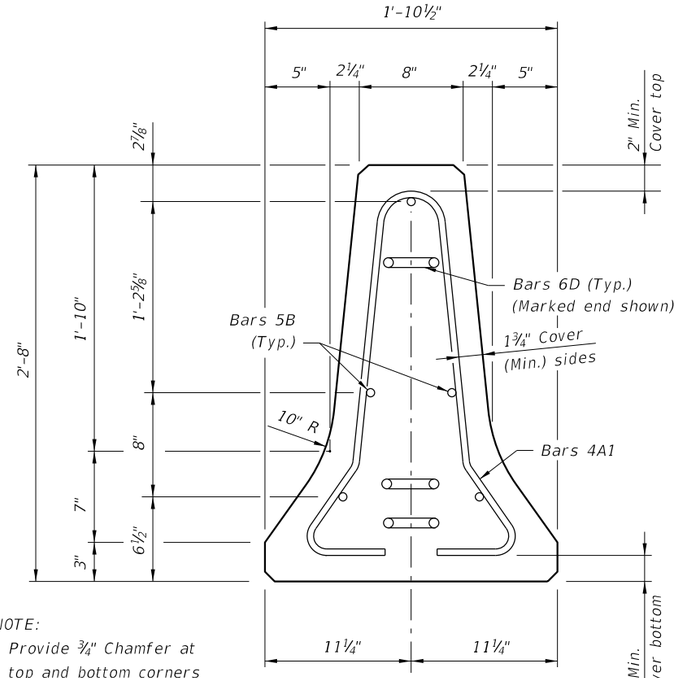
SIDE VIEW
BARS 6D1, 6D2 & 6D3



STIRRUP BAR 4A1

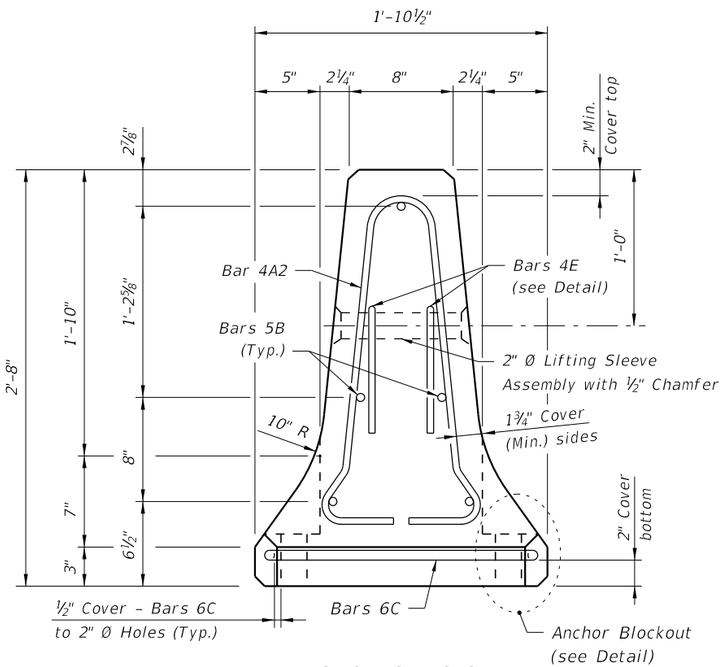


STIRRUP BAR 4A2



NOTE:
Provide ¾" Chamfer at top and bottom corners of Barrier.

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



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

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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.

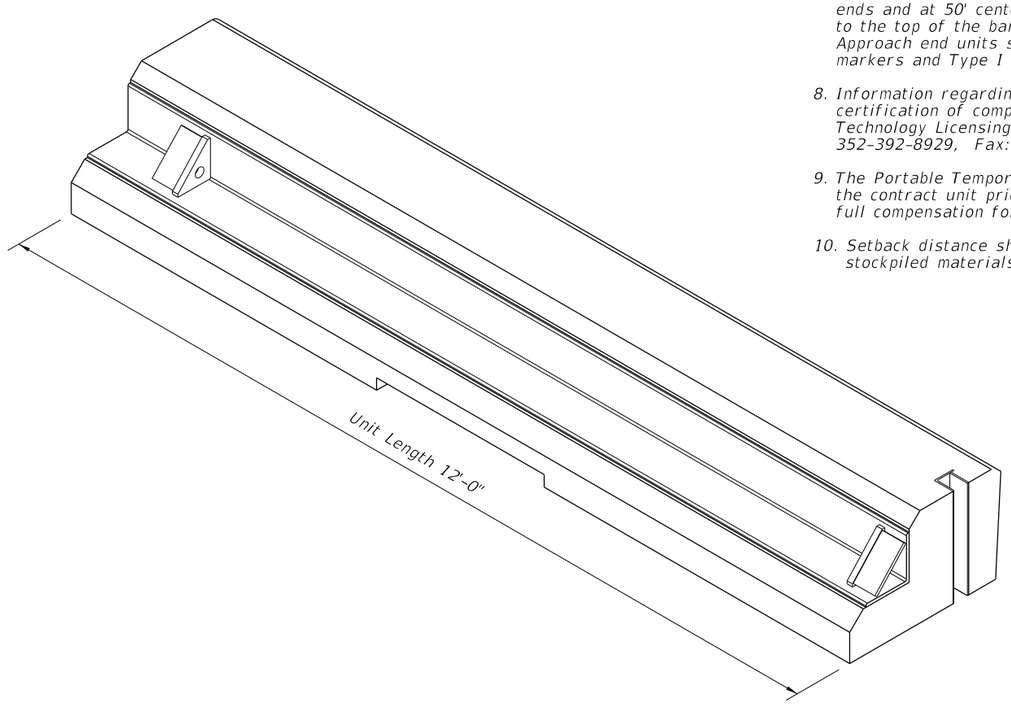
6. If the plans specify Low Profile Barrier then substitution with other barrier types is not permitted.

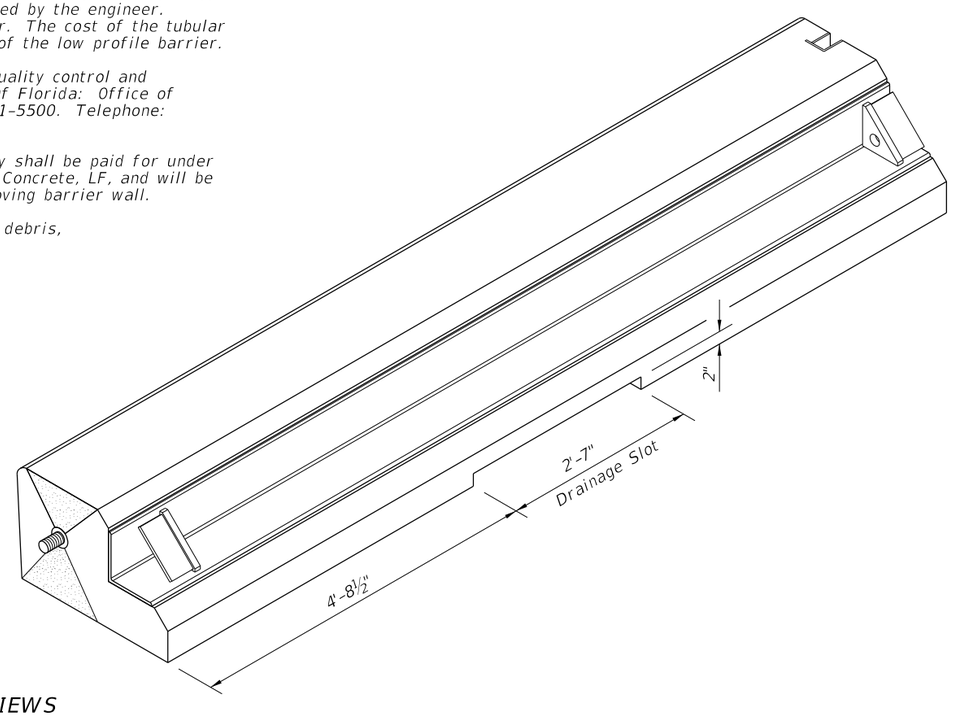
7. Tubular markers shall be orange in color and installed along the run of barrier at the ends and at 50' centers on tangents and 25' centers on radii. The markers shall be fixed to the top of the barrier by an adhesive or other method approved by the engineer. Approach end units shall be marked with 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

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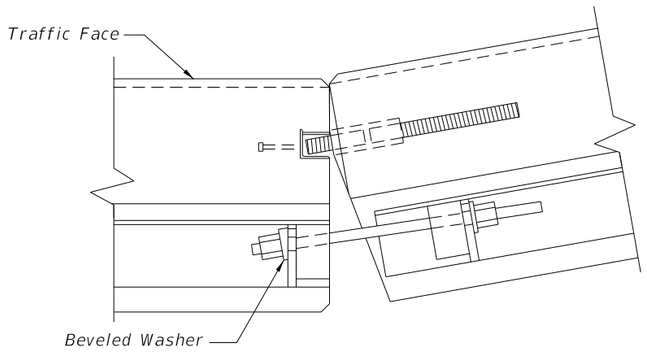
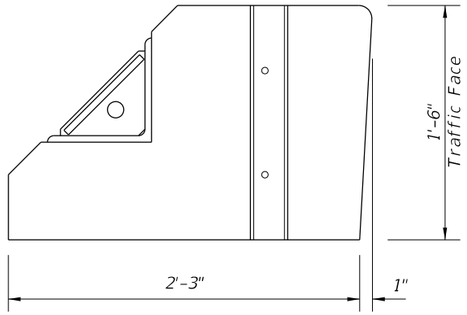
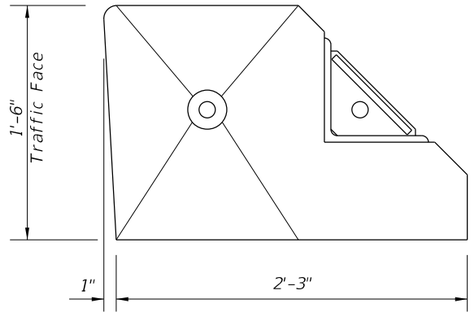


CONCAVE CONNECTION

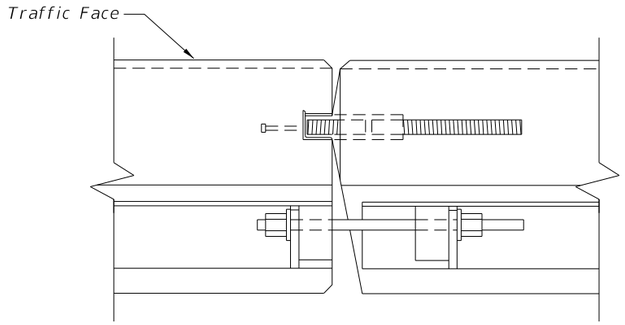


FLAT FACE FEMALE END



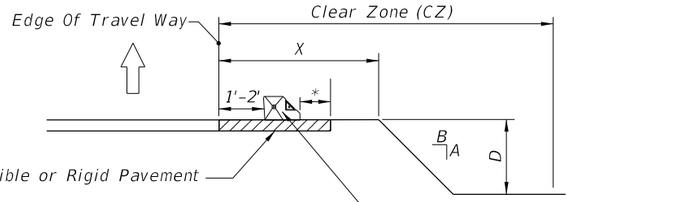
BEVELED FACE MALE END

END VIEWS



PARALLEL CONNECTION

WORK ZONE SPEED	LATERAL OFFSET	SETBACK DISTANCE
45 MPH OR LESS	1' MIN, 2' PREFERRED	9"



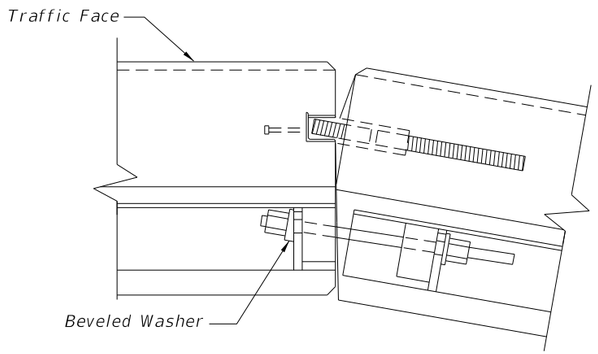
* Minimum 9" on 1:10 or flatter slopes for 'Portable Temporary Low Profile Barrier For Roadside Safety.' For values A, B, D and X see Index 102-600.

SETBACK DISTANCE AT DROP-OFFS

Notes:

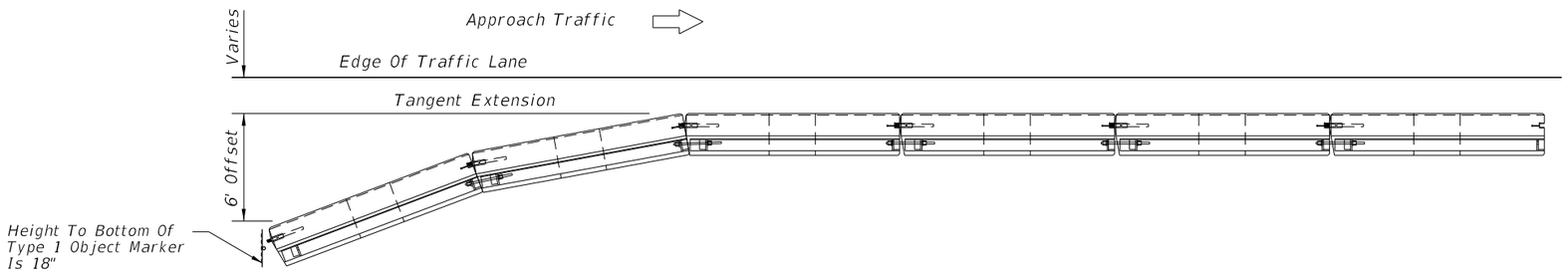
LIMITATION OF USE: This installation technique can only be used on flexible or rigid pavement.

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.



CONVEX CONNECTION

PLAN VIEWS OF CONNECTIONS



PLAN VIEW OF APPROACH END OFFSET

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

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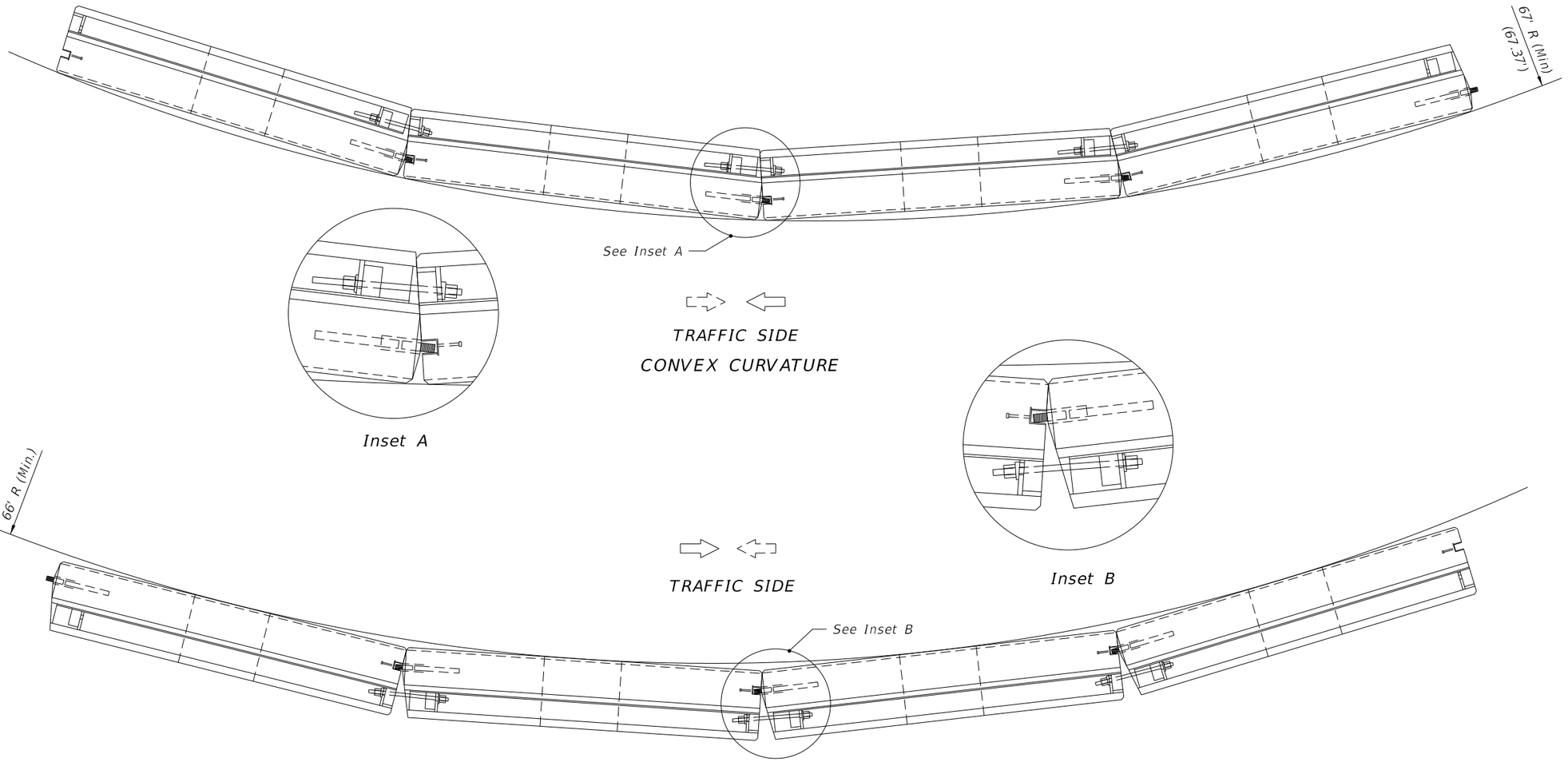

Inset A

Inset B

MAXIMUM CURVATURE ● MINIMUM RADIUS

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

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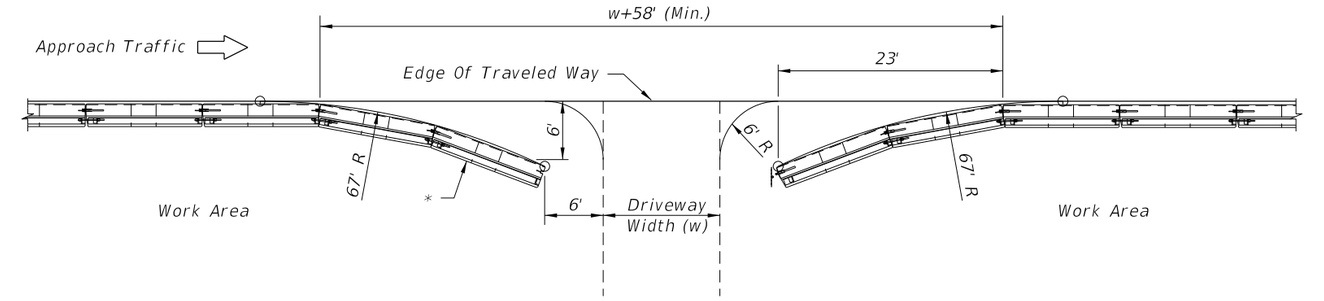

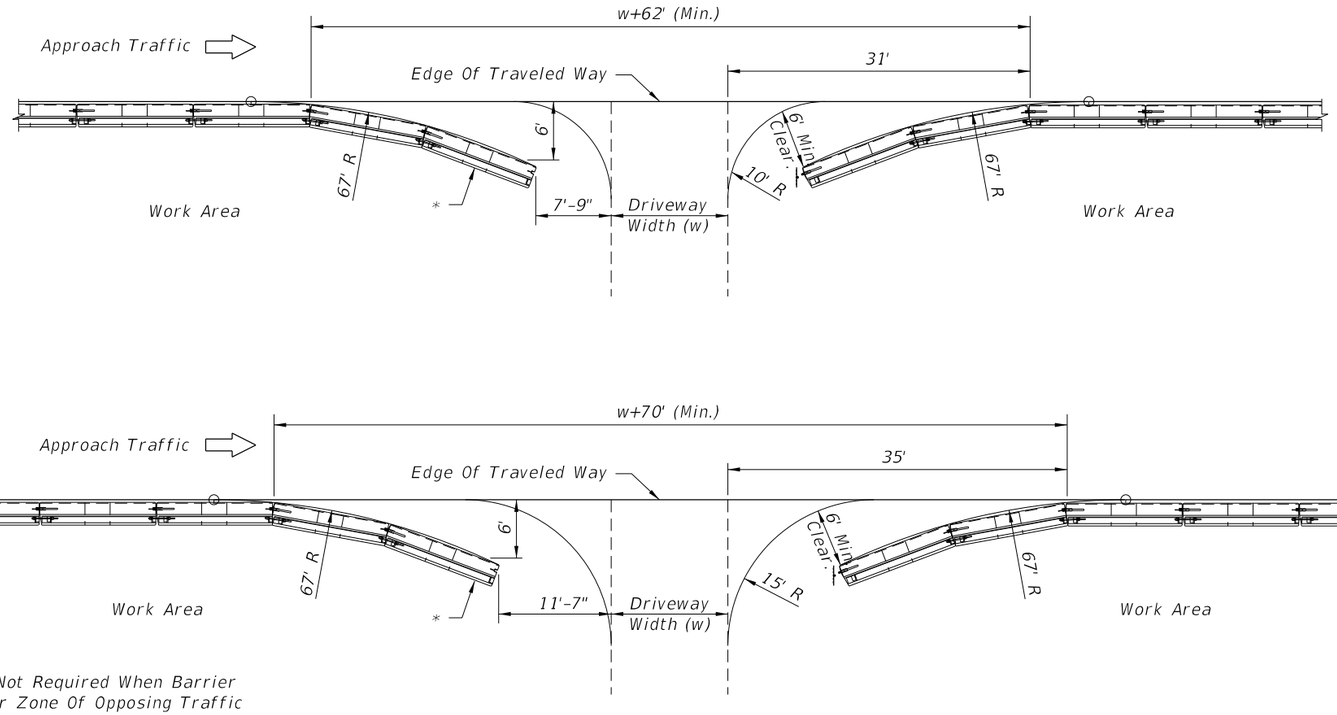

* Trailing End Flares Are Not Required When Barrier Located Outside The Clear Zone Of Opposing Traffic

Type I Object Marker To Be Installed When Trailing End Flare Falls Within The Clear Zone Of Opposing Traffic

LEGEND

Type I Object Marker

BARRIER OPENINGS AT DRIVEWAYS

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

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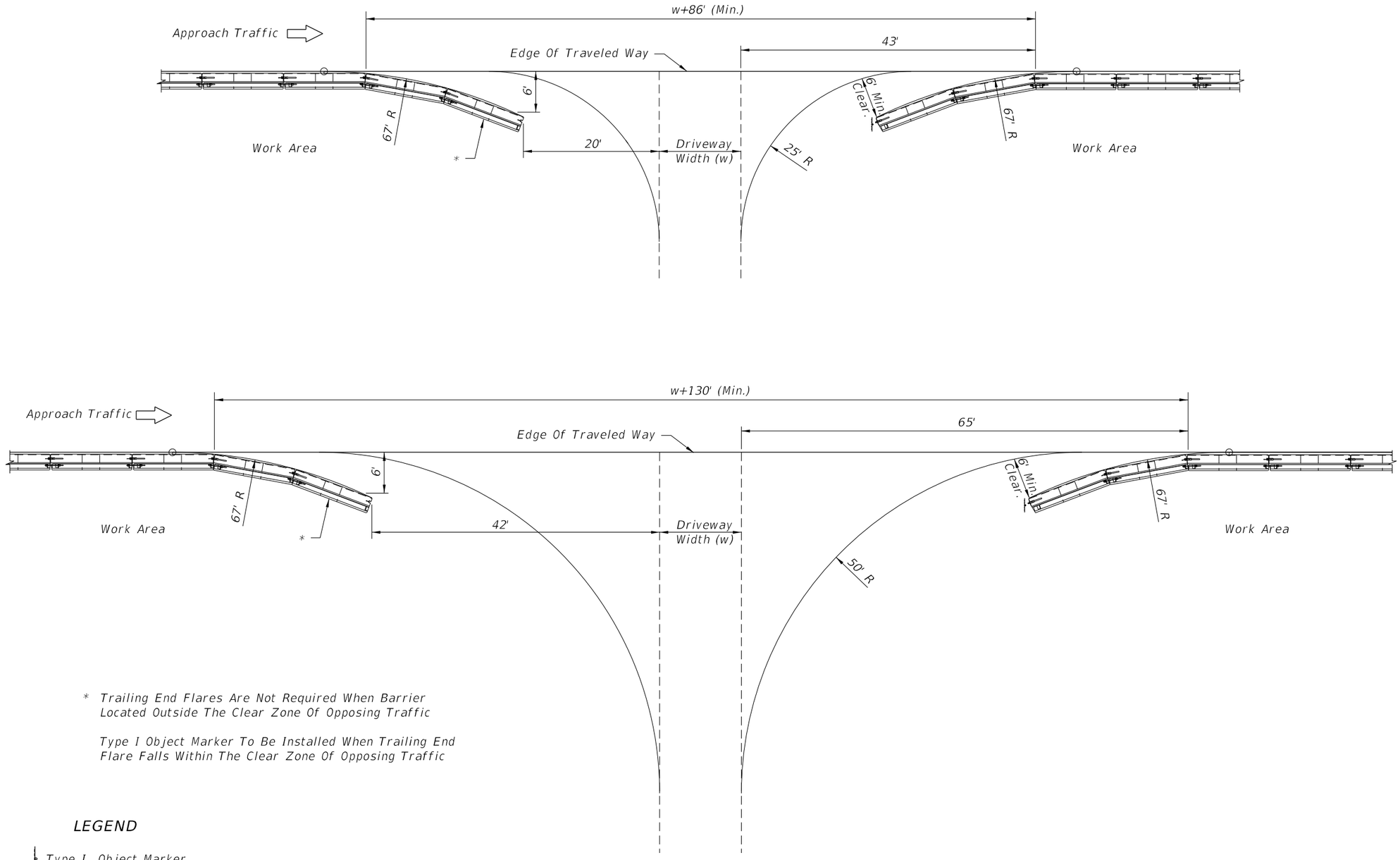

* Trailing End Flares Are Not Required When Barrier Located Outside The Clear Zone Of Opposing Traffic

Type I Object Marker To Be Installed When Trailing End Flare Falls Within The Clear Zone Of Opposing Traffic

LEGEND

* Type I Object Marker

BARRIER OPENINGS AT DRIVEWAYS

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	LOW PROFILE BARRIER	INDEX	SHEET
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SHEET	CONTENTS
1	General Notes
2	Definitions Temporary Traffic Control Devices Pedestrian and Bicyclist Overhead Work Railroads Sight Distance Above Ground Hazard
3	Clear Zone Widths For Work Zones Superelevation Length Of Lane Closures Overweight/Oversize Vehicles Lane Widths High-Visibility Safety Apparel Regulatory Speeds In Work Zones
4	Flagger Control Survey Work Zones Signs
5	Work Zone Sign Supports
6	Project Information Sign
7	Commonly Used Warning and Regulatory Signs In Work Zones
8	Manholes/Crosswalks/Joints Truck Mounted Attenuators Removing Pavement Markings Signals Channelizing Devices Channelizing Devices Consistency Portable Changeable (Variable) Message Signs (PCMS) Advanced Warning Arrow Boards
9	Drop-Offs In Work Zones
10	Business Entrance Temporary Asphalt Separator
11	Channelizing Devices Notes Temporary Barrier Notes
12	Pavement Markings

GENERAL NOTES:

1. All projects and works on highways, roads and streets shall have a traffic control plan. All work shall be executed under the established plan and Department-approved procedures. 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. Indexes 102-601 through 102-670 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 shall comply with Section 335.15, F.S.

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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

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.

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.

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.

PEDESTRIAN AND BICYCLIST

When an existing pedestrian way or bicycle way is located within a traffic control work zone, accommodation must be maintained and provision for the disabled must be provided.

Only approved pedestrian longitudinal channelizing devices may be used to delineate a temporary traffic control zone pedestrian walkway.

Advanced notification of sidewalk closures and marked detours shall be provided by appropriate signs.

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.

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

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.

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

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.

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.

CLEAR ZONE WIDTHS FOR WORK ZONES		
WORK 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
30–40	14	10
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB	4' BEHIND FACE OF CURB

SUPERELEVATION

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

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.

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. The minimum widths for work zone travel lanes shall be 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 freeways; and 10' for all other facilities.

HIGH-VISIBILITY SAFETY APPAREL

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

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

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

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

REGULATORY SPEEDS IN WORK ZONES

Traffic Control Plans (TCP's) for all projects must include specific regulatory speeds for each phase of work. This can either be the posted speed or a reduced speed. The speed shall be noted in the TCPs; this includes indicating the existing speed if no reduction is to be made. Regulatory speeds are to be uniformly established through each phase.

In general, the regulatory speed should be established to route vehicles safely through the work zone as close as to normal highway speed as possible. The regulatory speed should not be reduced more than 10 mph below the posted speed and never below the minimum statutory speed for the class of facility. When a speed reduction greater than 10 mph is imposed, the reduction is to be done in 10 mph per 500' increments.

Temporary regulatory speed signs shall be removed 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 unless new speed limit signing is provided for in the plans.

On projects with interspaced work activities, speed reductions should be located in proximity to those activities which merit a reduced speed, and not "blanketed" for the entire project. At the departure of such activities, the normal highway speed should be posted to give the motorist notice that normal speed can be resumed.

If the existing regulatory speed is to be used, consideration should be given to supplementing the existing signs when the construction work zone is between existing regulatory speed signs. For projects where the reduced speed conditions exist for greater than 1 mile in rural areas (non–interstate) and on rural or urban interstate, additional regulatory speed signs are to be placed at no more than 1 mile intervals. Engineering judgement should be used in placement of the additional signs. Locating these signs beyond ramp entrances and beyond major intersections are examples of proper placement. For urban situations (non–interstate), additional speed signs are to be placed at a maximum of 1000' apart.

When field conditions warrant speed reductions different from those shown in the TCP the contractor may submit to the project engineer for approval by the Department, a signed and sealed study to justify the need for further reducing the posted speed, or, the engineer may request the District Traffic Operations Engineer (DTOE) to investigate the need. It will not be necessary for the DTOE to issue regulations for regulatory speeds in work zones due to the revised provisions of F.S. 316.07451(2) (b). Advisory Speed plates will be used at the option of the field engineer for temporary use while processing a request to change the regulatory speed specified in the plans when deemed necessary. Advisory speed plates cannot be used alone but must be placed below the construction warning sign for which the advisory speed is required.

For additional information, refer to the FDOT Design Manual 240.

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FLAGGER CONTROL

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 space so that approaching road users will have sufficient distance to stop before entering the work space. 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.

(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.

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.

SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN

The SPEEDING FINES DOUBLED WHEN WORKERS PRESENT sign should be installed on all projects, but may be omitted if the work operation is less than 1 day. The placement should be 500 feet beyond the ROAD WORK AHEAD sign or midway to the next sign whichever is less.

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.

PROJECT INFORMATION SIGN

The Project information sign shall be installed when called for in the plans.

TEMPORARY SIGN SUPPORT NOTES:

1. All signs shall be post mounted when work operations exceed one day except for:

   a. Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the APL.
   b. Pedestrian 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.

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 in^3 for 60 ksi steel, a minimum section modulus of 0.37 in^3 for 70 ksi steel, or a minimum section modulus of 0.34 in^3 for 80 ksi steel.

6. Provide 4 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.56 in^3 for 60 ksi steel, or a minimum section modulus of 0.47 in^3 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.

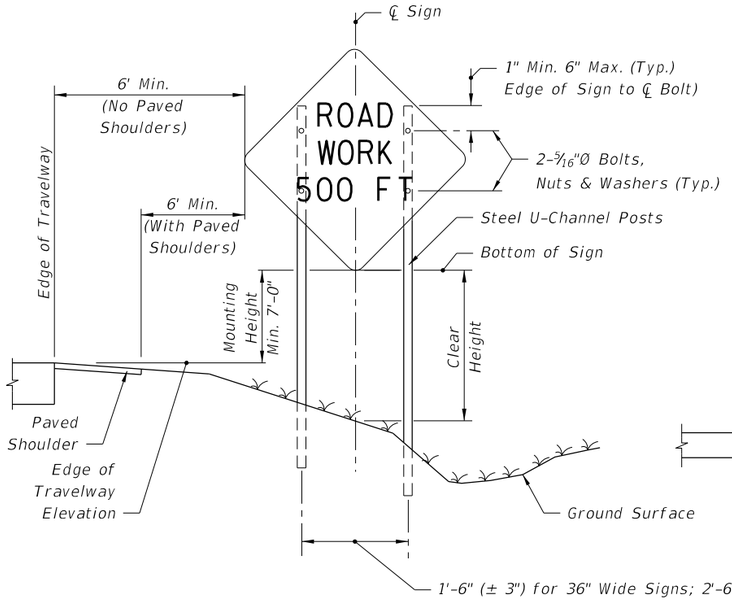
9. For diamond warning signs with supplement plaque (up to 5 ft^2 in area), use 4 lb/ft posts for up to 10 ft Clear Height (measure to the bottom of diamond warning sign).

10. Install 4 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.

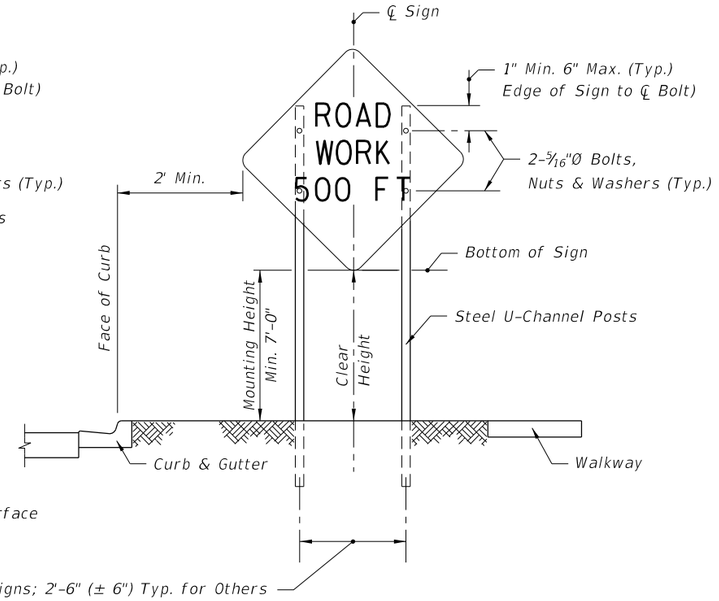
11. The contractor may install 3 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.

12. Install all posts plumb.

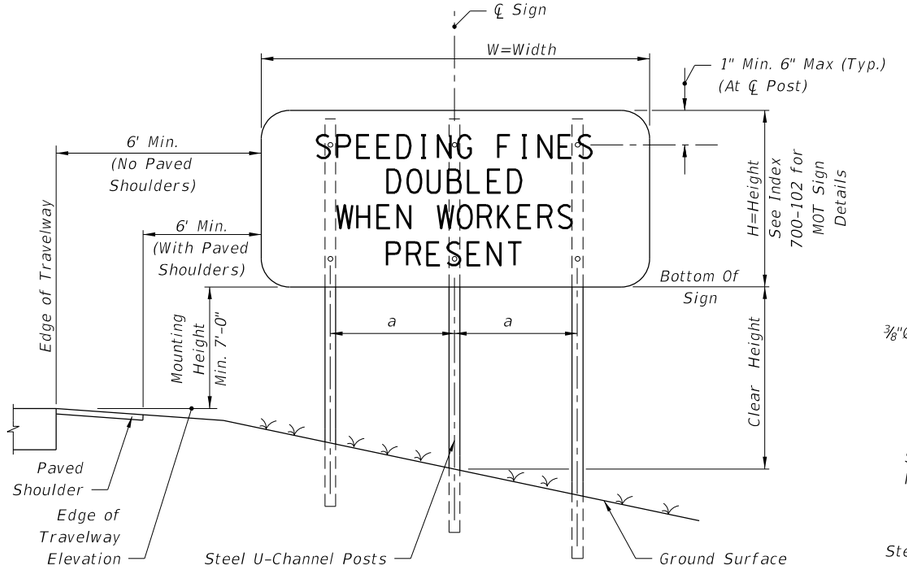
13. The contractor may set posts in preformed holes to the specified depth with suitable backfill tamped securely on all sides, or drive 3 lb/ft sign posts and any size base post in accordance with the manufacturer's detail shown on the APL.



2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR) RURAL

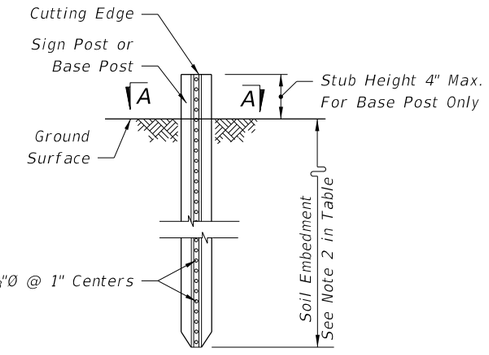


2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR) URBAN



3 POST SIGN SUPPORT MOUNTING DETAILS

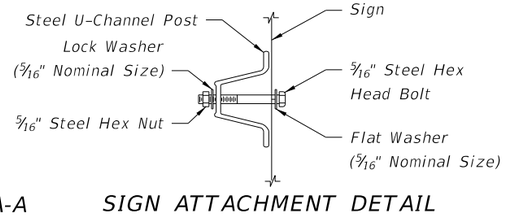
Where W = 48": a = 1' - 4½" (± 1")
W = 60": a = 1' - 9" (± 1")
W = 72": a = 2' - 1" (± 1")



TYPICAL FOUNDATION DETAIL

See APL for post, splice and connection details.
No bolts installed closer than 1" to cutting edge.

SECTION A-A (SCHEMATIC)



SIGN ATTACHMENT DETAIL (WITHOUT Z-BRACKET)

POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS

SIGN SHAPE	SIGN SIZE (inches)	NUMBER OF STEEL U CHANNEL POSTS
Octagon	30x30	1
Triangle	36x36x36	1
	48x48x48	1
	60x60x60	2
Rectangle (W x H)	24x18	1
	24x30	1
	30x24	1
	36x18	1
	36x24	1
	48x18	1
	48x24	1
	36x48	2
	48x30	2
	48x36	2
	54x36	2
	48x60	3
	60x54	3
	72x48	3
	120x60*	4*
Square	30x30	1
	36x36	2
	48x48	2
Diamond (See Note 7)	48x48	2
Circle	360	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'.

* Use 4 lb/ft U-channel sign post with a mounting height of 7' min. and 8' max. Attach sign panel using Z-bracket detail on Sheet 6.

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.

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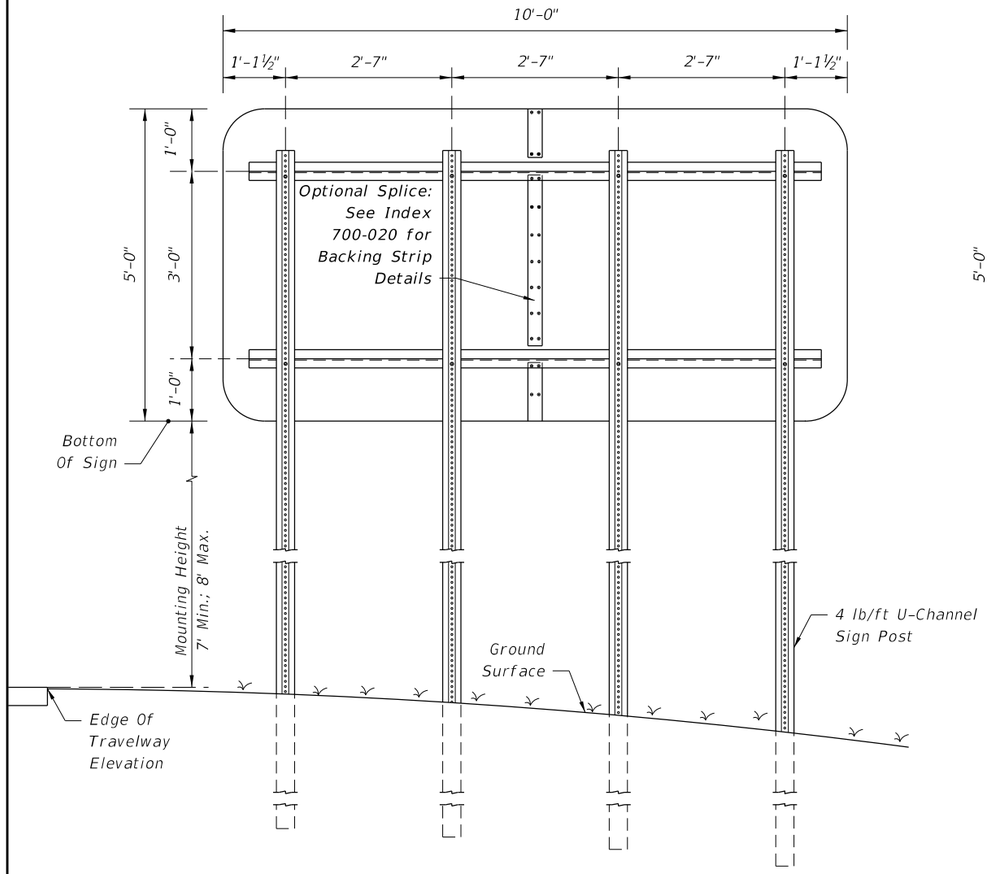
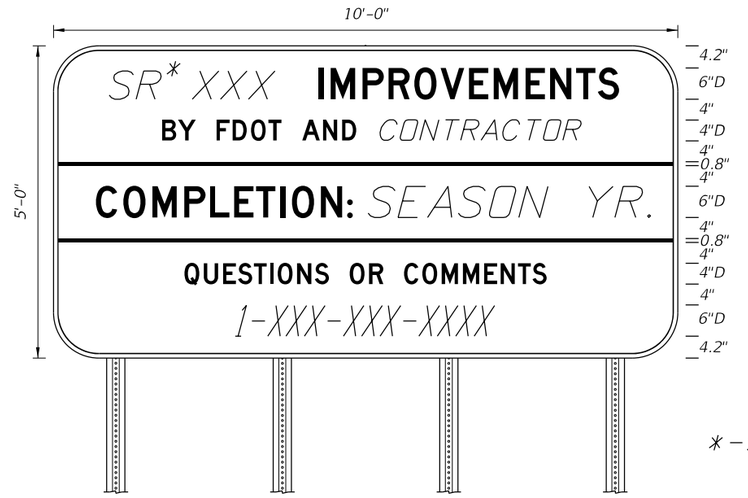


4 POST SIGN SUPPORT MOUNTING DETAIL

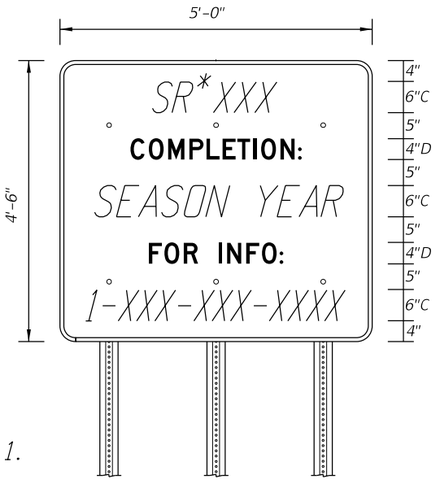


*-See Note 1.

BORDER	10'-0"x 5'-0"
R=8"	8" Radii
TH=0.25"	4" and 6" series D Legend
IN=0.75"	Blue Background
	White Legend and Border

PROJECT INFORMATION SIGN DETAIL
50 MPH OR GREATER

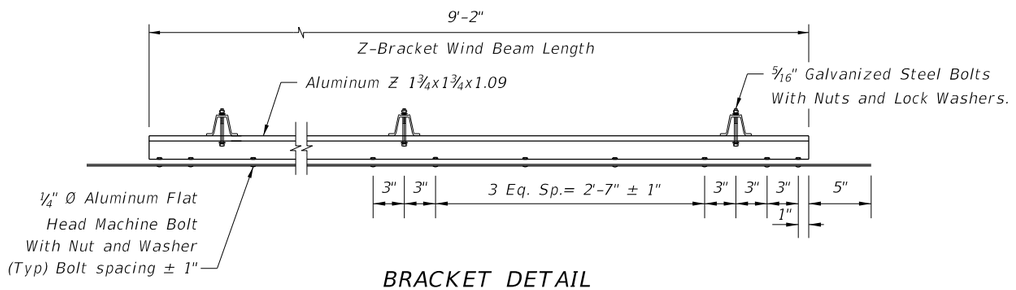
Use SIGN ATTACHMENT DETAIL (WITH Z-BRACKET).



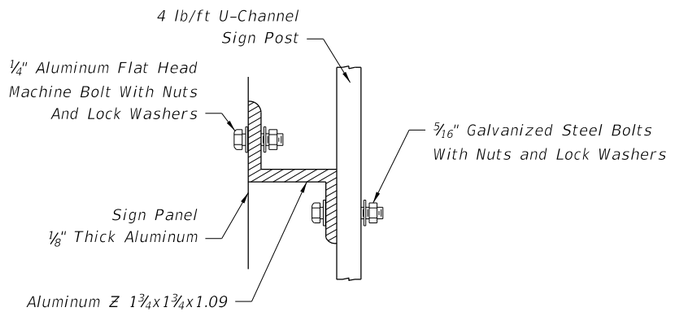
BORDER	5'-0"x 4'-6"
R=3"	3" Radii
TH=0.25"	4" series D Legend and
IN=0.75"	6" series C Legend
	Blue Background
	White Legend and Border

PROJECT INFORMATION SIGN DETAIL
45 MPH OR LESS

Use SIGN ATTACHMENT DETAIL (WITHOUT Z-BRACKET) On Sheet 5.



BRACKET DETAIL



SIGN ATTACHMENT DETAIL
(WITH Z-BRACKET)

PROJECT INFORMATION SIGN NOTES:

1. Road designation should be the most common designation (i.e. I-Interstate, SR-State Road or US.)
2. Italic text on signs indicate variable information specific to the project.
3. See Sheet 5 for Typical Foundation Details and Post and Foundations Table.

PROJECT INFORMATION SIGN

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E5-2
B/0

E5-2a
B/0

G20-1
B/0

G20-2
B/0

G20-4
B/0

M4-8
B/0

M4-8A
B/0

M4-9L
B/0

M4-9R
B/0

M4-10L
O/B

M4-10R
O/B


OM-3R
B/Y

R1-1
W/R

R1-2
RW/R

R2-1
B/W

R4-1
B/W

R4-2
B/W

R4-5
B/W


R4-7
B/W


R4-8
B/W

R4-7AL
B/W

R4-7AR
B/W

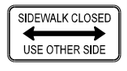
R4-7BL
B/W

R4-7BR
B/W

R5-1
WR/W

R9-8
B/W

R9-9
B/W



R9-10
B/W

R9-11
B/W

R9-11a
B/W

R11-2
B/W


W1-1R
B/0


W1-2R
B/0


W1-3R
B/0


W1-4R
B/0


W1-4b
B/0


W1-4c
B/0


W1-6
B/0


W1-7
B/0


W1-8
B/0

W3-1
RB/O

W3-2
RB/O

W3-3
B(RYG)/0

W3-4
B/0

W3-5
B/0

W4-1
B/0

W4-2
B/0

W5-1
B/0

W5-2
B/0

W5-3
B/0

W6-1
B/0

W6-2
B/0

W6-3
B/0

W8-1
B/0

W8-2
B/0

W8-3
B/0

W8-4
B/0

W8-5
B/0

W8-6
B/0

W8-7
B/0

W8-8
B/0

W8-9
B/0

W8-9a
B/0

W8-15P
B/0

W8-11
B/0

W9-1L
B/0

W9-1R
B/0

W9-2L
B/0

W9-2R
B/0

W10-1
B/Y

W11-2
B/0

W12-1
B/0

W12-2
B/0

W13-1
B/0

W20-1A
B/0

W20-1B
B/0

W20-1C
B/0

W20-1D
B/0

W20-1E
B/0

W20-1F
B/0

W20-2A
B/0

W20-2B
B/0

W20-2C
B/0

W20-2D
B/0

W20-2E
B/0

W16-7P
B/0

W20-3
B/0

W20-4
B/0

W20-5a
B/0

W20-5L
B/0

W20-5R
B/0

W20-5C
B/0

W20-7A
B/0

W20-7
B/0

W21-1A
B/0

W21-1
B/0

W21-5
B/0

W21-5a
B/0

W21-6
B/0

W21-7
B/0

W16-2P
B/0

W22-1
B/0

W22-2
B/0

W22-3
B/0

COLOR CODES
Legend and/or Symbol Background

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

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.

MOT-1-06
B/0

MOT-4-06
B/0

MOT-5-06
MOT-6-06
B/0

MOT-7-06
B/0

MOT-8-06
B/0

MOT-9-06
B/0

MOT-10-06
B/0

MOT-11-06
BLUE/W

MOT-12-06R
B/W

MOT-12-06L
B/W

MOT-13-06
(Limited access facilities)
MOT-14-06
(All other facilities)

MOT-15-06
B/0

W8-15P
B/0

MOT-16-06
B/0

MOT-17-06
B/0

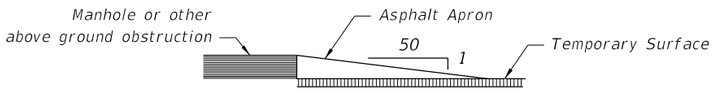
MOT-18-10
B/0

COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

MANHOLES/CROSSWALKS/JOINTS

Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than ¼" shall have a temporary asphalt apron constructed as shown in the diagram below.

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



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.

REMOVING PAVEMENT MARKINGS

Existing pavement markings that conflict with temporary work zone delineation shall be removed by any method approved by the Engineer, where operations exceed one daylight period. Remove conflicting pavement marking using a method that will not damage the surface texture of the pavement, unless the pavement will be restored prior to traffic use. Painting over existing pavement markings with black paint or spraying with asphalt shall not be accepted as substitute for removal or obliteration. Full pavement width overlays of either a structural or friction course (non-final surface) are an acceptable alternate means to achieve removal.

SIGNALS

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

Maintain all existing actuated or traffic responsive mode signal operations for main and side street movements for the duration of the Contract and require restoration of any loss of detection within 12 hours. The contractor shall select only detection technology listed on the Department's Approved Products List (APL) and approved by the Engineer to restore detection capabilities.

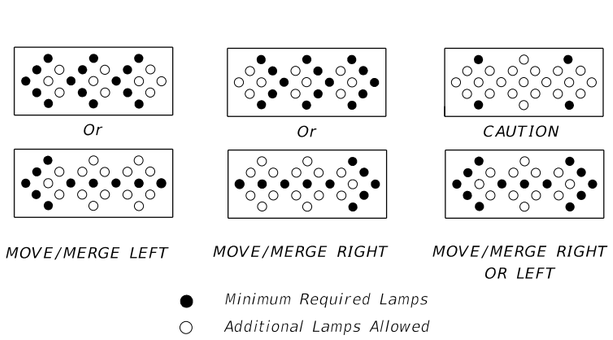
ADVANCE WARNING ARROW BOARDS

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.



MODES

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS)

The PCMS can be used to:

1. Supplement standard signing in construction or maintenance work zones.
2. Reinforce static advance warning messages.
3 Provide motorists with updated guidance information.

PCMS should be placed approx. 500 to 800 feet in advance of the work zone conflicts or 0.5 to 2 miles in advance of complex traffic control schemes which require new and/or unusual traffic maneuvers.

If PCMS are to be used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.

For additional information refer to the FDOT Plans Preparation Manual, Volume I, Chapter 10.

TRUCK/TRAILER-MOUNTED ATTENUATORS

Truck/Trailer-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Indexes 102-607 and 102-619. For short-term, stationary operations, see Part VI of the MUTCD.

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.

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.

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DROP-OFF CONDITION NOTES

1. These conditions and treatments can be applied only in work areas that fall within a properly signed work zone.

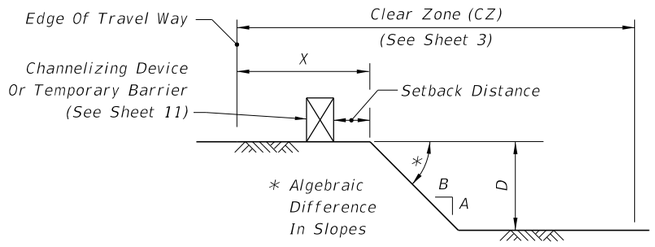
2. When drop-offs occur within the clear zone due to construction or maintenance activities, protection devices are required (See Table 1). A drop-off is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slope (A:B) steeper than 1:4. In superelevated sections, 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, LSD. Use of this treatment in lieu of a temporary barrier is not eligible for CSIP consideration. Conduct daily inspections for deficiencies related to erosion, excessive slopes, rutting or other adverse conditions. Repair any deficiencies immediately.

4. For Setback Distance, refer to the Index or Approved Products List (APL) drawing of the selected barrier.

5. For Conditions 1 and 3 provided in Table 1, 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 ≥ 6", no channelizing device will be required. For curb heights < 6", see Table 1.



DROP-OFF CONDITION DETAIL

Table 1
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	Removal of portions of Bridge Deck		Temporary Barrier

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING NOTES

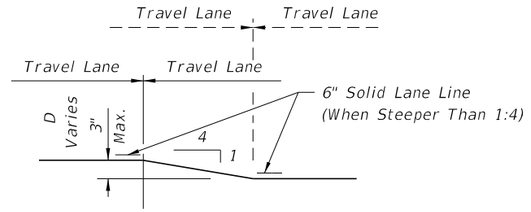
1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.

2. Whenever there is a difference in elevation between adjacent travel lanes, the W8-11 sign with "UNEVEN LANES" is required at intervals of ½ mile maximum.

3. If D is 1½" 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

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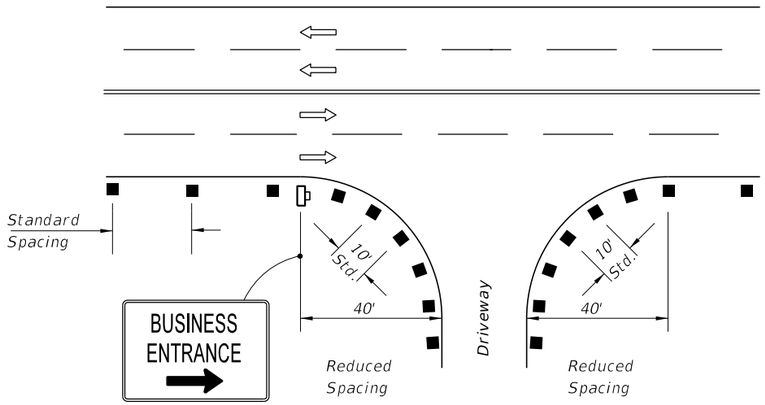


1. For single business entrances, place one 24" x 36" business sign for each driveway entrance affected. Signs shall show specific business names. Logos may be provided by business owners. Standard BUSINESS ENTRANCE sign in Index 700-102 may be used when approved by the Engineer.

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.

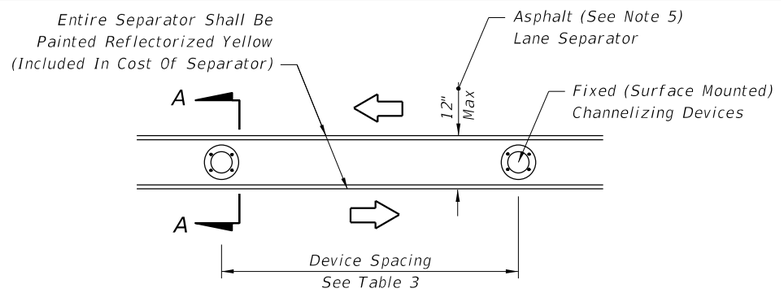
3. Channelizing devices shall be placed at a reduced spacing on each side of the driveway entrance, but shall not restrict sight distance for the driveway users.

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.

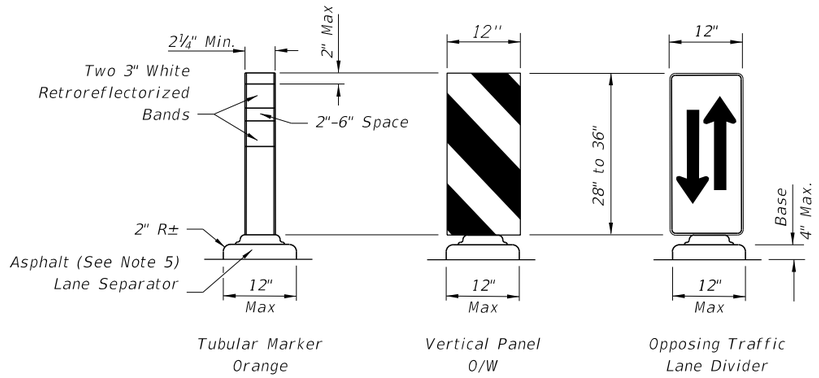
PLACEMENT OF BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES AT BUSINESS ENTRANCE

Table 3
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft.)			
	Tubular Markers		Vertical Panels or Opposing Traffic Lane Divider	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100



PLAN



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: 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. 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.

6. Any damage to existing pavement caused by the removal of temporary lane separator shall be satisfactorily repaired and the cost of such repairs are to be included in the cost of Maintenance of Traffic, LS.

TEMPORARY LANE SEPARATOR

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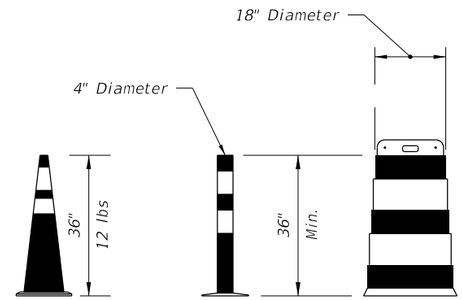
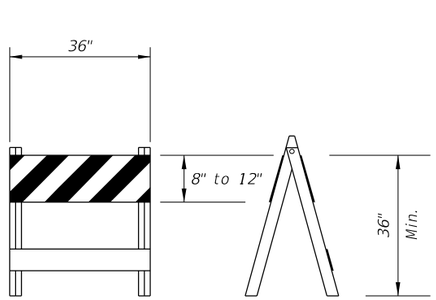


CONES

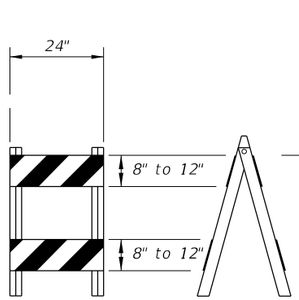
TUBULAR MARKER

TUBULAR NON-FIXED MARKER TO BE USED DURING DAYLIGHT ONLY

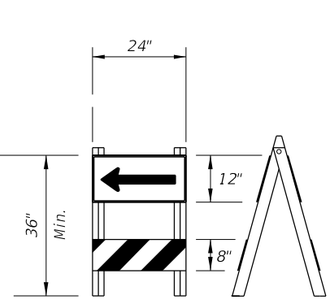
PLASTIC DRUMS



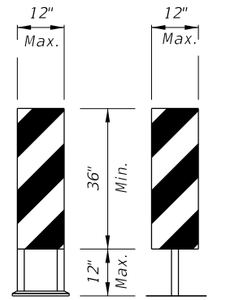
TYPE I BARRICADE



TYPE II BARRICADE

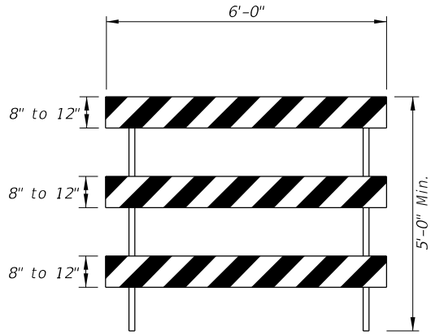


DIRECTION INDICATOR BARRICADE



A-FRAME POST MOUNT

VERTICAL PANEL



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 either 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. Vehicular longitudinal channelizing devices shall not exceed 36" in height. For vehicular longitudinal channelizing devices (LCDs) less than 32" in height, the LCD shall be supplemented with approved fixed (surface mounted) channelizing devices (tubular markers, vertical panels, etc.) along the run of the LCD, at the ends, at 50' centers on tangents, and 25' centers on radii. The cost of the fixed supplemented channelizing devices shall be included in the cost of the LCD. LCDs less than 32" in height shall not be used for speeds greater than 45 mph.

10. 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 ⅛" 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.

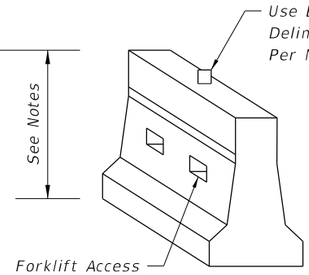
11. For Barrier Delineators, see Specification 102. Place on top of unit so that retroreflective sheeting faces vehicular traffic. Color must match adjacent longitudinal pavement marking.

TEMPORARY BARRIER NOTES:

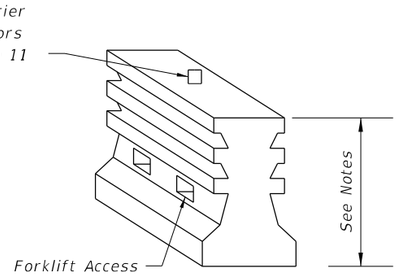
1. Where a barrier is specified, any of the types below may be used in accordance with the applicable Index:

Index	Description
102-100	Temporary Barrier
102-120	Low Profile Barrier
536-001	Guardrail

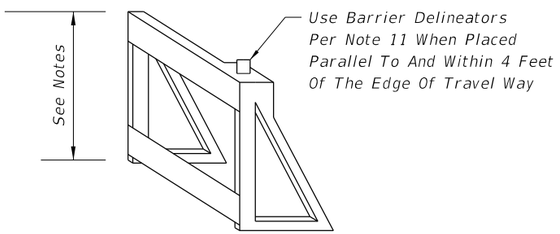
2. Trailer Mounted Barriers may be used to provide positive protection for workers within the work areas. APL drawings may be used as a guide to develop project specific Temporary Traffic Control Plans that are signed and sealed by the Contractor's Engineer.



VEHICULAR LCD



VEHICULAR/ PEDESTRIAN LCD



PEDESTRIAN LCD

LONGITUDINAL CHANNELIZING DEVICE

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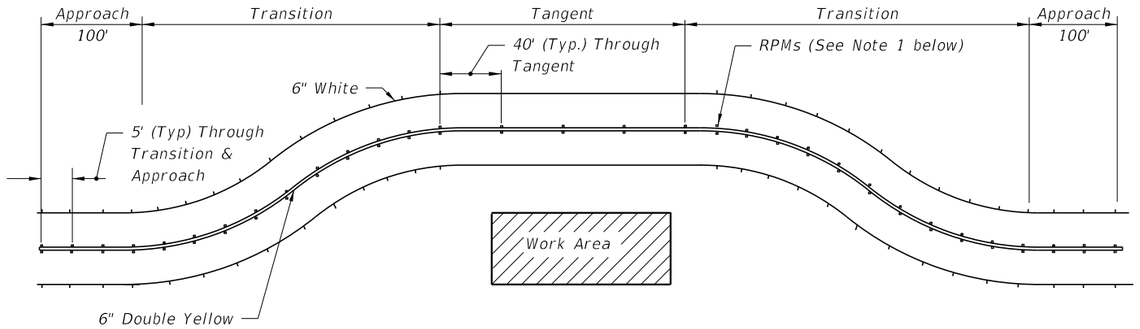


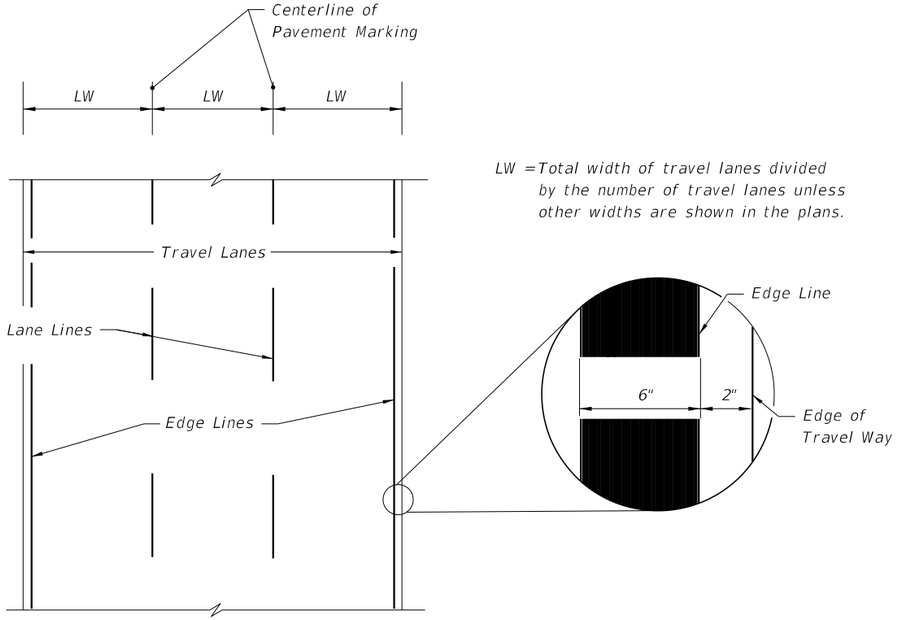
USE OF RPMS TO SUPPLEMENT PAINT OR REMOVABLE TAPE IN WORK ZONES

1. RPMs shall be installed as a supplement to:
   a. All lane lines.
   b. Edge lines in transition & approach areas.
   c. Edge lines of gore areas.
2. Placement of RPMs should be as shown in Index 706-001 with the following exceptions:
   RPMs shall be placed at 5 feet center to center in approach and transition areas.

NOTES FOR RAISED PAVEMENT MARKERS:

1. The color of the raised pavement marker under both day and night conditions shall conform to the color of the marking for which they serve as a positioning guide, or for which they supplement.

2. RPMs used to supplement lane lines are to be paid for as Raised Pavement Marker (Temporary), EA. RPMs used as a temporary substitute for paint or removable tape due to equipment malfunction are to be placed at the Contractor's expense.



LW = Total width of travel lanes divided by the number of travel lanes unless other widths are shown in the plans.

PLACEMENT OF PAVEMENT MARKINGS

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PAVEMENT MARKINGS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX	SHEET
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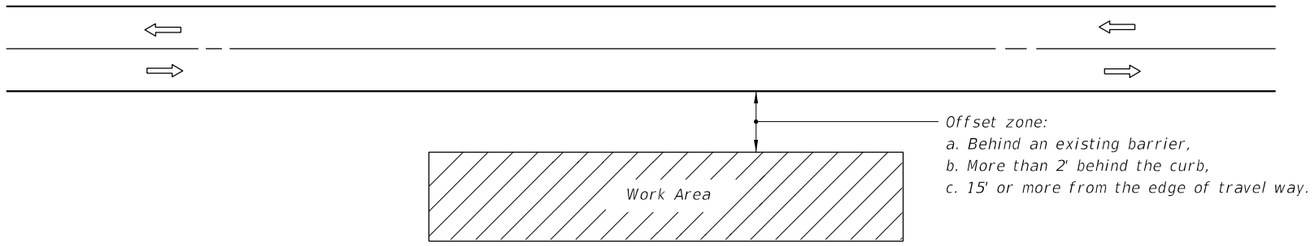

SYMBOLS

Work Area

Lane Identification + Direction of Traffic

GENERAL NOTES

1. If 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, traffic control will be in conformance with Index 102-602.
2. No special signing is required.
3. When a side road intersects the highway within the work area, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
4. When construction activities encroach on a sidewalk refer to Index 102-660.
5. For general TCZ requirements and additional information, refer to Index 102-600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS AND THEIR ACTIVITIES ARE BEHIND AN EXISTING BARRIER, MORE THAN 2' BEHIND THE CURB, OR 15' OR MORE FROM THE EDGE OF TRAVEL WAY.

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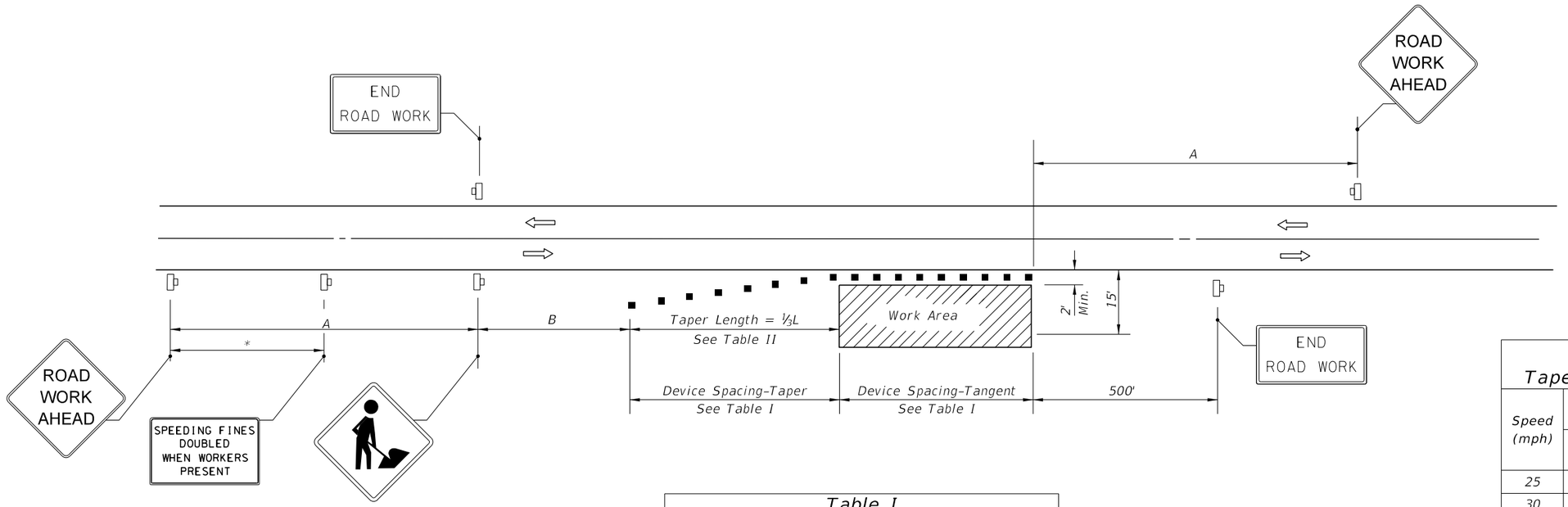
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK OUTSIDE SHOULDER	INDEX	SHEET
11/01/17						102-601	1 of 1



DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft.)	
	A	B
40 mph or less	200	200
45 mph	350	350
50 mph or greater	500	500

*Midway between signs.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Taper Length - Shoulder

Speed (mph)	½L (ft)			Notes
	8' Shldr.	10' Shldr.	12' Shldr.	
25	28	35	42	$L=\frac{WS^2}{60}$
30	40	50	60	
35	55	68	82	
40	72	90	107	
45	120	150	180	L=WS
50	133	167	200	
55	147	183	220	
60	160	200	240	
65	173	217	260	
70	187	233	280	

8' minimum shoulder width

½L = Length of shoulder taper in feet

W = Width of total shoulder in feet (combined paved and unpaved width)

S = Posted speed limit (mph)

SYMBOLS

Work Area

■ Channelizing Device (See Index 102-600)

Work Zone Sign

Lane Identification + Direction of Traffic

GENERAL NOTES

1. When four or more work vehicles enter the through traffic lanes in a one hour period or less (excluding establishing and terminating the work area), the advanced FLAGGER sign shall be substituted for the WORKERS sign. For location of flaggers and FLAGGER signs, see Index 102-603.
2. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign only on the side where the shoulder work is being performed.
3. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
4. For general TCZ requirements and additional information, refer to Index 102-600.

DURATION NOTES

1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

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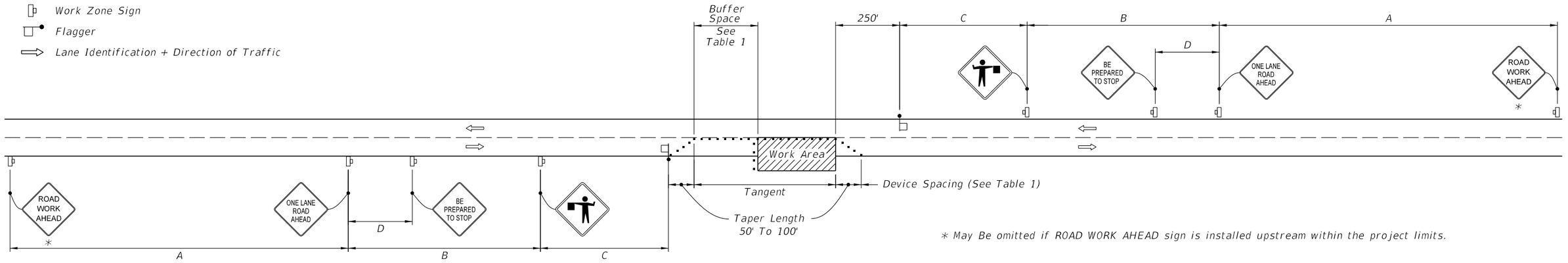
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK ON SHOULDER	INDEX 102-602	SHEET 1 of 1

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Flagger
- Lane Identification + Direction of Traffic



WITHOUT TEMPORARY RAISED RUMBLE STRIPS

GENERAL NOTES:

1. Special Conditions may be required in accordance with these notes and the following sheets:

   A. Railroad Crossings:
      a. If an active railroad crossing is located closer to the Work Area than the queue length plus 300 feet, extend the Buffer Space as shown on Sheet 3.
      b. If the queuing of vehicles across an active railroad crossing cannot be avoided, provide a uniformed traffic control officer or flagger at the highway-rail grade crossing to prevent vehicles from stopping within the highway-rail grade crossing, even if automatic train warning devices are in place.
   B. If the Work Area encroaches on the Centerline, use the Layout for Temporary Lane Shift to Shoulder on Sheet 3 only if the Existing Paved Shoulder width is sufficient to provide for an 11' lane between the Work Area and the Edge of Existing Paved Shoulder. Reduce the posted speed when appropriate.

2. Temporary Raised Rumble Strips:

   A. Use when both of the following conditions are met concurrently:
      a. Existing Posted Speed is 55 mph or greater;
      b. Work duration is greater than 60 minutes.
   B. Use a consistent Strip color throughout the work zone.
   C. Place each Rumble Strip Set transversely across the lane at locations shown.
   D. Use Option 1 or Option 2 as shown on Sheet 2. Use only one option throughout work zone.

3. 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.

4. When a side road intersects the highway within the TTC zone, place additional TTC devices in accordance with other applicable TCZ Indexes.

5. The two channelizing devices directly in front of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

6. When Buffer Space cannot be attained due to geometric constraints, use the greatest attainable length, not less than 200 ft, for posted speeds greater than 25 mph.

7. ROAD WORK AHEAD and the BE PREPARED TO STOP signs may be omitted if all of the following conditions are met:

   A. Work operations are 60 minutes or less.
   B. Speed limit is 45 mph or less.
   C. There are no sight obstructions to vehicles approaching the work area for a distance equal to the Buffer Space shown in Table 1.
   D. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   E. Volume and complexity of the roadway has been considered.
   F. If a railroad crossing is present, vehicles will not queue across rail tracks.
   G. AFADs are not in use.

8. See Index 102-600 for general TCZ requirements and additional information.

9. Automated Flagger Assistance Devices (AFADs) may be used in accordance with Specifications Section 102, 990 and the APL vendor drawings.

TABLE 1

Posted Speed	DEVICE SPACING				Distance Between Signs				Buffer Space
	Maximum Spacing of Cones or Tubular Markers		Maximum Spacing of Type I or Type II Barricades/Panels/Drums						
	On a Taper	On a Tangent	On a Taper	On a Tangent	A	B	C	D	
25	20'	50'	20'	50'	200'	200'	200'	100'	155'
30	20'	50'	20'	50'	200'	200'	200'	100'	200'
35	20'	50'	20'	50'	200'	200'	200'	100'	250'
40	20'	50'	20'	50'	200'	200'	200'	100'	305'
45	20'	50'	20'	50'	350'	350'	350'	175'	360'
50	20'	50'	20'	100'	500'	500'	500'	250'	425'
55	20'	50'	20'	100'	2640'	1500'	1000'	500'	495'
60	20'	50'	20'	100'	2640'	1500'	1000'	500'	570'
65	20'	50'	20'	100'	2640'	1500'	1000'	500'	645'
70	20'	50'	20'	100'	2640'	1500'	1000'	500'	730'

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA BETWEEN THE CENTERLINE AND A LINE 2' OUTSIDE THE EDGE OF TRAVEL WAY.

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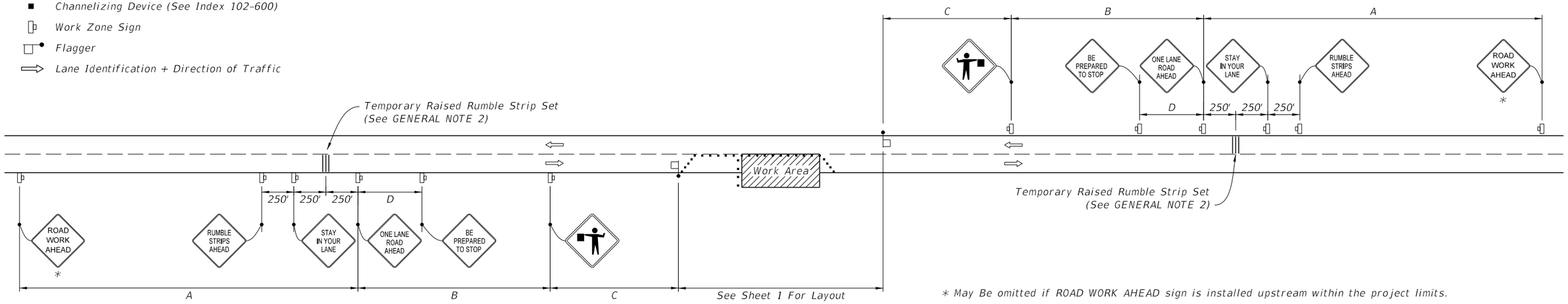
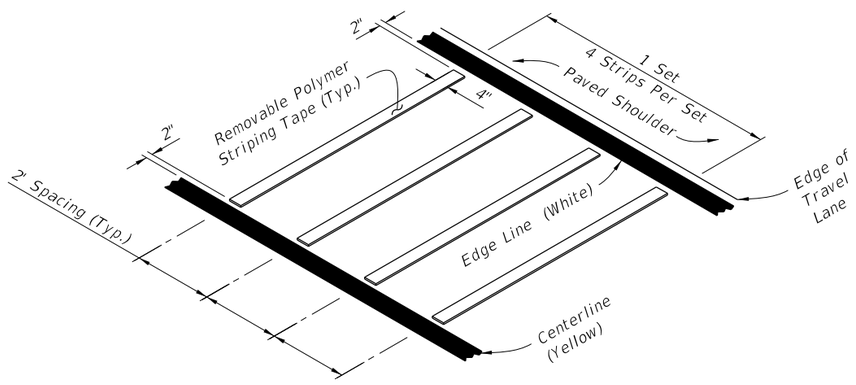
SYMBOLS:

- *Work Area*
- *Channelizing Device (See Index 102-600)*
- *Work Zone Sign*
- *Flagger*
- *Lane Identification + Direction of Traffic*



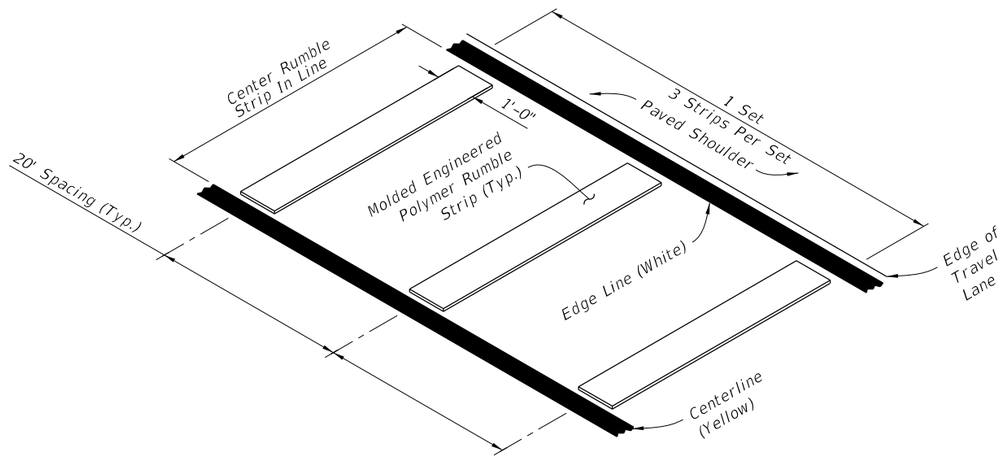
* May Be omitted if ROAD WORK AHEAD sign is installed upstream within the project limits.

WITH TEMPORARY RAISED RUMBLE STRIPS
(When Required See GENERAL NOTE 2)



REMOVABLE POLYMER STRIPING TAPE

RUMBLE STRIP SET
OPTION - 1



MOLDED ENGINEERED POLYMER SET

RUMBLE STRIP SET
OPTION - 2

TEMPORARY RAISED RUMBLE STRIPS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY	INDEX	SHEET
11/01/17						102-603	2 of 3

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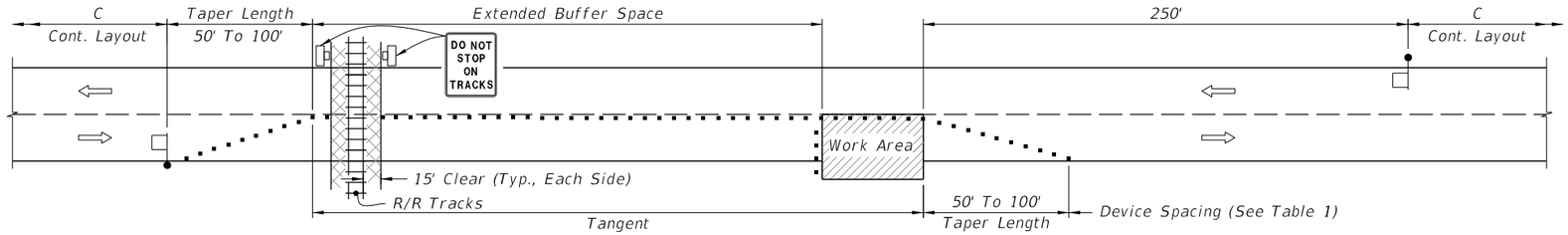
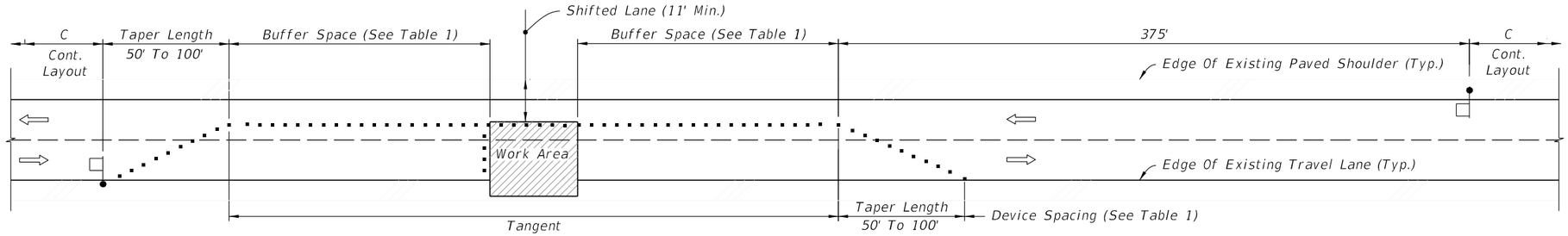


TEMPORARY RAILROAD CROSSING BUFFER SPACE EXTENSION



TEMPORARY LANE SHIFT TO SHOULDER WHEN WORK AREA ENCROACHES ON THE CENTERLINE

SPECIAL CONDITIONS

Cross Reference:
1. See General Note 1, Sheet 1 for more information.

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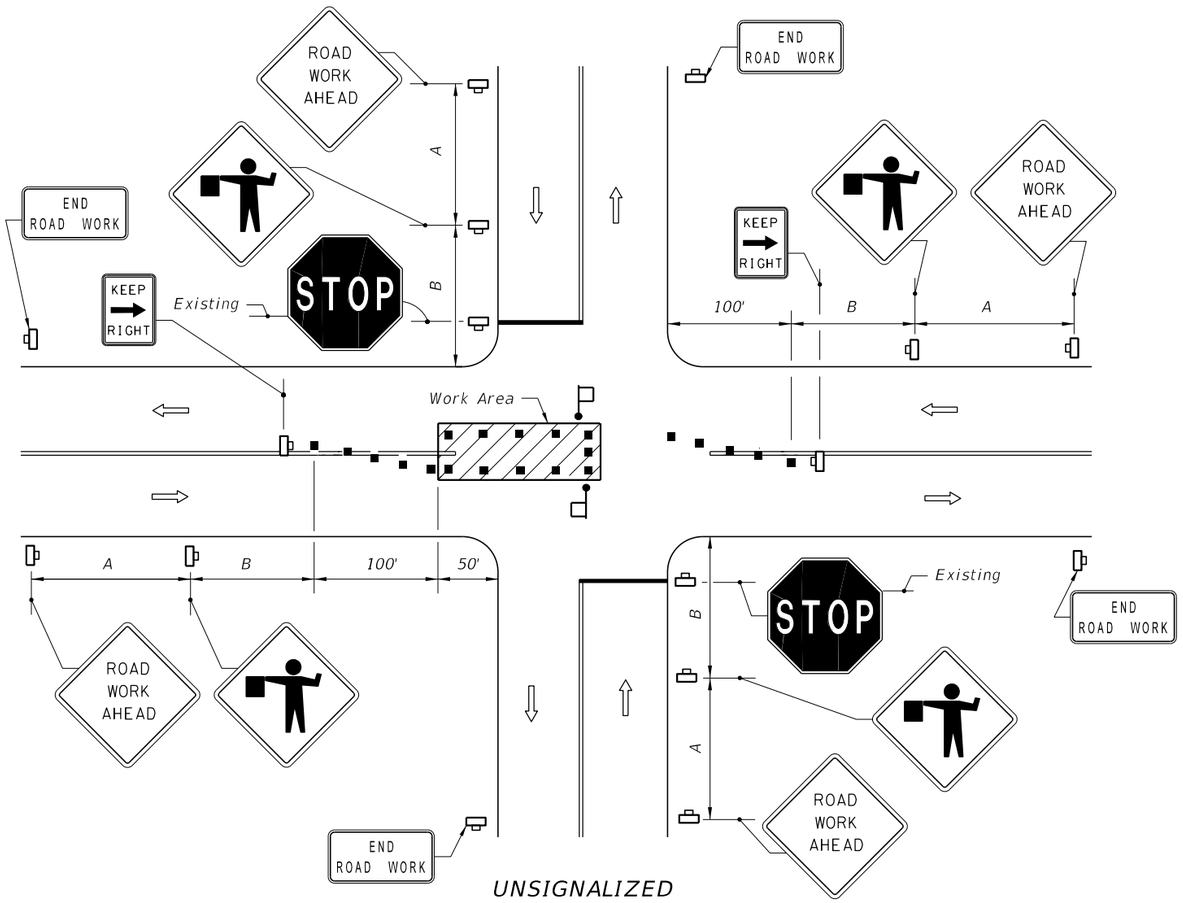
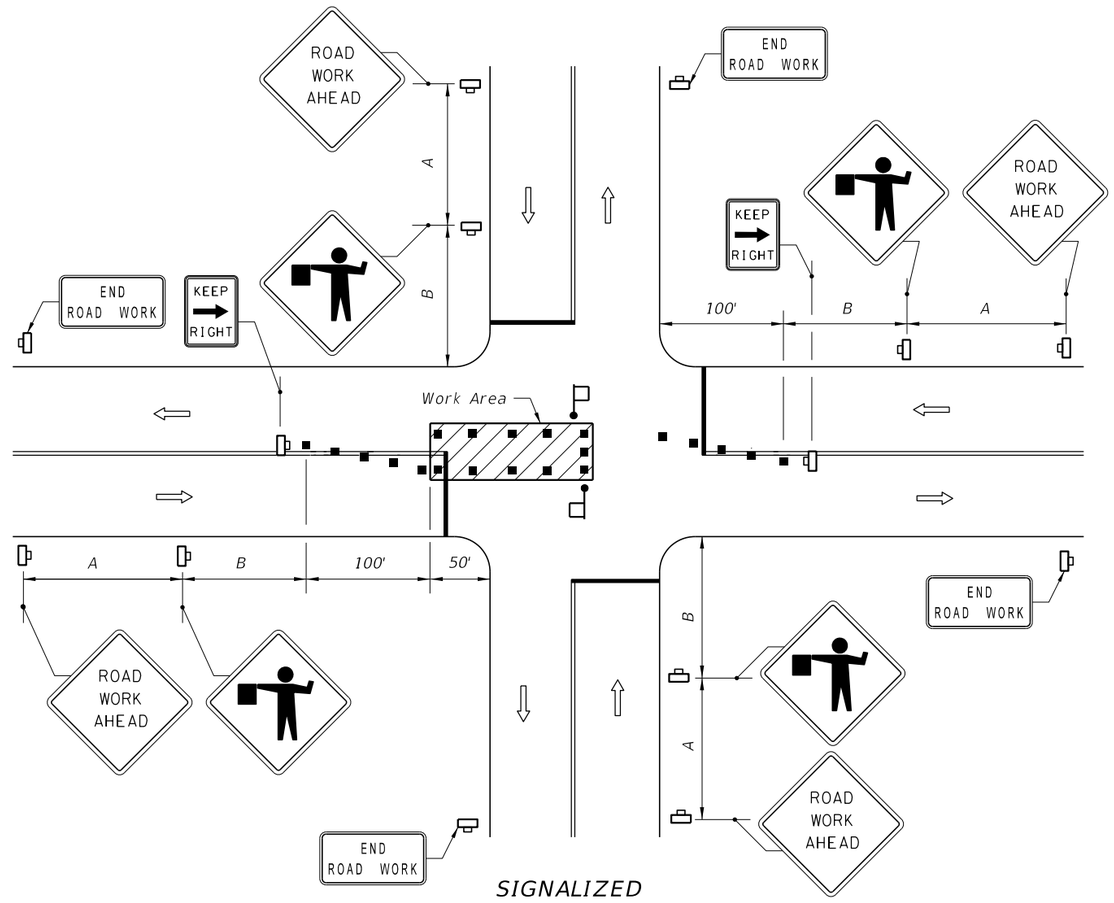


UNSIGNALIZED



SIGNALIZED

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Flagger
- Stop Bar
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. The FLAGGER legend sign may be substituted for the symbol sign.
2. When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index 700-101.
3. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index 102-660.
4. Flaggers shall be located where they can control more than one direction of traffic.

   Flaggers shall be in sight of each other or in direct communication at all times.
5. Maximum spacing between channelizing devices shall be not greater than 20'.
6. Temporary signal phasing modifications are to be approved by the District Traffic Operations Engineer prior to the beginning of work.
7. For general TCZ requirements and additional information, refer to Index 102-600.
8. 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.

DURATION NOTES

1. ROAD WORK AHEAD AND END ROAD WORK sign may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Speed is 45 mph or less.
   c. No sight obstructions to vehicles approaching the work area for a distance equal to A plus B.
   d. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e. Volume and complexity of the roadway has been considered.

DISTANCE BETWEEN SIGNS

Speed	Spacing (ft.)	
	A	B
40 mph or less	200	200
45 mph	350	350

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF A PORTION OF ONE OR MORE TRAFFIC LANES IN AN INTERSECTION.

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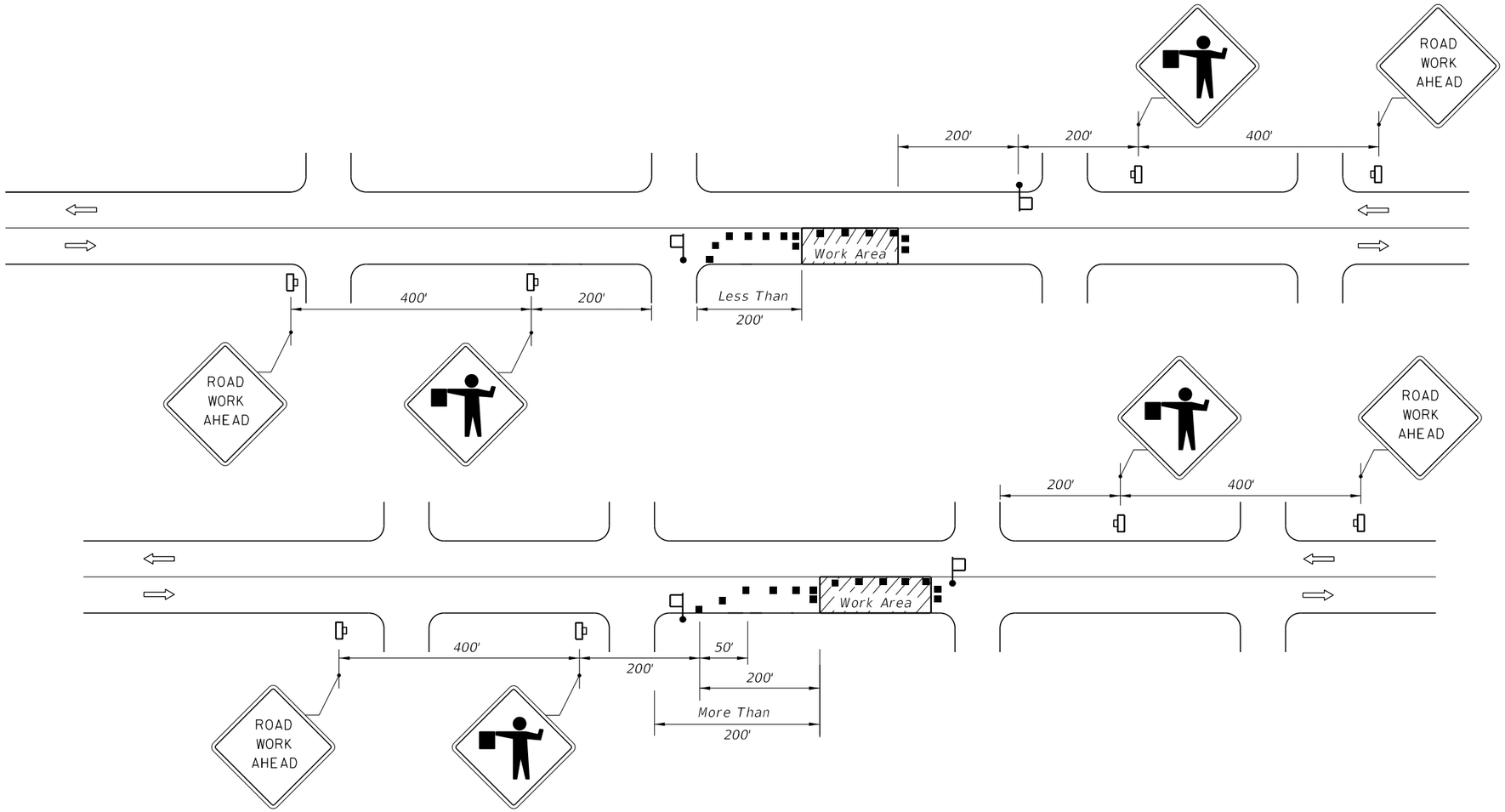
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK IN INTERSECTION	INDEX	SHEET
11/01/17						102-604	1 of 1



CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF ONE TRAFFIC LANE, FOR WORK AREAS LESS THAN 200' DOWNSTREAM FROM AN INTERSECTION FOR A PERIOD OF MORE THAN 60 MINUTES.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF ONE TRAFFIC LANE, FOR WORK AREAS 200' OR MORE DOWNSTREAM FROM AN INTERSECTION FOR A PERIOD OF MORE THAN 60 MINUTES.

SYMBOLS

- *Work Area*
- *Channelizing Device (See Index 102-600)*
- *Work Zone Sign*
- *Flagger*
- *Lane Identification + Direction of Traffic*

GENERAL NOTES

1. *Work operations shall be confined to one travel lane, leaving the opposing travel lane open to traffic.*
2. *When vehicles in a parking zone block the line of sight to TCZ signs or when TCZ signs encroach on a normal pedestrian walkway, the signs shall be post mounted and located in accordance with Index 700-101.*
3. *If work area is confined to an outside auxiliary lane, the work area shall be barricaded and the FLAGGER signs replaced by ROAD WORK AHEAD signs. Flaggers are not required.*
4. *Flaggers shall be in sight of each other or in direct communication at all times.*
5. *The FLAGGER legend sign may be substituted for the symbol sign.*
6. *The maximum spacing between devices shall be no greater than 25.'*
7. *For general TCZ requirements and additional information, refer to Index 102-600.*
8. *The two channelizing devices directly in front and directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.*
9. *Use Temporary Raised Rumble Strips in accordance with Index 102-603. Placement of Rumble Strips and additional signs should begin at FLAGGER sign location.*

DURATION NOTES

1. *ROAD WORK AHEAD sign may be omitted if all of the following conditions are met:*
   a. *Work operations are 60 minutes or less.*
   b. *Speed is 45 mph or less.*
   c. *No sight obstructions to vehicles approaching the work area for a distance of 600 feet.*
   d. *Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.*
   e. *Volume and complexity of the roadway has been considered.*

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK NEAR INTERSECTION	INDEX 102-605 / SHEET 1 of 1

GENERAL NOTES

1. Use either portable signals or span wire signals and include two signal faces for each approach.

2. Obtain approval from the District Traffic Operations Engineer for the installation and timing of the signals prior to the signals being placed in operation. 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. For the maximum distance between portable distance between portable temporary traffic signals do not exceed the distance at which the signals can safely communicate. When the distance between signals is 0.25 miles to 0.50 miles, use a countdown timer on both signals. When the distance between signals is greater than 0.50 miles, use a combination of a pilot vehicle and manually controlled temporary traffic signals.

4. The SIGNAL AHEAD legend sign may be substituted for the symbol sign.

5. 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.

6. Monitor temporary traffic signals by having one or more workers present during operation. In the event of a temporary traffic signal failure, maintain traffic with flaggers.

7. Use Temporary Raised Rumble Strips in accordance with Index 102-603.

SYMBOLS

- Work Area
- Work Zone Sign
- Temporary Traffic Signal
- Channelizing Device (See Index 102-600)
- Type III Barricade
- Stop Bar
- Flagger
- Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES WILL ENCROACH ON ONE LANE OR MOMENTARILY ENCROACH ON BOTH LANES OF A TWO-LANE TWO-WAY ROADWAY AND TRAFFIC SIGNALS ARE NEEDED.

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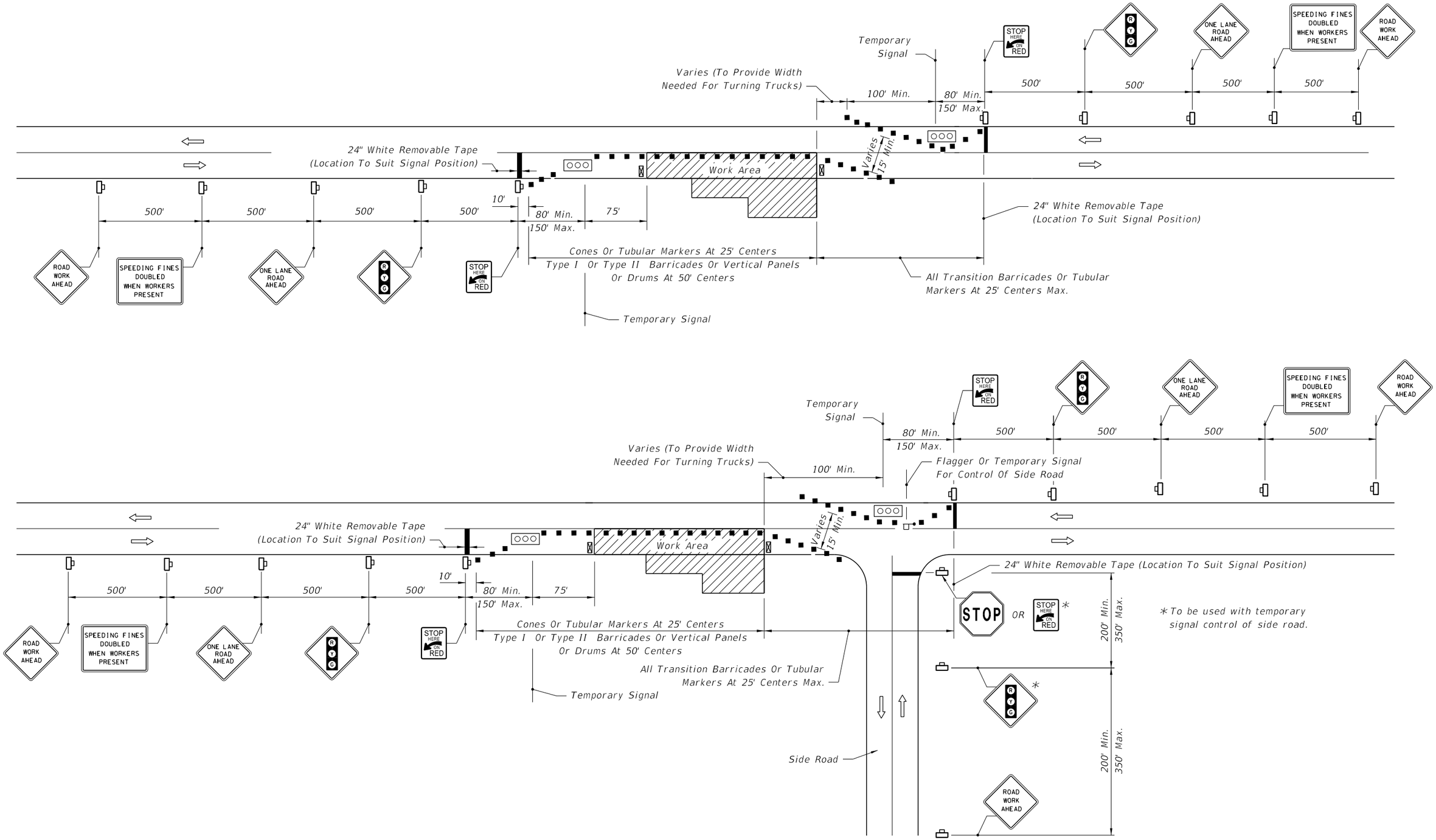
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY - SIGNAL CONTROL	INDEX	SHEET
11/01/17						102-606	1 of 4



SINGLE LANE CLOSURE • ROADWAY AND BRIDGES ALL LENGTHS

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY - SIGNAL CONTROL	INDEX 102-606	SHEET 2 of 4

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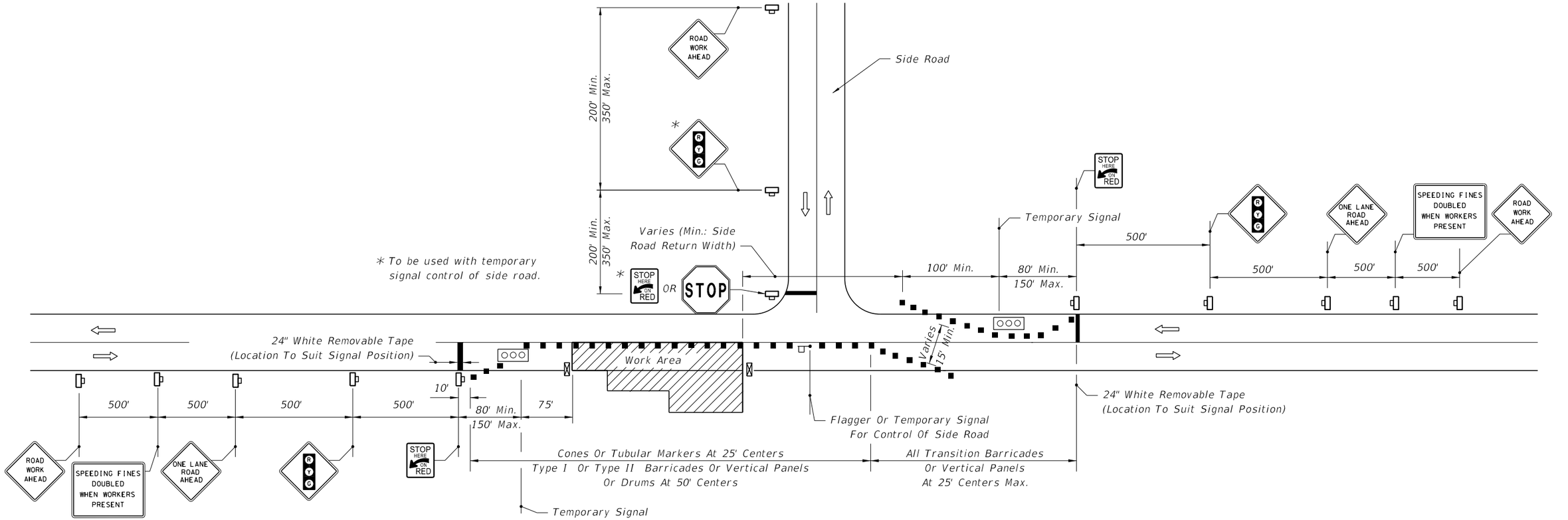
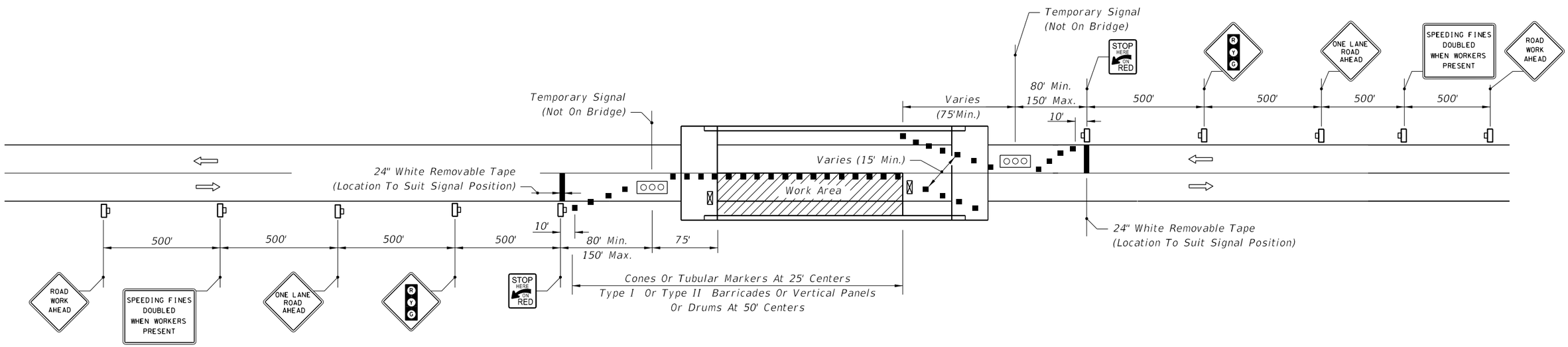


SINGLE LANE CLOSURE • ROADWAY AND BRIDGES ALL LENGTHS



SINGLE LANE CLOSURE • SHORT BRIDGES

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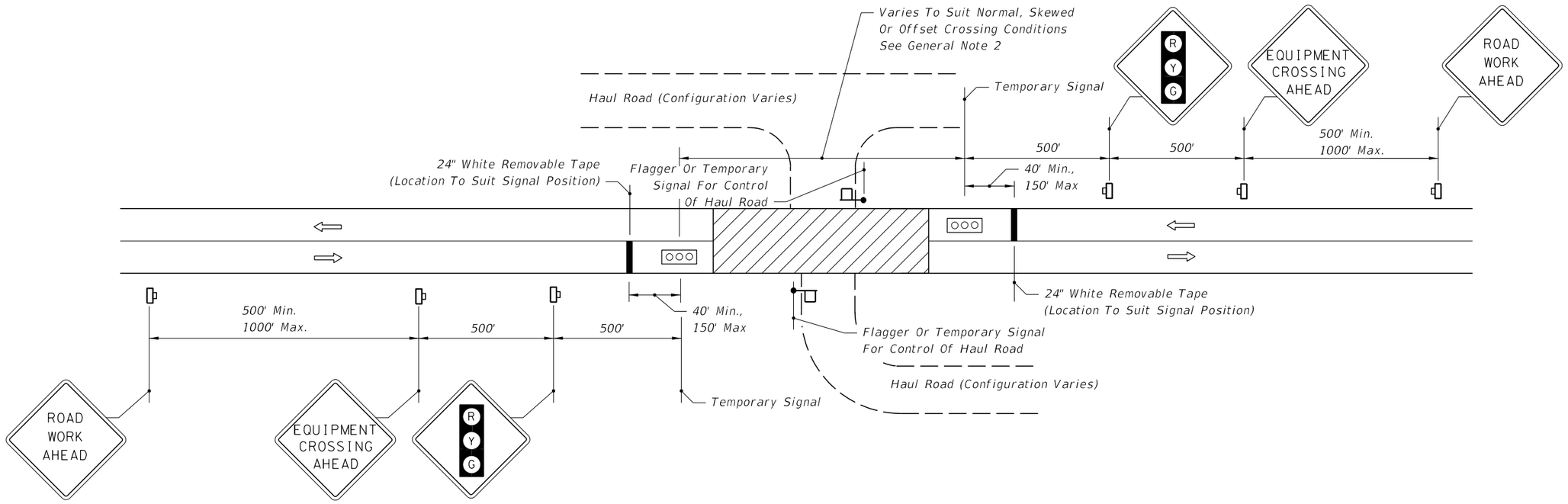
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY - SIGNAL CONTROL	INDEX 102-606	SHEET 3 of 4



MOMENTARY ROADWAY CLOSURE • HAUL ROUTE CROSSING

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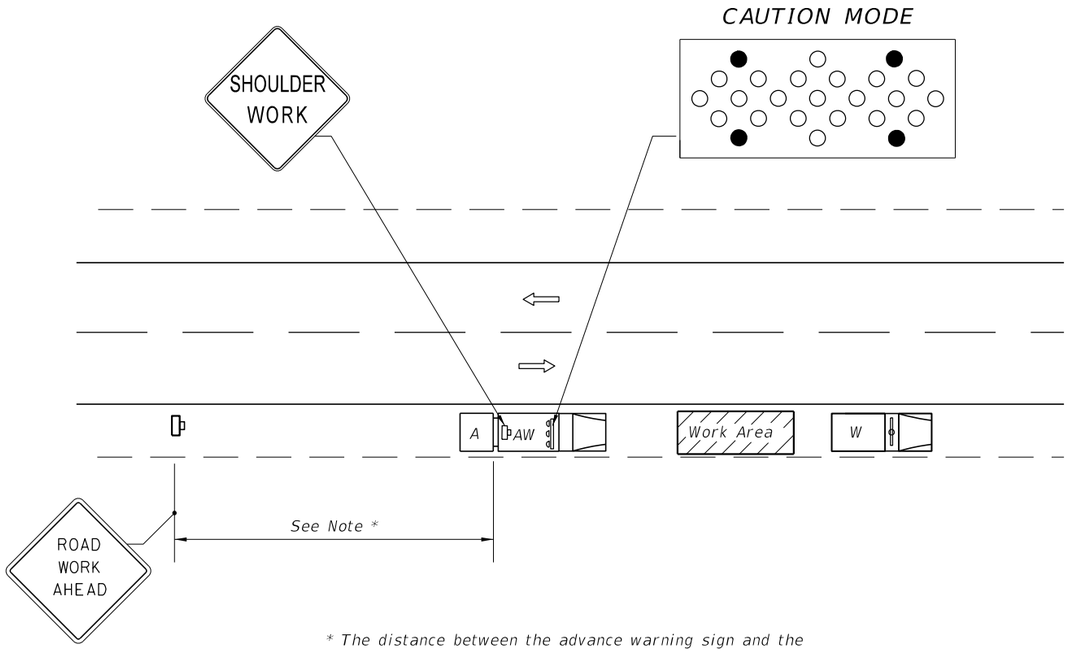
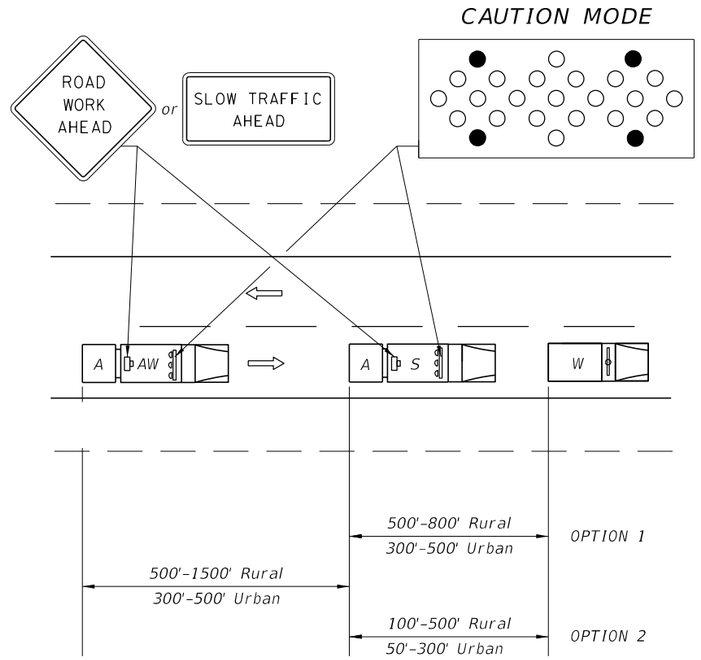
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY - SIGNAL CONTROL	INDEX 102-606	SHEET 4 of 4



* The distance between the advance warning sign and the work location should not exceed 5 miles.

WORK ON SHOULDER



OPTION 1: Advanced Warning Vehicle is optional and to be operated on the shoulder when feasible. If an Advance Warning Vehicle is operated in the shoulder, an approved Truck Mounted Attenuator is required on both the Advance Warning and Shadow Vehicles. If an Advance Warning Vehicle is operated in the lane behind the Shadow Vehicle, an approved Truck Mounted Attenuator will be required on the Advance Warning Vehicle, but not required on the Shadow Vehicle. The Advance Waning Arrow Board and Warning Sign is required on both the Advance warning and Shadow Vehicles.

OPTION 2: Advanced Warning Vehicle is required and must be operated in the lane behind the shadow vehicle. An approved Truck Mounted Attenuator will be required on the Advanced Warning Vehicle but not required on the Shadow Vehicle. The Advance Warning Arrow Board and Warning Sign is required on both the Advance Warning and Shadow Vehicles.

WORK IN TRAVEL WAY
(Option 2 Shown, Option 1 Similar)

SYMBOLS

- Work Area
- Work Zone Sign
- Lane Identification + Direction of Traffic
- W — Work Vehicle With Rotating/Strobe Lights
- X — Shadow (S) Or Advance Warning (AW) Vehicle with Advance Warning Arrow Board and Sign Message
- A — Truck/Trailer Mounted Attenuator (TMA)
- Advanced Warning Arrow Board

GENERAL NOTES

1. Where work activities within 2' of the edge of travel way are incidental (i.e., Mowing, Litter Removal), the Engineer may delete requirements for signs and the advance warning vehicle provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
2. If an arrow board is used, the caution mode shall be used.
3. Shadow and Advance Warning Vehicle shall display rotating/strobe lights.
4. For general TCZ requirements and additional information, refer to Index 102-600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE AN INTERMITTENT OR CONTINUOUS MOVING OPERATION.

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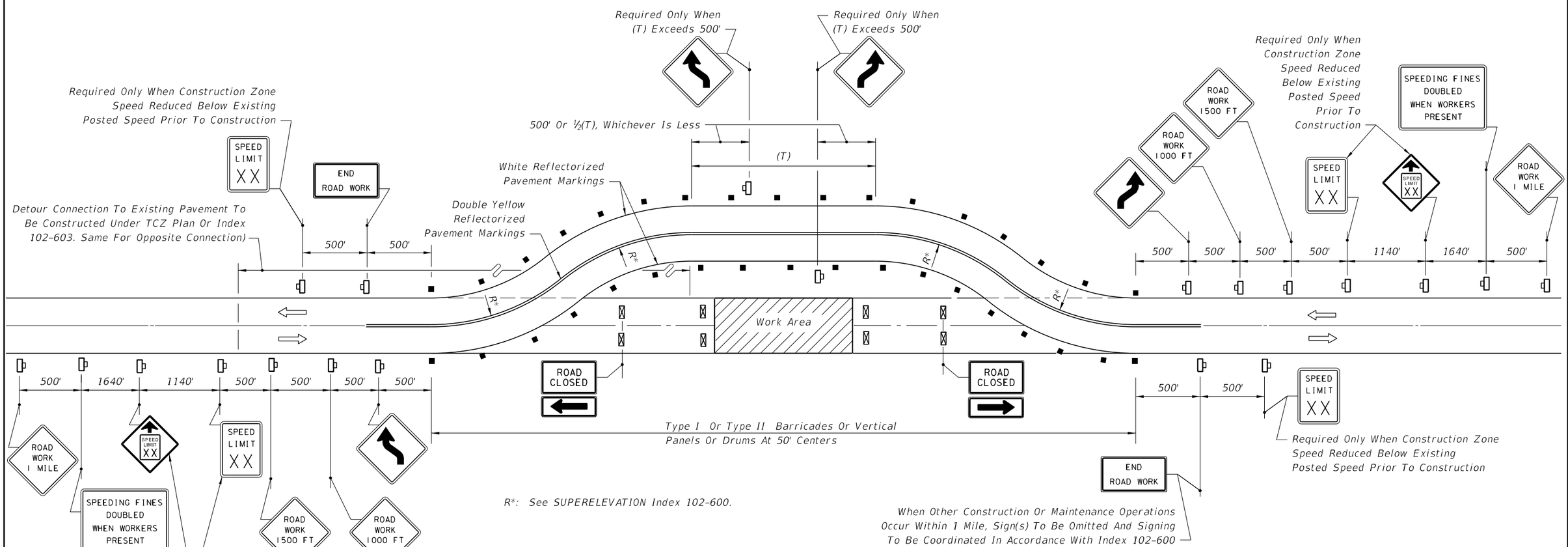
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY MOBILE OPERATION, WORK ON SHOULDER AND WORK WITHIN THE TRAVEL WAY	INDEX 102-607	SHEET 1 of 1



R*: See SUPERELEVATION Index 102-600.

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. For speed sign applications, see Index 102-600.
2. Where the tangent distance (T) exceeds 600', spacing between cones or tubular markers may be increased to 50' or spacing between Type I or Type II barricades, vertical panels or drums may be increased to 100' within limits of the tangent, or post mounted delineators at 50' centers may be substituted for the barricades, vertical panels or drums.
3. On the existing pavement, all existing markings within the realignment which conflict with the revised traffic pattern are to be removed and removable pavement markings used for marking a new centerline and edge lines.
4. Where the tangent distance (T) exceeds 600' and no passing or stopping sight distance restrictions exist, the yellow reflectorized markings used to indicate the centerline of the traveled way may be replaced with yellow reflectorized markings in a broken pattern. For raised pavement marker application see Index 102-600 and Index 706-001.
5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
6. If temporary structures are required on the diversion, traffic control will be in conformance with Index 105-650.
7. For general TCZ requirements and additional information, refer to Indexes 102-600 and 706-001.
8. If posted speed for Work Zone is 45 mph or less, use "ROAD WORK ½ MILE" and space accordingly.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE THE CLOSURE OF BOTH LANES AND A TEMPORARY DIVERSION IS CONSTRUCTED.

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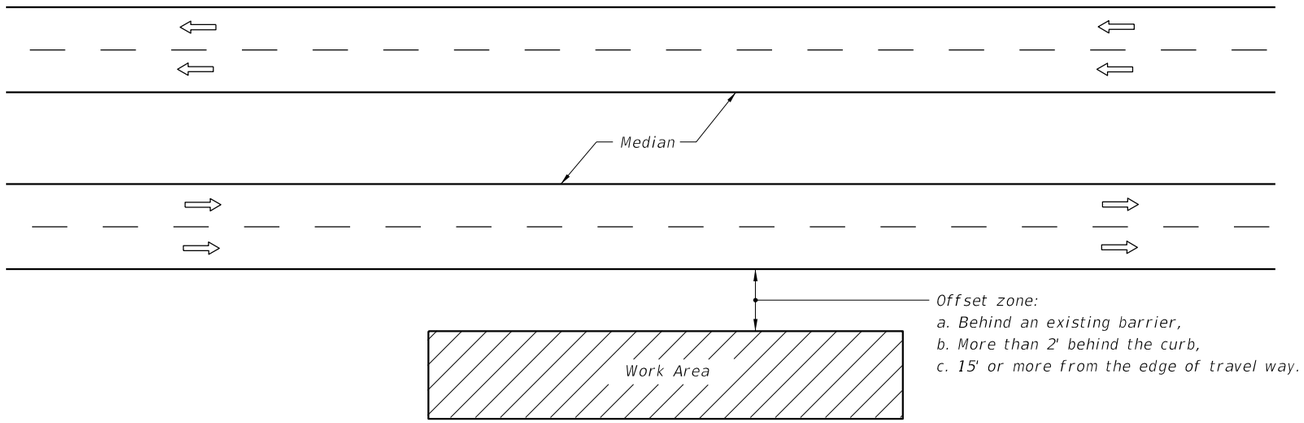
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	TWO-LANE, TWO-WAY TEMPORARY DIVERSION CONNECTION	INDEX	SHEET
11/01/17					102-608	1 of 1



GENERAL NOTES

1. If 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, traffic control will be in accordance with Index 102-612.
2. No special signing is required.
3. This index also applies when work is being performed on a multilane undivided highway.
4. This index also applies to work performed in the median behind an existing barrier or more than 15' from the edge of travel way, both roadways. Work performed in the median behind curb and gutter shall be in accordance with Index 102-612.
5. When a side road intersects the highway within the work area, additional traffic control devices shall be placed in accordance with other applicable TCZ Indexes.
6. When construction activities encroach on a sidewalk, refer to Index 102-660.
7. For general TCZ requirements and additional information, refer to Index 102-600.

SYMBOLS

Work Area

Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS AND THEIR ACTIVITIES ARE BEHIND AN EXISTING BARRIER, MORE THAN 2' BEHIND THE CURB, OR 15' OR MORE FROM THE EDGE OF TRAVEL WAY.

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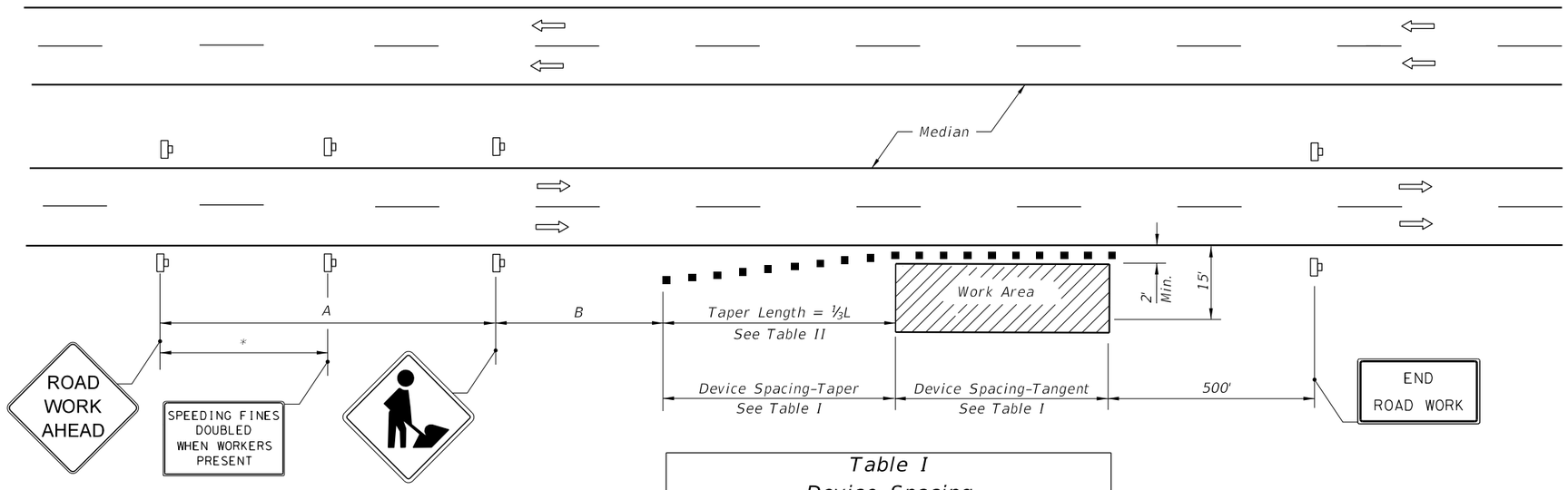
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, WORK OUTSIDE SHOULDER	INDEX	SHEET
11/01/17						102-611	1 of 1



DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft.)	
	A	B
40 mph or less	200	200
45 mph	350	350
50 mph or greater	500	500

* 250' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II Taper Length - Shoulder				
Speed (mph)	⅓L (ft.)			Notes
	8' Shldr.	10' Shldr.	12' Shldr.	
25	28	35	42	$L=\frac{WS^2}{60}$
30	40	50	60	
35	55	68	82	
40	72	90	107	
45	120	150	180	L=WS
50	133	167	200	
55	147	183	220	
60	160	200	240	
65	173	217	260	
70	187	233	280	

8' minimum shoulder width.

⅓L = Length of shoulder taper in feet

W = Width of total shoulder in feet (combined paved and unpaved width)

S = Posted speed limit (mph)

SYMBOLS

Work Area

Channelizing Device (See Index 102-600)

Work Zone Sign

Lane Identification + Direction of Traffic

GENERAL NOTES

1. When a high volume of work vehicles are entering and leaving the Work Area at speeds slower than 10 MPH below the posted speed, place an MOT-5-06 sign in the ROAD WORK AHEAD sign location and shift the ROAD WORK AHEAD sign upstream 500 ft.
2. This TCZ plan also applies to work performed in the median more than 2' but less than 15' from the edge of travelway.
3. When work is being performed on a multilane undivided roadway the signs normally mounted in the median (as shown) shall be omitted.
4. WORKERS signs to be removed or fully covered when no work is being performed.
5. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign.
6. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
7. For general TCZ requirements and additional information, refer to Index 102-600.

DURATION NOTES

1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

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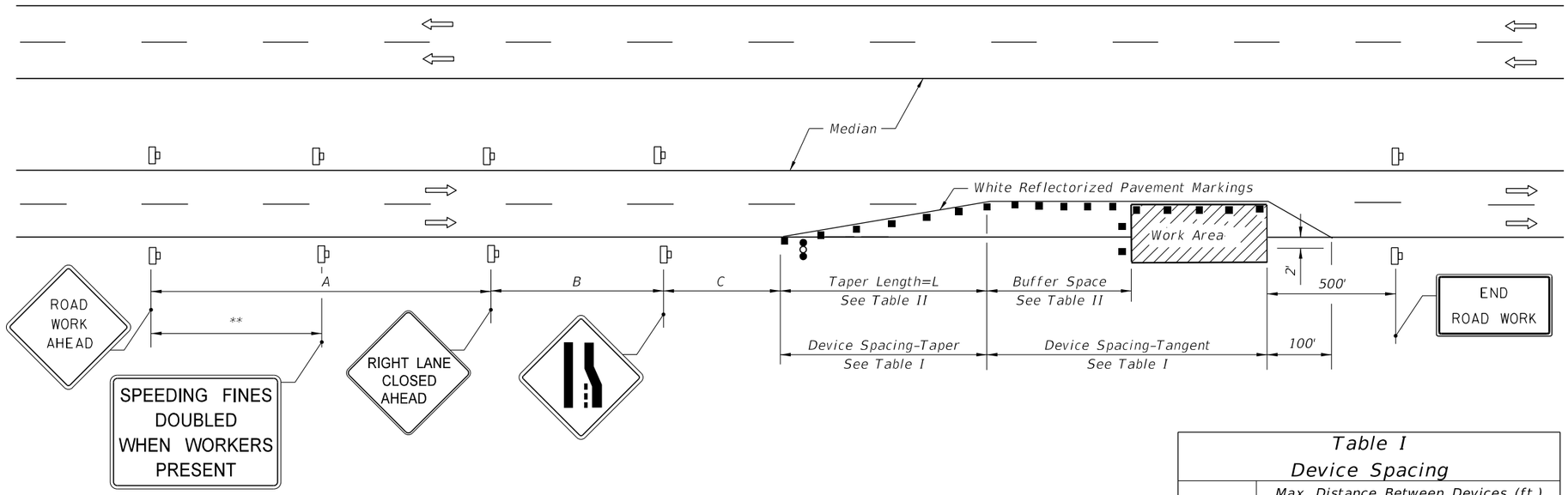
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK ON SHOULDER	INDEX	SHEET
11/01/17					102-612	1 of 1



DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350
50 mph	500	500	500
*55 mph or greater	2640	1640	1000

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign and the RIGHT LANE CLOSED ½ MILE sign may be used as an alternate to the RIGHT LANE CLOSED AHEAD sign.

** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

SYMBOLS

- Work Area
- ■ Channelizing Device (See Index 102-600)
- Work Zone Sign
- ●●● Advance Warning Arrow Board

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the adjacent lane open to traffic.
2. On undivided highways the median signs as shown are to be omitted.
3. When work is performed in the median lane on divided highways, the channelizing device plan is inverted and left lane closed and lane ends signs substituted for the right lane closed and lane end signs.

   The same applies to undivided highways with the following exceptions:
   a. Work shall be confined within one median lane.
   b. Additional barricades, cones, or drums shall be placed along the centerline abutting the work area and across the trailing end of the work area.

   When work on undivided highways occurs across the centerline so as to encroach on both median lanes, the inverted plan is applied to the approach of both roadways.
4. Signs and traffic control devices are to be modified in accordance with INTERMITTENT WORK STOPPAGE details (sheet 2 of 2) when no work is being performed and the highway is open to traffic.
5. The two channelizing devices directly in front of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
6. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way. See Index 102-612 for shoulder taper formulas.
7. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
8. This TCZ plan does not apply when work is being performed in the middle lane(s) of a six or more lane highway. See Index 102-614.
9. For general TCZ requirements and additional information, refer to Index 102-600.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II Buffer Space and Taper Length			
Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)	
	Dist. (ft.)	L (ft.)	Notes (Merge)
25	155	125	$L = \frac{WS^2}{60}$
30	200	180	
35	250	245	
40	305	320	
45	360	540	$L = WS$
50	425	600	
55	495	660	
60	570	720	
65	645	780	
70	730	840	

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in notes column.
Where:

L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

DURATION NOTES

1. Temporary white edgeline may be omitted for work operations less than 3 consecutive calendar days.
2. For work operations up to approximately 15 minutes, signs, channelizing devices, arrow board, and buffer space may be omitted if all of the following conditions are met:
   a. Speed limit is 45 mph or less.
   b. No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space and the taper length combined.
   c. Volume and complexity of the roadway has been considered.
   d. The closed lane is occupied by a class 5 or larger, medium duty truck(s) with a minimum gross weight vehicle rating (GWVR) of 16,001 lb with high-intensity, rotating, flashing, oscillating, or strobe lights mounted above the cab height and operating.
3. For work operations up to 60 minutes, arrow board and buffer space may be omitted if conditions a, b, and c in DURATION NOTE 2 are met, and vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE LANE ADJACENT TO EITHER SHOULDER AND THE AREA 2' OUTSIDE THE EDGE OF TRAVEL WAY.

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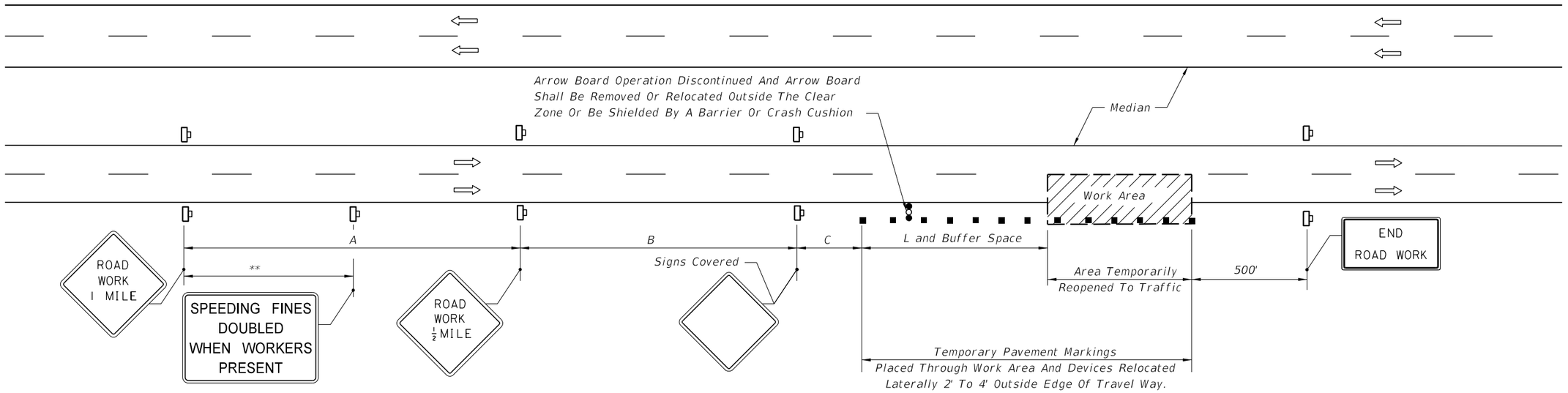
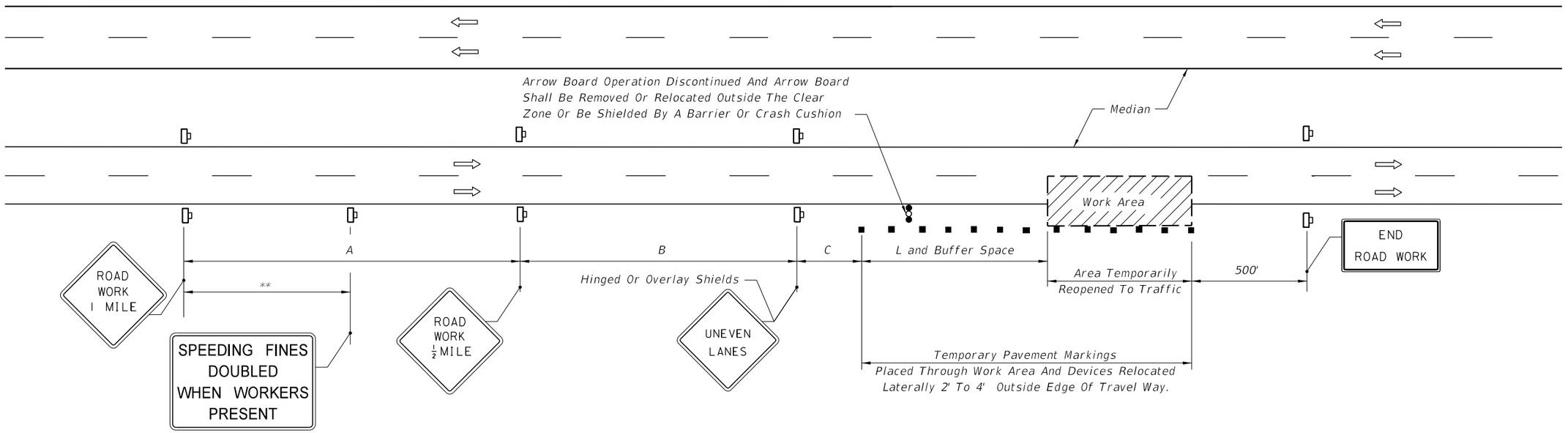
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK WITHIN TRAVEL WAY MEDIAN OR OUTSIDE LANE	INDEX 102-613	SHEET 1 of 2



EVEN PAVEMENT



UNEVEN PAVEMENT

INTERMITTENT WORK STOPPAGE - LANE REOPENED TO TRAFFIC

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK WITHIN TRAVEL WAY MEDIAN OR OUTSIDE LANE	INDEX 102-613	SHEET 2 of 2

EXISTING POSTED SPEED	PROPOSED WORK ZONE SPEED	REMARKS
MPH	MPH	The 'Proposed Work Zone Speeds' are recommended speeds for the traffic control plan detailed below; however, where the Engineer deems other speeds are appropriate, the applicable speeds are to be shown on the plans.
65	55	
55	45	
45	35	

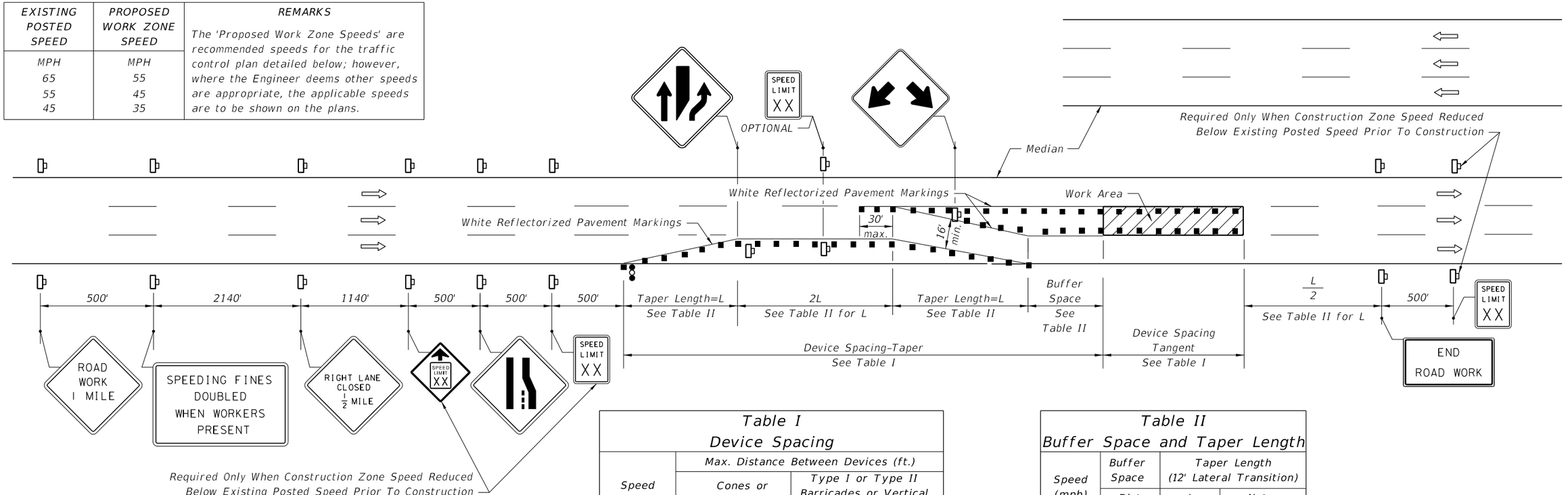

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Buffer Space and Taper Length

Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)	
	Dist. (ft.)	L (ft.)	Notes (Merge)
25	155	125	$L = \frac{WS^2}{60}$
30	200	180	
35	250	245	
40	305	320	
45	360	540	$L = WS$
50	425	600	
55	495	660	
60	570	720	
65	645	780	
70	730	840	

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic

CONDITION NOTES

1. The RIGHT LANE CLOSED and lane reduction signs are to be removed or fully covered when no work is being performed and the center lane is opened to traffic.
2. For work performed in the median or outside lane, refer to Index 102-613.
3. When the lane closure exceeds a continuous 24 hour period, all existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and removable pavement marking used for marking new edge lines and centerline.

GENERAL NOTES

1. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
2. For general TCZ requirements and additional information, refer to Index 102-600.

DURATION NOTES

1. Temporary pavement markings may be omitted for work operations less than 3 days.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON ANY PORTION OF A CENTER LANE OF A MULTILANE HIGHWAY, AND TWO DRIVING LANES ARE MAINTAINED ON THE TRAVEL WAY.

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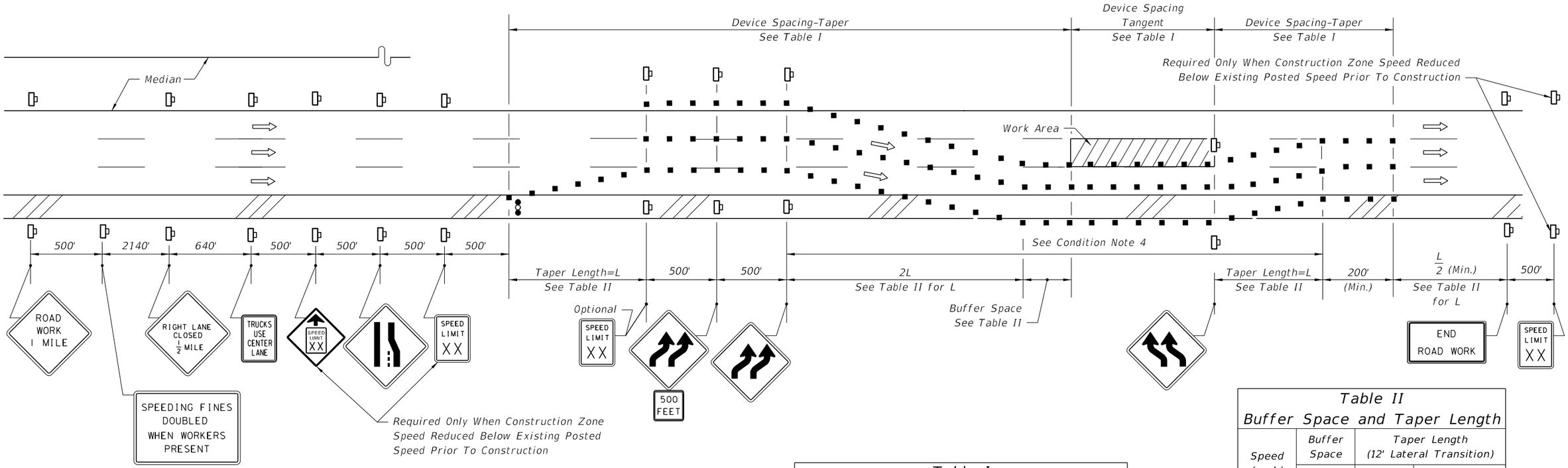
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK WITHIN TRAVEL WAY, CENTER LANE	INDEX 102-614	SHEET 1 of 2



EXISTING POSTED SPEED	PROPOSED WORK ZONE SPEED	REMARKS
MPH	MPH	The 'Proposed Work Zone Speeds' are recommended speeds for the traffic control plan detailed below; however, where the Engineer deems other speeds are appropriate, the applicable speeds.
65	55	
55	45	
45	35	

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Buffer Space and Taper Length

Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)		
	Dist. (ft)	L (ft)	Notes (Merge)	
25	155	125	$L = \frac{WS^2}{60}$	
30	200	180		
35	250	245		
40	305	320		
45	360	540	$L = WS$	
50	425	600		
55	495	660		
60	570	720		
65	645	780		
70	730	840		

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

SYMBOLS

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

CONDITION NOTES

1. See General Notes, Sheet 1.
2. Length of time that traffic is using shoulder should be minimized. For example, remove lane closure and lane shift at night (unless performing night work) if practical.
3. The RIGHT LANE CLOSED, lane reduction and reverse curve signs are to be removed or fully covered when no work is being performed and the travel way is open to traffic.
4. When the lane closure exceeds a continuous 24 hour period, all existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and removable pavement markings used for marking new edge lines and centerlines.
5. For general TCZ requirements and additional information, refer to Index 102-600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON ANY PORTION OF A CENTER LANE OF A MULTILANE HIGHWAY, AND TWO DRIVING LANES ARE MAINTAINED, AND, THE OUTSIDE SHOULDER PAVEMENT IS TEMPORARILY USED AS A TRAVEL LANE.

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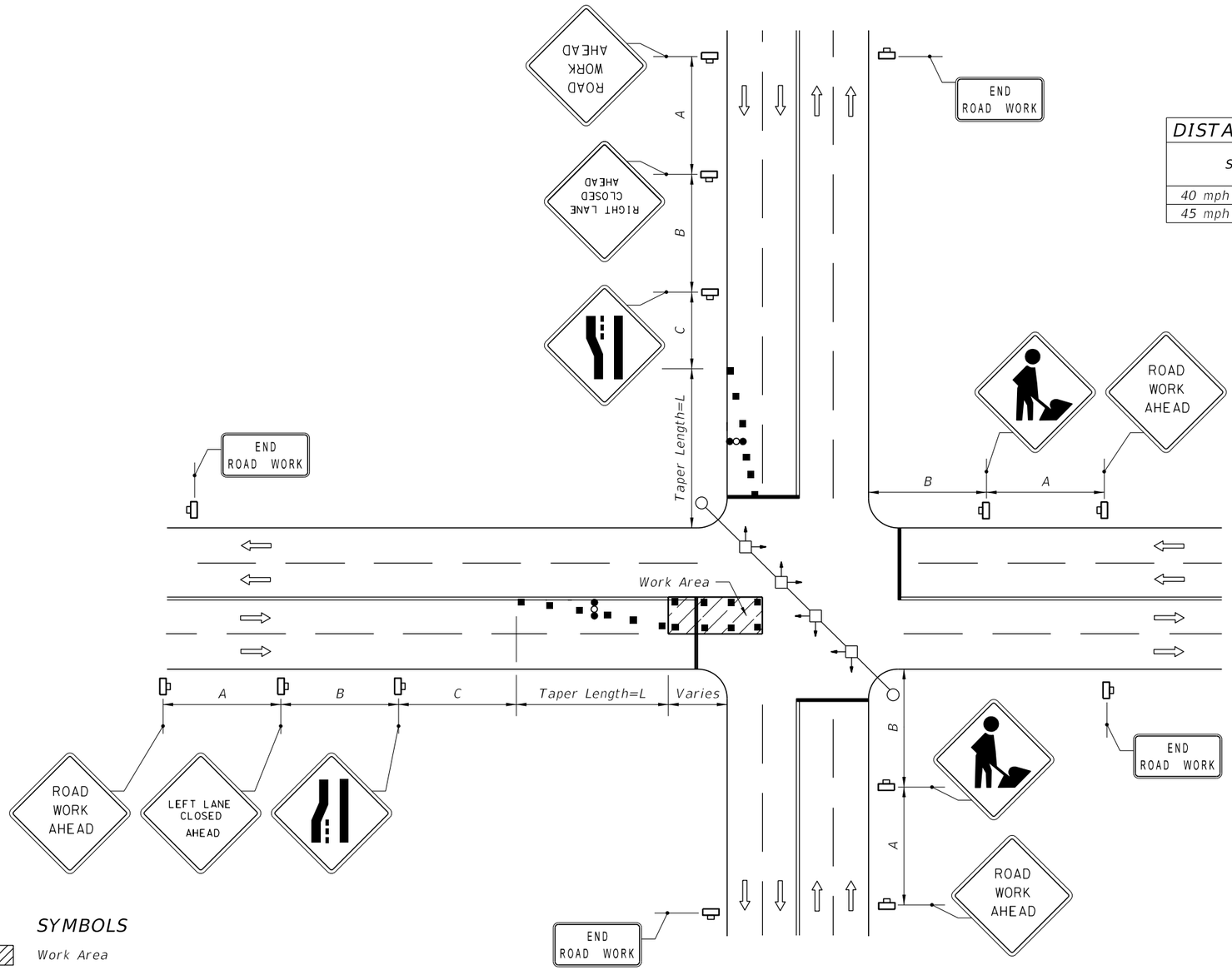
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, WORK WITHIN TRAVEL WAY, CENTER LANE	INDEX 102-614 / SHEET 2 of 2



SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Stop Bar
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic

SIGNALIZED

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF AT LEAST ONE MEDIAN TRAFFIC LANE.

DISTANCE BETWEEN SIGNS

Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

Table II
Taper Length - Merge
(12' Lateral Transition)

Speed (mph)	L (ft.)	Notes (Merge)
25	125	$L = \frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	L=WS

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

GENERAL NOTES

1. *The WORKERS legend sign may be substituted for the symbol sign.*
2. *When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index 700-101.*
3. *If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index 102-660.*
4. *Dual signs are required for divided roadways.*
5. *Maximum spacing between barricades, vertical panels, cones, tubular markers and drums shall not be greater than 25'.*
6. *Temporary signal phasing modifications are to be approved by the District Traffic Operations Engineer prior to the beginning of work.*
7. *For general TCZ requirements and additional information, refer to Index 102-600.*

DURATION NOTES

1. *Signs and arrow board may be omitted if all of the following conditions are met:*
   a. *Work operations are 60 minutes or less.*
   b. *Speed is 45 mph or less.*
   c. *No sight obstructions to vehicles approaching the work area for a distance equal to twice the taper length.*
   d. *Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.*
   e. *Volume and complexity of the roadway has been considered.*

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, WORK IN INTERSECTION	INDEX 102-615 / SHEET 1 of 1

GENERAL NOTES

1. Work operations shall be confined to either one lane, or lane combinations as follows:

   a. Outside travel lane;
   b. Outside auxiliary lane;
   c. Outside travel lane and adjoining auxiliary lane;
   d. Inside travel lane △;
   e. Inside auxiliary lane △;
   f. Inside travel lane and adjoining auxiliary lane △
   △ See Sheet 3

   If the work area is confined to an auxiliary lane the work area shall be barricaded and the RIGHT (LEFT) LANE CLOSED AHEAD signs replaced by ROAD WORK AHEAD signs, and the merge symbol signs eliminated.

2. When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index 700-101

3. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index 102-660.

4. Signs are required on the median side for divided highways.

5. The two channelizing devices directly in front and directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

6. For general TCZ requirements and additional information, refer to Index 102-600.

DURATION NOTES

1. For work operations up to approximately 15 minutes, signs, channelizing devices, and arrow board may be omitted if all of the following conditions are met:

   a. Speed limit is 45 mph or less.
   b. No sight obstructions to vehicles approaching the work area for a distance equal to twice the taper length.
   c. Volume and complexity of the roadway has been considered.
   d. The closed lane is occupied by a class 5 or larger, medium duty truck(s) with a minimum gross weight vehicle rating (GWVR) of 16,001 lb with high-intensity, rotating, flashing, oscillating, or strobe lights mounted above the cab height and operating.

2. For work operations up to 60 minutes, the arrow board may be omitted if conditions a, b, and c in DURATION NOTE 1 are met, and vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

SYMBOLS

- Work Area
- Work Zone Sign
- Advance Warning Arrow Board
- Type III Barricade
- Channelizing Device (See Index 102-600)
- Lane Identification + Direction of Traffic

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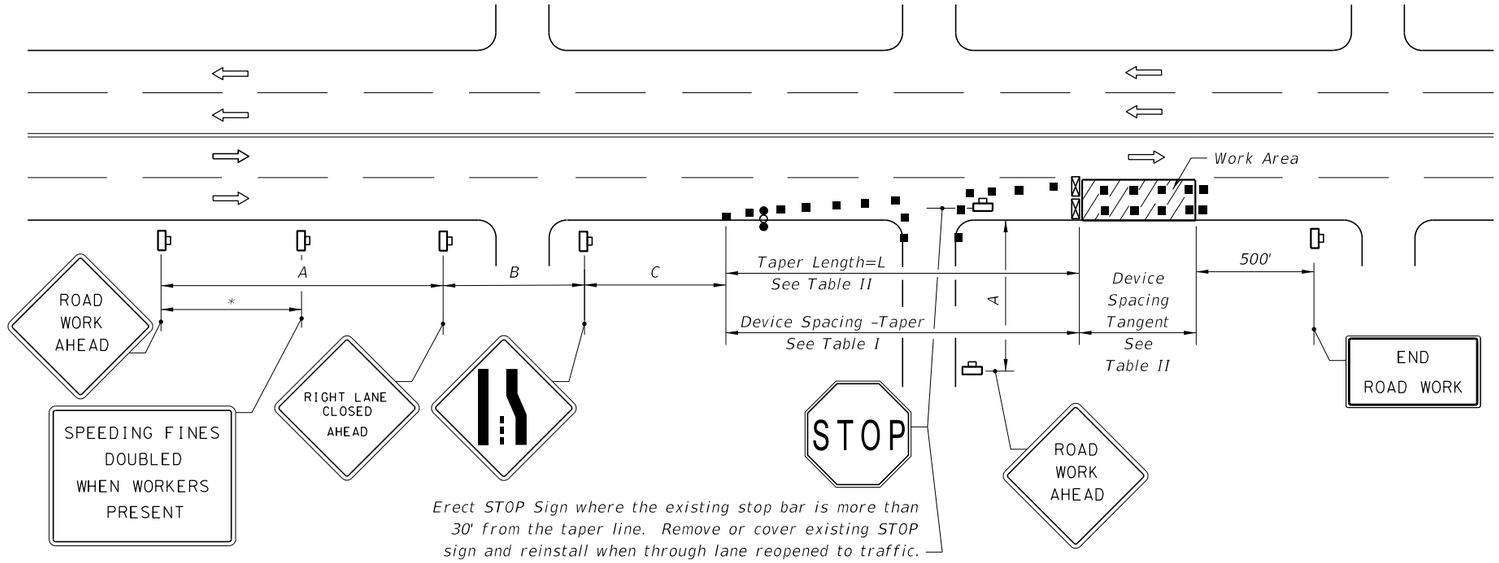
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE	INDEX	SHEET
11/01/17						102-616	1 of 3



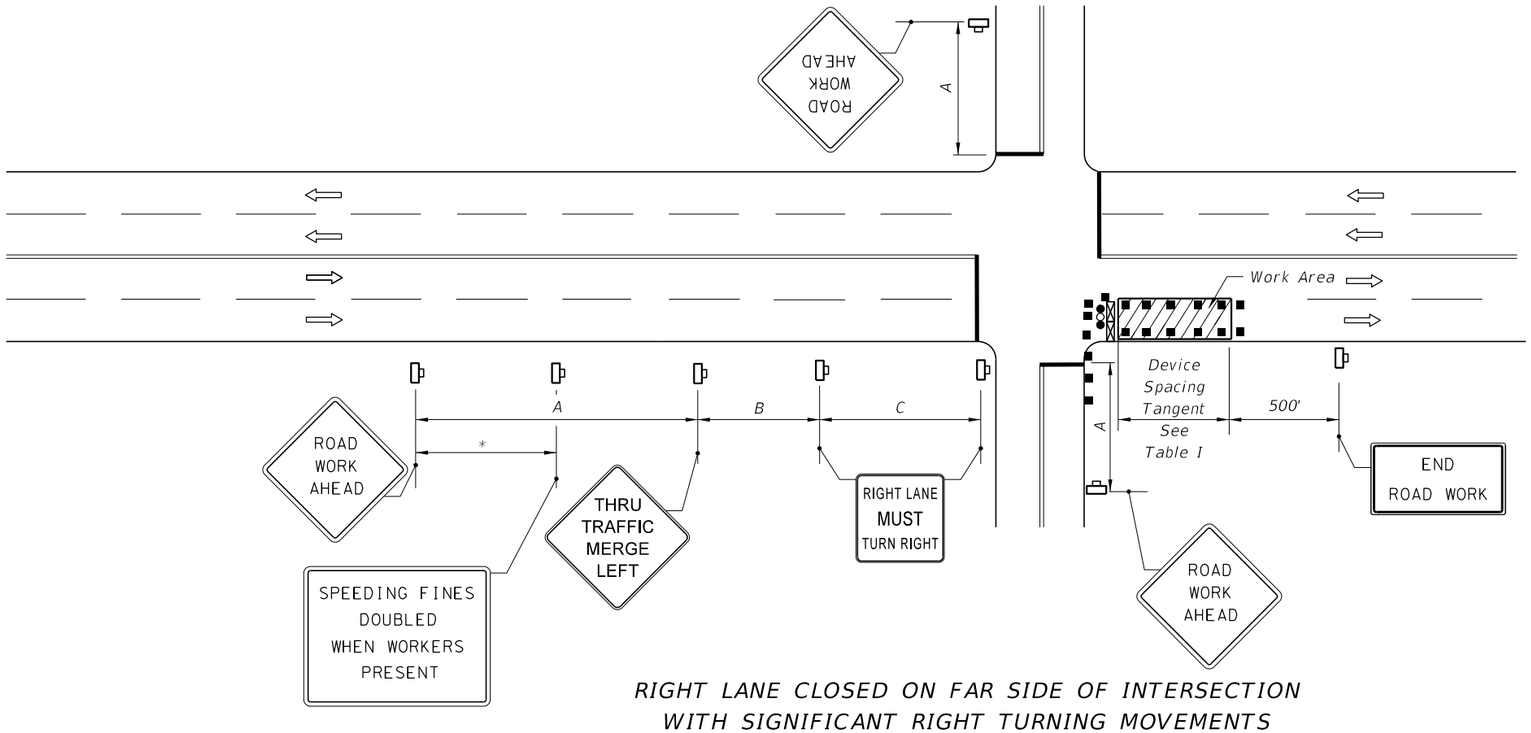
RIGHT LANE CLOSED ON FAR SIDE OF MINOR SIDE STREET

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50



RIGHT LANE CLOSED ON FAR SIDE OF INTERSECTION
WITH SIGNIFICANT RIGHT TURNING MOVEMENTS

Table II
Taper Length - Merge
(12' Lateral Transition)

Speed (mph)	L (ft)	Notes (Merge)
25	125	$L = \frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	L=WS

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

1. The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a right lane having significant right turning movements, then the right lane may be restricted to right turns only as shown in this detail.
2. For intersection approaches reduced to a single lane, left turning movements may be prohibited to maintain capacity for through vehicular traffic.

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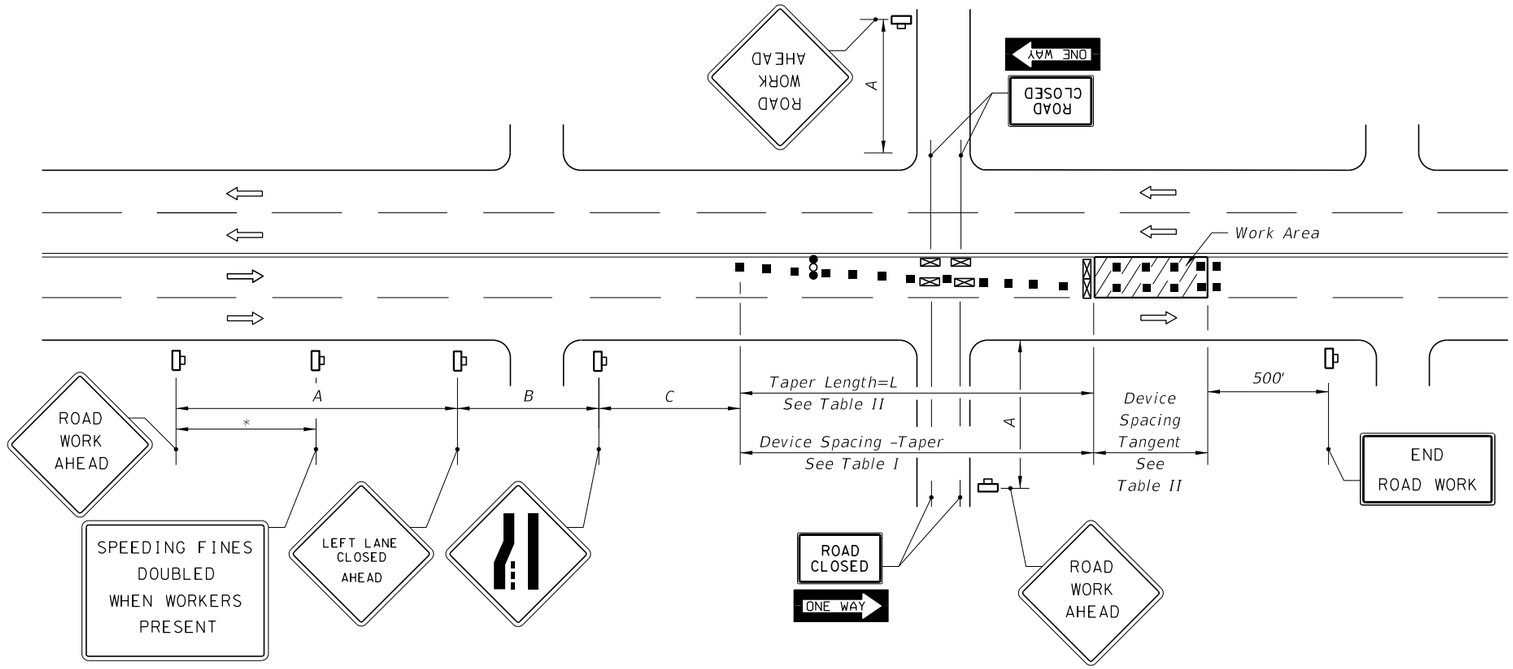
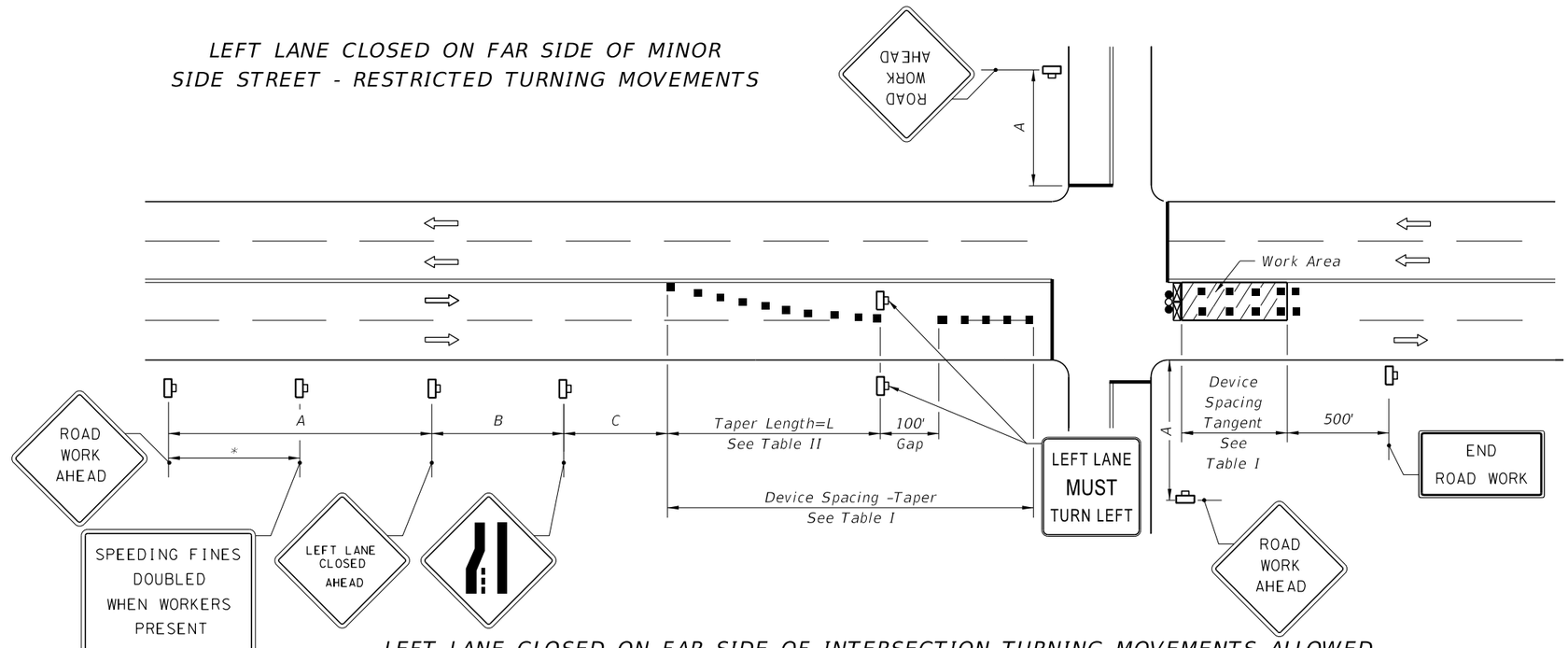
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE	102-616	2 of 3



LEFT LANE CLOSED ON FAR SIDE OF MINOR SIDE STREET - RESTRICTED TURNING MOVEMENTS



LEFT LANE CLOSED ON FAR SIDE OF INTERSECTION TURNING MOVEMENTS ALLOWED

1. The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a left lane having significant left turning movements, then the left lane may be reopened as a turn bay for left turns only as show in this detail.

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50

Table II Taper Length - Merge (12' Lateral Transition)		
Speed (mph)	L (ft.)	Notes (Merge)
25	125	$L = \frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	L = WS

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

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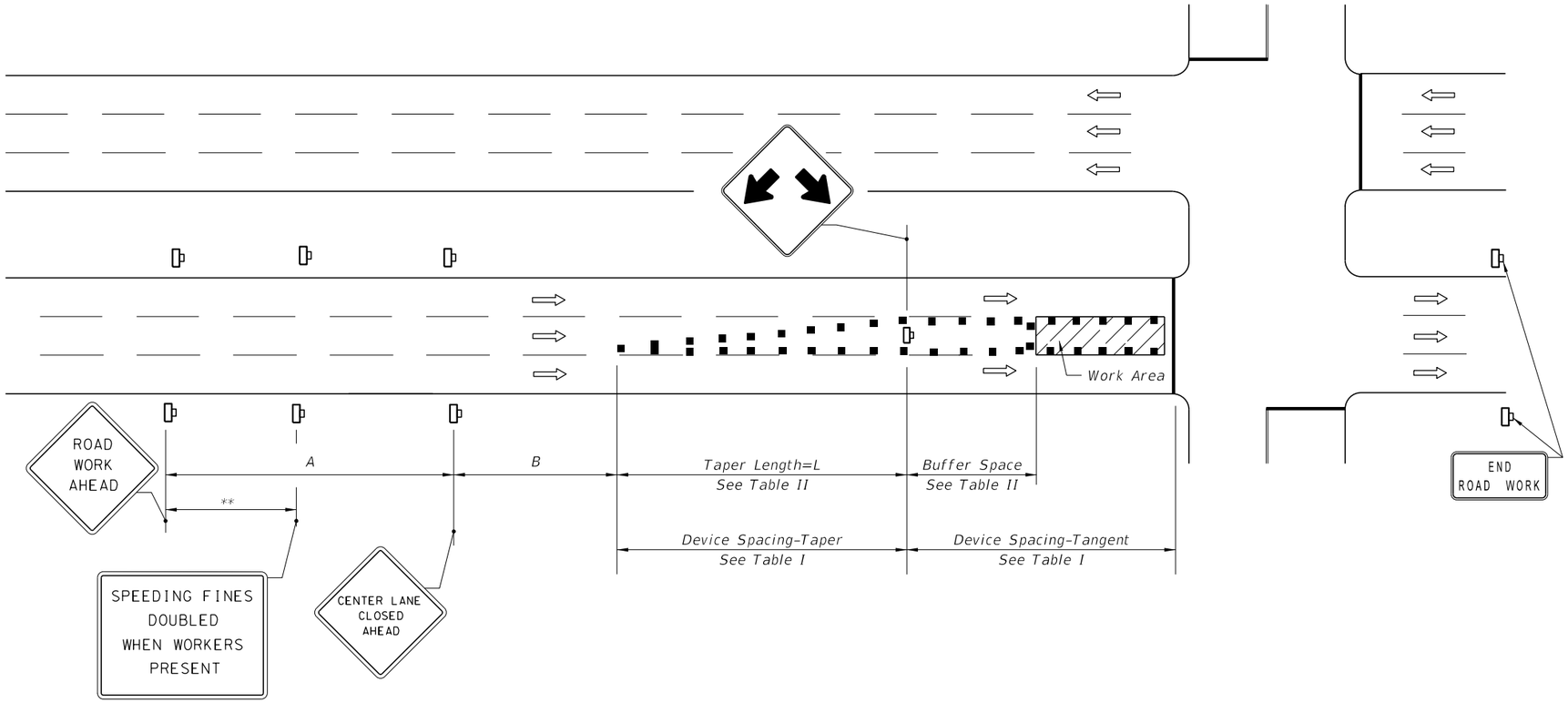
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE	102-616	3 of 3



** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft.)	
	A	B
40 mph or less	200	200
45 mph	350	350

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Barricades or Vertical Type I or Type II Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50

Table II
Buffer Space and Taper Length

Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)	
	Dist. (ft.)	L (ft.)	Notes (Merge)
25	155	125	$L = \frac{WS^2}{60}$
30	200	180	
35	250	245	
40	305	320	
45	360	540	L = WS

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. Work operations shall be confined to one center travel lane, leaving the adjacent travel lanes open to traffic.
2. The merging taper shall direct vehicular traffic into either the right or left lane, but not both.
3. When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index 700-101.
4. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index 102-660.
5. For general TCZ requirements and additional information, refer to Index 102-600.

DURATION NOTES

1. Signs and buffer space may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Speed limit is 45 mph or less.
   c. No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space and the taper length combined.
   d. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e. Volume and complexity of the roadway has been considered.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF THE CENTER LANE NEAR AN INTERSECTION.

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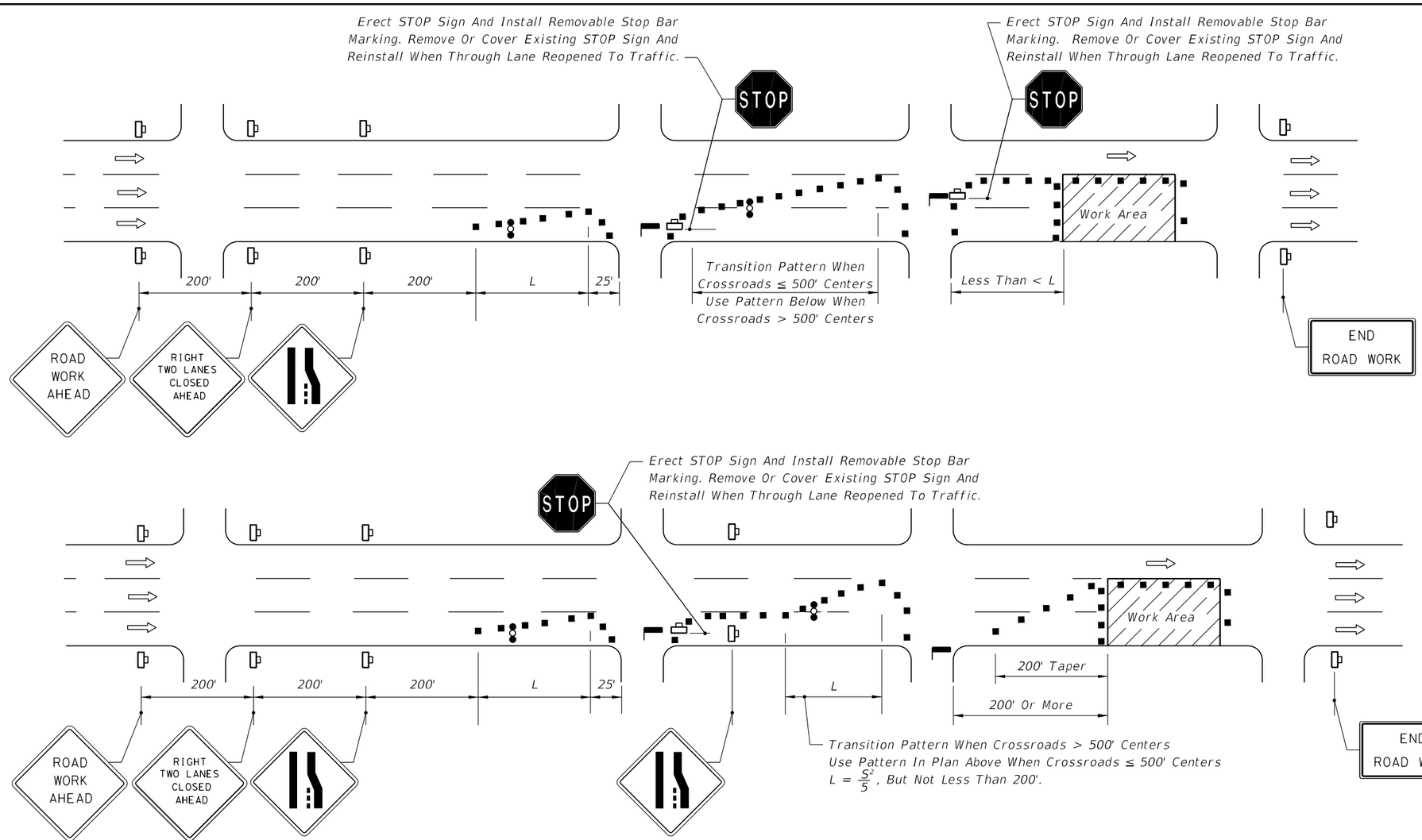
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK IN INTERSECTION CENTER LANE	INDEX 102-617	SHEET 1 of 1



CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF EITHER THE OUTSIDE AND CENTER TRAVEL LANES OR THE MEDIAN AND CENTER TRAVEL LANES, WITH OR WITHOUT CLOSURE OF ADJOINING AUXILIARY LANES, FOR WORK AREA LESS THAN 200' FROM INTERSECTION, FOR A PERIOD OF MORE THAN 60 MINUTES.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF EITHER THE OUTSIDE AND CENTER TRAVEL LANES OR THE MEDIAN AND CENTER TRAVEL LANES, WITH OR WITHOUT CLOSURE OF ADJOINING AUXILIARY LANES, FOR WORK AREA 200' OR MORE FROM INTERSECTION, FOR A PERIOD OF MORE THAN 60 MINUTES.

Table II
Taper Length - Merge (12' Lateral Transition)

Speed (mph)	L (ft.)	Notes (Merge)
25	125	$L = \frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	$L = WS$

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Stop Bar
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index 102-660.
2. Signs are required on the median side for divided highways.
3. The two channelizing devices directly in front and directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
4. Within the lateral transitions, the maximum spacing between cones and tubular markers shall be 25'. Maximum spacing between Type I or Type II barricades or vertical panels or drums shall be based on the speed limit as follows: 15' up to 25 MPH; 30' for 30-40 MPH; 50' for 45 MPH.

   Spacing for devices parallel to the travel lanes shall be 25' centers for cones or tubular markers and 50' centers for Type I or Type II barricades or vertical panels or drums for 250', thereafter, cones or tubular markers at 50' centers and Type I or Type II barricades or vertical panels or drums at 100' centers.
5. For general TCZ requirements and additional information, refer to Index 102-600.

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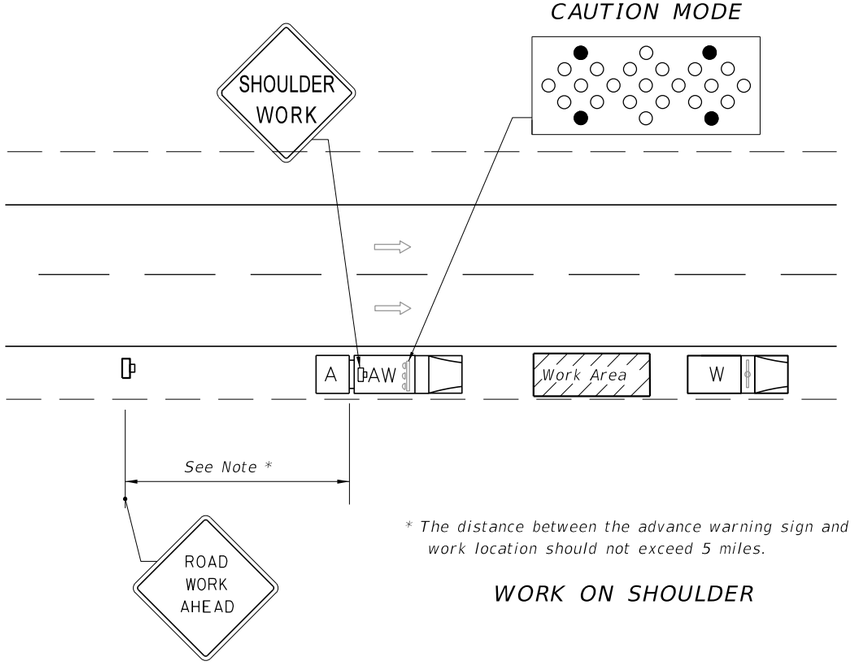
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, WORK IN INTERSECTION TWO LANES CLOSED - 45 MPH OR LESS	INDEX	SHEET
11/01/17						102-618	1 of 1

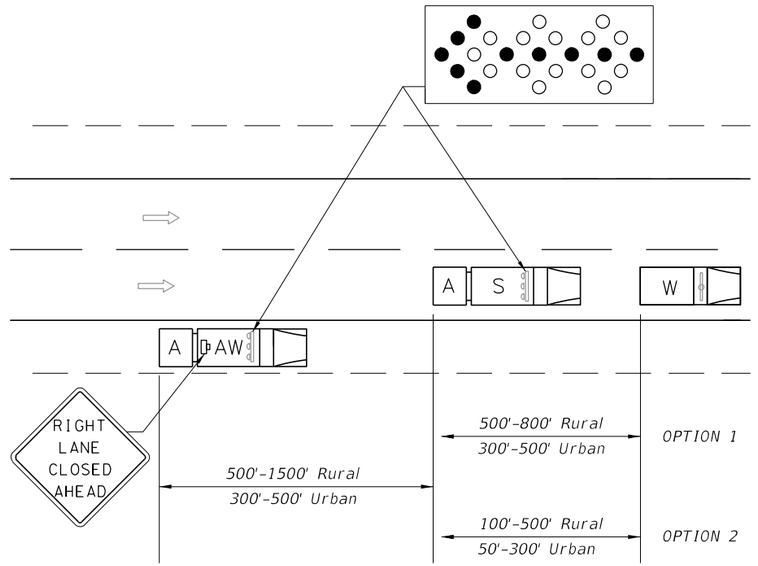
CAUTION MODE



* The distance between the advance warning sign and the work location should not exceed 5 miles.

WORK ON SHOULDER

MOVE/MERGE MODE



OPTION 1: Advanced Warning Vehicle may be operated in the lane behind the Shadow Vehicle where adequate shoulder width is not available. Approved Truck Mounted Attenuators are required on both the Advance Warning Vehicle and the Shadow Vehicle.

OPTION 2: Advance Warning Vehicle must be operated in the lane behind the Shadow Vehicle. Approved Truck Mounted Attenuators are required on both the Advance Warning Vehicle and the Shadow Vehicle.

WORK WITHIN TRAVEL LANE
(Option 1 Shown, Option 2 Similar)

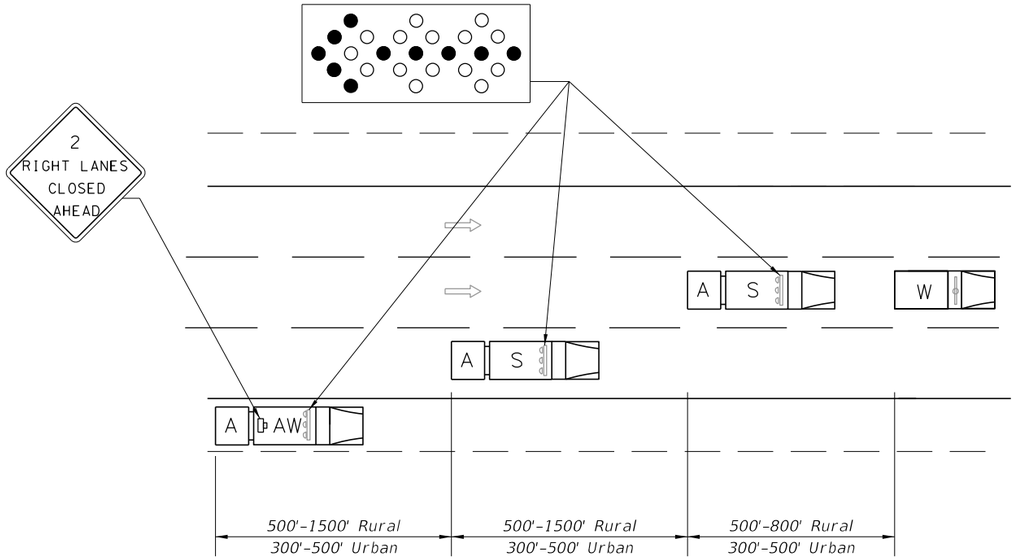
SYMBOLS

- W — Work Vehicle
- S — Shadow (S) Vehicle with Arrow Board
- AW — Advance Warning (AW) Vehicle with Arrow Board and Sign Message or Changeable Message Sign
- A — Truck/Trailer Mounted Attenuator (TMA)
- Lane Identification And Direction Of Traffic
- Arrow Board

GENERAL NOTES

1. These illustrations are representative of general conditions.
2. The figures illustrate closing the right shoulder or right lanes for various lane configurations. When work is required on left side of roadways, the inverted plan is to be applied. The intent of this index is to allow passing on only one side of the work convoy.
3. Arrow boards shall not be obscured by equipment, supplies, signs, or the enclosure.
4. Vehicle-mounted signs shall be mounted 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. Changeable message signs shall flash alternately to read "Left or Right Lane" or "Two Left or Two Right Lanes", "Closed Ahead", and the arrow symbol. Arrow boards shall not be used with truck mounted changeable message signs. Sign legends shall be covered or turned from view when work is not in progress.
5. On freeway facilities (interstates, toll roads, and expressways), a traffic control officer is required for all nighttime non-emergency operations for work within the travel lane.
6. If the work vehicle speed exceeds the minimum legal speed limit on limited access facilities and one half the posted speed limit on other facilities, the Engineer may delete requirements for shadow vehicle and attenuator. The work vehicle will be required to have an arrow board and sign message.
7. Where work activities within 2' of the edge of travel way are Incidental (i.e. Mowing, Litter Removal), the Engineer may delete requirements for signs and the advance warning vehicle provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
8. Work, Shadow, and Advance Warning Vehicles shall have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
9. Functional two-way communication is required between all vehicles in the mobile operation convoy.
10. For general TCZ requirements and additional information, refer to Index 102-600.

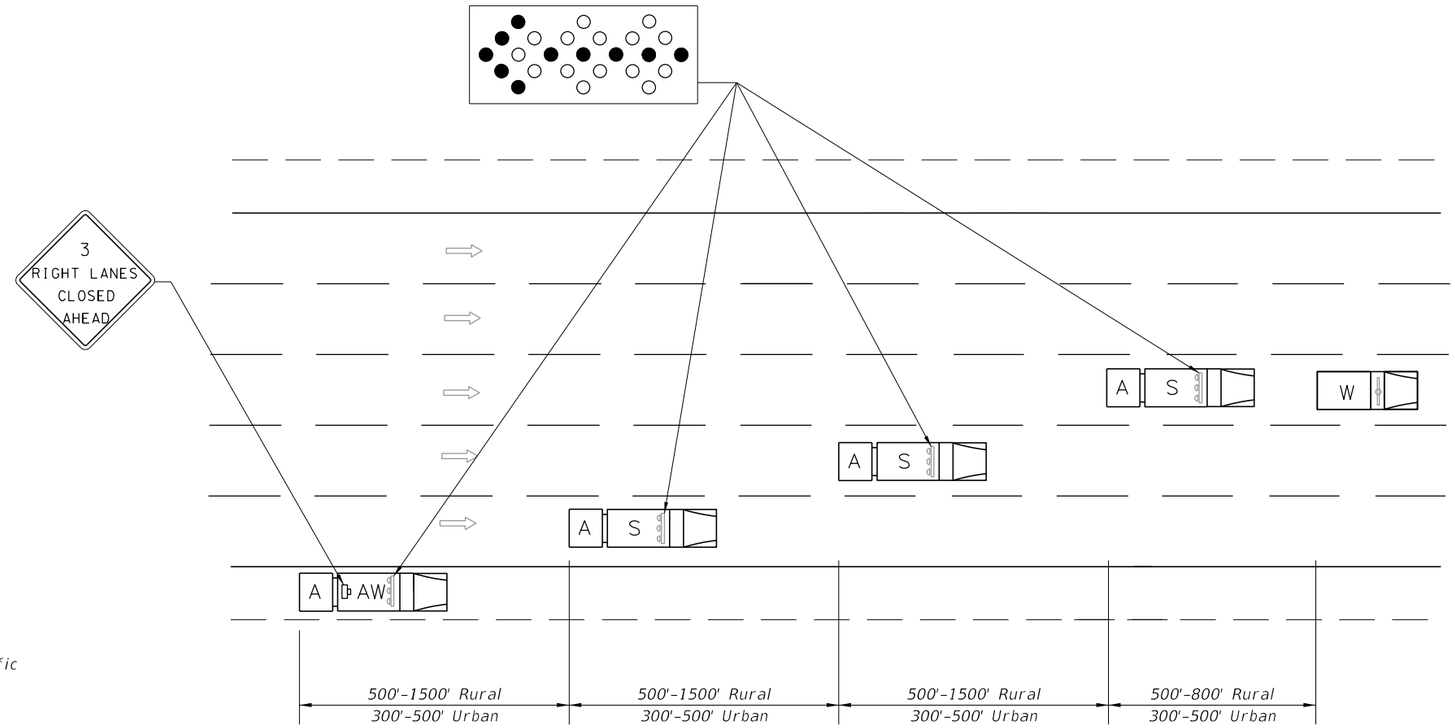
MOVE/MERGE MODE



WORK WITHIN TRAVEL WAY, CENTER LANE OR OUTSIDE CENTERLINE

Where adequate shoulder width is not available, the advance warning vehicle may drive in the lane.

MOVE/MERGE MODE



SYMBOLS

- W — *Work Vehicle*
- S — *Shadow (S) Vehicle with Arrow Board*
- AW — *Advance Warning (AW) Vehicle with Arrow Board and Sign Message or Changeable Message Sign*
- A — *Truck/Trailer Mounted Attenuator (TMA)*
- *Lane Identification And Direction Of Traffic*
- *Arrow Board*

WORK WITHIN TRAVEL LANE

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, MOBILE OPERATIONS WORK ON SHOULDER, WORK WITHIN TRAVEL WAY	INDEX 102-619	SHEET 2 of 2

GENERAL NOTES

1. TWO-WAY TRAFFIC sign(s) shall be repeated every ¼ mile in each direction, throughout the tangent distance (T).

2. L (min.) $= WS$ for speeds ≥ 45 mph

   $= \frac{WS^2}{60}$ for speeds ≤ 40 mph

   Where:
   W= Width of lateral transition in feet.
   S= Posted speed limit (mph).

3. Where the tangent distance (T) exceeds 250', spacing between Type I or II barricades or vertical panels or drums may be increased to 100' within the limits of the tangent, or post mounted delineators at 50' centers may be substituted for barricades, vertical panels or drums.

4. All existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and removable pavement markings used for making new edge lines.

5. When side roads, cross roads or interchanges intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.

6. For general TCZ requirements and additional information, refer to Index 102-600.

SCHEME APPLICATIONS

Scheme 1: Restricted Construction Limits.

Scheme 2: Unrestricted Construction Limits And Light To Moderate Traffic.

Scheme 3: Unrestricted Construction Limits And Moderate To Heavy Traffic.

Where: Construction Limits Are The Outward Beginning Or Ending Of Lane Reductions.

Where: Unless A Specific Scheme Is Called For In The Plans, Scheme Selection Shall Be At The Contractor's Option And As Approved By The Engineer.

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE THE CLOSURE OF ONE ROADWAY AND THE OPPOSING ROADWAY IS CONVERTED TO TEMPORARY TWO-WAY TRAVEL BY WAY OF CROSSOVERS.

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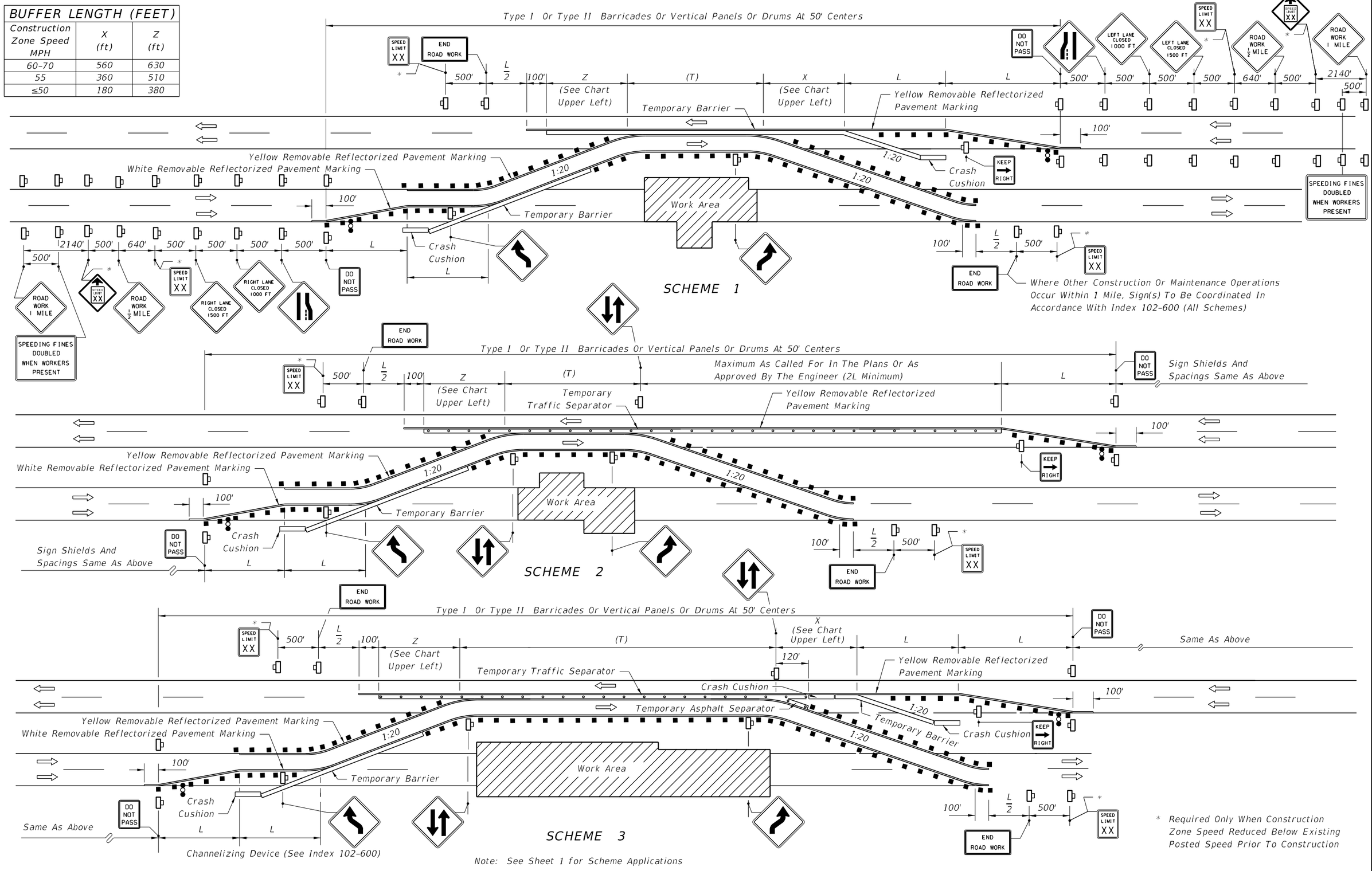
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, DIVIDED TEMPORARY DIVERSION CONNECTION	INDEX	SHEET
11/01/17						102-620	1 of 2

BUFFER LENGTH (FEET)		
Construction Zone Speed MPH	X (ft)	Z (ft)
60-70	560	630
55	360	510
≤50	180	380



Note: See Sheet 1 for Scheme Applications

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE, DIVIDED TEMPORARY DIVERSION CONNECTION	INDEX 102-620	SHEET 2 of 2

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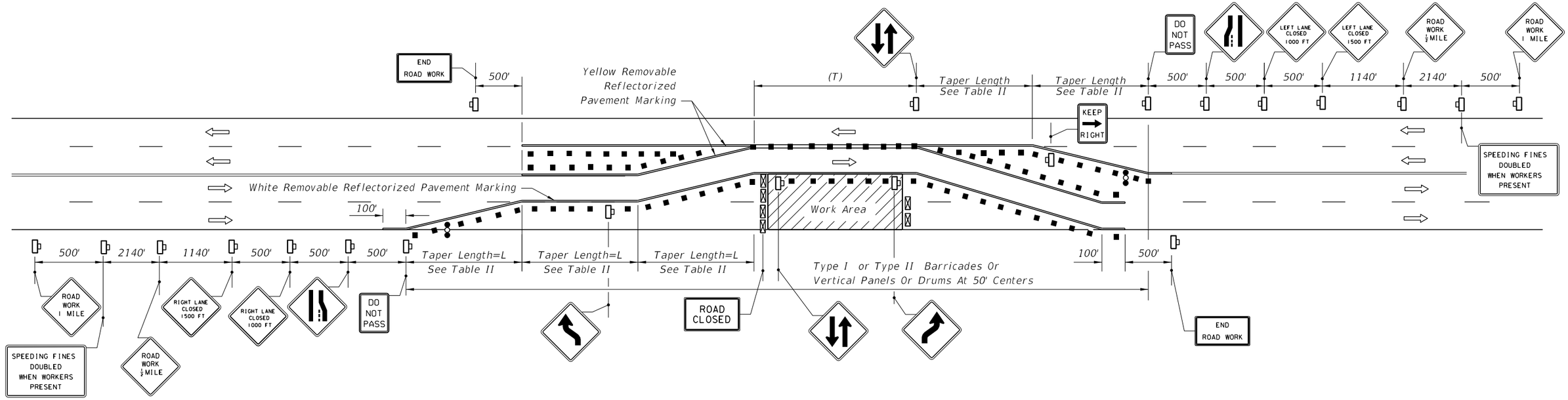

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. TWO-WAY TRAFFIC signs shall be repeated every ¼ mile in each direction, through the tangent distance (T).
2. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way. See Index 102-612 for shoulder taper formulas.
3. Where the tangent distance (T) exceeds 250', spacing between cones or tubular markers may be increased to 50' or spacing between Type I or Type II barricades or vertical panels or drums may be increased to 100' within the limits of the tangent.
4. This index does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special maintenance of traffic details will be required.
5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
6. For general TCZ requirements and additional information, refer to Index 102-600.

Table II
Taper Length - Merge
(12' Lateral Transition)

Speed (mph)	L (ft.)	Notes (Merge)
25	125	$L=\frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	L=WS
50	600	
55	660	
60	720	
65	780	
70	840	

For lateral transitions other than 12' use formula for L shown in the notes column.
Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE THE CLOSURE OF THE LANES IN ONE DIRECTION AND A DIVERSION IS PROVIDED BY UTILIZING ONE LANE OF THE OPPOSING TRAFFIC LANES.

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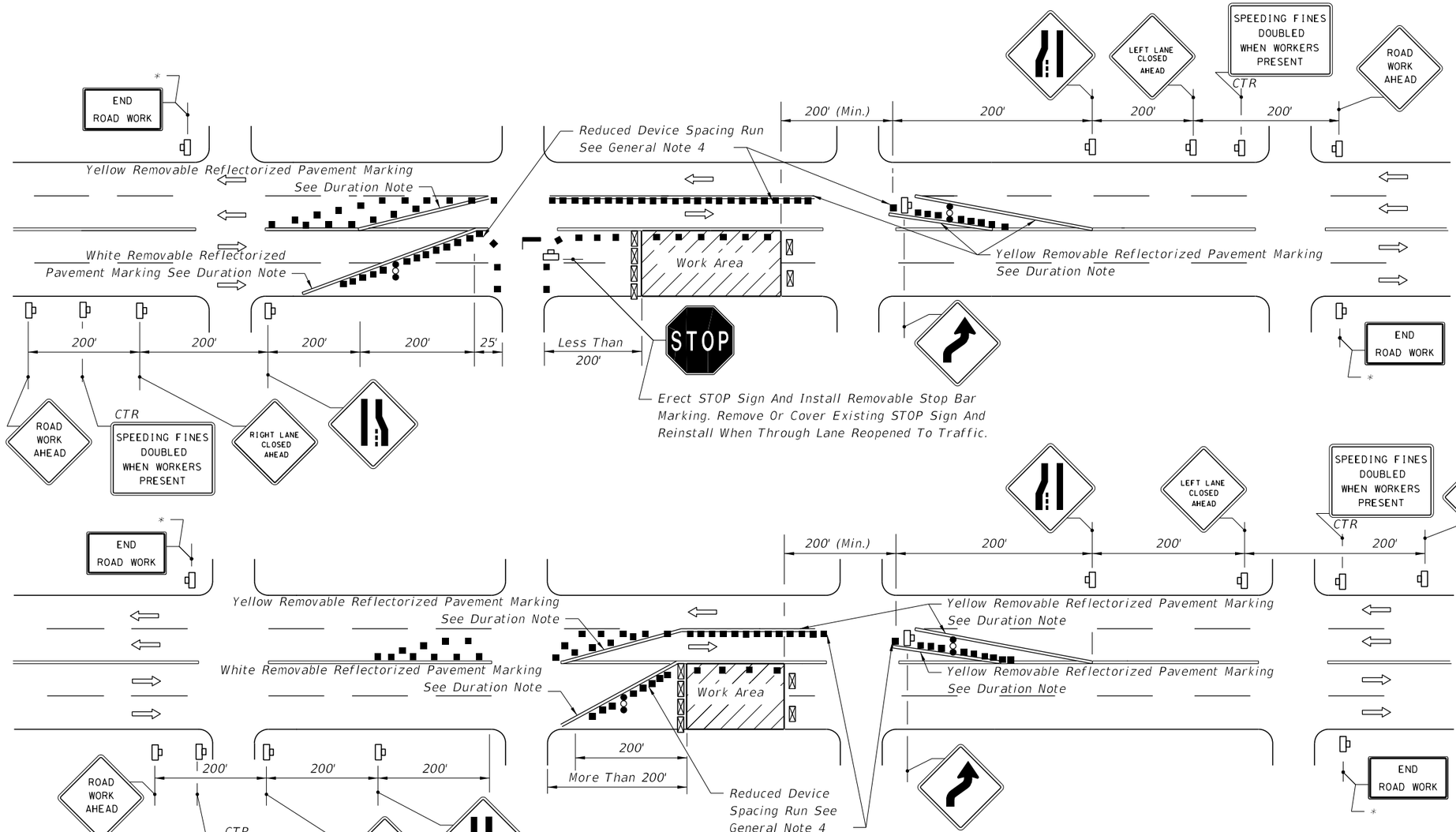
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTILANE, UNDIVIDED TEMPORARY DIVERSION CONNECTION	INDEX	SHEET
11/01/17						102-621	1 of 1



CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF TRAFFIC LANES IN ONE DIRECTION AND THE USE OF ONE OPPOSING TRAFFIC LANE TO MAINTAIN TWO-WAY TRAFFIC, FOR WORK AREA LESS THAN 200' FROM INTERSECTION, FOR A PERIOD OF MORE THAN 60 MINUTES.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF TRAFFIC LANES IN ONE DIRECTION AND THE USE OF ONE OPPOSING TRAFFIC LANE TO MAINTAIN TWO-WAY TRAFFIC, FOR WORK AREA 200' OR MORE FROM INTERSECTION, FOR A PERIOD OF MORE THAN 60 MINUTES.

* *When Other Construction Or Maintenance Operations Occur Within 1 Mile, Sign To Be Omitted And Signing To Be Coordinated In Accordance With Index 102-600.*

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Advance Warning Arrow Board
- Stop Bar
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. When vehicles in a parking zone block the line of sight to TCZ signs or when TCZ signs encroach on a normal pedestrian walkway, the signs shall be post mounted and located in accordance with Index 700-101.
2. Dual signs are required for divided roadways.
3. Channelizing devices are to be spaced with Type I or Type II barricades or vertical panels or drums at 30' centers in tapers, 50' centers in tangent sections and 15' centers where reduced device spacing runs are identified in the drawing.
4. For general TCZ requirements and additional information, refer to Index 102-600.

DURATION NOTE

Removable reflectorized pavement markings shall be used when closure time exceeds one daylight period.

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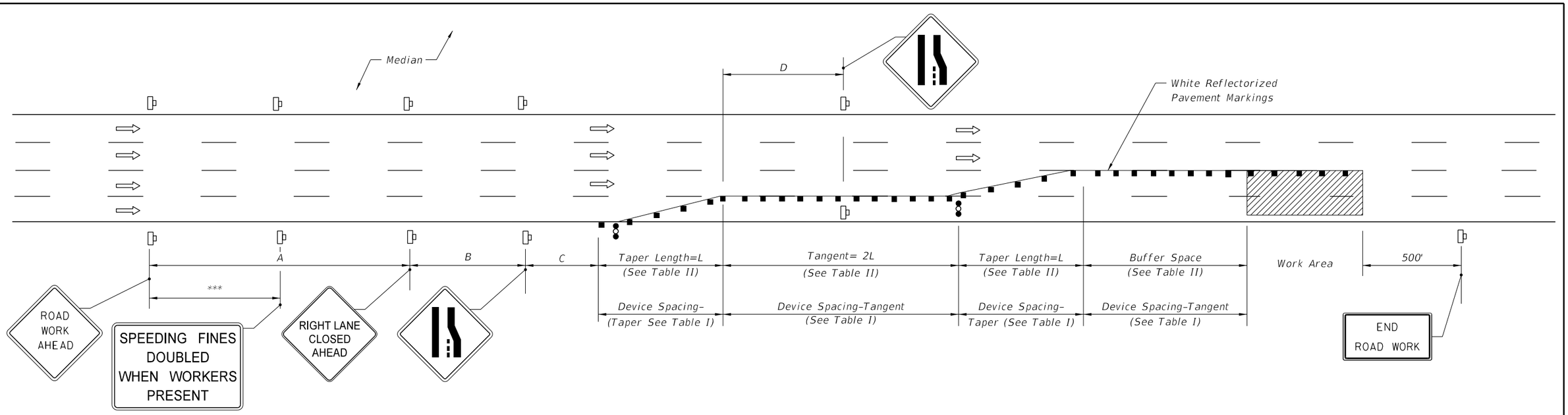
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTILANE WORK NEAR INTERSECTION-TEMPORARY DIVERSION CONNECTION - 35 MPH OR LESS	INDEX	SHEET
07/01/15						102-622	1 of 1



DISTANCE BETWEEN SIGNS				
Speed	Spacing (ft.)			
	A	B	C	D**
40 mph or less	200	200	200	L
45 mph	350	350	350	L
50 mph	500	500	500	L
*55 mph or greater	2640	1640	1000	L

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign MILE sign may be used as an alternate to the RIGHT LANE CLOSED AHEAD sign.

** See Table II for L

*** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II Buffer Space and Taper Length				
Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)		Tangent
	Dist. (ft.)	L (ft.)	Notes (Merge)	2L (ft.)
25	155	125	$L = \frac{WS^2}{60}$	250
30	200	180		360
35	250	245		490
40	305	320		640
45	360	540	L = WS	1080
50	425	600		1200
55	495	660		1320
60	570	720		1440
65	645	780		1560
70	730	840		1680

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L= Length of taper in feet
W= Width of lateral transition in feet
S= Posted speed limit (mph)

GENERAL NOTES

1. Work operations shall be confined to the two outside traffic lanes, leaving the adjacent lane(s) open to traffic.
2. On undivided highways the median signs as shown are to be omitted.
3. When work is performed in the median lane on divided highways, the channelizing device plan is inverted and left lanes closed and lane ends signs substituted for the right lanes closed and lane end signs.
4. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
5. For general TCZ requirements and additional information, refer to Index 102-600.
6. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way. See Index 102-612 for shoulder taper formulas.

SYMBOLS

- Work Area
- ■ Channelizing Device (See Index 102-600)
- Work Zone Sign
- ●◇● Advance Warning Arrow Board

DURATION

Temporary white edgeline may be omitted for work operations less than three (3) days.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE TWO LANES ADJACENT TO EITHER SHOULDER.

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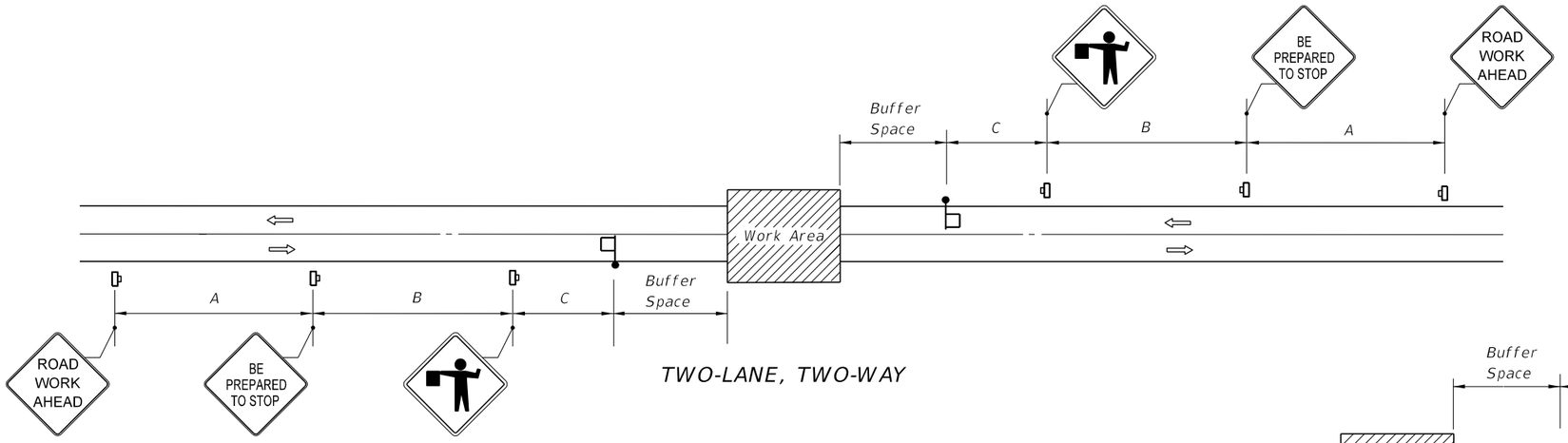
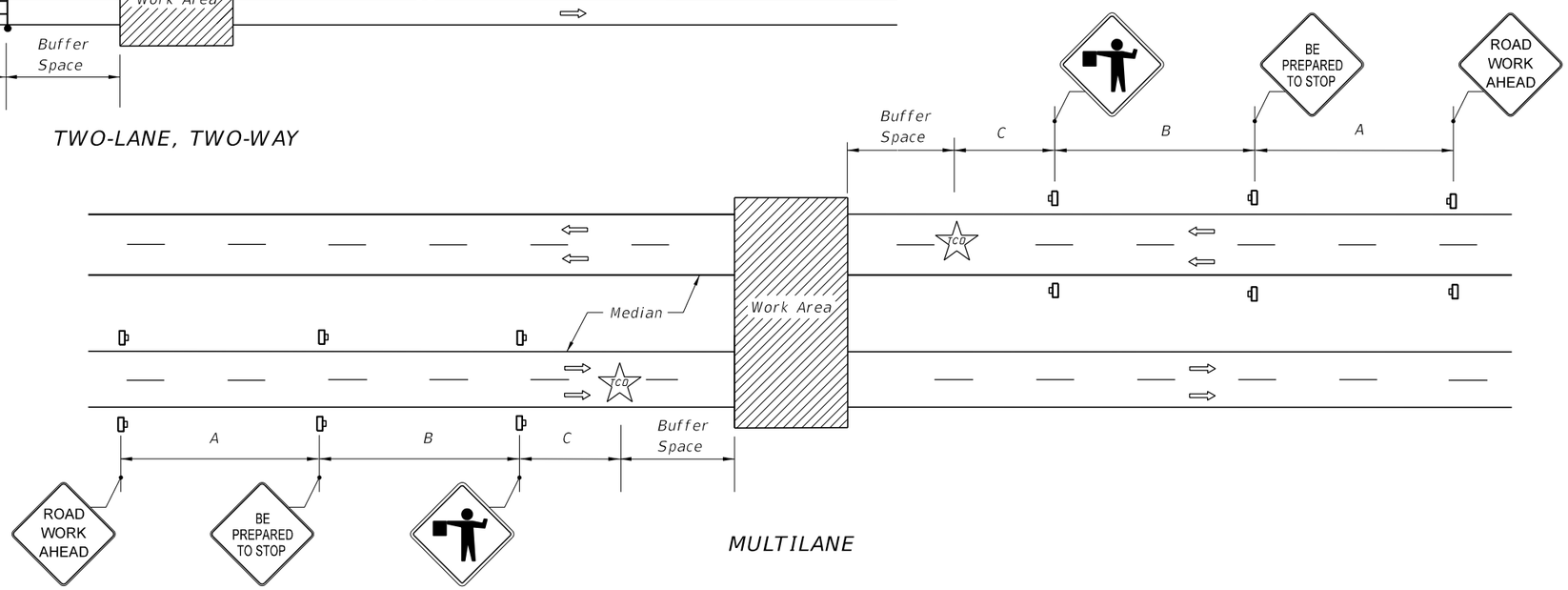
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MULTILANE, WORK WITHIN THE TRAVEL WAY DOUBLE LANE CLOSURE	INDEX 102-623	SHEET 1 of 1



TWO-LANE, TWO-WAY



MULTILANE

BUFFER SPACE	
Speed (mph)	Dist. (ft.)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

DISTANCE BETWEEN SIGNS			
Speed (mph)	Spacing (ft.)		
	A	B	C
40 or less	200	200	200
45	350	350	350
50 or greater	500	500	500

SYMBOLS

- Work Area
- Work Zone Sign
- Flagger
- Traffic Control Officer
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. This Index does not apply to limited access facilities.
2. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with applicable TCZ Indexes.
3. Traffic volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
4. The buffer space may be omitted if there are no sight obstructions to vehicles approaching the Flagger/Officer for distance equal to the buffer space.
5. A Flagger may be substituted for a Traffic Control Officer and the BE PREPARED TO STOP sign may be omitted, when the following conditions are met:
   a. Speed limit is 45 mph or less.
   b. No sight obstructions to vehicles approaching the Flagger/Officer for a distance equal to the buffer space.
   c. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
6. On undivided highways the median sign as shown are to be omitted.
7. For general TCZ requirements and additional information refer to Index 102-600.

CONDITIONS

PLANNED CLOSURE NOT EXCEEDING 5 MINUTES.

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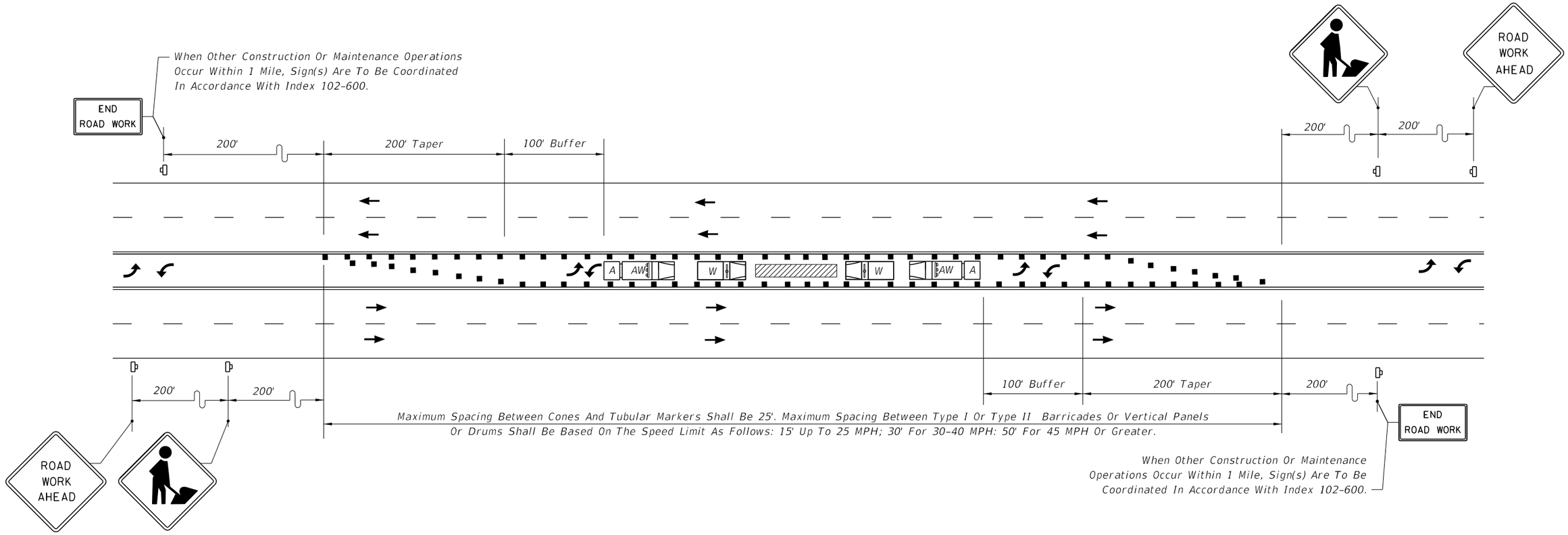
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TEMPORARY ROAD CLOSURE 5 MINUTES OR LESS	INDEX 102-625	SHEET 1 of 1



SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- W — Work Vehicle With Rotating/Strobe Lights
- X — Shadow (S) Or Advance Warning (AW) Vehicle with Advance Warning Arrow Board and Sign Message
- A — Truck/Trailer Mounted Attenuator (TMA)

GENERAL NOTES

1. Work operations shall be confined to two way left turn lane, leaving the adjacent lanes open to traffic.
2. Advance Warning Vehicle will have an Advanced Warning Arrow Board in the Warning Mode.
3. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
4. For general TCZ requirements and additional information, refer to Index 102-600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ARE BEING CONDUCTED IN THE TWO WAY LEFT TURN LANE.

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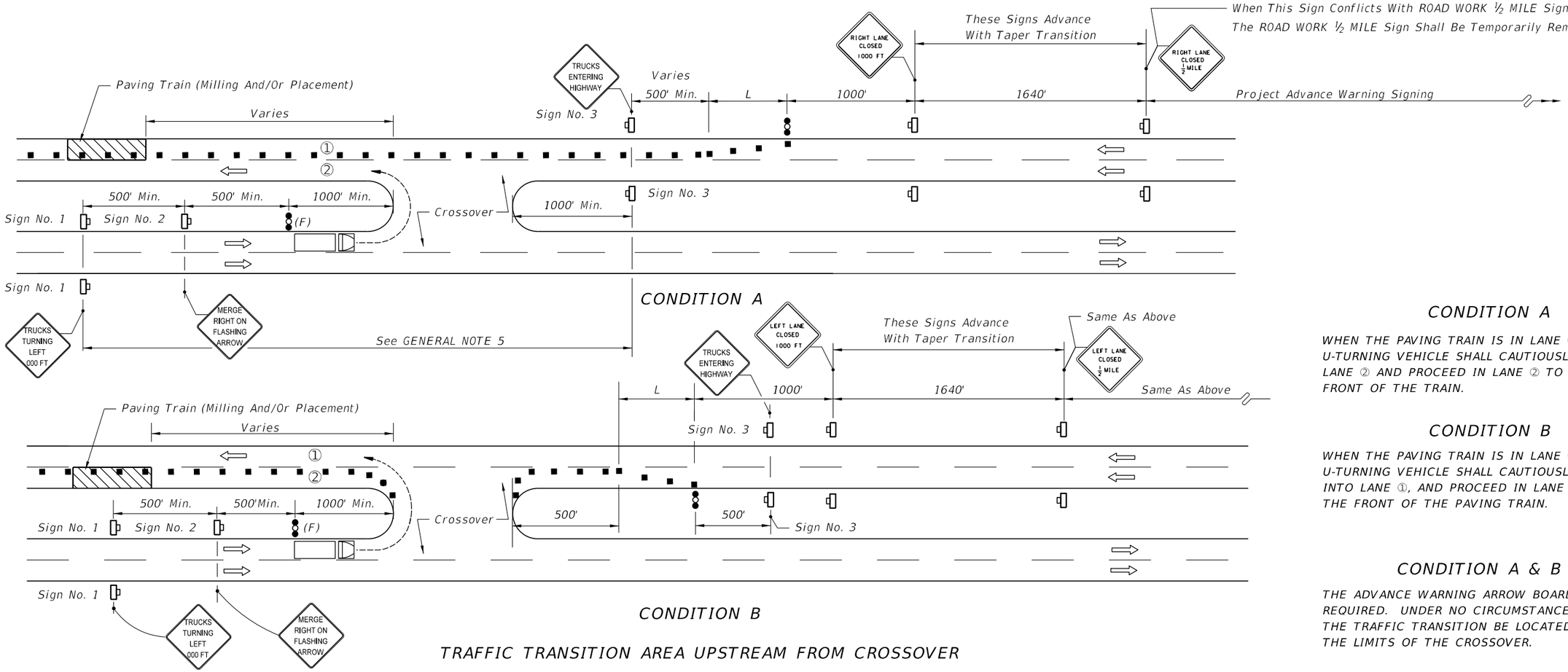
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FY 2020-21 STANDARD PLANS	TWO WAY LEFT TURN LANE CLOSURE	INDEX 102-628	SHEET 1 of 1



TRAFFIC TRANSITION AREA UPSTREAM FROM CROSSOVER

CASE I

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board – Type C (48"x 96")
- (F) Advance Warning Arrow Board – Type C (48"x 96") Trailer Mounted And Actuated By Flagger Upon Approach Of The Work Vehicle
- Work Vehicle
- (X) Lane Number
- Lane Identification + Direction of Traffic

CONDITION A

WHEN THE PAVING TRAIN IS IN LANE ① THE U-TURNING VEHICLE SHALL CAUTIOUSLY TURN INTO LANE ② AND PROCEED IN LANE ② TO THE FRONT OF THE TRAIN.

CONDITION B

WHEN THE PAVING TRAIN IS IN LANE ② THE U-TURNING VEHICLE SHALL CAUTIOUSLY TURN INTO LANE ①, AND PROCEED IN LANE ① TO THE FRONT OF THE PAVING TRAIN.

CONDITION A & B

THE ADVANCE WARNING ARROW BOARDS ARE REQUIRED. UNDER NO CIRCUMSTANCES WILL THE TRAFFIC TRANSITION BE LOCATED WITHIN THE LIMITS OF THE CROSSOVER.

GENERAL NOTES

1. This index does not apply to limited access facilities.

2. When crossovers do not exist, the contractor will construct temporary crossovers in accordance with Index 102-631.

3. L = Length of taper in feet:
   = WS for speeds ≥ 45 mph
   = $\frac{WS^2}{60}$ for speeds ≤ 40 mph

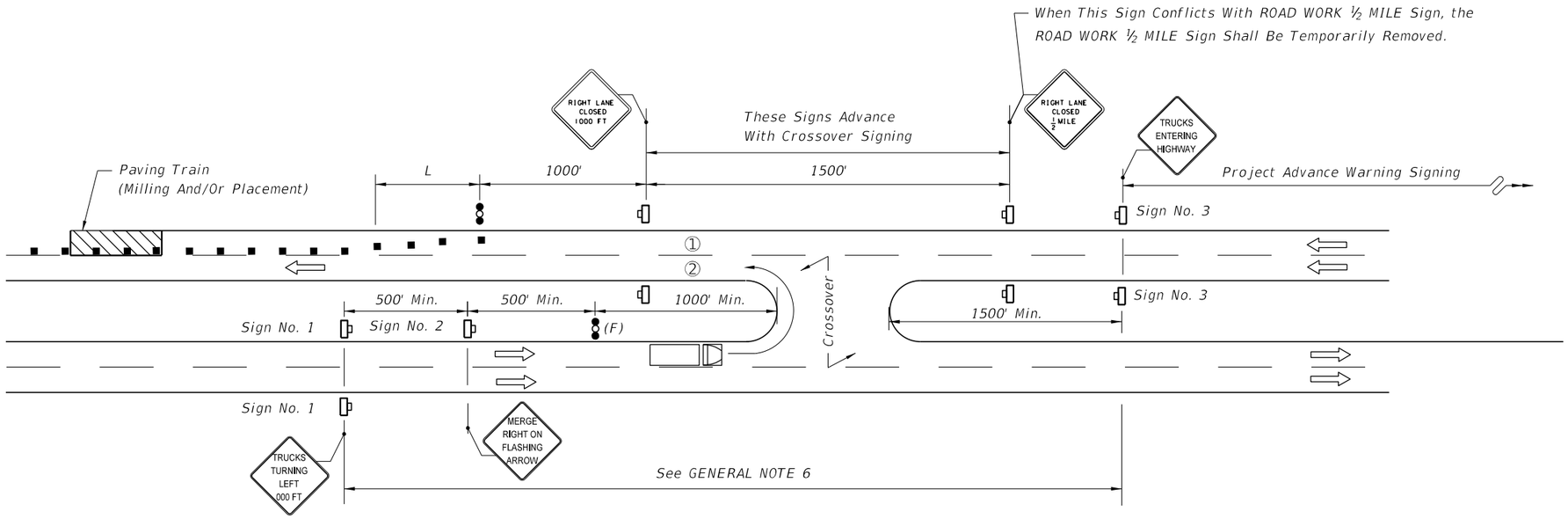
   Where:
   W = Width of lateral transition in feet.
   S = Posted speed limit (mph).

4. Within the lateral transitions, the maximum spacing between cones and tubular markers shall be 25'. Maximum spacing between Type I or Type II barricades or vertical panels or drums shall be based on the speed limit as follows: 15' up to 25 MPH; 30' for 30-40 MPH; 50' for 45 MPH or greater.

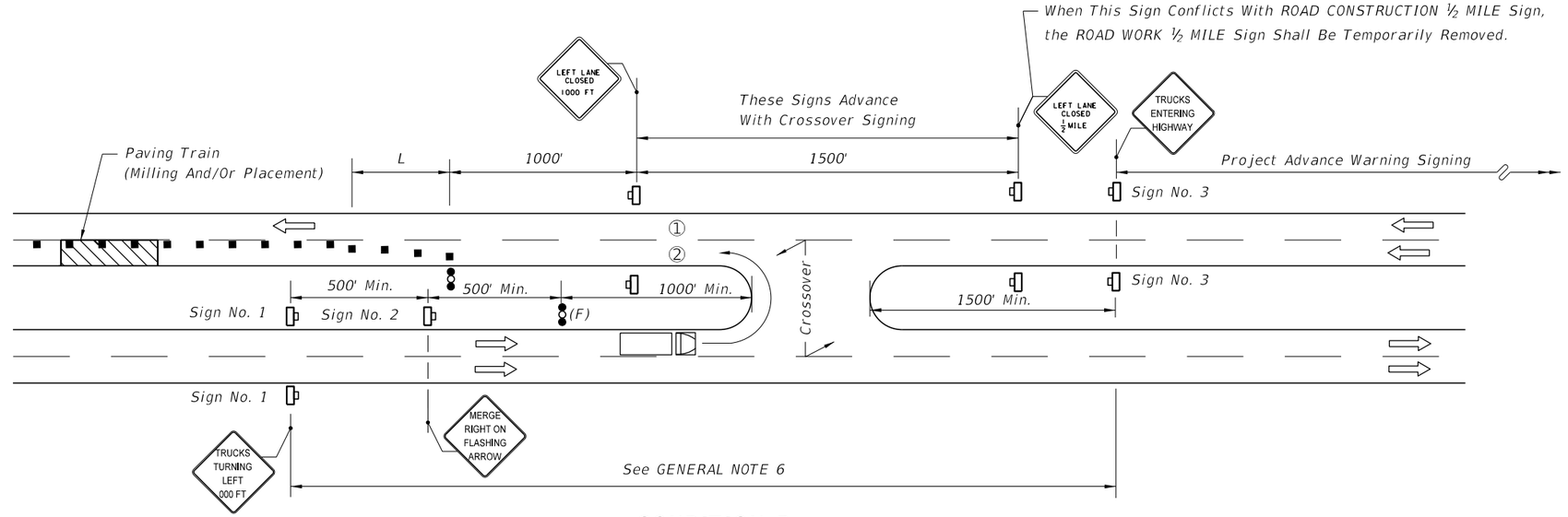
   Spacing for devices parallel to the travel lanes shall be 25' centers for cones or tubular markers and 50' for Type I or Type II barricades or vertical panels or drums.

5. For Case I, Condition A, when the median width is too narrow for trucks to make turns into Lane No. 2, Sign Nos. 1, 2, 3 and the Flagger Actuated Advance Warning Arrow Board shall be moved ahead to a crossover in advance of the paving lane taper. Project advance warning signs (not shown) shall be located in advance of the relocated Sign No. 3.

6. For Case II, Conditions A & B, when the median width is too narrow for trucks to make turns into Lane No. 2, Sign Nos. 1, 2, 3 and the Flagger Actuated Advance Warning Arrow Board shall be moved ahead to a crossover in advance of the 'RIGHT LANE CLOSED ½ MILE' sign. Project advance warning signs (not shown) shall be located in advance of the relocated Sign No. 3.



CONDITION A



CONDITION B

TRAFFIC TRANSITION AREA DOWNSTREAM FROM CROSSOVER

CASE II

CONDITION A

WHEN THE PAVING TRAIN IS IN LANE ① THE U-TURNING VEHICLE SHALL CAUTIOUSLY TURN INTO LANE ② AND PROCEED IN LANE ② TO THE FRONT OF THE TRAIN.

CONDITION B

WHEN THE PAVING TRAIN IS IN LANE ② THE U-TURNING VEHICLE SHALL TURN INTO LANE ②, CAUTIOUSLY MERGE INTO LANE ① AND PROCEED TO THE FRONT OF THE PAVING TRAIN.

CONDITION A & B

THE ADVANCE WARNING ARROW BOARD IS REQUIRED. UNDER NO CIRCUMSTANCES WILL THE TRAFFIC TRANSITION BE LOCATED WITHIN THE LIMITS OF THE CROSSOVER.

Note: See Sheet 1 for General Notes.

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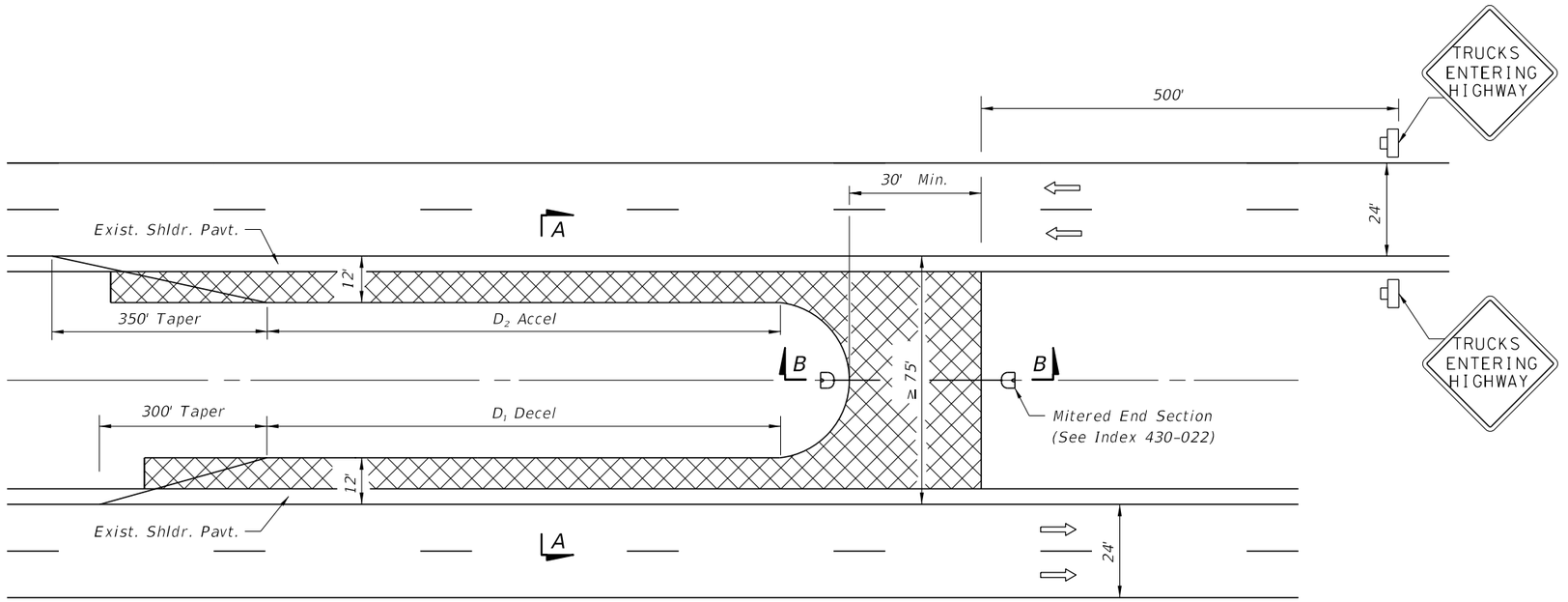
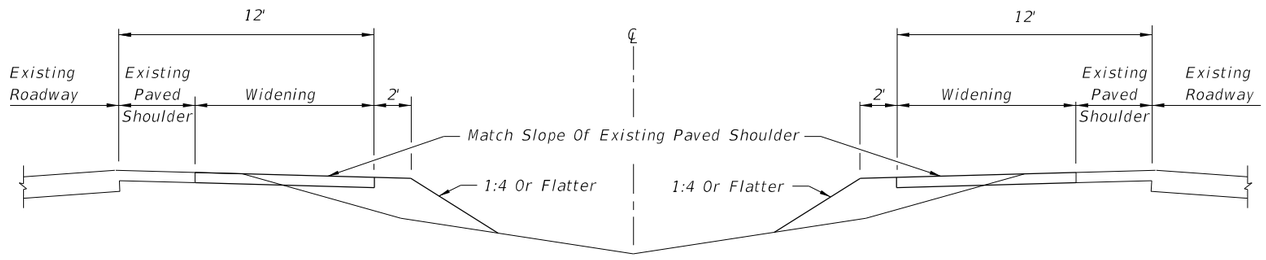
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CROSSOVER FOR PAVING TRAIN OPERATIONS, RURAL	INDEX	SHEET
11/01/17						102-630	2 of 2

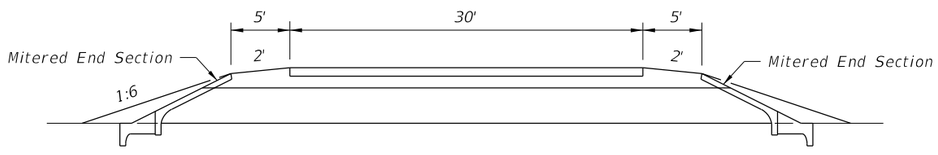


PLAN

LENGTH OF ACCESS LANES (Ft.)		
Grade	D_1	D_2
2% or less	590'	1540'
3 to 4% Upgrade	530'	2310'
3 to 4% Downgrade	710'	925'



SECTION AA



SECTION BB

SYMBOLS

- Work Zone Sign
- Lane Identification + Direction of Traffic
- Temporary Pavement

GENERAL NOTES

1. Temporary median crossovers shall be within the project limits and shall not be used for transporting materials to or from any other project. The acceleration-deceleration surfaces shall be paved. RAP material is acceptable for crossing surfacing.
2. Temporary median crossovers shall be located only in areas having adequate sight distance. On limited access facilities temporary median crossovers shall not be located within 1.5 miles of interchanges nor within 2000 ft. of acceleration-deceleration lanes at rest areas, other access openings or other highway service areas.
3. For paving train operations at permanent crossovers, see Index 102-630.
4. All traffic control devices are to be removed when crossover will not be in use for one hour or longer.
5. Trailer mounted advance warning panel may be used in lieu of advance warning vehicle.
6. When a crossover is no longer needed, all temporary construction shall be immediately removed and the area restored to its original condition.
7. Cost of construction, maintenance, removal and restoration work related to temporary crossovers shall be included in the contract unit price for Maintenance of Traffic, LS.
8. Temporary crossovers on limited access right of way and use of this Index are prohibited unless specifically permitted in the Contract Plans or Special Provisions. When permitted in the Contract Plans or Special Provisions and prior to construction of any temporary crossover, the Contractor must submit, in writing, a request identifying specific locations for approval by the Engineer.
9. Pipe and mitered end sections are not required when crossover is located at the high point of a crest vertical curve.

TEMPORARY CROSSOVER FOR MEDIAN WIDTHS ≥ 75'

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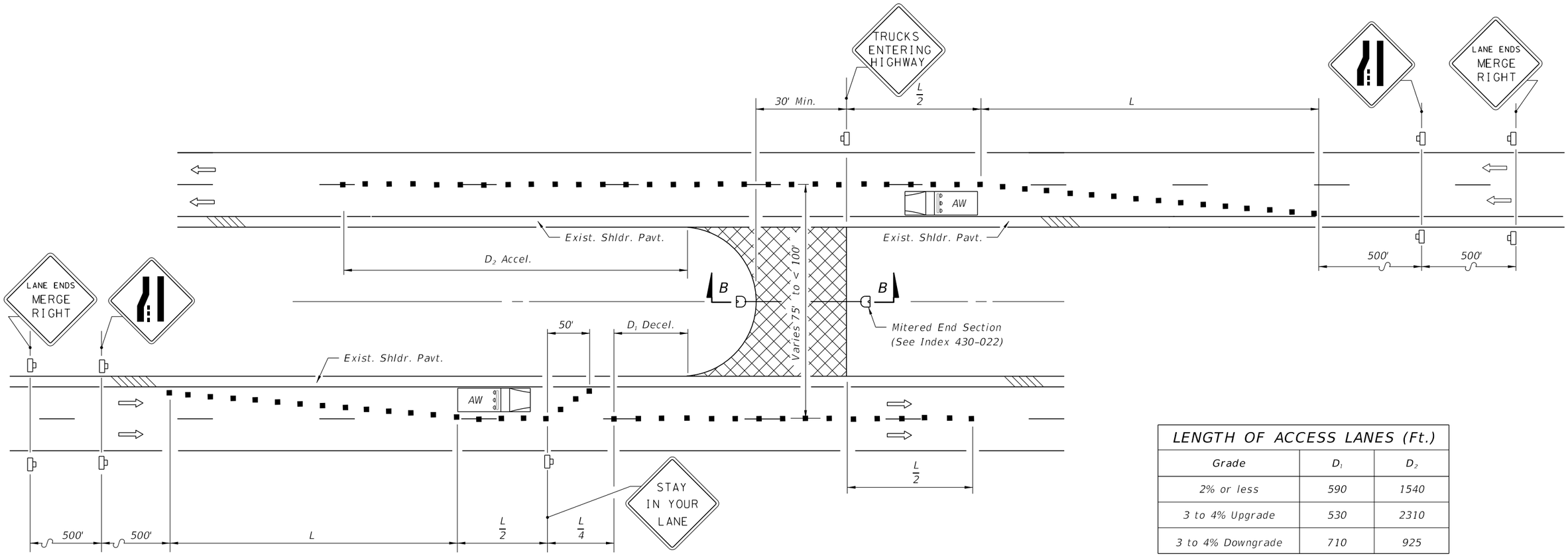
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TEMPORARY CROSSOVER	102-631	1 of 2



LENGTH OF ACCESS LANES (Ft.)		
Grade	D_1	D_2
2% or less	590	1540
3 to 4% Upgrade	530	2310
3 to 4% Downgrade	710	925

SYMBOLS

- Temporary Pavement
- Work Zone Sign
- Channelizing Device (See Index 102-600)
- AW — Advance Warning Vehicle
- Lane Identification + Direction of Traffic

Maximum Spacing Between Cones And Tubular Markers Shall Be 25'

L (Min.) = WS

S = Existing Posted Speed (MPH)

NOTE

1. A lane closure analysis will be required to determine the times of day that this crossover can be in operation.

TEMPORARY CROSSOVER FOR MEDIAN WIDTHS FROM 50' TO < 75'

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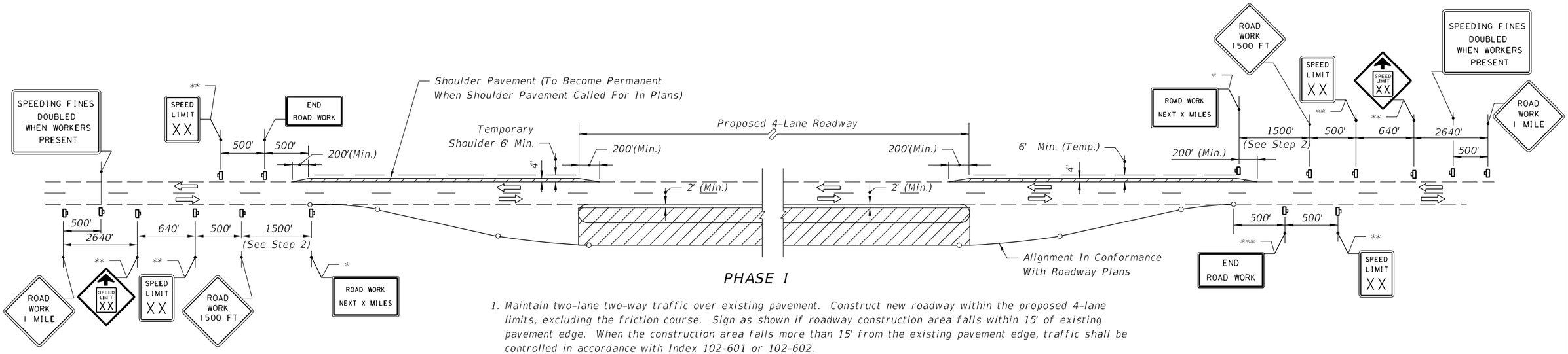
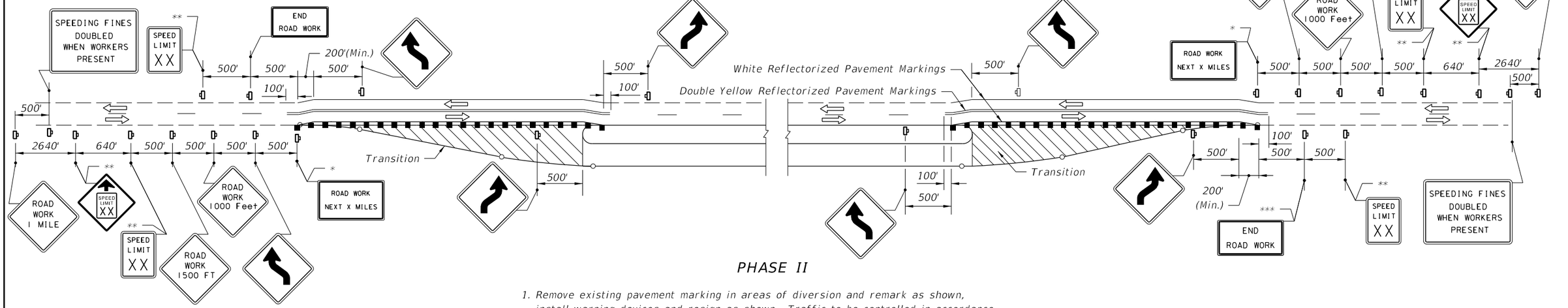
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	TEMPORARY CROSSOVER	INDEX	SHEET
11/01/17					102-631	2 of 2



PHASE I

1. Maintain two-lane two-way traffic over existing pavement. Construct new roadway within the proposed 4-lane limits, excluding the friction course. Sign as shown if roadway construction area falls within 15' of existing pavement edge. When the construction area falls more than 15' from the existing pavement edge, traffic shall be controlled in accordance with Index 102-601 or 102-602.

2. Construct shoulder pavement to provide two-lane two-way traffic over shoulder and existing pavement during Phase II roadway construction. For lane width requirements see Index 102-600. Signing as shown, with the near 1500' zone modified in accordance with Index 102-603, to be in place prior to shoulder pavement construction.



PHASE II

1. Remove existing pavement marking in areas of diversion and remark as shown, install warning devices and resign as shown. Traffic to be controlled in accordance with Index 102-607. For lane width requirements see Index 102-600.

2. Route through traffic to temporary and existing pavement.

3. Construct transitions, excluding friction course.

Note: See Sheet 2 for General Notes.

SYMBOLS

- ■ Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification + Direction of Traffic

LEGEND

- Phase I Construction
- Phase II Construction
- Phase III Construction

* Required For Projects > 2 Miles

** Required Only When Construction Zone Speed Reduced Below Existing Posted Speed Prior To Construction

*** When Other Construction Or Maintenance Operations Occur Within 1 Mile, Sign(s) To Be Omitted And Signing To Be Coordinated In Accordance With Index 102-600.

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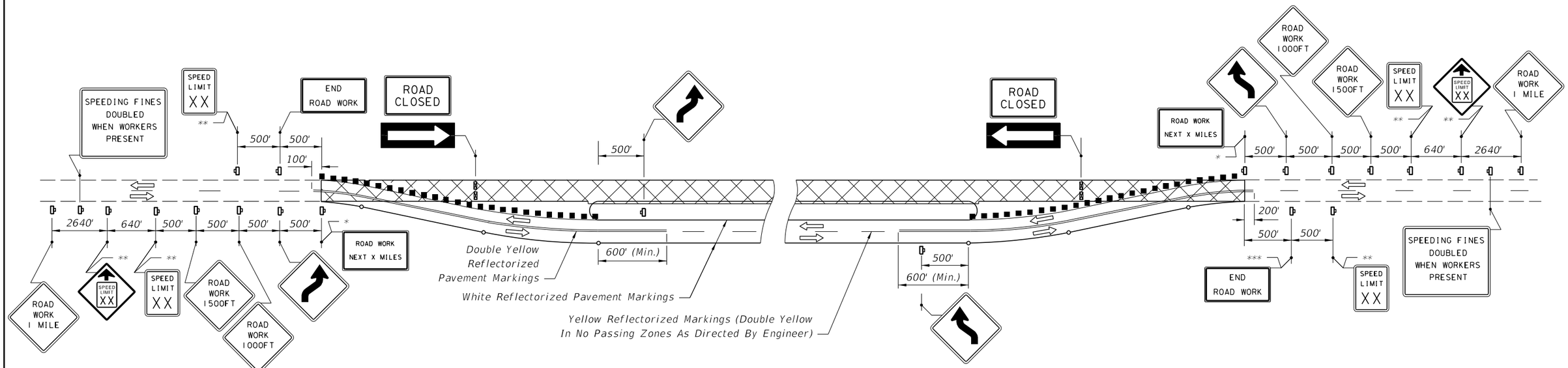
2/26/2020

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONVERTING TWO LANES TO FOUR LANES DIVIDED, RURAL	INDEX	SHEET
11/01/17						102-640	1 of 2



PHASE III

1. Remove temporary marking from the existing pavement and temporary shoulder pavement. Mark pavement, install warning devices and resign as shown. Traffic to be controlled in accordance with Index 102-607. For lane width requirements see Index 102-600.

2. Route through traffic to newly constructed roadway.

3. Resurface or reconstruct existing pavement including required shoulder pavement and friction course.

PHASE IV

1. Reroute through traffic as shown in Phase II. Signing to be as shown in Phase II.

2. Construct friction course over pavement constructed in Phases I and II.

GENERAL NOTES

1. Existing signs and pavement markings that conflict with construction signing and marking shall be obliterated or removed.

2. Lane widths for maintenance of two-way traffic should desirably be equal to lane widths of the existing facility, but lanes shall be not less than 10' in width. When one-lane one-way operations are necessary, a minimum width of 12' shall be maintained and traffic controlled in accordance with Indexes 102-603 and 102-607. Minimum width for the temporary shoulders is 6'.

3. Within the lateral transitions, the maximum spacing between Type I or Type II barricades or vertical panels or drums shall be based on the speed limit as follows: 15' up to 25 MPH; 30'-40 MPH; 50' for 45 MPH or greater.

   The maximum spacing between warning devices used for delineation between the travel way and construction area is 50' for Type I or Type II barricades or vertical panels or drums.

4. Warning devices shall be in conformance with 'Drop-offs In Work Zones', see Index 102-600.

5. For speed sign applications, see 'Regulatory Speed In Work Zones' Index 102-600.

6. For reflectorized raised pavement marker applications, see 'Pavement Markers' Index 102-600 and Index 706-001.

7. Additional barricades, signing, or other traffic controls shall be provided for limited work areas in accordance with other applicable TCZ Indexes.

8. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.

9. Provisions approved by the Engineer shall be made for the removal of storm water from the roadway(s) during construction.

10. For general TCZ requirements and additional information, refer to Index 102-600.

* Required For Projects > 2 Miles

** Required Only When Construction Zone Speed Reduced Below Existing Posted Speed Prior To Construction

*** When Other Construction Or Maintenance Operations Occur Within 1 Mile, Sign(s) To Be Omitted And Signing To Be Coordinated In Accordance With Index 102-600.

SYMBOLS

- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Lane Identification + Direction of Traffic

LEGEND

- Phase I Construction
- Phase II Construction
- Phase III Construction

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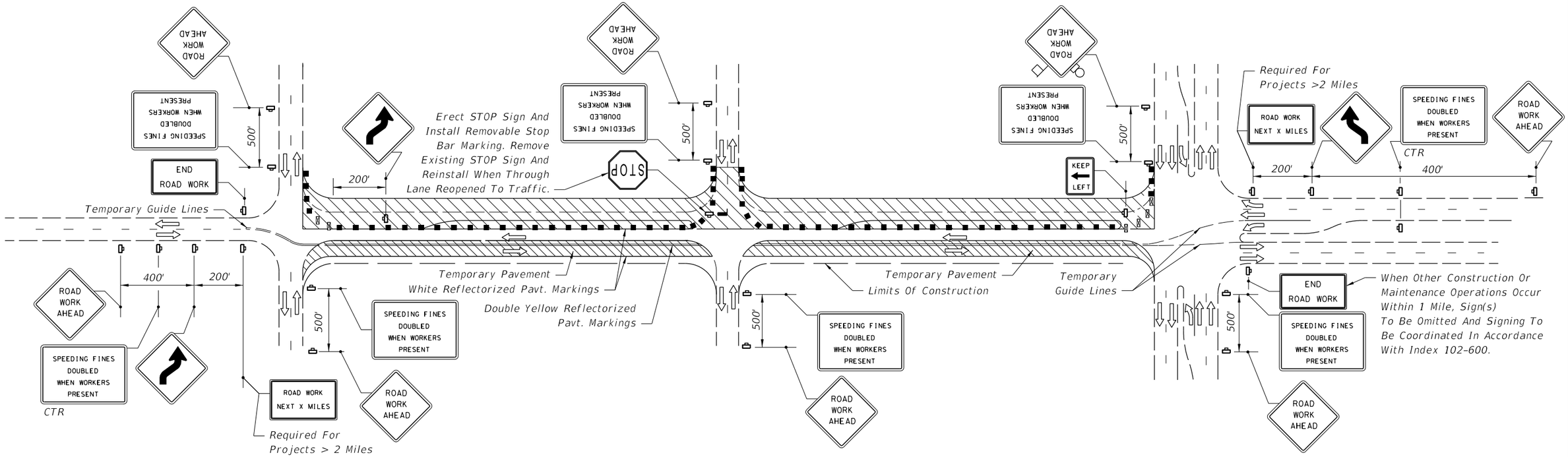
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CONVERTING TWO LANES TO FOUR LANES DIVIDED, RURAL	INDEX 102-640	SHEET 2 of 2



PHASE I

1. Maintain two-lane two-way traffic along existing facility. Install construction signing.

2. Remark existing pavement to facilitate temporary pavement construction. For lane width requirements see Index 102-600.

3. Construct temporary pavement of sufficient width to accommodate two-lane two-way traffic on the temporary pavement and a portion of the existing pavement during Phase I roadway construction. When two-lane two-way traffic can not be maintained during temporary pavement construction one-lane operations shall be maintained in accordance with Index 102-605. Channelizing devices shall be in conformance with 'Drop-Offs in Work Zones' of Index 102-600.

4. Mark the pavement in accordance with the Phase I diagram. Reroute through traffic to the temporary pavement and a portion of the existing pavement. For lane width requirements see Index 102-600.

5. Construct two lanes of the proposed roadway, excluding the friction course. Side street traffic to be maintained. Through and cross traffic to be controlled in accordance with Indexes 102-604, 102-605, and 102-615. Barricading shall be in conformance with 'Drop-Offs in Work Zones', Index 102-600. When work extends through an intersection, temporarily reroute the cross traffic to other cross streets. When rerouting is not possible, provide one-lane access (minimum) for two-lane two-way cross streets and one-lane access (minimum) each direction for four-lane two-way cross streets, in accordance with Indexes 102-604, 102-605, and 102-615.

SYMBOLS

- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Stop Bar
- Lane Identification + Direction of Traffic

LEGEND

- Phase I Construction
- Phase II Construction
- Phase III Construction

See Sheet 3 for General Notes.

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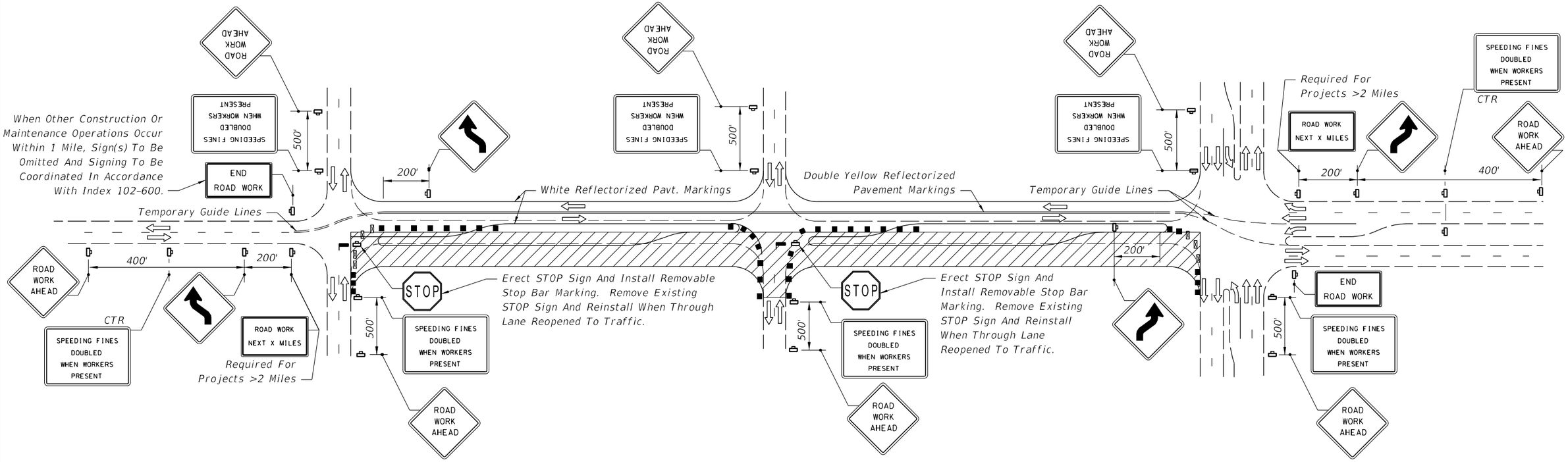
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONVERTING TWO LANES TO FOUR LANES DIVIDED, URBAN	INDEX	SHEET
11/01/17						102-641	1 of 3



PHASE II

1. Sign and mark Phase I pavement in accordance with the Phase II diagram. For lane width requirements see Index 102-600.
2. Reroute through traffic to Phase I pavement.
3. Complete all Phase II construction, including the friction course. Side street traffic to be maintained. Through and cross traffic to be controlled in accordance with Indexes 102-604, 102-605, and 102-615. Channelizing devices shall be in conformance with 'Drop-Offs in Work Zones' of Index 102-600. When work extends through an intersection, temporarily reroute cross traffic to other cross streets. When rerouting is not possible, provide one-lane access (minimum) for two-lane two-way cross streets and one-lane access (minimum) each direction for four-lane two-way cross streets, in accordance with Indexes 102-604, 102-605, and 102-615.

SYMBOLS

- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Stop Bar
- Lane Identification + Direction of Traffic

LEGEND

- Phase I Construction
- Phase II Construction
- Phase III Construction

See Sheet 3 for General Notes.

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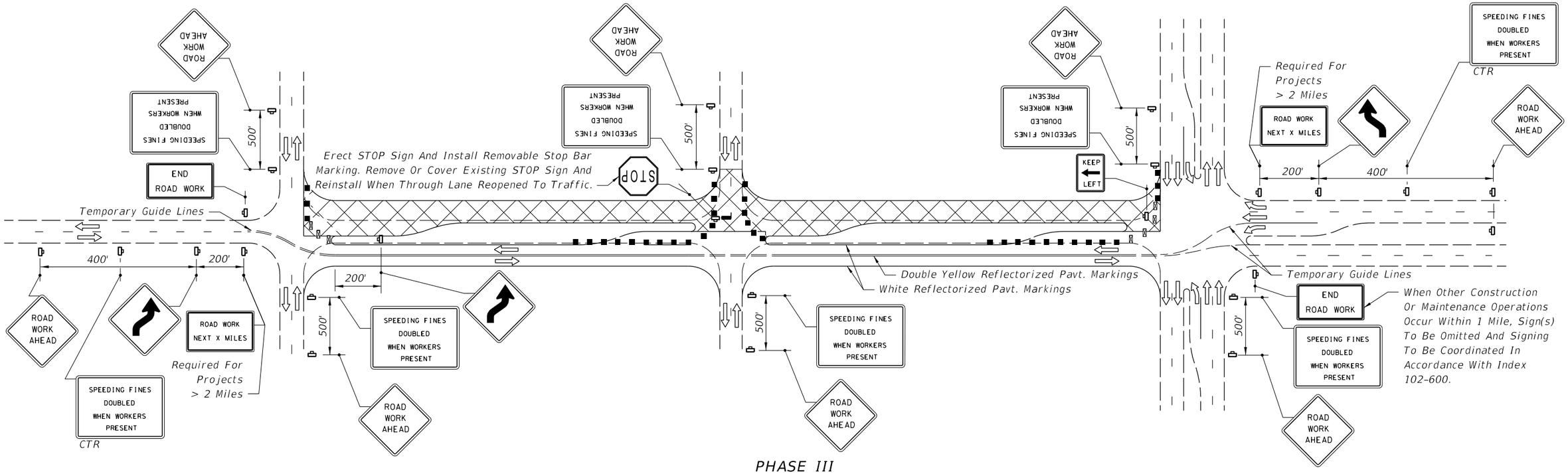
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONVERTING TWO LANES TO FOUR LANES DIVIDED, URBAN	INDEX	SHEET
11/01/17					102-641	2 of 3



PHASE III

1. Sign and mark Phase II pavement in accordance with the Phase III diagram.
2. Reroute through traffic to Phase II pavement.
3. Construct friction course over Phase I pavement. Side street traffic to be maintained. Through and cross traffic to be controlled in accordance with Index 102-604, 102-605, or 102-615. When work extends through an intersection, temporarily reroute cross traffic to other cross streets. When rerouting is not possible, provide one-lane access (minimum) for two-lane two-way cross streets and one-lane across (minimum) each direction for four-lane two-way cross streets.

GENERAL NOTES

1. All signing, pavement marking, and barricades necessary for maintenance of traffic shall conform to Index 102-600.
2. Lane widths for maintenance of two-way traffic should desirably be equal to lane widths of the existing facility, but lanes shall not be less than 10' in width. When one-lane one-way operations are necessary, a minimum width of 12' should be maintained and traffic controlled in accordance with Index 102-604, 102-605, or 102-615.
3. At signalized intersections, signals shall be directed or relocated as required to the center of relocated lanes.
4. For reflectorized raised pavement marker application, see Indexes 102-600 and 706-001.
5. Additional barricades, signing, lighting or other traffic controls for limited work areas shall be provided in accordance with other applicable TCZ Indexes as conditions warrant in each phase.
6. Provisions approved by the Engineer shall be made for the removal of storm water from the roadway(s) during construction.
7. For general TCZ requirements and additional information, refer to Index 102-600.

SYMBOLS

- Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Stop Bar
- Lane Identification + Direction of Traffic

LEGEND

- Phase I Construction
- Phase II Construction
- Phase III Construction

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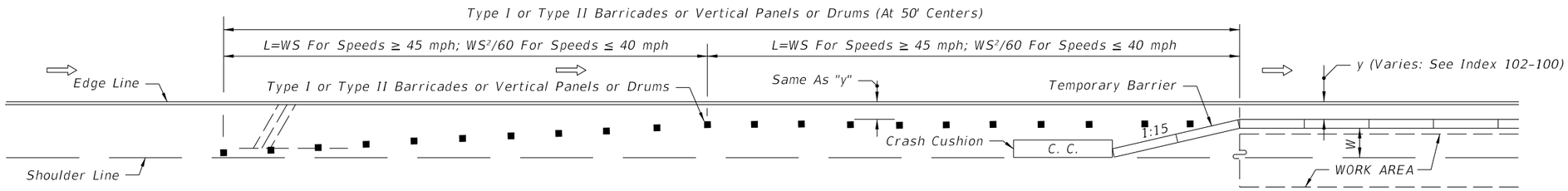
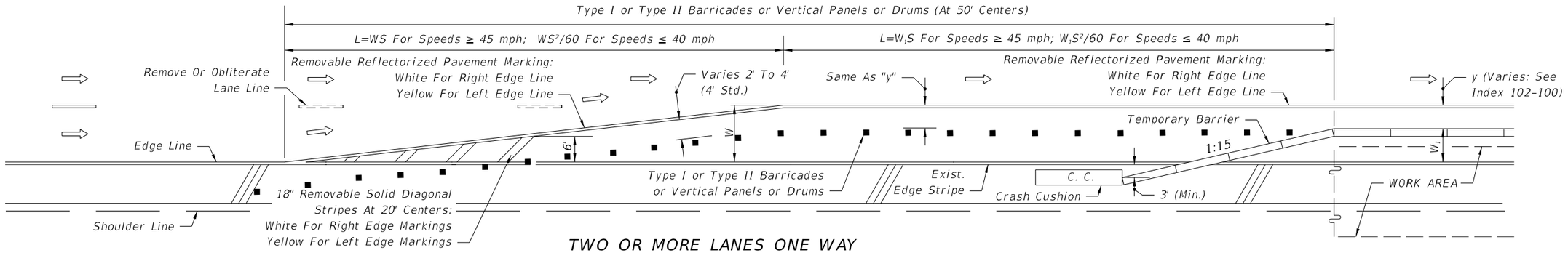
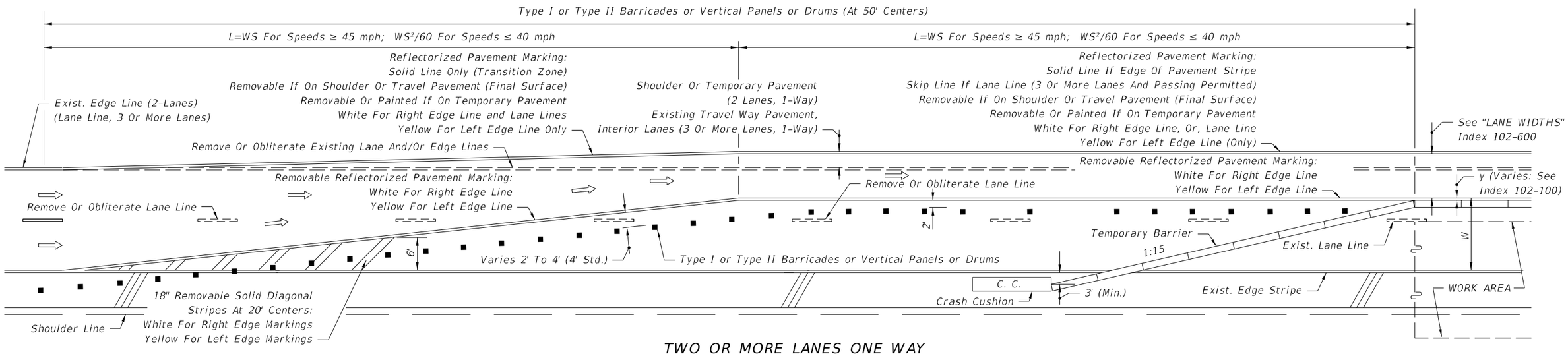
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CONVERTING TWO LANES TO FOUR LANES DIVIDED, URBAN	INDEX 102-641	SHEET 3 of 3



BARRIER AND TRANSITION LOCATED ON PAVED OR UNPAVED SHOULDERS
PLAN SHOWN FOR RIGHT LANE - INVERTED PLAN FOR LEFT LANE



TWO OR MORE LANES ONE WAY
LANE DROP • PLAN SHOWN FOR RIGHT LANE MERGE LEFT - INVERTED PLAN FOR LEFT LANE MERGE RIGHT



TWO OR MORE LANES ONE WAY
LANE DROP AND LANE SHIFTS - PLAN SHOWN FOR RIGHT LANE MERGE LEFT - INVERTED PLAN FOR LEFT LANE MERGE RIGHT

SYMBOLS

⇨ *Lane Identification + Direction of Traffic*

■ *Channelizing Device (See Index 102-600)*

GENERAL NOTES

1. *For signing information see the Plans, Specifications, MUTCD and other TCZ Indexes.*
2. *Where W=width of lateral transition in feet, S=posted speed limit.*

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	TRANSITIONS FOR TEMPORARY BARRIER ON FREEWAY FACILITIES	102-642	1 of 1

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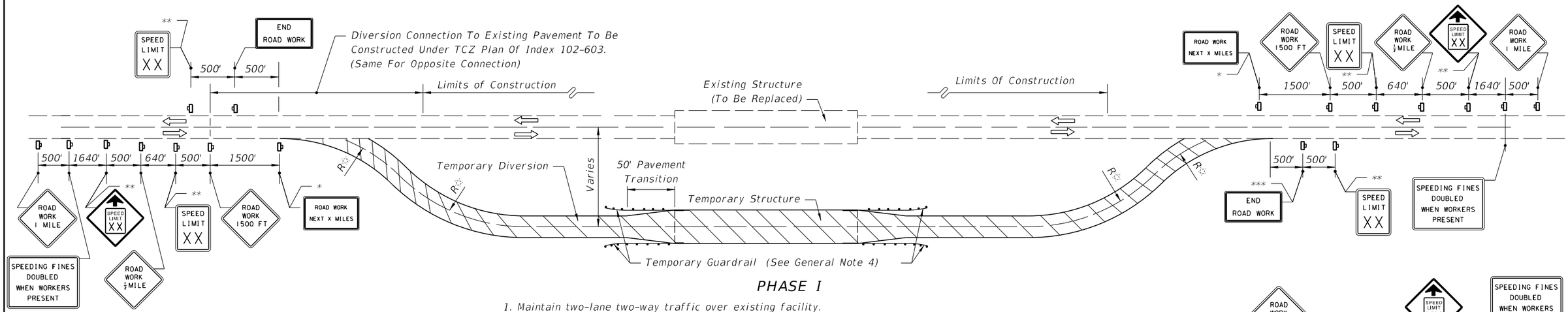
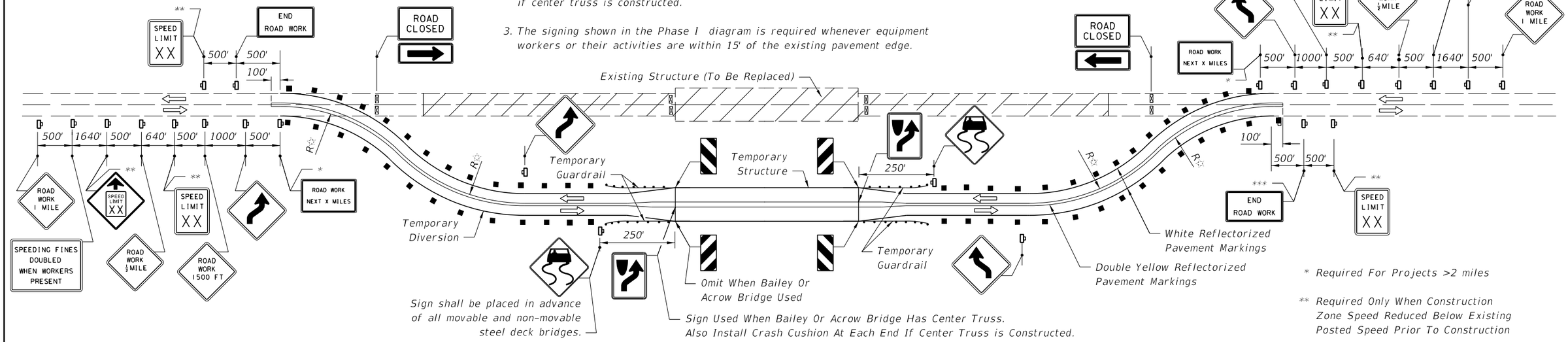


PHASE I

1. Maintain two-lane two-way traffic over existing facility.
2. Construct temporary structure, approaches, guardrail and install crash cushions if center truss is constructed.
3. The signing shown in the Phase I diagram is required whenever equipment workers or their activities are within 15' of the existing pavement edge.



☆ See SUPERELEVATION Index 102-600.

* Required For Projects >2 miles

** Required Only When Construction Zone Speed Reduced Below Existing Posted Speed Prior To Construction

*** When Other Construction Or Maintenance Operations Occur Within 1 Mile, Sign(s) To Be Omitted And Signing To Be Coordinated In Accordance With Index 102-600.

PHASE II

1. Resign and mark as shown in Phase II plan.
2. Reroute traffic to diversion and maintain two-way traffic on diversion. Install Type III barricades.
3. Construct proposed structure and reconstruct or resurface existing approaches.

SYMBOLS

- ■ Channelizing Device (See Index 102-600)
- Type III Barricade
- Work Zone Sign
- Lane Identification + Direction of Traffic

LEGEND

- Phase I
- Phase II

PHASE III and General Notes (See Sheet 2)

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TWO-LANE TWO-WAY, RURAL STRUCTURE REPLACEMENT	102-650	1 of 2

PHASE III

1. Reroute traffic to final alignment and maintain two-way traffic.

2. Remove all temporary construction items.

GENERAL NOTES

1. All signing, pavement marking, and barricades necessary for maintenance of traffic shall conform to Index 102-600.

2. For speed sign applications, see Index 120-600.

3. For lane width requirements see Index 102-600. When one-way one-lane operations are necessary, a minimum width of 12' shall be maintained and traffic controlled in accordance with Index 102-603, 102-606, or 102-607. Minimum width for the diversion shoulders is 6'.

4. Method of attaching temporary guardrail to the diversion structure to be approved by the Engineer. Cost of temporary guardrail systems, including end anchorage assemblies, transitions and attachment to temporary structures, are to be included in the contract unit price for Guardrail (Temporary) LF.

5. Provisions approved by the Engineer shall be made for the removal of storm water from the roadway(s) during construction.

6. Only temporary crash cushions approved by the Department shall be used unless specified devices called for in the plans.

7. Where the temporary structure is not required, the diversion may be constructed in accordance with Index 102-608, unless otherwise stipulated in the plans.

8. For reflective raised pavement marker application, see Indexes 102-600 and 706-001.

9. For general TCZ requirements and additional information, refer to Index 102-600.

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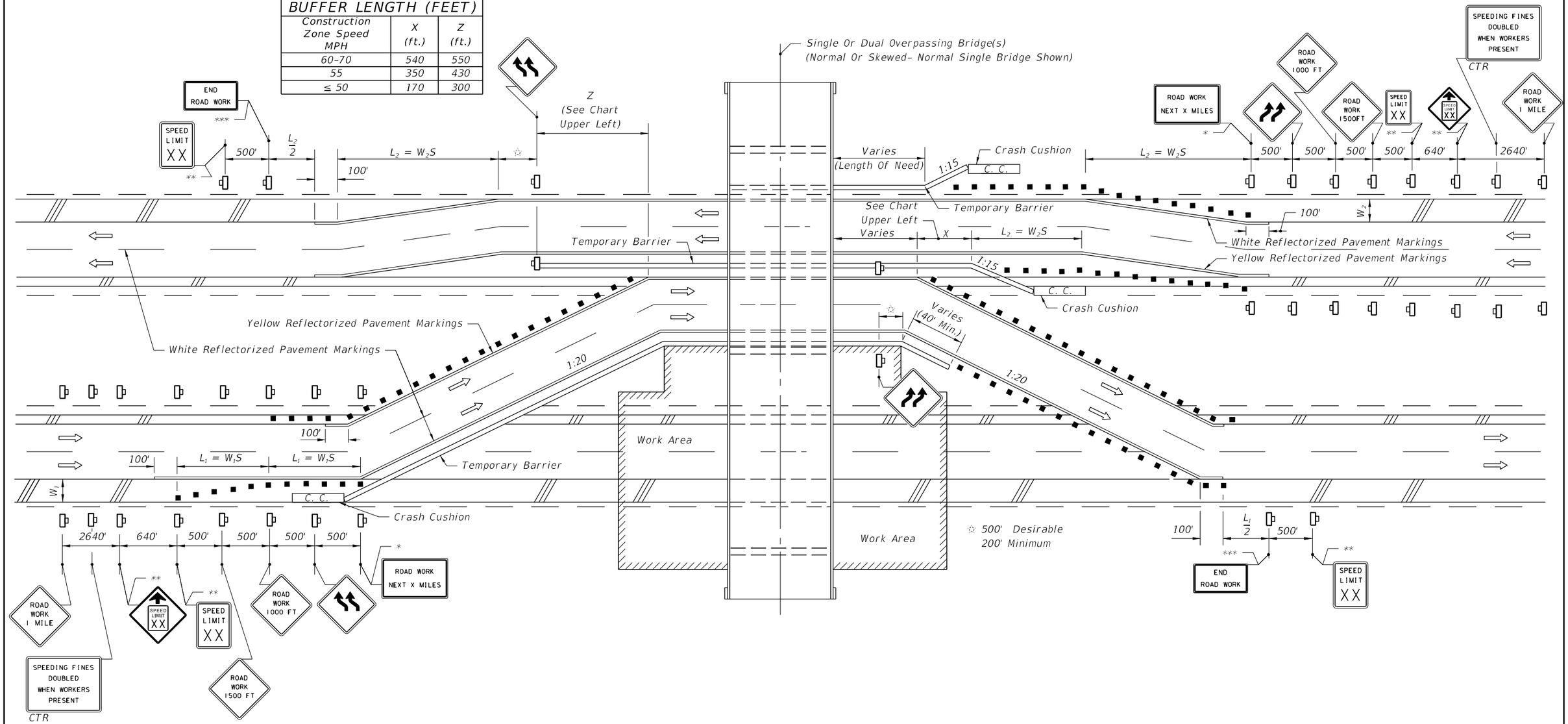
BUFFER LENGTH (FEET)		
Construction Zone Speed MPH	X (ft.)	Z (ft.)
60-70	540	550
55	350	430
≤ 50	170	300



SYMBOLS

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

GENERAL NOTES

1. S=Posted speed limit (mph).
2. Within the lateral transitions, the maximum spacing between Type I or Type II barricades or vertical panels or drums shall be based on the speed limit as follows: 15' up to 25 MPH; 30' for 30-40 MPH; 50' for 45 MPH or greater. Barricades, vertical panels, and drums shall not be intermixed in lateral transitions.
3. For speed sign applications, see 'Regulatory Speed in Work Zones' Index 102-600.
4. All existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and new pavement markings used for marking edge lines and lane lines.
5. When side roads, cross roads or interchanges within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes
6. For general TCZ requirements and additional information, refer to Index 102-600.

* Required For Projects > 2 miles

** Required Only When Construction Zone Speed Reduced Below Existing Posted Speed Prior To Construction

*** When Other Construction Or Maintenance Operations Occur Within 1 Mile, Sign(s) To Be Omitted And Signing To Be Coordinated In Accordance With Index 102-600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE THE CLOSURE OF ONE ROADWAY AND THE OPPOSING ROADWAY IS CONVERTED TO TEMPORARY TWO-WAY TRAVEL BY WAY OF CROSSOVERS.

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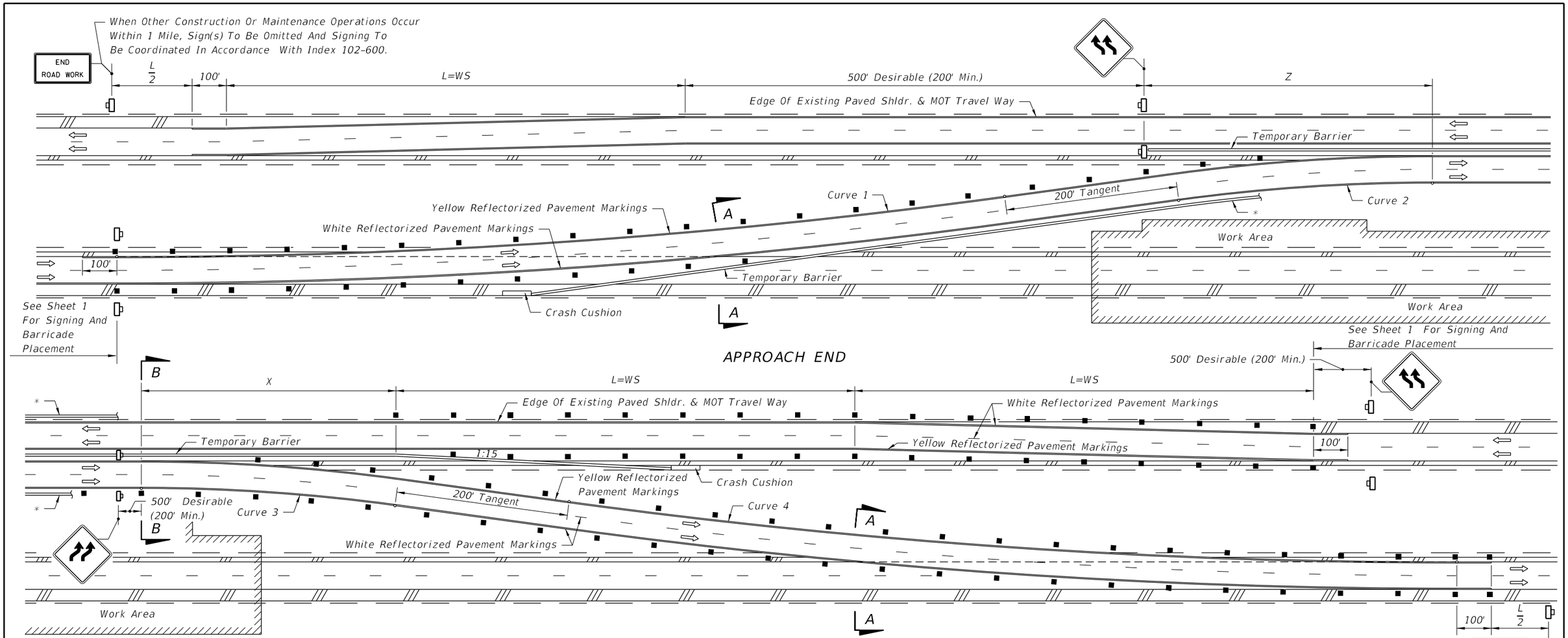
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MULTILANE DIVIDED, MAINTENANCE AND CONSTRUCTION	INDEX 102-651	SHEET 1 of 2

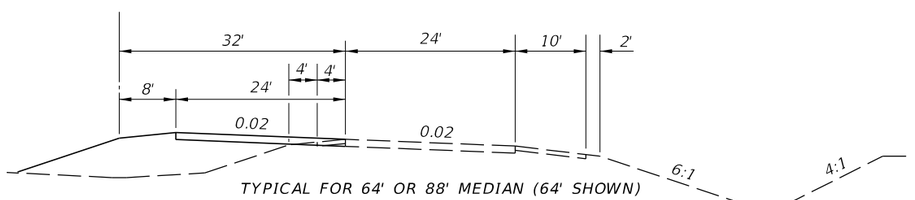


*Length of barrier needed for protection of work area and/or other hazards to be shown in the plans. For complimentary information on barrier and work area see Sheet 1. See Index 102-600 for clear zone requirements.

BUFFER LENGTH (ft)				
Construction Zone Speed MPH	64' Median		88' Median	
	X	Z	X	Z
70	607	588	582	545
65	581	562	552	514
60	562	543	531	492
55	337	369	330	350
50	201	286	200	276
45	115	164	115	163
40	104	149	104	148
35	91	134	91	132
30	78	118	78	115

MINIMUM RADII FOR NORMAL CROSS SLOPES		
Construction Zone Speed MPH	Minimum Radius (ft) R	
	Curves 1 & 4	Curves 2 & 3
70	22,918 (0° 15')	4,584 (1° 15')
65	22,918 (0° 15')	3,820 (1° 30')
60	22,918 (0° 15')	3,274 (1° 45')
55	11,459 (0° 30')	2,546 (2° 15')
50	11,459 (0° 30')	2,292 (2° 30')
45	1,080 (5° 18')	700 (8° 11')
40	830 (6° 54')	550 (10° 25')
35	620 (9° 14')	410 (13° 58')
30	450 (12° 44')	285 (20° 06')

NOTE: Diversions with speeds of 50 mph or greater are considered high speed facilities; curvature and superelevation criteria for open highway conditions apply.



TYPICAL FOR 64' OR 88' MEDIAN (64' SHOWN)

SECTION AA

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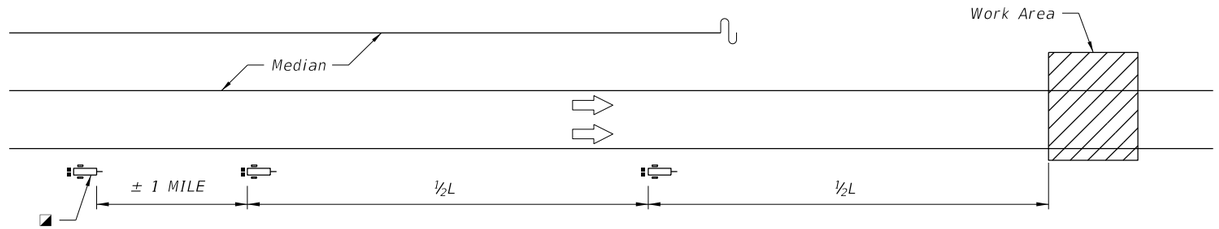
TRAFFIC PACING GUIDE

Traffic pacing is a traffic control technique to slow but not stop traffic to facilitate short duration work operations without an elaborate and difficult detour or diversion. Traffic Control Officers pace or slow the traffic to a speed that provides approximately 20–30 minutes to perform the work operation. The Department has frequently used this technique for setting bridge beams, overhead sign structures and replacing overhead sign panels.

CHANGEABLE MESSAGE SIGNS
(Typical Placement and Messages)



L = Length of Traffic Pacing Operation

Symbols

- ■ Channelizing Device (See Index 102-600)
- Marked Police Vehicle with Flashing Blue Lights
- PCMS, Portable Changeable Message Sign
- ◪ To be placed the day of pacing operation
- ⇨ Lane Identification and Direction of Traffic

CHANGEABLE MESSAGE SIGN MESSAGE
(MAINLINE AND RAMPS)

ONE WEEK PRIOR TO PACING OPERATION	EXPECT DELAYS ON	MMM DD-DD X AM - X AM
DURING DAY OF PACING OPERATION	ROAD WORK TONIGHT	EXPECT PERIODIC DELAYS
DURING PACING OPERATION	SLOW TRAFFIC AHEAD	BE PREPARED TO STOP

NOTICE

This Index represents the minimum requirements for traffic pacing operations on the State Highway System.

Develop a site specific traffic control plan for each pacing operation location.

TRAFFIC PACING GENERAL NOTES

1. Install ROAD CLOSED (W20-3) signs approximately 1000' prior to the work area. These signs shall remain covered until the pacing operation begins and covered when the pacing operation has ended.
2. Prior to requesting that the traffic control officer supervisor initiate the pacing operation, the contractor shall ensure that the necessary equipment is properly positioned (off the roadway) for the construction activity requiring the traffic pacing operation.
3. Truck mounted attenuator(s) with changeable message sign(s) are required to protect workers and/or equipment positioned in a travel lane(s) at the work area during the pacing operation from an errant vehicle. If no workers and/or equipment are positioned in a travel lane(s) at the work area, truck mounted attenuator(s) are not required.
4. A traffic control officer supervisor shall be stationed at the work area continuously throughout the pacing operation to insure radio communications between the contractor and/or the project administrator, and all the police vehicles involved in the pacing operation.
5. When more than one pacing operation is required in one work period the contractor shall allow sufficient time between pacing operations to permit traffic to return to normal speeds and flow. Additional time may be required between pacing operations to allow traffic to resume normal speeds and flow upstream of the work area as determined by the project administrator or traffic control officer supervisor.
6. For work durations of less than five minutes, coordinate with traffic control officer to provide resources necessary for pacing traffic. Portable changeable message signs, truck-mounted attenuators, ROAD CLOSED signs, and site specific traffic control plans are not required for such operations. Use traffic pacing distance values from the five minute column of the table on Sheet 3.

TRAFFIC CONTROL PLANS OR TECHNICAL SPECIFICATION

1. The specific activities and locations, along with allowable times of day and days of the week, when pacing will be allowed should be clearly detailed in the traffic control plans or technical specification. If there are specific holiday or special event dates that, due to anticipated traffic congestion, pacing operations should not be allowed, these dates should also be spelled out in plans or specifications. When detailing the specific activities and locations of pacing activities, identify the minimum number of traffic control officers needed for each function and location of the pacing operation. If there are certain work activities that need to be completed prior to the contractor starting the work anticipated during the pacing operation, the activities should be clearly detailed in the plans or technical specification.
2. When developing a pacing plan, failsafe "stop points" should be identified for those work operations in which a construction problem could create a condition that could not be immediately cleared. A failsafe stop point is the last safe egress from the highway facility prior to traffic coming upon the work that is being completed during the operation. In the unlikely event that the work is not completed during the time estimated for the pacing, the plans or specification should direct the pacing to not proceed past the failsafe stop point until the highway is cleared. In the event of major construction problem that cannot be immediately cleared, traffic can then be diverted off the facility.
3. The traffic control plans or technical specification should require the contractor to submit a pacing plan in advance of the operation. The pacing plan should outline the contractors expected equipment and personnel, outline the operation, and include a contingency plan should any of the contractor's critical equipment break down. If the project includes a damage recovery clause, the traffic control plan or technical specification should be clear that the damage recovery applies to the pacing operation as well.
4. Changeable message signs shall be displayed one week prior to work using messages described in the traffic pacing plan. The number and location of changeable message signs shall be called out in the traffic control plans.

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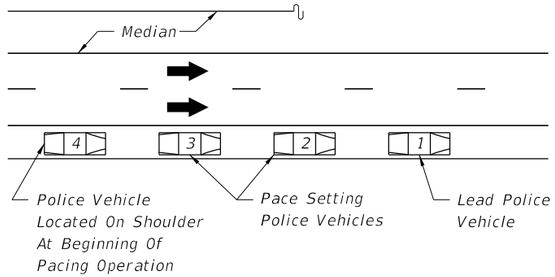
MAINLINE PACING DETAILS
(1 DIRECTION OF FOUR LANE ROADWAY EXAMPLE)

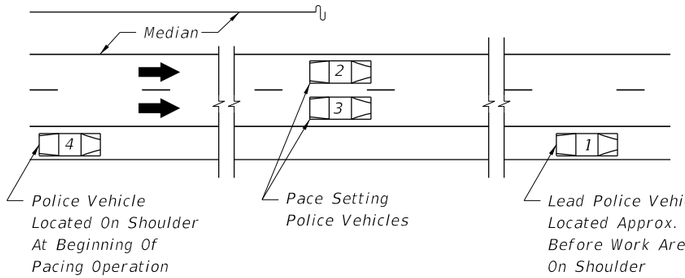


STAGE ONE

1. Four police vehicles located upstream of the work area at the beginning location of the traffic pacing operation with flashing blue lights off.

STAGE TWO

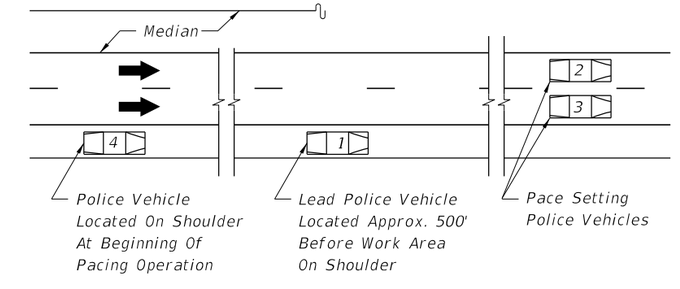
1. Once the police vehicles are in place and the traffic control officer supervisor at the work area notifies all officers to begin the traffic pacing operation, the last three police vehicles shall turn on their flashing blue lights. The first three police vehicles shall enter the travel lanes with the second and third police vehicles immediately forming a side by side "pacing operation" of all lanes behind the lead police vehicle (flashing blue lights off).



STAGE THREE

1. The two pace setting police vehicles shall begin to slow to the pacing speed (20 mph is preferred, 10 mph minimum), for the duration of the traffic pacing operation.

2. The lead police vehicle (flashing blue lights off) shall match the speed of the last vehicles ahead of the pacing vehicles and continue following traffic until a point approximately 500' in advance of the work area. The lead police vehicle shall then come to a complete stop on the right shoulder and turn on its flashing blue lights. If required, crash truck(s) with rear mounted impact attenuator(s) and changeable message sign(s) shall move into the travel lanes approximately 200 ft. upstream of the work area with the impact attenuators down and operating once traffic has cleared the work area.

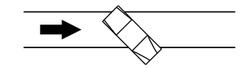


STAGE FOUR

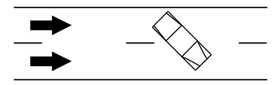
1. When the pace setting police vehicles are within approximately two miles of the work area they shall notify the onsite traffic control officer supervisor who will immediately inform the contractors on site supervisor of their location. Once the contractors on site supervisor has been notified of the pacing vehicles location, the contractor shall begin to clear the travel lanes of all equipment and debris in order to reopen all travel lanes.

2. In case of emergency the pace setting police vehicles shall come to a complete stop once they reach the lead police vehicle. If no emergency is encountered, the crash truck(s) shall be moved from the travel lanes and the two pace setting police vehicles shall clear the work area and immediately move to the right shoulder or an area designated by the traffic control officer supervisor and turn off the flashing blue lights. Once the two pace setting police vehicles pass the work area, the traffic control officer supervisor shall instruct the lead and last police vehicles to turn off their flashing blue lights.

RAMP PACING DETAILS



ONE LANE RAMP



TWO LANE RAMP

RAMP CLOSURE DETAIL

1. Once notified by the on site traffic control officer supervisor to begin the traffic pacing operation each police vehicle at the indicated ramp shall turn their flashing blue lights on and position the vehicle across the ramp lane(s) to close ramp access.

2. Once the pacing operation passes the closed on ramp the police vehicle on the ramp shall turn off the flashing blue lights and move from the ramp lane(s) to allow traffic to enter the mainline pacing operation.

GENERAL NOTES

1. Each Traffic Control Officer shall have a marked vehicle with flashing blue lights, for the pacing operation. The location and number of officers at each location will be as follows:

No. Of Traffic Control Officers With Vehicles	Function	Location
1 min.	Supervisor	Work Area
1 Lead Vehicle	Varies	Mobile operation
1 for each travel lane	Pacing Operation	Mobile operation beginning x miles upstream and terminating at the work area
1 Stationed at the Beginning of Pacing Operation	Advanced Warning to Motorist	Stationed at the Beginning of Pacing Operation
1 for each entrance ramp	Entrance Ramp Roadblocks	One at each of the entrance ramps upstream of the work area

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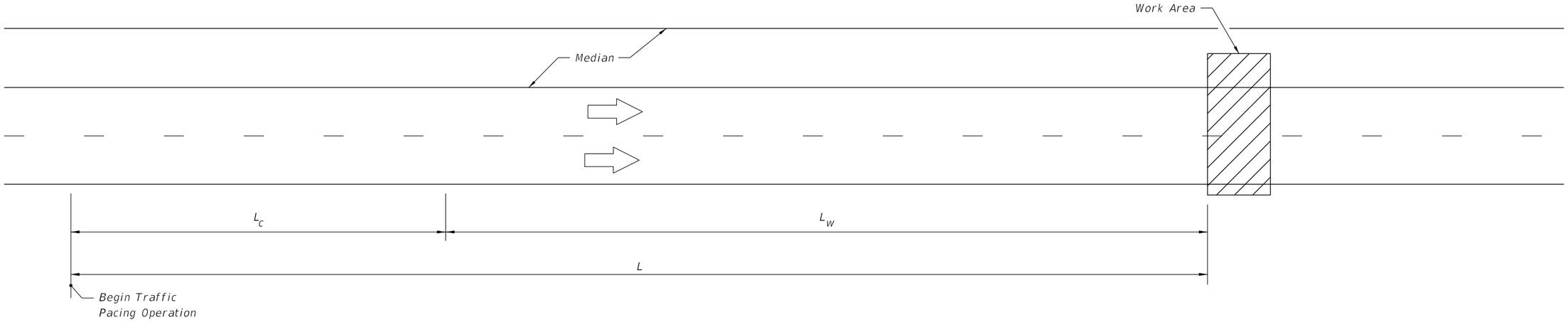

DESIGN CONSIDERATIONS:

The design shall evaluate the actual distance required for the pacing operation based on site specific features such as: roadway geometrics, pacing speeds, regulatory speeds, interchange spacing, work duration, availability of traffic control officers, traffic volumes and maximum queue length.

The starting point of a traffic pacing operation must consider the following factors: the speed of the pacing vehicles, the location of entrance ramps, horizontal and vertical alignment of the facility.

In some instances, it may be necessary to close a lane at the work site to position a crane(s) and the materials to be lifted.

All material to be installed shall be on-site before the traffic pacing operation begins.

It may be necessary to install temporary barrier walls to protect pre-positioned and assembled materials in the right of way.

The minimum speed allowed for a pacing operation is 10 mph with 20 mph the preferred speed.

The maximum allowed work duration is ½ hour (30 min).

The maximum practical pacing operation length is 10 miles.

S_r = Regulatory speed (mph)

S_p = Pacing speed (mph)

t_w = Work duration (min)

L = Total pacing distance in miles

$$L = \frac{t_w}{60} S_p \left(\frac{S_p}{S_r - S_p} + 1 \right)$$

$$L = L_c + L_w$$

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

$$L_c = \left(\frac{\frac{t_w}{60} \times S_p^2}{S_r - S_p} \right)$$

L_w = distance paced vehicles travel while work is performed

$$L_w = \left(\frac{t_w}{60} \times S_p \right)$$

F_{HV} = Heavy Vehicle Factor

$$F_{HV} = 1 + \left(\frac{P_t}{100} \times 0.5 \right)$$

P_t = % Trucks

TRAFFIC PACING DISTANCES (L) miles

S_p=20; pcphpl ≤ 1,750

S_r	t_w (min)					
	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	*	*	*

* Calculation required, for additional guidance see FDOT Design Manual 242.

NOTES FOR TABLE:

t_w is the total time allowed for work activity in minutes. This time starts just after the last vehicle traveling at the pre-pacing regulatory speed clears the work area and ends just as the pacing operation reaches the work area. t_w must include the time required to clear the roadway of equipment, materials, and personnel.

Demand volume may not exceed 1,750 pcphpl (passenger cars per hour per lane) without a site specific design. Traffic counts can be obtained from the Office of Planning, or you may need to collect traffic counts. Hourly directional traffic volumes must be converted to pcphpl using the following:

$$pcphpl = \left(\frac{\text{Hourly Directional Volume}}{\text{\# Lanes (each direction)}} \right) \times \text{Heavy Vehicle Factor}$$

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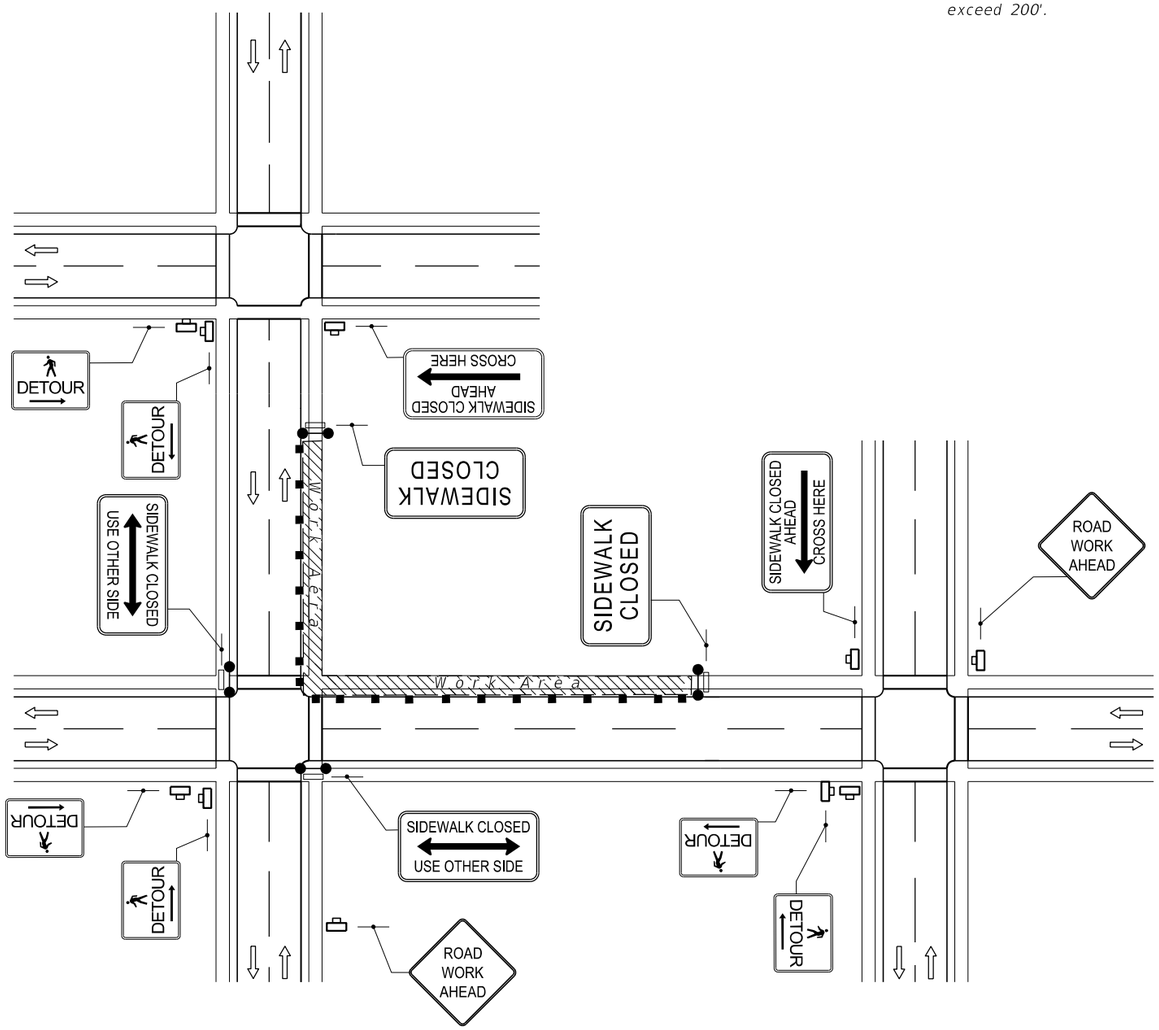
SYMBOLS

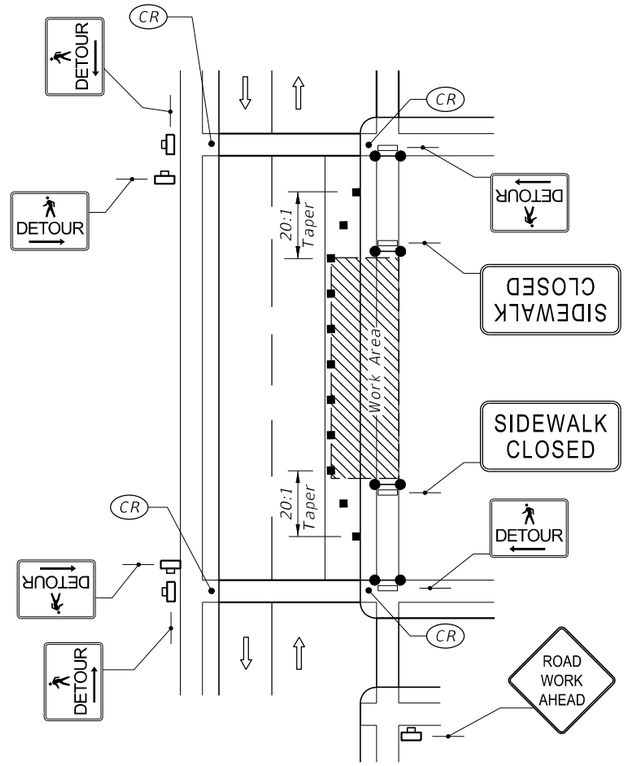
- Work Area
- Channelizing Device
- Work Zone Sign
- CR — Required Locations For Either Temporary Or Permanent Curb Ramps.
- Lane Identification + Direction of Traffic
- Pedestrian Longitudinal Channelizing Device (LCD) with Mounted Work Zone Sign or separate Work Zone Sign
- Pedestrian Longitudinal Channelizing Device (LCD)
- Temporary Sidewalk

GENERAL NOTES:

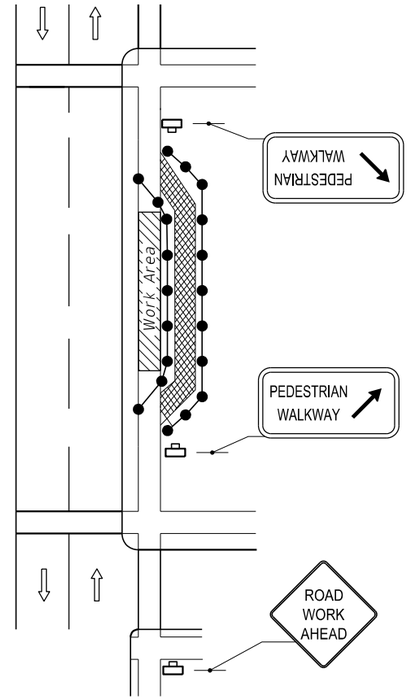
1. When encroaching work requires a sidewalk closure for 60 minutes or greater, provide an alternate pedestrian route.
2. For spacing of vehicular Channelizing Devices, see applicable vehicular temporary traffic control Indexes.
3. Cover or deactivate pedestrian traffic signal display(s) controlling closed crosswalks.
4. 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.
5. Provide a 5' wide temporary walkway, except where space restrictions warrant a minimum width of 4'. Provide a 5' x 5' passing space for temporary walkways less than 5' in width at intervals not to exceed 200'.
6. Provide a cross-slope with a maximum value of 0.02 for all temporary walkways.
7. Maintain temporary walkway surfaces and ramps that are stable, firm, slip-resistant, and free of any obstructions or hazards such as holes, debris, mud, construction equipment, and stored material.
8. Remove temporary walkways immediately after reopening of the sidewalk, unless otherwise noted in the plans.
9. Meet the requirements of Index 522-002 for temporary curb ramps.
10. Place pedestrian longitudinal channelizing device(s) across the full width of the closed sidewalk. For temporary walkways, similar to the Sidewalk Diversion, place LCDs to delineate both sides of the temporary walkway.
11. For sidewalk diversions, ensure that there is sufficient R/W for placement of temporary sidewalk and pedestrian longitudinal channelizing devices.



CROSSWALK CLOSURE AND PEDESTRIAN DETOUR



SIDEWALK DETOUR



SIDEWALK DIVERSION

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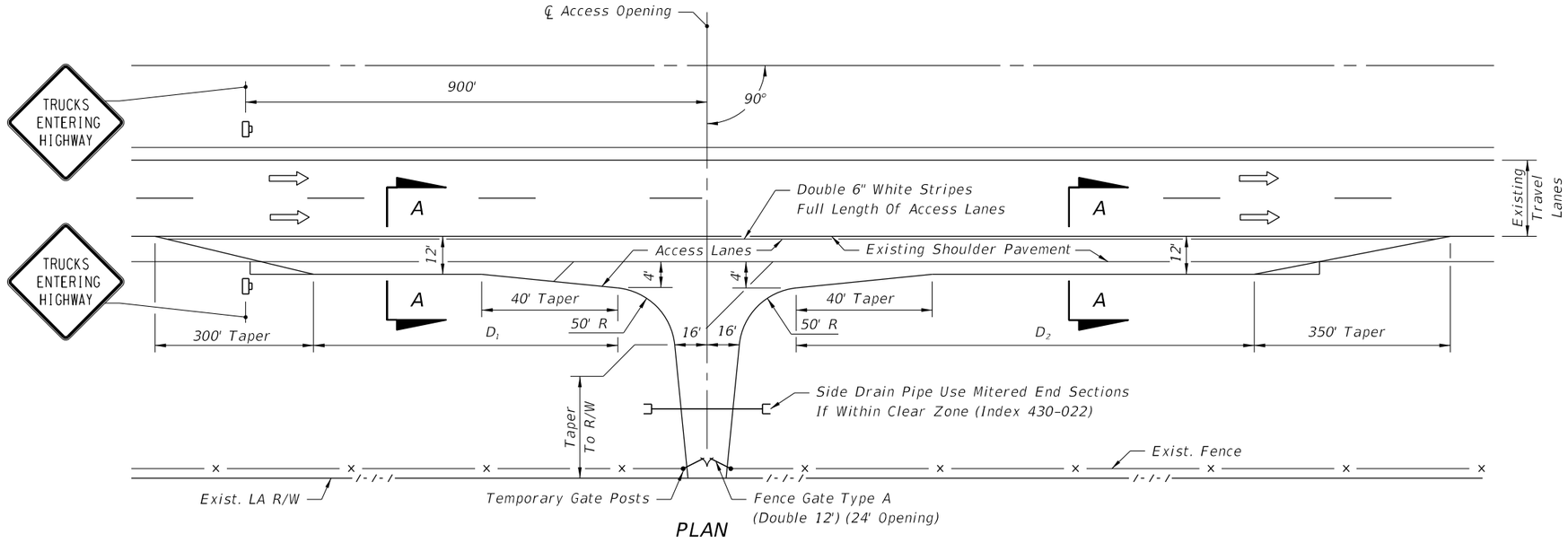
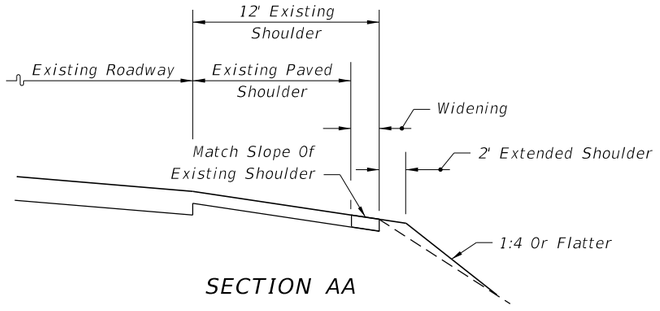
11/01/17			FDOT FY 2020-21 STANDARD PLANS	PEDESTRIAN CONTROL FOR CLOSURE OF SIDEWALKS	INDEX 102-660	SHEET 1 of 1



PLAN

LENGTH OF ACCESS LANES (Ft.)		
Grade	D_1	D_2
2% or less	590	1540
3 to 4% Upgrade	530	2310
3 to 4% Downgrade	710	925



SECTION AA

SYMBOLS

Work Zone Sign

GENERAL NOTES

1. Access openings across limited access right of way and use of this Index are prohibited unless specifically permitted in the Contract Plans or Special Provisions. When permitted in the Contract Plans or Special Provisions and prior to construction of any opening, the Contractor must submit, in writing, a request identifying specific locations for approval by the Engineer.
2. No more than two (2) access openings will be allowed on each project.
3. Access openings shall be located only in areas having adequate sight distance and shall not be located within 1.5 miles of interchanges nor within 2000 ft. of acceleration-deceleration lanes at rest areas, other access openings or other highway service areas.
4. Access openings shall not be constructed directly opposite temporary median crossovers nor within 2000 ft. of temporary median crossovers.
5. Access openings shall be within the project limits and shall not be used for transporting materials to or from any other project. The acceleration-deceleration surfaces shall be paved. RAP material is acceptable for driveway surfacing.
6. Any Motorist Aid Call Boxes affected by the temporary access openings shall be relocated outside the limits of access lanes and remain in use during construction. Upon removal of access lanes, call boxes shall be returned to their previous location. Temporary relocation and restoration of call boxes shall be at the contractor's expense.
7. Access openings in the limited access fence shall have gates which are to be locked during nonwork hours or periods when the access is not in active use.
8. The contractor shall take all precautions necessary to insure against entrance by livestock or unauthorized persons or vehicles.
9. The contractor shall not vary from the plan detail without approval of the Engineer.
10. Gates shall be removed and access opening locations shall be restored to preconstruction condition immediately upon completion of activities utilizing the materials being transported through the openings whether or not the project is completed.
11. Failure to comply with any provision of the access opening plan shall be cause for terminating use of all openings. Upon notification by the Engineer, the contractor shall cease hauling and begin restoration of affected areas. Under this condition expense of removal, restoration and of additional hauling distances shall be borne by the contractor.
12. No guardrail or barrier wall will be removed for access openings.
13. Construction and removal of the access and restoring the area to preconstruction condition shall be included in the cost of Maintenance Of Traffic, LS.

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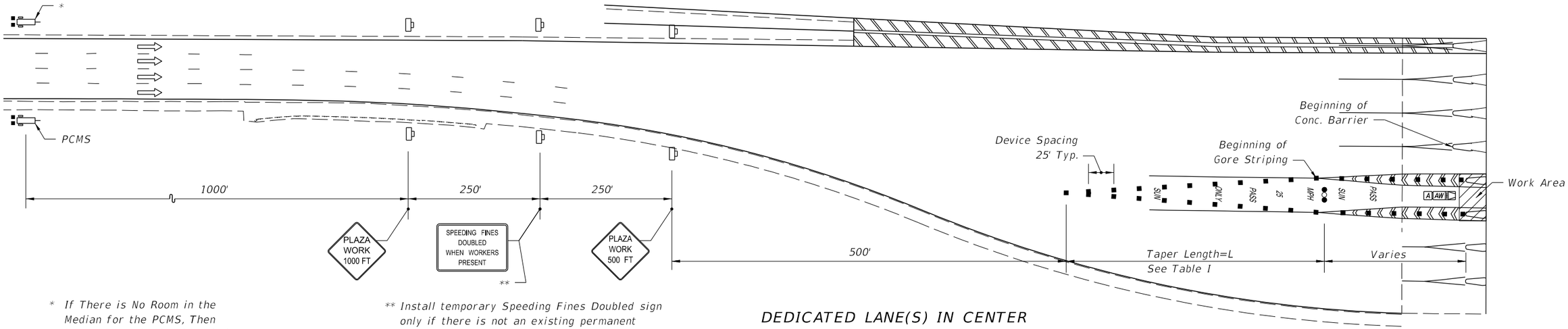
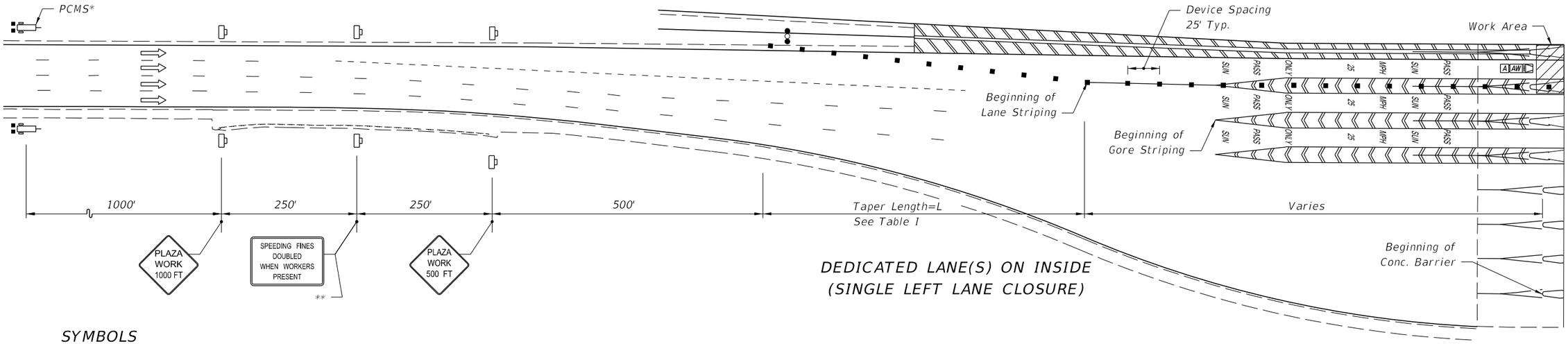


* *If There is No Room in the Median for the PCMS, Then Locate it on the Outside of the Roadway only.*

** *Install temporary Speeding Fines Doubled sign only if there is not an existing permanent "Speeding Fines Doubled Through Toll Plaza" sign or an existing "Speeding Fines Doubled When Workers Present" sign in place.*

DEDICATED LANE(S) IN CENTER



DEDICATED LANE(S) ON INSIDE (SINGLE LEFT LANE CLOSURE)

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic
- Advance Warning Vehicle Equipped with Advance Warning Arrow Board and Truck/Trailer Mounted Attenuator
- Portable Changeable (Variable) Message Sign

PCMS DISPLAY A

MESSAGE 1: SUNPASS LANE(S) CLOSED — MESSAGE 2: USE CASH LANES

PCMS DISPLAY B

MESSAGE 1: SUNPASS ONLY LANE(S) — MESSAGE 2: CLOSED AT PLAZA

PCMS DISPLAY C

MESSAGE 1: SUNPASS ONLY LANE(S) — MESSAGE 2: KEEP LEFT/RIGHT

Table I - Taper Length (L)

Dedicated Lane Location	Number of Dedicated Lanes	Number of Dedicated Lanes Closed	Taper Length (Feet)	PCMS Display
Center	1	1	200	A
	2	1	200	B
		2	350	A
	3	1	350	B
		2	350	B
		3	350	A
Inside***	1	1	350	A
	2	1	350	C
	3	1	350	C

*** *See Index 102-667 Sheet 2 for Right or Center Inside Dedicated Lane Closed, or Two or More Inside Dedicated Lanes Closed Configurations.*

GENERAL NOTES

1. *This Plan is to be used at Mainline Plazas Only.*
2. *This Plan is for Lane Closures that exceed three hours.*
3. *Plaza canopies which have existing DMS signs on the canopies shall display the message "LANE CLOSED" for the duration of this closure.*
4. *A truck/trailer mounted attenuator is required.*
5. *Lane use control lights, signs, or signals over toll lanes shall be switched to the appropriate symbol, message, or correct color prior to the start of any lane closure. They should also be switched at project completion.*
6. *At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.*

DEDICATED LANES

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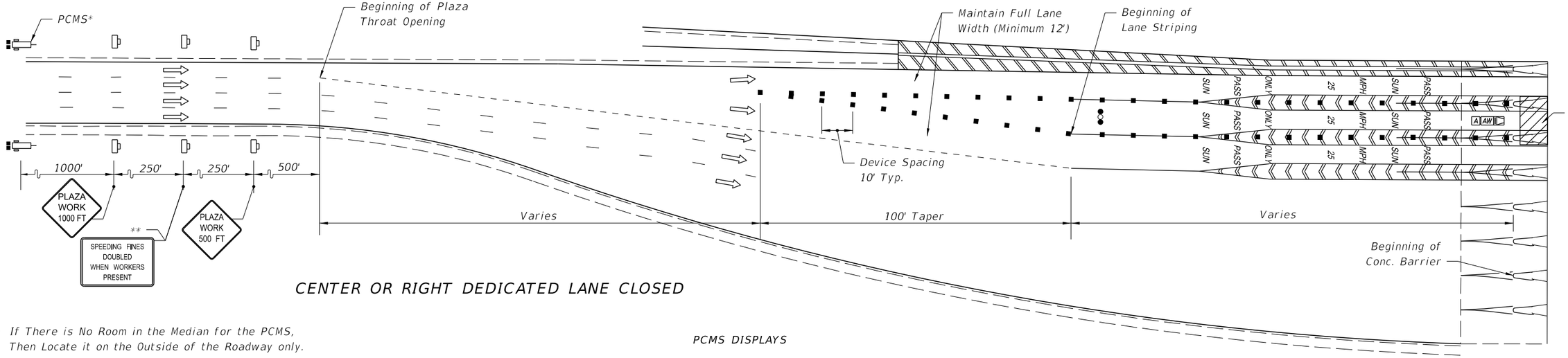


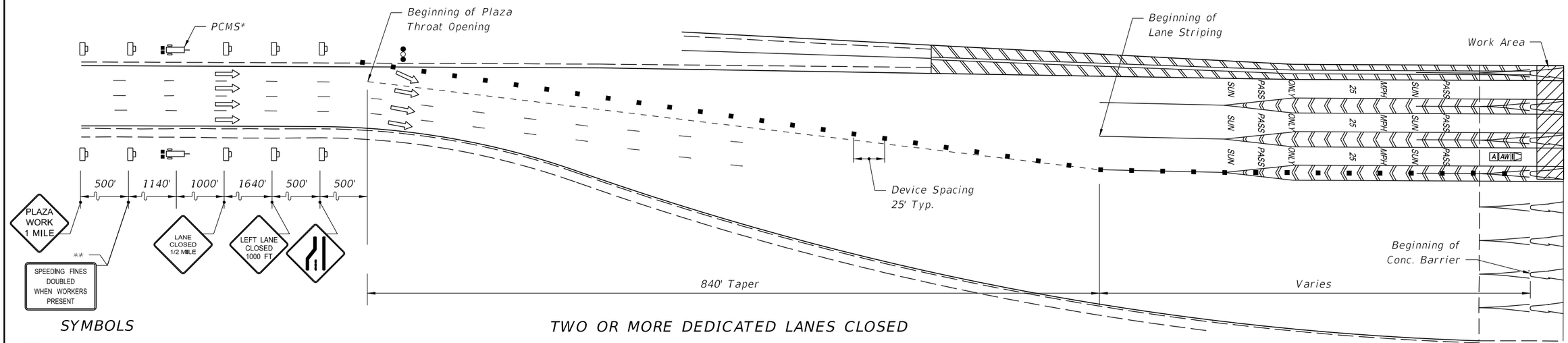
CENTER OR RIGHT DEDICATED LANE CLOSED

* If There is No Room in the Median for the PCMS, Then Locate it on the Outside of the Roadway only.

** Install temporary Speeding Fines Doubled sign only if there is not an existing permanent "Speeding Fines Doubled Through Toll Plaza" sign or an existing "Speeding Fines Doubled When Workers Present" sign in place.

PCMS DISPLAYS

MESSAGE 1:	MESSAGE 2:
CENTER SUNPASS LANE	CLOSED AT PLAZA
SUNPASS ONLY LANE(S)	KEEP LEFT



TWO OR MORE DEDICATED LANES CLOSED

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic
- Advance Warning Vehicle Equipped with Advance Warning Arrow Board and Truck/Trailer Mounted Attenuator
- Portable Changeable (Variable) Message Sign

PCMS DISPLAY

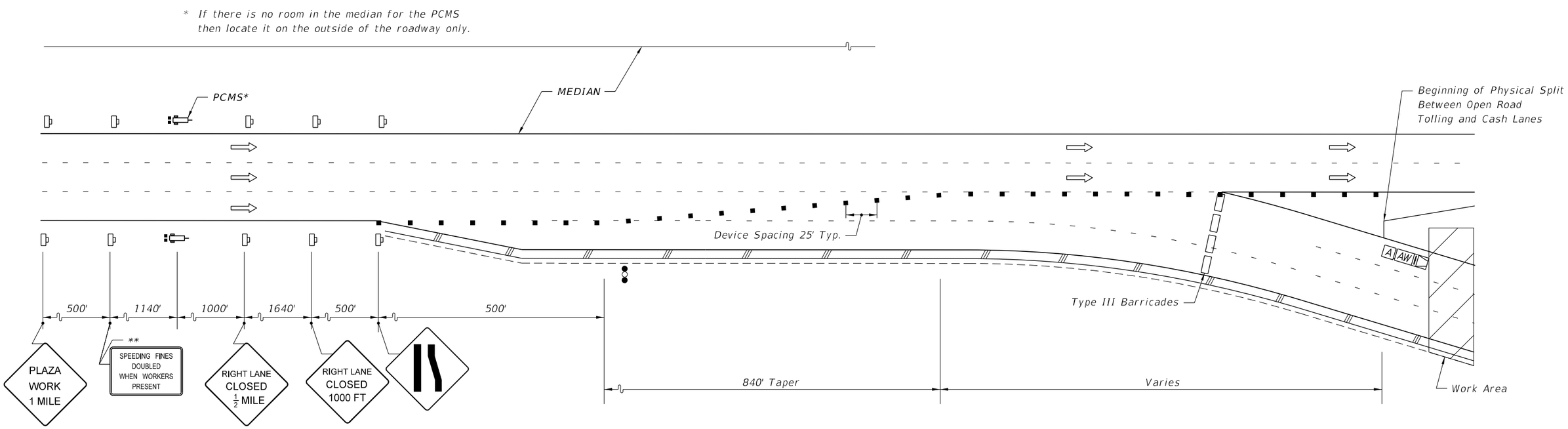
MESSAGE 1:	MESSAGE 2:
SUNPASS LANES CLOSED	USE CASH LANES

GENERAL NOTES

1. This Plan is to be used at Mainline Plazas Only.
2. This Plan is for Lane Closures that exceed three hours.
3. Plaza canopies which have existing DMS signs on the canopies shall display the message "LANE CLOSED" for the duration of this closure.
4. A truck/trailer mounted attenuator is required.
5. See Sheet 1 for Two or More Inside Dedicated Lanes Single Left Lane Closed Configuration.
6. Lane use control lights, signs, or signals over toll lanes shall be switched to the appropriate symbol, message, or correct color prior to the start of any lane closure. They should also be switched at project completion.
7. At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.

INSIDE DEDICATED LANES

2/26/2020 12:59:17 PM



ALL LANES CLOSED***

** Install temporary Speeding Fines Doubled sign only if there is not an existing permanent "Speeding Fines Doubled Through Toll Plaza" sign or an existing "Speeding Fines Doubled When Workers Present" sign in place.

*** Inverted for Inside Open Road Tolling Lanes Configuration

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic
- Advance Warning Vehicle Equipped with Advance Warning Arrow Board and Truck/Trailer Mounted Attenuator
- Portable Changeable (Variable) Message Sign
- Type III Barricades and "RAMP CLOSED" sign

PCMS DISPLAYS

PCMS DISPLAY PRIOR TO CLOSURE

MESSAGE 1:	SUNPASS ONLY LANES	MESSAGE 2:	CLOSED "DATE(S)"

PCMS DISPLAY DURING CLOSURE

MESSAGE 1:	SUNPASS LANES CLOSED	MESSAGE 2:	USE CASH LANES

GENERAL NOTES

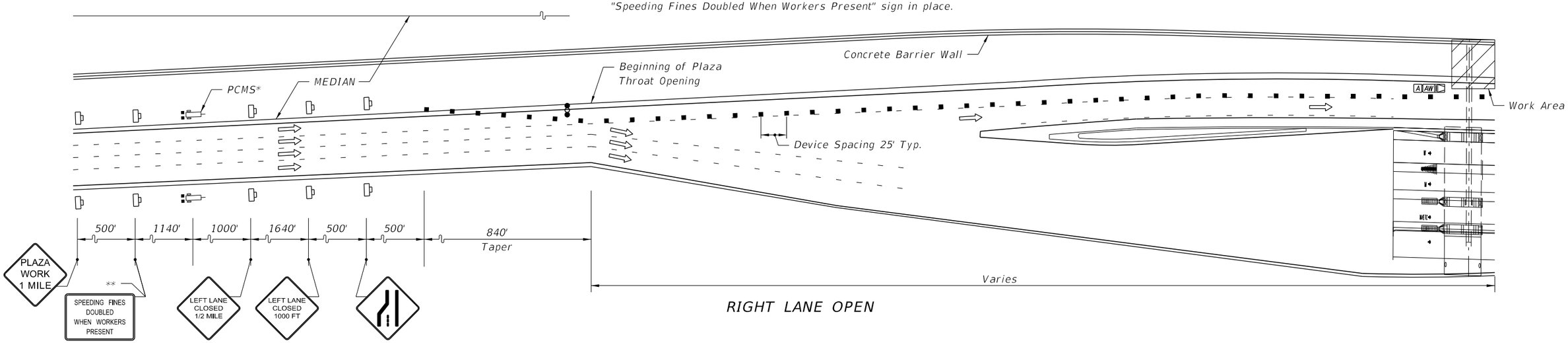
1. This Plan is to be used at Mainline Plazas Only.
2. This Plan is for lane closures of any time length.
3. Plaza canopies which have existing DMS signs on the canopies shall display the message "LANE CLOSED" for the duration of this closure.
4. For planned lane closure, a portable changeable message sign shall be placed and shall display the message shown at a minimum of one week prior to closure. If planned lane closure is less than one week, place portable changeable message sign immediately using "prior to closure" messages.
5. A truck/trailer mounted attenuator is required.
6. Lane closure configurations applicable to 2 or 3 lane open road tolling plazas.
7. At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.

OUTSIDE OPEN ROAD TOLLING LANES

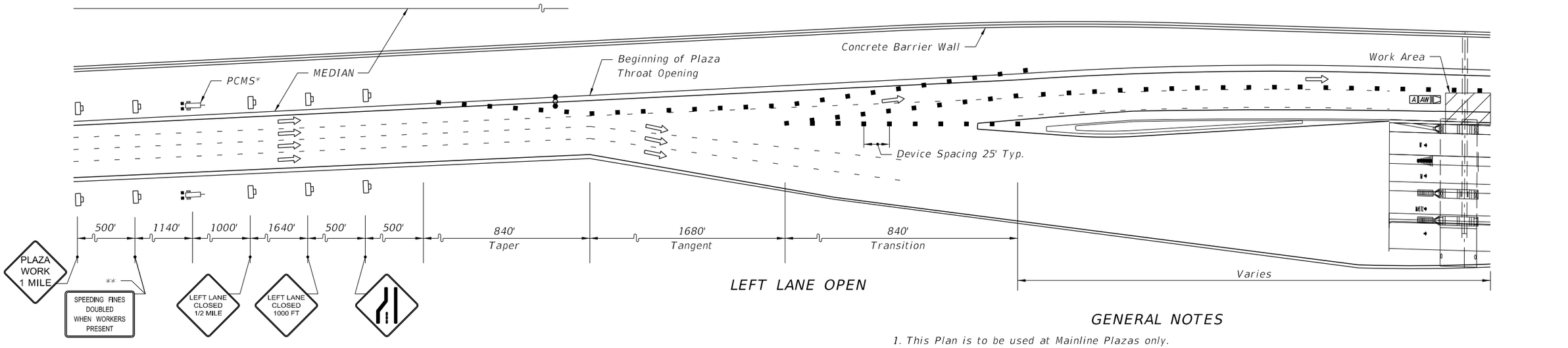
2/26/2020 12:59:18 PM

* If there is no room in the median for the PCMS sign, then locate it on the outside of the roadway only.

** Install temporary Speeding Fines Doubled sign only if there is not an existing permanent "Speeding Fines Doubled Through Toll Plaza" sign or an existing "Speeding Fines Doubled When Workers Present" sign in place.



RIGHT LANE OPEN



LEFT LANE OPEN

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Advance Warning Arrow Board
- Lane Identification + Direction of Traffic
- Advance Warning Vehicle Equipped with Advance Warning Arrow Board and Truck/Trailer Mounted Attenuator
- Portable Changeable (Variable) Message Sign

PCMS DISPLAYS

PCMS DISPLAY PRIOR TO CLOSURE

Message 1:	ONE SUNPASS ONLY	Message 2:	LANE OPEN "DATE(S)"

PCMS DISPLAY DURING CLOSURE

Message 1:	SUNPASS ONLY LANE	Message 2:	OPEN USE CAUTION

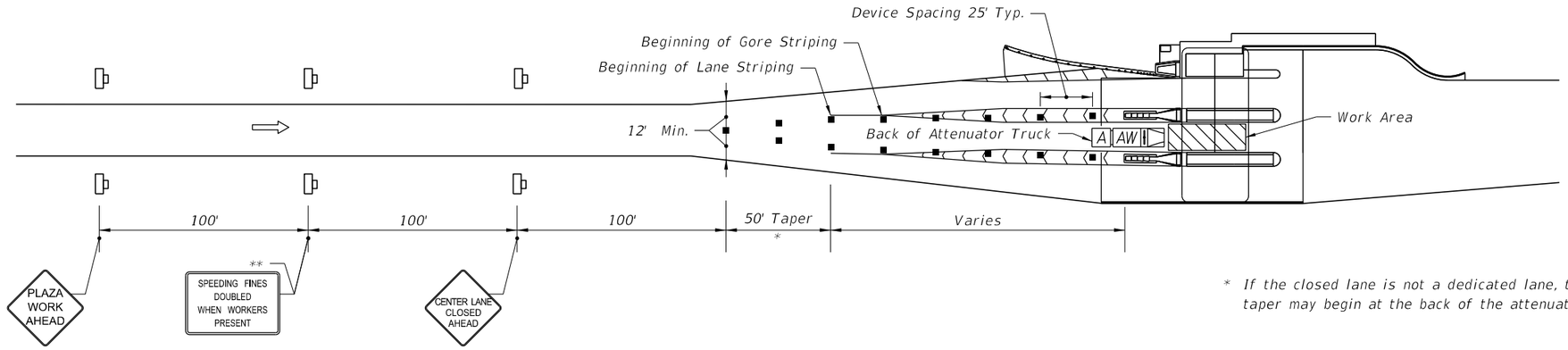
GENERAL NOTES

1. This Plan is to be used at Mainline Plazas only.
2. This Plan is for lane closures of any time length.
3. Plaza canopies which have existing DMS signs on the canopies shall display the message "LANE CLOSED" for the duration of this closure.
4. For planned lane closure, a portable changeable message sign shall be placed and shall display the messages shown at a minimum of one week prior to closure. If planned lane closure is less than one week, place portable changeable message sign immediately using "prior to closure" messages.
5. A truck/trailer mounted attenuator is required.
6. Lane closure configurations applicable to 2 or 3 lane open road tolling plazas.
7. At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.

INSIDE OPEN ROAD TOLLING LANES

2/26/2020 12:59:19 PM

LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	TOLL PLAZA TRAFFIC CONTROL STANDARDS	INDEX	SHEET
11/01/17					102-667	4 of 6



* *If the closed lane is not a dedicated lane, the 50' taper may begin at the back of the attenuator truck.*

EXHIBIT A

DEDICATED, CASH, OR MIXED-USE LANES IN CENTER - ONE LANE CLOSED
(This same plan can be used for any non-dedicated lane even if they are not in the center of the plaza)

** *Install temporary Speeding Fines Doubled sign only if there is not an existing permanent "Speeding Fines Doubled Through Toll Plaza" sign or an existing "Speeding Fines Doubled When Workers Present" sign in place.*

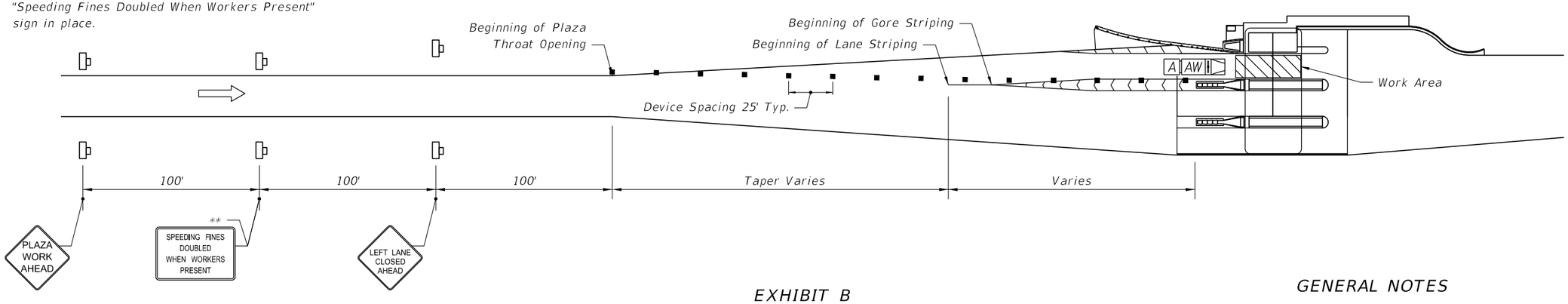


EXHIBIT B

DEDICATED LANE INSIDE OR OUTSIDE - ONE LANE CLOSED
(Outside Lane Closure is a Mirror Image of this Exhibit)

SYMBOLS

- *Work Area*
- *Channelizing Device (See Index 102-600)*
- *Work Zone Sign*
- *Lane Identification + Direction of Traffic*
- *Advance Warning Vehicle Equipped with Advance Warning Arrow Board and Truck/Trailer Mounted Attenuator* (A AW)

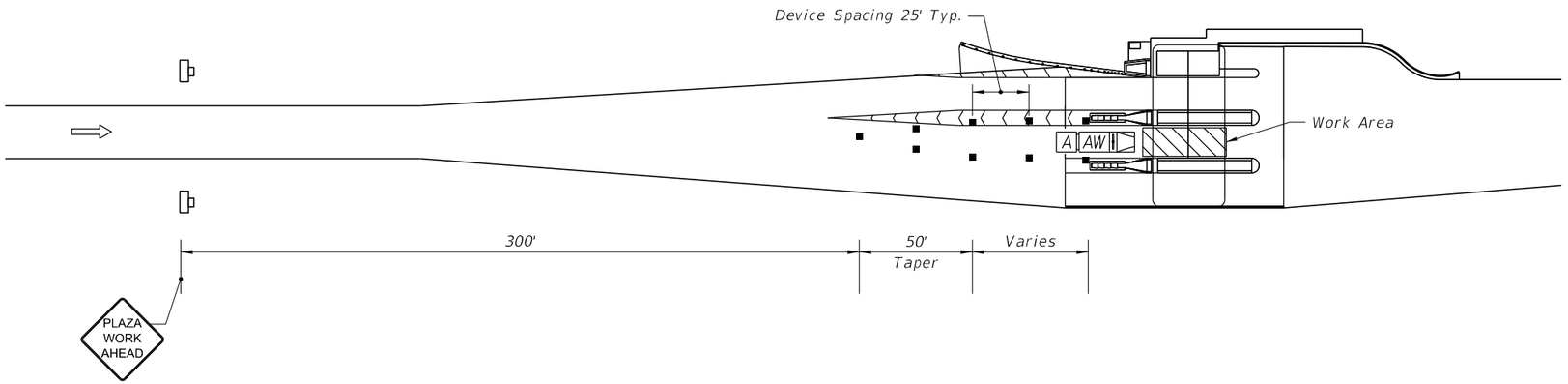
GENERAL NOTES

1. *This Plan is for lane closures that exceed three hours.*
2. *If the closed lane is a dedicated lane, Exhibit A shall be used at Ramp Plazas only. If the closed lane is a cash or mixed-use lane, Exhibit A may be used at Ramp or Mainline Plazas.*
3. *A truck/trailer mounted attenuator is required.*
4. *Exhibit B shall be used at Ramp Plazas only.*
5. *Lane use control lights, signs, or signals over toll lanes shall be switched to the appropriate symbol, message, or correct color prior to the start of any lane closure. They should also be switched at project completion.*
6. *At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.*

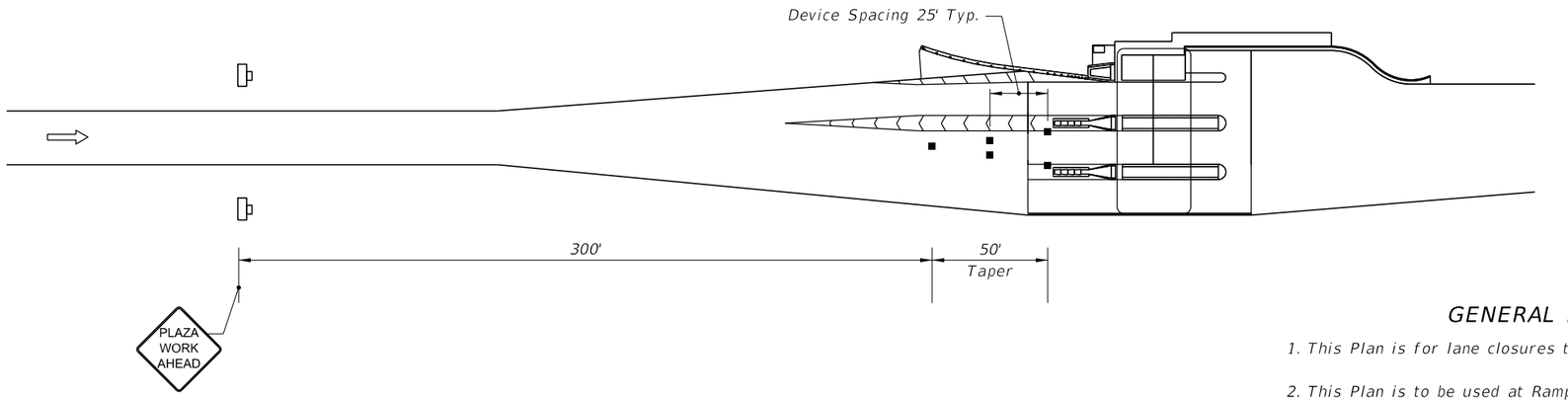
MAINLINE PLAZAS & RAMP PLAZAS

2/26/2020 12:59:19 PM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	TOLL PLAZA TRAFFIC CONTROL STANDARDS	INDEX	SHEET
11/01/17					102-667	5 of 6



WORK DONE WITHIN TRAVEL LANE - ONE LANE CLOSED



WORK NOT DONE WITHIN TRAVEL LANE - ONE LANE CLOSED

SYMBOLS

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification + Direction of Traffic
- A AW — Advance Warning Vehicle Equipped with Advance Warning Arrow Board and Truck/Trailer Mounted Attenuator

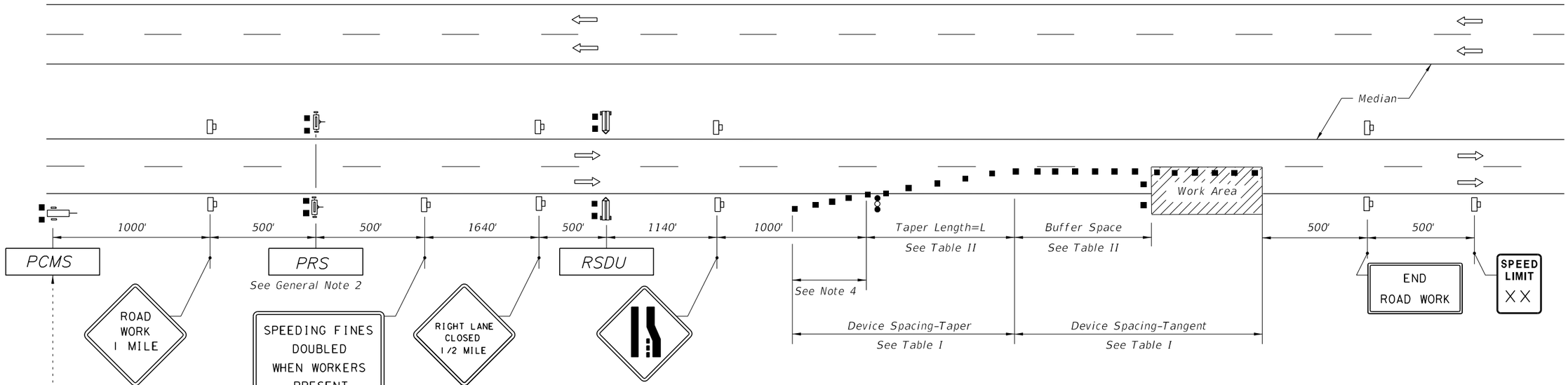
GENERAL NOTES

1. This Plan is for lane closures that are three hours or less.
2. This Plan is to be used at Ramp or Mainline Plazas.
3. This plan can be used for any lane, with appropriate modifications, even if it is not in the center of the Plaza.
4. Lane use control lights, signs, or signals over toll lanes shall be switched to the appropriate symbol, message, or correct color prior to the start of any lane closure. They should also be switched at project completion.
5. At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.
6. A Truck/Trailer Mounted Attenuator is required for all aerial work operations (lift truck). For non-aerial operations, the Truck Mounted Attenuator or additional devices may be required by the Engineer based on the work being performed.

SHORT-TERM CLOSURES

2/26/2020 12:59:20 PM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TOLL PLAZA TRAFFIC CONTROL STANDARDS	INDEX	SHEET
11/01/17						102-667	6 of 6



TYPICAL PCMS DISPLAY

With speed reduction:
Message 1: WORKERS PRESENT AHEAD
Message 2: SPEED REDUCED NEXT XMI

Without speed reduction:
Message 1: WORKERS PRESENT AHEAD
Message 2: NEXT X MILES

SYMBOLS

- *Work Area*
- *Channelizing Device (See Index 102-600)*
- *Work Zone Sign*
- *Advance Warning Arrow Board*
- *Lane Identification + Direction of Traffic*
- *(1) PCMS= Portable Changeable(Variable) Message Sign*
- *(2) PRS= Portable Regulatory Sign- Speed Limit When Flashing*
- *(2) RSDU= Radar Speed Display Unit*

Table I
Device Spacing

Posted Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
55 to 70	25	50	50	100

Table II
Buffer Space and Taper Length

Posted Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)	
	Dist. (ft.)	L (ft.)	Notes (Merge)
55	495	660	L = WS
60	570	720	
65	645	780	
70	730	840	

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L= Length of taper in feet
W= Width of lateral transition in feet
S= Posted speed limit (mph)

GENERAL NOTES:

1. *Use the MAS for lane closures of 5 day or more on multilane divided facilities with a posted speed of 55 MPH or greater when workers are present and not protected by a barrier.*
2. *For posted speeds of 65 MPH or greater, reduce Work Zone Speeds by 10 MPH. For posted speeds of 60 MPH, use a Work Zone Speed of 55 MPH.*
3. *Right lane closure shown, left lane closure similar using left lane signing.*
4. *Use shoulder taper in accordance with Index 102-612 for shoulder widths 8 feet or greater.*
5. *See Index 102-600 for general TCZ requirements and additional information.*

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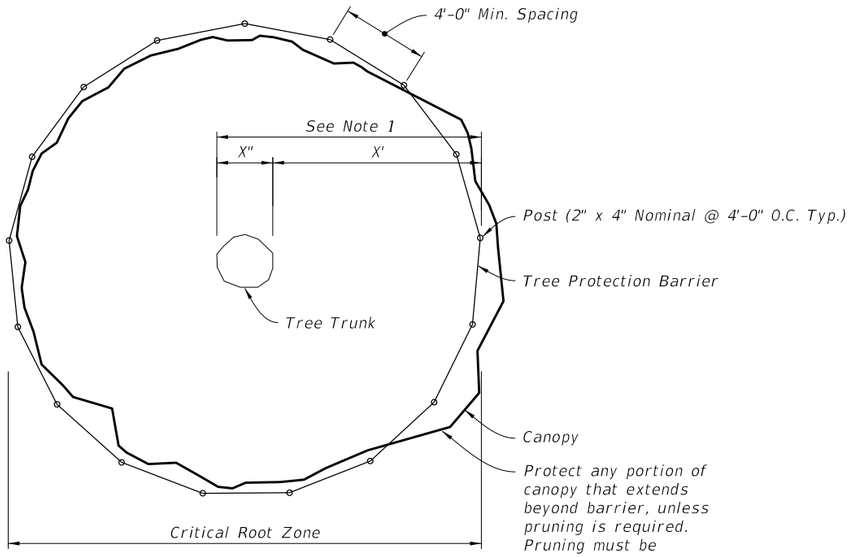
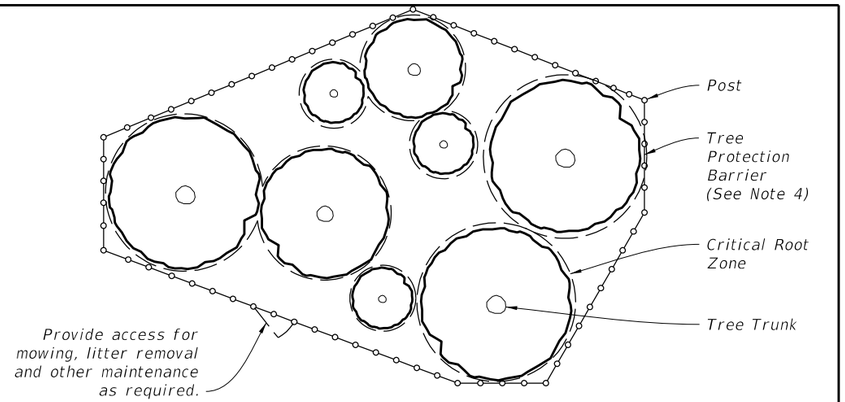
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	MOTORIST AWARENESS SYSTEM (MAS)	102-670	1 of 1

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.

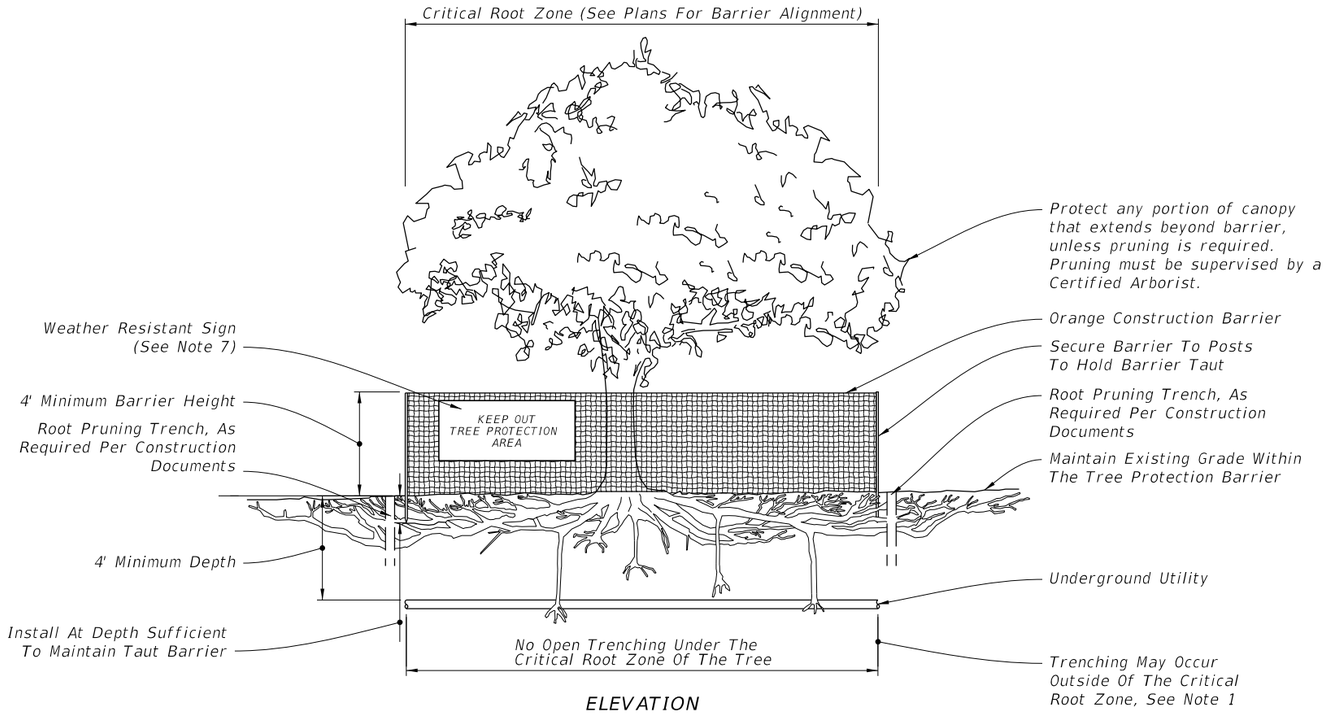


PLAN



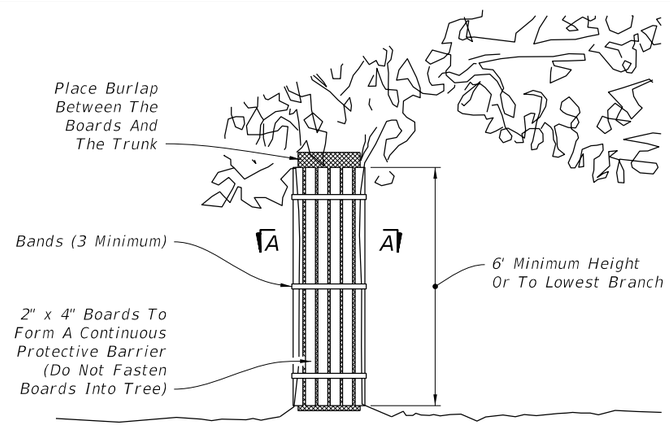
PLAN

PROTECTION BARRIER FOR TREE GROUPINGS

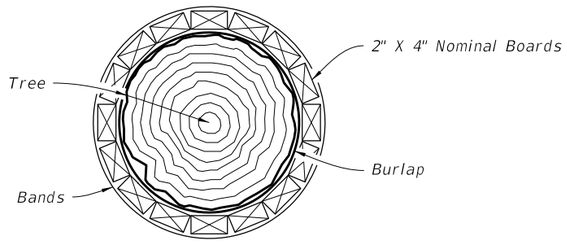


ELEVATION

TREE PROTECTION BARRIER



ELEVATION



SECTION A-A

NOTES:

1. Trunk protection may be used when Tree Protection Barrier can not be reasonably erected, when approved by Engineer.
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 PROTECTION

10/29/2019 8:14:39 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FDOT FY 2020-21 STANDARD PLANS	TREE PROTECTION AND PRESERVATION	110-100	1 of 1

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 guardrail it should be placed behind the guardrail whenever practical.

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

6. Mailboxes shall be set with the bottom of the box between 42" and 48" above the mail stop surface, unless the U.S. Postal Service establishes other height restrictions.

7. No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangements have been shown to be safe by crash testing in accordance with NCHRP Report 350.

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

8. Lightweight newspaper receptacles may be mounted below the mailbox on the side of the support post in conformance with the USPS Domestic Mail Manual. The mail patron shall be responsible for newspaper receptacle installation and maintenance.

9. Wood and steel support posts for both single and double mailbox mountings shall be embedded no more than 24" into the ground.

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

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

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

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

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

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

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

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

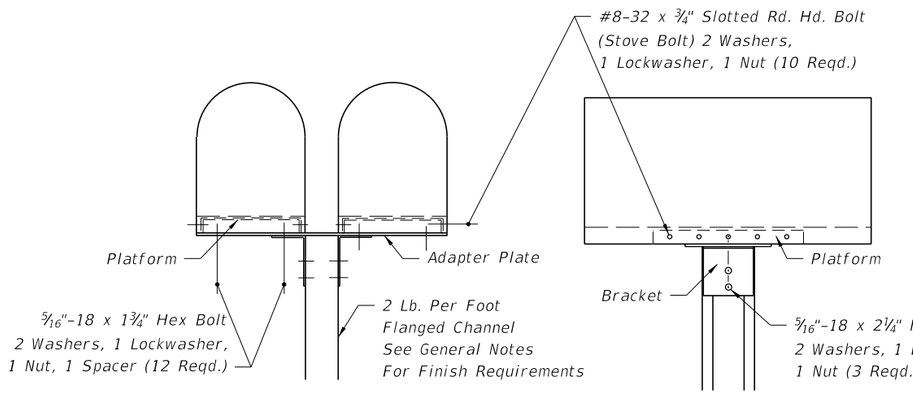
    Payment shall be limited to one mailbox per patron address whether the mailbox is new, reused, salvaged, reset or relocated. Payment shall be per mailbox regardless of the number of mailboxes per support or grouping arrangement.

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

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

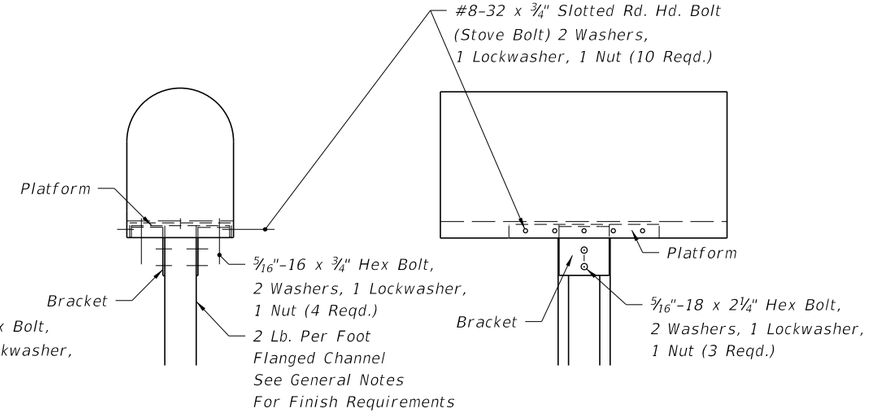
10/29/2019 8:14:40 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MAILBOXES	INDEX	SHEET
11/01/17					110-200	1 of 3



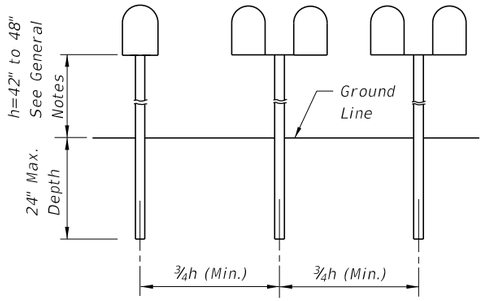
FRONT VIEW SIDE VIEW

FLANGED CHANNEL



FRONT VIEW SIDE VIEW

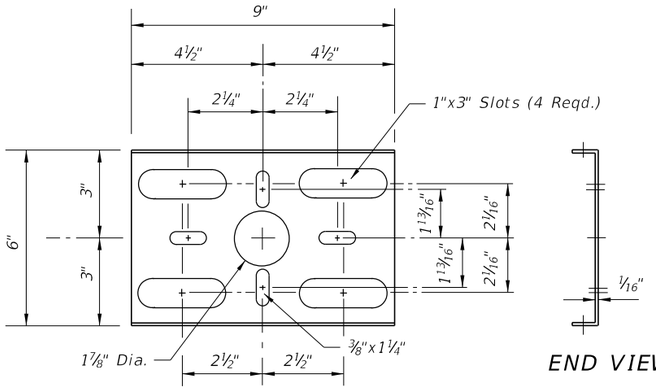
FLANGED CHANNEL



ELEVATION

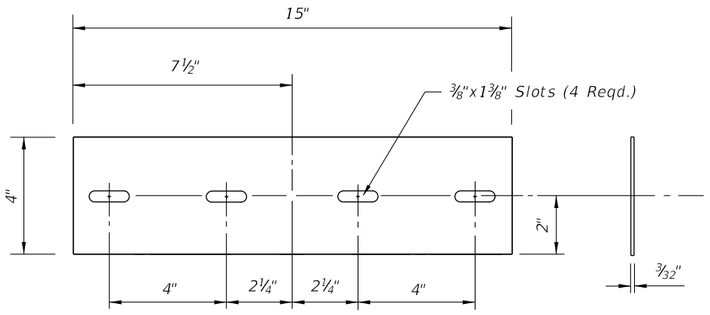
SINGLE OR COMBINED WOOD, FLANGED CHANNEL
OR PIPE POST TYPES SHOWN ON THIS INDEX

POST SPACING



BOTTOM VIEW

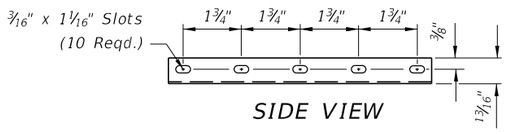
END VIEW



TOP VIEW END VIEW

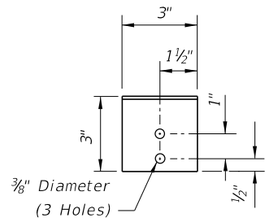
STEEL ADAPTER PLATE

Note: See General Notes for finish requirements.

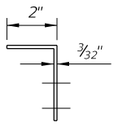


SIDE VIEW

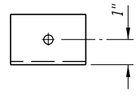
STEEL PLATFORM



FRONT VIEW

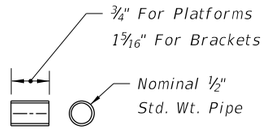


END VIEW



TOP VIEW

STEEL BRACKET

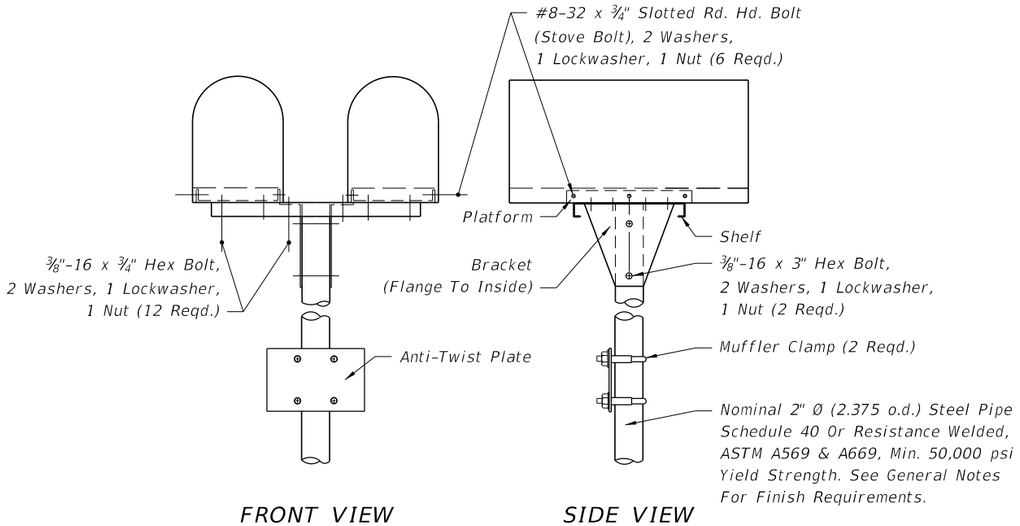


STEEL SPACER

STEEL FLANGED CHANNEL SUPPORT POSTS

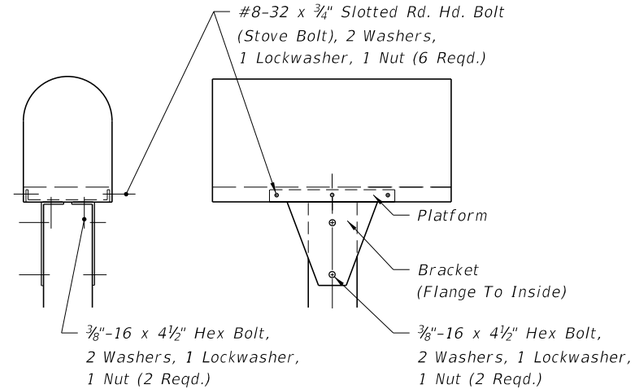
10/29/2019 8:14:41 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	MAILBOXES	110-200	2 of 3



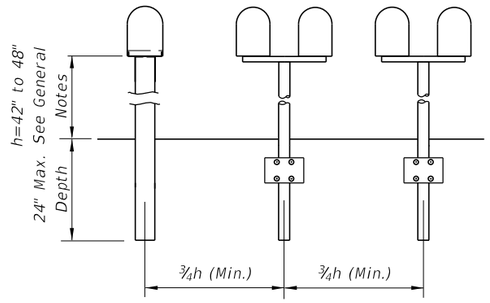
FRONT VIEW SIDE VIEW

2" Ø PIPE POST



FRONT VIEW SIDE VIEW

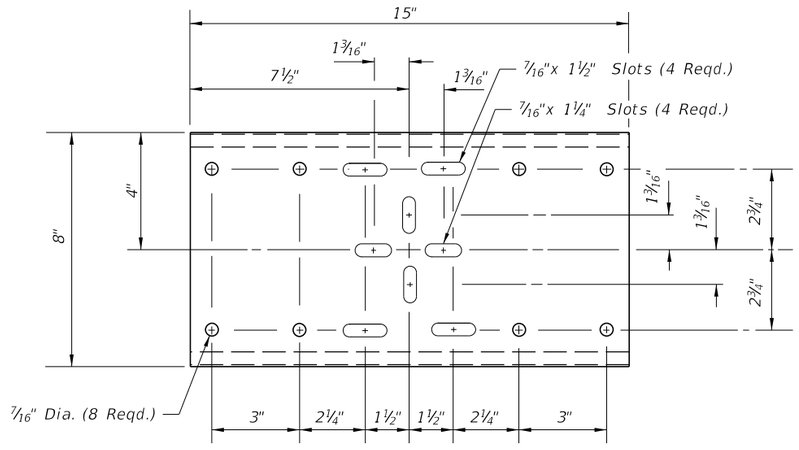
4" X 4" WOOD POST



SINGLE OR COMBINED WOOD, FLANGED CHANNEL
OR PIPE POST TYPES SHOWN ON THIS INDEX

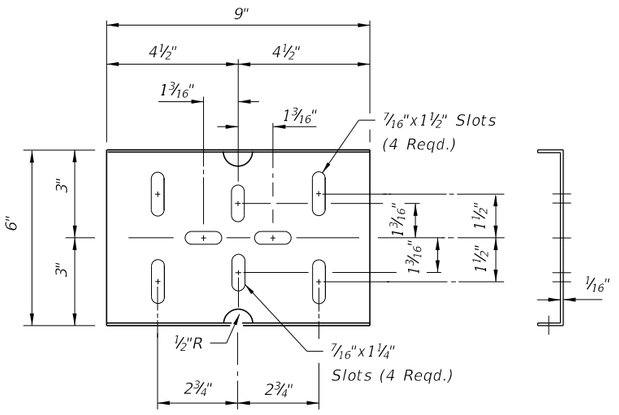
ELEVATION

POST SPACING

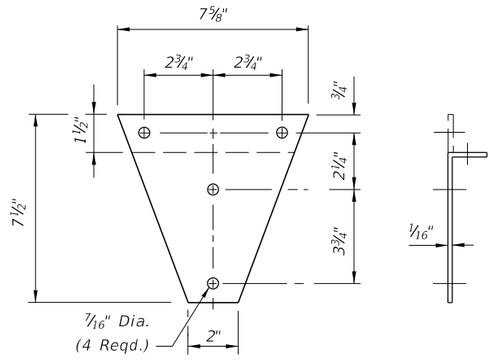


TOP VIEW END VIEW

STEEL SHELF

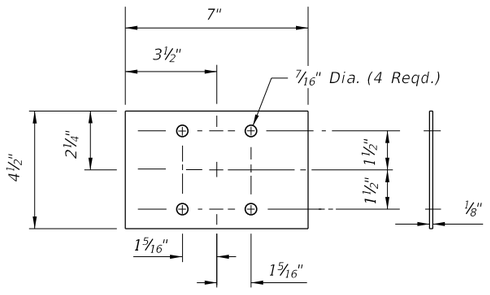


BOTTOM VIEW END VIEW



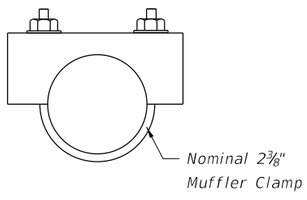
SIDE VIEW END VIEW

STEEL BRACKET



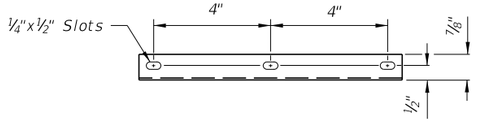
FRONT VIEW END VIEW

STEEL ANTI-TWIST PLATE



TOP VIEW

STEEL CLAMP



SIDE VIEW

STEEL PLATFORM

STEEL PIPE AND WOOD SUPPORT POSTS

Note: See General Notes for finish requirements

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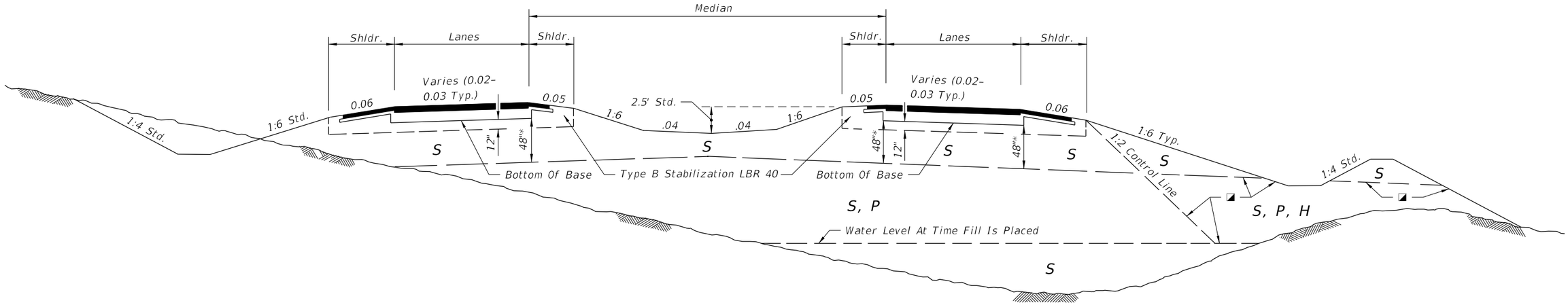
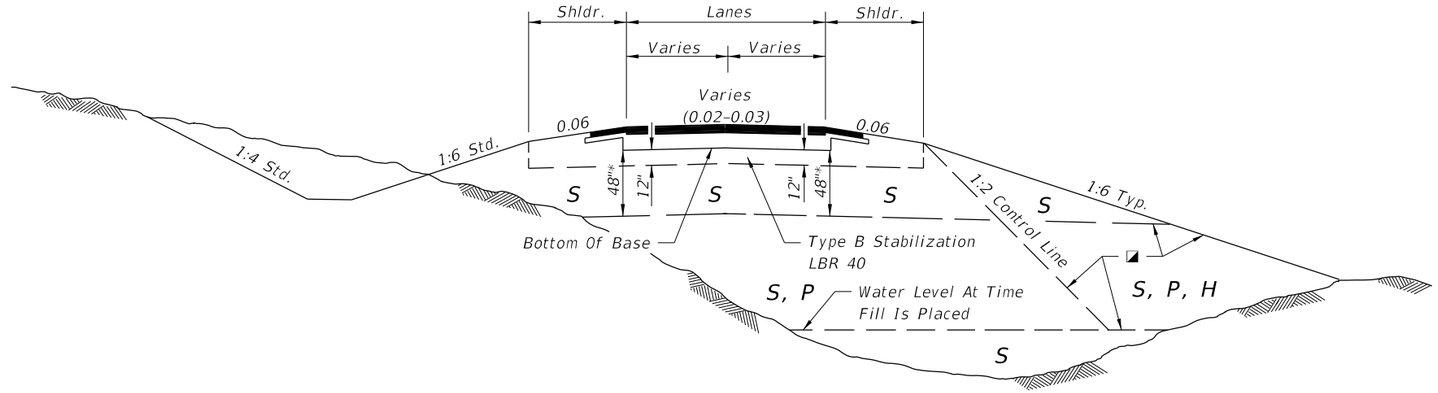
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	MAILBOXES	110-200	3 of 3



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

GENERAL NOTES:

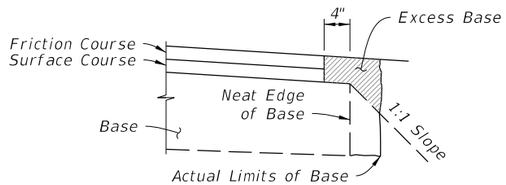
1. Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this Index do not supersede the details shown in the Plans or Indexes 120-002 and 160-001.

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.



NOTES:

1. All material in the shaded area is excess base to be removed.

2. There is no additional payment for removal of excess base material.

REMOVAL OF EXCESS BASE MATERIAL

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

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index 120-002. For minor collectors and local facilities this dimension may be reduced to 18".

GENERAL NOTES AND FLEXIBLE PAVEMENT

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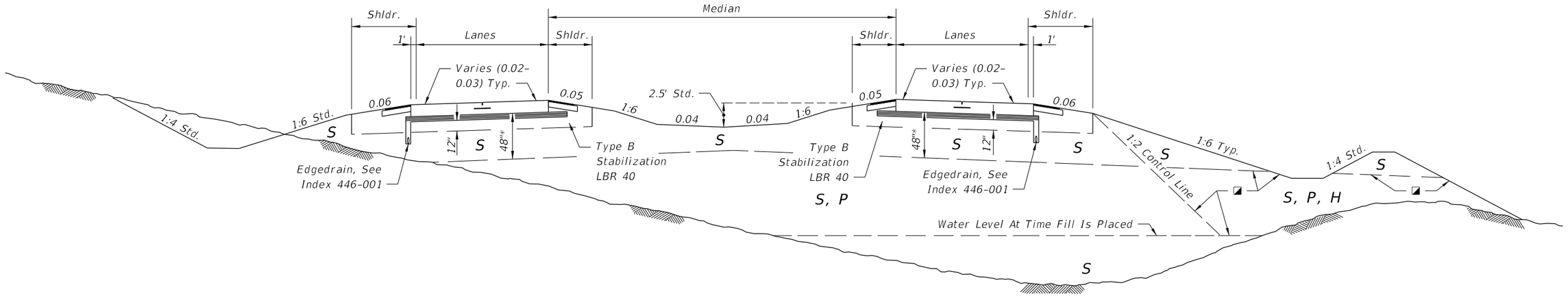
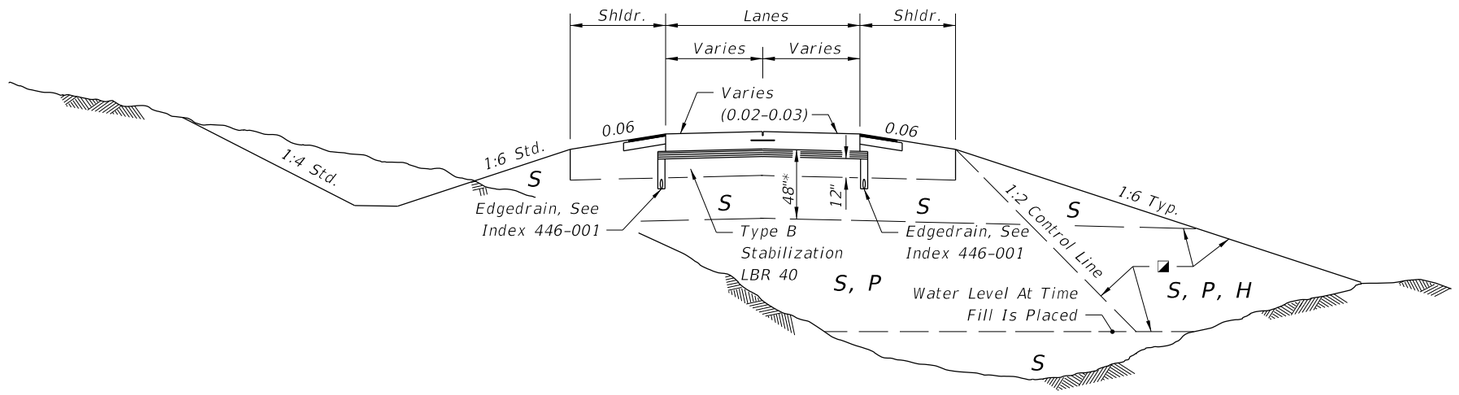
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	EMBANKMENT UTILIZATION	INDEX	SHEET
11/01/18					120-001	1 of 3



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50)
M	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

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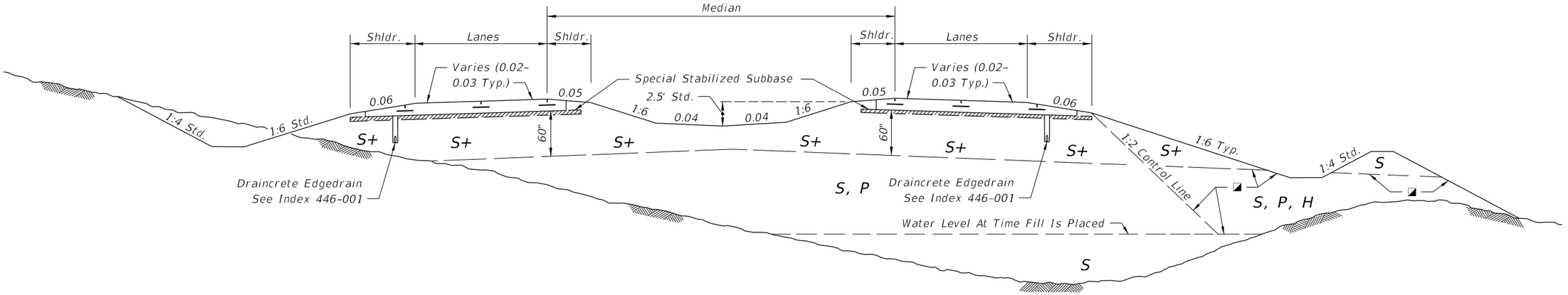
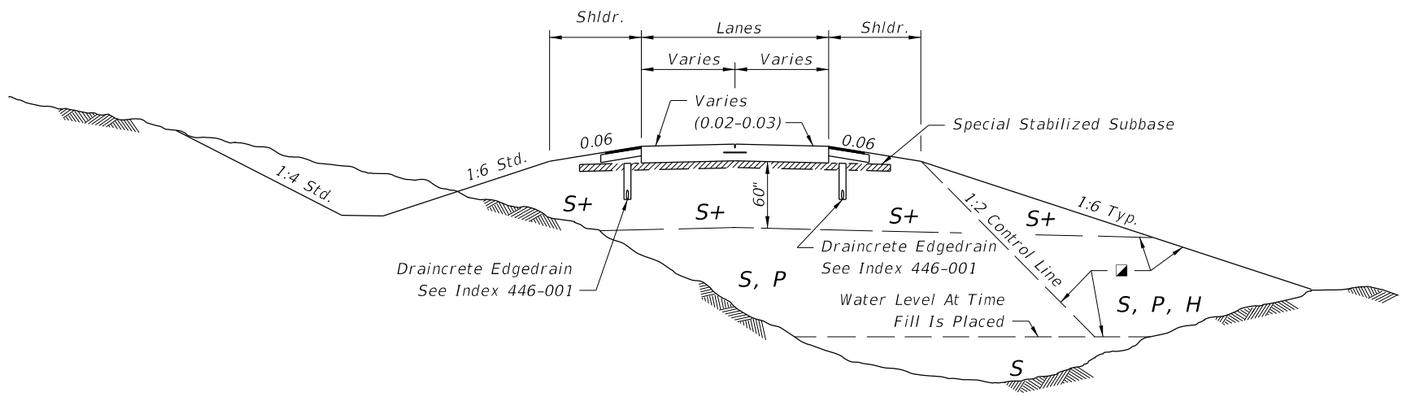
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	EMBANKMENT UTILIZATION	INDEX	SHEET
11/01/18					120-001	2 of 3



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	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 $5x10^{-5}$ cm/sec. (0.14 ft./day) as per AASHTO T 215
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL<50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL>50)
M	Muck	A-8

Classification listed left to right in order of preference.

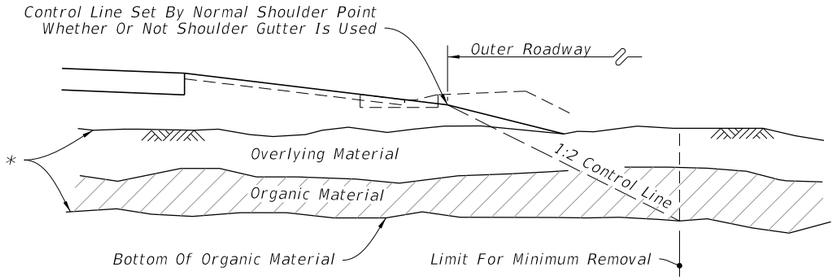
◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

*** 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.

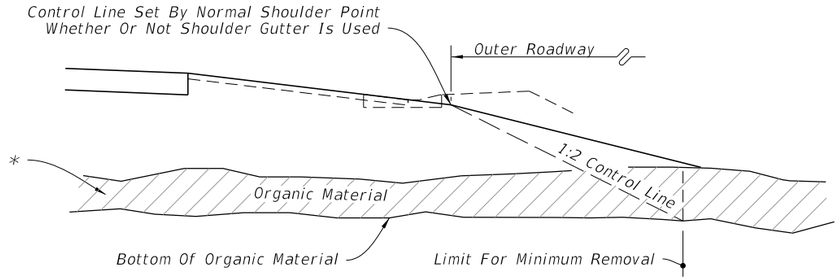
** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be nonplastic and contain less than 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

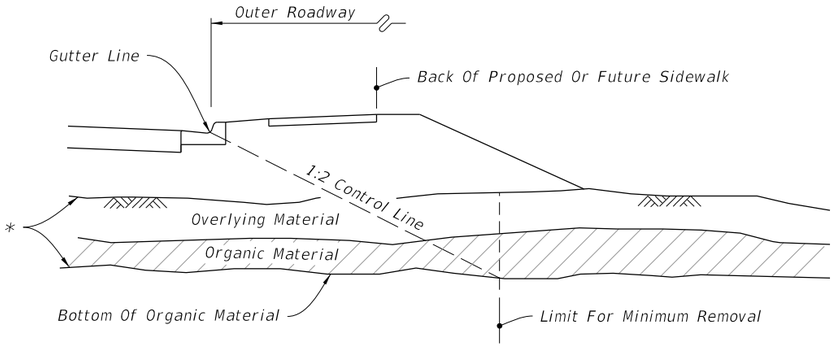


WITH OVERBURDEN - HALF SECTION



WITHOUT OVERBURDEN - HALF SECTION

CONSTRUCTION OF FLUSH SHOULDER ROADWAY



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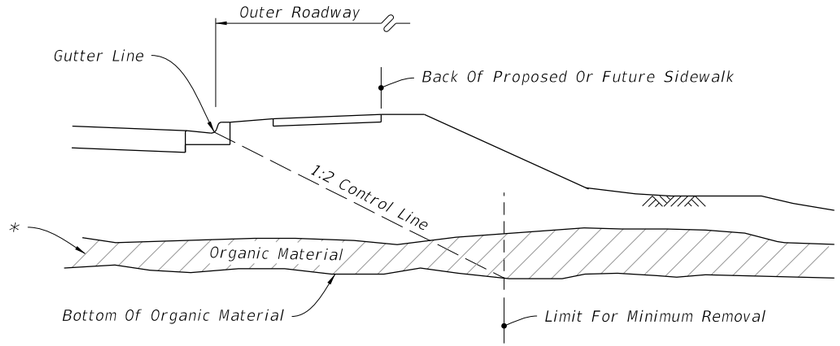

WITHOUT OVERBURDEN - HALF SECTION

CONSTRUCTION OF CURBED ROADWAY

* 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:

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%.

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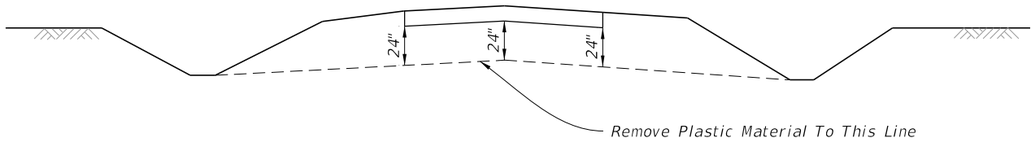
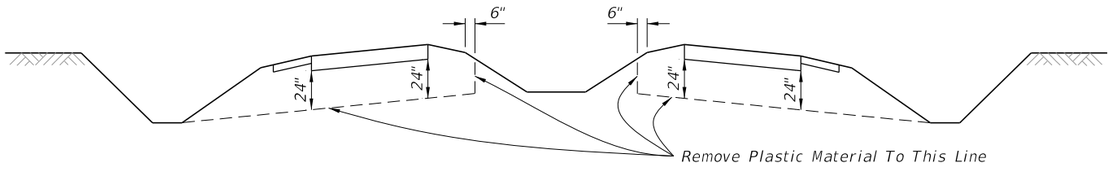
GENERAL NOTES AND REMOVAL OF ORGANIC MATERIAL

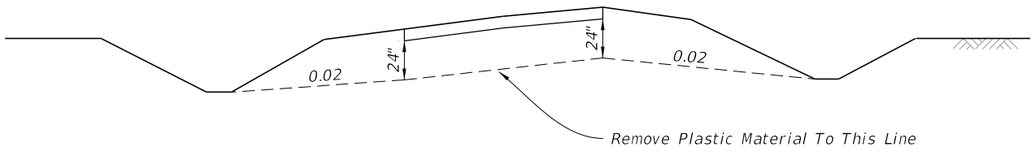
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	SUBSOIL EXCAVATION	INDEX	SHEET
11/01/17					120-002	1 of 2



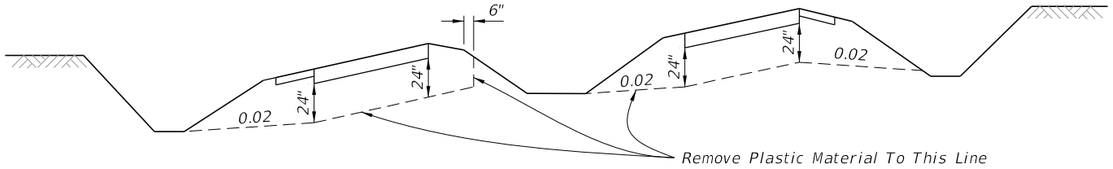
TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON TANGENT

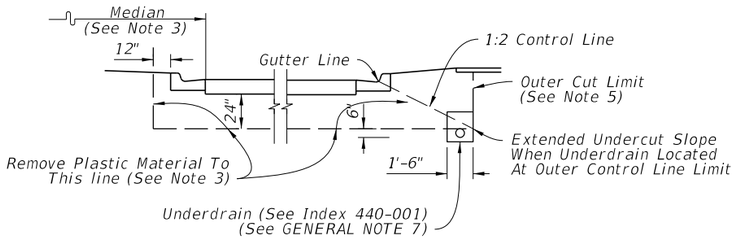


TYPICAL CUT SECTION ON SUPERELEVATION

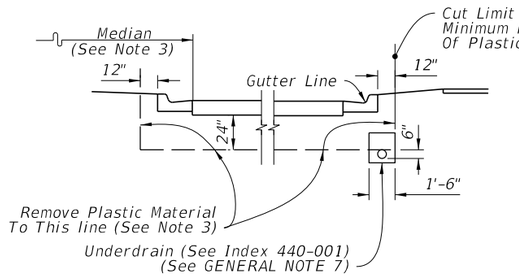


TYPICAL CUT SECTION ON SUPERELEVATION

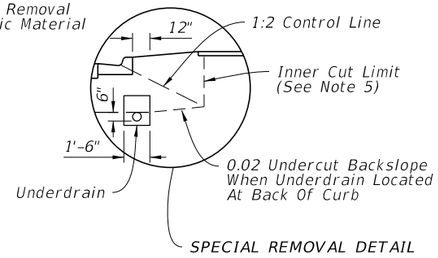
DIVIDED FREEWAYS, ARTERIALS, MAJOR COLLECTORS HAVING FLUSH MEDIANS, ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS



PREFERABLE REMOVAL



MINIMUM REMOVAL



SPECIAL REMOVAL DETAIL

INTERSTATE FACILITIES, FREEWAYS, DIVIDED ARTERIALS AND MAJOR COLLECTORS HAVING DEPRESSED MEDIANS

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

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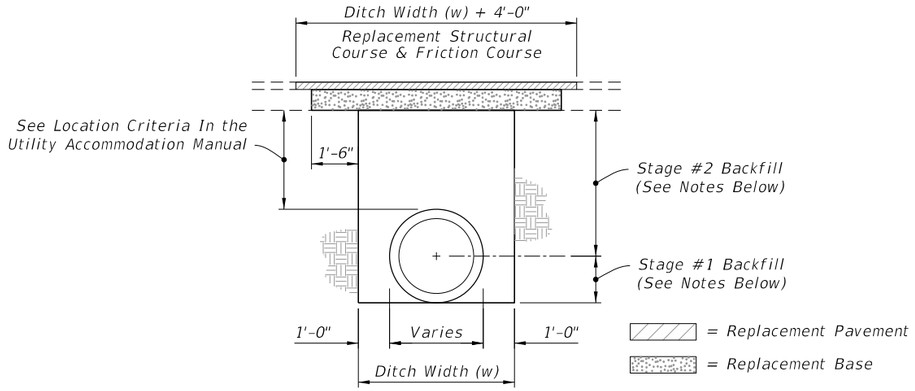
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SUBSOIL EXCAVATION	INDEX	SHEET
11/01/17						120-002	2 of 2



NOTES:

PAVEMENT REMOVAL AND REPLACEMENT

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

BACKFILL OPTION

1. COMPACTED AND STABILIZED FILL

   A. Place backfill material in accordance with Specification 125.

   B. In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

   C. In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

2. FLOWABLE FILL

   A. If compaction can not be achieved through normal mechanical methods then flowable fill may be used.

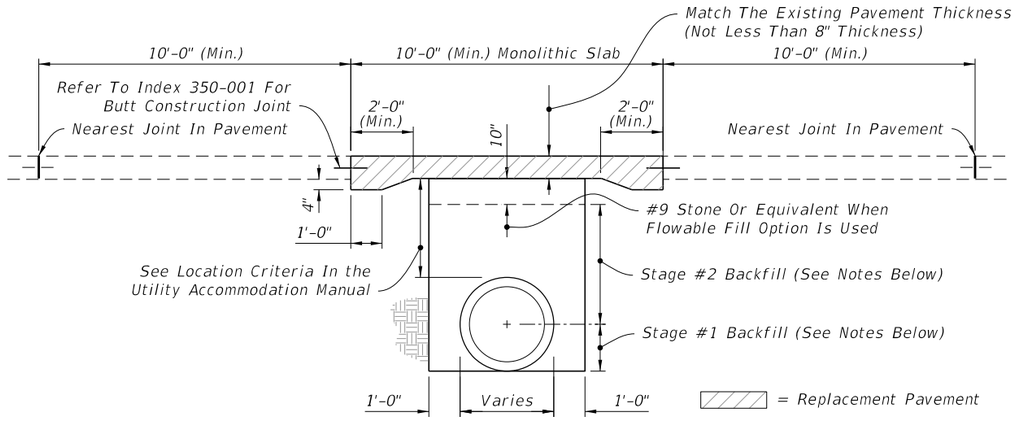
   B. Flowable fill is to be placed in accordance with Specification 121, as approved by the Engineer.

   C. Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

   D. In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

   E. In Stage #2, place flowable fill to the bottom of the existing base course.

FLEXIBLE PAVEMENT CUT



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 any bedding.

   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

GENERAL NOTES

1. The details provided in this Index apply to cases in which jack and bore or directional boring methods are not required by the Engineer.
2. Flowable fill shall not be placed directly over loose, or high plastic, or muck material (see Index 120-001) which will cause settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to 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.
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.
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.

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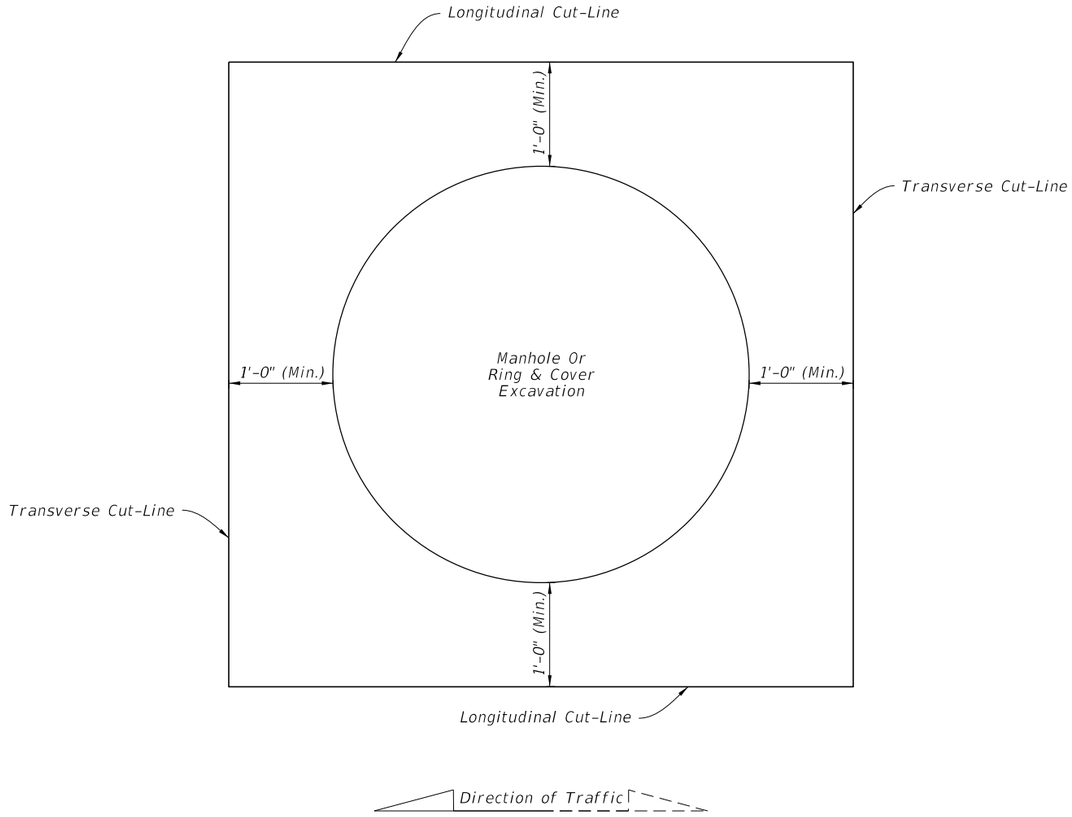
TRENCH CUTS AND RESTORATIONS ACROSS ROADWAYS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	UTILITY ADJUSTMENTS THRU EXISTING PAVEMENT	125-001	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.

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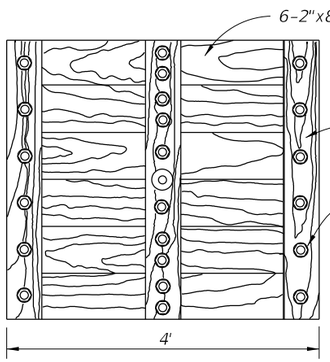
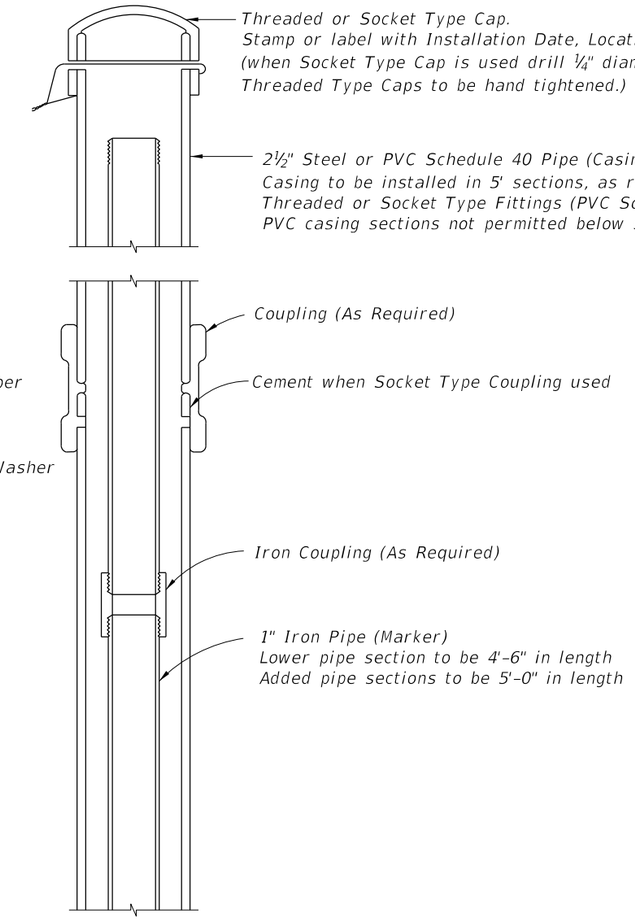
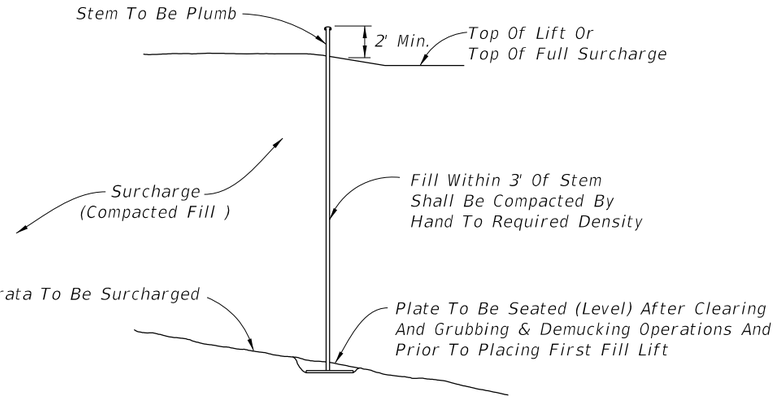
NONTRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	UTILITY ADJUSTMENTS THRU EXISTING PAVEMENT	INDEX	SHEET
11/01/17						125-001	2 of 2



PLAN
TIMBER PLATE

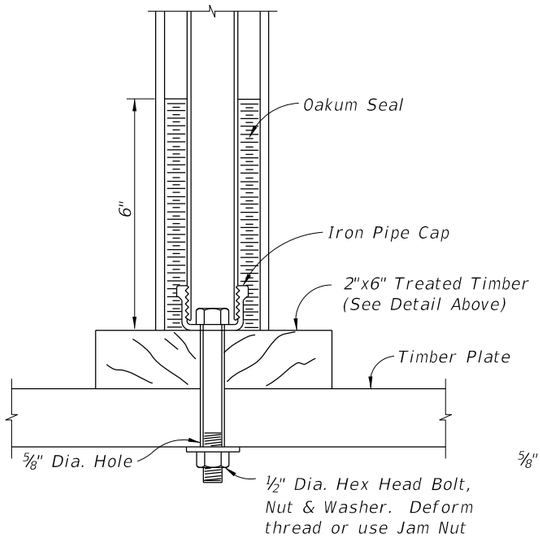




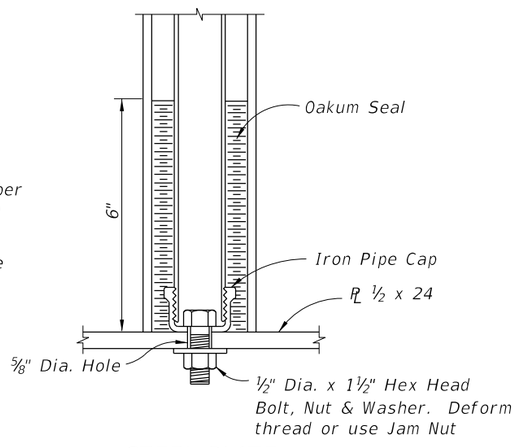
INSTALLATION

NOTES:

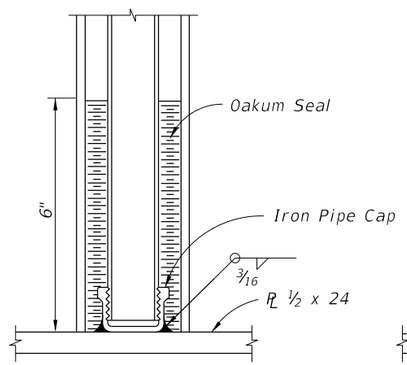
1. Elevation of the top of each length of marker pipe shall be determined as soon as it is installed and also immediately before the next length of marker pipe is added.
2. Settlement plate locations shall be flagged and protected from construction vehicles and equipment. If settlement plates are disturbed, they shall be replaced in kind.
3. Oakum used to construct seal should not have a mesh covering (plastic or other synthetic material).
4. The settlement plates shall be paid for under the contract unit price for Settlement Plate Assembly, AS.



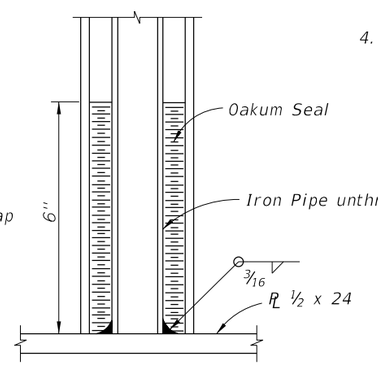
TIMBER PLATE



STEEL PLATE



STEEL PLATE



STEEL PLATE

STEM AND PLATE OPTIONS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/00			FY 2020-21 STANDARD PLANS	SETTLEMENT PLATE	141-T01	1 of 1

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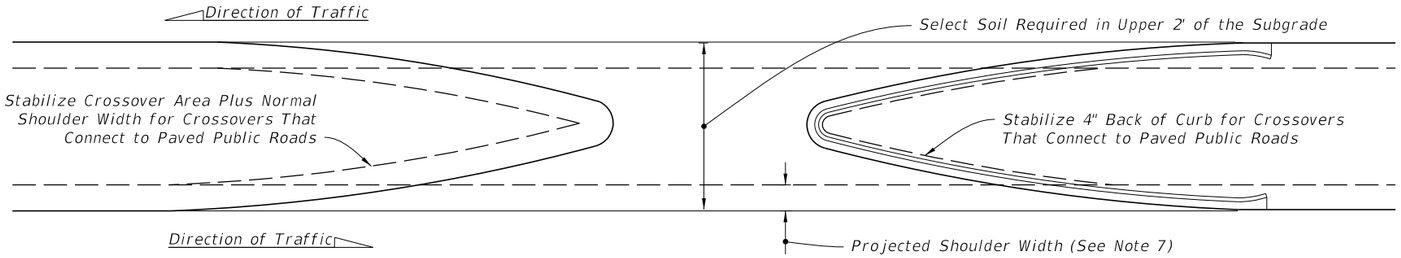
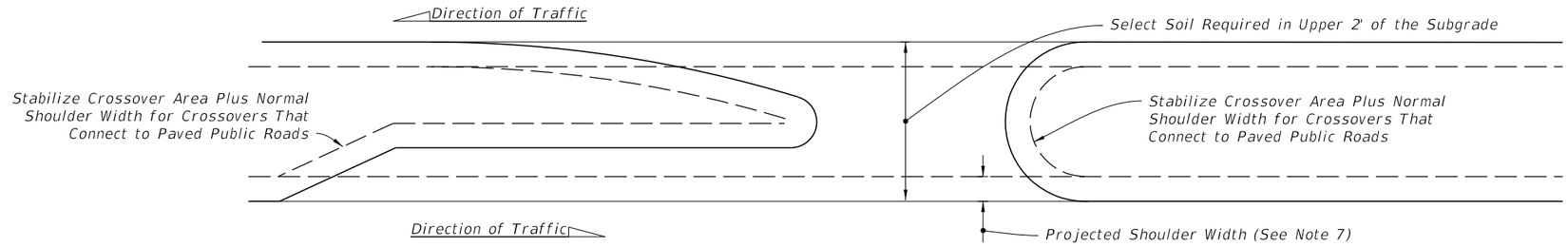
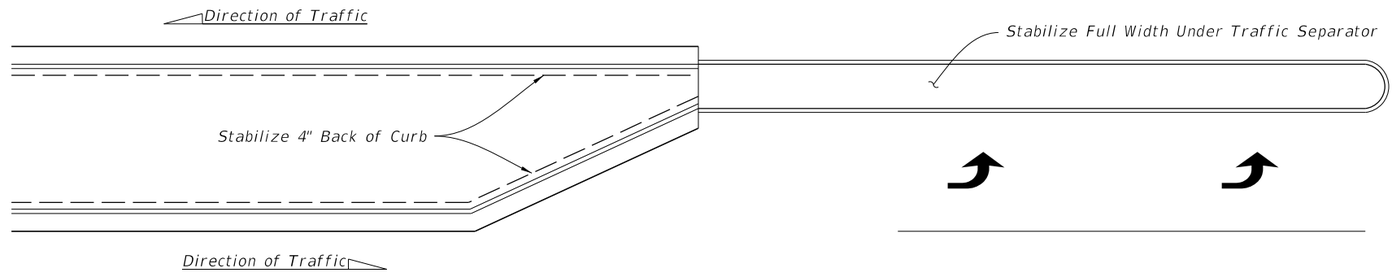


TYPICAL CROSSOVER



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.

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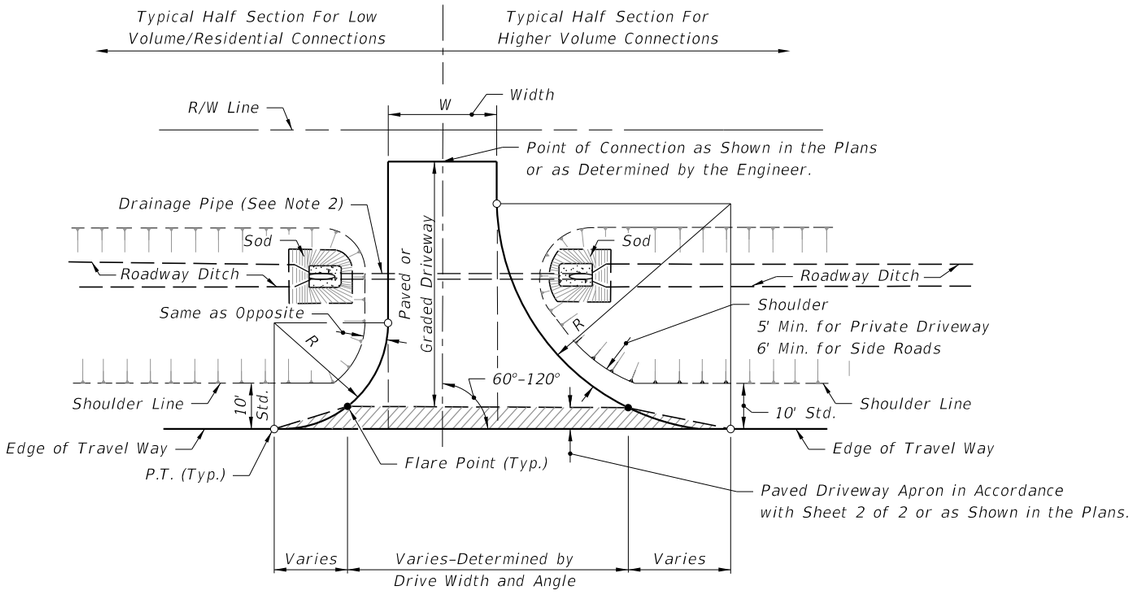
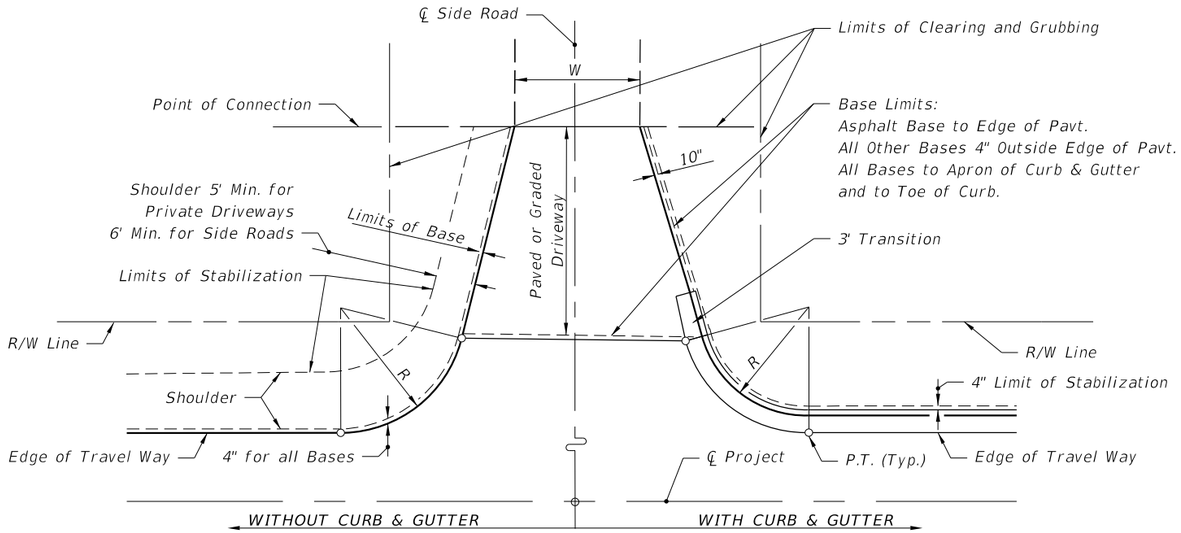
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MEDIAN STABILIZING DETAILS	INDEX	SHEET
11/01/19						160-001	1 of 1

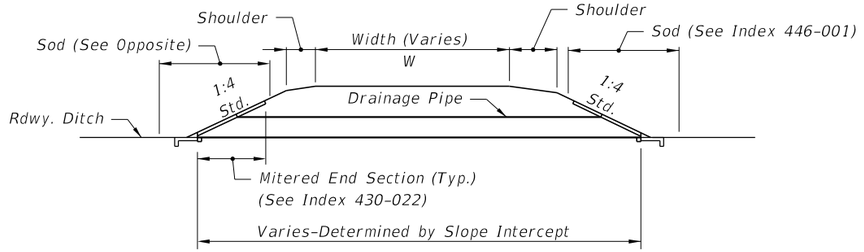


PLAN

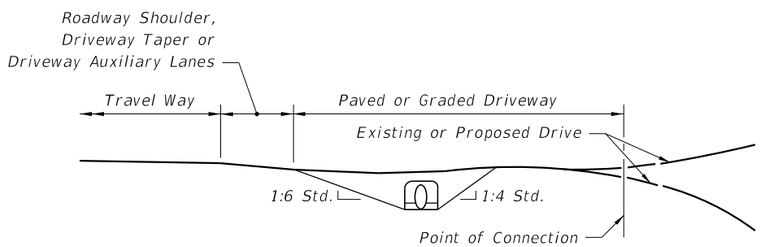


PLAN

LIMITS OF CLEARING & GRUBBING, STABILIZING AND BASE AT DRIVEWAYS



DRAINAGE SECTION



DRIVEWAY PROFILE AND END VIEW

FLUSH SHOULDER ROADWAY - DRIVEWAY CONSTRUCTION

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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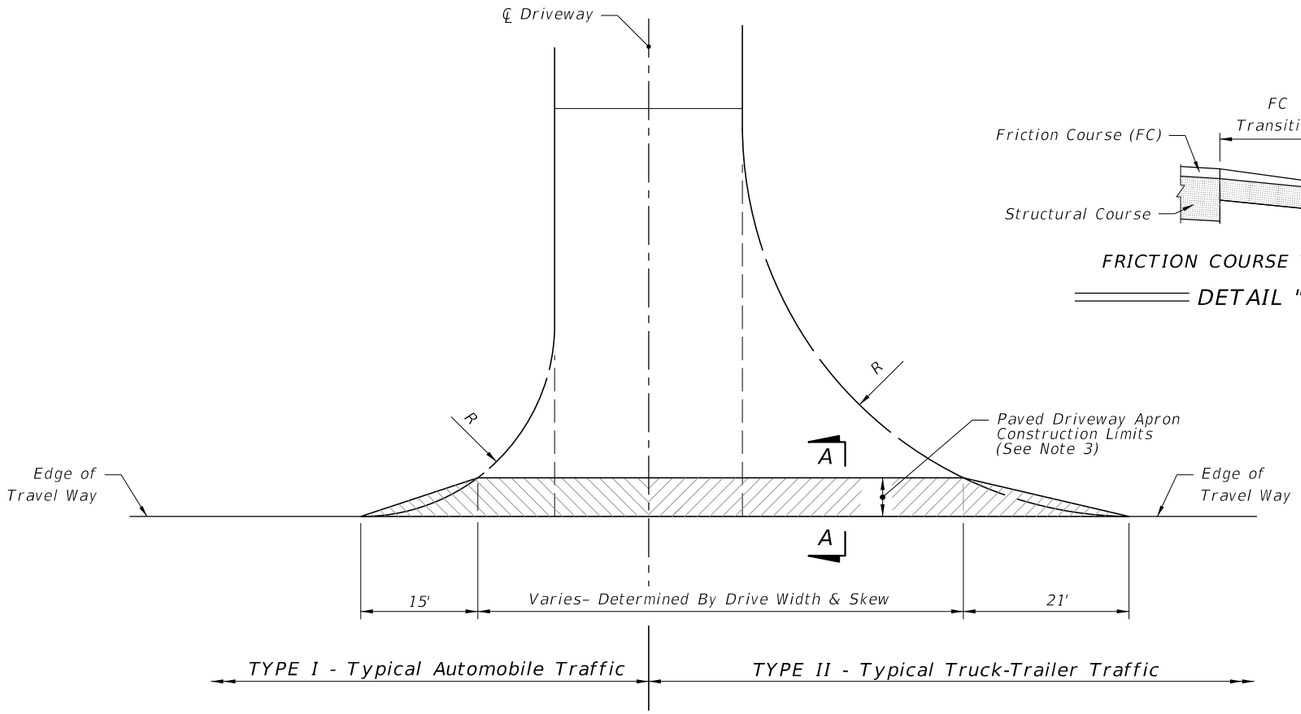
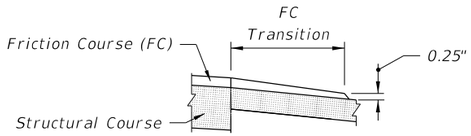
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PAVED AND GRADED DRIVEWAYS	INDEX	SHEET
11/01/18						330-001	1 of 2

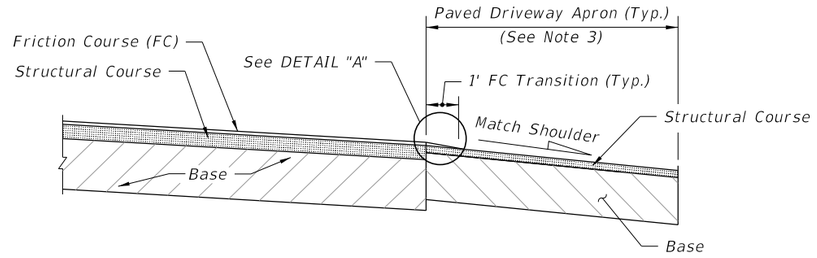


DRIVEWAY TYPES

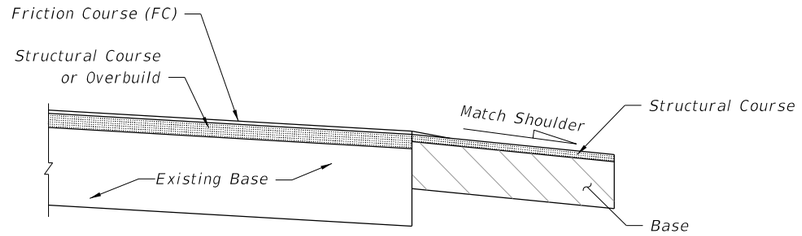


FRICTION COURSE TRANSITION

DETAIL "A"



SECTION AA - NEW CONSTRUCTION



SECTION AA - RESURFACING

NEW DRIVEWAY

AREAS FOR ONE 5' DEEP DRIVEWAY APRON (SY)

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

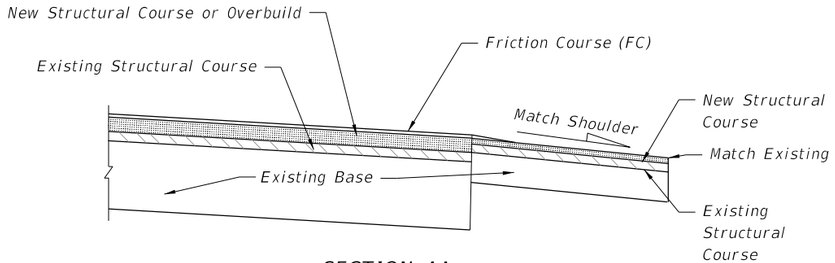
MATERIAL TYPES AND THICKNESSES FOR PAVED CONNECTIONS

Course	Materials	Minimum Thickness (in.)	
		Connections	Roadway*
Structural	Asphaltic Concrete	1½"	1½"
Bases	Optional Base (See Specification 285)	O.B.G. 2	O.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

RESURFACING EXISTING DRIVEWAY

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 ≥ 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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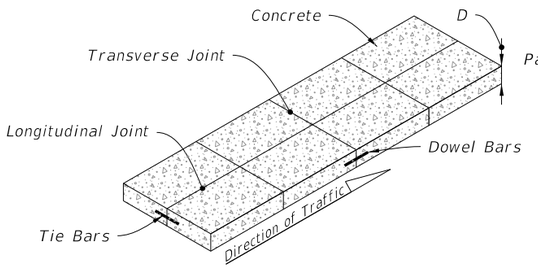
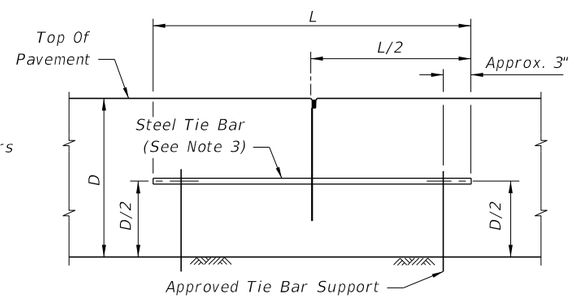
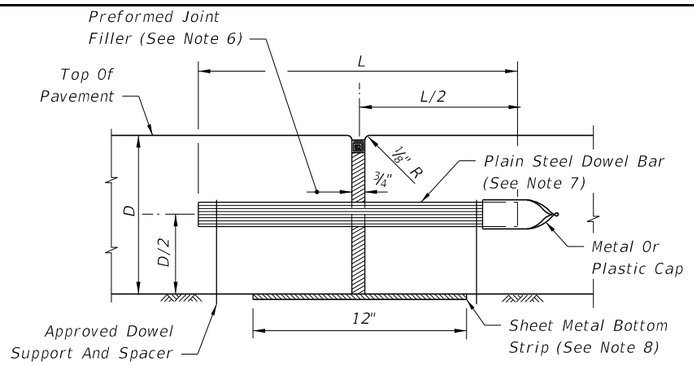
11/01/18			FDOT FY 2020-21 STANDARD PLANS	PAVED AND GRADED DRIVEWAYS	330-001	2 of 2

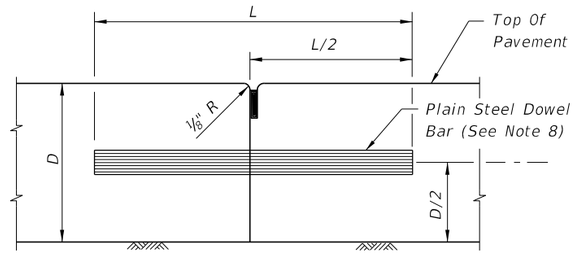




BUTT CONSTRUCTION JOINT



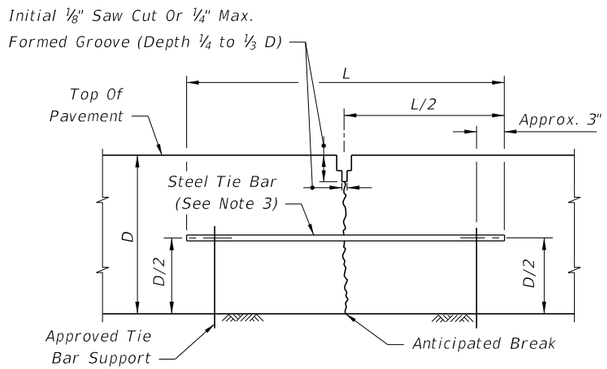
EXPANSION JOINT
(See Note 6)



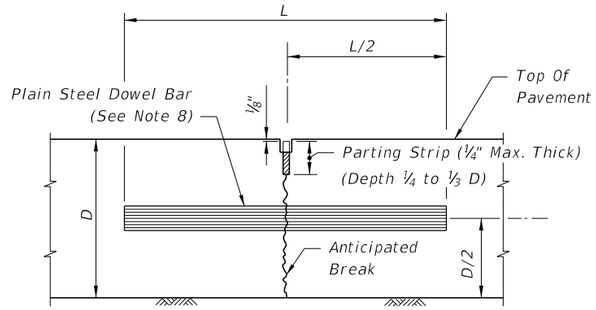
BUTT CONSTRUCTION JOINT
(Used At Discontinuance Of Work)

NOTES:

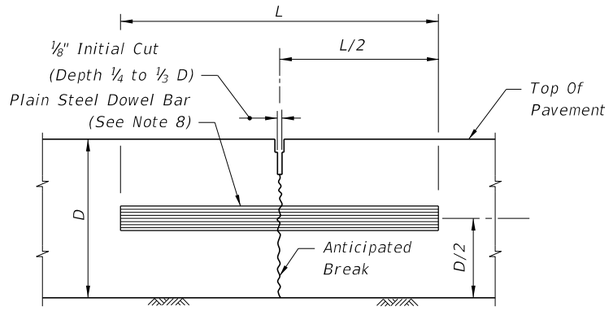
1. For joint seal dimensions see Sheet 2.
2. For slabs poured simultaneously, tie bars may be inserted in the plastic concrete by means approved by the Engineer.
3. For Longitudinal Joints:
   A. Tie bars are deformed #4 or #5 reinforcing steel bars meeting the requirements of Specification 931.
   B. Provide a standard load transfer tied joint with #4 bars 25" in length at 24" spacing or #5 bars 30" in length at 38" spacing.
4. Transverse joints are to be spaced at a maximum of 15'. Dowels are required at all transverse joints unless otherwise noted in the plans.
5. Expansion joints to be placed at street intersections and other locations as indicated in the Plans. For bridge expansion joints, see Index 370-001.
6. Punch clean holes in preformed joint filler greater than bar diameter.
7. Coat and lubricate plain steel dowel bars in accordance with Specification 350.
8. Sheet metal bottom strips in accordance with Specification 931. Not required with asphalt base.



LANE-TIE JOINT
(See Note 2)



CONTRACTION JOINT
(Vibro Case Method)

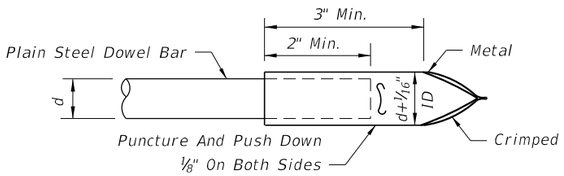


CONTRACTION JOINT
(Sawed Method)

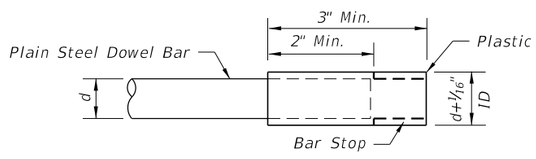
LONGITUDINAL JOINTS

TRANSVERSE JOINTS

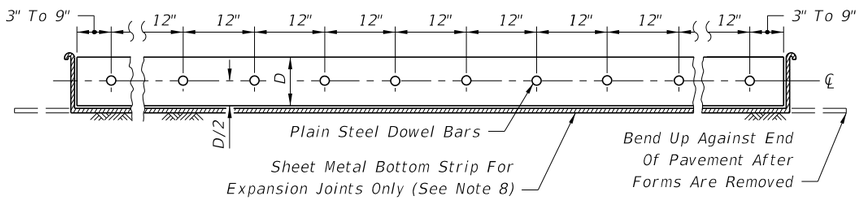
DOWELS (LENGTH 18")	
Pavement Thickness "D"	Diameter
6"-6½"	¾"
7"-8"	1"
8½"-10½"	1¼"
≥11"	1½"



METAL



PLASTIC



DOWEL BARS CAPS

DOWEL BAR LAYOUT

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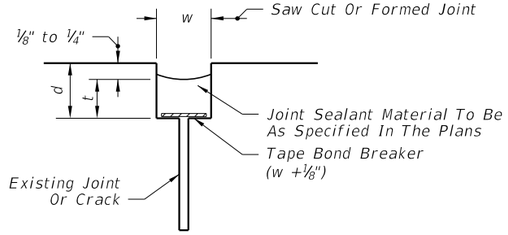
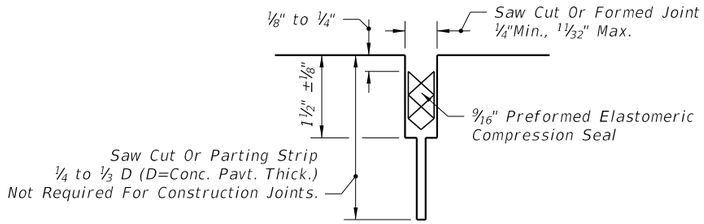
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	CONCRETE PAVEMENT JOINTS	350-001	1 of 4



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.

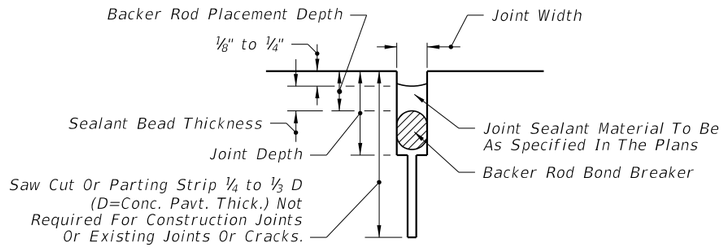
FOR REHABILITATION PROJECTS

TAPE BOND BREAKER



FOR NEW PROJECTS

PREFORMED ELASTOMERIC COMPRESSION SEAL

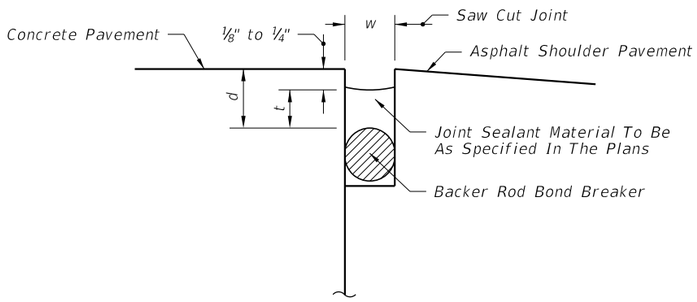


FOR NEW AND REHABILITATION PROJECTS

BACKER ROD BOND BREAKER

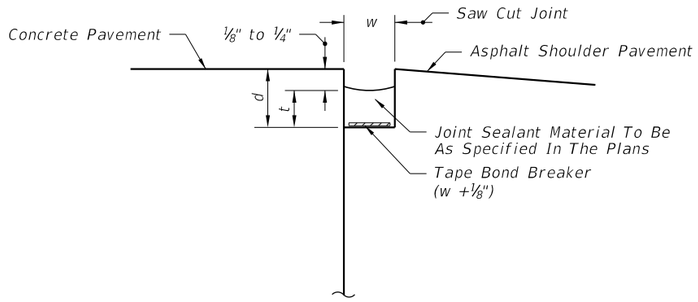
CONCRETE-CONCRETE JOINTS

d = w = ¾" Unless Specified Otherwise In The Plans



BACKER ROD BOND BREAKER

d = w = ¾" 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 DIMENSIONS (INCHES)

JOINT WIDTH	SEALANT BEAD THICKNESS	BACKER ROD DIA.	MINIMUM JOINT DEPTH	BACKER ROD PLACEMENT DEPTH
¼	¼	⅜	1	½
⅜	¼	½	1¼	½
½	¼	⅝	1¼	½
⅝	5/16	¾	1½	9/16
¾	⅜	1	1¾	⅝
⅞	7/16	1⅛	1¾	11/16
1	½	1¼	2	¾
>1	½	1¼+	2+	¾

Unless otherwise indicated on the plans the joint width for new construction will be ¼" for construction joints, ⅜" 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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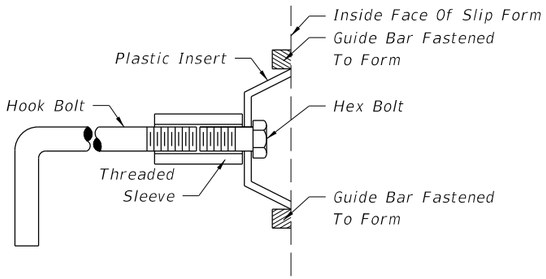
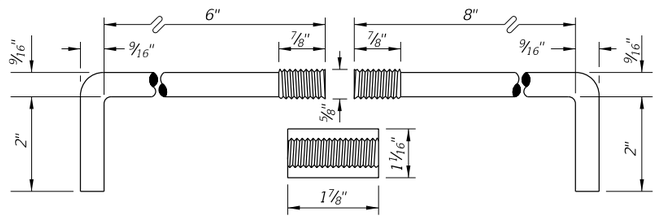




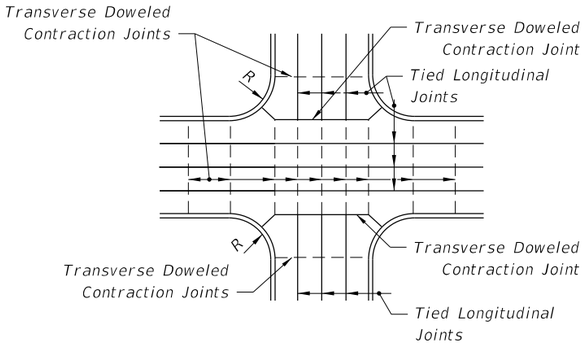
Note: After the concrete has set to the extent that the Keyway will retain its shape, the hex bolt and plastic insert shall be removed. The remaining portion of the hook bolt assembly shall be installed immediately prior to placing of concrete in the adjacent lane.

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

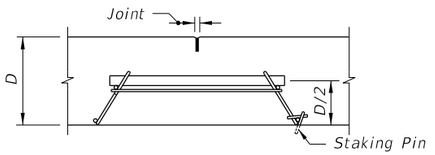
STEEL HOOK BOLT ASSEMBLY



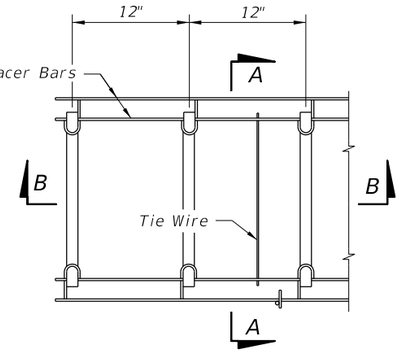
JOINT LAYOUT
AT THRU INTERSECTION

JOINT LAYOUT
AT 'T' INTERSECTIONS

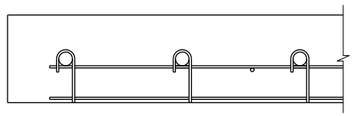
JOINT ARRANGEMENT



SECTION AA

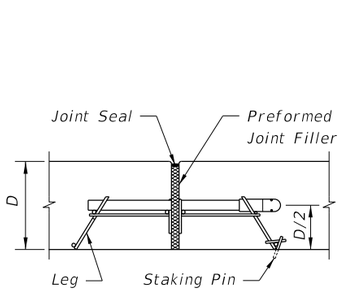


TOP VIEW

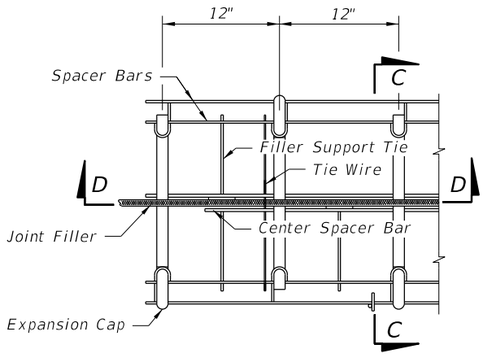


SECTION BB

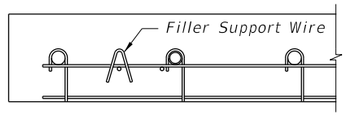
CONTRACTION ASSEMBLY



SECTION CC



TOP VIEW



SECTION DD

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.

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.

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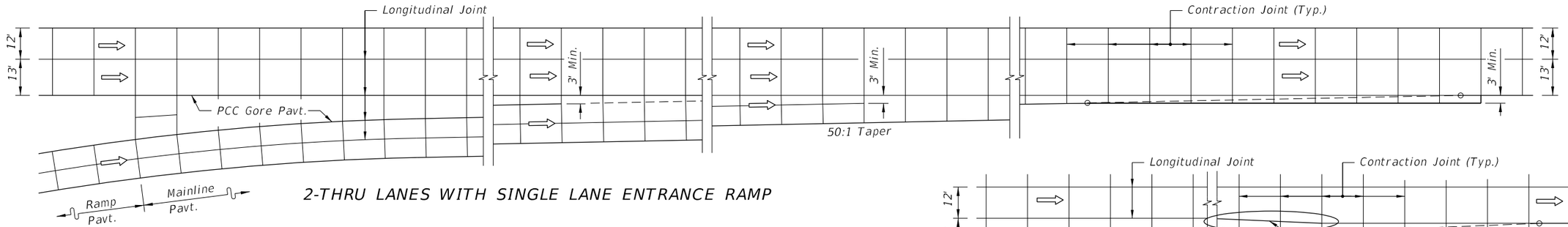
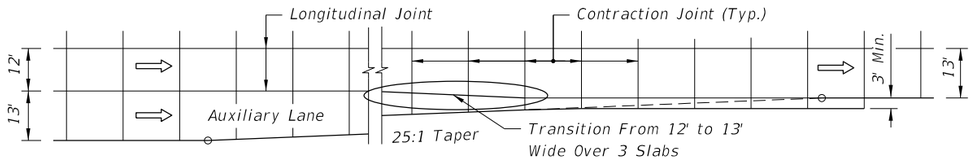
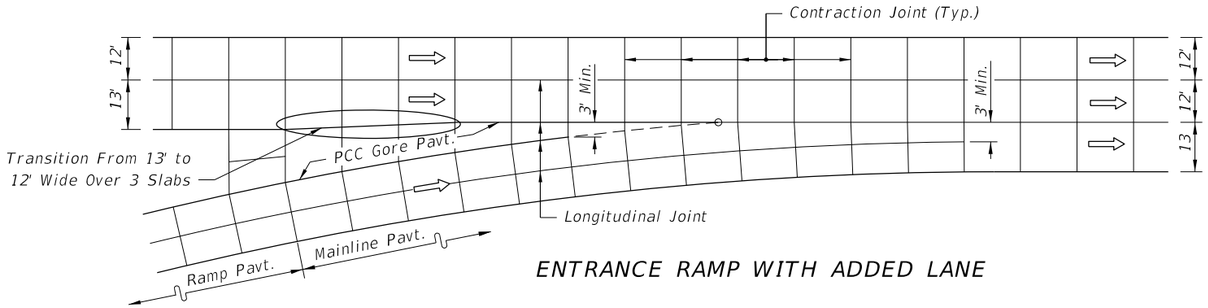
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2020-21 STANDARD PLANS	CONCRETE PAVEMENT JOINTS	INDEX 350-001	SHEET 3 of 4



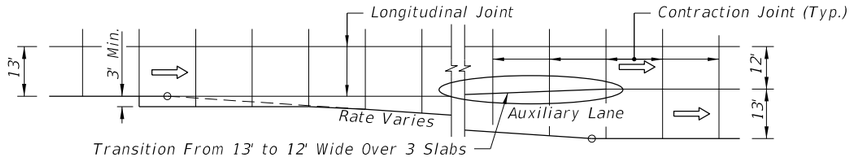
2-THRU LANES WITH SINGLE LANE ENTRANCE RAMP



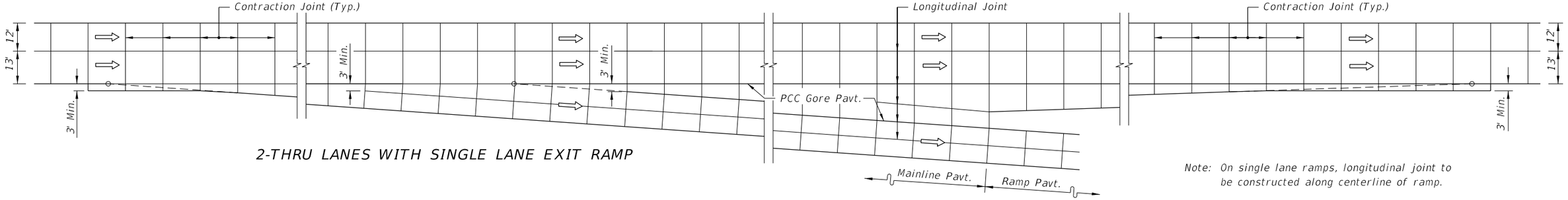
ENTRANCE TAPER WITH AUXILIARY LANE



ENTRANCE RAMP WITH ADDED LANE

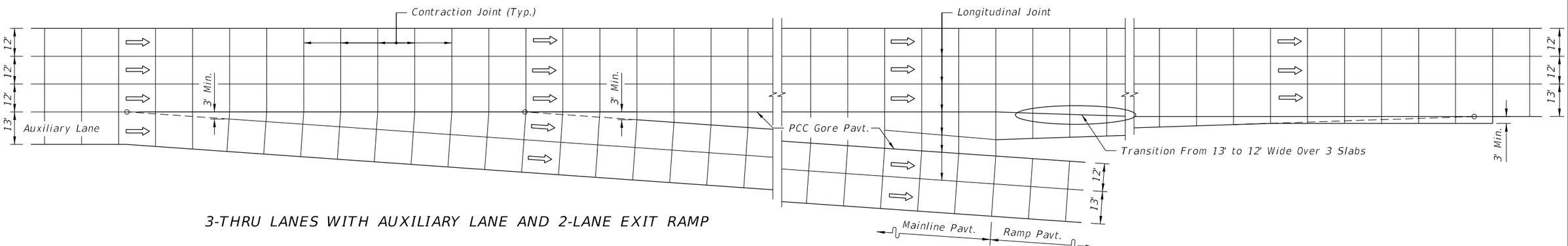


EXIT TAPER WITH AUXILIARY LANE



2-THRU LANES WITH SINGLE LANE EXIT RAMP

Note: On single lane ramps, longitudinal joint to be constructed along centerline of ramp.



3-THRU LANES WITH AUXILIARY LANE AND 2-LANE EXIT RAMP

Note: Transverse joint spacing should not exceed 15-ft or twenty-four times the slab thickness, whichever is less. If a lane exceeds 15-ft width, such as single lane ramps and weigh stations, longitudinal joint to be constructed in centerline of lane.

JOINT LAYOUT AT ENTRANCE AND EXIT RAMP TERMINALS

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	CONCRETE PAVEMENT JOINTS	350-001	4 of 4

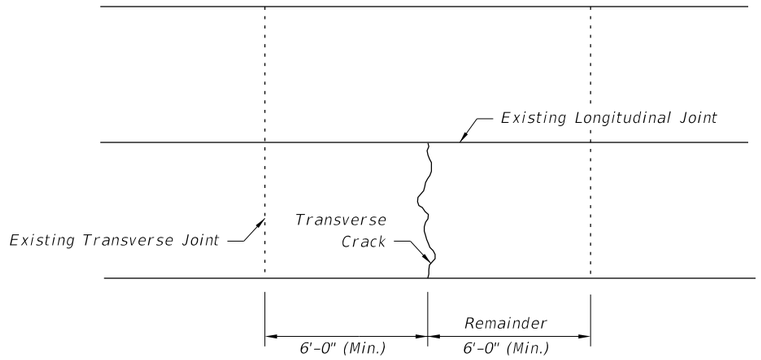

FIGURE 10.2 - REPAIR METHOD: NONE OR CLEAN AND SEAL

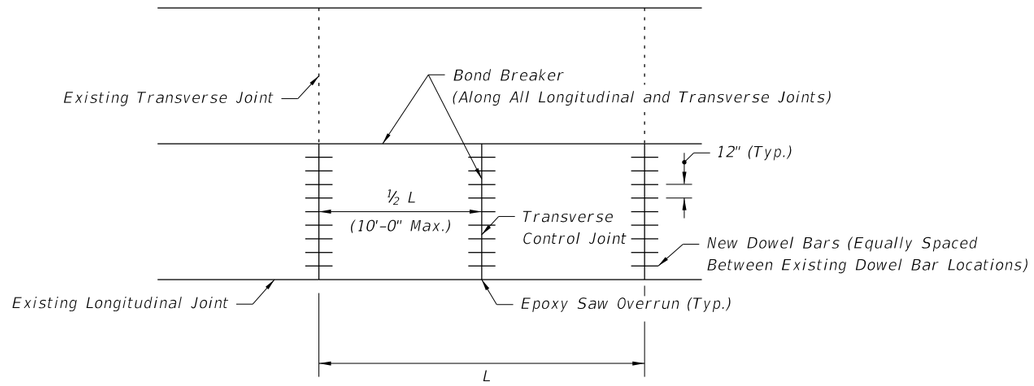

FIGURE 10.3 - FULL SLAB FULL DEPTH REPLACEMENT

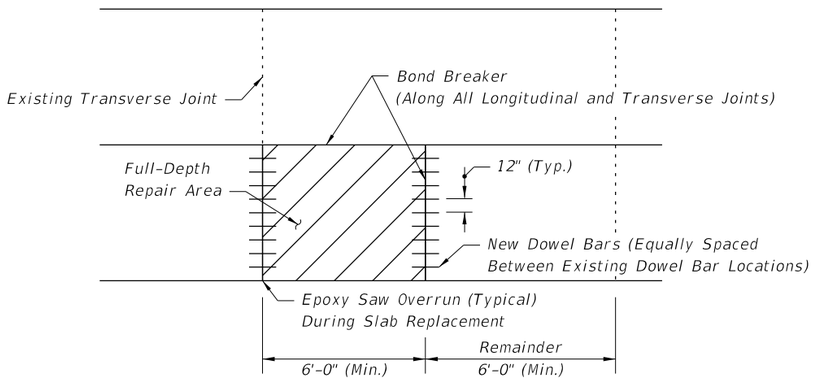

FIGURE 10.4 - PARTIAL SLAB FULL DEPTH REPLACEMENT

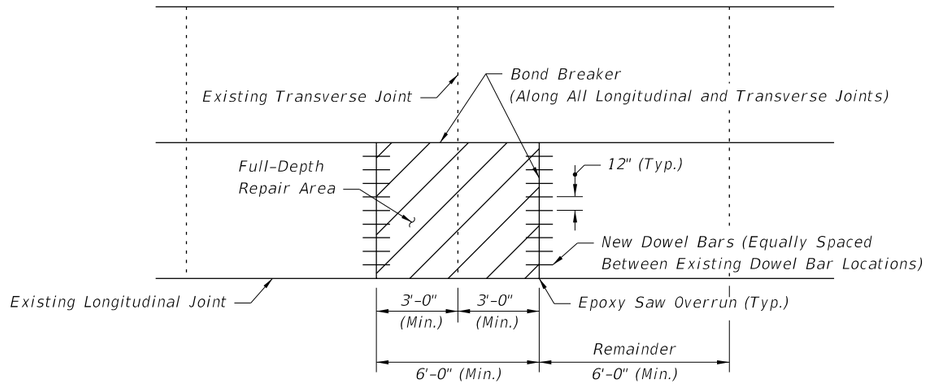

FIGURE 10.5 - FULL-DEPTH REPAIR ON BOTH SIDES OF THE JOINT

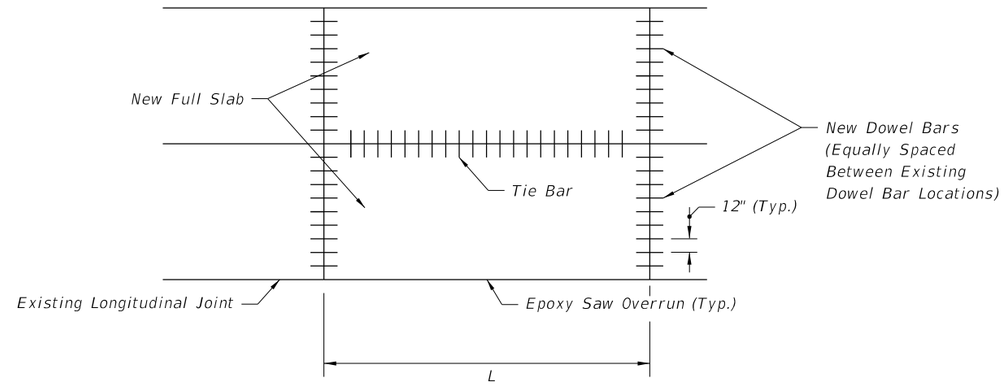

FIGURE 10.6 - MULTIPLE SLAB FULL DEPTH REPLACEMENT

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.

SLAB REPAIR AND REPLACEMENT CRITERIA

DISTRESS PATTERN	SEVERITY/DESCRIPTION		REPAIR METHOD	REFERENCE
CRACKING				
Longitudinal	Light	<⅛", no faulting, spalling <½" wide	None	Figure 10.2
	Moderate	⅛" <width <½", spalling <3" wide	Clean and Seal	Figure 10.2
	Severe	width >½", spalling >3" faulting >½"	Replace	Figure 10.3
Transverse	Light	<⅛", no faulting, spalling <½" wide	None	Figure 10.2
	Moderate	⅛" <width <½", spalling <3" wide	Clean and Seal	
	Severe	width >½", spalling >3" faulting >½"	Replace	Figure 10.3, 10.4 and 10.5
Corner Breaks	A corner of the slab is separated by a crack that intersects the adjacent longitudinal and transverse joint, describing an approximate 45° angle with the direction of traffic.		Full Depth	Figure 10.4 and 10.5
Intersecting Random Cracks (Shattered Slab)	Cracking patterns that divide the slab into three or more segments.		Full Depth	Figure 10.3 and 10.4
JOINT DEFICIENCIES				
Spall Nonwheel Path	Light	spall width <1½", < ⅓ slab depth, <12" in length	None	Figure 10.4 and 10.5
	Moderate	1½" <spall width <3", < ⅓ slab depth, <12" in length	None	Figure 10.4 and 10.5
	Severe	spall width >3" or length >12"	Full Depth	Figure 10.4 and 10.5
Spall Wheel Path	Light	spall width <1½", <than ⅓ slab depth, <12" in length	None	Figure 10.4 and 10.5
	Moderate	1½" <spall width <3", < ⅓ 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	Small pieces of surface pavement broken loose, normally ranging from 1 to 4 in. diameter and ½ to 2 in. in depth.			
	Light	Not deemed to be a traffic hazard	Keep under observation	
	Severe	Flying debris deemed a traffic hazard	Full Depth	Figure 10.4
Pop Outs Wheel Path	Small pieces of surface pavement broken loose, normally >3" diameter and 2" in depth.			
	Light	Deemed to be a traffic hazard	Full Depth	Figure 10.4
	Severe	Flying debris deemed a traffic hazard	Full Depth	Figure 10.4
MISCELLANEOUS DISTRESS				
Faulting	Elevation differences across joints or cracks.			
	Light	Faulting <4/32"	None	
	Moderate	4 <Faulting <16/32"	Grind	
	Severe	Faulting >16/32"	Grind	
Lane To Shoulder Drop-Off	Light	0 <drop-off <1"	None	N/A
	Moderate	1" <drop-off <3"	Build Up	
	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	Upward movement at transverse joints or cracks often accompanied by shattering of the concrete.		Full Depth	Figure 10.3 and 10.4

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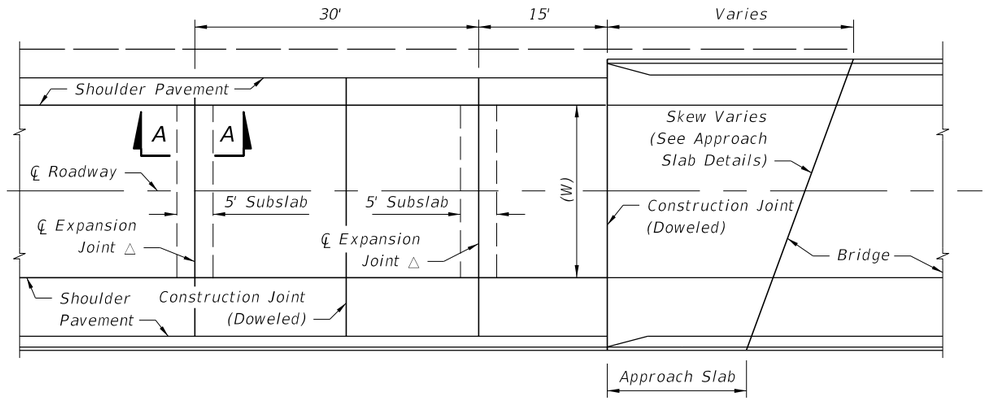
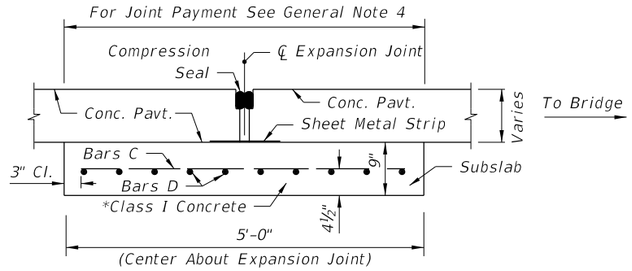


△ *Construct Expansion Joints Parallel To The Existing Transverse Pavement Joints On Rehabilitation Projects, And Parallel To The Standard Transverse Pavement Joints Shown In The Plans For New Construction.*

PLAN



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

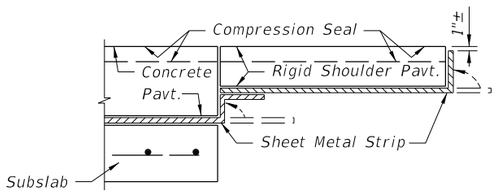
* *Finish surface smooth. Cure with heavy coating of wax base white pigmented curing compound. Apply second application immediately prior to placing pavement.*

SECTION A-A

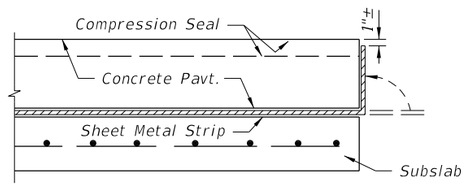
EXPANSION JOINT

GENERAL NOTES:

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



RIGID SHOULDER PAVEMENT

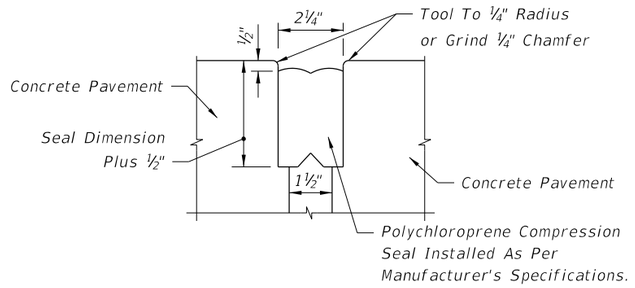


SODDED SHOULDER OR FLEXIBLE SHOULDER PAVEMENT

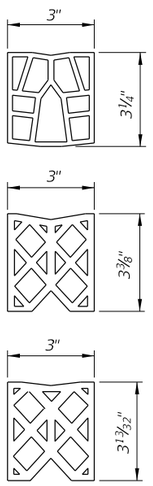
NOTES:

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

SHEET METAL STRIP DETAILS



JOINT DIMENSIONS



OPTIONAL SEALS

NOTE:

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

COMPRESSION SEAL DETAIL

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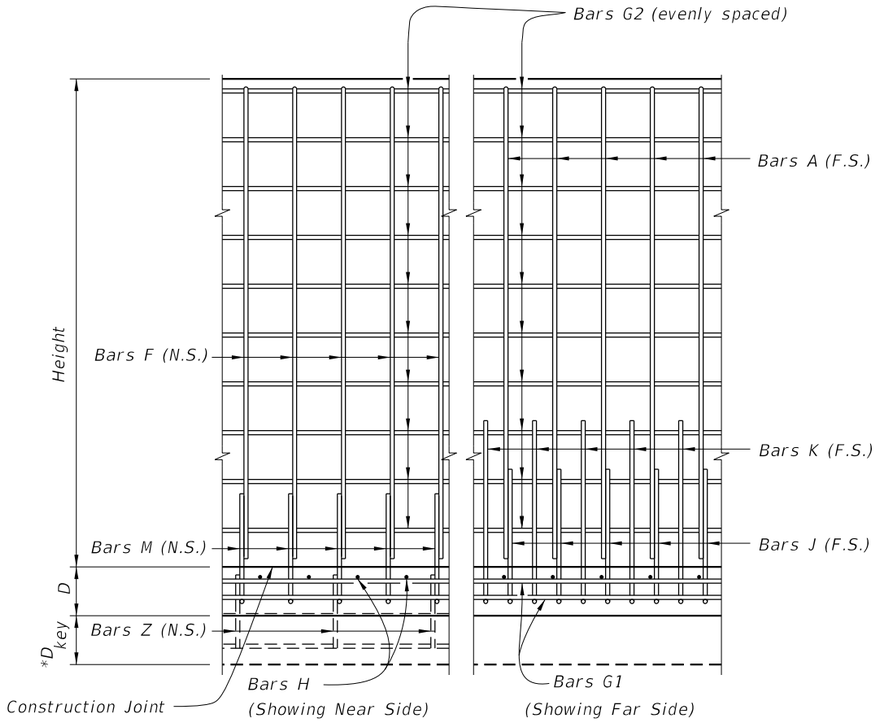
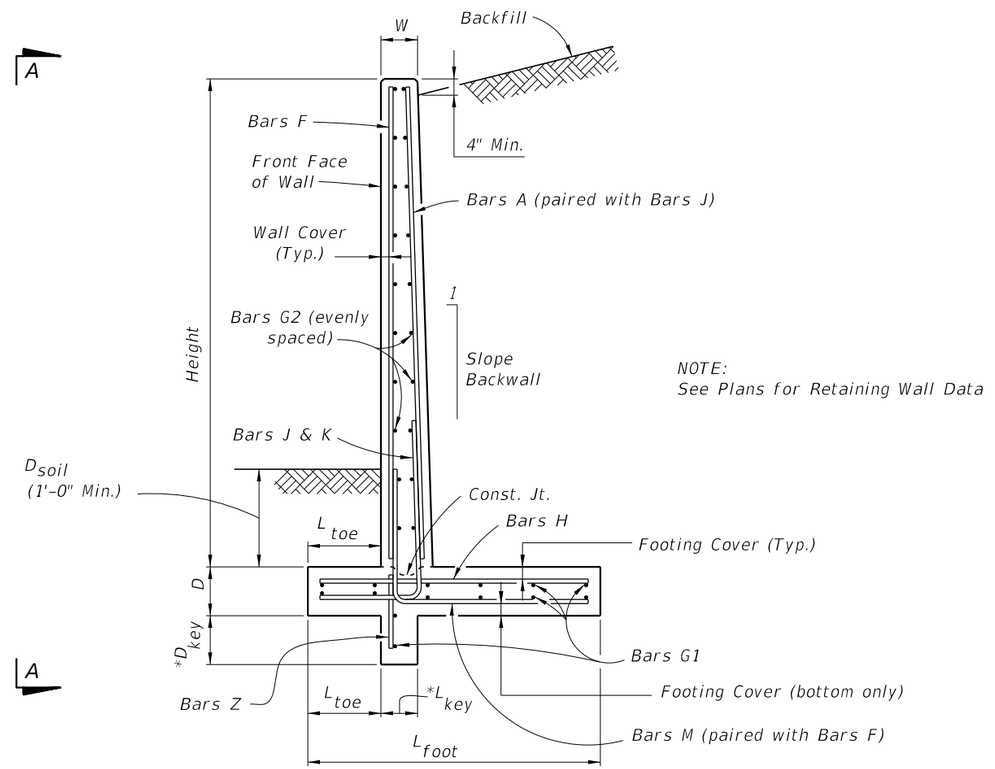
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	BRIDGE APPROACH EXPANSION JOINT CONCRETE PAVEMENT WITH SPECIAL SELECT SOIL BASE	370-001	1 of 1



VIEW A-A

(Shear key shown dashed)



NOTE:
See Plans for Retaining Wall Data

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

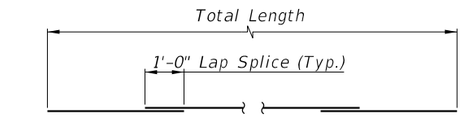
TYPICAL SECTION

NOTES

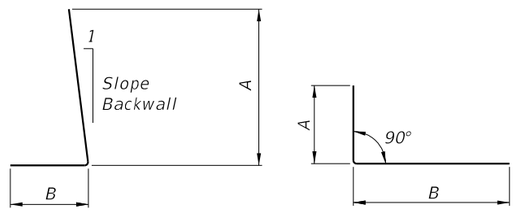
TRAFFIC RAILINGS OR PARAPETS:
If there is a Traffic Railing or Parapet on the wall, align Wall Joints with V-Grooves, and Wall Expansion Joints with Barrier Open Joints.

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

REINFORCING STEEL BENDING DIAGRAMS



BARS G1



BARS J & K BARS M

NOTE:
All bar dimensions are out-to-out

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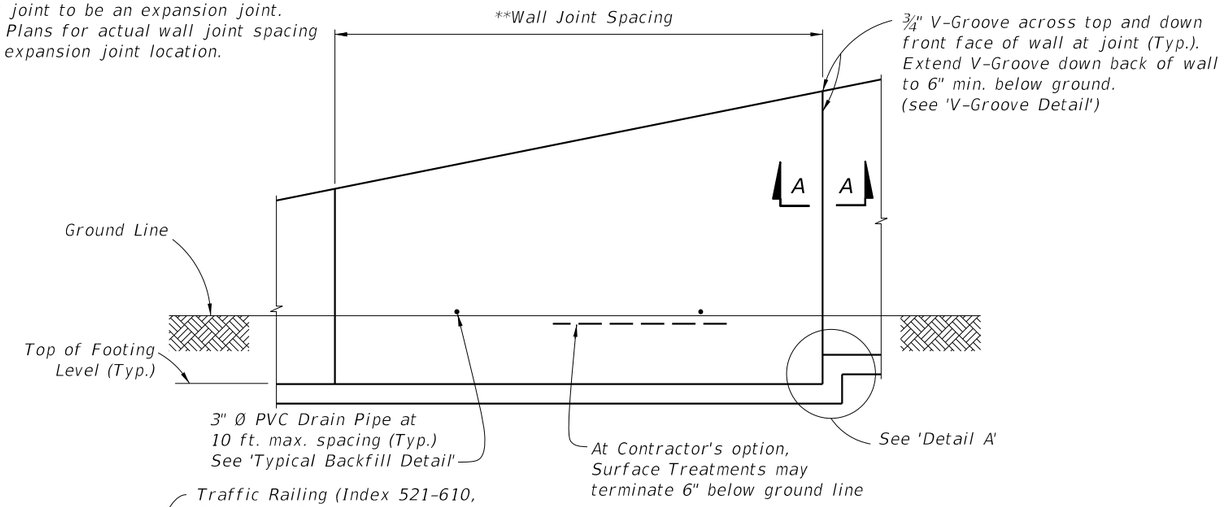
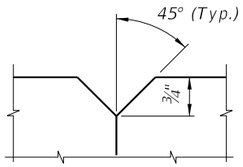
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CANTILEVER RETAINING WALL (C-I-P)	400-010	1 of 2

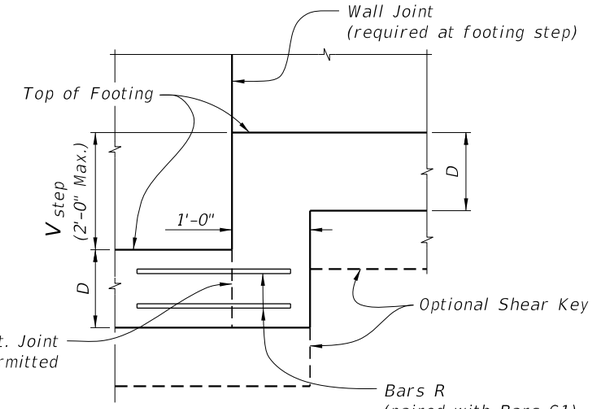
**Wall joint spacing 25 ft. maximum and 5' minimum. At minimum, every fourth wall joint to be an expansion joint. See Plans for actual wall joint spacing and expansion joint location.



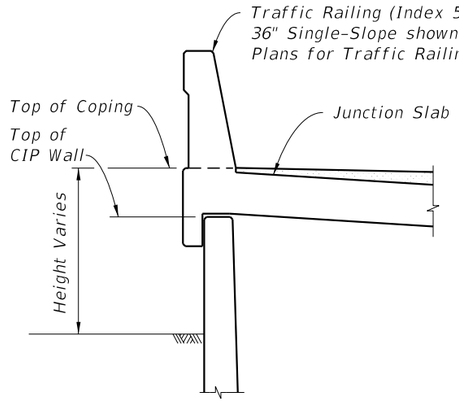
FRONT ELEVATION



V-GROOVE DETAIL

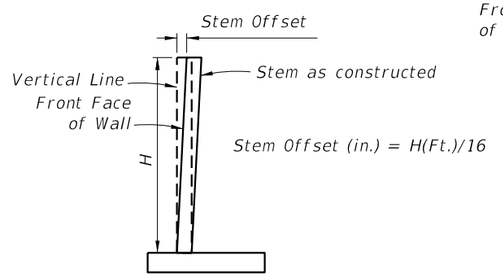


DETAIL A



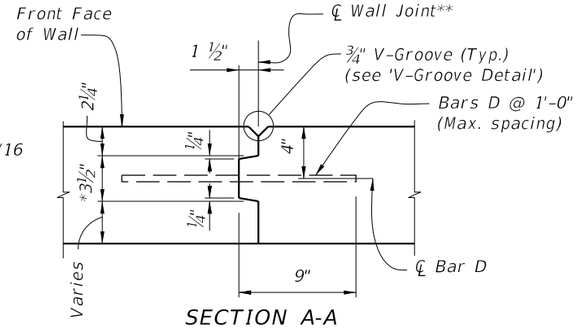
TRAFFIC RAILING/JUNCTION SLAB DETAIL

(36" Single-Slope shown, other Traffic Railings similar)

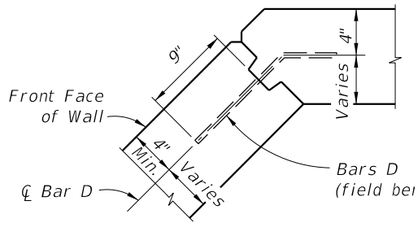


STEM OFFSET VALUES

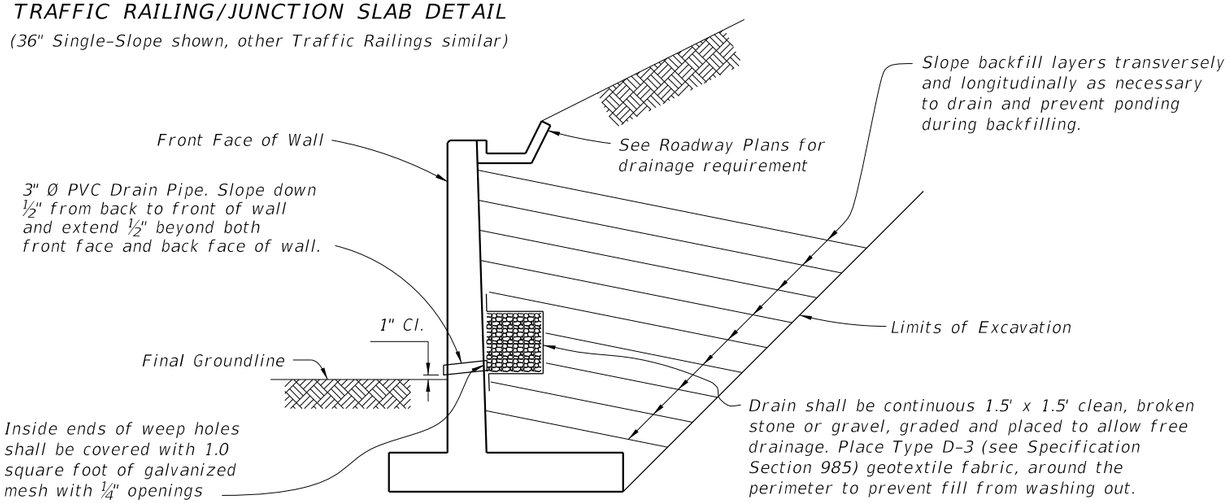
(for H < 20 Ft.)



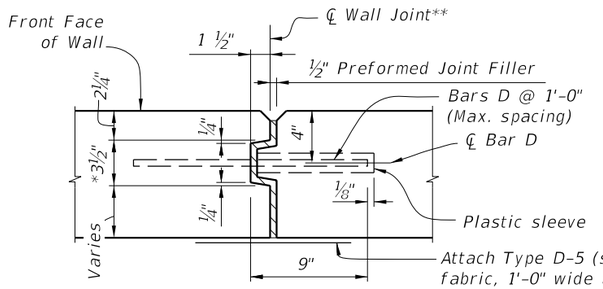
SECTION A-A
WALL JOINT DETAIL



TYPICAL CORNER JOINT DETAIL



TYPICAL BACKFILL DETAIL



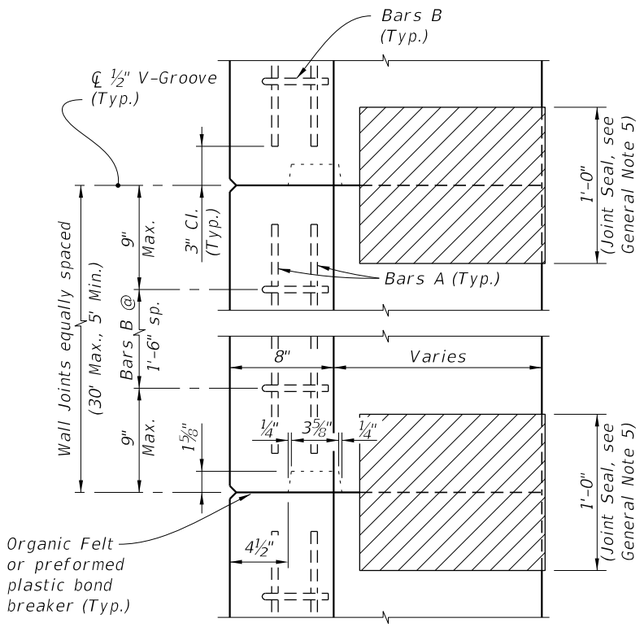
SECTION A-A
EXPANSION JOINT DETAIL

* Key to stop at top of footing and 6" from top of wall. Joint across footing and top of wall to be a straight line.

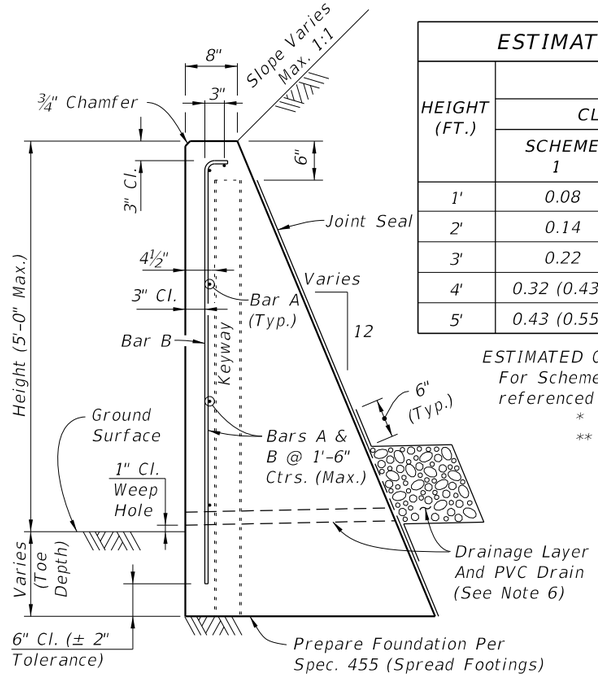
** Stay-In-Place Plastic Preformed Bond Beakers are permitted to form joints.

10/29/2019 8:15:04 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CANTILEVER RETAINING WALL (C-I-P)	INDEX	SHEET
11/01/17						400-010	2 of 2



KEYWAY & WALL JOINT DETAIL
(TOP VIEW)



TYPICAL SECTION
C-I-P CONCRETE GRAVITY WALL

ESTIMATED QUANTITIES FOR C-I-P WALL

HEIGHT (FT.)	PER LINEAR FOOT OF WALL				WEEP HOLES & DRAIN REQD.
	CLASS NS CONCRETE (CY)			REINF. STEEL (LB.)	
	SCHEME 1	SCHEME 2	SCHEME 3**		
1'	0.08	0.11 (0.20*)	0.03	3 (4*)	No
2'	0.14	0.20 (0.32*)	0.09	4 (5*)	No
3'	0.22	0.32 (0.47*)	0.29	5 (6*)	Yes
4'	0.32 (0.43*)	0.47 (0.65*)	0.43	6 (7*)	Yes
5'	0.43 (0.55*)	0.65 (0.85*)	0.60	7 (8*)	Yes

ESTIMATED QUANTITIES NOTES:

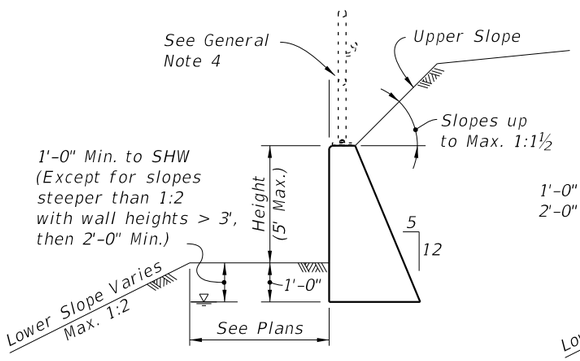
For Scheme 3 Junction Slab and Traffic Railing see the referenced Index for estimated quantities.

* *Quantity for 2'-0" Toe Depth.*

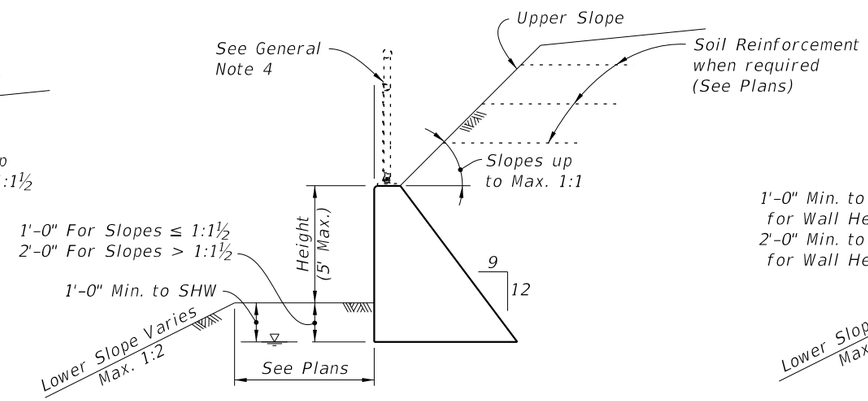
** *Quantity for Scheme 3 assumes 1'-3" thick coping above Gravity Wall.*

GENERAL NOTES

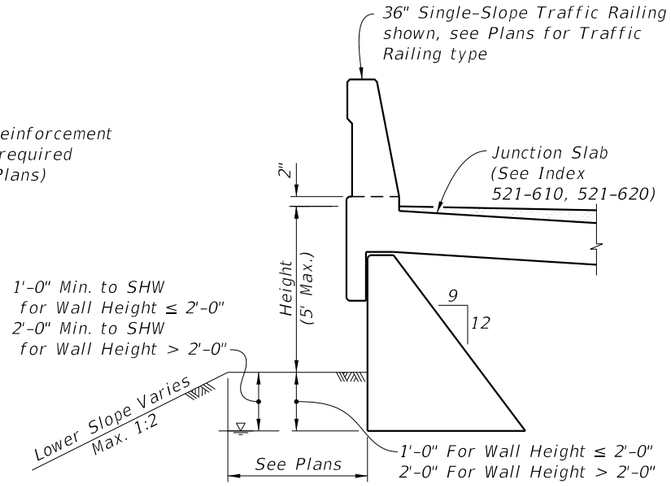
1. *C-I-P Gravity Walls constructed as extensions of reinforced concrete retaining walls, except walls of proprietary designs, shall have the same face texture and finish as the reinforced concrete retaining wall.*
2. *Concrete for Gravity Wall shall be Class NS per Section 347. Concrete for Scheme 3 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.*
4. *When required, for adjunct guiderail, see Index 515-070 or 515-080 as appropriate. For adjunct Type B fence see Index 550-002.*
5. *Joint Seal: 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 ¼" 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.*



SCHEME 1
(No Traffic Loading Effects &
Upper Slopes ≤ 1:1½)



SCHEME 2
(With Traffic Loading or
Upper Slopes > 1:1½)

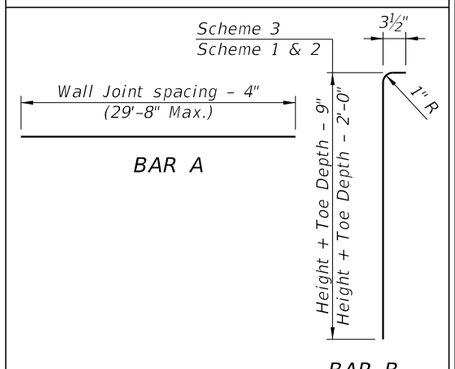


SCHEME 3
(With Traffic Railing)

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
A	4	As Reqd.
B	4	As Reqd.

BAR BENDING DIAGRAM

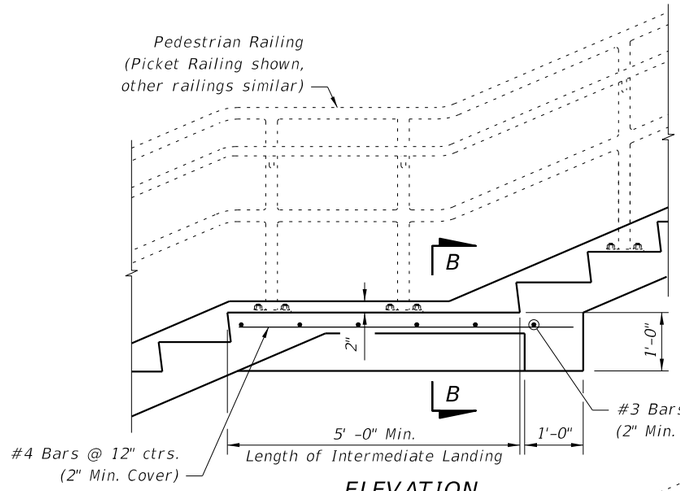


NOTES:

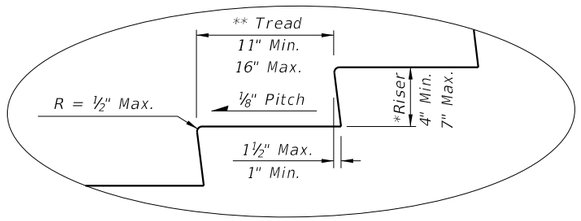
1. *All bar dimensions are out to out.*
2. *Lap splices for Bars A must be a minimum of 1'-10".*

10/29/2019 8:15:05 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/17			FDOT FY 2020-21 STANDARD PLANS	GRAVITY WALL	INDEX 400-011 / SHEET 1 of 1

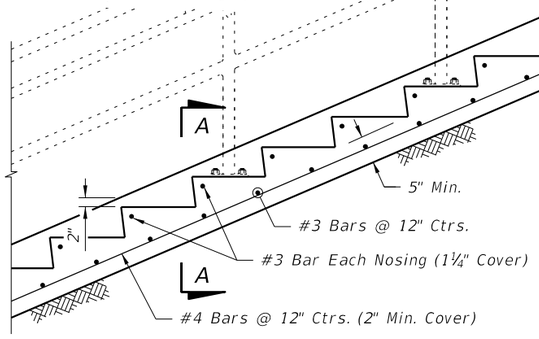


ELEVATION

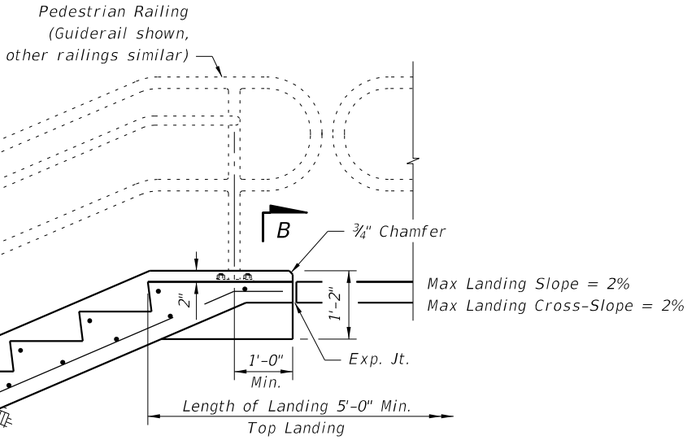


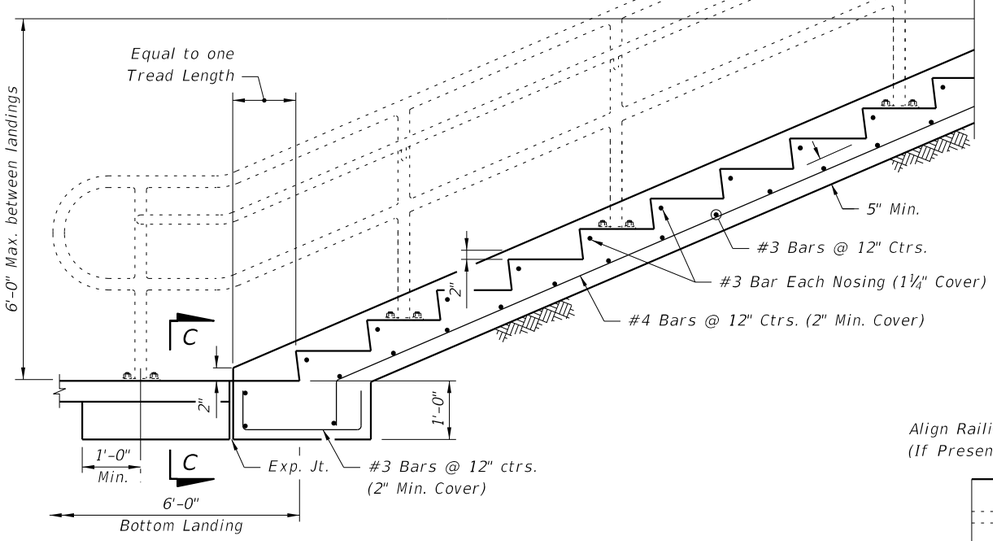
STAIR TREAD AND RISER DETAILS

* The greatest riser height within the flight of steps shall not exceed the smallest by more than 3/8".
** The greatest tread depth within the flight of steps shall not exceed the smallest by more than 3/8".

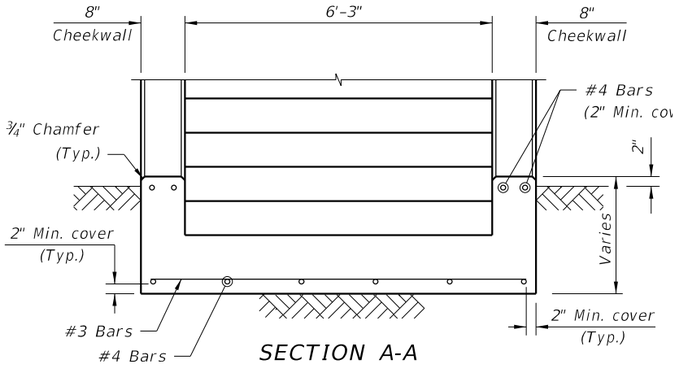


NOTE: Provide a maximum of 12 risers between landings.

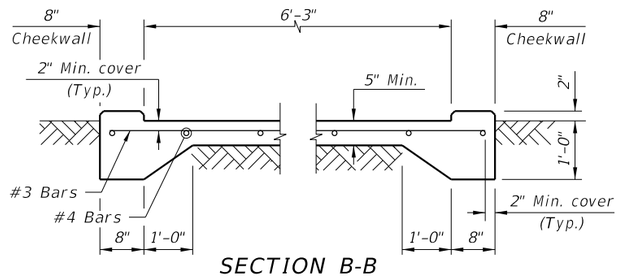




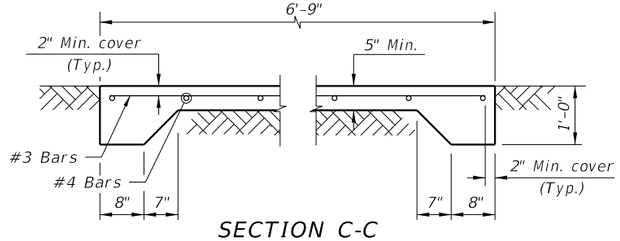
Max Landing Slope = 2%
Max Landing Cross-Slope = 2%



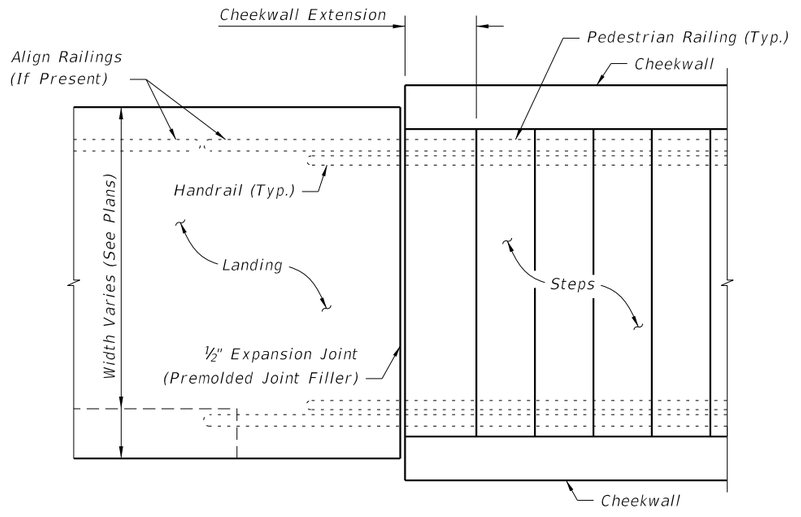
SECTION A-A



SECTION B-B



SECTION C-C

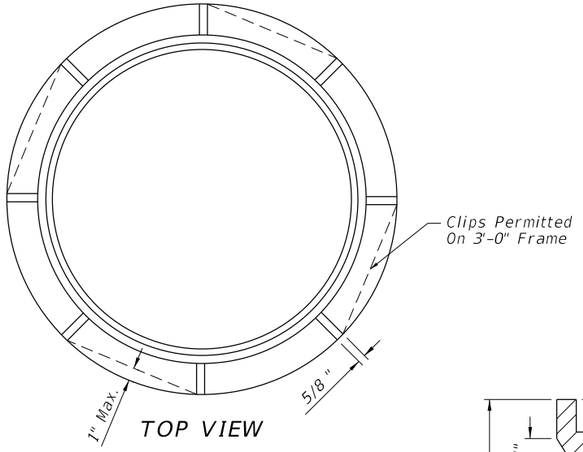


PLAN AT JUNCTION OF STEPS & LANDING
(Bottom Landing shown, Top Landing similar)

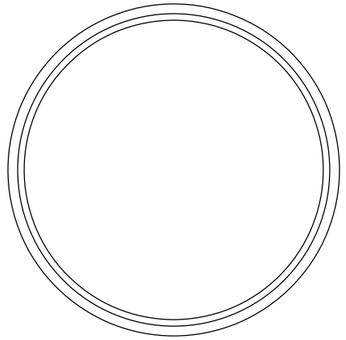
NOTES:
1. Do not use this Index for suspended (structural) steps or stairways.
2. Construct steps in accordance with Specification 522.
3. Concrete: Class NS, Specification 347.
4. Tread Finish: Broom finish parallel to steps unless otherwise shown in Plans.
5. Pedestrian Railing: See Indexes 515-052, 515-062, 515-070, 515-080 or Project Specific Design.
6. Cost of concrete steps, landings and cheekwalls shall be paid for under the contract unit price for Class NS Concrete (Concrete Steps), CY. Cost of reinforcing steel shall be paid for under the contract unit price for Reinforcing Steel (Miscellaneous), LB.

10/29/2019 8:15:06 AM

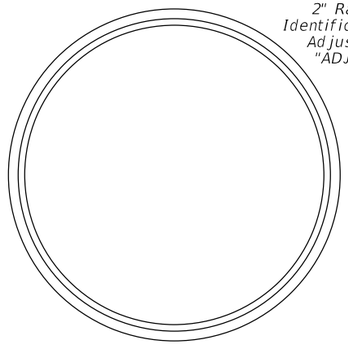
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE STEPS	INDEX	SHEET
11/01/17						400-021	1 of 1



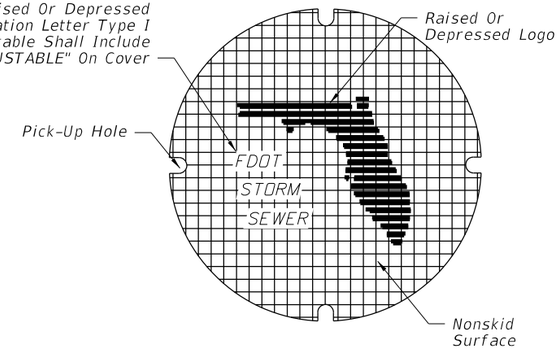
TOP VIEW



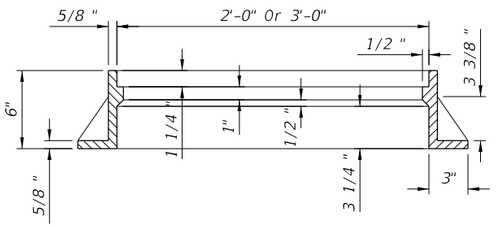
TOP VIEW



TOP VIEW



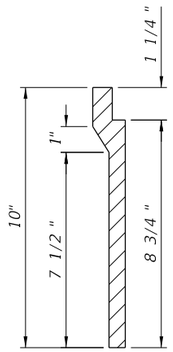
TOP VIEW



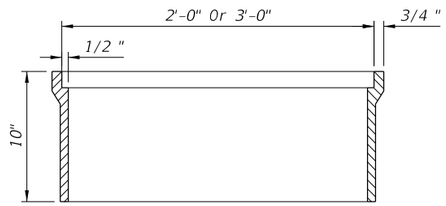
SECTION

For Manholes

TYPE I



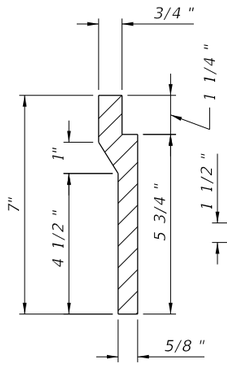
WALL SECTION



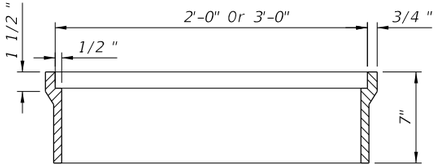
SECTION

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

TYPE II



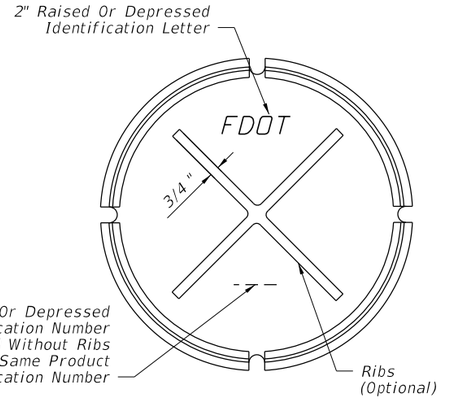
WALL SECTION



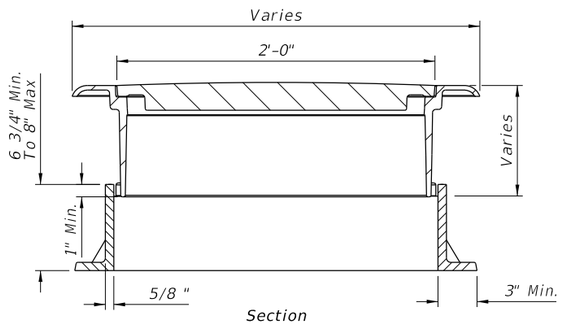
SECTION

For Curb Inlets Types 7 & 8

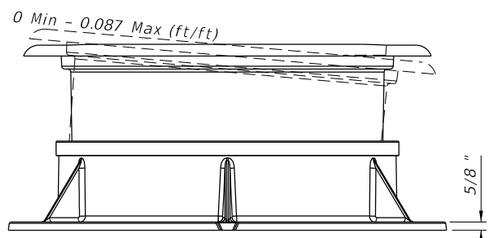
TYPE III



BOTTOM VIEW



Section



Front View

TYPE I ADJUSTABLE

WEIGHT OF CASTINGS (lb)						
Frame Type	2' OPENING		3' OPENING			
	Frame	Cover (Std.)	Frame	2-Piece Cover		
				Inside	Outside	Total
I *	155	190	220	190	220	410
II	145	190	255	190	220	410
III	90	190	180	190	220	410

* Includes Type I Adjustable

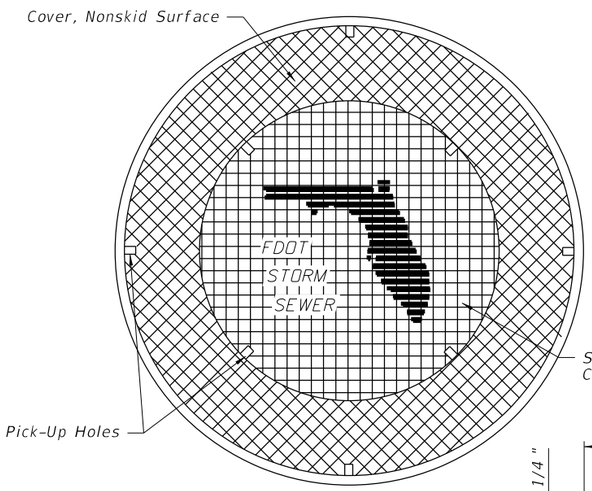
NOTES (FRAMES, AND COVER)

1. The standard cover is to be used for all frames Types I, II, III and the 2-piece cover, and is the replacement cover for all previous frames with 1½" deep seats (traffic type). The 185 lb. cover (nontraffic type), 1984 Roadway and Traffic Design Standards Index 201, is the replacement cover for existing frames with ½" deep seats. Installation of frame with ½" deep seats is not permitted.

2. Use the 2'-0" 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.

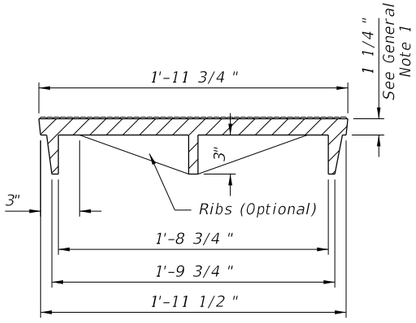
DESIGNER NOTE:

Consider using the 2-piece cover where depths exceed 5' and manual entry may be required for cleaning. Clearly note the requirement for a 2-piece cover, on the Drainage Structure sheets in the plans.



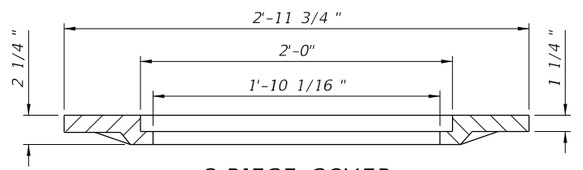
For Use With Types I, II And
III Frames With 3'-0" Opening

2-PIECE COVER



SECTION

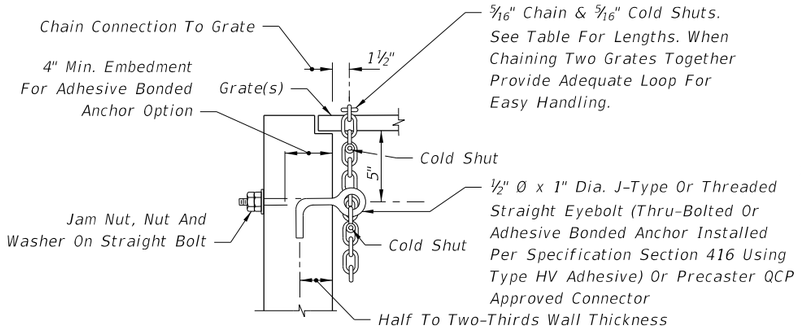
COVER FOR ALL FRAMES



2-PIECE COVER

10/29/2019 8:15:07 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS	INDEX 425-001 / SHEET 1 of 5



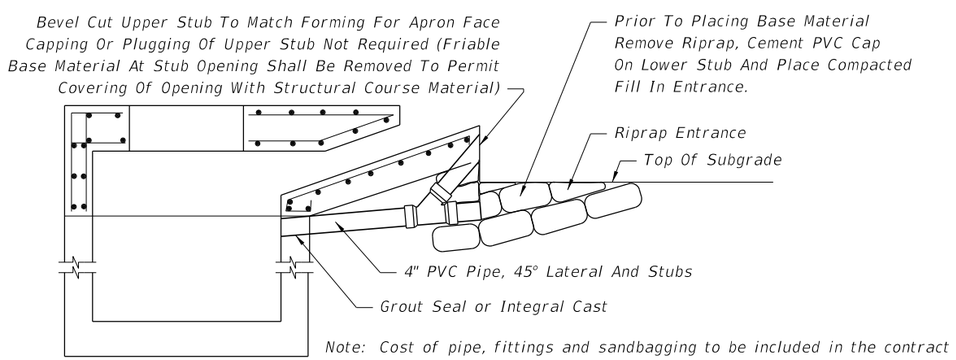
NOTE: When Alternate "G" grate is specified, the chain, bolt, nuts, washer and cold shuts shall be galvanized in accordance with Section 425 of the Standard Specifications.

Cost of eyebolt and chain to be included in the contract unit price for inlets.

EYEBOLT AND CHAIN REQUIREMENTS

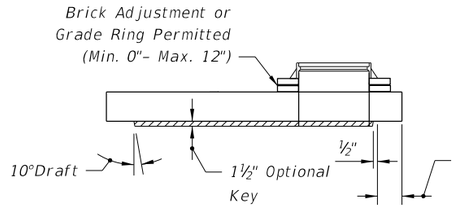
Index Number	Inlet Type	Eye-Bolts	Length Of Chain	Handling & Remarks
425-030	1	1	4'-0"	Slide & Spin
	2	1	4'-0"	Slide & Spin
	3	2	2 @ 4'-0"	Slide & Spin
	4	2	2 @ 4'-0"	Slide & Spin
	5	2	2 @ 4'-0"	Slide & Spin
425-031	N/A	1	3'-8"	Slide Or Slide & Spin
425-032	N/A	1	4'-0"	Slide & Spin
425-040	S	1	4'-0"	Slide & Spin
425-041	V	1	4'-0"	Slide & Spin
425-050	A	1	3'-0"	Slide
425-051	B	1	5'-0"	Slide & Spin
425-052	C	1	2'-6"	Slide & Spin
	D	1	2'-6"	Slide & Spin
	E	2	2 @ 2'-6"	Slide & Spin
	H	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
425-053	F	1	3'-6"	Flip Or Slide & Spin
	G	1	6'-0"	Slide
			2'-0"	Lifting Loop
425-054	J	1	4'-0"	Slide & Spin

EYEBOLT AND CHAIN FOR LOCKING GRATES TO INLETS



Note: Cost of pipe, fittings and sandbagging to be included in the contract unit price for inlets.

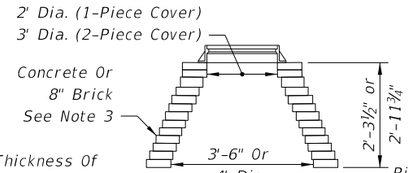
TEMPORARY DRAINS FOR SUBGRADE AND BASE



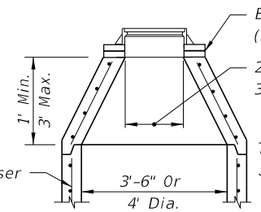
SECTION

Note: See Slab Designs Index 425-010.

TYPE 7

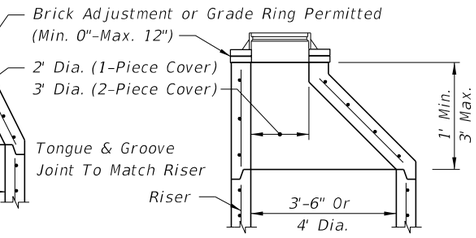


BRICK OR CONCRETE



PRECAST CONCENTRIC CONE

TYPE 8



PRECAST ECCENTRIC CONE

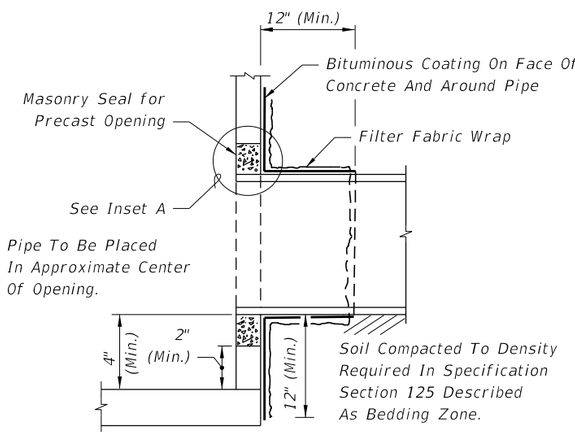
MANHOLE TOPS

NOTES (TOPS)

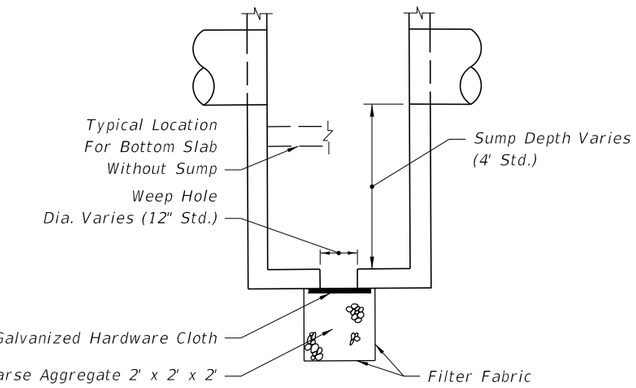
1. Manhole top Type 7 slabs shall be of Class II concrete. Concrete as specified in ASTM C478 may be used for precast units; see General Note 3.
2. Manhole top Type 7 slabs may be of cast-in-place or precast construction. The optional key is for precast tops and in lieu of dowels. Frame and slab openings are to be omitted when top is used over a junction box.
3. Manhole top Type 8 may be of cast-in-place or precast concrete construction or brick construction. For concrete construction, the concrete and steel reinforcement shall be the same as the supporting wall unit. An eccentric cone may be used.
4. Manhole tops shall be secured to structures by optional construction joints as shown on Sheet 3.
5. Frames can be adjusted a maximum 12" height with brick or precast ASTM C478 grade rings.
6. Substitution of manhole top Type 8 for manhole top Type 7 is allowed provided that minimum dimensions shown above are not reduced.
7. Substitution of Manhole top Type 7 for Type 8 is allowed if the minimum thickness (h) above pipe opening cannot be maintained with manhole top Type 8.

DESIGN NOTES

1. Manhole top Type 8 should be specified in the plans when depths shown above can be maintained.

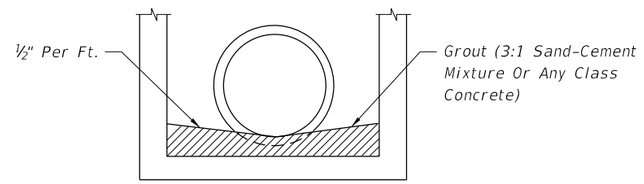


FILTER FABRIC WRAP ON GROUTED PIPE TO STRUCTURE JOINT



NOTE: Sump bottom appropriate for all manhole and inlet types. Sumps are to be constructed in inlet and manholes connected to French Drains unless excluded in the plans. At other locations, sump is to be constructed only where called for in the plans. Weep holes to be constructed in sump bottom only where called for in the plans. Cost of sump bottom and weep hole to be included in the contract unit price for inlet or manhole.

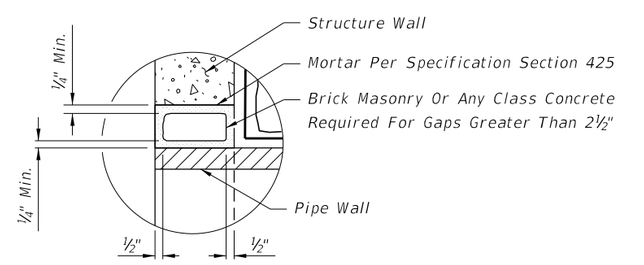
SUMP BOTTOM



FOR ALL STRUCTURES UNLESS EXCLUDED BY SPECIAL DETAIL

ALL PIPE TYPES

DRAINAGE STRUCTURE INVERT



INSET A

10/29/2019 8:15:07 AM

LAST REVISION	REVISION	DESCRIPTION:			
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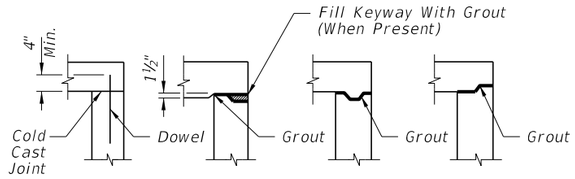
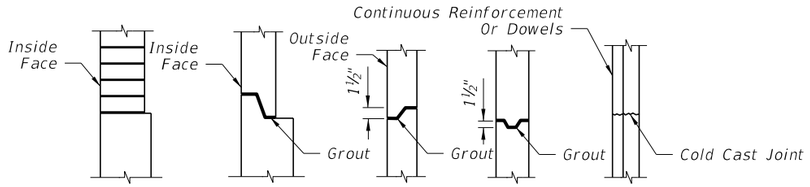
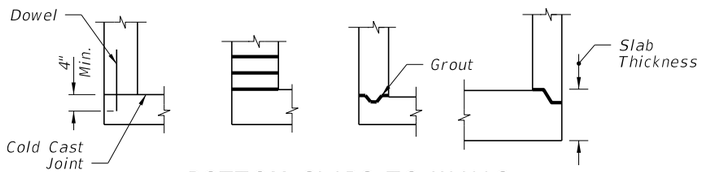


TOP SLABS TO WALLS



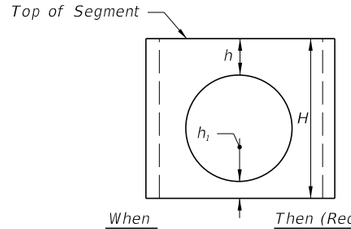
WALL JOINTS



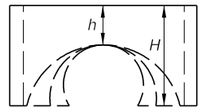
BOTTOM SLABS TO WALLS

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.
2. All grouted joints are to have a maximum thickness of 1".
3. Keyways are to be a minimum of 1½" 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 Section 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 4.
5. Minimum cover on dowel reinforcing bars is 2" to outside face of structure.
6. Joints between wall segments and between wall segments and top or bottom slabs may be sealed either by preformed plastic gasket material using the procedures given in Section 430 of the Specifications or by non-shrink grout, in accordance with Section 934 of the Specifications.
7. Insert products approved by the Engineer may be used in lieu of dowel embedment.

OPTIONAL CONSTRUCTION JOINTS

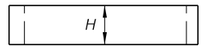


When	Then (Reqd.)
$6" \le h_1 < 0.75H$ (min.)	$h \ge 0.4H$
$h_1 \ge 0.75H$ (min.)	$h \ge H$ (min.)



H (min.) $\le h \ge 0.4H$

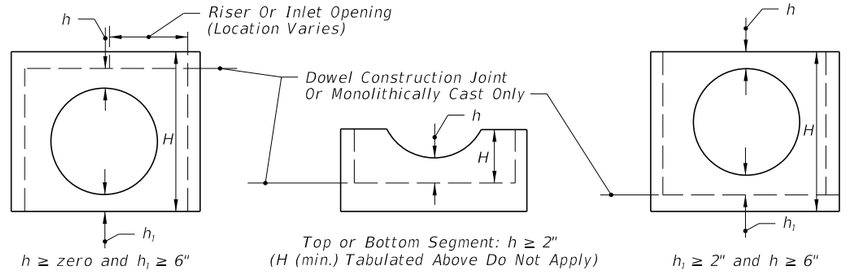
Segments may be inverted. Opening for pipe shall be the pipe OD plus 6" (± 2" tolerance). If h can not be attained, then a top or bottom slab must be attached to the segment as shown below.



$H \ge H$ (min.)

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"

SEPARATE RISER SEGMENTS WITH CONSTRUCTION JOINTS OTHER THAN DOWEL OPTION



$h \ge$ zero and $h_1 \ge 6"$

Top or Bottom Segment: $h \ge 2"$ (H (min.) Tabulated Above Do Not Apply)

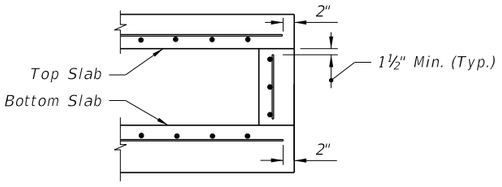
$h_1 \ge 2"$ and $h \ge 6"$

SEGMENTS FOR SLAB TO WALL DOWEL CONSTRUCTION JOINTS OR MONOLITHICALLY CAST SEGMENTS

NOTE: h may be less than 6" when approved by the Engineer, but not for inlet segments at finish grade elevation.

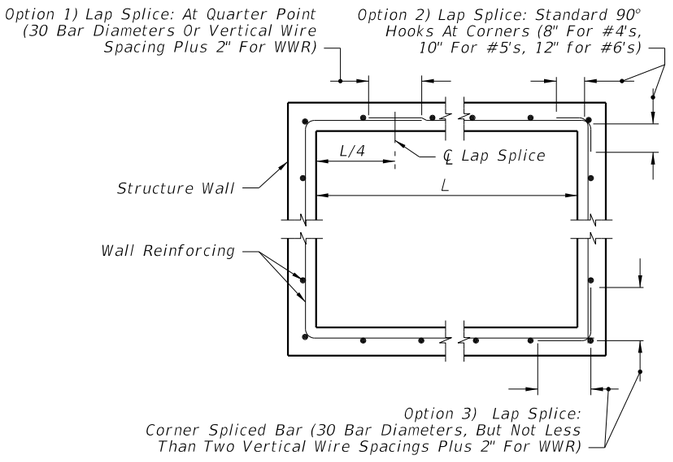
COMPARATIVE SIDE VIEWS

MINIMUM DIMENSIONS FOR BOX AND RISER SEGMENTS



(NOTE: NOT APPLICABLE AROUND MANHOLE AND RISER OPENINGS)

REBAR STRAIGHT END EMBEDMENT FOR TOP AND BOTTOM SLABS



WALL REINFORCING SPLICE DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS	INDEX	SHEET
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EXAMPLE TABLE OF EQUIVALENT STEEL AREA

SCHEDULE	GRADE 60 REINFORCING BAR		EQUIVALENT GRADE 40 REINFORCING BAR		EQUIVALENT 65 KSI SMOOTH WELDED WIRE REINFORCEMENT		EQUIVALENT 70 KSI DEFORMED WELDED WIRE REINFORCEMENT	
	Bar Size & Spacing	Steel Area (in^2/ft)	Bar Size & Spacing	Min. Steel Area (in^2/ft)	Style Designation	Min. Steel Area (in^2/ft)	Style Designation	Min. Steel Area (in^2/ft)
A	#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
B	#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
C	#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
E	#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

GENERAL NOTES

1. For square or rectangular precast drainage structures, using either deformed or smooth WWR meeting the requirements of Specification Section 931, WWR shall be continuous around the box and lapped in accordance with Option 1 or 3 as shown in the Wall Reinforcing Splice Details.

2. Horizontal steel in the walls of rectangular structures shall be lap spliced in accordance with Option 1, 2 or 3 as shown in the Wall Reinforcing Splice Details.

3. Welding of splices and laps is permitted. The requirements and restrictions placed on welding in AASHTO M259 shall apply.

4. 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 or standard drawings.

5. Concrete as specified in ASTM C478, (4000 psi) may be used in lieu of Class II concrete in precast items manufactured in plants which meet the requirements in accordance with Specification Section 449.

6. Precast opening for pipe shall be the pipe OD plus 6" (± 2" tolerance). Mortar used to seal the pipe into the opening will be of such a mix that shrinkage will not cause leakage into or out of the structure. Dry-pack mortar may be used in lieu of brick and mortar construction to seal openings less than 2½" wide.

7. For pay item purposes, the height used to determine if a drainage structure is greater than 10 feet shall be computed using:
   A. the elevation of the top of the manhole lid,
   B. the grate elevation or the theoretical gutter grade elevation of an inlet, or
   C. the outside top elevation of a junction box less the flow line elevation of the lowest pipe or to top of sump floor.

NOTES FOR PRECAST OPTIONS AND EQUIVALENT REINFORCEMENT SUBSTITUTION

1. Details for optional precast inlet construction up to depths of 15' are shown on the inlet indexes.

2. When precast units are used in conjunction with Alt. "B" Structure Bottoms, Index 425-010, the interior dimensions of an Alt. "B" Bottom can be adjusted to reflect these inlet interior dimensions.

3. Concrete which meets the requirements of ASTM C478 or Class IV must be used for precast structures constructed with 6" wall or slab thickness.

4. Reinforcement can be either 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. For bars and spacings not given, the steel area required can be determined by the following equations:

   $$\text{Grade 40 Steel Area} = A_s40 = \frac{60}{40} \times A_s60$$

   $$\text{Smooth Welded Wire Reinforcement Steel Area} = A_s65 = \frac{60}{65} \times A_s60$$

   $$\text{Deformed Welded Wire Reinforcement Steel Area} = A_s70 = \frac{60}{70} \times A_s60$$

   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, then the maximum bar spacing may be increased by the squared ratio of increased steel area, but not to exceed 12":

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

   In no case will reinforcement with wires smaller than W3.1 or D4.0, or spacings greater than 8" be permitted. Bar reinforcement shall show the minimum yield designation grade mark or either the number 60 or one (1) grade mark line to be acceptable at the higher value. Maximum bar spacing shall not be 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 are permitted 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. Shop drawings corresponding to an approved fiber-reinforced concrete mix design must be submitted for approval to the State Drainage Engineer.

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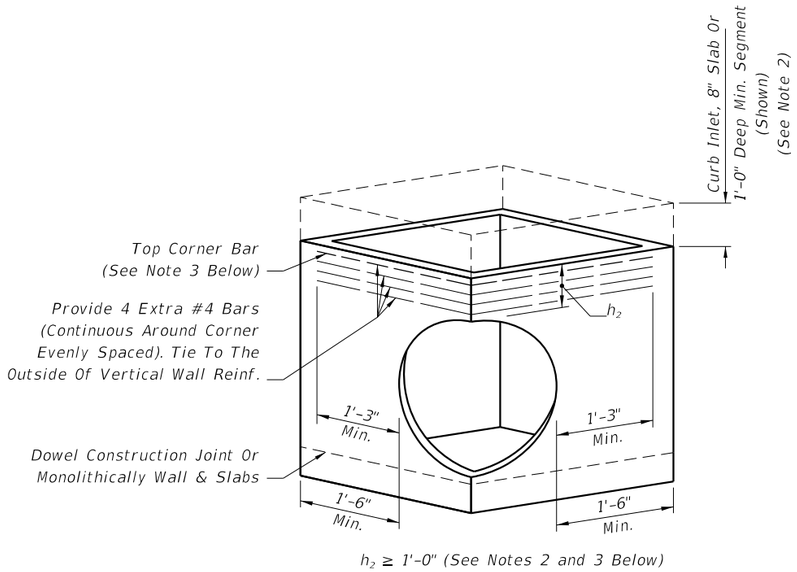


DESIGNER NOTE: Use only when round structures are not practical, engineer of record approval required.

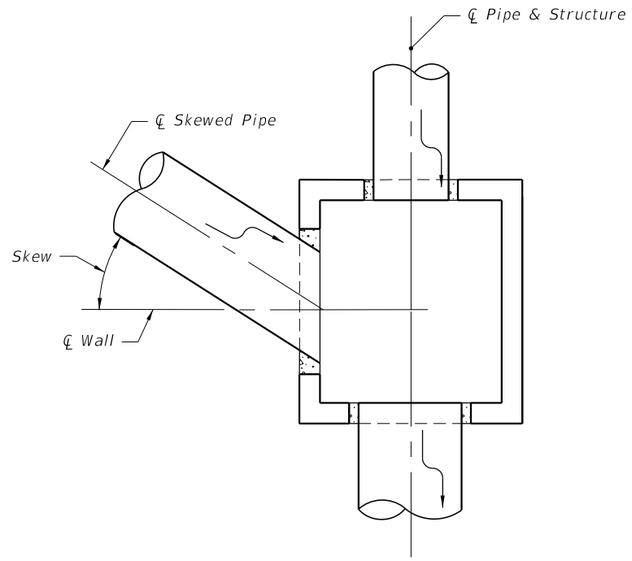
PICTORIAL VIEW

NOTE: 1. Submit Shop Drawings of corner openings for approval by the Engineer of Record.

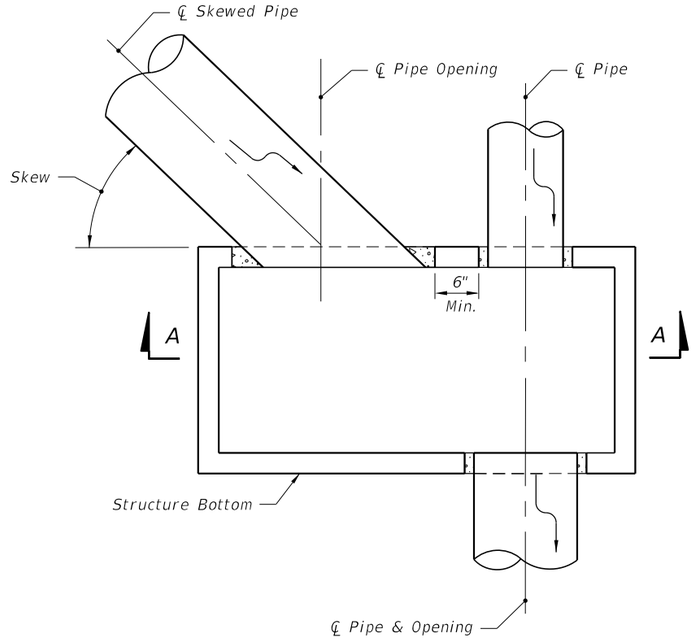
2. h_2 may be less than 1'-0" when a minimum 1'-0" deep segment, 8" slab or curb inlet is provided above the corner opening.

3. For inlet segments at finish grade elevation substitute a #8 Bar for the top corner bar when 1'-0" $\leq h_2 <$ 2'-0".

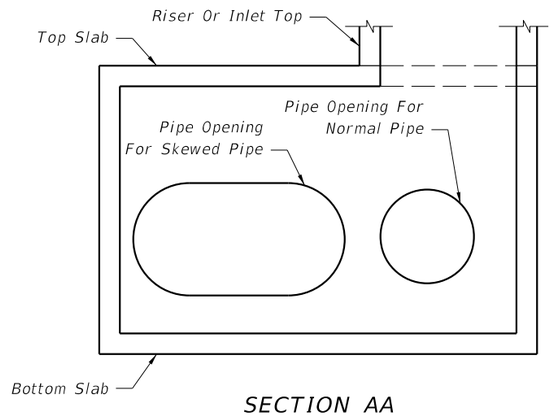
RECTANGULAR SEGMENT WITH
PIPE OPENING AT CORNER



PLAN VIEW FOR SKEWS ≤ 45°
(Not Centered)



PLAN VIEW FOR SKEWS > 45°
(Not Centered)



SECTION AA

(Pipes Not Shown For Clarity)

DETAILS FOR SKEWED PIPES IN
RECTANGULAR STRUCTURES

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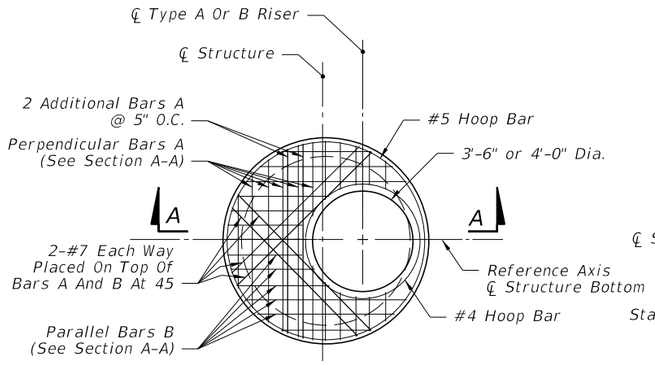
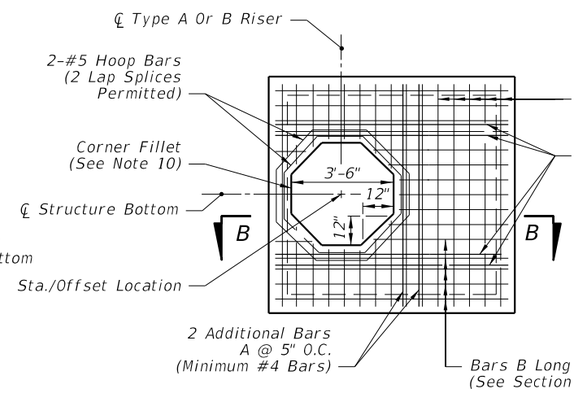
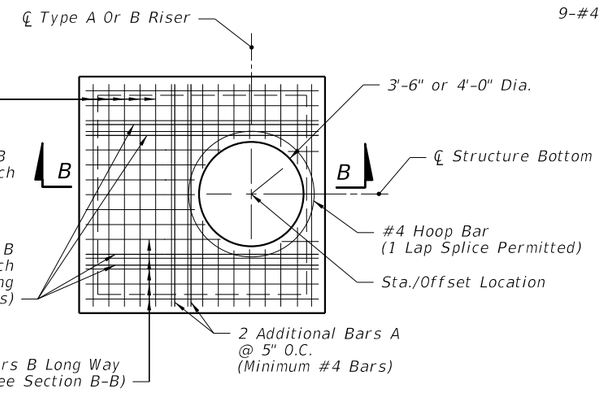


NOTE:
Not Applicable For Type A, B, C, D & E Ditch Bottom Inlets Or Type S & V Gutter Inlets.
See Indexes 425-040, 425-050, 425-051, and 425-052.

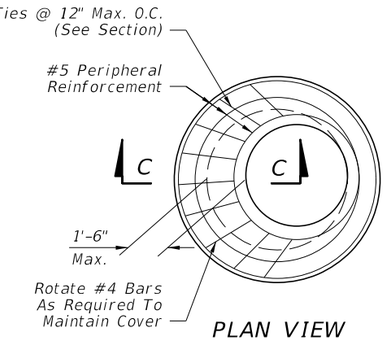
TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE A)



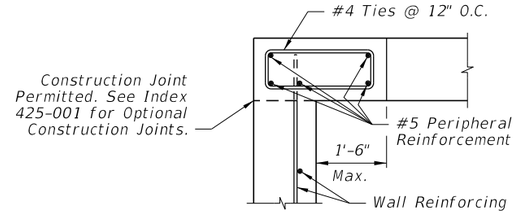
SQUARE OPENING WITH CORNER FILLETS TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE B)



ROUND RISER OPENING

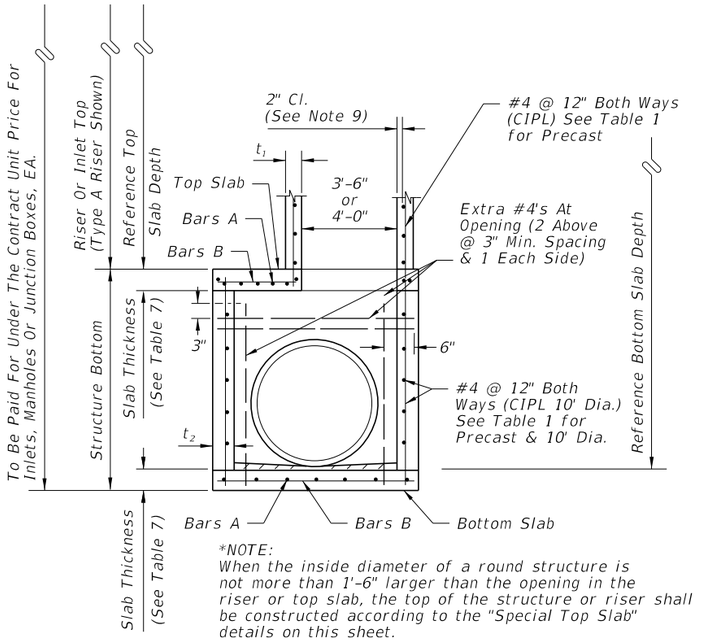


PLAN VIEW



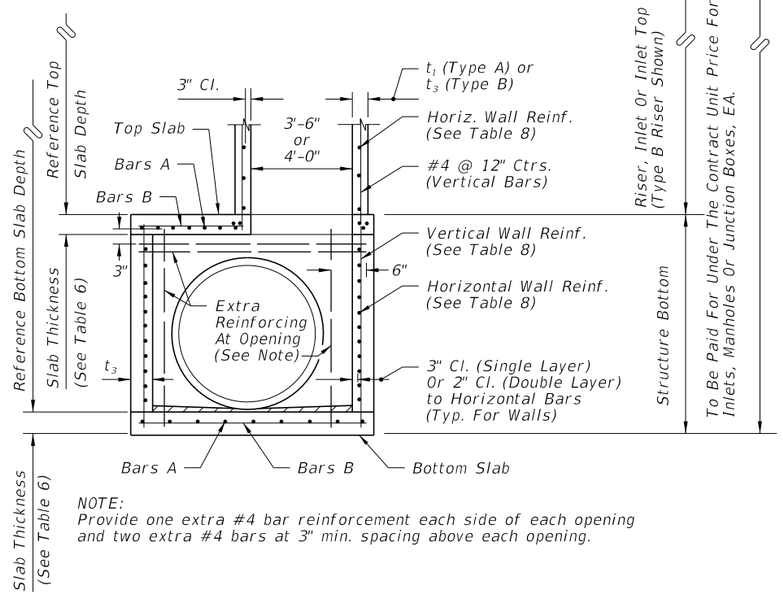
SECTION C-C

SPECIAL TOP SLAB*



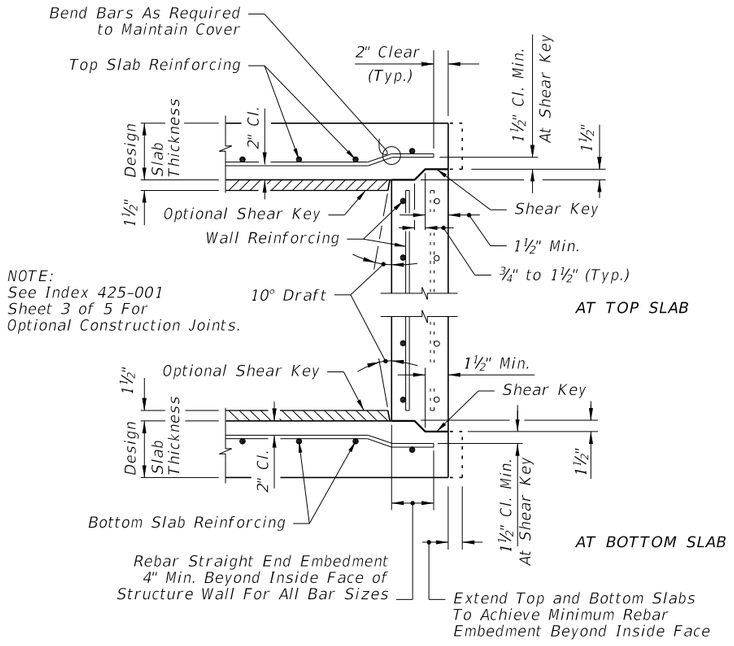
*NOTE:
When the inside diameter of a round structure is not more than 1'-6" larger than the opening in the riser or top slab, the top of the structure or riser shall be constructed according to the "Special Top Slab" details on this sheet.

SECTION A-A (ALTERNATE A)



NOTE:
Provide one extra #4 bar reinforcement each side of each opening and two extra #4 bars at 3" min. spacing above each opening.

SECTION B-B (ALTERNATE B)



TYPICAL SLAB TO WALL DETAILS FOR PRECAST STRUCTURES

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ROUND STRUCTURE BOTTOMS (ALTERNATE A) & ROUND RISERS– TABLE 1

Wall Thickness (t_1 & t_2) and Vertical & Horizontal Areas of Reinforcement (A_s)

Type	Structure/Riser Diameter (ft)	Cast–In–Place Items Class II Concrete			Precast Items				
					Class II Concrete			ASTM C478	
		t_1 Riser (in.)	t_2 Bottom (in.)	A_s (in.²/ft.)	t_1 Riser (in.)	t_2 Bottom (in.)	A_s (in.²/ft.)	t_1 or t_2 (in.)	A_2 *** (in.²/ft.)
P	3'–6"	6	8	0.20	6	8	0.20	4**	0.105
P	4'–0"	6	8	0.20	6	8	0.20	5**	0.120
J	5'–0"	–	8	0.20	–	8	0.20	6**	0.150
J	6'–0"	–	8	0.20	–	8	0.20	6	0.180
J	7'–0"	–	8	0.20	–	8	0.20	7	0.210
J	8'–0"	–	8	0.20	–	8	0.20	8	0.240
J	10'–0"	–	10	0.40##	–	10	0.40##	10	0.300
J	12'–0"	–	10	0.40##	–	12	0.40##	12	0.360

TABLE 1 NOTES:

##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:

A_2 = 0.40 sq. in. for riser section height equal or less than 2'–0" (2 hoop min.)

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

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

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

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

SQUARE & RECTANGULAR STRUCTURES (ALTERNATE B) – TABLE 2

Type	Wall Length (ft)	Max. Depth (ft)	Wall Thickness (t_3)	
			CIP (in.)	Precast (in.)
P	≤ 3'–6"	40	6 Riser 8 Bottom	6
J	4'–0"	40	8	6
J	5'–0"	22	–	6
J	6'–0"	15	–	6
J	5'–0" to 9'–0"	40	8	8
J	10'–0"	26	8	8
J	10'–0" to 12'–0"	40	10	9
J	16'–0"	35	–	9
J	16'–0"	40	10	10
J	20'–0"	25	–	9
J	20'–0"	30	10	10

TABLE 2 NOTES:

See Table 8 for Reinforcing Schedule.

GENERAL NOTES

1. Standard structure bottoms 4'–0" diameter and smaller (Alt. A) and 3'–6" square (Alt. B) are designated Type P. Larger standard structure bottoms are designated Type J. Risers are permitted for all structures. Round risers are designated Type A, square risers are designated Type B.

2. Walls of circular structures (Alt. A) constructed in place may be of brick or reinforced concrete. Precast and rectangular structures (Alt. B) shall be constructed of reinforced concrete only.

3. 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 modified wall thicknesses in Table 1).

4. Top and bottom slab thickness and reinforcement are for precast and cast–in–place construction. All concrete shall be of Class II concrete, except use Class IV concrete when shown in the Plans, for special applications of structures located in extremely aggressive environments. Concrete as specified in ASTM C478 (4000 psi) may be used in lieu of Class II concrete for precast items manufactured in accordance with Specifications Section 449.

5. All reinforcement shown is Grade 60 steel, deformed bar. Equivalent area Grade 40 steel or equivalent area smooth or deformed welded wire reinforcement in accordance with Specification Section 931 may be substituted according to Index 425–001, unless otherwise noted.

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 unless otherwise shown in the plans or other standard drawings. Alt. B structure bottoms may be used in conjunction with curb inlet Types 7 & 8, or any ditch bottom inlet unless otherwise shown in the plans or other standard drawings.

7. Rectangular structures may be rotated as directed by the Engineer in order to facilitate connections between the structure walls and storm sewer pipes.

8. Except when ACI hooks are specifically required, reinforcement in top and bottom slab shall be straight embedment.

9. All reinforcement must have 2" minimum cover except for 3'–6" diameter precast circular units manufactured under ASTM C478, keyed construction otherwise shown. Additional bars used to restrain hole formers for precast structures with grouted pipe connections,may be left flush with the hole surface. Cut or bend reinforcement at pipe openings to maintain cover. Exposed ends of reinforcing at precast pipe openings and grouted joints must be removed to 1" below the concrete surface and sealed with a Type F epoxy in accordance with Specification Section 926. Horizontal steel in rectangular structures shall be lapped a minimum of 30 bar diameters or by standard hooks at corners.

10. The corner fillets shown are necessary for rectangular structures used with circular risers and inlet throats and when used on skew with rectangular risers, inlets and inlet throats. Fillets will be required in the top slab of the Alt. A structure bottoms when used with the Alt. B risers. Each fillet shall be reinforced with two #5 bars.

11. Inlet walls, throats, risers or manhole tops shall be secured to structures as shown on Index 425–001 Optional Construction Joints.

12. Structures with depths over 14' below the mean high water table are to be checked for flotation by the designer of the drainage project.

13. 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. Such larger units shall be furnished 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.

14. For manhole and junction box tops, for frames and covers, and, for supplementary details and notes see Index 425–001.

15. Type J structure bottoms must have a minimum 6'–0" wall height when possible, for maintenance access.

TABLE 3-MINIMUM STRUCTURE SIZES FOR SINGLE PIPE CONNECTION PER SIDE

PIPE SIZE	RECTANGULAR Side Dimension (L)		ROUND Diameter (D)	
	Single Pipe Per Side	Note Number	Single Pipe or θ=180°	2 to 4 Pipes θ=90°
18"	3'-6"		3'-6"	4'-0"
24"	3'-6"		3'-6"	5'-0"
30"	3'-6"/4'-0"	2	4'-0"	6'-0"
36"	4'-0"/5'-0"	3	5'-0"	7'-0"
42"	5'-0"		6'-0"	7'-0"
48"	6'-0"		6'-0"	8'-0"
54"	6'-0"		7'-0"	10'-0"
60"	7'-0"		7'-0"	10'-0"
66"	7'-0"/8'-0"	4	8'-0"	12'-0"
72"	8'-0"		8'-0"	12'-0"
78"	9'-0"		10'-0"	12'-0"
84"	9'-0"		12'-0"	N/A

TABLE 3 NOTES:

1. For Round Structures sizes with variable angles between pipes and variable pipe sizes, refer to the FDOT Storm Drain Handbook.

2. For 3'-6" Precast Square Structure Bottoms, 30" Pipes with similar invert elevations are not permitted in adjacent walls. Use 4'-0" Side Dimensions when 30" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".

3. For 4'-0" Precast Square Structure Bottoms, 36" Pipes with similar invert elevations are not permitted in adjacent walls. Use 5'-0" Side Dimensions when 36" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".

4. For 7'-0" Precast Square Structure Bottoms, 66" Pipes with similar invert elevations are not permitted in adjacent walls. Use 8'-0" Side Dimensions when 66" pipe openings are required on adjacent walls and the difference in flow lines is less than 4'-0".

TABLE 4-MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR RECTANGULAR STRUCTURE BOTTOMS

PIPE SIZE	PIPE SPACING (S)	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES		
		2	3	4
18"	2'-10"	6'-0"	8'-6"	11'-0"
24"	3'-5"	6'-6"	10'-0"	13'-6"
30"	4'-3"	8'-0"	12'-6"	16'-6"
36"	5'-1'	9'-6"	14'-6"	19'-6"
42"	6'-0"	11'-0"	17'-0"	-
48"	6'-9"	12'-6"	19'-0"	-
54"	7'-8"	14'-0"	-	-
60"	8'-6"	15'-0"	-	-
66"	9'-0"	16'-6"	-	-
72"	10'-0"	18'-0"	-	-
78"	10'-9"	19'-0"	-	-
84"	11'-8"	20'-6"	-	-

TABLE 4 NOTES:

1. Minimum wall lengths based on precast structures, using concrete pipe with maximum skew angles per Table 5.

2. Wall lengths exceeding 20'-0" require special designs.

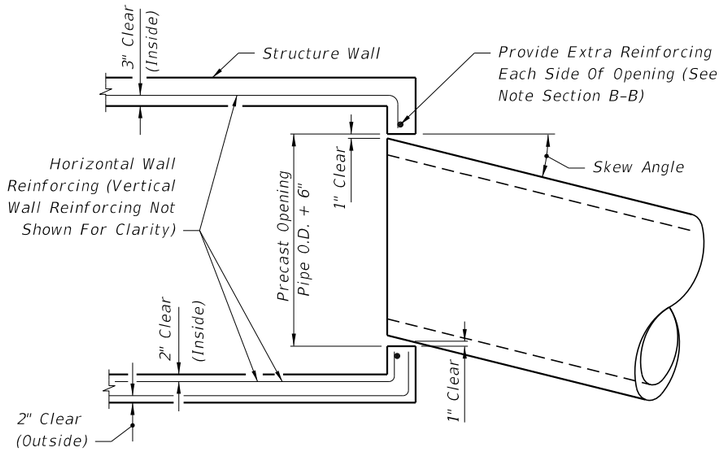
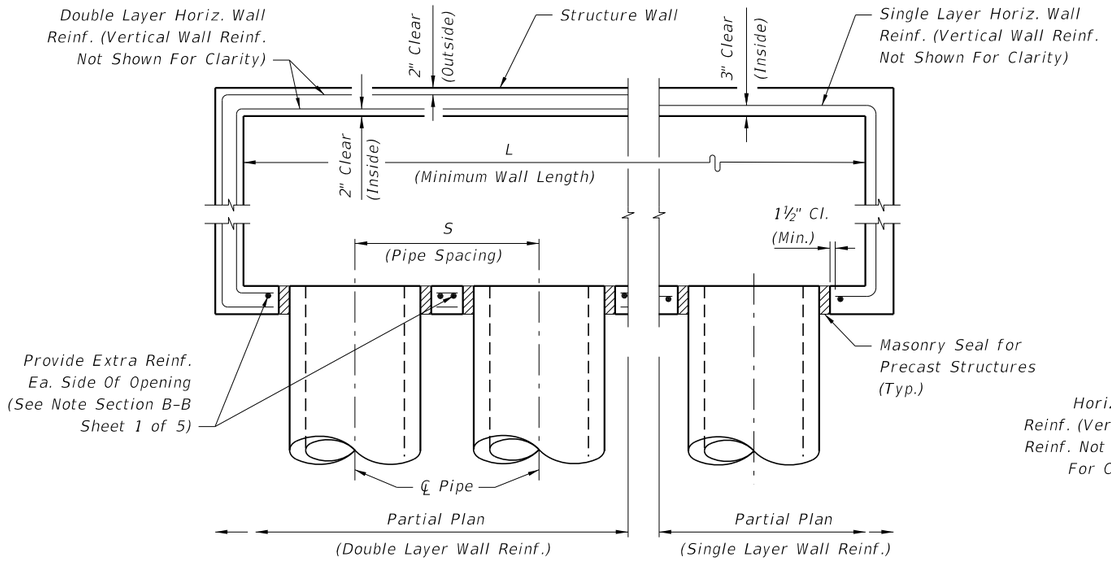


TABLE 5 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS

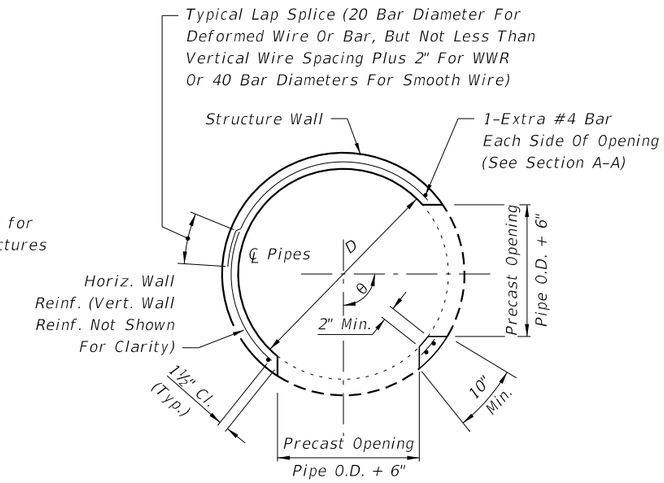
	WALL THICKNESS	PIPE SIZE 18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM SKEW ANGLE	8"	19°	17°	16°	16°	15°	14°	14°	13°	13°	13°	12°	12°
	6"	21°	20°	18°	17°	17°	16°	15°	15°	14°	14°	13°	13°

TABLE 5 NOTES:
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
PLAN VIEW



MULTIPLE PARALLEL PIPE CONNECTIONS DETAIL
PLAN VIEW



PRECAST ROUND STRUCTURES WITH
MULTIPLE PIPE CONNECTIONS

STRUCTURE SIZES FOR PIPE CONNECTIONS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	STRUCTURE BOTTOMS TYPE J AND P	425-010	3 of 5

10/29/2019 8:15:13 AM

SLAB DESIGNS - SQUARE AND RECTANGULAR STRUCTURES (TABLE 6)
(ALL SLABS 8" THICK EXCEPT AS NOTED - REINFORCING PARALLEL TO SHORT WAY AND LONG WAY)

SHORT-WAY		LONG-WAY	
SLAB DEPTH	SCHEDULE (Bars A)	SLAB DEPTH	SCHEDULE (Bars B)
SIZE: 3'-6" x UNLIMITED			
≥0.5' < 8'	B10	≥0.5' < 24'	B10
8' < 13'	B5.5	24'–40'	B5.5
13' < 31'	C6.5		
31'–40'	D7		
SIZE: 4' x UNLIMITED			
≥0.5' < 7'	B5.5	≥0.5' < 15'	B10
7' < 19'	C6.5	15' < 29'	B5.5
19' < 31'	D7	29'–40'	C6.5
31'–40'	E5		
SIZE: 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		
SIZE: 5' x 8'			
≥0.5' < 7'	C6.5	≥0.5' < 8'	B10
7' < 13'	D7	8' < 17'	B5.5
13' < 24'	E5	17' < 25'	C6.5
24'–40'	F5	25'–40'	C3.5
SIZE: 5' x 9'			
≥0.5' < 8'	C6.5	≥0.5' < 14'	B10
8' < 14'	D7	14' < 24'	B5.5
14' < 25'	E5	24' < 34'	C6.5
25'–40'	F5	34'–40'	C3.5
SIZE: 5' x 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

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

SHORT-WAY		LONG-WAY	
SLAB DEPTH	SCHEDULE (Bars A)	SLAB DEPTH	SCHEDULE (Bars B)
SIZE: 8' x 8'			
≥0.5' < 10'	D7	≥0.5' < 9'	D4.5
10' < 19'	E5	9' < 13'	E5
19'–30'	F5	13' < 18'	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
SIZE: 9'x9'x10" SLAB THICKNESS			
22' < 36'	F5	22' < 31'	F3.5
36'–40'	G5	31'–40'	G3.5
SIZE: 10'x10'x10" SLAB THICKNESS			
≥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
SIZE: 12'x12'x12" SLAB THICKNESS			
≥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 DESIGNS - ROUND STRUCTURES (TABLE 7)

SLAB DEPTH	SLAB THICKNESS	REINF. (2-WAY) SCHEDULE
SIZE: 3'-6" DIAMETER		
2'–15'	6" Precast	C6.5
0.5' < 30'	8"	A6
30'–40'	8"	B5.5
SIZE: 4'-0" DIAMETER		
≥0.5' < 19'	8"	A6
19' < 30'	8"	B5.5
30'–40'	8"	C6.5
SIZE: 5'-0" DIAMETER		
≥0.5' < 15'	8"	B5.5
15' < 26'	8"	C6.5
26' < 35'	8"	D7
35'–40'	8"	D4.5
SIZE: 6'-0" DIAMETER		
≥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
SIZE: 7'-0" DIAMETER		
≥0.5' < 8'	8"	C3.5
8' < 16'	8"	D4.5
16' < 23'	8"	E5
23' < 27'	8"	E3
27'–40'	8"	F3.5
SIZE: 8'-0" DIAMETER		
≥0.5' < 10'	8"	D4.5
10' < 16'	8"	E5
16' < 19'	8"	E3
19' < 29'	8"	F3.5
29'–40'	10"	F5
SIZE: 10'-0" DIAMETER		
≥0.5' < 12'	10"	D4.5
12' < 20'	10"	E5
20' < 28'	10"	F5
28'–40'	10"	G3.5
SIZE: 12'-0" DIAMETER		
≥0.5' < 8'	10"	D4.5
8' < 13'	10"	E5
13' < 18'	10"	F5
18' < 26'	10"	G3.5
26'–40'	12"	G3.5

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. Wall depth is measured to the top of the bottom slab for boxes and to the top of the intermediate slab for risers.
6. 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'.
7. Wall lengths exceeding 6'–0" require two layers of reinforcing (See Table 8) with 2" of cover from the horizontal bars to the inside and outside faces for each layer.
8. Wall lengths exceeding the dimensions or depths shown in Table 8, or 12'–0" diameter require a special design.
9. Wall thickness and reinforcing for rectangular structures is based on the longer wall length.
10. 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.

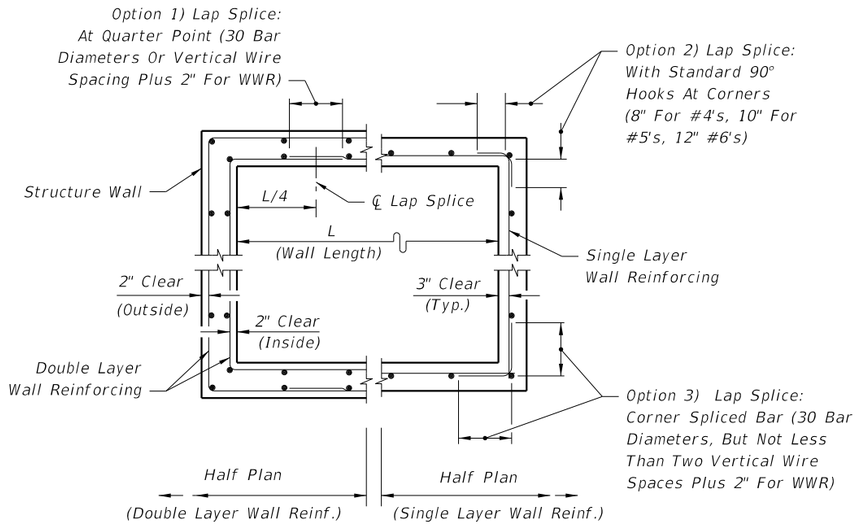
WALL DESIGNS - RECTANGULAR STRUCTURES (TABLE 8)

VERTICAL REINFORCING			HORIZONTAL REINFORCING			WALL THICKNESS
WALL DEPTH	SCHEDULE		WALL DEPTH	SCHEDULE		
SIZE: 3'-6' & RISERS						
≥1.17' - 40'	A12		≥1.17' < 10'	B10		6"/8"
			10' < 18'	B5.5		6"/8"
			18' < 29'	C6.5		6"/8"
			29' - 40'	C3.5		6"/8"
SIZE: 4'-0"						
≥1.17' - 40'	A12		≥1.17' < 6'	B10		6"/8"
			6' < 10'	B5.5		6"/8"
			10' < 20'	C6.5		6"/8"
			20' < 28'	C3.5		6"/8"
			28' - 40'	D4.5		6"/8"
SIZE: 5'-0"						
≥1.17' - 40'	A12		≥1.17' < 5'	B5.5		6"/8"
			5' < 9'	C6.5		6"/8"
			9' < 15'	C3.5		6"/8"
			15' < 22'	D4.5		6"/8"
			22' - 40'	E3		8"
SIZE: 6'-0"						
≥1.17' < 26'	A12		≥1.17' < 9'	C3.5		6"/8"
			9' < 15'	D4.5		6"/8"
			15' < 26'	E3		8"
	Inside	Outside		Inside	Outside	
26' - 40'	A12	A12	26' - 40'	D7	D7	8"
SIZE: 7'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 25'	A12	A12	≥1.17' < 7'	B10	B10	8"
26' - 40'	B10	B10	7' < 10'	B5.5	B5.5	8"
			10' < 20'	C6.5	C6.5	8"
			20' < 30'	D7	D7	8"
			30' - 40'	E5	E5	8"
SIZE: 8'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 20'	A12	A12	≥1.17' < 6'	B5.5	B5.5	8"
20' - 40'	C6.5	C6.5	6' < 13'	C6.5	C6.5	8"
			13' < 22'	D7	D7	8"
			22' < 31'	E5	E5	8"
			31' - 40'	F5	F5	8"
SIZE: 9'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 12'	A12	A12	≥1.17' < 8'	C6.5	C6.5	8"
12' < 28'	C6.5	C6.5	8' < 15'	D7	D7	8"
28' - 40'	D7	D7	15' < 23'	E5	E5	8"
			23' - 40'	F5	F5	8"
SIZE: 10'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 10'	B10	B10	≥1.17' < 10'	D7	D7	8"
10' < 21'	C6.5	C6.5	10' < 17'	E5	E5	8"
21' < 26'	D7	D7	17' < 26'	F5	F5	8"
26' - 40'	C6.5	C6.5	26' - 40'	F5	F5	10"

VERTICAL REINFORCING			HORIZONTAL REINFORCING			WALL THICKNESS
WALL DEPTH	SCHEDULE		WALL DEPTH	SCHEDULE		
SIZE: 10'-0" (Precast Only)						
	Inside	Outside		Inside	Outside	
26' - 40'	D7	D7	26' - 40'	F5	F5	9"
SIZE: 12'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 14'	B10	B10	≥1.17' < 10'	C6.5	C6.5	10"
14' < 25'	C6.5	C6.5	10' < 17'	D7	D7	10"
25' - 40'	D7	D7	17' < 24'	E5	E5	10"
			24' - 40'	F5	F5	10"
SIZE: 12'-0" (Precast Only)						
	Inside	Outside		Inside	Outside	
≥1.17' < 12'	B10	B10	≥1.17' < 10'	D7	D7	9"
12' < 24'	C6.5	C6.5	10' < 17'	D4.5	D4.5	9"
24' - 40'	D7	D7	17' < 23'	E5	E5	9"
			23' < 32'	F5	F5	9"
			32' - 40'	G5	G5	9"
SIZE: 16'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 11'	C6.5	C6.5	≥1.17' < 13'	D7	D7	10"
11' < 20'	D7	D7	13' < 20'	E5	E5	10"
20' < 28'	E5	E5	20' < 28'	F5	F5	10"
28' - 40'	F5	F5	28' - 40'	G5	G5	10"
SIZE: 16'-0" (Precast Only)						
	Inside	Outside		Inside	Outside	
≥1.17' < 10'	C6.5	C6.5	≥1.17' < 9'	D7	D7	9"
10' < 18'	D7	D7	9' < 13'	D4.5	D4.5	9"
18' < 25'	E5	E5	13' < 19'	E5	E5	9"
25' - 35'	F5	F5	19' < 27'	F5	F5	9"
			27' - 35'	G5	G5	9"
SIZE: 20'-0"						
	Inside	Outside		Inside	Outside	
≥1.17' < 10'	C6.5	C6.5	≥1.17' < 8'	D7	D7	10"
10' < 17'	D7	D7	8' < 12'	E5	E5	10"
17' - 30'	E5	E5	12' < 20'	F5	F5	10"
			20' - 30'	G5	G5	10"
SIZE: 20'-0" (Precast Only)						
	Inside	Outside		Inside	Outside	
≥1.17' < 8'	C6.5	C6.5	≥1.17' < 8'	D4.5	D4.5	9"
8' < 13'	D7	D7	8' < 12'	E5	E5	9"
13' - 25'	E5	E5	12' < 19'	F5	F5	9"
			19' - 25'	G5	G5	9"

REINFORCING SCHEDULE				
SCHEDULE	GRADE 60 BARS OR 65 KSI & 70 KSI WELDED WIRE REINFORCING			
	GRADE 60 AREA ($in.^2/ft.$)	MAXIMUM SPACING		
		GR 60 BARS (in.)	WWR EQUIV. AREA*	
			65 KSI (in.)	70 KSI (in.)
A12	0.20	12	8	8
A6	0.20	6	5	4½
B10	0.24	10	8	7½
B5.5	0.24	5½	5	4
C6.5	0.37	6½	6	5
C3.5	0.37	3½	3	2½
D7	0.53	7	6	5
D4.5	0.53	4½	4	3½
E5	0.73	5	4	4
E3	0.73	3	3	3
F5	1.06	5	4	4
F3.5	1.06	3½	3	3
G5	1.45	5	4	4
G.3.5	1.45	3½	3	3
H4	1.75	4	3	3

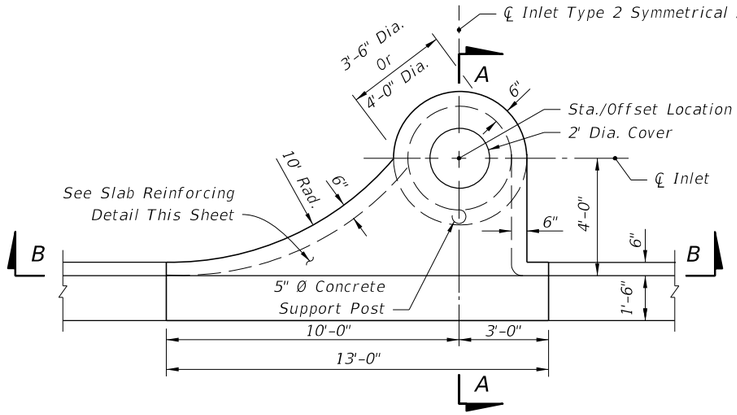
*Equivalent Area Welded Wire Reinforcing may be substituted in accordance with Index 425-001.



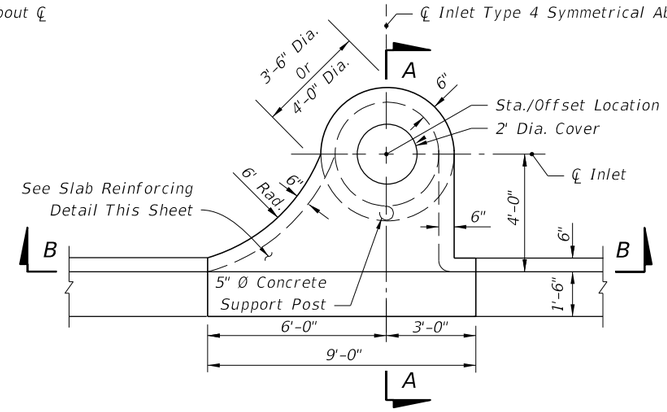
WALL REINFORCING SPLICE DETAILS (ALTERNATE B)

10/29/2019 8:15:14 AM

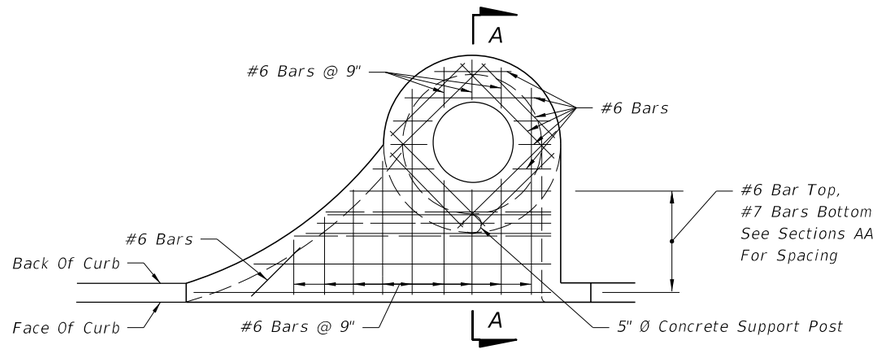
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRUCTURE BOTTOMS TYPE J AND P	INDEX	SHEET
11/01/17						425-010	5 of 5



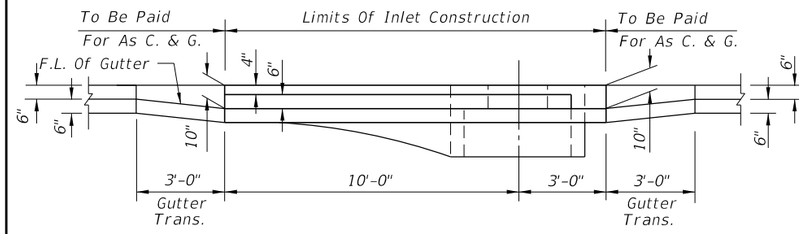
PLAN (INLET TYPE 2 SYMMETRICAL ABOUT ℄)



PLAN (INLET TYPE 4 SYMMETRICAL ABOUT ℄)

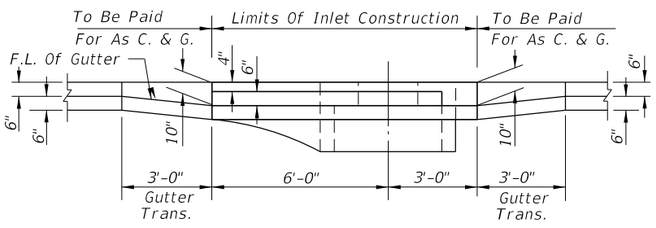


INLETS TYPES 1 AND 3



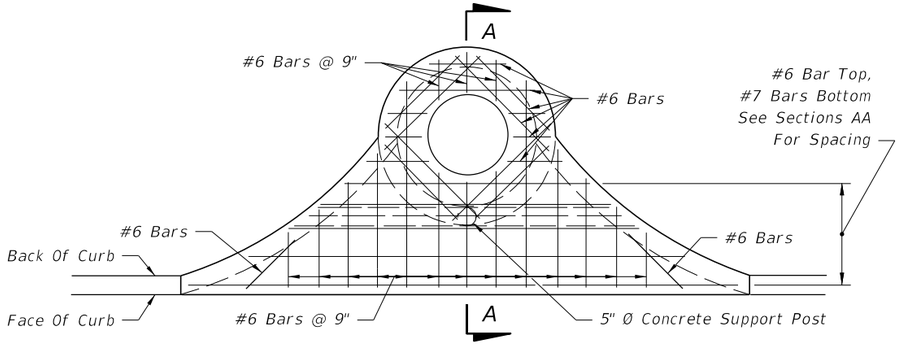
SECTION BB (INLET TYPE 2 SYMMETRICAL ABOUT ℄)

INLETS TYPES 1 AND 2



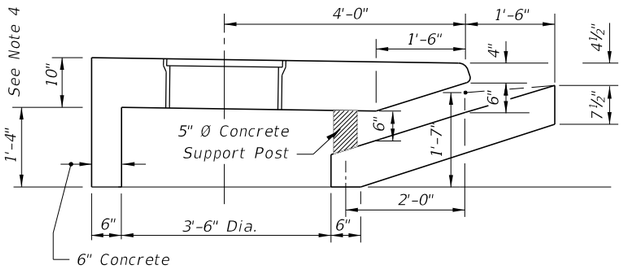
SECTION BB (INLET TYPE 4 SYMMETRICAL ABOUT ℄)

INLETS TYPES 3 AND 4

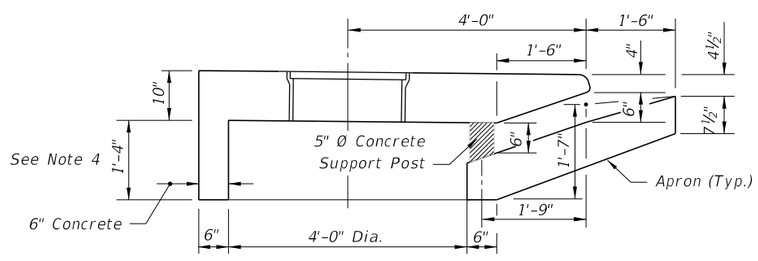


INLETS TYPES 2 AND 4

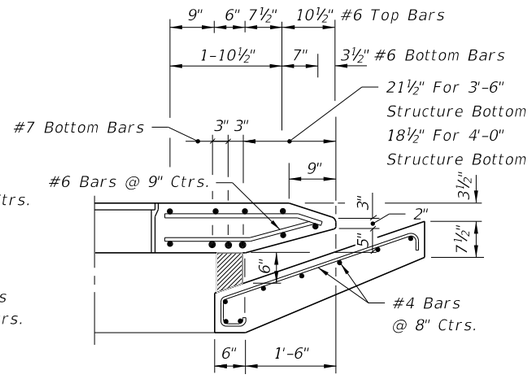
SLAB REINFORCING



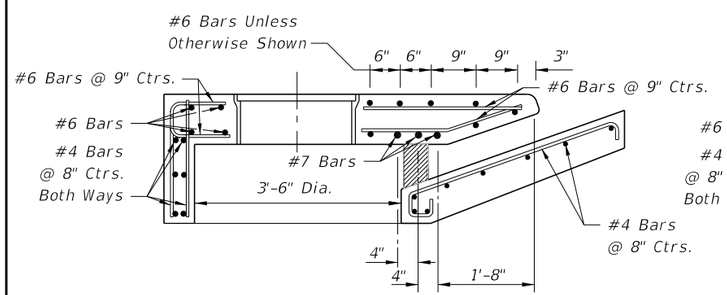
DIMENSIONAL SECTION



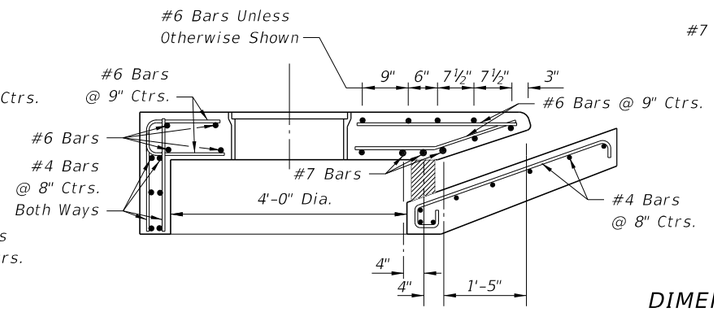
DIMENSIONAL SECTION



DIMENSION & REINFORCING HALF SECTION
TYPES A & E CURB (HALF SECTION AA)
(TYPE E GUTTER SHOWN)



REINFORCING SECTION
3'-6" DIA. STRUCTURE BOTTOM (SECTION AA)



REINFORCING SECTION
4'-0" DIA. STRUCTURE BOTTOM (SECTION AA)

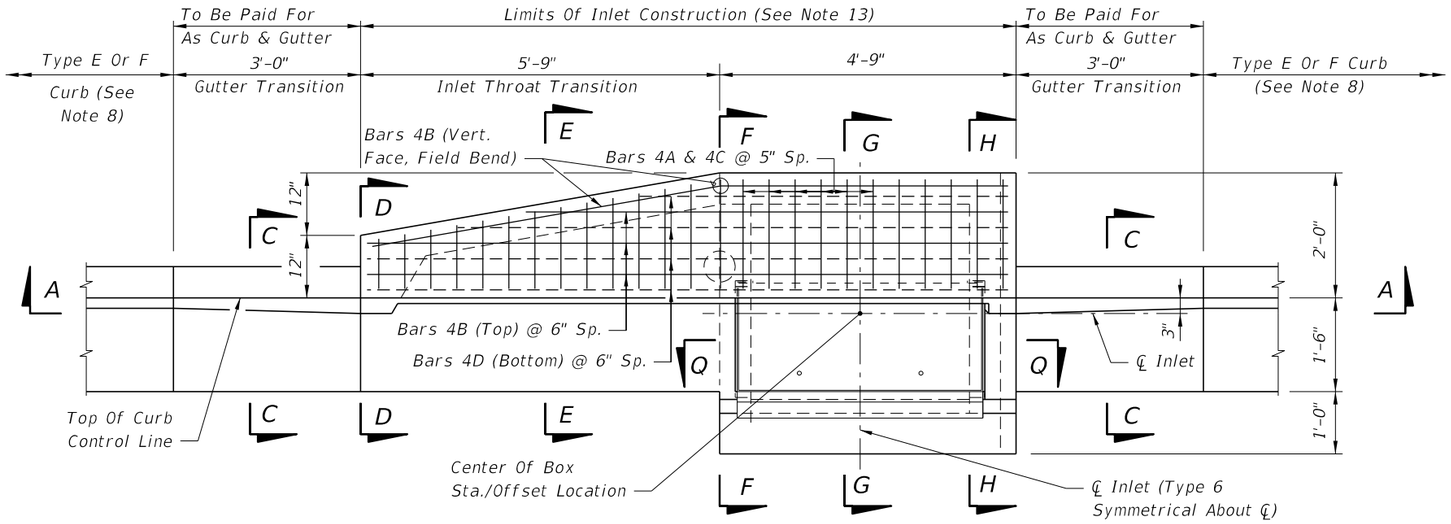
GENERAL NOTES

1. The finished grade and slope of the inlet tops 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 and, where necessary, modify the inlet details accordingly. Bend steel when necessary.
3. All steel in inlet top shall have 1¼" minimum cover unless otherwise shown. Inlet tops shall be either cast-in-place or precast concrete.
4. 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 in accordance with Index 425-001 "OPTIONAL CONSTRUCTION JOINTS".
5. For supplemental details see Index 425-001.
6. Only round concrete support post will be acceptable.
7. These inlets are designed for use with standard curb and gutter Types E and Type F. Locate inlet outside of pedestrian crosswalks.
8. For structure bottoms see Index 425-010.
9. Inlet to be paid for under the contract unit price for inlets (Curb) (Type_), Each.

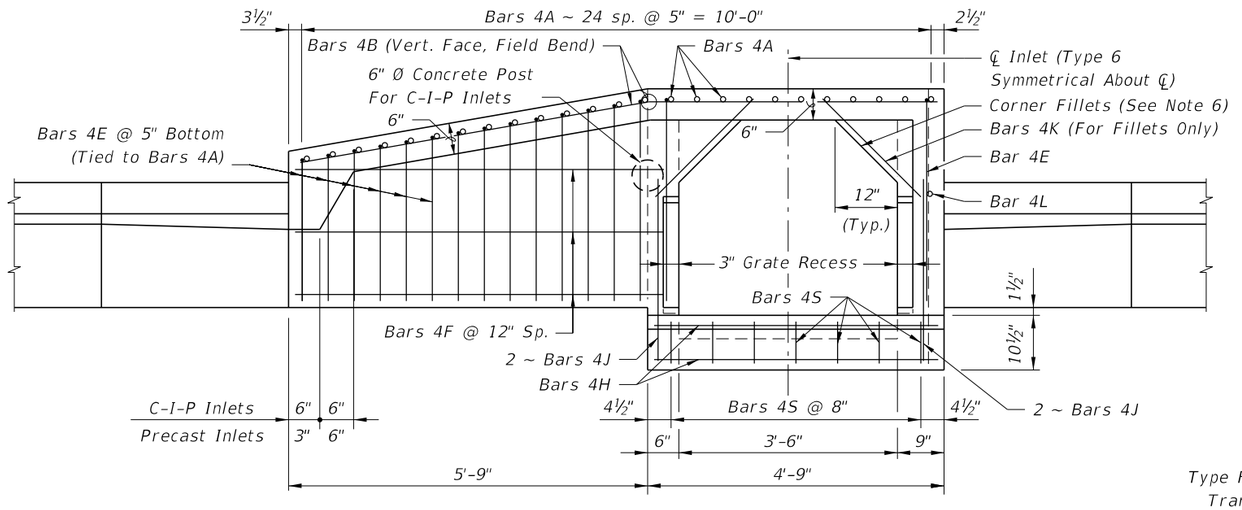
TRANSVERSE SECTIONS FOR INLETS TYPES 1, 2, 3 & 4

11/26/2019 10:18:02 AM

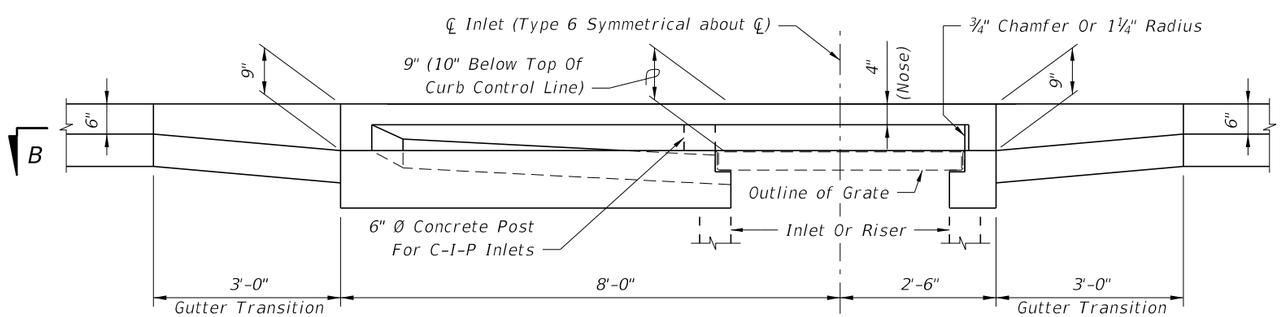
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CURB INLET TOPS TYPES 1, 2, 3 AND 4	INDEX	SHEET
11/01/17						425-020	1 of 1



TOP VIEW



SECTION BB

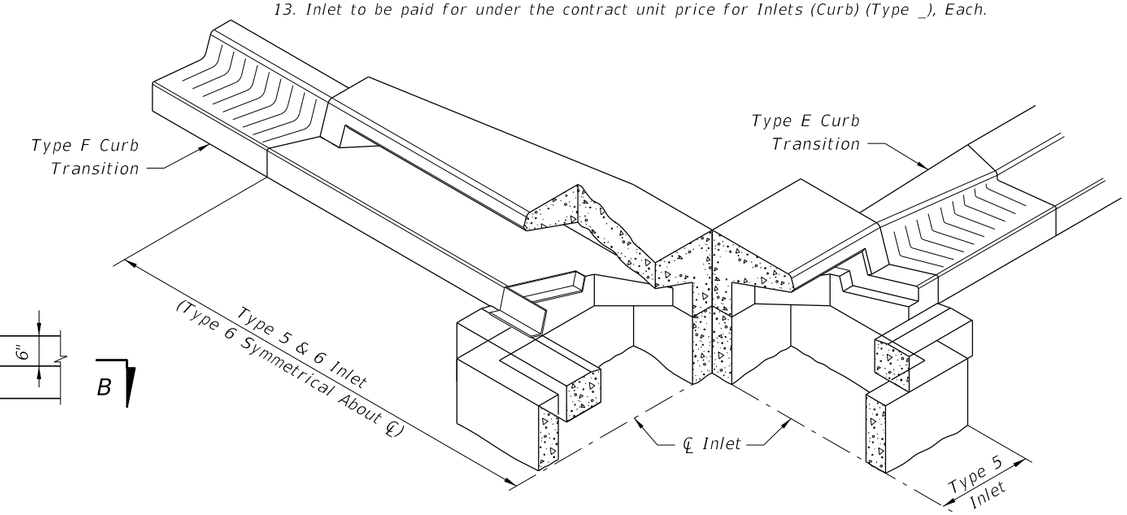


SECTION AA (At ℄ Inlet)

INLET TYPE 5 (Curb Inlet Type 6 Symmetrical With Left Half)

GENERAL NOTES

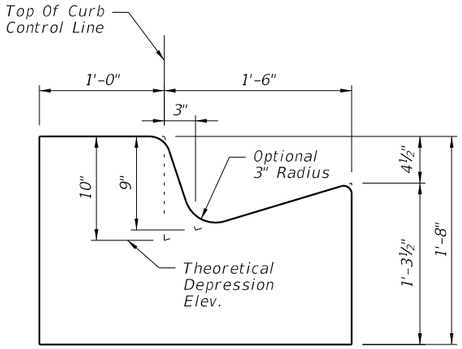
1. The finished grade and slope of the inlet tops are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. For inlets constructed on a curve, refer to the plans to determine the radius, and modify the inlet details accordingly. Bend steel when necessary.
3. All reinforcing steel to be Grade 60 bars with 1¼" minimum cover unless otherwise shown, see Sheet 4 for equivalent area Welded Wire Reinforcement details.
4. Inlet tops shall be either cast-in-place or precast concrete. Precast units shall conform to the dimensions shown or in accordance with approved shop drawing's. Request for shop drawing approval shall be directed to the State Drainage Engineer.
5. Concrete meeting the requirements of ASTM C478 (4,000 psi) may be used in lieu of Class II concrete for precast units, manufactured in plants which meet the requirements of Section 449 of the Specifications.
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 inlet bottoms see Index 425-010. Inlet tops are to be used with Type P bottoms, or Type J bottoms with 3'-6" square (Type B), 3'-6" or 4' round (Type A) risers or top slab openings.
8. These inlet tops are designed for use with standard curb and gutter Type E and Type F. Locate inlet outside of pedestrian crosswalks. For Type E curb, transition the shape of the curb over the gutter transition length to match the face of the inlet (Type F).
9. See Index 425-001 for supplemental details.
10. All steel used for frame and grate shall meet the requirements of ASTM A36/A36M.
11. Either cast iron grates or steel grates may be used.
12. When Alternate "G" grate is specified in the plans either the cast iron grate and galvanized steel frame or the the galvanized steel grate and frame must be used. Grates are to be grouted in accordance with the grouting detail shown on Sheet 5, in lieu of tack welding.
13. Inlet to be paid for under the contract unit price for Inlets (Curb) (Type _), Each.



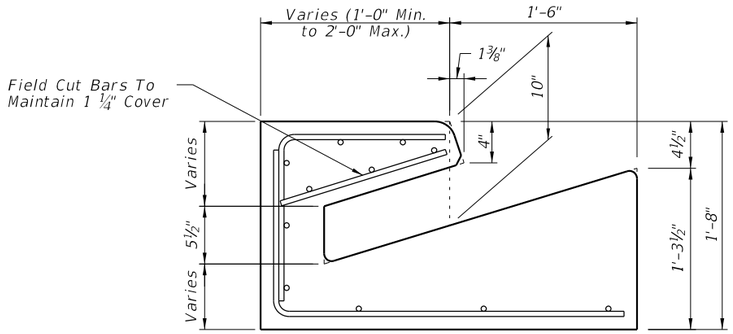
SKETCH SHOWING FRAME SEAT AND THROAT RECESS

10/29/2019 8:15:19 AM

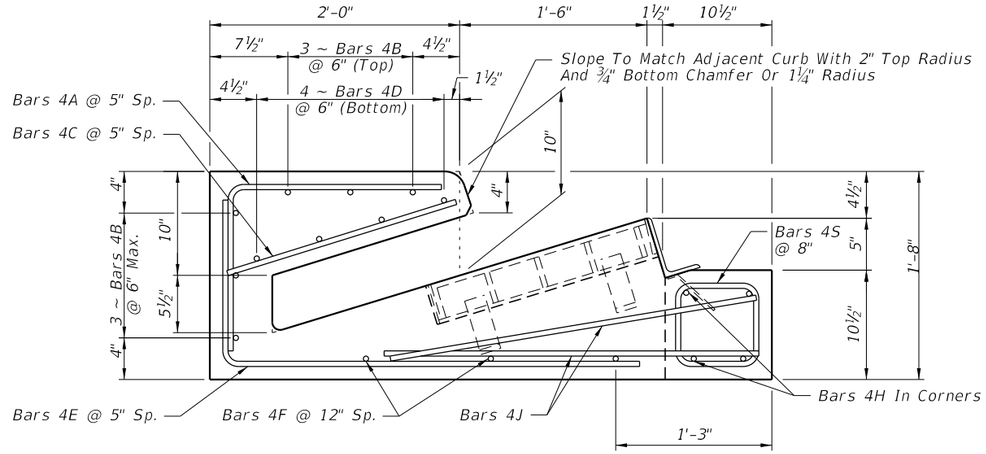
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CURB INLET TOPS TYPES 5 AND 6	INDEX	SHEET
11/01/17						425-021	1 of 5



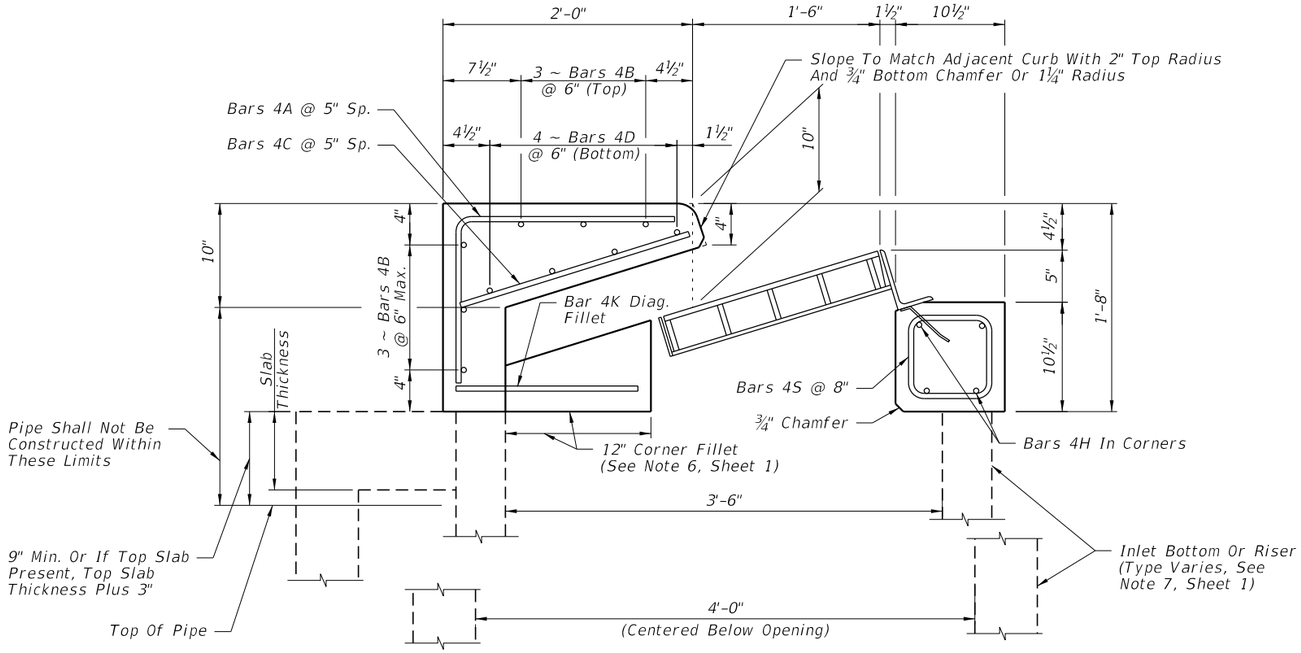
SECTION DD
(End View Of Inlet)



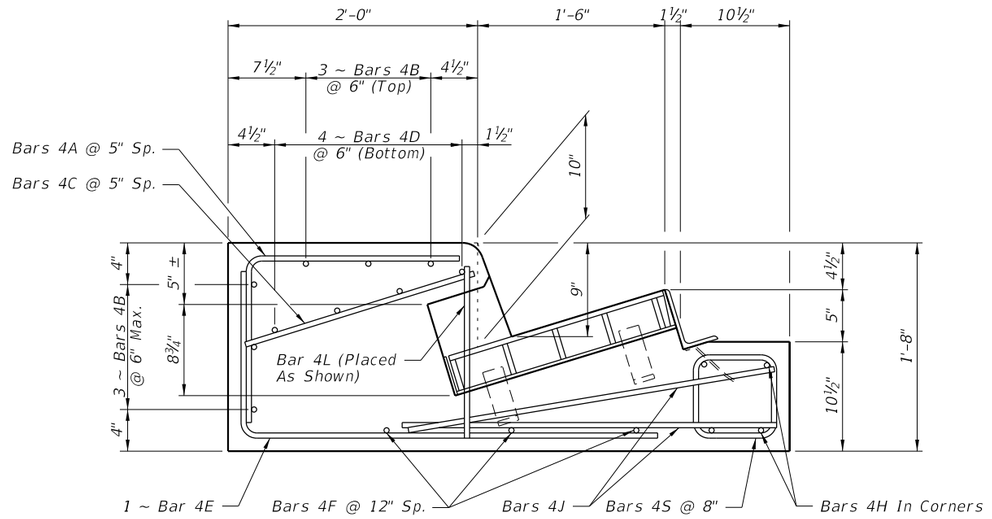
SECTION EE



SECTION FF



SECTION GG



SECTION HH
(Type 5 Inlet Only)

CROSS REFERENCES:
For General Notes See Sheet 1.
For Location Of Sections DD
Thru HH See Sheet 1.

PRECAST DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CURB INLET TOPS TYPES 5 AND 6	425-021	2 of 5

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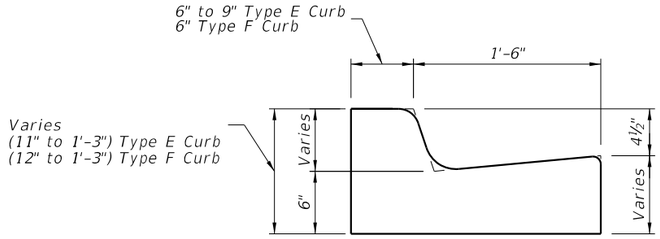
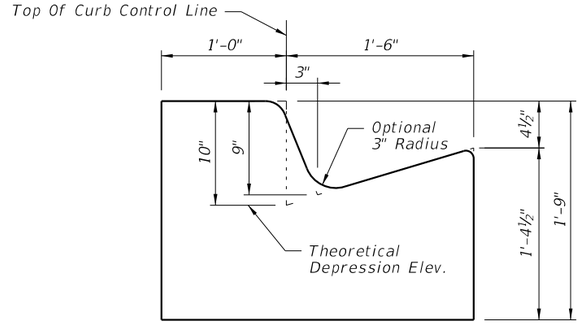
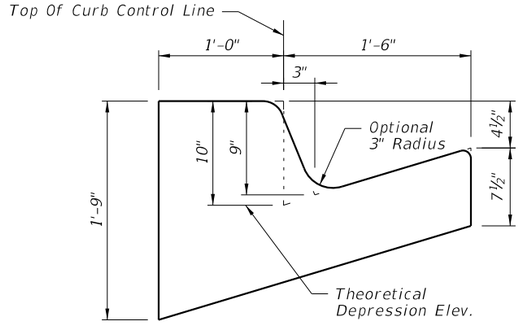


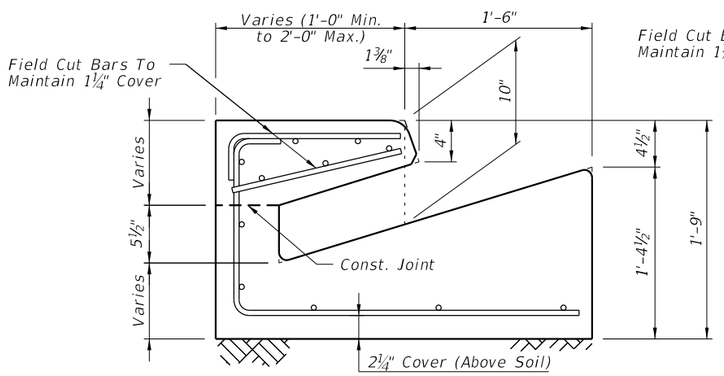
SECTION CC
(Gutter Transition
Type F Shown, Type E Similar)



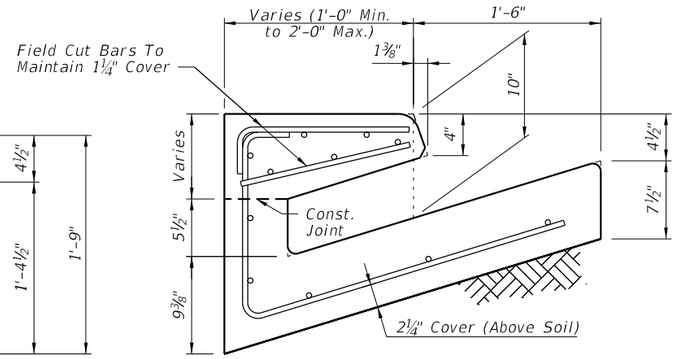
SECTION DD (OPTION A)
(End View Of Inlet)



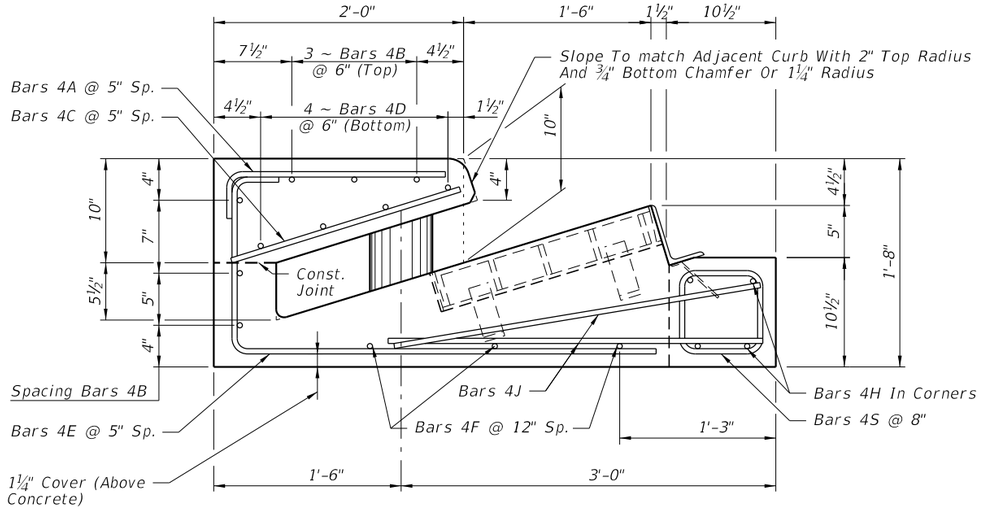
SECTION DD (OPTION B)
(End View Of Inlet)



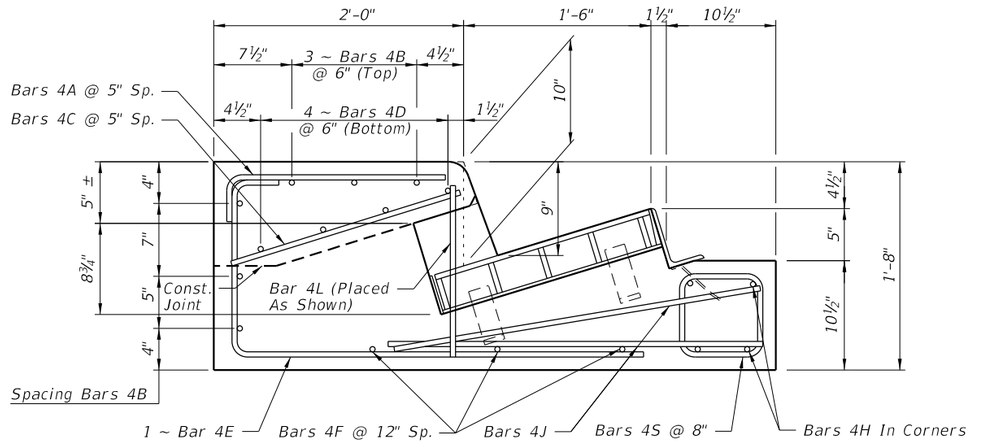
SECTION EE (OPTION A)



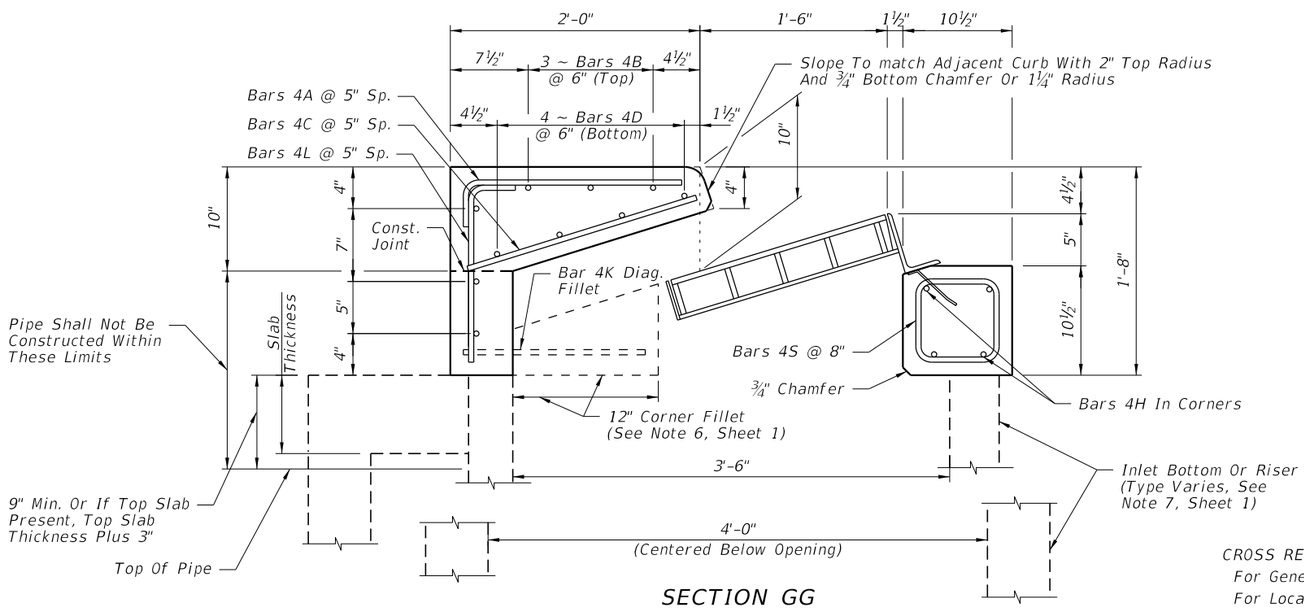
SECTION EE (OPTION B)



SECTION FF



SECTION HH (Type 5 Inlet Only)



SECTION GG

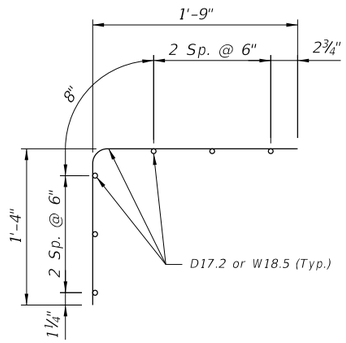
CROSS REFERENCES:
For General Notes See Sheet 1.
For Location Of Sections CC Thru HH See Sheet 1.

CAST-IN-PLACE DETAILS

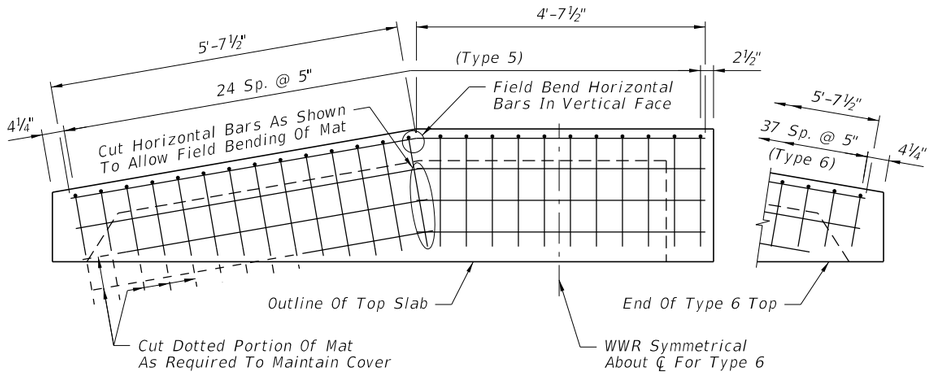
10/29/2019 8:15:28 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CURB INLET TOPS TYPES 5 AND 6	INDEX 425-021	SHEET 3 of 5

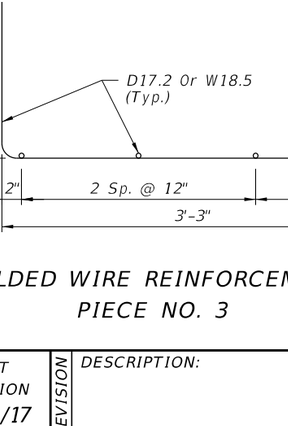
ALTERNATE REINFORCING STEEL DETAILS FOR WELDED WIRE REINFORCEMENT (WWR)



WELDED WIRE REINFORCEMENT
PIECE NO. 1



PLACEMENT SCHEMATIC FOR WELDED
WIRE REINFORCEMENT PIECE NO. 1



WELDED WIRE REINFORCEMENT
PIECE NO. 2

PLACEMENT SCHEMATIC FOR WELDED
WIRE REINFORCEMENT PIECE NO. 2

WELDED WIRE REINFORCEMENT
PIECE NO. 3

PLACEMENT SCHEMATIC FOR WELDED
WIRE REINFORCEMENT PIECE NO. 3

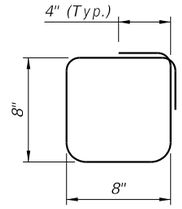
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

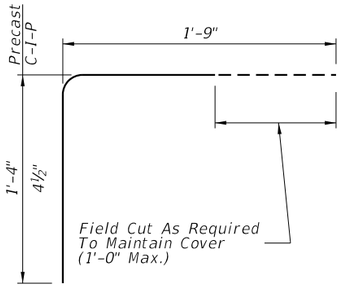
MARK	SIZE	TYPE 5 INLET		TYPE 6 INLET	
		NO.	LENGTH	NO.	LENGTH
A (Precast)	4	25	3'-1"	38	3'-1"
A (C-I-P)	4	25	2'-1½"	38	2'-1½"
B	4	6	10'-3"	6	15'-9"
C	4	25	11" to 1'-11"	38	11" to 1'-11"
D	4	4	10'-3"	4	15'-9"
E	4	16	4'-11½"	30	4'-11½"
F	4	3	6'-0"	6	6'-0"
H	4	4	4'-6"	4	4'-6"
J	4	4	3'-0"	4	3'-0"
K (Fillet)	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"
S	4	7	3'-2"	7	3'-2"

REINFORCING STEEL NOTES:

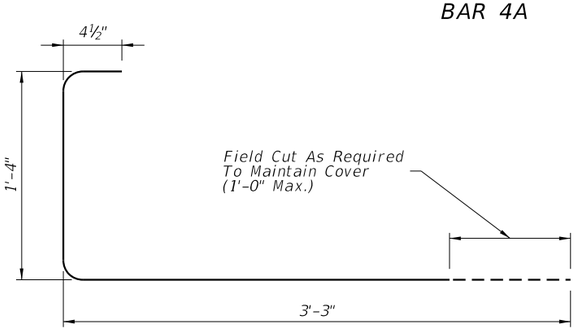
1. All bar dimensions in the bending diagrams are out to out.
2. Bars 4A and 4E may be combined into a single bar.
3. Welded Wire Reinforcement consists of Smooth or Deformed wire meeting the requirements of Specification Section 931.



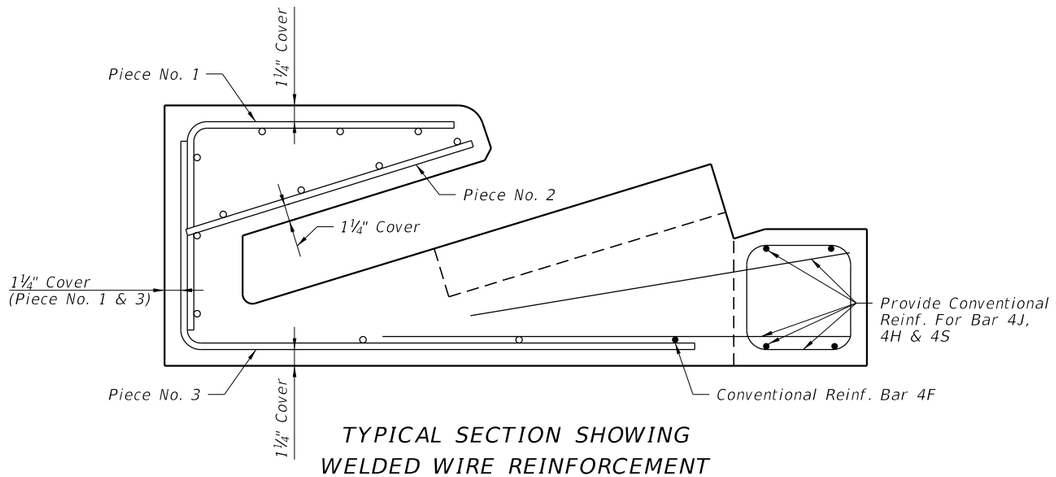
BAR 4S



BAR 4A



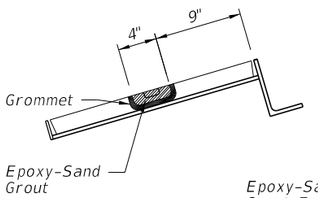
BAR 4E



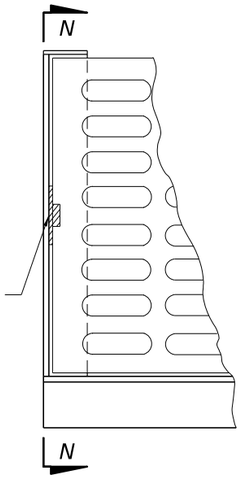
TYPICAL SECTION SHOWING
WELDED WIRE REINFORCEMENT

10/29/2019 8:15:29 AM

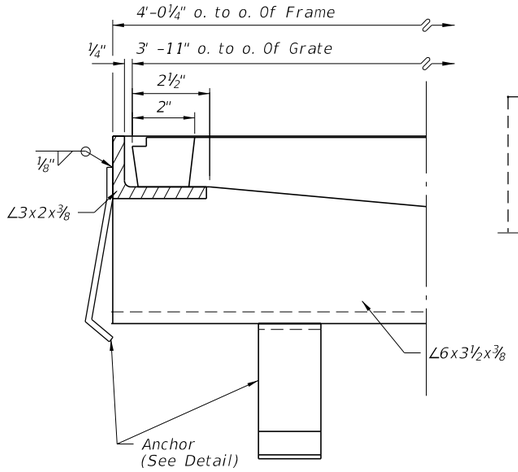
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CURB INLET TOPS TYPES 5 AND 6	425-021	4 of 5



SECTION NN



TOP VIEW
CAST IRON GRATE



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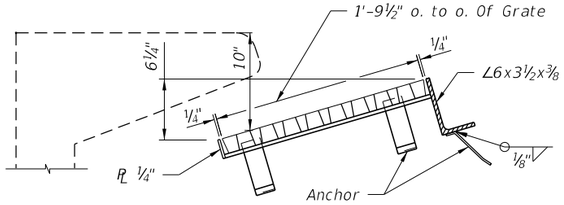

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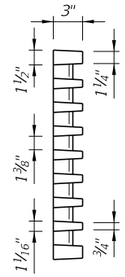

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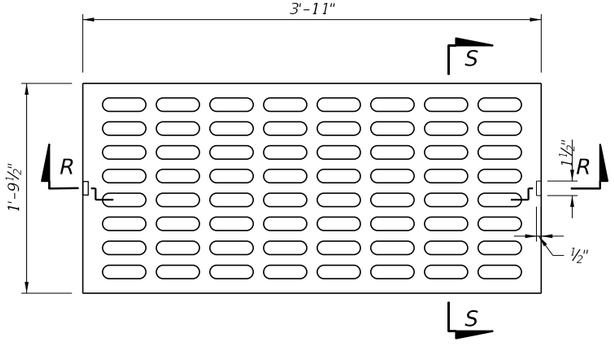
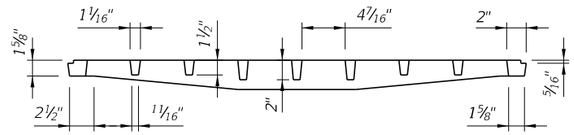


TOP VIEW



SECTION RR

CAST IRON GRATE

SECTION MM

TOP VIEW
STEEL GRATE

SECTION QQ

SECTION GG

SECTION YY

TOP VIEW

SECTION XX

GROUTING DETAILS

CROSS REFERENCES:
For Location Of Section GG and QQ
See Sheet 1.

STEEL GRATE

TOP VIEW
FRAME DETAIL

ANCHOR DETAIL

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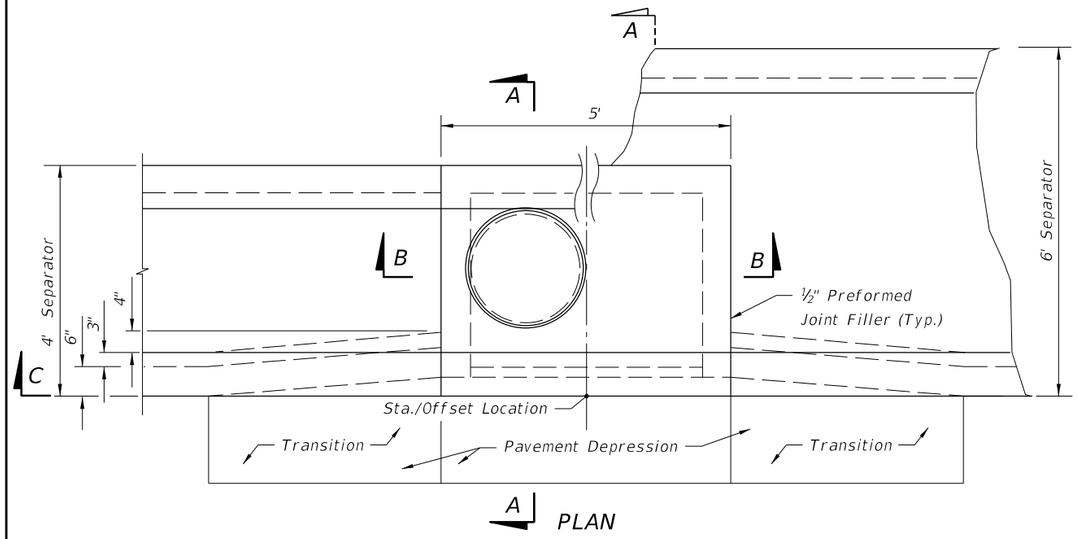
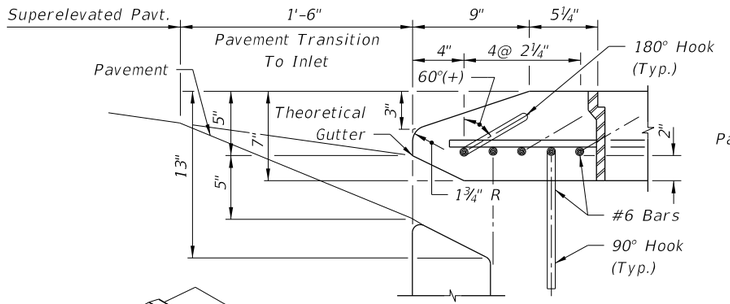
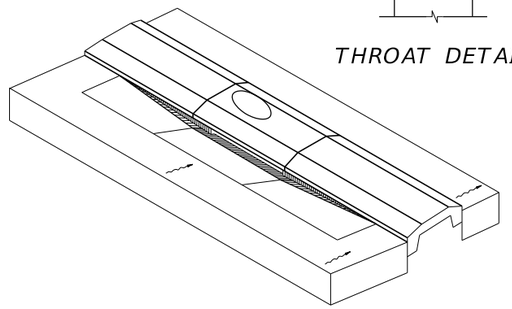
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CURB INLET TOPS TYPES 5 AND 6	INDEX 425-021	SHEET 5 of 5



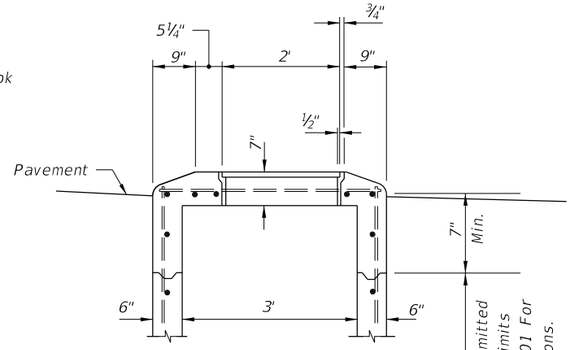


THROAT DETAIL

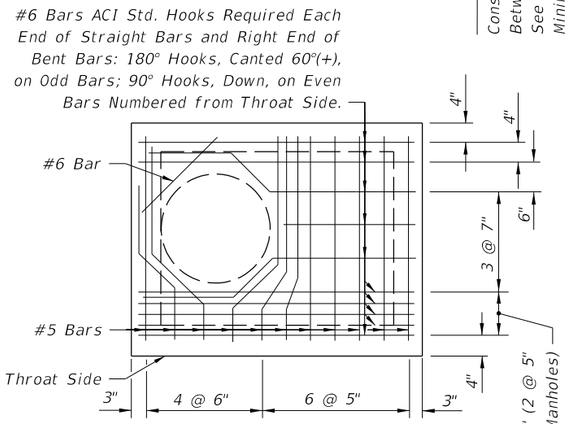


HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

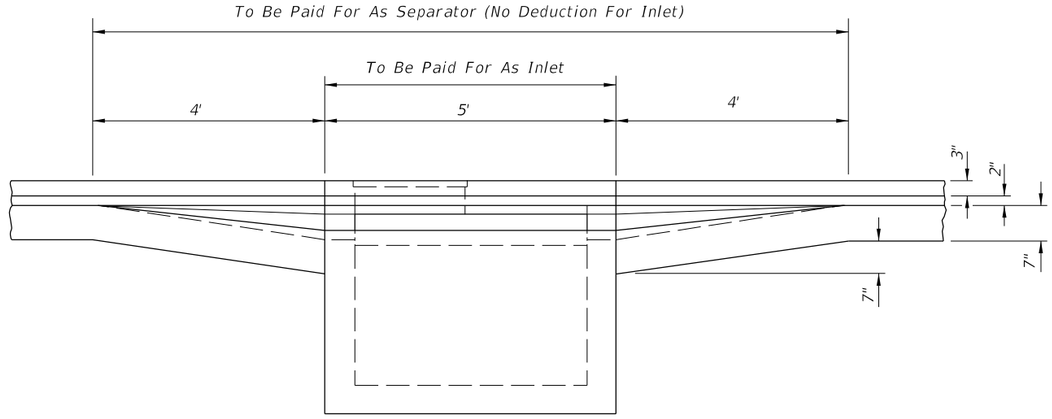
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' – 6'	A12	0.20	12"	8"
6' – 10'	A6	0.20	6"	5"
10' – 13'	A4	0.20	4"	3"
10' – 15'	B5.5	0.24	5½"	5"

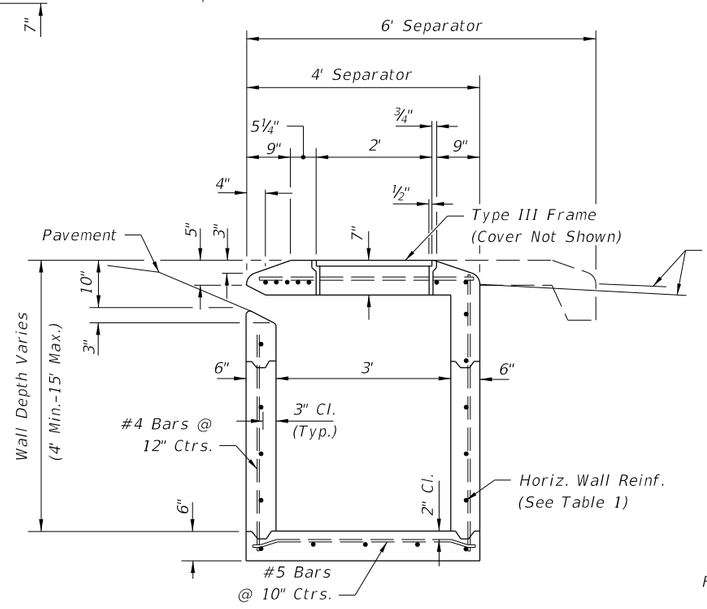


MODIFICATION WHEN USED AS A MANHOLE

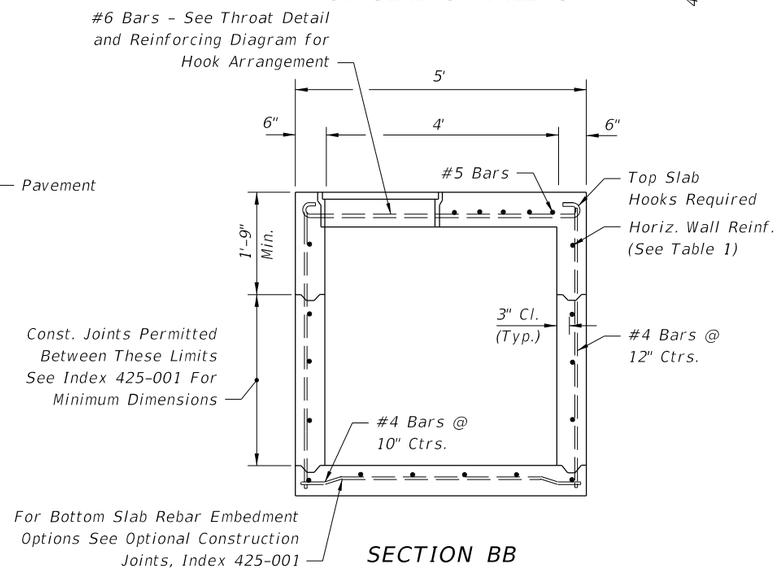


REINFORCING STEEL DIAGRAM TOP SLAB OF INLETS





SECTION AA



SECTION BB

GENERAL NOTES

1. This inlet is used in Traffic Separators Types I and II; or, in separators constructed with Curbs Types A, B and E and sidewalk paving, which cannot accommodate Inlets Types 1, 2, 3, 4, 5, or 6. Use of this Inlet on through traffic side of the separator is not permitted in medians with Curb Types A and B. Locate inlet outside of pedestrian way.

2. All reinforcing to be Grade 60 bars with 2" min. 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 are recommended.

4. For supplementary details see Index 425-001.

5. All dimensions are for both precast and cast-in-place inlets unless otherwise shown.

6. Inlet to be paid for under the contract unit price for Inlets (Curb) (Type 7), Each.

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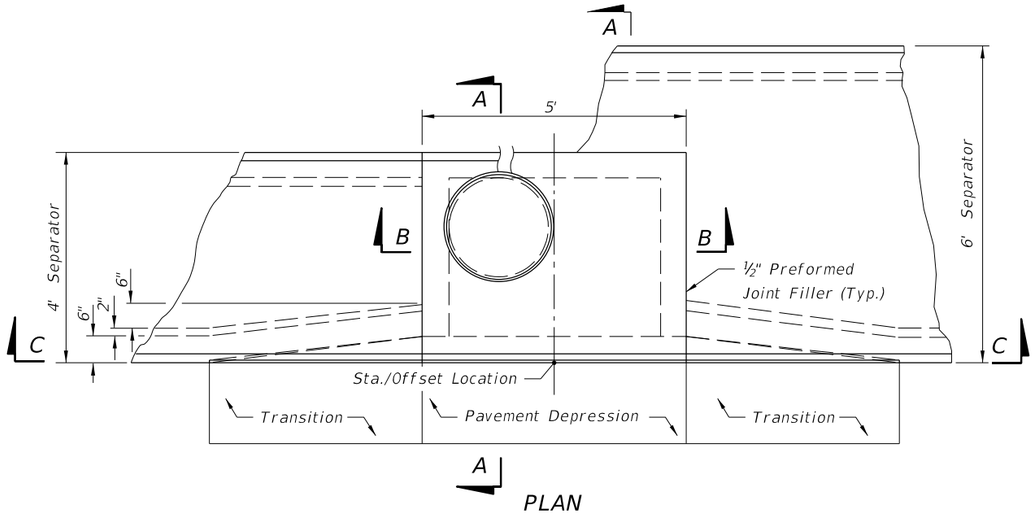
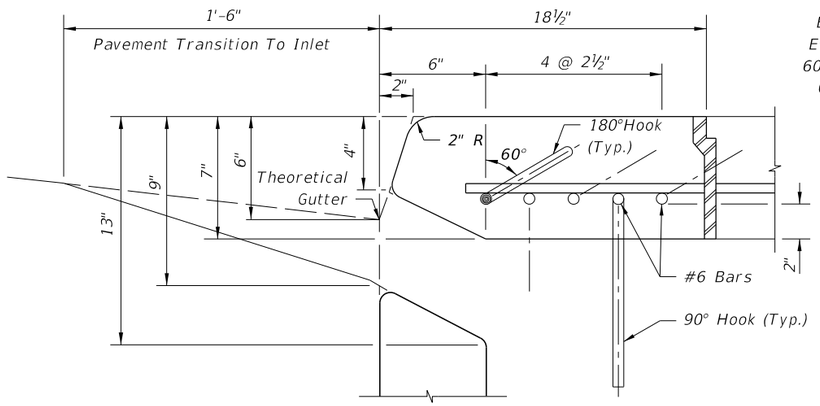
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CURB INLET TYPE 7	INDEX	SHEET
11/01/17						425-022	1 of 1

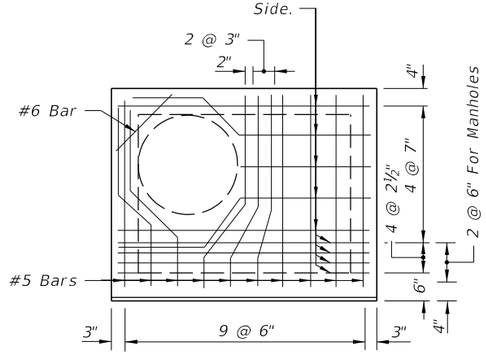


PLAN

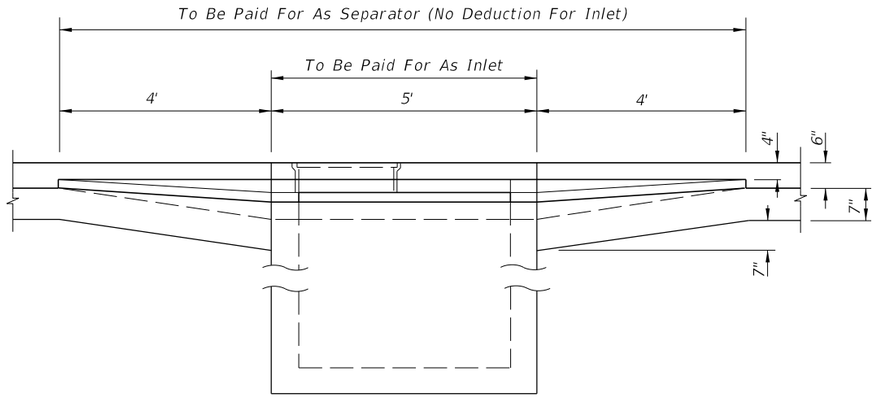


THROAT DETAIL (SECTION AA)

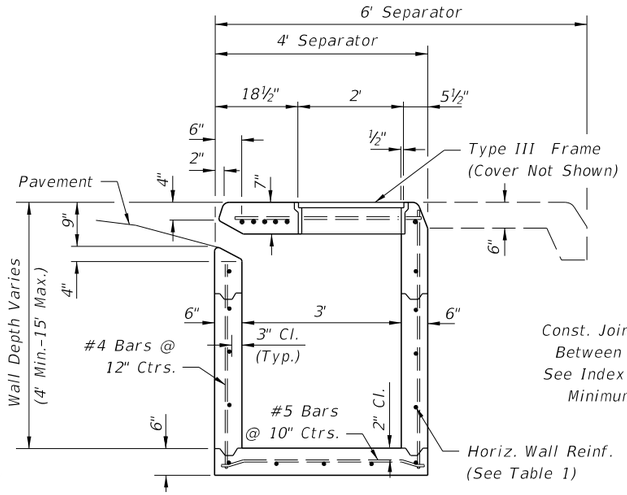
#6 Bars ACI Std. Hooks Required Each End Of Straight Bars And Right End Of Bent Bars. 180°Hooks, Canted 60°(+), On Odd Bars; 90° Hooks, Down, On Even Bars Numbered From Throat Side.



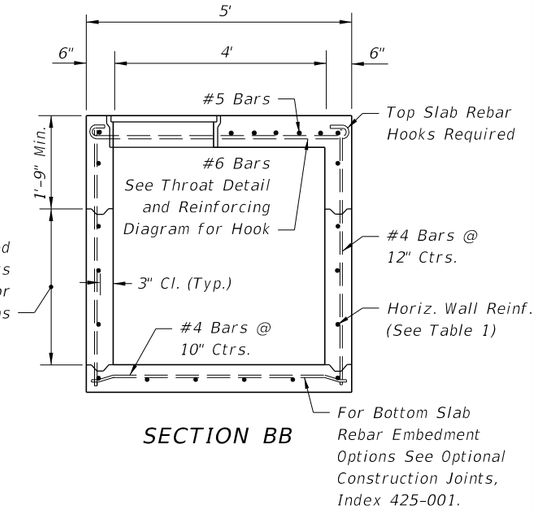
REINFORCING STEEL DIAGRAM TOP SLAB OF INLET



SECTION CC



SECTION AA



Const. Joints Permitted Between These Limits See Index 425-001 for Minimum Dimensions

SECTION BB

For Bottom Slab Rebar Embedment Options See Optional Construction Joints, Index 425-001.

GENERAL NOTES

1. This inlet is to be used only in Traffic Separators Types IV and V; or, in separators constructed with Curbs Types D and F and sidewalk paving, which cannot accommodate Inlets Types 1, 2, 3, 4, 5 or 6. Use of this inlet on the through traffic side of the separator should be avoided in medians constructed with Curb Type D (Curb inlets Types 9 or 10 are recommended). Locate inlet outside of pedestrian way.

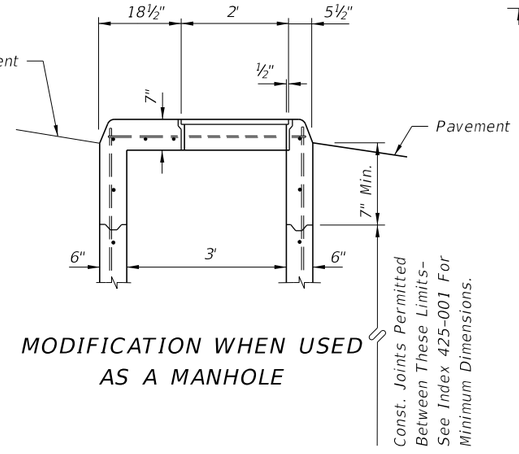
2. All reinforcing to be Grade 60 bars with 2" min. cover unless otherwise shown. See Index 425-001 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary. Bars to clear pipe by 1½".

3. Recommended maximum pipe sizes are 24" longitudinal and 30" transverse. For larger pipe, inlets with Alt. B bottoms, Index 425-010 are recommended.

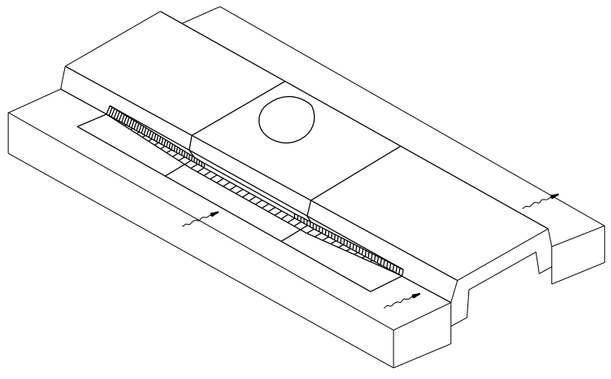
4. For supplemental details and notes see Index 425-001.

5. All dimensions are for both precast and cast-in-place inlets unless otherwise shown.

6. Inlet to be paid for under the contract unit price for Inlets (Curb) (Type 8), Each.



MODIFICATION WHEN USED AS A MANHOLE



HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' -6'	A12	0.20	12"	8"
6' -10'	A6	0.20	6"	5"
10'-13'	A4	0.20	4"	3"
10'-15'	B5.5	0.24	5½"	5"

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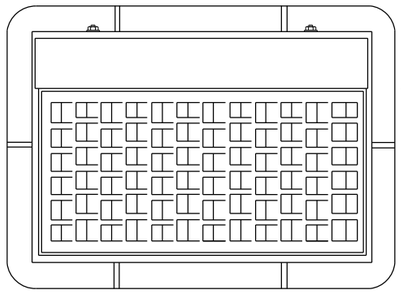
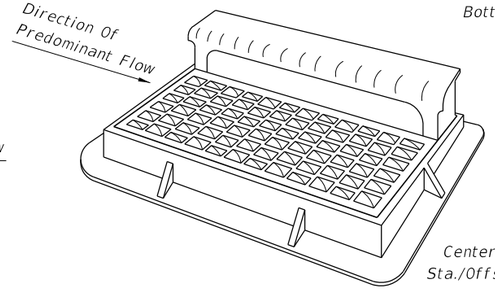
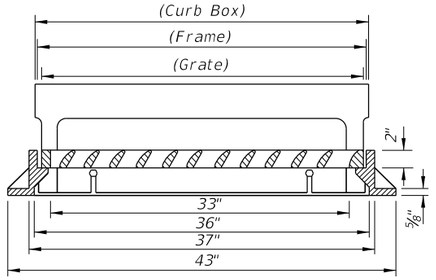
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CURB INLET TYPE 8	425-023	1 of 1

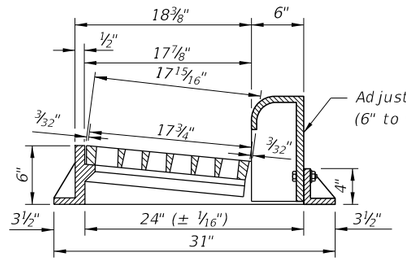


TOP VIEW



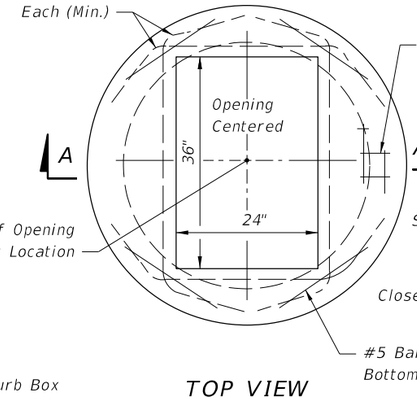


LONGITUDINAL SECTION

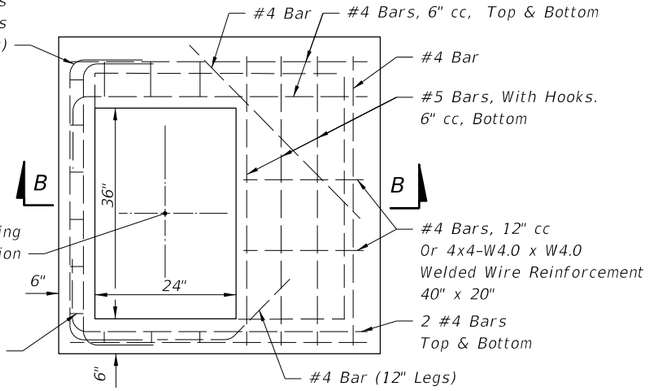


TRANSVERSE SECTION

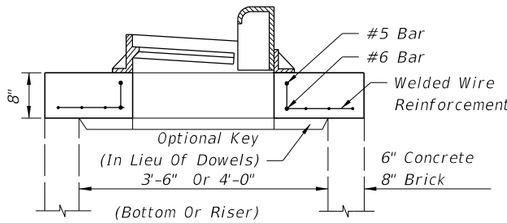
FRAME AND GRATE



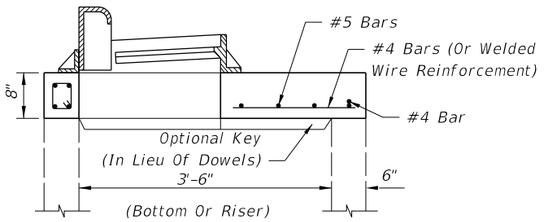
TOP VIEW



TOP VIEW

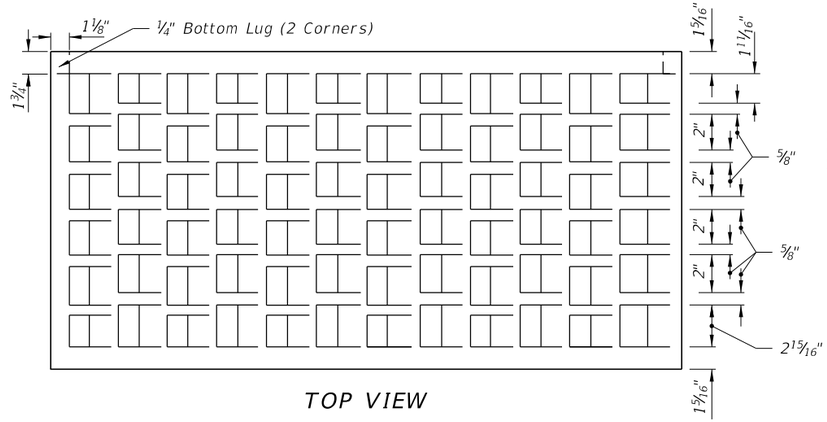


SECTION AA
(SEE NOTE 6 BELOW)

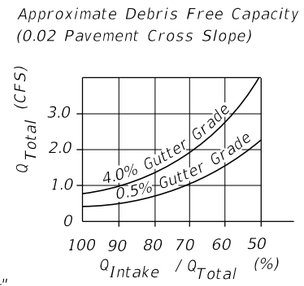


SECTION BB
(SEE NOTE 6 BELOW)

TOP SLABS



TOP VIEW



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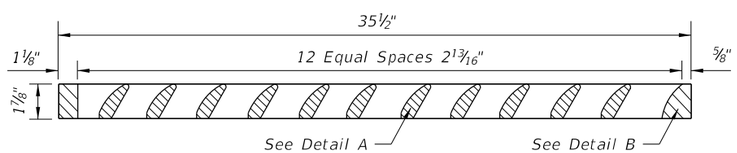

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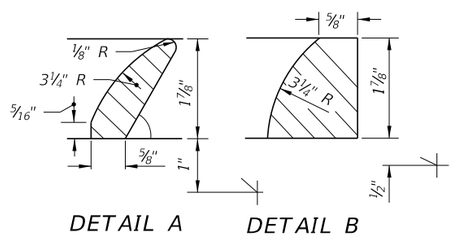

DETAIL A

DETAIL B

GRATE DETAIL

GENERAL NOTES

1. This inlet is primarily intended for locations with light to moderate flows where right of way does not permit the use of throated Curb Inlets Types 1 through 6. The typical application is on curb returns to city streets. The inlet grate is suitable for pedestrian and bicycle traffic.
2. This inlet to be located outside of curb ramp area in vertical faced curbs such as Curb and Gutter Type F. Grate shall be oriented with vanes directed toward Predominant flow.
3. For structure bottoms see Index 425-010. For supplemental details see Index 425-001.
4. All steel in slab tops shall have 1¼" minimum cover unless otherwise shown. Tops shall be either cast-in-place or precast concrete.
5. For Alternate B applications, top slab openings shall be placed such that 2 edges of inlet frame will be located directly above bottom wall or riser wall.
6. When used on a structure with dimensions larger than those detailed above and risers are not applied, the top slab shall be constructed using Index 425-010 with the slab opening adjusted to 24"x36". The "Special Top Slab" on Index 425-010 is not permitted.
7. Frame may be adjusted with one to six courses of brick.
8. Vaned grates with approximately equal openings will be permitted that satisfy AASHTO HL-93 loading. Grates shall be reversible, right or left.

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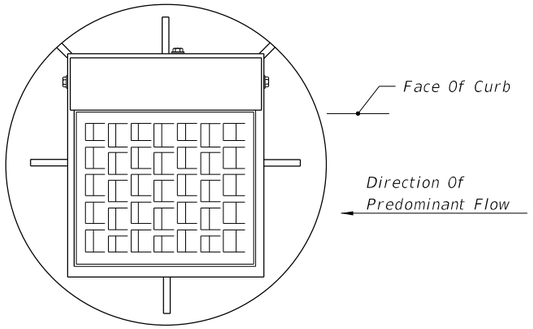
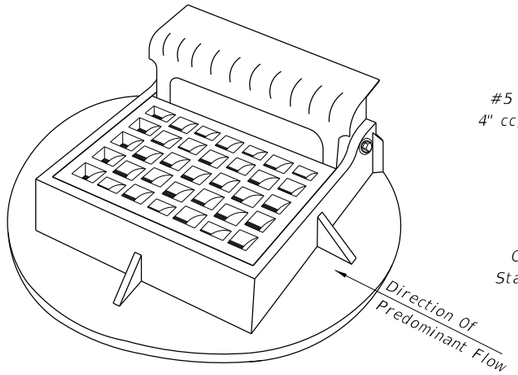
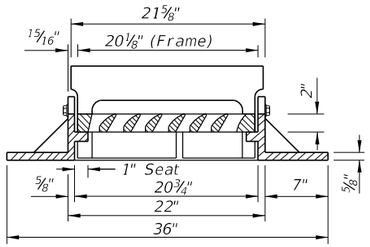
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CURB INLET TOP TYPE 9	INDEX	SHEET
11/01/17					425-024	1 of 1

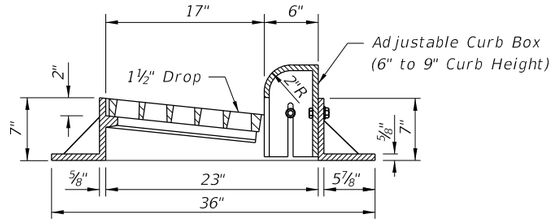


TOP VIEW



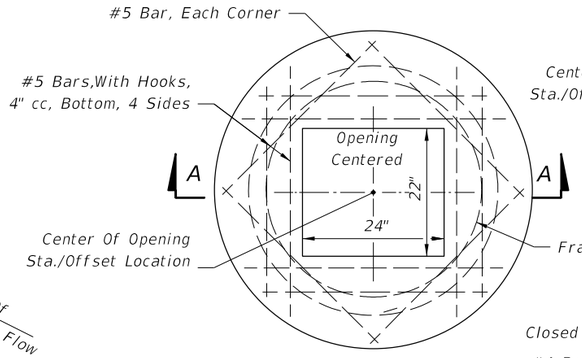


LONGITUDINAL SECTION

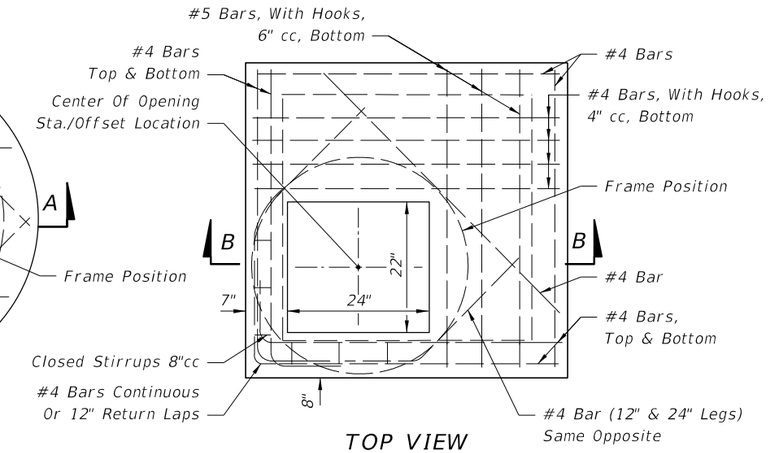


TRANSVERSE SECTION

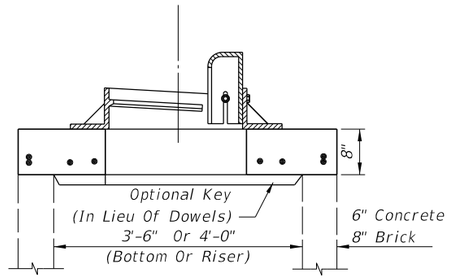
FRAME AND GRATE



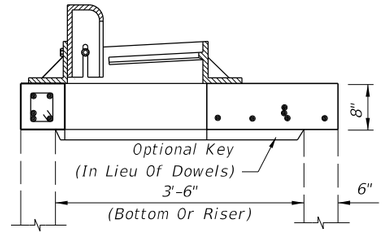
TOP VIEW



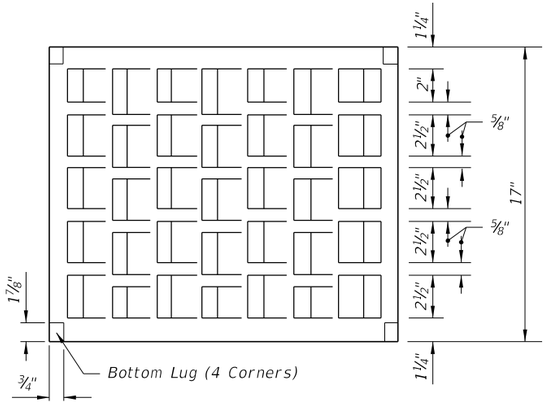
TOP VIEW



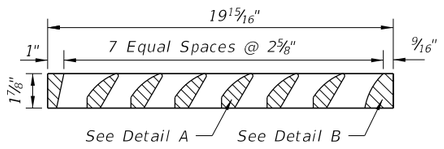
SECTION AA
(SEE NOTE 6 BELOW)



SECTION BB
(SEE NOTE 6 BELOW)



PLAN



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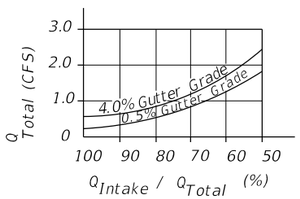
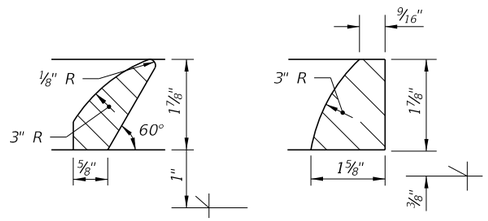


EFFICIENCY CURVE



DETAIL A

DETAIL B

GRATE DETAIL

TOP SLABS

GENERAL NOTES

1. This inlet is primarily intended for locations with light flows where right of way does not permit the use of throated Curb Inlets Types 1 through 6. The typical application is on curb returns to city streets. The inlet grate is suitable for pedestrian and bicycle traffic.

2. This inlet to be located outside of curb ramp area in vertical faced curbs such as Curb and Gutter Type F. Grate shall be oriented with vanes directed toward predominant flow.

3. For structure bottoms see Index 425-010. For supplemental details see Index 425-001.

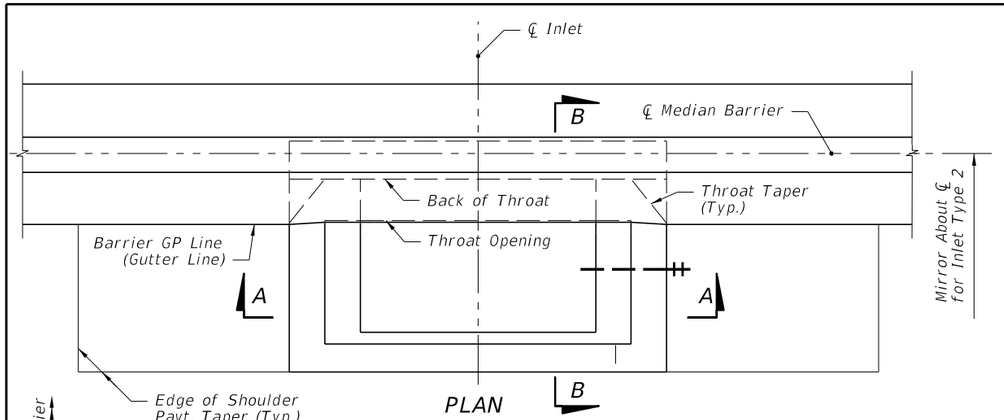
4. All steel in slab tops shall have 1¼" minimum cover unless otherwise shown. Tops shall be either cast-in-place or precast concrete.

5. For Alternate B applications, top slab openings shall be placed such that 2 edges of inlet frame will be located directly above bottom or riser walls.

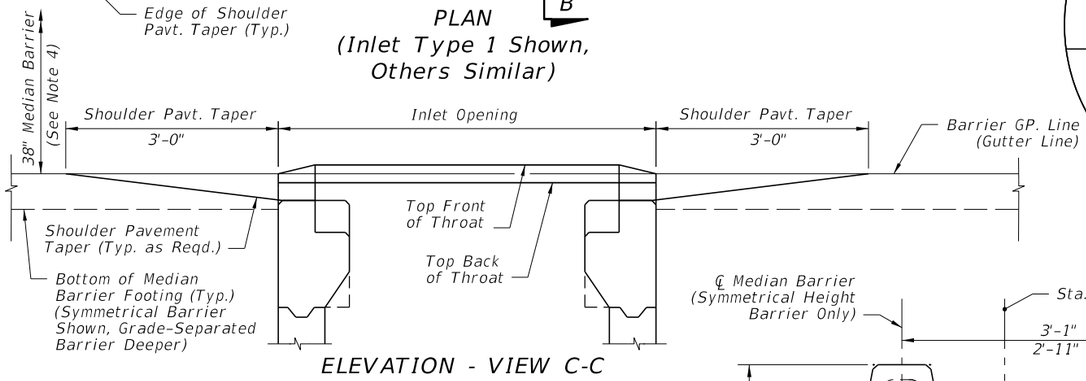
6. When used on a structure with dimensions larger than those detail above and risers are not applied, the top slab shall be constructed using Index 425-010 with the slab opening adjusted to 22"x24". The "Special Top Slab" on Index 425-010 is not permitted.

7. Frame may be adjusted with one to six courses of brick.

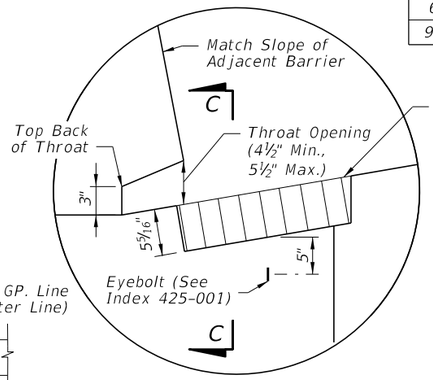
8. Vaned grates with approximately equal openings will be permitted that satisfy AASHTO HL-93 loading. Grates shall be reversible.



PLAN
(Inlet Type 1 Shown, Others Similar)



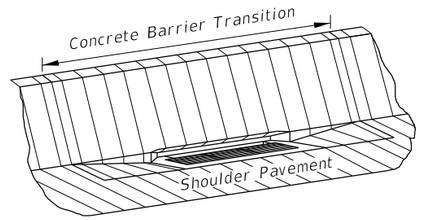
ELEVATION - VIEW C-C
(Grate Not Shown for Clarity)



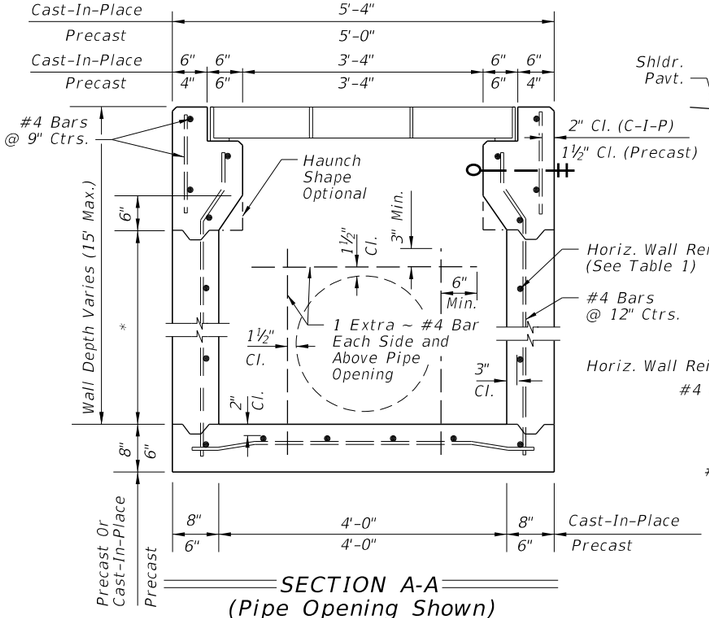
INLET DETAIL

TABLE 1: HORIZONTAL WALL REINFORCING SCHEDULE

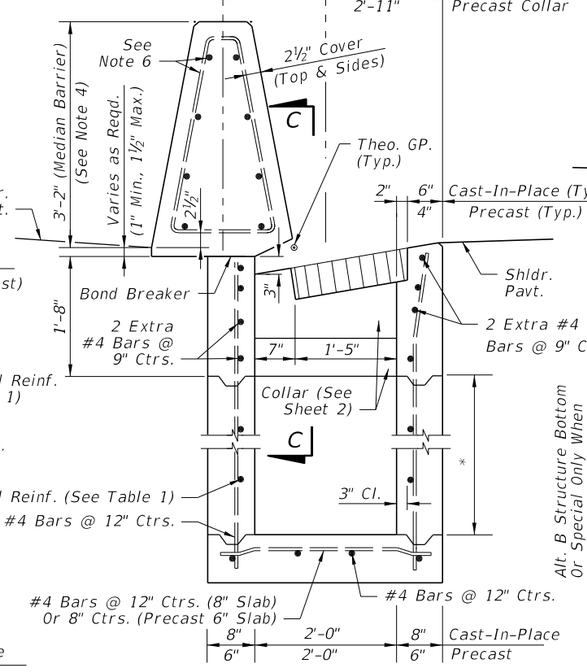
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWR
0'-3'	A12	0.20	12"	8"
3'-6'	A6	0.20	6"	5"
6'-9'	B5.5	0.24	5½"	5"
9'-15'	C6.5	0.37	6½"	6"



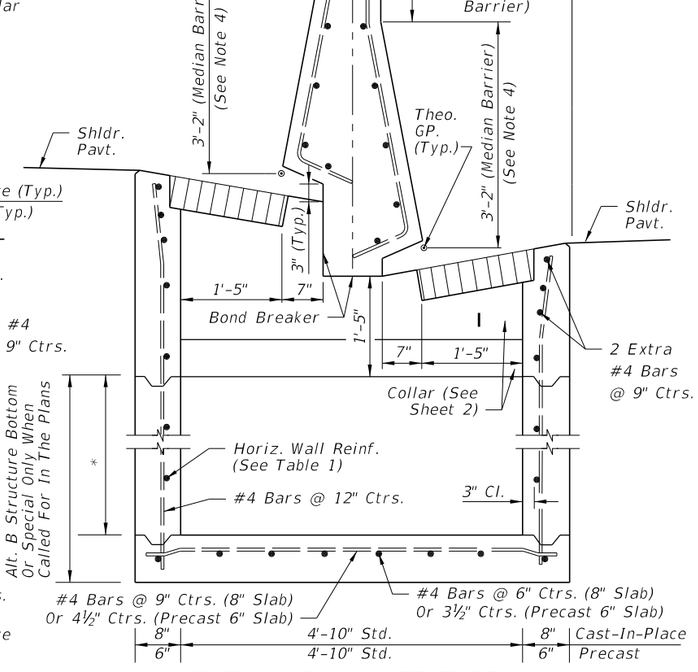
ISOMETRIC VIEW



SECTION A-A
(Pipe Opening Shown)



SECTION FOR INLET TYPE 1
(SYMMETRICAL HEIGHT BARRIER ONLY)



SECTION FOR INLET TYPE 2
(GRADE-SEPARATED BARRIER SHOWN, SYMMETRICAL HEIGHT BARRIER SIMILAR)

* Const. Joint Permitted Between These Limits See Index 425-001 For Min. Dimensions

SECTION B-B
(Pipe Opening Not Shown)

GENERAL NOTES:

1. Where called for in the Plans, use this inlet in conjunction with Median Barrier per Index 521-001.

   Inlet Descriptions:
   Type 1: Inlet on one side of Median Barrier
   Type 2: Inlet on both sides of Median Barrier

2. For grate details, see Index 425-040. The parallel bar grate shall be used unless the reticuline grate is called for in the plans. The reticuline grate shall be specified where bicycle traffic is anticipated. Used in areas of occasional pedestrian traffic. Not suitable for use in pedestrian traffic or bicycle way.

3. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.

4. For standard Median Barrier dimensions and requirements, see Index 521-001.

5. Inlet wall reinforcing is Grade 60 #4 bars. The horizontal wall reinforcing must be positioned 3" from the inside face unless otherwise shown. Per Index 425-001, the equivalent area of welded wire fabric is permitted.

6. Barrier reinforcing is Grade 60 #4 bars or #5 bars, as required to match the stirrups and longitudinal steel of the adjacent Concrete Barrier per Index 521-001. Barrier reinforcing steel cover may be either 2" or 2½" as needed 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.

7. For supplemental details see Index 425-001.

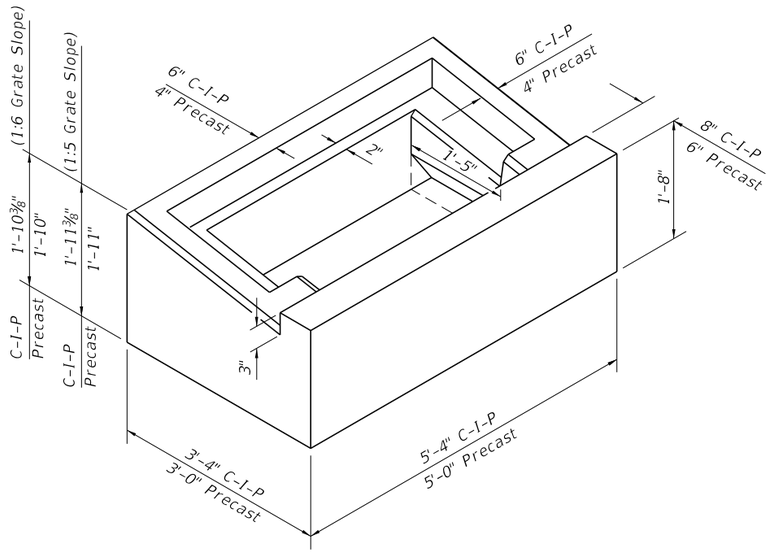
8. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.

9. Inlets to be paid for under the contract unit price for Inlets (Median Barrier Type_), EA. Concrete Barrier to be paid for under the contract unit price for Concrete Barrier, LF.

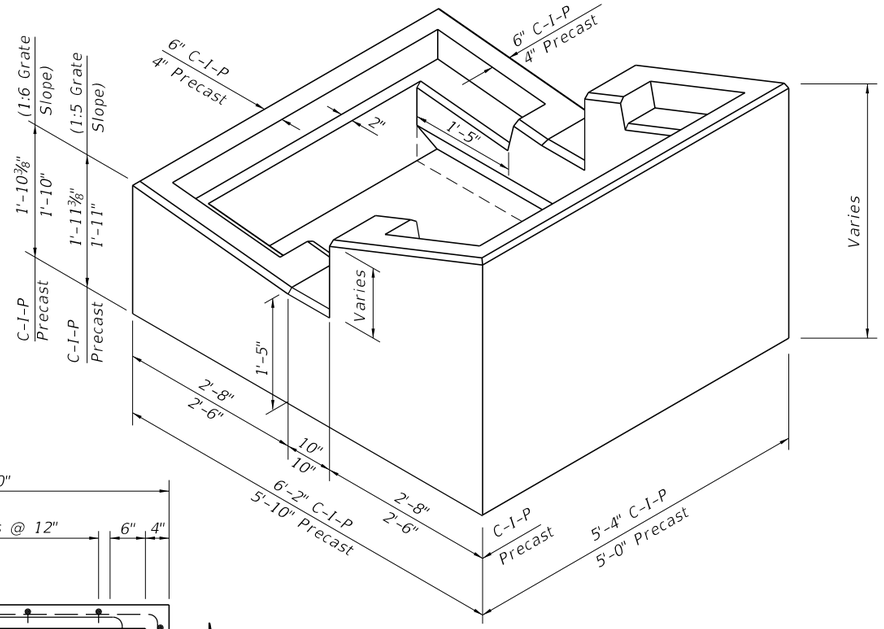
10. Bond Breaker: One layer of ASTM D6380 Class S, Type III organic felt between inlet and barrier, including footings.

11/25/2019 12:32:43 PM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	MEDIAN BARRIER INLETS TYPES 1 AND 2	425-030	1 of 2



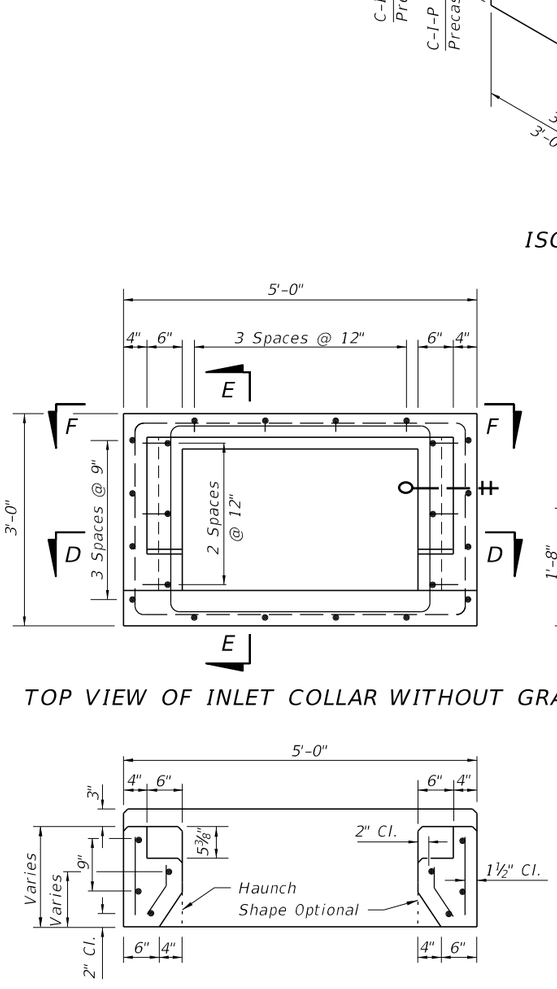
ISOMETRIC VIEW OF INLET COLLAR (TYPE 1)



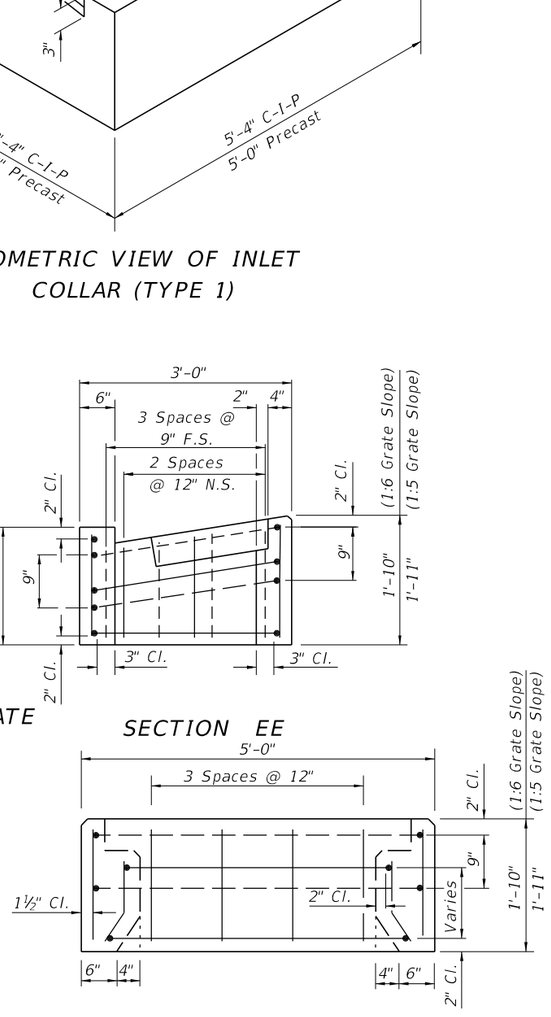
ISOMETRIC VIEW OF INLET COLLAR (TYPE 2)

TOP VIEW OF INLET COLLAR WITHOUT GRATE

SECTION EE

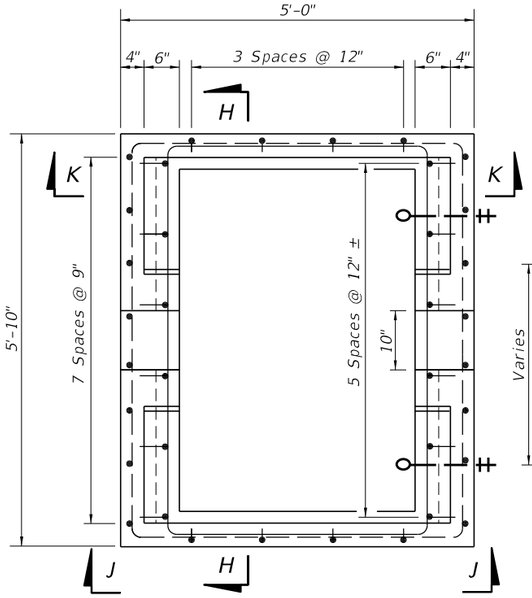


SECTION DD

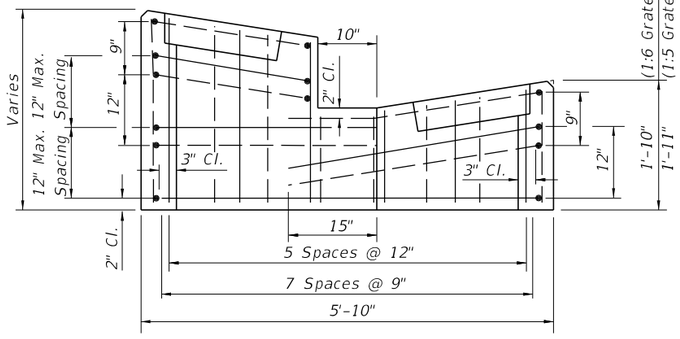


VIEW FF

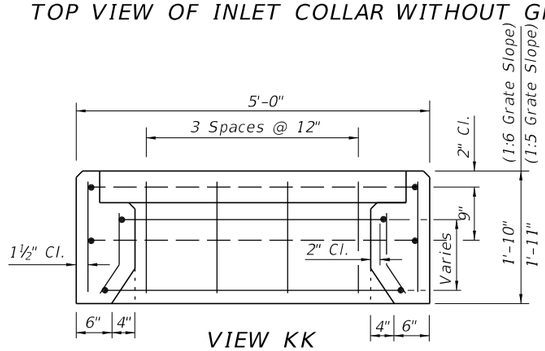
PRECAST COLLAR REINFORCING DETAILS (TYPE 1)
(C-I-P COLLAR REINFORCING DETAILS SIMILAR)



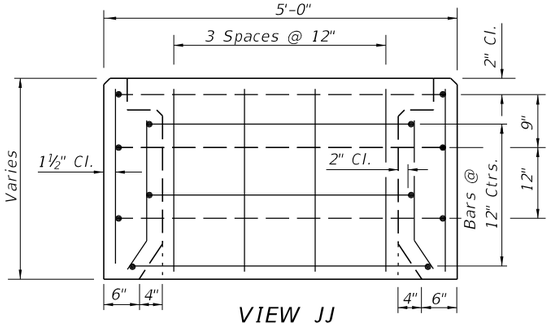
TOP VIEW OF INLET COLLAR WITHOUT GRATE



SECTION HH



VIEW KK

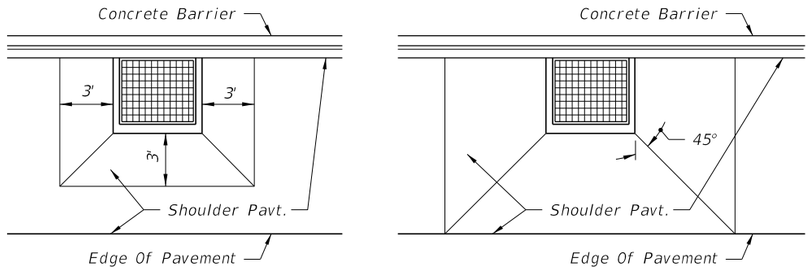


VIEW JJ

PRECAST COLLAR REINFORCING DETAILS (TYPE 2)
(C-I-P COLLAR REINFORCING DETAILS SIMILAR)

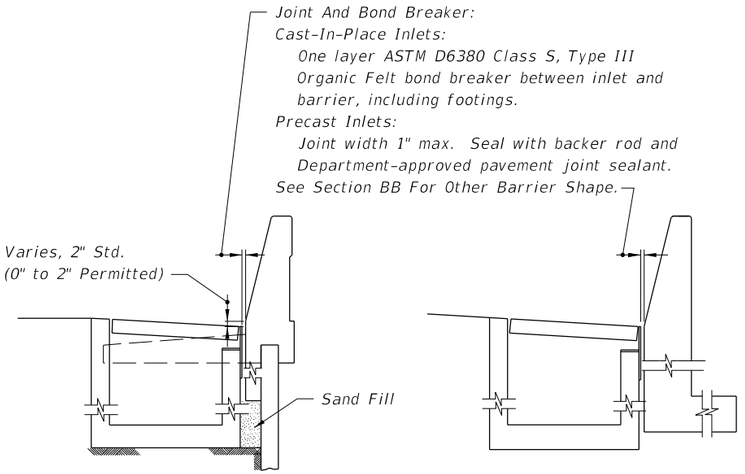
10/29/2019 8:15:35 AM

LAST REVISION 11/01/17	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MEDIAN BARRIER INLETS TYPES 1 AND 2	INDEX 425-030	SHEET 2 of 2



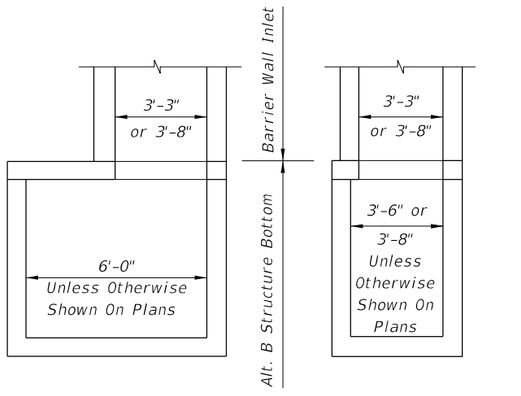
LOW SIDE SUPERELEVATION — HIGH SIDE TRANSITION

PAVEMENT WARP FOR SHOULDERS IN SUPERELEVATION



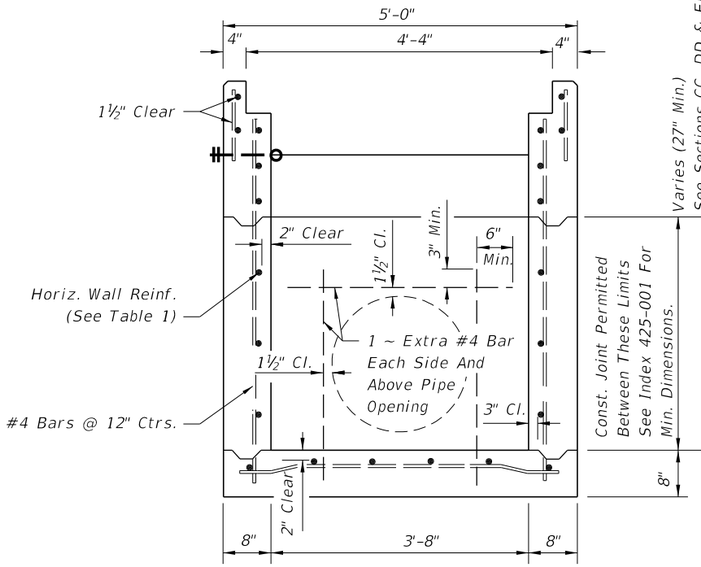
BARRIER WITH JUNCTION SLAB AND WALL COPING — BARRIER WITH STEM AND FOOTING

INLET SECTIONS - EXAMPLE BARRIER TYPES



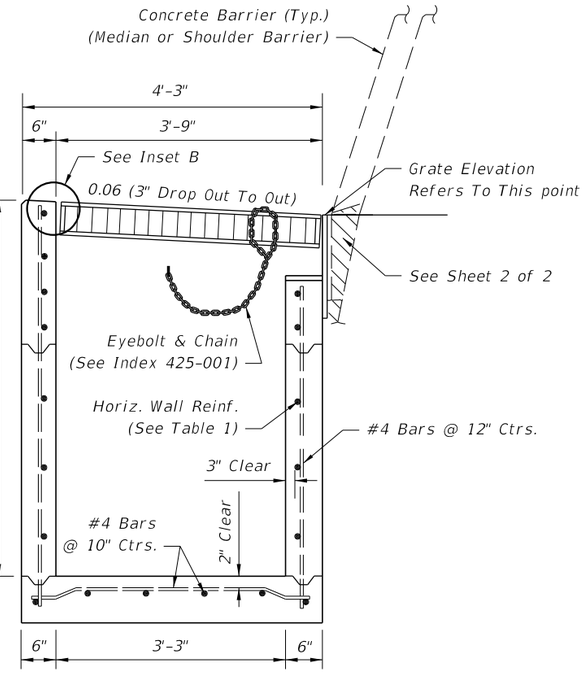
Note: Alt. B Structure Bottom Only. See Index 425-010

INLET WITH STRUCTURE BOTTOM



SECTION A-A (WITHOUT GRATE)

(Pipe Opening Shown)



SECTION B-B

(Pipe Opening Not Shown)

GENERAL NOTES:

1. Where 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. The inlet is suitable for bicycle and occasional pedestrian traffic, with roller bar installation (see INSET B), but should not be placed in a designated pedestrian travel way.

2. Inlets located in embankments constructed with earth anchored retaining wall shall be designed with minimum depths to reduce adverse impact on the anchorage system. Runs of pipe parallel to and near anchored wall shall be avoided wherever practical. Special coordination must be exercised during the design and construction of storm water systems within anchored wall systems.

3. Inlet bottoms and/or tops may be either precast or cast-in-place. Whether cast as a single unit or as multiple segments, and whether precast or cast-in-place, the upper 2'-3" of the inlet shall be reinforced in accordance with sections CC, DD and EE.

4. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.

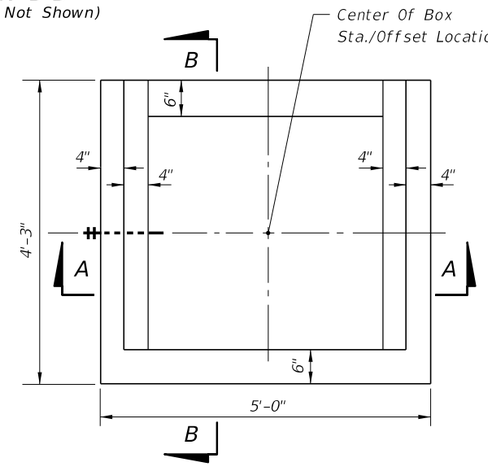
5. When Alternate G grate is specified in the plans, the grate is to be hot-dip galvanized after fabrication. Field installation of the filler bar called for in Inset B will not be permitted, thereby requiring tolerance adjustment during fabrication and/or casting, or, matching grate to structure prior to galvanizing.

6. All reinforcing is Grade 60 bars. See Index 425-001 for equivalent area of welded wire fabric.

7. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.

8. For supplemental details see Indexes 425-001 and 425-010.

9. Inlets to be paid for under the contract unit for Inlets (Concrete Barrier), Ea.



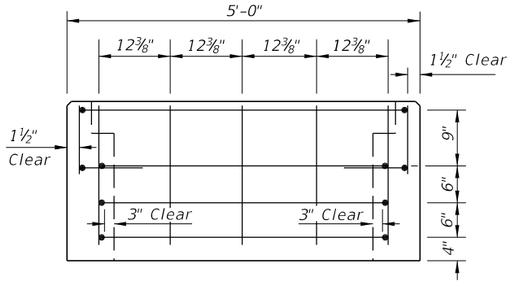
TOP VIEW (WITHOUT GRATE)

TABLE 1: HORIZONTAL WALL REINFORCING SCHEDULE

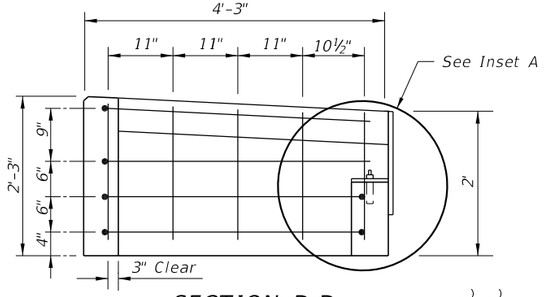
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0'-5'	A12	0.20	12"	8"
5'-10'	A6	0.20	6"	5"
10'-15'	A4	0.20	4"	3"
10'-15'	B5.5	0.24	5½"	5"

10/29/2019 8:15:35 AM

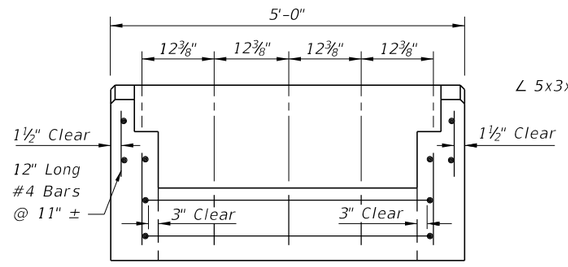
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	ADJACENT BARRIER INLET	425-031	1 of 2



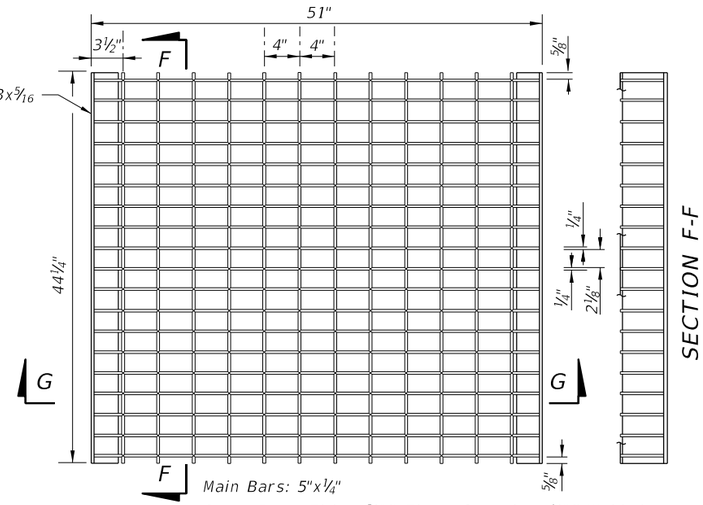
SECTION C-C



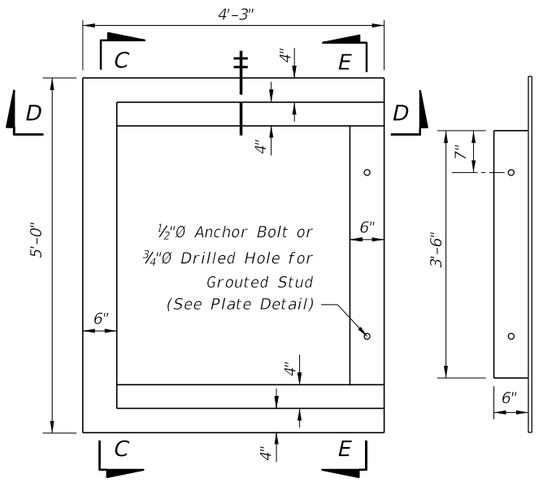
SECTION D-D



SECTION E-E

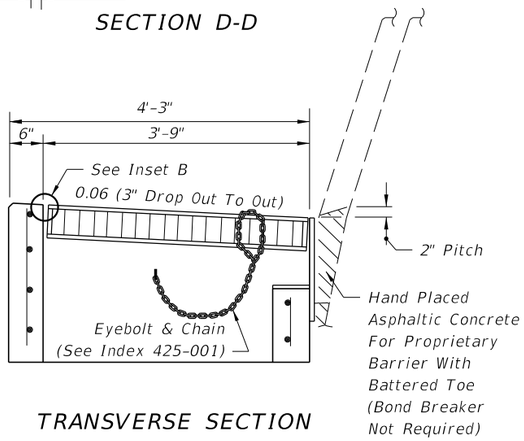


TOP VIEW

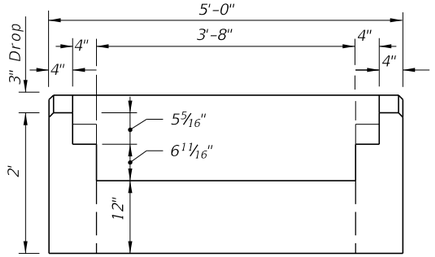


TOP VIEW OF INLET WITHOUT GRATE

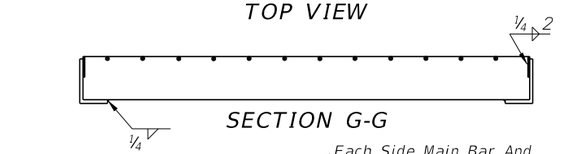
TOP VIEW OF METAL PLATE



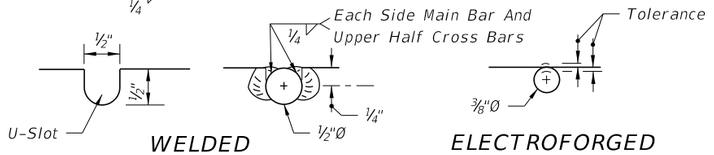
TRANSVERSE SECTION WITH GRATE & PLATE



BACK VIEW WITHOUT BACK PLATE



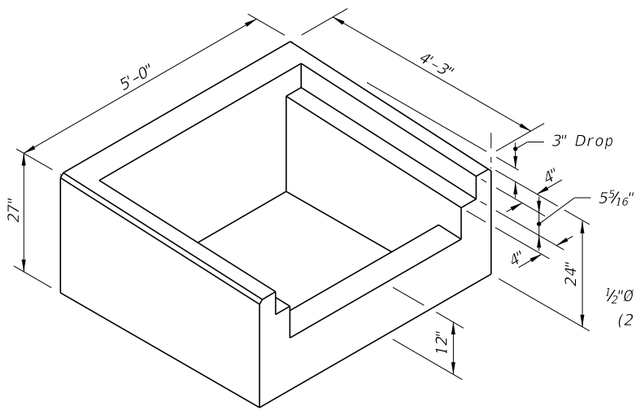
SECTION G-G



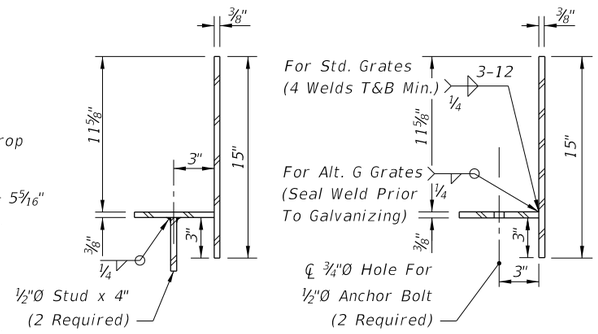
WELDED ELECTROFORGED

CROSS BAR OPTIONS

STEEL GRATE



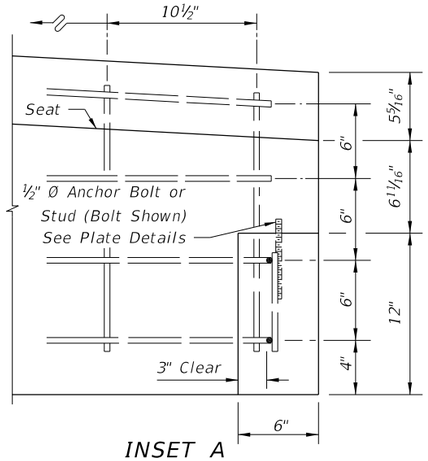
PICTORIAL VIEW OF INLET COLLAR



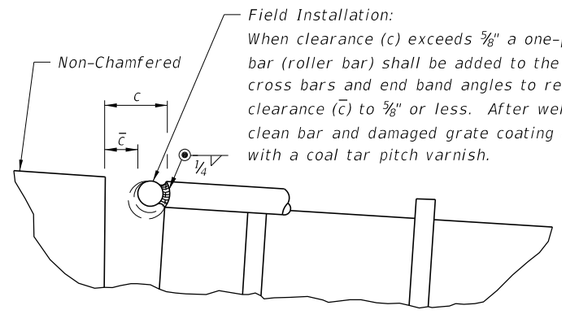
OPTION FOR GROUT STUD

OPTION FOR ANCHOR BOLT

TRANSVERSE SECTIONS THRU BACKWALL PLATE



INSET A



INSET B
(See Sheet 1,
General Note 1)

NOTES

1. All reinforcing steel bars shown are #4 bars.

2. Anchor bolts shall be 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 Section 416. Bolts or rods shall be 6" long (4" min. embedment) with one heavy hex head nut (ASTM 194 or A563) and one flat washer (ASTM F436) each. All anchor bolts, nuts and washers shall be hot-dip galvanized.

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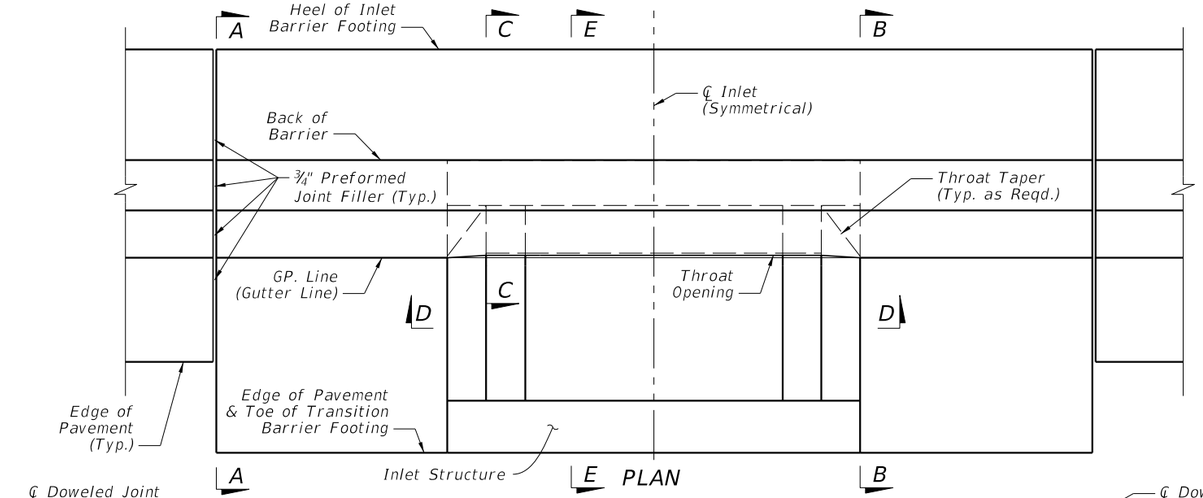
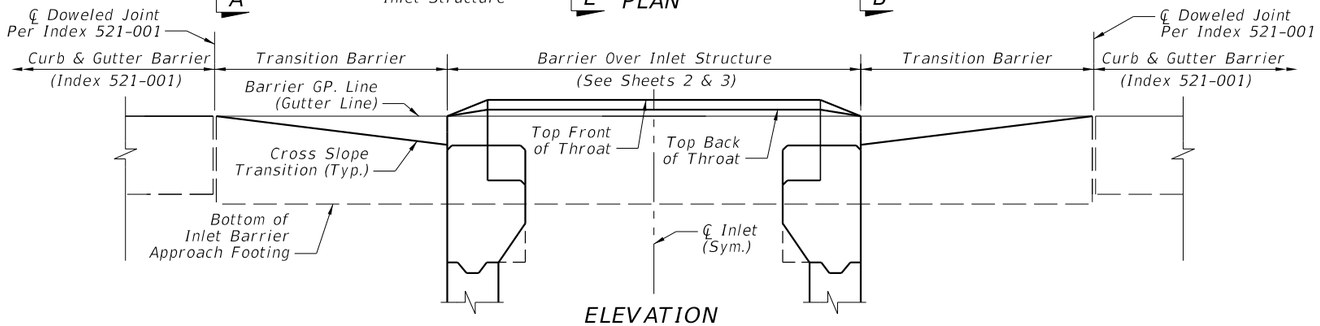
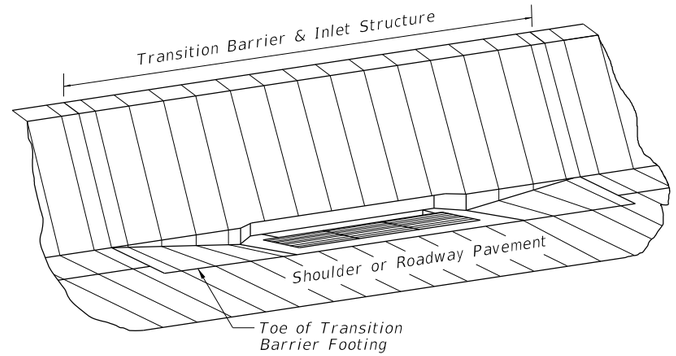
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ADJACENT BARRIER INLET	INDEX	SHEET
11/01/19						425-031	2 of 2

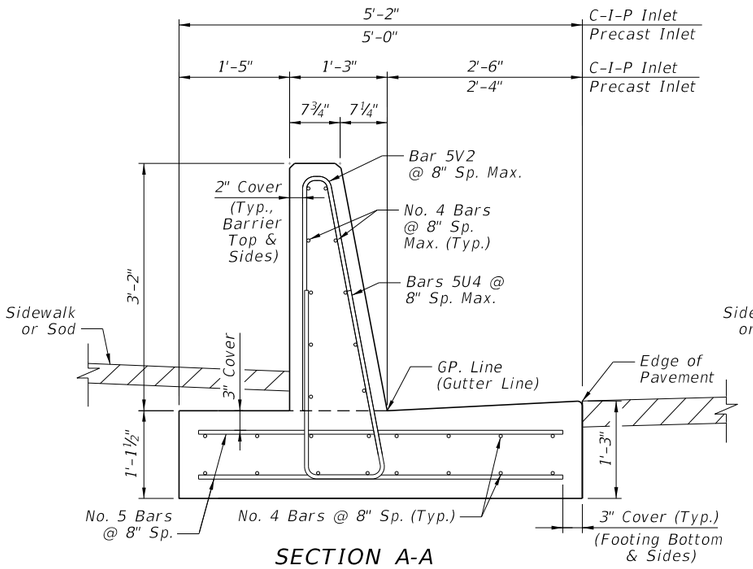




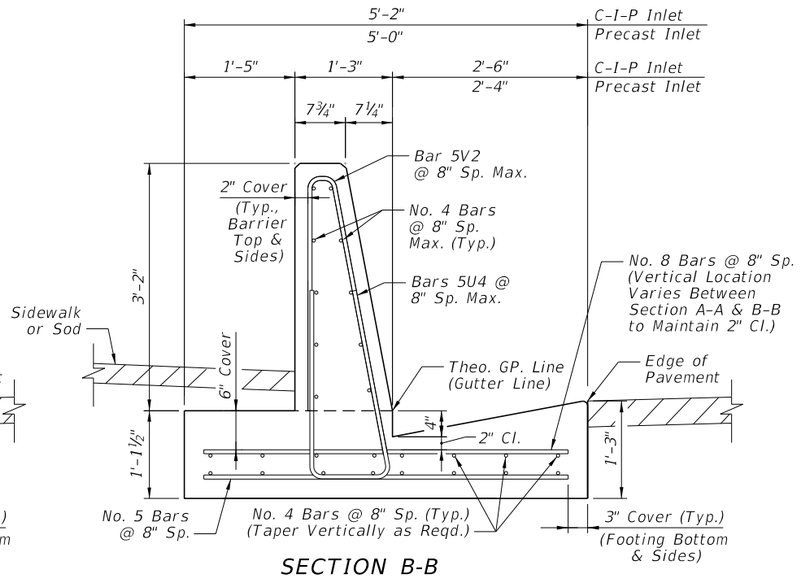
ELEVATION



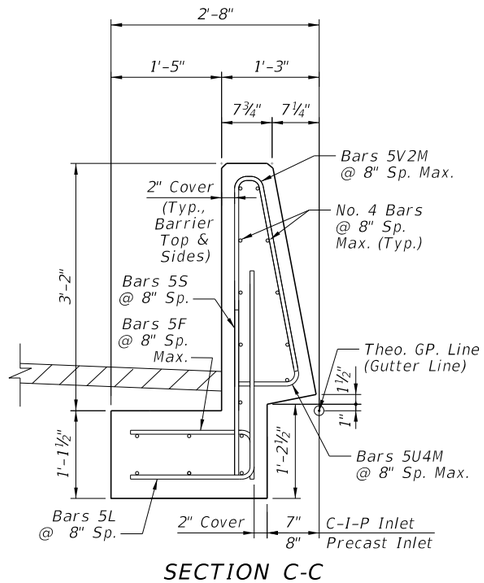
ISOMETRIC VIEW



SECTION A-A
TRANSITION BARRIER
BEGIN CROSS-SLOPE TRANSITION
(ALIGN WITH CURB AND GUTTER BARRIER, SEE INDEX 521-001)



SECTION B-B
TRANSITION BARRIER
END CROSS-SLOPE TRANSITION
(ALIGN WITH INLET STRUCTURE)



SECTION C-C
BARRIER OVER INLET STRUCTURE
(THROAT FULLY TRANSITIONED)

GENERAL NOTES:

1. 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.
2. 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 1½" clearance around pipe openings. The cost for additional reinforcing in the barrier is included in the cost of the concrete barrier.

   For Bar Bending Details of Bars 5V2 & 5U4, see Index 521-001. For all others, see Sheet 2 & 3.
3. All barrier is Class II or IV concrete per Index 521-001.
4. Apply a ¾" chamfer or ¼" radius to all exposed concrete edges.
5. For pipe connections to inlet structure bottoms, the recommended maximum pipe sizes are 18" longitudinal and 30" transverse. For larger pipe, use Alternate B bottoms, Index 425-010.
6. Grates may be fabricated with reticuline bars or with either ½"∅ welded or ⅜"∅ electroforged cross bars and bearing bars as detailed on Sheet 3.
7. When Alternate G grate is specified in the plans, the grate is to be hot-dip galvanized after fabrication, in accordance with Specification 962-9.
8. For Pay Item purposes, the depth of the barrier inlet shall be computed using the center of box grate elevation, minus either the flow line elevation of the lowest pipe flow line or the top of the sump floor elevation.
9. All dimensions are for both precast and cast in place (C-I-P) inlets unless otherwise indicated.
10. For inlets placed in areas of bicycle traffic, provide the extended crossbar or bar stub (See Insets "B" and "B ALTERNATE").
11. Inlets to be paid for under the contract unit price for Inlets, Barrier Rigid, Curb and Gutter, Each.
12. Concrete Barrier to be paid for under the contract unit price for Shoulder Concrete Barrier, Rigid-Curb & Gutter, LF.

BARRIER SECTIONS

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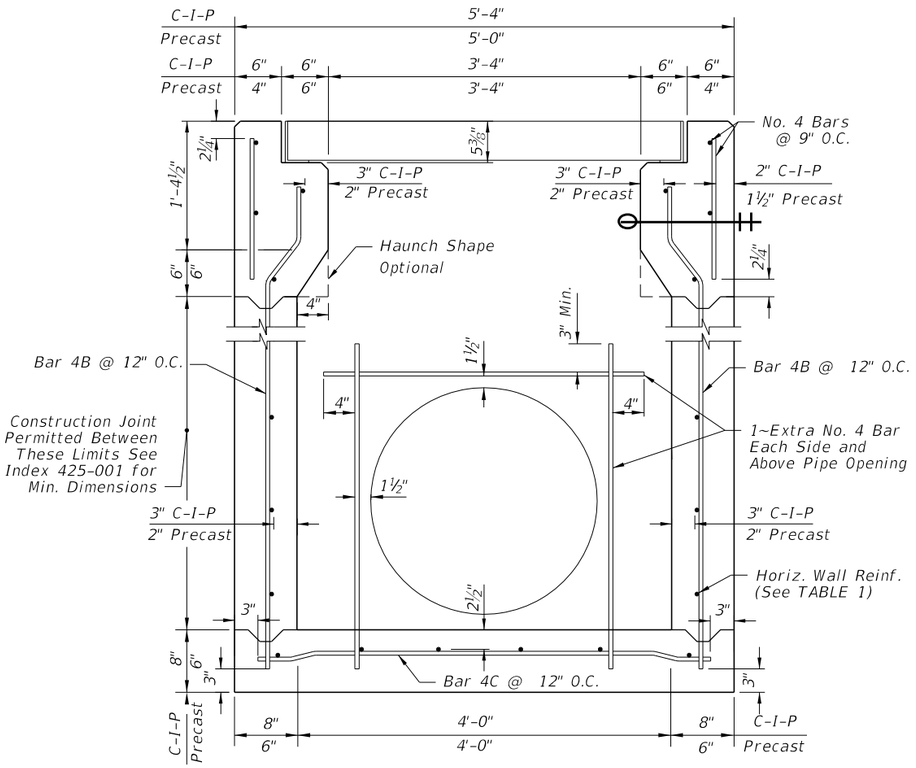
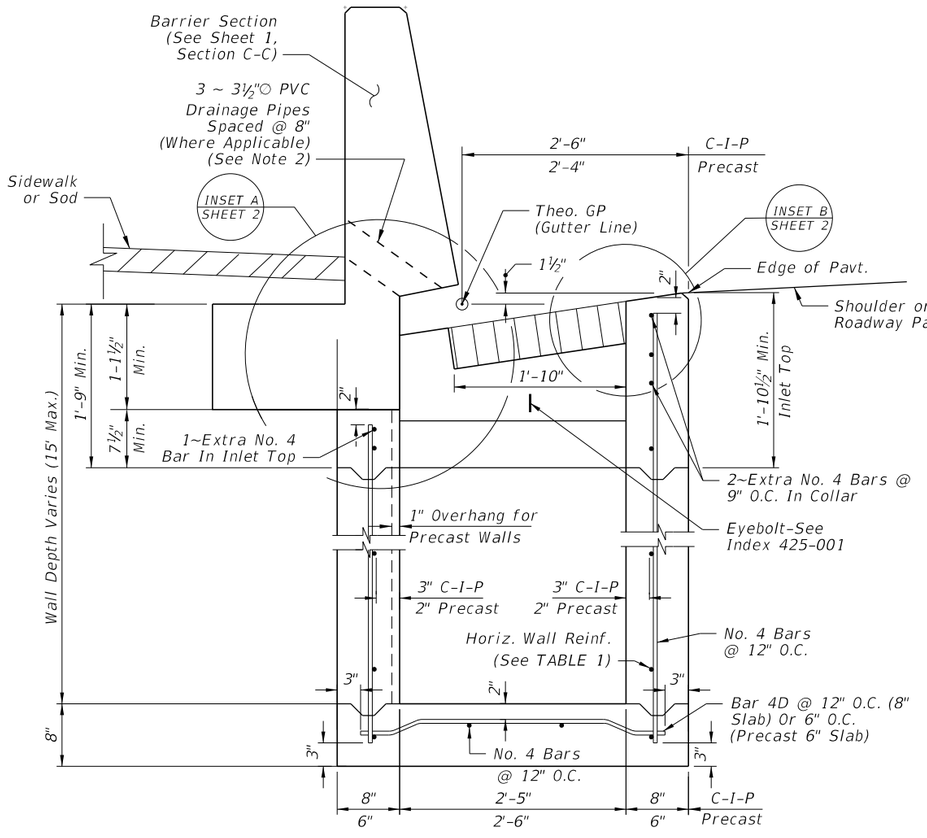
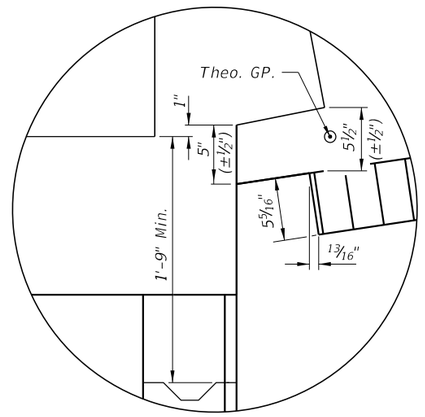
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CURB AND GUTTER BARRIER INLET	INDEX	SHEET
11/01/17						425-032	1 of 3



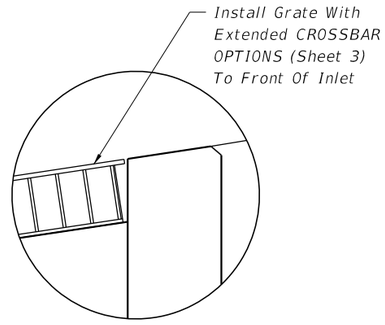
SECTION D-D
INLET STRUCTURE
(18" Dia. Pipe Opening Shown)



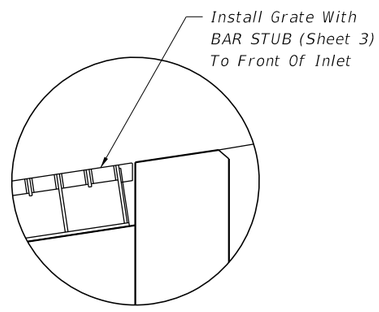
SECTION E-E
(Pipe Opening Not Shown)
(Barrier Reinforcing Steel Not Shown, See Sheet 1, Section C-C)



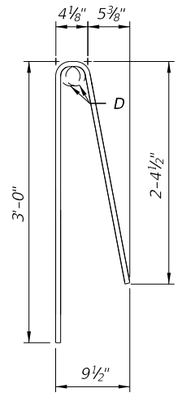
INSET A



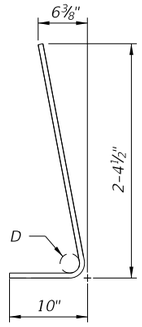
INSET B
(See General Note 10)



INSET B ALTERNATE
(See General Note 10)

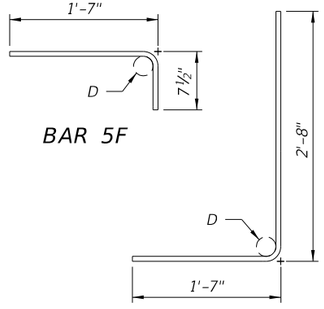


BAR 5V2M

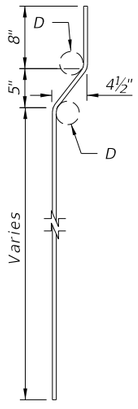


BAR 5U4M

BAR 5S



BAR 5F
BAR 5L



BAR 4B

BAR 4C

BAR 4D

BAR BENDING DIAGRAMS

WALL DEPTH		SCHEDULE	AREA	MAX. SPACING	
C-I-P	PRECAST		(in.²/ft.)	BARS	WWR
0'-4'	0'-3'	A12	0.20	12"	8"
4'-9'	3'-6'	A6	0.20	6"	5"
9'-15'	6'-10'	B5.5	0.24	5½"	5"
	10'-15'	C6.5	0.37	6½"	6"

TABLE 1: HORIZONTAL WALL REINFORCING SCHEDULE

NOTES:

1. For Bar Bending Diagrams of Bars 5V2 & 5U4, See Index 521-001. Bars 5V2M, 5U4M, & 5S may be field cut from Bars 5V2 & 5U4.
2. Install PVC drainage pipes at the inlet centerline when the inlet is located in a sag curve or when drainage pipes are called for in the plans. Install a quantity of 3 ~ 3½"○ (I.D.) NPS Schedule 40 Pipes longitudinally spaced at 8", with the center pipe as near to the inlet centerline as practical without conflicting with the steel reinforcing.

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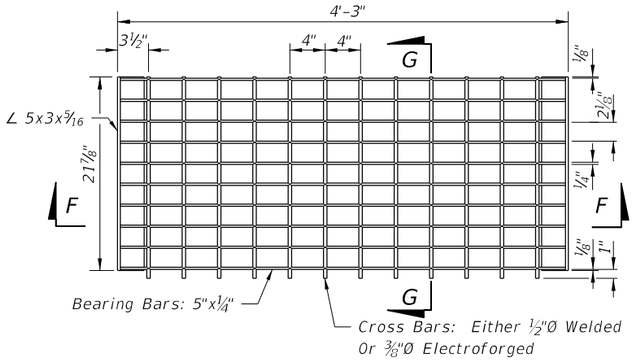
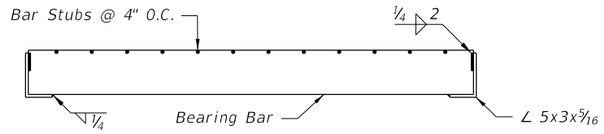
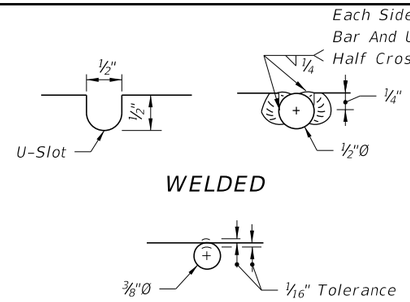
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CURB AND GUTTER BARRIER INLET	INDEX 425-032	SHEET 2 of 3



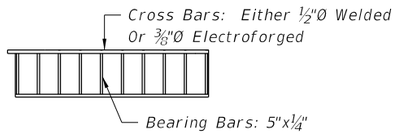
PLAN VIEW



SECTION FF

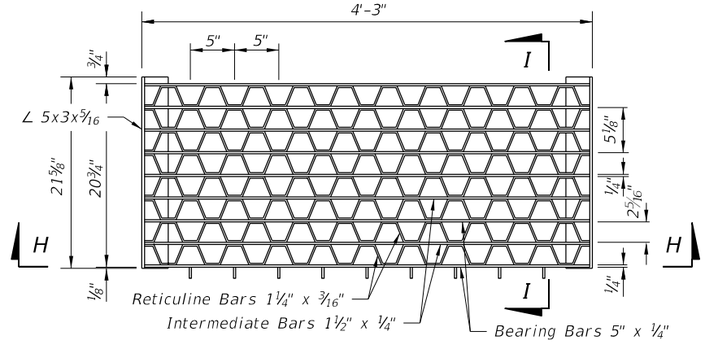


CROSS BAR OPTIONS

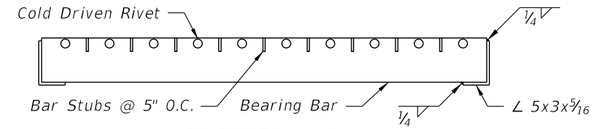


SECTION GG

CROSS BAR GRATE

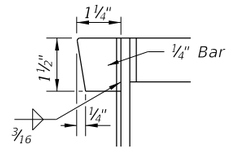


PLAN VIEW

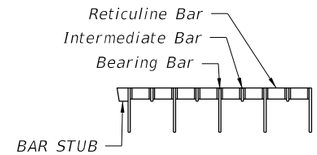


SECTION HH

RETICULINE GRATE

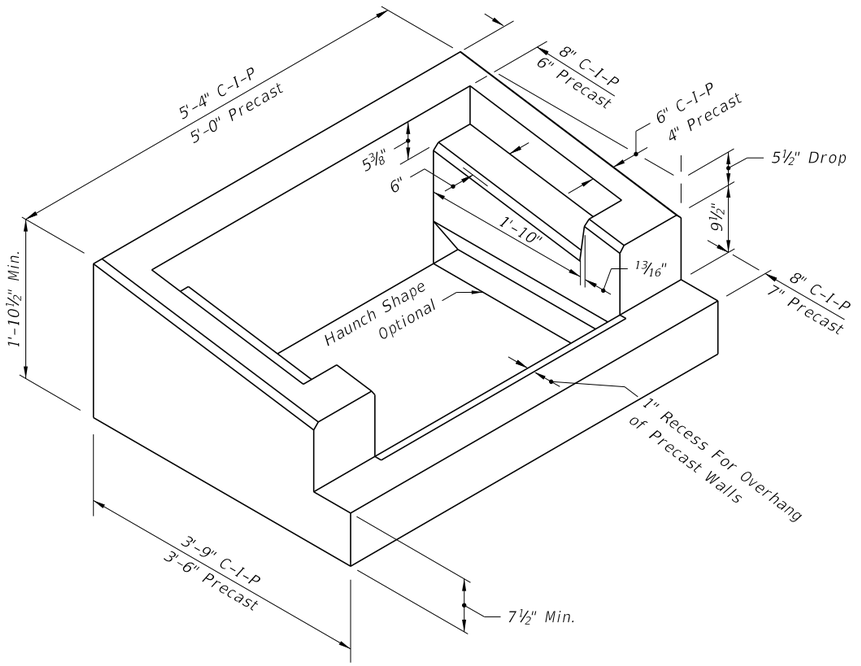


BAR STUB

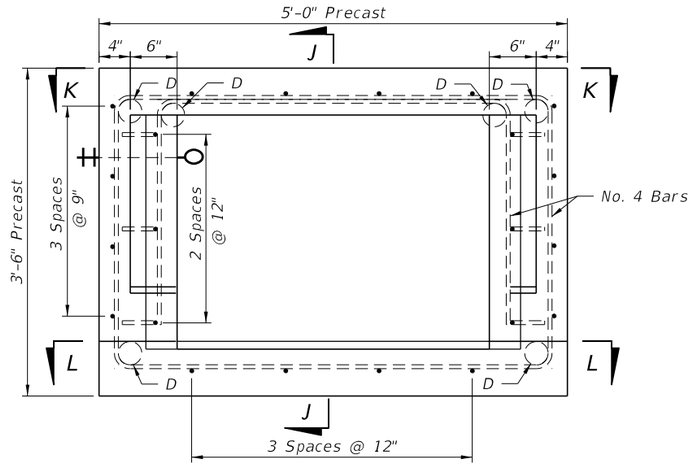


SECTION II

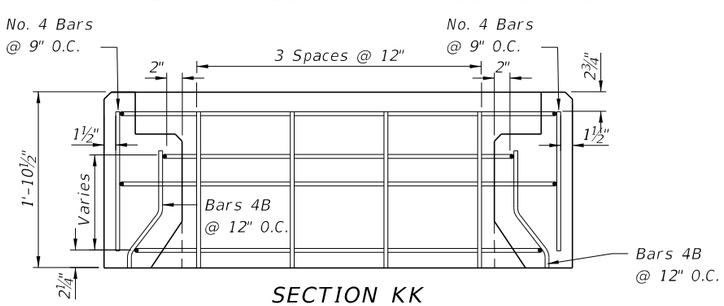
OPTIONAL STEEL GRATES



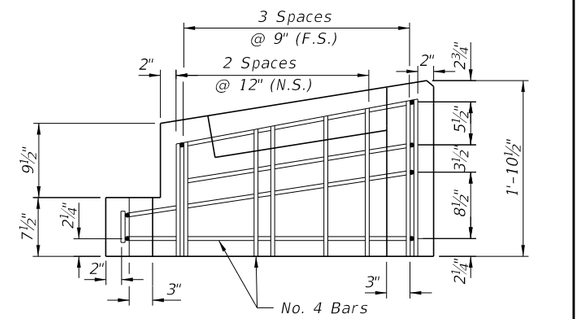
PICTORIAL VIEW OF INLET TOP



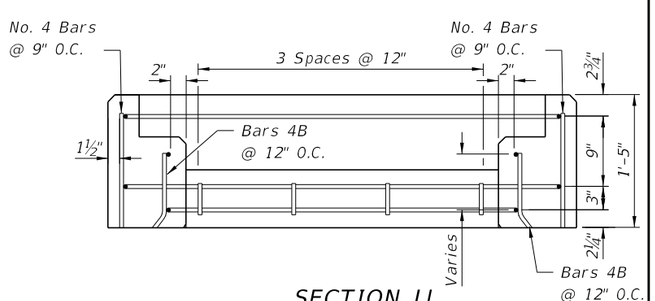
TOP VIEW OF INLET TOP WITHOUT GRATE



SECTION KK



SECTION JJ



SECTION LL

NOTE:
1. For additional information on Bar 4B, see BAR BENDING DIAGRAMS (Sheet 2).
2. C-I-P Inlet Top Reinforcing Similar

PRECAST INLET TOP REINFORCING DETAILS

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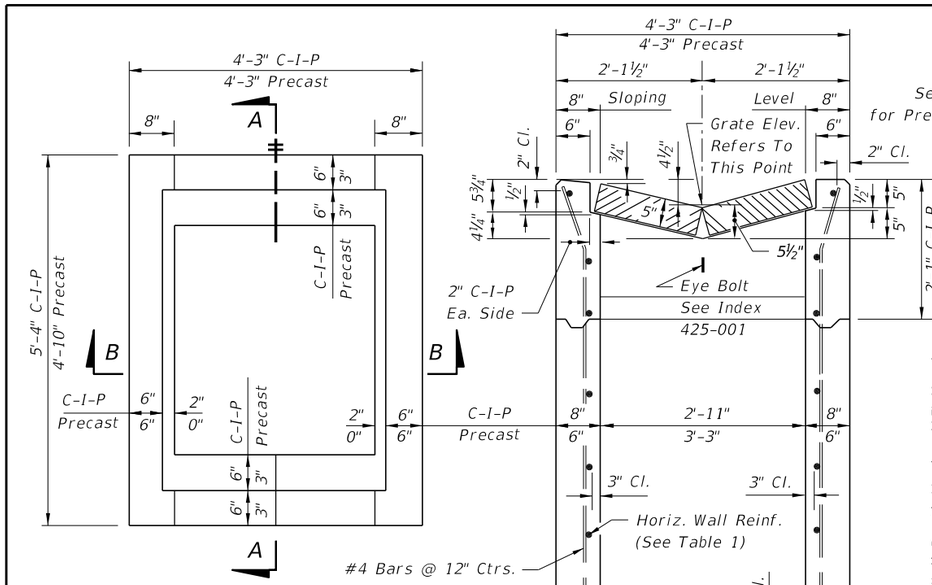
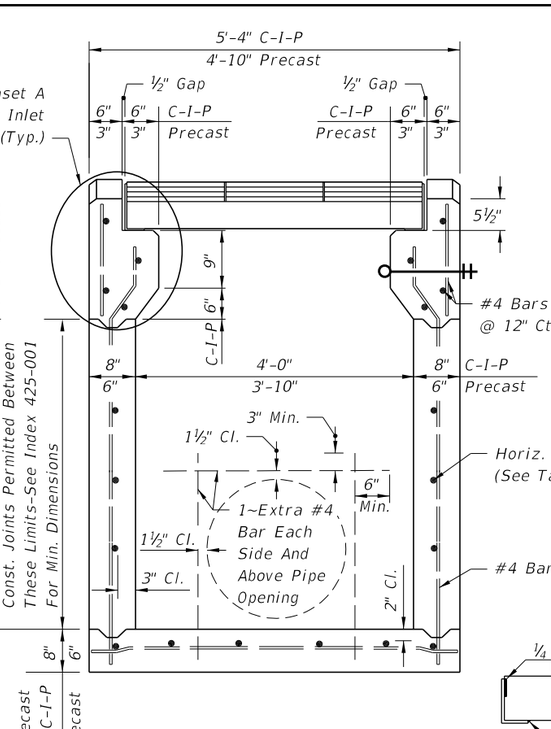
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CURB AND GUTTER BARRIER INLET	425-032	3 of 3



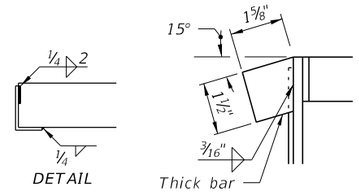
PLAN
(CAST-IN-PLACE INLET WITHOUT GRATE SHOWN, PRECAST INLET SIMILAR)

(Pipe Opening Not Shown)
SECTION BB

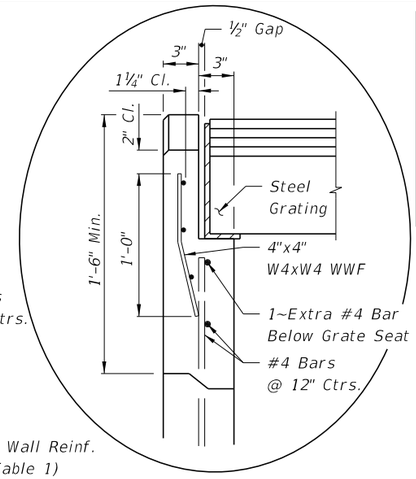


(Pipe Opening Shown)
SECTION AA

(CAST-IN-PLACE INLET SHOWN, PRECAST INLET SIMILAR)



DETAIL
DETAIL OF BAR STUB



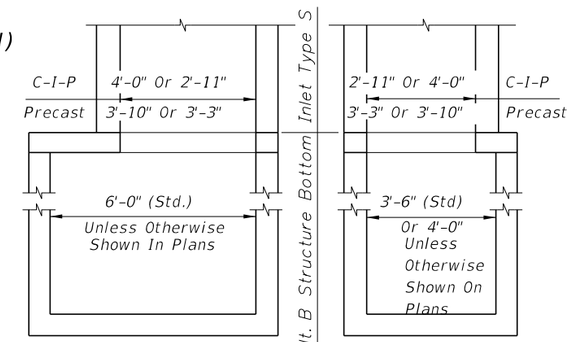
INSET A
(PRECAST OPTION)

RECOMMENDED MAXIMUM PIPE SIZES	
INLET INSIDE WIDTH	PIPE SIZE
2'-11" or 3'-3"	24"
4'-0" or 3'-10"	30"

Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index 425-001. For larger pipe see bottom detail below and Index 425-010.

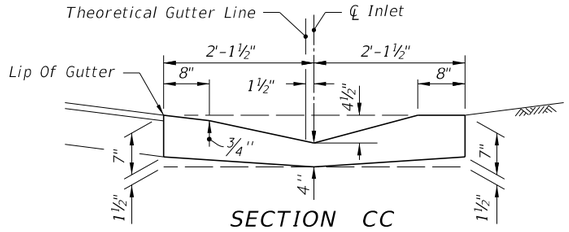
HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

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

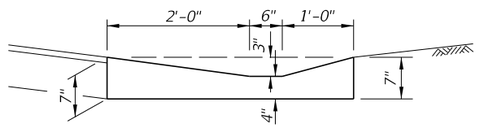


NOTE: Alt. B Structure Bottom Only. See Index 425-010 for structure bottom details and hole reinforcement.

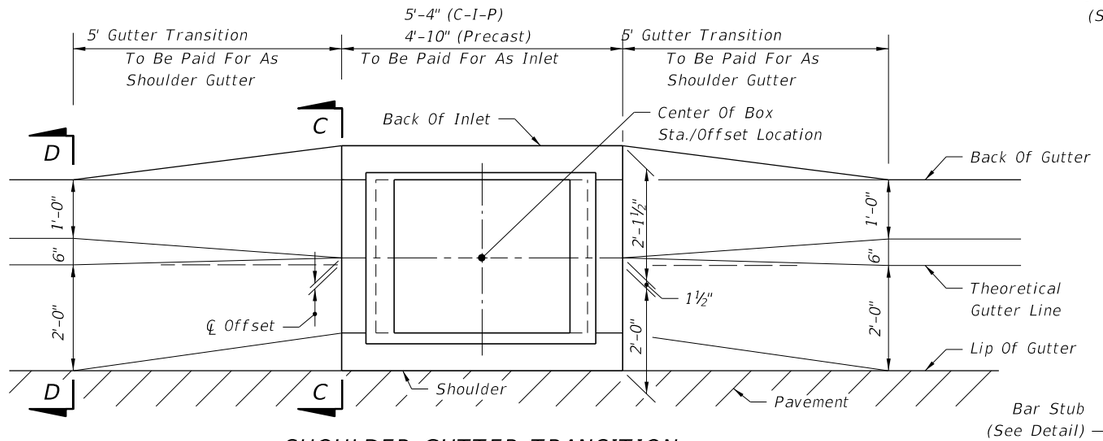
INLET WITH STRUCTURE BOTTOM



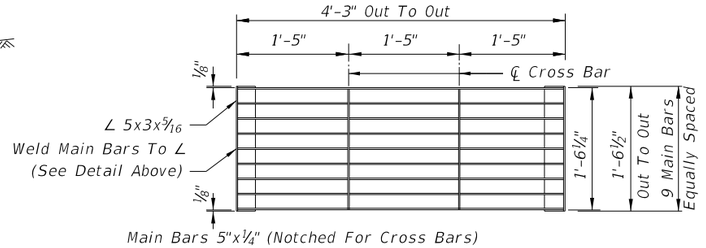
SECTION CC

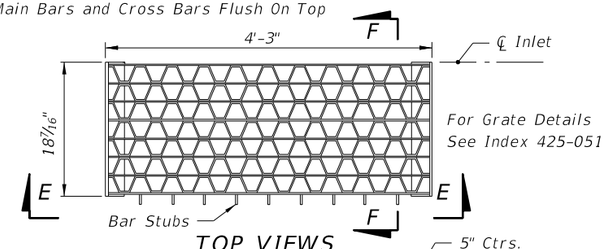


SECTION DD

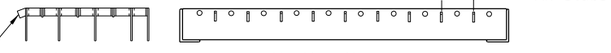


SHOULDER GUTTER TRANSITION





TOP VIEWS



SECTION FF

SECTION EE

STEEL GRATE

GENERAL NOTES

1. This inlet is intended for use in shoulder gutter on facilities subject to heavy wheel loads.
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. Bars to be cut or bent for 1½" minimum clearance around pipe.
3. All exposed edges and corners must be ¾" chamfer or tooled to ¼" radius.
4. When Alternate G grate is specified in plans, the grate is to be hot-dip galvanized after fabrication.
5. For supplementary details and notes see Indexes 425-001 and 425-010.
6. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
7. Inlets to be paid for under the contract unit price for inlets (Gutter Type S), EA. Cost of concrete apron at terminal inlets to be included in the cost of the inlet.

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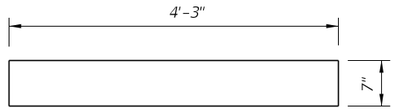
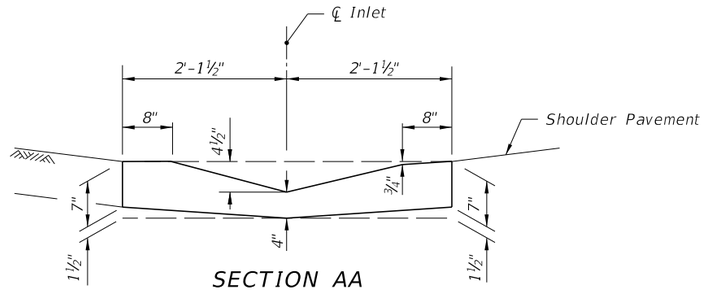
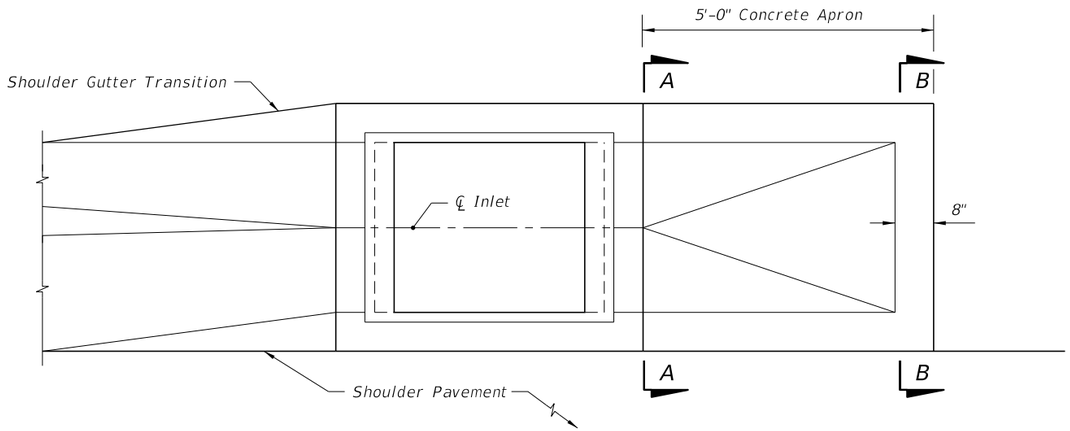
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	GUTTER INLET TYPE S	INDEX	SHEET
11/01/17					425-040	1 of 3



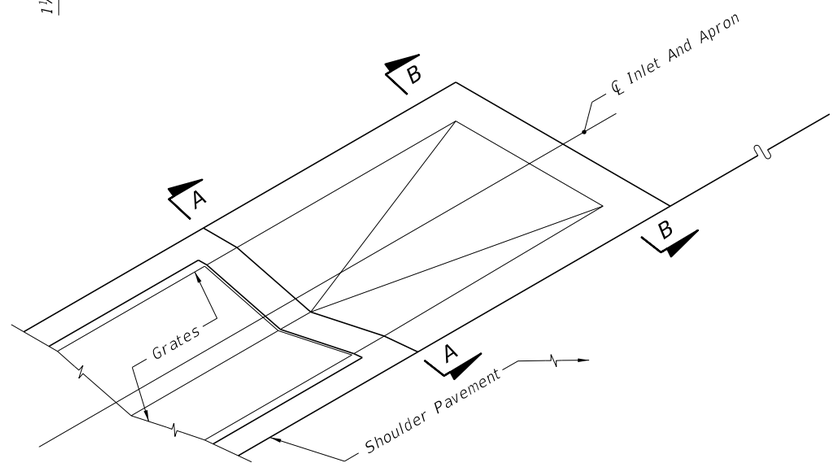
SECTION BB
(Enlarged)



SECTION AA
(Enlarged)



Top View



PICTORIAL VIEW

Apron To be Constructed At The Most Downstream Inlet In A Run Of Shoulder Gutter

CONCRETE APRON AT TERMINAL INLETS

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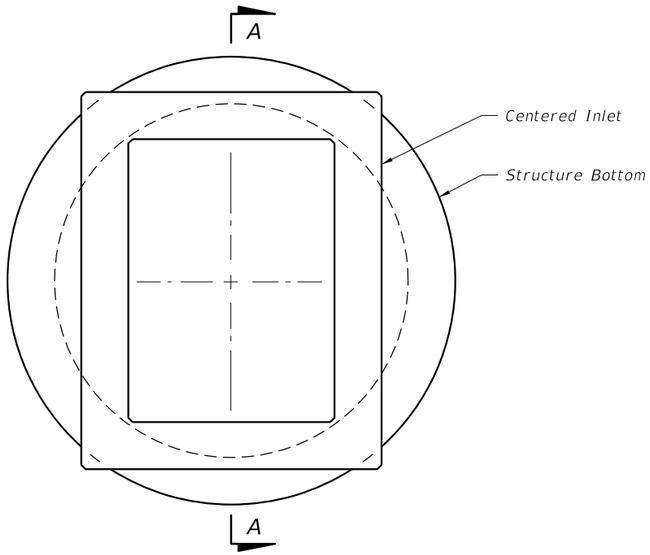
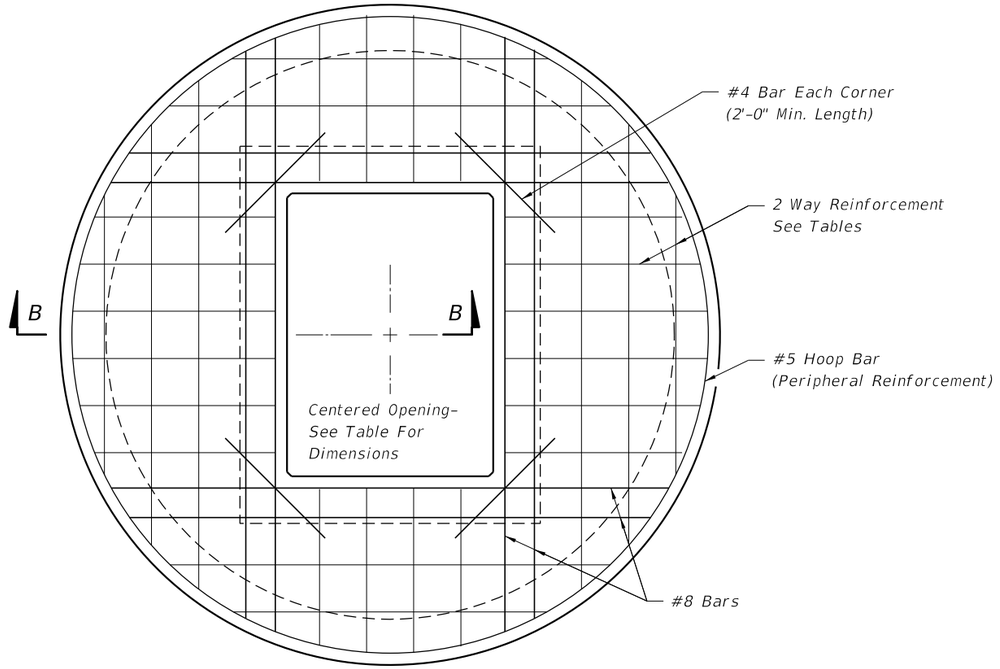
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUTTER INLET TYPE S	INDEX	SHEET
11/01/17						425-040	2 of 3



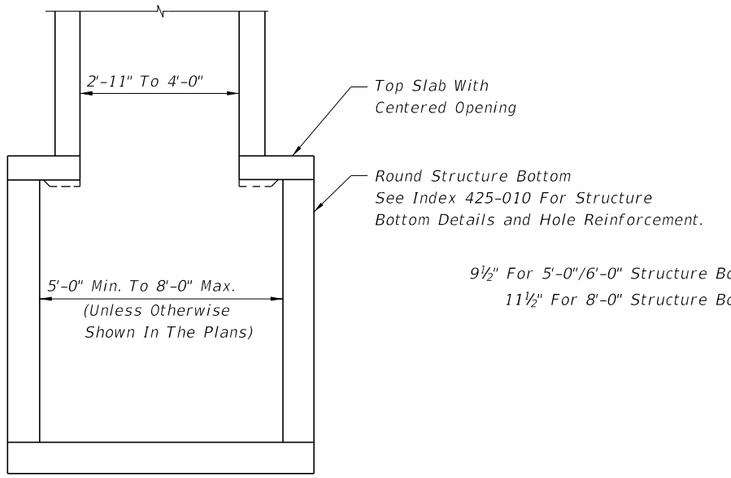
TOP VIEW



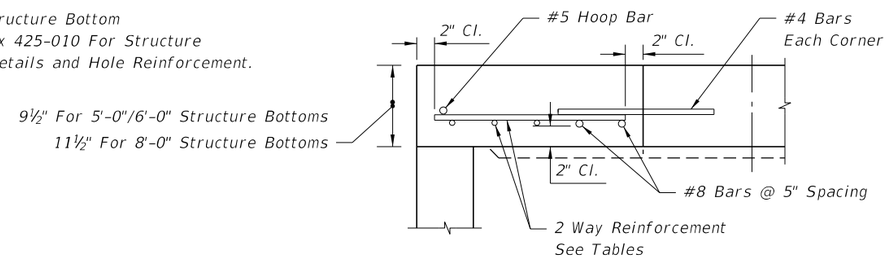
TOP SLAB REINFORCING DIAGRAM

TOP SLAB REINFORCING SCHEDULE	
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) $In^2/ft.$
A	0.20
B	0.24
C	0.37
D	0.53
E	0.73
F	1.06
G	1.45

TOP SLAB OPENINGS		
DIAMETER	OPENING SIZE	
	MIN.	MAX.
5'-0" To 8'-0"	2'-11" x 4'-0"	3'-3" x 3'-10"



SECTION AA



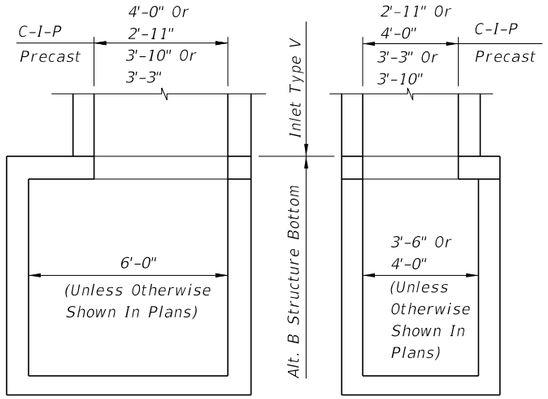
SECTION BB

TOP SLAB WITH CENTERED OPENING		
SLAB DEPTH	SLAB THICKNESS	REINFORCING (2 WAYS) SCHEDULE
SIZE: 5'-0"		
≥0.5'<30'	9½"	C
30'-40'	9½"	D
SIZE: 6'-0"		
≥0.5'<8'	9½"	B
8'<18'	9½"	C
18'<30'	9½"	D
30'<37'	9½"	E
37'-40'	9½"	G
SIZE: 8'-0"		
≥0.5'<9'	11½"	C
9'<15'	11½"	D
15'<23'	11½"	E
23'<33'	11½"	E
33'-40'	11½"	G

ALT. A STRUCTURE BOTTOM FOR INLET TYPE S

10/29/2019 8:15:42 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	GUTTER INLET TYPE S	INDEX	SHEET
11/01/17					425-040	3 of 3

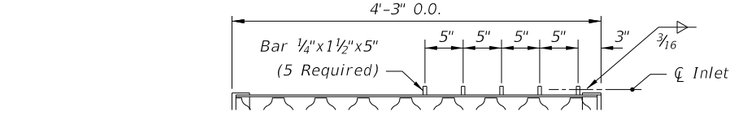


NOTE: Alt. B Structure Bottom Only. See Index 425-010 for structure bottom details and hole reinforcement.

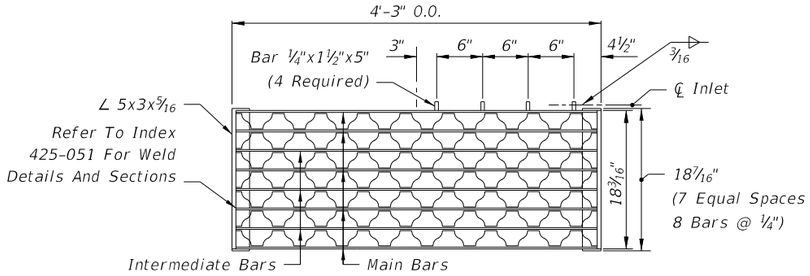
(For Pipes 30" Dia. And Larger)

INLET WITH STRUCTURE BOTTOM

RECOMMENDED MAXIMUM PIPE SIZES	
Inlet Inside Width	Pipe Size
2'-11" Or 3'-3"	24"
4'-0" Or 3'-10"	30"
Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index 425-001. For larger pipe see bottom detail above and Index 425-010.	



OPTIONAL BAR SPACING



TWO REQUIRED PER INLET

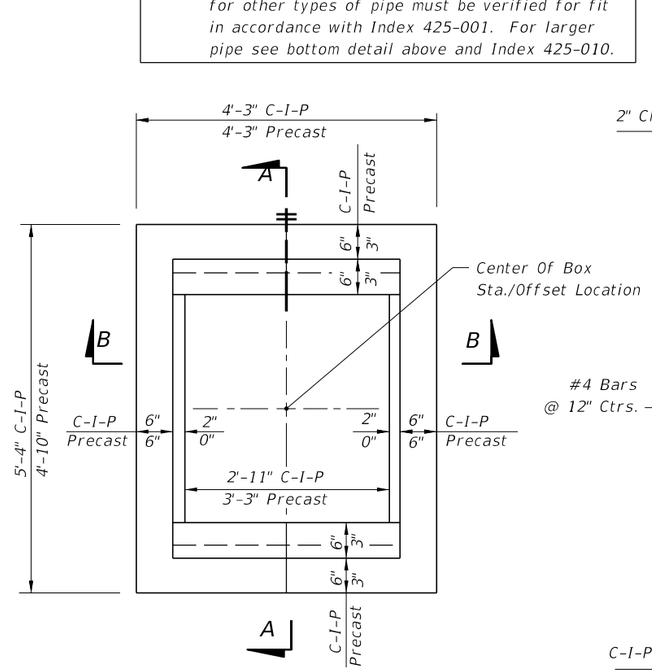
5" Steel Grate: Main Bars 5"x¼"
Intermediate Bars 1½"x¼"
Reticuline Bars 1¼"x3/16"

GENERAL NOTES

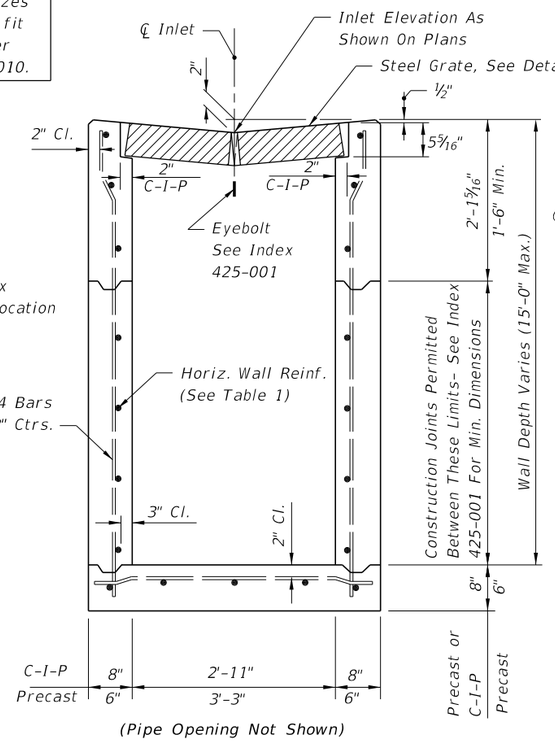
1. This inlet is suitable for village swales, ditches, or other areas subject to heavy wheel loads, minimum debris. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet. This inlet is not for use in a bicycle way.
2. When alternate "G" grate is specified in plans, the grate is to be hot dip galvanized after fabrication.
3. 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 1½".
4. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
5. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
6. For supplementary details see Index 425-001.
7. Inlet to be paid for under the contract unit price for Inlets (Gutter Type V), EA

HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

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

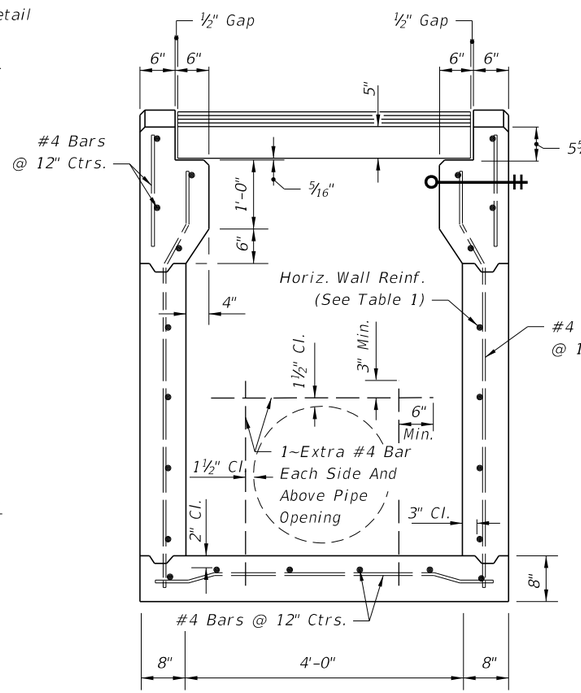


PLAN
(CAST-IN-PLACE INLET SHOWN WITHOUT GRATE; PRECAST INLET SIMILAR)

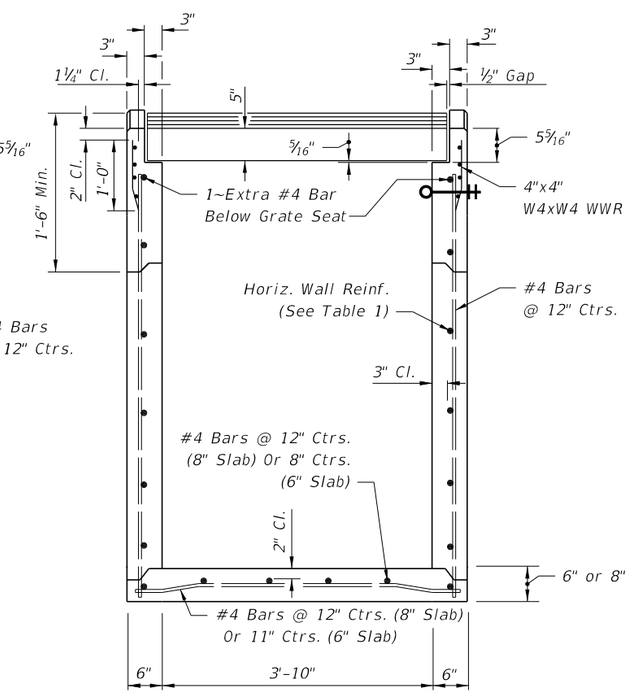


(Pipe Opening Not Shown)

SECTION BB
(CAST-IN-PLACE INLET SHOWN PRECAST INLET SIMILAR)



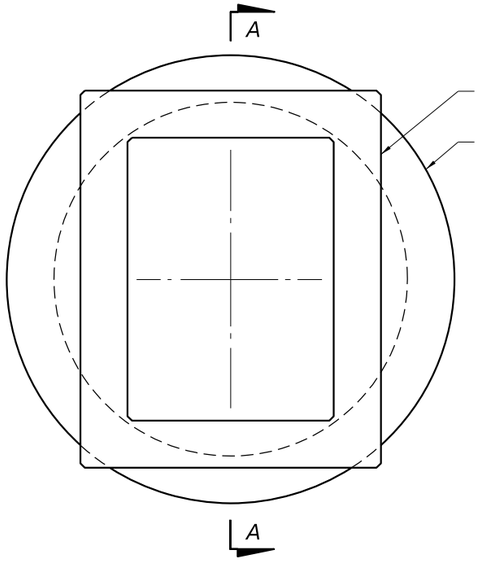
(Pipe Opening Shown)
SECTION AA
(CAST-IN-PLACE INLET)



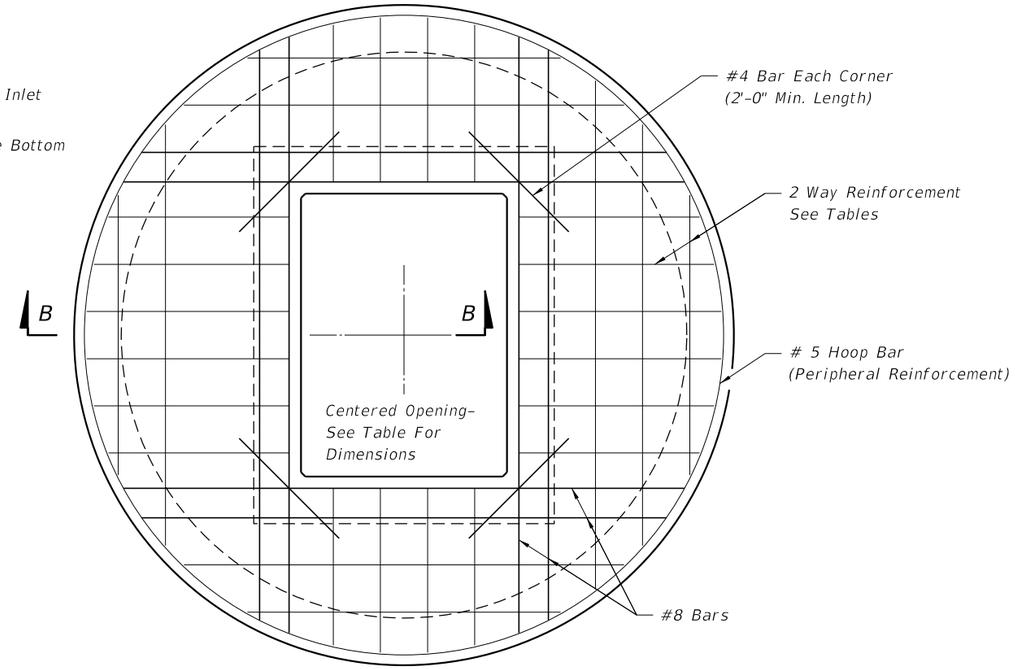
(Pipe Opening Not Shown)
SECTION AA
(PRECAST INLET)

10/29/2019 8:15:43 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/17			FY 2020-21 STANDARD PLANS	GUTTER INLET TYPE V	INDEX 425-041 / SHEET 1 of 2



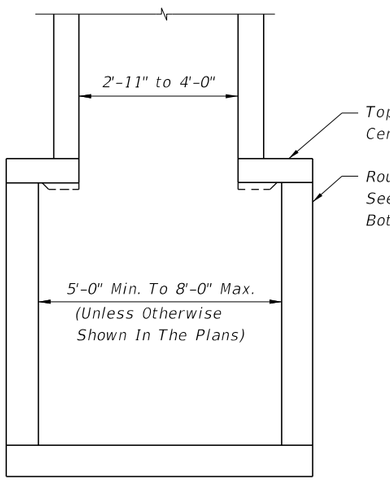
TOP SLAB OPENINGS		
DIAMETER	OPENING SIZE	
	MIN.	MAX.
5'-0" To 8'-0"	2'-11" x 4'-0"	3'-3" x 3'-10"



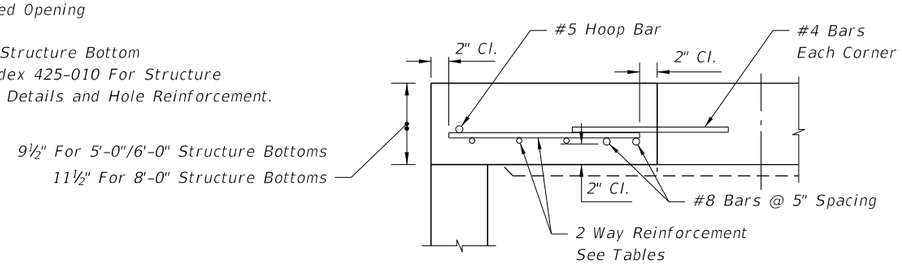
TOP SLAB REINFORCING DIAGRAM

TOP SLAB REINFORCING SCHEDULE	
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) $In.^2/ft.$
A	0.20
B	0.24
C	0.37
D	0.53
E	0.73
F	1.06
G	1.45

TOP SLAB WITH CENTERED OPENING		
SLAB DEPTH	SLAB THICKNESS	REINFORCING (2 WAYS) SCHEDULE
SIZE: 5'-0"		
≥0.5' <30'	9½"	C
30'-40'	9½"	D
SIZE: 6'-0"		
0.5' < 8'	9½"	B
8' < 18'	9½"	C
18' < 30'	9½"	D
30' < 37'	9½"	E
37'-40'	9½"	G
SIZE: 8'-0"		
≥0.5' < 9'	11½"	C
9' < 15'	11½"	D
15' < 23'	11½"	E
23' < 33'	11½"	E
33'-40'	11½"	G



SECTION AA

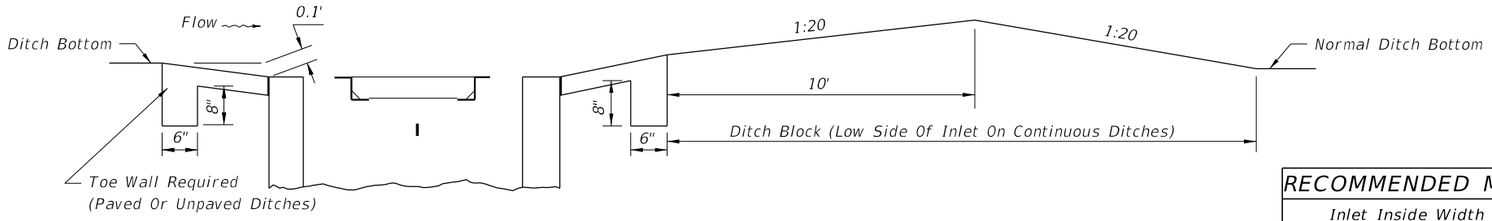


SECTION BB

ALT. A STRUCTURE BOTTOM FOR INLET TYPE V

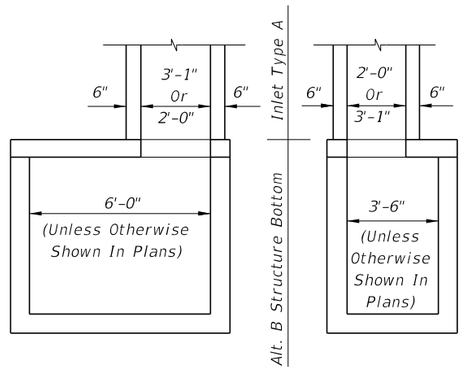
10/29/2019 8:15:44 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	GUTTER INLET TYPE V	INDEX	SHEET
11/01/17					425-041	2 of 2



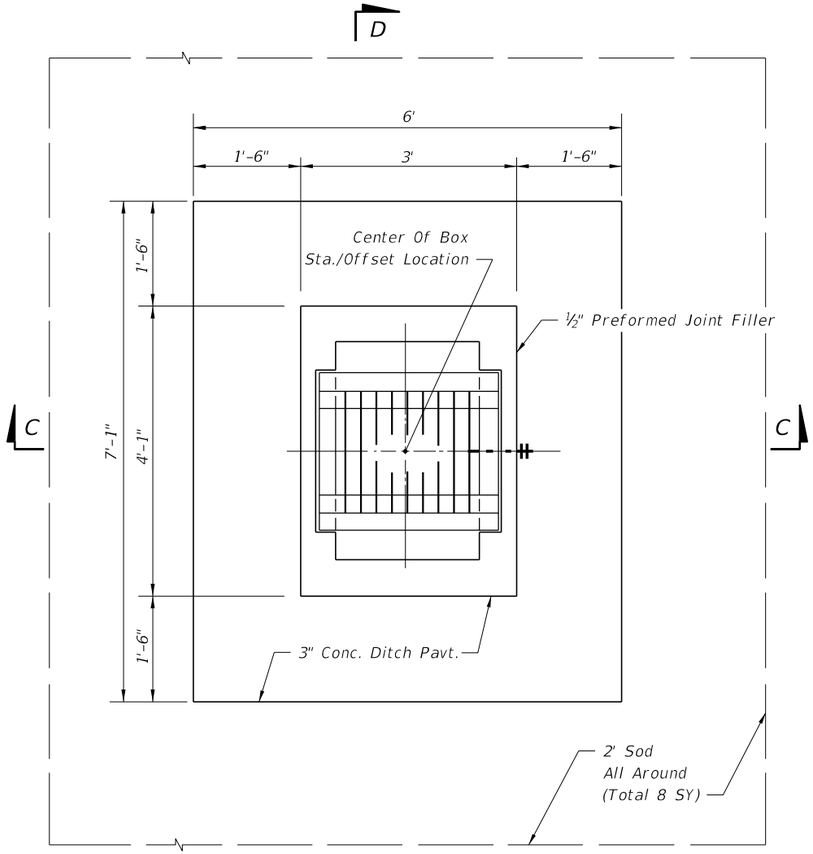
SECTION DD

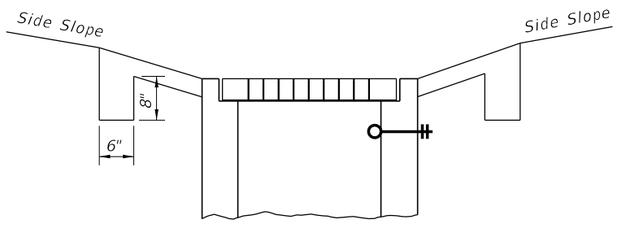
RECOMMENDED MAXIMUM PIPE SIZES	
Inlet Inside Width	Pipe Size
2'-0"	18"
3'-1"	24" 18" Where An 18" pipe Enters A 2'-0" Wall
Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index 425-001. For larger pipe see bottom detail right and Index 425-010.	



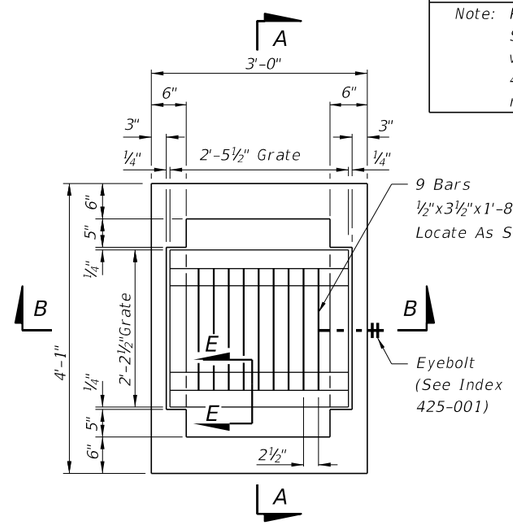
NOTE: Alt. B Structure Bottom Only. See Index 425-010 for Structure Bottom Details And Hole Reinforcement.

INLET WITH STRUCTURE BOTTOM

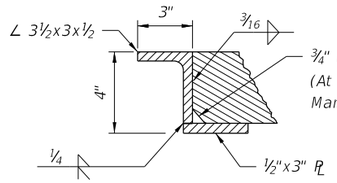




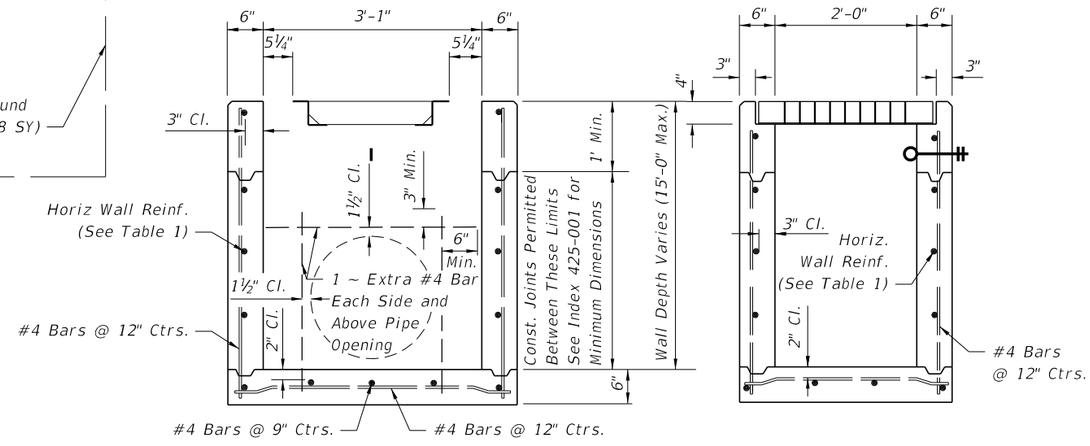
SECTION CC



PLAN



SECTION EE



SECTION AA

SECTION BB

GENERAL NOTES

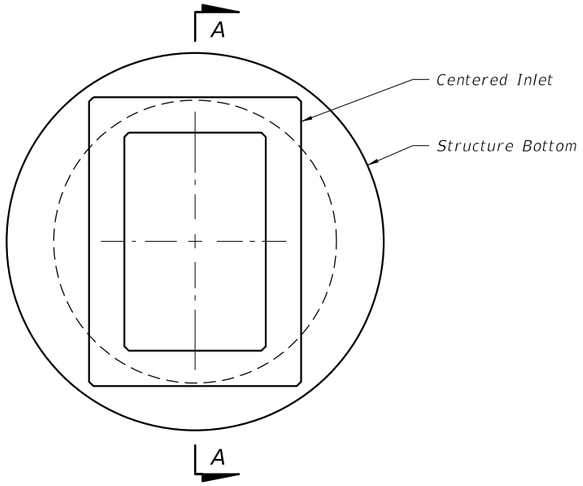
1. This inlet is designed for ditches, medians, or other area subject to heavy wheel loads on limited access facilities where debris may be a problem. This inlet is not for use in areas subject to pedestrian and/or bicycle traffic.
2. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. Cut or bend bars out of way of pipe to clear pipe by 1½". See Index 425-001 for equivalent area of welded wire fabric.
3. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
4. When alternate "G" grate is specified in plans, the grate is to be hot-dip galvanized after fabrication.
5. Cost of ditch paving to be included in the cost of Inlet. Sodding to be paid for under contract unit price for Performance Turf, SY.
6. For supplemental details see Index 425-001.
7. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
8. Inlet to be paid for under the contract unit price for inlets (Dt Bot Type A), EA.

HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

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"

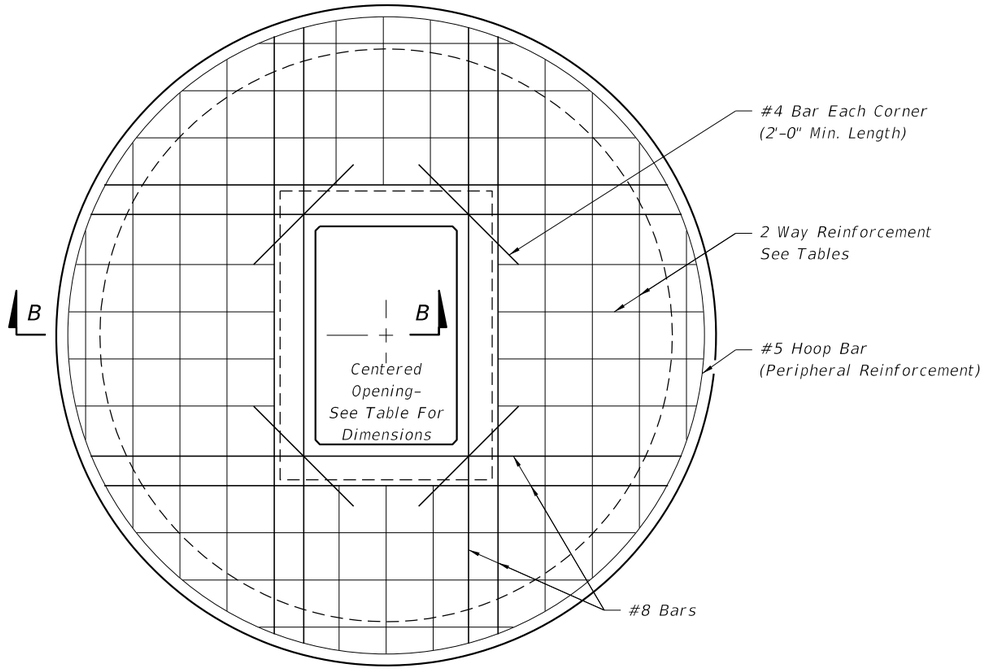
10/29/2019 8:15:45 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/17			FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE A	INDEX 425-050 / SHEET 1 of 2



TOP VIEW

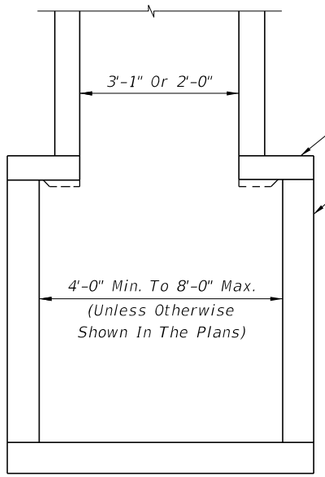
TOP SLAB OPENINGS	
DIAMETER	OPENING SIZE
	MIN.
4'-0" To 8'-0"	2'-0" x 3'-1"



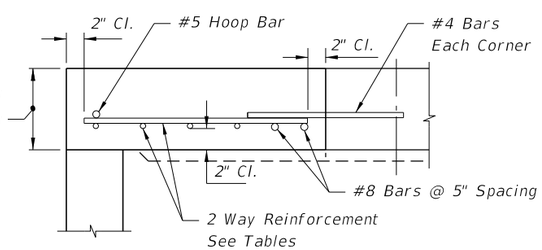
TOP SLAB REINFORCING DIAGRAM

TOP SLAB REINFORCING SCHEDULE	
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) $In.^2/ft.$
A	0.20
B	0.24
C	0.37
D	0.53
E	0.73
F	1.06
G	1.45

TOP SLAB WITH CENTERED OPENING		
SLAB DEPTH	SLAB THICKNESS	REINFORCING (2 WAYS) SCHEDULE
SIZE: 4'-0"		
≥0.5'-40'	9½"	C
SIZE: 5'-0"		
≥0.5'<30'	9½"	C
30'-40'	9½"	D
SIZE: 6'-0"		
0.5'<8'	9½"	B
8'<18'	9½"	C
18'<30'	9½"	D
30'<37'	9½"	E
37'-40'	9½"	G
SIZE: 8'-0"		
≥0.5'<9'	11½"	C
9'<15'	11½"	D
15'<23'	11½"	E
23'<33'	11½"	E
33'-40'	11½"	G



SECTION AA

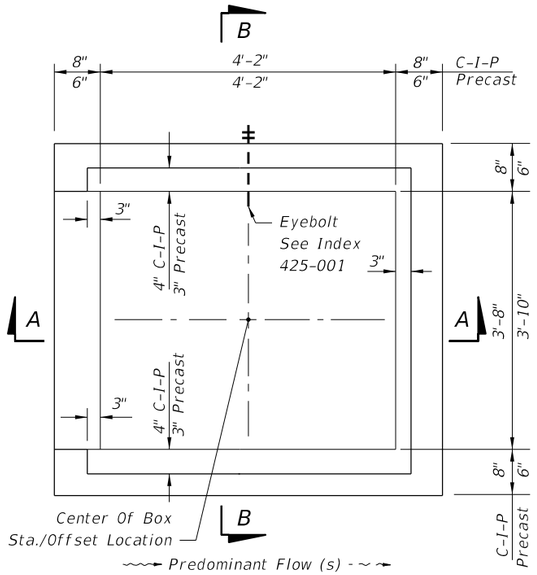


SECTION BB

ALT. A STRUCTURE BOTTOM FOR INLET TYPE A

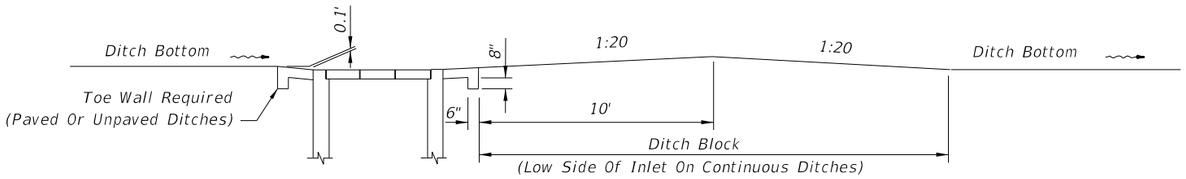
10/29/2019 8:15:46 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE A	INDEX	SHEET
11/01/17					425-050	2 of 2



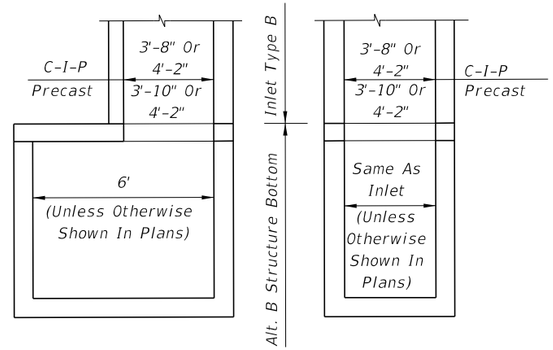
(Grate, Apron And Slot Not Shown)

PLAN



SECTION EE

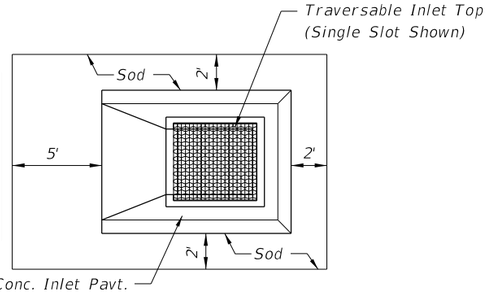
DITCH BLOCK



NOTE: Alt. B Structure Bottom Only. See Index 425-010 for structure bottom details and pipe opening reinforcement.

INLET WITH STRUCTURE BOTTOM

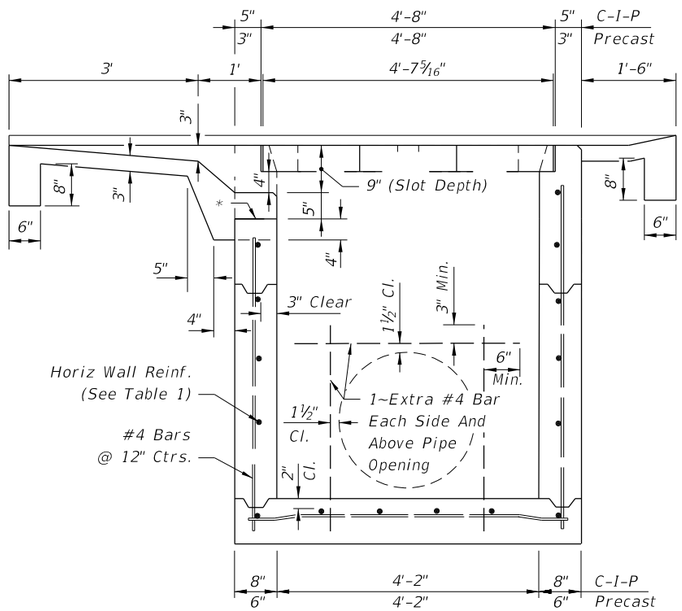
ESTIMATED QUANTITIES For Informational Purposes Only			
SLOT TYPE	PAVEMENT		SOD
	SY	CY	SY
Single Slot	6.2	0.9	14
Double Slot	8.1	1.1	19



CONCRETE INLET PAVEMENT AND SODDING

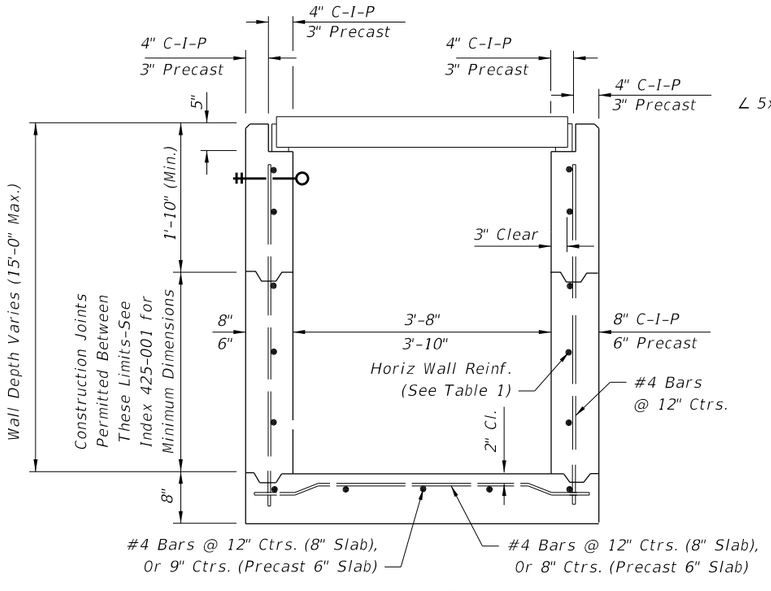
RECOMMENDED MAXIMUM PIPE SIZES	
INLET INSIDE WIDTH	PIPE SIZE
3'-8"	30"
4'-2"	36"

Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index 425-001. For larger pipe see bottom detail above and Index 425-010.



SECTION AA

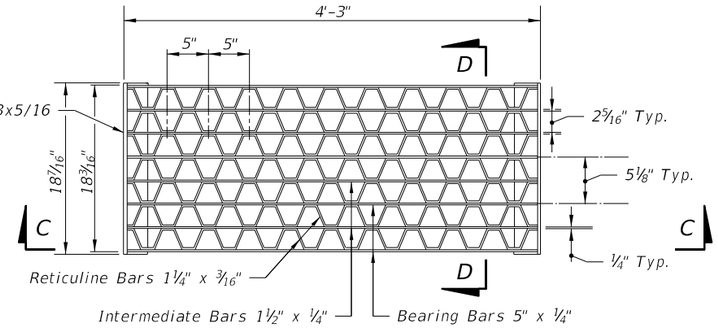
*See Sheet 2 of 3



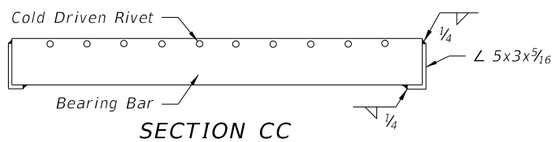
SECTION BB

HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

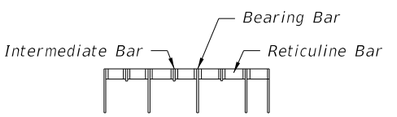
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 5'	A12	0.20	12"	8"
5' - 9'	A6	0.20	6"	5"
9' - 13'	B5.5	0.24	5½"	5"
13' - 15'	Special	0.267	5"	4"



PLAN



SECTION CC

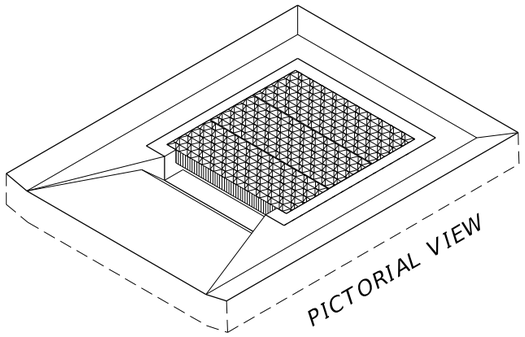


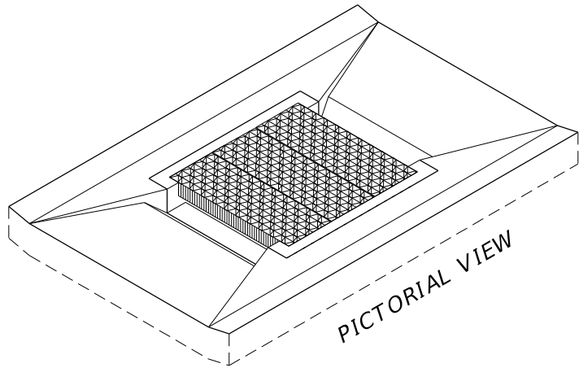
SECTION DD

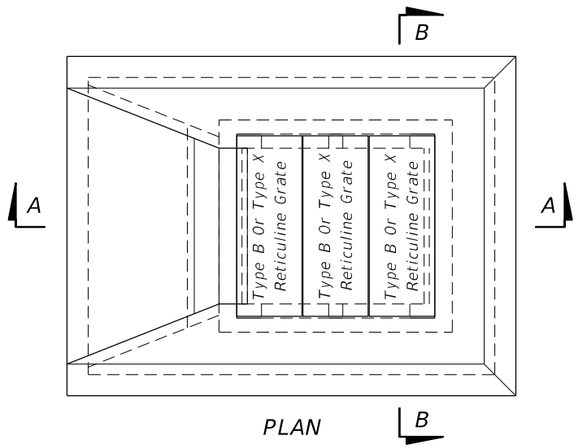
STEEL GRATE

10/29/2019 8:15:47 AM

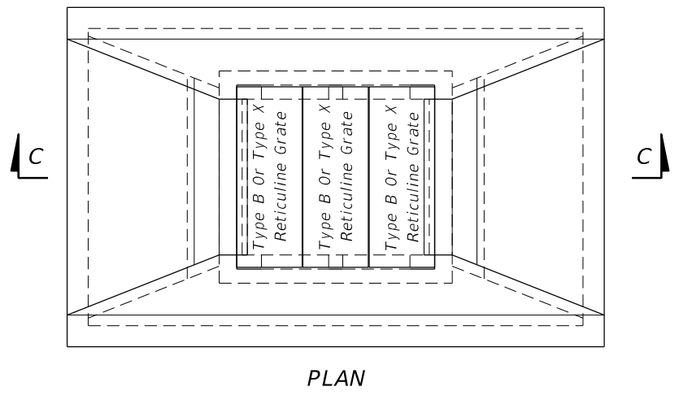
LAST REVISION	REVISION	DESCRIPTION:			
11/01/17			FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE B	INDEX 425-051 / SHEET 1 of 3



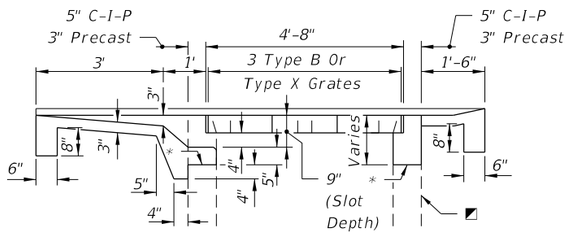




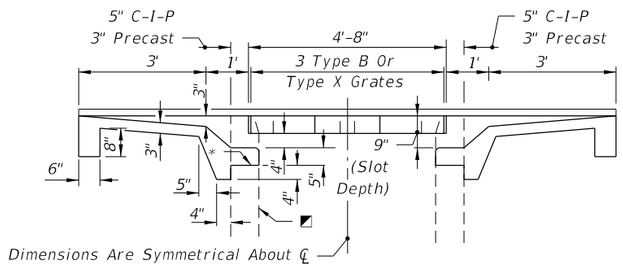
PLAN



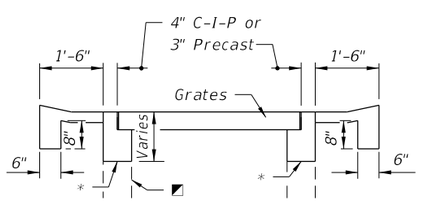
PLAN



SECTION AA
SINGLE SLOT



SECTION CC
DOUBLE SLOT



SECTION BB

◩ Inlet Box (Line Type Indicates Existing Box To Facilitate Depiction Of Partial Construction On Existing Inlets)

* 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.

GENERAL NOTES

1. The general purpose of the inlet top designs are:

   a. For ditches, medians or other areas subject to heavy wheel loads. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet. Inlet not suitable for bicycle traffic.

   b. Provide full grate and horizontal slot designs for new construction.

   c. Provide full grate and horizontal slot designs for replacing the vertical slot tops on existing Inlets Type B and Type X that are in locations subject to occasional pedestrian traffic.

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. Bars to be cut or bent for min. 1½" clearance around pipe.

3. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.

4. When Alternate G grates are specified in the plans, the grates are to be hot-dip galvanized after fabrication.

5. Cost for constructing traversable tops on new inlet boxes shall be included in the contract unit price for Inlets (DT B0T) (Type B), EA., and shall include the cost for surrounding concrete inlet pavement. Existing Inlets Type B and Inlets Type X that are converted to traversable inlet tops shall be paid for under the contract unit price for Inlets (DT B0T) (Type B) (Partial), EA. Unit price and payment shall be full compensation for inlet conversion and shall include the removal and disposal of any existing concrete inlet pavement; the removal and stockpiling or disposal of sufficient material from the existing inlet box to facilitate construction of the required inlet top; construction of the required inlet conversion; backfill construction; construction of concrete inlet pavement; reusing, supplementing, transferring or replacing grates as required by plans or as directed by the Engineer; any required earthwork for ditch restoration within 30' of the inlet; and, restoration of disturbed turf.

6. Ditch pavement shall be paid for, separate from the inlet and concrete inlet pavement, by pavement types and units as called for in the plans.

7. Sod will be paid for under the contract unit price for Performance Turf, SY.

8. For supplementary details see Index 425-001.

9. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.

DESIGN NOTES

1. The type of top (single or double slots) depends on the approach ditch configuration and the hydraulic requirements of the site. The designer will stipulate in the plans the type of top to be constructed at each individual inlet location.

2. On existing inlets, conversion grates shall be constructed at the original grate elevations unless other elevations are called for in the plans. When plans call for the inlet top to be constructed to support storm water detention, details for ditch modifications and underdrains shall be shown in the plans.

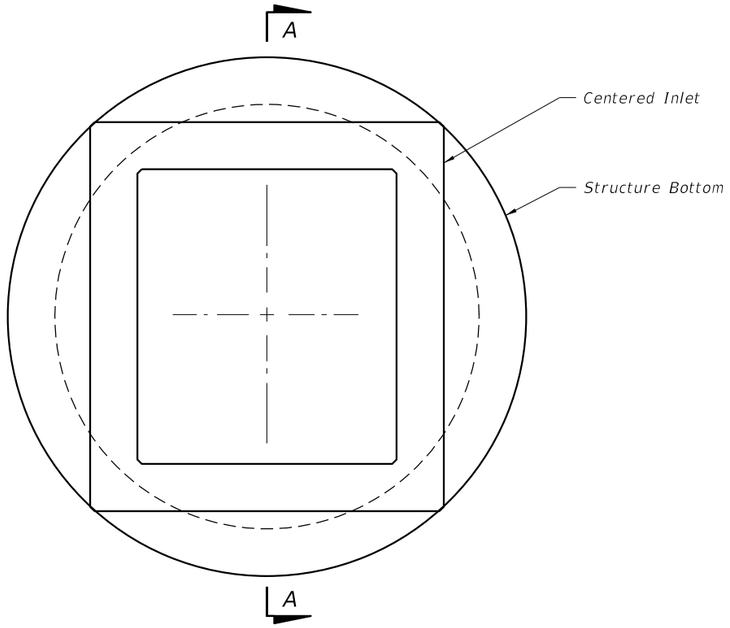
MAINTENANCE NOTES

1. Traversable inlet tops that are constructed by maintenance contract or by maintenance forces may reuse the existing grates that are determined by the Maintenance Engineer to be functionally sound, and their reuse is so directed by the Maintenance Engineer. Existing grates approved for reuse and new grates may be mixed, matched or replaced as directed by the Maintenance Engineer.

TRAVERSABLE TOPS FOR INLETS TYPE B AND FOR CONVERSIONS OF EXISTING INLETS TYPE B AND TYPE X

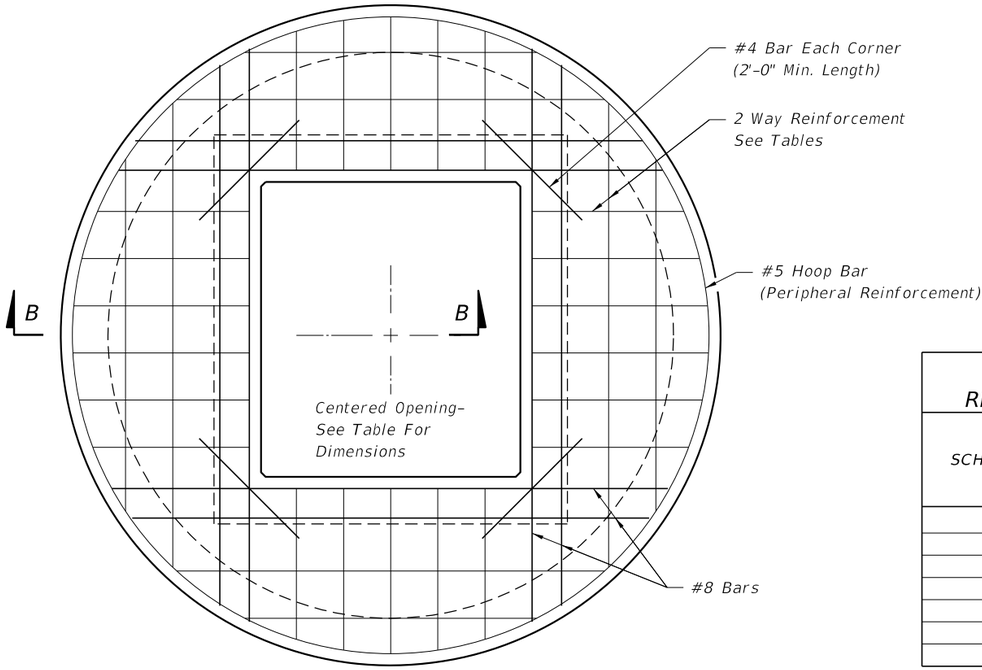
10/29/2019 8:15:48 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE B	INDEX	SHEET
11/01/17					425-051	2 of 3



TOP VIEW

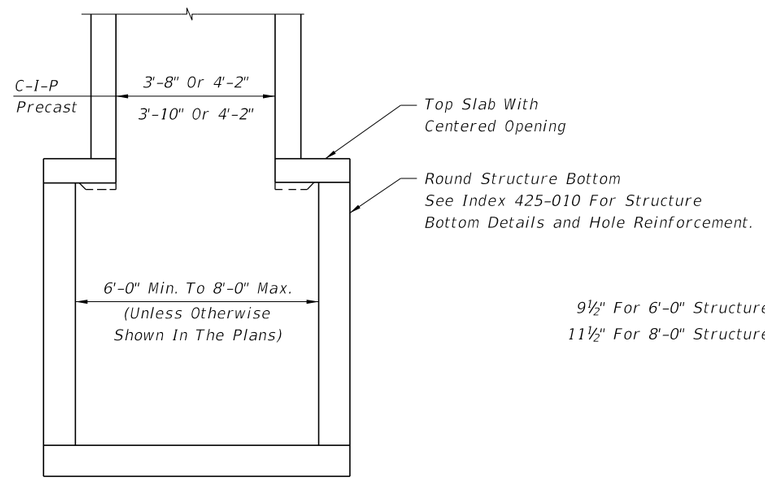
TOP SLAB OPENINGS		
DIAMETER	OPENING SIZE	
	MIN.	MAX.
6'-0" to 8'-0"	3'-8" x 4'-2"	3'-10" x 4'-2"



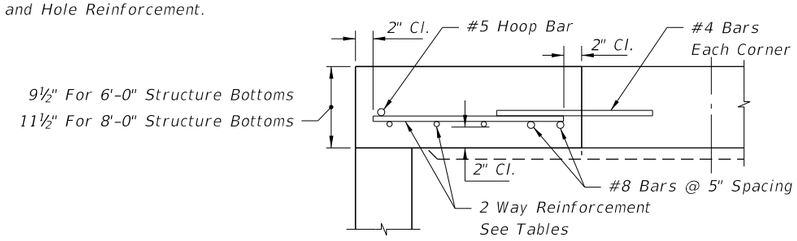
TOP SLAB REINFORCING DIAGRAM

TOP SLAB REINFORCING SCHEDULE	
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) $In^2/ft.$
A	0.20
B	0.24
C	0.37
D	0.53
E	0.73
F	1.06
G	1.45

TOP SLAB WITH CENTERED OPENING		
SLAB DEPTH	SLAB THICKNESS	REINFORCING (2 WAYS) SCHEDULE
SIZE: 6'-0"		
0.5' < 8'	9½"	B
8' < 18"	9½"	C
18' < 30'	9½"	D
30' < 37'	9½"	E
37'-40'	9½"	G
SIZE: 8'-0"		
≥0.5' < 9'	11½"	C
9' < 15'	11½"	D
15' < 23'	11½"	E
23' < 33'	11½"	E
33'-40'	11½"	G



SECTION AA

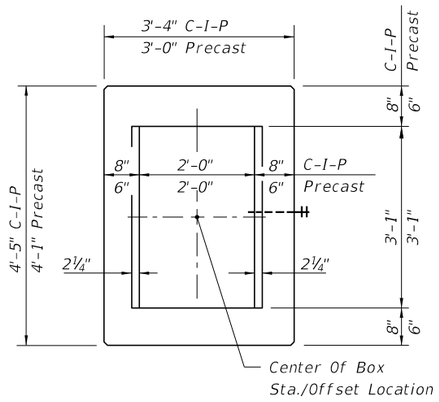


SECTION BB

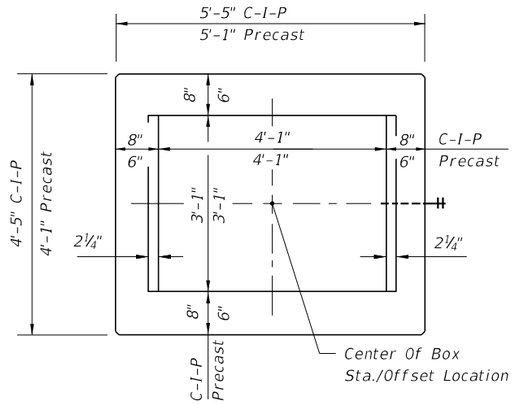
ALT. A STRUCTURE BOTTOM FOR INLET TYPE B

10/29/2019 8:15:49 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE B	INDEX	SHEET
11/01/17					425-051	3 of 3



PLAN



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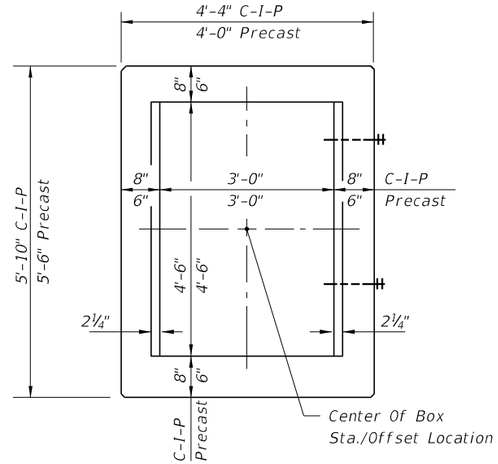
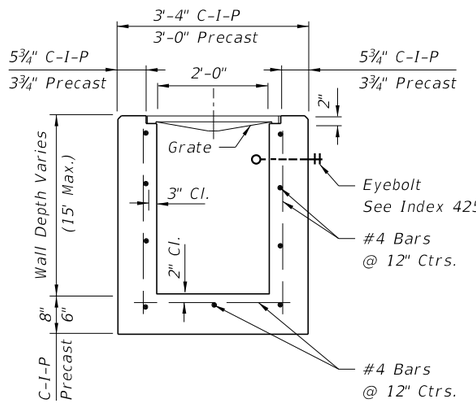


PLAN



SECTION

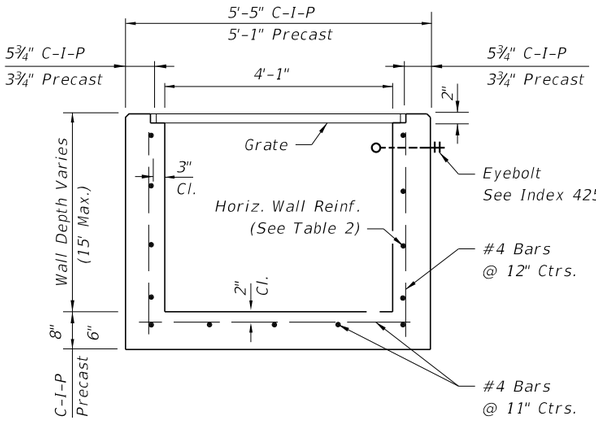
HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0'-15'	A12	0.20	12"	8"

TYPE C

Recommended Maximum Pipe Size:

2'-0" Wall – 18" Pipe
3'-1" Wall – 24" Pipe (18" where an 18" pipe enters a 2'-0" wall)



SECTION

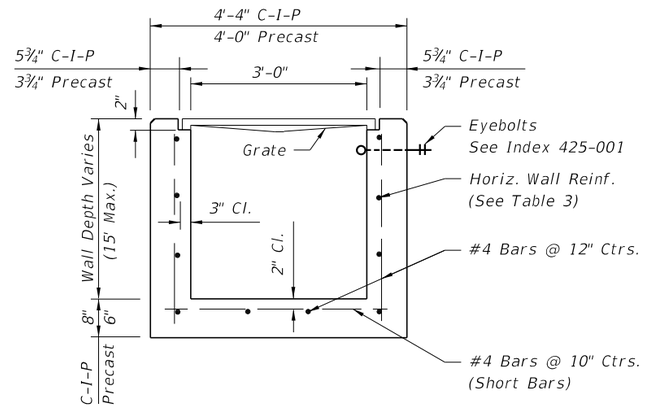
HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 2)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0'-6'	A12	0.20	12"	8"
6'-10'	A6	0.20	6"	5"
10'-13'	A4	0.20	4"	3"
10'-15'	B5.5	0.24	5½"	5"

TYPE D

Recommended Maximum Pipe Size:

3'-1" Wall – 24" Pipe
4'-1" Wall – 36" Pipe



SECTION

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 3)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0'-5'	A12	0.20	12"	8"
0'-7.5'	A6	0.20	6"	5"
7.5'-10'	B5.5	0.24	5½"	5"
10'-15'	C6.5	0.37	6½"	6"

TYPE E

Recommended Maximum Pipe Size:

3'-0" Wall – 24" Pipe
4'-6" Wall – 36" Pipe

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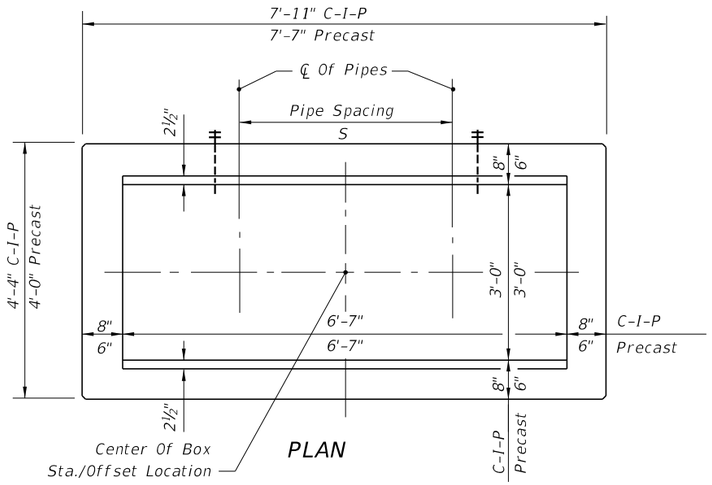
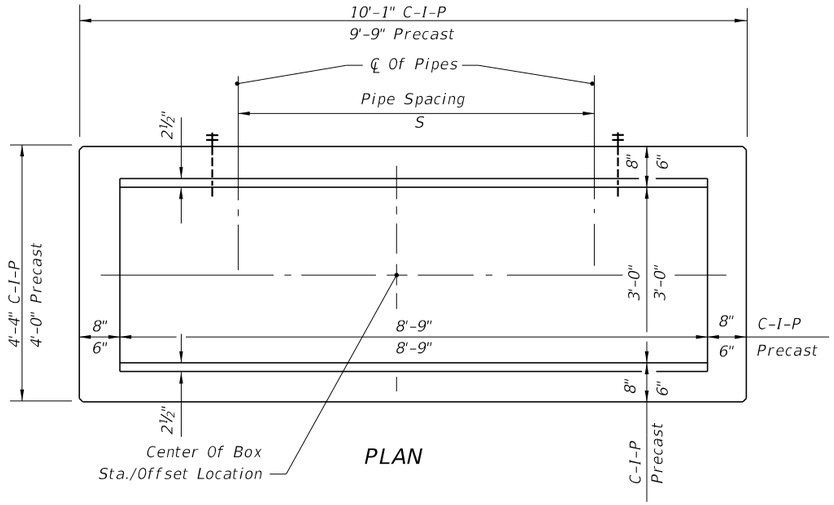
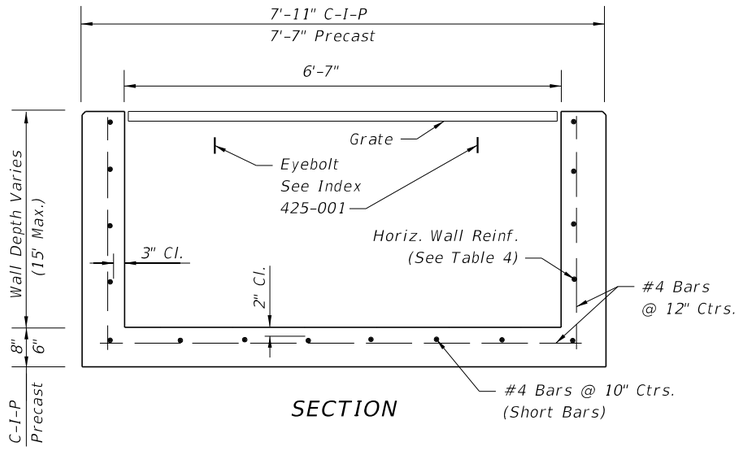
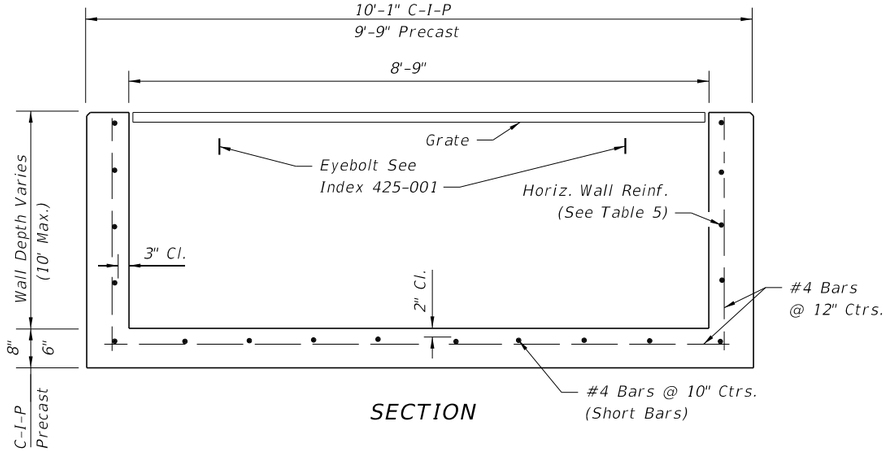
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
11/01/17						425-052	1 of 7









HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 4)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0'-5'	B5.5	0.24	5½"	5"
5'-7'	C6.5	0.37	6½"	6"
7'-15'	D4.5	0.53	4½"	4"

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 5)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0'-5'	C3.5	0.37	3½"	3"
5'-10'	D4.5	0.53	4½"	4"

TYPE H (2 & 3-GRATE INLET)

Recommended Maximum Pipe Size:
3'-0" Wall - 24" Pipe
6'-7" Wall - 1-60" Pipe
Or 2-24" Pipe (S=3'-5")

TYPE H (4-GRATE INLET)

Recommended Maximum Pipe Size:
3'-0" Wall - 24" Pipe
8'-9" Wall - 1-78" Pipe
Or 2-30" Pipe (S=4'-3")

GENERAL NOTES

See Sheet 3 of 7.

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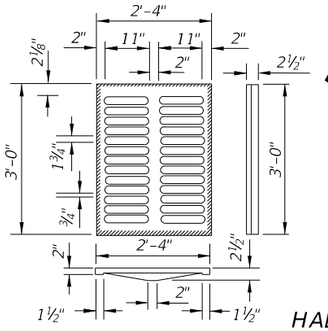
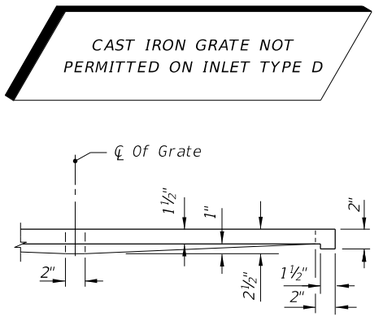
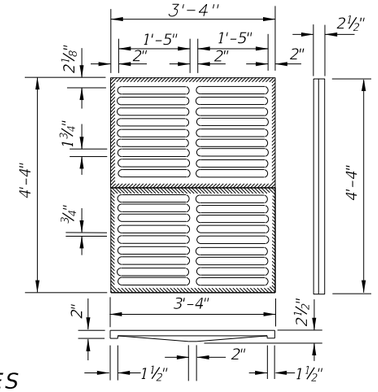
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
11/01/17					425-052	2 of 7



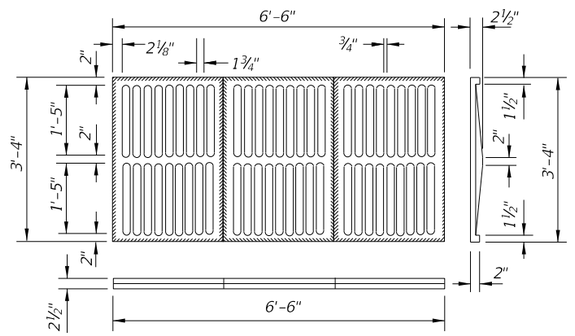


HALF SECTION CAST IRON GRATES

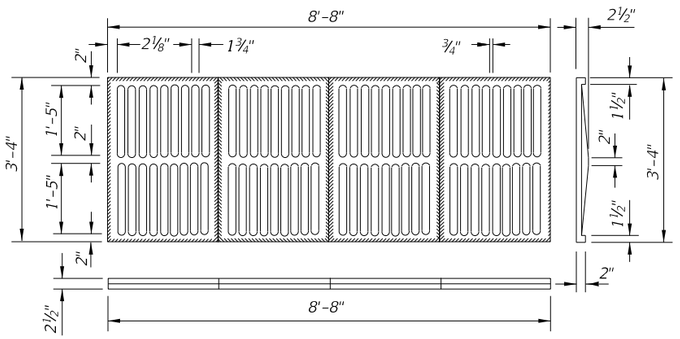


TYPE C
Approx. Weight 235 Lbs.

TYPE E
Approx. Weight 465 Lbs.

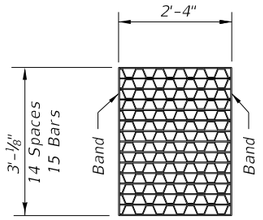


TYPE H (3-GRATE INLET)
Approx. Weight 725 Lbs.

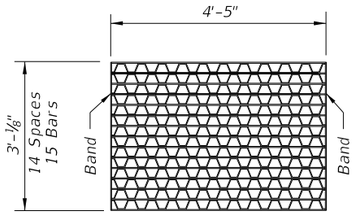


TYPE H (4-GRATE INLET)
Approx. Weight 967 Lbs.

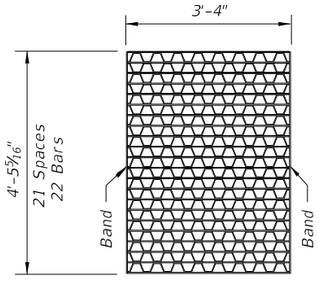
CAST IRON GRATES



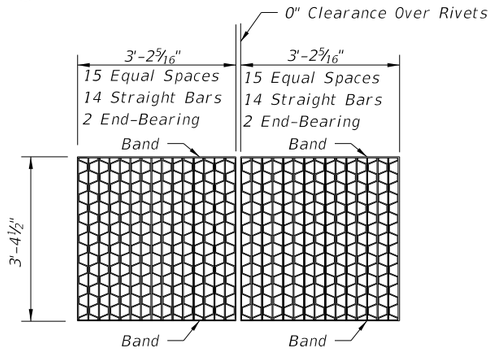
TYPE C
Straight Bars 2"x ¼"
Reticuline Bars 1¼" x 3/16"
Bands 2" x ¼"
Approx. Weight 104 Lbs.



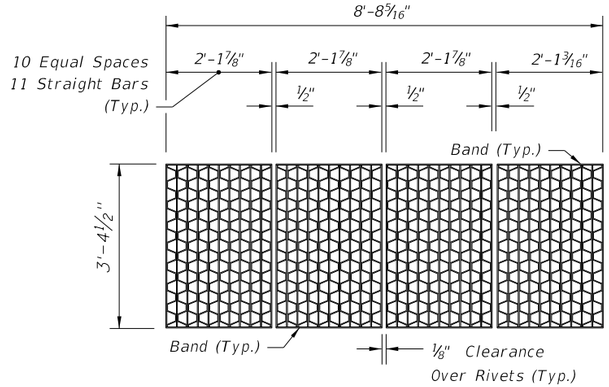
TYPE D
Straight Bars 2" x ¼"
Reticuline Bars 1¼" x 3/16"
Bands 2" x ¼"
Approx. Weight 190 Lbs.



TYPE E
Straight Bars 2" x ¼"
Reticuline Bars 1¼" x 3/16"
Bands 2" x ¼"
Approx. Weight 215 Lbs.



TYPE H (2-GRATE INLET)
Straight End-Bearing Bars 2" x 3/8"
Straight Bearing Bars 2" x ¼"
Reticuline Bars 1¼" x 3/16"
Banding Bars 2" x ¼"
Approx. Total Weight 310 Lbs.



TYPE H (4-GRATE INLET)
Straight End-Bearing Bars 2" x ¼"
Reticuline Bars 1¼" x 3/16"
Banding Bars 2" x 3/16"
Approx. Total Weight 388 Lbs.

STEEL GRATES

NOTE: Steel Grates Are Required On Inlets With Traversable Slots And On Inlets where Bicycle Traffic Is Anticipated.

GENERAL NOTES

1. *These inlets are suitable for bicycle traffic and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads. These inlets may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet.*

2. *Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and areas subject to pedestrians shall have traversable slots. The traversable slot modification is not adaptable to inlet Type H. Slots may be constructed at either or both ends as shown on plans. Traversable slots shall not be used in areas subject to occasional bicycle traffic.*

3. *Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dip galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.*

4. *Recommended maximum pipe sizes shown are for concrete pipe. Size for other types of pipe must be checked for fit.*

5. *All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.*

6. *Concrete inlet pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans; but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.*

7. *Traversable slots constructed in existing inlets shall be paid for as inlets partial. For conversion work and method of payment see 'TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS'.*

8. *Sodding to be used on all inlets not located in paved areas and paid for under contract unit price for Performance Turf, SY.*

9. *For supplementary details see Index 425-001.*

10. *All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. Bars to be cut or bent for 1½" clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening.*

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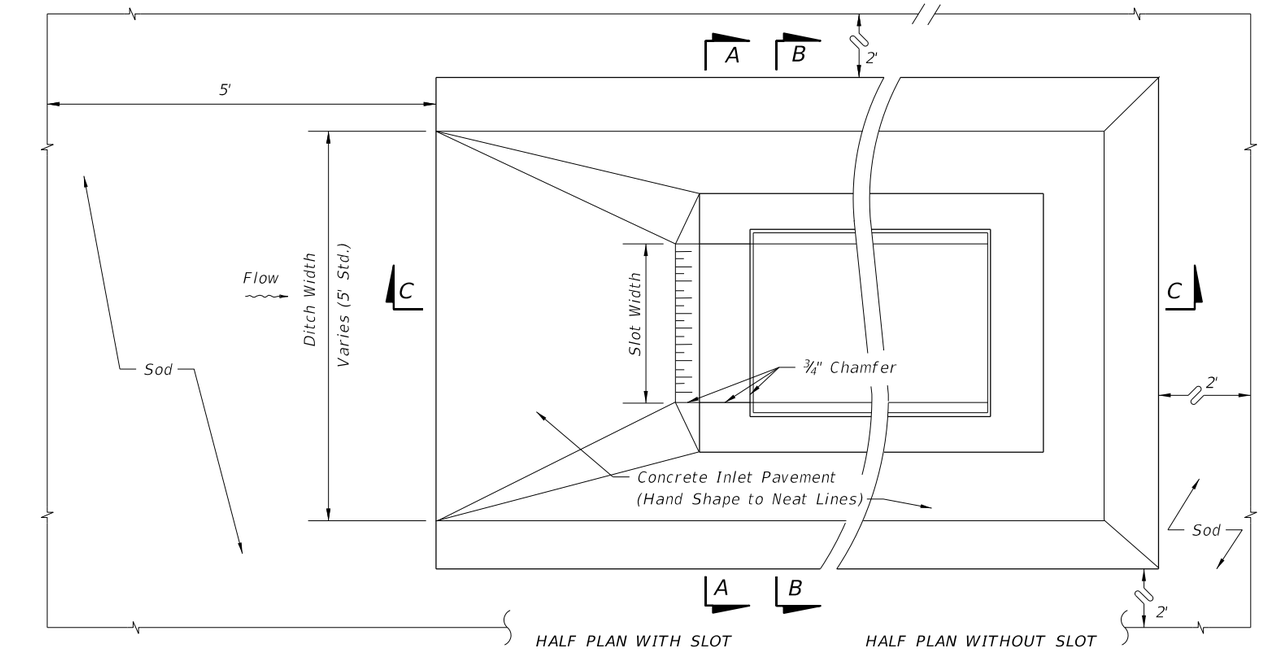
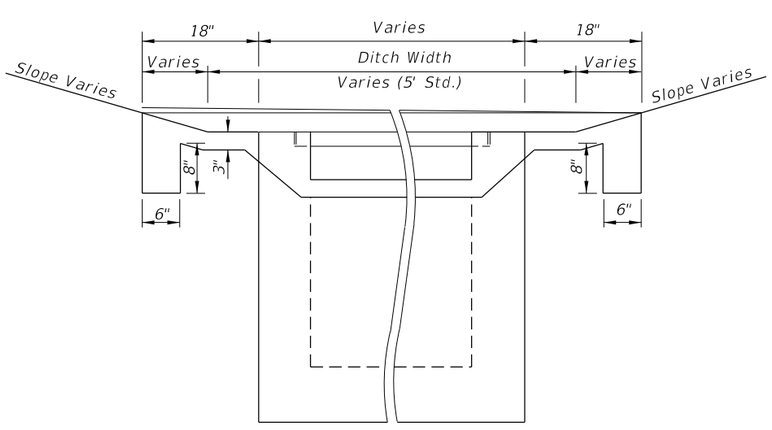
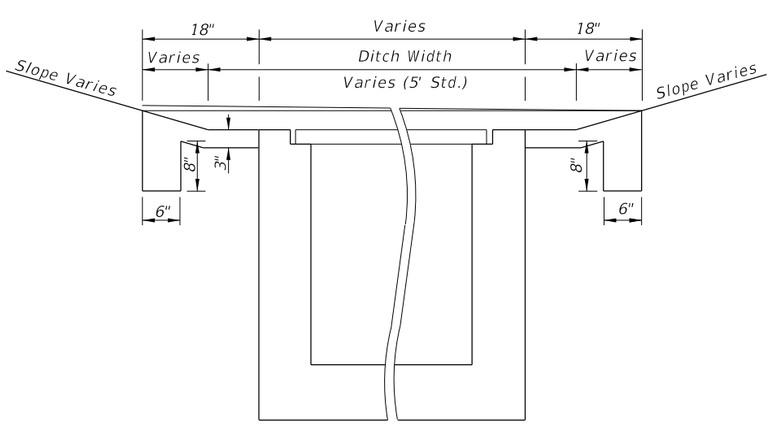
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
11/01/17						425-052	3 of 7



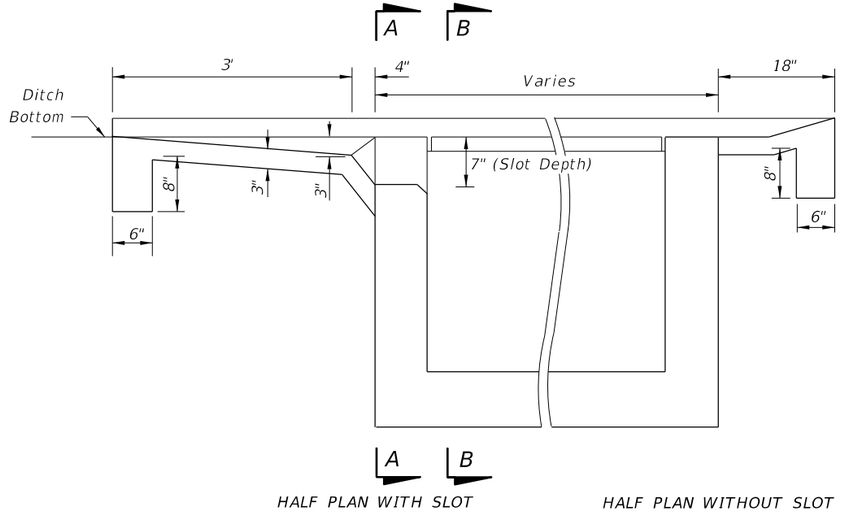
PLAN VIEW



SECTION AA



SECTION BB



SECTION CC

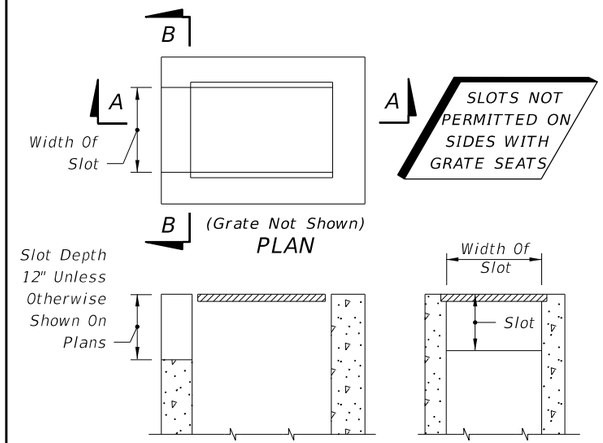
PAVEMENT AND SODDING QUANTITIES FOR TRAVERSABLE SLOTS

Inlet	Pavement				Sod	
	Single Slot		Double Slot		Single Slot	Double Slot
	SY	CY	SY	CY	SY	SY
C	4.87	0.77	6.16	0.93	12	16
D	5.99	0.91	7.70	1.10	14	19
E	5.88	0.91	7.37	1.08	14	18

TRAVERSABLE SLOTS

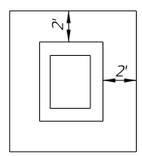
10/29/2019 8:15:52 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
11/01/17						425-052	4 of 7



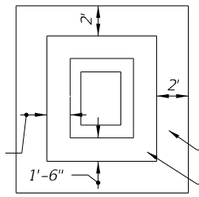
SECTION AA SECTION BB

NON-TRAVERSABLE SLOTS



SOD ONLY

Inlet	Sod SY
C	6
D	6
E	7
H	8

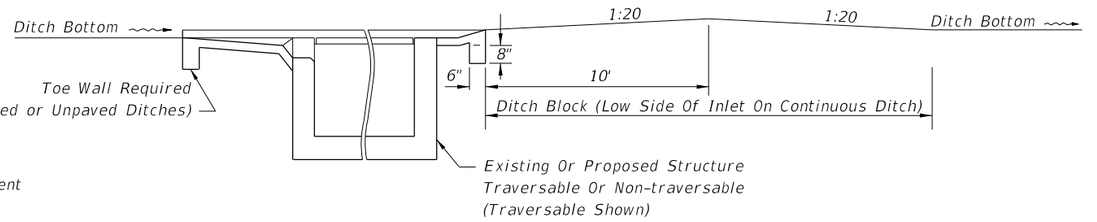


Inlet	Pavt. CY	Sod SY
C	0.30	8
D	0.36	9
E	0.37	9
H	0.45	11

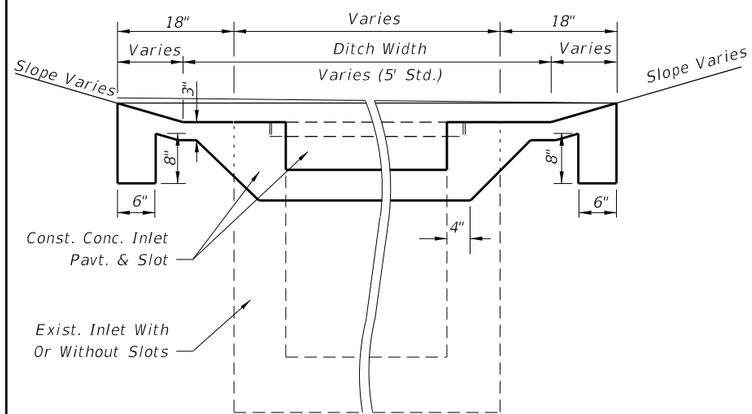
PAVT. AND SOD

NOTE: See General Notes Nos. 6 and 7, Sheet 3 of 7.

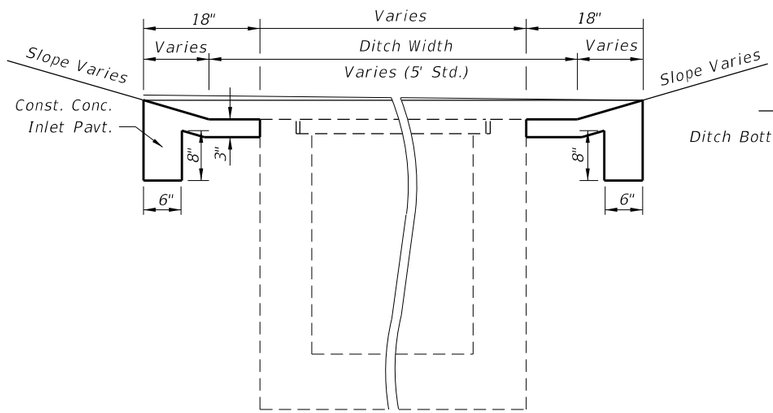
SODDING AND PAVEMENT FOR INLETS WITHOUT SLOTS AND INLETS WITH NON-TRAVERSABLE SLOTS



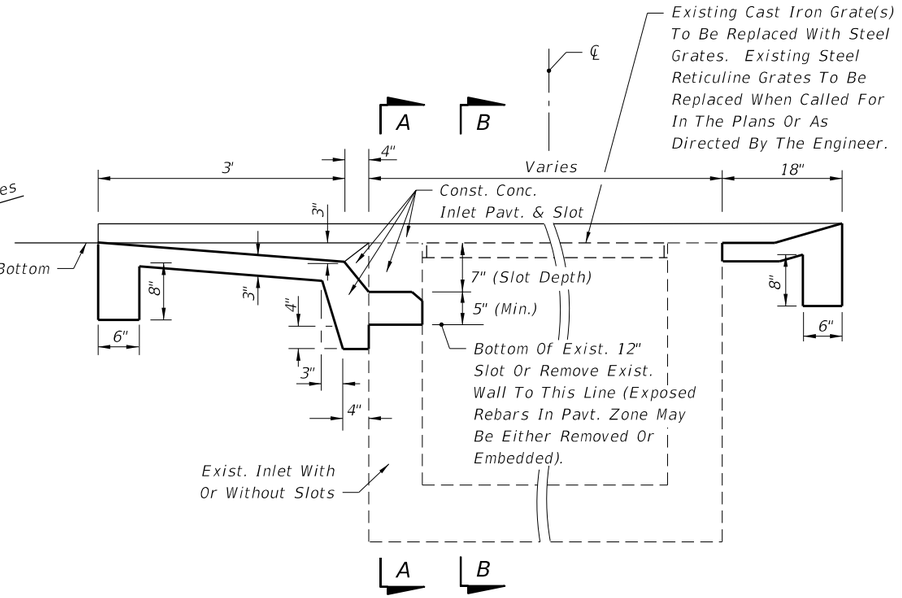
DITCH BLOCK FOR INLETS WITH OR WITHOUT SLOTS



SECTION AA



SECTION BB



SINGLE SLOT SHOWN (DOUBLE SLOTS SYMMETRICAL ABOUT CENTERLINE)

SECTION CC (CASE I)

PAVEMENT AND SODDING QUANTITIES FOR TRAVERSABLE SLOTS

Inlet	Pavement				Sod	
	Single Slot		Double Slot		Single Slot	Double Slot
	SY	CY	SY	CY	SY	SY
C	4.87	0.83	6.16	1.05	12	16
D	5.99	1.01	7.70	1.30	14	19
E	5.88	0.99	7.37	1.24	14	18

NOTE: For plan view and additional details see Sheet 4 of 7.
For payment see General Notes Nos. 6 and 7, Sheet 3 of 7.

TRAVERSABLE SLOTS FOR EXISTING INLETS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
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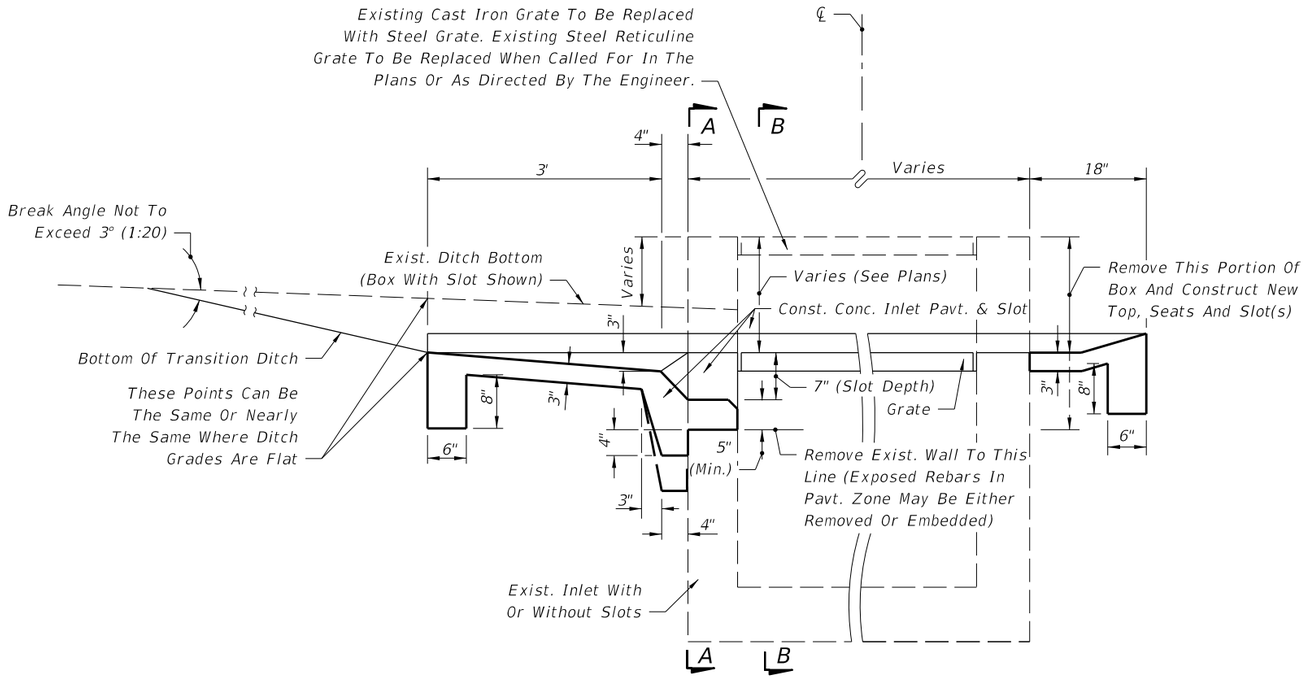
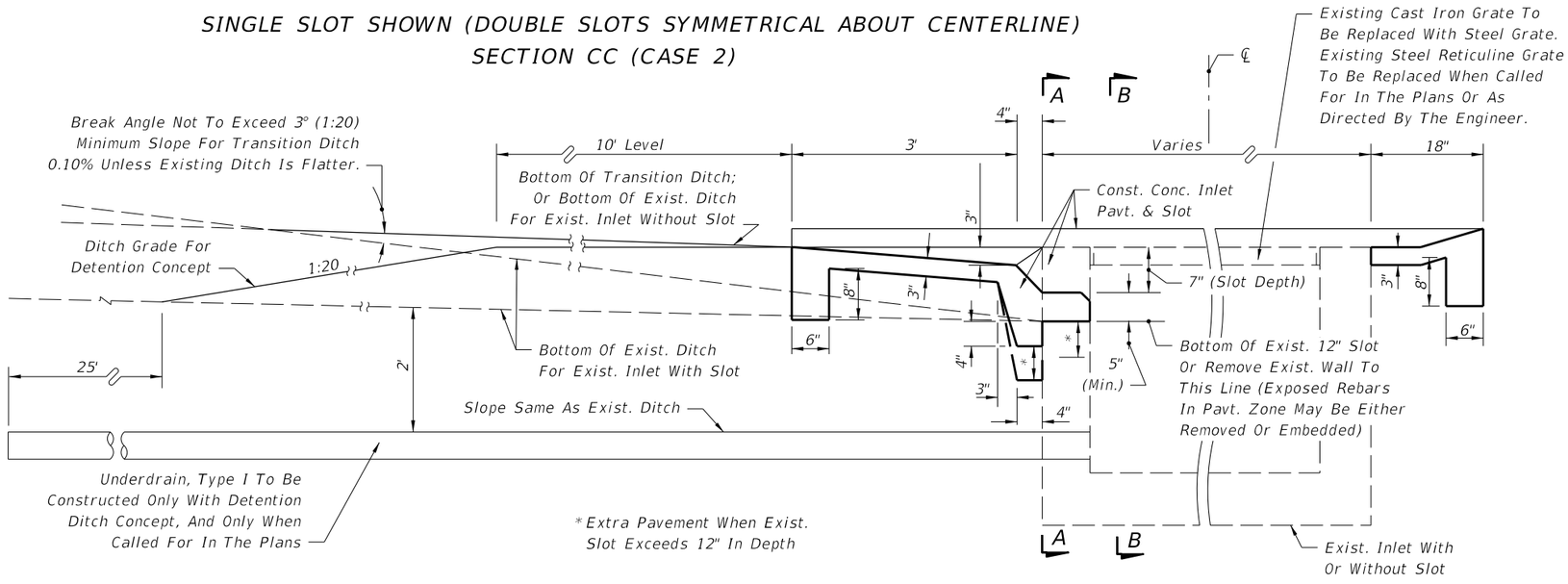


SINGLE SLOT SHOWN (DOUBLE SLOTS SYMMETRICAL ABOUT CENTERLINE)
SECTION CC (CASE 2)



SINGLE SLOT SHOWN (DOUBLE SLOTS SYMMETRICAL ABOUT CENTERLINE)
SECTION CC (CASE 3)

TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS

DESIGN NOTES FOR TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS

1. The general purpose of these conversions is to remove the hazard of the protruding inlet top, while not creating a hazard by depressing the top too deeply.

2. The corrective procedure depends on the approach ditch grade and hydraulic requirements of the site. The selection of the appropriate case depends on the relationship between inlet top and ditch elevation, and, on the vertical clearance between the top of the uppermost pipe(s) and the grate. The purpose for the Case 1 conversion is to add the traversable slot to an existing inlet where top removal, change in grade elevation and ditch transitions are not required. Case 2 will normally be applicable to ditches with flatter grades adjoining the inlet. Case 3 will normally be applicable to ditches with steeper grades adjoining the inlet where build up of the existing ditch is acceptable.

3. The designer shall stipulate in the plans which case is to be constructed at each individual inlet location.

   Where the existing inlet top is above the existing ditch (Case 2) but borrow material will be required to adjust the ditch (Case 3), and vertical clearance or other conditions do not prevent removal of the inlet top, the designer should call for Case 2. The designer shall determine if ditch reconstruction is required more than 35 feet beyond any traversable slot side and shall include separate pay items in the plans to cover the cost for that portion of required ditch reconstruction exceeding the 35 foot limit. The designer shall also determine whether ditch pavement is required for ditch restoration within the 35 foot limit and include that pavement under a pay item separate from the inlets partial.

   When the detention ditch concept is to be used with Case 3, the designer shall stipulate 'Case 3 (Detention)' in the plans.

   The designer shall determine whether tight soil or other conditions at each individual inlet indicates the need for underdrain in Case 3 conversions and shall call for Underdrain, Type I in the plans.

METHOD OF PAYMENT FOR TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS

1. Existing inlets converted to traversable slot tops under Cases 1, 2 and 3 shall be paid for as inlets partial, each. Case shall not be included in the pay item description.

2. All ditch reconstruction work within 35 feet of each traversable slot conversion, whether required by these details or as a direct result of the conversion, shall be included as a part of the partial cost. Reconstruction work shall include excavation and removal of surplus materials or borrow materials in place, grading, compaction, shaping and restoration of disturbed turf. Sodding, ditch pavement and underdrain are not included as part of the inlet partial cost and are to be paid for separately.

3. Concrete inlet pavement and sodding shall be in accordance with the sections on this detail and with the Plan on Sheet 4 and Sections AA, BB and CC (as Case 1) and tabular quantities on Sheet 5.

4. Unit price and payment shall constitute full compensation for inlet conversion (including concrete inlet paving and replacement grate(s)), ditch reconstruction, restoration of disturbed turf, and shall be paid for under the contract price for Inlets (DT Bot) (Type __) (Partial), each.

   Sodding shall be paid for under the contract unit price for Performance Turf, SY.

   Ditch pavement shall be paid for separate from the inlet by pavement type(s) and unit(s) as called for in the plans.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
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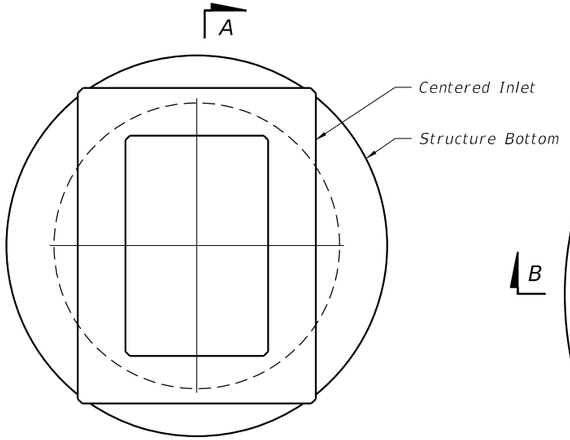
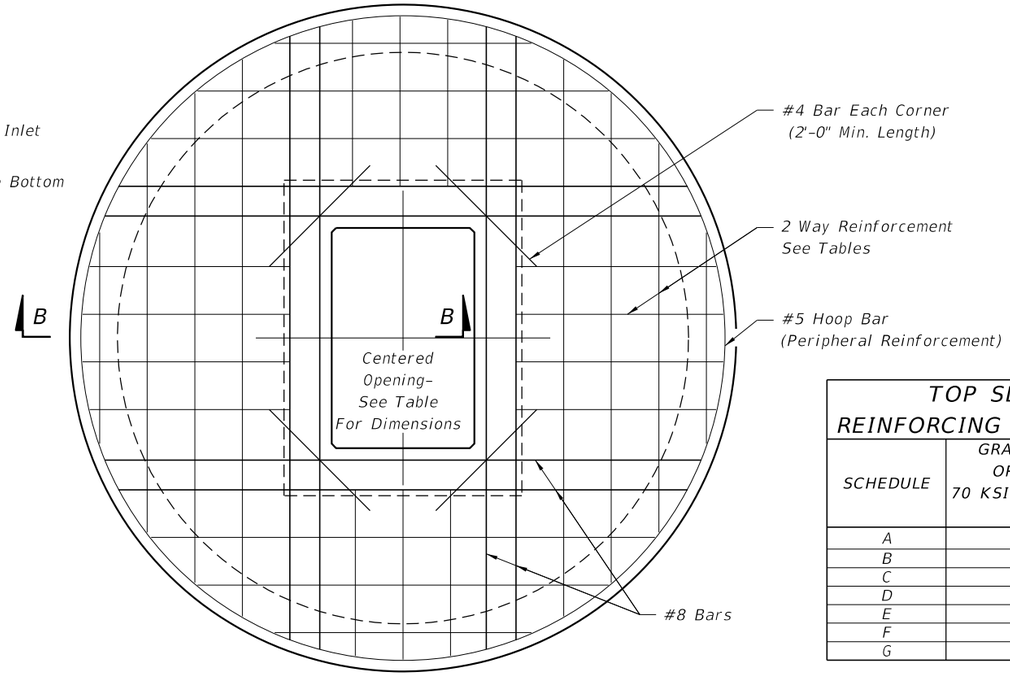


TOP VIEW

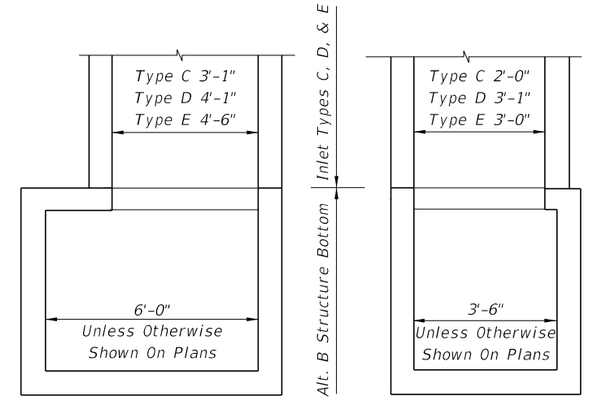


TOP SLAB REINFORCING DIAGRAM

TOP SLAB OPENINGS		
DIAMETER	OPENING SIZE	
	MIN.	MAX.
4'-0"	2'-0" x 3'-1"	2'-0" x 3'-1"
5'-0"	2'-0" x 3'-1"	3'-1" x 4'-1"
6'-0"	2'-0" x 3'-1"	3'-0" x 4'-6"
8'-0"	2'-0" x 3'-1"	3'-0" x 4'-6"

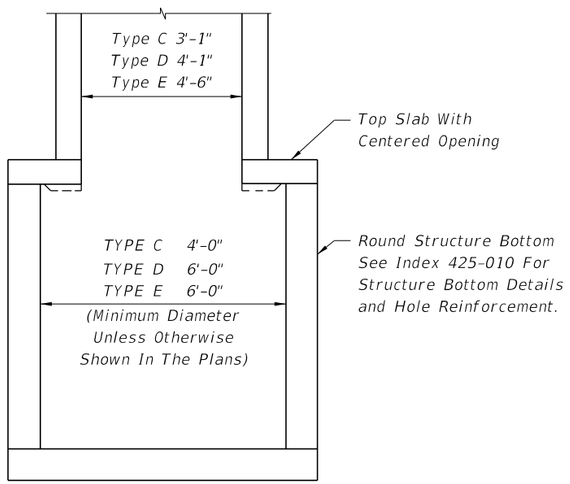
TOP SLAB REINFORCING SCHEDULE	
SCHEDULE	GRADE 60 (BAR) OR 65 KSI & 70 KSI (WIRE FABRIC) $In.^2/ft.$
A	0.20
B	0.24
C	0.37
D	0.53
E	0.73
F	1.06
G	1.45

TOP SLAB WITH CENTERED OPENING		
SLAB DEPTH	SLAB THICKNESS	REINFORCING (2 WAYS) SCHEDULE
SIZE: 4'-0"		
≥0.5'-40'	9½"	C
SIZE: 5'-0"		
≥0.5' < 30'	9½"	C
30'-40'	9½"	D
SIZE: 6'-0"		
0.5' < 8'	9½"	B
8' < 18'	9½"	C
18' < 30'	9½"	D
30' < 37'	9½"	E
37'-40'	9½"	G
SIZE: 8'-0"		
≥0.5' < 9'	11½"	C
9' < 15'	11½"	D
15' < 23'	11½"	E
23' < 33'	11½"	E
33'-40'	11½"	G

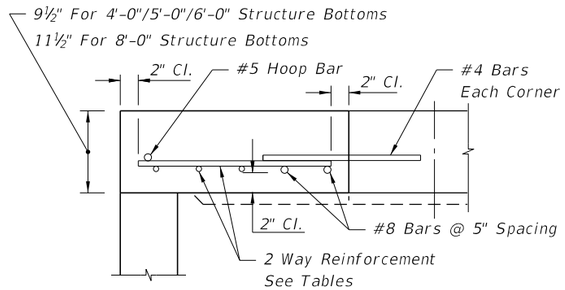


See Index 425-010 for structure bottom details and hole reinforcement.

ALT. B STRUCTURE BOTTOM FOR INLETS TYPE C, D & E



SECTION AA



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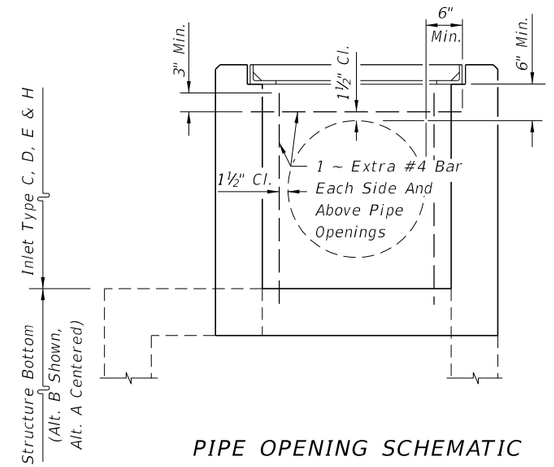

PIPE OPENING SCHEMATIC

ALT. A STRUCTURE BOTTOM FOR INLETS TYPE C, D AND E

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX	SHEET
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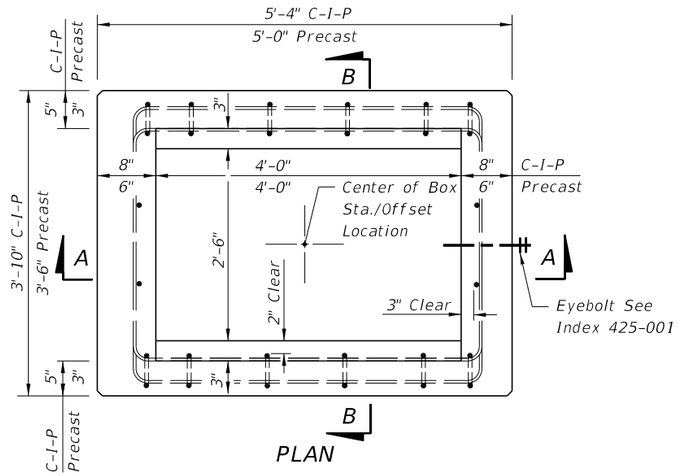
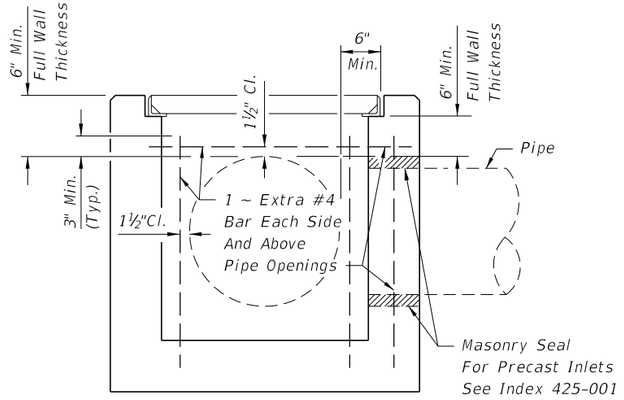
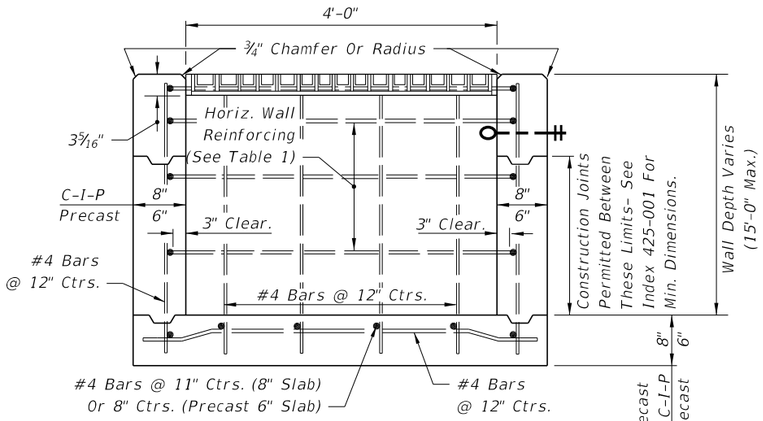


PLAN

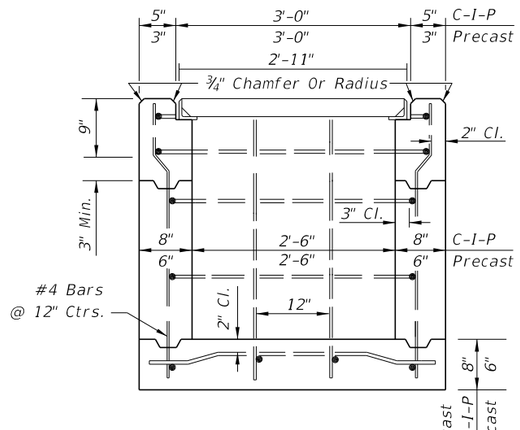


(TYPE F SHOWN, TYPE G SIMILAR)

PIPE OPENING SCHEMATIC

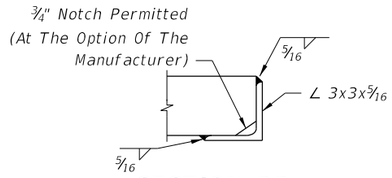


SECTION AA

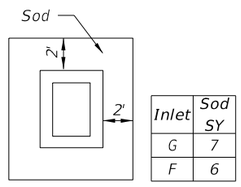


SECTION BB

SECTION CC

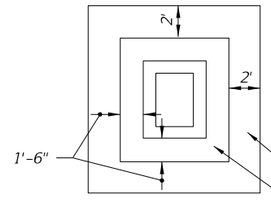


SECTION DD



Inlet	Sod SY
G	7
F	6

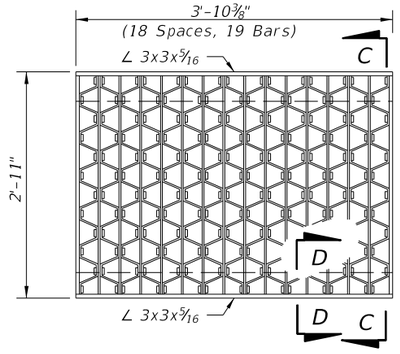
SOD ONLY



Inlet	Pavt. CY*	Sod SY
G	0.43	10
F	0.34	9

* For Estimating Purposes Only

PAVT. AND SOD



STEEL GRATE

Steel Grating, Straight Bars 3"x¼"
Reticuline Bars 2"x3⁄16"

TYPE F

Notes:
1. Pavement and/or sod to be used only where called for in the plans.
2. Cost of paving to be included in cost of inlet.

PAVEMENT AND SODDING

GENERAL NOTES

1. These inlets are designed for use in ditches, medians, pavement areas, or other areas subject to heavy wheel loads, minimal debris, and bicycle traffic. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet. When inlet is placed in areas subject to bicycle traffic, install filler bar when clearance or gap is greater than ⅝" as shown in Index 425-031.
2. When Alternate G grate is specified in plans, the grate is to be hot dip galvanized after fabrication.
3. These inlets may be used with Alternate B structure bottoms, Index 425-010. The inlet and bottom combinations are to be paid for under the contract unit price for inlets (DT Bot) (Type F (or G)) (J Bot, Depth), Ea.
4. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
5. For supplemental details, see Index 425-001.
6. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. Bars to be cut or bent for 1½" clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening, as shown.
7. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.

HORIZONTAL WALL REINF. SCHEDULES
TYPE F INLET (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in²/ft)	MAX. SPACING BARS	MAX. SPACING WWR
0' - 4'	A12	0.20	12"	8"
4' - 7'	A6	0.20	6"	5"
7' - 12'	B5.5	0.24	5½"	5"
12' - 15'	Special 1	0.267	5"	4"

RECOMMENDED MAXIMUM PIPE SIZES

INLET INSIDE WIDTH	PIPE SIZE
2'-6" (Type F)	18"
4'-0" (Type F)	30"
4'-10" / 5'-0" (Type G)	42"

Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index 425-001. For larger pipe sizes see Note 3.

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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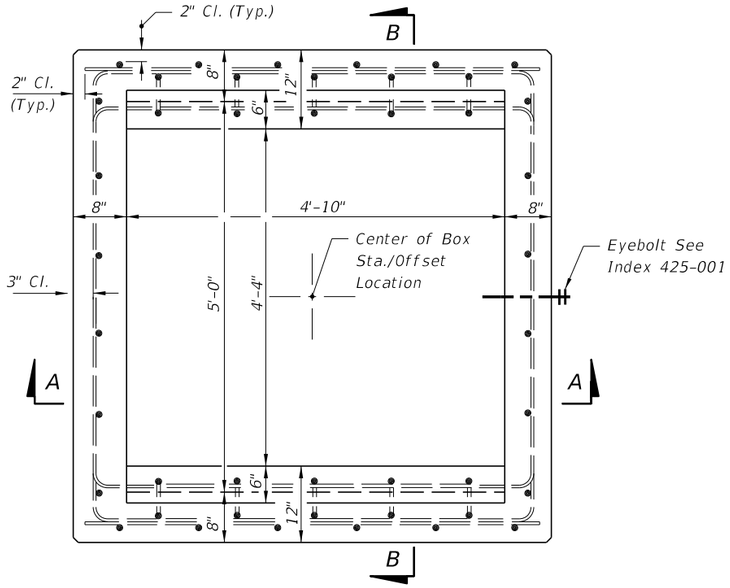
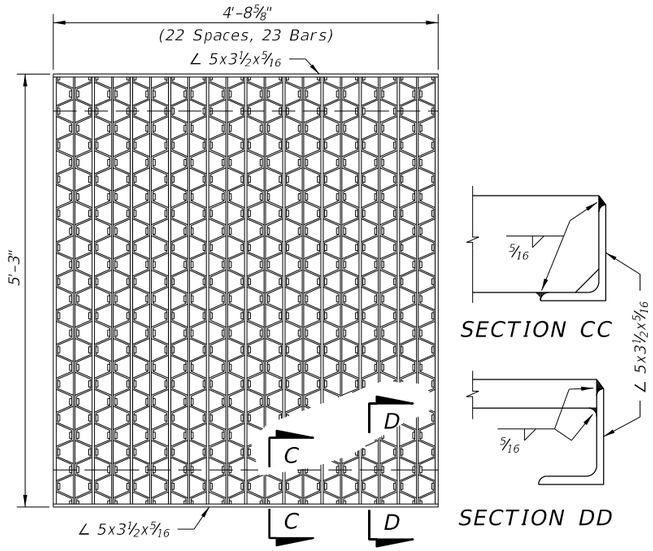
DITCH BOTTOM INLET TYPES F AND G



PLAN

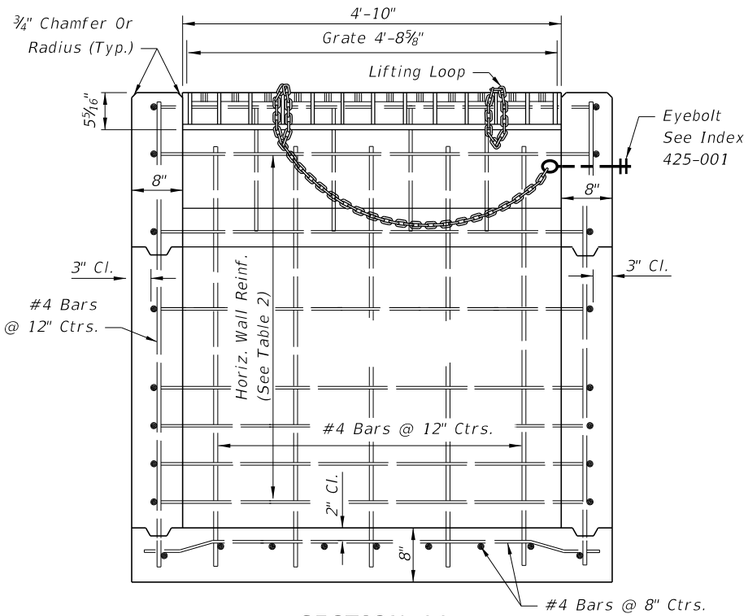


STEEL GRATE

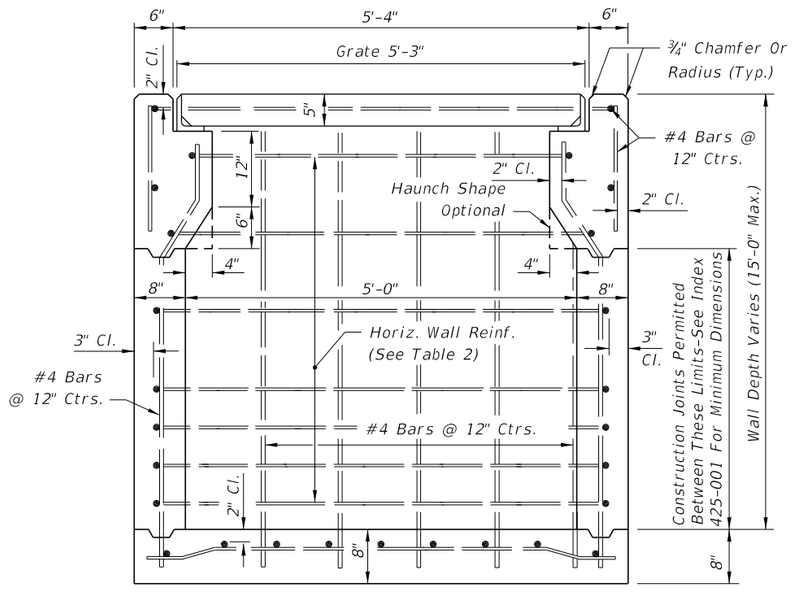
5" Steel Decking, Weight 630 Lbs. Main Bars 5" x ¼"
Intermediate Bars 1½" x¼", Reticuline Bars 1¼" x 3/16"

TYPE G INLET (TABLE 2)

WALL DEPTH	SCHEDULE	AREA (in^2/ft)	MAX. SPACING	
			BARS	WWR
0' - 3'	A12	0.20	12"	8"
3' - 7'	A6	0.20	6"	5"
7' - 10'	B5.5	0.24	5½"	5"
10' - 15'	C6.5	0.37	6½"	6"



SECTION AA



SECTION BB

TYPE G

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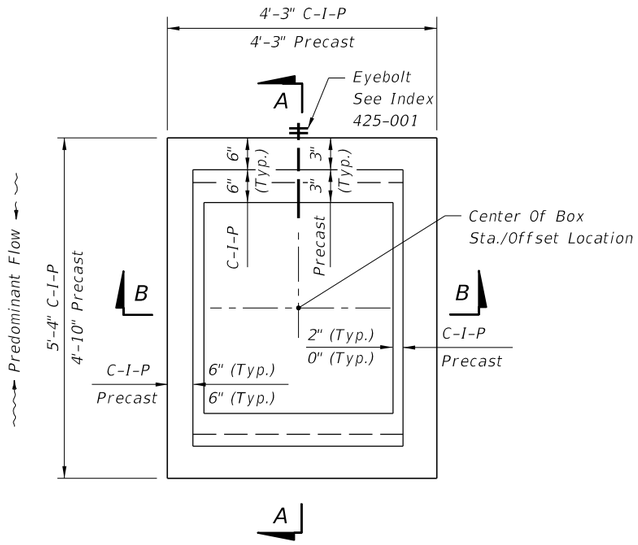
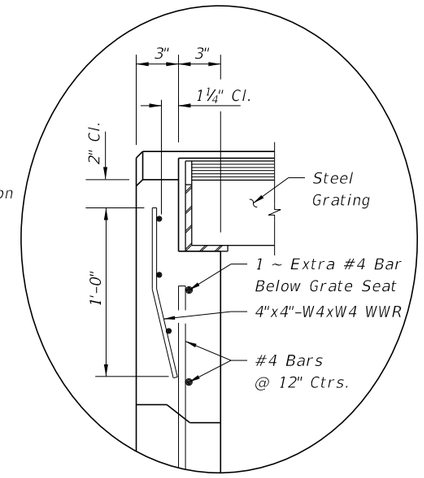
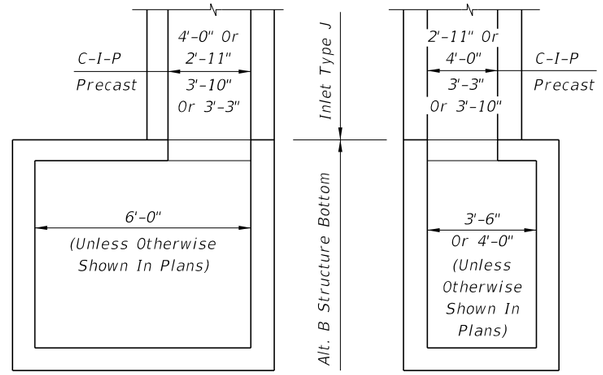
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPES F AND G	425-053	2 of 2



PLAN
(CAST-IN-PLACE INLET SHOWN, WITHOUT GRATE, PRECAST INLET SIMILAR)



INSET A
(PRECAST OPTION)



NOTE: Alt. B Structure Bottom Only. See Index 425-010 for structure bottom details and hole reinforcement.

INLET WITH STRUCTURE BOTTOM

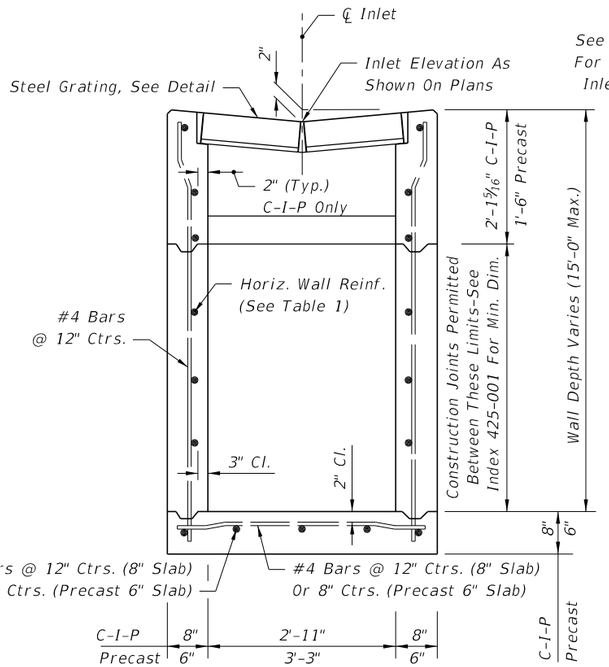
HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

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

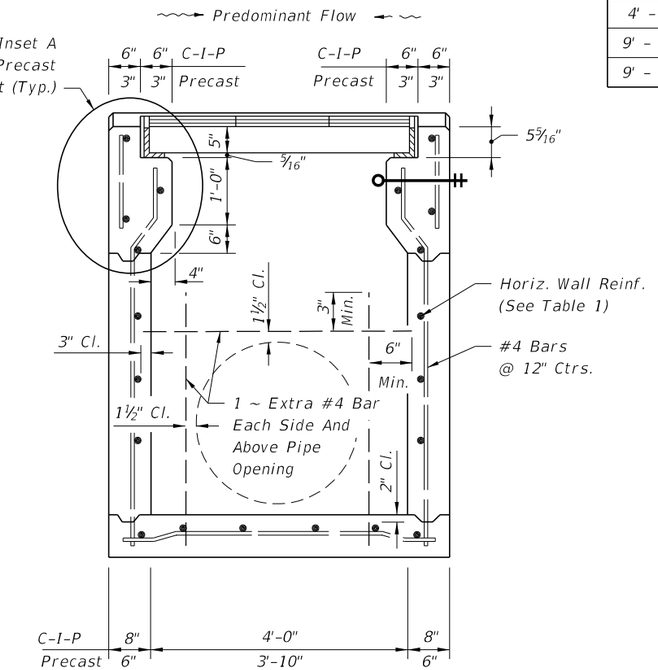
RECOMMENDED MAXIMUM PIPE SIZES

INLET INSIDE WIDTH	PIPE SIZE
2'-11" or 3'-3"	24"
3'-10" or 4'-0"	30"

Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index 425-001. For larger pipe, see Structure Bottom detail above and Index 425-010.



(Pipe Opening Not Shown)
SECTION BB



(Pipe Opening Shown)
SECTION AA

GENERAL NOTES

1. This inlet is designed for use in ditches, medians, pavement areas or other areas subject to heavy wheel loads with minimal debris. This inlet is not for use in areas subject to bicycle traffic. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet.
2. All reinforcing 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 when necessary; bars to clear pipe by 1½".
3. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
4. When alternate G grate is specified in plans the grate is to be hot dip galvanized after fabrication.
5. For supplemental details, see Index 425-001.
6. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
7. Cost of ditch paving to be included in cost of inlet. Sodding to be paid for under contract unit price for Performance Turf, SY.

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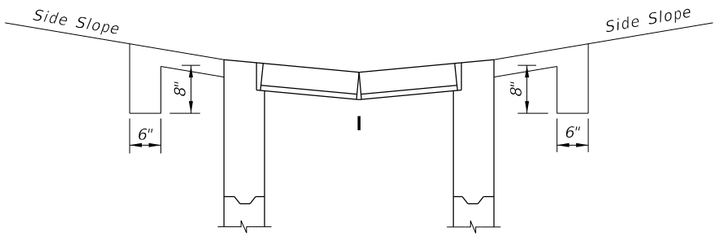
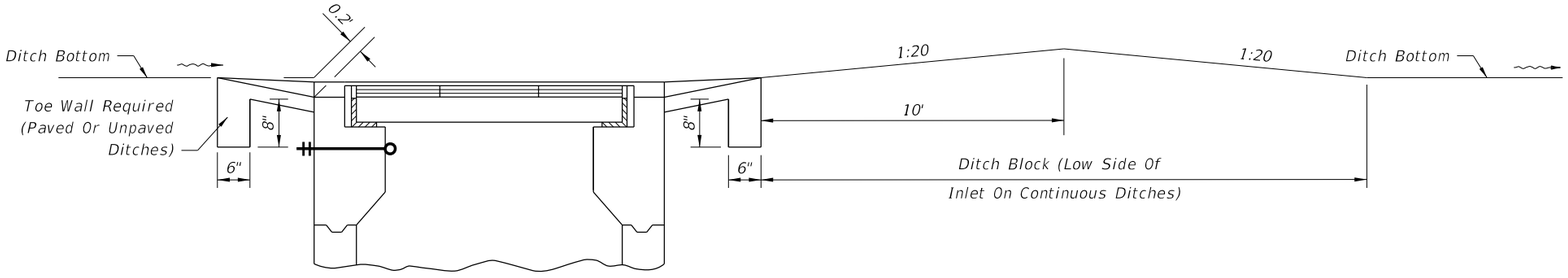
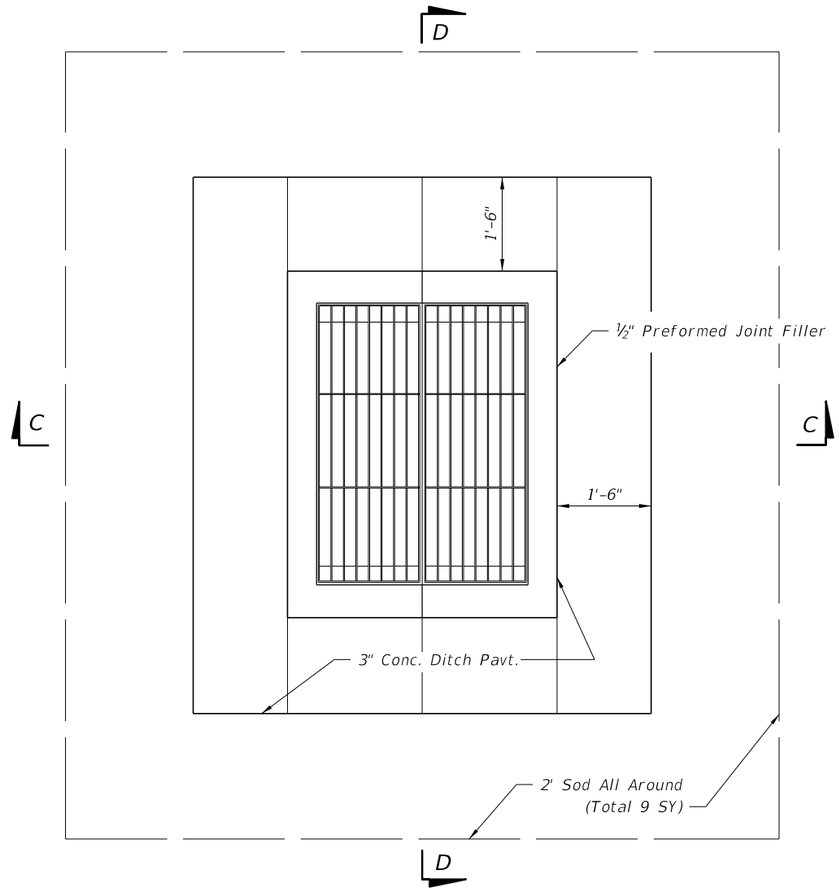
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE J	INDEX	SHEET
11/01/17						425-054	1 of 2



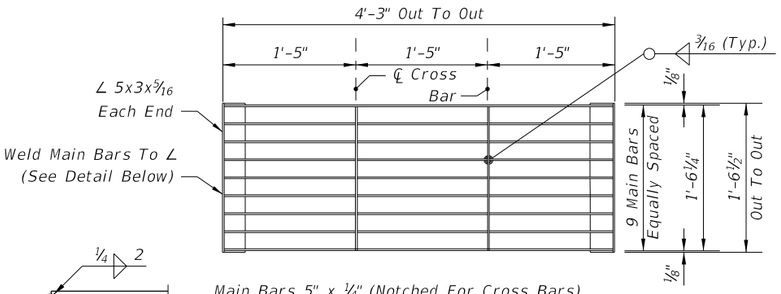
SECTION CC

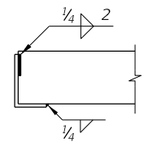


SECTION DD



PAVEMENT & SODDING





DETAIL

Main Bars 5" x ¼" (Notched For Cross Bars)
Cross Bars 1¾" x¼" (Continuously Welded At
Main Bar Notches) Main Bars And Cross Bars Flush On Top.

Note: Two Required Per Inlet

STEEL GRATING

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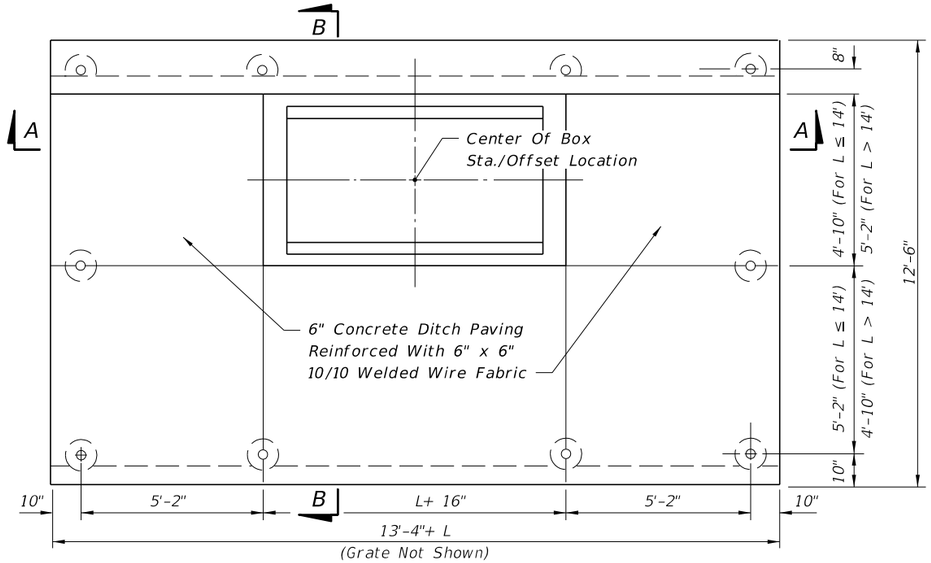
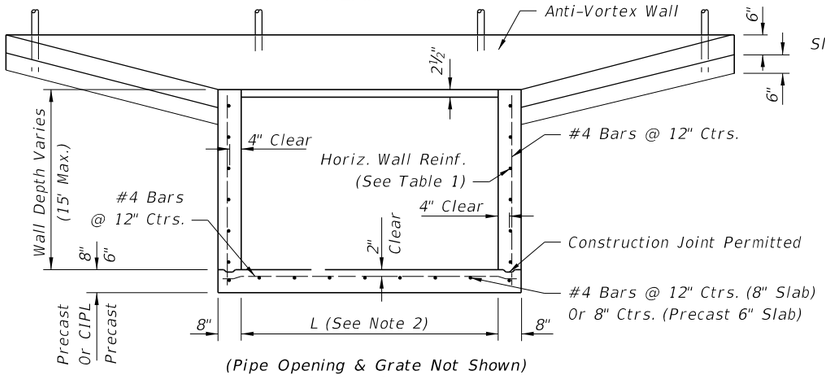
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE J	INDEX	SHEET
11/01/17						425-054	2 of 2

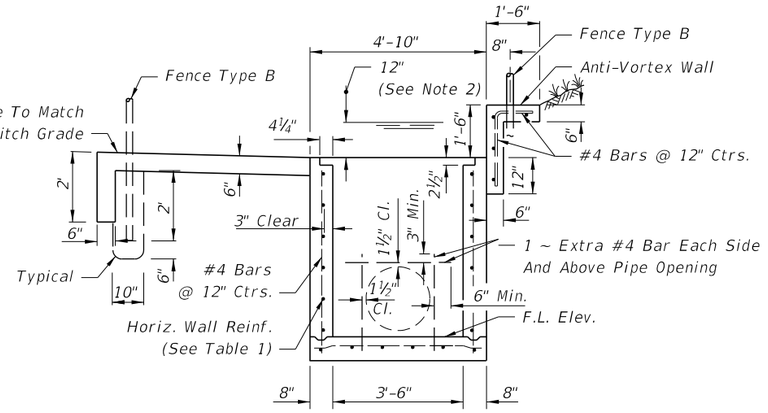


PLAN



(Pipe Opening & Grate Not Shown)

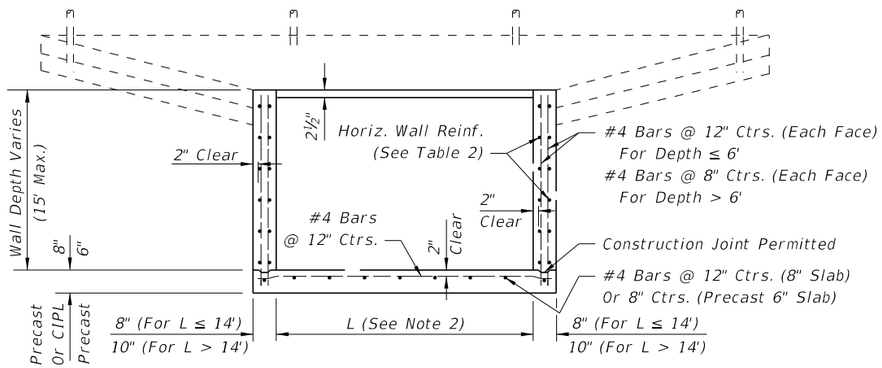
SECTION AA



(Pipe Opening Shown, Grate Not Shown)

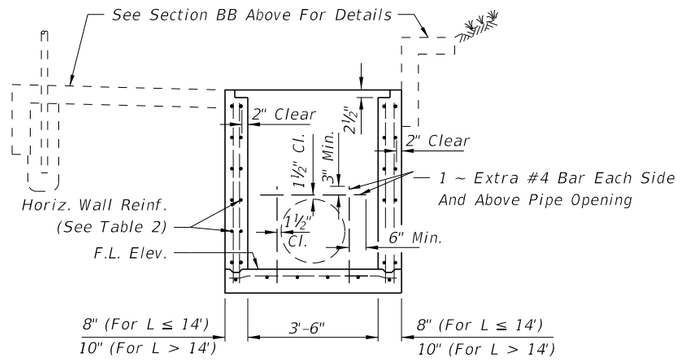
SECTION BB

INLET LENGTHS (L) LESS THAN OR EQUAL TO 9' (SINGLE LAYER WALL REINFORCING)



(Pipe Opening & Grate Not Shown)

SECTION AA



(Pipe Opening Shown, Grate Not Shown)

SECTION BB

INLET LENGTHS (L) GREATER THAN OR EQUAL TO 9' (DOUBLE LAYER WALL REINFORCING)

GENERAL NOTES

1. This inlet is to be used at locations having high flow rates, usually where an endwall could not be utilized without hazardous intake.
2. Inlet length (L) shall be set by the designer for the greater of either culvert requirement or inlet pool not to exceed 12" depth. Structures over 6 feet in depth are to be checked for flotation by the designer of project drainage.
3. This inlet is not intended for use with Index 425-010 structure bottoms.
4. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
5. Inlet and anti-vortex wall to be Class II Concrete.
6. All reinforcing is Grade 60 with 2" min. cover unless otherwise noted. See Index 425-001 for equivalent area of welded wire reinforcing (WWR). Bars to be cut or bent for 1½" clearance around pipe opening. Bend top and corner bars to clear anchor holes.
7. 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.
8. Channels and bars for grate shall be ASTM A242/A242M, A572/A572M or A588/A588M, Grade 50 steel, and galvanized in accordance with Specification 975.
9. Fence enclosure shall be Fence Type B (Index 550-002). All posts to be set in concrete. A minimum of 10 posts required. Corner and approach side posts to be 3" nominal diameter.
10. Cost of ditch paving, anti-vortex wall, grate, concrete, reinforcing steel and fence enclosure to be included in the cost of inlet. Inlet to be paid for under the contract unit price for Inlets (DT Bot) (Type K), Each.
11. Anchor Bolts shall be ASTM F1554 Grade 36 fully threaded headless bolts, installed in accordance with Specification 416 and 937. Nuts shall be ASTM A563 or A194 and washers shall be ASTM F436 or Type A plain washers. All nuts, bolts and washers shall be galvanized.

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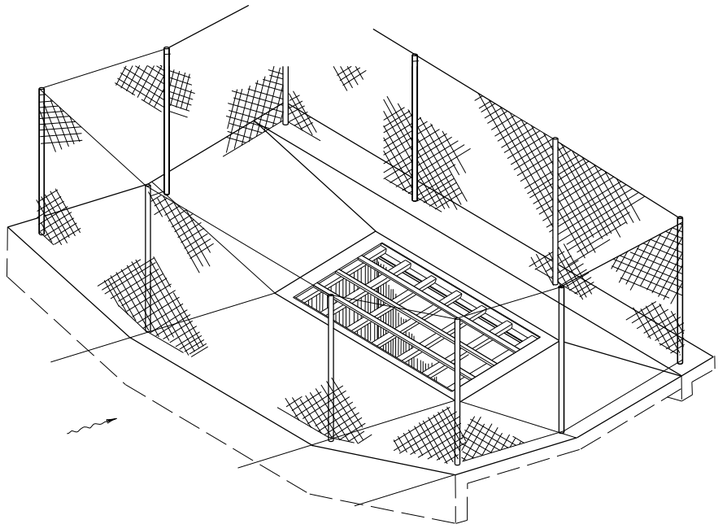
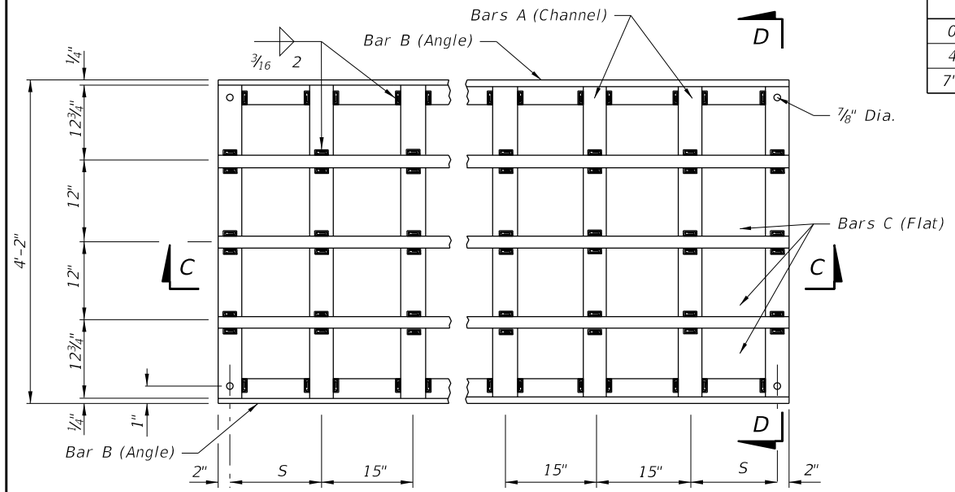
10/29/2019

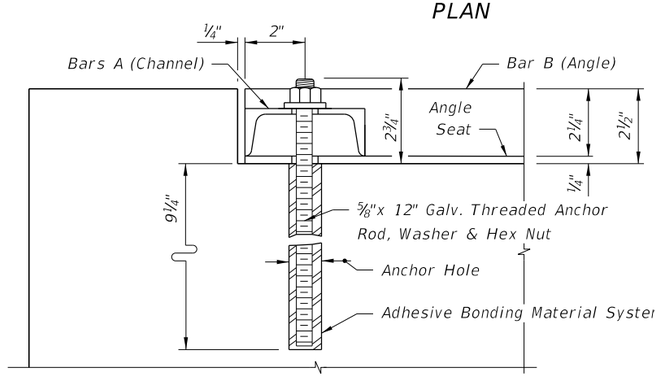
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE K	INDEX	SHEET
11/01/17					425-055	1 of 2



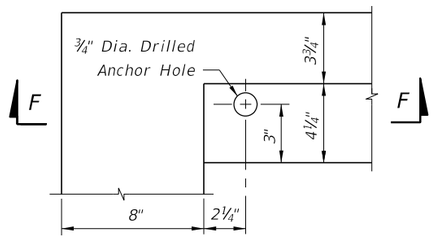
ISOMETRIC OF INLET FENCE ENCLOSURE



PLAN



SECTION FF



GRATE SEAT AND ANCHOR HOLE PLAN

STEEL GRATE

HORIZONTAL WALL REINFORCING SCHEDULES

WALL DEPTH	SCH.	AREA (in²/ft)	MAX. SPACING BARS	MAX. SPACING WWR
SIZE: L = 5'-0"				
0'-5'	A12	0.20	12"	8"
5'-8'	A6	0.20	6"	5"
8'-15'	B5.5	0.24	5½"	5"
SIZE: L = 6'-0"				
0'-4'	A12	0.20	12"	8"
4'-6'	B5.5	0.24	5½"	5"
6'-9'	C6.5	0.37	6½"	6"
9'-15'	C3.5	0.37	3½"	3"
SIZE: L = 7'-0"				
0'-4'	B5.5	0.24	5½"	5"
4'-7'	C6.5	0.37	6½"	6"
7'-15'	D4.5	0.53	4½"	4"
SIZE: L = 8'-0"				
0'-3'	B5.5	0.24	5½"	5"
3'-5'	C6.5	0.37	6½"	6"
5'-9'	D4.5	0.53	4½"	4"
9'-15'	E5	0.73	5"	4"
SIZE: L = 9'-0"				
0'-4'	C6.5	0.37	6½"	6"
4'-7'	D4.5	0.53	4½"	4"
7'-15'	E3	0.73	3"	3"

SINGLE LAYER REINFORCING (TABLE 1)

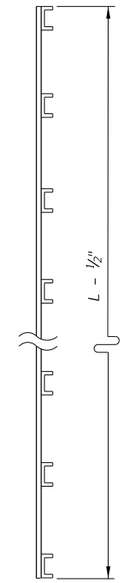
WALL DEPTH	SCH.	AREA (in²/ft)	MAX. SPACING BARS	MAX. SPACING WWR
SIZE: L = 9'-0"				
0'-4'	A12	0.20	12"	8"
4'-6'	A6	0.20	6"	5"
6'-8'	B5.5	0.24	5½"	5"
8'-15'	C6.5	0.37	6½"	6"
SIZE: L = 10'-0"				
0'-3'	A12	0.20	12"	8"
3'-5'	A6	0.20	6"	5"
5'-8'	C6.5	0.37	6½"	6"
8'-15'	C3.5	0.37	3½"	3"
SIZE: L = 12'-0"				
0'-4'	B5.5	0.24	5½"	5"
4'-6'	C6.5	0.37	6½"	6"
6'-15'	D4.5	0.53	4½"	4"
SIZE: L = 14'-0"				
0'-4'	C6.5	0.37	6½"	6"
4'-7'	D4.5	0.53	4½"	4"
7'-15'	E5	0.73	5"	4"
SIZE: L = 16'-0" x 10" WALL THICK				
0'-4'	C6.5	0.37	6½"	6"
4'-8'	D4.5	0.53	4½	4"
8'-15'	E5	0.73	5"	4"
SIZE: L = 18'-0" x 10" WALL THICK				
0'-3'	C6.5	0.37	6½"	6"
3'-5'	D4.5	0.53	4½"	4"
5'-8'	E5	0.73	5"	4"
8'-15'	F5	1.06	5"	4"

DOUBLE LAYER REINFORCING (TABLE 2)

GRATE QUANTITIES

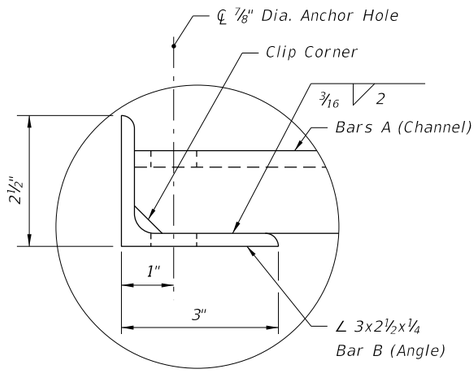
PIPE SIZE	L	S	BILL OF STEEL BAR	No. REQD.	LENGTH	STEEL WEIGHT CHANNEL 4"x 5.4 lb	ANGLE 3"x 2½"x ¼" (4.5 lb/ft)	FLAT 2" x ½" (3.4 lb/ft)
30"&36"	5'-0"	12¾"	A	5	4'-1½"	111		
			B	2	4'-11½"		45	
			C	3	4'-11½"			51
42"&48"	6'-0"	11¼"	A	6	4'-1½"	134		
			B	2	5'-11½"		54	
			C	3	5'-11½"			61
54"&60"	7'-0"	9¾"	A	7	4'-1½"	156		
			B	2	6'-11½"		63	
			C	3	6'-11½"			71
66"&72"	8'-0"	8¼"	A	8	4'-1½"	178		
			B	2	7'-11½"		72	
			C	3	7'-11½"			81
84"	9'-0"	14¼"	A	8	4'-1½"	178		
			B	2	8'-11½"		81	
			C	3	8'-11½"			91
SPECIAL	10'-0"	12¾"	A	9	4'-1½"	201		
			B	2	9'-11½"		90	
			C	3	9'-11½"			102
SPECIAL	12'-0"	9¾"	A	11	4'-1½"	245		
			B	2	11'-11½"		108	
			C	3	11'-11½"			122
SPECIAL	14'-0"	14¼"	A	12	4'-1½"	267		
			B	2	13'-11½"		126	
			C	3	13'-11½"			142
SPECIAL	16'-0"	11¼"	A	14	4'-1½"	312		
			B	2	15'-11½"		144	
			C	3	15'-11½"			163
SPECIAL	18'-0"	8¼"	A	16	4'-1½"	356		
			B	2	17'-11½"		162	
			C	3	17'-11½"			183

Table Notes:
See Sheet 1 for dimension "L" location.
See steel grate Plan View for dimension "S" location.



SECTION DD

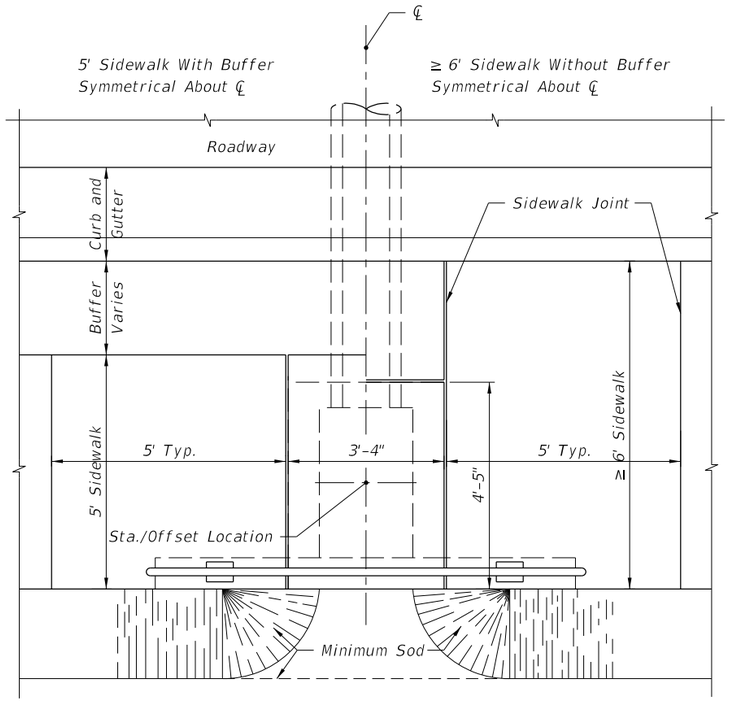
SECTION CC



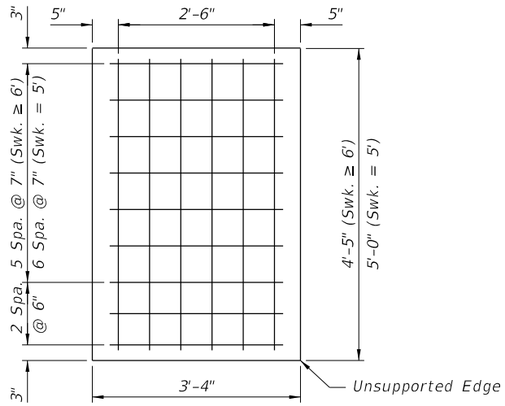
DETAIL E

10/29/2019 8:16:00 AM

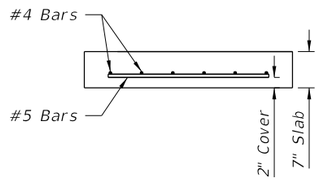
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	DITCH BOTTOM INLET TYPE K	425-055	2 of 2



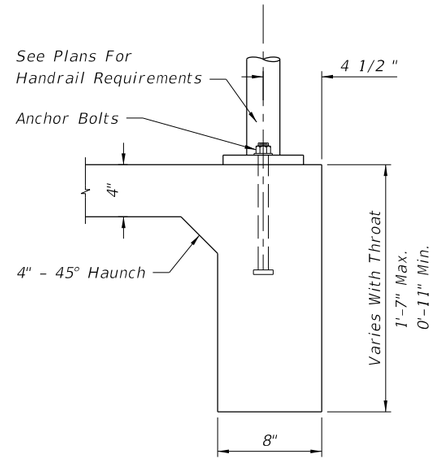
PLAN



SLAB REINFORCEMENT



SLAB SECTION



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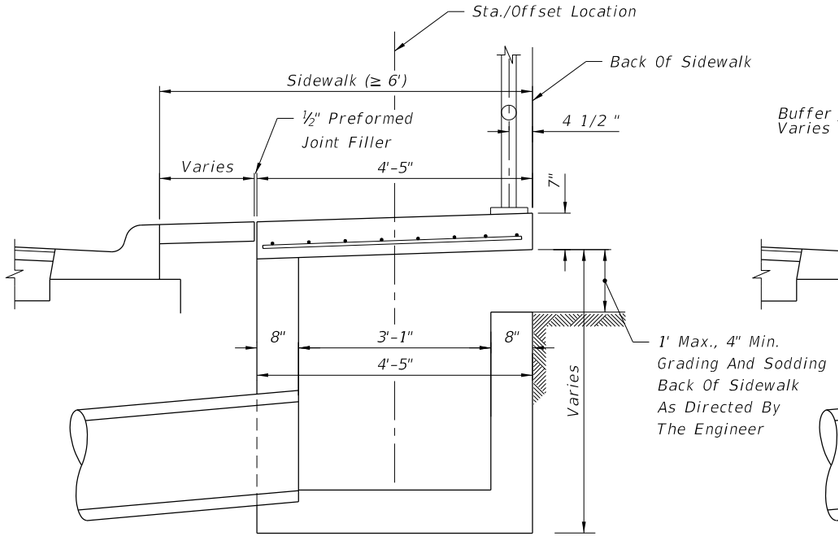
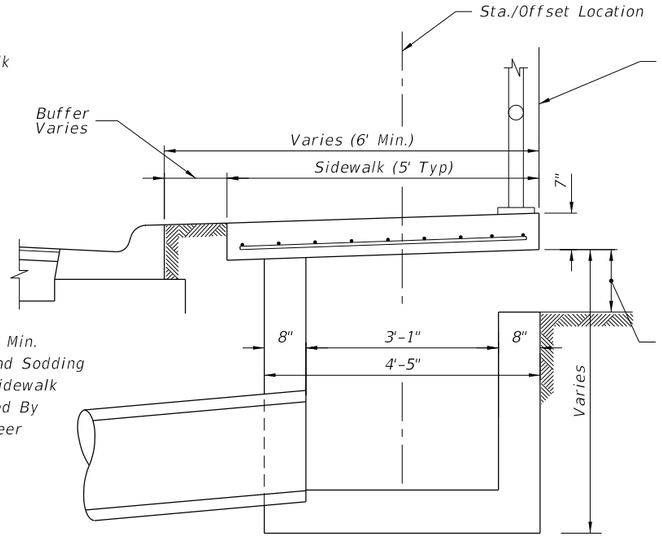
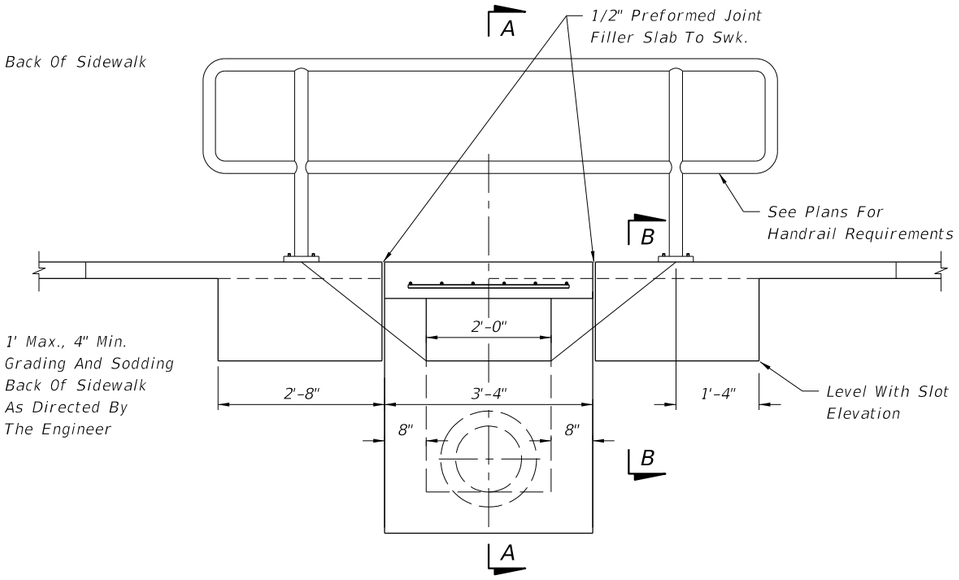


≥ 6' SIDEWALK
SECTION AA



5' SIDEWALK
SECTION AA



FRONT ELEVATION

Notes:

1. For additional details see Index 425-052.

2. Inlet to be paid for under the contract unit price for Inlets (Ditch Bottom Type C Modified), EA.
   Handrail to be paid for under the contract unit price for Pipe Handrail, (Material), LF.

INLET TYPE C (MODIFIED)

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	BACK OF SIDEWALK DRAINAGE	INDEX	SHEET
11/01/17						425-060	1 of 3

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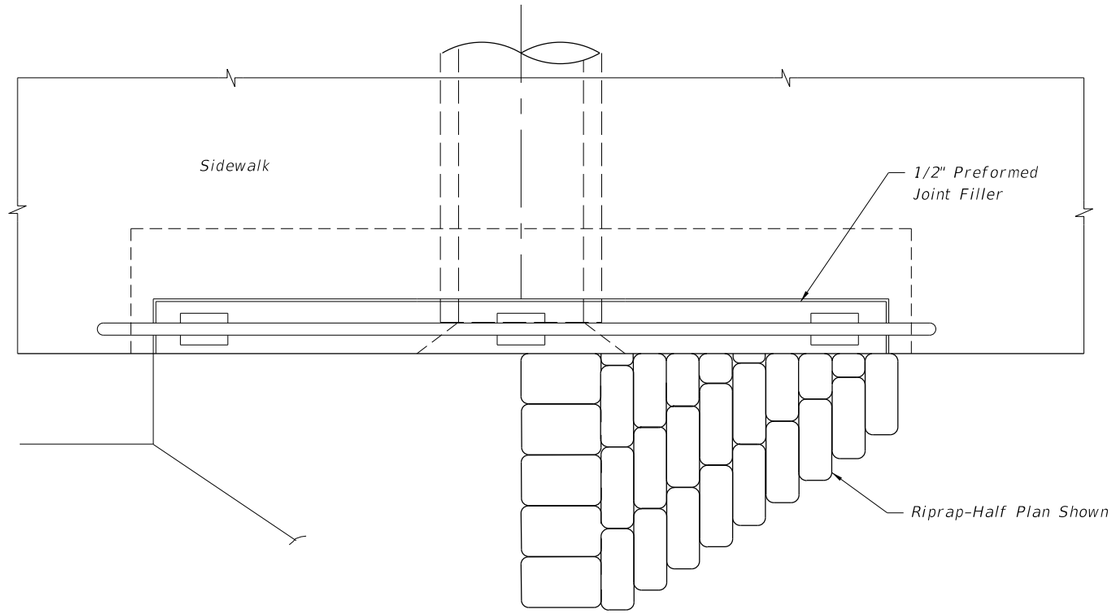
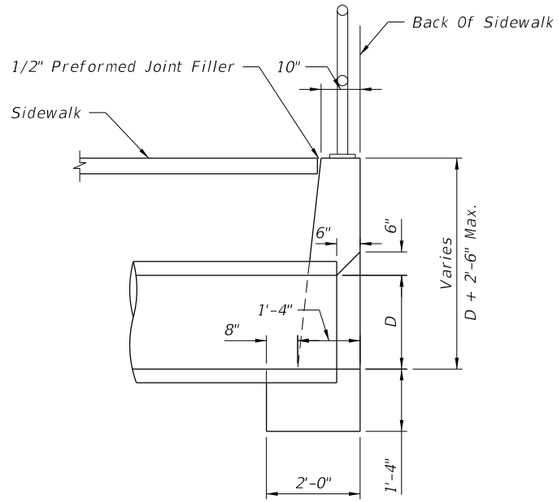


PLAN



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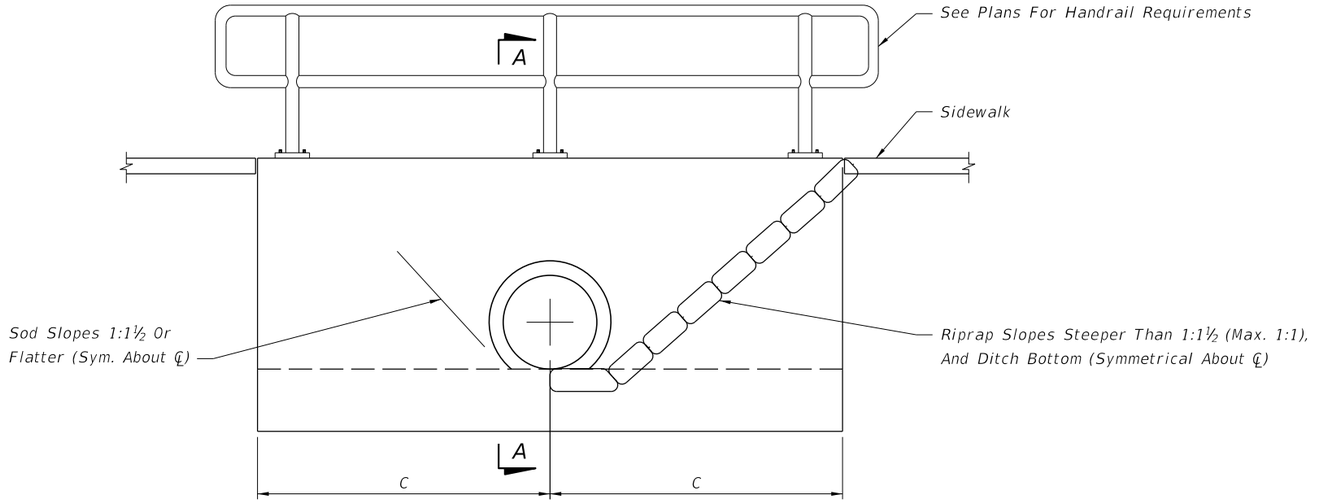


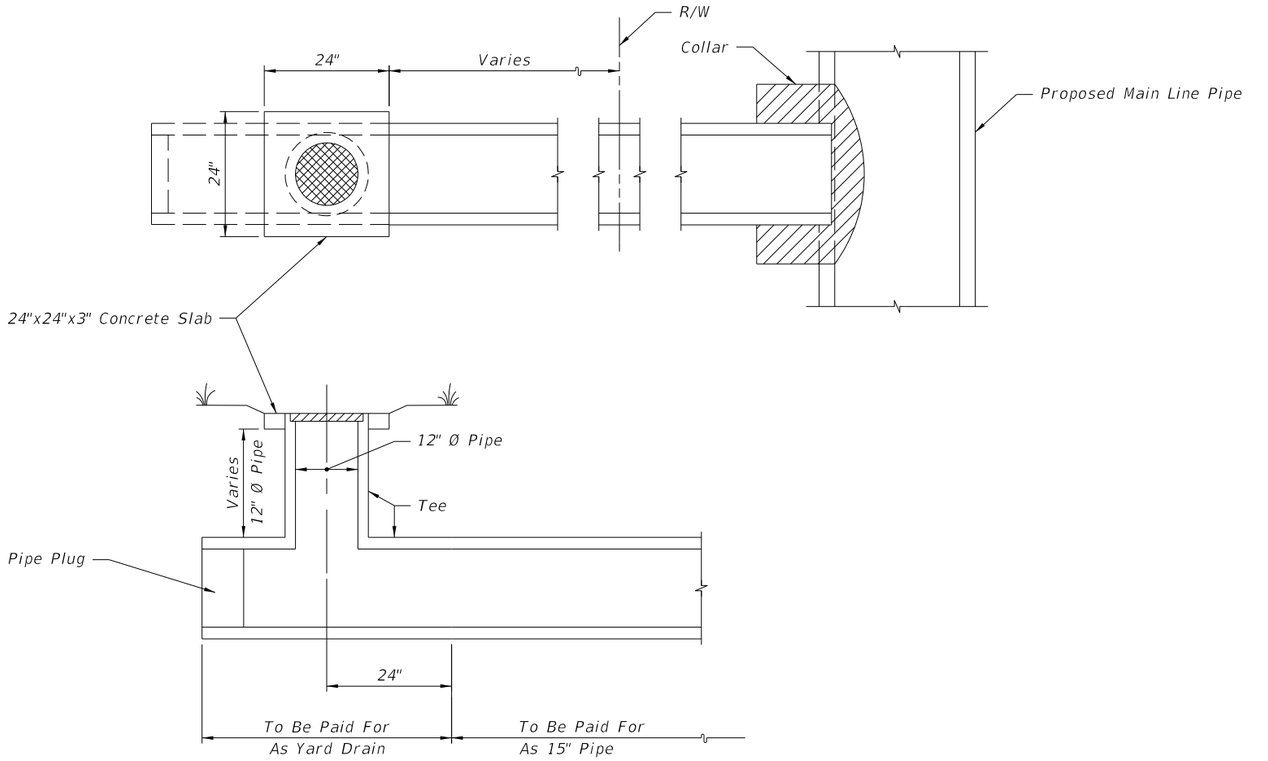
FRONT ELEVATION

Notes:

1. Maximum pipe size shall be 24" diameter.
2. Grading back of sidewalk varies and shall be done as directed by the Engineer.
3. Concrete quantities shown are for maximum wall heights, and shall be basis for estimate and payment.
4. Riprap quantities shown are for estimate purposes only. Cost of riprap to be included in cost of the endwall.
5. Endwalls to be paid for under the contract unit price for Concrete Class I (Endwalls), CY. Handrail to be paid for under the contract unit price for Pipe Handrail, (Material), LF.

Pipe Size (in)	C	Concrete Class I (CY)	Sand-Cement Riprap (CY)
15	4'-9"	2.3	1.1
18	5'-3"	2.6	1.3
24	6'-3"	3.3	1.8

SPECIAL CONCRETE ENDWALL



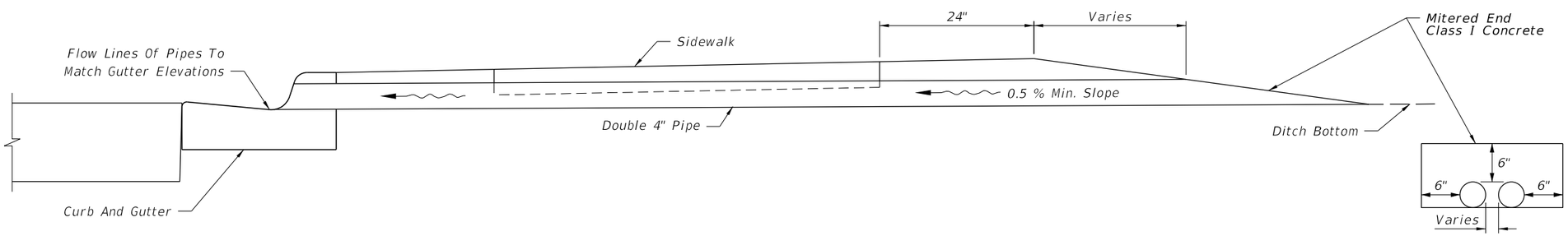
YARD DRAIN ITEM INCLUDES:

1. 15" x 15" x 12" Concrete or PVC Tee 4' long.
2. Grate diameter = 14-¼"
   Thickness = 2-½"
   Flow area = 45 sq in min.
   Light Duty Cast Iron, see Specification Section 962.
3. 12" pipe as necessary.
4. 0.04 Cubic yards concrete for slab.

YARD DRAINS

Notes:

1. Yard drains to be located outside the R/W. Drainage area should not exceed 750 SF (grate flow 0.1 Cfs).
2. Yard drains may be constructed at the option of the property owner as shown on the plans.
3. Cost of plugs and collars to be included in the cost for 15" pipe. For collar and plug details see Index 430-001.
4. Yard drains to be paid for under the contract unit price for Yard Drains, EA.



SHALLOW DITCHES

Notes:

1. To be constructed at locations as directed by the Engineer.
2. Either cast iron pipe or PVC rigid conduit, U.L. listed for direct sunlight exposure, Schedule 40, may be used.
3. Pipe and Mitered End to be paid for under the contract unit price for either Cast Iron Soil Pipe (Standard) (4"), LF or PVC Pipe For Back Of Sidewalk Drainage (4"), LF.

Note:
Miter to slope.

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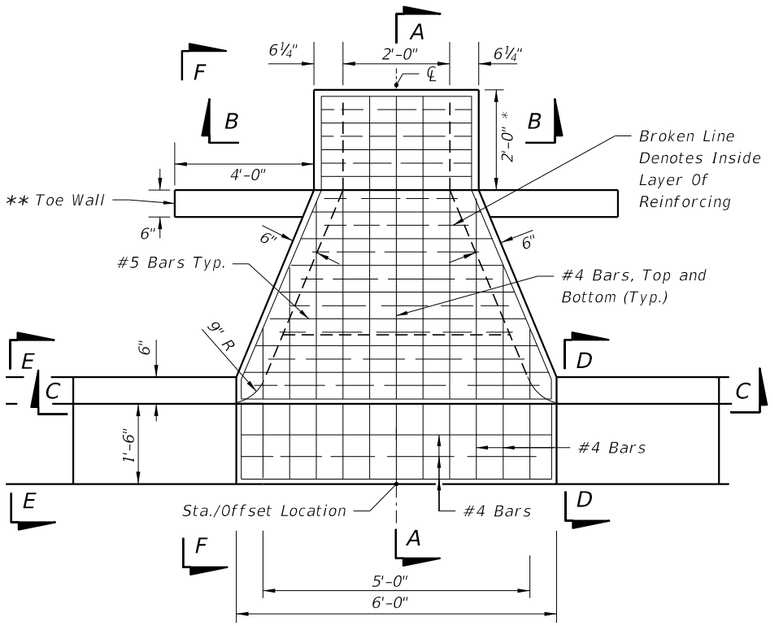
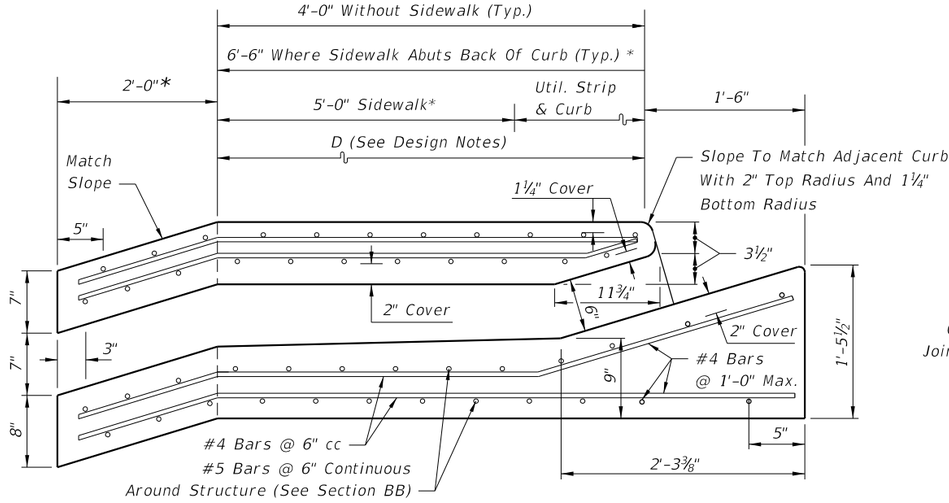
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	BACK OF SIDEWALK DRAINAGE	425-060	3 of 3



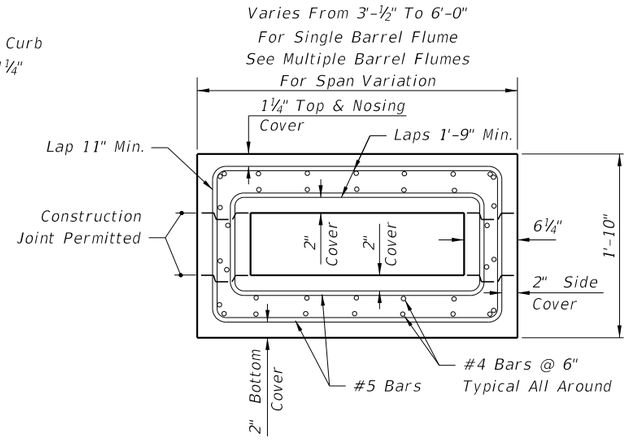
TOP VIEW



SECTION AA

* Sloped Section to be used w/sidewalk applications only.

** Toe Walls as depicted to be used with sidewalk application only. For endwall without sidewalk see detail on Sheet 2.



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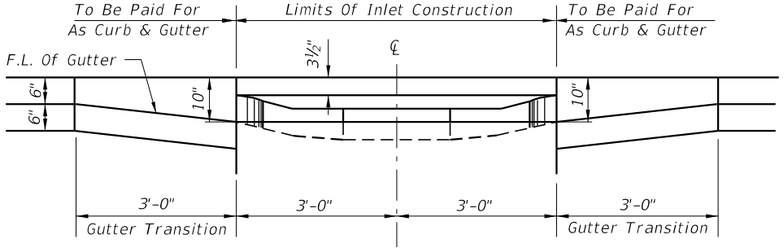

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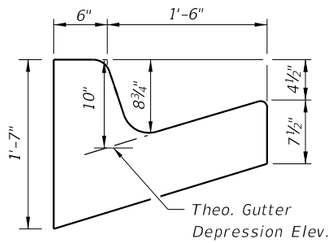

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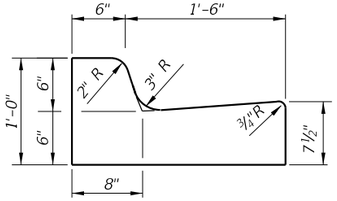
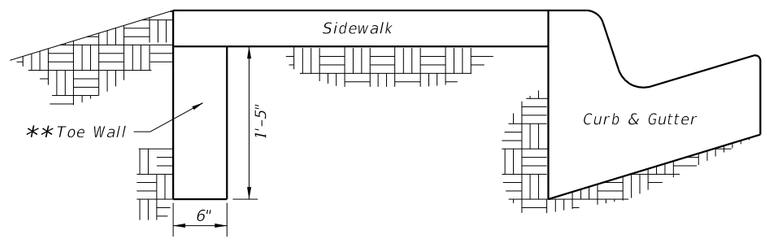


SECTION EE
(Curb And Gutter Type F)



SECTION FF

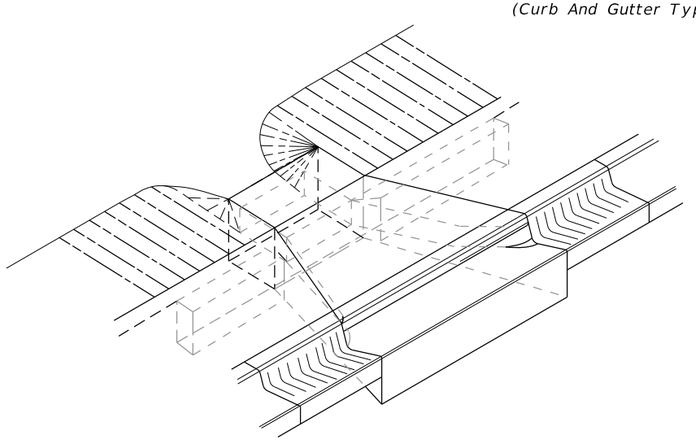
DESIGN NOTES

1. These inlets are designed for use with Type F curb and gutter only. Locate inlet outside of curb ramp area.

   The Single Barrel Flume is intended for locations with light to moderate flows. Multiple Barrel Flumes must be selected to meet design heavy flows.

2. Designer must specify Flume Type, "D" dimension, number of barrels and guiderail requirements in plans.

3. Designer must specify where energy dissipating bricks are required.



FLUME W/SIDEWALK INLET (CLOSED FLUME) TYPE I
SINGLE BARREL FLUME DEPICTED

GENERAL NOTES

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 and, where necessary, modify the inlet details accordingly. Bend steel when necessary.

3. All steel shall have 2" minimum cover unless otherwise shown. 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. Equivalent area grade 40 steel or 65 ksi welded wire fabric may be substituted.

5. Inlets to be paid for under the contract unit price for Inlets (Closed Flume) EA.

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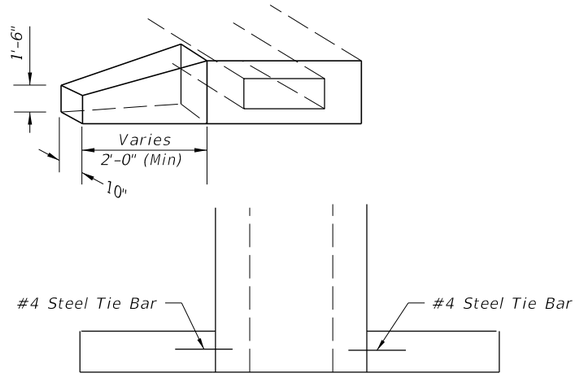
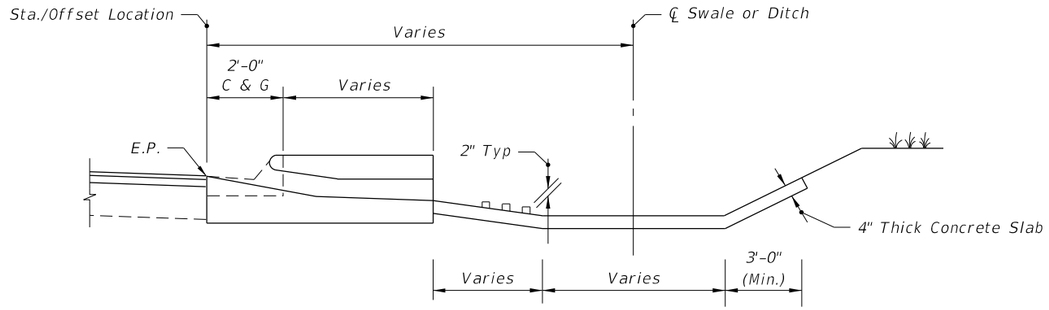
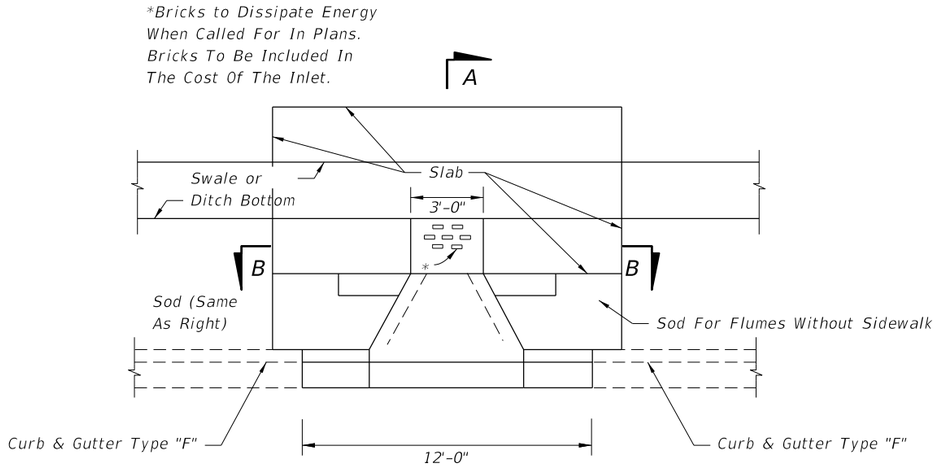
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CLOSED FLUME INLET	INDEX	SHEET
11/01/17					425-061	1 of 3



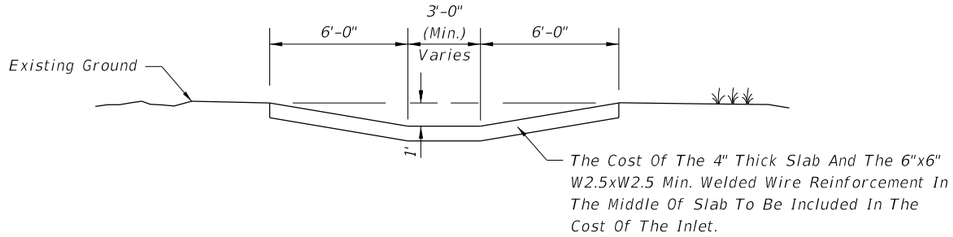
ENDWALL



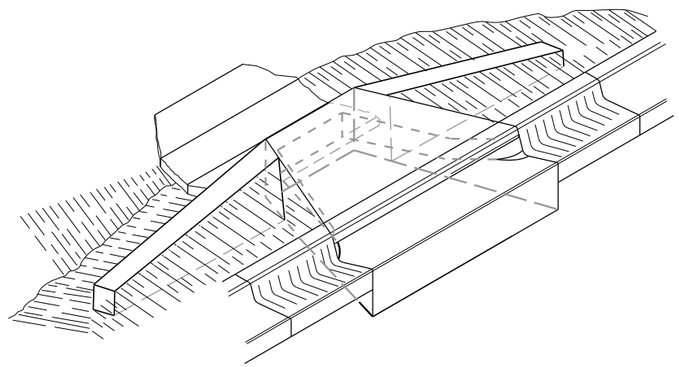
SECTION AA



PLAN



SECTION BB



FLUME W/O SIDEWALK INLET (CLOSED FLUME) TYPE II

SINGLE BARREL FLUME DEPICTED

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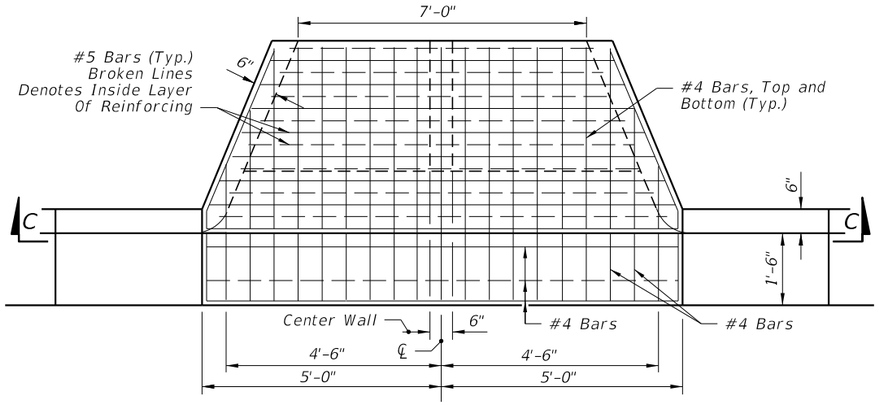
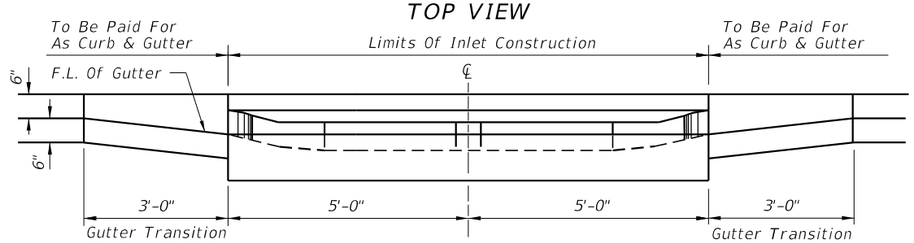
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CLOSED FLUME INLET	INDEX 425-061	SHEET 2 of 3

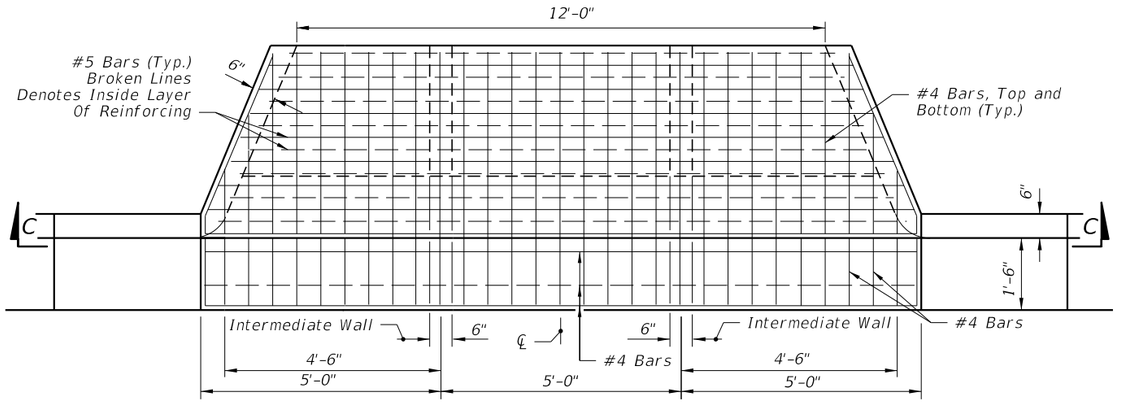


TOP VIEW

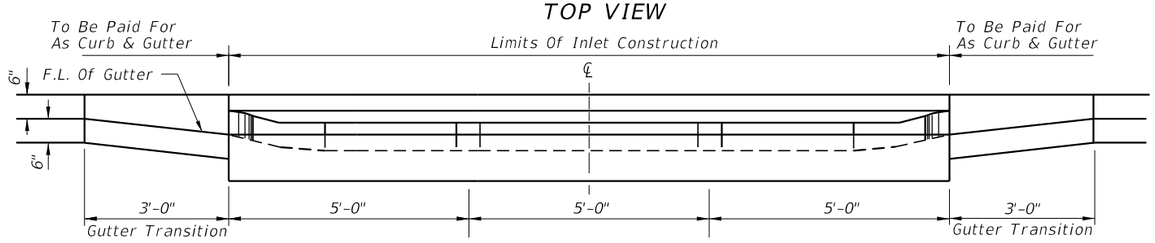


SECTION CC

DOUBLE BARREL FLUME

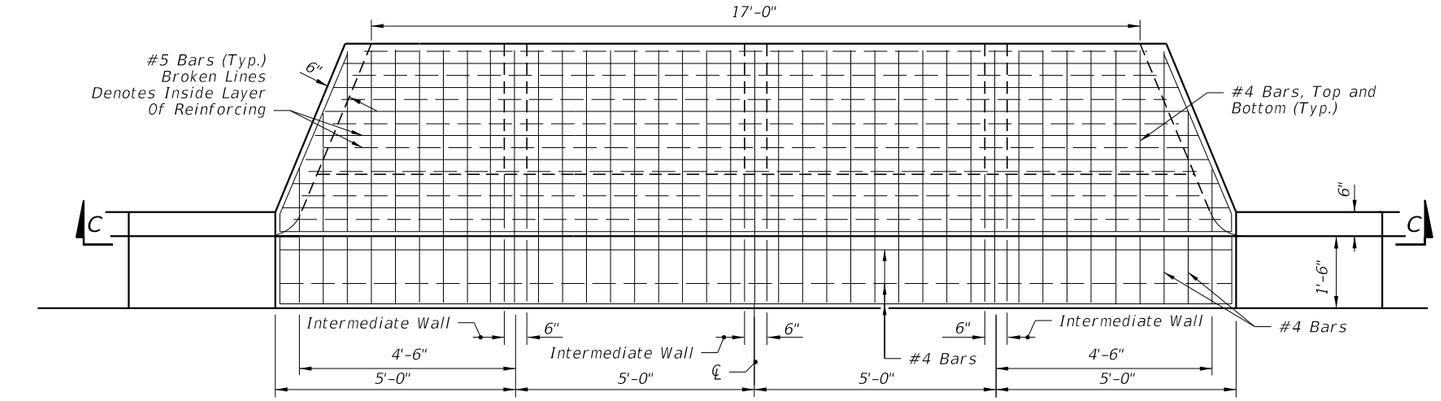


TOP VIEW

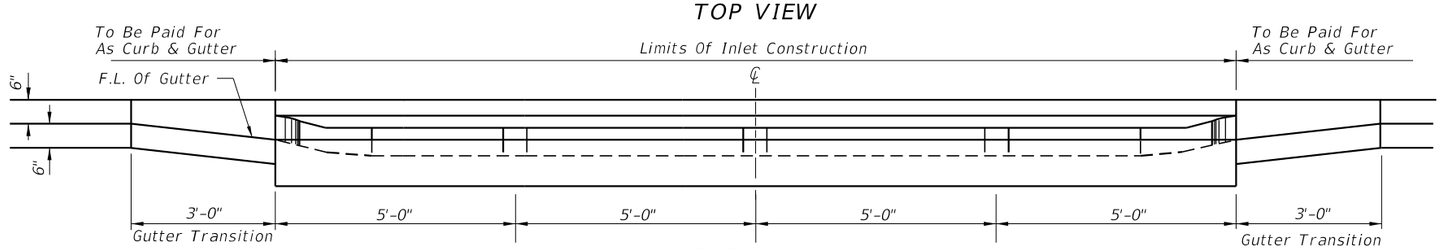


SECTION CC

TRIPLE BARREL FLUME

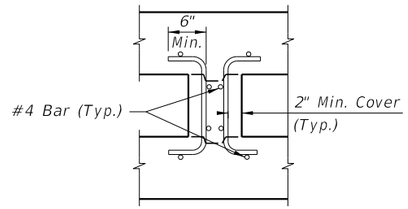


TOP VIEW



SECTION CC

QUADRUPLE BARREL FLUME



INTERMEDIATE-WALL REINFORCING

NOTE: See Barrel Flume For Base Dimensions.

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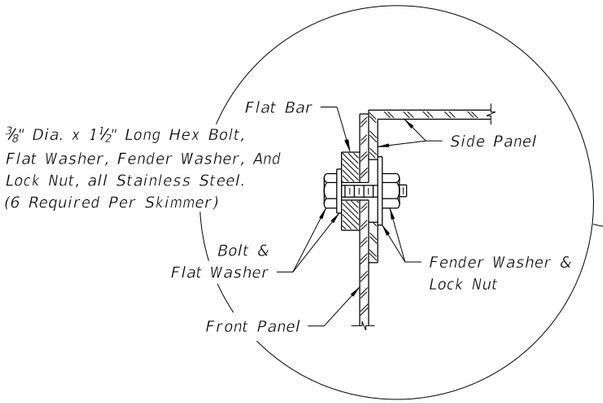
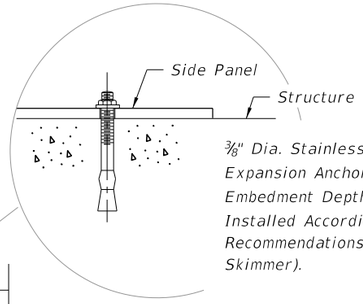
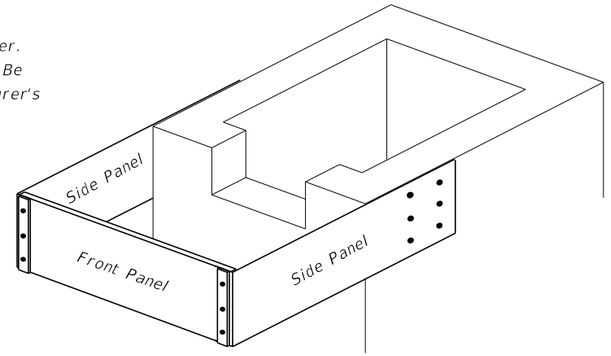
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CLOSED FLUME INLET	425-061	3 of 3

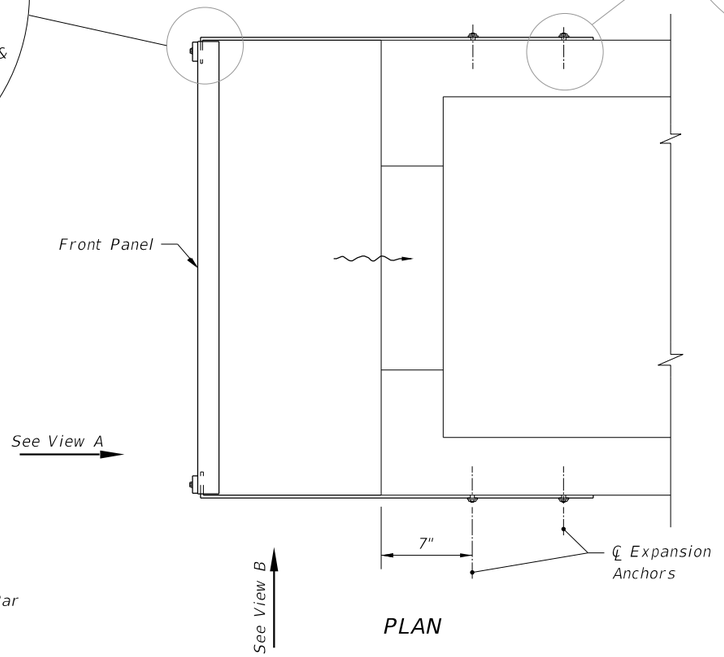




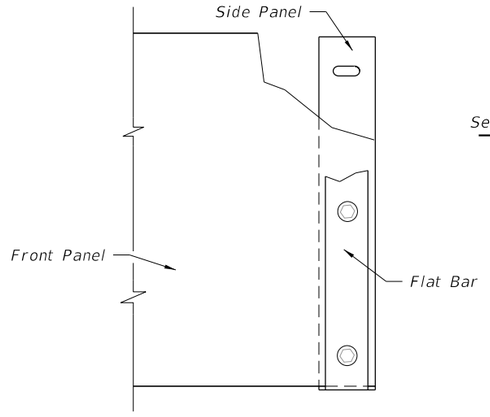
⅜" Dia. Stainless Steel Stud Type Expansion Anchor With Nut And Washer. Embedment Depth = 2½". Anchors To Be Installed According To The Manufacturer's Recommendations (12 Required Per Skimmer).



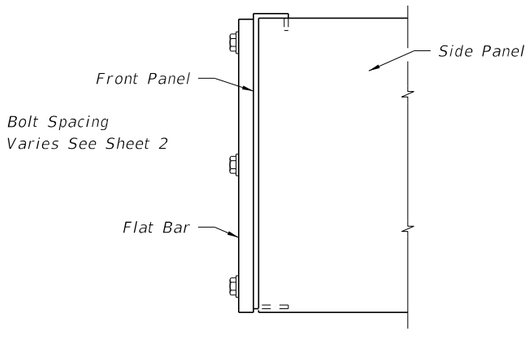
PICTORIAL VIEW



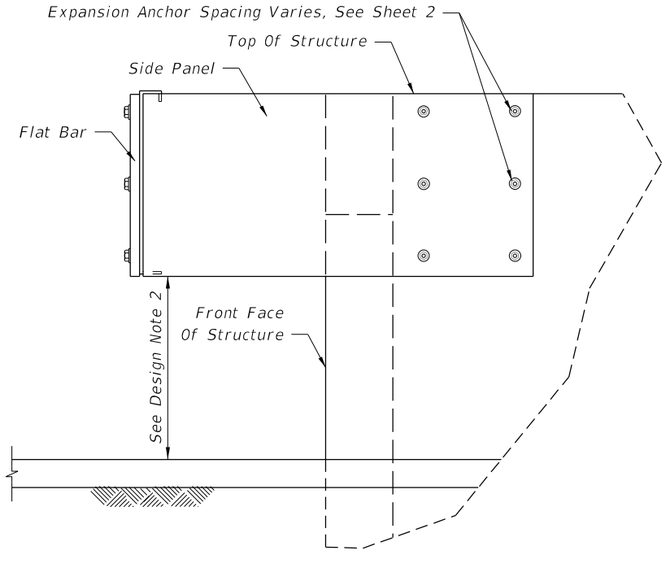
PLAN



VIEW A



VIEW B



SIDE VIEW

GENERAL NOTES

1. This skimmer is intended for use on Type C, D, or E Ditch Bottom Inlets that are used as outlet control structures of stormwater management facilities.
2. The side panels are dimensionally symmetric, therefore they may be used on either side of the structure.
3. Two (2) skimmers may be constructed on one structure provided they are on opposite ends.
4. The width of the front panel (dimension W) shall be the same as the outside dimension across the front of the structure.
5. The front panel, side panels, and flat bars are to be hot dip galvanized after fabrication.
6. The location of the reinforcing steel in these structures must conform to the applicable standards to avoid conflict with the expansion anchors used to attach the skimmer.
7. Grates to be used on the inlets unless otherwise specified in the plans.
8. A skimmer consists of two (2) side panels, one front panel, two (2) flat bars, and accessory hardware. The cost of skimmers is to be included in the cost of the inlet.

DESIGN NOTES

1. The designer must specify, in the plans, the skimmer height (dimension H) and the sides where the weir slots and skimmers are located. The skimmer height must be one of the dimensions shown in the table on Sheet 2. The skimmer should not be used on structure sides with outside dimensions greater than 6'-4".
2. To minimize hydraulic losses across the skimmer, the flow area under the skimmer should be three times larger than the flow area of the weir slot. The distance between the pond bottom at the structure and the skimmer shall be not less than 1 foot.
3. The configuration of skimmers may be subject to regulatory requirements. The designer should coordinate the outlet control structure details with the permitting agencies.
4. Where this skimmer is used, the designer should reference this index with the outlet control structure details. Where a different skimmer design is needed, the designer should provide skimmer details in the plans.
5. The designer shall evaluate if a grate is needed for safety reasons. Where a grate is not needed for safety reasons and is not desirable for hydraulic or other reasons, the designer may omit the grate by stating so in the outlet control structure details.
6. The designer must show the configuration of the weir slots in the outlet control structure detail.

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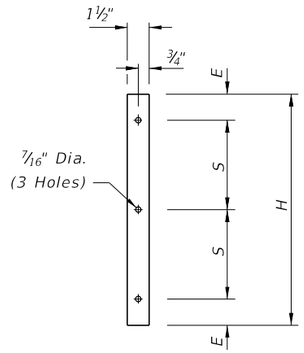
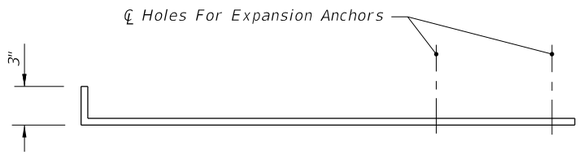
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SKIMMER FOR OUTLET CONTROL STRUCTURES	INDEX	SHEET
11/01/17						425-070	1 of 2

DIMENSIONS				
Skimmer Height as Specified in the Plans				Bolt Spacing
H	D	E	L	S
Inches				
12	3 3/16	3	28	3
14	3 3/16	3	28	4
16	3 3/16	3	28	5
18	3 3/16	3	28	6
20	4 3/16	4	31	6
22	4 3/16	4	31	7
24	4 3/16	4	31	8
26	4 3/16	4	31	9
28	4 3/16	4	31	10
30	5 3/16	5	31	10
32	5 3/16	5	31	11
34	5 3/16	5	31	12
36	6 3/16	6	31	12
38	6 3/16	6	31	13
40	6 3/16	6	31	14

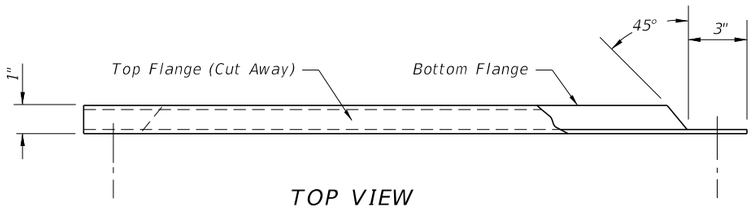


¼" Thick x 1½" Wide

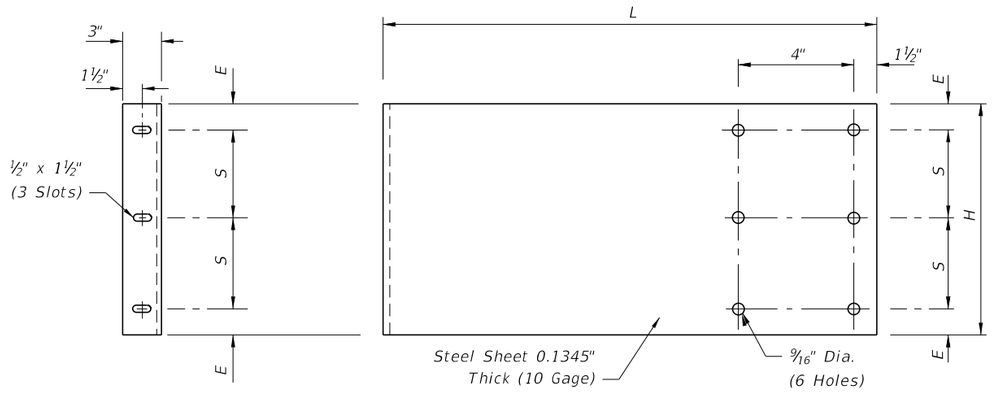
FLAT BAR



TOP VIEW



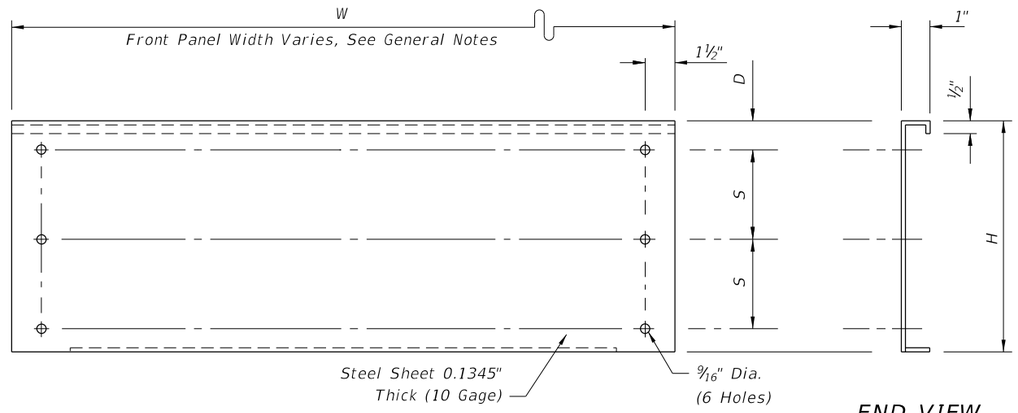
TOP VIEW



END VIEW (FRONT)

SIDE VIEW

SIDE PANEL



FRONT VIEW

END VIEW

FRONT PANEL

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	SKIMMER FOR OUTLET CONTROL STRUCTURES	INDEX 425-070	SHEET 2 of 2

NOTES:

1. These details are for construction field expediency to resolve utility conflicts that cannot be remedied by relocation. For conflicts determined during design, use the construction shop drawings for structure details.

2. Concrete used in conflict structures shall be as specified in ASTM C478. 4000 psi may be used in lieu of Class I concrete.

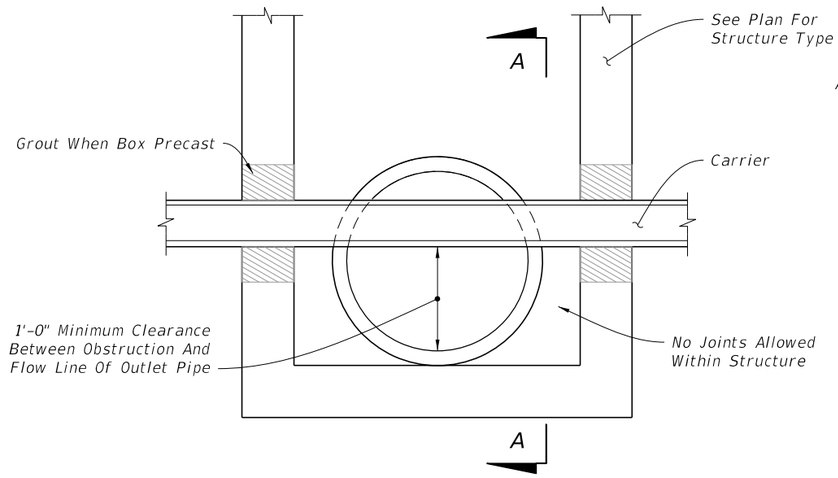
3. Maximum opening for pipe shall be the pipe OD plus 6". Mortar used to seal the pipe into the opening will be of such mix that shrinkage will not cause leakage into or out of the structure.

4. If the conflict structure is round or there are multiple inlet or outlet pipes, then the wall section should be reviewed for strength.

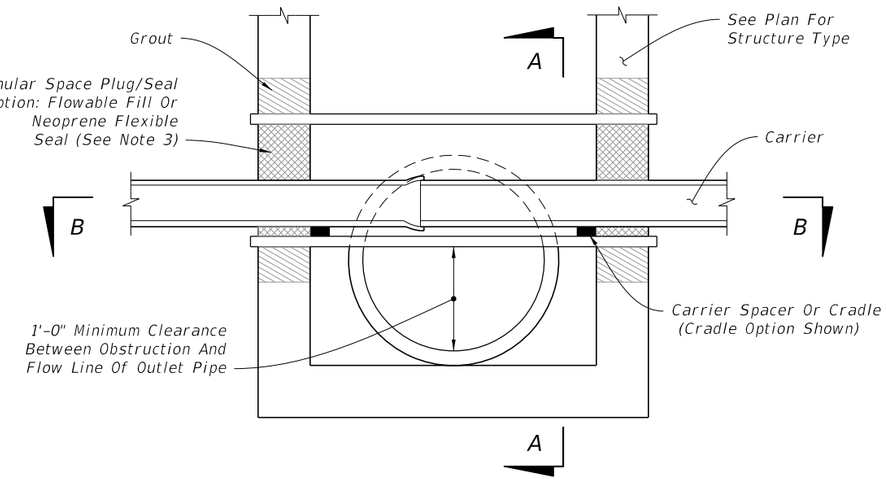
5. If during construction or the plans design process it is determined that a potable water supply line must pass though a storm drain structure, it must be in compliance with Chapter 62-555.314 (3) F.A.C. and shown on the design or construction plans and submitted to the Florida Department of Environmental Protection (FDEP) Administrator For Drinking Water in the respective FDEP District for review and comment. This index and rule citation provide accepted methods for addressing conflicts when and where they cannot be reasonably avoided. To be submitted along with the plans shall be a justification describing inordinate cost and the impracticality of avoidance. If identified, properly justified, and accomplished in accordance with this index, approval is granted. Upon request, the Utility Agency Owner (UAO) must provide support data on the cost of relocation or adjustment to the FDOT for submittal to the FDEP. See the following web site for District FDEP Drinking Water Contacts: www.dep.state.fl.us/water/drinkingwater/index.htm and click on "Organization" on the menu to the right.

DESIGNER'S NOTES:

"Sumped" conflict manholes shall not be used unless the system is hydraulically designed to account for the headloss generated if the sump is completely blocked



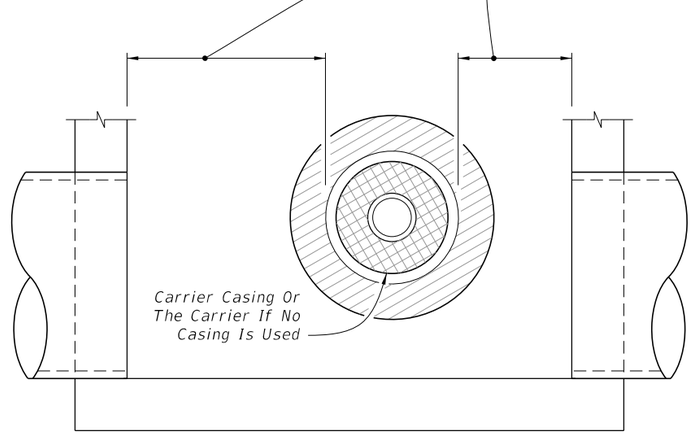
SECTION LONGITUDINAL TO CARRIER PIPE



SECTION LONGITUDINAL TO CARRIER PIPE

UTILITY CONFLICT CONDITION I

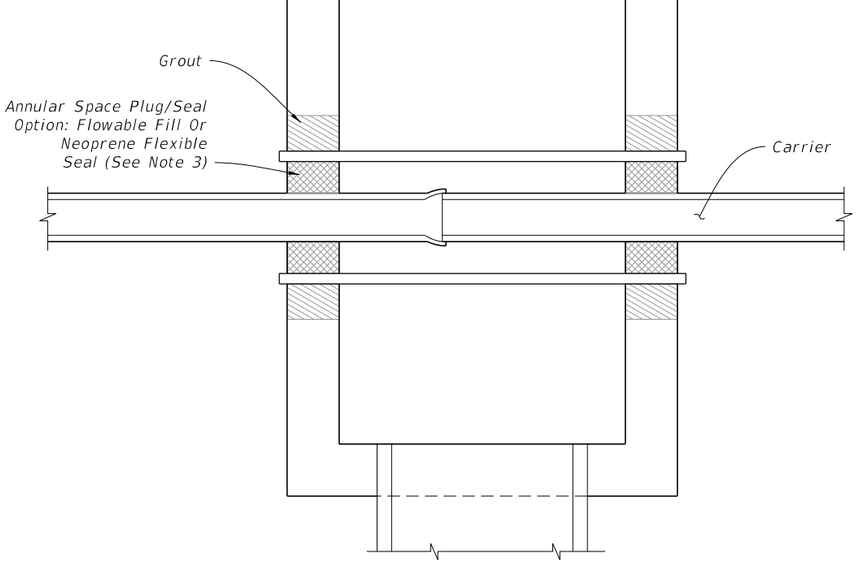
(Nonpressure Or Nonfluid Carrier Installations)



SECTION A-A

UTILITY CONFLICT CONDITION II

(Pressure Or Fluid Carrier Installations)



SECTION B-B

UTILITY CONFLICT PIPES THRU STORM DRAIN STRUCTURES

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	UTILITY CONFLICTS THRU DRAINAGE STRUCTURES	INDEX 425-080 / SHEET 1 of 1

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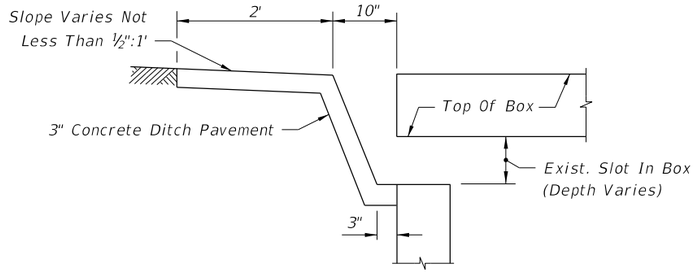
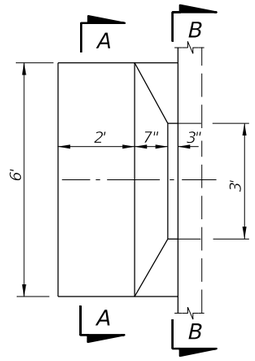
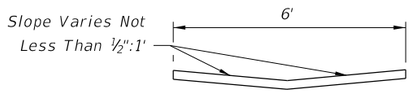


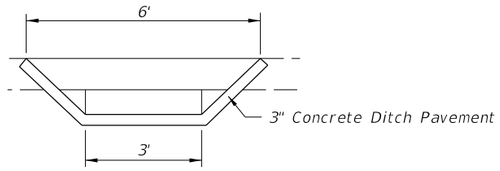
LONGITUDINAL SECTION



PLAN



SECTION AA



SECTION BB

SAFETY MODIFICATION FOR INLETS IN BOX CULVERTS

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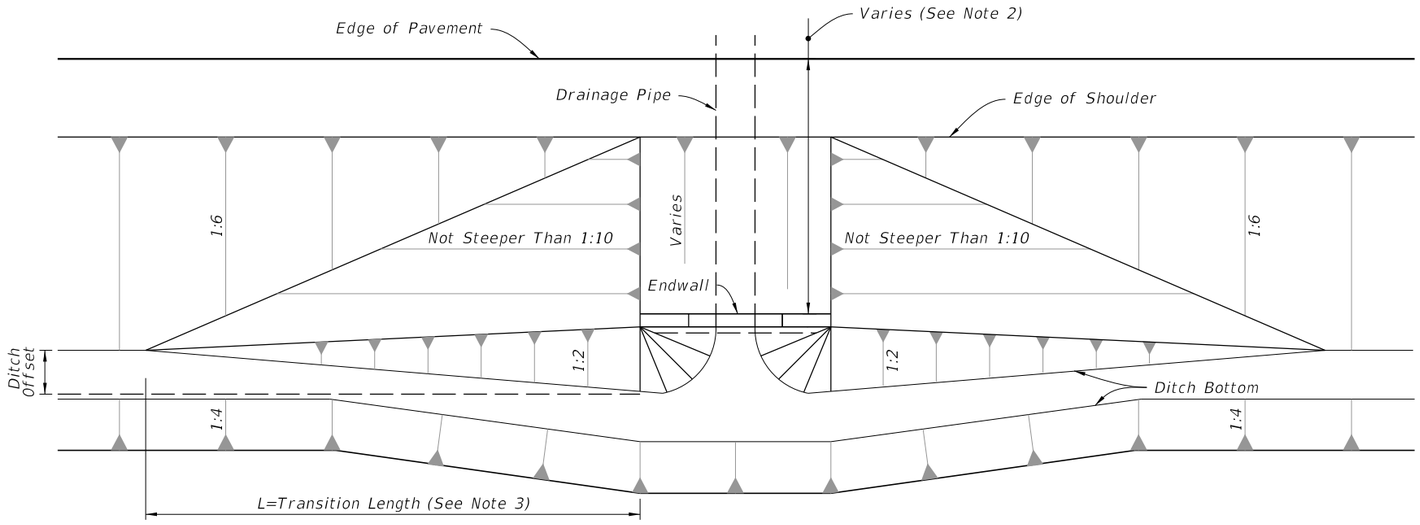
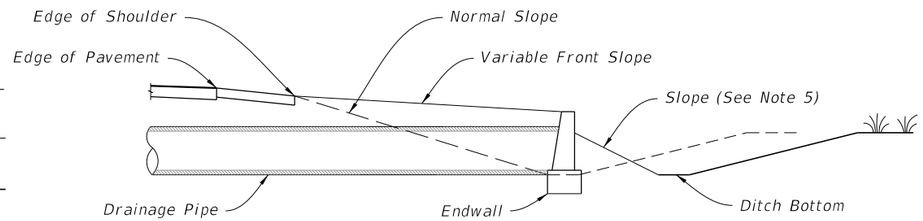
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	SAFETY MODIFICATIONS FOR INLET IN BOX CULVERTS	425-090	1 of 1



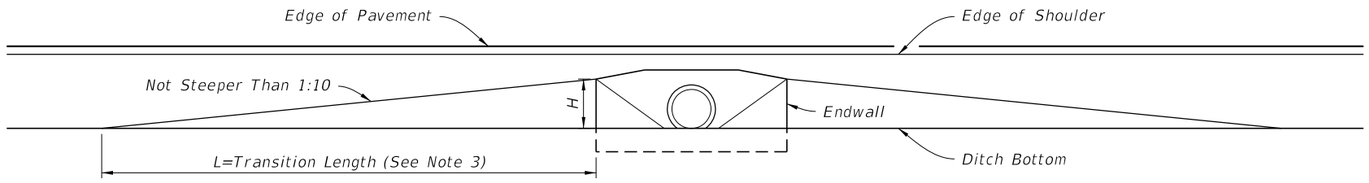
PLAN

NOTES:

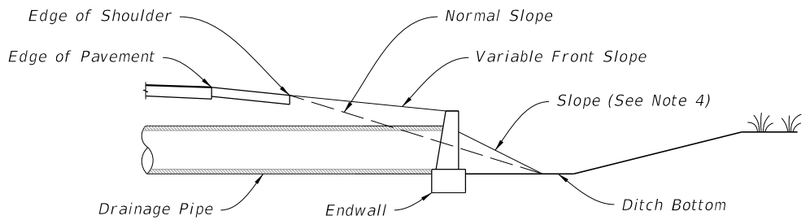
1. Fill or excavate variable slopes during normal grading operations.
2. Minimum distance as required to comply with safety criteria.
3. Use Larger Value Of Either:
   L=10xH (No Maximum)
   L=10xDitch Offset (Maximum L=100')
4. Slope to normal slope if possible. Slope not to be steeper than 1:2. See 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)



END ELEVATION



SIDE ELEVATION (TYPICAL)

FRONT SLOPES AT DRAINAGE STRUCTURES

TABLE OF CONTENTS:

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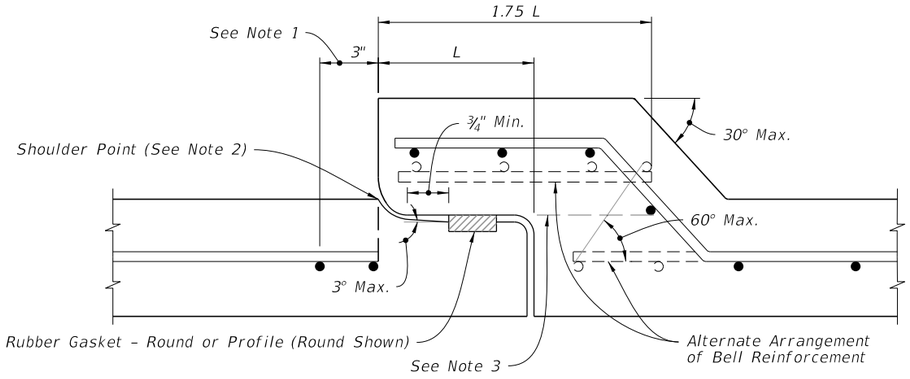
LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
11/01/19					430-001	1 of 6

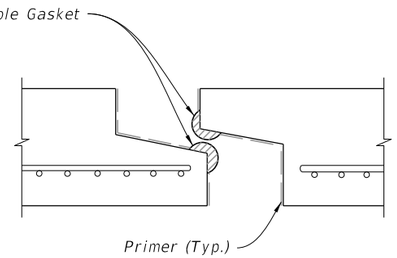


SCHEDULE OF BELL REINFORCEMENT Classes II,III,IV,V; Wall A,B,C		
Nominal Pipe Diameter	Design Bell Reinforcement	Maximum Reinforcement Under Tolerance
	in^2 per foot	in^2 per foot
15"	0.07	0.010
18"	0.07	0.010
24"	0.09	0.010
30"	0.12	0.010
36"	0.14	0.010
42"	0.16	0.010
48"	0.19	0.011
54"	0.21	0.012
60"	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
108"	0.42	0.0255

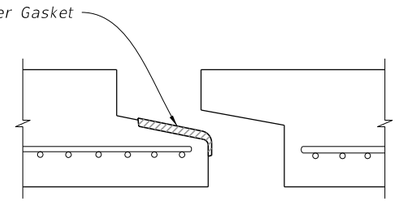
NOTES:

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

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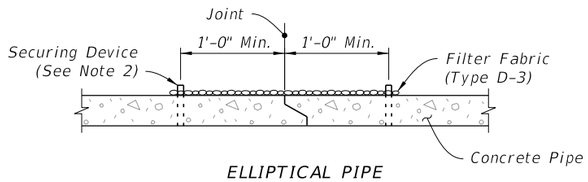
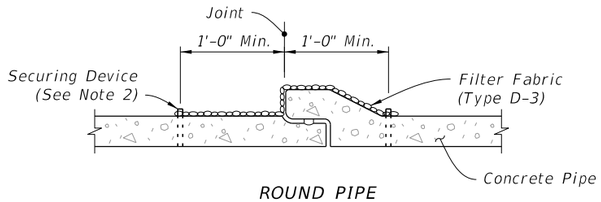
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
11/01/19						430-001	2 of 6

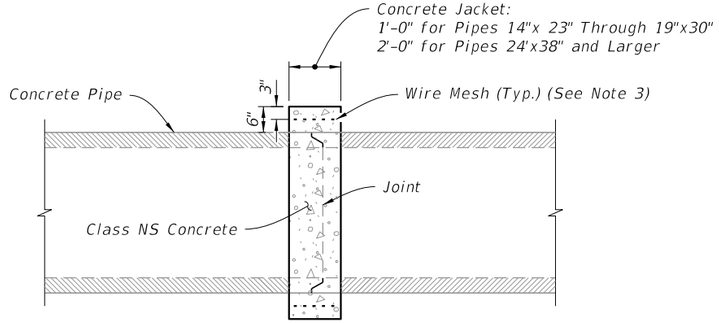


ELLIPTICAL PIPE
(Tongue & Groove Shown)

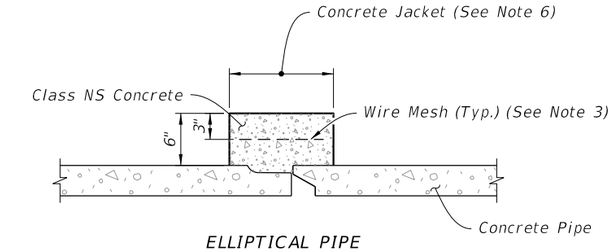


ROUND PIPE
(Bell & Spigot Shown)

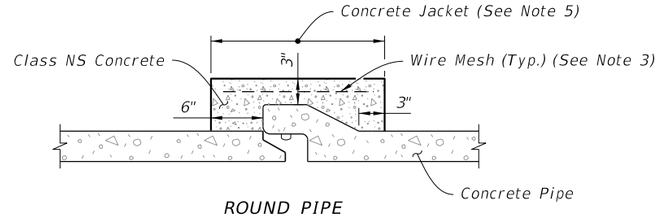
SECTION VIEW



ELLIPTICAL PIPE

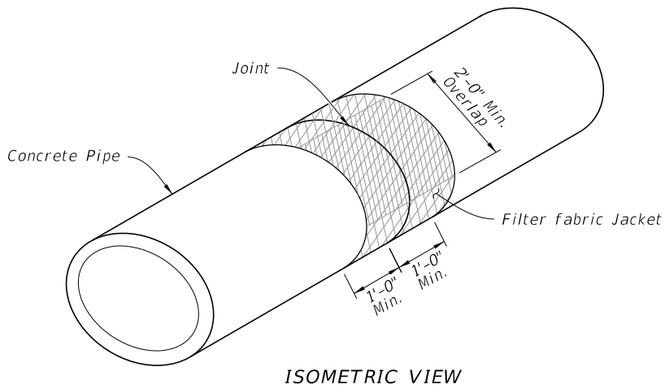


ELLIPTICAL PIPE
(Tongue & Groove Shown)



ROUND PIPE
(Bell & Spigot Shown)

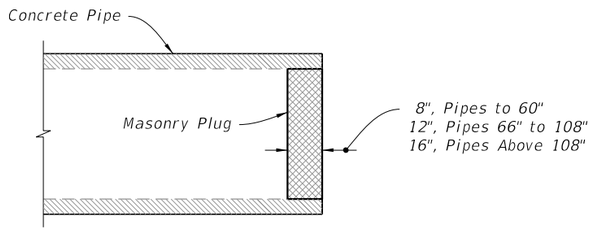
DISSIMILAR JOINTS



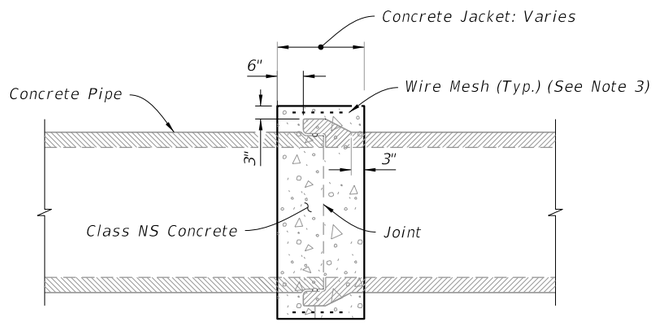
ISOMETRIC VIEW

FILTER FABRIC JACKET

(For All Pipe Types - Concrete Elliptical Pipe Shown)

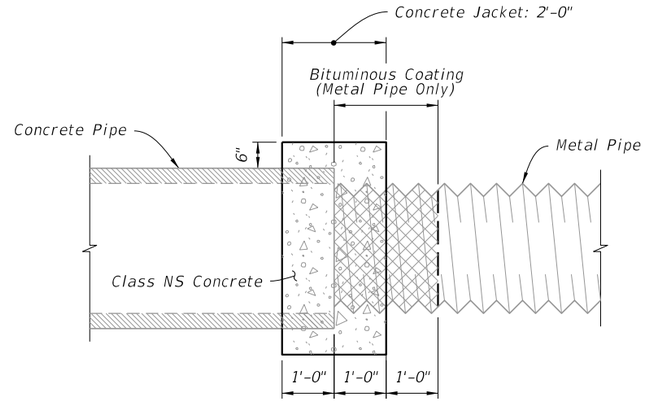


PIPE PLUG



ROUND PIPE

SIMILAR TYPES
(Only When Called For In The Plans)



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

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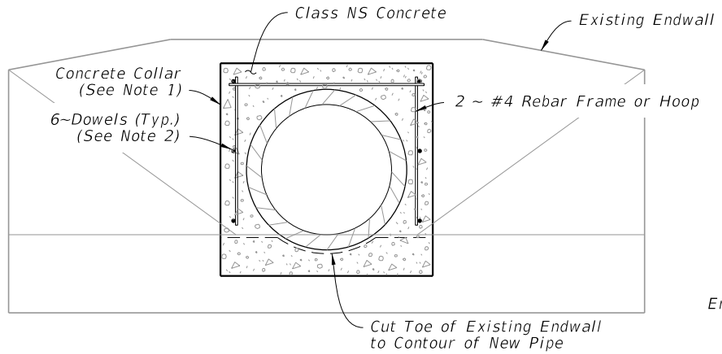
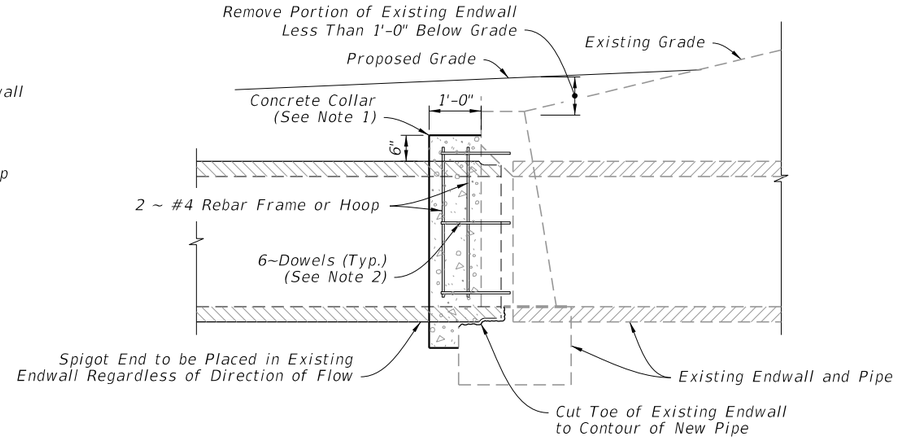
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX 430-001	SHEET 3 of 6

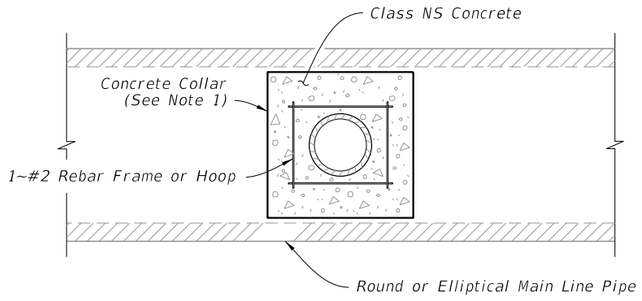


END ELEVATION

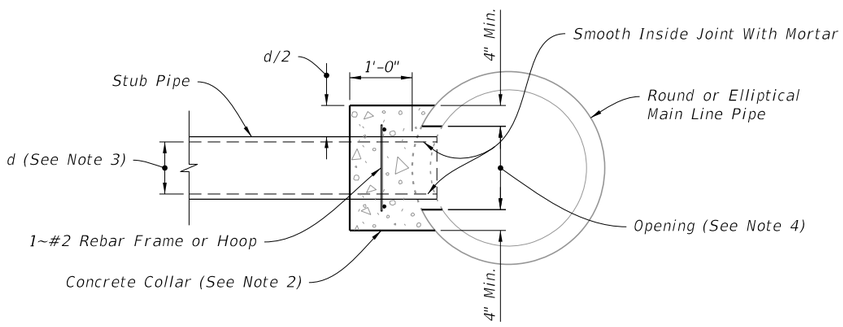


SIDE ELEVATION

EXTENSION OF EXISTING PIPE CULVERTS



STUB END ELEVATION



SIDE ELEVATION

JOINING MAINLINE PIPE TO STUB PIPE

NOTES:

1. The collar may be formed by any method approved by the Engineer.
2. Install ½"x16" dowels in adhesive bond material.
3. Stub Pipes maximum diameter:
   ½ of a round main line pipe diameter, or ½ the height of elliptical main line pipes.
4. Opening by Pipe Manufacturer.
5. Install riser reinforcement using #5 Bars @ 18" centers vertically and 6" centers horizontally. Bend pipe steel to riser.
6. Reinforced concrete top required when inlet: manhole or junction box riser is less than 4 feet in diameter; or when 3'-6", alt. b inlet, manhole or junction box riser is used; or when rectangular inlet is used.
7. See Index 425-001 for optional construction joints.

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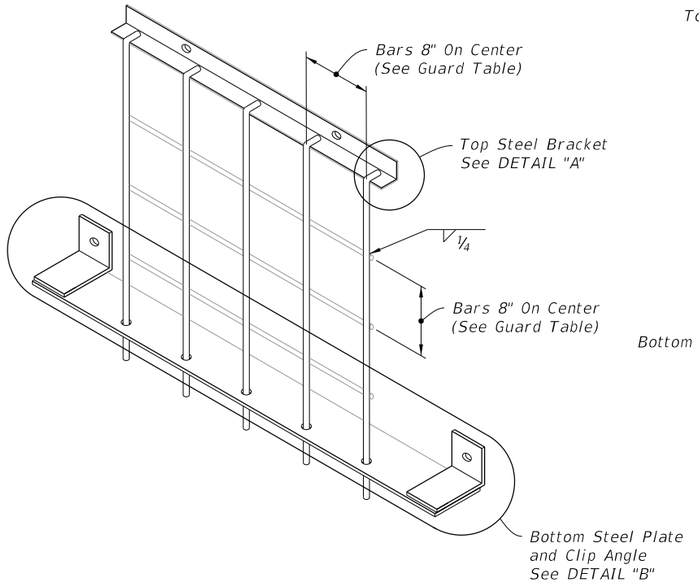
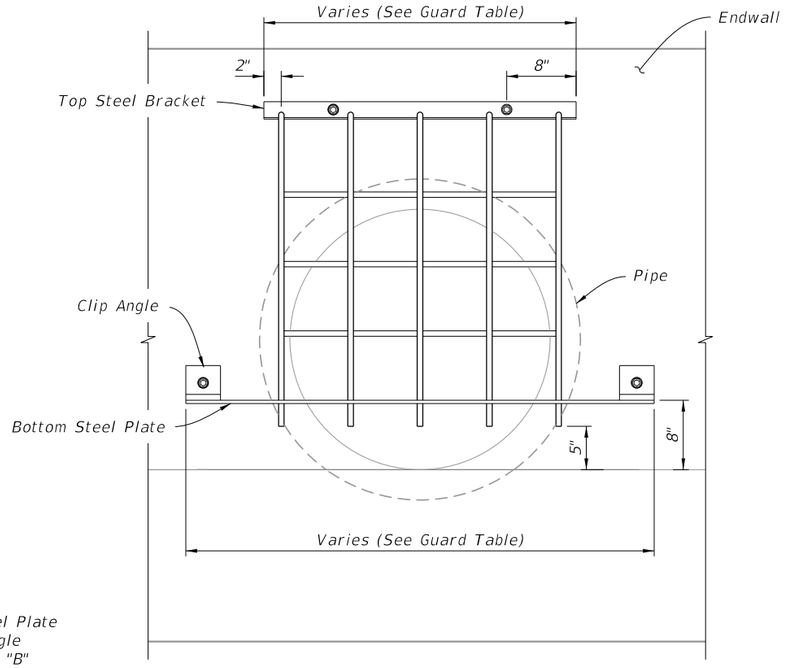
CONCRETE COLLARS



ISOMETRIC VIEW



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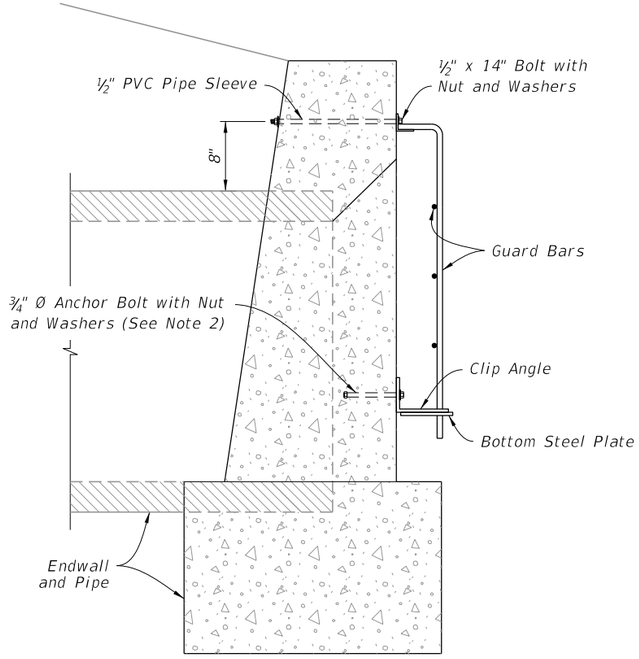
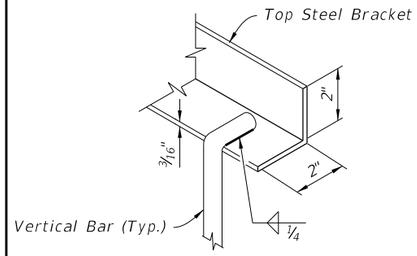
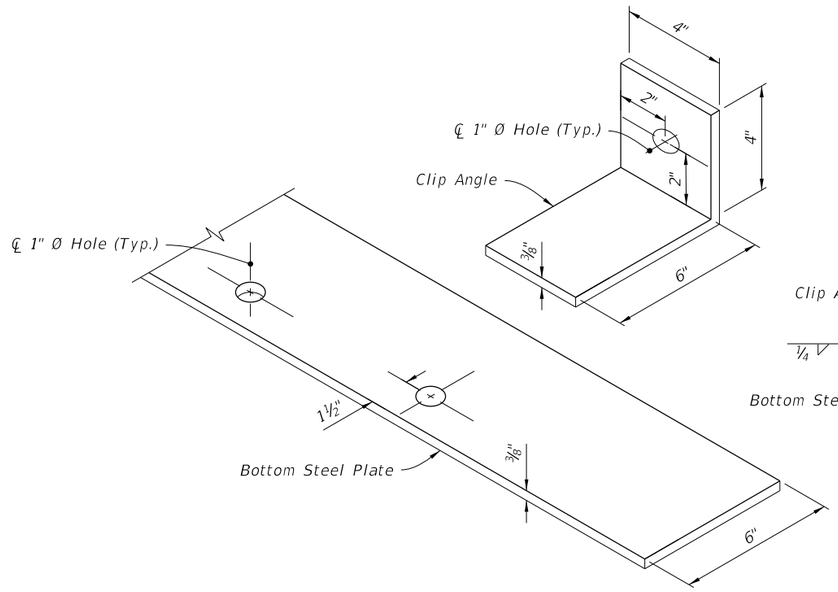


SIDE ELEVATION

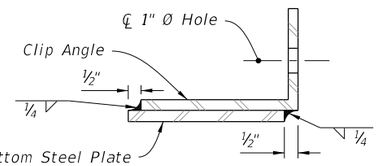
GUARD



DETAIL "A"



DETAIL "B"

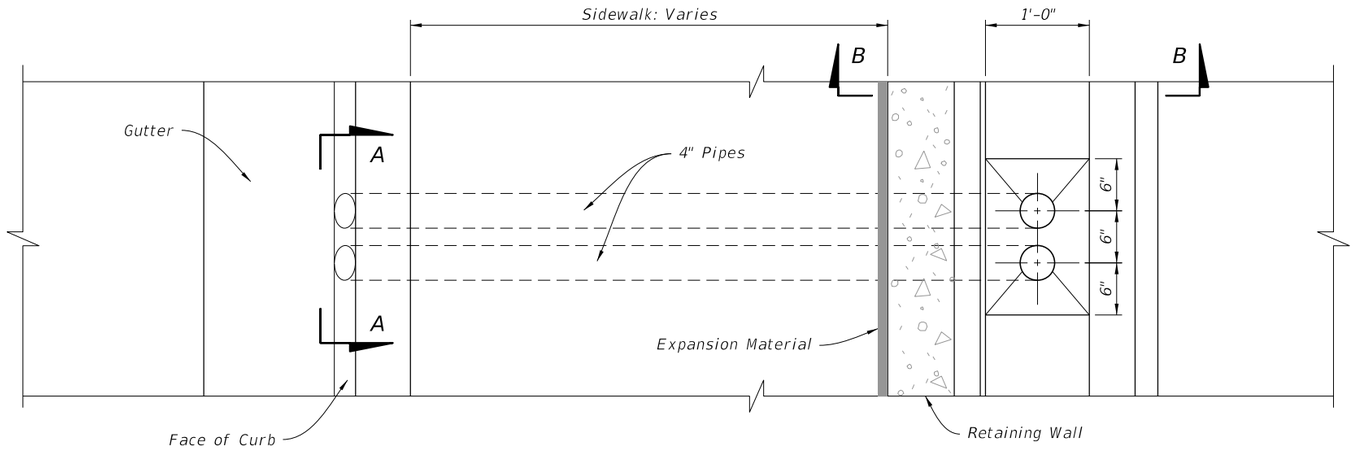


GUARD TABLE						
Pipe Dia.	Top Steel Bracket	Bottom Steel Plate	Number of Vert. Bars and Plate Holes	Number of Horiz. Bars	Bars Size	Weight lbs.
18"	2'-4"	3'-6"	4	1	½"	48
24"	3'-0"	4'-0"	5	2	½"	58
30"	3'-0"	4'-6"	5	3	⅝"	74
36"	3'-8"	5'-0"	6	4	⅝"	90
42"	4'-4"	5'-6"	7	5	⅝"	111

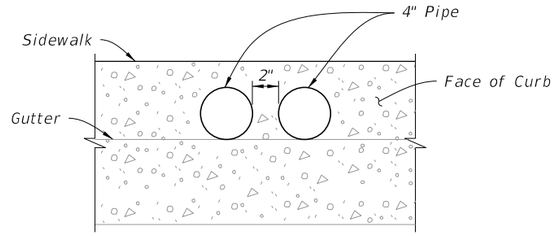
NOTES:

1. Construct guards only at locations specifically called for in Plans.
2. Install anchor bolt to a 6½" minimum embedment. Hex Bolt: cast-in-place. Adhesive-bonded anchor: fully threaded rod installed in accordance with Specification 416.

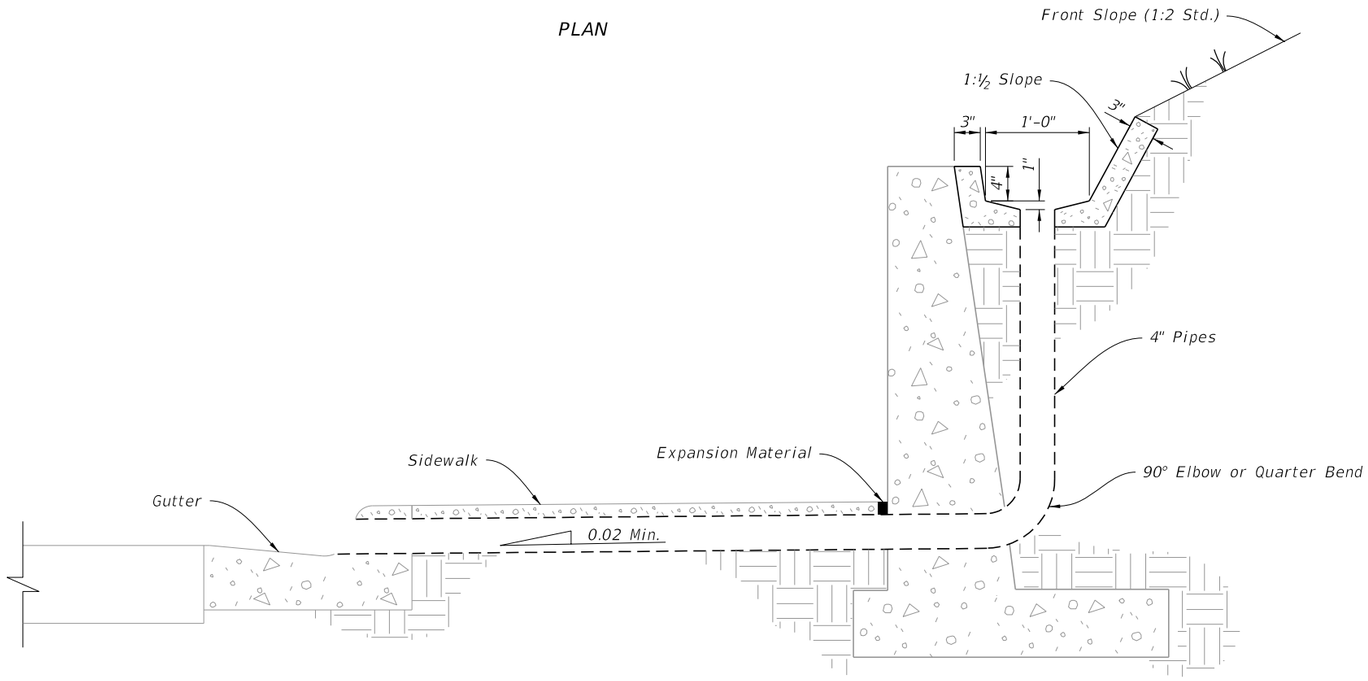
PIPE END GUARD



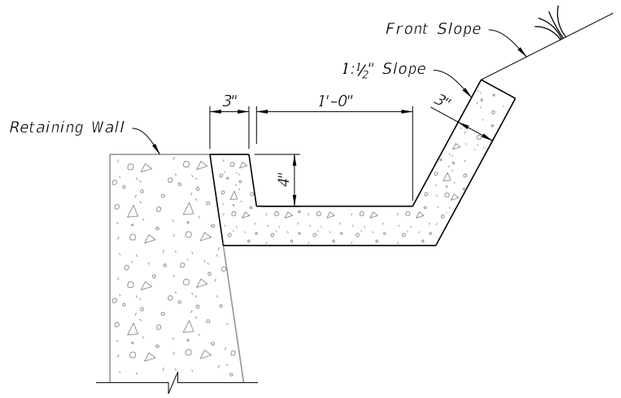
PLAN



SECTION A-A



ELEVATION



SECTION B-B

GUTTER AND DRAINS

RETAINING WALL CONCRETE GUTTER AND DRAINS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	430-001	6 of 6

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GENERAL NOTES:

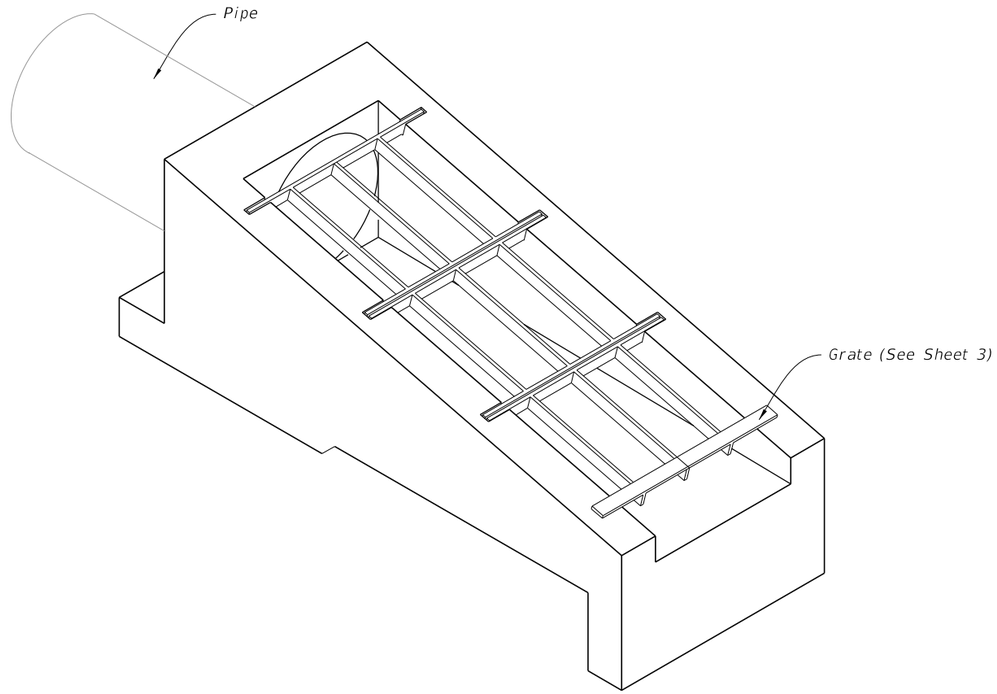
1. Use Class I concrete.

2. Reinforcing steel: All bars are size #4. Spacing's 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:



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

(24" Pipe Shown)

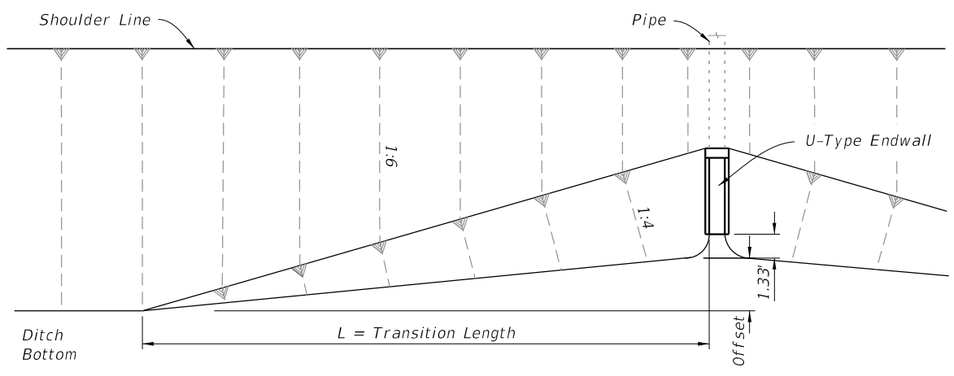


TABLE 1
SLOPE TRANSITIONS

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

FRONT SLOPE TRANSITION AT ENDWALL

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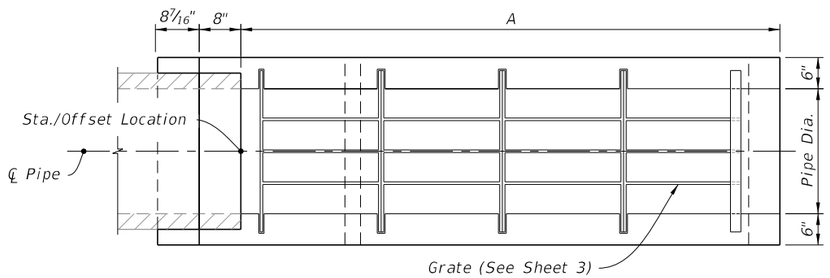
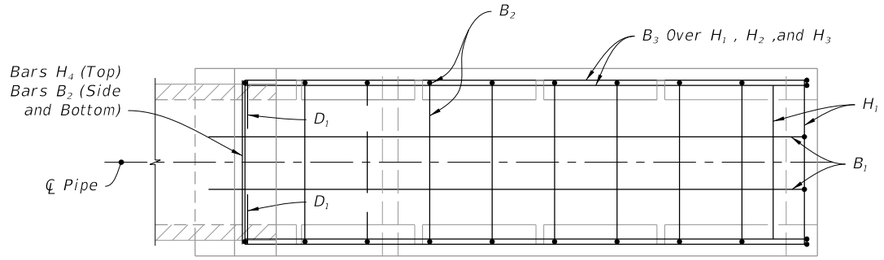
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES	430-010	1 of 3



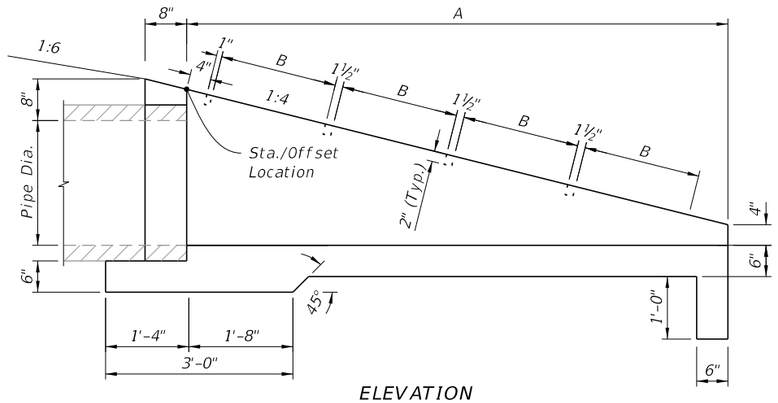
PLAN



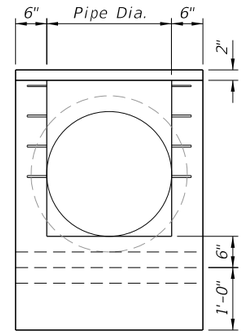
PLAN

LEGEND:

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

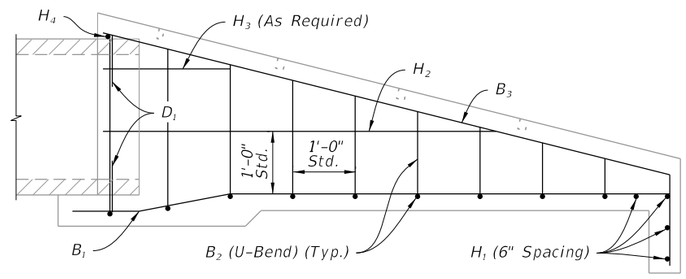


ELEVATION



END VIEW

DIMENSIONAL DETAIL



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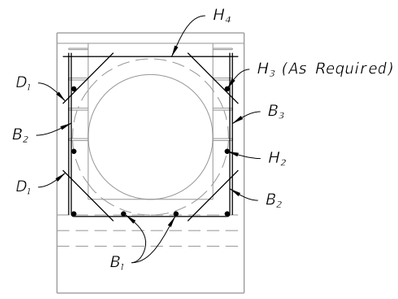

END VIEW

REINFORCING DETAIL

TABLE 2
DIMENSIONS AND QUANTITIES

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

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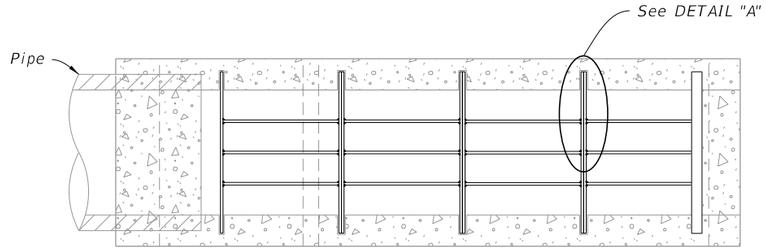
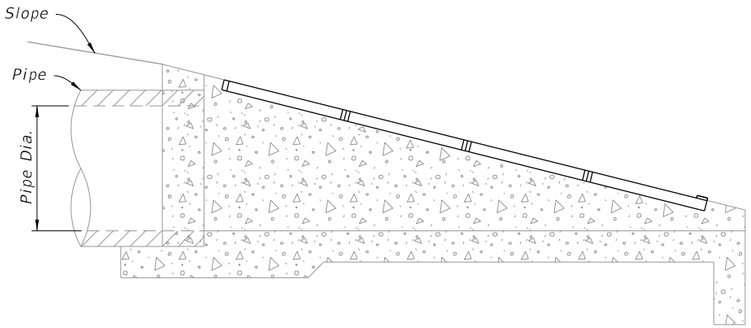
DIMENSIONAL AND REINFORCING DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES	430-010	2 of 3



PLAN



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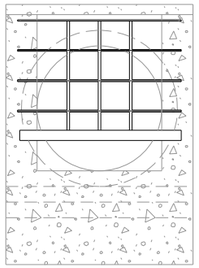
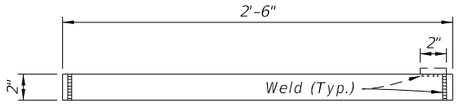
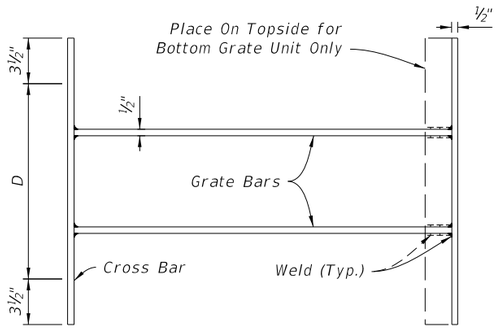


END VIEW

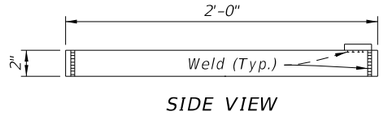


SIDE VIEW

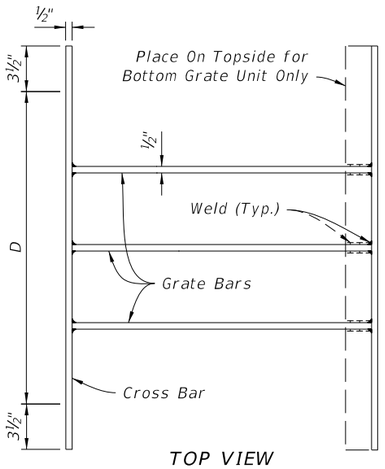


TOP VIEW

TYPE 1

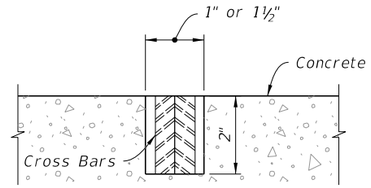


SIDE VIEW

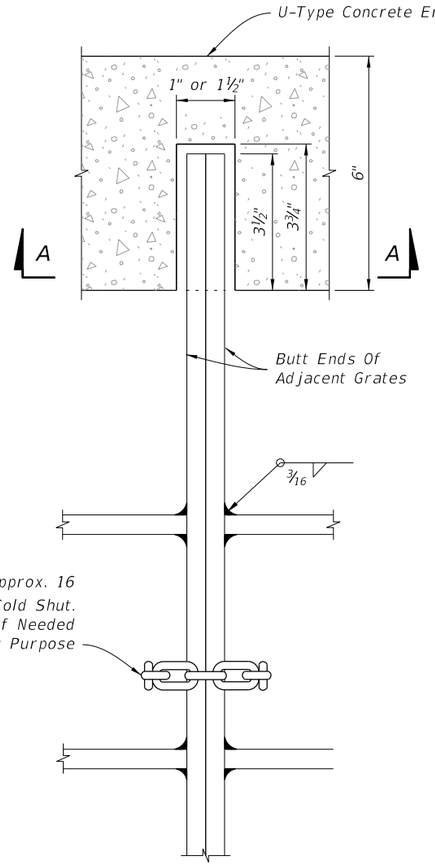


TOP VIEW

TYPE 2



SECTION A-A



GRATE, SEAT, WELD & CHAIN DETAIL

NOTES:

1. Install grate bars evenly spaced across dimension D.

2. All bars and grate bars are ½" x 2".

TABLE 3
NUMBER OF GRATE BARS AND GRATES REQUIRED

Pipe Dia. D	Grate Bars Reqd.		Grate Wt. (lbs.)	Grate Reqd.		Total Grate Wt. (lbs.)
	Type No. 1	Type No. 2		Type No. 1	Type No. 2	
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

TYPE 1 AND TYPE 2 GRATE DETAILS

DETAIL "A"

TYPE 1 AND TYPE 2 GRATE DETAILS

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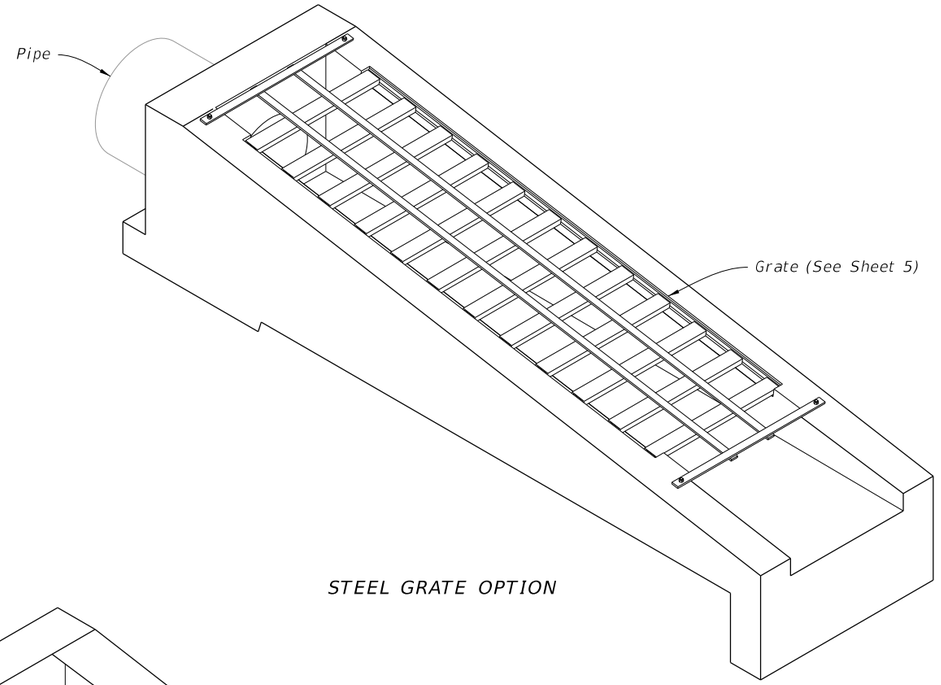
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES	INDEX	SHEET
11/01/19						430-010	3 of 3

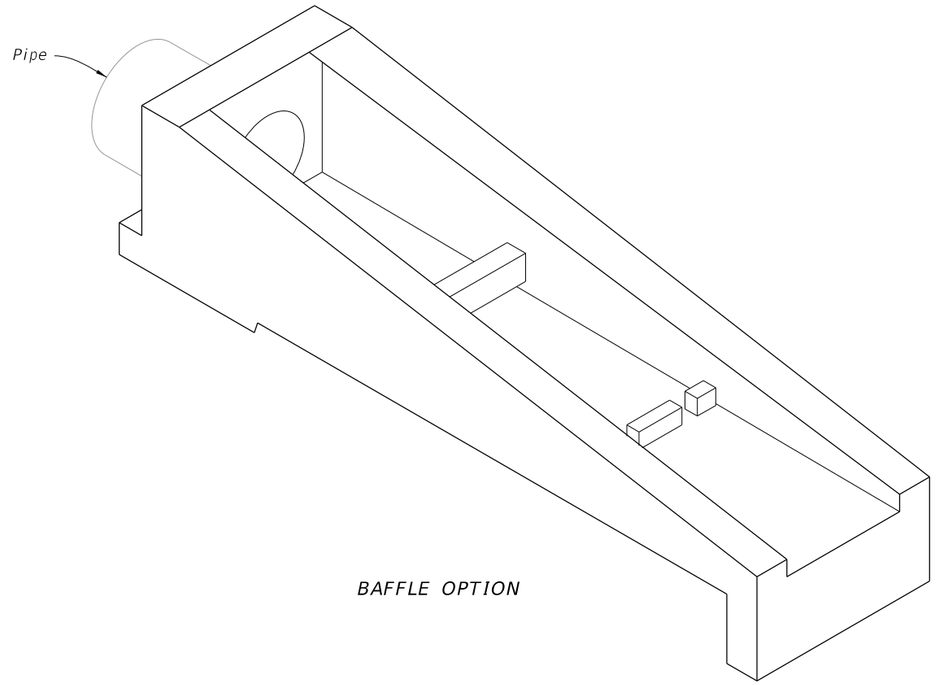
GENERAL NOTES:

1. Use Class I 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:



STEEL GRATE OPTION



BAFFLE OPTION

U-TYPE CONCRETE ENDWALLS

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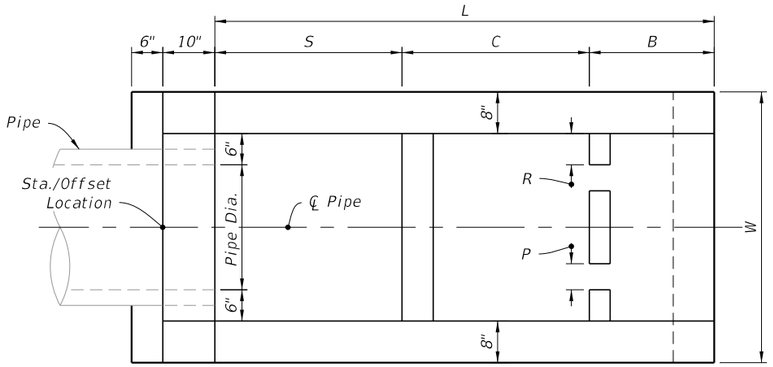
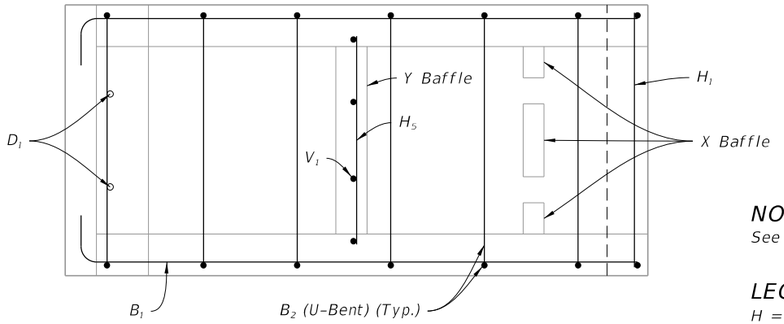
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX	SHEET
11/01/19						430-011	1 of 5



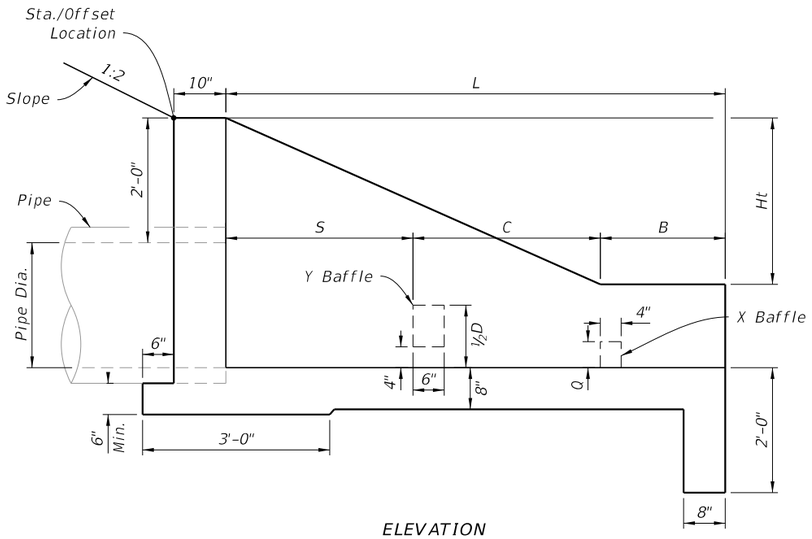
PLAN



PLAN

NOTE:
See Sheet 3 for Bar Bending Diagram.

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



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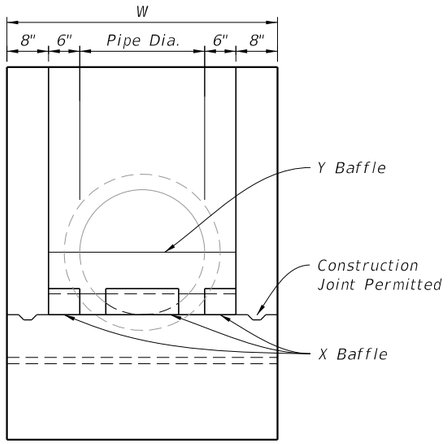
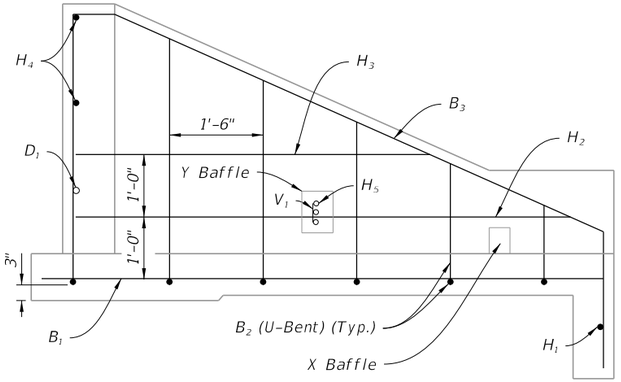


FRONT VIEW



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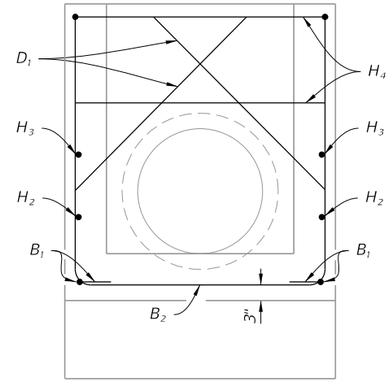


BACK VIEW

DIMENSIONAL DETAILS

REINFORCING DETAILS

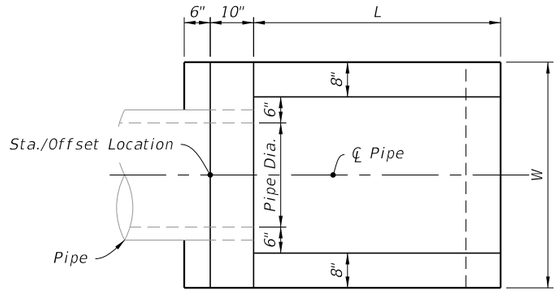
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL

Pipe		L	Ht	W	S	B	C	X Baffle			Y Baffle Reinf. Steel		Class I Conc. Cu. Yd.	Reinf. Steel lbs.
Dia.	Area Sq. Ft.							P	Q	R	Bars V_1	Bars H_5		
15"	1.23	5'-9"	2'-3½"	3'-7"	2'-3"	1'-3"	2'-3"	4"	4"	4"	2 #4	1 #4	1.61	72
18"	1.77	6'-6"	2'-5"	3'-10"	2'-6"	1'-6"	2'-6"	4"	4"	5"	3 #4	2 #4	1.89	86
24"	3.14	8'-0"	2'-8"	4'-4"	3'-0"	2'-0"	3'-0"	5"	5"	6"	4 #4	3 #4	2.52	108
30"	4.91	9'-6"	2'-11"	4'-10"	3'-6"	2'-6"	3'-6"	5"	5"	7"	4 #4	4 #4	3.34	131

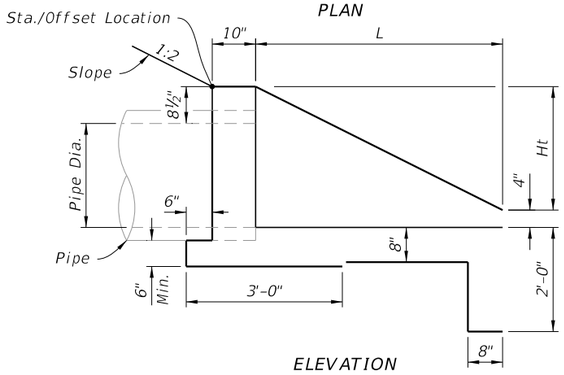
ENDWALLS FOR 1:2 SLOPES WITH BAFFLES

10/29/2019 8:16:16 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/19			FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX 430-011 / SHEET 2 of 5



PLAN



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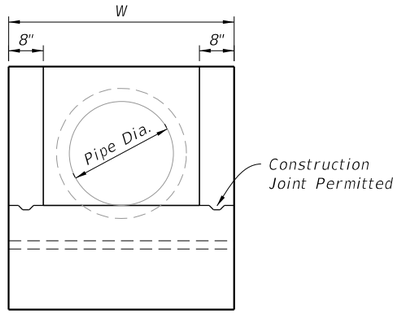
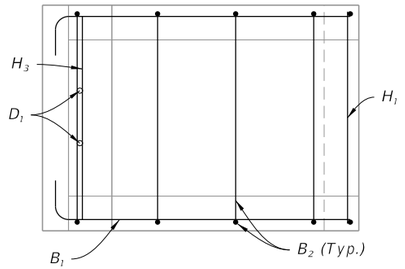


FRONT VIEW

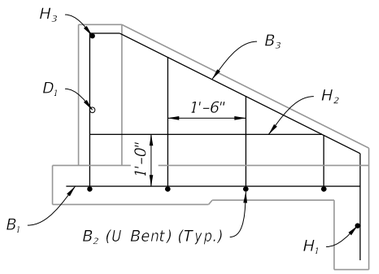
DIMENSIONAL DETAILS



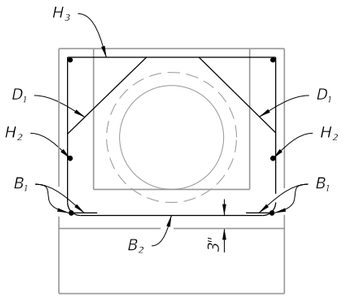
PLAN

LEGEND:

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



SIDE VIEW



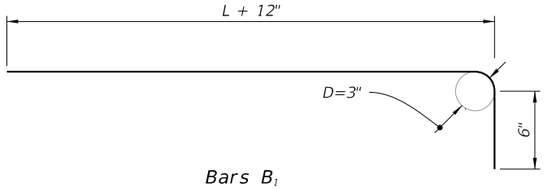
BACKWALL SECTION

REINFORCING DETAILS

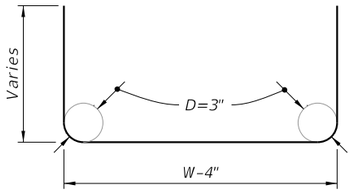
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL

Pipe		L	Ht	W	Class I Conc. Cu. Yd.	Reinf. Steel lbs.
Dia.	Area Sq. Ft.					
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'-4½"	4'-4"	1.40	55
30"	4.91	5'-9"	2'-10½"	4'-10"	1.88	64

ENDWALL WITHOUT BAFFLES



Bars B_1



Bars B_2

BENDING DIAGRAM

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

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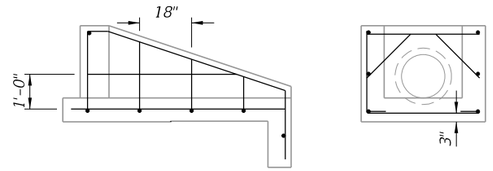
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX 430-011	SHEET 3 of 5

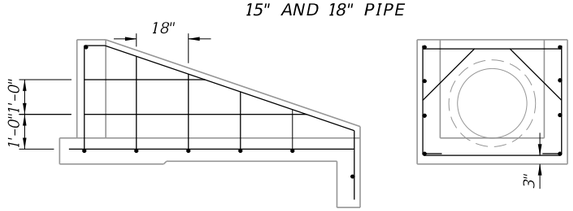
NOTE:

1. Reinforcing similar to Sheets 2 and 3.

2. See Sheet 3 for Bar Bending Diagram.

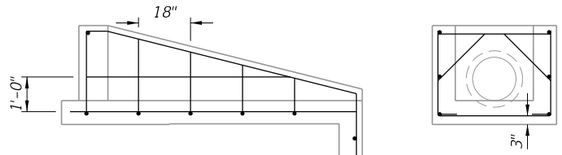


15" AND 18" PIPE

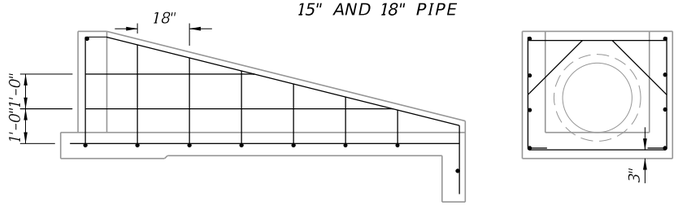


24" AND 30" PIPE

1:3 SLOPES

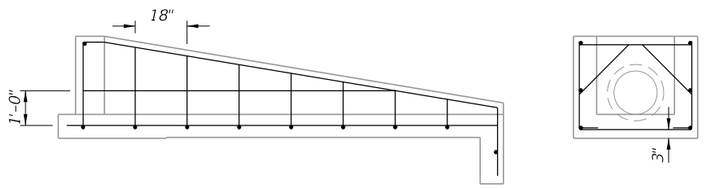


15" AND 18" PIPE

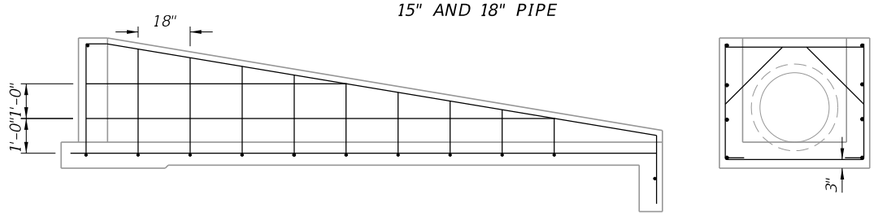


24" AND 30" PIPE

1:4 SLOPES



15" AND 18" PIPE

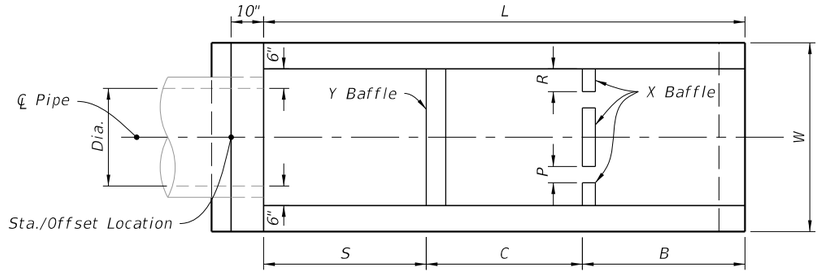


24" AND 30" PIPE

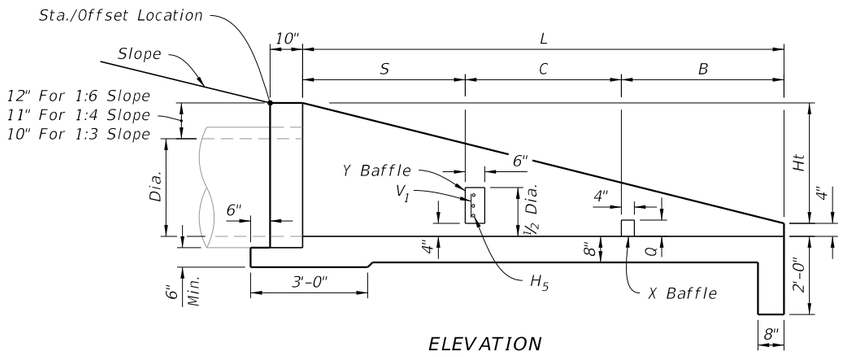
1:6 SLOPES

REINFORCING DETAILS

(Side Views And Backwall Sections Shown)



PLAN



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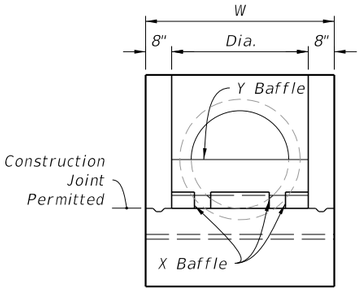


END VIEW

DIMENSIONAL DETAILS

DIMENSIONS AND QUANTITIES FOR BAFFLES

Pipe Dia.	X Baffle			Y Baffle Reinf. Steel		Class I Concrete Cu. Yd.	Reinf. Steel lbs.
	P Width	Q Height	R Length	Bar V_1	Bar H_5		
15"	4"	4"	4"	2- #4	1- #4	0.10	4
18"	4"	4"	5"	3- #4	2- #4		8
24"	5"	5"	6"	4- #4	3- #4		12
30"	5"	5"	7"	4- #4	4- #4		16

DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL

Rate Of Slope	Pipe		L	Ht	W	Baffle Locations (When Required)			Class I Concrete Cu. Yd.	Reinf. Steel lbs.
	Dia.	Area (Sq. Ft.)				S	B	C		
1 : 3	15"	1.23	5'-3"	1'-9"	3'-7"	1'-9"	1'-9"	1'-9"	1.19	51
	18"	1.77	6'-0"	2'-0"	3'-10"	2'-0"	2'-0"	2'-0"	1.42	56
	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
1 : 4	15"	1.23	7'-4"	1'-10"	3'-7"	2'-6"	2'-6"	2'-4"	1.54	64
	18"	1.77	8'-4"	2'-1"	3'-10"	2'-10"	2'-10"	2'-8"	1.84	71
	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
1 : 6	15"	1.23	11'-6"	1'-11"	3'-7"	3'-10"	3'-10"	3'-10"	2.19	89
	18"	1.77	13'-0"	2'-2"	3'-10"	4'-4"	4'-4"	4'-4"	2.63	103
	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

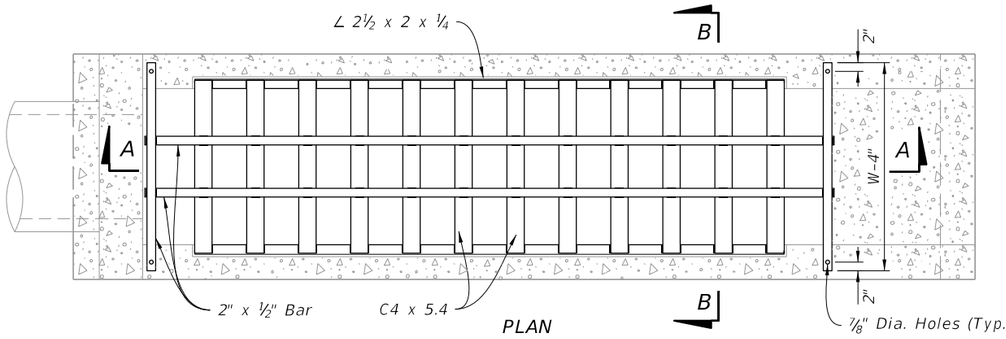
ENDWALLS WITH AND WITHOUT BAFFLES FOR 1:3, 1:4, AND 1:6 SLOPES

10/29/2019 8:16:18 AM

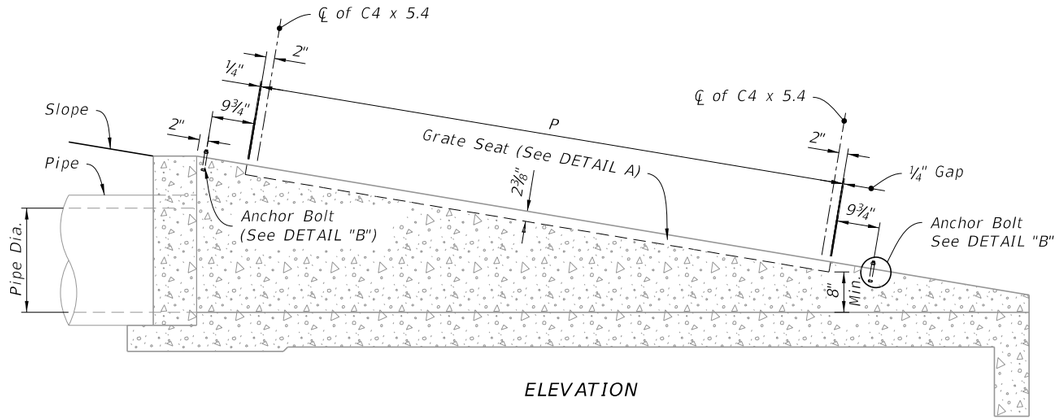
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX 430-011	SHEET 4 of 5

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE GRATE

Rate of Slope	Size Dia.	G	2 Each Bars @ 3.4 lb/ft			(X) Channels @ 5.4 lb/ft			2 Angles @ 3.62 lb/ft		Total Weight (lb)
			L	W-4"	lbs	(X)	F	lbs	P	lb	
1:3	15"	2' -8½"	4'-3"	3'-3"	51	3	2' -6⅞"	42	2'-4"	17	110
	18"	2' -11½"	5'-3"	3'-6"	60	4	2' -9⅞"	61	3'-4"	24	145
	24"	3' -5½"	6'-3"	4'-0"	70	5	3' -3⅞"	90	4'-4"	31	191
	30"	3' -11½"	8'-3"	4'-6"	87	7	3' -9⅞"	145	6'-4"	46	278
1:4	15"	2' -8½"	6'-3"	3'-3"	65	5	2' -6⅞"	70	4'-4"	32	167
	18"	2' -11½"	7'-3"	3'-6"	73	6	2' -9⅞"	92	5'-4"	39	204
	24"	3' -5½"	9'-3"	4'-0"	90	8	3' -3⅞"	144	7'-4"	53	287
	30"	3' -11½"	11'-3"	4'-6"	107	10	3' -9⅞"	206	9'-4"	68	381
1:6	15"	2' -8½"	9'-3"	3'-3"	85	8	2' -6⅞"	111	7'-4"	53	249
	18"	2' -11½"	10'-3"	3'-6"	94	9	2' -9⅞"	137	8'-4"	62	292
	24"	3' -5½"	13'-3"	4'-0"	117	12	3' -3⅞"	215	11'-4"	82	414
	30"	3' -11½"	16'-3"	4'-6"	141	15	3' -9⅞"	310	14'-4"	104	555



PLAN



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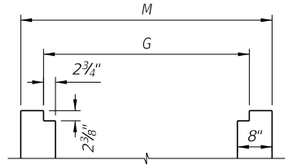
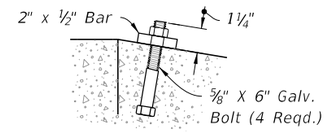
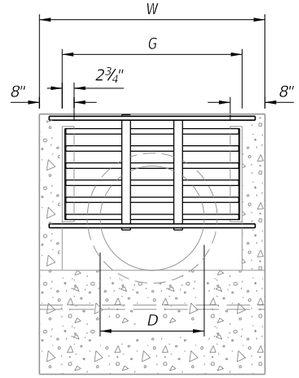


Grate Seat

DETAIL "A"

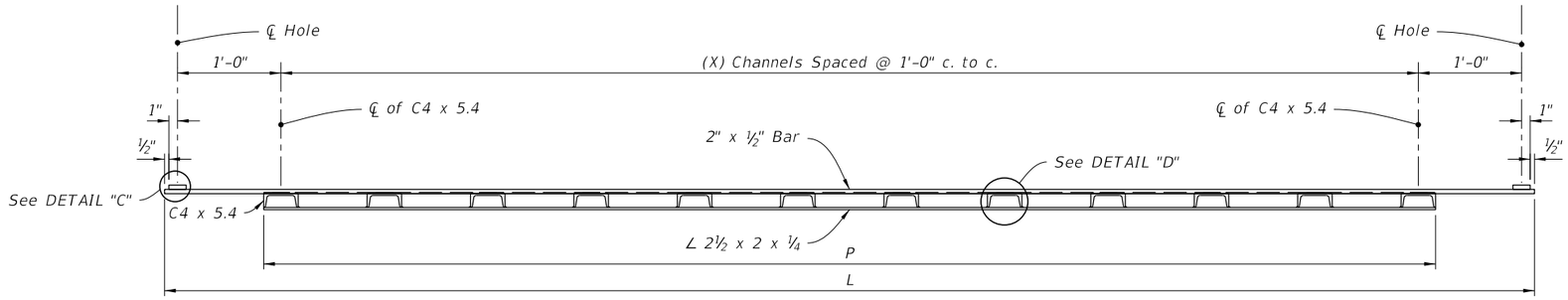


Anchor Bolt Detail
DETAIL "B"

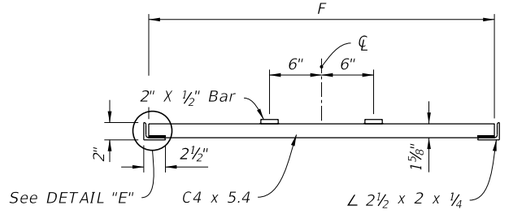


END VIEW

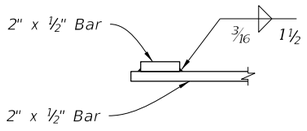
STEEL GRATE MOUNTING



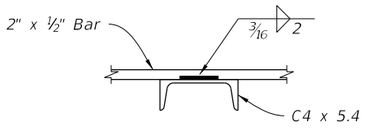
SECTION A-A



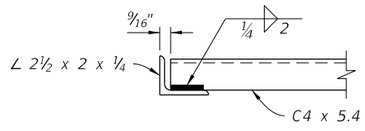
SECTION B-B



Bar to Bar Weld
DETAIL "C"



Bar to Channel Weld
DETAIL "D"



Channel to Angle Weld
DETAIL "E"

STEEL GRATE DETAILS

STEEL GRATE OPTION

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX 430-011	SHEET 5 of 5

GENERAL NOTES:

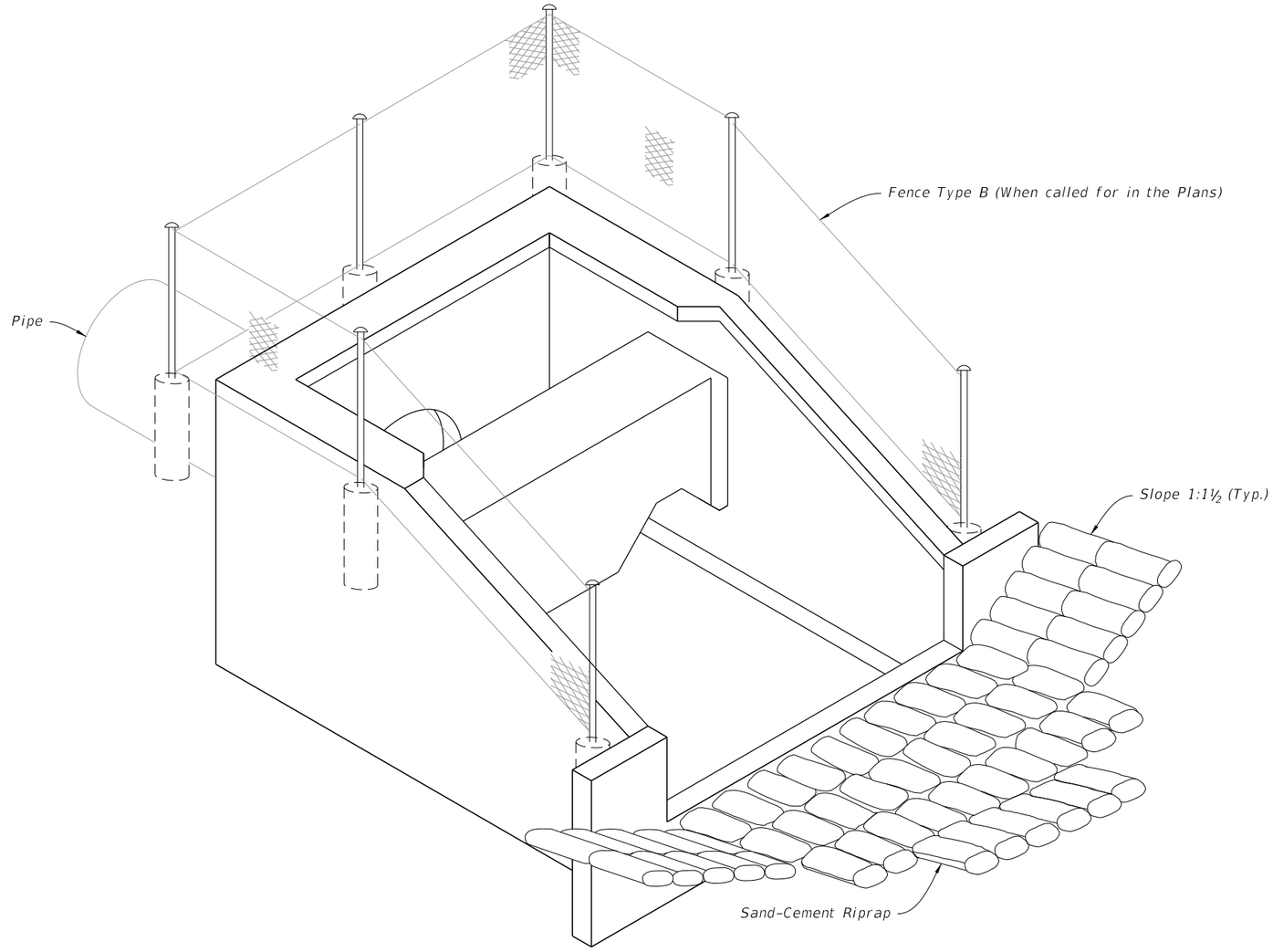
1. Use Class I concrete.

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.

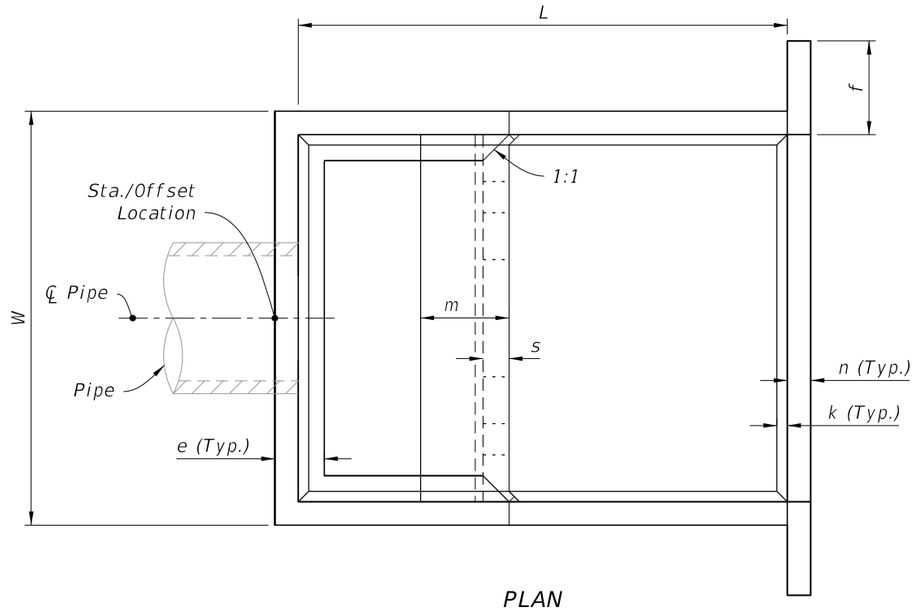
TABLE OF CONTENTS:



U-TYPE CONCRETE ENDWALLS

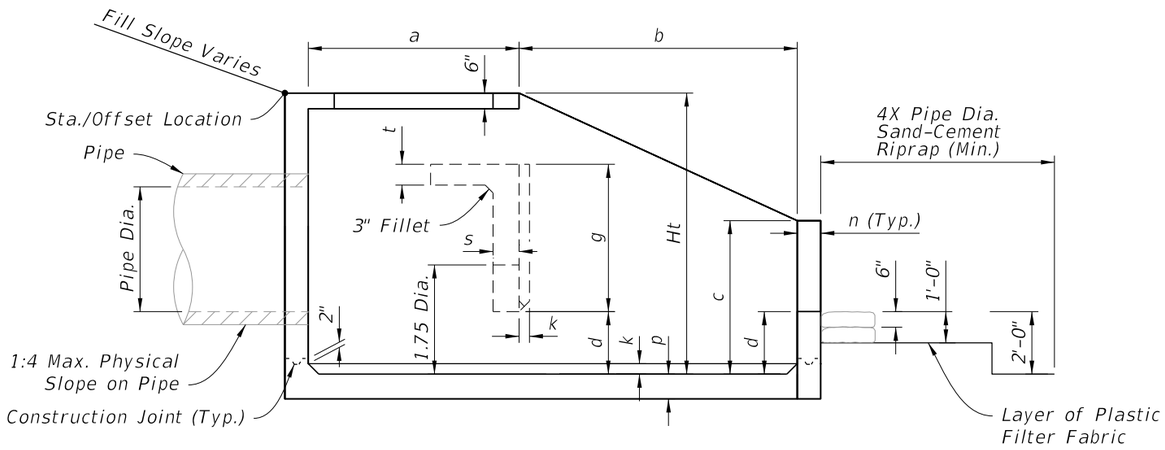
10/29/2019 8:16:20 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS ENERGY DISSIPATOR 30" TO 72" PIPE	INDEX	SHEET
11/01/19						430-012	1 of 3



PLAN

Pipe		DIMENSION TABLE																Concrete (CY)	Reinf. Steel (lb)	Sand-Cement Riprap (Nom.) (CY)
Dia.	Area (SF)	Feet – Inches											Inches							
		W	Ht	L	a	b	c	d	e	f	g	m	n	p	s	t	k			
30"	4.91	9-0	6-3	10-8	4-7	6-1	3-4	1-4	1-2	2-6	3-0	1-11	6	6½	7	7	3	6.72	736	10.6
36"	7.07	10-5	7-3	12-4	5-3	7-1	3-10	1-7	1-3	3-0	3-6	2-3	7	7½	8	8	3	10.34	1,072	13.6
42"	9.62	11-10	8-0	14-0	6-0	8-0	4-5	1-9	1-6	3-0	3-11	2-6	8	8½	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	9½	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	10½	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	11½	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	12½	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	12½	12	8	6	50.68	5,426	44.5



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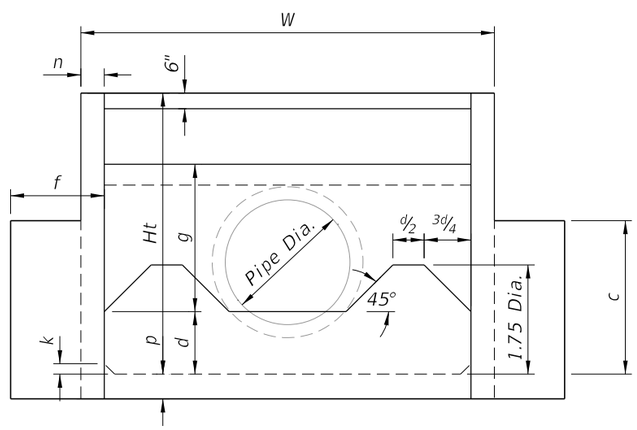


FRONT VIEW

DIMENSIONAL DETAILS

DIMENSIONAL DETAILS

10/29/2019 8:16:20 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALL ENERGY DISSIPATOR 30" TO 72" PIPE	INDEX	SHEET
11/01/19						430-012	2 of 3

NOTES:

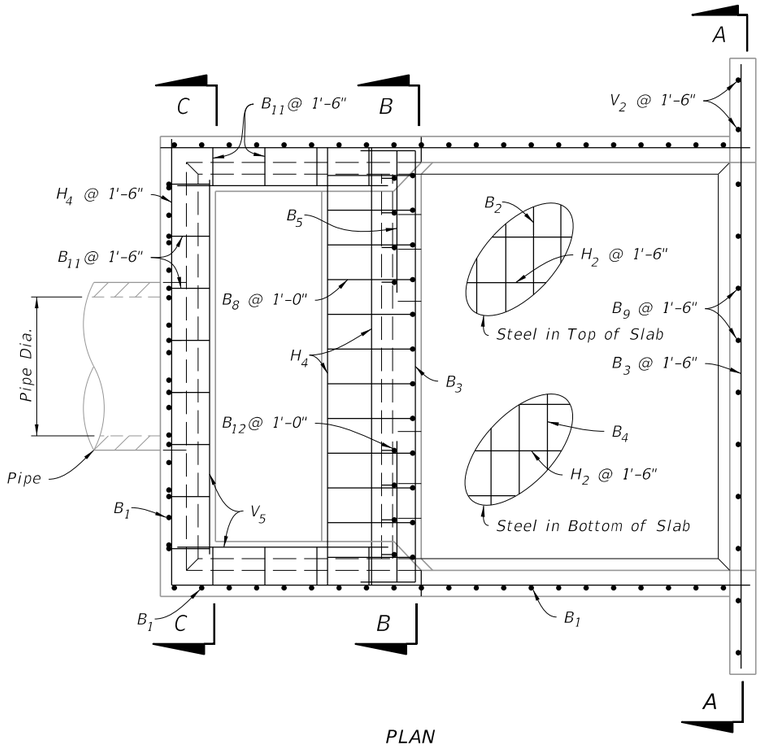
1. All bar dimensions are measured out to out.
2. All Bars are size #4 unless otherwise noted.
3. Install reinforcing steel with a minimum of 2" cover.
4. Bars B6 and B7 (N.S. and F.S.) equivalent in size to B_5 (cut and bend as required)
5. Bars V_1, V_2, V_3, V_4, V_5, H_1, H_2, H_3, H_4, and H_5 are straight bars.

LEGEND:

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

BENT BARS TABLE

Pipe	B_1		B_2		B_3		B_4		B_5		B_{10}	
	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)
30"	4	0-9½	4	1-6	5	0-11	4	0-9½	5	0-5½	4	0-9½
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	0-6½	5	0-11
48"	5	0-9½	4	1-0	6	1-0	5	0-9½	6	0-6	5	0-9½
54"	5	0-8½	4	0-10	7	1-1	5	0-8½	7	0-6½	5	0-8½
60"	6	0-10	5	1-1	7	1-0	6	0-10	7	0-6	6	0-10
66"	6	0-8½	5	0-11½	7	0-11	6	0-8½	7	0-5½	6	0-8½
72"	6	0-7½	5	0-10	7	0-10	6	0-7½	7	0-5	6	0-7½



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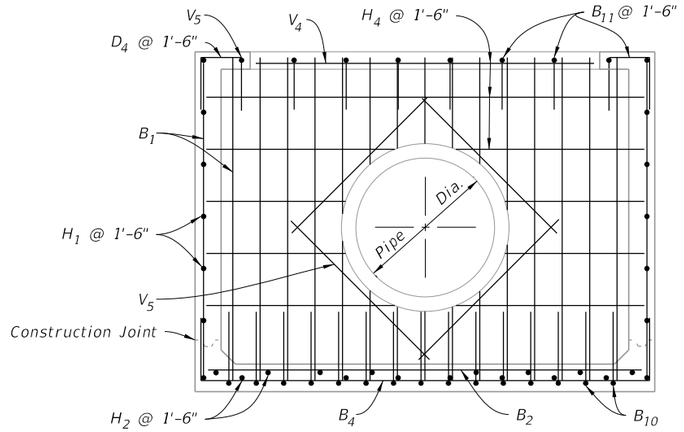
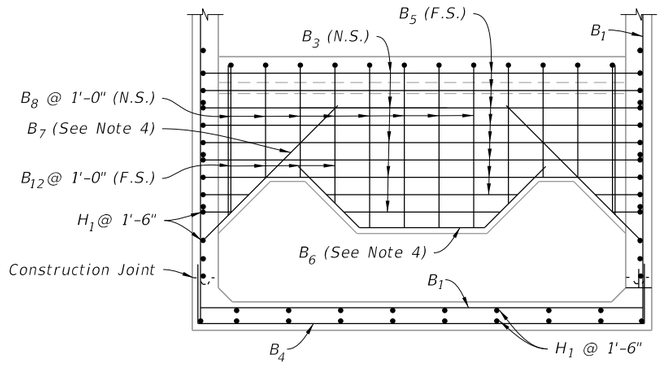


SECTION C-C



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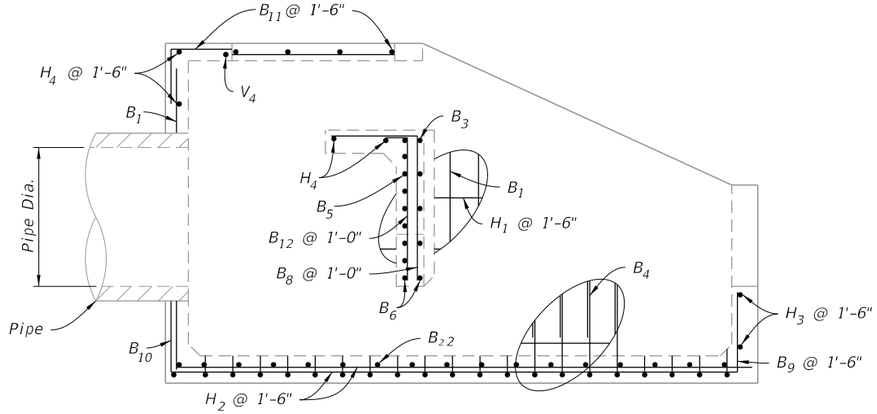

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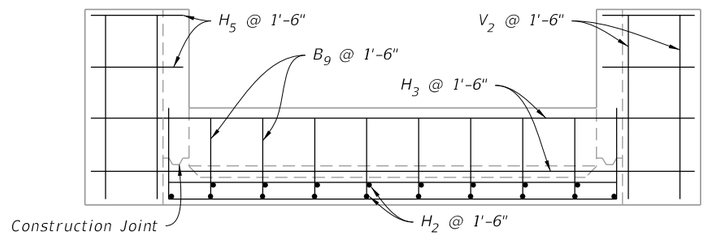
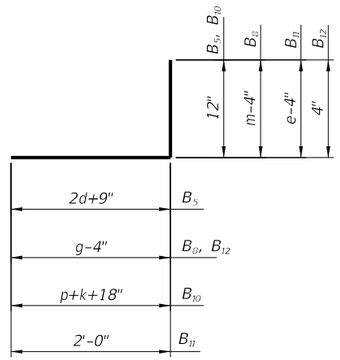
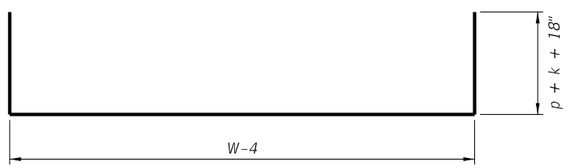


SECTION A-A



BARS B_5 B_8 B_{10} B_{11} B_{12}



BAR B_4

BENDING DIAGRAM

REINFORCING DETAILS

REINFORCING DETAILS AND BENDING DIAGRAM

10/29/2019 8:16:21 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	U-TYPE CONCRETE ENDWALL ENERGY DISSIPATOR 30" TO 72" PIPE	INDEX	SHEET
11/01/19						430-012	3 of 3

GENERAL NOTES:

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.

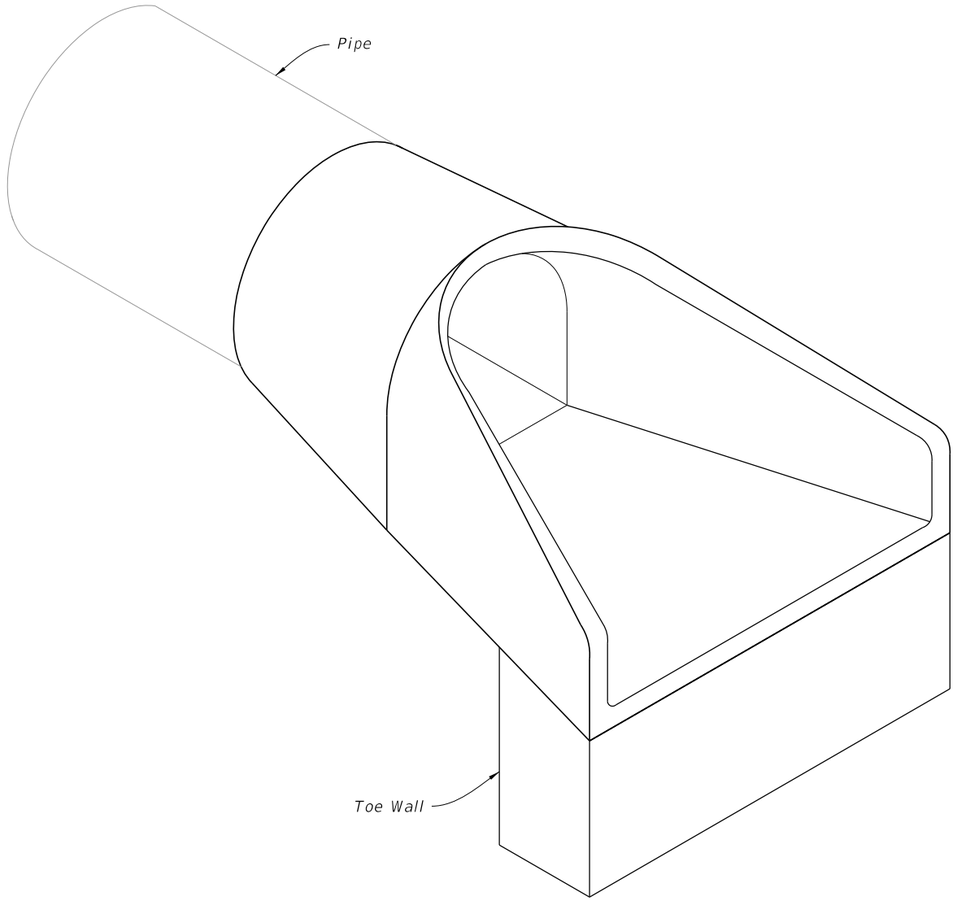
   c. Reinforced concrete jackets, as detailed on sheet 2. When non-coated corrugated metal pipe is called for in the Plans, use bituminous coated pipe in the jacketed area as specified on Index 430-001. Construct concrete jacket as specified in Index 430-001.

3. Toe walls are to be cast-in-place using Class I 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:



FLARED END SECTION

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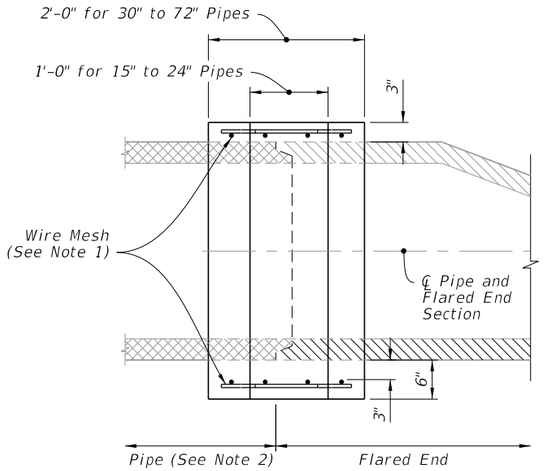
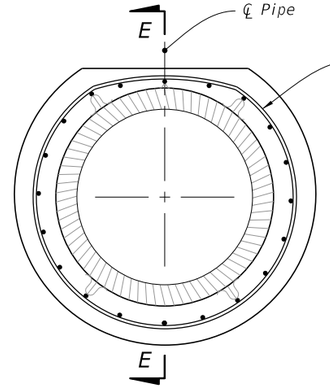
Pipe Dia.	T	Reinf. sq. in. Per Foot	Bell or Spigot	A	B	C	D	E	P	R 1	R 2	FLAT	h	Toe Wall Class I Conc. (CY.)
12"	2"	0.07	1½"	4"	2'-0"	4'-0⅞"	6'-0⅞"	2'-0"	19 15/16"	10⅛"	9"	3½"	12"	.06
15"	2¼"	0.07	2"	6"	2'-3"	3'-10"	6'-1"	2'-6"	24 5/16"	12½"	11"	3½"	12"	.07
18"	2½"	0.07	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	29"	15½"	12"	4"	15"	.11
21"	2¾"	0.07	2¼"	9"	2'-11"	3'-2"	6'-1"	3'-6"	31⅝"	16⅛"	13"	4"	15"	.12
24"	3"	0.07	2½"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	33 3/16"	16 13/16"	14"	4½"	18"	.17
27"	3¼"	0.148	2½"	10½"	4'-0"	2'-1½"	6'-1½"	4'-6"	36"	18 9/16"	14½"	4½"	18"	.19
30"	3½"	0.148	3"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	37"	18½"	15"	5"	21"	.24
36"	4"	0.148	3½"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	47 13/16"	24 5/16"	20"	5½"	21"	.29
42"	4½"	0.148	3¾"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	53⅞"	27½"	22"	5½"	24"	.36
48"	5"	0.148	4¼"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	56½"	28½"	22"	5¾"	24"	.39
54"	5½"	0.174	4¾"	2'-3"	5'-5"	2'-11"	8'-4"	7'-6"	65½"	33⅛"	24"	6¼"	24"	.42
60"	6"	0.174	5"	2'-6"	5'-0"	3'-3"	8'-3"	8'-0"	72½"	36 1/16"	24"	6¾"	24"	.44
66"	6½"	0.174	5½"	2'-0"	6'-6"	1'-9"	8'-3"	8'-6"	72"	36⅛"	24"	7¼"	24"	.47
72"	7"	0.174	6"	2'-0"	6'-6"	1'-9"	8'-3"	9'-0"	77 3/16"	38 15/16"	24"	7¾"	24"	.50



SECTION E-E

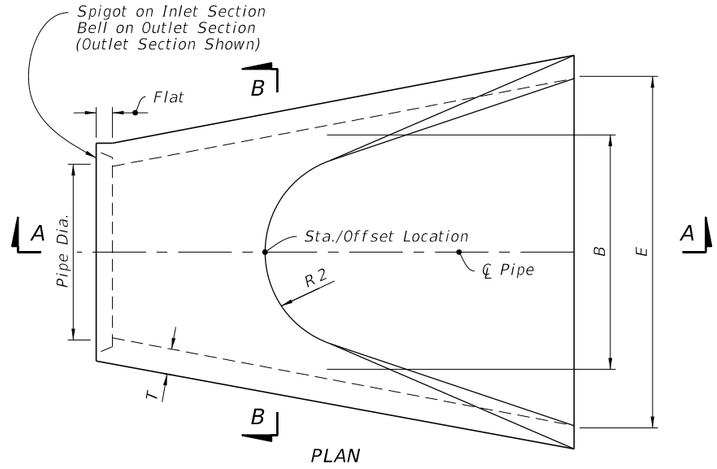


END VIEW

NOTES:

1. Use a wire mesh with 0.126 square inches of steel area per linear foot both directions. Use wire spaced 2" minimum to 6" maximum on centers.
2. Concrete pipe shown, other pipe material similar.

REINFORCED CONCRETE JACKET DETAIL



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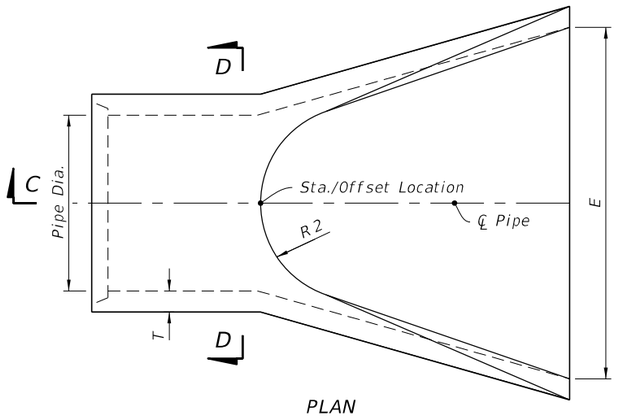

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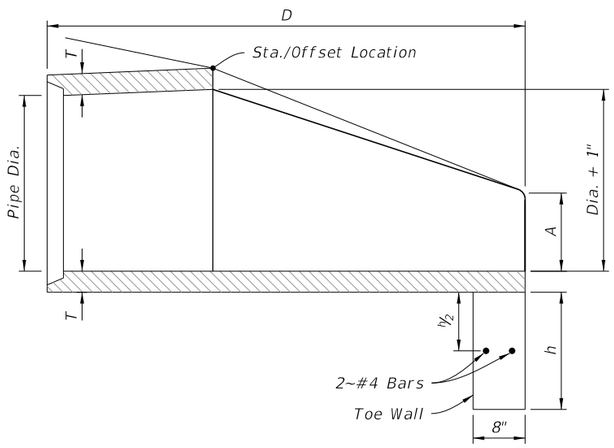
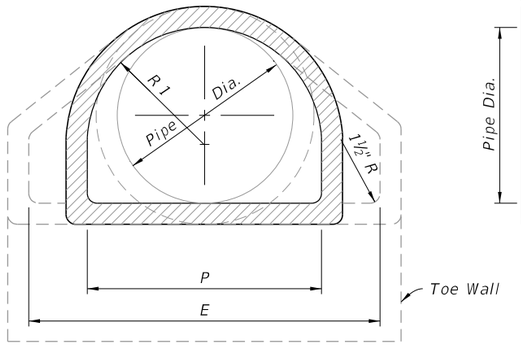
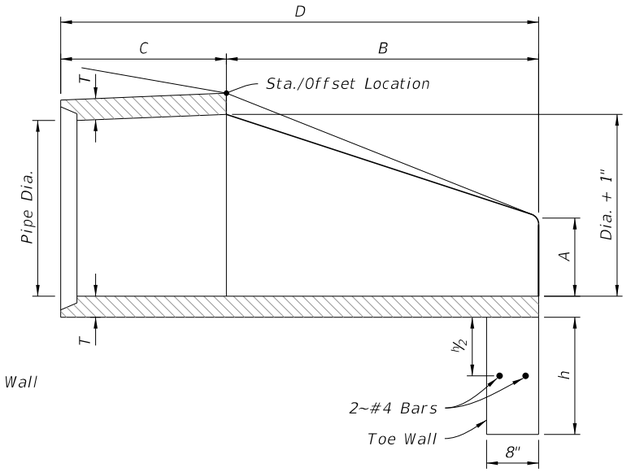


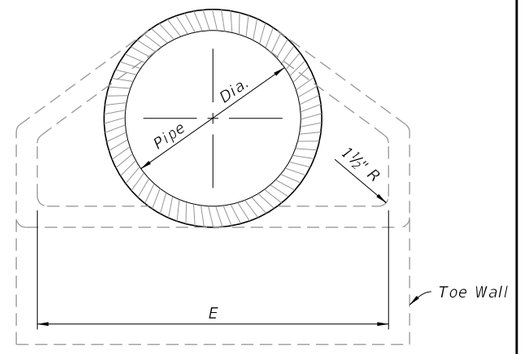
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

STRAIGHT FLARE

OPTIONAL SHAPE

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	FLARED END SECTION	INDEX 430-020	SHEET 2 of 2

GENERAL NOTES:

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.

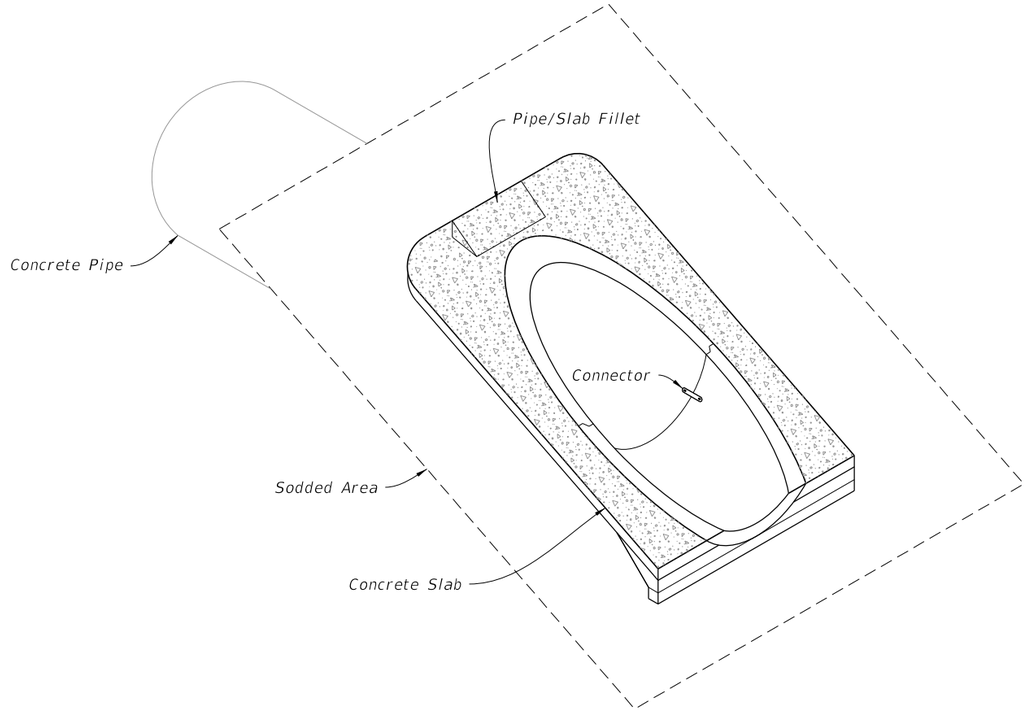
5. Repair corrugated metal pipe galvanizing that is damaged during beveling and perforating.

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.

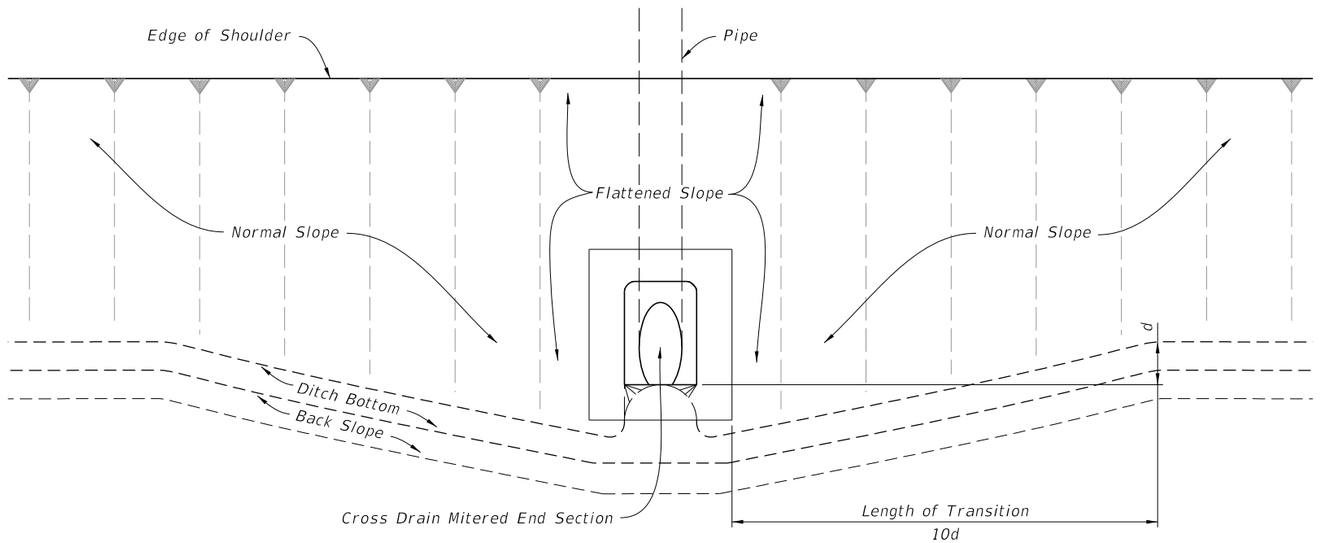
7. Saddle Slope:
   - 1:4 Miter – Slope to ℄ of pipe for round pipes less than or equal to 18" diameter and 1:1 for round pipes greater than or equal to 24" diameter.
     Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger.
     Slope to the span line 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:



CROSS DRAIN MITERED END SECTION
(Concrete Pipe Shown, Corrugated Metal Pipe Similar)



SLOPE AND DITCH TRANSITIONS

10/29/2019 8:16:23 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CROSS DRAIN MITERED END SECTION	INDEX	SHEET
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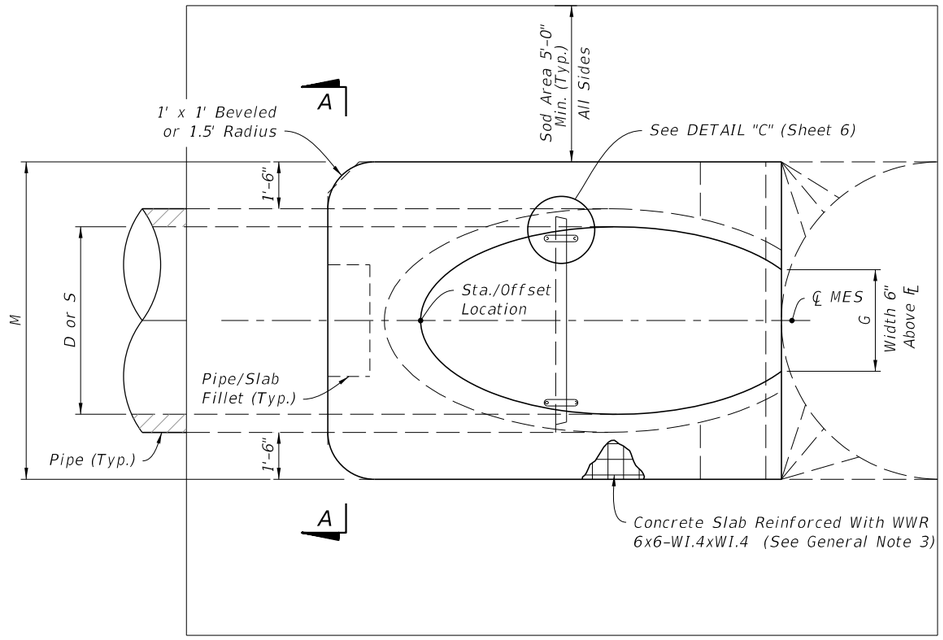
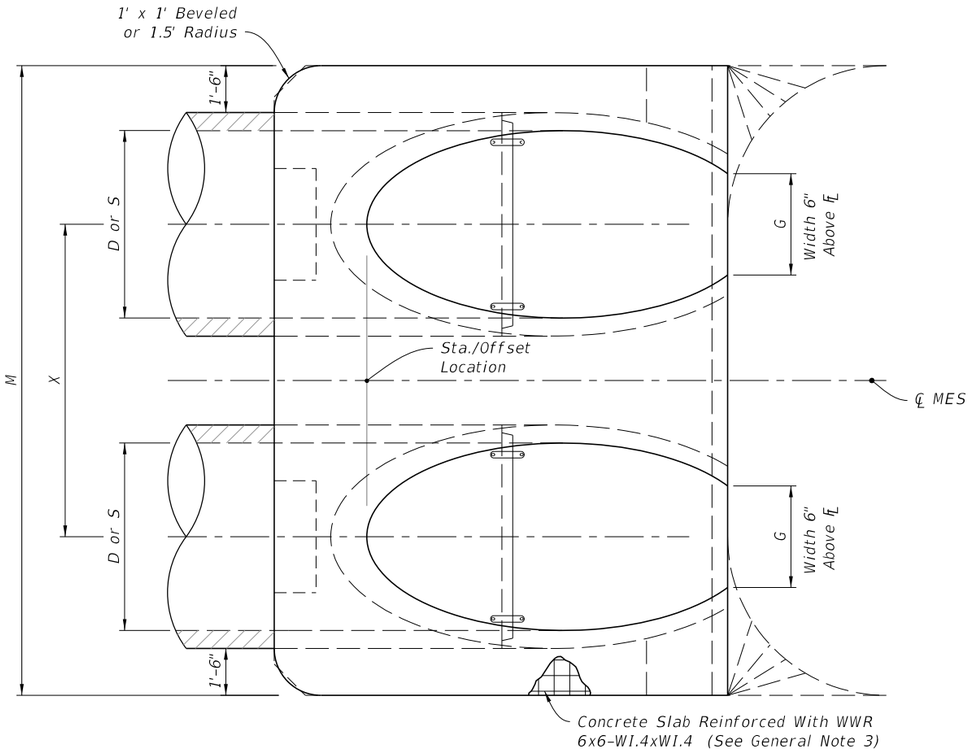
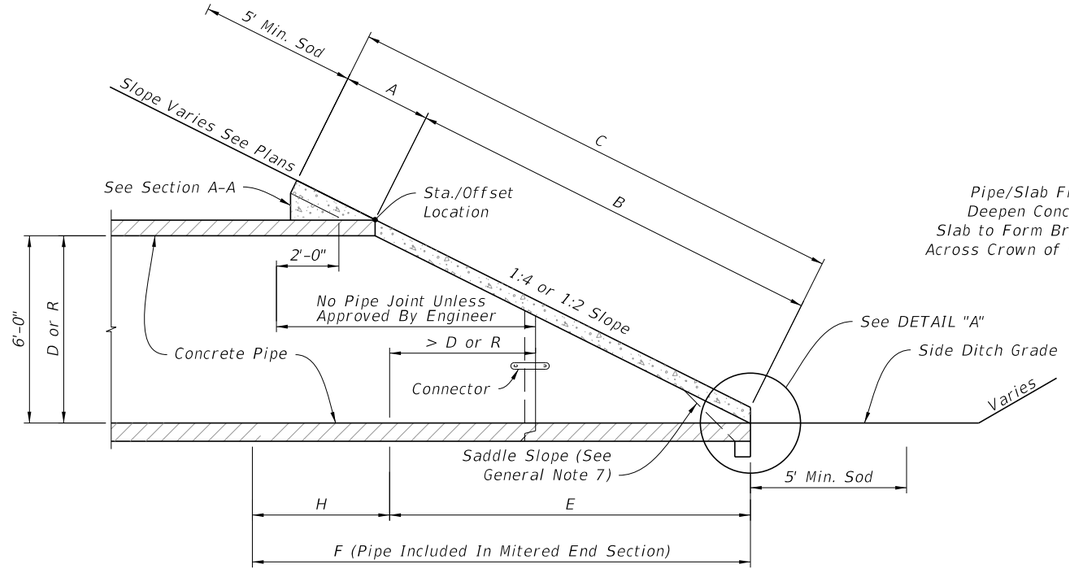


PLAN - SINGLE PIPE



PLAN - MULTIPLE PIPE



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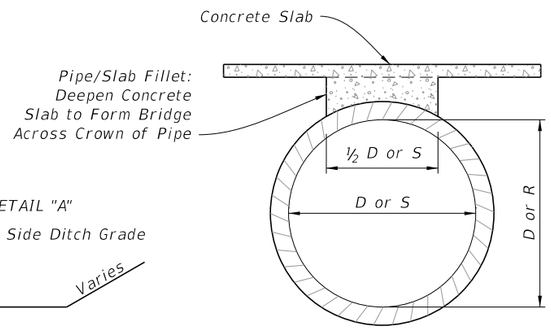
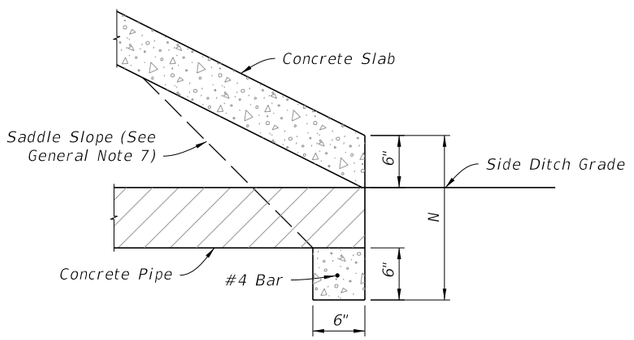


SECTION A-A
(Pipe/Slab Fillet)



DETAIL "A"

ROUND CONCRETE PIPE
(Elliptical Pipe Similar)

NOTE: See Table 1 on Sheet 3 for Dimensions and Quantities.

SINGLE AND MULTIPLE CONCRETE PIPE

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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TABLE 1
SINGLE AND MULTIPLE CONCRETE PIPE DIMENSIONS AND QUANTITIES

		Dia. D	Rise R	Span S	X	A	B	C	E	F	G	H	M				N	5½" CONC. SLAB (CY) (See General Note 3)				3" CONC. SLAB (CY) (See General Note 3)				SODDING (SY)			
													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
Round Concrete Pipe	1:2 Slope	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
		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
		42"	—	—	6'-0"	2.34'	7.21'	9.55'	6.56'	10'	2.45'	3.4'	7.25'	13.25'	19.25'	25.25'	1.38'	0.97	1.70	2.45	3.19	0.66	1.15	1.66	2.15	30	37	43	50
		48"	—	—	6'-9"	2.43'	8.33'	10.76'	7.56'	11'	2.65'	3.4'	7.83'	14.58'	21.33'	28.08'	1.42'	1.13	2.04	2.93	3.84	0.76	1.37	1.96	2.57	32	39	47	54
		54"	—	—	7'-8"	2.52'	9.44'	11.96'	8.56'	12'	2.83'	3.4'	8.42'	16.08'	23.75'	31.42'	1.46'	1.31	2.44	3.58	4.72	0.87	1.62	2.38	3.14	34	42	51	59
		60"	—	—	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	1.90	2.81	3.73	36	45	55	64
		66"	—	—	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
		72"	—	—	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
	1:4 Slope	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'	0.57	0.87	1.15	1.44	0.40	0.61	0.80	1.00	23	26	29	32
		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'	0.66	0.99	1.31	1.65	0.47	0.69	0.91	1.14	25	28	31	35
		24"	—	—	3'-5"	2.53'	7.18' △	9.71'	7.03' △	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
		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
		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
		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'	1.58	2.76	3.91	5.09	1.05	1.82	2.57	3.34	38	44	51	58
		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"	—	—	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"	—	—	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"	—	—	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"	—	—	10'-0"	3.91'	23.68'	27.59'	23.03'	27'	3.30'	4.0'	10.16'	20.16'	30.16'	40.16'	1.58'	3.54	6.61	9.87	13.13	2.12	4.18	6.24	8.30	52	63	74	85
Elliptical Concrete Pipe	1:2 Slope	—	12"	18"	2'-10"	1.97'	1.62'	3.59'	1.56'	4'	1.50'	2.4'	4.92'	7.75'	10.58'	13.42'	1.21'	0.30	0.49	0.67	0.85	0.19	0.33	0.45	0.57	21	24	27	30
		—	14"	23"	3'-4"	2.01'	1.99'	4.00'	1.89'	5'	1.90'	3.1'	5.38'	8.71'	12.04'	15.38'	1.23'	0.37	0.59	0.81	1.02	0.25	0.40	0.55	0.69	22	26	29	33
		—	19"	30"	4'-0"	2.11'	2.92'	5.03'	2.73'	6'	2.37'	3.3'	6.04'	10.04'	14.04'	18.04'	1.27'	0.50	0.80	1.09	1.39	0.34	0.55	0.75	0.95	24	28	33	37
		—	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	0.71	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
		—	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
		—	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
		—	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
		—	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
		—	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
		—	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	52	65	78
	1:4 Slope	—	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
		—	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
		—	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
		—	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
		—	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
		—	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"	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'	2.02	3.78	5.56	7.32	1.38	2.58	3.79	4.99	41	51	61	71
		—	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'	2.34	4.49	6.64	8.79	1.59	3.05	4.51	5.97	44	55	66	77
		—	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'	2.66	5.17	7.66	10.16	1.80	3.50	5.19	6.88	47	59	71	83
		—	58"	91"	11'-8"	4.08'	18.87'	22.95'	18.36'	22'	5.01'	3.6'	11.83'	23.50'	35.17'	46.83'	1.63'	3.02	5.98	8.95	11.90	2.04	4.04	6.05	8.05	50	63	76	89

B	E	
△ 6.42'	△ 6.25'	Dimensions permitted to allow use of 8' standard pipe lengths.
◇ 10.40'	◇ 10.10'	Dimensions permitted to allow use of 12' standard pipe lengths.

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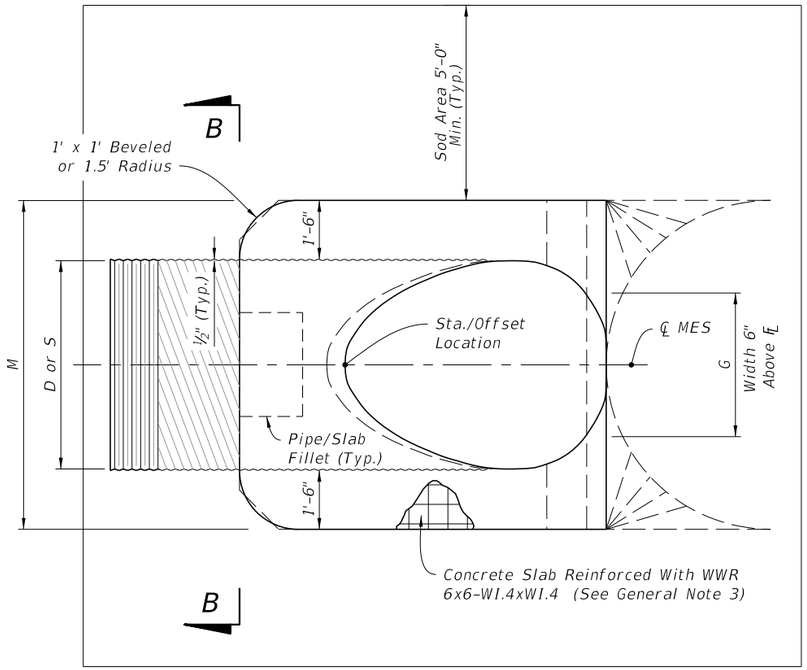
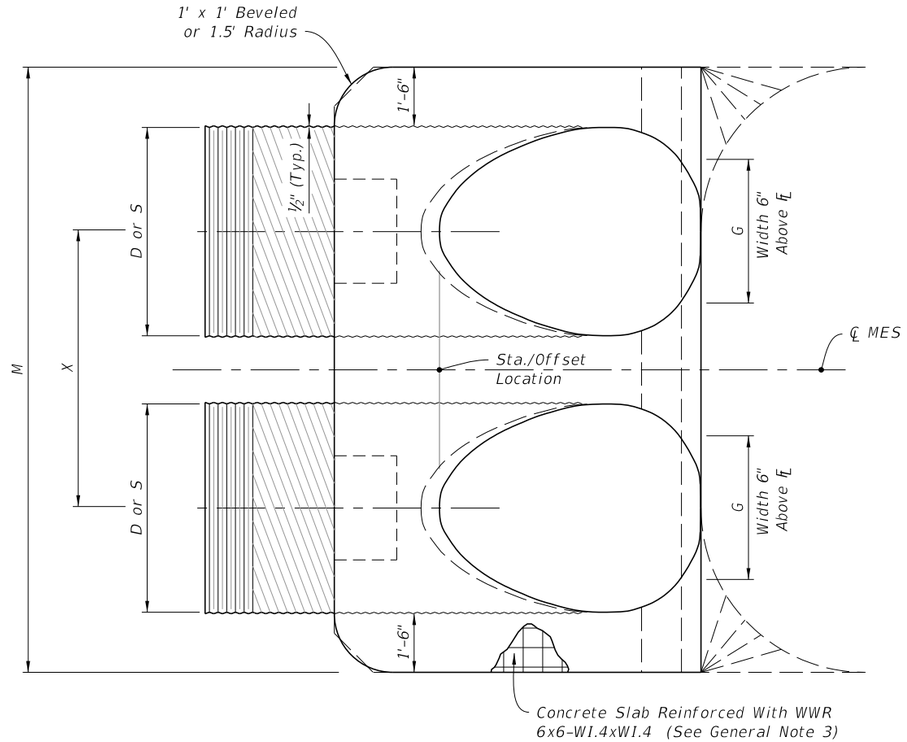
CONCRETE PIPE DIMENSIONS AND QUANTITIES

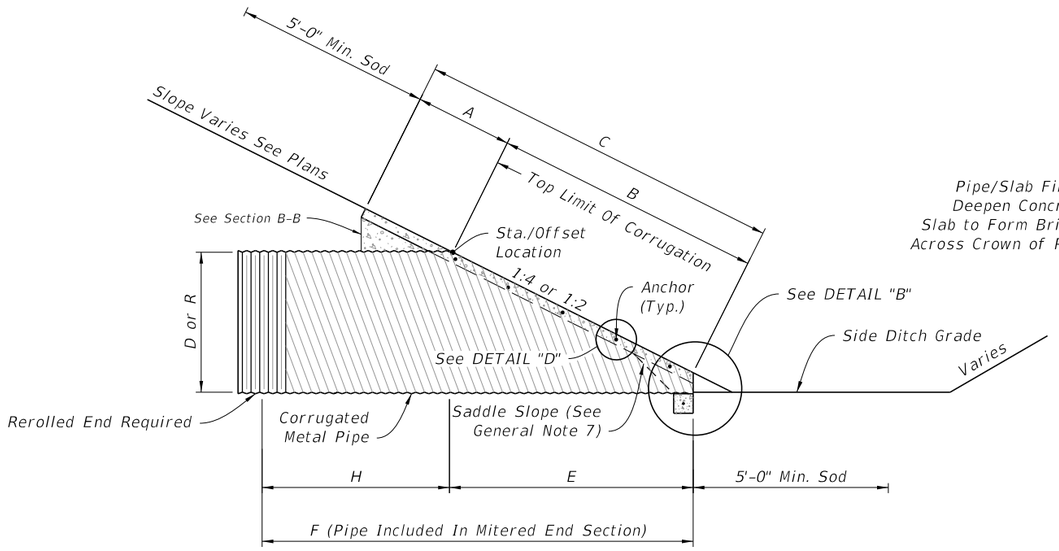
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	CROSS DRAIN MITERED END SECTION	430-021	3 of 6



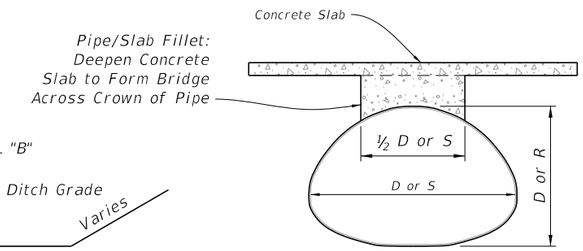
PLAN - SINGLE PIPE



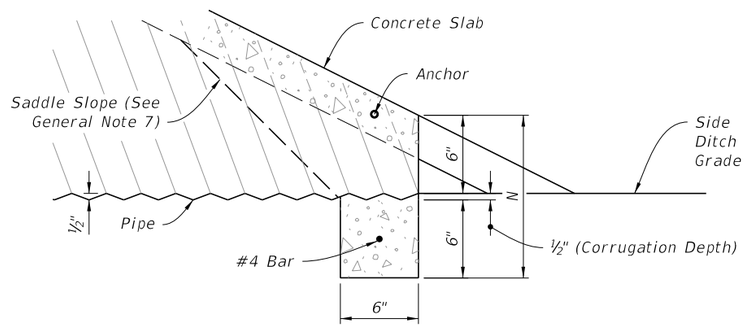
PLAN - MULTIPLE PIPE



ELEVATION



SECTION B-B
(Pipe/Slab Fillet)



DETAIL "B"

ARCHED CORRUGATED METAL PIPE
(Round Pipe Similar)

NOTE: See Table 2 on Sheet 5 for Dimensions and Quantities.

SINGLE AND MULTIPLE CORRUGATED METAL PIPE

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	CROSS DRAIN MITERED END SECTION	430-021	4 of 6

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TABLE 2
SINGLE AND MULTIPLE CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES

		Dia. D	Rise R	Span S	X	A	B	C	E	F	G	H	M				N	5½" CONC. SLAB (CY) (See General Note 3)				3" CONC. SLAB (CY) (See General Note 3)				SODDING (SY)			
													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
Round Corrugated Metal Pipe	1:2 Slope	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
		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
		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
		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
		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
		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'	1.04'	0.89	1.71	2.54	3.36	0.57	1.09	1.63	2.15	31	38	46	53
		54"	—	—	7'-8"	2.5'	8.94'	11.44'	8.0'	12.0'	2.83'	4.0'	7.58'	15.25'	22.92'	30.58'	1.04'	1.02	2.06	3.10	4.14	0.65	1.32	1.99	2.66	33	41	50	58
		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
	1:4 Slope	15"	—	—	2'-7"	2.5'	3.09'	5.59'	3.0'	7.0'	1.23'	4.0'	4.33'	6.92'	9.50'	12.08'	1.04'	0.44	0.68	0.91	1.15	0.31	0.47	0.63	0.79	22	25	28	31
		18"	—	—	2'-10"	2.5'	4.12'	6.62'	4.0'	8.0'	1.41'	4.0'	4.58'	7.42'	10.25'	13.08'	1.04'	0.49	0.77	1.03	1.31	0.34	0.53	0.71	0.90	24	27	30	33
		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
		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
		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
		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'	27.33'	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
Corrugated Metal Pipe Arch	1:2 Slope	—	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
		—	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
		—	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
		—	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
		—	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
		—	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
		—	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
	1:4 Slope	—	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
		—	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
		—	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
		—	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
		—	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
		—	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
		—	71"	47"	7'-10"	2.5'	14.09'	16.59'	13.67'	19'	4.14'	5.3'	9.00'	16.83'	24.67'	32.50'	1.04'	1.50	2.65	3.81	4.97	0.95	1.68	2.43	3.17	40	48	57	66

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CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES

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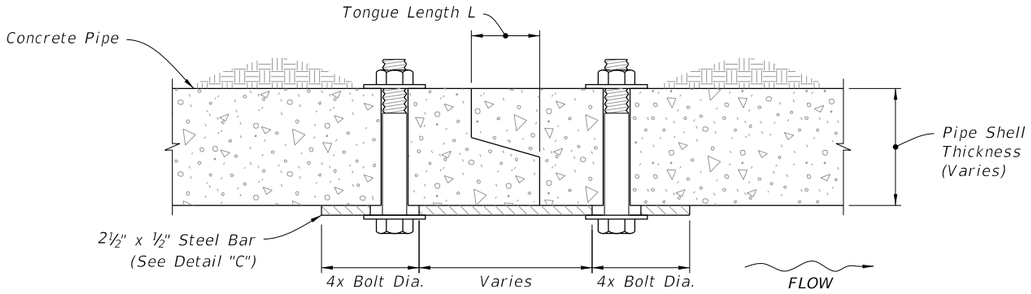
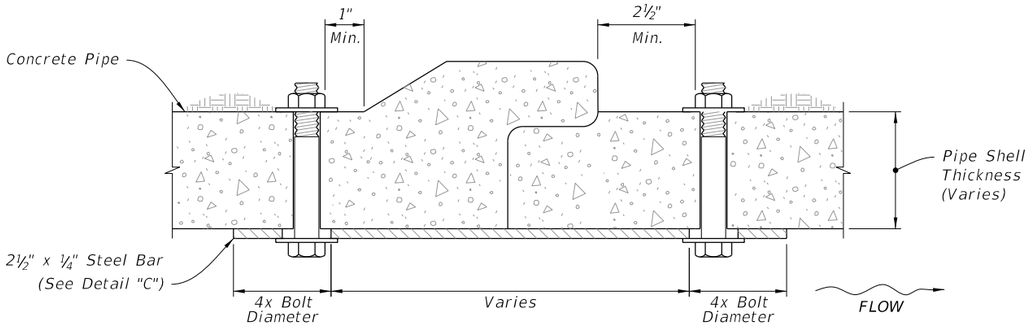
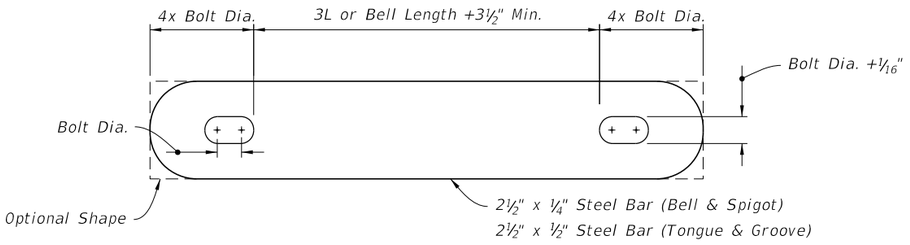


TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



STEEL BAR

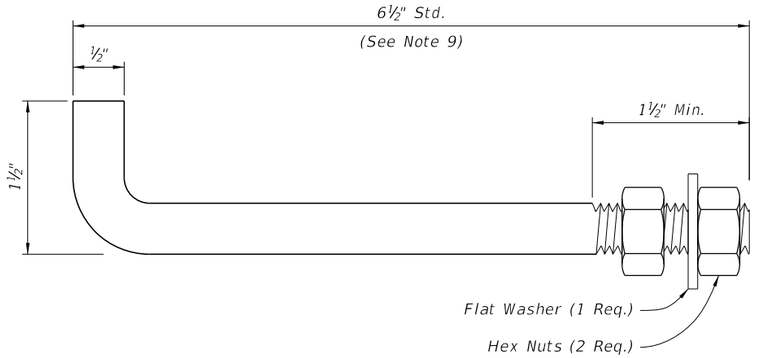
NOTES:

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

Bolt Dia.	Pipe Dia.
⅜"	15" to 36"
⅝"	42" to 72"

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 ½" bolt substitution is permitted.

CORRUGATED METAL PIPE (CMP) ANCHOR DETAIL

DETAIL "D"

CONCRETE PIPE CONNECTION AND CORRUGATED PIPE ANCHOR DETAILS

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GENERAL NOTES:

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 ℄ 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.

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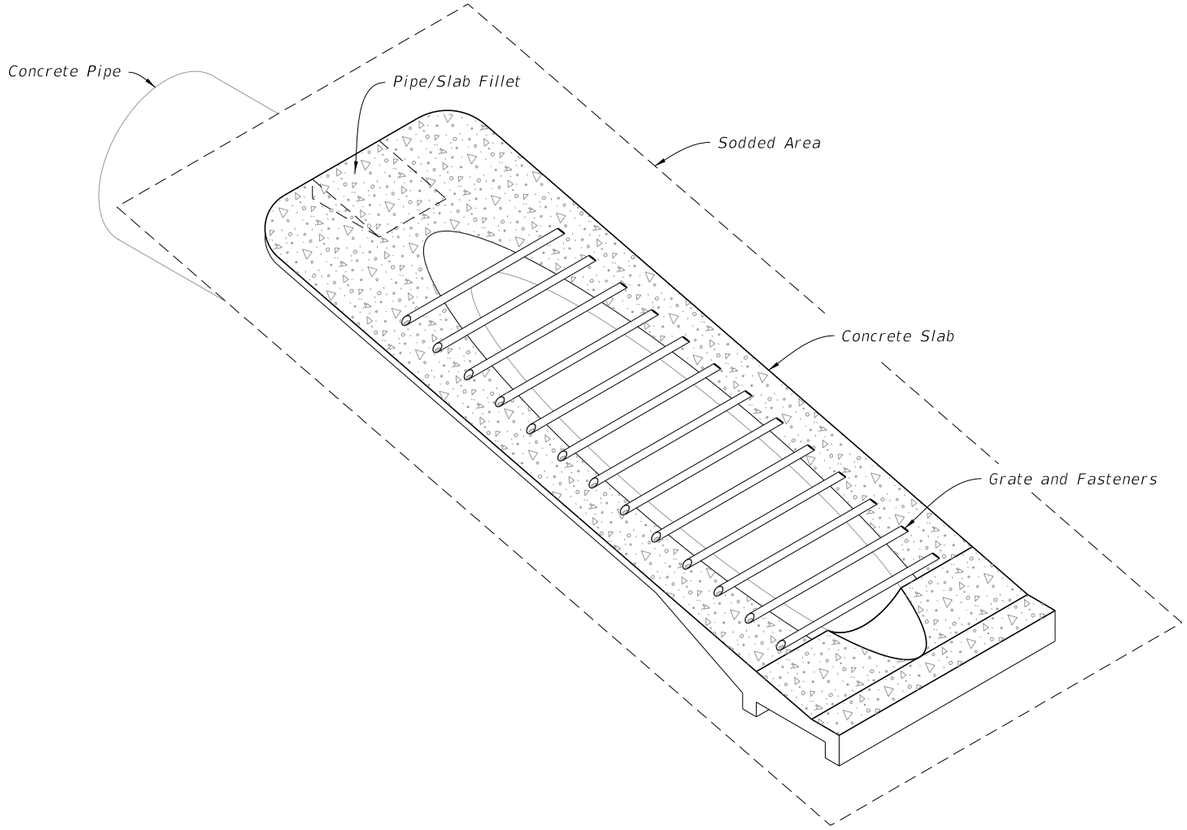
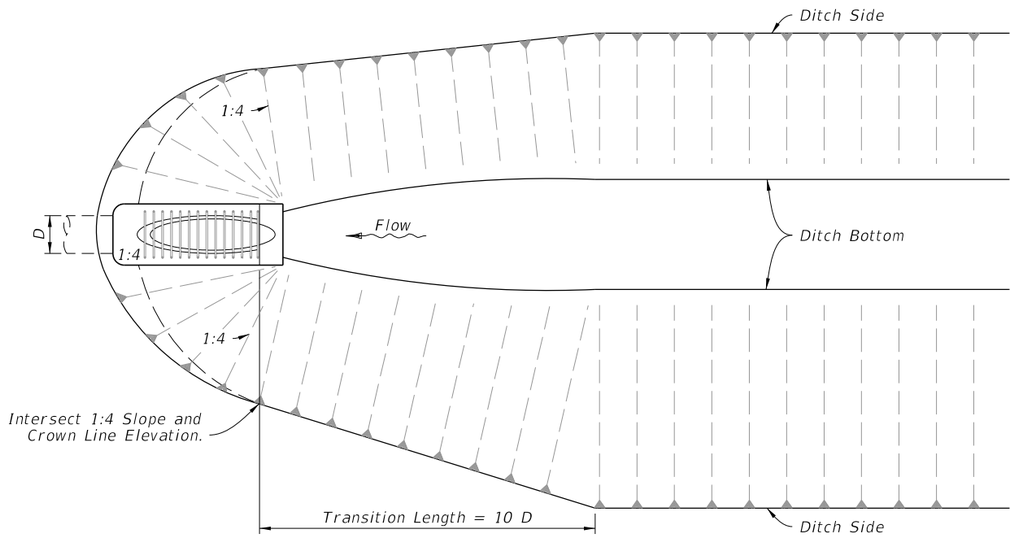


SIDEDRAIN MITERED END SECTION
(Concrete Pipe Shown, Corrugated Metal Pipe Similar)



DITCH TRANSITION

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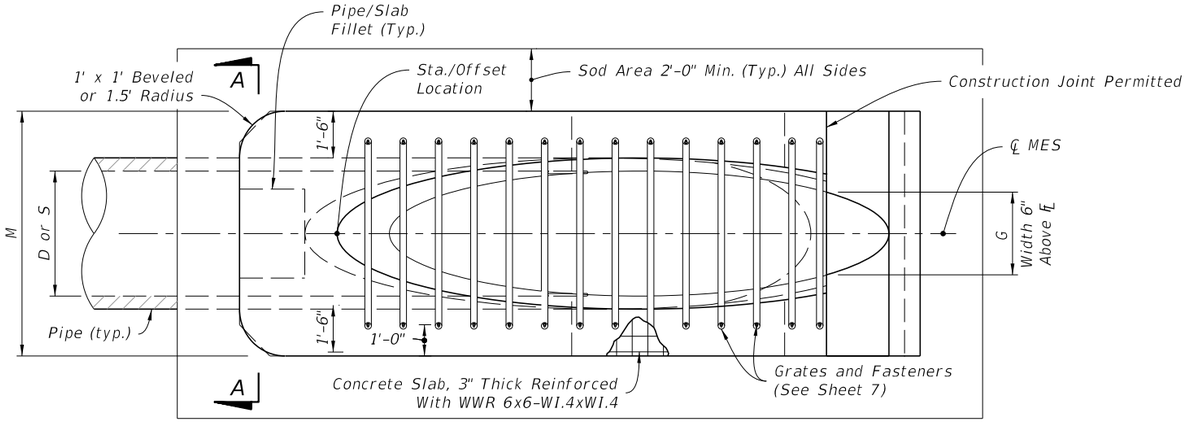
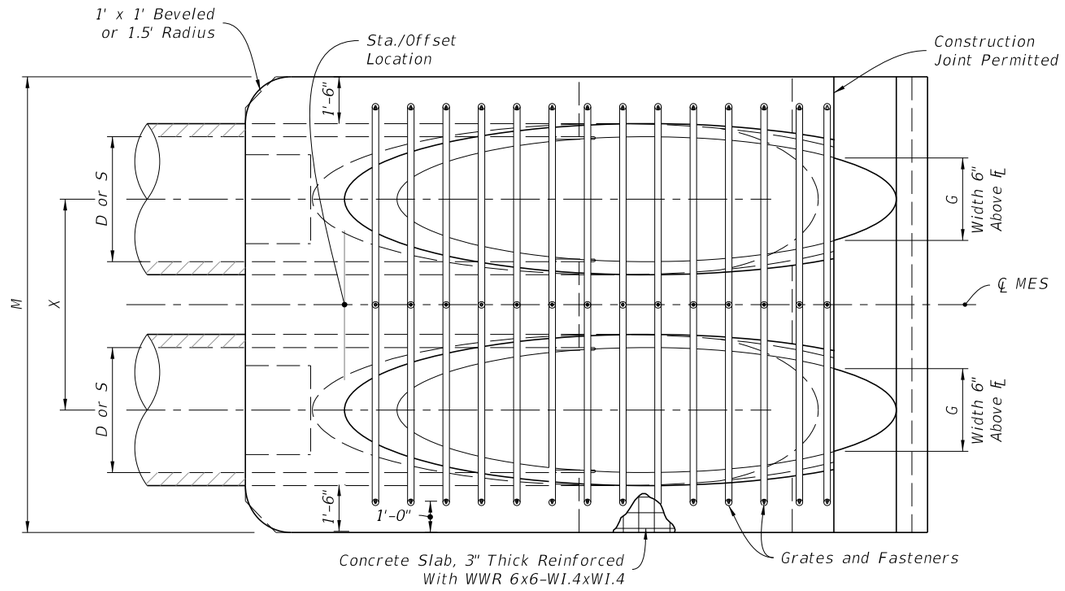
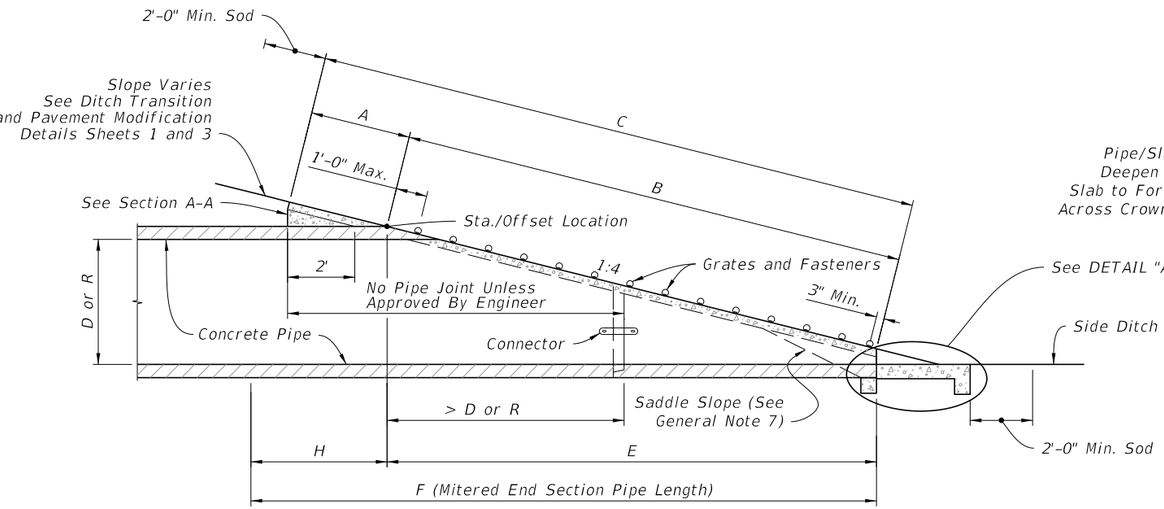


PLAN - SINGLE PIPE



PLAN - MULTIPLE PIPE



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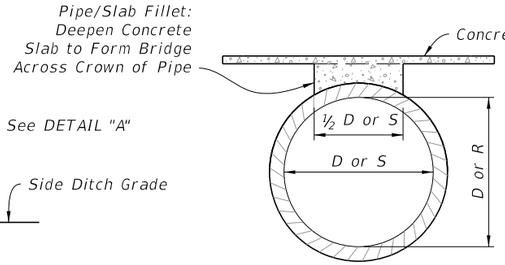
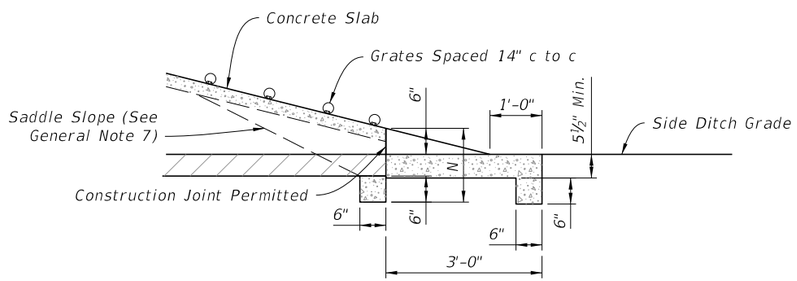


SECTION A-A
(Pipe/Slab Fillet)



DETAIL "A"

ROUND CONCRETE PIPE
(Elliptical Pipe Similar)

SINGLE AND MULTIPLE CONCRETE PIPE

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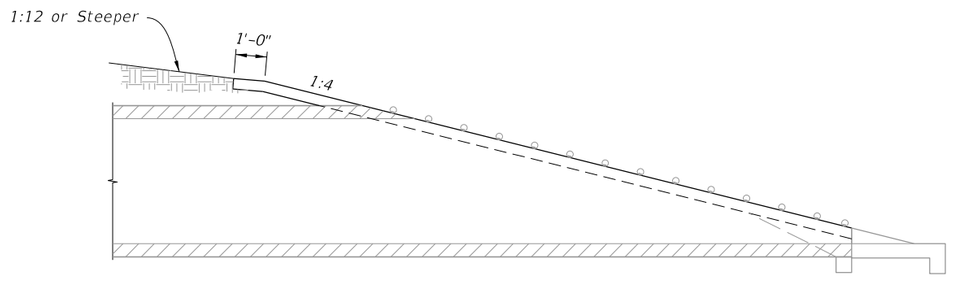
SINGLE AND MULTIPLE CONCRETE PIPE DIMENSIONS AND QUANTITIES

Pipe	Dia. D	Rise R	Span S	X	A	B	C	E	F	G	H	M				N	GRATE SIZES		3" CONC. SLAB (CY)				SODDING (SY)			
												Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe		STANDARD WEIGHT PIPE	EXTRA STRONG PIPE	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
Round Concrete	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
	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
	24"	—	—	3'-5"	2.53'	7.18'△	9.71'	7.03' △	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
	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'	2½"	3"	1.23	1.98	2.74	3.50	12	14	15	17
	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'	2½"	3"	1.40	2.38	3.33	4.24	13	15	17	20
	42"	—	—	6'-0"	3.05'	13.37'	16.42'	13.03'	17'	2.45'	4.0'	7.25'	13.25'	19.25'	25.25'	1.38'	2½"	3½"	1.60	2.83	4.04	5.26	14	17	19	22
	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'	2½"	3½"	1.81	3.26	4.70	6.14	15	18	21	24
	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
Elliptical Concrete	—	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
	—	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
	—	19"	30"	4'-0"	2.62'	5.47'	8.09'	5.36'	8'	2.37'	2.6'	6.04'	10.04'	14.04'	18.04'	1.27'	2½"	3"	0.95	1.52	2.09	2.65	10	12	13	15
	—	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'	2½"	3"	1.18	1.95	2.74	3.53	11	13	15	18
	—	29"	45"	5'-11"	3.05'	8.90'	11.95'	8.70'	12'	3.19'	3.3'	7.50'	13.42'	19.33'	25.25'	1.38'	2½"	3½"	1.41	2.42	3.44	4.45	12	15	18	20
	—	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"	3½"	1.63	2.92	4.22	5.52	13	17	20	23
	—	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
	—	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"x5/16"	2.37	4.54	6.73	8.92	17	21	26	30
	—	53"	83"	10'-8"	3.91'	17.15'	21.06'	16.70'	20'	4.77'	3.3'	11.08'	21.75'	32.42'	43.08'	1.58'	3"	HSS 5"x3/16"	2.61	5.09	7.56	10.03	18	23	27	32
	—	58"	91"	11'-8"	4.08'	18.87'	22.95'	18.36'	22'	5.01'	3.6'	11.83'	23.50'	35.17'	46.83'	1.63'	3½"	HSS 5"x3/8"	2.91	5.77	8.64	11.50	19	24	29	35

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

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



PERMISSIBLE PAVEMENT MODIFICATION

CONCRETE PIPE DIMENSIONS AND QUANTITIES
AND PERMISSIBLE PAVEMENT MODIFICATION

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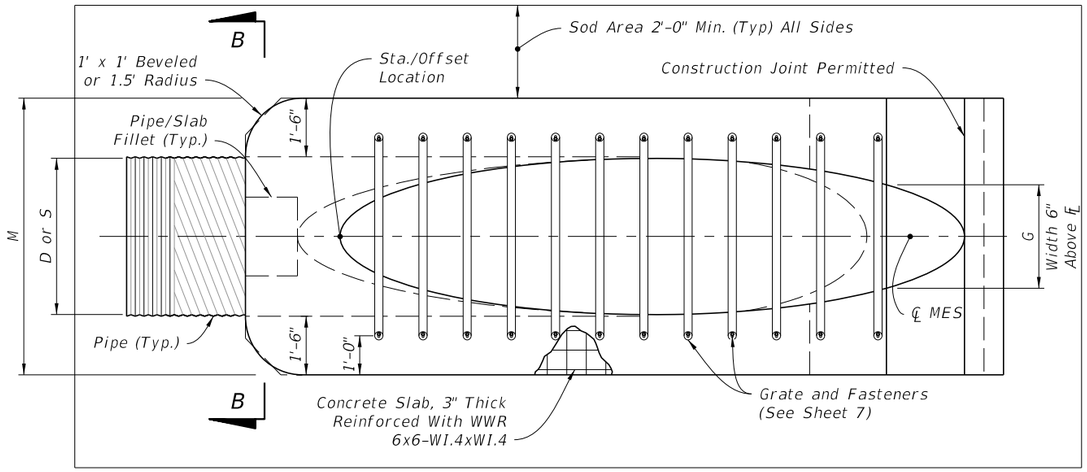
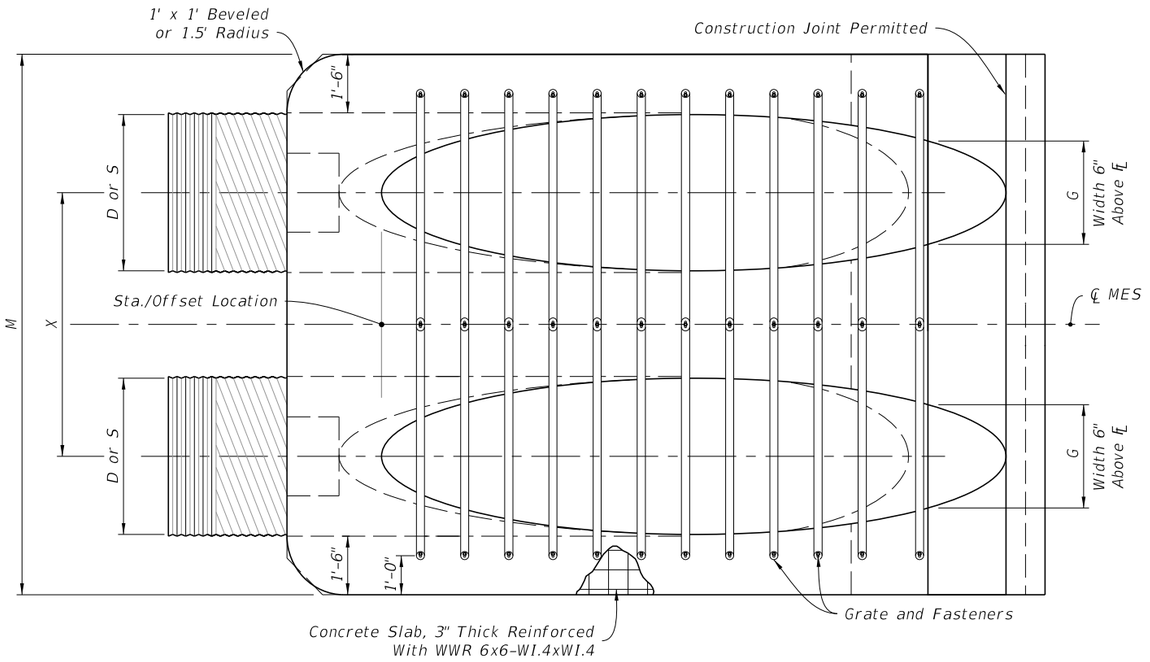
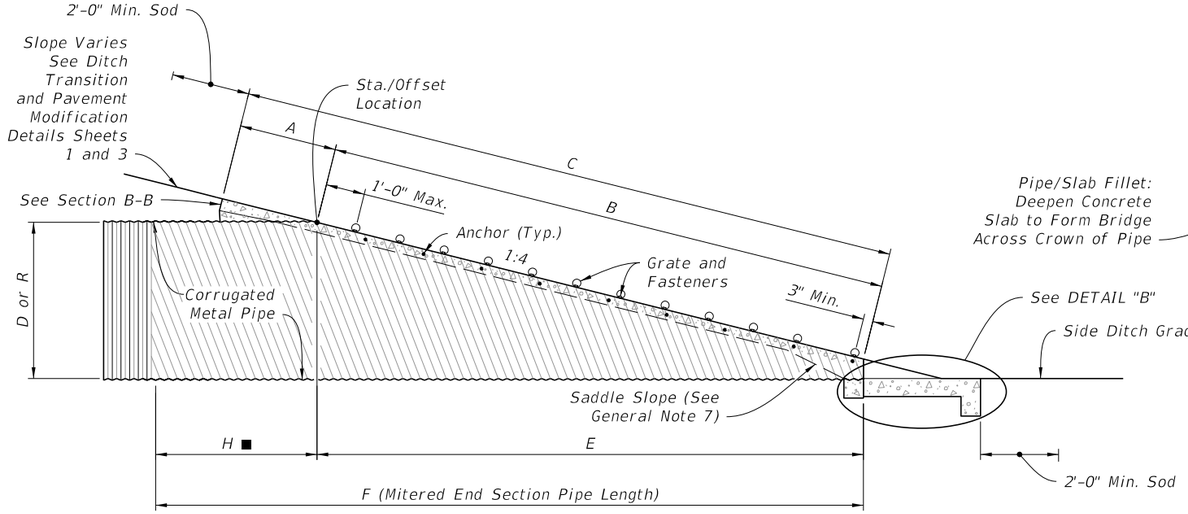


PLAN - SINGLE PIPE



PLAN - MULTIPLE PIPE



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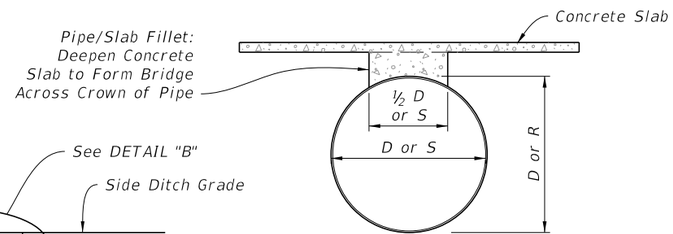
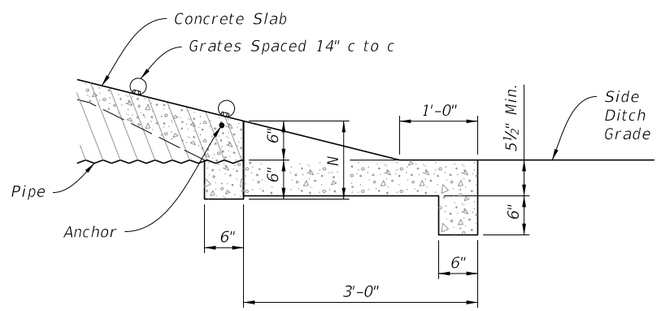


SECTION B-B
(Pipe/Slab Fillet)



DETAIL "B"

ROUND CORRUGATED PIPE
(Arched Pipe Similar)

SINGLE AND MULTIPLE CORRUGATED METAL PIPE

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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SINGLE AND MULTIPLE CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES

Pipe	Dia. D	Rise R	Span S	X	A	B	C	E	F	G	H	M				N	GRATE SIZES		3" CONC. SLAB (CY)				SODDING (SY)			
												Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe		STANDARD WEIGHT PIPE	EXTRA STRONG PIPE	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
Round Corrugated Metal 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
	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
	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
	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
	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
	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
	36"	—	—	5'-1"	2.5'	10.31'	12.81'	10.0'	14.0'	2.24'	4.0'	6.08'	11.17'	16.25'	21.33'	1.04'	2½"	3"	1.08	1.92	2.77	3.62	12	14	17	19
	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'	2½"	3½"	1.20	2.26	3.34	4.61	13	16	18	21
	48"	—	—	6'-9"	2.5'	14.43'	16.93'	14.0'	18.0'	2.65'	4.0'	7.08'	13.83'	20.58'	27.33'	1.04'	2½"	3½"	1.60	3.11	4.62	6.12	14	17	20	23
	54"	—	—	7'-8"	2.5'	16.49'	18.99'	16.0'	20.0'	2.83'	4.0'	7.58'	15.25'	22.92'	30.58'	1.04'	3"	4"	1.76	3.56	5.34	7.14	15	19	22	26
	60"	—	—	8'-6"	2.5'	18.55'	21.05'	18.0'	22.0'	3.00'	4.0'	8.08'	16.58'	25.08'	33.58'	1.04'	3"	4"	1.94	4.03	6.12	8.20	17	20	24	28
Corrugated Metal Pipe - Arch	—	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
	—	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
	—	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
	—	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'	2½"	3"	0.94	1.51	2.09	2.66	10	12	14	15
	—	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
	—	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
	—	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
	—	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
	—	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'	3"	4"	1.62	2.94	4.27	5.59	15	18	22	25

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CORRUGATED METAL PIPE DIMENSIONS AND QUANTITIES

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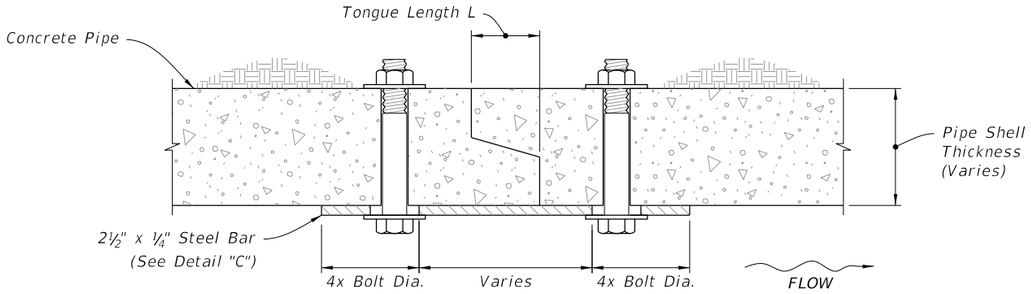
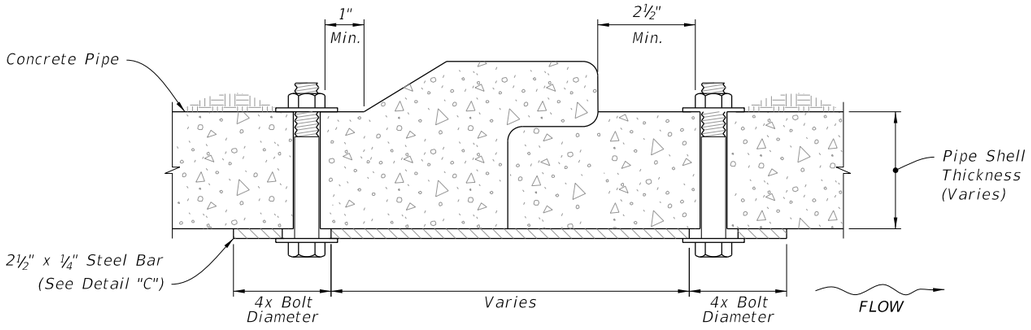
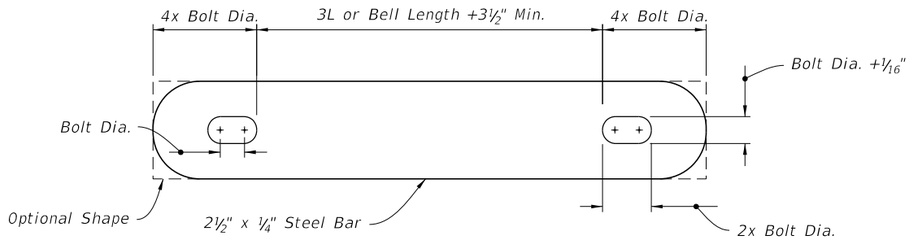


TONGUE AND GROOVE CONNECTOR DETAIL



BELL AND SPIGOT CONNECTOR DETAIL



STEEL BAR

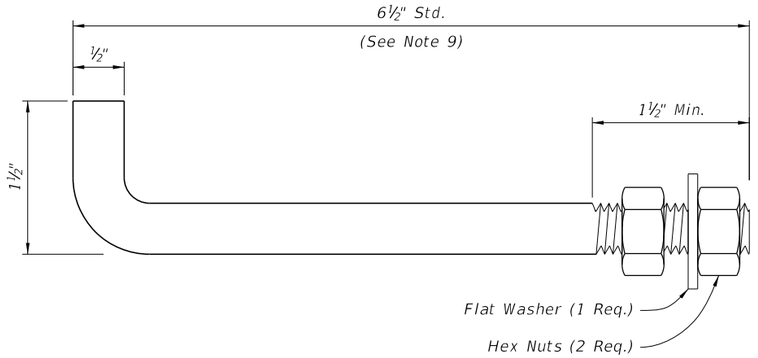
NOTES:

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

Bolt Dia.	Pipe Dia.
⅜"	15" to 36"
⅝"	42" to 72"

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 ½" bolt substitution is permitted.

CORRUGATED METAL PIPE (CMP) ANCHOR DETAIL

DETAIL "D"

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CONCRETE PIPE CONNECTION AND CORRUGATED PIPE ANCHOR DETAILS

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NOTES:

1. 5/8" 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. 5/8" 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 only when called for in the plans on round pipes 24" or less in diameter, arch pipes 28" x 20" or smaller, and elliptical pipes 14" x 23" or smaller.

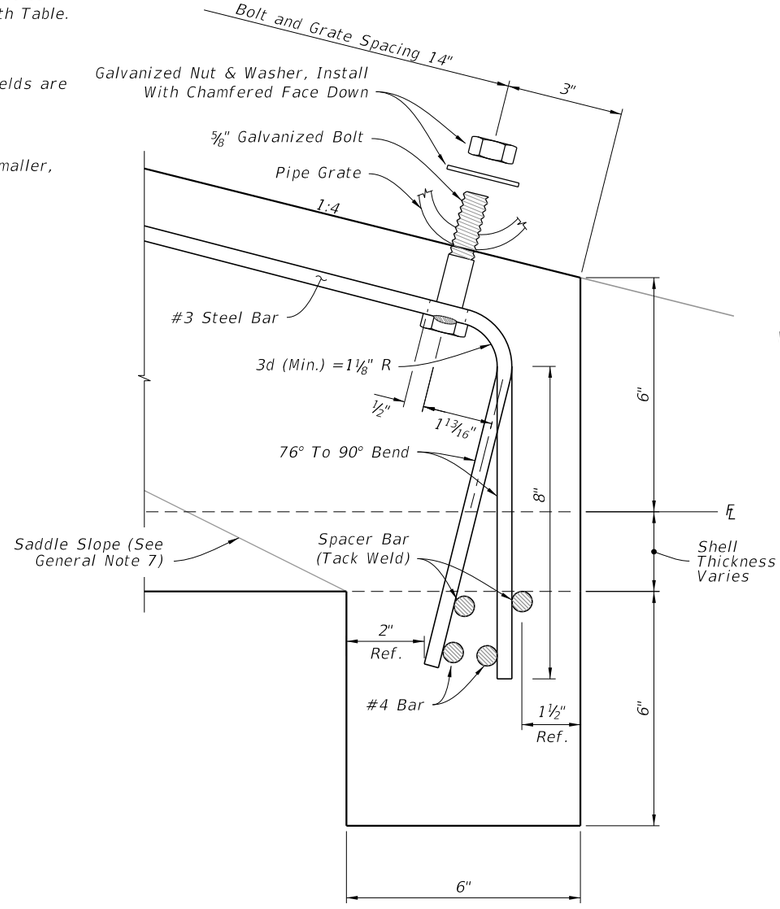
CONCRETE PIPE

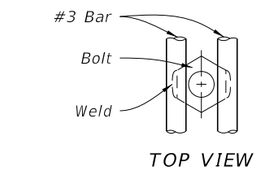
ROUND PIPE					ELLIPTICAL PIPE				
Pipe Dia.	s	n	L	La	Drain Size	s	n	L	La
*15"	3	4	4'-0"	4'-11"	*12"x18"	2	3	2'-10"	3'-9"
*18"	4	5	5'-2"	6'-1"	*14"x23"	3	4	4'-0'	4'-11"
*24"	6	7	7'-6"	8'-5"	19"x30"	4	5	5'-2"	6'-1"
30"	7	8	8'-8"	9'-7"	24"x38"	5	6	6'-4"	7'-3"
36"	9	10	11'-0"	11'-11"	29"x45"	7	8	8'-8"	9'-7"
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"

CORRUGATED METAL PIPE

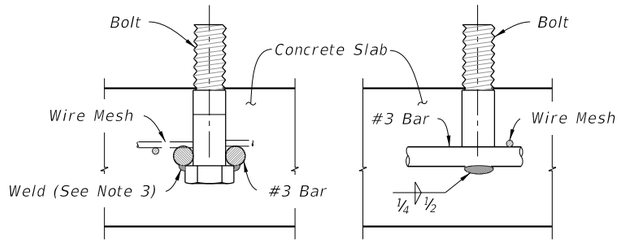
ROUND PIPE					ARCHED PIPE				
Pipe Dia.	s	n	L	La	Drain Size	s	n	L	La
*15"	2	3	2'-10"	3'-9"	*17"x13"	1	2	1'-8"	2'-7"
*18"	3	4	4'-0"	4'-11"	*21"x15"	2	3	2'-10"	3'-9"
*24"	5	6	6'-4"	7'-3"	*28"x20"	4	5	5'-2"	6'-1"
30"	7	8	8'-8"	9'-7"	35"x24"	5	6	6'-4"	7'-3"
36"	8	9	9'-10"	10'-9"	42"x29"	6	7	7'-6"	8'-5"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

* See Note 5



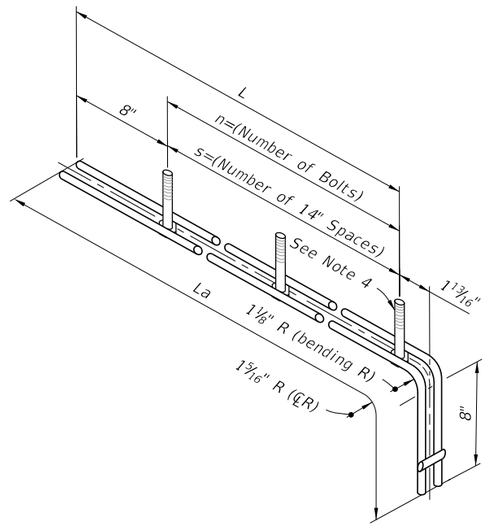


TOP VIEW



END VIEW SIDE VIEW

SPECIAL BOLT LENGTH	
Grate Size (Std. & X-Stg.)	Bolt Length
2 1/2"	5 1/2"
3"	6"
3 1/2"	6 1/2"
4"	7"



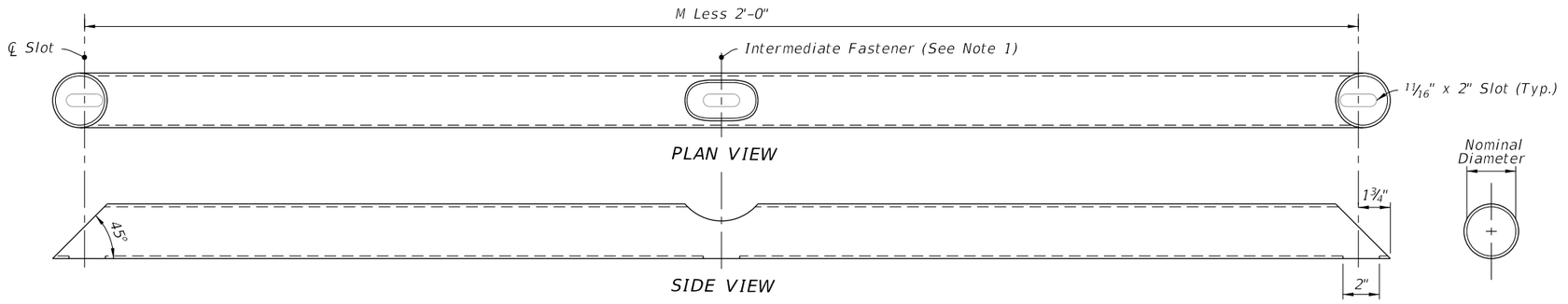
MULTIPLE FASTENER UNIT DETAIL
(For Single and Multiple Pipes)

NOTE:

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

Options for top opening:
a. 4" of 6" mill head cut, 1" deep
b. 2" diameter drilled hole
c. 1 1/16" x 2" slot

Bottom opening: 1 1/16" x 2" slot.



GRATE DETAIL
(For Single and Multiple Pipes)

FASTENER UNIT AND GRATE DETAILS

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GENERAL NOTES:

1. Use Class I 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 ¾".

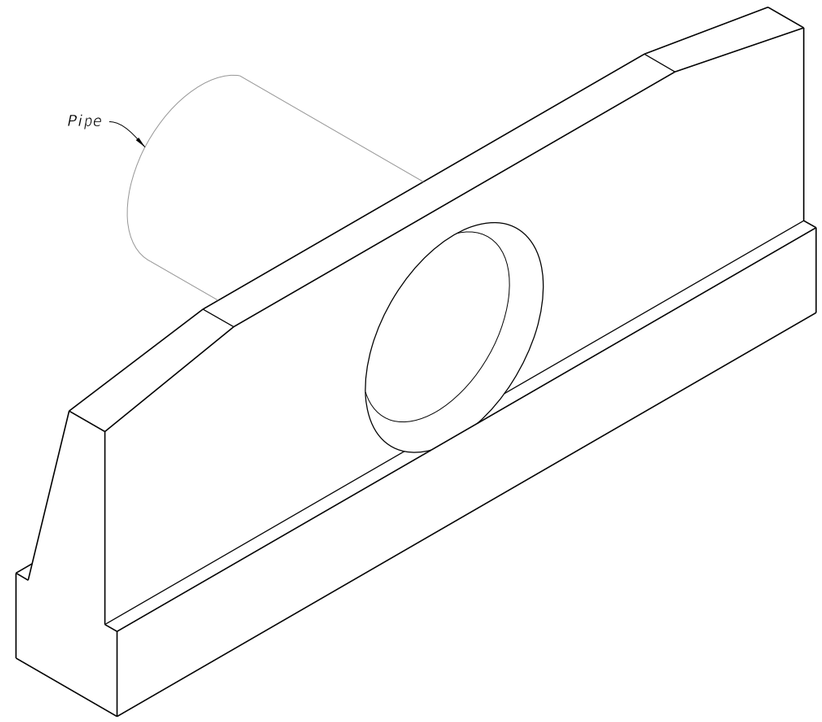
5. Endwall dimensions, locations and positions are for round and elliptical concrete pipe and for round and pipe-arch corrugated metal pipe. Round concrete pipe shown.

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:



STRAIGHT CONCRETE ENDWALL

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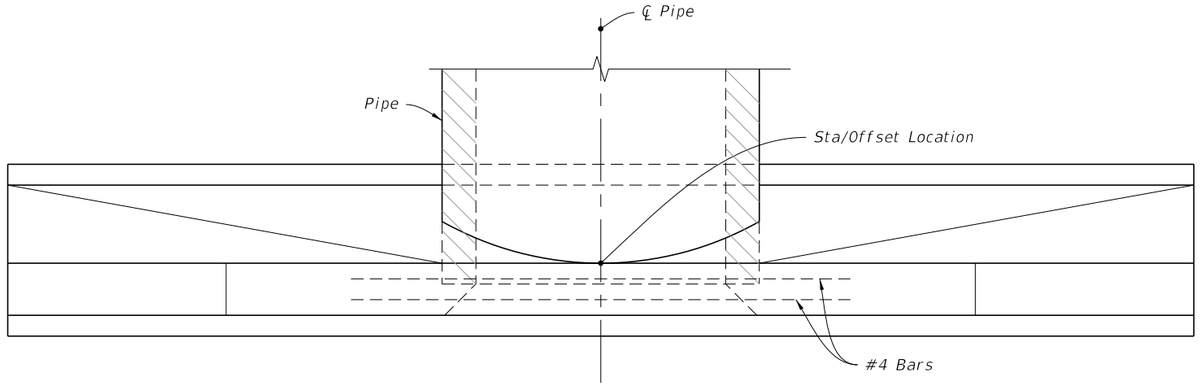
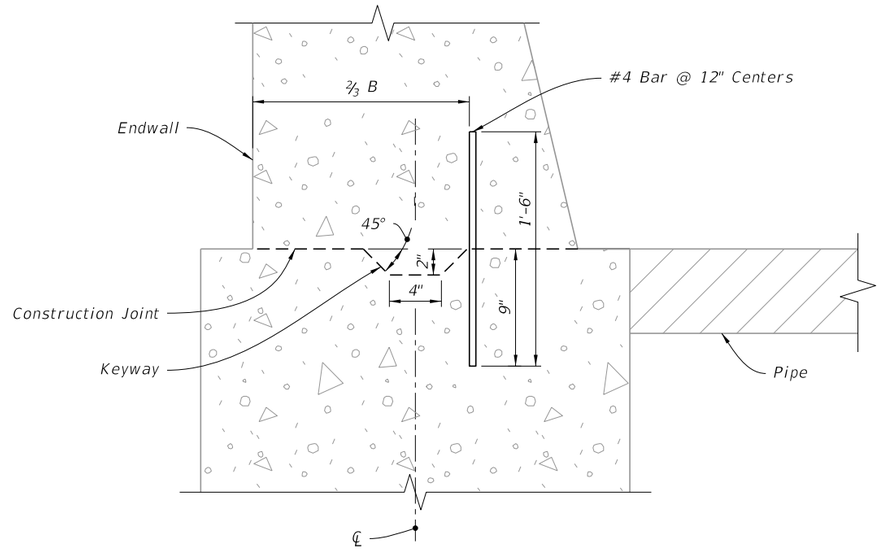
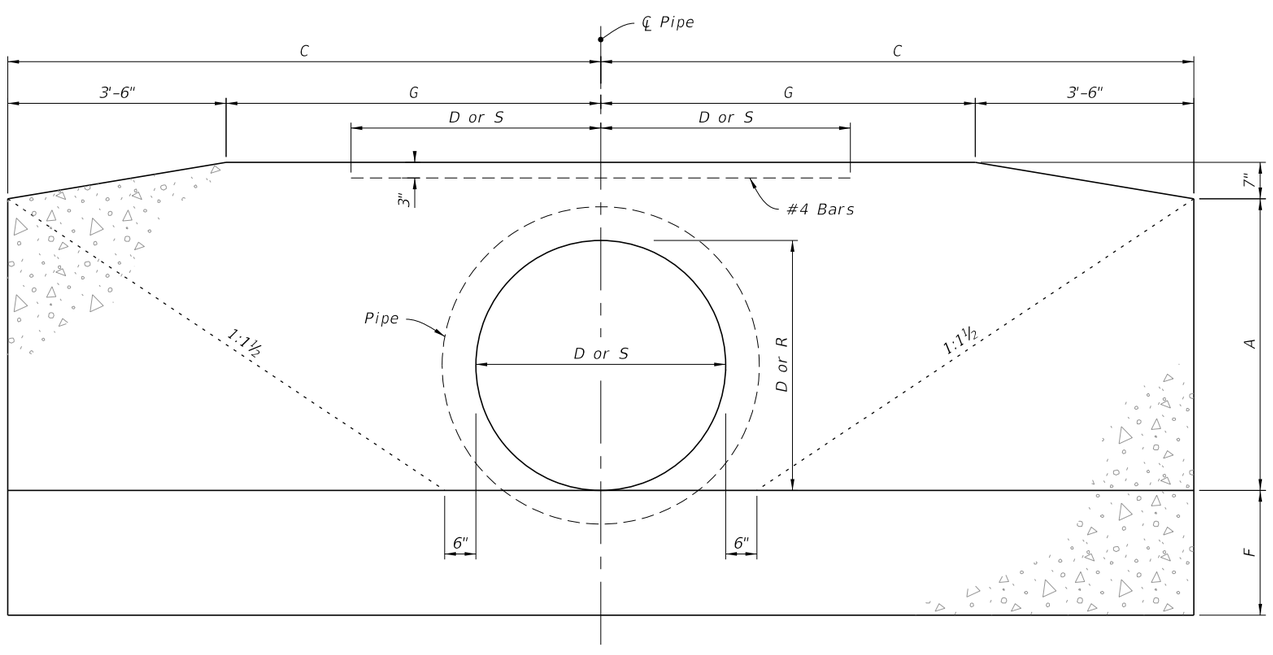


PLAN

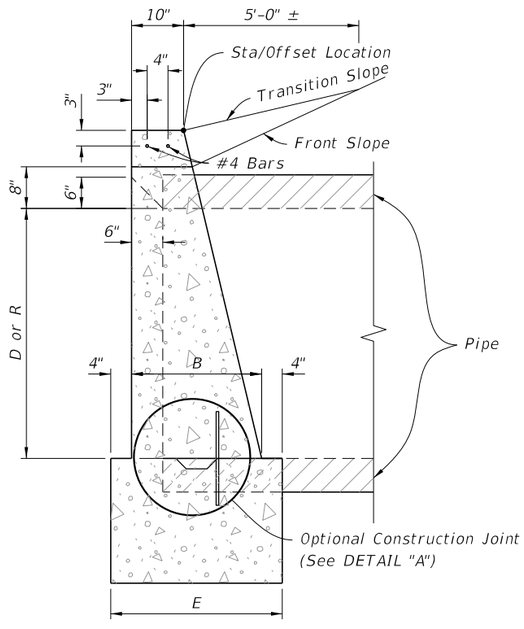


NOTE: Keyway and Dowels are required for optional construction joint.

DETAIL "A"



FRONT ELEVATION



SIDE ELEVATION

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CONCRETE ENDWALL DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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ROUND CONCRETE AND CORRUGATED METAL PIPE

Pipe	Dia. D	Opening Area (SF) Number Of Pipes 1	2	3	4	Dimensions A	B	C	E	F	G	Y	X 0°	15°	30°	45°	Class I Concrete (CY) Number Of Pipe And Skew Angle Of Pipe (α) Single 0°	Double 0°	15°	30°	45°	Triple 0°	15°	30°	45°	Quadruple 0°	15°	30°	45°	D
Concrete	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"
	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"
	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"
	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"
	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"
Corrugated Metal	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"
	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"
	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"
	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"
	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"
	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"
	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"
	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"
	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"

ELLIPTICAL CONCRETE AND CORRUGATED METAL PIPE

Pipe	Span S	Rise R	Opening Area (SF) Number Of Pipes 1	2	3	4	Dimensions A	B	C	E	F	G	Y	X 0°	15°	30°	45°	Class I Concrete (CY) Number Of Pipe And Skew Angle Of Pipe (α) Single 0°	Double 0°	15°	30°	45°	Triple 0°	15°	30°	45°	Quadruple 0°	15°	30°	45°	Span	Rise	Approx. Equiv. Round
Concrete	18"	12"	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"
	23"	14"	1.8	3.6	5.4	7.2	1'-10"	1'-3"	4'-2½"	1'-11"	1'-3"	8½"	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"
	30"	19"	3.3	6.6	9.9	13.2	2'-3"	1'-4"	5'-1½"	2'-0"	1'-4"	1'-7½"	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"
	38"	24"	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"
	45"	29"	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"
	53"	34"	10.2	20.4	30.6	40.8	3'-6"	1'-7"	7'-11½"	2'-3"	1'-7"	4'-5½"	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"
	60"	38"	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"
	68"	43"	16.6	33.2	49.8	66.4	4'-3"	1'-10"	9'-8½"	2'-6"	1'-10"	6'-2½"	8'-10"	8'-10"	9'-2"	10'-2"	12'-6"	6.63	9.01	9.09	9.38	10.00	11.39	11.56	12.13	13.36	13.77	14.02	14.88	16.73	43"	68"	54"
	76"	48"	20.5	41.0	61.5	82.0	4'-8"	2'-1"	10'-8"	2'-9"	2'-0"	7'-2"	9'-9"	9'-9"	10'-1"	11'-3"	13'-9"	8.66	11.74	11.85	12.22	13.02	14.82	15.04	15.77	17.37	17.91	18.23	19.34	21.74	48"	76"	60"
	83"	53"	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"
	91"	58"	29.5	59.0	88.5	118.0	5'-6"	2'-10"	12'-6½"	3'-6"	2'-10"	9'-0½"	11'-4"	11'-4"	11'-9"	13'-1"	16'-0"	16.46	22.26	22.46	23.16	24.66	28.05	28.46	29.85	32.85	33.85	34.46	36.55	41.05	58"	91"	72"
Corrugated Metal	17"	13"	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	17"	13"	15"
	21"	15"	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	21"	15"	18"
	28"	20"	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	28"	20"	24"
	35"	24"	4.3	8.6	12.9	17.2	2'-8"	1'-4"	5'-11½"	2'-0"	1'-4"	2'-5½"	4'-0"	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	35"	24"	30"
	42"	29"	5.9	11.8	17.7	23.6	3'-1"	1'-5"	6'-10½"	2'-1"	1'-5"	3'-4½"	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	42"	29"	36"
	49"	33"	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	49"	33"	42"
	57"	38"	10.6	21.2	31.8	42.4	3'-10"	1'-7"	8'-7½"	2'-3"	1'-7"	5'-1½"	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	57"	38"	48"
	64"	43"	13.2	26.4	39.6	52.8	4'-3"	1'-8"	9'-6½"	2'-4"	1'-8"	6'-0½"	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	64"	43"	54"
	71"	47"	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	71"	47"	60"

NOTES:

1. Dimension X is calculated as: X = Y*SEC α.

2. Select tabular quantities using skew values as follows:

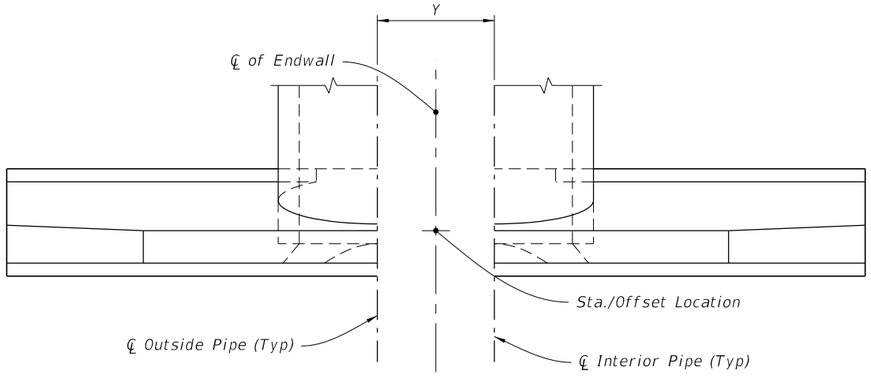
End Skew to Pipe	Use Tabulated Value
0° to 5°	0°
6° to 15°	15°
16° to 30°	30°
31° or Over	45°

CONCRETE AND METAL PIPE TABLES

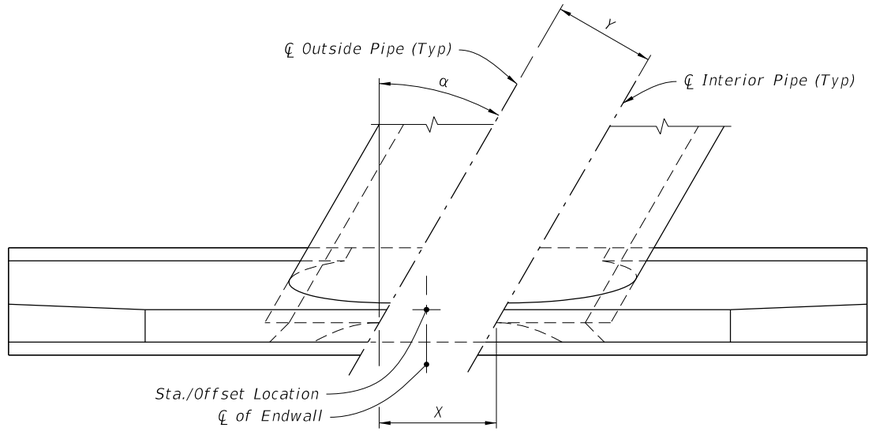
$STINE$

$DATE$

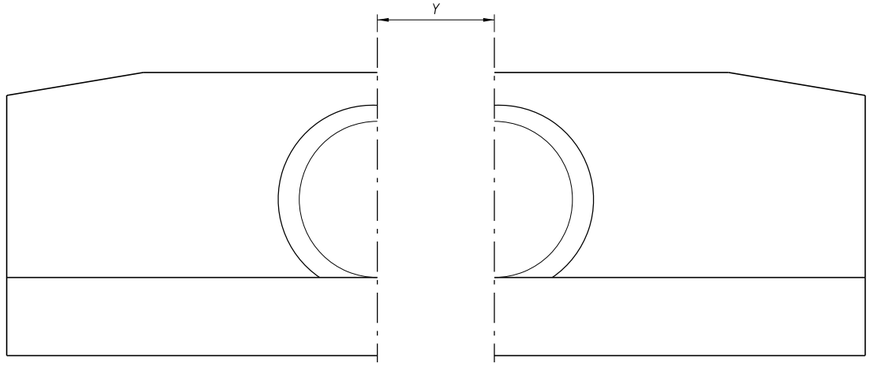
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX 430-030	SHEET 3 of 4



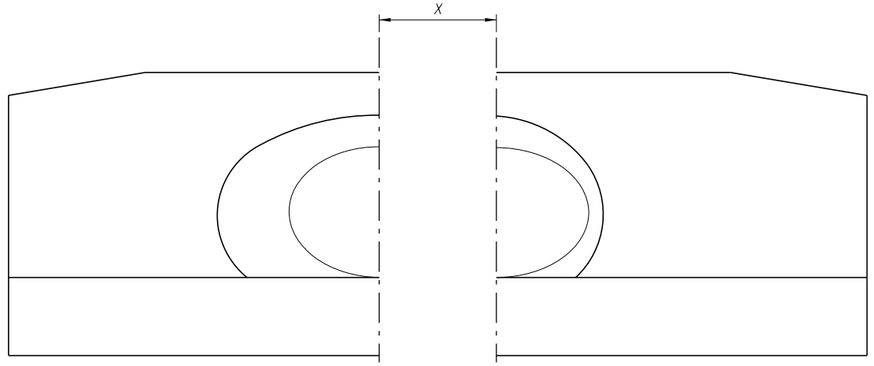
PLAN



PLAN



FRONT ELEVATION



FRONT ELEVATION

NORMAL PIPE

SKEWED PIPE

(Multiple Pipe Shown, Single Pipe Similar)

LEGEND:

α Pipe Skew Angle
Y Center to Center between pipes
X Center to Center along front of Headwall

SPACING FOR MULTIPLE PIPES

9:19:42 AM

2/15/2023

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX	SHEET
11/01/19						430-030	4 of 4

GENERAL NOTES:

1. Use Class II concrete.

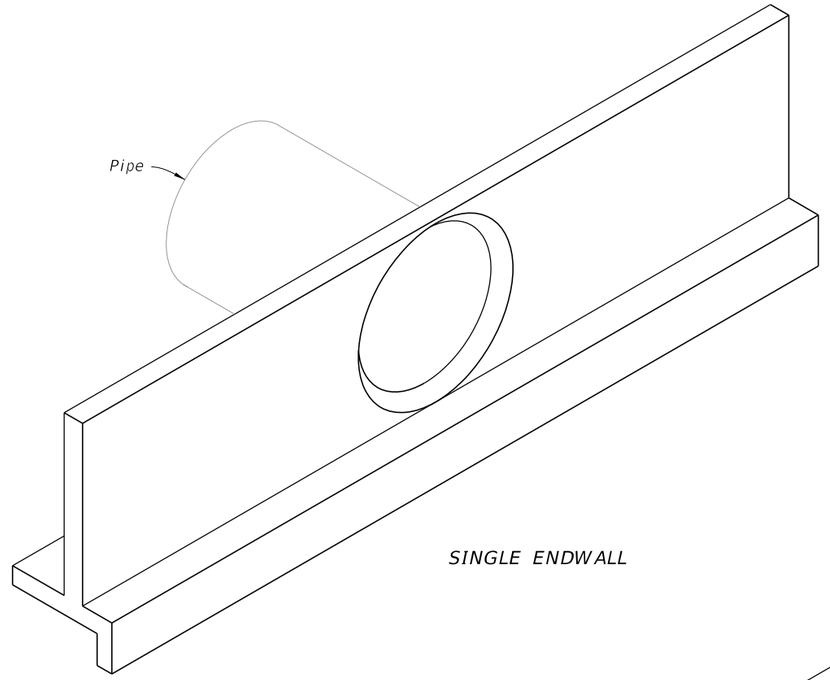
2. Reinforcing steel is either Grade 40 or 60.

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.

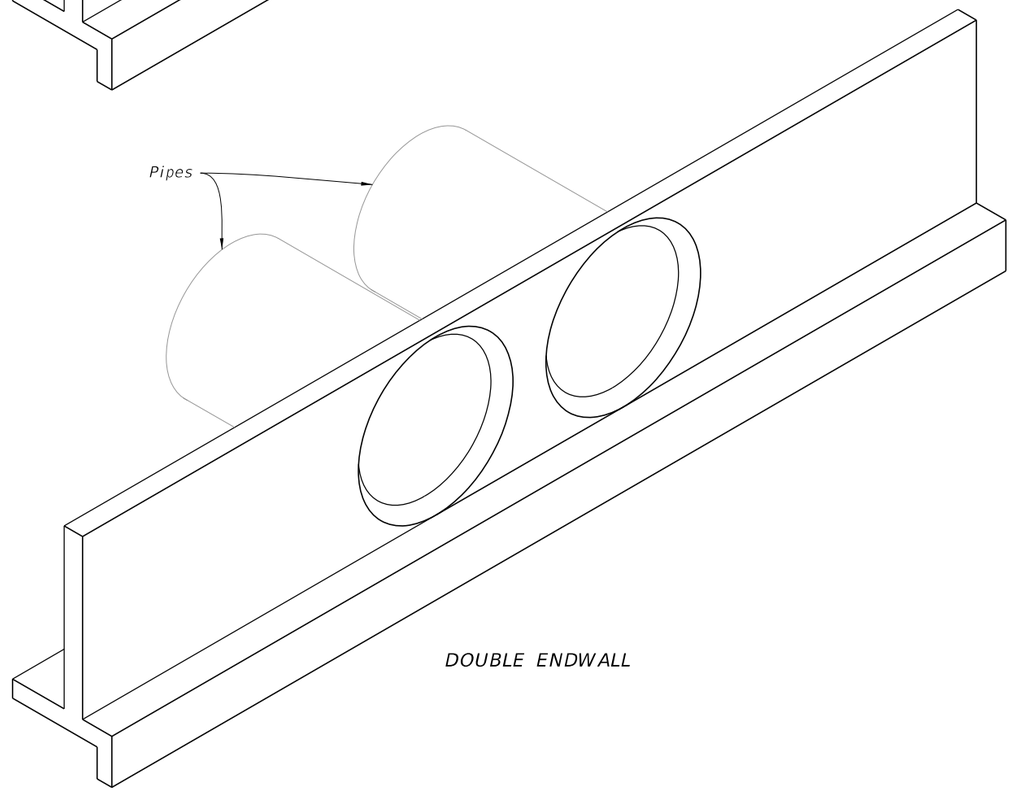
4. Chamfer all exposed edges and corners ¾" unless otherwise shown.

5. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:



SINGLE ENDWALL

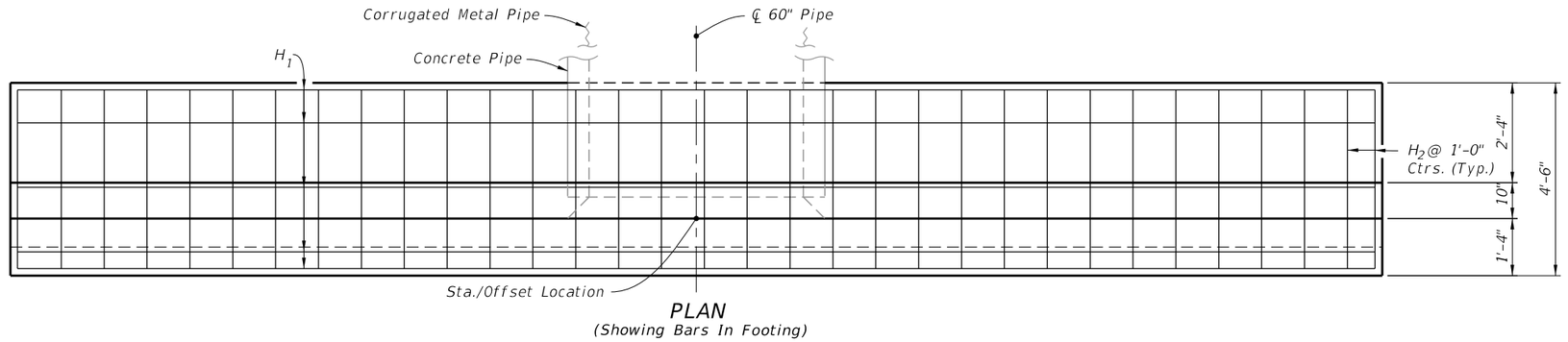


DOUBLE ENDWALL

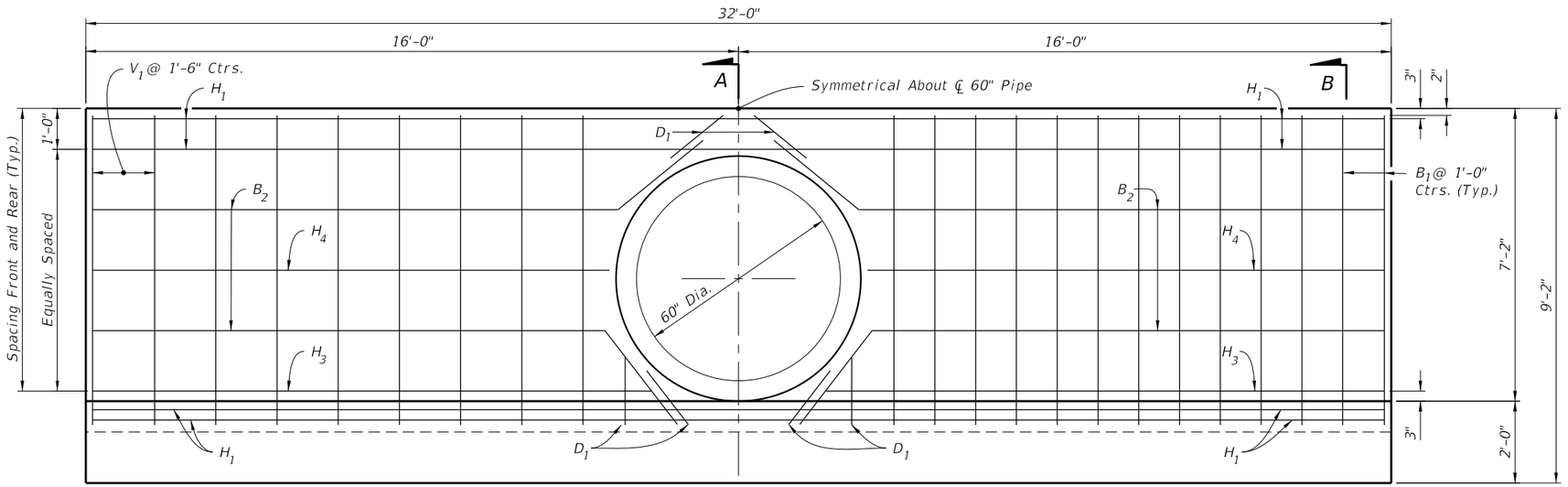
STRAIGHT CONCRETE ENDWALLS 60" PIPE

10/29/2019 8:16:39 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 60" PIPE	INDEX	SHEET
11/01/19						430-031	1 of 3



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)

A

HALF ELEVATION
(Showing Bars in Back Face of Wall)

B

NOTES:

1. 2" clearance on all reinforcement, unless otherwise shown.
2. Cut and bend B_2 and B_3 Bars as shown.
3. All bar dimensions are out to out.

LEGEND:

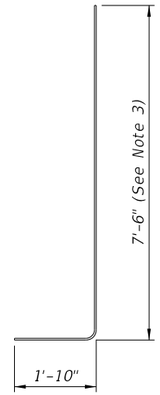
H = Horizontal Bars B = Bent Bars
V = Vertical Bars D = Dowels or Diagonal Bars

SINGLE 60" PIPE ESTIMATED QUANTITIES

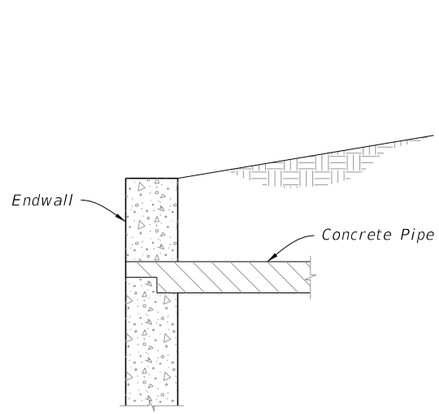
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	11.3	11.4
Reinforcing Steel	Lb.	695	695

BILL OF REINFORCING STEEL

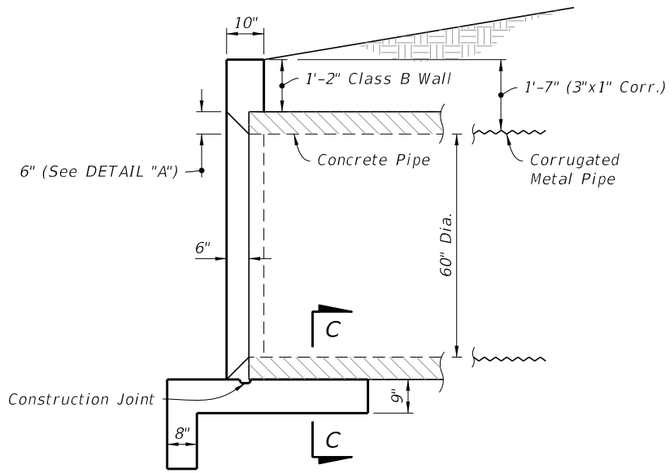
MARK	SIZE	NO. REQD.	LENGTH
H_1	4	9	31'-8"
H_2	4	32	4'-2"
H_3	4	4	13'-9"
H_4	4	4	12'-4"
V_1	4	18	7'-6"
B_1	4	26	9'-4"
B_2	4	4	31'-8"
D_1	4	8	1'-8"



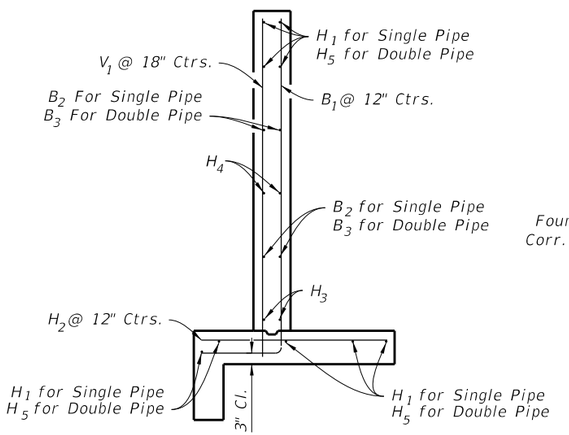
BAR B_1
BENDING DIAGRAM



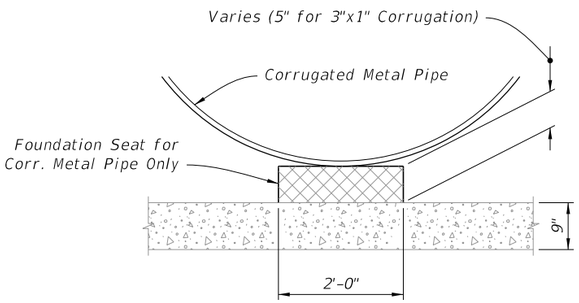
DETAIL "A"
(Concrete Pipe Optional Entrance)



SECTION A-A
(Rebar Not Shown)



SECTION B-B
(Typical Section)



SECTION C-C

SINGLE 60" PIPE ENDWALL DETAILS

10/29/2019 8:16:39 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 60" PIPE	INDEX	SHEET
11/01/19					430-031	2 of 3

NOTES:

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

LEGEND:

H = Horizontal Bars

V = Vertical Bars

B = Bent Bars

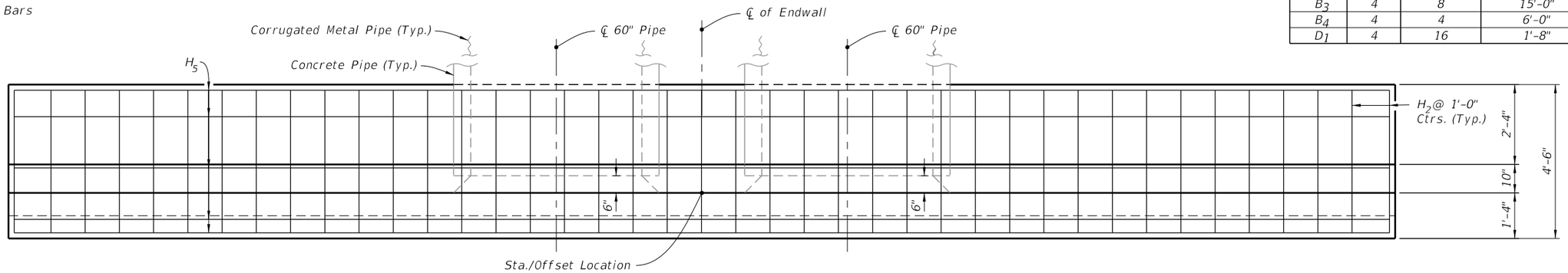
D = Dowels or Diagonal Bars

DOUBLE 60" PIPE ESTIMATED QUANTITIES

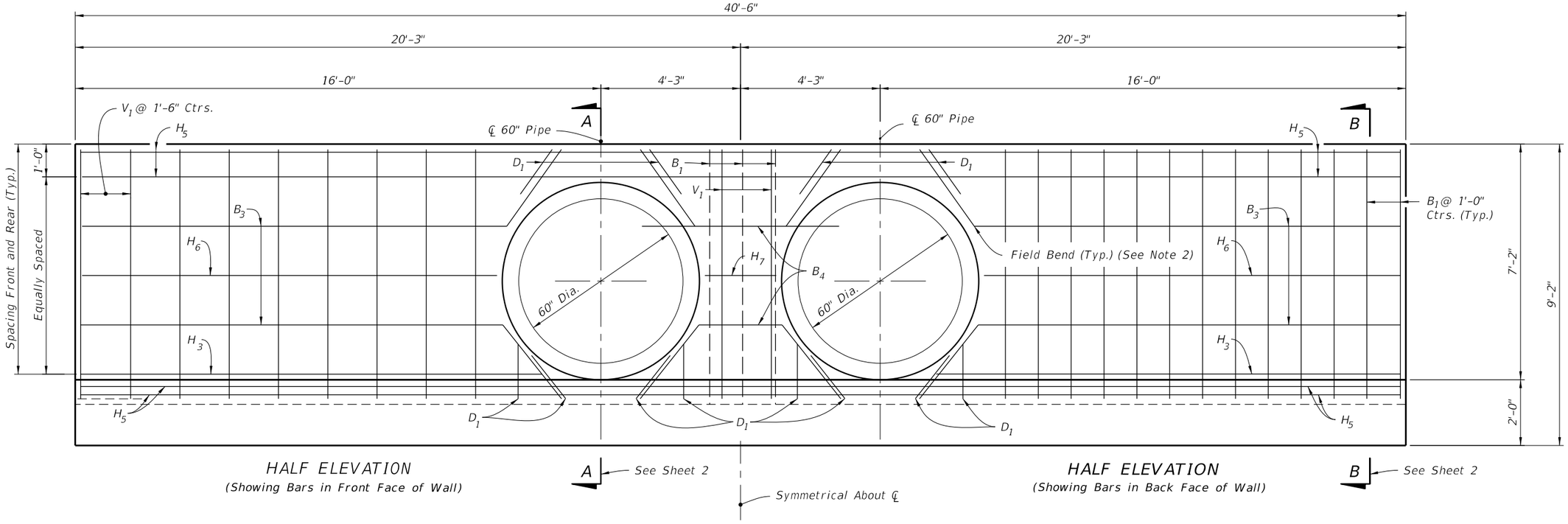
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	13.7	13.8
Reinforcing Steel	Lb.	824	824

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH
H_2	4	41	4'-2"
H_3	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"
B_1	4	29	9'-4"
B_3	4	8	15'-0"
B_4	4	4	6'-0"
D_1	4	16	1'-8"



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)

A See Sheet 2

Symmetrical About ℄

HALF ELEVATION
(Showing Bars in Back Face of Wall)

B See Sheet 2

DOUBLE 60" PIPE ENDWALL DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 60" PIPE	INDEX	SHEET
11/01/19						430-031	3 of 3

10/29/2019 8:16:40 AM

GENERAL NOTES:

1. Use Class II concrete.

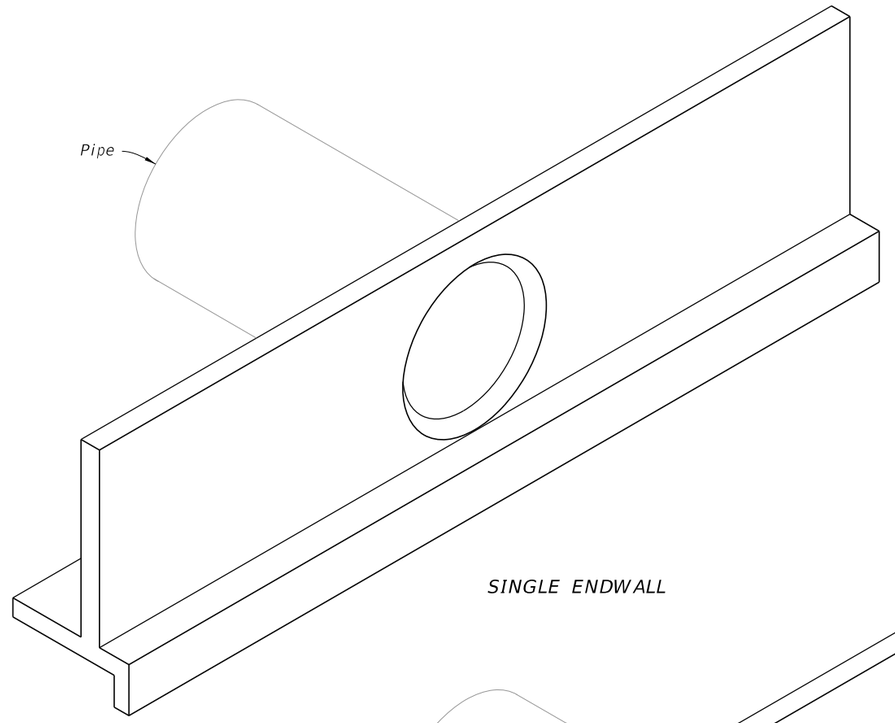
2. Reinforcing steel is either Grade 40 or 60.

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.

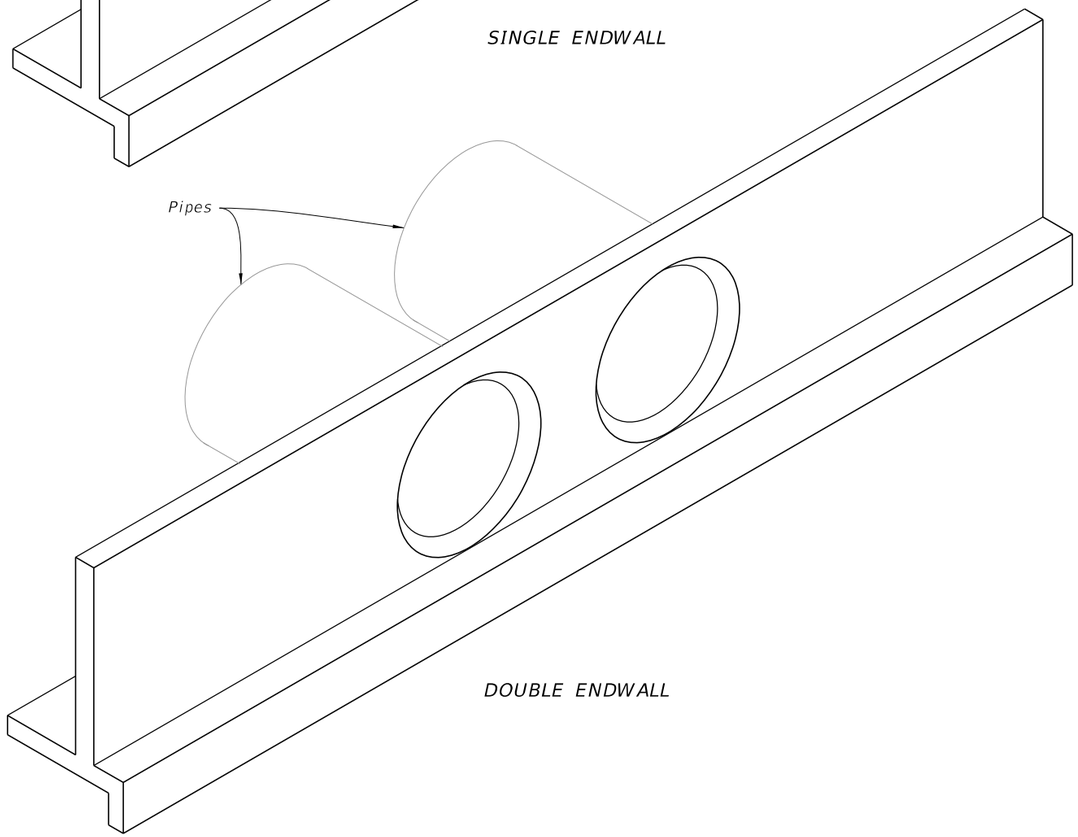
4. Chamfer all exposed edges and corners ¾" unless otherwise shown.

5. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:



SINGLE ENDWALL

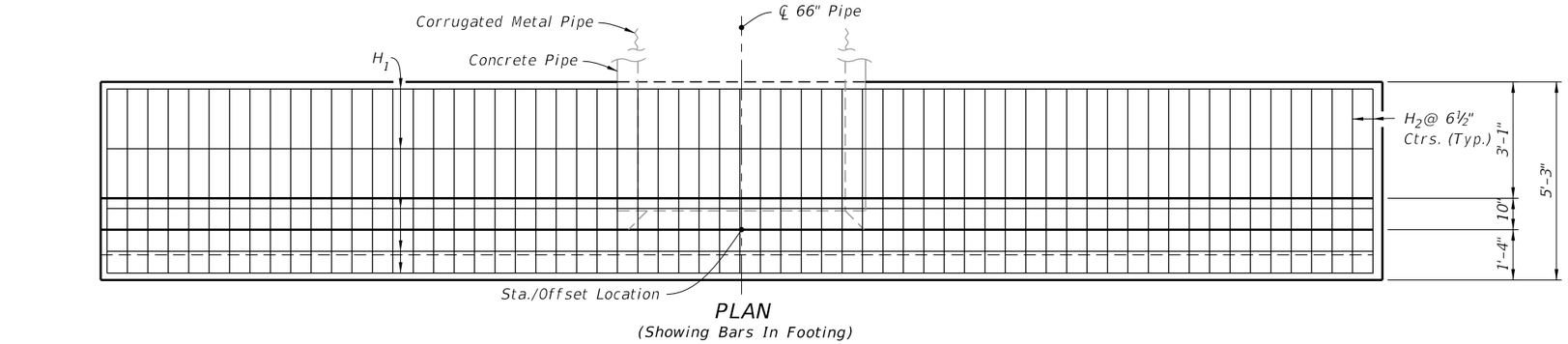


DOUBLE ENDWALL

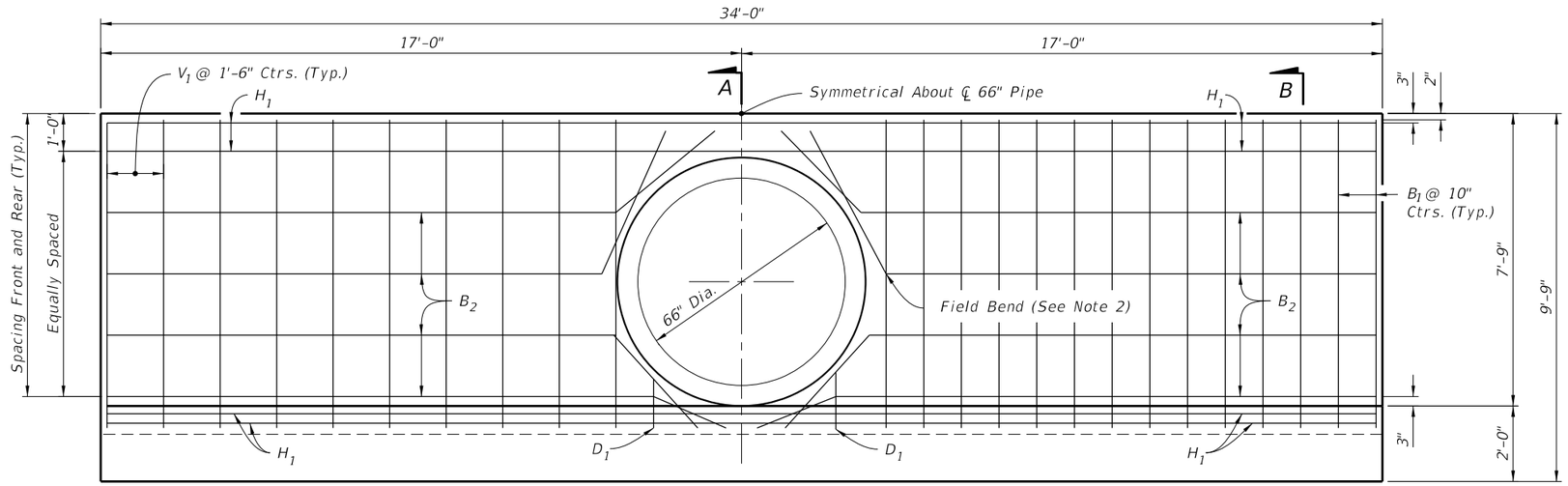
STRAIGHT CONCRETE ENDWALLS 66" PIPE

10/29/2019 8:16:41 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 66" PIPE	INDEX	SHEET
11/01/19						430-032	1 of 3



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)
A

HALF ELEVATION
(Showing Bars in Back Face of Wall)
B

NOTES:

1. 2" clearance on all reinforcement, unless otherwise shown.
2. Cut and bend B_2 Bars as shown.
3. All bar dimensions are out to out.

LEGEND:

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

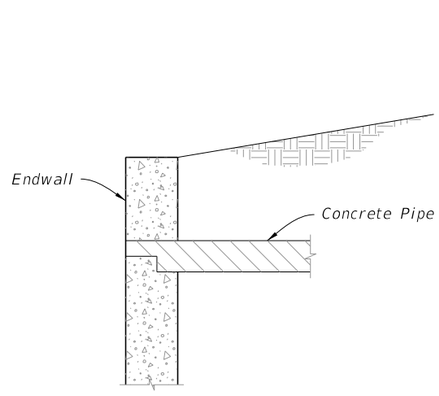
SINGLE 66" PIPE ENDWALL ESTIMATED QUANTITIES

ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	13.2	13.3
Reinforcing Steel	Lb.	1,170	1,170

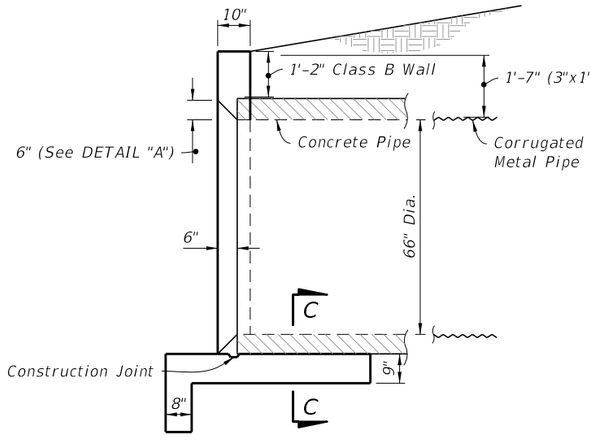
BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH
H_1	4	9	33'-8"
H_2	5	63	4'-11"
V_1	4	20	8'-1"
B_1	5	34	9'-11"
B_2	4	8	33'-8"
D_1	4	4	1'-8"

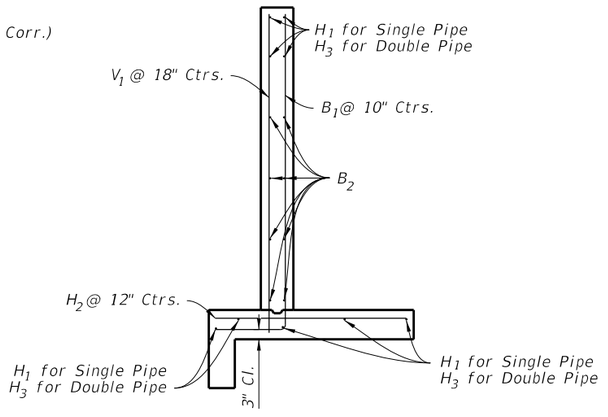
BAR B_1
BENDING DIAGRAM



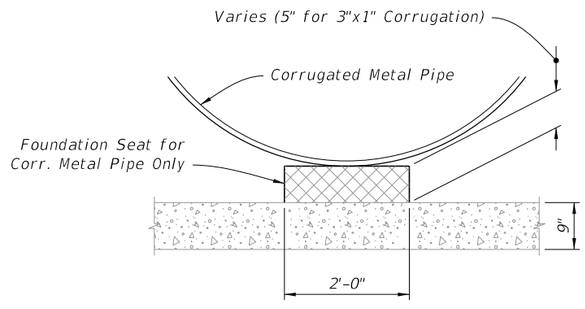
DETAIL "A"
(Concrete Pipe Optional Entrance)



SECTION A-A
(Rebar Not Shown)



SECTION B-B
(Typical Section)



SECTION C-C

SINGLE 66" PIPE ENDWALL DETAILS

10/29/2019 8:16:41 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 66" PIPE	INDEX	SHEET
11/01/19						430-032	2 of 3

NOTES:

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

LEGEND:

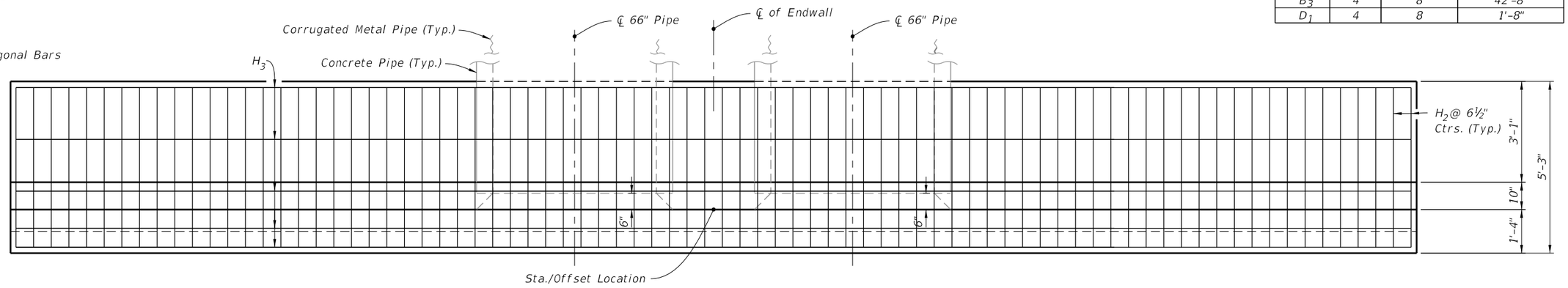
H = Horizontal Bars
V = Vertical Bars
B = Bent Bars
D = Dowels or Diagonal Bars

DOUBLE 66" PIPE ENDWALL ESTIMATED QUANTITIES

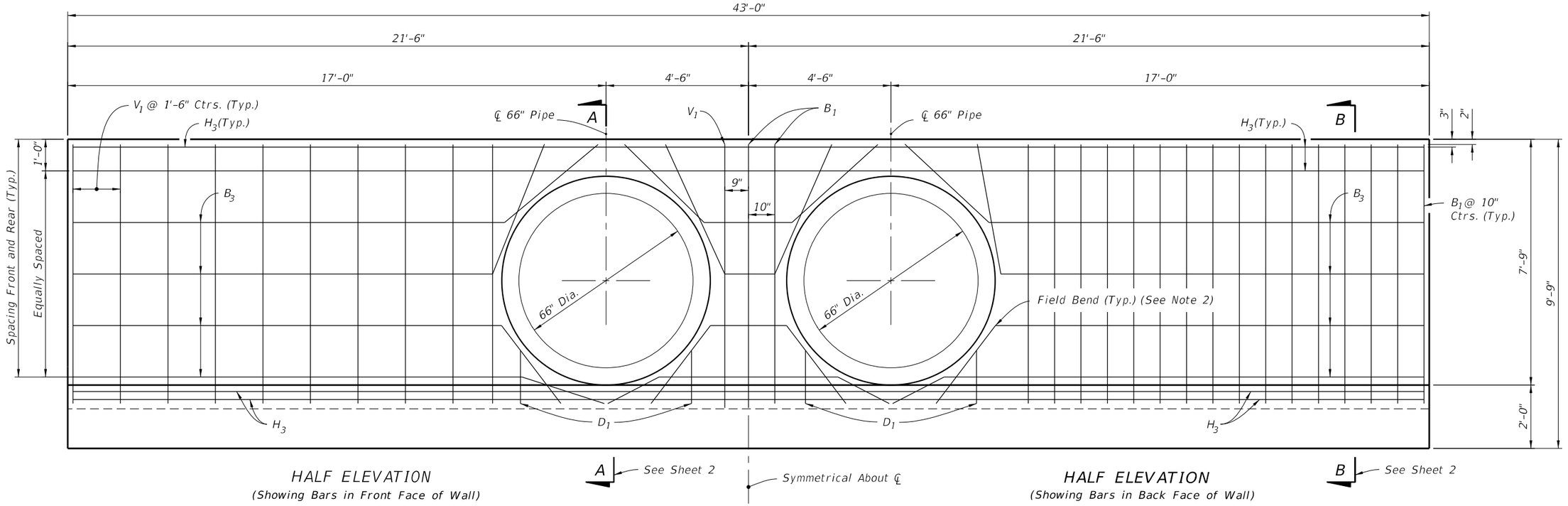
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	16.0	16.2
Reinforcing Steel	Lb.	1,406	1,406

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH
H_2	5	80	4'-11"
H_3	4	9	42'-8"
V_1	4	22	8'-1"
B_1	5	37	9'-11"
B_3	4	8	42'-8"
D_1	4	8	1'-8"



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)

HALF ELEVATION
(Showing Bars in Back Face of Wall)

DOUBLE 66" PIPE ENDWALL DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 66" PIPE	430-032	3 of 3

10/29/2019 8:16:42 AM

GENERAL NOTES:

1. Use Class II concrete.

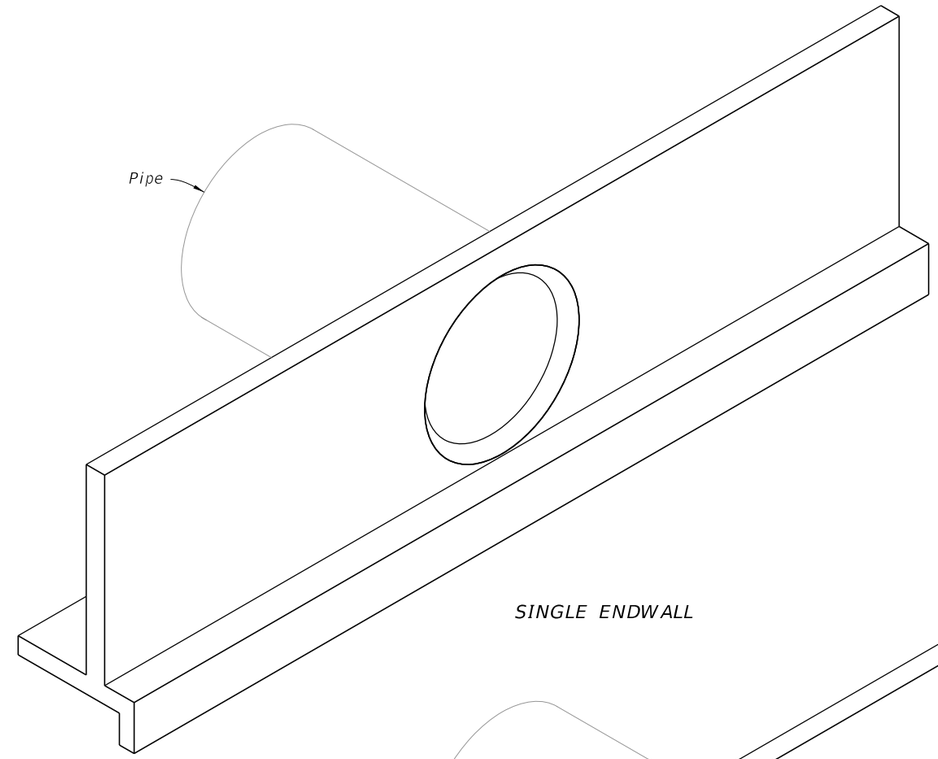
2. Reinforcing steel is either Grade 40 or 60.

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.

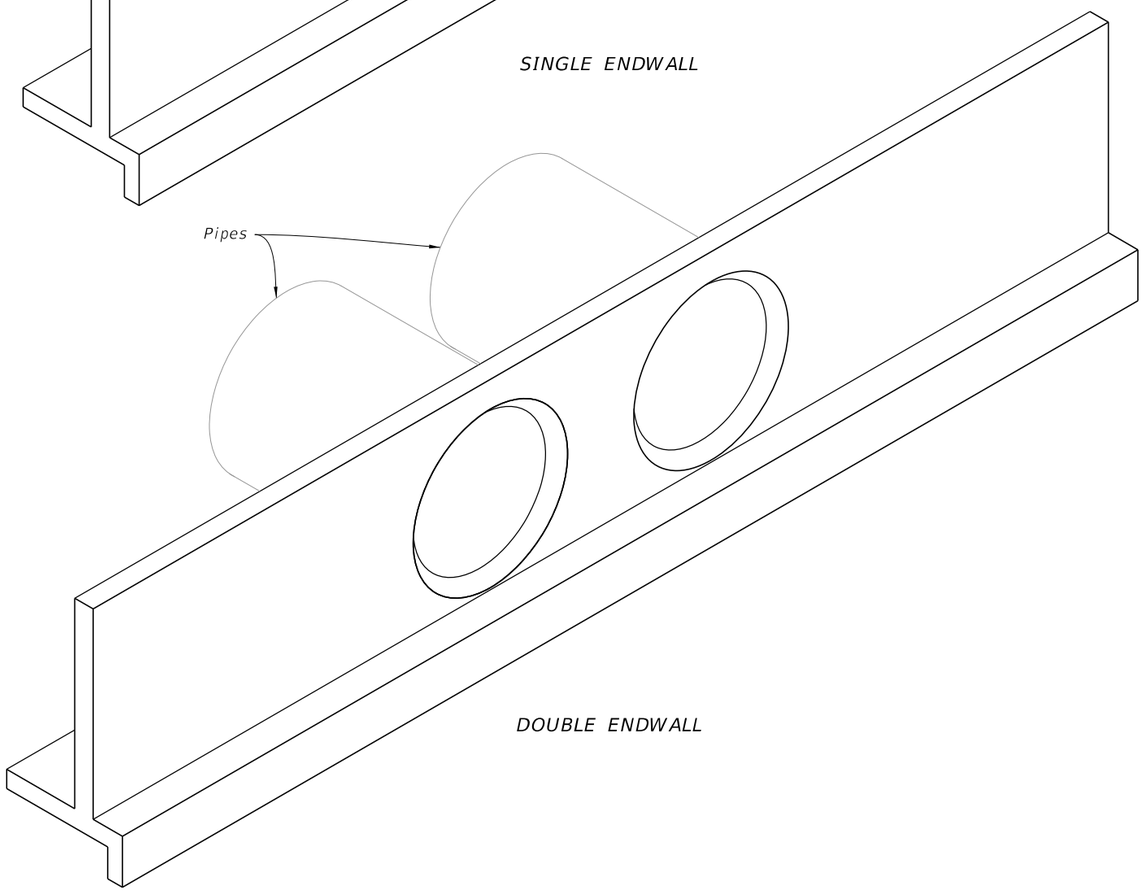
4. Chamfer all exposed edges and corners ¾" unless otherwise shown.

5. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:



SINGLE ENDWALL

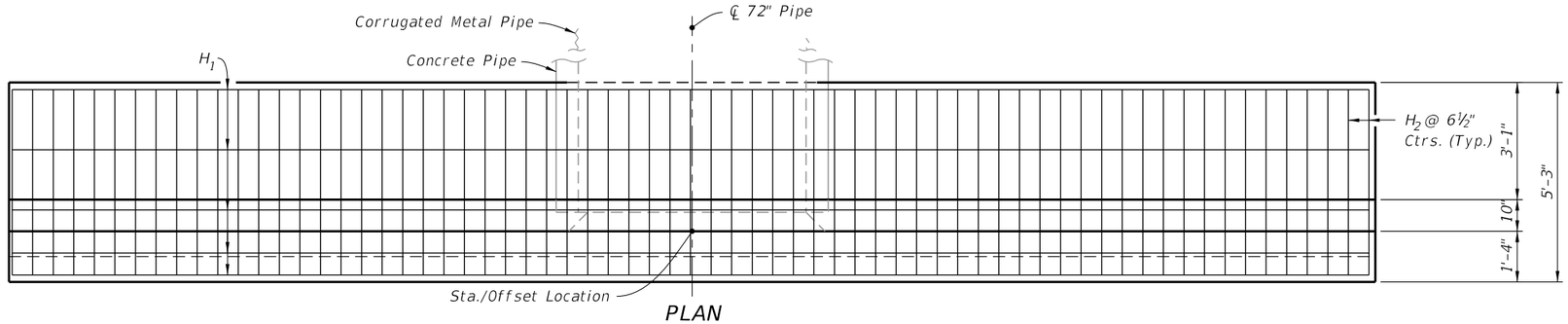


DOUBLE ENDWALL

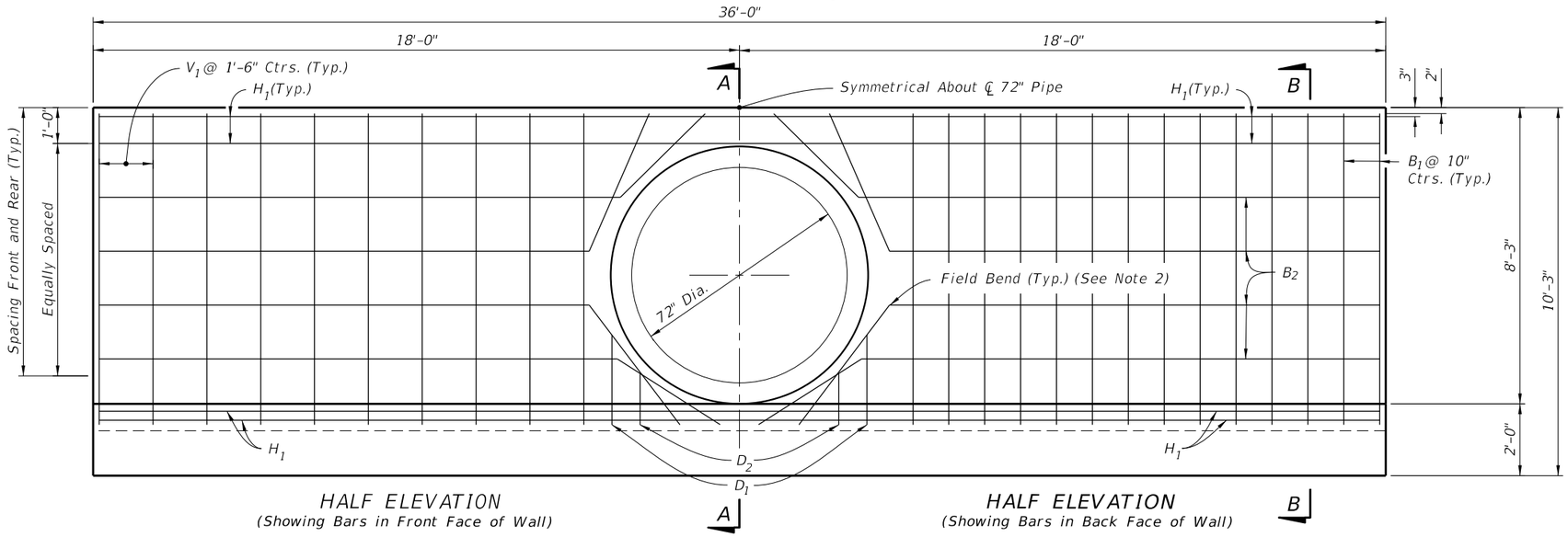
STRAIGHT CONCRETE ENDWALLS 72" PIPE

10/29/2019 8:16:43 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 72" PIPE	INDEX	SHEET
11/01/18						430-033	1 of 3



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)
A

HALF ELEVATION
(Showing Bars in Back Face of Wall)
B

NOTES:

1. 2" clearance on all reinforcement, unless otherwise shown.
2. Cut and bend B_2 Bars as shown.
3. All bar dimensions are out to out.

LEGEND:

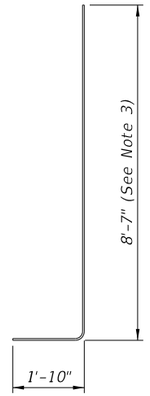
H = Horizontal Bars B = Bent Bars
V = Vertical Bars D = Dowels or Diagonal Bars

SINGLE 72" PIPE ENDWALL ESTIMATED QUANTITIES

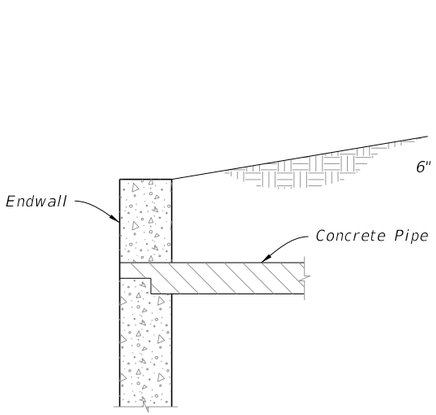
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	14.4	14.5
Reinforcing Steel	Lb.	1249	1249

BILL OF REINFORCING STEEL

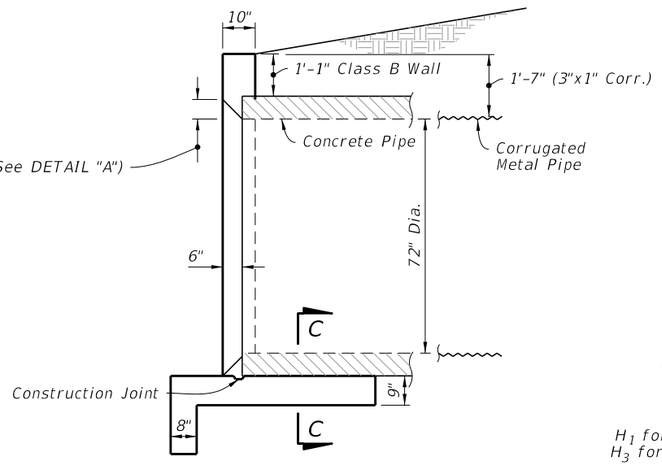
MARK	SIZE	NO. REQD.	LENGTH
H_1	4	9	35'-8"
H_2	5	68	4'-11"
V_1	4	20	8'-7"
B_1	5	34	10'-5"
B_2	4	8	35'-8"
D_1	4	4	2'-6"
D_2	4	4	1'-6"



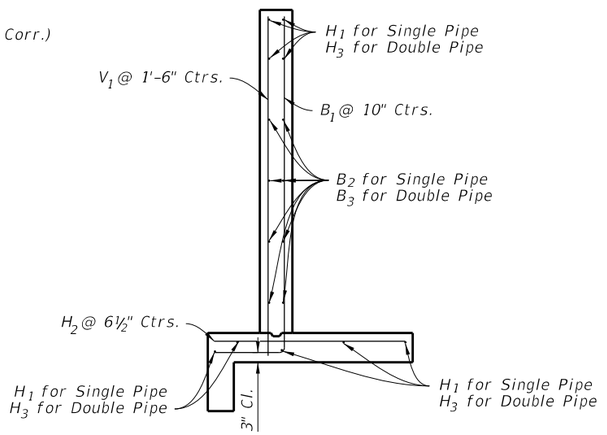
BAR B_1
BENDING DIAGRAM



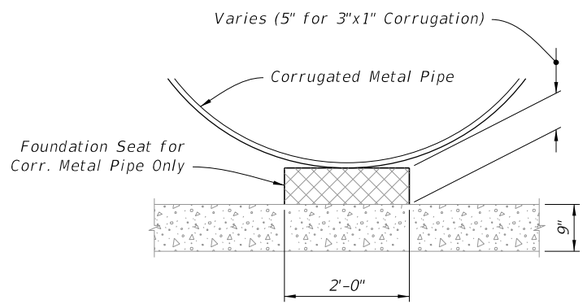
DETAIL "A"
(Concrete Pipe Optional Entrance)



SECTION A-A
(Rebar Not Shown)



SECTION B-B
(Typical Section)



SECTION C-C

SINGLE 72" PIPE ENDWALL DETAILS

10/29/2019 8:16:44 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 72" PIPE	INDEX	SHEET
11/01/19						430-033	2 of 3

NOTES:

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

LEGEND:

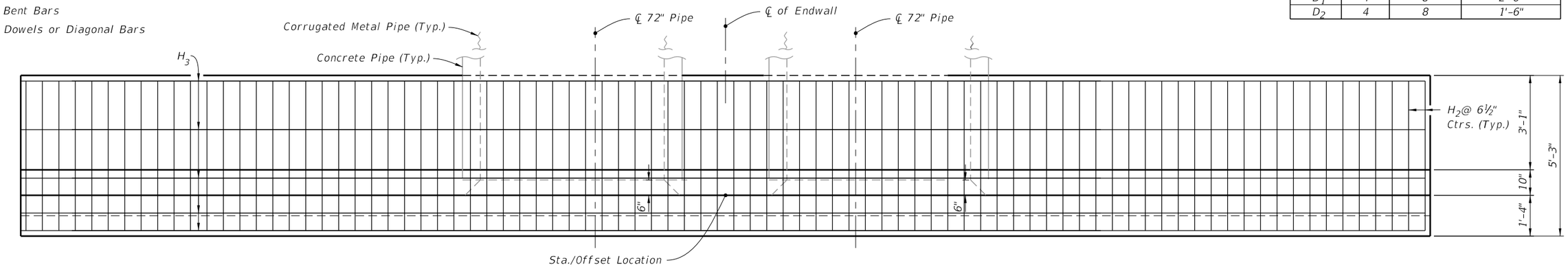
H = Horizontal Bars
V = Vertical Bars
B = Bent Bars
D = Dowels or Diagonal Bars

DOUBLE 72" PIPE ENDWALL ESTIMATED QUANTITIES

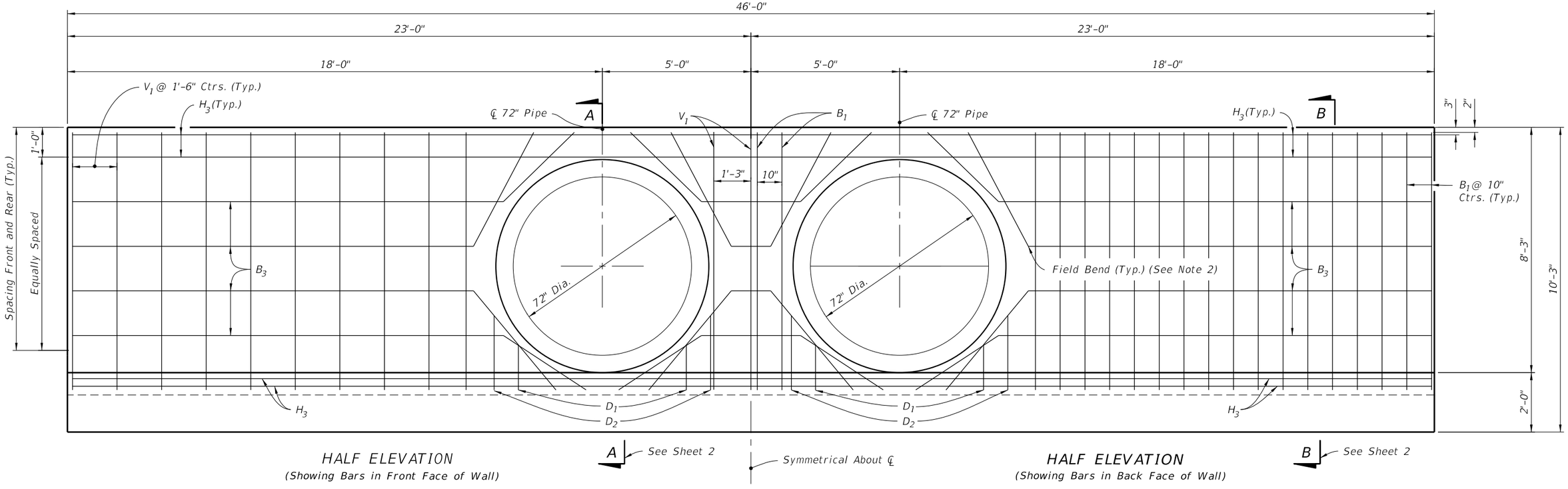
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	17.5	17.8
Reinforcing Steel	Lb.	1519	1519

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH
H_2	5	85	4'-11"
H_3	4	9	45'-8"
V_1	4	23	8'-7"
B_1	5	38	10'-5"
B_3	4	8	45'-8"
D_1	4	8	2'-6"
D_2	4	8	1'-6"



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)

A See Sheet 2

Symmetrical About ℄

HALF ELEVATION
(Showing Bars in Back Face of Wall)

B See Sheet 2

DOUBLE 72" PIPE ENDWALL DETAILS

10/29/2019 8:16:45 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND DOUBLE 72" PIPE	INDEX	SHEET
11/01/19						430-033	3 of 3

GENERAL NOTES:

1. Use Class II concrete.

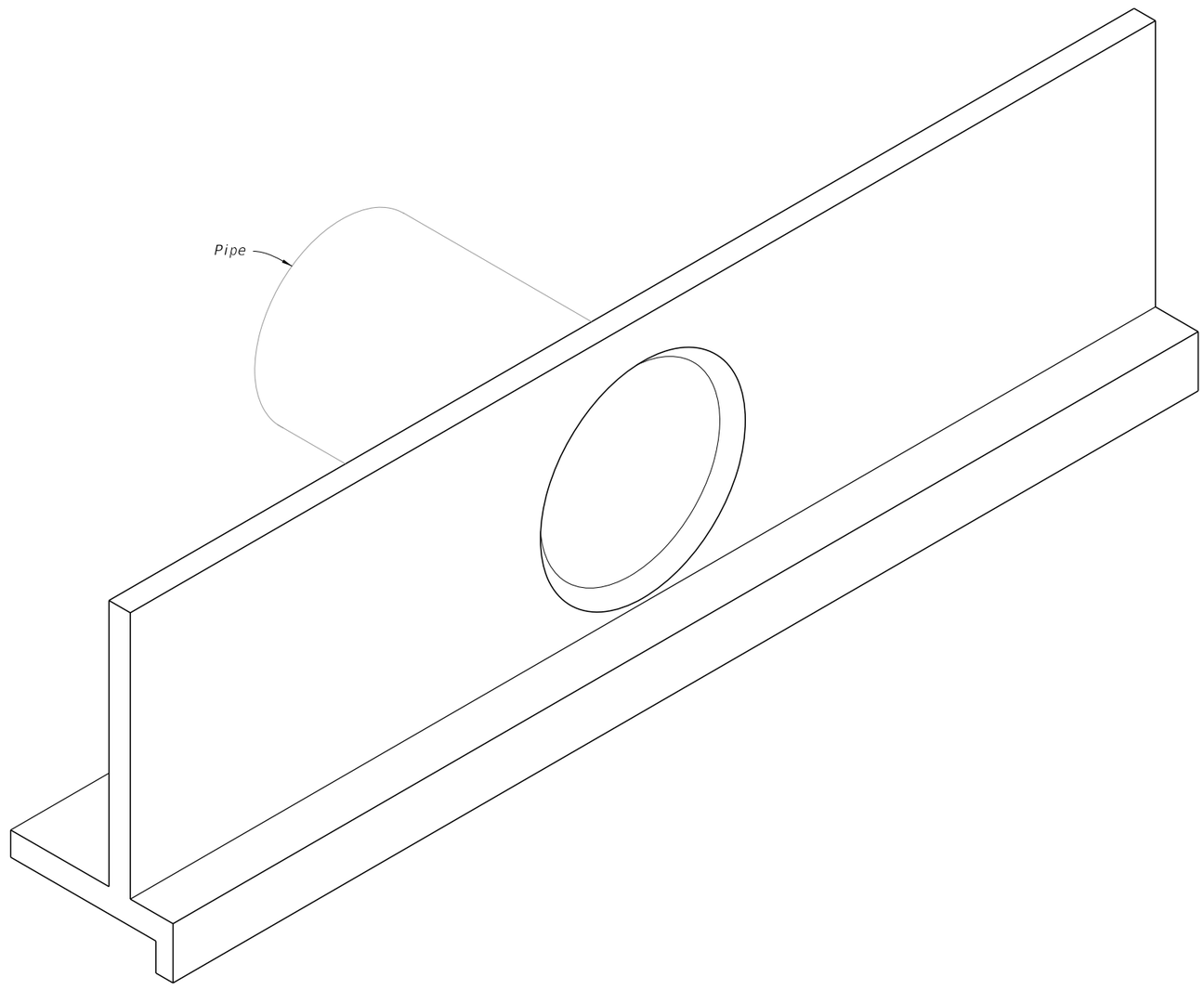
2. Reinforcing steel is either Grade 40 or 60.

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 ¾" unless otherwise shown.

5. Quantities shown are for estimating purposes only.

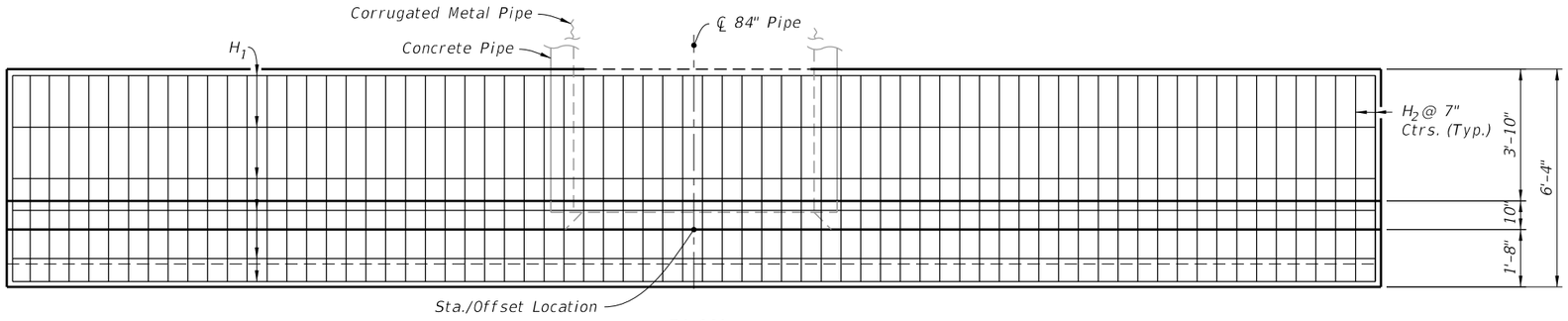
TABLE OF CONTENTS:



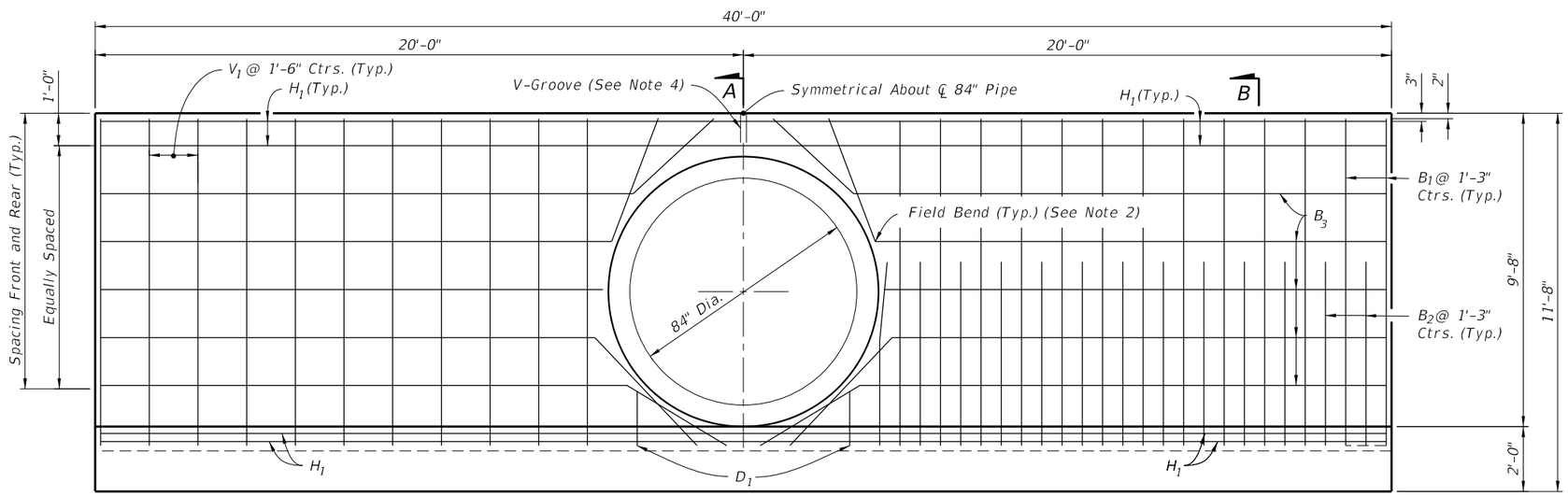
STRAIGHT CONCRETE ENDWALL SINGLE 84" PIPE

10/29/2019 8:16:45 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE 84" PIPE	INDEX	SHEET
11/01/19					430-034	1 of 2



PLAN
(Showing Bars In Footing)



HALF ELEVATION
(Showing Bars in Front Face of Wall)

A

HALF ELEVATION
(Showing Bars in Back Face of Wall)

B

NOTES:

1. 2" clearance on all reinforcement, unless otherwise shown.
2. Cut and/or bend B_3 Bars as shown.
3. All bar dimensions are out to out.
4. Install a ¾" V-Groove at the top, front and back.

SINGLE 84" PIPE ENDWALL ESTIMATED QUANTITIES

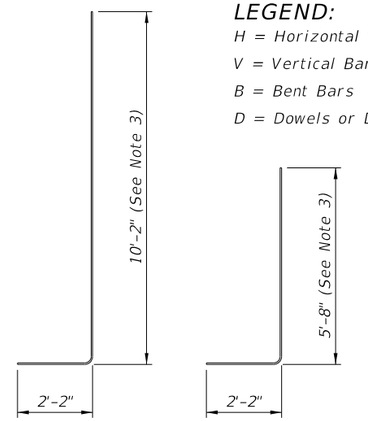
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	20.0	20.2
Reinforcing Steel	Lb.	2,095	2,095

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH
H_1	4	6	39'-8"
H_2	6	69	6'-0"
V_1	4	22	10'-2"
B_1	6	26	12'-4"
B_2	6	26	7'-10"
B_3	4	14	39'-8"
D_1	4	4	2'-0"

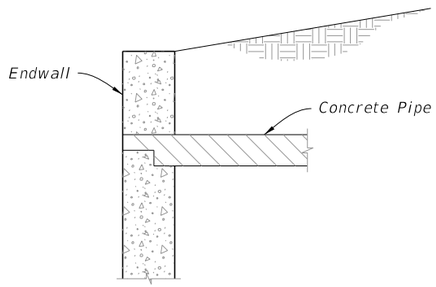
LEGEND:

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

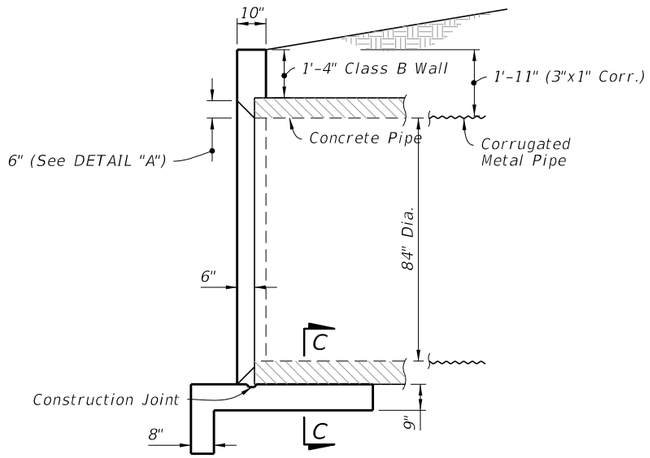


BAR B_1 BAR B_2

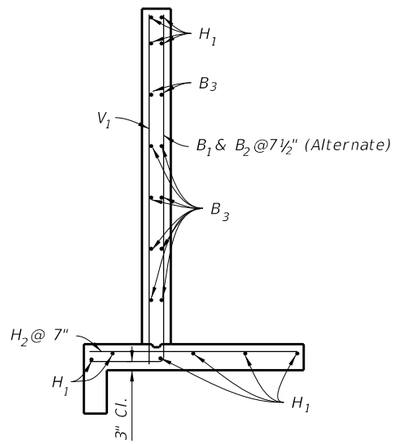
BENDING DIAGRAM



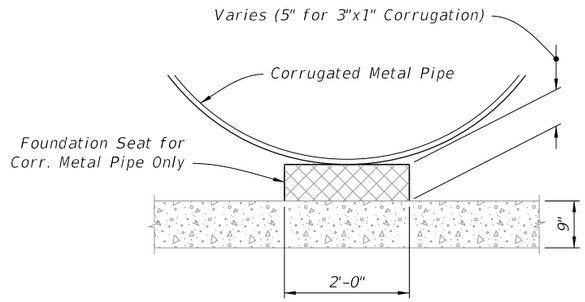
DETAIL "A"
(Concrete Pipe Optional Entrance)



SECTION A-A
(Rebar Not Shown)



SECTION B-B
(Typical Section)



SECTION C-C

SINGLE 84" PIPE ENDWALL DETAILS

10/29/2019 8:16:46 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE 84" PIPE	INDEX	SHEET
11/01/19						430-034	2 of 2

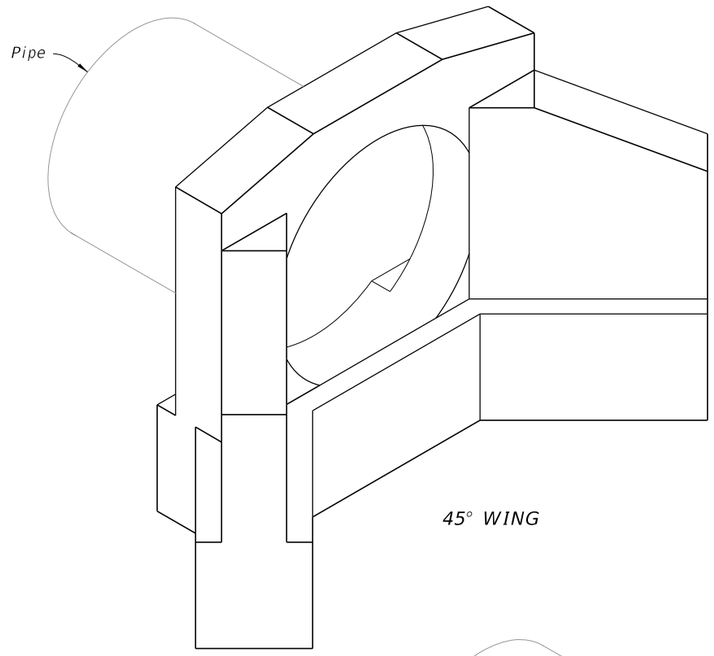
GENERAL NOTES:

1. Use Class I concrete.

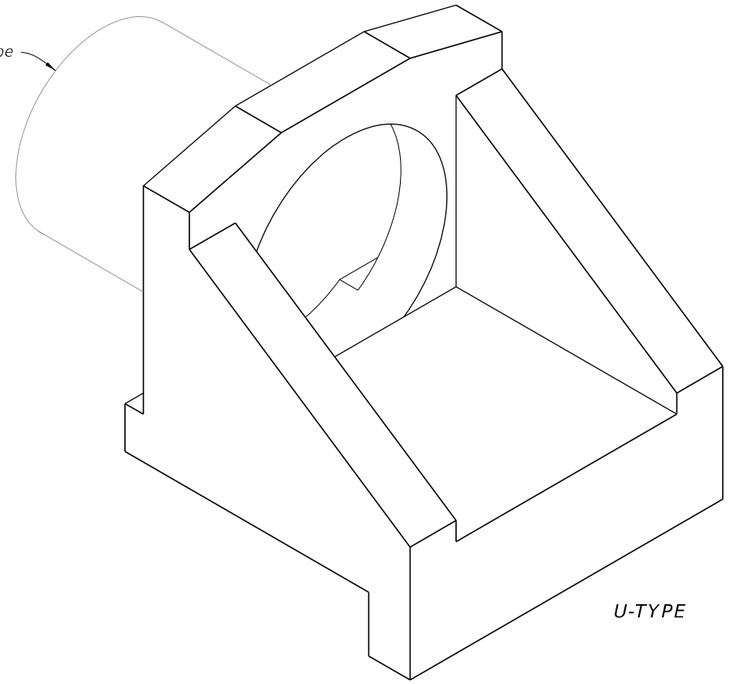
2. Chamfer all exposed edges and corners ¾" unless otherwise shown.

3. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:



45° WING

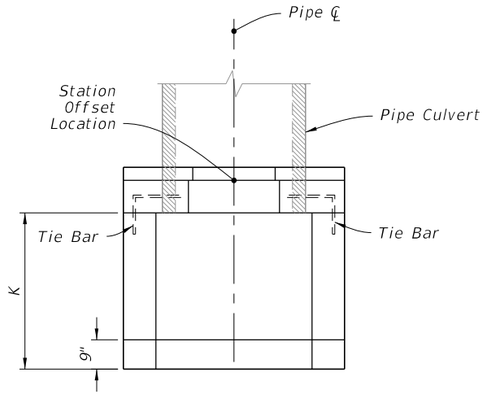


U-TYPE

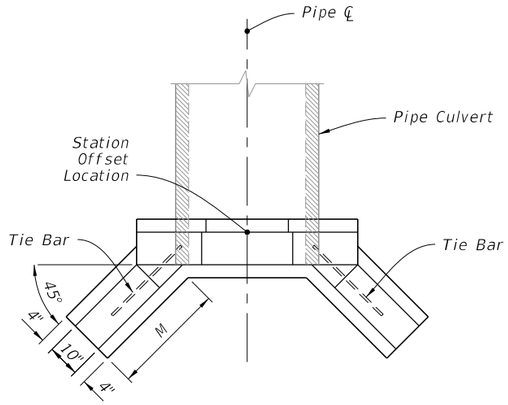
WINGED CONCRETE ENDWALLS

10/29/2019 8:16:47 AM

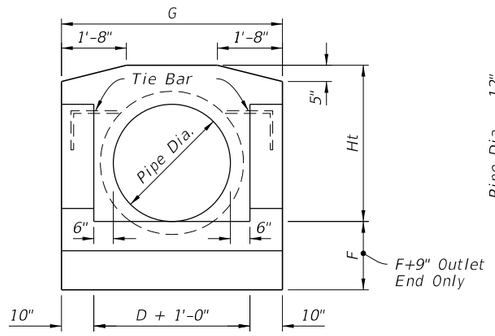
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	WINGED CONCRETE ENDWALLS	INDEX	SHEET
11/01/19						430-040	1 of 2



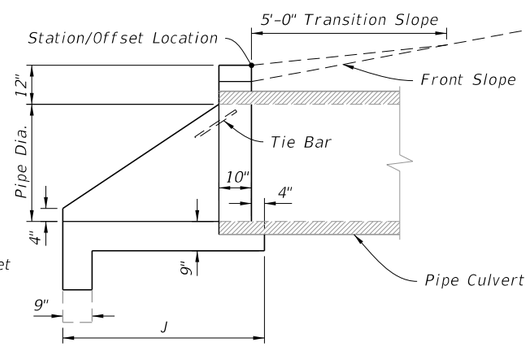
PLAN



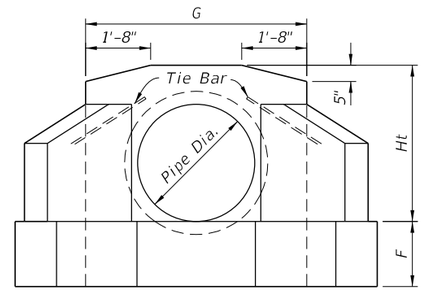
PLAN



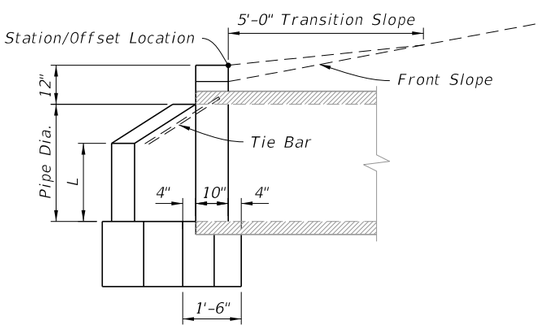
FRONT ELEVATION



SIDE ELEVATION



FRONT ELEVATION



SIDE ELEVATION

DIMENSIONS AND ESTIMATED QUANTITIES PIPE CULVERT ENDWALLS WITH U-TYPE WINGS													
DIMENSIONS							QUANTITIES IN ONE ENDWALL						
Pipe		Wall			Footing		Concrete, Class I, Total (CY)						Steel Tie Bars
							RCP		CMP		CIP		
Dia. D	Area (ft²)	G	Ht	K	F	J	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	
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"

ENDWALL WITH U-TYPE WINGS

DIMENSIONS AND ESTIMATED QUANTITIES PIPE CULVERT ENDWALLS WITH 45° WINGS									
DIMENSIONS							QUANTITIES IN ONE ENDWALL		
Pipe		Wall				Footing	Concrete, Class I		Steel Tie Bars
							Total (CY)		
Dia. D	Area (ft²)	Ht	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 45° WINGS

10/29/2019 8:16:47 AM

U-TYPE AND 45° ENDWALLS

LAST REVISION	REVISION	DESCRIPTION:			
11/01/19			FDOT FY 2020-21 STANDARD PLANS	WINGED CONCRETE ENDWALLS	INDEX 430-040 / SHEET 2 of 2

GENERAL NOTES:

1. Use Class I Concrete.

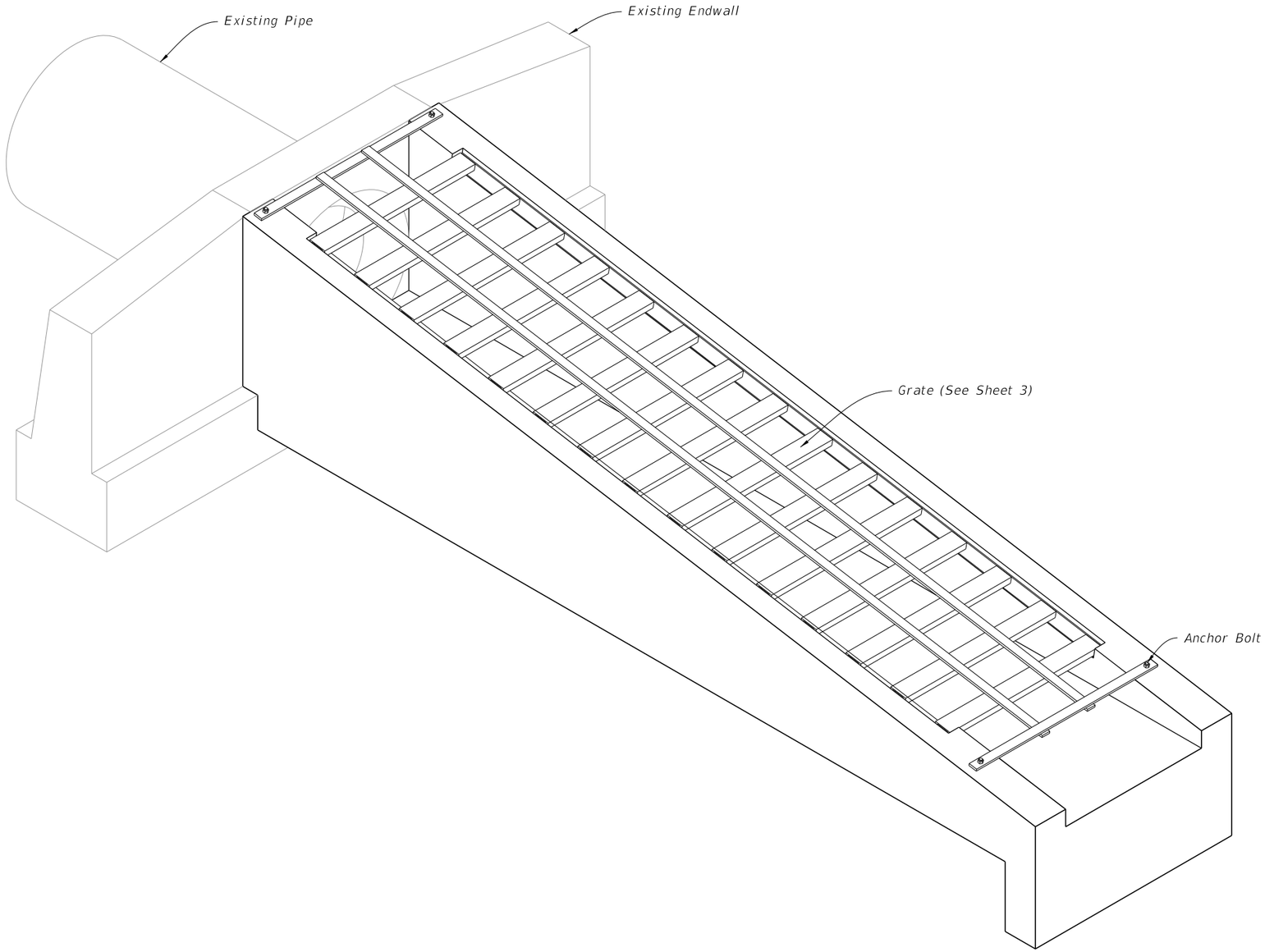
2. Channel section C3 x 6.0 may be substituted for the C4 x 5.4 channel.

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 1¼" 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.



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SAFETY MODIFICATIONS

10/29/2019 8:16:48 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SAFETY MODIFICATIONS FOR ENDWALLS	INDEX	SHEET
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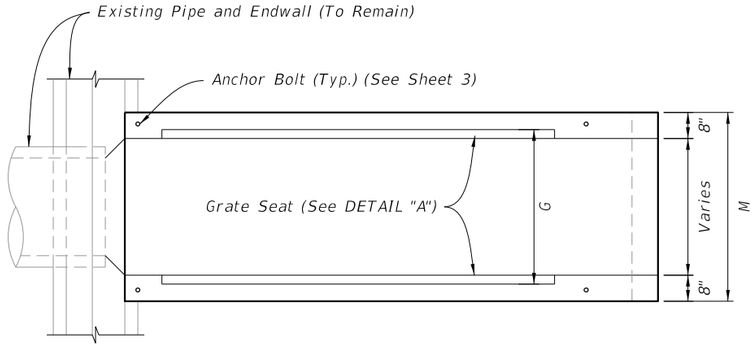
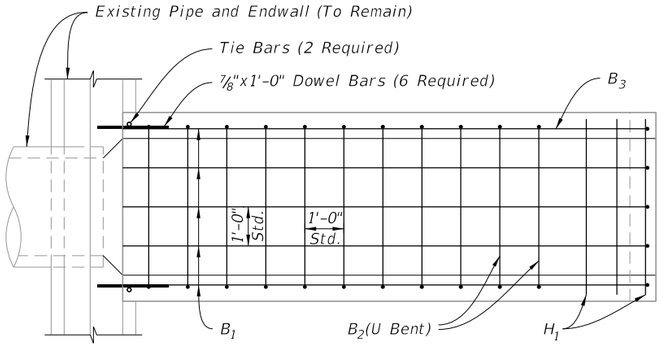


PLAN

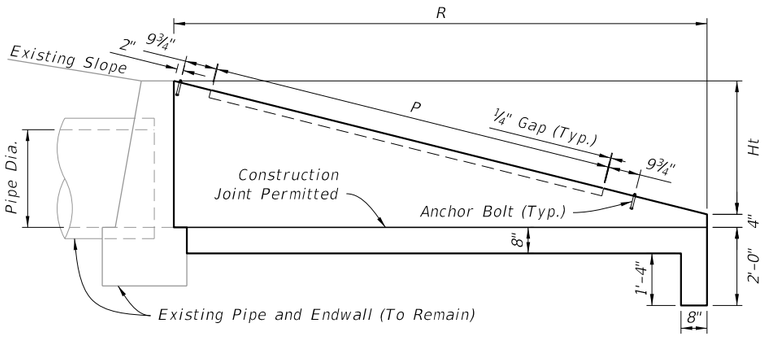


PLAN

LEGEND:

H = Horizontal Bars

B = Bent Bars



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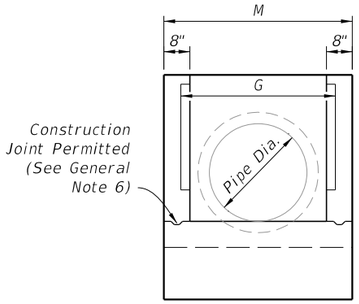
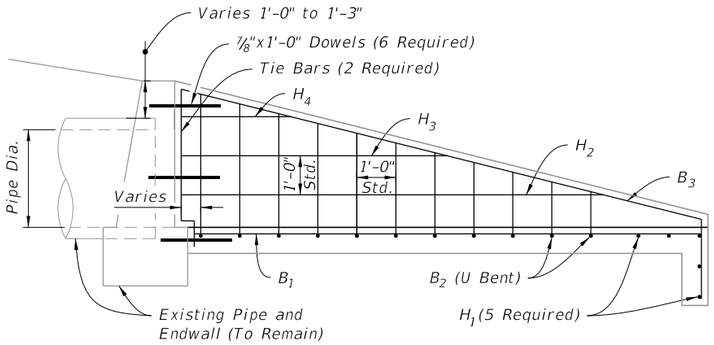


END VIEW



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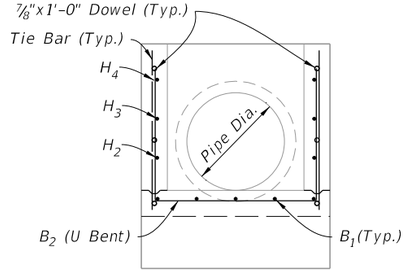
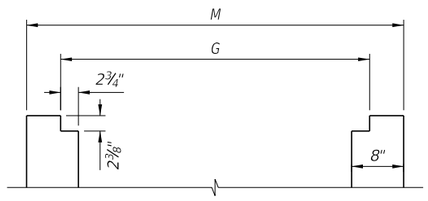


BACK VIEW

DIMENSIONAL DETAILS



GRATE SEAT

DETAIL "A"

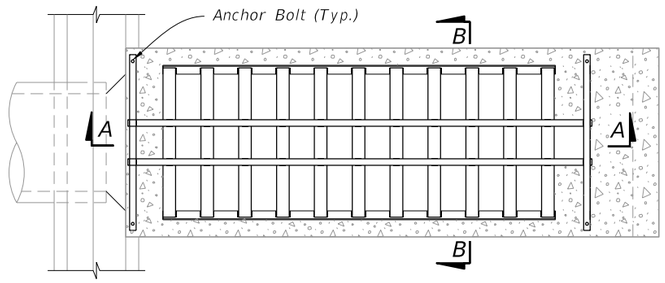
REINFORCING DETAILS

TABLE 1
U-ENDWALL DIMENSIONS AND QUANTITIES

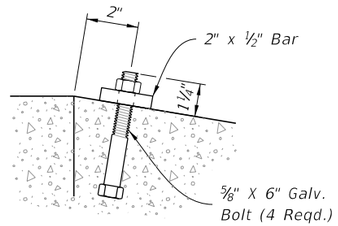
Slope	Pipe Dia.	G	M	Ht	R	P	Class I Concrete-CY	Reinforcing Steel-lbs.	Sod SY
1:6	15"	2'-8½"	3'-7"	2'-2"	13'-0"	9'-4"	2.12	167	23
	18"	2'-11½"	3'-10"	2'-5"	14'-6"	11'-4"	2.53	173	25
	24"	3'-5½"	4'-4"	2'-11"	17'-6"	14'-4"	3.48	238	29
	30"	3'-11½"	4'-10"	3'-5"	20'-6"	17'-4"	4.57	315	32
1:4	15"	2'-8½"	3'-7"	2'-2"	8'-8"	5'-4"	1.44	120	19
	18"	2'-11½"	3'-10"	2'-5"	9'-8"	6'-4"	1.72	130	20
	24"	3'-5½"	4'-4"	2'-11"	11'-8"	8'-4"	2.36	167	22
	30"	3'-11½"	4'-10"	3'-5"	13'-8"	10'-4"	3.09	225	25

ENDWALLS FOR 1:4 AND 1:6 SLOPES

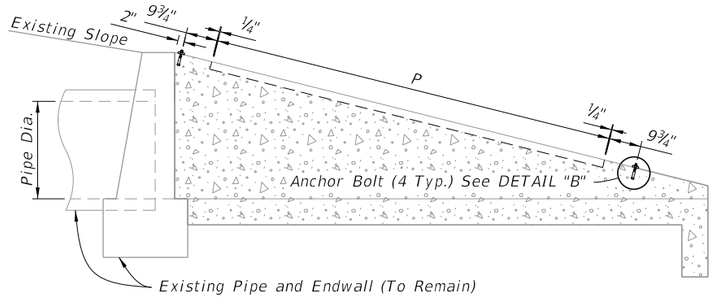
TABLE 2 GRATE DIMENSIONS AND QUANTITIES									
Slope	Pipe Dia.	Channels @ 5.4 Lbs./LF			Bars @ 3.4 lbs/LF (2 ea.)			Angles @ 3.2 Lbs./LF	
		Quantity	F	lbs.	L	M-4"	lbs.	P	lbs.
1:6	15"	10	2'-6 7/8"	139	11'-3"	3'-3"	99	9'-4"	60
	18"	12	2'-9 7/8"	183	13'-3"	3'-6"	114	11'-4"	73
	24"	15	3'-3 7/8"	269	16'-3"	4'-0"	138	14'-4"	92
	30"	18	3'-9 7/8"	372	19'-3"	4'-6"	162	17'-4"	111
1:4	15"	6	2'-6 7/8"	83	7'-3"	3'-3"	71	5'-4"	34
	18"	7	2'-9 7/8"	107	8'-3"	3'-6"	80	6'-4"	41
	24"	9	3'-3 7/8"	161	10'-3"	4'-0"	97	8'-4"	53
	30"	11	3'-9 7/8"	227	12'-3"	4'-6"	114	10'-4"	66



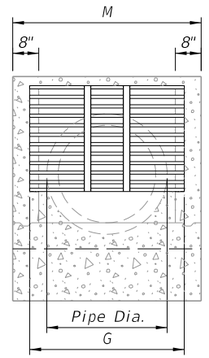
PLAN



Anchor Bolt Detail
DETAIL "B"

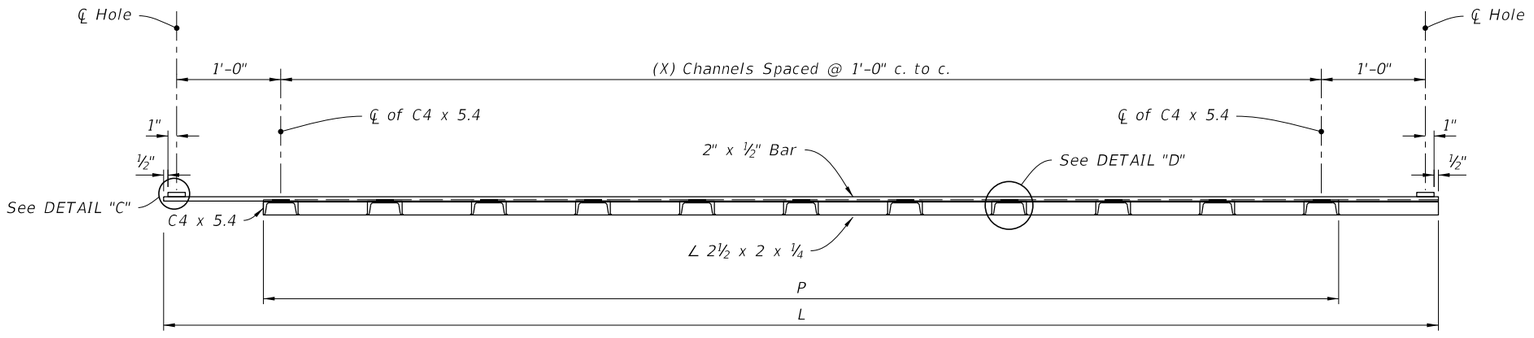


ELEVATION

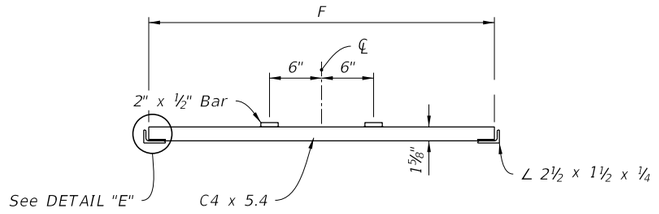


END VIEW

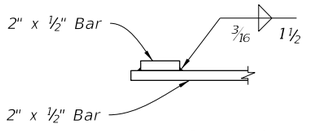
STEEL GRATE MOUNTING



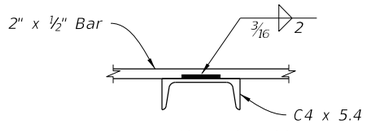
SECTION A-A



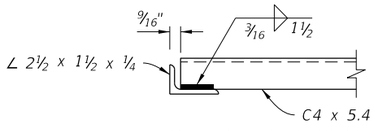
SECTION B-B



Bar to Bar Weld
DETAIL "C"



Bar to Channel Weld
DETAIL "D"



Channel to Angle Weld
DETAIL "E"

STEEL GRATE DETAILS

STEEL GRATE

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GENERAL NOTES:

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.

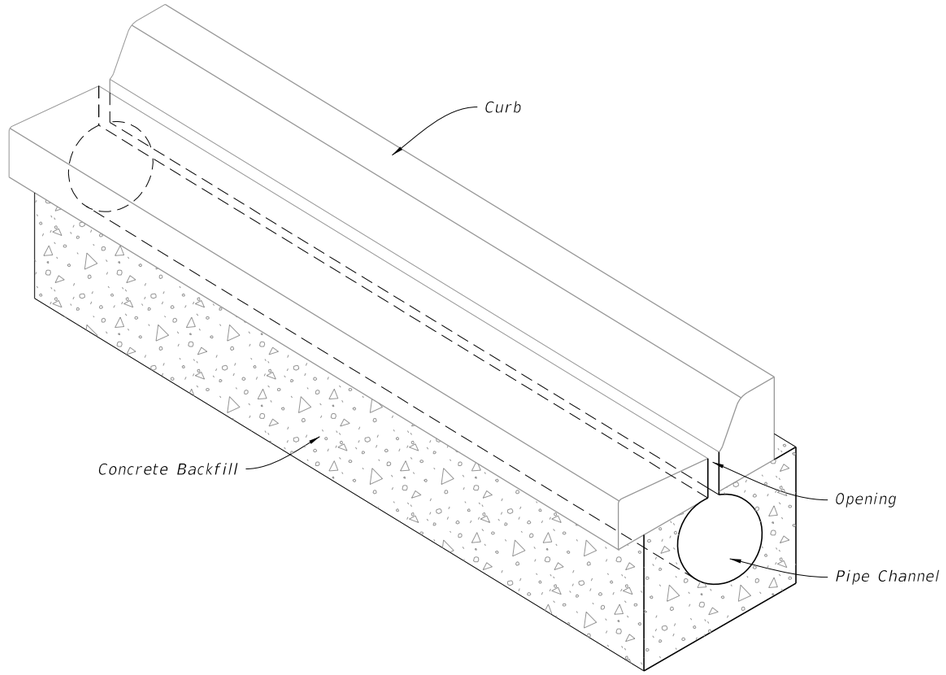
2. Stub trench drain directly into drainage structures or install outlet pipes to connect trench drain to drainage structures.

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:



TRENCH DRAIN ASSEMBLY

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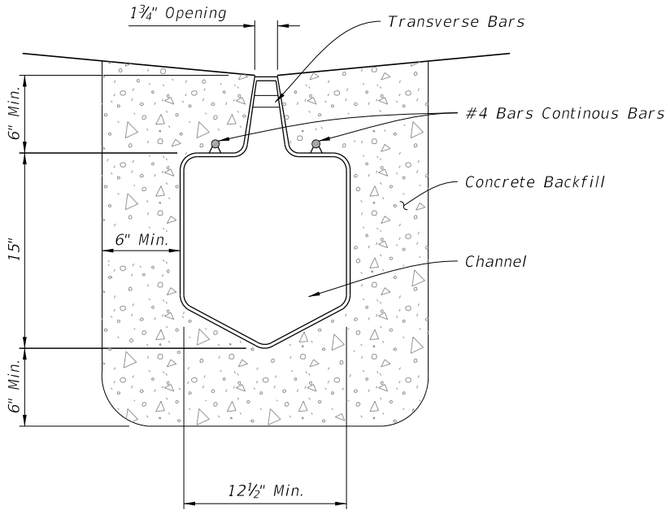
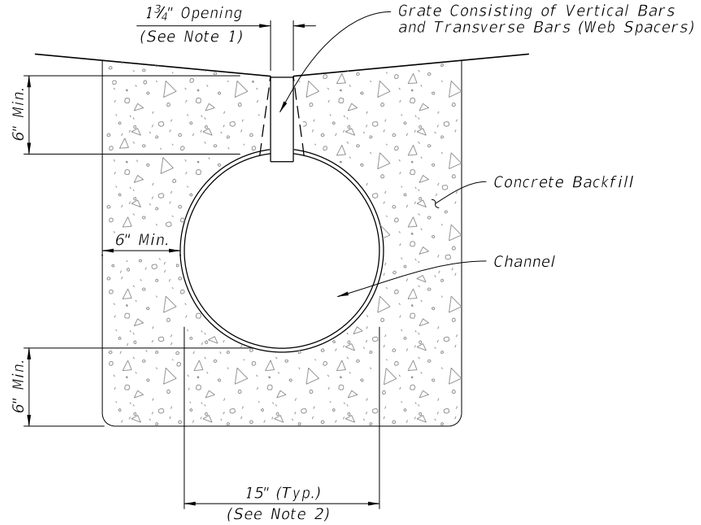
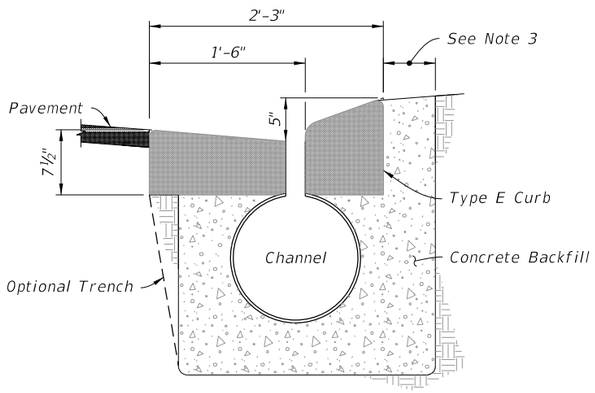


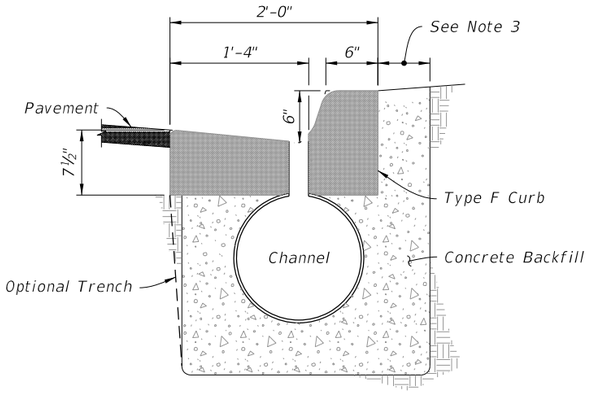
PREFORMED POLYETHYLENE CHANNEL



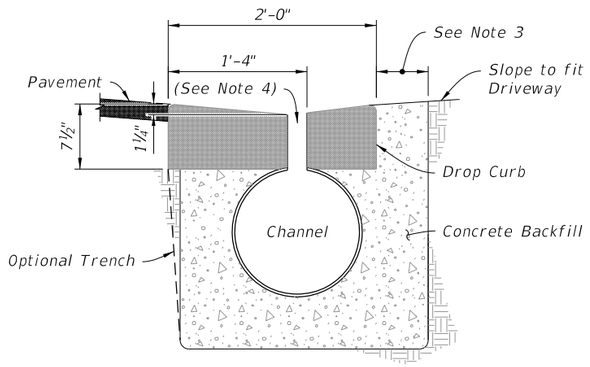
ROUND PIPE CHANNEL



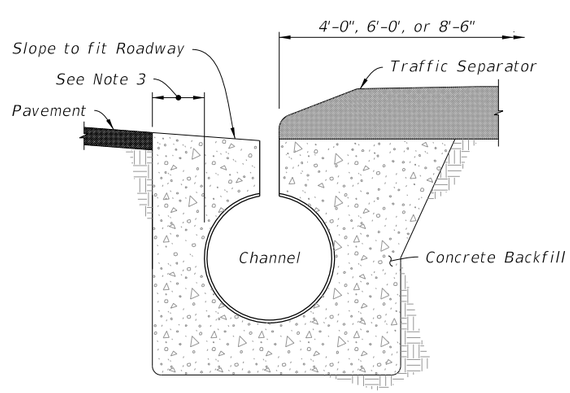
WITHIN TYPE E CURB



WITHIN TYPE F CURB



WITHIN DROP CURB



ADJACENT TO TRAFFIC SEPARATOR

TYPICAL LOCATIONS

(Round Channel Shown, Preformed Polyethylene Similar)

NOTES:

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

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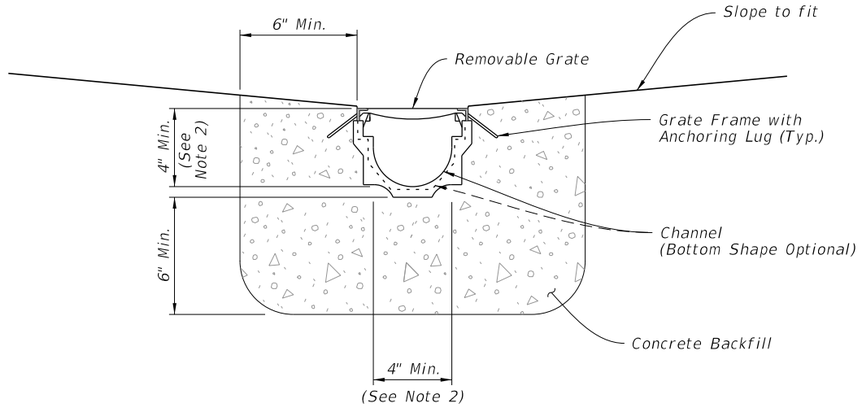
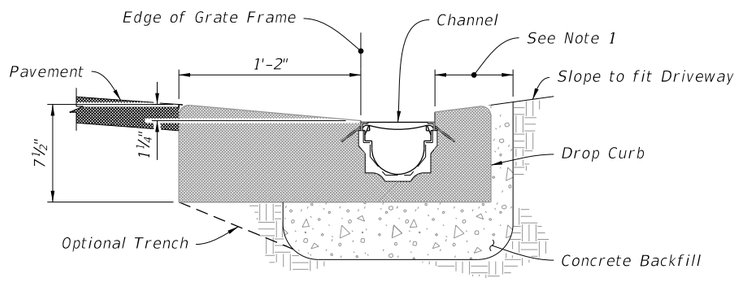
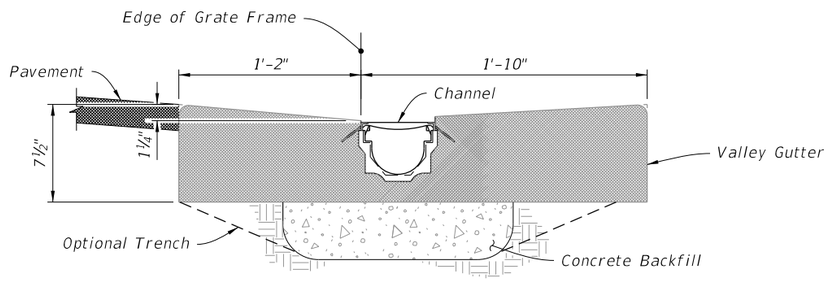


PREFORMED CHANNEL WITH REMOVABLE GRATE



WITHIN DROP CURB



WITHIN VALLEY GUTTER

TYPICAL LOCATIONS

NOTES:

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

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TYPE II - REMOVABLE GRATE

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GENERAL NOTES:

1. Install underdrain pipe that is either 4" smooth or 5" corrugated tubing unless otherwise shown in the Plans. The size to be furnished will be based on the nominal internal diameter of a pipe with a smooth interior wall. Except when prohibited by the Plans, the special provisions or this standard, pipe with a corrugated interior wall may be provided based on the following size equivalency.

   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 ⅛ (45 deg.) elbows. Construct 90 deg. bends with two ⅛ 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.

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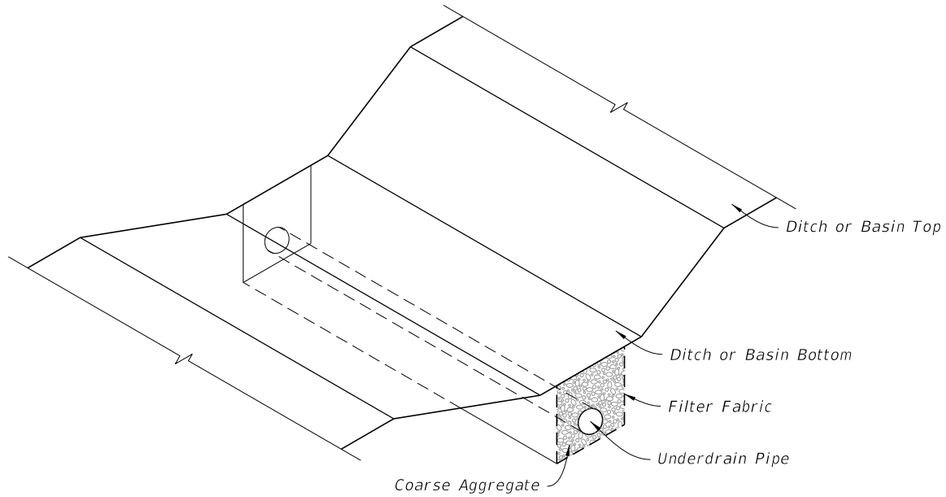
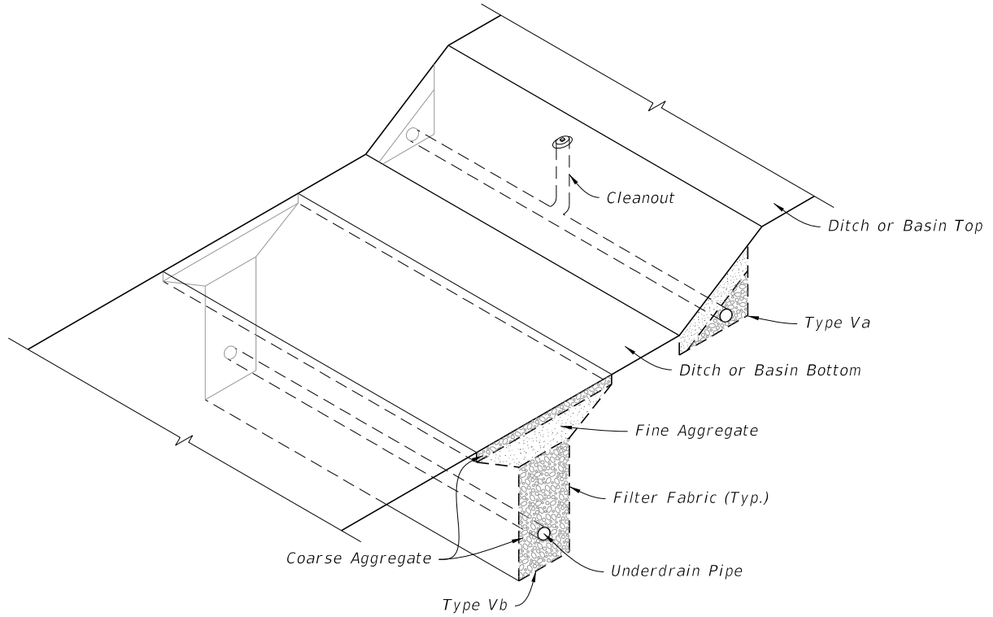


UNDERDRAIN TYPE I, II, AND III ASSEMBLY
(Type II Shown, Others Similar)



UNDERDRAIN TYPE Va AND Vb ASSEMBLY

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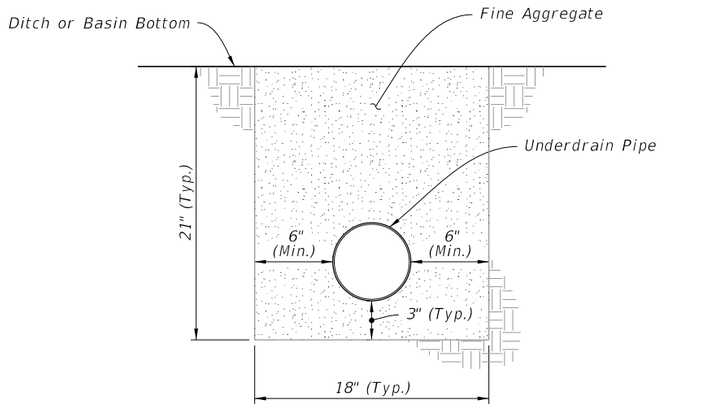
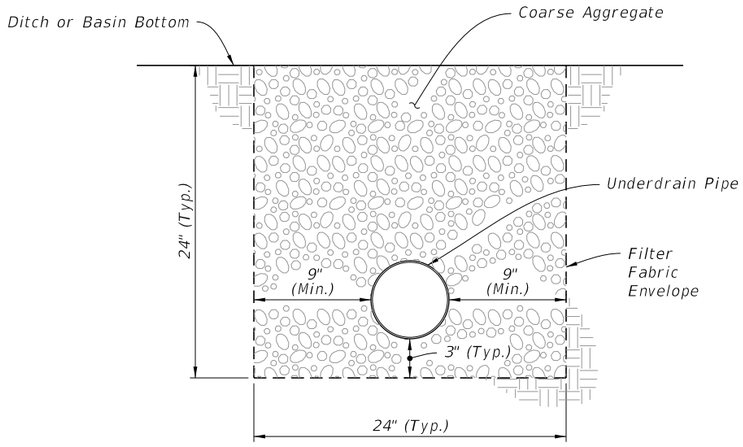
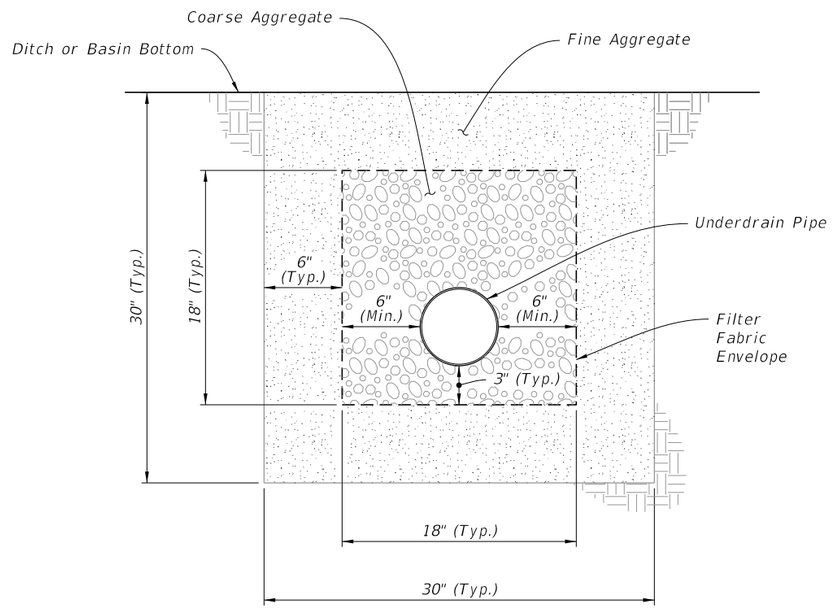


TYPE I



TYPE II



TYPE III

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TYPE I, II, AND III

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	UNDERDRAIN	INDEX	SHEET
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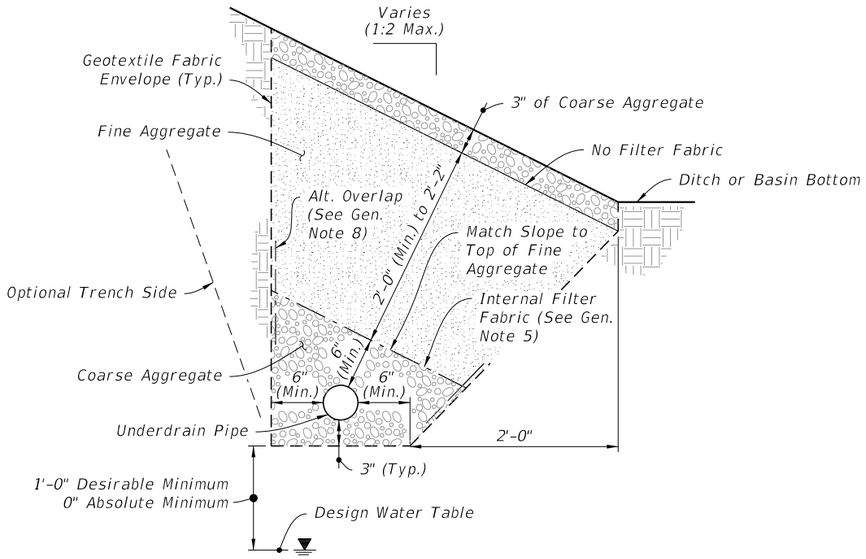
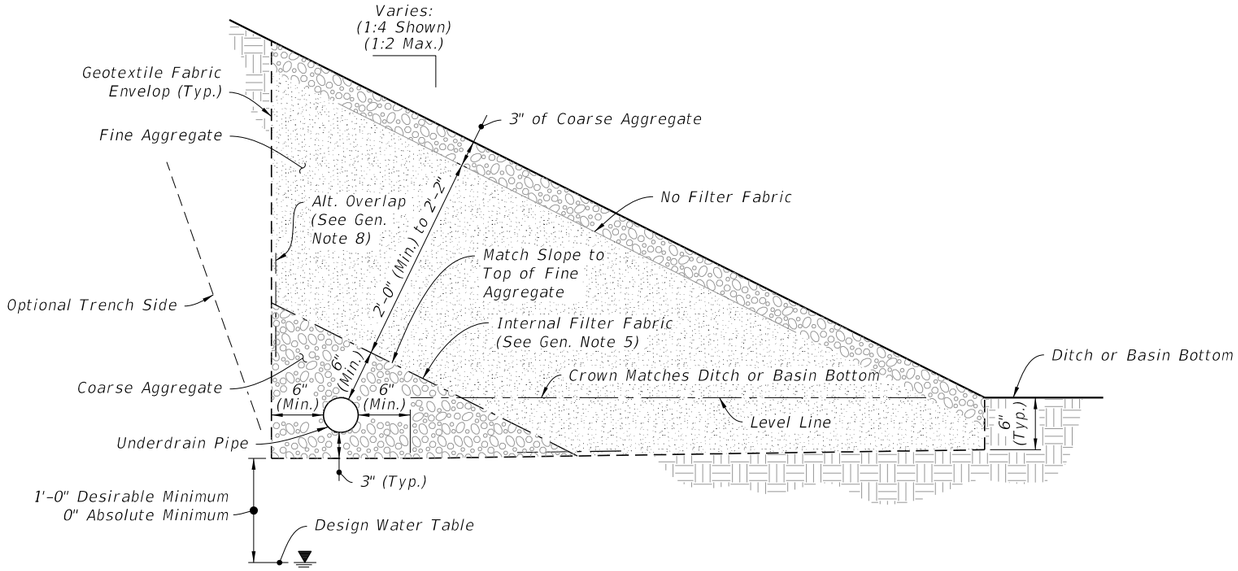
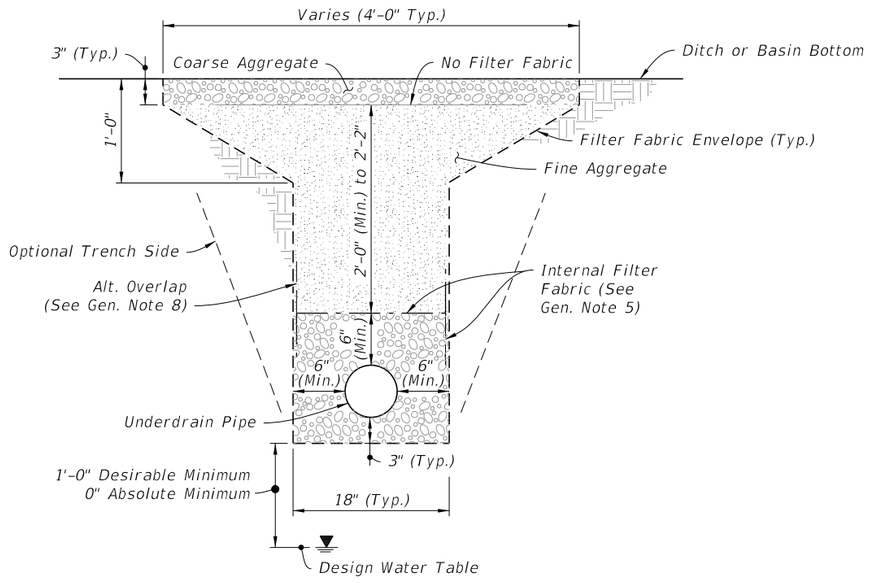


LOWER LIMITS

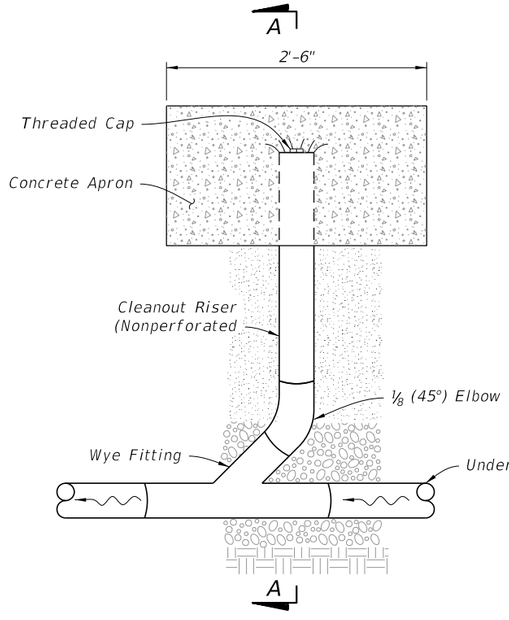


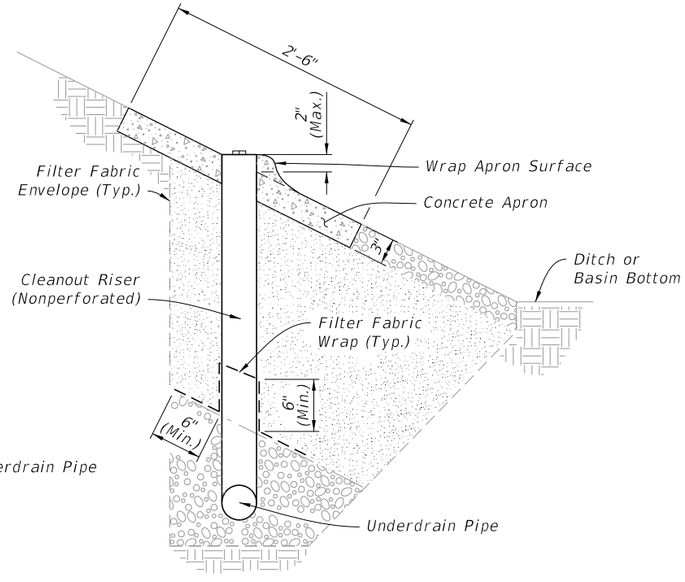
UPPER LIMITS

TYPE Va



TYPE Vb





SECTION A-A

TYPE V CLEANOUT

TYPE Va, Vb, AND CLEANOUT

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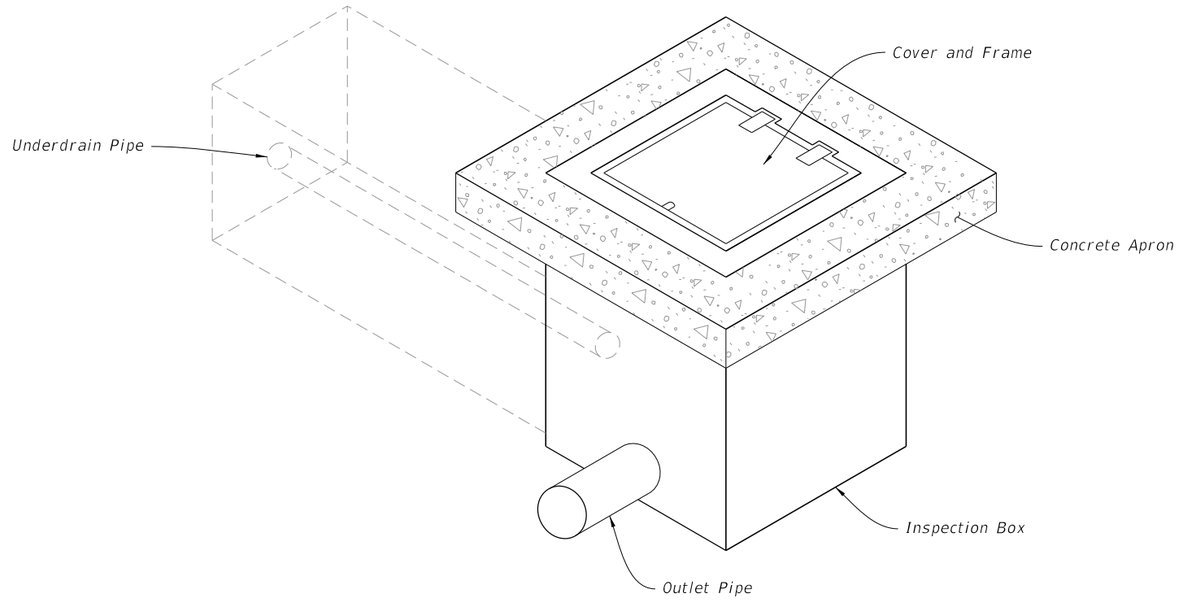
GENERAL NOTES:

1. Install light duty cast iron cover and frame in accordance with Specifications 962.
2. Use Class I 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:



UNDERDRAIN INSPECTION BOX ASSEMBLY

10/29/2019 8:17:03 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	UNDERDRAIN INSPECTION BOX	INDEX	SHEET
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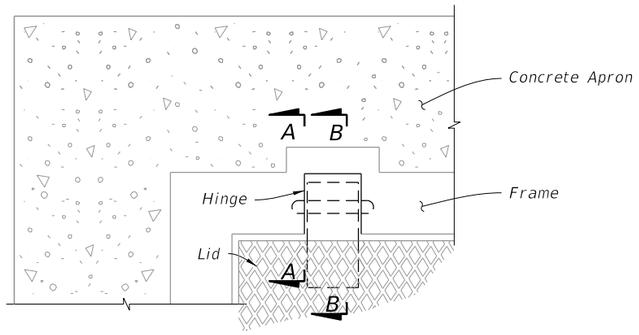
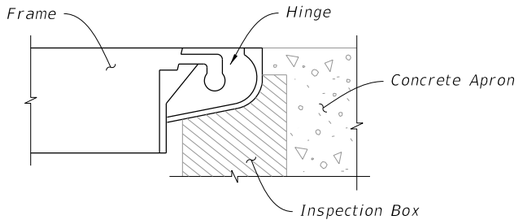
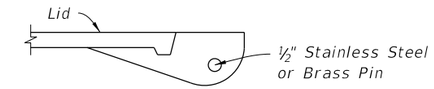


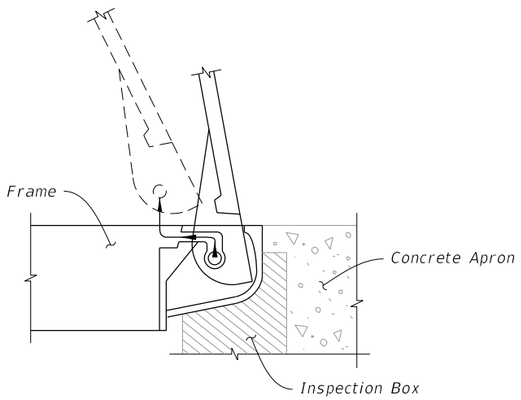
PLAN VIEW



SECTION A-A
(Frame)

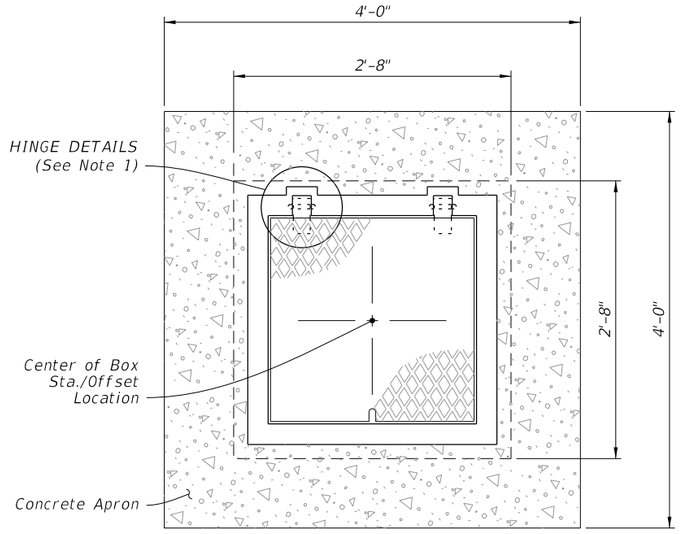


SECTION B-B
(Lid)

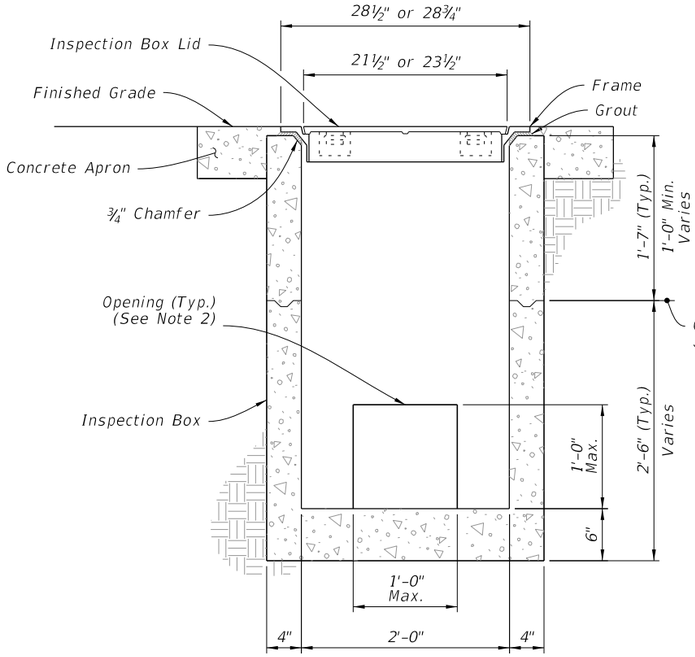


COVER REMOVAL

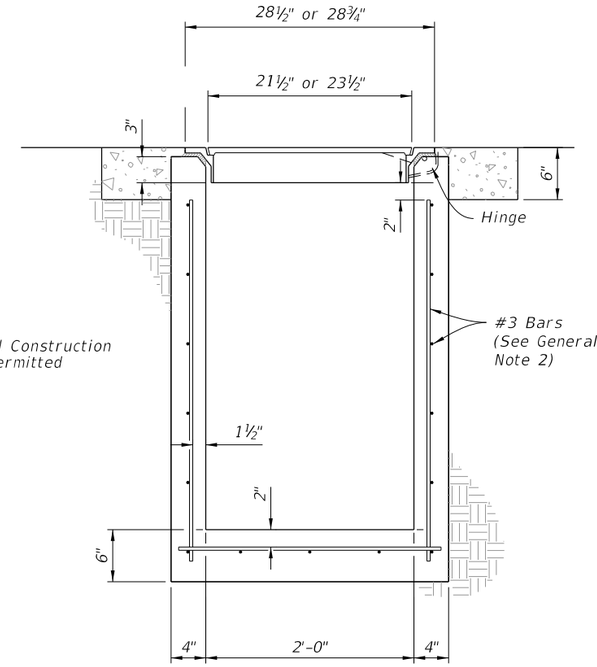
HINGE DETAIL



PLAN



ELEVATION
(FRONT VIEW)



ELEVATION
(SIDE VIEW)

INSPECTION BOX DETAILS

NOTES:

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

TYPICAL INSPECTION BOX INSTALLATION

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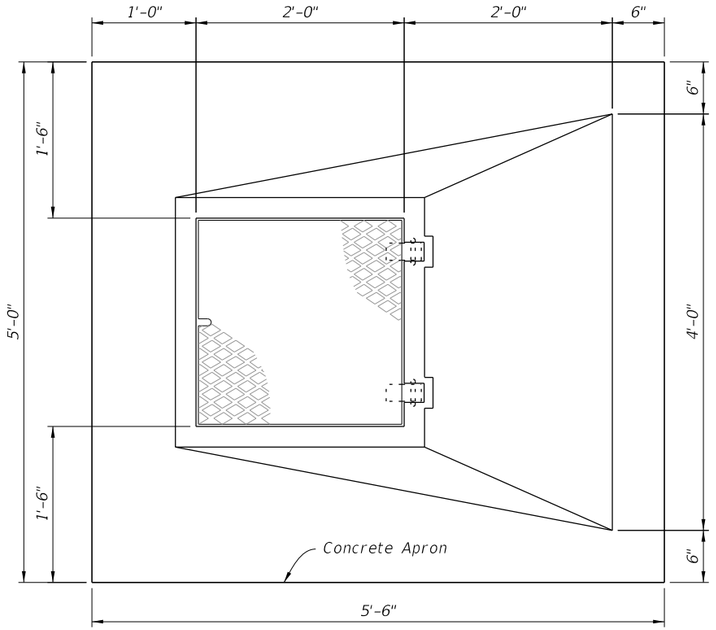
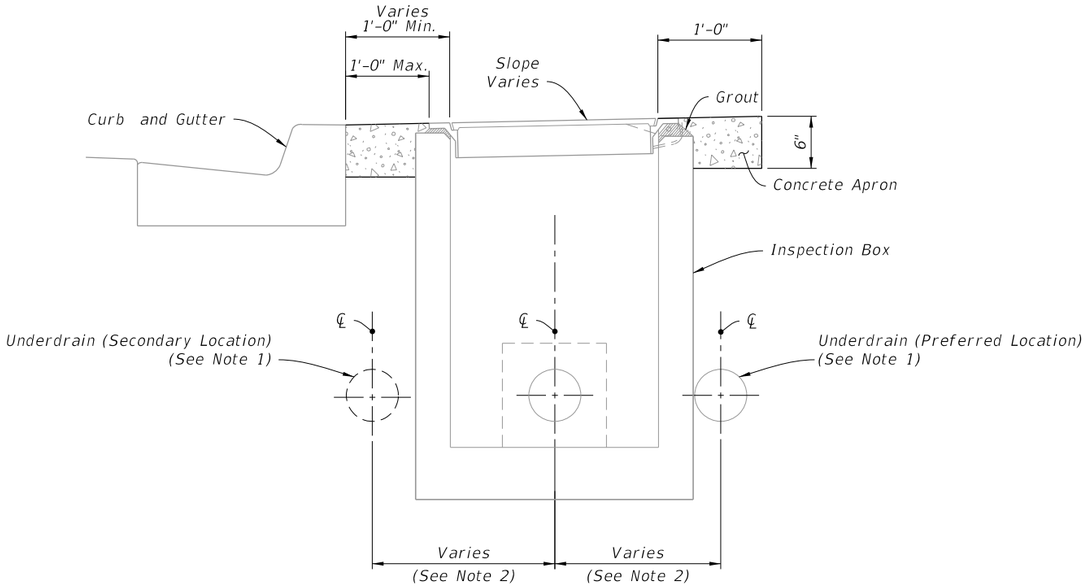
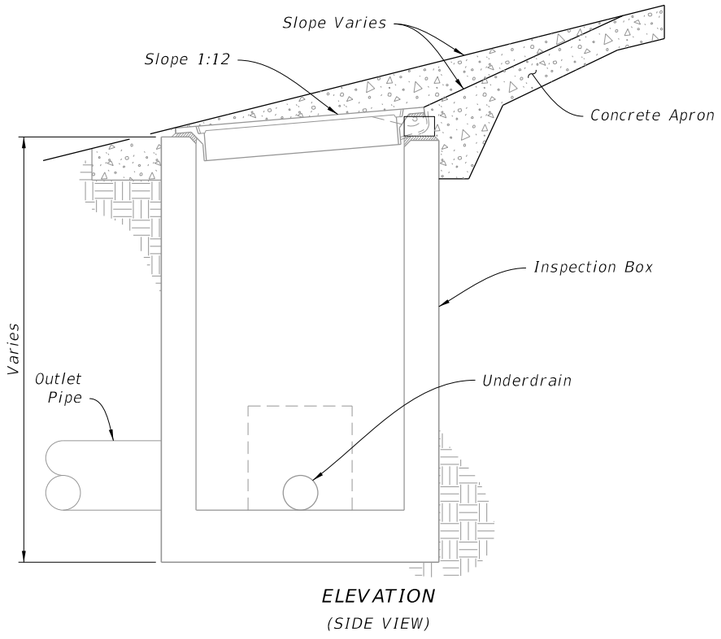


PLAN

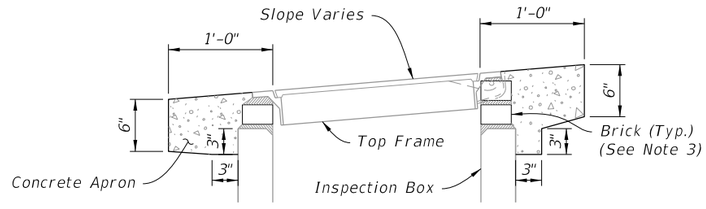


TYPICAL URBAN INSTALLATION



ELEVATION
(SIDE VIEW)

INSTALLATION ON SLOPE



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

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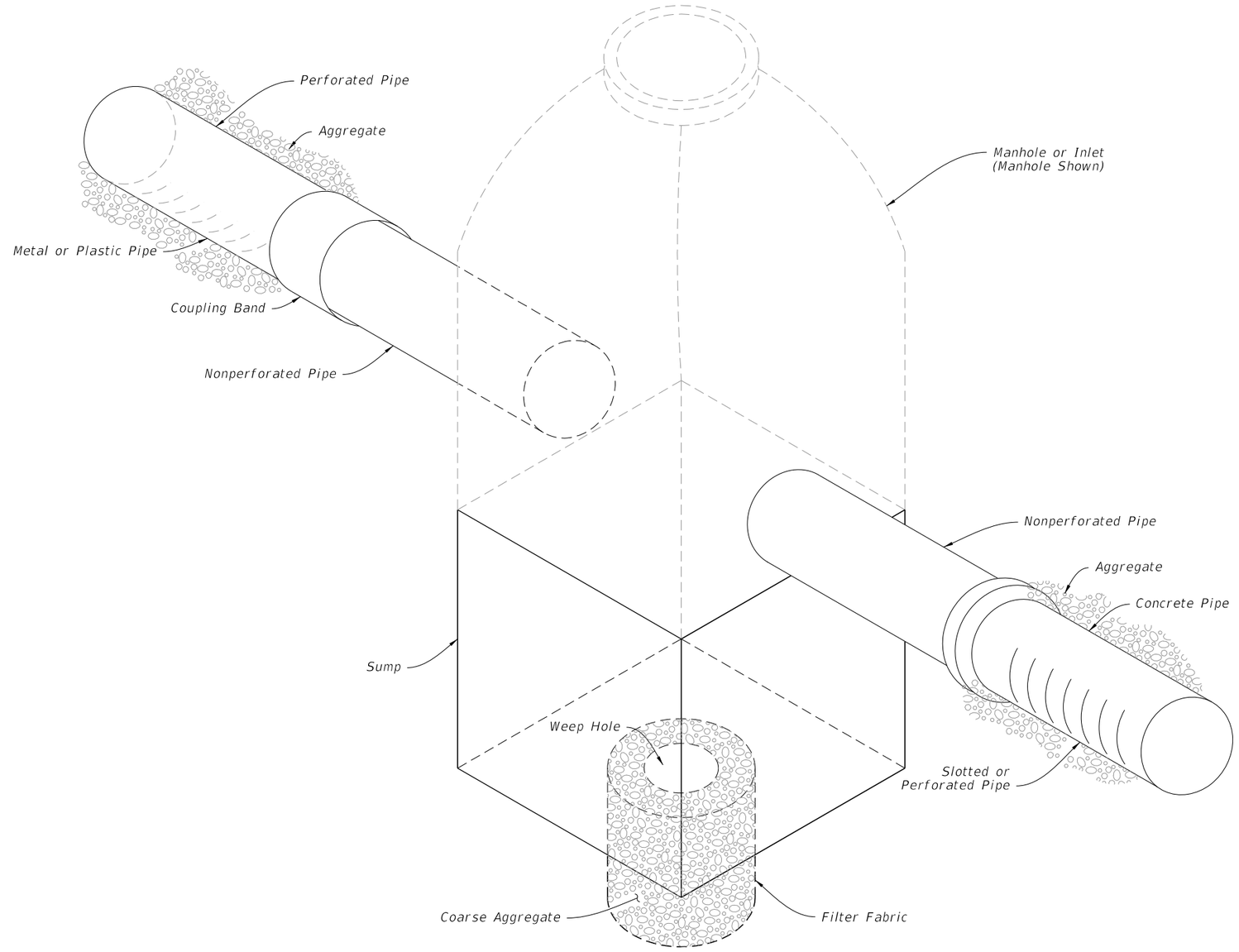
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	UNDERDRAIN INSPECTION BOX	INDEX	SHEET
11/01/19						440-002	3 of 3

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:



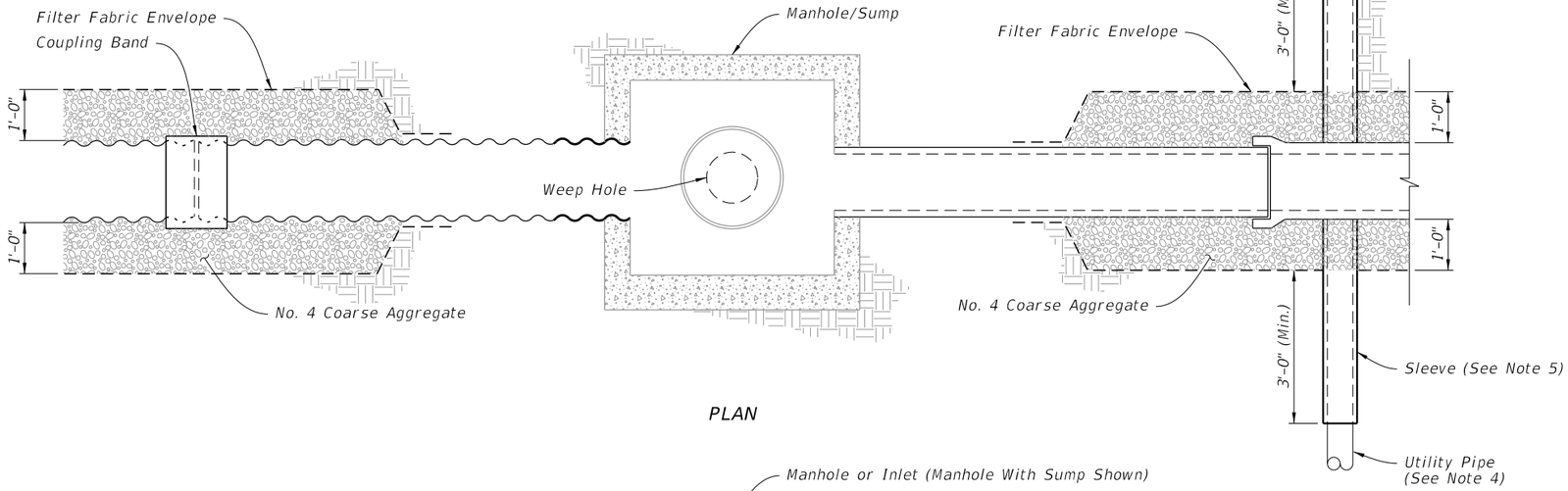
FRENCH DRAIN ASSEMBLY

6/18/2021 8:32:26 AM

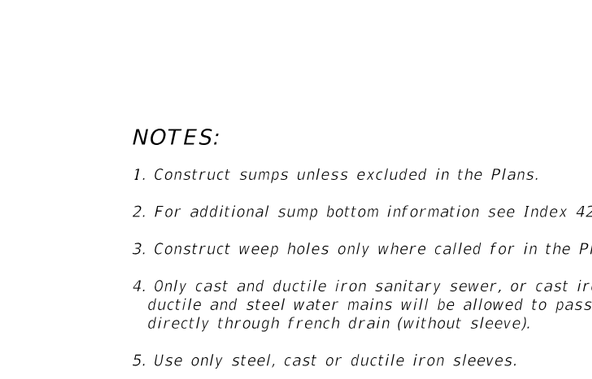
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	FRENCH DRAIN	INDEX	SHEET
11/01/19						443-001	1 of 3

NOTES:

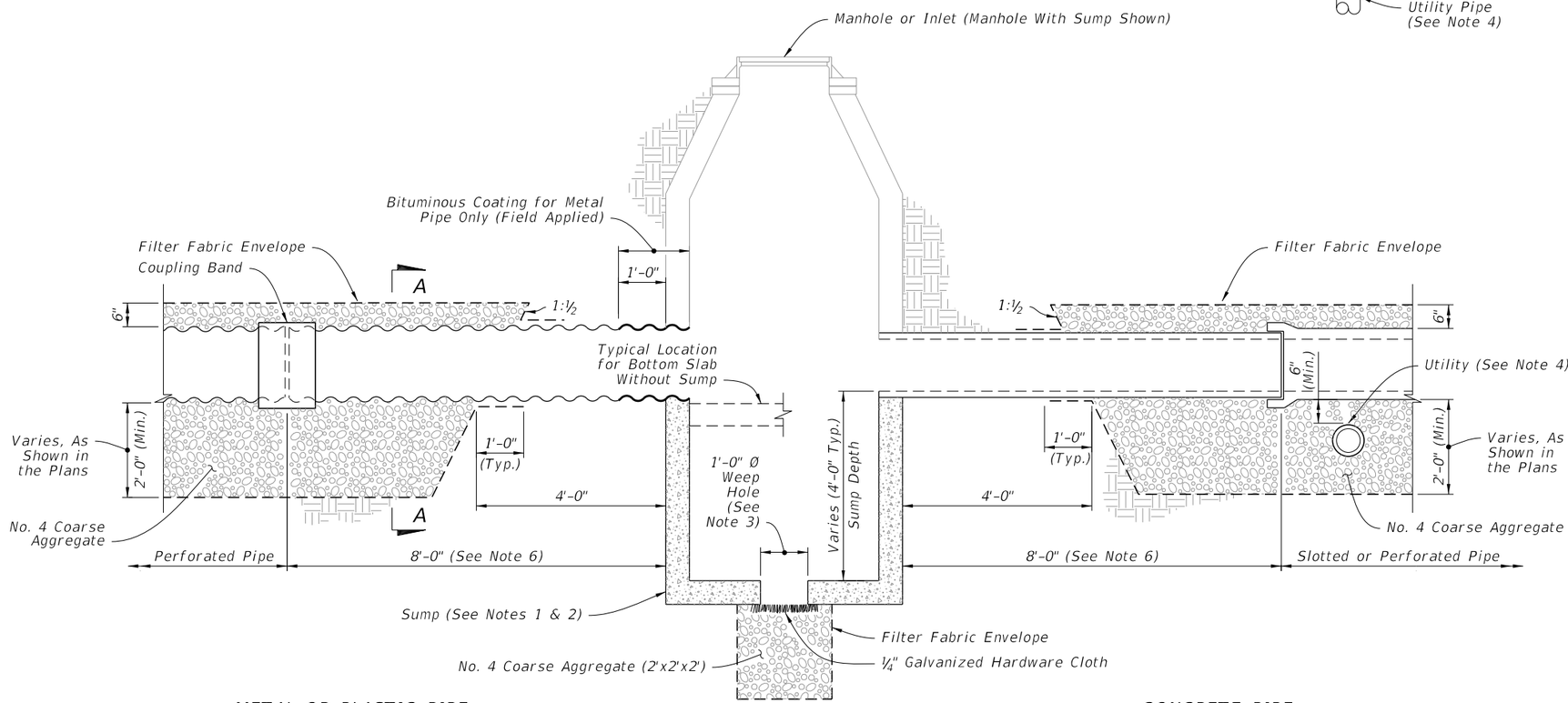
1. Construct sumps unless excluded in the Plans.
2. For additional sump bottom information see Index 425-001.
3. Construct weep holes only where called for in the Plans.
4. Only cast and ductile iron sanitary sewer, or cast iron, ductile and steel water mains will be allowed to pass directly through french drain (without sleeve).
5. Use only steel, cast or ductile iron sleeves.
6. No slots or perforations.



PLAN



SECTION A-A



ELEVATION

FRENCH DRAIN
(Round Pipe Shown)

FRENCH DRAIN SYSTEM

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	FRENCH DRAIN	INDEX	SHEET
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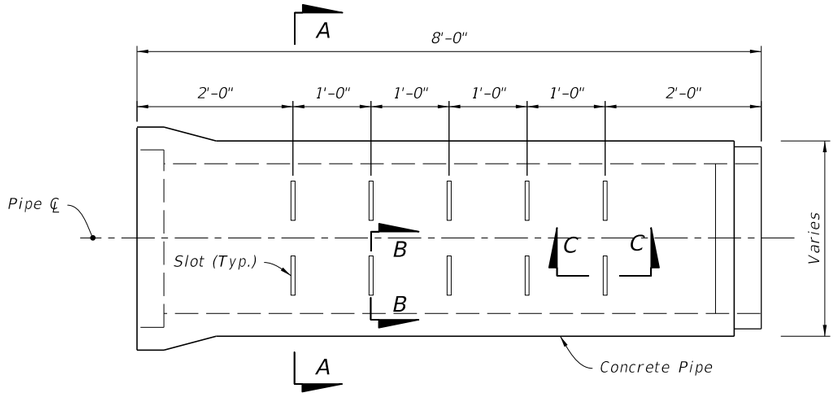
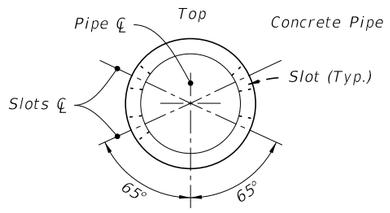
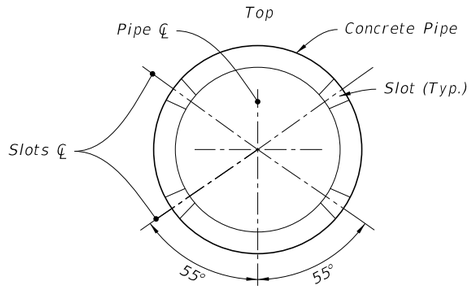


SIDE VIEW

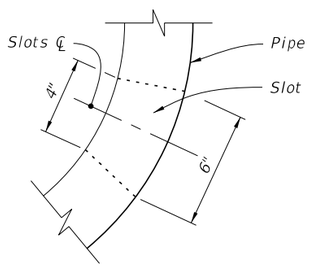


15" to 30"

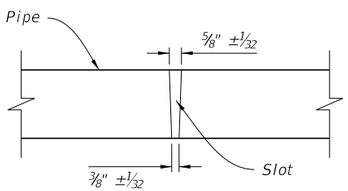


36" to 72"

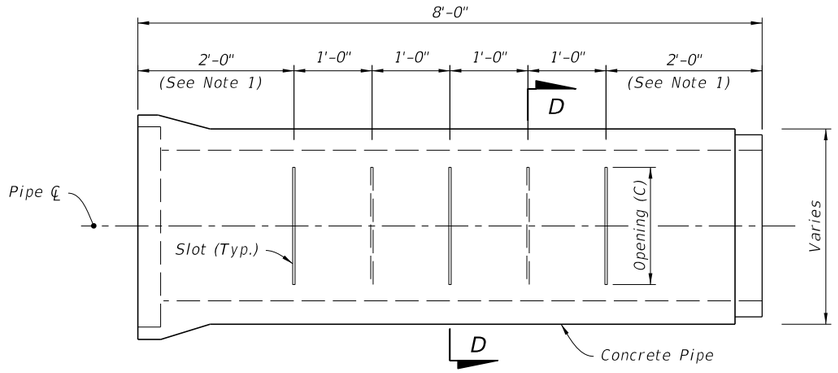
SECTION A-A



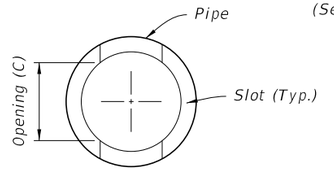
SECTION B-B



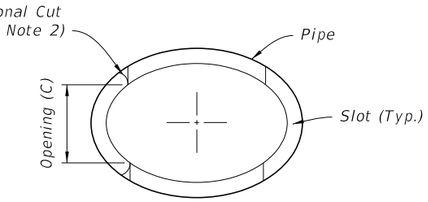
SECTION C-C



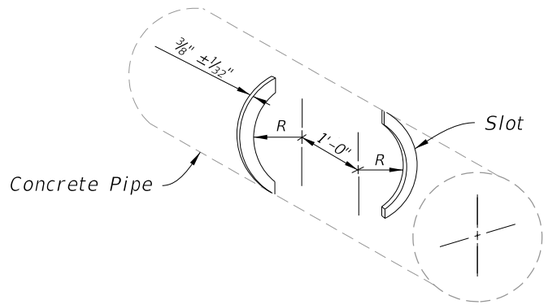
SIDE VIEW



ROUND PIPE



ELLIPTICAL PIPE



ISOMETRIC VIEW
(Round Pipe Shown)

SECTION D-D

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

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

OPTION A - ROUND PIPE

OPTION B - ROUND OR ELLIPTICAL PIPE

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CONCRETE SLOTTED PIPE OPTIONS

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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 basin.

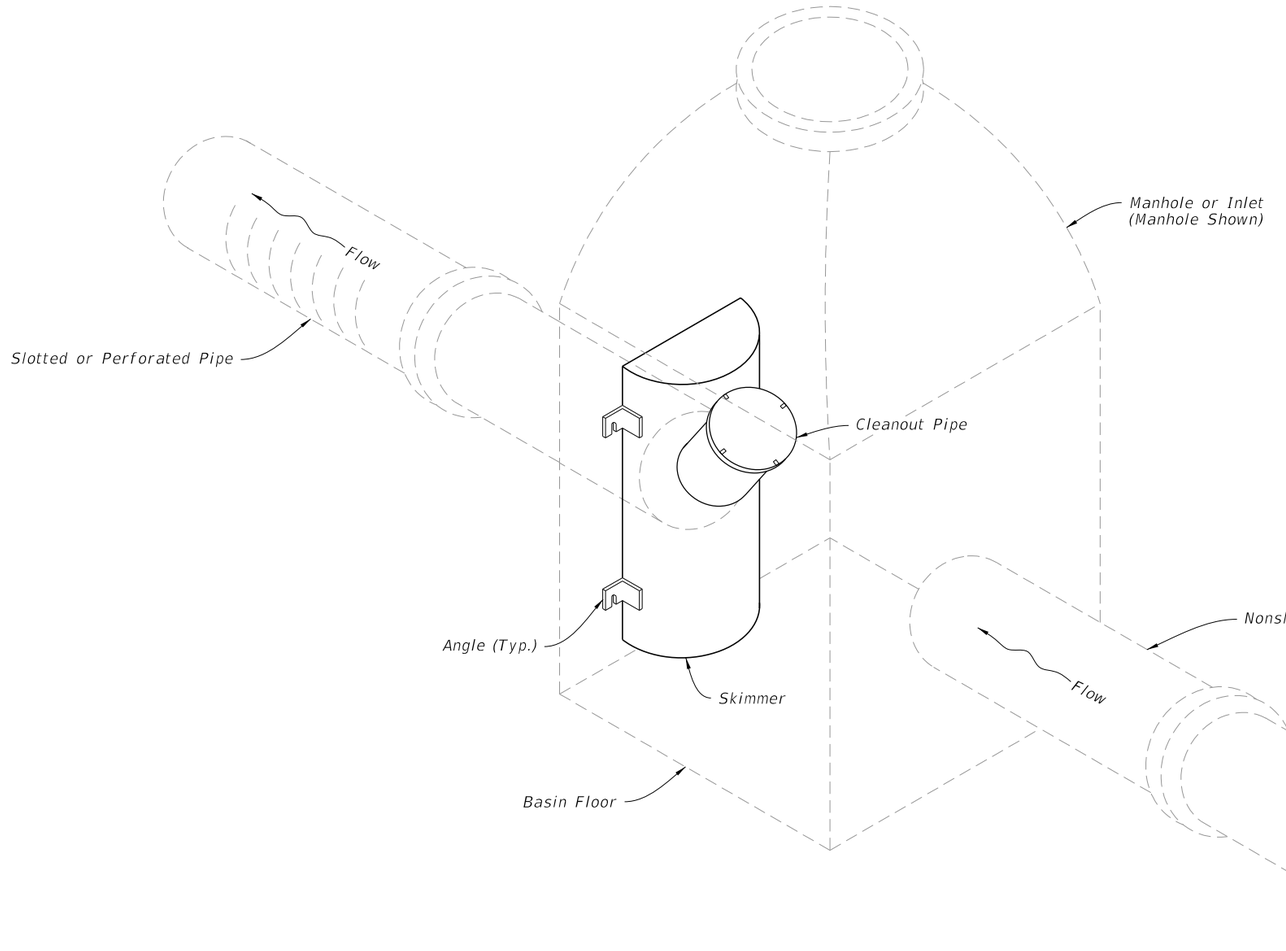
2. Place neoprene gasket material between the skimmer and the catchbasin at all points of contact. Trim the gasket to extend 1/2 inch beyond the joint on all sides.

3. Provide skimmer baffle, cleanout pipe and angles constructed of either galvanized steel, aluminum, polyvinyl chloride, polyethylene, fiberglass or acrylonitrite butadiene styrene. Provide hot-dip galvanized steel components, unless stainless.

4. Use Mounting hardware, hinges and latches made of stainless steel. Loss prevention device can use either stainless steel chain or riveted nylon strap.

5. Provide skimmer bodies (baffles) and cleanout pipe meeting Specification 943 for steel, 945 for aluminum or 948 for plastics.

6. Work this Index in accordance with Specification 425.



SKIMMER FOR FRENCH DRAIN OUTLETS ASSEMBLY

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

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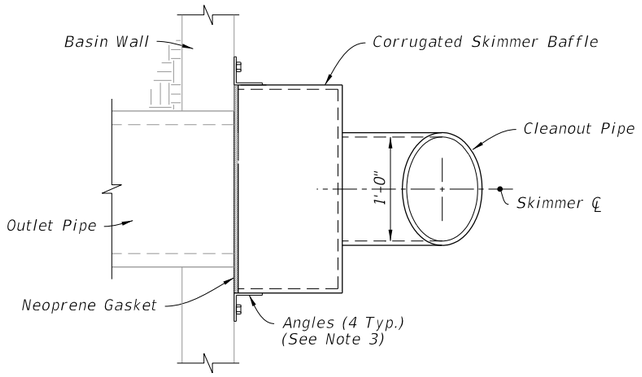
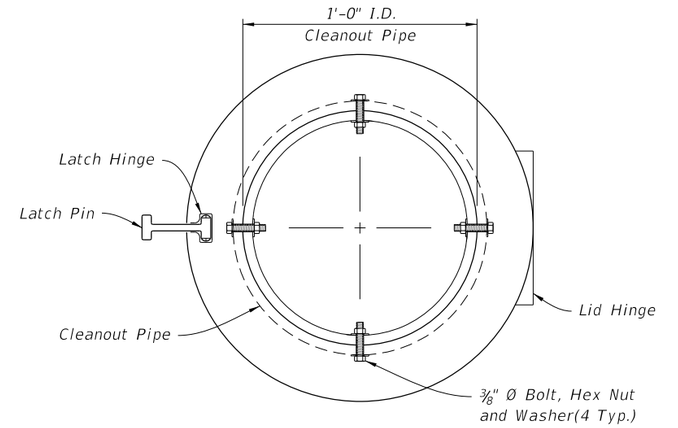
NOTES:

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	A	B	C
18"	12"	42"	24"
24"	15"	48"	30"
30"	18"	54"	36"
36"	21"	60"	42"



PLAN



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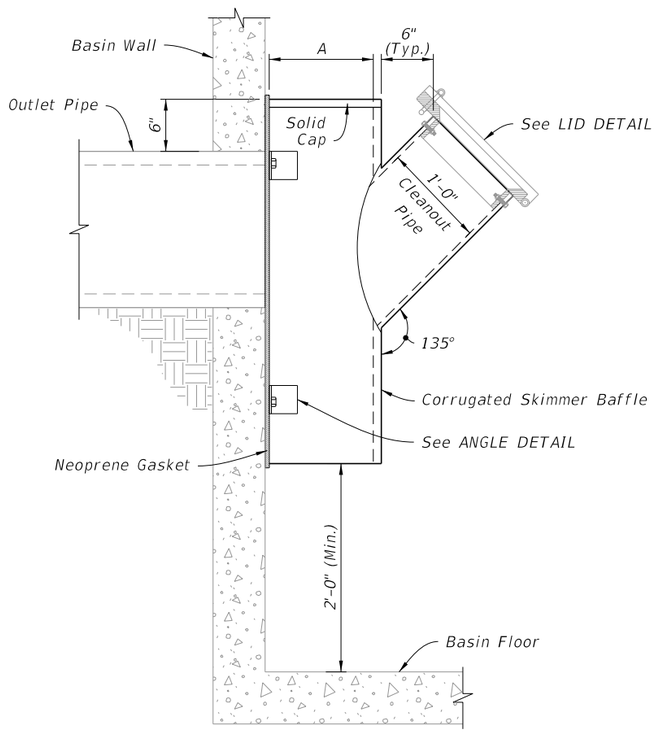
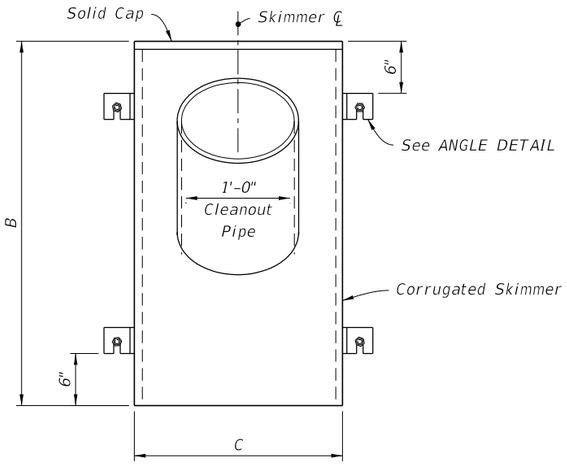
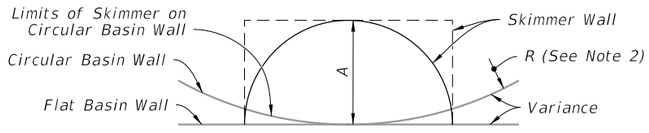


SIDE ELEVATION

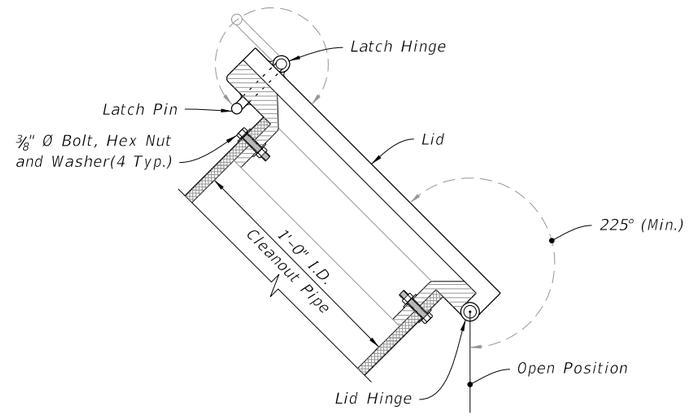


FRONT ELEVATION



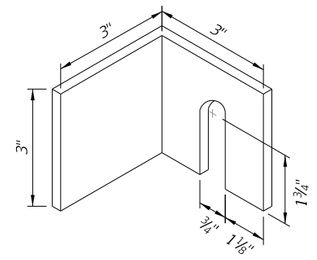
SCHEMATIC VIEW

TYPE I DETAILS



SIDE ELEVATION

LID DETAIL



ANGLE DETAIL

TYPE I SKIMMERS

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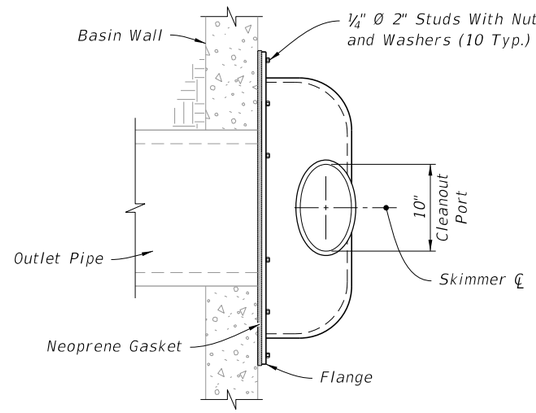
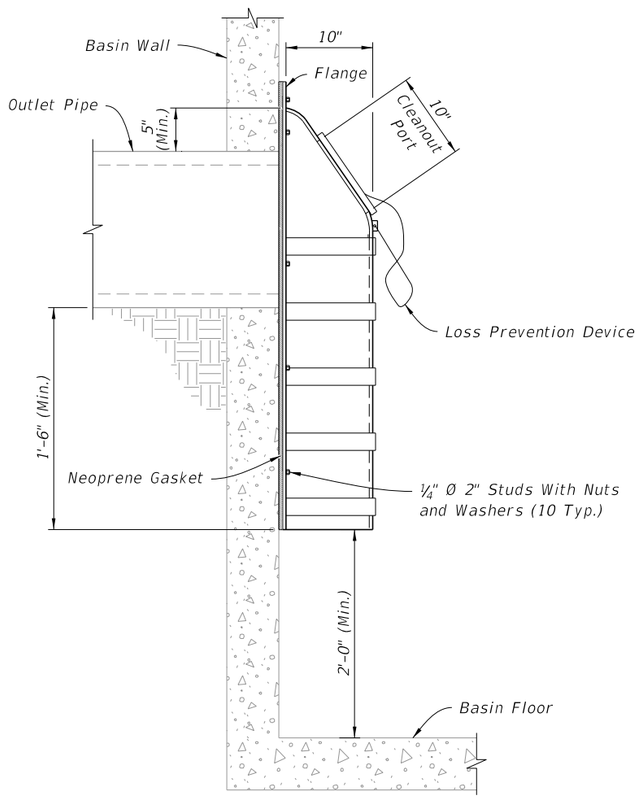


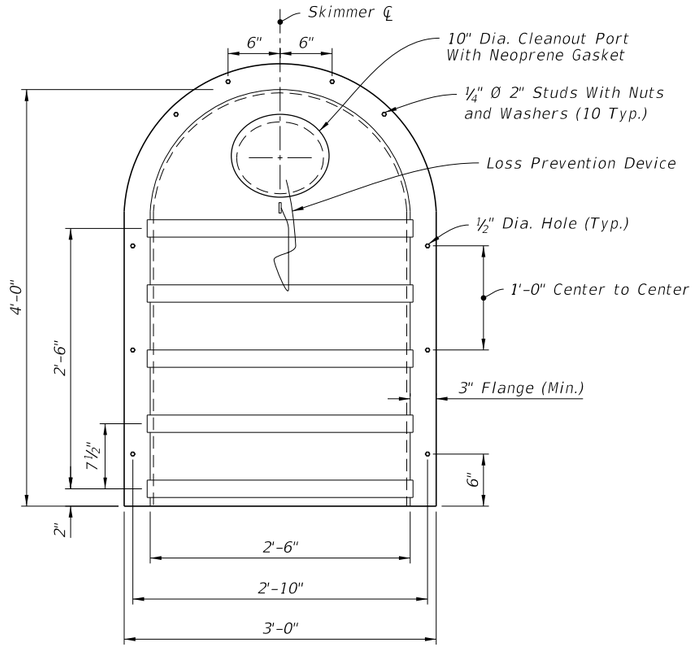
PLAN

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.



SIDE ELEVATION



FRONT ELEVATION

TYPE II DETAILS

TYPE II SKIMMERS

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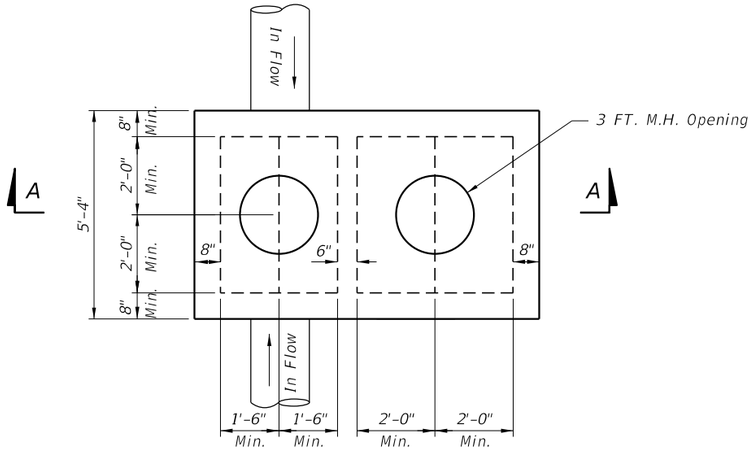
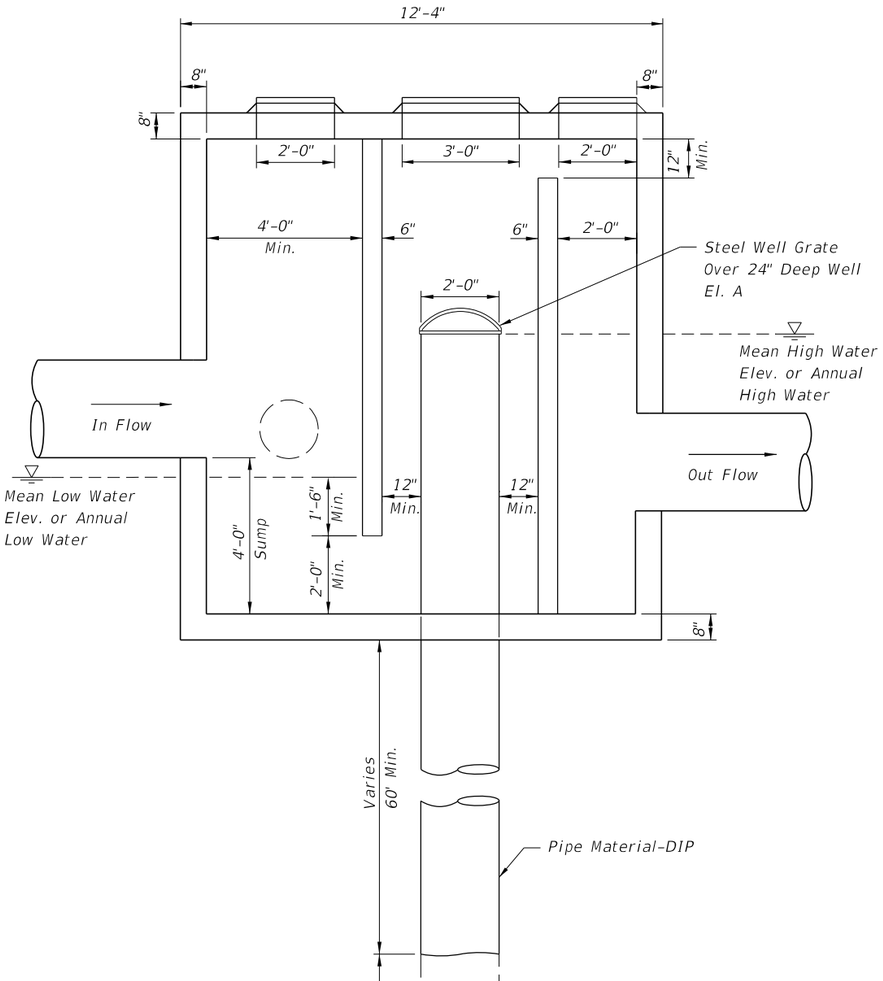


TOP SLAB PLAN

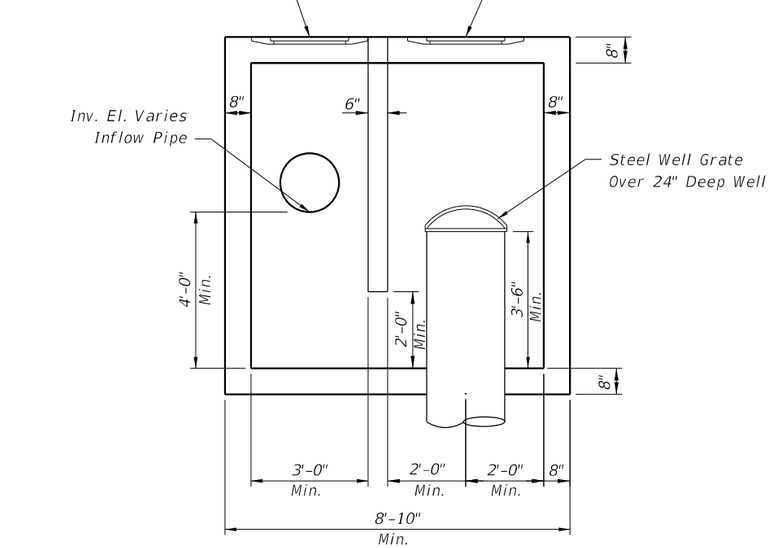


Note: Deep well encased and open lengths as specified in plans. Contractor is to verify design capacity.

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.



SECTION A-A

STRUCTURE WITH NO OUTFLOW

24" STEEL WELL GRATE

Heavy duty "bee hive" grate

Openings: 1-½" maximum

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.

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LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	DEEP WELL INJECTION BOX	INDEX	SHEET
11/01/17					444-T01	1 of 1

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.

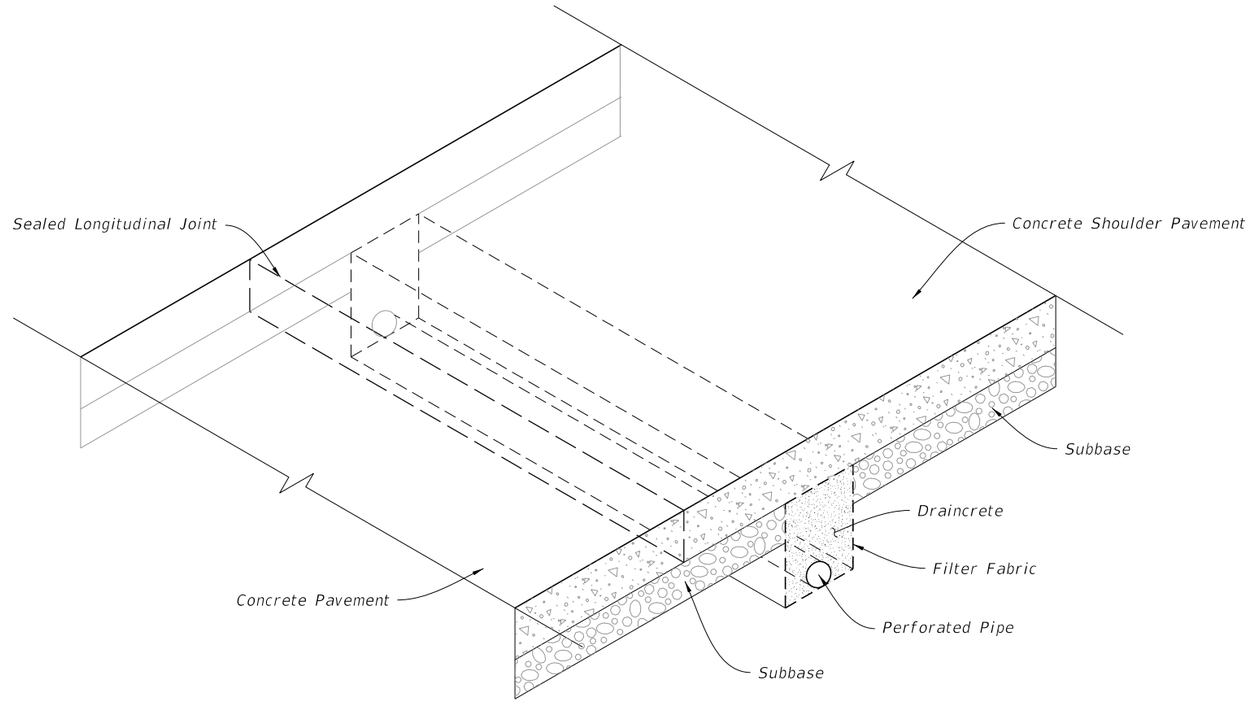
   Stub outlet pipes into existing inlets or into existing ditch pavements at an elevation 6" above the inlet flowline or ditch bottom when directed by the Engineer. Concrete apron and bordering sod are not required for stubbed outlets, but replacement sodding will be required at trenches for pipes stubbed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

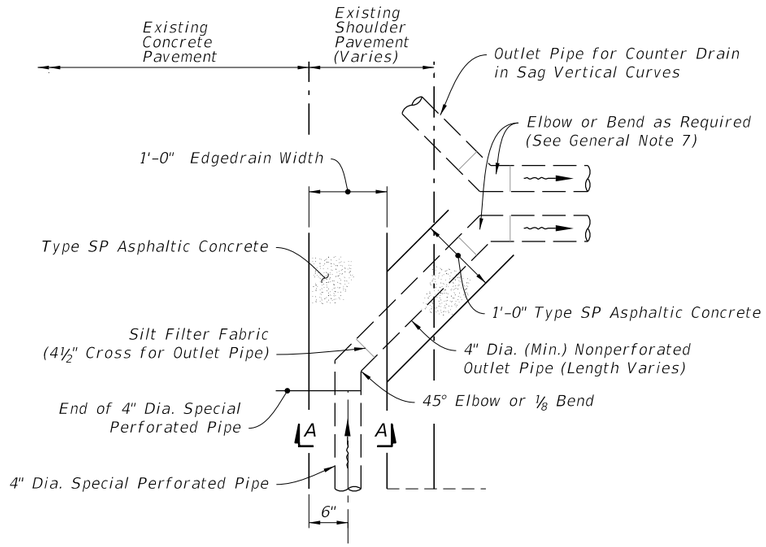
TABLE OF CONTENTS:



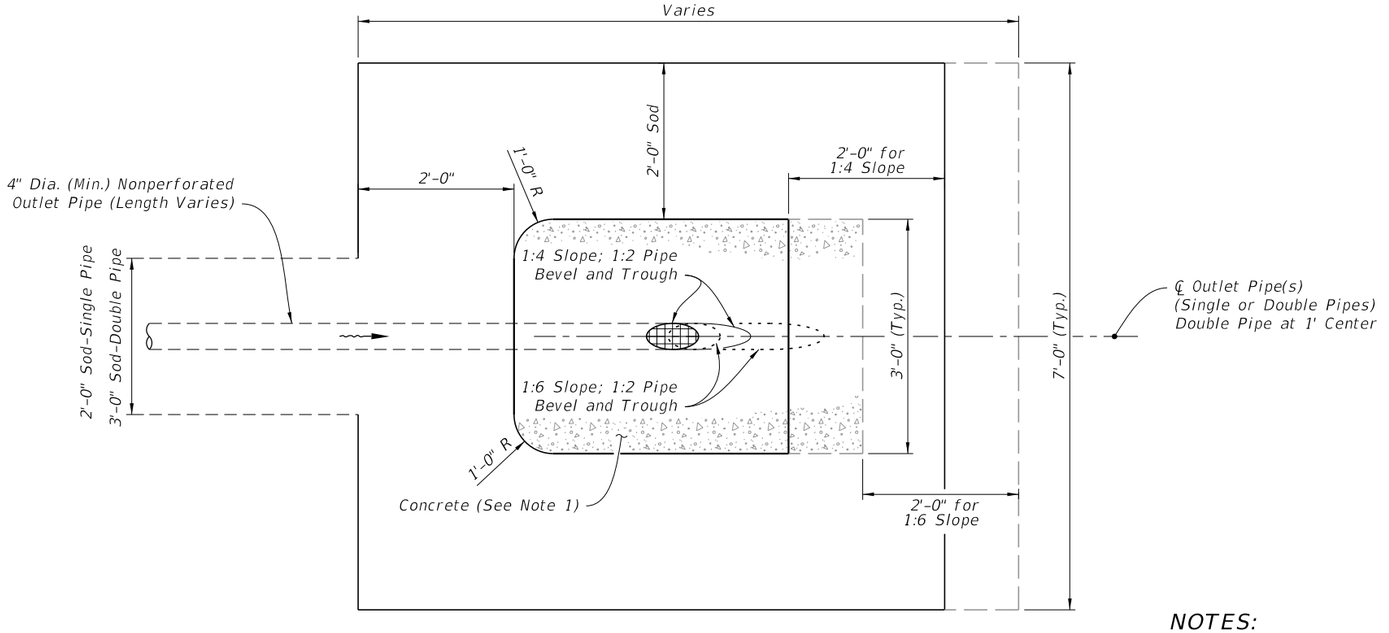
DRAINCRETE SUBDRAINAGE

10/29/2019 8:17:11 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE PAVEMENT SUBDRAINAGE	INDEX	SHEET
11/01/19						446-001	1 of 4



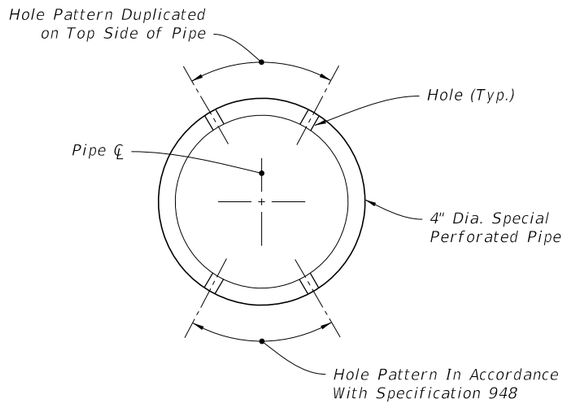
PLAN



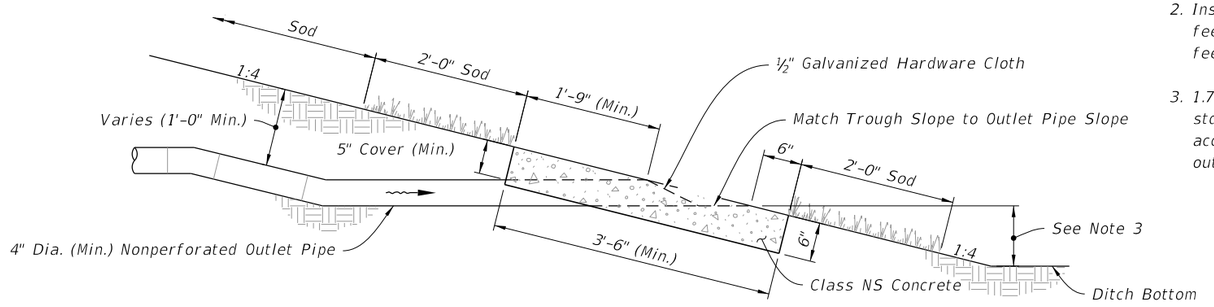
PLAN

NOTES:

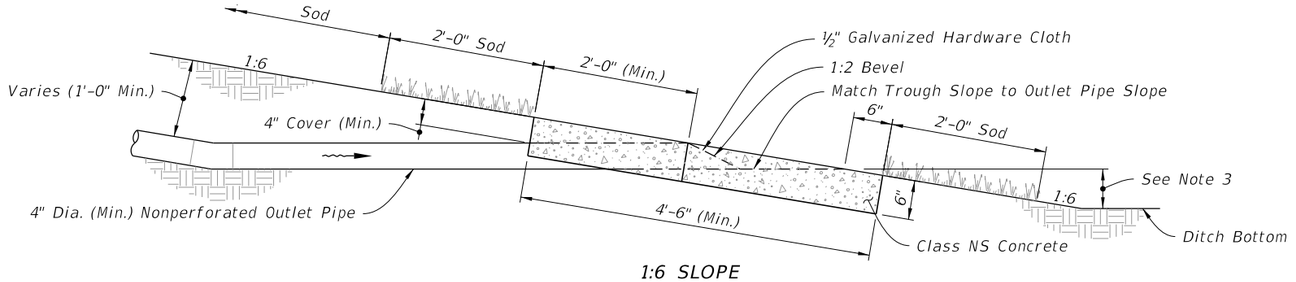
1. Install 6" thick Class NS concrete, 0.19 cubic yard for 1:4 slopes and 0.25 cubic yard for 1:6 slopes.
2. Install perimeter sod, 4.7 square feet for 1:4 slopes and 5.5 square feet for 1:6 Slopes.
3. 1.75' std. for grassed ditches; 0.5' std. for paved ditches [less is acceptable to provide minimum 0.1% outlet pipe slope]



SECTION A-A



1:4 SLOPE



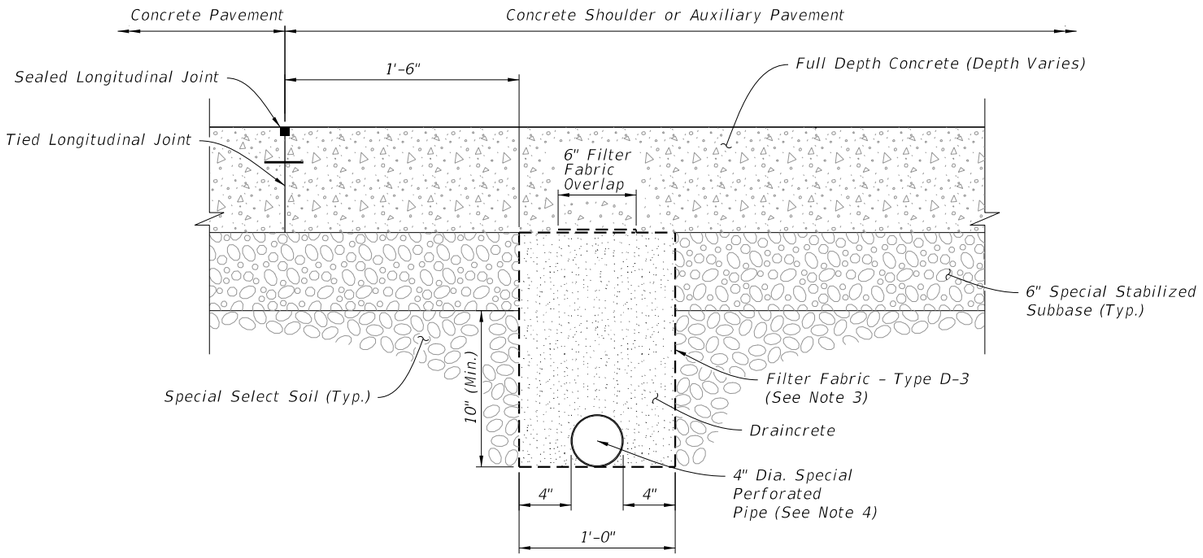
1:6 SLOPE

ELEVATIONS

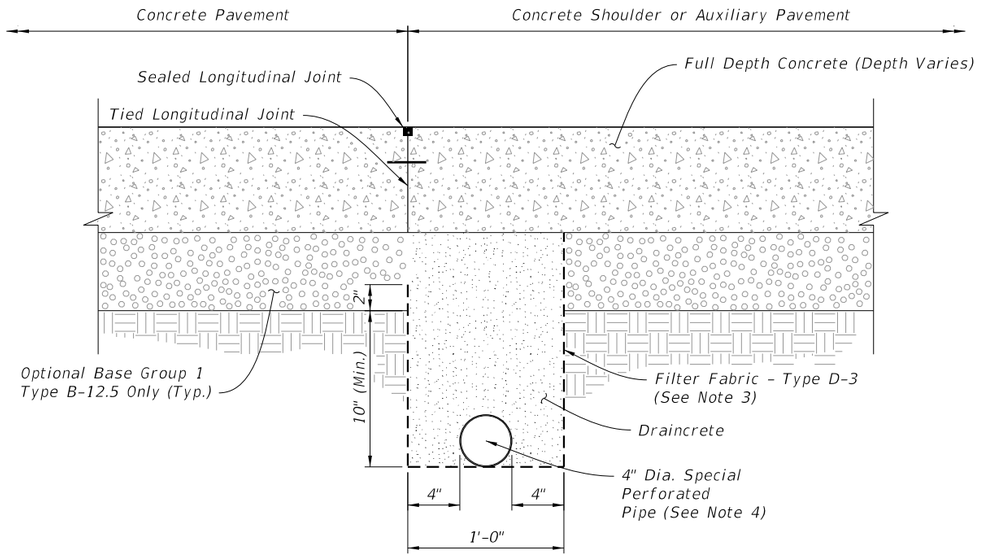
EDGEDRAIN OUTLET

10/29/2019 8:17:12 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	CONCRETE PAVEMENT SUBDRAINAGE	446-001	2 of 4

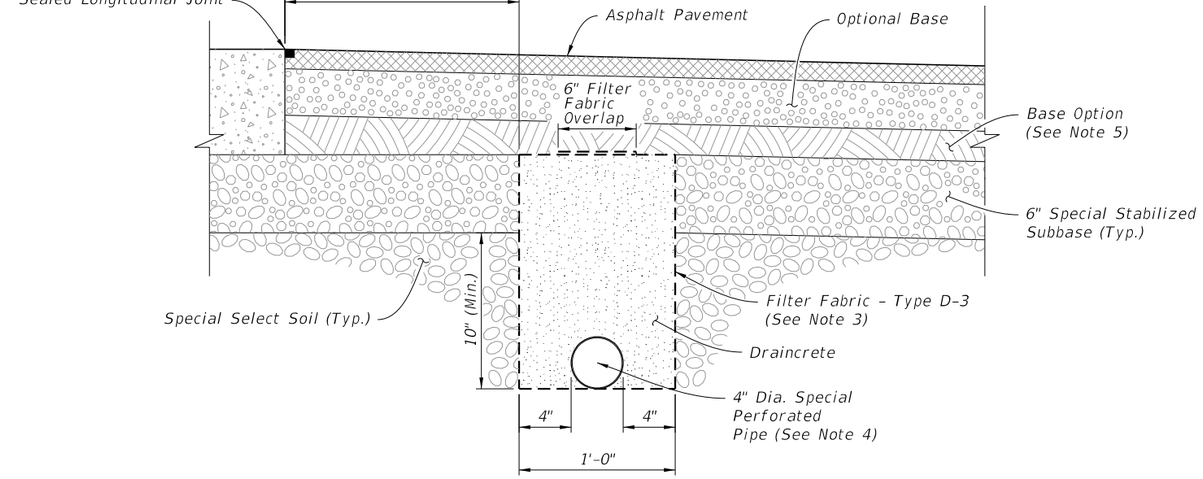


SPECIAL SELECT SOIL BASE



ASPHALT BASE

CONCRETE SHOULDERS AND AUXILIARY PAVEMENT



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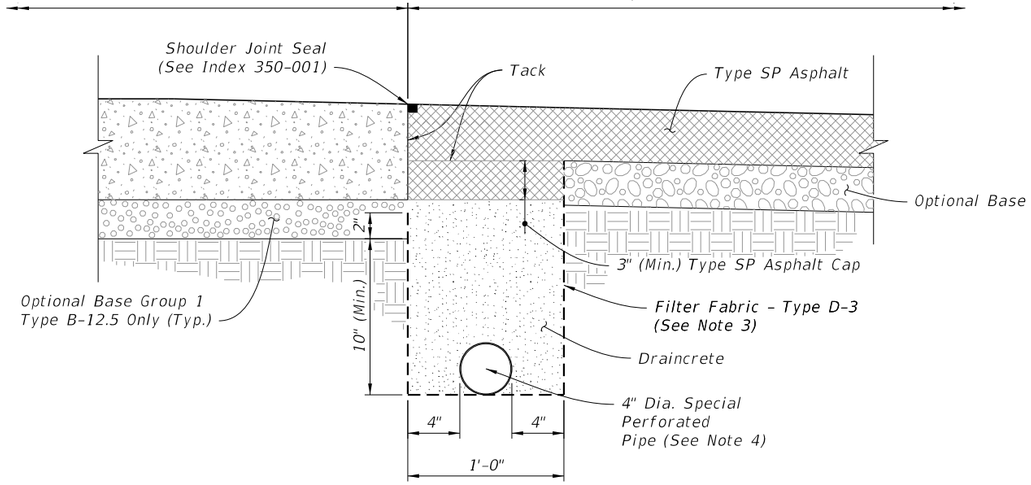

ASPHALT BASE

ASPHALT 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. At the Contractor's option this area may be constructed of Optional Base material (Specification 285) or special stabilized subbase.

NEW CONSTRUCTION

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	CONCRETE PAVEMENT SUBDRAINAGE	446-001	3 of 4

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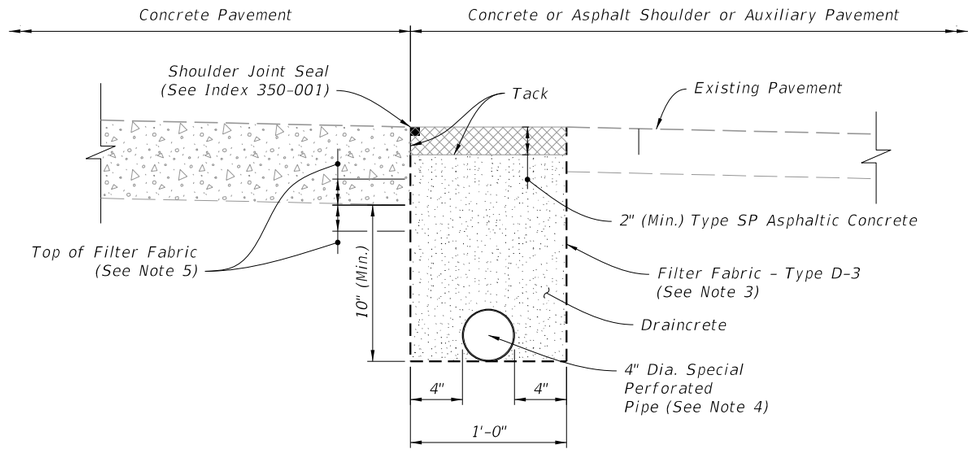
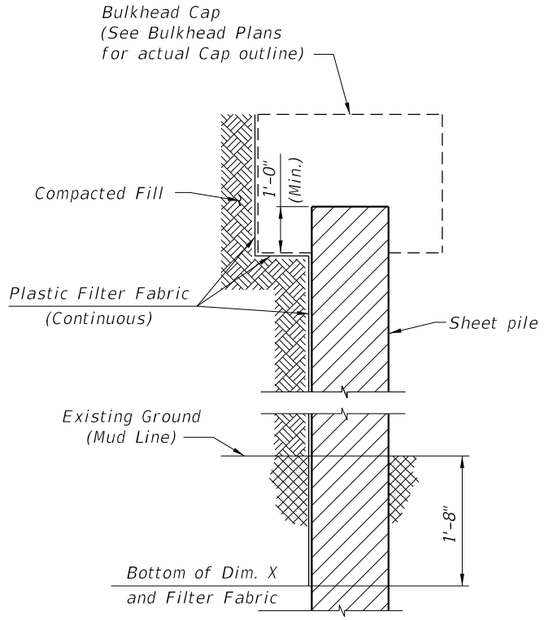


EXISTING SHOULDERS

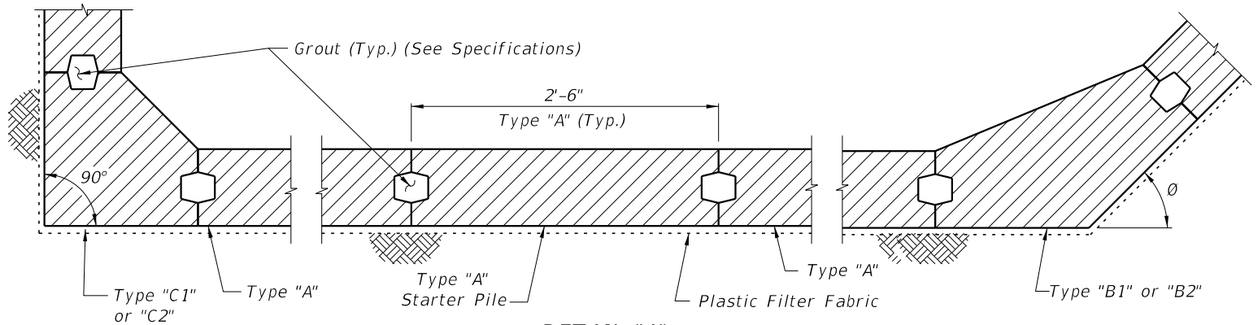
NOTES:

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.

CROSS REFERENCES:
For Dimensions L and X see Sheet
Pile Wall Data Table in Structures Plans.

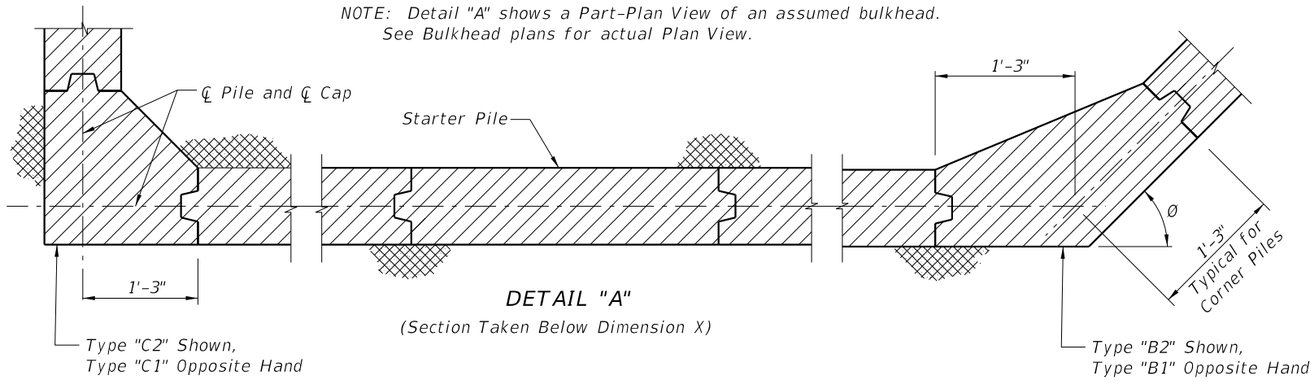


SECTION THRU BULKHEAD
(Showing Plastic Filter Fabric)



DETAIL "A"
(Cap and Anchoring System Not Shown)
(Section Taken Above Dimension X)

NOTE: Detail "A" shows a Part-Plan View of an assumed bulkhead.
See Bulkhead plans for actual Plan View.



DETAIL "A"
(Section Taken Below Dimension X)

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 silica fume, metakaolin or ultrafine fly ash for extremely aggressive environments
Unit weight:	150 pcf
Modulus of Elasticity:	Based on the use of Florida limerock concrete

REINFORCING STEEL
ASTM A615 Grade 60

PRESTRESSING STEEL
ASTM A416 Grade 270 (Low-Relaxation Strand)

DESIGN PARAMETERS:
Type "A"

Concrete Compressive Strength at release of prestressing:	4000 psi minimum
Uniform compression after prestressing losses:	1000 psi minimum
Pick-up, Storage and Transportation:	0.0 psi tension with 1.5 times pile self weight

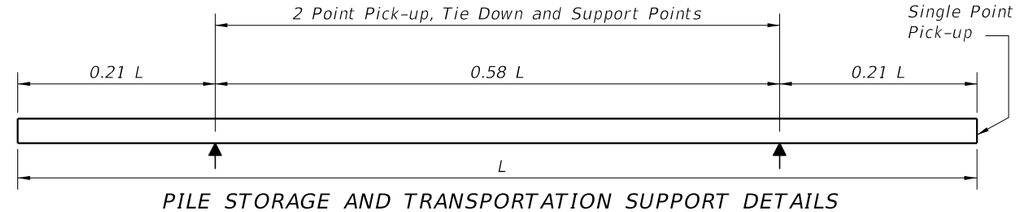
Types "B1", "B2", "C1" & "C2"
Pick-up, Storage and Transportation: Minimum compressive strength f'ci ≥ 4000 psi required.

ENVIRONMENT:
The pile designs are applicable to all Environments.

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.
Types "B1", "B2", "C1" & "C2"
Two point pick-up for lifting out of forms & two point support for storage & transportation.
Single point pick-up for installation only.

PILE FIT-UP:
The 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to ½" to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-5½". No changes shall be made to the tongues or grooves.



PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS

NOTES AND DETAILS

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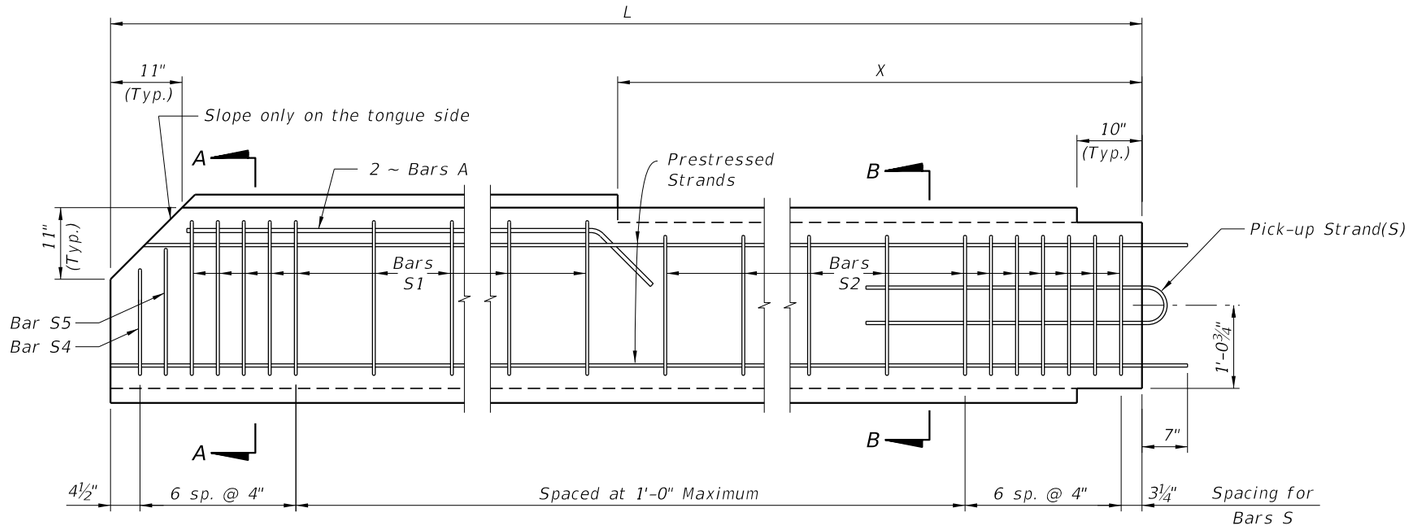
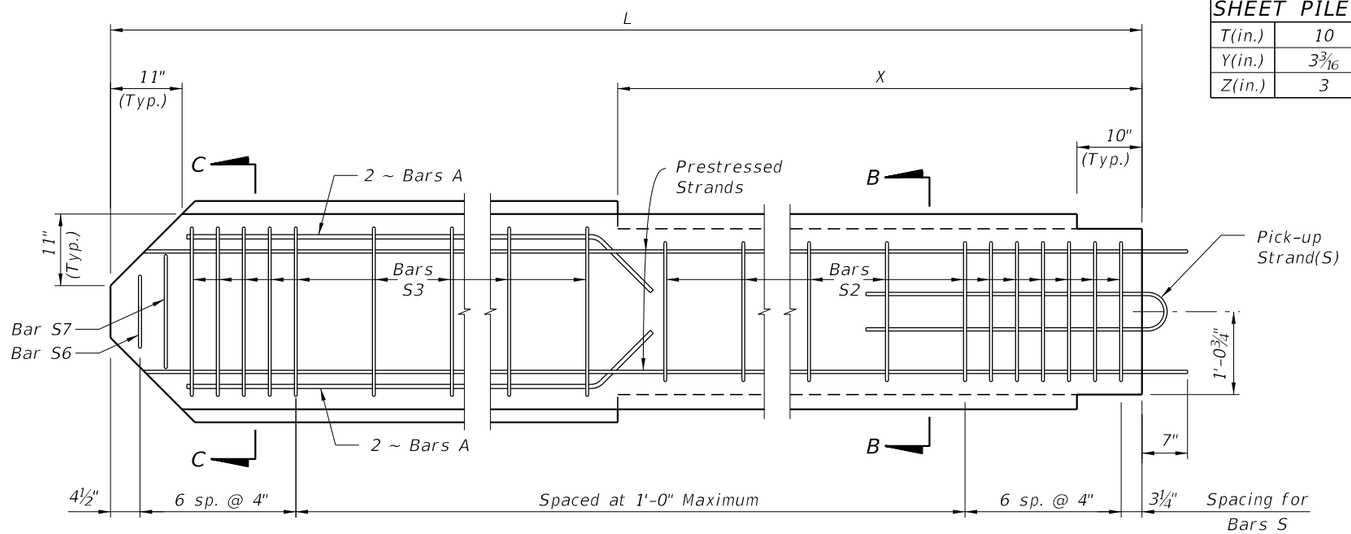
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CONVENTIONAL)	INDEX 455-400	SHEET 1 of 4



TYPICAL PILE

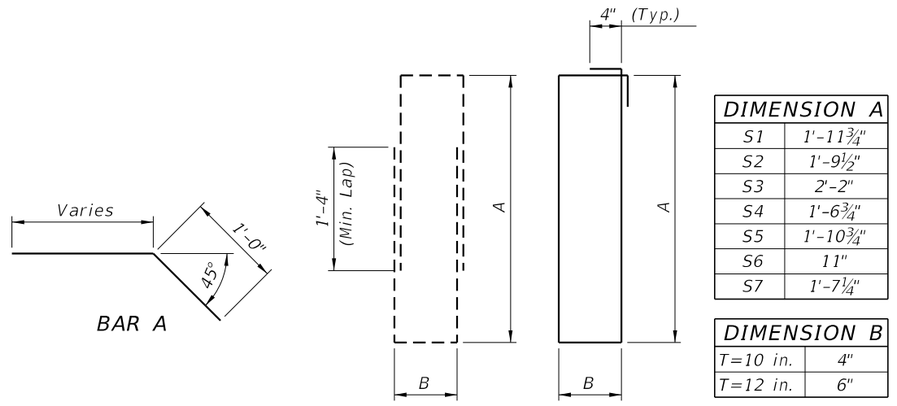


STARTER PILE

WALL THICKNESS	STRAND DIA. (in.)	MAXIMUM L	n	D (in.)	TOTAL # OF STRANDS	INITIAL (JACKING) FORCE (Kip)
T=10 in.	0.5	28'-0"	6	3¼	14	31
	0.6	27'-0"	4	5	10	44
T=12 in.	0.5	31'-0"	7	2⅞	16	31
	0.6	30'-0"	5	4	12	44

SHEET PILE DIMENSIONS		
T(in.)	10	12
Y(in.)	3 3/16	4 3/16
Z(in.)	3	4

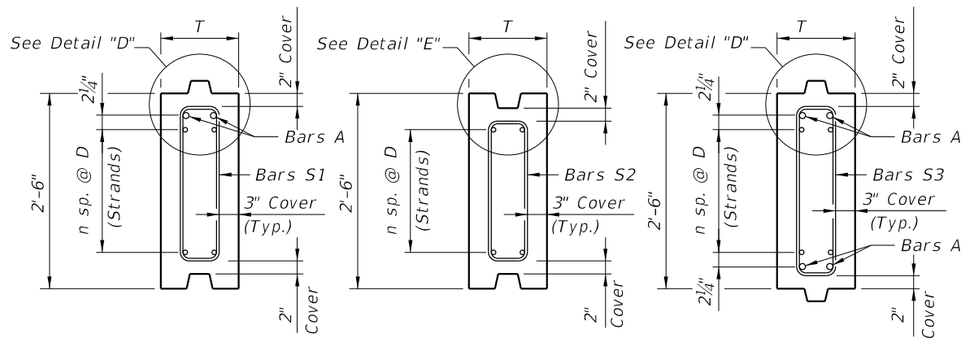
BAR BENDING DIAGRAMS

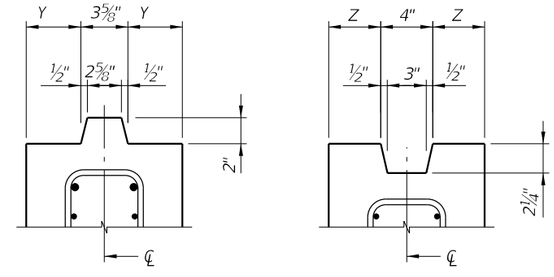


DIMENSION A	
S1	1'-11¾"
S2	1'-9½"
S3	2'-2"
S4	1'-6¾"
S5	1'-10¾"
S6	11"
S7	1'-7¼"

DIMENSION B	
T=10 in.	4"
T=12 in.	6"

NOTES:
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.





TYPE "A" STANDARD SECTION

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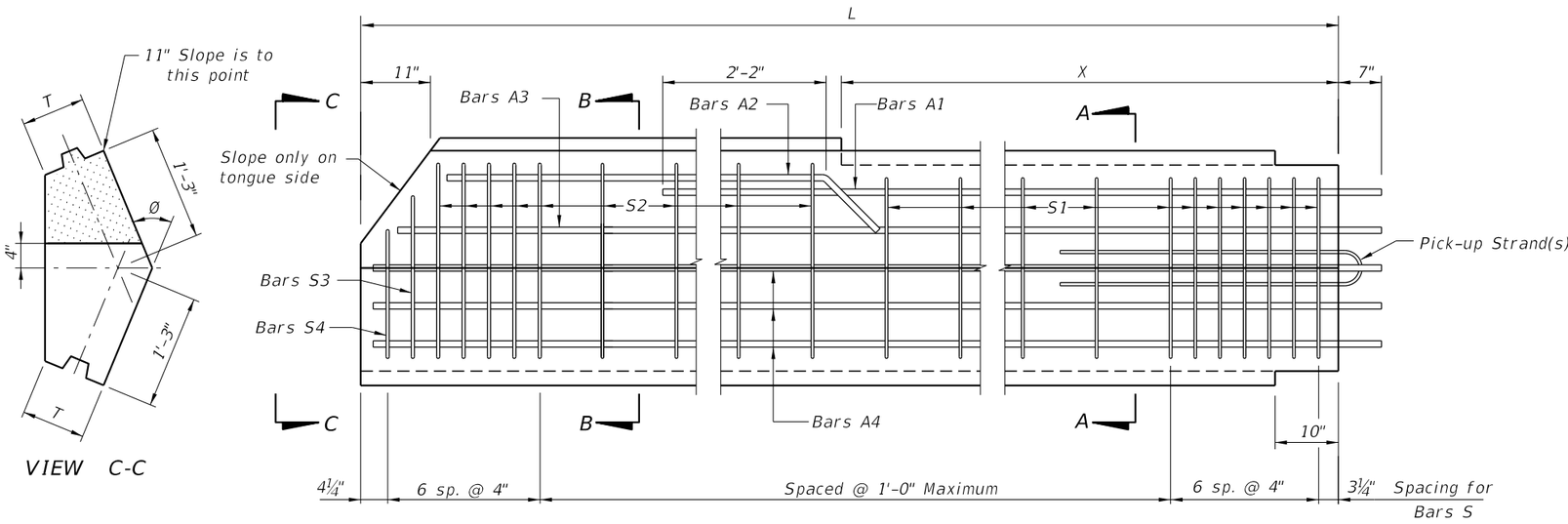
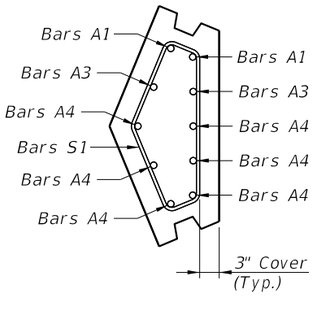
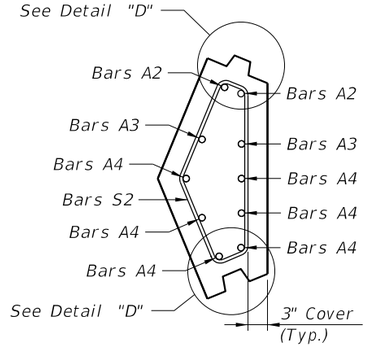
LAST REVISION	REVISION	DESCRIPTION:			
11/01/18			FY 2020-21 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CONVENTIONAL)	INDEX 455-400 / SHEET 2 of 4



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



SECTION A-A



SECTION B-B

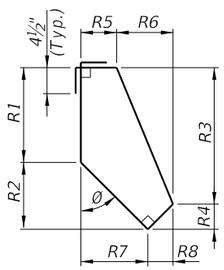
BAR BENDING DIAGRAMS

STIRRUP DIMENSIONS (T = 10")

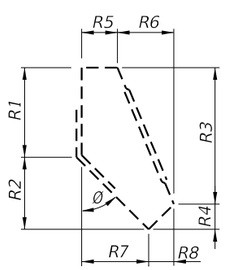
Ø	BAR MARK	R1	R2	R3	R4	R5	R6	R7	R8
30°	S1	11¼"	9¾"	1'-6½"	2½"	5"	4¾"	5½"	4¼"
	S2	1'-1½"	9¾"	1'-8¾"	2½"	4½"	5½"	5¾"	4¼"
	S3	11¼"	8"	1'-6"	1¼"	5"	4½"	4½"	5"
	S4	11¼"	4¼"	1'-1¾"	1¾"	5"	3¾"	2½"	6¼"
45°	S1	11½"	8"	1'-4"	4"	5½"	6½"	8"	4"
	S2	1'-1¾"	8"	1'-5¾"	4"	4½"	7½"	8"	4"
	S3	11½"	6¾"	1'-4"	2¼"	5½"	6¾"	6¾"	5½"
	S4	11½"	3½"	1'-0"	3"	5½"	5"	3½"	7"
60°	S1	1'-0"	6"	1'-0¾"	5¼"	6"	7¼"	10¼"	3"
	S2	1'-2"	6"	1'-2¾"	5¼"	4¾"	8¾"	10½"	3"
	S3	1'-0"	4¾"	1'-1½"	3¼"	6"	8"	8¾"	5¼"
	S4	1'-0"	2½"	10"	4½"	6"	5¾"	4"	7½"

STIRRUP DIMENSIONS (T = 12")

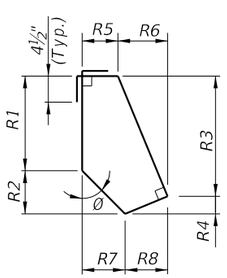
Ø	BAR MARK	R1	R2	R3	R4	R5	R6	R7	R8
30°	S1	11½"	10"	1'-6"	3½"	7"	4¾"	5¾"	6"
	S2	1'-1¾"	10"	1'-8¼"	3½"	6½"	5¼"	5¾"	6"
	S3	11½"	8¼"	1'-5¾"	2"	7"	4¾"	4½"	7¼"
	S4	11½"	4"	1'-1¼"	2¼"	7"	3¾"	2½"	8¼"
45°	S1	1'-0"	8½"	1'-3¼"	5¼"	7½"	6¼"	8½"	5¼"
	S2	1'-2¼"	8½"	1'-5½"	5¼"	6½"	7¼"	8½"	5¼"
	S3	1'-0"	7"	1'-4"	3"	7½"	6¾"	7"	7¼"
	S4	1'-0"	3½"	11¾"	3¾"	7½"	5"	3½"	9"
60°	S1	1'-0½"	6¼"	11¾"	7"	8"	6¾"	10¾"	4"
	S2	1'-2¾"	6¼"	1'-2"	7"	6¾"	8"	10¾"	4"
	S3	1'-0½"	5"	1'-1½"	4"	8"	8"	9"	7"
	S4	1'-0½"	2½"	9½"	5½"	8"	5½"	4¼"	9¼"



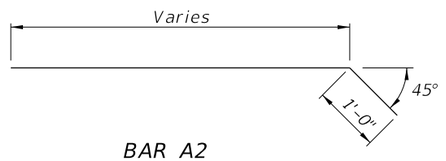
1 - PIECE
BARS S1 & S2



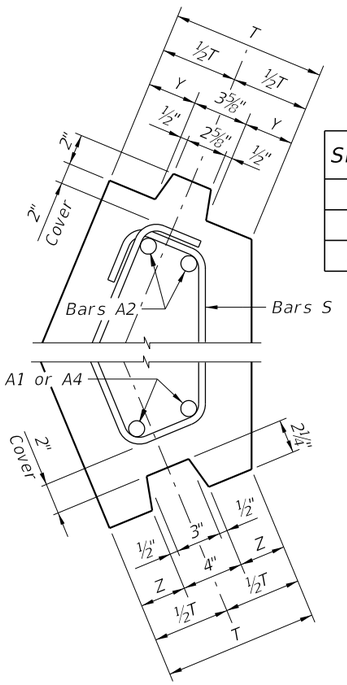
2 - PIECE



BARS S3 & S4



BAR A2

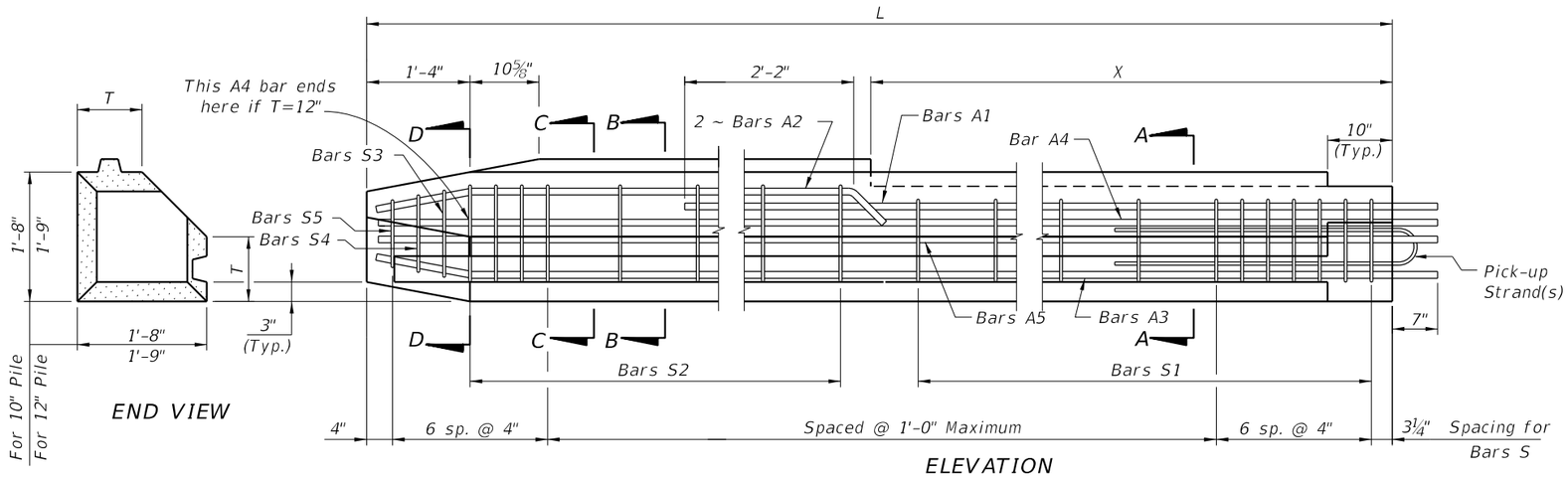


SHEET PILE DIMENSIONS		
T (in.)	10	12
Y (in.)	3 3/16	4 3/16
Z (in.)	3	4

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

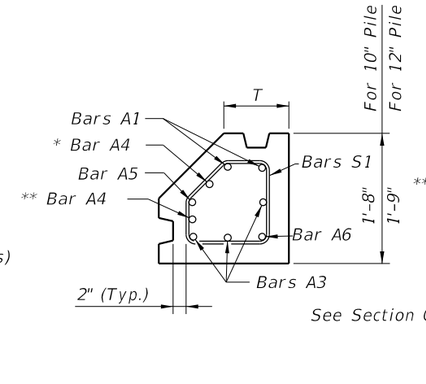
NOTES:
1. This drawing includes details for precast concrete corner piles for 10" and 12" thick sheet pile systems. The details apply equally to both thicknesses.
2. The bar configurations shown in Sections A-A and B-B shall be used for Ø angles between 15° and 75°. For Ø angles not shown, the reinforcing bar dimensions may be interpolated or extrapolated from the stirrup dimensions shown.
3. All bar dimensions are out-to-out.
4. Bars A are #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

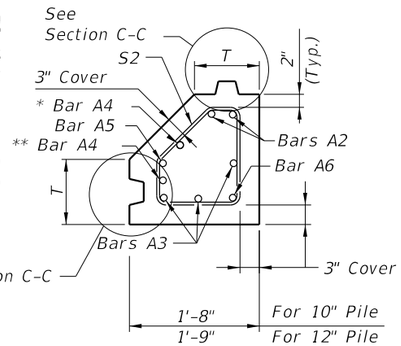


END VIEW

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



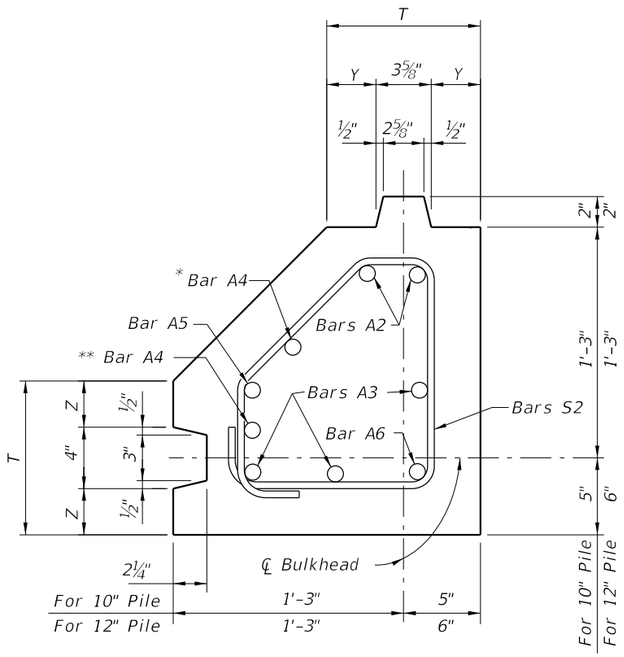
SECTION A-A



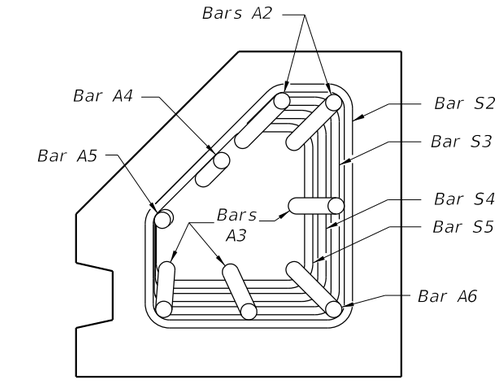
SECTION B-B

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

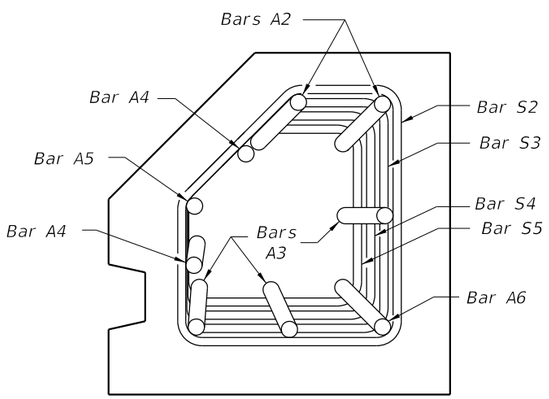
** This Bar A4 (not shown in elevation) is included only if T = 12".



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



SECTION D-D (T=10")

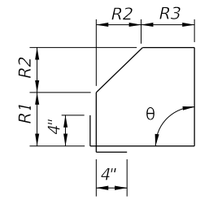


SECTION D-D (T=12")

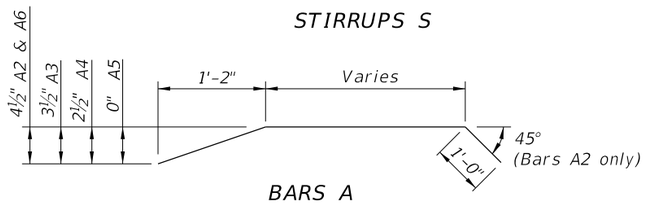
STIRRUP DIMENSIONS					
θ	T (in.)	BAR MARK	R1	R2	R3
90°	10	S1	7"	5¾"	7"
		S2	7"	8"	4¾"
		S3	6¼"	7¼"	4¾"
		S4	5½"	6½"	4¾"
		S5	4¾"	5¾"	4¾"
	12	S1	9"	4¾"	9"
		S2	9"	7"	6¾"
		S3	8¼"	6¼"	6¾"
		S4	7½"	5½"	6¾"
		S5	6¾"	4¾"	6¾"

SHEET PILE DIMENSIONS		
T (in.)	10	12
Y (in.)	3 3/16	4 3/16
Z (in.)	3	4

BAR BENDING DIAGRAMS



STIRRUPS S



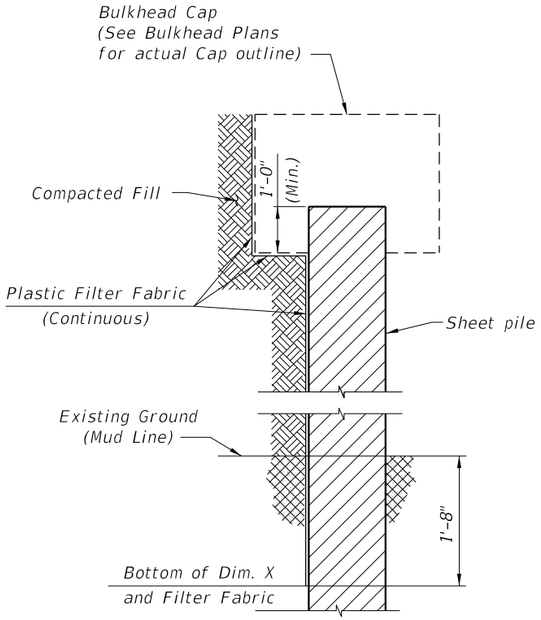
BARS A

Note: All Bar dimensions are out-to-out.

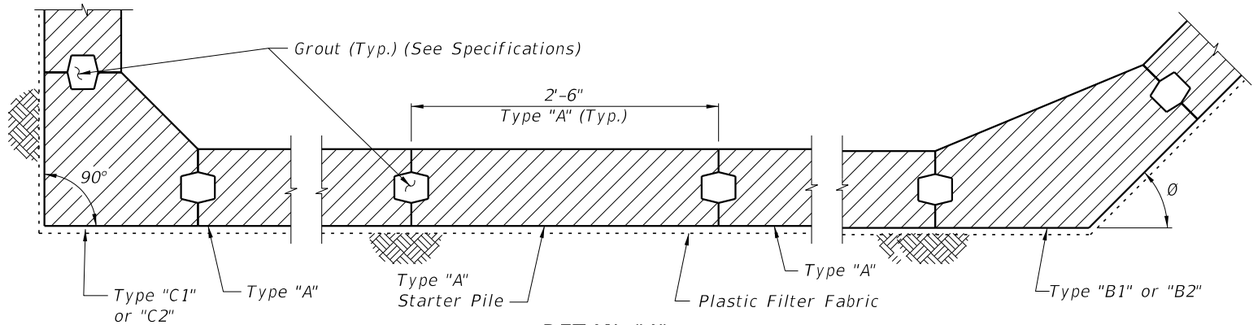
NOTES:
1. All bar dimensions are out-to-out.
2. Bars A are #8 and Bars S are #4.
3. This drawing includes information for precast Corner Piles for 10" and 12" thick Sheet Pile systems. The details apply to both thicknesses but the bar configurations change slightly according to the thickness values used.
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 or Groove side.
6. For Dimensions L and X see Sheet Pile Data Table in Structures Plans.

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

CROSS REFERENCES:
For Dimensions L and X see Sheet
Pile Wall Data Table in Structures Plans.

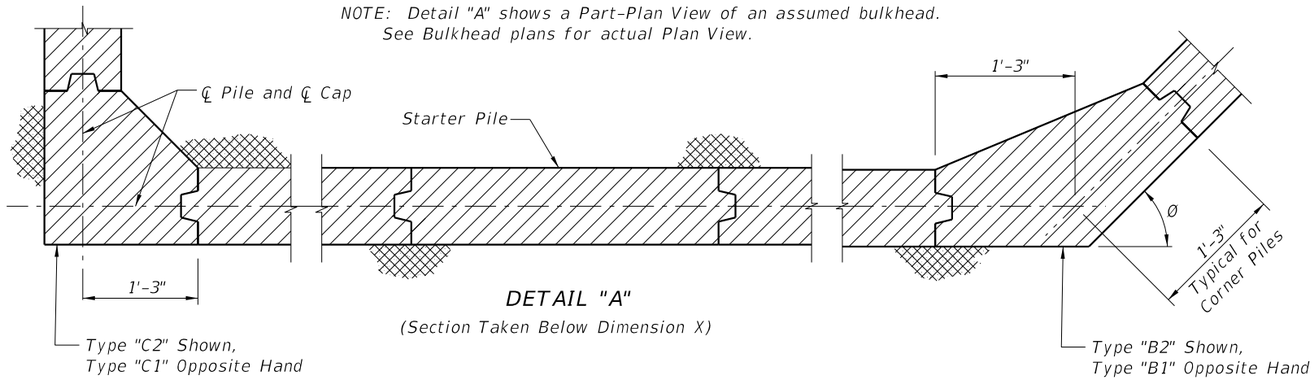


SECTION THRU BULKHEAD
(Showing Plastic Filter Fabric)



DETAIL "A"
(Cap and Anchoring System Not Shown)
(Section Taken Above Dimension X)

NOTE: Detail "A" shows a Part-Plan View of an assumed bulkhead.
See Bulkhead plans for actual Plan View.



DETAIL "A"
(Section Taken Below Dimension X)

CFRP/GFRP 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, UNS S32205 (Type 2205) or UNS S31803 strand, meeting the requirements of Specification Section 933.
Carbon FRP: Prestressing strand shall be CFRP strand, meeting the requirements of Specification Section 933.

DESIGN PARAMETERS:
Type "A"

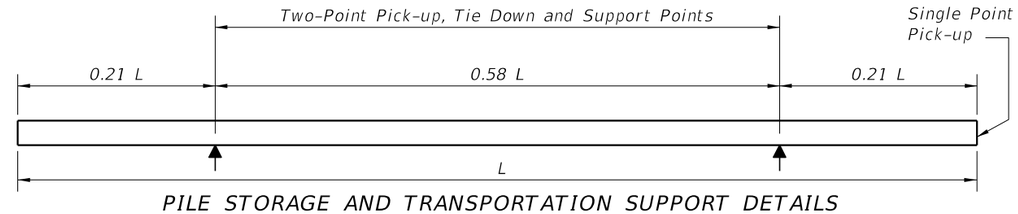
Concrete Compressive Strength at release of prestressing:	4000 psi minimum
Uniform compression after prestressing losses:	700 psi minimum
Pick-up, Storage and Transportation:	450 psi tension with 1.5 times pile self weight for single-point pick-up at f'c ≥ 6000 psi

Types "B1", "B2", "C1" & "C2"
Pick-up, Storage and Transportation: Minimum compressive strength f'ci ≥ 4000 psi required for two-point pick-up; f'c ≥ 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.

PILE FIT-UP:
The 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to ½" to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-5½". No changes shall be made to the tongues or grooves.

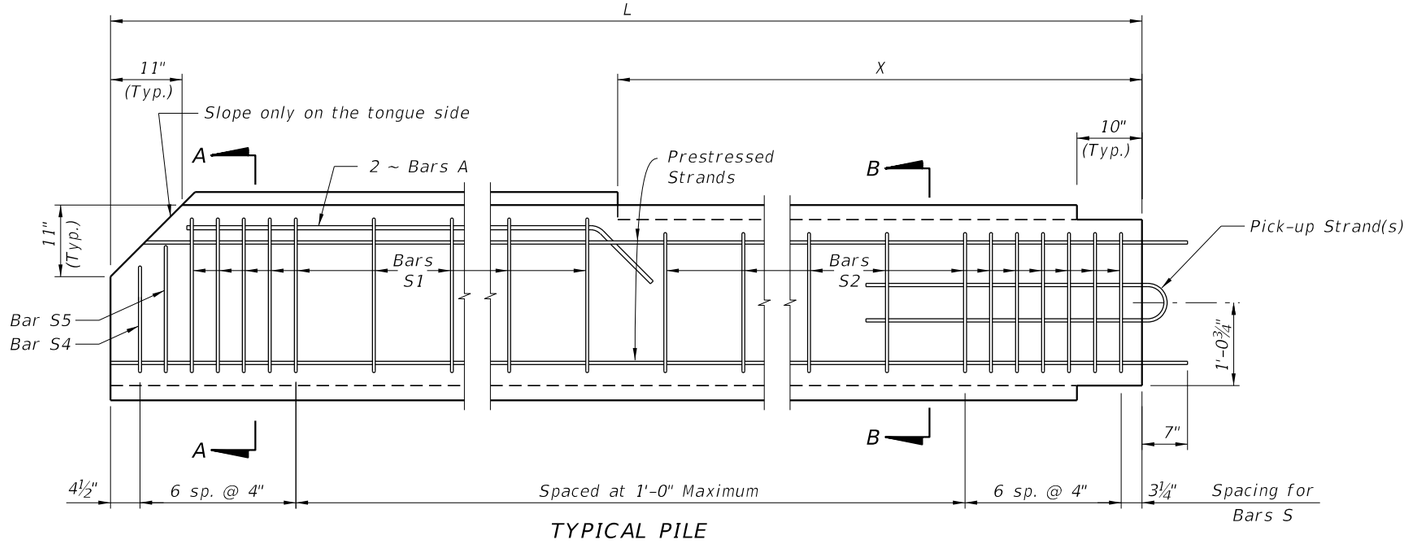


PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS

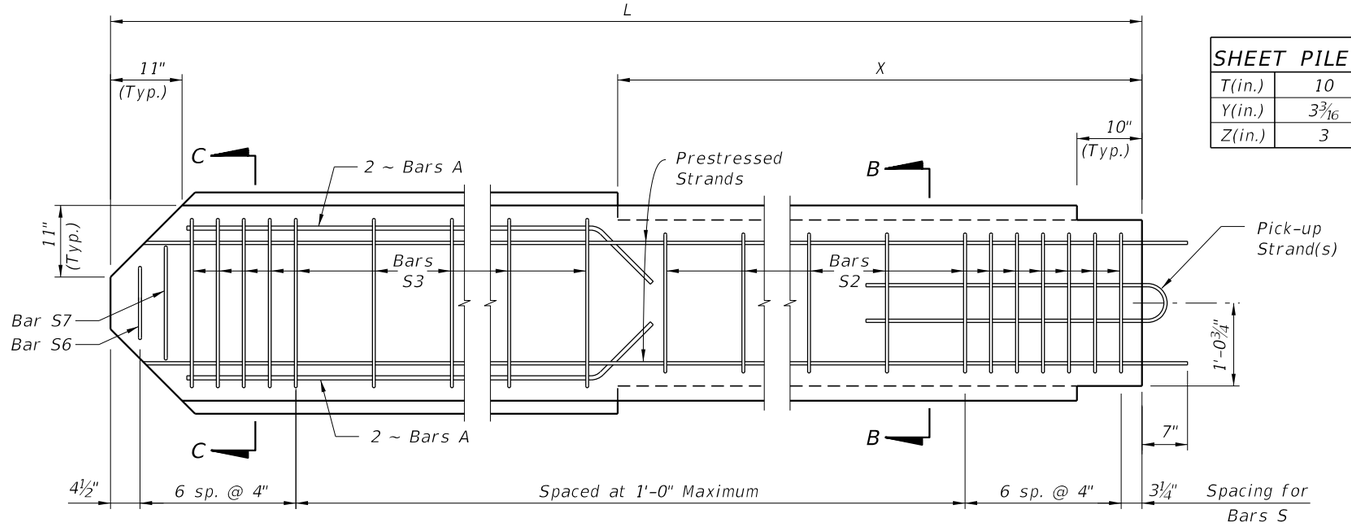
NOTES AND DETAILS

10/29/2019 8:17:29 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CFRP/GFRP & HSSS/GFRP)	INDEX	SHEET
11/01/16						455-440	1 of 4



TYPICAL PILE



STARTER PILE

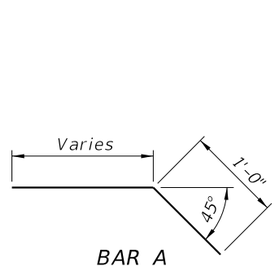
SHEET PILE DIMENSIONS		
T(in.)	10	12
Y(in.)	3 3/16	4 3/16
Z(in.)	3	4

Strand Material	Wall Thickness	STRAND DIA. (in.)	MAXIMUM L *	n	D (in.)	TOTAL # OF STRANDS	Initial (Jacking) FORCE (Kip)
CFRP Strand	T=10 in.	0.49 (12.5mm)	26'-0"	4	4	10	28.7
		0.5 (12.7mm)	27'-0"	3	5¼ (2)	8	41.3
		0.6 (15.2mm)	27'-0"	3	5¼ (2)	8	42.7
	T=12 in.	0.49 (12.5mm)	31'-0"	5	3¼ (1)	12	28.7
		0.5 (12.7mm)	31'-0"	3	5¼ (2)	8	41.3
		0.6 (15.2mm)	31'-0"	3	5¼ (2)	8	42.7
HSSS Strand	T=10 in.	0.5 (12.7mm)	27'-0"	5	3¼ (1)	12	25.7
		0.6 (15.2mm)	26'-0"	3	5¼ (2)	8	36.5
	T=12 in.	0.5 (12.7mm)	32'-0"	6	2¾ (3)	14	25.7
		0.6 (15.2mm)	32'-0"	4	4	10	36.5

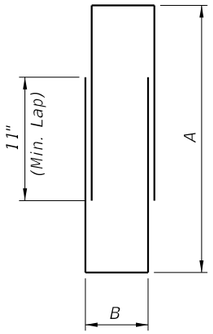
Alternate symmetrical strand patterns:
(1) 4 sp. @ 2" & 1 sp. @ 8"
(2) 2 sp. @ 4" & 1 sp. @ 8"
(3) 4 sp. @ 2" & 2 sp. @ 4"

* Based on lifting using single point pick-up.

BAR BENDING DIAGRAMS



BAR A

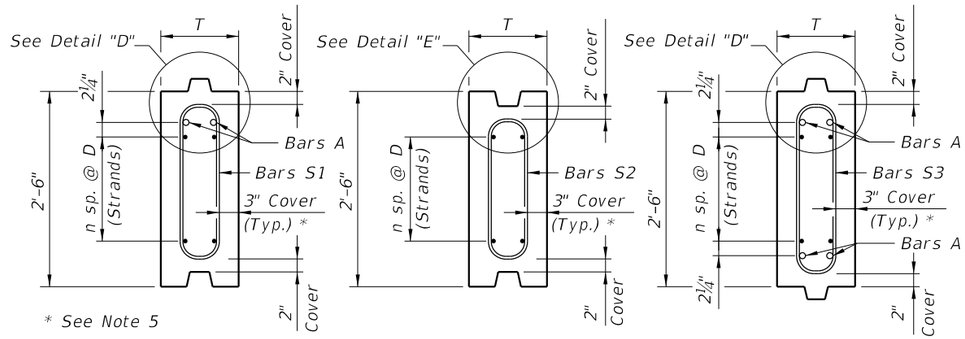


BAR S (2-PIECE)
(See Note 4)

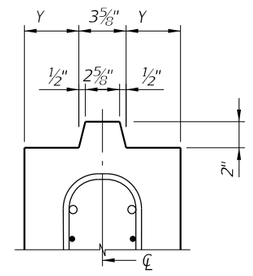
DIMENSION A	
S1	1'-11¾"
S2	1'-9½"
S3	2'-2"
S4	1'-5¼"
S5	1'-9¼"
S6	1'-1"
S7	1'-9"

DIMENSION B	
T=10 in.	6"
T=12 in.	6"

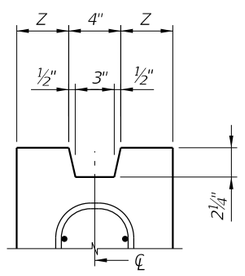
NOTES:
1. Intermediate Prestress Strands not shown in Elevations and Sections.
2. All bar dimensions are out-to-out.
3. Bars A are GFRP #5
4. Bars S are GFRP #4 and may be a single closed bar (hoop) with equivalent area and tensile strength.
5. For 10" thick Sheet Piles, Bars S may be tilted to achieve contact with strands or provide supplemental GFRP Bars to offset Bars S from strands and maintain 2" Nominal cover.
6. For Dimensions L and X see Sheet Pile Data Table in Structures Plans.



SECTION A-A SECTION B-B SECTION C-C



DETAIL "D"
(Typical Tongue)



DETAIL "E"
(Typical Groove)

TYPE "A" STANDARD SECTION

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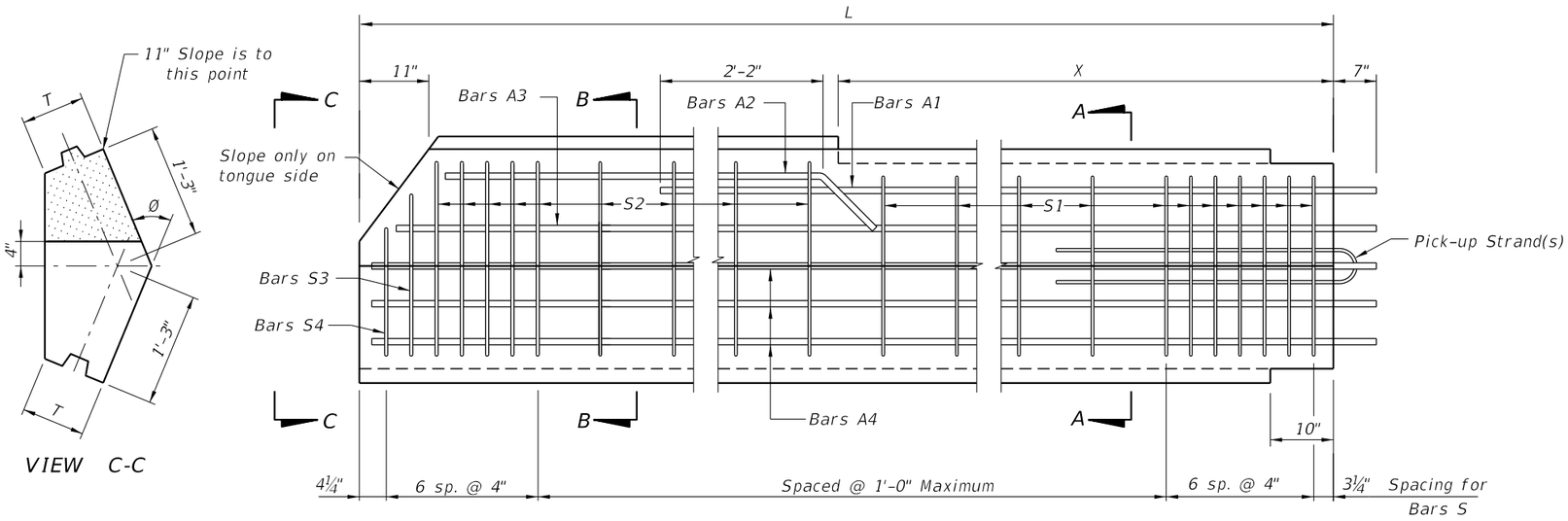
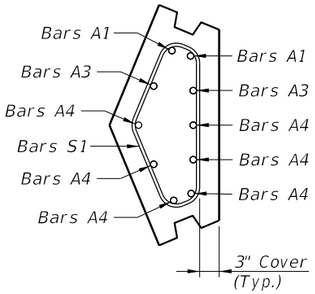
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CFRP/GFRP & HSSS/GFRP)	INDEX 455-440	SHEET 2 of 4

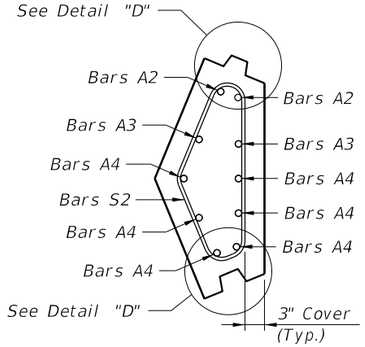


ELEVATION
(TYPE "B1" PILE SHOWN, TYPE "B2" PILE OPPOSITE HAND)

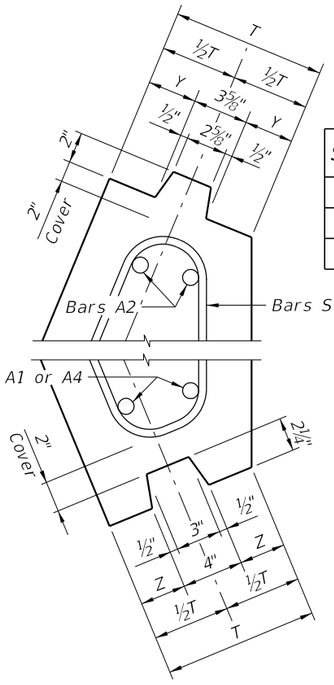
VIEW C-C



SECTION A-A



SECTION B-B



SHEET PILE DIMENSIONS		
T (in.)	10	12
Y (in.)	3 3/16	4 3/16
Z (in.)	3	4

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

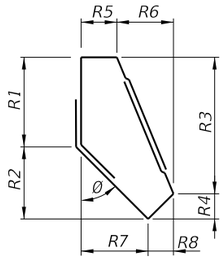
BAR BENDING DIAGRAMS

STIRRUP DIMENSIONS (T = 10")

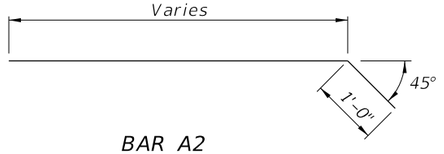
Ø	BAR MARK	R1	R2	R3	R4	R5	R6	R7	R8
30°	S1	11¼"	9¾"	1'-6½"	2½"	5"	4¾"	5½"	4¼"
	S2	1'-1½"	9¾"	1'-8¾"	2½"	4½"	5½"	5¾"	4¼"
	S3	11¼"	8"	1'-6"	1¼"	5"	4½"	4½"	5"
	S4	11¼"	4¼"	1'-1¾"	1¾"	5"	3¾"	2½"	6¼"
45°	S1	11½"	8"	1'-4"	4"	5½"	6½"	8"	4"
	S2	1'-1¾"	8"	1'-5¾"	4"	4½"	7½"	8"	4"
	S3	11½"	6¾"	1'-4"	2¼"	5½"	6¾"	6¾"	5½"
	S4	11½"	3½"	1'-0"	3"	5½"	5"	3½"	7"
60°	S1	1'-0"	6"	1'-0¾"	5¼"	6"	7¼"	10¼"	3"
	S2	1'-2"	6"	1'-2¾"	5¼"	4¾"	8¾"	10½"	3"
	S3	1'-0"	4¾"	1'-1½"	3¼"	6"	8"	8¾"	5¼"
	S4	1'-0"	2½"	10"	4½"	6"	5¾"	4"	7½"

STIRRUP DIMENSIONS (T = 12")

Ø	BAR MARK	R1	R2	R3	R4	R5	R6	R7	R8
30°	S1	11½"	10"	1'-6"	3½"	7"	4¾"	5¾"	6"
	S2	1'-1¾"	10"	1'-8¼"	3½"	6½"	5¼"	5¾"	6"
	S3	11½"	8¼"	1'-5¾"	2"	7"	4¾"	4½"	7¼"
	S4	11½"	4"	1'-1¼"	2¼"	7"	3¾"	2½"	8¼"
45°	S1	1'-0"	8½"	1'-3¼"	5¼"	7½"	6¼"	8½"	5¼"
	S2	1'-2¼"	8½"	1'-5½"	5¼"	6½"	7¼"	8½"	5¼"
	S3	1'-0"	7"	1'-4"	3"	7½"	6¾"	7"	7¼"
	S4	1'-0"	3½"	11¾"	3¾"	7½"	5"	3½"	9"
60°	S1	1'-0½"	6¼"	11¾"	7"	8"	6¾"	10¾"	4"
	S2	1'-2¾"	6¼"	1'-2"	7"	6¾"	8"	10¾"	4"
	S3	1'-0½"	5"	1'-1½"	4"	8"	8"	9"	7"
	S4	1'-0½"	2½"	9½"	5½"	8"	5½"	4¼"	9¼"



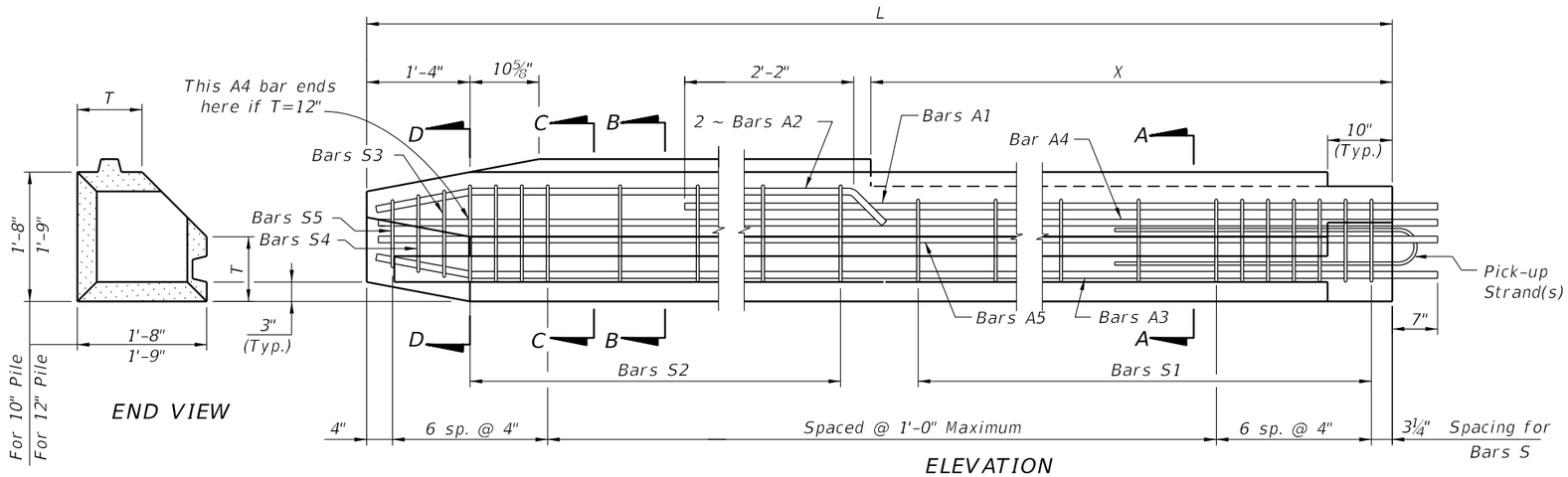
BARS S1 & S2
(2 - PIECE)



BAR A2

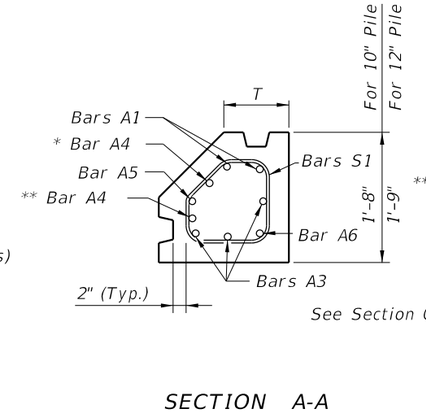
NOTES:
1. This drawing includes details for precast concrete corner piles for 10" and 12" thick sheet pile systems. The details apply equally to both thicknesses.
2. The bar configurations shown in Sections A-A and B-B shall be used for Ø angles between 15° and 75°. For Ø angles not shown, the reinforcing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

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

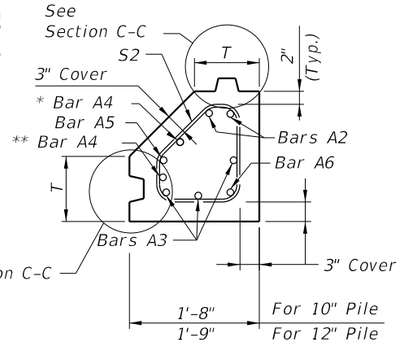


END VIEW

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



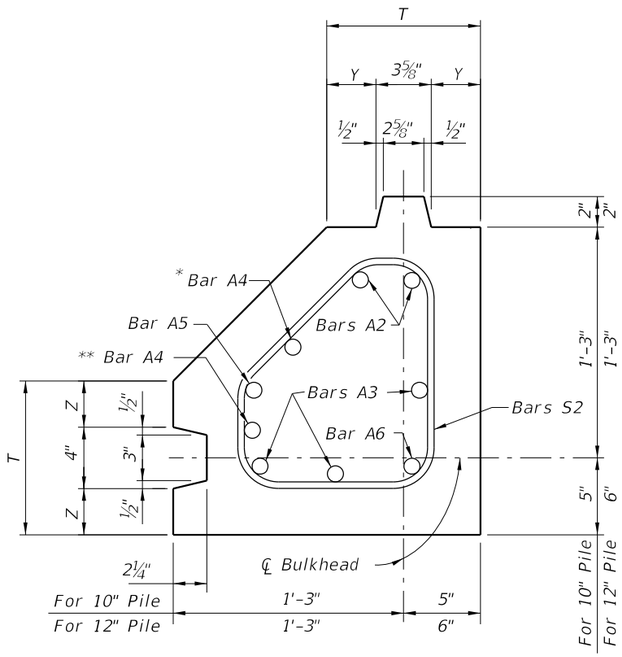
SECTION A-A



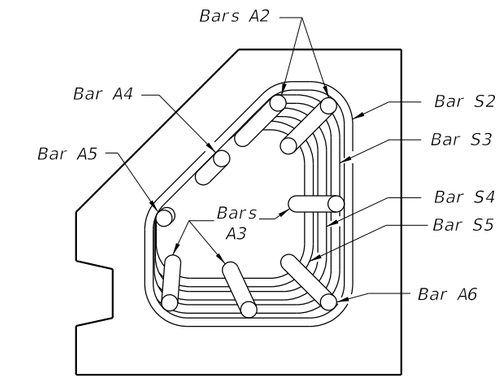
SECTION B-B

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

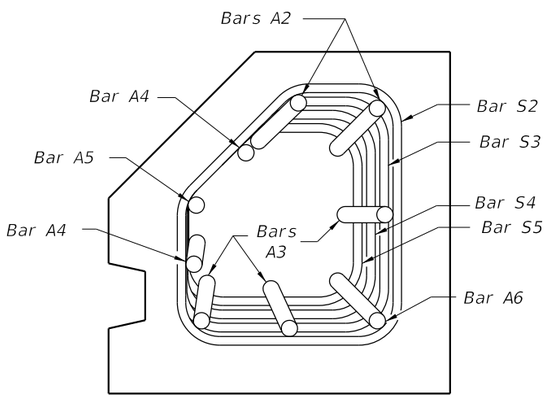
** This Bar A4 (not shown in elevation) is included only if T = 12".



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



SECTION D-D (T=10")

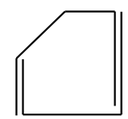


SECTION D-D (T=12")

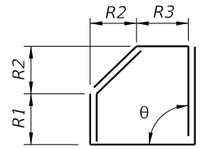
STIRRUP DIMENSIONS					
θ	T (in.)	BAR MARK	R1	R2	R3
90°	10	S1	7"	5¾"	7"
		S2	7"	8"	4¾"
		S3	6¼"	7¼"	4¾"
		S4	5½"	6½"	4¾"
		S5	4¾"	5¾"	4¾"
	12	S1	9"	4¾"	9"
		S2	9"	7"	6¾"
		S3	8¼"	6¼"	6¾"
		S4	7½"	5½"	6¾"
		S5	6¾"	4¾"	6¾"

SHEET PILE DIMENSIONS		
T (in.)	10	12
Y (in.)	3 3/16	4 3/16
Z (in.)	3	4

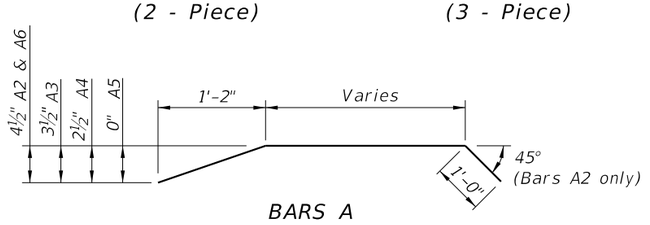
BAR BENDING DIAGRAMS



STIRRUPS S
(2 - Piece)



STIRRUPS S
(3 - Piece)



BARS A

Note: All Bar dimensions are out-to-out.

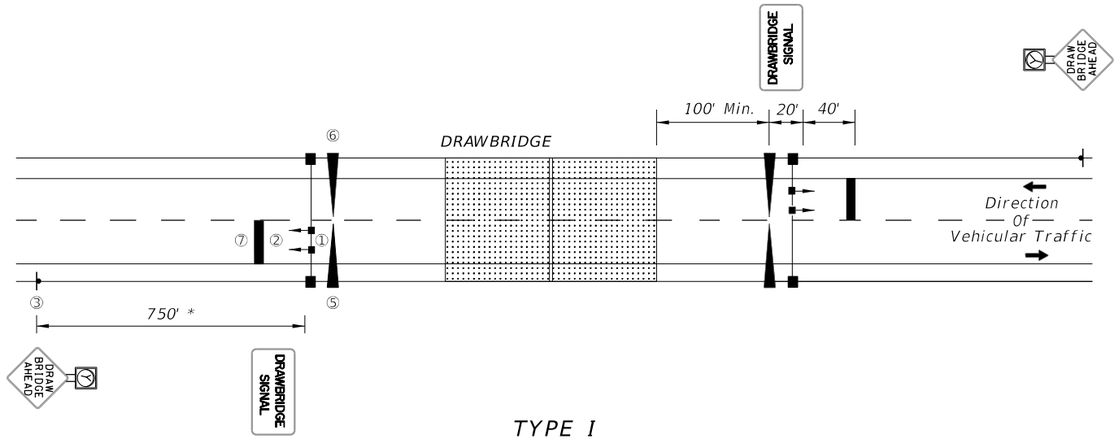
NOTES:
1. All bar dimensions are out-to-out.
2. Bars A are GFRP #8 and Bars S are GFRP #4.
3. This drawing includes information for precast Corner Piles for 10" and 12" thick Sheet Pile systems. The details apply to both thicknesses but the bar configurations change slightly according to the thickness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

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

10/29/2019 8:17:32 AM

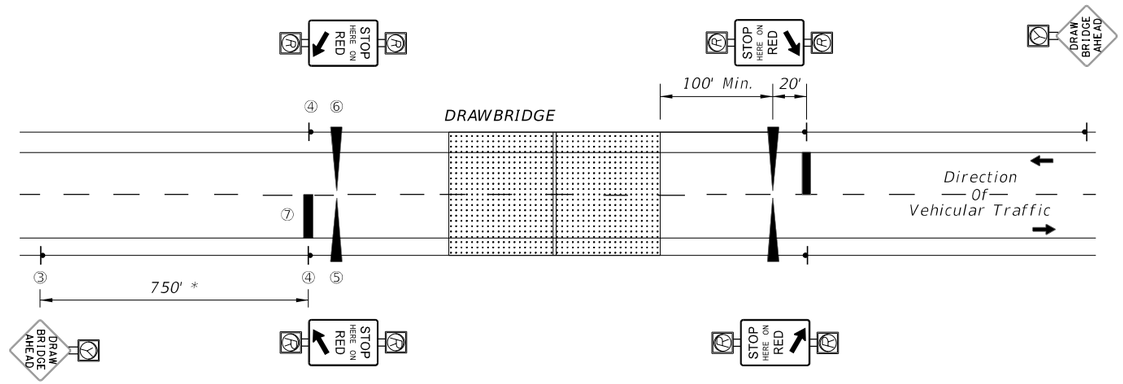
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CFRP/GFRP & HSSS/GFRP)	INDEX	SHEET
11/01/16						455-440	4 of 4

TYPICAL BRIDGE MOUNTS



TYPE I

TO BE USED WHERE BRIDGE OPERATORS ARE FULL TIME OR A DAILY BASIS.



TYPE II

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 } Monotube Support Mounted (On Bridge)
- ③ DRAWBRIDGE AHEAD SIGN WITH YELLOW FLASHING BEACON } Ground Mounted
- ④ STOP HERE ON RED SIGN WITH RED FLASHING BEACONS } Ground Mounted
- ⑤ ENTRANCE GATE
- ⑥ EXIT GATE
- ⑦ 24" THERMOPLASTIC STOP BAR

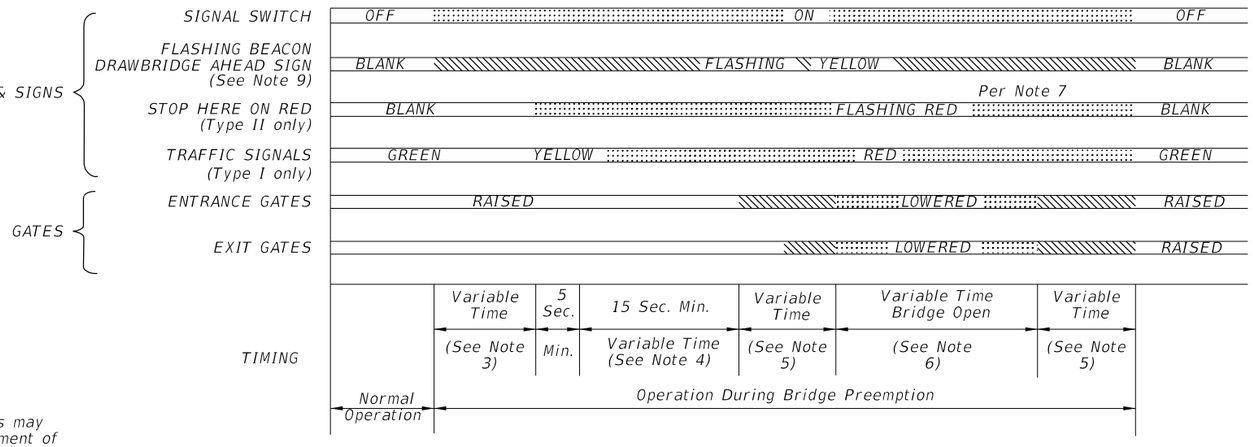
W8-5
SLIPPERY WHEN WET SIGN
See Note 11

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 approach speed.
4. Beginning of operation of drawbridge gates shall not be less than 15 seconds after steady red or 20 seconds after flashing red (Actual time may be determined by the bridge tender.)
5. Time of gate lowering and raising is dependent upon gate type.
6. Time of bridge opening is determined by the bridge tender.
7. Each gate shall be operated by a separate switch.
8. On each approach (Type II), all four red signals shall be on the same two circuit flashers, with the two top signals on one circuit, and the two bottom signals on the alternately flashing circuit.
9. A Drawbridge Ahead sign is required for both types of signal operation, However a flashing beacon shall be added to the sign when physical conditions prevent a driver traveling at the 85% approach speed from having continuous view of at least one signal indication for approximately 10 seconds.
10. Requirements on gate installation are contained in Section 41 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."

* Field conditions may require adjustment of this standard distance.

SEQUENCE CHART



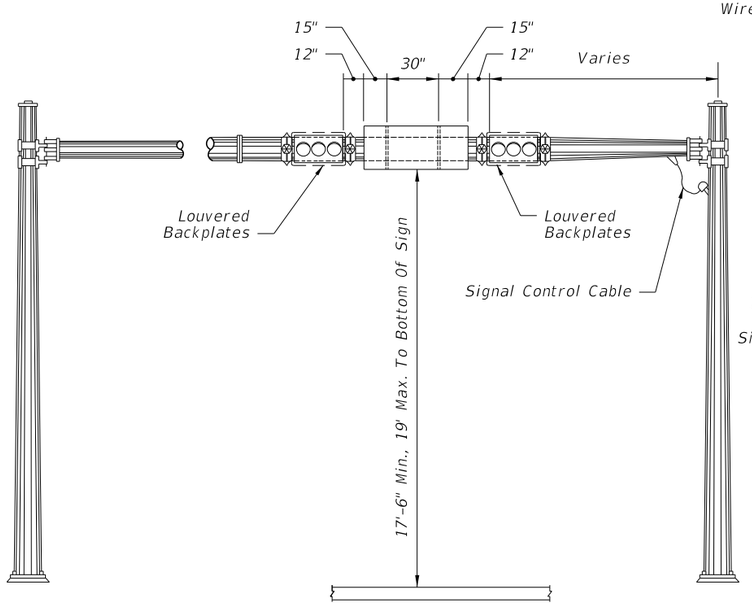


FIGURE - A

MONOTUBE SUPPORT MOUNTING

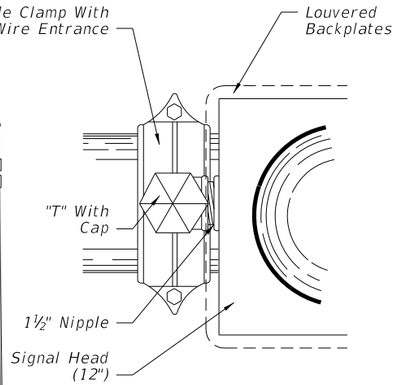


FIGURE - C

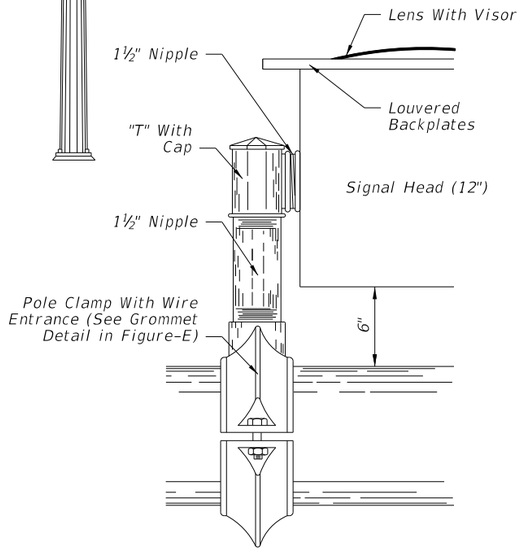


FIGURE - D

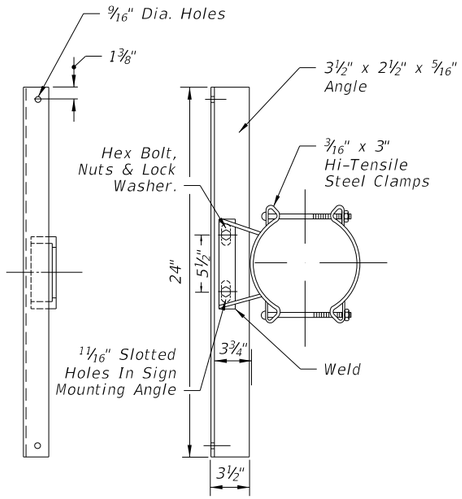


FIGURE - B

SIGN PANEL MOUNTING ASSEMBLY

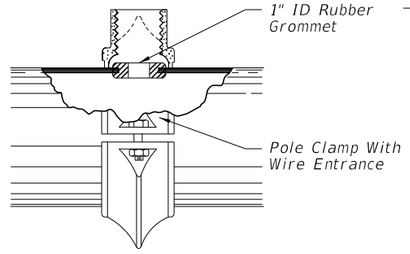


FIGURE - E

SIGNAL HEAD MOUNTING ASSEMBLY

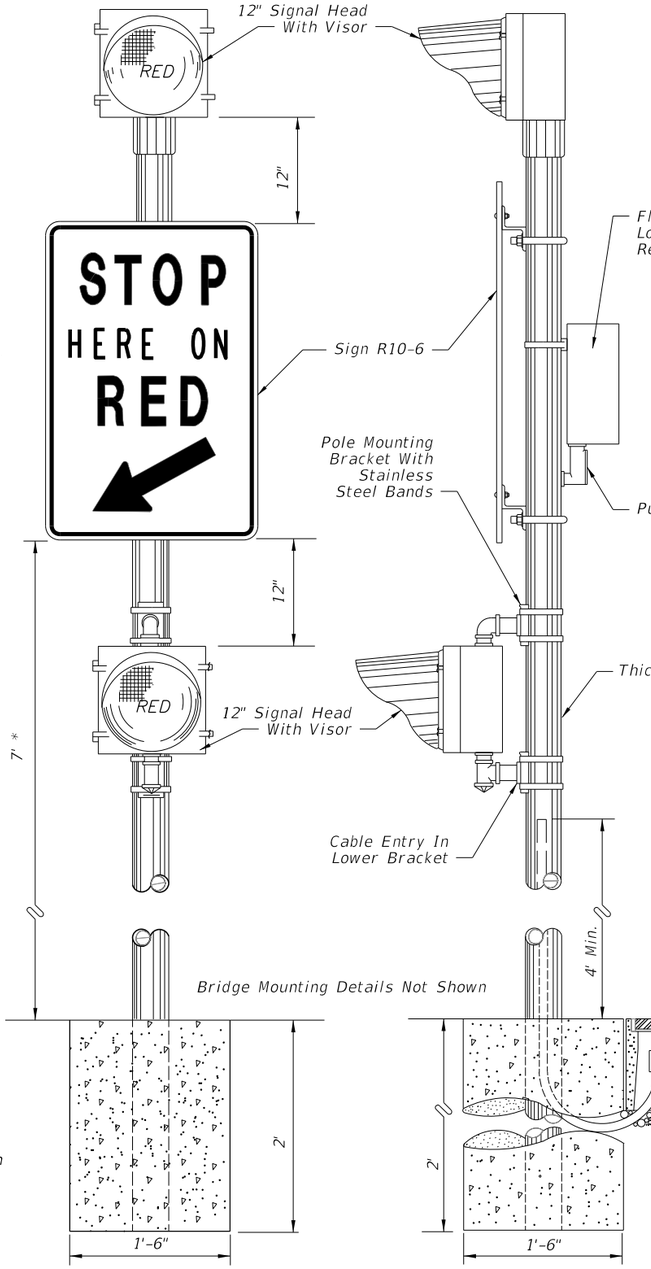


FIGURE - F

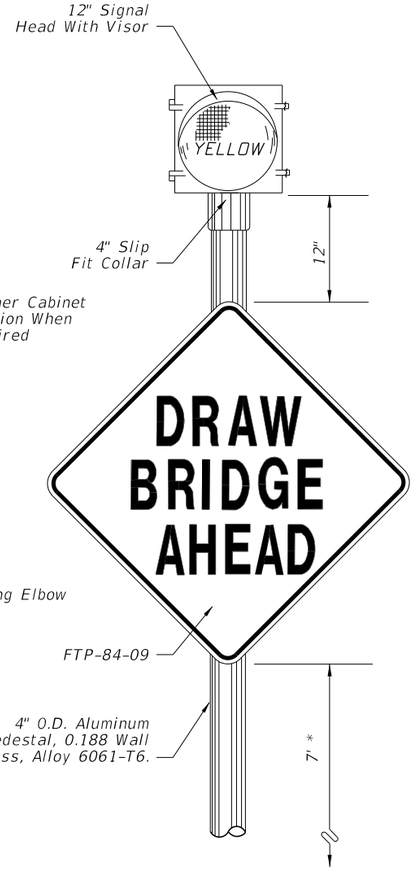
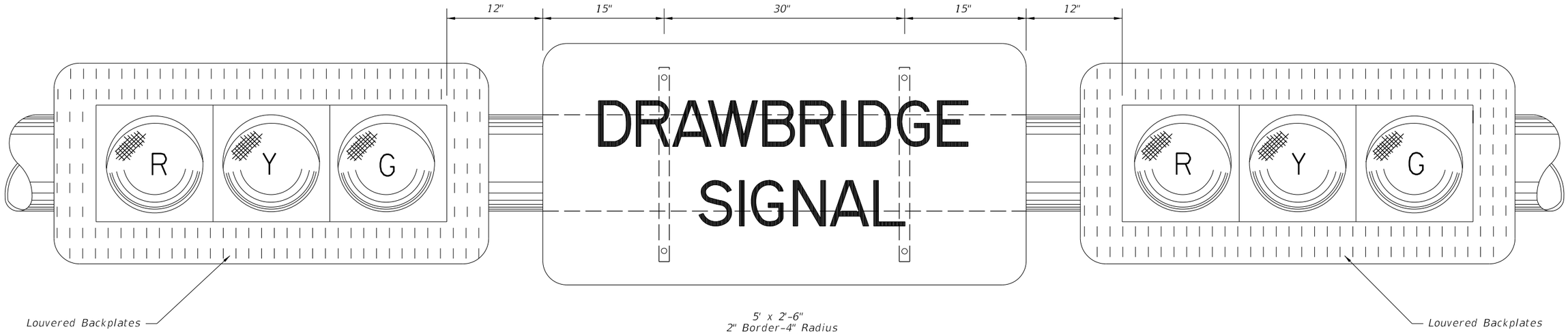


FIGURE - G

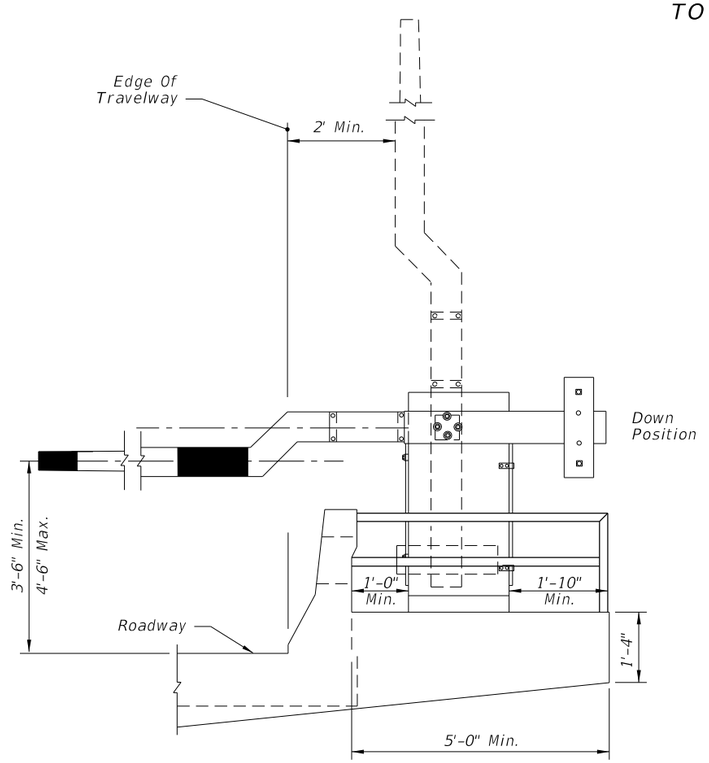
* Measured from the bottom of the sign to the near edge of the pavement. Horizontal distance between edge of the pavement and inside edge of sign will vary with condition at job site.

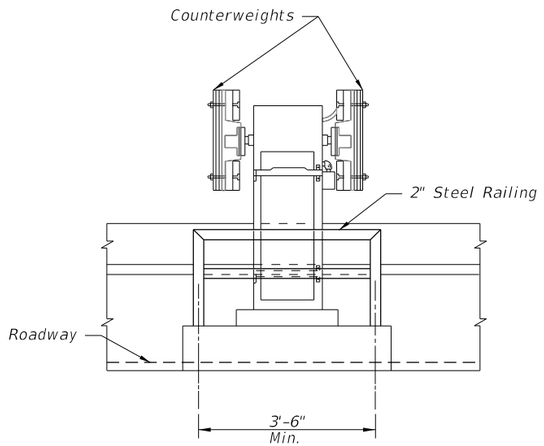
10/29/2019 8:17:36 AM

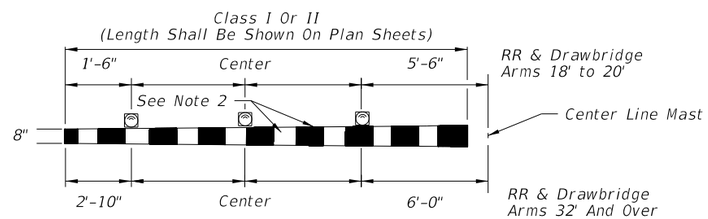
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TRAFFIC CONTROL DEVICES FOR MOVABLE SPAN BRIDGE SIGNALS	INDEX 508-T01	SHEET 2 of 3



BLACK OPAQUE LEGEND AND BORDER ON REFLECTORIZED YELLOW BACKGROUND TO BE USED WITH TYPE I OPERATION, AS SHOWN ON PREVIOUS SHEET MONOTUBE SUPPORT MOUNTING







NOTES:

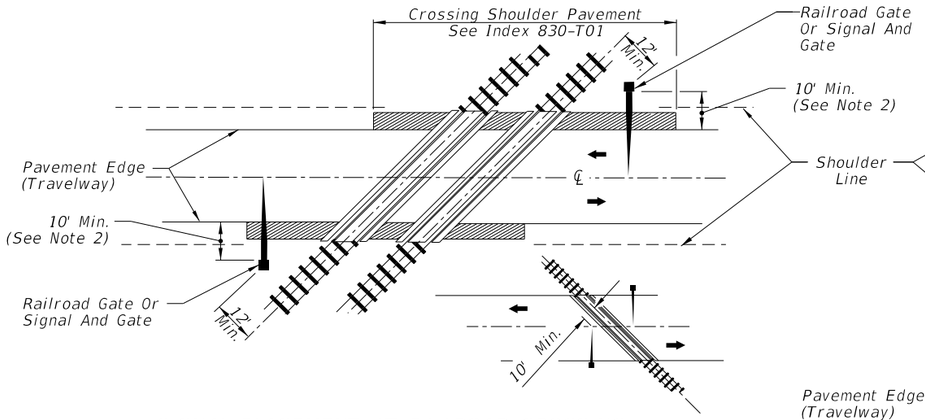
1. 12 volt flashing red lights shall be mounted on gate arm and shall operate in the flashing mode only when gate arm is in the lower position or in the process of being lowered. The number of lights shall vary accordingly to length of the gate arm.
2. Alternating 16" pattern of fully reflectorized red and white stripes.

GATE & ARM DETAIL

TYPICAL LAMP PLACEMENT

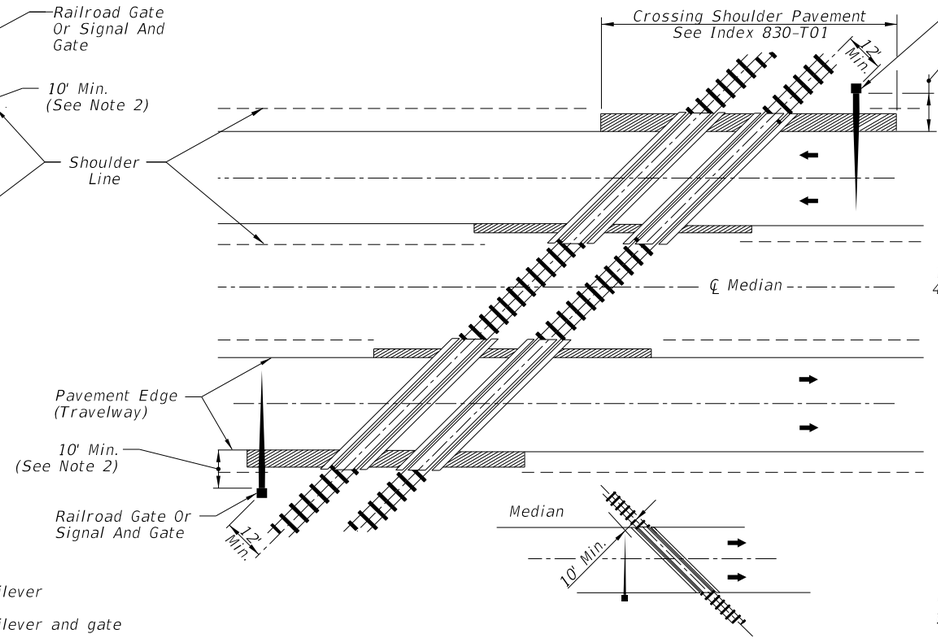
10/29/2019 8:17:37 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TRAFFIC CONTROL DEVICES FOR MOVABLE SPAN BRIDGE SIGNALS	INDEX 508-T01	SHEET 3 of 3



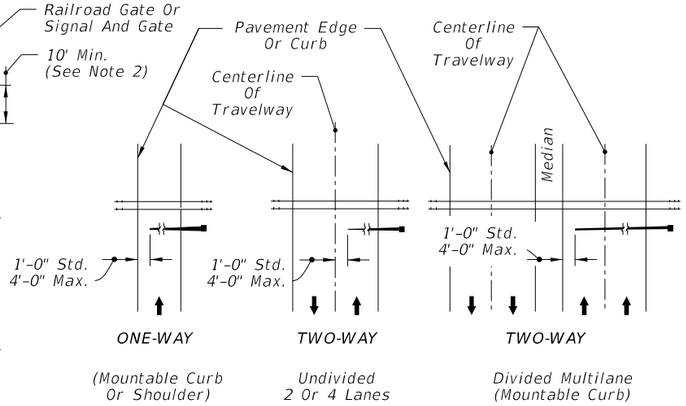
SIGNAL PLACEMENT AT RAILROAD CROSSING

(2 - LANE DESIGN)



SIGNAL PLACEMENT AT RAILROAD CROSSING

(4 - LANE DESIGN)



NOTE: Arrows denote direction of travel not pavement markings.

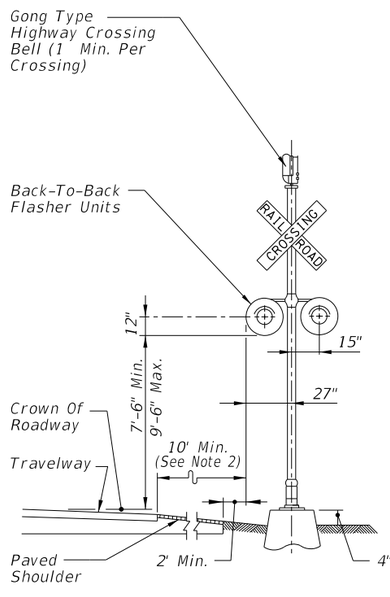
FIGURE 1

GENERAL NOTES:

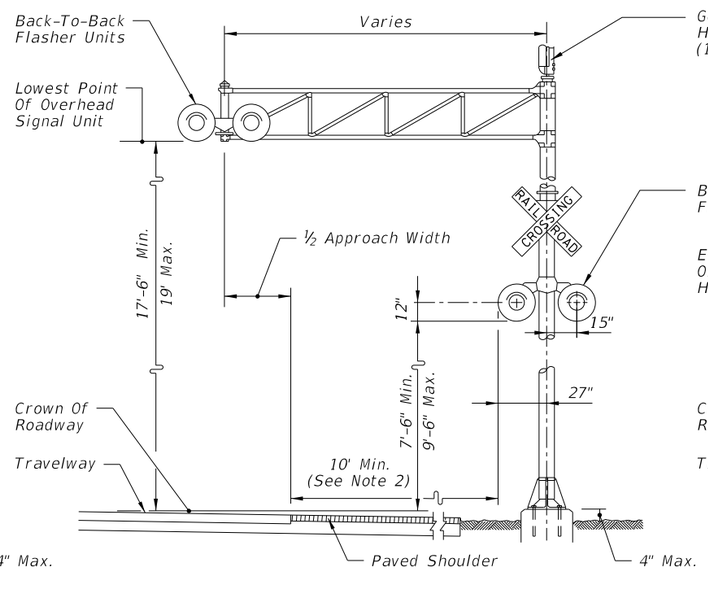
1. No guardrail is proposed for signals; however, some form of impact attenuation device may be specified for certain locations.
2. Advance flasher to be installed when and if called for in Plans or Specifications.
3. Top of foundation shall be no higher than 4" above finished shoulder grade.
4. Type of traffic control device
   - I Flashing warning devices
   - II Flashing warning devices with cantilever
   - III Flashing warning devices with gate
   - IV Flashing warning devices with cantilever and gate
   - V Gate
5. Class of traffic control devices (Not Shown)
   - I 2 Quadrant flashing warning devices-one track
   - II 2 Quadrant flashing warning devices-multiple tracks
   - III 2 Quadrant flashing warning devices and gates-one track
   - IV 2 Quadrant flashing warning devices and gates-multiple tracks
   - V 3-4 Quadrant flashing warning devices and gates-one track
   - VI 2-4 Quadrant flashing warning devices and gates-multiple tracks

NOTE:

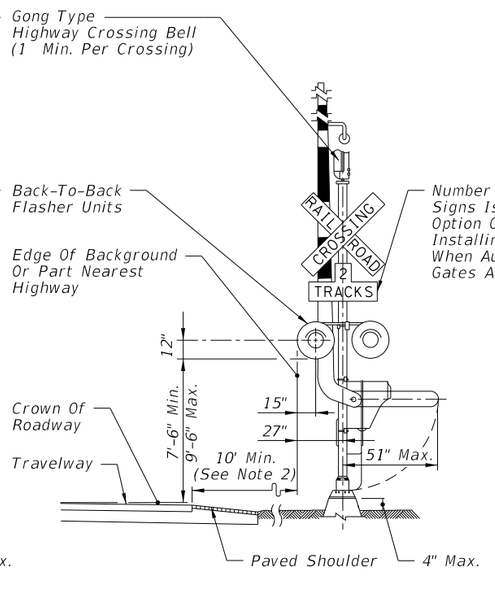
1. Two separate foundations may be required (one for signals, one for gate), depending on type of equipment used.
2. When 10' is deemed impractical the control device can be located as close as 2' from the edge of a paved shoulder but not less than 6' from the edge of the near traffic lane.



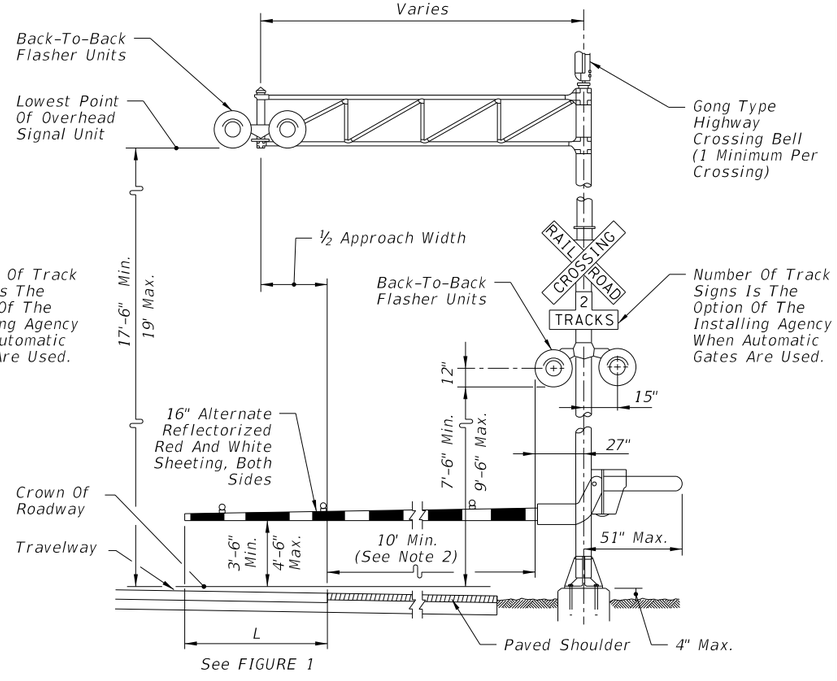
TYPE I



TYPE II



TYPE III AND TYPE V

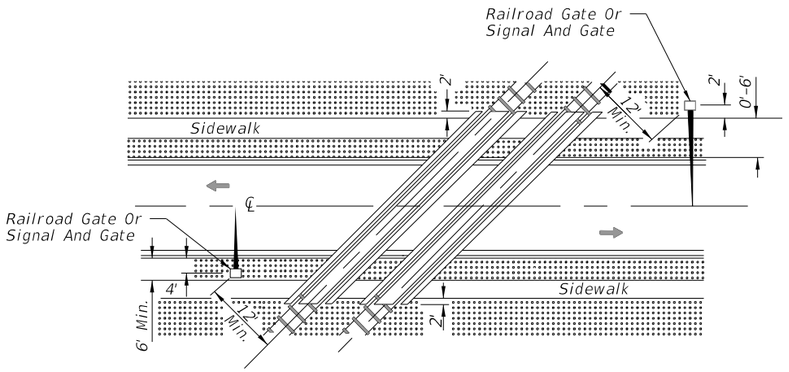


TYPE IV AND TYPE VI

TRAFFIC CONTROL DEVICES FOR FLUSH SHOULDER ROADWAY

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES	509-070	1 of 4

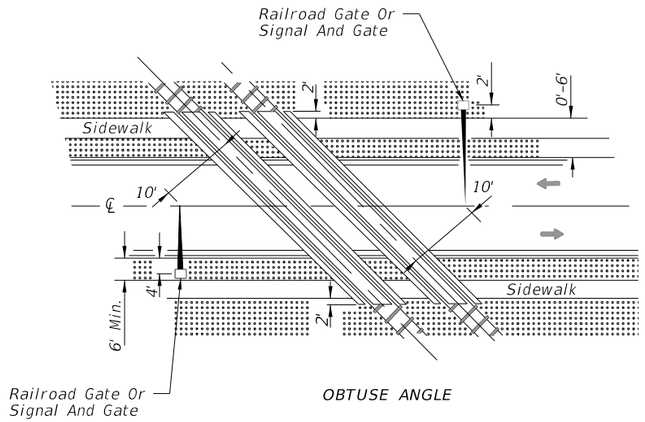
11/13/2019 8:34:03 AM



ACUTE ANGLE (AND RIGHT ANGLE)

SIGNAL PLACEMENT AT RAILROAD CROSSING

(2 LANES, CURB & GUTTER)



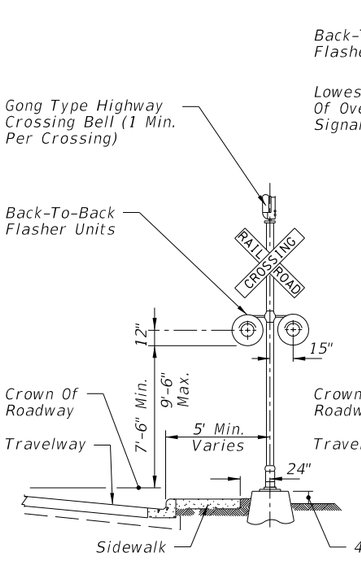
OBTUSE ANGLE

SIGNAL PLACEMENT AT RAILROAD CROSSING

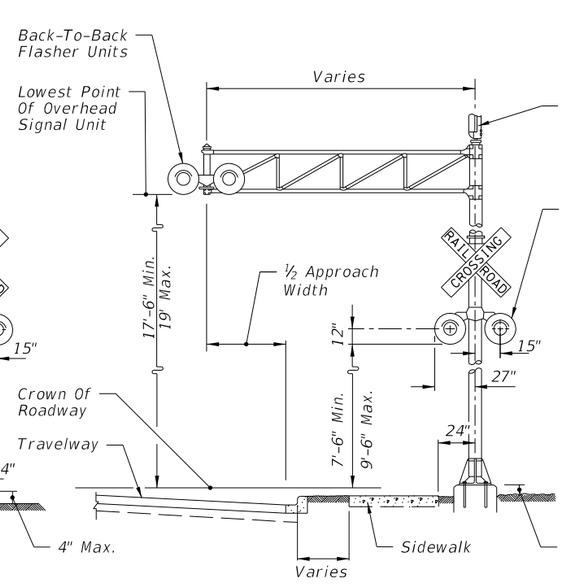
(2 LANES, CURB & GUTTER)

NOTES:

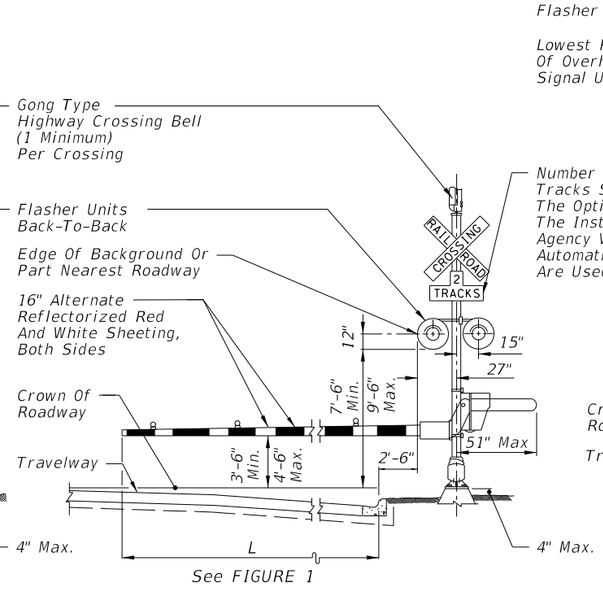
1. The location of flashing warning devices and stop lines shall be established based on future (or present) installation of gate with appropriate track clearances.
2. Where plans call for railroad traffic control devices to be installed in curbed medians, the minimum median width shall be 12'-6".
3.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



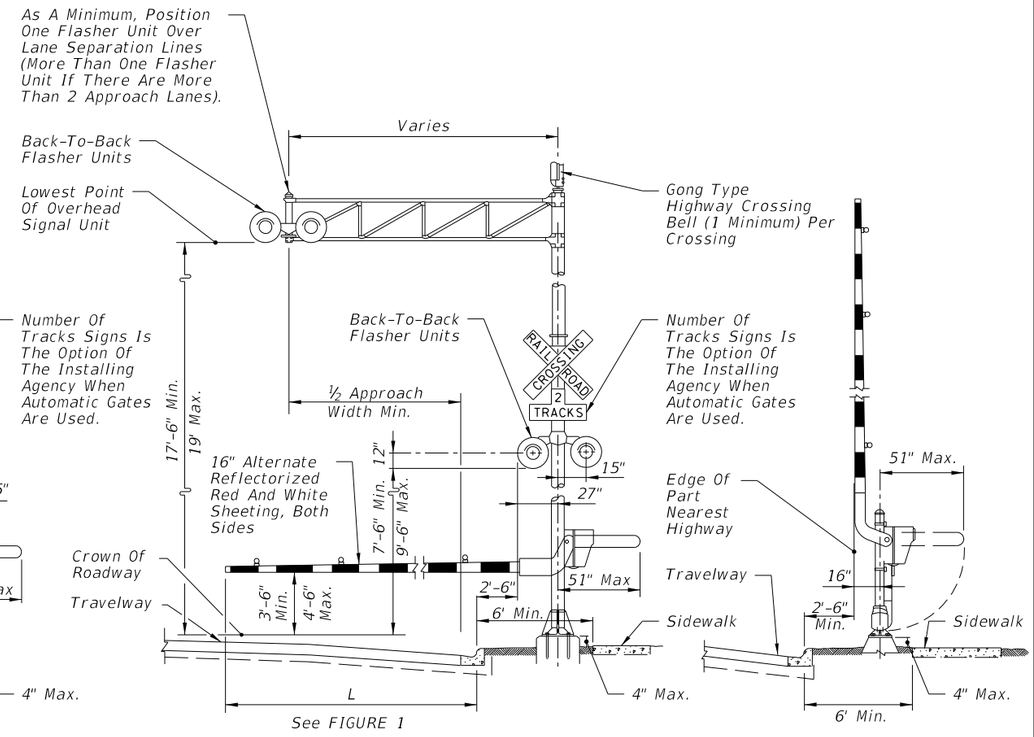
TYPE I



TYPE II



TYPE III



TYPE IV

TYPE V

TRAFFIC CONTROL DEVICES FOR CURBED ROADWAY

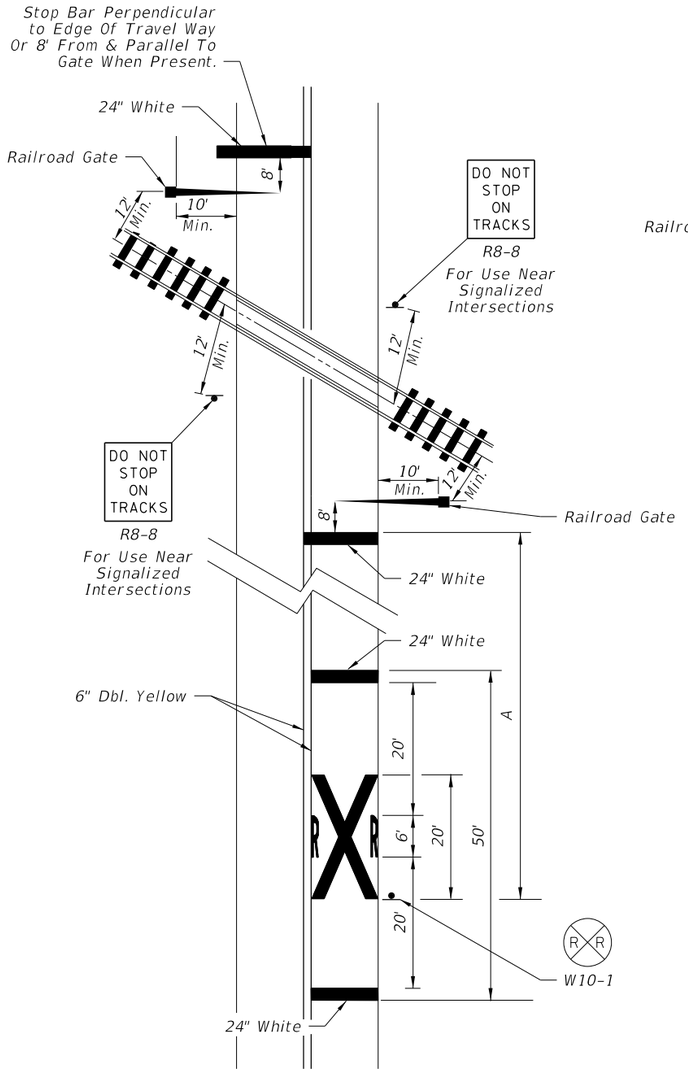
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES	509-070	2 of 4

10/29/2019 8:17:39 AM

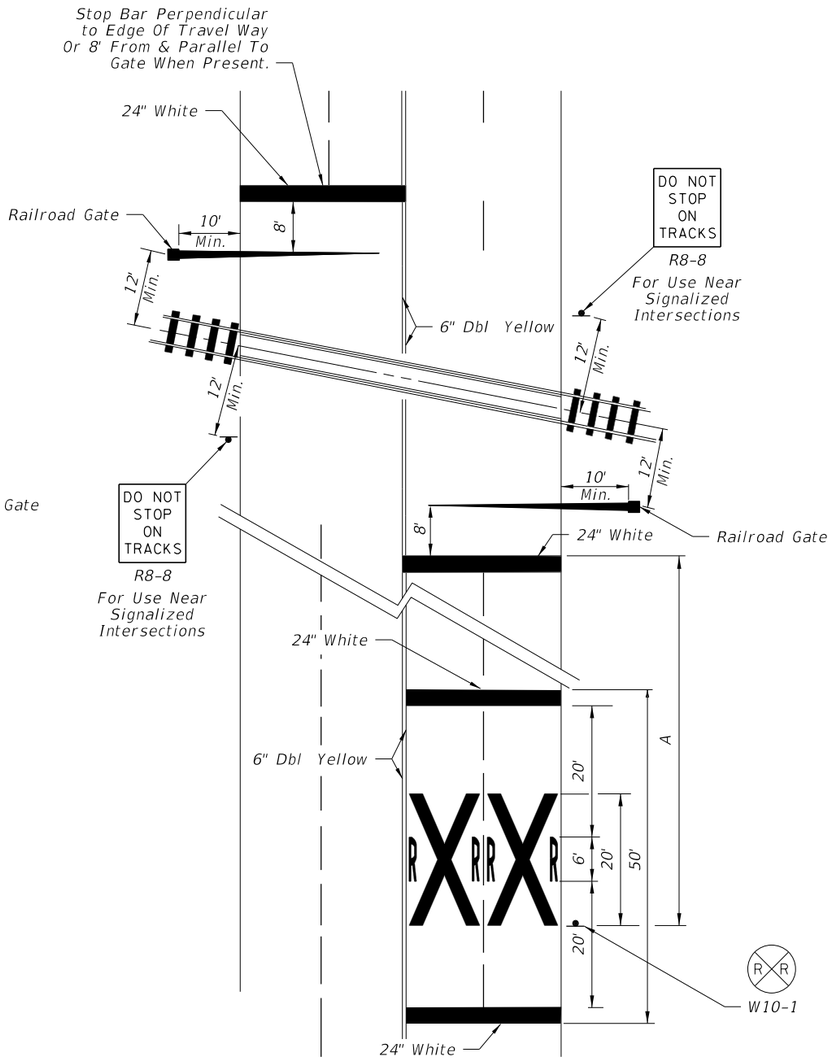
NOTES:

1. Place an additional W10-1 sign where intersections occur between the R/R pavement message and the tracks.
2. Place FTP-61-06 or FTP-62-06 sign 100' in advance of crossing for urban conditions and 300' in advance of crossing for rural conditions. See Index 700-102 for sign details.

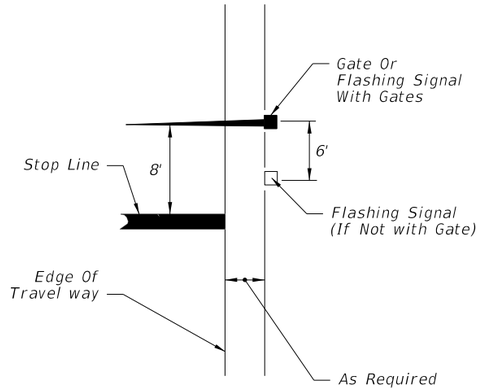
Design Speed (mph)	Distance "A" (ft)
60	400
55	325
50	250
45	175
40	125
35	100
URBAN	85 Min.



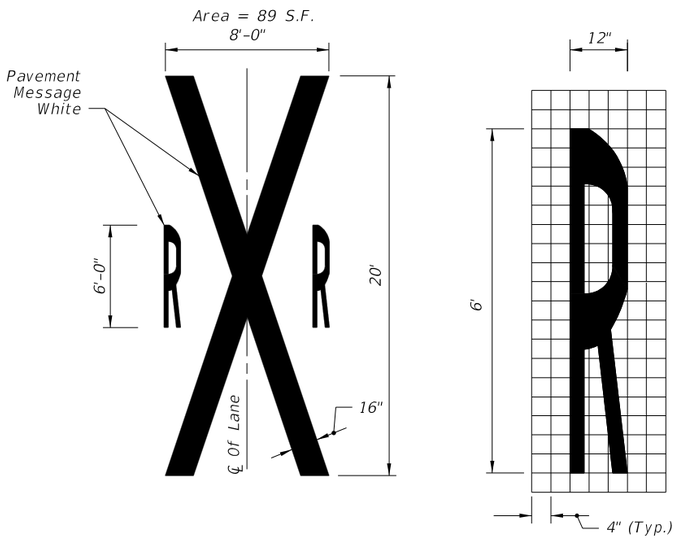
RAILROAD CROSSING AT TWO-LANE ROADWAY



RAILROAD CROSSING AT MULTILANE ROADWAY



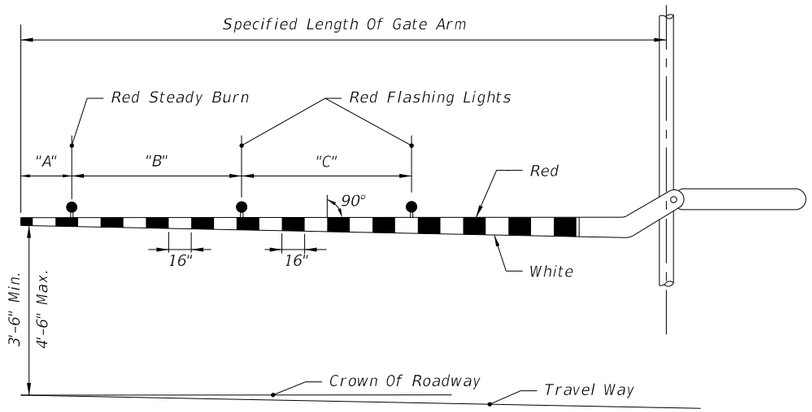
RELATIVE LOCATION OF CROSSING TRAFFIC CONTROL DEVICES

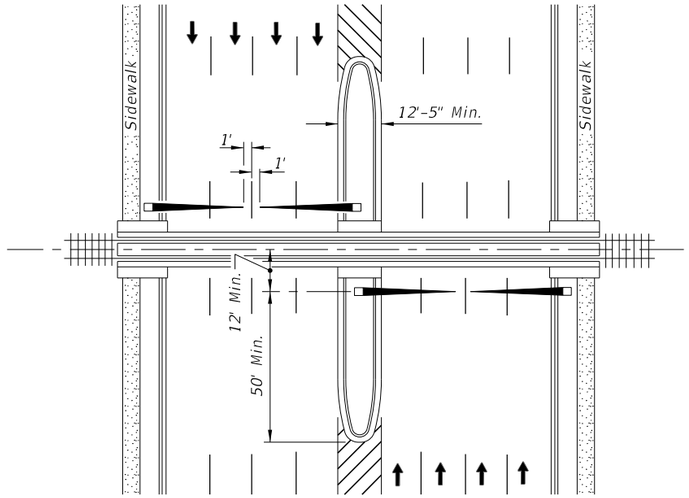


RAILROAD CROSSING PAVEMENT MESSAGE

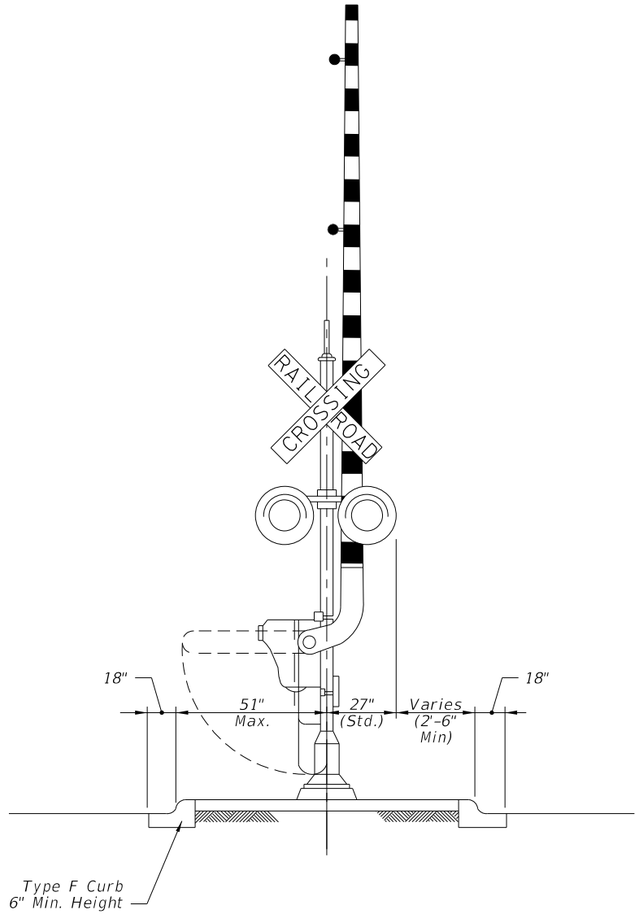
10/29/2019 8:17:39 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES	INDEX	SHEET
11/01/18					509-070	3 of 4





PLAN



MEDIAN SECTION AT SIGNAL GATES

RAILROAD GATE ARM LIGHT SPACING

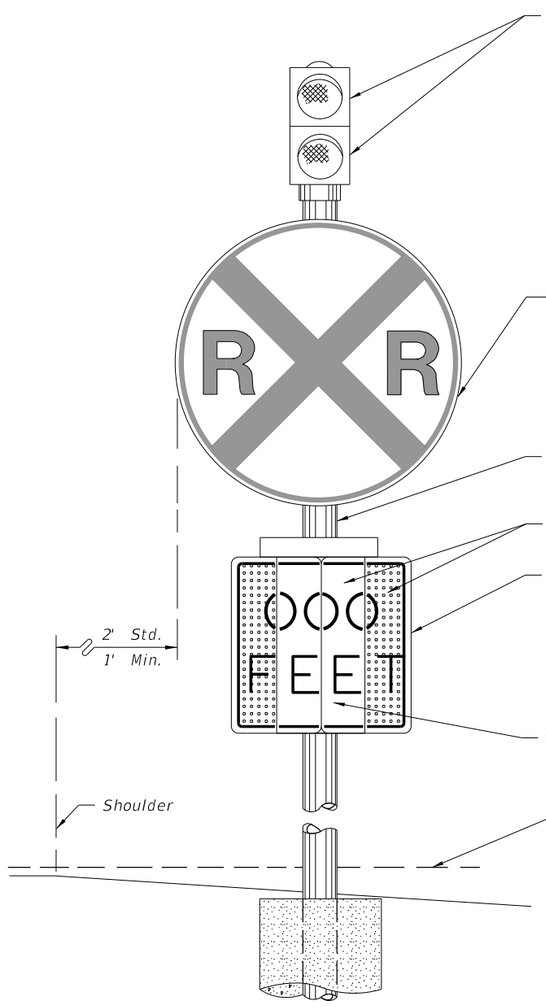
Specified Length Of Gate Arm	Dimension "A"	Dimension "B"	Dimension "C"
14 Ft.	6"	36"	5'
15 Ft.	18"	36"	5'
16-17 Ft.	24"	36"	5'
18-19 Ft.	28"	41"	5'
20-23 Ft.	28"	4'	5'
24-28 Ft.	28"	5'	5'
29-31 Ft.	36"	6'	6'
32-34 Ft.	36"	7'	7'
35-37 Ft.	36"	9'	9'
38 And Over	36"	10'	10'

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".

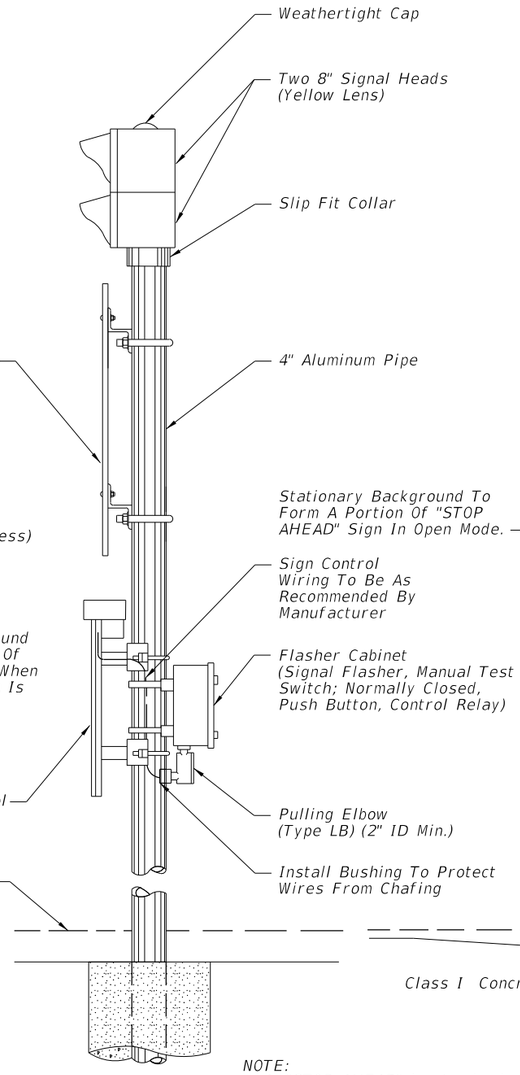
MEDIAN SIGNAL GATES FOR MULTILANE UNDIVIDED URBAN SECTIONS (THREE OR MORE DRIVING LANES IN ONE DIRECTION, 45 MPH OR LESS)

10/29/2019 8:17:40 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES	INDEX	SHEET
11/01/17						509-070	4 of 4



FRONT VIEW

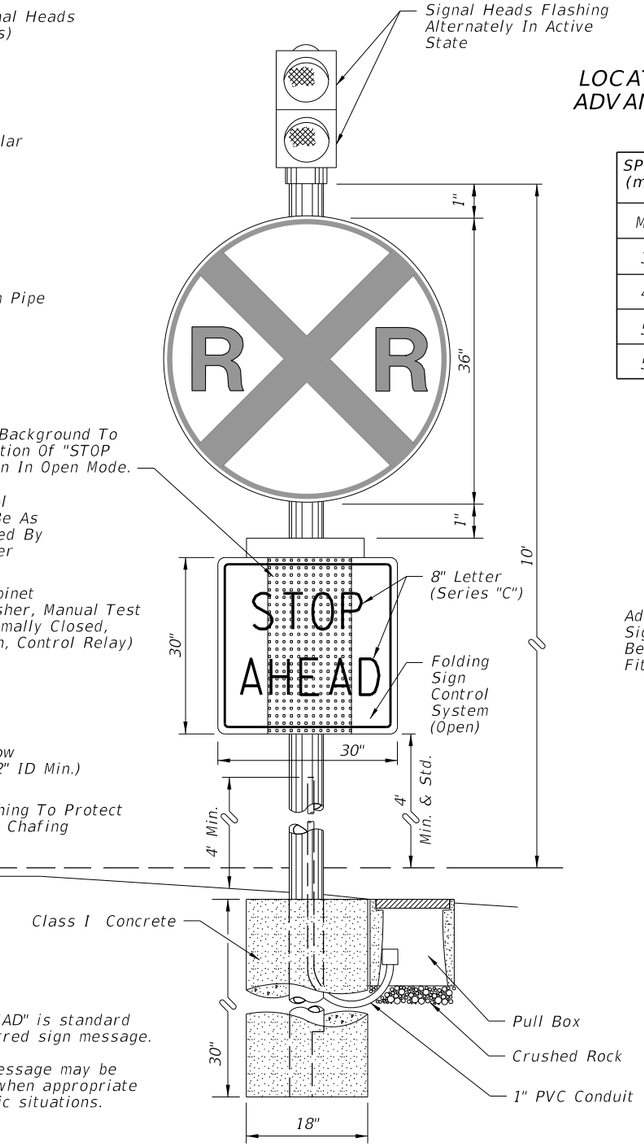


SIDE VIEW

NOTE:
1. "STOP AHEAD" is standard and preferred sign message.

Another message may be approved when appropriate for specific situations.

PASSIVE STATE
(TRAIN CIRCUIT NOT ACTUATED)



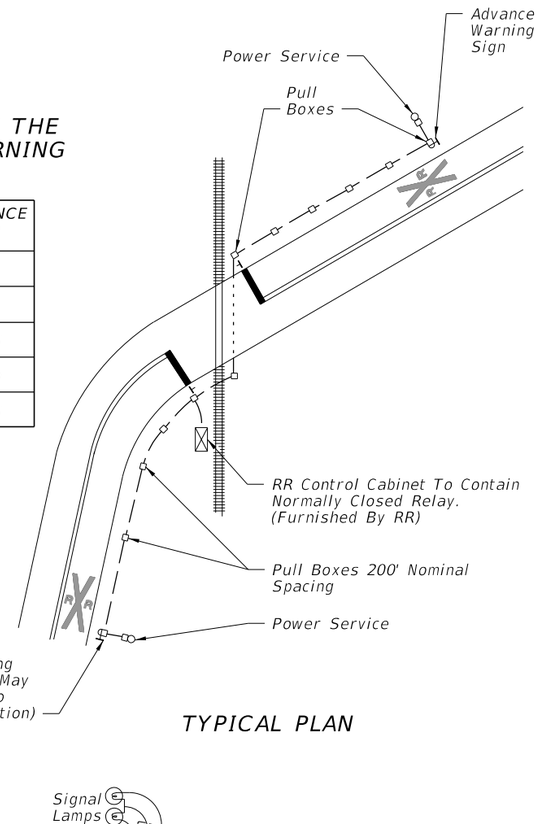
FRONT VIEW

ACTIVE STATE
(TRAIN CIRCUIT ACTUATED)

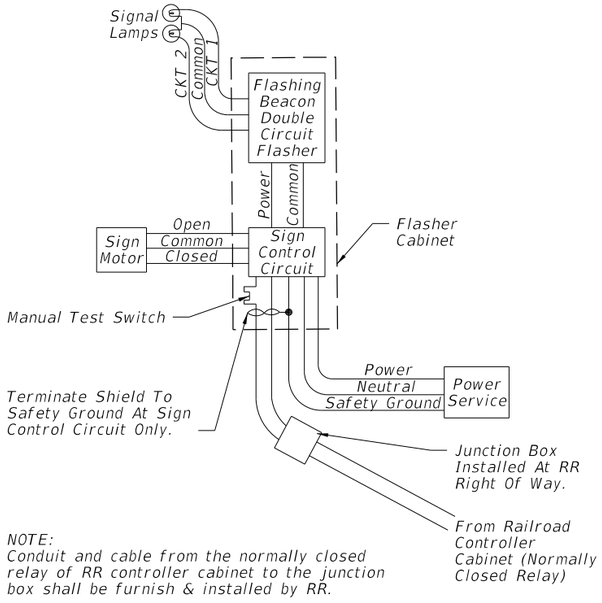
The Distance Is Measured Along Right Edge Of Pavement From RR Stop Bar To Sign Advance Warning Sign.

LOCATION OF THE ADVANCE WARNING SIGN

SPEED (mph)	DISTANCE (ft)
Min.	50
30	75
40	125
50	250
55	325



TYPICAL PLAN



NOTE:
Conduit and cable from the normally closed relay of RR controller cabinet to the junction box shall be furnish & installed by RR.

FUNCTIONAL BLOCK DIAGRAM

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	ADVANCE WARNING FOR R/R CROSSING	INDEX	SHEET
11/01/17					509-100	1 of 1

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 x⅛	2.50" x 1.50"	0.125"
Post "B"	HSS 2½ x 1½ x3⁄16	2.50" x 1.50"	0.188"
Top Rail	2½" NPS (Sch. 10)	2.875"	0.120"
	HSS 3.000 x 0.120	3.000"	0.120"
End Hoops	2½" NPS (Sch. 10)	2.875"	0.120"
	HSS 3.000 x 0.120	3.000"	0.120"
Top Rail Joint/Splice Sleeves	HSS 2.500 x 0.125	2.500"	0.125"
Intermediate & Bottom Rail	HSS 2 x 2 x 3⁄16	2.00" x 2.00"	0.188" (1)
Int. & Bottom Rail Post Connection Sleeve	HSS 1.500 x 0.125	1.500"	0.125" (1)
Handrail Joint/Splice Sleeves	1" NPS (Sch. 40)	1.315"	0.133"
	HSS 1.500 x 0.125	1.500"	0.125"
Handrails	1½" NPS (Sch. 40)	1.900"	0.145"
Handrail Support Bar	¾" Ø Round Bar	0.750"	N/A
Pickets (Type 1 Infill Panel)	¾" Ø Round Bar	0.750"	N/A
Infill Panel Members (Types 2 – 5)	Varies (See Details)	Varies	Varies

TABLE 1 NOTES:

(1) 0.125" wall thickness permitted for rails with post spacings less than 5'–8", except that Post Connection Sleeve must be 1¼" NPS (Sch. 40).

NOTES

Notes:

1. Shop Drawings are required; see Specification Section 515
2. For bridge mounted railings work this Index with Index 515-051 Bridge Bicycle/Pedestrian Railing
3. Materials:
   - A. Pipe Rails and Pickets: ASTM A500 Grade B, C or D, or ASTM A53 Grade B for standard weight pipe (Schedule 40) and ASTM A36 for bars.
   - B. Structural Tube: ASTM A500 Grade A, B, C, or D or ASTM A501
   - C. Steel Plate: ASTM A36 or ASTM A709 Grade 36
   - D. U-Channels and filler plates: ASTM A36 or ASTM A1011 (Grade 36).
   - E. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
   - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
     - a. Hex Head Bolts: ASTM A 307
       1. ⅞" diameter single bolt option, Grade 36
       2. 7⁄16" 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: ⅛" 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 5⅞" for standard installations and 3⅞" 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 Expansion Joint.
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.

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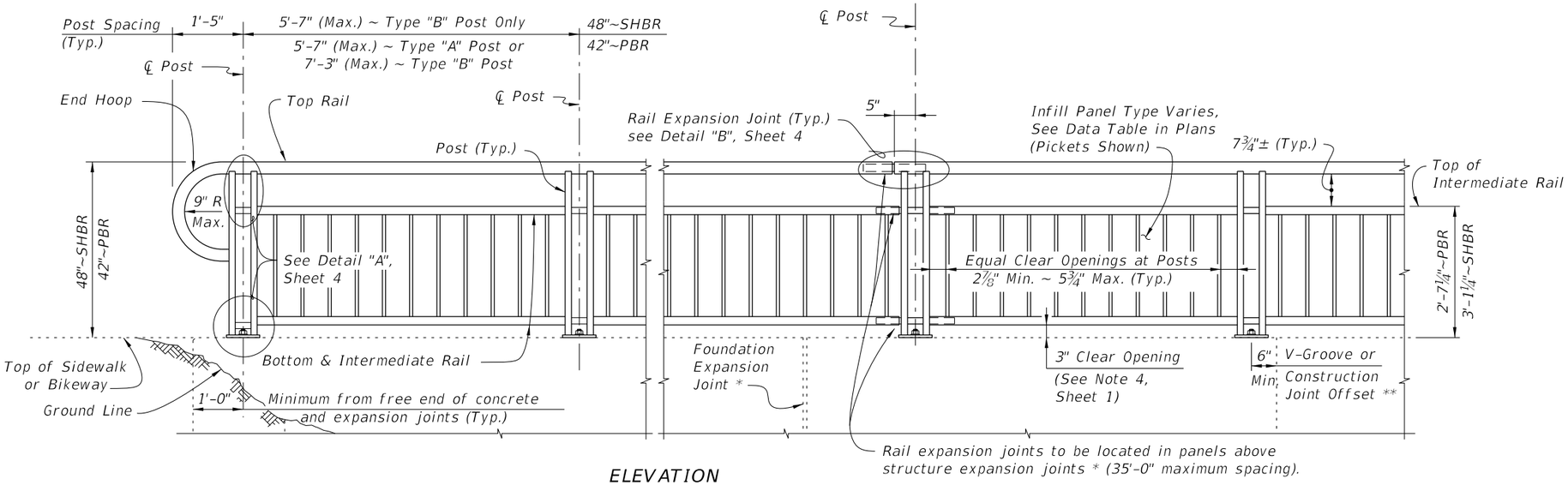
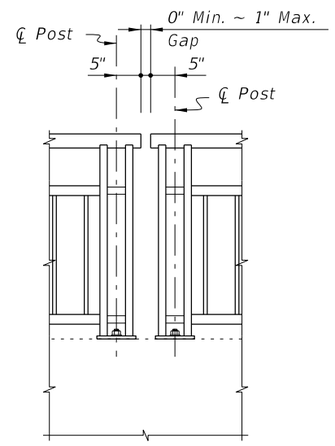
11/01/18						515-052	1 of 8



ELEVATION
(Showing Outside Face of Railing with Type "A" Posts)

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%

(Type 1 - Picket Railing Shown, Other Types Similar)

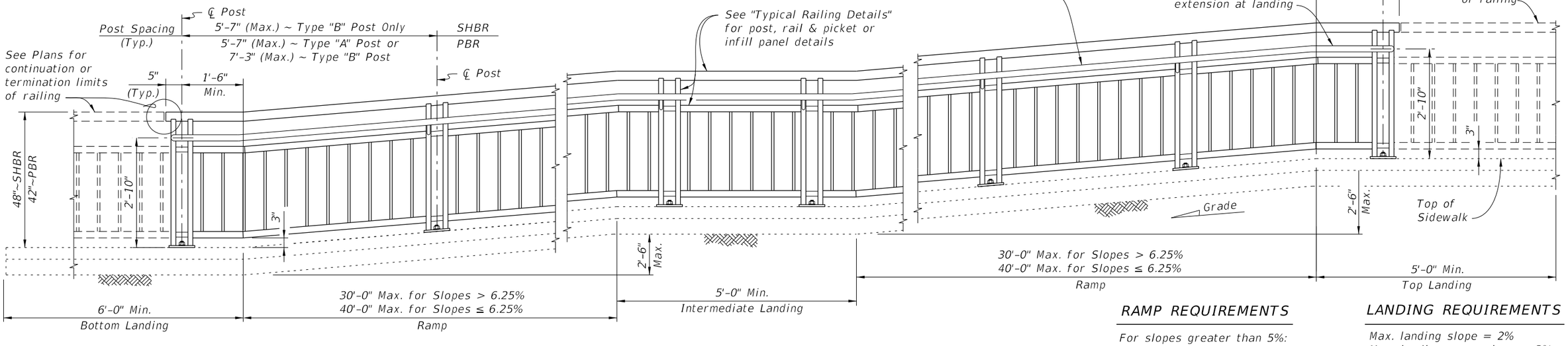


Note: Non-continuous corners are permitted when handrails are not required.

EXPANDED ELEVATION AT CORNERS

DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS

NOTES:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.
** Contraction joints (Tooled or Saw Cut) in sidewalks do not require a 6" minimum offset.



ELEVATION
(Showing Inside Face of Railing with Type "A" Posts)

RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

RAILINGS ON GRADES STEEPER THAN 5%

(Type 1 - Picket Railing Shown, Other Types Similar)

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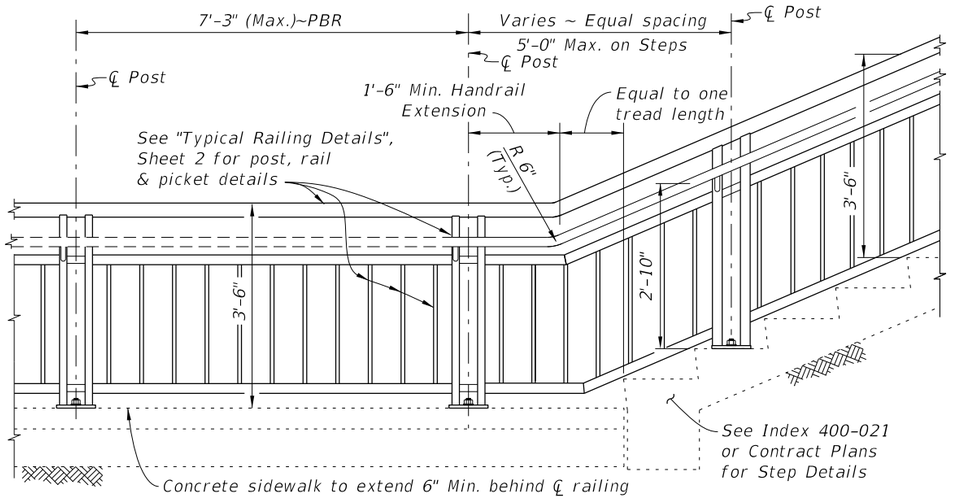
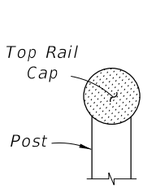
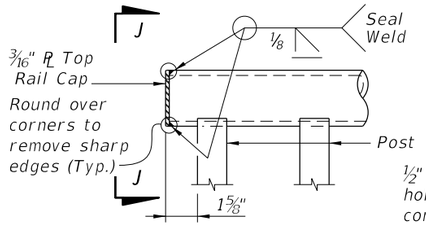


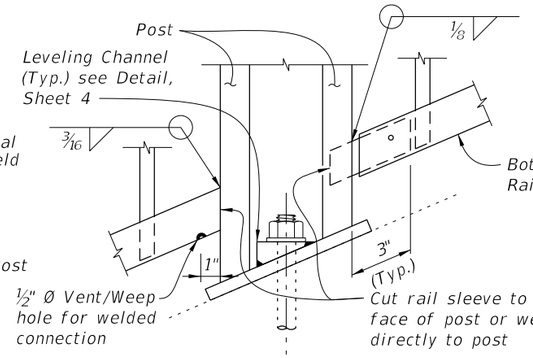
RAILING CONTINUATION BEYOND STEPS OR STAIRS
(Bottom shown, Top similar)



VIEW J-J

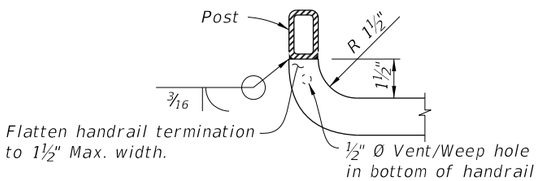


DETAIL "J" - ELEVATION VIEW
TOP RAIL TERMINATION

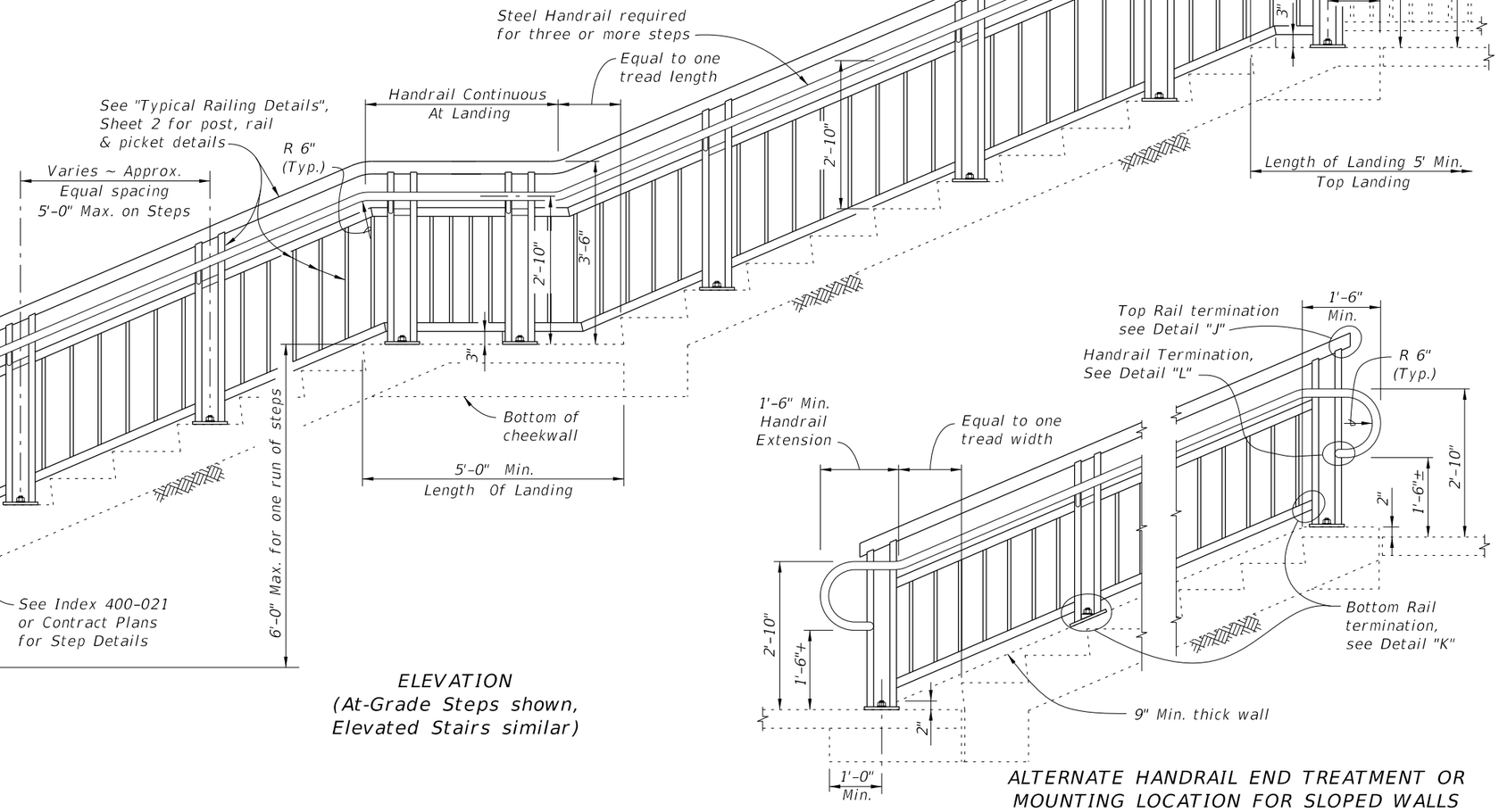


DETAIL "K" - ELEVATION VIEW
BOTTOM RAIL CONNECTION
(Intermediate Rail Similar)

RAIL TERMINATION DETAILS



DETAIL "L" - PLAN VIEW
HANDRAIL TERMINATION



ELEVATION
(At-Grade Steps shown,
Elevated Stairs similar)

ALTERNATE HANDRAIL END TREATMENT OR
MOUNTING LOCATION FOR SLOPED WALLS

RAILINGS ON STEPS & STAIRS

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11/01/16			FDOT FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX 515-052	SHEET 3 of 8

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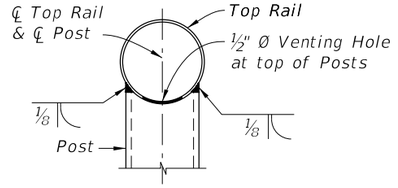
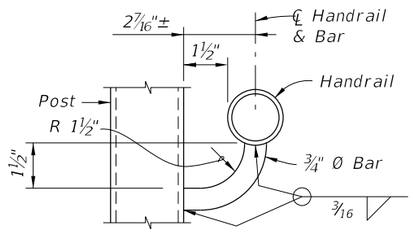
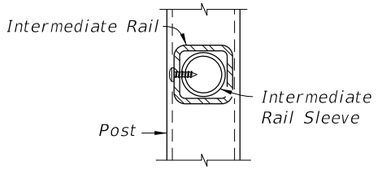


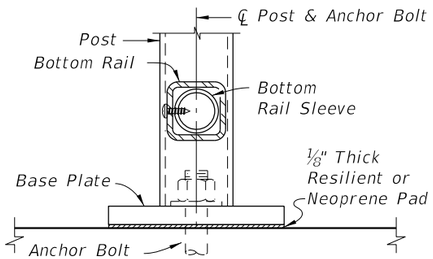
SECTION A-A
(Top Rail Connection)



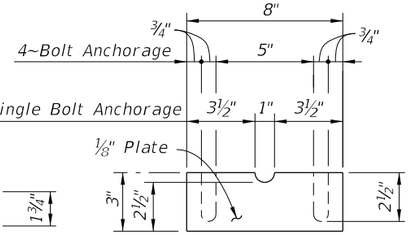
SECTION B-B
(Handrail Connection)



SECTION C-C
(Intermediate Rail Connection)



SECTION D-D
(Bottom Rail Connection -
Single Anchor Bolt Shown)



SHIM PLATE DETAIL

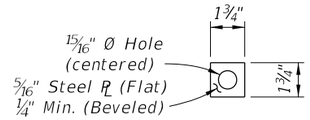
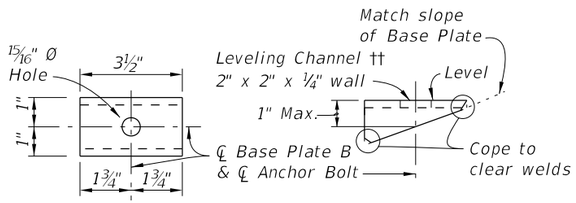
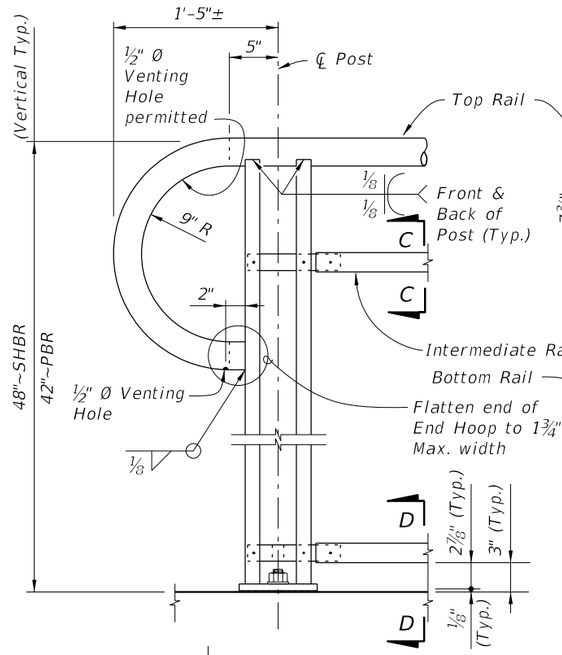


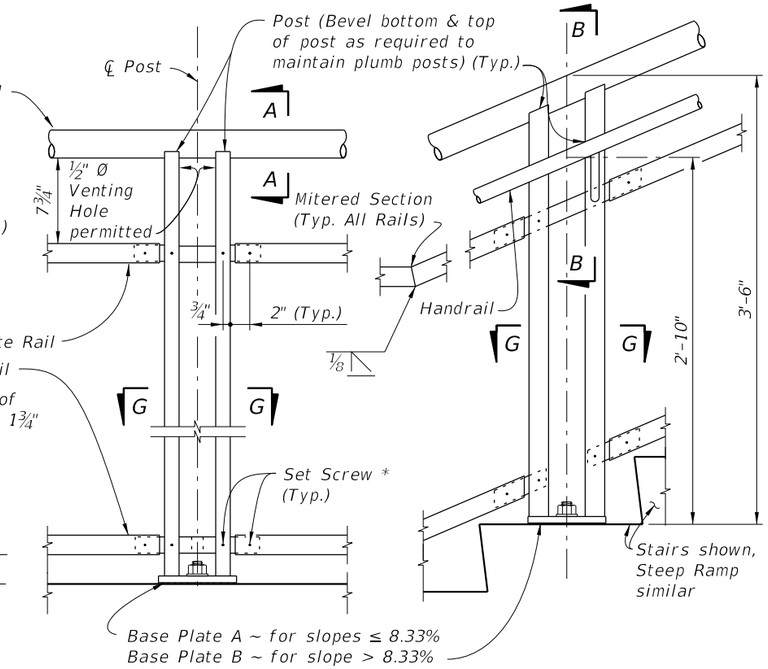
PLATE WASHER
DETAIL



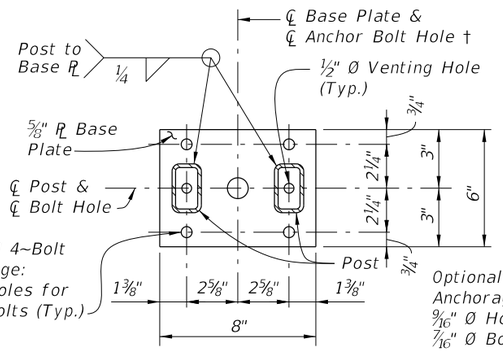
TOP VIEW SIDE VIEW

LEVELING CHANNEL DETAIL

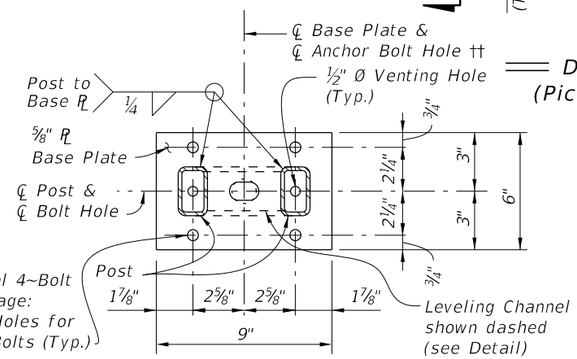




DETAIL "A" - RAIL CONNECTIONS
(Pickets/Panels and 4~Bolt Anchorage
Not Shown for Clarity)



BASE PLATE A



BASE PLATE B

SECTION G-G - BASE PLATE DETAILS

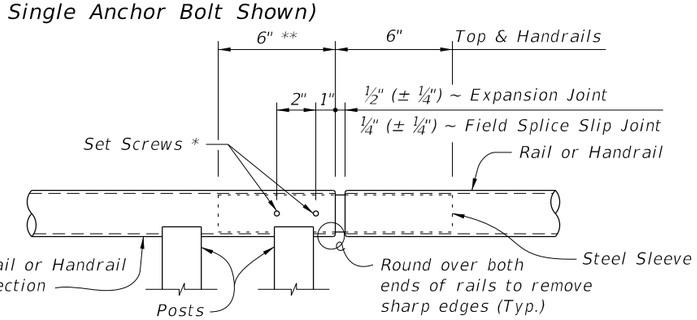
NOTES:

† *Base Plate A (Ramps – Bolts normal) use 1 1/16" Ø Holes for Single Anchor Bolts with Flat Washers for slopes ≤ 8.33%.*

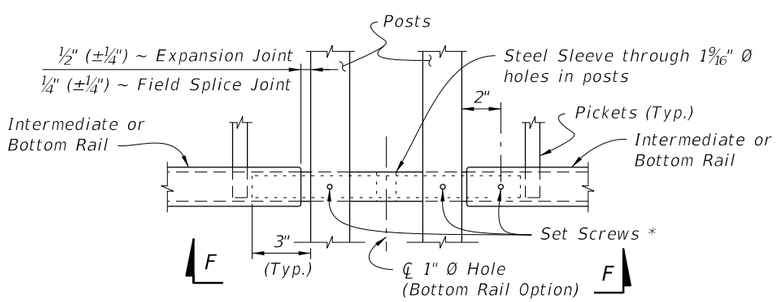
†† *Base Plate B (Stairs – Bolts plumb) use 1¼" Ø Holes for Single Anchor Bolts with Beveled Plate and Washers for slopes > 8.33% to ≤ 15%; use 15/16" x 1½" Slotted Holes with Leveling Channel for slopes > 15%.*

* *¼" Ø x ¾" Pan Head Stainless Steel (Type 316 or 18-8 Alloy) Set Screws. Screws must be set flush against the outside face of rails & posts and underside of handrails. ½" Ø plug welds may be substituted for the Set Screws. Do not provide Set Screws for Rails at free end of Expansion Joints.*

** *Embedded length may be 4" for plug welded connection.*

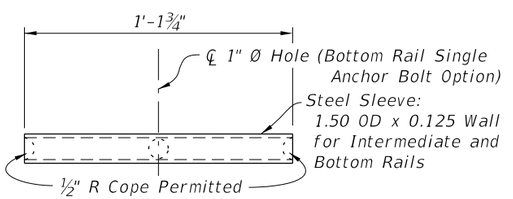


ROUND RAILS - TOP RAIL OR HANDRAIL
(Top Rail at Expansion Joint Shown)



SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL
(Bottom Rail at Expansion Joint Shown)

DETAIL "B" - EXPANSION JOINT (FIELD SPLICE SLIP JOINT SIMILAR)



VIEW F-F
INTERMEDIATE OR BOTTOM RAIL -
STEEL SLEEVE DETAIL (Bottom Side Shown)

CROSS REFERENCE:

For location of Details "B", See Sheet 2.

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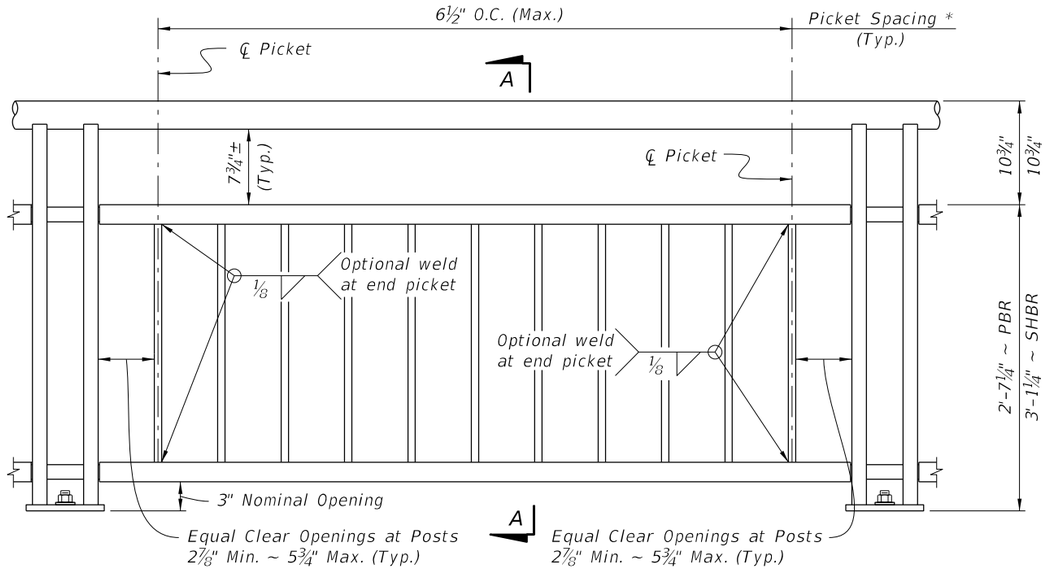
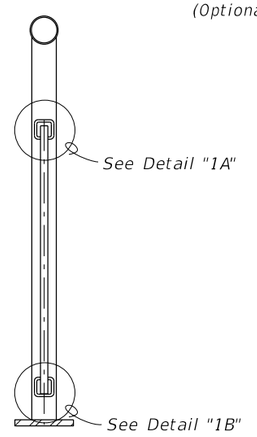
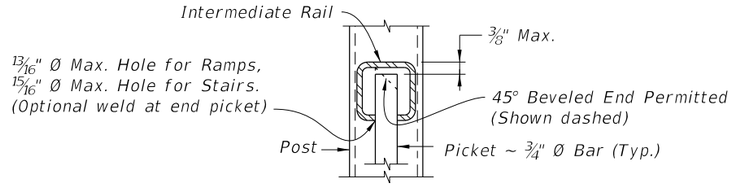
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	515-052	4 of 8



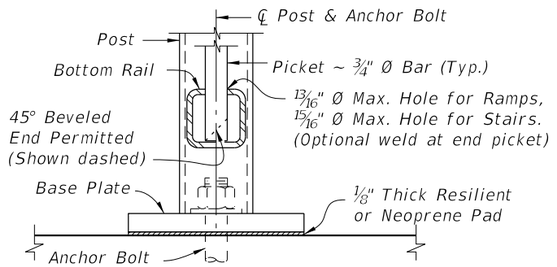
TYPE 1 - PICKET INFILL PANEL



SECTION A-A



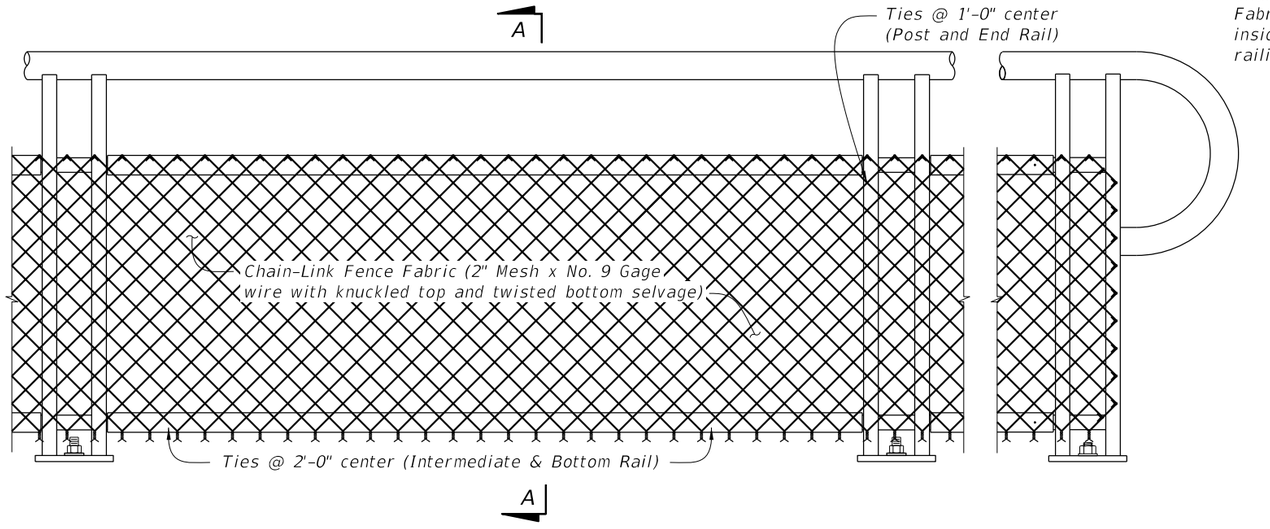
DETAIL "1A"
(Top of Picket Connection)



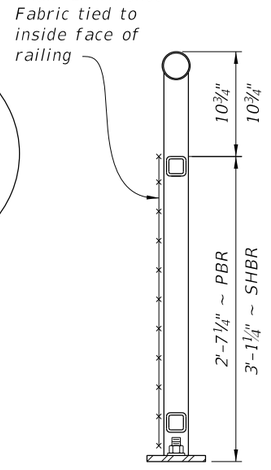
DETAIL "1B"
(Bottom of Picket Connection)

PICKET NOTES:

* Picket Spacing of 6½" centers is based on a ¾" Ø Bar for standard applications. When shown in the Contract Plans a 4½" picket spacing may be required. See Note 4 (Sheet 1).



TYPE 2 - CHAIN-LINK (Continuous Infill Panel)



SECTION A-A

TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS		
COMPONENT	ASTM	COMPONENT INFORMATION
Chain-Link Fence Fabric (2" mesh with twisted bottom and knuckled top selvage)	A 392	Zinc-Coated Steel – No. 9 gage (coated wire diameter), Class 2 Coating
	A 491	Aluminum-Coated Steel – No. 9 gage (coated wire diameter)
	F 668	Polyvinyl Chloride (PVC) Coated Steel – No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) ~ See Plans for specified color of PVC.
Tie Wires	F 626	Zinc-Coated Steel Wire – No. 9 gage with coating to match Chain-Link Fence Fabric.
Tension Bars	F 626	3/16" (Min. thickness) x ¾" (Min. width) x 2'-3" (Min. height) Steel Bars
Miscellaneous Fence Components	F 626	Zinc-Coated Steel

NOTES:

1. See Plans for Infill Panel option required.

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.

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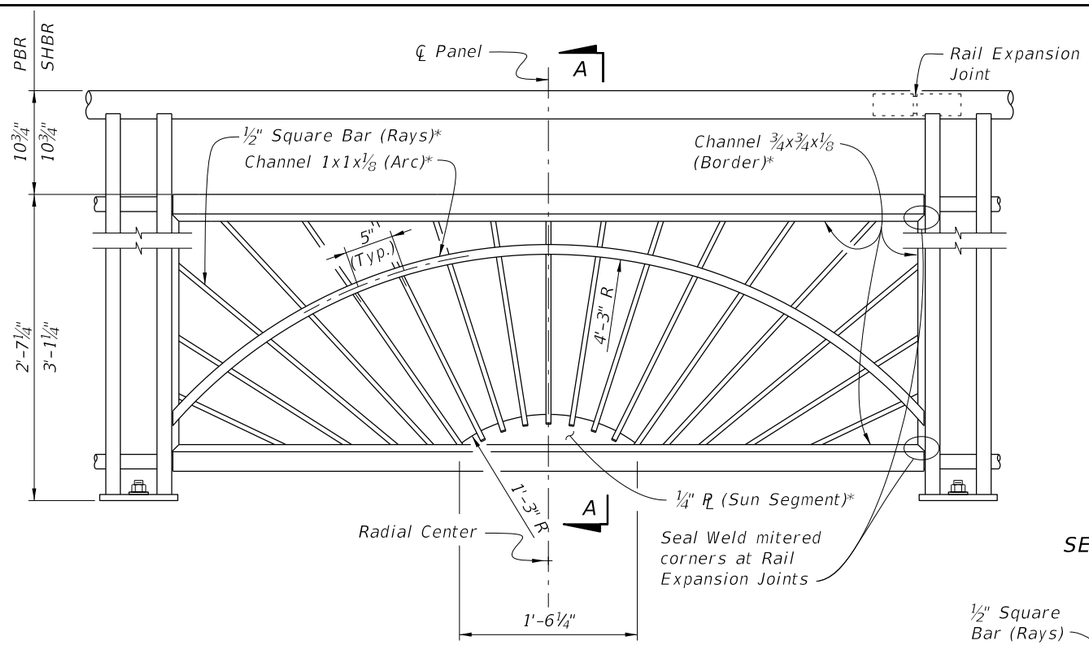
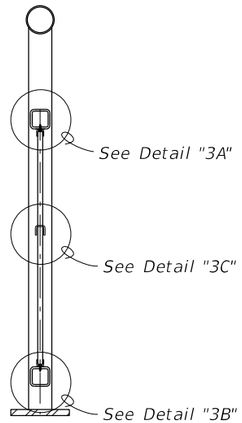
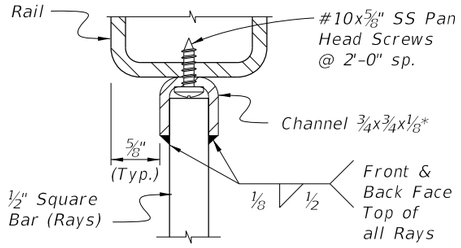


TYPE 3 - SUNSHINE INFILL PANEL

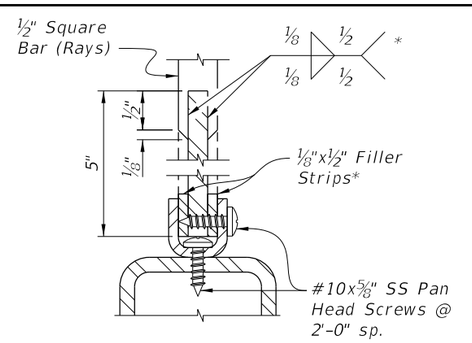
* Arc, Rays and Sun Segment may be formed in a single panel from ½" steel plate pattern cut with laser or plasma CNC, welded to a 1x1x⅛ Angle Border or the ¾x¾x⅛ Channel Border shown.



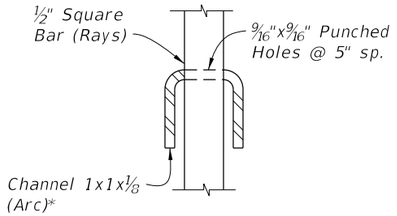
SECTION A-A



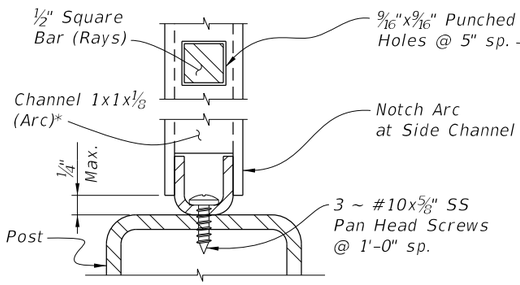
DETAIL "3A"
INTERMEDIATE RAIL/RAY CONNECTION



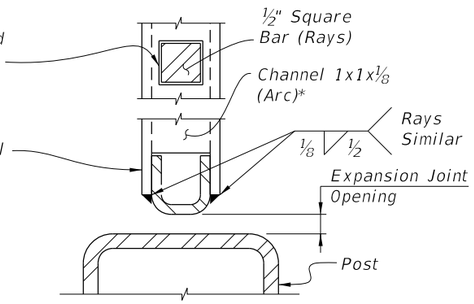
DETAIL "3B"
BOTTOM RAIL/RAY CONNECTION



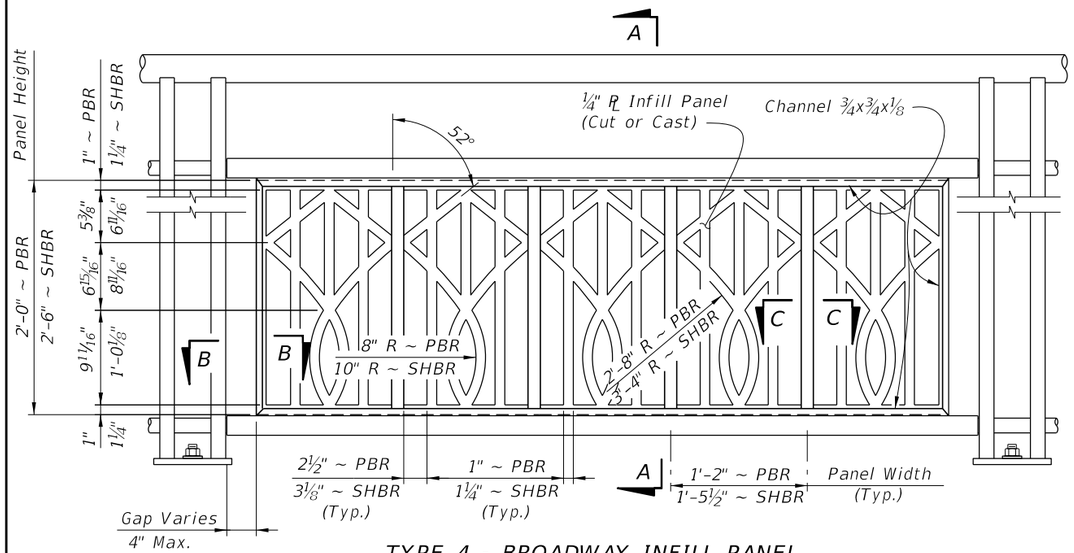
DETAIL "3C"
RAY/ARC CONNECTION



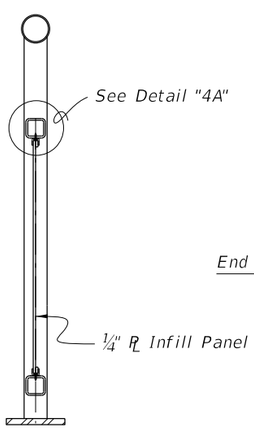
DETAIL "3D"
ARC/POST CONNECTION
(Continuous Top Rail)



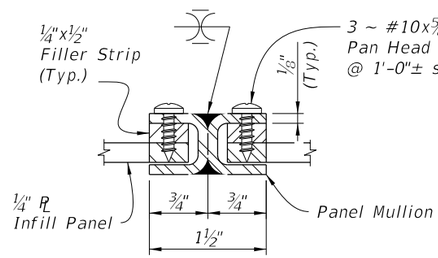
DETAIL "3E"
PANEL END CONNECTION
AT POST WITH EXPANSION JOINT



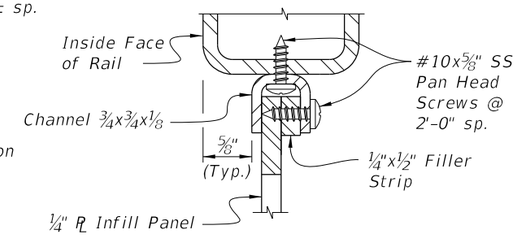
TYPE 4 - BROADWAY INFILL PANEL



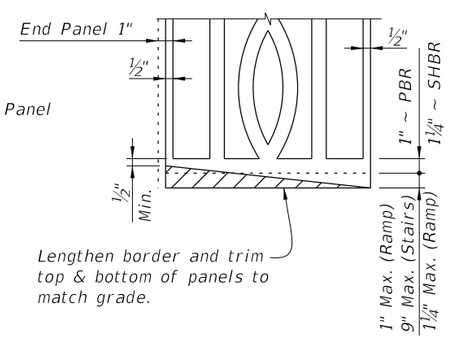
SECTION A-A



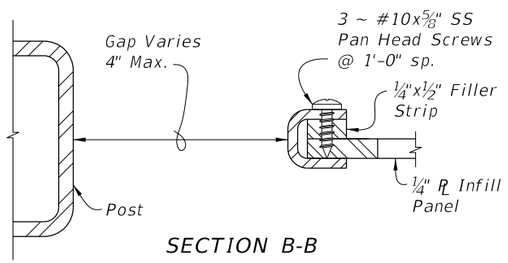
SECTION C-C
PANEL/SPLICE CONNECTION



DETAIL "4A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



PANEL ADJUSTMENT FOR RAILINGS ON GRADES



SECTION B-B
PANEL END CAP

NOTES:

1. See Plans for Infill Panel Option required.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX	SHEET
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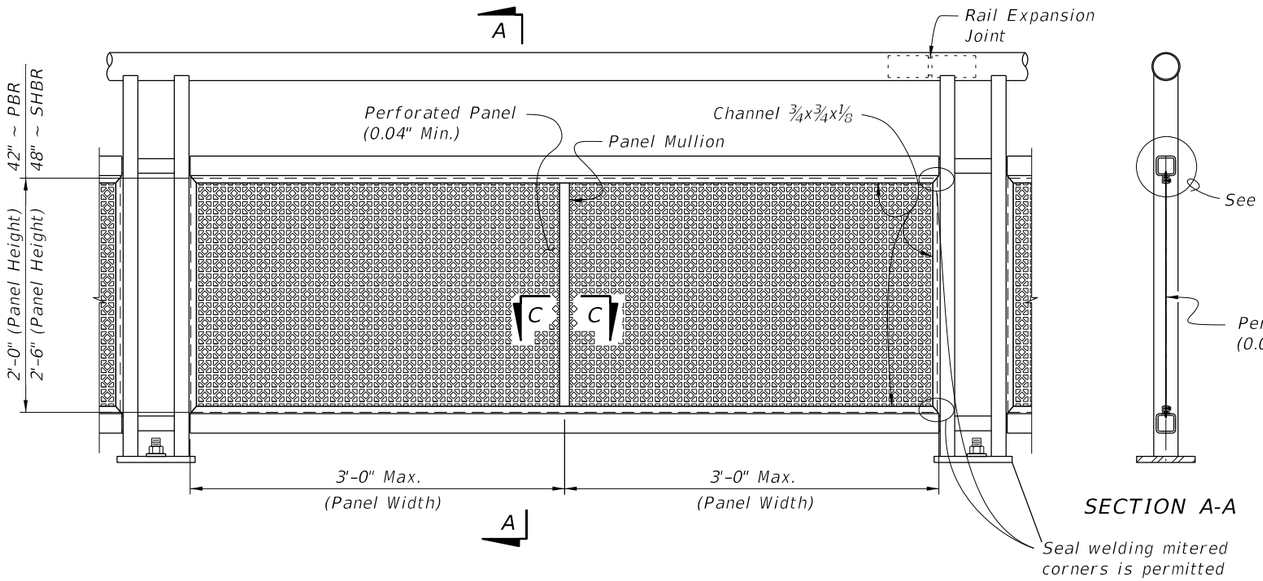
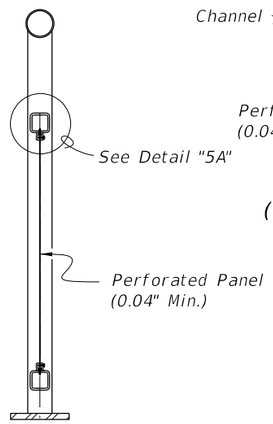
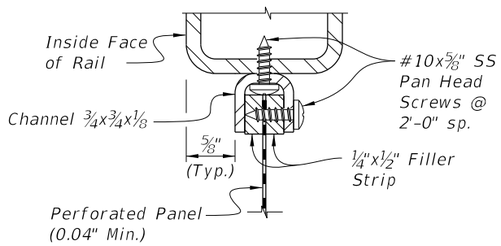


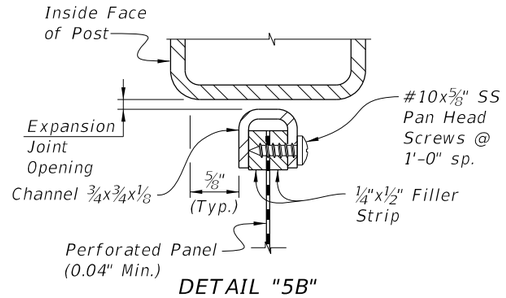
TYPE 5 - PERFORATED INFILL PANEL



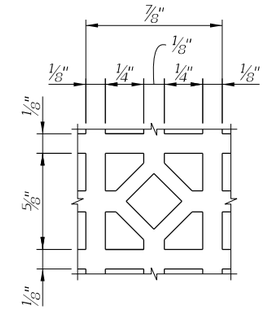
SECTION A-A



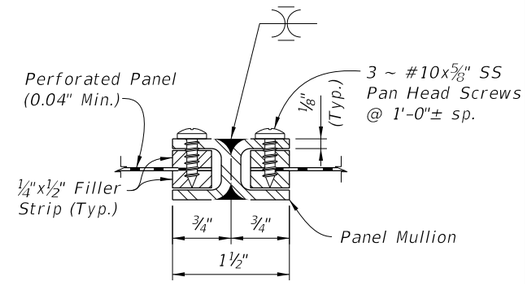
DETAIL "5A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



DETAIL "5B"
PANEL END CONNECTION
(Expansion Joint Shown, Sides Similar)



REPEATING PATTERN DETAIL
FOR PERFORATED PANEL



SECTION C-C
PANEL/SPLICE CONNECTION

NOTES:

1. See Plans for Infill Panel Type required.

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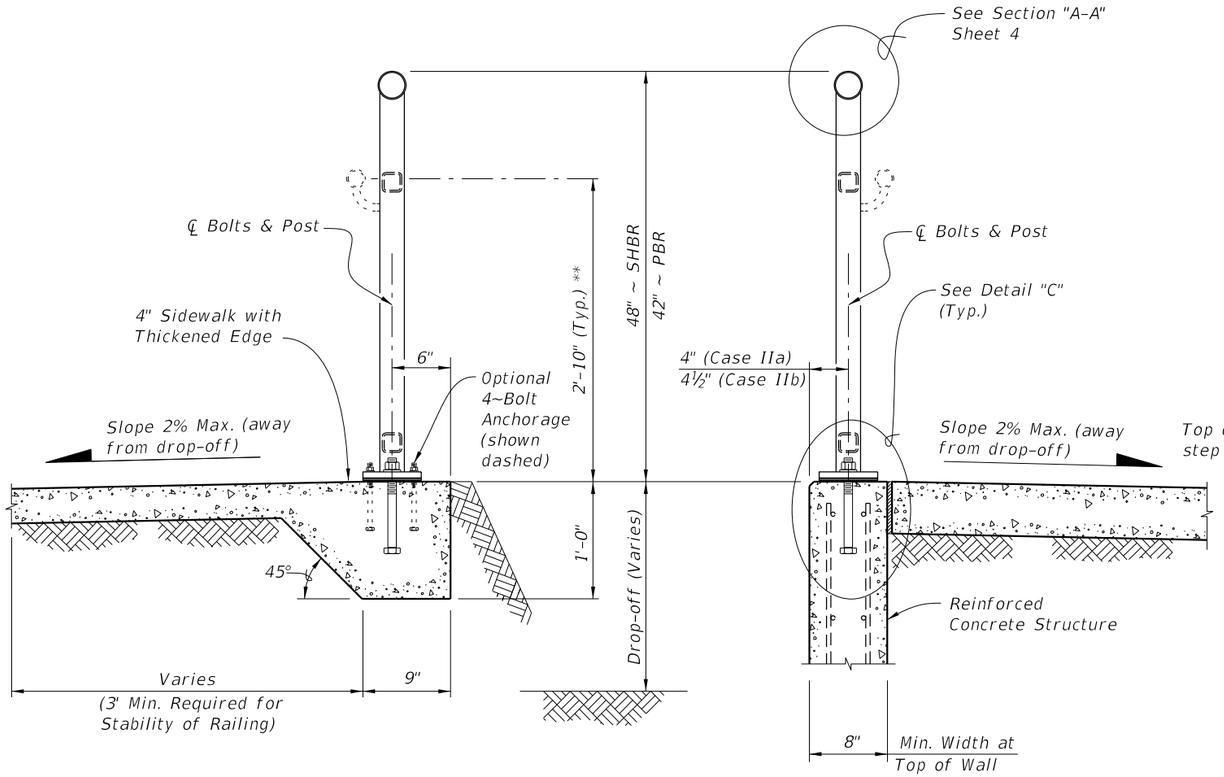
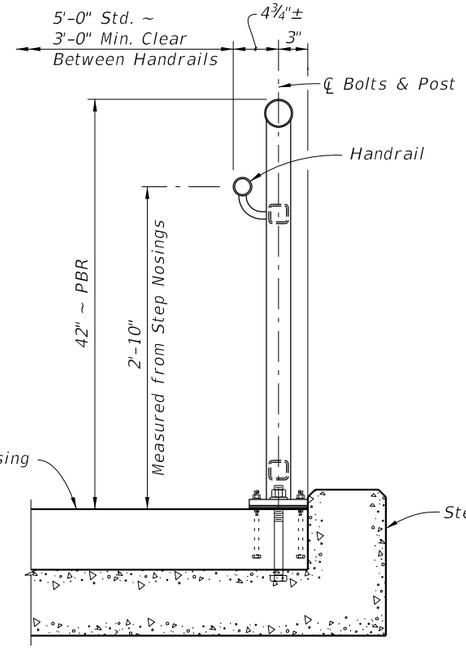
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	515-052	7 of 8

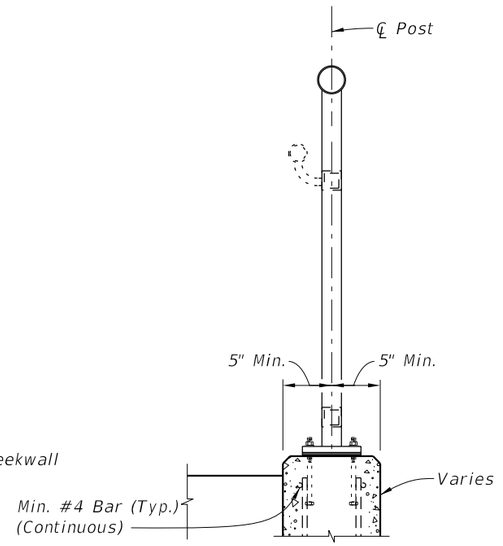


TYPICAL SECTION ON CONCRETE SIDEWALK
(Case I)

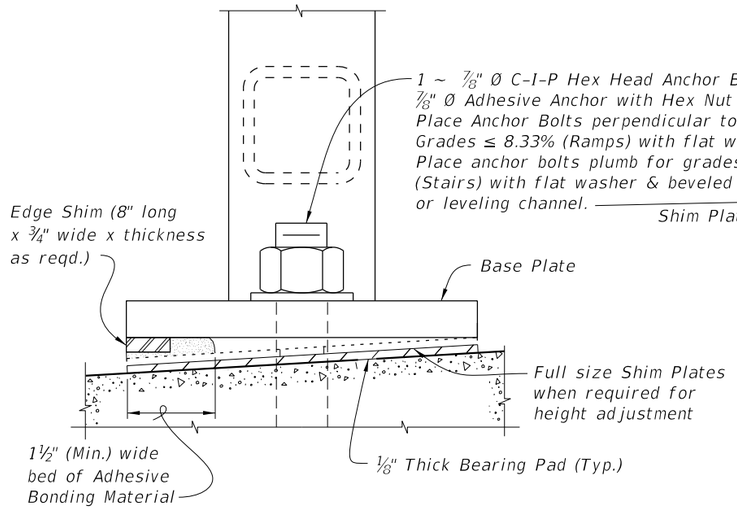
TYPICAL SECTION ON RETAINING WALL
(Case II)



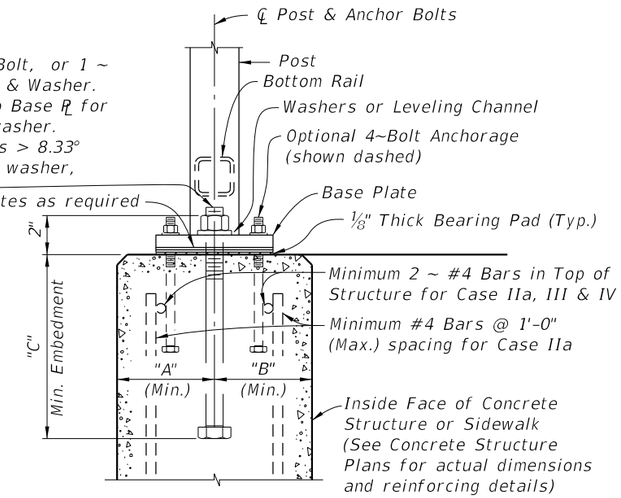
TYPICAL SECTION ON STEPS & STAIRS
(Case III)



TYPICAL SECTION FOR 4~BOLT ANCHORAGE
(Case IV)



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)

ANCHOR BOLT TABLE							
CASE	STRUCTURE TYPE	DIMENSIONS			ANCHOR LENGTH		ANCHOR SIZE
		A Edge Dist.	B Edge Dist.	C Embedment	C-I-P Hex Head Bolt	Adhesive Anchor	
I	Unreinforced Concrete	6"	1'-2"	6"	7½"	8"	⅞" Ø
IIa	Reinforced Concrete	4"	4"	9"	10½"	11"	⅞" Ø
IIb	Gravity Wall Index 400-011	4½"	3½" @ top	9"	10½"	11"	⅞" Ø
III	Step Cheekwall	4½"	4½"	9"	10½"	11"	⅞" Ø
IV	Varies	5"	5"	5"	6½"	7"	7/16" Ø

** When required; measured from top of sidewalk.

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

TABLE 1 - RAILING MEMBERS

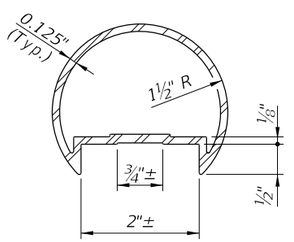
MEMBER	ALLOY(1)	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Posts (Type "A" & "B")	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250"
Posts (Type "C")	6061-T6	Extrusion 1½x2½x0.125	1.50" x 2.50"	0.125"
Top Plate (Type "C")	6061-T6	Extrusion (See Details)	2¾" x 7"	Varies
Top Rail	6061-T6	2½" NPS (Sch. 10) 3" Round Top Cap Rail	2.875" 3.000"	0.120" 0.125"
End Hoops	6063-T5	2½" NPS (Sch. 10) 3.00 OD x 0.125 Wall	2.875" 3.000"	0.120" 0.125"
Top Rail Joint/Splice Sleeves	6063-T5	2.50 OD x 0.125 Wall Top Cap Rail Inner Sleeve	2.500" 2.800"	0.125" 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"
Handrail Joint/Splice Sleeves	6063-T5 6063-T5	1" NPS (Sch. 40) 1.50 OD x 0.125 Wall	1.315" 1.500"	0.133" 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.

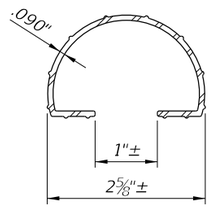
NOTES

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. ⅞" diameter single bolt option, Grade 36
       2. 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 ⅛" 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 5⅞" for standard installations and 3⅞" 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.

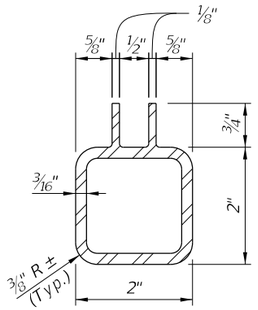
CROSS REFERENCES:
Detail "A", Sheet 4
Detail "B", Sheet 4
Detail "K", Sheet 3



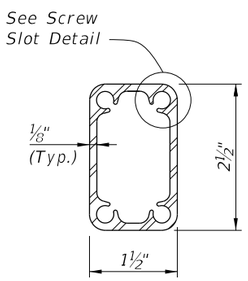
3" ROUND TOP CAP RAIL



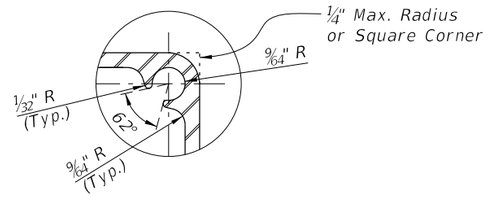
TOP CAP RAIL INNER SPLICE SLEEVE



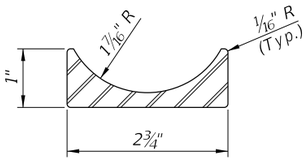
ALTERNATIVE BOTTOM & INTERMEDIATE RAIL SECTION FOR TYPE 3, 4 & 5 RAILINGS



POST TYPE "C" SCREW SLOT SECTION



SCREW SLOT DETAIL



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

ALTERNATE TOP RAIL SECTION

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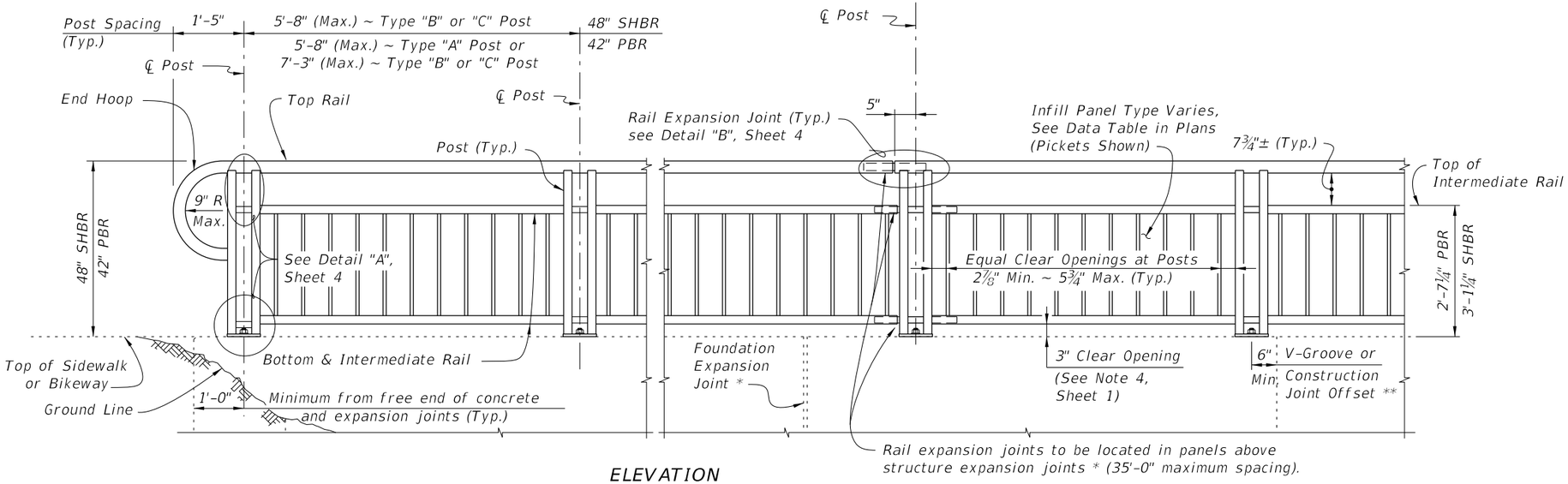
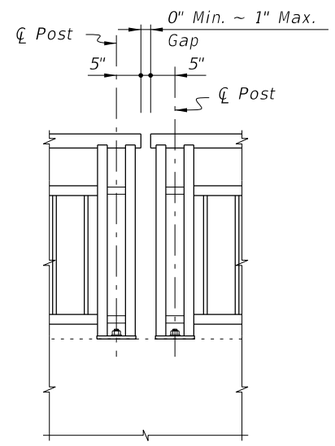
11/01/18			FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX 515-062 / SHEET 1 of 9



ELEVATION
(Showing Outside Face of Railing with Type "A" Posts)

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%

(Type 1 - Picket Railing Shown, Other Types Similar)

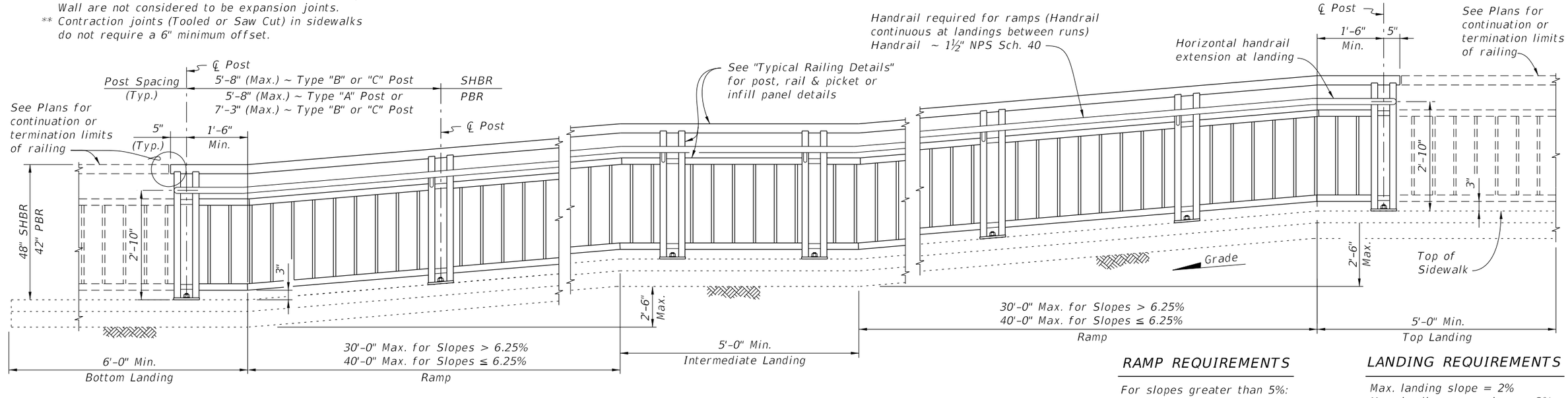


Note: Non-continuous corners are permitted when handrails are not required.

EXPANDED ELEVATION AT CORNERS

DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS

NOTES:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.
** Contraction joints (Tooled or Saw Cut) in sidewalks do not require a 6" minimum offset.



ELEVATION
(Showing Inside Face of Railing with Type "A" Posts)

RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

RAILINGS ON GRADES STEEPER THAN 5%

(Type 1 - Picket Railing Shown, Other Types Similar)

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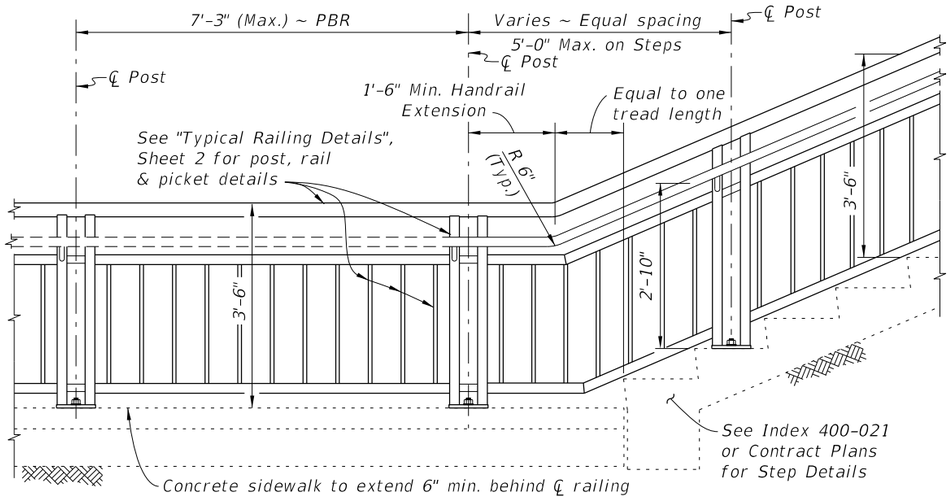
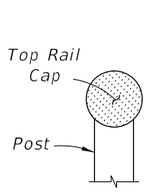
07/01/15			FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	2 of 9

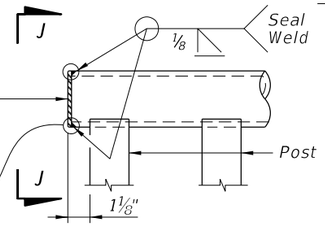


RAILING CONTINUATION BEYOND STEPS OR STAIRS
(Bottom shown, Top similar)

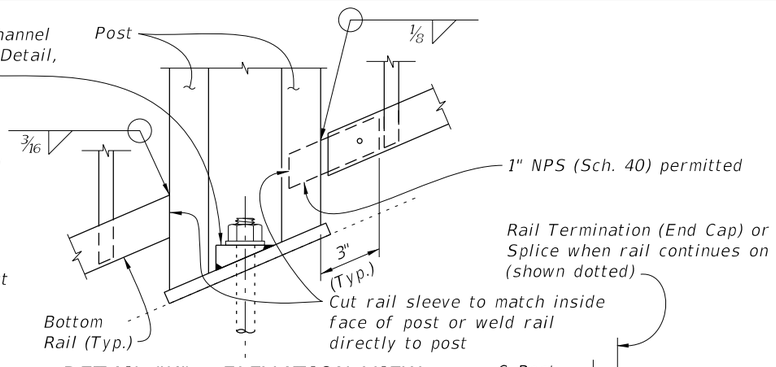
DETAIL "L" - PLAN VIEW
HANDRAIL TERMINATION



VIEW J-J

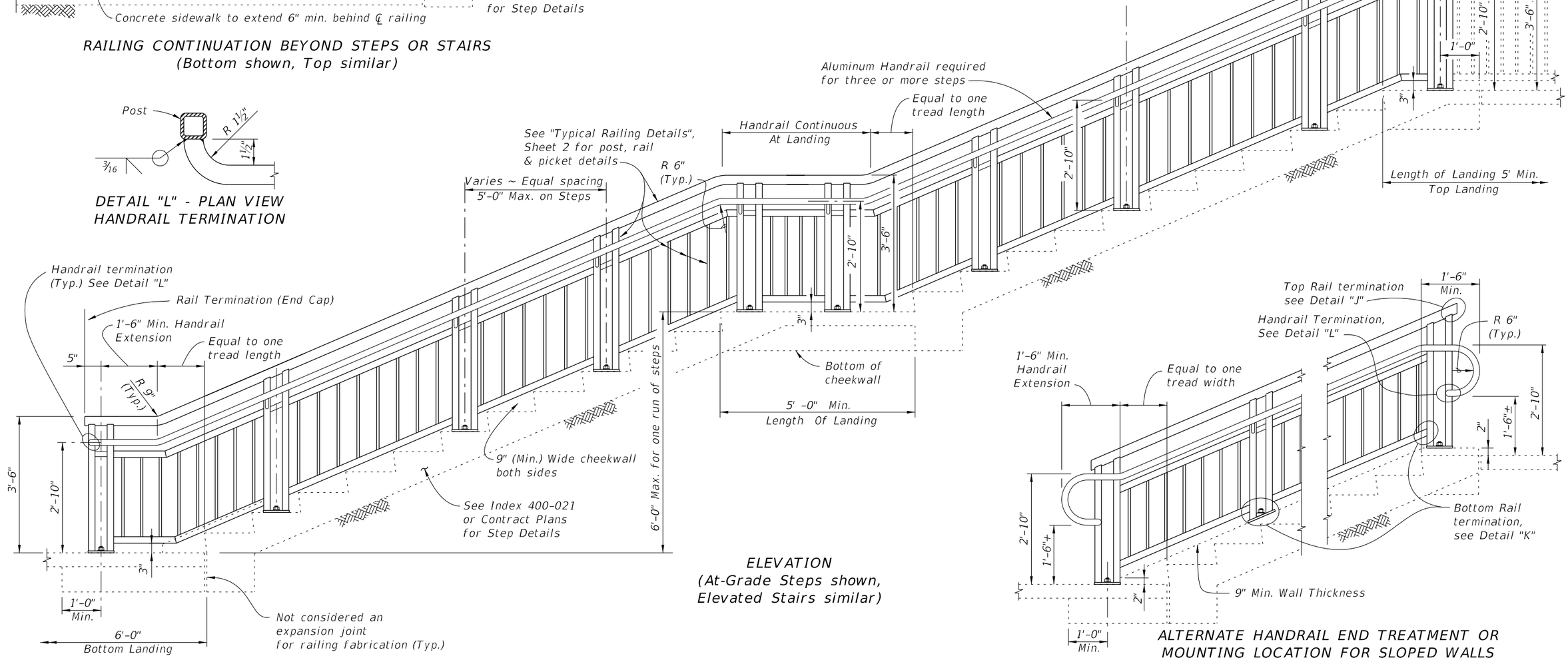


DETAIL "J" - ELEVATION VIEW
TOP RAIL TERMINATION



DETAIL "K" - ELEVATION VIEW
BOTTOM RAIL CONNECTION
(Intermediate Rail Similar)

RAIL TERMINATION DETAILS



ELEVATION
(At-Grade Steps shown,
Elevated Stairs similar)

ALTERNATE HANDRAIL END TREATMENT OR
MOUNTING LOCATION FOR SLOPED WALLS

RAILINGS ON STEPS & STAIRS

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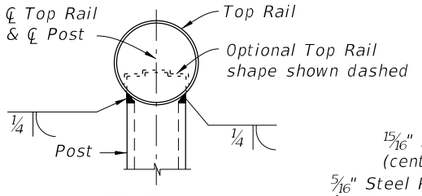
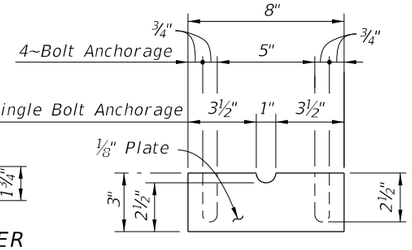
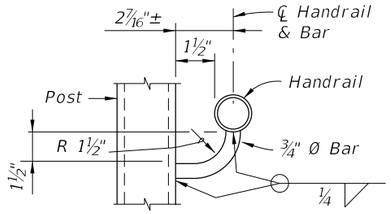


SECTION A-A
(Top Rail Connection)

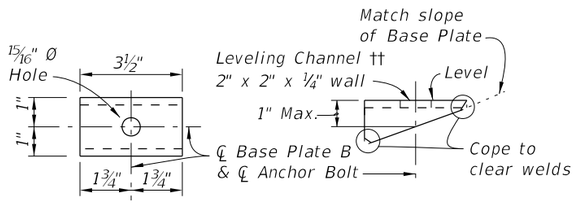
PLATE WASHER DETAIL



SHIM PLATE DETAIL

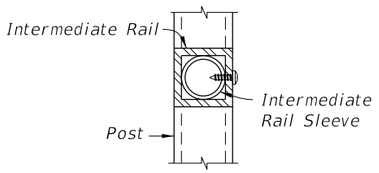


SECTION B-B
(Handrail Connection)

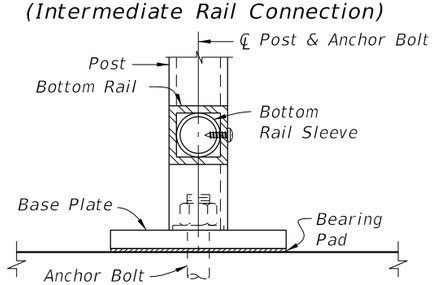


TOP VIEW SIDE VIEW

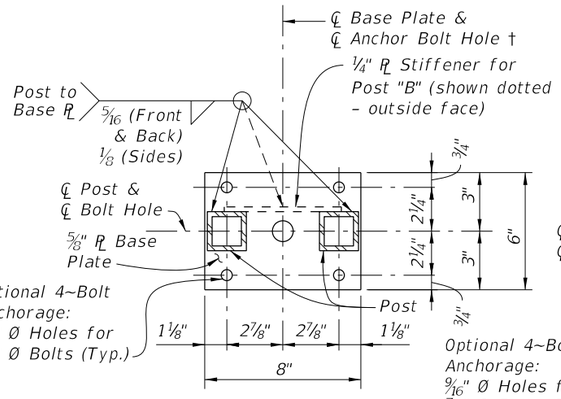
LEVELING CHANNEL DETAIL



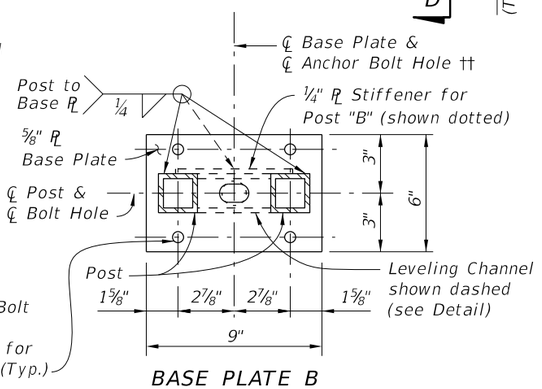
SECTION C-C
(Intermediate Rail Connection)



SECTION D-D
(Bottom Rail Connection -
Single Anchor Bolt Shown)

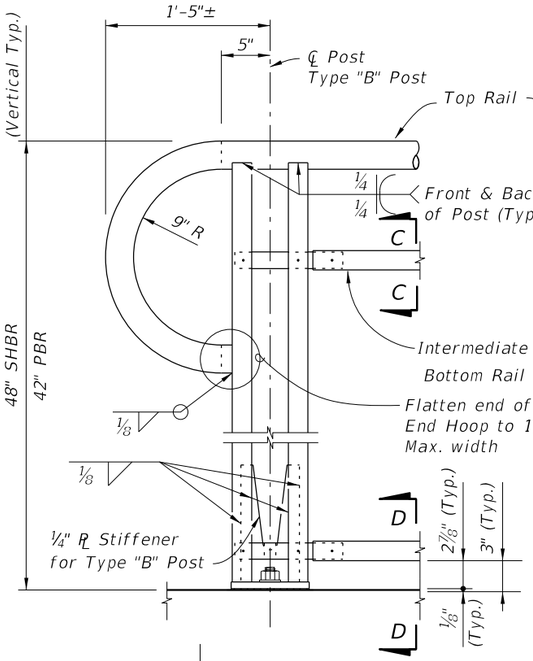


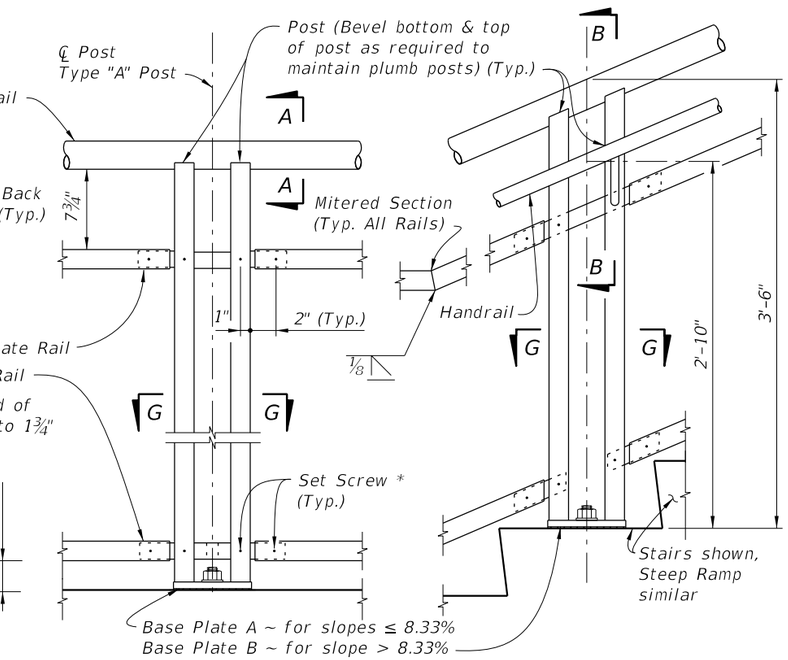
BASE PLATE A



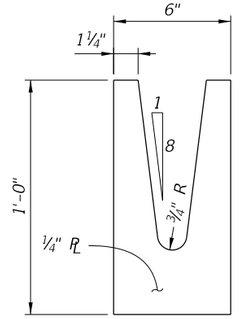
BASE PLATE B

SECTION G-G - BASE PLATE DETAILS





DETAIL "A" - RAIL CONNECTIONS
(Showing Inside Face of Railing)
(Pickets/Panels and 4~Bolt Anchorage Not Shown for Clarity)



POST "B" STIFFENER DETAIL

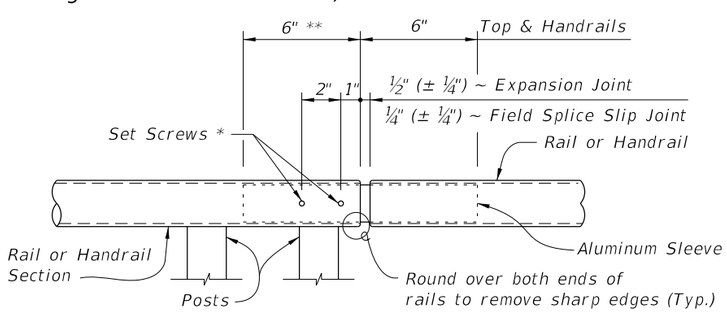
NOTES:

† Base Plate A (Ramps – Bolts normal) use 1 1⁄16" Ø Holes for Single Anchor Bolts with Flat Washers for slopes ≤ 8.33%.

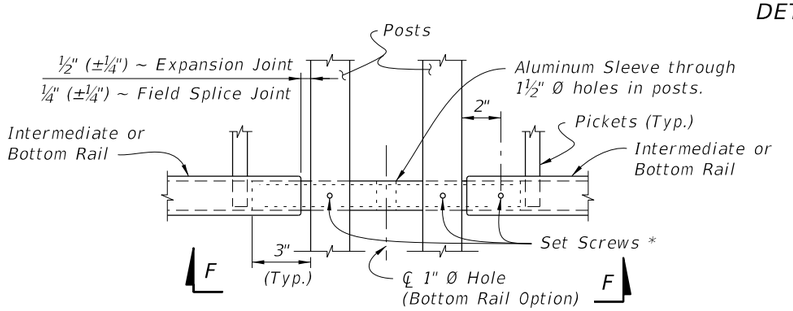
†† Base Plate B (Stairs – Bolts plumb) use 1¼" Ø Holes for Single Anchor Bolts with Beveled Plate and Washers for slopes > 8.33% to ≤ 15%; use 15⁄16" x 1½" Slotted Holes with Leveling Channel for slopes > 15%.

* ¼" Ø x ¾" Pan Head Aluminum or Stainless Steel Set Screws. Screws must be set flush against the outside face of rails & posts and underside of handrails. A single tack weld (½" max. length) at top of the sleeve for each post may be substituted for the Set Screws. Do not provide Set Screws for Rails at free end of Expansion Joints.

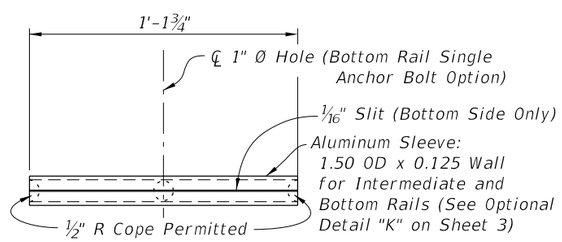
** Embedded length may be 4" for plug welded connection.



ROUND RAILS - TOP RAIL OR HANDRAIL
(Top Rail at Expansion Joint Shown)



SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL
(Bottom Rail Shown at Expansion Joint Shown)



VIEW F-F
INTERMEDIATE OR BOTTOM RAIL -
ALUMINUM SLEEVE DETAIL (Bottom Side Shown)

DETAIL "B" - EXPANSION JOINT (FIELD SPLICE SLIP JOINT SIMILAR)

CROSS REFERENCE:
For location of Details "B", See Sheet 2.

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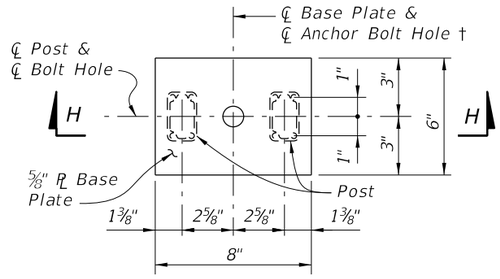
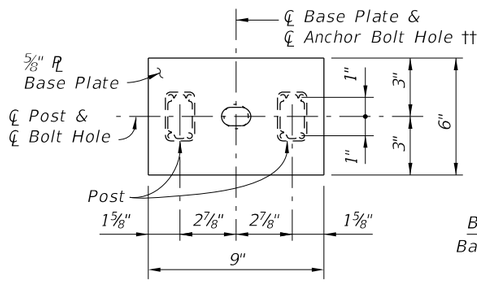
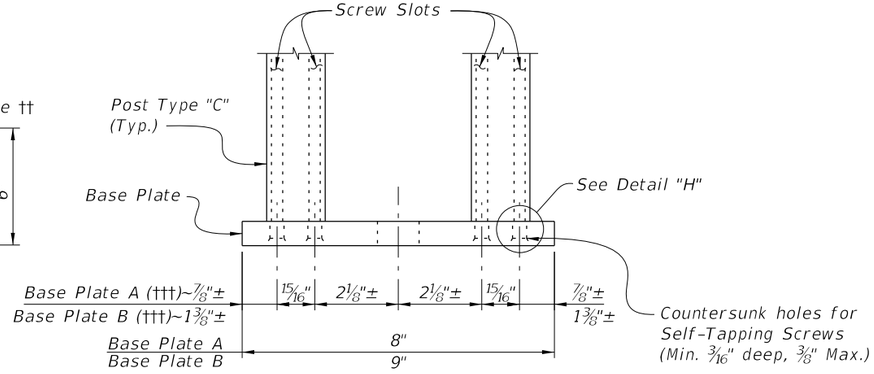
11/01/16			FDOT	FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX 515-062 / SHEET 4 of 9



BASE PLATE A

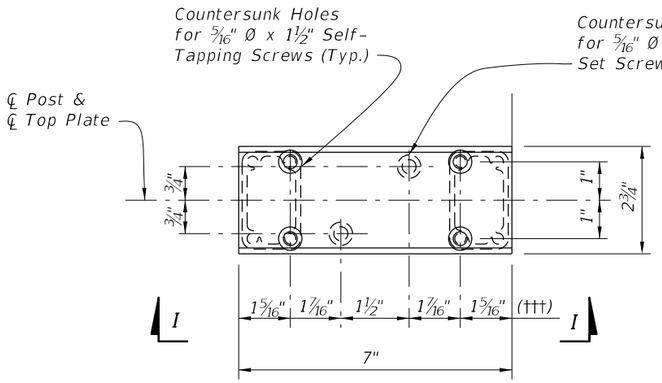


BASE PLATE B

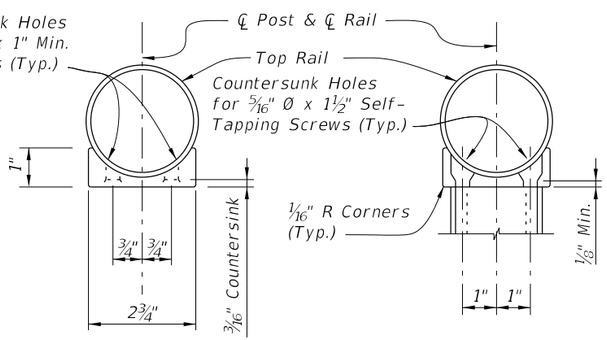


SECTION H-H
(Screws Not Shown for Clarity)

BASE PLATE DETAILS FOR TYPE "C" POST

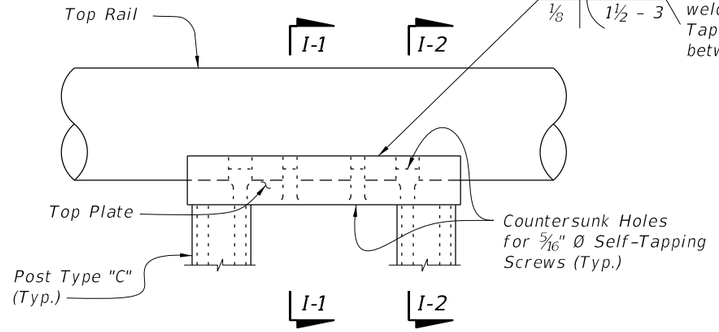


PLAN



SECTION "I-1"

SECTION "I-2"



VIEW "I"

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

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

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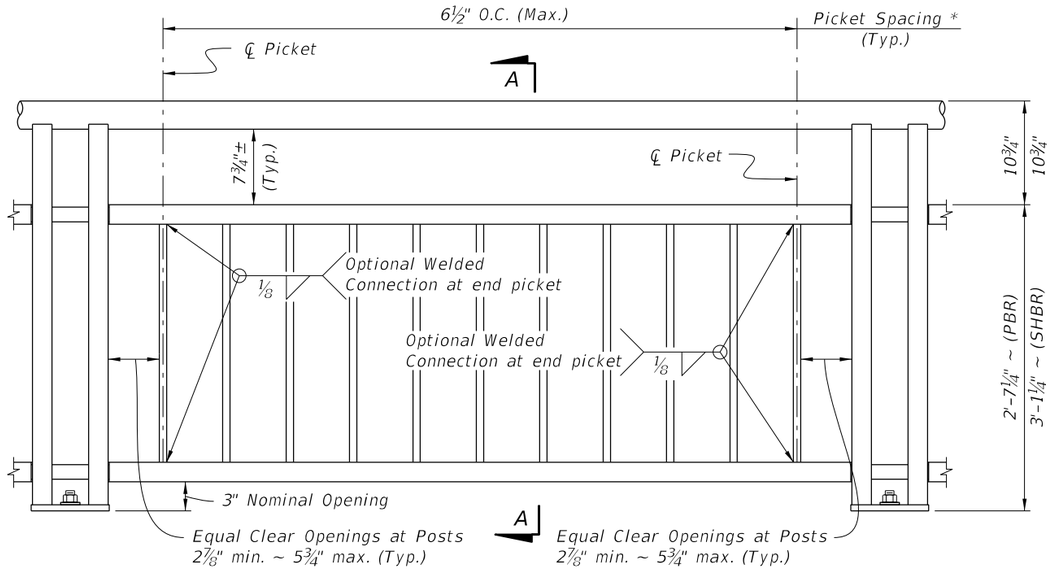
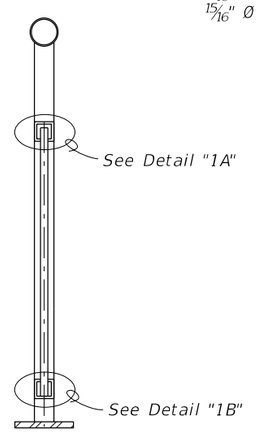
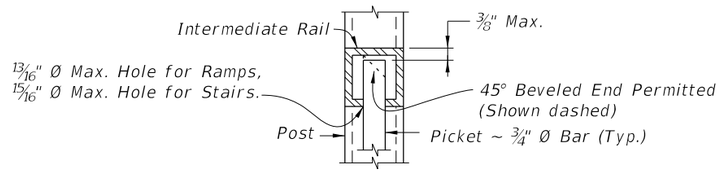
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	5 of 9



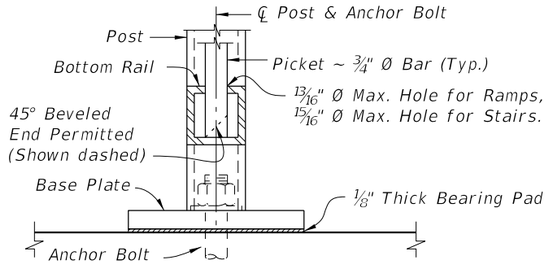
TYPE 1 - PICKET INFILL PANEL



SECTION A-A



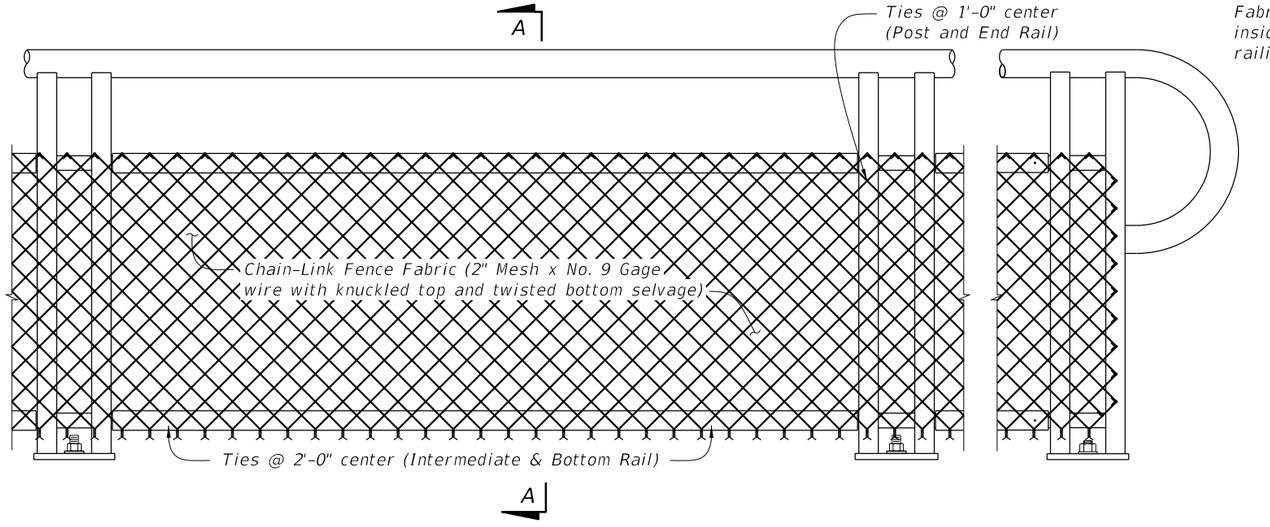
DETAIL "1A"
(Top of Picket Connection)



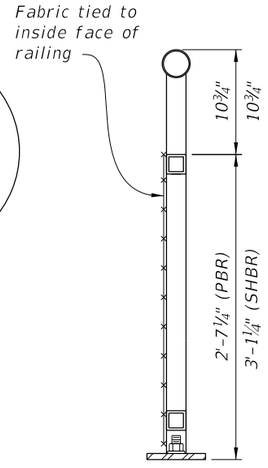
DETAIL "1B"
(Bottom of Picket Connection)

PICKET NOTES:

* Picket Spacing of 6½" centers is based on a ¾" Ø Bar for standard applications. When shown in the Contract Plans a 4½" picket spacing may be required. See Note 4 (Sheet 1).



TYPE 2 - CHAIN-LINK (Continuous Infill Panel)



SECTION A-A

TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS		
COMPONENT	ASTM	COMPONENT INFORMATION
Chain-Link Fence Fabric (2" mesh with twisted bottom and knuckled top selvage)	A392	Zinc-Coated Steel – No. 9 gage (coated wire diameter), Class 2 Coating
	A491	Aluminum-Coated Steel – No. 9 gage (coated wire diameter)
	F668	Polyvinyl Chloride (PVC) Coated Steel – No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) ~ See Plans for specified color of PVC.
Tie Wires	F626	Zinc-Coated Steel Wire – No. 9 gage with coating to match Chain-Link Fence Fabric.
Tension Bars	F626	3⁄16" (min. thickness) x ¾" (min. width) x 2'-3" (min. height) Steel Bars
Miscellaneous Fence Components	F626	Zinc-Coated Steel

NOTES:

1. See Plans for Infill Panel option required.

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.

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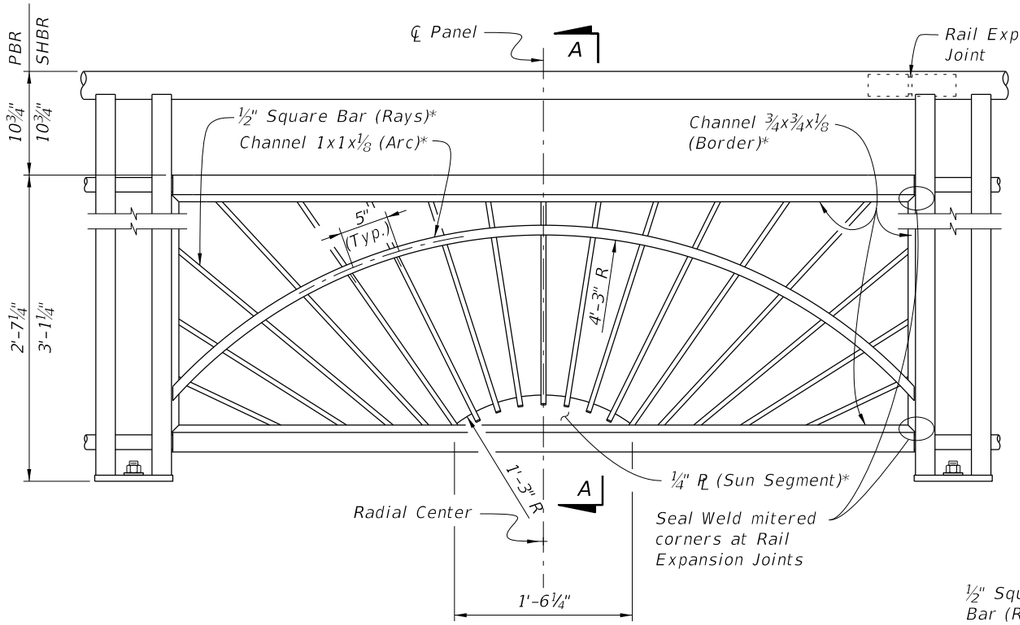
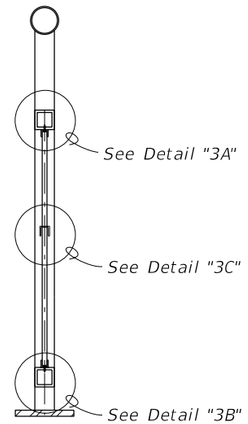
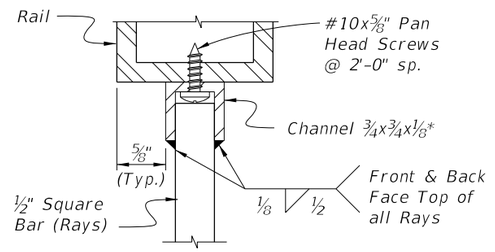


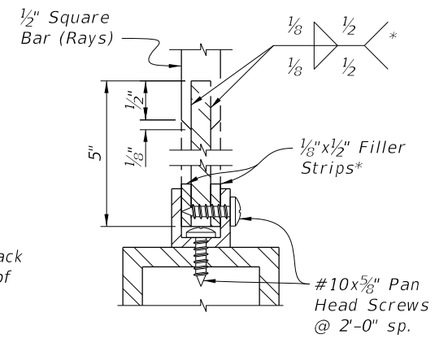
TYPE 3 - SUNSHINE INFILL PANEL



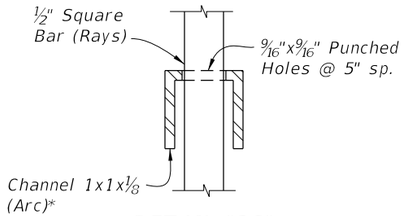
SECTION A-A



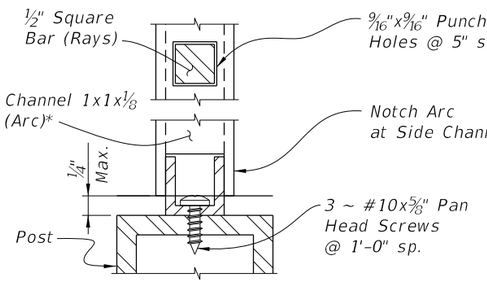
DETAIL "3A"
INTERMEDIATE RAIL/RAY CONNECTION



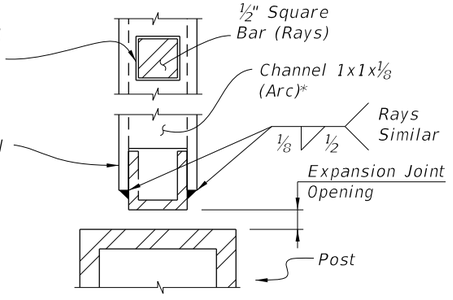
DETAIL "3B"
BOTTOM RAIL/RAY CONNECTION



DETAIL "3C"
RAY/ARC CONNECTION

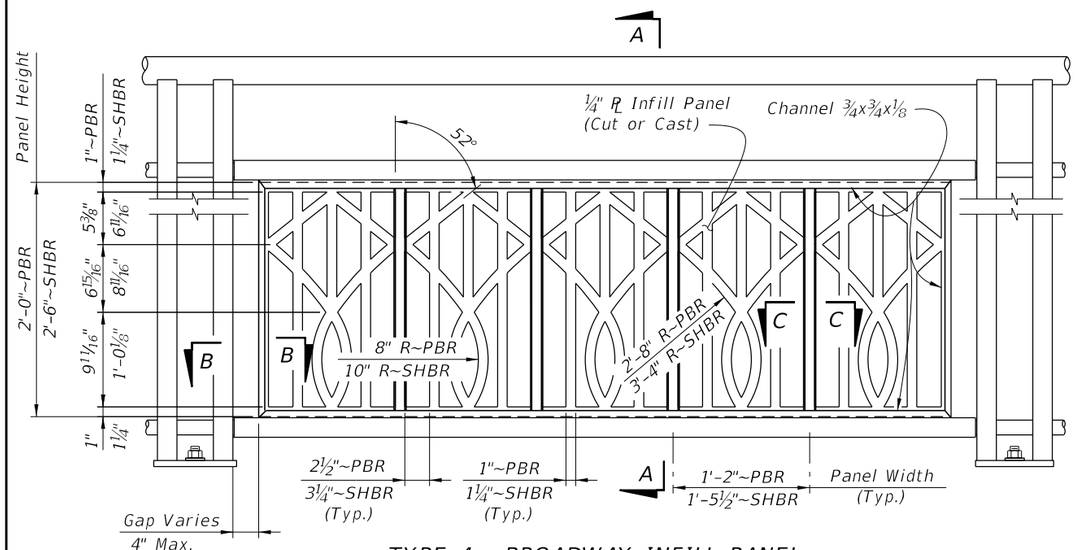


DETAIL "3D"
ARC/POST CONNECTION
(Continuous Top Rail)

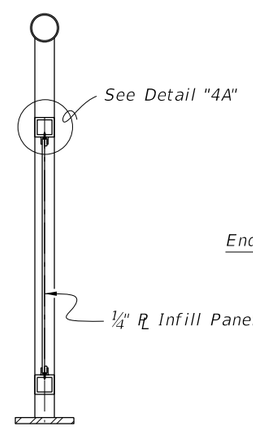


DETAIL "3E"
PANEL END CONNECTION
AT POST WITH EXPANSION JOINT

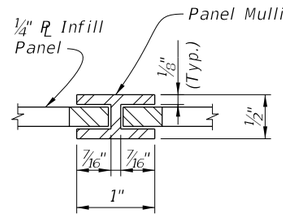
* Arc, Rays and Sun Segment may be formed in a single panel from ½" plate (ASTM B209 Alloy 6061-T6 or T651) pattern cut with laser or plasma CNC, welded to a 1x1x⅛ Angle Border or the ¾x¾x⅛ Channel Border shown.



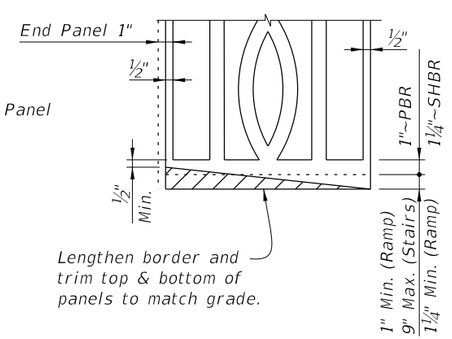
TYPE 4 - BROADWAY INFILL PANEL



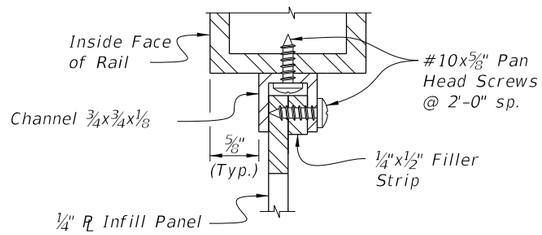
SECTION A-A



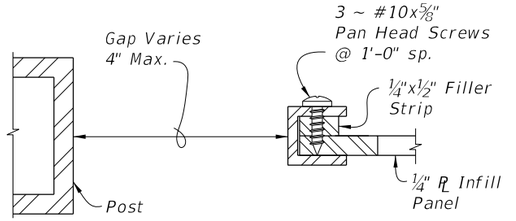
SECTION C-C
PANEL/SPLICE CONNECTION



PANEL ADJUSTMENT FOR RAILINGS
ON GRADES



DETAIL "4A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



SECTION B-B
PANEL END CAP

NOTES:

1. See Plans for Infill Panel Option required.

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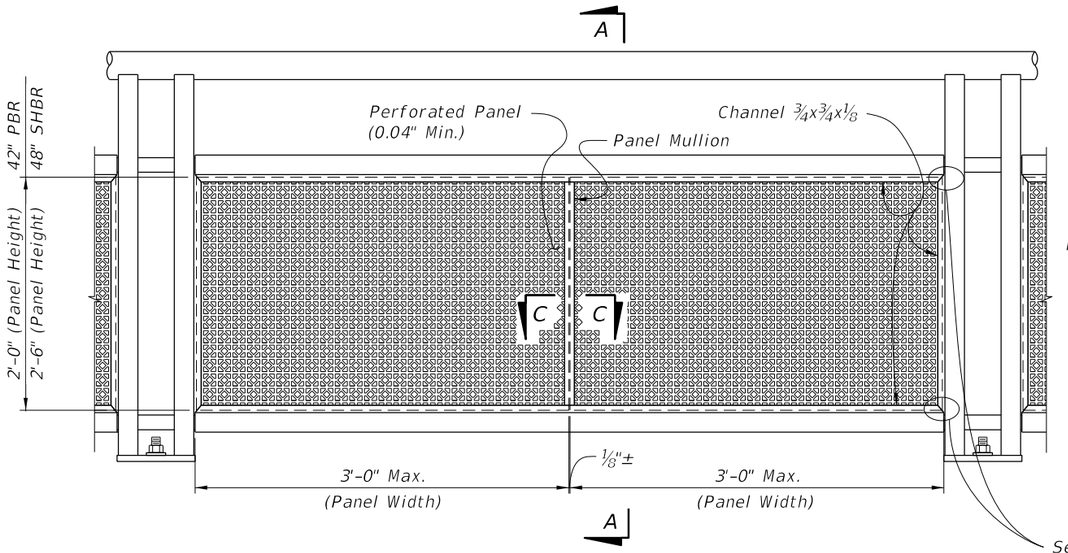
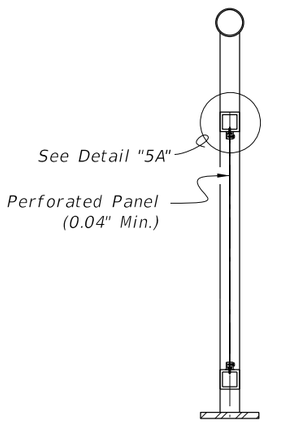
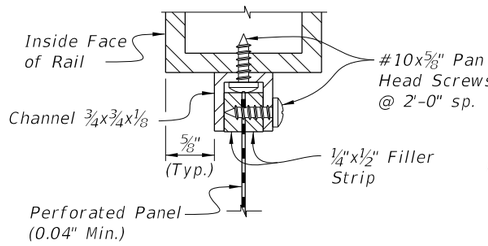
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	7 of 9



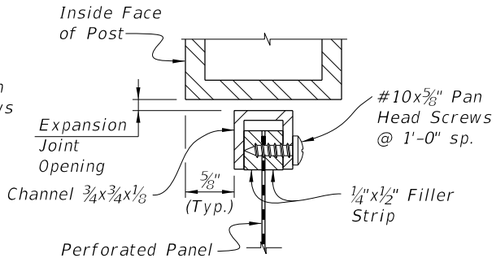
TYPE 5 - PERFORATED INFILL PANEL



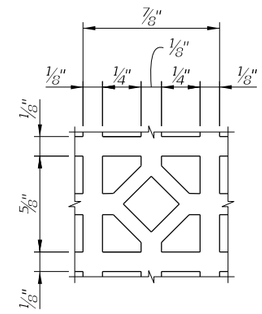
SECTION A-A



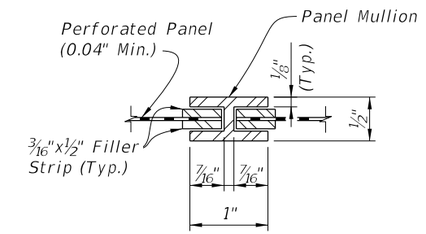
DETAIL "5A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



DETAIL "5B"
PANEL END CONNECTION
(Expansion Joint Shown, Sides Similar)



REPEATING PATTERN DETAIL
FOR PERFORATED PANEL



SECTION C-C
PANEL/SPLICE CONNECTION

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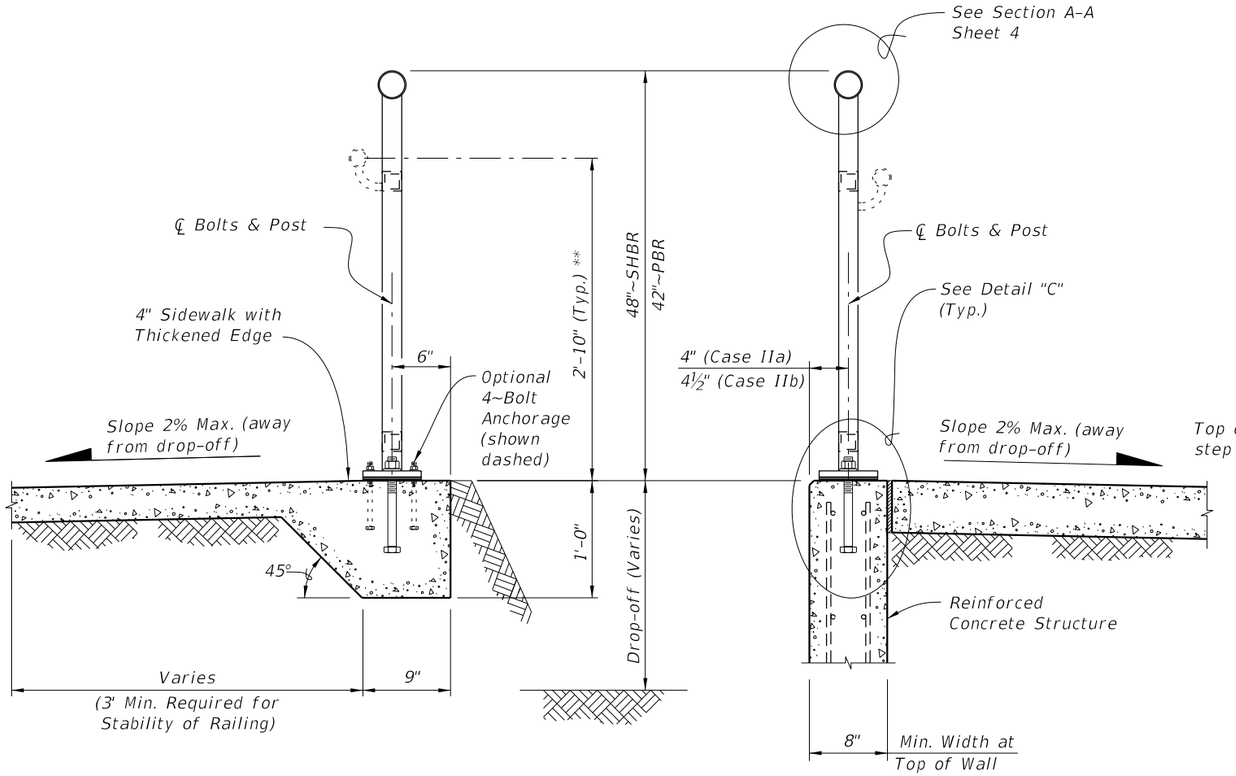
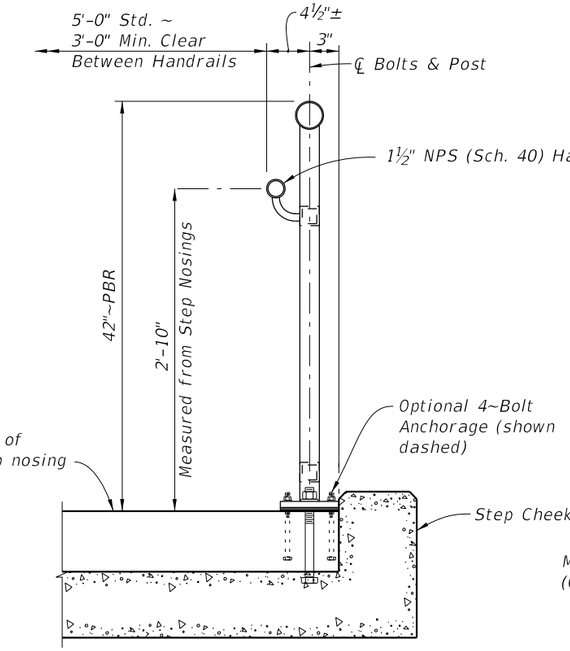
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX 515-062	SHEET 8 of 9

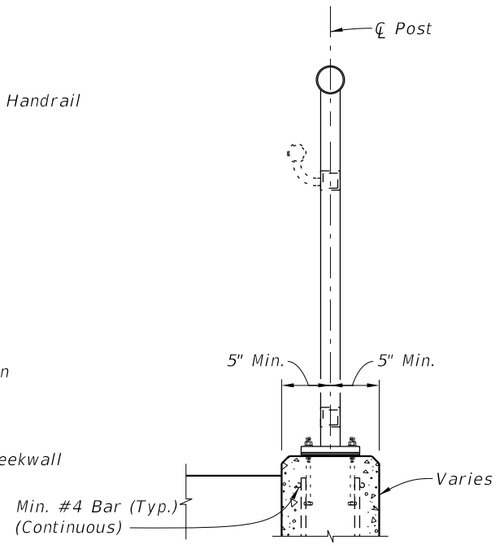


TYPICAL SECTION ON CONCRETE SIDEWALK
(Case I)

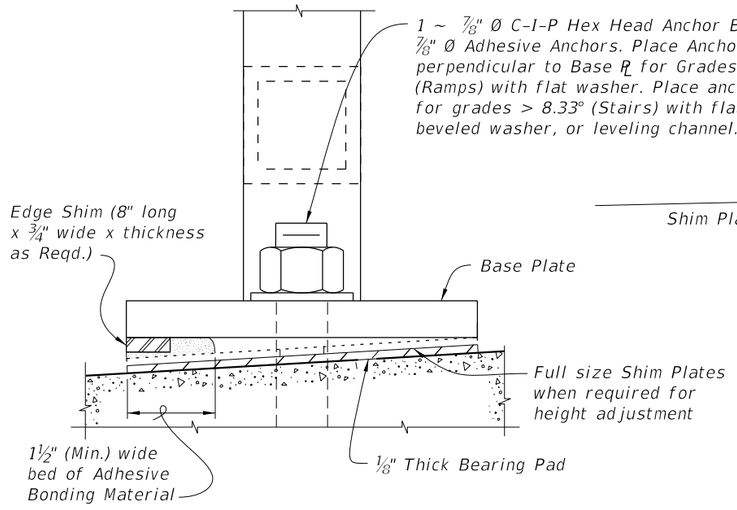
TYPICAL SECTION ON RETAINING WALL
(Case II)



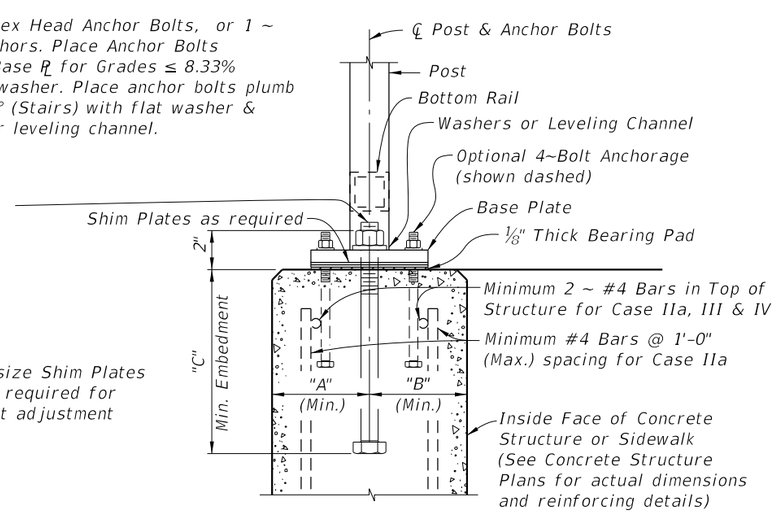
TYPICAL SECTION ON STEPS & STAIRS
(Case III)



TYPICAL SECTION FOR 4~BOLT ANCHORAGE
(Case IV)



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)

ANCHOR BOLT TABLE							
CASE	STRUCTURE TYPE	DIMENSIONS			ANCHOR LENGTH		ANCHOR SIZE
		"A" Edge Dist.	"B" Edge Dist.	"C" Embedment	C.I.P Hex Head Bolt	Adhesive Anchor	
I	Unreinforced Concrete	6"	1'-2"	6"	7½"	8"	⅞" Ø
IIa	Reinforced Concrete	4"	4"	9"	10½"	11"	⅞" Ø
IIb	Gravity Wall Index 400-011	4½"	3½" @ top	9"	10½"	11"	⅞" Ø
III	Step Cheekwall	4½"	4½"	9"	10½"	11"	⅞" Ø
IV	Varies	5"	5"	5"	6½"	7"	7/16" Ø

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

10/29/2019 8:18:04 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX 515-062	SHEET 9 of 9

NOTES:

1. Shop Drawings are required.

2. Work with Specification 515.

3. Materials:

   A. Pan Head Set Screws: Aluminum Alloy 2024-74 or 7075-T73 or Stainless Steel (SS) Type 316 or 18-8 Alloy.

   B. Base Plates and Cap Plates: ASTM B209, Alloy 6061-T6

   C. Structural Pipe Tube and Bars: ASTM B221 or ASTM B429, Alloy 6061-T6

   D. End Rails 90° bends and corner bends with a maximum 4 foot spacing: Alloy 6063-T5 is permitted.

RAILING MEMBER DIMENSIONS TABLE			
MEMBER	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.

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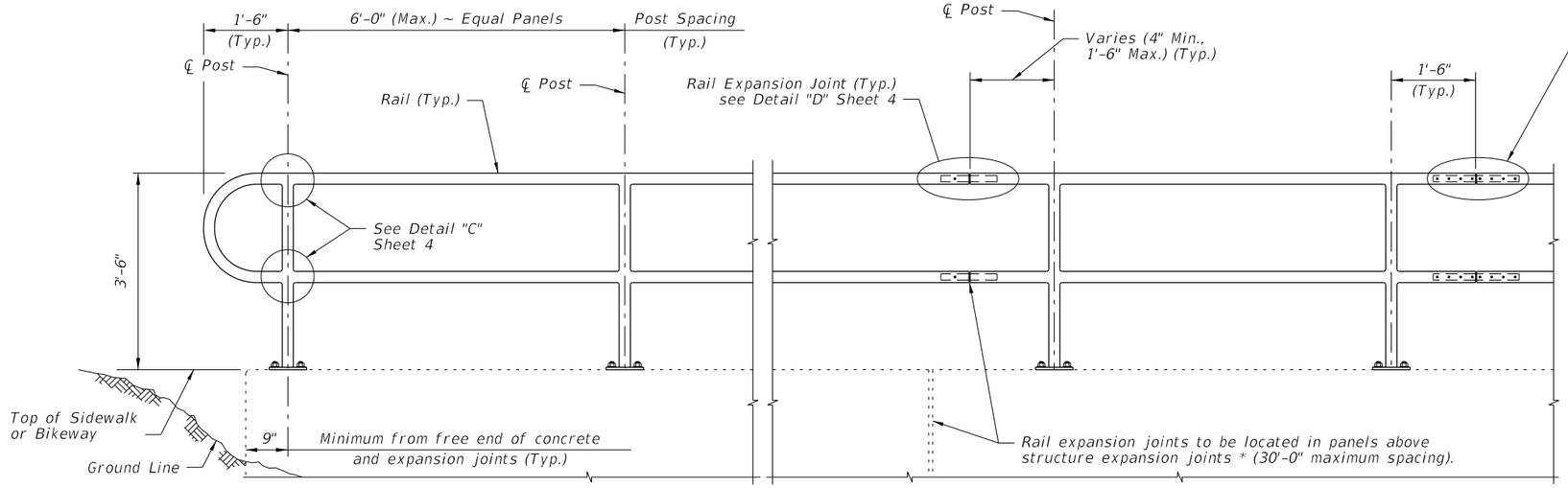


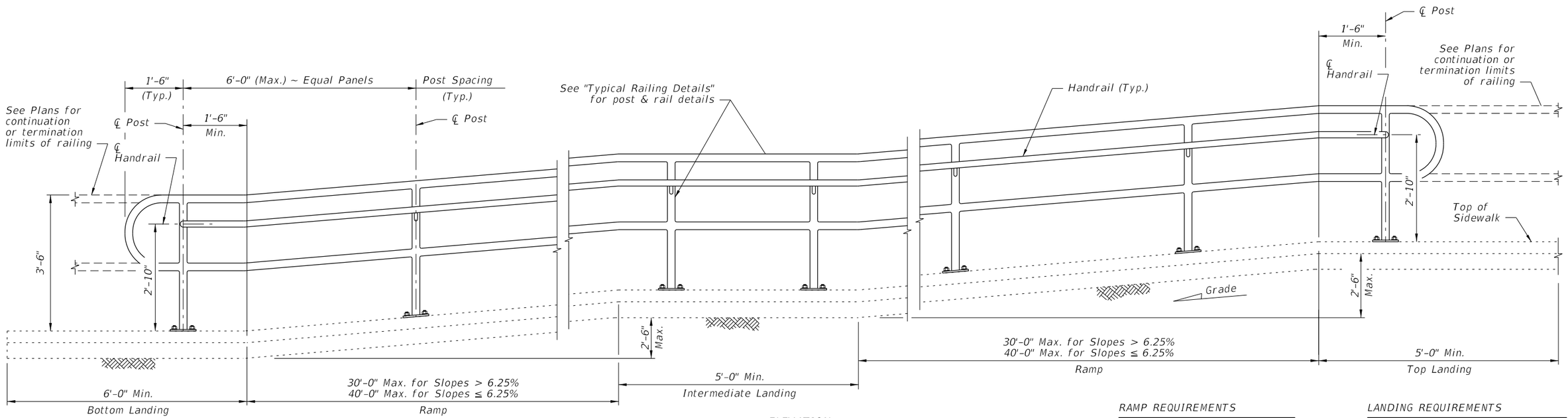
ELEVATION

NOTES:
NPS = Nominal Pipe Size

STRUCTURES EXPANSION JOINTS NOTE:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.

CROSS REFERENCE:
For Details "C", "D" and "E", see Sheet 4.

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%



ELEVATION
(Showing Inside Face of Railing)

RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

RAILINGS ON GRADES STEEPER THAN 5% TO 8.33%

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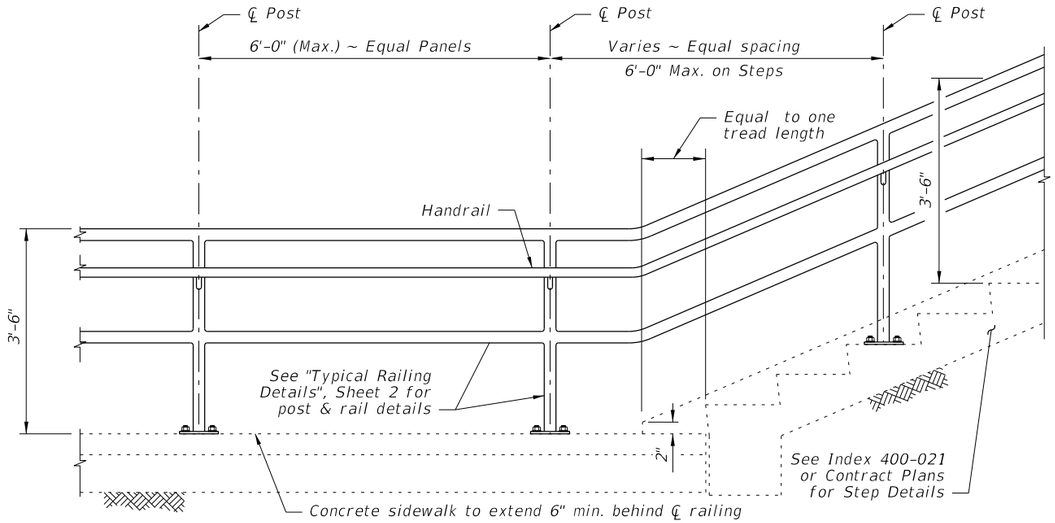
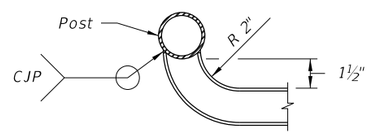
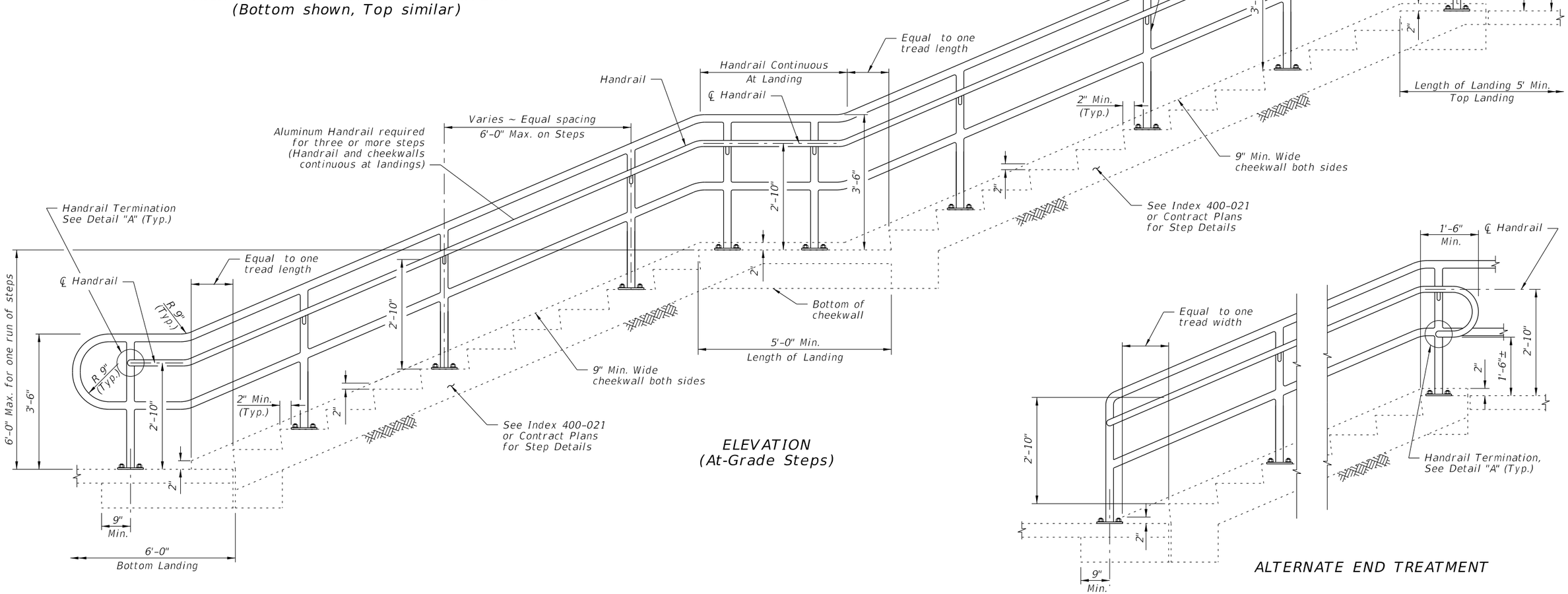
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (ALUMINUM)	INDEX	SHEET
11/01/17						515-070	2 of 5



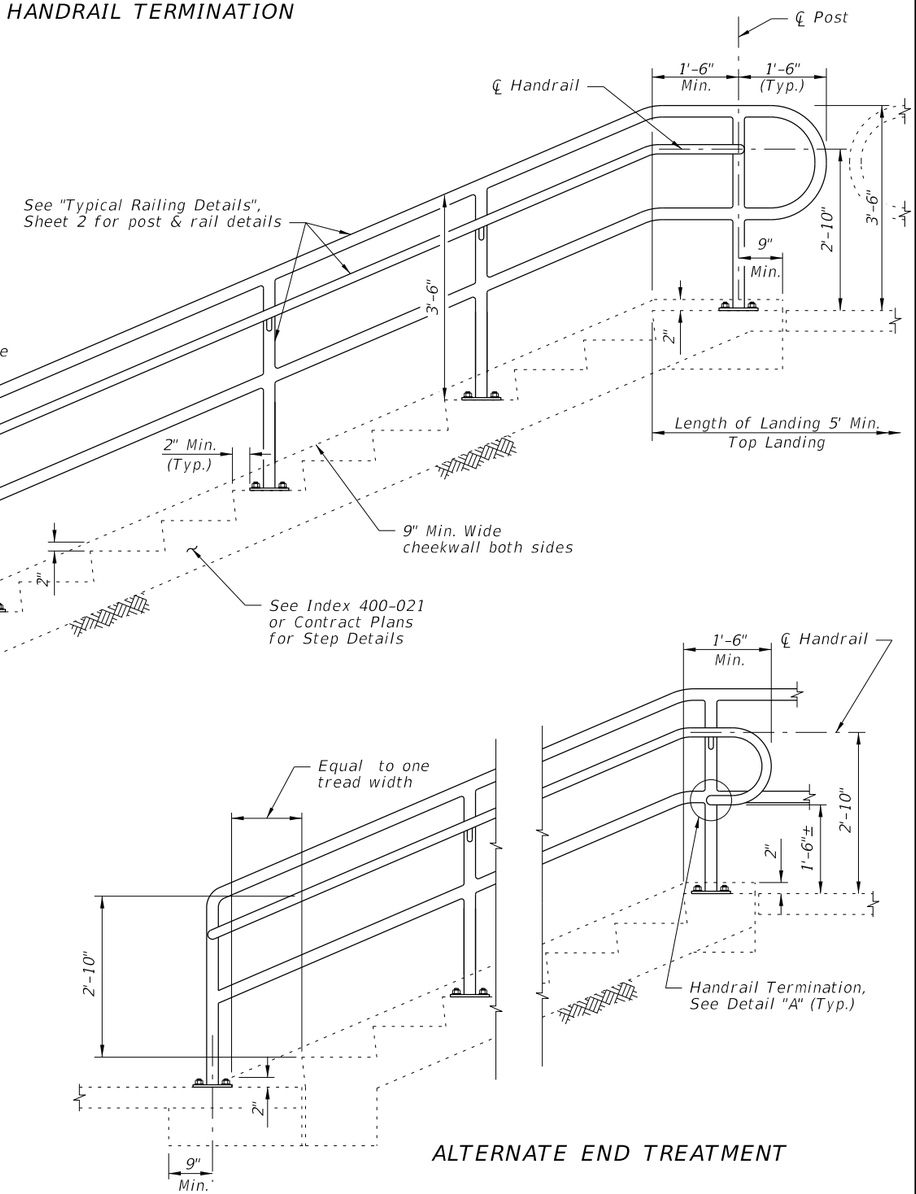
RAILING CONTINUATION BEYOND STEPS
(Bottom shown, Top similar)



DETAIL "A" - PLAN VIEW
HANDRAIL TERMINATION



ELEVATION
(At-Grade Steps)



ALTERNATE END TREATMENT

GUIDERAIL ON STEPS & STAIRS

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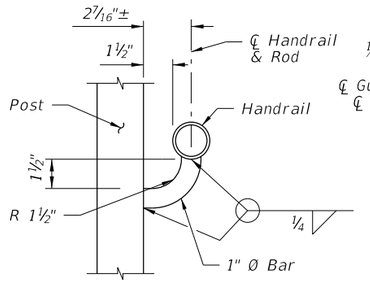
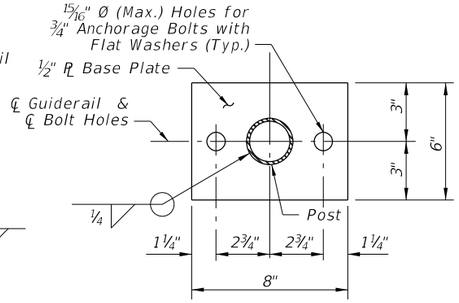
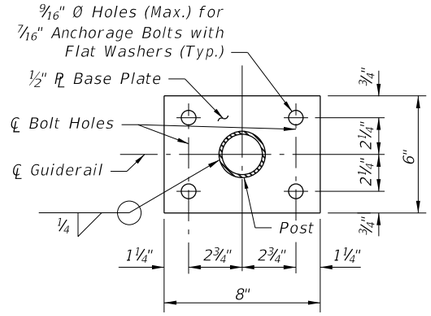
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (ALUMINUM)	515-070	3 of 5



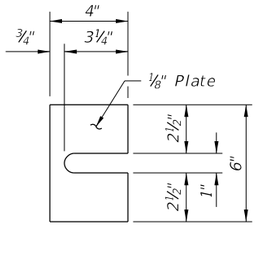
SECTION B-B
(Handrail Connection)



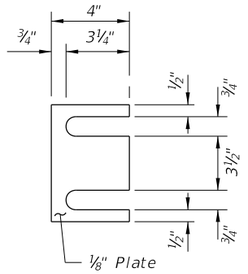
SECTION C-C
BASE PLATE DETAIL
(2~Bolt Anchorage)



SECTION C-C
BASE PLATE DETAIL
(4~Bolt Anchorage)



SHIM PLATE DETAIL
(2~Bolt Anchorage)



SHIM PLATE DETAIL
(4~Bolt Anchorage)

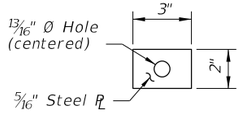
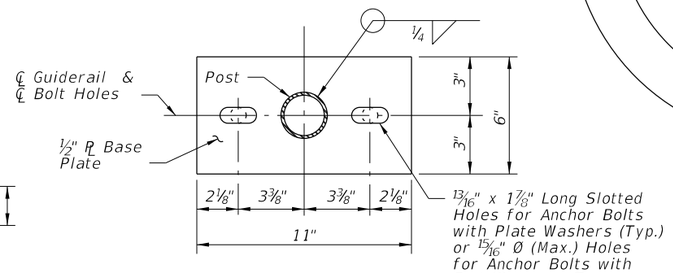
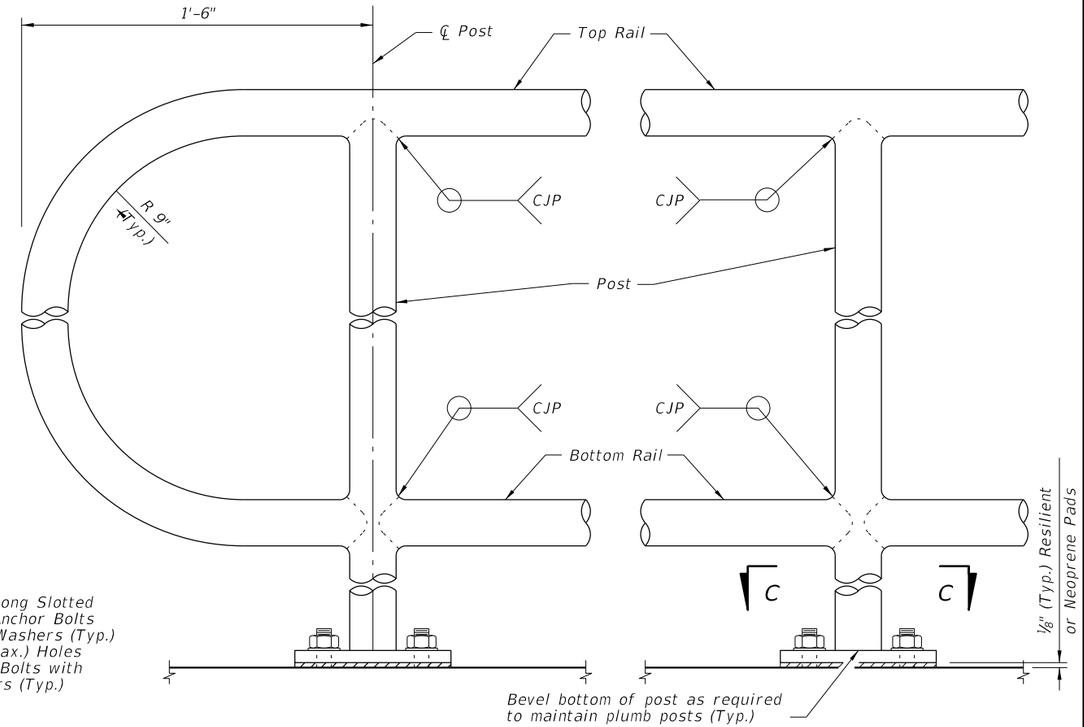


PLATE WASHER
DETAIL



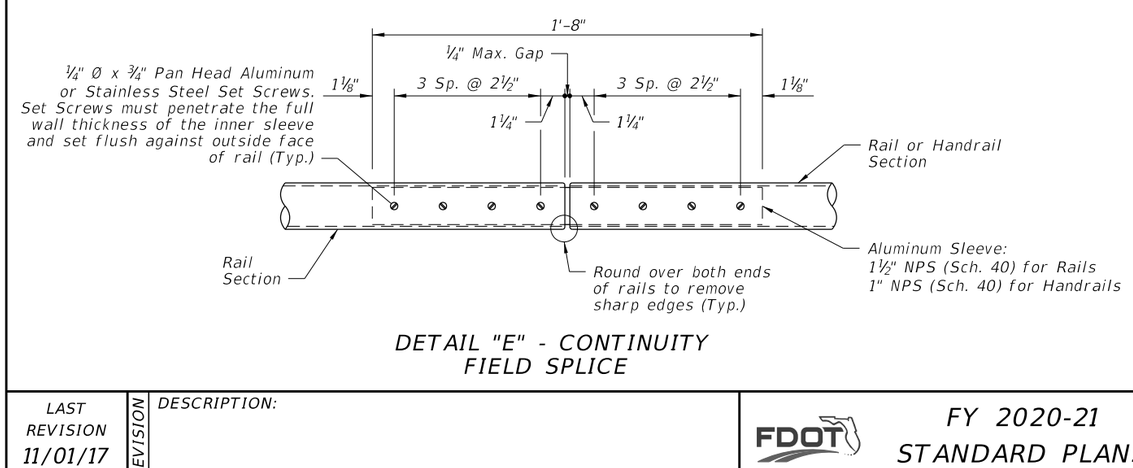
ALTERNATE BASE
PLATE DETAIL
(Recommended for Steep Slopes)



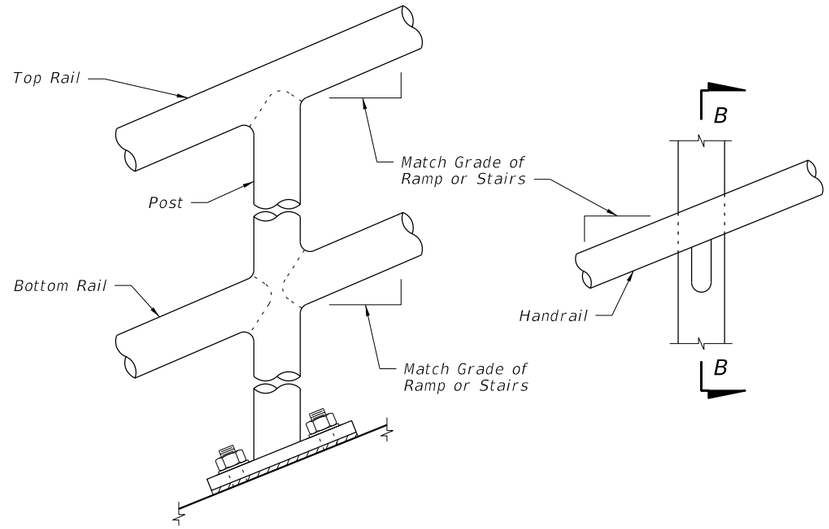
DETAIL "C" - RAIL CONNECTIONS
(Handrail and 4~Bolt Anchorage Not Shown)

DETAIL "D" - EXPANSION JOINT
(FIELD SPLICE SLIP JOINT SIMILAR)

* At the Contractor's option, embedded length may be 4" when a 3/4" Ø plug weld is substituted for the 1/4" Ø set screw.



DETAIL "E" - CONTINUITY
FIELD SPLICE



DETAIL "B" - RAIL AND HANDRAIL
(Showing Sloped Condition for Ramps with 2~Bolt Anchorage)

CROSS REFERENCE:
For locations of Details "C", "D" and "E", see Sheet 2.

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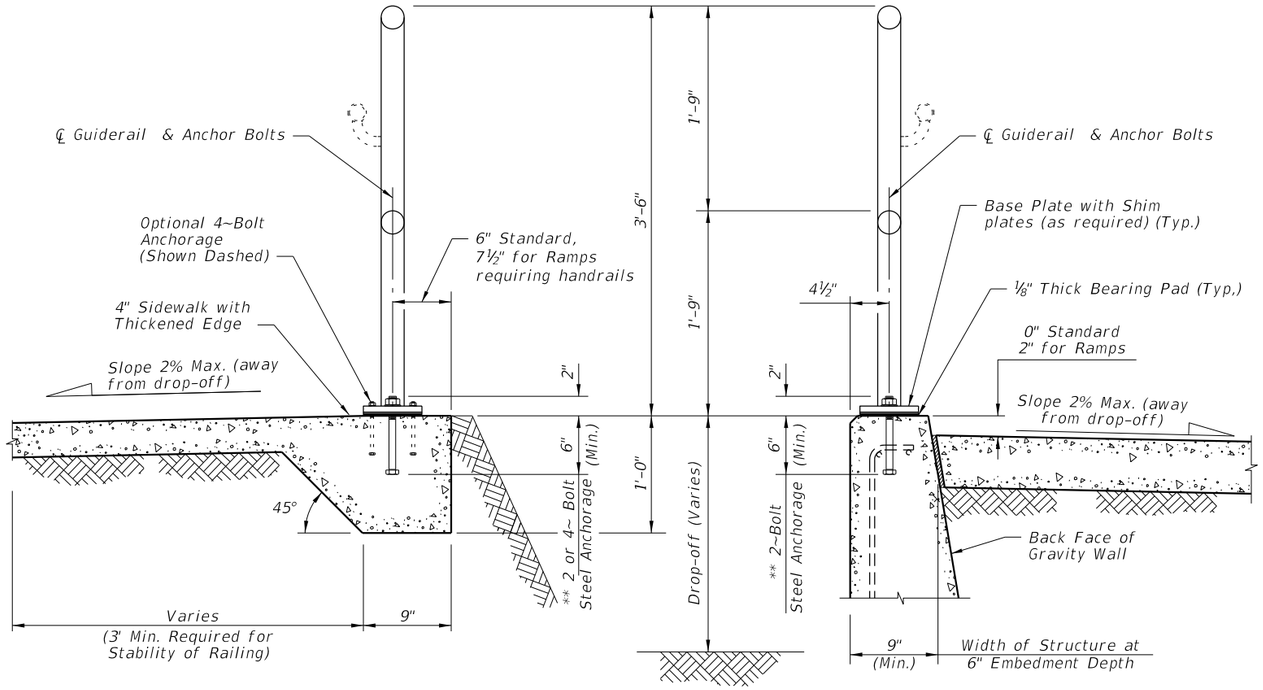
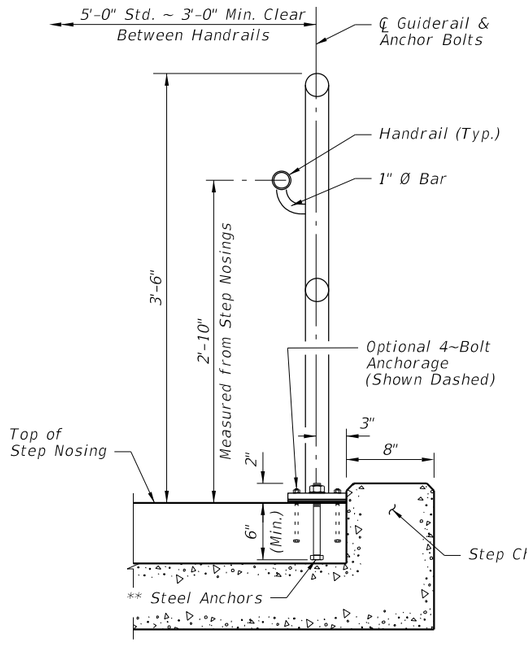
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (ALUMINUM)	INDEX	SHEET
11/01/17						515-070	4 of 5

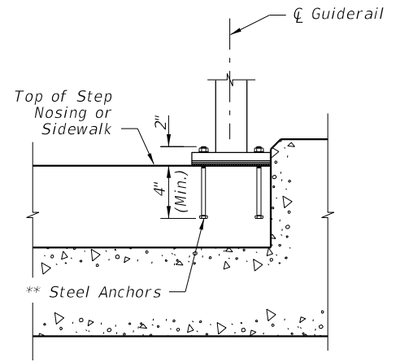


TYPICAL SECTION ON CONCRETE SIDEWALK

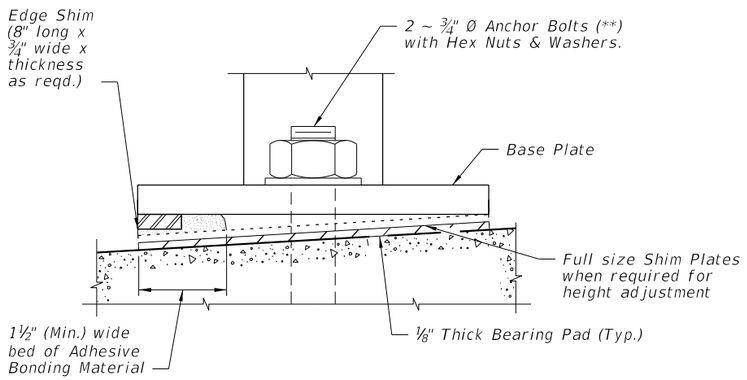
TYPICAL SECTION ON GRAVITY WALL
(Other Retaining Walls Similar)



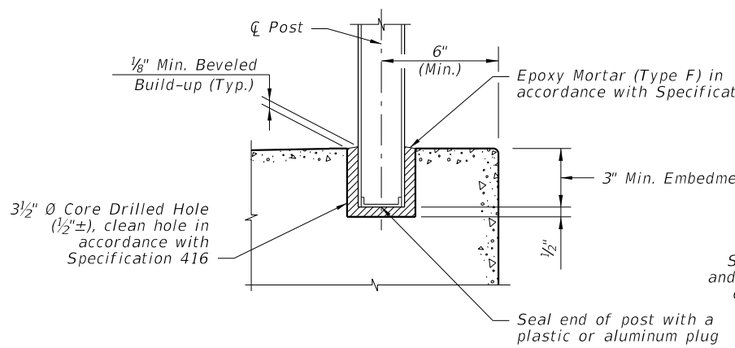
TYPICAL SECTION ON
STEPS & STAIRS



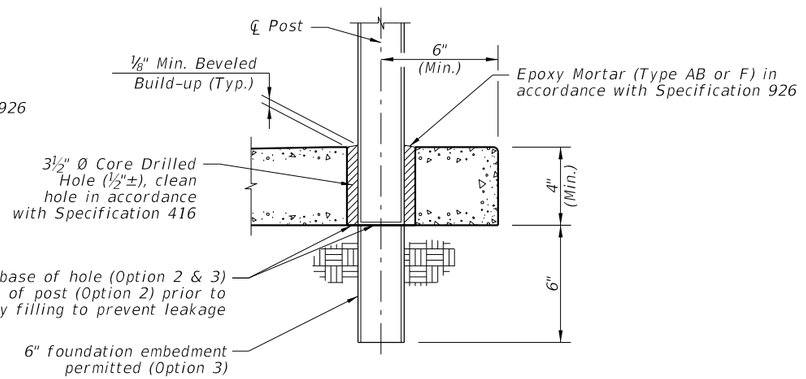
4~BOLT ANCHORAGE DETAIL



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 ~ ¾" Ø x 8" or 4 ~ 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.

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	515-070	5 of 5

PIPE GUIDERAIL (ALUMINUM)

NOTES:

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

2. Materials:

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.

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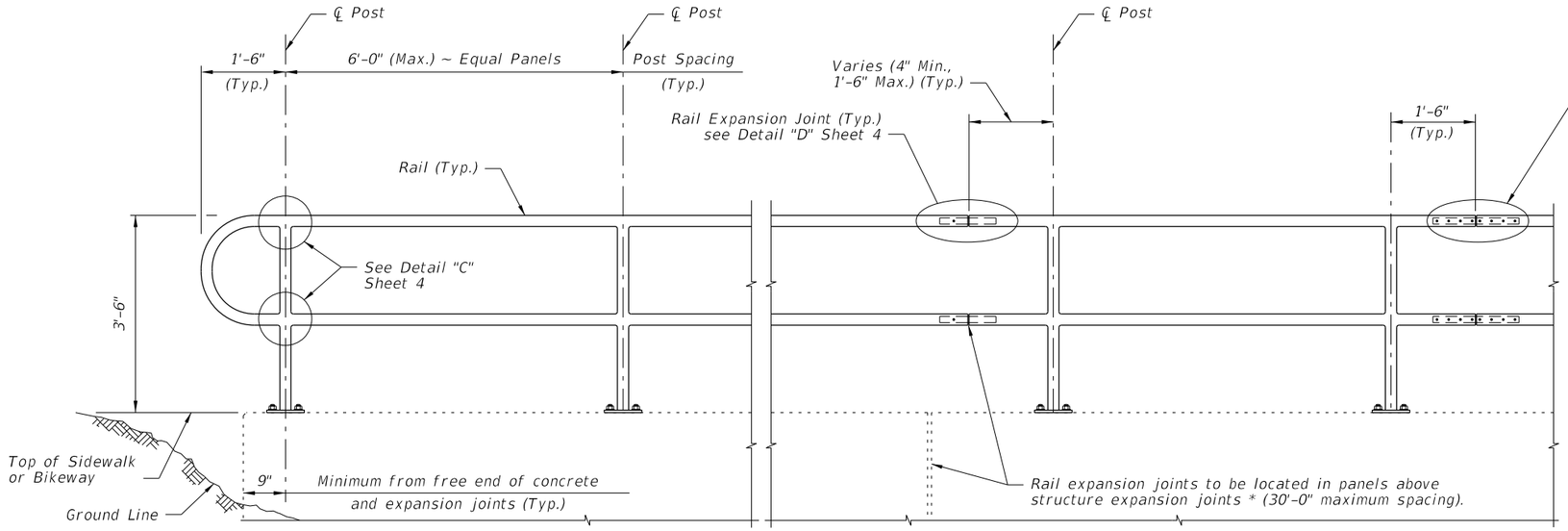


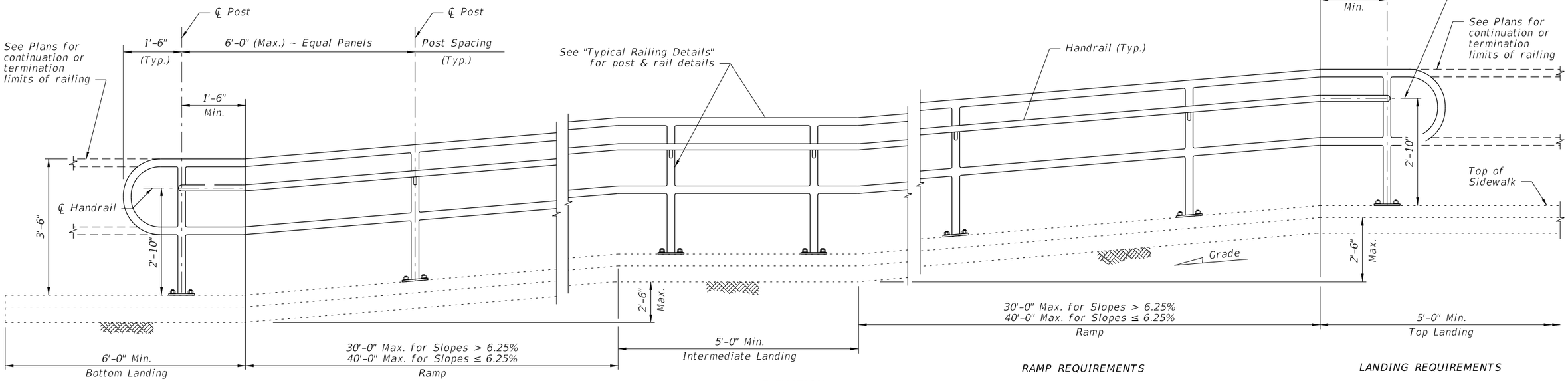
ELEVATION

NOTES:
NPS = Nominal Pipe Size

STRUCTURES EXPANSION JOINTS NOTE:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.

CROSS REFERENCE:
For Details "C", "D" and "E", see Sheet 4.

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%



ELEVATION
(Showing Inside Face of Railing)

RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

RAILINGS ON GRADES STEEPER THAN 5% TO 8.33%

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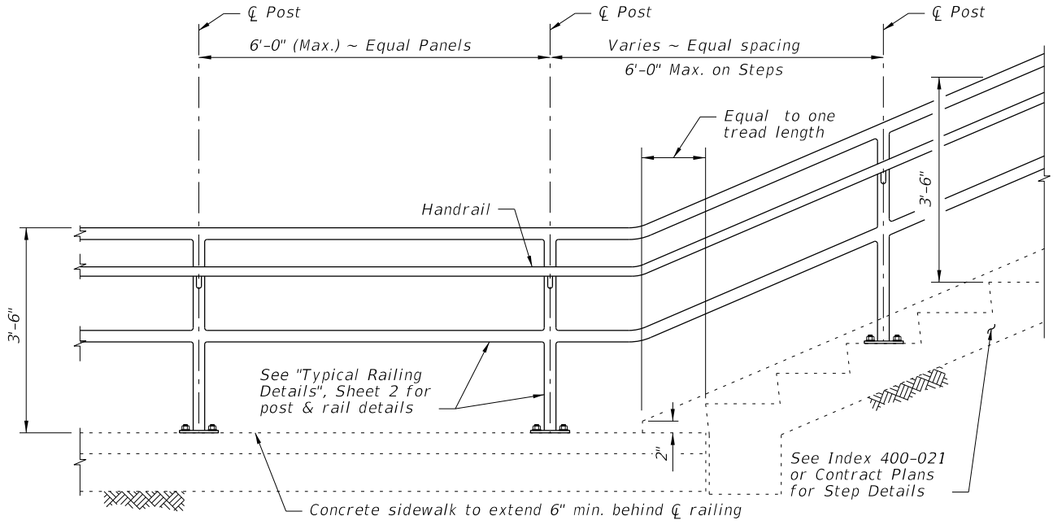
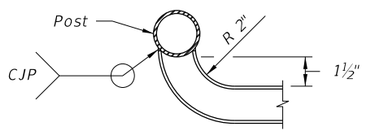
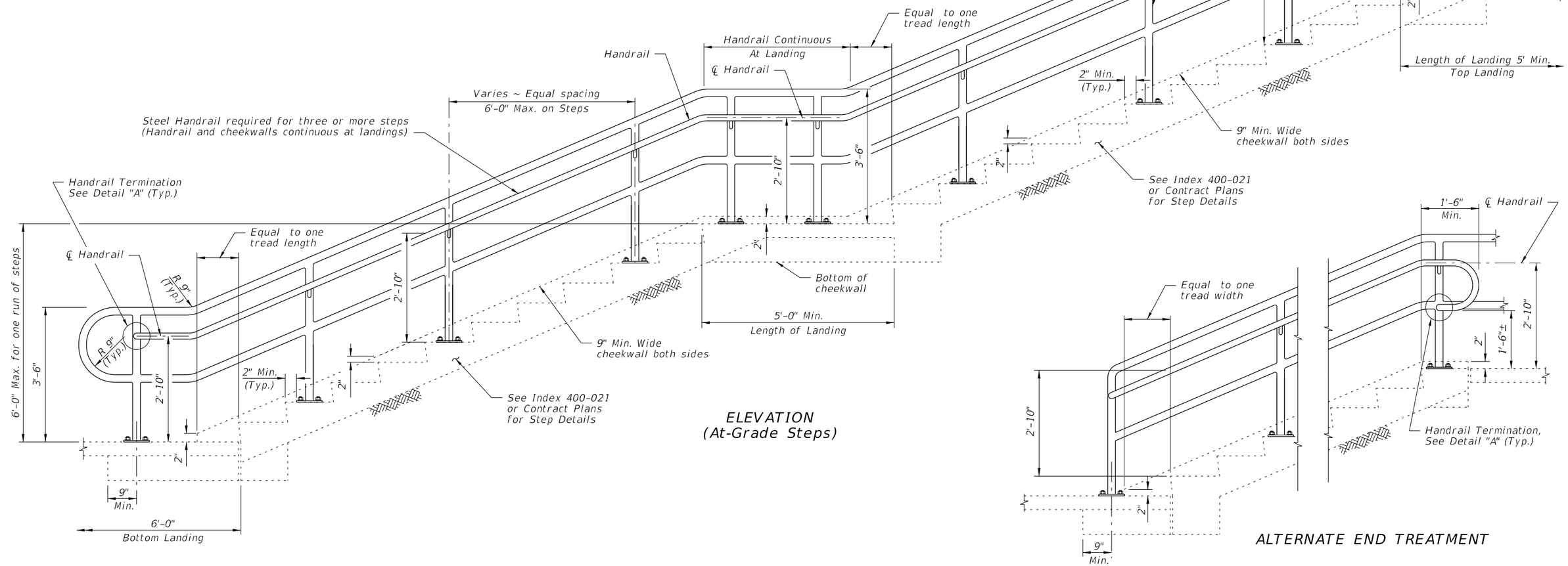
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (STEEL)	INDEX	SHEET
11/01/17					515-080	2 of 5



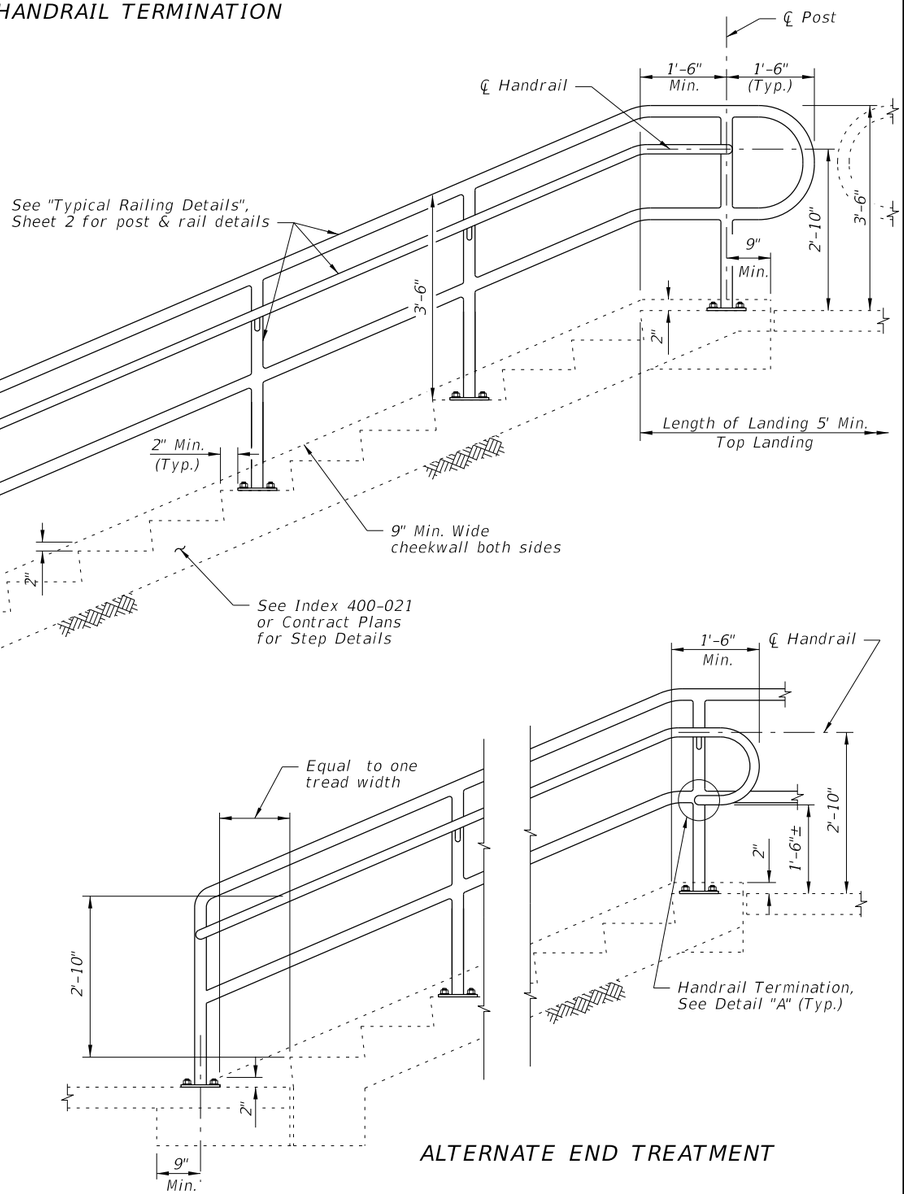
RAILING CONTINUATION BEYOND STEPS
(Bottom shown, Top similar)



DETAIL "A" - PLAN VIEW
HANDRAIL TERMINATION



ELEVATION
(At-Grade Steps)

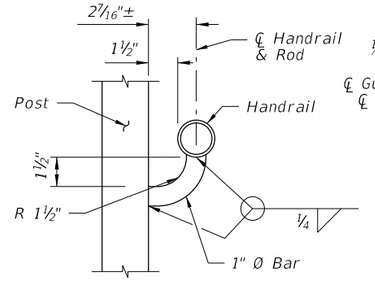


ALTERNATE END TREATMENT

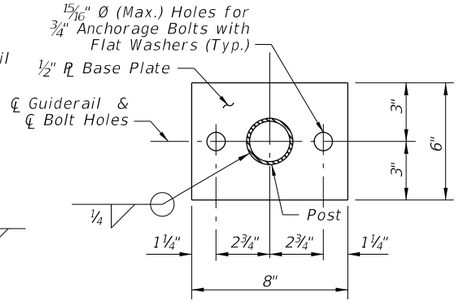
GUIDERAIL ON STEPS & STAIRS

10/29/2019 8:18:13 AM

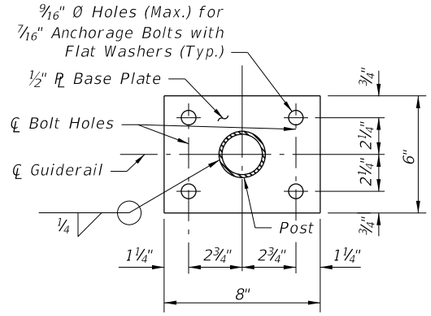
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (STEEL)	INDEX	SHEET
11/01/17						515-080	3 of 5



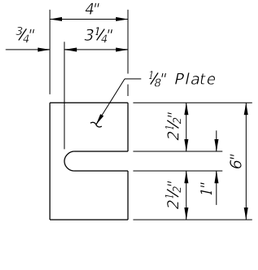
SECTION B-B
(Handrail Connection)



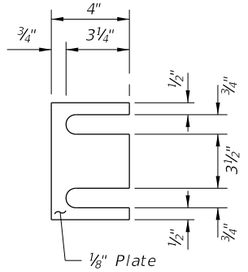
SECTION C-C
BASE PLATE DETAIL
(2~Bolt Anchorage)



SECTION C-C
BASE PLATE DETAIL
(4~Bolt Anchorage)



SHIM PLATE DETAIL
(2~Bolt Anchorage)



SHIM PLATE DETAIL
(4~Bolt Anchorage)

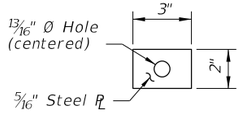
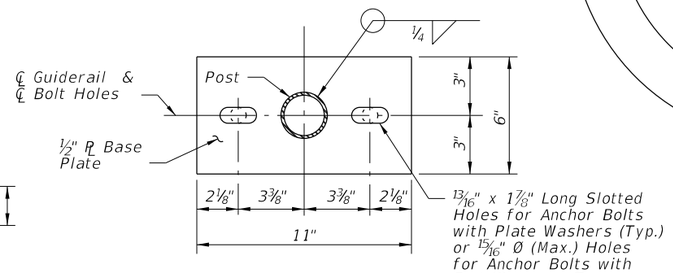
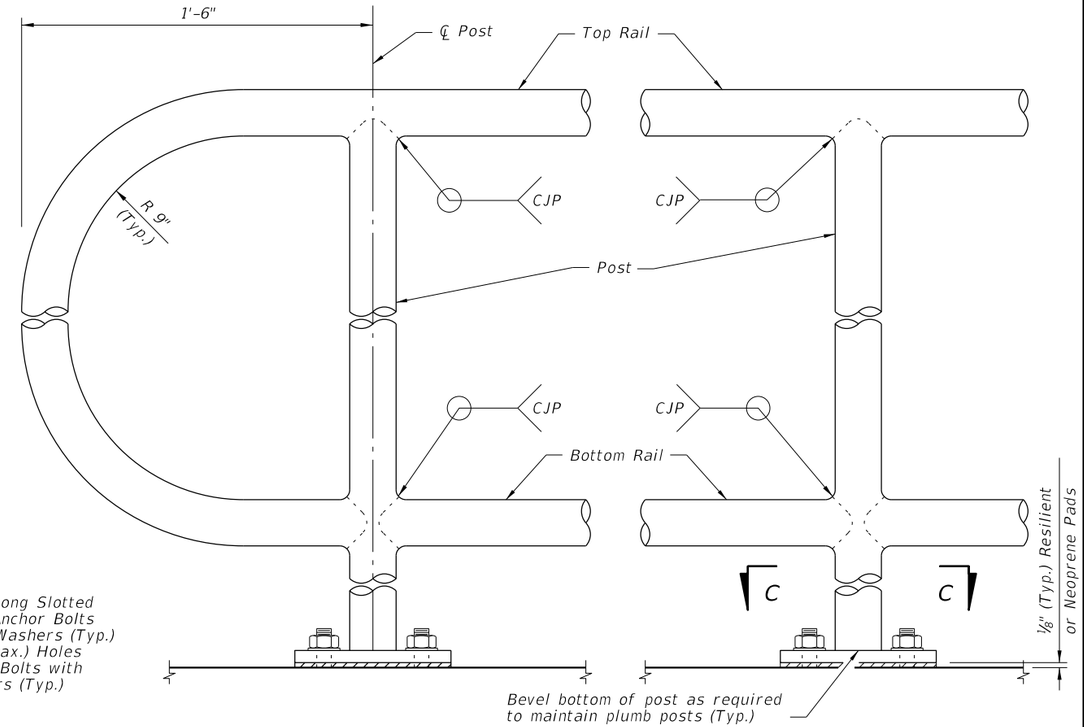


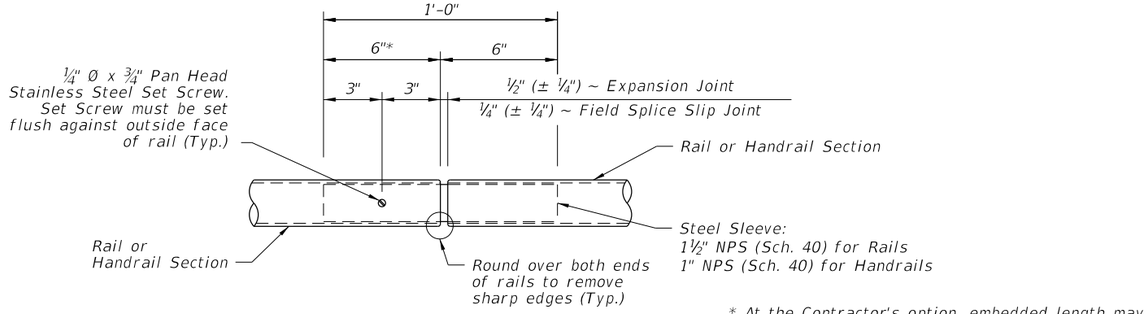
PLATE WASHER
DETAIL



ALTERNATE BASE
PLATE DETAIL
(Recommended for Steep Slopes)

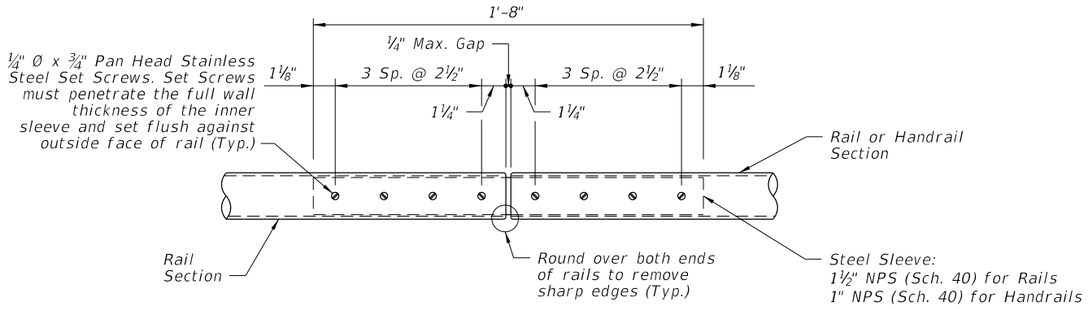


DETAIL "C" - RAIL CONNECTIONS
(Handrail and 4~Bolt Anchorage Not Shown)

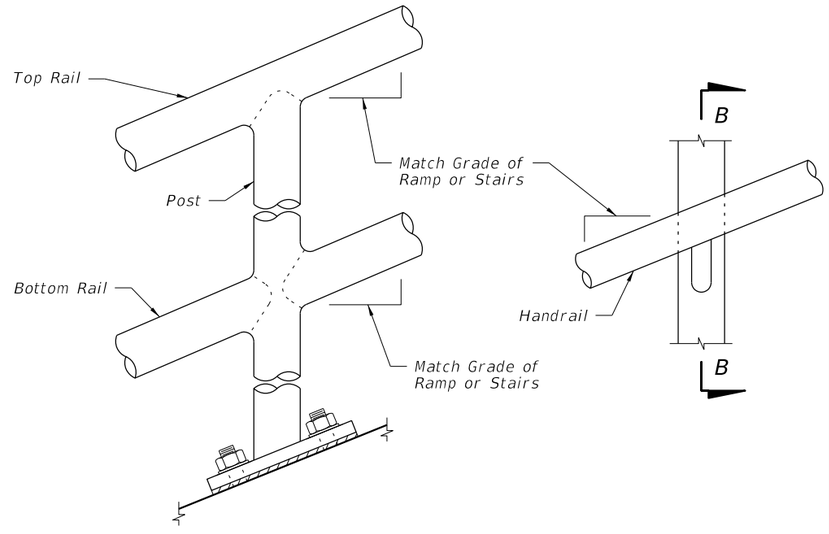


DETAIL "D" - EXPANSION JOINT
(FIELD SPLICE SLIP JOINT SIMILAR)

* At the Contractor's option, embedded length may be 4" when a ¾" Ø plug weld is substituted for the ¼" Ø set screw.



DETAIL "E" - CONTINUITY
FIELD SPLICE



DETAIL "B" - RAIL AND HANDRAIL
(Showing Sloped Condition for Ramps with 2~Bolt Anchorage)

CROSS REFERENCE:
For locations of Details "C", "D" and "E", see Sheet 2.

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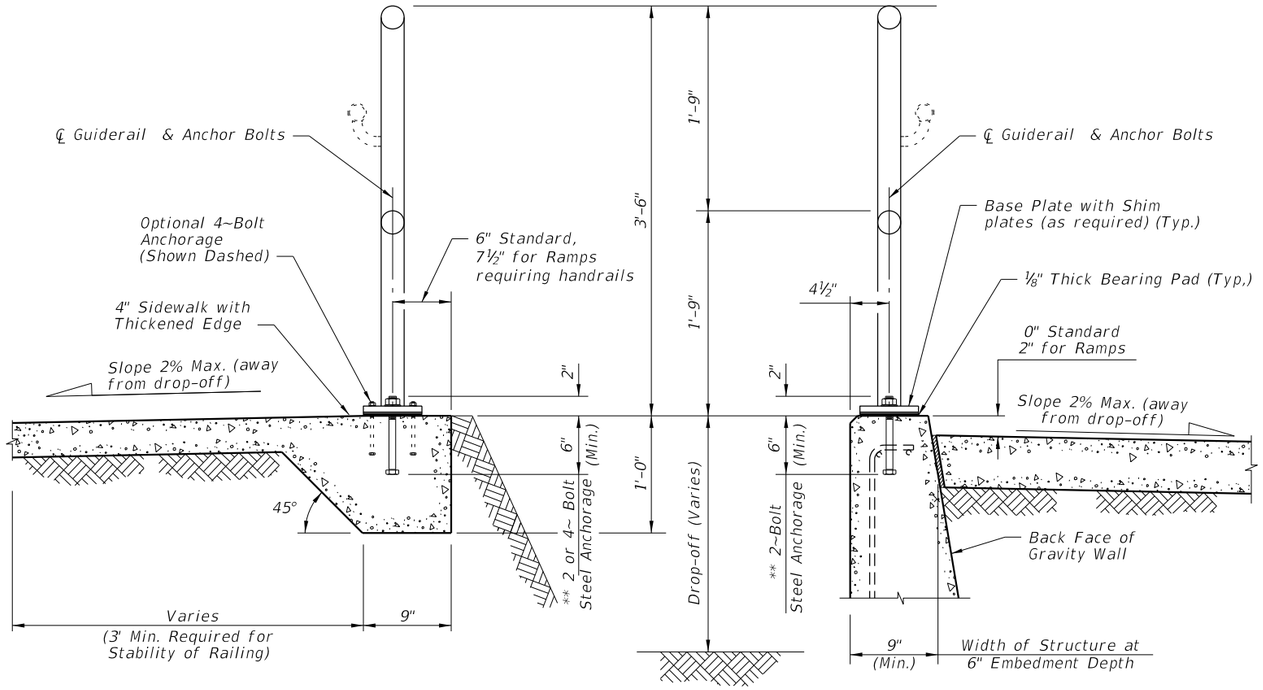
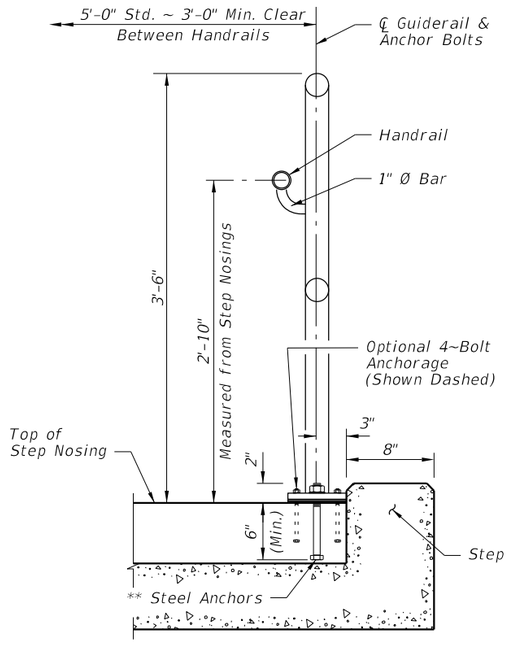
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (STEEL)	INDEX	SHEET
11/01/17					515-080	4 of 5

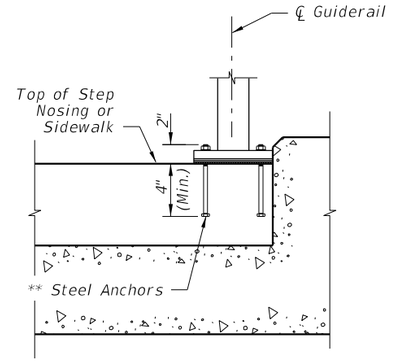


TYPICAL SECTION ON CONCRETE SIDEWALK

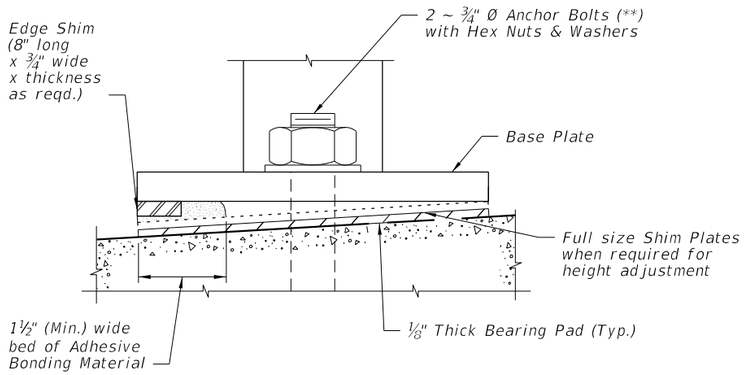
TYPICAL SECTION ON GRAVITY WALL
(Other Retaining Walls Similar)



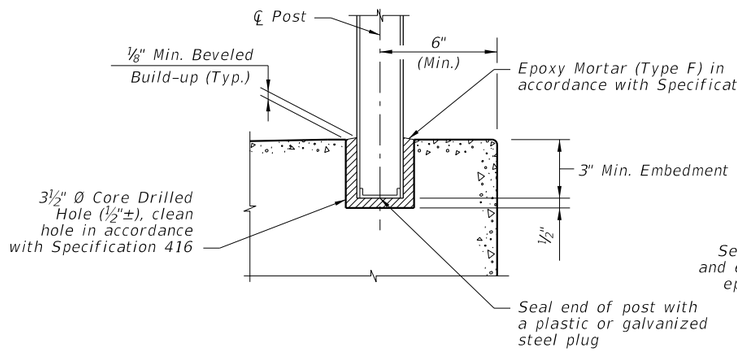
TYPICAL SECTION ON
STEPS & STAIRS



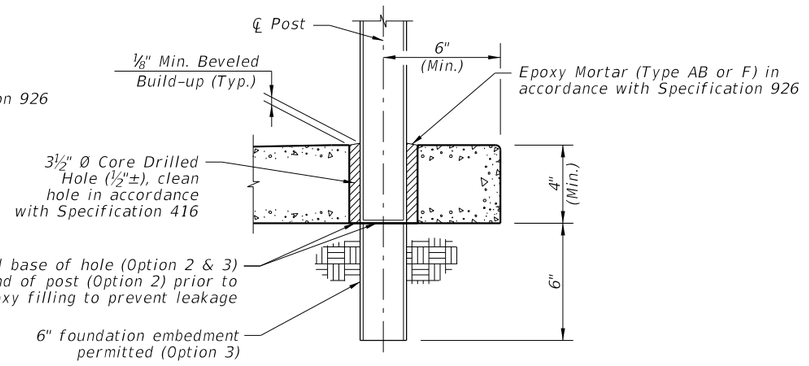
4~BOLT ANCHORAGE DETAIL



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

NOTES:
**2 ~ ¾" Ø x 8" or 4 ~ 7/16" Ø x 6" Steel Anchors: Galvanized Steel Bolts (As Shown) (C-I-P); Galvanized U-Bolts Permitted (C-I-P); Galvanized Adhesive Anchors Permitted (***); Expansion Anchors Not Permitted.

*** The minimum embedment for adhesive anchors is 6" for 2~Bolt Anchorage or 4" for 4~Bolt Anchorage.

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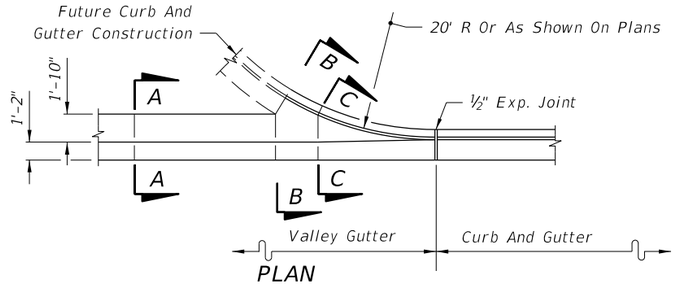
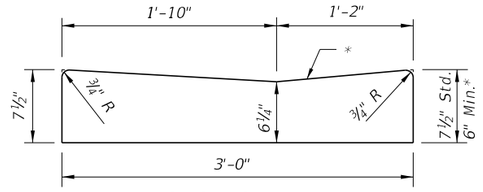
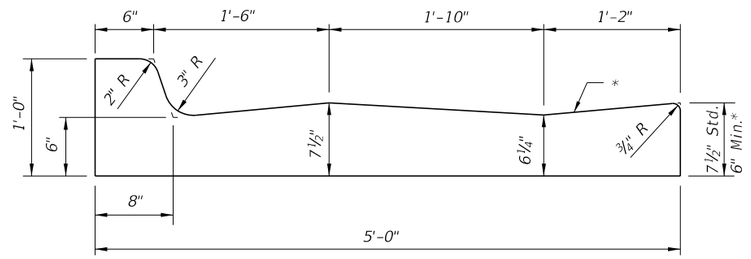
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	PIPE GUIDERAIL (STEEL)	515-080	5 of 5



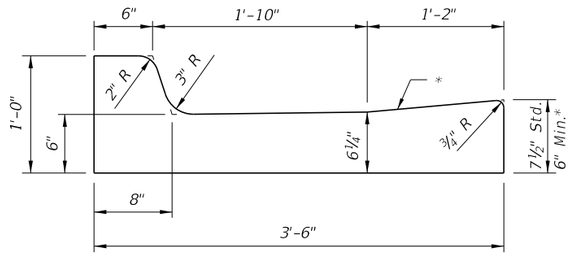
PLAN



SECTION AA



SECTION BB



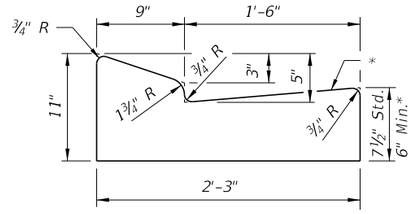
SECTION CC

VALLEY GUTTER

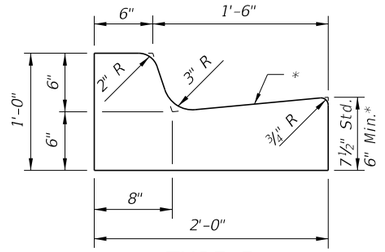
* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

◪ Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.

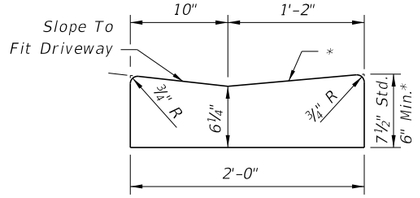
For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see Sheet 2. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see Sheet 2.



TYPE E

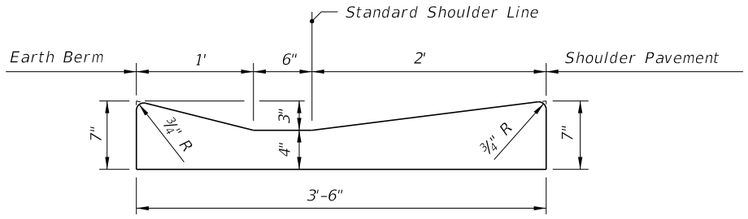


TYPE F

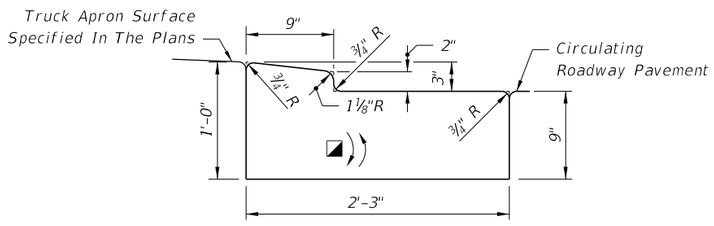


Note: To be paid for as parent curb.

DROP CURB

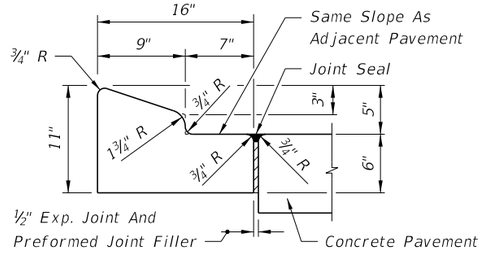


SHOULDER GUTTER



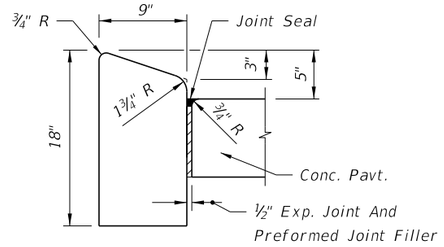
TRAFFIC BEARING SECTION FOR USE IN ROUNDABOUT CENTRAL ISLAND CONSTRUCTION

TYPE RA

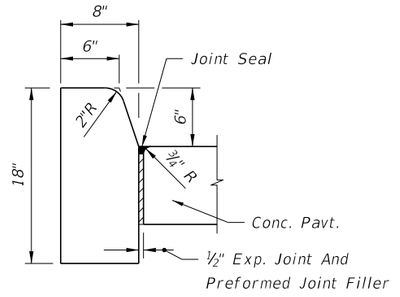


For details depicting usage adjacent to flexible pavement, see Sheet 2.

TYPE A



TYPE B



TYPE D

Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see Sheet 2.

CONCRETE CURB

CONCRETE CURB AND GUTTER

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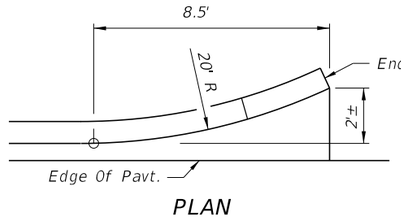
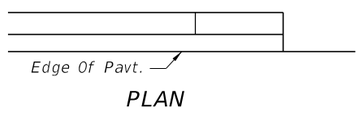
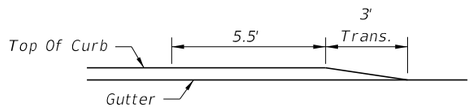
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CURB AND GUTTER	INDEX	SHEET
11/01/17						520-001	1 of 2



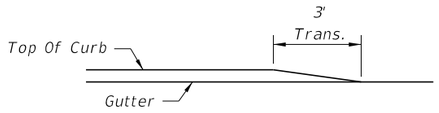
PLAN



PLAN

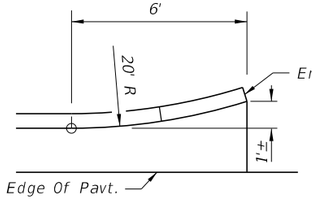


PROFILE
FLARED END

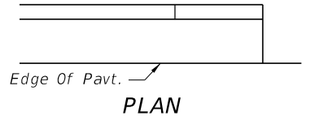


PROFILE
STRAIGHT END

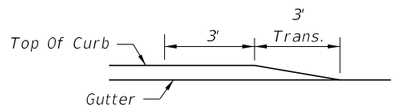
CURB TYPE A



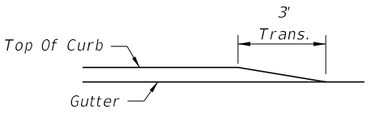
PLAN



PLAN



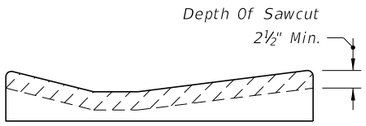
PROFILE
FLARED END



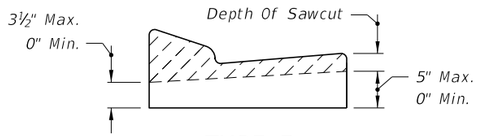
PROFILE
STRAIGHT END

CURB TYPE E & F

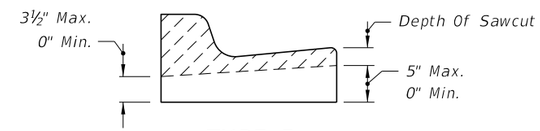
CURB AND GUTTER ENDINGS



SHOULDER GUTTER



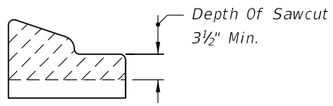
TYPE E



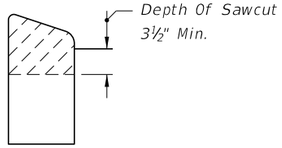
TYPE F

Sawcuts should be avoided within valley gutter and within curb and gutter endings.

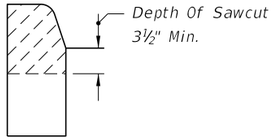
CONTRACTION JOINT IN CURB AND GUTTER



TYPE A

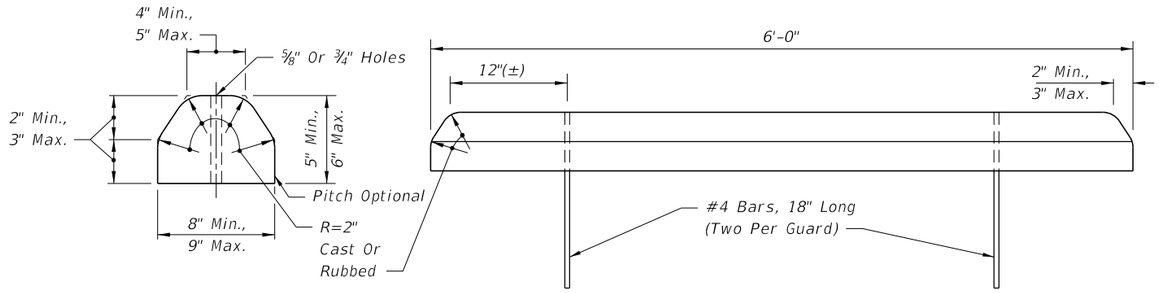


TYPE B

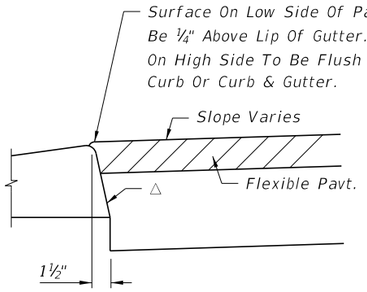


TYPE D

CONTRACTION JOINT IN CURB

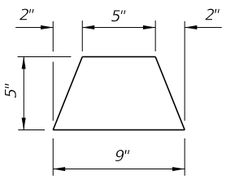


CONCRETE BUMPER GUARD

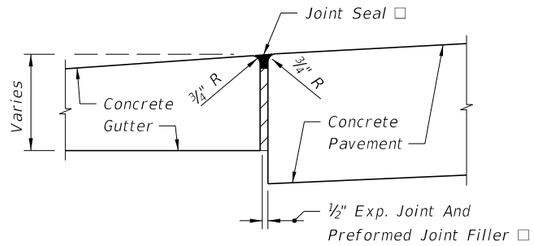


△ Applies to both high and low sides of pavement, low side shown.
Applies to shoulder gutter only where adjoining traffic lanes.

CURB AND GUTTER AND TYPE A CURB ADJACENT TO FLEXIBLE PAVEMENT



ASPHALTIC CONCRETE CURB



□ Applies to both high and low sides of pavement, low side shown.

EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT

GENERAL NOTES

1. For curb, gutter and curb & gutter provide ⅛" – ¼" 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. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Specification 520.

2. Ends of Curbs Types B and D shall transition from full to zero heights in 3'.

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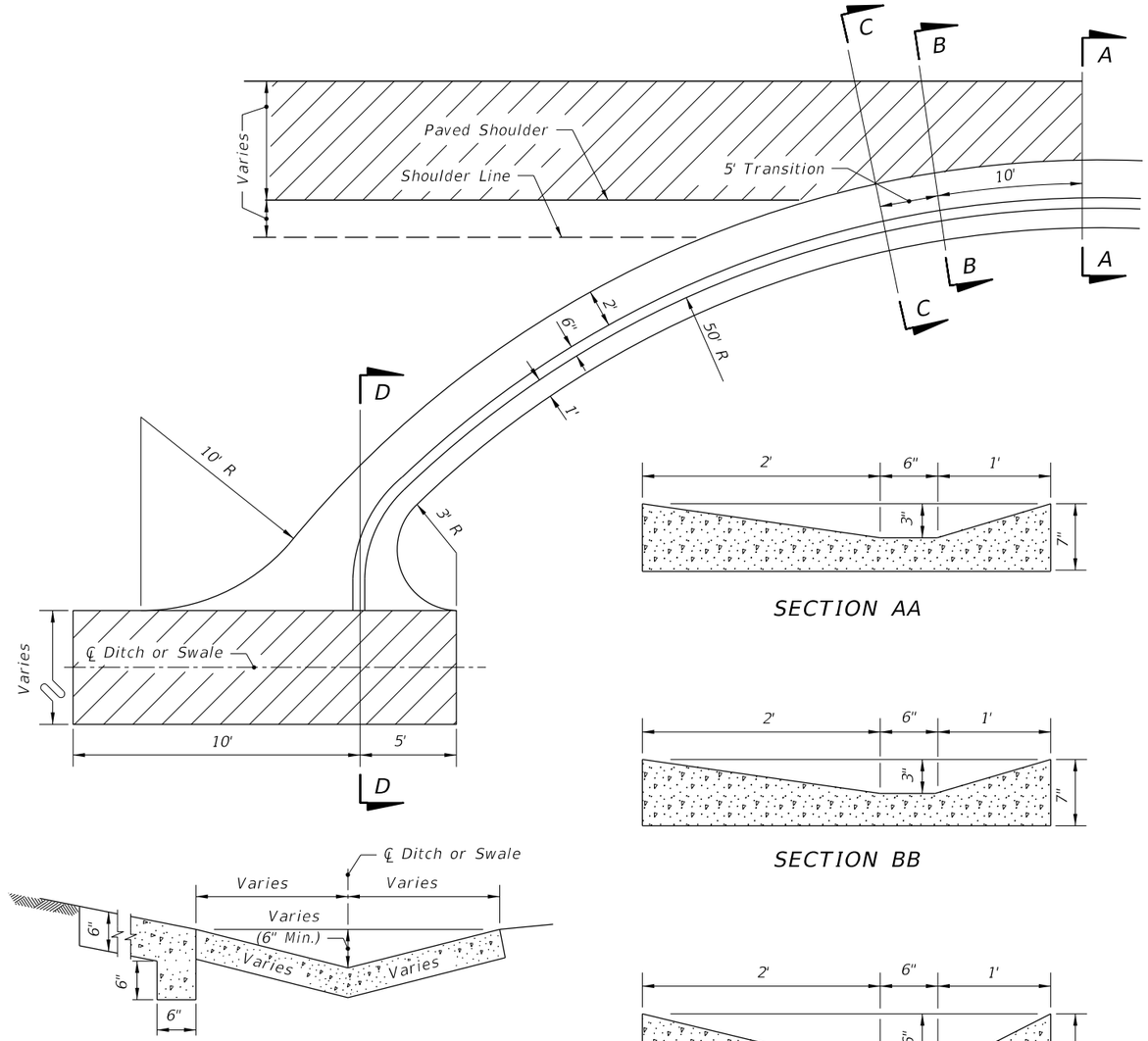
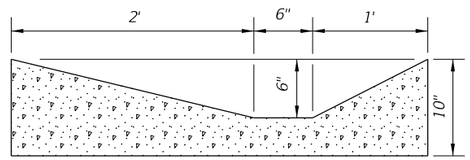
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CURB AND GUTTER	520-001	2 of 2



SECTION DD

SECTION AA

SECTION BB



SECTION CC

1. Spillway to be paid for as Shoulder Gutter, L.F.

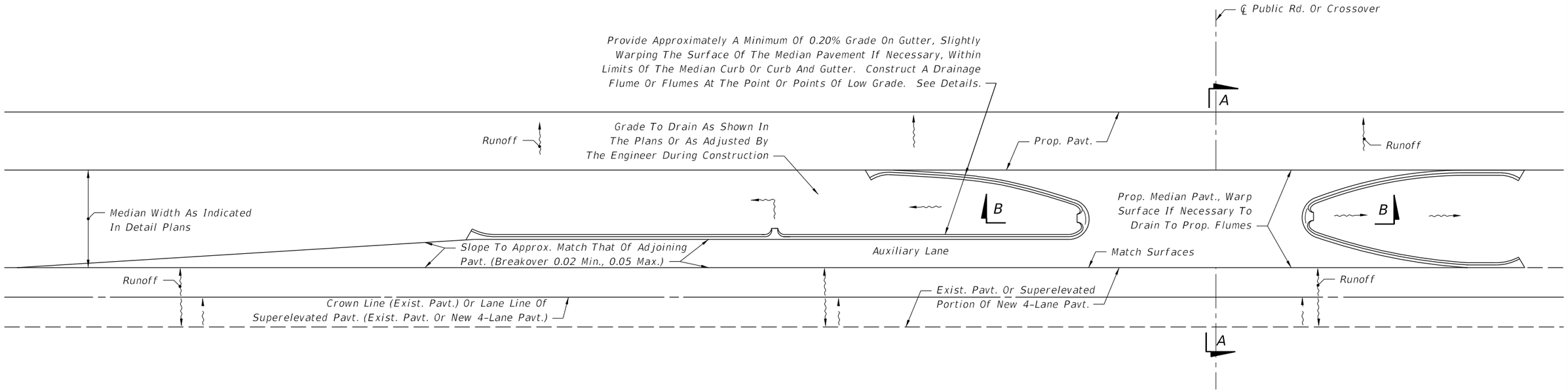
2. If spillway empties into an unpaved ditch, the detail should be modified as necessary.

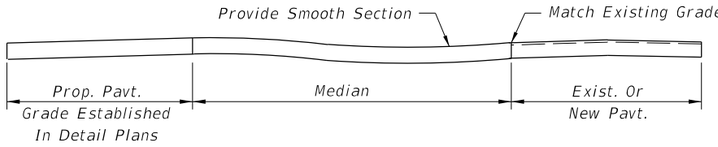
DETAIL OF CONCRETE SPILLWAY AT END OF SHOULDER GUTTER

(TO BE USED WHERE INLETS, PIPES & ENDWALLS ARE IMPRACTICAL)

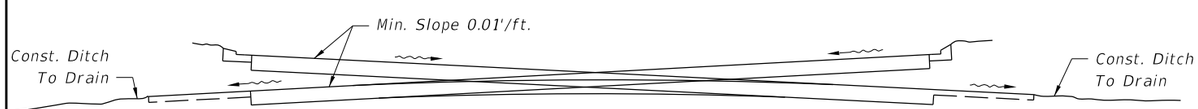
10/29/2019 8:18:17 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE SHOULDER GUTTER SPILLWAY	INDEX	SHEET
11/01/17					520-005	1 of 1



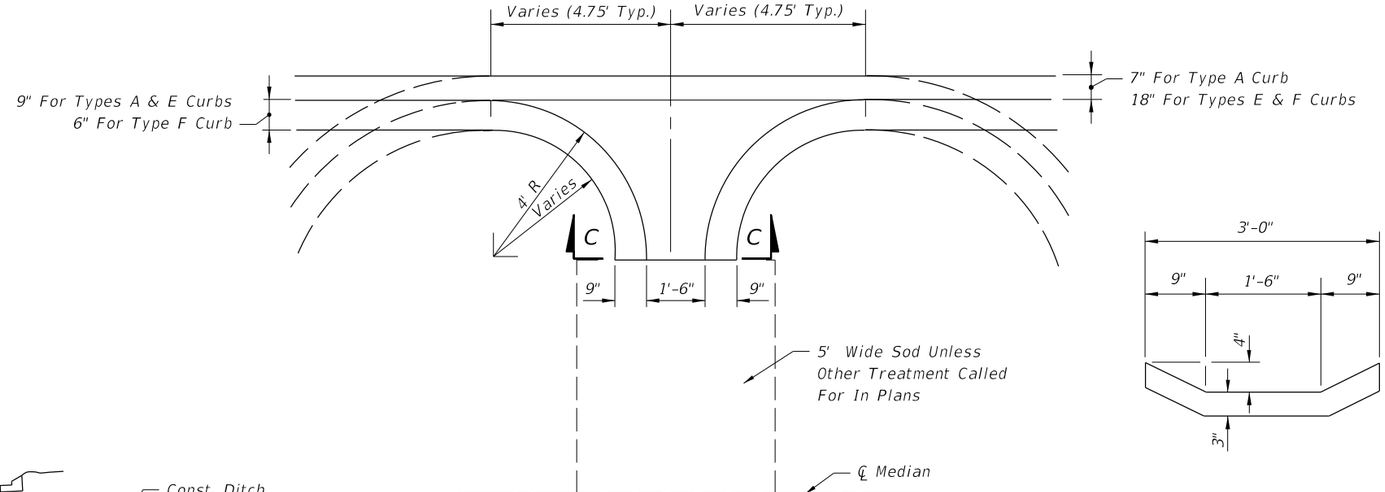


SECTION AA



SECTION BB

(May Drain From Any Point Designated In the Plans Or As Adjusted By The Engineer During Construction)



FLUME DETAIL

SECTION CC

GENERAL NOTES

1. These details are to apply to projects which provide for the conversion of 2-lane sections to 4-lane divided highway sections and for superelevated sections of new 4-lane divided highways. Layout above is illustration only. Cost of flumes to be included in the contract price for Curb or Curb and Gutter. Sod to be paid for under the contract unit price for Performance Turf, SY.

2. Flumes to be located in low point of noses and at other points as designated in the plans. The locations may be adjusted by the Engineer during construction.

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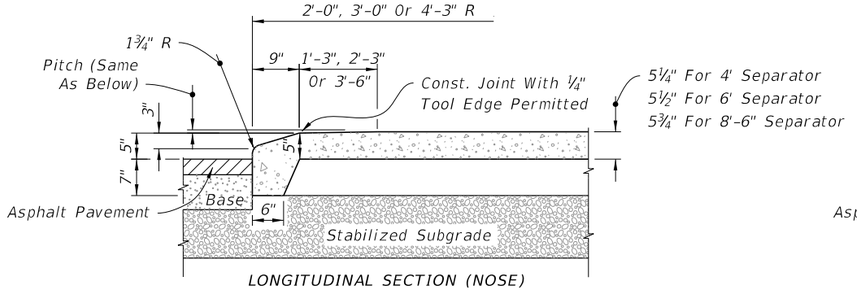
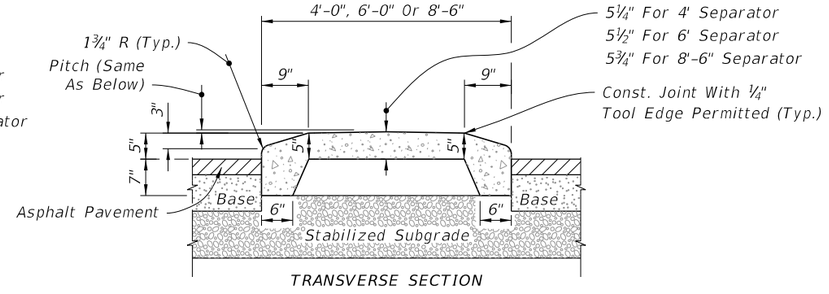
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MEDIAN OPENING FLUME	INDEX	SHEET
11/01/17					520-010	1 of 1

TYPE I - CONCRETE TRAFFIC SEPARATOR

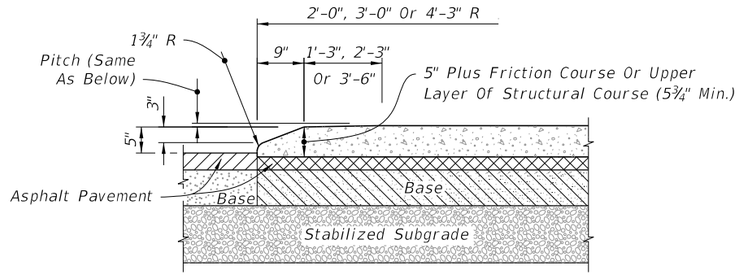


LONGITUDINAL SECTION (NOSE)

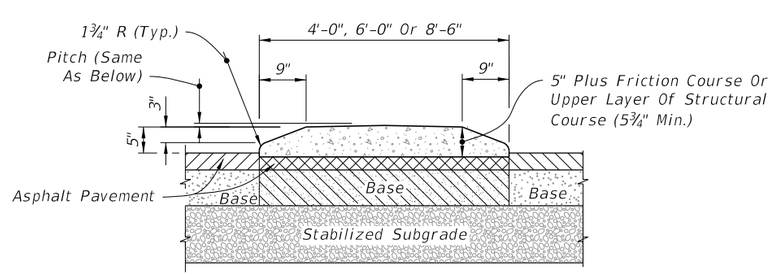


TRANSVERSE SECTION

OPTION I



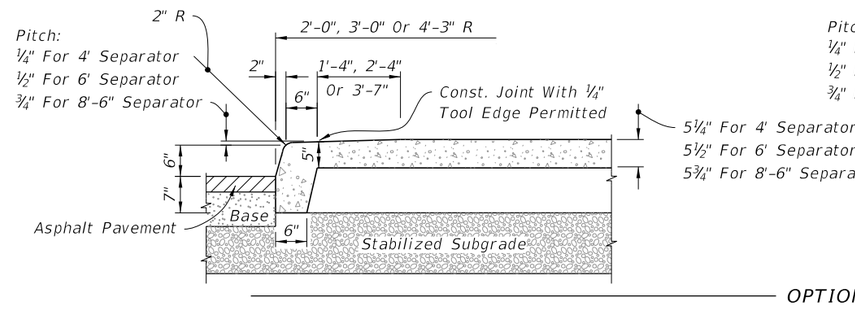
LONGITUDINAL SECTION (NOSE)

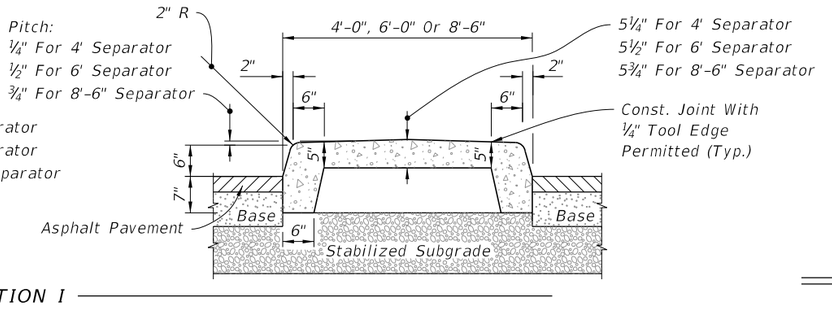


TRANSVERSE SECTION

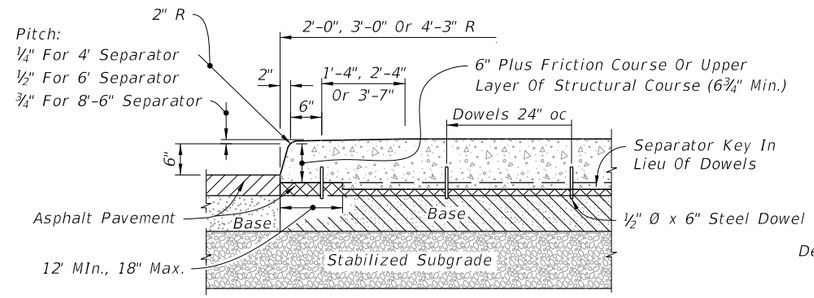
OPTION II

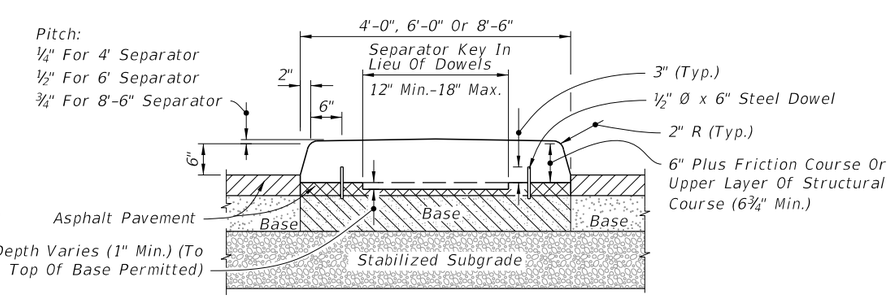
TYPE IV - CONCRETE TRAFFIC SEPARATOR





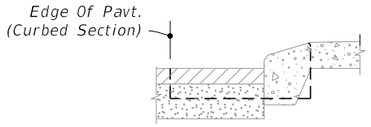
OPTION I



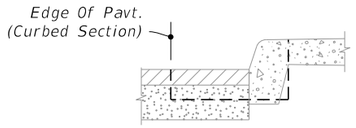


OPTION II

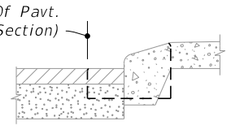
CURB AND GUTTER



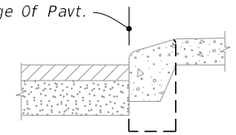
TYPE E



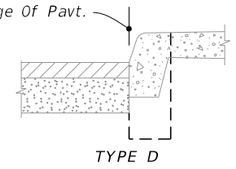
TYPE F



TYPE A



TYPE B



TYPE D

CURB

MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS

(Option I Separator Shown, For Curb Details see Index 520-001)

NOTES:

1. Separators Type I and IV are to be used with flexible pavement. Separators Types II and V are to be used with rigid pavement.
2. Either Option I or Option II may be used for Types I and IV separators except when a specific option is called for in the Plans.
3. For all separators provide ⅛"- ¼" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves to match the pavement joints, with intermediate joints not to exceed 10' center.

ROADWAY INSTALLATIONS - FLEXIBLE PAVEMENT

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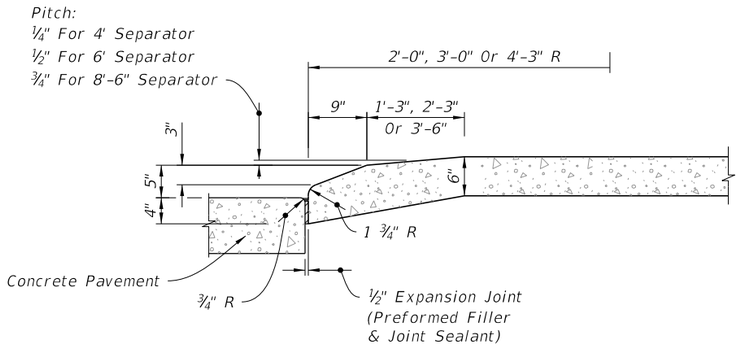
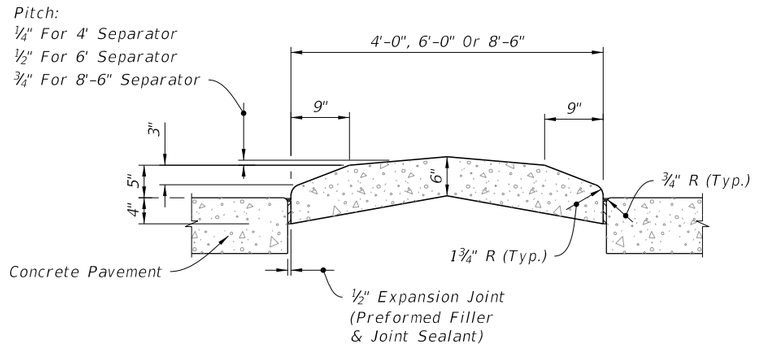
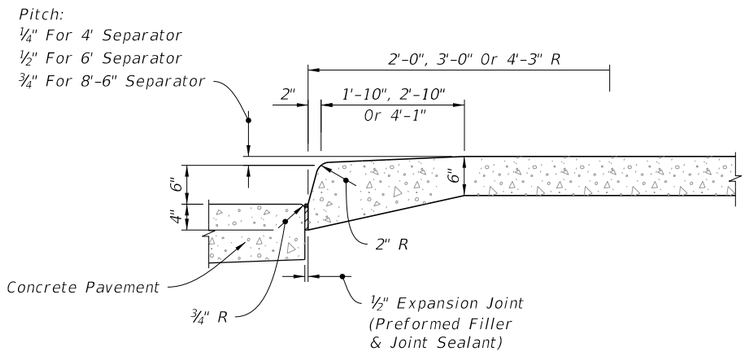


LONGITUDINAL SECTION (NOSE)

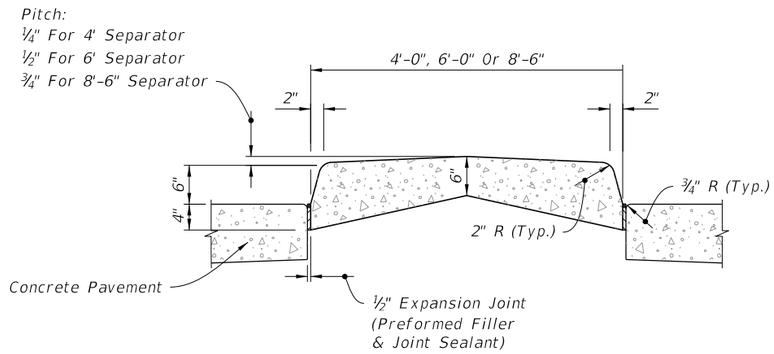


TRANSVERSE SECTION

TYPE II - CONCRETE TRAFFIC SEPARATOR



LONGITUDINAL SECTION (NOSE)



TRANSVERSE SECTION

TYPE V - CONCRETE TRAFFIC SEPARATOR

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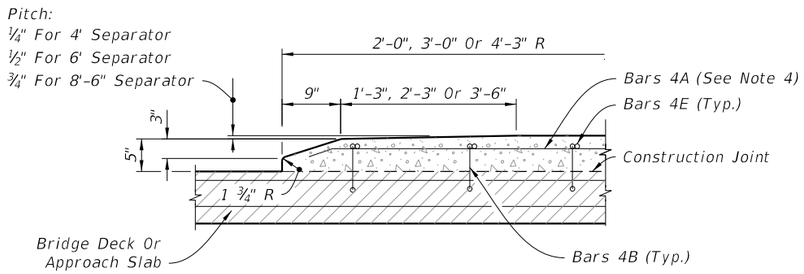
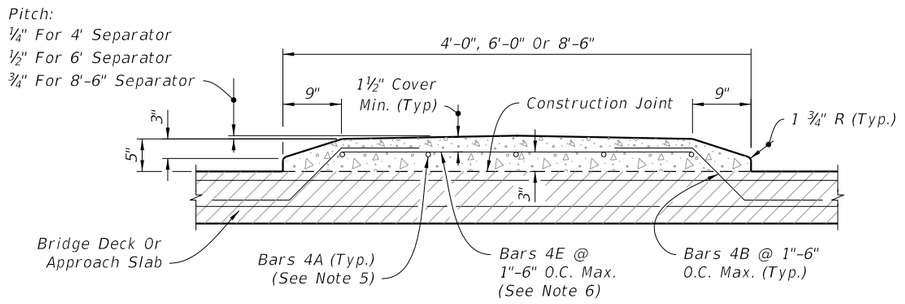
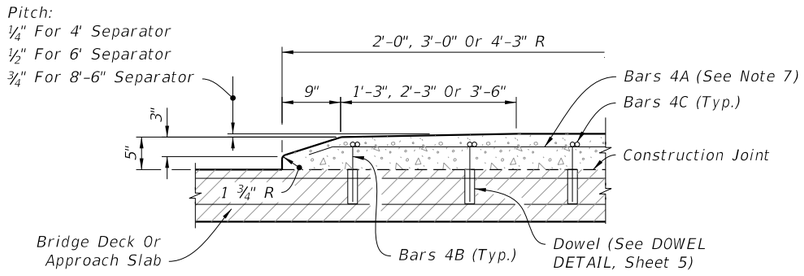


LONGITUDINAL SECTION (NOSE)

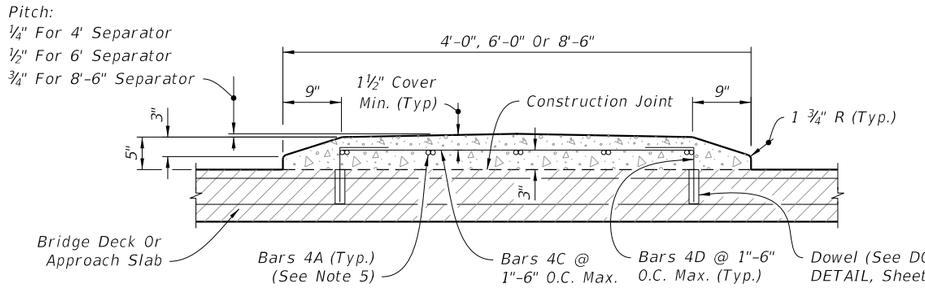


TRANSVERSE SECTION

OPTION I



LONGITUDINAL SECTION (NOSE)

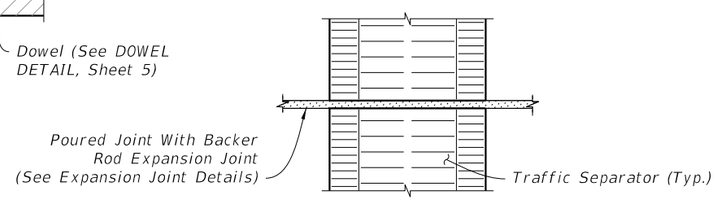


TRANSVERSE SECTION

OPTION II

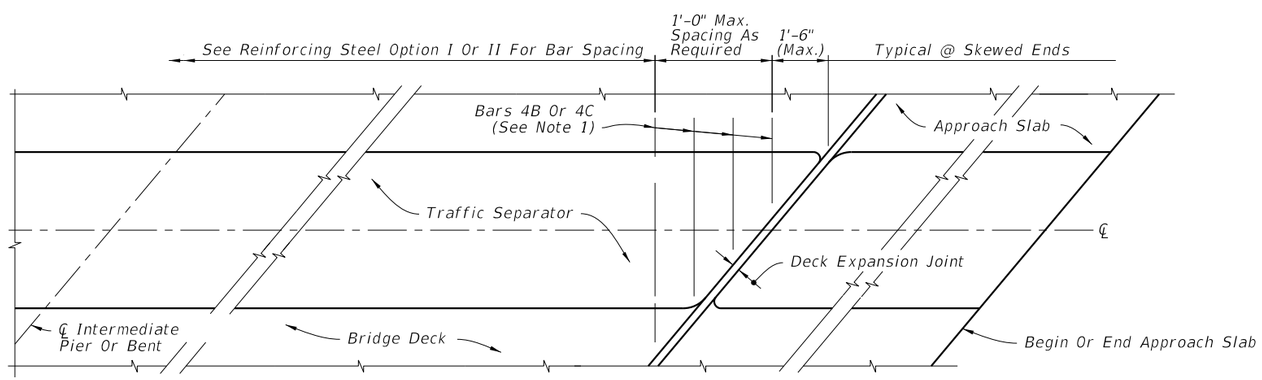
Notes:

1. Traffic Separator transverse reinforcement adjacent to deck expansion joints shall be field adjusted to maintain clearance and spacing. Bars shall be field cut as shown, bars may be rotated to maintain clearance.
2. Traffic Separator ends at deck expansion joints shall follow the deck joint limits. Drainage joints and b" V-Grooves shall be placed perpendicular or radial to the ℄ of the Traffic Separator. See Structures Plans, Superstructure and Approach Slab Sheets for details.
3. See Structures Plans, Superstructure Sheets for actual dimensions and joint orientation.
4. Option II is not permitted on bridge decks with prestressing steel.
5. Bar Spacing:
   4'-0" @ 3 equal spaces (continuous)
   6'-0" @ 5 equal spaces (continuous)
   8'-6" @ 7 equal spaces (continuous)
6. At the Contractor's option, a one piece bar my be substituted for Bars 4B and 4E.
7. Field bend and cut rebar as required to maintain cover.



REINFORCING STEEL

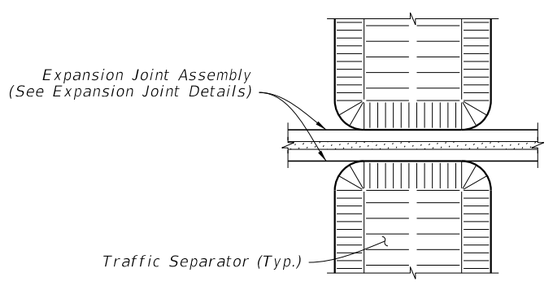
(Bridge Deck SHown, Approach Slab Similar)



SKEWED BRIDGE DECK AND APPROACH SLAB WITH TRAFFIC SEPARATOR

(Deck Expansion Joint at Begin or End Bridge Shown, Expansion Joint at ℄ Pier or Intermediate Bents Similar)

DETAIL AT POURED JOINT WITH BACKER ROD EXPANSION JOINTS



DETAIL AT EXPANSION JOINTS

(Strip Seal Shown, Other Armored Joint Types Similar)

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BRIDGE INSTALLATIONS - TYPE "E" CURB

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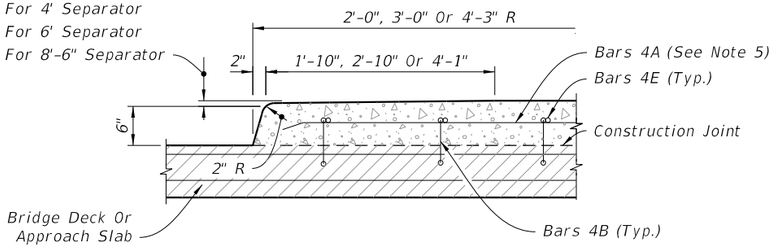
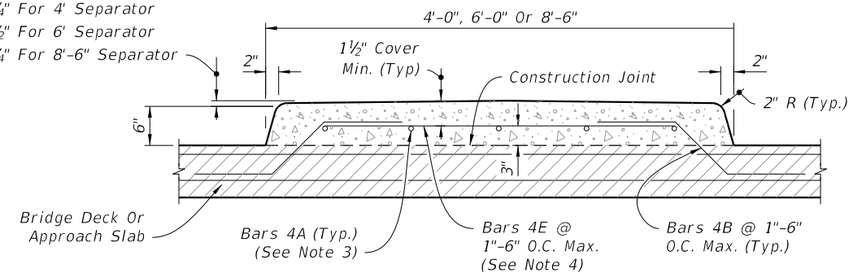
Pitch:
¼" For 4' Separator
½" For 6' Separator
¾" For 8'-6" Separator



LONGITUDINAL SECTION (NOSE)

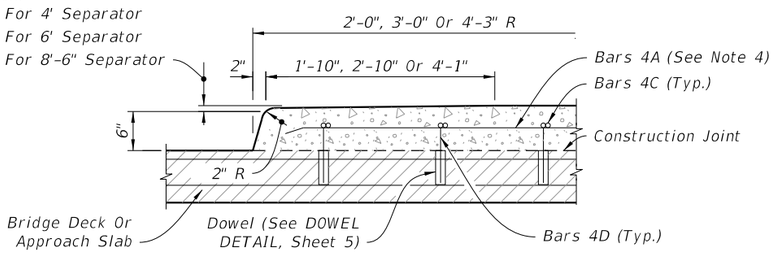
Pitch:
¼" For 4' Separator
½" For 6' Separator
¾" For 8'-6" Separator



TRANSVERSE SECTION

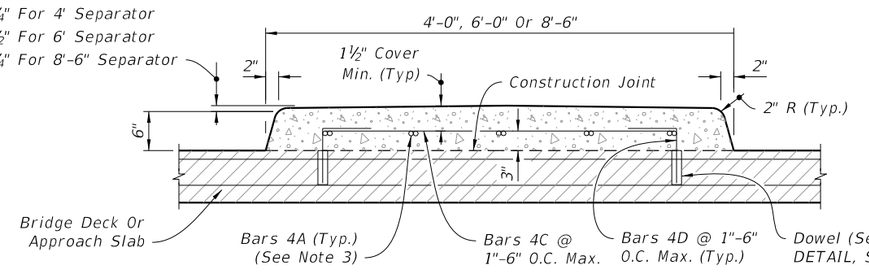
OPTION I

Pitch:
¼" For 4' Separator
½" For 6' Separator
¾" For 8'-6" Separator



LONGITUDINAL SECTION (NOSE)

Pitch:
¼" For 4' Separator
½" For 6' Separator
¾" For 8'-6" Separator



TRANSVERSE SECTION

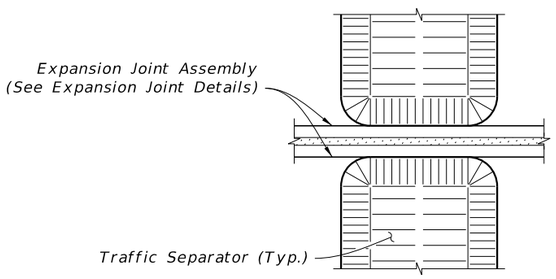
OPTION II

Notes:

1. Treatment of separators on straight bridges shown. For additional notes and treatment of separators on skewed bridges, see Sheet 2.
2. Option II is not permitted on bridge decks with prestressing steel.
3. Bar Spacing:
   4'-0" @ 3 equal spaces (continuous)
   6'-0" @ 5 equal spaces (continuous)
   8'-6" @ 7 equal spaces (continuous)
4. At the Contractor's option, a one piece bar my be substituted for Bars 4B and 4E.
5. Field bend and cut rebar as required to maintain cover.

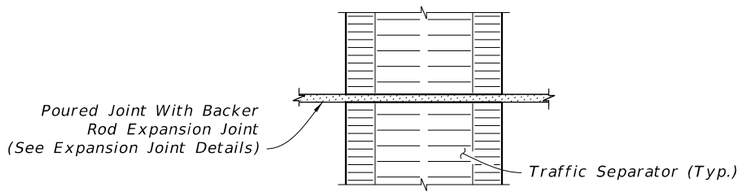
REINFORCING STEEL

(Bridge Deck Shown, Approach Slab Similar)



DETAIL AT EXPANSION JOINTS

(Strip Seal Shown, Other Armored Joint Types Similar)



DETAIL AT POURED JOINT WITH BACKER ROD EXPANSION JOINTS

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BRIDGE INSTALLATIONS - TYPE "F" CURB

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	TRAFFIC SEPARATORS	INDEX	SHEET
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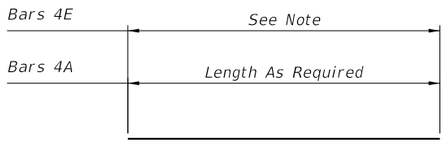
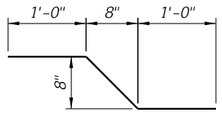


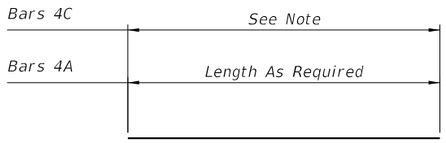
Bars 4A & 4E



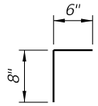
Bar 4B

NOTE:
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

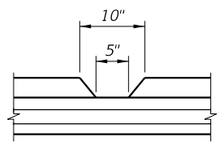
NOTE:
Length of Bars 4C is 2'-4½" for 4'-0" Separator.
Length of Bars 4C is 4'-4½" for 6'-0" Separator.
Length of Bars 4C is 6'-10½" for 8'-6" Separator.

OPTION II

REINFORCING STEEL NOTES:

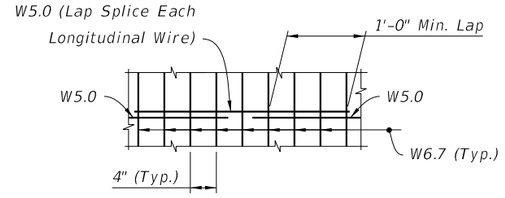
1. All dimensions are out to out.
2. The 8" vertical dimension shown for Bars 4B and 4D are based on a slab 8½" thick or greater without a wearing surface. If slab thickness is less than 8½", decrease this dimension by an amount equal to the difference in thickness. If a wearing surface is to be provided, 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)



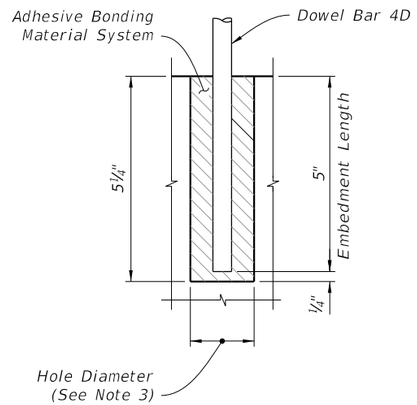
SPLICE DETAIL
(Between WWR 3 x 4 - W5.0 x W6.7 Sections)

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:

CONCRETE:
CONSTANT WIDTH OF SEPARATOR:

	TYPE "E"	TYPE "F"
4'-0"	Width = 0.056 CY per Ft.	– 0.072 CY per Ft.
6'-0"	Width = 0.089 CY per Ft.	– 0.112 CY per Ft.
8'-6"	Width = 0.132 CY per Ft.	– 0.164 CY per Ft.

NOSE:

	TYPE "E"		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 8½" 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.

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BRIDGE INSTALLATIONS - TYPE "E" AND "F" CURB

GENERAL NOTES:

1. BARRIER CONCRETE: Use Class II concrete for all barriers constructed in slightly aggressive environments, and use Class IV Concrete for all barriers constructed in moderately or extremely aggressive environments. On all exposed surfaces, apply a 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 4½", measured from the top face of the barrier.

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

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

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

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

7. DOWELED JOINTS: As shown in the Dowel Details on Sheets 2 & 13, install ¾" Doweled Joints for Concrete Barrier connections to Pier Protection Barrier and Traffic Railings. Doweled Joints are also required for expansion mitigation in Median Barrier as defined per Sheets 2 & 5. Doweled Joints are not permitted within Grade-Separated Median Barrier.

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

9. SUBGRADE: Compact the top 12 inches of the subgrade to at least 98% of the maximum density determined by FM 1-T 180, Method D.

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 4½" inner diameter for bar bends. Where required to fit pull boxes while maintaining bar spacing and concrete cover, trim GFRP bars as defined in the Plans.

   At toll site locations, the use of Median Barriers on outside shoulders is permitted where called for in the Plans. Shoulder Pavement shown herein may be substituted with material for an alternate usage where defined in the Plans.

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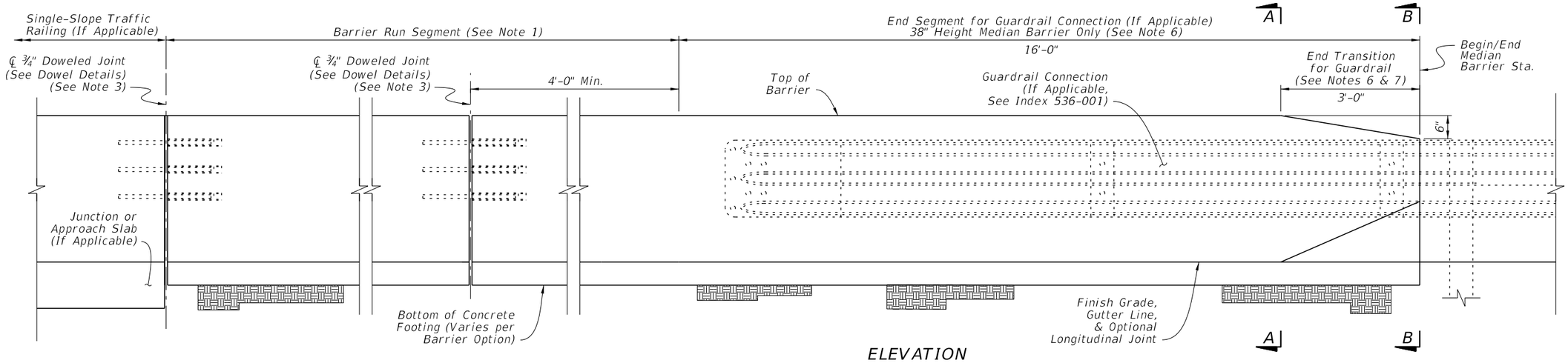
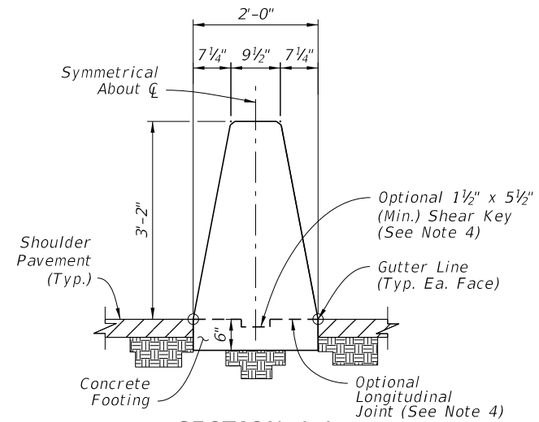
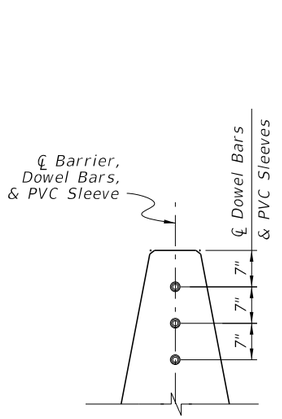
11/01/18						521-001	1 of 26

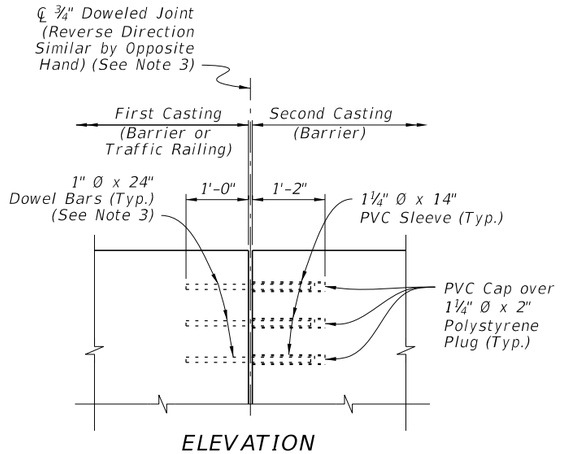




SECTION A-A
38" HEIGHT MEDIAN BARRIER
(See Sheet 3 for Steel Reinforcing Details)



SECTION
DOWEL PLACEMENT



ELEVATION
DOWEL BAR & PVC
CONNECTION

DOWEL DETAILS

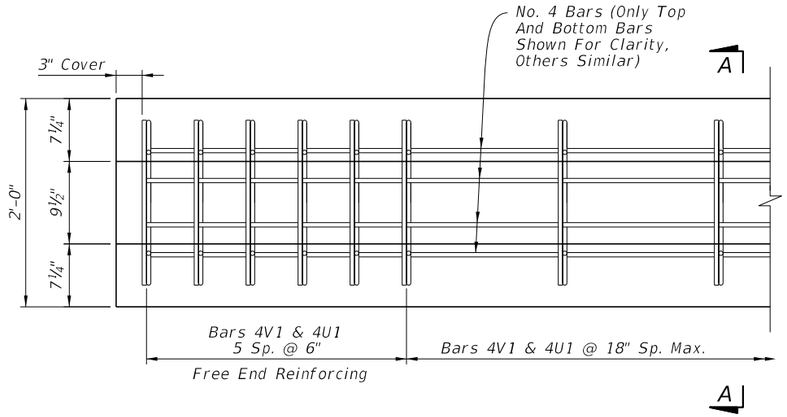
NOTES:

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

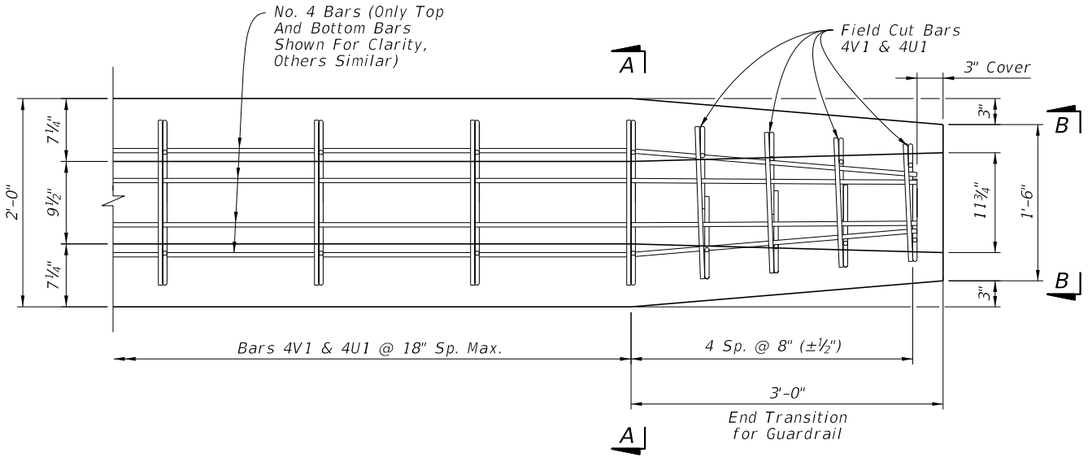
   For the dowel connection into the first casting, the dowel may be cast-in-place for new concrete or placed into a 1⅛"∅ x 13"(± ½") drilled hole for cured concrete. For drilled holes larger than 1⅛"∅, secure the dowel with adhesive in accordance with Specification 416. No load testing is required.

   For the dowel connection into the second casting, use a 1¼" NPS Schedule 80 PVC pipe with a sealed cap, cast-in-place as shown.
4. OPTIONAL LONGITUDINAL JOINT: When a longitudinal joint is placed above the footing, use the Optional 1½" x 5½" Shear Key shown. As a substitute for the Shear Key, the concrete footing's top surface may be raked to provide additional shear friction. Rake the fresh concrete surface so that about half of the surface area consists of approximately ¼" depth longitudinal grooves, distributed evenly and approved by the Engineer.
5. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the ¾" Doweled Joint.
6. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with the 16'-0" End Segment for Guardrail shown herein.
7. CRASH CUSHION CONNECTIONS: Connect Crash Cushions per Index 544-001 in conjunction with the 3'-0" End Transition for Guardrail as shown herein.
8. FREE ENDS: When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, Crash Cushion Connection, or Sloped End Treatment as called for in the Plans, terminate in accordance with the Free End Reinforcing detail on Sheet 3.

MEDIAN BARRIER



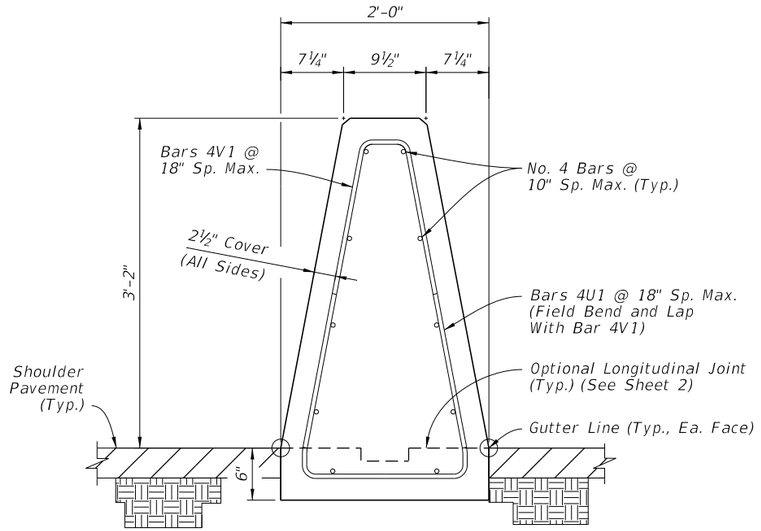
PLAN VIEW - 38" HEIGHT MEDIAN BARRIER FREE END REINFORCING (See Note 3)



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

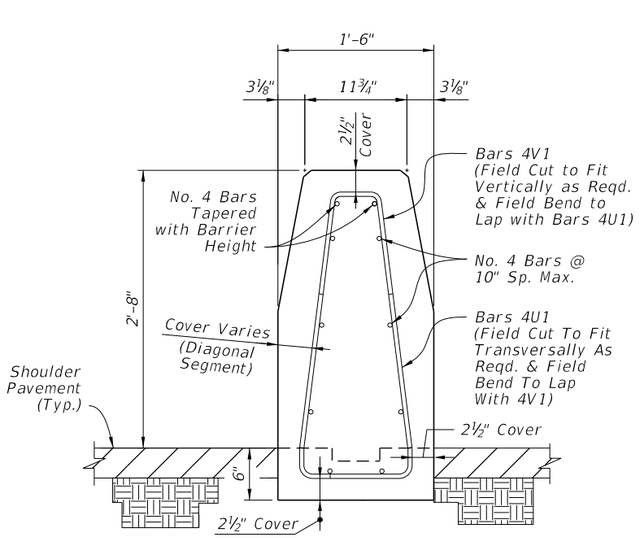
NOTES:

1. *GENERAL: Work with the Plan and Elevation Views on Sheet 2.*
2. *BAR BENDING DIAGRAMS: For additional information on Bars 4V1 and 4U1, see the details on Sheet 26.*
3. *PLAN VIEWS: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal steel locations, see the section views.*



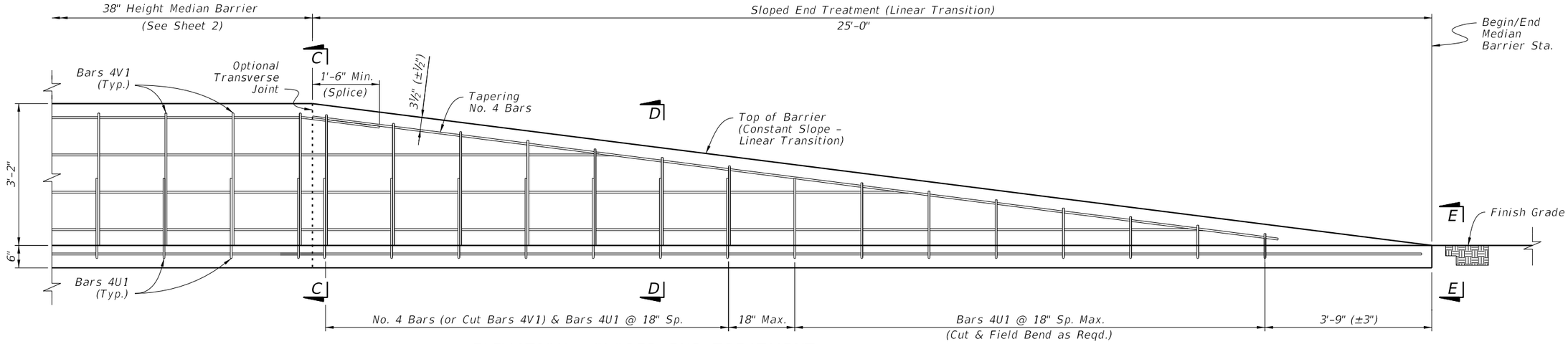
SECTION A-A
38" HEIGHT
MEDIAN BARRIER

Concrete Qty. = 0.20 CY/FT
Steel Qty. = 11.8 LB/FT

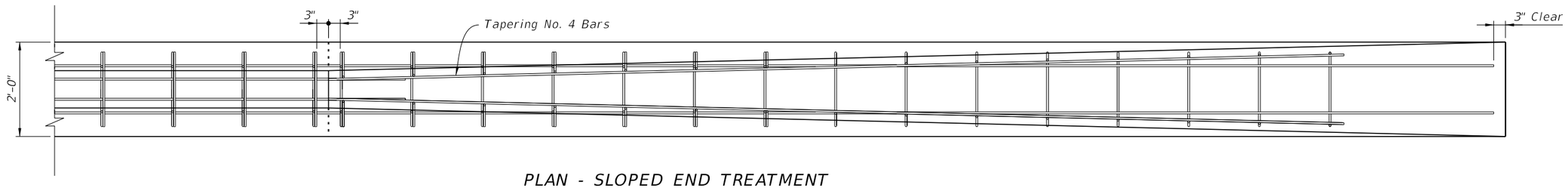


VIEW B-B
REDUCED SECTION
OF END TRANSITION
FOR GUARDRAIL
(End of Barrier)

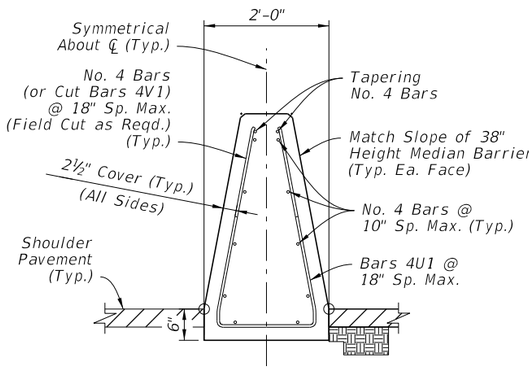
MEDIAN BARRIER - REINFORCING DETAILS



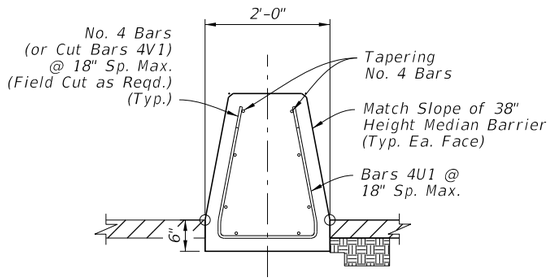
ELEVATION - SLOPED END TREATMENT



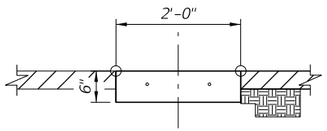
PLAN - SLOPED END TREATMENT
(Only Top & Bottom Longitudinal Bars Shown for Clarity,
See Section Views for All Longitudinal Steel Locations)



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

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LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
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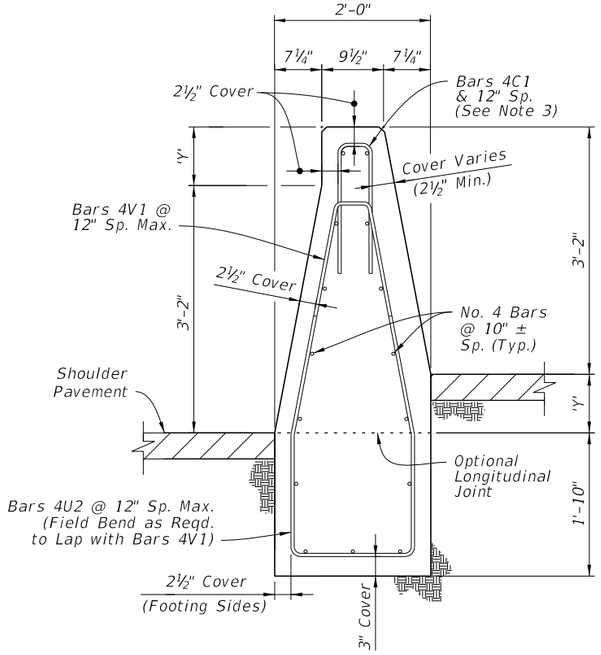
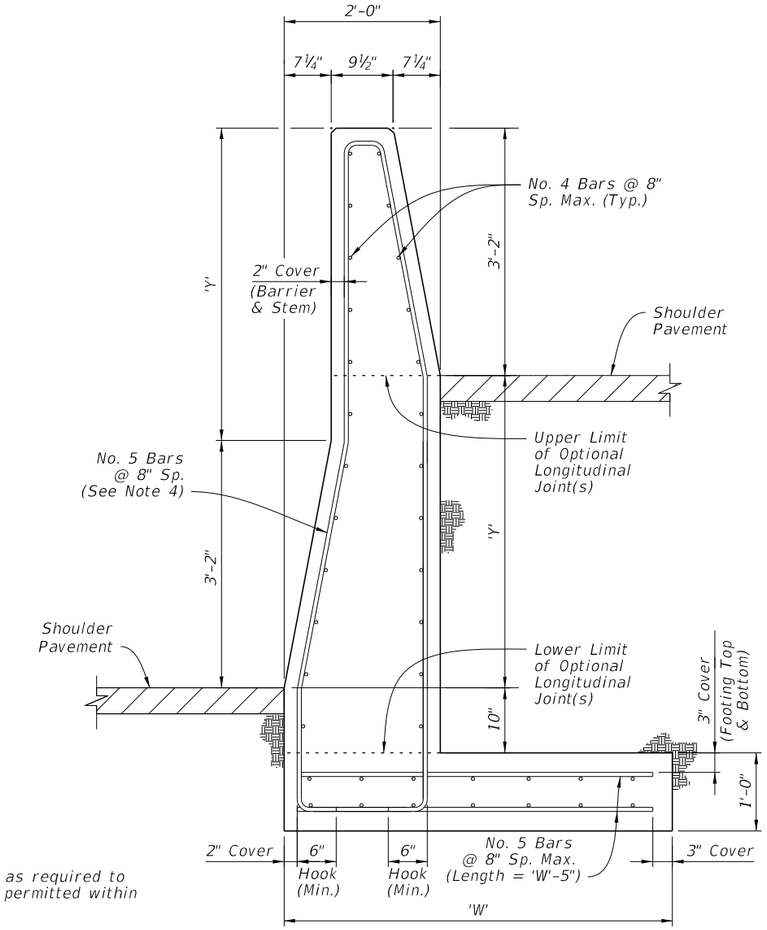
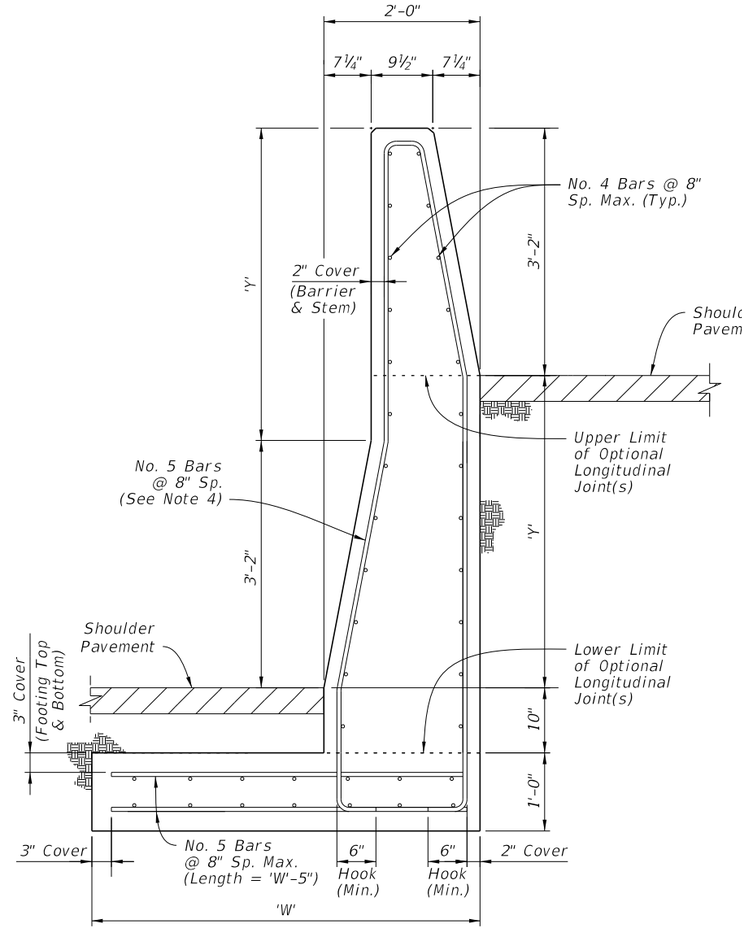


SHORT GRADE-SEPARATED SECTION FOR Y ≤ 9"



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



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

NOTES:

1. *GENERAL: Install the Grade-Separated sections where shown in the Plans and as required to accommodate vertical offsets in pavement of Height Y. Doweled Joints are not permitted within Grade-Separated sections.*

2. *CONNECTIONS BETWEEN DIFFERENT SECTIONS: Connect Short Grade-Separated sections and Tall Grade-Separated sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections or has a full lap splice with the adjacent section's longitudinal steel. Connect Short Grade-Separated sections and 38" Height Median Barrier sections of Sheet 2 using a ¾" Doweled Joint.*

3. *SHORT GRADE-SEPARATED SECTIONS: Bars 4C1 and the two uppermost longitudinal bars may be omitted for segments where Y < 2".*

4. *TALL GRADE-SEPARATED SECTIONS: For the vertical and transverse steel reinforcement shown in the Tall Grade-Separated Sections, bar bending diagrams are not provided due to varying section dimensions and Longitudinal Joint locations. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.*

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

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

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

TALL GRADE-SEPARATED SECTIONS DIMENSION TABLE

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

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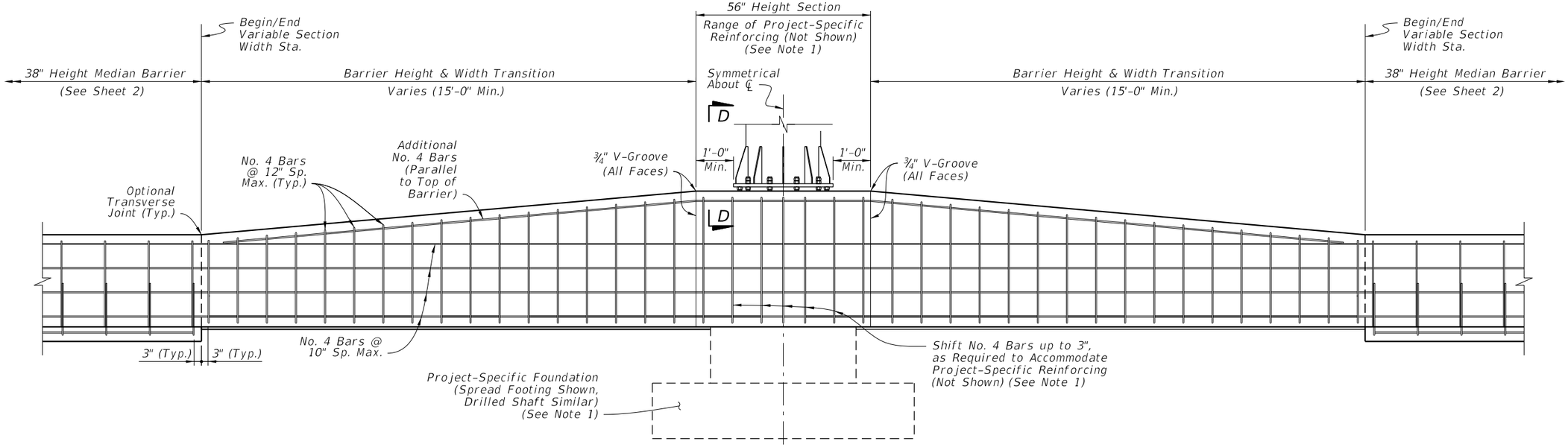
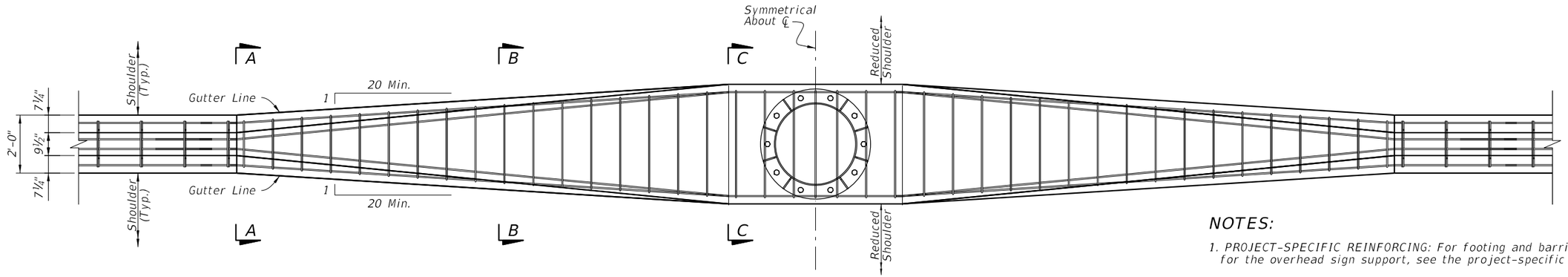
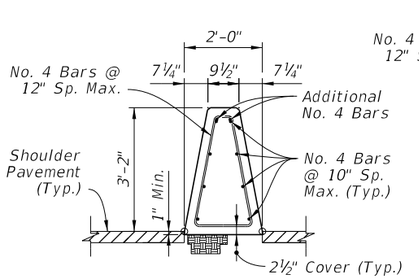
MEDIAN BARRIER - GRADE-SEPARATED



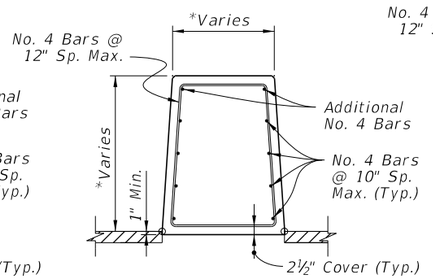
ELEVATION



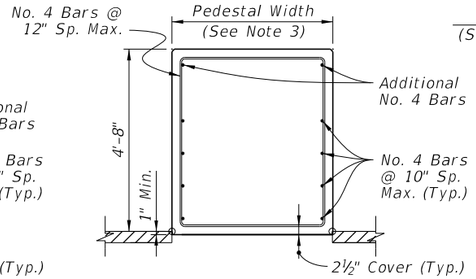
PLAN
(See Note 4)



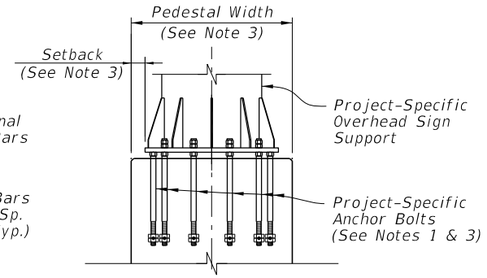
SECTION A-A
BEGIN TRANSITION



SECTION B-B
*Dimension Varies Linearly Between Section A-A and C-C



SECTION C-C
END TRANSITION
(56" Height Section)



SECTION D-D
(Reinforcing Steel Not Shown for Clarity)

NOTES:

1. PROJECT-SPECIFIC REINFORCING: For footing and barrier reinforcing required for the overhead sign support, see the project-specific design in the Plans.

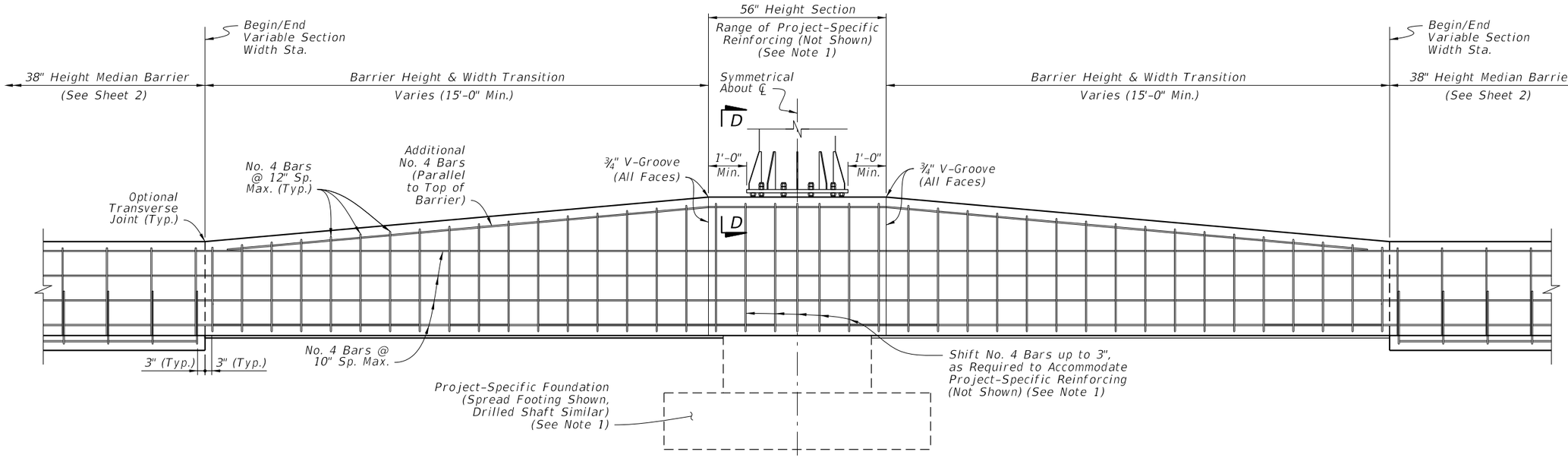
2. BARRIER REINFORCING: Maintain the 38" Height Median Barrier's longitudinal steel reinforcing continuously through the barrier height transition and pedestal. Provide the Additional No. 4 Bars and taper as required to maintain a 4½" maximum cover from the top of the barrier.

   For the vertical and transverse reinforcement requirements shown in Sections A-A through C-C, 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.

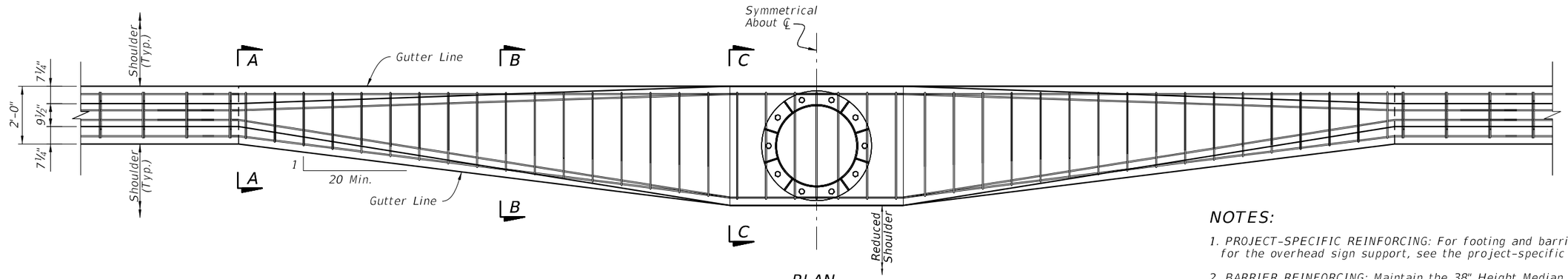
3. PROJECT-SPECIFIC PEDESTAL WIDTH & SETBACK: The pedestal width is governed by the size requirements of the overhead sign support, as detailed in the Plans. Likewise, the setback distance from the sign support base to the barrier face is governed by the anchor bolt cover requirements, as defined per the Plans. The minimum pedestal width is 2'-0", where a complete removal of the gutter line taper is permitted.

4. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

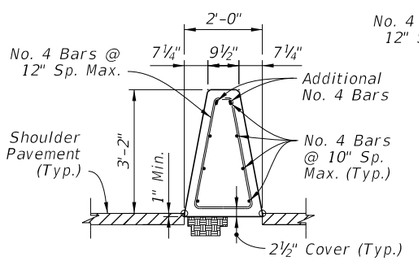
MEDIAN BARRIER - 56" HEIGHT SECTION FOR BARRIER-MOUNTED SIGN SUPPORT SHIELDING - SYMMETRICAL



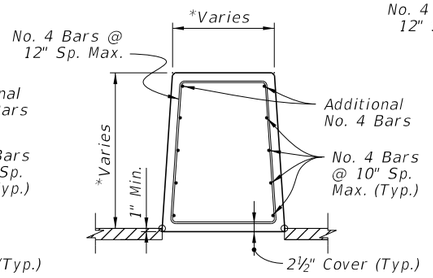
ELEVATION



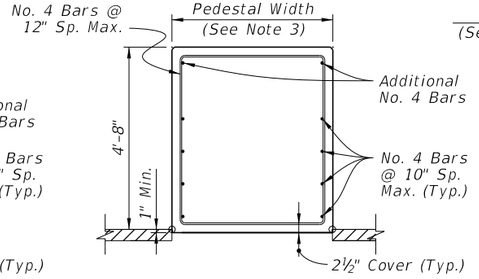
PLAN
(See Note 4)



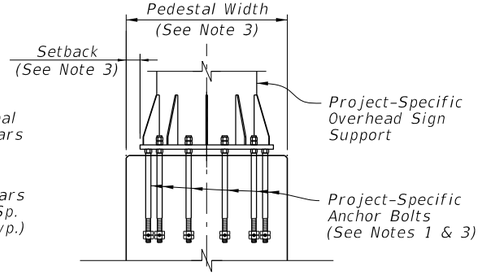
SECTION A-A
BEGIN TRANSITION



SECTION B-B
*Dimension Varies Linearly Between Section A-A and C-C



SECTION C-C
END TRANSITION
(56" Height Section)



SECTION D-D
(Reinforcing Steel Not Shown for Clarity)

NOTES:

1. PROJECT-SPECIFIC REINFORCING: For footing and barrier reinforcing required for the overhead sign support, see the project-specific design in the Plans.

2. BARRIER REINFORCING: Maintain the 38" Height Median Barrier's longitudinal steel reinforcing continuously through the barrier height transition and pedestal. Provide the Additional No. 4 Bars and taper as required to maintain a 4½" maximum cover from the top of the barrier.

   For the vertical and transverse reinforcement requirements shown in Sections A-A through C-C, 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.

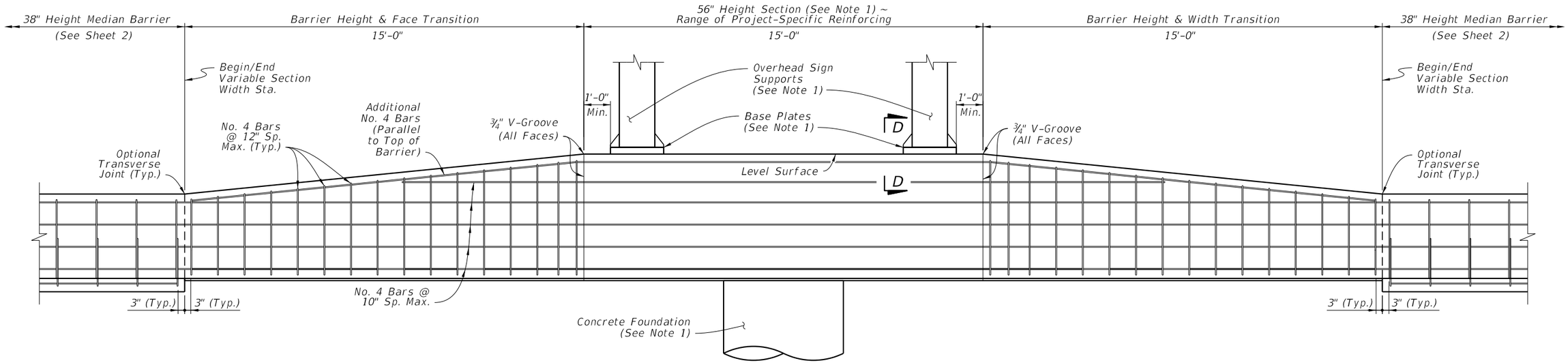
3. PROJECT-SPECIFIC PEDESTAL WIDTH & SETBACK: The pedestal width is governed by the size requirements of the overhead sign support, as detailed in the Plans. Likewise, the setback distance from the sign support base to the barrier face is governed by the anchor bolt cover requirements, as defined per the Plans. The minimum pedestal width is 2'-0", where a complete removal of the gutter line taper is permitted.

4. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

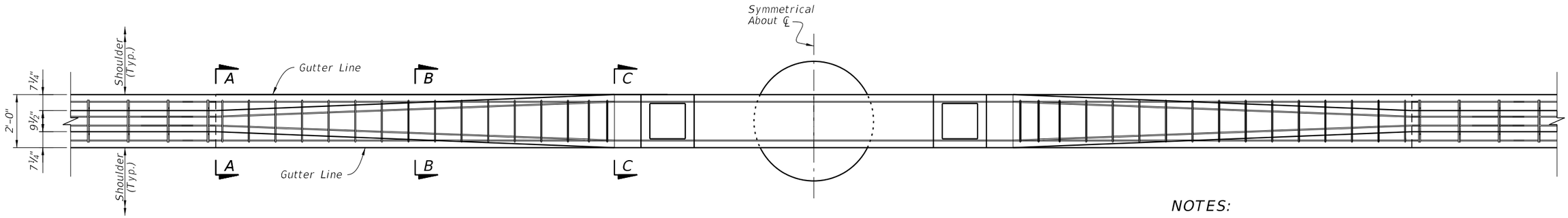
MEDIAN BARRIER - 56" HEIGHT SECTION FOR BARRIER-MOUNTED SIGN SUPPORT SHIELDING - ASYMMETRICAL

10/29/2019 8:18:28 AM

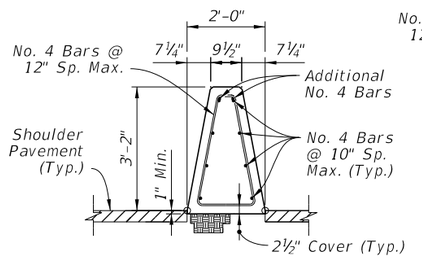
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 7 of 26



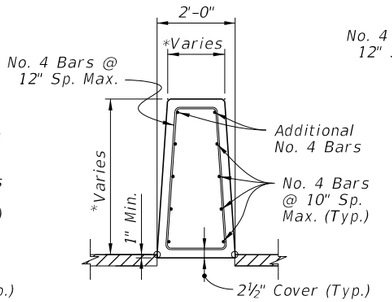
ELEVATION



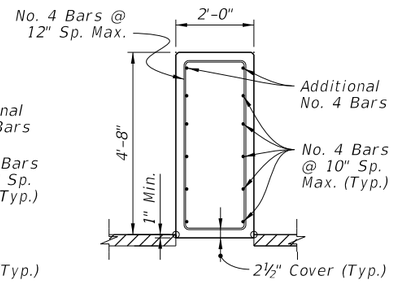
PLAN
(See Note 3)



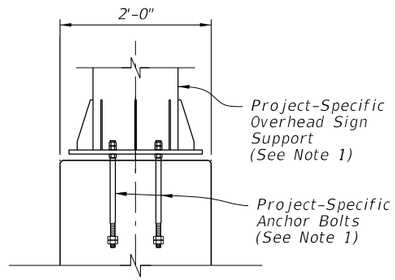
SECTION A-A
BEGIN TRANSITION



SECTION B-B
*Dimension Varies Linearly Between Section A-A and C-C



SECTION C-C
END TRANSITION
(56" Height Section)



SECTION D-D
(Reinforcing Steel Not Shown for Clarity)

NOTES:

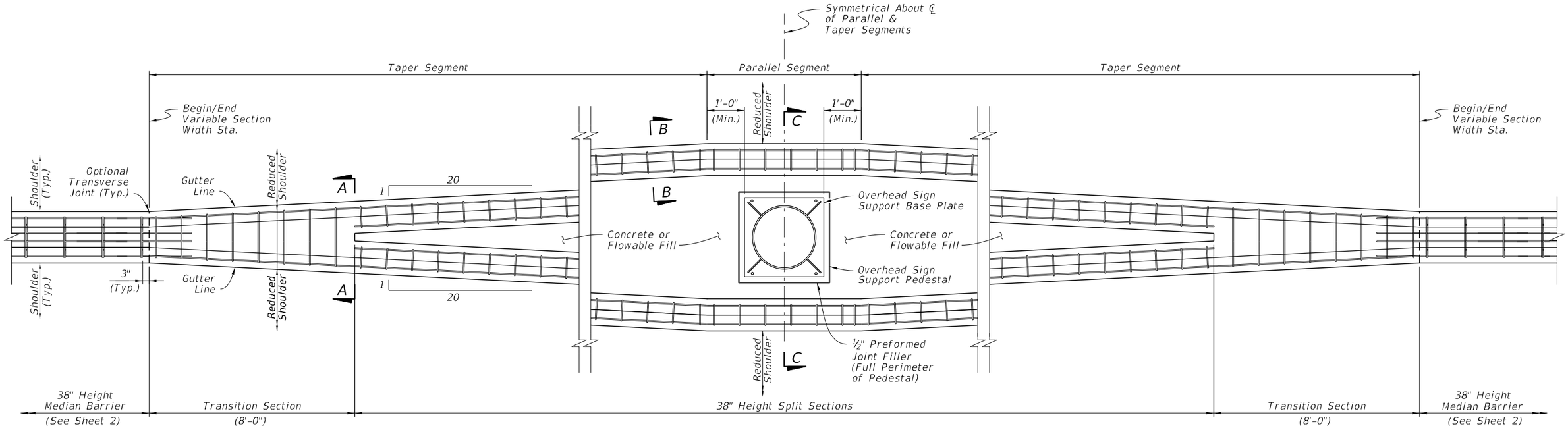
1. PROJECT-SPECIFIC DESIGN: For the base plate, anchor bolts, foundation design, and additional reinforcing required for the barrier, see the project-specific design in the Plans.

2. BARRIER REINFORCING: Maintain the 38" Height Median Barrier's longitudinal steel reinforcing continuously through the barrier height transition and pedestal. Provide the Additional No. 4 Bars and taper as required to maintain a 4½" maximum cover from the top of the barrier.

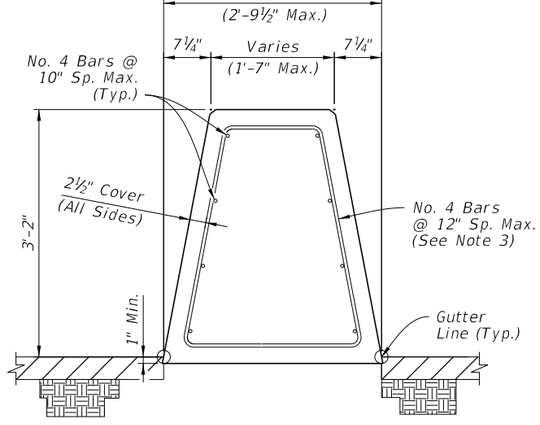
   For the vertical and transverse reinforcement requirements shown in Sections A-A through C-C, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

3. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

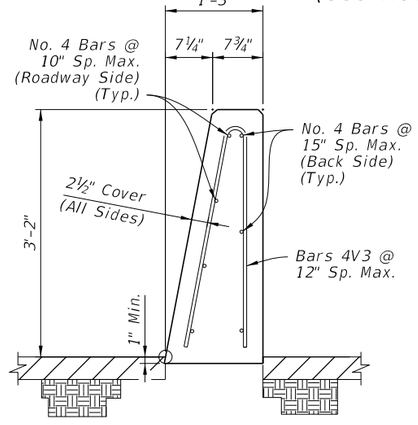
MEDIAN BARRIER - 56" HEIGHT SECTION FOR BARRIER-MOUNTED DUAL SIGN SUPPORT SHIELDING - MINIMUM WIDTH



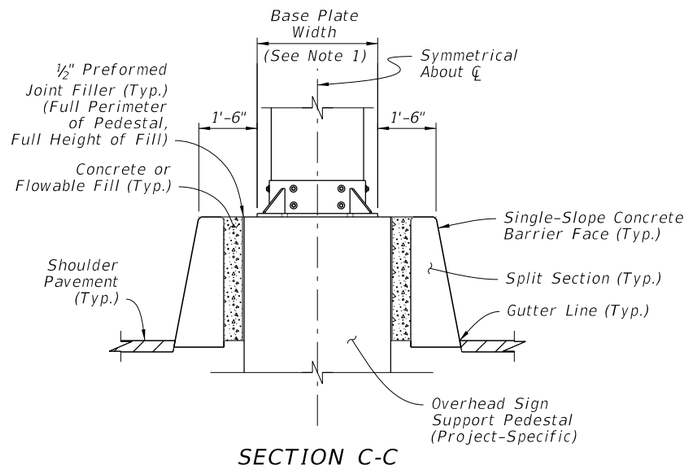
PLAN
(See Note 3)



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



SECTION B-B
38" HEIGHT SPLIT SECTION
(OPPOSITE SIDE SIMILAR
BY OPPOSITE HAND)



SECTION C-C

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.

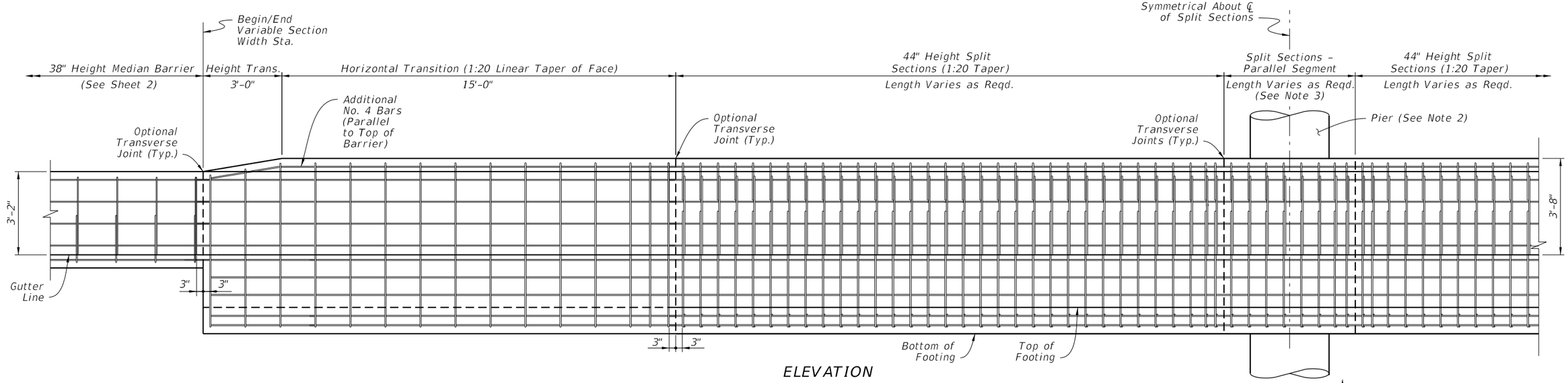
3. PLAN VIEW: Only outermost longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

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.

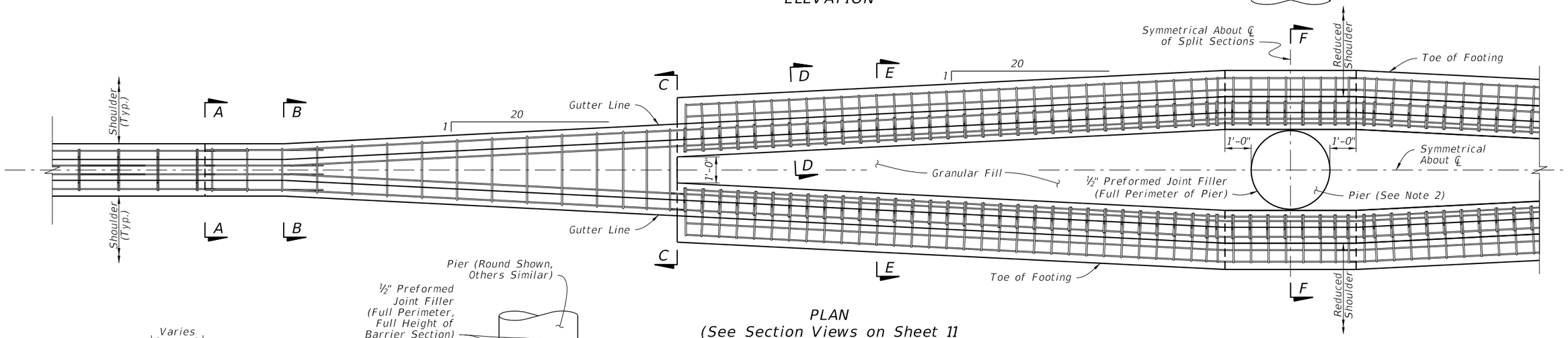
5. CONCRETE OR FLOWABLE FILL: Use Class NS Concrete in accordance with Specification 347 or Non-Excavatable Flowable Fill in accordance with Specification 121.

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

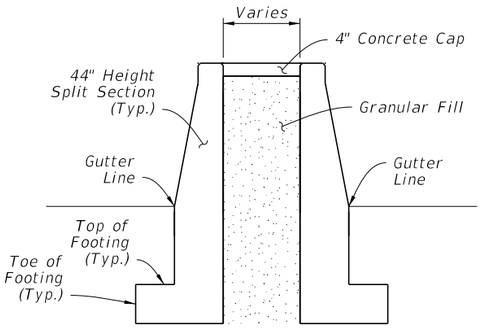
10/29/2019 8:18:31 AM



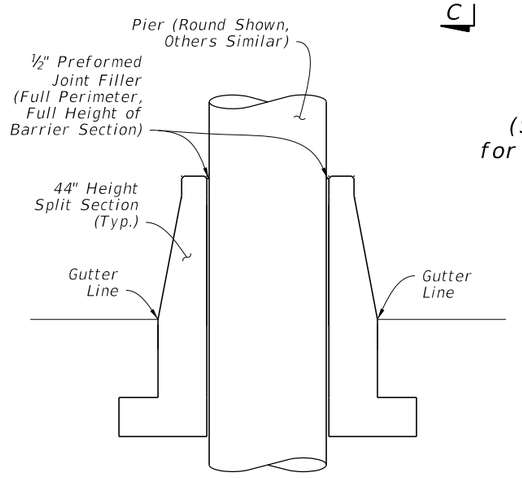
ELEVATION



PLAN
(See Section Views on Sheet 11 for All Longitudinal Steel Locations)



SECTION E-E
SPLIT SECTIONS



SECTION F-F
SPLIT SECTIONS AT PIER

NOTES:

1. SECTION VIEWS: See Sheet 11 for Section Views A-A through D-D and corresponding reinforcing steel details.
2. PIER: The round pier shown is an example only, and project-specific pier shapes may vary. For actual dimensions and requirements, see the Plans. The overall length and width of the split barrier system is governed by the project-specific pier dimensions, as defined in the Plans.
3. MULTIPLE PIERS: The parallel segment may be lengthened to accommodate multiple consecutive piers, with the approach and trailing tapers located 1 foot, measured longitudinally, upstream and downstream from the first and last piers, respectively.

MEDIAN BARRIER - 44" HEIGHT
SPLIT SECTION FOR PIER SHIELDING

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
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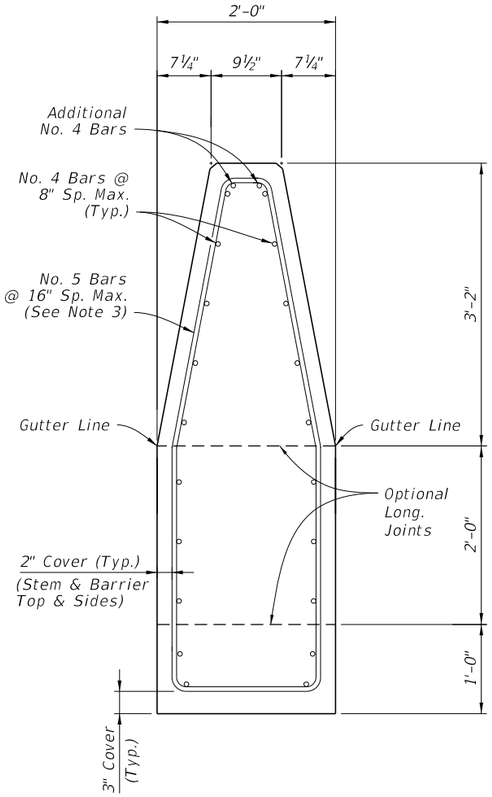
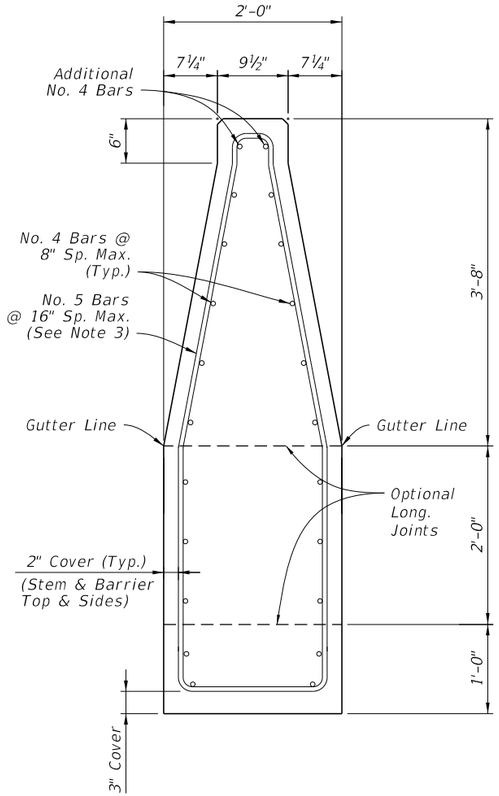
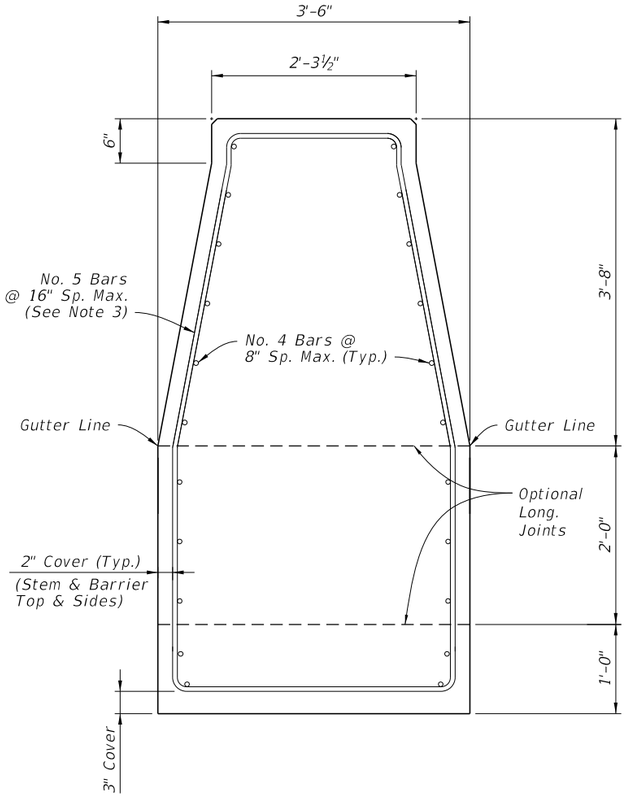


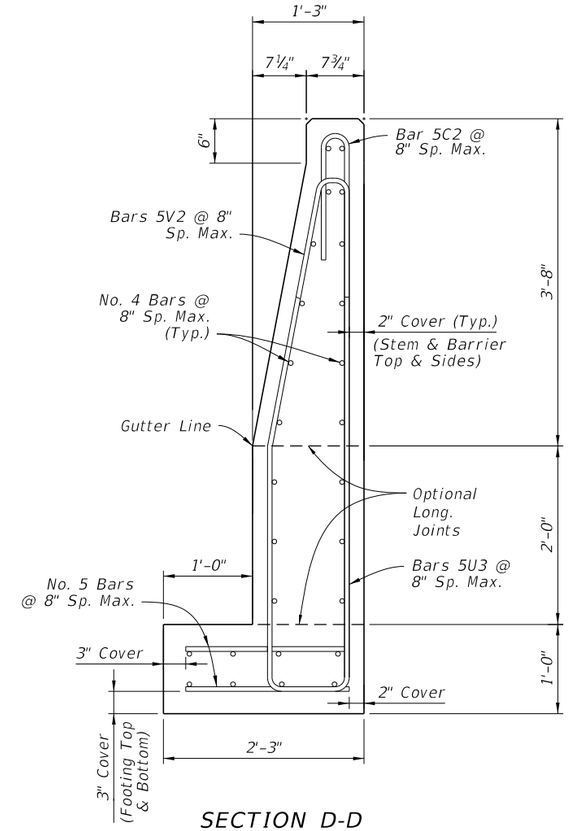
SECTION A-A
BEGIN HEIGHT
TRANSITION
(show spliced bars)



SECTION B-B
END HEIGHT TRANSITION
BEGIN WIDTH TRANSITION



SECTION C-C
END WIDTH TRANSITION
BEGIN SPLIT SECTIONS



SECTION D-D
44" HEIGHT SPLIT SECTION
(Opposite Side of Median
Similar by Opposite Hand)

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

NOTES:

1. GENERAL: Work with the Plan and Elevation views on Sheet 10.
2. LONGITUDINAL REINFORCING CONTINUITY: Maintain all longitudinal steel reinforcing shown in Section C–C continuously into Section D–D (spliced where required). The additional longitudinal reinforcing shown in Section D–D does not require continuity into Section C–C, and it starts 3" from the construction joint or edge of concrete per the details on Sheet 10.
3. STIRRUP BARS: For the vertical and transverse reinforcement requirement shown, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

MEDIAN BARRIER - 44" HEIGHT
SPLIT SECTION FOR PIER SHIELDING - DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
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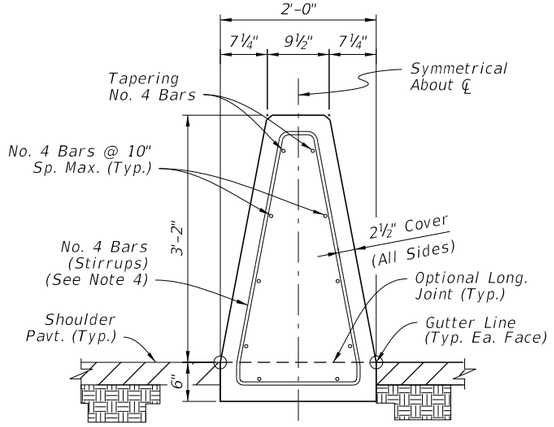
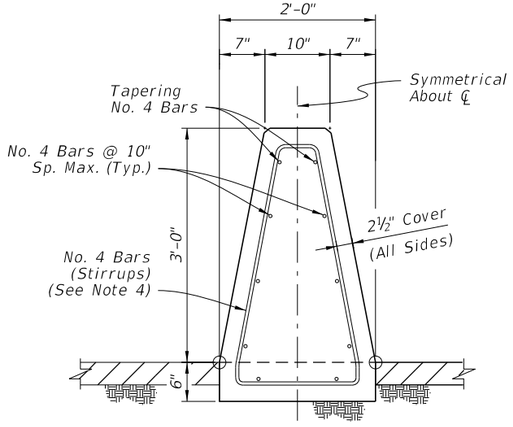
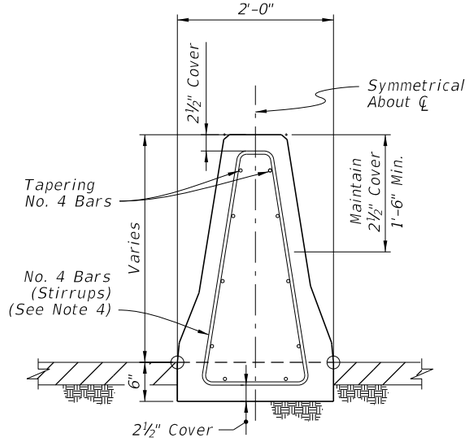


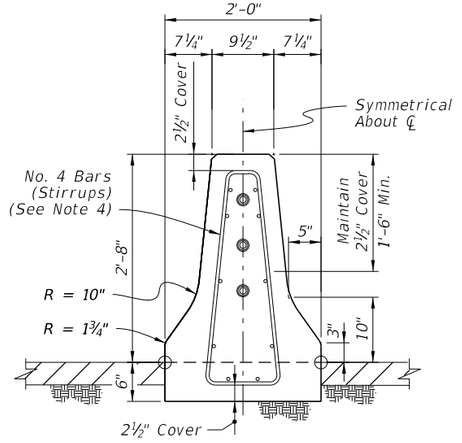
SECTION A-A
BEGIN TRANSITION - OPTION 'A'
MATCH SINGLE-SLOPE
38" HEIGHT MEDIAN BARRIER



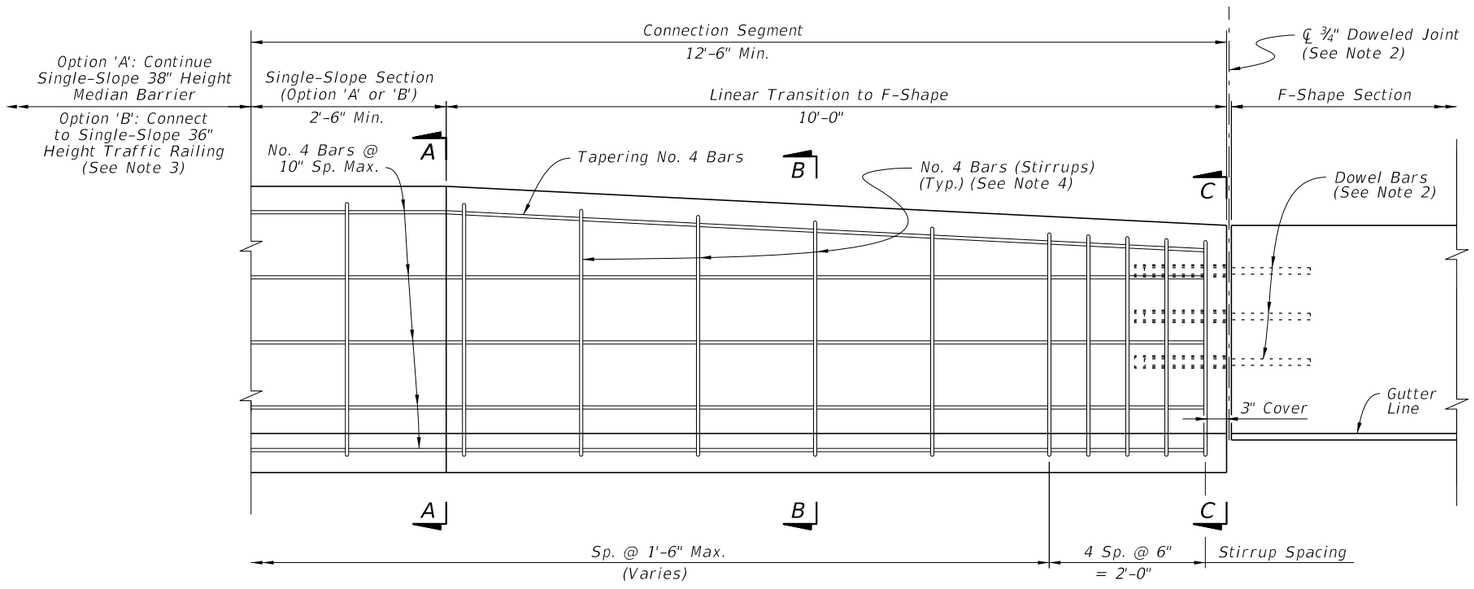
SECTION A-A
BEGIN TRANSITION - OPTION 'B'
MATCH SINGLE-SLOPE
36" HEIGHT TRAFFIC RAILING
(Bridge Applications)



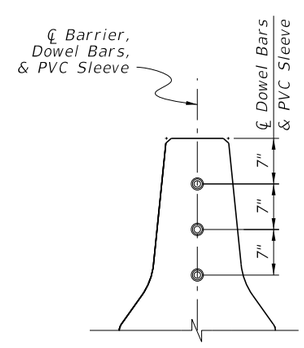
SECTION B-B
INTERMEDIATE SECTION
OF LINEAR TRANSITION



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



ELEVATION
(Reverse Direction Similar
by Opposite Hand)



SECTION - F-SHAPE
DOWEL PLACEMENT
(See Note 2)

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

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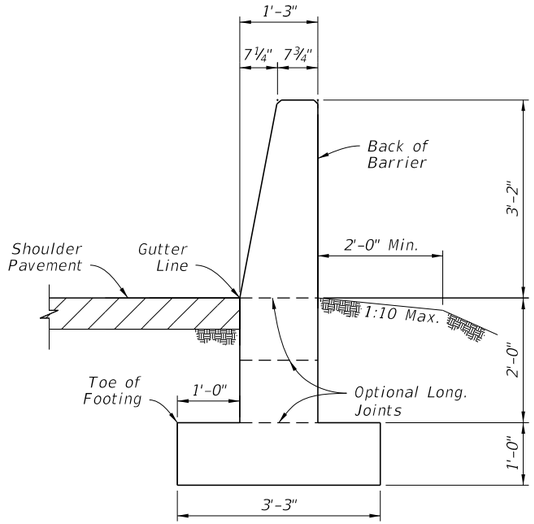
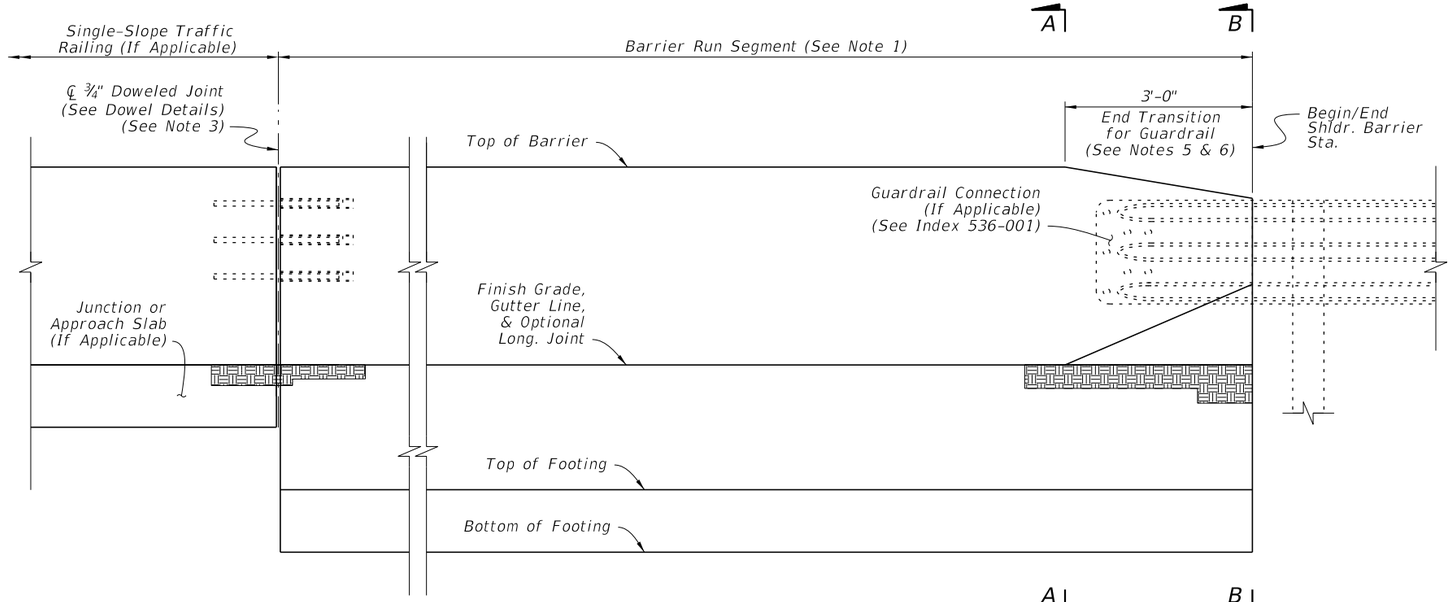
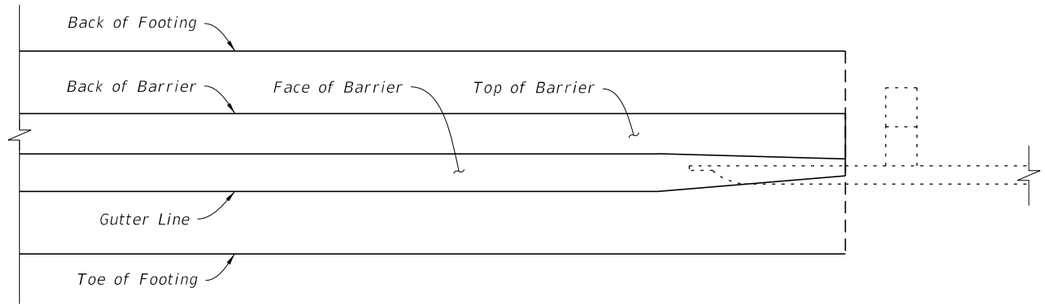


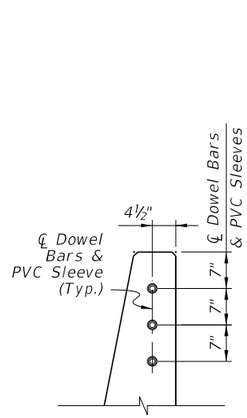
SECTION A-A
38" HEIGHT SHOULDER BARRIER
(See Sheet 14 for Reinforcing Steel Details)



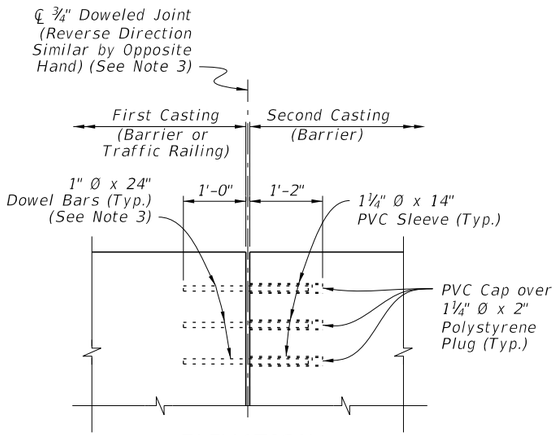
ELEVATION



PLAN



SECTION
DOWEL PLACEMENT



ELEVATION
DOWEL BAR & PVC CONNECTION

DOWEL DETAILS

NOTES:

1. *BARRIER RUN SEGMENT: Either the 38" Height Shoulder Barrier or the differing Shoulder Barrier sections shown throughout the Index may be placed within this segment as required per the Plans.*
2. *SECTION VIEWS: For additional Views A-A and B-B, see Sheet 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 1⅛"∅ x 13"(± ½") drilled hole for cured concrete. For drilled holes larger than 1⅛"∅, 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 1¼" 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

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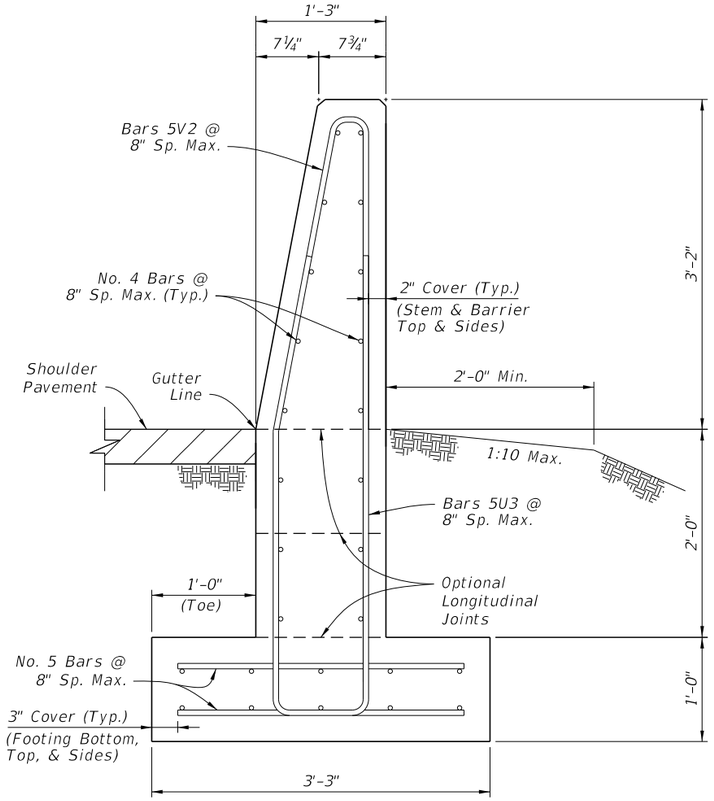
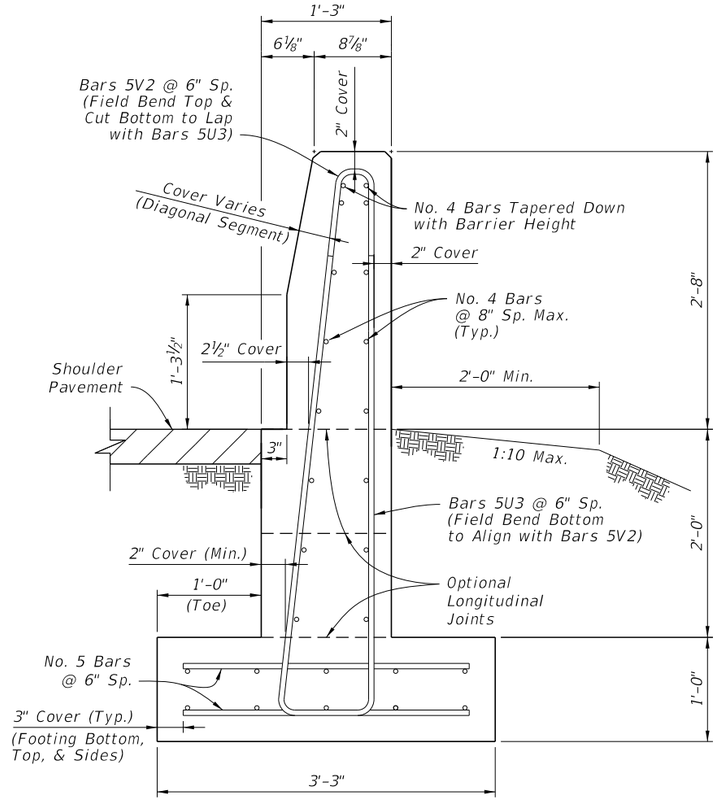


SECTION A-A
38" HEIGHT SHOULDER BARRIER

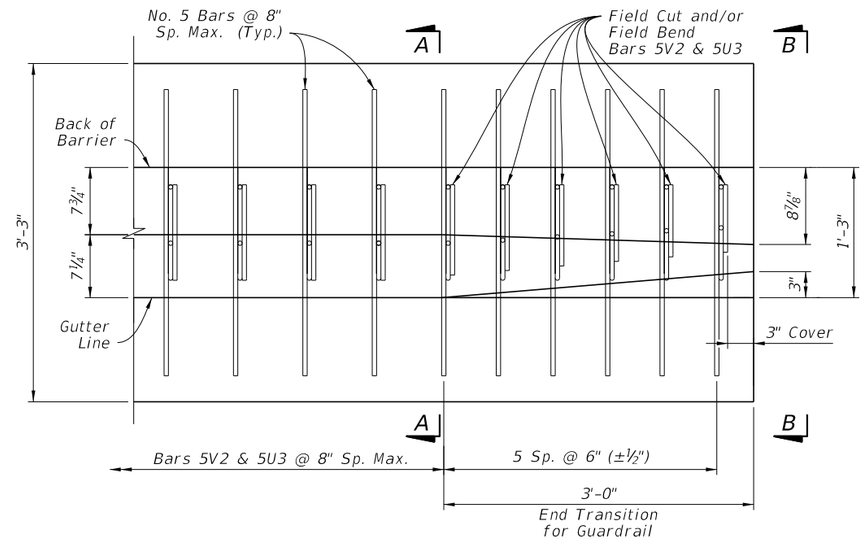
Concrete Qty. = 0.32 CY/FT
Steel Qty. = 50.9 LB/FT



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

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.



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

SHOULDER BARRIER - REINFORCING DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
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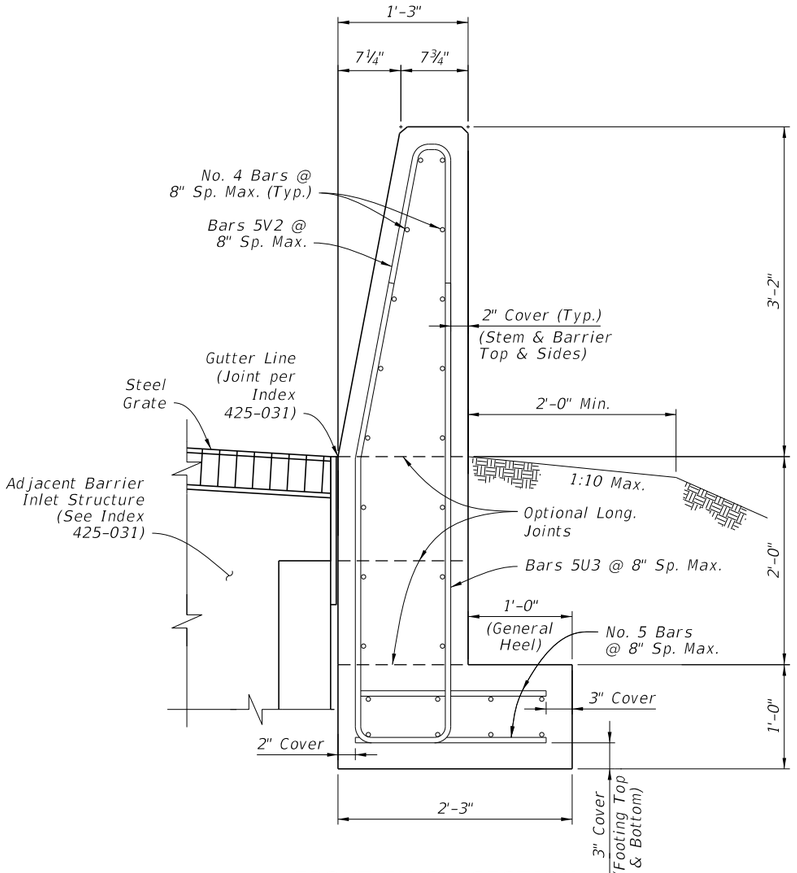
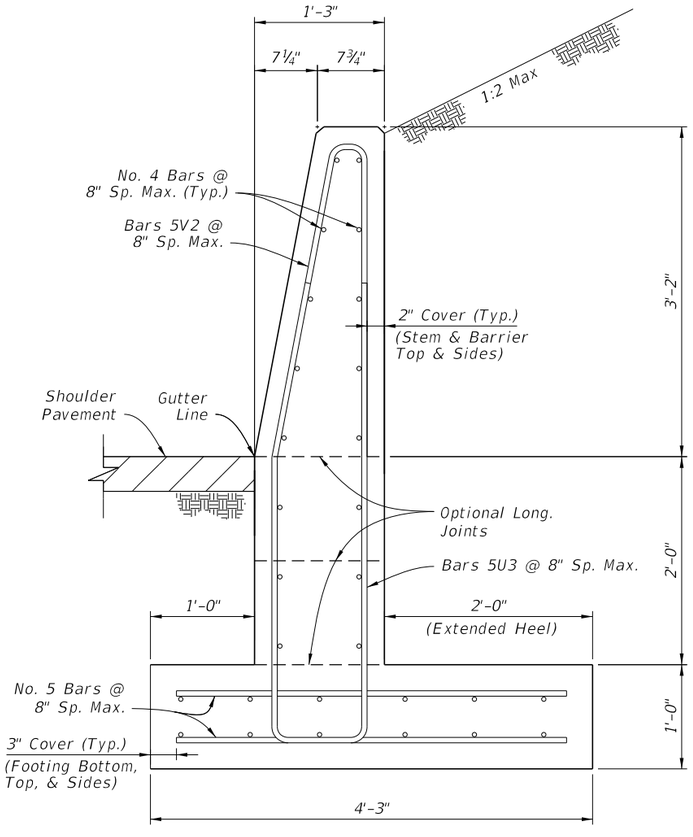


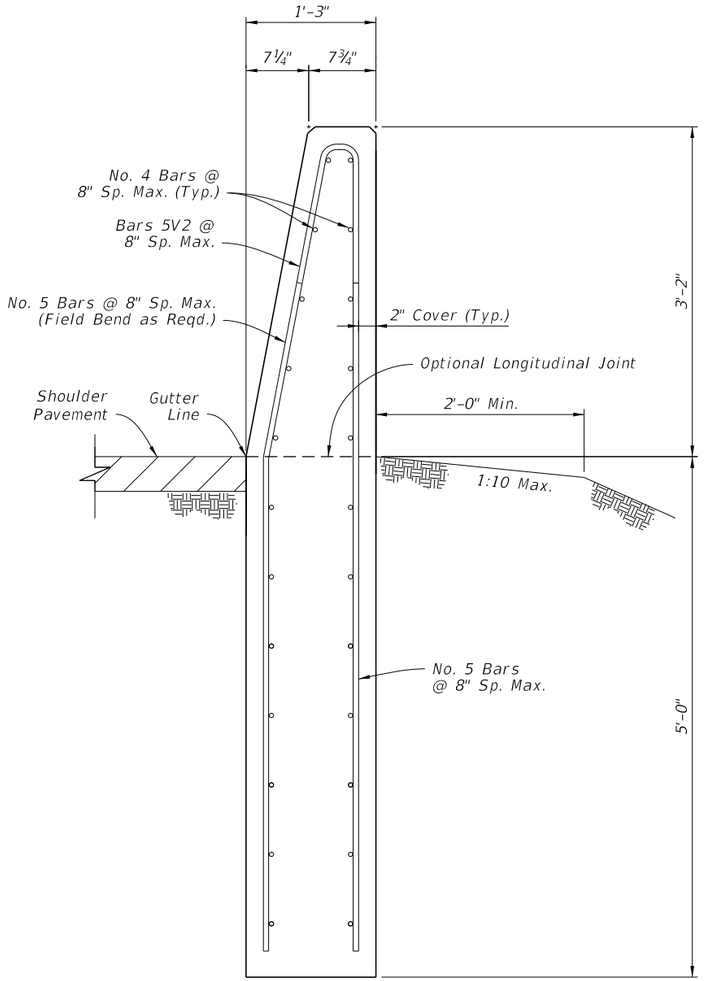
FRONT-FLUSH SECTION
(Where Required For Barrier Inlet Locations)

Concrete Qty. = 0.29 CY/FT
Steel Qty. = 46.6 LB/FT



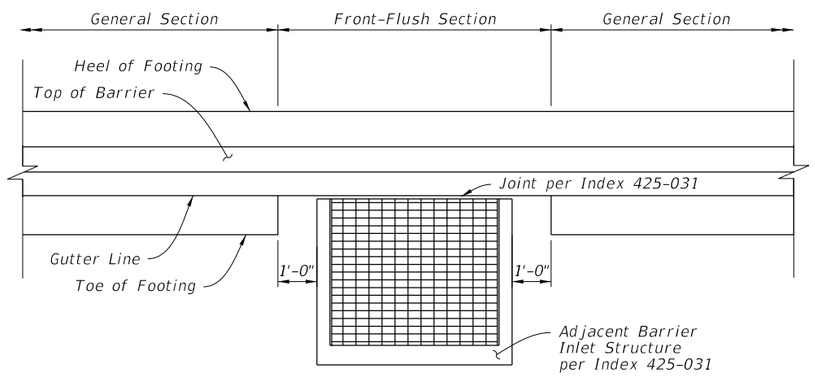
RETAINING SECTION

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



TRENCH FOOTING SECTION

Concrete Qty. = 0.35 CY/FT
Steel Qty. = 46.2 LB/FT



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

NOTES:

1. *GENERAL: Install the differing Section Options as required per the Plans.*
2. *CONNECTIONS BETWEEN DIFFERENT SECTIONS: Connect differing Shoulder Barrier sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections. Alternatively, a Doweled Joint may be used as shown on Sheet 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

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
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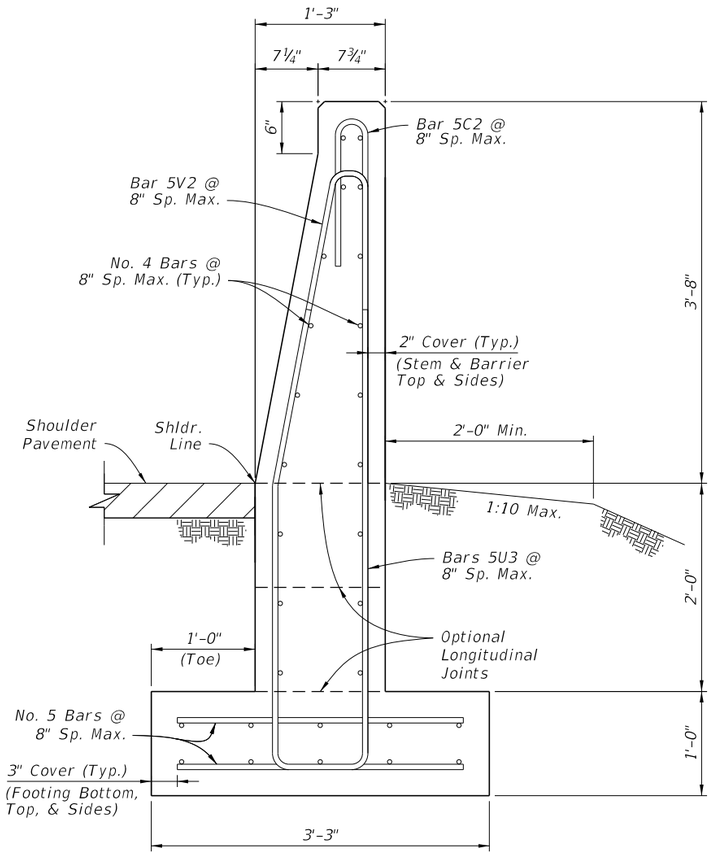
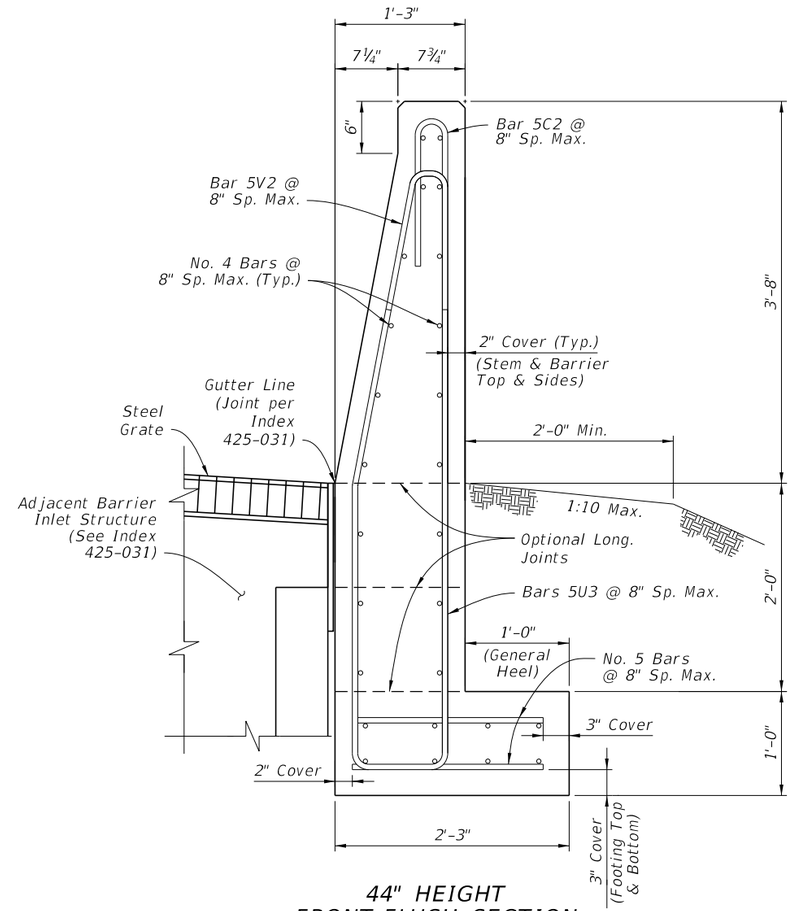


44" HEIGHT SECTION
(For Use Adjacent to Rear-Flush Section on Sheet 18)

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



44" HEIGHT
FRONT-FLUSH SECTION
(For Use Adjacent to Rear-Flush Section on Sheet 18, as Required for Barrier Inlets)

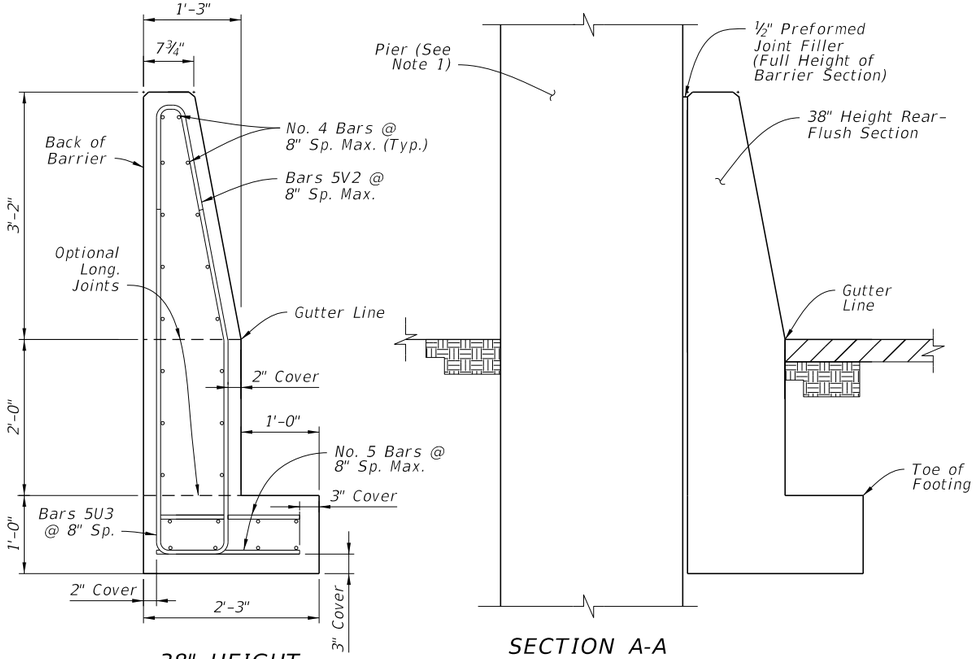
Concrete Qty. = 0.30 CY/FT
Steel Qty. = 52.6 LB/FT

NOTE:

1. GENERAL: See the applicable Notes on Sheet 15.

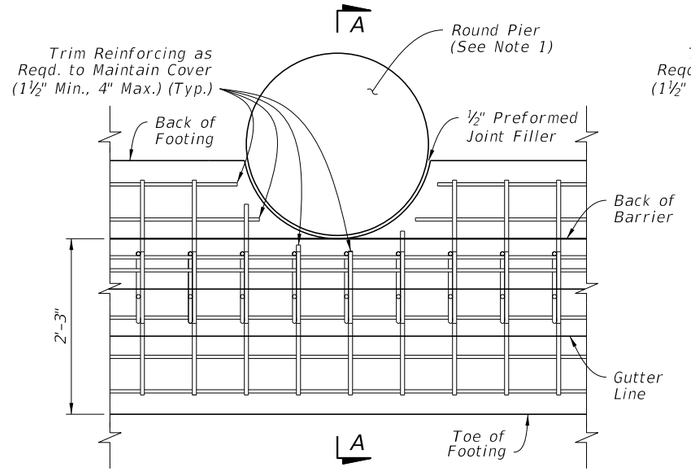
SHOULDER BARRIER - SECTION OPTIONS (CONTINUED)

10/29/2019 8:18:36 AM

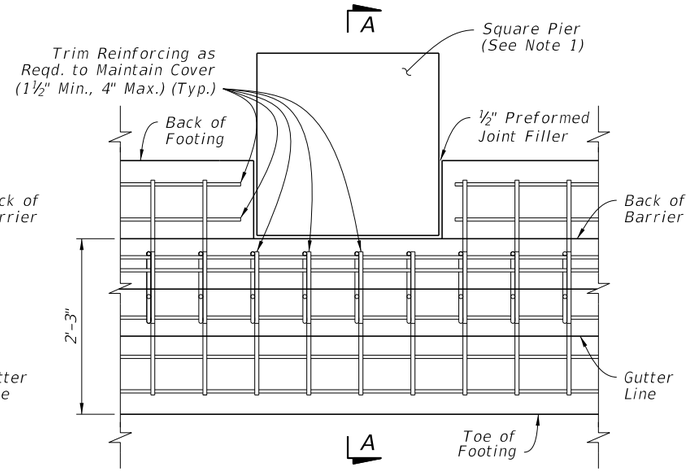


38" HEIGHT
REAR-FLUSH SECTION

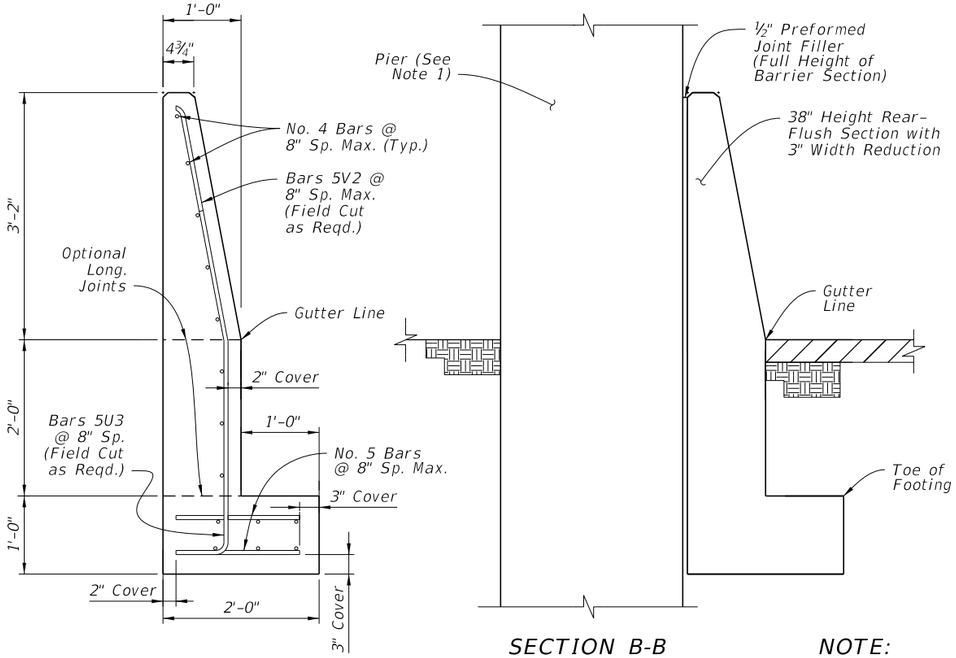
SECTION A-A
ABOVE-GROUND HAZARD
EMBEDDED IN FOOTING



PLAN - ROUND PIER EXAMPLE
REAR-FLUSH SECTION
(See Section View for All
Longitudinal Steel Locations)

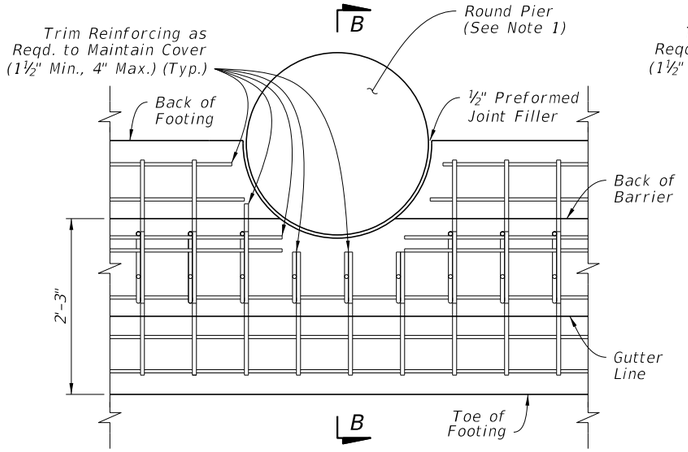


PLAN - SQUARE PIER EXAMPLE
REAR-FLUSH SECTION
(See Section View for All
Longitudinal Steel Locations)

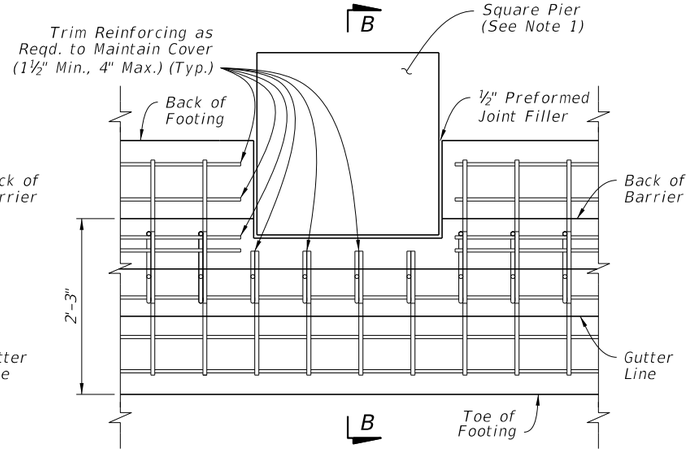


38" HEIGHT
REAR-FLUSH SECTION
WITH 3" WIDTH REDUCTION

SECTION B-B
ABOVE-GROUND HAZARD
EMBEDDED IN FOOTING
& BARRIER



PLAN - ROUND PIER EXAMPLE
REAR-FLUSH SECTION
WITH 3" WIDTH REDUCTION
(See Section View for All
Longitudinal Steel Locations)



PLAN - SQUARE PIER EXAMPLE
REAR-FLUSH SECTION
WITH 3" WIDTH REDUCTION
(See Section View for All
Longitudinal Steel Locations)

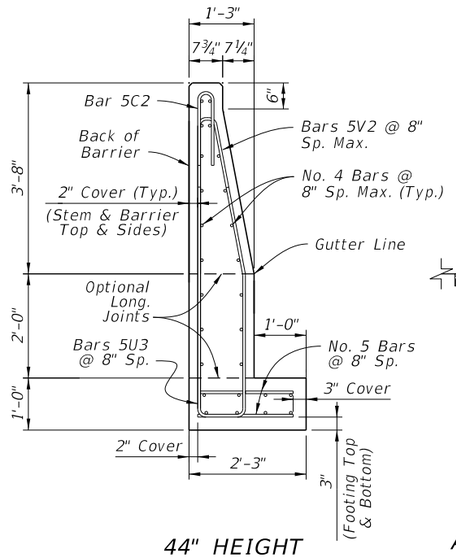
NOTE:

1. PIERS: The piers shown herein are example shapes only; see the Plans for the project-specific dimensions. The details shown herein are only for use when piers do not require protection per the AASHTO LRFD requirements. For piers requiring protection, see Index 521-002.

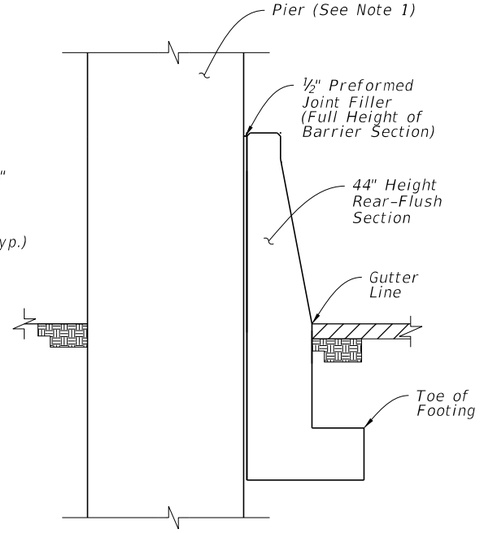
SHOULDER BARRIER - 38" HEIGHT REAR-FLUSH SECTION FOR REDUCED SETBACK PIER SHIELDING (DESIGN SPEED ≤ 45 MPH)

10/29/2019 8:18:37 AM

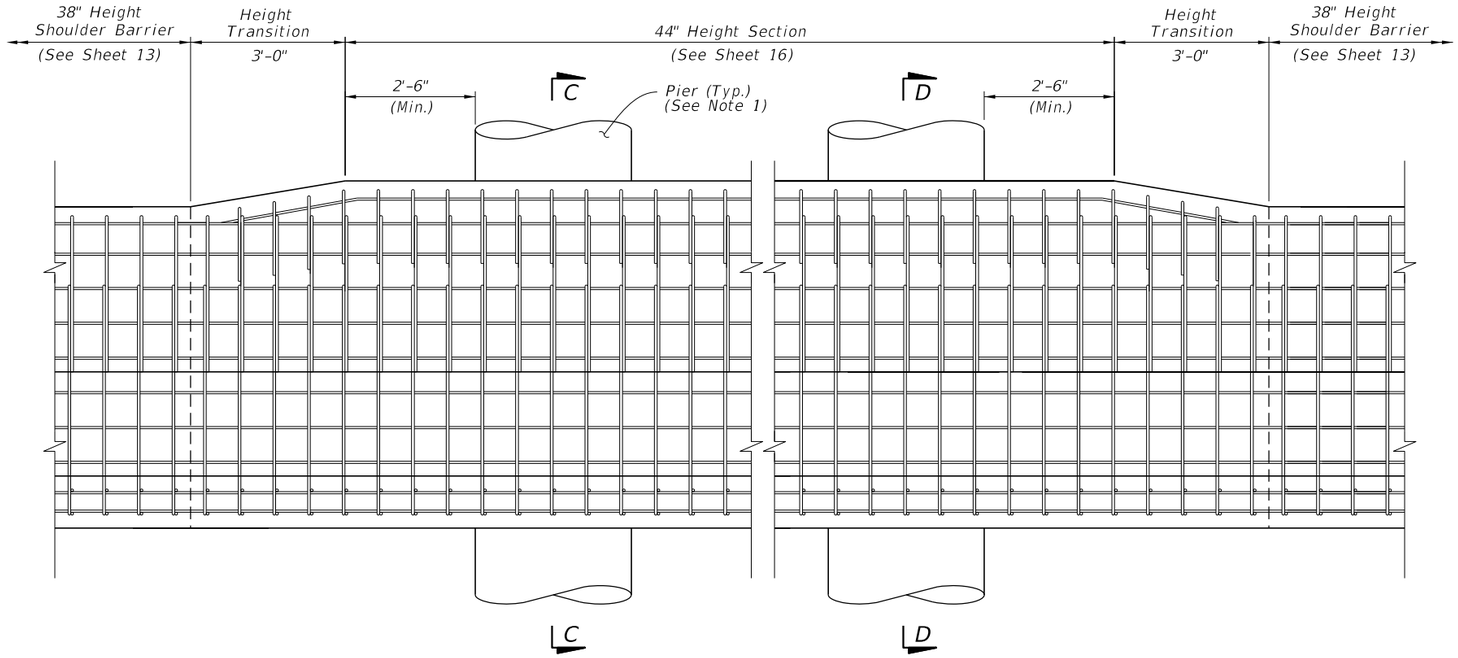
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 17 of 26



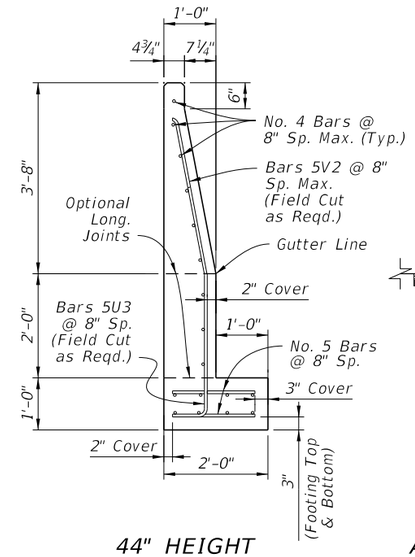
44" HEIGHT
REAR-FLUSH SECTION



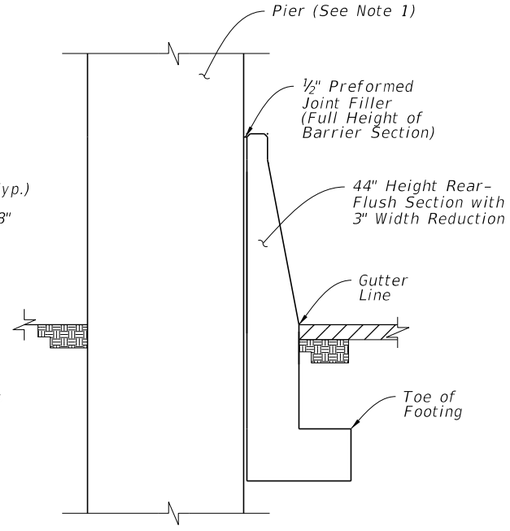
SECTION C-C
ABOVE-GROUND HAZARD
EMBEDDED IN FOOTING



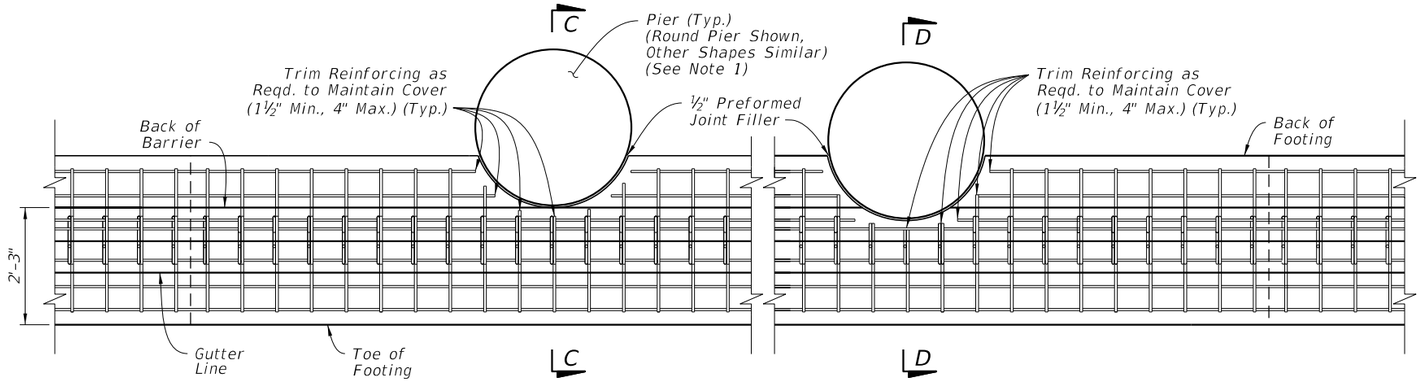
ELEVATION - ROUND PIERS EXAMPLE
(SQUARE PIERS SIMILAR)



44" HEIGHT
REAR-FLUSH SECTION
WITH 3" WIDTH REDUCTION



SECTION D-D
ABOVE-GROUND HAZARD
EMBEDDED IN FOOTING
& BARRIER



PLAN - ROUND PIERS EXAMPLE
(SQUARE PIERS SIMILAR)
(For All Longitudinal Steel Locations,
See the Section Views)

NOTE:

1. PIERS: The piers shown herein are example shapes only; see the Plans for the project-specific dimensions. The details shown herein are only for use when piers do not require protection per the AASHTO LRFD requirements. For piers requiring protection, see Index 521-002.

SHOULDER BARRIER - 44" HEIGHT REAR-FLUSH SECTION FOR REDUCED SETBACK PIER SHIELDING

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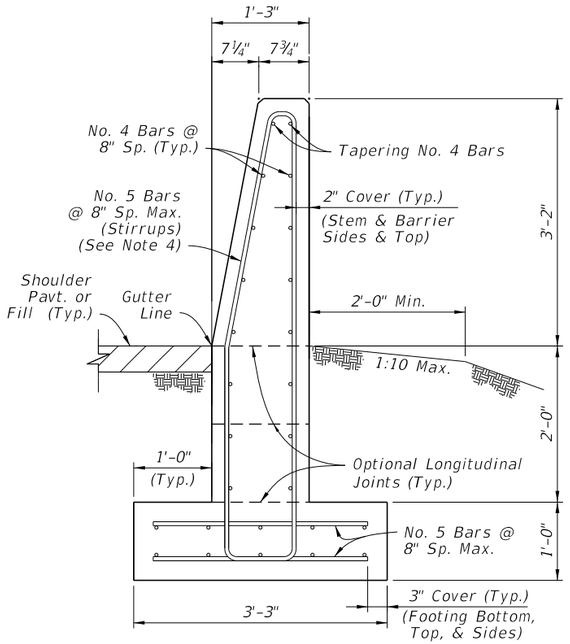
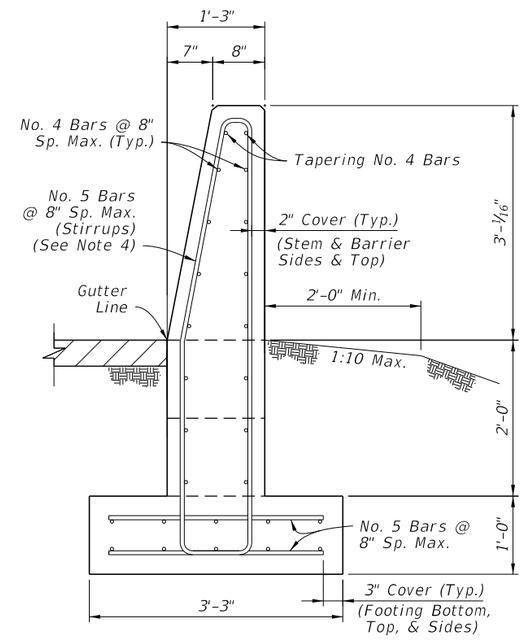
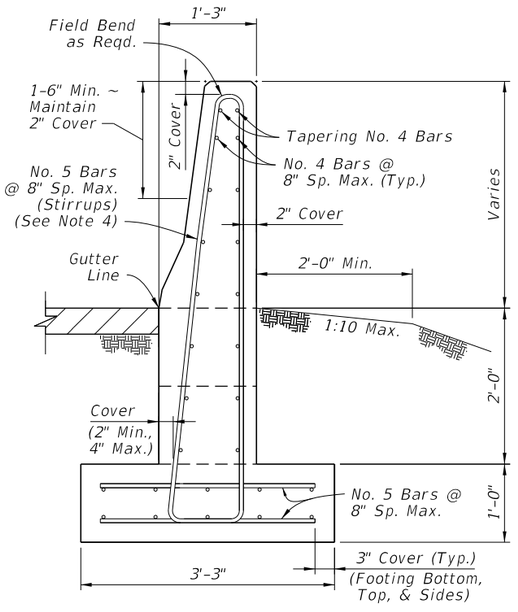
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
11/01/18					521-001	18 of 26



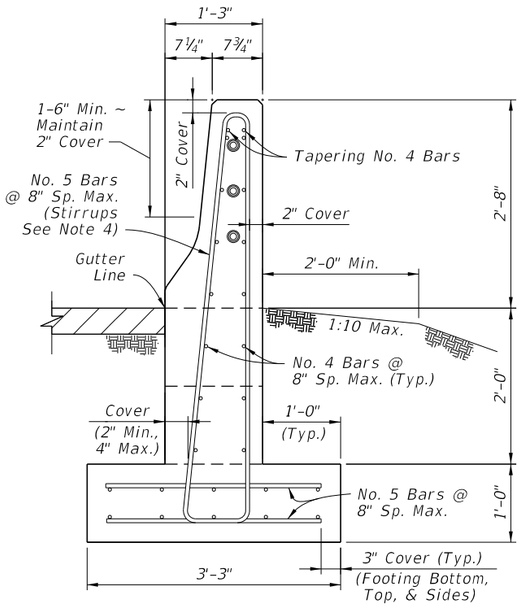
SECTION A-A
BEGIN TRANSITION - OPTION 'A'
MATCH SINGLE-SLOPE
38" HEIGHT SHOULDER BARRIER



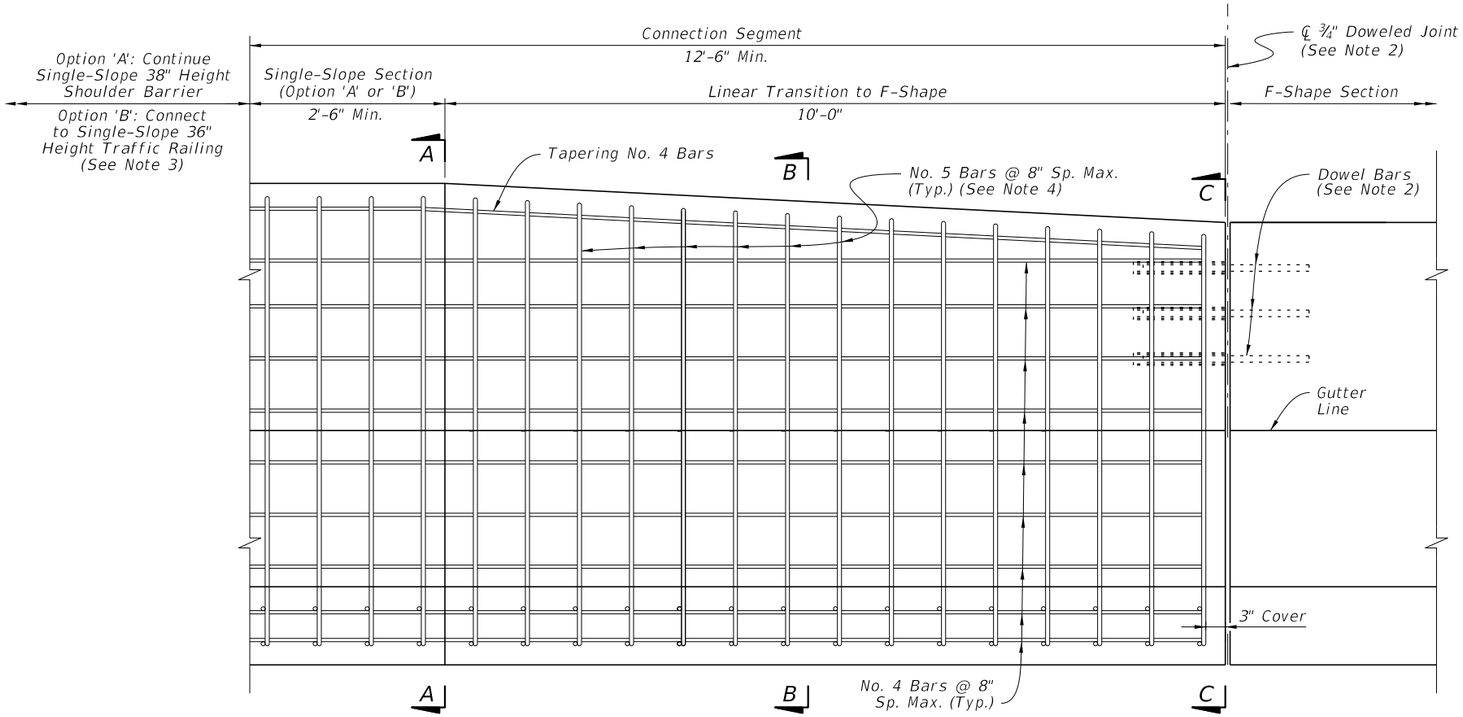
SECTION A-A
BEGIN TRANSITION - OPTION 'B'
MATCH SINGLE-SLOPE
36" HEIGHT TRAFFIC RAILING
(Bridge Applications)



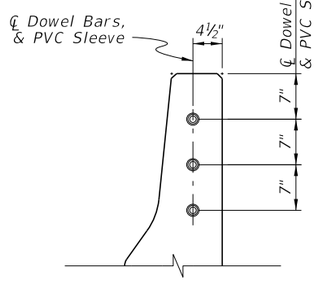
SECTION B-B
INTERMEDIATE SECTION
OF LINEAR TRANSITION



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



ELEVATION



SECTION - F-SHAPE
DOWEL PLACEMENT
(See Note 2)

NOTES:

1. GENERAL: Construct the Connection Segment as required per the Plans to connect existing F-Shape sections to Single-Slope Shoulder 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 13.
3. TRAFFIC RAILING CONNECTION: For the Option 'B' connection, use a Doweled Joint per Sheet 13 and the additional Free End Reinforcing with reduced bar spacing per Sheet 14.
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.

SHOULDER BARRIER - CONNECTION TO F-SHAPE

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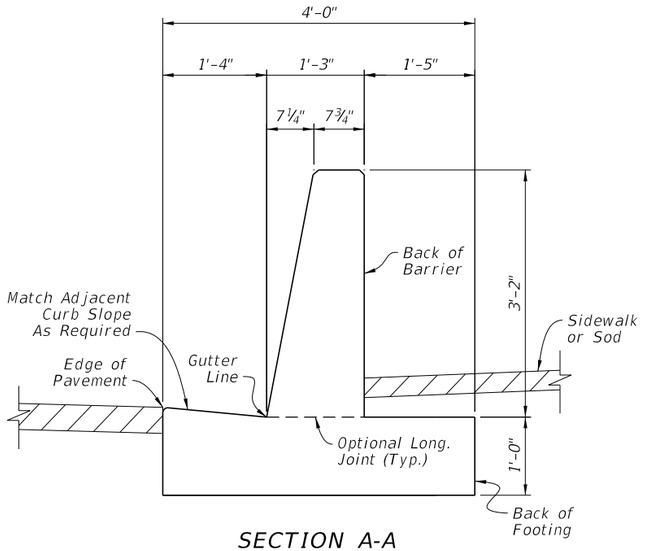
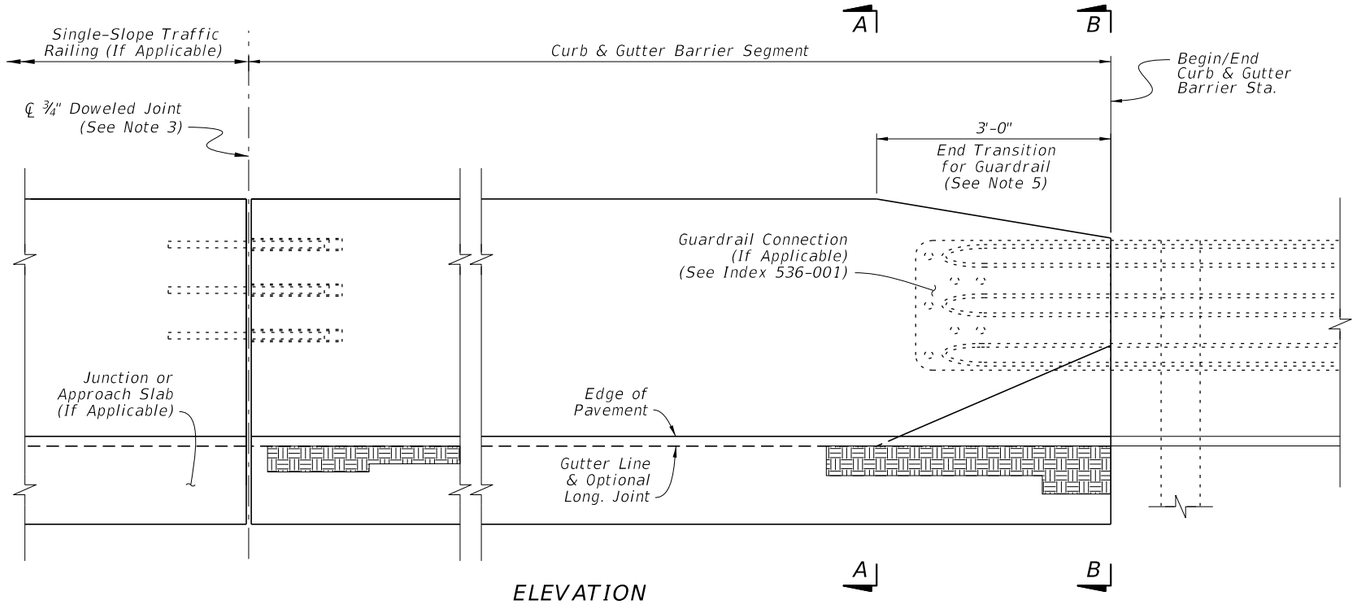
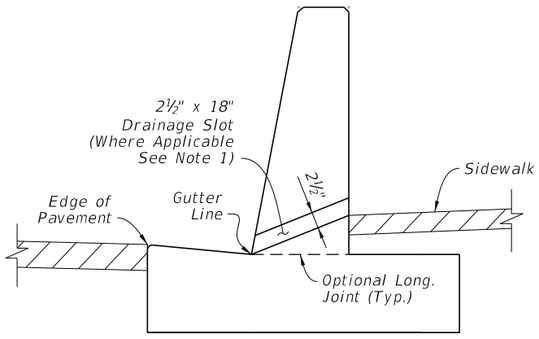


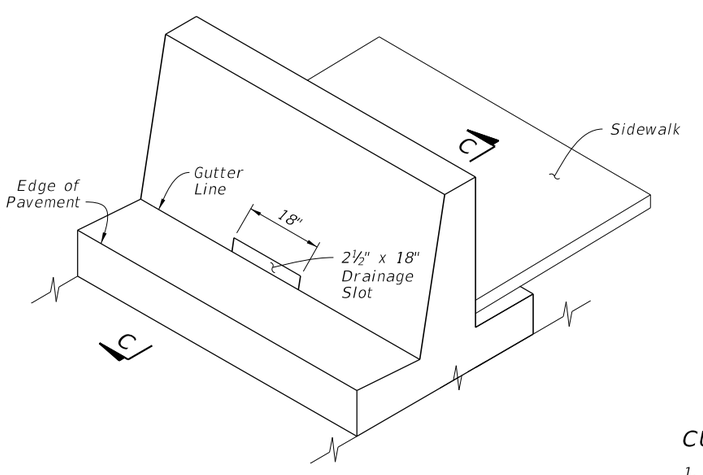
SECTION A-A
CURB & GUTTER BARRIER



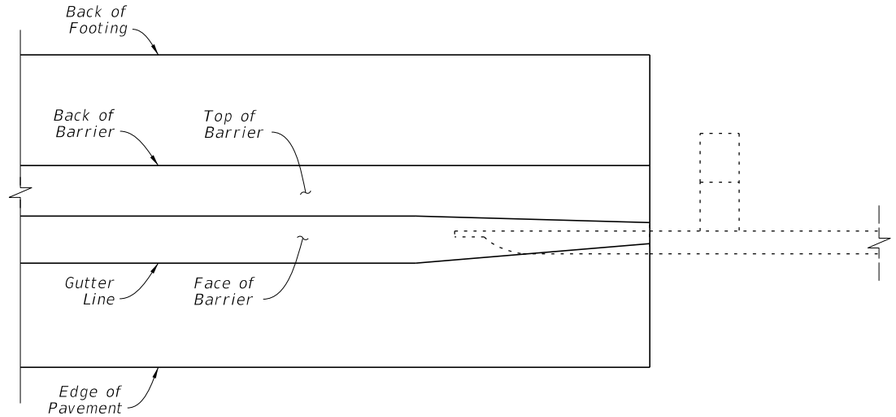
ELEVATION



SECTION C-C
CURB & GUTTER BARRIER WITH DRAINAGE SLOT



ISOMETRIC VIEW
CURB GUTTER BARRIER WITH DRAINAGE SLOT



PLAN

DRAINAGE SLOT DETAILS

DRAINAGE SLOT NOTES:

1. GENERAL: Place 2½" x 18" Drainage Slots at locations and/or spacing called for in the Plans.

2. STEEL REINFORCEMENT CONFLICT: When the Drainage Slot encounters a conflict with reinforcing steel, shift or cut the reinforcing steel to provide 2½"(± ½") 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).

CURB AND GUTTER BARRIER NOTES:

1. SECTION VIEWS: For additional Views A-A and B-B, see Sheet 21.

2. EXPANSION JOINTS: Place ½" width transverse expansion joints through the barrier and footing spaced at 100-foot maximum intervals. On both sides of each joint, use the Free End Reinforcing bar spacing per Sheet 21.

3. DOWELED JOINTS: See the General Notes on Sheet 1 for usage of joint types. Where required, install ¾" Doweled Joints as defined on Sheet 13.

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

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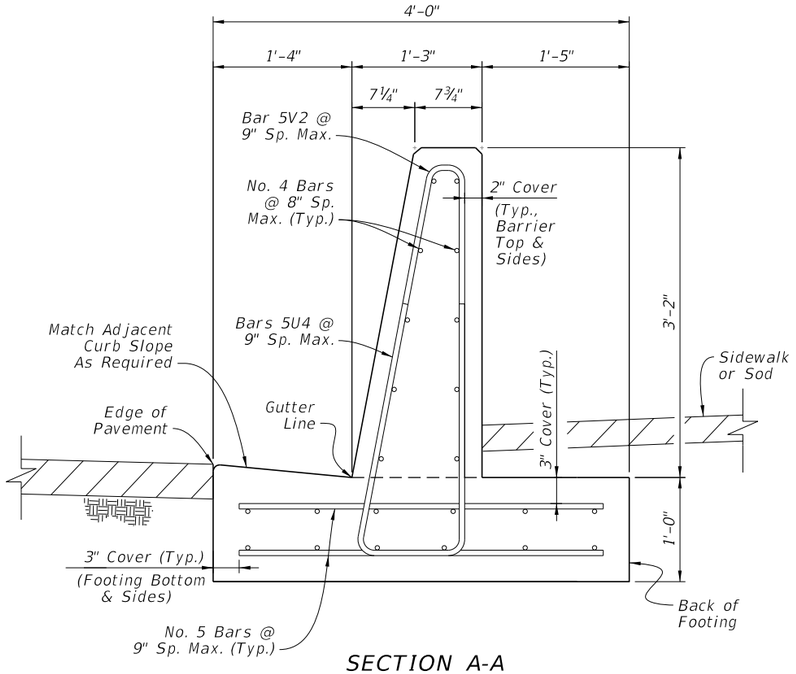
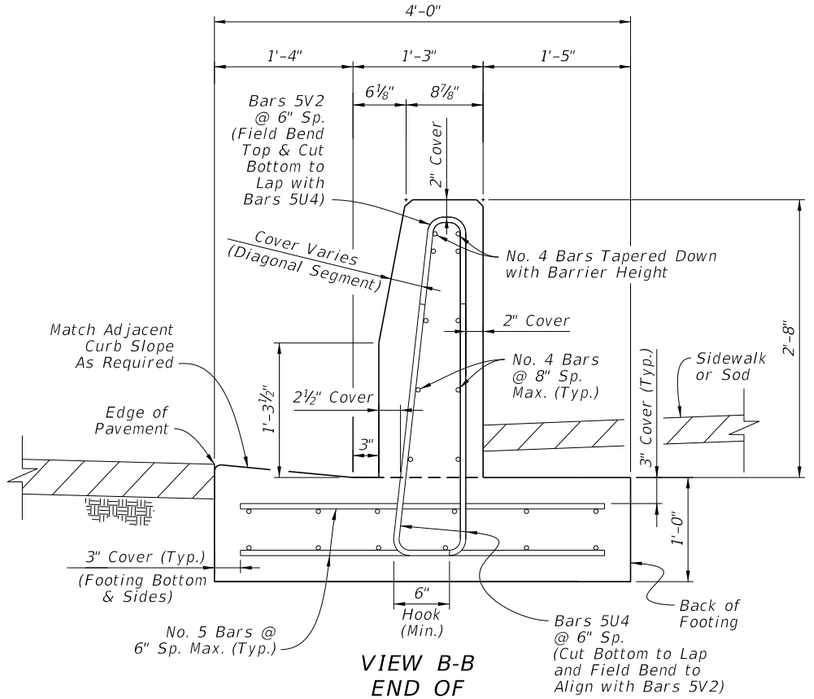
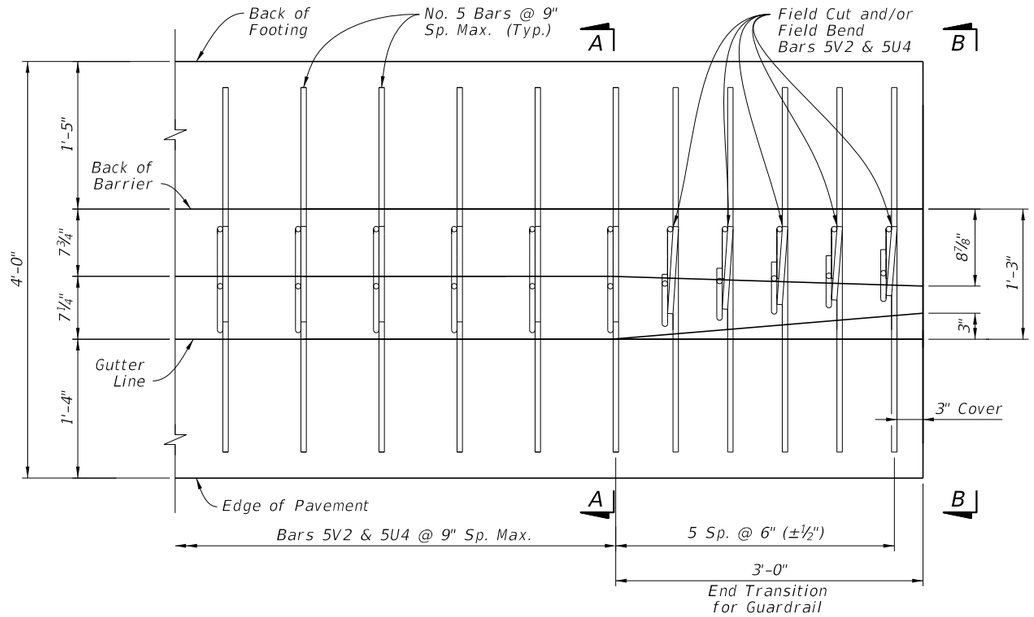


SECTION A-A
CURB & GUTTER
BARRIER

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



VIEW B-B
END OF
TRANSITION
FOR GUARDRAIL



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

NOTES:

1. *GENERAL: Work with the Plan and Elevation Views on Sheet 20.*
2. *FREE END REINFORCING: Where shown in the Plans, terminate the 38" Curb & Gutter Barrier section with a transverse vertical end face. Reduce the spacing of Bars 5V2 and 5U4 to 6" for 5 Spaces, placed with 3" cover from the barrier's end face.*
3. *BAR BENDING DIAGRAMS: For additional details for bars 5V2 and 5U4, see the Bar Bending Diagrams on Sheet 26.*

CURB AND GUTTER BARRIER - REINFORCING DETAILS

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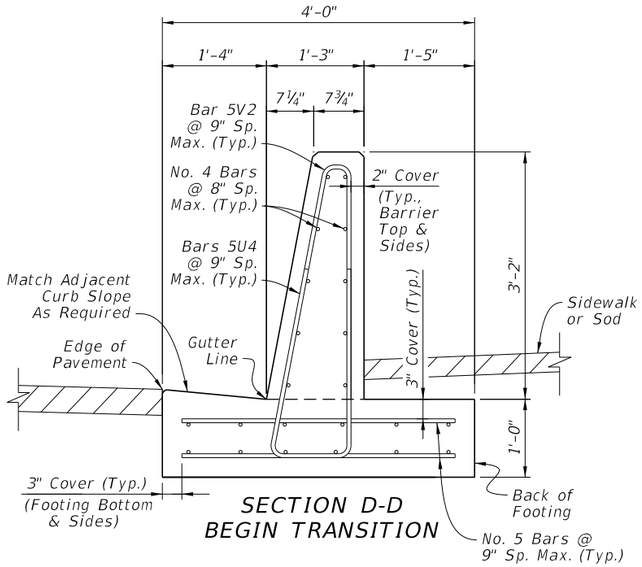
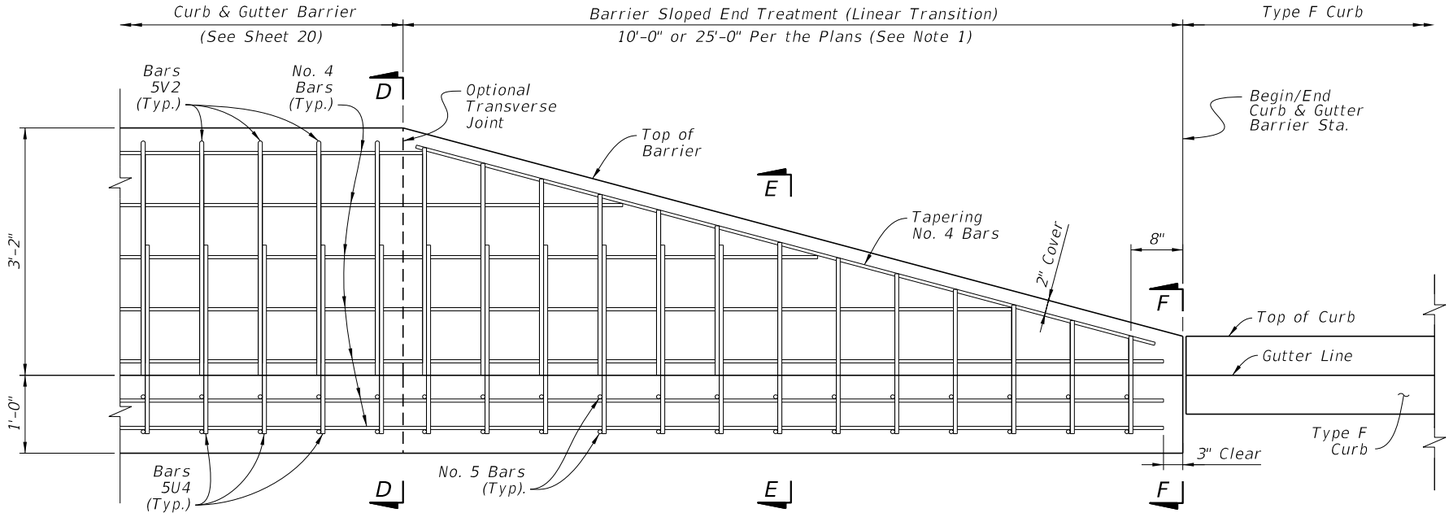
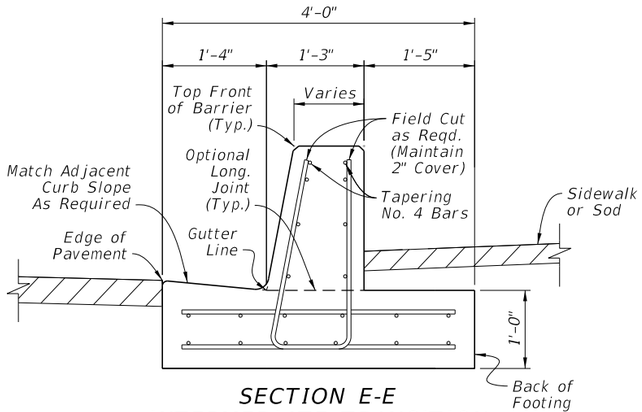


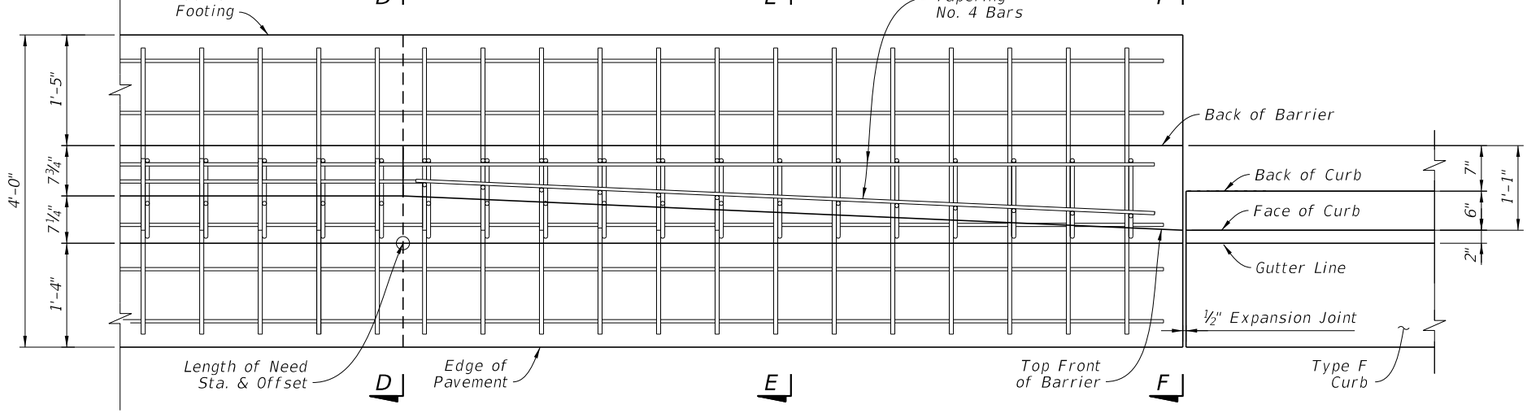
SECTION D-D
BEGIN TRANSITION



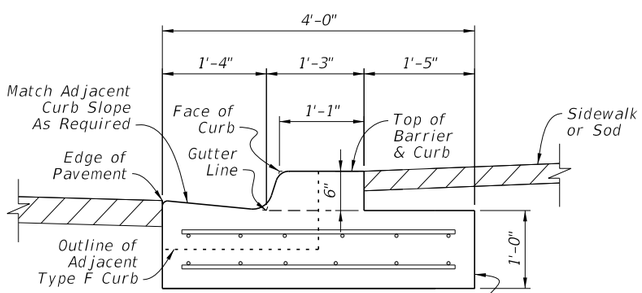
ELEVATION - CURB AND GUTTER BARRIER
SHOWING SLOPED END TREATMENT
(Approach and Trailing
End Similar by Opposite Hand)



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



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



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

NOTES:

1. GENERAL: Install a Sloped End Treatment only where called for in the Plans, using either a 10'-0" length or 25'-0" length treatment as specified in the Plans. The 10'-0" length option is shown herein, while the 25'-0" length option requires additional trimmed Bars 5U4 & 5V2 at the same 9" longitudinal spacing.

2. BAR BENDING DIAGRAMS: For additional details on Bars 5V2 & 5U4, see the Bar Bending Diagrams on Sheet 26.

CURB AND GUTTER BARRIER -
SLOPED END TREATMENT

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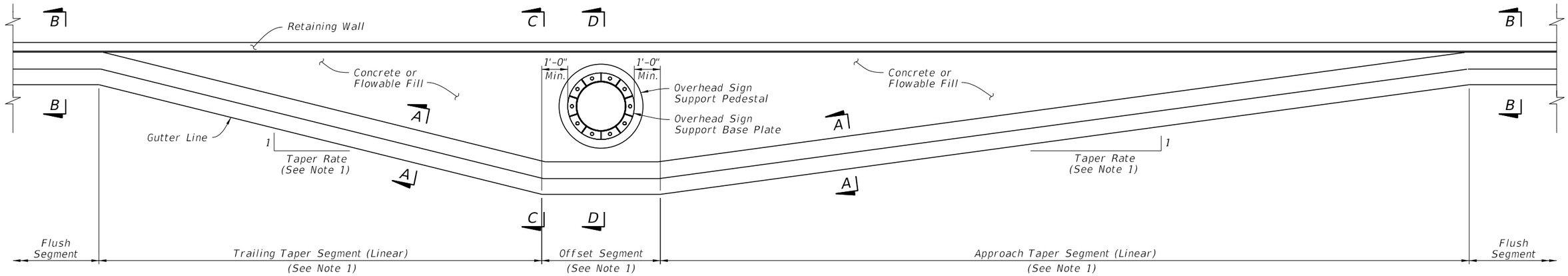
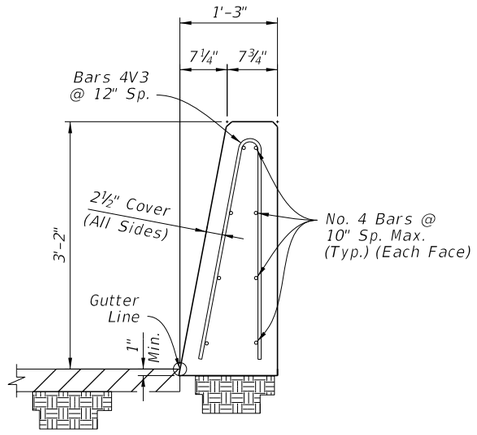
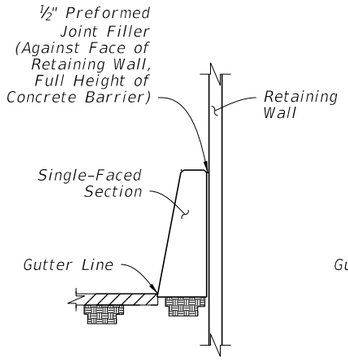
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
11/01/18						521-001	22 of 26



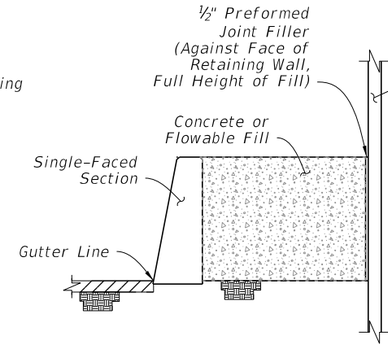
PLAN
(See Section A-A for Barrier Reinforcing)



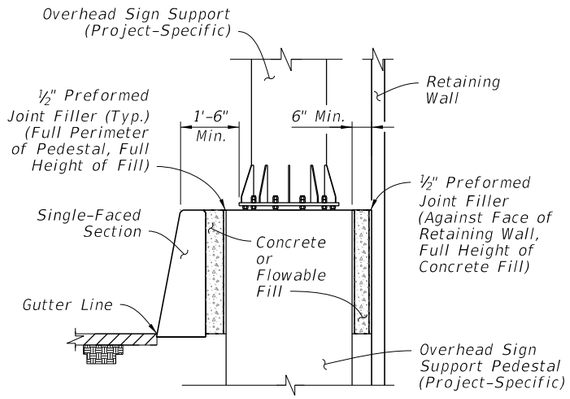
SECTION A-A
38" HEIGHT
SINGLE-FACED SECTION
(Reverse Side Similar by Opposite Hand)



SECTION B-B
FLUSH
SEGMENT



SECTION C-C
OFFSET
SEGMENT



SECTION D-D
OVERHEAD SIGN
SUPPORT

NOTES:

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.

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

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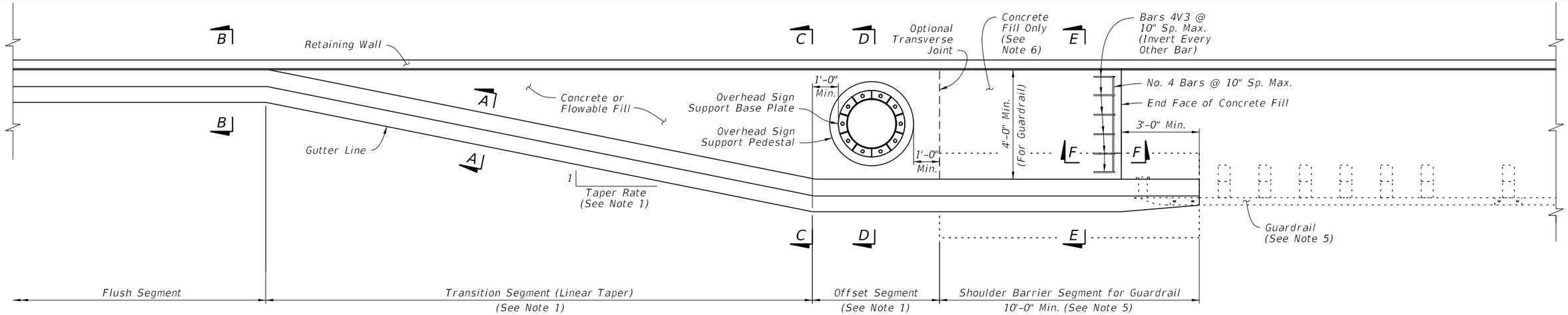
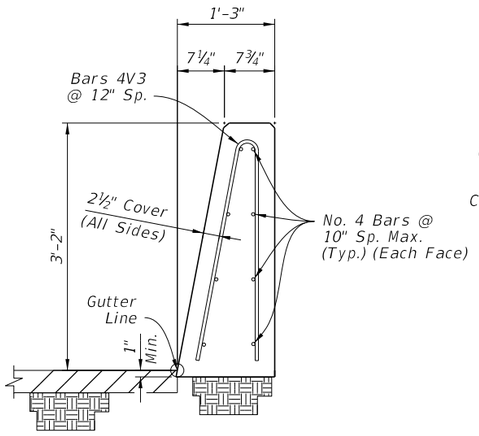
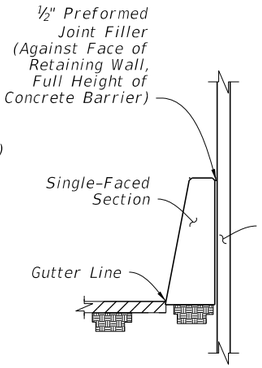
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX	SHEET
11/01/18					521-001	23 of 26



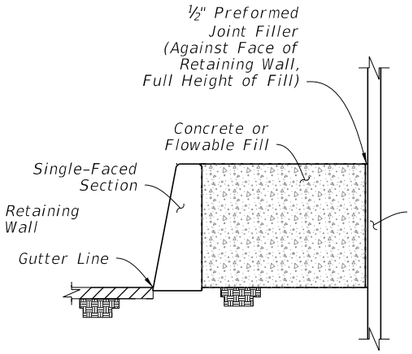
PLAN
(See Section A-A for Barrier Reinforcing)



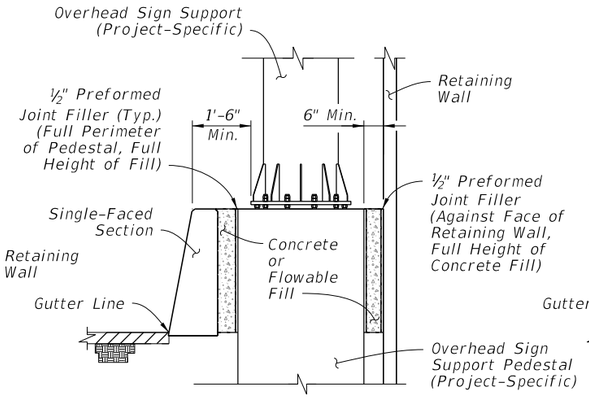
SECTION A-A
38" HEIGHT
SINGLE-FACED SECTION
(Reverse Side Similar by Opposite Hand)



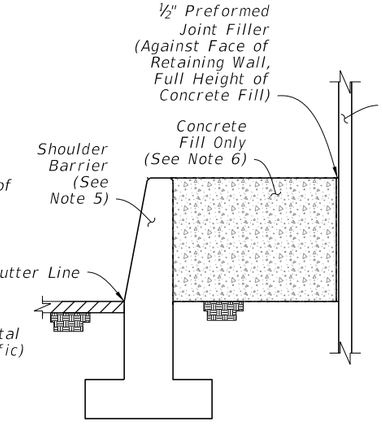
SECTION B-B
FLUSH
SEGMENT



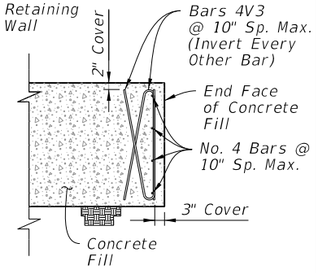
SECTION C-C
OFFSET
SEGMENT



SECTION D-D
OVERHEAD SIGN
SUPPORT



SECTION E-E
SHOULDER BARRIER
SEGMENT FOR
GUARDRAIL



SECTION F-F
CONCRETE FILL
END FACE

NOTES:

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. CONNECTIONS TO DIFFERENT CONCRETE BARRIER SECTIONS: Connect to aligning barrier sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections or has a full lap splice with the adjacent section's longitudinal steel.

4. FREE ENDS: Where shown in the Plans, terminate the Single-Faced Section with a transverse end face. Place a stirrup bar with a 3" cover from the end face. Place longitudinal bars with a 3" cover from the end face.

5. GUARDRAIL CONNECTIONS: Within the Shoulder Barrier Segment for Guardrail, install Shoulder Barrier as shown per Sheet 3, including the corresponding End Transition for Guardrail. Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001.

6. CONCRETE OR FLOWABLE FILL: Use Class NS Concrete in accordance with Specification 347 or Non-Excavatable Flowable Fill in accordance with Specification 121.

   Use only concrete fill behind the Shoulder Barrier Segment; do not use flowable fill at this location.

WALL SHIELDING BARRIER -
38" HEIGHT SECTION -
GUARDRAIL CONNECTION

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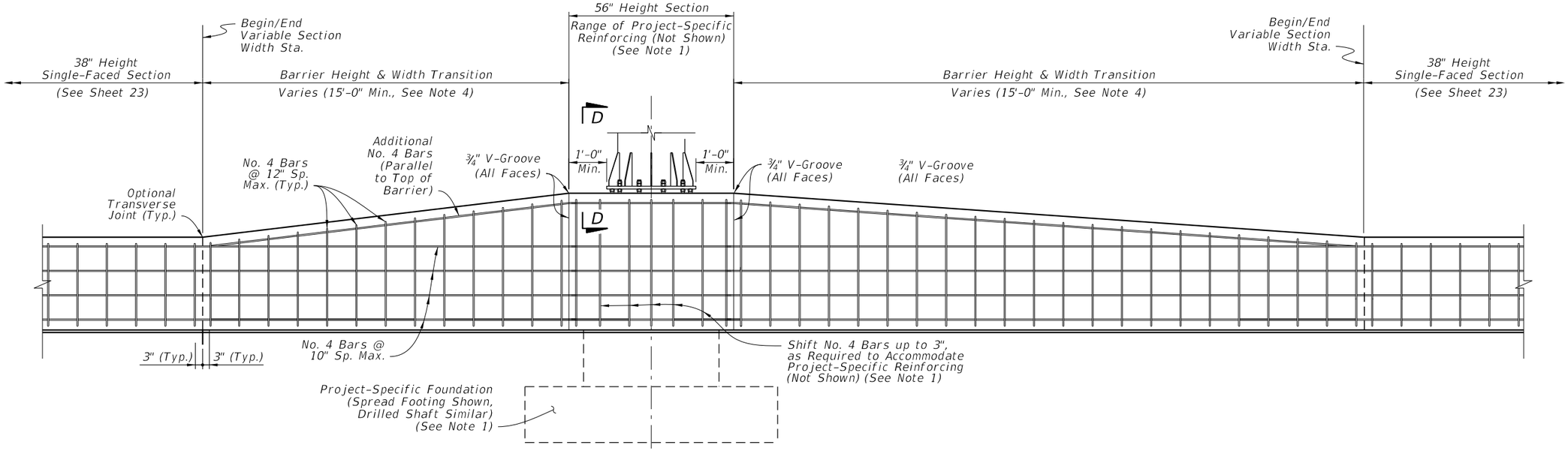
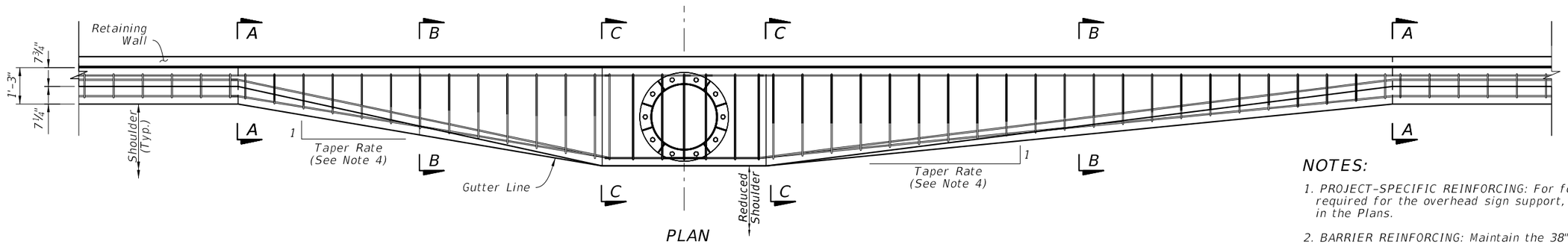
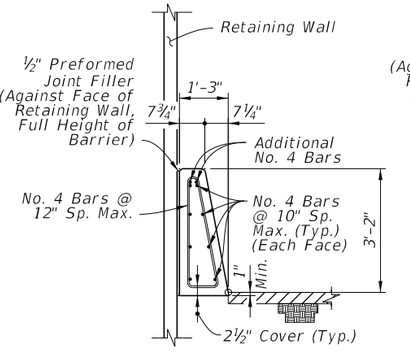
LAST REVISION 11/01/18	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER	INDEX 521-001	SHEET 24 of 26



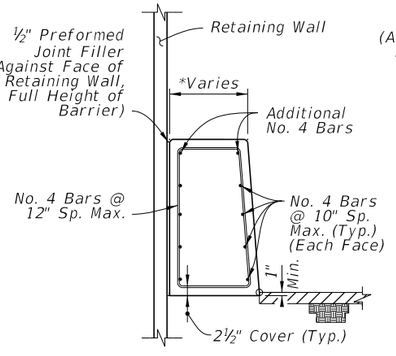
ELEVATION



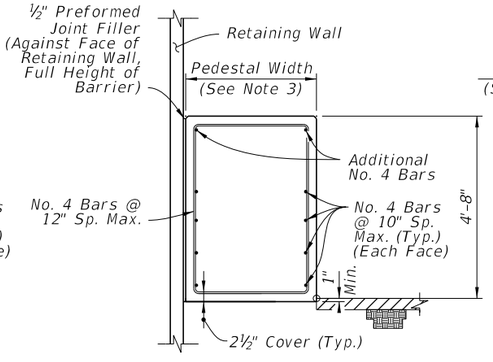
PLAN
(See Note 5)



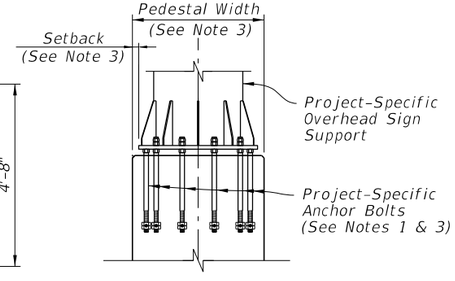
SECTION A-A
BEGIN TRANSITION



SECTION B-B
*Dimension Varies Linearly Between Section A-A and C-C



SECTION C-C
END TRANSITION
(56" Height Section)



SECTION D-D
(Reinforcing Steel Not Shown for Clarity)

NOTES:

1. PROJECT-SPECIFIC REINFORCING: For footing and barrier reinforcing required for the overhead sign support, see the project-specific design in the Plans.
2. BARRIER REINFORCING: Maintain the 38" Height Median Barrier's longitudinal steel reinforcing continuously through the barrier height transition and pedestal. Provide the Additional No. 4 Bars and taper as required to maintain a 4½" maximum cover from the top of the barrier.

   For the vertical and transverse reinforcement requirements shown in Sections A-A through C-C, 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.
3. PROJECT-SPECIFIC PEDESTAL WIDTH & SETBACK: The pedestal width is governed by the size requirements of the overhead sign support, as detailed in the Plans. Likewise, the setback distance from the sign support base to the barrier face is governed by the anchor bolt cover requirements, as defined per the Plans.
4. TRANSITION SEGMENTS: The Transition Segments shown are examples only. For the actual approach and trailing transition taper rate, length, and width, see the details in the Plans.
5. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

WALL SHIELDING BARRIER - 56" HEIGHT SECTION FOR BARRIER-MOUNTED SIGN SUPPORT SHIELDING

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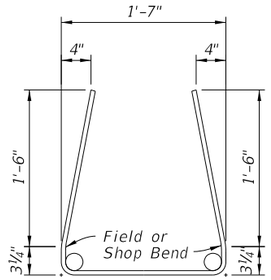
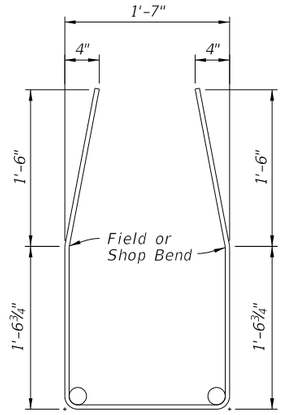
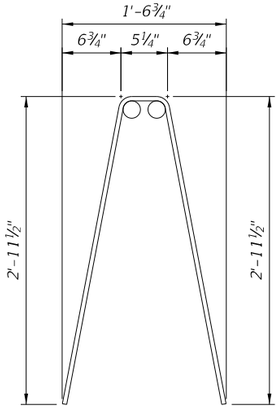
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
C1	4	3'-8"
C2	5	3'-0"
U1	4	5'-1"
U2	4	7'-8"
U3	5	9'-7"
U4	5	5'-9"
V1	4	6'-4"
V2	5	6'-3"
V3	4	5'-10"



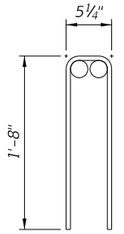
BARS 4U1



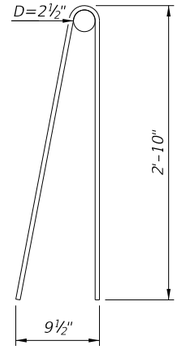
BAR 4U2



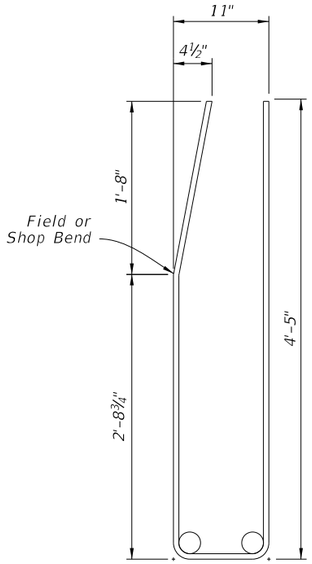
BAR 4V1



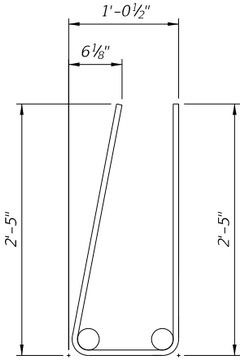
BAR 4C1



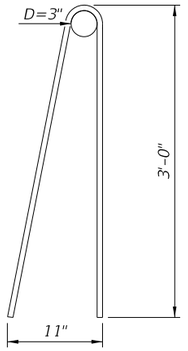
BAR 4V3



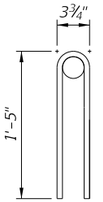
BAR 5U3



BAR 5U4



BAR 5V2



BAR 5C2

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.

REINFORCING BAR BENDING DIAGRAMS

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

GENERAL NOTES:

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

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

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

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

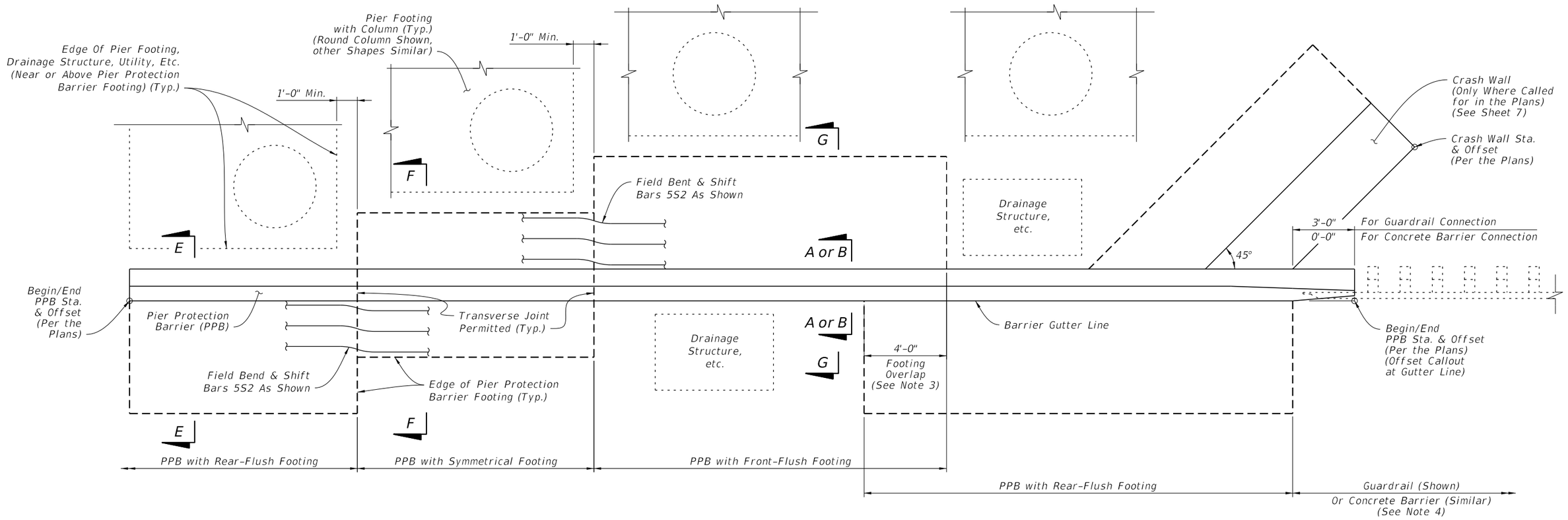
3. FOUNDATION: Compact the top 12 inches of the subgrade to at least 98% of the maximum density determined by FM 1-T 180, Method D.

4. DRAINAGE INLETS: See Index 425-031 for Adjacent Barrier Inlets, and isolate these structures from Pier Protection Barriers and Footings with 1" Preformed Joint Filler.

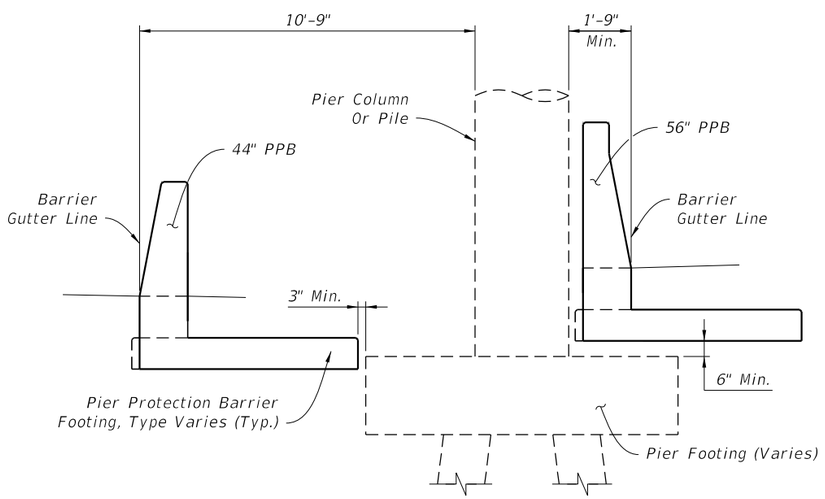
5. BARRIER END MARKERS: For all free ends of barriers that are not connected to guardrail or concrete barrier, install a Type 3 Object Marker on the end face per Specification 705.

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

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



EXAMPLE PLAN VIEW



EXAMPLE SECTION VIEW

NOTES:

1. GENERAL: The views shown herein are schematic only, showing example layouts for Pier Protection Barrier (PPB) footings and Crash Wall placement in relation to adjacent miscellaneous structures (including bridge piers, footings, drainage structures, etc.). The actual PPB footing placement depends on the project-specific configuration of adjacent structures and obstacles. For project-specific locations of PPB and adjacent features, see the Plans.

2. MINIMUM FOOTING LENGTH: The minimum length of a single footing option (i.e. Symmetrical Footing, Rear-Flush Footing, Front-Flush Footing), is 8'-0", measured longitudinally. See Sheet 6 for the footing option details.

3. FOOTING OVERLAP: When a Front-Flush Footing section connects to a Rear-Flush Footing section, a 4'-0" footing overlap is required as shown. In footing overlap segments, place all lateral steel reinforcement continuously for the entire width of the combined footing while maintaining the cover requirements per Sheet 6.

4. CONNECTING GUARDRAIL OR CONCRETE BARRIER: Connect the PPB to either Guardrail or Concrete Barrier as specified in the Plans. For additional Guardrail Details, see Sheet 3 and Index 536-001. For additional Concrete Barrier Details, see Sheet 3 and Index 521-001.

EXAMPLE LAYOUTS - FOOTING PLACEMENT AND CONNECTIONS

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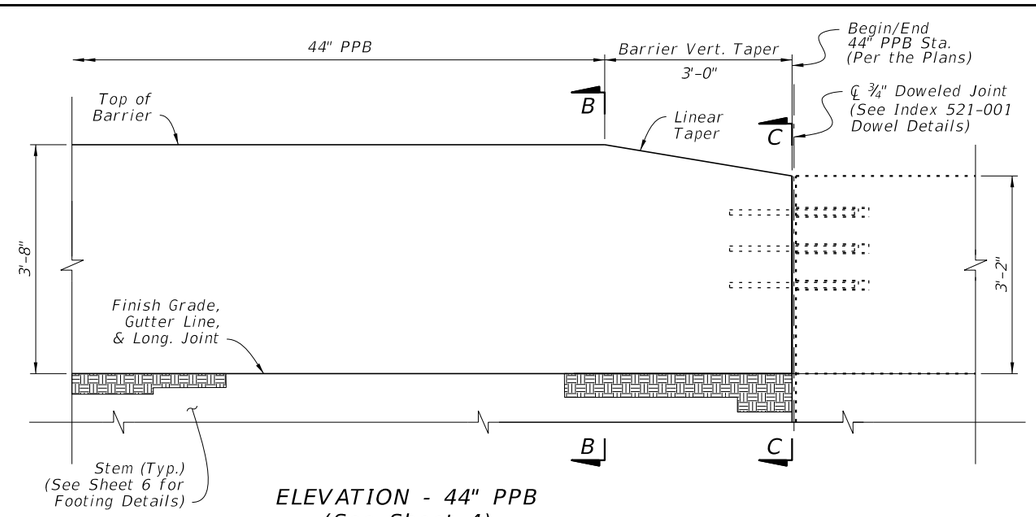
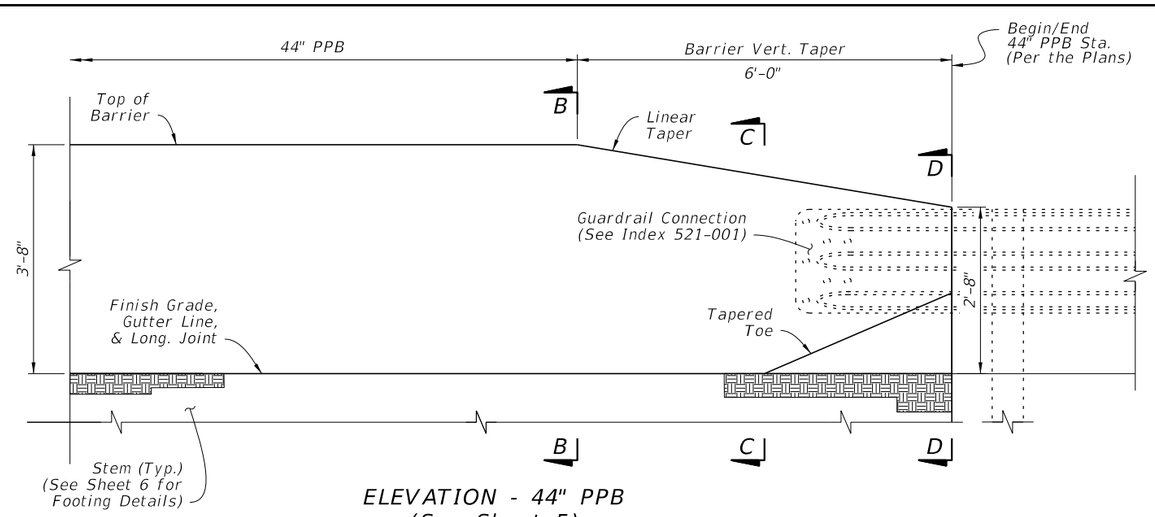
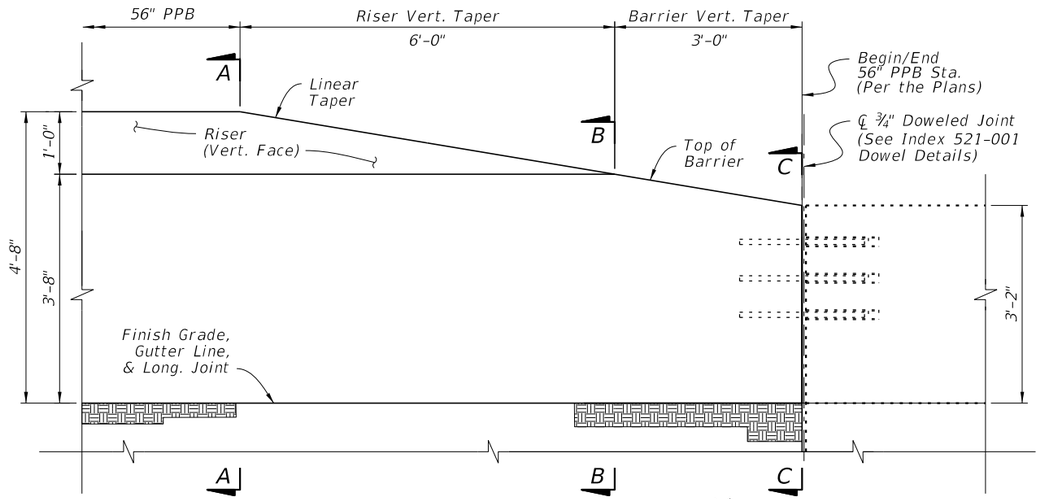


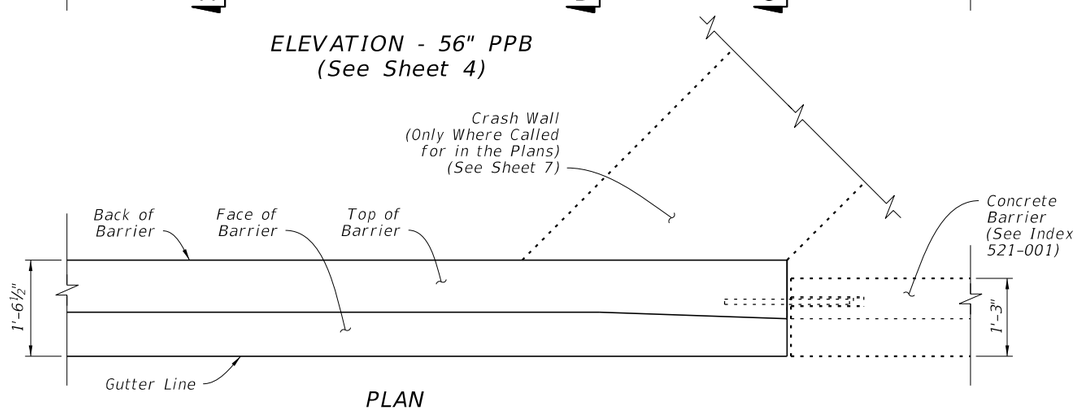
ELEVATION - 44" PPB
(See Sheet 4)



ELEVATION - 44" PPB
(See Sheet 5)

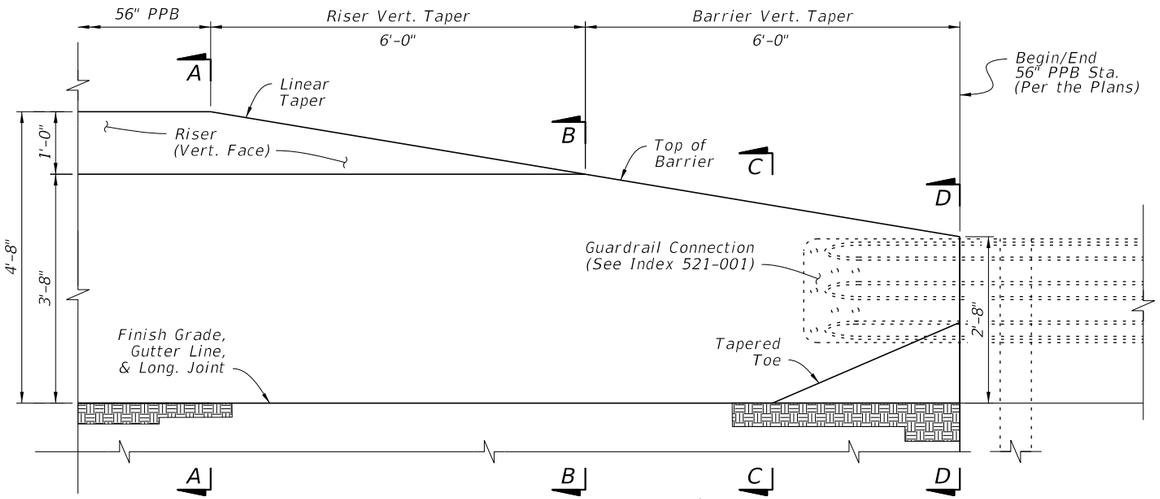


ELEVATION - 56" PPB
(See Sheet 4)

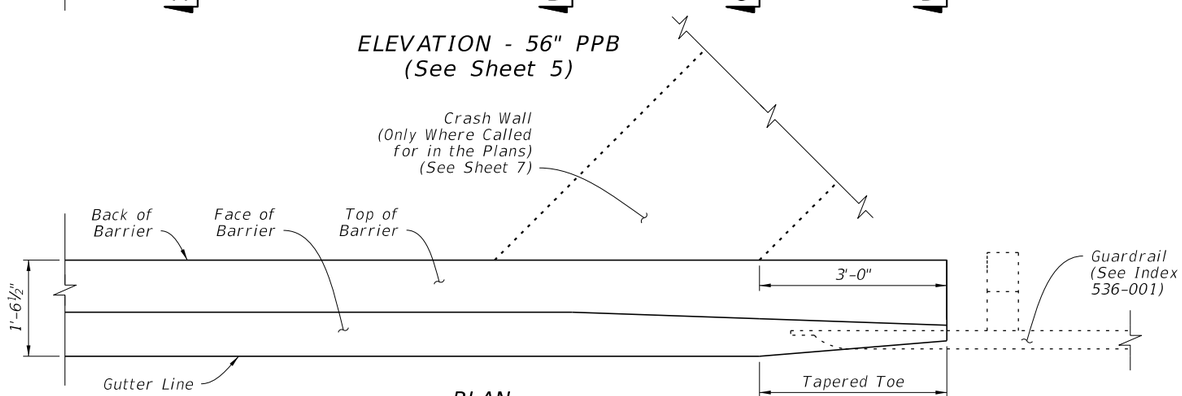


PLAN
(Footing Not Shown,
See Sheet 6 for Options)

CONNECTION TO
CONCRETE BARRIER



ELEVATION - 56" PPB
(See Sheet 5)



PLAN
(Footing Not Shown,
See Sheet 6 for Options)

CONNECTION TO
GUARDRAIL

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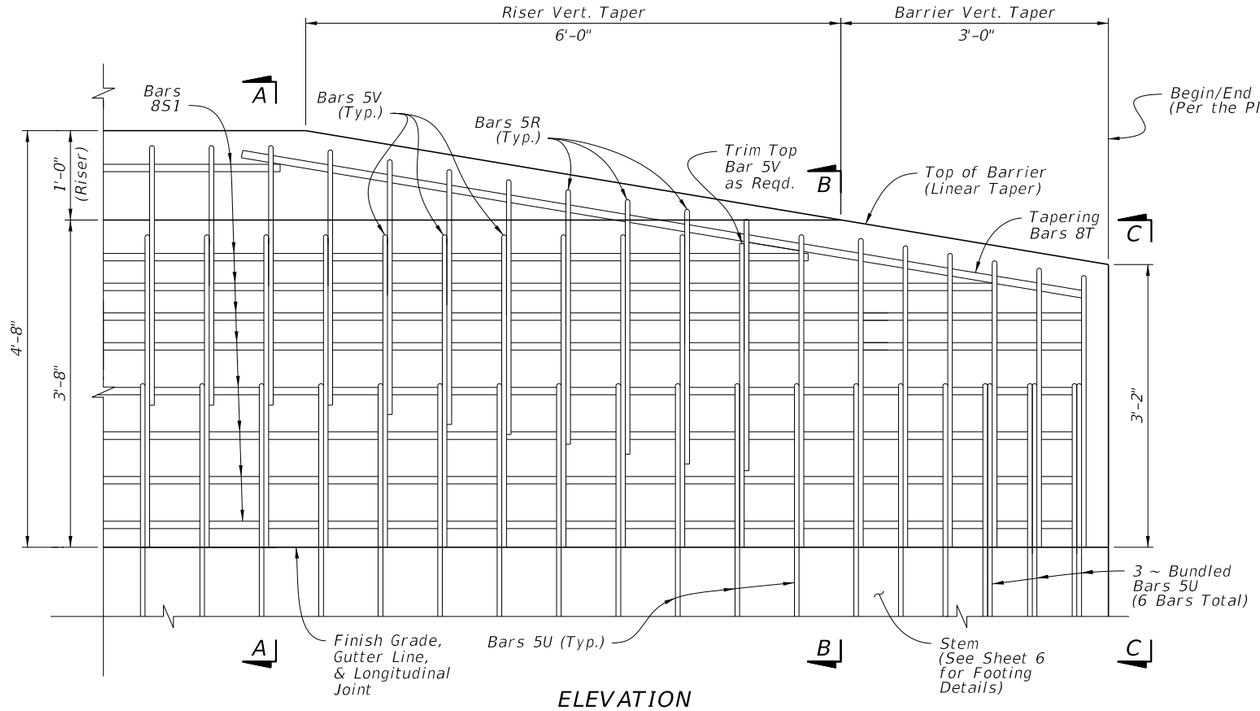
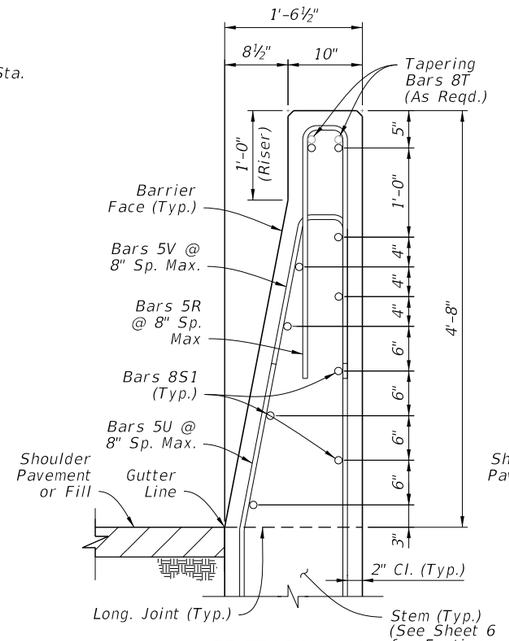
11/01/17			FY 2020-21 STANDARD PLANS	PIER PROTECTION BARRIER	521-002	3 of 8

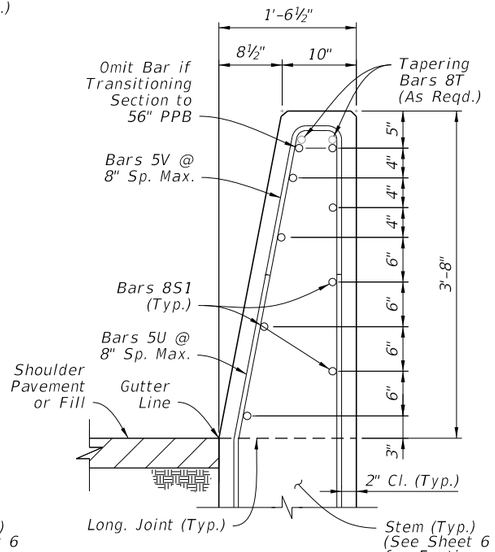


ELEVATION
(56" PPB Shown, 44" PPB Similar with 1'-0" Riser and Related Reinforcing Removed)



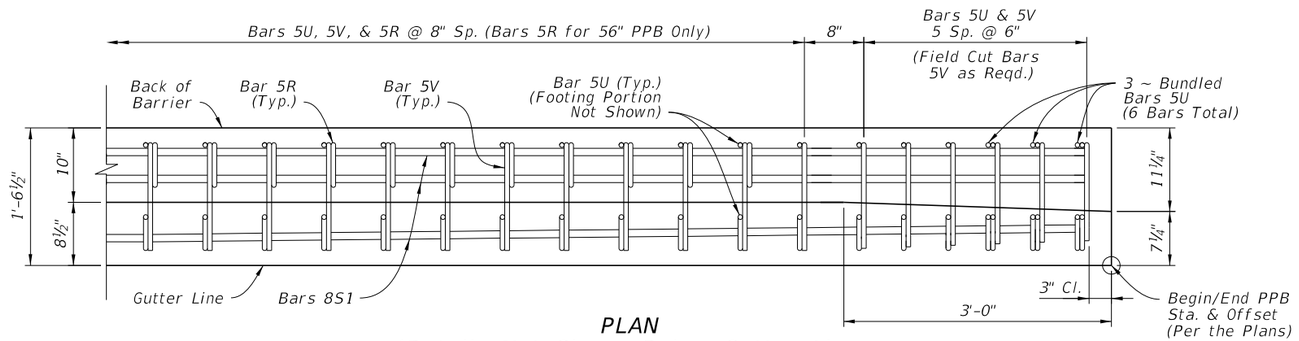
SECTION A-A
56" PPB

Concrete Qty. = 0.19 CY/FT (Above Gutter Line)
Steel Qty. = 47.7 LB/FT (Excluding Bars 5U & 8T)

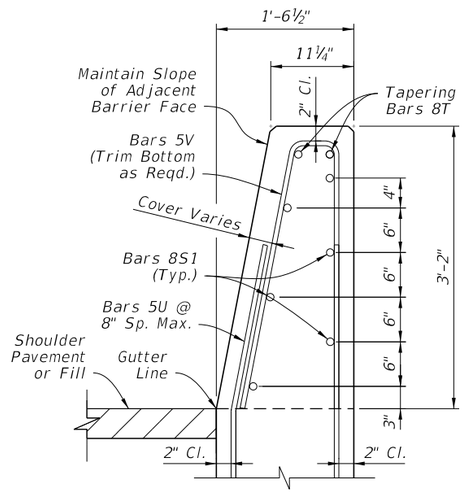


SECTION B-B
44" PPB

Concrete Qty. = 0.16 CY/FT (Above Gutter Line)
Steel Qty. = 35.7 LB/FT (Excluding Bars 5U & 8T)



PLAN
(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)



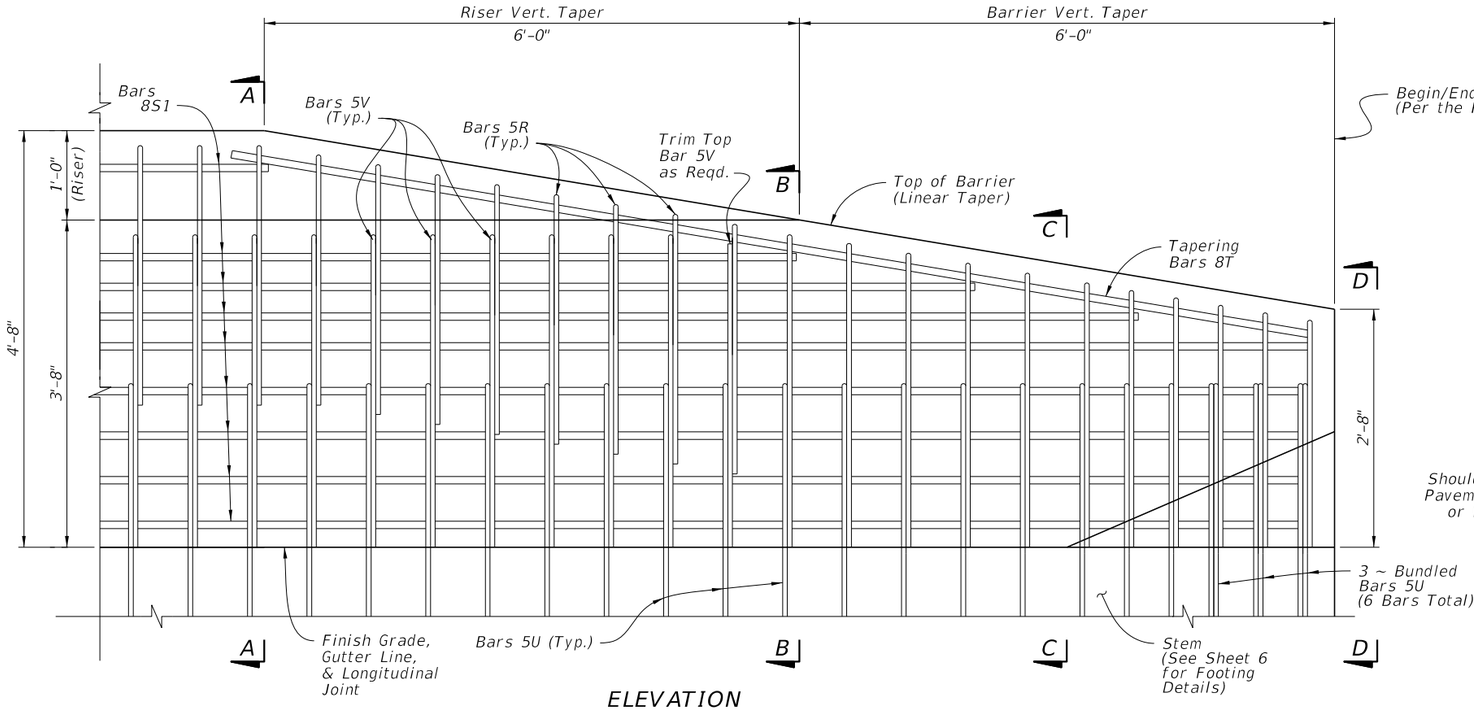
END VIEW C-C
(Connects to Adjacent Concrete Barrier, Aligned at Gutter Line)

NOTES:

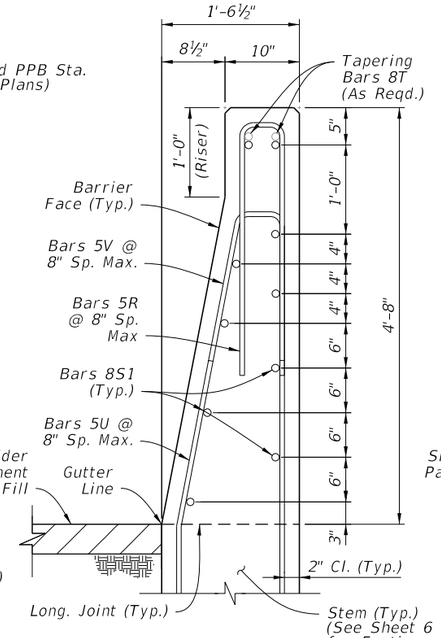
1. *GENERAL: Construct either the 56" PPB or the 44" PPB height as called for in the Plans. See Sheets 2 & 3 for additional plan and elevation details.*

2. *FOOTING OPTIONS: See Sheet 6 for the supporting stem and footing details.*

BARRIER DETAILS - CONNECTION TO CONCRETE BARRIER

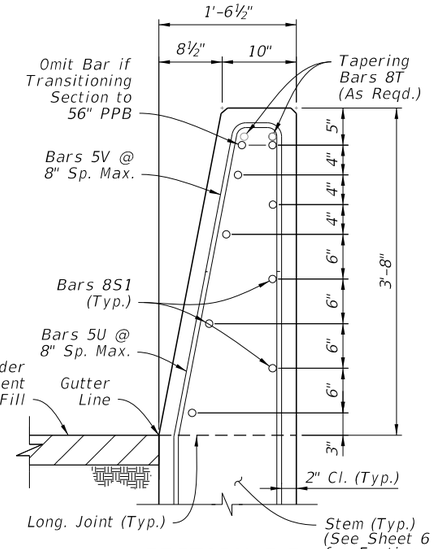


ELEVATION
(56" PPB Shown, 44" PPB Similar with 1'-0" Riser and Related Reinforcing Removed)



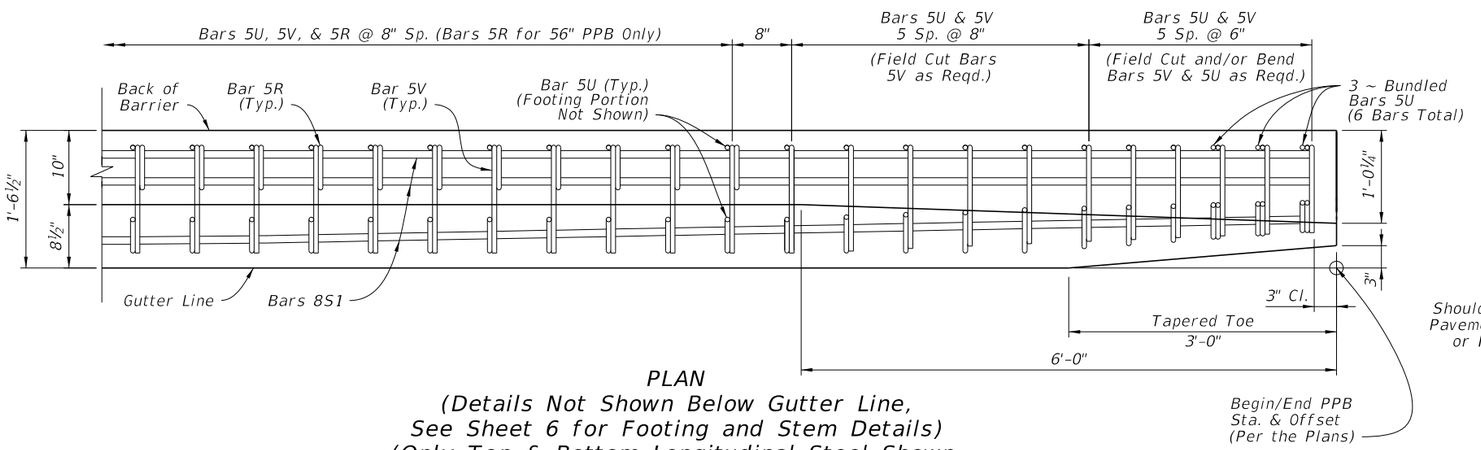
SECTION A-A
56" PPB

Concrete Qty. = 0.19 CY/FT (Above Gutter Line)
Steel Qty. = 47.7 LB/FT (Excluding Bars 5U & 8T)

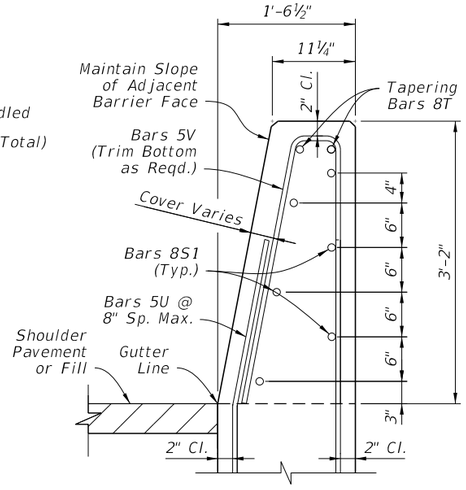


SECTION B-B
44" PPB

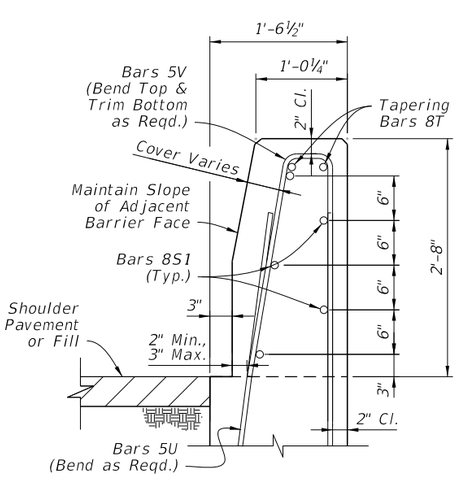
Concrete Qty. = 0.16 CY/FT (Above Gutter Line)
Steel Qty. = 35.7 LB/FT (Excluding Bars 5U & 8T)



PLAN
(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)



END VIEW C-C
(Begin Tapered Toe for Guardrail)

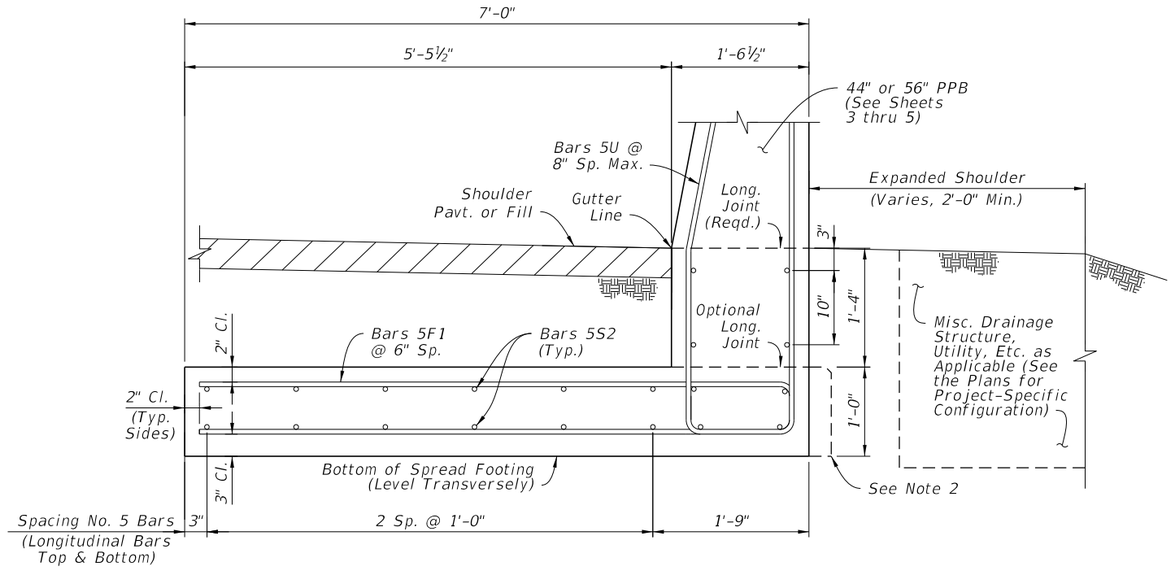


END VIEW D-D
(End Tapered Toe for Guardrail)

NOTES:

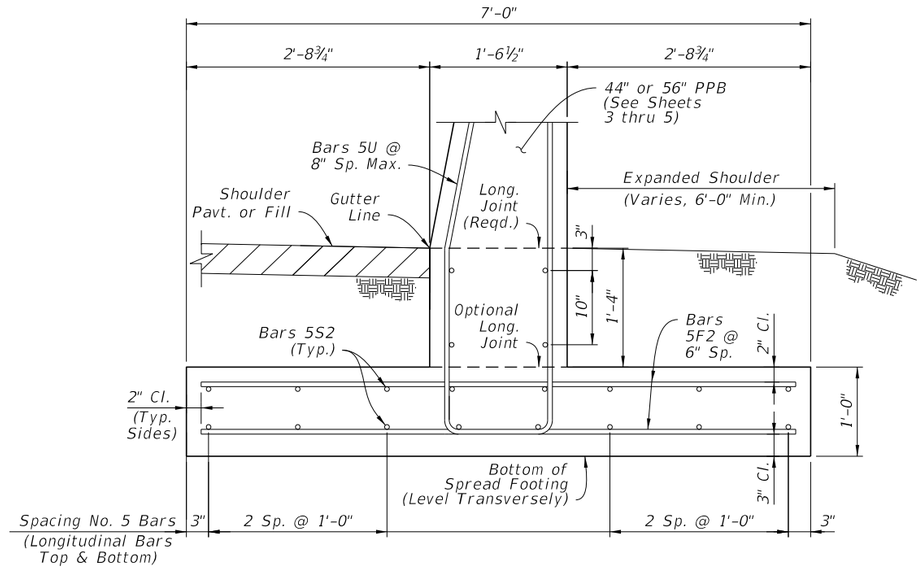
1. *GENERAL: Construct either the 56" PPB or the 44" PPB height as called for in the Plans. See Sheets 2 & 3 for additional plan and elevation details.*
2. *FOOTING OPTIONS: See Sheet 6 for the supporting stem and footing details.*

BARRIER DETAILS - CONNECTION TO GUARDRAIL



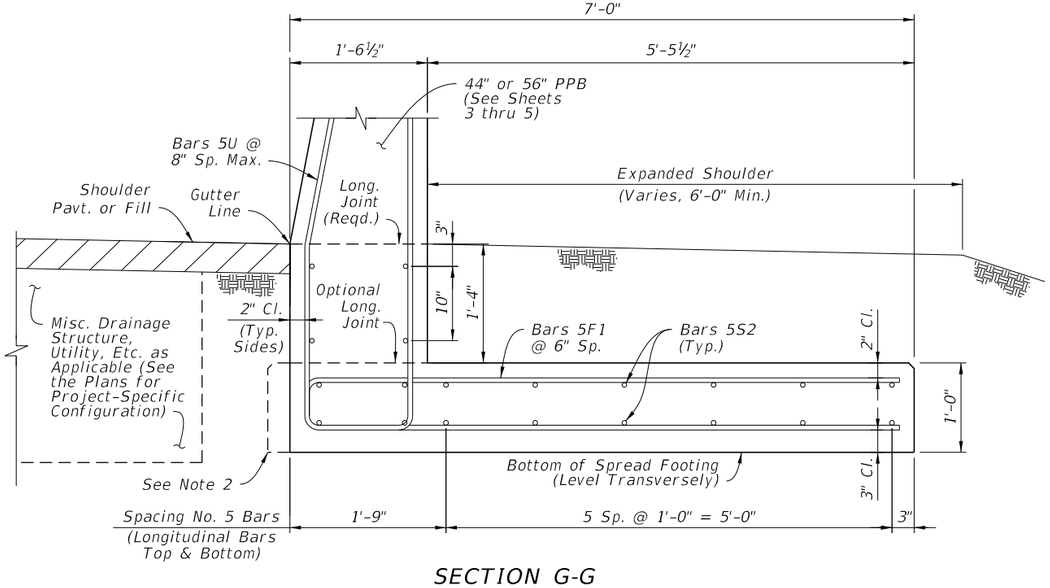
SECTION E-E
REAR-FLUSH FOOTING OPTION

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



SECTION F-F
SYMMETRICAL FOOTING OPTION

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



SECTION G-G
FRONT-FLUSH FOOTING OPTION

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

NOTES:

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

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

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

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

BARRIER FOOTING OPTIONS

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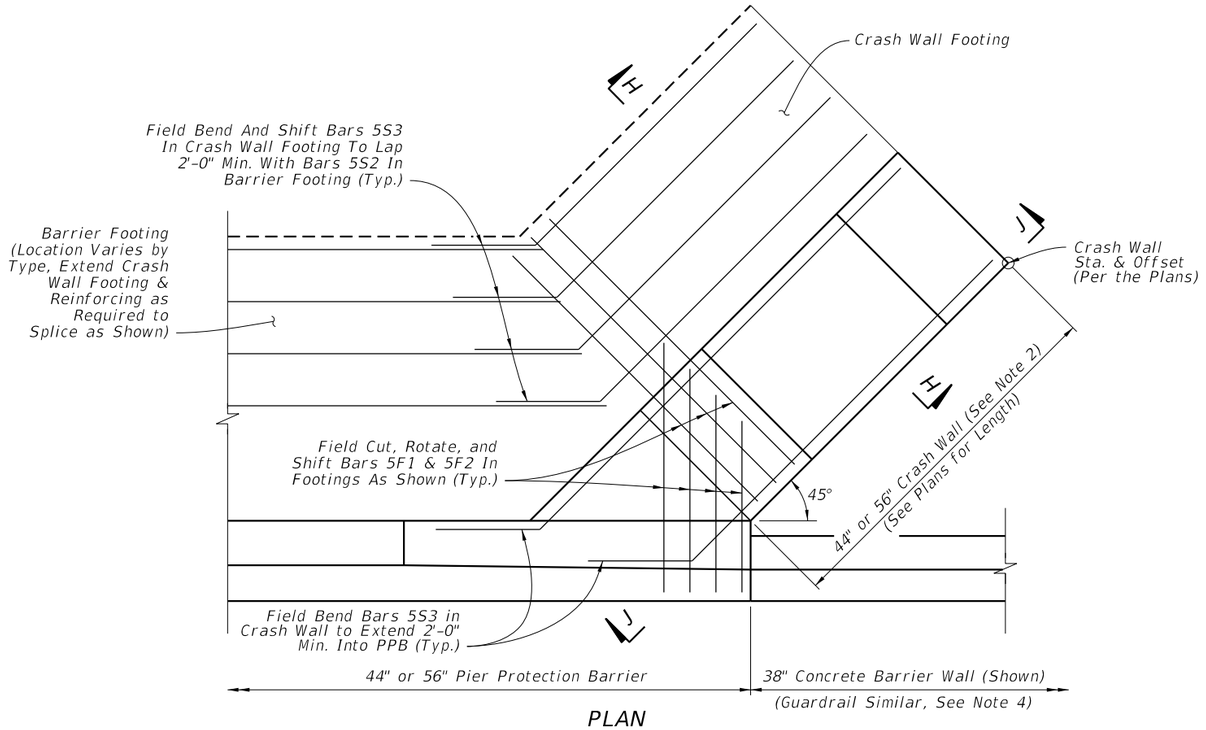
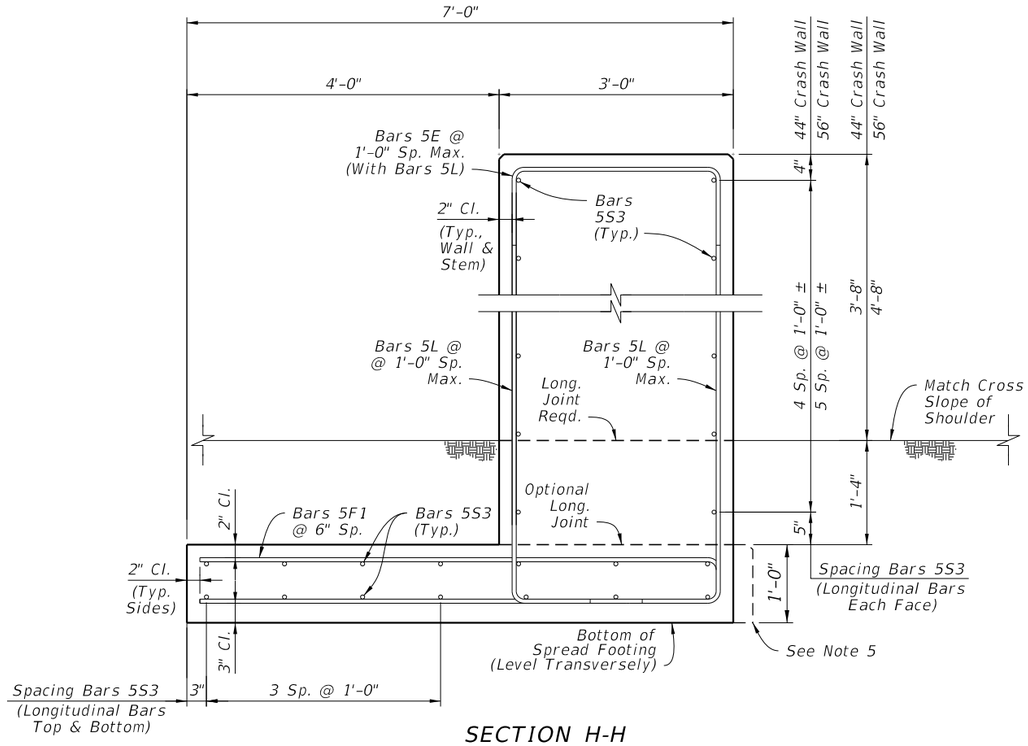
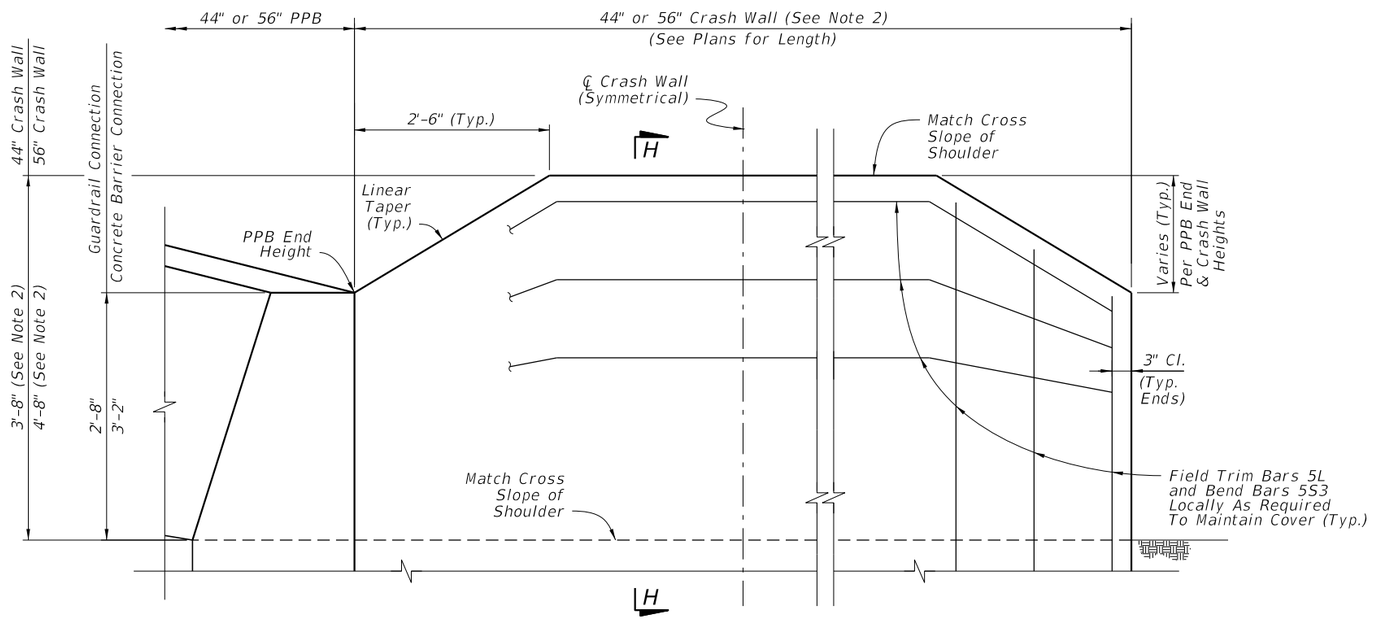


PLAN
(Schematic View - See Note 3)



SECTION H-H
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)



VIEW J-J CRASH WALL ELEVATION
(Schematic View - See Note 3)

NOTES:

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

   For additional layout details, see Sheets 2 & 3.

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

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

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

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

CRASH WALL DETAILS

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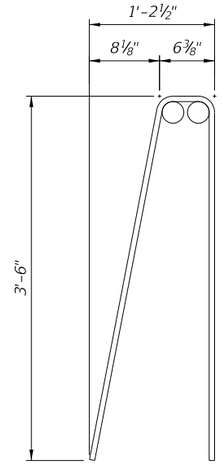
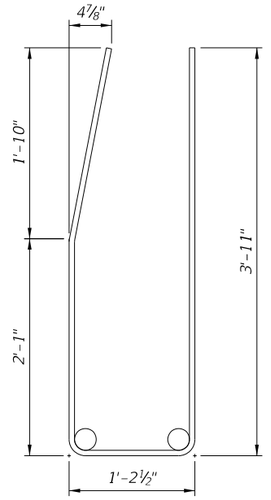
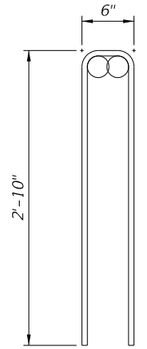
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
V	5	7'-5"
U	5	8'-11"
R	5	6'-0"
F1	5	13'-9"
F2	5	Varies (Straight)
L	5	6'-5" / 7'-5"
E	5	4'-6"
S1	8	Varies (Straight)
S2, S3	5	Varies (Straight)



BARS 5V



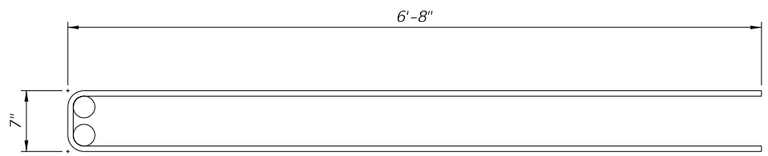
BARS 5U



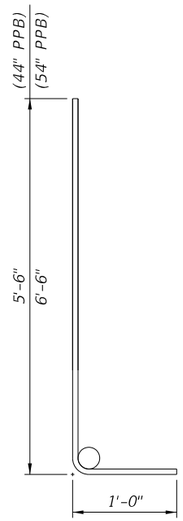
BARS 5R

NOTES:

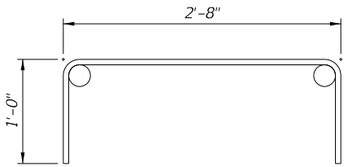
1. Work with the Standard Bar Bending Details per Index 415-001.
2. All bar dimensions in the bending diagrams are out to out.



BARS 5F1



BARS 5L



BARS 5E

BAR BENDING DIAGRAMS

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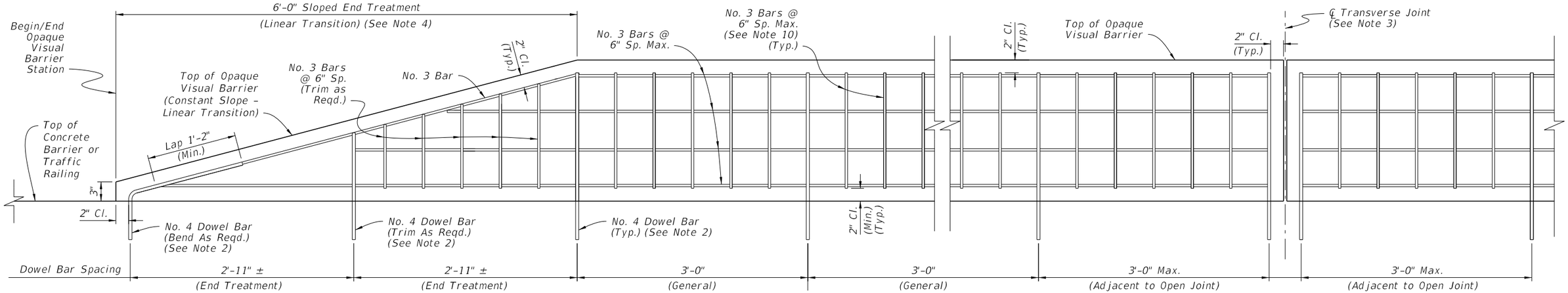
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	PIER PROTECTION BARRIER	INDEX 521-002	SHEET 8 of 8



ELEVATION VIEW - OPAQUE VISUAL BARRIER

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 Felt bond breaker as needed.

2. DOWEL BAR CONNECTION: For the embedment in Concrete Barrier or Traffic Railing concrete, dowel bars must be either cast in place for new concrete or grouted in place for existing concrete. Embed the dowel bars to the corresponding depths shown, and use the bar lengths provided in the Dowel Bar Length Table.

   At cast in place embedment locations, longitudinally shift the dowel bars only as required to avoid reinforcing steel in the Concrete Barrier or Traffic Railing.

   At grouted embedment locations, drill ⅝" Ø holes to a depth of 6¼". Use only approved non-shrink grout on the APL. Drilling through existing reinforcing steel is permitted.

3. TRANSVERSE JOINTS: Place ½" 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" (±½") from the base of the structure. Follow the same reinforcing scheme and concrete cover requirement for the Transverse Joint shown herein. See Note 7 below.

6. LARGE BARRIER-MOUNTED SIGN SUPPORTS: See Sheet 2 for details. See Note 7 below.

7. LEAVE-OUTS: OVB leave-outs are longitudinal gaps in OVB segments required to accommodate barrier-mounted signs and light pole placement. Leave-outs up to 15 feet in length are included in OVB length measurement.

8. ASYMMETRICAL CONCRETE BARRIER SECTIONS: When mounting on top of an asymmetrical Concrete Barrier section (not shown), align the centerline of the OVB with the centerline of the top face of the Concrete Barrier section.

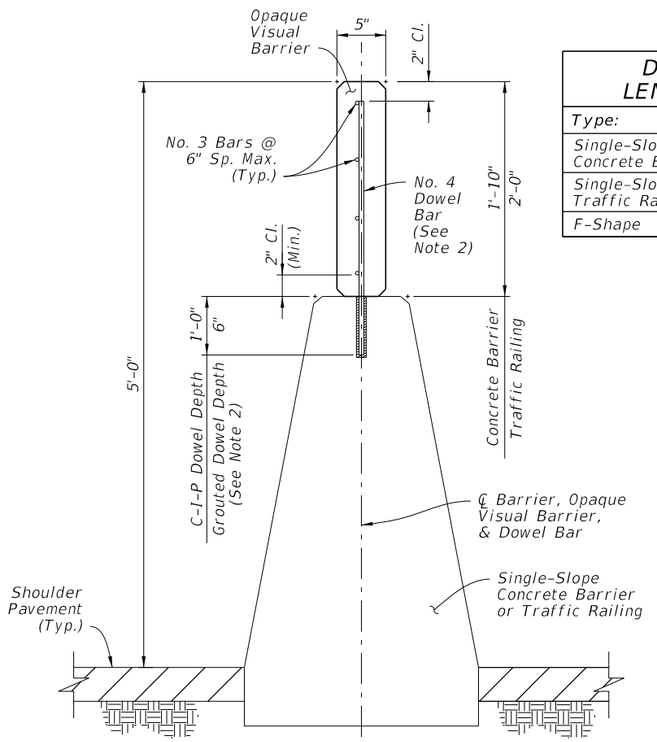
9. SPLIT CONCRETE BARRIER SECTIONS: For split Concrete Barrier sections that run separately (for vertical structures, bridges, etc.), OVB is only required on top of one of the Concrete Barrier sections. Place OVB on top of the Concrete Barrier section with the highest elevation. Longitudinally overlapping OVB runs are permitted where called for in the Plans, which are designated with overlapping Begin and End Station OVB callouts.

10. VERTICAL REINFORCING: Place vertical No. 3 bars with the spacing shown, except that No. 3 bars at the dowel bar locations may be shifted longitudinally to fit or they may be omitted at the contractor's option.

11. OPTIONAL WELDED WIRE REINFORCEMENT: With the approval of the Engineer, the No. 3 bars shown herein may be replaced with welded wire reinforcement in accordance with Specification 415. Use welded wire reinforcement of equal or greater strength than the bars being replaced; maintain the same cover requirements with equivalent or smaller spacing.

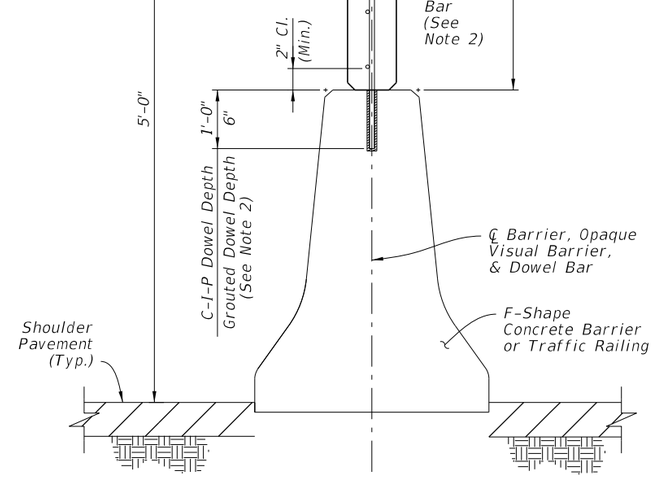
12. VARIABLE HEIGHT CONCRETE BARRIERS: See Sheet 2 for details.

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.



SECTION VIEW - OPAQUE VISUAL BARRIER FOR MEDIAN SINGLE-SLOPE CONCRETE BARRIER OR TRAFFIC RAILING

DOWEL BAR LENGTH TABLE		
Type:	Grouted	C-I-P
Single-Slope Concrete Barrier	2'-2"	2'-8"
Single-Slope Traffic Railing	2'-4"	2'-10"
F-Shape	2'-8"	3'-2"



SECTION VIEW - OPAQUE VISUAL BARRIER FOR MEDIAN F-SHAPE CONCRETE BARRIER OR TRAFFIC RAILING

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	OPAQUE VISUAL BARRIER	INDEX	SHEET
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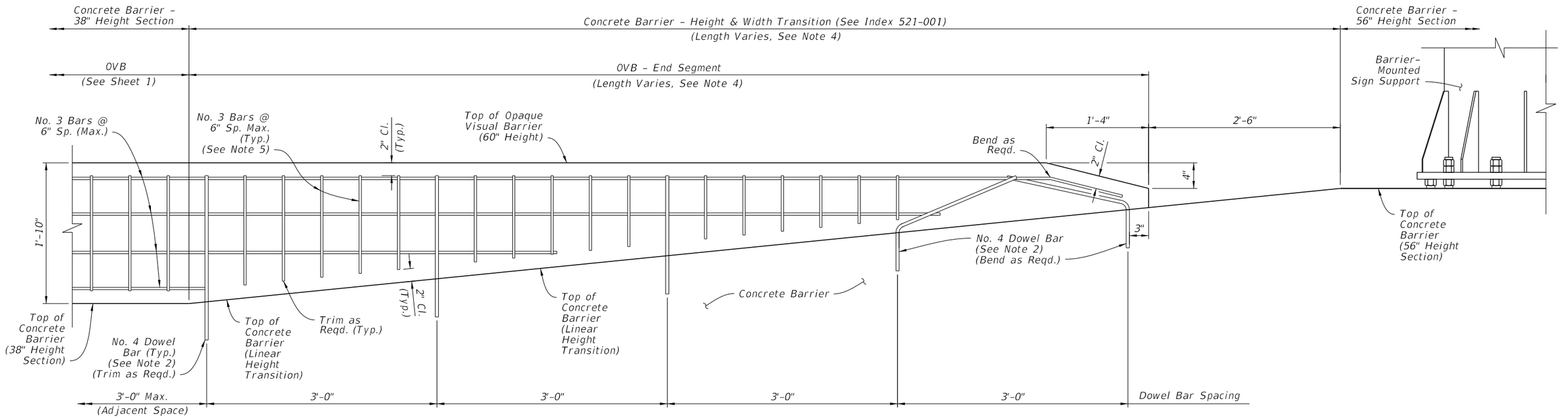
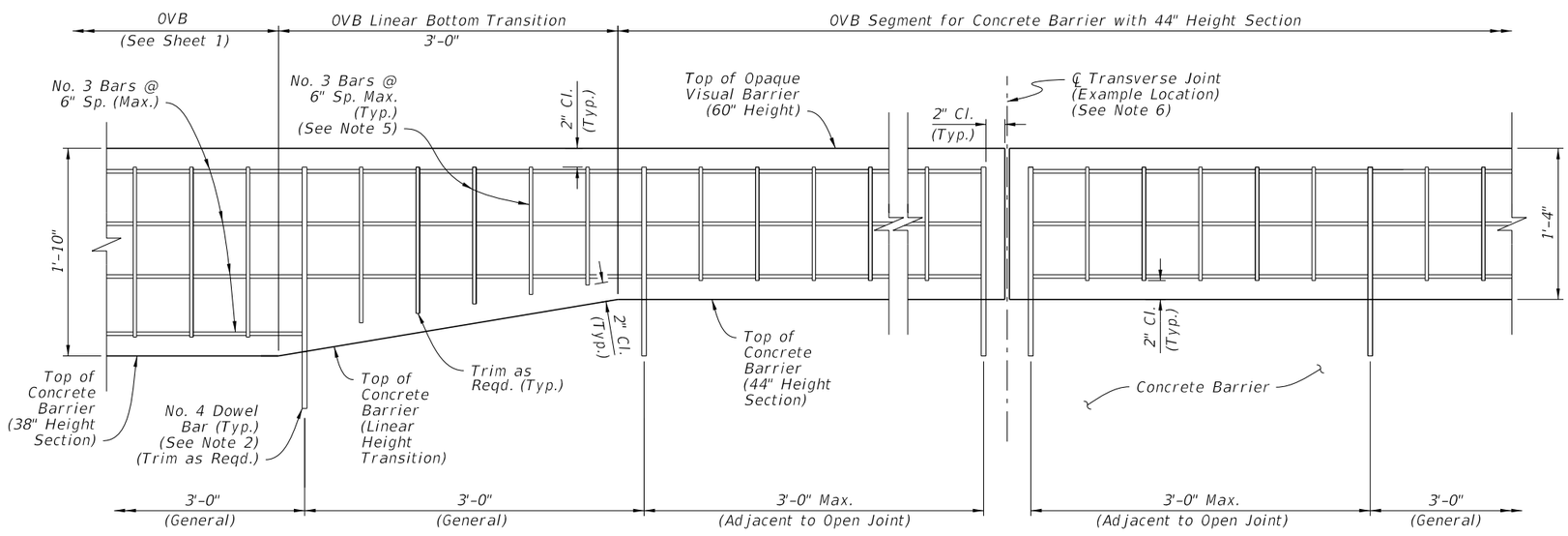


ELEVATION VIEW 'A' - OVB END SEGMENT AT CONCRETE BARRIER HEIGHT TRANSITION FROM 38" HEIGHT TO 56" HEIGHT SECTION (REVERSE DIRECTION SIMILAR BY OPPOSITE HAND)



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.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	OPAQUE VISUAL BARRIER	INDEX	SHEET
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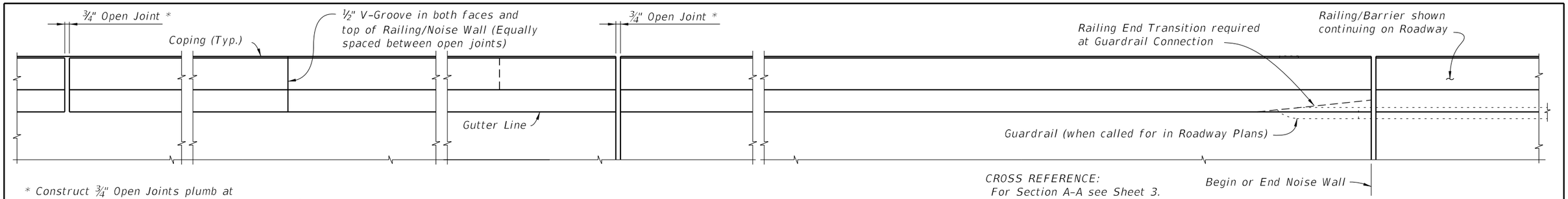
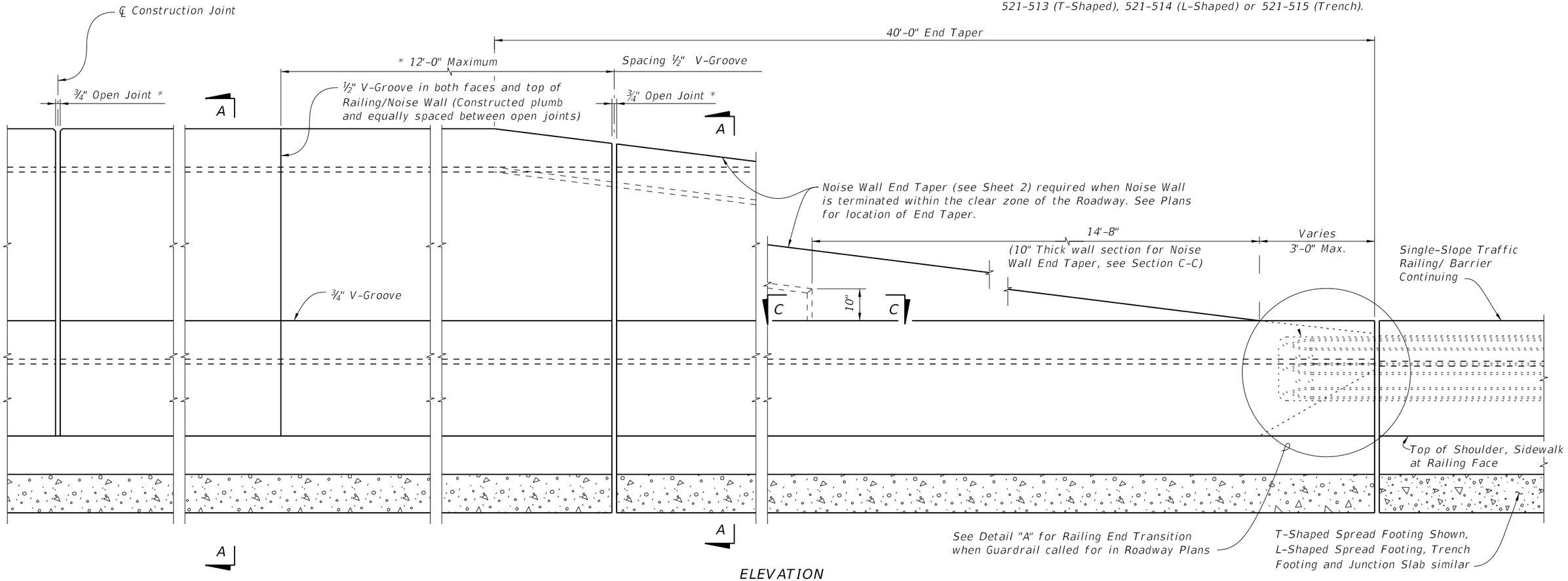


* Construct ¾" Open Joints plumb at Construction Joints in Junction Slabs or Footings.

CROSS REFERENCE:
For Section A-A see Sheet 3.
For Section C-C and Detail "A" see Sheet 5.
For Wall mounted Barrier/Noise Wall Details see Index 521-512.
For Footing mounted Barrier/Noise Wall Details see Index 521-513 (T-Shaped), 521-514 (L-Shaped) or 521-515 (Trench).

PLAN
(Reinforcing Steel not shown for clarity)



ELEVATION
(INSIDE FACE OF CONCRETE BARRIER/NOISE WALL WITH T-SHAPED FOOTING SHOWN,
(Other footings similar, Reinforcing steel not shown for clarity)

NOTES:
1. Work this Index with Indexes 521-512 through 521-515.
2. The Concrete Barrier/Noise Wall and joints shall be constructed plumb.
3. Concrete:
   A. Class II for slightly aggressive environments.
   B. Class IV for moderately or extremely aggressive environments.
4. Provide ¾" Open Joints spaced between 30 feet minimum to 90 feet maximum. Align Open Joints with construction joints in the Junction Slab or Footing. Provide additional reinforcing (see Sheet 2) at each open joint.
5. Install Barrier Delineators 2'-4" above the riding surface in accordance with Specification Section 705. Match the Barrier Delineators color (White or Yellow) to the near edgeline.
6. Slip forming of the barrier portion is permitted.
   A. Stem walls may be widened, at no additional cost, to accommodate slip forming.

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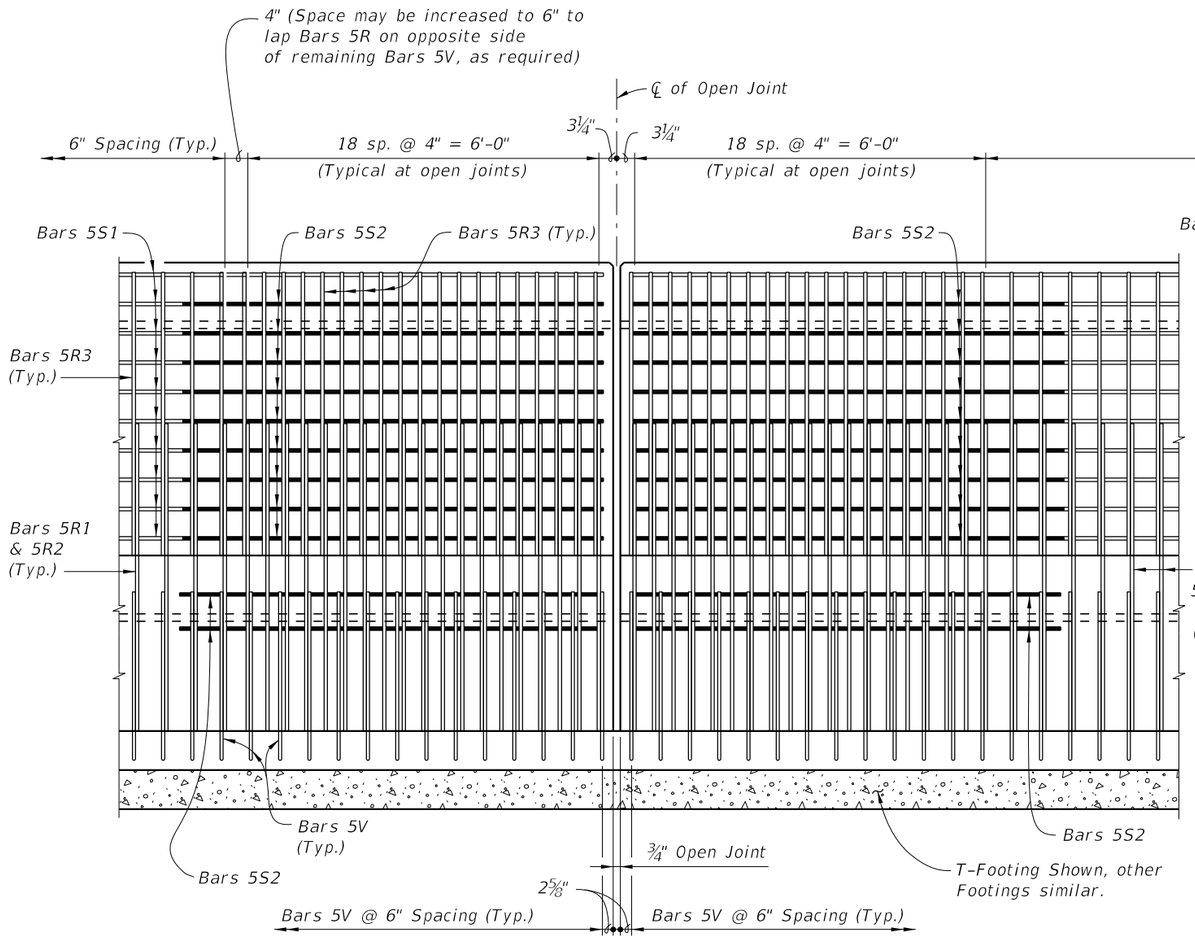
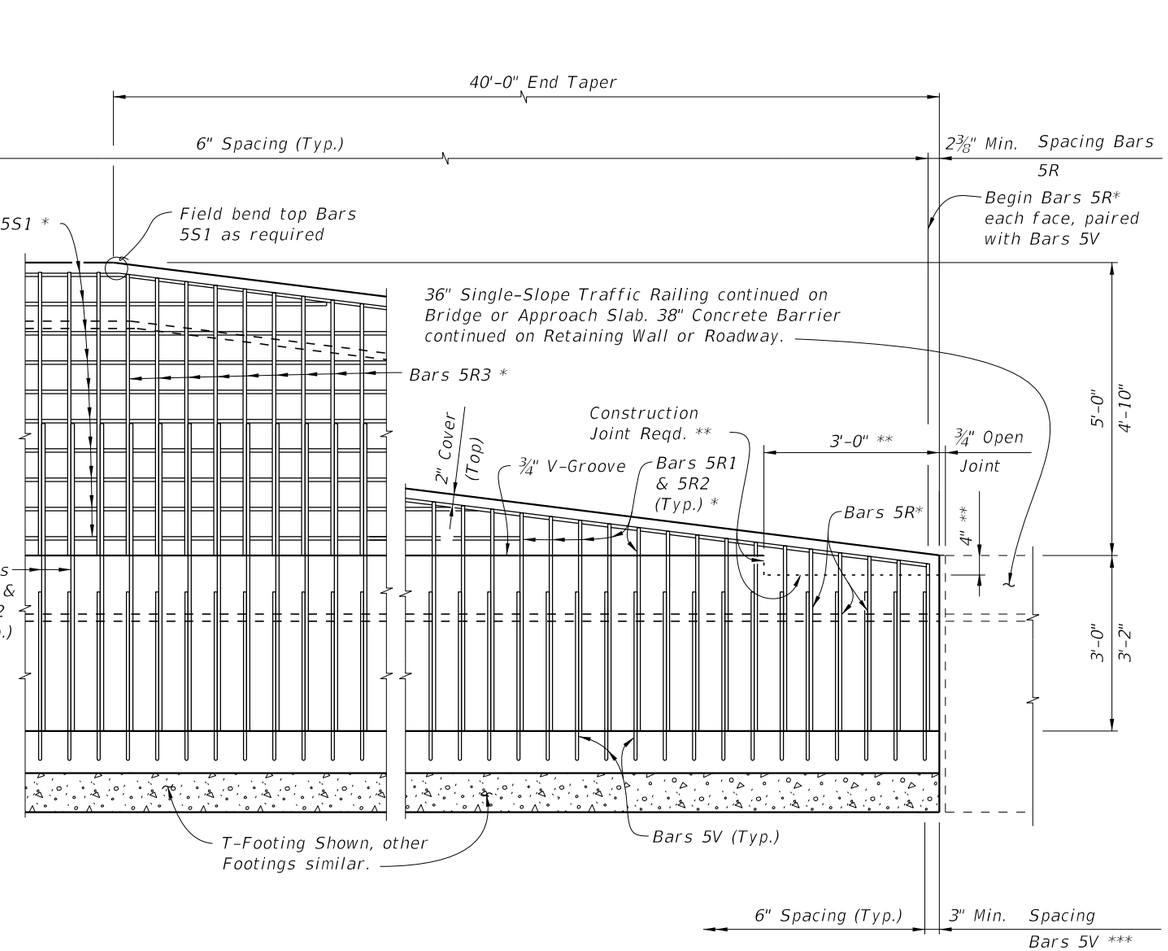
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (8'-0")	521-510	1 of 5



ELEVATION OF BARRIER/NOISE WALL REINFORCING STEEL AT OPEN JOINT
(Bars 5S1 in Barrier not shown for clarity)
(Footing or Junction Slab Details not shown)



ELEVATION OF BARRIER/NOISE WALL END TAPER (ADJACENT TO CONCRETE BARRIER SHOWN, GUARDRAIL ATTACHMENT SIMILAR SEE DETAIL "A", SHEET 5)
(Bars 5S1 in Railing not shown for clarity)
(Footing or Junction Slab Details not shown)

NOTES:
* Field Cut Bars 5R & 5S1 to maintain clearance.
** Terminate ¾" V-groove at construction joint & cast top of railing with End Taper.
*** Bar spacing shown for Bars 5V only applies when Single-Slope Concrete Barrier continues. For transition to guardrail see Sheet 5. Work Traffic/ Railing Noise Wall reinforcing with Index 521-512 (Junction Slab) or Index 521-513 through 521-515 (T, L or Trench Footings)

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (8'-0")	INDEX	SHEET
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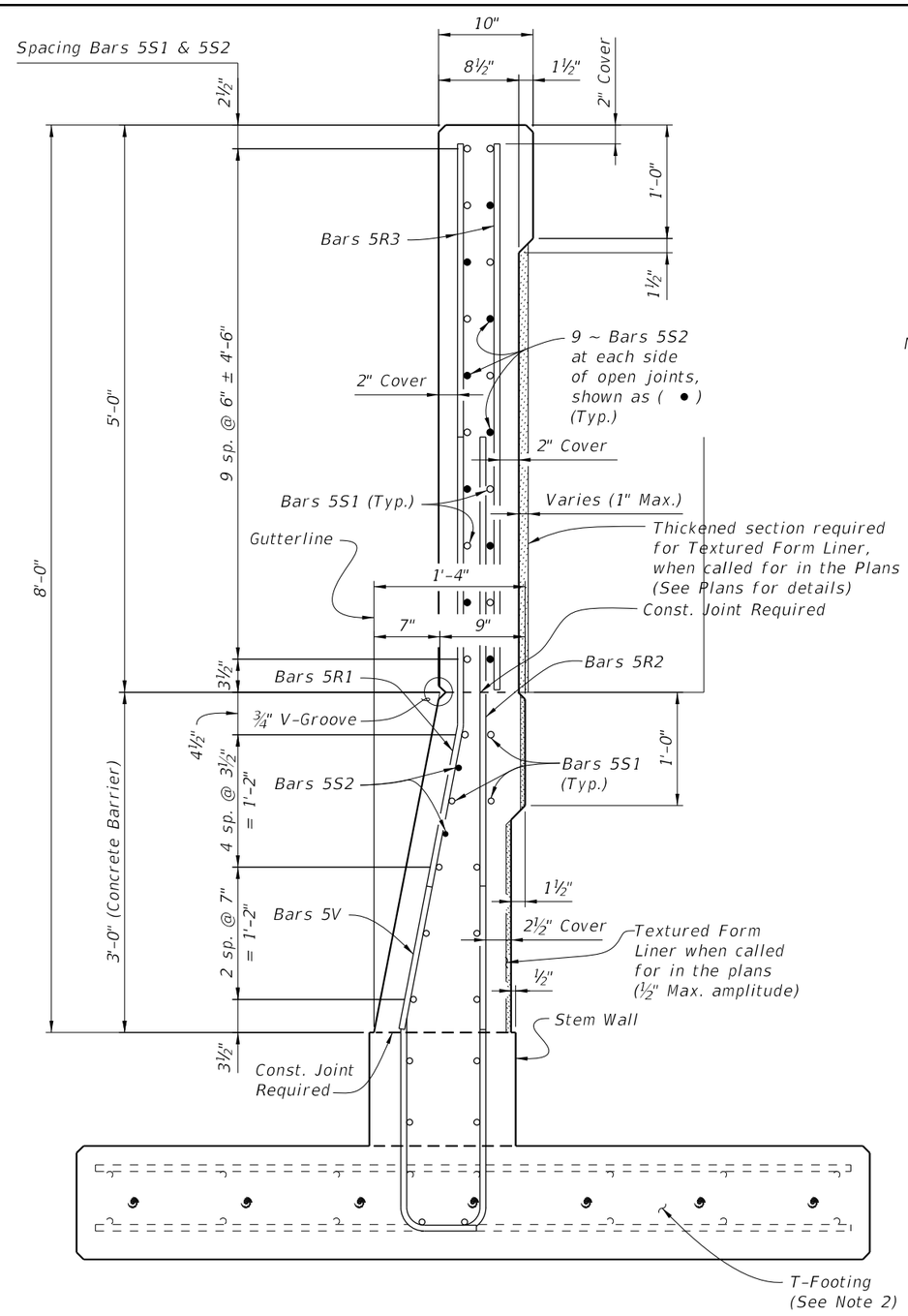
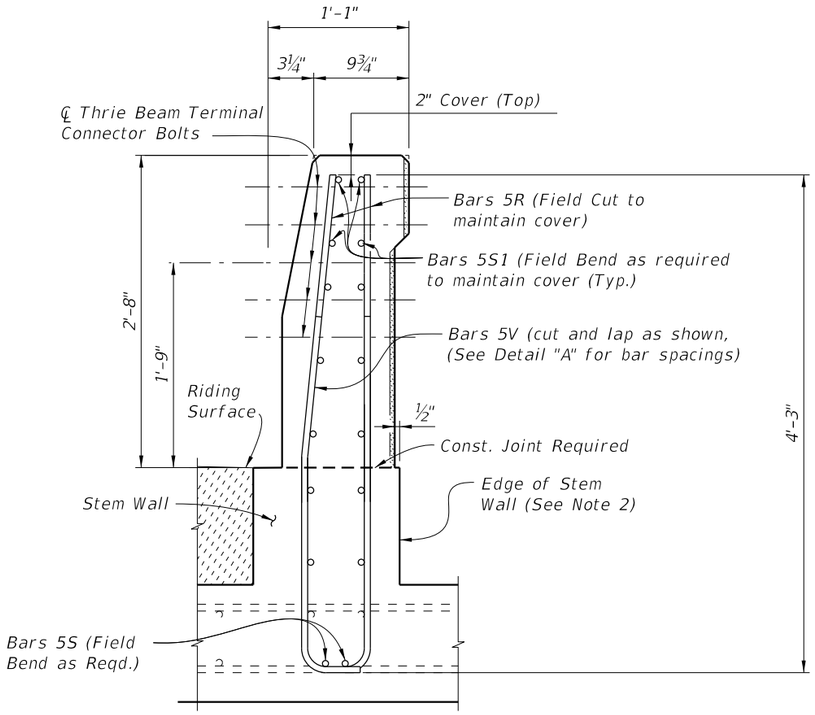


SECTION A-A
TYPICAL SECTION THRU CONCRETE BARRIER/NOISE WALL AT OPEN JOINT
(Section Thru T-Footing Shown, Section Thru Junction Slab, L or Trench Footings similar)

NOTES:

1. *Bars 5V shown are for T-Shape footings. 5V for Junction Slab, L-Shape and Trench footings are similar.*
2. *Foundation Details:*
   Index 521-512 (Junction Slab)
   Index 521-513 (T-Shape)
   Index 521-514 (L-Shape)
   Index 521-515 (Trench)

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



VIEW B-B
END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT
(T-Footing shown, Junction Slab, L or Trench Footings similar)

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (8'-0")	INDEX	SHEET
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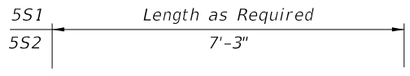
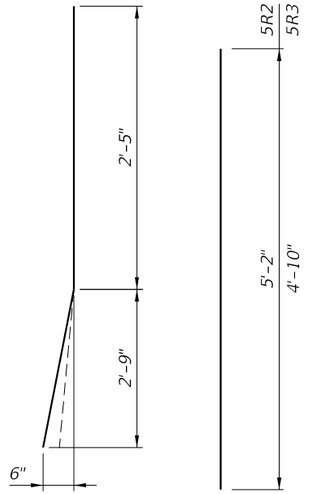
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
R1	5	5'-2"
R2	5	5'-2½"
R3	5	4'-10"
S1	5	As Reqd.
S2	5	7'-3"
V (Wall)	5	6'-6½"
V (T-Footing)	5	7'-8½"



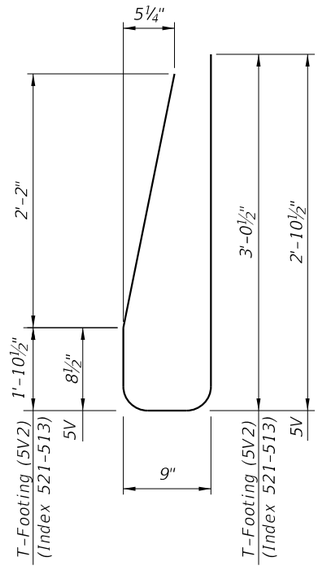
BARS 5S1 & 5S2



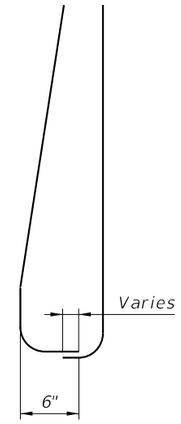
BAR 5R1

BAR 5R2 & BAR 5R3

(Field Cut and Bend for Railing End Transition)



STIRRUP BAR 5V



END STIRRUP BAR 5V
To Be Field Cut
(Railing End Transition)

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 5R shall be one continuous or lap spliced bar. No mechanical couplers are permitted.
4. Bars 5S1 may be continuous or spliced at the construction joints. Lap splices for Bars 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.

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)

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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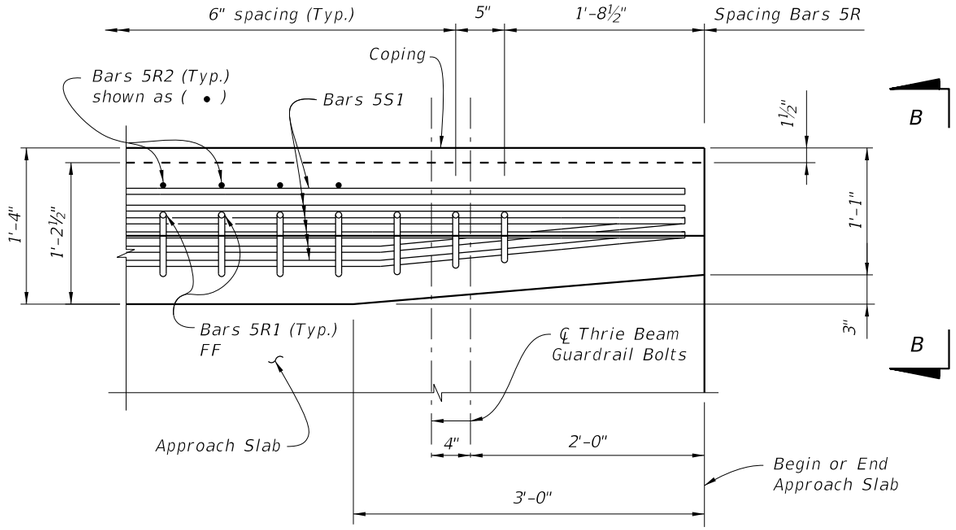
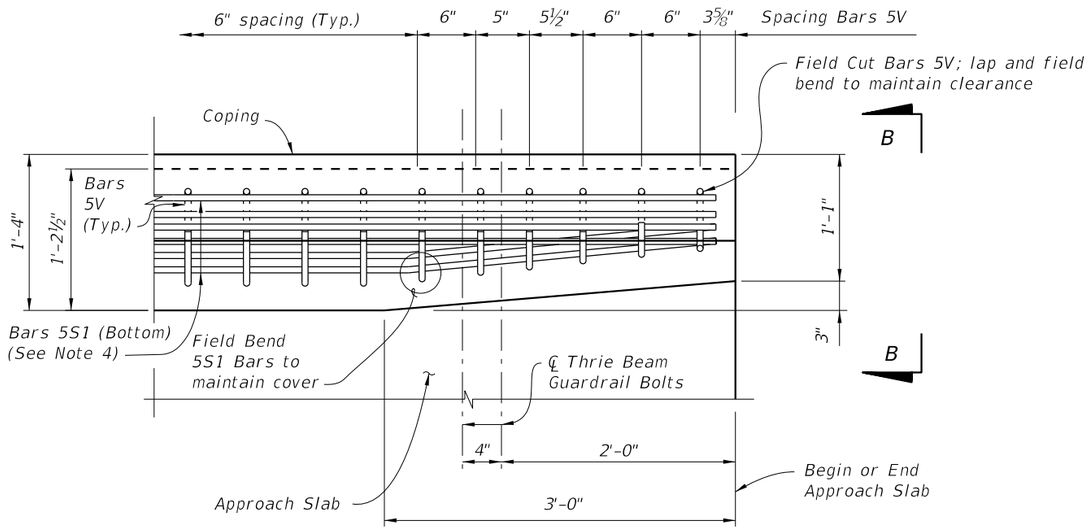


PLAN - RAILING END TRANSITION
(Showing Bars 5R, and Bars 5S1)
(Bars 5V not shown for Clarity)

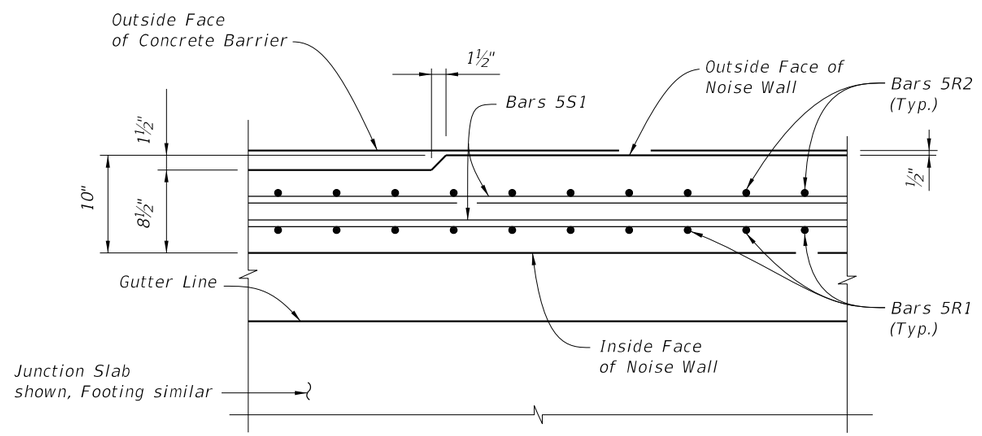


PLAN - RAILING END TRANSITION
(Showing Bars 5V and Bars 5S1)
(Bars 5R not shown for Clarity)

DETAIL "A"

DETAIL "A" NOTES:

1. *Begin placing Railing Bars 5V at the railing end and proceed toward the guardrail (thrie beam) terminal connector to ensure placement of guardrail bolt holes. Pair Bars 5R with Bars 5V as shown. Clearance of Bars 5R & 5V to guardrail bolt holes shall be checked to prevent cutting of bars if 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)*



SECTION C-C
THRU NOISE WALL END TAPER

CROSS REFERENCE:
For location of Detail "A" see Sheet 1.
For location of Section C-C see Sheet 1.
For View B-B see Sheet 3.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (8'-0")	INDEX	SHEET
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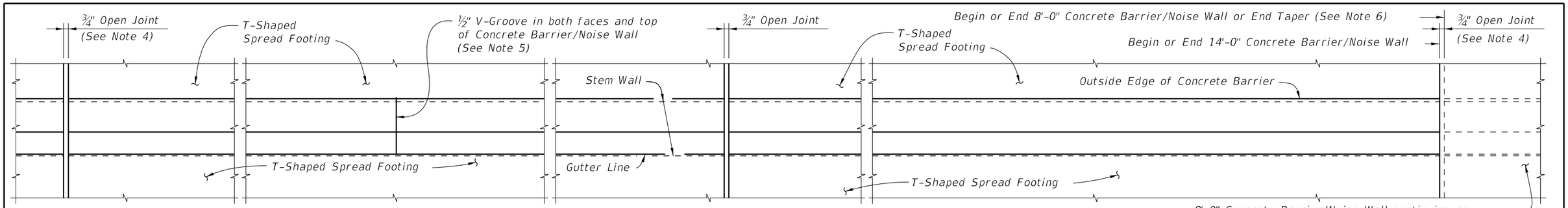
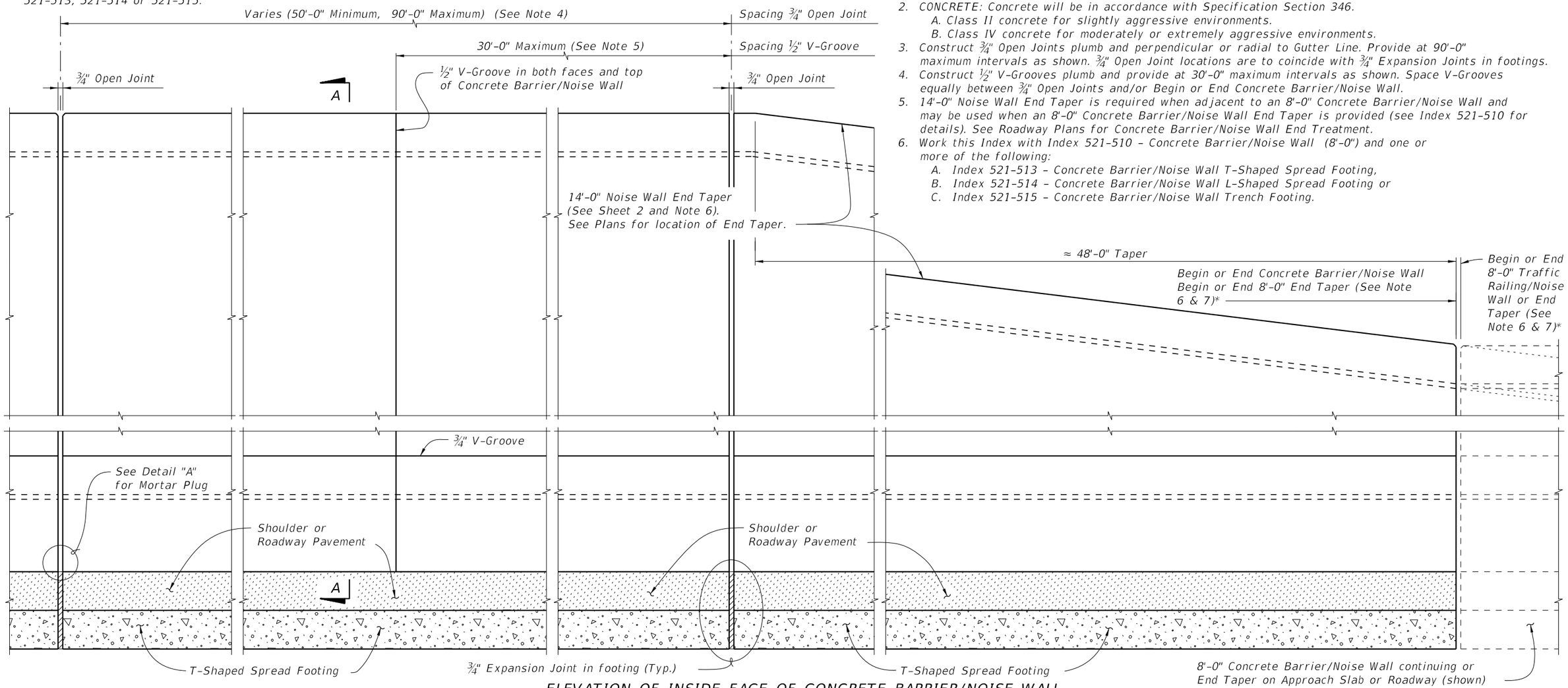


CROSS REFERENCE:
For Section A-A, Detail "A" and Estimated Quantities, see Sheet 3.
For Expansion Joint Detail in Footing, see Index 521-513, 521-514 or 521-515.

PLAN (Reinforcing Steel not shown for clarity)
(T-Shaped Spread Footing Shown, L-Shaped Spread Footing and Trench Footing Similar)

Concrete Barrier/NOISE WALL NOTES

1. Construct the Concrete Barrier/Noise Wall and joints plumb; do not construct the Concrete Barrier/Noise Wall perpendicular to the roadway surface.
2. CONCRETE: 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. Construct ¾" Open Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown. ¾" Open Joint locations are to coincide with ¾" Expansion Joints in footings.
4. Construct ½" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between ¾" Open Joints and/or Begin or End Concrete Barrier/Noise Wall.
5. 14'-0" Noise Wall End Taper is required when adjacent to an 8'-0" Concrete Barrier/Noise Wall and may be used when an 8'-0" Concrete Barrier/Noise Wall End Taper is provided (see Index 521-510 for details). See Roadway Plans for Concrete Barrier/Noise Wall End Treatment.
6. Work this Index with Index 521-510 - Concrete Barrier/Noise Wall (8'-0") and one or more of the following:
   A. Index 521-513 - Concrete Barrier/Noise Wall T-Shaped Spread Footing,
   B. Index 521-514 - Concrete Barrier/Noise Wall L-Shaped Spread Footing or
   C. Index 521-515 - Concrete Barrier/Noise Wall Trench Footing.

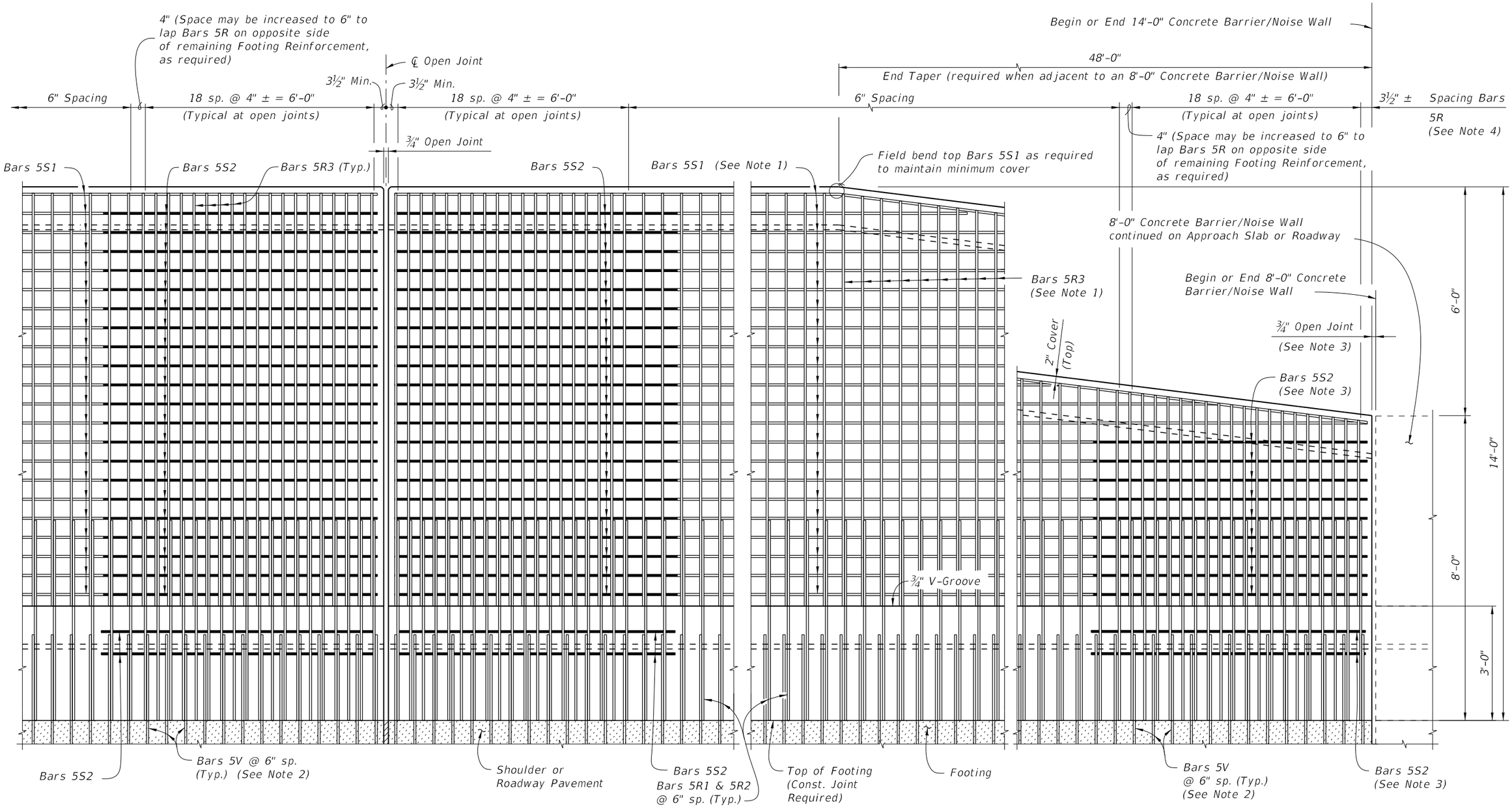


ELEVATION OF INSIDE FACE OF CONCRETE BARRIER/NOISE WALL
(Reinforcing Steel not shown for clarity)
(T-Shaped Spread Footing Shown, L-Shaped Spread Footing and Trench Footing Similar)

* ¾" Open Joint may be omitted when 8'-0" Railing/Noise Wall End Taper is adjacent to a 14'-0" Concrete Barrier/Noise Wall End Taper

10/29/2019 8:19:10 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (14'-0")	INDEX	SHEET
11/01/18					521-511	1 of 3



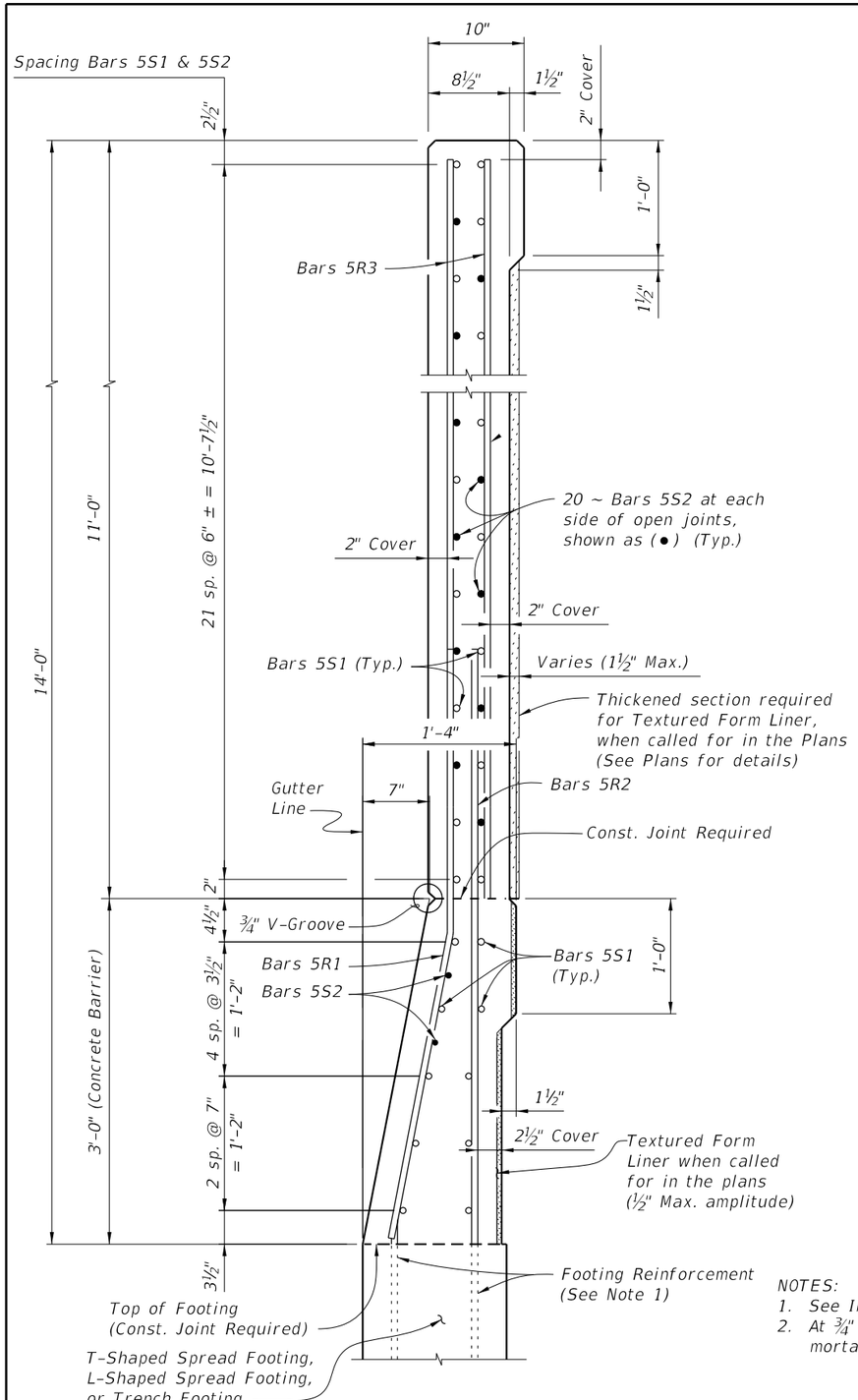
ELEVATION OF CONCRETE BARRIER/NOISE WALL REINFORCING STEEL
(Bars 5S1 in Railing not shown for clarity)

ELEVATION OF CONCRETE BARRIER/NOISE WALL END TAPER
(Bars 5S1 in Railing not shown for clarity)

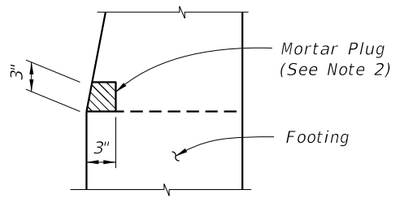
NOTES:
1. Field Cut Bars 5R & 5S1 in Noise Wall End Taper as required to maintain minimum cover.
2. See Index 521-513, 521-514 and 521-515 for footing reinforcement.
3. ¾" Open Joint may be omitted when 8'-0" Railing/Noise Wall End Taper is adjacent to a 14'-0" Concrete Barrier/Noise Wall End Taper as shown on Sheet 1. See Index 521-510 for reinforcement details and spacing. Bars 5S2 are not required when ¾" Open Joint is omitted.
4. Bar spacing shown is along the Gutter Line.

10/29/2019 8:19:12 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (14'-0")	INDEX	SHEET
11/01/18						521-511	2 of 3



SECTION A-A
TYPICAL SECTION THRU CONCRETE BARRIER/NOISE WALL



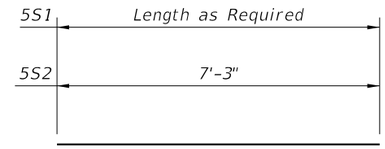
DETAIL "A" -
SECTION AT OPEN JOINT

NOTES:
1. See Index 521-513, 521-514 or 521-515 for footing reinforcement.
2. At ¾" Open Joints, plug the lower 3" portion of the open joint by filling it with mortar in accordance with Specification Section 400.

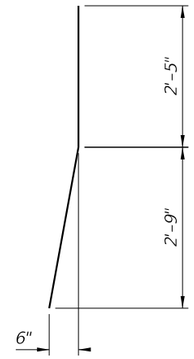
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
R1	5	5'-2"
R2	5	5'-2½"
R3	5	10'-10"
S1	5	AS REQD.
S2	5	7'-3"



BARS 5S1 & 5S2



BAR 5R1 (FF)

BAR 5R2 &
BAR 5R3

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.

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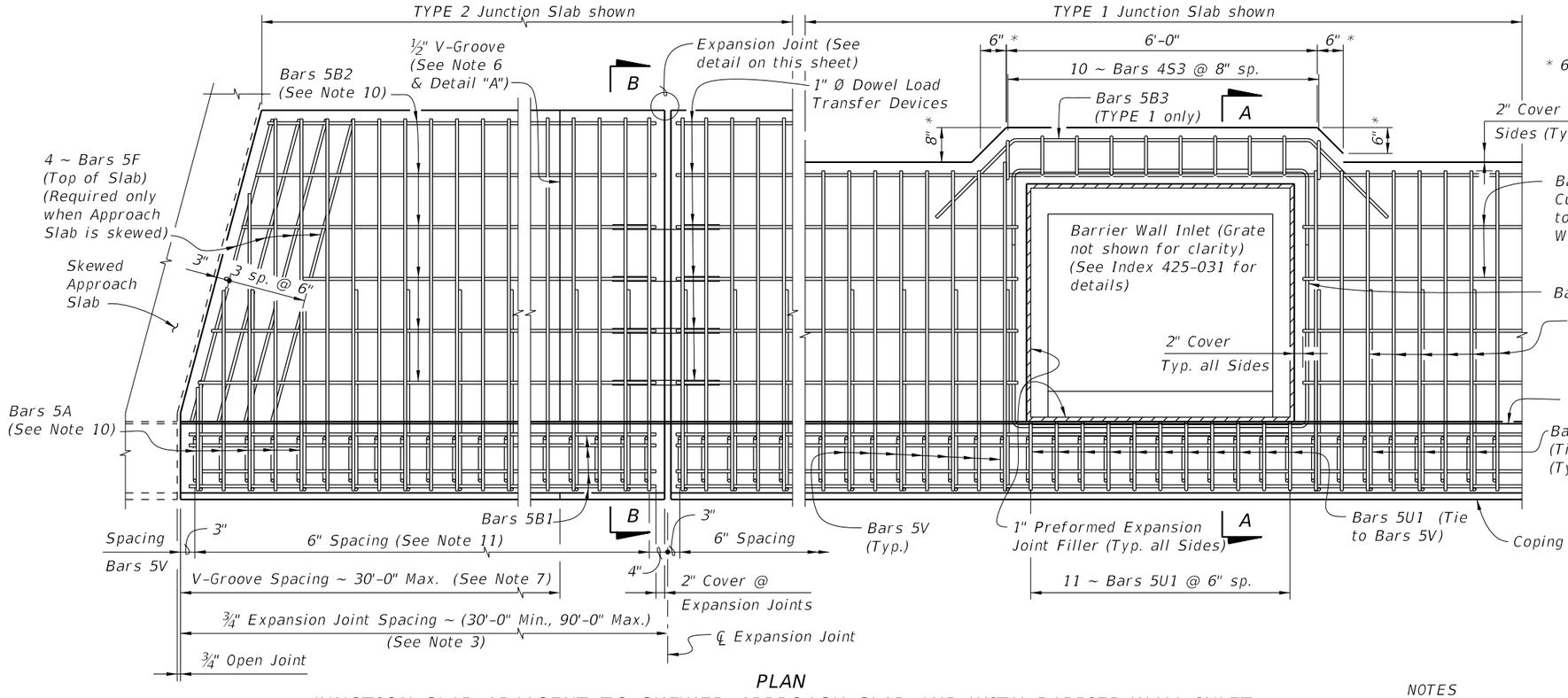
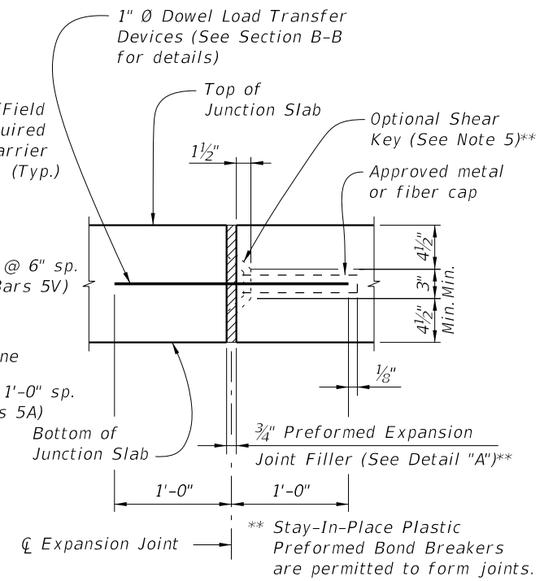
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (14'-0")	INDEX 521-511	SHEET 3 of 3



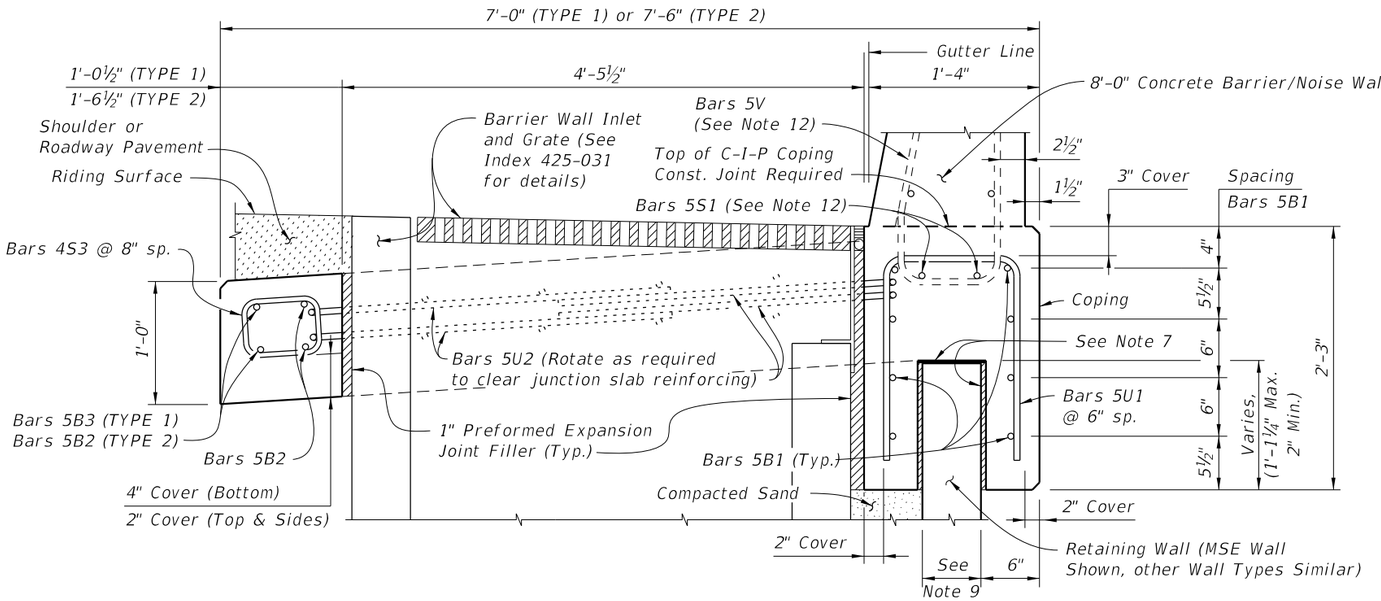
PLAN

JUNCTION SLAB ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET



*EXPANSION JOINT DETAIL***

(Junction Slab expansion joints are required at ¾" open joints in Concrete Barrier/Noise Wall)



SECTION A-A

SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL

(TYPE 1 Junction Slab Shown, TYPE 2 Similar)

NOTES

1. Work this Index with Index 521-510 – Concrete Barrier/Noise Wall (8'-0").
2. Concrete will be in accordance with Specification Section 346.
   A. Use Class II concrete for slightly aggressive environments.
   B. Class IV concrete for moderately or extremely aggressive environments.
3. Construct ¾" Expansion Joints and face of coping plumb, and either perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
4. Dowel Load Transfer Devices will be hot-dip galvanized ASTM A36 smooth round bars or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
5. Shear Keys in Junction Slab are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 5° to 45° from horizontal.
6. 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 Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Barrier/Noise Wall.
7. Provide Organic Felt bond breaker on top and Expanded Polystyrene (½" thick) on sides of retaining wall.
8. Shoulder or Roadway Pavement or Fill is required on top of the junction slab for its entire length on the traffic side of the Barrier/Noise Wall. See Section B-B for details.
9. Actual location & width vary depending on type of Retaining Wall used.
10. Field cut Bars 5A and 5B2 as required to maintain minimum cover for skewed Approach Slab.
11. Spacing shown is along the Gutter Line.
12. See Index 521-510 for Bars 5V and 2 ~ Bars 5S1. See Plans for Junction Slab width (TYPE).

CROSS REFERENCE:

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

10/29/2019 8:19:14 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (8'-0") JUNCTION SLAB	INDEX 521-512	SHEET 1 of 2

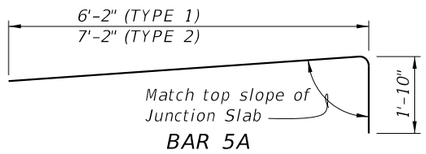
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

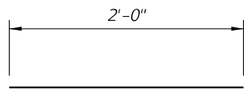
MARK	SIZE	LENGTH	
		TYPE 1	TYPE 2
A	5	8'-0"	9'-0"
B1	5	AS REQD.	AS REQD.
B2	5	AS REQD.	AS REQD.
B3	5	10'-0"	N/A
F	5	4'-8"	5'-8"
L	5	4'-5"	4'-5"
S3	4	3'-1"	4'-0"
U1	5	4'-9"	4'-9"
U2	5	12'-10"	12'-10"
DOWEL	1" Ø Smooth Bar	2'-0"	2'-0"

REINFORCING STEEL NOTES:

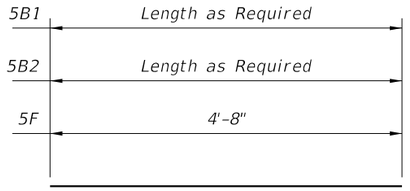
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-2".
4. The Contractor may use Deformed WWR when approved by the Engineer. Deformed WWR must meet the requirements of Specification Section 931.



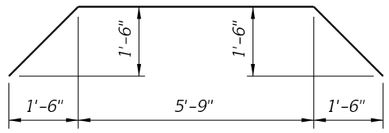
BAR 5A



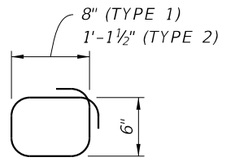
1" Ø DOWEL



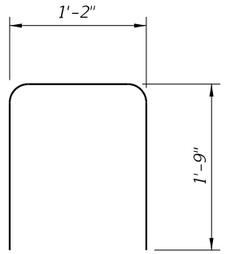
BARS 5B & 5F



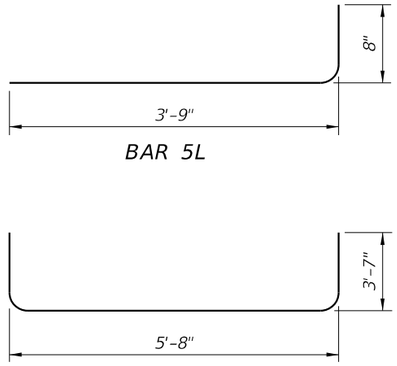
BAR 5B3 (TYPE 1 only)



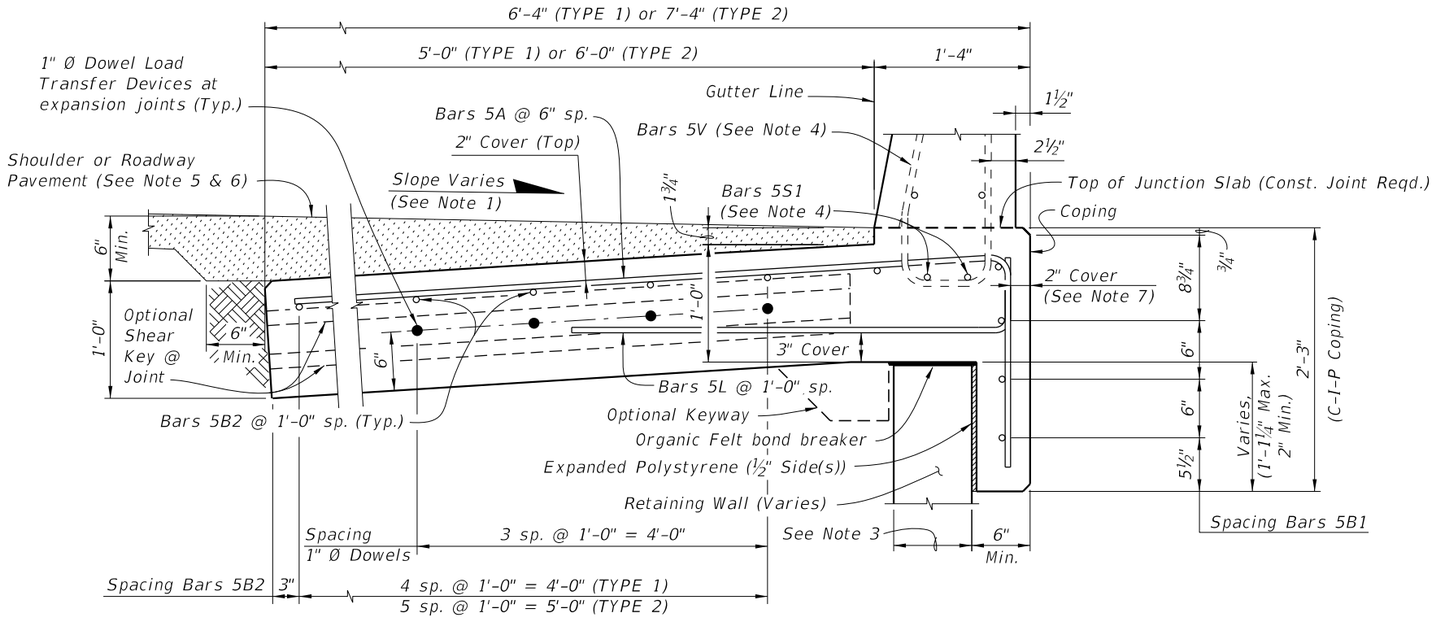
BAR 4S3



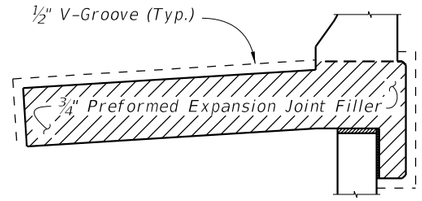
BAR 5U1



BAR 5L
BAR 5U2

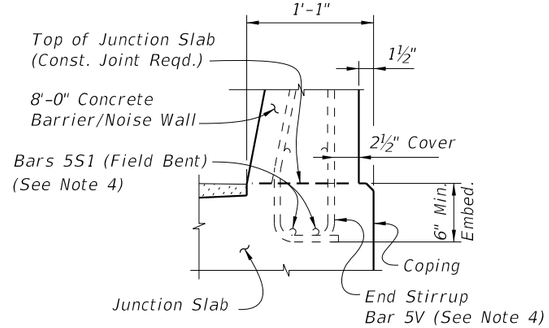


SECTION B-B
TYPICAL SECTION THRU JUNCTION SLAB AND RETAINING WALL



DETAIL "A"

(Showing Locations of ½" V-Grooves and ¾" 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.

ESTIMATED JUNCTION SLAB QUANTITIES

ITEM	UNIT	QUANTITY	
		TYPE 1	TYPE 2
Concrete (Junction Slab)	CY/FT	0.268	0.305
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.
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 2½" side cover with adjusted Typical Section dimensions.

CROSS REFERENCE:
For location of Section B-B, see Sheet 1.

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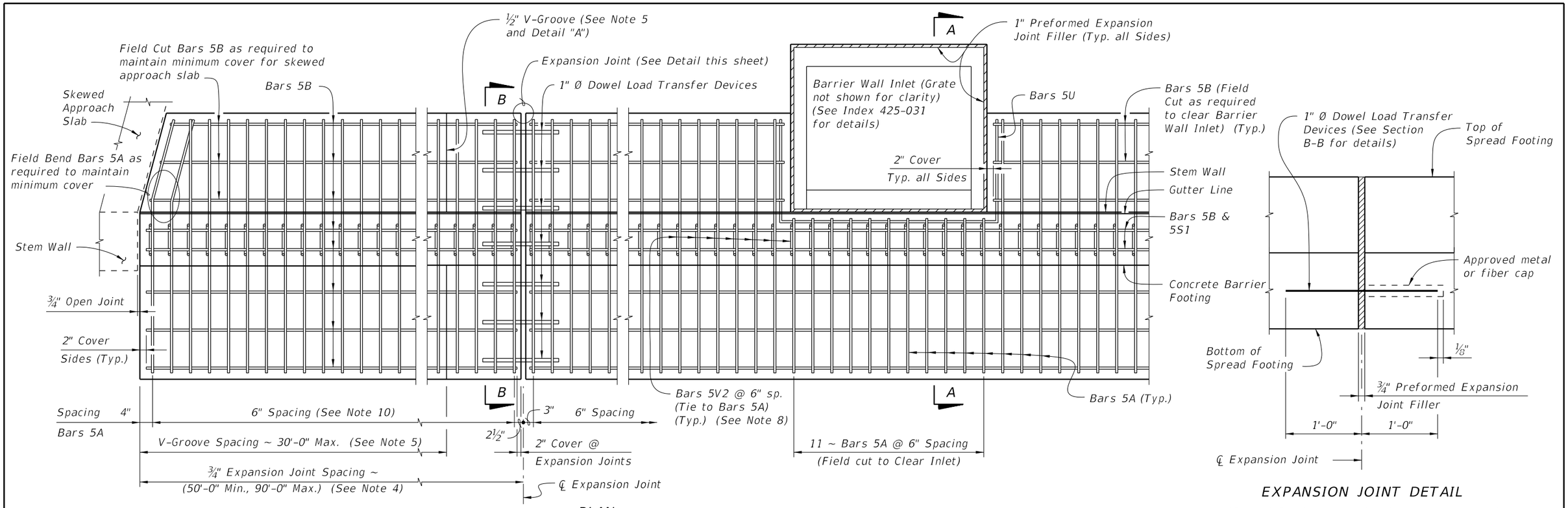
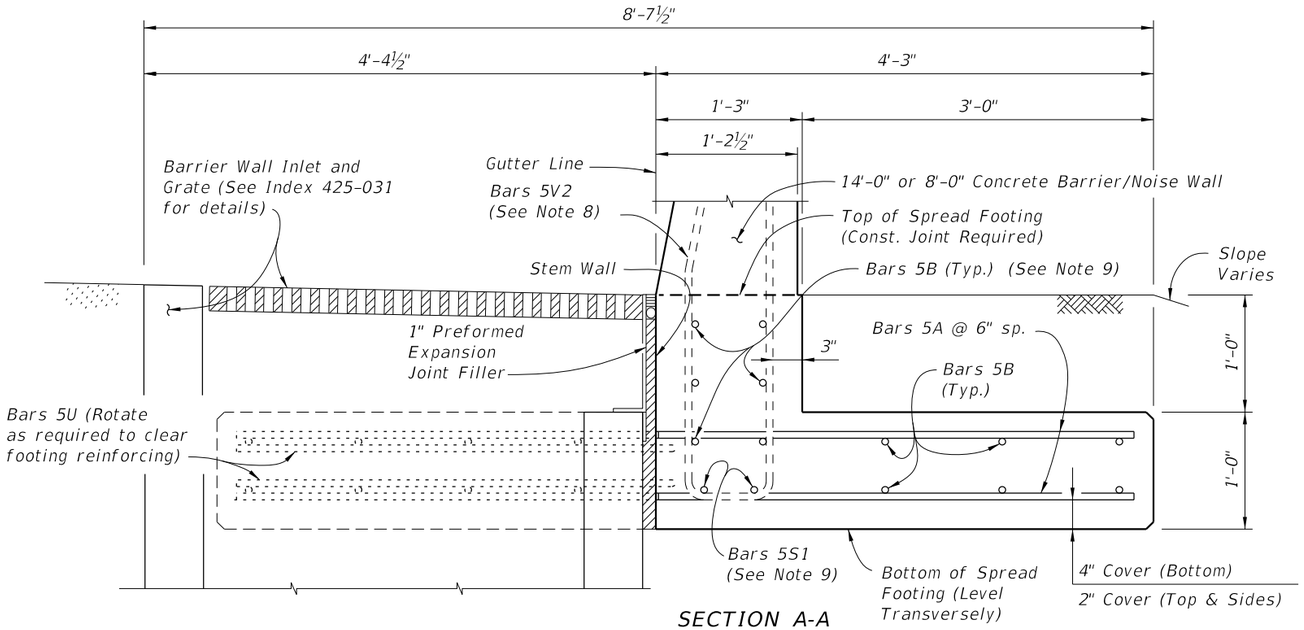
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL (8'-0") JUNCTION SLAB	INDEX 521-512	SHEET 2 of 2





NOTES

1. Construct the Spread Footing level transversely and plumb vertically; 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 Barrier/Noise Wall.
6. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
7. FILL REQUIREMENTS: Shoulder or Roadway Pavement or Fill is required on top (1'-0" minimum depth) for the entire length of the spread footing on both sides of the Barrier/Noise Wall. See Section B-B for details.
8. See Index 521-510 for Bars 5V2.
9. Place 8 ~ Bars (6 ~ 5B1 & 2 ~ 5S1) inside Stirrup Bars 5V2 as shown. (2 ~ 5S1 Bars included in 521-510 or 521-511 quantities)
10. Spacing shown is along the Gutter Line.
11. 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 Section B-B and Detail "A", see Sheet 2.

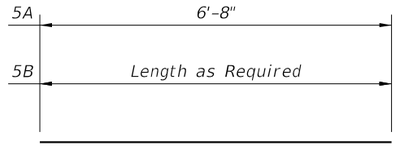
10/29/2019 8:19:16 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL T-SHAPED SPREAD FOOTING	INDEX	SHEET
11/01/18					521-513	1 of 2

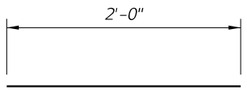
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

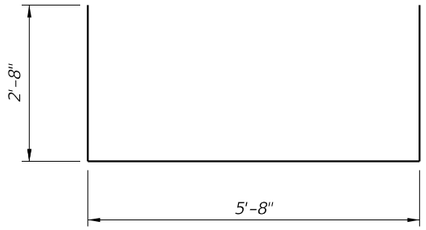
MARK	SIZE	LENGTH
A	5	6'-8"
B	5	AS REQD.
U	5	11'-0"
DOWEL	1" Ø Smooth Bar	2'-0"



BARS 5A & 5B



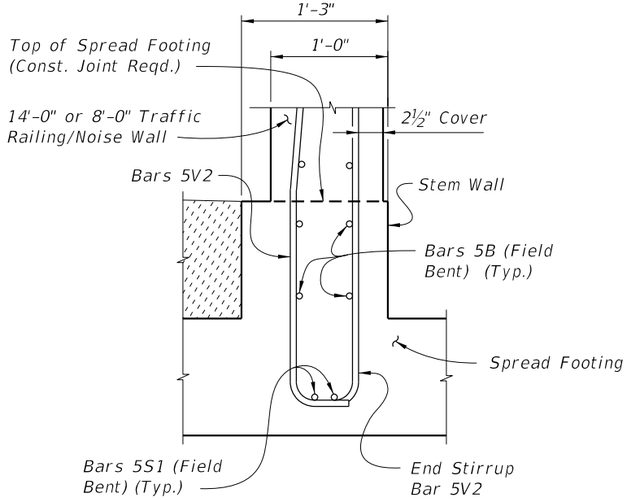
1" Ø DOWEL



BAR 5U

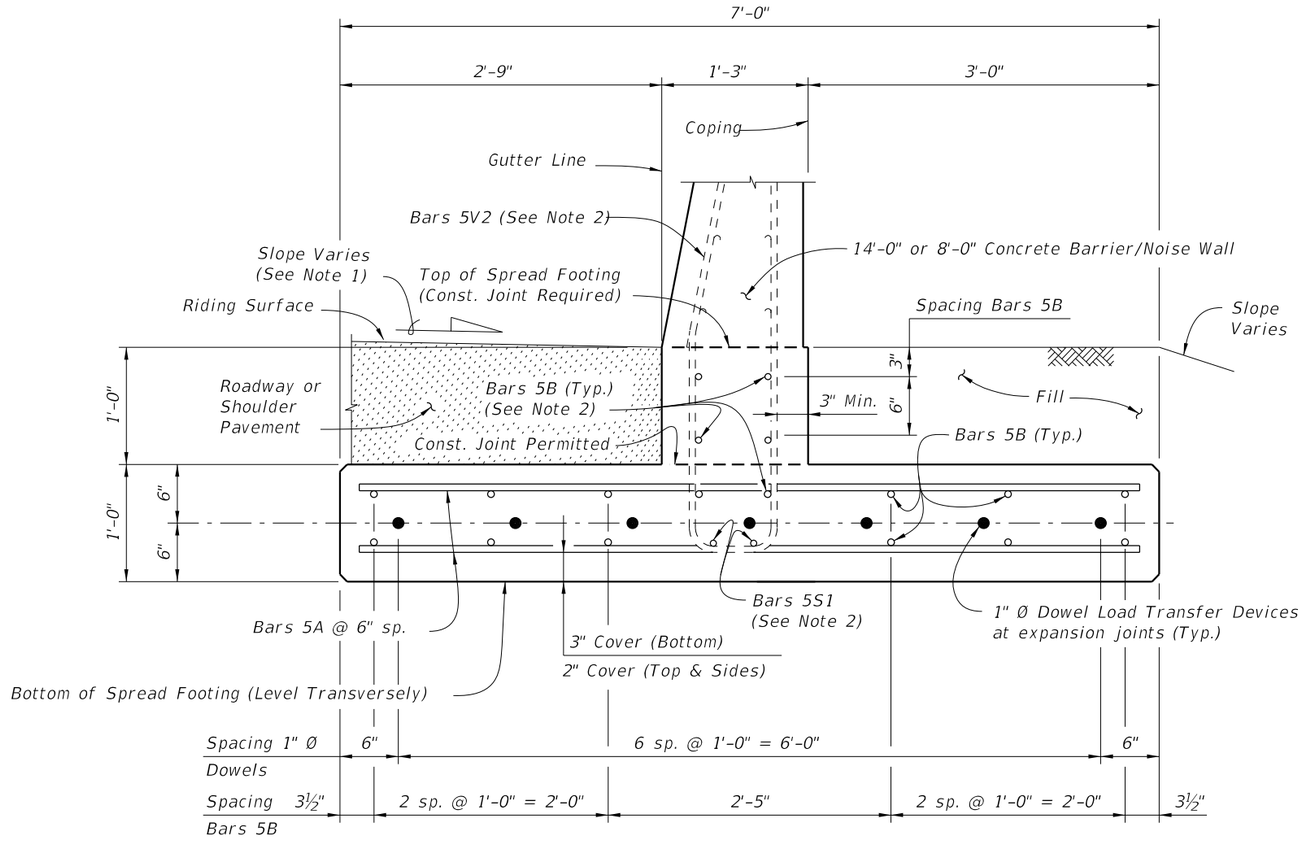
REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-2".
4. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.



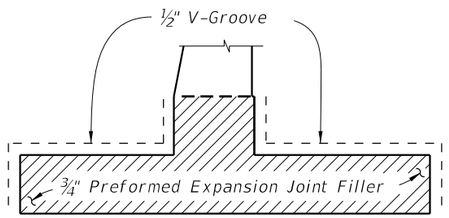
PARTIAL END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5V2, and Bars 5B inside of Stirrup Bars 5V2)

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



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

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 ¾" 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.

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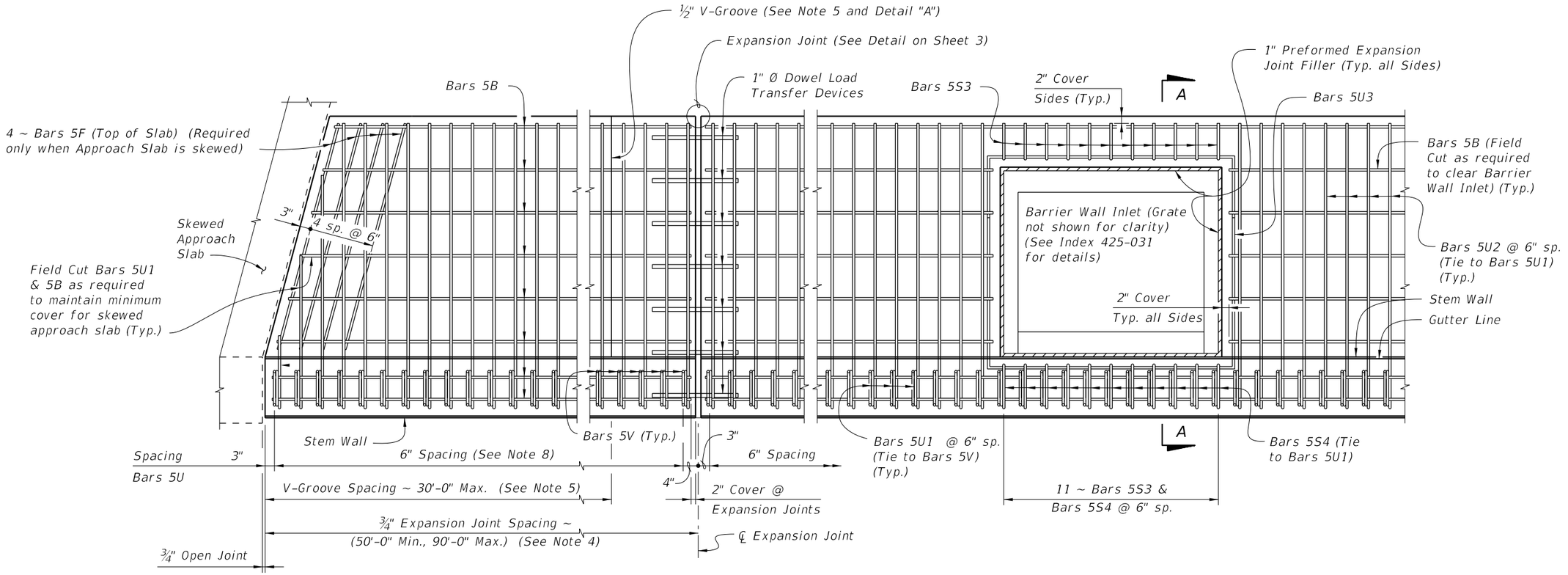
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL T-SHAPED SPREAD FOOTING	INDEX	SHEET
11/01/17					521-513	2 of 2



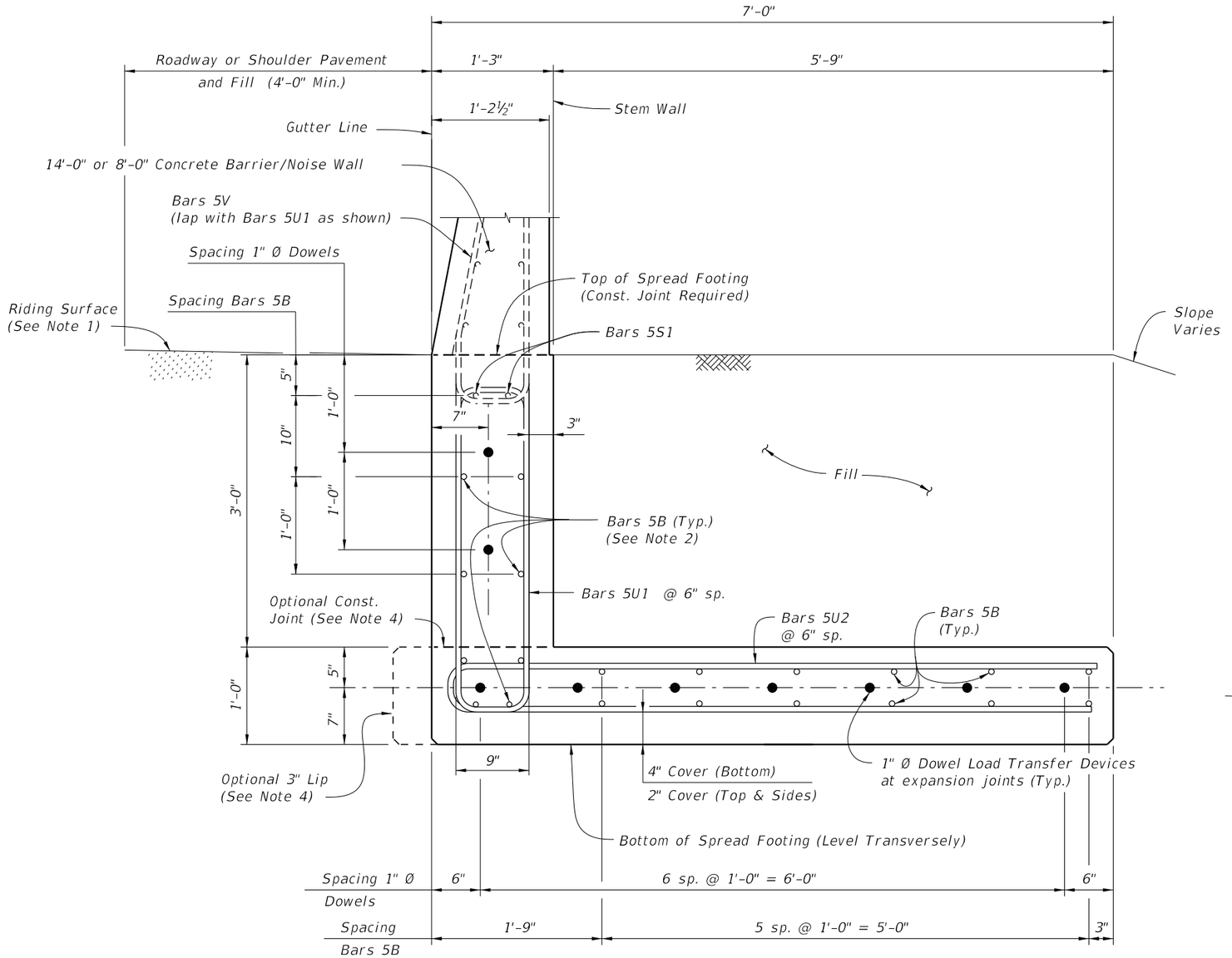
PLAN - OPTION B
SPREAD FOOTING ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET
(Option A Similar) (Bars S1 Not Shown)

NOTES

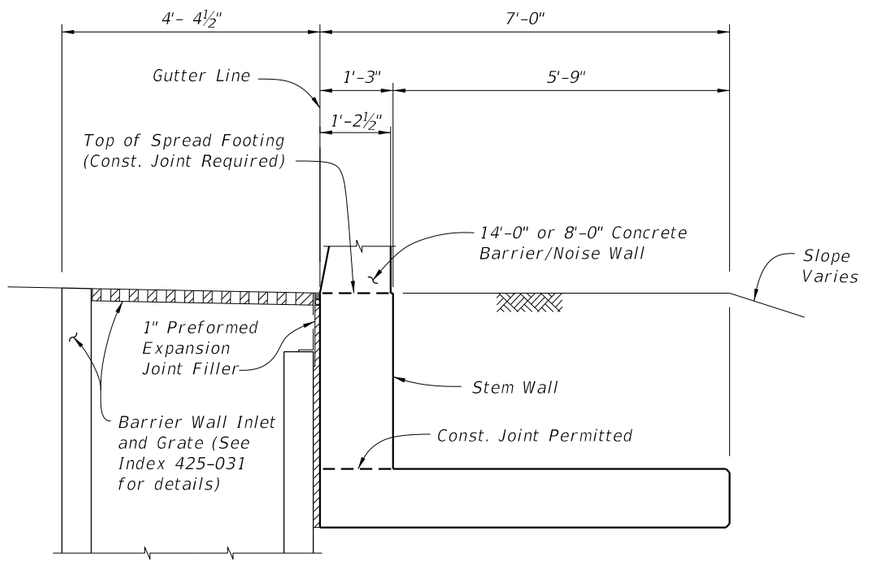
1. Construct the Spread Footing level transversely; do not construct the spread footing perpendicular to the roadway surface.
2. Concrete will be in accordance with Specification Section 346.
   A. Class II concrete for slightly aggressive environments.
   B. Class IV concrete for moderately or extremely aggressive environments.
3. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct 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.

10/29/2019 8:19:18 AM



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



TYPICAL SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET - OPTION A
(Reinforcing Steel not shown for clarity (See Note 3))

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, (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.

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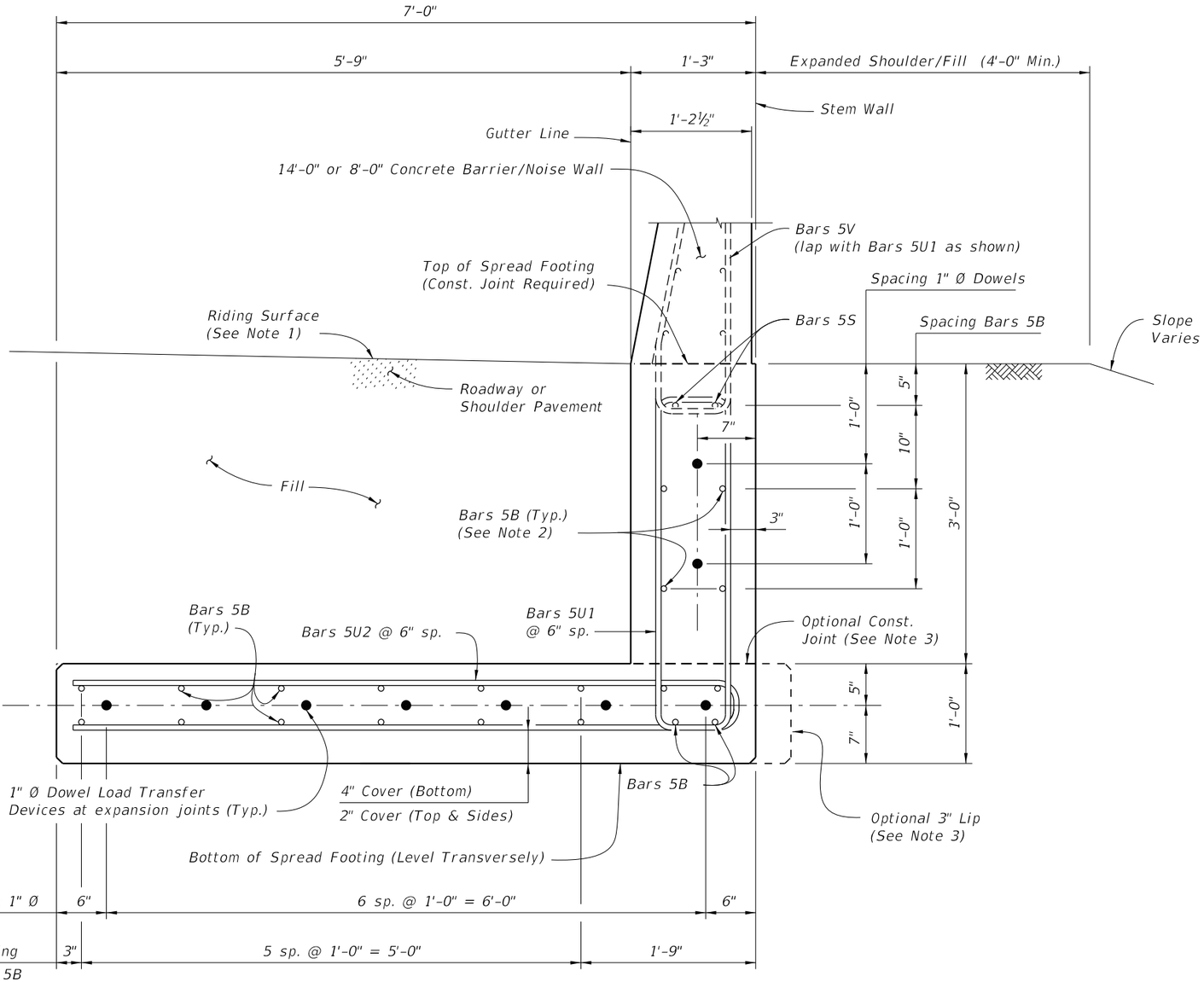
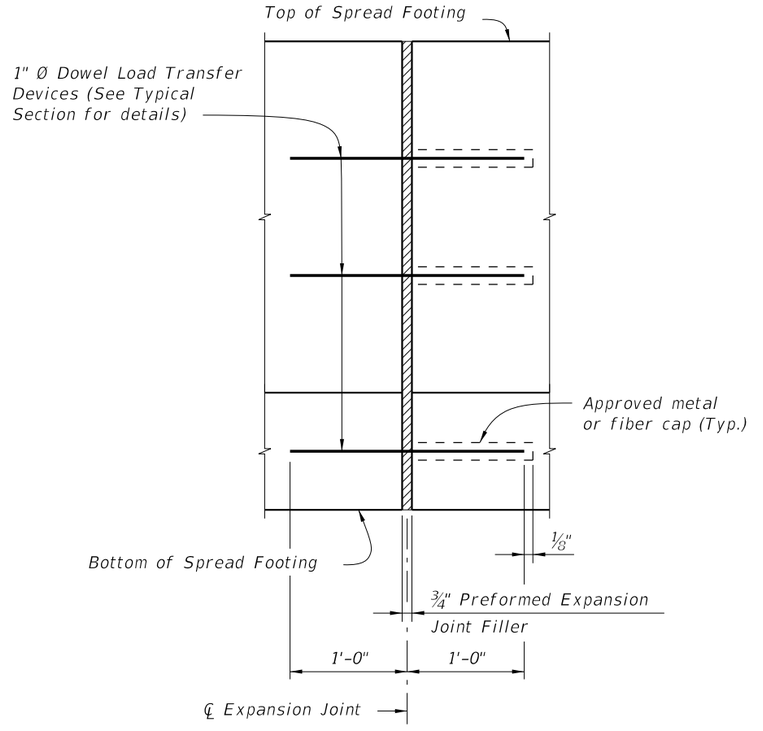
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL L-SHAPED SPREAD FOOTING	INDEX	SHEET
11/01/17						521-514	2 of 4



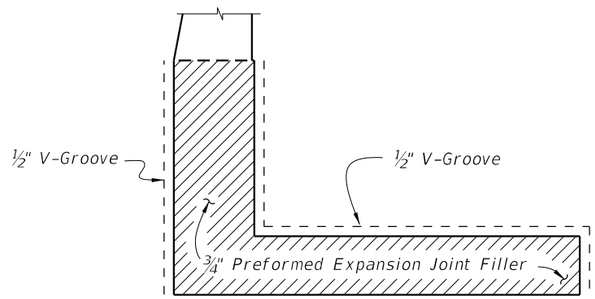
TYPICAL SECTION THRU SPREAD FOOTING - OPTION B
(Bars 5P, 5R and 5S1 in Concrete Barrier/Noise Wall not shown for clarity)

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 ¾" open joints in Concrete Barrier/Noise Wall)



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

(Showing Locations of ½" V-Grooves and ¾" Preformed Expansion Joint Filler)

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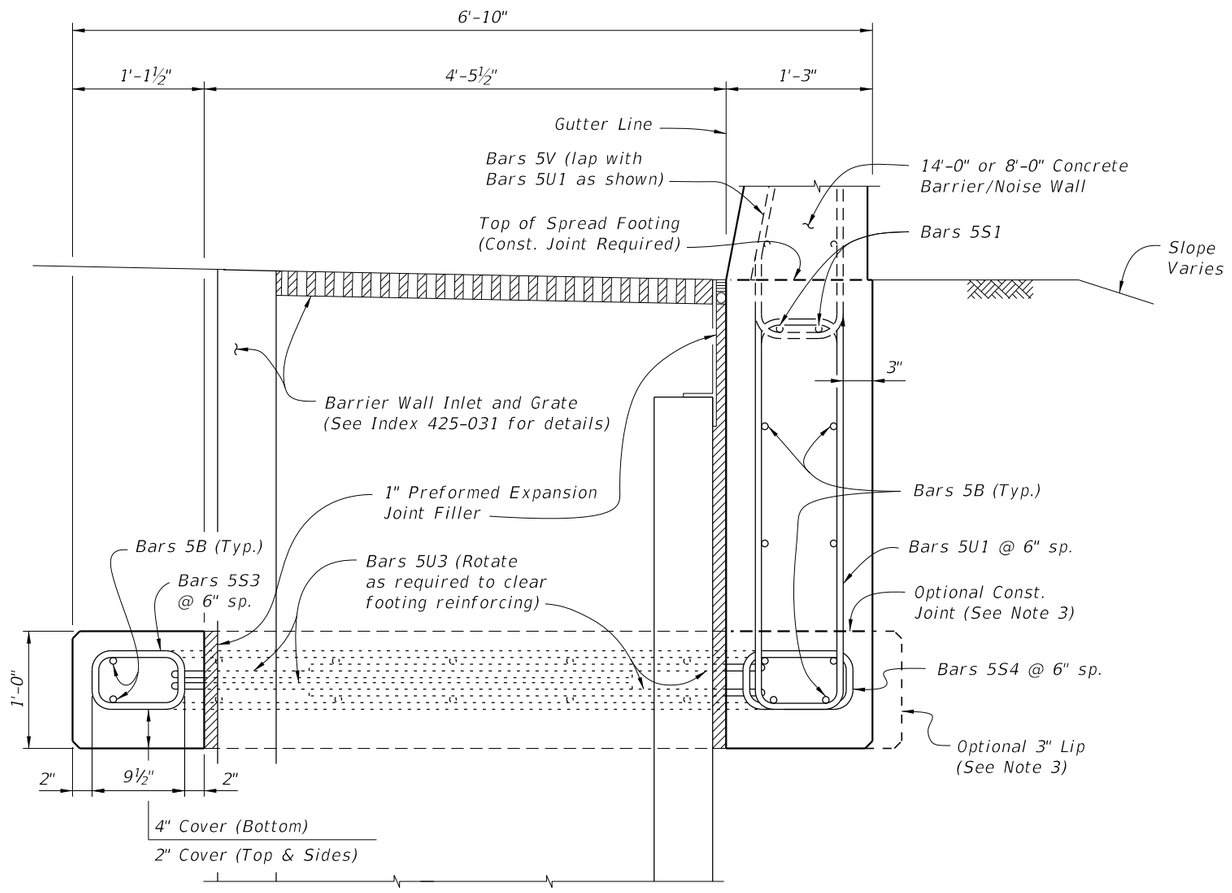
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL L-SHAPED SPREAD FOOTING	521-514	3 of 4



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)

NOTES:

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.*

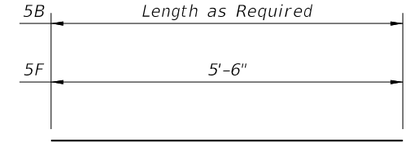
ESTIMATED L-SHAPED SPREAD FOOTING QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete (Footing)	CY/FT	0.398
Reinforcing Steel (Typical) *	LB/FT	68.84
Additional Reinf. @ Expansion Joint	LB	48.06

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

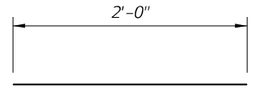
CROSS REFERENCE:
For location of Section A-A, see Sheet 1.

REINFORCING STEEL BENDING DIAGRAMS

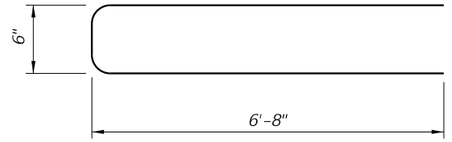
BILL OF REINFORCING STEEL		
MARK	SIZE	LENGTH
B	5	AS REQD.
F	5	5'-6"
S3	5	3'-7"
S4	5	3'-10"
U1	5	9'-2"
U2	5	13'-10"
U3	5	12'-10"
DOWEL	1" Ø Smooth Bar	2'-0"



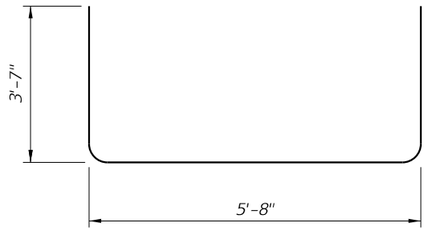
BARS 5B & 5F



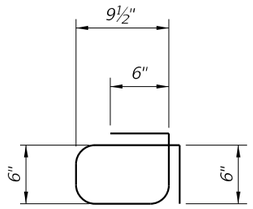
1" Ø DOWEL



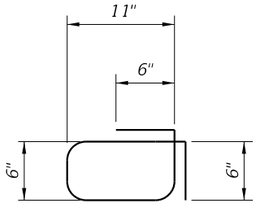
BAR 5U2



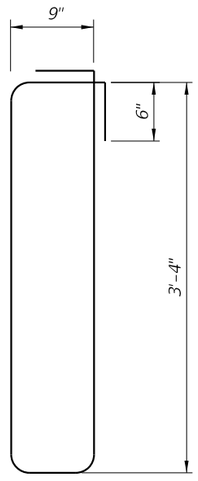
BAR 5U3



BAR 5S3



BAR 5S4



BAR 5U1

REINFORCING STEEL NOTES:

1. *All bar dimensions in the bending diagrams are out to out.*
2. *All reinforcing steel at the open joints will have a 2" minimum cover.*
3. *Lap splices for Bars 5B will be a minimum of 2'-2".*
4. *Lap splices Bars 5T and 5V with 5U1 will be a minimum of 2'-2".*
5. *The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.*

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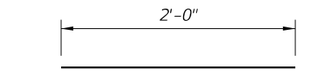
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL L-SHAPED SPREAD FOOTING	INDEX	SHEET
11/01/17						521-514	4 of 4

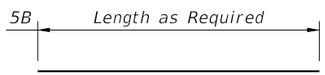
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

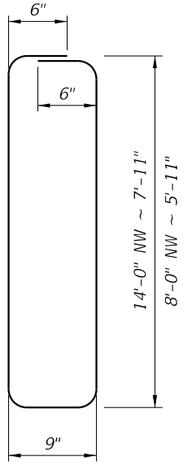
MARK	SIZE	LENGTH
B	5	AS REQD.
T	5	13'-7"
DOWEL	1" Ø Smooth Bar	2'-0"



1" Ø DOWEL



BAR 5B



BAR 5T

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-2".
4. The Contractor may use Deformed Welded Wire Reinforcement (WWR) meeting the requirements of Specification Section 931 when approved by the Engineer.

NOTES

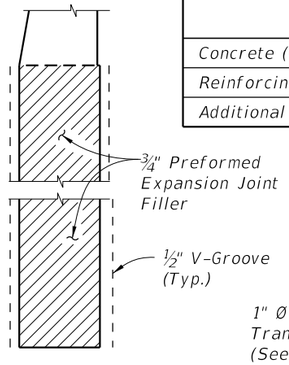
1. Construct the Trench Footing plumb, do not construct the Trench Footing perpendicular to the roadway surface.
2. Concrete will be in accordance with Specification Section 346.
   A. Class II concrete for slightly aggressive environments.
   B. Class VI concrete for moderately or extremely aggressive environments.
3. Dowel Load Transfer Devices will be hot-dip galvanized ASTM A36 smooth round bar or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617.
   Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Shear Keys in footing are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 5° to 45° from the transverse vertical plane.
5. Construct ¾" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
6. 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 Trench Footing. V-Groove locations are to coincide with V-Groove locations in the Barrier/Noise Wall.
7. Fill is required a distance of 4'-0" on both sides for the entire depth of the trench footing. See Typical Section for details.
8. Match Cross Slope of travel lane or shoulder.
9. Spacing shown is along the Gutter Line.
10. 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").

LEGEND: NW = Concrete Barrier
Barrier/Noise Wall

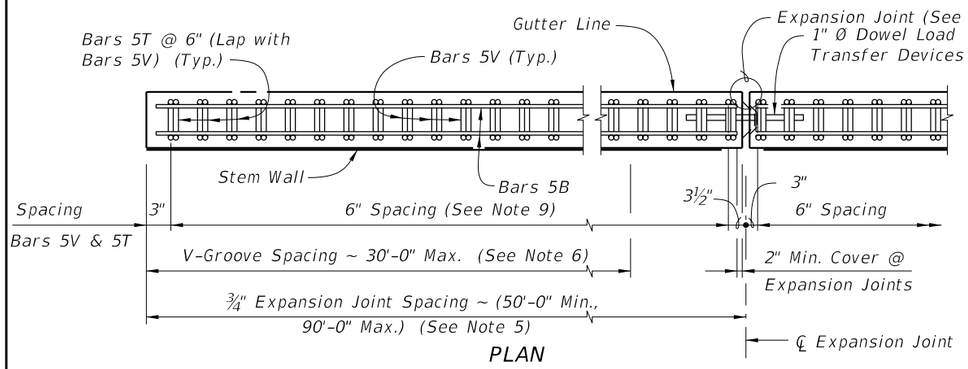
ESTIMATED TRENCH FOOTING QUANTITIES

ITEM	UNIT	QUANTITY	
		8'-0" NW	14'-0" NW
Concrete (Footing)	CY/FT	0.341	0.446
Reinforcing Steel (Typical) *	LB/FT	38.76	49.19
Additional Reinf. @ Expansion Joint	LB	21.36	21.36

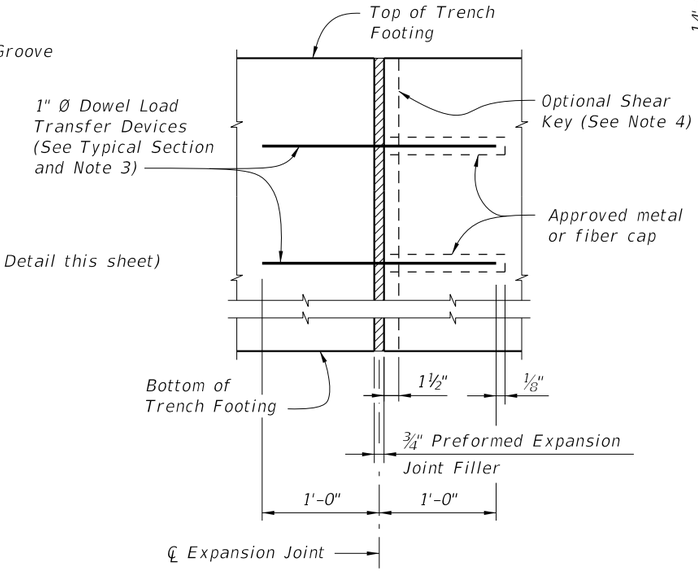
* Bars 5V and 5S1 are included in Index 521-510 or 521-511 quantities.



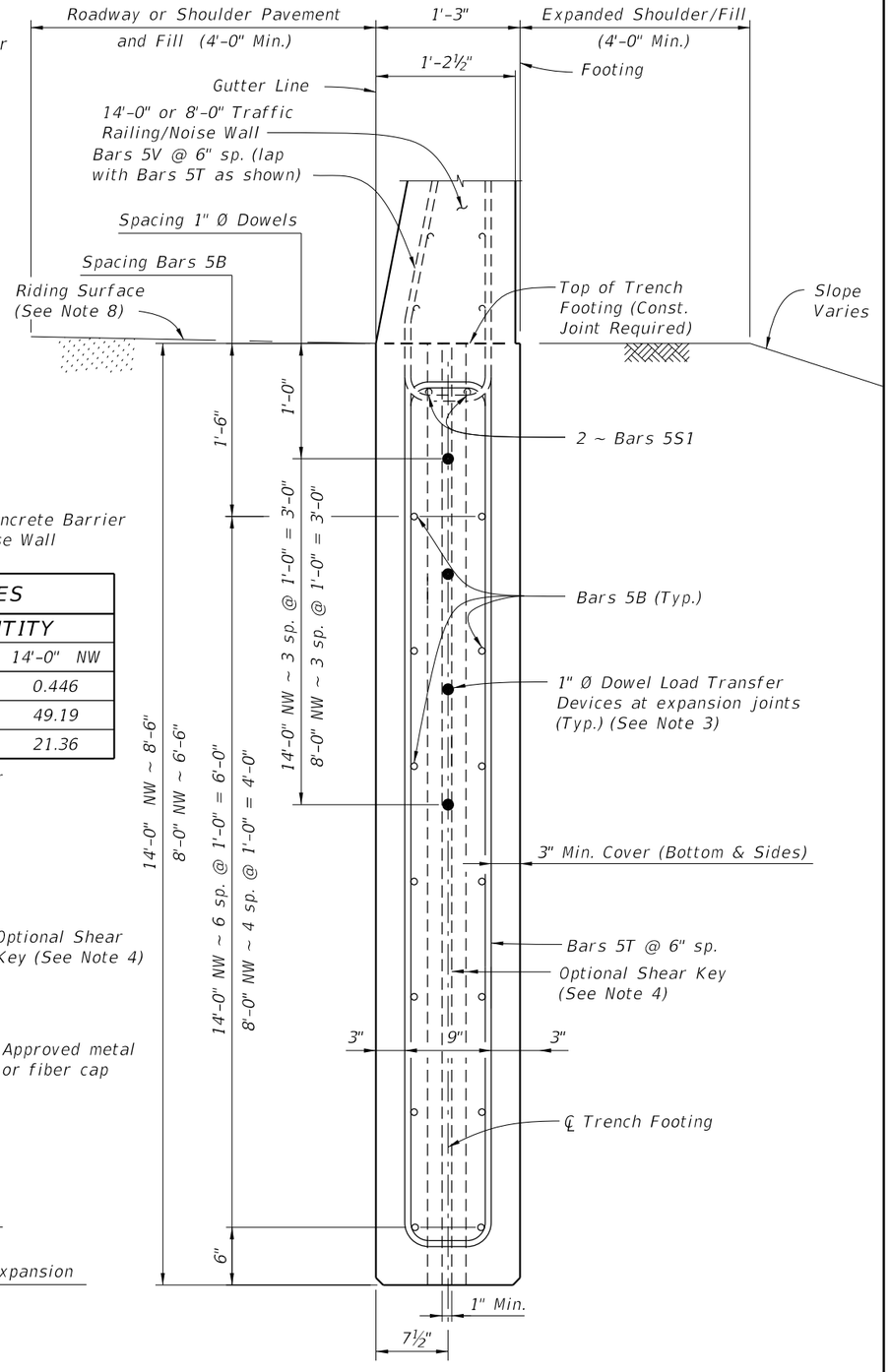
DETAIL "A"
(Showing Locations of ½" V-Grooves and ¾" Preformed Expansion Joint Filler)



PLAN
(Bars 5S1 Not Shown)



EXPANSION JOINT DETAIL
(Trench Footing expansion joints are required at ¾" open joints in Concrete Barrier/Noise Wall)



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

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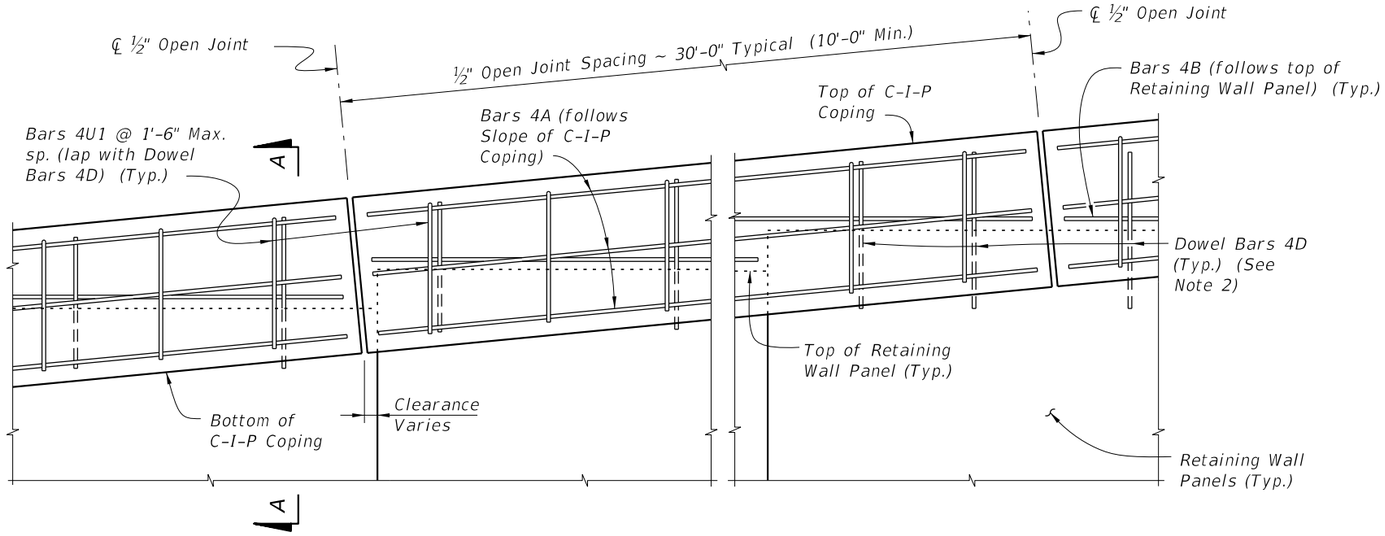
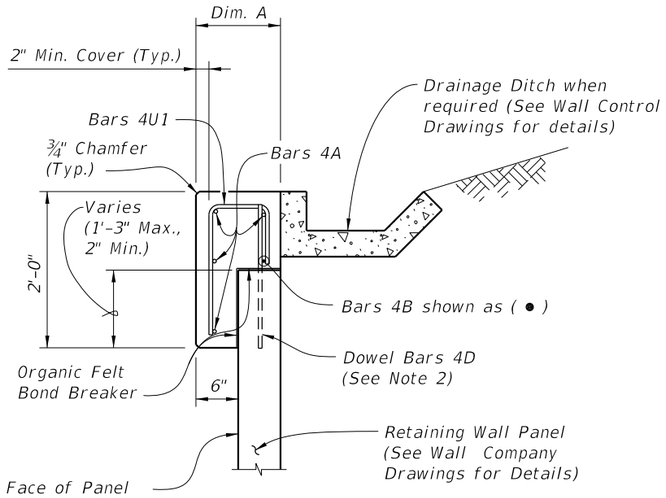
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/NOISE WALL TRENCH FOOTING	INDEX	SHEET
11/01/18					521-515	1 of 1



C-I-P COPING - PARTIAL ELEVATION VIEW

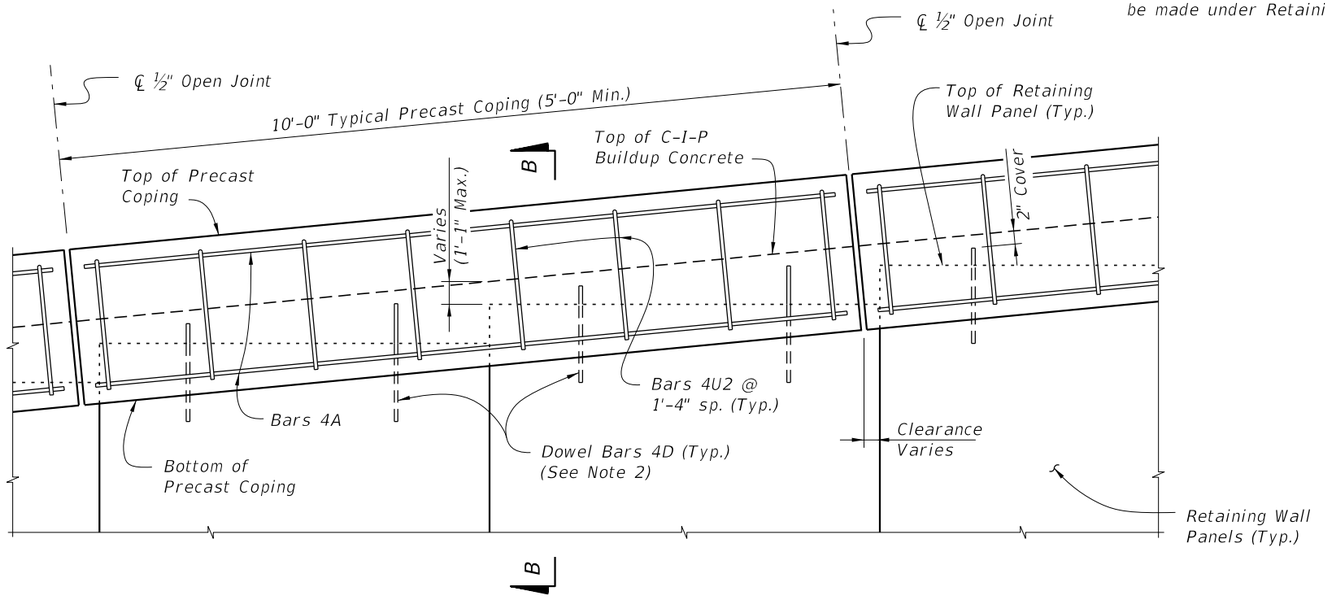


SECTION A-A
C-I-P COPING

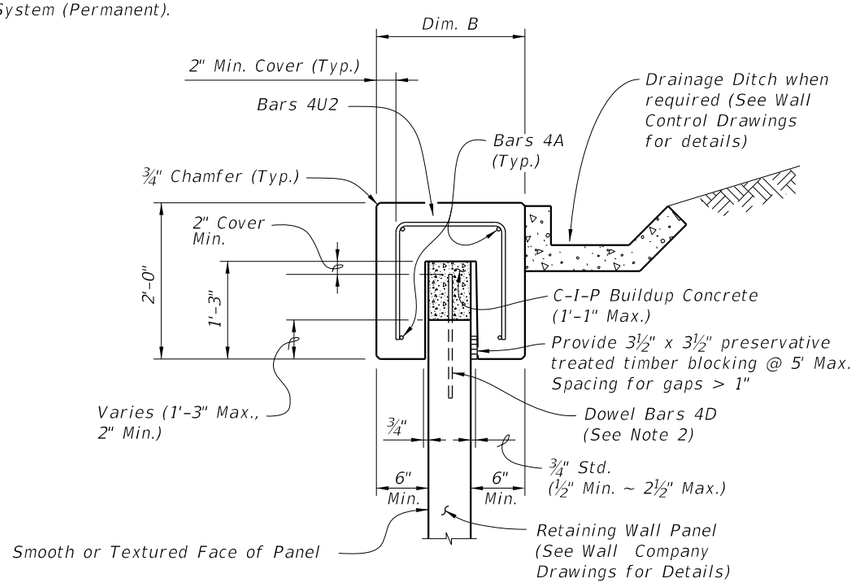
PRECAST AND C-I-P COPING NOTES:

1. *Provide Class II concrete for slightly aggressive environments or Class IV for moderately or extremely aggressive environments.*
2. *Dowel Bars 4D extend 11" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover. See Wall Company Drawings for number and spacing of Dowel Bars 4D.*
3. *Payment for Dowel Bars 4D, Buildup Concrete and Coping will be made under Retaining Wall System (Permanent).*

Dim. A	Panel width + 6"
Dim. B	Panel width + 1'-0" Min.



PRECAST COPING - PARTIAL ELEVATION VIEW



SECTION B-B
PRECAST COPING

10/30/2019 3:08:34 PM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MSE WALL COPING (PRECAST OR C-I-P)	INDEX	SHEET
11/01/19						521-600	1 of 2

REINFORCING STEEL BENDING DIAGRAMS - PRECAST AND C-I-P COPINGS

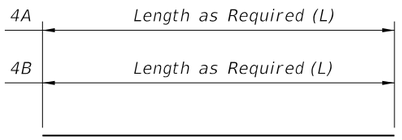
BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH (L) ## S or M	LENGTH (L) ## E
A	4	AS REQD.	AS REQD.
B	4	AS REQD.	AS REQD.
D	4	2'-0"	2'-0"
U1	4	Panel width + 4"	Panel width + 4"
U2	4	Dim. B - 4"	Dim. B - 4"
U3	4	Dim. C - 4"	Dim. C - 6"

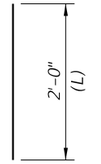
REINFORCING STEEL NOTES:

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 4A may be continuous or spliced at the construction joints. Lap splices for Bars 4A will be a minimum of 1'-8".
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.

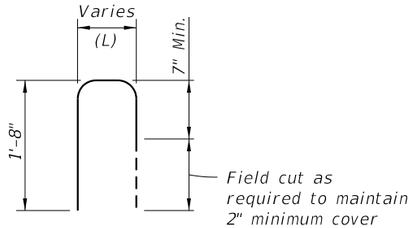
S = Slightly Aggressive
M = Moderately Aggressive
E = Extremely Aggressive



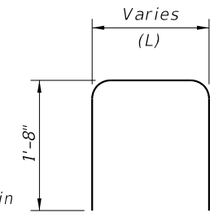
BARS 4A & 4B



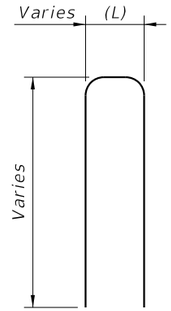
DOWEL BAR 4D



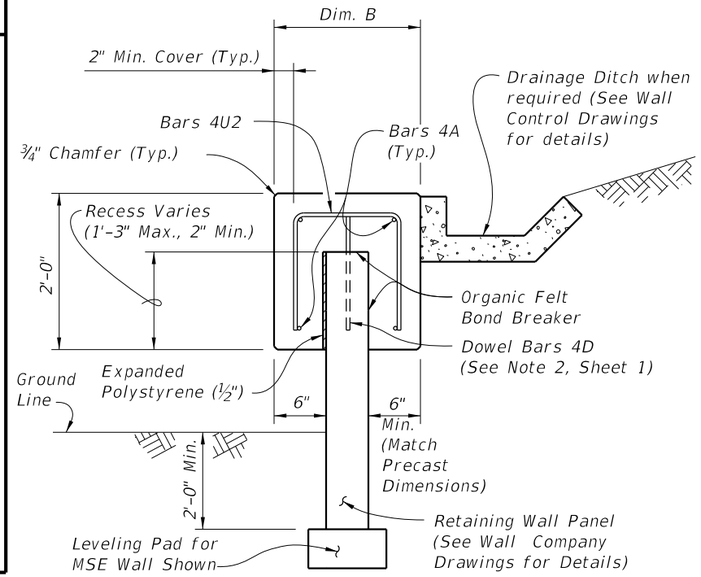
BAR 4U1



BAR 4U2

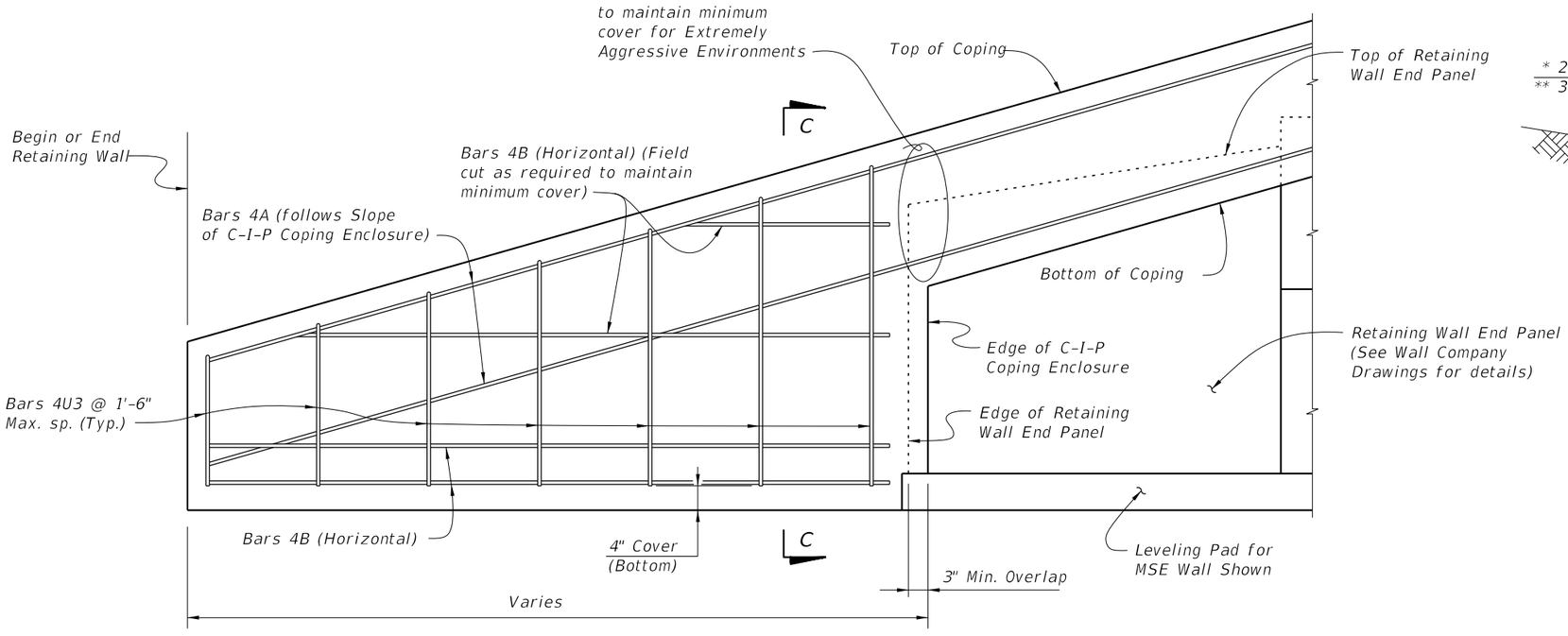


BAR 4U3

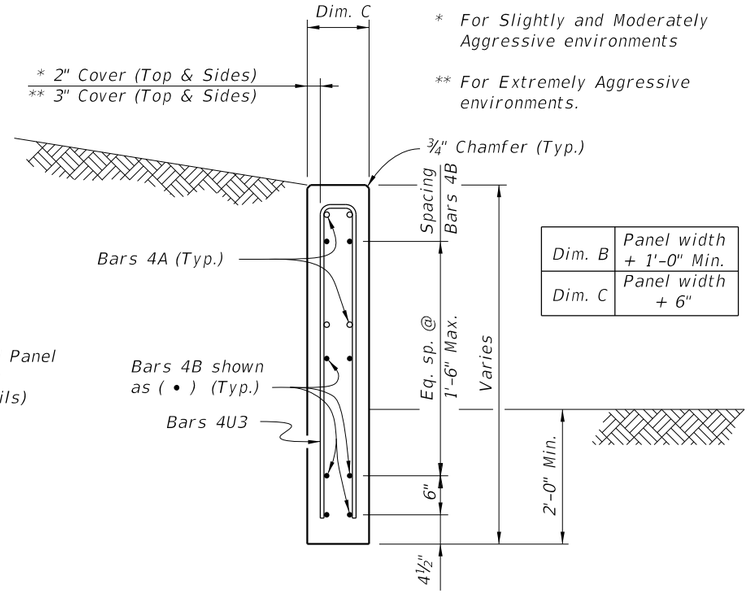


C-I-P COPING USED WITH PRECAST COPING

Note: When precast coping units do not fit the entire length of the retaining wall, use this similar C-I-P coping for short portions between precast coping units. This C-I-P coping may also be used for vertical copings.



C-I-P COPING ENCLOSURE DETAIL



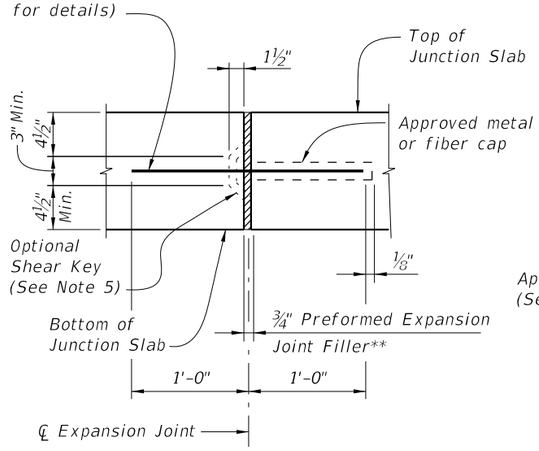
* For Slightly and Moderately Aggressive environments

** For Extremely Aggressive environments.

SECTION C-C

10/30/2019 3:08:35 PM

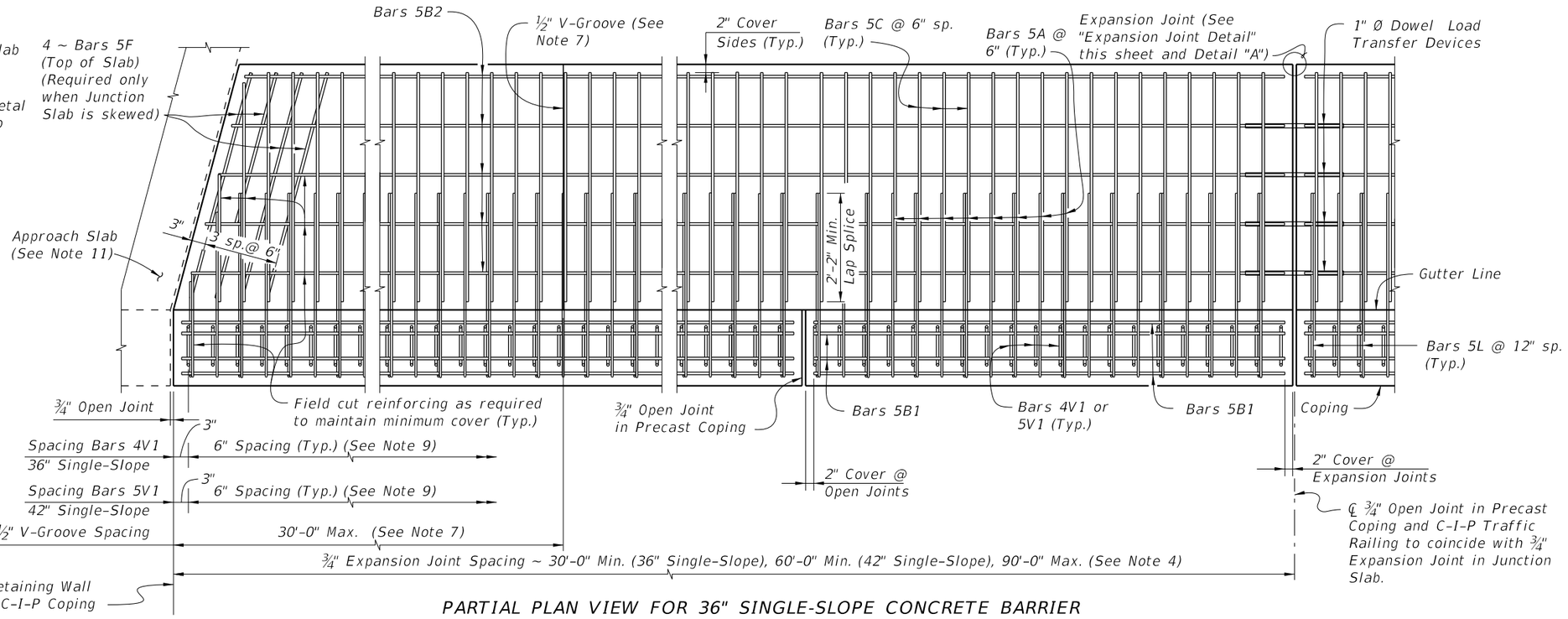
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MSE WALL COPING (PRECAST OR C-I-P)	INDEX	SHEET
11/01/19						521-600	2 of 2



EXPANSION JOINT DETAIL

(Junction Slab expansion joints are to coincide with ¾" open joints in Concrete Barrier)

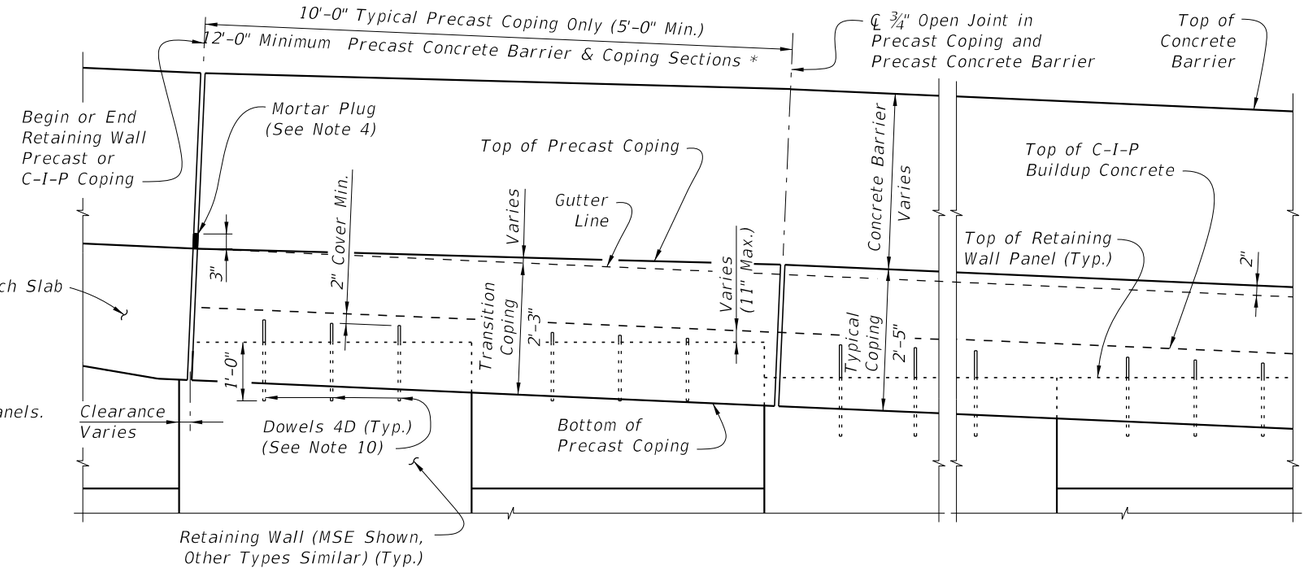
** Stay-In-Place Plastic Preformed Bond Breakers are permitted to form joints.



PARTIAL PLAN VIEW FOR 36" SINGLE-SLOPE CONCRETE BARRIER
(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
(Precast Coping Shown, C-I-P Coping Similar) (Concrete Barrier not Shown for Clarity)

JUNCTION SLAB NOTES:

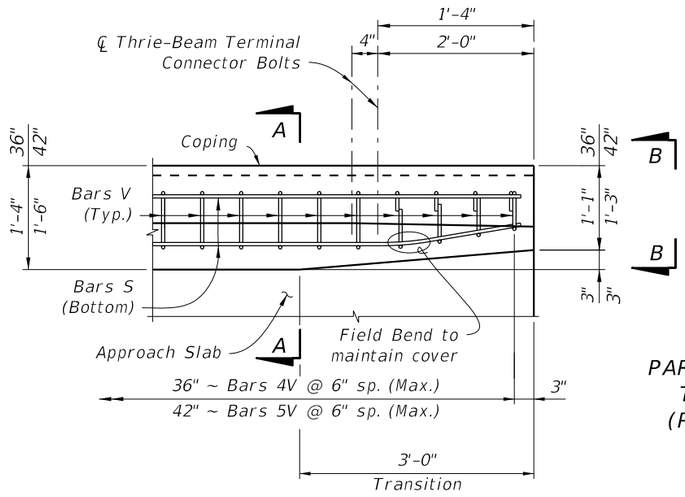
1. Construct the expansion joints, V-Grooves and face of coping plumb.
2. Provide Class II concrete for slightly aggressive environments or Class IV for moderate or extremely aggressive environments.
3. Dowel Load Transfer Devices will be hot-dip galvanized ASTM A 36 smooth round bar, or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct ¾" Expansion Joints in junction slabs and C-I-P copings plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown. Provide 3"x3" Mortar plugs in open joints at the base of Concrete Barriers to contain runoff.
5. Shear Keys in Junction Slab are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 5° to 45° from horizontal.
6. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
7. Construct ½" V-Grooves in junction slabs and C-I-P copings at 30'-0" maximum intervals as shown. Space V-Grooves equally between ¾" Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Concrete Barrier.
8. Shoulder or Roadway Pavement is required on top of the junction slab for its entire length on the traffic side of the Concrete Barrier. See Typical Sections on Sheets 2 and 3 for details.
9. Spacing shown is along the Gutter Line.
10. For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extended 9" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
11. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
    Index 400-090 – Approach Slabs (Flexible Pavement Approaches)
    Index 400-091 – Approach Slabs (Rigid Pavement Approaches)



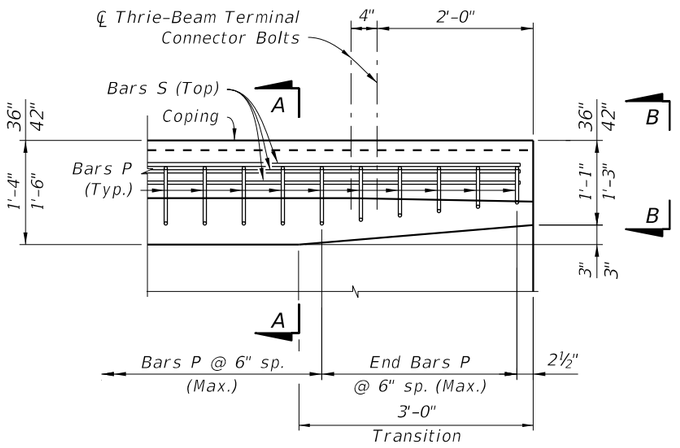
PARTIAL ELEVATION VIEW
(Precast Coping and Junction Slab Reinforcing not Shown for Clarity)
(Precast Coping Shown, C-I-P Coping Similar)

* C-I-P End Section must be ≥ 12'-0".

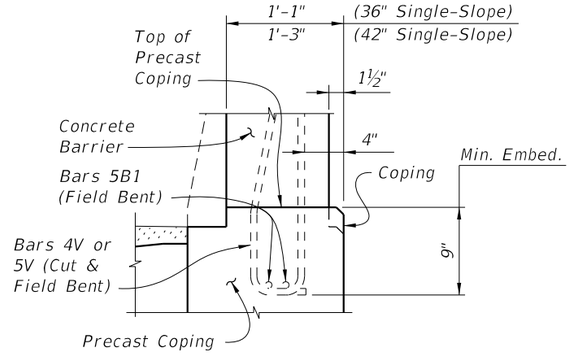
CROSS REFERENCE: For Detail "A", see Sheet 2.



PLAN - RAILING END TRANSITION
(Showing Bars V and S)

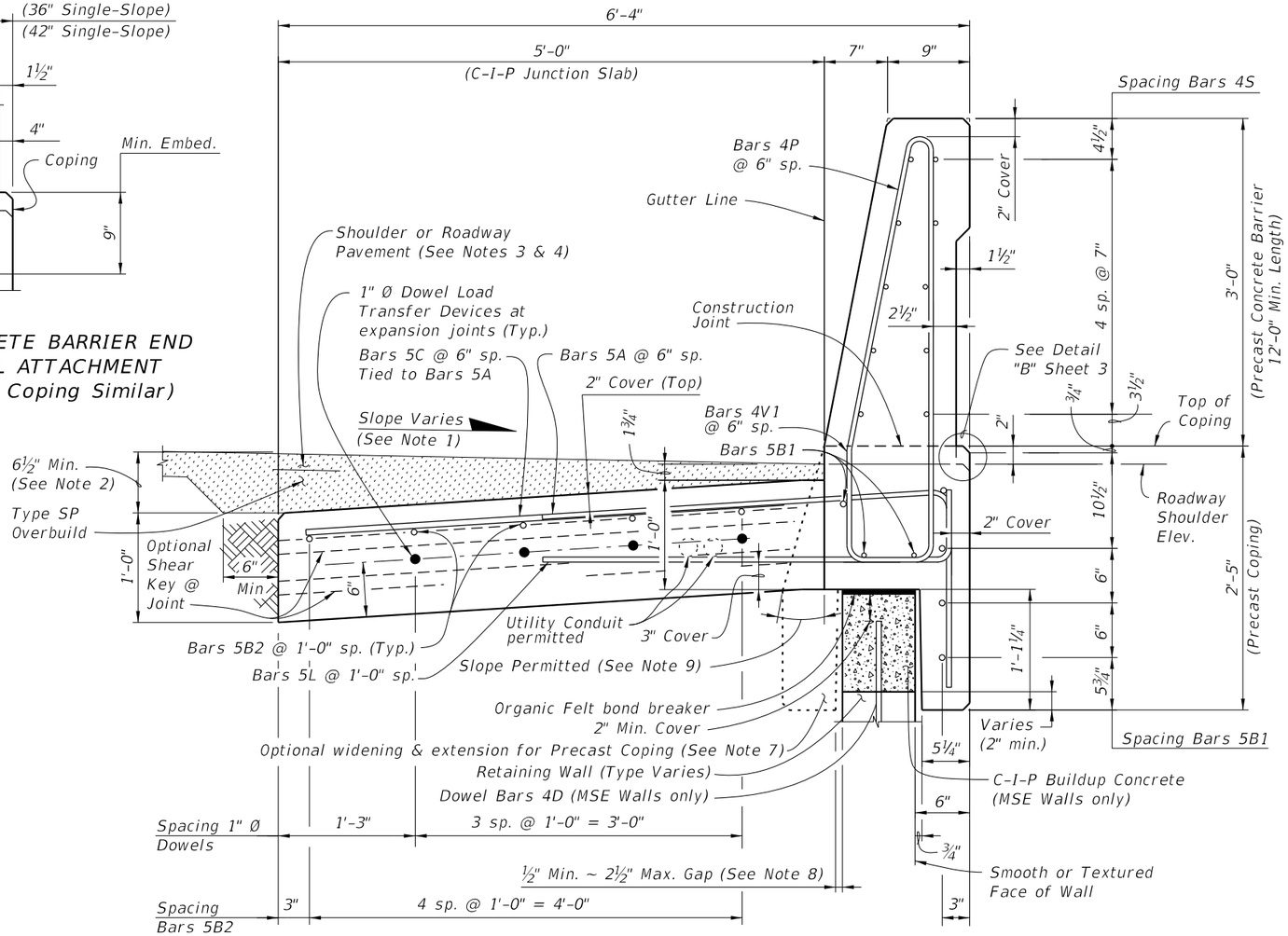


PLAN - RAILING END TRANSITION
(Showing Bars P and S)



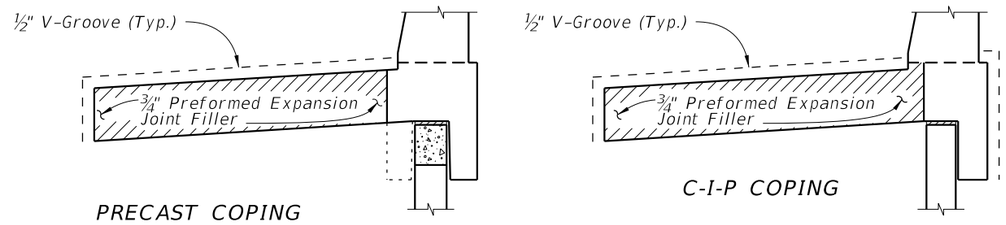
PARTIAL END VIEW OF CONCRETE BARRIER END TRANSITION FOR GUARDRAIL ATTACHMENT
(Precast Coping Shown, C-I-P Coping Similar)

*** For height transition See Index 521-427 or 521-428.



TYPICAL SECTION THRU PRECAST 36" SINGLE-SLOPE
CONCRETE BARRIER AND COPING WITH C-I-P JUNCTION SLAB

RAILING END TRANSITION DETAILS ***



DETAIL "A"
(Showing Locations of ½" V-Grooves and ¾" Preformed Expansion Joint Filler)

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. 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 edge of the slab.
4. See Roadway Plans for asphalt shoulder, roadway pavement and overbuild.
5. Minimum length of Junction Slab between expansion joints is 30'-0".
6. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Provide mechanical couplers in accordance with Specification Section 415. Mechanical couplers shall develop 125% of the bar yield strength.
7. Contractor to maintain stability of precast coping/Concrete Barrier 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.
8. 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 2½" air gap.
9. Angle varies ~ 0° min., 25° max.

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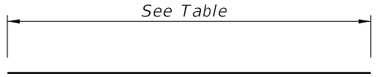
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/JUNCTION SLAB - WALL COPING	INDEX	SHEET
11/01/19						521-610	2 of 3

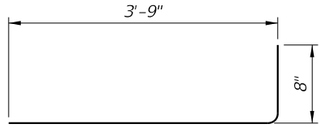
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

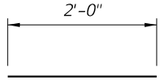
MARK	SIZE	LENGTH			
		PRECAST COPING FOR SINGLE-SLOPE		C-I-P COPING FOR SINGLE-SLOPE	
		(36")	(42")	(36")	(42")
A	5	5'-3"	5'-5"	7'-10"	8'-0"
B1	5	11'-6"	9'-6"	AS REQD.	AS REQD.
B2	5	AS REQD.	AS REQD.	AS REQD.	AS REQD.
C	5	4'-10"	4'-10"	N/A	N/A
F	5	4'-10"	4'-10"	4'-10"	4'-10"
L	5	4'-5"	4'-5"	4'-5"	4'-5"
P	4	5'-11"	N/A	5'-11"	N/A
P	5	N/A	7'-0"	N/A	7'-0"
S	4	11'-6"	N/A	AS REQD.	N/A
S	6	N/A	9'-6"	N/A	AS REQD.
V1	4	5'-9"	N/A	5'-9"	N/A
V1	5	N/A	6'-4"	N/A	6'-4"
1" Ø Dowel	Smooth Bar	2'-0"	2'-0"	2'-0"	2'-0"



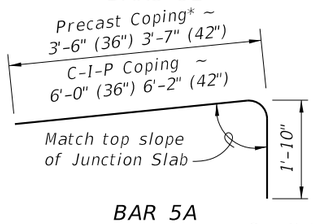
BARS 5B1, 5B2, 5C, 5F, 4S, & 6S



BARS 5L

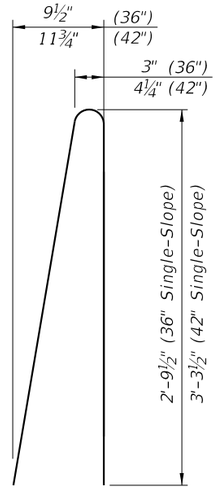


1" Ø DOWEL

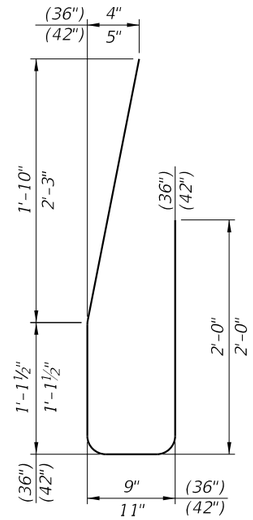


BAR 5A

* See Note 5 & 6



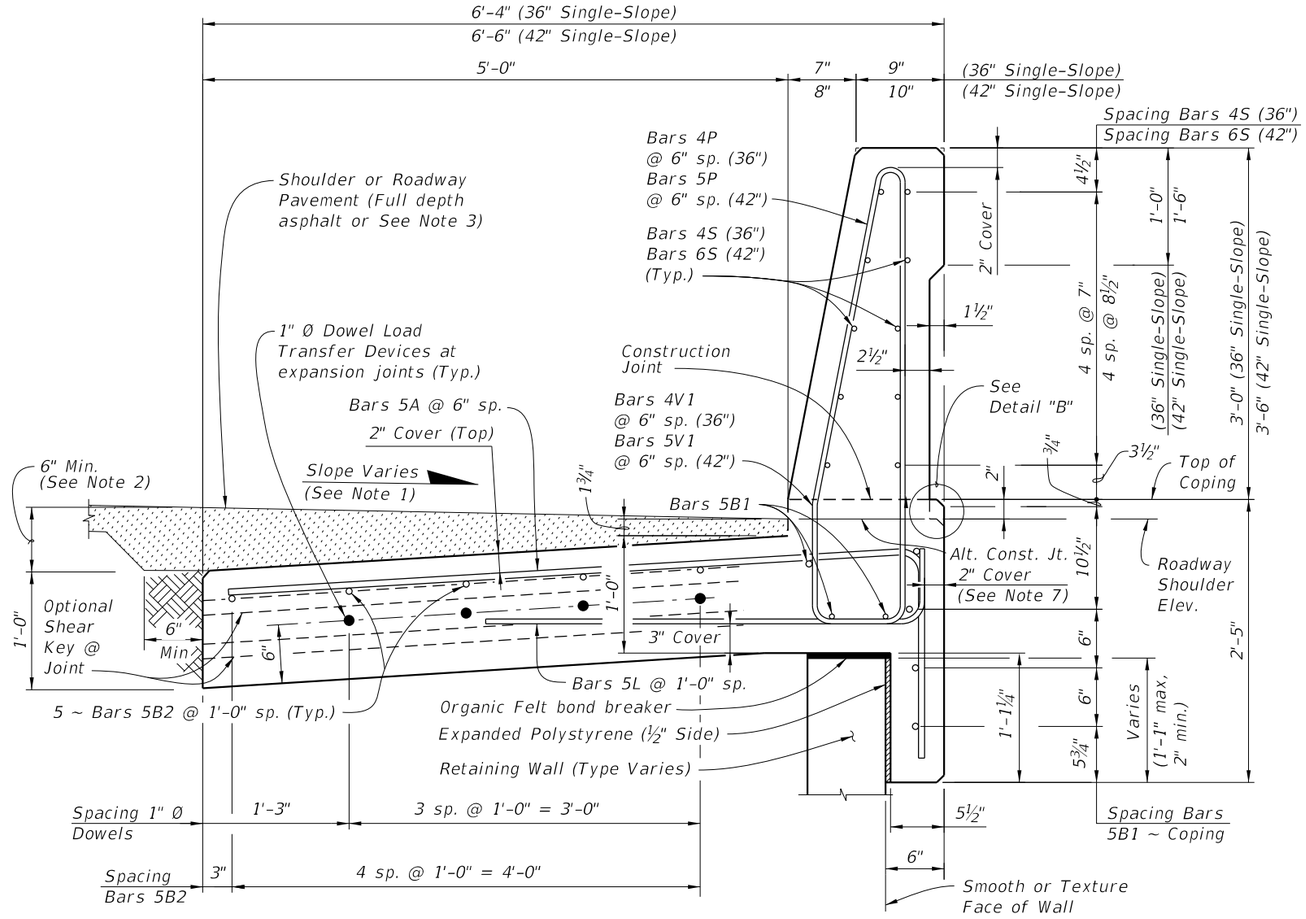
STIRRUP BAR
4P (36") 5P (42")



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

REINFORCING STEEL NOTES:

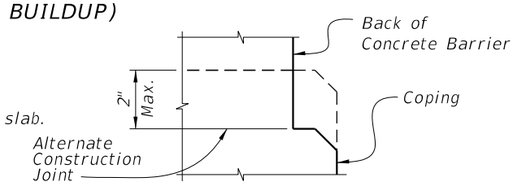
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion and open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B & 5S will be a minimum of 2'-2".
4. For Precast Copings only, lap splice Bars 5A with Bars 5C. Lap splices will be a minimum of 2'-2".
5. The Contractor may use either full length Bars 5A or lap splice with Bars 5C at Bars 5A for C-I-P Copings.
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-2½" (36" Single-Slope) or 1'-4½" (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.



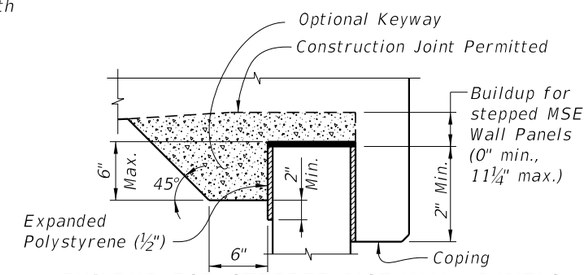
TYPICAL SECTION THRU C-I-P CONCRETE BARRIER WITH C-I-P JUNCTION SLAB AND C-I-P COPING
(PRECAST COPING SIMILAR WITH C-I-P BUILDUP)

NOTES:

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 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 2" minimum concrete cover.
6. If slip forming is used, submit shop drawings for approval showing 2½" side cover with the Typical Section dimensions adjusted.



DETAIL "B"
OPTIONAL NOTCH AT TOP OF COPING



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

ESTIMATED QUANTITIES FOR C-I-P			
ITEM	UNIT	QUANTITY (36")	QUANTITY (42")
Concrete	CY/LF	0.376	0.420
Reinforcing Steel (Typical) (excludes Bars 5C & 5F)	LB/LF	62.45	82.17
Additional Reinf. @ Expansion Joint (Steel Dowels)	LB	21.36	21.36

(The above concrete quantities are based on a max. superelevation of 6.25%)

SINGLE-SLOPE CONCRETE BARRIERS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/JUNCTION SLAB - WALL COPING	INDEX	SHEET
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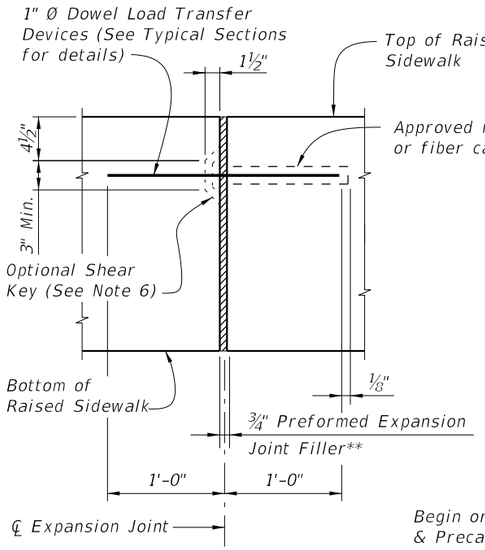
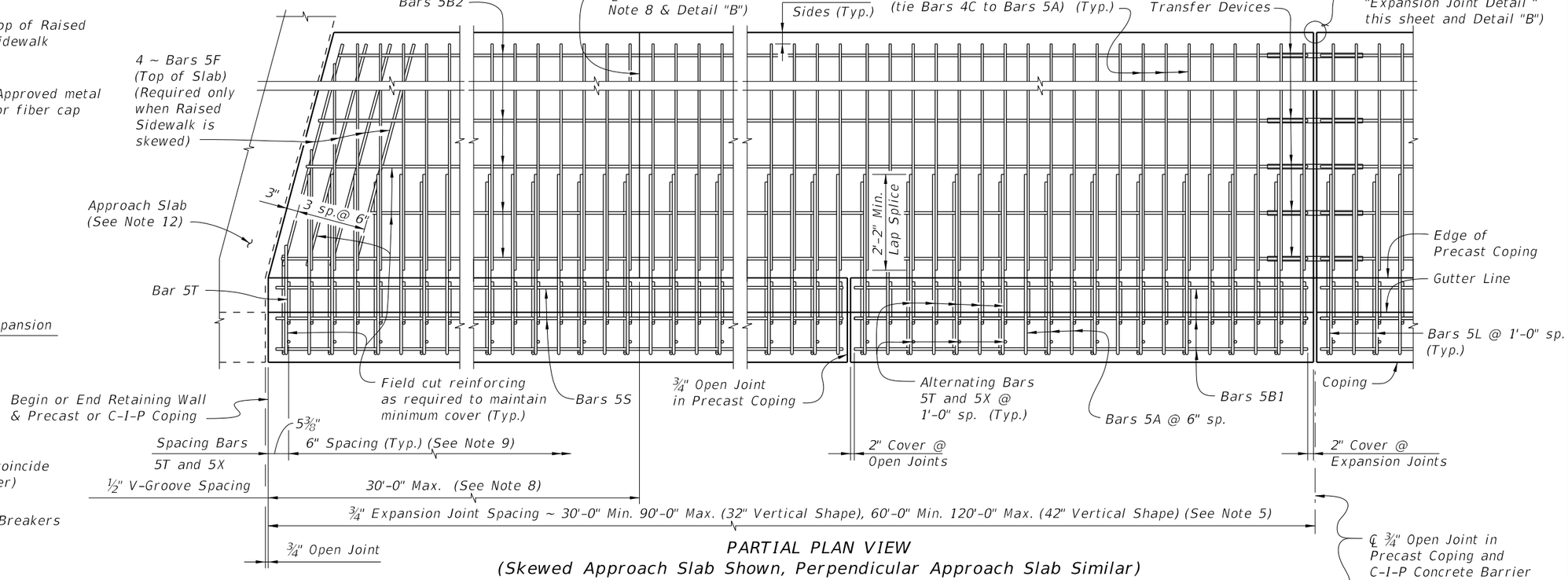


EXPANSION JOINT DETAIL

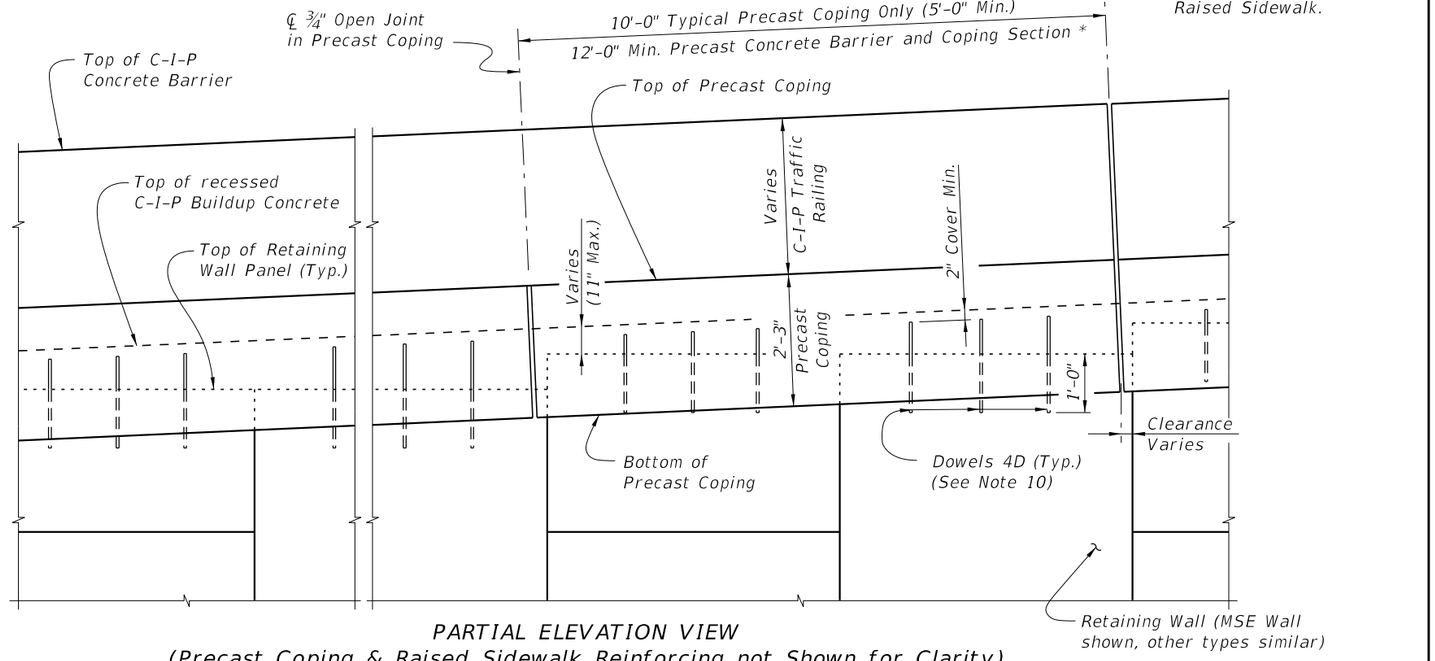
(Raised Sidewalk expansion joints are to coincide with ¾" open joints in Concrete Barrier)

** Stay-In-Place Plastic Preformed Bond Breakers are permitted to form joints.



PARTIAL PLAN VIEW

(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
(Precast Coping Shown, C-I-P Coping Similar) (Concrete Barrier not Shown for Clarity)



PARTIAL ELEVATION VIEW

(Precast Coping & Raised Sidewalk Reinforcing not Shown for Clarity)
(Precast Coping Shown, C-I-P Coping Similar)

* C-I-P End Section must be ≥ 12'-0".

VERTICAL SHAPE

RAISED SIDEWALK NOTES:

1. When a 42" Vertical Shape is used with a precast coping, increase Bars 4C to Bars 5C or provide Bars 4C @ 4" spacing within 6'-0" of Expansion Joints.
2. Construct the expansion joints, V-Grooves and face of coping plumb.
3. Provide Class II concrete for slightly aggressive environments or Class IV for moderately or extremely aggressive environments.
4. Dowel Load Transfer Devices will be hot-dip galvanized ASTM A 36 smooth round bar, or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
5. Construct ¾" Expansion Joints in raised sidewalk and C-I-P copings perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown.
6. Shear Keys in Junction Slab are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 5° to 45° from horizontal.
7. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
8. Construct ½" V-Grooves in raised sidewalk and C-I-P coping at 30'-0" maximum intervals as shown. Space V-Grooves equally between ¾" Expansion Joints and/or Begin or End Raised Sidewalk. V-Groove locations are to coincide with V-Groove locations in the Concrete Barrier.
9. Spacing shown is along the Gutter Line.
10. For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extend 9" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
11. Finish Sidewalks in accordance with Specification Section 522.
12. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
    Index 400-090 – Approach Slabs (Flexible Pavement Approaches)
    Index 400-091 – Approach Slabs (Rigid Pavement Approaches)

CROSS REFERENCE: For Detail "B", see Sheet 4.

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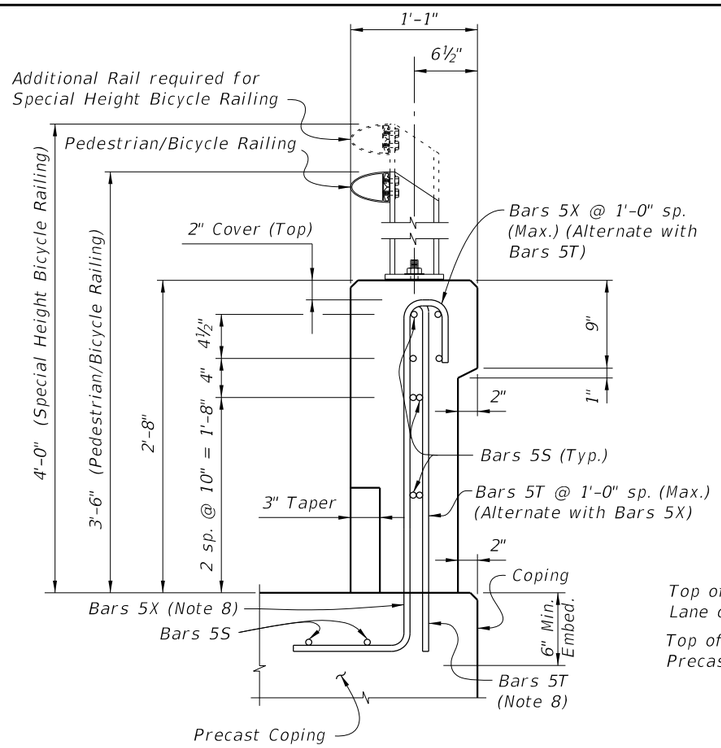
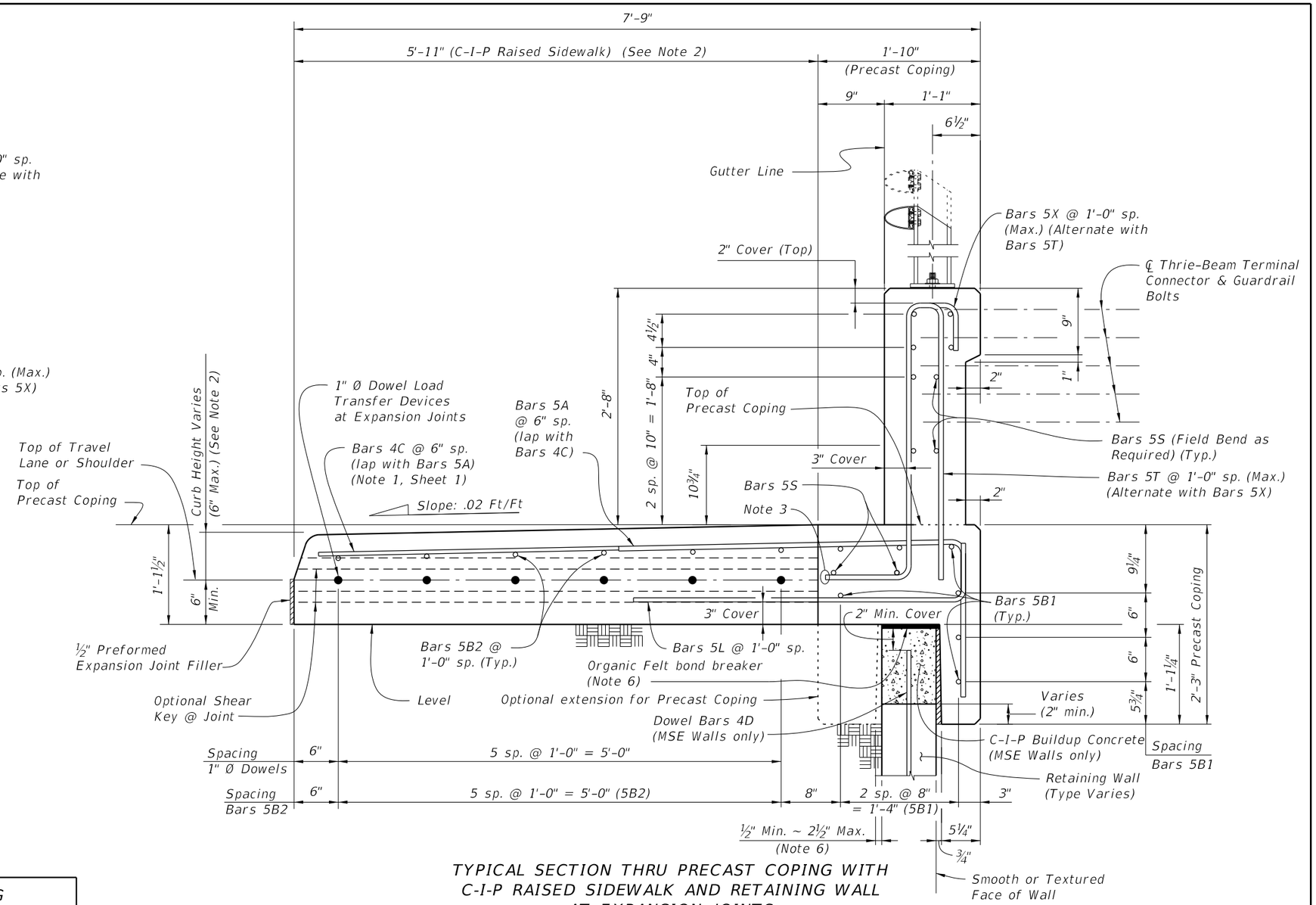
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING	INDEX	SHEET
11/01/18						521-620	1 of 4



END VIEW OF 32" VERTICAL SHAPE END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5S, Bars 5T and Bars 5X) (Precast Coping Shown, C-I-P Coping Similar)

NOTE: See Sheet 4 for End Transition Elevation.



TYPICAL SECTION THRU PRECAST COPING WITH C-I-P RAISED SIDEWALK AND RETAINING WALL AT EXPANSION JOINTS (32" Vertical Shape Shown, 42" Vertical Shape Similar)

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).

NOTES:
1. Actual width varies depending on type of Retaining Wall used.
2. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 5'-11" dimension is based on a 32" Vertical Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
3. Trim end of Bars 5T and 5X to clear construction joint for 42" Vertical Shape.
4. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.
5. Contractor to maintain stability of precast coping prior to junction slab completion.
6. When the air gap between the precast coping extension and retaining wall exceeds 2½", fill gap with full depth Expanded Polystyrene to provide a maximum 2½" 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

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING	INDEX	SHEET
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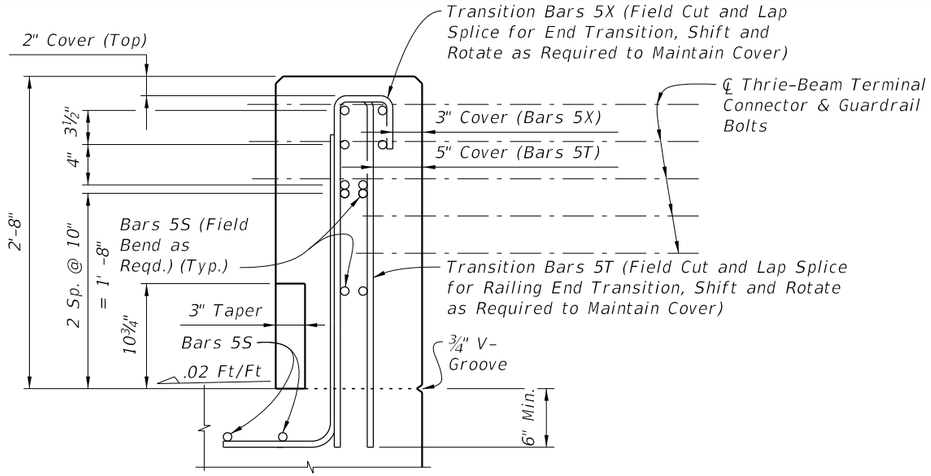
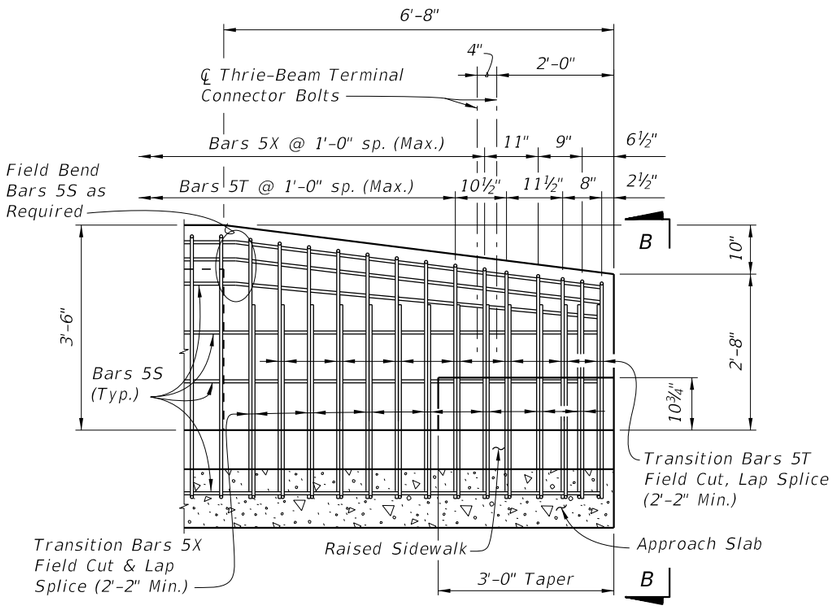


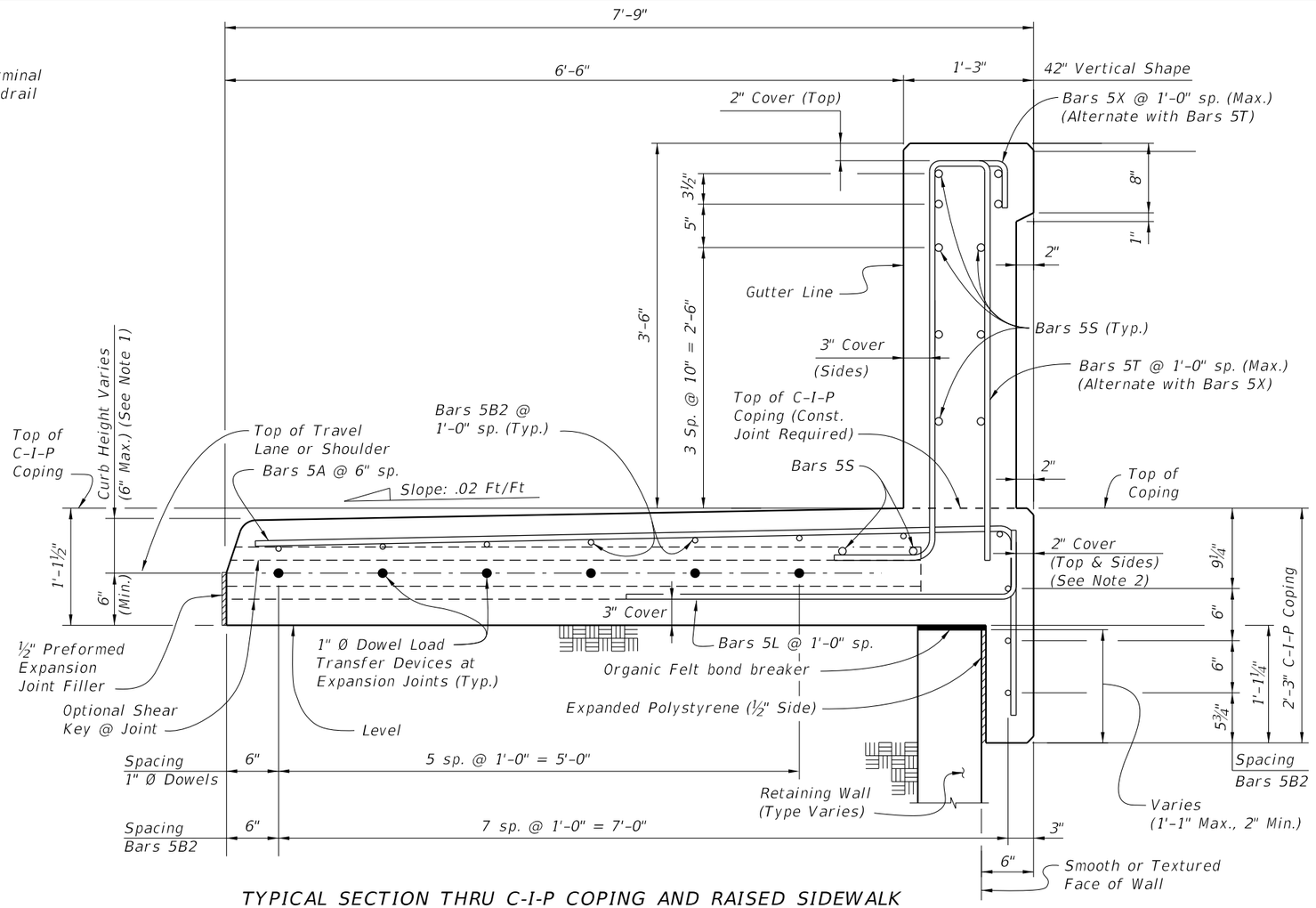
END VIEW OF VERTICAL FACE END TRANSITION



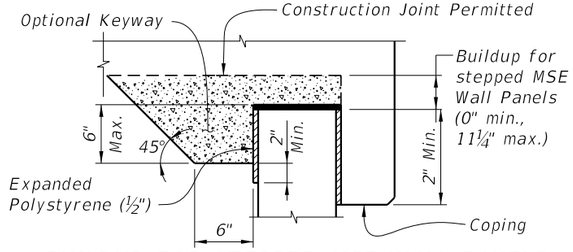
ELEVATION
END TRANSITION
(Guardrail Not Shown For Clarity)

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).



TYPICAL SECTION THRU C-I-P COPING AND RAISED SIDEWALK
AND RETAINING WALL AT EXPANSION JOINTS
(42" Vertical Face Shown, 32" Vertical Face Similar)



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

NOTES:
1. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 6'-6" dimension is based on a 42" Vertical Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
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

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LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING	INDEX	SHEET
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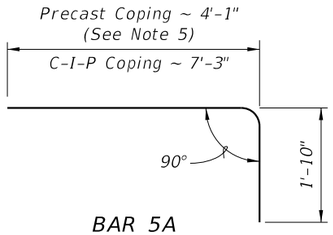
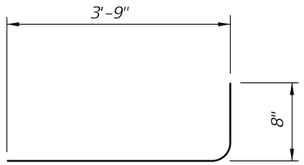
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

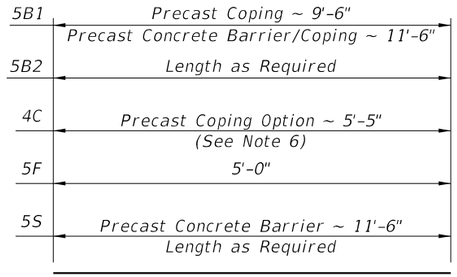
MARK	SIZE	LENGTH	
		PRECAST COPING/ RAILING	C-I-P COPING
A	5	5'-11"	9'-1"
B1	5	9'-6"/11'-6"	N/A
B2	5	AS REQD.	AS REQD.
C	4	5'-5"	N/A
F	5	5'-0"	5'-0"
L	5	4'-5"	4'-5"
1" Ø Dowel	Smooth Bar	2'-0"	2'-0"
		32"	42"
T	5	7'-4"	9'-2"
X	5	5'-1"	6'-0"



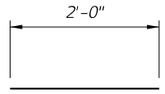
BAR 5A



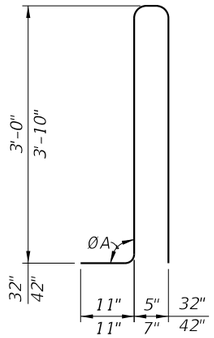
BAR 5L



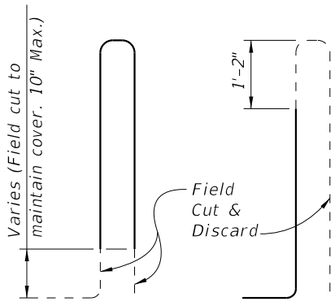
BARS 5B1, 5B2, 4C, 5F & 5S



1" Ø DOWEL

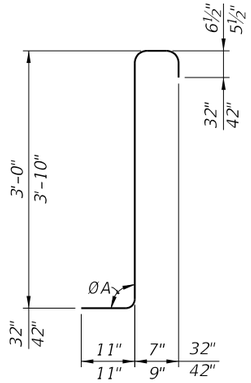


STIRRUP BAR 5T

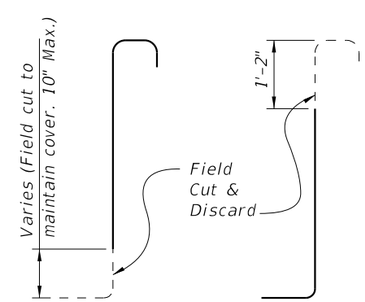


END TRANSITION STIRRUP BARS 5T FOR 42"

To Be Field Cut (7 of each required per Railing End Transition)



STIRRUP BAR 5X



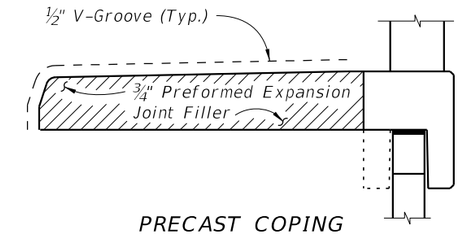
END TRANSITION STIRRUP BARS 5X FOR 42"

To Be Field Cut (7 of each required per Railing End Transition)

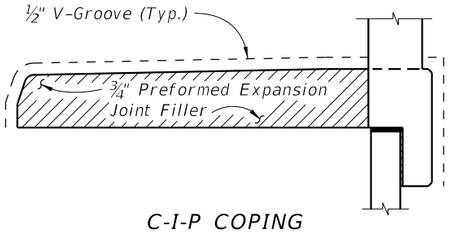
REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B and 5S will be a minimum of 2'-2".
4. Lap splice Bars 5A with Bars 4C will be a minimum of 2'-2".
5. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-8".
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 5'-8", and reinforcing size must be increased to #5 bars (Bars 5C).
7. The Contractor may use deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.

* See Sheet 3 Note 3.



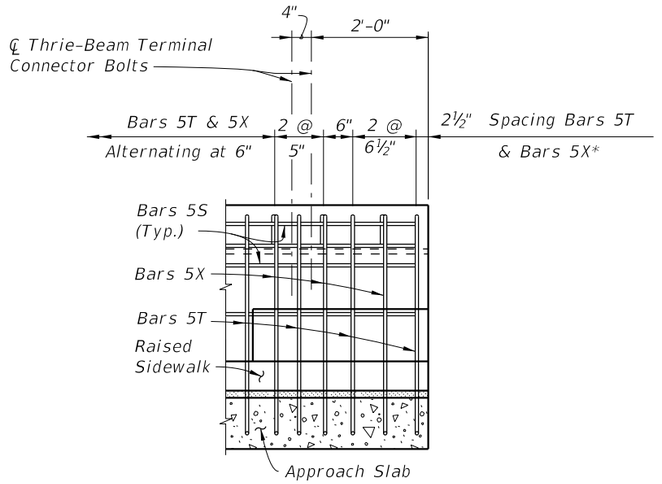
PRECAST COPING



C-I-P COPING

DETAIL "B"

(Showing Locations of ½" V-Grooves and ¾" Preformed Expansion Joint Filler)



END TRANSITION ELEVATION FOR 32" VERTICAL SHAPE
(Guardrail Not Shown For Clarity)

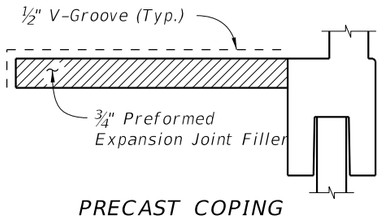
ESTIMATED CONCRETE BARRIER QUANTITIES

ITEM	UNIT	QUANTITY 32"	QUANTITY 42"
Concrete	CY/LF	0.095	0.145
Reinforcing Steel	LB/LF	23.38	28.33

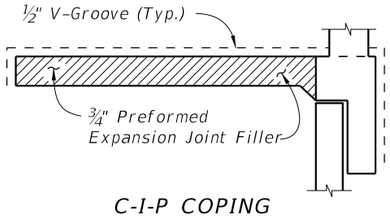
VERTICAL SHAPE

8:19:38 AM
10/29/2019

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE BARRIER/RAISED SIDEWALK - WALL COPING	INDEX	SHEET
11/01/18						521-620	4 of 4



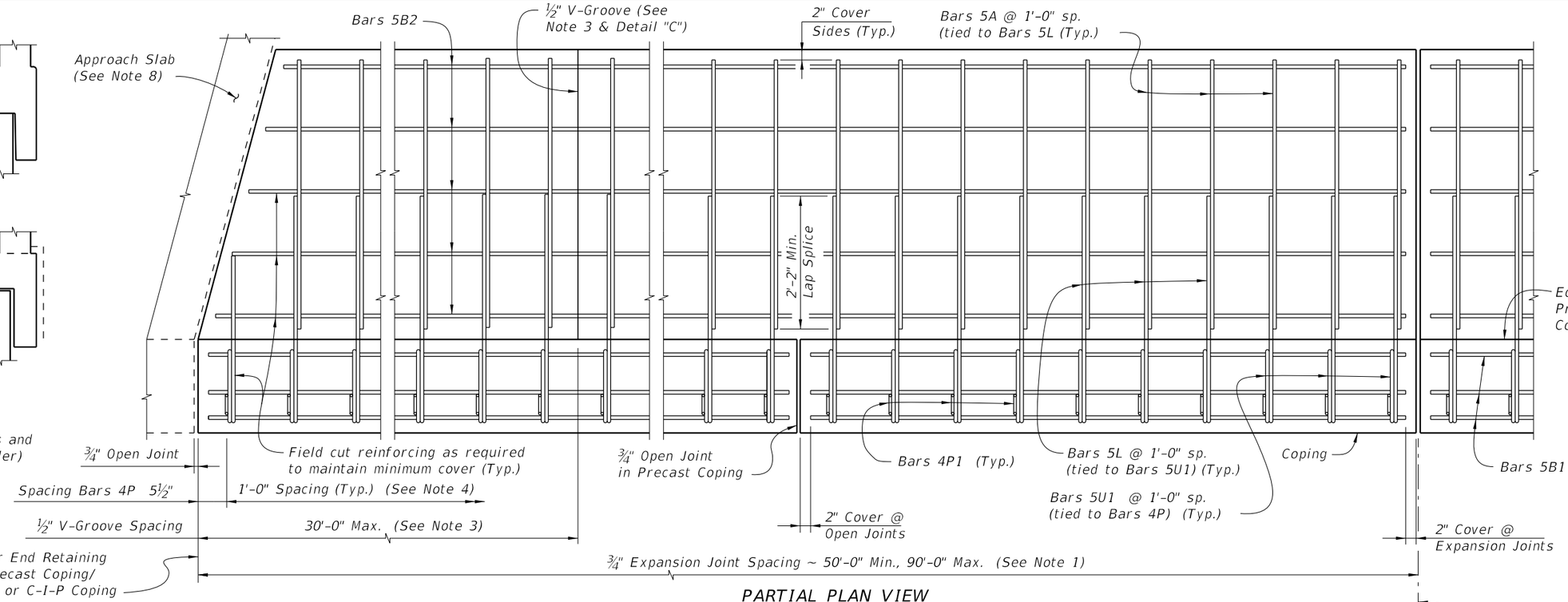
PRECAST COPING



C-I-P COPING

DETAIL "C"

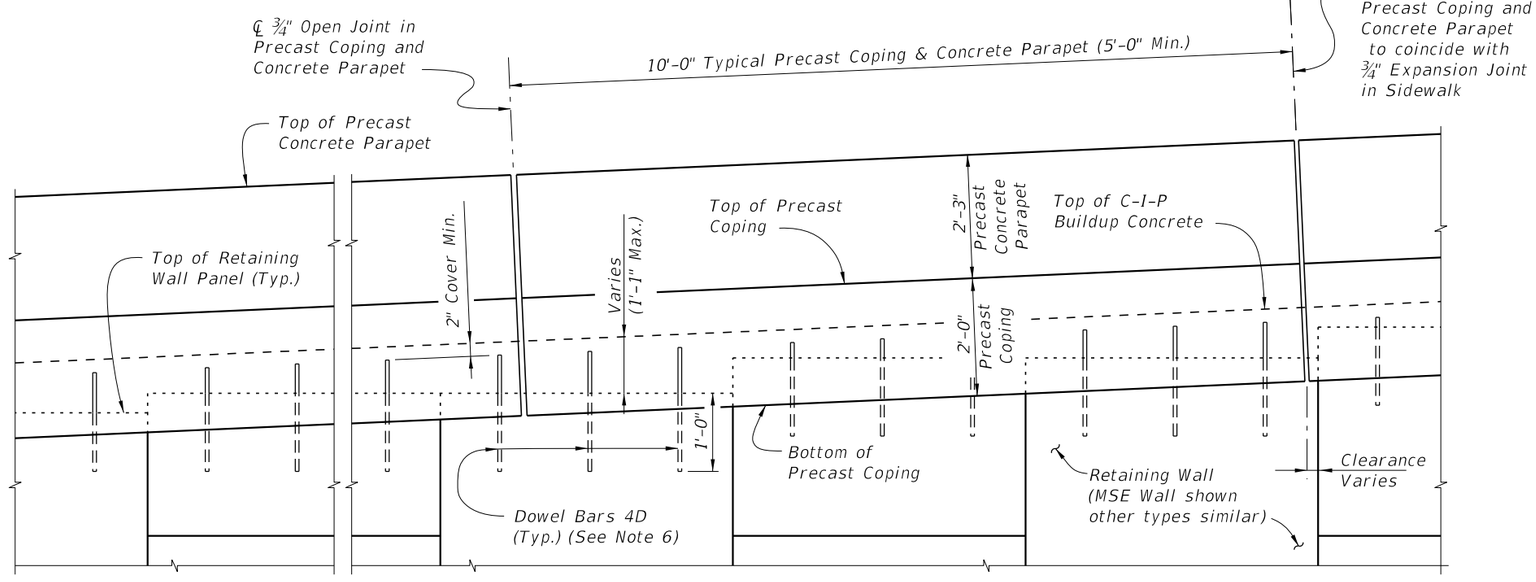
(Showing Locations of ½" V-Grooves and ¾" Preformed Expansion Joint Filler)



PARTIAL PLAN VIEW

(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)

(Precast Coping Shown, C-I-P Coping Similar) (Concrete Parapet not Shown for Clarity)



PARTIAL ELEVATION VIEW

(Precast Coping and Sidewalk Reinforcing not Shown for Clarity)

(Precast Coping Shown, C-I-P Coping Similar)

PRECAST COPING/PARAPET AND SIDEWALK NOTES:

1. Provide Class II concrete for slightly aggressive environments or Class IV for moderately or extremely aggressive environments.
2. Construct ¾" Expansion Joints in sidewalk and C-I-P coping plumb and either perpendicular or radial to the Gutter Line. Provide Expansion Joints at 90'-0" maximum intervals as shown.
3. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
4. Construct ½" V-Grooves in sidewalk and C-I-P coping. Space V-Grooves at 30'-0" Maximum intervals equally spaced between ¾" Expansion Joints and/or Begin or End Sidewalk. For C-I-P Coping only, V-Groove locations are to coincide with V-Groove locations in the Concrete Parapet.
5. Spacing shown is along the Gutter Line.
6. For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extend 11" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
7. Work this Index with Index 521-001 – Concrete Barrier Wall
8. For C-I-P Coping only, work this Index with Index 521-820 – Pedestrian/Bicycle Railing, or Index 521-825 – 42" Concrete Pedestrian/ Bicycle Railing.
9. Finish Sidewalks in accordance with Specifications Section 522.
10. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
    Index 400-090 – Approach Slabs (Flexible Pavement Approaches)
    Index 400-091 – Approach Slabs (Rigid Pavement Approaches)

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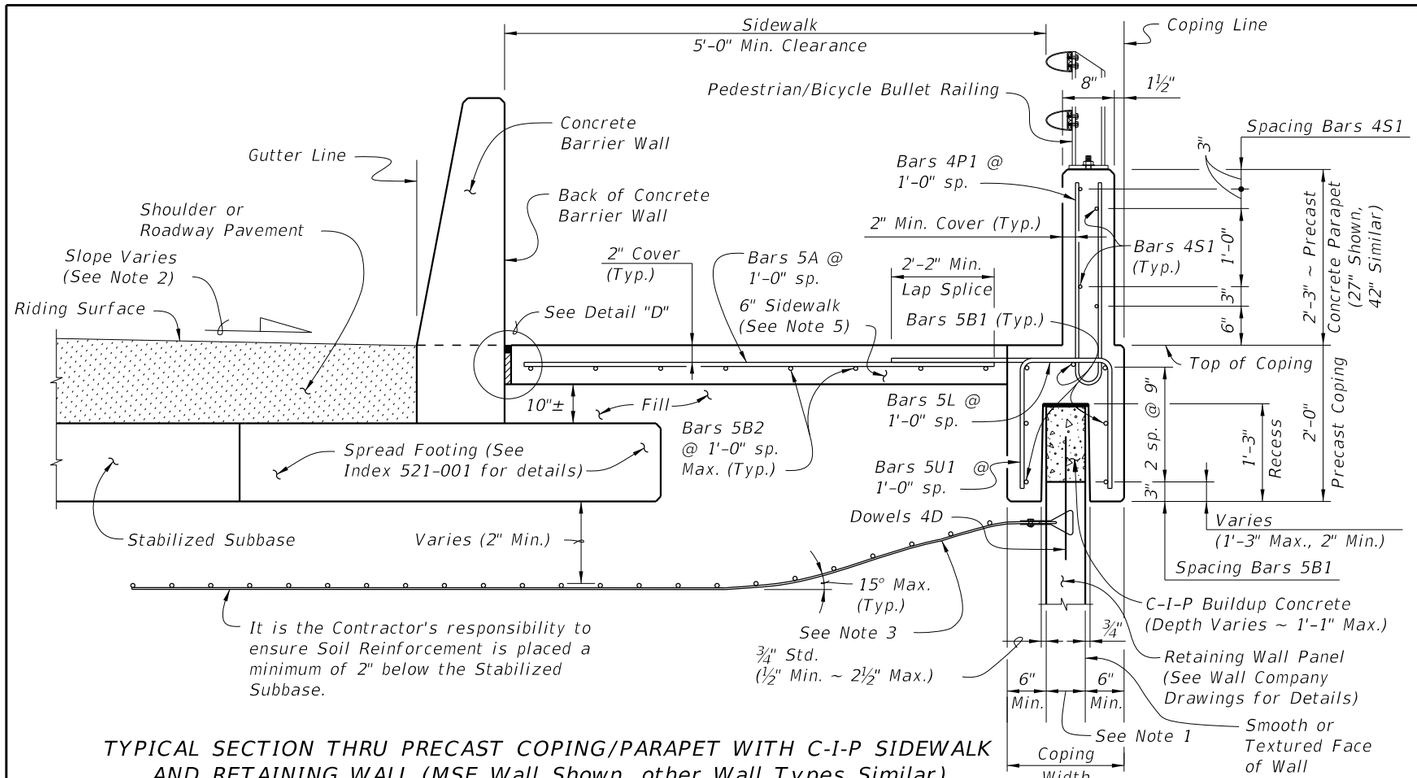
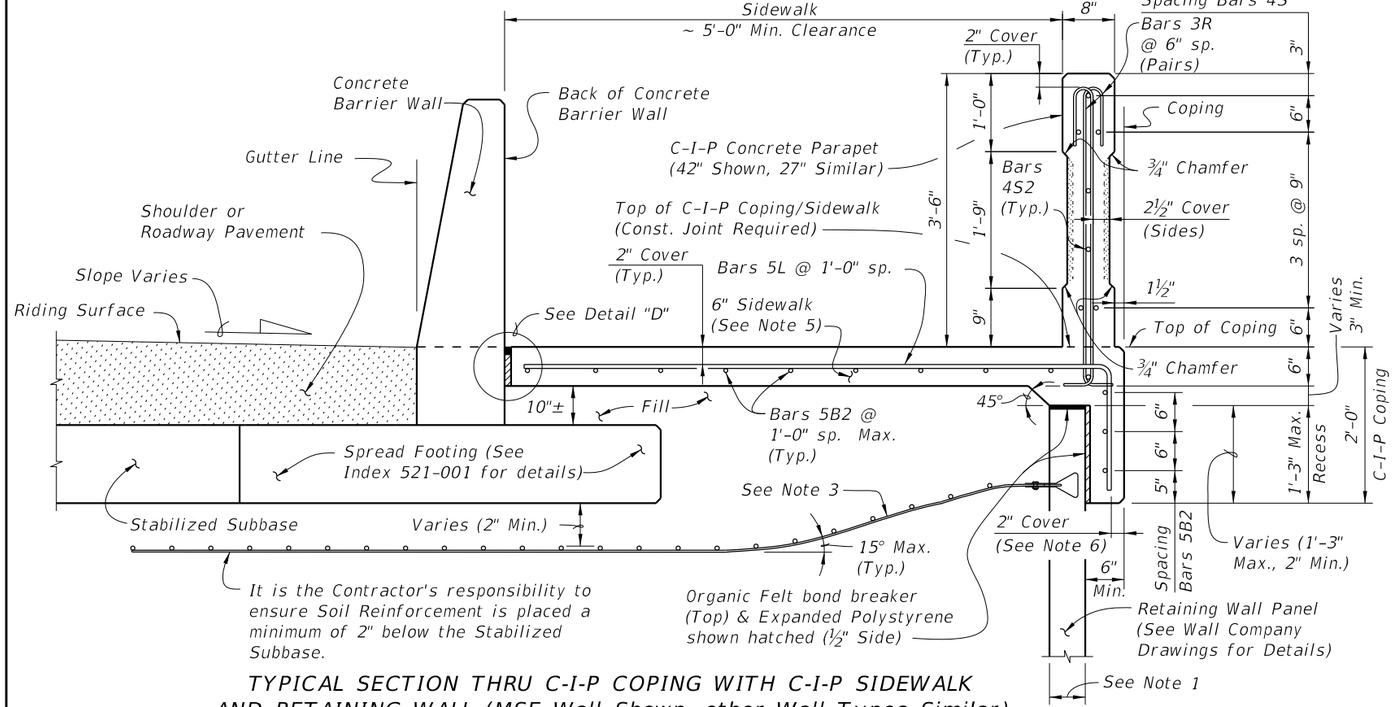
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	PARAPET WITH C-I-P SIDEWALK - WALL COPING	INDEX 521-630	SHEET 1 of 2



TYPICAL SECTION THRU PRECAST COPING/PARAPET WITH C-I-P SIDEWALK AND RETAINING WALL (MSE Wall Shown, other Wall Types Similar)

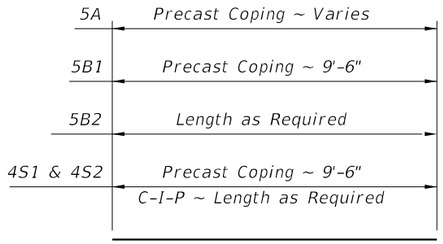


TYPICAL SECTION THRU C-I-P COPING WITH C-I-P SIDEWALK AND RETAINING WALL (MSE Wall Shown, other Wall Types Similar)

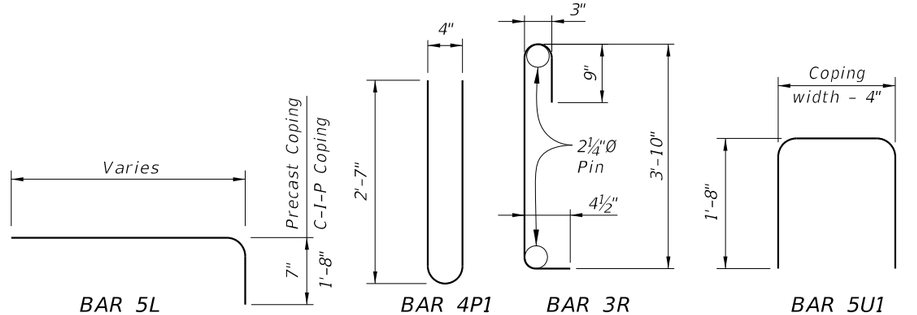
REINFORCING STEEL BENDING DIAGRAMS - COPING/PARAPET AND SIDEWALK

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH	
		PRECAST COPING	C-I-P COPING
A	5	VARIES	N/A
B1	5	9'-6"	N/A
B2	5	AS REQD.	AS REQD.
D	4	2'-0"	N/A
L	5	VARIES	VARIES
P1	4	5'-5"	5'-5"
S1	4	9'-6"	AS REQD.
S2	4	9'-6"	AS REQD.
R	3	5'-2"	5'-2"
U1	5	VARIES	N/A

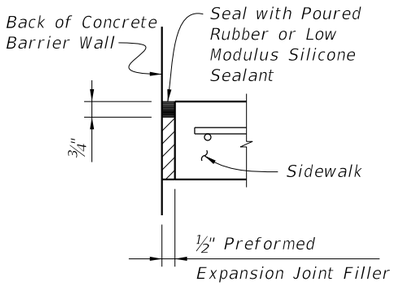


BARS 5A, 5B1, 5B2, 4S1 & 4S2



REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B2 and 5S will be a minimum of 2'-2".
4. For Precast Coping only, lap splice Bars 5L with Bars 5A. Lap splices will be a minimum of 2'-2".
5. The Contractor may use Deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.



DETAIL "D"

PRECAST COPING/PARAPET AND SIDEWALK NOTES:

1. Actual width varies depending on type of Retaining Wall used.
2. Place or cast Concrete Parapet vertical.
3. Gradually deflect/displace Soil Reinforcement downward as required. Soil Reinforcement is shown deflected downward for illustrative purposes only and is not to scale. See Wall Company Drawings for details.
4. Complete details and dimensions of Concrete Pedestrian/Bicycle Railing are required in the Shop Drawings.
5. Match cross slope of connecting sidewalk or as shown in the Wall Control Drawings.
6. If slip forming is used, submit shop drawings for approval showing 2½" side cover with adjusted Typical Section dimensions.
7. Bullet Railing: See Indexes 515-021 and 515-022.

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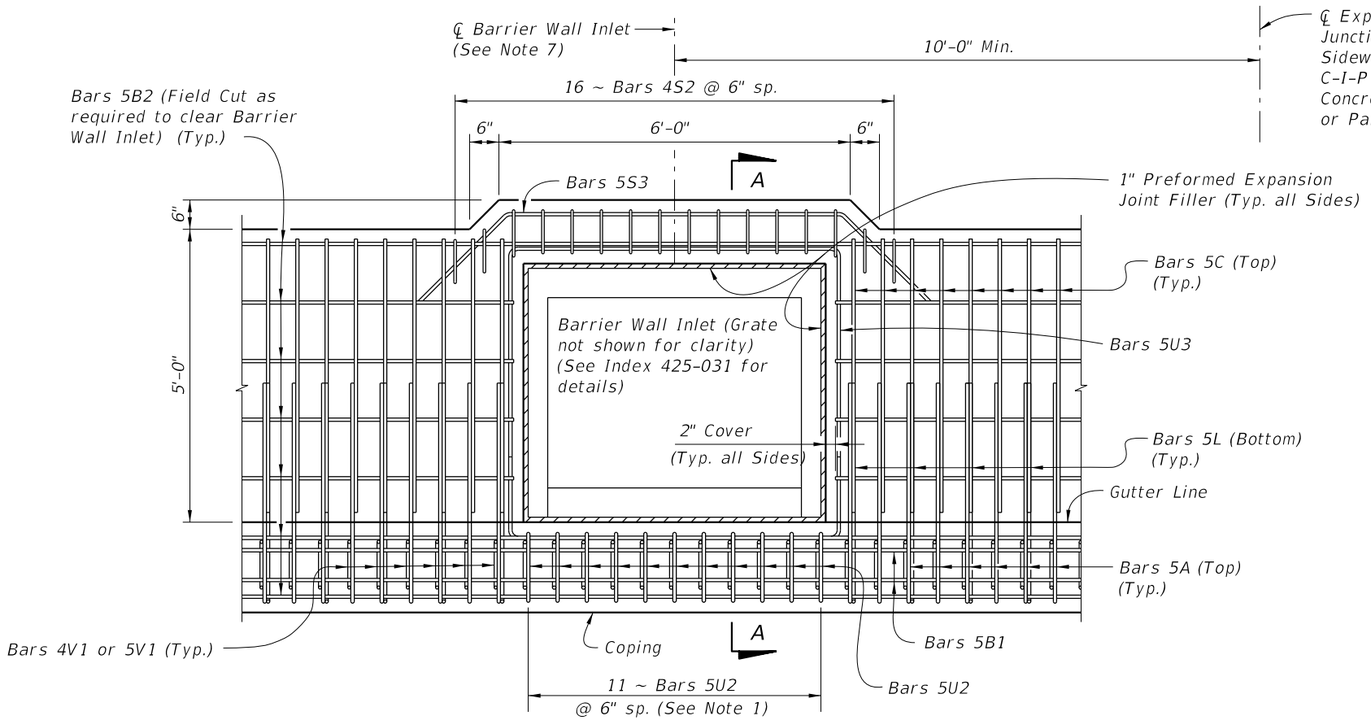
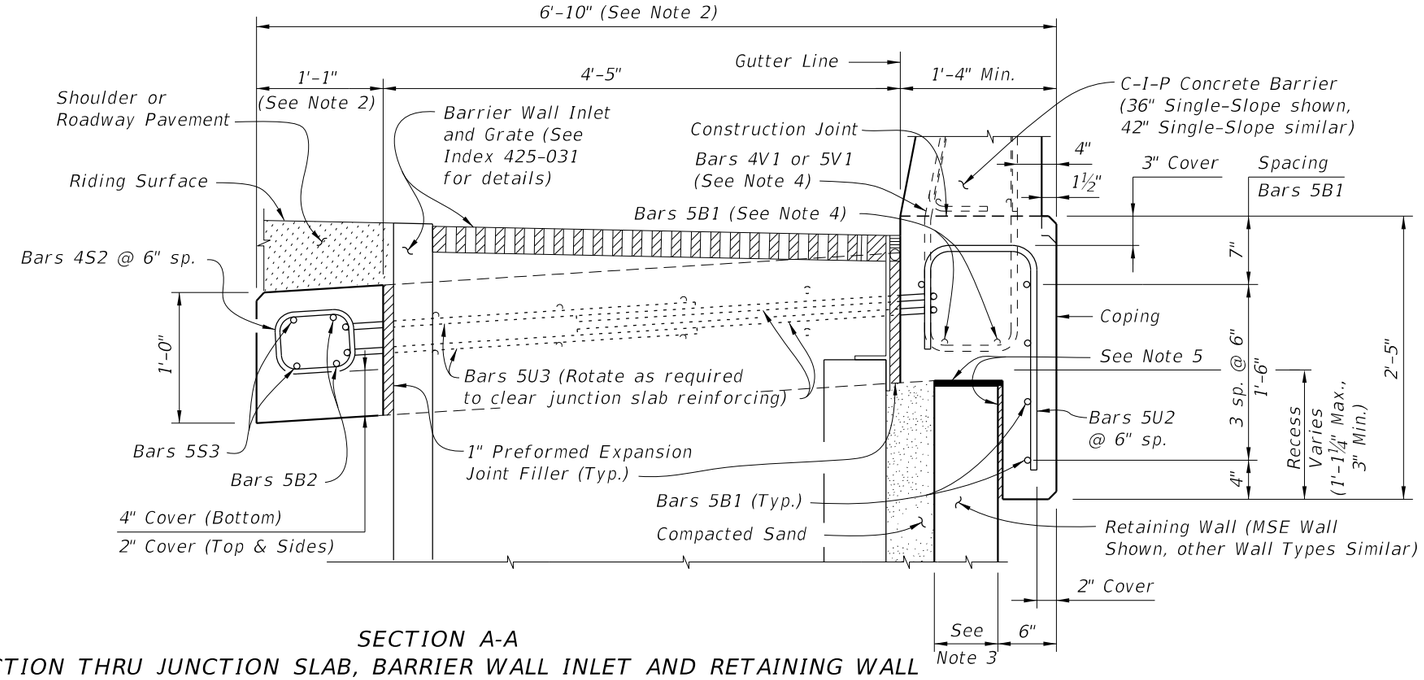
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT	FY 2020-21 STANDARD PLANS	PARAPET WITH C-I-P SIDEWALK - WALL COPING	INDEX 521-630 / SHEET 2 of 2



PLAN VIEW
(Junction Slab Shown, Raised Sidewalk Similar)

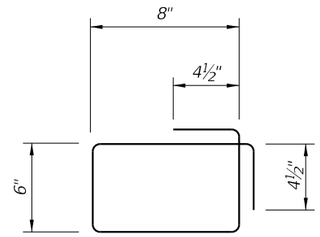


SECTION A-A
SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL
(Junction Slab Shown, Raised Sidewalk Similar)

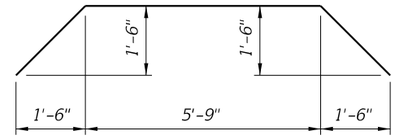
REINFORCING STEEL BENDING DIAGRAMS - DRAINAGE

BILL OF REINFORCING STEEL

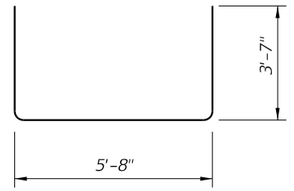
MARK	REQD.	SIZE	LENGTH
S2	16	4	3'-1"
S3	2	5	10'-0"
U2	11	5	VARIES
U3	4	5	12'-10"



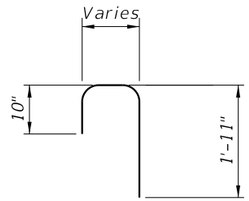
STIRRUP BAR 4S2



BAR 5S3



BAR 5U3



BAR 5U2

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at open joints will have a 2" minimum cover.
3. See Index 521-610, 521-620 & 521-630 for Bars 5A, 5B, 5C and 5L.
4. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

NOTES:

1. Spacing shown is along the Gutter Line. Spacing shown is for C-I-P Junction Slab. For C-I-P Raised Sidewalks or Sidewalks, match bar spacing and size shown in Typical Sections (i.e., 11 ~ Bars 5U2 and 15 ~ Bars 4S2 @ 6" spacing for Raised Sidewalks).
2. Dimensions shown are for junction slab. Increase width as required for C-I-P Raised Sidewalk and Sidewalks.
3. Actual location & width vary depending on type of Retaining Wall used.
4. See Index 521-610 for Bars 4V1 or 5V1 and 5B1.
5. Organic Felt bond breaker (Top) & Expanded Polystyrene shown hatched (½" Side).
6. Locate ℄ Barrier Wall Inlet a minimum of 10'-0" away from ℄ Expansion Joints in Junctions Slab, Raised Sidewalk or Sidewalk, C-I-P Coping and Traffic Railing or Concrete Parapet.
7. Locate open joints in Barrier Wall and Coping a minimum of 5'-0" from the centerline of the Barrier Wall Inlet.
8. Work this Index with the following as appropriate:
   Index 521-610
   Index 521-620
   Index 521-630

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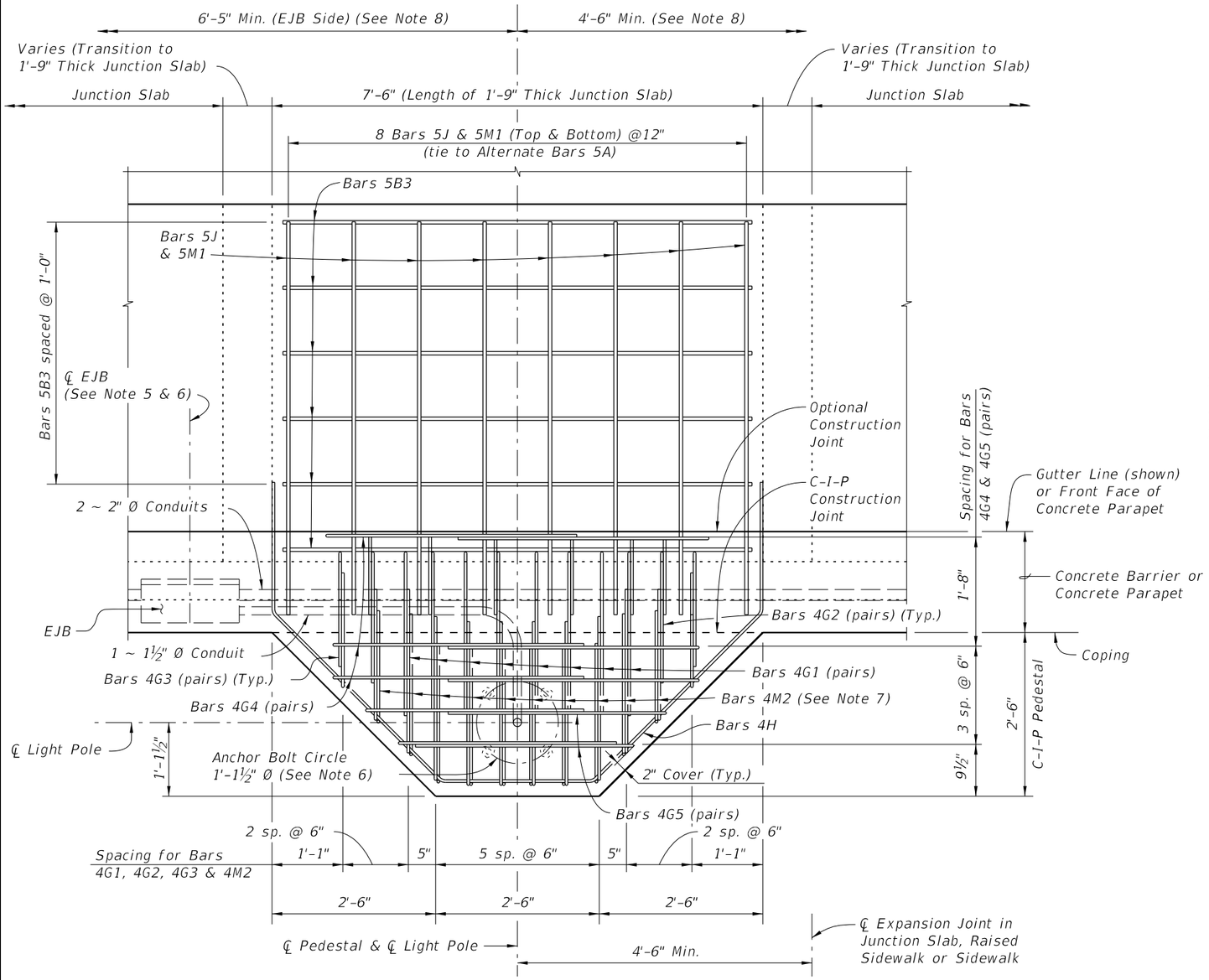
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DRAINAGE INLET OPENINGS IN JUNCTION SLAB - WALL COPING	INDEX	SHEET
11/01/19						521-640	1 of 1



PLAN VIEW
(Junction Slab reinforcing not shown for clarity)
(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)

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.*
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 521-620
    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 (MPH)	Arm Length (FT)	BASE OF POLE HEIGHT*		
		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*

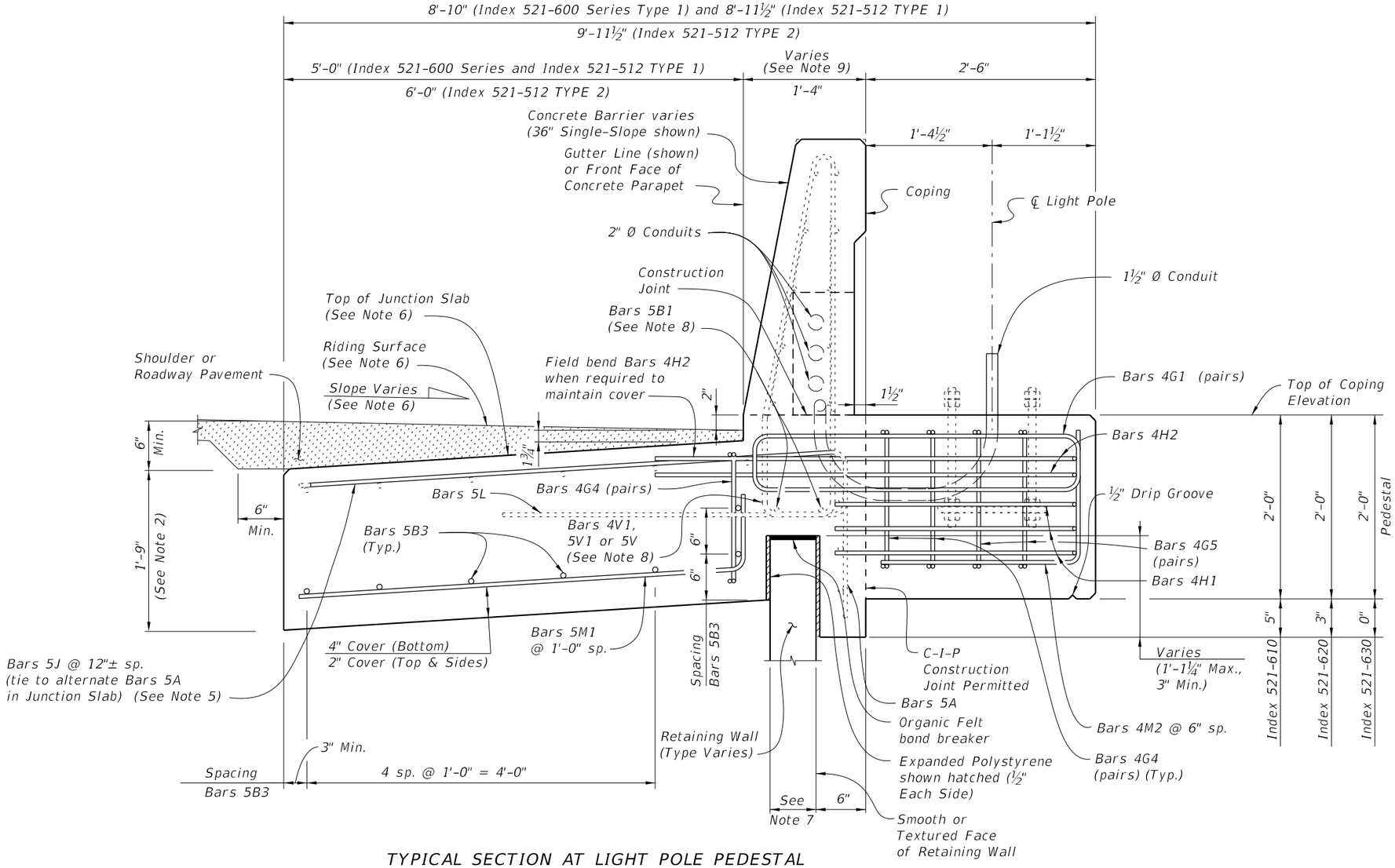
** Above Natural Ground*

*** Use 1¼" Ø Anchor bolts for wall heights greater than the height shown and less than 75'.*

STIMES

SDATES

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	LIGHT POLE PEDESTAL - WALL COPING	INDEX	SHEET
11/01/17						521-650	1 of 3



TYPICAL SECTION AT LIGHT POLE PEDESTAL

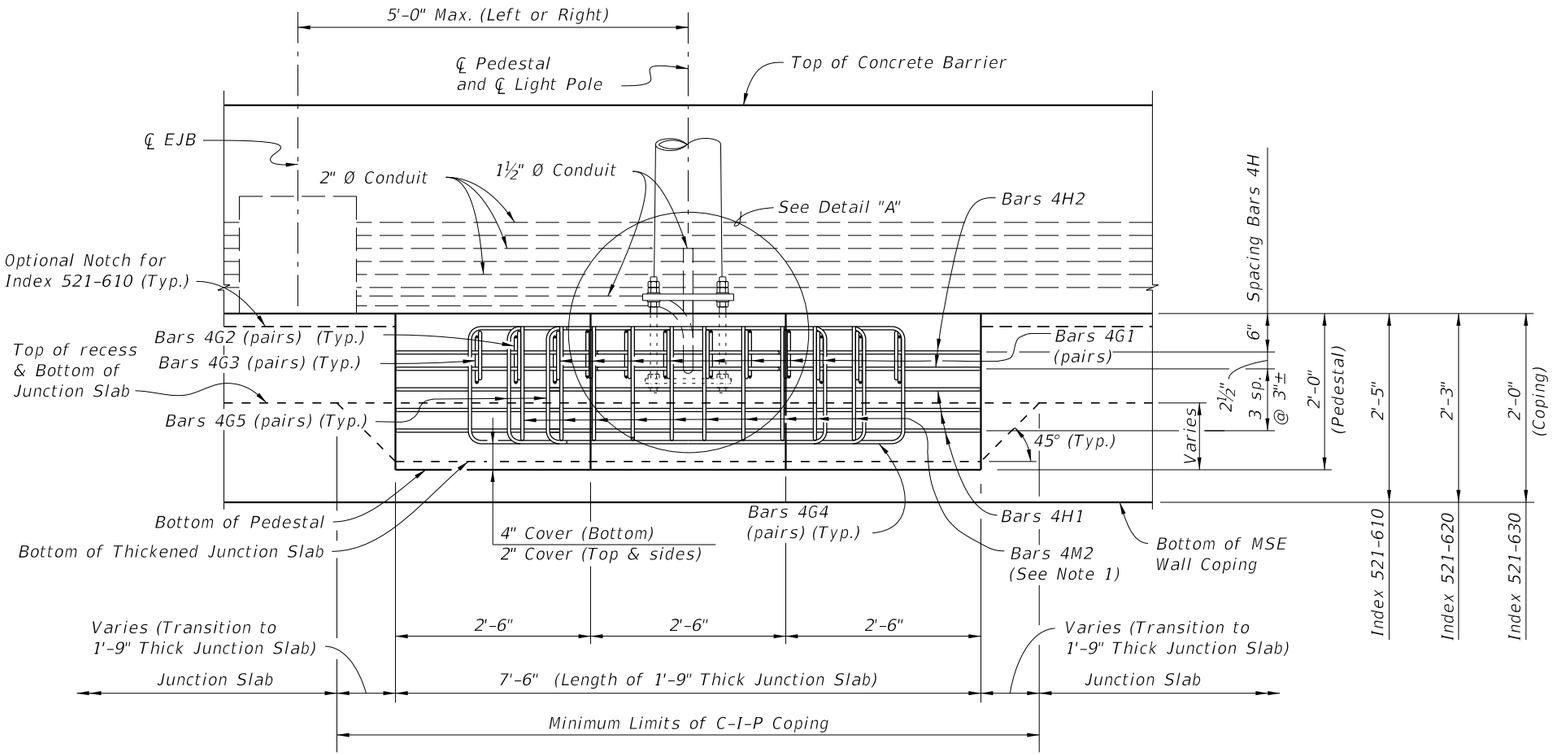
(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar) (36" Single-Slope Concrete Barrier shown, other railings similar)

NOTES:

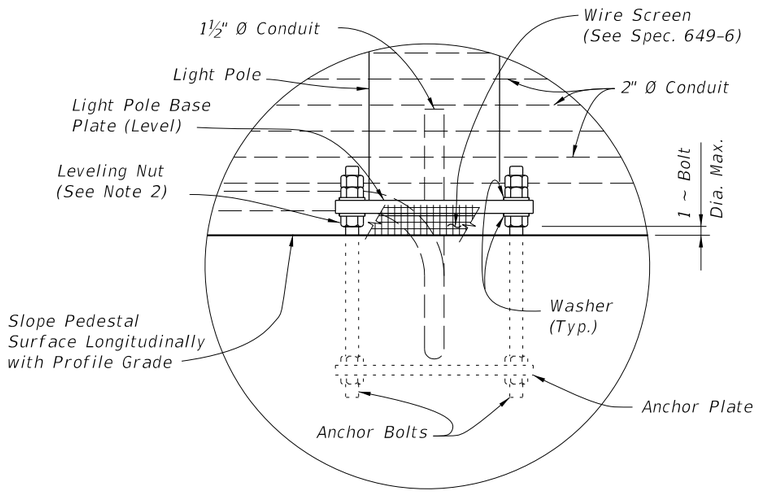
1. *Provide Concrete Class to match adjacent coping.*
2. *For junction slabs, increase the 1'-0" depth dimension to 1'-9".*
3. *For Parapet with sidewalk see Index 521-630, but increase 6" sidewalk depth to 1'-6". For raised sidewalk see Index 521-620.*
4. *The minimum length of the Junction Slabs, raised sidewalks and sidewalks is 30'-0", measured along the Gutter Line.*
5. *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).*

10/29/2019 8:19:43 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	LIGHT POLE PEDESTAL - WALL COPING	INDEX 521-650 / SHEET 2 of 3



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



DETAIL "A"

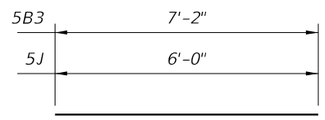
NOTES:
1. *Field Cut Bars 4M2 as required to maintain minimum cover.*
2. *Maximum clearance between leveling nut and top of pedestal will not exceed anchor bolt diameter.*

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

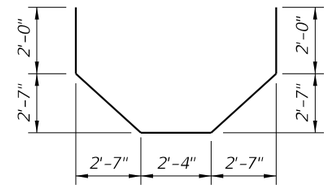
(The quantities above are for one C-I-P Light Pole Pedestal. The concrete quantity for the thickened junction slab is based on a 5'-0" length, 9" increase in thickness and a 5" wide retaining wall panel. Adjust thickened concrete quantity as required.

REINFORCING STEEL BENDING DIAGRAMS - LIGHT POLE PEDESTAL

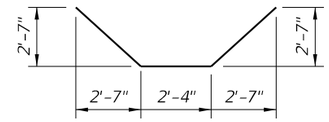
BILL OF REINFORCING STEEL			
MARK	*SIZE*	*NO. REQD.*	*LENGTH*
B3	*5*	*7*	*7'-2"*
G1	*4*	*16*	*5'-8"*
G2	*4*	*4*	*4'-8"*
G3	*4*	*4*	*4'-2"*
G4	*4*	*6*	*8'-10"*
G5	*4*	*4*	*7'-4"*
H1	*4*	*3*	*9'-8"*
H2	*4*	*2*	*13'-8"*
J	*5*	*8*	*6'-0"*
M1	*5*	*8*	*5'-10"*
M2	*4*	*10*	*3'-8"*



BARS 5B3 & 5J



BAR 4H2



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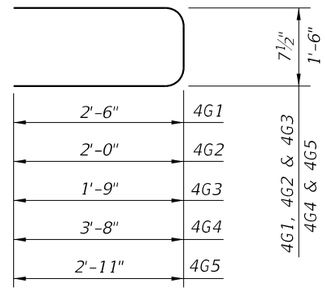
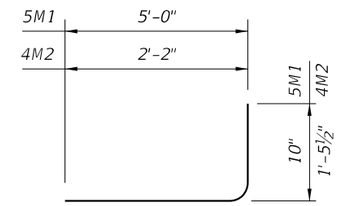


BARS 4G1, 4G2, 4G3, 4G4 & 4G5



BAR 5M1 & 4M2

REINFORCING STEEL NOTES:
1. *All bar dimensions in the bending diagrams are out to out.*
2. *Lap splices for Bars 4G1, 4G2, 4G3, 4G4 & 4G5 will be a minimum of 1'-4".*
3. *The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of deformed wire meeting the requirements of Specification Section 931.*

10/29/2019 8:19:44 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	LIGHT POLE PEDESTAL - WALL COPING	521-650	3 of 3

GENERAL NOTES:

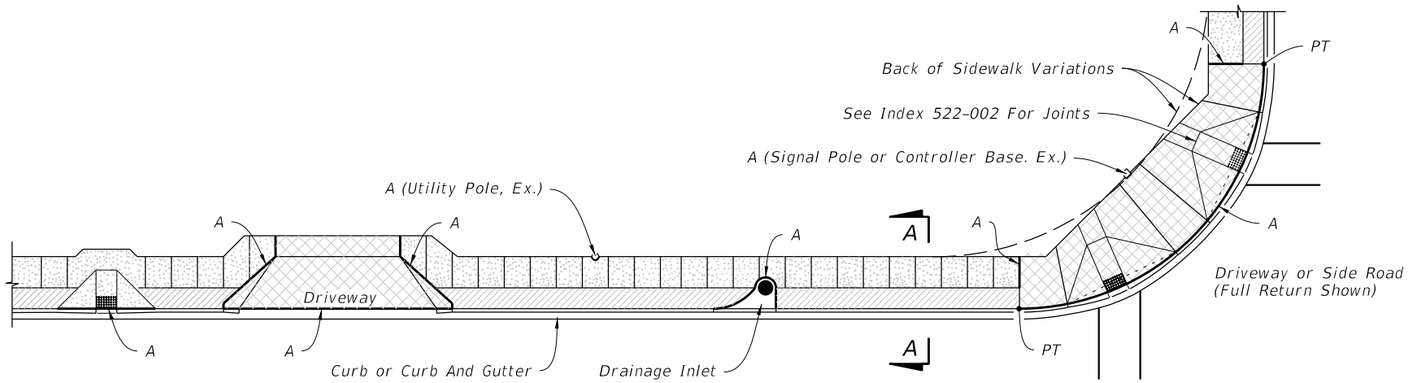
1. Construct sidewalks in accordance with Specification 522. Use 6" concrete for Sidewalks and Curb Ramps Located within Curb Returns (See Plan View). Install all other concrete with thickness as shown, unless otherwise detailed in the Plans.

2. Include detectable warnings on sidewalk curb ramps in accordance with Index 522-002.

3. For Driveways see Index 522-003.

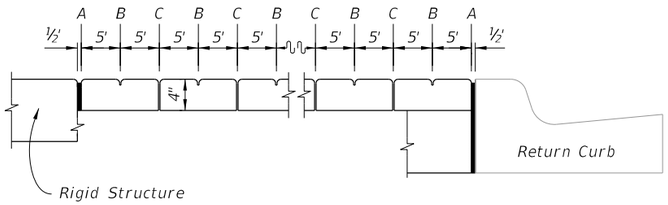
4. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils and not more than ½".

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)

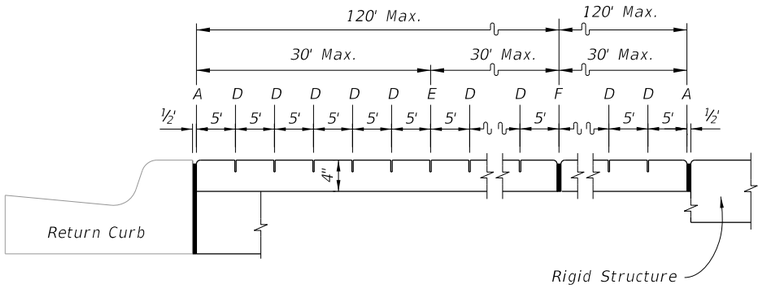


PLAN

SIDEWALK WITH UTILITY STRIP



OPEN JOINTS



SAWED JOINTS

LONGITUDINAL SECTION

LEGEND:

A- ½" Expansion Joints (Preformed Joint Filler) between the sidewalk and; driveways, sidewalk-intersections, and all other fixed objects (e.g. drainage inlets and utility poles).

B- ⅛" Dummy Joints, Tooled

C- ⅛" Formed Open Joints

D- 3/16" Saw Cut Joints, 1½" Deep (within 96 hours) Max. 5' Centers

E- 3/16" Saw Cut Joints, 1½" Deep (within 12 hours) Max. 30' Centers Joint(s) Required When Length Exceeds 30'

F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

G- Cold Joint With Bond Breaker, Tooled

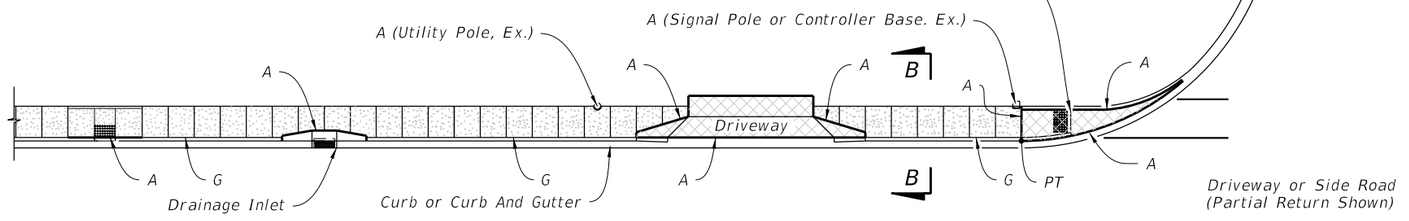
SIDEWALK JOINTS

LEGEND:

4" Thick Sidewalk

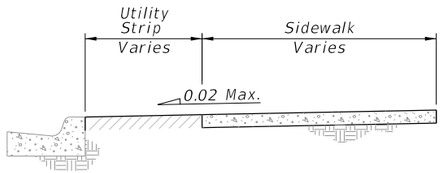
6" Thick Sidewalk

Utility Strip

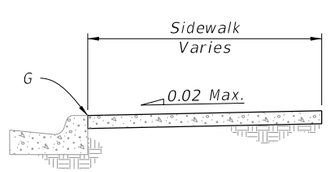


PLAN

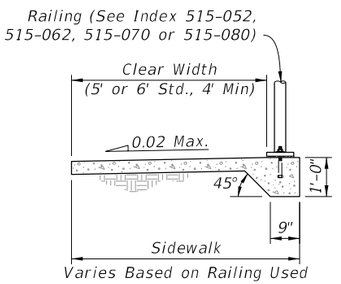
SIDEWALK WITHOUT UTILITY STRIP



SECTION A-A



SECTION B-B

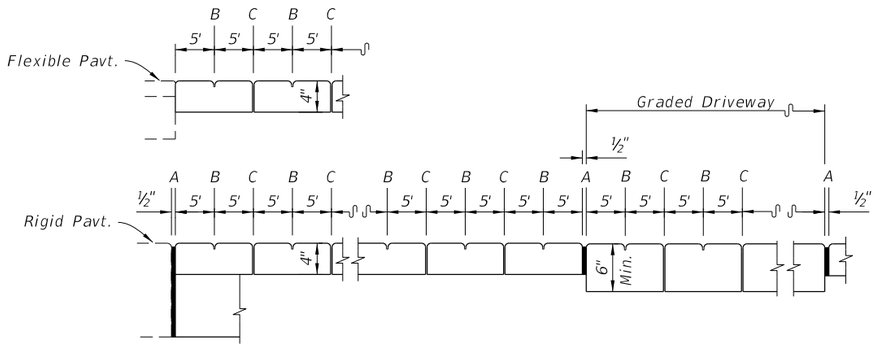


RAILING DETAIL

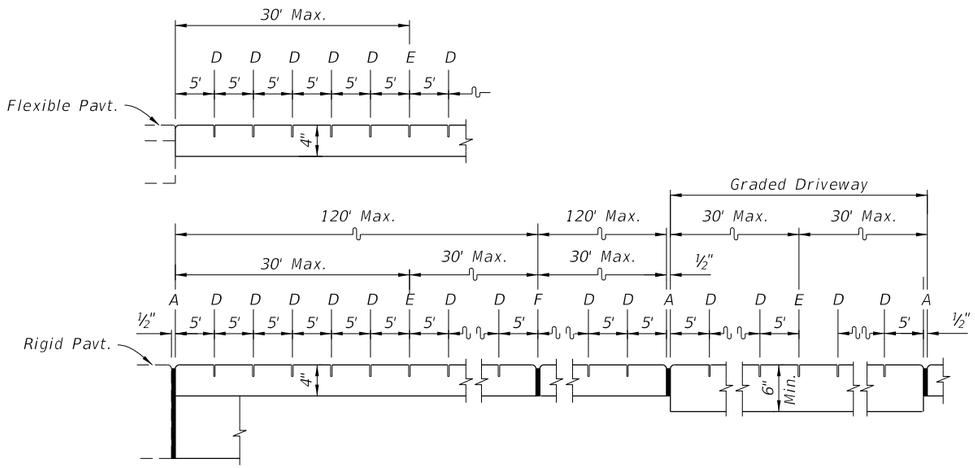
GENERAL NOTES AND CONCRETE SIDEWALK ON CURBED ROADWAYS

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE SIDEWALK	INDEX	SHEET
11/01/18					522-001	1 of 2

10/29/2019 8:19:45 AM



OPEN JOINTS



SAWED JOINTS

LONGITUDINAL SECTION

LEGEND:

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

B– ⅛" Dummy Joints, Tooled

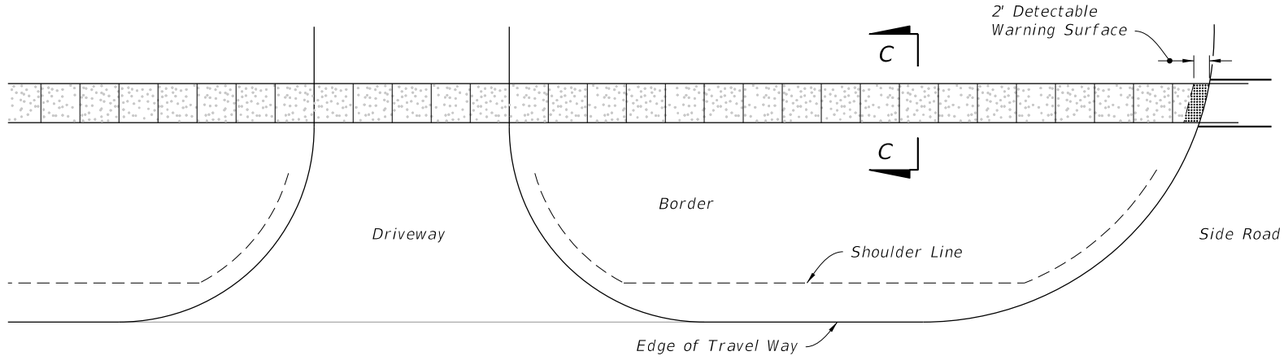
C– ⅛" Formed Open Joints

D– 3/16" Saw Cut Joints, 1½" Deep (within 96 hours) Max. 5' Centers

E– 3/16" Saw Cut Joints, 1½" Deep (within 12 hours) Max. 30' Centers Joint(s) Required When Length Exceeds 30'

F– ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

SIDEWALK JOINTS

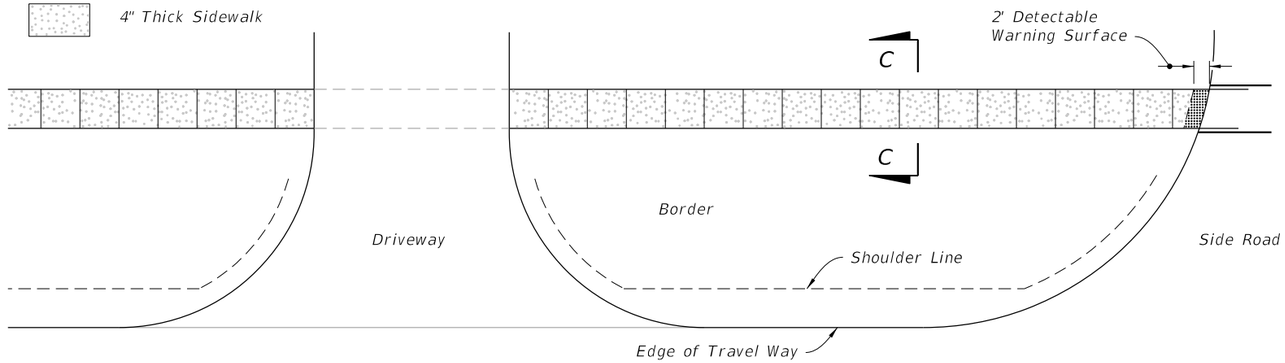


PLAN

CONTINUOUS SIDEWALK

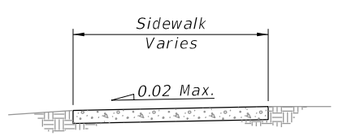
LEGEND:

4" Thick Sidewalk



PLAN

DISCONTINUOUS SIDEWALK



SECTION C-C

CONCRETE SIDEWALK ON FLUSH SHOULDER ROADWAYS

10/29/2019 8:19:46 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	CONCRETE SIDEWALK	522-001	2 of 2

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.

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.

5. Detectable Warnings – Acceptance Criteria:

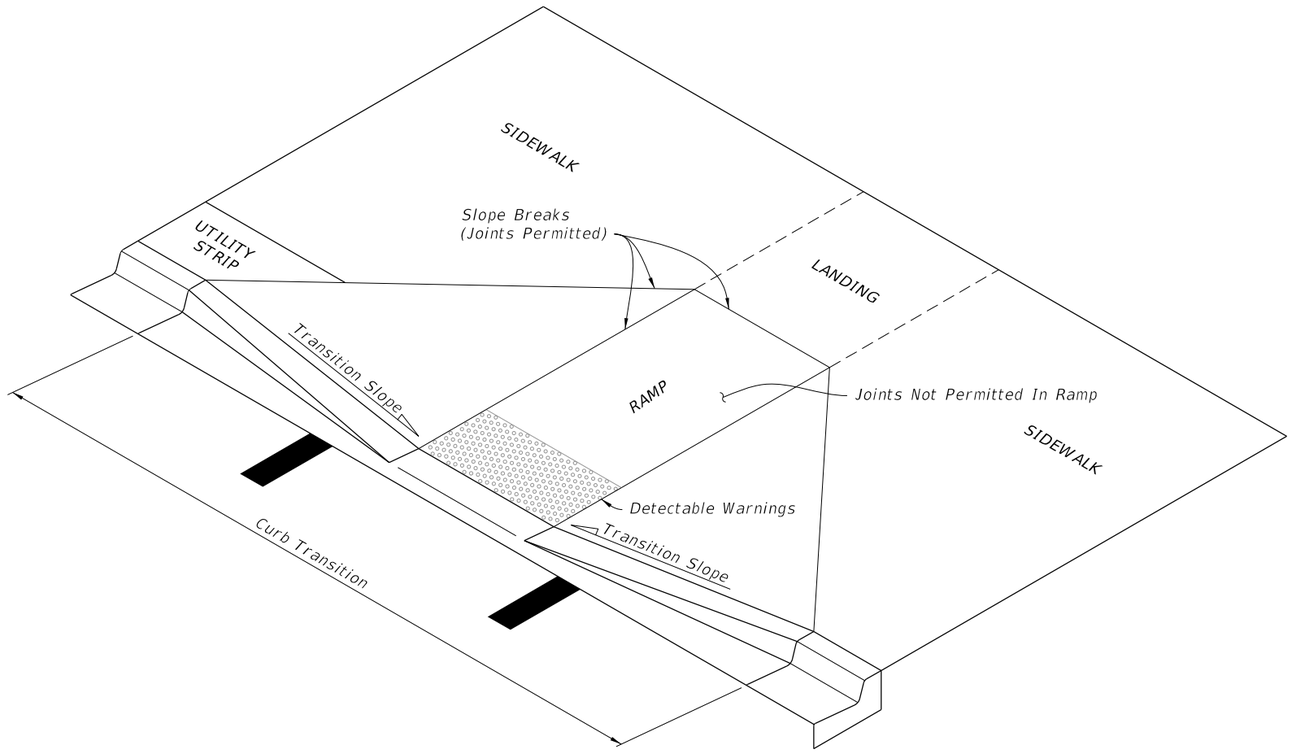
   A. Color and texture shall be complete and uniform.

   B. 90% of individual truncated domes shall be in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705.

   C. There shall be no more than 4 non-compliant domes in any one square foot.

   D. Non-compliant domes shall not be adjacent to other non-compliant domes.

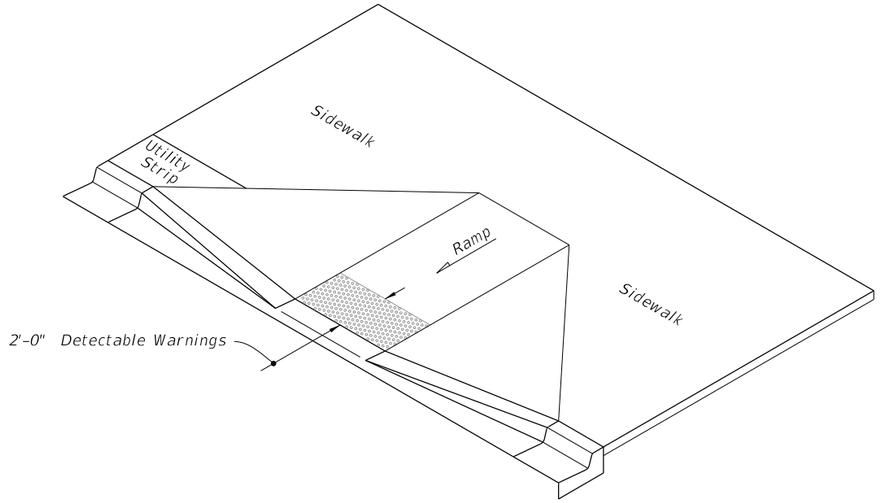
   E. Surfaces shall not deviate more than 0.10" from a true plane.



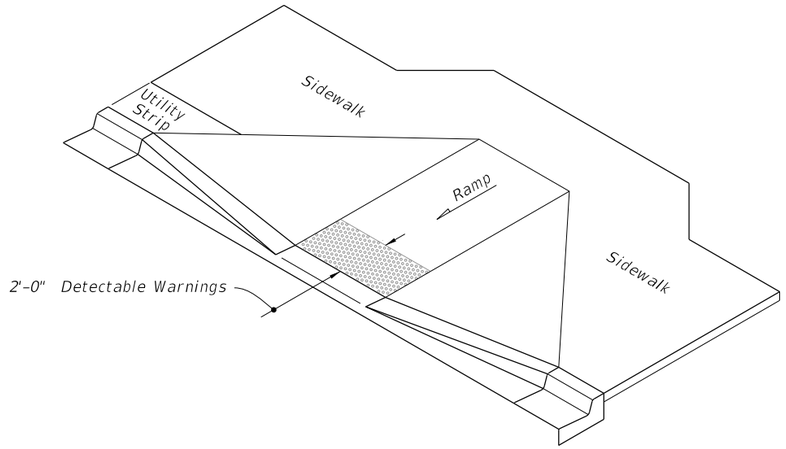
CURB RAMP NOMENCLATURE

7/20/2020 2:09:54 PM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX	SHEET
11/01/19						522-002	1 of 7



ISOMETRIC VIEW



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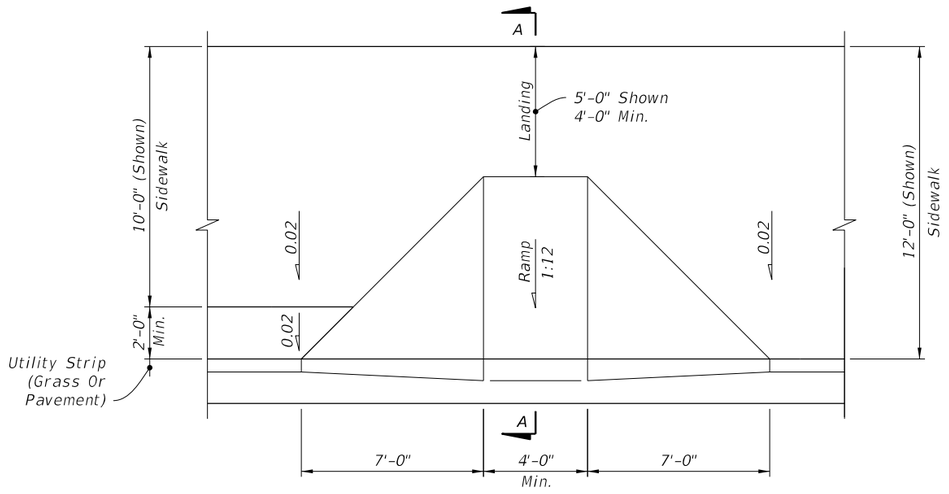
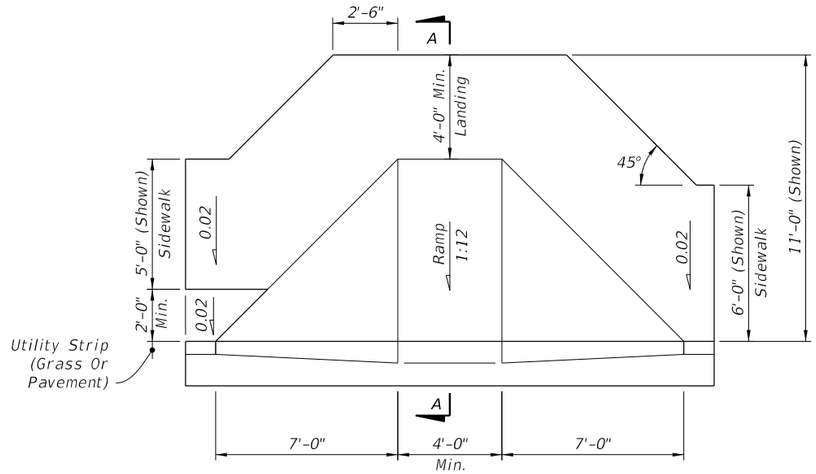


PLAN VIEW

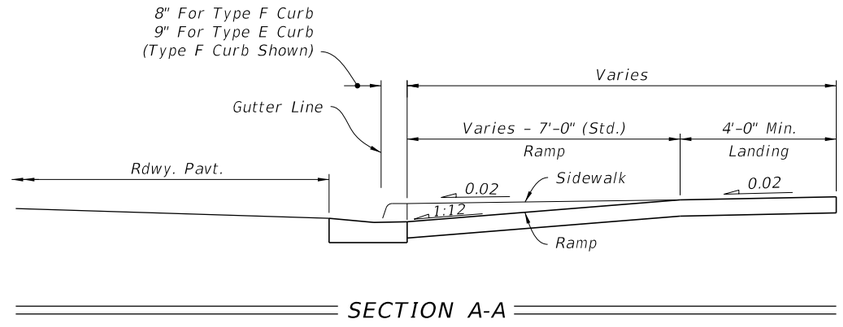
NOTE: For Example of CR-A used in Radial Curb Returns, See Sheet 8.

CR-A



PLAN VIEW

CR-B



SECTION A-A

SIDEWALK CURB RAMPS CR-A AND CR-B

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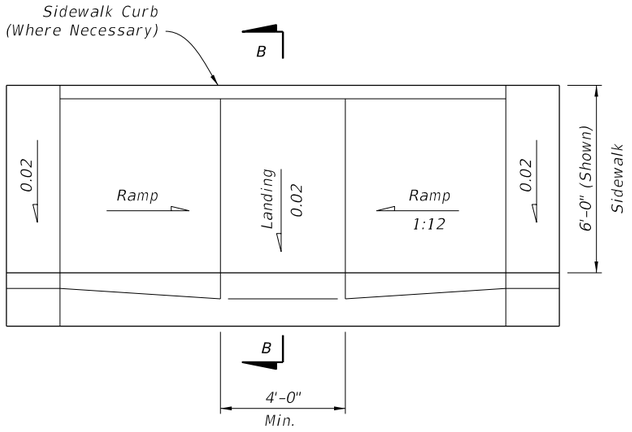
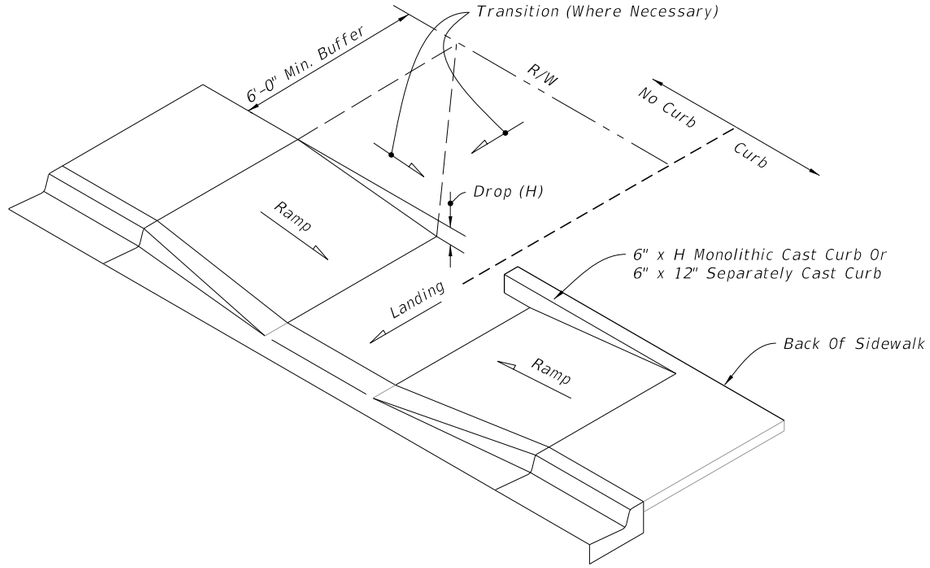
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX	SHEET
11/01/18						522-002	2 of 7

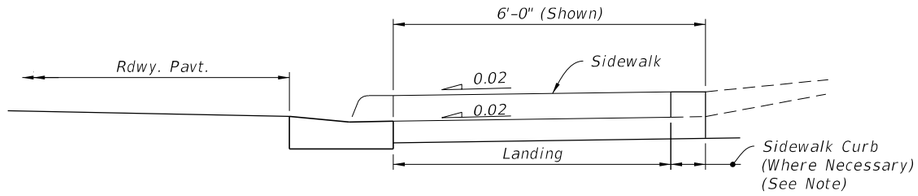


PLAN VIEW

CR-C

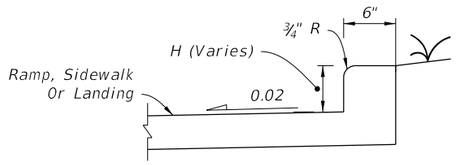


CONSTRUCTION OF SIDEWALK CURB IN CUT SECTIONS

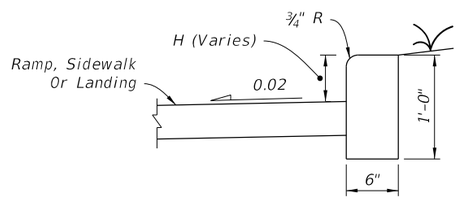


NOTE: For additional information on sidewalk curb construction, see SIDEWALK CURB OPTIONS details.

SECTION B-B



MONOLITHIC CAST CURB



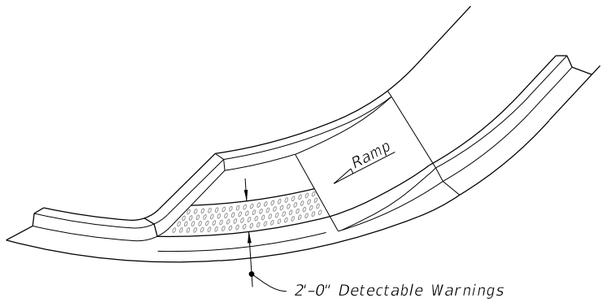
SEPARATELY CAST CURB

SIDEWALK CURB OPTIONS

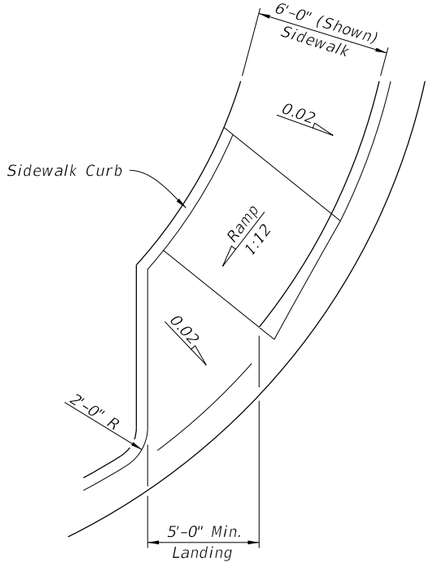
SIDEWALK CURB RAMPS CR-C AND SIDEWALK CURB

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	522-002	3 of 7

7/20/2020 2:10:03 PM

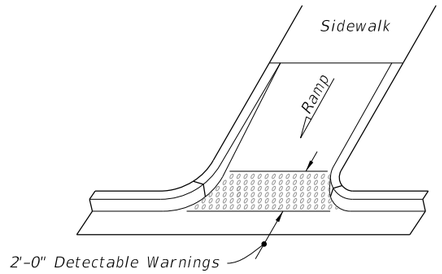


ISOMETRIC VIEW

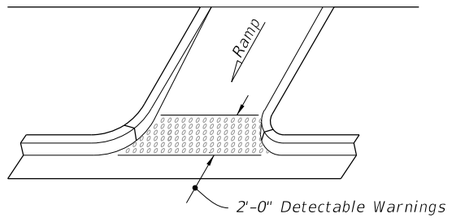


PLAN VIEW

CR-D

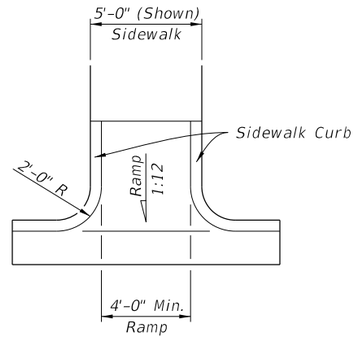


OPTION A



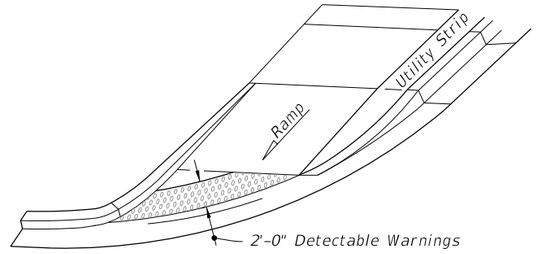
OPTION B

ISOMETRIC VIEW



PLAN VIEW

CR-E



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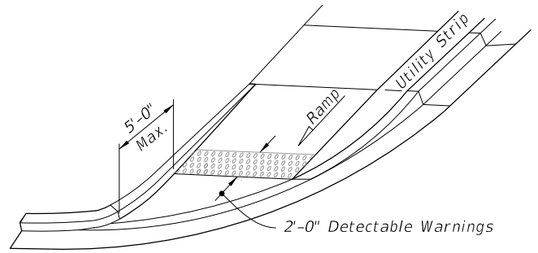

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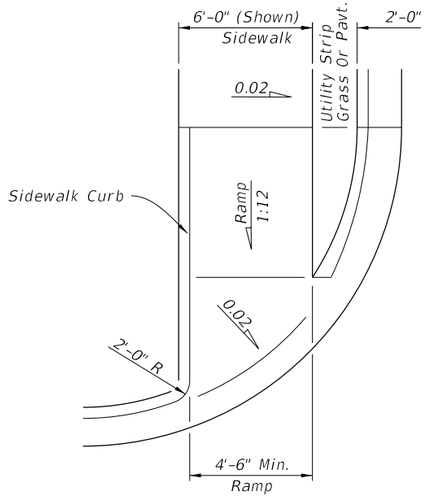
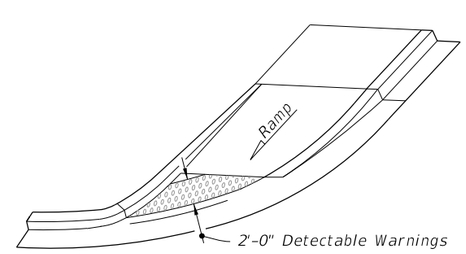


PLAN VIEW

CR-F



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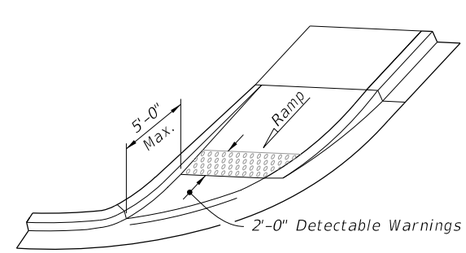

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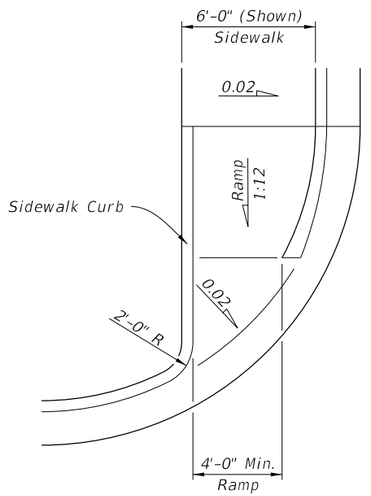


PLAN VIEW

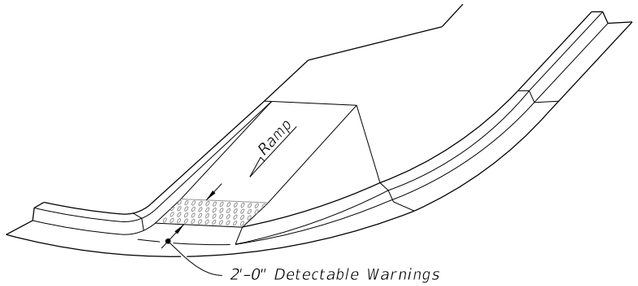
CR-G

2:10:05 PM

7/20/2020

SIDEWALK CURB RAMPS CR-D, CR-E, CR-F & CR-G

LAST REVISION 11/01/18	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX 522-002	SHEET 4 of 7



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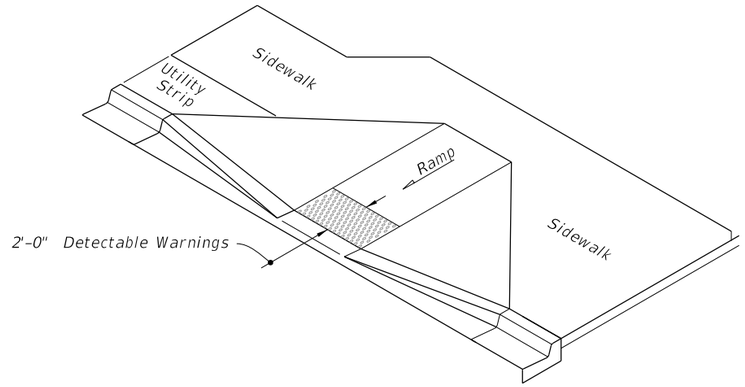

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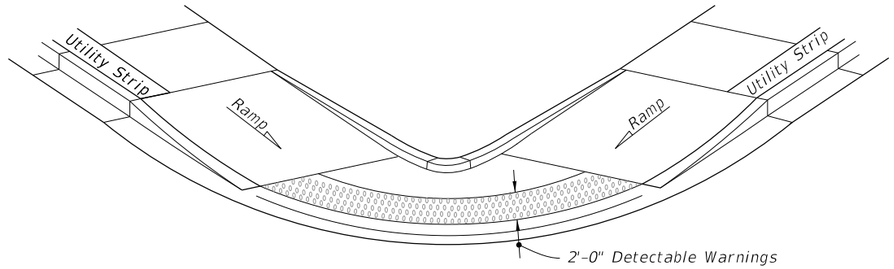

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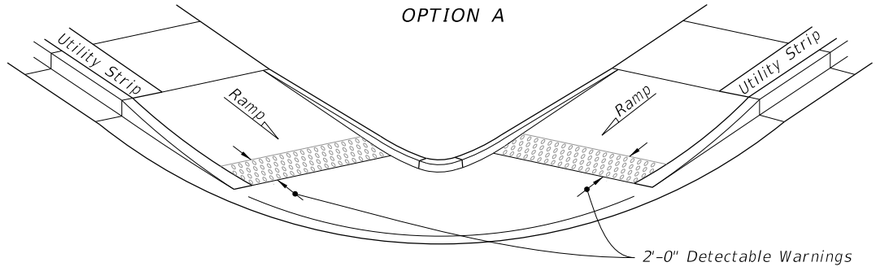
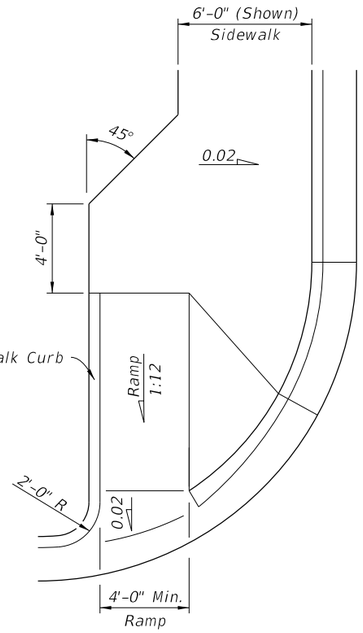


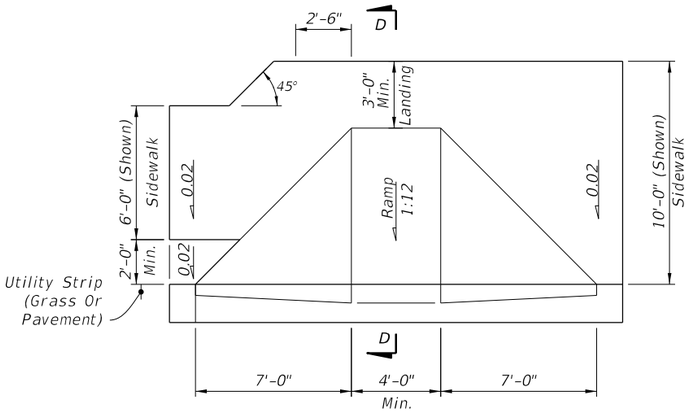
OPTION B

ISOMETRIC VIEW



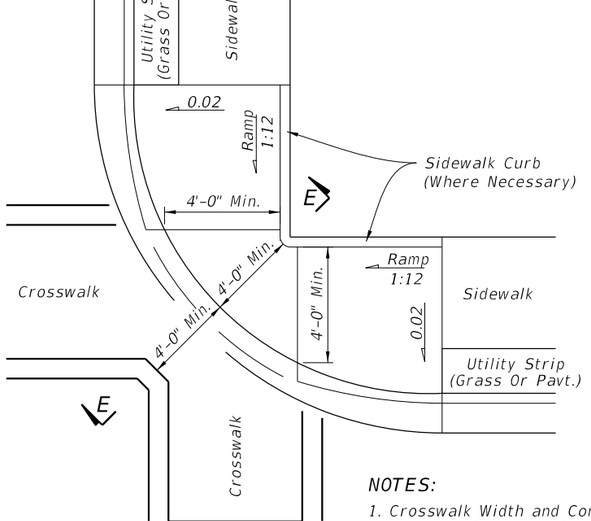
PLAN VIEW

CR-H



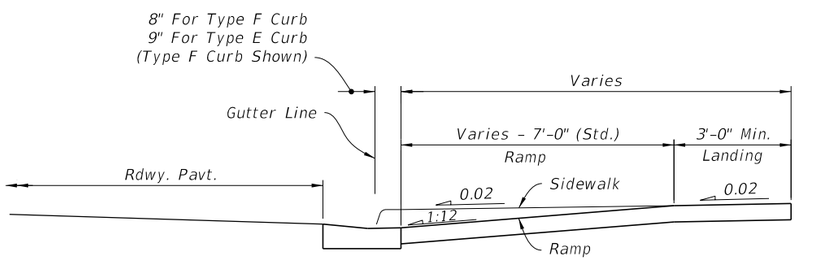
PLAN VIEW

CR-K

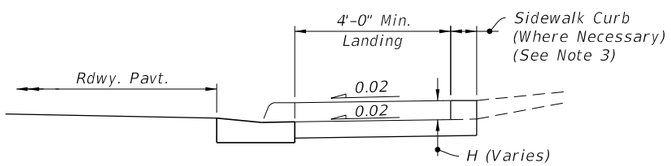


PLAN VIEW

CR-L



SECTION D-D



SECTION E-E

NOTES:

1. Crosswalk Width and Configuration Vary; Must Conform to Index 711-001.
2. 15' Radius Curve Shown for CR-L.
3. For additional information on sidewalk curb construction, see SIDEWALK CURB OPTIONS details, on Sheet 3.

SIDEWALK CURB RAMPS CR-H, CR-K & CR-L

7/20/2020 2:10:08 PM

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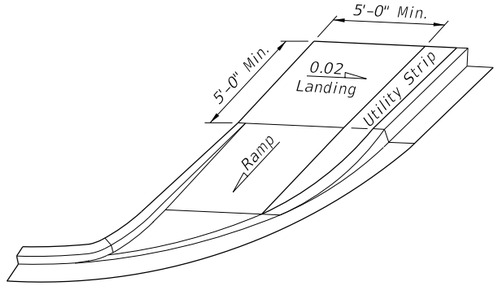
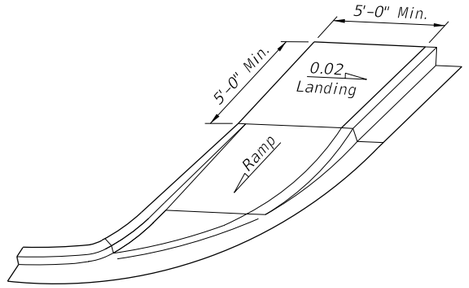
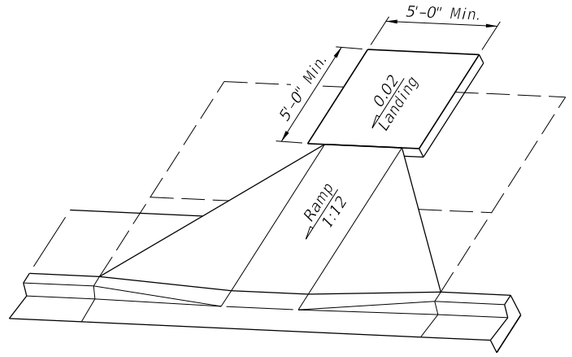
11/01/18			FY 2020-21 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	522-002	5 of 7

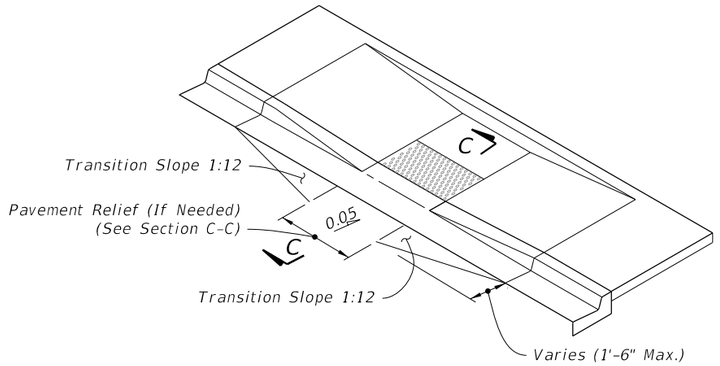






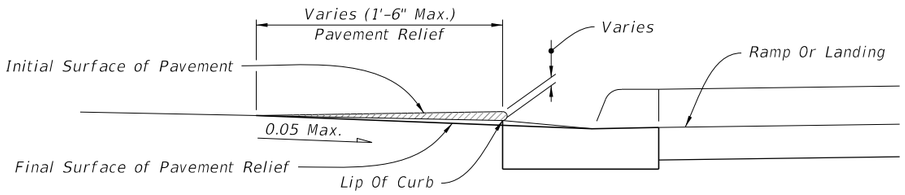
LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS

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



ISOMETRIC VIEW

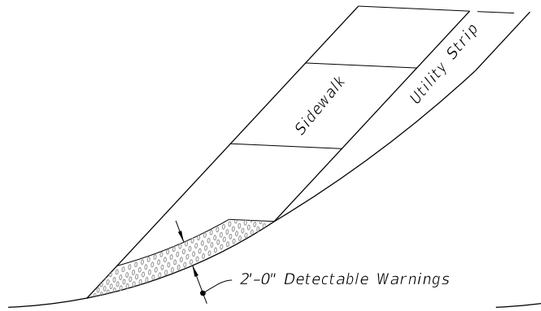
(CR-C Shown, Other Similar)



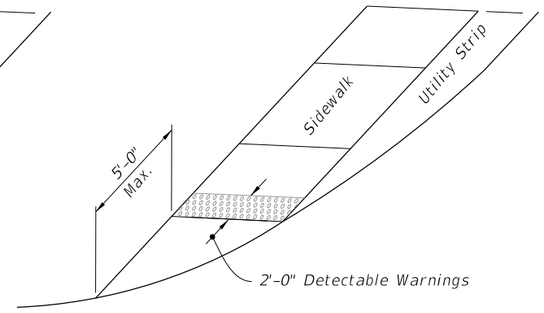
NOTE: Remove Elevated Pavement By Spading And Rolling, Smooth Milling, or Grinding.

SECTION C-C

PAVEMENT RELIEF DETAILS



OPTION A



OPTION B

DETECTABLE WARNING ON FLUSH SHOULDER SIDEWALKS

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CURB RAMPS WITHOUT SIDEWALKS AND FLUSH SHOULDER SIDEWALKS

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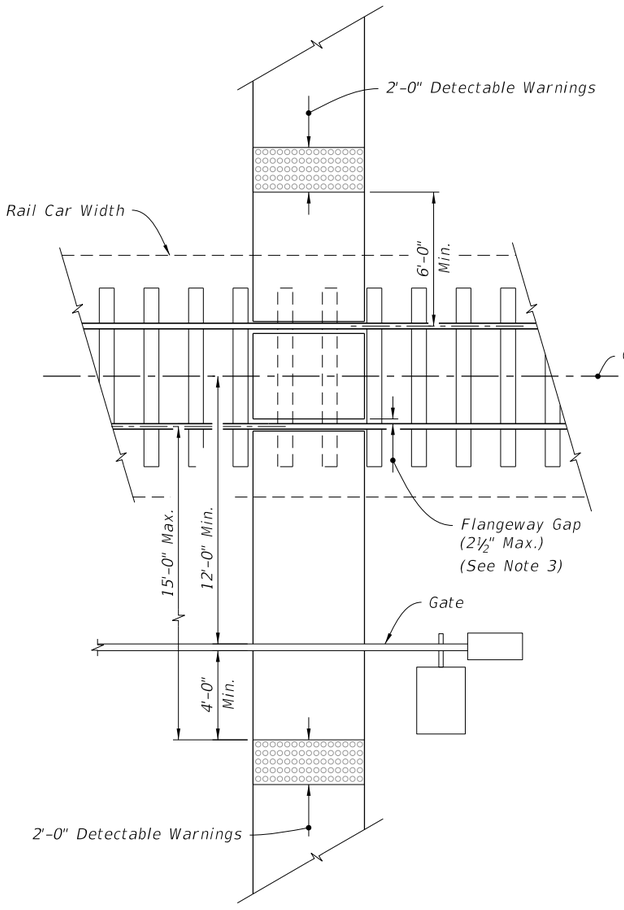
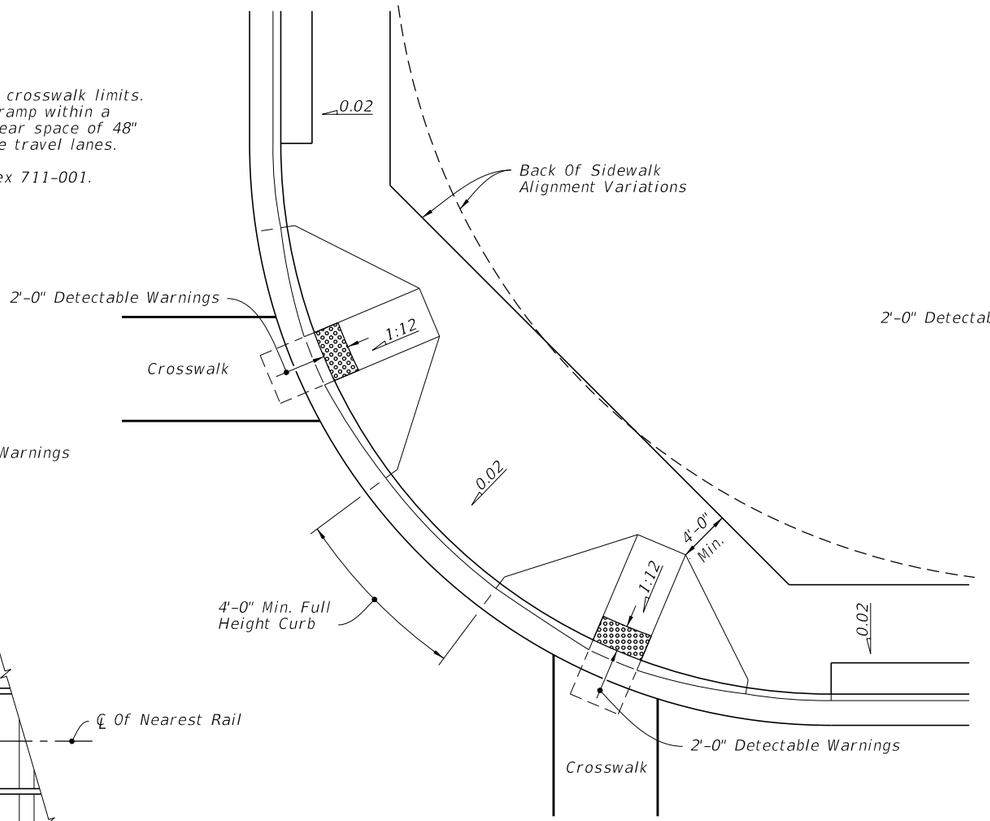
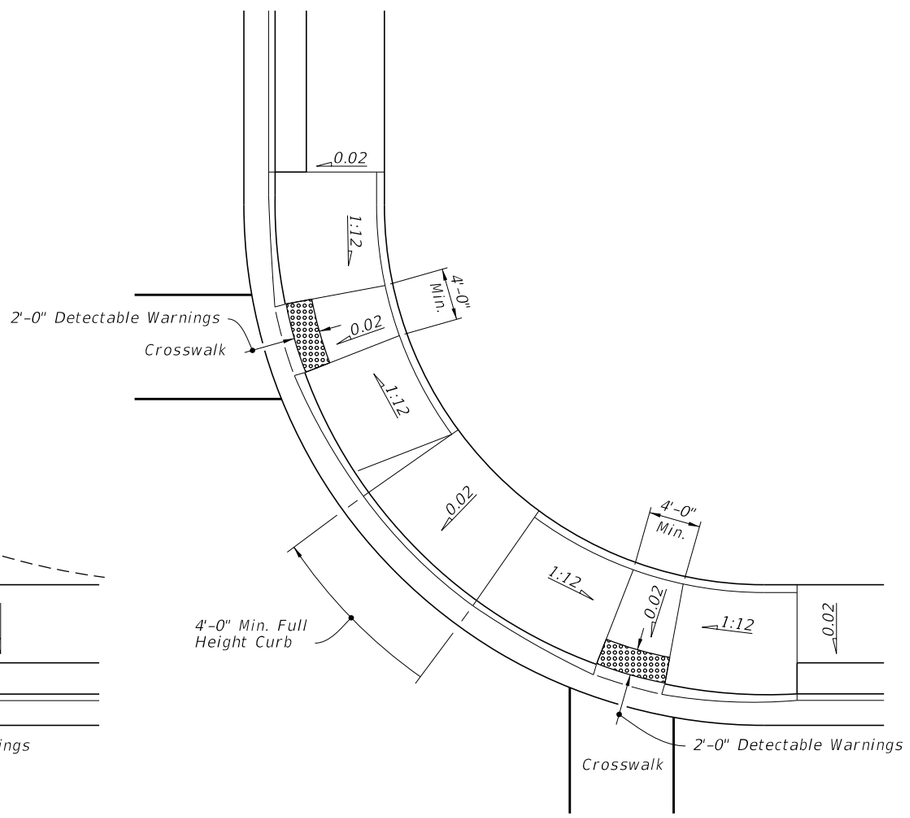
NOTES:

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.

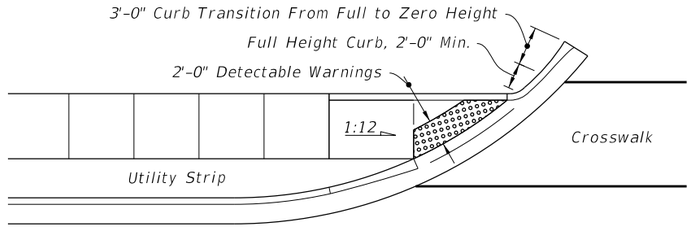


RAILROAD CROSSING





RADIAL SIDEWALK RAMPS



LINEAR SIDEWALK RAMPS

PLACEMENT OF SIDEWALK CURB RAMPS AT CURBED RETURNS (TYP.)

RAILROAD CROSSING AND CURB RAMPS AT CURBED RETURNS

7/20/2020 2:10:15 PM

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11/01/17			FY 2020-21 STANDARD PLANS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	522-002	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. Longitudinal Joints:
   Construct ⅛" open joints placed at equal (20' max.) intervals for driveways over 20' wide. Match joints in curb and gutter to match joints in driveways.

6. Transverse Joints:
   Construct ⅛" open joints @ 10' Centers and ½" expansion joints with preformed joint filler every 5th joint.

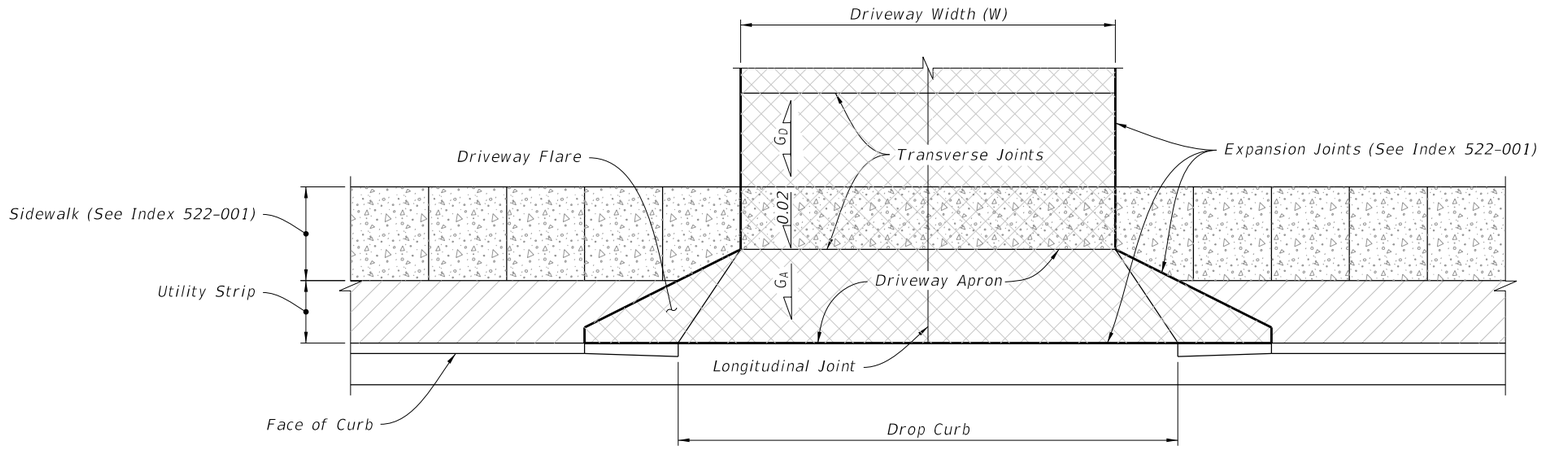
7. Construct driveways (6" thick concrete) to a uniform width (W) to the R/W line or the extent shown in the Plans.

8. Width of Sidewalk Thru Driveway is 4'-0" minimum. Match sidewalk width when shown in Plans or when utility strip width is equal to or greater than the depth of the Driveway Apron.

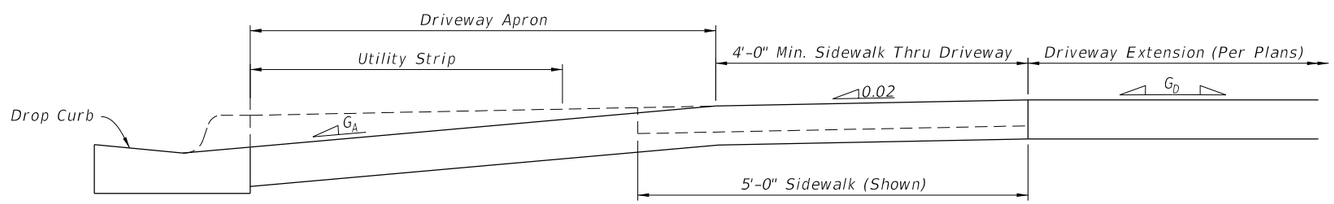
9. Alpha-Numeric Identification:
   Concrete Flared Driveway Alpha-Numeric Identifications (e.g. G4) are provided for reference purposes in the Plans.

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)



PLAN



ELEVATION

CONCRETE FLARED DRIVEWAY NOMENCLATURE

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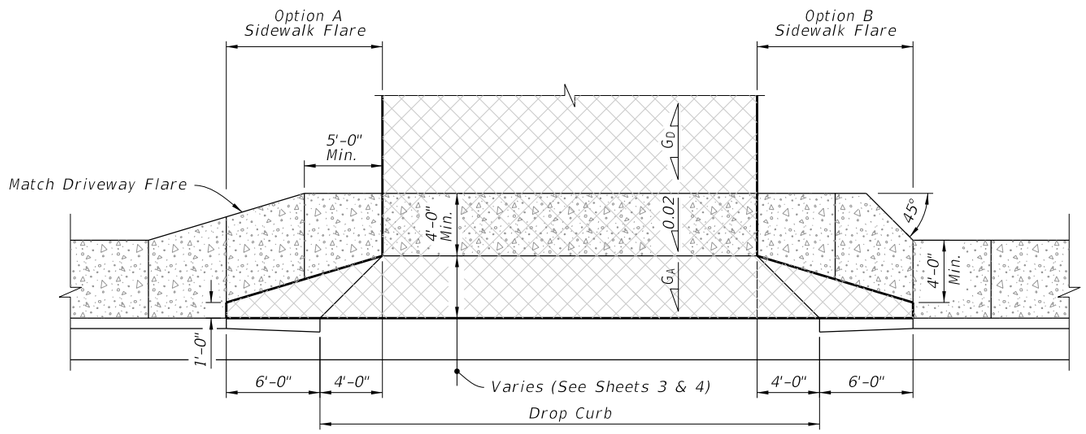
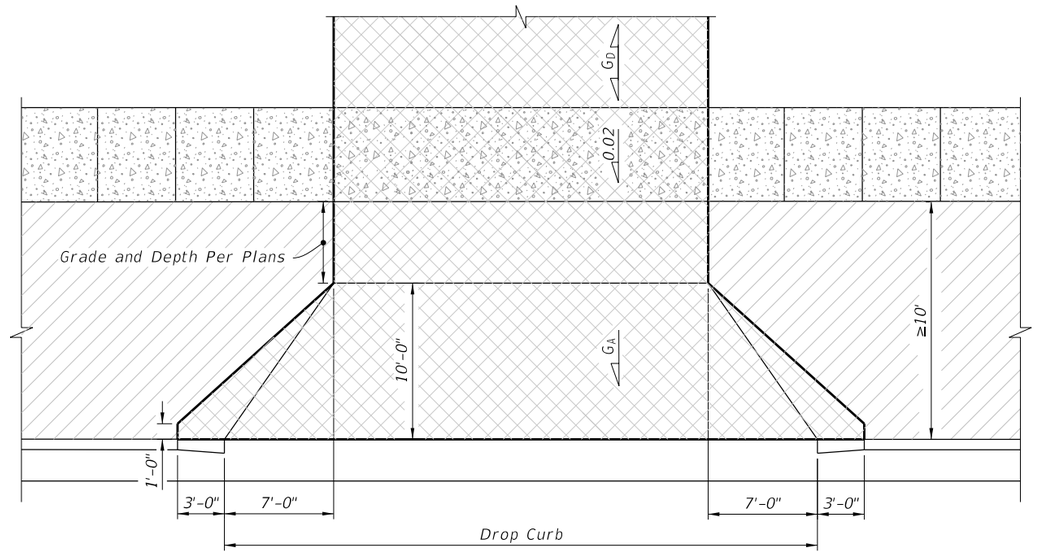
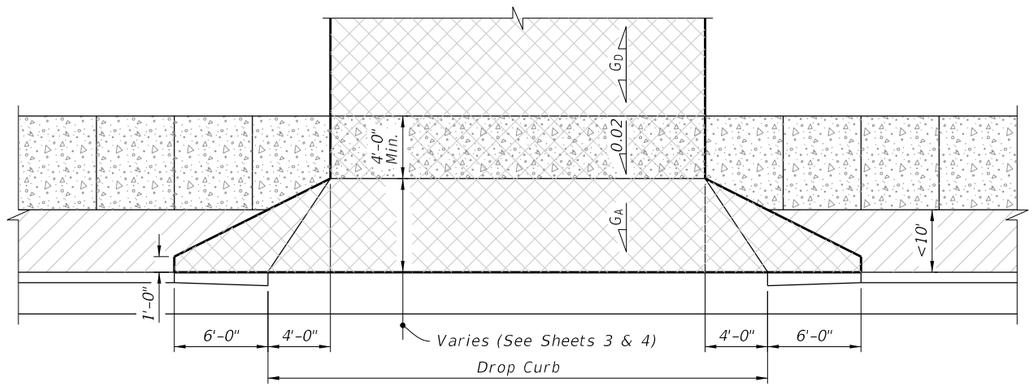
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	CONCRETE FLARED DRIVEWAYS	522-003	1 of 4



SIDEWALK WITHOUT UTILITY STRIP



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

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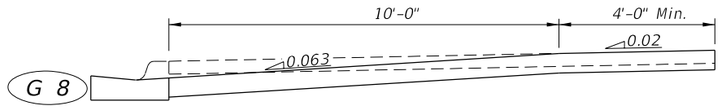
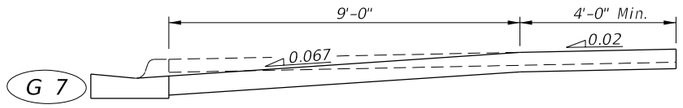
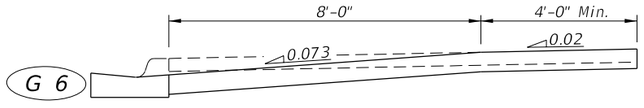
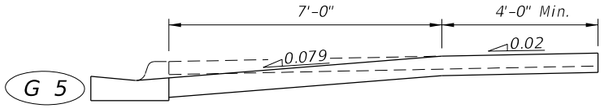
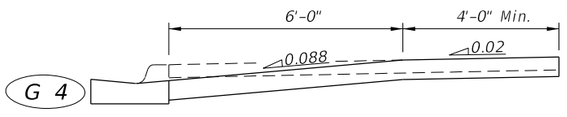
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FDOT FY 2020-21 STANDARD PLANS	CONCRETE FLARED DRIVEWAYS	522-003	2 of 4

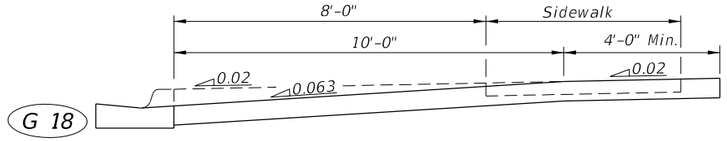


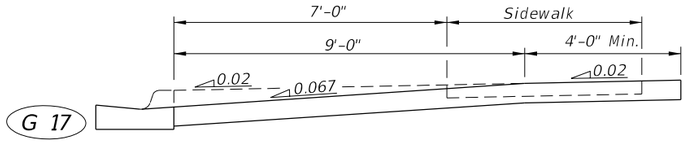


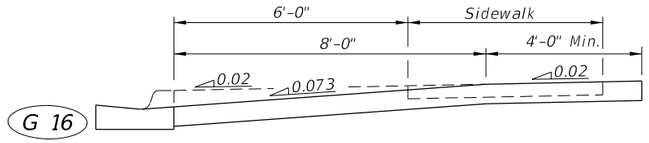


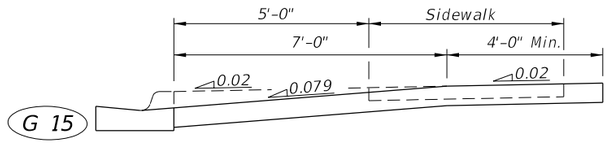


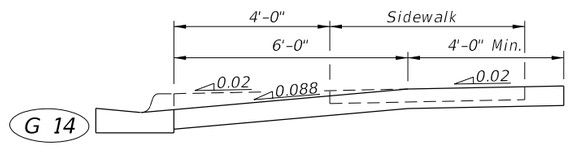


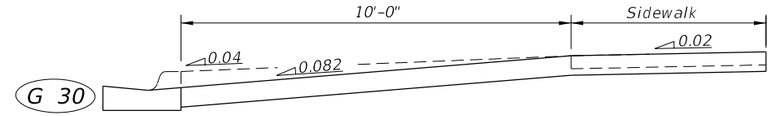


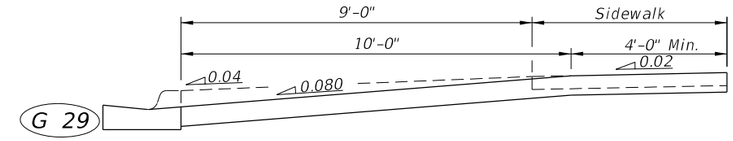


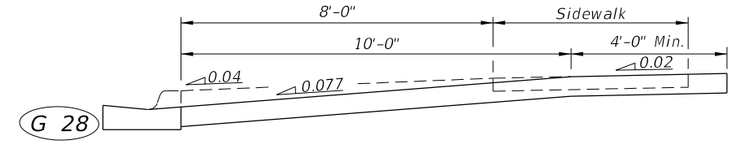


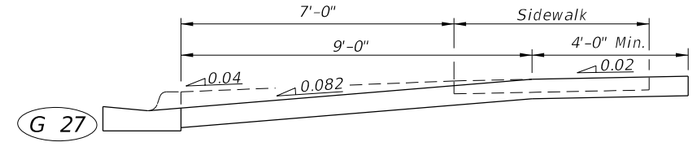


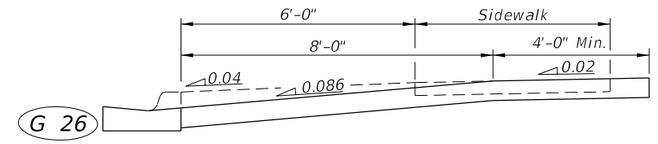


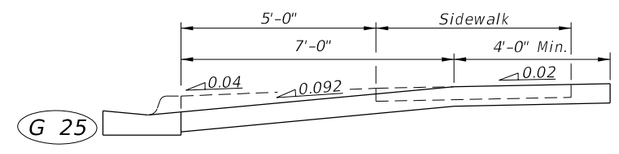




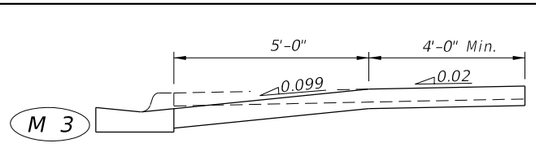


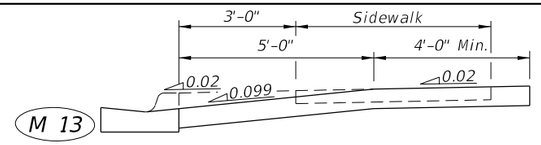


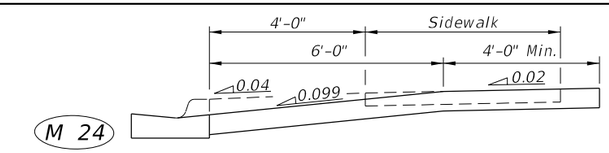




GENERAL APPLICATIONS







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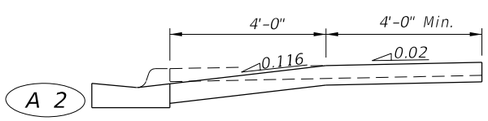

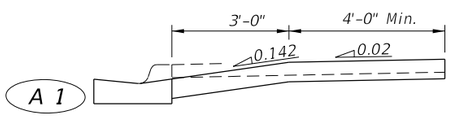

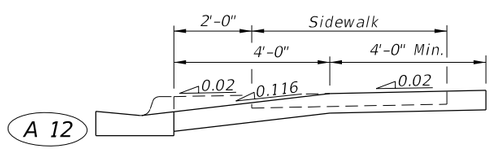

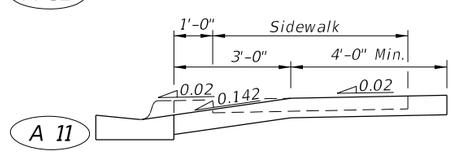

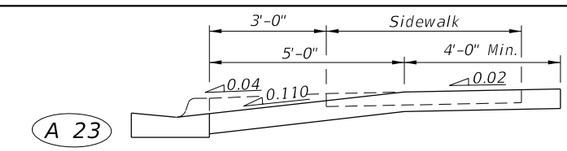

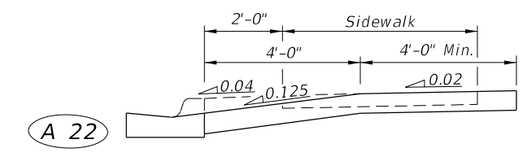

ADVERSE

SIDEWALK WITHOUT UTILITY STRIP

SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

NOTE:

5' sidewalks shown.

10/29/2019 8:19:53 AM

DRIVEWAY SECTIONS ON CURBED FACILITIES WITH SIDEWALKS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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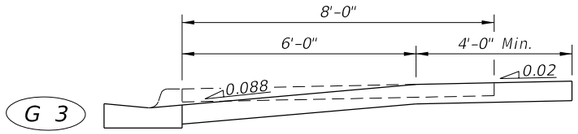
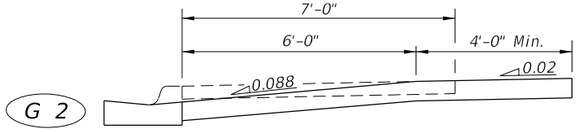


G 3



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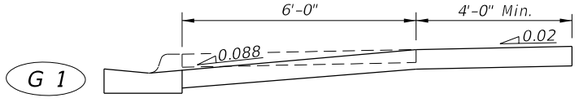

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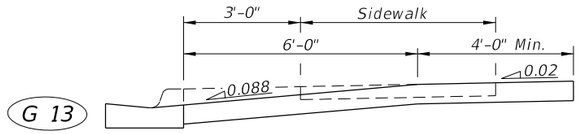

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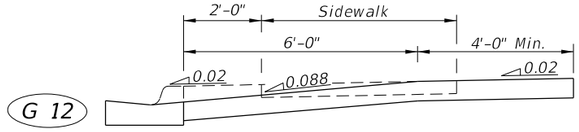

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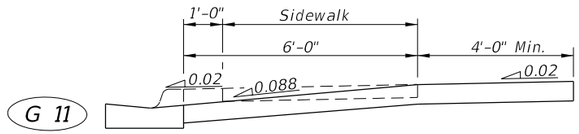
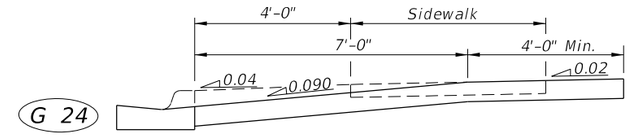


G 11



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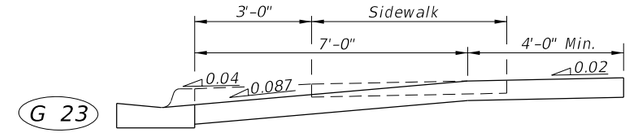

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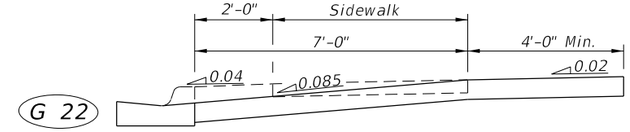
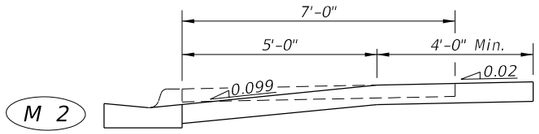


G 22

GENERAL APPLICATIONS



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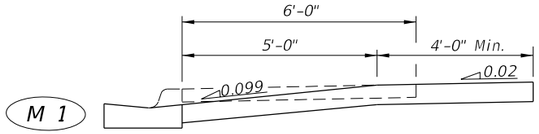

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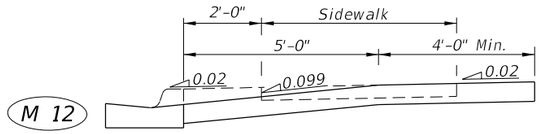

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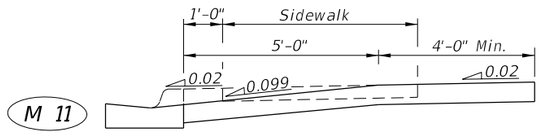

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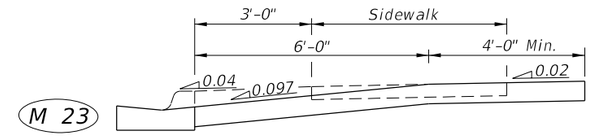

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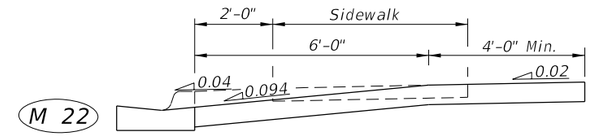

M 22

MARGINAL

SIDEWALK WITHOUT UTILITY STRIP

SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

NOTE:

5' sidewalks shown.

DRIVEWAY SECTIONS ON CURBED FACILITIES WITH SIDEWALKS

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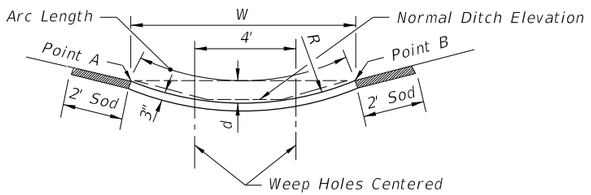
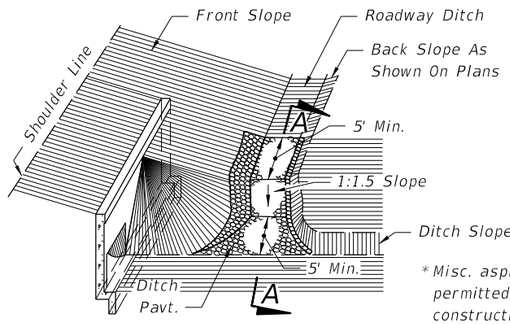
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE FLARED DRIVEWAYS	INDEX	SHEET
11/01/18					522-003	4 of 4



TO REPLACE:	W	d	R	Rows Of Weep Holes	Arc Length
6' Median Swale	6'	0.24'	19'	0	6.0'
1:6 Front Slopes; 1:4 Back Slope					
5' Ditch Bottom Width	10'	0.67'	19'	2	10.1'
4' Ditch Bottom Width	9'	0.54'	19'	2	9.1'
1:4 Front Slopes & Back Slope					
5' Ditch Bottom Width	9'	0.74'	14'	2	9.2'
4' Ditch Bottom Width	8'	0.58'	14'	1 (in center)	8.1'

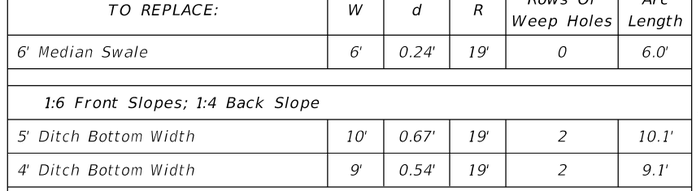
For use only where side slopes are 1:4 or flatter. Point "A" and "B" are to be the same elevation and should be used to locate the paved section.

ALTERNATE DITCH PAVEMENT

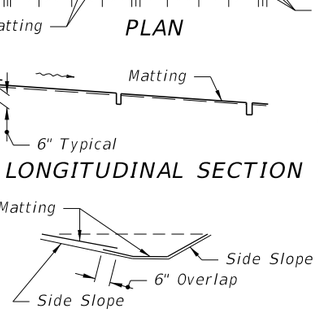


*Misc. asphalt will not be permitted for this type of construction.

JUNCTION OF ROADWAY DITCH* AND LATERAL DITCH



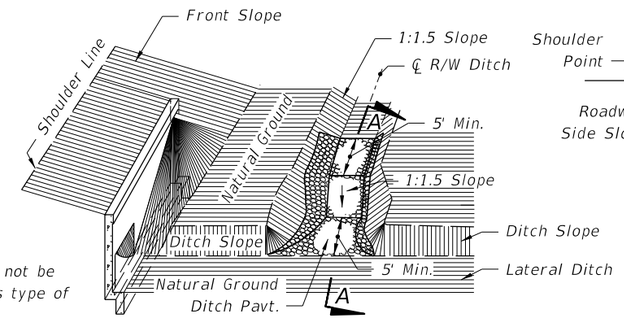
SECTION AA



LONGITUDINAL SECTION

SECTION

MATTING FOR DITCH

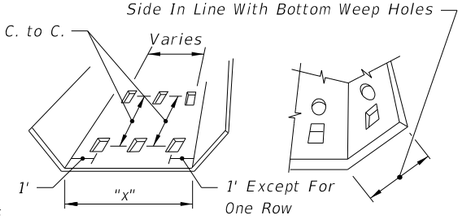


JUNCTION OF R/W DITCH* AND LATERAL DITCH

TYPICAL SECTION

PROFILE OF DITCH PAVEMENT AT LOCATIONS OTHER THAN JUNCTION WITH LATERAL DITCH

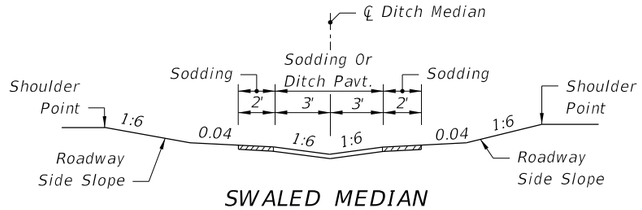
When Width Is Greater Than 4', Const. Weep Holes Half-Way Up The Side In Line With Bottom Weep Holes



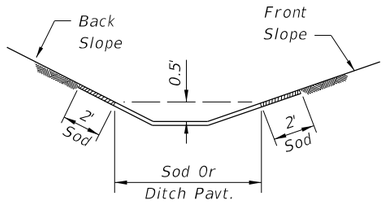
When "x"= 1' To 4' Const. 1 Row (Centered)
"x"= 5' To 7' Const. 2 Rows
"x"= 8' To 12' Const. 3 Rows
"x"= 13' To 17' Const. 4 Rows
"x"= 18' To 22' Const. 5 Rows

Note: All weep holes to be 3"x4" rectangle or 4" or 5" dia. circle hole. ½ cu. ft. (12" x 12" x 6") of No. 6 aggregate to be placed under each hole. 1 sq. ft. of galv. wire mesh (¼" 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.

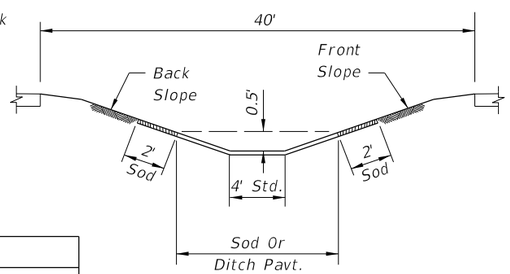
WEEP HOLE ARRANGEMENT



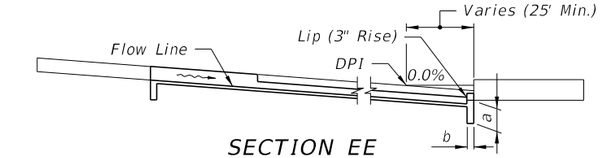
SWALED MEDIAN (No Weep Holes)



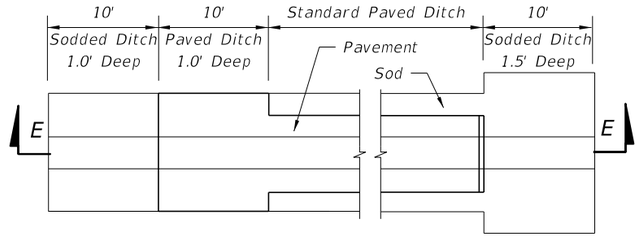
ROADWAY SIDE DITCH



40' MEDIAN



SECTION EE



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

TABLE 1: DITCH PAVEMENT

Pavement Type	Dimensions			Payment Unit	Basis Of Estimate	Filter Fabric Type	Velocity Range	References & Remarks
	a	b	c					
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

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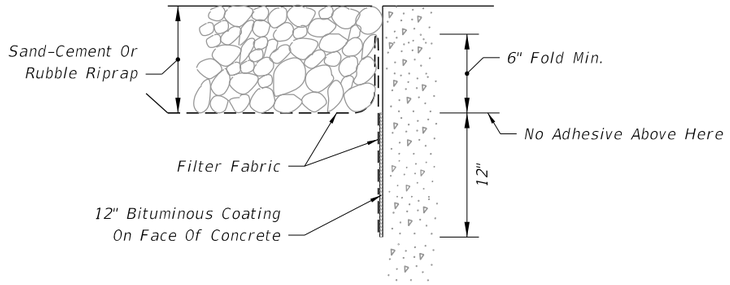
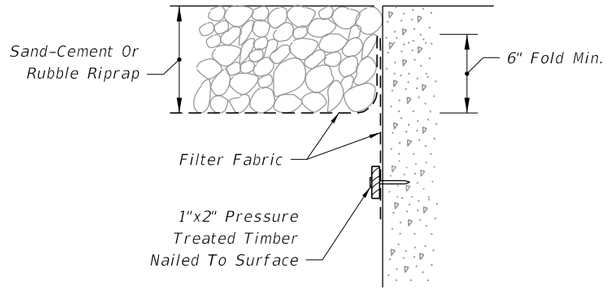
LAST REVISION	REVISION	DESCRIPTION:			
11/01/19			FY 2020-21 STANDARD PLANS	DITCH PAVEMENT AND SODDING	INDEX 524-001 / SHEET 1 of 2



BONDED OPTION



NAILED OPTION

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

FILTER FABRIC PLACEMENT AT CONCRETE STRUCTURE

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DITCH PAVEMENT AND SODDING	INDEX	SHEET
11/01/19						524-001	2 of 2

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.
      2. After panels are installed and centered between posts, grout between both panel ends and the adjoining posts (see Sheets 4 and 5 for details).
   D. Individual panel heights should be between 6'–0" and 12'–0" tall. The minimum panel height is 4'–0" and may be used where overhead clearance is limited, or where graphic panels are required on shorter walls.
7. Concrete And Grout:
   A. Concrete Class and Compressive Strength for:
      1. Precast Panels, Posts, and Post Caps: Class IV
      2. Cast–In–Place Collars: Class IV
   B. Minimum Compressive Strength for form removal and handling of posts and panels:
      1. 2,500 psi for horizontally cast post and panels
      2. 2,000 psi for vertically cast panels or when tilt–up tables are used for horizontally cast panels.
   C. Grout for Auger Cast Piles:
      1. Maximum Working Compressive Strength = 2,000 psi
      2. Minimum 28 day strength = 5,000 psi

8. Reinforcing Steel:
   A. In addition to the requirements of Specification Section 415, tie post and pile stirrups at the following locations as a minimum:
      1. Post Stirrups Tie at all four corner bars and at every third interior bar 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: +/– ¼"
   B. Thickness: +/– ¼"
   C. Plane of side mold: +/– 1/16"
   D. Openings: +/– ½"
   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 ½"
          b. 20' Post Spacing and Wall Height < 17 feet: 4"x 4"x ½"
          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.

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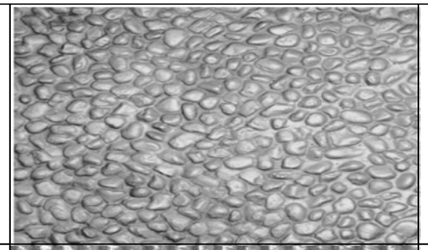
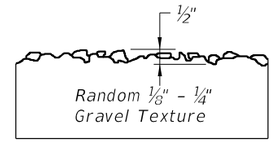
GENERAL NOTES

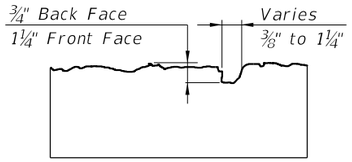
Type "A"
SMOOTH

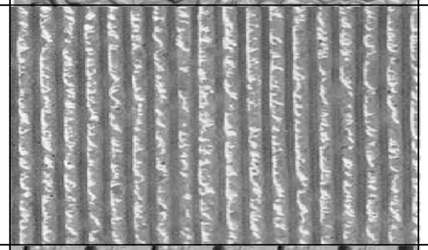


Type "F"
PEA GRAVEL

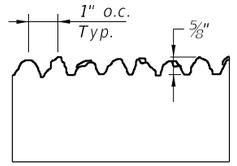


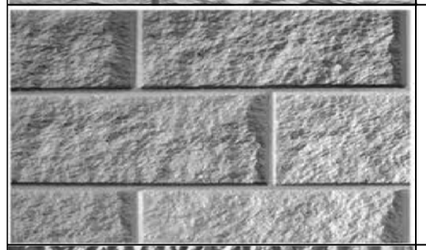
Type "B"
ASHLAR STONE



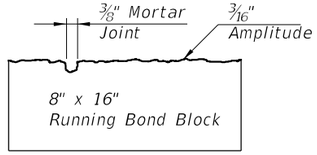


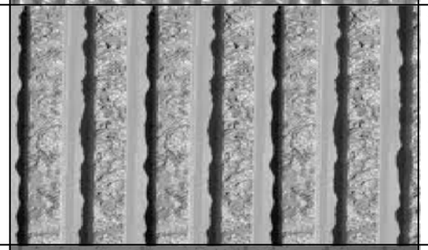
Type "G"
VERTICAL FRACTURED FIN



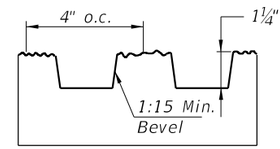


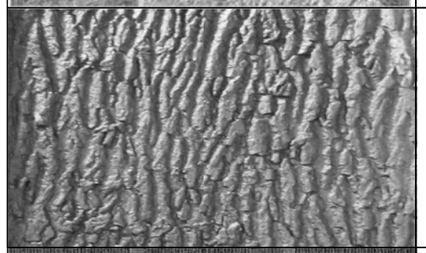
Type "C"
SPLIT FACE RUNNING BOND BLOCK



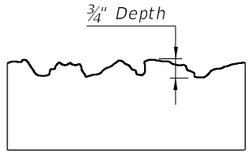


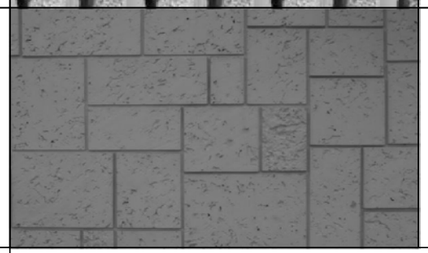
Type "H"
TRAPEZOID VERTICAL FINS W/ FRACTURED FACE (COLORADO DRAG AGGREGATE)



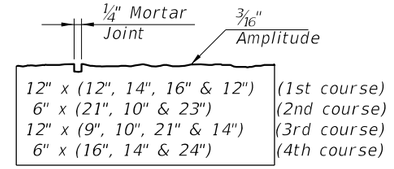


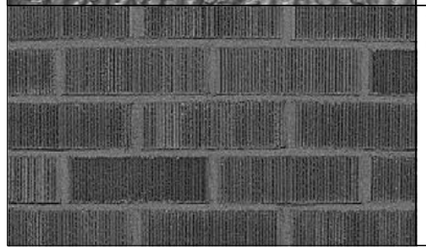
Type "D"
FRACTURED GRANITE



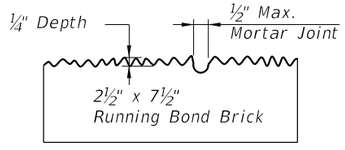


Type "I"
CUT CORAL BLOCK (RUNNING BOND)





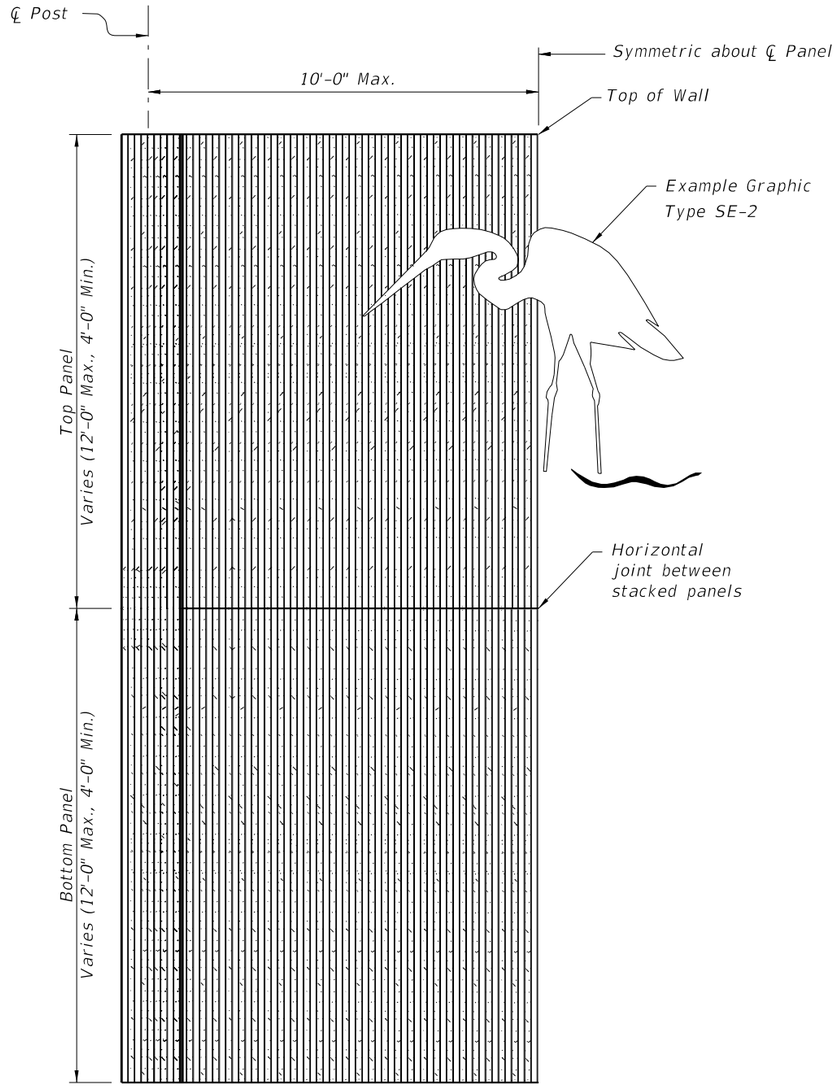
Type "E"
WIRE-CUT BRICK



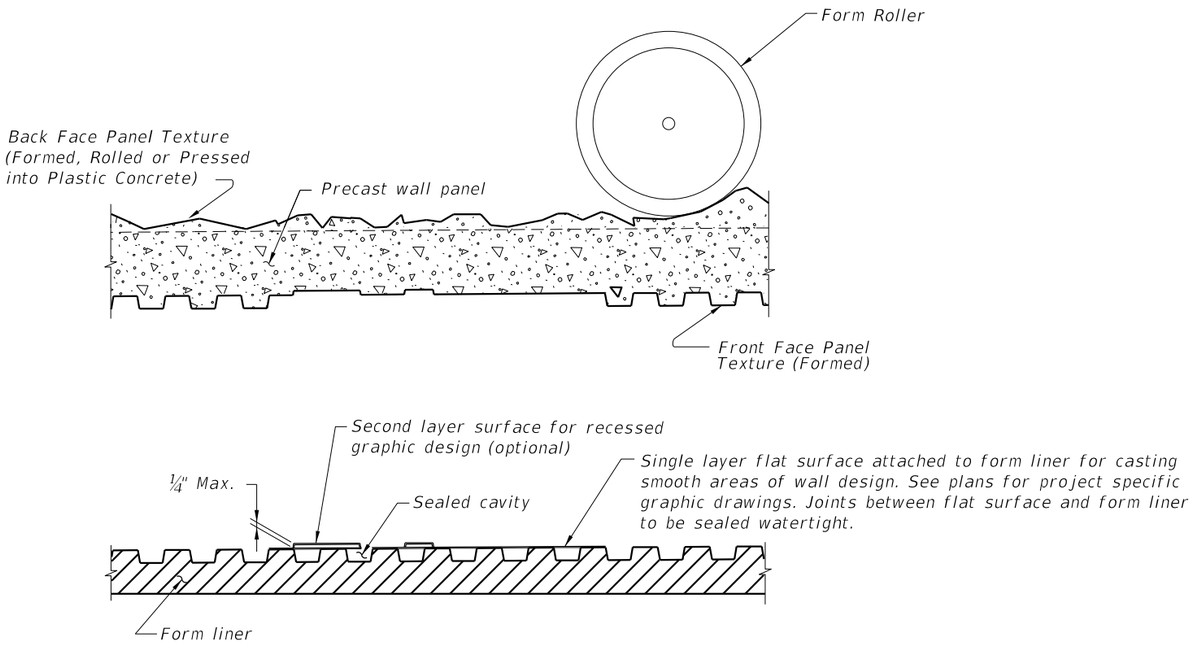
NOTES:

1. Surfaces shall be formed, rolled, or pressed using form liners in accordance with the Plans and Specifications for Class 3 Surface Finish.
2. See Noise Wall Data Tables for project aesthetic requirements.

TEXTURE OPTIONS



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

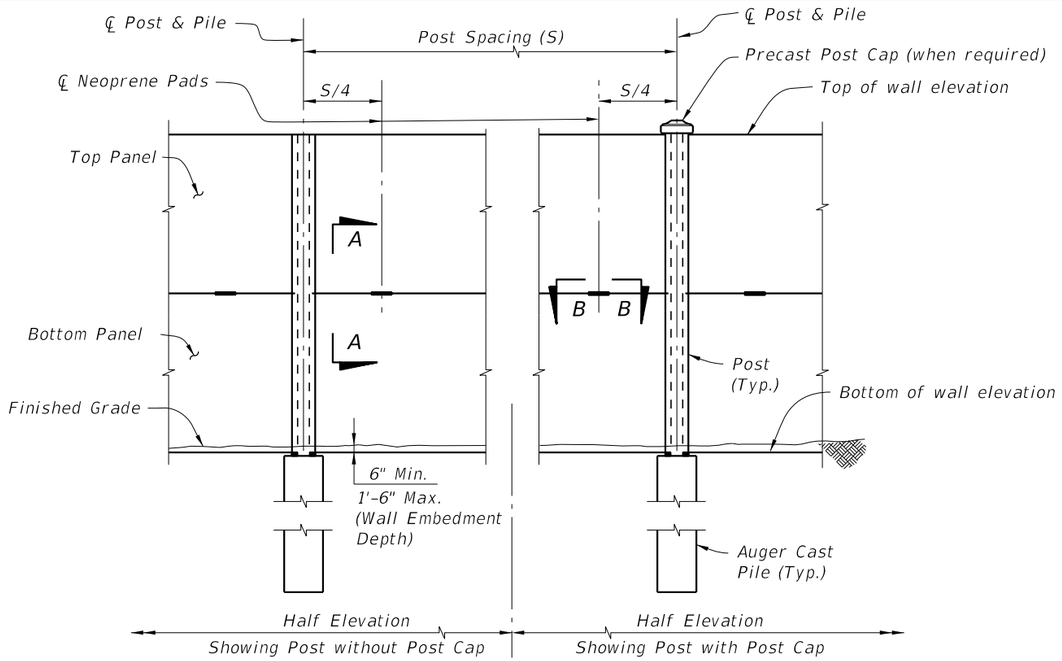


TYPICAL FORMING DETAIL
(Front Face Panel Texture Type "H" shown)
(Back Face Panel Texture Type "D" shown)
(Post Forming Details Similar)

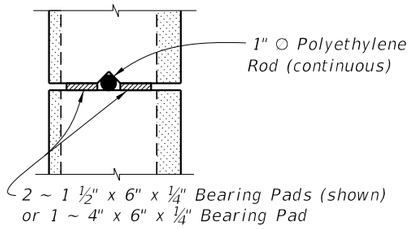
NOTES:

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.*

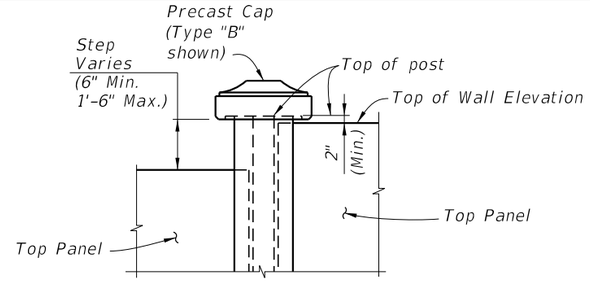
GRAPHICS & TEXTURE DETAILS



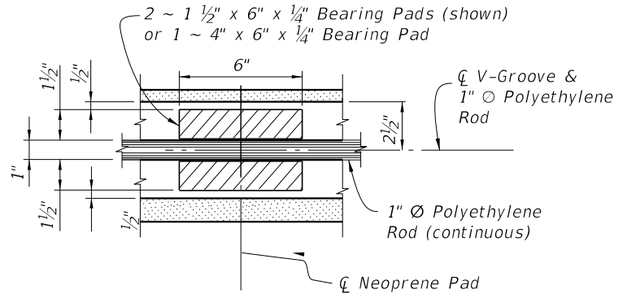
TYPICAL ELEVATION



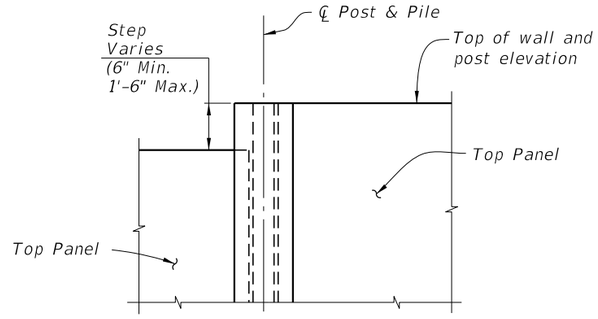
SECTION A-A



WITH POST CAP

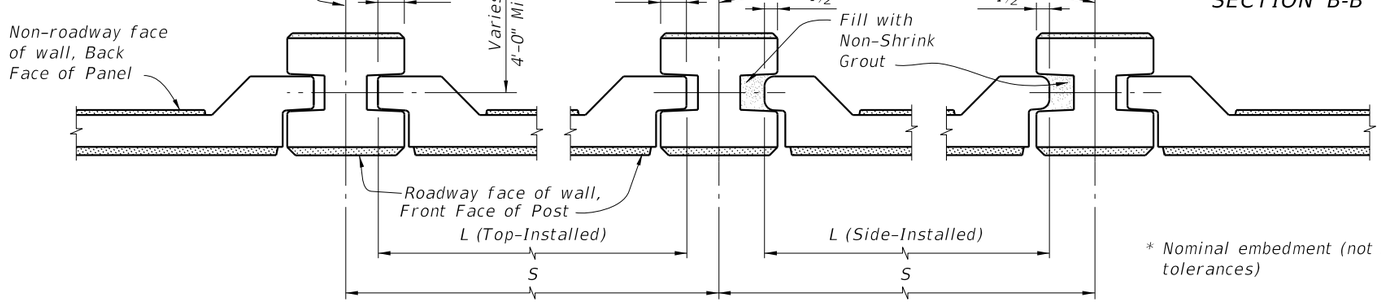


SECTION B-B



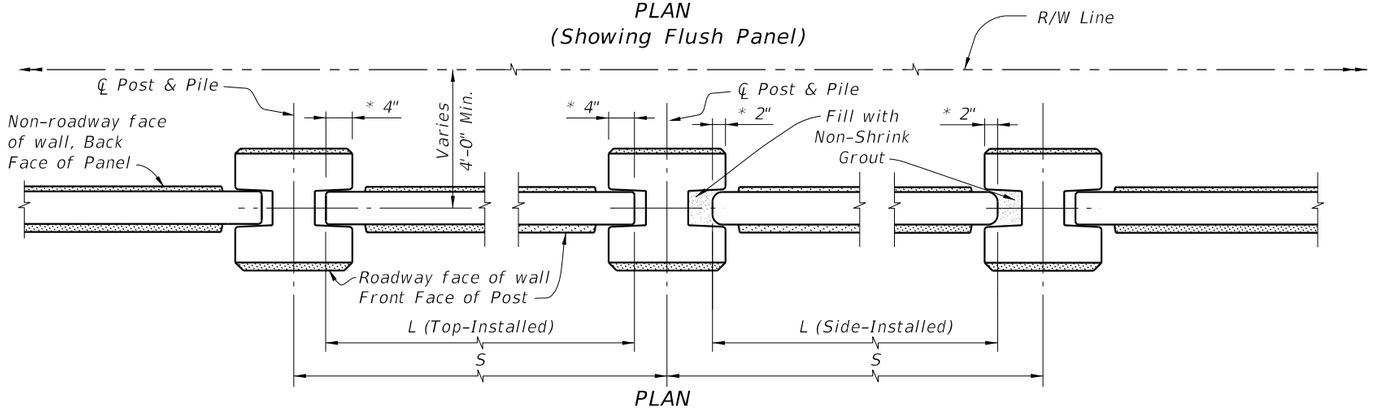
WITHOUT POST CAP

ELEVATION STEP AT TOP OF WALL

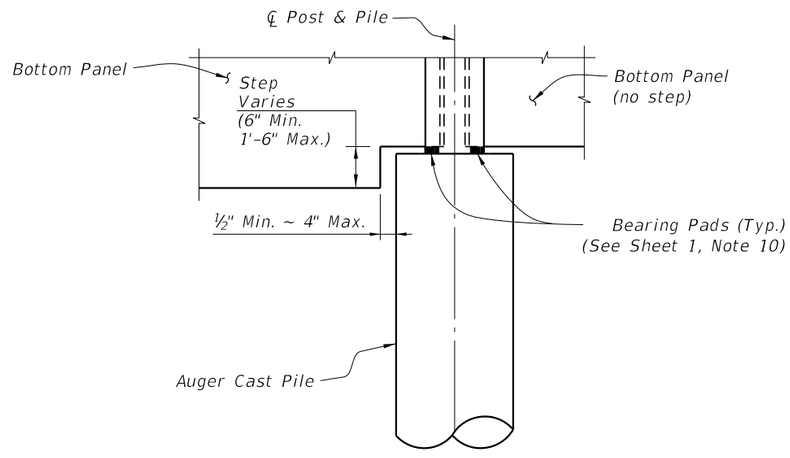


* Nominal embedment (not including tolerances)

PLAN
(Showing Flush Panel)



PLAN
(Showing Recessed Panel)



ELEVATION STEP AT BOTTOM OF WALL

Note:
See the plans for required post spacings (S).

TYPICAL DETAILS

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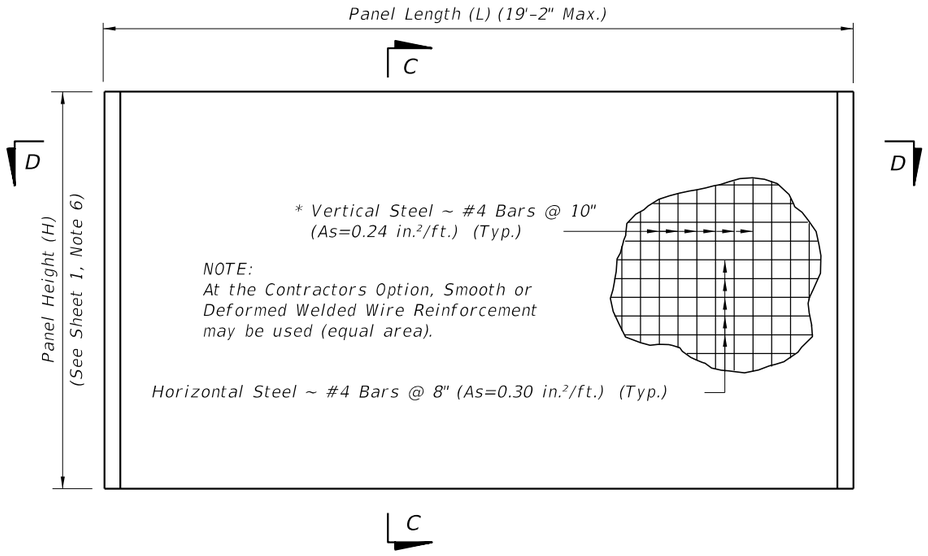
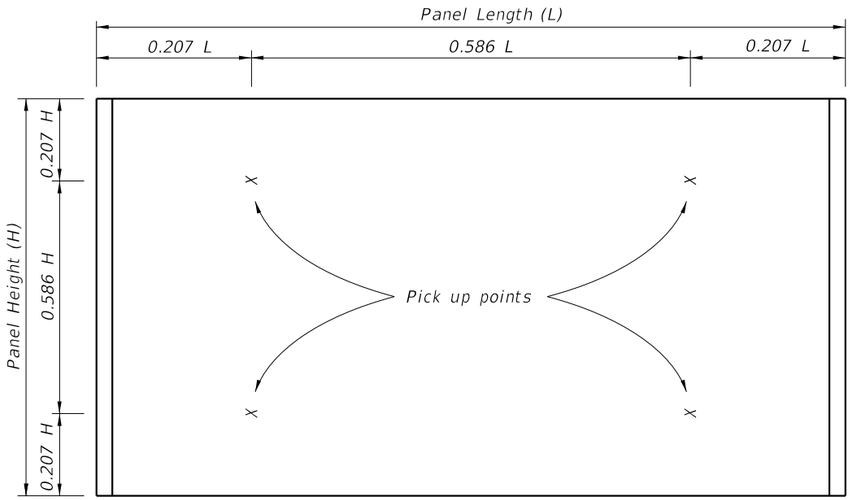
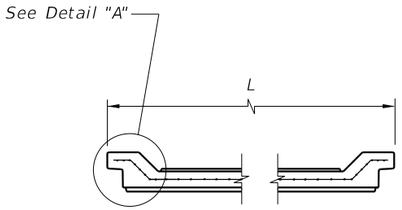


TYPICAL PANEL ELEVATION

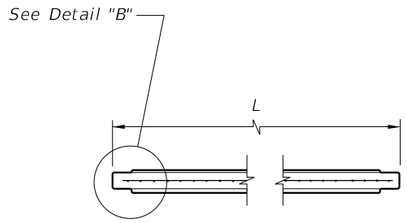
* In lieu of utilizing the standard pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, pick points must be placed in the top of panels only and transported maintaining the vertical orientation. If these criteria are met, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.16 in.²/ft.).



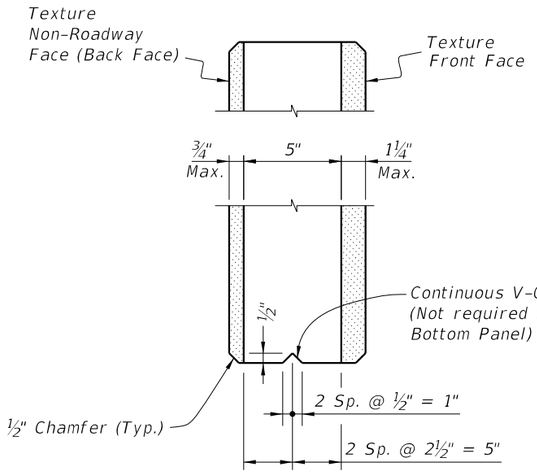
STANDARD PICK UP POINTS FOR PANELS
(Panels shall be rotated about long axis only)



SECTION D-D
(Showing Flush Type Panel)

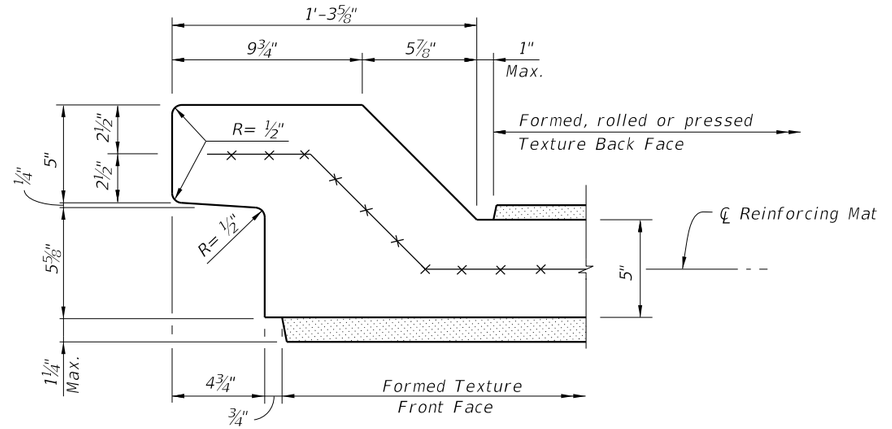


SECTION D-D
(Showing Recessed Type Panel)

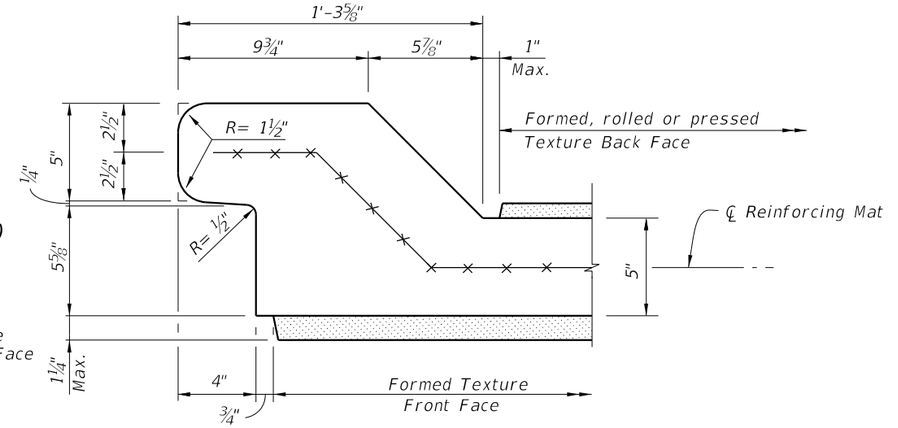


SECTION C-C

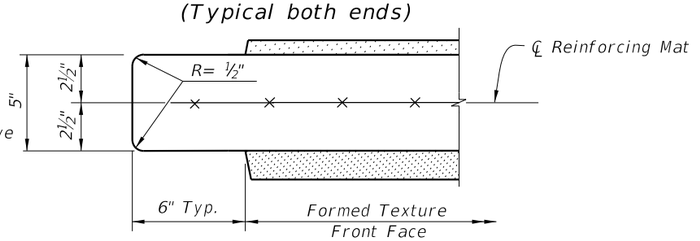
Notes:
1. See Sheet 3 for allowable methods of applying textures.
2. See plans for panel type and aesthetic requirements.
3. For equal post spacing, side-installed panel length will be shorter than top-installed Panel length.



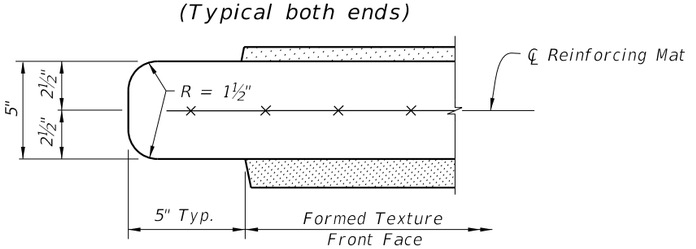
DETAIL "A" - TOP-INSTALLED
(Typical both ends)



DETAIL "A" - SIDE-INSTALLED
(Typical both ends)



DETAIL "B" - TOP-INSTALLED
(Typical both ends)



DETAIL "B" - SIDE-INSTALLED
(Typical both ends)

TYPICAL PANEL DETAILS

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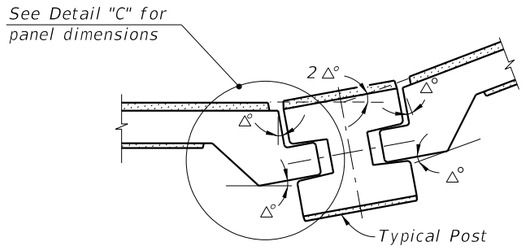
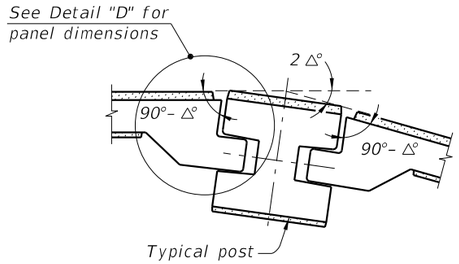
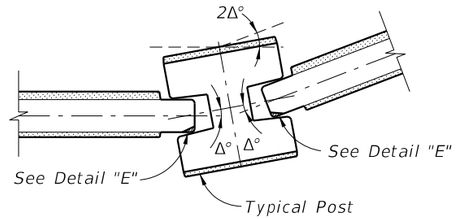


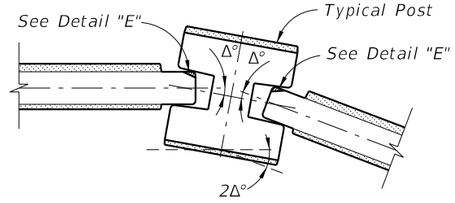
CASE 1
(Interior Angle)



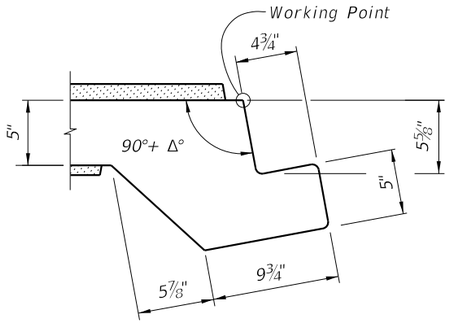
CASE 2
(Exterior Angle)



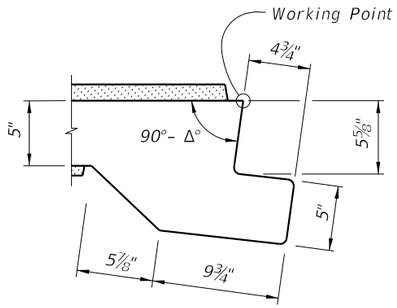
CASE 1
(Interior Angle)



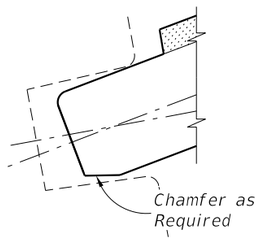
CASE 2
(Exterior Angle)



DETAIL "C"



DETAIL "D"



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

NOTE:
The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle (2Δ°) 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 (2Δ°) between panels exceeds 20°.

PIVOTING DETAILS
(Recessed Type Panel)

TYPICAL PANEL DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	NOISE WALLS - (PRECAST)	INDEX	SHEET
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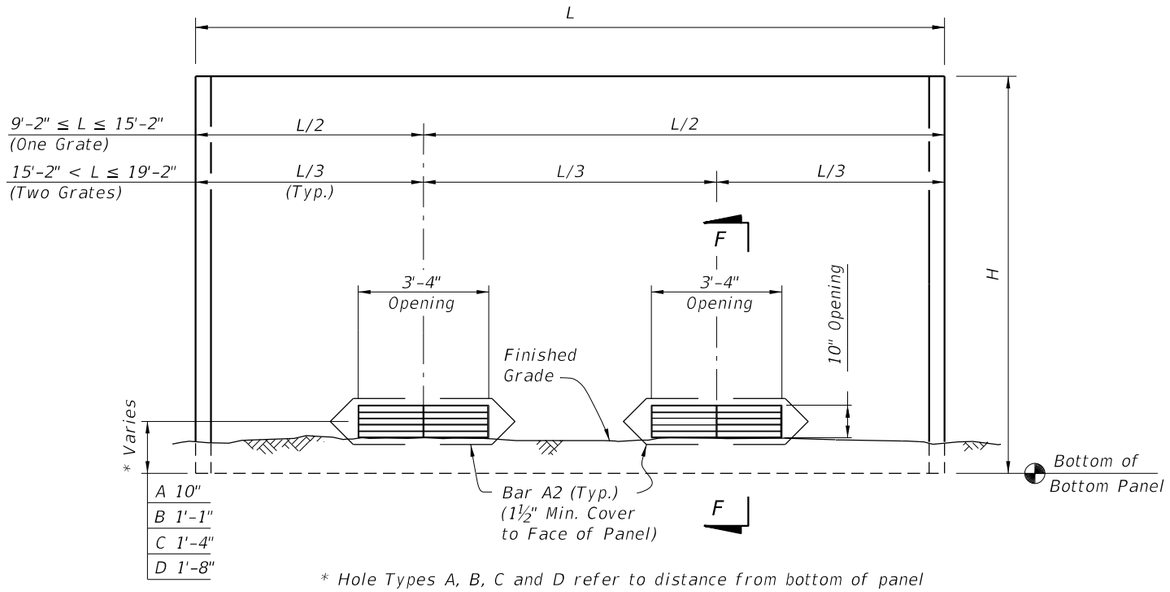
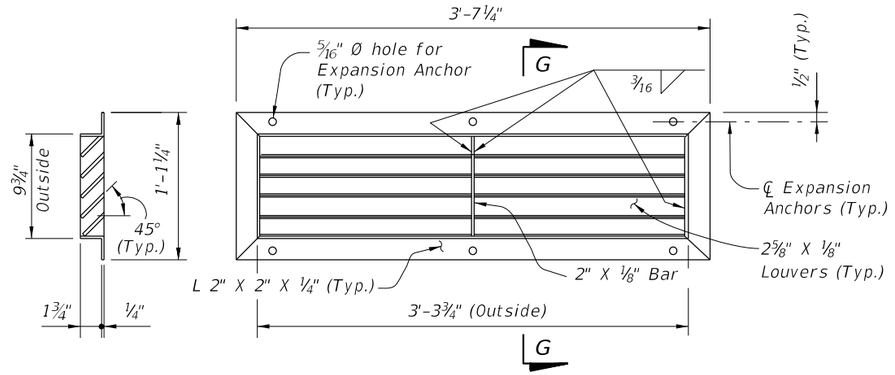


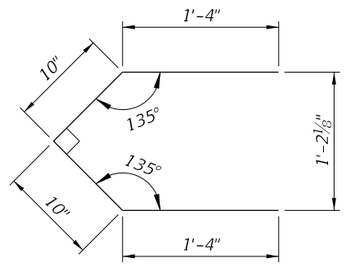
* Hole Types A, B, C and D refer to distance from bottom of panel to center of opening. See Wall Control Drawings in the plans.

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



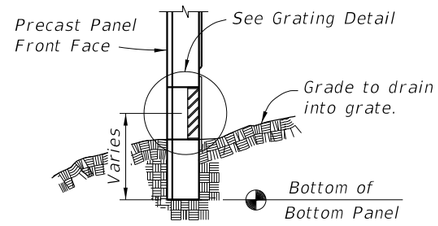
SECTION G-G

GRATING DETAIL



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

BAR BENDING DETAILS (#3 Bars)



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 Section 962.
2. Expansion Anchors: Use ¼" 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

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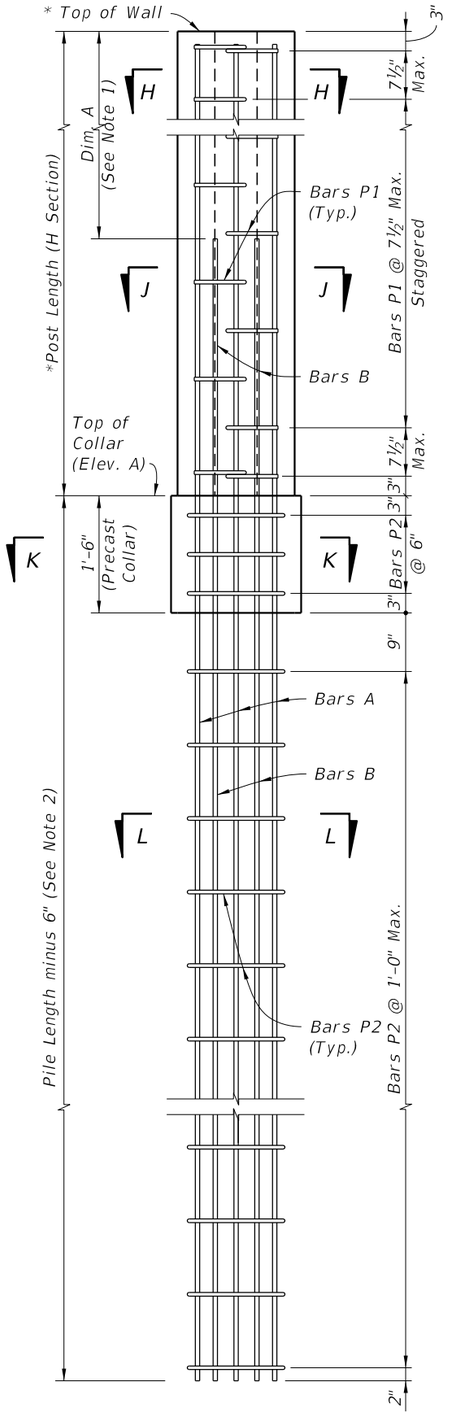
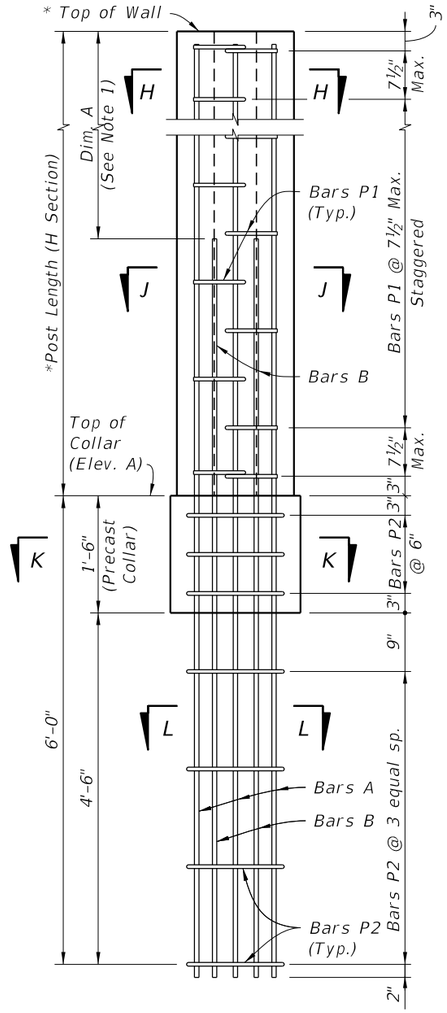
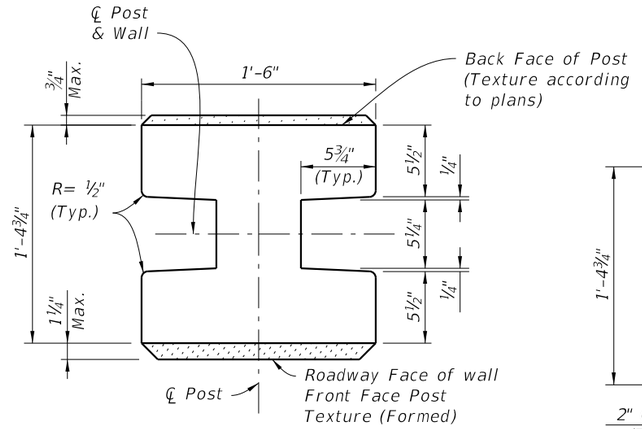


TYPICAL POST

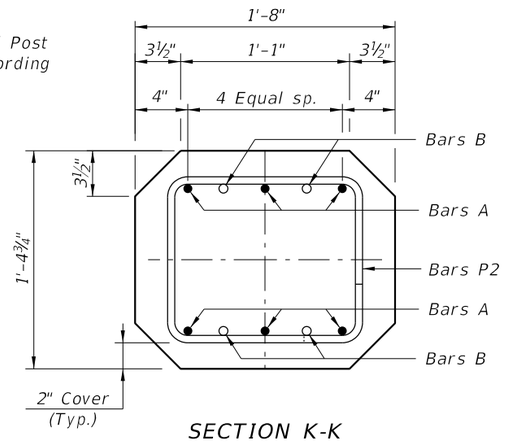


LOW CLEARANCE OPTION

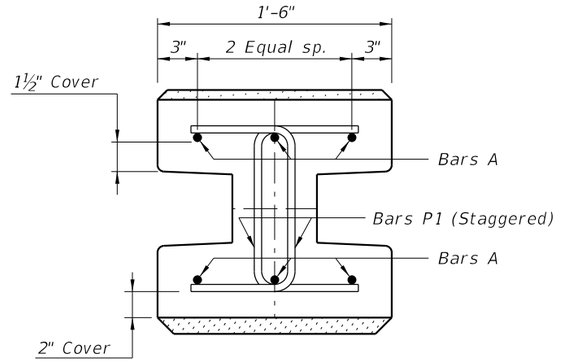
* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".



TYPICAL POST SECTION
(H Section)

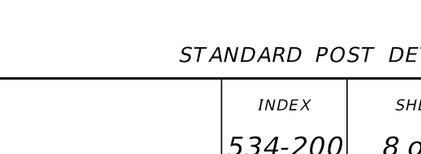


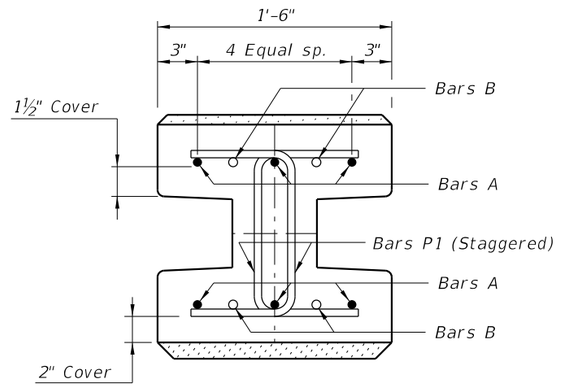
SECTION K-K
(Collar Section)



SECTION H-H

SECTION L-L





SECTION J-J

NOTES:
1. For Post Reinforcing see Sheets 15 and 16.
2. For Pile Lengths Tables see Sheets 15 and 16.

STANDARD POST REINFORCEMENT
(Standard Post Shown, 45° Corner Posts Similar)

STANDARD POST DETAILS

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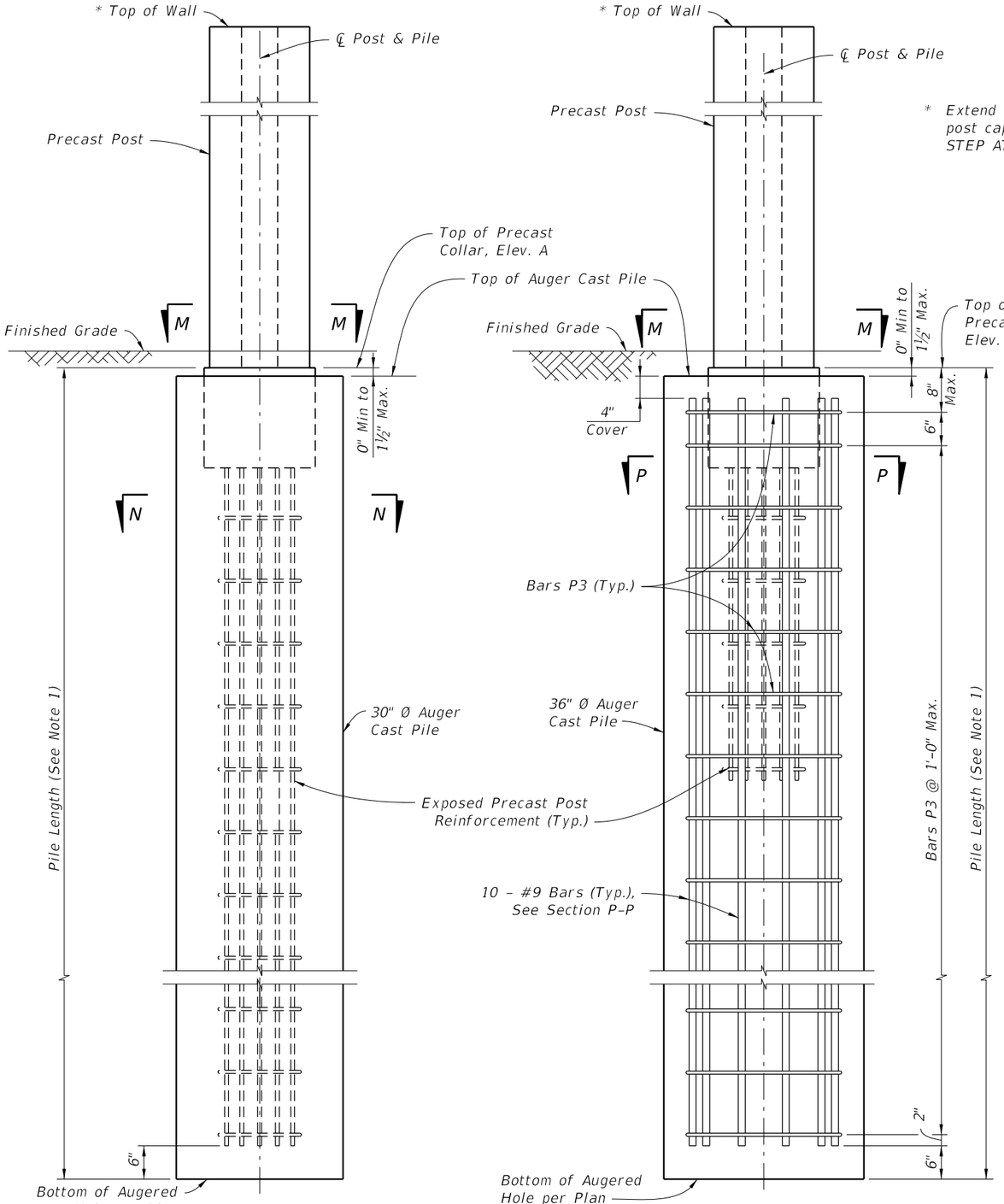
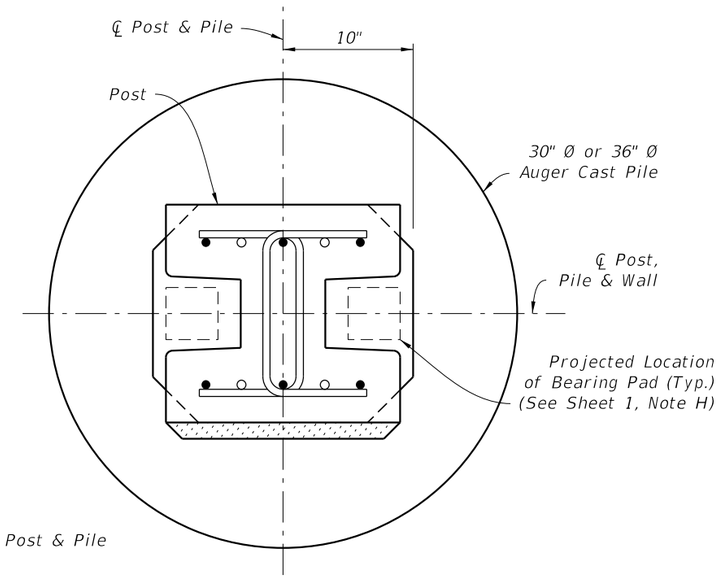


TYPICAL POST

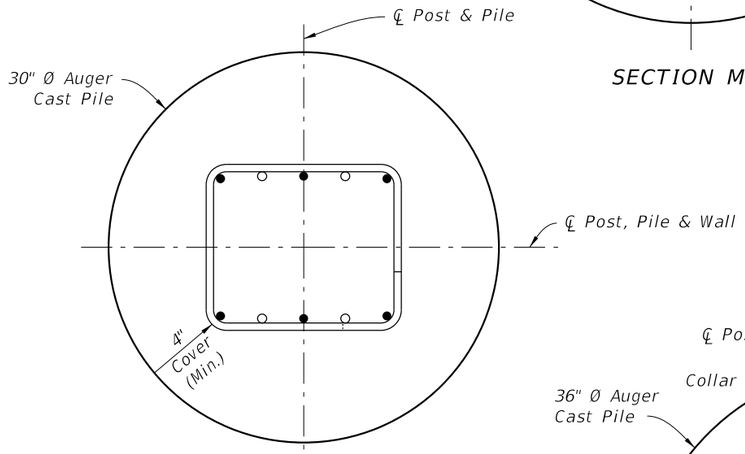
LOW CLEARANCE OPTION

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

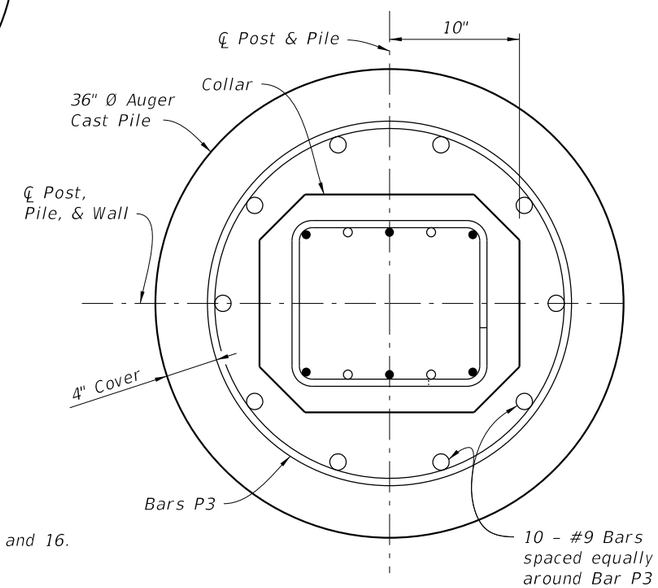
STANDARD POST PLACEMENT IN AUGER CAST PILE
(H-Post Shown, 45° Corner Posts Similar)



SECTION M-M



SECTION N-N



SECTION P-P
Low Clearance Option

NOTE:
1. For Pile Length Tables, see Sheets 15 and 16.

POST PLACEMENT & PILE REINFORCING STEEL DETAILS

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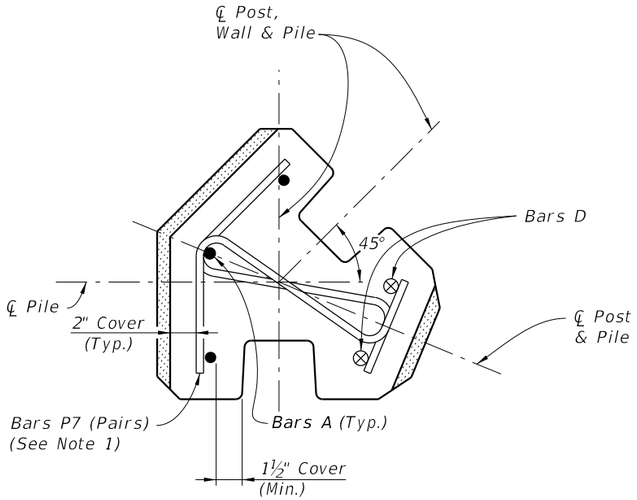
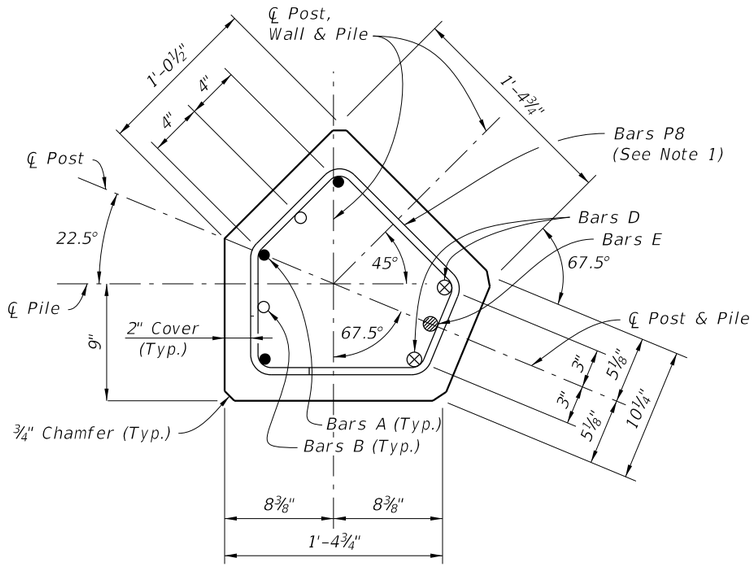
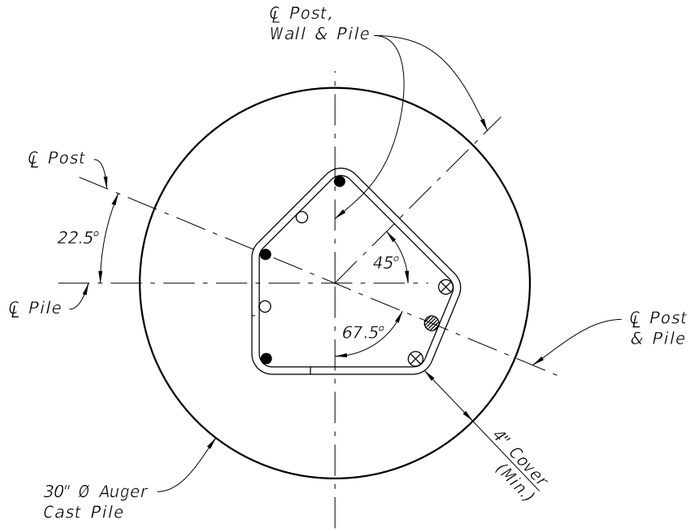


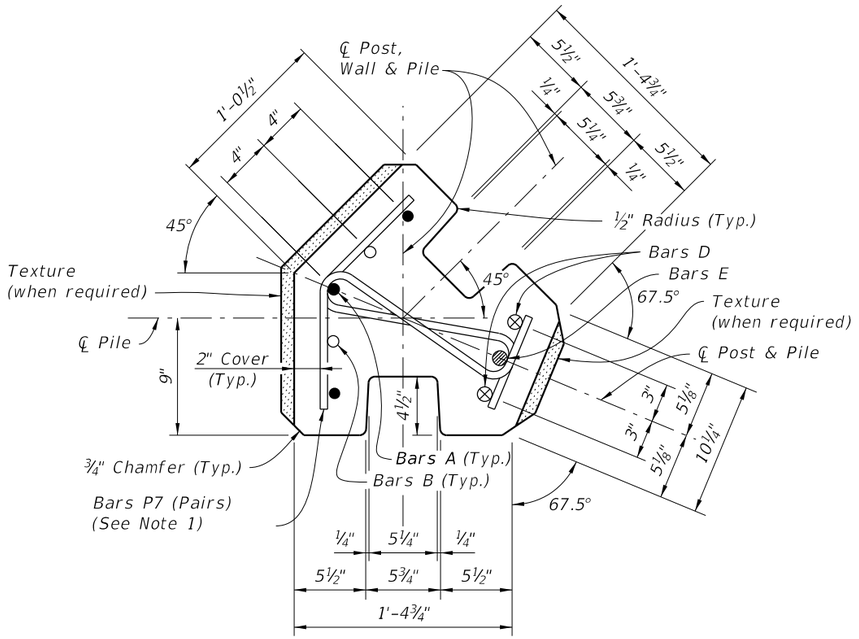
SECTION H-H
(45° Corner Post)



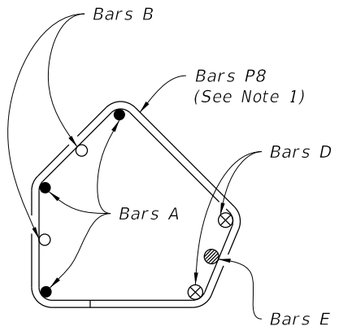
SECTION K-K
(Collar Section, 45° Corner Post)



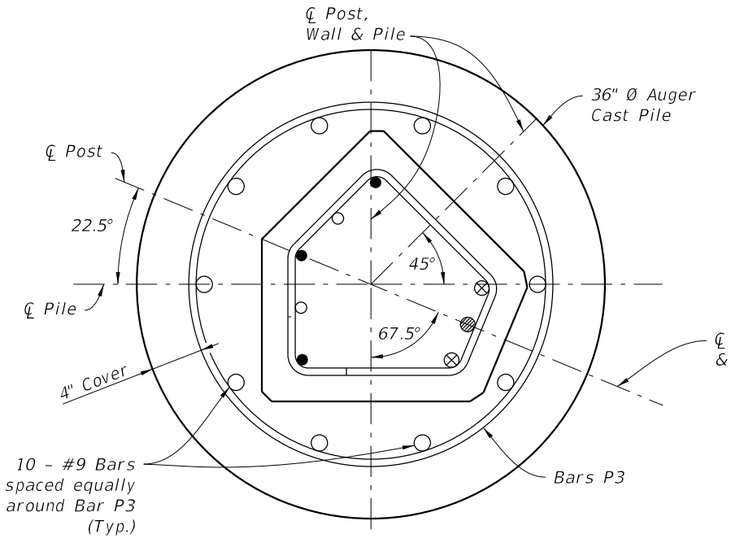
SECTION N-N
(45° Corner Post)



SECTION J-J
(45° Corner Post)



SECTION L-L
(45° Corner Post)



SECTION P-P
(45° Corner Post)

45° POST NOTES:

1. Reference Sheets 8 & 9 for location of Sections.
   Space Bars P7 as shown for Bars P1.
   Space Bars P8 as shown for Bars P2.
2. Match texture thickness with appropriate Panel face.
3. For Post Reinforcing, see sheets 15 & 16.
4. For Pile Length Tables, see sheets 15 & 16.

45° POST DETAILS

45° POST PLACEMENT IN AUGER CAST PILE

45° CORNER POST DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	NOISE WALLS - (PRECAST)	INDEX	SHEET
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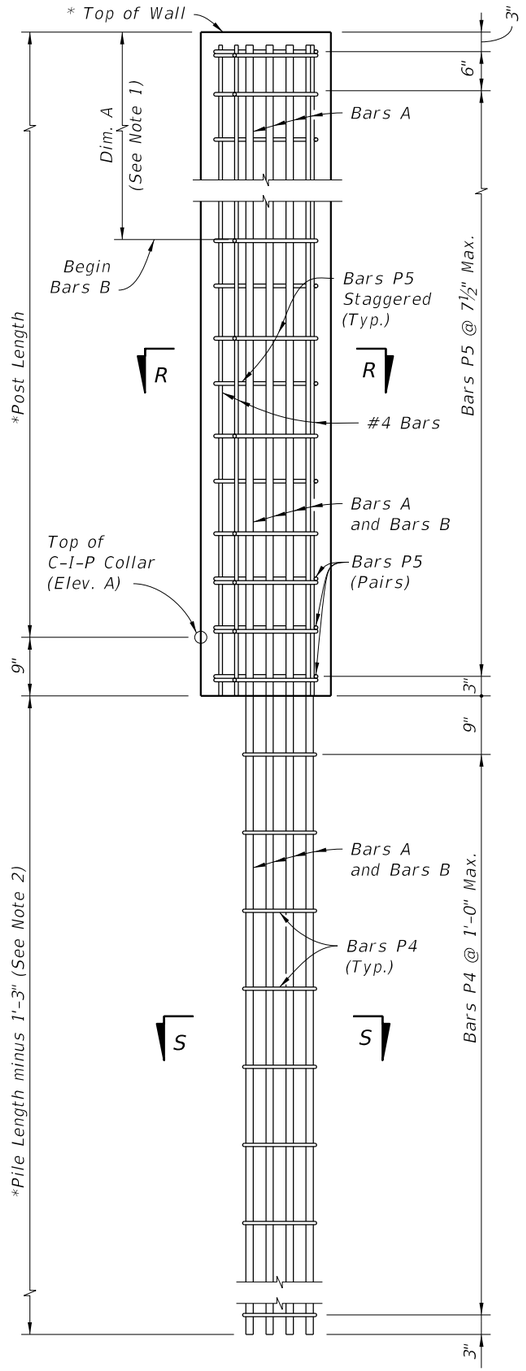
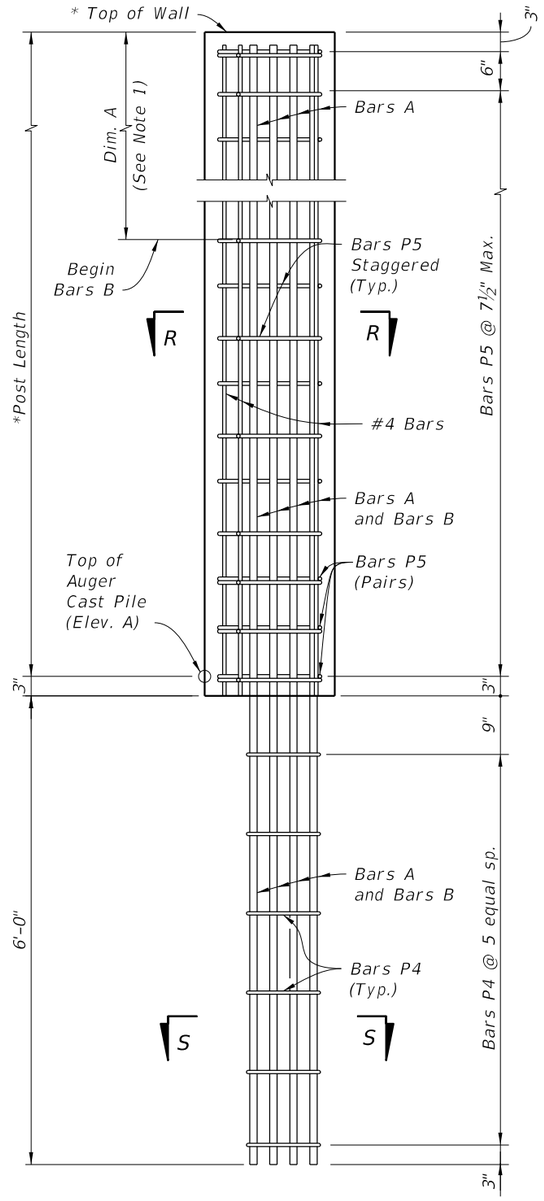
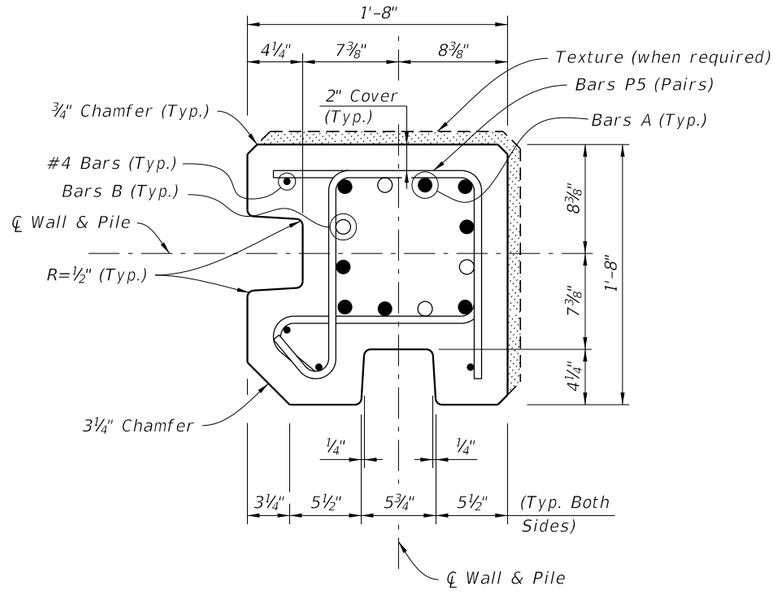


TYPICAL POST

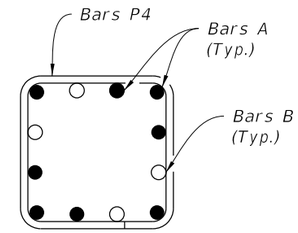


LOW CLEARANCE OPTION

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



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 REINFORCMENT
(Post Surface Features Not Shown For Clarity)

90° CORNER POST DETAILS

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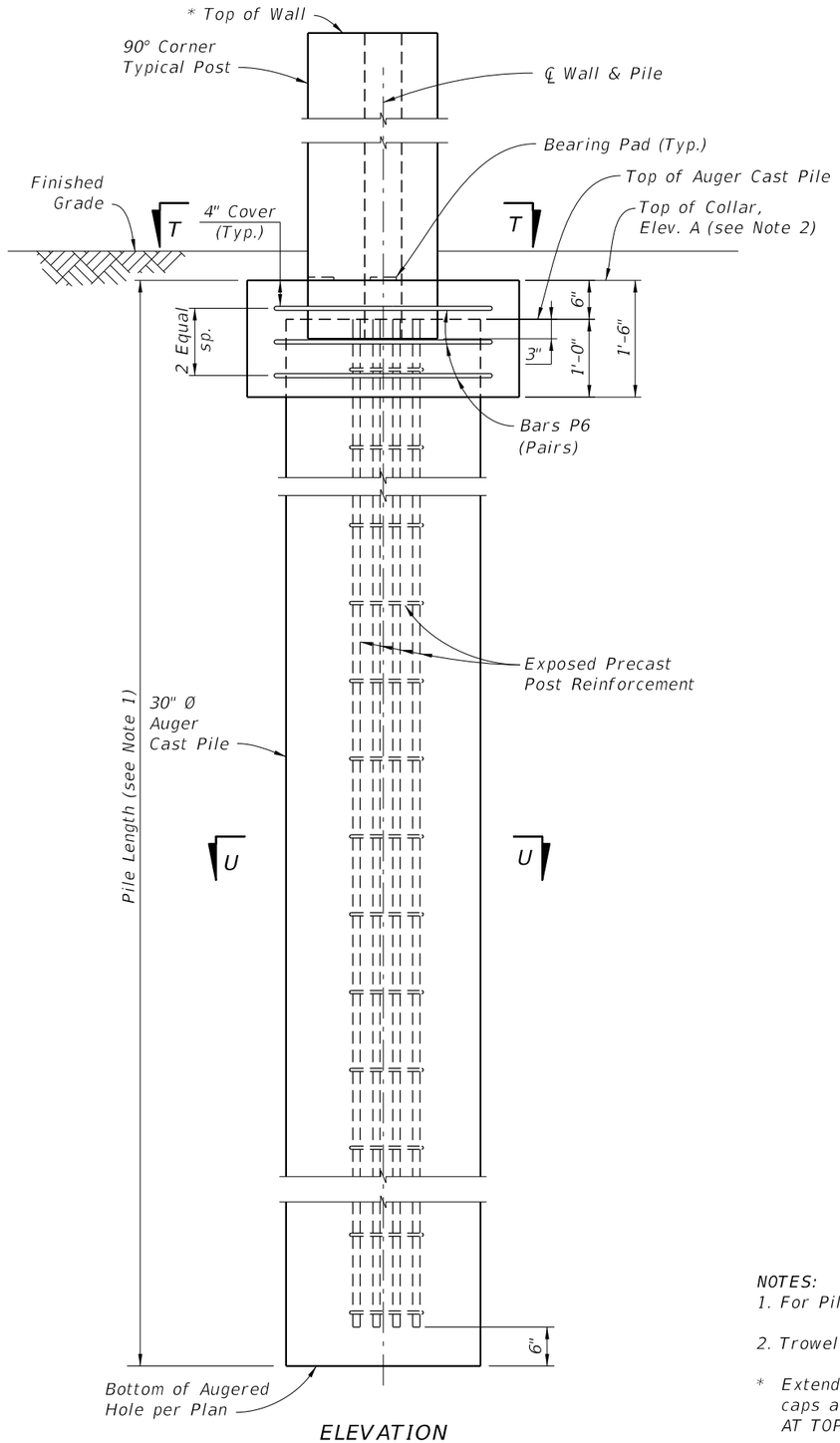
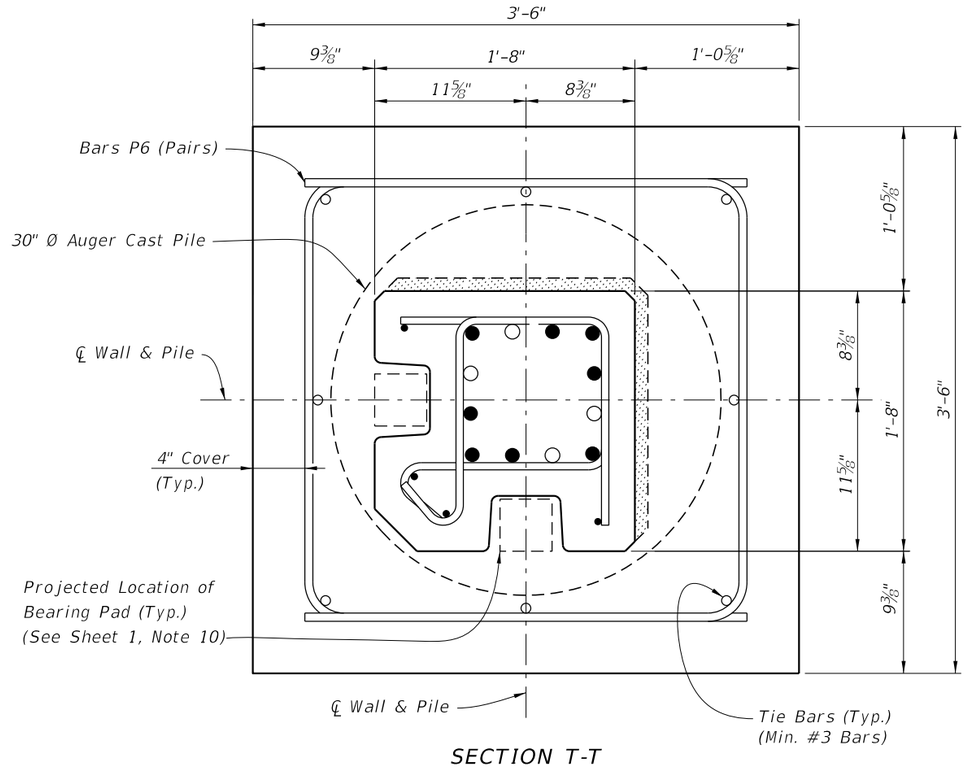
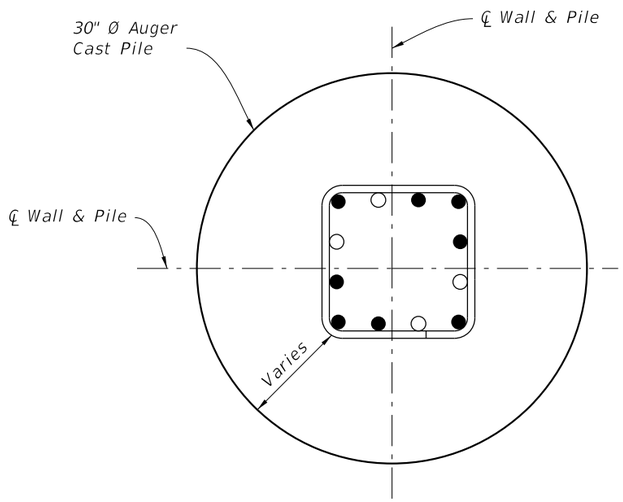


ELEVATION



SECTION T-T
C-I-P COLLAR



SECTION U-U

NOTES:
1. For Pile Length Tables, see Sheets 15 and 16.

2. Trowel Finish top of Collar to allow placement of Bearing Pads.

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

90° CORNER TYPICAL POST PLACEMENT DETAILS

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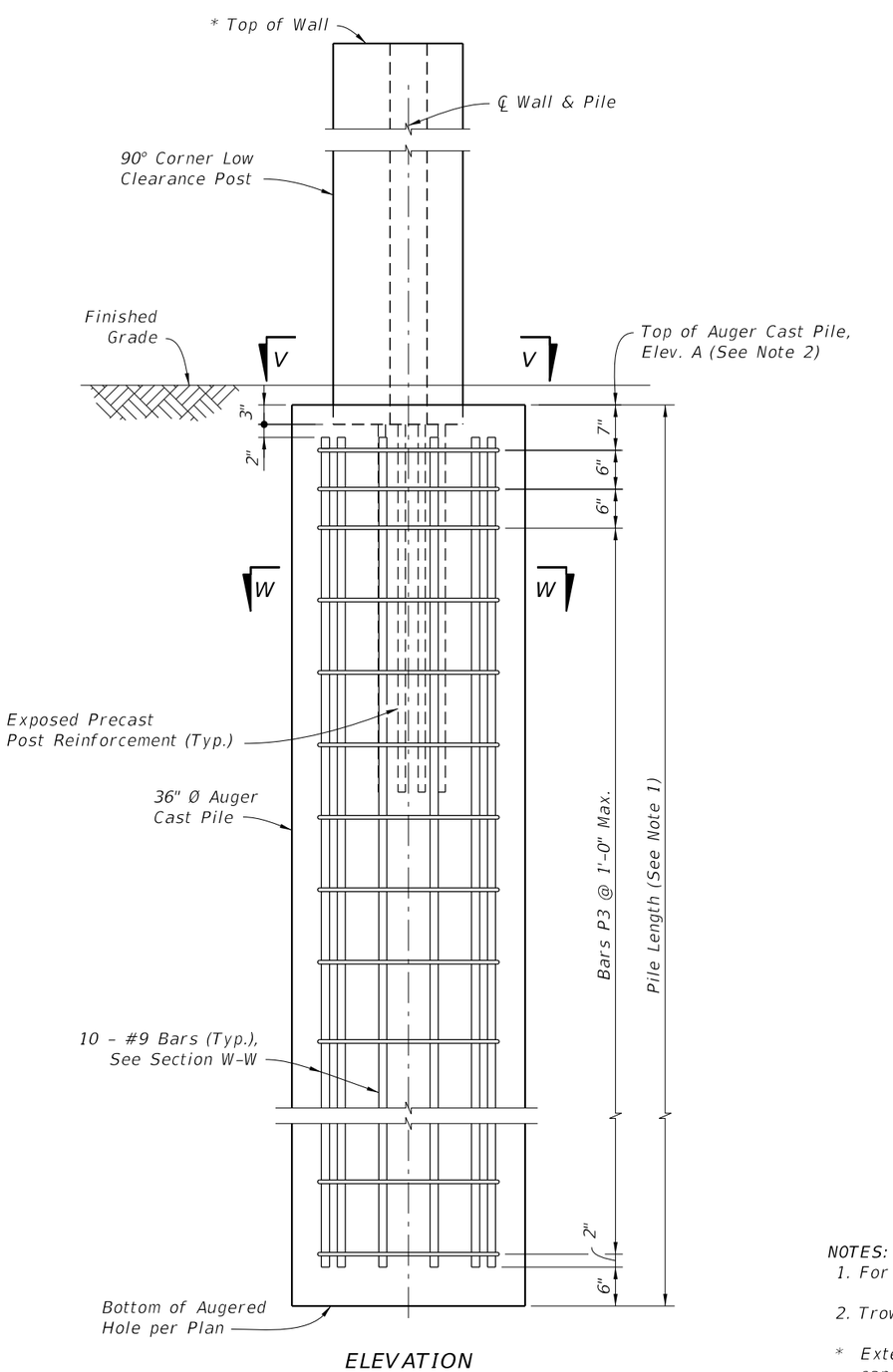
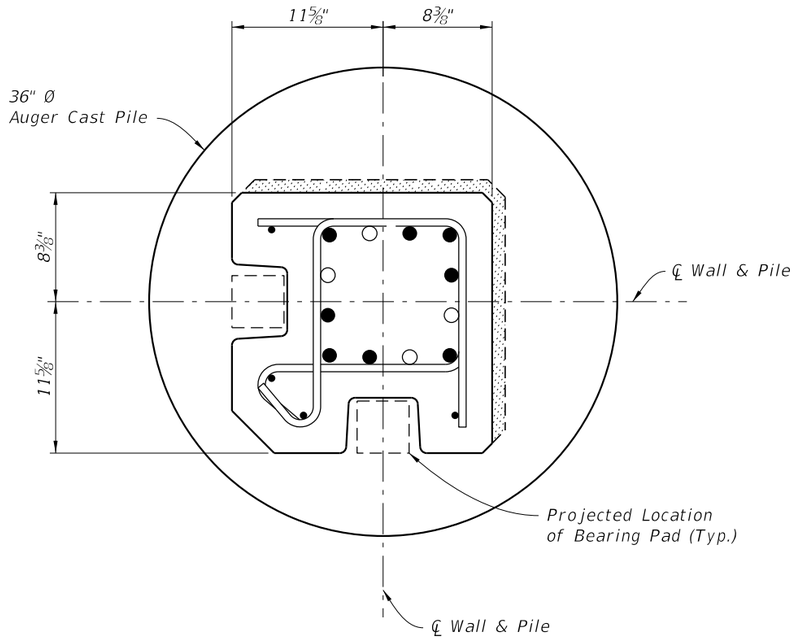


ELEVATION

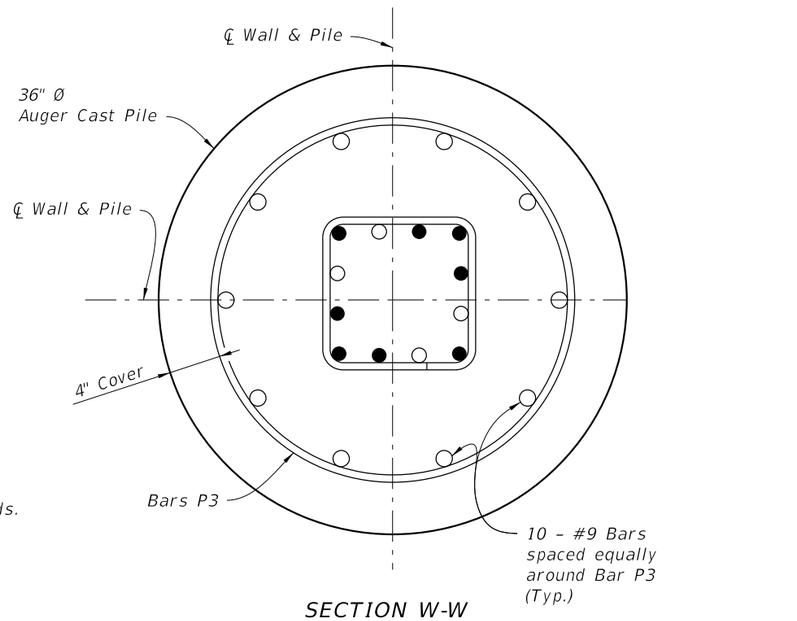


SECTION V-V

NOTES:

1. For Pile Length Tables, see Sheets 15 and 16.
2. Trowel Finish top of auger cast pile to allow placement of Bearing Pads.

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



SECTION W-W

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

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	NOISE WALLS - (PRECAST)	INDEX	SHEET
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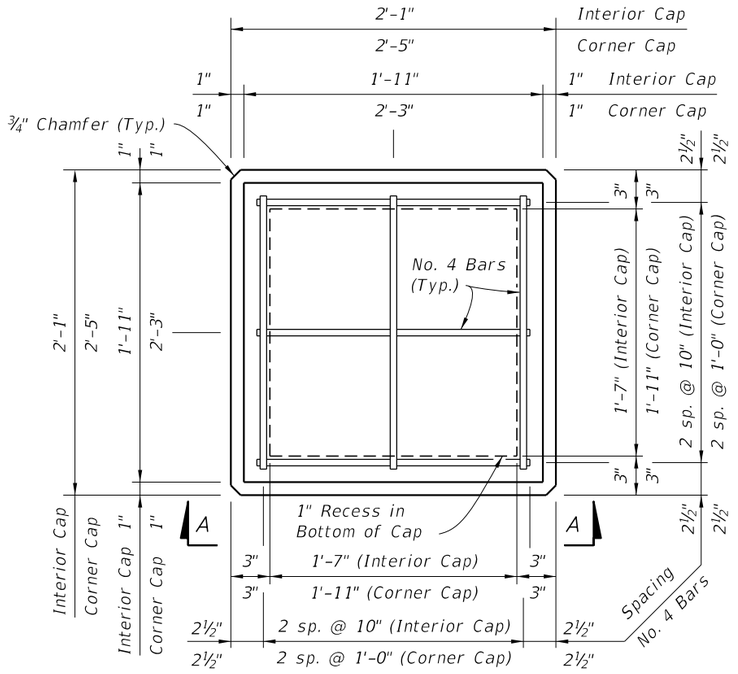
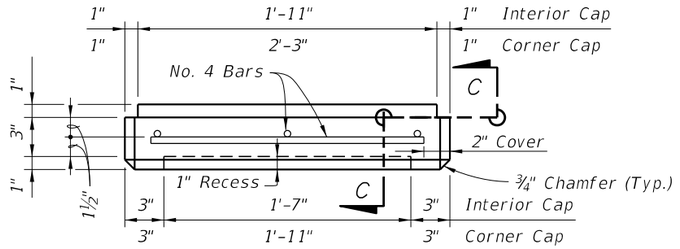
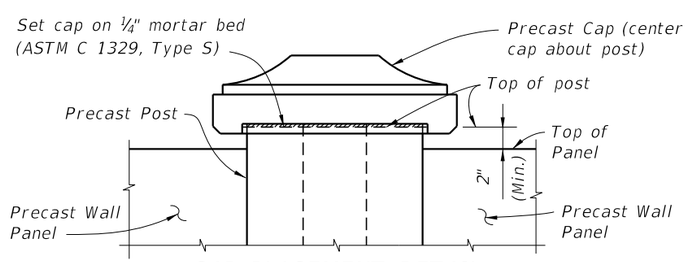


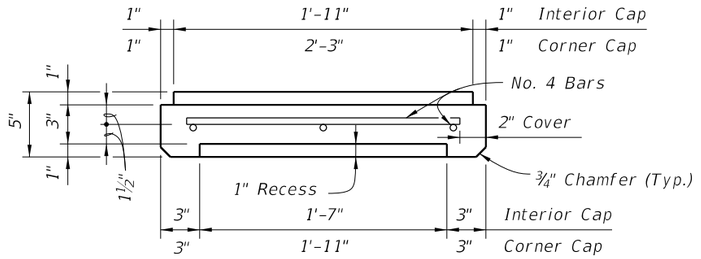
PLAN VIEW
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)



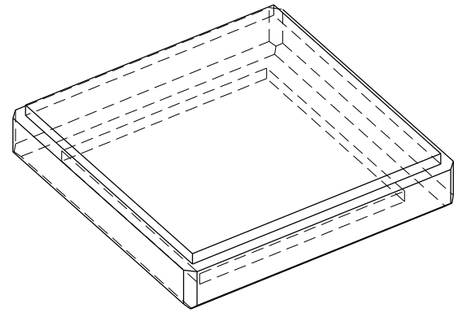
VIEW A-A SHOWN, VIEW B-B SIMILAR
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)



CAP PLACEMENT DETAIL
(Type "B" Cap Shown, Type "A" & "C" Caps Similar)

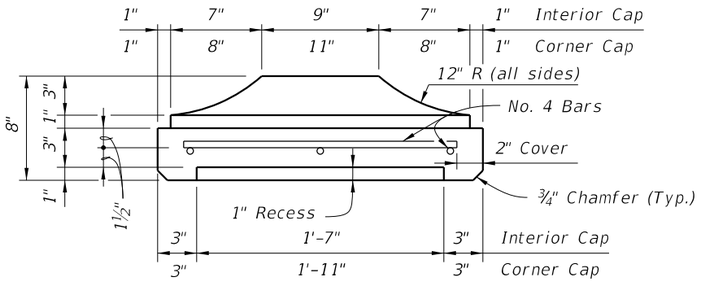


SECTION C-C

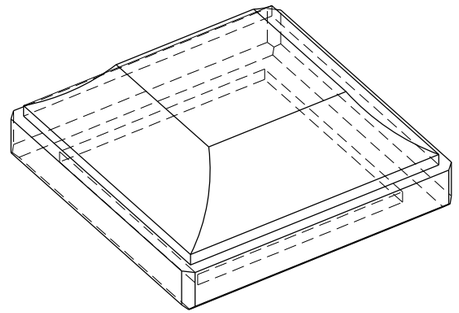


PICTORIAL VIEW

TYPE "A" CAP DETAILS

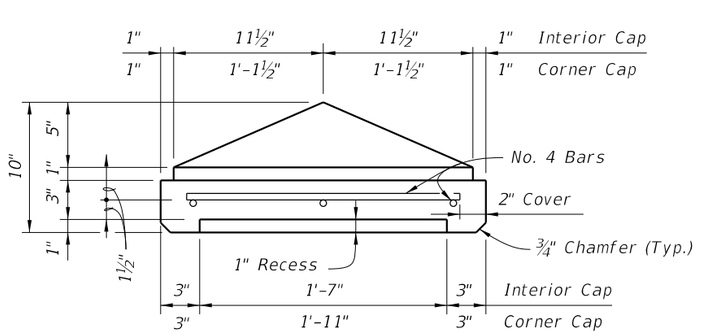


SECTION C-C

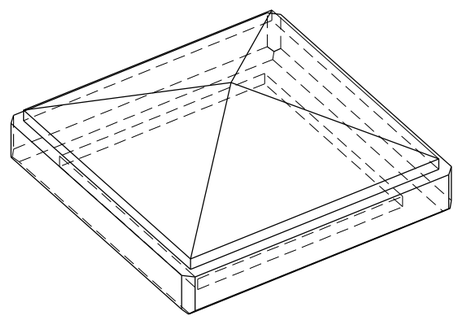


PICTORIAL VIEW

TYPE "B" CAP DETAILS



SECTION C-C



PICTORIAL VIEW

TYPE "C" CAP DETAILS

PRECAST POST CAPITAL

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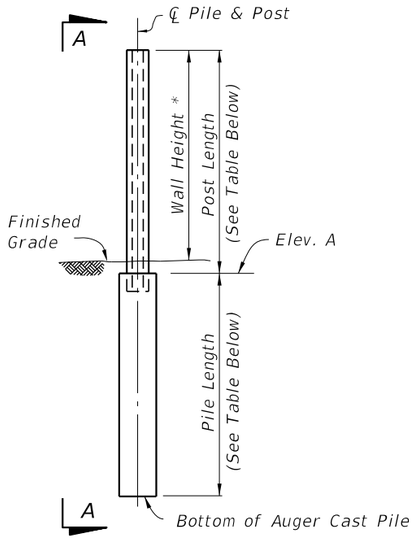
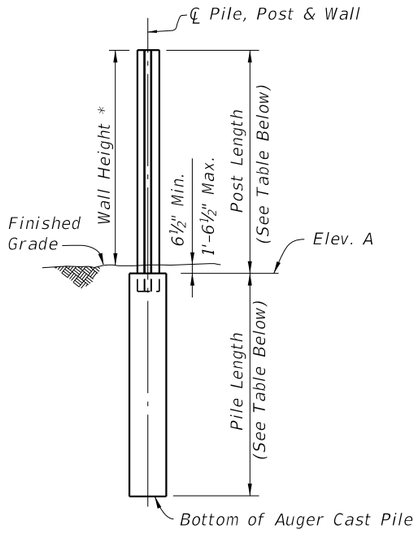


PILE/POST ELEVATION



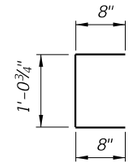
VIEW A-A

* See Sheet 1, Note 4.

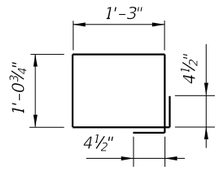
BAR BENDING DETAILS

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

STANDARD POST (#4 Bars)



BAR P1
Bar Length = 2'-5"

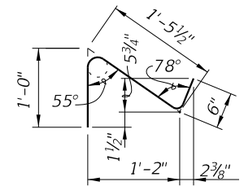


BAR P2
Bar Length = 5'-5"

PILE (Low Clearance) (#4 Bars)

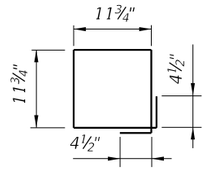
BAR P3
Bar Length = 8'-7"

45° CORNER POST (#4 Bars)

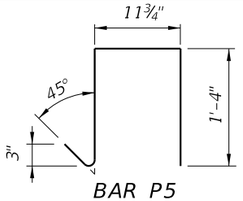


BAR P7
Bar Length = 3'-0"

90° CORNER POST (#4 Bars)

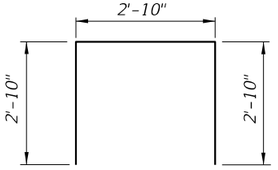


BAR P4
Bar Length = 4'-8"

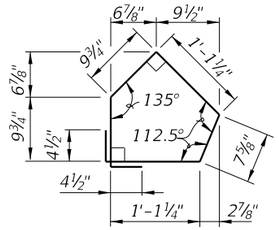


BAR P5
Bar Length = 4'-0"

CAST-IN-PLACE COLLAR (#5 Bars)



BAR P6 (Pair)
Bar Length = 8'-6" Each



BAR P8
Bar Length = 5'-3"

TABLE 1A - TABLE OF POST REINFORCING STEEL

NOMINAL WALL HEIGHT (Feet)	POST LENGTHS		WIND SPEED = 130 MPH										
			10'-0" POST SPACING						20'-0" POST SPACING					
	WITHOUT CAP	WITH CAP	BARS A	BARS B		BARS D	BARS E		BARS A	BARS B		BARS D	BARS E	
			SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'
12	13'-0½"	13'-2½"	#4	#4	7'-11"	#4	#4	9'-11"	#5	#5	9'-8"	#6	#6	9'-4"
13	14'-0½"	14'-2½"	#4	#4	10'-11"	#4	#4	10'-11"	#5	#5	9'-8"	#6	#6	9'-4"
14	15'-0½"	15'-2½"	#4	#4	10'-11"	#5	#5	11'-8"	#6	#6	11'-4"	#7	#7	10'-8"
15	16'-0½"	16'-2½"	#4	#4	10'-11"	#5	#5	12'-8"	#6	#6	11'-4"	#7	#7	10'-8"
16	17'-0½"	17'-2½"	#5	#5	13'-8"	#5	#5	12'-8"	#6	#6	11'-4"	#7	#7	10'-8"
17	18'-0½"	18'-2½"	#5	#5	14'-8"	#5	#5	12'-8"	#7	#7	12'-8"	#7	#8	10'-0"
18	19'-0½"	19'-2½"	#5	#5	14'-8"	#6	#6	14'-4"	#7	#7	12'-8"	#8	#8	12'-0"
19	20'-0½"	20'-2½"	#5	#5	14'-8"	#6	#6	14'-4"	#7	#8	12'-0"	#8	#9	11'-3"
20	21'-0½"	21'-2½"	#6	#6	16'-4"	#6	#6	14'-4"	#8	#7	14'-8"	#9	#8	14'-0"
21	22'-0½"	22'-2½"	#6	#6	16'-4"	#6	#6	14'-4"	#8	#8	14'-0"	#9	#10	12'-4"
22	23'-0½"	23'-2½"	#6	#6	16'-4"	#7	#7	16'-8"	#8	#9	13'-3"	#10	#9	15'-3"

TABLE 1B - PILE LENGTHS (Feet) - WIND SPEED = 130 MPH

NOMINAL WALL HEIGHT (Feet)	10'-0" POST SPACING								20'-0" POST SPACING							
	H-POSTS				CORNER POSTS				H-POSTS				CORNER POSTS			
	SOIL 1		SOIL 2		SOIL 1		SOIL 2		SOIL 1		SOIL 2		SOIL 1		SOIL 2	
	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅
12	11	10	10	10	11	10	10	10	15	14	13	12	14	13	13	12
13	12	11	10	10	11	10	10	10	15	14	13	13	15	14	13	12
14	12	11	11	10	12	11	10	10	16	15	14	13	15	14	14	13
15	12	12	11	10	12	11	11	10	16	15	15	13	16	15	14	13
16	13	12	11	11	12	12	11	10	17	16	15	14	16	15	15	14
17	13	12	12	11	13	12	11	11	18	16	16	14	17	16	15	14
18	14	13	12	11	13	12	12	11	18	17	16	15	18	16	15	14
19	14	13	12	12	14	13	12	11	19	17	16	15	18	17	16	15
20	14	13	13	12	14	13	12	12	19	18	17	16	19	17	16	15
21	15	14	13	12	14	13	13	12	20	18	17	16	19	18	17	16
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

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11/01/16			FDOT FY 2020-21 STANDARD PLANS	NOISE WALLS - (PRECAST)	534-200	15 of 16

TABLE 2A - TABLE OF POST REINFORCING STEEL

NOMINAL WALL HEIGHT (Feet)	POST LENGTHS		WIND SPEED = 150 MPH											
			10'-0" POST SPACING						20'-0" POST SPACING					
	WITHOUT CAP	WITH CAP	BARS A	BARS B		BARS D	BARS E		BARS A	BARS B		BARS D	BARS E	
			SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'
12	13'-0½"	13'-2½"	#4	#4	9'-11"	#5	#5	9'-8"	#6	#6	9'-4"	#6	#6	8'-4"
13	14'-0½"	14'-2½"	#4	#4	9'-11"	#5	#5	10'-8"	#6	#6	9'-4"	#7	#7	8'-8"
14	15'-0½"	15'-2½"	#5	#5	11'-8"	#5	#5	10'-8"	#7	#7	10'-8"	#7	#7	8'-8"
15	16'-0½"	16'-2½"	#5	#5	11'-8"	#6	#6	12'-4"	#7	#7	10'-8"	#8	#7	10'-8"
16	17'-0½"	17'-2½"	#5	#5	11'-8"	#6	#6	12'-4"	#7	#7	10'-8"	#8	#8	10'-0"
17	18'-0½"	18'-2½"	#6	#6	14'-4"	#6	#6	12'-4"	#7	#8	10'-0"	#9	#8	11'-0"
18	19'-0½"	19'-2½"	#6	#6	14'-4"	#7	#7	13'-8"	#8	#8	12'-0"	#9	#10	9'-4"
19	20'-0½"	20'-2½"	#6	#6	14'-4"	#7	#7	13'-8"	#8	#9	11'-3"	#10	#9	12'-3"
20	21'-0½"	21'-2½"	#6	#6	14'-4"	#7	#8	13'-0"	#9	#9	13'-3"	#10	#10	11'-4"
21	22'-0½"	22'-2½"	#7	#7	16'-8"	#7	#7	13'-8"	#9	#10	12'-4"	#11	#10	13'-4"
22	23'-0½"	23'-2½"	#7	#7	16'-8"	#8	#8	16'-0"	#10	#9	14'-3"	#11	#11	12'-5"

TABLE 2B - PILE LENGTHS (Feet) - WIND SPEED = 150 MPH

NOMINAL WALL HEIGHT (Feet)	10'-0" POST SPACING								20'-0" POST SPACING							
	H-POSTS				CORNER POSTS				H-POSTS				CORNER POSTS			
	SOIL 1		SOIL 2		SOIL 1		SOIL 2		SOIL 1		SOIL 2		SOIL 1		SOIL 2	
	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅
12	12	12	11	10	12	11	11	10	17	15	15	14	16	15	14	13
13	13	12	11	11	13	12	11	10	17	16	15	14	17	15	15	14
14	13	12	12	11	13	12	12	11	18	17	16	15	17	16	15	14
15	14	13	12	11	13	13	12	11	19	17	16	15	18	17	16	15
16	14	13	13	12	14	13	12	12	19	18	17	16	19	17	16	15
17	15	14	13	12	14	13	13	12	20	18	17	16	19	18	17	16
18	15	14	14	13	15	14	13	12	20	19	18	17	20	18	17	16
19	16	15	14	13	15	14	14	13	21	19	19	17	20	19	18	17
20	16	15	14	13	16	15	14	13	22	20	19	18	21	19	18	17
21	17	15	15	14	16	15	14	13	22	21	20	18	21	20	19	18
22	17	16	15	14	17	15	15	14	23	21	20	19	22	20	19	18

TABLE 3A - TABLE OF POST REINFORCING STEEL

NOMINAL WALL HEIGHT (Feet)	POST LENGTHS		WIND SPEED = 170 MPH											
			10'-0" POST SPACING						20'-0" POST SPACING					
	WITHOUT CAP	WITH CAP	BARS A	BARS B		BARS D	BARS E		BARS A	BARS B		BARS D	BARS E	
			SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'
12	13'-0½"	13'-2½"	#5	#5	9'-8"	#5	#5	8'-8"	#6	#6	8'-4"	#7	#7	7'-8"
13	14'-0½"	14'-2½"	#5	#5	10'-8"	#6	#6	10'-4"	#7	#7	8'-8"	#8	#7	8'-8"
14	15'-0½"	15'-2½"	#5	#5	10'-8"	#6	#6	10'-4"	#7	#7	8'-8"	#8	#8	8'-0"
15	16'-0½"	16'-2½"	#6	#6	12'-4"	#6	#6	10'-4"	#8	#7	10'-8"	#9	#8	10'-0"
16	17'-0½"	17'-2½"	#6	#6	12'-4"	#7	#7	11'-8"	#8	#8	10'-0"	#9	#10	8'-4"
17	18'-0½"	18'-2½"	#6	#6	12'-4"	#7	#7	11'-8"	#9	#8	12'-0"	#10	#9	10'-3"
18	19'-0½"	19'-2½"	#7	#7	13'-8"	#7	#8	11'-0"	#9	#10	10'-4"	#10	#11	8'-5"
19	20'-0½"	20'-2½"	#7	#7	13'-8"	#8	#7	13'-8"	#10	#10	11'-4"	#11	#11	10'-5"
20	21'-0½"	21'-2½"	#7	#7	13'-8"	#8	#8	13'-0"	#10	#11	10'-5"	#11	#14	7'-0"
21	22'-0½"	22'-2½"	#7	#8	13'-0"	#9	#8	15'-0"	#11	#10	13'-4"	#14	#11	12'-5"
22	23'-0½"	23'-2½"	#8	#7	16'-8"	#9	#9	14'-3"	#11	#11	12'-5"	#14	#14	9'-0"

TABLE 3B - PILE LENGTHS (Feet) - WIND SPEED = 170 MPH

NOMINAL WALL HEIGHT (Feet)	10'-0" POST SPACING								20'-0" POST SPACING							
	H-POSTS				CORNER POSTS				H-POSTS				CORNER POSTS			
	SOIL 1		SOIL 2		SOIL 1		SOIL 2		SOIL 1		SOIL 2		SOIL 1		SOIL 2	
	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅	30" ∅	36" ∅
12	14	13	12	11	13	12	12	11	18	17	16	15	18	16	16	15
13	14	13	13	12	14	13	12	11	19	18	17	16	19	17	16	15
14	15	14	13	12	14	13	13	12	20	18	18	16	19	18	17	16
15	15	14	14	13	15	14	13	12	21	19	18	17	20	18	18	16
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17	16	15	15	14	16	15	14	13	22	20	19	18	21	20	19	17
18	17	16	15	14	16	15	15	14	23	21	20	19	22	20	19	18
19	17	16	15	14	17	16	15	14	23	22	21	19	23	21	20	18
20	18	17	16	15	17	16	15	14	24	22	21	20	23	21	20	19
21	18	17	16	15	18	17	16	15	25	23	22	20	24	22	21	19
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;
   Soil 2 = Medium Dense Granular Soil, N = 10 to 40.

PILE DEPTH & REINFORCING SUMMARY

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.
     - ii. 2,000 psi for vertically cast panels or when tilt-up form tables are used for horizontally cast panels.

8. REINFORCING STEEL:
   - A. Concrete Cover: 1½" 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: +/- ¼"
    - B. Thickness: +/- ¼"
    - C. Plane of side mold: +/- 1/16"
    - D. Openings: +/- ½"
    - E. Out of Square: ⅛" per 6 ft., but not more than ⅜" total along any side
    - F. Warping: 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:

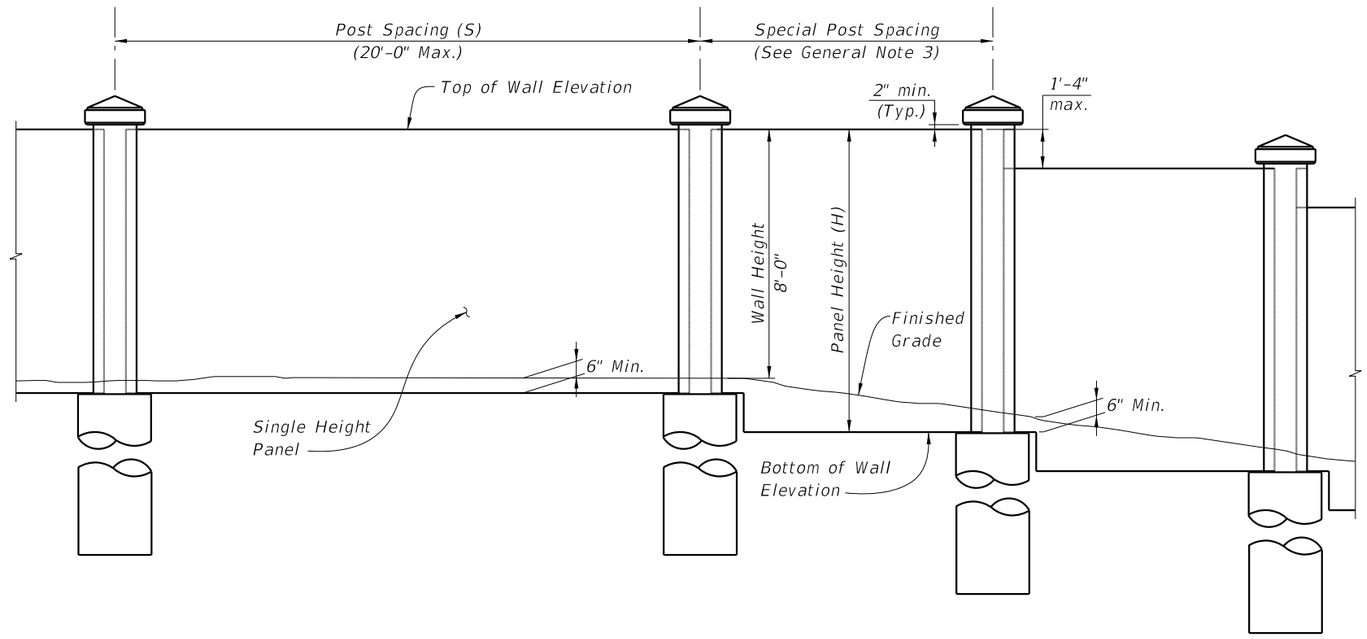
12. WALL NOTES:
    - A. Inspect construction in accordance with the International Building Code (IBC) Section 17.
    - B. Construct masonry walls with 8x8x16 block using a running bond pattern and concave tooled joints.
    - C. Make all elevation changes (steps) in footing and top of wall using full 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

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	PERIMETER WALLS	INDEX	SHEET
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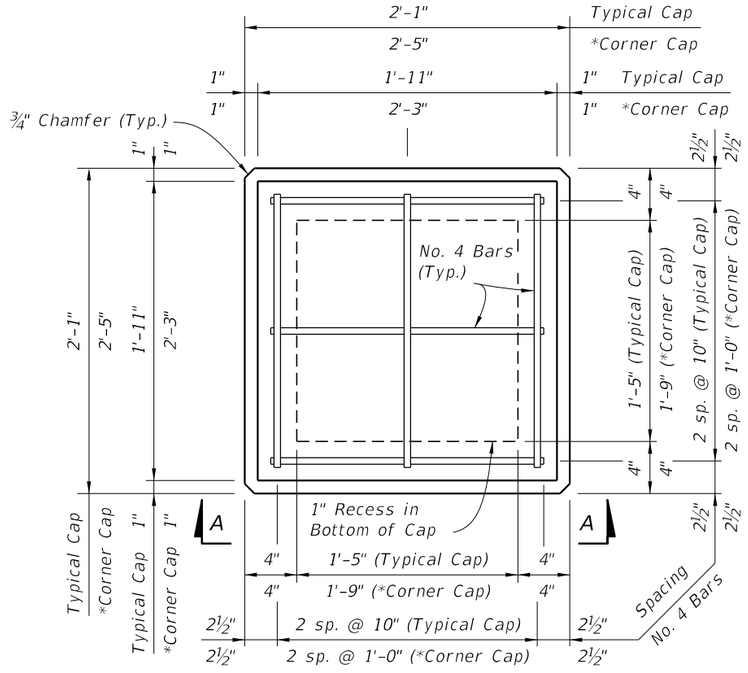
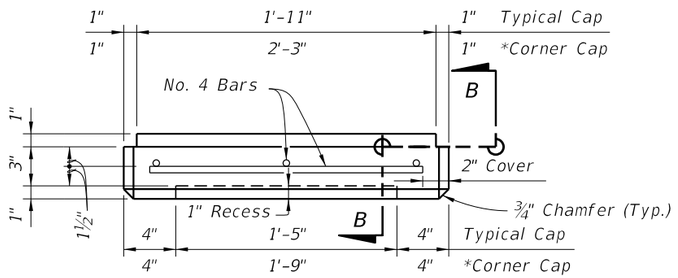
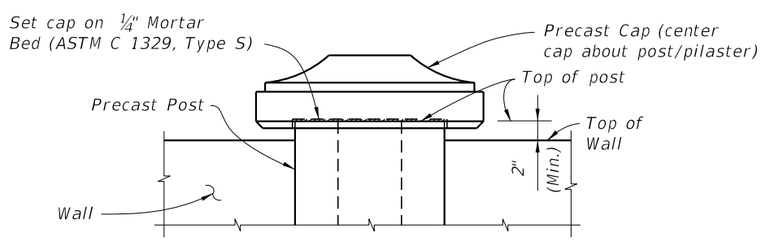


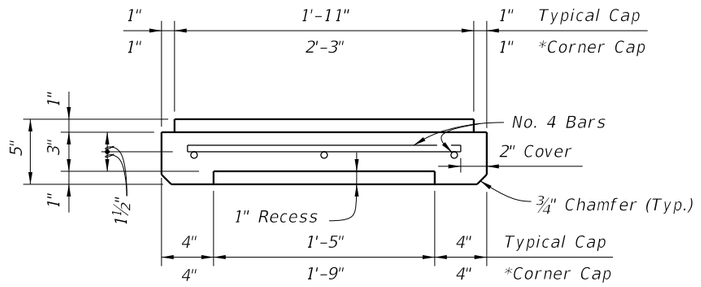
PLAN VIEW
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)



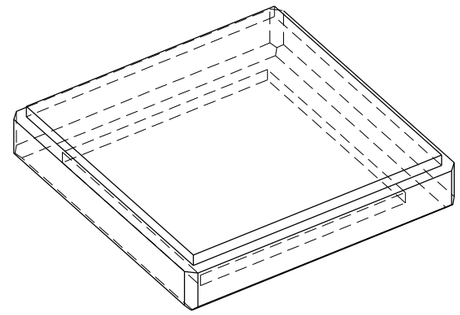
VIEW A-A
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)



CAP PLACEMENT DETAIL
(Type "B" Post Cap with Precast Option Shown)



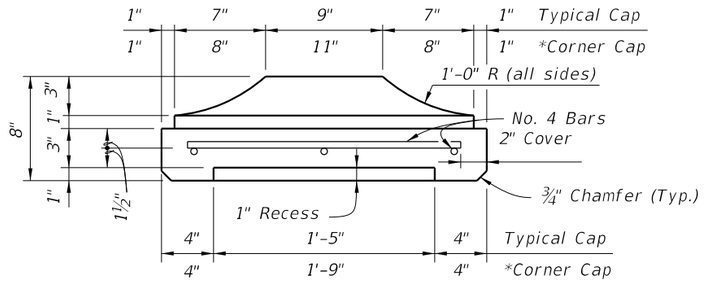
SECTION B-B



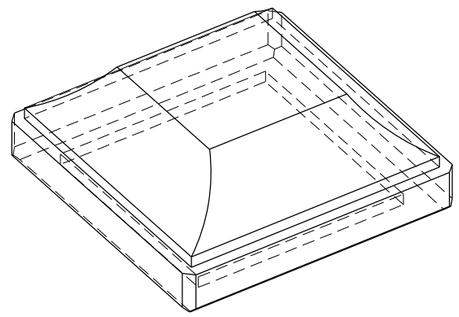
PICTORIAL VIEW

TYPE "A" CAP DETAILS

*Precast Option only

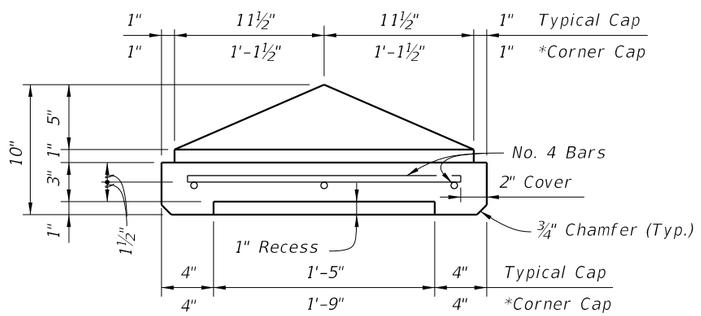


SECTION B-B

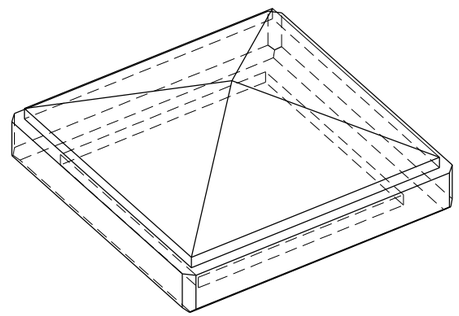


PICTORIAL VIEW

TYPE "B" CAP DETAILS



SECTION B-B



PICTORIAL VIEW

TYPE "C" CAP DETAILS

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POST CAP DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PERIMETER WALLS	INDEX	SHEET
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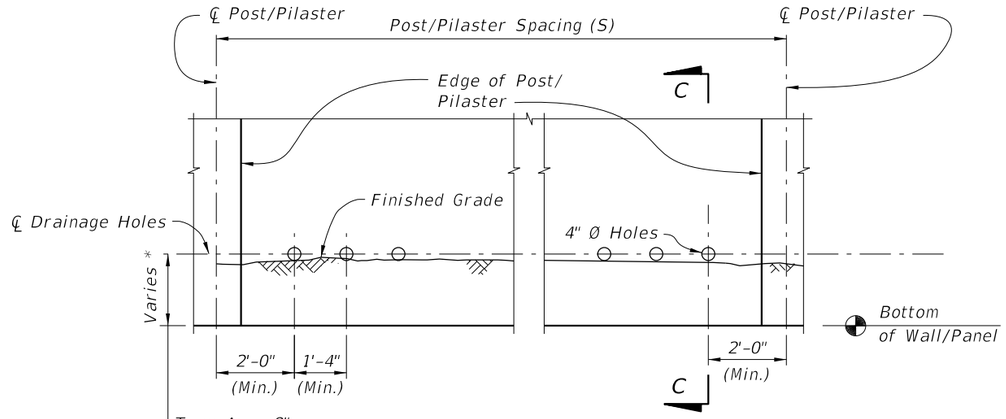
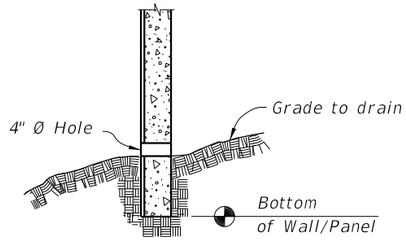


Type A: 8"
Type B: 1'-0"
Type C: 1'-4"
Type D: 1'-8"

DRAINAGE HOLES TYPES A, B, C & D

* Hole Types A, B, C, & D refer to distance from bottom of panel/wall to center of the pipe.



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.
2. See Wall Control drawings for number, Type and location/ spacing of drainage holes.

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DRAINAGE DETAILS

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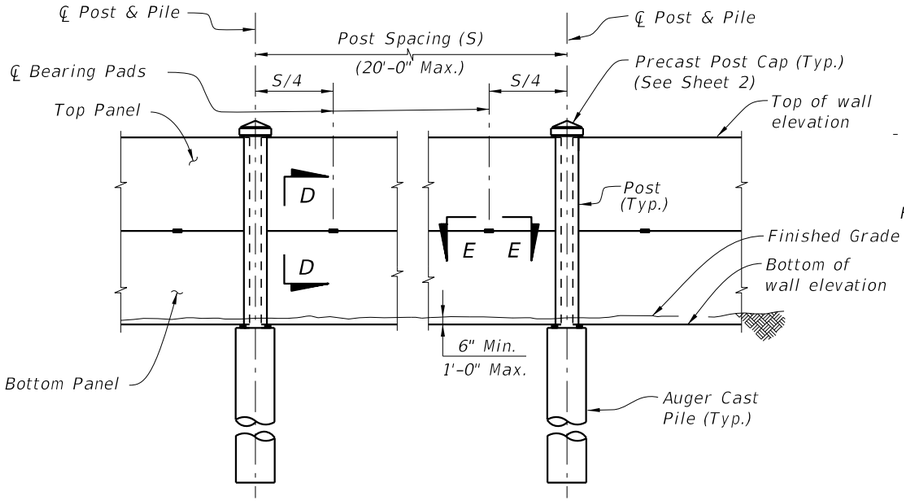
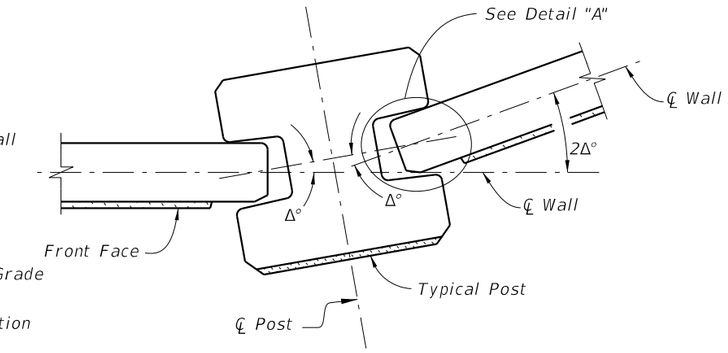
01/01/14					534-250	3 of 10

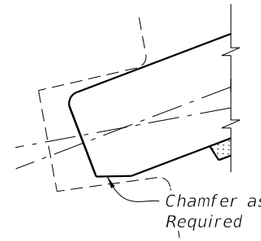


TYPICAL ELEVATION
(Front Face Shown, Textured Finish not Shown for Clarity)

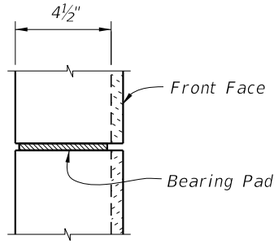


PIVOTING JOINT DETAILS

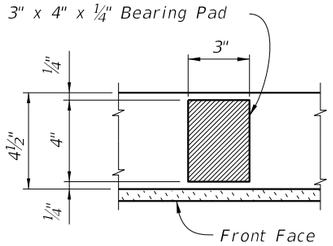
NOTE: *Shop Drawings shall include specific pivoting point details of panel ends at locations where the deflection angle (2Δ°) between panels exceeds 20°.*



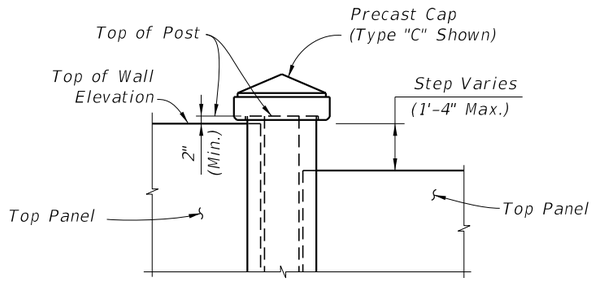
DETAIL "A"
(Back Face Chamfer Shown
Front Face Chamfer Similar)



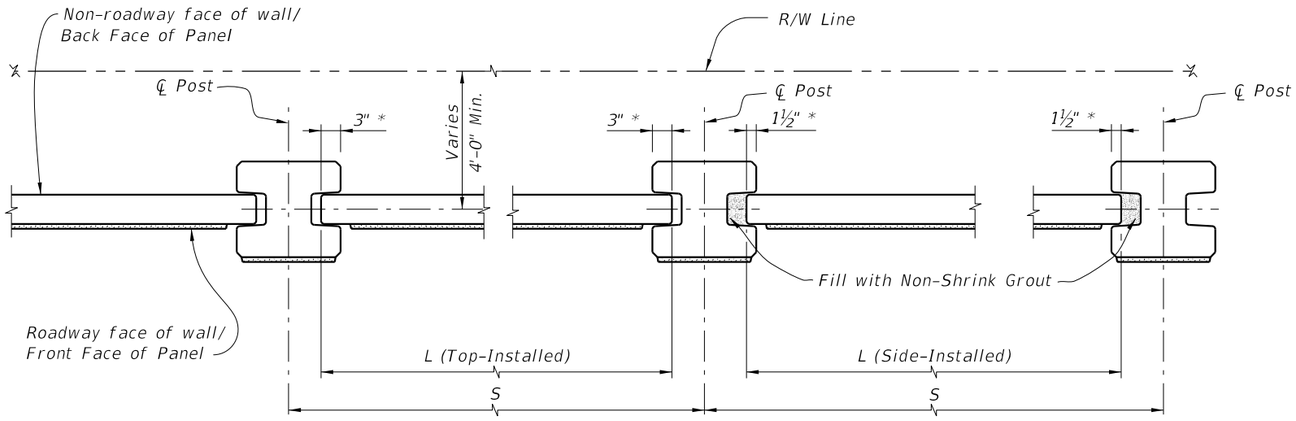
SECTION D-D



SECTION E-E

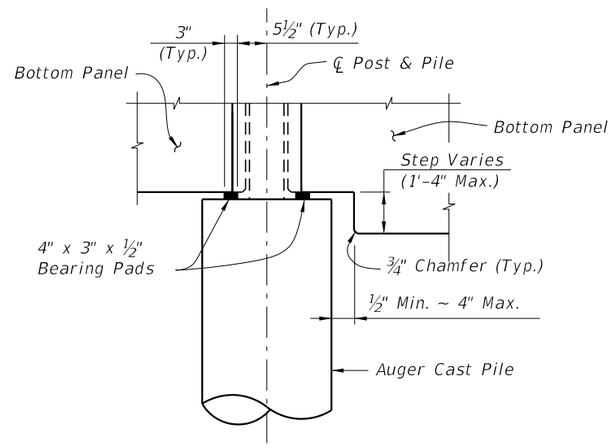


ELEVATION STEP AT TOP OF WALL
(Precast Panel Cap not Shown)



TYPICAL PLAN

* *Nominal embedment (not including tolerances)*



ELEVATION STEP AT BOTTOM OF WALL

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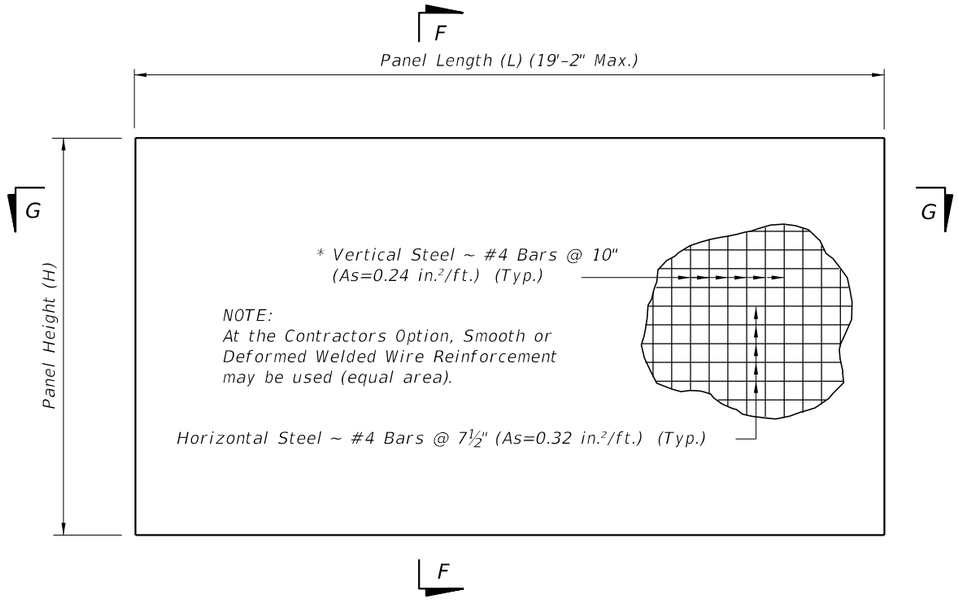
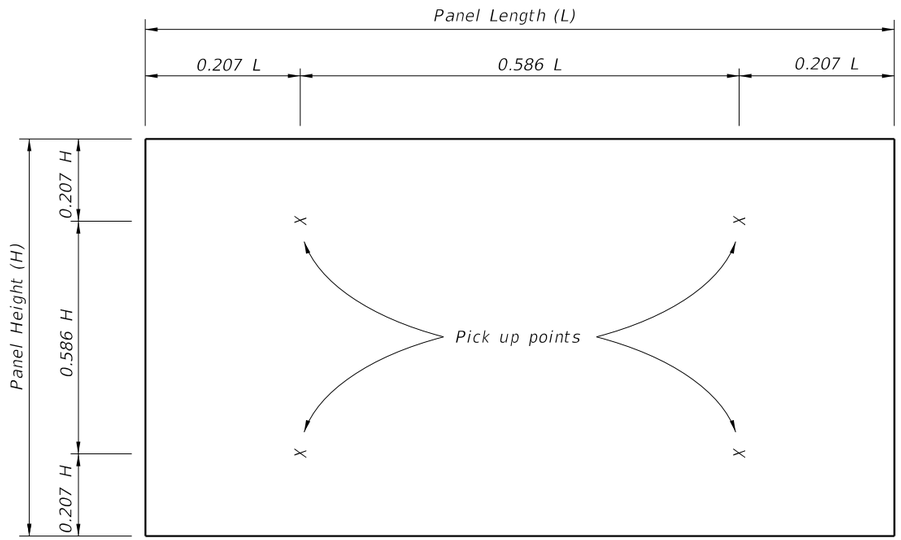
PRECAST OPTION - TYPICAL DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	PERIMETER WALLS	INDEX	SHEET
11/01/17					534-250	4 of 10

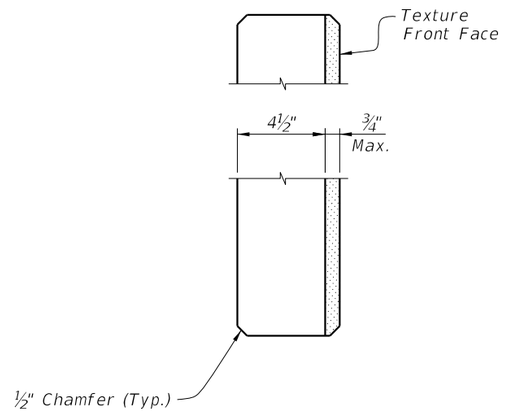


TYPICAL PANEL ELEVATION

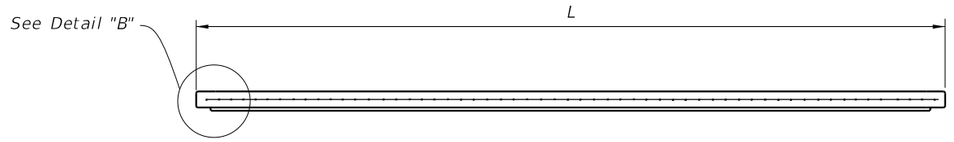
* In lieu of utilizing the standard pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, pick points must be placed in the top of panels only and transported maintaining the vertical orientation. If these criteria are met, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.16 in.²/ft.).



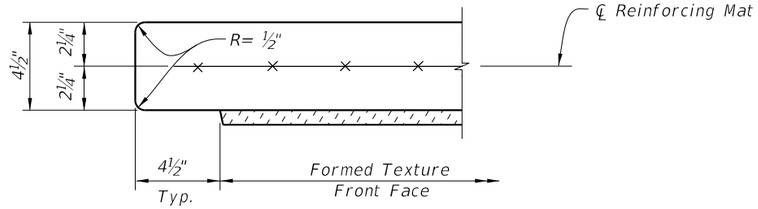
STANDARD PICK UP POINTS FOR PANELS
(Panels shall be rotated about long axis only)



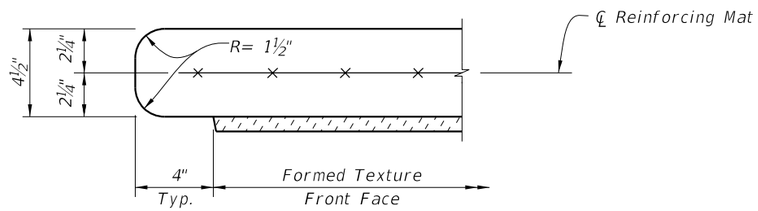
SECTION F-F



SECTION G-G



DETAIL "B" - TOP-INSTALLED
(Typ. Both Ends)



DETAIL "B" - SIDE-INSTALLED
(Typ. Both Ends)

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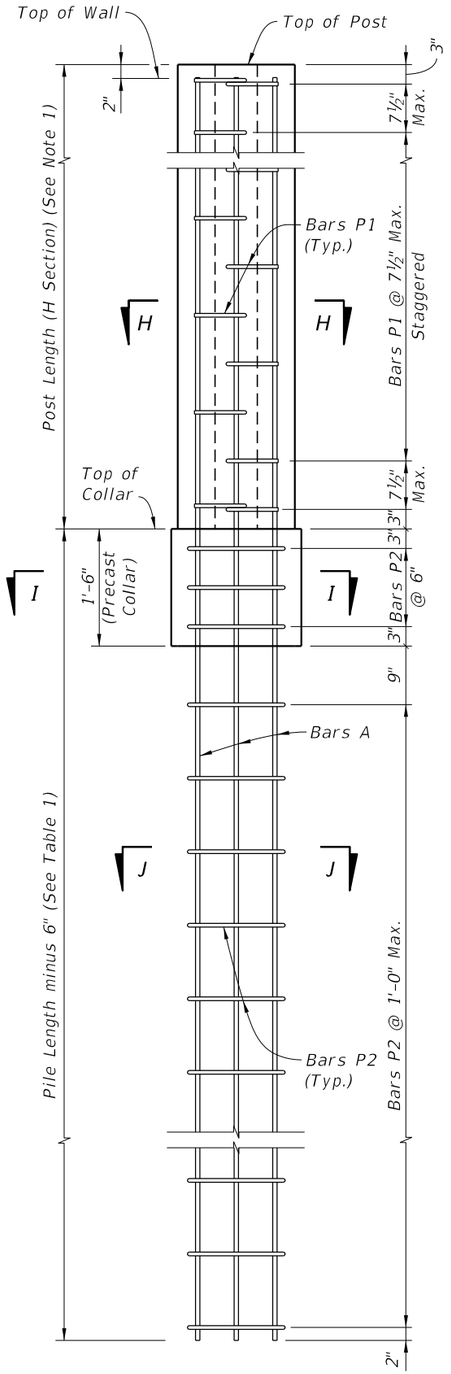
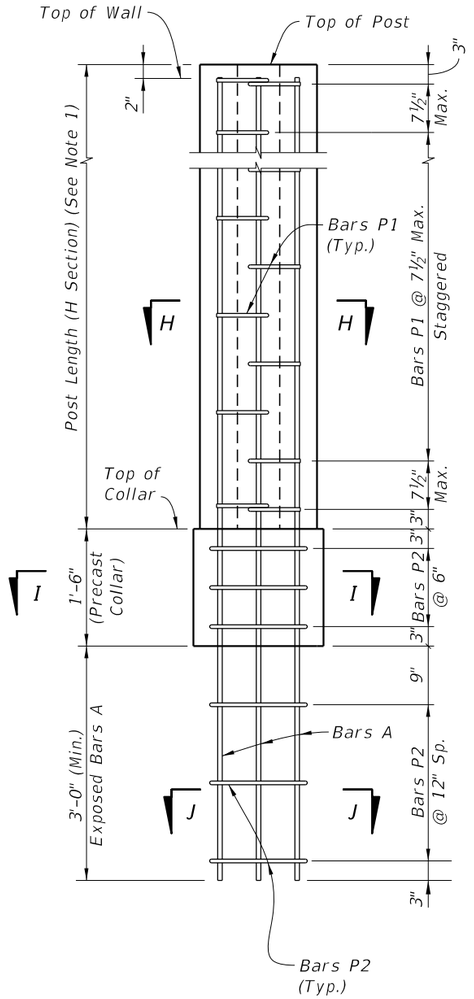
PRECAST OPTION - TYPICAL PANEL DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PERIMETER WALLS	INDEX	SHEET
01/01/14						534-250	5 of 10



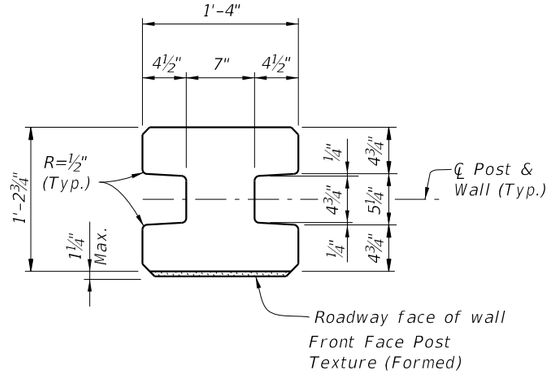
TYPICAL POST



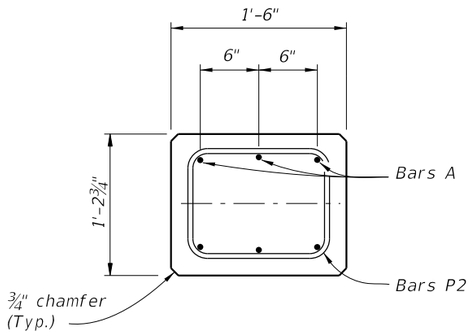
LOW CLEARANCE OPTION

NOTES:
1. See Shop Drawing for Post Lengths.

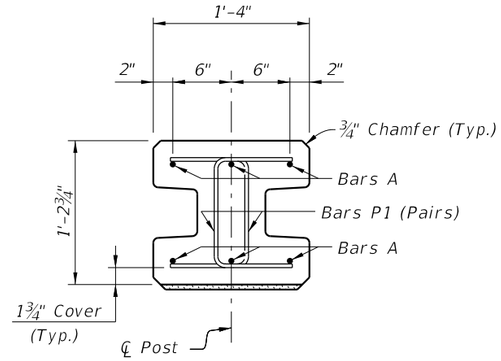
STANDARD POST REINFORCEMENT



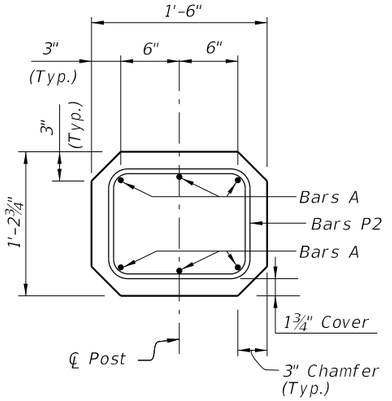
TYPICAL POST SECTION
(H Section)



SECTION I-I
Precast Collar



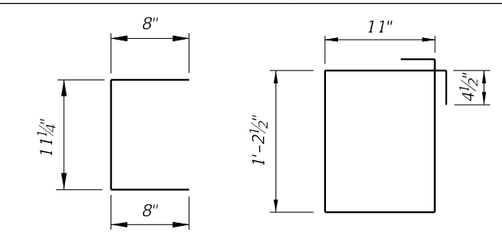
SECTION H-H
(H Section - Above Collar)



SECTION I-I
(for Low Clearance Option)

TABLE 1				
Wind Speed (MPH)	Pile Length	Bars A	Bars P1 thru P6	Bars S1
130	12'-0"	#5	#3	#4
150	13'-6"	#5	#3	#4
170	15'-0"	#6	#3	#4

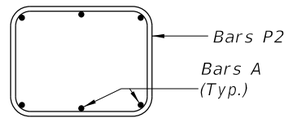
BAR BENDING DETAILS



BAR P1
Bar Length = 2'-3¼"

BAR P2
Bar Length = 5'-0"

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



SECTION J-J

PRECAST OPTION - STANDARD POST DETAILS

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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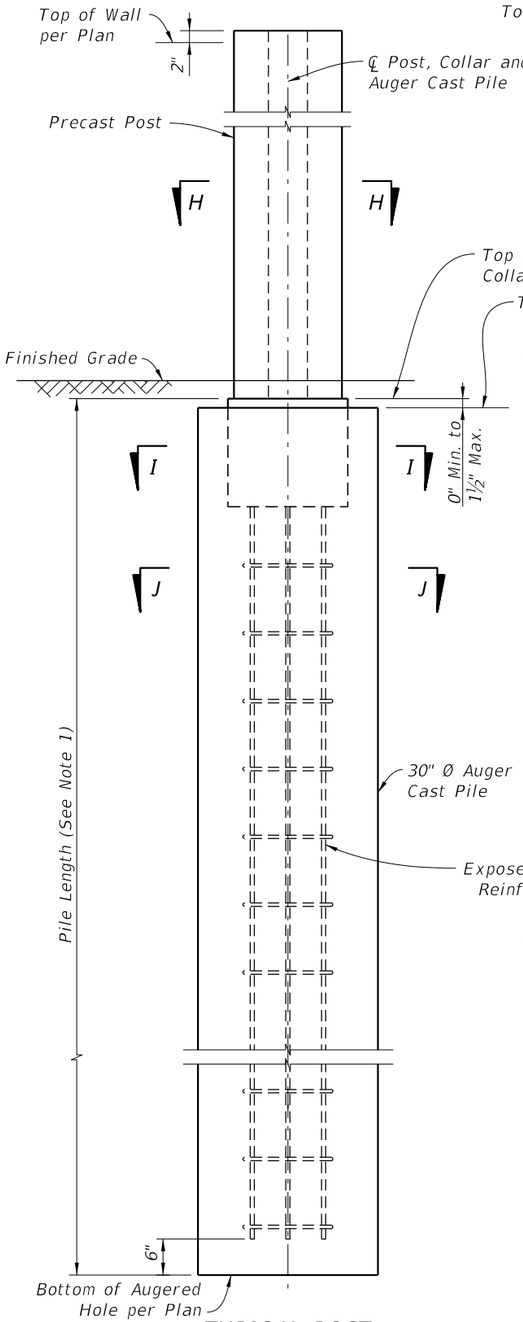
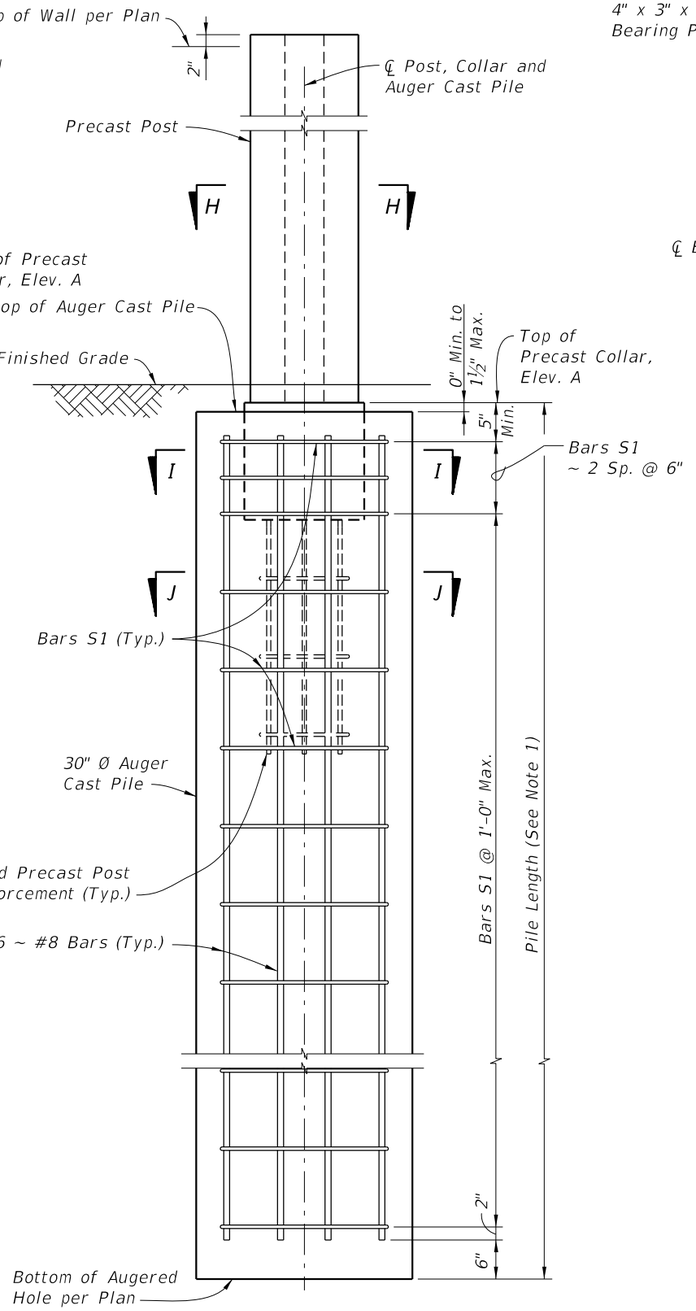
PERIMETER WALLS

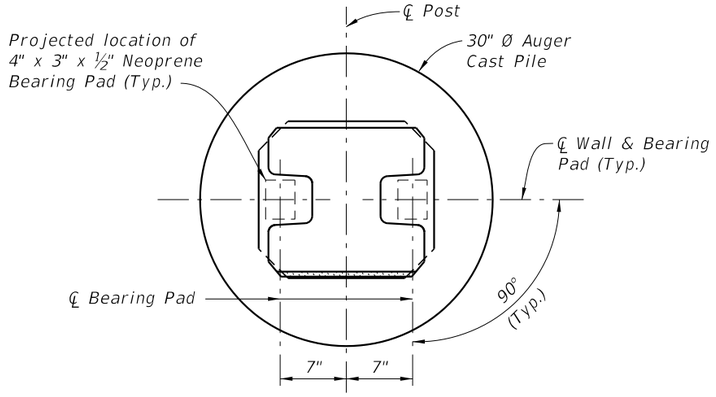


TYPICAL POST

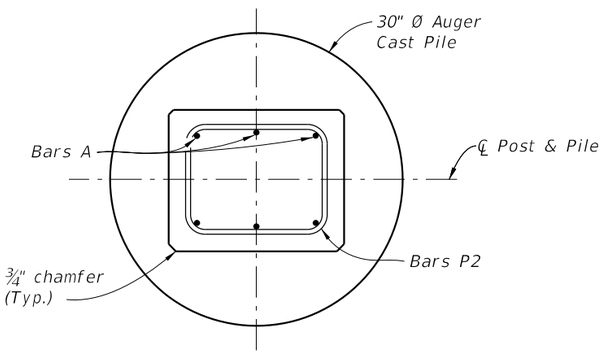


LOW CLEARANCE OPTION

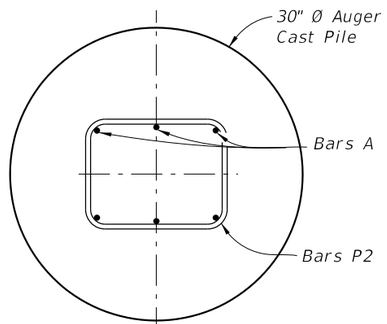
STANDARD POST PLACEMENT IN AUGER CAST PILE
(Standard Post Shown, 45° and 90° Corner Posts Similar)



SECTION H-H
(Reinforcing not Shown for Clarity)

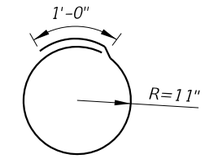


SECTION I-I
(Typical Post Option)



SECTION J-J
(Typical Post Option)

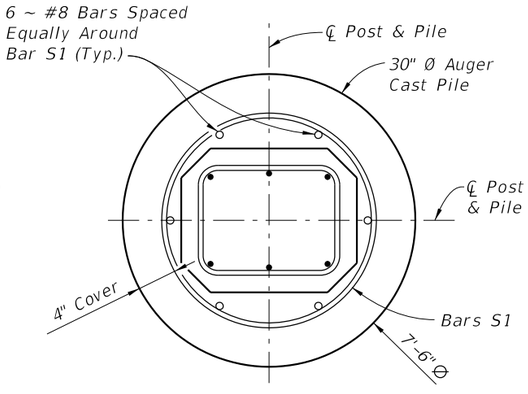
BAR BENDING DETAIL



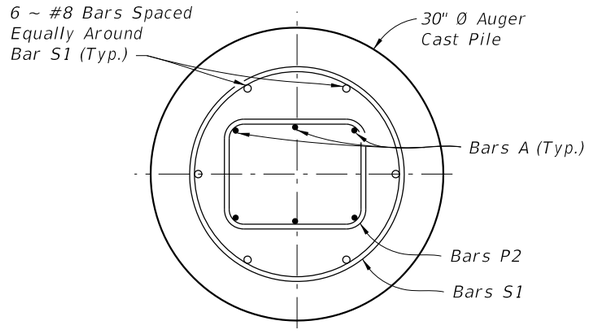
BAR S1

Bar Length = 6'-9"

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



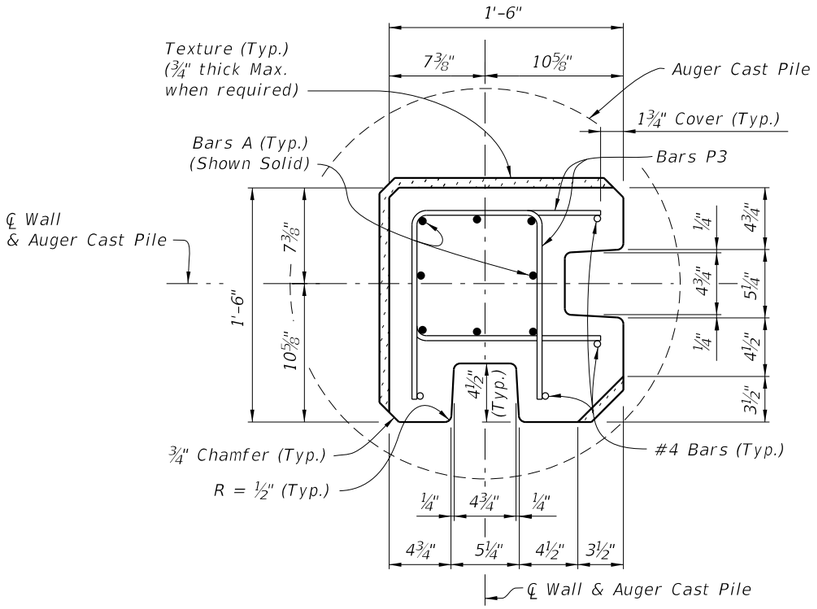
SECTION I-I
(Low Clearance Option)



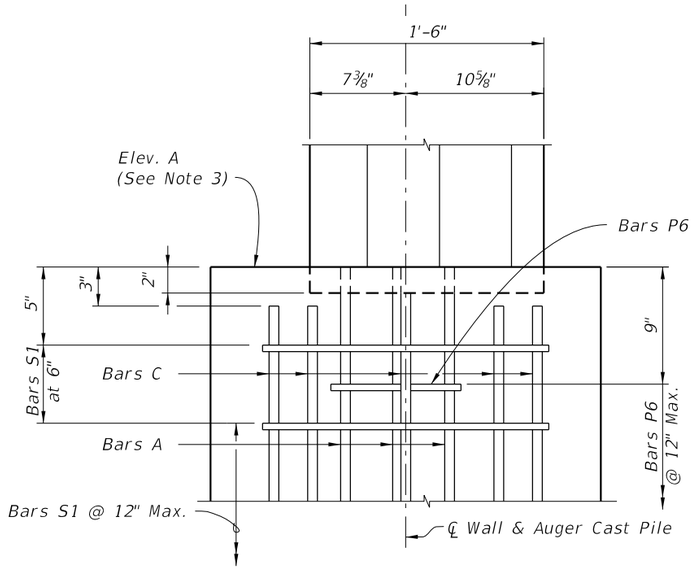
SECTION J-J
(Low Clearance Option)

Notes:
1. For Reinforcing Steel Sizes and Pile Lengths, see Table 1, Sheet 6.
2. For Corner Posts, see Sheet 8.
3. For Typical Post Section Dimensions, see Sheet 6.

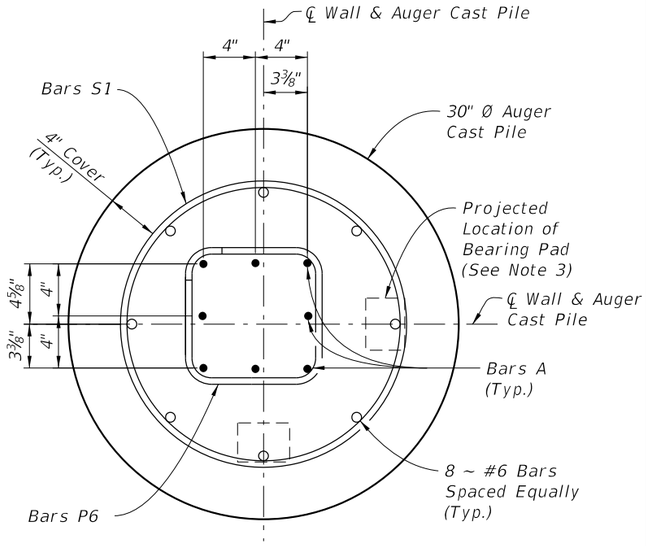
PRECAST OPTION - POST PLACEMENT & PILE REINFORCING STEEL DETAILS



SECTION H-H

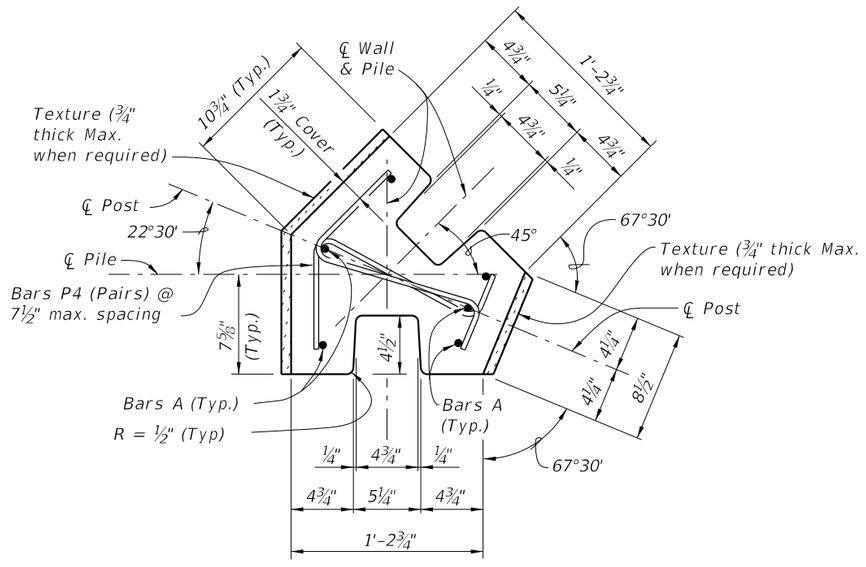


ELEVATION VIEW
(Low Clearance Shown)

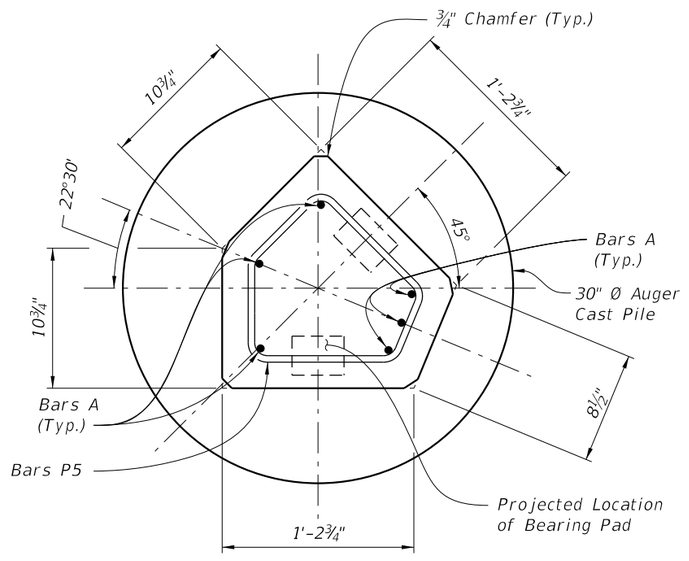


SECTION I-I
(See Note 3)

SPECIAL POST FOR 90° CORNERS



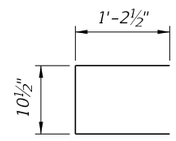
SECTION H-H



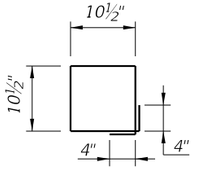
SECTION I-I
(Precast Collar)

NOTES:
1. For Reinforcing Steel Sizes, and Foundation Dimensions, see Table 1 Sheet 6.
2. For location of Section H-H and I-I, see Sheet 6.
3. The Bearing area beneath Neoprene Pads is formed by top of Auger Cast Pile Grout.

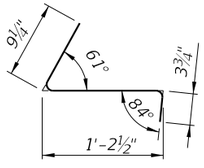
BAR BENDING DETAILS



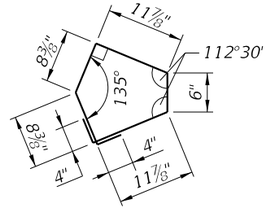
BAR P3
(90° Corner)
Bar Length = 3'-3½"



BAR P6
(90° Corner)
Bar Length = 4'-2"



BAR P4
(45° Corner)
Bar Length = 2'-3½"



BAR P5
(45° Corner)
Bar Length = 4'-6½"

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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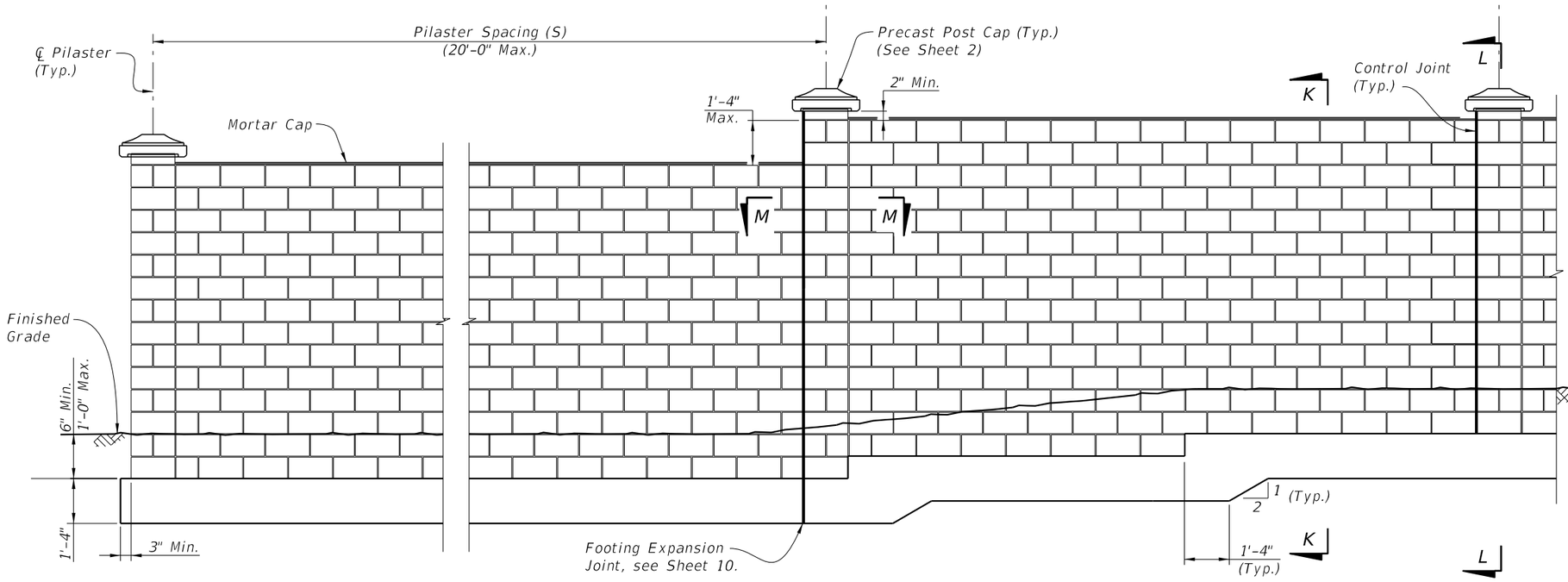
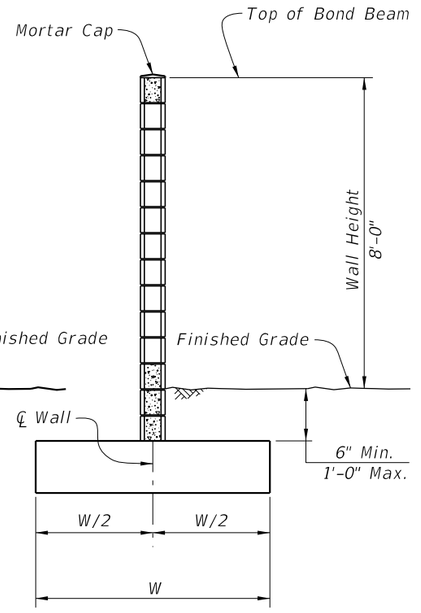


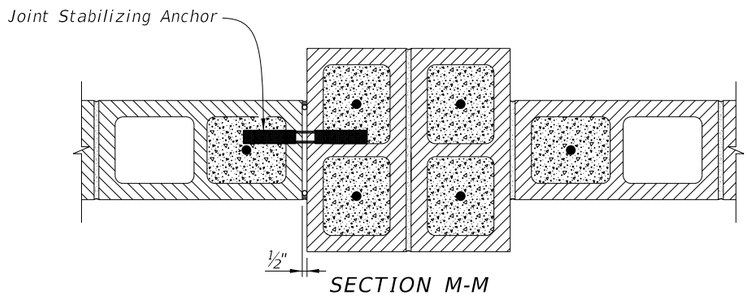
TYPICAL ELEVATION
(T-Footing Shown, Trench Footing Similar)



SECTION K-K
(Shown at Cell Without Vertical Reinforcing)

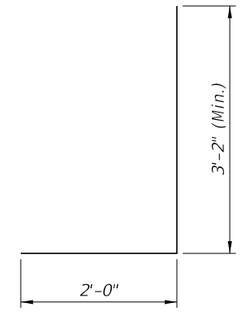
Table 2					
Wind Speed Category	Masonry Walls (8x8x16)		Foundations		
	Bars V1	SV Spacing	Bars F1 & F2	T-Footing Width (W)	Trench Footing Depth (D)
130	#5	2'-8"	#5	4'-4"	5'-6"
150	#5	2'-0"	#5	5'-0"	6'-4"
170	#5	1'-4"	#5	6'-0"	7'-0"

Notes:
1. End vertical reinforcing bars 1½" from top of bond beam blocks and horizontal bars 1½" 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.



SECTION M-M
PILASTER REINFORCING AND
WALL CONTROL JOINT DETAIL

BAR BENDING DETAIL



BAR F1
Length = 5'-2"

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

MASONRY OPTION

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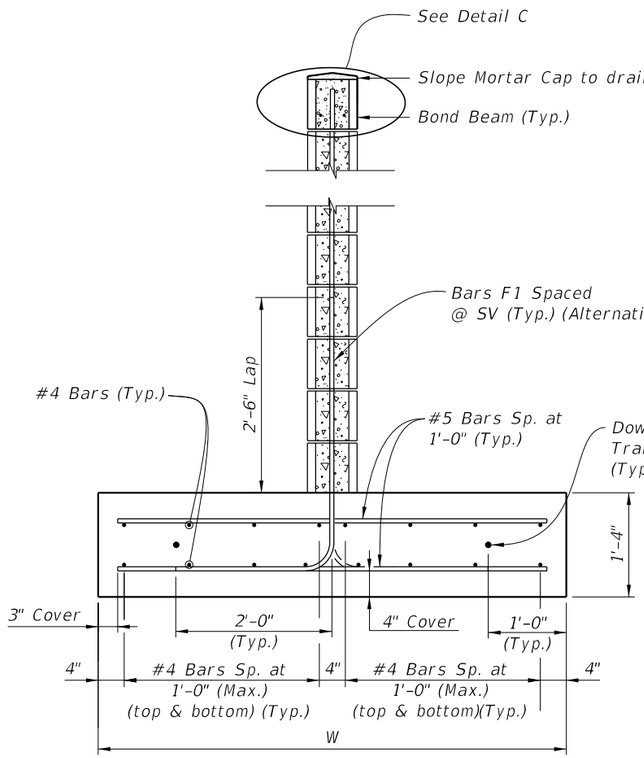
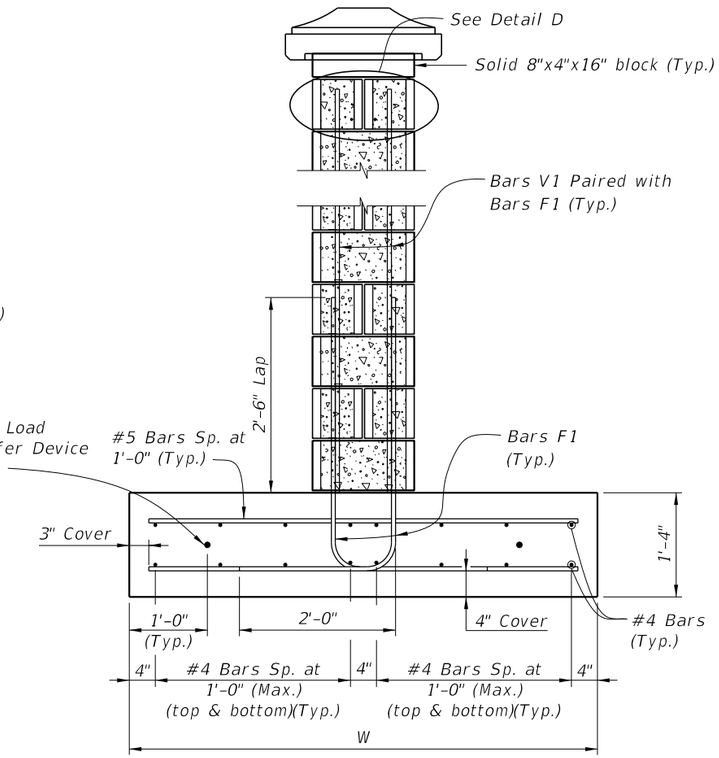
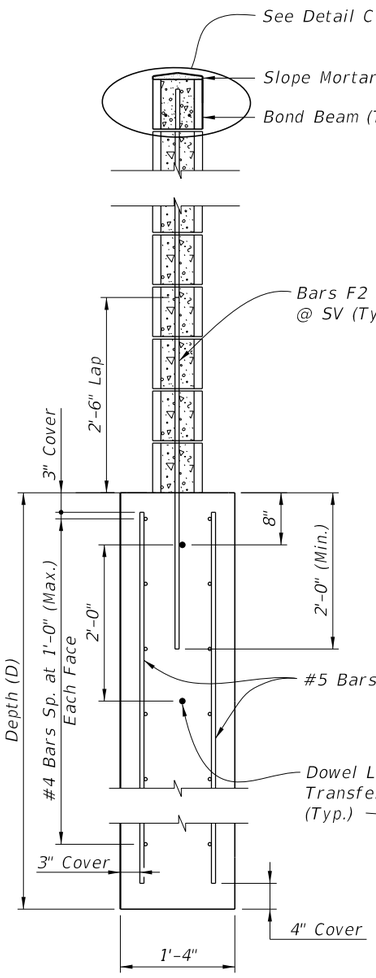


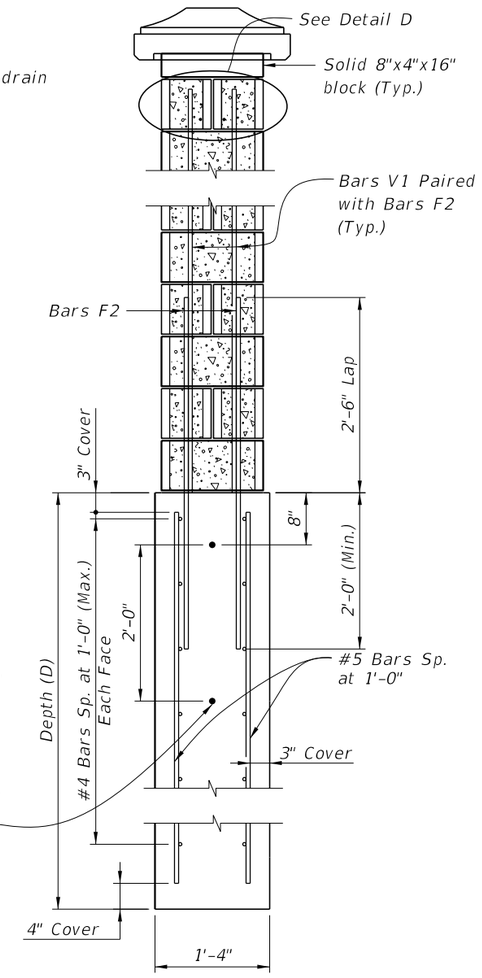
SECTION K-K
TYPICAL WALL SECTION
WITH T-FOOTING



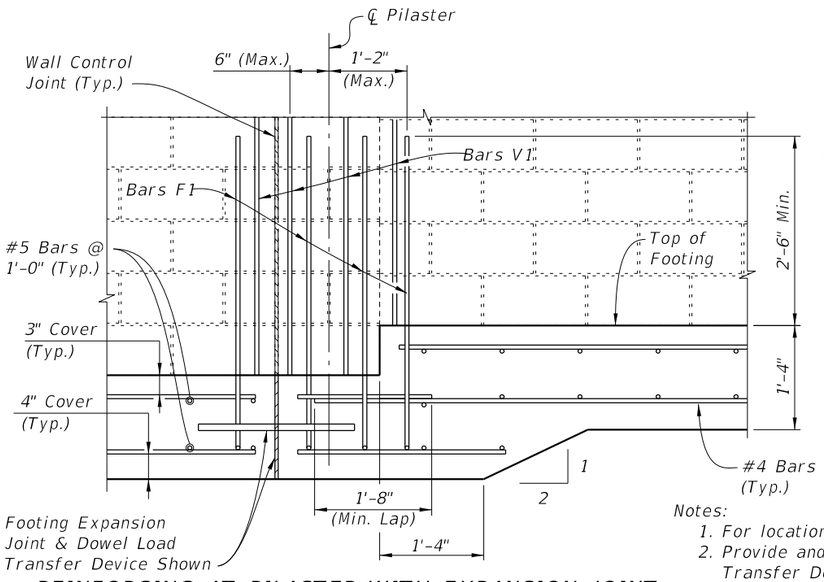
SECTION L-L
PILASTER SECTION
WITH T-FOOTING



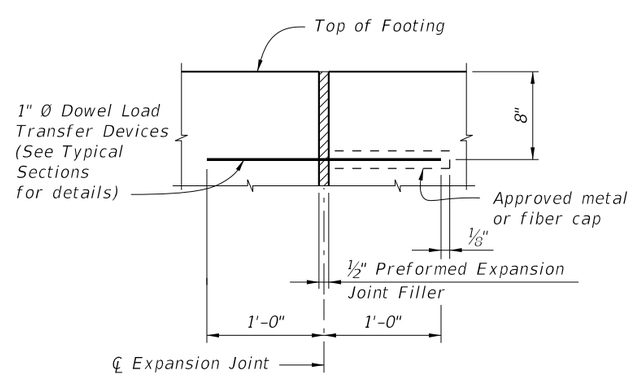
SECTION K-K
TYPICAL WALL SECTION
WITH TRENCH FOOTING



SECTION L-L
TYPICAL PILASTER SECTION
WITH TRENCH FOOTING

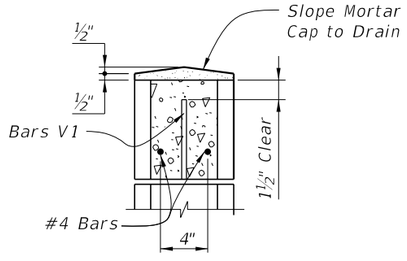


REINFORCING AT PILASTER WITH EXPANSION JOINT
(Step Shown, without Step Similar)
(T-Footing Shown, Trench Footing Similar)

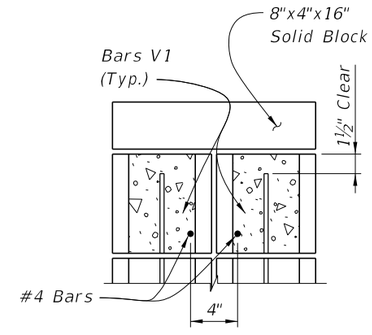


EXPANSION JOINT DETAILS

Notes:
1. For location of Sections K-K and L-L see Sheet 9.
2. Provide and install ½" Preformed Expansion Joints with 2 ~ 1" Ø Dowel Load Transfer Devices at 90° Max. as shown. See Sections L-L for placement details.
3. For Reinforcing sizes and spacings, see Table 2, Sheet 9.
4. Pairs F1, V1 are required in the wall cells on both sides of pilasters, plus a pair in each pilaster cell. Space wall reinforcing per Table 2, Sheet 9.



DETAIL C



DETAIL D

MASONRY OPTION

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LAST REVISION	REVISION	DESCRIPTION:			
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SHEET	CONTENTS
1	General Notes; Index Contents
2	General, TL-3 Guardrail – Installed Plan and Elevation
3	Low-Speed, TL-2 Guardrail – Installed Plan and Elevation
4	W-Beam and Thrie-Beam Panel Details
5	Post and Offset Block Details
6	Guardrail Sections – Heights and Adjacent Slopes
7	End Treatment – Approach Terminal Geometry, Parallel
8	End Treatment – Approach Terminal Geometry, Curbed and Double Faced
9	End Treatment – Trailing Anchorage
10	End Treatment – Component Details
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
20	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
23	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
24	Barrier Delineators – Post Mounted; Clear Space – Reduced Post Spacing for Hazards; ⅝" 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 ± ½" 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 1½" 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'-4½" or 15'-7½" panel). Alternatively, this transition to midspan panel splice may be achieved by installing a single reduced post spacing of 3'- 1½" within the new guardrail, immediately adjacent to the connection location.

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

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

12. QUANTITY MEASUREMENT: Measure guardrail and corresponding components as defined in Specification 536. The Guardrail length is measured along the centerline of installed Panels, between the points labeled Begin/End Guardrail Station shown on the following Index Sheets and defined in the plans (typically measured from the ℄ of the panel's post bolt slots at the approach/trailing ends).

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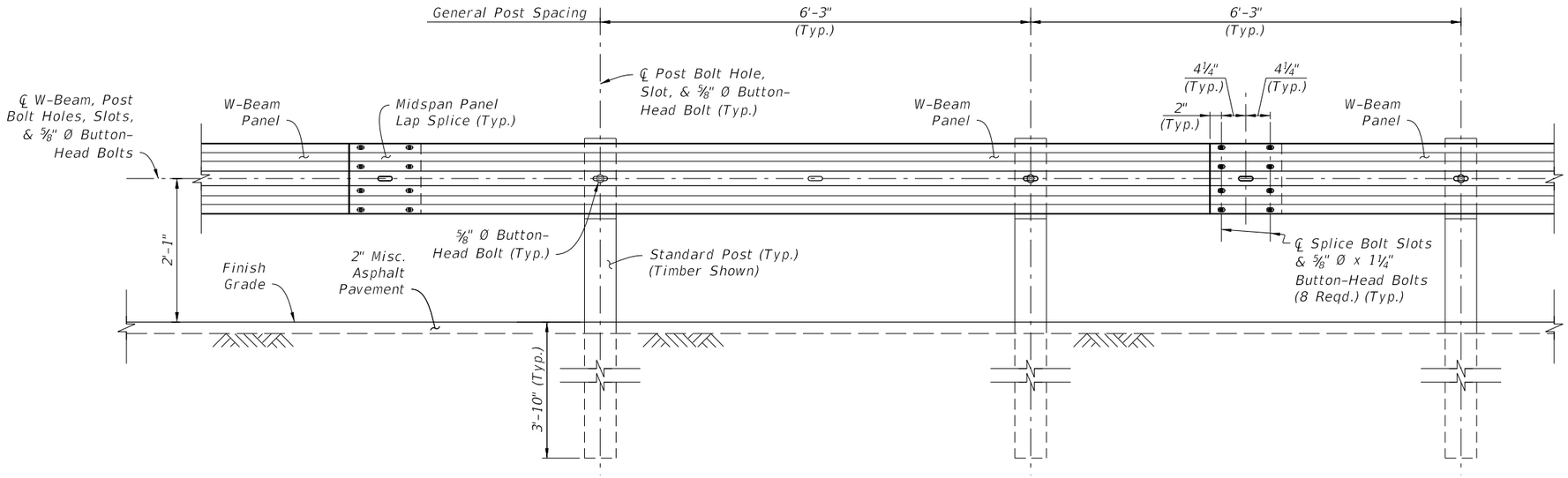
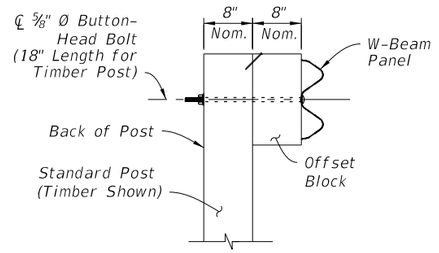
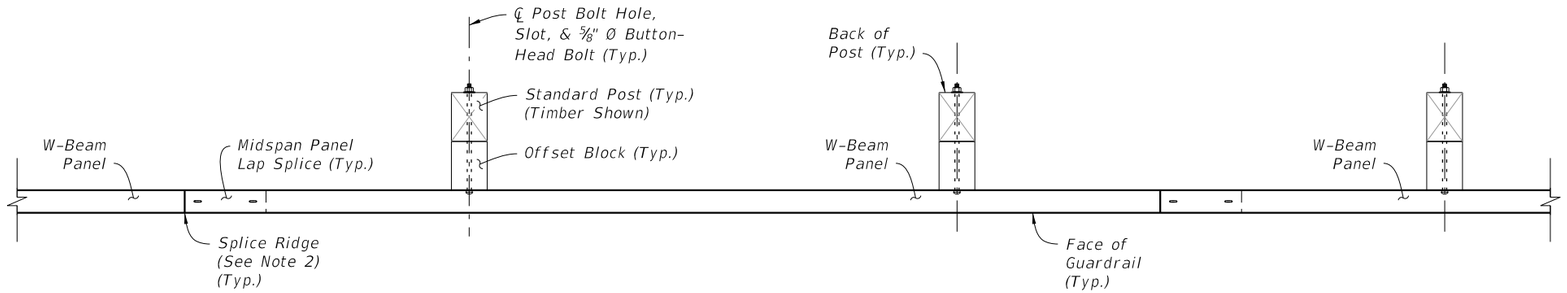


GENERAL GUARDRAIL
INSTALLED ELEVATION



INSTALLED SECTION



INSTALLED PLAN

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.

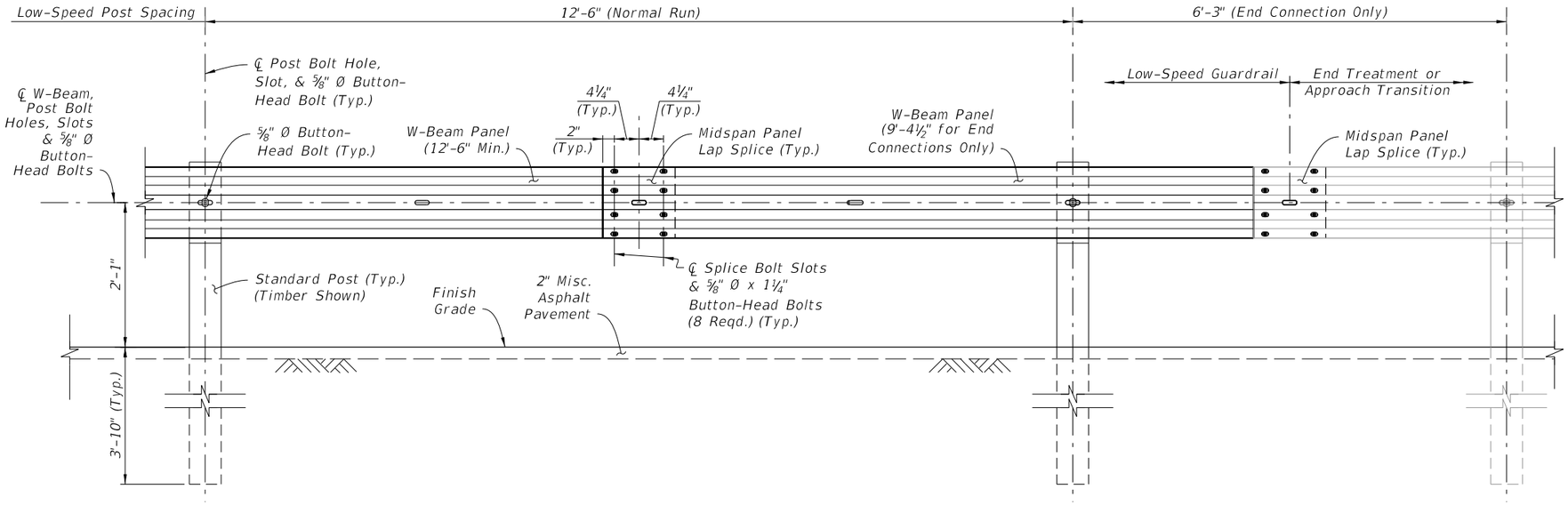
5. POST & OFFSET BLOCK DETAILS: See Sheet 5.

6. GUARDRAIL SECTIONS: For Sections showing typical mounting heights, grading, and lateral offsets in relation to adjacent roadway features, see Sheet 6.

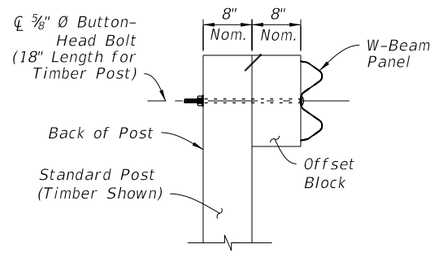
7. MODIFIED MOUNTS: Where concrete structures, concrete sidewalk, or shallow depth conditions are encountered, see Sheet 23 for additional post mounting options.

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).

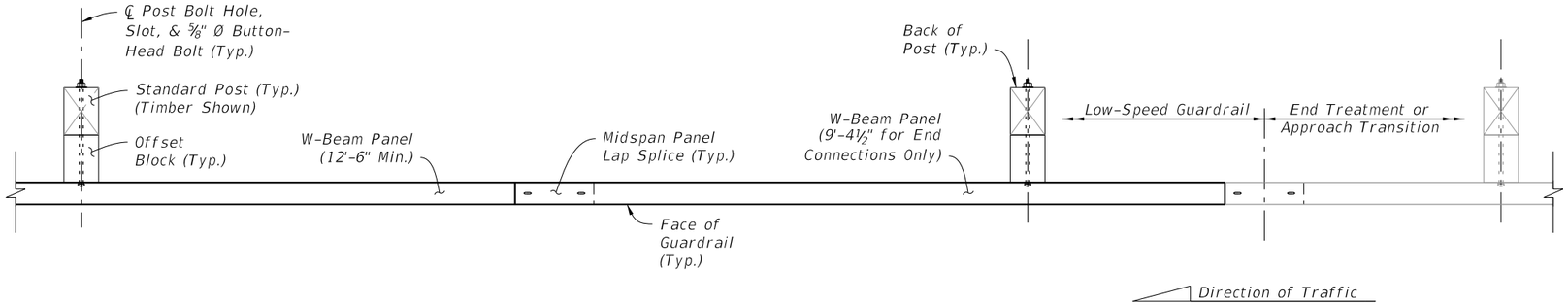
GENERAL, TL-3 GUARDRAIL DETAILS



LOW-SPEED GUARDRAIL INSTALLED ELEVATION



INSTALLED SECTION



INSTALLED PLAN

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'-4½" 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.*

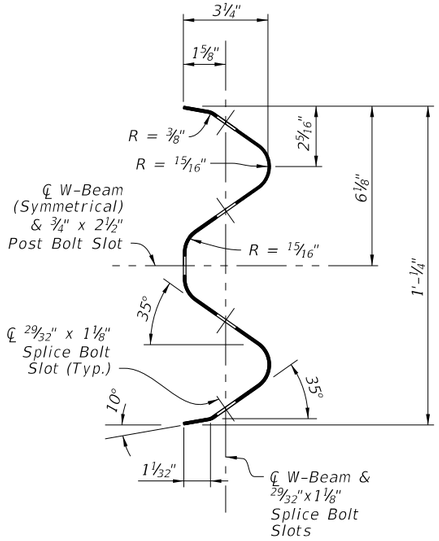
5. *POST & OFFSET BLOCK DETAILS: See Sheet 5.*

6. *GUARDRAIL SECTIONS: For Sections showing typical mounting heights, grading, and lateral offsets in relation to adjacent roadway features, see Sheet 6.*

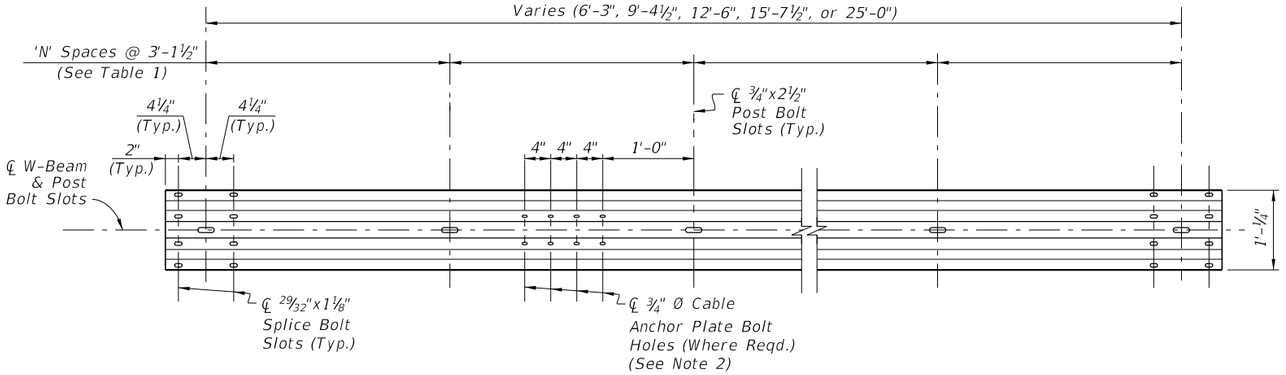
7. *MODIFIED MOUNTS: Where concrete structures, concrete sidewalk, or shallow depth conditions are encountered, see Sheet 23 for additional post mounting options.*

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



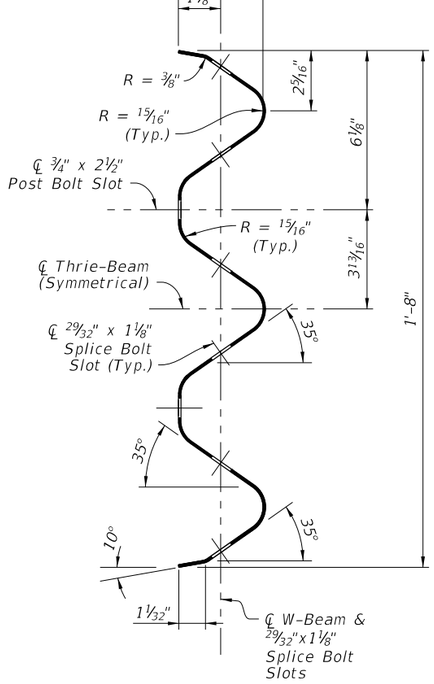
W-BEAM PANEL SECTION



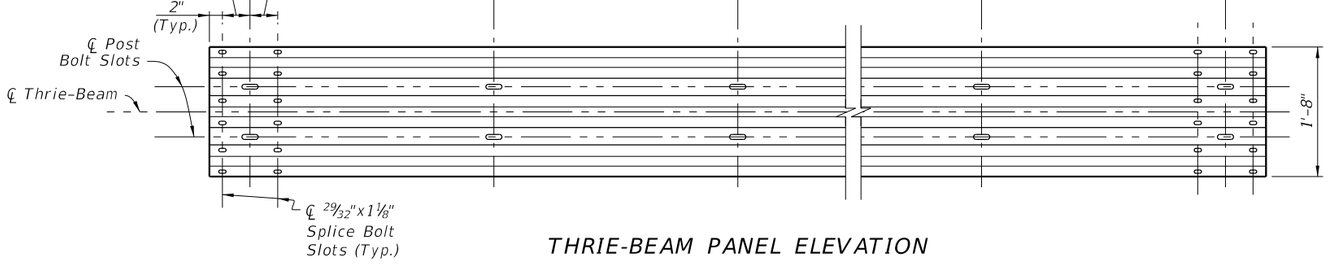
W-BEAM PANEL ELEVATION

PANEL SUMMARY TABLE:

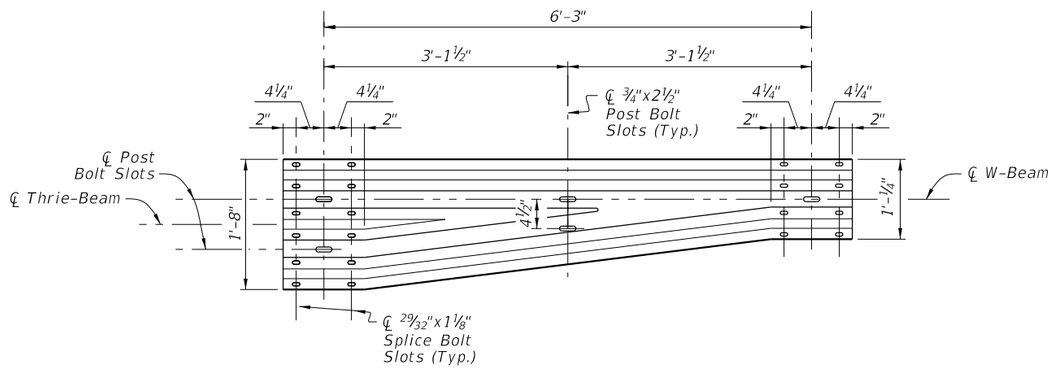
Panel Type	Number of Spaces 'N'	Gauge
6'-3" W-Beam	2	12
9'-4½" W-Beam	3	12
12'-6" W-Beam	4	12
15'-7½" W-Beam	5	12
25'-0" W-Beam	8	12
3'-1½" Thrie-Beam	1	10
6'-3" Thrie-Beam	2	12
12-6" Thrie-Beam	4	12
25-0" Thrie-Beam	8	12
Thrie-Beam Trans.	2	10



THRIE-BEAM PANEL SECTION



THRIE-BEAM PANEL ELEVATION



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 ¾" Ø Cable Anchor Plate Bolt Holes only where required for installation of the Cable Anchor Plate shown on Sheet 9, 10, & 11.

   29/32" x 1⅛" slots may substitute for the ¾" Ø holes shown.

W-BEAM AND THRIE-BEAM PANEL DETAILS

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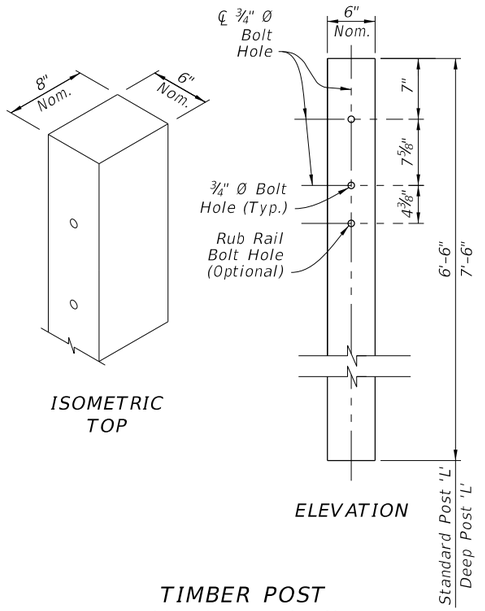
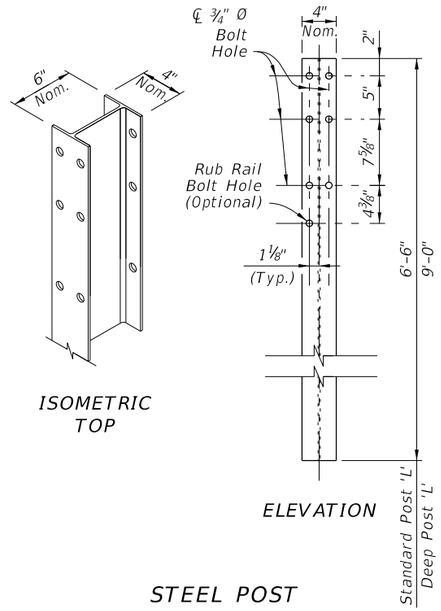
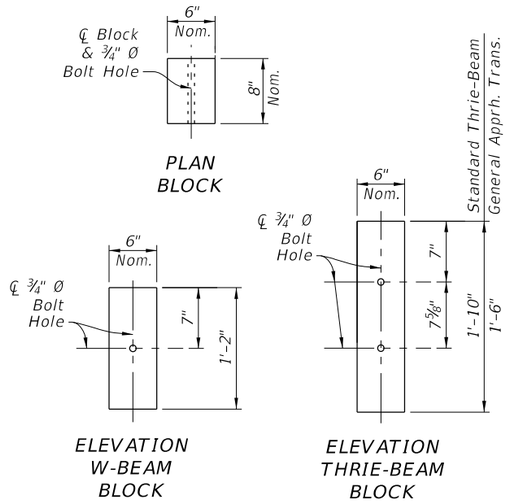
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
11/01/19						536-001	4 of 24



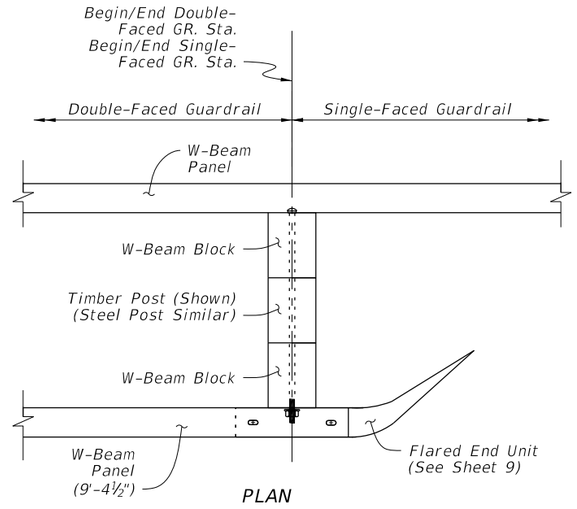
TIMBER POST
(6"X8" Nominal)



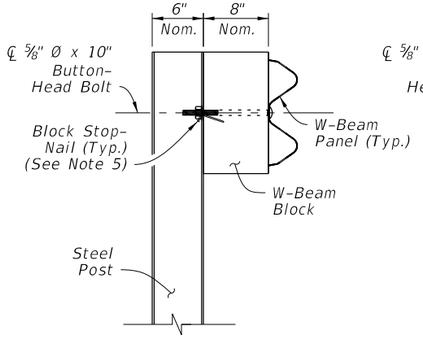
STEEL POST
(W6X8.5 or W6X9)

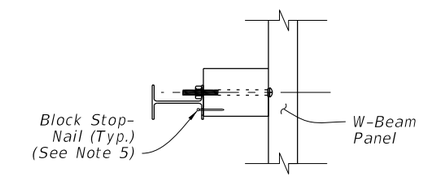


TIMBER OFFSET BLOCK
(6"X8" Nominal)

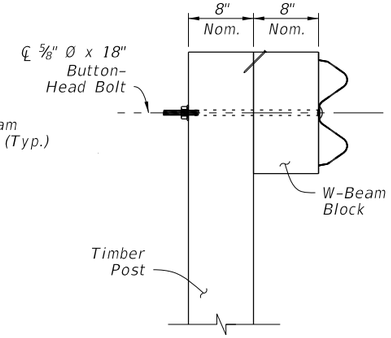


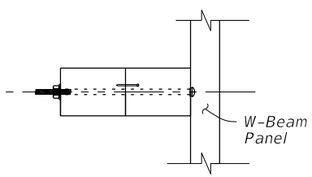
SINGLE-FACED / DOUBLE-FACED
GUARDRAIL CONNECTION



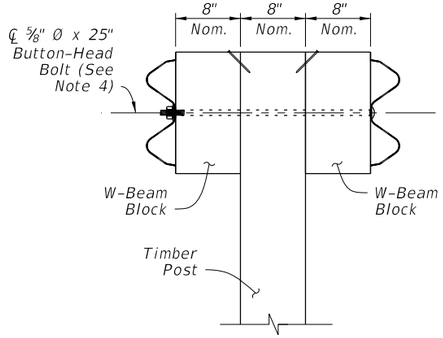


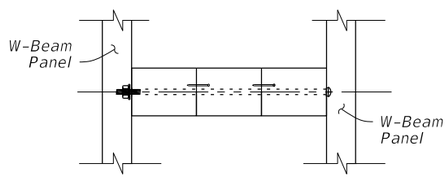
SINGLE-FACED
W-BEAM
STEEL POST



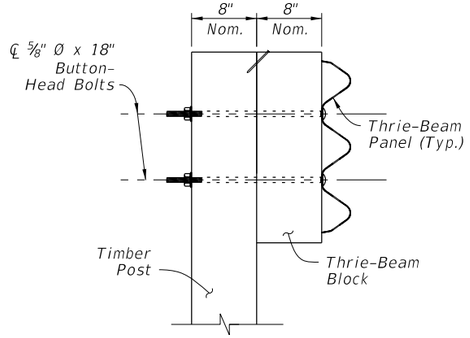


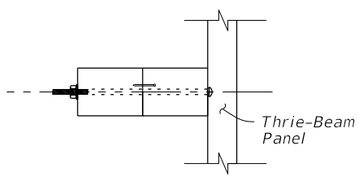
SINGLE-FACED
W-BEAM
TIMBER POST





DOUBLE-FACED W-BEAM
TIMBER POST
(Thrie-Beam Similar)
(Steel Post Similar)



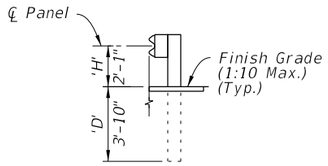


THRIE-BEAM
TIMBER POST
(Steel Post Similar)

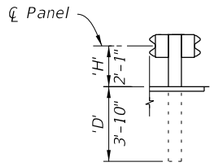
NOTES:

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.
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 Sheet 13).
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 ¾" 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.

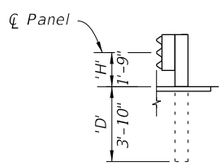
POST AND OFFSET BLOCK DETAILS



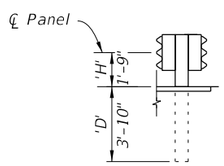
W-BEAM



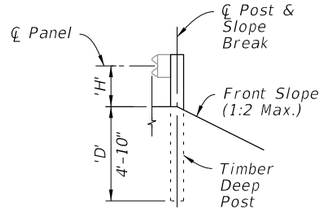
DOUBLE FACED
W-BEAM



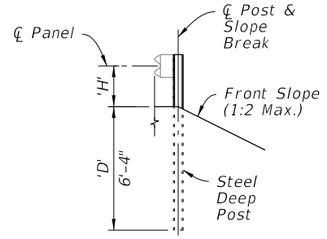
THRIE-BEAM



DOUBLE FACED
THRIE-BEAM

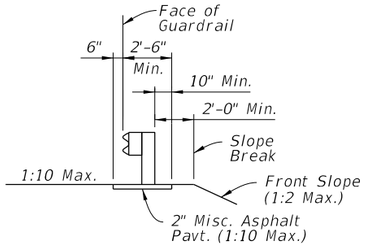


SLOPE BREAK CONDITION
TIMBER DEEP POST

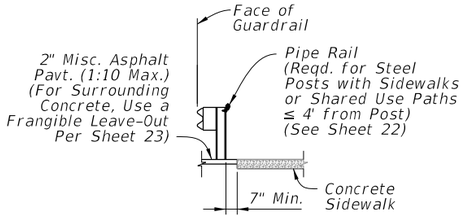


SLOPE BREAK CONDITION
STEEL DEEP POST

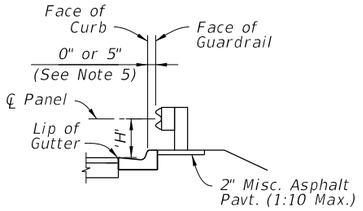
GUARDRAIL TYPES - MOUNTING HEIGHTS & POST DEPTHS



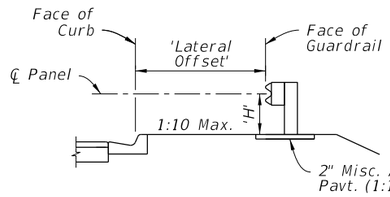
TYPICAL GRADING &
PAVT. PLACEMENT DETAIL
(See Note 2)



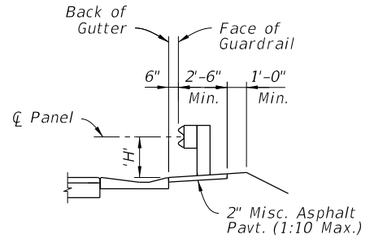
TYPICAL SIDEWALK DETAIL
(Work with Other
Sections as Reqd.)



ADJACENT TO CURB
(Type F Curb Shown)



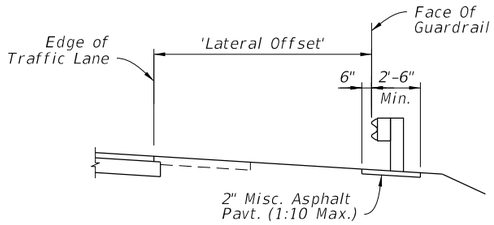
BEHIND CURB
(Type F Curb Shown)



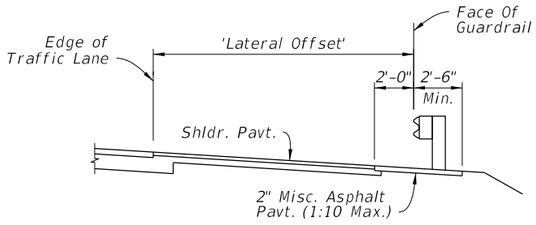
ADJACENT TO
SHOULDER GUTTER

GUARDRAIL SECTIONS - TYPICAL

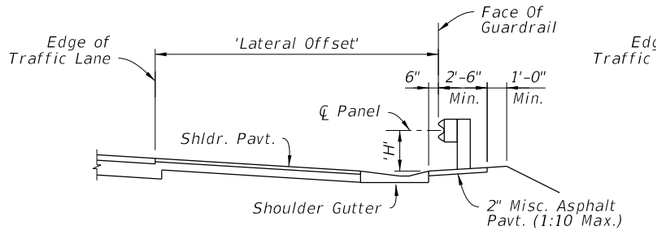
GUARDRAIL SECTIONS - CURB & GUTTER



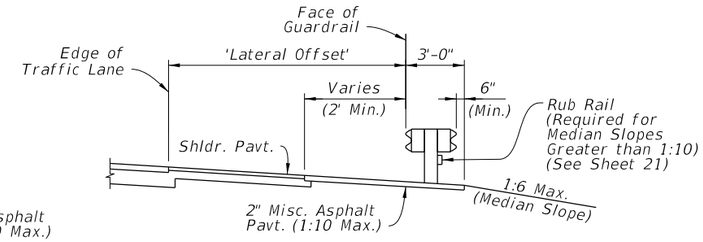
UNPAVED OR PARTIALLY
PAVED SHOULDER



FULLY PAVED SHOULDER



SHOULDER GUTTER



DOUBLE FACED GUARDRAIL
(Shown In Median)

GUARDRAIL SECTIONS - SHOULDERS

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

NOTES:

1. GUARDRAIL SECTIONS: Construct Sections as indicated in the plans. The details shown herein depict W-Beam Guardrail, but are applicable to the other defined Guardrail Types placed at the corresponding height, 'H'. Use components per Sheets 4 & 5. Steel and timber post types are interchangeable unless otherwise defined. The 1:10 Max. cross slope shown is the maximum slope permitted for proper guardrail function, but project-specific cross slope requirements are governed 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

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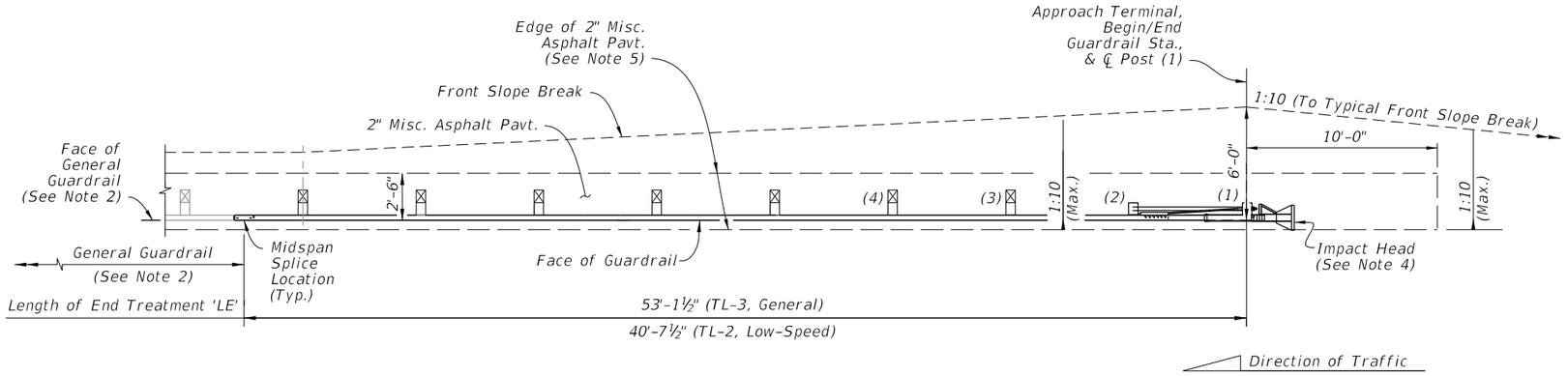


APPROACH TERMINAL ASSEMBLY
'PARALLEL' TYPE - PLAN VIEW

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.*

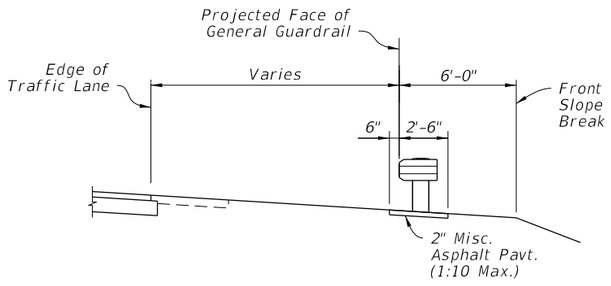
4. *IMPACT HEAD END DELINEATOR: Apply Yellow Retroreflective Sheeting to the nose of the End Terminal in accordance with Specification 536.*

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.*

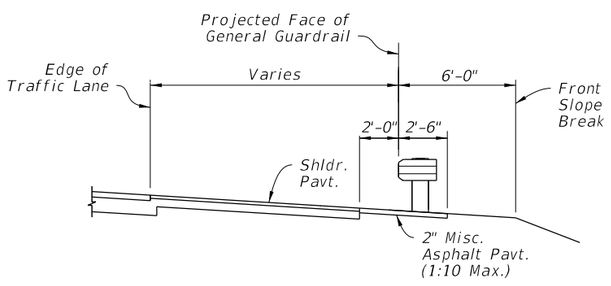
   The 2" Misc. Asphalt Pavement shown upstream of Post (1) may be substituted with a different pavement type where called for in the Plans.

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.*

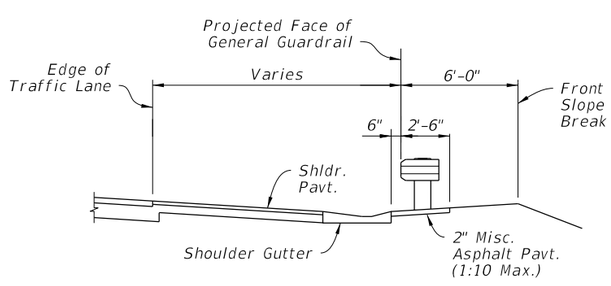
7. *'CURBED' AND 'DOUBLE FACED' GUARDRAIL SEGMENTS: See Sheet 8.*



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

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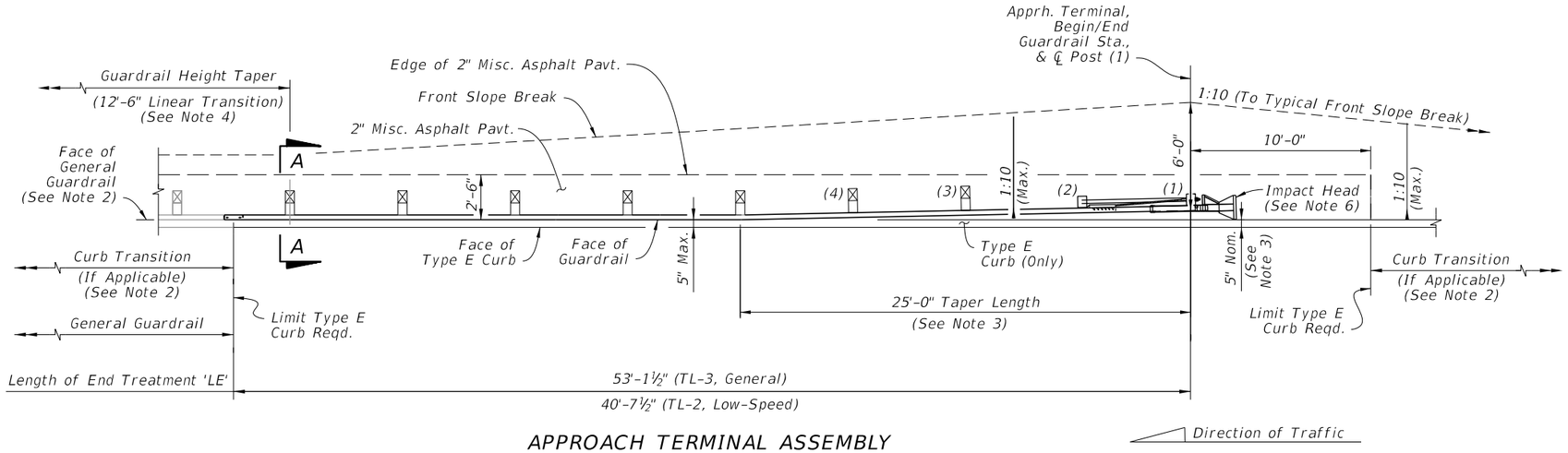
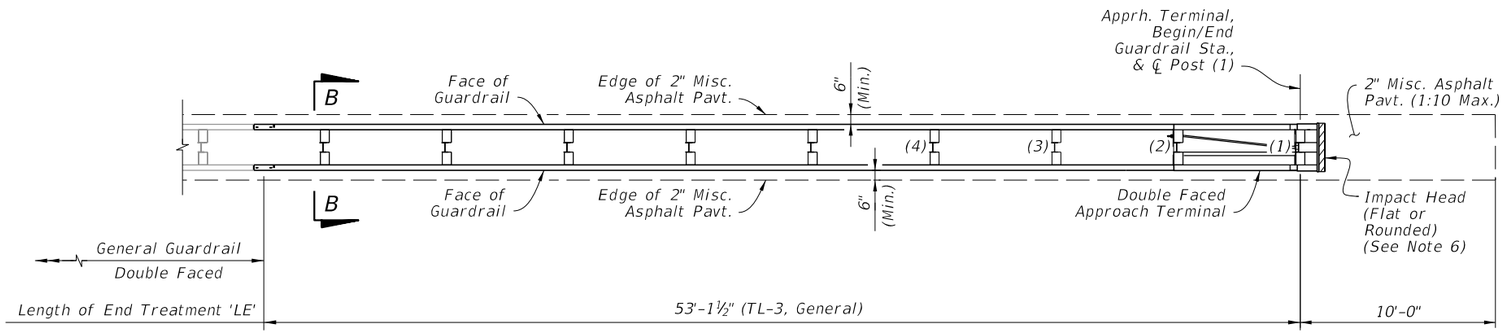
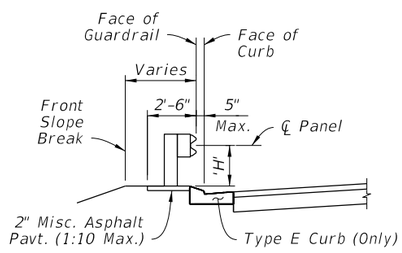


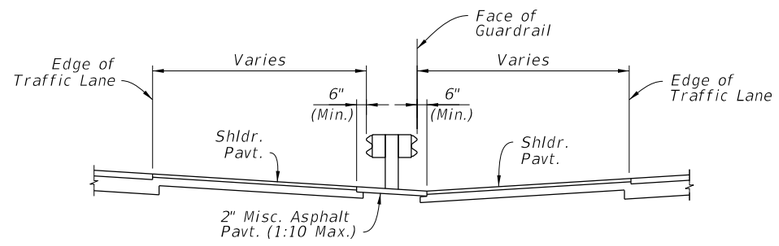
APPROACH TERMINAL ASSEMBLY
'CURBED' SEGMENT - PLAN VIEW



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

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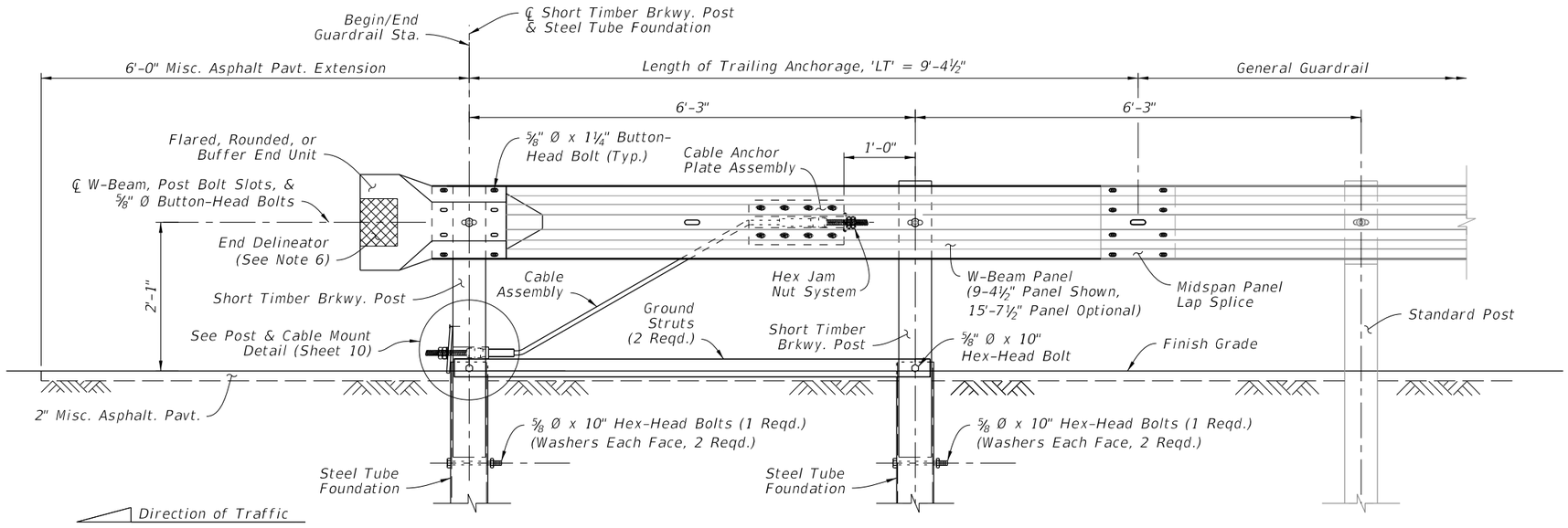
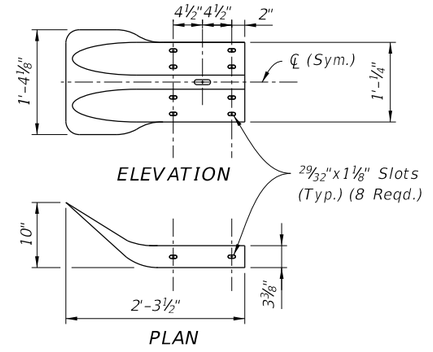
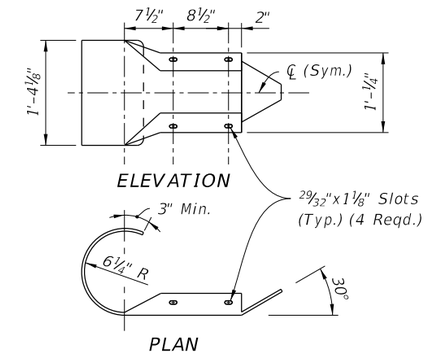


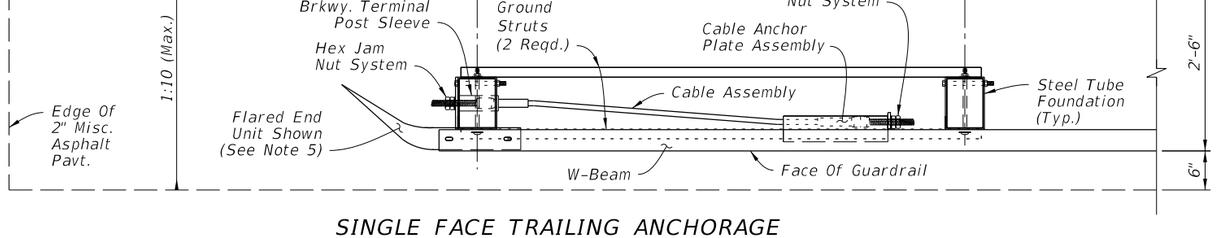
INSTALLED ELEVATION



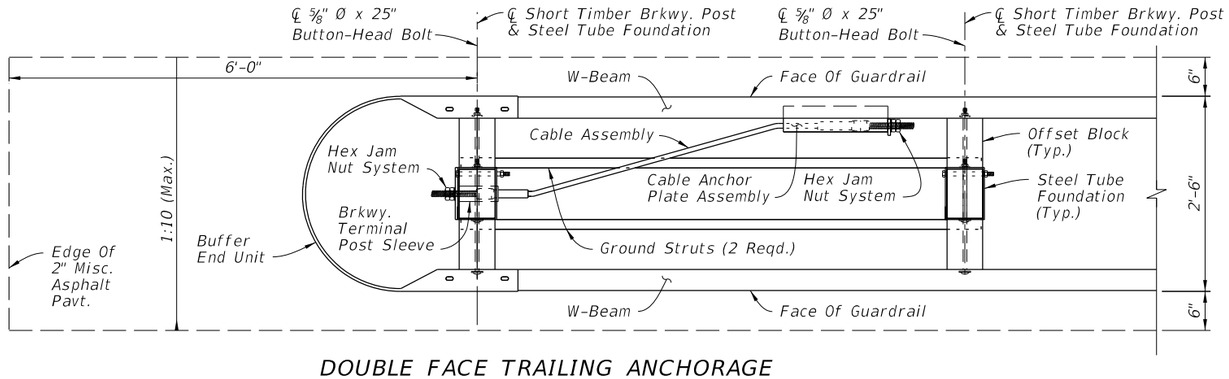
FLARED END UNIT



ROUNDED END UNIT



SINGLE FACE TRAILING ANCHORAGE
INSTALLED PLAN



DOUBLE FACE TRAILING ANCHORAGE
INSTALLED PLAN

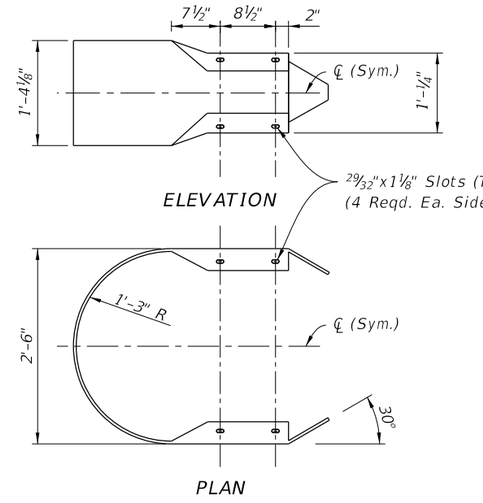
NOTES:

1. *COMPONENT DETAILS: For additional component details, See Sheet 10.*
2. *END UNITS: Use materials for end units as defined in Specifications Section 967. End Units are referred to as "End or Buffer Sections" in AASHTO M180.*

   Lap the Flared End Unit behind the W-Beam; lap the Rounded and Buffered End Units over the face of the W-Beam.
3. *FOUNDATIONS: Install Steel Tubes by either of the following methods:*

   a. Excavate, backfill, and compact material to provide full passive soil resistance to the surface of the Tube.

   b. Drive the Tube using a dummy timber post to prevent damage to the Breakaway Post.
4. *GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Transitions, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.*
5. *SIDEWALK REQUIREMENTS: When sidewalks are located adjacent to the End Treatment, install a Rounded End Unit (Flared End Unit not permitted for this case).*
6. *END DELINEATOR: Mount retroreflective sheeting to the approach face of the End Unit in accordance with Specification Sections 536 and 967.*



BUFFER END UNIT

END TREATMENT - TRAILING ANCHORAGE

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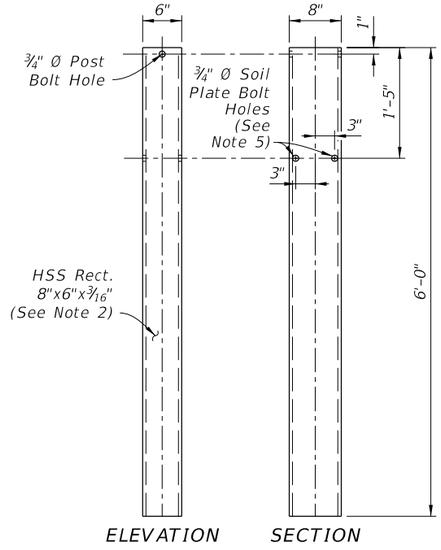
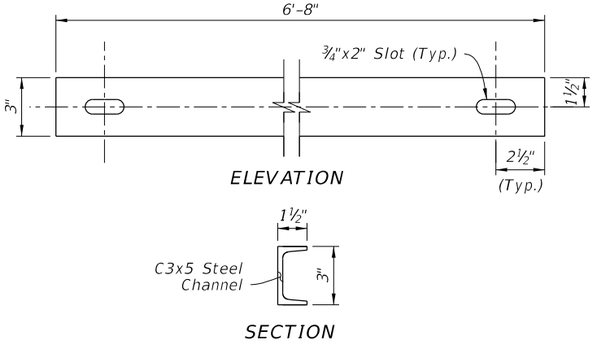
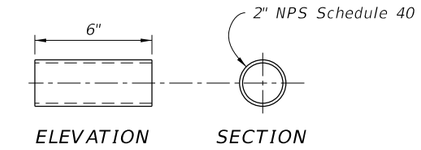


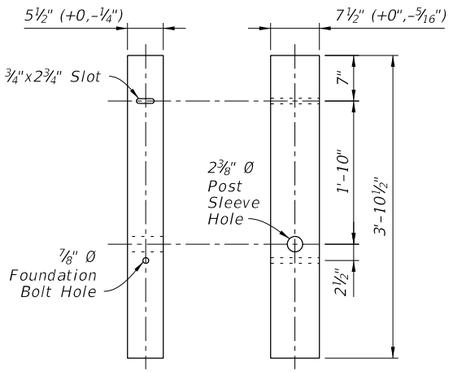
STEEL TUBE FOUNDATION



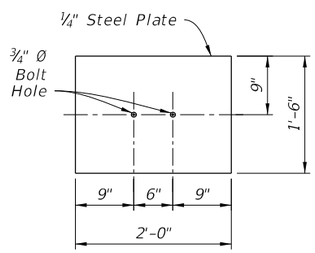
GROUND STRUT



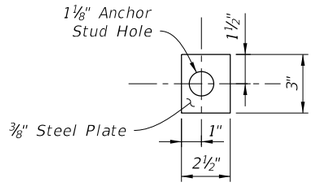
BREAKAWAY TERMINAL POST SLEEVE



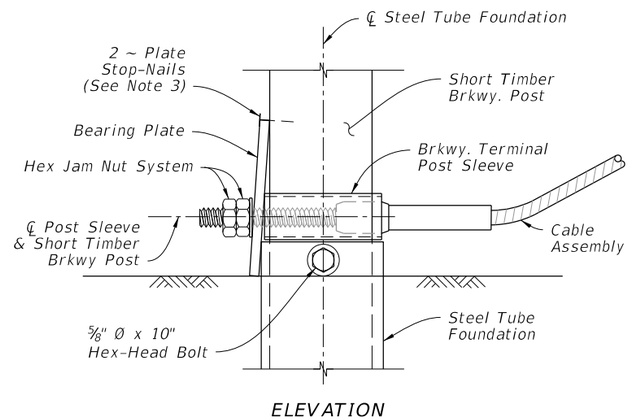
SHORT TIMBER BREAKAWAY POST (6"x8" Nom.)



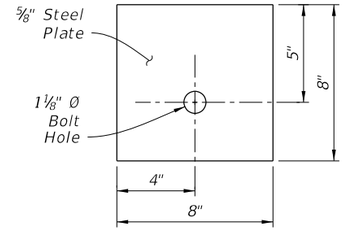
SOIL PLATE



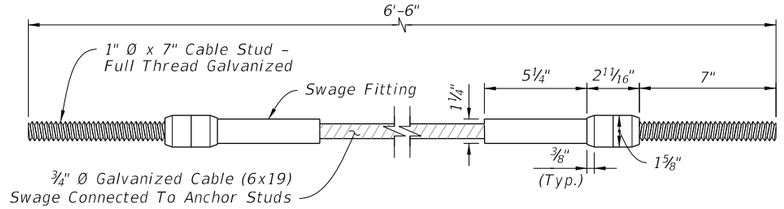
STEEL END PLATE



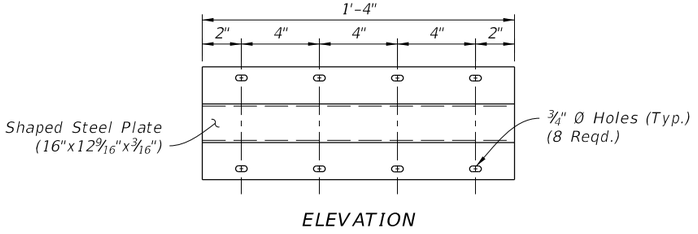
POST & CABLE MOUNT ASSEMBLY

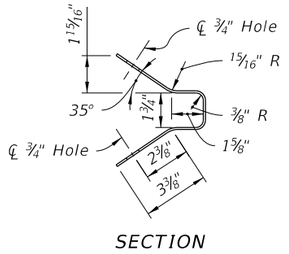


BEARING PLATE

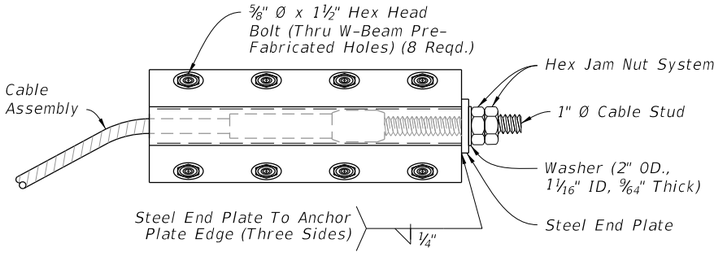


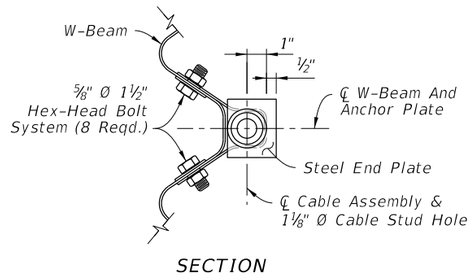
CABLE ASSEMBLY





CABLE ANCHOR PLATE





CABLE ANCHOR PLATE ASSEMBLY

NOTES:

1. INSTALLATION: Use components as shown on Sheets 9 & 11.
2. MATERIALS: Use steel plates, channels, and Cable Assemblies in accordance with Specification 967.

   Use Short Timber Breakaway Posts and Steel Tube Foundations in accordance with Specification 536.

   Use Hex Nuts, Hex Jam Nuts, and Washers in accordance with the AASHTO-AGC-ARTBA Guide to Standardized Barrier Hardware with English unit equivalents of components FNX24a and FWC24a, respectively. Two Hex Nuts may be used for the Hex Jam Nut System.
3. PLATE STOP-NAILS: To prevent rotation of the Bearing Plate, drive steel 2½" Type 8d nails with ASTM A153 hot-dip galvanization.
4. CABLE ANCHOR PLATE ASSEMBLY INSTALLATION: Mount to the pre-fabricated Cable Anchor Plate Bolt Holes in the W-Beam Panel, as shown on Sheet 4. These panel holes are only permitted for this Cable Anchor Plate Assembly application.
5. SOIL PLATE BOLT HOLE(S): For Trailing Anchorage installations as shown on Sheet 9, the two bolt holes shown may be substituted with a single bolt hole located at the tube centerline.

END TREATMENT - COMPONENT DETAILS

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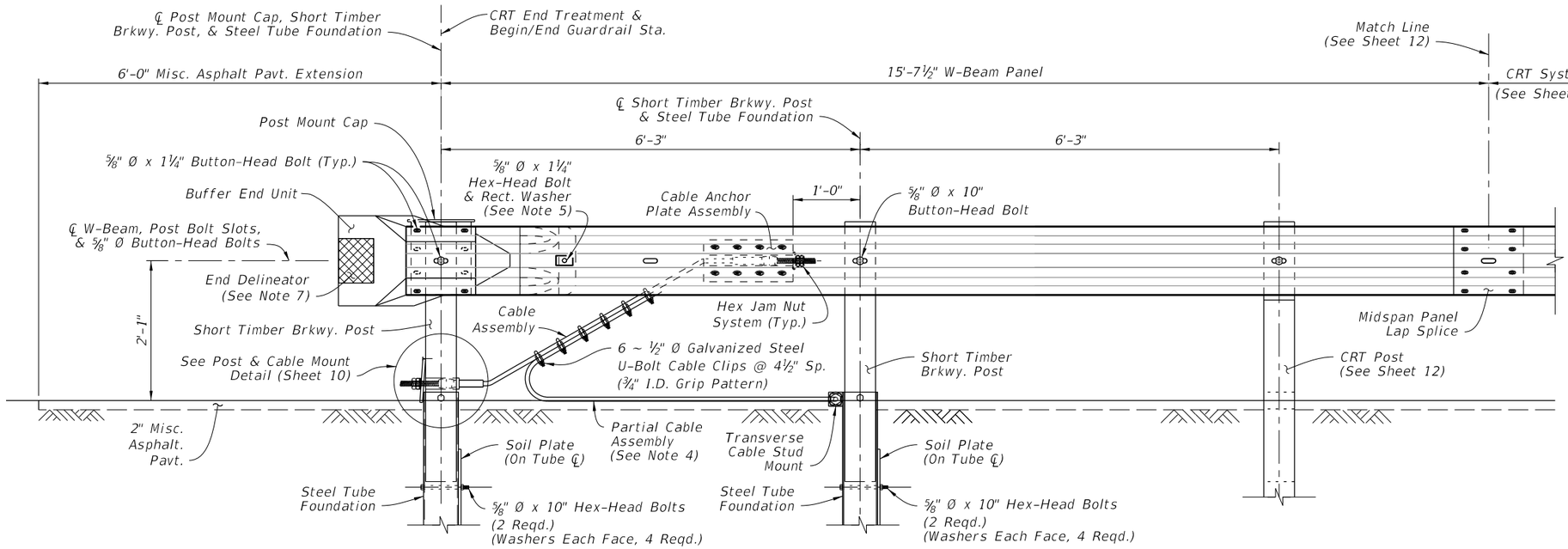
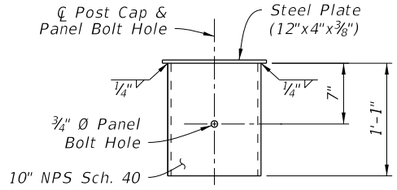
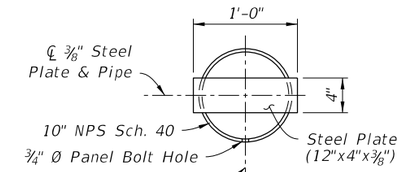


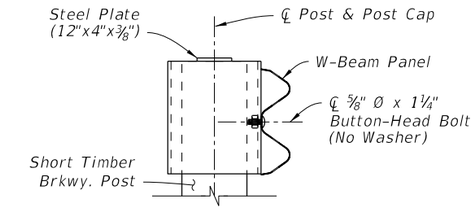
INSTALLED ELEVATION



ELEVATION

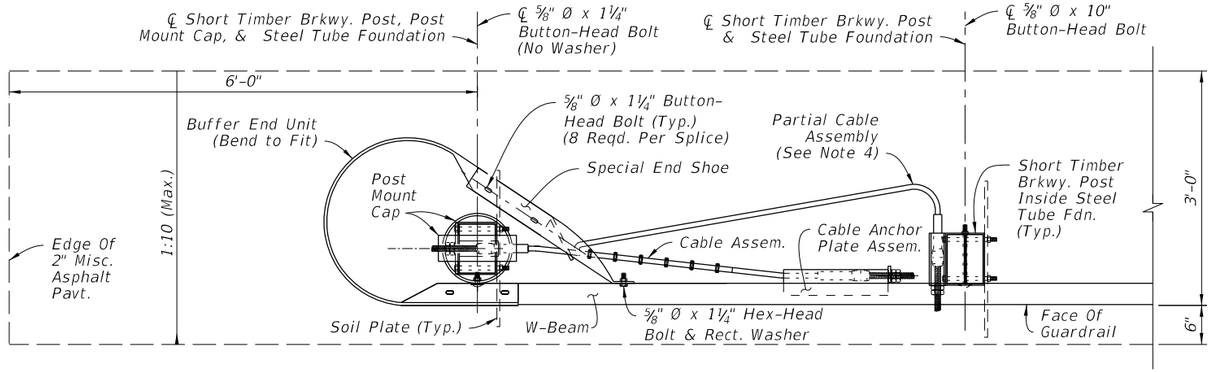


PLAN



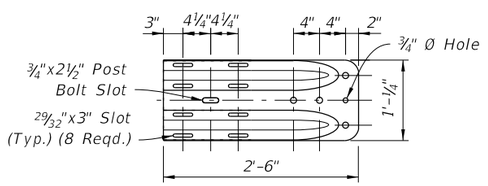
INSTALLED SECTION

POST MOUNT CAP

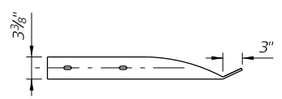


INSTALLED PLAN

CRT END TREATMENT ASSEMBLY

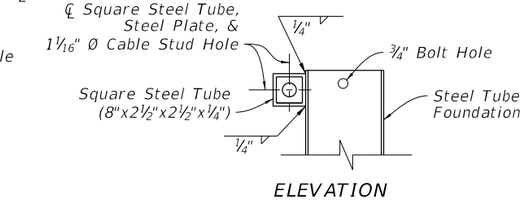


ELEVATION

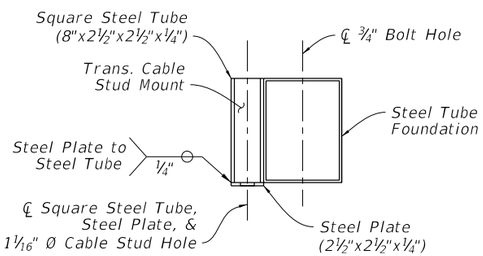


PLAN

SPECIAL END SHOE



ELEVATION



PLAN

TRANSVERSE CABLE STUD MOUNT

NOTES:

1. INSTALLATION: Use with CRT Systems as required on Sheet 12.
2. COMPONENT DETAILS: For additional component details, See Sheet 10 & 12. For the Rectangular Washer detail, see Sheet 24.
3. MATERIALS: Use steel End Shoes, Plates, Tubes, and pipes in accordance with Specification 967.
4. PARTIAL CABLE ASSEMBLY: The Partial Cable Assembly is similar to the Cable Assembly defined on Sheet 10, except with a 9'-0" total length and the Swage Fitting and Cable Stud omitted from one end.

   Feed the Cable Stud through the Cable Stud Hole of the Transverse Cable Stud Mount as shown, and secure it with the Hex Jam Nut System as defined on Sheet 10.
5. SPECIAL END SHOE MOUNT: Punch a ¾" Ø hole in the W-Beam Panel as needed to secure the Special End Shoe with the ⅝" Ø Hex-Head Bolt. Galvanize hole per Specification 562.
6. FOUNDATIONS: Install Steel Tubes with attached Soil Plates by either of the following methods:

   a. Excavate, backfill, and compact material to provide full passive soil resistance to all surfaces of the tube and soil plate.

   b. Drive the steel tube and soil plate as a single unit using a dummy timber post to prevent damage to the breakaway post.
7. END DELINEATOR: Mount retroreflective sheeting to the approach face of the Buffer End Unit in accordance with Specifications 536 and 967.

END TREATMENT - CONTROLLED RELEASE TERMINAL (CRT) SYSTEM

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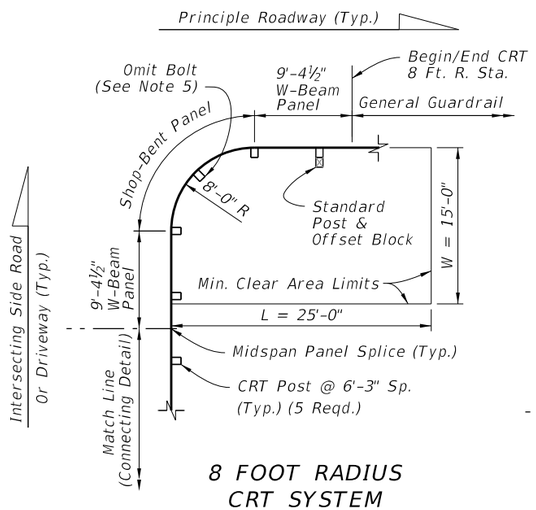
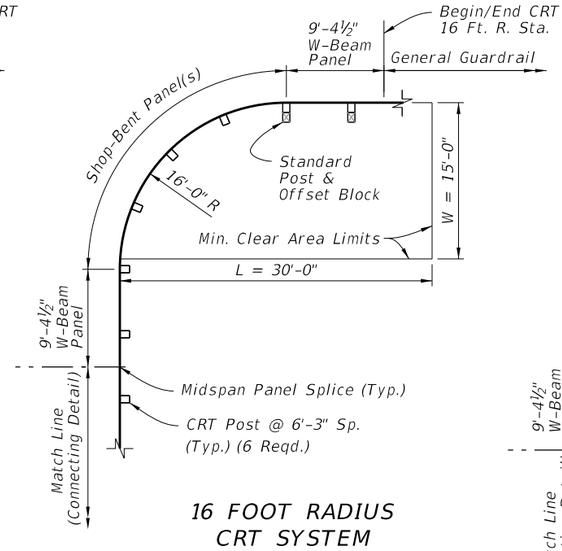
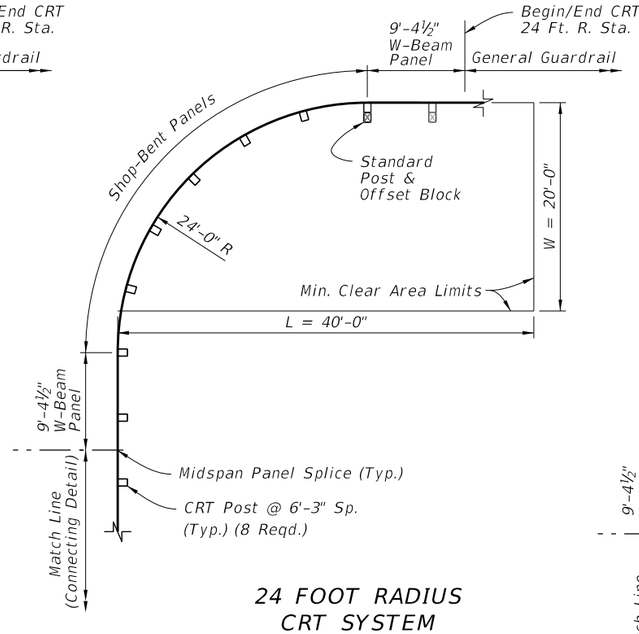


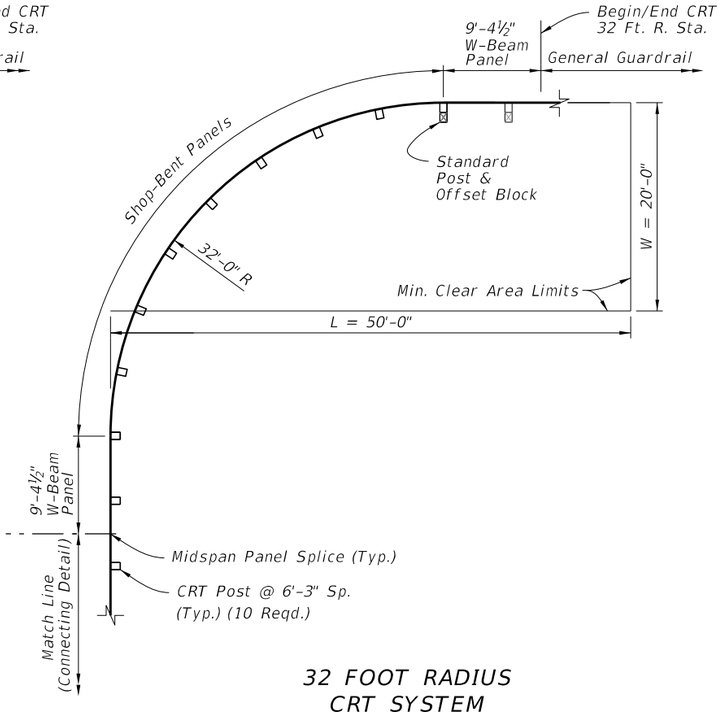
8 FOOT RADIUS CRT SYSTEM PLAN VIEW



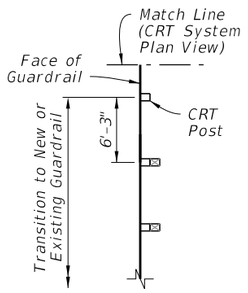
16 FOOT RADIUS CRT SYSTEM PLAN VIEW



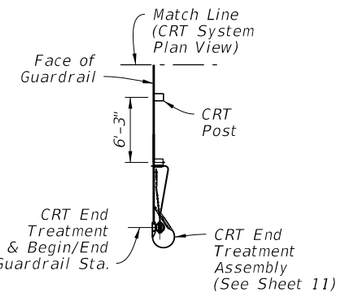
24 FOOT RADIUS CRT SYSTEM PLAN VIEW



32 FOOT RADIUS CRT SYSTEM PLAN VIEW



CONTINUING OPTION

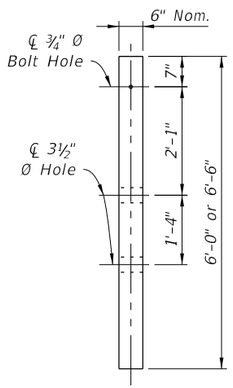


END TREATMENT OPTION

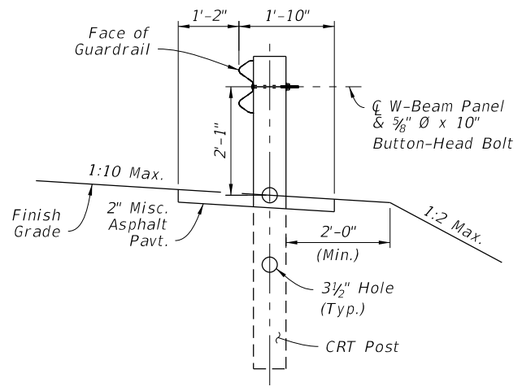
CONNECTING DETAIL

CRT SYSTEM SUMMARY TABLE:

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



CRT POST ELEVATION (6"x8" Nom. Timber)



CRT INSTALLED SECTION

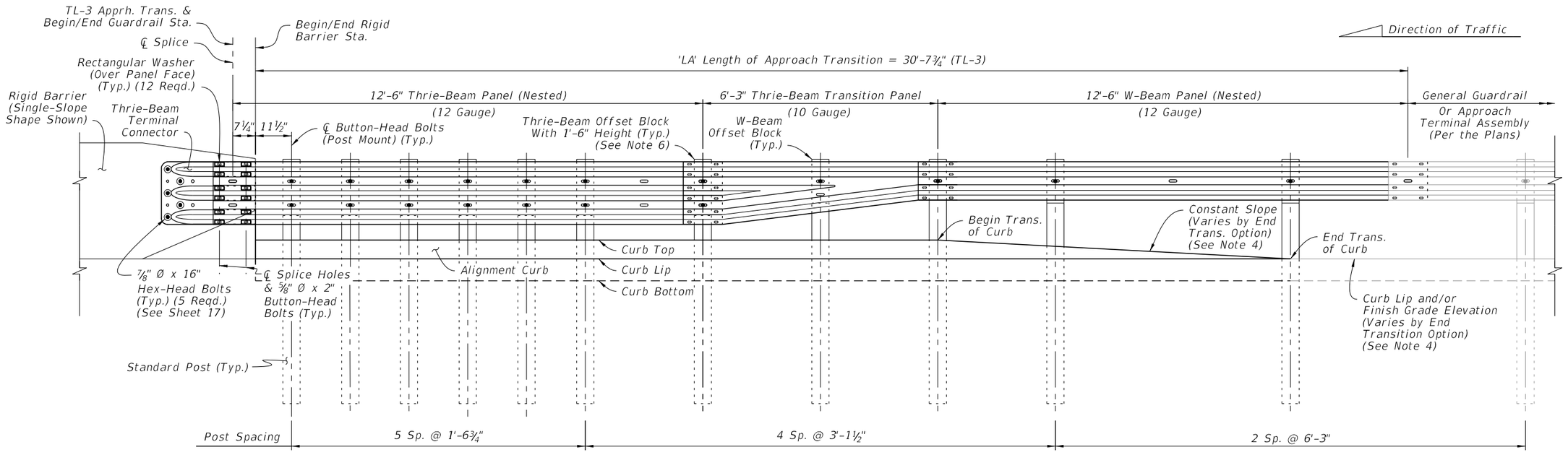
NOTES:

1. *INSTALLATION: Construct the specified radius layout and Connecting Detail option as shown in the plans.*
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' from the posts.*
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 ⅝" 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 ⅝" 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.*

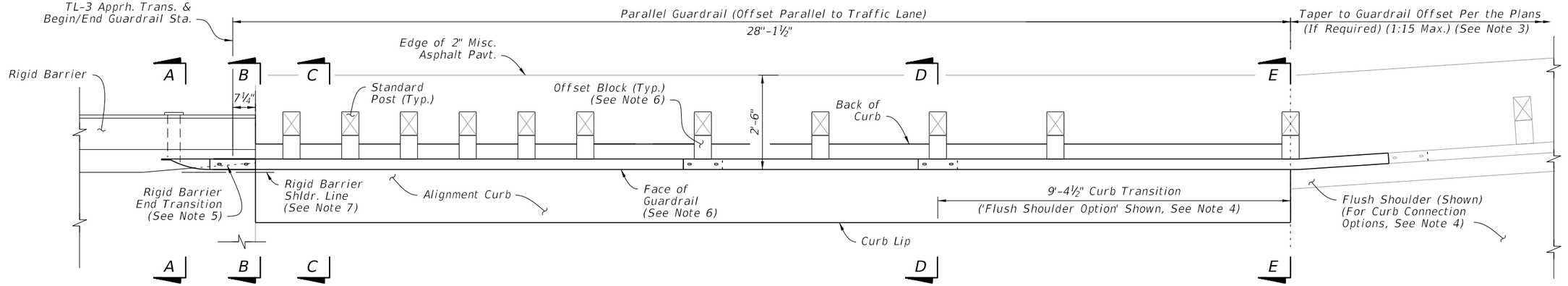
LAYOUT FOR CONTROLLED RELEASE TERMINAL (CRT) SYSTEMS - SIDE ROADS AND DRIVEWAYS

10/29/2019 8:20:37 AM

LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
11/01/19					536-001	12 of 24



TL-3 APPROACH TRANSITION INSTALLED ELEVATION



TL-3 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 shown herein, taper the guardrail to the connecting guardrail offset. If the adjacent guardrail segment has the same offset as the Approach Transition segment, then no taper is required.

4. END TRANSITION OF CURB OPTIONS: The Plan and Elevation views depict an example Curb Transition to Flush Shoulder from Section D-D to E-E, but this transition may require a different shape depending on the End Transition option shown in the plans (Either a 'Shoulder Gutter Option', 'Raised Curb Option', or 'Flush Shoulder Option'). See Sheet 14 for additional curb options and Sheet 17 for curb shape details.

5. RIGID BARRIER END TRANSITION: Taper the Rigid Barrier toe as shown. See Concrete Barrier, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-428, for details.

6. OFFSET BLOCKS: For Thrie-Beam post locations within the Length of Approach Transition segment, use the Timber Offset Blocks with 1'-6" height shown on Sheet 5.

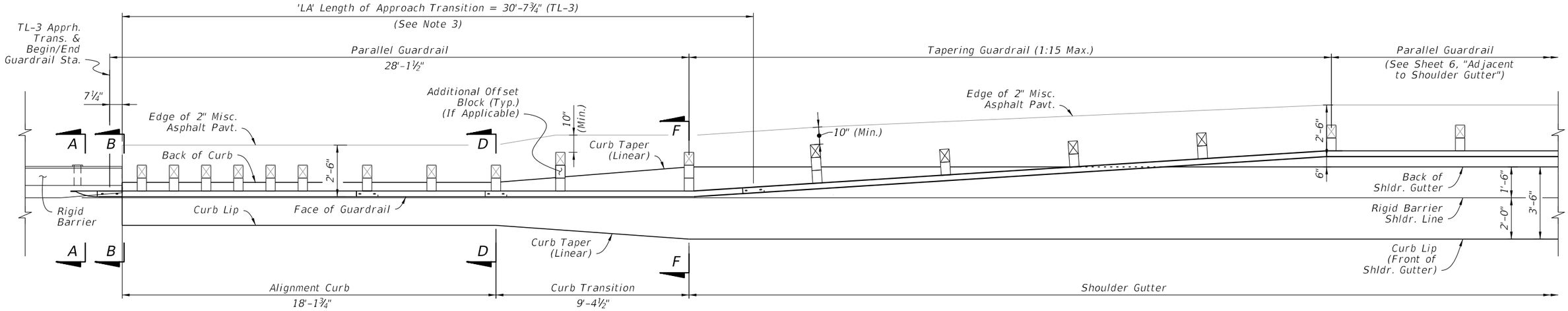
   For the midspan of the Thrie-Beam Transition Panel and for all other W-Beam locations shown herein, use the W-Beam Offset Blocks with 1'-2" height.

7. OFFSET: The required offset difference between the Face of Guardrail and Rigid Barrier Shoulder Line is considered negligible and may not be shown in the guardrail offset callouts in the plans. A consistent guardrail offset deviation of up to 4 inches outside of the Rigid Barrier Shoulder Line is permitted over the length 'LA'.

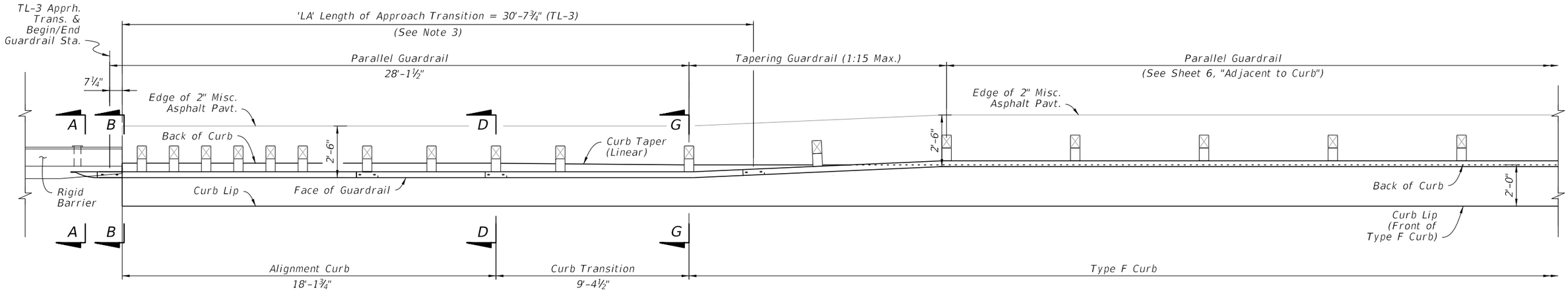
8. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Terminals, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.

APPROACH TRANSITION CONNECTION TO RIGID BARRIER - GENERAL, TL-3

10/29/2019 8:20:37 AM



TL-3 APPROACH TRANSITION WITH 'SHOULDER GUTTER' CONNECTION - PLAN VIEW



TL-3 APPROACH TRANSITION WITH 'TYPE F CURB' CONNECTION - PLAN VIEW

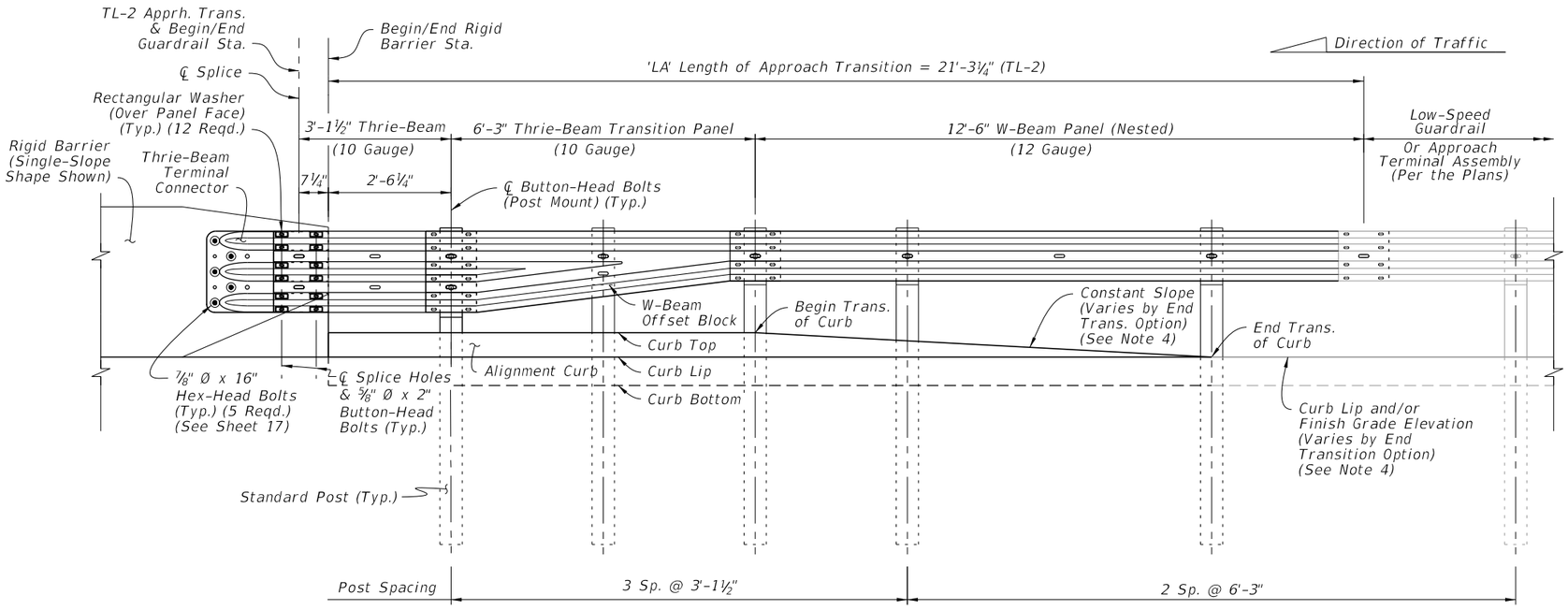
NOTES:

1. GENERAL: See the applicable notes and details on Sheet 13.
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 13. The curb details will differ depending on curb option required.

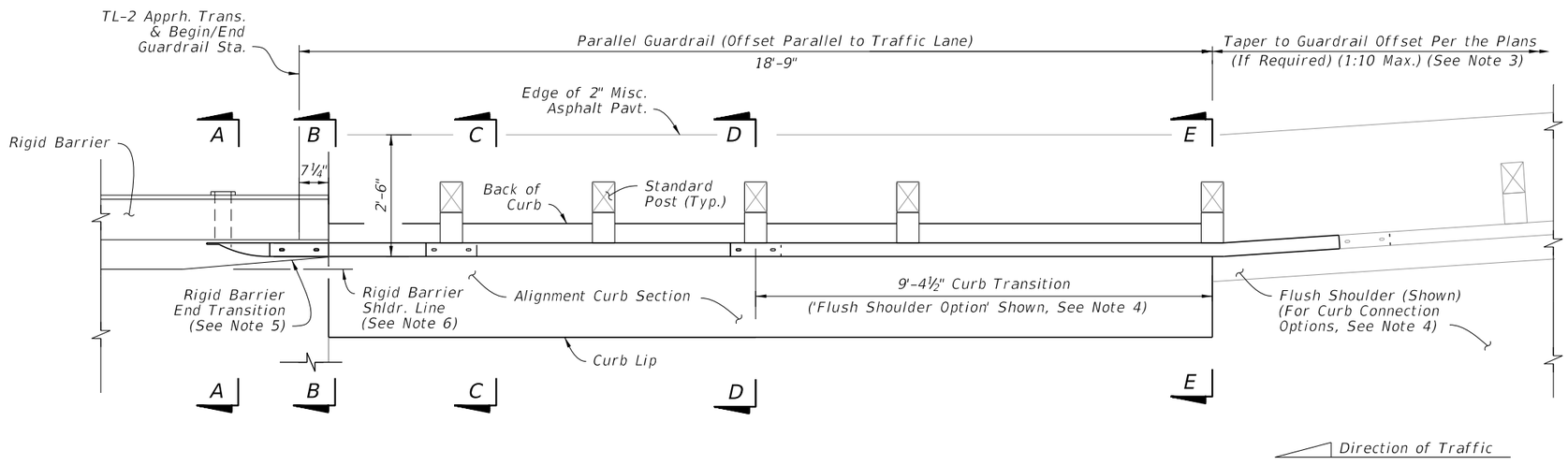
APPROACH TRANSITION CONNECTION TO RIGID BARRIER - GENERAL, TL-3 CURB CONNECTIONS

10/29/2019 8:20:38 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
11/01/19					536-001	14 of 24



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.*

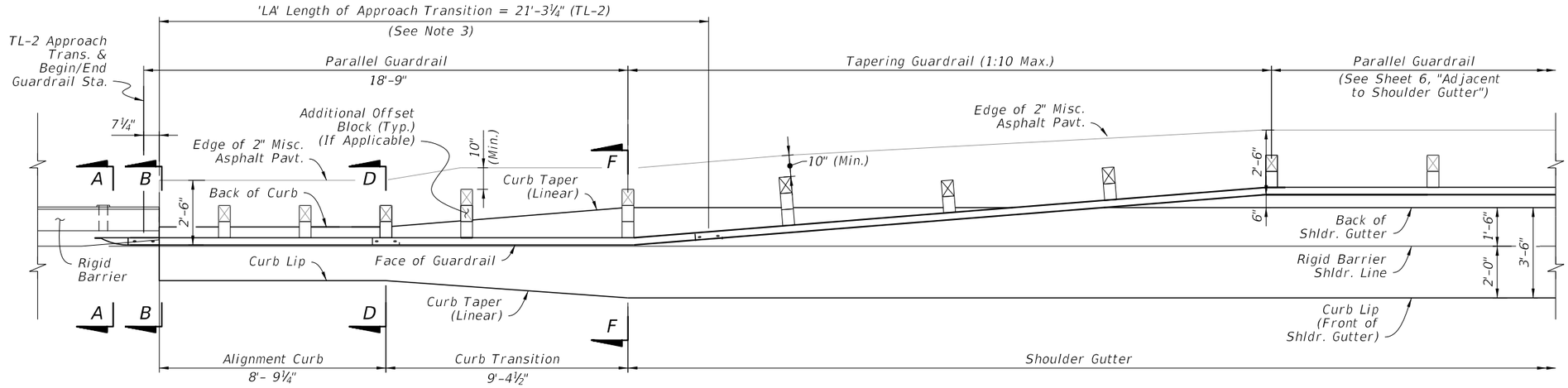
4. *END TRANSITION OF CURB OPTIONS: The Plan and Elevation views depict an example Curb Transition to Flush Shoulder from Section D-D to E-E, but this transition may require a different shape depending on the End Transition option shown in the plans (Either a 'Shoulder Gutter Option', 'Raised Curb Option', 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.*

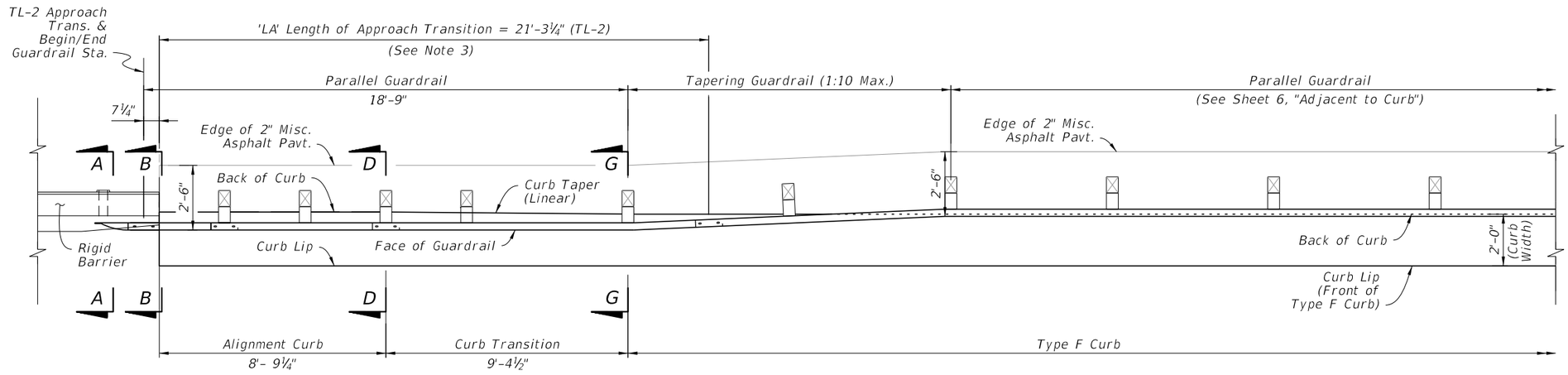
6. *OFFSET: The required offset difference between the Face of Guardrail and Rigid Barrier Shoulder Line is considered negligible and may not be shown in the guardrail offset callouts in the plans. A consistent guardrail offset deviation of up to 4 inches outside of the Rigid Barrier Shoulder Line is 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



TL-2 APPROACH TRANSITION WITH 'SHOULDER GUTTER' CONNECTION - PLAN VIEW



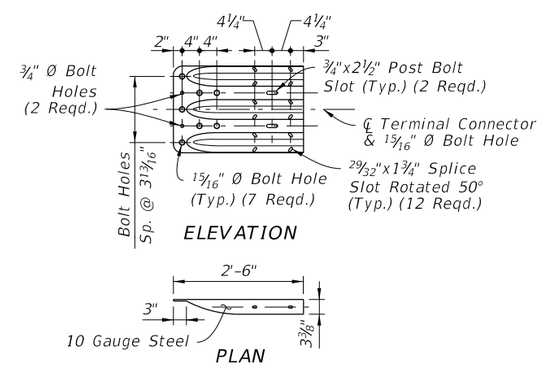
TL-2 APPROACH TRANSITION WITH 'TYPE F CURB' CONNECTION - PLAN VIEW

NOTES:

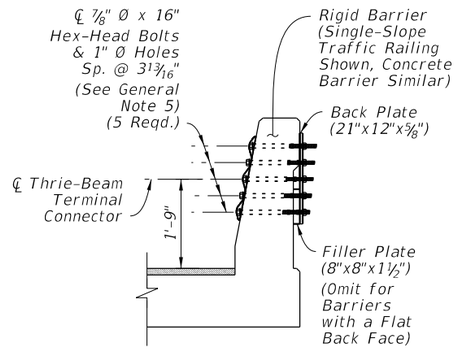
1. GENERAL: See the applicable notes and details on Sheet 15.
2. SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.
3. ELEVATION VIEW: For post and panel installation details within 'LA', see the elevation view on Sheet 15. The curb details will differ depending on curb option required.

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

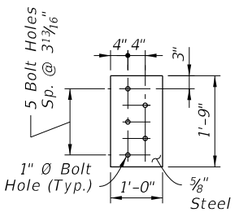
10/29/2019 8:20:40 AM



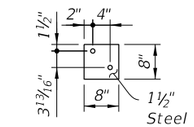
THRIE-BEAM TERMINAL CONNECTOR DETAIL



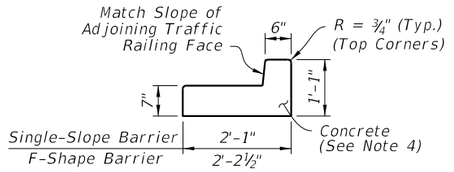
SECTION A-A
RIGID BARRIER TERMINAL CONNECTOR MOUNT



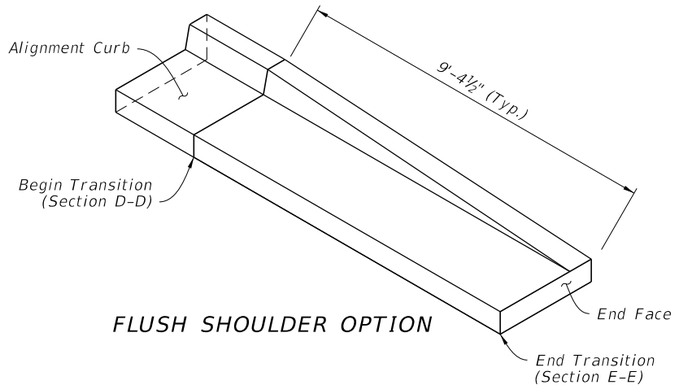
BACK PLATE



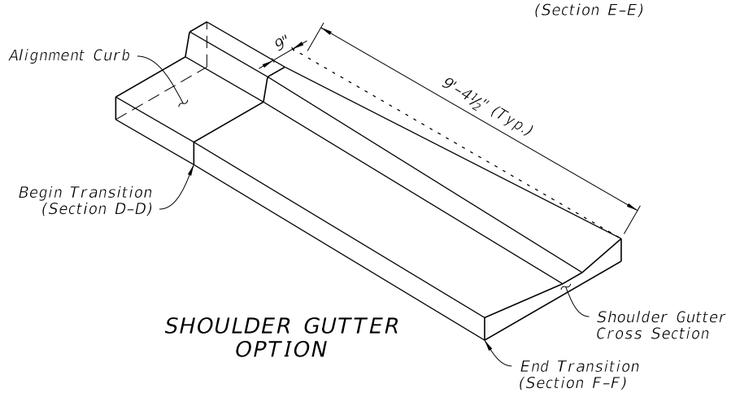
FILLER PLATE



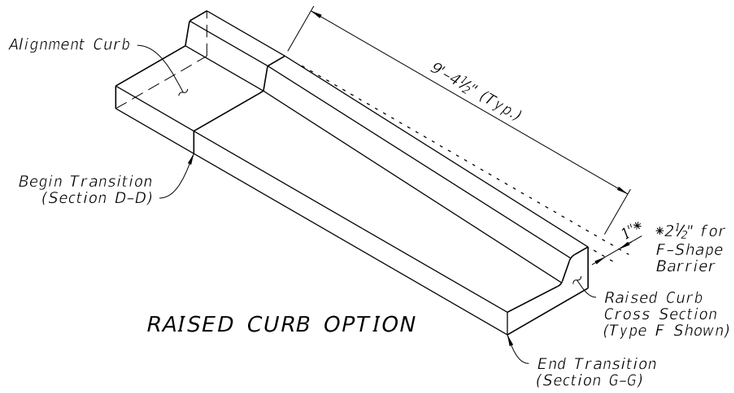
ALIGNMENT CURB SECTION



FLUSH SHOULDER OPTION

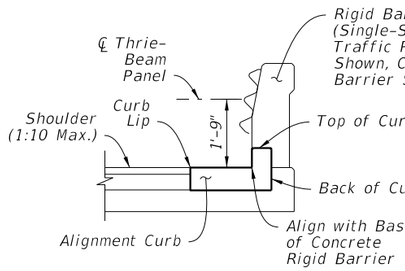


SHOULDER GUTTER OPTION

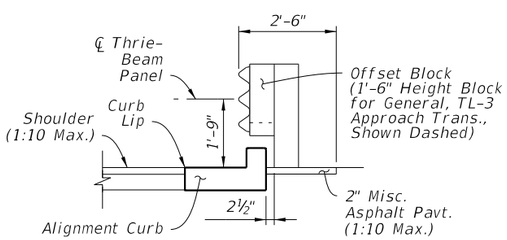


RAISED CURB OPTION

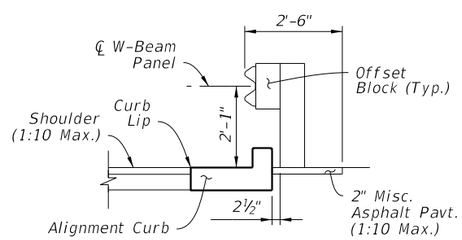
CURB TRANSITION ISOMETRIC VIEWS



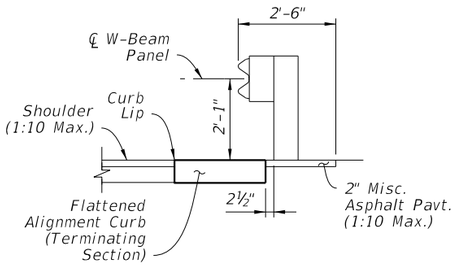
SECTION B-B
BEGIN ALIGNMENT CURB
(Mate to Rigid Barrier)



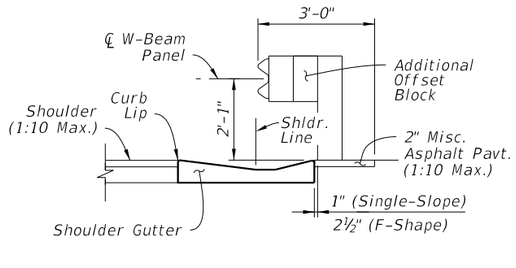
SECTION C-C
ALIGNMENT CURB
(Intermediate)



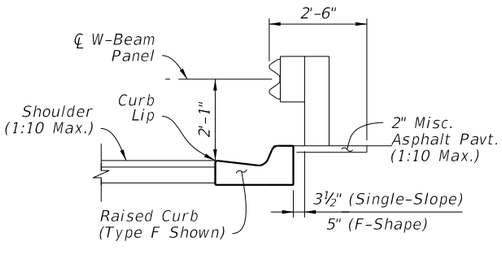
SECTION D-D
BEGIN TRANSITION
(End Alignment Curb)



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

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

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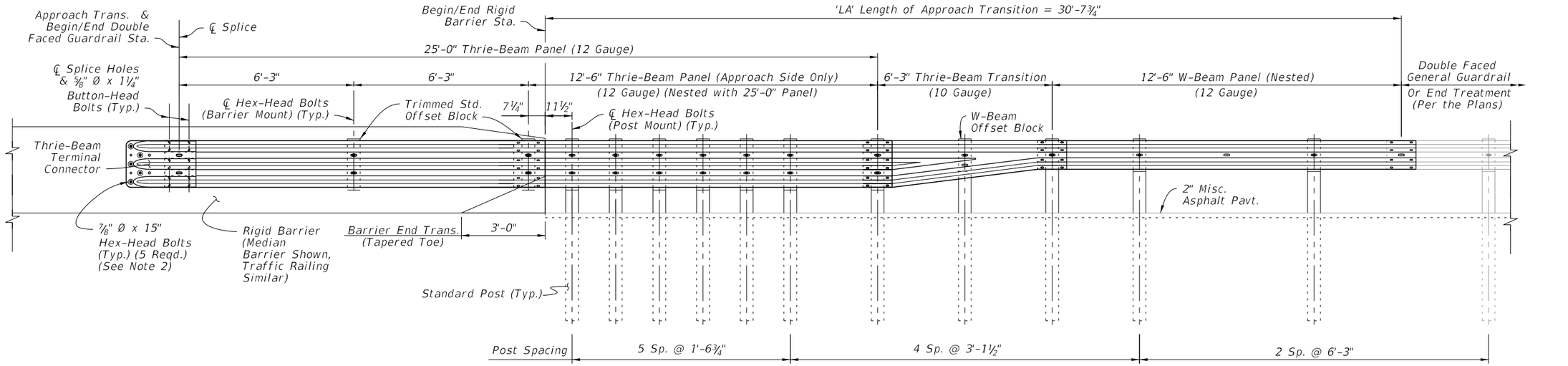
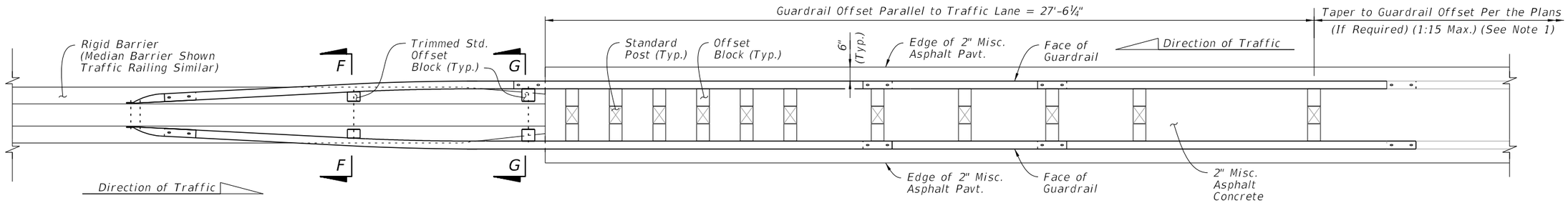


TL-3 DOUBLE FACED APPROACH TRANSITION INSTALLED ELEVATION



TL-3 DOUBLE FACED APPROACH TRANSITION INSTALLED PLAN

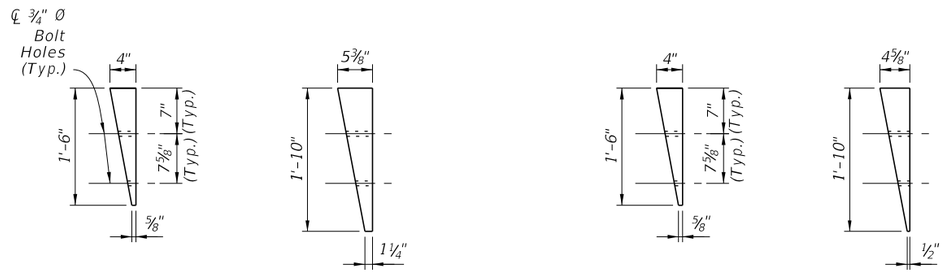
NOTES:

1. INSTALLATION: Construct the Approach Transition segment where indicated in the plans. The required offset of the connecting adjacent guardrail is shown in the plans.

   The Layout given on Sheet 20 provides a basic scheme for connections to adjacent guardrail, where a taper to a differing guardrail offset may be required. If the adjacent guardrail has the same offset as the Approach Transition segment, then no taper is required.

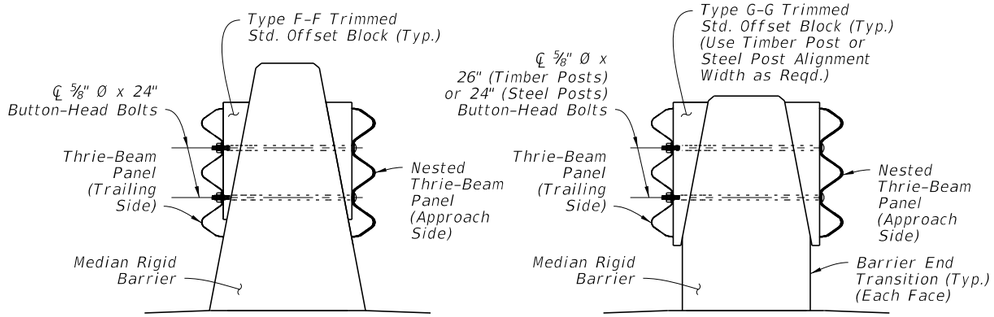
2. THRIE-BEAM TERMINAL CONNECTOR: See Sheet 17 for Details. The installed bolt's threaded portion is not permitted to extend beyond ¾" from the face of the nut; trim the threaded portion as needed and galvanize in accordance with Specification 562.

3. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. End Treatments or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.



TRIMMED STD. OFFSET BLOCKS TIMBER POST ALIGNMENT WIDTH

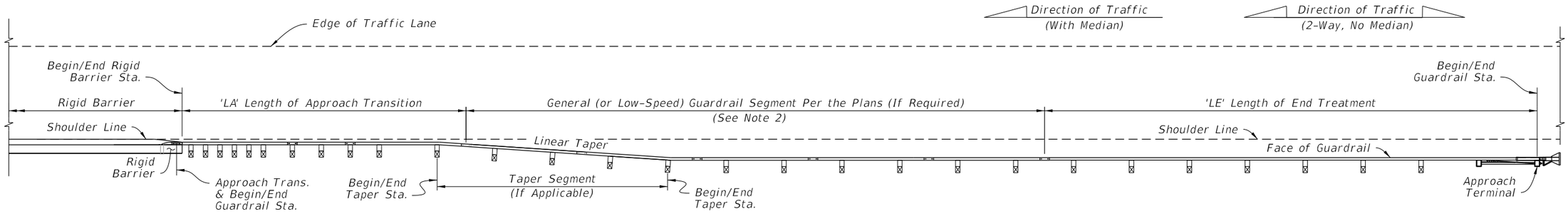
TRIMMED STD. OFFSET BLOCKS STEEL POST ALIGNMENT WIDTH



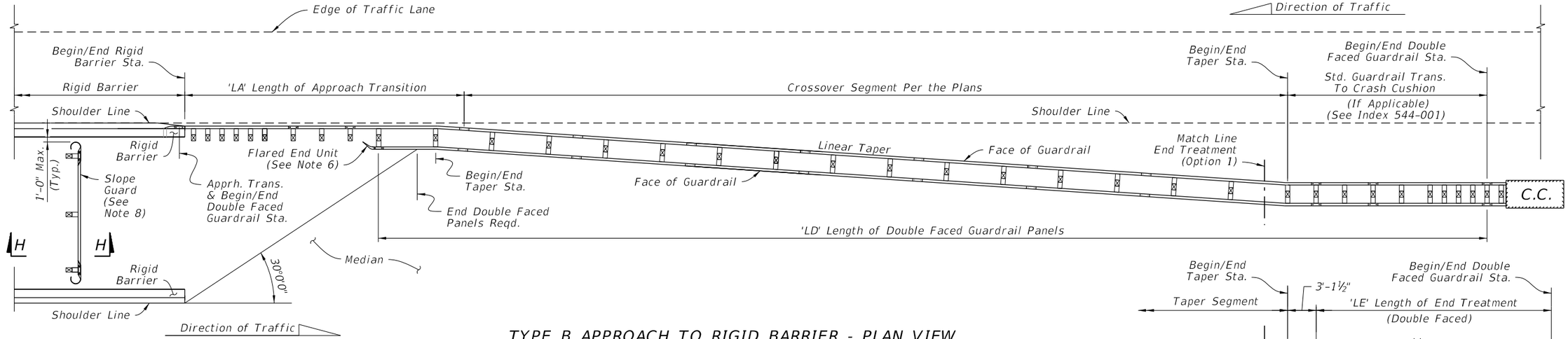
APPROACH TRANSITION CONNECTION TO RIGID BARRIER WITH DOUBLE FACED GUARDRAIL

10/29/2019 8:20:42 AM

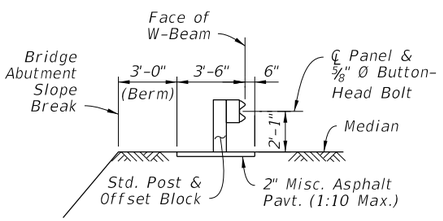
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL	536-001	18 of 24



TYPE A APPROACH TO RIGID BARRIER - PLAN VIEW
MEDIAN OR OUTSIDE SHOULDERS
(Mirror Horiz. and/or Vert. for Opposite Direction and/or Side of Road)



TYPE B APPROACH TO RIGID BARRIER - PLAN VIEW
CROSSOVER GUARDRAIL FOR MEDIAN SHOULDERS ONLY
DUAL BRIDGE APPROACH CONFIGURATION
(Mirror Horiz. and Vert. for Opposite Direction)



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

NOTES:

1. *INSTALLATION: The Plan Views shown are schematic only, showing example geometry for connecting guardrail segments including taper locations and Double Faced Guardrail requirements as applicable. Work this Sheet with the plans, where stationing and offsets for Begin/End Guardrail, Begin/End Rigid Barrier, and Begin/End Taper are specified. For existing bridge layouts, see Index 536-002, 521-404, and 521-405.*

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.

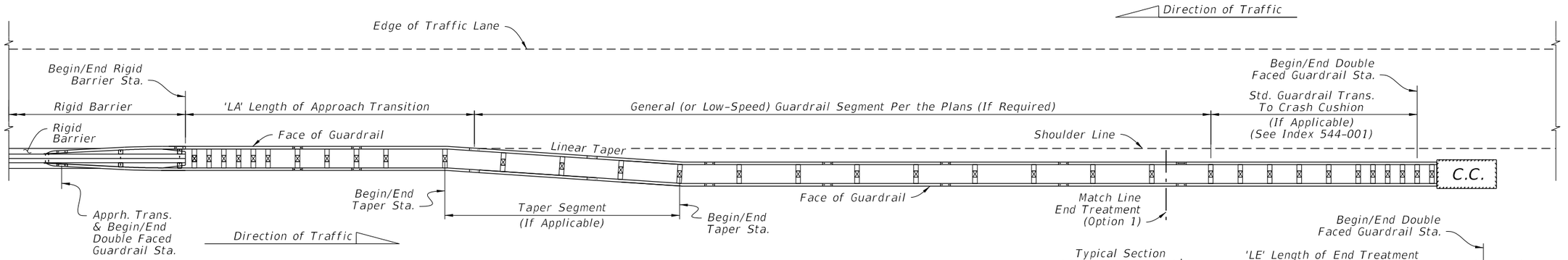
7. *END TREATMENT OPTIONS (FOR TYPE B & C APPROACH): For Double Faced applications, use either a Double Faced Approach Terminal Assembly per Sheet 8 or a Crash Cushion per Index 544-001. For either Option, meet the 1:10 adjacent grading requirements for Approach Terminals as shown on Sheet 8.*

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'-1½" 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

10/29/2019 8:20:42 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	GUARDRAIL	536-001	19 of 24

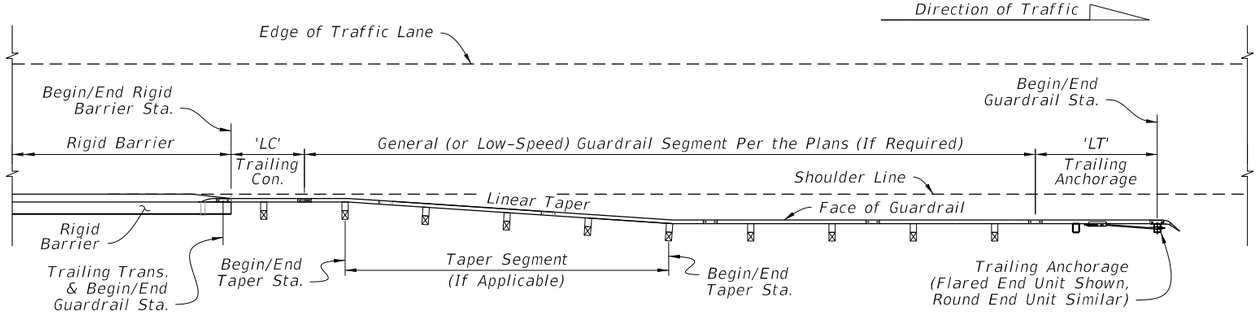


TYPE C APPROACH TO RIGID BARRIER - DOUBLE FACED GUARDRAIL
PLAN VIEW - MEDIAN SHOULDERS ONLY
(Mirror Horiz. and Vert. for Opposite Direction)

NOTES:

1. See the applicable Notes on Sheet 19.

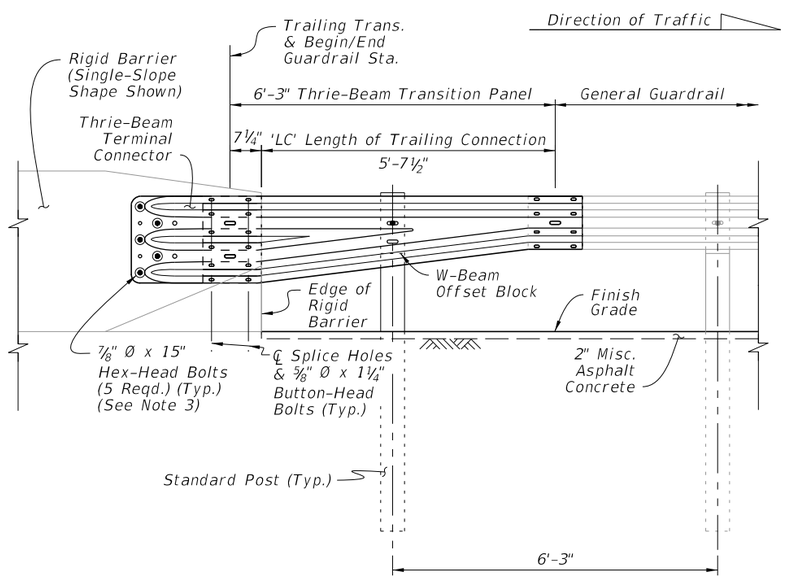
LAYOUT TO RIGID BARRIER - APPROACH ENDS WITH DOUBLE FACED GUARDRAIL



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

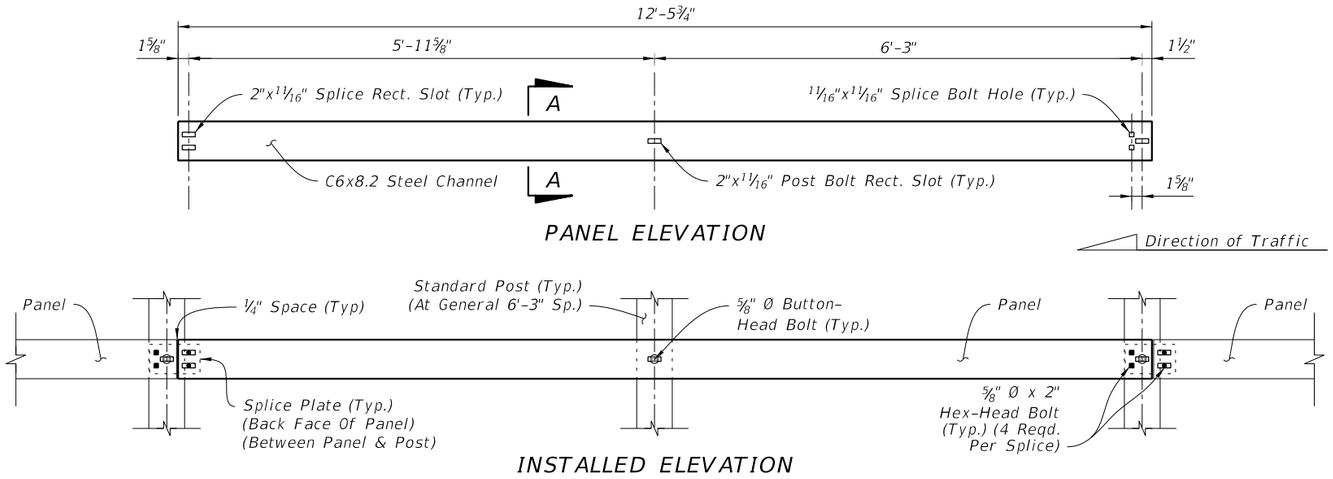
NOTES:

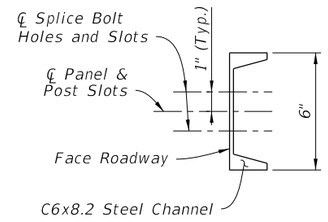
1. See the applicable Notes on Sheet 19.
2. LENGTH OF TRAILING ANCHORAGE, 'LT': Install the Trailing Anchorage as shown on Sheet 9, where called for in the plans.
3. THRIE-BEAM TERMINAL CONNECTOR: Install connector and bolts as shown on Sheet 17.
4. RIGID BARRIER SINGLE SLOPE END FACE: See Concrete Barrier Wall, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-423, for details.



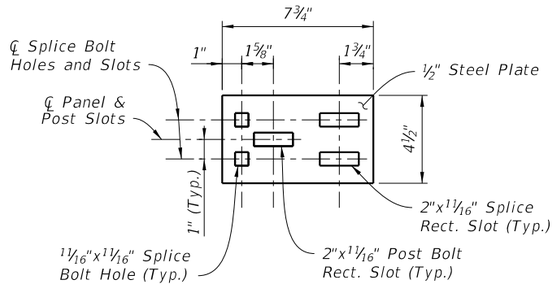
TRAILING END TRANSITION CONNECTION
TO RIGID BARRIER - INSTALLED ELEVATION

LAYOUT TO RIGID BARRIER - TRAILING ENDS



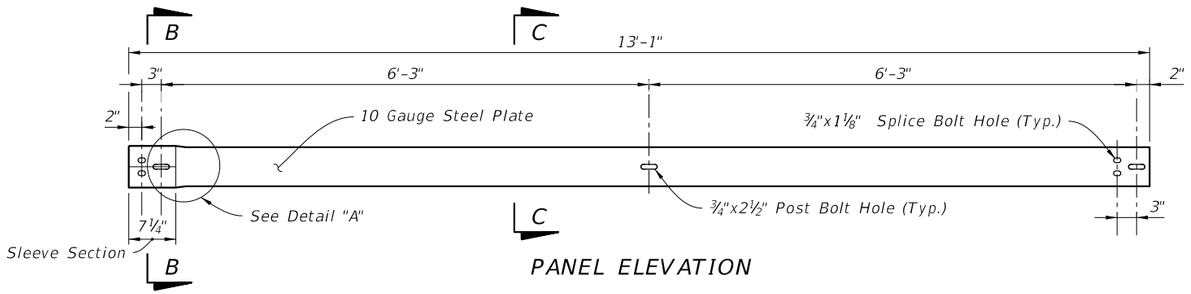


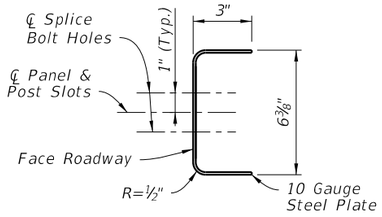
SECTION A-A
(Panel Typical)



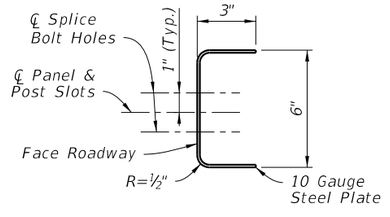
SPLICE PLATE
ELEVATION

CHANNEL SECTION RUB RAIL

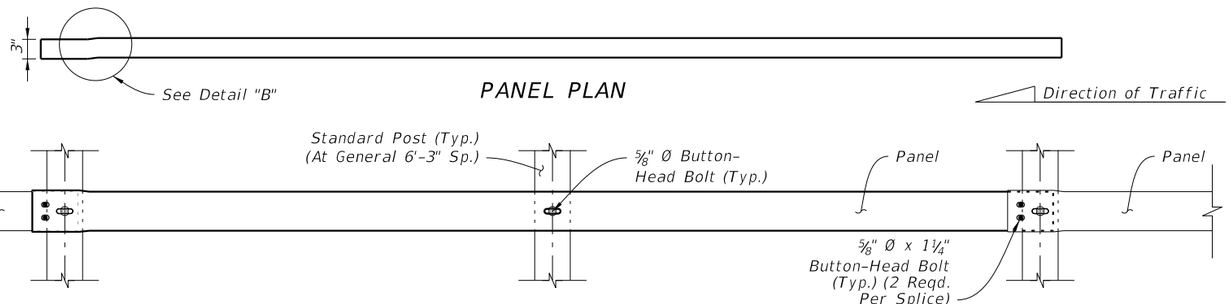


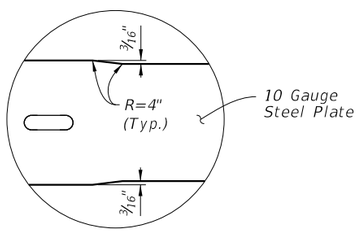


SECTION B-B
(Panel Sleeve End)

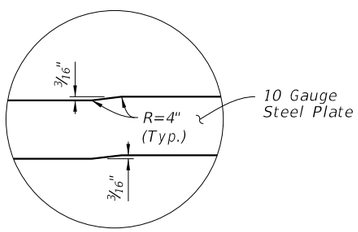


SECTION C-C
(Panel Typical)



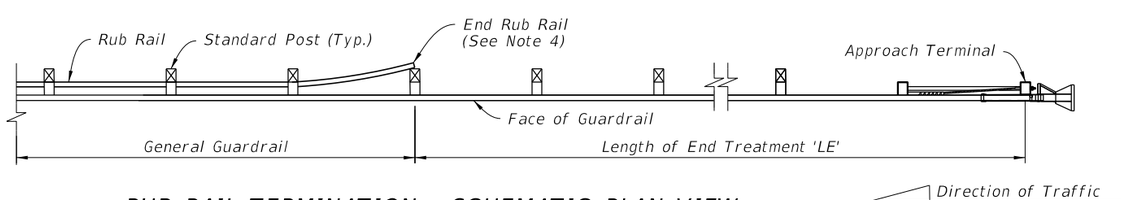


DETAIL "A"
(Sleeve Transition Elevation)



DETAIL "B"
(Sleeve Transition Plan)

BENT-PLATE PANEL RUB RAIL



RUB RAIL TERMINATION - SCHEMATIC PLAN VIEW

NOTES:

1. GENERAL: Install Rub Rail where called for in the plans. Position as shown on Sheet 6 unless otherwise shown in the plans. Install the backs of Rub Rail panels flush against Standard Posts. Either of the Channel Section or Bent-Plate Panel Rub Rail options may be used (consistent type per project). Where Double Sided Rub Rail is called for, thread the Button-Head Bolt through the Post Bolt Hole(s) and the panels on either side, and tighten the nut against the face of the panel farthest from adjacent traffic lanes. Trim the bolt's threaded portion in accordance with Note 4 on Sheet 5.
2. MOUNTING HEIGHT: Mount to the Standard Post's Rub Rail Bolt Hole as defined on Sheet 5.
3. MATERIALS: Use steel components in accordance with Specification 967.
4. END RUB RAIL: For Single Sided Rub Rail, terminate the run of Rub Rail by bending the panel behind the post and securing in place (as shown). For Double Sided Rub Rail, terminate the runs of Rub Rail on their respective front face of the post and secure with the typical Button-Head bolt.

RUB RAIL DETAILS

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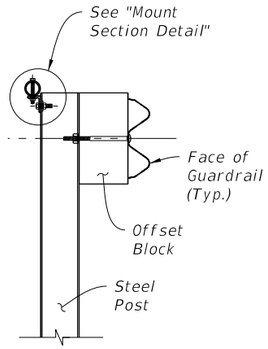
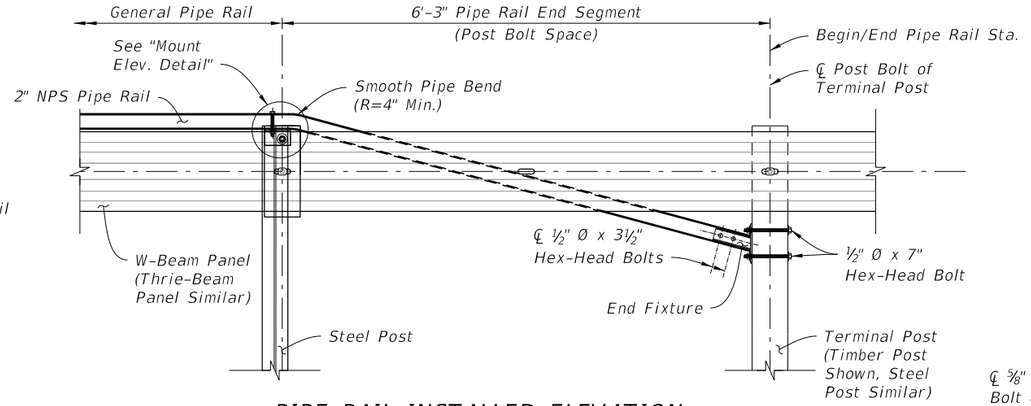
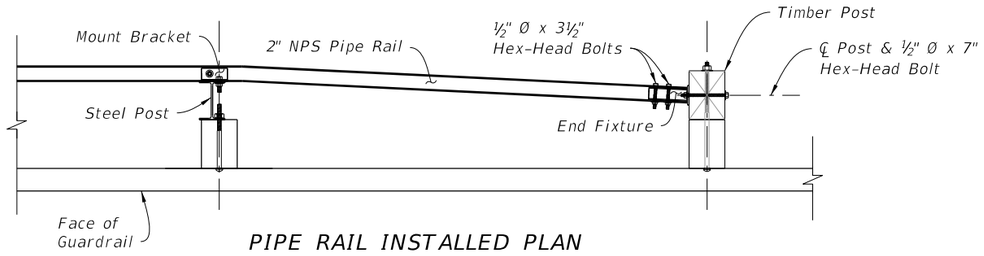


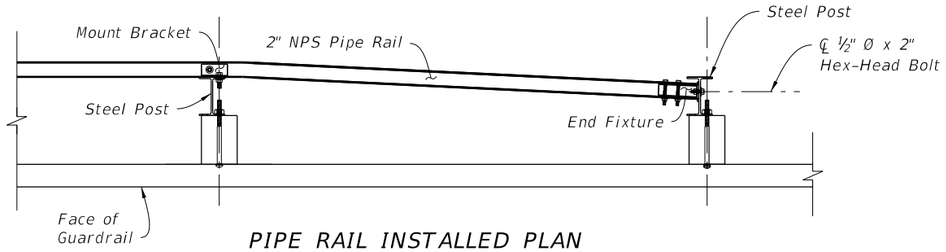
GENERAL PIPE RAIL SECTION



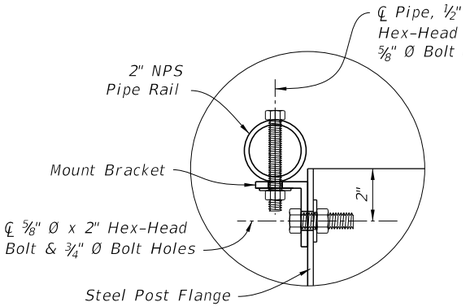
PIPE RAIL INSTALLED ELEVATION
(End Segment Shown)



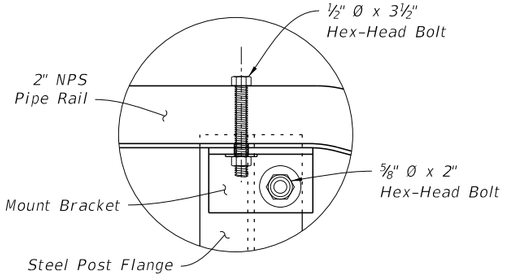
PIPE RAIL INSTALLED PLAN
END AT TIMBER POST OPTION



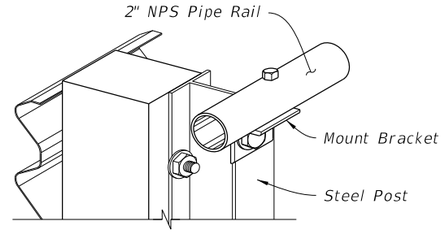
PIPE RAIL INSTALLED PLAN
END AT STEEL POST OPTION



MOUNT SECTION DETAIL



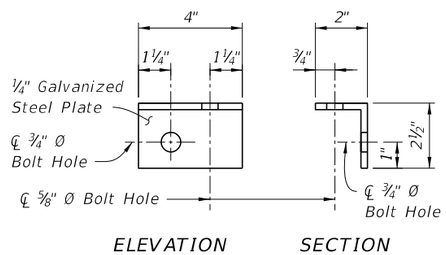
MOUNT ELEVATION DETAIL
(Back View - Mirrored)

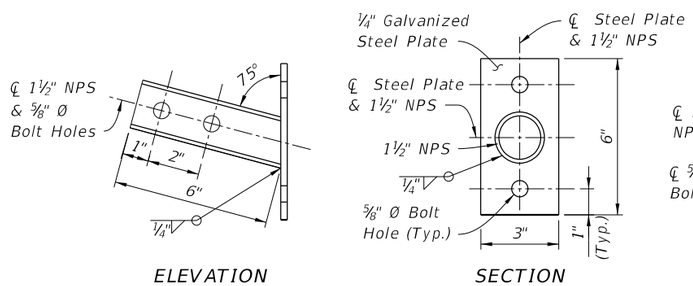


MOUNT ISOMETRIC
CUT-AWAY

NOTES:

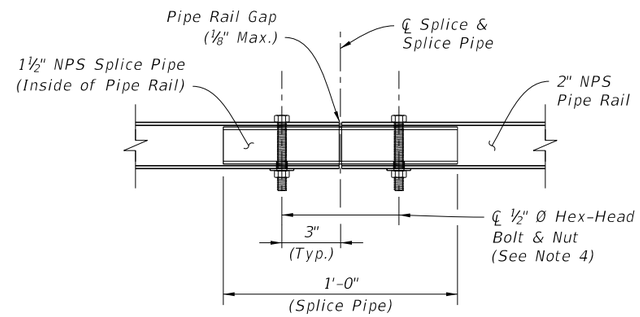
1. GENERAL: Install General Pipe Rail where indicated in the plans or when existing sidewalks or shared use paths are located less than 4'-0" from the back of Steel Posts as shown on Sheet 6.
2. PIPE RAIL END SEGMENTS: Place End Segments on both ends of General Pipe Rail runs, with End Fixtures mounted to Terminal Posts located outside of Approach Terminal Assembly ('LE'), Trailing Anchorage Assembly ('LT'), and Approach Transition ('LA') segments.
3. MATERIALS: Use steel brackets, fixtures, and pipes in accordance with Specification 967.
4. RAIL SPLICES: Install Rail Splices to join pieces of 2" NPS Pipe Rail into a continuous system. Place splices as needed, at a spacing of 18'-0" or greater. Orient the head of bolt on the top of the pipe.





MOUNT BRACKET DETAIL

END FIXTURE DETAIL



RAIL SPLICE DETAIL

PEDESTRIAN SAFETY TREATMENT - PIPE RAIL

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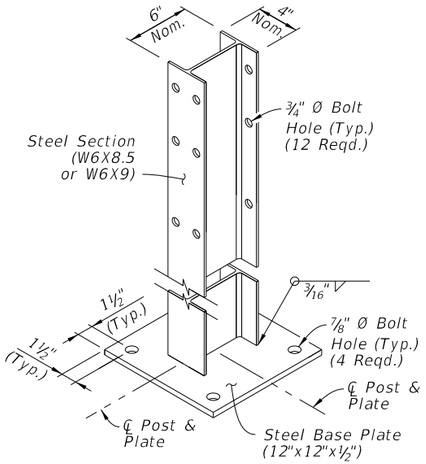
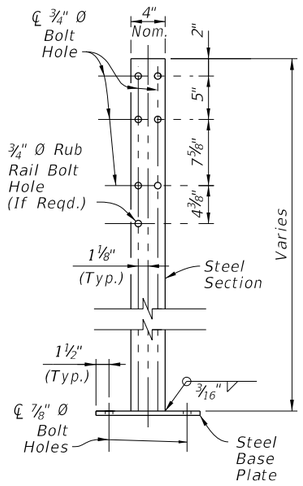
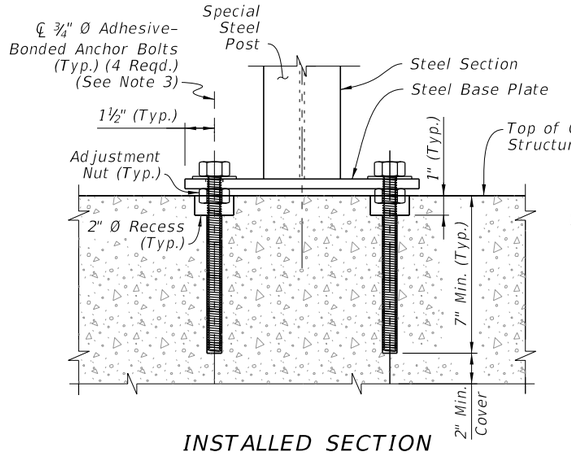


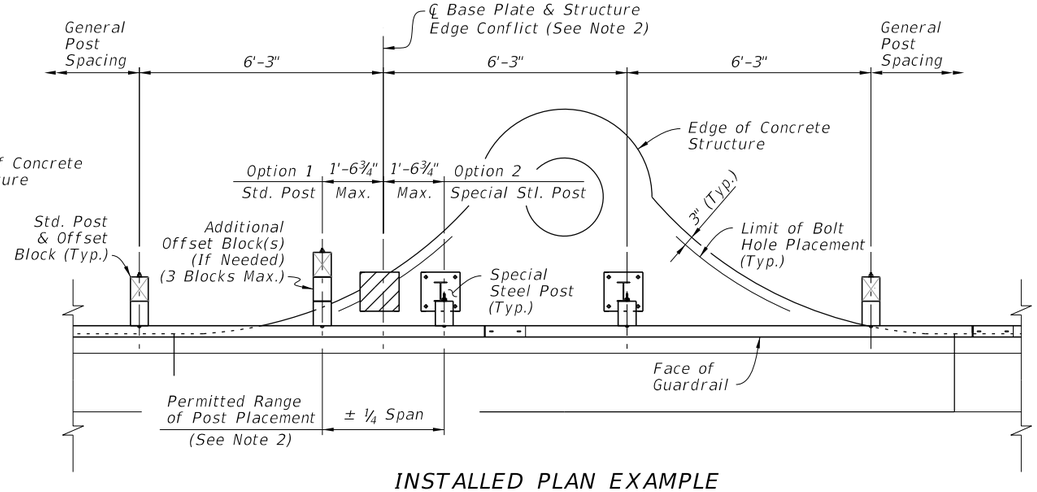
ISOMETRIC VIEW



ELEVATION



INSTALLED SECTION
(Option 2, Special Post)



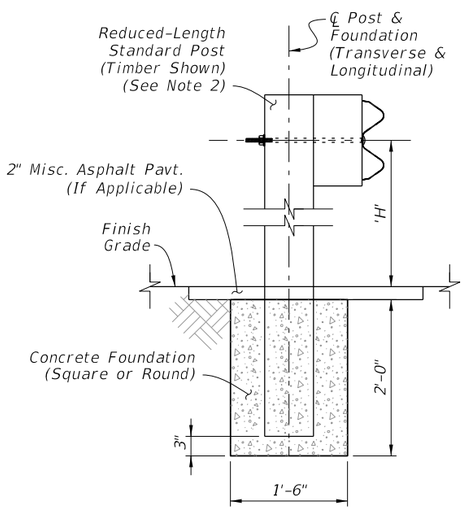
INSTALLED PLAN EXAMPLE
(Curb Inlet Top Type 2 Shown)

SPECIAL STEEL POST STRUCTURE MOUNTING

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 of the structure.*
3. *BASE PLATE MOUNT: Install Special Steel Posts as shown using steel Adhesive-Bonded Anchor Bolts in accordance with Specification 536. Use ¾" 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

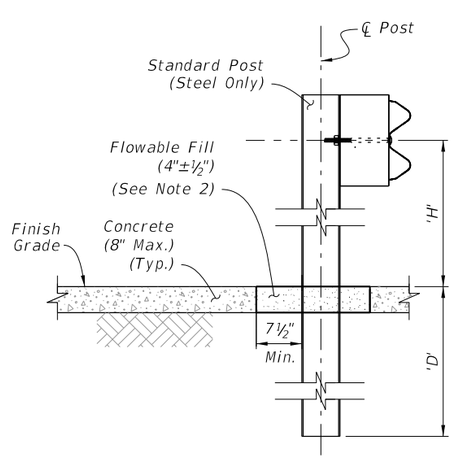


INSTALLED SECTION

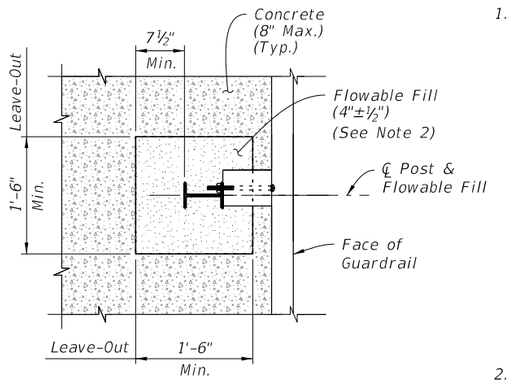
NOTES:

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.*

ENCASED POST FOR SHALLOW MOUNT



INSTALLED SECTION



INSTALLED PLAN

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 leave-outs.

   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.*

FRANGIBLE LEAVE-OUT FOR CONCRETE SURFACE MOUNT

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NOTES:

1. INSTALLATION: Install Barrier Delineators as shown in accordance with the plans, with Specifications 536 and 705, and with the manufacturer's design as approved on the APL.

2. MATERIALS: Use materials of the size and type defined for Barrier Delineators in Specification 993.

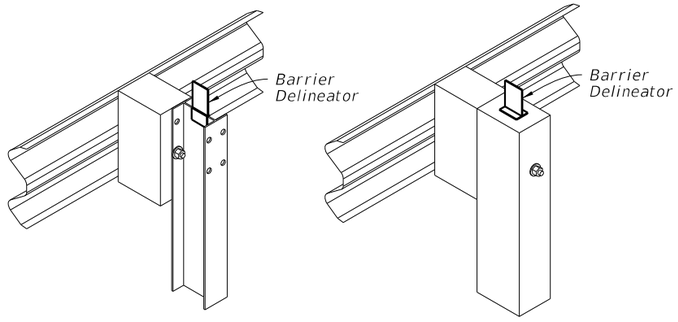
3. COLOR: Use either white or yellow retroreflective sheeting to match the color of the nearest lane's edgeline.

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 spacing:

   S1 = 25' x 1 Space
   S2 = 50' x 1 Space
   S3 = 75' x 1 Space
   S4 = 100' x for the Remaining Run

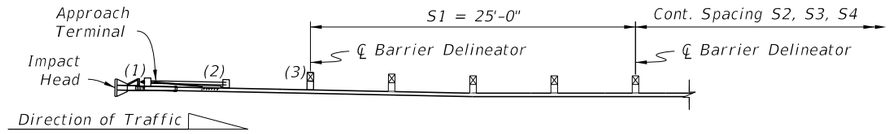
   Additionally, place a Barrier Delineator on Post (2) of the Trailing Anchorage or on the post nearest the Rigid Barrier.

5. MEDIAN GUARDRAIL: Install retroreflective sheeting on both sides of the barrier delineator for Guardrail on medians.



STEEL POSTS TIMBER POSTS

MOUNT LOCATION - ISOMETRIC VIEWS



MOUNT LOCATION - PLAN VIEW

BARRIER DELINEATORS

NOTES:

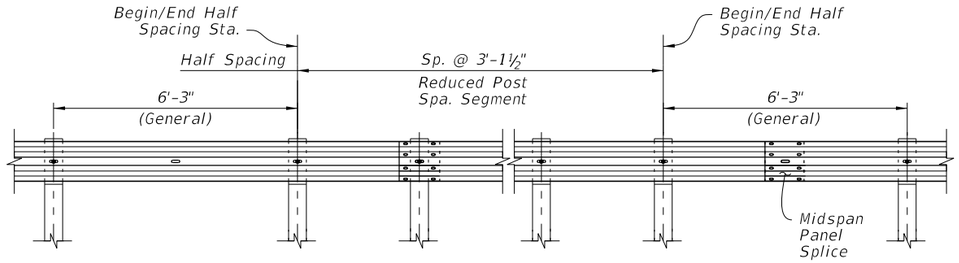
1. INSTALLATION:
   Work these details with the plans, where Stationing for Begin/End Half Spacing and Begin/End Quarter Spacing are indicated if required.

   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.

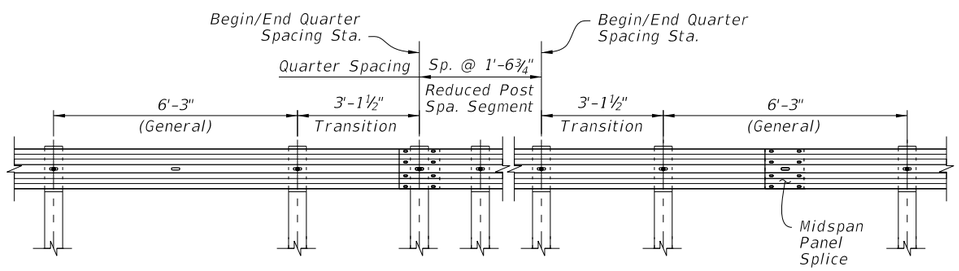
2. PANEL SPLICES: Midspan Panel Splices are not required in Transition and Reduced Post Spacing segments, however they are required for General segments. To place midspan splices in General segments, use one Non-General panel length (9'-4½" or 15'-7½") or add an additional Transition spaced post where 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'-1½" spaces.

4. PANEL POST BOLT SLOTS:
   For Quarter Spacing configurations, punch additional ¾"x2½" Post Bolt Slots in the panels only where required for mounting and in accordance with Specification 536.

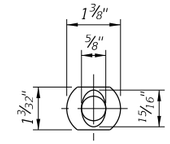


DETAIL 'S' - HALF SPACING ELEVATION
(AS REQD. PER THE PLANS)

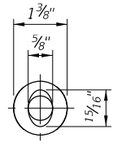


DETAIL 'S' - QUARTER SPACING ELEVATION
(AS REQD. PER THE PLANS)

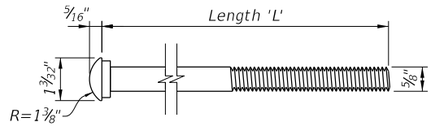
REDUCED POST SPACING FOR HAZARDS



ELEVATION OPTION 1

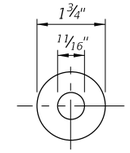


ELEVATION OPTION 2

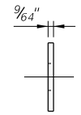


PROFILE (Option 1 Shown)

BUTTON-HEAD BOLT

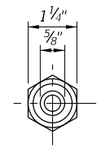


ELEVATION

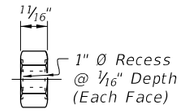


PROFILE

WASHER

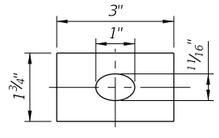


ELEVATION

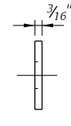


PROFILE

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	1¼"	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.

⅝" BUTTON-HEAD BOLT SYSTEM

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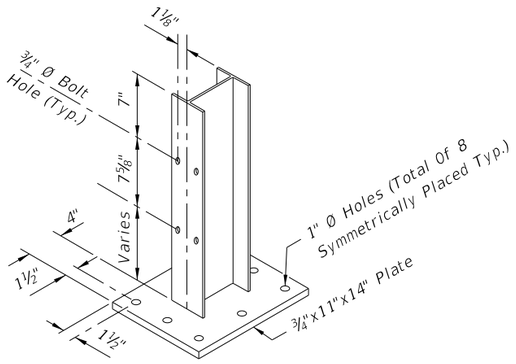

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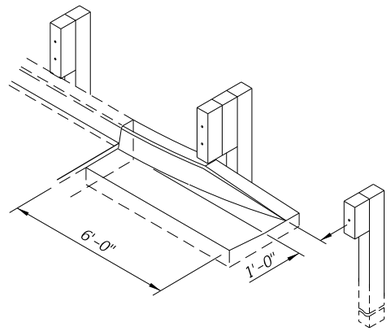
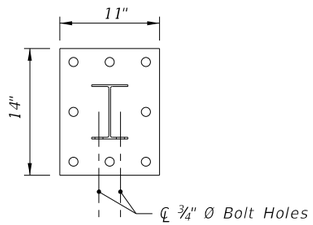
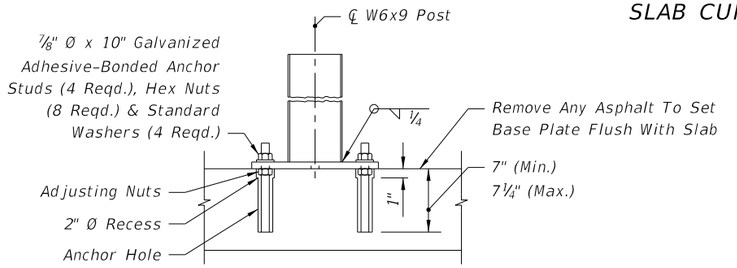


CURB TYPE F FLARE WHEN END OF EXISTING APPROACH SLAB CURB EXPOSED

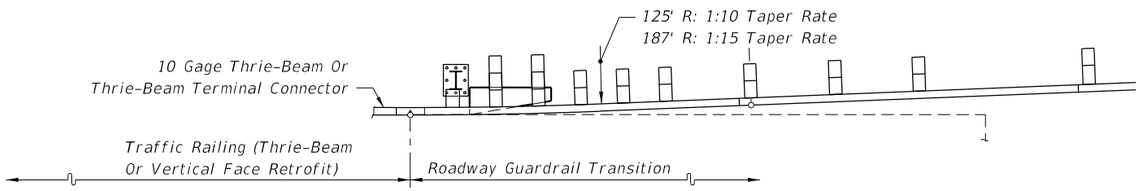


TOP VIEW

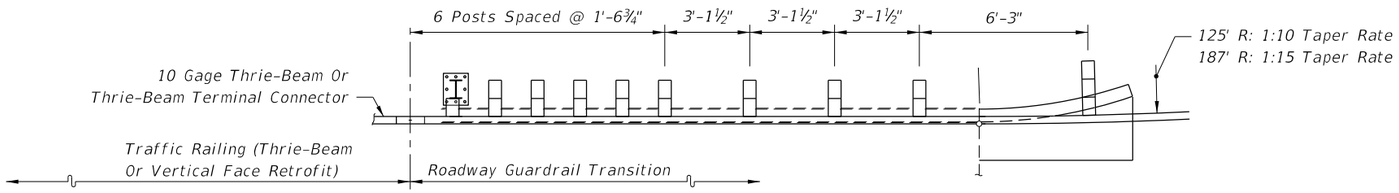


SIDE VIEW

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



APPROACH SLAB WITHOUT CURB



APPROACH SLAB WITH CURB

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

PARTIAL PLAN VIEWS

GENERAL NOTES

1. This index provides guardrail transition details for approach and trailing end guardrail connections to existing bridges, including details for connecting to traffic railing retrofits and safety shape barriers on existing bridges. Sheets 1 through 26 apply to bridges with retrofitted traffic railings (Sheet 26 shows the trailing end guardrail connections). Sheets 27 and 28 apply to bridges with safety shape traffic railing, and they provide approach and trailing end transition connection details for guardrail. Construct these guardrail transitions and connections where called for in the plans.

2. For miscellaneous guardrail 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.

6. Payment for connections to traffic railing vertical face retrofits are to be made under the contract unit price for Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate and bolts, nuts and washers.

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

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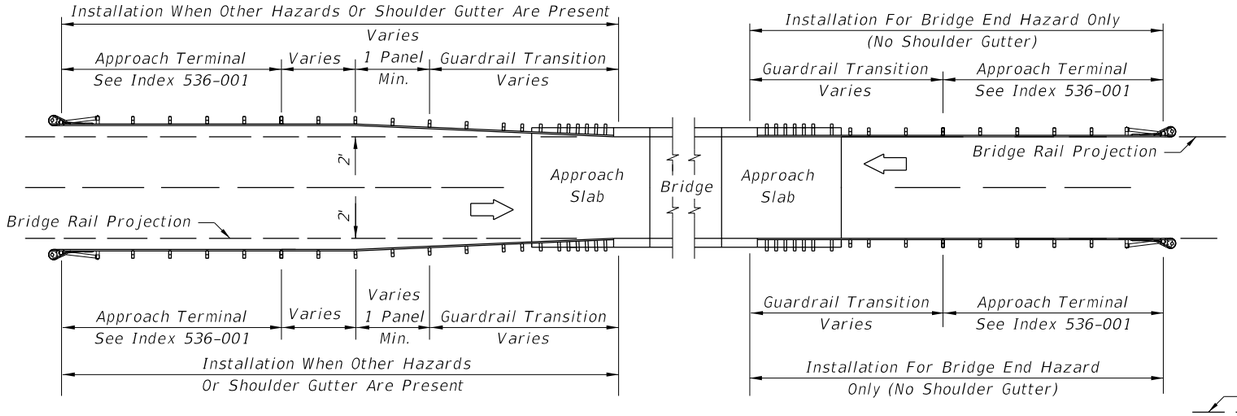
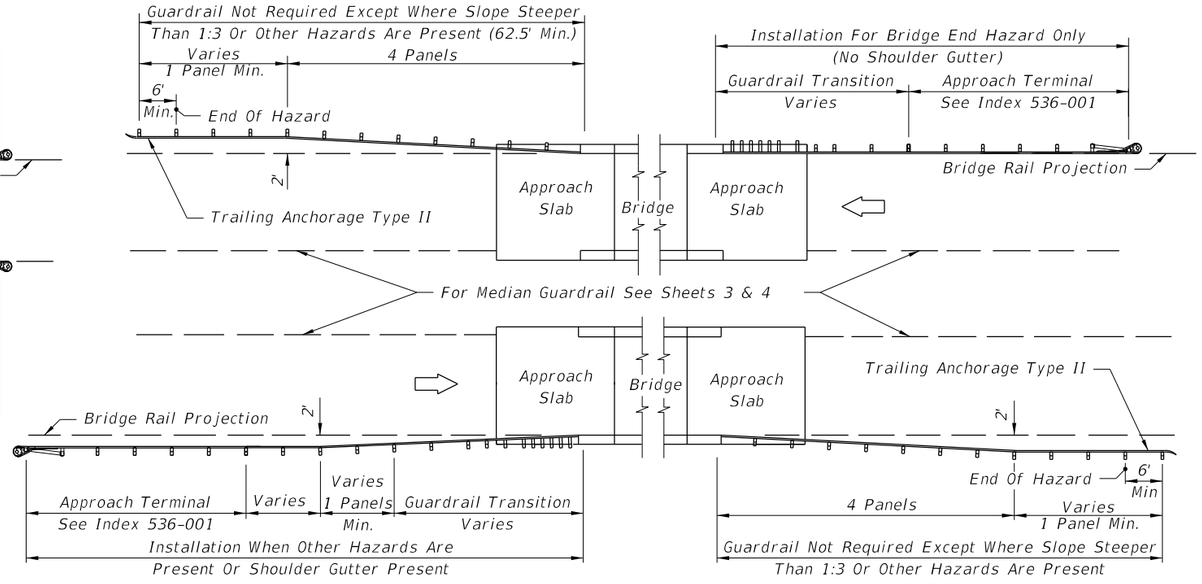
11/01/19			FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002 / SHEET 1 of 28

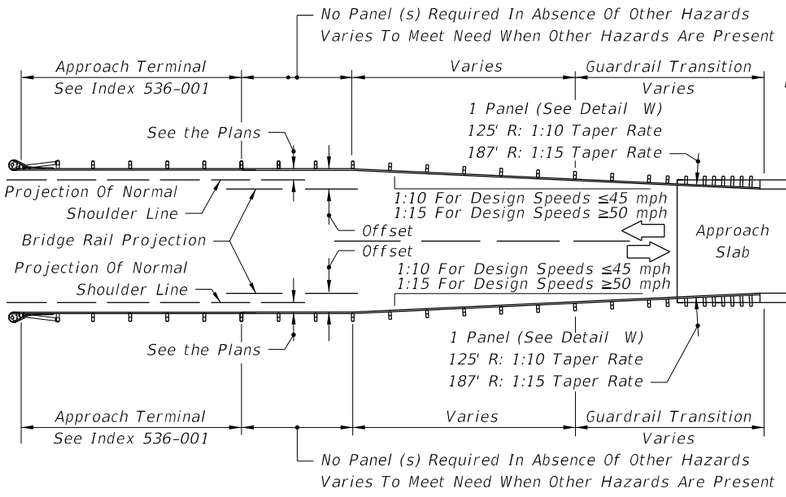


UNDIVIDED ROADWAY - DETAIL H

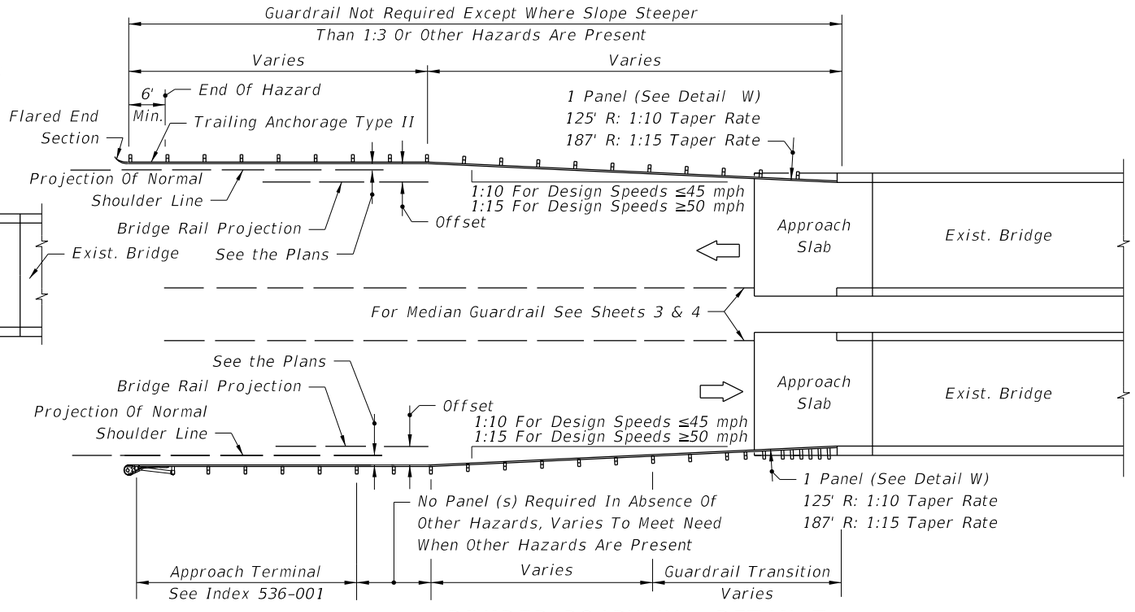


DIVIDED ROADWAY - DETAIL I

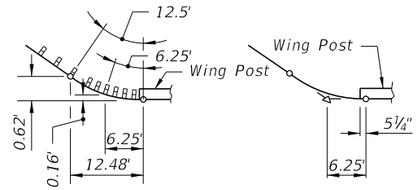
GUARDRAIL APPLICATIONS FOR BRIDGES WITH FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH



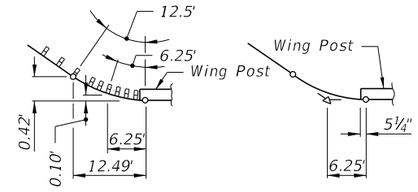
UNDIVIDED ROADWAY - DETAIL S



DIVIDED ROADWAY - DETAIL T



125' R LAYOUT



187' R LAYOUT

STANDARD PANELS SET TO RADIALS ADJOINING BRIDGES DETAIL W

GUARDRAIL APPLICATIONS FOR BRIDGES WITH LESS THAN FULL WIDTH SHOULDERS AND CONCRETE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

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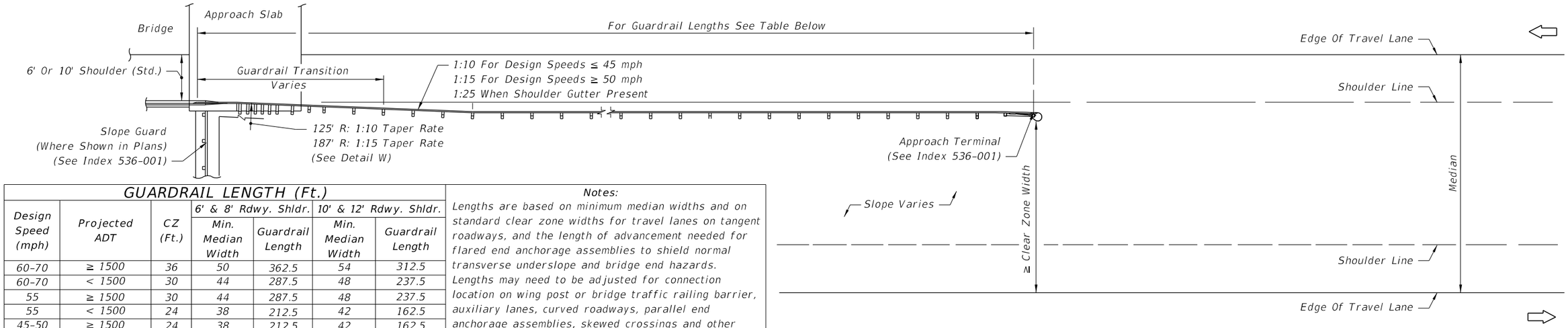
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	536-002	2 of 28



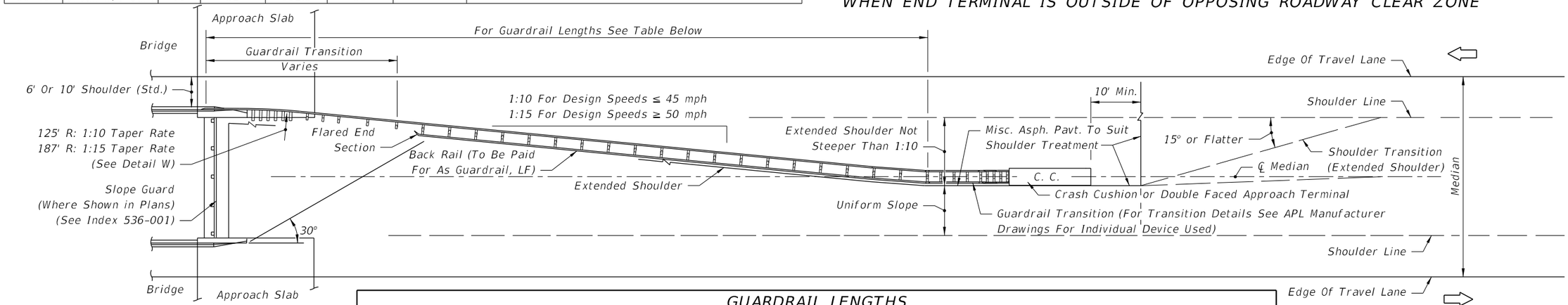
GUARDRAIL LENGTH (Ft.)						
Design Speed (mph)	Projected ADT	CZ (Ft.)	6' & 8' Rdwy. Shldr. Min. Median Width	6' & 8' Rdwy. Shldr. Guardrail Length	10' & 12' Rdwy. Shldr. Min. Median Width	10' & 12' Rdwy. Shldr. Guardrail Length
60-70	≥ 1500	36	50	362.5	54	312.5
60-70	< 1500	30	44	287.5	48	237.5
55	≥ 1500	30	44	287.5	48	237.5
55	< 1500	24	38	212.5	42	162.5
45-50	≥ 1500	24	38	212.5	42	162.5
45-50	< 1500	20	34	162.5	38	112.5
45-50	Urban w/o Curb	24	38	212.5	42	162.5
35-40	Urban w/o Curb	18	32	162.5	36	100.0

Notes:

Lengths are based on minimum median widths and on standard clear zone widths for travel lanes on tangent roadways, and the length of advancement needed for flared end anchorage assemblies to shield normal transverse underslope and bridge end hazards. Lengths may need to be adjusted for connection location on wing post or bridge traffic railing barrier, auxiliary lanes, curved roadways, parallel end anchorage assemblies, skewed crossings and other hazards present.

Note: For approach end anchorage assemblies see sheets elsewhere in this Index and the plans.

WHEN END TERMINAL IS OUTSIDE OF OPPOSING ROADWAY CLEAR ZONE

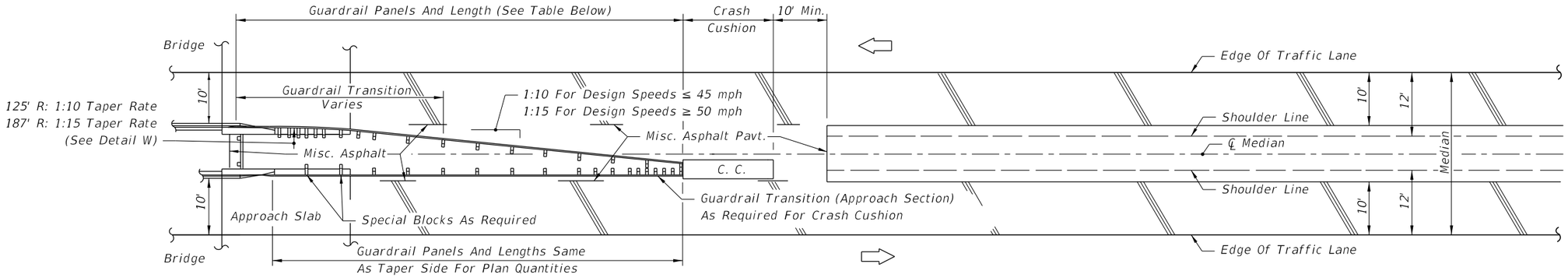


GUARDRAIL LENGTHS																
Median Width (ft.)	1:10 TAPER RATE								1:15 TAPER RATE							
	6' Bridge Shoulder				10' Bridge Shoulder				6' Bridge Shoulder				10' Bridge Shoulder			
	Panels (No.)			Length (Ft.)	Panels (No.)			Length (Ft.)	Panels (No.)			Length (Ft.)	Panels (No.)			Length (Ft.)
	Front	Back	Total	Total	Front	Back	Total	Total	Front	Back	Total	Total	Front	Back	Total	Total
32	7.5	6	13.5	168.75	4.5	3	7.5	93.75	11.5	9	20.5	256.25	7.5	6	13.5	168.75
34	8.5	6	14.5	181.25	5.5	4	9.5	118.75	12.5	10	22.5	281.25	7.5	6	13.5	168.75
36	9.5	7	16.5	206.25	6.5	5	11.5	143.75	13.5	11	24.5	306.25	8.5	7	15.5	193.75
38	10.5	8	18.5	231.25	7.5	6	13.5	168.75	14.5	12	26.5	331.25	10.5	9	19.5	243.75
40	10.5	8	18.5	231.25	7.5	6	13.5	168.75	16.5	13	29.5	368.75	11.5	9	20.5	256.25
42	11.5	8	19.5	243.75	8.5	6	14.5	181.25	17.5	14	31.5	393.75	12.5	10	22.5	281.25
44	12.5	9	21.5	268.75	9.5	7	16.5	206.25	18.5	15	33.5	418.75	13.5	11	24.5	306.25
46	12.5	9	21.5	268.75	10.5	8	18.5	231.25	19.5	16	35.5	443.75	14.5	12	26.5	331.25
48	14.5	11	25.5	318.75	11.5	9	20.5	256.25	20.5	16	36.5	456.25	16.5	13	29.5	368.75

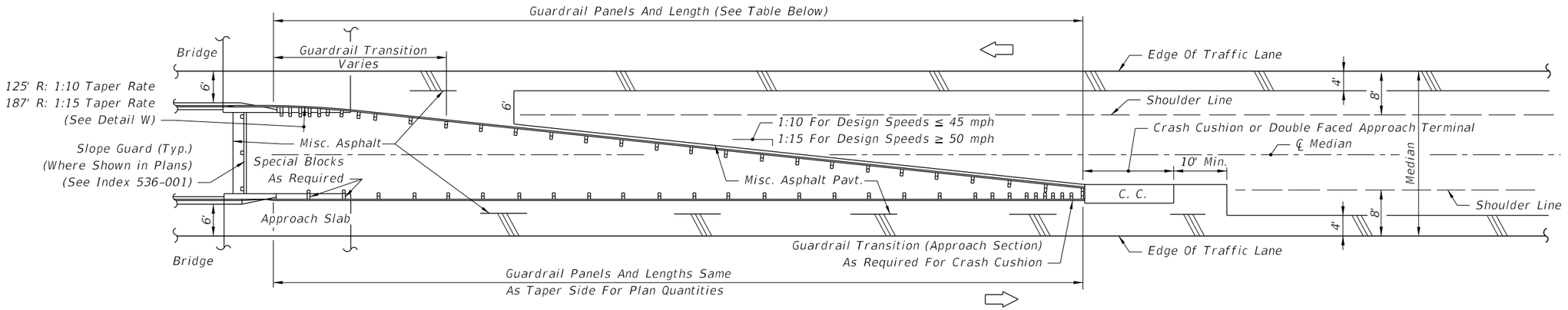
The lengths shown on this table are typical for roadways with standard width shoulders and a relocated connection to the existing wing post. Length requirements shall be determined on a site specific basis for both standard width and narrow bridge shoulders and for end anchorage or end shielding use.

WHEN END TERMINAL CANNOT BE LOCATED OUTSIDE OF OPPOSING ROADWAY CLEAR ZONE

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



MEDIANS WITH 10' BRIDGE SHOULDERS



MEDIANS WITH 6' BRIDGE SHOULDERS

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

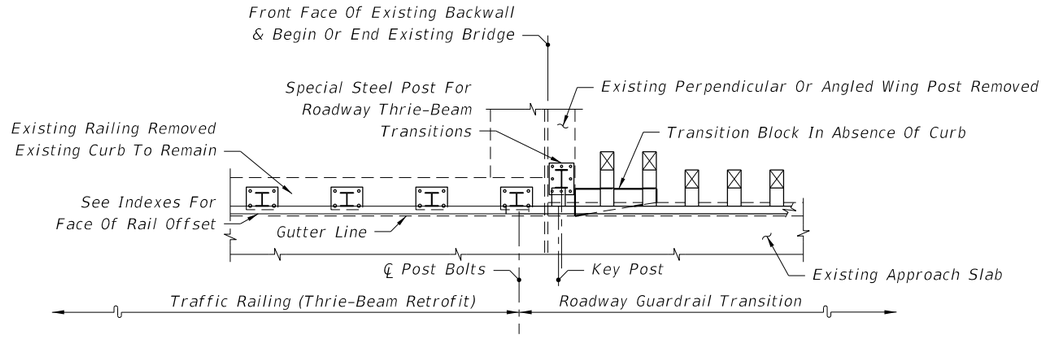
GUARDRAIL LENGTHS

MEDIAN WIDTH (Ft.)	6' BRIDGE SHOULDERS				10' BRIDGE SHOULDERS			
	1:10 TAPER RATE		1:15 TAPER RATE		1:10 TAPER RATE		1:15 TAPER RATE	
	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

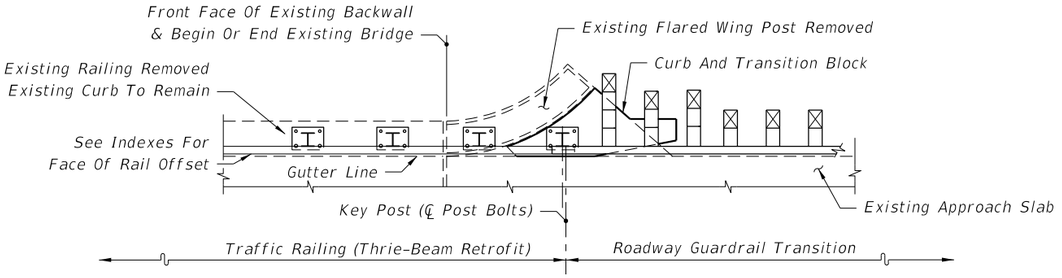
The lengths shown in this table are based on standard widths for roadway and bridge median shoulders. Length requirements for both standard width and narrow bridge shoulders and end anchorage or end shielding requirements shall be determined on a site specific basis. The number of panels may be reduced 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.

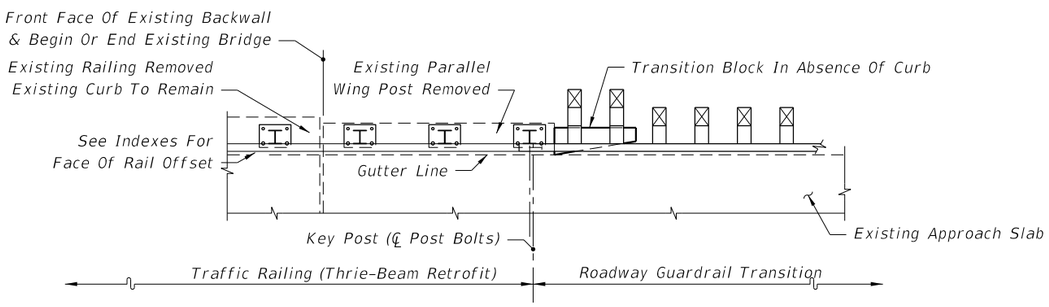
APPROACH GUARDRAIL TREATMENTS FOR BRIDGES WITH CONCRETE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH IN NARROW MEDIANS WITH FLUSH SHOULDERS



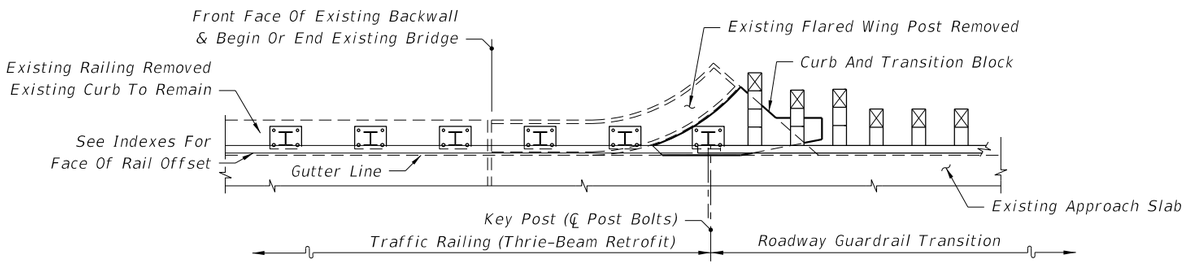
SEE INDEX 460-471 - SCHEME 1



SEE INDEX 460-471 - SCHEME 3



SEE INDEX 460-471 - SCHEME 2



SEE INDEX 460-471 - SCHEME 3

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

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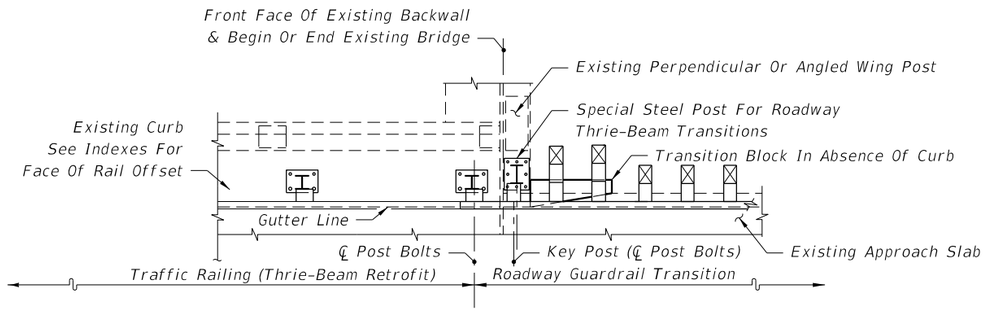
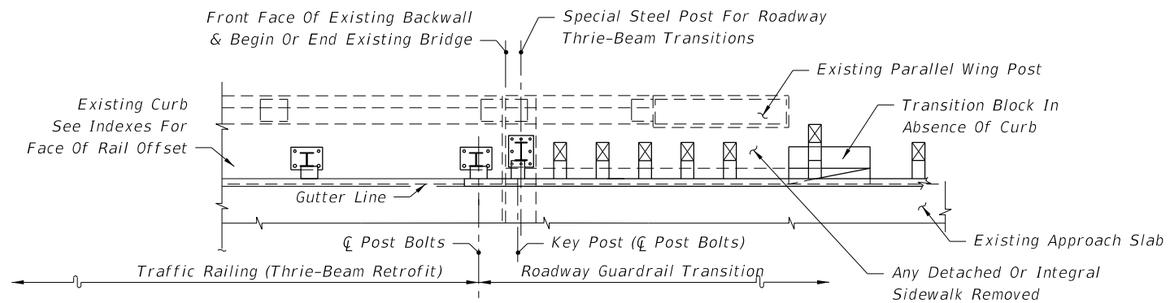
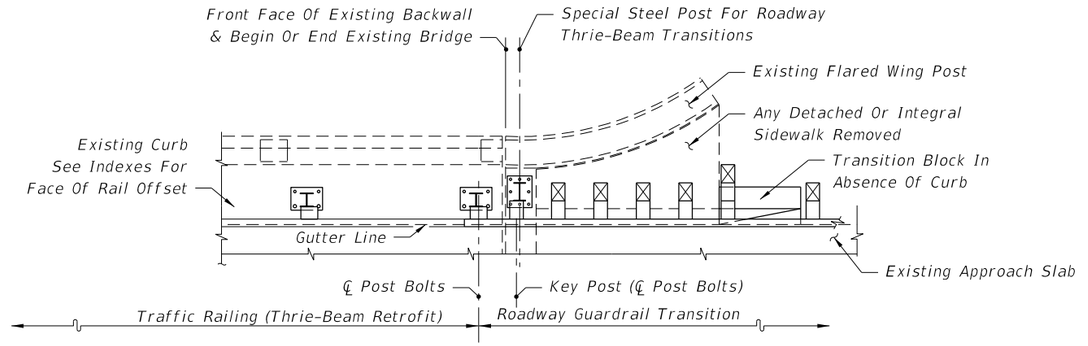


SEE INDEXES 460-472 & 460-475 - SCHEME 1



SEE INDEXES 460-472 & 460-475 - SCHEME 2



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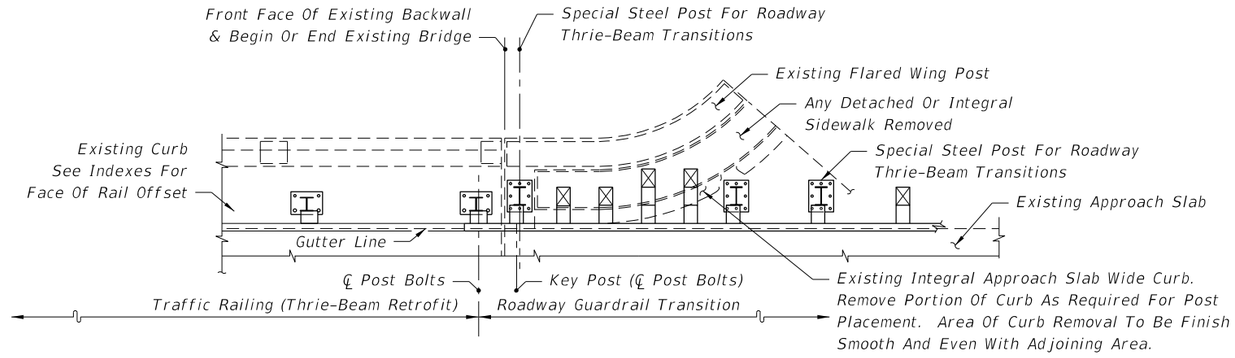

SEE INDEXES 460-472 & 460-475 - SCHEME 2

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

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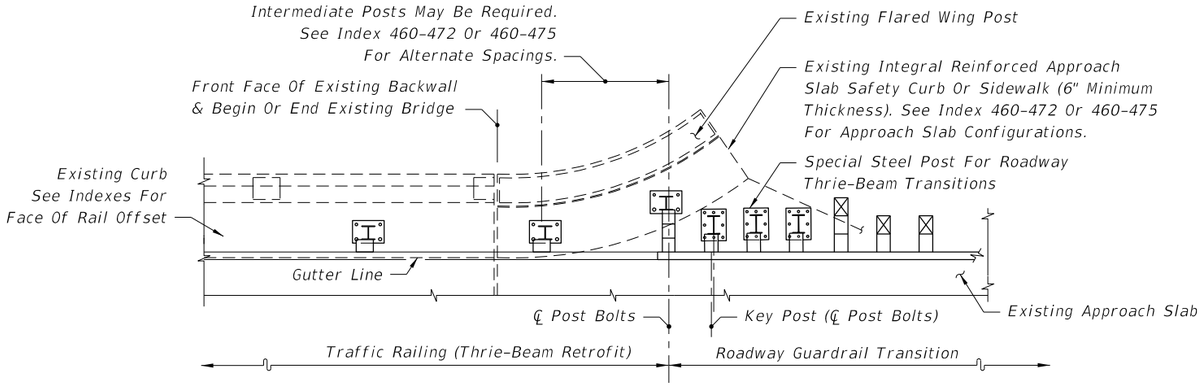
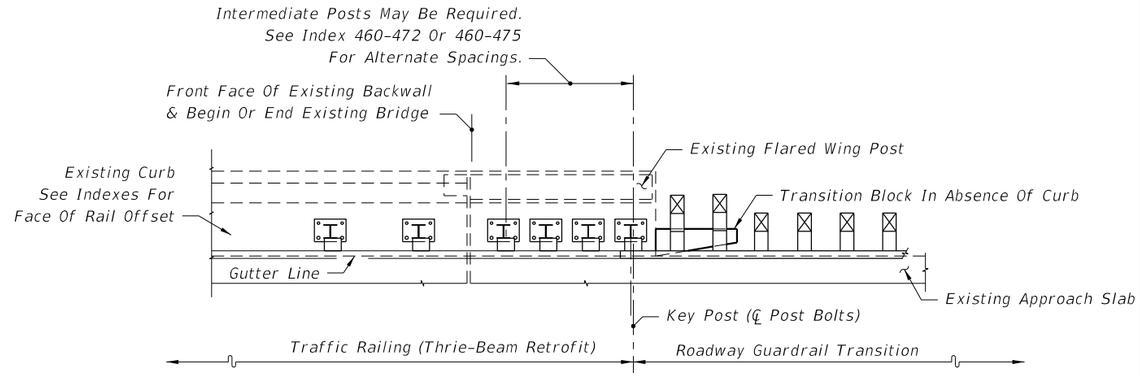
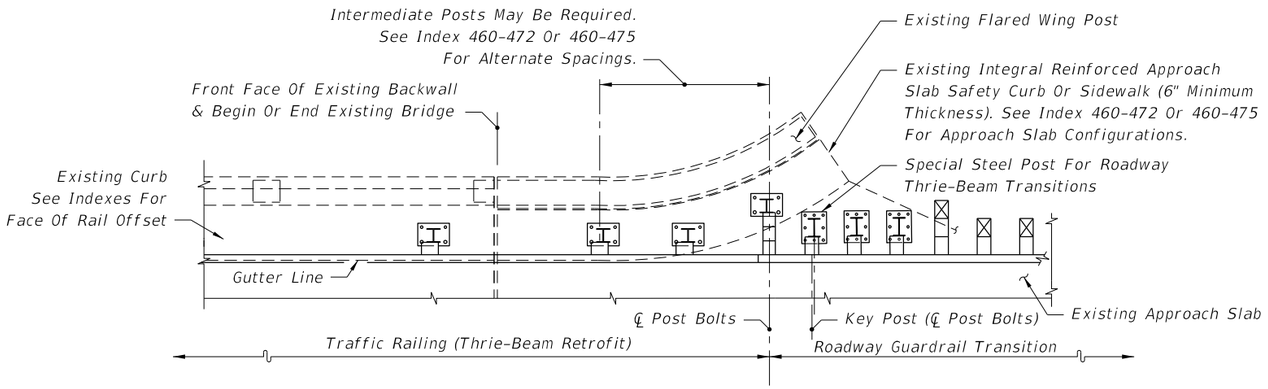


SEE INDEXES 460-472 & 460-475 - SCHEMES 3 & 4



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



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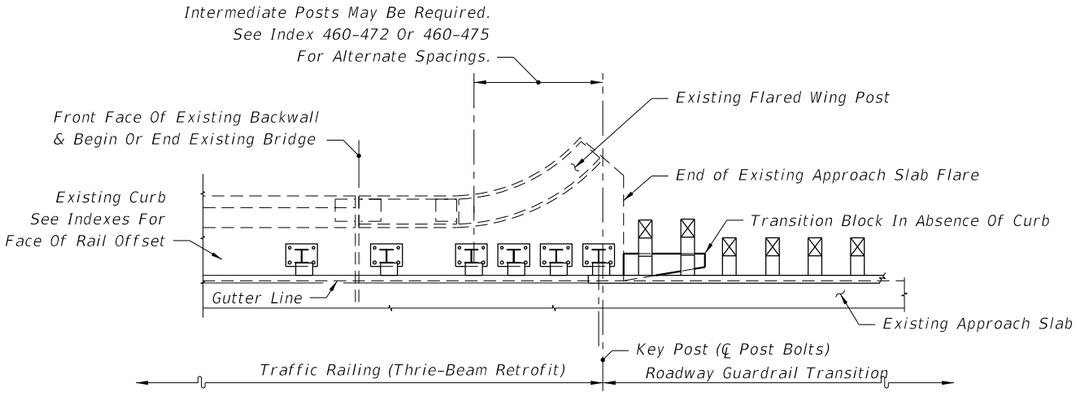

SEE INDEXES 460-472 & 460-475 - SCHEMES 5 & 6

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

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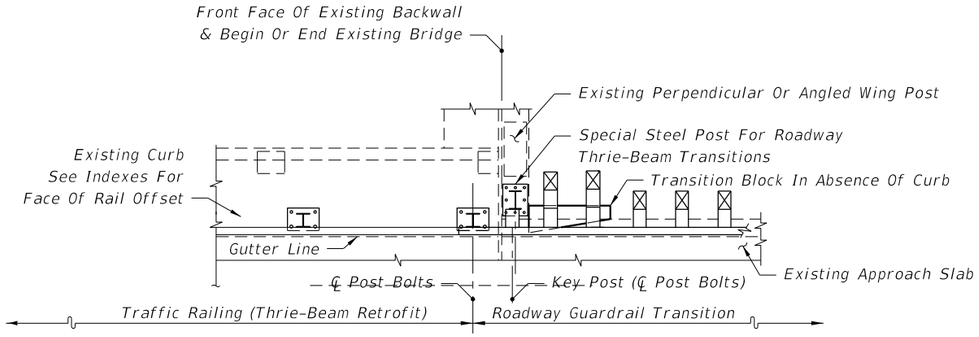
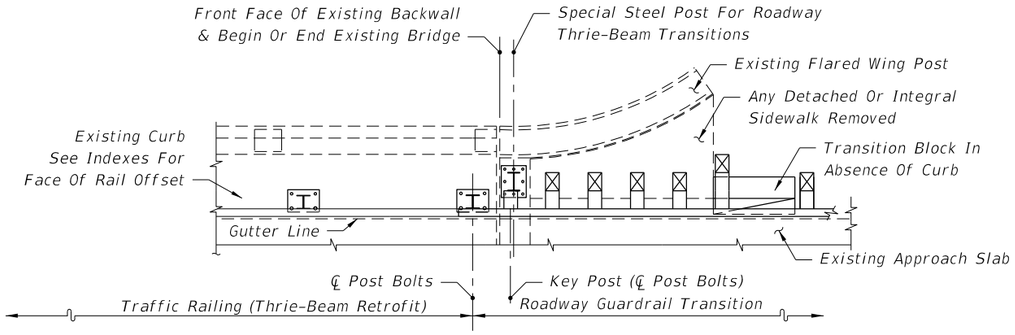
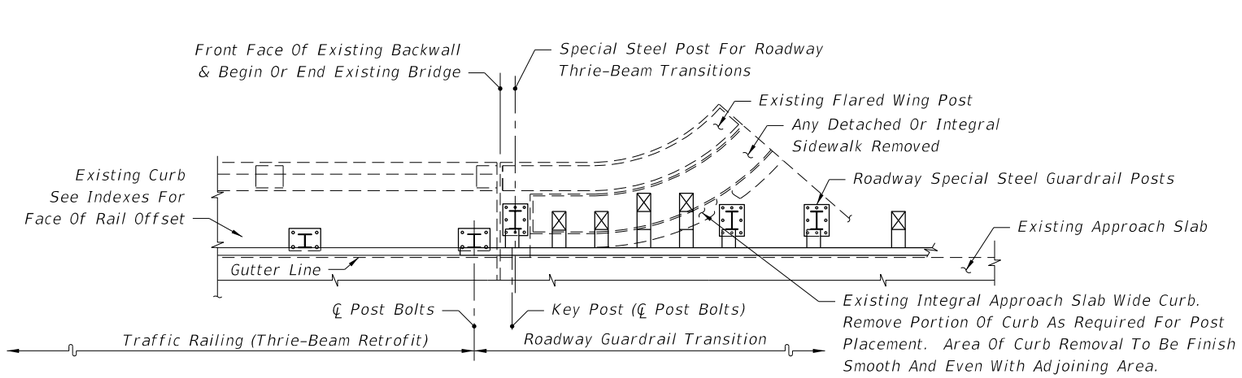


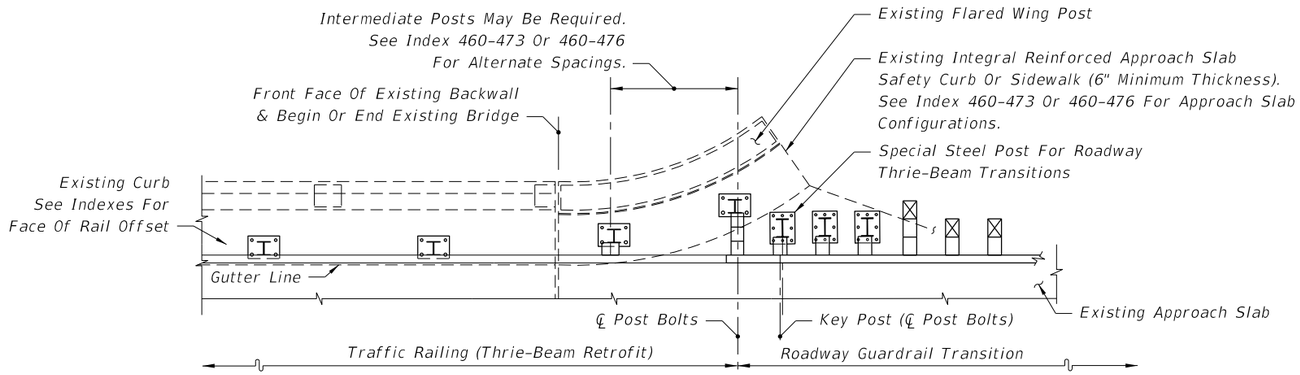
SEE INDEXES 460-473 & 460-476 - SCHEME 1



SEE INDEXES 460-473 & 460-476 - SCHEME 2



SEE INDEXES 460-473 & 460-476 - SCHEME 2



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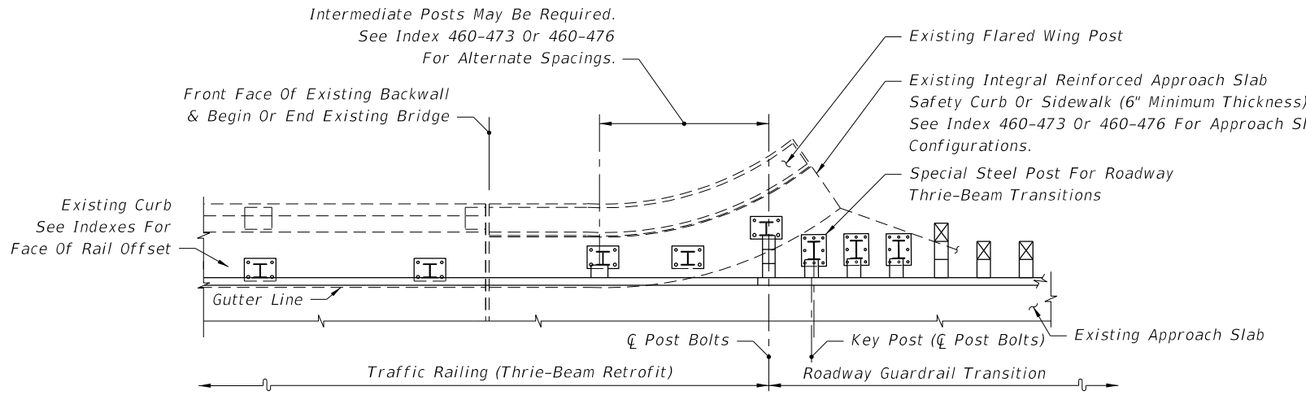

SEE INDEXES 460-473 & 460-476 - SCHEMES 3 & 4

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

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LAST REVISION	REVISION	DESCRIPTION:				
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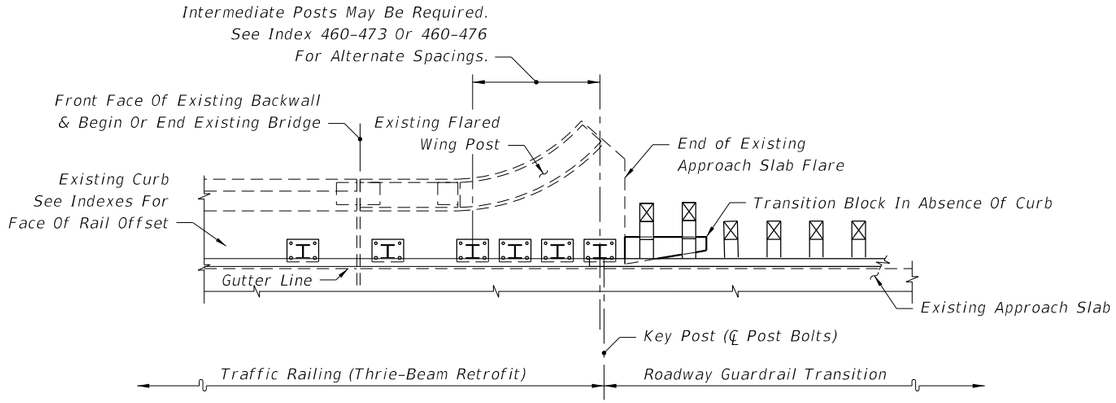
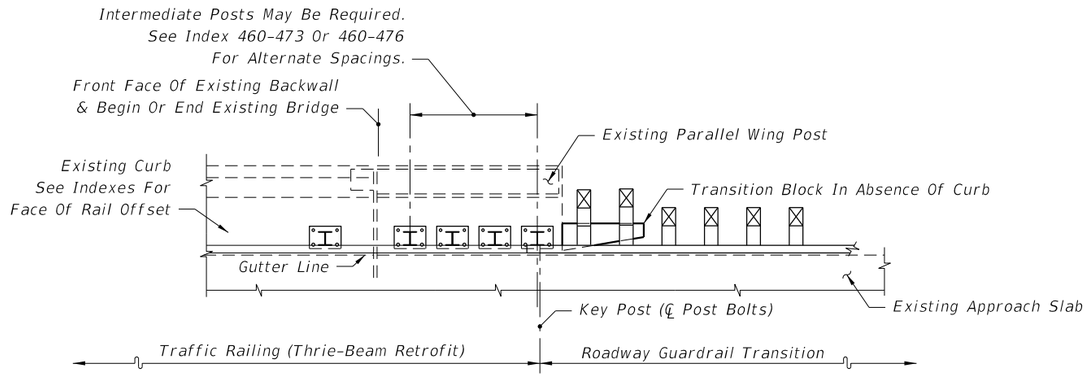


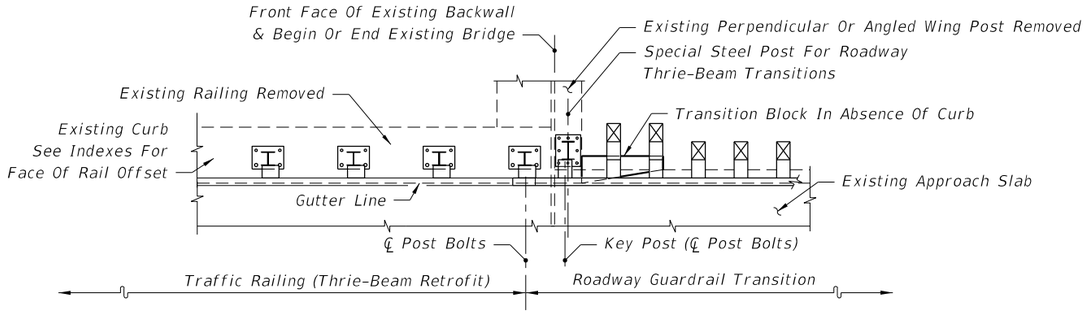
SEE INDEXES 460-473 & 460-476 - SCHEMES 5 & 6



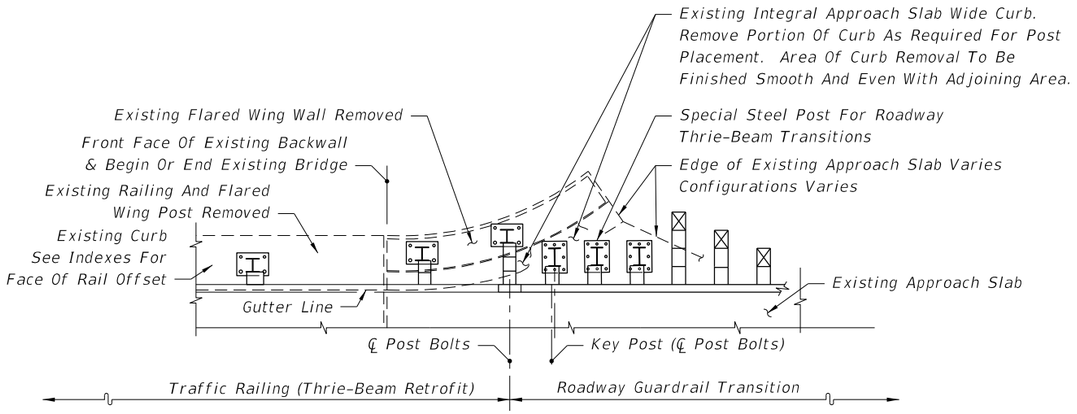
SEE INDEXES 460-473 & 460-476 - SCHEMES 5 & 6

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

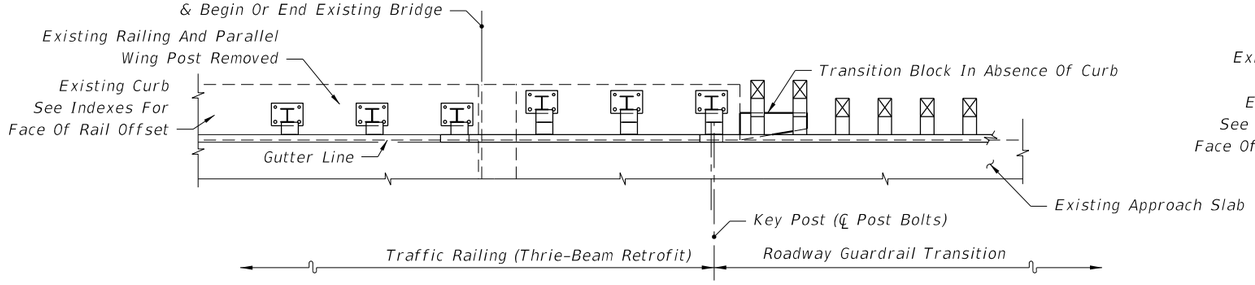
10/29/2019 8:21:02 AM



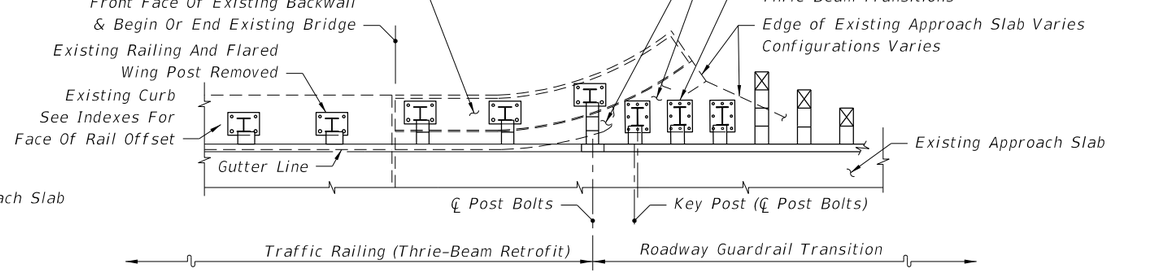
SEE INDEX 460-474 - SCHEME 1



SEE INDEX 460-474 - SCHEME 3



SEE INDEX 460-474 - SCHEME 2

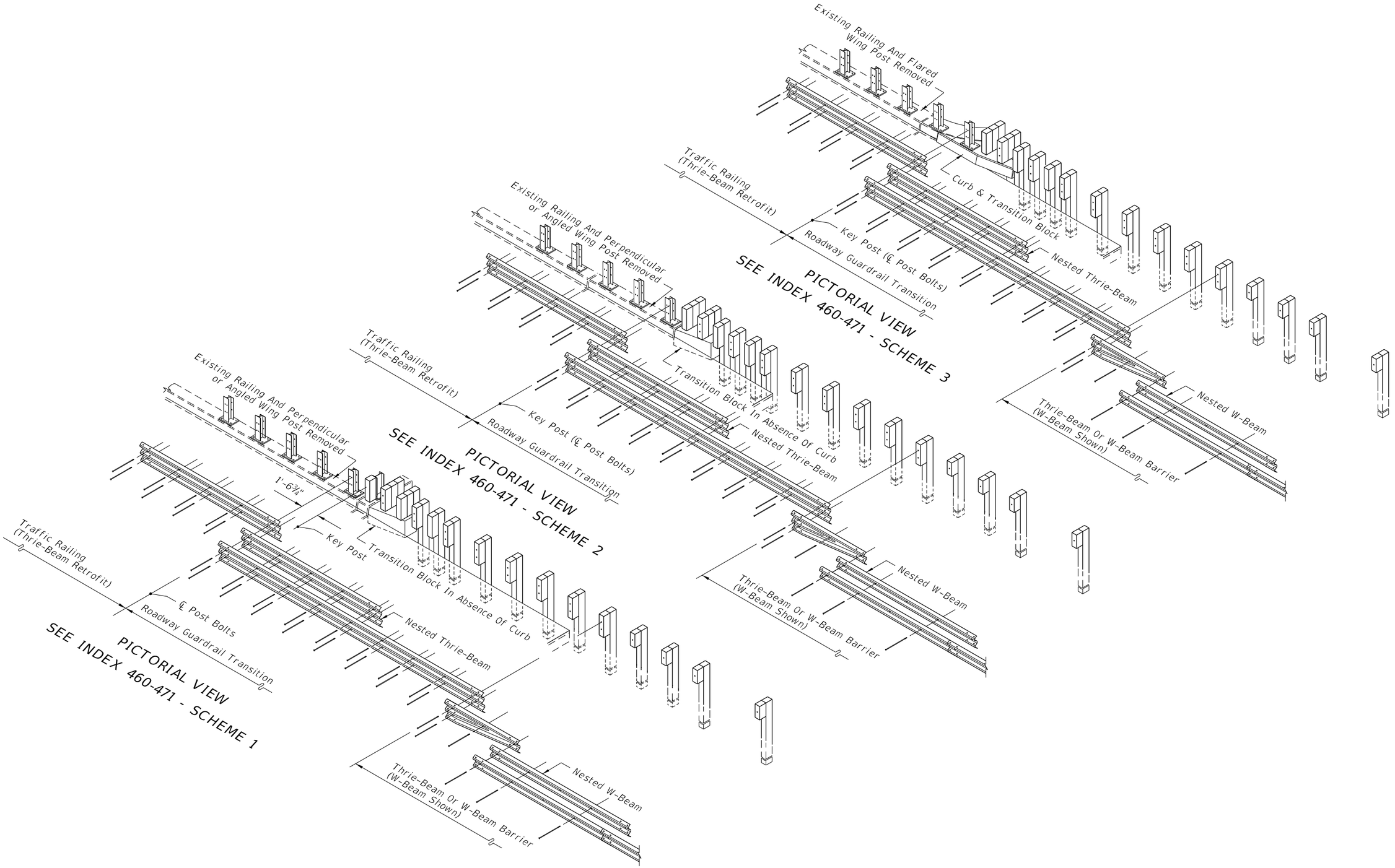


SEE INDEX 460-474 - SCHEME 3

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

10/29/2019 8:21:03 AM

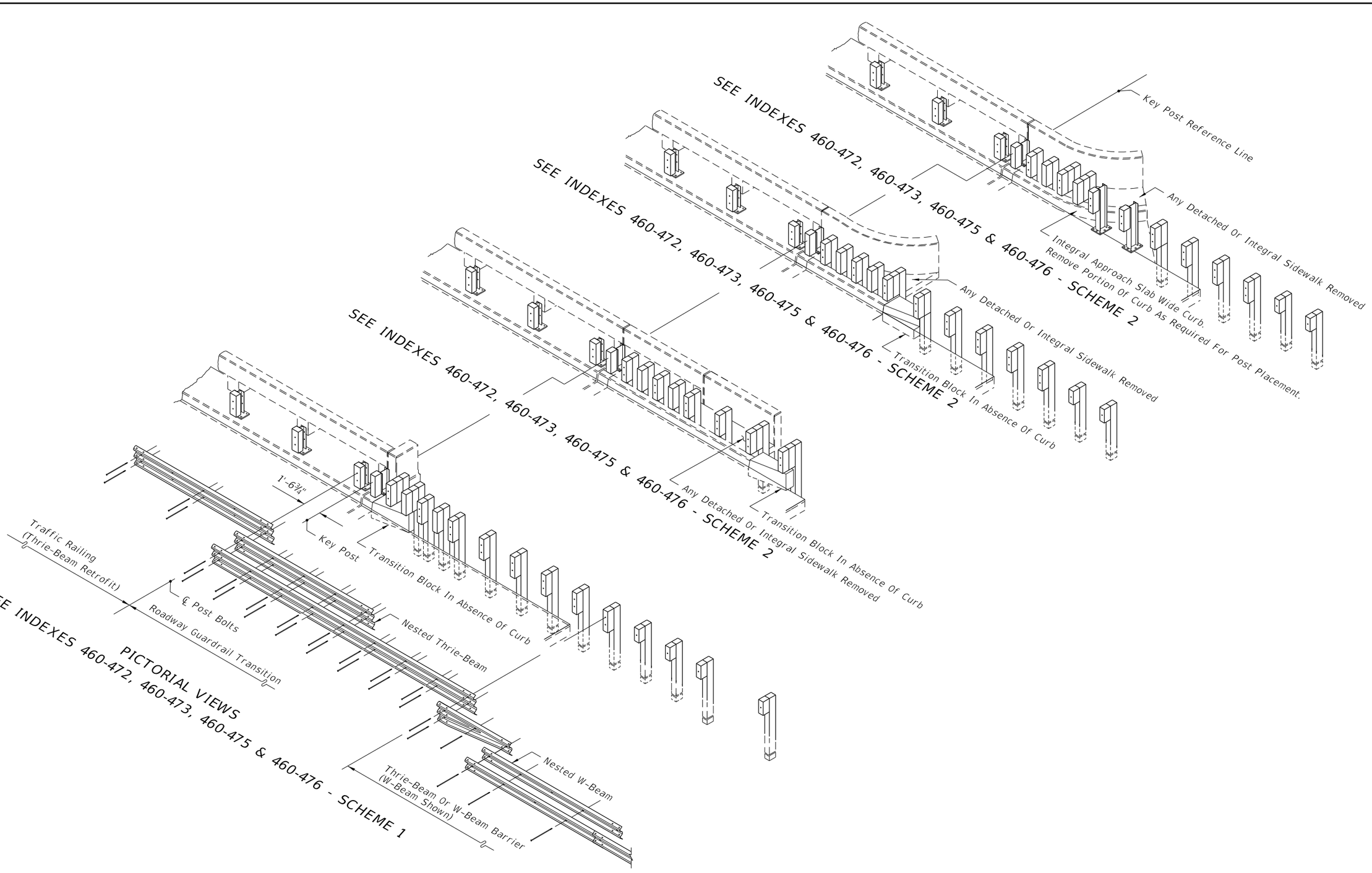
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 10 of 28



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

10/29/2019 8:21:04 AM

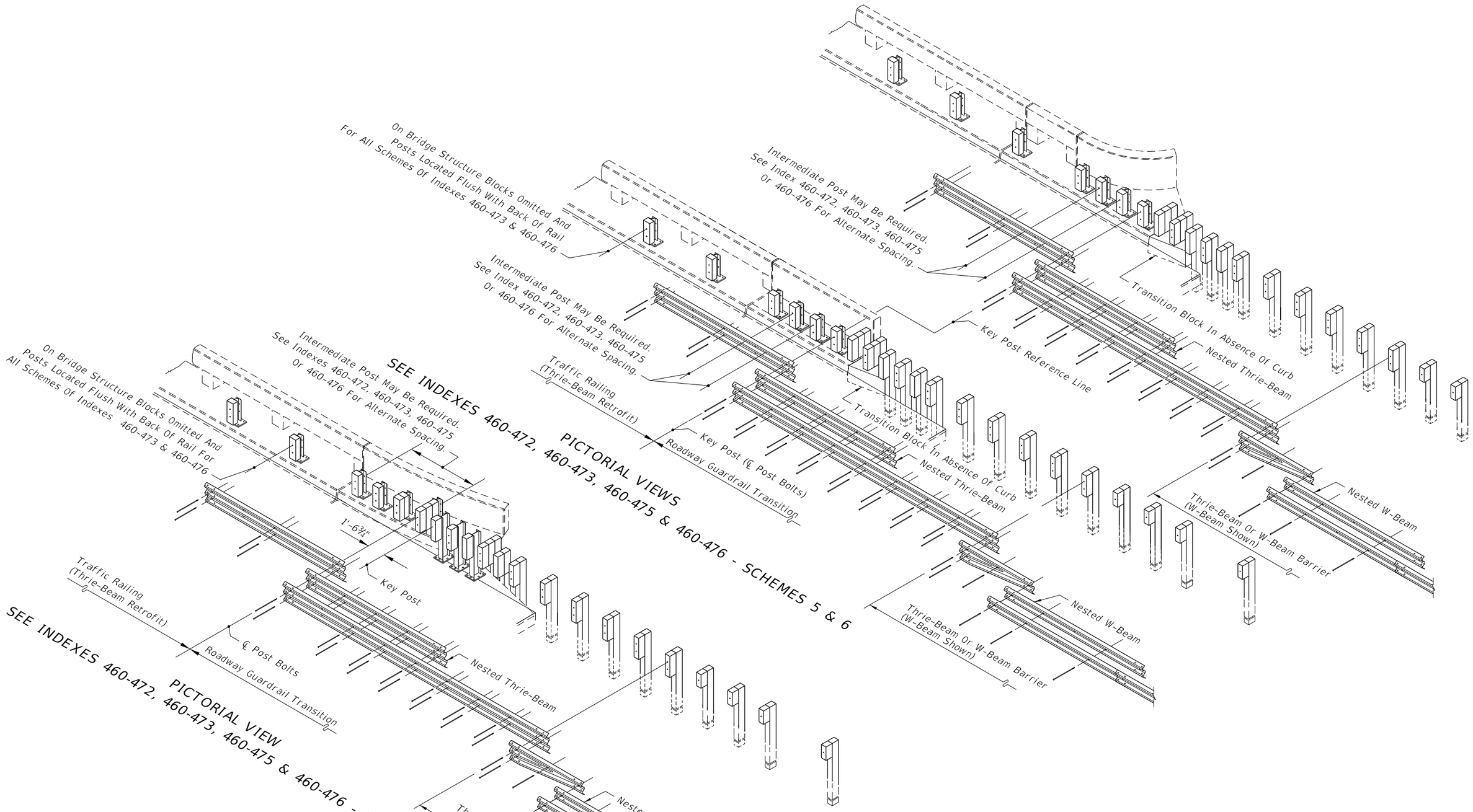
LAST REVISION 11/01/19	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 11 of 28



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

10/29/2019 8:21:04 AM

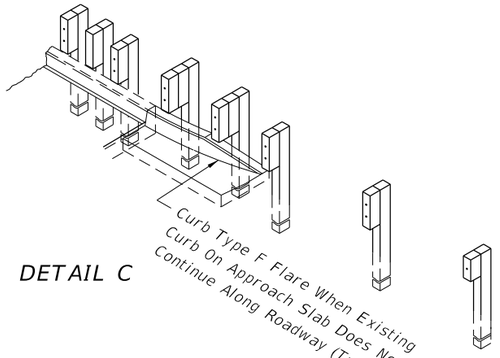
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	536-002	12 of 28



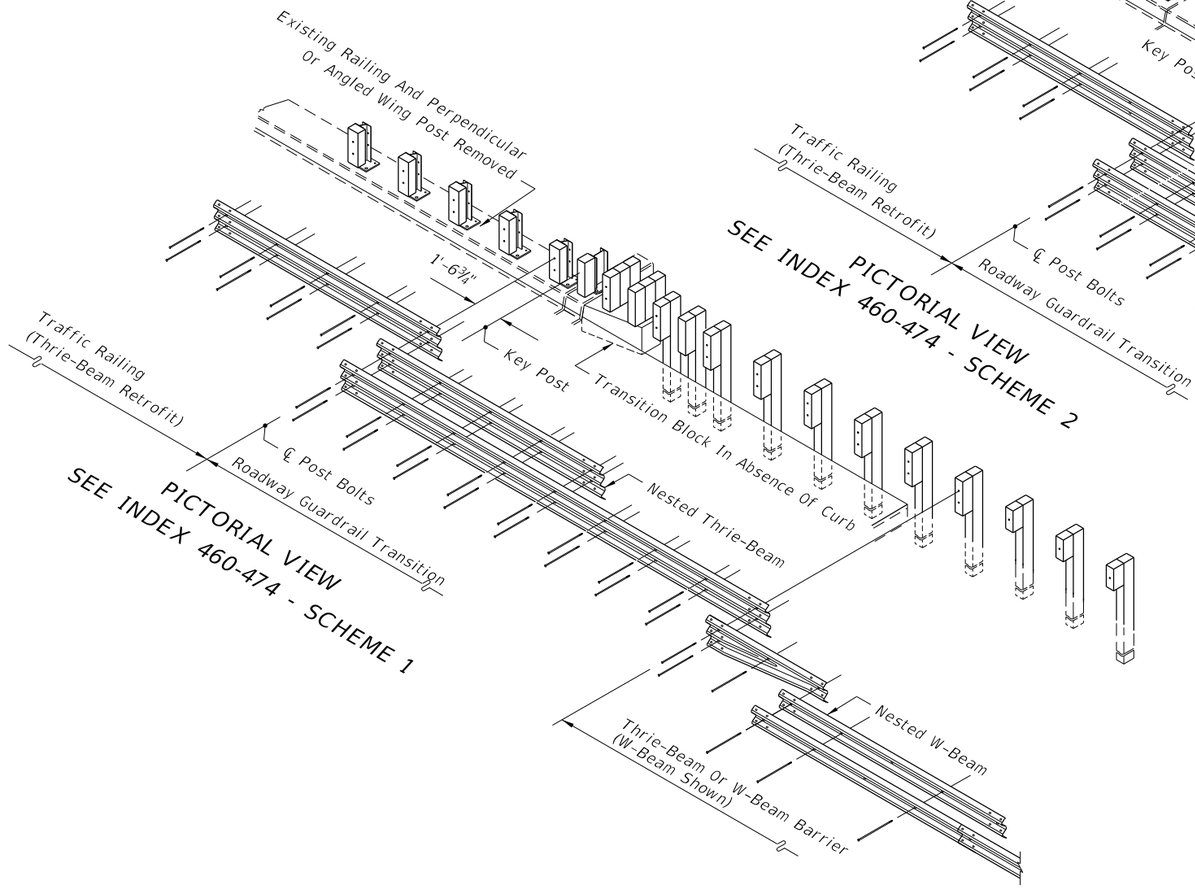
PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

10/29/2019 8:21:05 AM

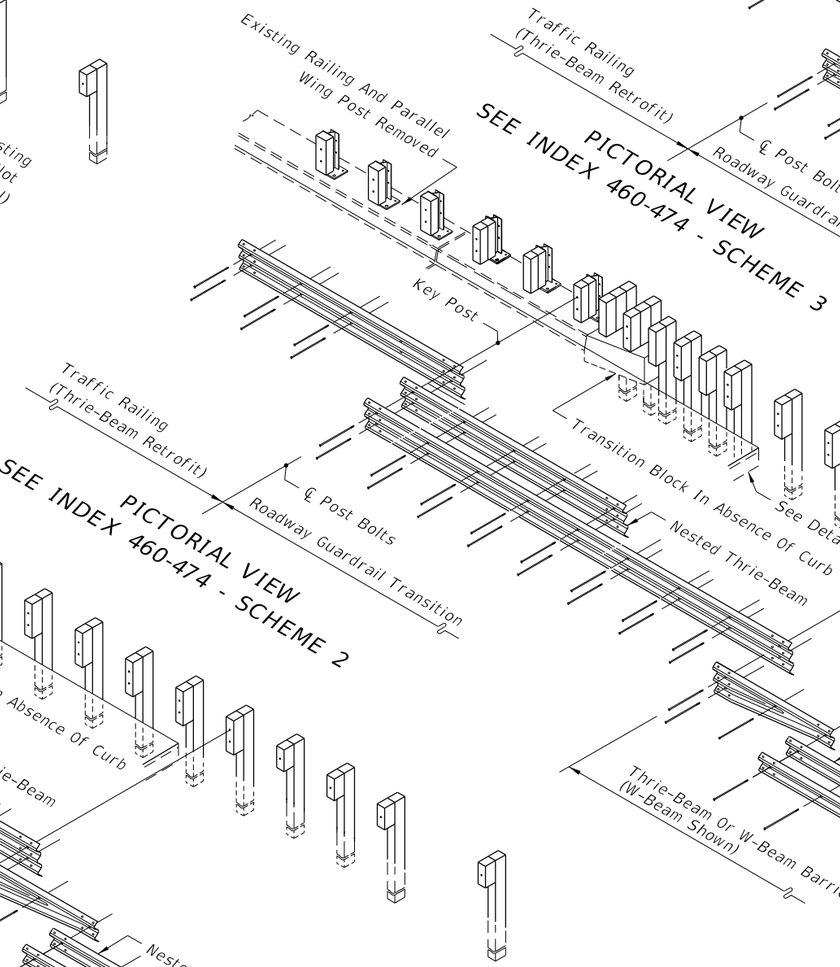
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 13 of 28



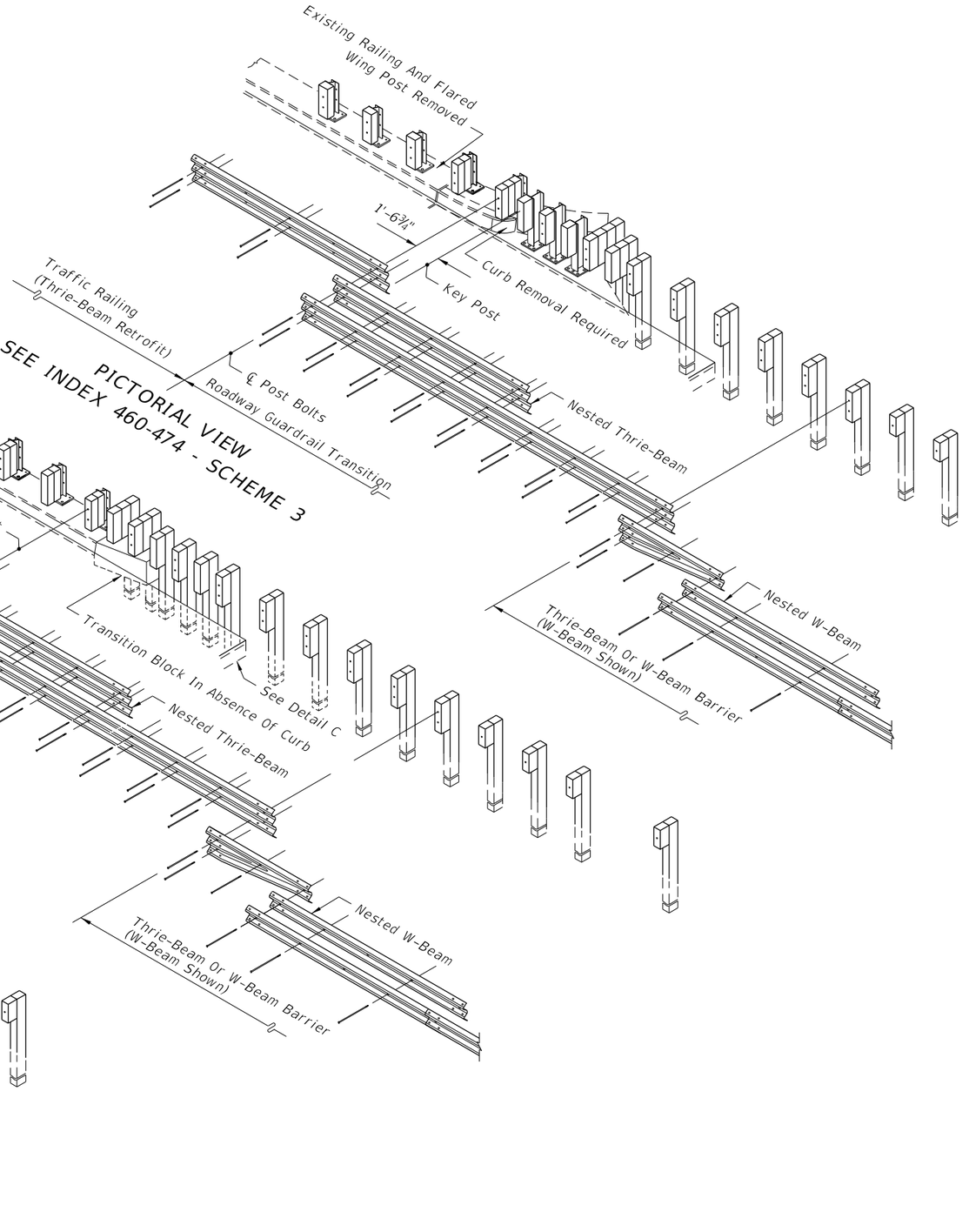
DETAIL C



PICTORIAL VIEW
SEE INDEX 460-474 - SCHEME 1



PICTORIAL VIEW
SEE INDEX 460-474 - SCHEME 2

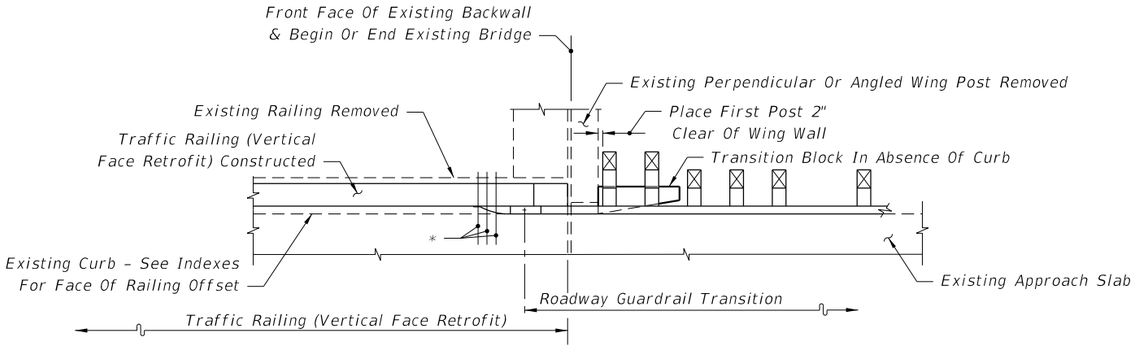


PICTORIAL VIEW
SEE INDEX 460-474 - SCHEME 3

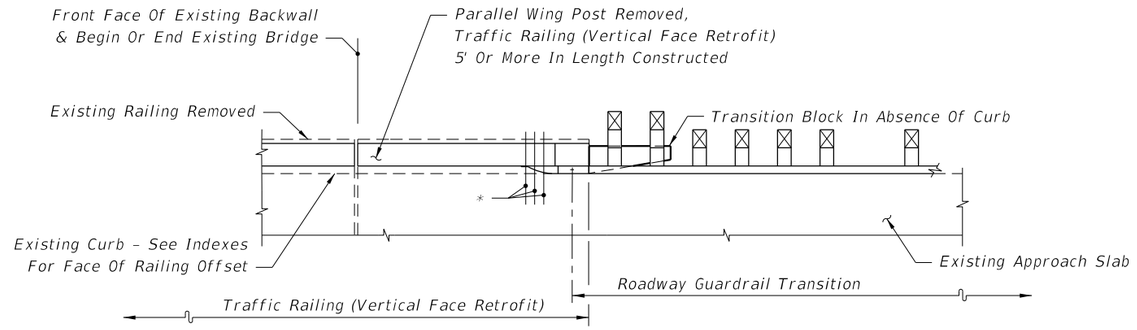
PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (THRIE-BEAM RETROFIT)

10/29/2019 8:21:06 AM

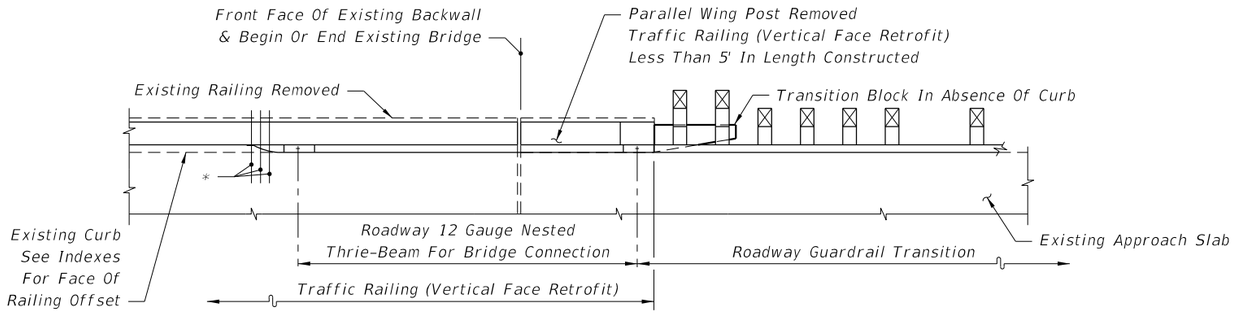
LAST REVISION 11/01/19	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 14 of 28



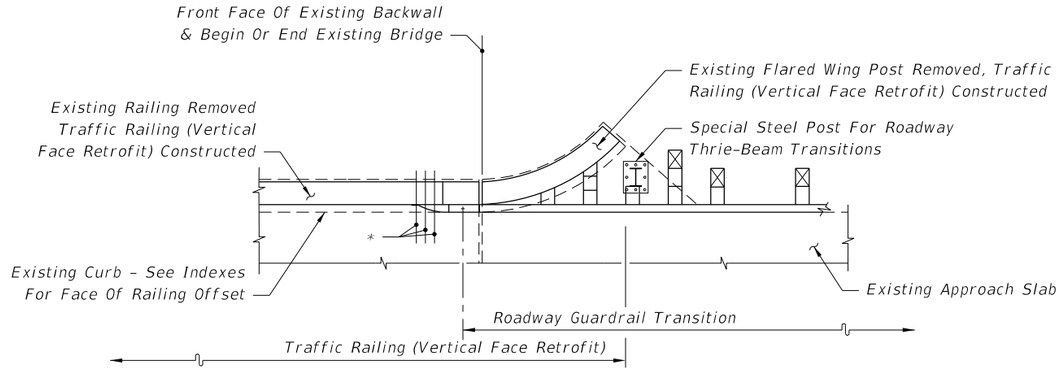
SEE INDEX 460-481 - SCHEME 1



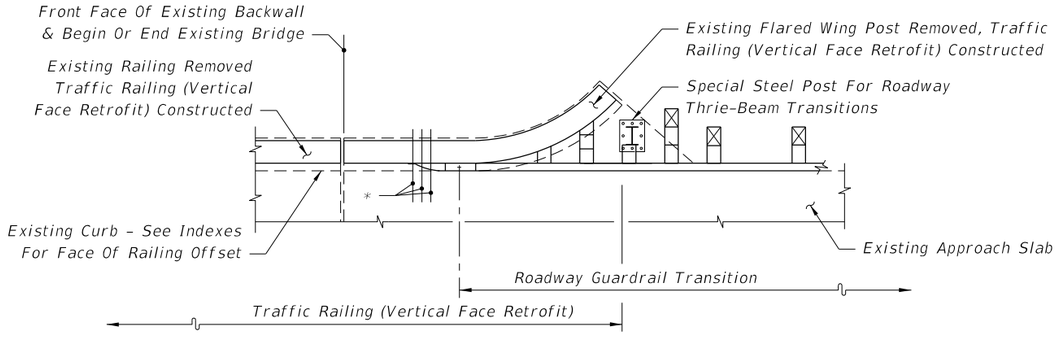
SEE INDEX 521-481 - SCHEME 2



SEE INDEX 521-481 - SCHEME 2



SEE INDEX 521-481 - SCHEME 3



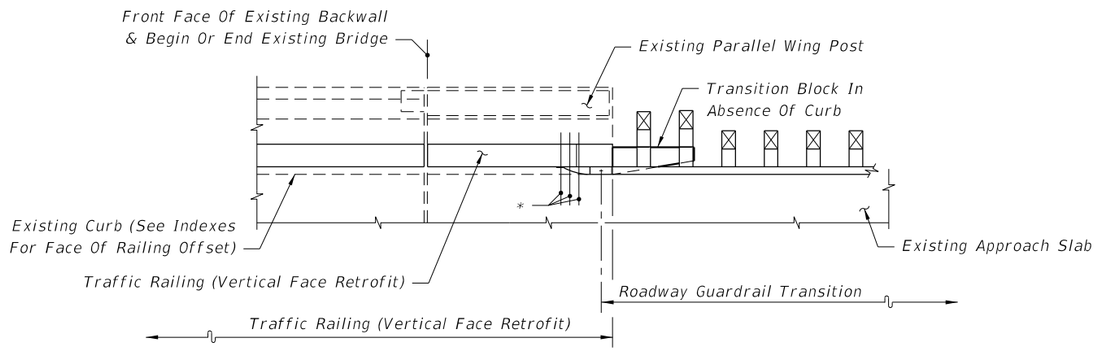
SEE INDEX 521-481 - SCHEME 3

Note:
* 21"x 12" x ⅝" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø x 12" Long HS Hex Bolts And Nuts (5 Reqd.) With 2¼" OD Plain Round Washers Under Heads And Nuts

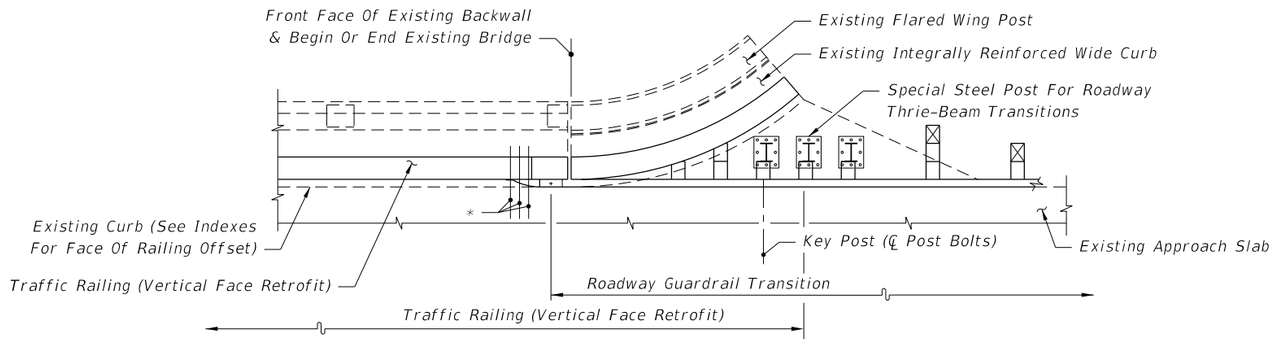
PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)

10/29/2019 8:21:07 AM

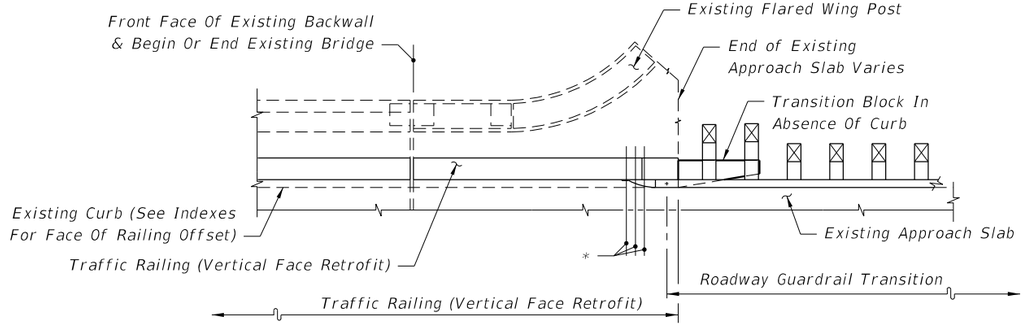
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX	SHEET
11/01/19						536-002	15 of 28



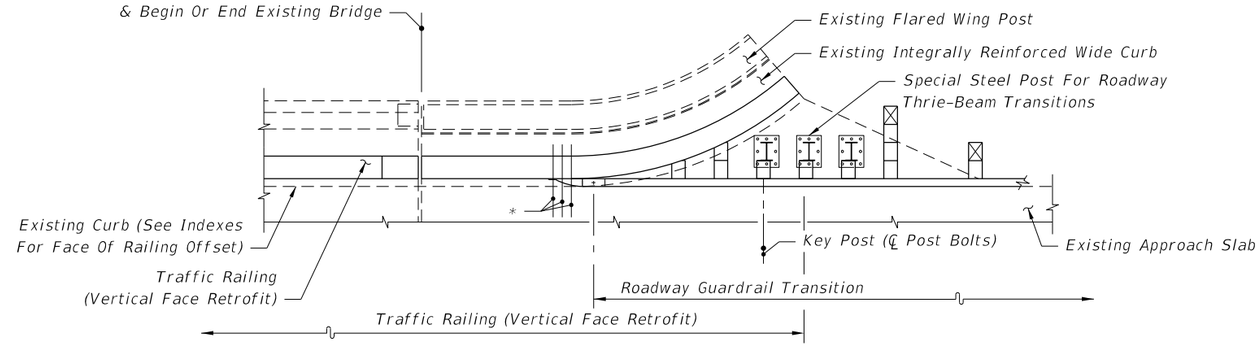
SEE INDEX 521-405 OR 521-482 - SCHEME 2



SEE INDEX 521-405 OR 521-482 - SCHEME 3



SEE INDEX 521-405 OR 521-482 - SCHEME 2



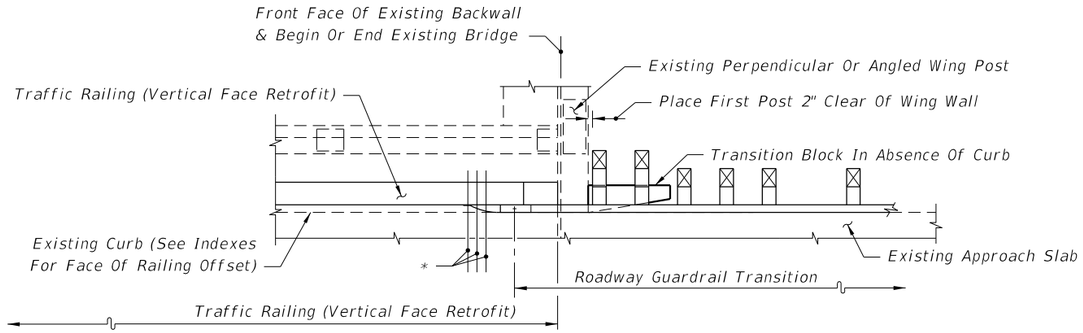
SEE INDEX 521-405 OR 521-482 - SCHEME 3

Note:
* 21" x 12" x ⅜" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø x 12" Long HS Hex Bolts And Nuts (5 Reqd.) With 2¼" OD Plain Round Washers Under Heads And Nuts

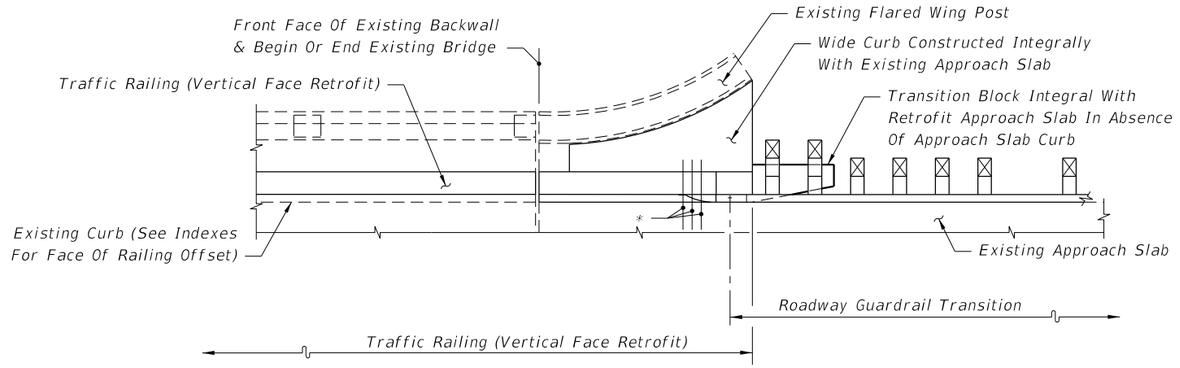
PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)
(INDEX 521-482 SHOWN, INDEX 521-405 SIMILAR)

10/29/2019 8:21:08 AM

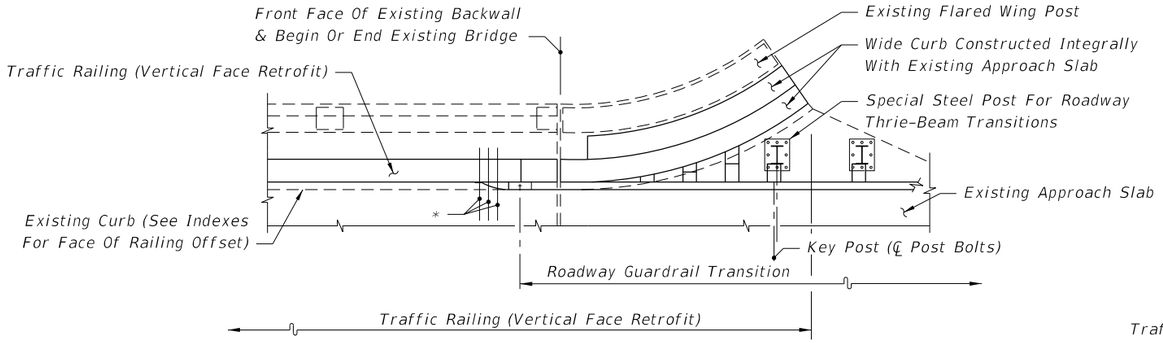
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX	SHEET
11/01/19						536-002	16 of 28



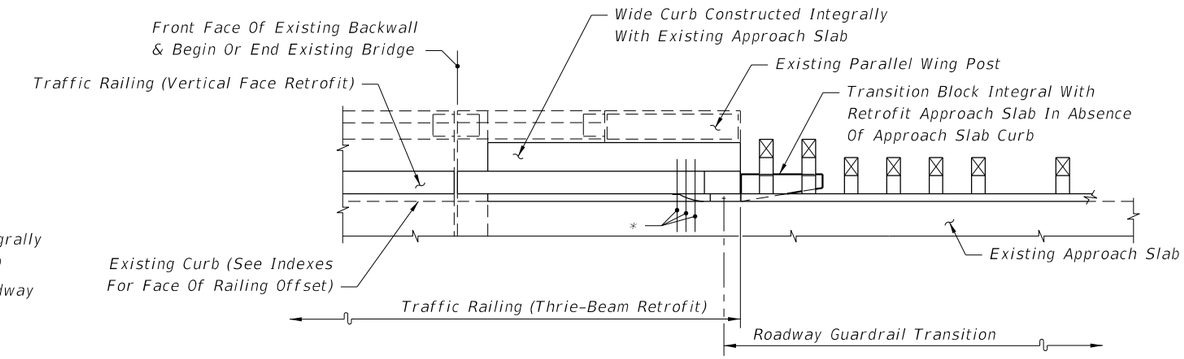
SEE INDEX 521-405 OR 521-482 - SCHEME 1



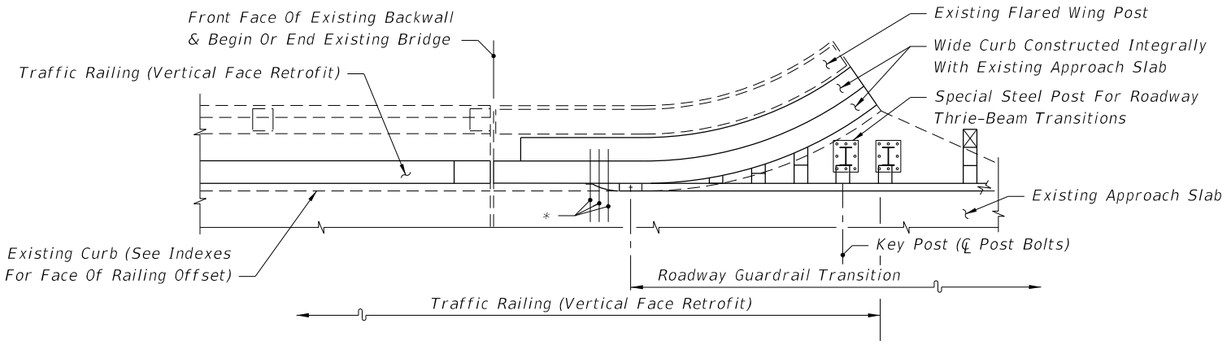
SEE INDEX 521-405 OR 521-482 - SCHEME 5



SEE INDEX 521-405 OR 521-482 - SCHEME 4



SEE INDEX 521-405 OR 521-482 - SCHEME 5



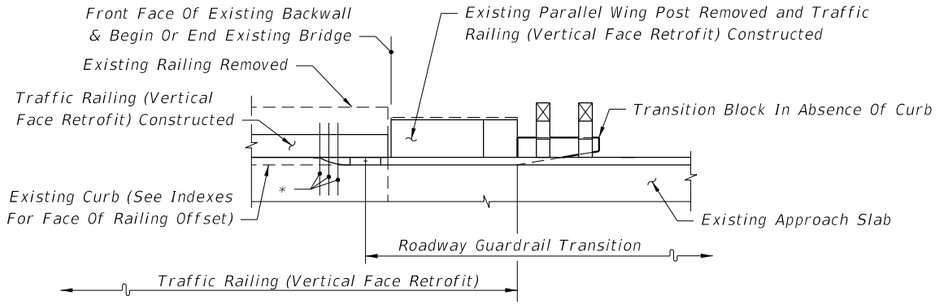
SEE INDEX 521-405 OR 521-482 - SCHEME 4

Note:
* 21" x 12" x ⅝" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø x 12" Long HS Hex Bolts And Nuts (5 Reqd.) With 2¼" OD Plain Round Washers Under Heads And Nuts

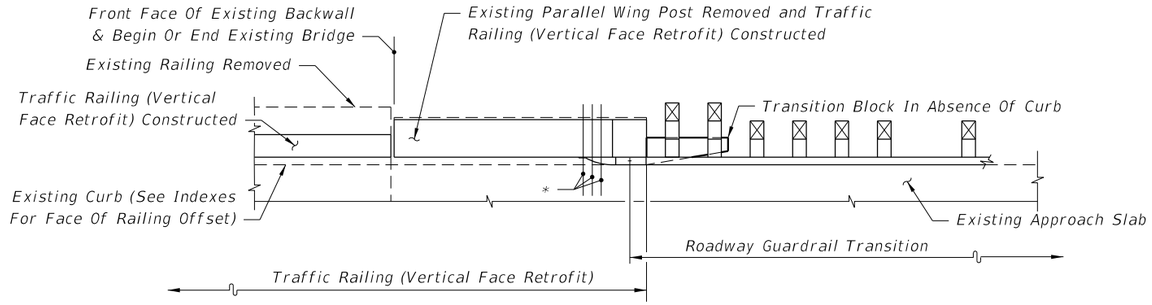
PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)
(INDEX 521-482 SHOWN, INDEX 521-405 SIMILAR)

10/29/2019 8:21:09 AM

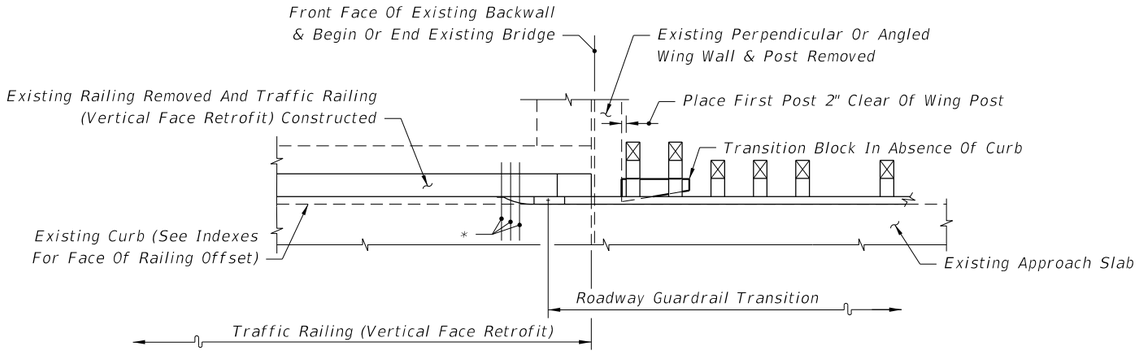
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX	SHEET
11/01/19						536-002	17 of 28



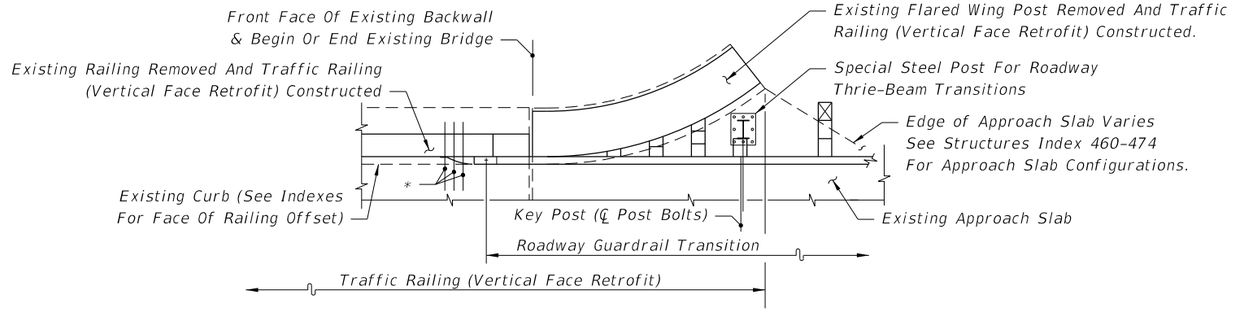
SEE INDEX 521-483 - SCHEME 2



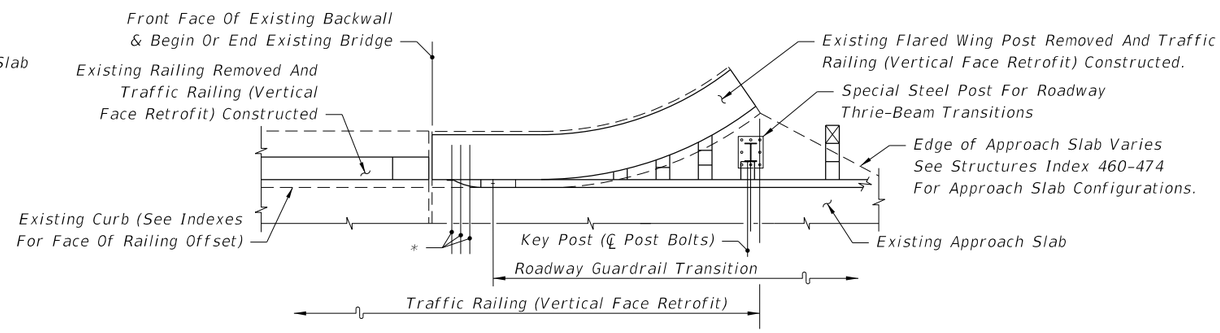
SEE INDEX 521-483 - SCHEME 2



SEE INDEX 521-483 - SCHEME 1



SEE INDEX 521-483 - SCHEME 3



SEE INDEX 521-483 - SCHEME 3

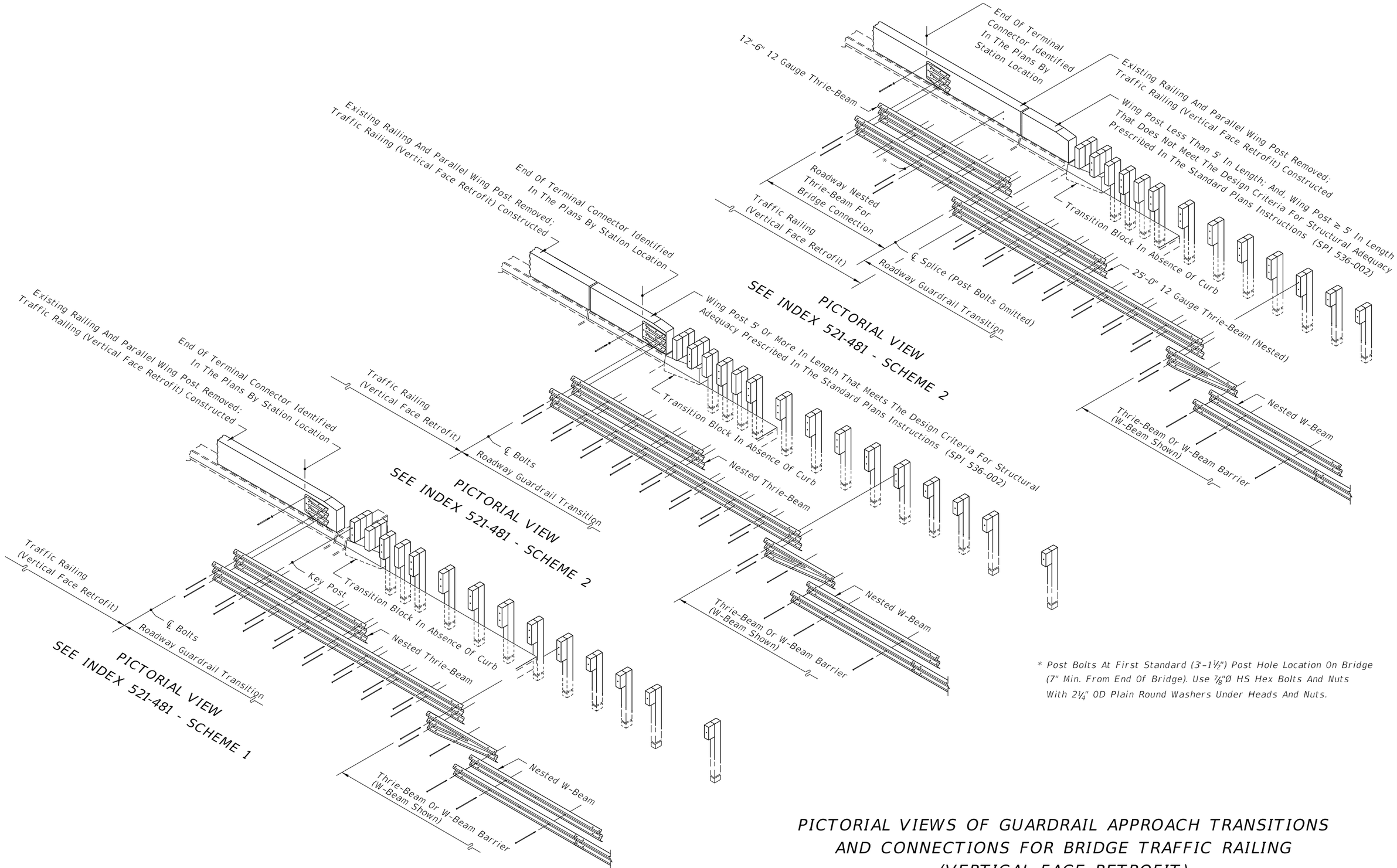
Note:

* 21" x 12" x ⅜" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø HS Hex Bolts And Nuts (12" Long For Scheme 1 And Length To Fit For Schemes 2 And 3) (5 Reqd.) With 2¼" OD Plain Round Washers Under Heads And Nuts

PARTIAL PLAN VIEWS OF TRAFFIC RAILING (VERTICAL FACE RETROFIT)

10/29/2019 8:21:09 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 18 of 28

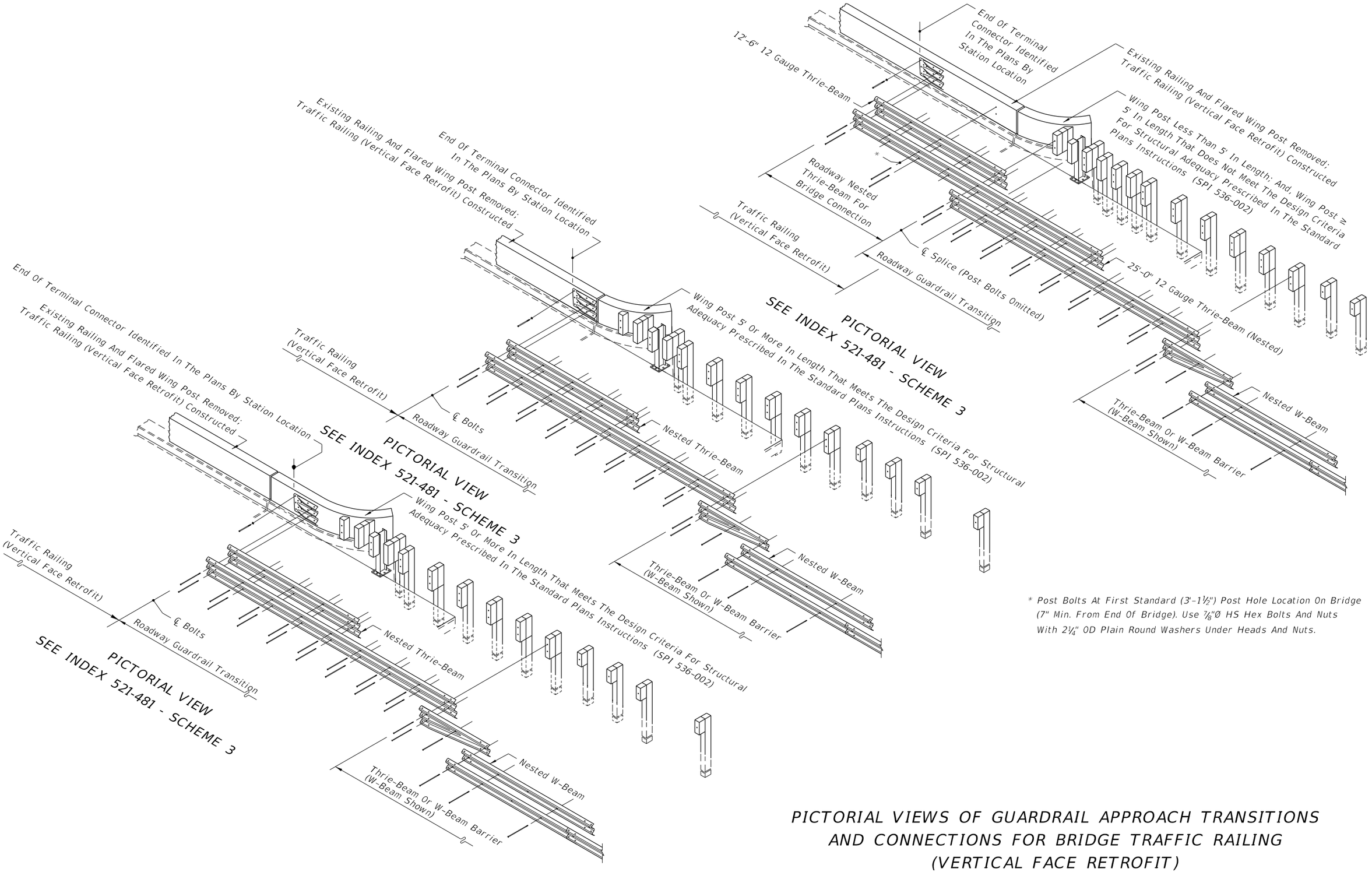


* Post Bolts At First Standard (3'-1½") Post Hole Location On Bridge (7" Min. From End Of Bridge). Use ⅞"Ø HS Hex Bolts And Nuts With 2¼" OD Plain Round Washers Under Heads And Nuts.

PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (VERTICAL FACE RETROFIT)

10/29/2019 8:21:10 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 19 of 28

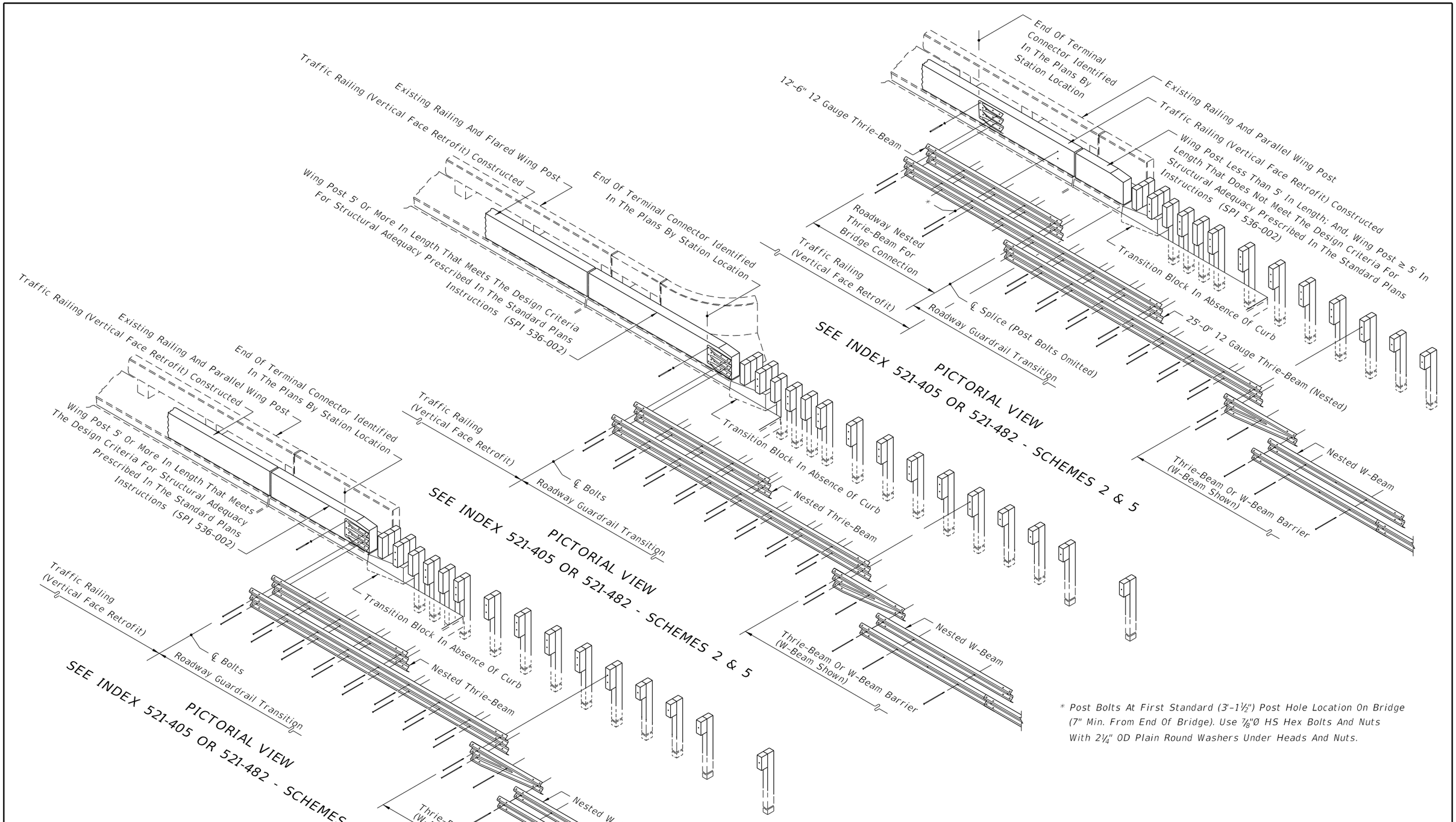


* *Post Bolts At First Standard (3'-1½") Post Hole Location On Bridge (7" Min. From End Of Bridge). Use ⅞"Ø HS Hex Bolts And Nuts With 2¼" OD Plain Round Washers Under Heads And Nuts.*

PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (VERTICAL FACE RETROFIT)

10/29/2019 8:21:11 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX	SHEET
11/01/19						536-002	20 of 28

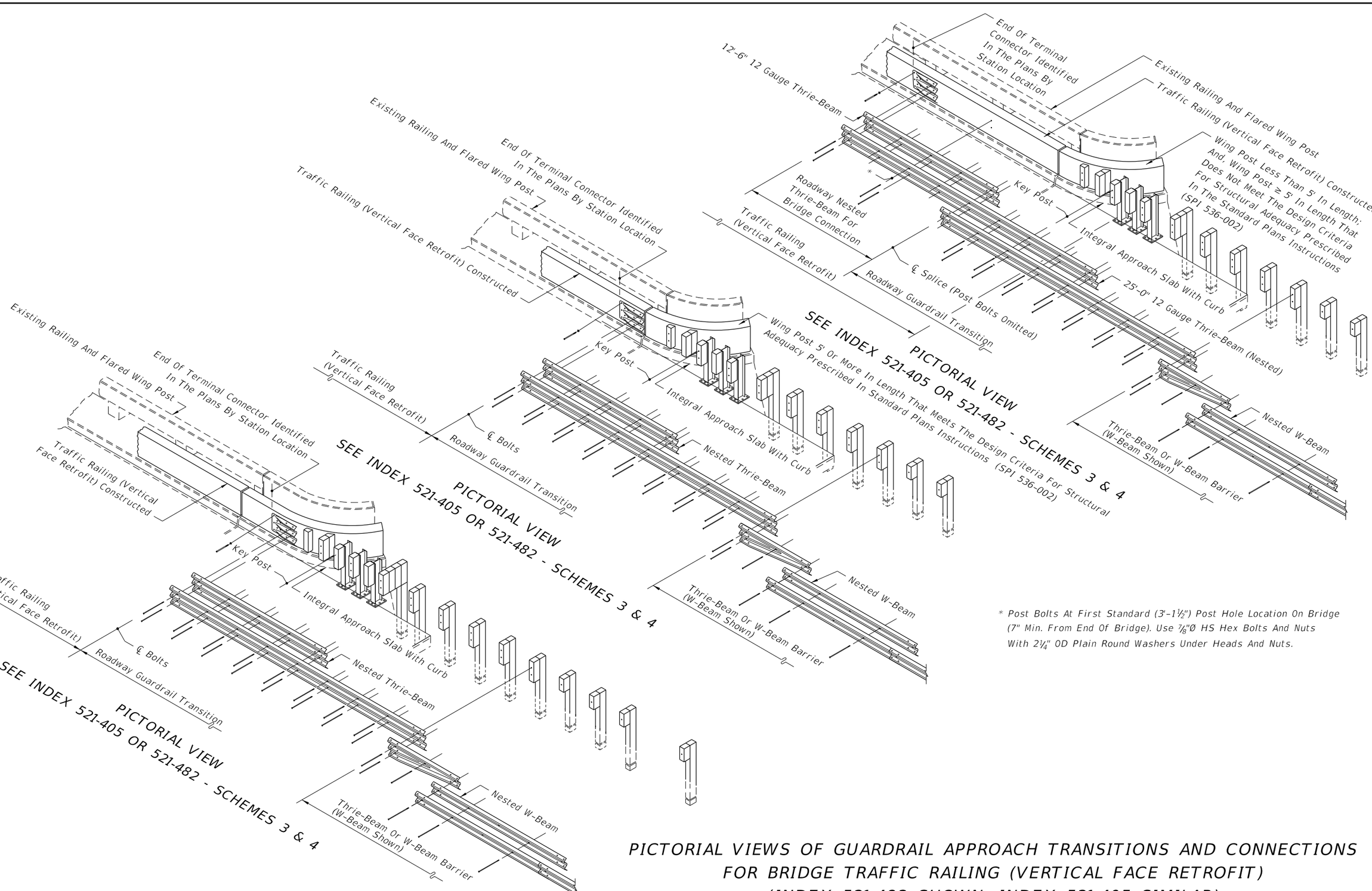


* *Post Bolts At First Standard (3'-1½") Post Hole Location On Bridge (7" Min. From End Of Bridge). Use ⅞"Ø HS Hex Bolts And Nuts With 2¼" OD Plain Round Washers Under Heads And Nuts.*

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

10/29/2019 8:21:12 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 21 of 28

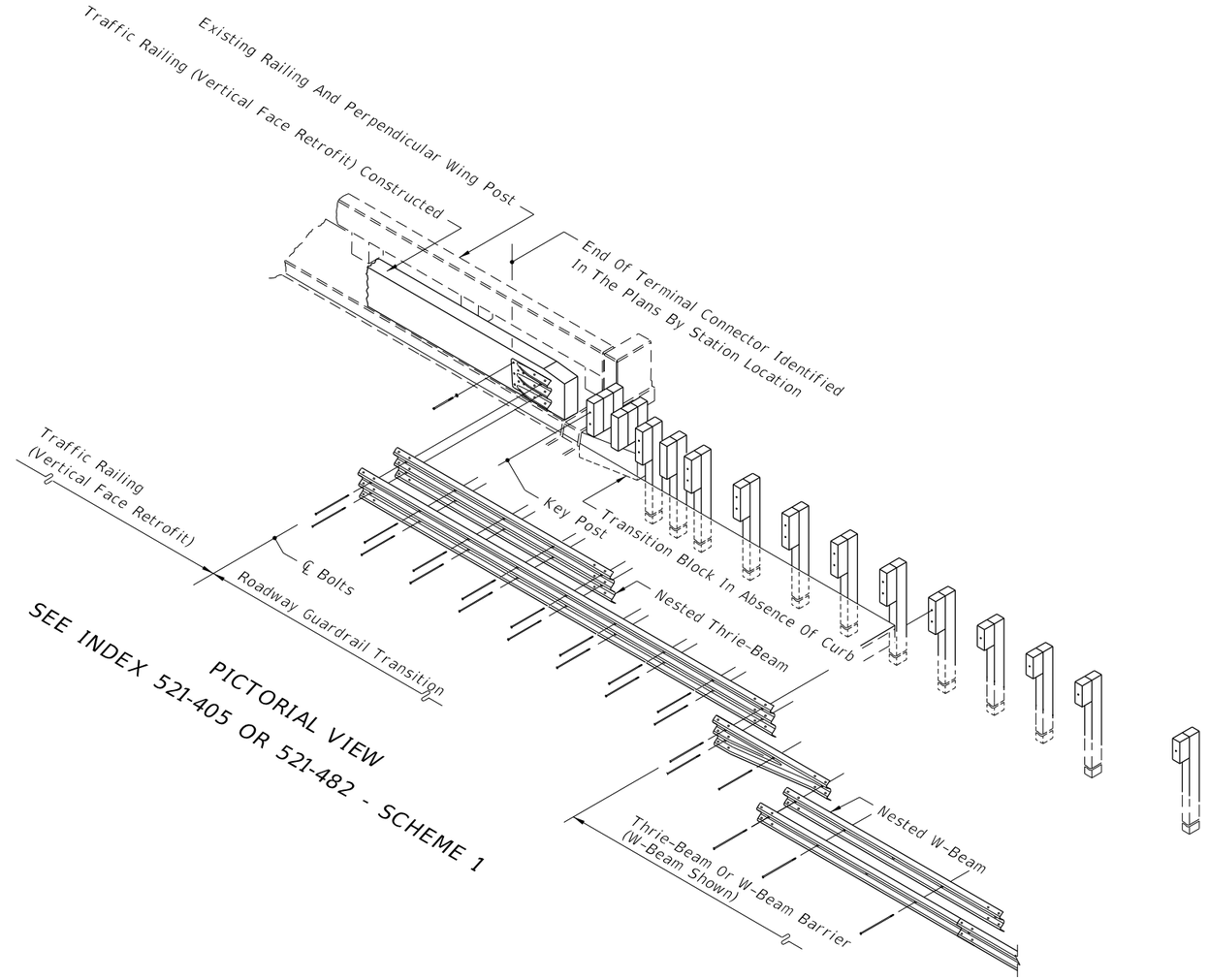


* Post Bolts At First Standard (3'-1½") Post Hole Location On Bridge (7" Min. From End Of Bridge). Use ⅞"Ø HS Hex Bolts And Nuts With 2¼" OD Plain Round Washers Under Heads And Nuts.

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

10/29/2019 8:21:14 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 22 of 28



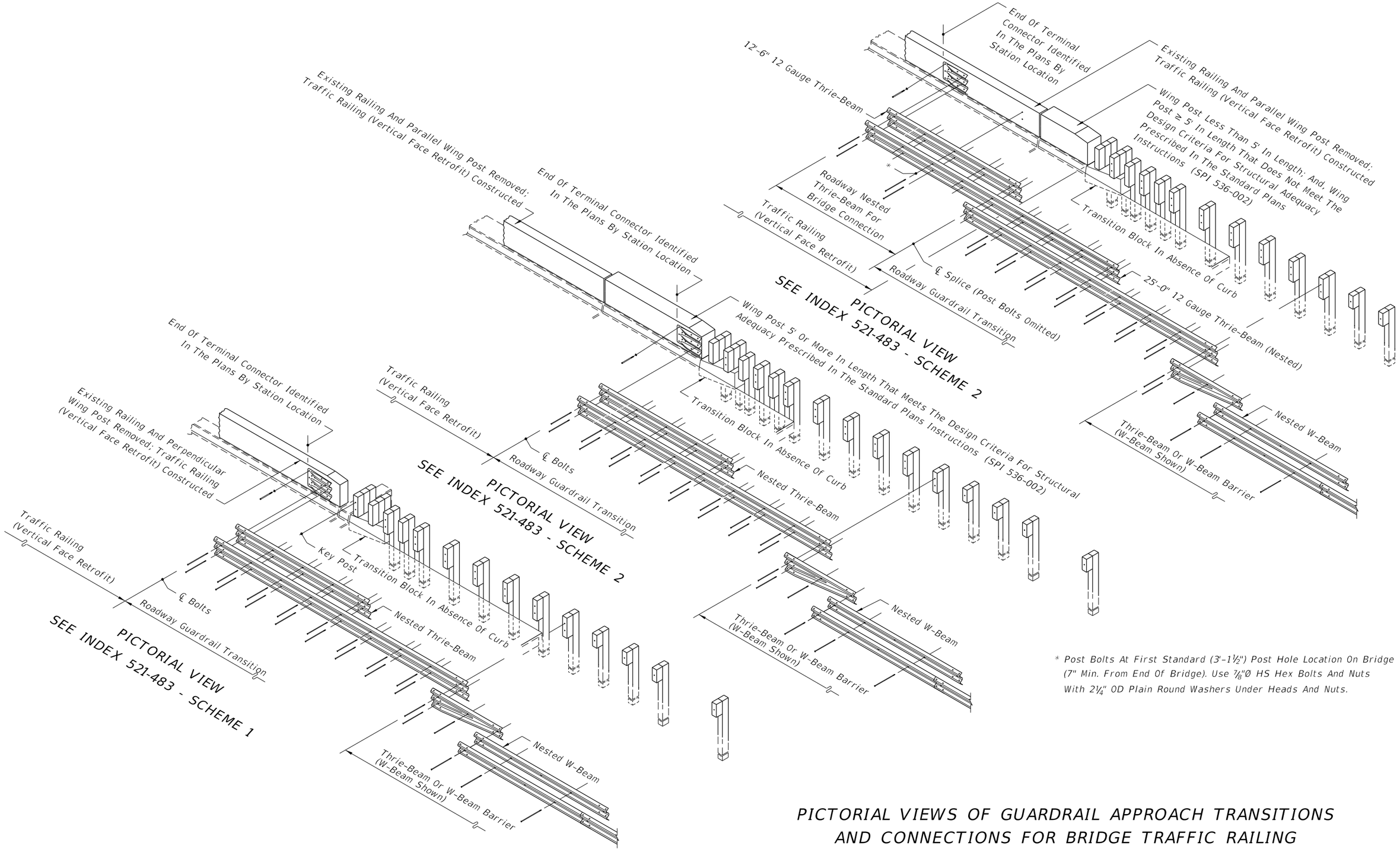
PICTORIAL VIEW

SEE INDEX 521-405 OR 521-482 - SCHEME 1

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

10/29/2019 8:21:15 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX	SHEET
11/01/19						536-002	23 of 28

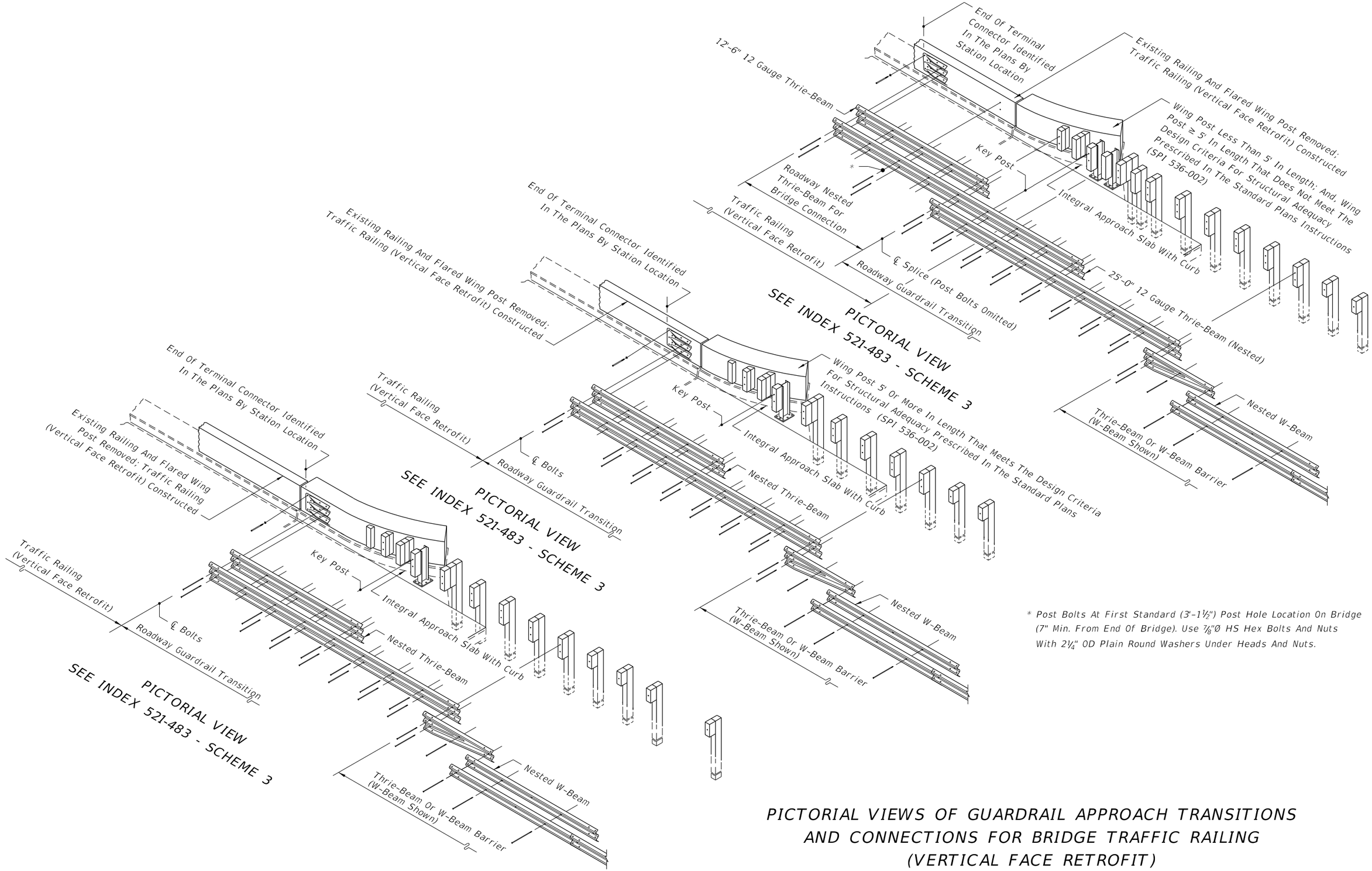


* *Post Bolts At First Standard (3'-1½") Post Hole Location On Bridge (7" Min. From End Of Bridge). Use ⅞"Ø HS Hex Bolts And Nuts With 2¼" OD Plain Round Washers Under Heads And Nuts.*

PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (VERTICAL FACE RETROFIT)

10/29/2019 8:21:16 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 24 of 28



* *Post Bolts At First Standard (3'-1½") Post Hole Location On Bridge (7" Min. From End Of Bridge). Use ⅞"Ø HS Hex Bolts And Nuts With 2¼" OD Plain Round Washers Under Heads And Nuts.*

PICTORIAL VIEWS OF GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR BRIDGE TRAFFIC RAILING (VERTICAL FACE RETROFIT)

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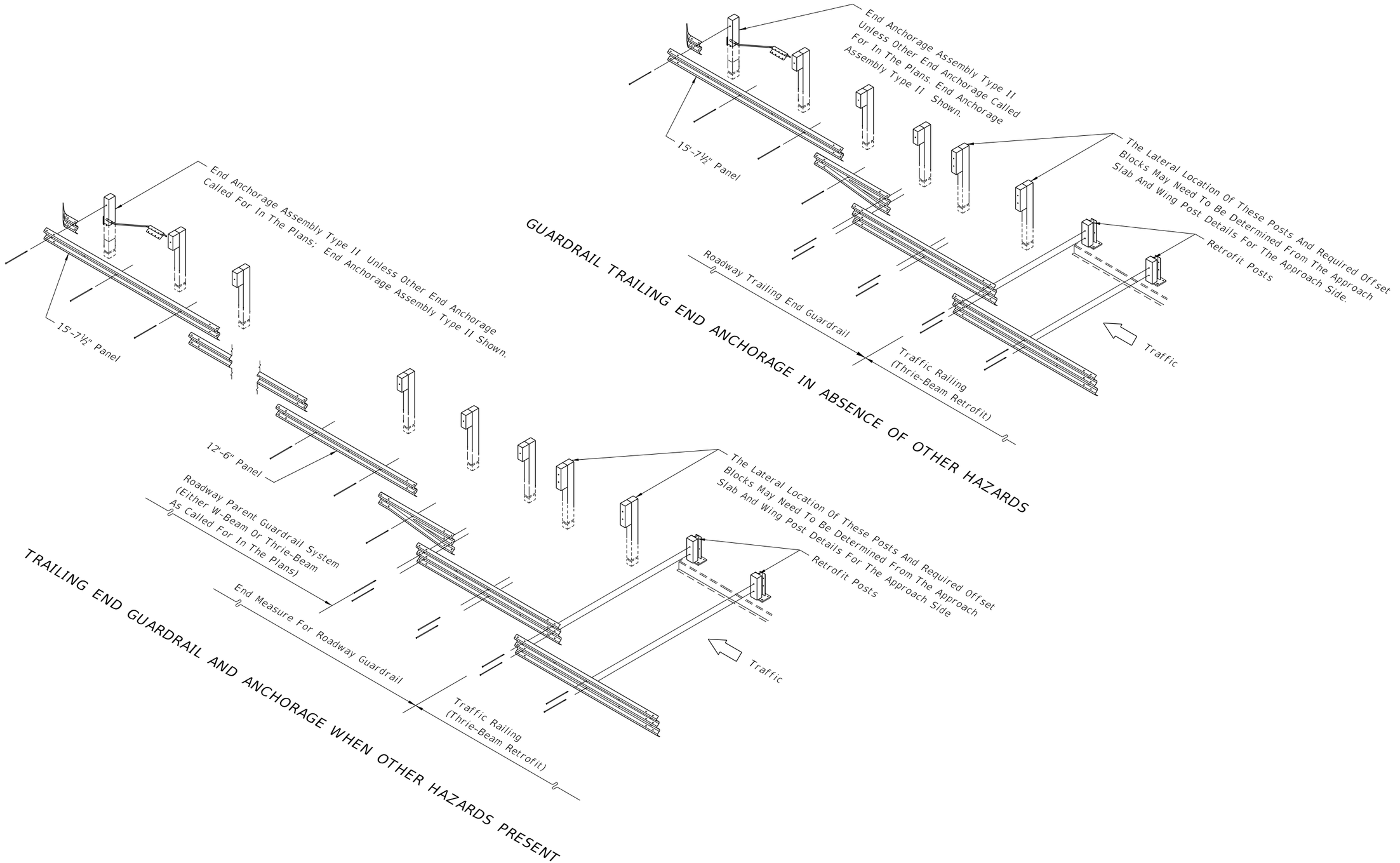
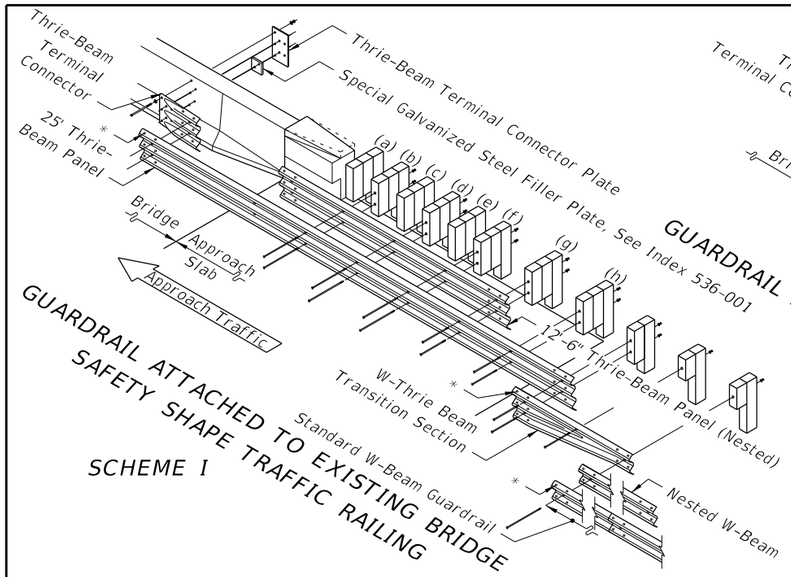
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 25 of 28



TRAILING END GUARDRAIL AND ANCHORAGE FOR BRIDGE TRAFFIC RAILING (THRIE BEAM RETROFITS)

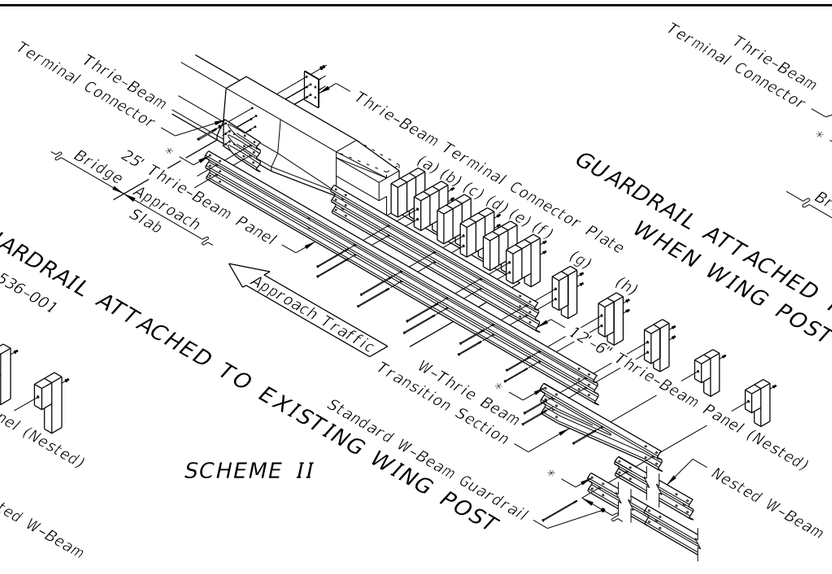
10/29/2019 8:21:18 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES	INDEX 536-002	SHEET 26 of 28



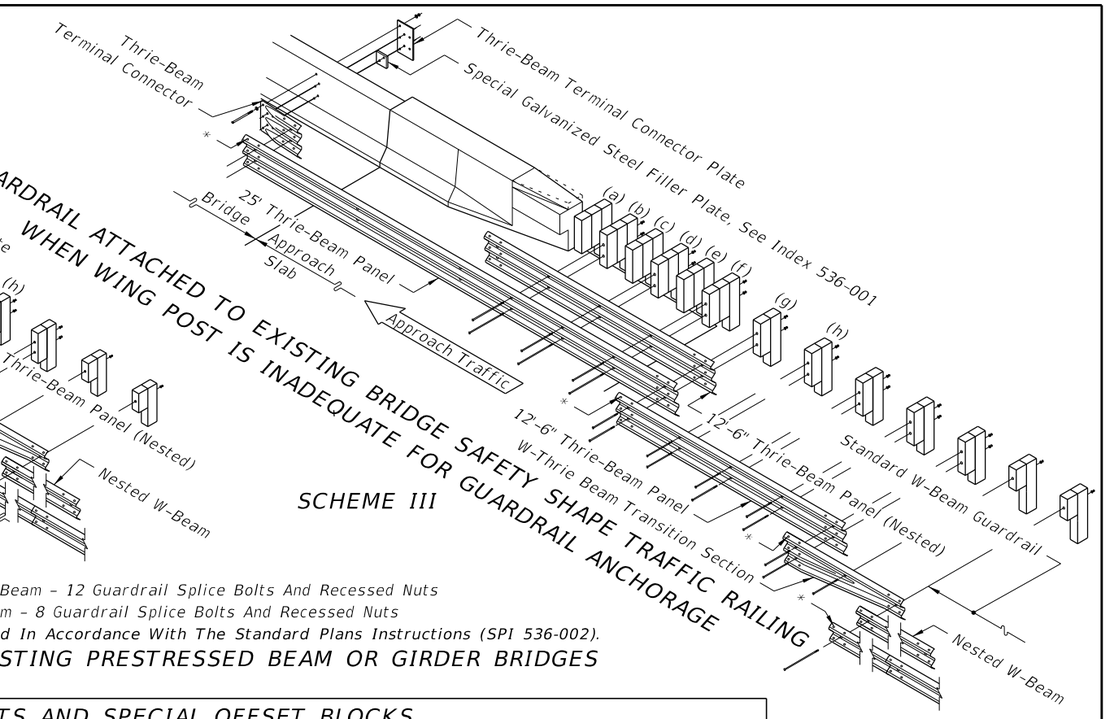
GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING

SCHEME I



GUARDRAIL ATTACHED TO EXISTING WING POST

SCHEME II



GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING WHEN WING POST IS INADEQUATE FOR GUARDRAIL ANCHORAGE

SCHEME III

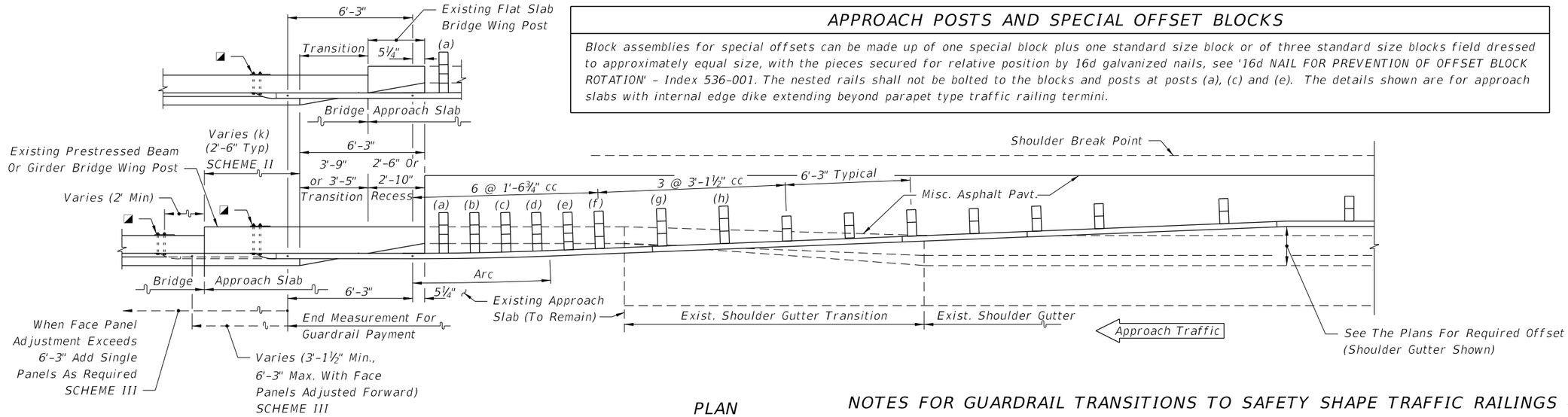
Use Of Scheme I Shall Be Determined
In Accordance With The Standard Plans Instructions (SPI 536-002).

GUARDRAIL TRANSITION TO EXISTING FLAT SLAB BRIDGES

* *Splice Locations: Thrie-Beam – 12 Guardrail Splice Bolts And Recessed Nuts*
W-Beam – 8 Guardrail Splice Bolts And Recessed Nuts

Use Of Schemes II And III Shall Be Determined In Accordance With The Standard Plans Instructions (SPI 536-002).

GUARDRAIL TRANSITIONS TO EXISTING PRESTRESSED BEAM OR GIRDER BRIDGES



PLAN

APPROACH POSTS AND SPECIAL OFFSET BLOCKS

Block assemblies for special offsets can be made up of one special block plus one standard size block or of three standard size blocks field dressed to approximately equal size, with the pieces secured for relative position by 16d galvanized nails, see '16d NAIL FOR PREVENTION OF OFFSET BLOCK ROTATION' – Index 536-001. The nested rails shall not be bolted to the blocks and posts at posts (a), (c) and (e). The details shown are for approach slabs with internal edge dike extending beyond parapet type traffic railing termini.

◪ *21"x12"x⅝" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø x 18" Long [15" Long With 3½" Min. Thread Length For Bridge Safety Shape Railing] HS Hex Bolts And Nuts (5 Reqd.) With 2¼" 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 ⅞" HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]*

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 ¼"Ø x 1" long concrete screws or expansion anchors at each corner, as approved by the Engineer. The sign panel shall be a minimum 1/16" thick and meet the requirements of Specification 700 with a white background and 3" tall black letters and sized appropriately to contain the information required. The cost of the sign panel shall be included in the cost of the Guardrail Bridge Anchorage Assembly.*

2. *When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction to be paid for under the contract unit price for Guardrail Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate(s) and bolts, nuts and washers.*

GUARDRAIL APPROACH TRANSITION CONNECTIONS FOR EXISTING FLAT SLAB, PRESTRESSED BEAM AND GIRDER BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

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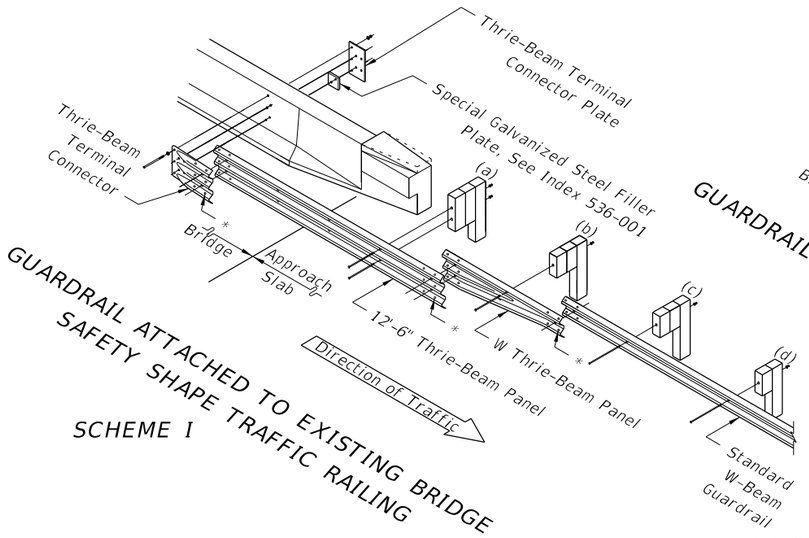
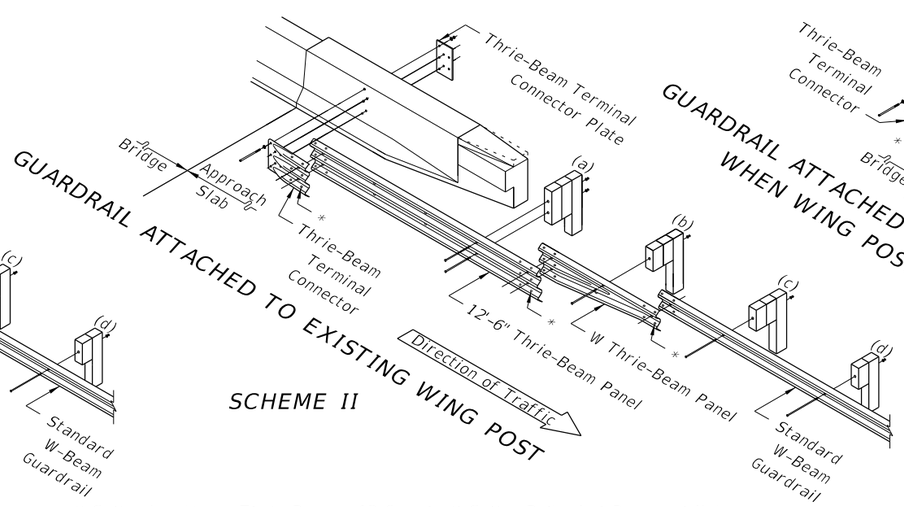


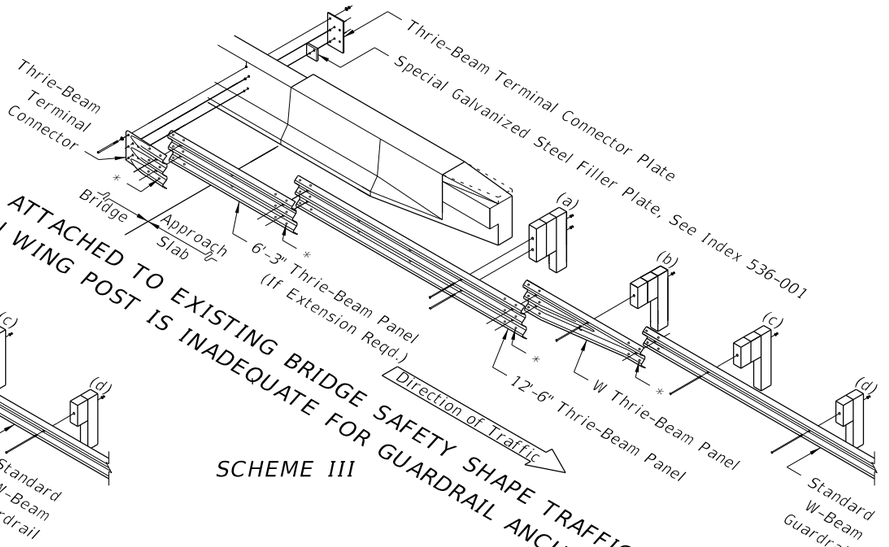
GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING

SCHEME I



GUARDRAIL ATTACHED TO EXISTING WING POST

SCHEME II



GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING WHEN WING POST IS INADEQUATE FOR GUARDRAIL ANCHORAGE

SCHEME III

* Splice Locations: Thrie-Beam – 12 Guardrail Splice Bolts And Recessed Nuts
W-Beam – 8 Guardrail Splice Bolts And Recessed Nuts

Use Of Scheme I Shall Be Determined In Accordance With The Standard Plans Instructions (SPI 536-002).

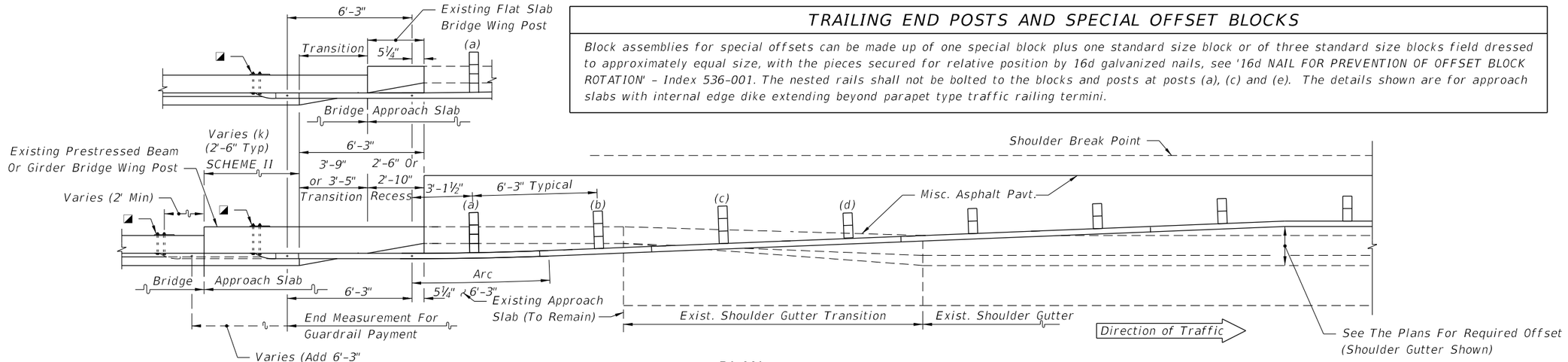
GUARDRAIL TRANSITION TO EXISTING FLAT SLAB BRIDGES

Use Of Schemes II And III Shall Be Determined In Accordance With The Standard Plans Instructions (SPI 536-002).

GUARDRAIL TRANSITIONS TO EXISTING PRESTRESSED BEAM OR GIRDER BRIDGES

TRAILING END POSTS AND SPECIAL OFFSET BLOCKS

Block assemblies for special offsets can be made up of one special block plus one standard size block or of three standard size blocks field dressed to approximately equal size, with the pieces secured for relative position by 16d galvanized nails, see '16d NAIL FOR PREVENTION OF OFFSET BLOCK ROTATION' – Index 536-001. The nested rails shall not be bolted to the blocks and posts at posts (a), (c) and (e). The details shown are for approach slabs with internal edge dike extending beyond parapet type traffic railing termini.



PLAN

◪ 21"x12"x⅝" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø x 18" Long [15" Long With 3½" Min. Thread Length For Bridge Safety Shape Railing] HS Hex Bolts And Nuts (5 Reqd.) With 2¼" 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 ⅞" HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]

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 ¼"Ø x 1" long concrete screws or expansion anchors at each corner, as approved by the Engineer. The sign panel shall be a minimum 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

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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 guardrail transition only if shown in the applicable APL drawing. See Note 4 below.

4. STANDARD GUARDRAIL TRANSITION: If the APL drawing does not provide a guardrail transition to w-beam guardrail, construct the Standard Guardrail Transition segment from thrie-beam to w-beam as shown per Sheet 2. This 21'-10½" segment must remain parallel to the roadway.

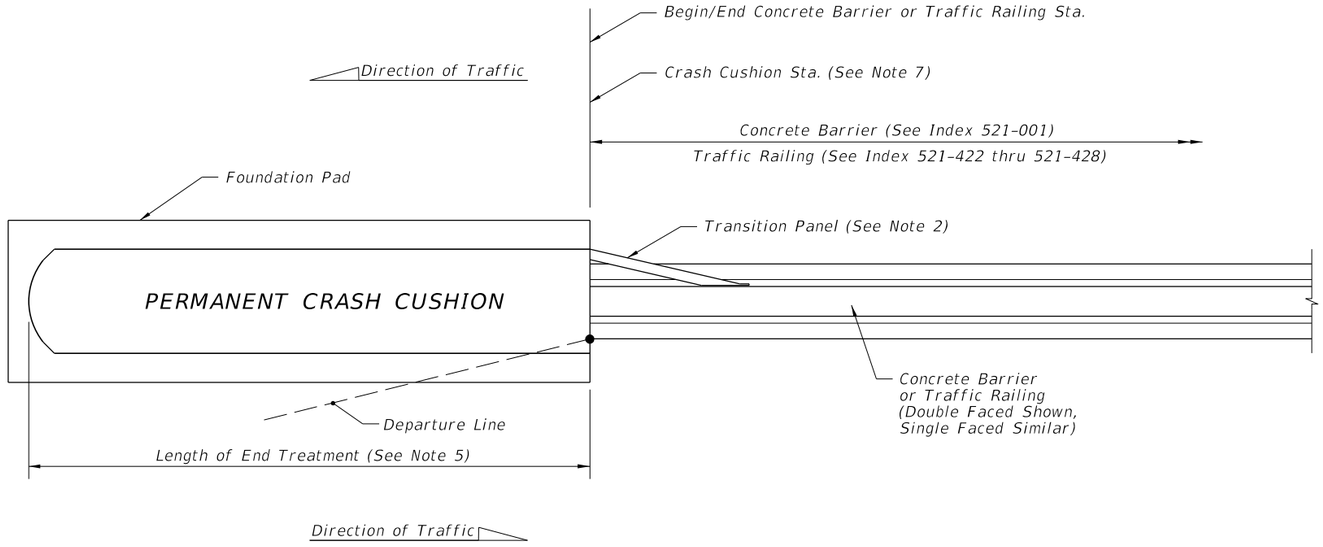
   If the APL drawing does provide a guardrail transition to w-beam guardrail, replace the Standard Guardrail Transition segment with a w-beam guardrail segment at 6'-3" post spacing, except that Post (10) will remain where shown herein if it is located at a guardrail begin or end taper station callout per the Plans. This 21'-10½" 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.

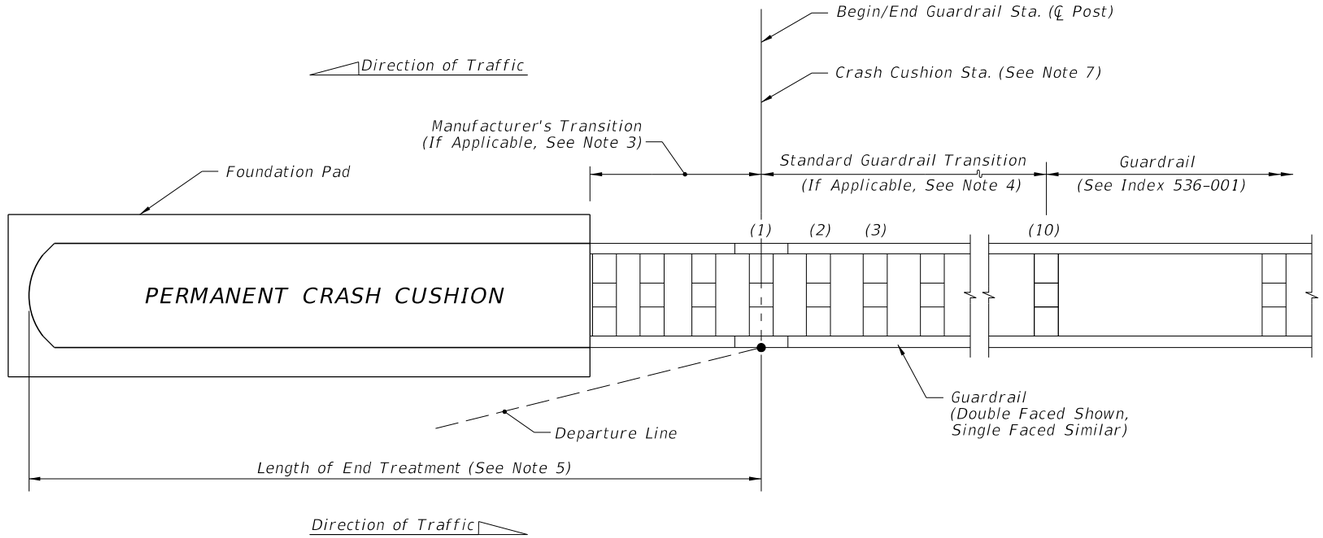
   The actual Length of End Treatment varies per Crash Cushion type, but an estimated Length of End Treatment is generally shown in the Plans to provide sufficient space for the Contractor's option of differing Crash Cushion types.

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.



CONCRETE BARRIER APPLICATION



GUARDRAIL APPLICATION

PERMANENT CRASH CUSHION APPLICATIONS

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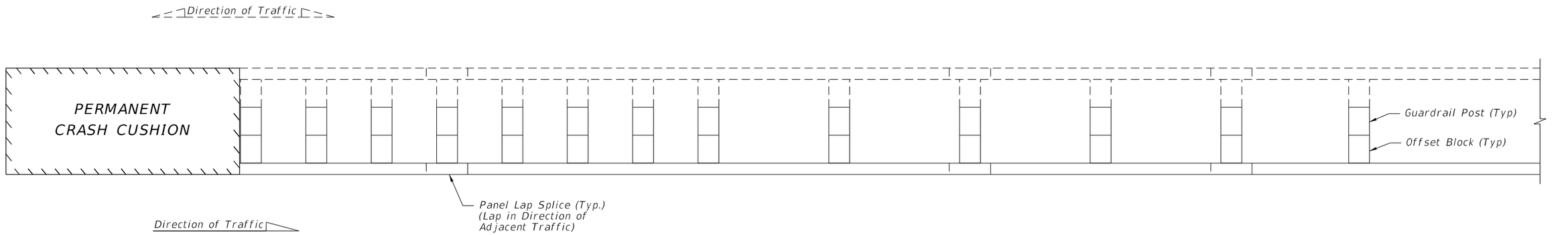
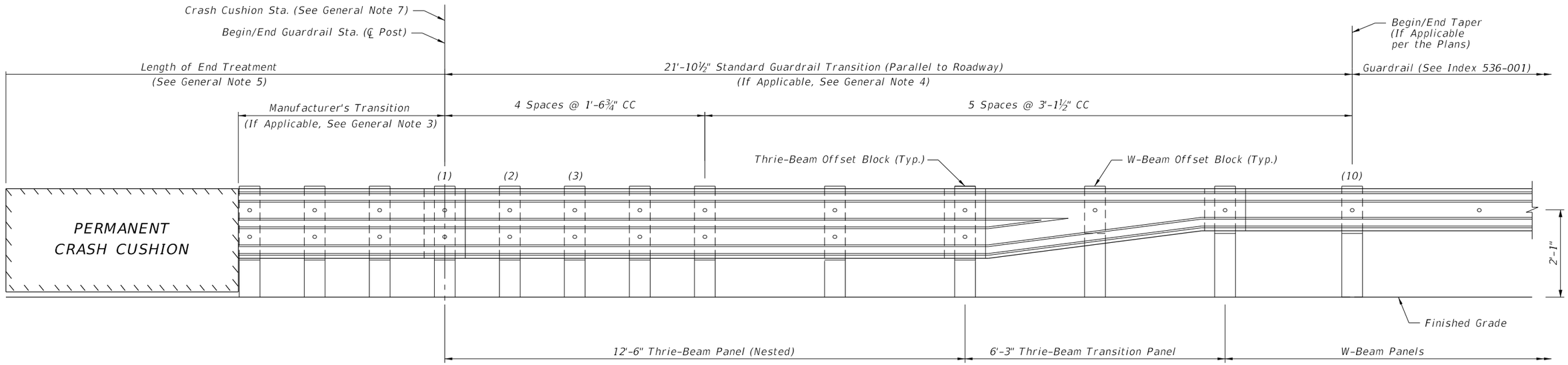


PLAN VIEW



ELEVATION VIEW

NOTE:
Work this Sheet with the details and General Notes on Sheet 1.

STANDARD GUARDRAIL TRANSITION

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CRASH CUSHION DETAILS	INDEX	SHEET
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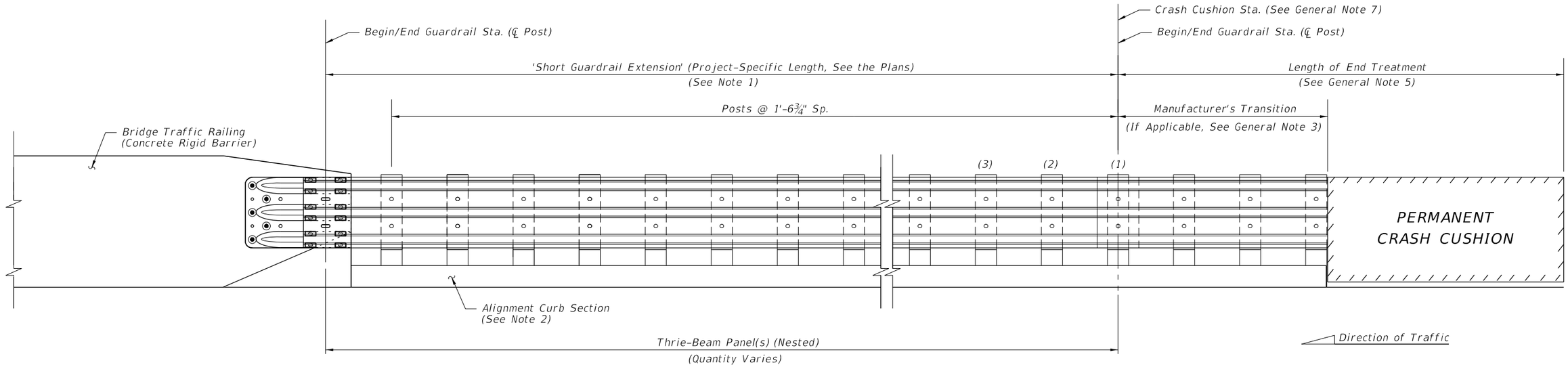
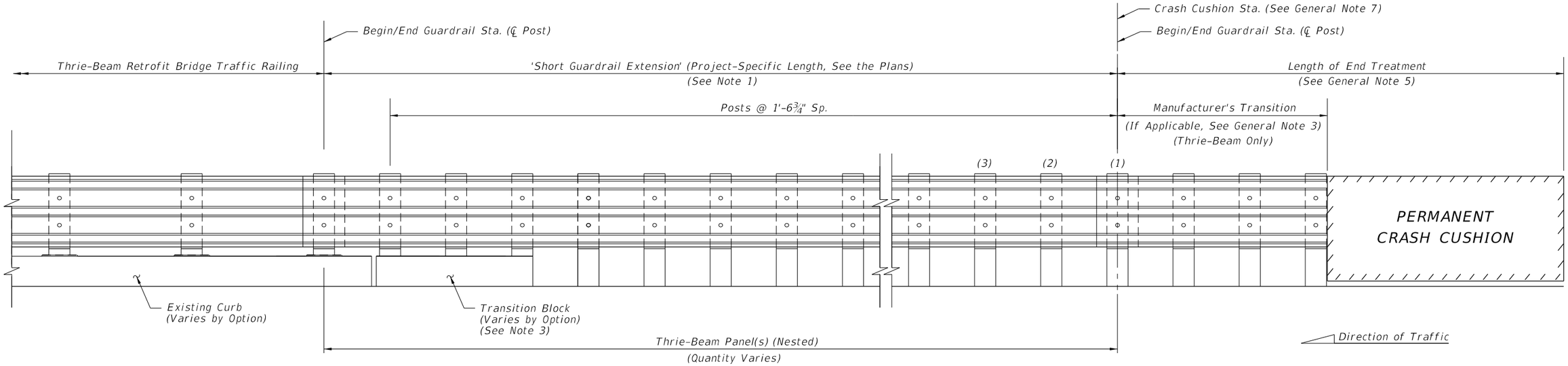


ELEVATION - CONNECTION TO CONCRETE TRAFFIC RAILING (See Note 2)



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

NOTES:

1. GENERAL: Work this Sheet with the details and General Notes on Sheet 1.

   Install short guardrail extension only where called for in the plans, using the project-specific length specified. Short guardrail extensions are typically used where adding length to a barrier system is warranted, but a full Approach Transition Connection to Rigid Barrier will not fit.

2. CONNECTION TO CONCRETE TRAFFIC RAILING: See Index 536-001 for connection details to rigid barrier, including the Thrie-Beam Terminal Connector and Alignment Curb details. Install the Alignment Curb section with no curb transition, and extend the curb to the crash cushion as shown. The crash cushion must laterally extend beyond the above-ground portion of the alignment curb to shield its end face from approaching traffic.

3. CONNECTION TO THRIE-BEAM RETROFIT: Provide Thrie-Beam Retrofit guardrail connection splice, curb, and Transition Block per Index 536-002 and the applicable Index 460-470 series.

ADDITIONAL BRIDGE CONNECTION OPTIONS SHORT GUARDRAIL EXTENSIONS

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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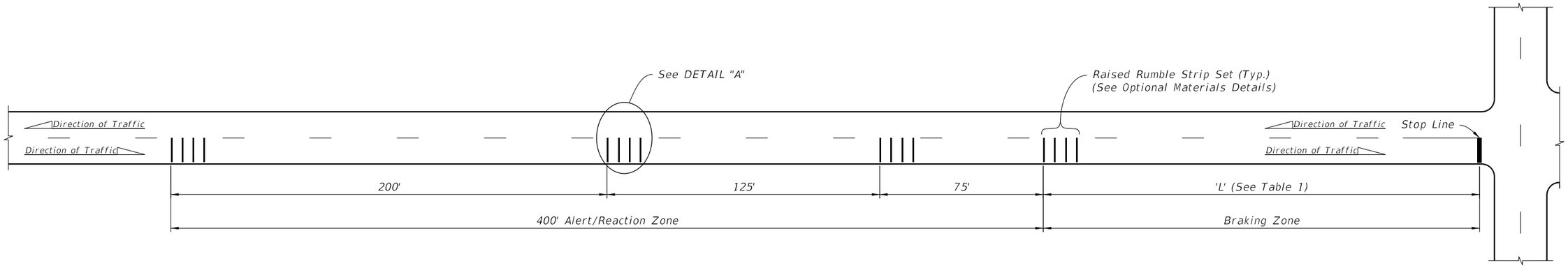
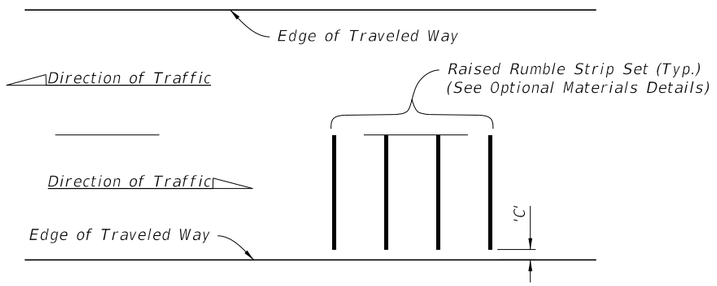


PLAN

SPACING OF RAISED RUMBLE STRIP SETS AT INTERSECTIONS

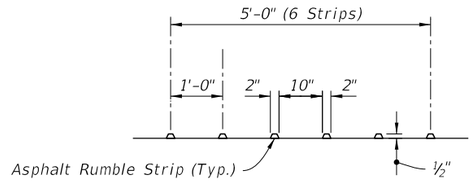
(Preformed Thermoplastic Set Shown, Others Similar)



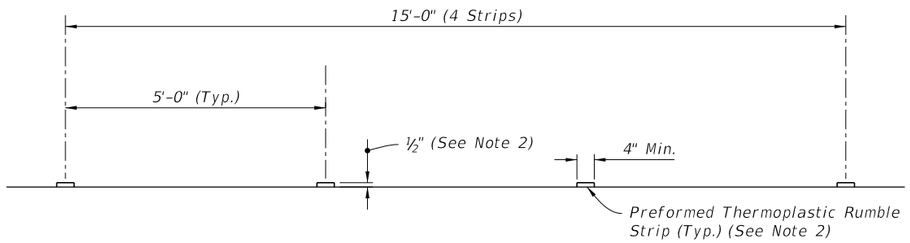
'C' = 0' For Roadways With Paved Shoulders

'C' = 1.5' For Roadways Without Paved Shoulders

DETAIL "A"



OPTION P1 - ASPHALT SET



OPTION P2 - PREFORMED THERMOPLASTIC SET

OPTIONAL MATERIALS DETAILS

TABLE 1 - BRAKING 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.

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PERMANENT RAISED RUMBLE STRIPS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	RAISED RUMBLE STRIPS	INDEX	SHEET
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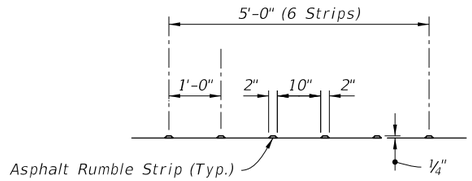
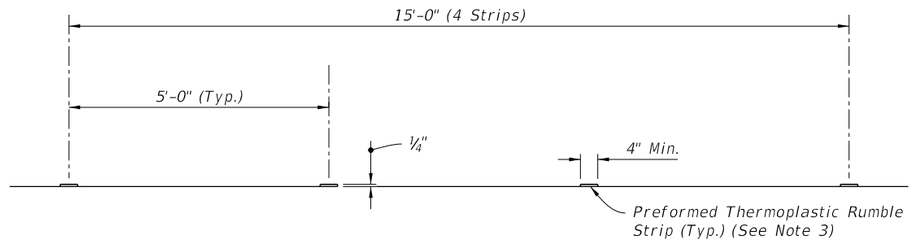
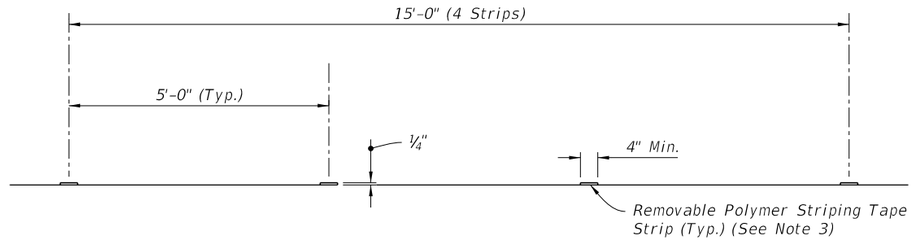


OPTION ST1 - ASPHALT SET



OPTION ST2 - PREFORMED THERMOPLASTIC SET



OPTION ST3 - REMOVABLE POLYMER STRIPING TAPE SET

OPTIONAL MATERIALS DETAILS

NOTES:

1. Construct short-term raised rumble strips where noted in the Plans and in accordance with Specification 546.
2. See Sheet 1 for placement and additional details.
3. Use color white for Preformed Thermoplastic and Removable Polymer Striping Tape Sets.

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SHORT-TERM RAISED RUMBLE STRIPS

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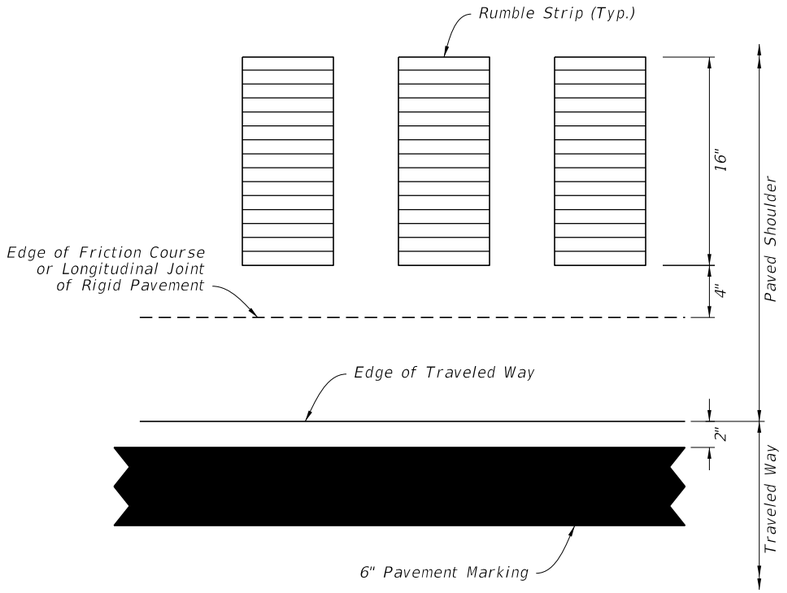
NOTES:

1. When friction course extends more than 8" beyond the edge of the traveled way, blade off the extended friction course to the 8" line prior to rumble strip grinding.

2. Use the continuous array on both inside and outside shoulders 1,000 feet in advance of bridge ends or back to the gore recovery area for mainline interchange bridges. Use the skip array for all other locations.

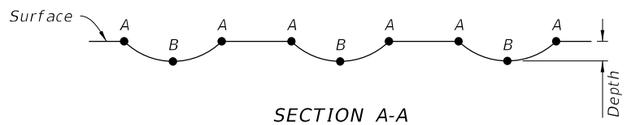
3. Exclude rumble strips at the following locations:

   A. At mainline tolling areas, terminate rumble strips at the end of the mainline normal section.
   B. At All Electronic Tolling (AET) facilities, terminate rumble strips within 50 feet of the centerline of the overhead gantry.
   C. On outside shoulders of entrance ramp terminals, terminate rumble strips at the point of the physical gore and resume at the end of the acceleration lane taper.
   D. On outside shoulders of exit ramp terminals, terminate rumble strips at the start of the deceleration lane taper and resume at the point of the physical gore.
   E. On approaches to bridges, terminate rumble strips at the approach slab joint.
   F. On either side of median crossover openings, terminate rumble strips within 400 feet.

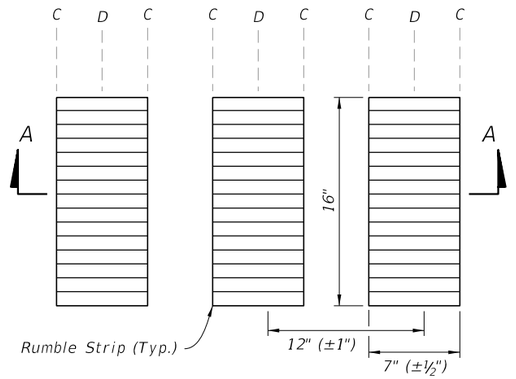


RUMBLE STRIP PLACEMENT
(Plan View)

RUMBLE STRIP DEPTH TABLE	
LOCATION	DEPTH FROM SURFACE (IN.)
A	0
B	9/16 (±1/16)

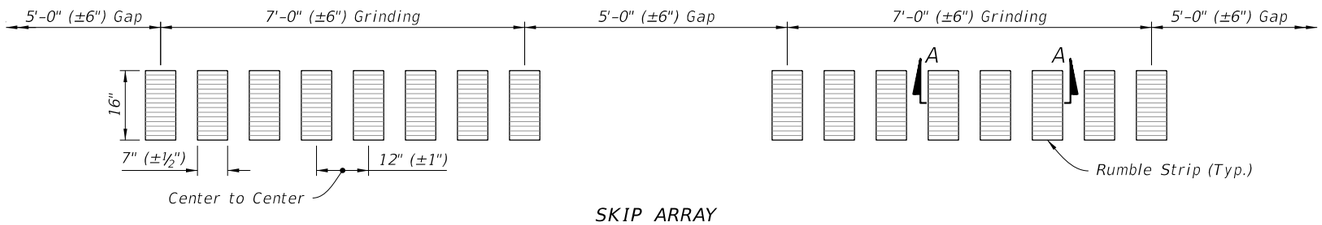


SECTION A-A

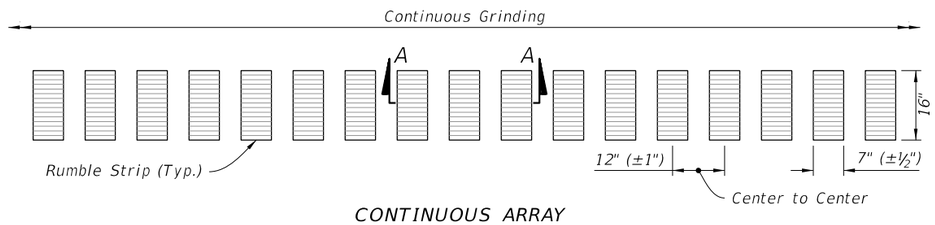


PLAN VIEW

RUMBLE STRIP DETAILS



SKIP ARRAY



CONTINUOUS ARRAY

RUMBLE STRIP ARRAY DETAILS

LIMITED ACCESS ROADWAYS

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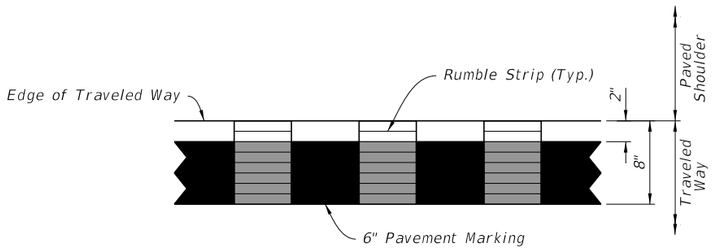
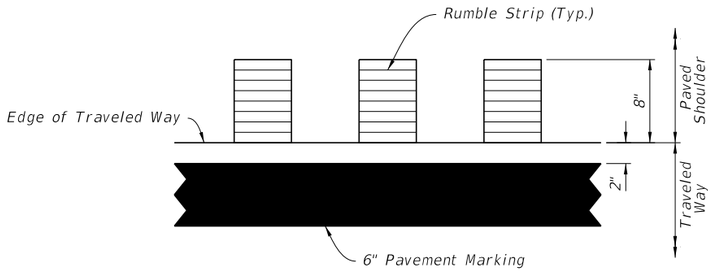
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	GROUND-IN RUMBLE STRIPS	INDEX	SHEET
04/04/18					546-010	1 of 3



TYPE "A1"
(Plan View)



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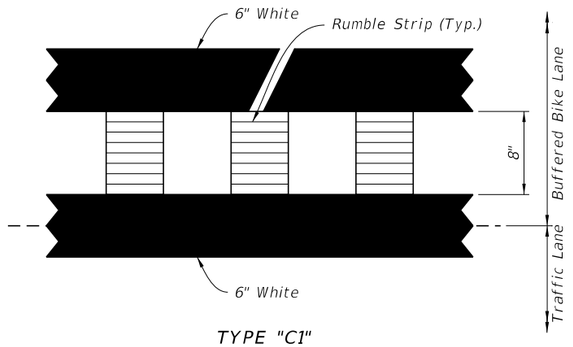
(Plan View)



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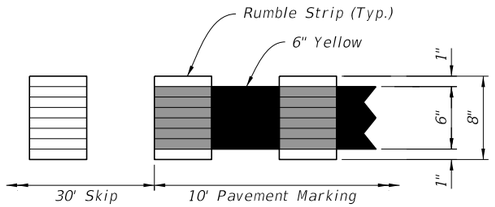
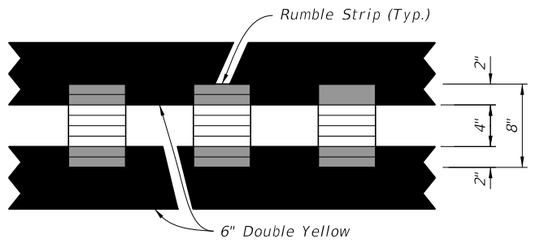
(Plan View)

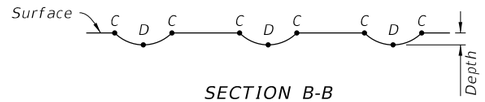


TYPE "D1" - PASSING
(Plan View)

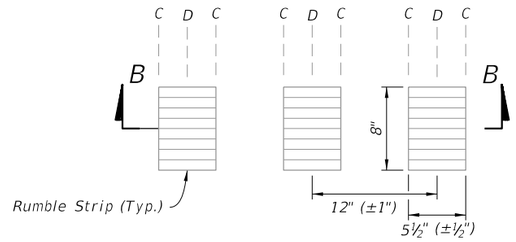


TYPE "D1" – NO PASSING
(Plan View)

RUMBLE STRIP DEPTH TABLE	
LOCATION	DEPTH FROM SURFACE (IN.)
C	0
D	3/16 (±1/16)

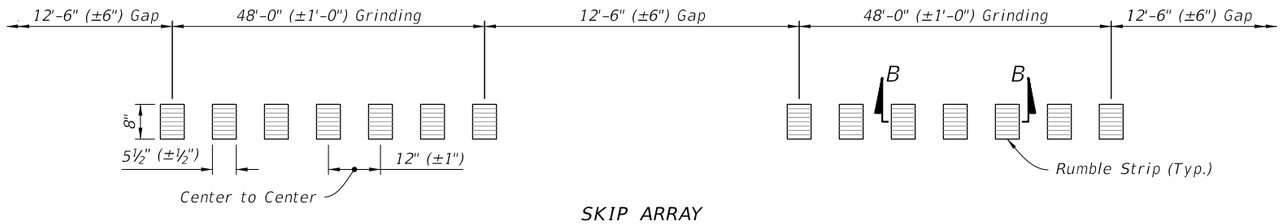


SECTION B-B



PLAN VIEW

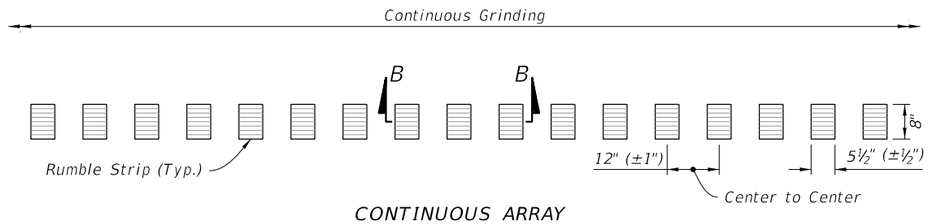
EDGE LINE RUMBLE STRIP PLACEMENT TYPES



SKIP ARRAY
(Outside Shoulder Edge Lines)

CENTERLINE RUMBLE STRIP PLACEMENT TYPES

RUMBLE STRIP DETAILS



CONTINUOUS ARRAY
(Centerlines and Inside Shoulder Edge Lines)

RUMBLE STRIP ARRAY DETAILS

NOTE:

See the Plans for the Placement Type to be used.

CYLINDRICAL FOR ARTERIALS AND COLLECTORS

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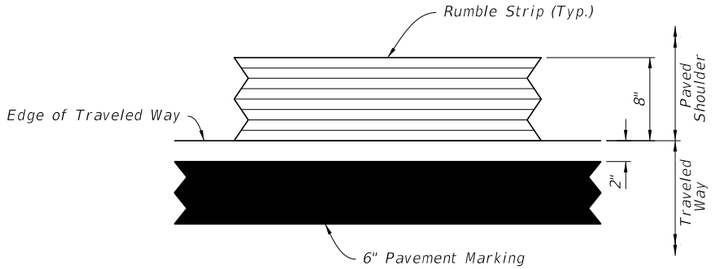
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	GROUND-IN RUMBLE STRIPS	INDEX	SHEET
04/04/18						546-010	2 of 3



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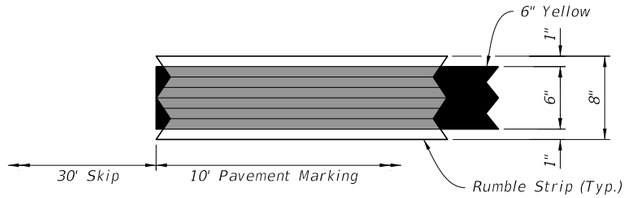
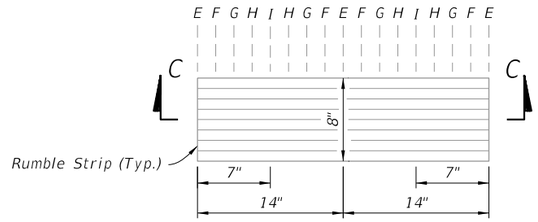
(Plan View)



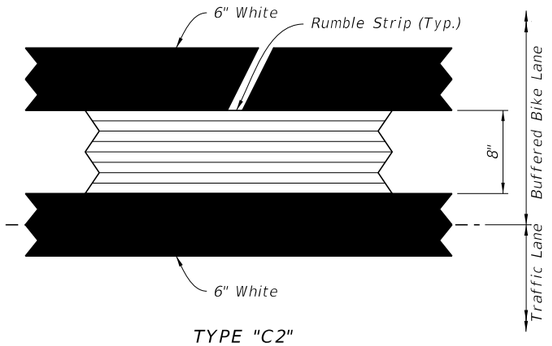
TYPE "D2" - PASSING
(Plan View)

RUMBLE STRIP DEPTH TABLE	
LOCATION	DEPTH FROM SURFACE (IN.)
E	0
F	1/16
G	5/32
H	9/32
I	5/16

SECTION C-C



PLAN VIEW



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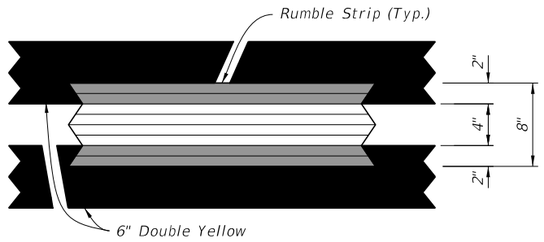

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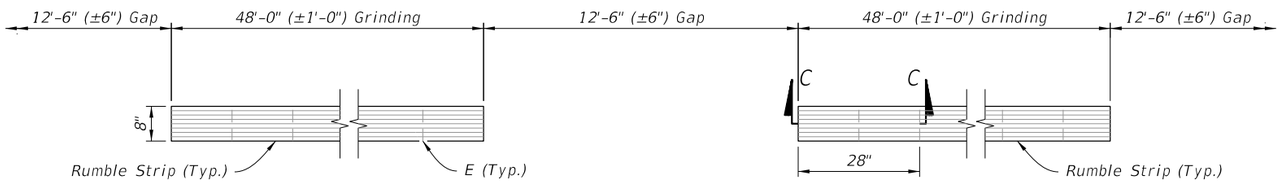
(Plan View)

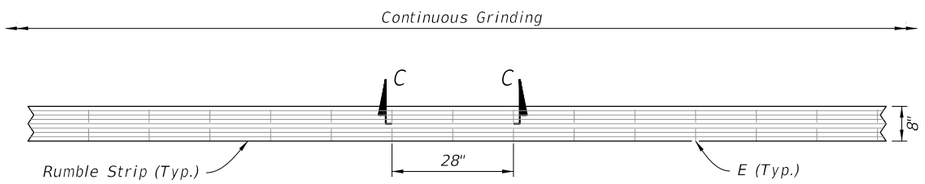
EDGE LINE RUMBLE STRIP PLACEMENT TYPES

CENTERLINE RUMBLE STRIP PLACEMENT TYPES

RUMBLE STRIP DETAILS



SKIP ARRAY
(Outside Shoulder Edge Lines)



CONTINUOUS ARRAY
(Centerlines and Inside Shoulder Edge Lines)

RUMBLE STRIP ARRAY DETAILS

NOTE:

See the Plans for the Placement Type to be used.

SINUSOIDAL FOR ARTERIALS AND COLLECTORS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
04/04/18			FY 2020-21 STANDARD PLANS	GROUND-IN RUMBLE STRIPS	546-010	3 of 3

1/6/2020 8:06:41 AM

NOTES

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 Chapter 3 of the FDOT Structures Design Guidelines.

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.

MATERIALS:

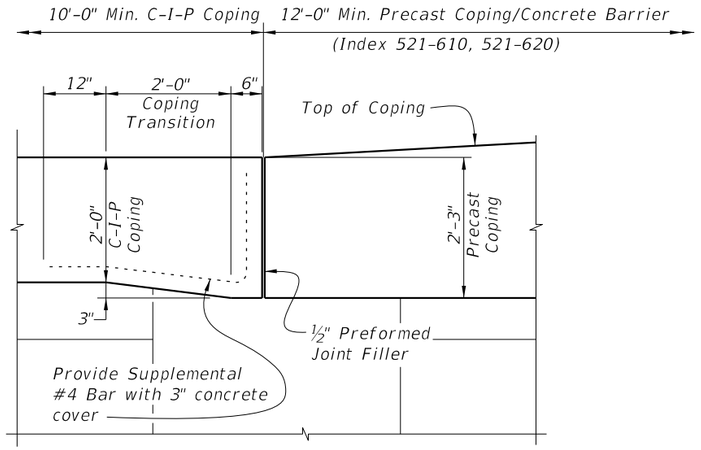
1. See Specification Section 548 for material requirements.

CONSTRUCTION:

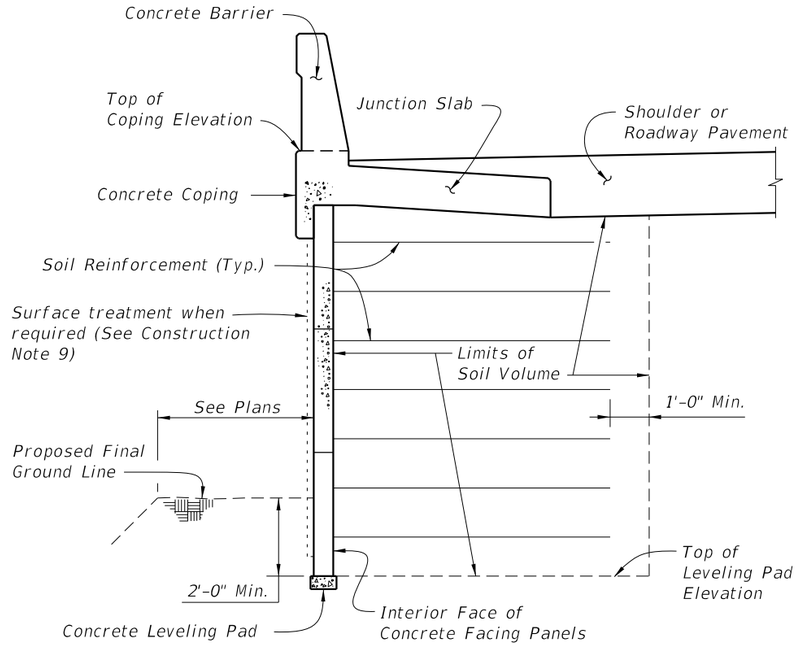
1. Walls will be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
2. For location and alignment of retaining walls, see Wall Control Drawings.
3. If required, locate manholes and drop inlets as shown on wall elevations.
4. Refer to Wall Control Drawings of 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.
8. 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.

SHOP DRAWINGS:

See Specification Section 548 for shop drawing requirements.



ELEVATION VIEW OF
COPING HEIGHT TRANSITION



TYPICAL MSE RETAINING WALL SECTION
WITH A CONCRETE BARRIER
(Showing Limits of the Reinforced Soil Volume)

FDOT MSE RETAINING WALL CLASSIFICATION TABLE

Applicable FDOT Wall Type *	Durability Requirements (Carbon-Steel Reinforcing)			Durability Requirements (FRP Reinforcing)			Soil Reinforcement Type	Other Allowable FDOT Wall Types					
	Concrete Cover (in.)	Concrete Class for Panels	Pozzolan Additions? **	Concrete Cover (in.)	Concrete Class for Panels	Pozzolan Additions? **		2A	2B	2C	2D	2E	2F
Type 2A	2	II	No	1.5	II	No	Metal		✔	✔	✔	✔	✔
Type 2B	2	IV	No	1.5	IV	No	Metal			✔	✔	✔	✔
Type 2C	3	IV	No	1.5	IV	No	Metal				✔	✔	✔
Type 2D	3	IV	Yes	2	IV	No	Metal					✔	✔
Type 2E	3	IV	No	2	IV	No	Plastic						✔
Type 2F	3	IV	Yes	2	IV	No	Plastic						

* See Data Table in Contract Plans.

** Silica fume, metakaolin or ultrafine fly ash.

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GENERAL NOTES AND DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MSE RETAINING WALL SYSTEMS - PERMANENT	INDEX	SHEET
11/01/18						548-020	1 of 1

NOTES

DESIGN CRITERIA:

1. Design is based on the assumption that the material contained within the reinforced soil volume, methods of construction and quality of prefabricated materials are in accordance with Specification Section 548 and FDOT Structures Design Guidelines Section 3.13.2.
2. It is the responsibility of the Engineer to determine that the factored bearing pressure shown for the wall does not exceed the factored bearing resistance of the foundation for that specific wall location.
3. The Wall Company is responsible for internal stability of the wall. External stability design, including foundation and slope stability, is the responsibility of the Engineer.
4. If present, consider in design and analysis and locate manholes and drop inlets as shown on wall elevations.

SOIL PARAMETERS:

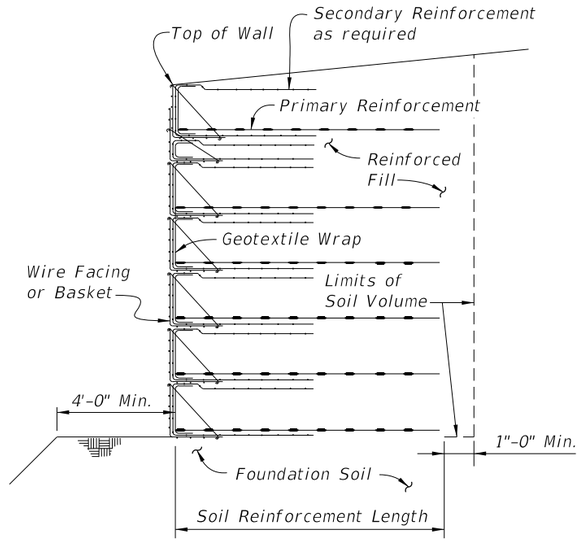
1. See wall control drawings for soil characteristics of foundation material to be used in the design of the wall system. The Contractor must provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site. Provide the values of unit weight, cohesion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

MATERIALS:

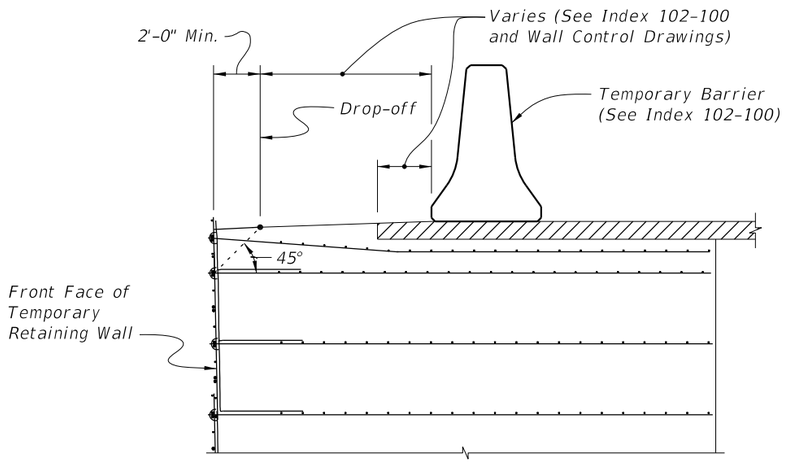
1. Provide soil reinforcement in accordance with Specification Section 548.
2. For additional material notes, see Wall Company General Notes.

CONSTRUCTION:

1. Walls must be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
2. For location and alignment of retaining walls, see Wall Control Drawings.
3. Refer to Plan and Elevation sheets of individual walls for minimum reinforcement strip/mesh length, factored bearing resistance's, minimum wall embedment and anticipated long term and differential settlements.
4. If existing or future structures, pipes, foundations or 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)



TEMPORARY TRAFFIC RAILING
PLACEMENT DETAIL

GENERAL NOTES AND DETAILS

10/29/2019 8:21:34 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MSE RETAINING WALL SYSTEMS - TEMPORARY	INDEX	SHEET
11/01/17						548-030	1 of 1

GENERAL NOTES

1. This fence to be provided generally in rural areas. For supplemental information see Specifications 550.

2. Fabric shall be woven wire, either galvanized steel, meeting the requirements of ASTM A116, No. 9 Grade 60, Design Number 1047–6–9, with Class 3 zinc coating; No. 12 ½ Grade 175, Design Number 1047–6–12 ½, with a 10 ½ gage top and bottom wire and with Class 3 zinc coating; or aluminum coated steel, meeting the requirements of ASTM A584, No. 9 Farm, Design Number 1047–6–9, with a minimum coating weight of 0.40 oz./ft.^{2}. For additional information see payment note below.

3. Fence shall be installed with wire side to private property except on horizontal curves greater than 3° the fence shall be installed so as to pull against all posts.

4. Posts may be either timber, steel, recycled plastic or concrete. Unless a specific post material is called for in the plans, the Contractor may elect to use either a single material or a combination of timber, steel, recycled plastic or concrete materials, but must comply with the electrical grounding requirements in Specification 550. Line posts of one material may be used with corner, pull and end post assemblies of a different material. Line posts of only one optional material and pull post assemblies of only one optional material will be permitted between corner and end post assemblies. Within individual corner and end post assemblies only one optional material will be permitted.

5. Timber posts shall meet the material requirements of Specification 954. Timber line posts are to be minimum 4" diameter. Timber corner, pull, approach and end posts are to be a minimum 5" diameter. Timber braces are to be minimum 4" diameter.
   (A) Staples for line posts to be 1¼" minimum length; for approach, corner and pull posts 1½" 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.; roll formed studding; anchor plate attached, ASTM A702 (18 in.^{2}).
   (B) Approach posts: 2½"x2½"x¼" angles, 8' long; fabricated for attaching brace; with necessary hardware, clamps, etc.
   (C) Pull, end and corner posts: 2½"x2½"x¼" angles, 8' long; fabricated for attaching brace; with necessary hardware, clamps, etc.
   (D) Braces: 2"x2"x¼" angles with necessary hardware and fabricated for attaching to post.
   (E) The pull, corner, approach and end posts are to be set in concrete as per detail. (Also see General Note 15)

7. Recycled plastic posts shall meet the following material requirements: Line posts shall have a minimum section of 4" round or 4" square. Plastic posts shall not be used as corner, pull, end or approach posts unless such use is specifically detailed in the plans. The straightness of the post shall comply with Specification 954 for timber post. The flexural strength shall meet the requirements of the latest edition of the Southern Pine Inspection Bureau's Standard Grading Rules for Southern Pine Lumber for No. 2SR Stress Rated Grade Timber. Plastic posts can be set by either digging and tamped backfill or by driving into full depth preformed holes ¼" to ½" smaller than cross section of post.
   Staples for fabric and barbed wire connection to plastic line posts shall be the same size, count and location as that for timber posts.

8. The Contractor, at his option, may use any suitable precast or prestressed concrete posts; however, approval by the Engineer, of posts not shown on this index, will be required prior to construction of the fence. Precast posts shall be Class I concrete. Prestressed posts shall be Class III concrete. Lengths of concrete post to be as indicated for timber posts.

9. Aluminum post, braces and accessory framing hardware shall not be used unless the plans specifically detail their application or the Engineer specifically approves their incorporation in fence construction or repair. Aluminum framed gates are permitted as described in General Note 19.

10. The woven wire shall be attached to steel and concrete posts by a minimum of five tie wires. The single wire ties shall be applied to the top, bottom and three intermittent line wires. The ends of each tie wire shall have a minimum of two tight turns around the line wire. Tie wires shall be steel wire not less than 0.120" diameter, zinc coating Class 3, soft temper, in accordance with ASTM A641.

11. Steel Barbed Wire can be either of the following types:
   Type I: This type shall conform to the requirements of ASTM A121, with two strands of 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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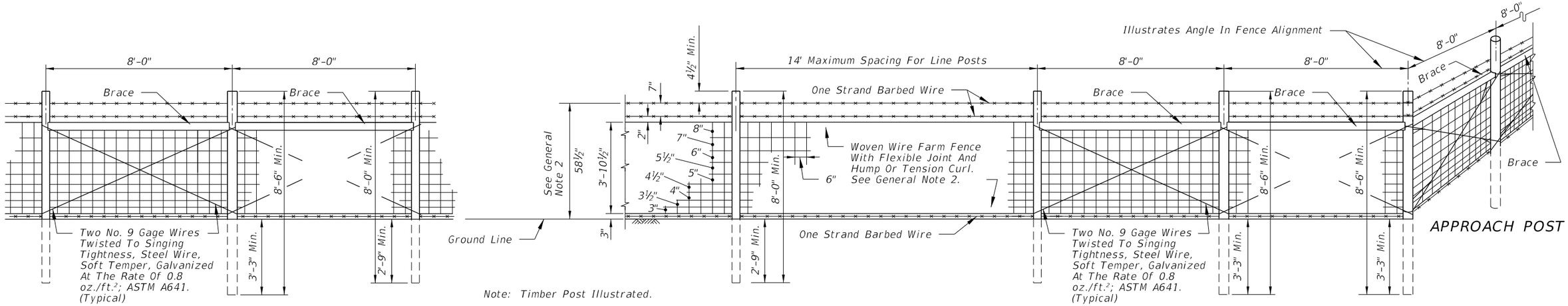
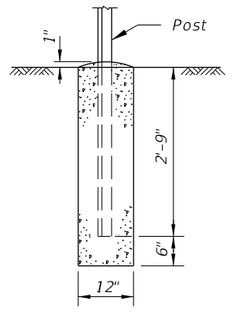
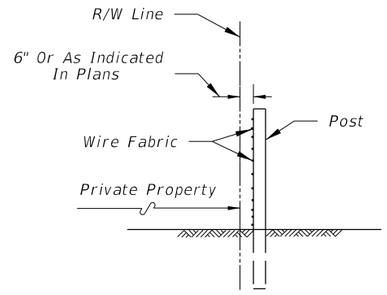
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	FENCE TYPE A	INDEX	SHEET
11/01/17						550-001	1 of 3





(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 46½" (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.

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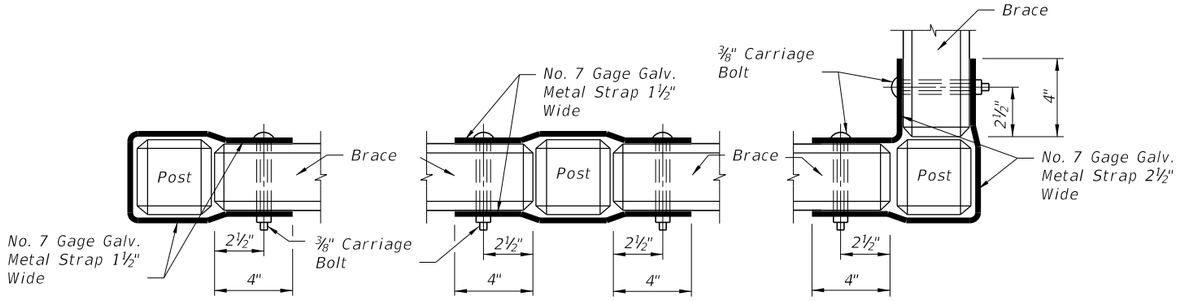
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	FENCE TYPE A	INDEX	SHEET
11/01/17					550-001	2 of 3

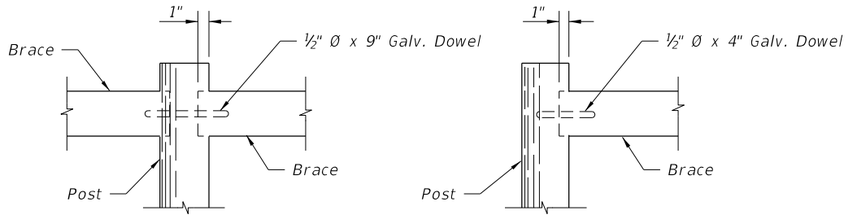


BRACE AND POST

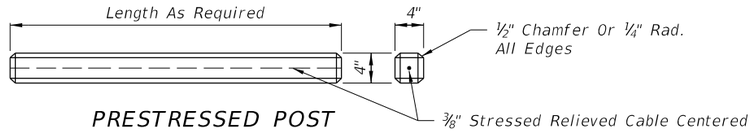
BRACE TO BRACE ON LINE

BRACE TO BRACE AT CORNER

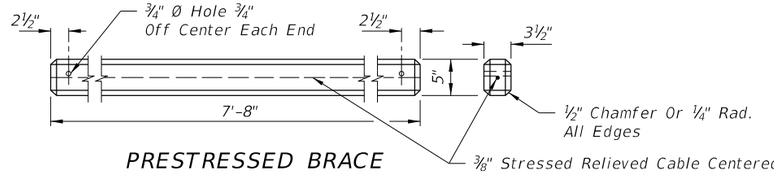
FASTENER FOR CONCRETE POST AND BRACES



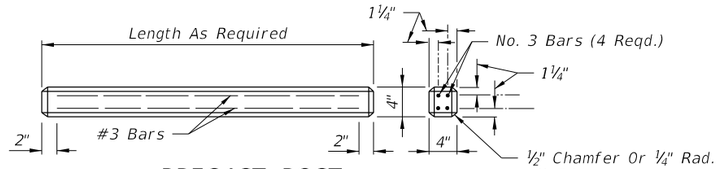
FASTENER FOR TIMBER POST AND BRACE



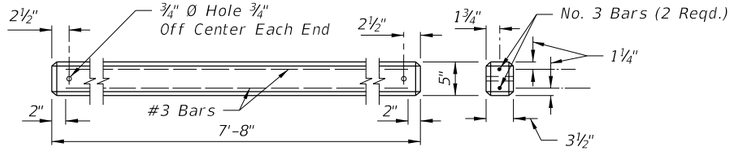
PRESTRESSED POST



PRESTRESSED BRACE

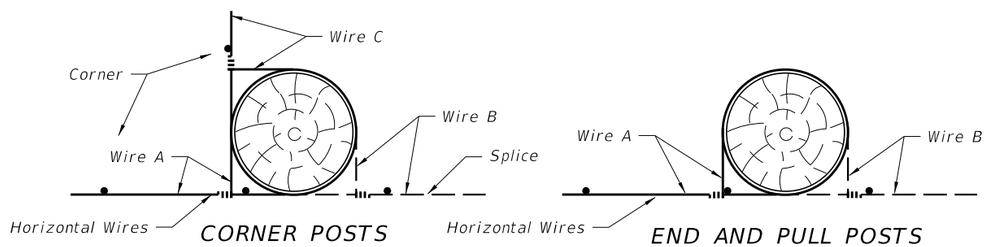


PRECAST POST



PRECAST BRACE

ALTERNATE CONCRETE POSTS AND BRACES



CORNER POSTS

END AND PULL POSTS

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

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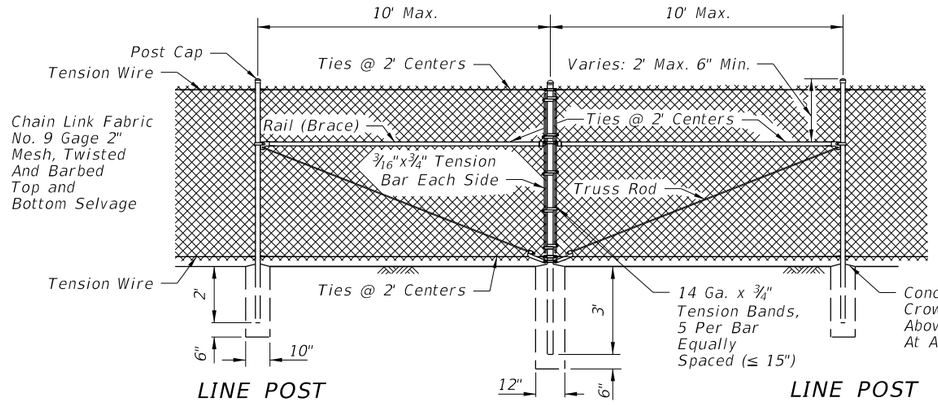

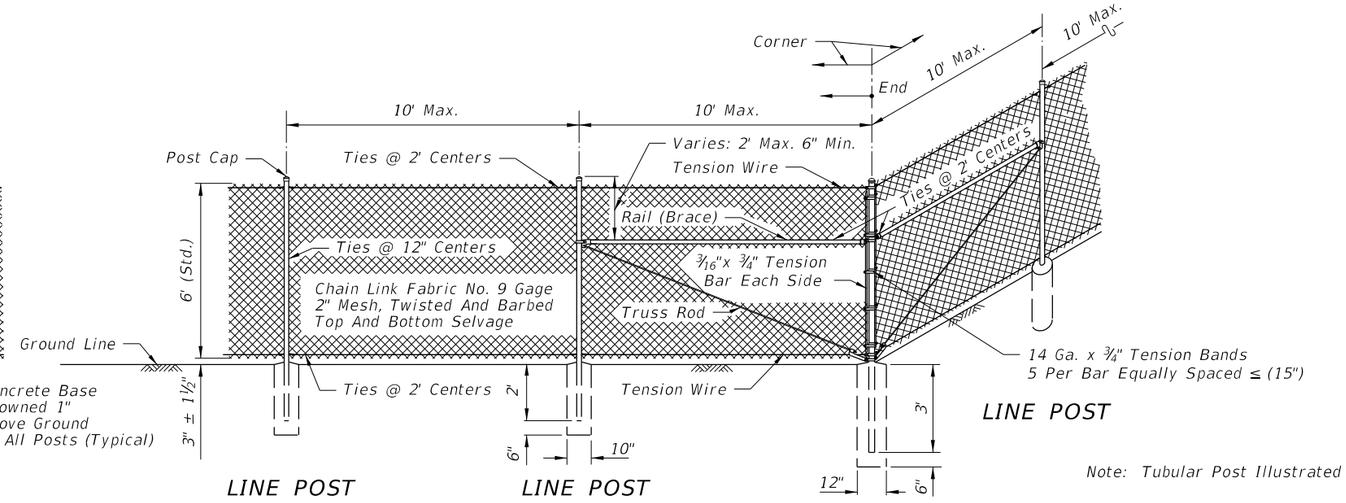

Note: Tubular Post Illustrated

GENERAL NOTES

1. 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– 1½" 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– 1½" nominal dia., 1.90" OD; coated at the rate 0.40 oz./ft.: AASHTO M111.
      (3) Aluminum alloy pipe– 2" nominal dia.: ASTM B241 or B221, Alloy 6063, T6.
      (4) Steel H–Beam– 1⅞"x 1⅝": Zinc Galv. 1.8 oz./ft.: AASHTO M111 and Detail.
      (5) Aluminum alloy H–Beam– 1⅞"X 1⅜" Detail.
      (6) Steel C– 1⅞"X 1⅝": Galv.: 1.8 oz/ft. zinc: AASHTO M111; OR , 0.9 oz./ft². zinc–5% aluminum–mischmetal: ASTM F1043 and Detail.
      (7) Resistance welded steel pipe; 50,000 psi min. yield strength ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design); fence industry 2" OD, 1½" NPS, 1.900" dec. equiv., 0.120" min. wall thick. and min. wt. 2.28 lb./ft.; with ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15µg/in². min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.

   B. Corner, end, and pull post options:
      (1) Galvanized steel pipe, Schedule 40– 2" nominal dia. zinc galvanized at the rate of 1.8 oz./ft².: ASTM A53 Table X 2, ASTM F1083, and AASHTO M111.
      (2) Aluminum coated steel pipe: ASTM A53 steel, X 2 Tables: Schedule 40; 2" nominal dia., 2.375" OD; coated at the rate 0.40 oz./ft.: AASHTO M111.
      (3) Aluminum alloy pipe– 2½" nominal dia.: ASTM B241 or B221, Alloy 6063,T6.
      (4) Resistance welded steel pipe; 50,000 psi min. yield strength ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design); fence industry 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 15µg/in². min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.

   C. Rail options:
      (1) Galvanized steel pipe, Schedule 40– 1¼" 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; 1¼" nominal dia., 1.660" OD; coated at the rate 0.40 oz./ft.: AASHTO M111.
      (3) Aluminum alloy pipe– 1¼" 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 1⅝" OD, 1¼" 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 15µg/in². min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.

   D. Chain link fabric options (2" mesh with twisted and barbed selvage top and bottom for all options except as described in Note 10):
      (1) AASHTO M181 Type I – Zinc Coated Steel, No. 9 gage (coated wire diameter), coated at the rate of 1.8 oz/ft². (M181 Class D 2.0 oz./ft². modified to 1.8 oz./ft².).
      (2) AASHTO M181 Type II –Aluminum Coated Steel, No. 9 gage (coated wire diameter), coated at the rate of 0.40 oz./ft².
      (3) AASHTO M181 Type IV– Polyvinyl Chloride (PVC) Coated Steel, No. 9 gage (coated core wire diameter), core wire–zinc coated steel. PVC coating: M181 Class A (either extruded or extruded and bonded) or Class B (bonded). See table right. Unless the plans call for M181 standard colors medium green, dark green or black the coating color shall be soft gray matching that of No. 36622 of Federal Standard 595a.

   E. Tension wire options:
      (1) Steel wire No. 7 gage zinc galvanized at the rate of 1.2 oz./ft².: AASHTO M181.
      (2) Aluminum alloy wire with a diameter of 0.1875" or larger conforming to the requirements of ASTM B211, Alloy 5056 Temper H38, or, Alclad Alloy 5056 Temper H192.
      (3) Aluminum coated steel wire No.7 gage coated at the rate of 0.040 oz./ft².: AASHTO M181.

   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.

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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								
Specified Diameter Of Metallic Coated Core Wire			Minimum Weight Of Zinc Coating		PVC Thickness Range			
					M181 Class A (Extruded Or Extruded And Bonded Coating)		M181 Class B (Bonded Coating)	
in.	mm	gage	oz./ft².	g/m²	in.	mm	in.	mm
0.148	3.77	9	0.30	92	0.015 to 0.025	0.38 to 0.64	0.006 to 0.010	0.15 to 0.25

DESIGN NOTE

This index details fencing that is constructed with chain link fabric 6' (nominal) in height and with specific ground clearance.
For fencing of different height or installation details, the fence shall be fully detailed in the Contract plans.

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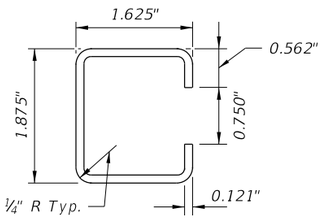
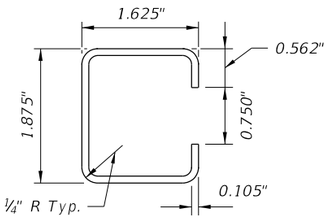


Galv. Wt. Per. Ft.= 2.34# ±5%
Yield PSI (Min.) 45,000

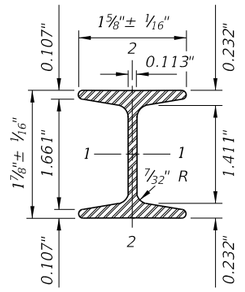
STANDARD WALL



Galv. Wt. Per. Ft.= 1.85# ±5%
Yield PSI (Min.) 45,000

THINWALL

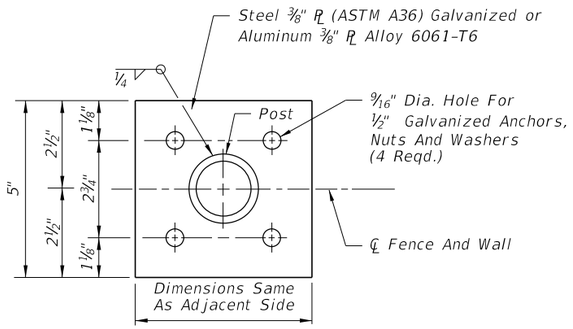
OPTIONAL "C" LINE POST



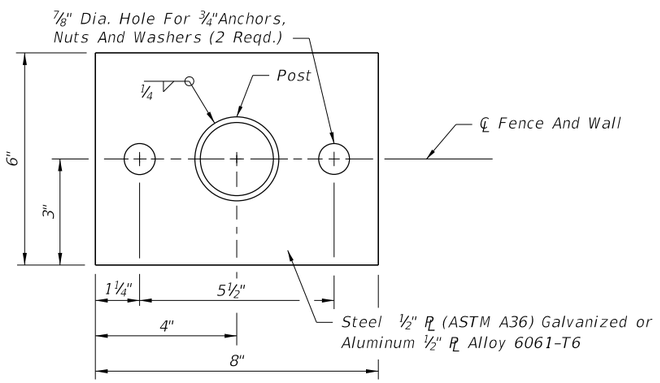
	STEEL	ALUMINUM
Area (Sq. In.)	724	724
Weight (Lb./Ft.)	2.72 ± 5% (Galv.)	0.91 ± 5%
Surface Area (SF/Ft.)	0.776	0.776
Tensile Strength (psi Min.)	80,000	30,000
Yielding Point (psi Min.)	48,000	25,000

	Axes 1–1	Axes 2–2	Axes 1–1	Axes 2–2
Moment Of Inertia	0.428	0.101	0.428	0.101
Section Modulus	0.456	0.124	0.456	0.124
Rad. Of Gyration	0.779	0.373	0.779	0.373

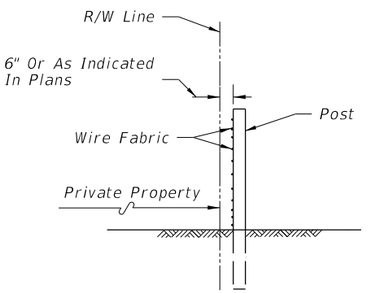
OPTIONAL 1⅞"x 1⅝" H-BEAM LINE POST



TOP VIEW
FOUR ANCHOR PLATE OPTION

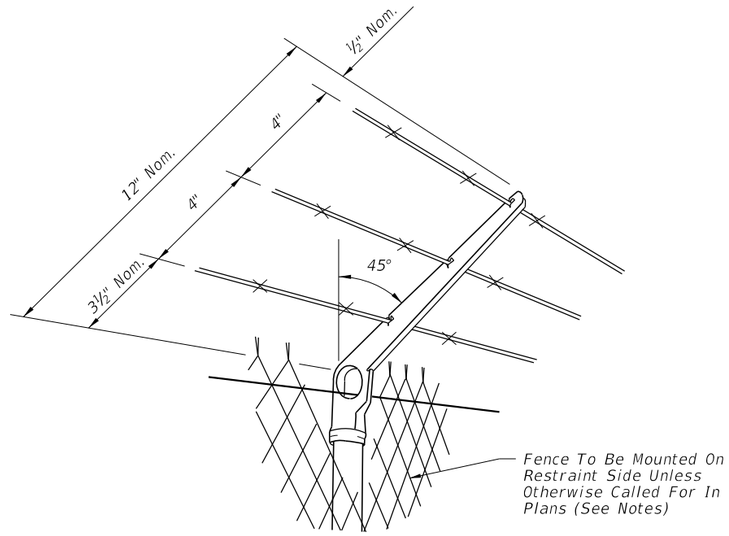


TOP VIEW
TWO ANCHOR PLATE OPTION



FENCE POSITION AT LOCATIONS WITHOUT FRONTAGE ROADS

(REFER TO DETAIL PLANS FOR FENCE POSITION AT LOCATIONS WITH FRONTAGE ROADS)



NOTES

Attachments to be used only when called for in the plans.
Attachments to extend in direction of restraint. Unless otherwise called for in plans, direction of restraint will be as follows:

(a.) Outward on limited access right of way line.
(b.) Outward on controlled access right of way line.
(c.) Outward from utilities and hazardous facilities located within highway right of way.
(d.) Outward from lateral ditches, outfalls, retention basins, canals, borrow areas and similar support facilities.
(e.) Inward on pedestrian ways.

The cap-arm shall be designed to provide a drive fit over the top of posts and to exclude moisture in posts with tubular sections.

BARB WIRE ATTACHMENT

BASE PLATE AND ANCHOR NOTES:

1. Base plate identical for line, pull, end and corner posts and shall be considered an integral part of the respective posts for basis of payment.
2. Post to be plumbed by grout shim under base plate.
3. Anchors (Galvanized Steel):
   12" Cast In Place, 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 ⅛" larger in diameter than the anchor bolt.
   Expansion Bolts Not Permitted.

FENCE MOUNTING ON CONCRETE ENDWALL AND RETAINING WALLS

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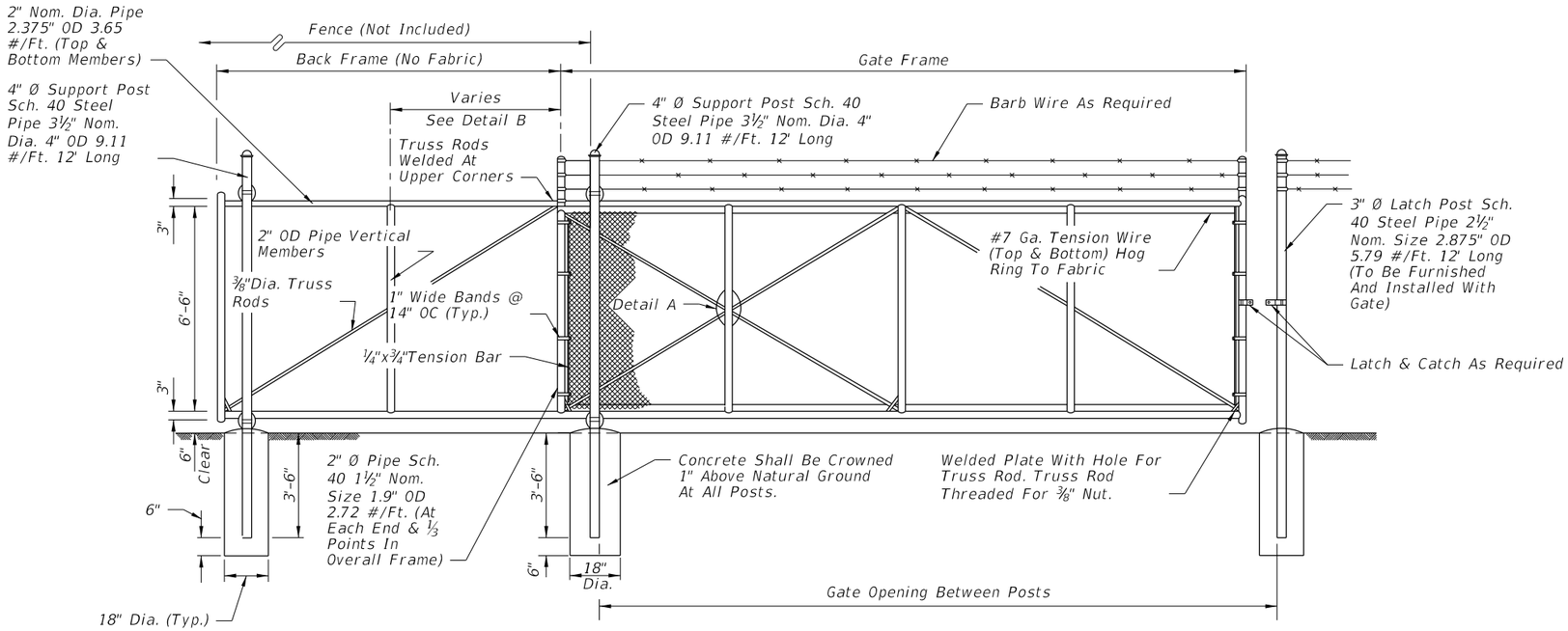
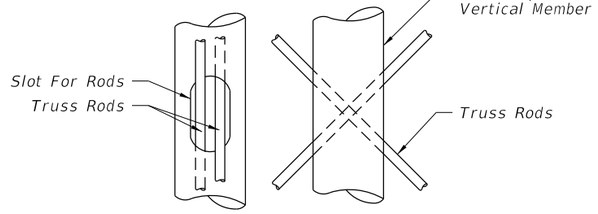
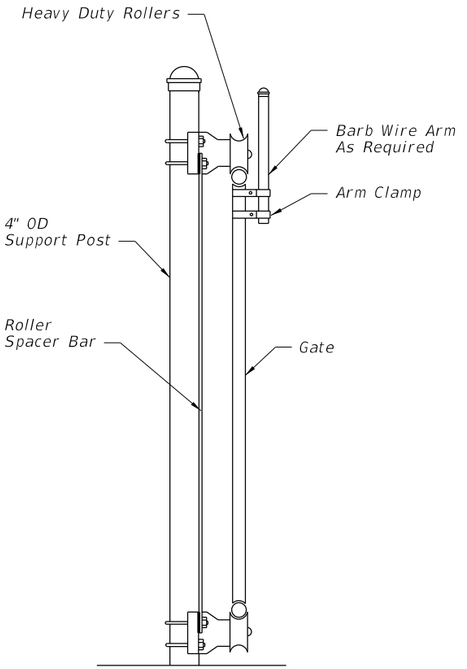


FRONT ELEVATION

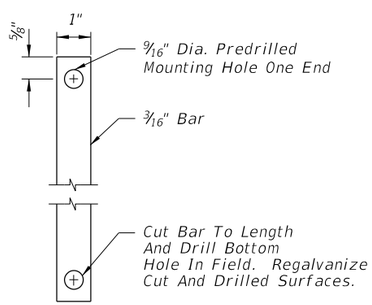


DETAIL A



SUPPORT POST DETAIL

GATE OPENING	GATE FRAME	BACK FRAME
12'	12'-3"	6'
16'	16'-3"	8'
20'	20'-3"	10'
24'	24'-3"	12'



ROLLER SPACER BAR

GENERAL NOTES

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

   Gate components shall meet or exceed the protective coatings specified on Index 550-002.

2. Steel gate frame shall be fabricated prior to galvanizing, except that truss rods may be fabricated following frame galvanizing provided surfaces damaged during welding are galvanized in accordance with Section 24 of AASHTO M36; or, fabricated from pipe components with protective coating meeting the requirements of Index 550-002 that are tolerant of welding (low burn back), and a protective coating applied to the weld and damaged pipe surfaces that is equivalent to the protective coating of the fabricated pipe 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 - 24' Opening

TYPICAL FRAME - 12', 16' & 20' Opening

DETAIL B

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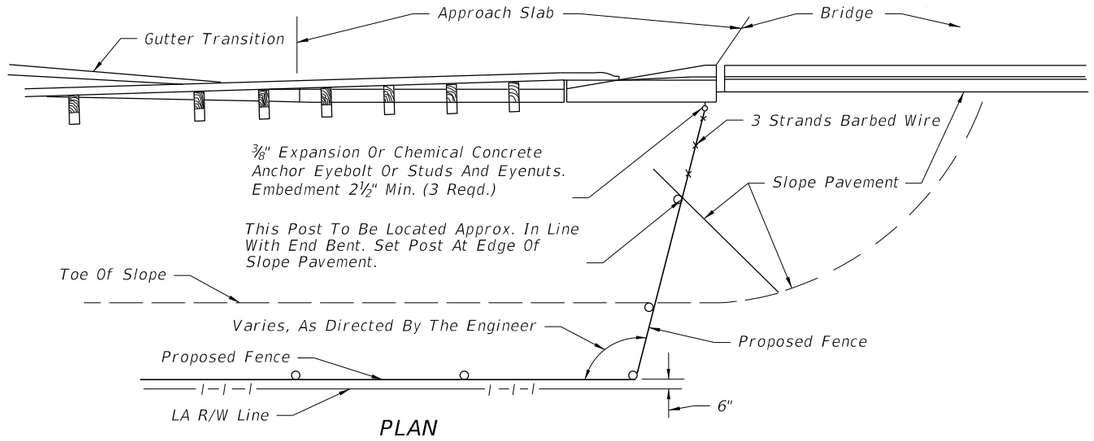
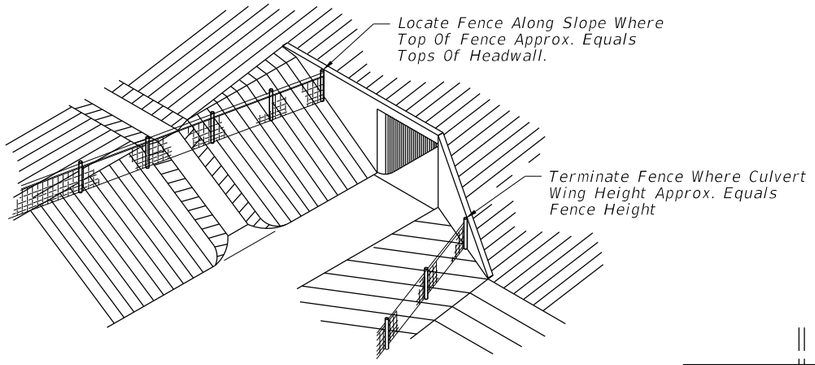
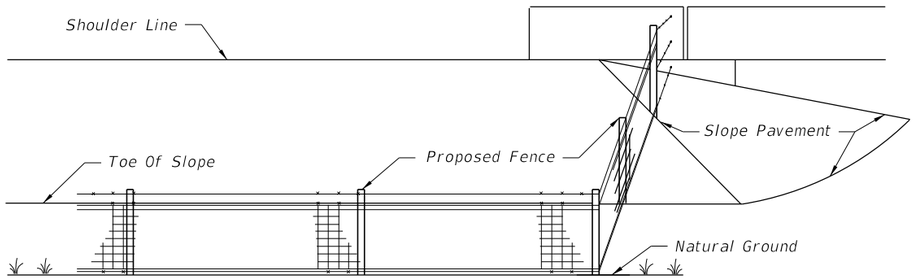


PLAN

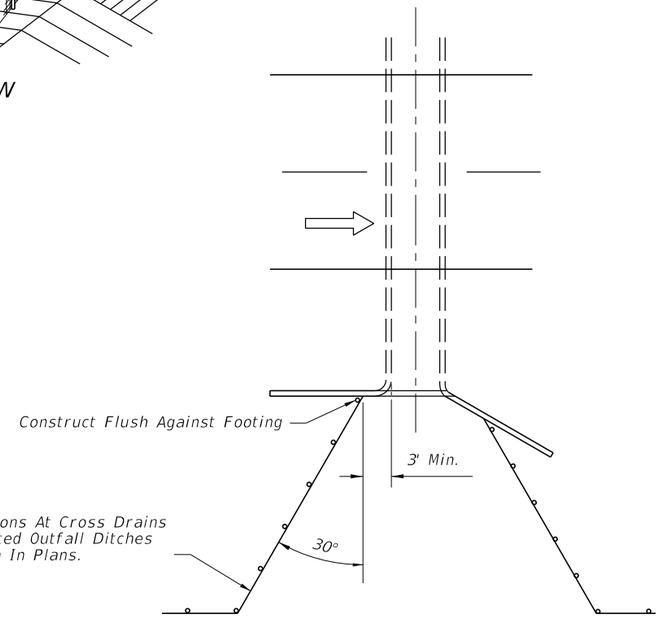


PICTORIAL VIEW

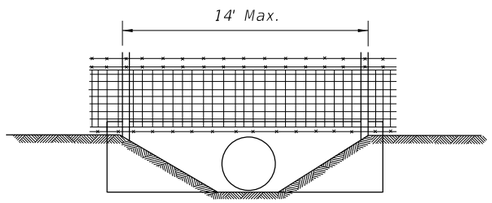


ELEVATION

FENCING TERMINALS AT BRIDGE ENDS
(ROADWAY)

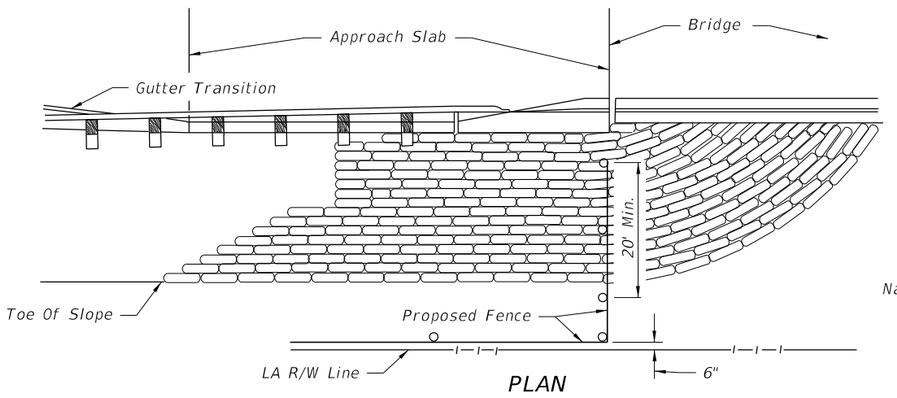


PLAN
(For Heights Of Headwall Greater Than 4')
FENCING TERMINALS AT BOX CULVERTS

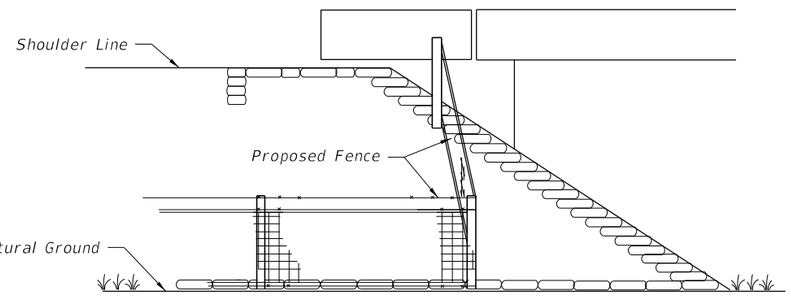


FENCING DETAIL AT CULVERT
(For Heights Of Headwalls 4' Or Less.)

Note: When height of headwall is 4' or less (drainage pipe 36" or less) the fence shall not be tied to the headwall, but shall span the lateral ditch.



PLAN



ELEVATION

FENCING TERMINALS AT BRIDGE ENDS
(STREAM CROSSING)

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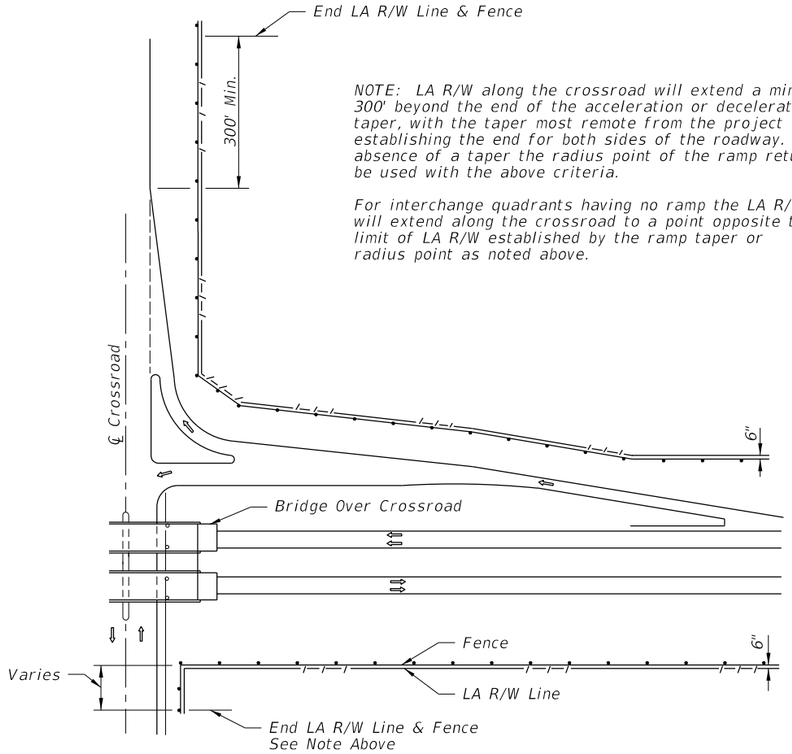
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	FENCE LOCATION	550-004	1 of 2

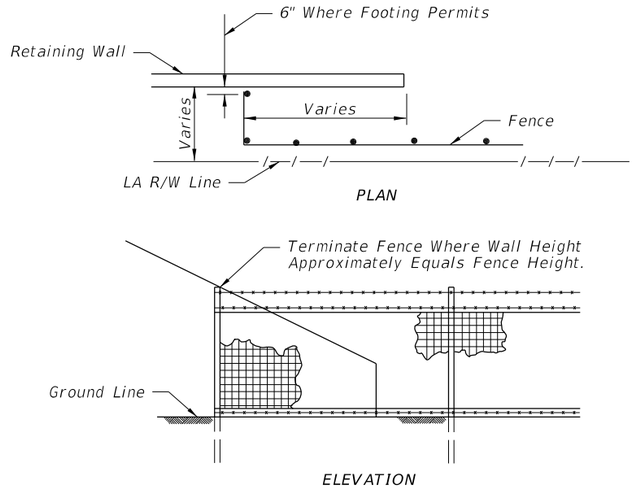


NOTE: LA R/W along the crossroad will extend a minimum 300' beyond the end of the acceleration or deceleration taper, with the taper most remote from the project establishing the end for both sides of the roadway. In the absence of a taper the radius point of the ramp return will be used with the above criteria.

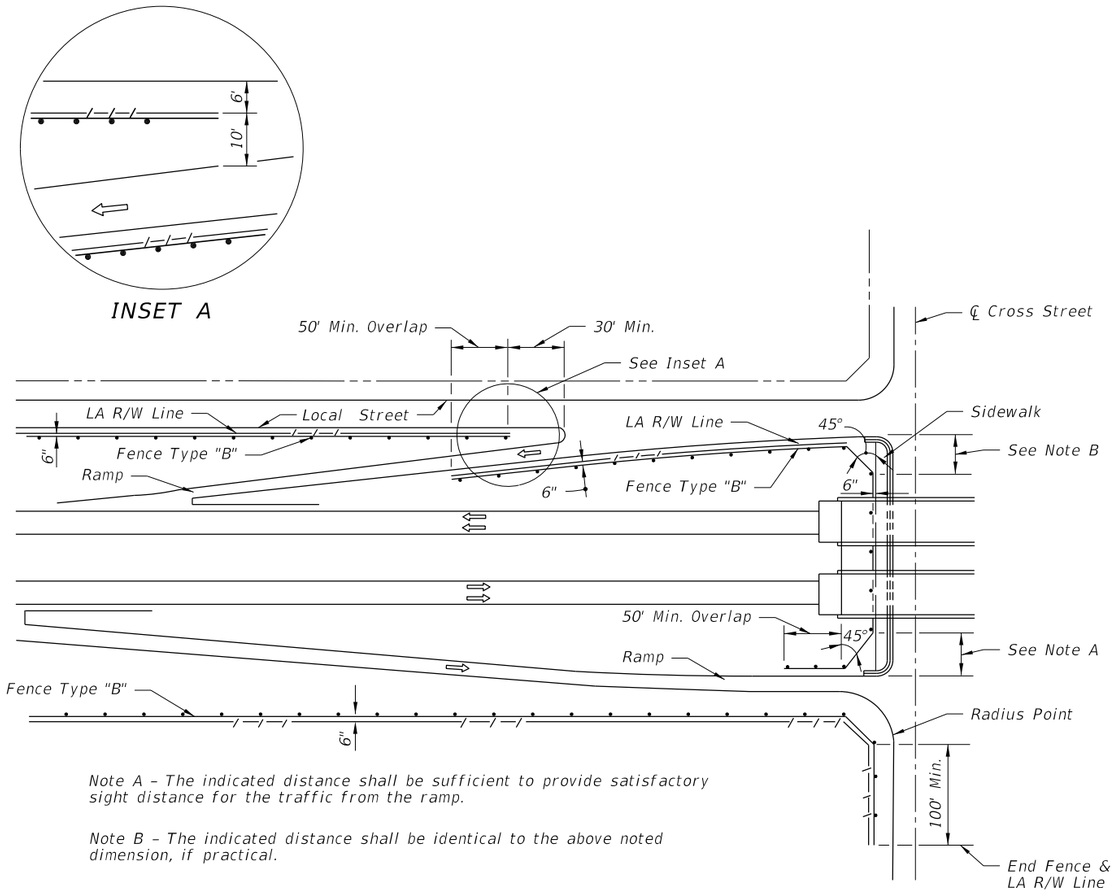
For interchange quadrants having no ramp the LA R/W will extend along the crossroad to a point opposite the limit of LA R/W established by the ramp taper or radius point as noted above.

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

FENCING TERMINALS AT RURAL INTERCHANGES



FENCING TERMINALS AT RETAINING WALLS



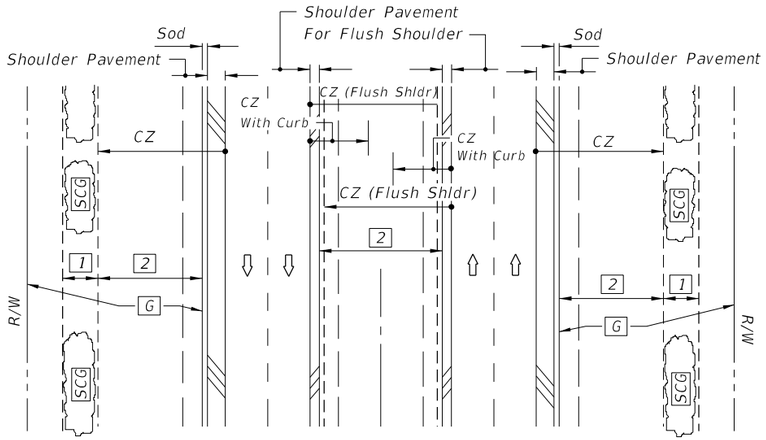
Note A – The indicated distance shall be sufficient to provide satisfactory sight distance for the traffic from the ramp.

Note B – The indicated distance shall be identical to the above noted dimension, if practical.

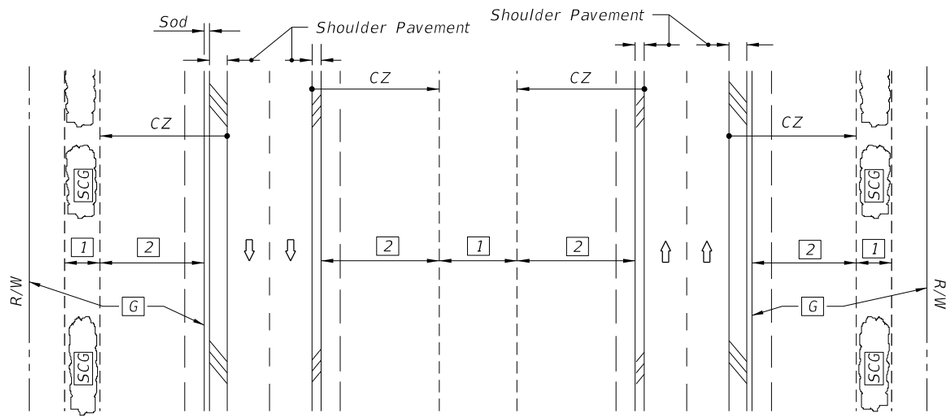
FENCING TERMINALS AT URBAN INTERCHANGES

10/29/2019 8:21:41 AM

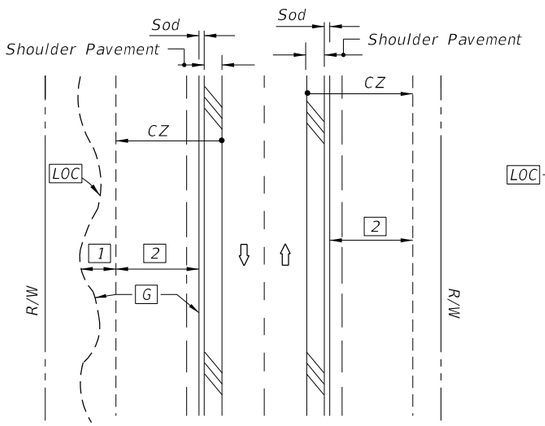
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	FENCE LOCATION	INDEX	SHEET
11/01/17					550-004	2 of 2



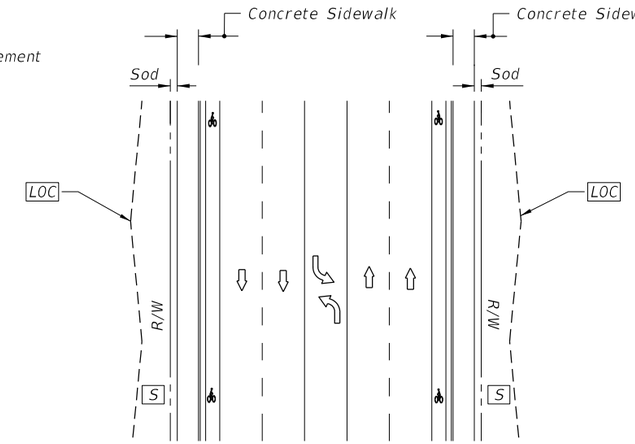
DIVIDED NARROW MEDIAN WITH OR WITHOUT CURBED MEDIAN



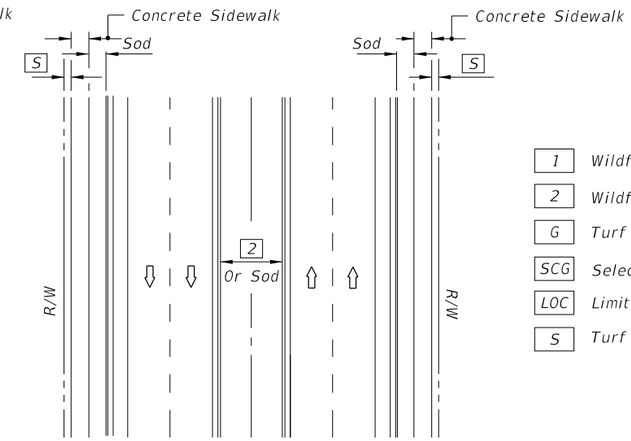
DIVIDED WIDE MEDIAN WITH OR WITHOUT CURBED MEDIAN



UNDIVIDED FLUSH SHOULDER



UNDIVIDED CURBED



DIVIDED CURBED

LEGEND

1	Wildflower Group #1
2	Wildflower Group #2
G	Turf (To Limit of Construction)
SCG	Selective Clearing And Grubbing
LOC	Limits Of Construction
S	Turf

WILDFLOWER SEEDING RATES

Common Name (Botanical Name)	lbs/ac
#1 Group	
Black-Eyed Susan (Rudbeckia hirta)	2
Lance-Leaf Tickseed (Coreopsis lanceolata)	10
Goldenmane Tickseed (Coreopsis basalis)	10
Leavenworth's Tickseed (Coreopsis leavenworthii)	10
Fire Wheel (Gaillardia pulchella)	10
Softhair Coneflower (Rudbeckia mollis)	2
Crimson Clover (Trifolium incarnatum)	15
#2 Group	
Annual Phlox (Phlox drummondii)	10
Moss Verbena (Verbena tenuisecta)	6
Leavenworth's Tickseed (Coreopsis leavenworthii)	10
Fire Wheel (Gaillardia pulchella)	10
Crimson Clover (Trifolium incarnatum)	15

Note: Wildflower seeding rates are for restoring impacted wildflower areas.

GENERAL NOTES

1. All turf establishment shall be performed meeting the requirements of Specification 570.
2. Activities such as clearing, grading, and excavating that will disturb one or more acres of land require coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the Florida Department of Environmental Protection, and implementation of appropriate pollution prevention measures to minimize erosion and sedimentation and properly manage stormwater.
3. Confirm compatibility of wildflower with Seeding Zones.

SEEDING ZONES

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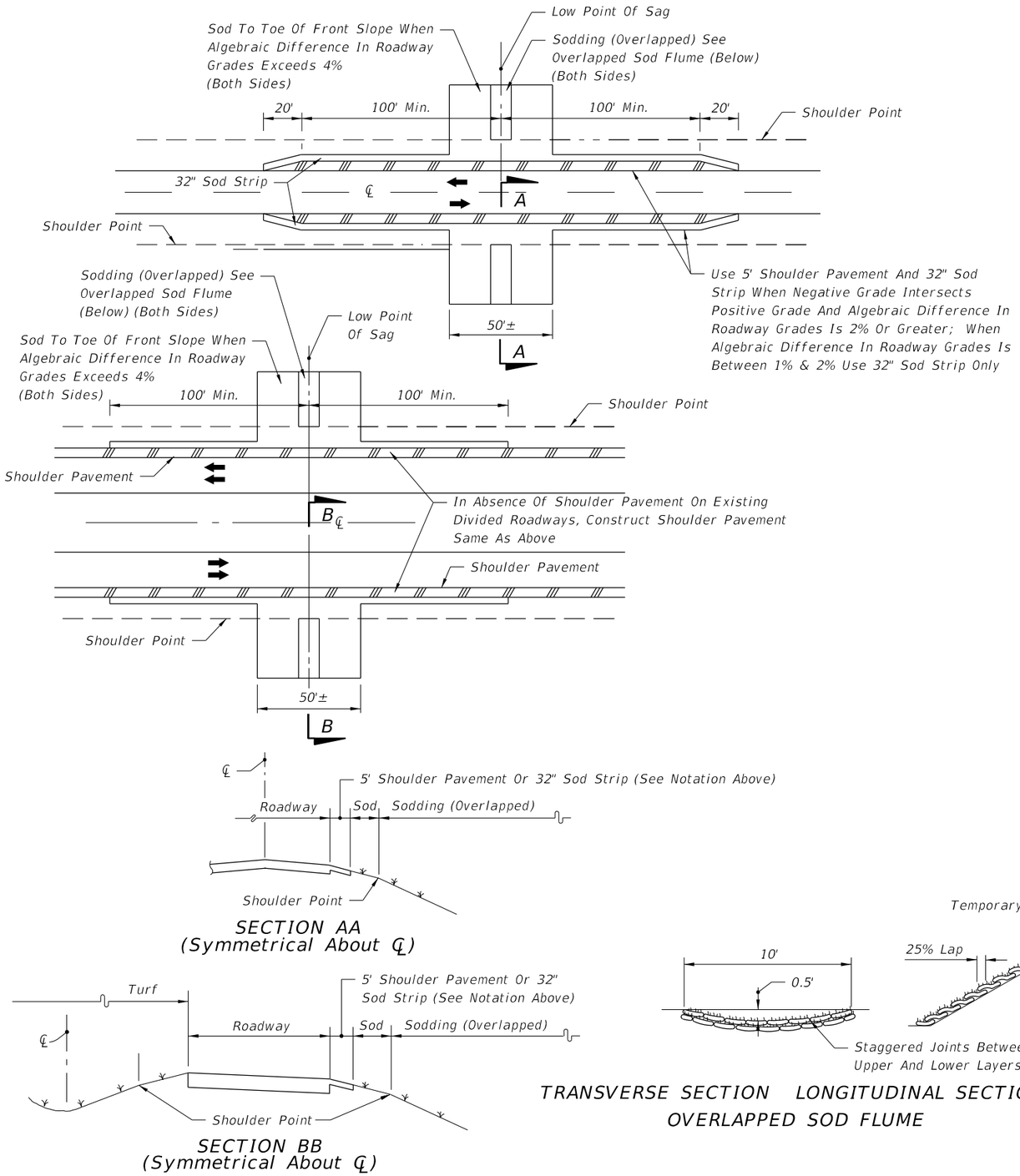
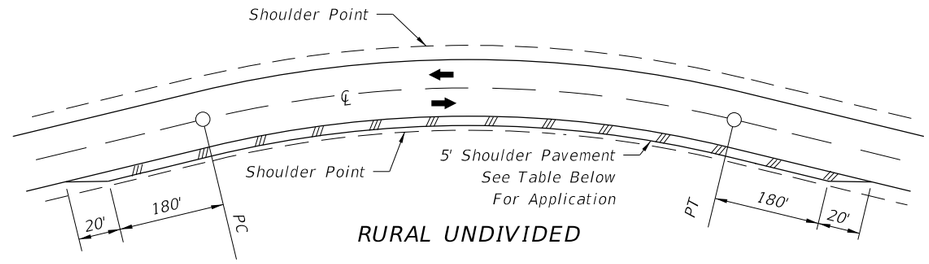
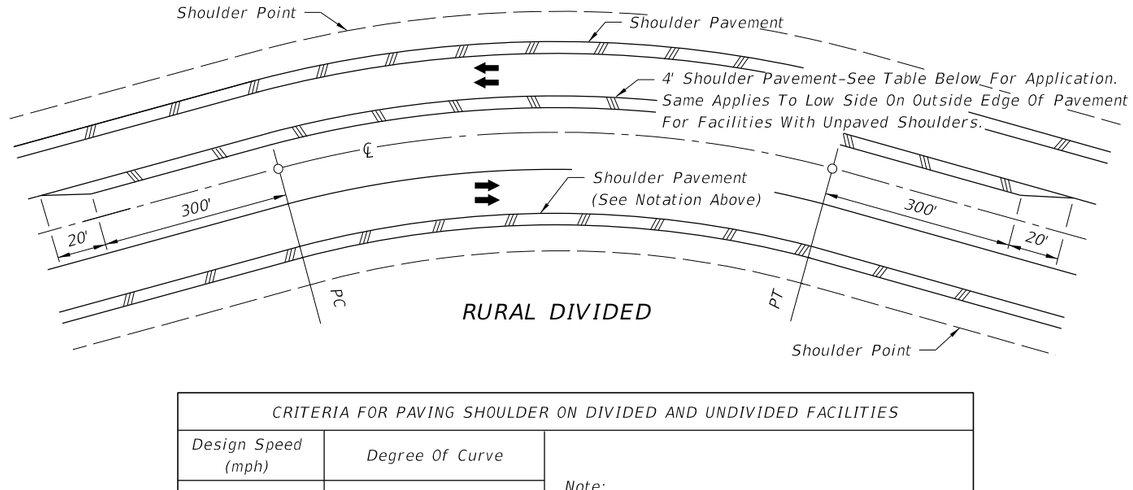
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	PERMANENT EROSION CONTROL	570-001	1 of 3



SHOULDER AND SLOPE TREATMENT IN SAG VERTICAL CURVES





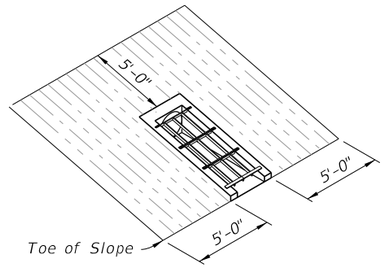
CRITERIA FOR PAVING SHOULDER ON DIVIDED AND UNDIVIDED FACILITIES		
Design Speed (mph)	Degree Of Curve	Note: Shoulder Pavement is required on all curves meeting the criteria tabulated. For curves not meeting the criteria, shoulders are to be paved where erosion of the shoulder is evident or anticipated.
30	7° Or Greater	
40	5° Or Greater	
50	4° Or Greater	
60	3° Or Greater	
65	3° Or Greater	
70	2° Or Greater	

SHOULDER AND SLOPE TREATMENT FOR SUPERELEVATED ROADWAYS

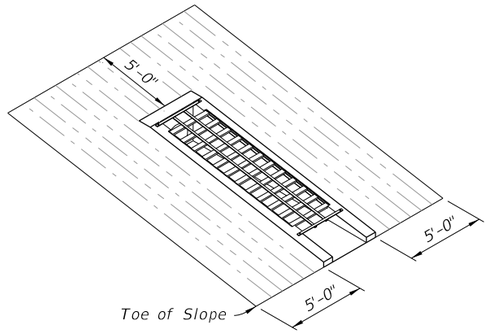
NOTES

1. These treatments are applicable to new construction, reconstruction and RRR projects. Project requirements for shoulder pavement and sodding that exceed the limits of this standard take precedence.
2. For sodding adjacent to ditches and at headwalls, see Index 524-001.
3. All front slopes steeper than 1:3 are to be sodded.

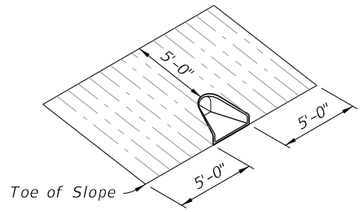
TREATMENTS FOR PROTECTION FROM CONCENTRATED ROADWAY RUNOFF EROSION AND SHOULDER RAVELING



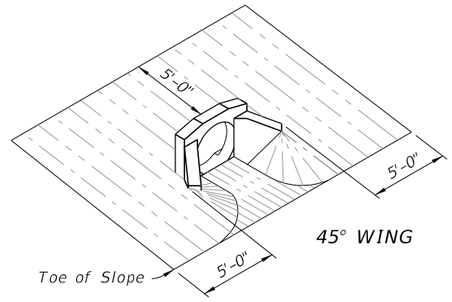
INDEX 430-010



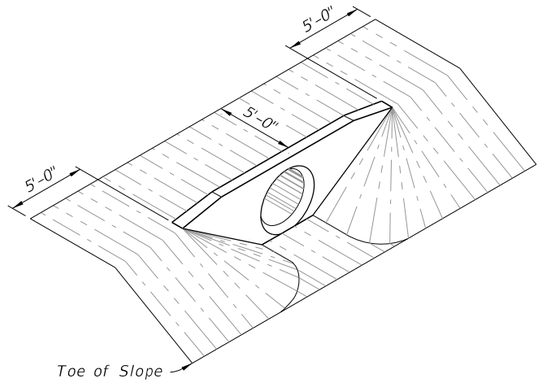
INDEX 430-011



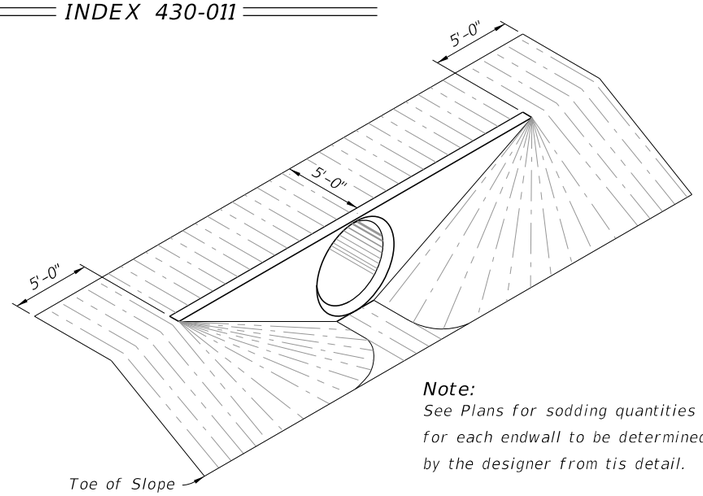
INDEX 430-020



45° WING

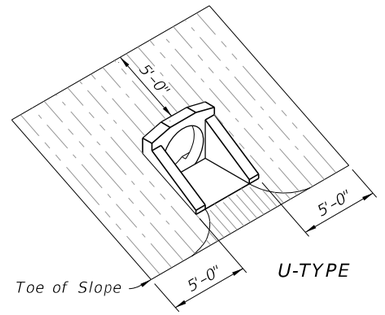


INDEX 430-030



Note:
See Plans for sodding quantities for each endwall to be determined by the designer from tis detail.

INDEX 430-031 Through 430-034



U-TYPE

INDEX 430-040

TABLE 2: SOD QUANTITIES (SY)

	INDEX 430-010	INDEX 430-011				INDEX 430-020	INDEX 430-030											INDEX 430-040			
		SLOPE				ALL SLOPES	SLOPE											SLOPE			
PIPE SIZE	1:4	1:2	1:3	1:4	1:6		1:2			1:3			1:4			1:6		1:2	1:3	1:4	1:6
		PIPES				PIPES	PIPES											PIPES			
	1	1	1	1	1	1	1	2	3	1	2	3	1	2	3	1	2	3	1	1	1	1
12"						10													14	15	18	22
15"	15	13 (15)	16	17	23	11	19	21	24	22	26	29	26	30	33	34	38	43	15	17	20	25
18"	16	14 (16)	17	19	25	11	21	24	27	25	29	33	30	34	38	39	44	50	16	18	22	28
21"						12																
24"	19	15 (17)	19	21	28	14	26	30	34	32	37	42	38	44	50	50	58	66	19	22	26	34
27"						15																
30"	21	17 (18)	21	24	32	16	31	37	42	39	46	53	46	55	63	62	74	85	21	25	30	40
36"						18	37	44	52	46	56	65	56	67	79	76	91	107	24	29	35	47
42"						19	43	53	62	55	67	79	67	82	96	91	111	132	27	32	39	54
48"						21	50	62	73	64	79	93	78	97	115	108	133	158	30	36	44	61
54"						21	57	71	85	74	92	110	91	113	136	126	157	188				
60"						22																
66"						25																
72"						26																
		() Endwall With Baffles																				

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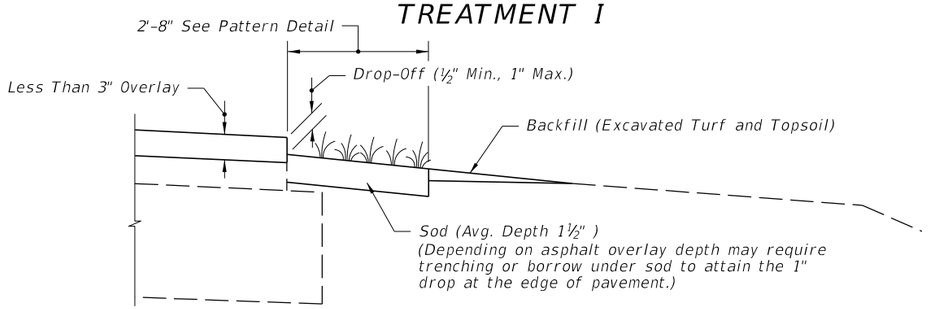
SOD PLACEMENT AT PIPE/CULVERT END TREATMENTS

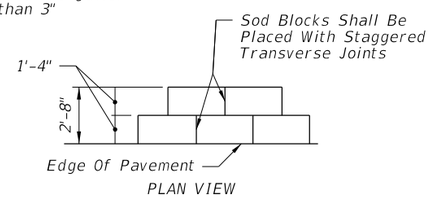
TREATMENT I



COMPLETED SHOULDER

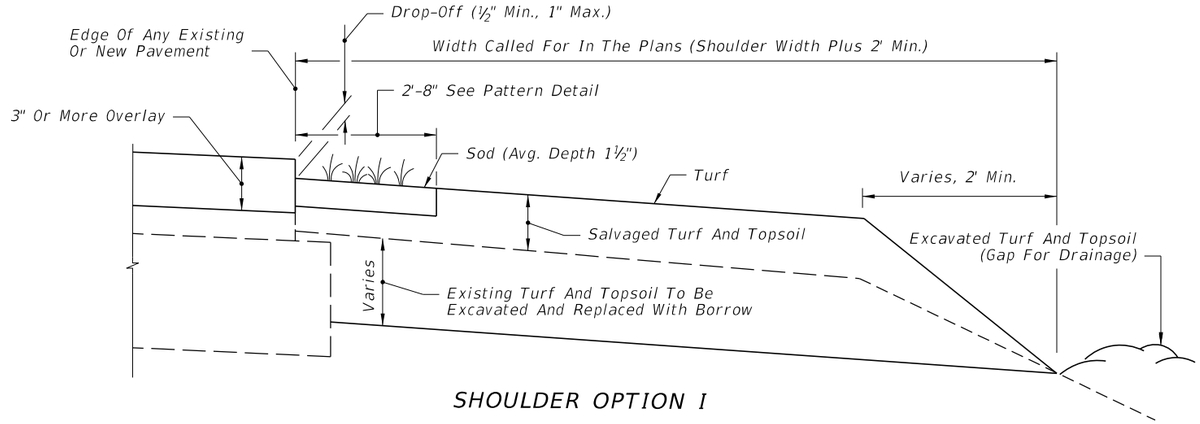
CRITERIA FOR USING TREATMENT I

Project___
- is resurfacing, widening and resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is less than 3"

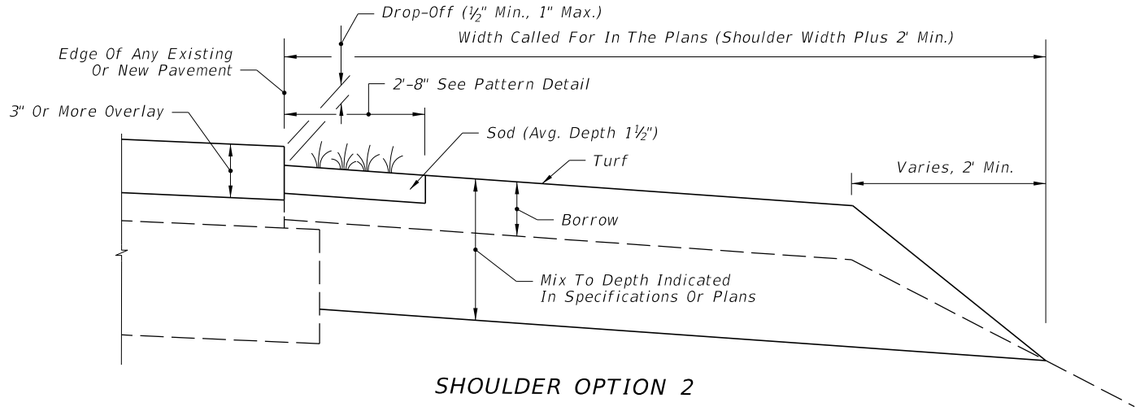


PATTERN DETAIL

TREATMENT II



SHOULDER OPTION I



SHOULDER OPTION 2

CRITERIA FOR USING TREATMENT II

Project___
- is resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is 3" or more

A SIMILAR TREATMENT MAY BE USED FOR PROJECTS THAT REQUIRE SHOULDER WIDENING. DETAILS ARE TO BE SHOWN IN THE PLANS.

GENERAL NOTES

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:

   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.

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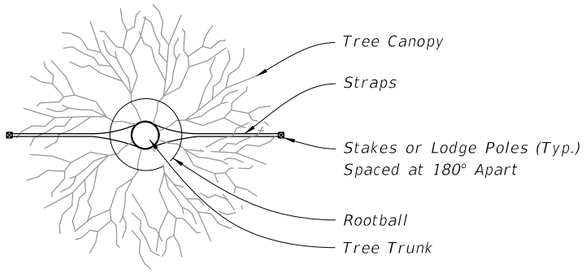
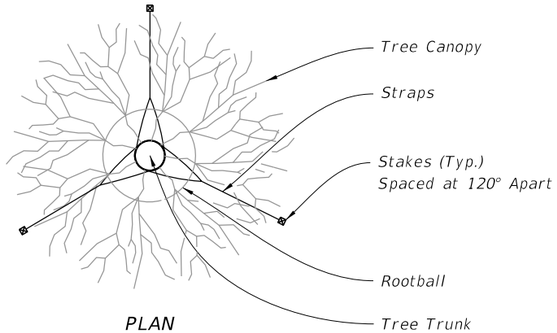
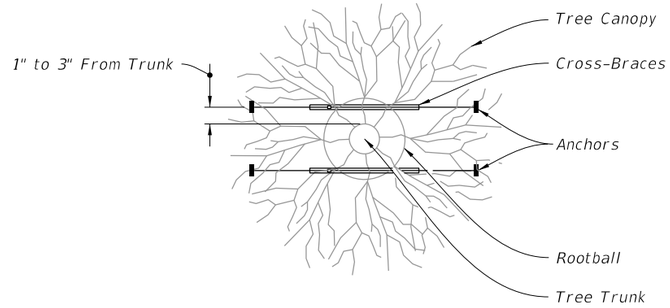
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SHOULDER SODDING AND TURF ON EXISTING FACILITIES	INDEX	SHEET
11/01/18						570-010	1 of 1



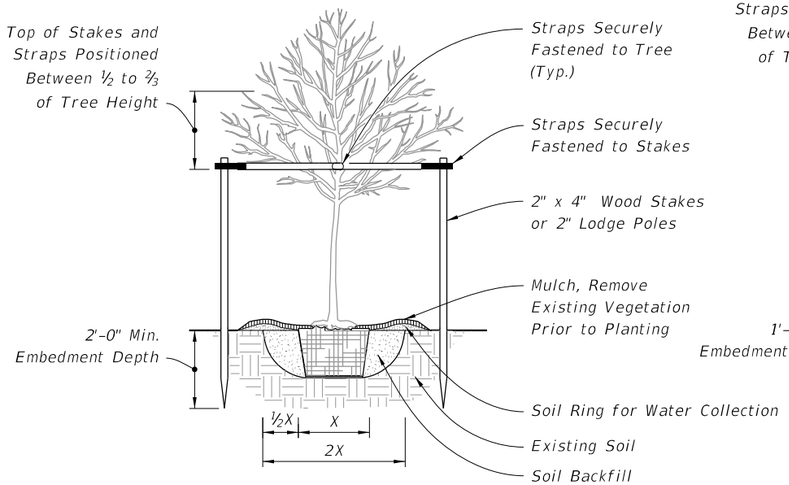
PLAN



PLAN

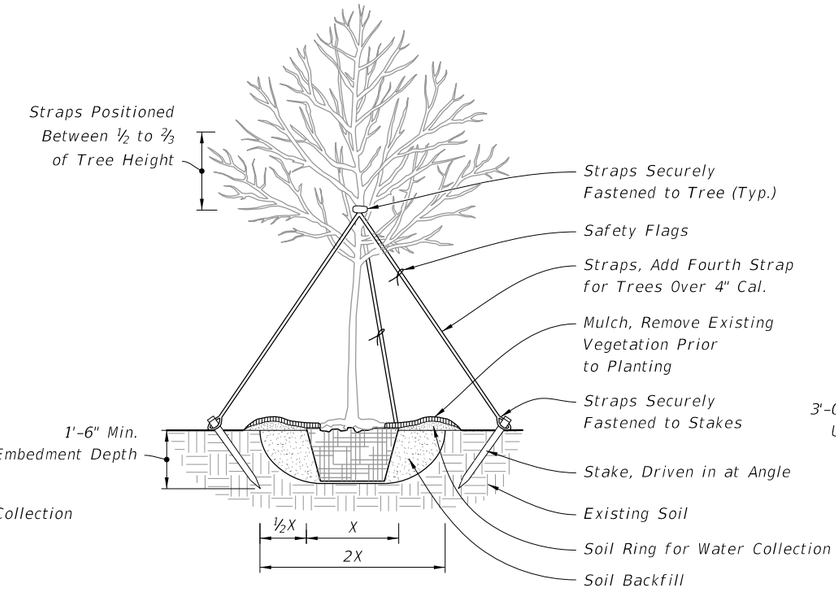


PLAN



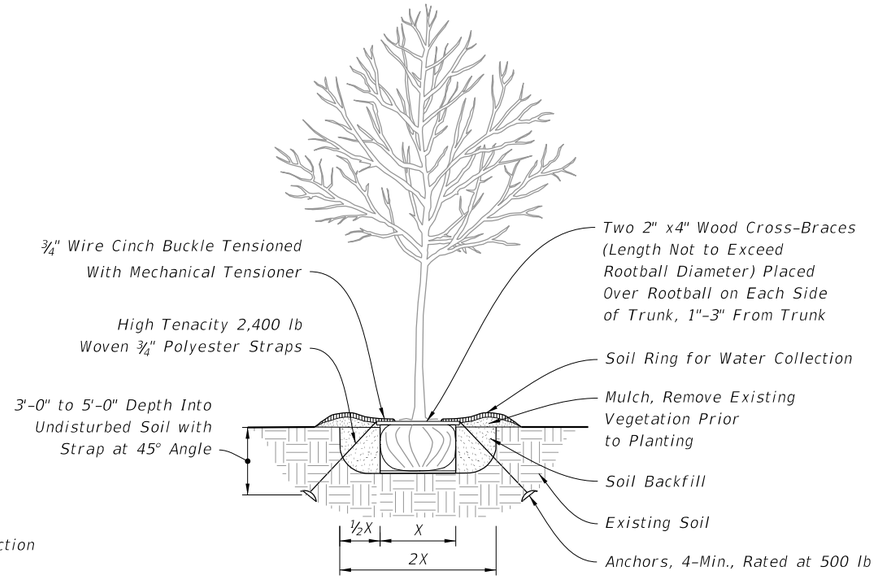
ELEVATION

UNDER 2½" CALIPER TREE PLANTING



ELEVATION

2½" TO 6" CALIPER TREE PLANTING



ELEVATION

UNDER 4" CALIPER TREE PLANTING WITH UNDERGROUND BRACING

GENERAL NOTES:

1. Staking guidelines are based on standard horticultural requirements and are provided for plant establishment purposes only. Details not intended to apply when bracing is intended to address safety considerations. When bracing for safety, refer to Designer generated signed and sealed details. These guidelines are not intended to apply when the tree or palm is within falling distance of a roadway, pedestrian or bicycle route, under extreme wind loads, non-standard soil properties, non-standard plant dimensions, or when rootball is anticipated to be greater than 4 feet diameter and planted on 1:3 slope or steeper.

2. All dimensions 6" and less are exaggerated for illustrative purposes only. Dimensions shown for wood materials are nominal. Slopes shown are Vertical:Horizontal.

3. Remove plant containers prior to planting. Remove a minimum of the top 1/3 of burlap, fabric, or wire mesh for plants not 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 detailed on the Index.

9. Relocated Trees and Palms: Brace relocated trees and palms in accordance with the Contract Documents. Remove bracing at the conclusion of the contract or as directed by the Engineer. Bracing or straps must not damage or become embedded 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.

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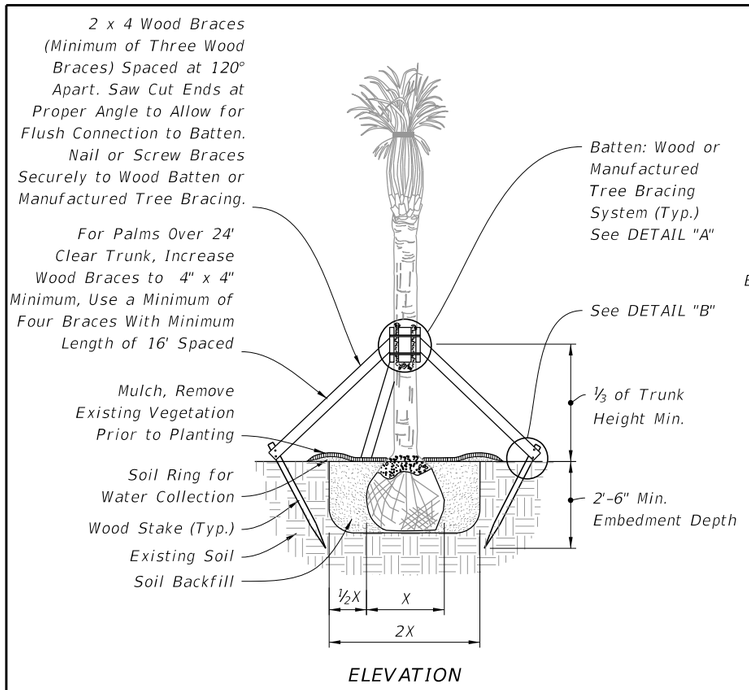
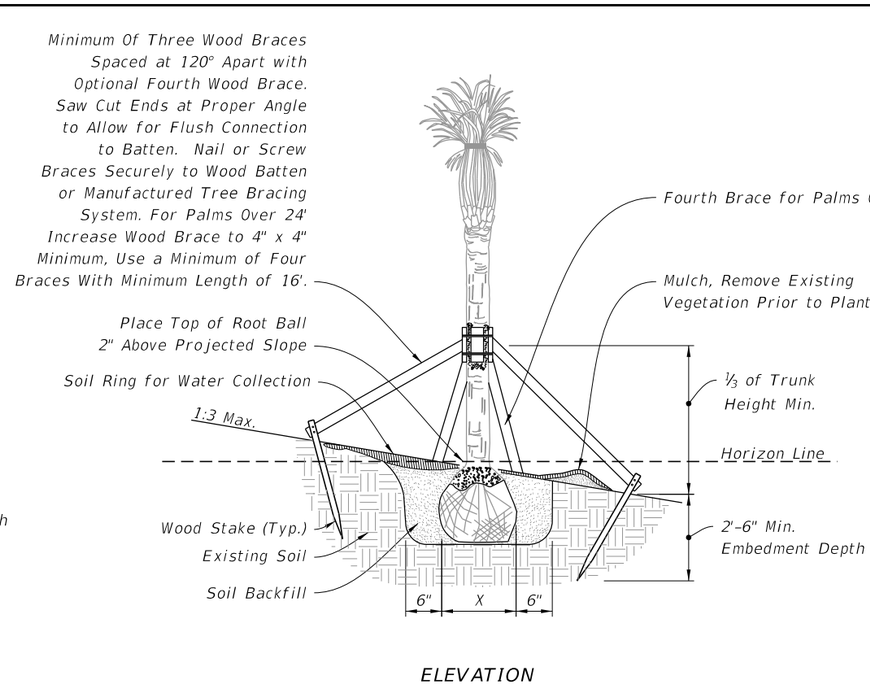


ELEVATION

NOTE: May be used on large caliper canopy trees, adjust banding every 6 months or as needed (for fast growing species) to prevent girdling.

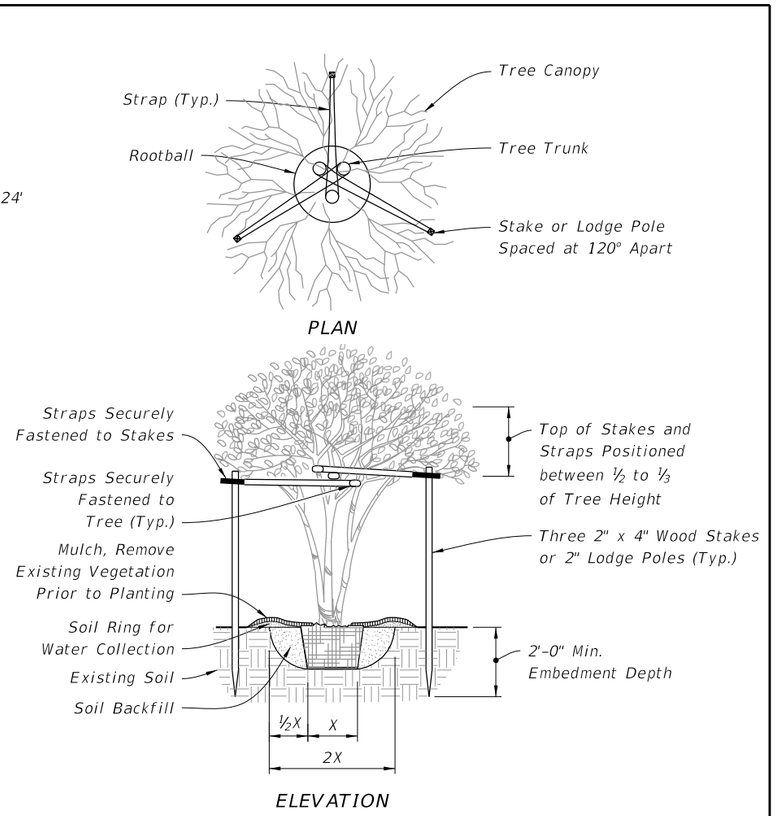
PALM PLANTING



ELEVATION

NOTE: May be used on large caliper canopy trees pending slope and rootball width, adjust banding every 6 months or as needed (for fast growing species) to prevent girdling.

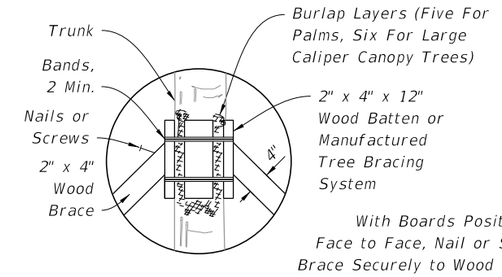
PALM PLANTING ON SLOPE



PLAN

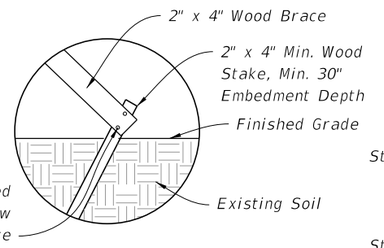
ELEVATION

MAX 10' HT. MULTI-TRUNK TREE PLANTING



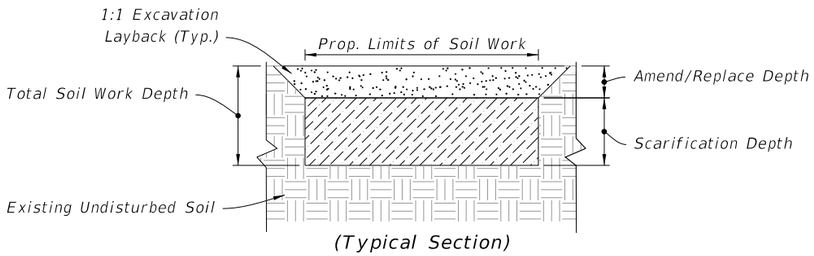
NOTE: Install bands and couplings that are rated a min. 900 lb. tensile strength, and are corrosion and UV resistant.

DETAIL "A"



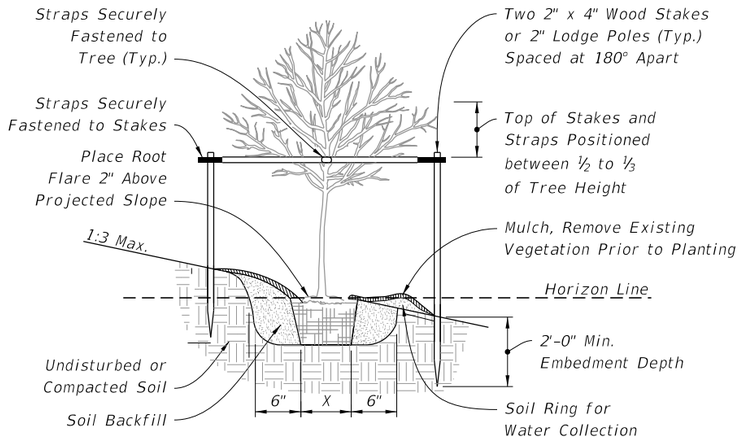
NOTE: Stake Into Firm, Existing Soil.

DETAIL "B"



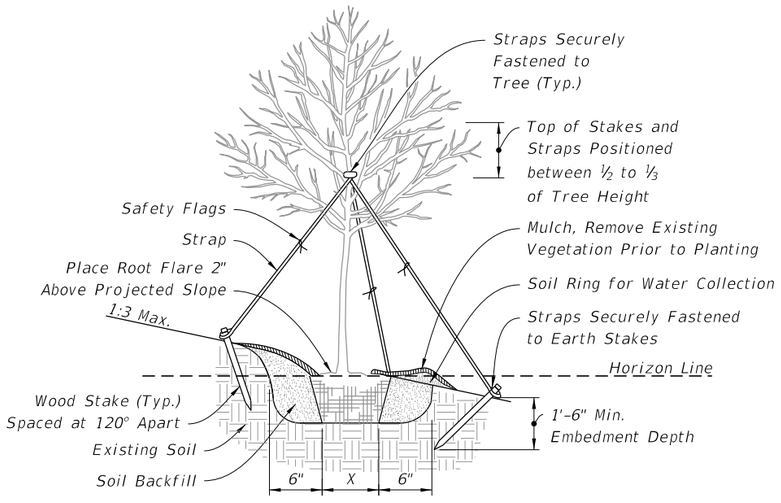
(Typical Section)

LANDSCAPE SOIL WORK



ELEVATION

UNDER 2½" CALIPER TREE PLANTING ON SLOPE

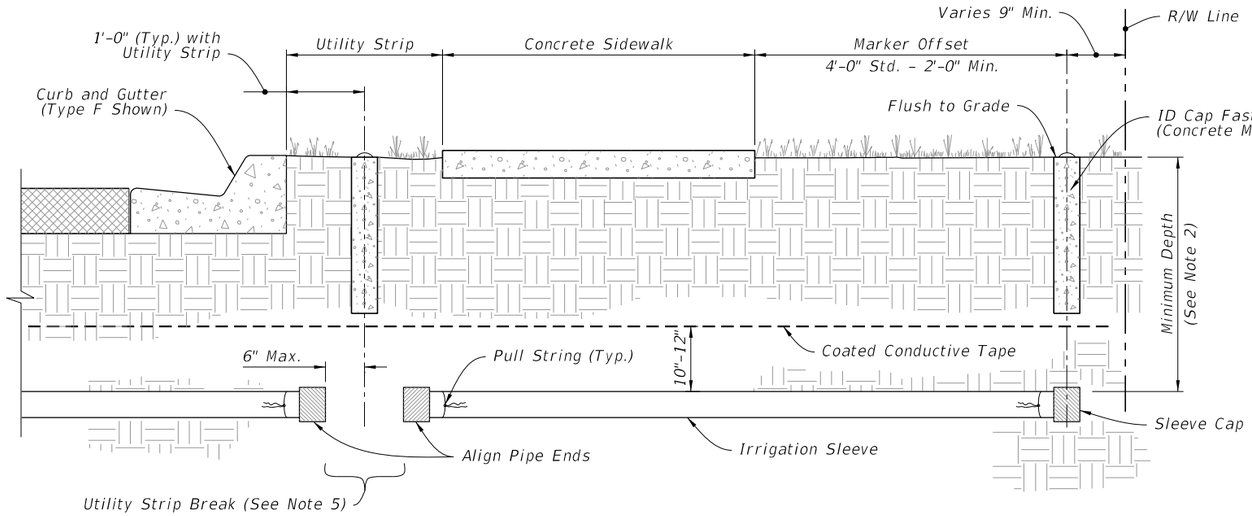


ELEVATION

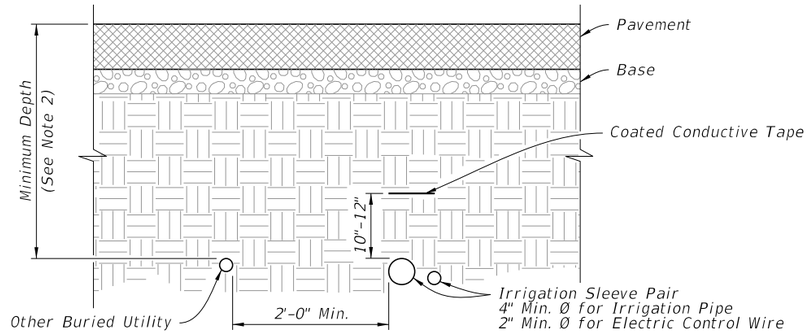
2½" TO 6" CALIPER TREE PLANTING ON SLOPE

10/29/2019 8:21:49 AM

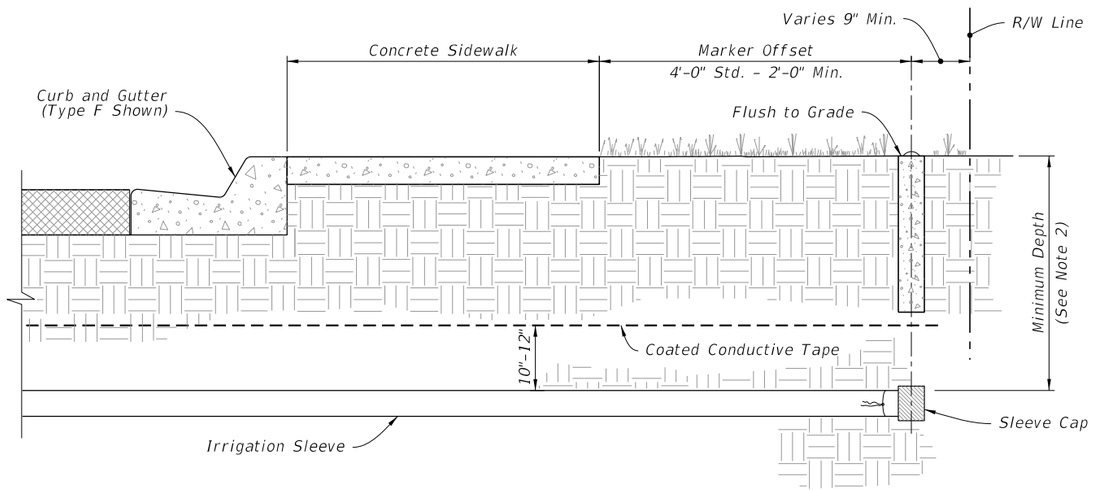
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	LANDSCAPE INSTALLATION	580-001	2 of 2



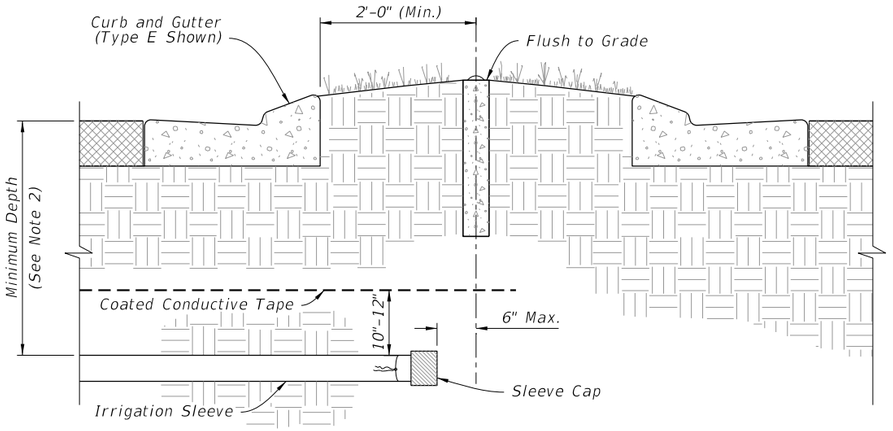
ROADWAY WITH UTILITY STRIP



ROADWAY CROSS SECTION



ROADWAY WITHOUT UTILITY STRIP



ROADWAY MEDIAN OR ROUNDABOUT

NOTES:

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.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	LANDSCAPE IRRIGATION SLEEVES	INDEX	SHEET
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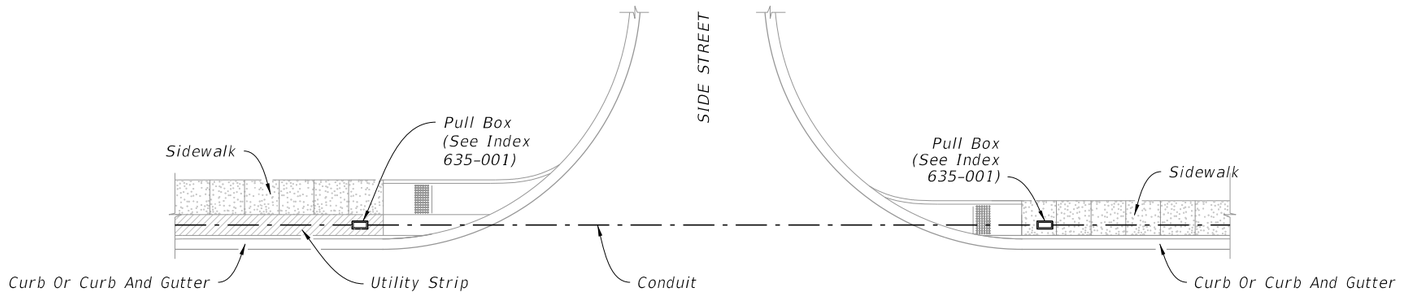
GENERAL NOTES:

1. Install conduit in accordance with Specification 630.

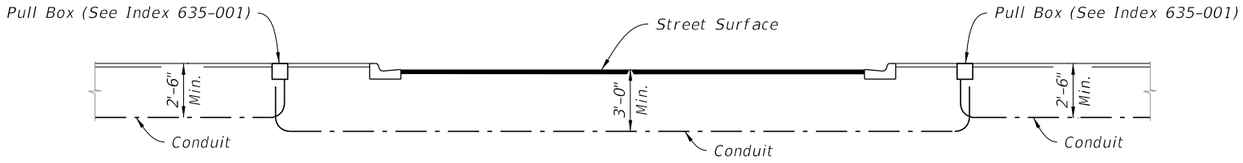
7. When installing conduit under sidewalk by open trench, replace the entire sidewalk slab.

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.

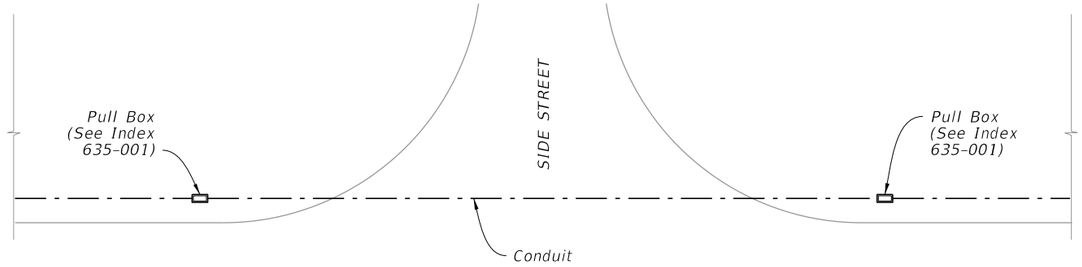


PLAN

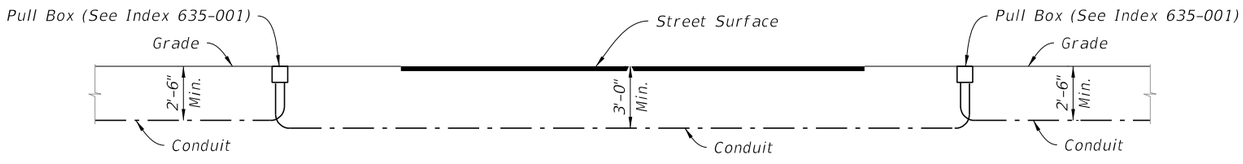


ELEVATION

CURB AND GUTTER



PLAN



ELEVATION

FLUSH SHOULDER

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LAST REVISION	REVISION	DESCRIPTION:				
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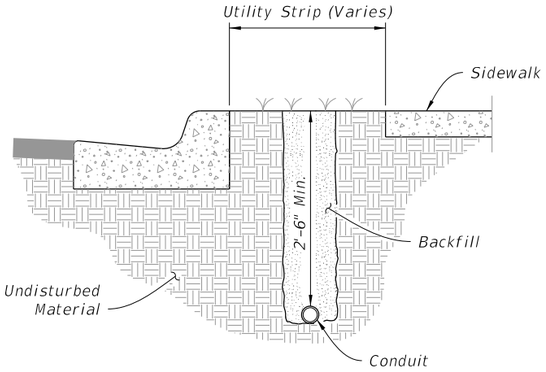
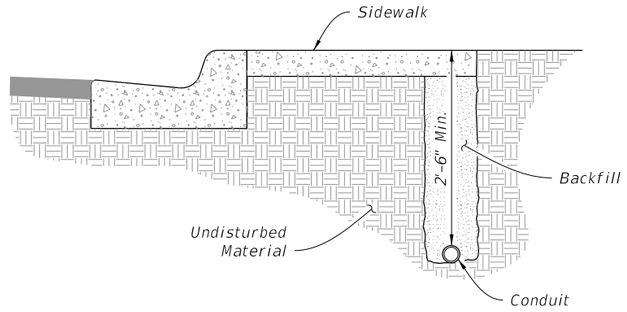
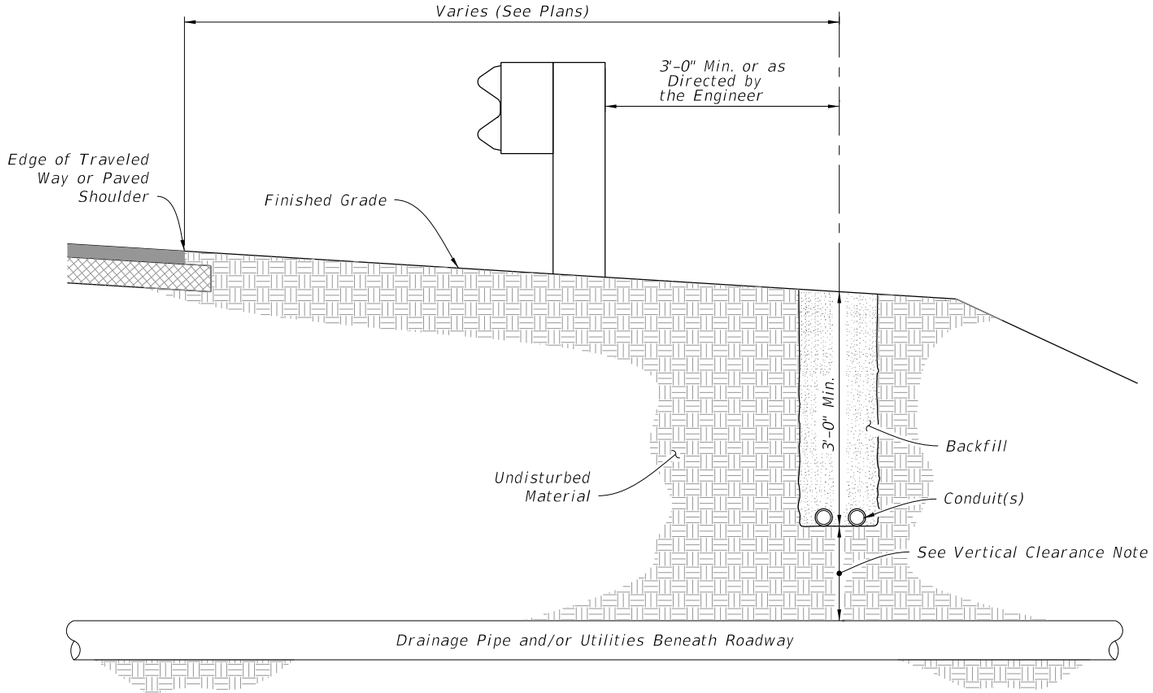


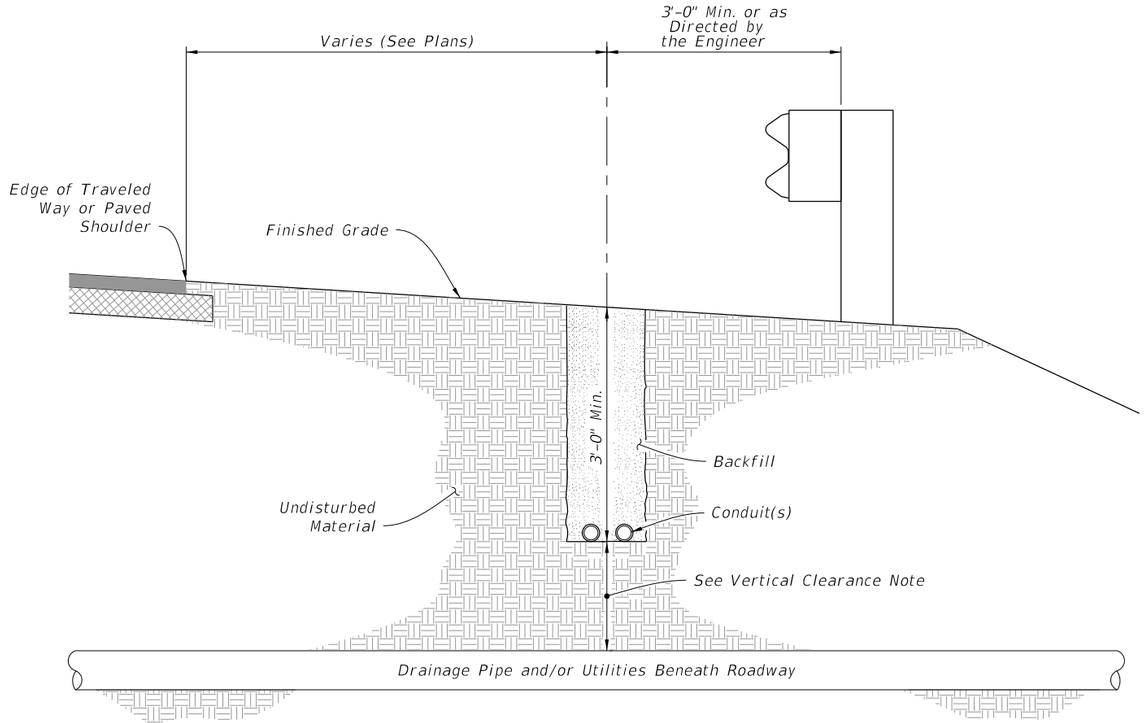
PLACEMENT WITHIN THE UTILITY STRIP



PLACEMENT UNDER SIDEWALK



PLACEMENT BEHIND GUARDRAIL



PLACEMENT IN FRONT OF GUARDRAIL

VERTICAL CLEARANCE NOTE:

Maintain 1'-0" minimum vertical clearance when crossing over pipe and or utilities. If minimum vertical clearance cannot be maintained, conduit is to be routed under pipe maintaining 1'-0" minimum vertical clearance.

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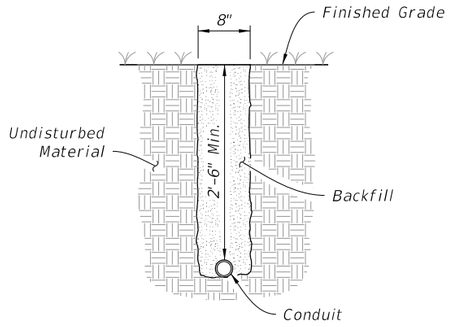
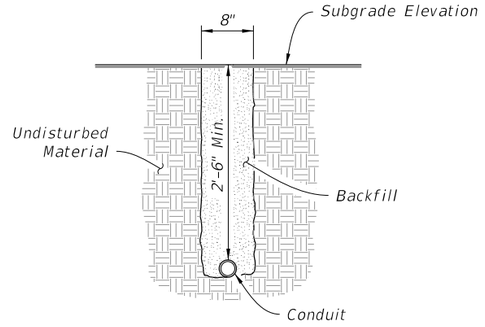
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONDUIT INSTALLATION DETAILS	INDEX	SHEET
11/01/18					630-001	2 of 4



PLACEMENT NOT EXPOSED TO VEHICULAR TRAFFIC

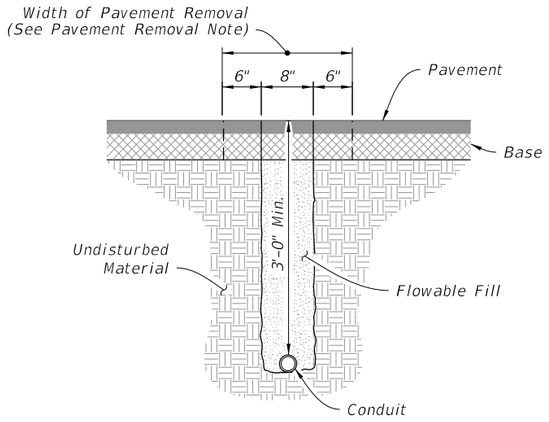


PLACEMENT UNDER NEW ROADWAY PRIOR TO INSTALLATION OF BASE AND PAVEMENT

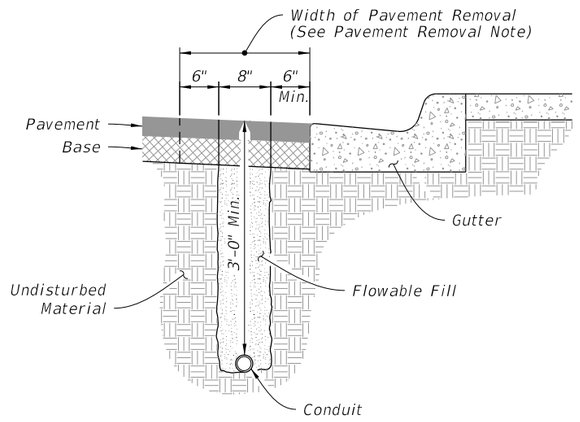
NOTES:

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

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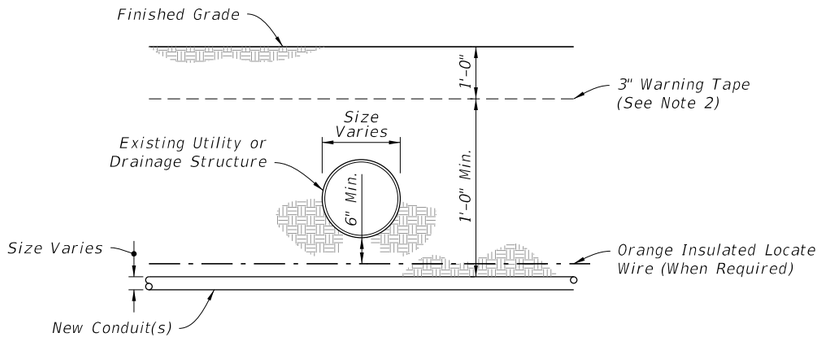
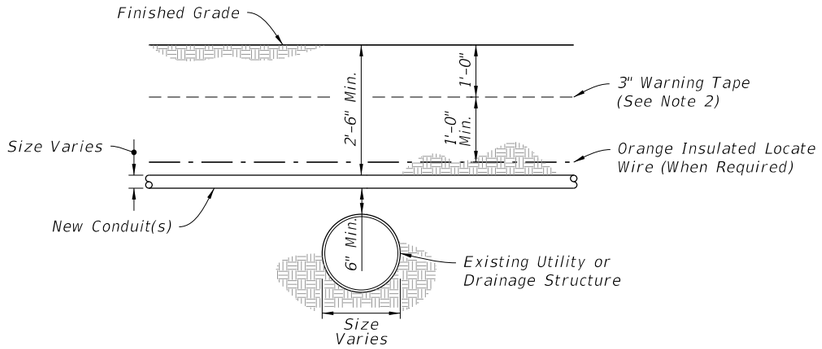
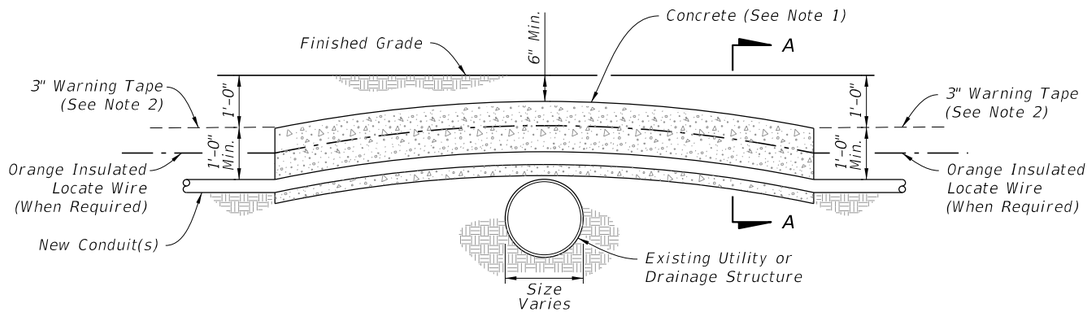
LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2020-21 STANDARD PLANS	CONDUIT INSTALLATION DETAILS	INDEX 630-001	SHEET 3 of 4



BELOW EXISTING

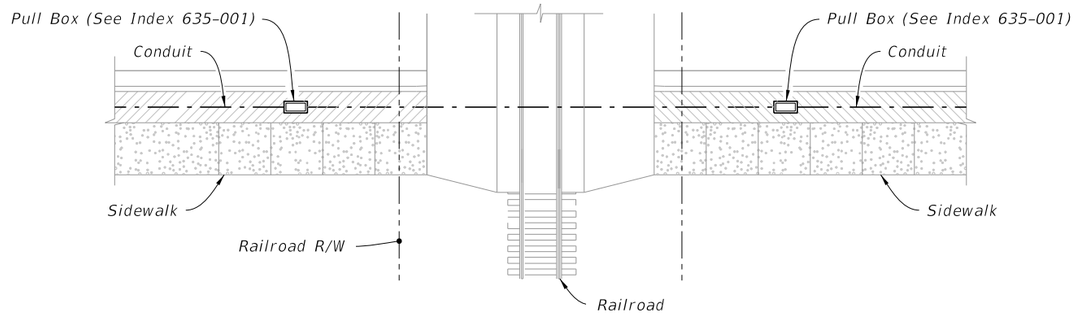


ABOVE EXISTING - DEPTH 2'-6" OR GREATER

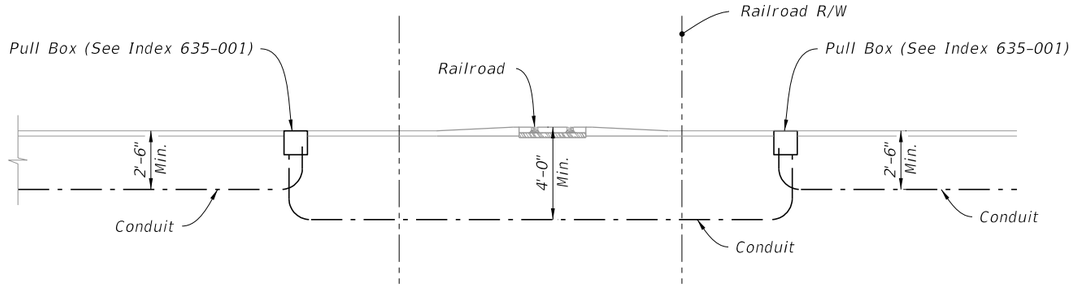


ABOVE EXISTING - DEPTH 2'-6" OR LESS

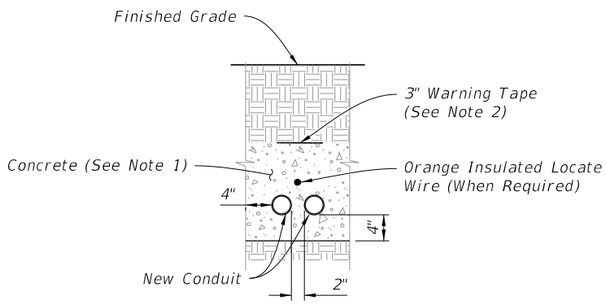
PLACEMENT ACROSS EXISTING DRAINAGE PIPES OR UTILITIES



PLAN



PLACEMENT UNDER RAILROAD



SECTION A-A

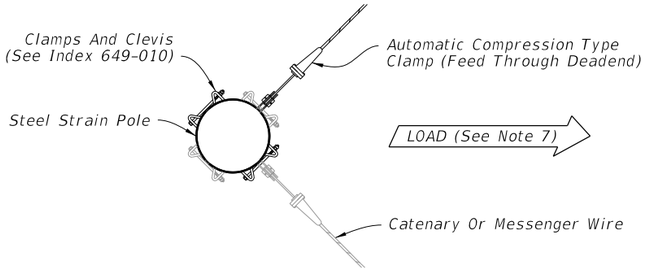
NOTES:

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".

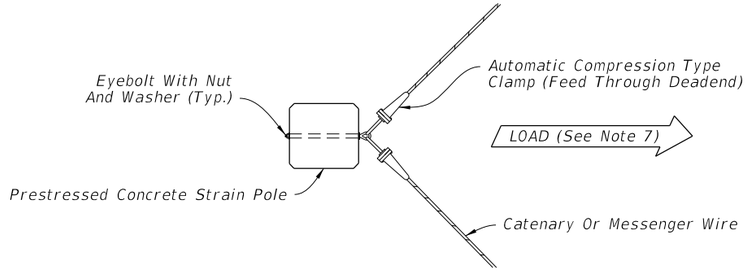
2. Place 3" Warning Tape when new conduit is installed at a depth of 1'-6" or greater, and the new conduit is not encased in concrete.

5/20/2020 7:37:15 AM

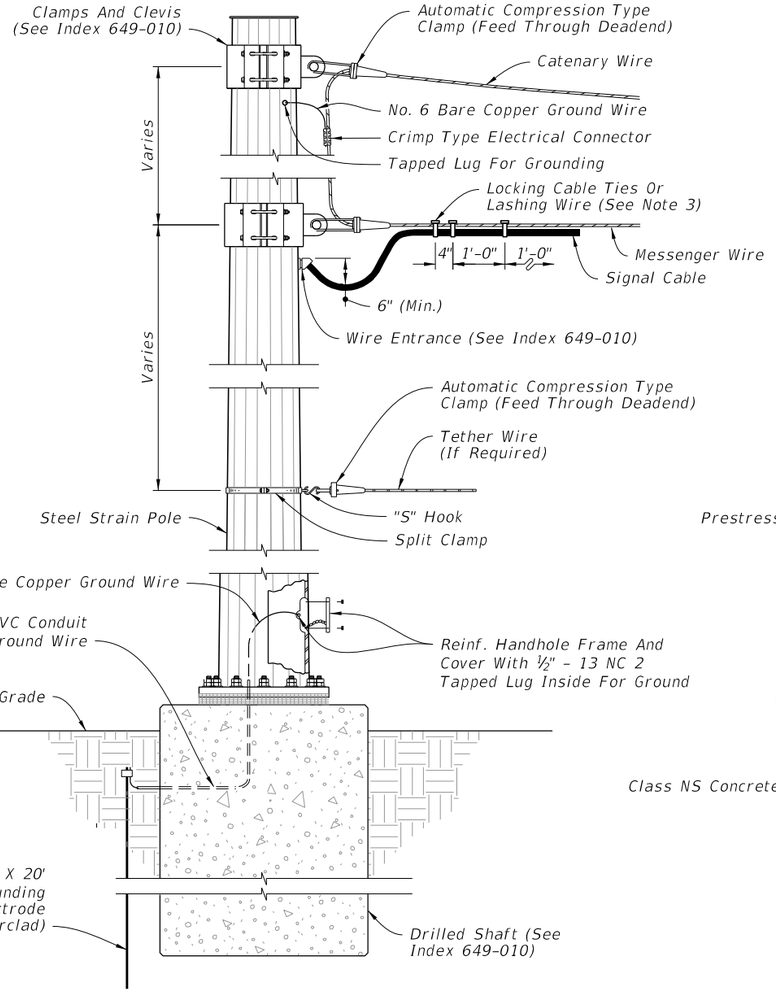
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONDUIT INSTALLATION DETAILS	INDEX	SHEET
11/01/18						630-001	4 of 4



PLAN
(Two Span Connections Shown)

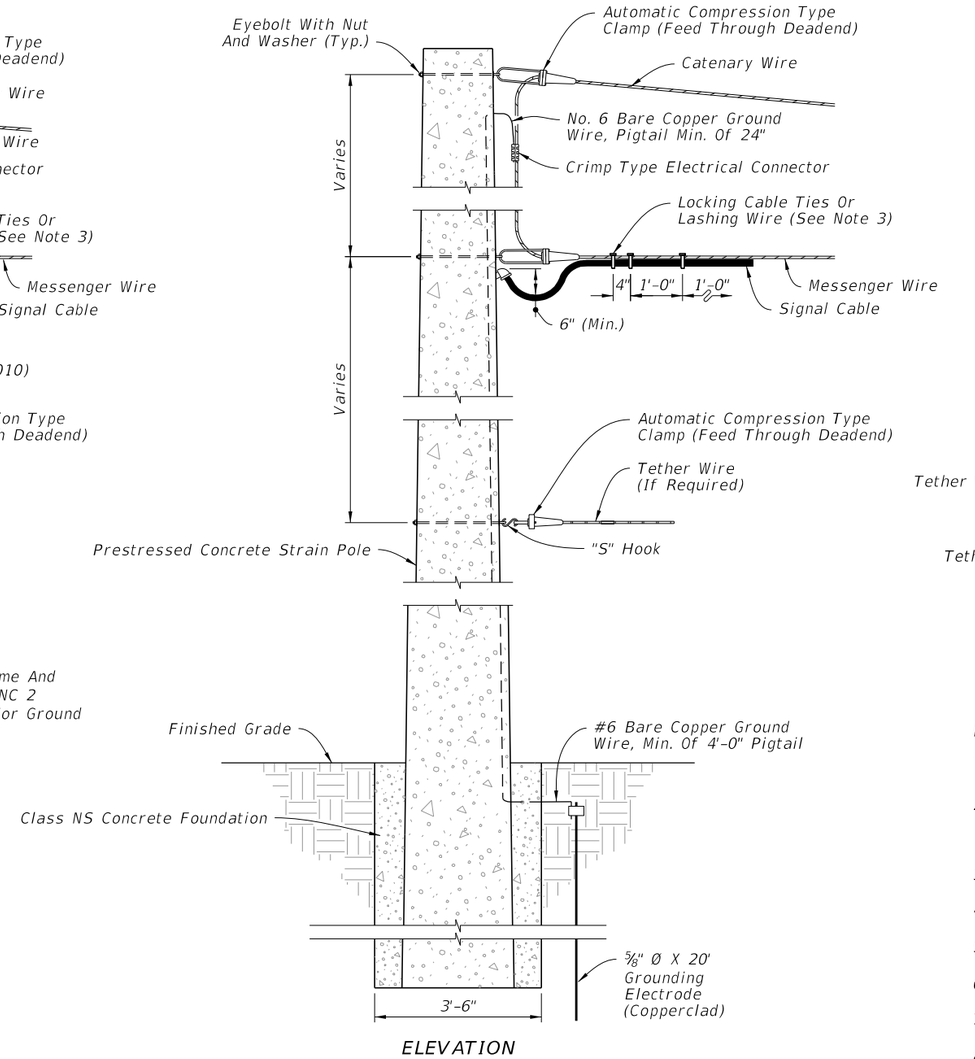


PLAN
(Two Span Connections Shown)



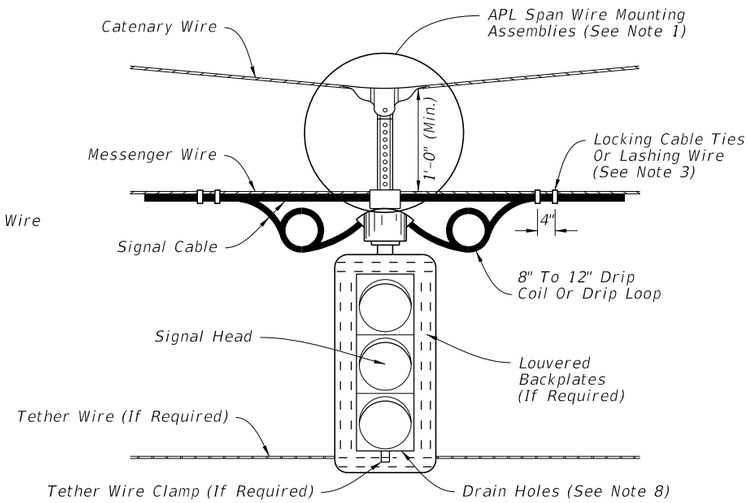
ELEVATION

STEEL STRAIN POLE



ELEVATION

PRESTRESSED CONCRETE STRAIN POLE



ELEVATION

SIGNAL ATTACHMENT

NOTES:

1. Use only span wire mounting assemblies listed on the APL. For specific details and requirements, see the vendor drawings on the APL.
2. With the approval of the resident engineer, the service head hole for joint use poles may be drilled by the utility company at an angle of 90° but not less than 45° to the face of the pole.
3. Lashing wire should normally be used for distances of 12' or greater.
4. Use only stainless steel hardware on all signal attachments.
5. Hole for eyebolt will require field reaming for 1" & 1¼" eyebolts.
6. Meet all grounding requirements of Specification 620.
7. The load face of pole is to be perpendicular to the resultant load.
8. Field Drill 2~¼" drain holes in the bottom of the installed signals.
9. Method of framing corner Strain Poles angles 10° to 120°.

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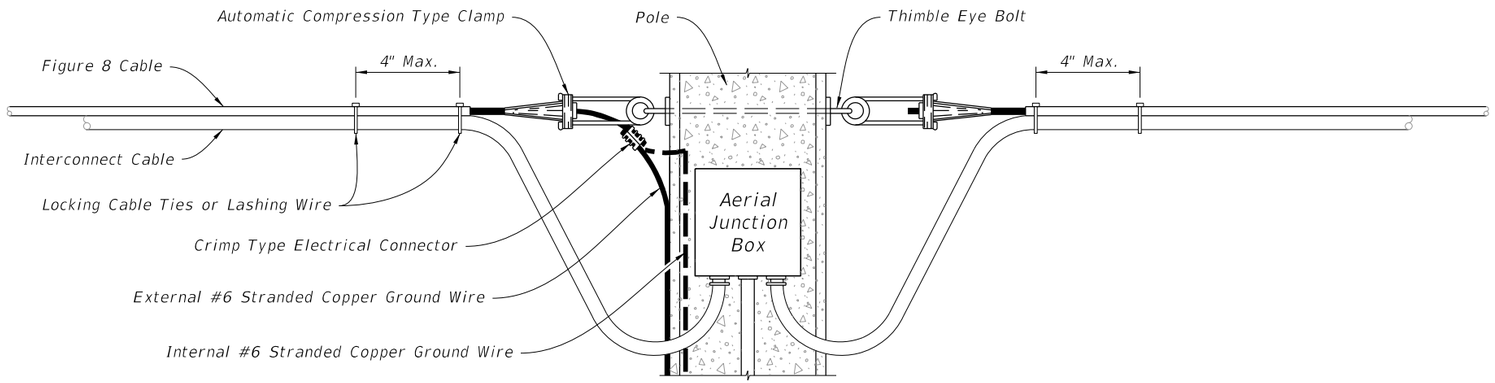
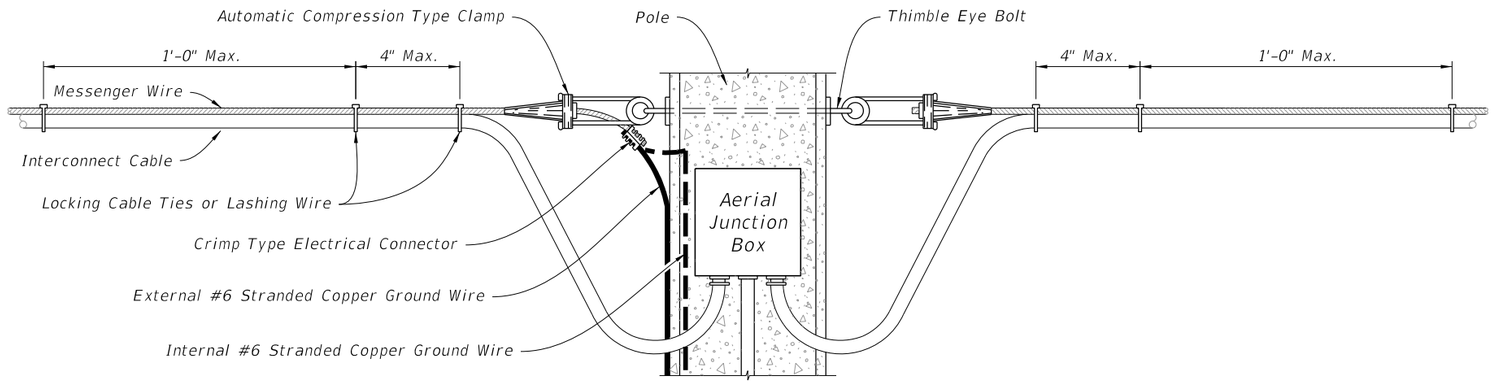
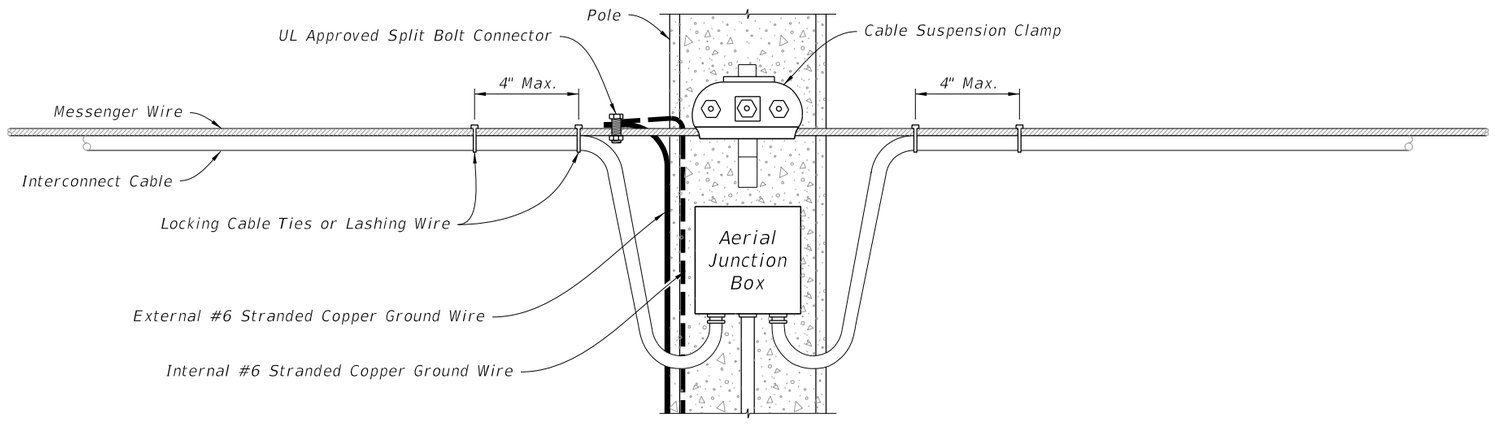
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	SIGNAL CABLE AND SPAN WIRE INSTALLATION DETAILS	INDEX 634-001	SHEET 1 of 1



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

NOTES:

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 extending down the pole.
3. When utilizing the external ground wire, install a piece of ½" conduit extending up 8' from the finish grade to protect the ground wire connecting the messenger wire to the ground rod.
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.

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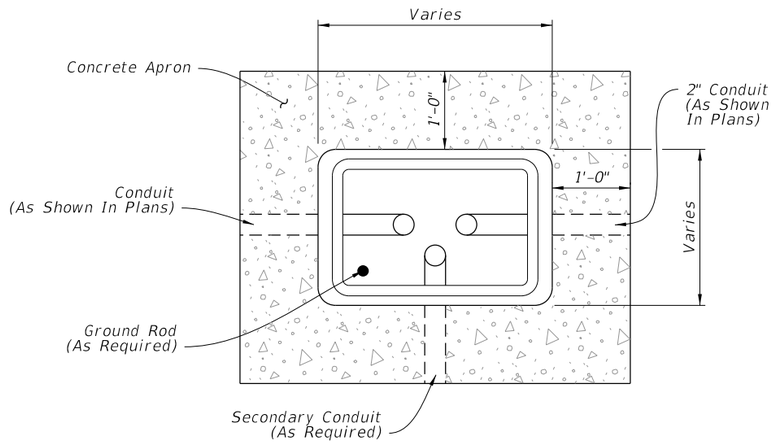
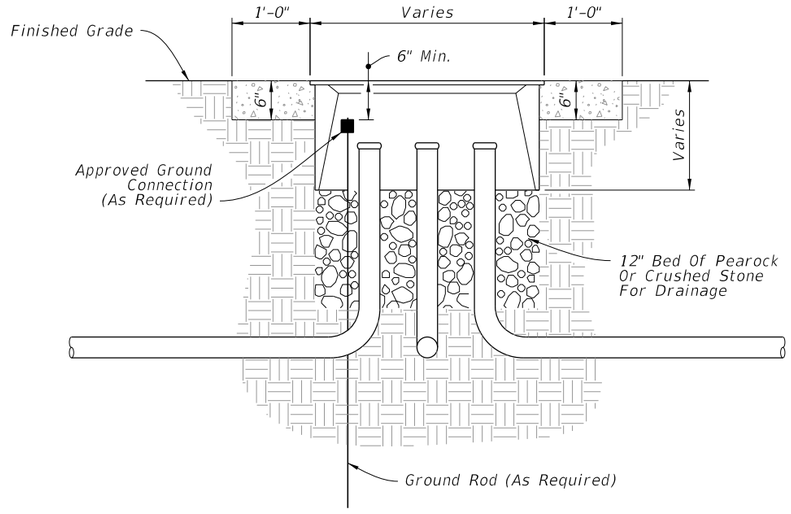
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	AERIAL INTERCONNECT	INDEX	SHEET
11/01/18						634-002	1 of 1

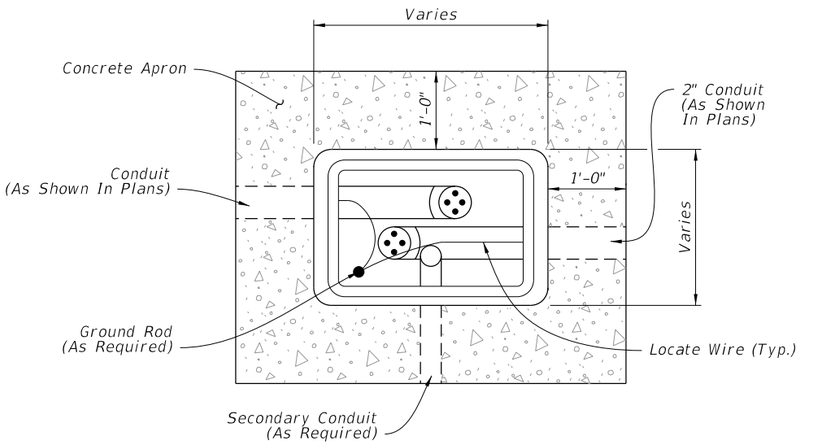


PLAN

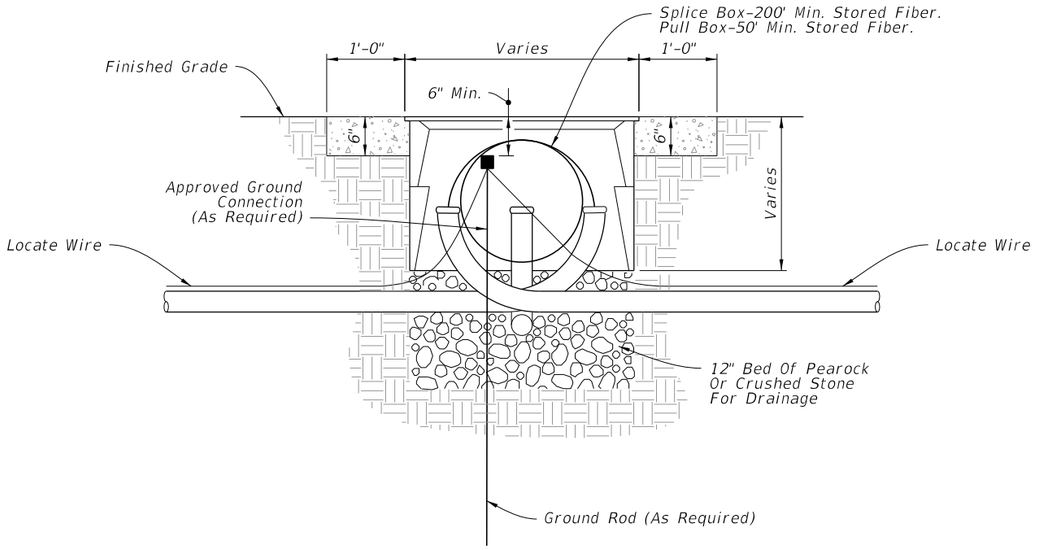


ELEVATION

PULL BOX



PLAN



ELEVATION

FIBER OPTIC BOX

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.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PULL AND SPLICE BOXES	INDEX	SHEET
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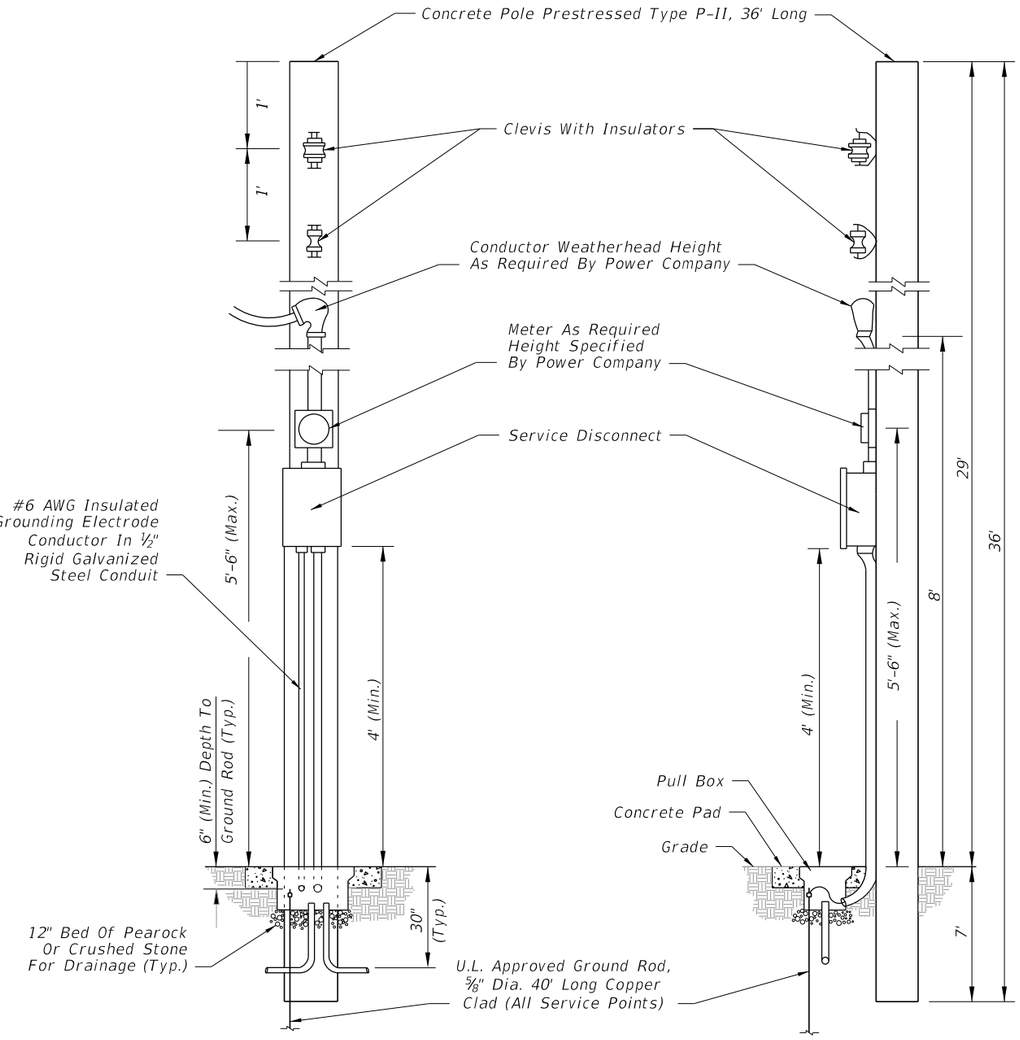
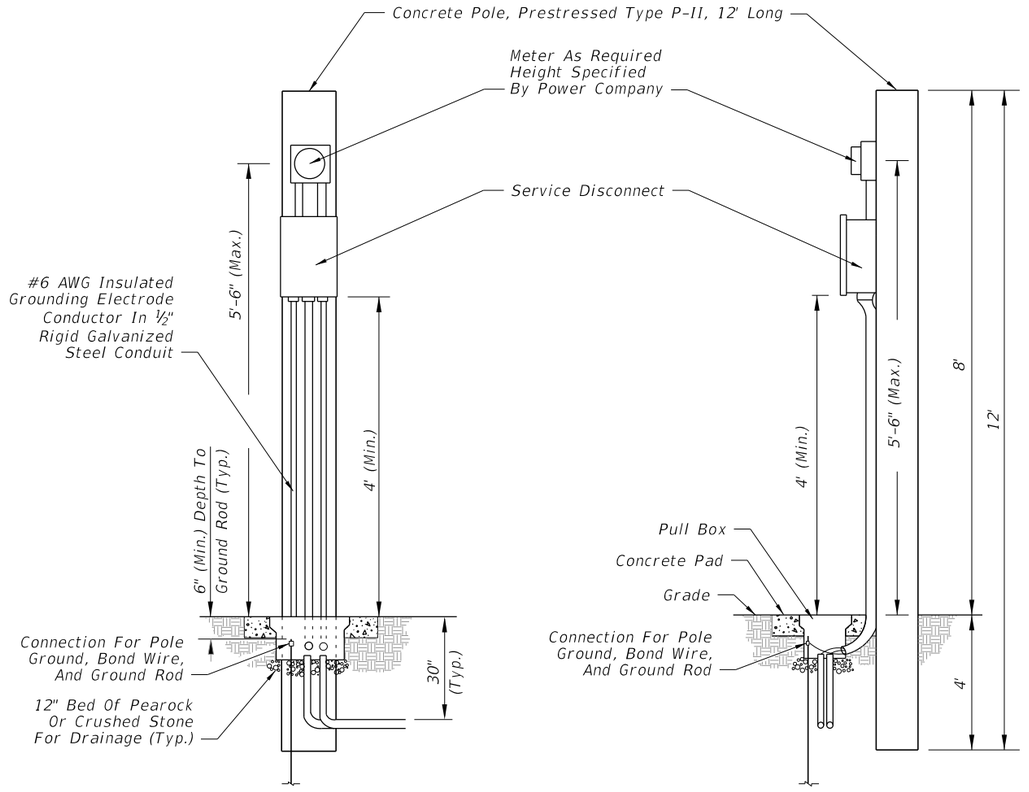
GENERAL NOTES:

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 A
AERIAL FEED



DETAIL B
UNDERGROUND FEED

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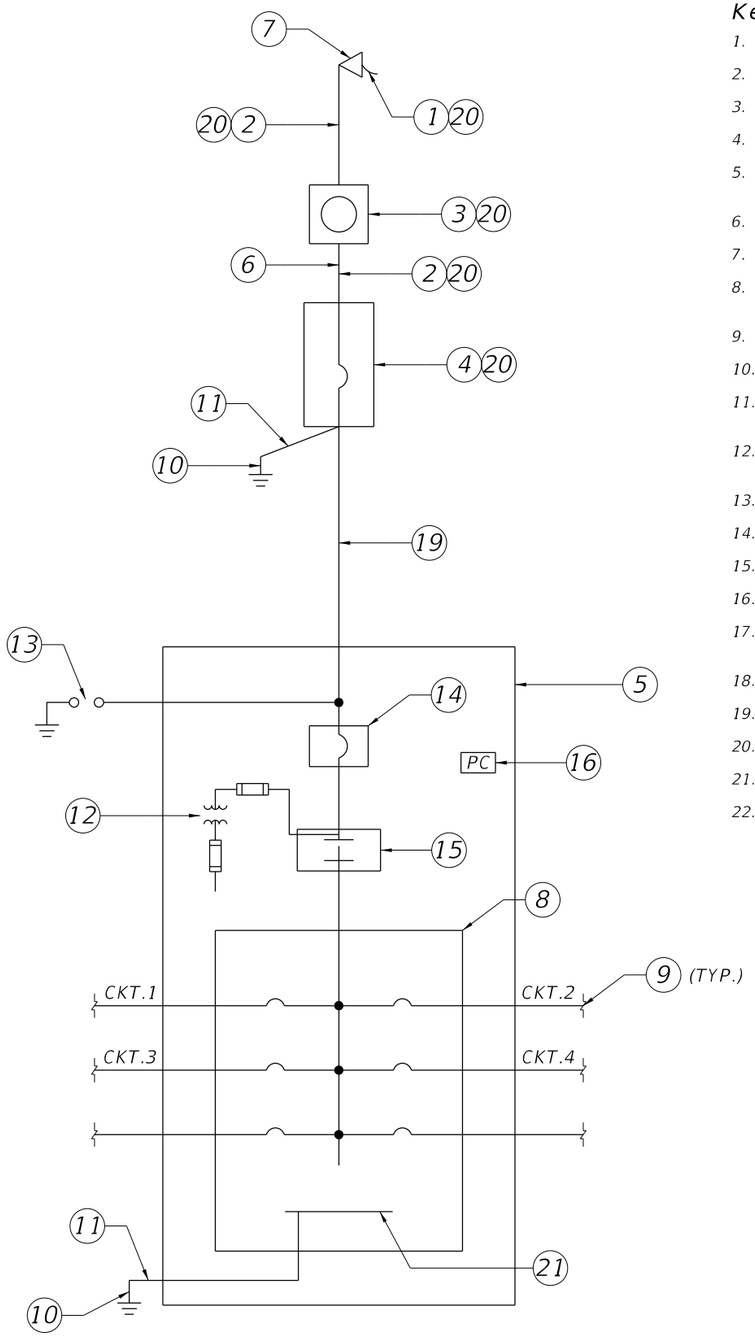
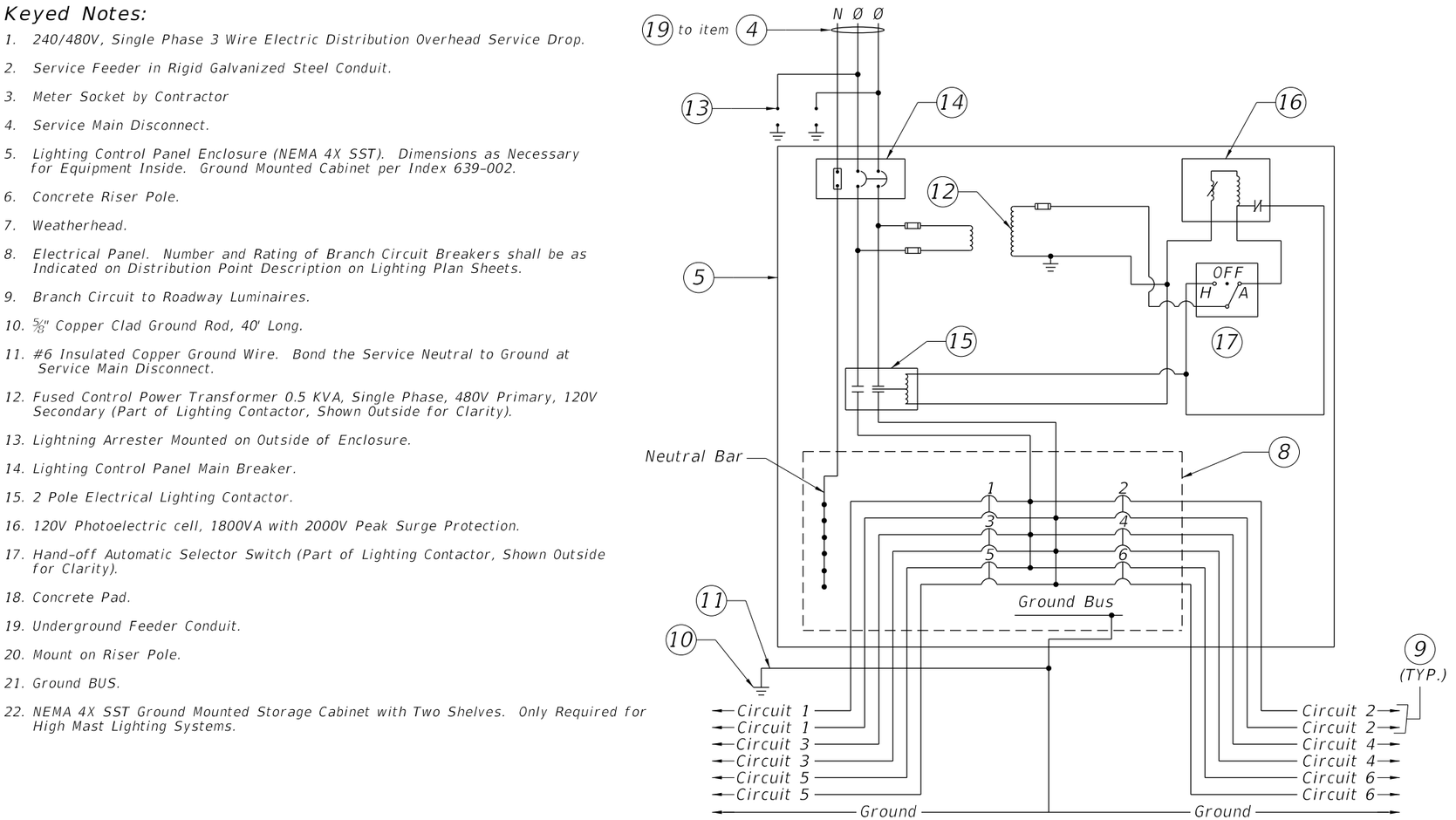
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	SERVICE POINT DETAILS	INDEX	SHEET
11/01/17					639-001	1 of 2

Keyed Notes:

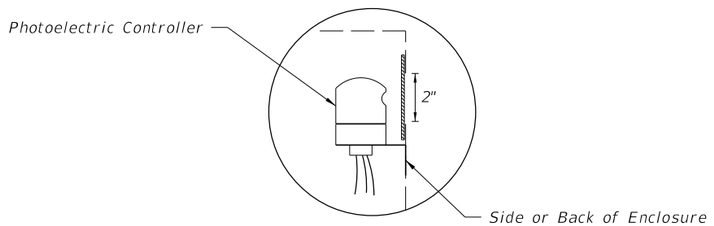
1. 240/480V, Single Phase 3 Wire Electric Distribution Overhead Service Drop.
2. Service Feeder in Rigid Galvanized Steel Conduit.
3. Meter Socket by Contractor
4. Service Main Disconnect.
5. Lighting Control Panel Enclosure (NEMA 4X SST). Dimensions as Necessary for Equipment Inside. Ground Mounted Cabinet per Index 639-002.
6. Concrete Riser Pole.
7. Weatherhead.
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. 5/8" Copper Clad Ground Rod, 40' Long.
11. #6 Insulated Copper Ground Wire. Bond the Service Neutral to Ground at Service Main Disconnect.
12. Fused Control Power Transformer 0.5 KVA, Single Phase, 480V Primary, 120V Secondary (Part of Lighting Contactor, Shown Outside for Clarity).
13. Lightning Arrester Mounted on Outside of Enclosure.
14. Lighting Control Panel Main Breaker.
15. 2 Pole Electrical Lighting Contactor.
16. 120V Photoelectric cell, 1800VA with 2000V Peak Surge Protection.
17. Hand-off Automatic Selector Switch (Part of Lighting Contactor, Shown Outside for Clarity).
18. Concrete Pad.
19. Underground Feeder Conduit.
20. Mount on Riser Pole.
21. Ground BUS.
22. NEMA 4X SST Ground Mounted Storage Cabinet with Two Shelves. Only Required for High Mast Lighting Systems.



ONE LINE DIAGRAM DISTRIBUTION POINT

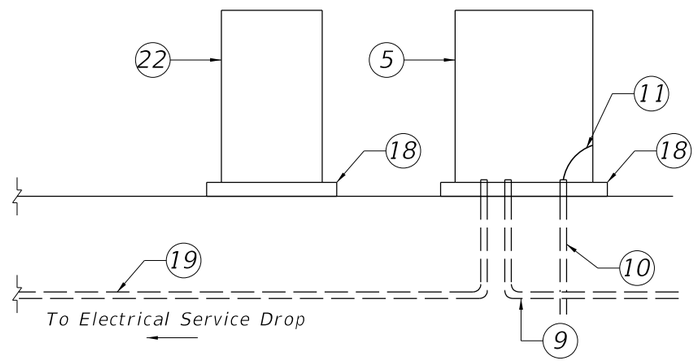


TYPICAL DISTRIBUTION POINT SCHEMATIC DETAIL



Cut a 2" hole in the side of the Lighting Control Panel enclosure for the operation and mounting of the Photo Electric controller. Use plexiglass and a clear silicone sealant to cover hole, install Photo Electric Controller.

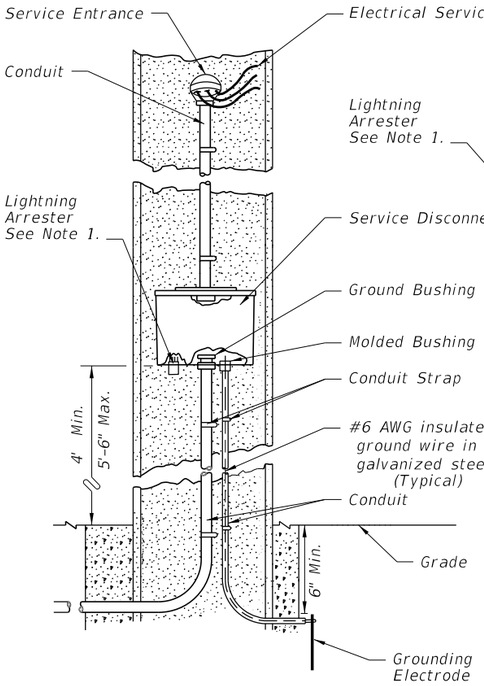
PHOTOELECTRIC CONTROLLER DETAIL



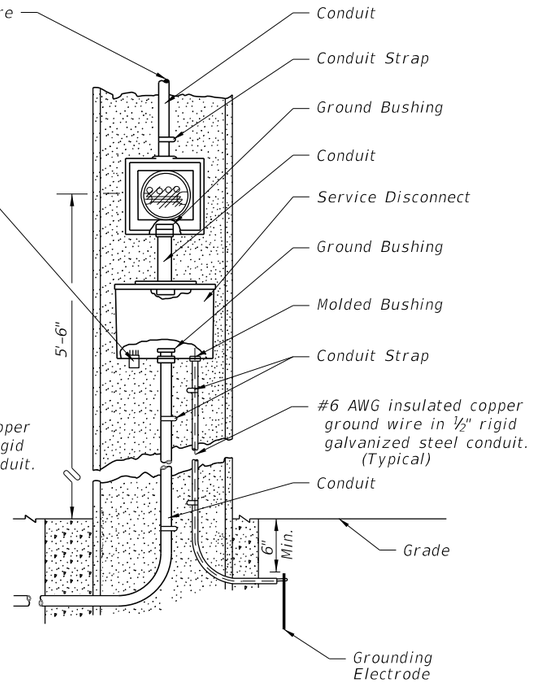
RISER DIAGRAM - TYPICAL DISTRIBUTION POINT

10/29/2019 8:21:56 AM

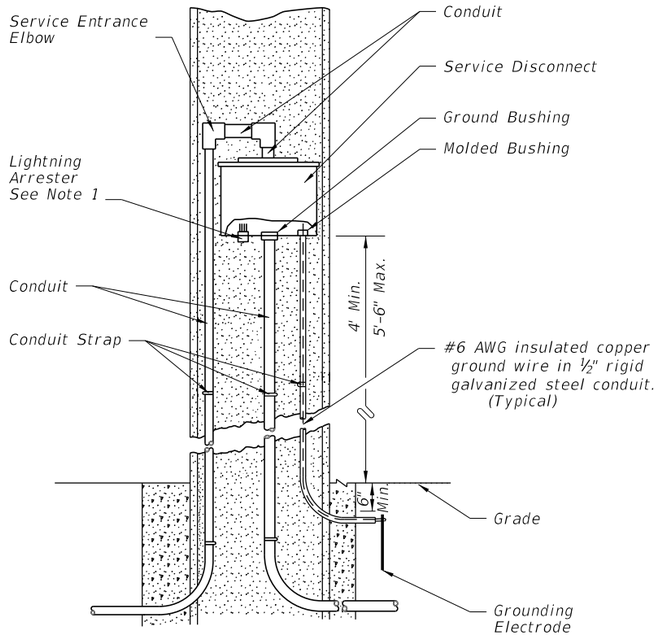
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	SERVICE POINT DETAILS	INDEX	SHEET
11/01/19					639-001	2 of 2



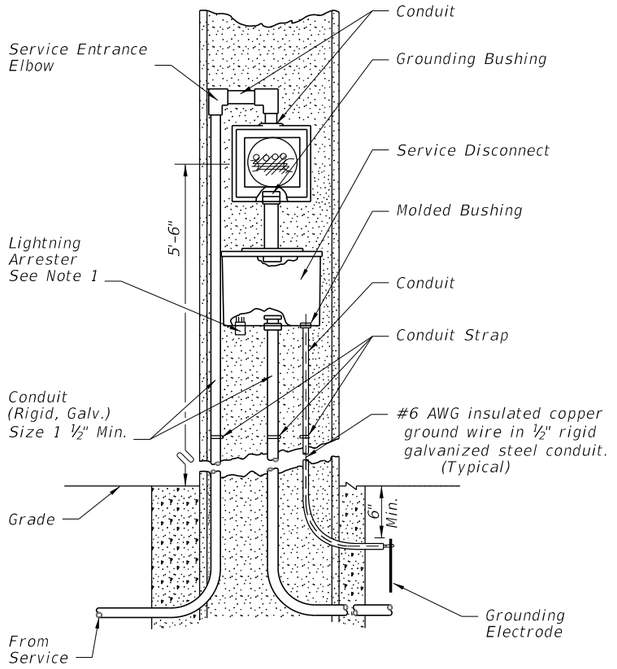
AERIAL FEED
(NO METER USED)
FIGURE A



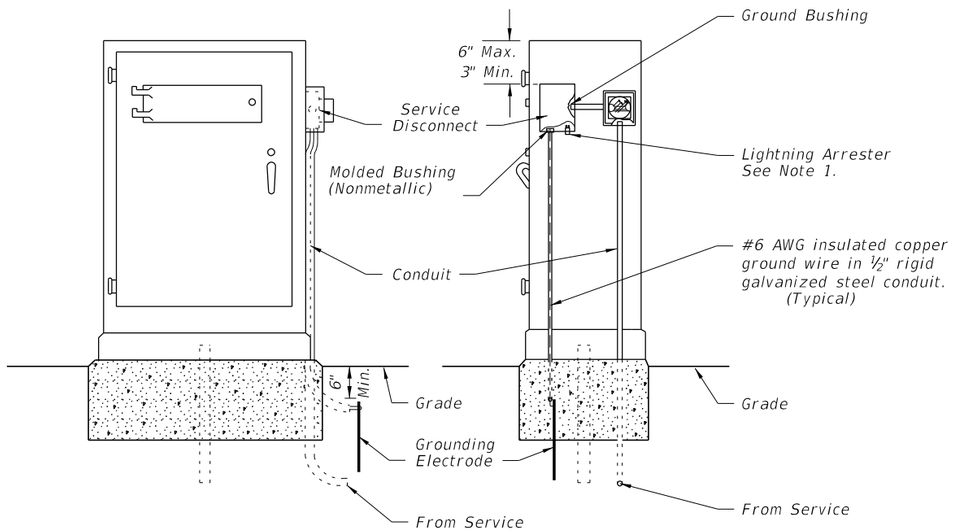
AERIAL FEED
(METER USED)
FIGURE B



UNDERGROUND FEED
(NO METER USED)
FIGURE C



TYPE "B" UNDERGROUND FEED
(METER USED)
FIGURE D



UNDERGROUND CABINET MOUNTED
(METER USED)
FIGURE E

NOTES:

1. The lightning arrester can be located on the side or bottom of the service disconnect enclosure at the Contractor's Option.
2. Liquidtight flexible conduit is approved for use from the electrical disconnect to the cabinet when both are installed on the same pole.
3. Bond all elements together to form an Intersection Grounding Network in accordance with Specification 620. The bond wire shall be run in conduit with the Electrical Service Wire or Signal Cable.
4. Meet all grounding requirements of Specification 620.
5. The Service Disconnect shall be lockable by padlock and four keys provided to the maintaining agency. The door shall have a minimum of three hinges and be lockable. No screws to be used to attach door.
6. The Service Disconnect shall be NEMA 3R or better.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ELECTRIC POWER SERVICE	INDEX	SHEET
11/01/17						639-002	1 of 1

GENERAL NOTES:

1. Work these Index drawings with the Strain Pole Schedule in the Plans.
2. Shop Drawings: This Index is considered fully detailed and no shop drawings are necessary. Submit shop drawings for minor modifications not detailed in the plans.
3. Materials:
   - A. Concrete: Class V Special or Class VI
   - B. Prestress Strands & Spiral Reinforcing: Specification 641
   - C. Hand and coupler cover plates: Non-corrosive material
   - D. Screws: Round headed, chrome plated
4. Fabrication:
   - A. Pole Taper for pole width, strands, reinforcing and void: 0.081 in/ft per face.
   - B. Concrete Cover: 1" minimum
   - C. Spiral Reinforcing: As shown, plus 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 ± ¼" 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 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 Tags on the poles with the following information:
     - a. Financial Project ID.
     - b. Pole Manufacturer
     - c. Standard Pole Type Number
     - d. Pole Length (L)
5. Support locations are for strand release, storage, lifting and transport. Keep BF oriented downward until final erection.
6. Pick-up and support locations shown may vary within a tolerance of ±3".
7. Two point attachment: provide an eye bolt hole for the messenger wire.
8. Tether Wire: When required, field-drill the eyebolt hole prior to installation

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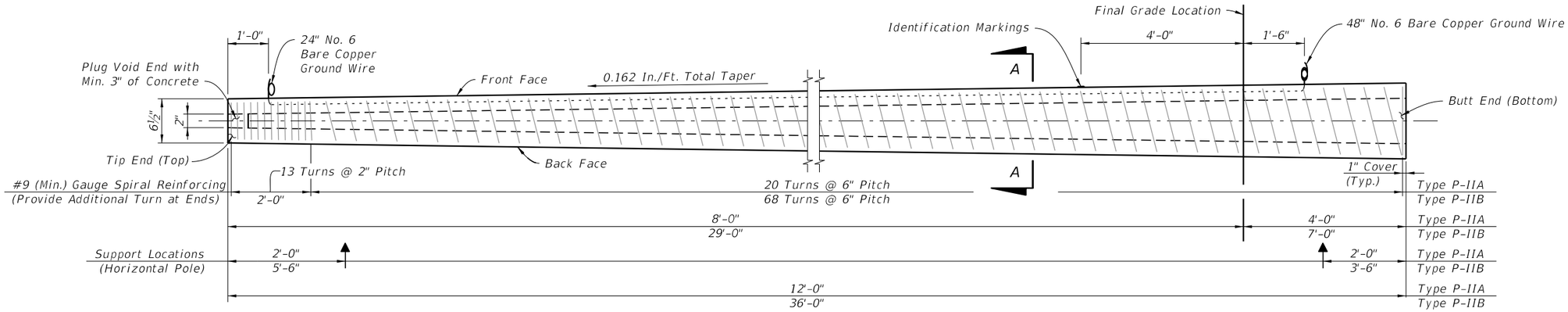
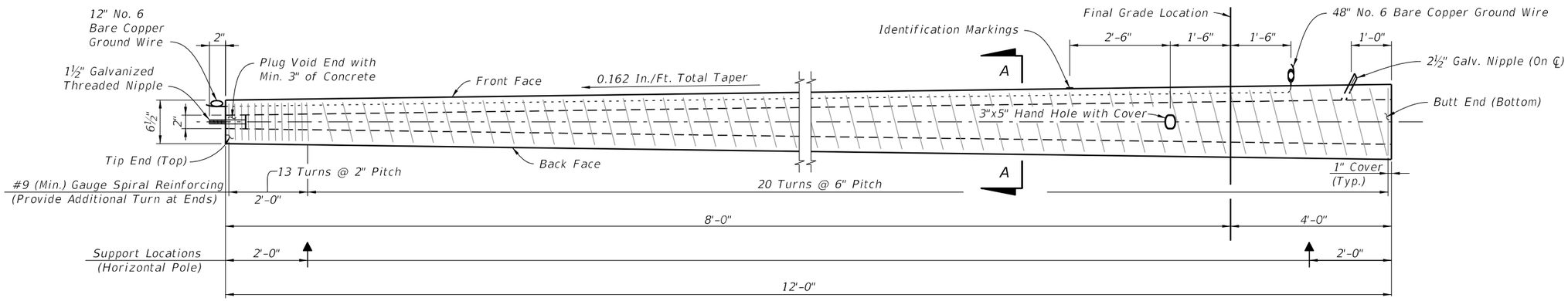
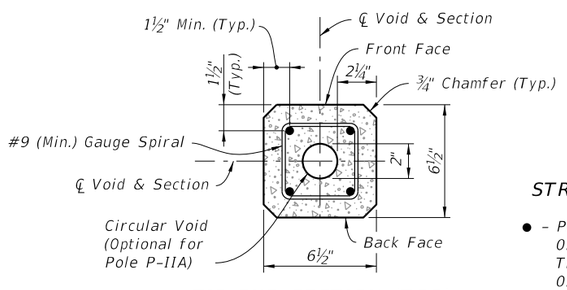


SERVICE POLE P-IIA (12 Ft.) & P-IIB (36 Ft.) ELEVATION
(Strands Not Shown)



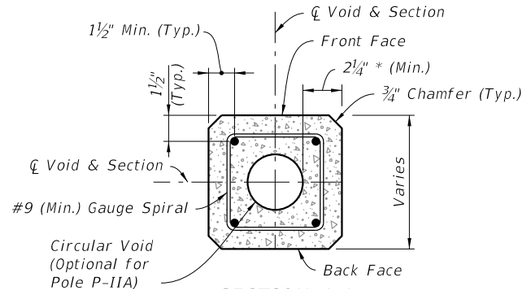
PEDESTAL POLE P-IIC (12 Ft.) ELEVATION
(Strands Not Shown)



TIP END SECTION (TOP)

STRAND LEGEND

- – *Prestressed Strand:*
  0.5 in. ~ 24 kips Before Transfer or
  0.375 in. ~ 14 kips Before Transfer
  (4 strands total)



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

For final erection, tilt pole upright with single point attachment located a distance of 4 Ft. (for P-IIA & P-IIC) or 10 Ft. (for P-IIB) from the Tip End.

** Dimension may vary from 2¼" to 3½" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 2".*

SERVICE AND PEDESTAL POLE TYPE P-II

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE POLES	INDEX	SHEET
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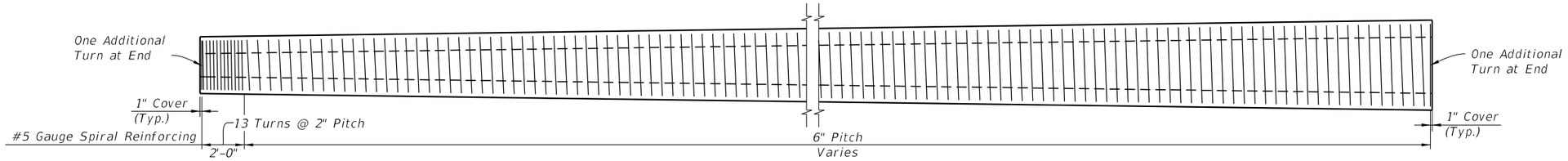
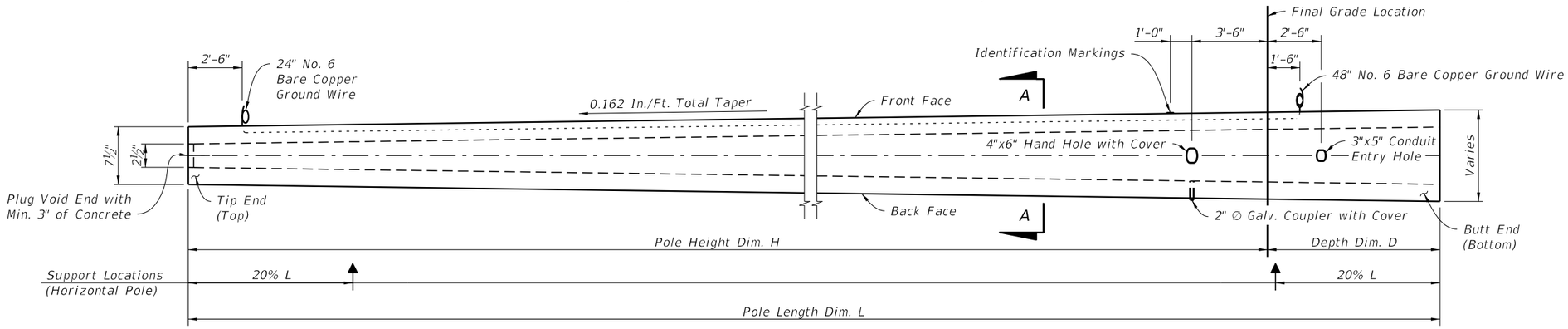
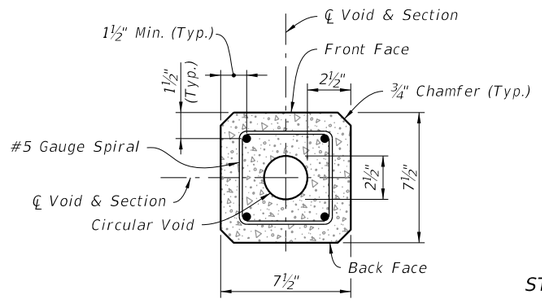


SPIRAL REINFORCING ELEVATION
(Strands, Holes, and Fixtures Not Shown)



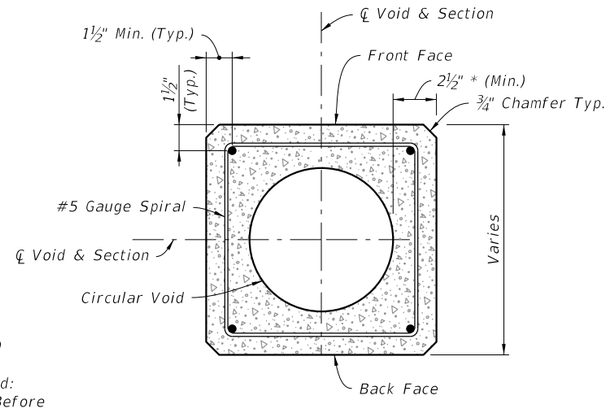
POLE ELEVATION
(Strands and Reinforcing Not Shown)



TIP END SECTION (TOP)

STRAND LEGEND

● - Prestressed Strand:
0.5 in. ~ 31 kips Before
Transfer (4 strands total)



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

For final erection, tilt pole upright with single point attachment located a distance 33.3% L from Tip End.

* Dimension may vary from 2½" to 3¾" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 2½".

POLE TYPE P-III

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONCRETE POLES	INDEX	SHEET
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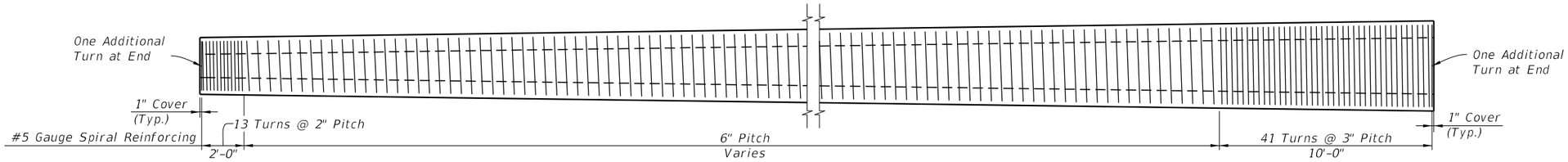
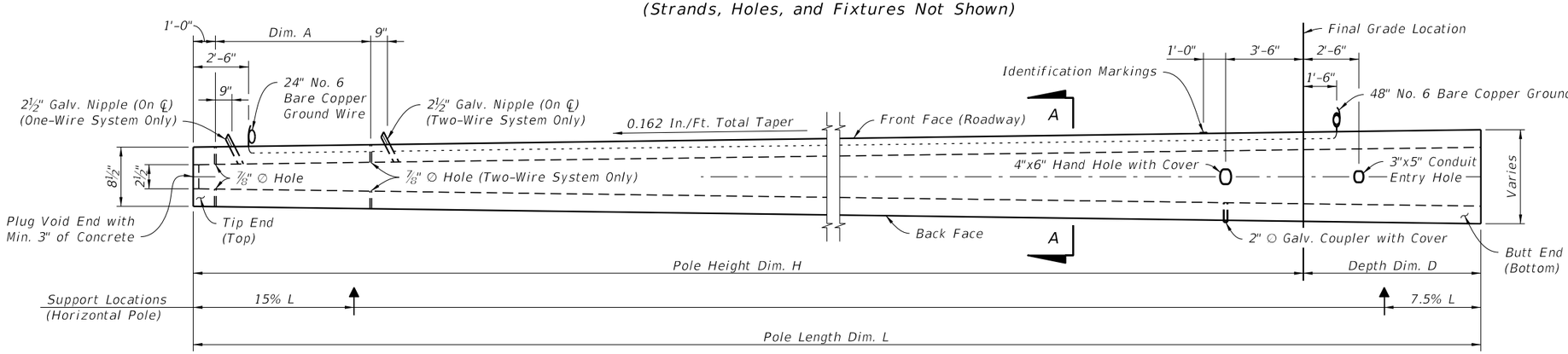
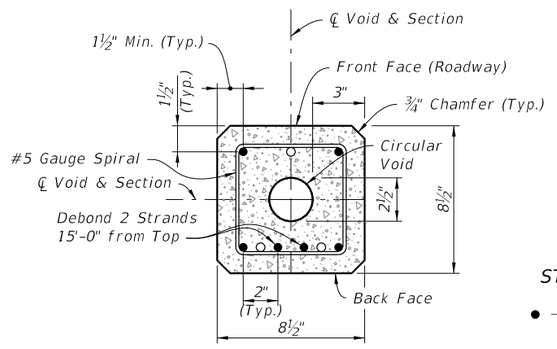


SPIRAL REINFORCING ELEVATION
(Strands, Holes, and Fixtures Not Shown)



POLE ELEVATION
(Strands and Reinforcing Not Shown)

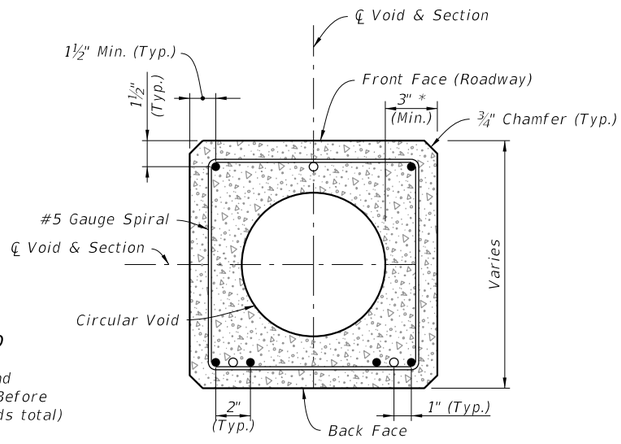


TIP END SECTION (TOP)
(For Dormant Strand Locations See Section A-A)

STRAND LEGEND

● – *Prestressed Strand 0.5 in. ~ 31 kips Before Transfer (6 strands total)*

○ – *Dormant Strand 0.5 in. (3 strands total) One 24" Splice Allowed Per Strand*



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

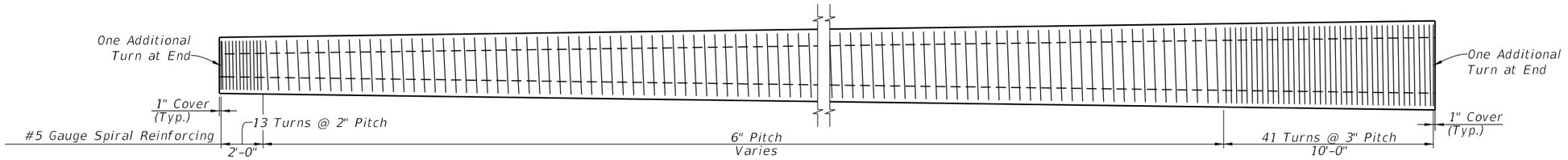
For final erection, tilt pole upright with single point attachment located a distance 20% L from the Tip End.

* *Dimension may vary from 3" to 4¼" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 2½".*

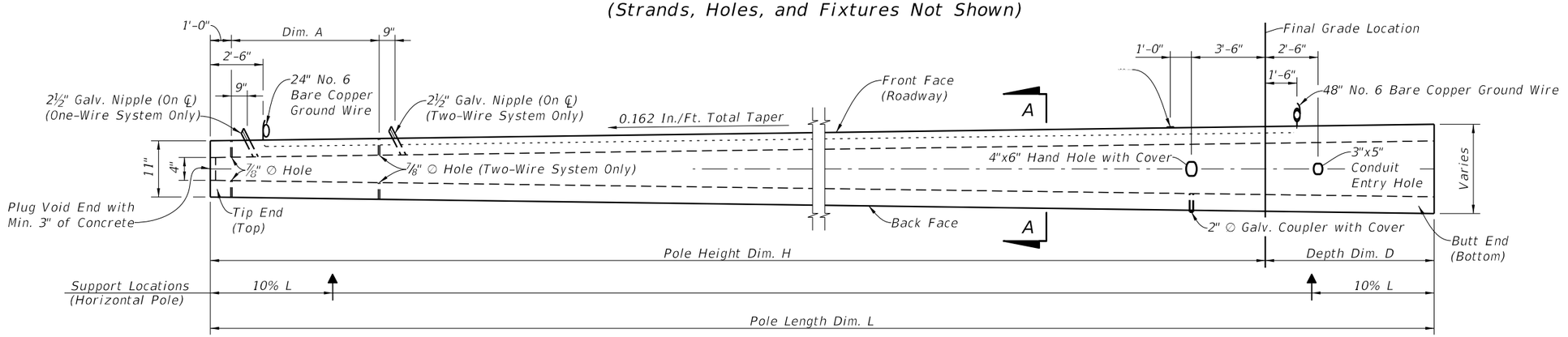
STRAIN POLE TYPE P-IV

10/29/2019 8:22:06 AM

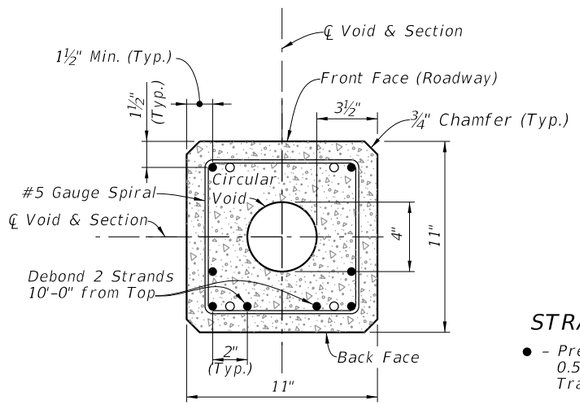
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE POLES	INDEX	SHEET
11/01/17					641-010	4 of 8



SPIRAL REINFORCING ELEVATION
(Strands, Holes, and Fixtures Not Shown)



POLE ELEVATION
(Strands and Reinforcing Not Shown)

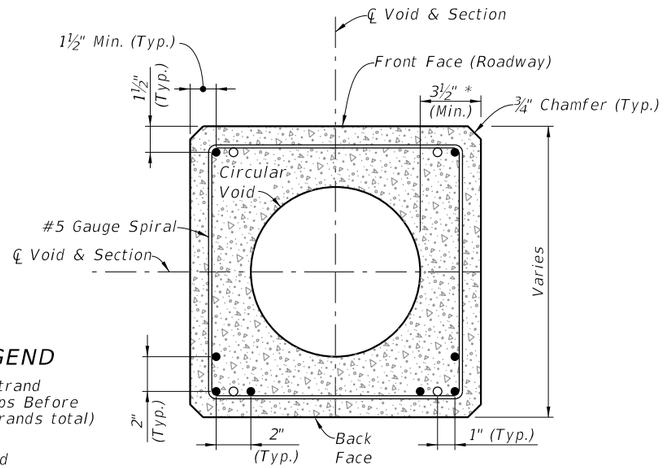


TIP END SECTION (TOP)
(For Dormant Strand Locations, See Section A-A)

STRAND LEGEND

● – Prestressed Strand 0.5 in. ~ 31 kips Before Transfer (8 strands total)

○ – Dormant Strand 0.5 in. (4 strands total) One 24" Splice Allowed Per Strand



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

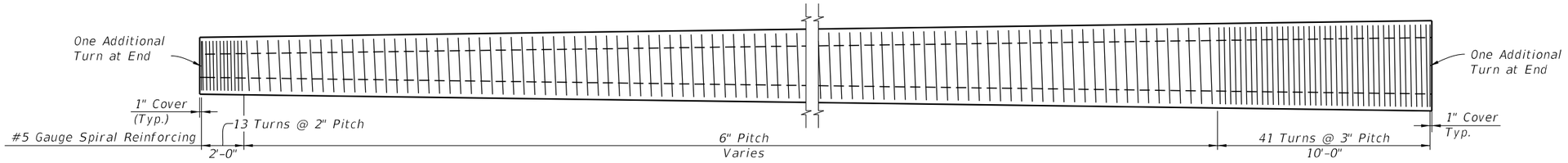
For final erection, tilt pole upright with single point attachment located a distance 12.5% L from the Tip End.

* Dimension may vary from 3½" to 4¾" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 4".

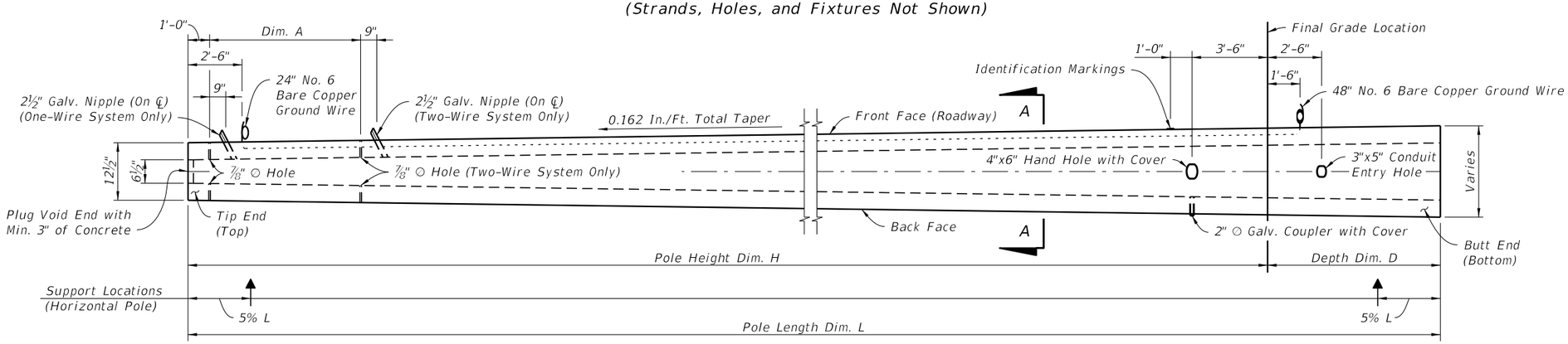
STRAIN POLE TYPE P-V

10/29/2019 8:22:07 AM

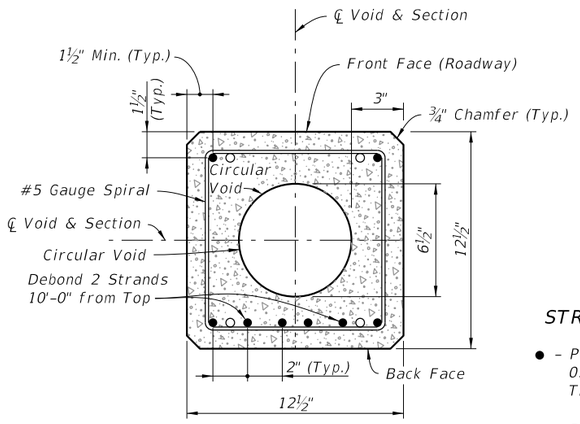
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CONCRETE POLES	641-010	5 of 8



SPIRAL REINFORCING ELEVATION
(Strands, Holes, and Fixtures Not Shown)



POLE ELEVATION
(Strands and Reinforcing Not Shown)

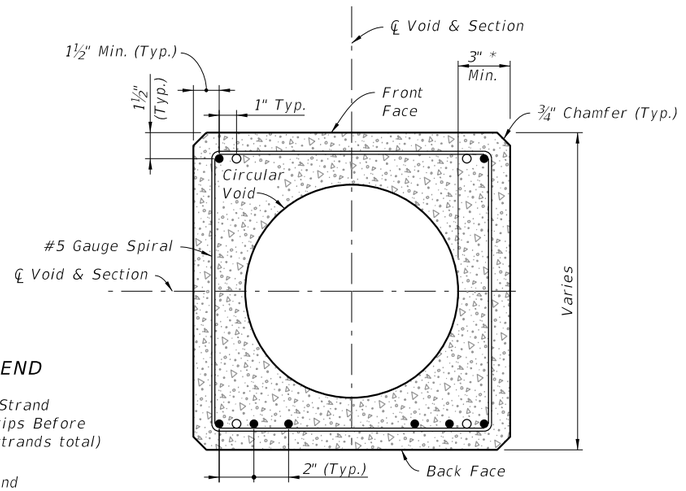


TIP END SECTION (TOP)
(For Dormant Strand Locations, See Section A-A)

STRAND LEGEND

● – Prestressed Strand 0.5 in. ~ 31 kips Before Transfer (8 strands total)

○ – Dormant Strand 0.5 in. (4 strands total) One 24" Splice Allowed Per Strand



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

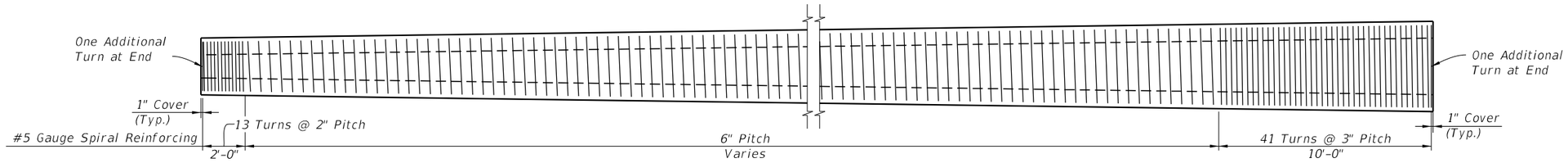
For final erection, tilt pole upright with single point attachment located a distance 10% L from Tip End.

* Dimension may vary from 3" to 4¼" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 6½".

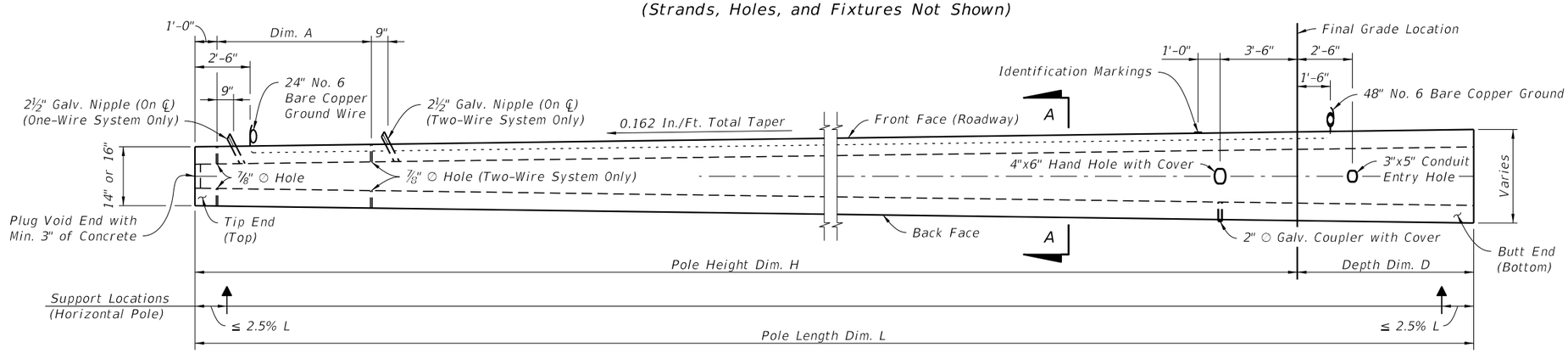
STRAIN POLE TYPE P-VI

10/29/2019 8:22:08 AM

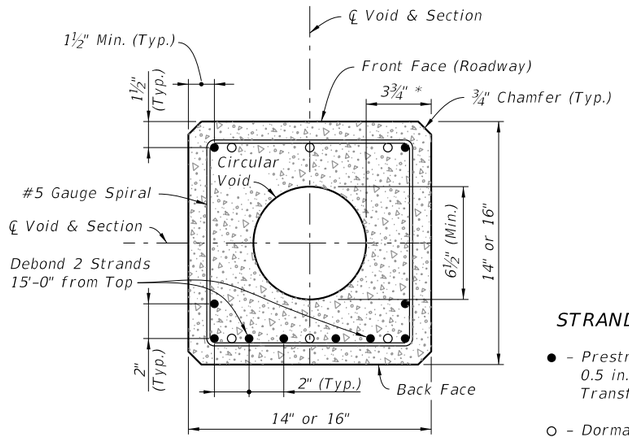
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE POLES	INDEX	SHEET
11/01/17					641-010	6 of 8



SPIRAL REINFORCING ELEVATION
(Strands, Holes, and Fixtures Not Shown)



POLE ELEVATION
(Strands and Reinforcing Not Shown)

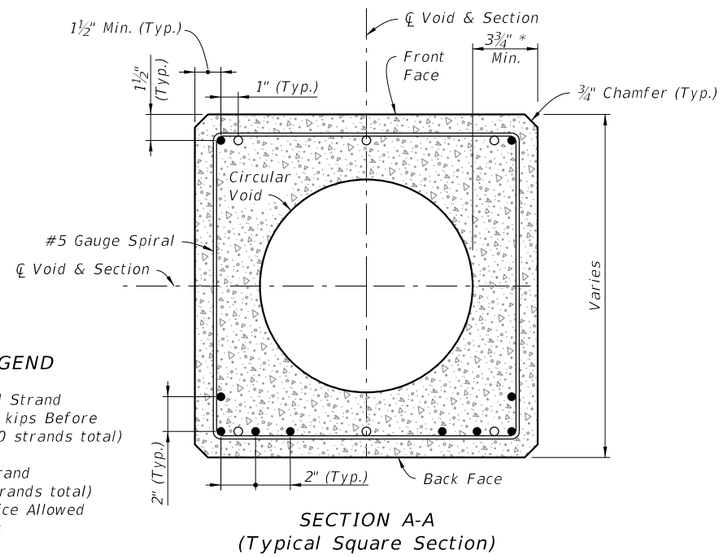


TIP END SECTION (TOP)
(For Dormant Strand Locations, See Section A-A)

STRAND LEGEND

● – Prestressed Strand
0.5 in. ~ 31 kips Before Transfer (10 strands total)

○ – Dormant Strand
0.5 in. (6 strands total)
One 24" Splice Allowed Per Strands



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

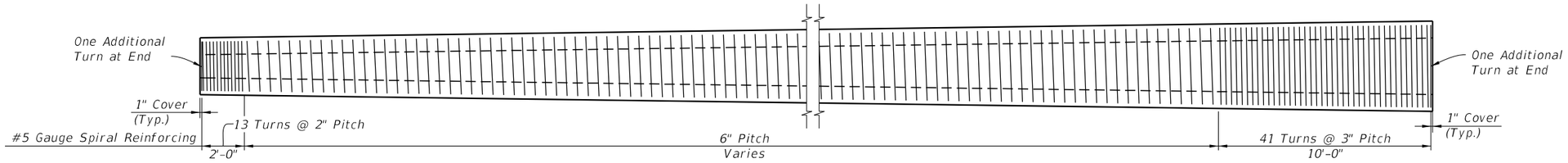
For final erection, tilt pole upright with single point attachment located a distance 10% L from the Tip End.

* Dimension may vary from 3¾" to 5" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 6½".

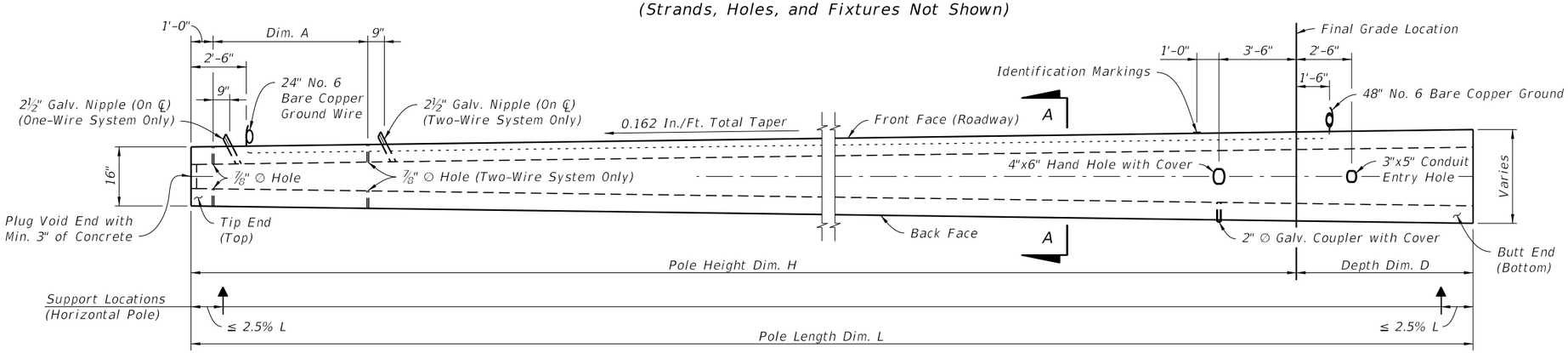
STRAIN POLE TYPE P-VII

10/29/2019 8:22:09 AM

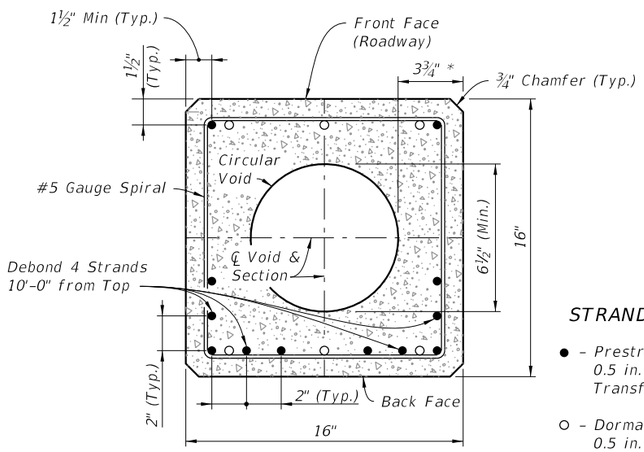
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONCRETE POLES	INDEX	SHEET
11/01/17					641-010	7 of 8



SPIRAL REINFORCING ELEVATION
(Strands, Holes, and Fixtures Not Shown)



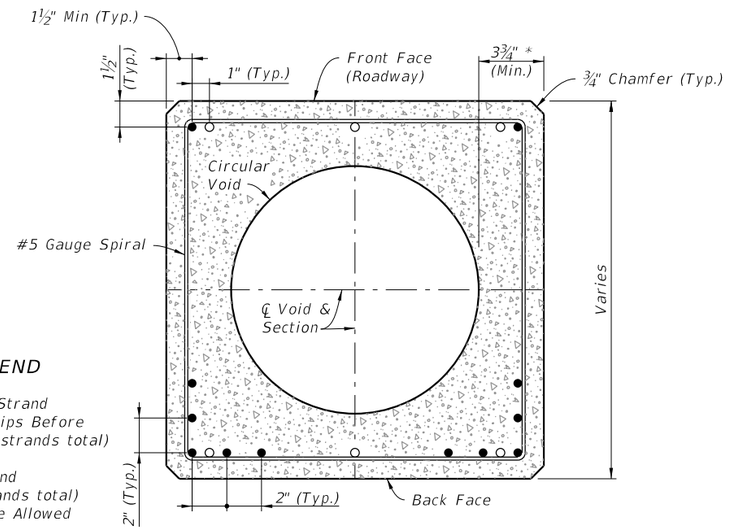
POLE ELEVATION
(Strands and Reinforcing Not Shown)



TIP END SECTION (TOP)
(For Dormant Strand Locations, See Section A-A)

STRAND LEGEND

- ● – *Prestressed Strand 0.5 in. ~ 31 kips Before Transfer (12 strands total)*
- ○ – *Dormant Strand 0.5 in. (6 strands total) One 24" Splice Allowed Per Strand*



SECTION A-A
(Typical Square Section)

NOTES:

Strands shown are continuous from Tip End to Butt End.

Elevation view scale is exaggerated vertically for clarity.

For final erection, tilt pole upright with single point attachment located a distance 10% L from the Tip End.

* *Dimension may vary from 3¾" to 5" to accommodate smaller radius of optional stepped (PVC) void. The void diameter shall not be less than 6½".*

STRAIN POLE TYPE P-VIII

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. Install pole plumb.

4. Provide either round or 12-sided Poles.

5. See Index 635-001 for additional details for Pull Boxes.

6. Materials:

   A. Pole: Use Class VI concrete with 6 ksi minimum strength at transfer.
   B. Prestressing Strands: ASTM A416, Grade 270 low relaxation.
   C. Reinforcing Steel: ASTM A615, Grade 60
   D. Spiral Reinforcing: ASTM A1064 Cold-Drawn
   E. Bolts: ASTM F1554, Grade 55
      Nuts: ASTM A563, Grade A Heavy Hex
      Washers: ASTM F436
   F. Steel plates and Pole Cap: ASTM A36 or ASTM A709, Grade 50
   G. Galvanization: Bolts, nuts and washers: ASTM F2329
      All other steel: ASTM A123

7. Pole 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

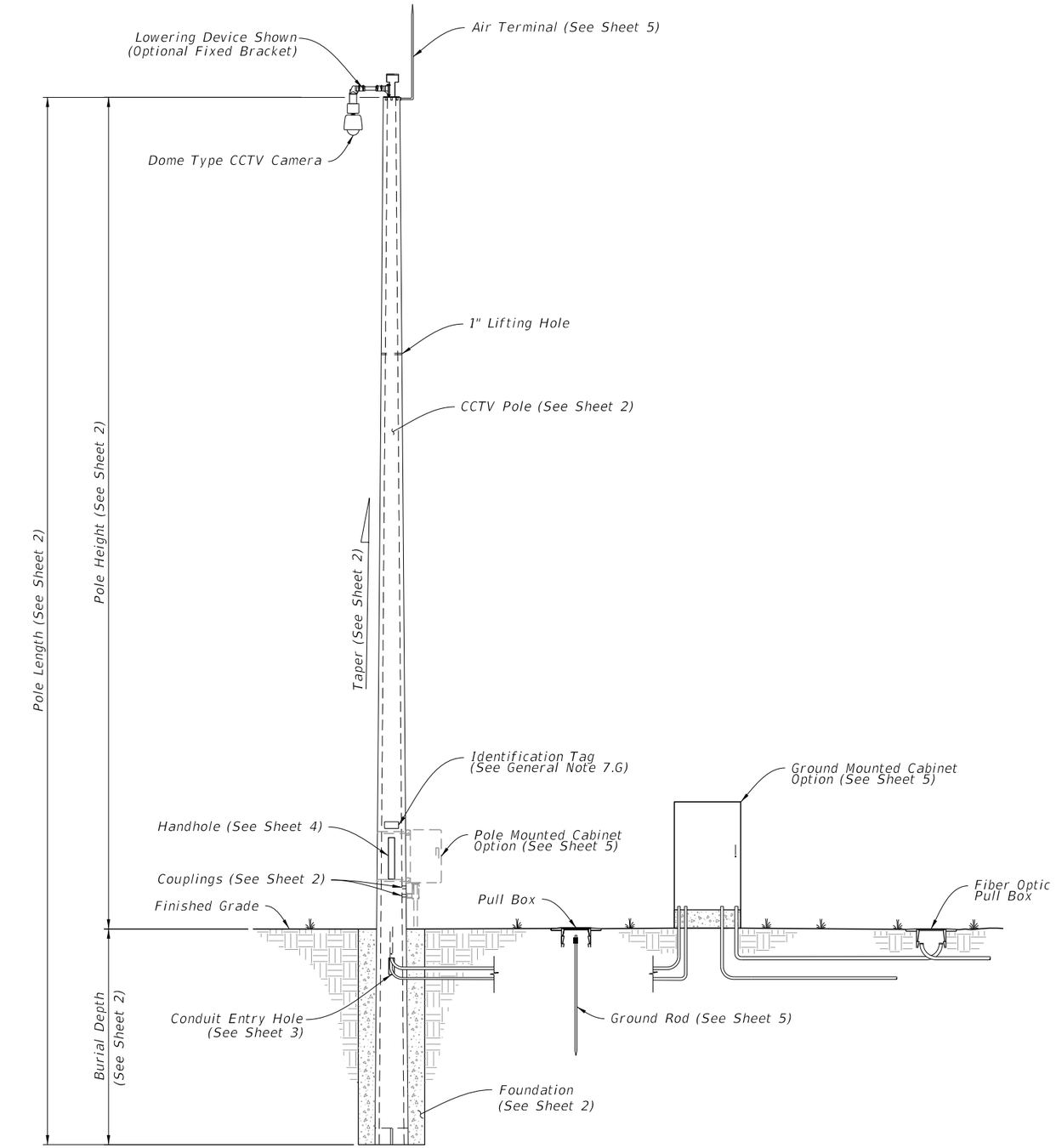
   H. Tie ground wires to the interior of reinforcing steel as necessary to prevent displacement during concreting operations.
   I. Storage, Handling and Erection locations shown may vary within ± 3".

8. Cabinet Installation:

   A. Splice fiber optic cables in cabinet to preterminater 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:

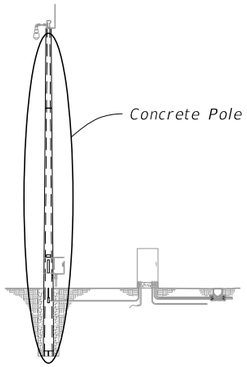
   A. Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.
   B. Mount lowering arm perpendicular to the 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.



CCTV POLE ASSEMBLY

10/29/2019 8:22:11 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CONCRETE CCTV POLE	641-020	1 of 5



ASSEMBLY

NOTES:

1. Diameter of 12-sided poles are measured flat to flat.
2. Total Taper applies to pole, strands and reinforcing.
3. For 12-Sided Pole and Round Roles Option 2, Stress prestressed strand to 70% of Ultimate before transfer. For Round Pole Option 1, stress prestressed strand to 60% of Ultimate before transfer.
4. Pole Design Tables, Burial Depth is based on level ground (flatter than 1:5). Increase the burial depth in accordance with the Additional Burial Depth Due To Ground Slope table for foundations with slopes 1:5 and steeper. Use the higher value for slope or diameter values that fall between those shown on the table.

ADDITIONAL BURIAL DEPTH DUE TO GROUND SLOPE

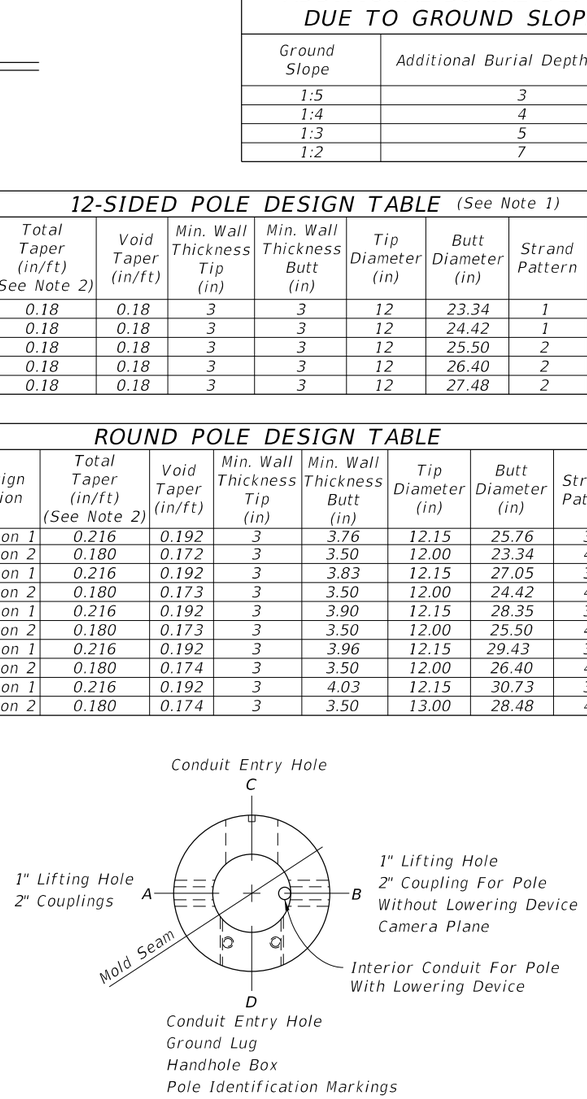
Ground Slope	Additional Burial Depth (feet)
1:5	3
1:4	4
1:3	5
1:2	7

12-SIDED POLE DESIGN TABLE (See Note 1)

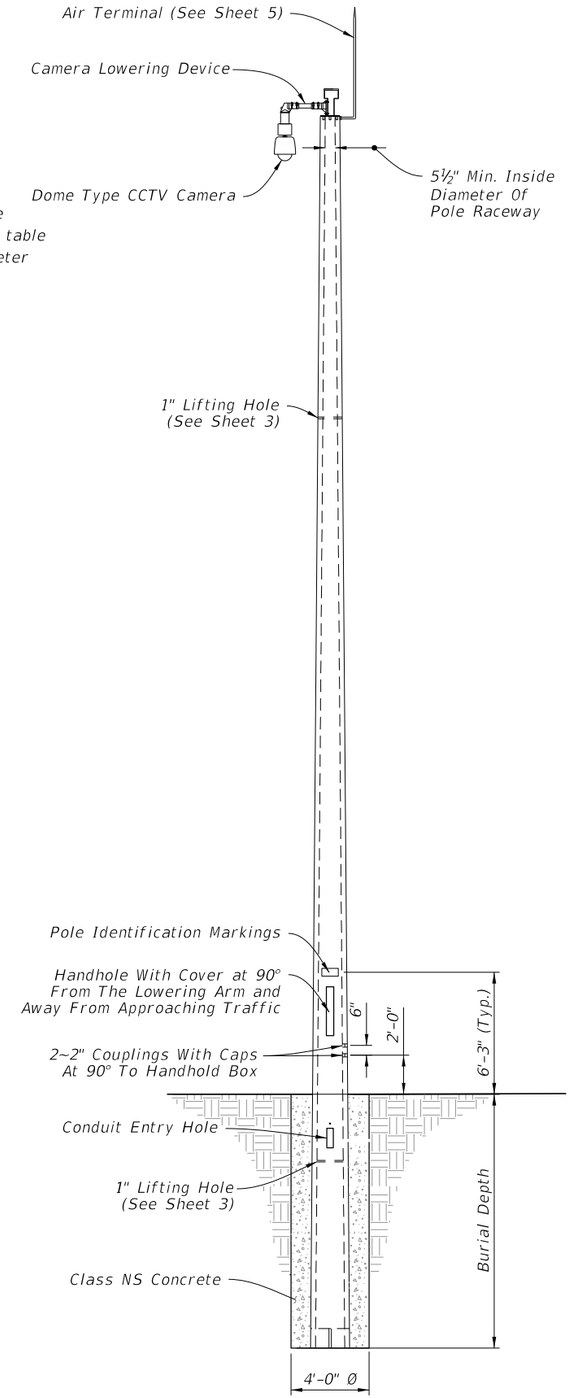
Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Total Taper (in/ft) (See Note 2)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter
63	50	13	0.18	0.18	3	3	12	23.34	1	0.6"
69	55	14	0.18	0.18	3	3	12	24.42	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

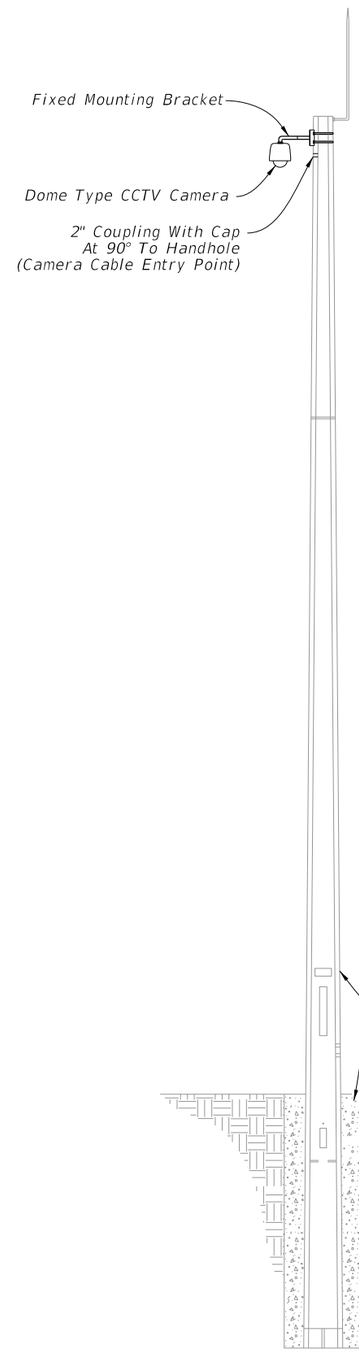
Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Design Option	Total Taper (in/ft) (See Note 2)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter
63	50	13	Option 1	0.216	0.192	3	3.76	12.15	25.76	3	0.5"
			Option 2	0.180	0.172	3	3.50	12.00	23.34	4	0.5"
69	55	14	Option 1	0.216	0.192	3	3.83	12.15	27.05	3	0.5"
			Option 2	0.180	0.173	3	3.50	12.00	24.42	4	0.5"
75	60	15	Option 1	0.216	0.192	3	3.90	12.15	28.35	3	0.5"
			Option 2	0.180	0.173	3	3.50	12.00	25.50	4	0.5"
80	65	15	Option 1	0.216	0.192	3	3.96	12.15	29.43	3	0.5"
			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"
			Option 2	0.180	0.174	3	3.50	13.00	28.48	4	0.5"



PLAN VIEW



CAMERA LOWERING DEVICE



FIXED MOUNTING BRACKET

ELEVATION

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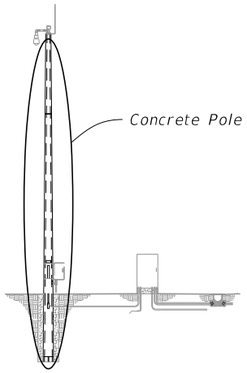
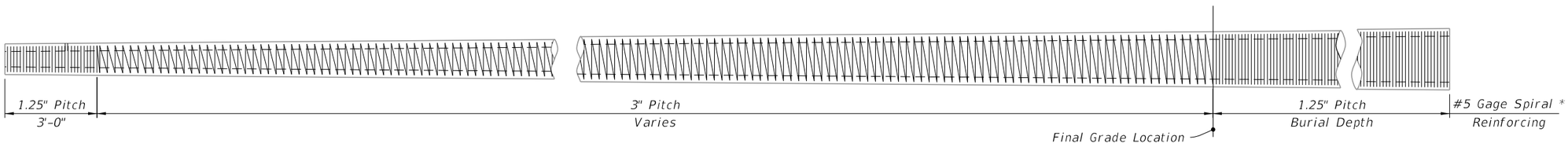
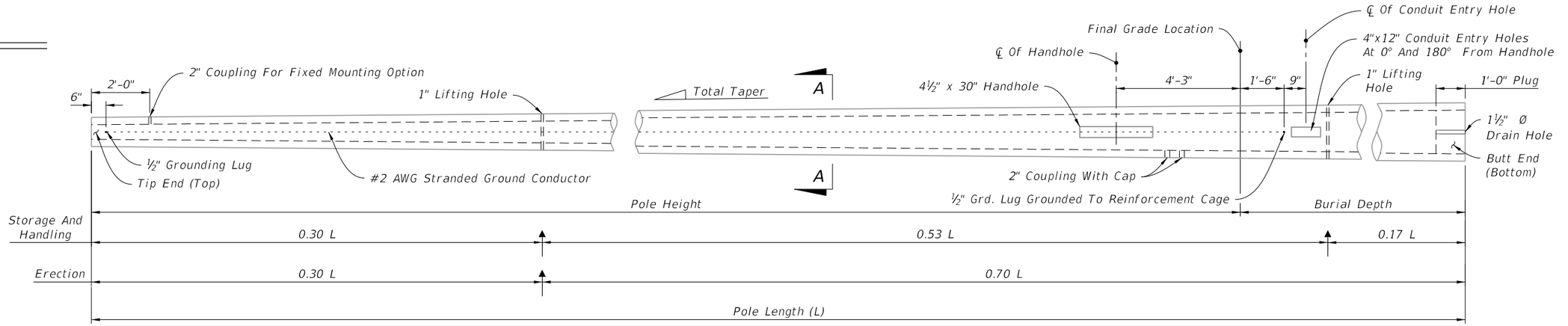


ASSEMBLY

*Spiral wire may be wrapped in two directions given that an equivalent area of spiral wire is provided to that shown in this Index and the cover requirements are met.



SPIRAL REINFORCING ELEVATION
(Strands, Holes and Fixtures Not Shown)



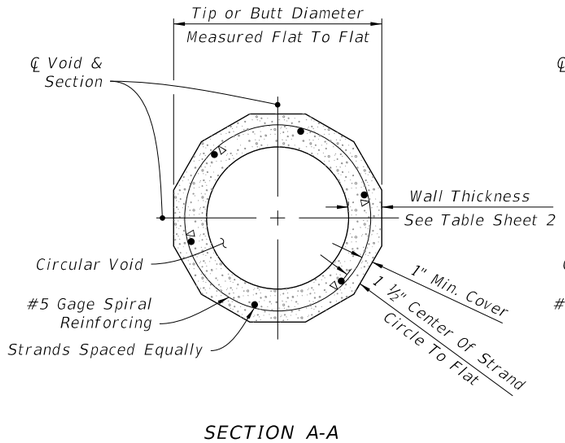
LEGEND:

- ● Prestressed Strand
- △ (4) #5 Rebar (Shown) or (6) #4 Rebar
- ↑ Lift Points

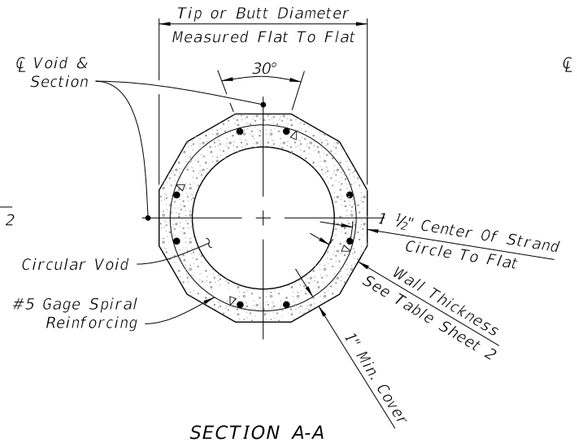
NOTE:

Strands and rebar shown are continuous from Tip End To Butt End.

POLE ELEVATION
(Strands And Reinforcing Not Shown)

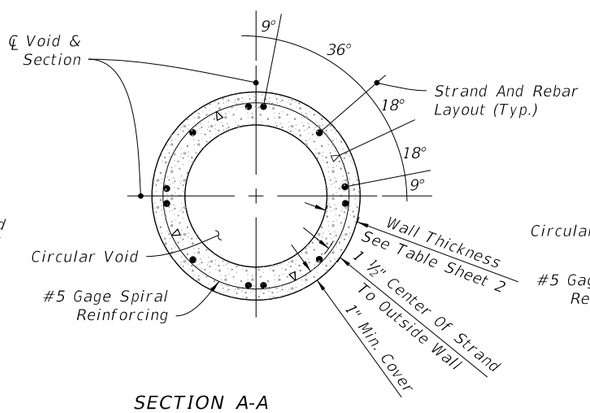


SECTION A-A
STRAND PATTERN 1

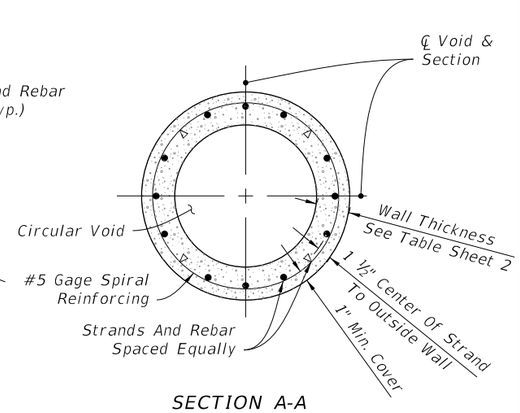


SECTION A-A
STRAND PATTERN 2

12 - SIDED CONCRETE POLE



SECTION A-A
STRAND PATTERN 3
(Option 1)



SECTION A-A
STRAND PATTERN 4
(Option 2)

ROUND CONCRETE POLE

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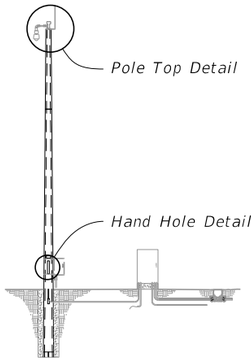
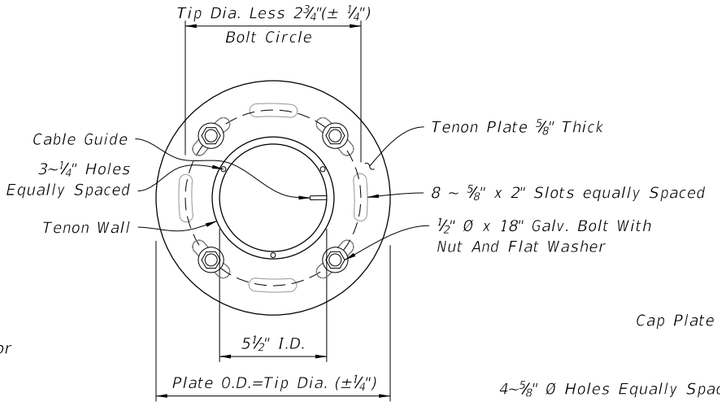


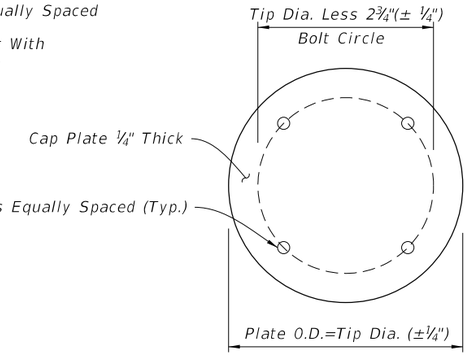
ASSEMBLY

NOTES:

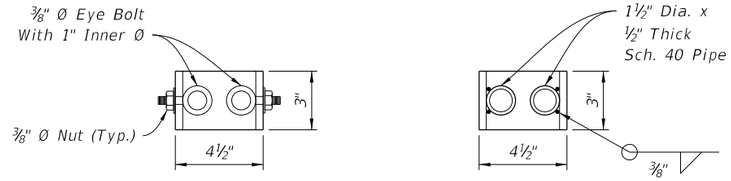
1. Install all handhole and opening covers prior to shipping.
2. Install ½" Ø x 5" long stud with hex nut in insert before shipment.
3. As an alternate, embed 4~½" Ø x 18" stainless steel threaded rods with a threaded nut. At top of rod, thread a coupling nut to attach plate w/ 4~½" x 1¾" stainless steel bolts.
4. Handhole frame may be Cast Aluminum 356.2.



PLAN VIEW



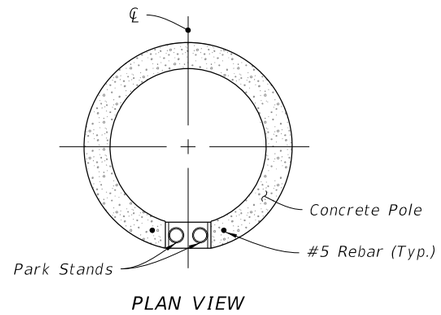
PLAN VIEW



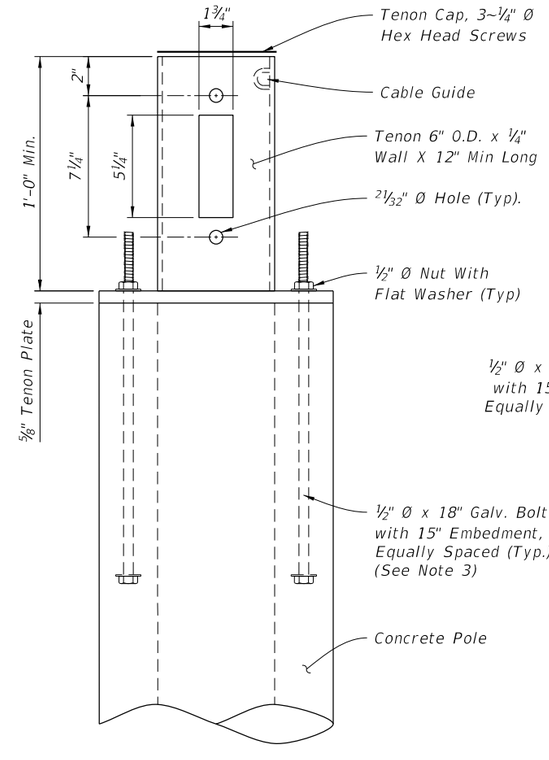
EYE BOLT OPTION

PIPE OPTION

PARK STAND DETAIL

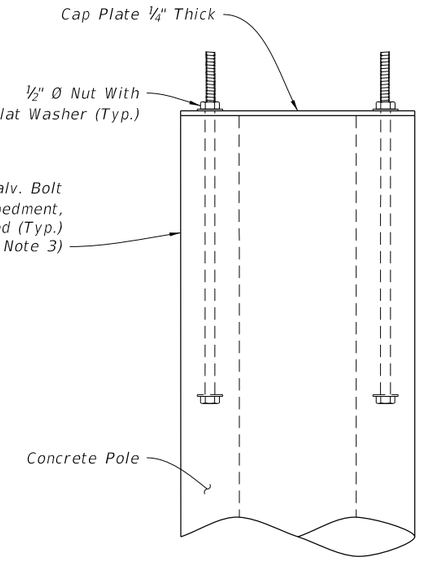


PLAN VIEW



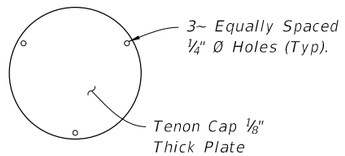
ELEVATION

LOWERING DEVICE TENON



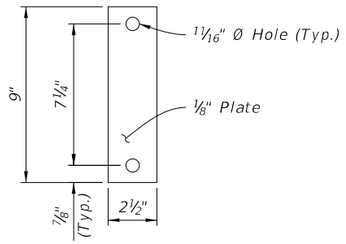
ELEVATION

CAP PLATE DETAIL
(Without Lowering Device)



TENON CAP

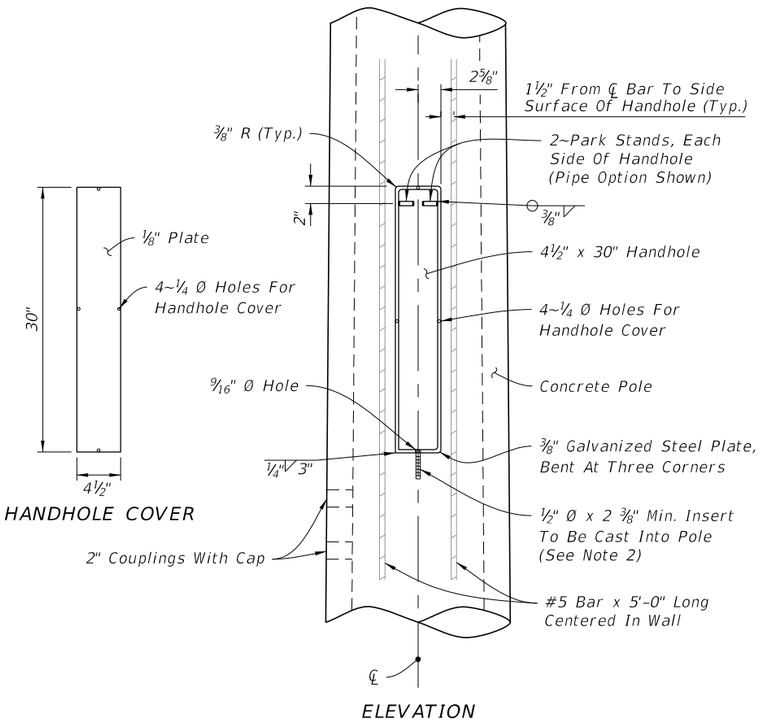
PLAN VIEW



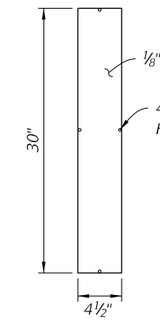
ELEVATION

TENON COVER

POLE TOP DETAIL



ELEVATION



HANDHOLE COVER

HANDHOLE DETAIL

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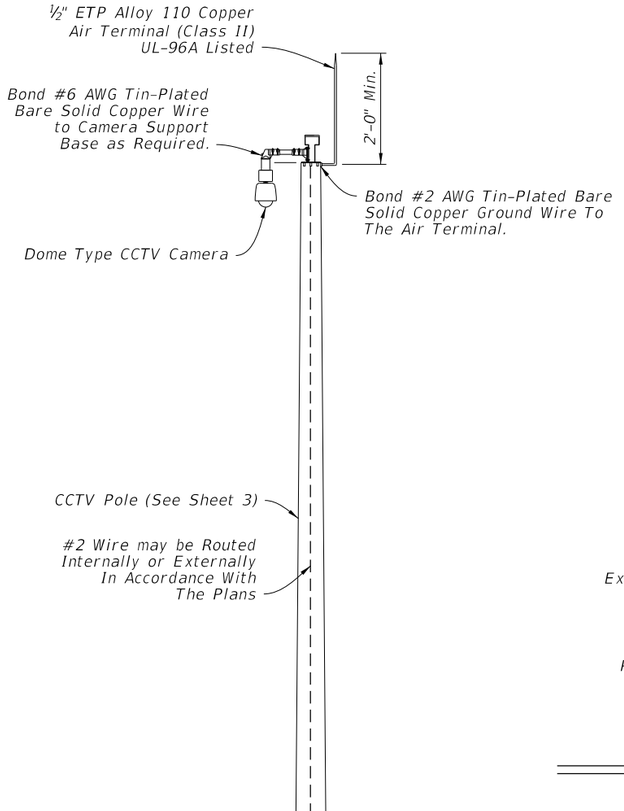
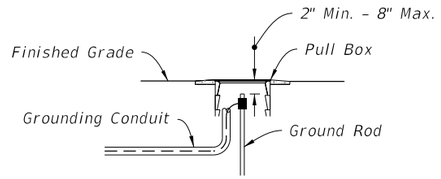
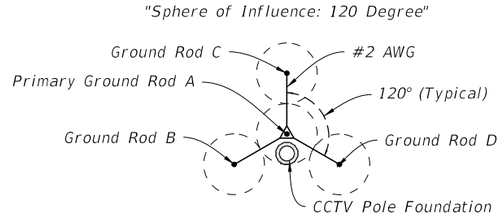


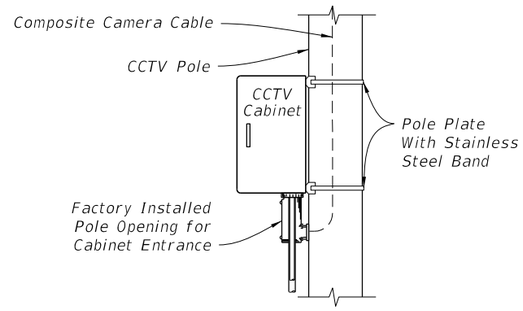


(Pole Mounted Cabinet Configuration Shown)

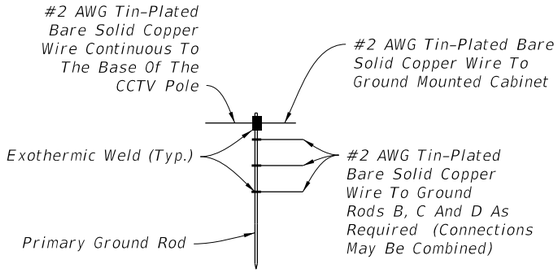
DETAIL "A"



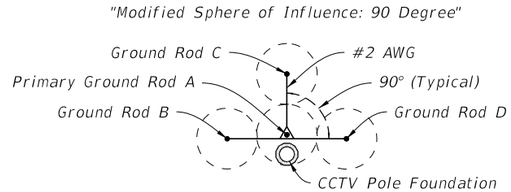
TYPICAL
(20' Rods, 40' Spacing)



SIDE VIEW



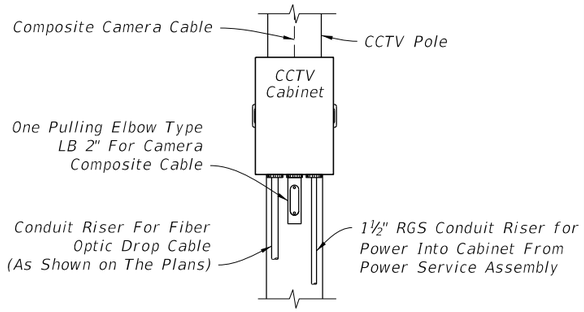
DETAIL "B"



TYPICAL MODIFIED
(20' Rods, 40' Spacing)

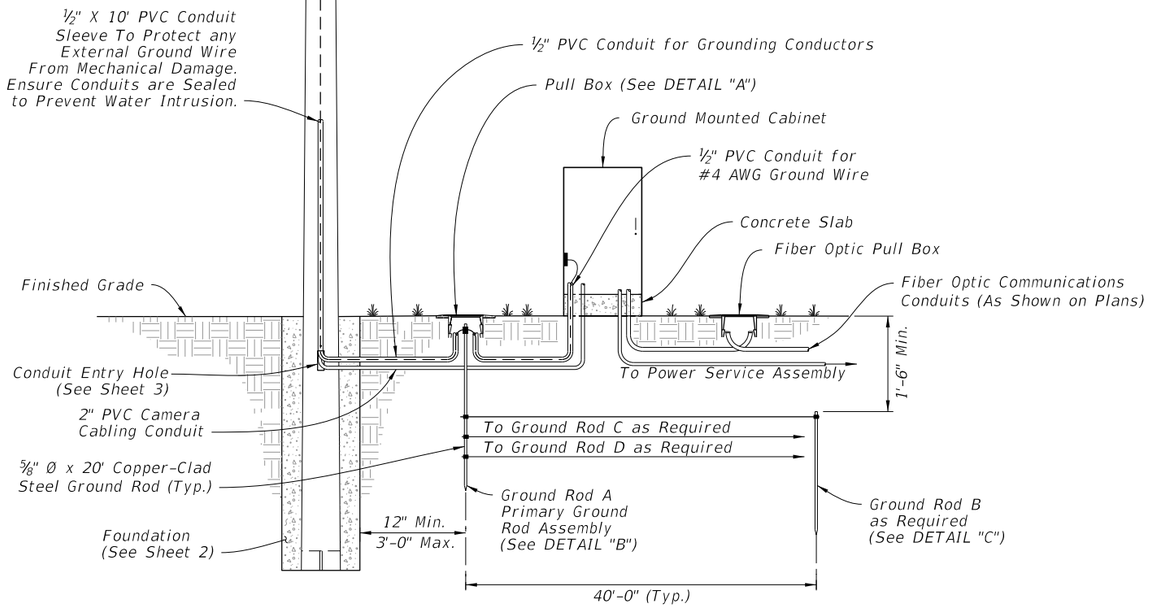
GROUND ROD ARRAY PLACEMENT

DETAIL "C"

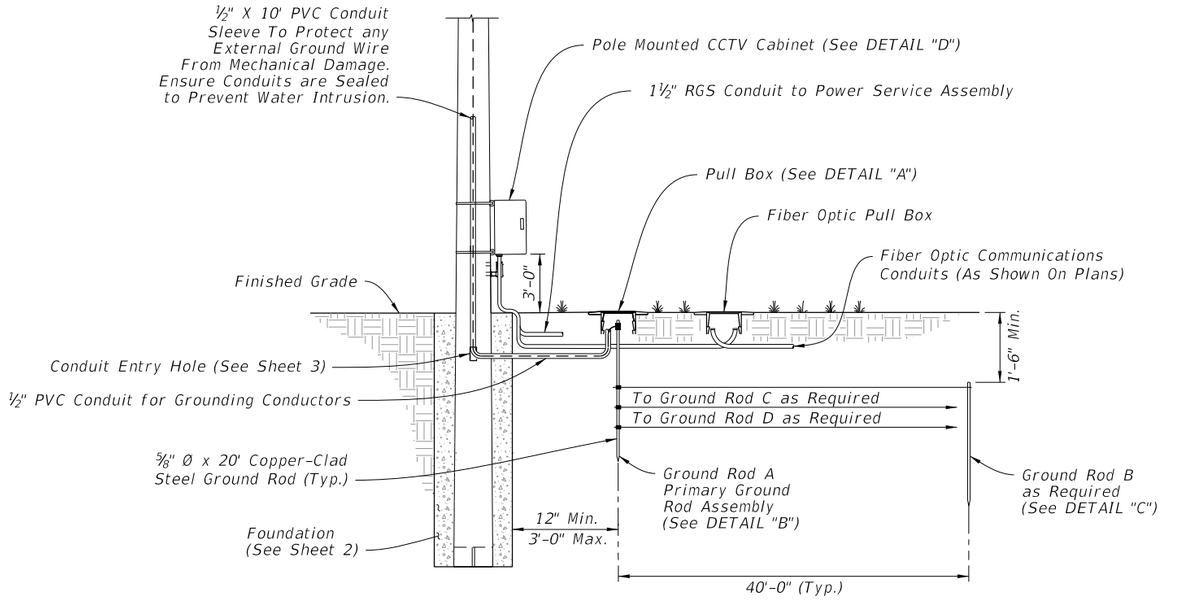


FRONT VIEW

DETAIL "D"



GROUND MOUNTED CABINET



POLE MOUNTED CABINET

CONCRETE CCTV POLE GROUNDING

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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.

2. Shop Drawings:

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

3. Materials:

   A. Strain Pole and Backing Rings:
      a. Less than 3/16": ASTM A1011 Grade 50, 55, 60 or 65
      b. Greater than or equal to 3/16": ASTM A572 Grade 50, 55, 60 or 65
      c. ASTM A595 Grade 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:

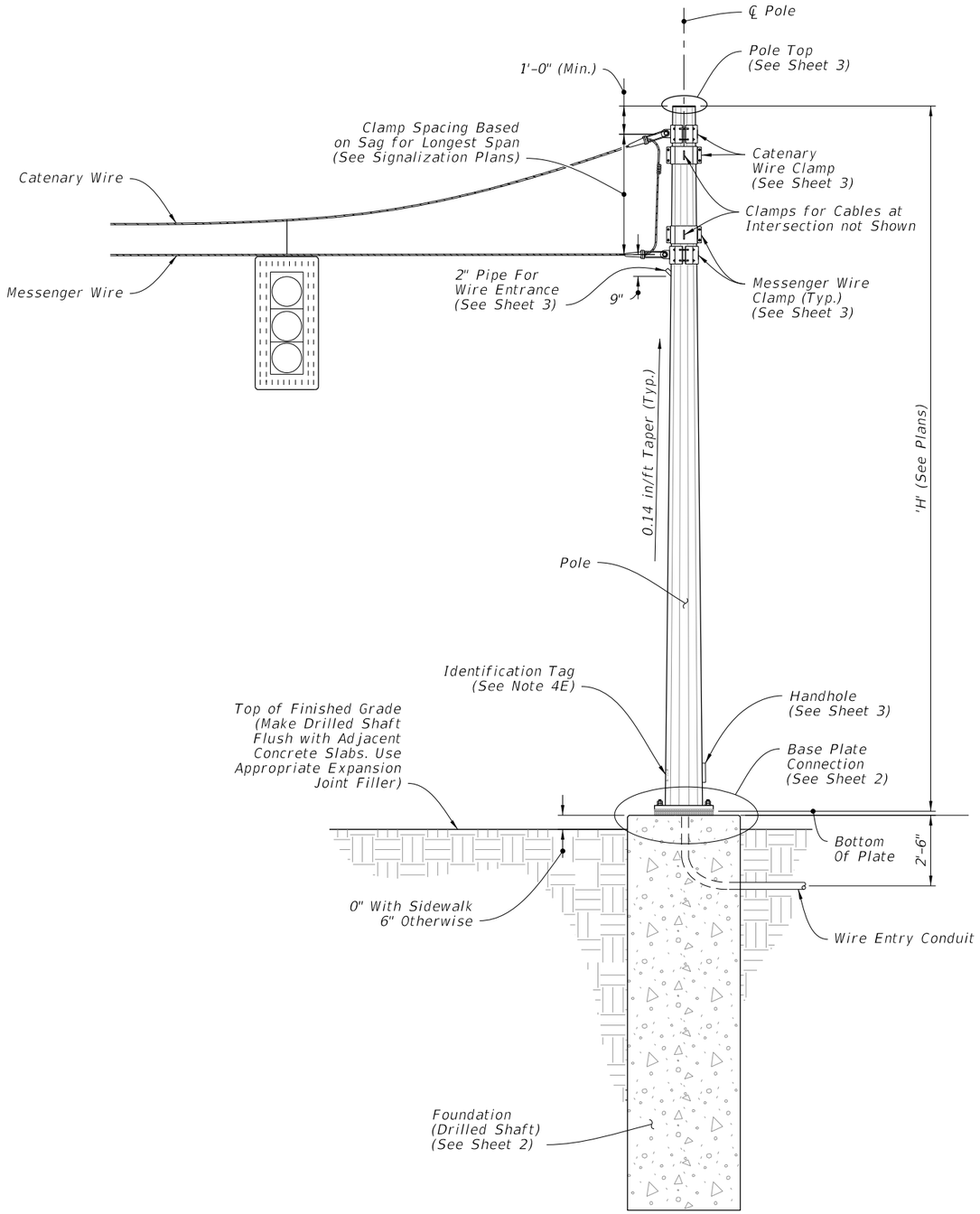
   A. Pole Taper: Change diameter at a rate of 0.14 inches per foot, round or 12-sided (Min.)
   B. Upright splices are not permitted. Transverse welds are only permitted at the base.
   C. Provide bolt hole diameters as follows:
      a. Bolts (except Anchor Bolts): Bolt diameter plus 1/16", prior to galvanizing.
      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 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 groove 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.

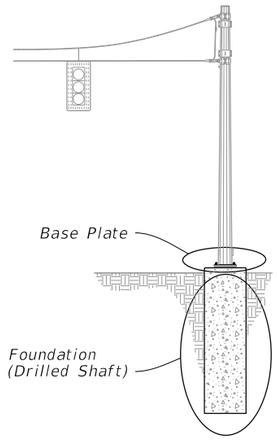


STRAIN POLE ASSEMBLY

ELEVATION AND NOTES

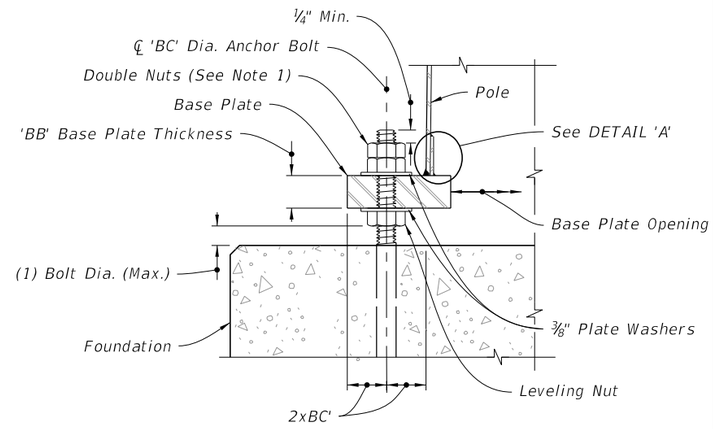
10/29/2019 8:22:15 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	STEEL STRAIN POLE	INDEX	SHEET
11/01/19					649-010	1 of 3



POLE ASSEMBLY

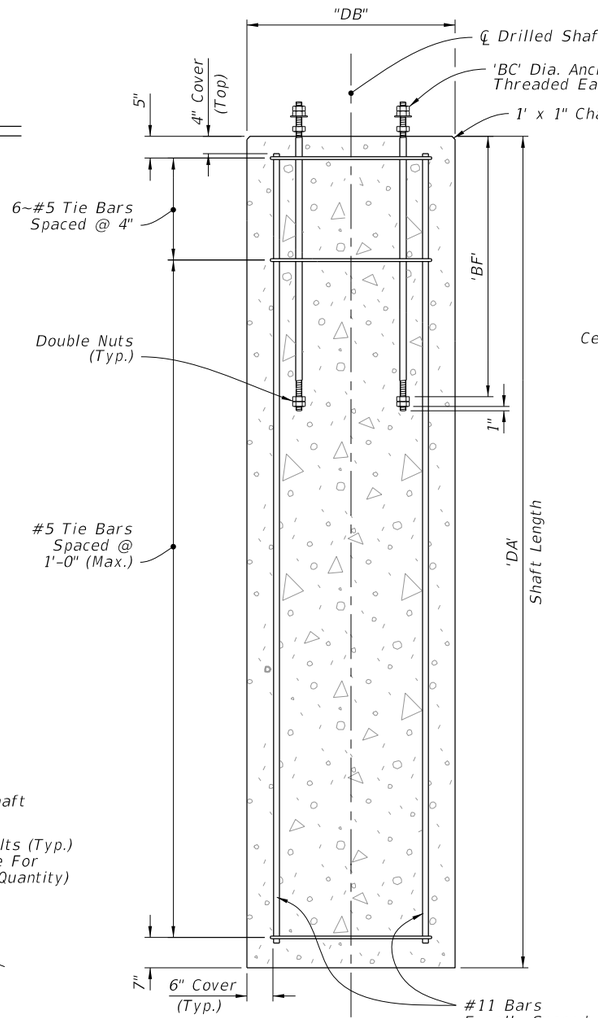
STEEL STRAIN POLE DATA TABLE										
POLE TYPE	POLE		BASE CONNECTION					SHAFT		
	J (in)	K (in)	No. of Bolts	BA (in)	BB (in)	BC (in)	BF (in)	DA (FT)	DB (FT)	No. of #11 Bars
PS-IV	0.250	14	8	25	2.50	1 3/8	60	14	4	14
PS-V	0.313	16	10	28	2.50	1 1/2	60	15	4	14
PS-VI	0.313	18	12	30	2.50	1 1/2	60	16	4	14
PS-VII	0.313	21	14	33	2.50	1 1/2	60	16	4.5	16
PS-VIII	0.313	23	16	35	2.50	1 1/2	60	17	4.5	16
PS-IX	0.313	25	12	39	3.00	1 3/4	60	17	5	18
PS-X	0.313	27	14	41	3.00	1 3/4	60	18	5	18



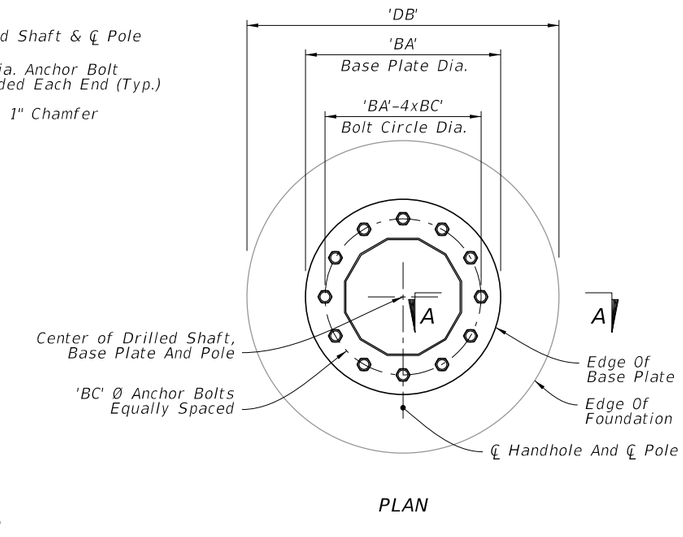
SECTION A-A

NOTE:

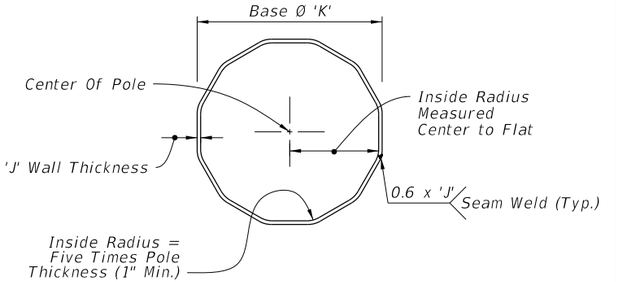
1. Double Nuts: Bottom nut may be half-height 'jam' nut. Provide individual nut covers (not shown) for each bolt.



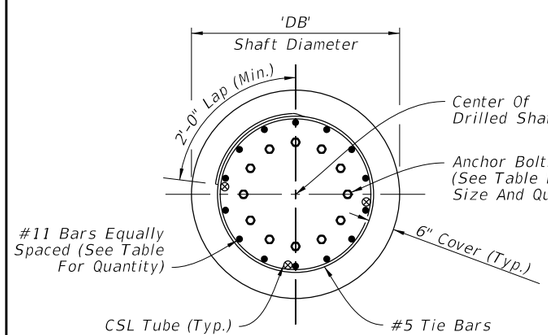
ELEVATION



PLAN

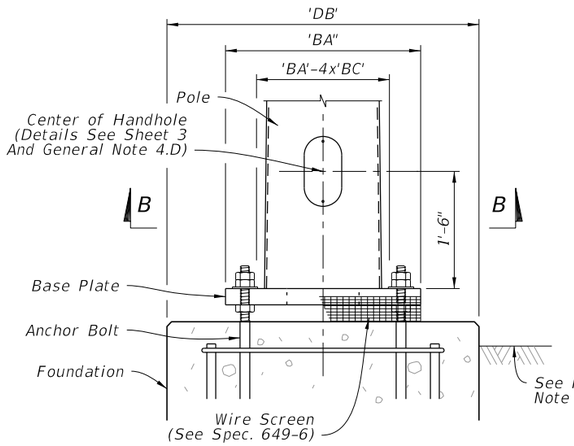


SECTION B-B



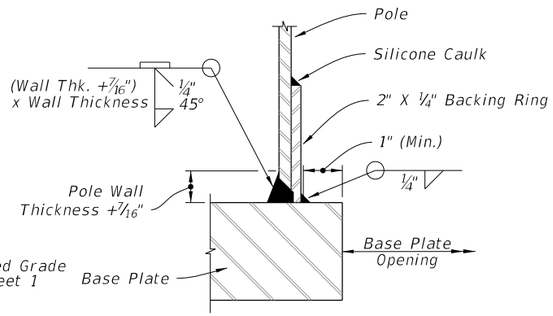
PLAN

FOUNDATION



ELEVATION

BASE PLATE



JOINT WELD DETAIL

DETAIL 'A'

FOUNDATION AND BASE DETAILS

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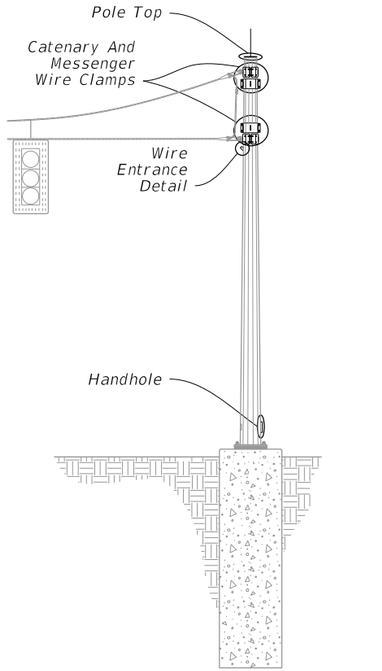
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STEEL STRAIN POLE	INDEX	SHEET
11/01/18						649-010	2 of 3

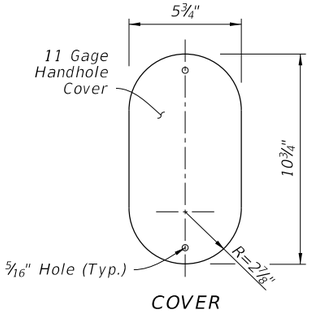


POLE ASSEMBLY

NOTES:

1. Clamps have been sized for Design Cable Loads shown in the Clamp Thickness Table, and a Maximum Pole Diameter at the Clamp location of 2'-1". Use one clamp per cable.
2. Install a properly sized Weather Head, fastened securely to the standard pipe for each pole location. At locations other than the wire entrance, the Weather Head face is to be left closed to outside atmosphere. Wire entrance installed per Index 634-001.
3. Any combination of Option 'a' or 'b' may be used provided both lifting and wiring is accommodated.

CLAMP THICKNESS TABLE		
Cable Diameter (in.)	Minimum Breaking Strength (kip)	Plate Thickness (in.)
1/2	25	1
7/16	18	7/8
3/8	11.5	3/4
1/4	3.15	3/8



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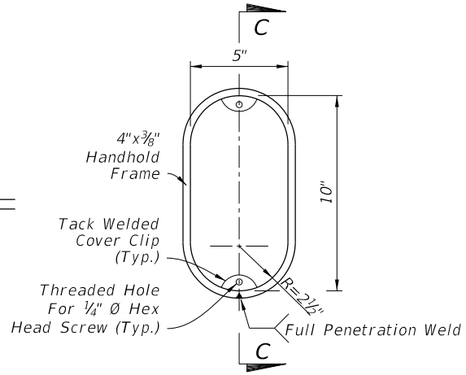

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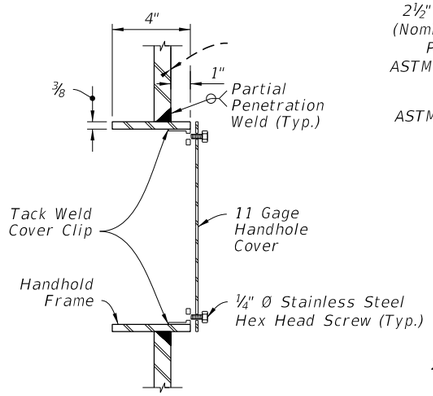
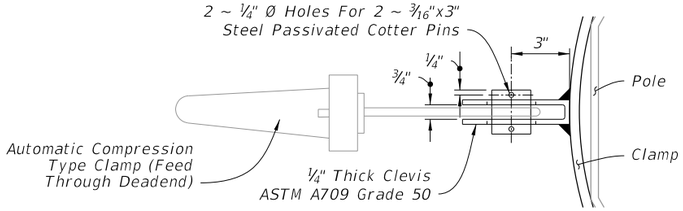
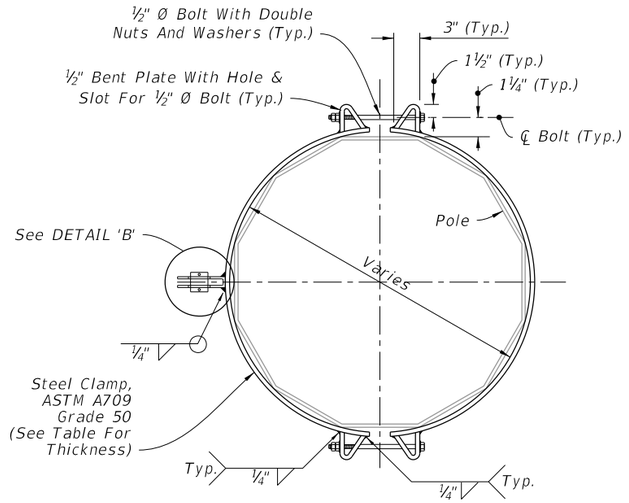


SECTION C-C

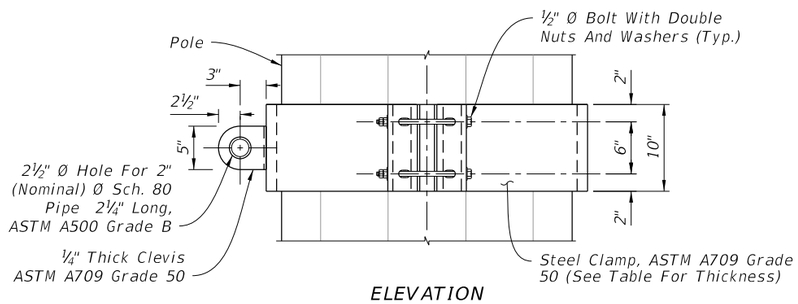
HANDHOLE



DETAIL "B"

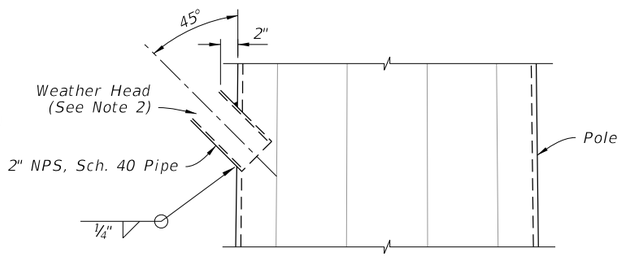


PLAN

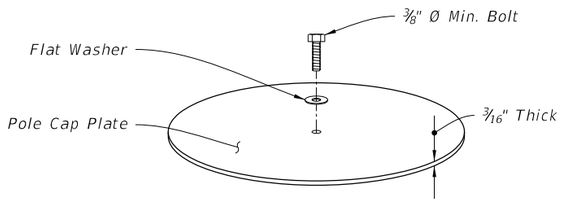


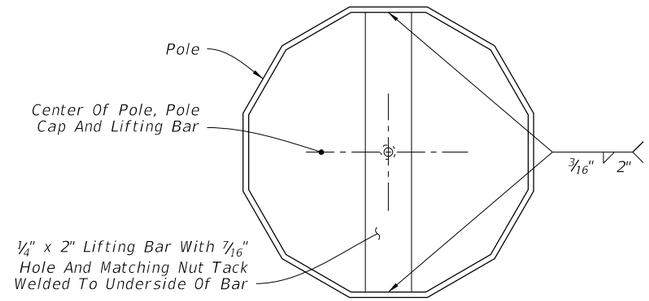
ELEVATION

CATENARY AND MESSENGER WIRE CLAMPS

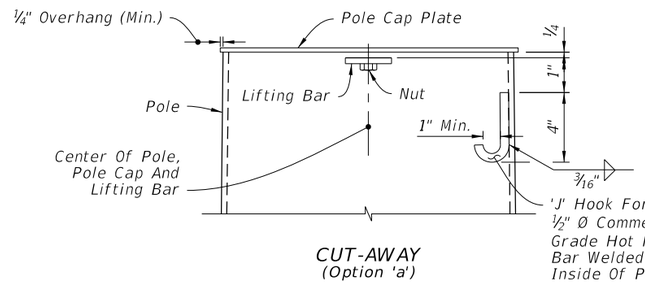


WIRE ENTRANCE DETAIL

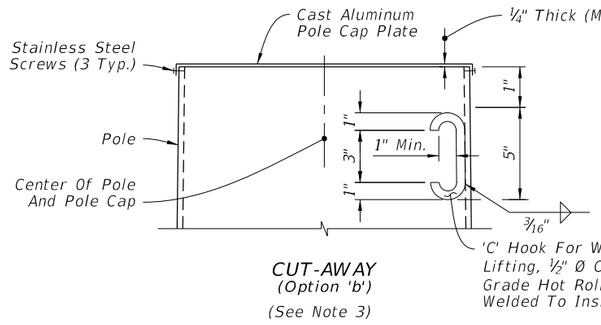




TOP VIEW



CUT-AWAY
(Option 'a')



CUT-AWAY
(Option 'b')
(See Note 3)

POLE TOP

ATTACHMENT DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	STEEL STRAIN POLE	INDEX	SHEET
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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.

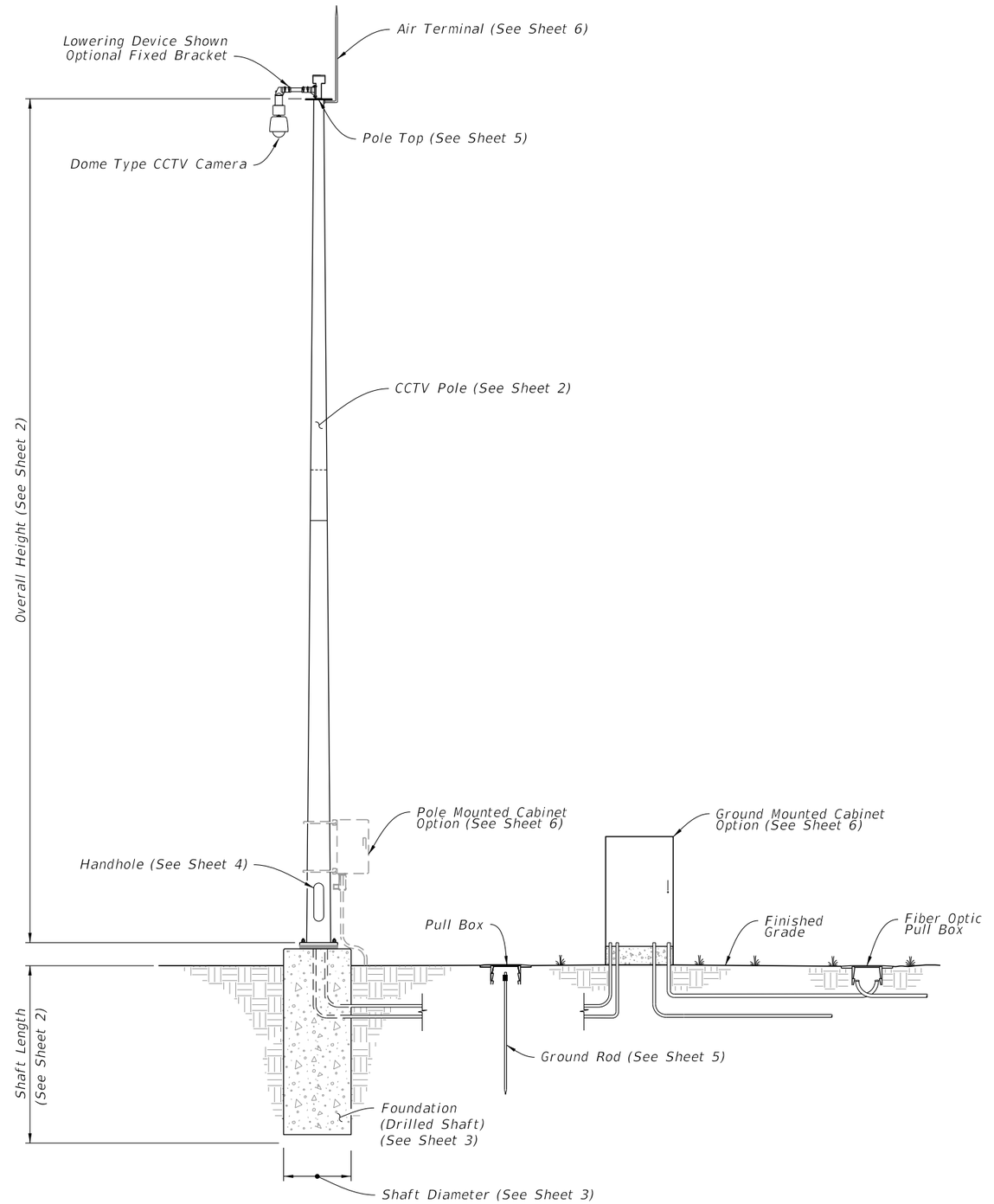
3. Materials:
   - A. Pole: ASTM A1011 Grade 50, 55, 60 or 65 (less than ¼") or ASTM A572 Grade 50, 60 or 65 (greater than or equal to ¼") or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
   - B. Steel Plates and Pole Cap: ASTM A36 or ASTM A709 Grade 50.
   - C. Weld Metal: E70XX.
   - 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.

4. Fabrication:
   - A. Welding:
     a. Specification 460-6.4 and
     b. AASHTO RFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals Section 14.4.4.
   - B. Poles:
     a. Round or 16-sided (Min.)
     b. Taper pole diameter at 0.14 inches per foot
     c. Fabricate Pole longitudinal seam welds (2 maximum) with 60 percent minimum penetration or fusion welds except as follows:
        1. Use a 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 ⅛" 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 bolt holes are bolt diameter plus ½" (Max) prior to galvanizing.

5. Pole Installation:
   - A. Do not install additional wire access holes (not shown in this Index) with a diameter that exceeds 1½" 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.

6. Cabinet Installation:
   - A. Splice fiber optic cables in cabinet to preterminater 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.

7. Lowering Device Installation:
   - 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.



STEEL CCTV POLE ASSEMBLY

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STEEL CCTV POLE	INDEX	SHEET
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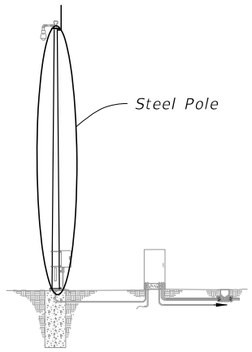


ASSEMBLY

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

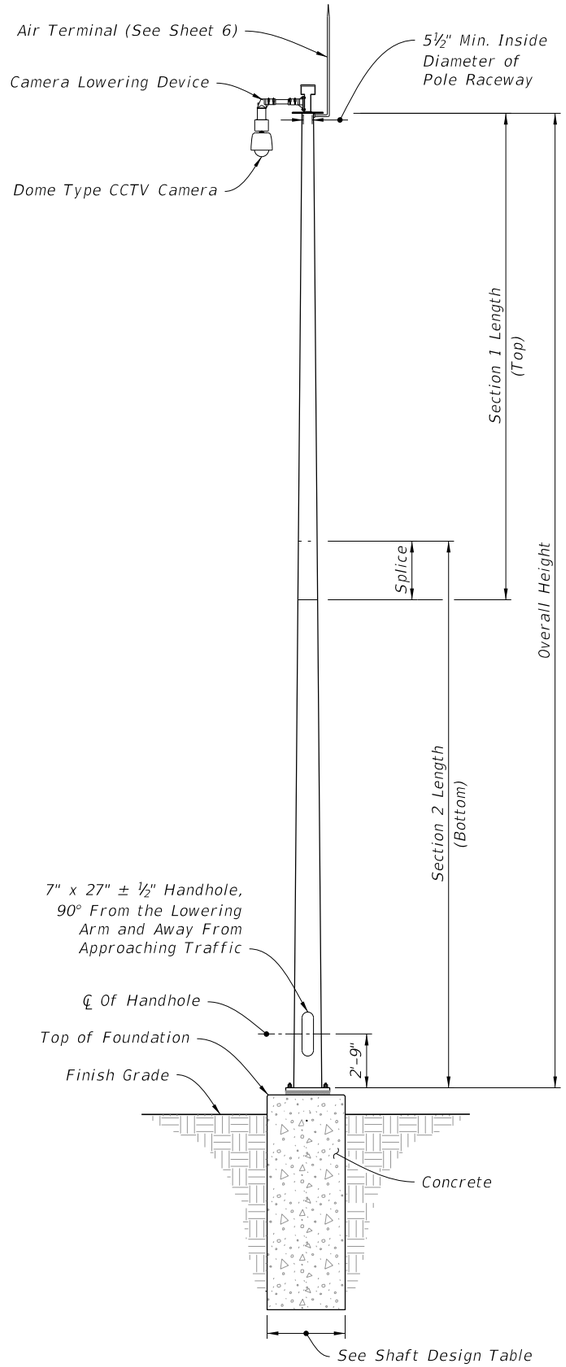
ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE		
Ground Slope	4'-0" Shaft Diameter	5'-0" Shaft Diameter
1:5	3'-0"	4'-0"
1:4	4'-0"	5'-0"
1:3	5'-0"	6'-0"
1:2	7'-0"	9'-0"

FOUNDATION NOTES:

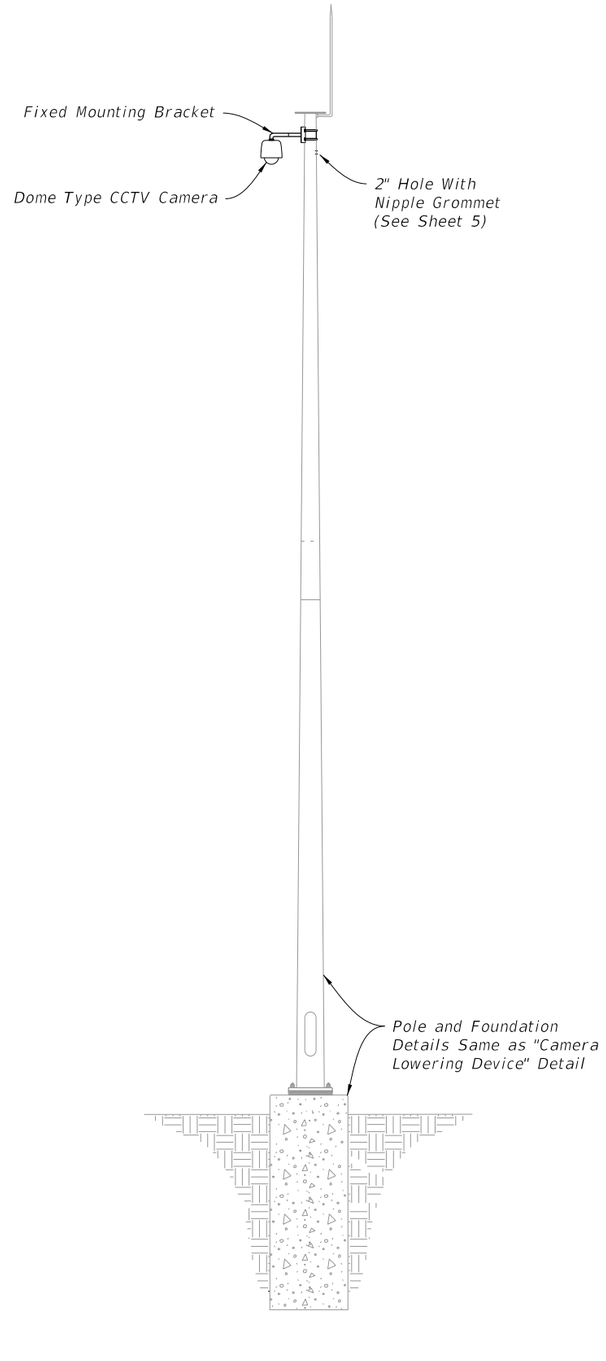
1. Shaft Length is based on 1'-0" height above the finished grade.
2. Shaft Design Table Shaft Length is based on level ground (flatter than 1:5). Increase the shaft depth in accordance with the Additional Shaft Depth Due To Ground Slope table for foundations with slopes 1:5 and steeper. Use the higher value for slope or diameter values that fall between those shown on the table.

BASE PLATE AND ANCHOR BOLT DESIGN TABLE							
Pole Overall Height (ft)	Base Plate Diameter (in.)	Base Plate Thickness (in.)	Anchor Bolt Circle (in.)	Number of Bolts	Anchor Bolt Diameter (in.)	Anchor Bolt Embedment (in.)	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)	Section 1 (Top)			Section 2 (Bottom)			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	---
	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



CAMERA LOWERING DEVICE



FIXED MOUNTING BRACKET

ELEVATION

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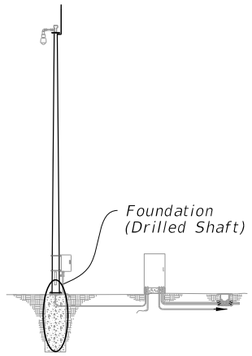
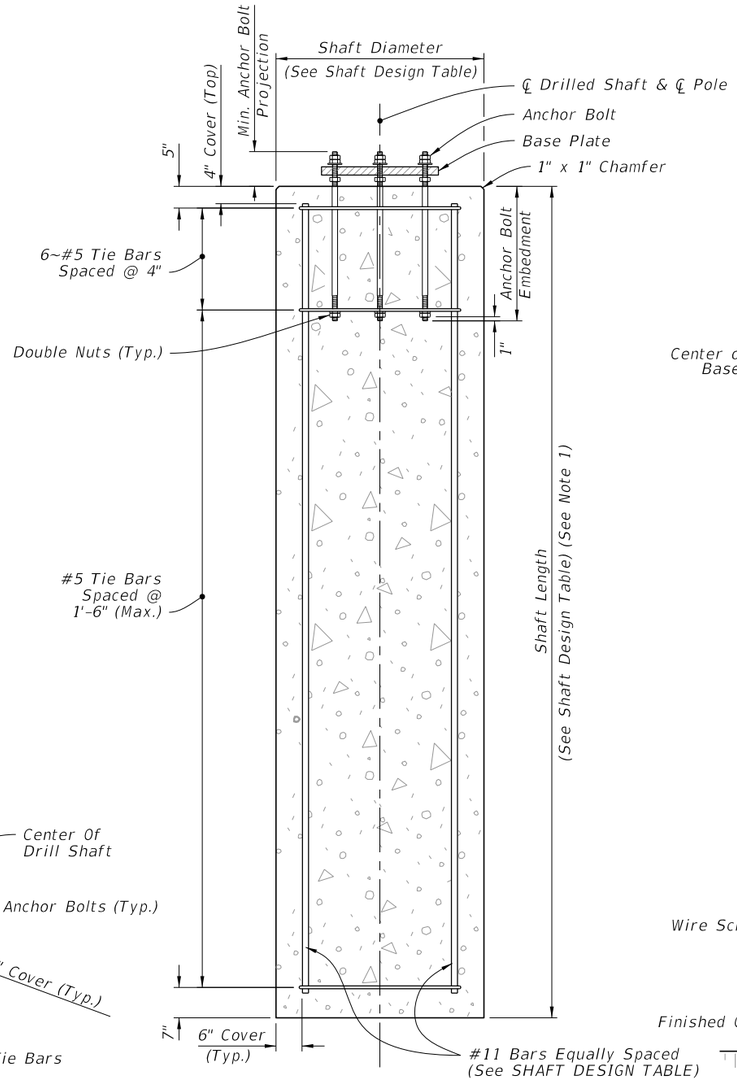
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	STEEL CCTV POLE	649-020	2 of 6



ASSEMBLY

NOTES:

1. Shaft Length is based on 1'-0" height above the finished grade.
2. Double Nuts: Bottom nut may be half-height 'jam' nut. Provide individual nut covers (not shown) for each bolt.
3. Conduit and CSL Tubes not shown for clarity.
4. Work these details with Data Table on Sheet 2.



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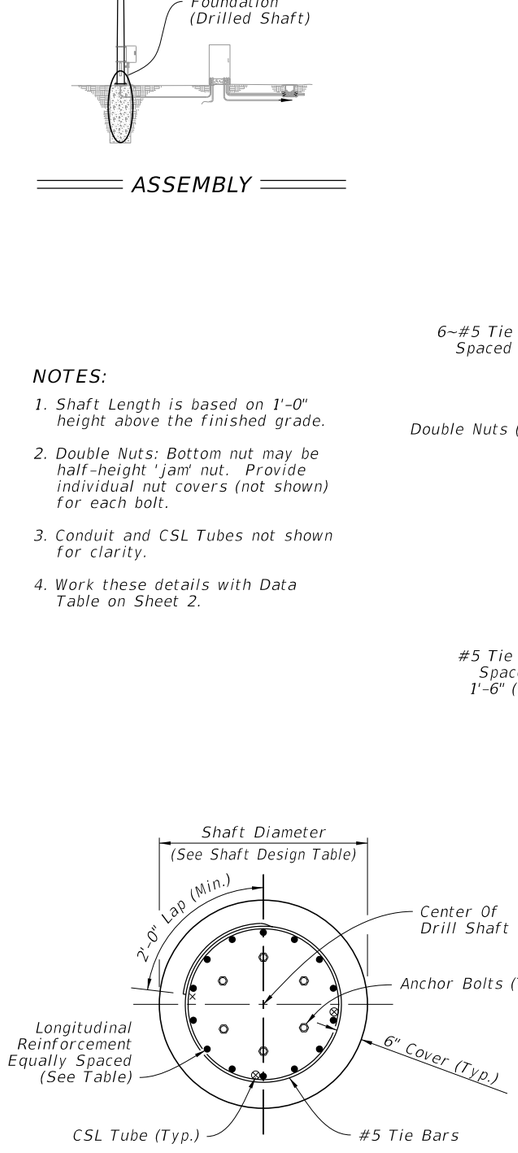
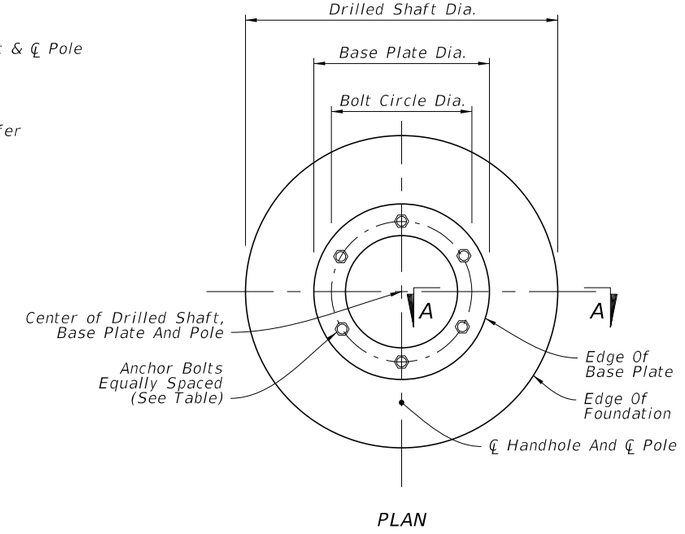


PLAN

FOUNDATION



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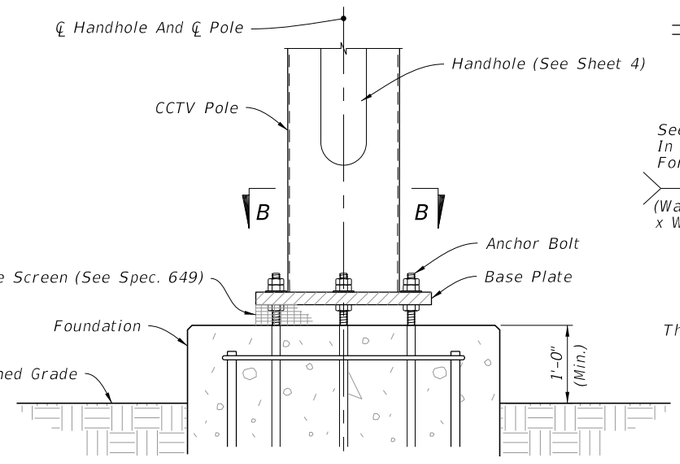
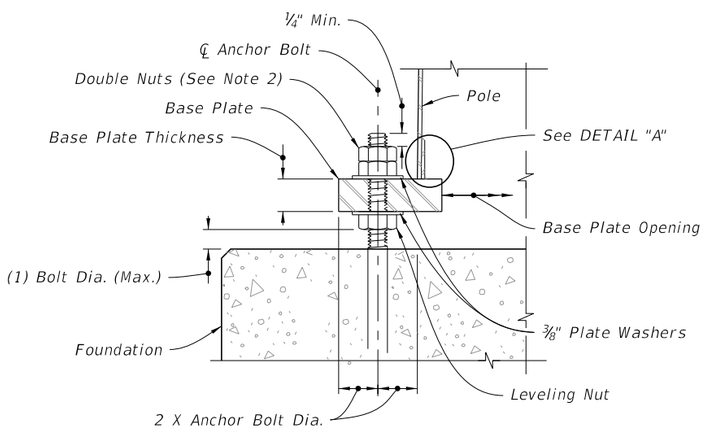
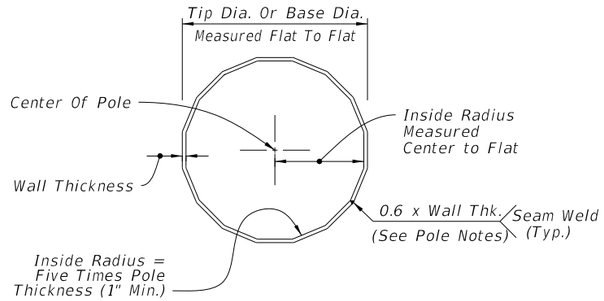


ELEVATION

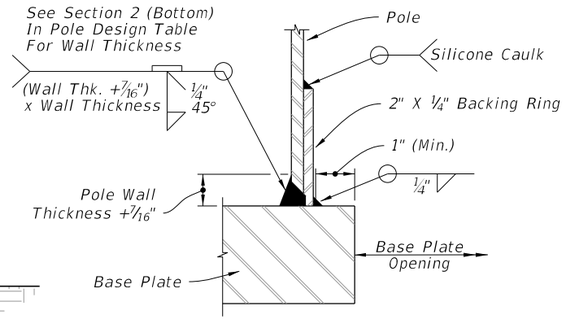
BASE PLATE



SECTION A-A



SECTION B-B



JOINT WELD DETAIL

DETAIL "A"

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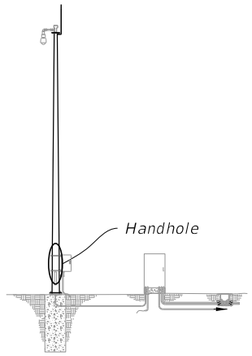
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	STEEL CCTV POLE	649-020	3 of 6



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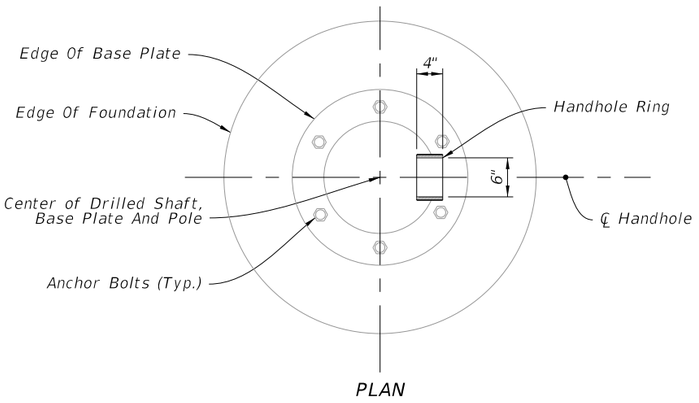

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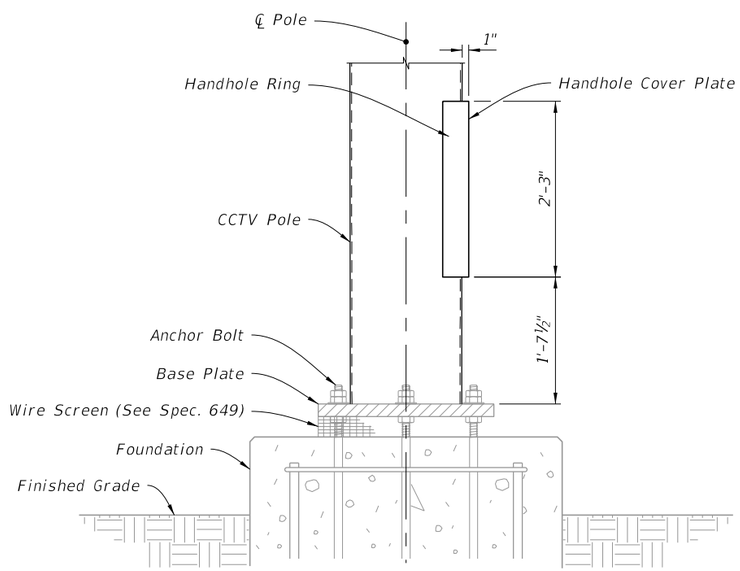
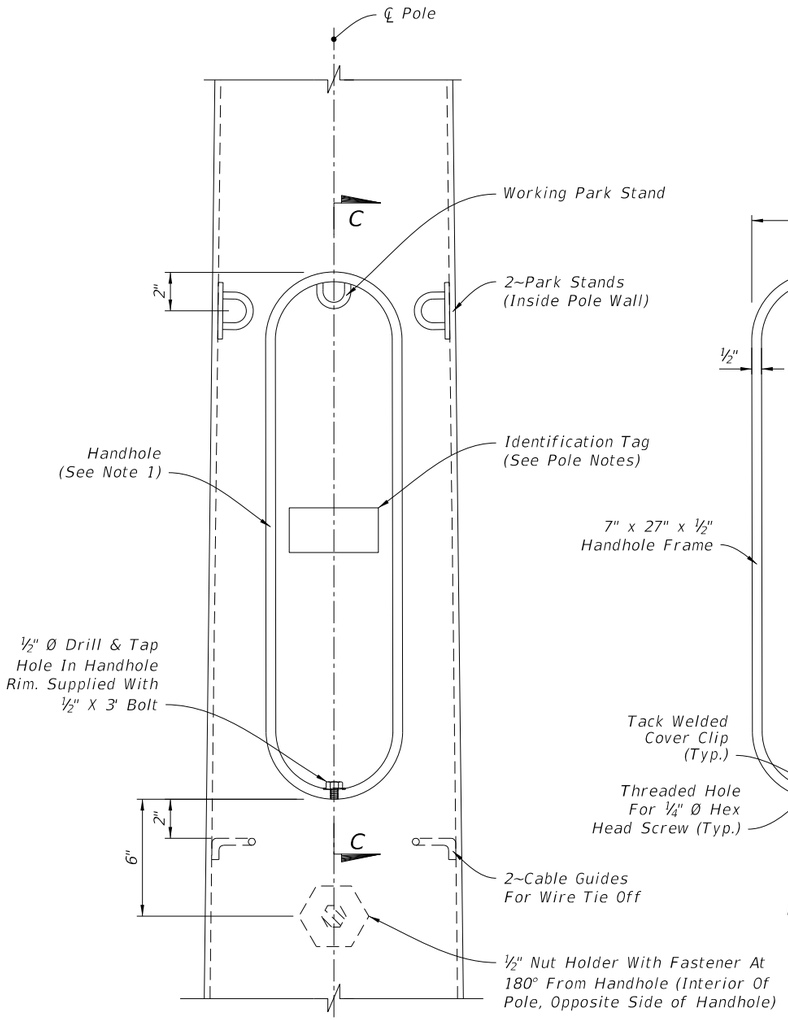


ELEVATION

HANDHOLE LOCATION



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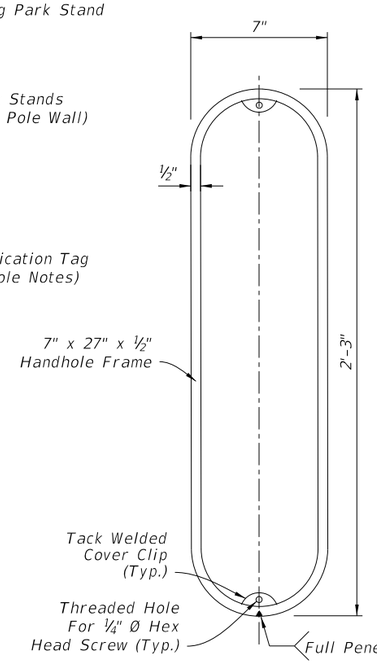

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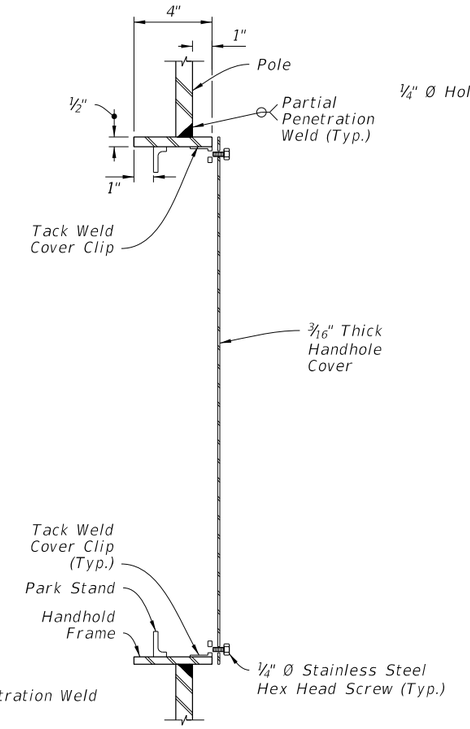


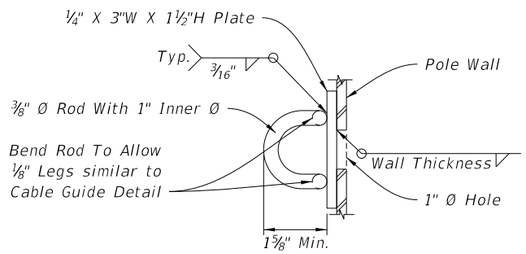
SECTION C-C

COVER PLATE

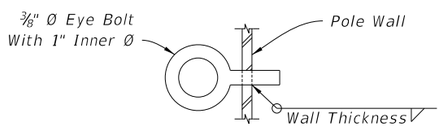
NOTE:

To secure the cover plate, install a steel chain from the cover to the pole or by mounting the cover with hinges and install a pad lock tab.

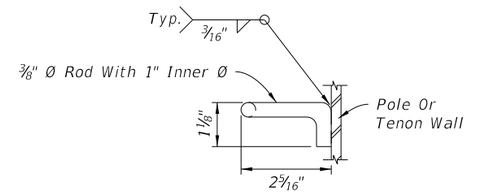
HANDHOLE DETAIL



Rod Option



Eye Bolt Option



PARK STAND DETAILS

CABLE GUIDE DETAIL

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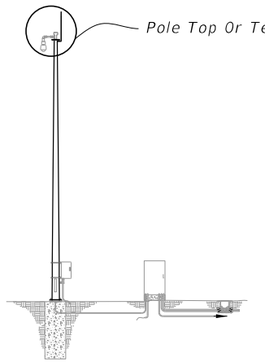
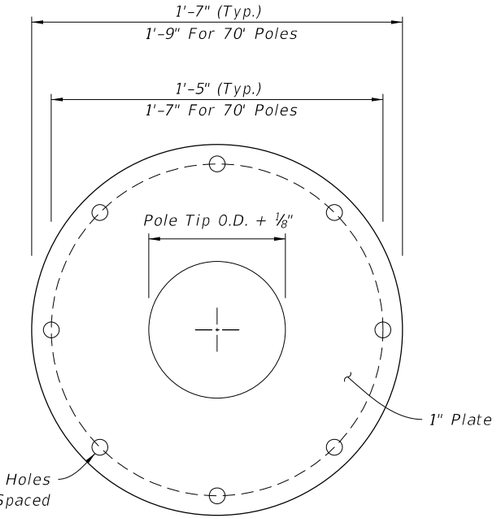
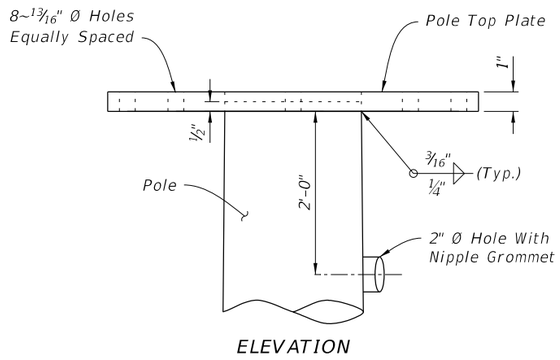
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FY 2020-21 STANDARD PLANS	STEEL CCTV POLE	INDEX 649-020	SHEET 4 of 6



ASSEMBLY

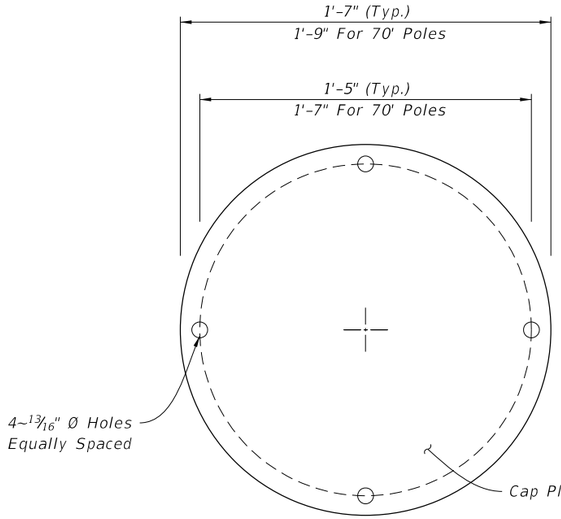


PLAN VIEW



ELEVATION

POLE TOP PLATE



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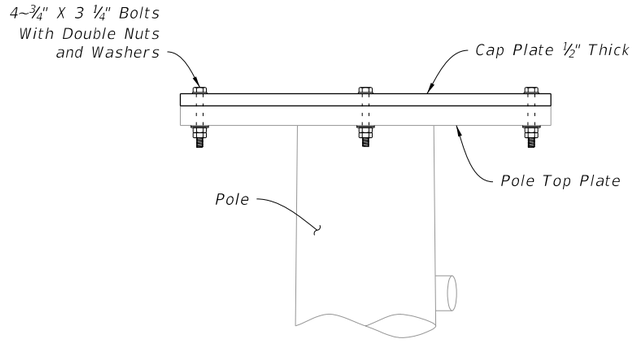
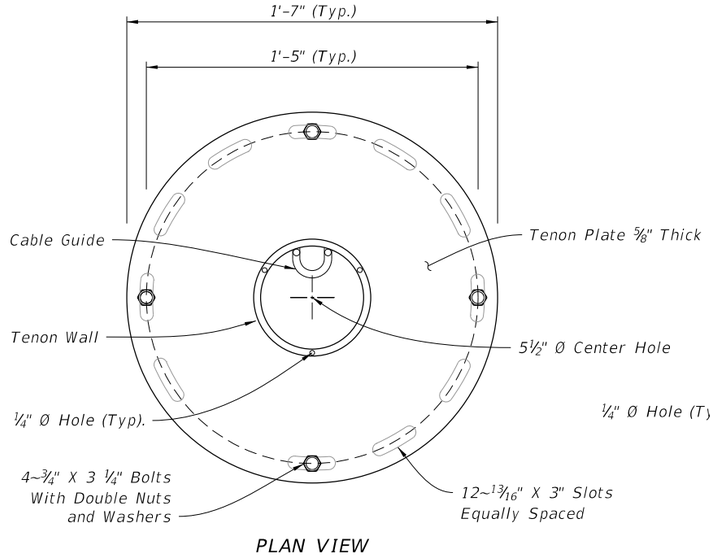


ELEVATION
CAP PLATE DETAIL



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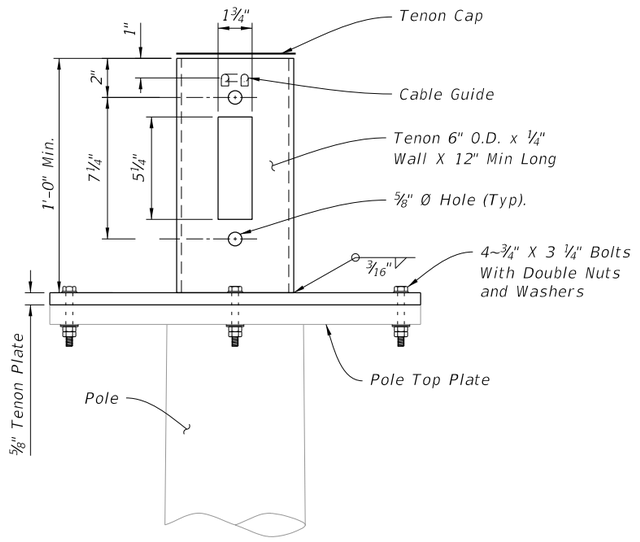
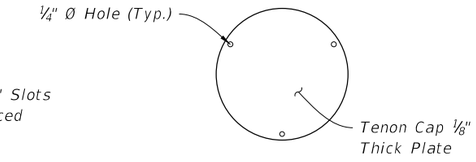
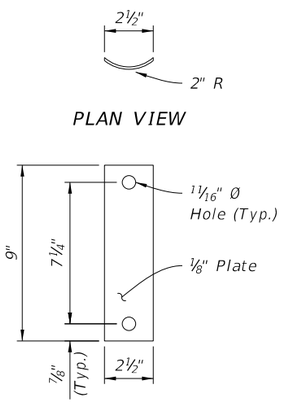


ELEVATION
LOWERING DEVICE TENON

POLE TOP DETAIL



TENON CAP



ELEVATION

TENON COVER

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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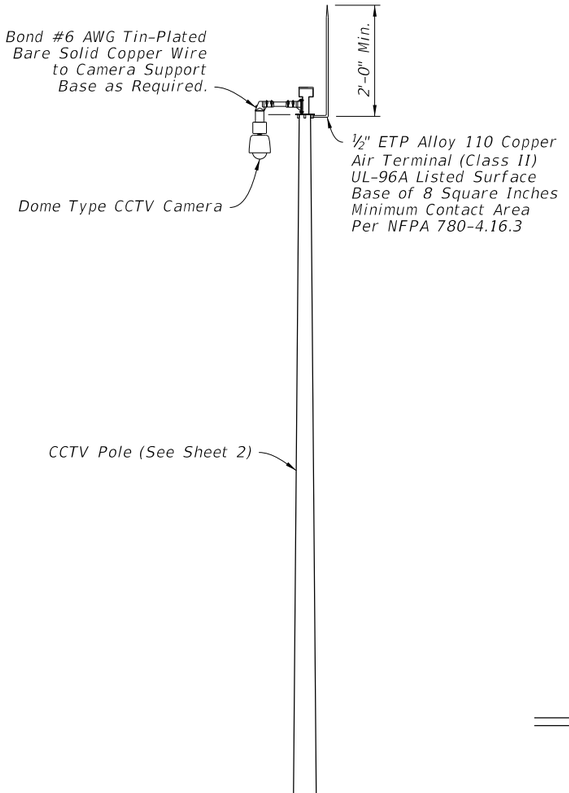
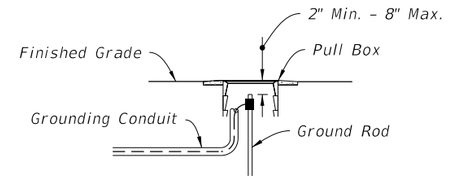


GROUND MOUNTED CABINET



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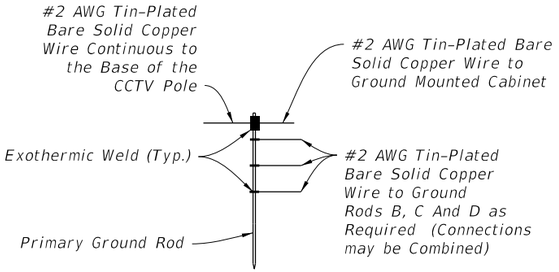

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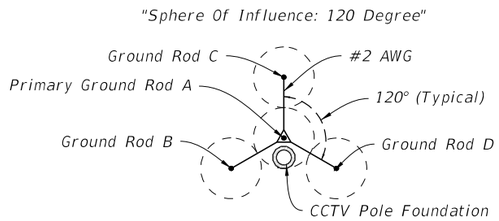
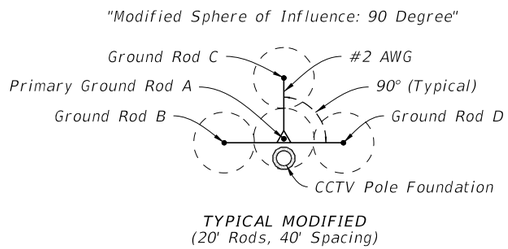


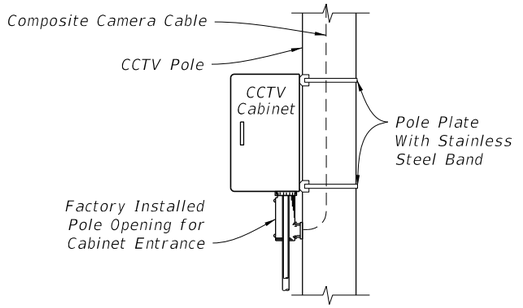
TYPICAL
(20' Rods, 40' Spacing)



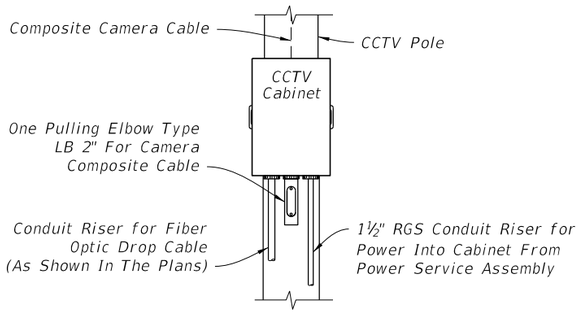
TYPICAL MODIFIED
(20' Rods, 40' Spacing)

GROUND ROD ARRAY PLACEMENT

DETAIL "D"

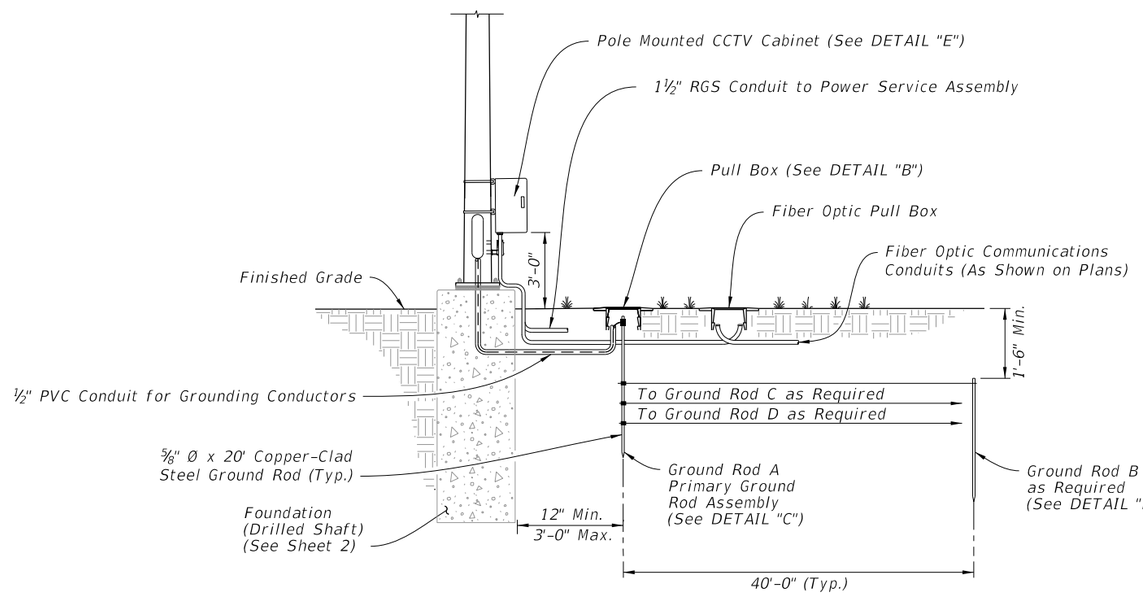


SIDE VIEW



FRONT VIEW

DETAIL "E"



POLE MOUNTED CABINET

STEEL CCTV POLE GROUNDING

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ARM AND BASE PLATE

Arm ID Axx-ArmLength S-SingleArm D-DoubleArm H-HeavyDuty	Total Arm Length (ft)	Arm			Arm Extension			Base Plate		
		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	30	11	0.250				22	25	3
A30/S/H		30	12	0.250						
A30/D		30	11	0.250				30	36	
A30/D/H		30	12	0.250						
A40/S	40	40	13	0.250				22	27	3
A40/S/H		40	14	0.250						
A40/D		40	13	0.250				30	36	
A40/D/H		40	14	0.250						
A50/S	50	32.5	12	0.250	20.5	14	0.313	22	29	3
A50/S/H		32.5	13	0.250	20.5	15				
A50/D		32.5	12	0.250	20.5	14		30	36	
A50/D/H		32.5	13	0.250	20.5	15				
A60/S	60	35.5	12	0.250	27.5	15	0.375	30	36	3
A60/S/H		35.5	13	0.250	27.5	16				
A60/D		35.5	12	0.250	27.5	15				
A60/D/H		35.5	13	0.250	27.5	16				
A70/S	70	38	13	0.250	35	17	0.375	30	36	3
A70/S/H		38	14	0.250	35	18				
A70/D		38	13	0.250	35	17				
A70/D/H		38	14	0.250	35	18				
A78/S	78	39	13	0.250	42	18	0.375	30	36	3
A78/S/H		39	15	0.250	42	20				
A78/D		39	13	0.250	42	18				
A78/D/H		39	15	0.250	42	20				

POLE, BASE PLATE AND ARM CONNECTION

Pole ID Px-PoleNo S-SingleArm D-DoubleArm L-Luminaire	Upright				Base Plate					Arm-Upright Connection							
	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	16	0.375		6	32	2.5	2	40	22	25	0.75	0.438	14	1.25	2	8.5	0.438
P1/S/L	39			37.5														
P1/D	25									30	36			23		2.75	12.5	
P1/D/L	39			37.5														
P2/S	25	18	0.375		6	34	2.5	2	40	22	27	0.75	0.438	15	1.25	2	8.5	0.438
P2/S/L	39			37.5														
P2/D	25									30	36			23		2.75	12.5	
P2/D/L	39			37.5														
P3/S	25	20	0.375		6	36	2.5	2	40	22	29	0.75	0.438	16	1.25	2	8.5	0.438
P3/S/L	39			37.5														
P3/D	25									30	36			23		2.75	12.5	
P3/D/L	39			37.5														
P4/S	25	22	0.375		8	38	2.5	2	40	30	36	0.75	0.438	17	1.25	2.5	12.5	0.438
P4/S/L	39			37.5														
P4/D	25													23				
P4/D/L	39			37.5														
P5/S	25	24	0.375		8	40	2.5	2	40	30	36	0.75	0.5	18	1.25	2.5	12.5	0.5
P5/S/L	39			37.5														
P5/D	25													23				
P5/D/L	39			37.5														
P6/S	25	24	0.5		8	42	2.5	2.25	45	30	36	0.75	0.625	18	1.5	2.5	12	0.625
P6/S/L	39			37.5														
P6/D	25													23				
P6/D/L	39			37.5														
P7/S	25	26	0.5		8	44	2.5	2.25	45	30	36	0.75	0.625	19	1.5	2.5	12	0.625
P7/S/L	39			37.5														
P7/D	25													23				
P7/D/L	39			37.5														

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

NOTE:

1. Work this Index with Index 649-031.

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LAST REVISION	REVISION	DESCRIPTION:			
11/01/18			FY 2020-21 STANDARD PLANS	STANDARD MAST ARM ASSEMBLIES	INDEX 649-030 / SHEET 1 of 1

GENERAL NOTES:

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

2. Prior to Fabrication: Verify the installed foundation elevation will result in the required signal elevation and adjust the Pole height as needed.

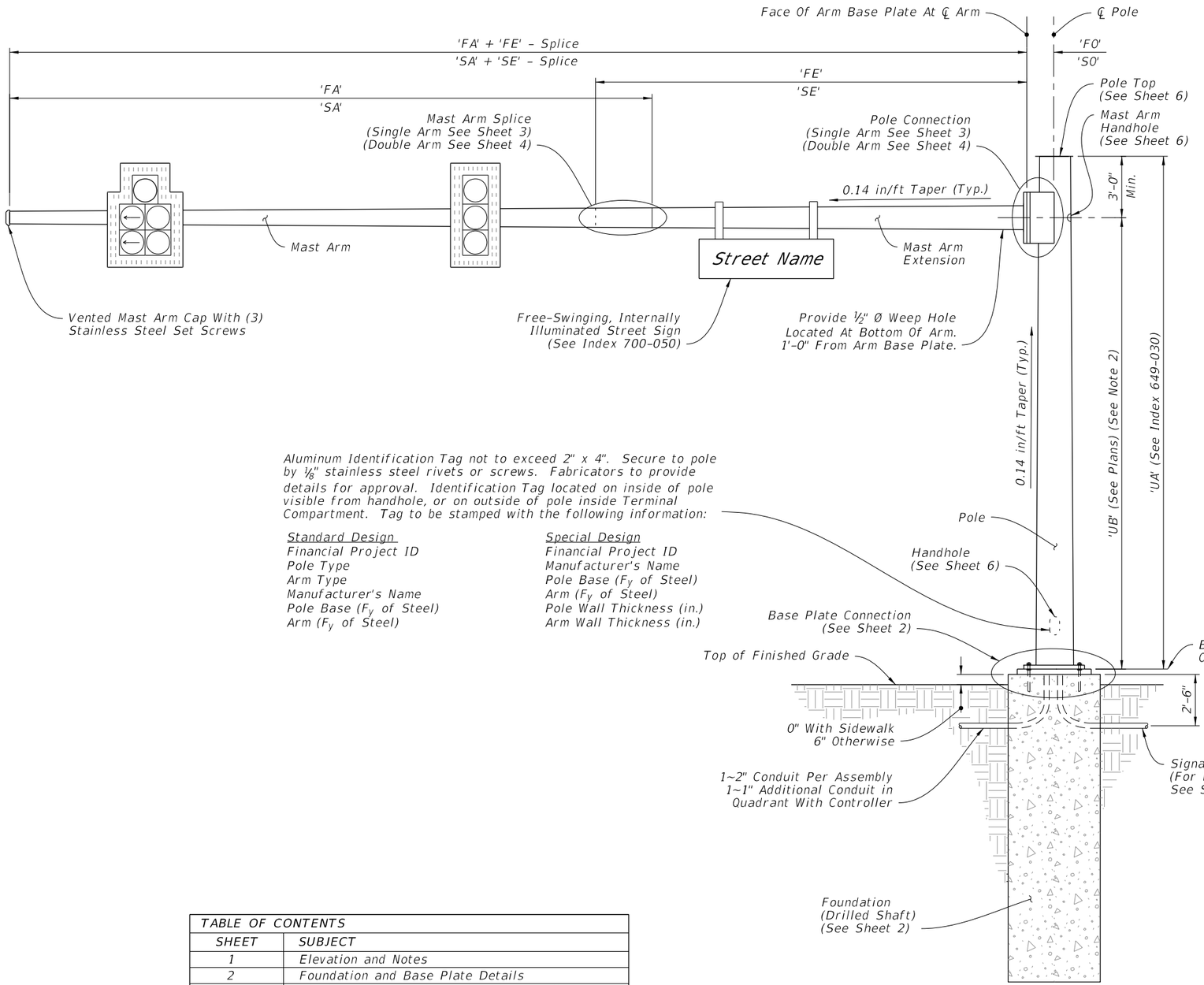
3. Details for Signal and Sign locations, Signal Head attachment, Sign attachment, Pedestrian Head attachment, and Foundation Conduit are not shown for simplicity.

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 3/16": ASTM A572 Grade 50, 55, 60 or 65
     - c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
   - B. Steel Plates: ASTM A36
   - C. Weld Metal: E70XX
   - D. Bolts, Nuts and Washers:
     - a. High Strength Hex Head Bolts: ASTM F3125, Grade A325, Type 1
     - b. Nuts: ASTM A563 DH Heavy-Hex
     - c. Washers: ASTM F436 Type 1, one under turned element
   - E. Anchor Bolts, Nuts and Washers:
     - a. Anchor Bolts: ASTM F1554 Grade 55
     - b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
     - c. Plate Washers: ASTM A36 (2 per bolt)
   - F. Threaded Bars/Studs: ASTM A36 or ASTM A307
   - G. Handhole Frame: ASTM A709 or ASTM A36, Grade 36
   - H. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65
   - I. Aluminum Pole Caps and Nut Covers: ASTM B26 (319-F)
   - J. Stainless Steel Screws: AISI Type 316
   - K. Concrete: Class IV (Drilled Shaft) for all environmental classifications.
   - L. Reinforcing Steel: Specification 415

5. Fabrication:
   - A. Welding:
     - a. Specification 460-6.4 and
     - b. AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals Section 14.4.4
   - B. Poles and Mast Arms:
     - a. Round or 12-sided (Min.)
     - b. Taper pole diameter at 0.14 inches per foot
     - c. Upright poles must be a single section. For arms and upright poles, circumferential welds and laminated sections are not permitted.
     - d. Arms may be either one or two sections. See Sheet 4 for telescopic splice detail
     - e. Fabricate longitudinal seam welds with 60 percent minimum penetration or fusion welds except:
       1. Use a 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 1/2" (Max.).

6. Coatings:
   - A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329
   - B. All other steel items including plate washers ASTM A123

7. Construction:
   - A. Foundation: Specification 455 Drilled Shaft, except that payment is included in the cost of the Mast Arm.
   - B. Install Pole vertically.
   - 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.



Aluminum Identification Tag not to exceed 2" x 4". Secure to pole by ⅛" stainless steel rivets or screws. Fabricators to provide details for approval. Identification Tag located on inside of pole visible from handhole, or on outside of pole inside Terminal Compartment. Tag to be stamped with the following information:

Standard Design	Special Design
Financial Project ID	Financial Project ID
Pole Type	Manufacturer's Name
Arm Type	Pole Base (F_y of Steel)
Manufacturer's Name	Arm (F_y of Steel)
Pole Base (F_y of Steel)	Pole Wall Thickness (in.)
Arm (F_y of Steel)	Arm Wall Thickness (in.)

TABLE OF CONTENTS

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

MAST ARM ASSEMBLY

ELEVATION AND NOTES

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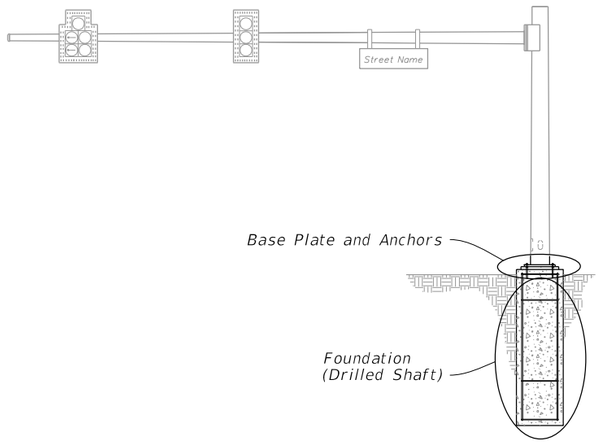
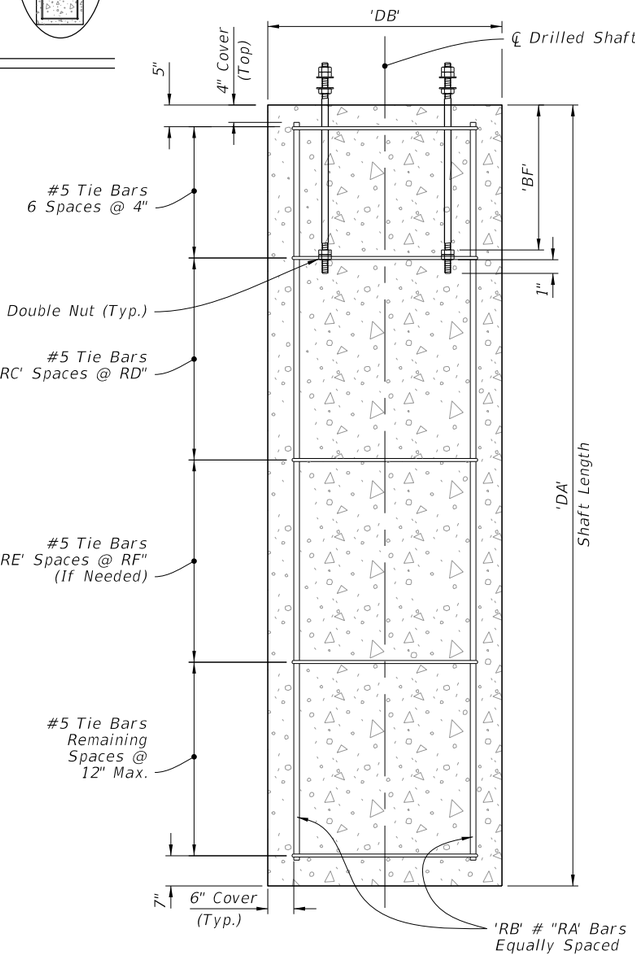


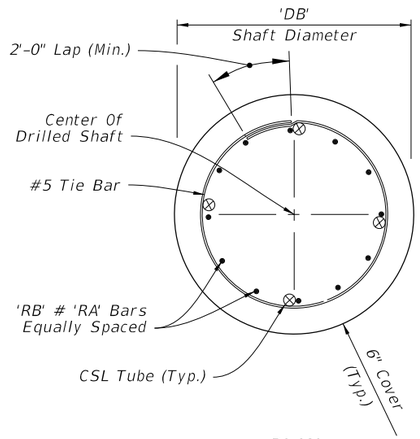
MAST ARM ASSEMBLY

NOTES:

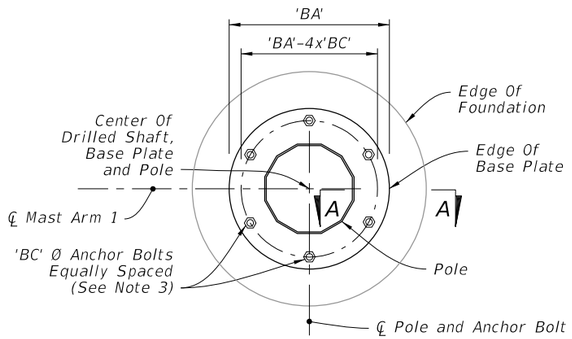
1. The Structural Grout Pad diameter may be reduced where the footprint of the Grout Pad does not provide adequate clearance for the sidewalk and/or accessibility considerations.
2. See Index 649-030 and the plans for actual quantity of bolts in the Base Plate Connection.
3. The bottom hex nut of the Double Nuts shown in Section A-A may be substituted by a half-height anchor 'jam' nut. Provide individual nut covers (not shown) for each bolt.



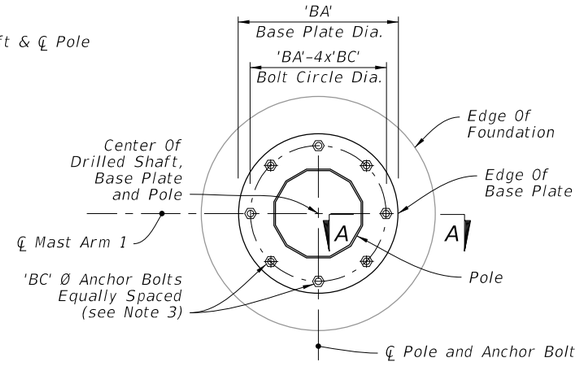
ELEVATION



PLAN

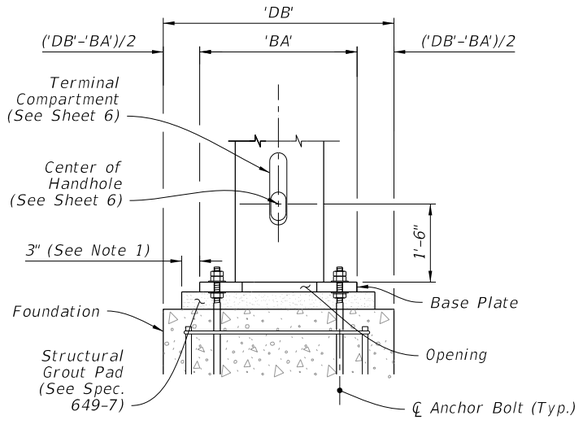


(6 Anchor Bolts)



(8 Anchor Bolts)

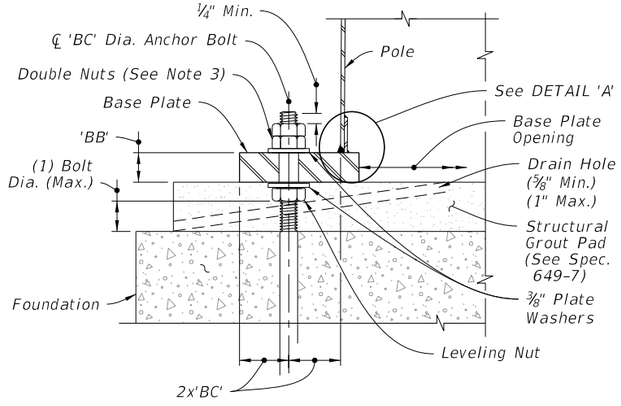
PLAN



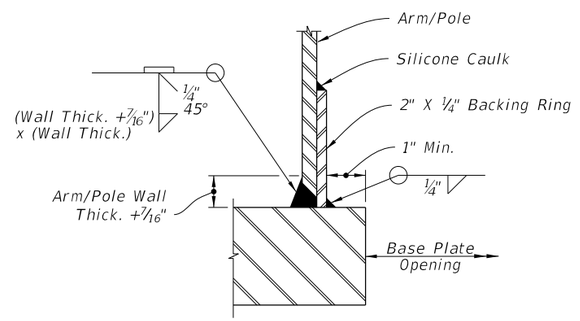
ELEVATION
(Back Face Shown)

FOUNDATION

BASE PLATE CONNECTION



SECTION A-A



JOINT WELD DETAIL

DETAIL 'A'

FOUNDATION AND BASE PLATE DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MAST ARM ASSEMBLIES	INDEX	SHEET
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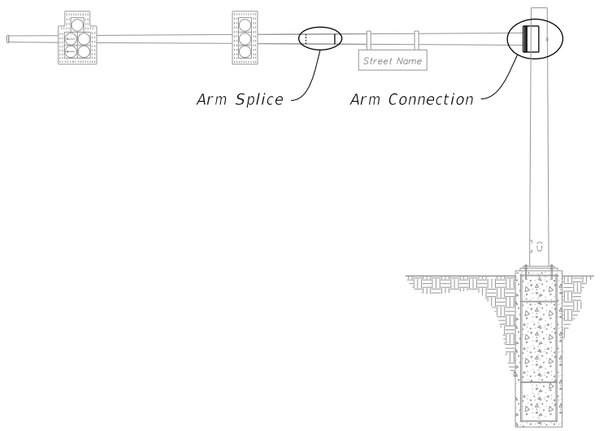
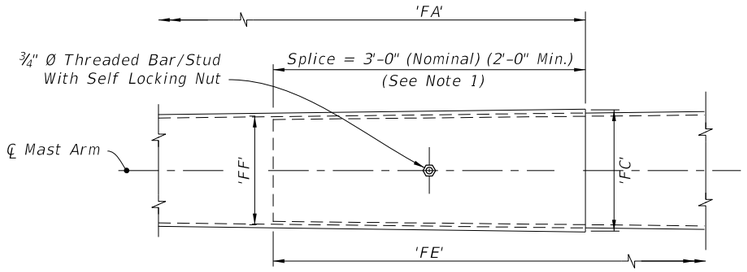
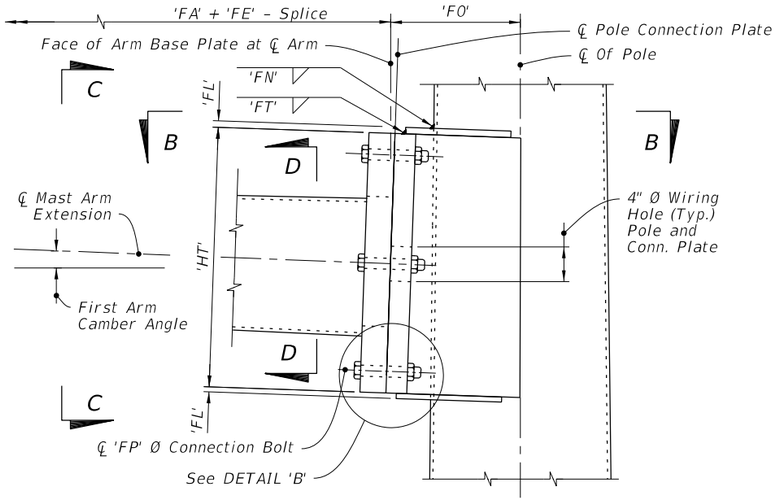


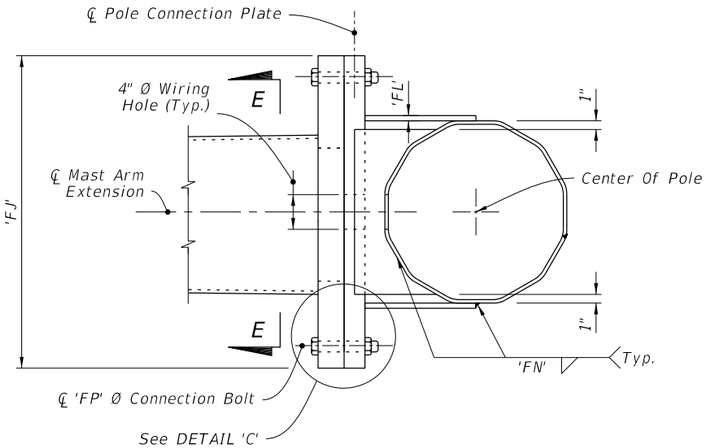
MAST ARM ASSEMBLY



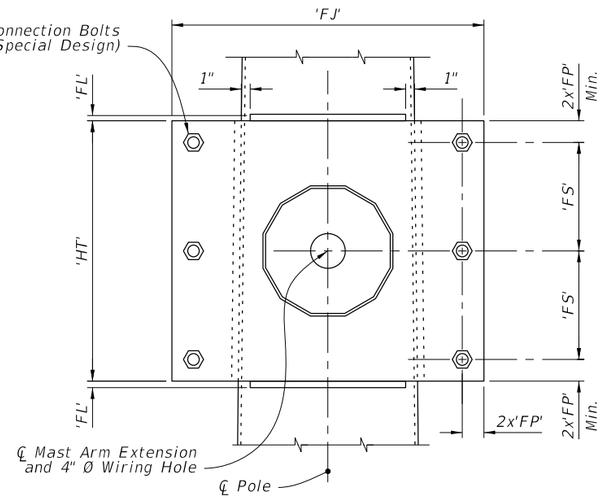
ARM SPLICE



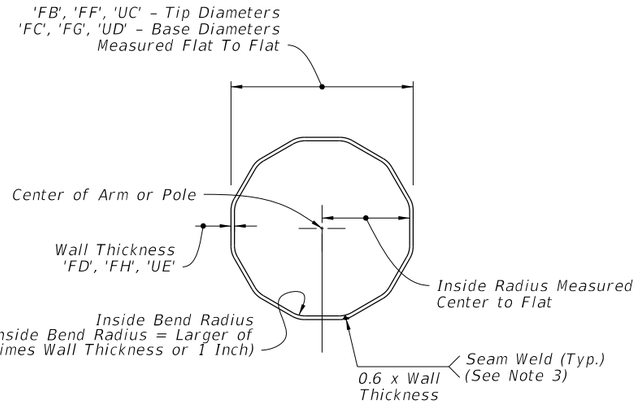
SINGLE ARM CONNECTION



SECTION B-B



SECTION C-C



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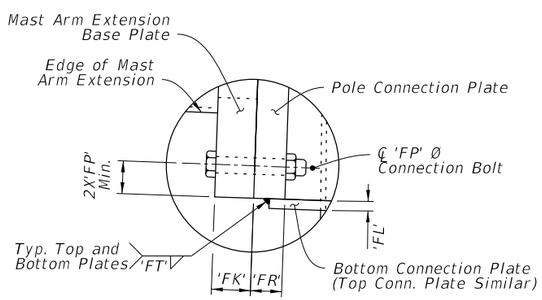
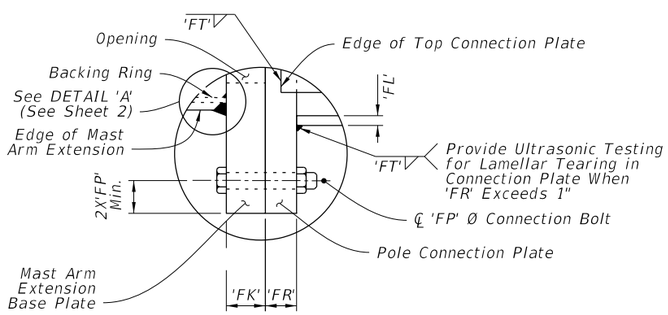


DETAIL 'B'



DETAIL 'C'

NOTE:

1. Install the 'Slip Joint' splice with a tight fit and no change in the Mast Arm taper due to the splice.
2. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
3. Match mark the Arm and Connection Plates to ensure proper assembly and the seam weld is in the proper location (seam located at the bottom side of the Arm).

SINGLE ARM CONNECTIONS & SPLICE DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MAST ARM ASSEMBLIES	INDEX	SHEET
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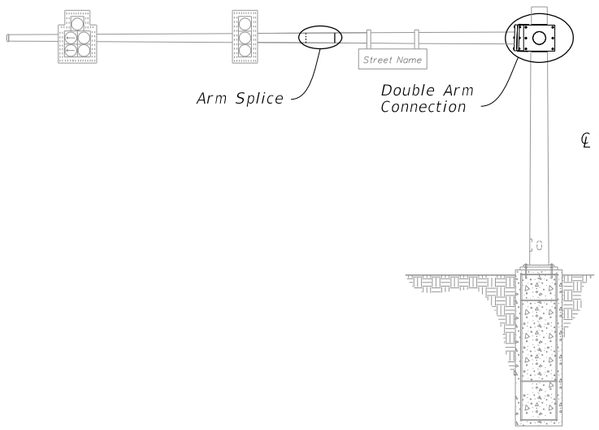
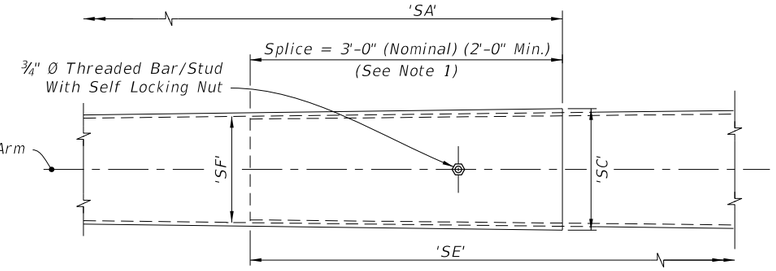
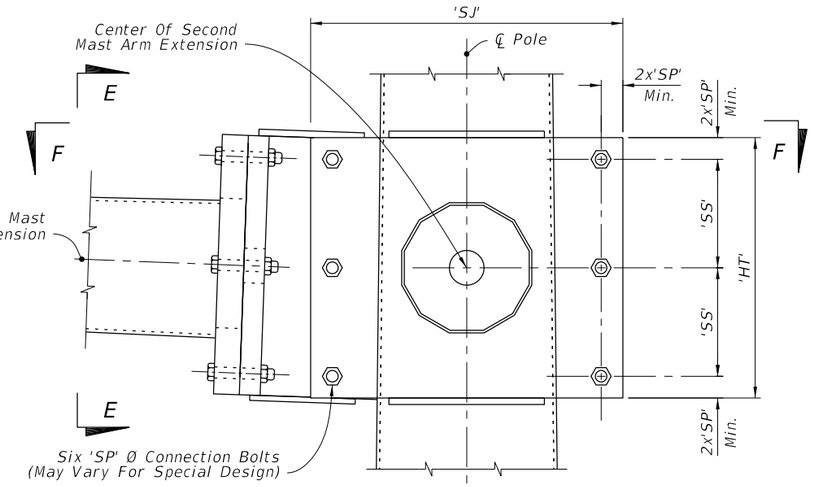


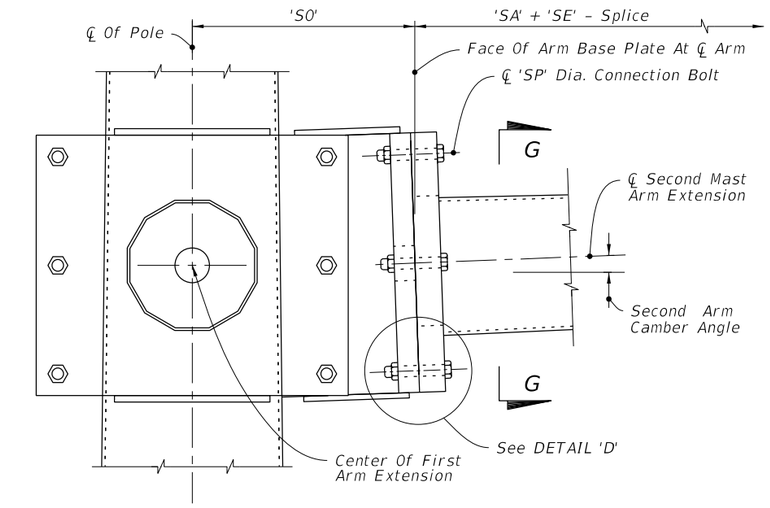
MAST ARM ASSEMBLY



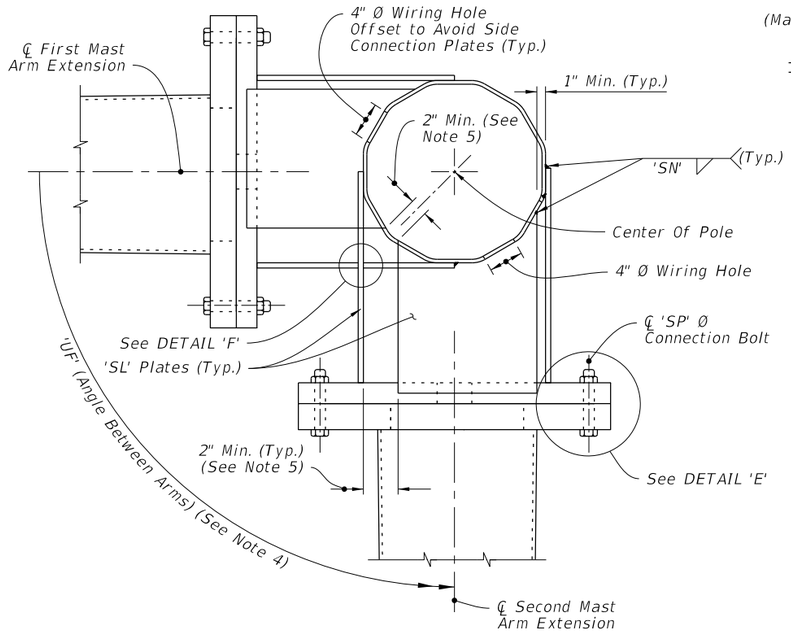
ARM SPLICE



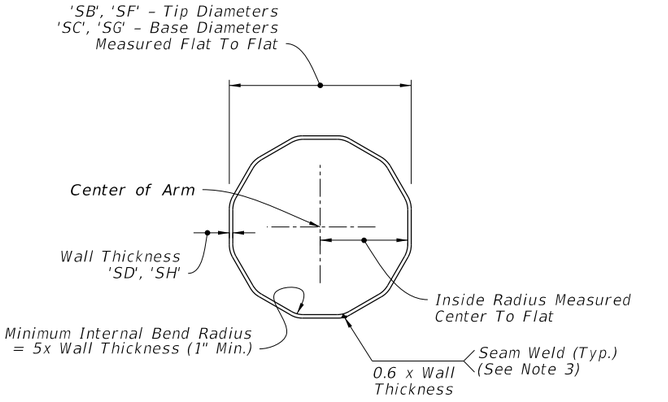
DOUBLE ARM CONNECTION



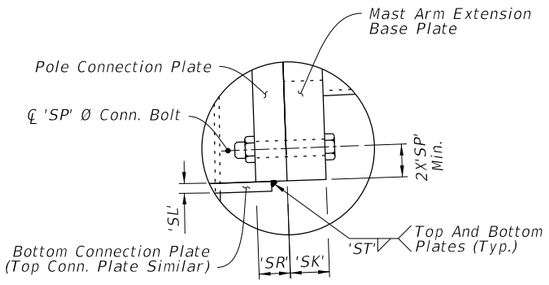
SECTION E-E



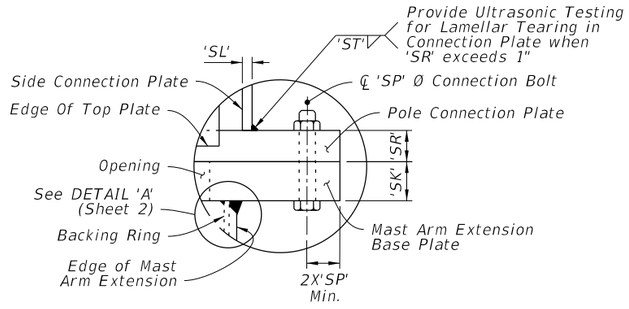
SECTION F-F



SECTION G-G



DETAIL 'D'



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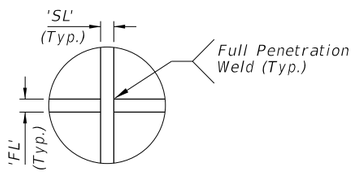


DETAIL 'F'

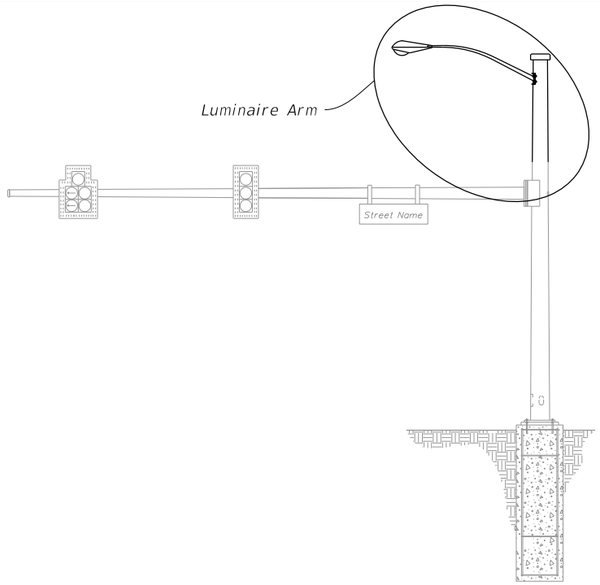
NOTE:

1. Install the 'Slip Joint' splice with a tight fit and no change in the Mast Arm taper due to the splice.
2. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
3. Match mark the Arm and Connection Plates to ensure proper assembly and the seam weld is in the proper location (seam located at the bottom side of the Arm).
4. 'UF' measured counter clockwise from ℄ First Mast Arm Extension.
5. Adjust width of top and bottom Connection Plates to maintain minimum clearance shown.

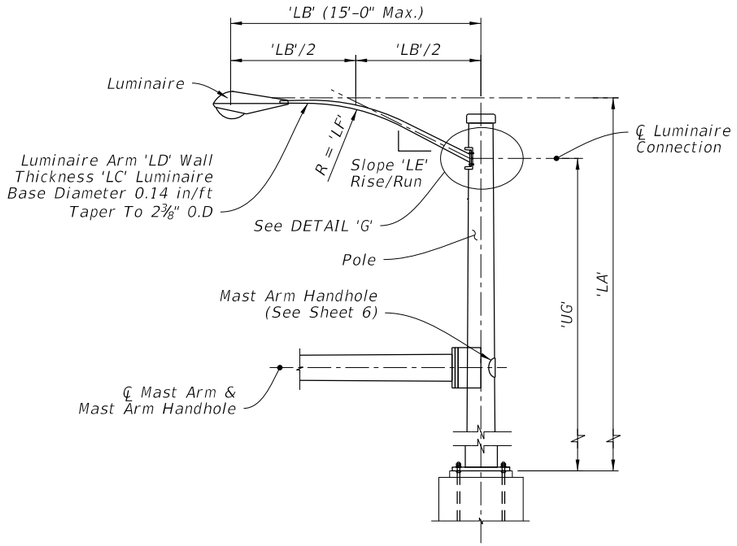
DOUBLE ARM CONNECTIONS & SPLICE DETAILS

10/29/2019 8:22:31 AM

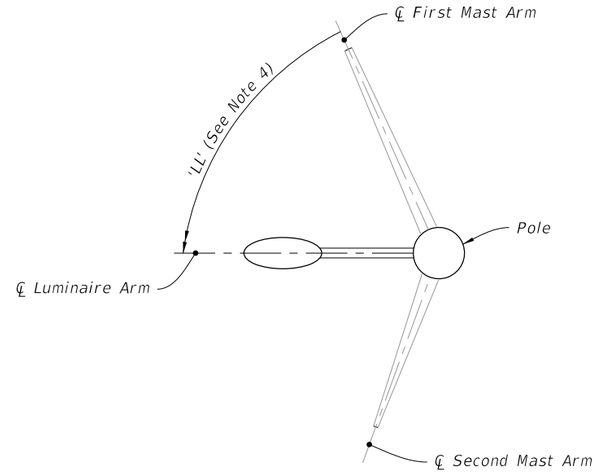
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MAST ARM ASSEMBLIES	INDEX	SHEET
11/01/19					649-031	4 of 6



MAST ARM ASSEMBLY



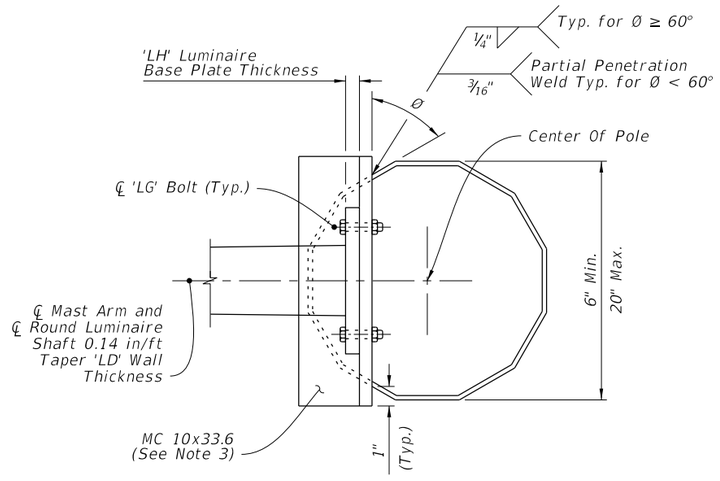
LUMINAIRE ELEVATION



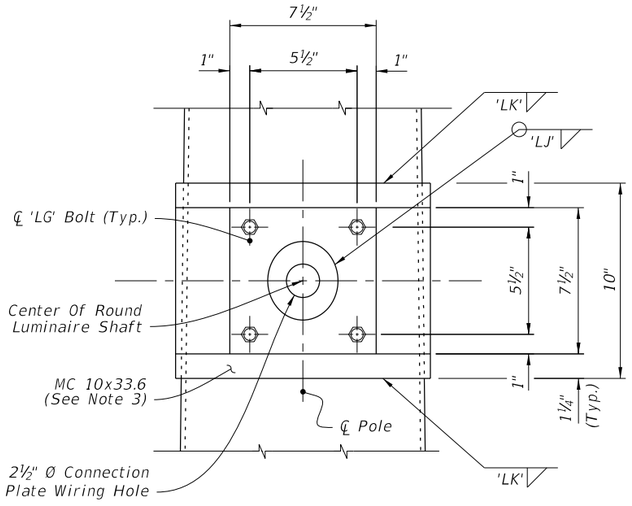
LUMINAIRE ORIENTATION

NOTES:

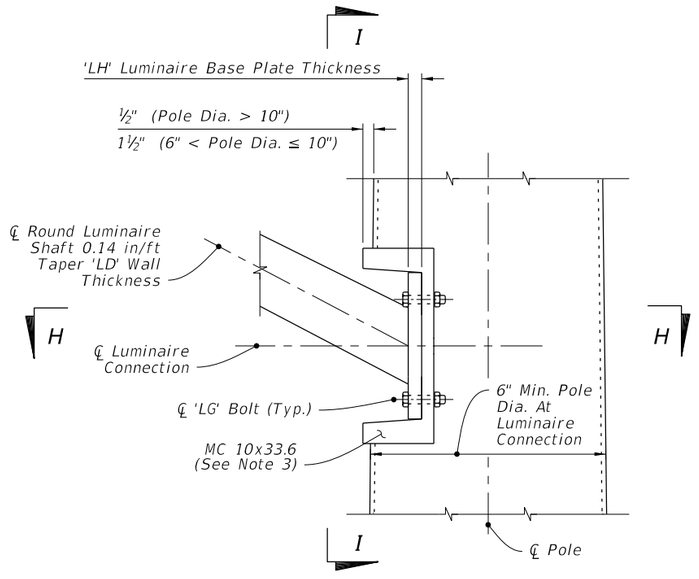
1. Galvanized steel luminaire type and luminaire length may be found in the Lighting Plans.
2. Align Luminaire Arm with Single Mast Arm or First Arm of Double Mast Arm unless indicated otherwise in the plans.
3. The fabricator may substitute a ½" thick bent plate with the same flange width, height, and 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

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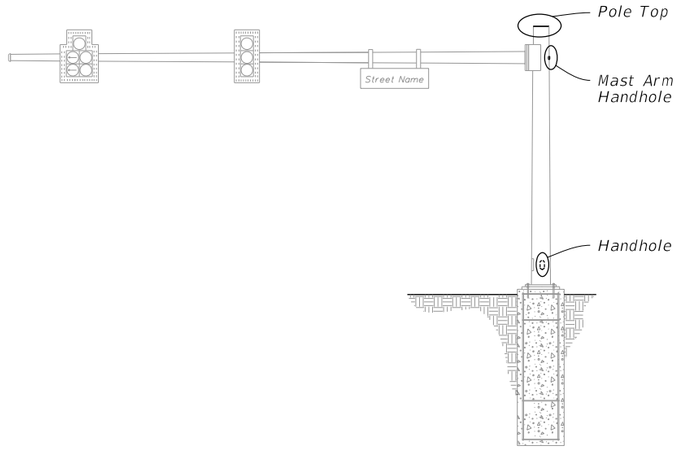
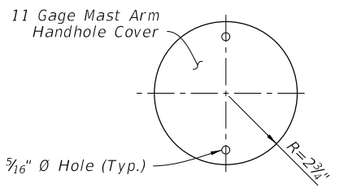
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MAST ARM ASSEMBLIES	INDEX	SHEET
11/01/19						649-031	5 of 6



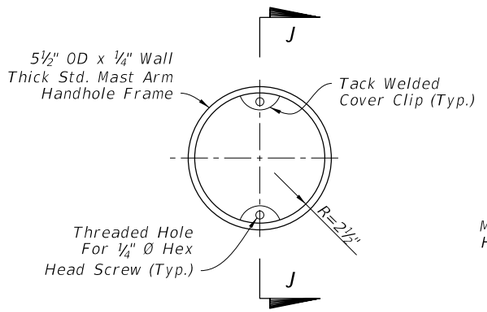
MAST ARM ASSEMBLY

NOTES:

1. Handhole covers may be omitted when Terminal Compartment is provided.
2. See Mast Arm Tabulation sheet to see if Terminal Compartment is required and for locations.
3. Terminal Compartment Frame Height 2'-0" minimum to 2'-6" maximum. Align bottom of Terminal Compartment a minimum of 1" below the bottom of the Handhole Frame.
4. Any combination of Option 'a' or 'b' may be used, provided both lifting and wiring is accommodated.



COVER



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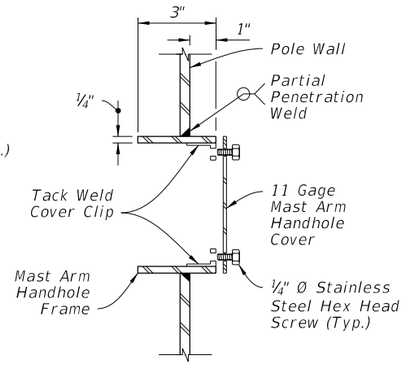
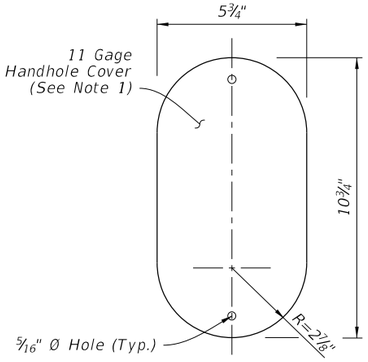
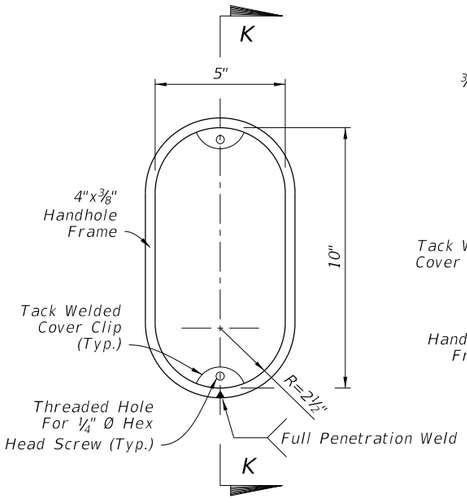


SECTION J-J

MAST ARM HANDHOLE



COVER



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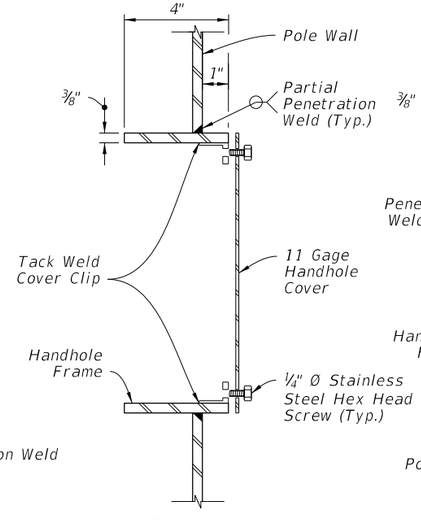
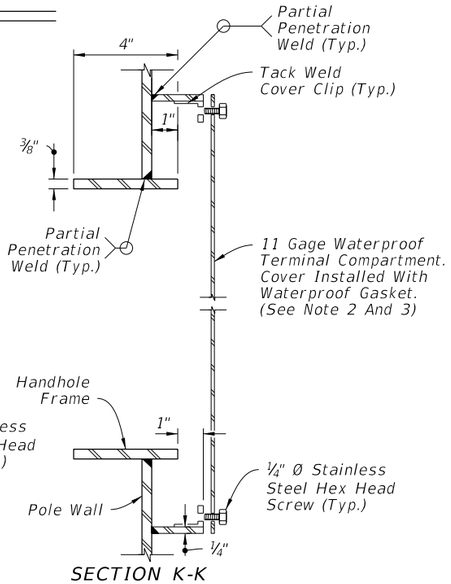
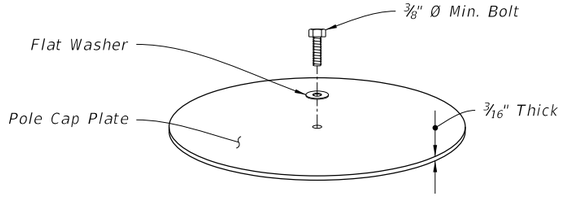


SECTION K-K
(Thru Handhole)

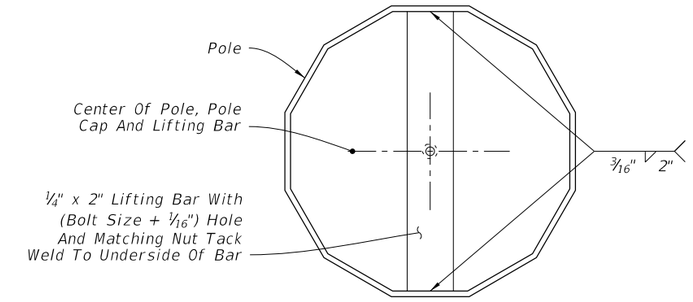


SECTION K-K
(Terminal Compartment)

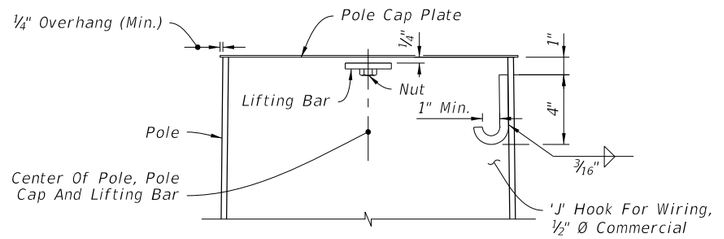
HANDHOLE



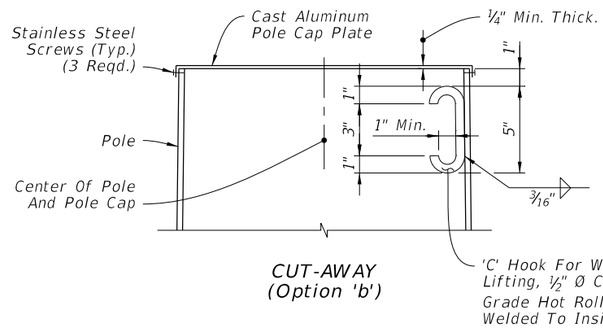
ISO VIEW
(Option 'a')



TOP VIEW
(Option 'a')



CUT-AWAY
(Option 'a')



CUT-AWAY
(Option 'b')

POLE TOP

HANDHOLE AND POLE TOP DETAILS

10/29/2019 8:22:33 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MAST ARM ASSEMBLIES	INDEX	SHEET
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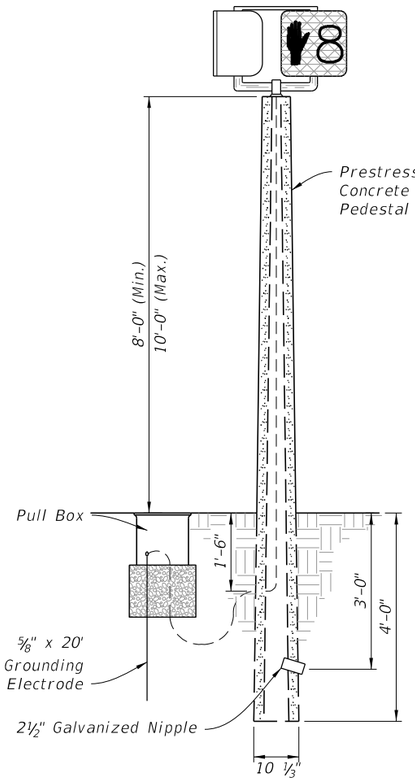
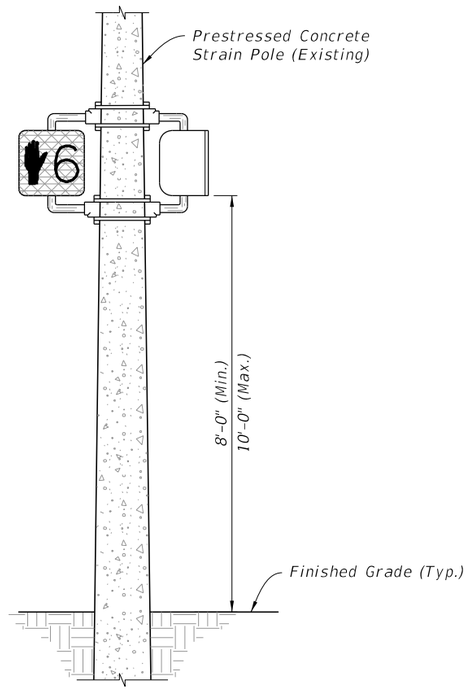
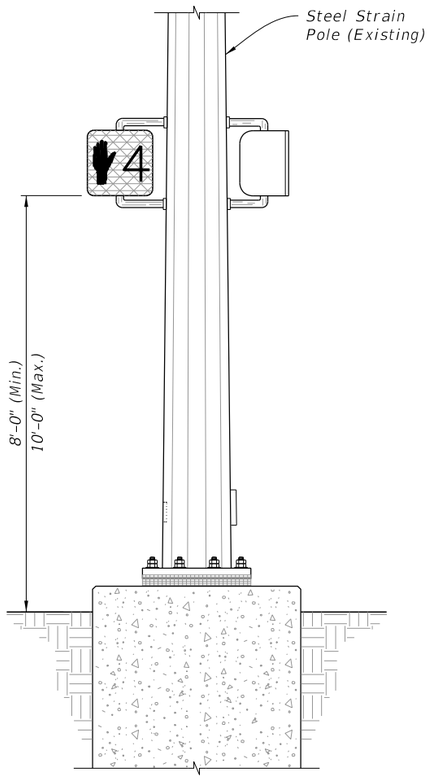


NEW CONSTRUCTION
(See Note 7)

CONCRETE POLE MOUNTED SIGNAL

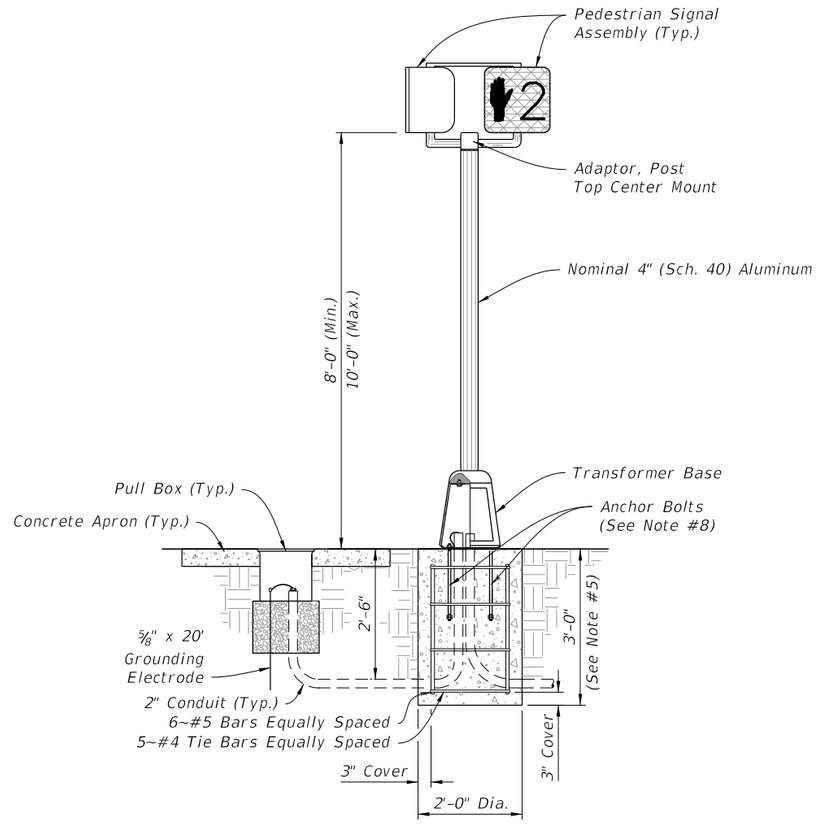


EXISTING CONSTRUCTION



(See Note 6)

STRAIN POLE MOUNTED SIGNAL



PEDESTAL MOUNTED SIGNAL

NOTES:

1. As an option, pedestrian signals may be installed on concrete poles and pedestals using lead anchors (two bolts same size per hub) in lieu of the stainless steel bands.
2. Repair drilled or punched holes in galvanized steel poles or pedestals in accordance with Specification 562. Install grommets or bushings in each hole.
3. Meet grounding requirements of Specification 620.
4. See APL for Department-approved Pedestrian Signal Assemblies and hardware.
5. Construct footing with Class I Concrete, footing may be Cast-In-Place (CIP) or Precast.
6. For Steel Strain Poles see Index 649-010.
7. For Prestressed Concrete Poles see Index 641-010.
8. Install 4 ~ ¾" x 18" Anchor Bolts With Double Nuts. (ASTM F1554 Grade 55)
9. Meet the requirements of Specification 646 for aluminum poles and transformer bases.

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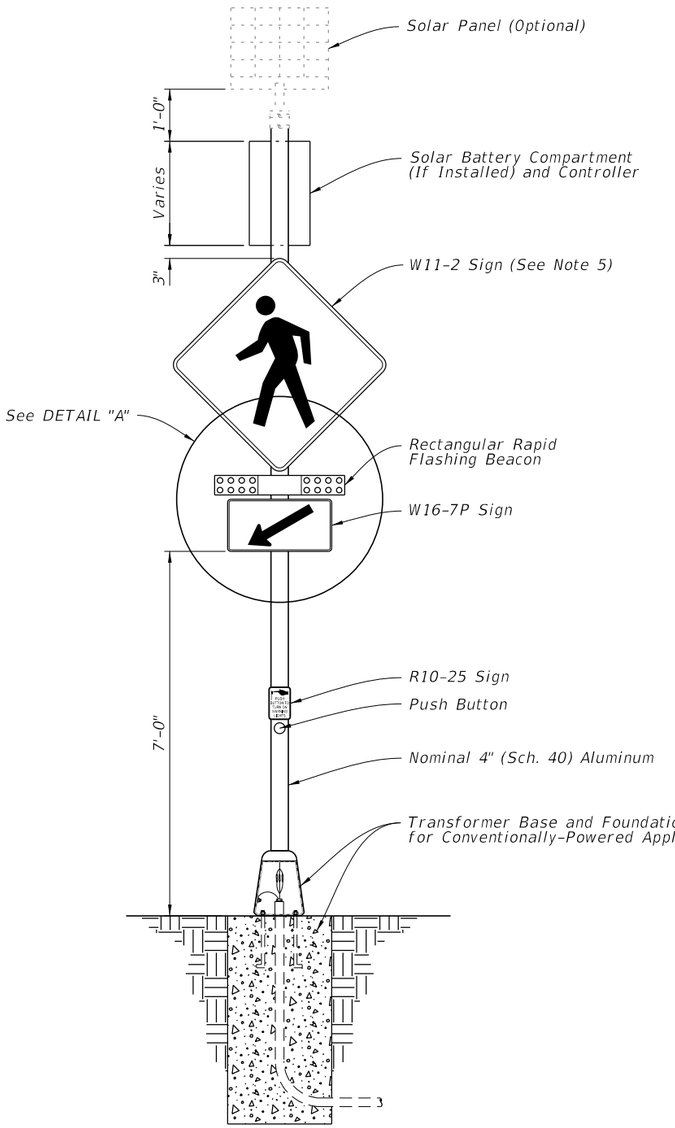
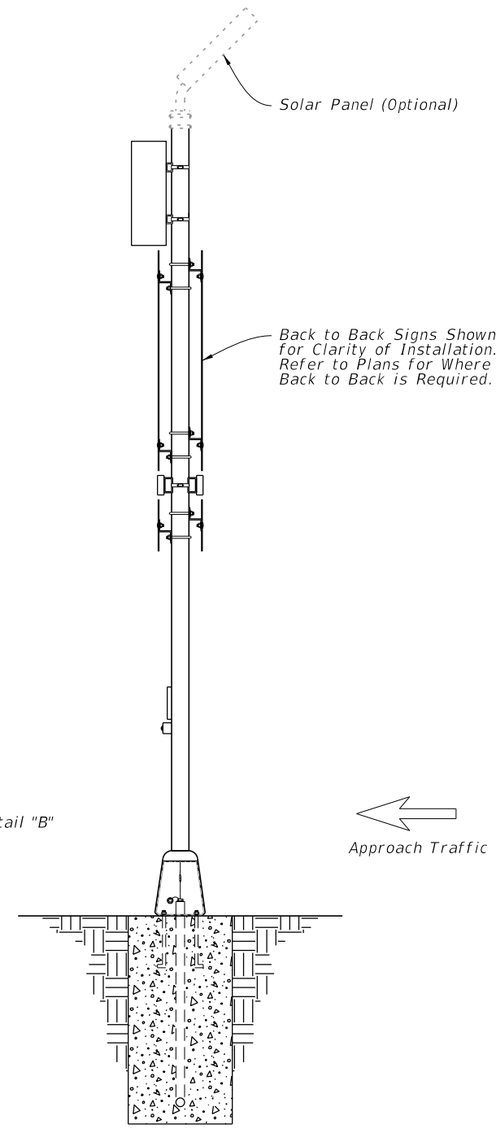
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PEDESTRIAN CONTROL SIGNAL INSTALLATION DETAILS	INDEX	SHEET
11/01/17						653-001	1 of 1

NOTES:

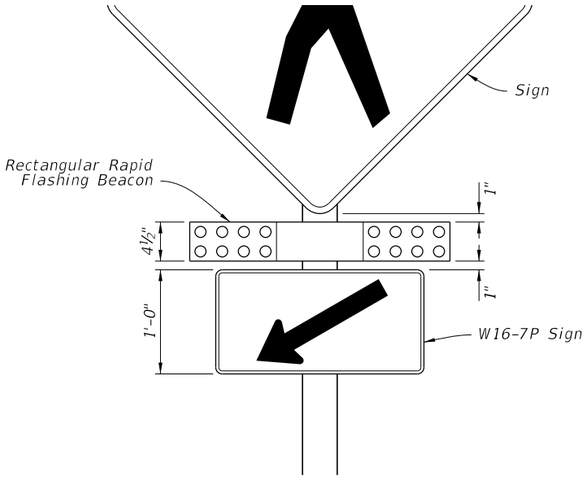
1. A transformer base is required for both conventionally-powered and solar-powered applications (conventional power shown).
2. Install the RRFB in pairs, one on either side of approach traffic.
3. Install controller on the backside of post from approach traffic.
4. Install a 30" X 30" W11-2 sign on two-lane roadways and a 36" X 36" W11-2 sign for multilane roadways.
5. Install push button and R10-25 sign in accordance with Index 665-001.
6. Engage all threads on the transformer base and post unless the aluminum post is fully seated into base.
7. Meet the requirements of Specification 646 for aluminum poles and transformer bases.
8. Install a concrete slab around all pull boxes. The minimum slab dimension is 4'-0" by 4'-0". In urban areas where space is limited slab dimensions may be adjusted as shown in the Plans.
9. For assemblies connected to conventional power, provide single pole non-fused watertight breakaway electrical connectors in the frangible transformer base.
10. When wire entry holes are drilled in the sign column, use a bushing or rubber grommet to protect conductors.
11. For solar-powered applications, orient solar panel to face South for optimal exposure to sunlight.



FRONT VIEW



SIDE VIEW



DETAIL "A"

POLE WIRING AND FOOTING DETAIL

DETAIL "B"

10/29/2019 8:22:34 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT	FY 2020-21 STANDARD PLANS	RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	INDEX 654-001 / SHEET 1 of 1

NOTES:

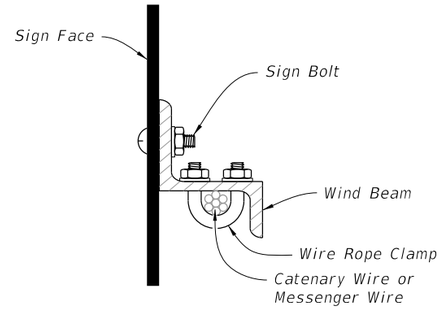
1. Materials:
   A. Sign panels, wind beams and associated hardware: See Index 700-020
   B. Sign adjustable hangers, wire rope clamps and associated hardware: See APL
   C. Wire and additional hardware requirements: See Specification 634

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 ≤ 7'-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

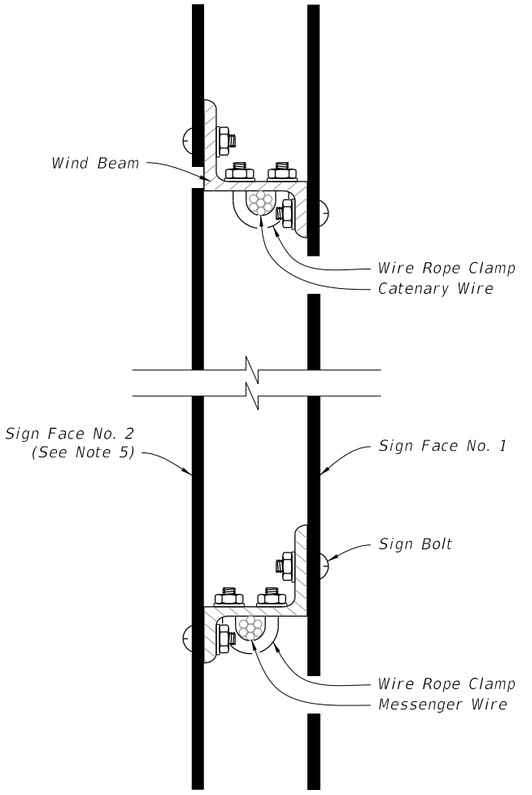
3. Type D Attachments:
   Maximum sign width = 3'-0"

4. Align the bottom edges of signs to approximately the same elevation.

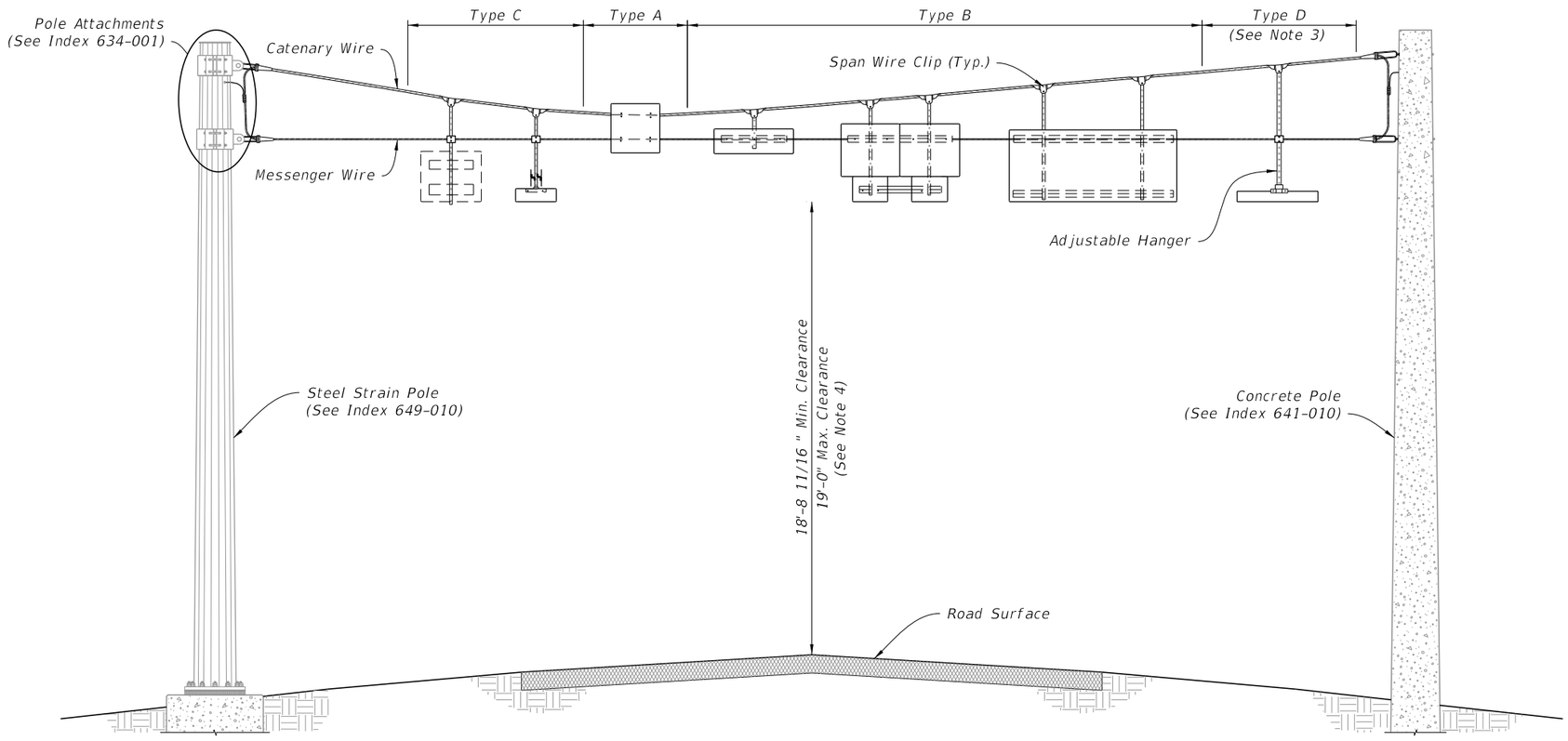
5. Use a minimum of 2 bolts with a minimum spacing of 2" for overlapped connection of the adjustable hangers.



SIGN MOUNTING DETAIL



OPPOSING SIGN MOUNTING DETAIL



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

10/29/2019 8:22:45 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SPAN WIRE MOUNTED SIGN DETAILS	INDEX	SHEET
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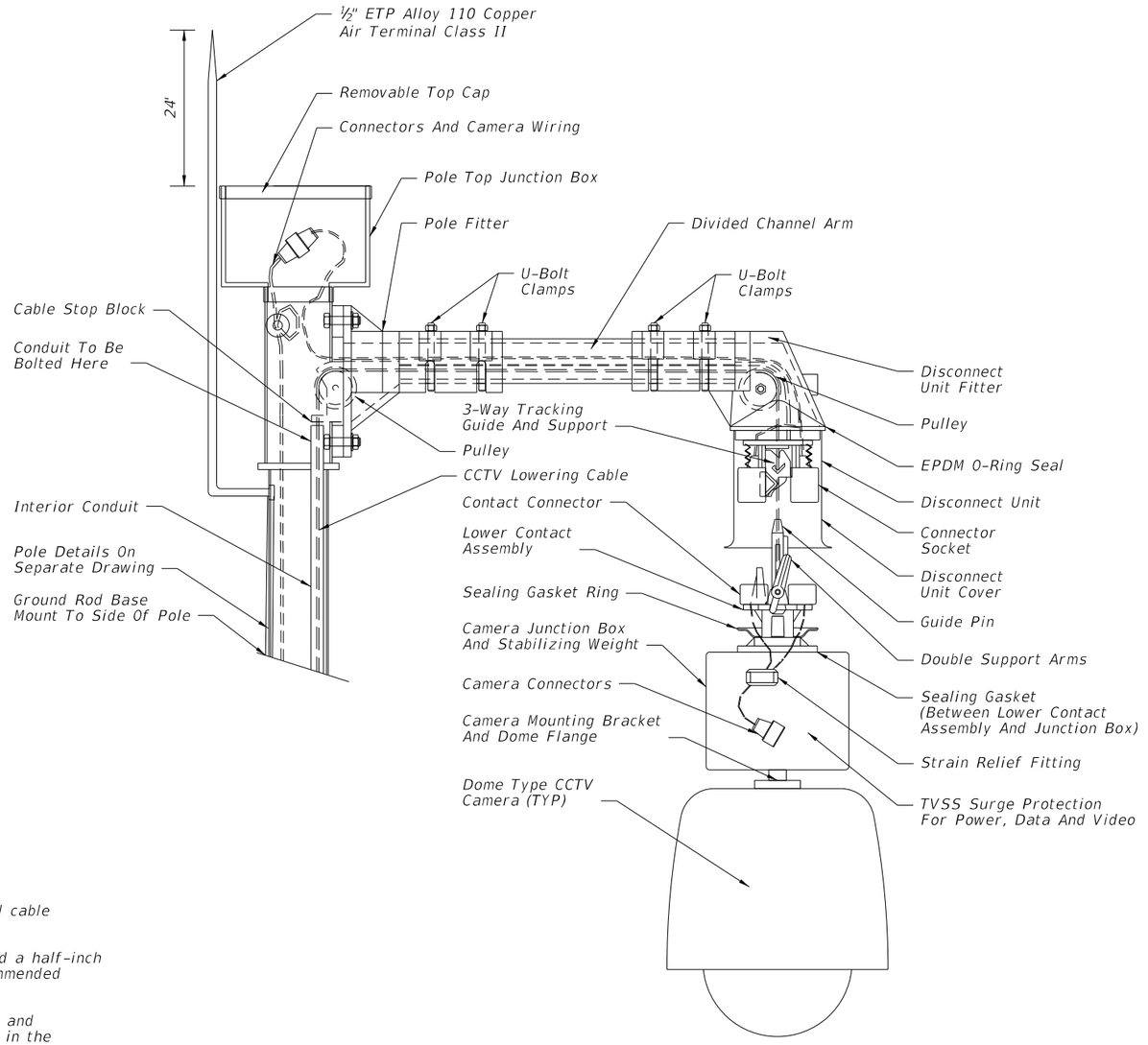
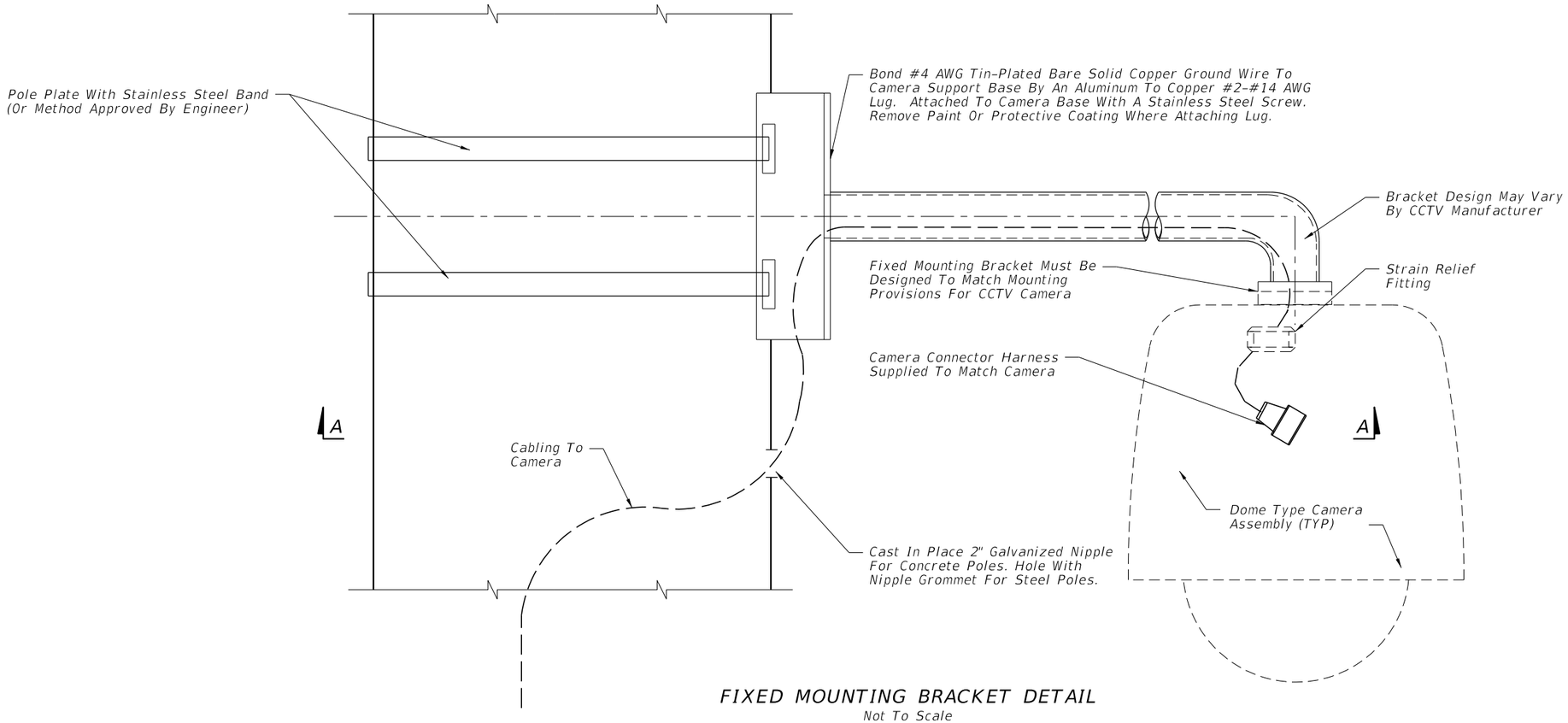


CAMERA LOWERING DEVICE DETAIL

GENERAL NOTES:

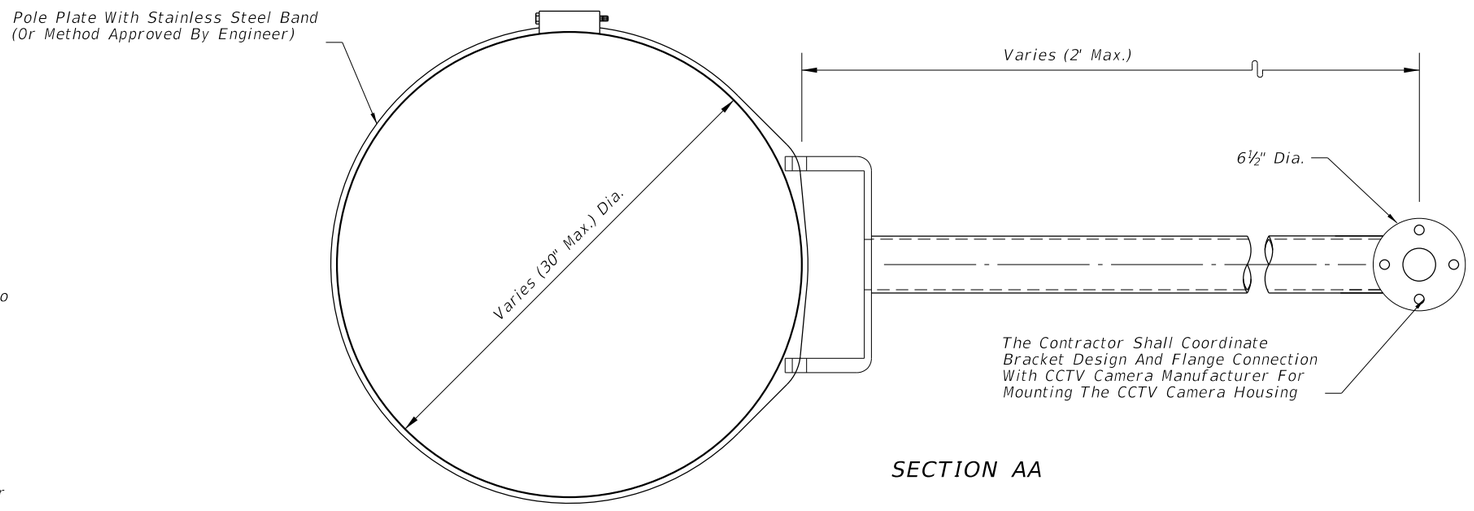
1. Lowering device to be shipped ready for pole attachment to include 100 ft. of composite power and signal cable prewired to lowering device at the factory.
2. The lowering device manufacturer shall supply both a portable lowering tool with a manual hand crank and a half-inch chuck variable-speed reversible 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 ¼" 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



FIXED MOUNTING BRACKET DETAIL

Not To Scale



SECTION AA

GENERAL NOTES:

1. Verify the pole type, the dimensions of the pole at the point of installation of the camera mount, and angle with respect to the roadway before manufacturing camera mount assembly.
2. Design camera mounting arm and connection to the pole according to FDOT Structures Manual (current edition).
3. No field welding shall be permitted.
4. Mounting bracket arm shall be level after installation.
5. The contractor shall submit shop drawings for the proposed fixed mounting arm, signed and sealed by a Professional Engineer registered in the State of Florida, to the Engineer for review and approval.
6. See Index 641-020 for concrete pole details and Index 649-020 for steel pole details.
7. Galvanized pipe connections and conduit entry points shall be sealed in accordance with Specification 630.

CAMERA MOUNTING WITH FIXED BRACKET

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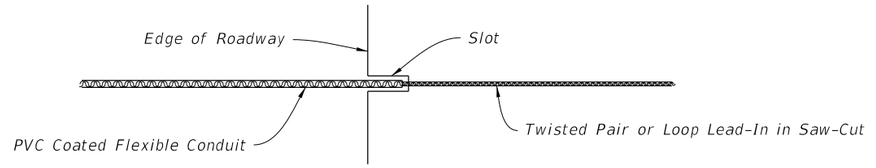
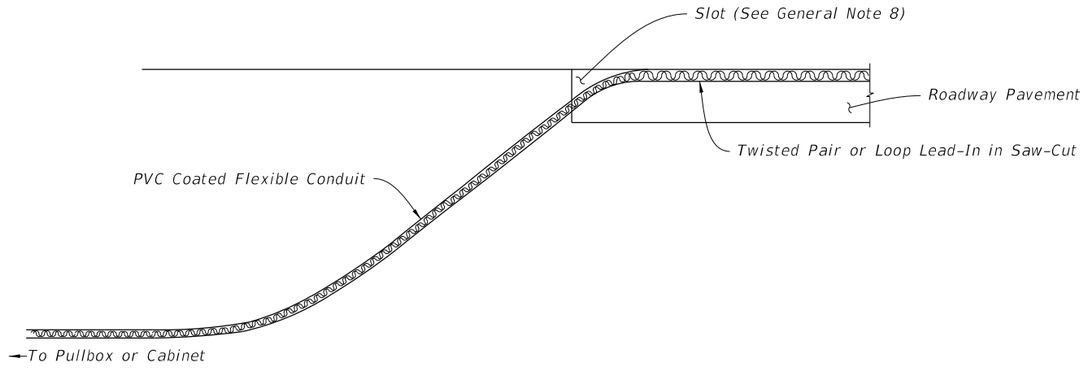
GENERAL NOTES:

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

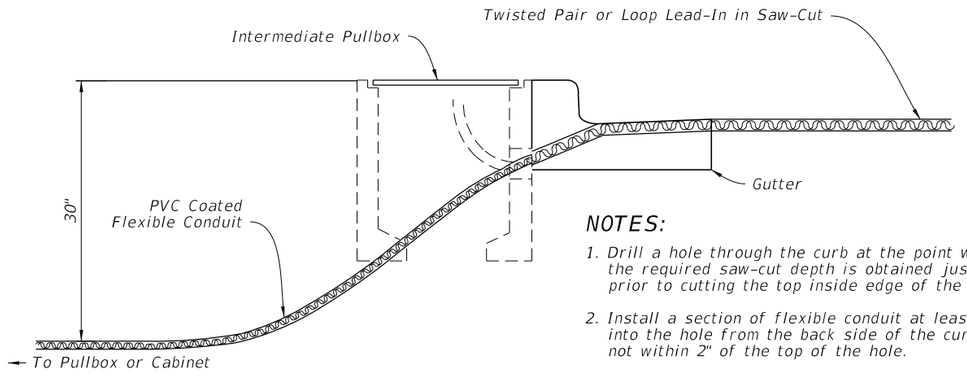


ELEVATION

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°.

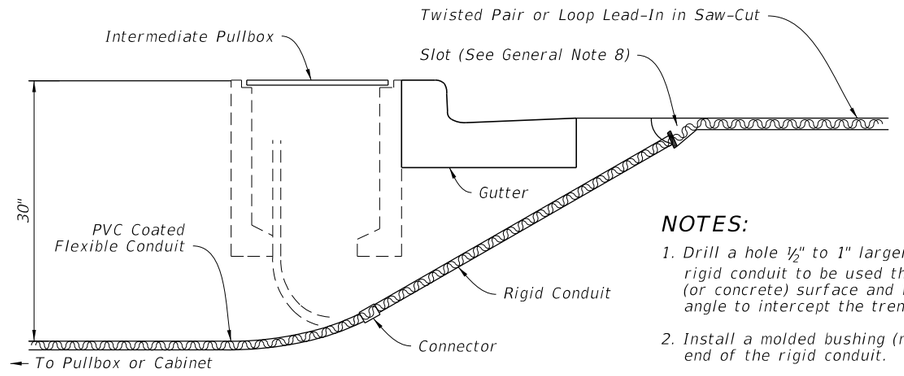
INSTALLATION WITHOUT CURB & GUTTER



NOTES:

1. Drill a hole through the curb at the point which the required saw-cut depth is obtained just prior to cutting the top inside edge of the curb.
2. Install a section of flexible conduit at least 6" into the hole from the back side of the curb but not within 2" of the top of the hole.
3. Insure the conduit fits snug within the drilled hole.
4. Fill the top of the hole with loop sealant to the level of the curb surface.
5. Use a nonmetallic material to prevent excessive loop sealant from entering the flexible conduit.

ALTERNATIVE 1



NOTES:

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.
3. Place the top of the rigid conduit approximately 2" below the roadway surface.
4. Fill the hole with loop sealant to the level of the roadway surface.
5. Use a nonmetallic material to prevent excessive loop sealant from entering the rigid conduit.

ALTERNATIVE 2

INSTALLATION WITH CURB & GUTTER

TWISTED PAIR AND LOOP LEAD-IN INSTALLATION

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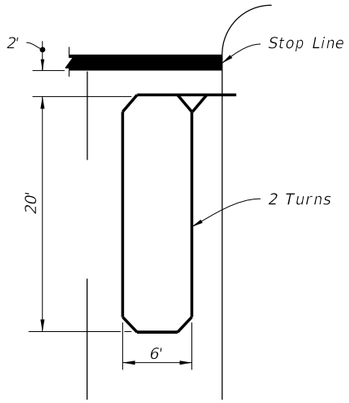
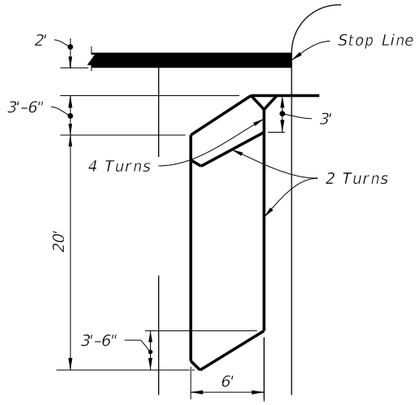
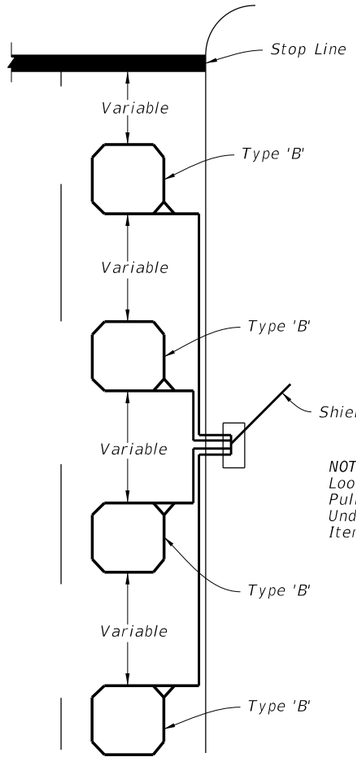
11/01/18			FDOT FY 2020-21 STANDARD PLANS	VEHICLE LOOP INSTALLATION DETAILS	INDEX 660-001	SHEET 1 of 2



TYPE A

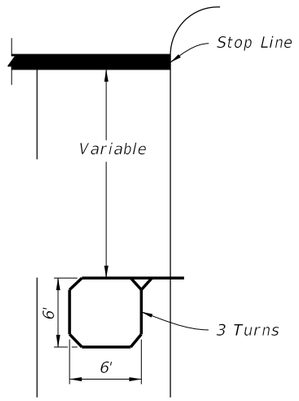


TYPE D

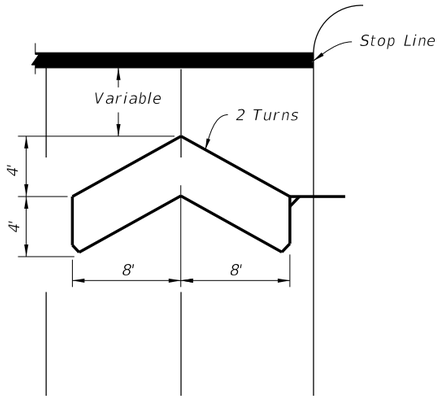


NOTE:
Loops To Pullbox.
Pullbox Specified
Under Separate Pay
Items.

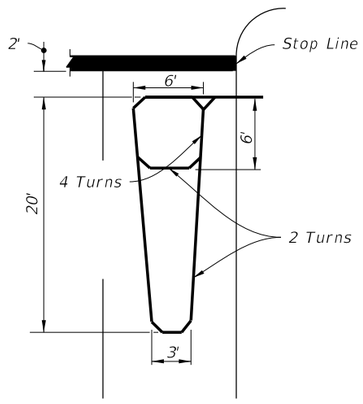
TYPE G



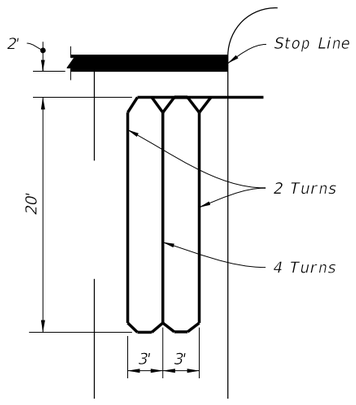
TYPE B



TYPE E



TYPE C



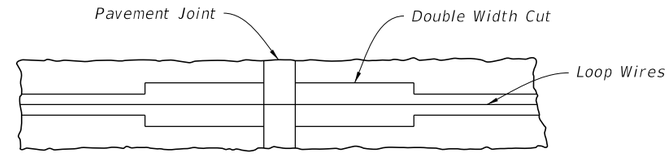
TYPE F

NOTE:
Loop conductors must follow saw-cut
to bottom forming slack section at joint.

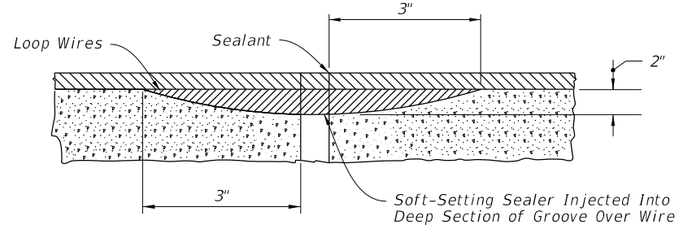
NOTES:

1. The number of "Turns" indicated at the specified point on the loop refers to the number of passes of loop wires which are placed in the saw-cut forming the complete loop.
2. Loop types or details not drawn to scale.
3. Loop Types are centered in a single lane except Type E which is centered on two lanes.
4. The number of individual loops in the Type G loop may vary up to a maximum of four (4).
5. Lead-in may be connected to either end of loop.
6. When shown in the Plans, the leading edge of loop Types A, C, D, & F may extend past the stop line a maximum of 10' and the length of these loops may be extended to a maximum of 60'.
7. Do not install loop lead-in wires in the same pull box with signal power cable.

LOOP TYPES

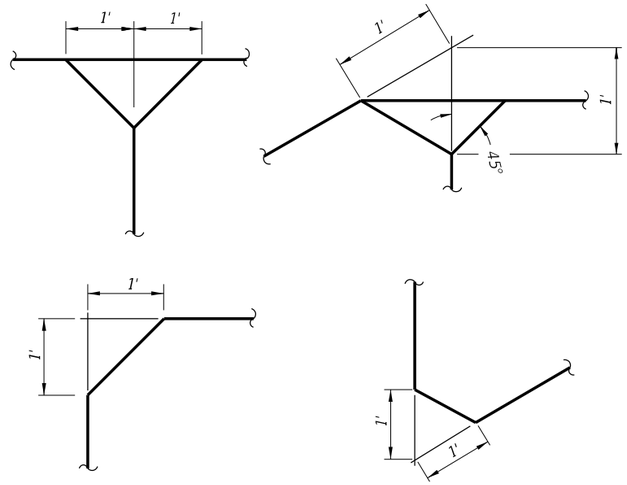


PLAN



VERTICAL SECTION

CONCRETE PAVEMENT EXPANSION JOINTS



LOOP CORNER AND LEAD-IN DETAILS

LOOP TYPES, EXPANSION JOINTS, AND DETAILS

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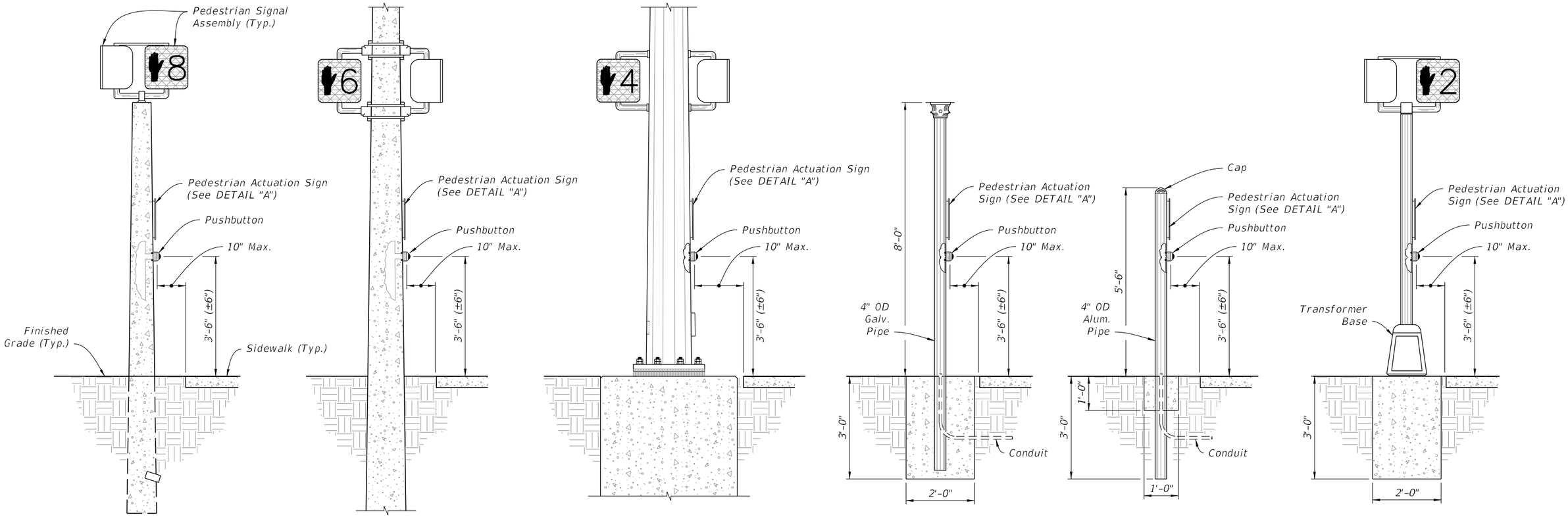
11/01/18					660-001	2 of 2



PRESTRESSED CONCRETE PEDESTAL POLE

PRESTRESSED CONCRETE STRAIN POLE

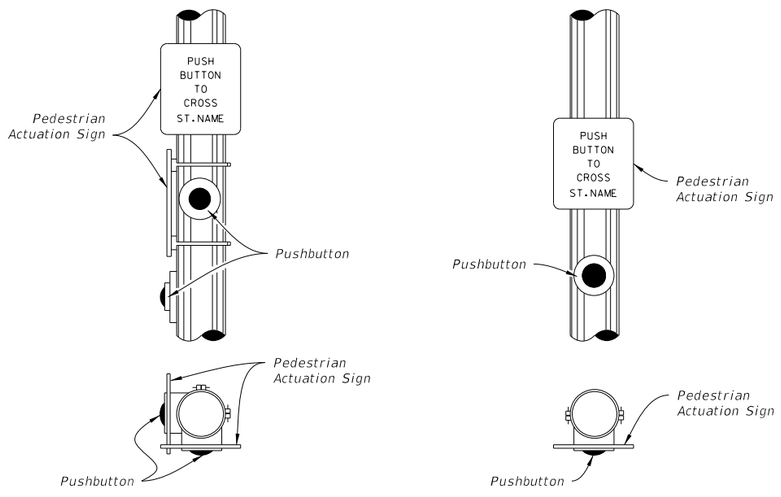
STEEL STRAIN POLE

GALVANIZED POLE

ALUMINUM POLE

PEDESTAL

PUSHBUTTON PEDESTRIAN DETECTORS



DETAIL "A"

NOTES:

1. Mount Signs above the detectors. See Index 700-102 for sign details.
2. Install Pushbuttons and Pedestrian Actuation Signs with faces parallel to the crossing direction, or as shown in the Plans.
3. Mount pushbuttons and Signs in accordance with Specification 665.
4. Install all grounding per Specification 620.
5. Pushbutton mounting height shown above is taken at the center of the actuation switch.

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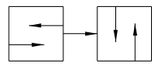
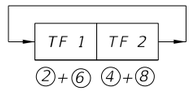
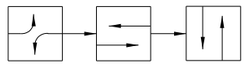
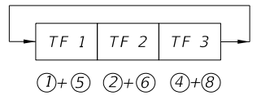
11/01/19			FY 2020-21 STANDARD PLANS	PEDESTRIAN DETECTOR ASSEMBLY INSTALLATION DETAILS	665-001	1 of 1



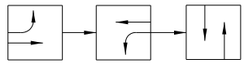


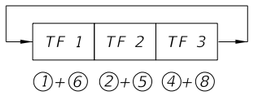
SOP 1



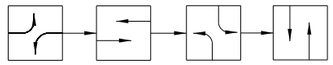


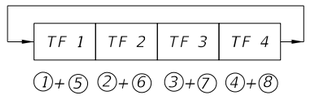
SOP 2



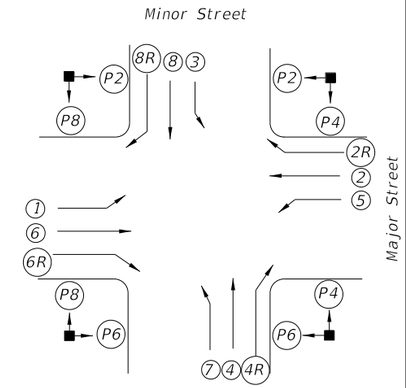


SOP 3



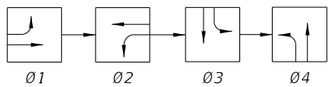


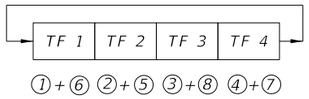
SOP 4



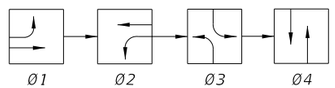
SIGNALIZED INTERSECTION

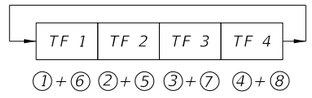
Vehicle movements & signal head number assignments are not directionally oriented but shall maintain their relative orientation about the intersection (I.E., movements 7 and 4 are always to the right of movements 1 and 6 etc.).



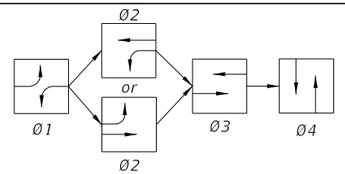


SOP 5

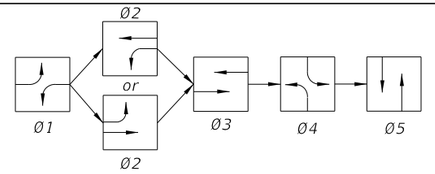




SOP 6



SOP 7



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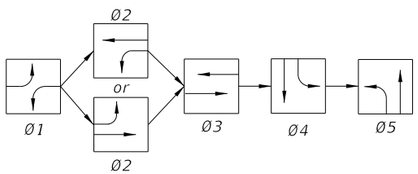
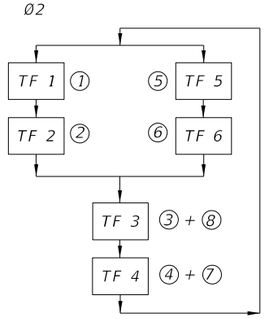
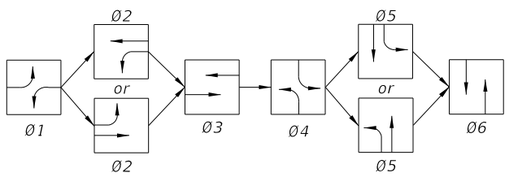
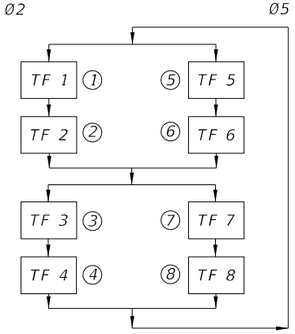




SOP 9





SOP 10

SIGNAL CLEARANCE TABLE

(Blank Indicates No Clearance Required)

From / To		SIGNAL INDICATIONS							
		R	⟵R	G		⟵G	⟵Ⓖ	WALK	DONT WALK
SIGNAL INDICATIONS	R			Y		⟵G	Y		
	⟵R			Y		⟵G	Y		
	G					⟵G			
	⟵G								
	Ⓖ								
	WALK								
	DONT WALK							Flash DONT WALK	

LEGEND

- (X) Vehicle Movement Number
- (PX) Pedestrian Movement Number
- TF X Timing Function Number
- ØX Phase Number
- ⟵G Green Arrow (Left or Right)
- ⟵R Red Arrow
- ⟵ Yellow Arrow

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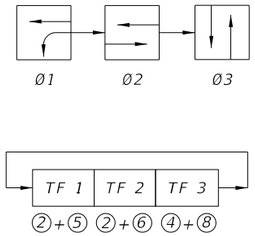
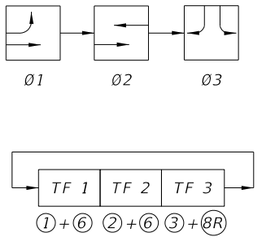
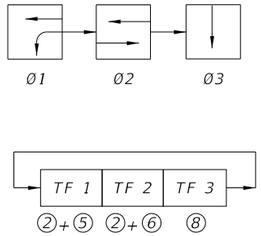
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	STANDARD SIGNAL OPERATING PLANS	671-001	1 of 2



SOP 11

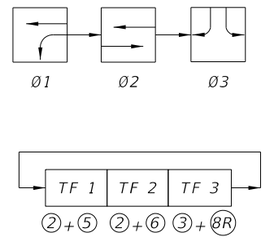


SOP 12



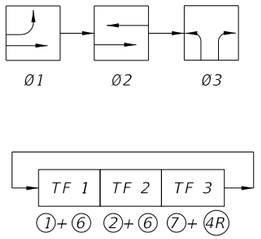
SOP 13

(ONE- WAY STREET INTERSECTION)



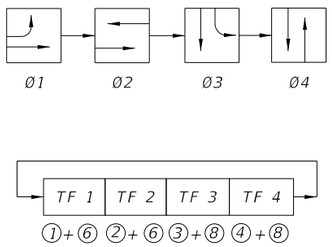
SOP 14

(DIAMOND INTERCHANGE OPERATION)

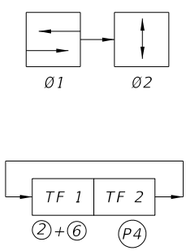


SOP 15

(DIAMOND INTERCHANGE OPERATION)

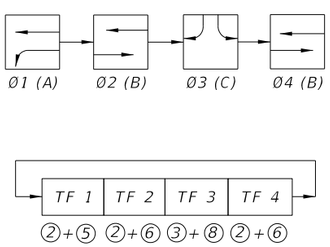


SOP 16



SOP 17

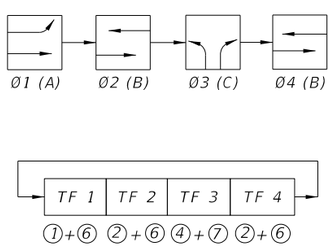
(MIDBLOCK)



NOTE:
Only Ø2 Or Ø4 Used, Not Both To Obtain ABC, Or ACB Operation.

SOP 18

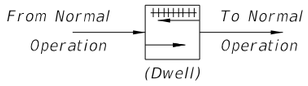
(DIAMOND INTERCHANGE OPERATIONS)



NOTE:
Only Ø2 Or Ø4 Used, Not Both To Obtain ABC, Or ACB Operation.

SOP 19

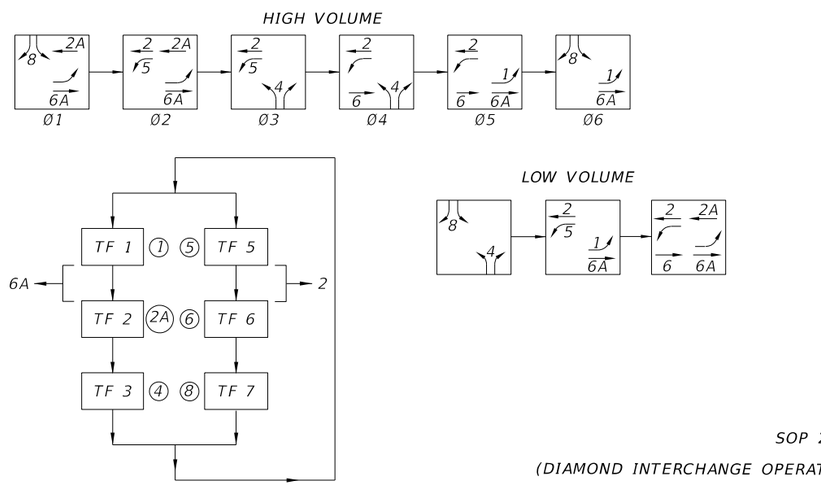
(DIAMOND INTERCHANGE OPERATIONS)



POP 1

POP 2

POP 3



SOP 20

(DIAMOND INTERCHANGE OPERATIONS)

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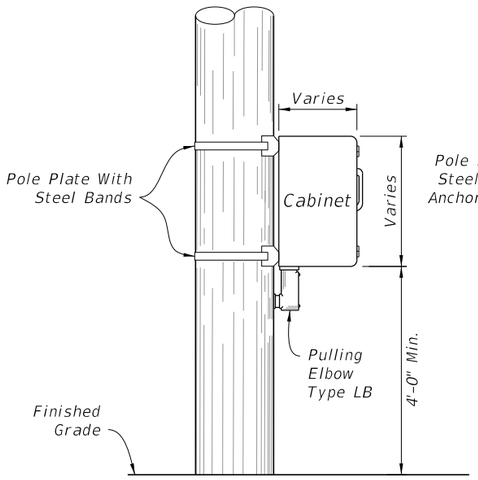
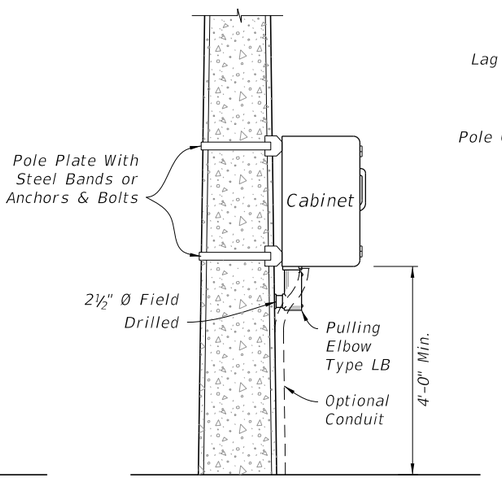


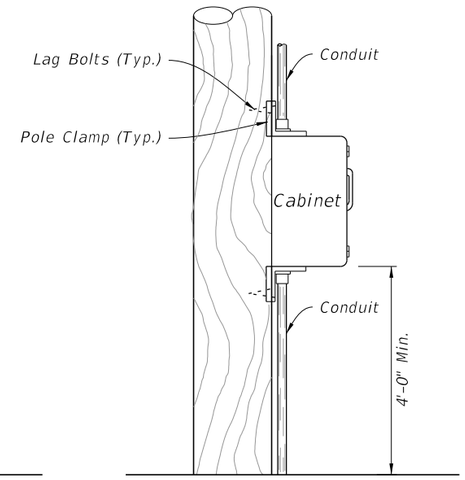
SIDE ELEVATION

METAL POLE



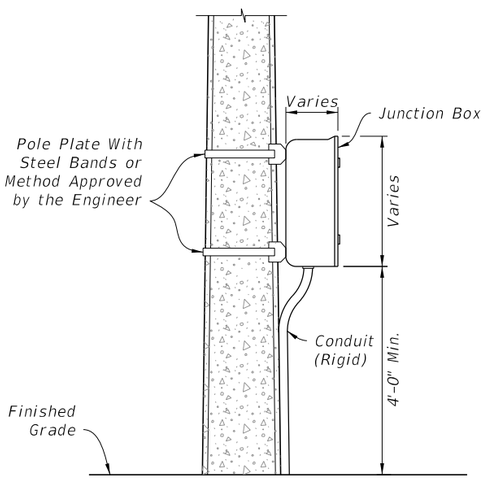
SIDE ELEVATION

CONCRETE POLE



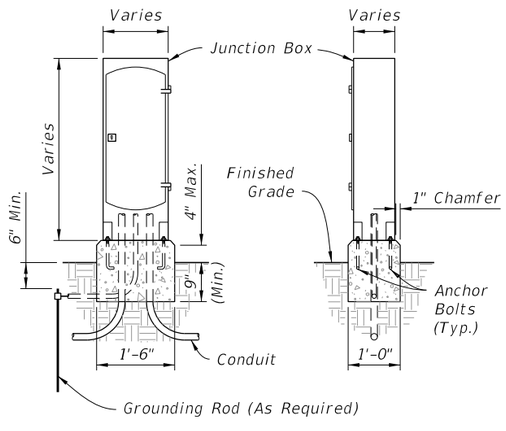
SIDE ELEVATION

WOOD POLE



SIDE ELEVATION

POLE MOUNTED



FRONT ELEVATION

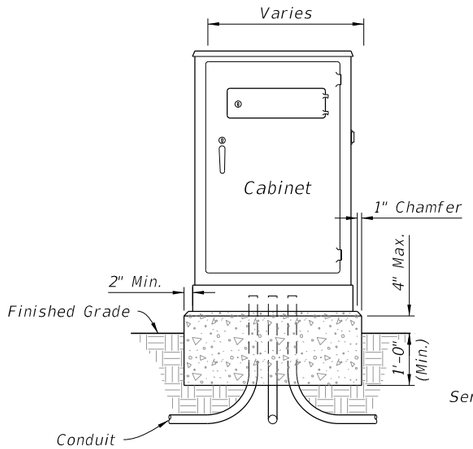
SIDE ELEVATION

GROUND MOUNTED

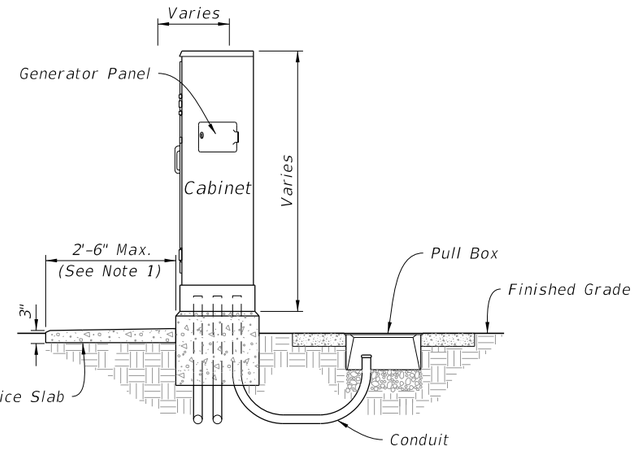
NOTES:

1. If cabinet mounting requires relocation of hole in concrete pole, fill existing hole with concrete or cover with a noncorrosive cover plate.
2. Liquidtight flexible conduit is approved for use from the electrical disconnect to the cabinet when both are installed on the same pole.

POLE MOUNTED CONTROLLER CABINET



FRONT ELEVATION



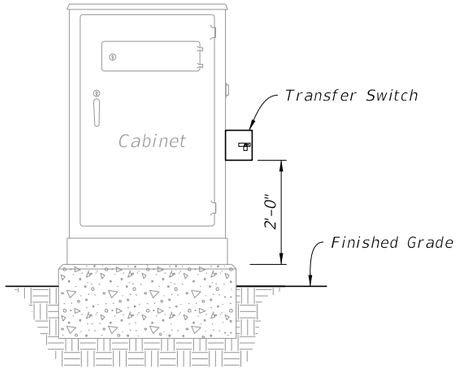
SIDE ELEVATION

NOTES:

1. Service Slab: slope ¼" to 1" for drainage. Not required in sidewalk, pavement areas, or where R/W is restricted.
2. The number, size and orientation of conduit sweep will vary according to site condition or locations. Provided two spare 2" PVC conduits in all bases. Place the exits of the spare conduits in the direction of the center rear of the cabinet base and into a pullbox. If obstructions prevent the spare conduit from exiting to the rear, or the rear of the cabinet is located on the R/W line, locate as directed by the Engineer. Cap all spare conduit sweeps with a weatherproof fitting.

NEW CONTROLLER CABINET

INTERCONNECT JUNCTION BOX



FRONT ELEVATION

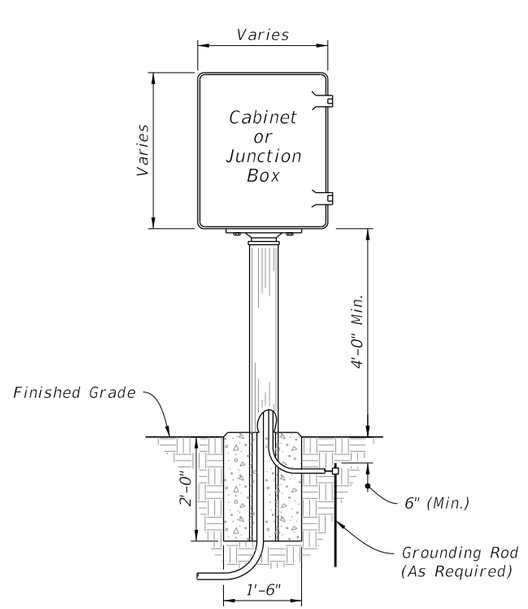
NOTES:

1. Retrofit existing controller cabinets in accordance with Specification 678.
2. Retrofit installation procedure for signalized intersection controller cabinet are located at: http://www.fdot.gov/Traffic/Doc_Library/Doc_Library.shtm Generator Power for Signalized Intersection

EXISTING CONTROLLER CABINET

GROUND MOUNTED CONTROLLER CABINET

PEDESTAL MOUNTED CABINET



FRONT ELEVATION

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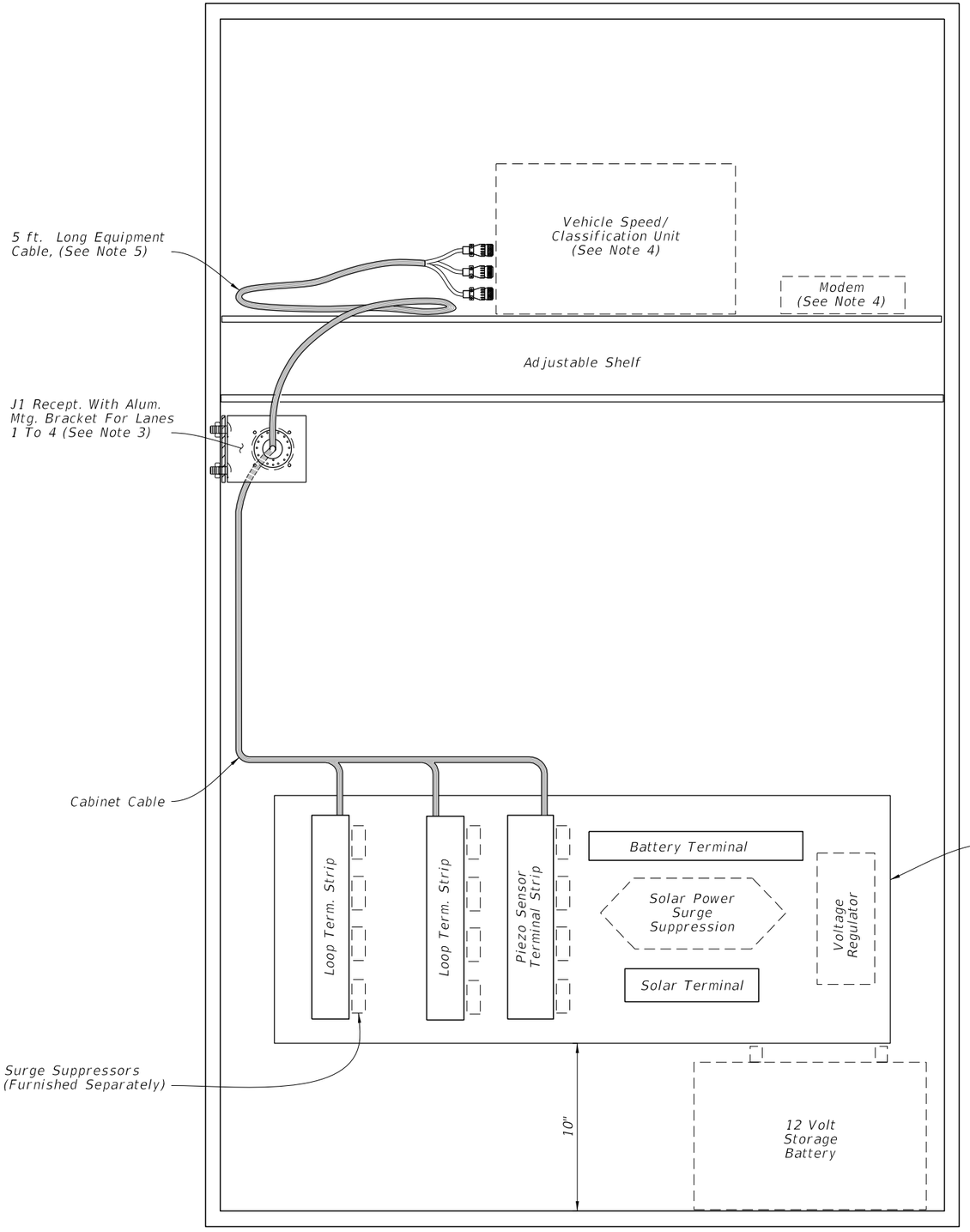
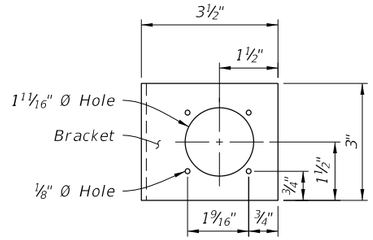
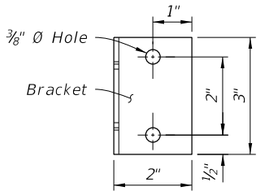
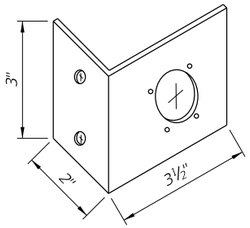




FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW

NOTE:

Fabricate bracket out of 3/32" – ⅛" inch thick aluminum. Dimensions may vary depending on the manufacturer of the J1 receptacle being furnished. The cabinet manufacturer will construct the mounting bracket to fit the receptacle.

J1 MOUNTING BRACKET

NOTES:

1. Traffic monitoring site cabinet includes:
   A. One adjustable Shelf; (equipped as shown)
   B. One backplane assembly; (equipped as shown)
   C. One J1 receptacle with mounting bracket;
   D. One J1 equipment cable 5 ft. long (Reference Sheet 4);
   E. All Associated wiring and wiring harnesses.
2. Basic backplane assembly consists of:
   A. Two inductive loop terminal strips;
   B. One piezo sensor terminal strip;
   C. One battery terminal strip;
   D. One solar panel terminal strip.
3. The contractor is responsible for contacting the TMS Manager at the Transportation Statistics Office for lane number information and verification.
4. Speed/Classification Unit and Modem furnished separately.
5. Cable ends must be fabricated to fit the vehicle speed/ classification unit. (Reference Sheet 4)

CABINET LAYOUT DETAILS (Four Lanes or Less)

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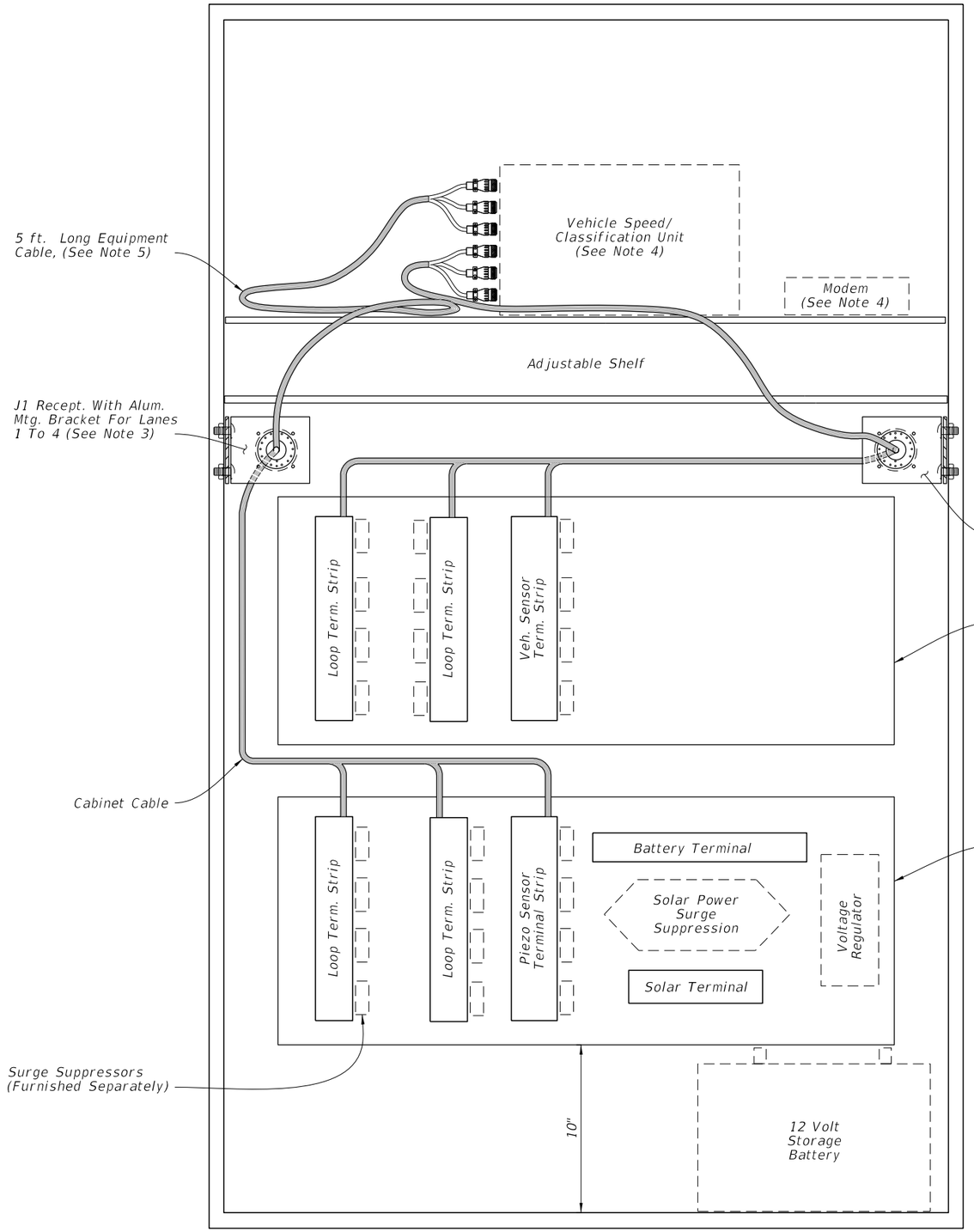
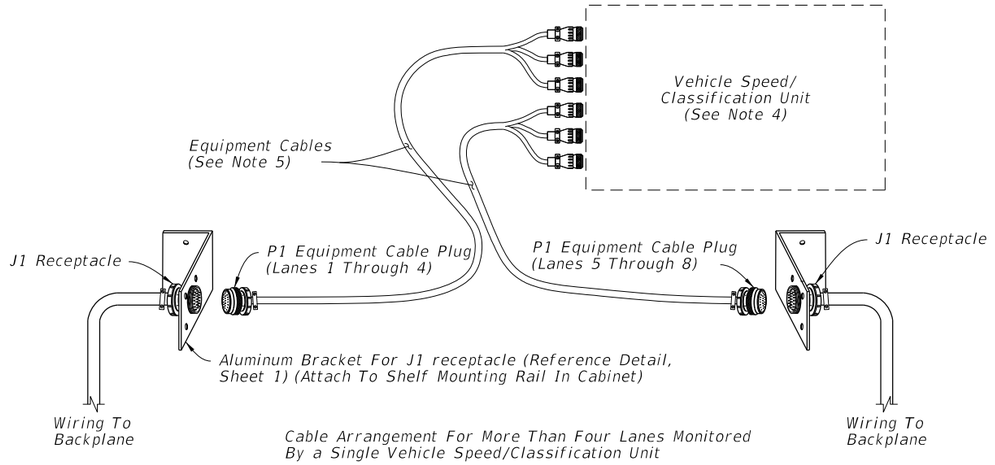
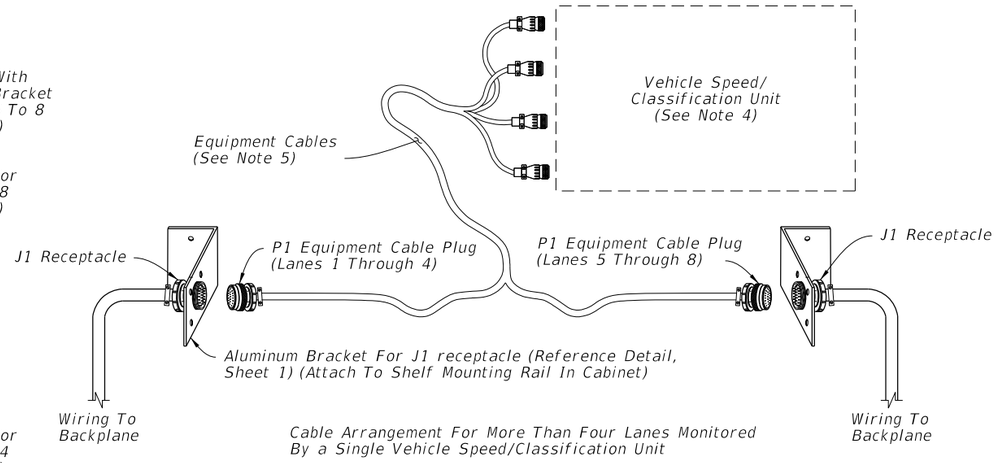




Cable Arrangement For More Than Four Lanes Monitored By a Single Vehicle Speed/Classification Unit

OPTION A (Shown)



Cable Arrangement For More Than Four Lanes Monitored By a Single Vehicle Speed/Classification Unit

OPTION B

EQUIPMENT CABLE ASSEMBLY

NOTES:

1. Traffic monitoring site cabinet includes:
   A. One adjustable Shelf; (equipped as shown)
   B. Two backplane assembly; (equipped as shown)
   C. Two J1 receptacle with mounting bracket;
   D. One J1 equipment cable 5 ft. long (Reference Sheet 4);
   E. All Associated wiring and wiring harnesses.
2. Basic backplane assembly consists of:
   A. Two inductive loop terminal strips;
   B. One piezo sensor terminal strip;
   C. One battery terminal strip;
   D. One solar panel terminal strip.
3. The contractor is responsible for contacting the TMS Manager in the Transportation Statistics Office for lane number information and verification.
4. Speed/Classification Unit and Modem furnished separately.
5. Cable ends must be fabricated to fit the vehicle speed/ classification unit. (Reference Sheet 4 for Pinout Charts, receptacle and plug details.

CABINET LAYOUT DETAILS (Five to Eight Lanes)

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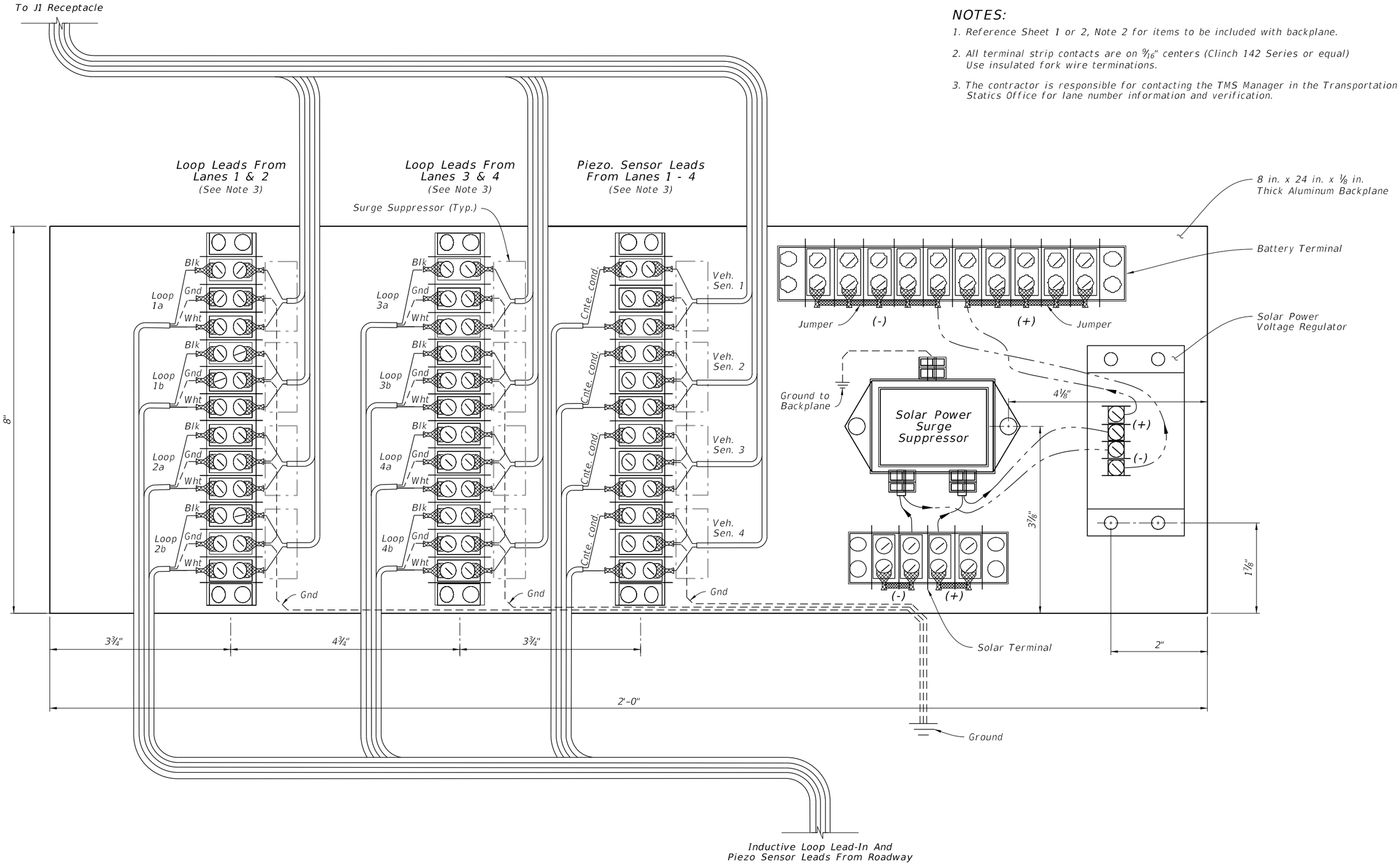
NOTES:

1. Reference Sheet 1 or 2, Note 2 for items to be included with backplane.
2. All terminal strip contacts are on 9/16" centers (Clinch 142 Series or equal) Use insulated fork wire terminations.
3. The contractor is responsible for contacting the TMS Manager in the Transportation Statics Office for lane number information and verification.



CABINET BACKPLANE DETAIL

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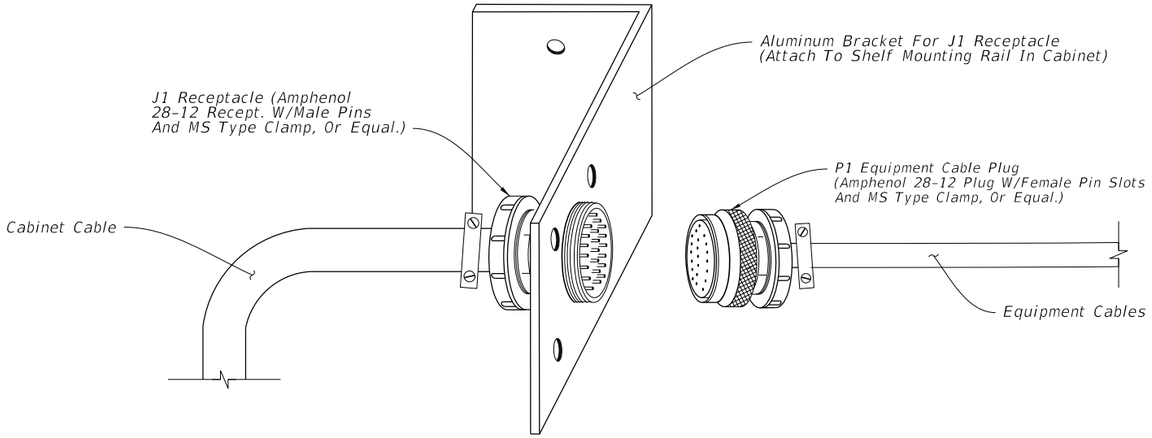
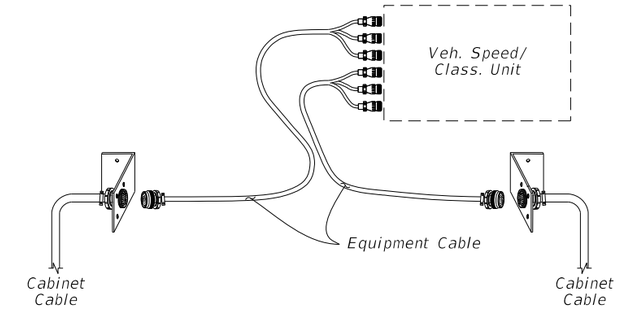
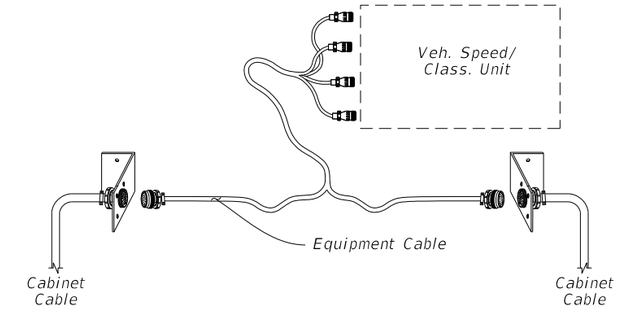


J1 RECEPTACLE PINOUT	
26 Recessed Male Pins	
A	Loop 1a (5a) yellow
B	Loop 1a (5a) purple
C	Loop 1b (5b) gray
D	Loop 1b (5b) pink
E	Loop 2a (6a) brown
F	Loop 2a (6a) blue
G	Loop 2b (6b) orange
H	Loop 2b (6b) tan
J	Loop 3a (7a) white
K	Loop 3a (7a) green
L	Loop 3b (7b) red
M	Loop 3b (7b) black
N	Gnd
P	Loop 4a (8a) w/yellow
R	Loop 4a (8a) w/purple
S	Loop 4b (8b) w/gray
T	Loop 4b (8b) w/brown
U	Piezo 1 (5) (+) w/blue
V	Piezo 1 (5) sh w/orange
W	Piezo 2 (6) (+) w/green
X	Piezo 2 (6) sh w/red
Y	Piezo 3 (7) (+) w/black
Z	Piezo 3 (7) sh w/red/blk
a	Piezo 4 (8) (+) red/ green
b	Piezo 4 (8) sh red/yellow
d	Gnd red/black

J1 EQUIPMENT CABLE PLUG		
26 Female Pin Slots		
A	Loop 1a (5a)	Connect To Electronics Unit
B	Loop 1a (5a)	
C	Loop 1b (5b)	
D	Loop 1b (5b)	
E	Loop 2a (6a)	
F	Loop 2a (6a)	
G	Loop 2b (6b)	
H	Loop 2b (6b)	
N	Gnd	
J	Loop 3a (7a)	Connect To Electronics Unit
K	Loop 3b (7b)	
L	Loop 3b (7b)	
M	Loop 3b (7b)	
P	Loop 4a (8a)	
R	Loop 4a (8a)	
S	Loop 4b (8b)	
T	Loop 4b (8b)	
d	Gnd	
U	Piezo 1 (5) (+)	Connect To Electronics Unit
V	Piezo 1 sh	
W	Piezo 2 (6) (+)	
X	Piezo 2 sh	
Y	Piezo 3 (7) (+)	
Z	Piezo 3 sh	
a	Piezo 4 (8) (+)	
b	Piezo 4 sh	



OPTION A



OPTION B

NOTES:

1. The contractor is responsible for contacting the TMS Manager in the Transportation Statistics 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.

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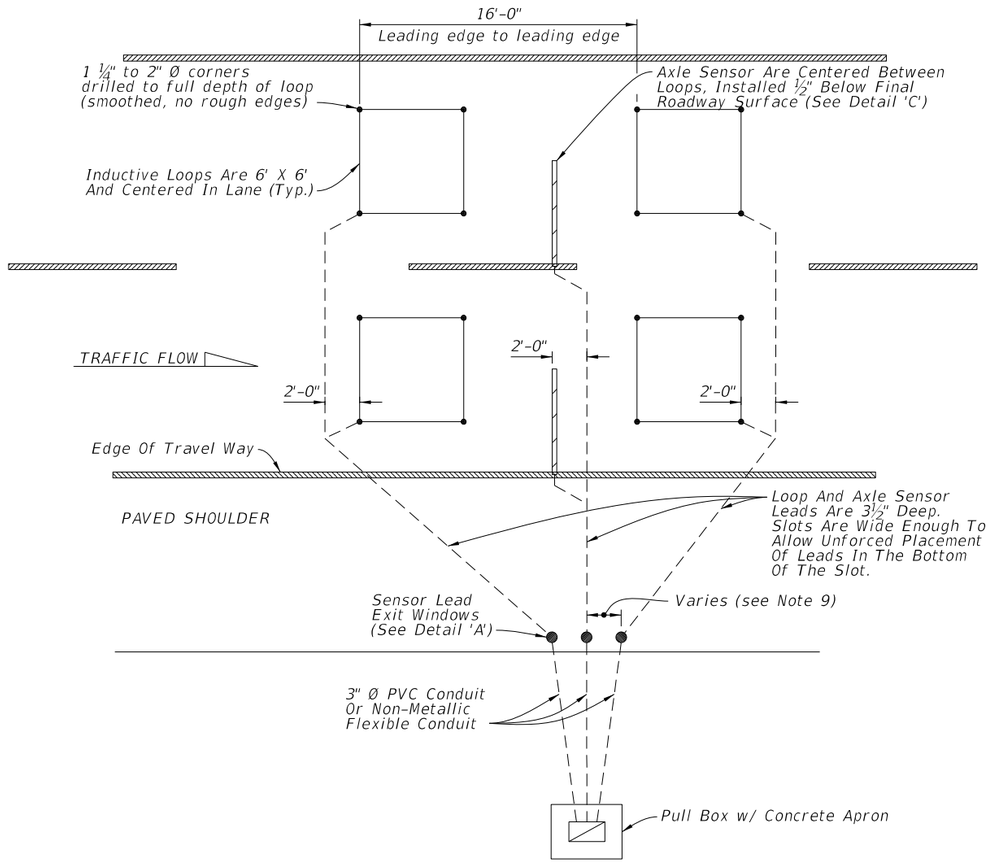
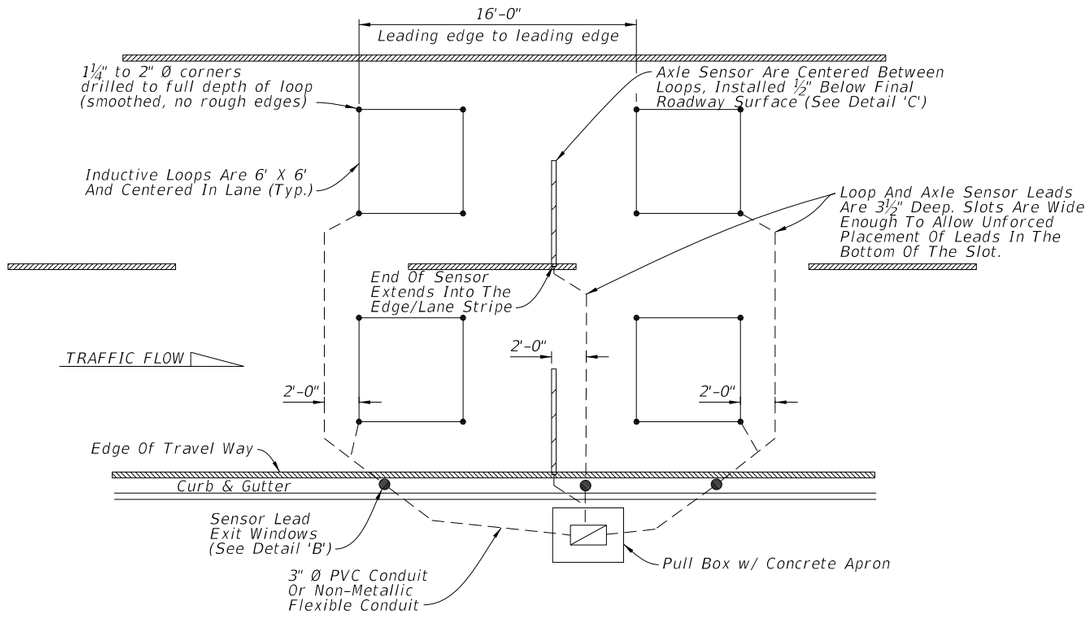


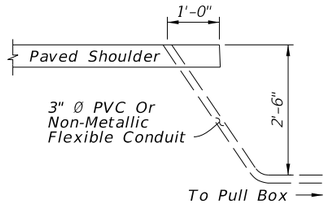
ROADWAYS WITH PAVED SHOULDERS



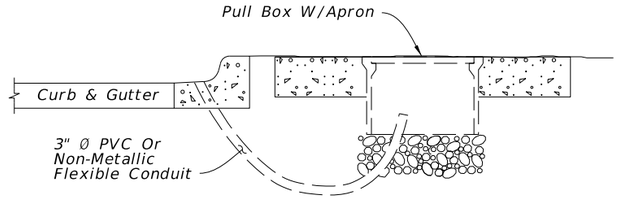
CURB & GUTTER ROADWAYS

NOTES:

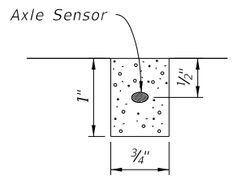
1. Install axle sensors and loops associated with axle sensors after placement of the friction course.
2. Cut a 3½" deep slot for the Inductive loops. Loop slots will be cut wide enough to allow unforced placement of the wire into the bottom of the slot. Four turns of #14 AWG, place the IMSA 51-7 copper 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 them is not allowed.
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.



EXIT WINDOW
DETAIL 'A'



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

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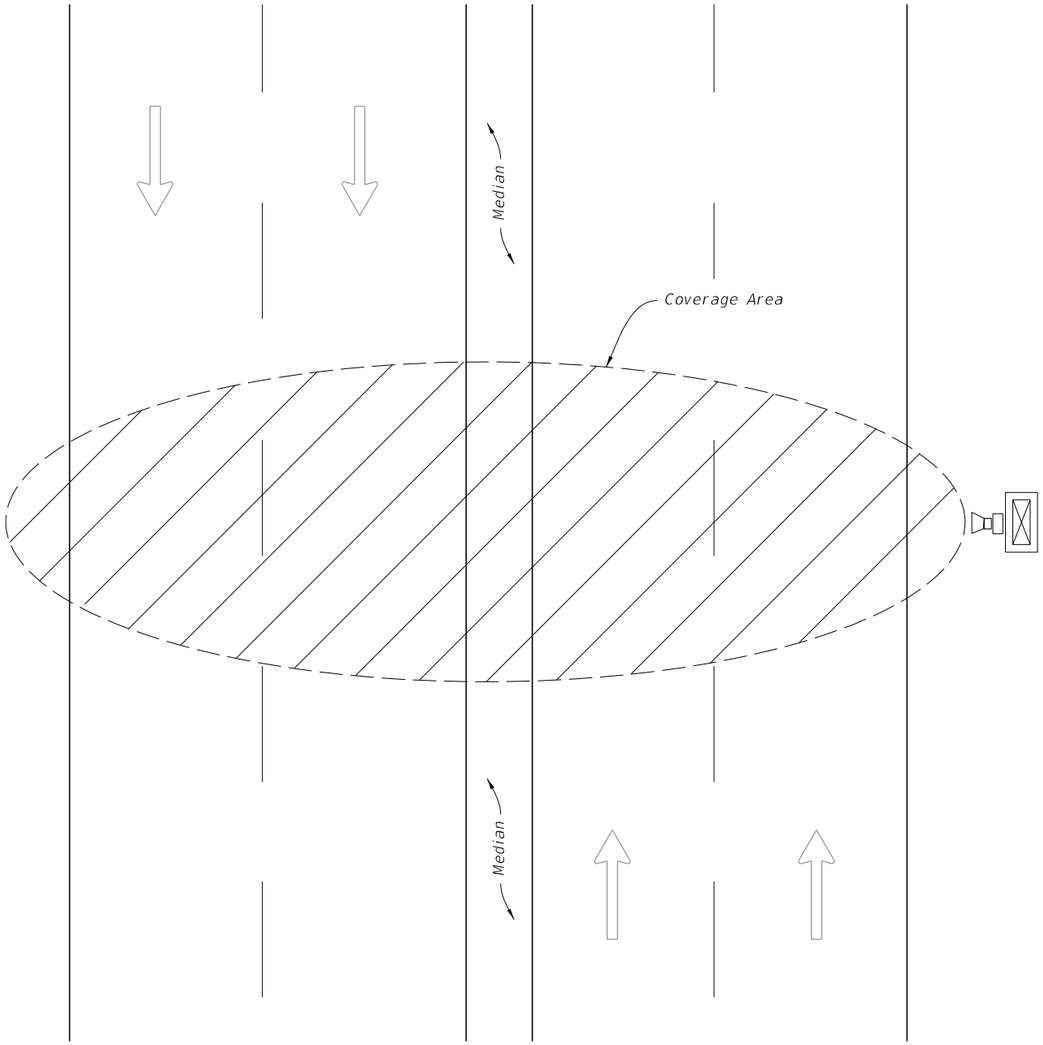
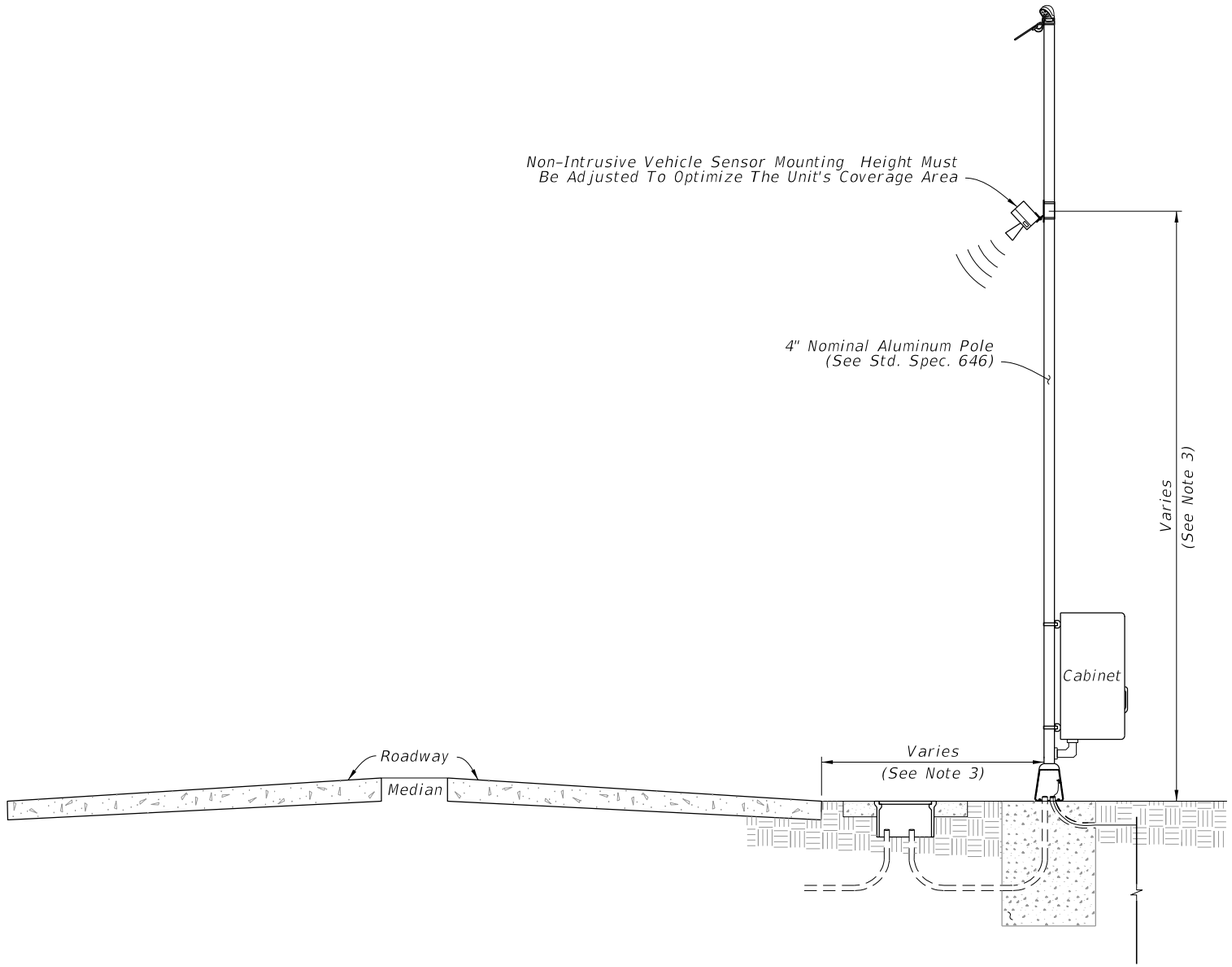


PLAN



ELEVATION

NOTES:

1. The unit must be capable of detecting up to eight lanes of traffic (in either or both directions) when mounted perpendicular to the roadway.
2. Coverage area of the unit is affected by the roadway geometry: distance from the travel lanes, median type and width, barrier walls, etc.
3. Mounting height of the unit and offset from the roadway must be determined on a site-by-site basis, in accordance with the manufacturer's recommended guidelines. Offset of pole must be greater than or equal to minimum clear zone requirements.

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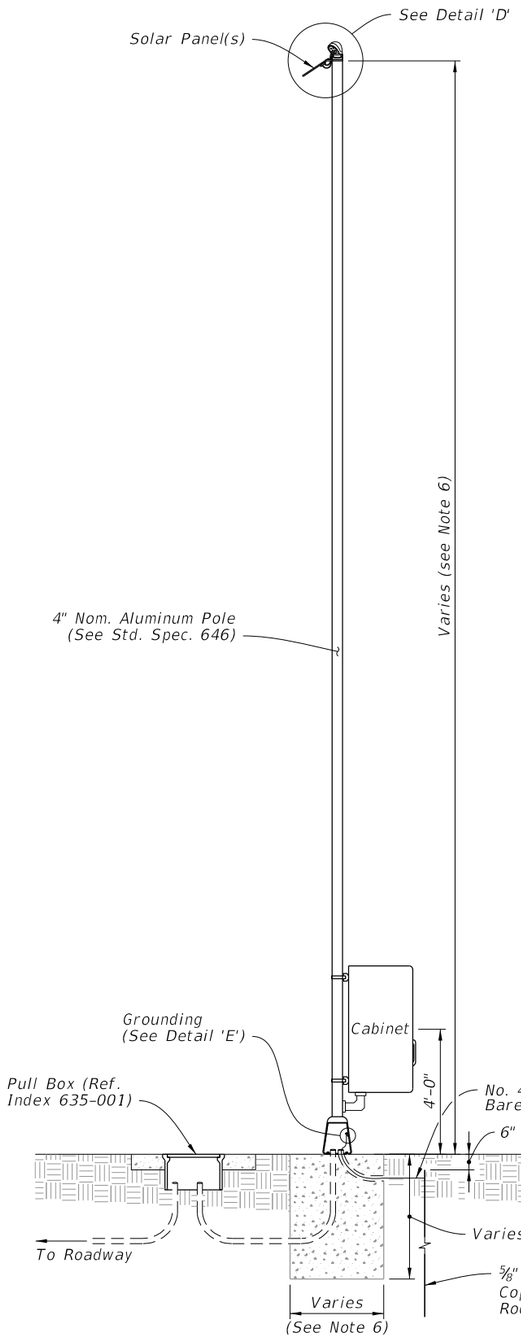
NON-INTRUSIVE VEHICLE SENSOR

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TRAFFIC MONITORING SITE	INDEX	SHEET
11/01/17						695-001	6 of 7



SOLAR POWER POLE
WITH POLE MOUNTED CABINET
(Telemeter Sites)

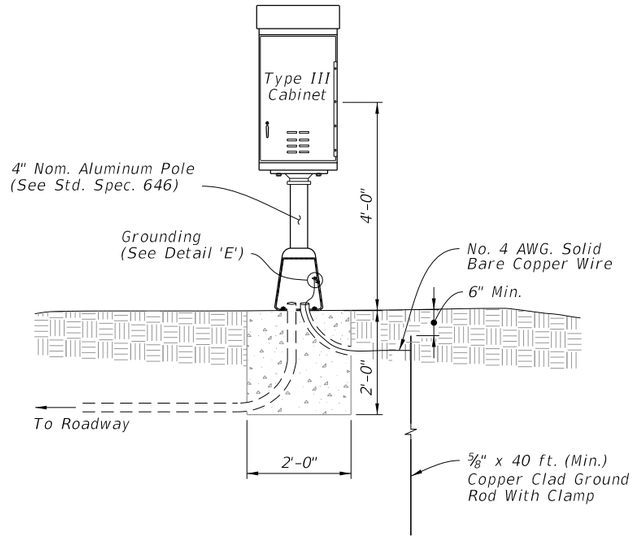
NOTE:

1. Cabinet installed per Index 676-010 except cabinet center will be 4 feet above grade.
2. Place pole in accordance with the Standard Specification 125.4 and 125.8.2.
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 Requirements:

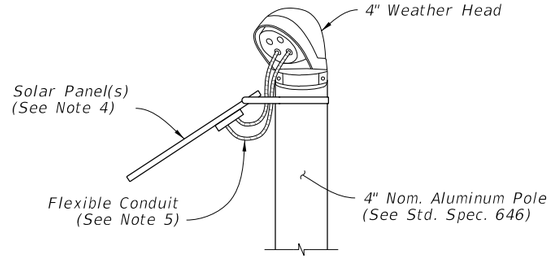
   a. 4' poles: 2'-0" X 2'-0" wide, a depth of 2'-0"

   b. 12', 15' or 20' poles: 3'-0" X 3'-0" wide, a depth of 3'-0"

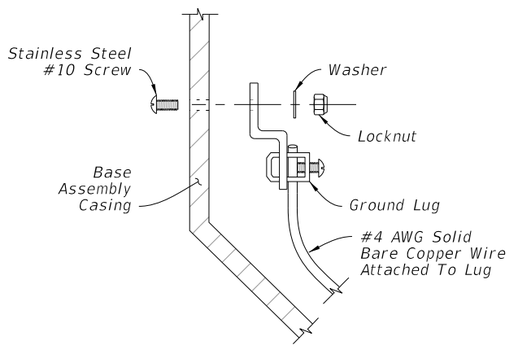
   c. 30' or 35' poles: 3'-0" X 3'-0" wide, a depth of 4'-0"



PEDESTAL MOUNTED CABINET
(Portable Traffic Monitoring Sites)



DETAIL 'D'



DETAIL 'E'

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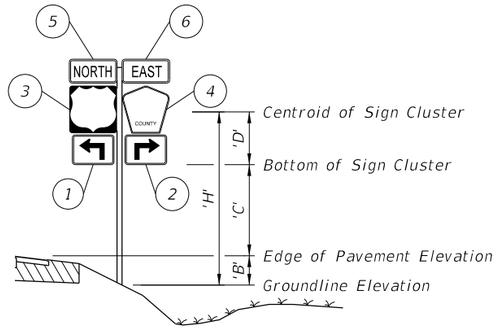
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	TRAFFIC MONITORING SITE	INDEX	SHEET
11/01/17					695-001	7 of 7

STEP 1: *Calculate the area and the centroid for an individual sign or a sign cluster. Note that the centroid and areas have been calculated for frequently used sign clusters. These are shown on Sheets 7, 8, and 9.*



	Size a x h	Centroid: Local $'Y_n'$	Centroid: Global $'X_n'$	Centroid: 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 in.² = 15.4 ft.² $\quad \Sigma\ ('X_n' \times 'A_n')$ = –1,890 in.³ = –1.09 ft.³ $\quad \Sigma\ ('Y_n' \times 'A_n')$ = 60,133 in.³ = 34.8 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 ft., Y_c' = 'D' 2.26 ft.

'H' = 'B' + 'C' + 'D' = 10.26 ft. ==> USE 11 ft. $\quad \Sigma\ ('A_n')$ = 15.4 ft.² ==> USE 16 ft.²

STEP 3: *Refer to the Aluminum Column (Post) Selection Tables and find the intersection point. See Sheet 3.*

ALUMINUM COLUMN (POST) SELECTION TABLE

TOTAL PANEL AREA (SF) \ 'H' (FT)	8 ft	9 ft	10 ft	11 ft	12 ft	13 ft	14 ft	15 ft	16 ft	17 ft	18 ft	19 ft	20 ft
3 sf	2	2.5	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5
4 sf	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
5 sf	2.5	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
6 sf	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4
7 sf	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4
8 sf	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4
9 sf	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
10 sf	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5
11 sf	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5
12 sf	3.5	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5
13 sf	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5	5
14 sf	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5
15 sf	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5	5
16 sf	3.5	4	4	4	4	4	4	4.5	4.5	5	5	5	6
17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
18 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6
19 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6	6
20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
22 sf	4	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6
23 sf	4	4	4	4.5	4.5	5	5	5	6	6	6	6	6
24 sf	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6	6
25 sf	4	4	4.5	4.5	5	5	5	6	6	6	6	6	8
26 sf	4	4.5	4.5	4.5	5	5	5	6	6	6	6	8	8
27 sf	4	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8
28 sf	4	4.5	4.5	5	5	5	6	6	6	6	6	8	8
29 sf	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8	8
30 sf	4.5	4.5	5	5	5	6	6	6	6	6	8	8	8

For 'H' = 11 ft., Area = 16 ft.²

- *Refer to the Aluminum Column (Post) Selection Table, from Sheet 3 and shown here for reference.*
- *To determine the required post size, find the intersection of the row labeled "16 SF" and the column labeled "11 FT". For the example the intersection value is "4" (4" OD).*
- *In the Column (Post) and Foundation Table, the value "4" shows the design requires a 4.0" diameter and ¼" thick Aluminum Column (Post) and a 2.0' diameter and 3.5' deep Concrete Foundation and 3.0' Stub.*

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:

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 B308 Alloy 6061–T6*
   - *D. Cast Aluminum: ASTM B26 Alloy A356–T6*
   - *E. Aluminum Weld Material: ER 5556 or 5356*

3. *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*

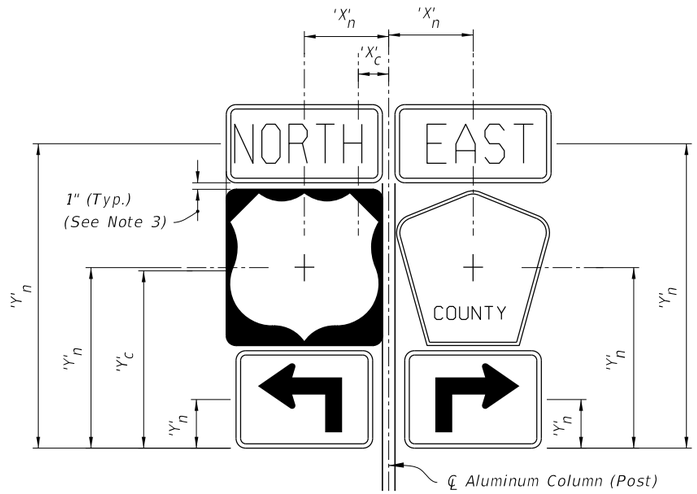
4. *Stainless Steel Bolts, Nuts and Washers may be used in lieu of the Aluminum button head and flat head bolts as follows:*
   - *A. Stainless Steel Bolts: ASTM F 593 Alloy Group 2, Condition A, CW1 or SH1*
   - *B. Stainless Steel Nuts: ASTM F594*

5. *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.*
   - *B . Aluminum Bolts (Sleeve): ASTM F468, Alloy 6061–T6 or 2024–T4 with Hex Nuts F467 6061–T6 or 6262–T9 and Washers B221, Alclad 2024–T4*
   - *C. Galvanized High Strength Hex Head Bolts (BaseBolts): ASTM F3125, Grade A325, Type 1*
   - *D. Galvanized Hex Nuts: ASTM A563 Grade DH*
   - *E. Galvanized Washers: ASTM F436*
   - *F. Galvanized Bolts (Sleeve): ASTM A307 with Galvanized Hex Nuts and Washers*

6. *Coatings:*
   - *A. Aluminum Fasteners: Anodic coating (0.0002 inches min.) 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*

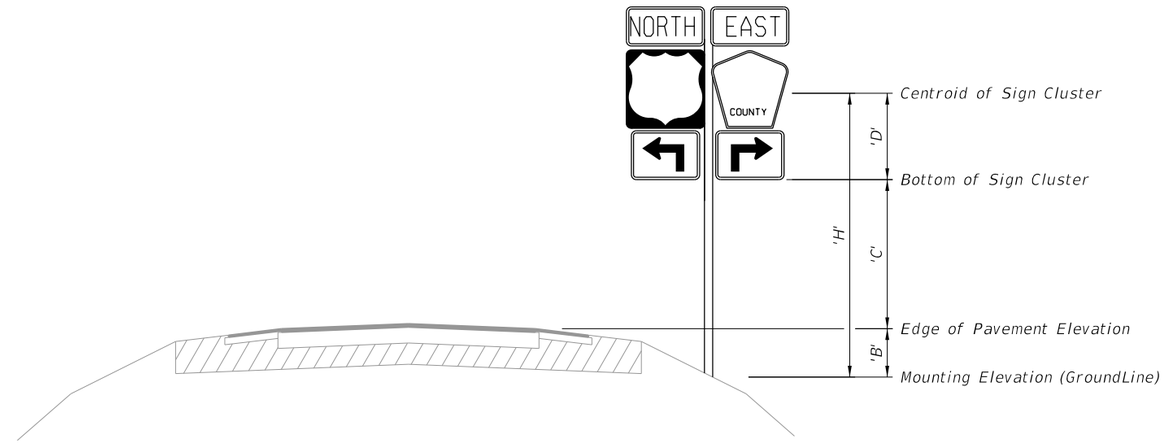
7. *BREAKAWAY SUPPORTS REQUIREMENTS: Install non–frangible aluminum column (post) (larger than 3½") with breakaway supports as shown on Sheet 4. Signs shielded by barrier wall or guardrail do not require breakaway support.*

GENERAL NOTES AND DESIGN EXAMPLE



SIGN CLUSTER

$$'X'_c = \frac{\Sigma\ (\ 'X'_n \times 'A'_n\ )}{\Sigma\ 'A'_n} \qquad 'C' = 'Y'_c = \frac{\Sigma\ (\ 'Y'_n \times 'A'_n\ )}{\Sigma\ 'A'_n}$$



TYPICAL SECTION

'A'n = Area of individual sign

'B' = Height of the edge of pavement from the mounting elevation

'C' = Height of the the bottom of the sign or cluster from the edge of pavement elevation

'D' = Height of the centroid of the sign or cluster from the bottom of the sign or cluster

h = Individual sign height

'H' = Height of sign or cluster centroid from groundline

a = Individual sign width

'X'c = Centroid horizontal location of sign or cluster from ℄ Aluminum Column (Post)

'Y'c = Centroid height of sign or cluster from bottom of sign cluster

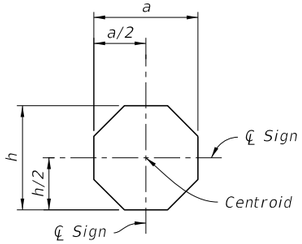
'X'n = Individual sign centroid horizontal location from ℄ Aluminum Column (Post)

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

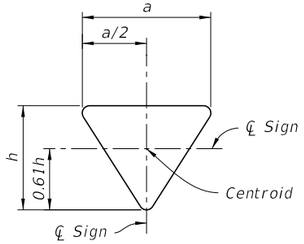
NOTES:

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.

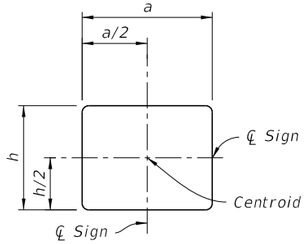
CALCULATION OF SIGN CLUSTER CENTROID



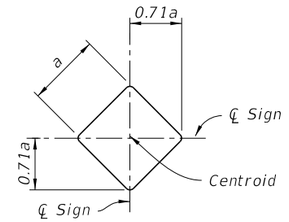
STOP



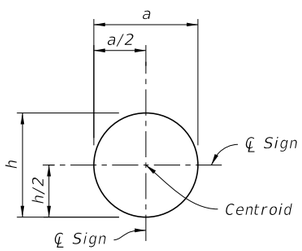
YIELD



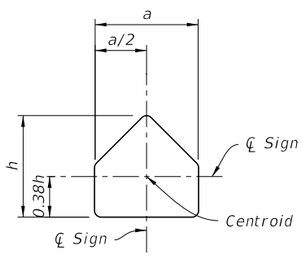
RECTANGLE



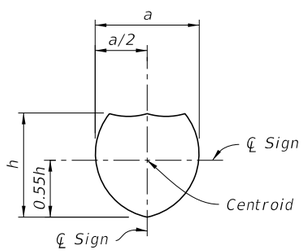
DIAMOND



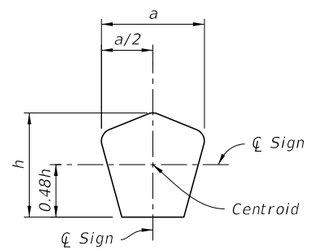
RAILROAD



SCHOOL



SHIELD



COUNTY

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DESIGN EXAMPLE - CENTROID

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FY 2020-21 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	700-010	2 of 10

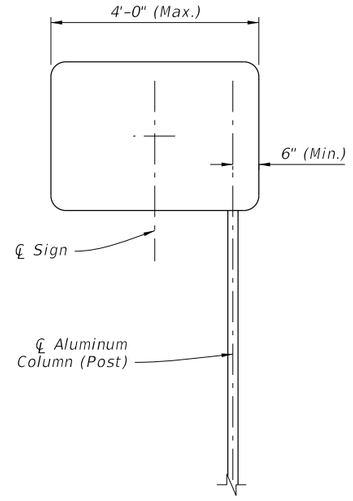
ALUMINUM COLUMN (POST) SELECTION TABLE (O.D. in.)

TOTAL PANEL AREA (SF)	'H' (FT) 8 ft	9 ft	10 ft	11 ft	12 ft	13 ft	14 ft	15 ft	16 ft	17 ft	18 ft	19 ft	20 ft
3 sf	2	2.5	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5
4 sf	2.5	2.5	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
5 sf	2.5	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
6 sf	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4
7 sf	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4
8 sf	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4
9 sf	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
10 sf	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5
11 sf	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5
12 sf	3.5	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5
13 sf	3.5	3.5	4	4	4	4	4	4	4	4.5	4.5	4.5	5
14 sf	3.5	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5
15 sf	3.5	4	4	4	4	4	4	4.5	4.5	4.5	5	5	5
16 sf	3.5	4	4	4	4	4	4	4.5	4.5	5	5	5	6
17 sf	4	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6
18 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6
19 sf	4	4	4	4	4	4.5	4.5	4.5	5	5	6	6	6
20 sf	4	4	4	4	4.5	4.5	4.5	5	5	5	6	6	6
21 sf	4	4	4	4	4.5	4.5	5	5	5	6	6	6	6
22 sf	4	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6
23 sf	4	4	4	4.5	4.5	5	5	5	6	6	6	6	6
24 sf	4	4	4.5	4.5	4.5	5	5	6	6	6	6	6	6
25 sf	4	4	4.5	4.5	5	5	5	6	6	6	6	6	8
26 sf	4	4.5	4.5	4.5	5	5	5	6	6	6	6	8	8
27 sf	4	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8
28 sf	4	4.5	4.5	5	5	5	6	6	6	6	6	8	8
29 sf	4.5	4.5	4.5	5	5	6	6	6	6	6	8	8	8
30 sf	4.5	4.5	5	5	5	6	6	6	6	6	8	8	8

FOUNDATION TABLE

Column (Post) Size		Foundation Alternatives				
		Driven Post *		Concrete (Class I)		
Outside Diameter (in)	Wall Thk. (in)	Embedment Depth (ft) without Soil Plate	Embedment Depth (ft) with Soil Plate	Diameter (ft)	Embedment Depth (ft)	Stub 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) 3½" O.D. and less are considered frangible and may be installed either by driving the post or setting the posts in preformed holes. Backfill preformed holes with suitable material tamped in layers not thicker than 6" (to provide adequate compaction) or filled with flowable fill or bagged concrete.



OFFSET SIGN

NOTE:
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.

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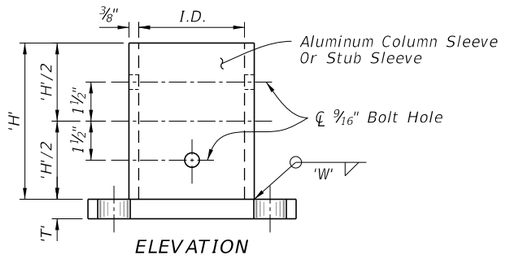
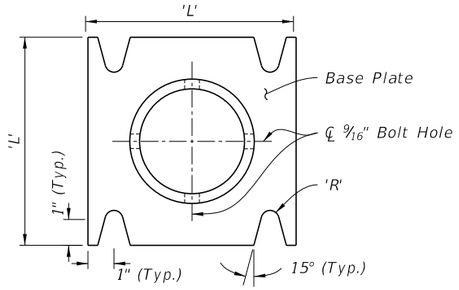
COLUMN AND FOUNDATION TABLES



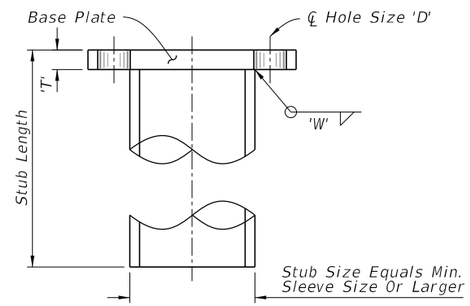
ELEVATION



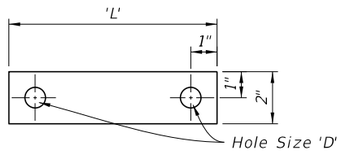
PLAN

(Welded Or Sandcast)

STUB/SLEEVE & BASE PLATE DETAILS

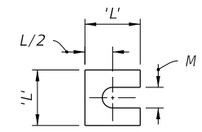


(Welded)



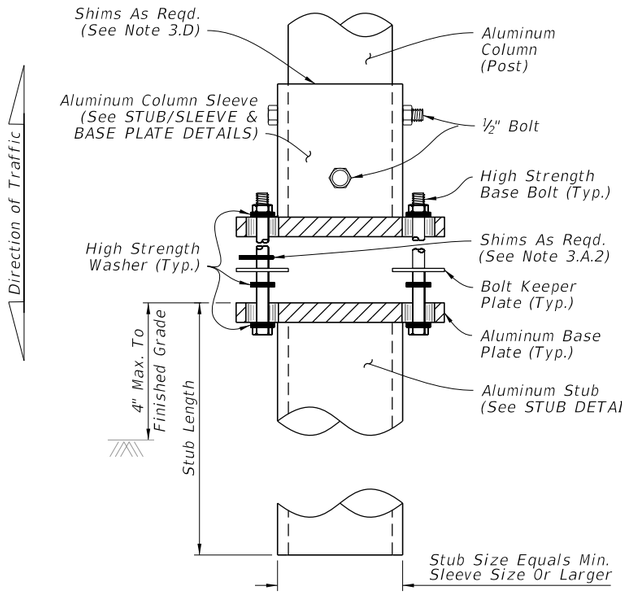
28 Ga. Thick Aluminum Strip
2 Reqd. Per Base

BOLT KEEPER PLATE DETAIL

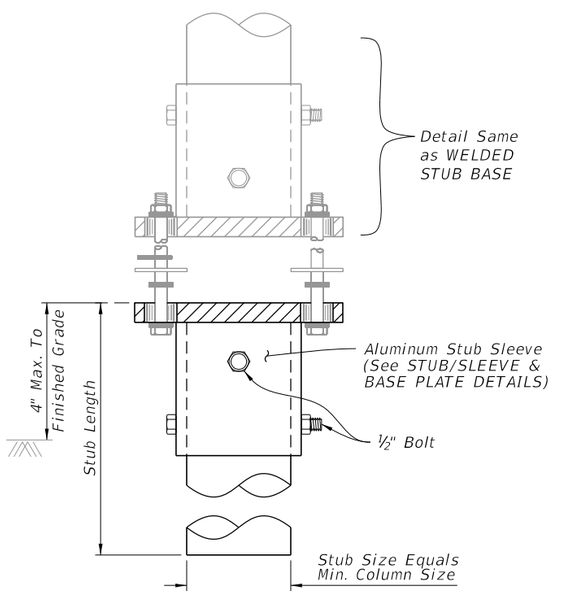


Provide 2~0.0149" Thick (28 gauge)
and 2~0.0329" Thick (21 gauge)
Brass Shims Per Post

SHIM DETAIL

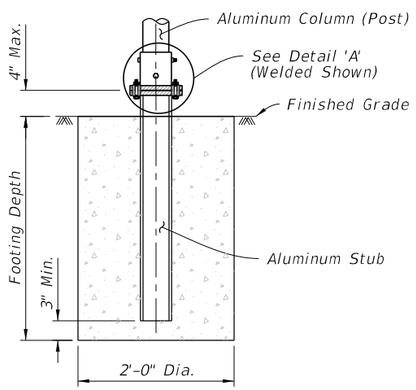


WELDED STUB BASE

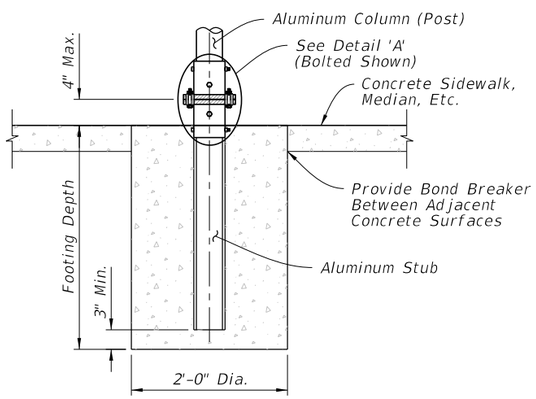


BOLTED STUB/SLEEVE BASE

STUB DETAIL



DETAIL 'A'



SLIP BASE AND FOUNDATION DETAIL
(Non-Frangible Column, Typ.)

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

NOTES:

1. Foundation Notes for Slip Base:

   A. Place Stub into concrete foundation given in the FOUNDATION TABLE using Class I Concrete.

2. Slip Base Fabrication Notes:

   A. The difference between the O.D. of the post and I.D. of the Sleeve must be 1/16" or less.

   B. Either a Welded Stub Base or Bolted Stub/Sleeve Base may be used in Slip Base.

   C. 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 ~ ½" 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'	Weld 'W'	Base Plate 'L'	Base Plate 'T'	Radius 'R'	Base Bolt Size	Base Bolt Length	Base Plate Torque ft-lbs	Base Plate Torque in.-lbs	Hole Size 'D'	SHIM L	SHIM M
4"	¼"	4 1/16"	6"	¼"	8"	¾"	1 1/32"	⅝"	3"	29	345	1 1/16"	1 3/8"	1 1/16"
4½"	¼"	4 9/16"	6"	¼"	8"	⅞"	1 1/32"	⅝"	3¼"	29	345	1 1/16"	1 3/8"	1 1/16"
5"	¼"	5 1/16"	7"	¼"	8"	⅞"	1 1/32"	⅝"	3¼"	29	345	1 1/16"	1 3/8"	1 1/16"
6"	¼"	6 1/16"	8"	¼"	9"	1"	1 3/32"	¾"	3½"	46	554	1 3/16"	1 3/4"	1 3/16"
8"	¼"	8 1/16"	10"	¼"	11"	1"	1 5/32"	⅞"	3¾"	53	640	1 5/16"	2⅜"	1 1/16"

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SLIP BASE AND FOUNDATION DETAILS

LAST REVISION	REVISION	DESCRIPTION:			
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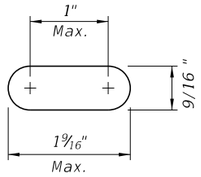
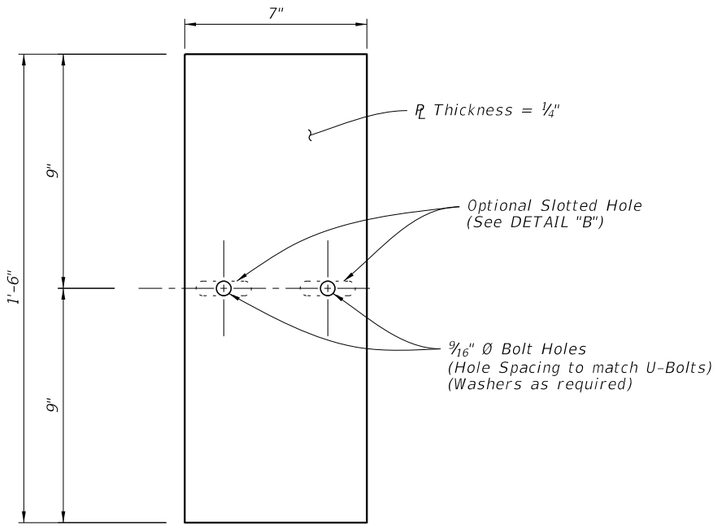
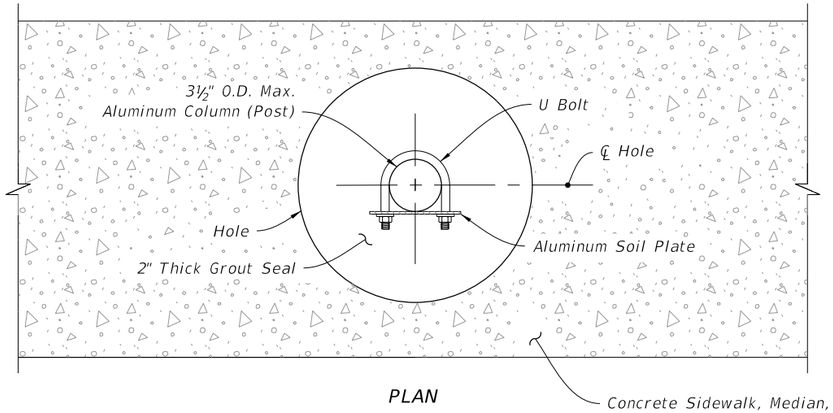


Optional Slotted Holes

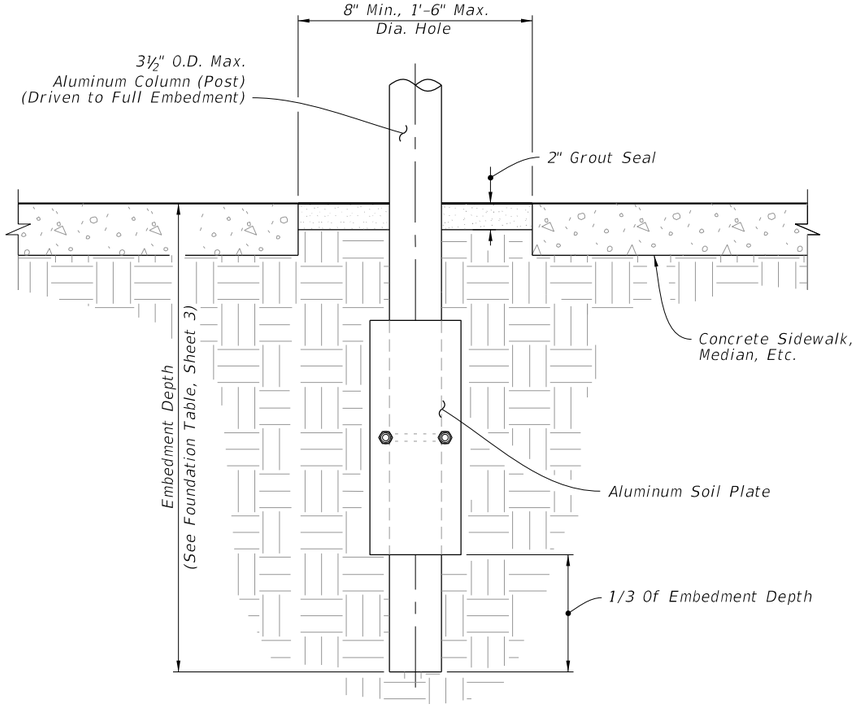
DETAIL "B"



ALUMINUM SOIL PLATE DETAIL



PLAN



ELEVATION

DRIVEN POST DETAIL

(Frangible Post In Crossovers, Medians & Sidewalks)

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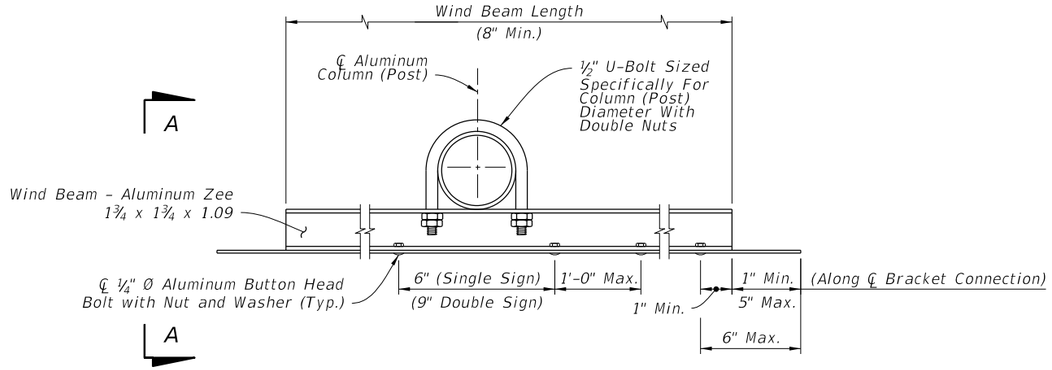
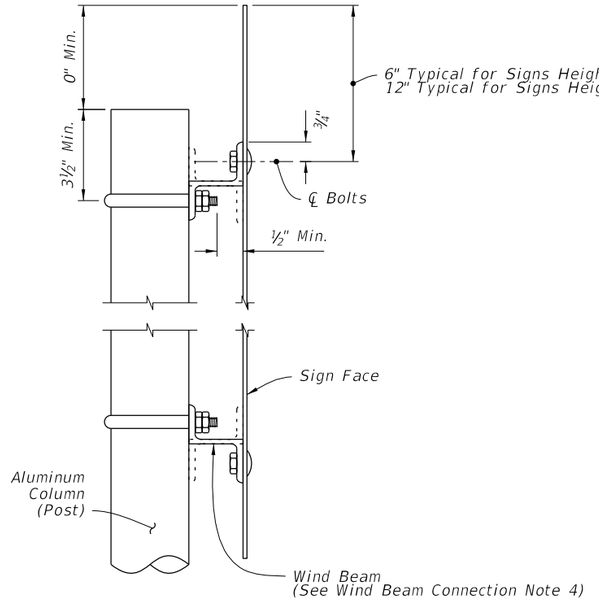
DRIVEN POST AND SOIL PLATE DETAIL

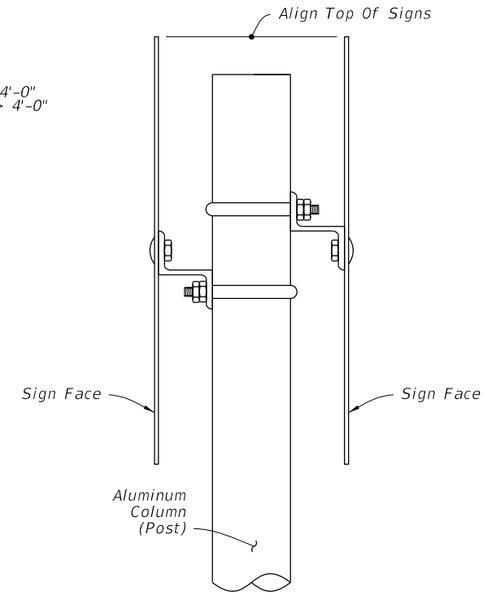
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT	FY 2020-21 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX 700-010 / SHEET 5 of 10



WIND BEAM CONNECTIONS DETAILS



SINGLE SIGN DETAIL



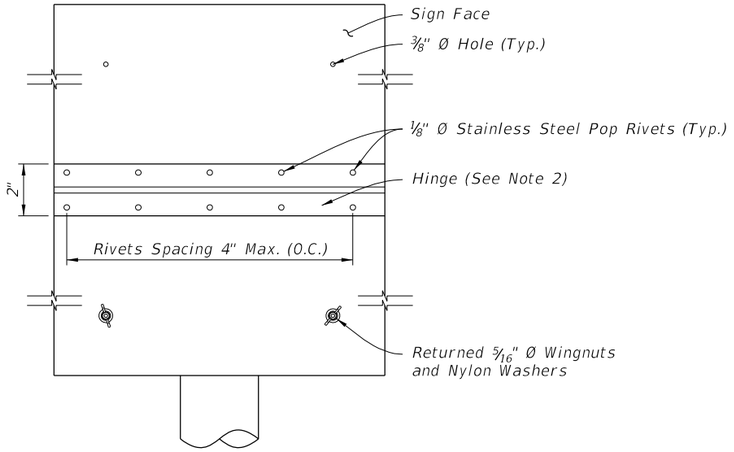
NOTE: Use the area and the centroid location of the largest sign to determine aluminum column (post) size.

BACK-TO-BACK SIGN DETAIL

VIEW A-A

NOTES:

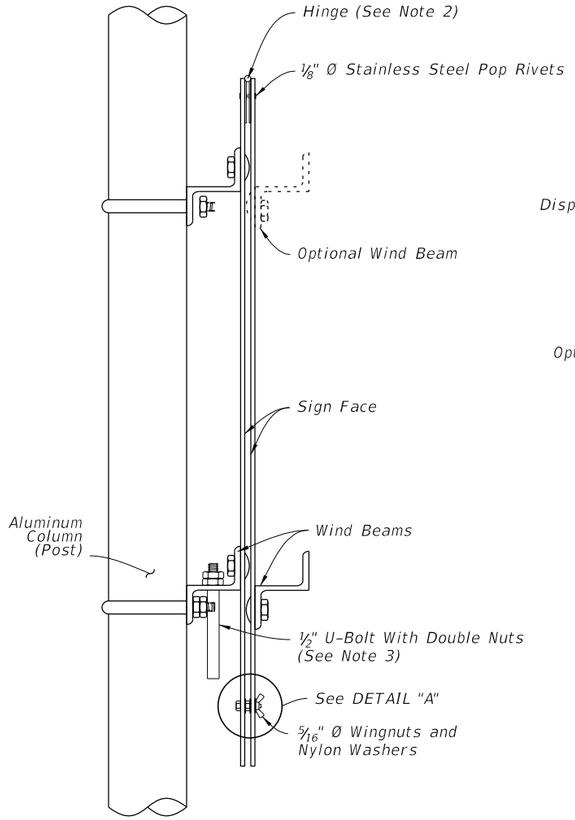
1. $\frac{5}{16}$" Ø stainless steel hex head bolts with nylon washer under head and washer under nut may be used in lieu of ¼" Ø aluminum button or flat head bolts.
2. Use nylon washers (provided by the sheeting supplier) under the bolt heads to protect sign sheeting.
3. Slots up to 2" long are allowed 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".



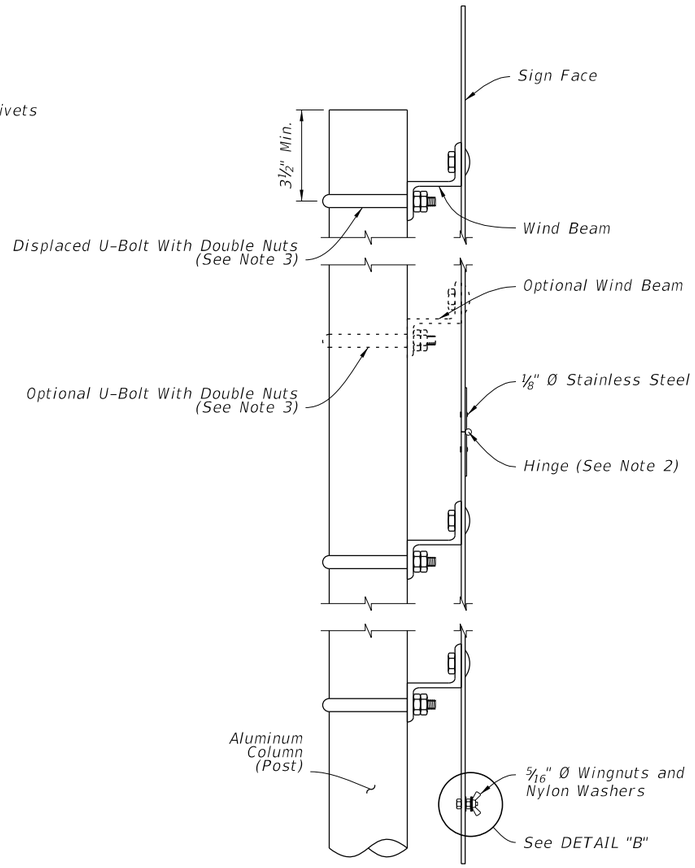
SIGN PANEL FRONT VIEW

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 with double nuts. 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.

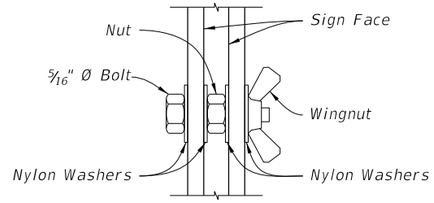


UNDEPLOYED SIGN DETAIL

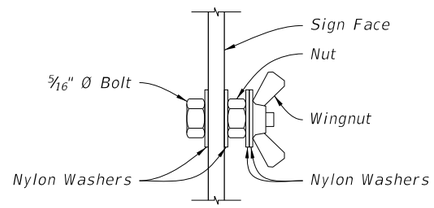


DEPLOYED SIGN DETAIL

SIGN PANEL SIDE VIEW



DETAIL "A"



DETAIL "B"

WIND BEAM CONNECTION FOR FLIP UP SIGN

Size	Area	Total Area	Centroid
36x12	3.00 SF	6.31 SF	1.75 Ft.
24x24	3.31 SF		

Size	Area	Total Area	Centroid
36x12	3.00 SF	8.18 SF	1.92 Ft.
30x30	5.18 SF		

Size	Area	Total Area	Centroid
36x12	3.00 SF	10.46 SF	2.10 Ft.
36x36	7.46 SF		

Size	Area	Total Area	Centroid
36x12	3.00 SF	16.25 SF	2.48 Ft.
48x48	13.25 SF		

Size	Area	Total Area	Centroid
24x24	3.31 SF	6.31 SF	1.71 Ft.
24x18	3.00 SF		

Size	Area	Total Area	Centroid
30x30	5.18 SF	10.18 SF	2.19 Ft.
30x24	5.00 SF		

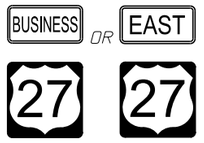
Size	Area	Total Area	Centroid
36x36	7.46 SF	12.46 SF	2.55 Ft.
30x24	5.00 SF		

Size	Area	Total Area	Centroid
36x12	3.00 SF	13.18 SF	2.87 Ft.
30x30	5.18 SF		
30x24	5.00 SF		

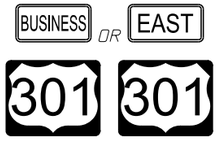
Size	Area	Total Area	Centroid
36x12	3.00 SF	15.46 SF	3.15 Ft.
36x36	7.46 SF		
30x24	5.00 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	6.19 SF	1.60 Ft.
24x24	4.00 SF		

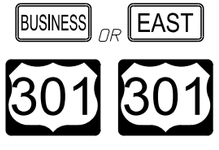
Size	Area	Total Area	Centroid
21x15	2.19 SF	7.19 SF	1.52 Ft.
30x24	5.00 SF		



Size	Area	Total Area	Centroid
24x12	2.00 SF	6.00 SF	1.53 Ft.
24x24	4.00 SF		



Size	Area	Total Area	Centroid
24x12	2.00 SF	7.00 SF	1.45 Ft.
30x24	5.00 SF		

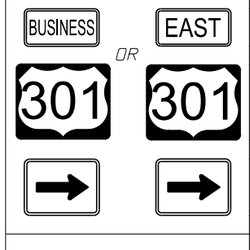


Size	Area	Total Area	Centroid
30x15	3.13 SF	8.13 SF	1.66 Ft.
30x24	5.00 SF		

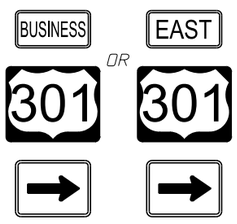
Size	Area	Total Area	Centroid
24x24	4.00 SF	6.19 SF	1.73 Ft.
21x15	2.19 SF		

Size	Area	Total Area	Centroid
30x24	5.00 SF	7.19 SF	1.81 Ft.
21x15	2.19 SF		

Size	Area	Total Area	Centroid
24x12	2.00 SF	8.19 SF	2.26 Ft.
24x24	4.00 SF		
21x15	2.19 SF		



Size	Area	Total Area	Centroid
24x12	2.00 SF	9.19 SF	2.27 Ft.
30x24	5.00 SF		
21x15	2.19 SF		



Size	Area	Total Area	Centroid
30x15	3.13 SF	10.32 SF	2.49 Ft.
30x24	5.00 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
24x12	2.00 SF	10.19 SF	2.80 Ft.
24x12	2.00 SF		
24x24	4.00 SF		
21x15	2.19 SF		

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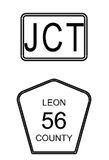
Size	Area	Total Area	Centroid
24x12	2.00 SF	11.19 SF	2.76 Ft.
24x12	2.00 SF		
30x24	5.00 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
30x15	3.13 SF	13.45 SF	3.16 Ft.
30x15	3.13 SF		
30x24	5.00 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	3.90 SF	1.57 Ft.
18x18	1.71 SF		



Size	Area	Total Area	Centroid
21x15	2.19 SF	5.22 SF	1.72 Ft.
24x24	3.03 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	6.95 SF	1.87 Ft.
30x30	4.76 SF		

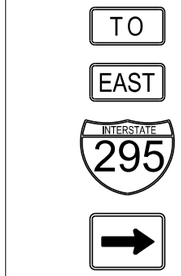
Size	Area	Total Area	Centroid
18x18	1.71 SF	3.90 SF	1.26 Ft.
21x15	2.19 SF		

Size	Area	Total Area	Centroid
24x24	3.03 SF	5.22 SF	1.62 Ft.
21x15	2.19 SF		

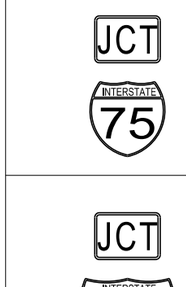
Size	Area	Total Area	Centroid
30x30	4.76 SF	6.95 SF	1.97 Ft.
21x15	2.19 SF		

Size	Area	Total Area	Centroid
24x12	2.00 SF	9.39 SF	2.87 Ft.
24x12	2.00 SF		
24x24	3.20 SF		
21x15	2.19 SF		

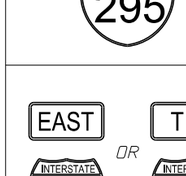
Size	Area	Total Area	Centroid
24x12	2.00 SF	10.18 SF	2.84 Ft.
24x12	2.00 SF		
30x24	3.99 SF		
21x15	2.19 SF		



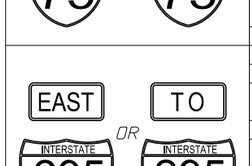
Size	Area	Total Area	Centroid
30x15	3.13 SF	12.44 SF	3.26 Ft.
30x15	3.13 SF		
30x24	3.99 SF		
21x15	2.19 SF		



Size	Area	Total Area	Centroid
21x15	2.19 SF	5.39 SF	1.75 Ft.
24x24	3.20 SF		



Size	Area	Total Area	Centroid
21x15	2.19 SF	6.18 SF	1.67 Ft.
30x24	3.99 SF		



Size	Area	Total Area	Centroid
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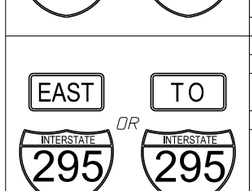
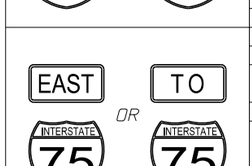
24x24	3.20 SF		



Size	Area	Total Area	Centroid
24x12	2.00 SF	5.99 SF	1.60 Ft.
30x24	3.99 SF		



Size	Area	Total Area	Centroid
30x15	3.13 SF	7.12 SF	1.81 Ft.
30x24	3.99 SF		

Size	Area	Total Area	Centroid
30x15	3.13 SF	10.33 SF	2.27 Ft.
36x36	7.20 SF		

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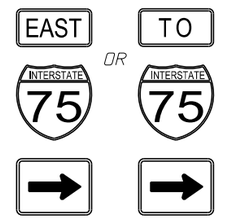
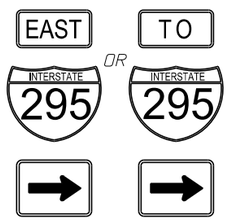
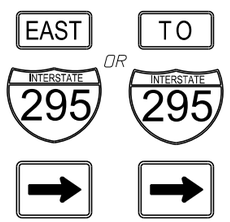
Size	Area	Total Area	Centroid
30x15	3.13 SF	12.12 SF	2.18 Ft.
45x36	8.99 SF		



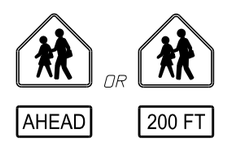
Size	Area	Total Area	Centroid
24x12	2.00 SF	7.39 SF	2.30 Ft.
24x24	3.20 SF		
21x15	2.19 SF		



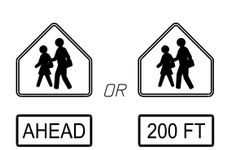
Size	Area	Total Area	Centroid
24x12	2.00 SF	8.18 SF	2.31 Ft.
30x24	3.99 SF		
21x15	2.19 SF		



Size	Area	Total Area	Centroid
30x15	3.13 SF	9.31 SF	2.55 Ft.
30x24	3.99 SF		
21x15	2.19 SF		



Size	Area	Total Area	Centroid
30x30	4.69 SF	6.69 SF	1.61 Ft.
24x12	2.00 SF		



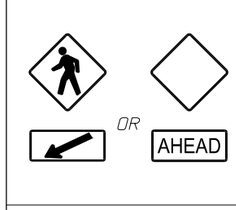
Size	Area	Total Area	Centroid
30x30	4.69 SF	8.44 SF	1.77 Ft.
30x18	3.75 SF		

Size	Area	Total Area	Centroid
36x36	6.75 SF	10.50 SF	2.06 Ft.
30x18	3.75 SF		

Size	Area	Total Area	Centroid
30X30	4.69 SF	6.69 SF	1.61 Ft.
24X12	2.00 SF		

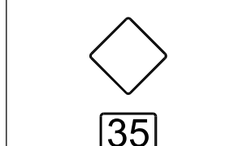
Size	Area	Total Area	Centroid
30X30	4.69 SF	8.44 SF	1.77 Ft.
30X18	3.75 SF		

Size	Area	Total Area	Centroid
36X36	6.75 SF	10.50 SF	2.06 Ft.
30X18	3.75 SF		

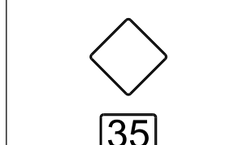


Size	Area	Total Area	Centroid
30X30	6.25 SF	8.25 SF	2.28 Ft.
24X12	2.00 SF		

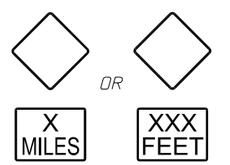
Size	Area	Total Area	Centroid
36X36	9.00 SF	12.75 SF	2.84 Ft.
30X18	3.75 SF		



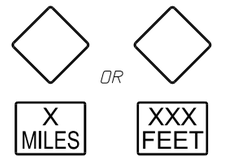
Size	Area	Total Area	Centroid
30X30	6.25 SF	10.25 SF	2.74 Ft.
24X24	4.00 SF		



Size	Area	Total Area	Centroid
36X36	9.00 SF	15.25 SF	3.29 Ft.
30X30	6.25 SF		



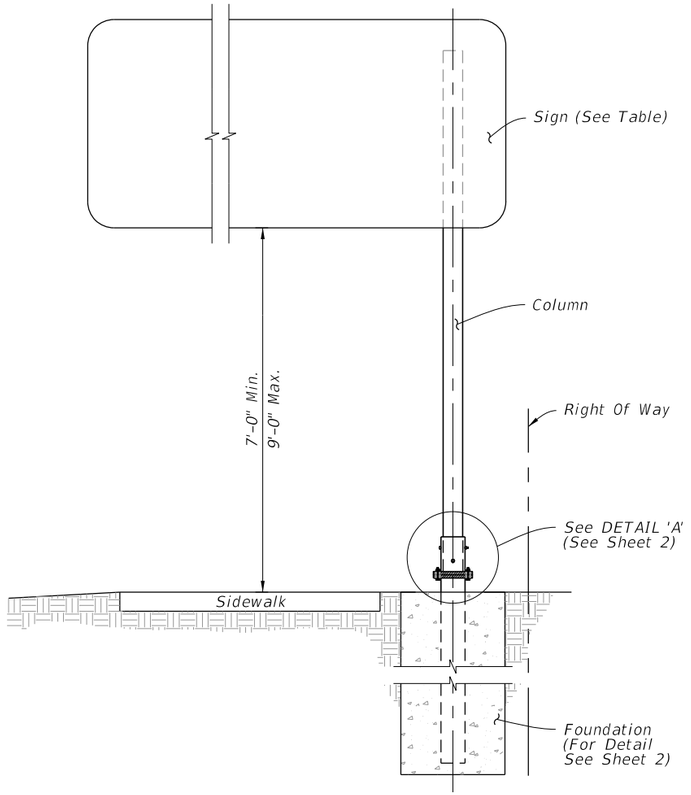
Size	Area	Total Area	Centroid
30X30	6.25 SF	9.25 SF	2.51 Ft.
24X18	3.00 SF		



Size	Area	Total Area	Centroid
36X36	9.00 SF	14.00 SF	3.06 Ft.
30X24	5.00 SF		

10/29/2019 8:23:09 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SINGLE COLUMN GROUND SIGNS	INDEX	SHEET
11/01/19						700-010	10 of 10

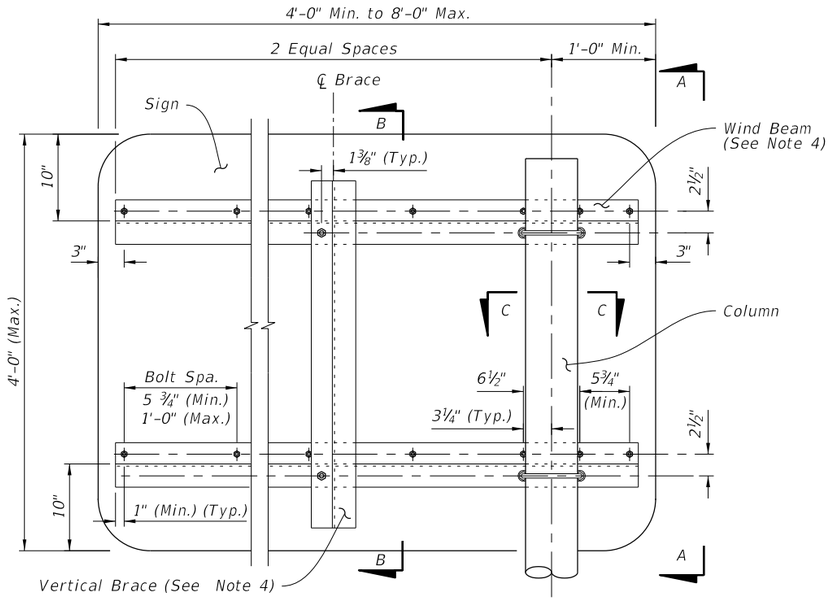


TYPICAL SECTION

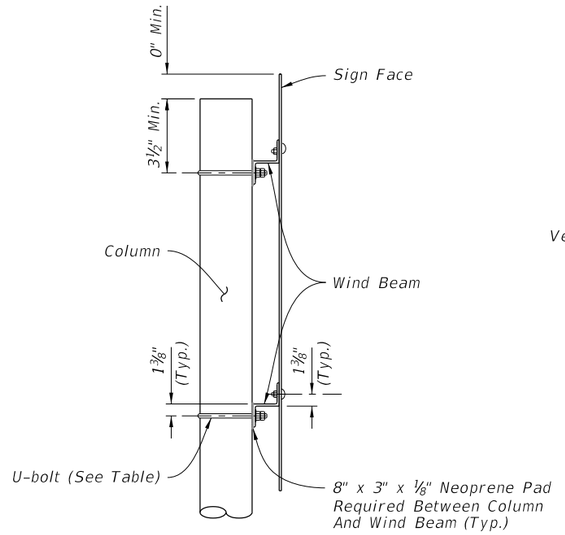
GENERAL NOTES:

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 $2\frac{11}{16}$ 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.

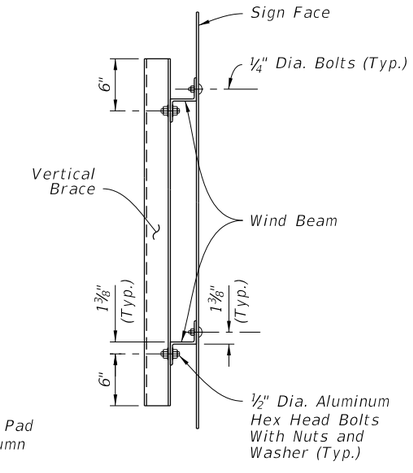
COLUMN SELECTION AND FOOTING SIZE TABLE							
Sign Size Height x Length	Column Size Diameter x Thickness	Sleeve Size Diameter x Thickness	U-bolt Diameter	Base Bolt Diameter x Length	Torque lbs./in	Base Plate Thickness	Footing Depth
4'-0" x 5'-0"	4 NPS Schedule 80 (4.5" x 0.337")	5 NPS Schedule 120 (5.563" x 0.5")	½"	⅝" x 3½"	270 ± 45	1"	6'-0"
4'-0" x 6'-0"							
4'-0" x 7'-0"	5 NPS Schedule 80 (5.563" x 0.375")	6 NPS Schedule 80 (6.625" x 0.432")	⅝"	¾" x 4"	445 ± 75	1⅛"	6'-6"
4'-0" x 8'-0"							7'-0"



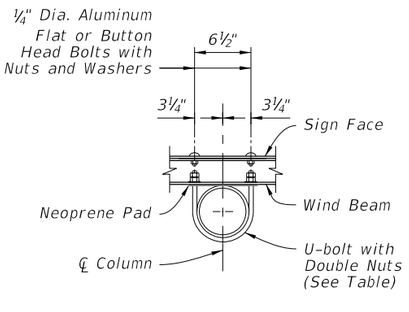
SIGN DETAIL



VIEW A-A



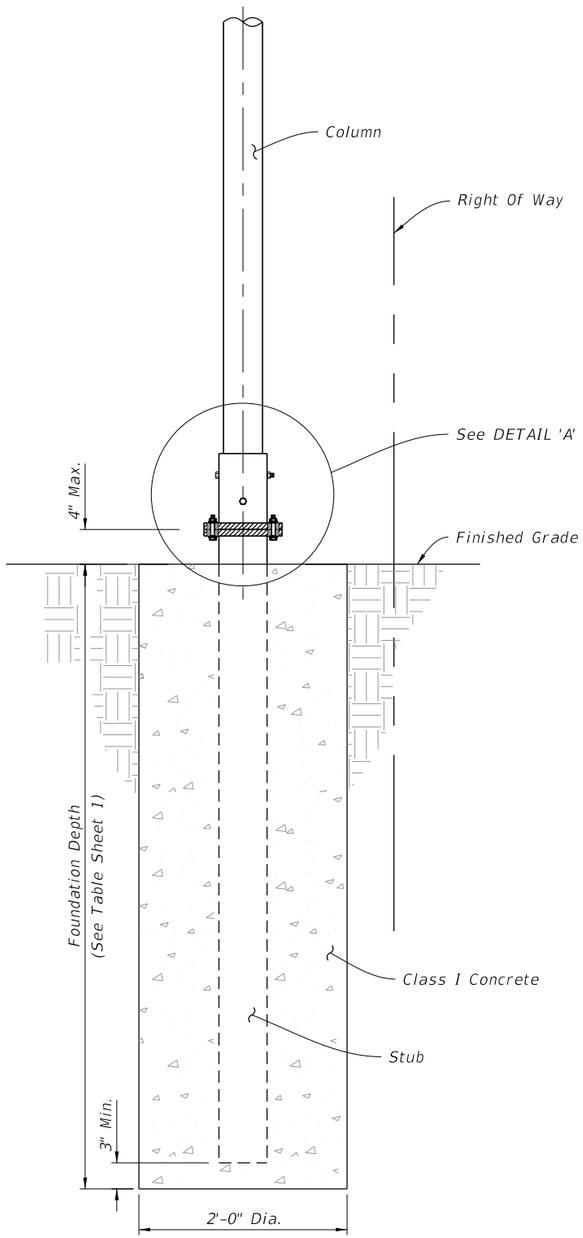
SECTION B-B



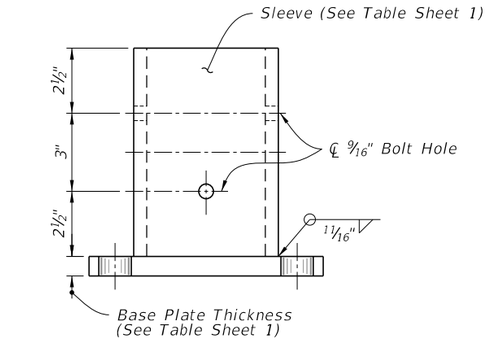
SECTION C-C

10/29/2019 8:23:10 AM

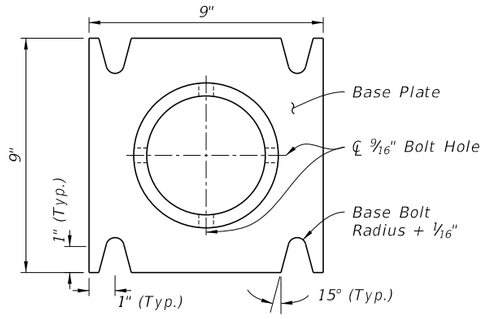
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	SINGLE COLUMN CANTILEVER GROUND MOUNTED SIGN	700-011	1 of 2



BASE AND FOUNDATION DETAIL

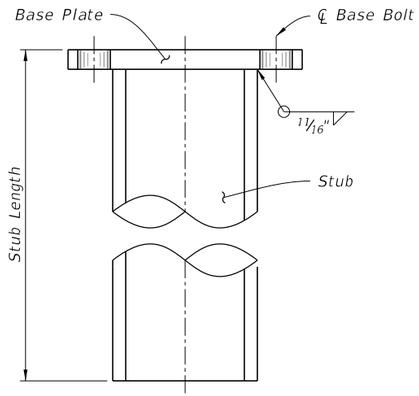


ELEVATION



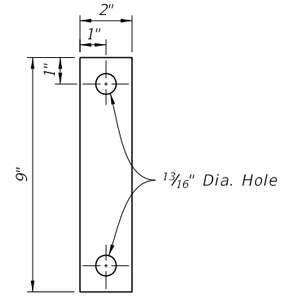
PLAN

SLEEVE & BASE PLATE DETAILS



Stub Size Equals
Min. Sleeve Size

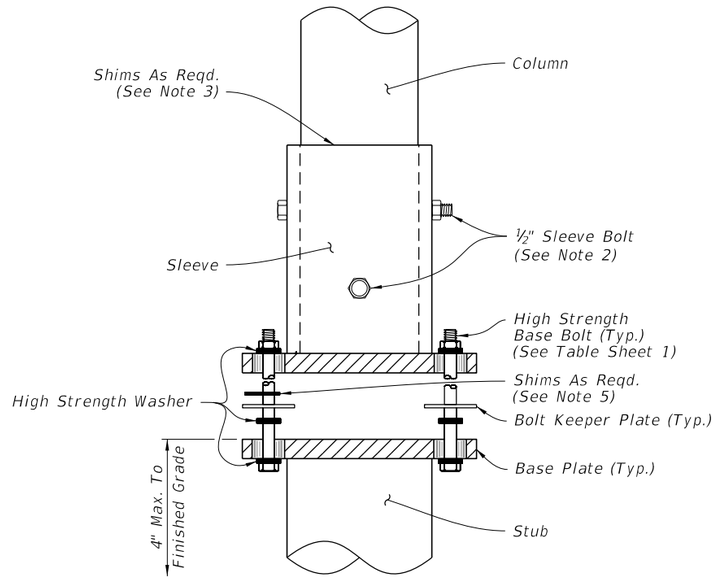
STUB DETAIL



28 Ga. Thick Aluminum Strip
2 Required Per Base

BOLT KEEPER PLATE DETAIL

Direction of Traffic



DETAIL 'A'

10/29/2019 8:23:11 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SINGLE COLUMN CANTILEVER GROUND MOUNTED SIGN	INDEX	SHEET
11/01/18						700-011	2 of 2

NOTES:

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 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. 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 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

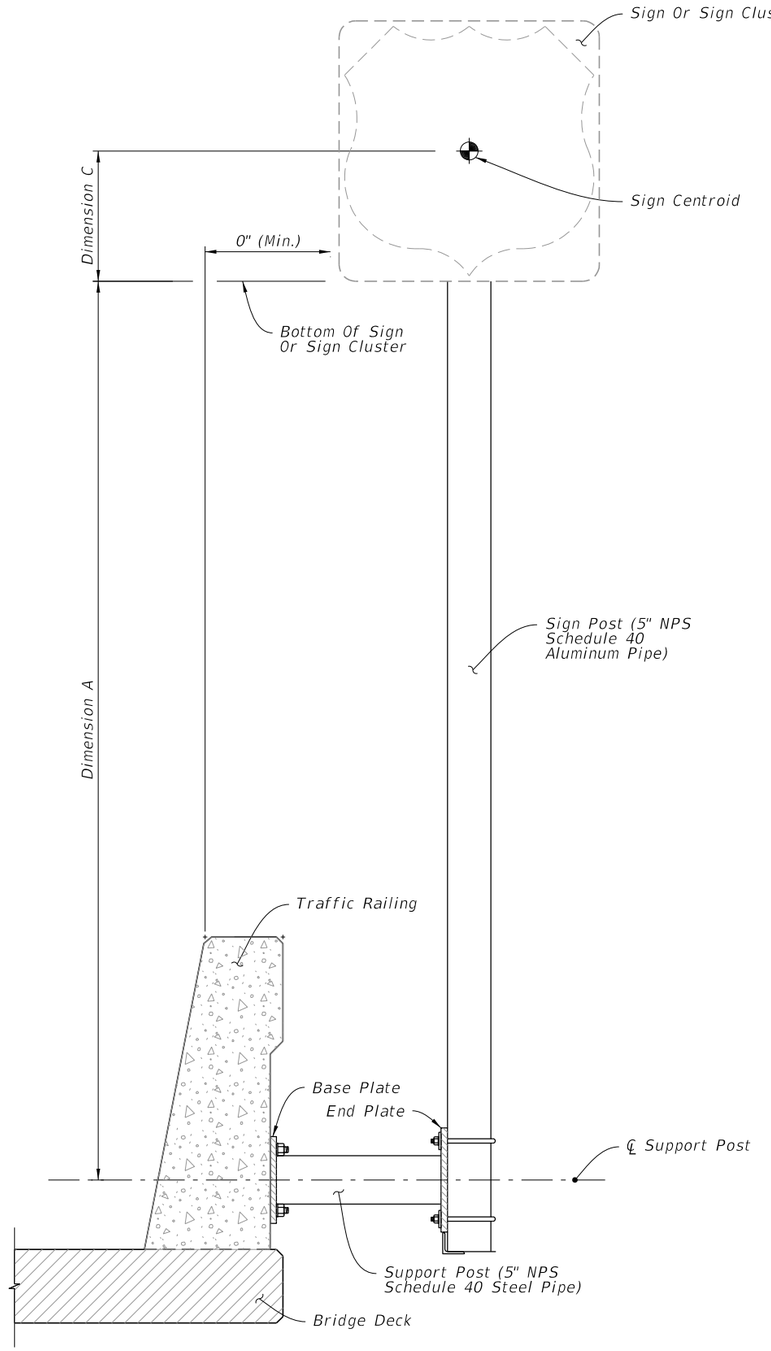
8. Payment:

   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.

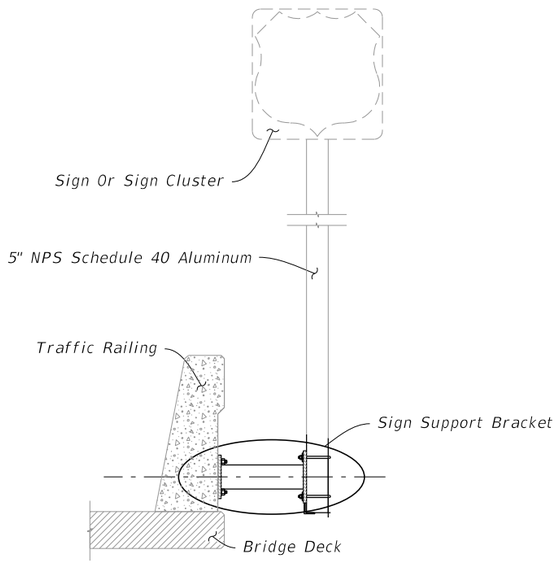
Dimension C = Vertical distance from the bottom of the sign or sign cluster to the Centroid of the sign or sign cluster.

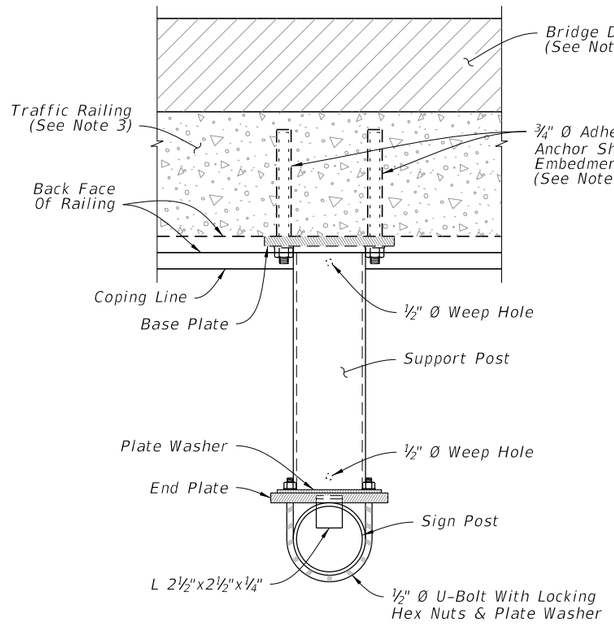


SIGN SUPPORT ASSEMBLY

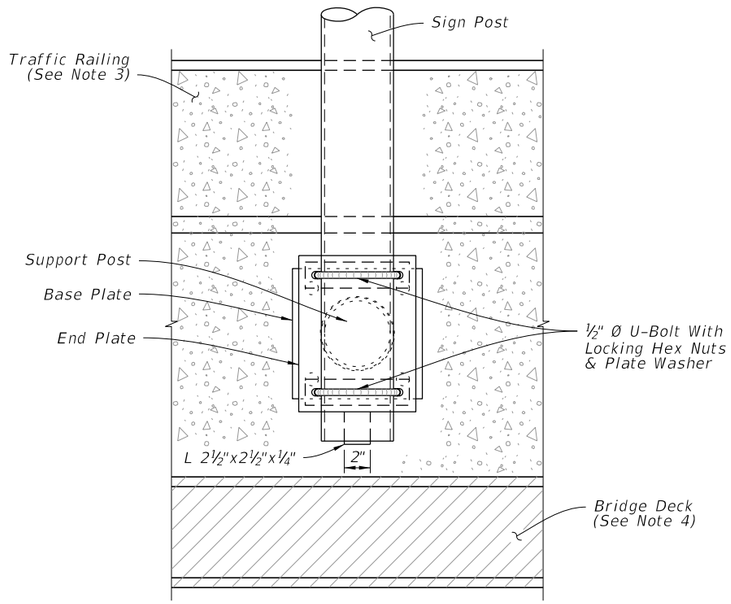
10/29/2019 8:23:12 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SINGLE POST BRIDGE MOUNTED SIGN SUPPORT	INDEX	SHEET
11/01/18						700-012	1 of 3





PLAN



ELEVATION

SIGN SUPPORT BRACKET

NOTES:

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 1½" beyond traffic face of railing.

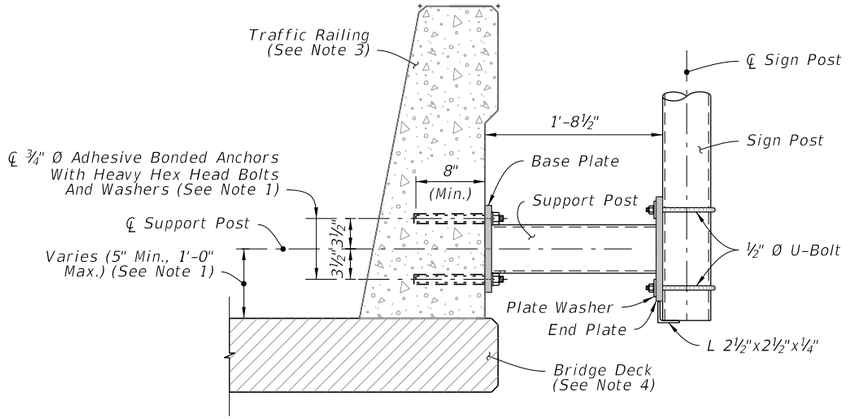
   C. For through bolting, countersink the nut and washer so that the bolt and nut does not extend beyond the face of the traffic railing. Do not exceed a countersink depth and diameter of 2½".

2. New Traffic Railings:

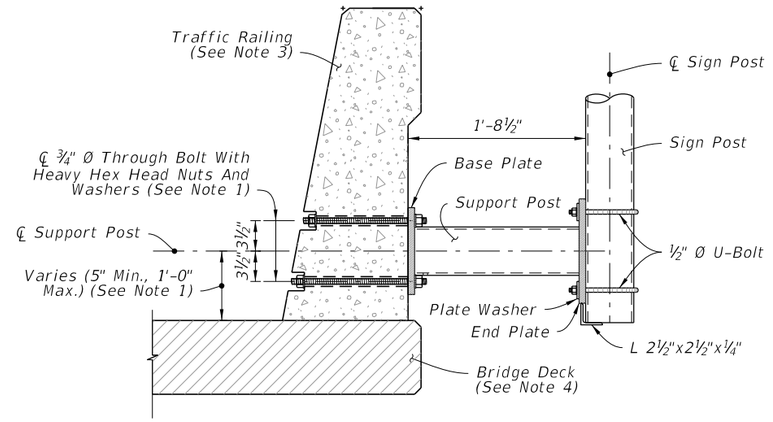
   A. Optional Couplers are shown for slipforming; keep Anchor Bolt coupler threads free of concrete.

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.

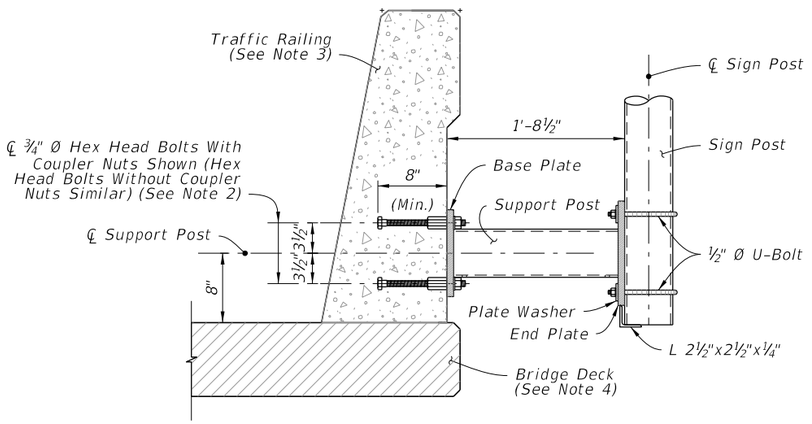


ADHESIVE BOND



THROUGH BOLTING

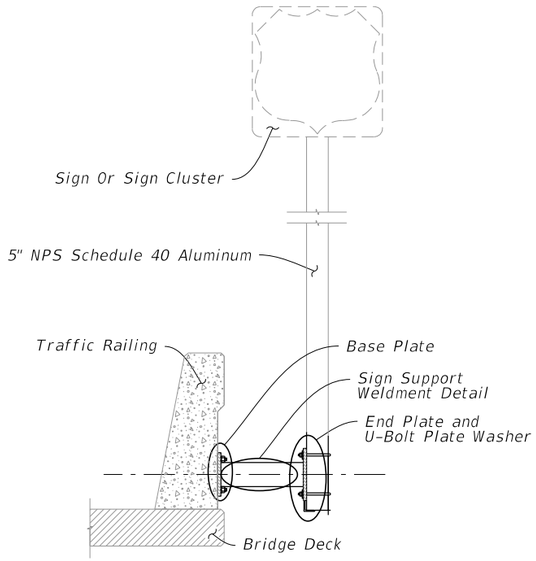
TYPICAL SECTION - EXISTING RAILING



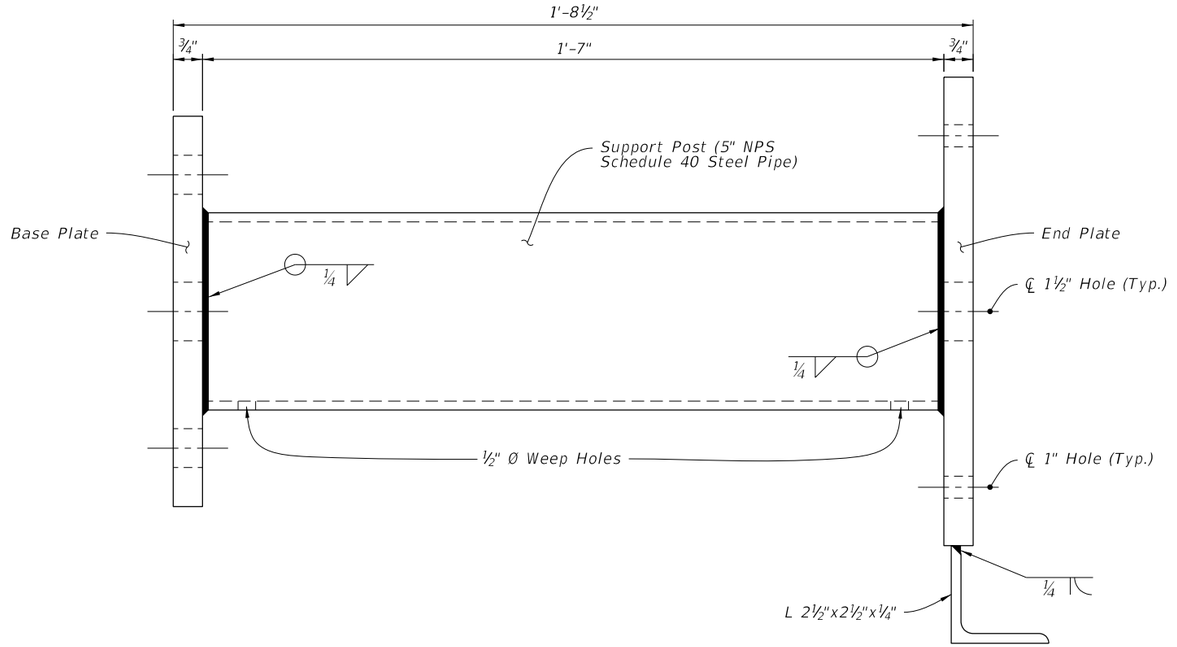
TYPICAL SECTION - NEW CONSTRUCTION

10/29/2019 8:23:13 AM

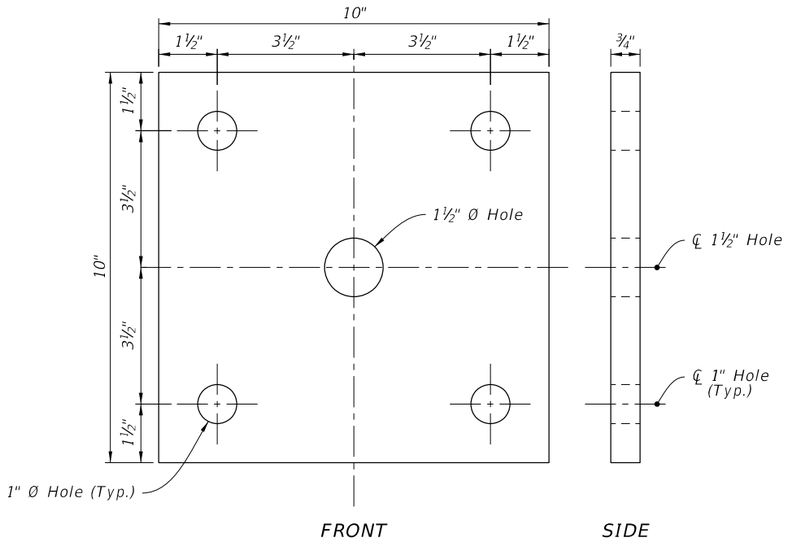
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SINGLE POST BRIDGE MOUNTED SIGN SUPPORT	INDEX	SHEET
11/01/17						700-012	2 of 3



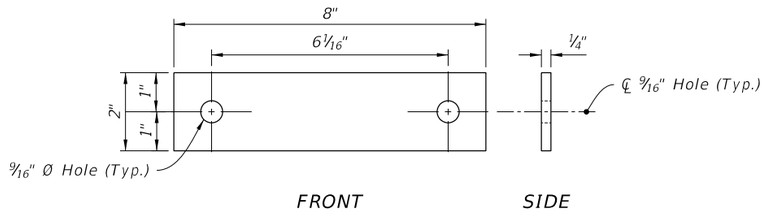
SIGN SUPPORT ASSEMBLY



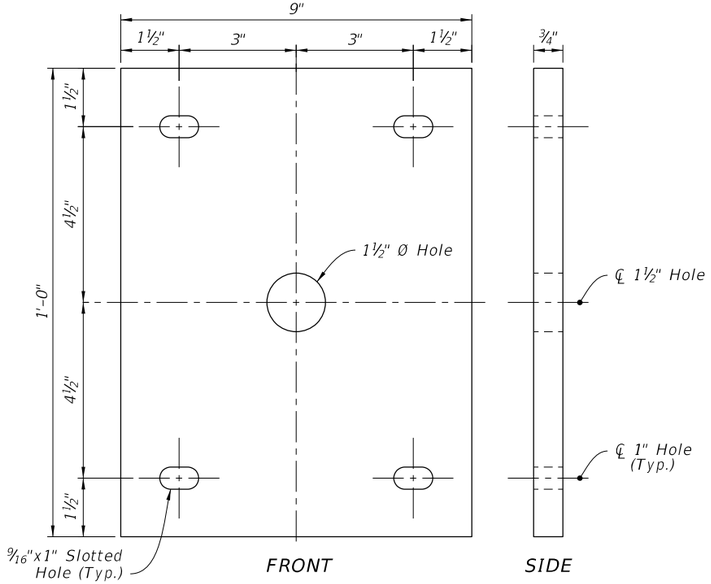
SIGN SUPPORT WELDMENT DETAIL



BASE PLATE



U-BOLT PLATE WASHER



END PLATE

10/29/2019 8:23:15 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	SINGLE POST BRIDGE MOUNTED SIGN SUPPORT	INDEX 700-012	SHEET 3 of 3

NOTES:

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

4. Coating:

   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

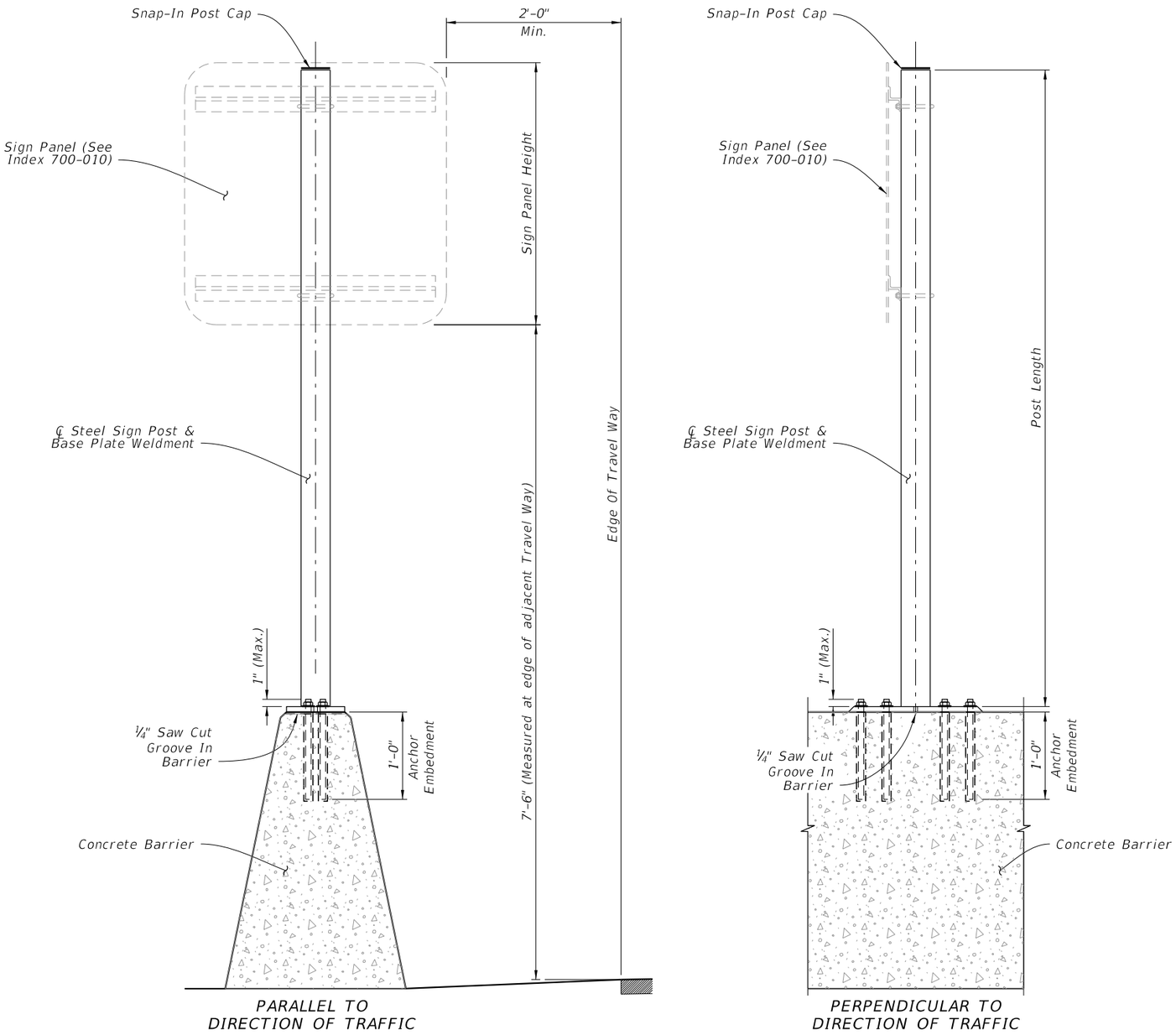
7. Removal of Temporary Signs on Permanent Traffic Railings:

   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

8. Payment:

   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
	13.5 < Sign < 20	3.5

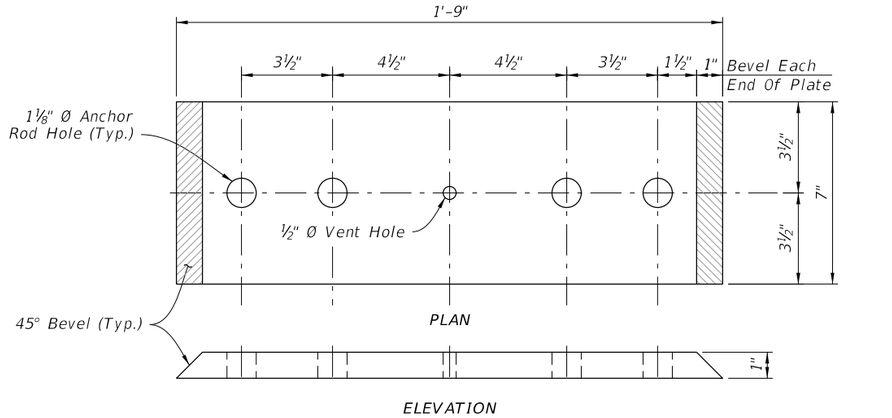


(Index 521-001 Median Barrier shown; others similar)

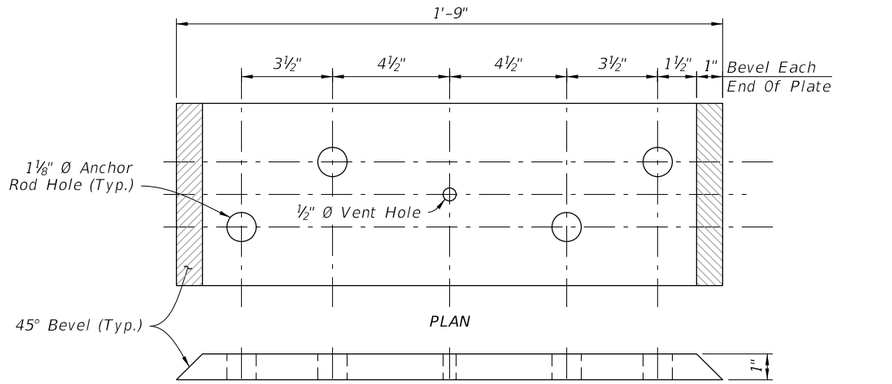
ELEVATION

10/29/2019 8:23:16 AM

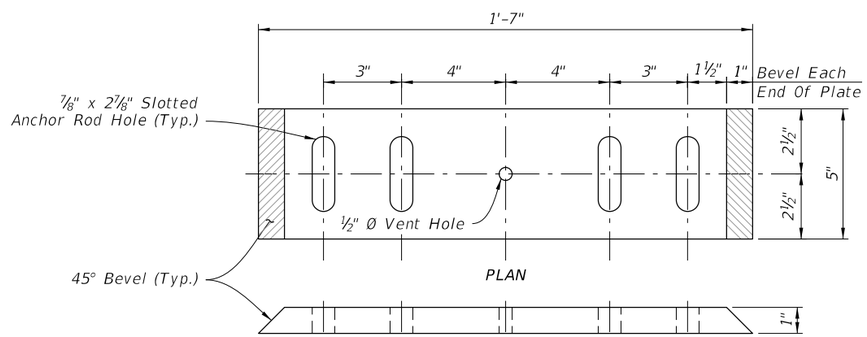
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SINGLE POST MEDIAN BARRIER MOUNTED SIGN SUPPORT	INDEX	SHEET
11/01/18						700-013	1 of 2



BASE PLATE TYPE A
(Linear Anchor Rod Pattern)



BASE PLATE TYPE B
(Staggered Anchor Rod Pattern)

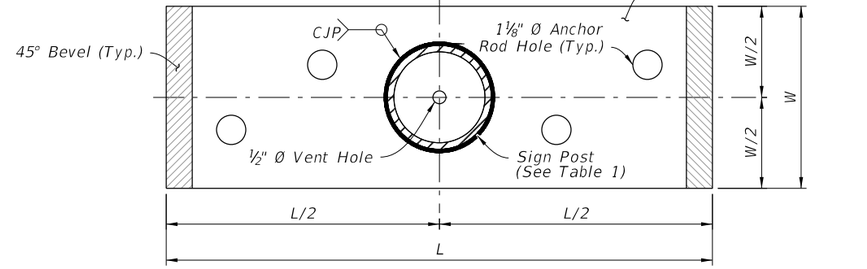


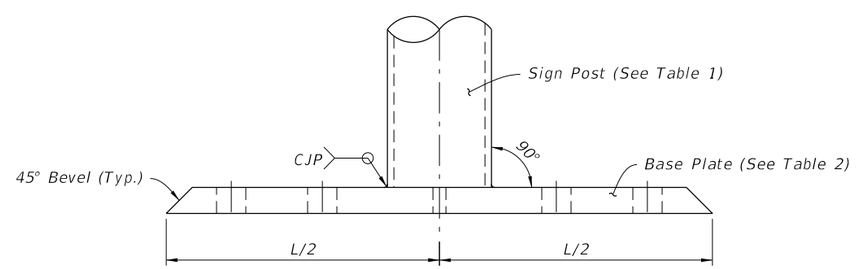
BASE PLATE TYPE C

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	B	1"
521-001	Cantilever or L-Wall	A	
All listed above Plus 102-110 & 102-100	Temporary Signs	C	¾"





SIGN SUPPORT WELDMENT DETAIL
(Staggered Anchor Rod Pattern shown)

10/29/2019 8:23:17 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	SINGLE POST MEDIAN BARRIER MOUNTED SIGN SUPPORT	700-013	2 of 2

GENERAL NOTES:

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

2. Shop drawings:

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 B308, 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 I.
G. Reinforcing Bars or Welded Wire Reinforcement (WWR): Specification 415

4. Coatings:

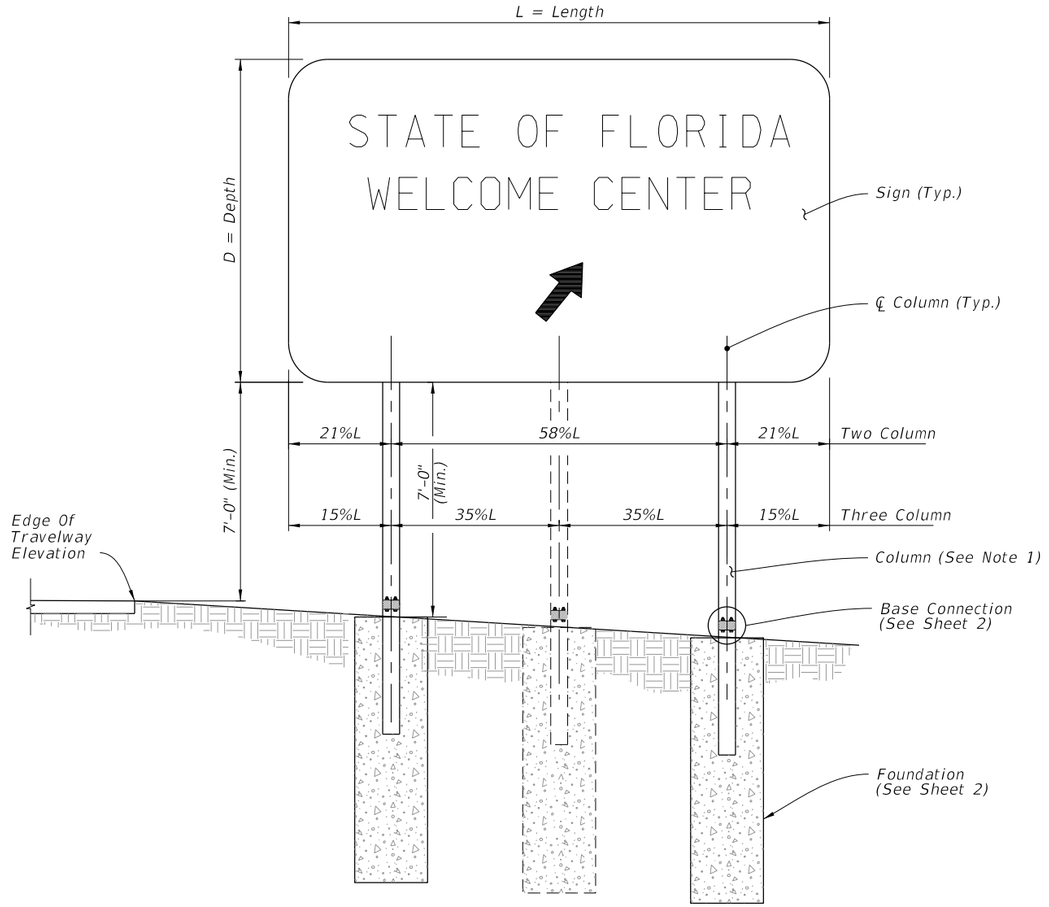
A. Aluminum Fasteners: Anodic coating (0.0002 inches min.) and chromate sealed
B. Galvanize High Strength Steel Bolts Nuts and Washers: ASTM F2329
C. Galvanize all other steel items (excluding stainless steel): Hot-dip ASTM A123
D. Treat damaged galvanizing in accordance with Specification 562

5. Fabrication:

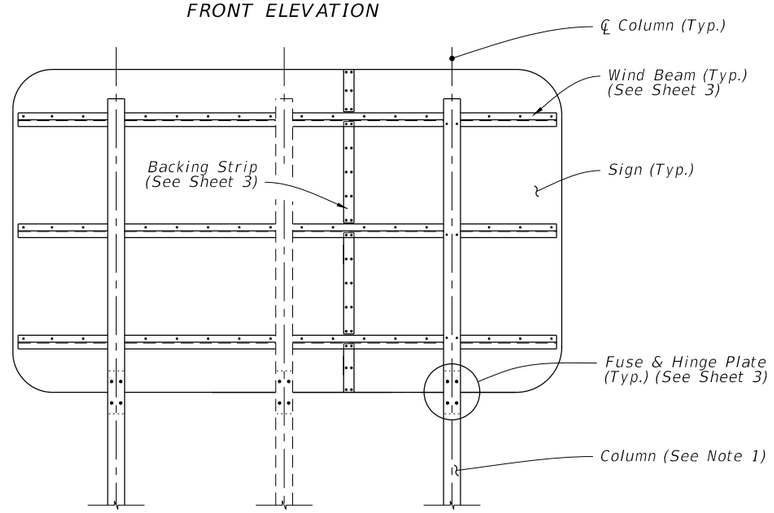
A. All Base Connections and Stub Column materials are steel unless otherwise specified.
B. Drill or sub-punch and ream holes in Fuse Plates and Hinge Plates
C. Weld Base Plate to Post & Stub or if using the Alternate Connection Detail weld Base Plate and Stiffeners to Post and Stub (Sheet 2)
D. Hot dip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

6. Construction:

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.



FRONT ELEVATION

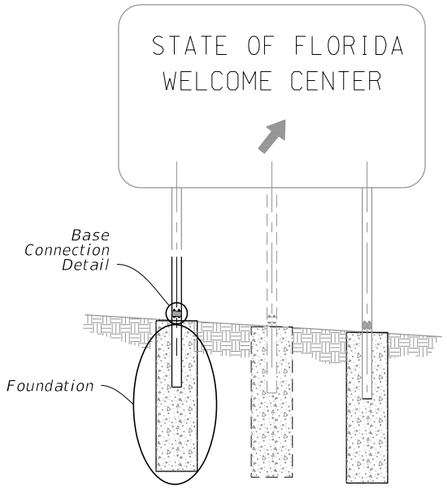


BACK ELEVATION

MULTI-COLUMN SIGN ASSEMBLY

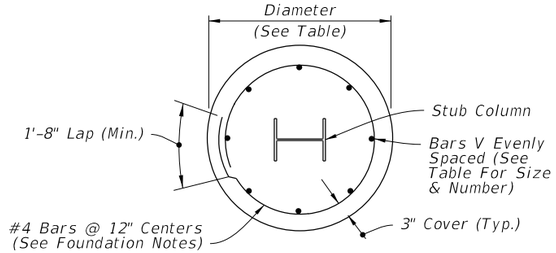
11/5/2019 9:28:34 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MULTI-COLUMN GROUND SIGN	INDEX	SHEET
11/01/18						700-020	1 of 3

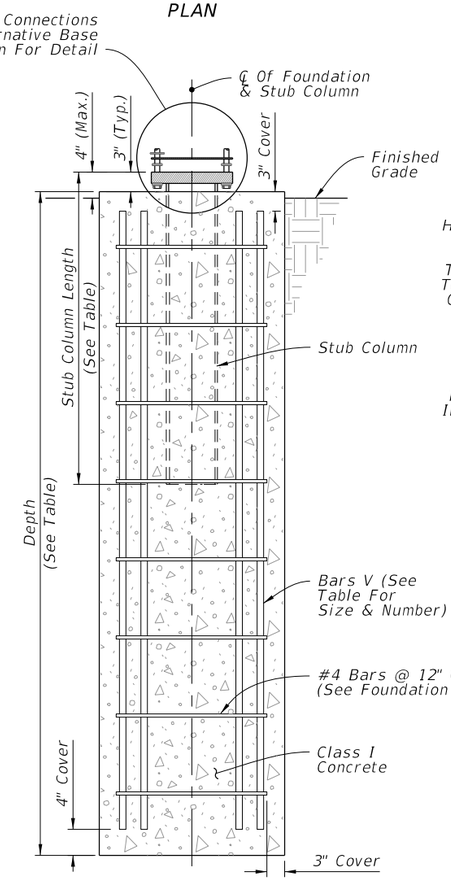


MULTI-COLUMN SIGN ASSEMBLY

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



PLAN



ELEVATION

FOUNDATION NOTES:

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

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 and the Nut.

   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 L_2 Tightening Instructions:

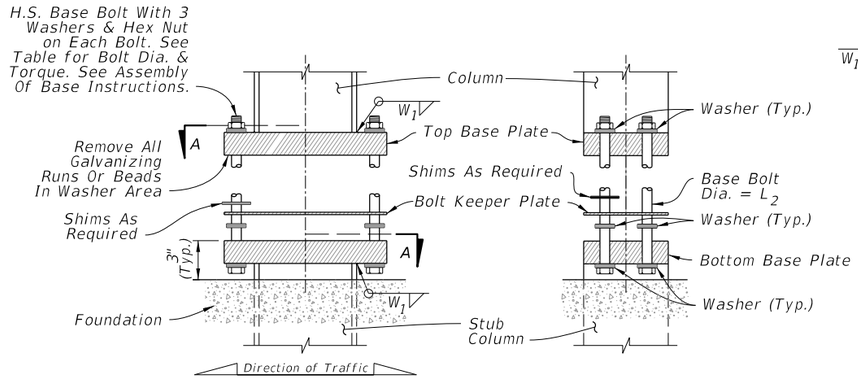
   A. Tighten Base Bolts to the maximum possible with a 12" to 15" wrench (this will bed the washers and shims and clear the bolt threads).

   B. Loosen each Base Bolt one turn.

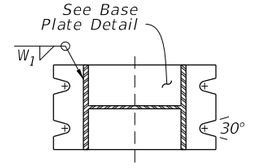
   C. Under the supervision of the Engineer, use a calibrated wrench to tighten bolts to the torque prescribed in the Table. Over tightened Base Bolts will not be permitted.

   D. Burr threads at junction with nut to prevent nut loosening. Treat damaged galvanizing.

FOUNDATION



SIDE ELEVATION FRONT ELEVATION



SECTION A-A

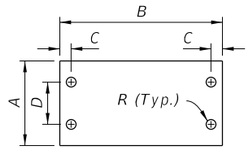
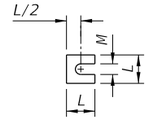
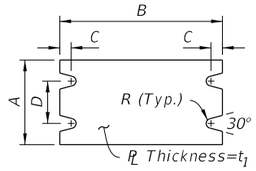


Plate Thickness=0.0149" (28 Gauge)

BOLT KEEPER PLATE DETAIL



SHIM DETAIL

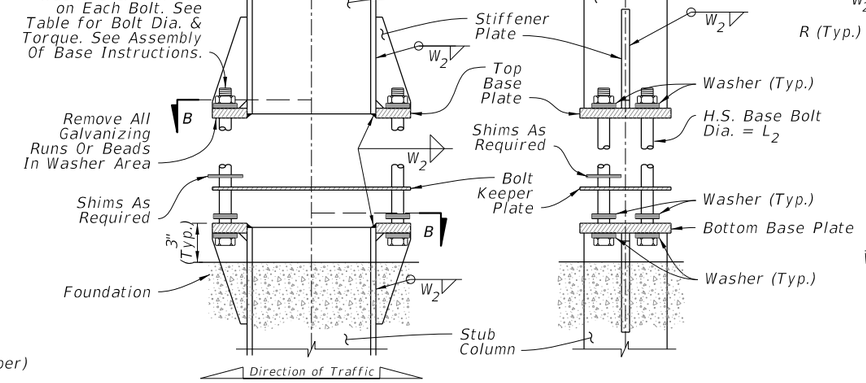


BASE PLATE DETAIL

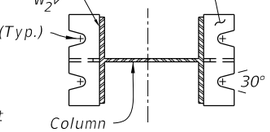
	BASE CONNECTION DATA									SHIM	
Steel Post & Stub Section*	A	B	C	D	R	t_1	L_2	W_1	Torque (lbf*in)	L	M
S 3x5.7	4"	7"	3/4"	2"	5/16"	1"	1/2"	1/4"	90 ± 20	1-1/4"	9/16"
W 6x12	4"	10"	3/4"	2"	3/8"	1-5/8"	5/8"	1/4"	270 ± 45	1-3/8"	11/16"
W 8x18	5-1/4"	12-1/2"	7/8"	2-3/4"	7/16"	1-3/4"	3/4"	3/8"	445 ± 75	1-3/4"	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"

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

BASE CONNECTION



SIDE ELEVATION FRONT ELEVATION



SECTION B-B

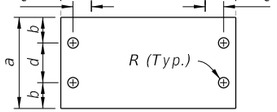
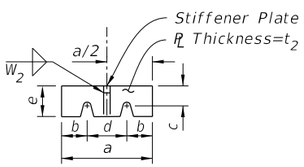
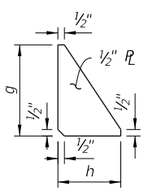


Plate Thickness=0.0149" (28 Gauge)

BOLT KEEPER PLATE DETAIL



BASE PLATE DETAIL



STIFFENER PLATE DETAIL

ALTERNATIVE BASE CONNECTION DATA												
Steel Section*	a	b	c	d	e	t_2	L_2	R	Torque (lbf*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"

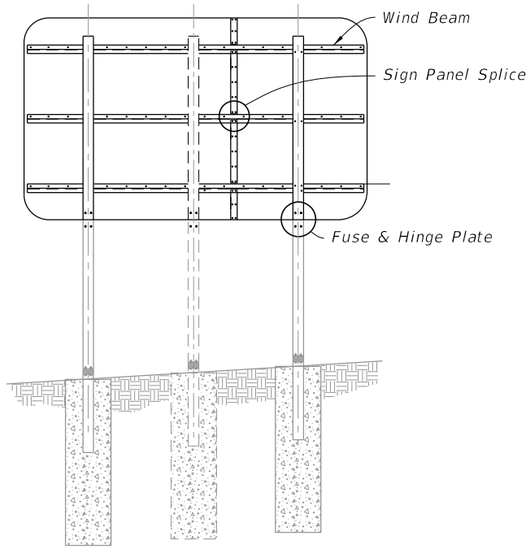
* Designations: (Nominal Depth in inches) x (weight in pounds per linear foot).

ALTERNATIVE BASE CONNECTION

FOUNDATION AND BASE CONNECTION DETAILS

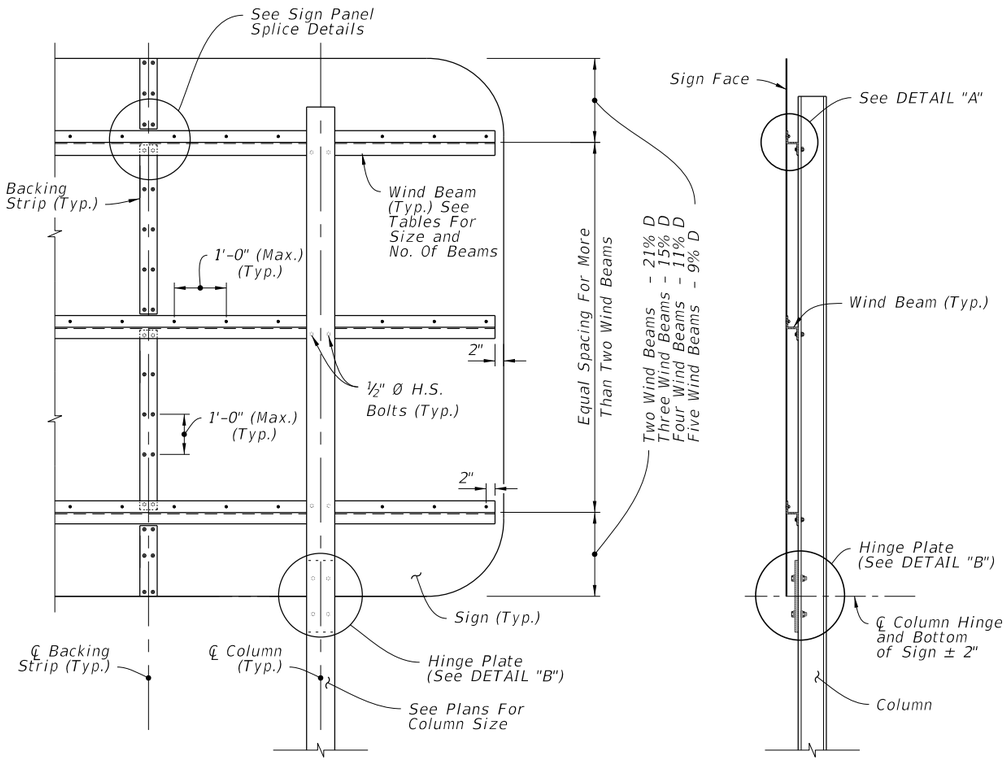
11/5/2019 9:28:35 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/18			FDOT FY 2020-21 STANDARD PLANS	MULTI-COLUMN GROUND SIGN	INDEX 700-020	SHEET 2 of 3



BACK ELEVATION

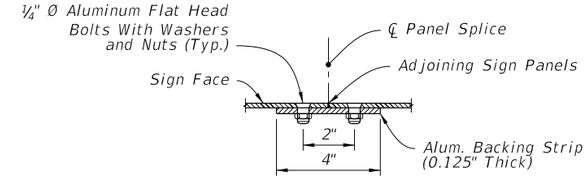
MULTI-COLUMN SIGN ASSEMBLY



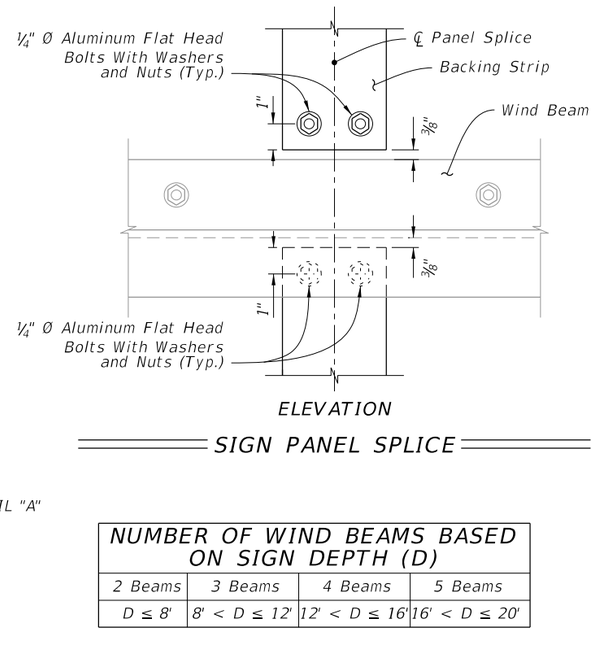
BACK ELEVATION

SIDE ELEVATION

MULTI-COLUMN SIGN BACK PANEL



PLAN VIEW



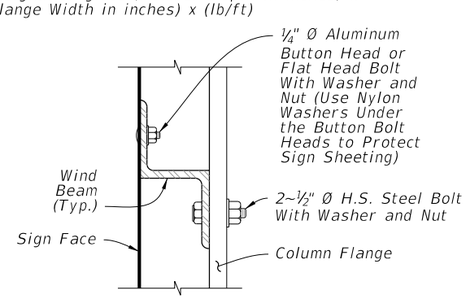
ELEVATION

SIGN PANEL SPLICE

NUMBER OF WIND BEAMS BASED ON SIGN DEPTH (D)			
2 Beams	3 Beams	4 Beams	5 Beams
D ≤ 8'	8' < D ≤ 12'	12' < D ≤ 16'	16' < D ≤ 20'

WIND BEAM SIZE BASED ON SIGN LENGTH (L)		
2 Columns	3 Columns	Aluminum Beam Size **
L ≤ 12'	L ≤ 18'	Z 1-¾ x 1-¾ x 1.09
12' < L ≤ 20'	18' < L ≤ 30'	Z 3 x 2-^{1}1⁄$_{16}$ x 2.33
20' < L ≤ 25'	30' < L ≤ 39'	Z 4-1⁄$_{16}$ x 3-⅛ x 3.57

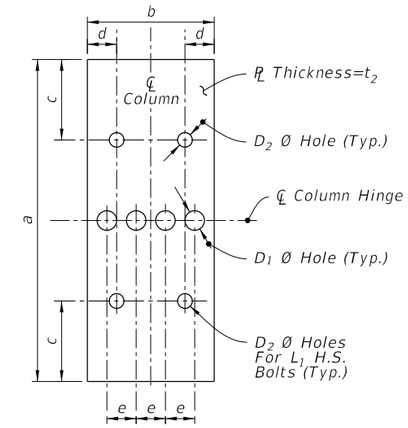
**Designation gives (Member Depth in inches) x (Flange Width in inches) x (lb/ft)



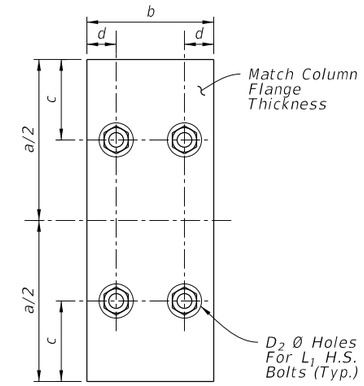
DETAIL "A"

FUSE (HINGE) PLATE DATA									
Steel Section*	a	b	c	d	e	t_2	D_1	D_2	L_1
S 3x5.7	7-1/4"	2-3/8"	1-1/4"	1/2"	9/16"	3/8"	7/16"	9/16"	1/2"
W 6x12	7-1/4"	4"	1-1/4"	7/8"	15/16"	3/8"	13/16"	11/16"	5/8"
W 8x18	8-1/4"	5-1/4"	1-3/8"	1-1/8"	1-1/4"	3/8"	1"	13/16"	3/4"
W 8x24	8-1/4"	6-1/2"	1-3/8"	1-1/2"	1-1/2"	1/2"	1"	13/16"	3/4"
W 10x33	9-1/4"	8"	2"	1-3/4"	1-3/4"	5/8"	1-1/8"	1-1/16"	1"
W 12x45	11"	8"	2"	1-3/4"	1-3/4"	3/4"	1-5/16"	1-1/16"	1"

* Designations: (Nominal Depth in inches) x (Weight in Pounds Per Linear Foot)

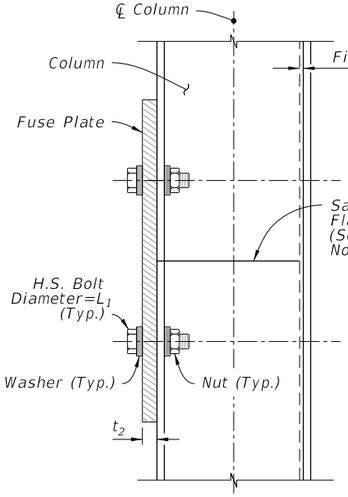


FUSE PLATE



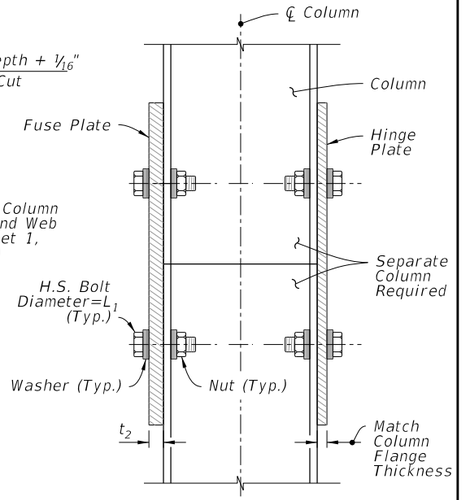
HINGE PLATE

FUSE & HINGE PLATE



Side Elevation

TYPICAL HINGE



Side Elevation

OPTIONAL HINGE

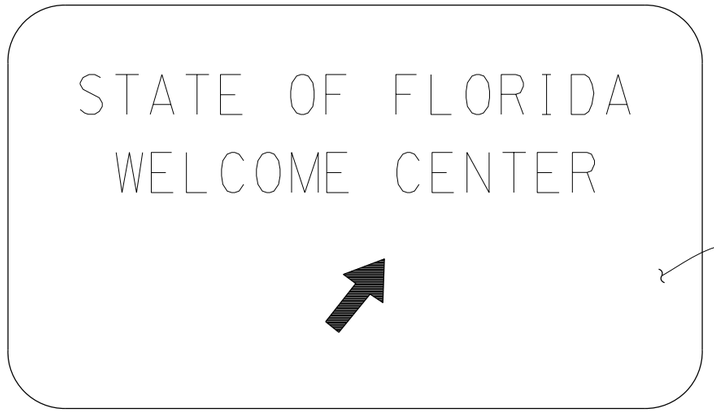
(See Fabrication Notes on Sheet 1)

DETAIL "B"

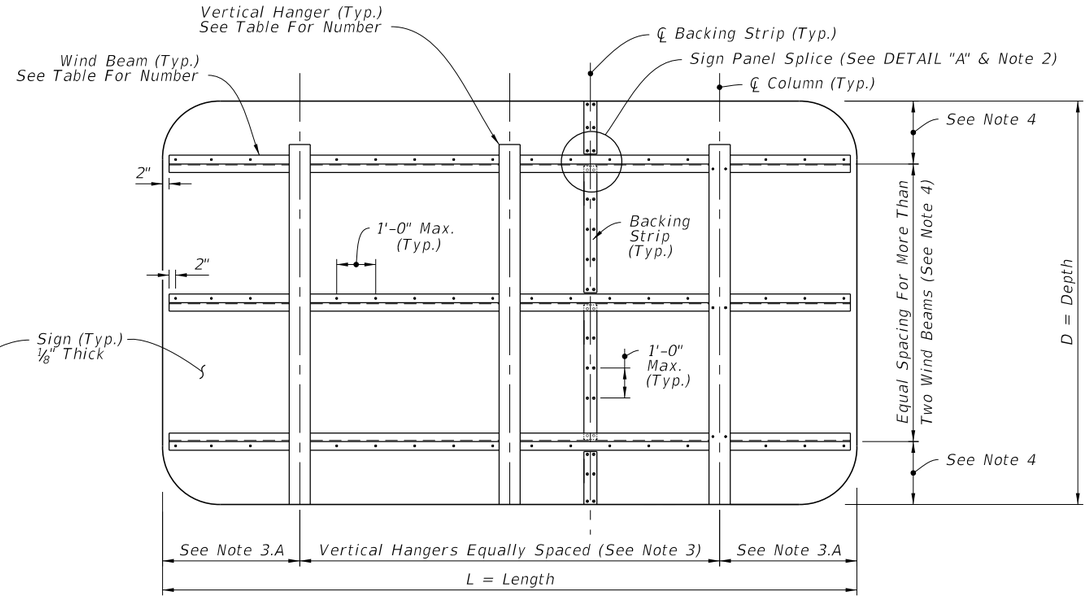
WIND BEAM, BACKING STRIP & FUSE/HINGE PLATE DETAILS

11/5/2019 9:28:37 AM

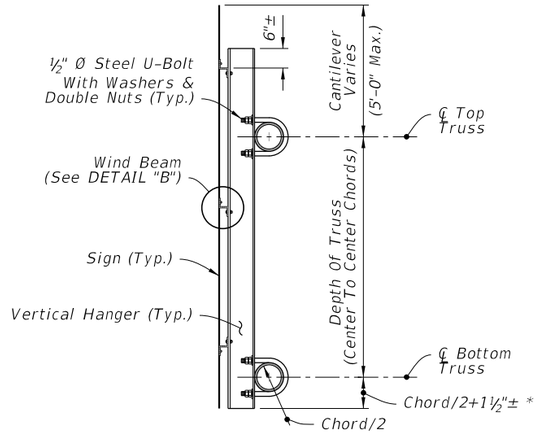
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	MULTI-COLUMN GROUND SIGN	700-020	3 of 3



FRONT ELEVATION



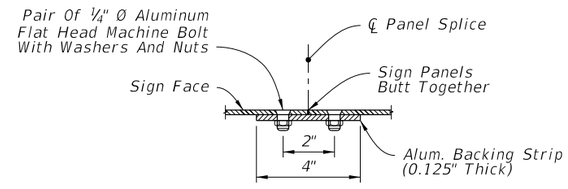
BACK ELEVATION



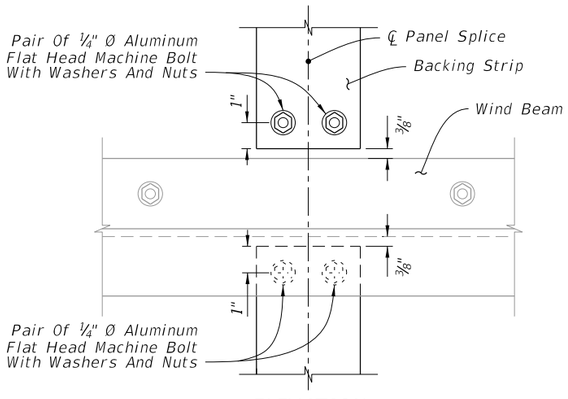
*Bottom Justified Shown, Center Justified Similar.

SIDE ELEVATION

TYPICAL SIGN FOR OVERHEAD TRUSS



PLAN VIEW



ELEVATION

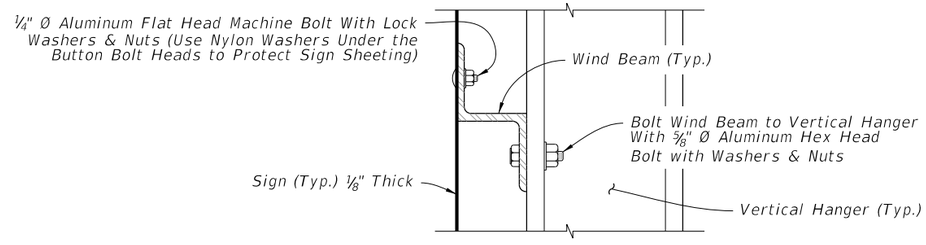
SIGN PANEL SPLICE

DETAIL "A"

WIND BEAM TABLE (Z 3 x 2 11/16 x 2.33)				
Number of Horizontal Wind Beams Based on Sign Depth (D)				
2 Beams	3 Beams	4 Beams	5 Beams	6 Beams
D ≤ 5'	5' < D ≤ 9'	9' < D ≤ 12'	12' < D ≤ 15'	15' < D ≤ 18'

HANGER TABLE (I 6 x 4.69 or Z 5 x 3¼ x 6.19)					
Number of Vertical Hanger Beams Based on Wind Speed and Sign Length (L)					
	2 Hangers	3 Hangers	4 Hangers	5 Hangers	6 Hangers
130 mph	L ≤ 20'	20' < L ≤ 30'	30' < L ≤ 40'	40' < L ≤ 50'	--
150 mph	L ≤ 18'	18' < L ≤ 27'	27' < L ≤ 35'	35' < L ≤ 45'	45' < L ≤ 50'
170 mph	L ≤ 15'	15' < L ≤ 20'	20' < L ≤ 28'	28' < L ≤ 35'	35' < L ≤ 43'

NOTE: For Monroe County designs, use 170 mph values but with Z 5 x 3-¼ x 6.19 vertical hanger beams only.



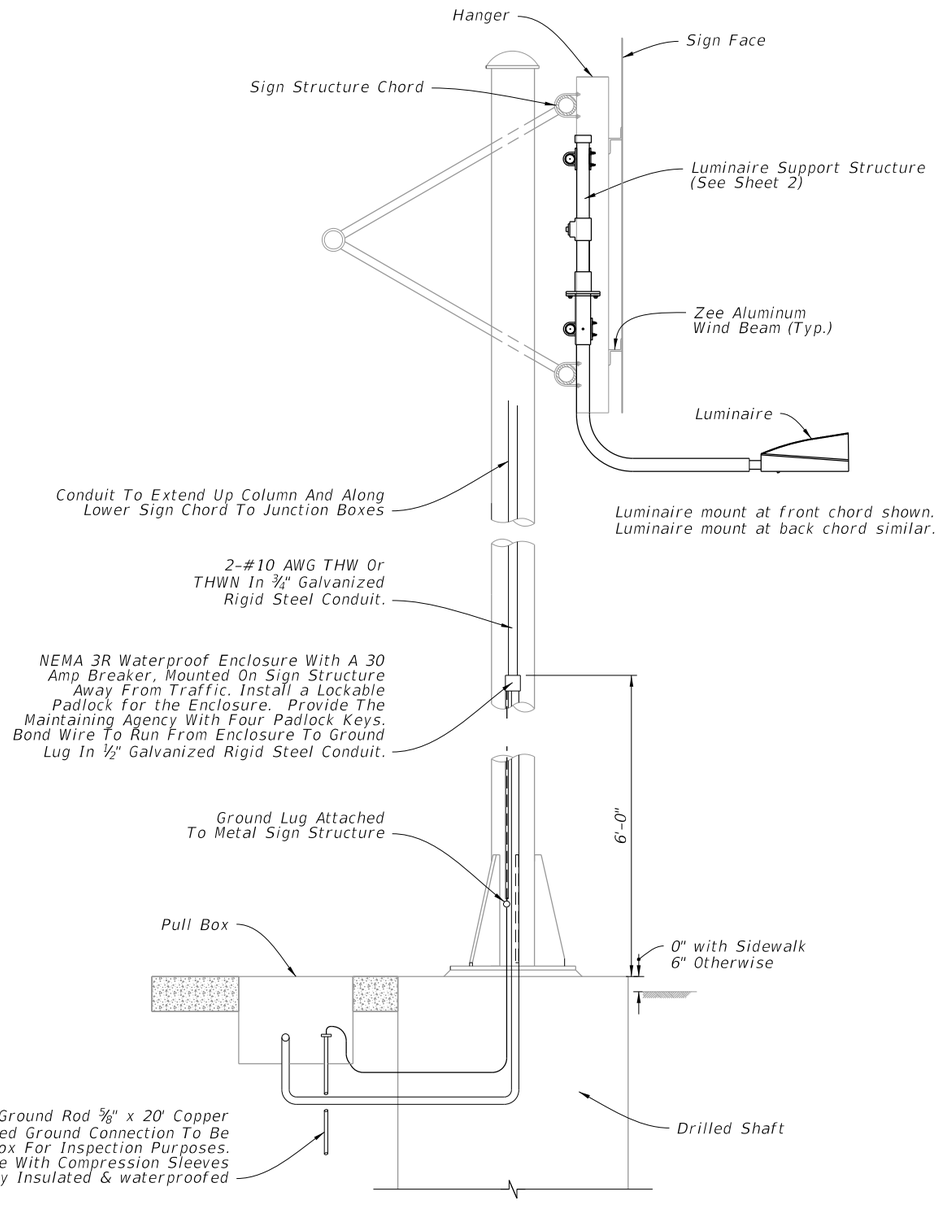
DETAIL "B"

GENERAL NOTES

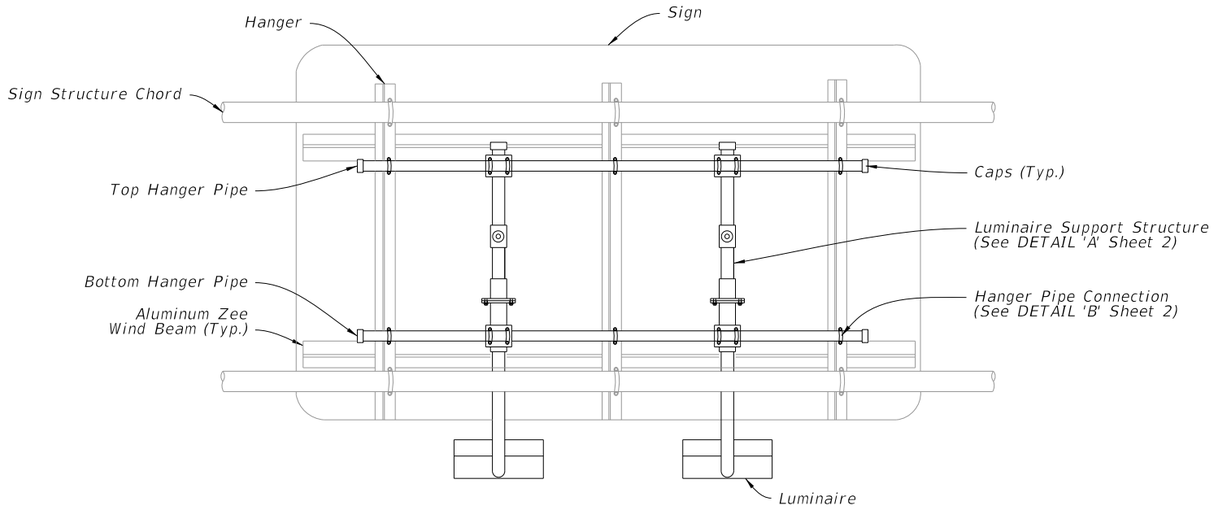
1. Work this Index with Index 700-040 and 700-041.
2. The number and location of the Panel Splices are determined by the Sign Face supplier.
3. Spacing of Vertical Hangers:
   A. Two Vertical Hanger = 21.0% L
      Three Vertical Hanger = 15.0% L
      Four Vertical Hanger = 11.0% L
      Five Vertical 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:
      a. Bars, and Extruded Shapes: ASTM B 221, Alloy 6061-T6 or Alloy 6351-T5
      b. Structural Shapes: ASTM B308, 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
   B. Steel:
      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.

10/29/2019 8:23:23 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	WIND AND HANGER BEAMS FOR OVERHEAD SIGNS	INDEX	SHEET
11/01/18						700-030	1 of 1



SIDE VIEW



BACK VIEW

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.
3. Signing contractor provides all electrical equipment necessary for connection of the sign lights.

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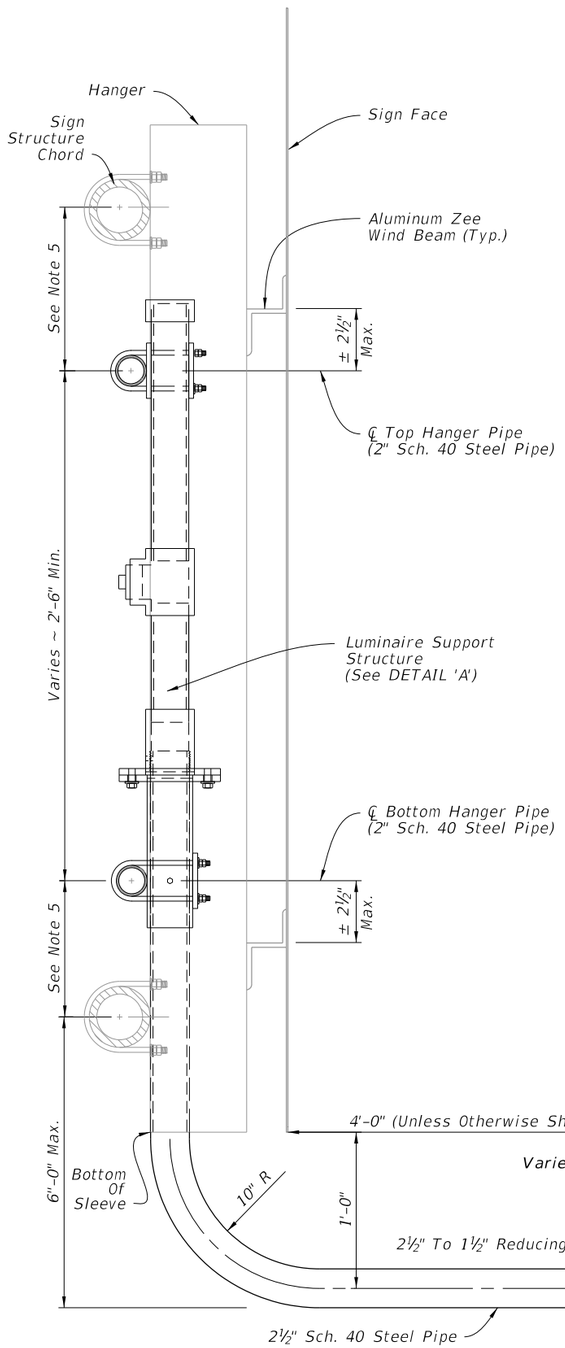


LUMINAIRE SUPPORT STRUCTURE

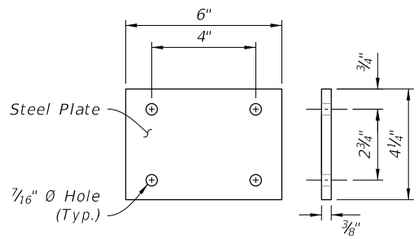


PLATE 'A'

NOTES

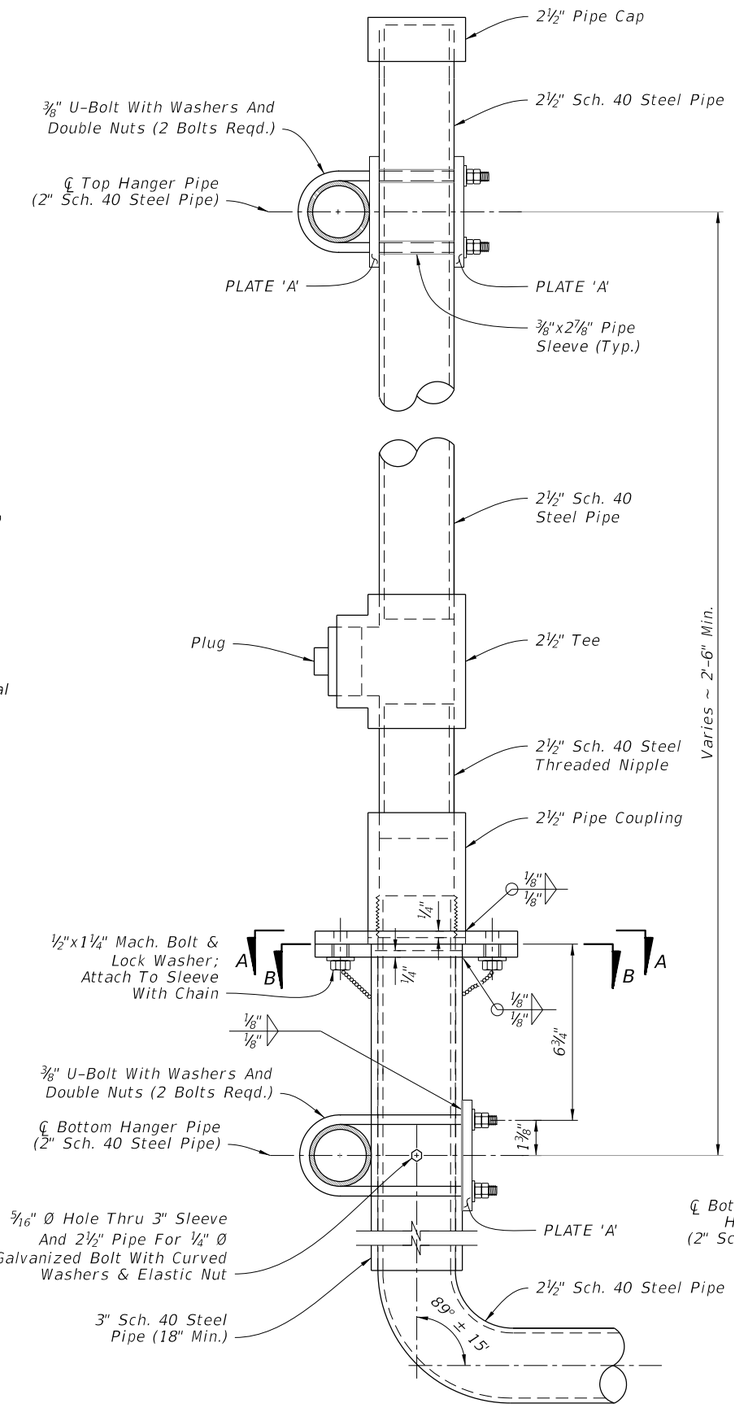
1. Install hanger pipe to each vertical beam crossed with a ⅜" U-Bolt, lock washers and hex nuts. Cap both ends of the horizontal pipe.

2. Materials;
   A. Steel Pipe: ASTM A53 (Grade A or B)
   B. Steel Plate: ASTM A36
   C. Bolts: ASTM A307
   D. Hex Nuts: ASTM A563
   E. Washers: ASTM F436

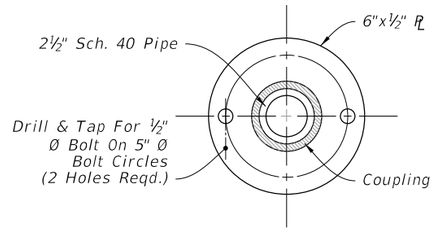
3. Coating: Hot-Dip Galvanize pipes, plates, structural shapes: ASTM A123, Fasteners and hardware: ASTM A153.

4. All pipe dimensions are NPS.

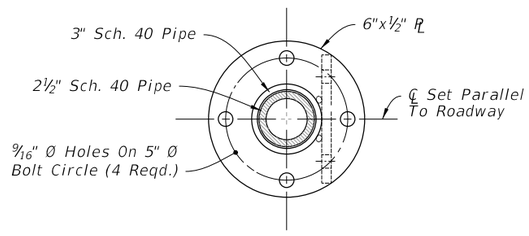
5. $\frac{\text{Chord O.D.}}{2}$ + 5" (Min.)



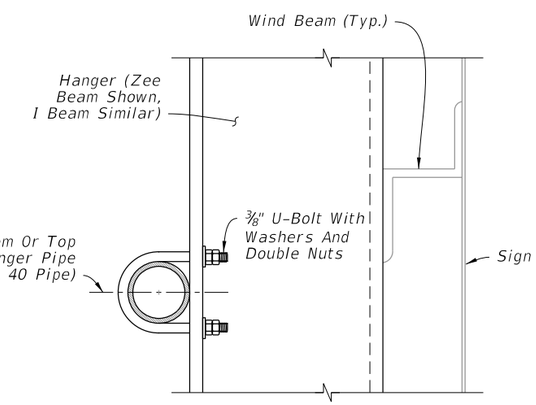
DETAIL 'A'
(Luminaire Support Structure)



SECTION A-A



SECTION B-B



DETAIL 'B'
(Hanger Pipe Connection)

10/29/2019 8:23:25 AM

LAST REVISION	REVISION	DESCRIPTION:			
11/01/17			FY 2020-21 STANDARD PLANS	EXTERNAL LIGHTING FOR SIGNS	INDEX 700-031 / SHEET 2 of 2

NOTES:

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:

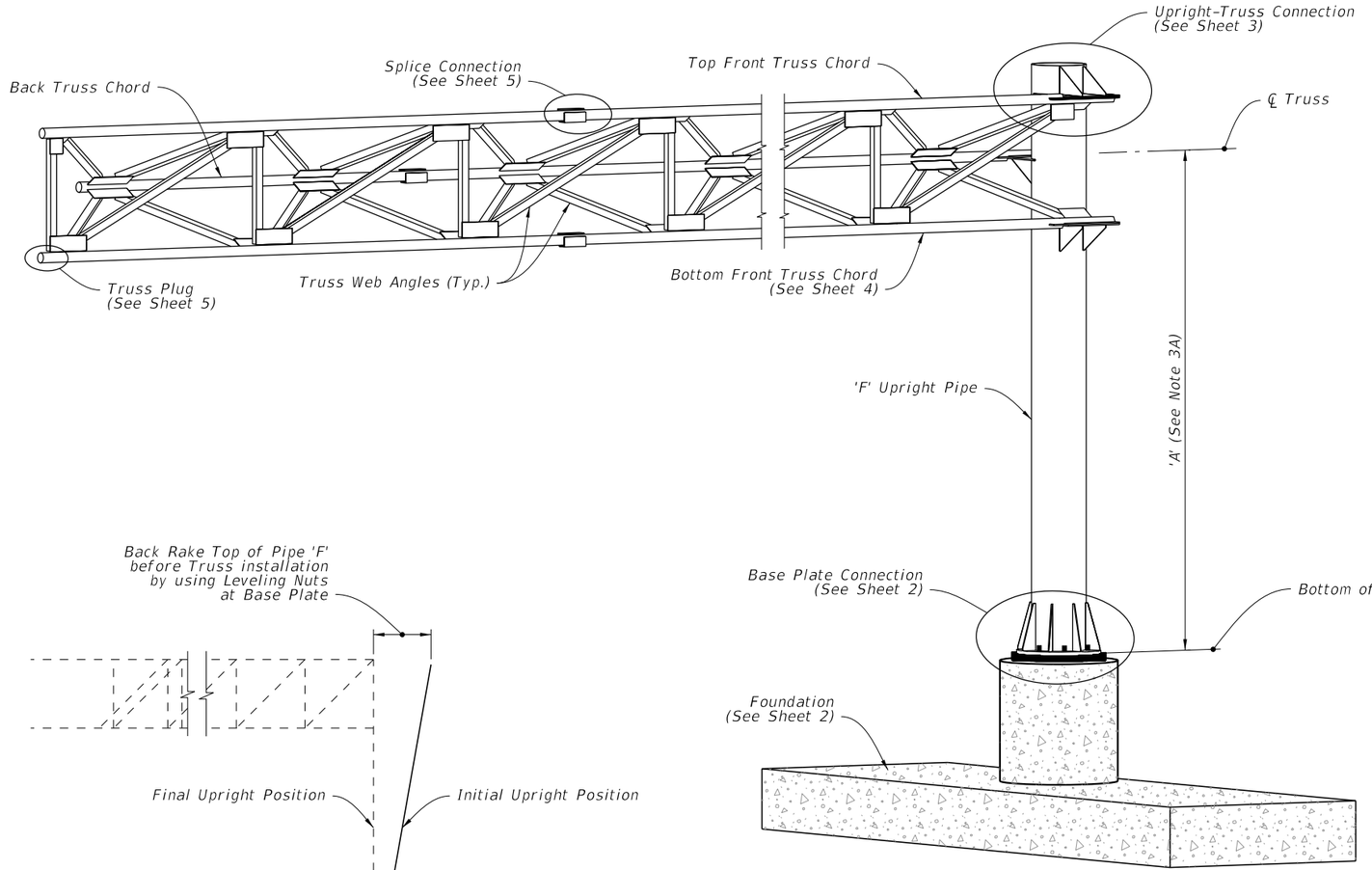
   A. Welding: Specification 460-6.4
   B. Chord Splices: "SD" Panel from upright is the closest panel in which a chord splice may be used. See Plans for CANTILEVER SIGN STRUCTURE DATA TABLE. Minimum splice spacing is two truss panel lengths apart.
   C. Upright splices: Not allowed
   D. Structural bolt hole diameters: Bolt diameter plus $\frac{1}{16}$"
   E. Anchor bolt hole diameters: Bolt diameter plus $\frac{1}{2}$"
   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
   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 the Engineer.
   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.



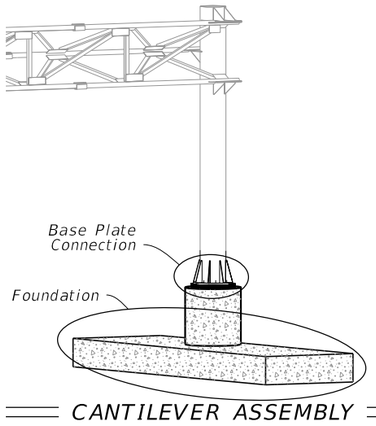
CAMBER DIAGRAM

ISOMETRIC VIEW

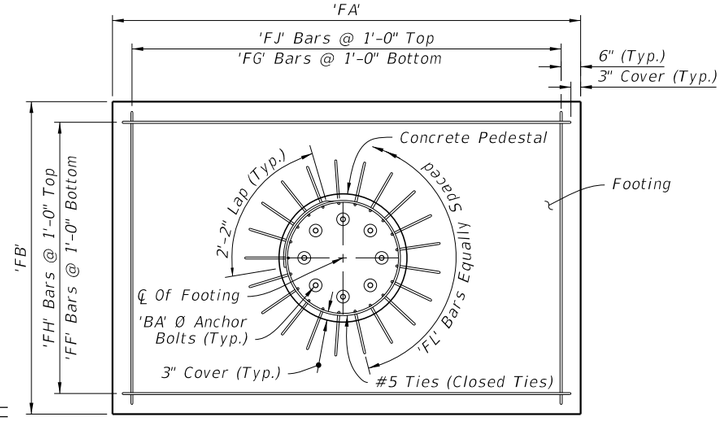
CANTILEVER SIGN ASSEMBLY

10/29/2019 8:23:29 AM

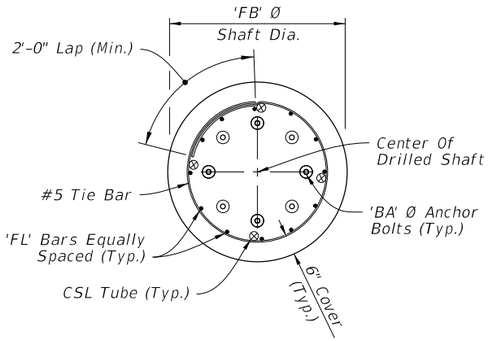
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CANTILEVER SIGN STRUCTURE	INDEX	SHEET
11/01/17					700-040	1 of 5



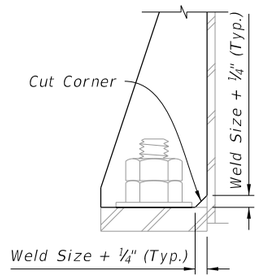
CANTILEVER ASSEMBLY



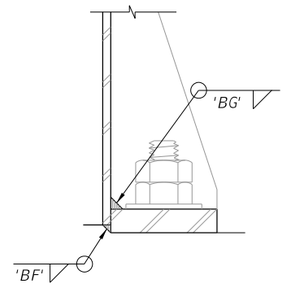
PLAN



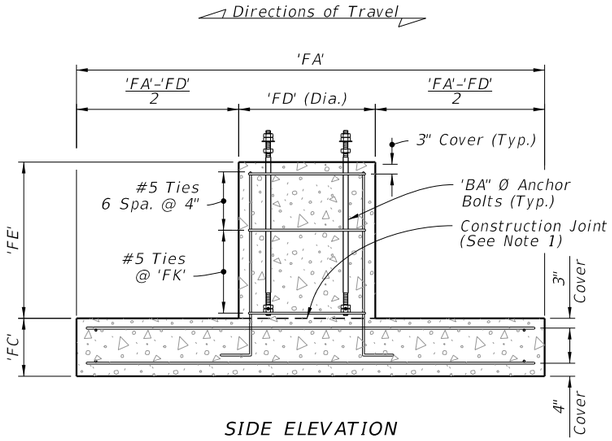
PLAN



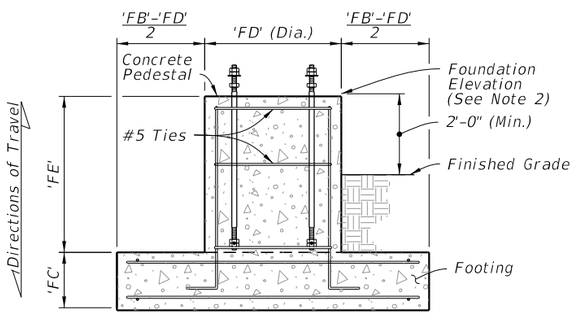
DETAIL 'A'



DETAIL 'B'

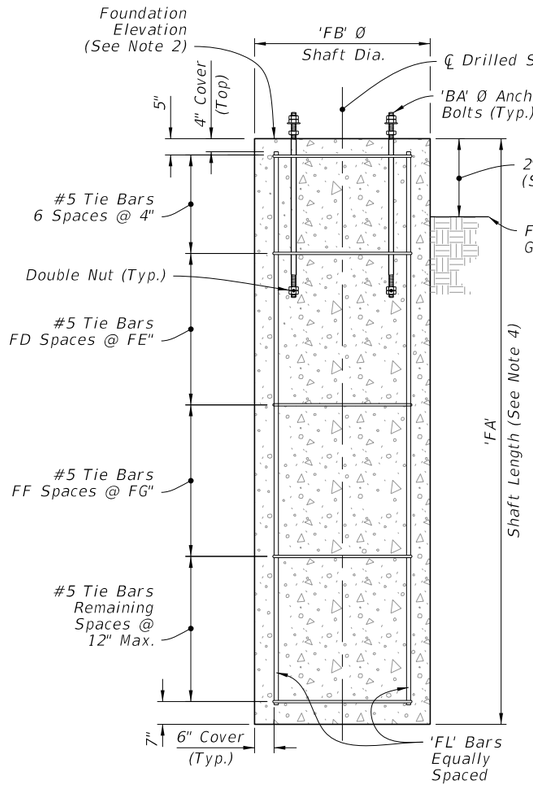


SIDE ELEVATION



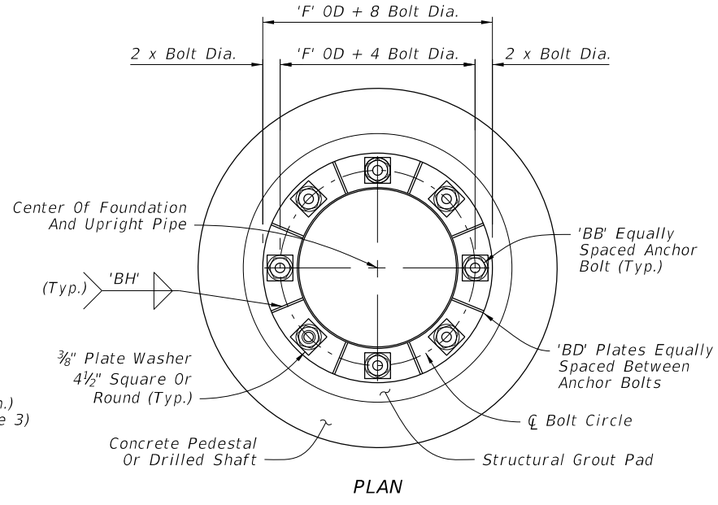
FRONT ELEVATION

FOOTING AND PEDESTAL

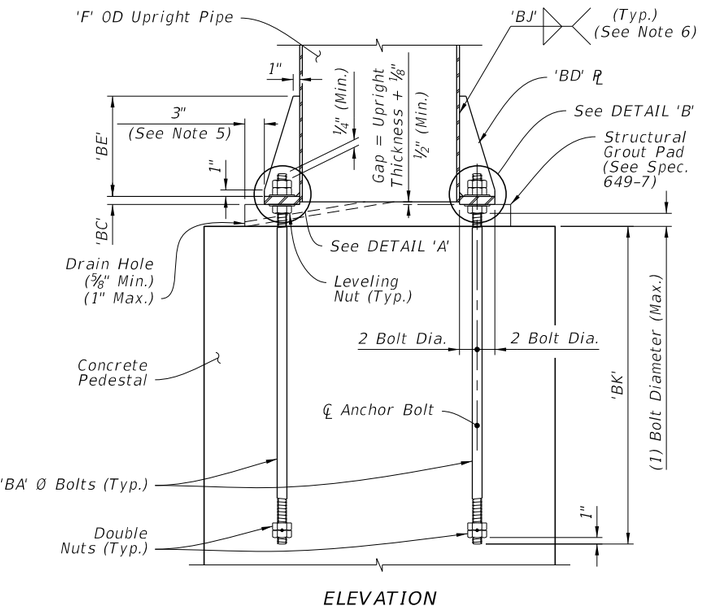


ELEVATION

DRILLED SHAFT
(Alternate Foundation)



PLAN



ELEVATION

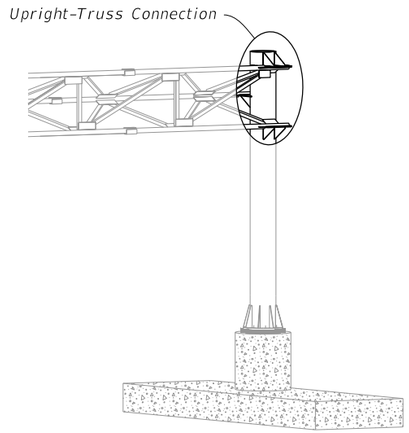
NOTES:

1. Construction joint allowed, roughen surface to ¼" minimum amplitude prior to pour.
2. See Traffic Plans for elevation at top of Foundation.
3. Install Drilled Shaft with a 2'-0" minimum from top elevation of the drilled shaft to the finished grade, unless specified otherwise in the plans.
4. The shaft length is based on 2'-0" height above finished grade.
5. Structural Grout Pad dimension may be modified to be less than 3" where the footprint of the Structural Grout Pad does not provide adequate clearance for accessibility considerations.
6. Wrap fillet weld around the stiffener termination on the tube wall.

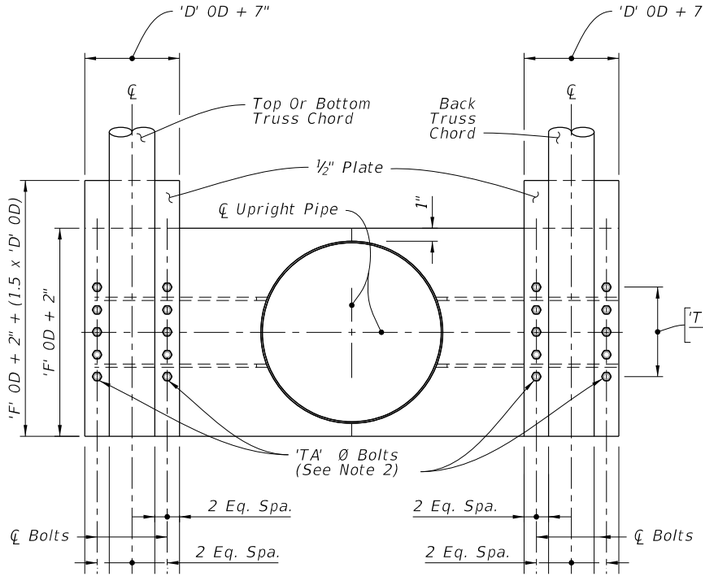
FOUNDATION

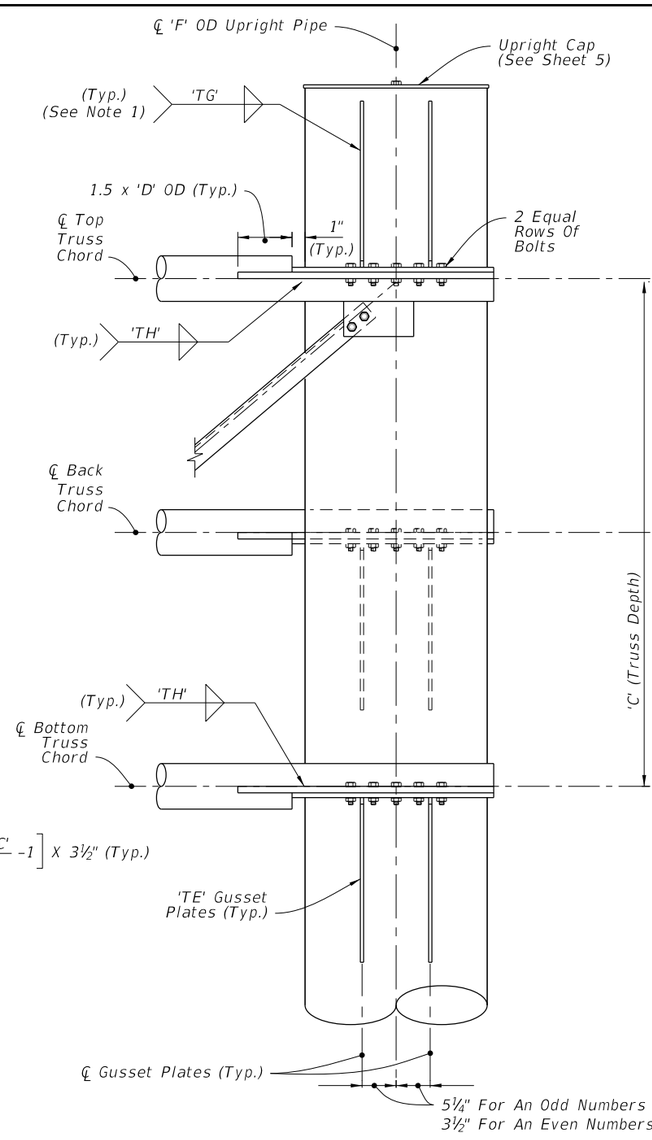
BASE PLATE CONNECTION

10/29/2019 8:23:31 AM

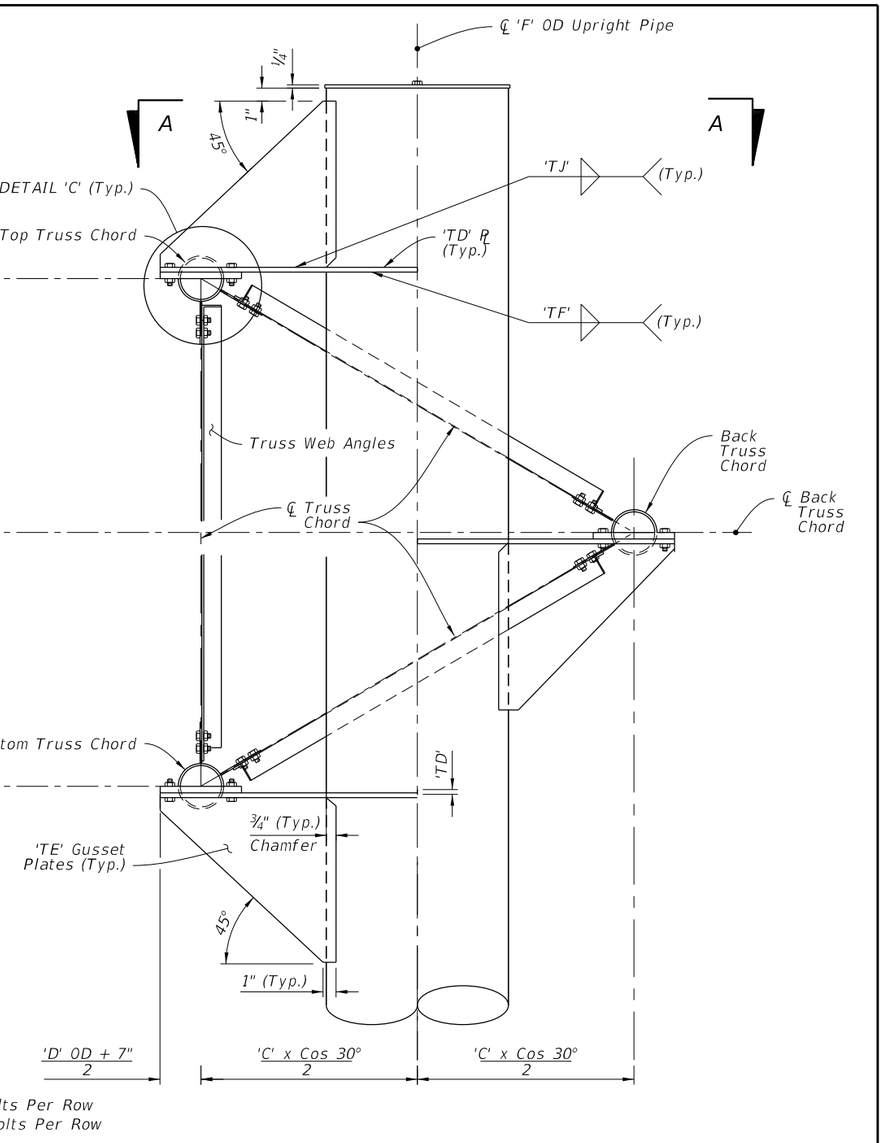


CANTILEVER ASSEMBLY





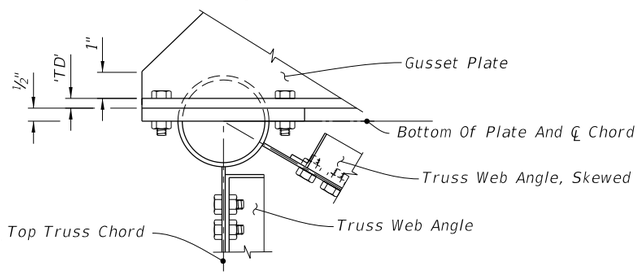
FRONT ELEVATION



SIDE ELEVATION

SECTION A-A

(With Gusset Plates And Web Angles Omitted For Clarity)



DETAIL 'C'

UPRIGHT-TRUSS CONNECTION DETAIL

(Web Members From Back Truss Chord Omitted For Clarity)

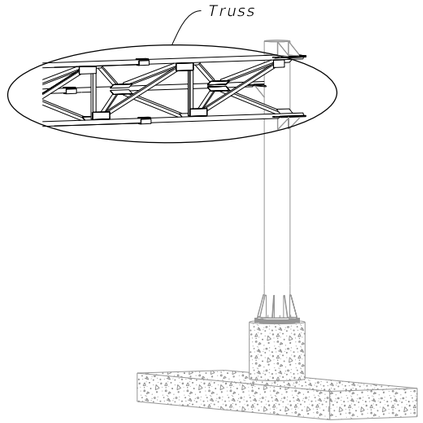
NOTE:

1. Wrap fillet weld around the stiffener termination on the tube wall.

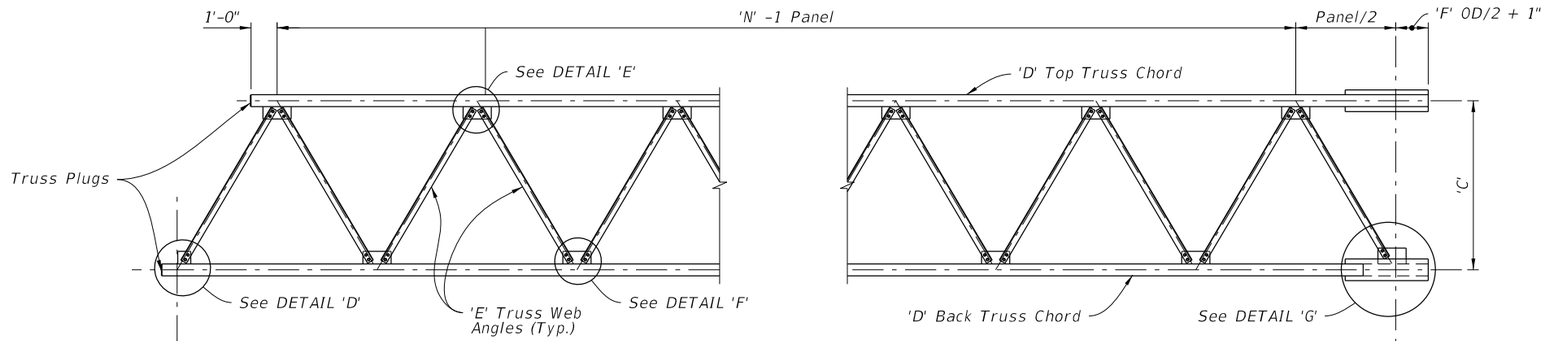
2. Truss Chord Bolts:
   A. Top and Bottom: Install 'TC' hex head bolts.
   B. Back: Install 'TB' hex head bolts.

10/29/2019 8:23:32 AM

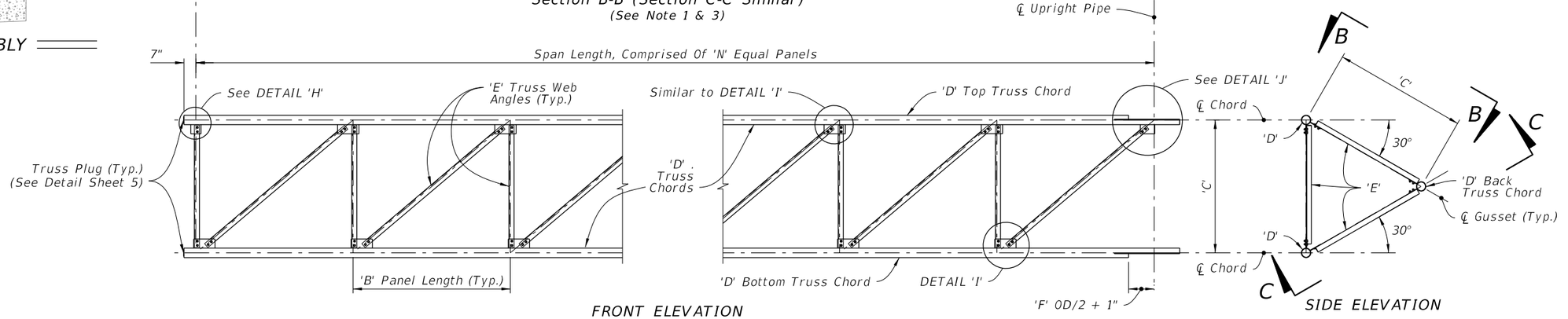
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	CANTILEVER SIGN STRUCTURE	700-040	3 of 5



CANTILEVER ASSEMBLY



Section B-B (Section C-C Similar)
(See Note 1 & 3)



FRONT ELEVATION
(See Note 1 & 3)

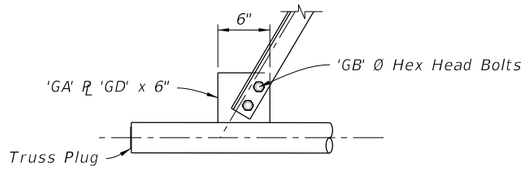
SIDE ELEVATION

TRUSS NOTES:

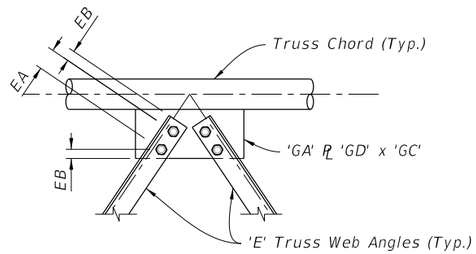
1. Out-of-plane members are not shown for clarity.
2. Wrap fillet weld around plate termination on the tube wall.
3. Chord Splices not shown.

Bolt Size	Distance	
	EA	EB
1¼" Ø	4⅜"	2¼"
1" Ø	3½"	1¾"
⅞" Ø	3"	1½"
¾" Ø	2½"	1¼"
⅝" Ø	2¼"	1⅛"

TRUSS



DETAIL 'D'



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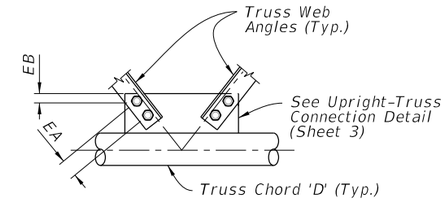

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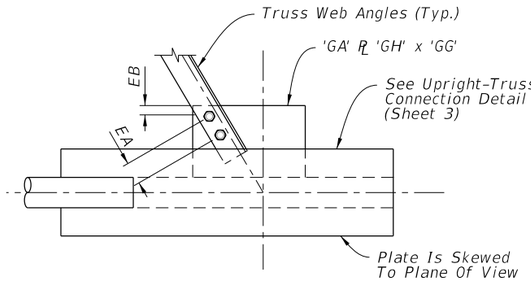

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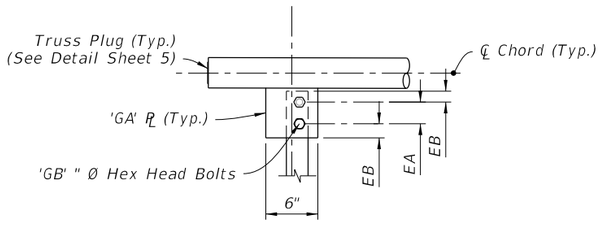
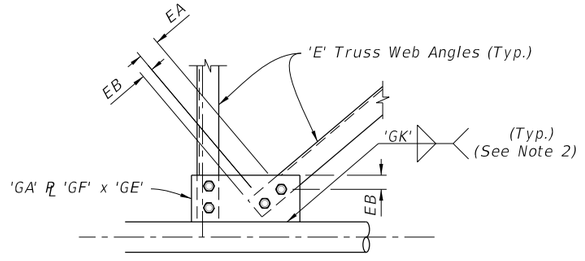
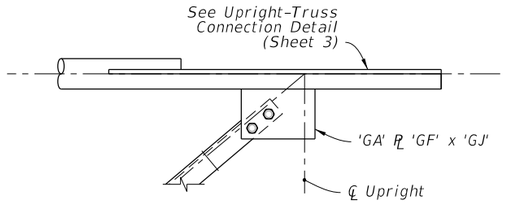


DETAIL 'H'



DETAIL 'I'



DETAIL 'J'

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CANTILEVER SIGN STRUCTURE	INDEX	SHEET
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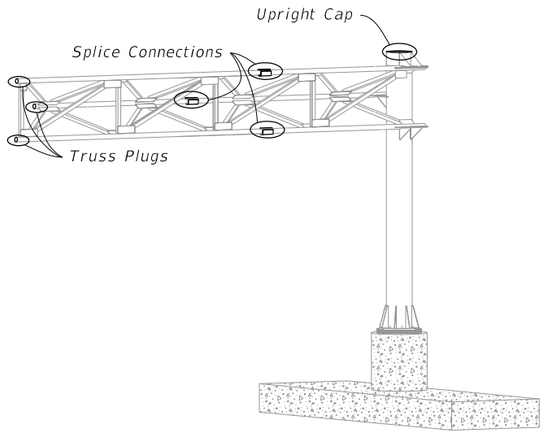
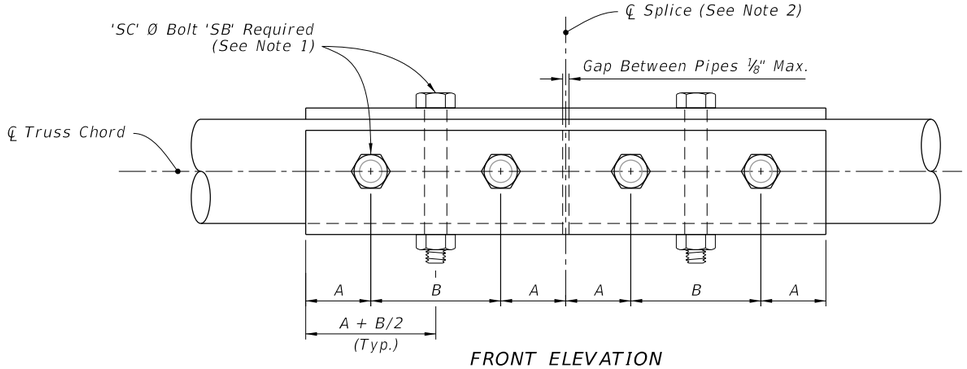
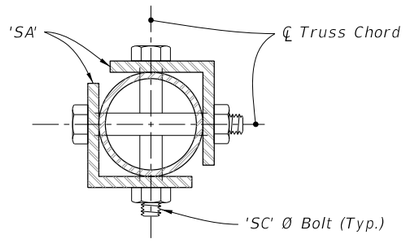


CANTILEVER ASSEMBLY

Bolt Size	Distance	
	A	B
1" Ø	1¾"	3½"
⅞" Ø	1½"	3"
¾" Ø	1¼"	2½"



FRONT ELEVATION



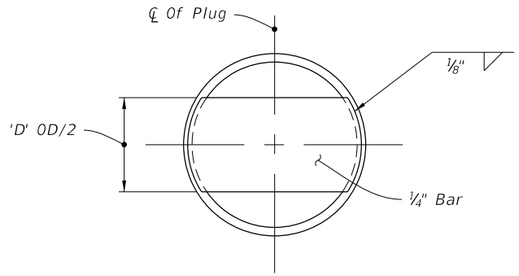
SIDE ELEVATION

SPLICE CONNECTION DETAIL

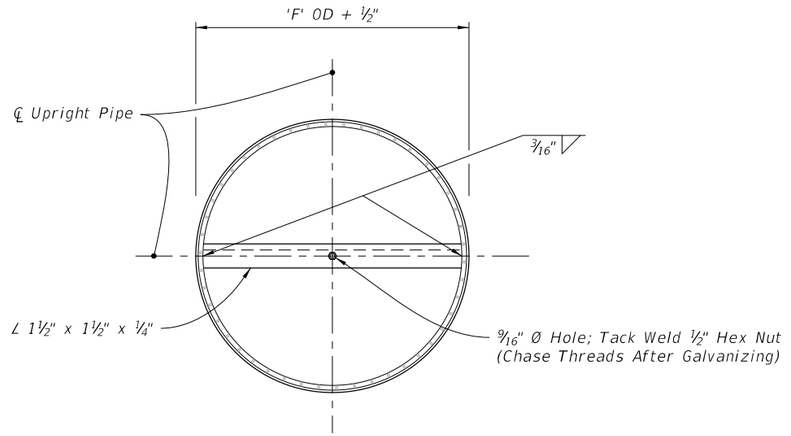
SPLICE CONNECTION NOTES:

1. Only 6 bolts are shown in detail for clarity. (One Half Each Side Of Splice)

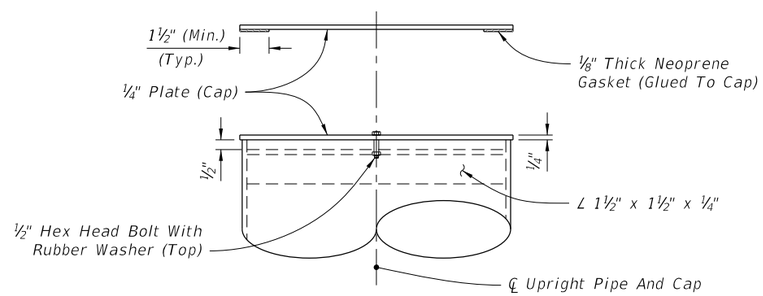
2. Splices are not permitted for trusses less than or equal to 40', Splice optional for trusses greater than 40'.



TRUSS PLUG DETAIL



PLAN



ELEVATION

UPRIGHT CAP DETAIL

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NOTES:

1. Work this Index in conjunction with SPAN SIGN STRUCTURE DATA TABLES in the Plans and Index 700-030.

2. Handholes at the pole base are required 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 ('C' & 'B') and foundation elevations: Verify dimensions in the field prior to submittal to ensure minimum vertical clearances of the sign panel over the roadway.
   B. Height of the foundation above adjacent ground.
   C. Anchor bolt orientation with respect to centerline of truss and the direction of traffic.
   D. Method to be used to provide the required parabolic camber (see Camber Diagram).
   E. Handholes at pole base (when required).

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 Plates: 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: Class IV (Drilled Shaft)
   E. Reinforcing Steel: Specification 415

5. Fabrication:

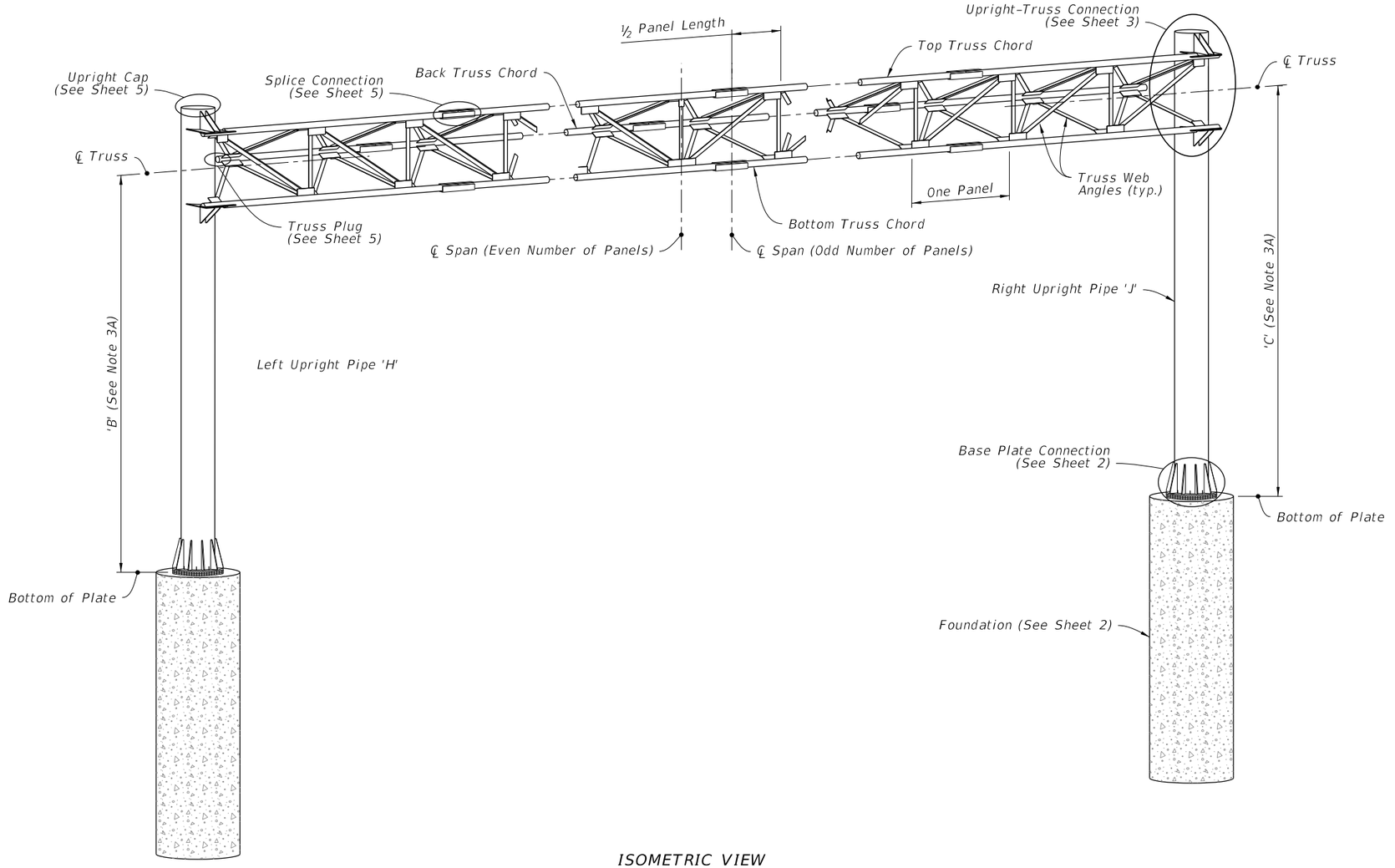
   A. Welding: Specification 460-6.4
   B. Chord Splices: Minimum splice spacing is three truss panel lengths apart and three truss panel lengths from the uprights when panel lengths are 10'-0" or less.
      Chord Splices may be either the Standard Splice or the Alternate Splice, but not both on the same structure.
   C. Upright splice: Not allowed unless the upright exceeds available mill lengths (35' - 40').
   D. Structural bolt hole diameters: Bolt diameter plus 1/16".
   E. Anchor bolt hole diameters: Bolt diameter plus 1/2".
   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
   B. All other steel, including Plate Washers, hot dip galvanize: ASTM A123

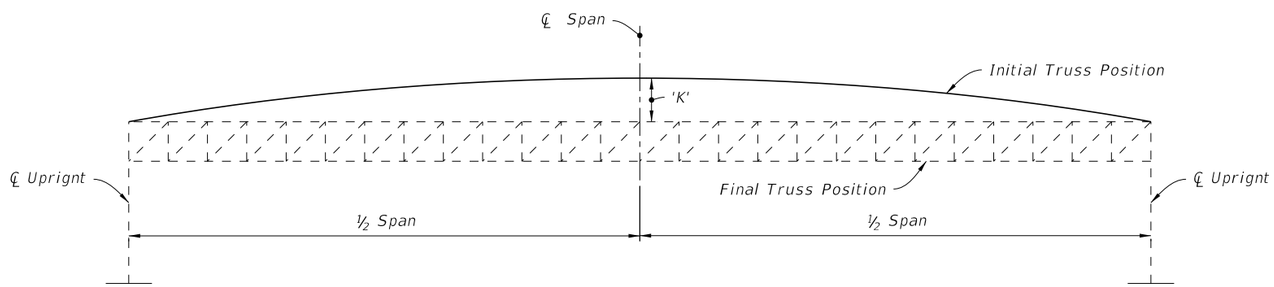
7. Construction:

   A. Construct foundation in accordance with Specification 455 Drilled Shaft, except payment is included in the cost of the structure.
   B. Prior to erection, record the as-built anchor locations and submit to the Engineer.
   C. Provide a parabolic camber with the required upward deflection as shown on the Camber Diagram.
   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. After installation, place wire screen between top of foundation and bottom of baseplate in accordance with Specification 649-6.



ISOMETRIC VIEW

SPAN SIGN ASSEMBLY



CAMBER DIAGRAM

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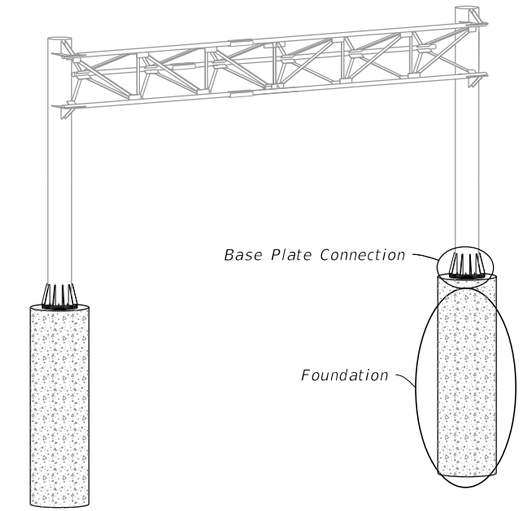
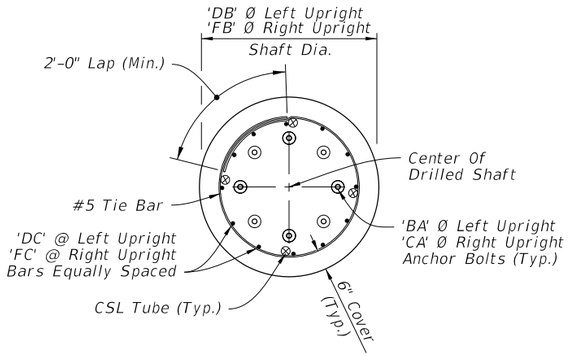
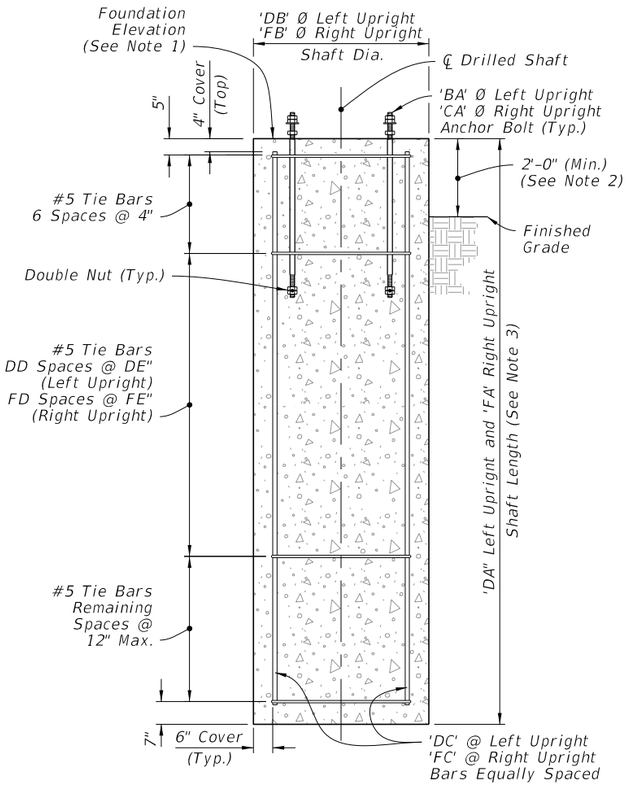


SPAN SIGN ASSEMBLY



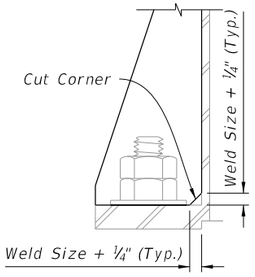
PLAN



ELEVATION

DRILLED SHAFT

FOUNDATION



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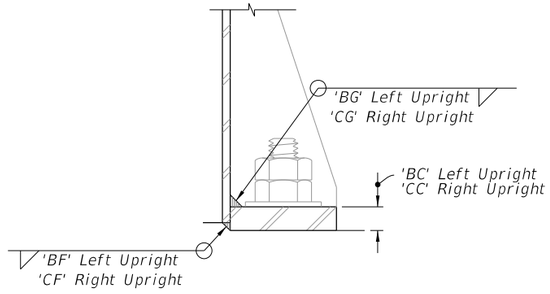

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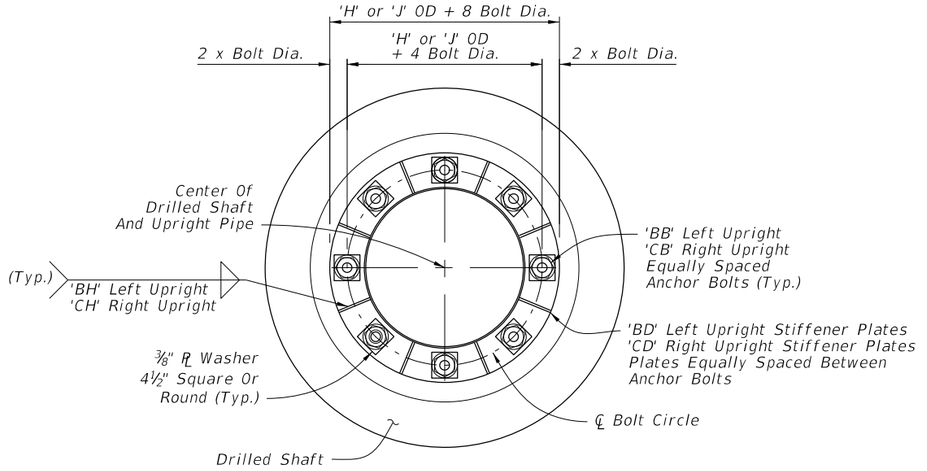
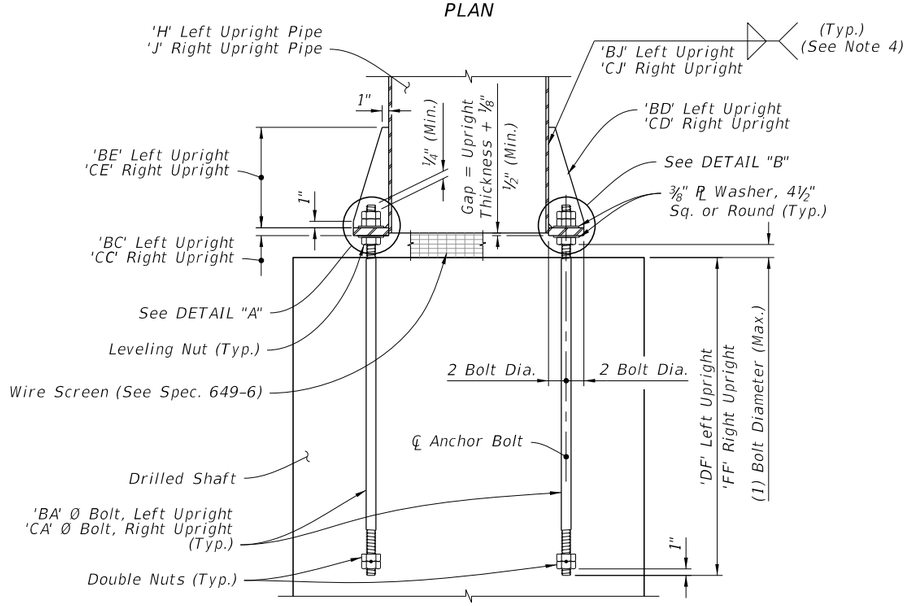


PLAN



ELEVATION

BASE PLATE CONNECTION

NOTES:

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).

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LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	SPAN SIGN STRUCTURE	INDEX	SHEET
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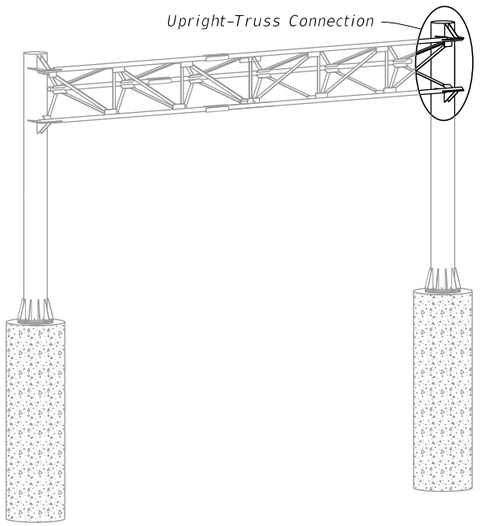
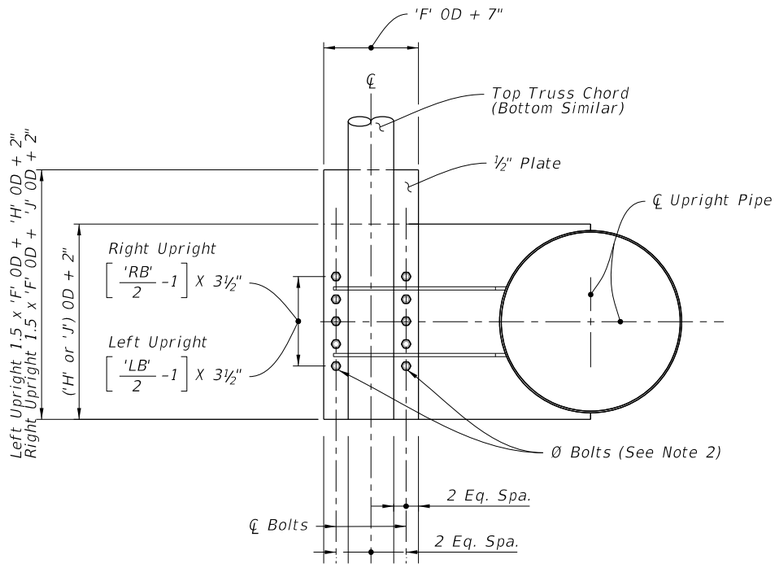
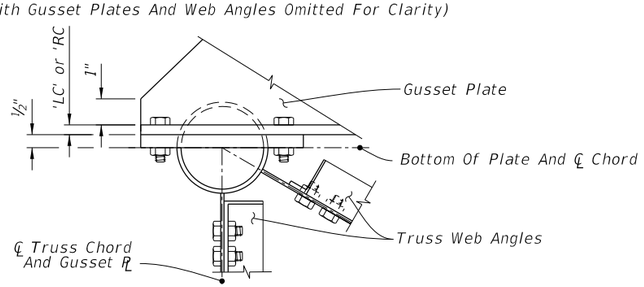


SPAN SIGN ASSEMBLY



SECTION A-A

(With Gusset Plates And Web Angles Omitted For Clarity)



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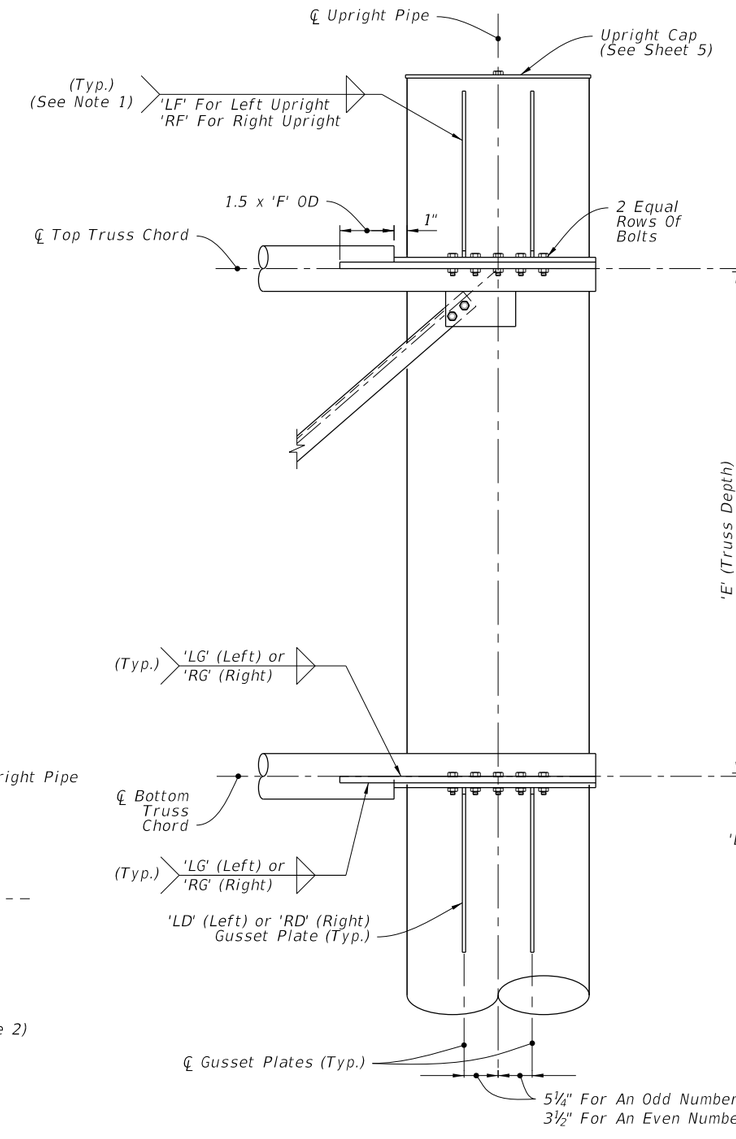
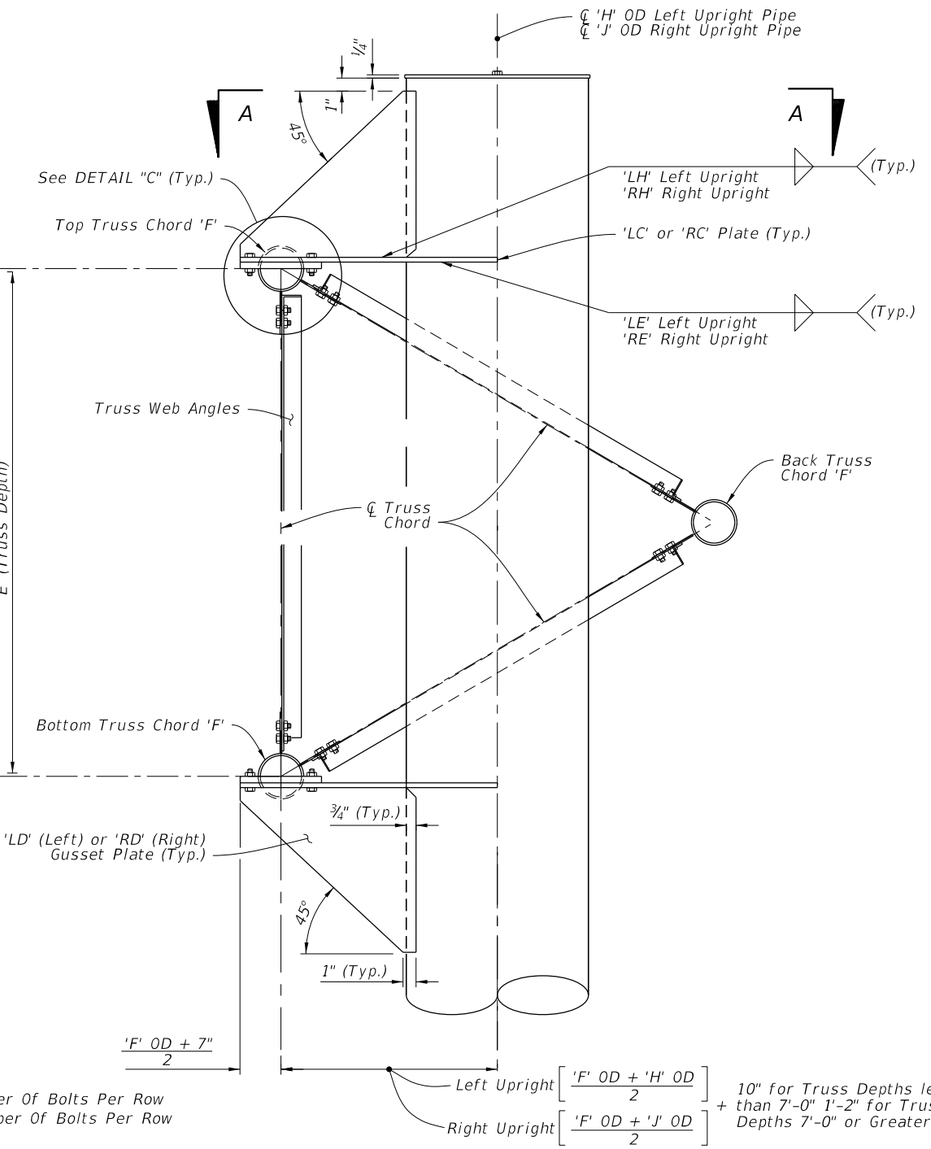


FRONT ELEVATION



SIDE ELEVATION

UPRIGHT-TRUSS CONNECTION DETAIL

(Web Members From Back Truss Chord Omitted For Clarity, See Note 3)

NOTES:

1. Wrap fillet weld around the stiffener termination on the tube wall.
2. Truss Chord Bolts: 'LB' or 'RB' Hex Head Bolts 'LA' or RA' Ø.
3. Right Upright Truss connection shown, Left Upright Truss connection similar.

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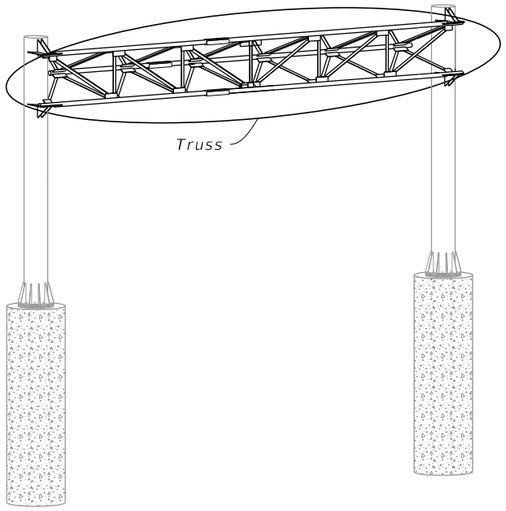
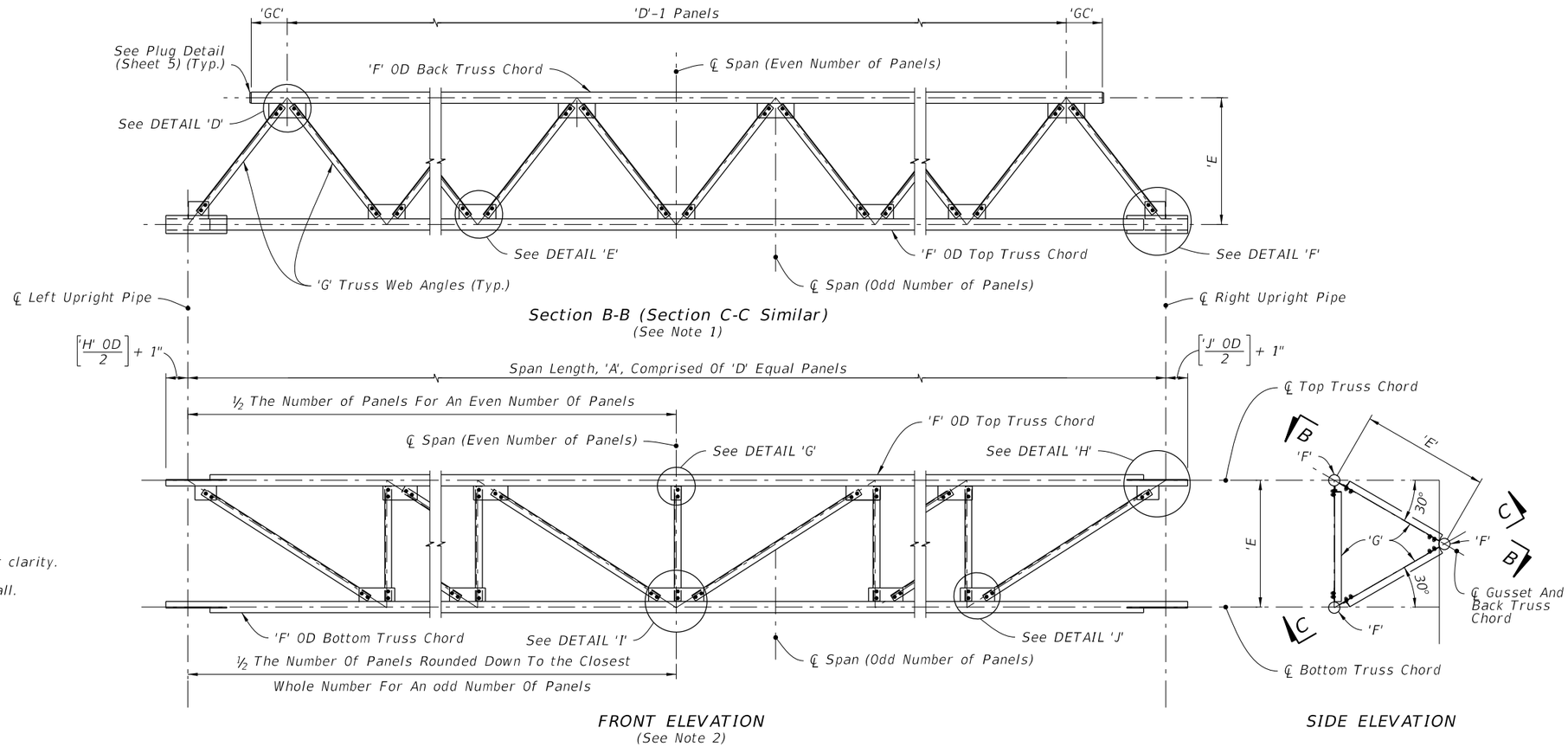


SPAN SIGN ASSEMBLY

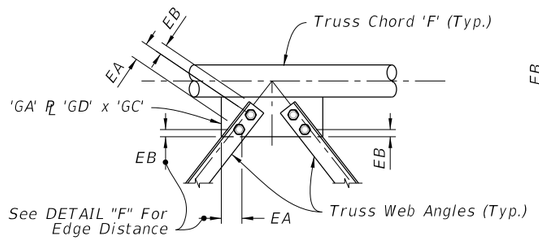
NOTES:

1. Out-of-plane members are not shown for clarity.
2. Back truss chord and attached angles are not shown for clarity.
3. Wrap fillet weld around plate termination on the tube wall.

Bolt Diameter (in.)	Distance (in.)	
	EA	EB
1¼	4⅜	2¼"
1	3½	1¾
⅞	3	1½
¾	2½	1¼
⅝	2¼	1⅛



TRUSS



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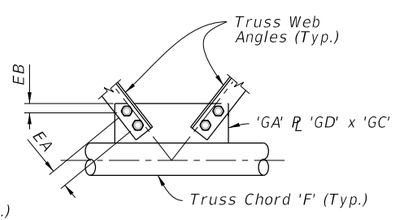

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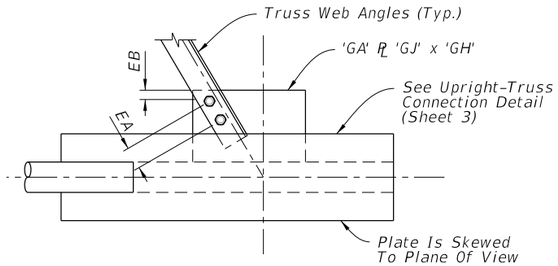

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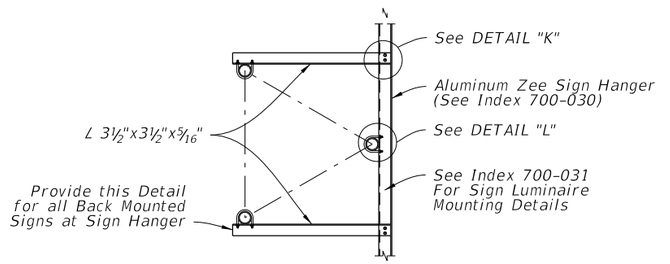
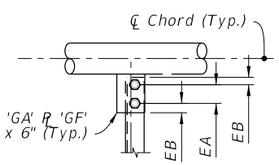


BACK-SIDE SIGN MOUNTING



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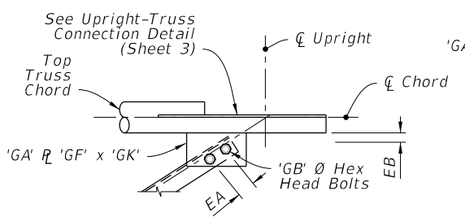

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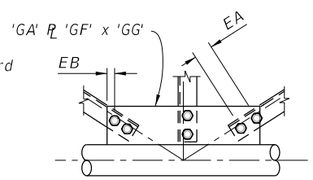

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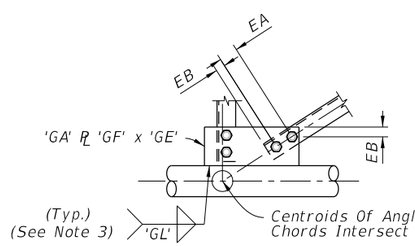

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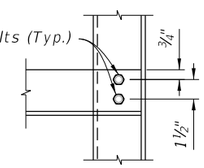

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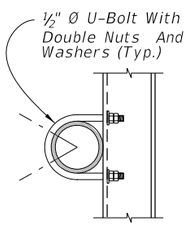

DETAIL 'L'

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SPAN SIGN STRUCTURE	INDEX	SHEET
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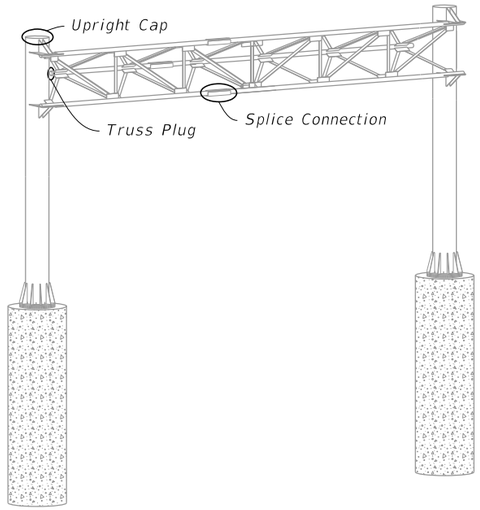
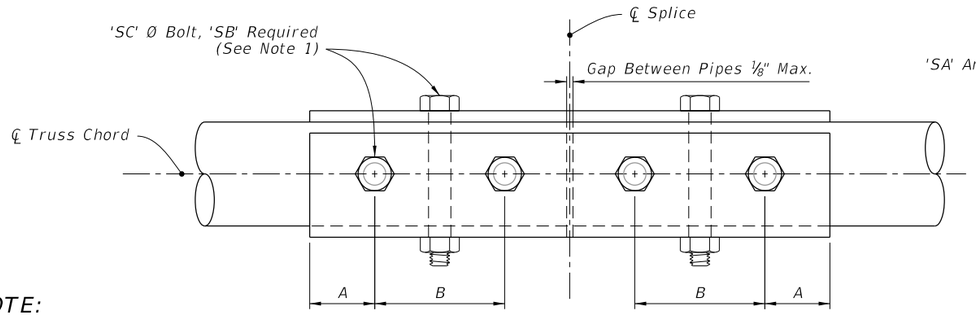


SPAN SIGN ASSEMBLY

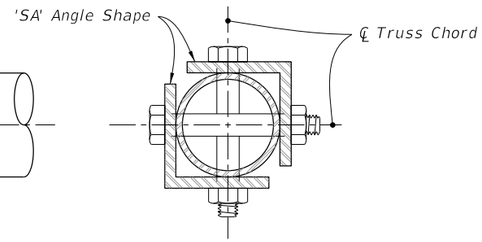
Bolt Diameter (in.)	Distance (in.)	
	A	B
1	1¾	3½
⅞	1½	3
¾	1¼	2½

SPLICE CONNECTION NOTE:

1. Only 6 bolts are shown in detail for clarity. (One Half Each End Of Splice)

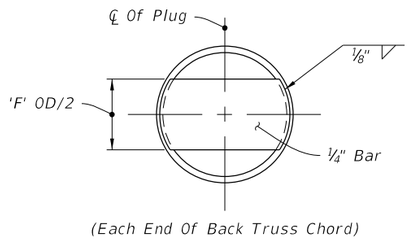


FRONT ELEVATION

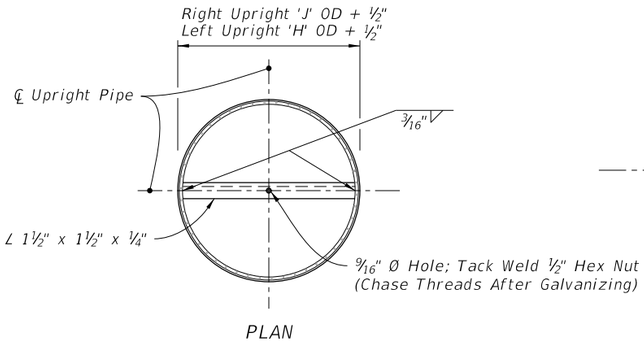


SIDE ELEVATION

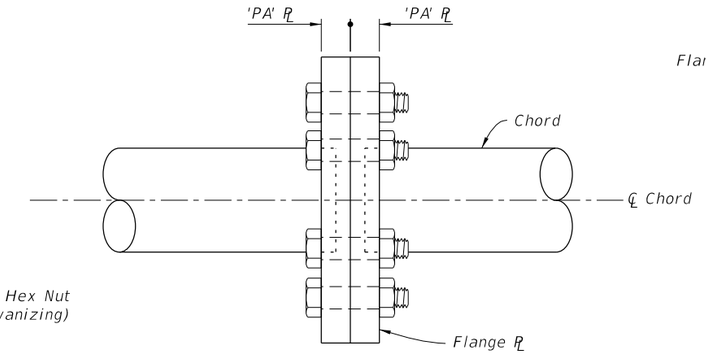
SPLICE CONNECTION DETAIL



TRUSS PLUG DETAIL



PLAN



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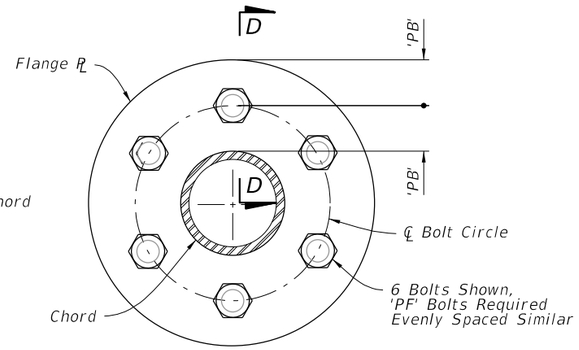
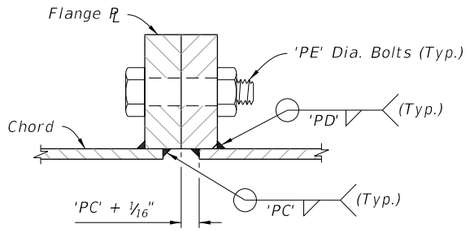
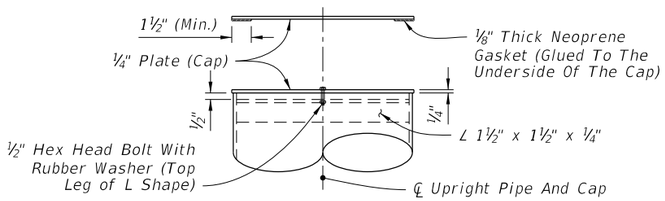


SIDE ELEVATION



SECTION D-D



ELEVATION

UPRIGHT CAP DETAIL

ALTERNATE SPLICE CONNECTION DETAIL

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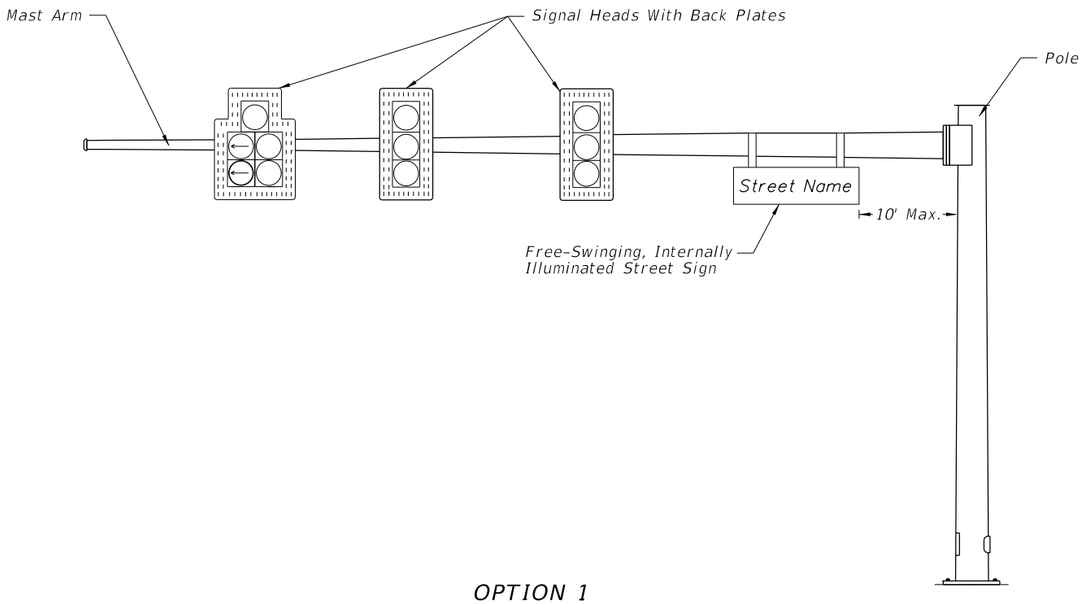
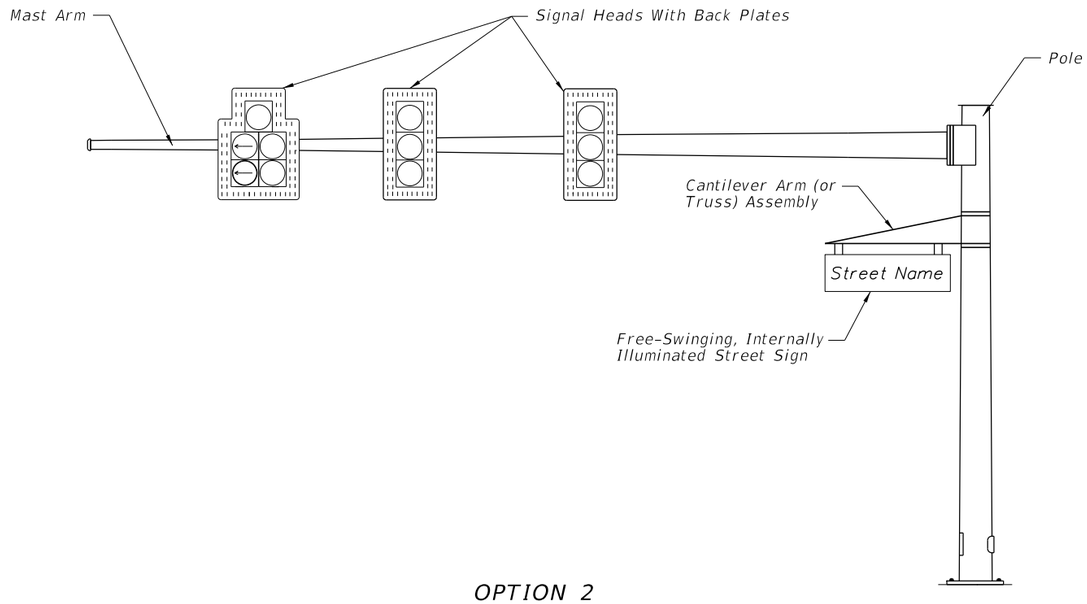
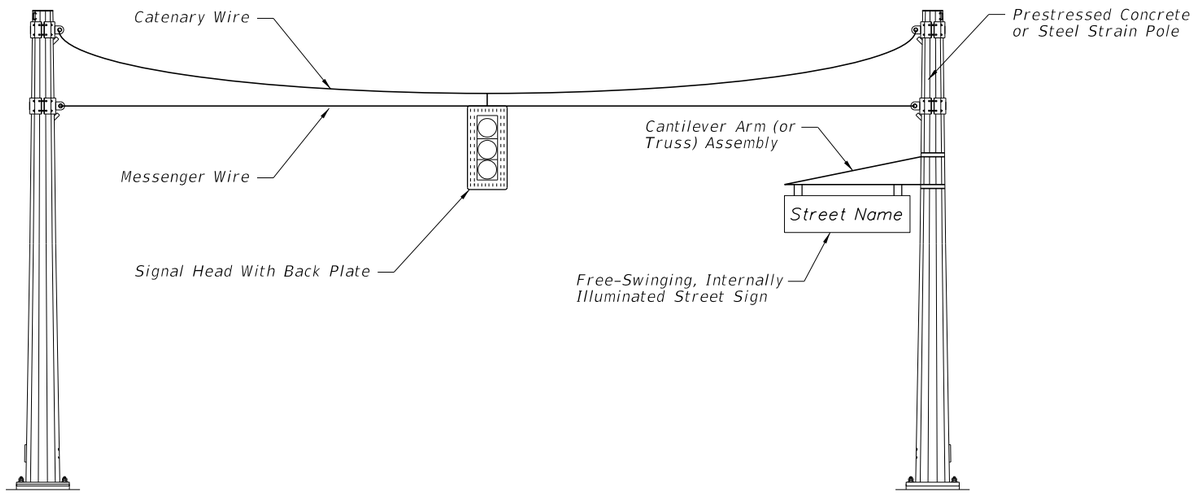


OPTION 1



OPTION 2

MAST ARM ASSEMBLY



SPAN WIRE ASSEMBLY

NOTES:

1. Free-swinging, internally-illuminated street signs shall only be installed on the signal pole for span wire assemblies. For mast arm assemblies the street sign may be installed on the arm or pole.
2. Free-swinging, internally-illuminated street signs meet the requirements of Specification 700.
3. Pole attachments and cantilever arm (or truss) assemblies may be accepted by Contractor certification provided the signs being supported meet the weight and area limitations included in Specification 700 for "Acceptance by Certification".
4. Pole attachments and cantilever arm (or truss) assemblies supporting signs not meeting the weight or area limitations included in Specification 700 for "Acceptance by Certification" require the submittal of structural calculations and Shop Drawings that have been prepared by and sealed by the Specialty Engineer.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	FREE-SWINGING, INTERNALLY-ILLUMINATED STREET SIGN ASSEMBLIES	INDEX	SHEET
11/01/17						700-050	1 of 1

GENERAL NOTES:

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.

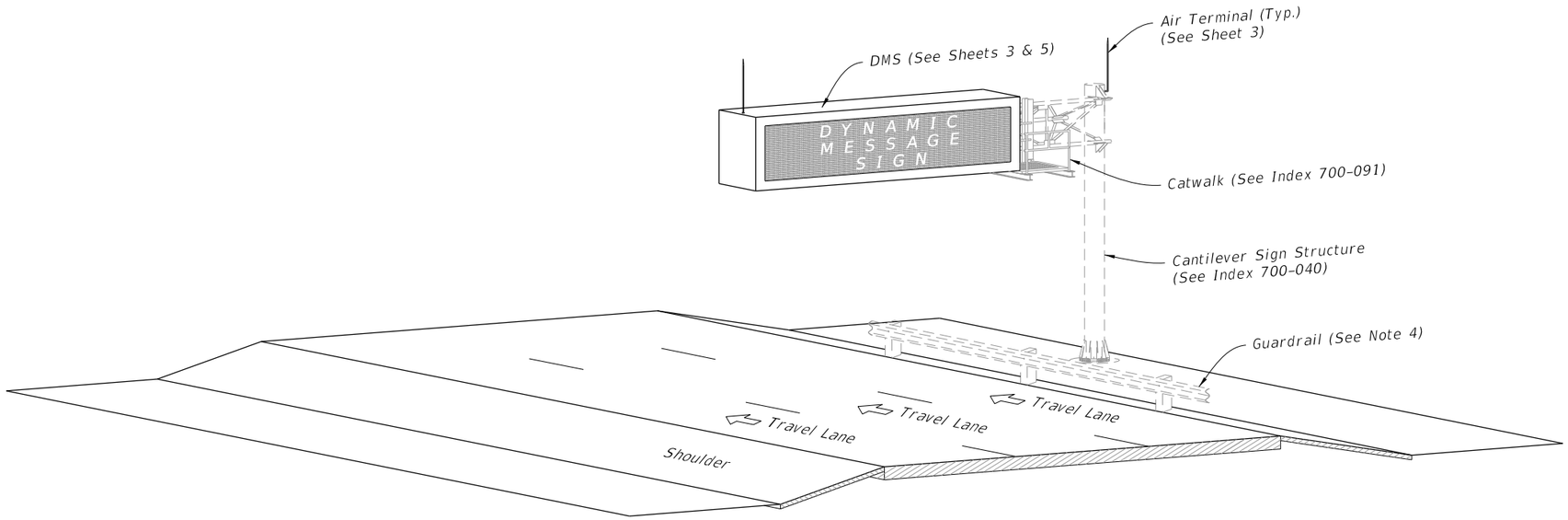
5. Materials:

   A. Sign Mounting Components:
      a. Aluminum Structural Shapes: ASTM B308, Alloy 6061-T6
      b. Vertical Hangers: ASTM A704, 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)

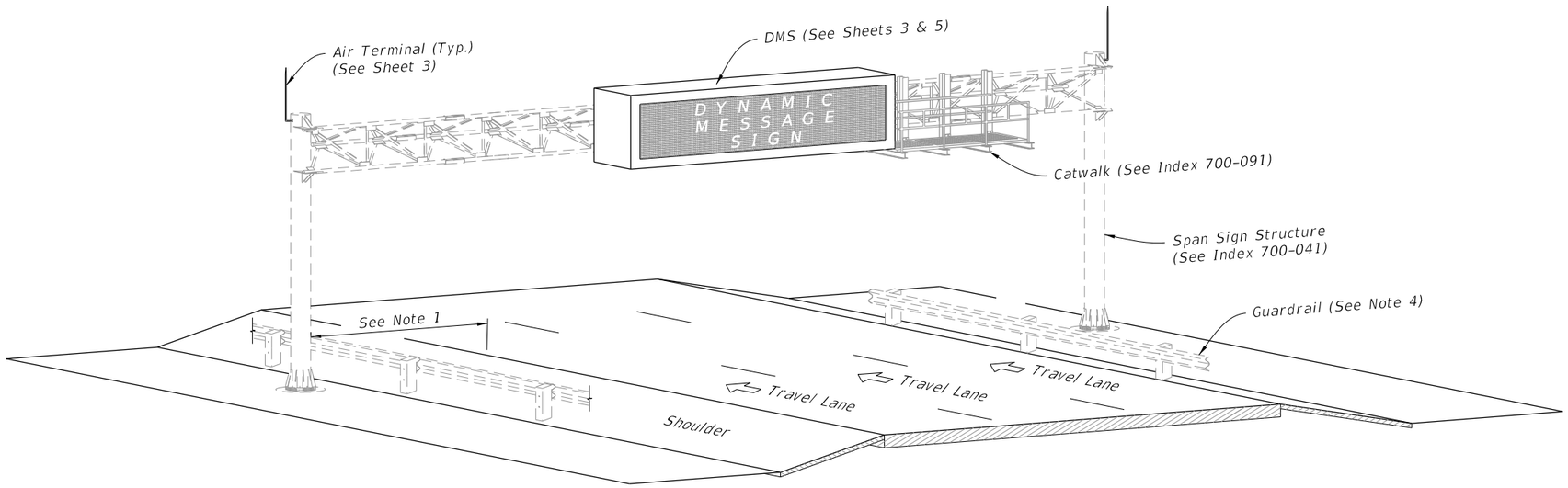
   B. Coatings:
      a. All nuts, bolts and washers ASTM F2329
      b. All other steel items ASTM A123
      c. Bolt hole Diameters: Bolt plus $\frac{1}{16}$" before galvanizing

6. Installation:

   A. See project requirements for location of DMS Cabinet.
   B. Field Adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel given site condition as directed by the Engineer. Avoid conflicts with stiffeners, handhole and maintenance of anchor bolts.
   C. Locate the sign horizontal on the structure as shown in the Plans. Vertically center the sign enclosure with the centerline 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 sign truss
   F. Connect grounding conductors to the steel framework that has been cleaned to base metal by use of bonding plates having contact area of not less than 8 square inches or by welding or brazing. Drilling and tapping the steel structure to accept a threaded connector is also an acceptable method
   G. If steel framework is to be drilled and tapped to accept threaded connector, the threaded connector shall be galvanized and have at least 5 threads fully engaged and secured with a jam nut to the steel framework.
   H. Bends in the conduit must be greater than the minimum bending radius for the cable contained in the conduit.
   I. Completely encase all data, fiber optic and power cables for the DMS within the sign structure or in conduit.
   J. Permanently stamp/mark foundation to indicate conduit locations.
   K. Transition conduit in foundation to indicate underground conduit with appropriate reducer outside the limits of the foundation.



CANTILEVER ISOMETRIC VIEW



SPAN ISOMETRIC VIEW

DYNAMIC MESSAGE SIGN ASSEMBLY

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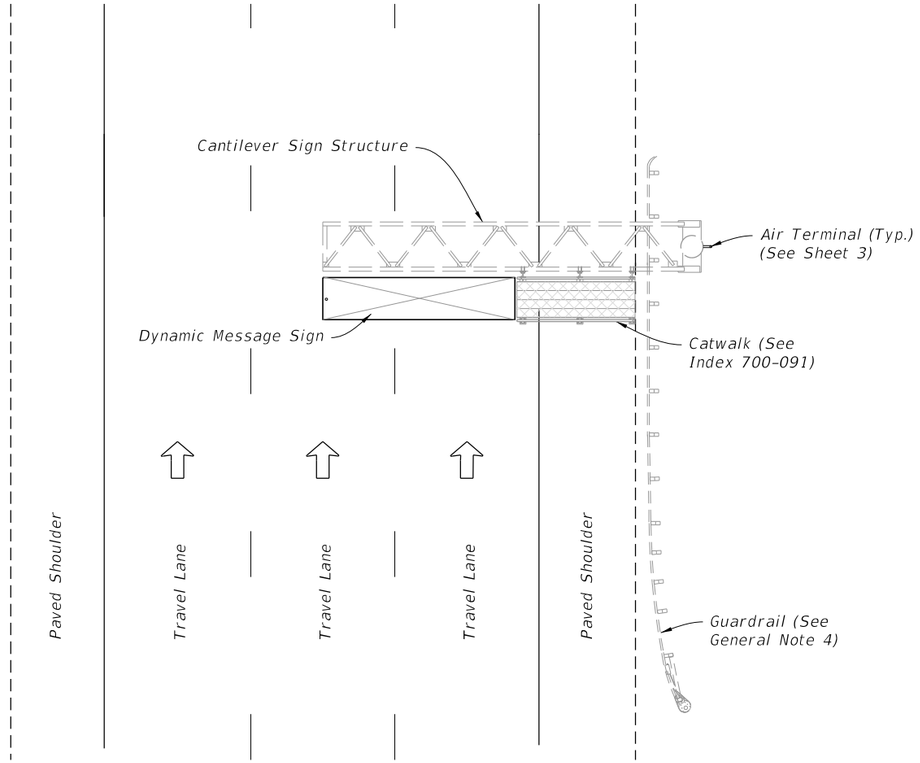
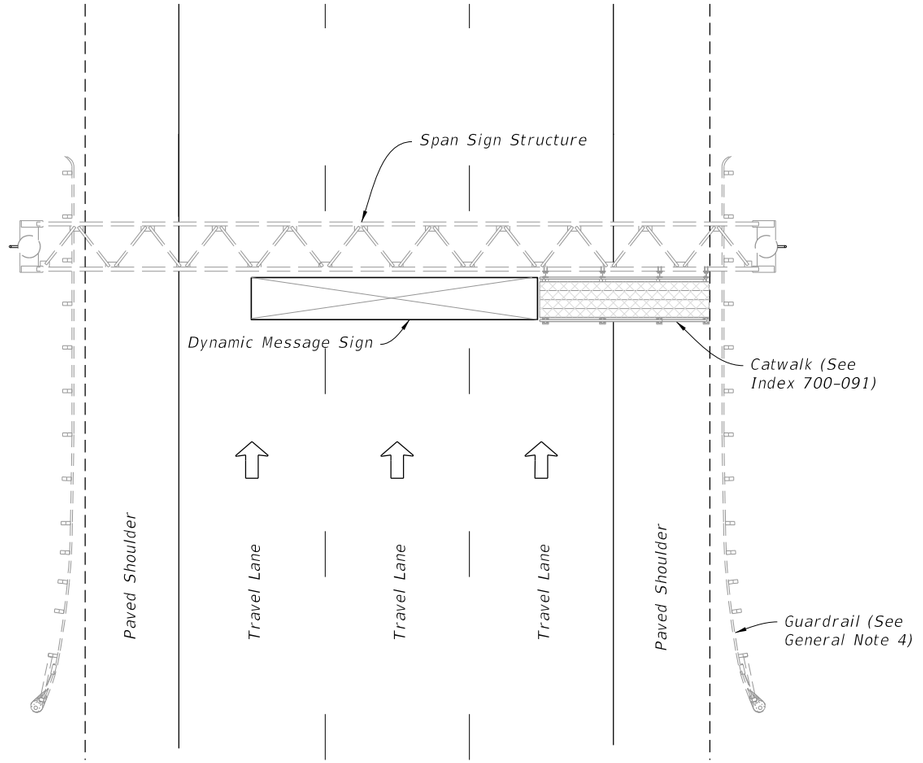
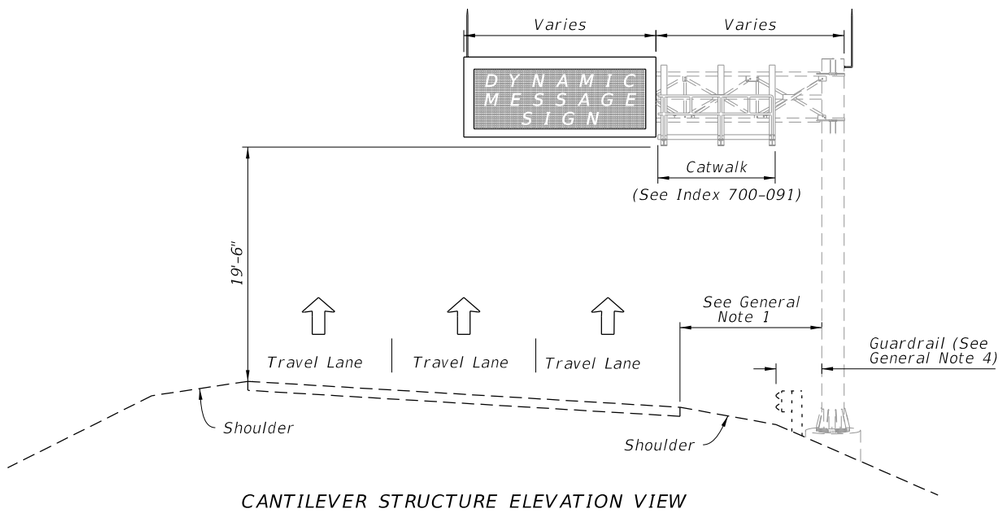
11/01/19			FDOT FY 2020-21 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	700-090	1 of 5



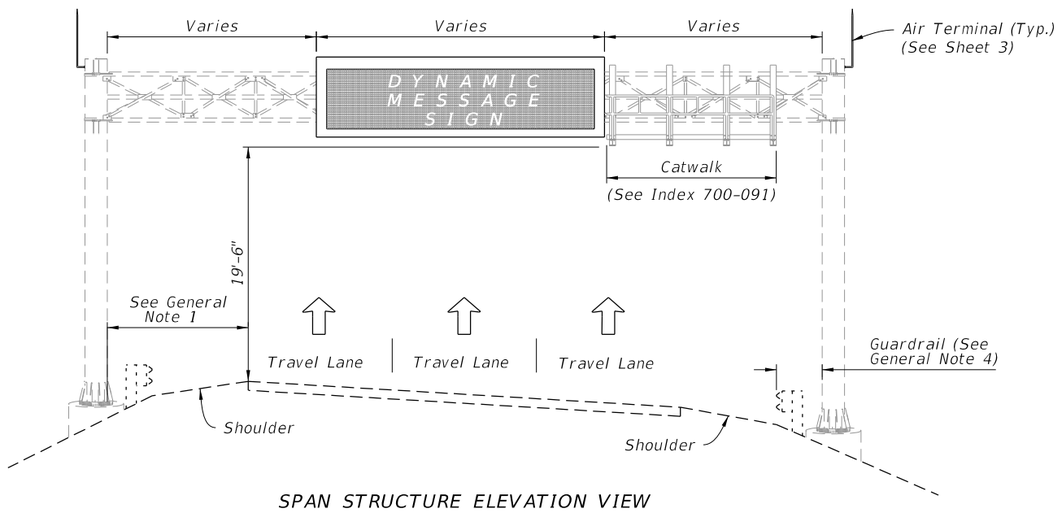
CANTILEVER STRUCTURE PLAN VIEW



SPAN STRUCTURE PLAN VIEW



CANTILEVER STRUCTURE ELEVATION VIEW



SPAN STRUCTURE ELEVATION VIEW

DYNAMIC MESSAGE SIGN GENERAL LAYOUT

NOTE: Actual number and direction of travel lanes varies.

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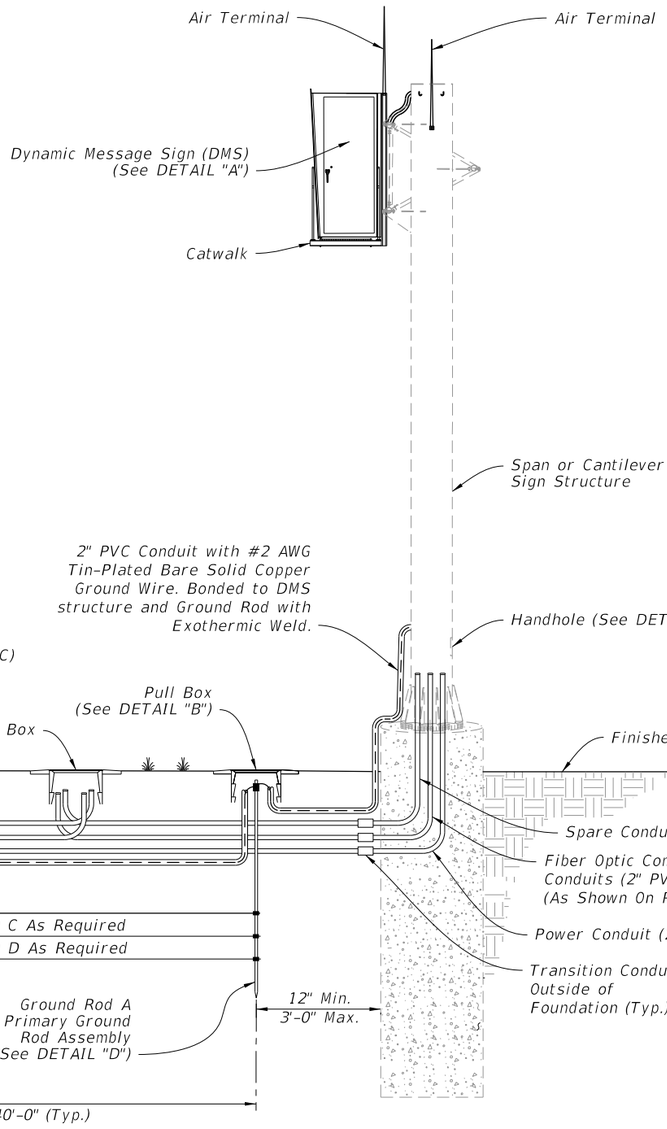
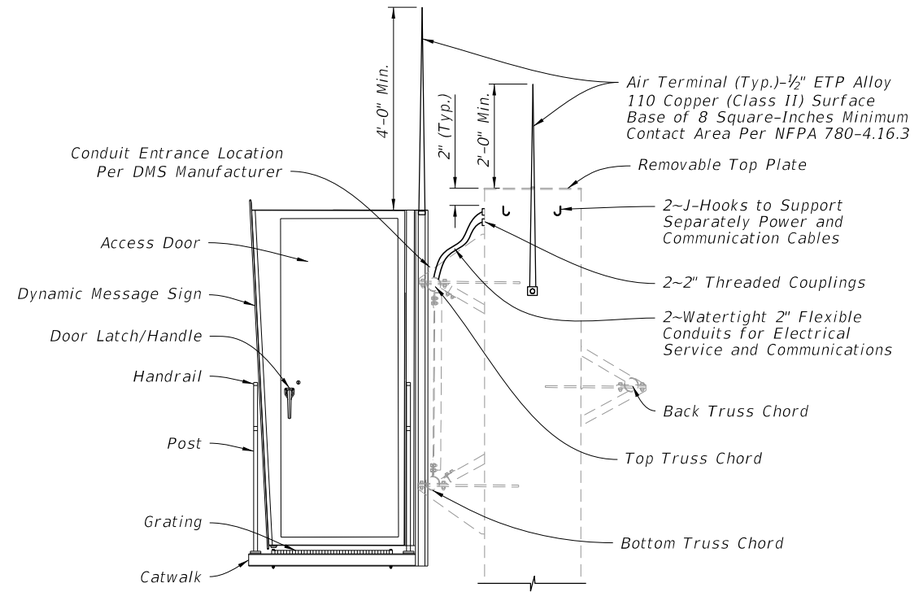
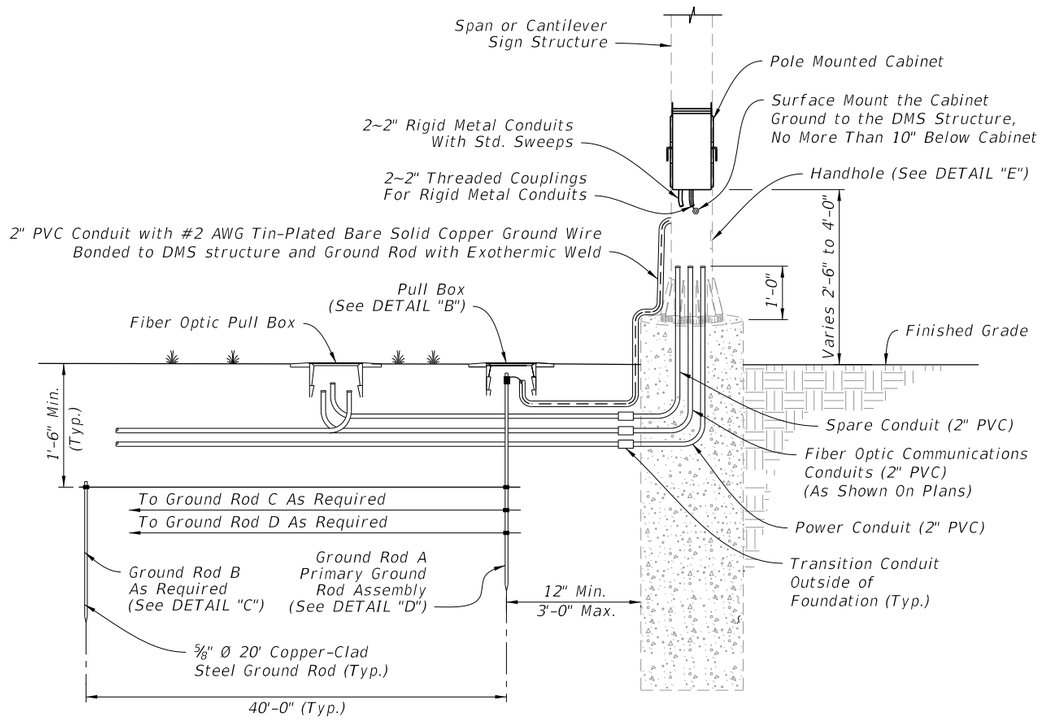
11/01/19			FY 2020-21 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	700-090	2 of 5



GROUND MOUNTED CABINET



DETAIL "A"



POLE MOUNTED CABINET

DYNAMIC MESSAGE SIGN GROUNDING AND CONDUIT DETAIL

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX	SHEET
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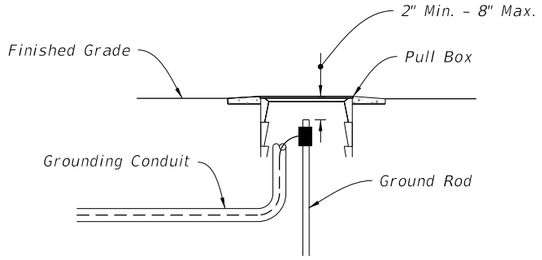
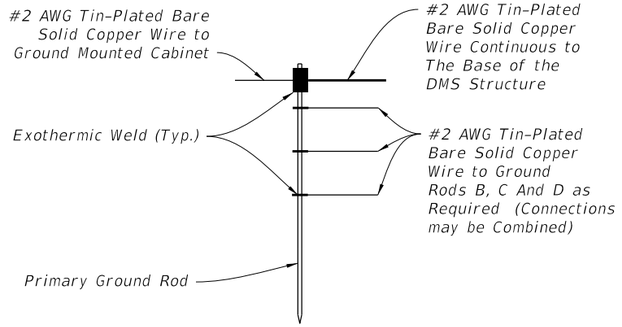
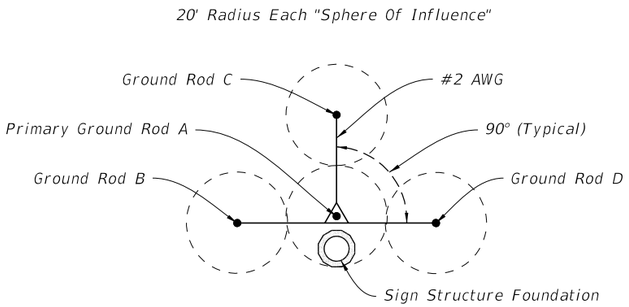


(Pole Mounted Cabinet Configuration Shown)

DETAIL "B"



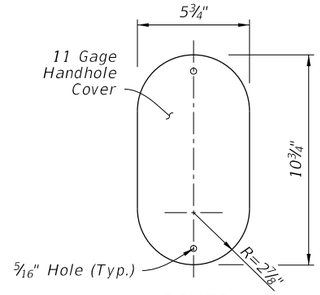
DETAIL "C"



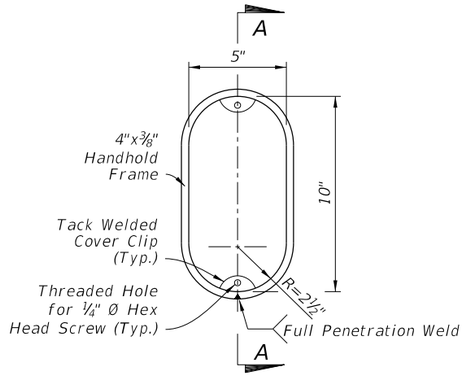
TYPICAL
(20' Rods, 40' Spacing)

GROUND ROD ARRAY DETAIL

DETAIL "D"



COVER



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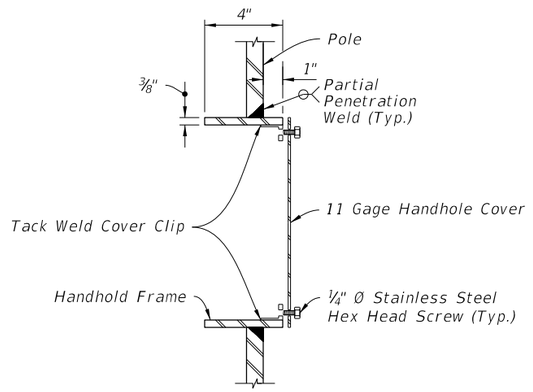

(Thru Handhole)

SECTION A-A

DETAIL "E"

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX	SHEET
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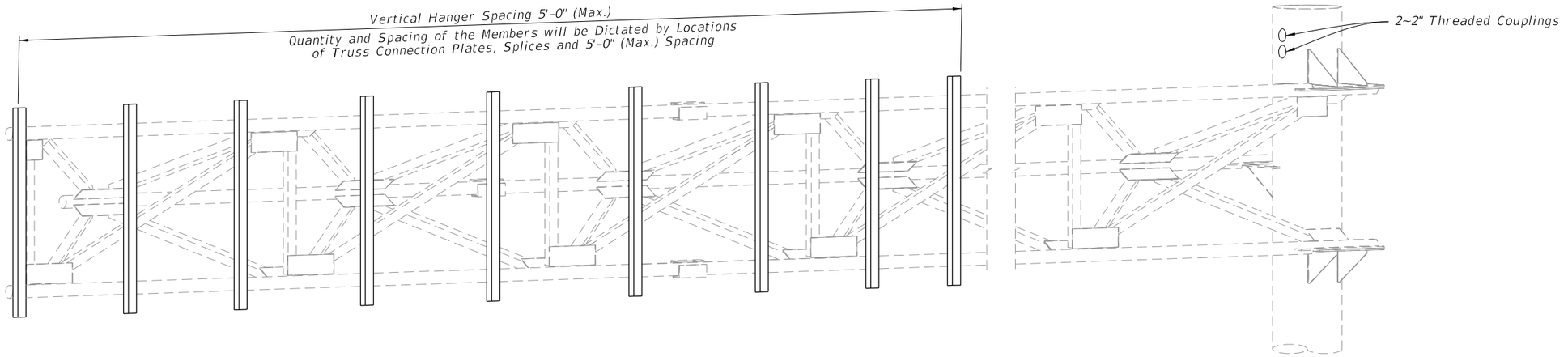
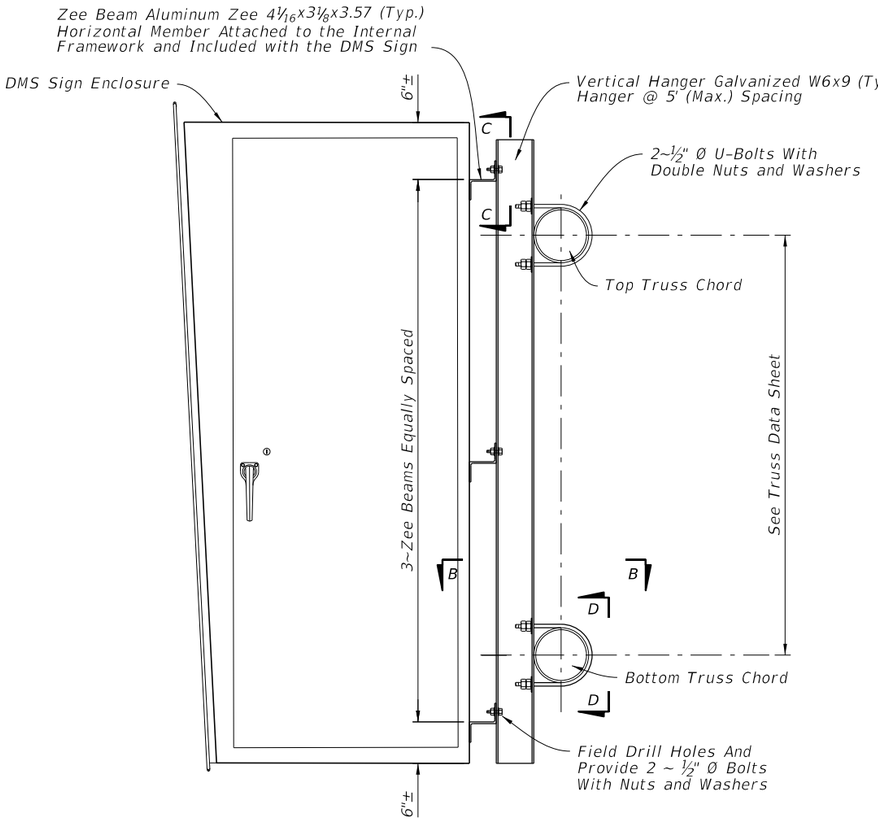
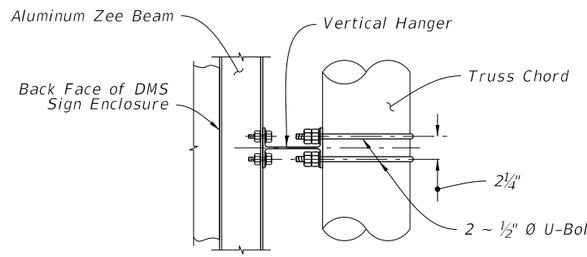


(Cantilever Sign Structure Shown, Span Sign Structure Similar)

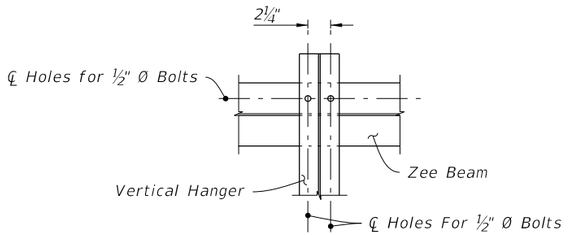
HANGER LOCATION DETAIL



DYNAMIC MESSAGE SIGN END VIEW



SECTION B-B



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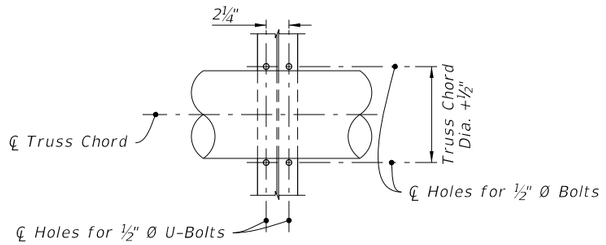

SECTION D-D

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX	SHEET
11/01/17					700-090	5 of 5

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 3½" 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, corrosion resistant safety gate.

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:

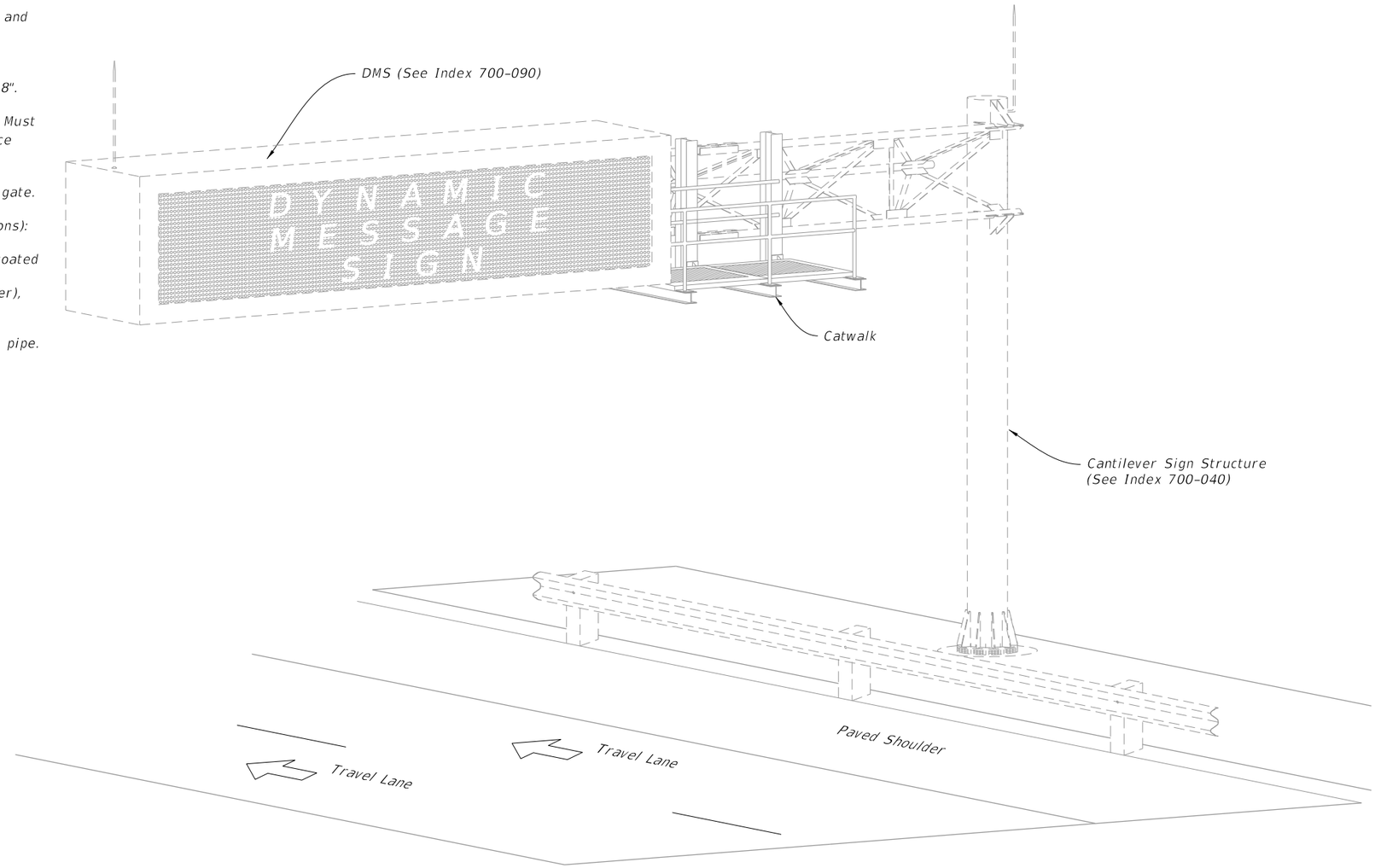
   E70XX

10. Materials:

    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. Coatings/Galvanizing:

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



CATWALK ASSEMBLY
(Cantilever Shown, Span Similar)

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CATWALK DETAILS	INDEX	SHEET
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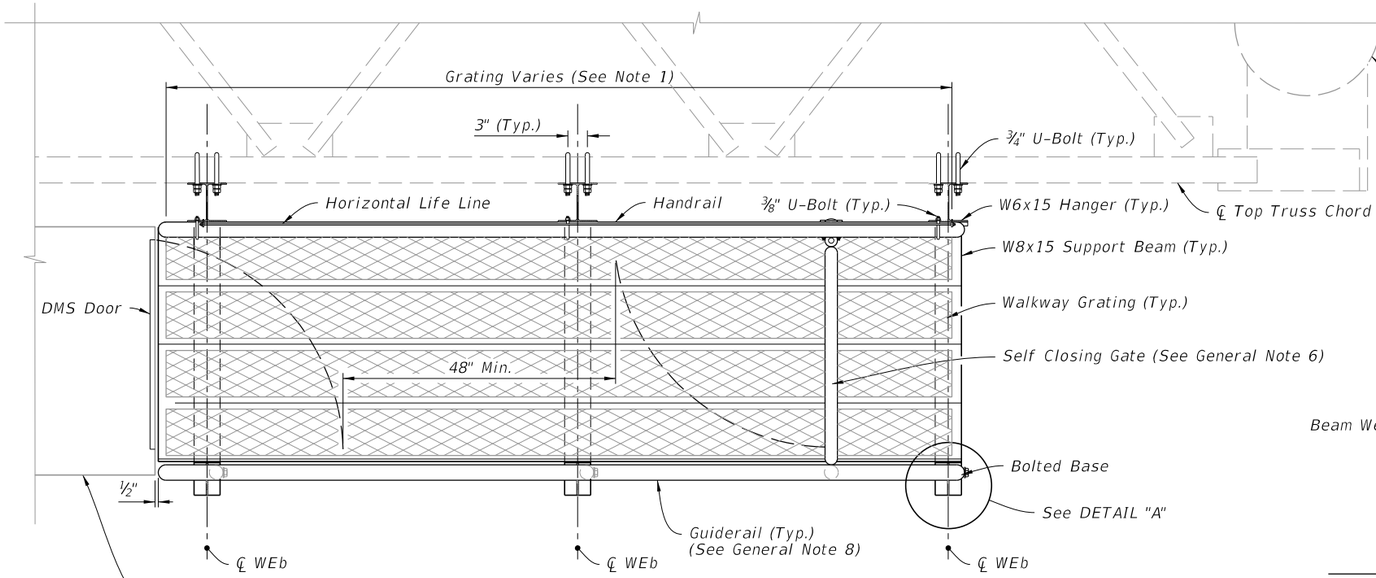
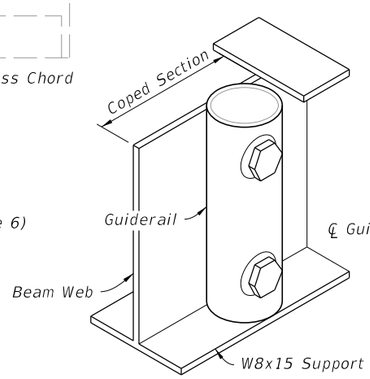
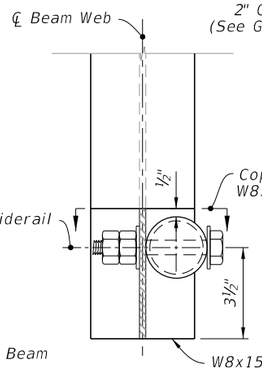


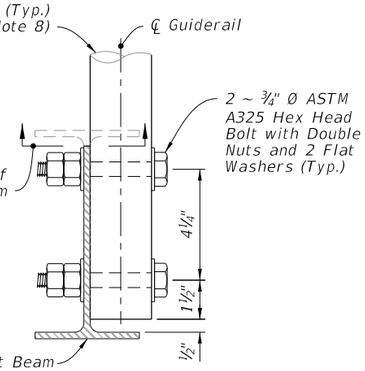
PLAN



ISOMETRIC VIEW

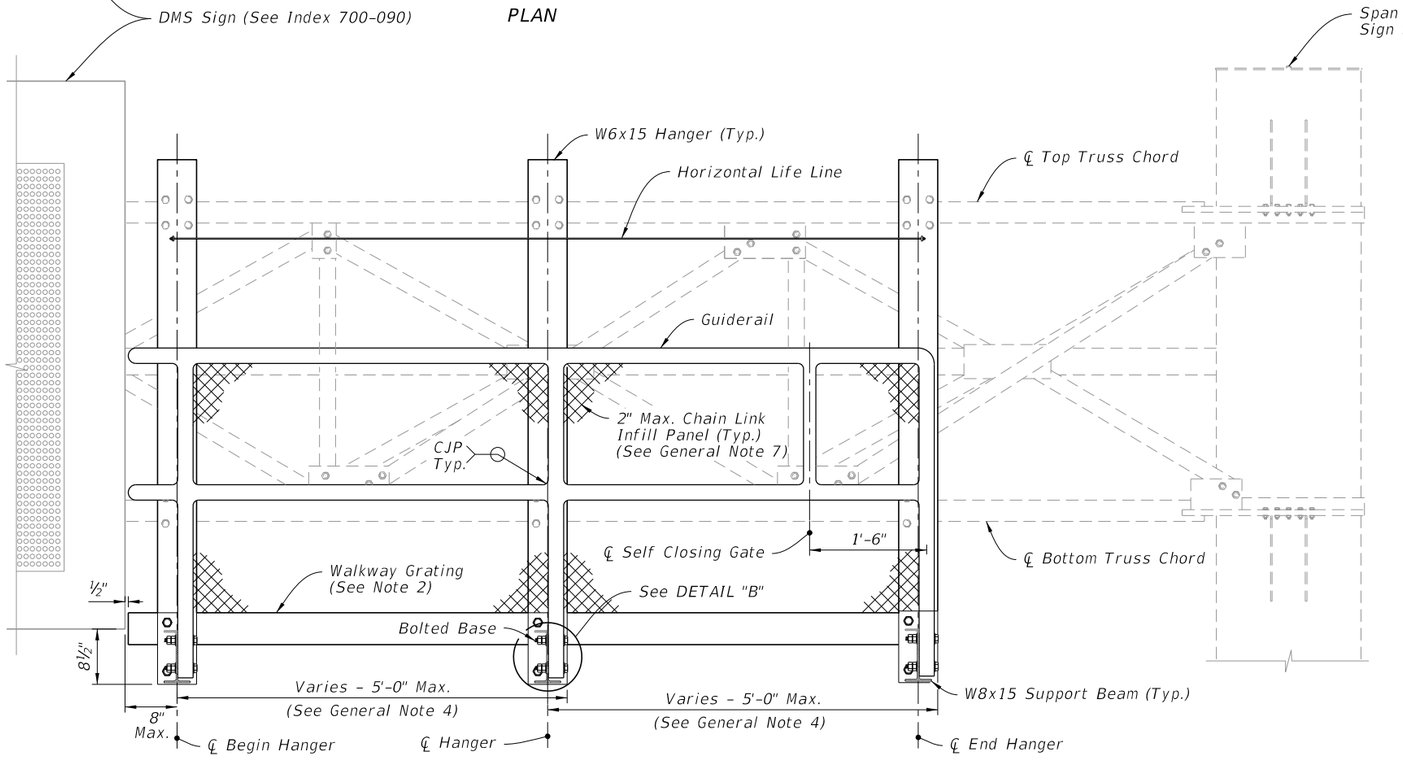


DETAIL "A"

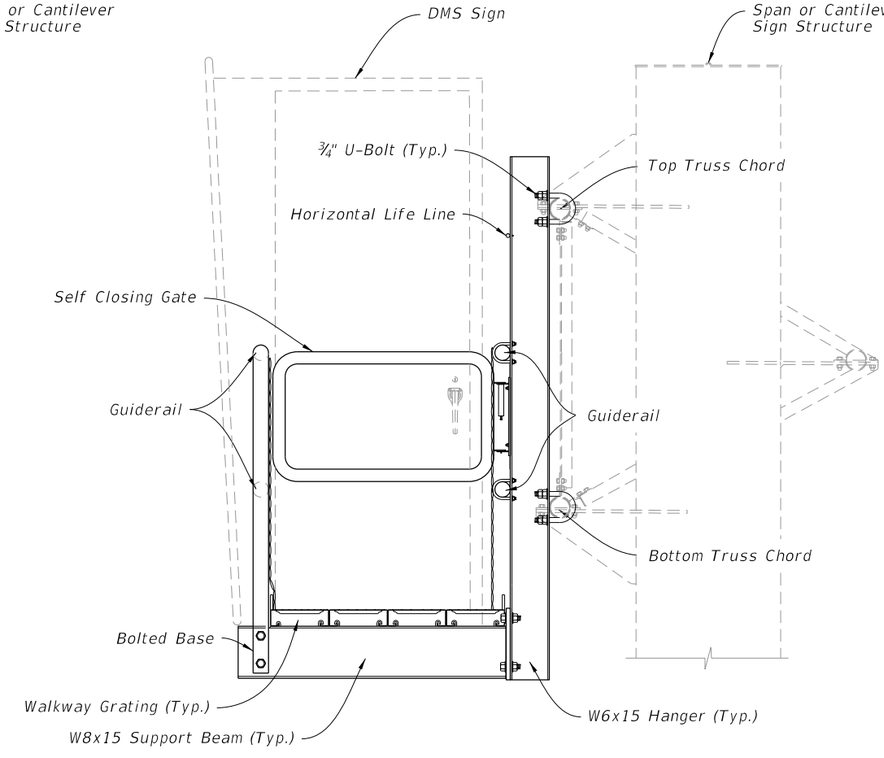


DETAIL "B"

BOLTED BASE DETAILS



FRONT ELEVATION



SIDE ELEVATION

GENERAL ASSEMBLY

NOTES:

1. See manufacturer details for walkway planks and bolting criteria.
2. Fasten securely. See grating manufactures details.

GENERAL ASSEMBLY AND FIXED BASE DETAILS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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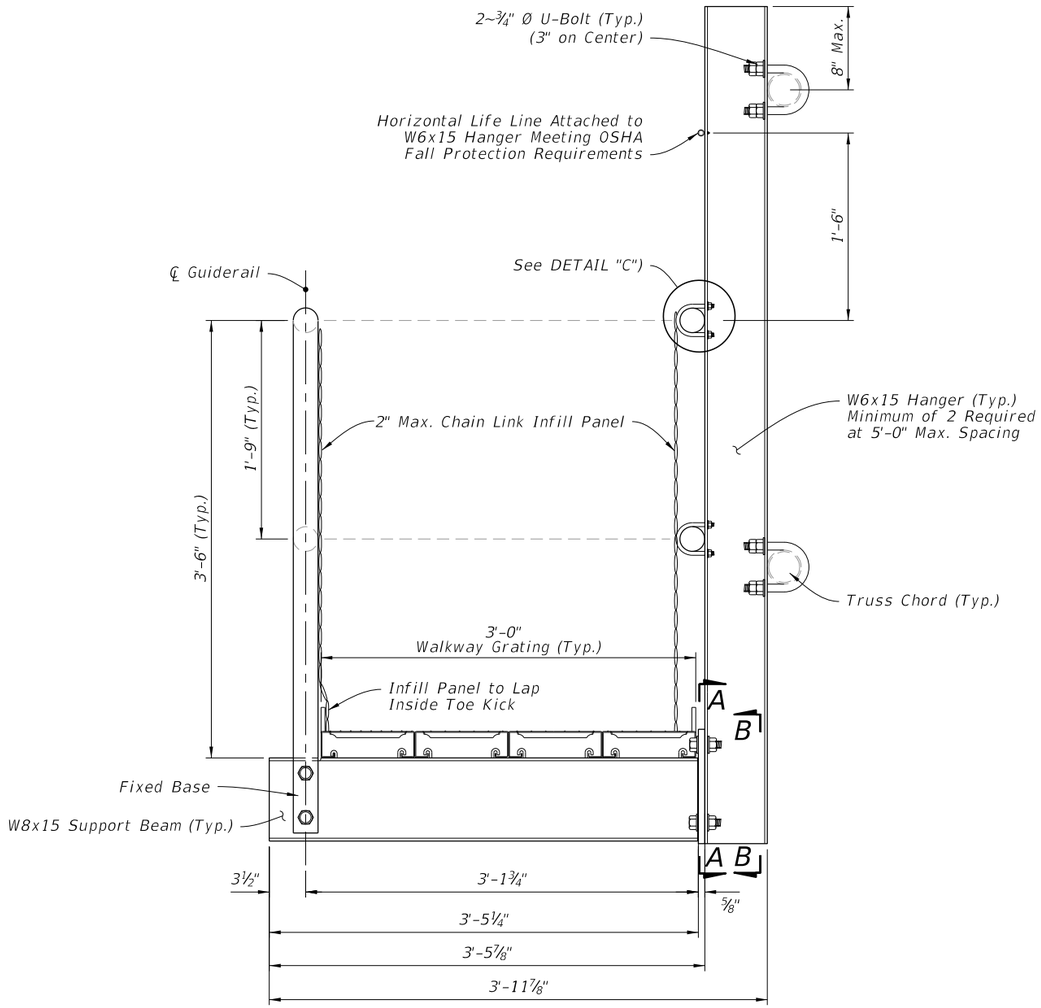
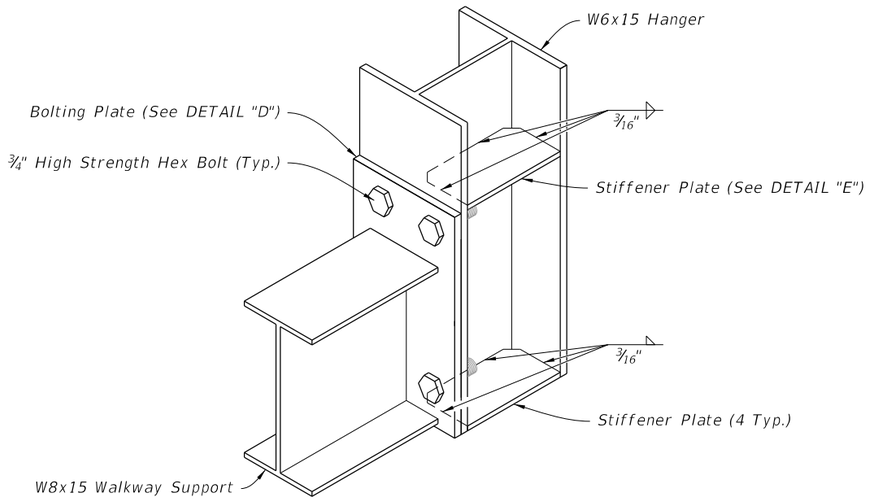
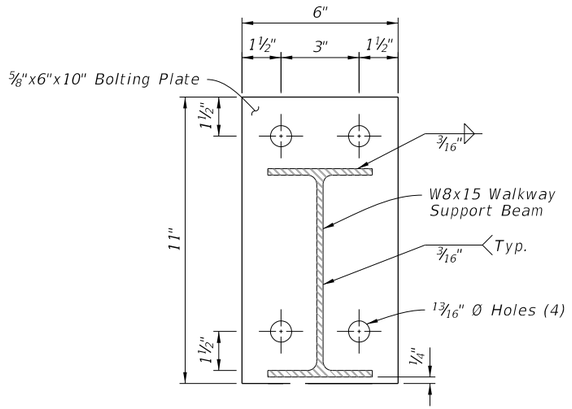


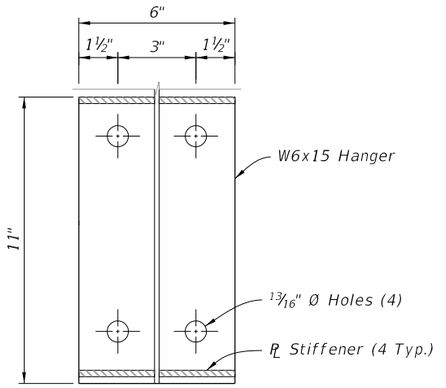
WALKWAY SUPPORT DETAILS



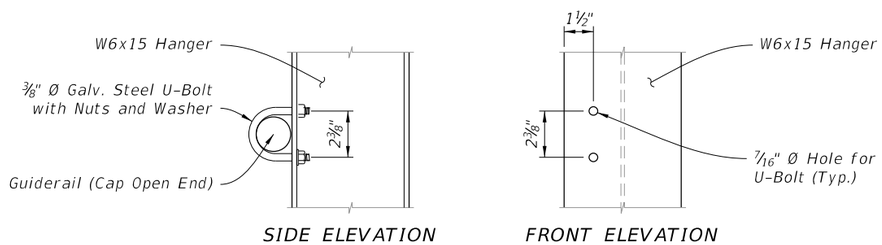
ISOMETRIC VIEW



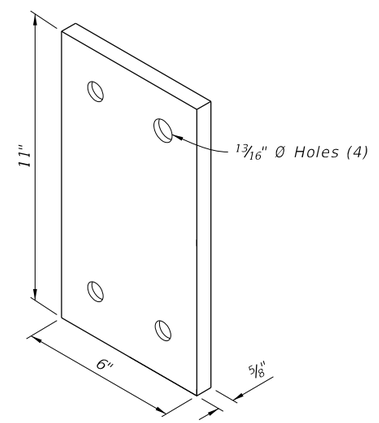
SECTION A-A



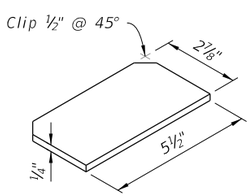
SECTION B-B



DETAIL "C"
(Guiderail Attachment)



DETAIL "D"
(Bolting Plate)



DETAIL "E"
(Stiffener Plate)

WALKWAY SUPPORT DETAILS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CATWALK DETAILS	INDEX	SHEET
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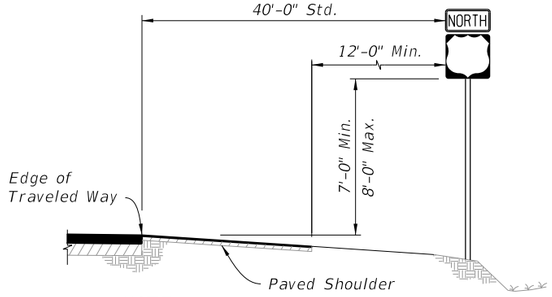
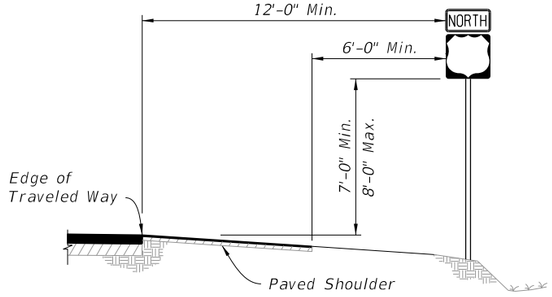


NOTE:
If median width does not allow standard offset from both roadway, center sign in median.

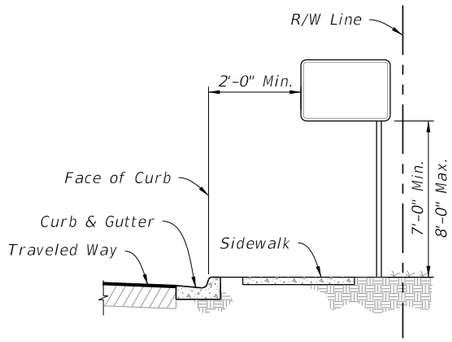
CASE I

Use on Limited Access Roadways



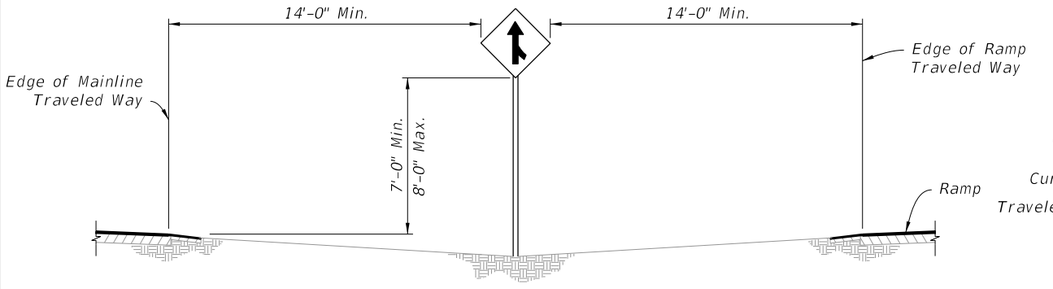
CASE II

Use on Arterial and Collector Roadways, and Limited Access Ramps



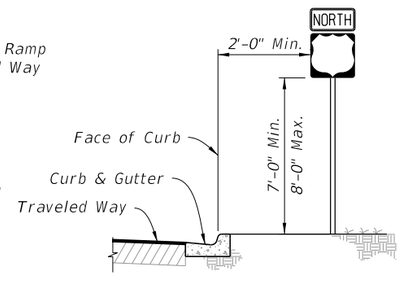
CASE III

Use on Arterial and Collector Roadways



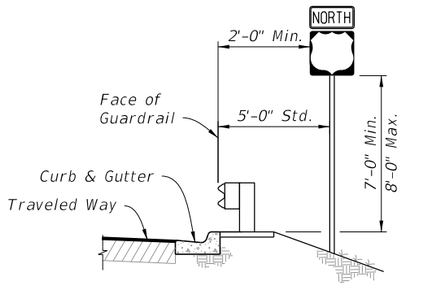
CASE IV

Use on Limited Access Roadways



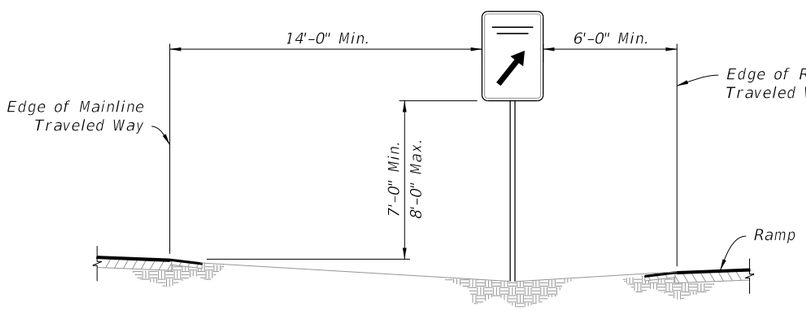
CASE V

Use in Business or Residential Areas Only



CASE VI

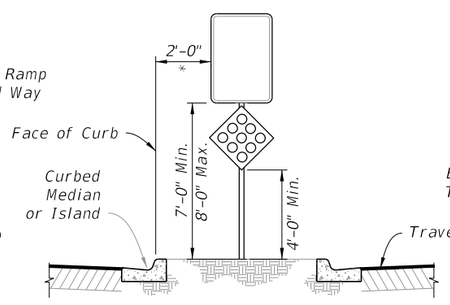
Use on Roadways With
Signs Behind Guardrail



CASE VII

REST AREA AND EXIT GORE SIGNS

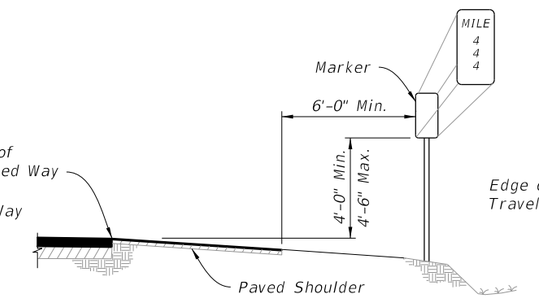
Use on Limited Access Roadways



* For separators <6'-0", center the sign within the separator, center sign column on island

CASE VIII

Use on Island or Curbed Median

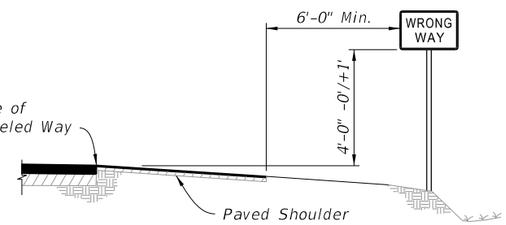


NOTE:
For more information refer to Section 2H of the MUTCD.

CASE IX

MILE POST MARKER

Use on Limited Access Roadways



CASE X

WRONG WAY SIGNS

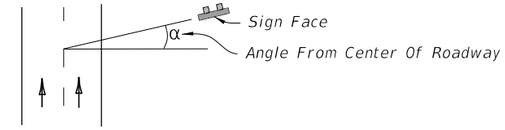
Use on Interstate Exit Ramps

GENERAL NOTES:

1. Single-Column Signs Shown, Multi-Column Signs similar. These typical sections serve as a guide for locating the traffic signs required under various roadside conditions. For size and details of sign construction and footing, refer to the appropriate Index and Plans.

2. Verify the length of sign supports in the field prior to fabrication.

3. Install ground signs at an angle of 1 to 4 degrees away from the traffic flow (see illustration). Install shoulder mounted signs rotated counterclockwise and median mounted signs rotated clockwise. Install signs on a curve as noted above from the perpendicular to the motorist line of sight.



4. The setback for Stop and Yield signs may be reduced to 3' minimum from the Edge of Traveled Way if required for visibility in business or residential sections with no curb and speeds of 30 MPH or less.

5. The mounting heights are measured from the bottom of the sign panel to a horizontal line extended from the Edge of Traveled Way or from the ground surface at the back of curb. If the standard heights cannot be met, the minimum heights are as follows:

   Limited Access Roadways – 7'

   Arterial and Collector Roadways:
   5' – Rural
   7' – Urban (including residential with parking and/or pedestrian activity)

   Limited Access Roadways:
   If a secondary sign is mounted below the major sign, mount the major sign so that the bottom of the sign is at least 8' above the edge of the traveled way and the secondary sign at least 5' above the edge of the traveled way.

   Arterial and Collector Roadways:
   Rural, mount the secondary sign at least 5' above the edge of the traveled way.
   Urban, mount the secondary sign at least 7' above the edge of the traveled way.

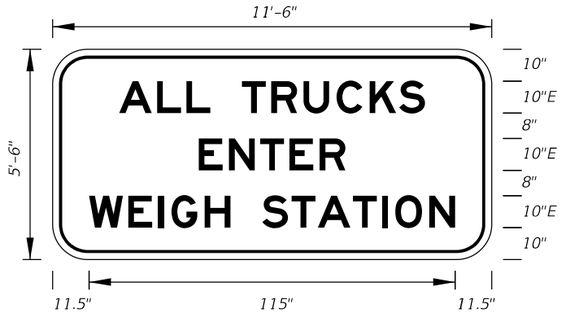
6. Do not install sign supports in the bottom of ditches.

7. Install sign supports so they do not reduce the accessible Width of Sidewalks or Shared Use Paths to less than 4' min. clear width.

6/24/2020 6:33:28 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2021-22 STANDARD PLANS	TYPICAL SECTIONS FOR PLACEMENT OF SINGLE AND MULTI-COLUMN SIGNS	700-101	1 of 1

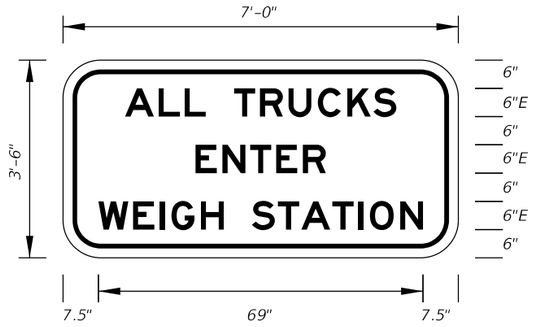
FREEWAY USE



FTP-1-06
11'-6" X 5'-6"
9" Radii 2" Border

10" Series E Legend
White Background
Black Legend and Border

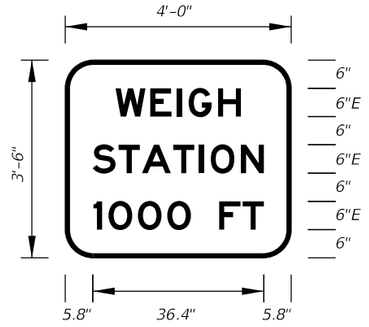
OTHER THAN FREEWAY USE



FTP-2-06
7' X 3'-6"
6" Radii 2" Border

6" Series E Legend
White Background
Black Legend and Border

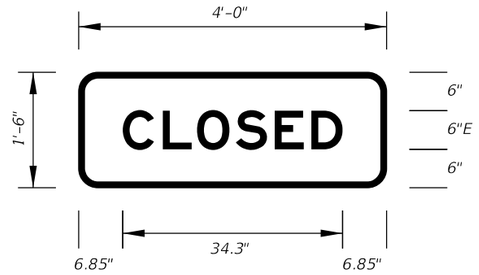
OTHER THAN FREEWAY USE



FTP-3-06
4' X 3'-6"
6" Radii 2" Border

6" Series E Legend
Green Background
White Legend and Border

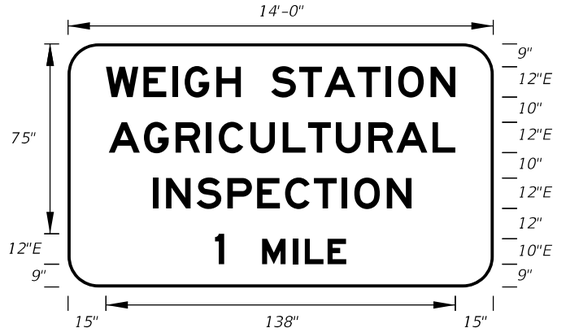
OTHER THAN FREEWAY USE



FTP-4-06
4' X 1'-6"
3" Radii 2" Border

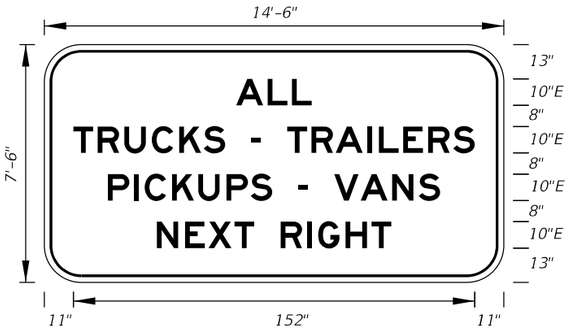
6" Series E Legend
Green Background
White Legend and Border

Note:
FTP-4-06 to be
used with FTP-3-06



FTP-5-06
14' X 8'
12" Radii 2" Border

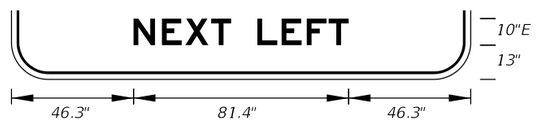
12" and 10" Series E Legend
Green Background
White Legend and Border



FTP-6A-06
14'-6" X 7'-6"
12" Radii 2" Border

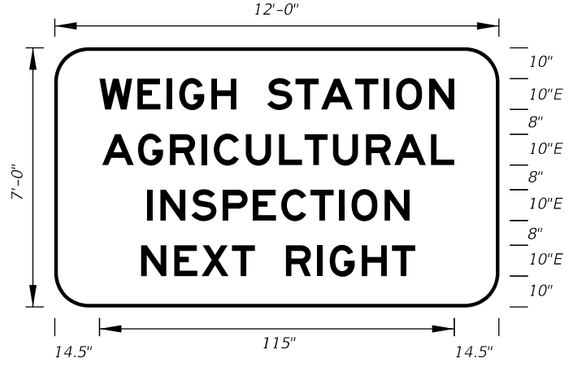
10" Series E Legend
White Background
Black Legend and Border

On Interstate Station
Delete Pickups-Vans,
and reduce Sign height
accordingly.



FTP-6B-06
14'-6" X 7'-6"
12" Radii 2" Border

10" Series E Legend
White Background
Black Legend and Border

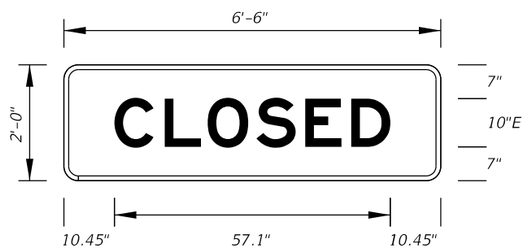


FTP-7A-06
12' X 7'
11" Radii 2" Border

10" Series E Legend
Green Background
White Legend and Border

FTP-7B-06
12' X 7'
11" Radii 2" Border
10" Series E Legend
Green Background
White Legend and Border

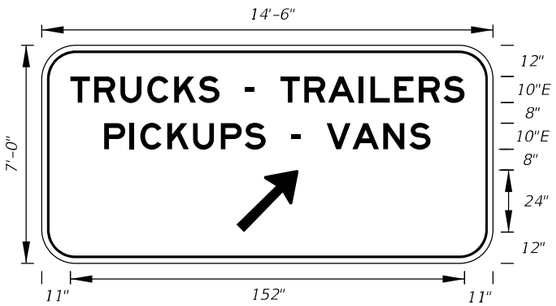
FREEWAY USE



FTP-8-06
6'-6"X 2'
3" Radii 2" Border
10" Series E Legend
Green Background
White Legend and Border

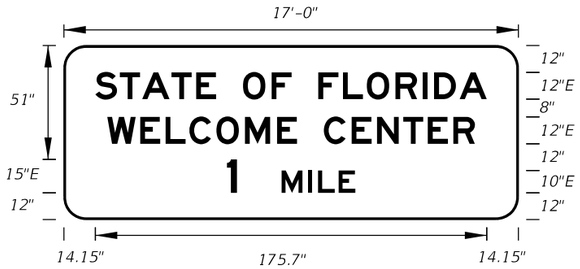
Note:
FTP-8-06 to be
used with FTP-7A-06
& FTP-7B-06.

FTP-9B-06-LEFT ARROW



FTP-9A-06
14'-6" X 7'
11" Radii 2" Border

10" Series E Legend
Green Background
White Legend and Border



FTP-10-06
17' X 6'-6"
10" Radii 2" Border

12", 10" and 15" Series E Legend
Blue Background
White Legend and Border

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LAST REVISION	REVISION	DESCRIPTION:			
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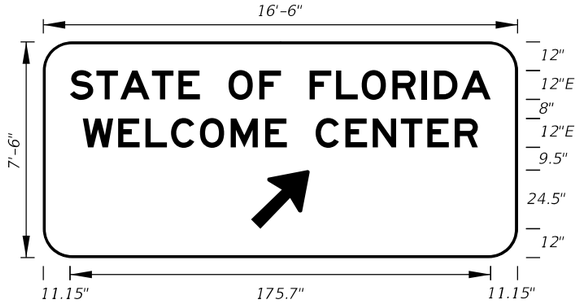
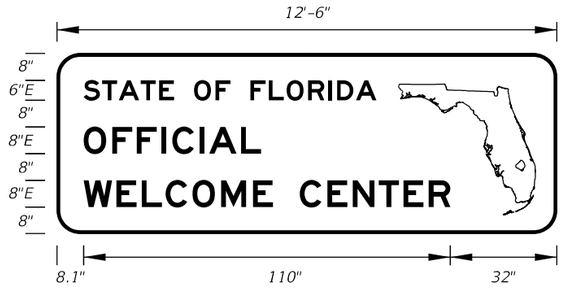
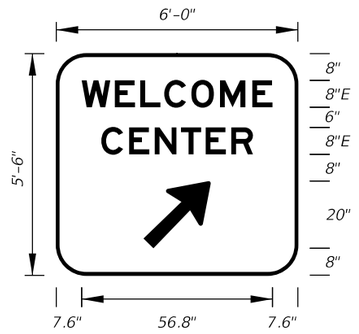


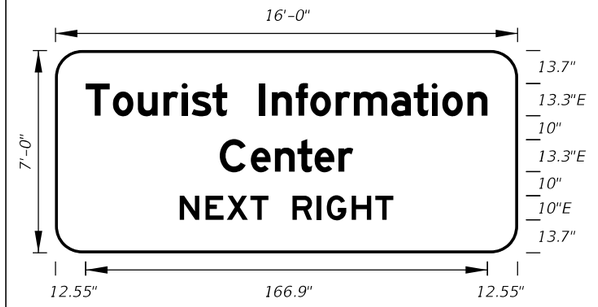
FTP-11-06
16'-6" X 7'-6"
12" Radii 2" Border
12" Series E Legend
Blue Background
White Legend and Border



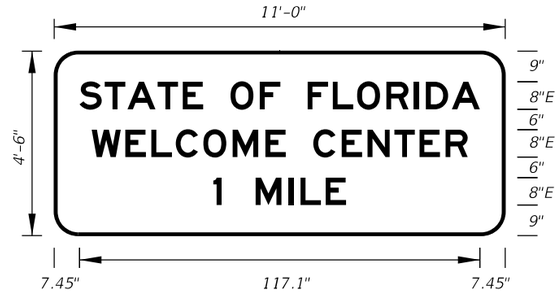
FTP-12-06
12'-6" X 4'-6"
7" Radii 2" Border
6" and 8" Series E Legend
Blue Background
White Legend and Border



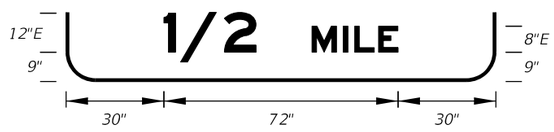
FTP-13-06
6' 0" X 5'-6"
9" Radii 2" Border
8" Series E Legend
Blue Background
White Legend and Border



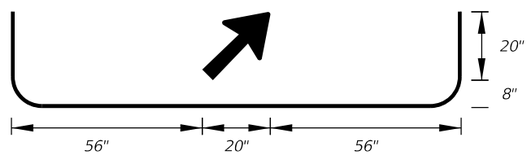
FTP-14-06
16'-0" X 7'-0"
11" Radii 2" Border
13.3 and 10" Series E Legend
Blue Background
White Legend and Border



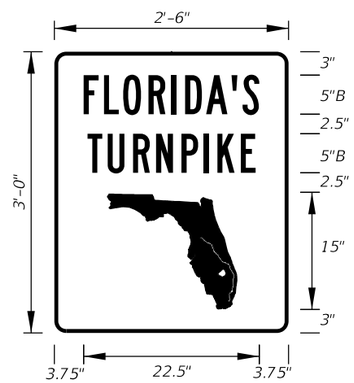
FTP-15A-06
11'-0" X 4'-6"
7" Radii 2" Border
8" Series E Legend
Blue Background
White Legend and Border



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-16-10
2'-6" X 3'-0"
1.5" Radii 3/4" Border
5" Series B Legend
Green Background
White Legend, Border,
and Florida Symbol

FTP-17-10
3'-0" X 4'-0"
1.5" Radii 3/4" Border
7" Series B Legend
Green Background
White Legend, Border,
and Florida Symbol

FTP-18-10
4'-0" X 5'-0"
3" Radii 1 1/4" Border
8" Series B Legend
Green Background
White Legend, Border,
and Florida Symbol

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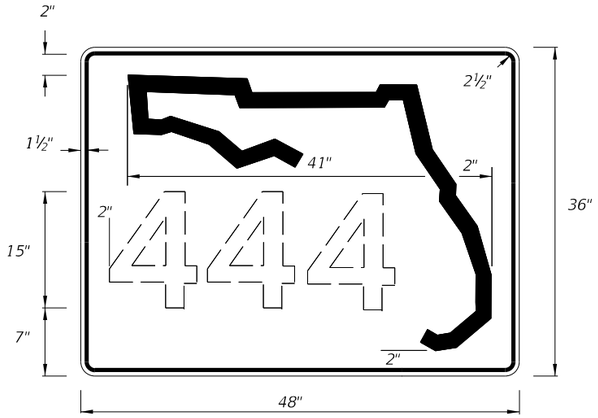
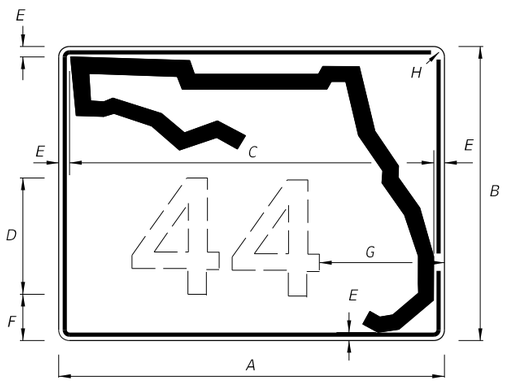


DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE
1-3	15"	C	48" x 36"
4	12"	C	48" x 36"

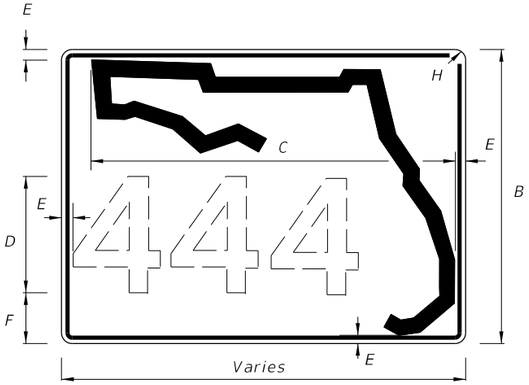
NOTES:

1. Stroke width of State Outline shall be 1".
2. 2½" Radii

INDEPENDENT USE FOR FREEWAY



1 OR 2 DIGITS



3 OR MORE DIGITS

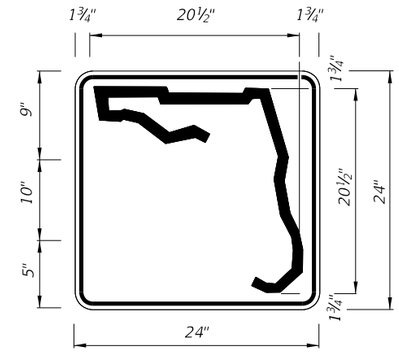
NOTES:

1. Florida marker shall have Black Legend with White Background.
2. Stroke width of State outline shall be 1¾" for Guide Sign.
3. Series D Legend.
4. ⅝" Border

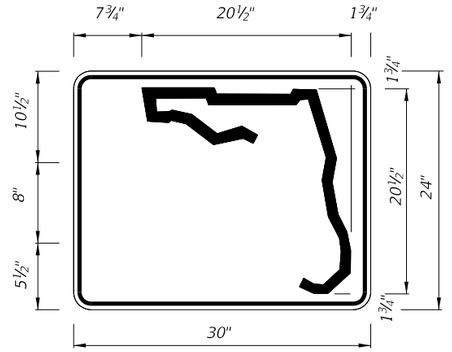
A	B	C	D	E	F	G	H
30"	24"	26"	12"	1¼"	2¾"	8¼"	1¼"
36"	30"	32"	15"	1¼"	3¼"	8¾"	1¼"
42"	36"	38"	15"	1¼"	6¼"	11"	1¼"

GUIDE SIGN USE

FTP-17-06 - FLORIDA ROUTE MARKER



1 or 2 DIGITS



3 or 4 DIGITS

DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE
1-2	10"	D	24" x 24"

DIGITS	NUMERAL SIZE	SERIES LEGEND	PANEL SIZE
3	8"	D	30" x 24"
4	8"	C	30" x 24"

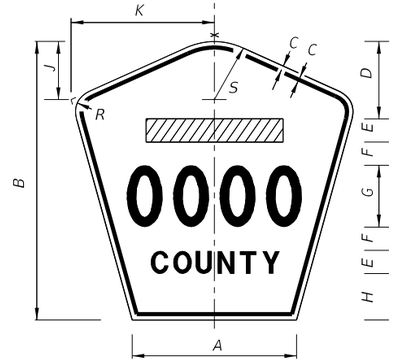
NOTES:

1. Stroke width of State Outline shall be 1".
2. The 24" X 24" panel shall only be used for a 3 digit route when the panel is to be used on a sign cluster with other 24" X 24" panels.
3. 1½" Radii

INDEPENDENT USE OTHER THAN FREEWAY

NOTES:

1. Series D Legend.
2. Color: Yellow Legend and Border on Blue Background.
3. When used on a guide sign, marker must be overlaid on a rectangular Yellow Background as shown in chart.
4. When two or more County Route Markers are mounted together, use the dimensions of the largest marker for all other markers.



SIGN	DIMENSIONS												Rectangular Yellow Background Dimensions (See Note 3)
	A	B	C	D	E	F	G	H	J	K	R	S	
4 DIGIT POST MOUNTED	25⅛"	42"	¾"	10"	4"	4"	8"	8"	8⅜"	22"	5"	8¾"	42"x 42"
2 DIGIT OVERHEAD	21½"	36"	½"	7½"	3"	3"	12"	4½"	7⅛"	18⅞"	4¼"	7½"	42"x 42"
3 DIGIT OVERHEAD	25⅛"	42"	¾"	8"	4"	4"	12"	6"	8⅜"	22"	5"	8¾"	48"x 48"
4 DIGIT OVERHEAD	29⅞"	48"	¾"	8"	5"	5"	12"	8"	9¾"	25⅝"	5¾"	10¼"	52"x 52"

FTP-18-06 - COUNTY ROUTE MARKER (M1-6)

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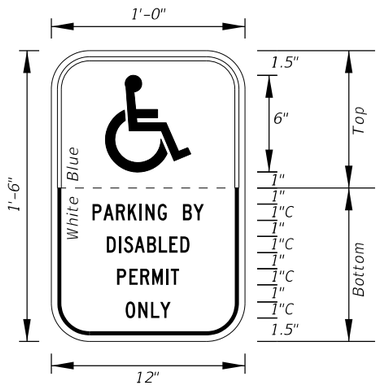
FTP-19-06

1' X 1'-6"
4" Radii 3/8" Border
Top 4" Series D
Bottom 2" Series C
White Background
Green Legend and Border

All Letters → 1" Series C, 1" Spacing Between Lines of Text

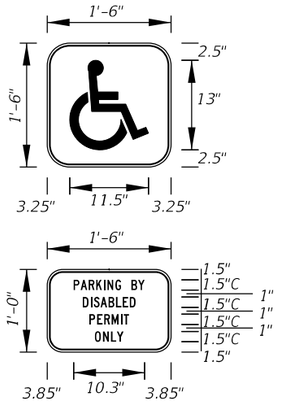


FTP-20-06

1' X 1'-6"
2" Radii 3/8" Border
1" Series C Legend
Color
Background
Legend and Border

Top	Bottom
Blue	White
White	Black

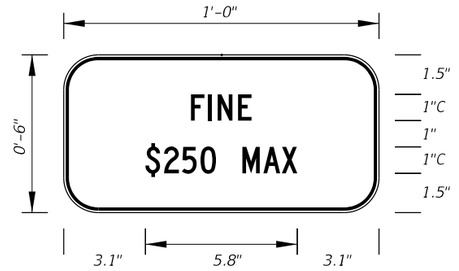
All Letters → 1.5" Series C, 1" Spacing Between Lines of Text



FTP-21-06

1'-6" X 2'-6"
2" Radii 3/8" Border
1.5" Series C Legend
Color
Background
Legend and Border

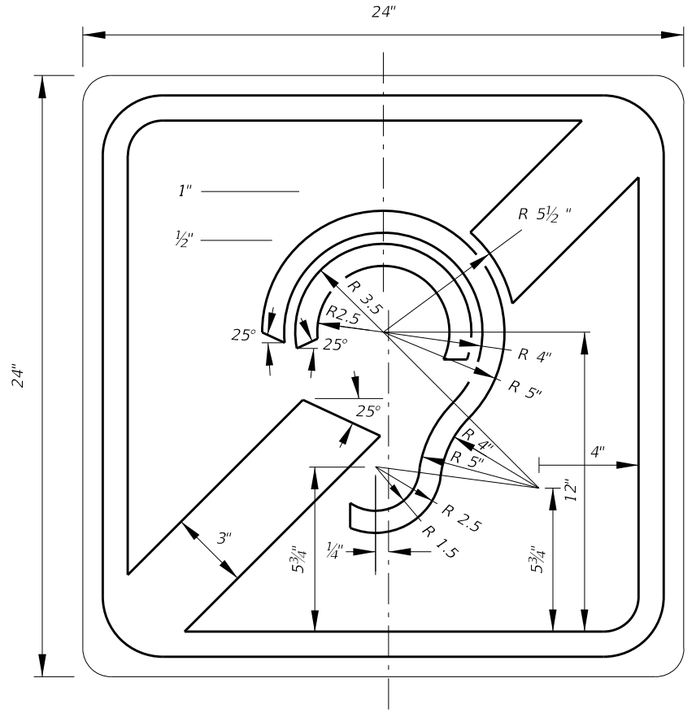
Top	Bottom
Blue	White
White	Black



FTP-22-06

1' X 6"
1" Radii 3/8" Border
1" Series C Legend
White Background
Black Legend and Border

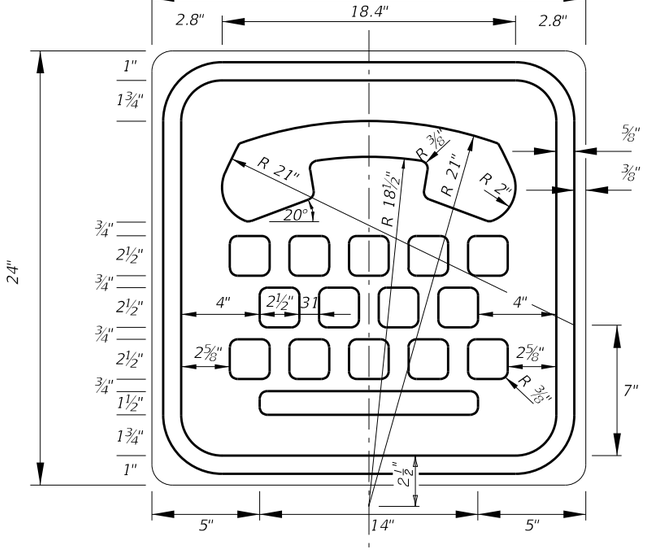
Supplemental Panel for the FTP-20-06 and FTP-21-06 signs



FTP-23-06

2' X 2'
1.5" Radii 3/8" Border
Blue Background
White Legend and Border

INTERNATIONAL SYMBOL OF ACCESS FOR HEARING LOSS



FTP-24-06

2' X 2'
1.5" Radii 3/8" Border
Blue Background
White Legend and Border

INTERNATIONAL TDD SYMBOL

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	SPECIAL SIGN DETAILS	INDEX	SHEET
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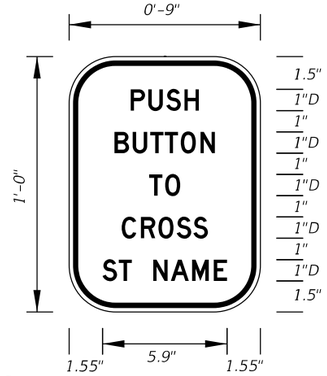
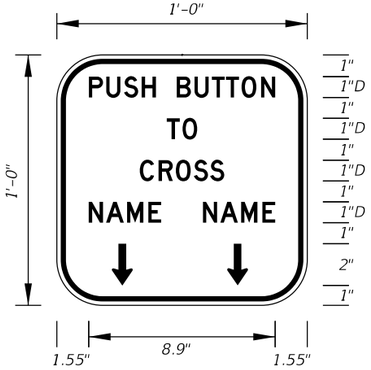
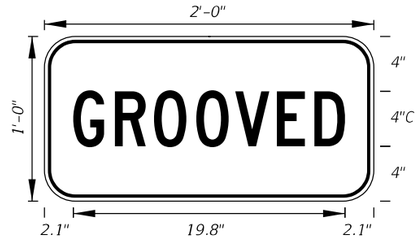


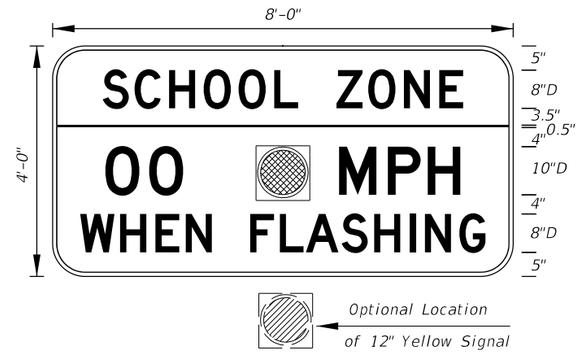
FTP-25-06
9" X 1'-0"
2" Radii 3/8" Border
1" Series D Legend
White Background
Black Legend and Border



FTP-26-06
1' X 1'
2" Radii 3/8" Border
1" Series D Legend
White Background
Black Legend and Border

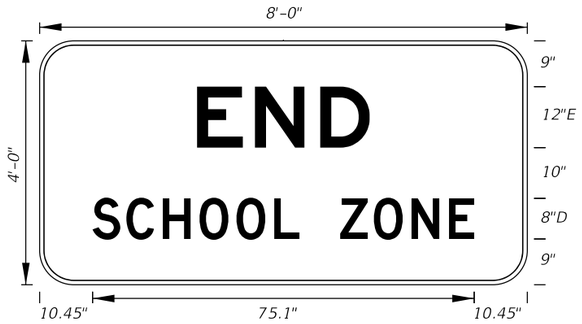


FTP-29-06
2'-0" X 1'-0"
2" Radii 3/8" Border
4" Series C Legend
Yellow Background
Black Legend and Border



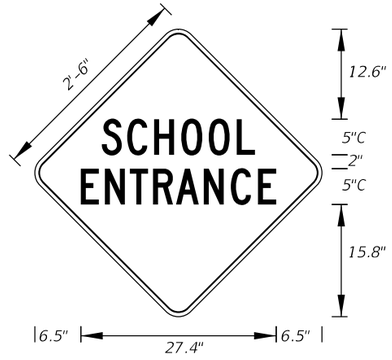
FTP-31-06
8' X 4'
6" Radii 3/4" Border
Series D Legend

Fluorescent Yellow-Green Background Top
White Background Bottom
Black Legend and Border



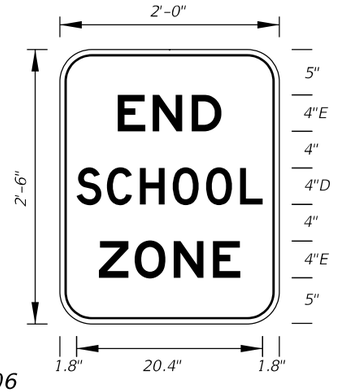
FTP-32-06
8' X 4'
6" Radii 3/4" Border

12" Series E and 8" Series D Legend
White Background
Black Legend and Border

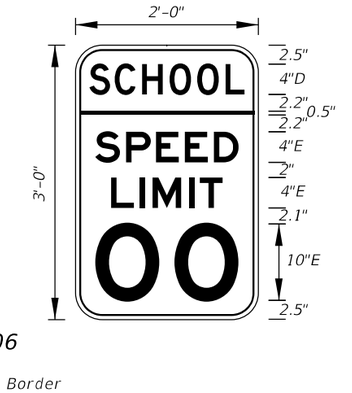


FTP-33-06
2'-6" X 2'-6"
2" Radii 3/4" Border

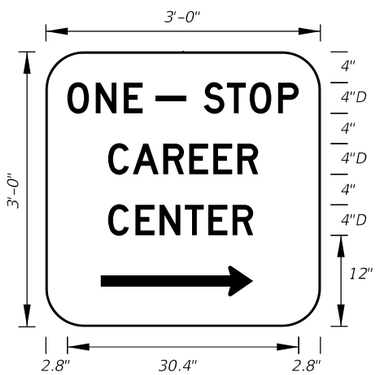
5" Series C Legend
Fluorescent Yellow-Green Background
Black Legend and Border



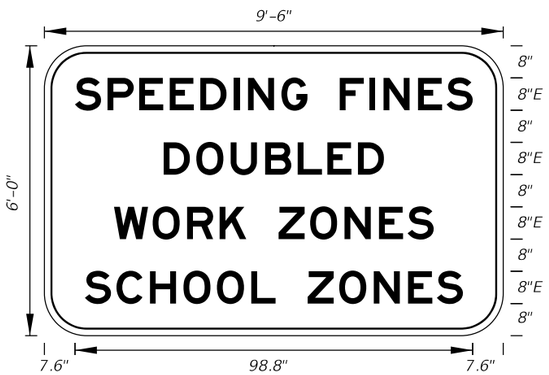
FTP-34-06
2' X 2'-6"
3" Radii 5/8" Border
4"Series D and E Legend
White Background
Black Legend and Border



FTP-35-06
2' X 3'
3" Radii 5/8" Border
Top 4" Series D Legend
Bottom 4" and 10" Series E Legend
Fluorescent Yellow-Green Background Top
White Background Bottom
Black Legend and Border

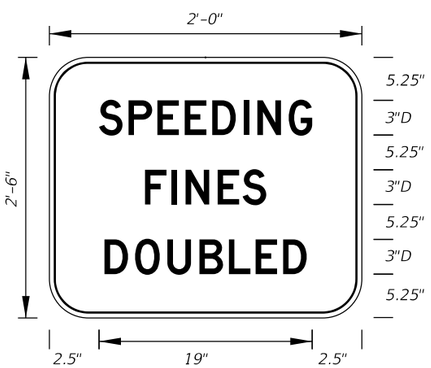


FTP-36-06
3' X 3'
5" Radii
4" Series D Legend
Green Background
White Legend and Border

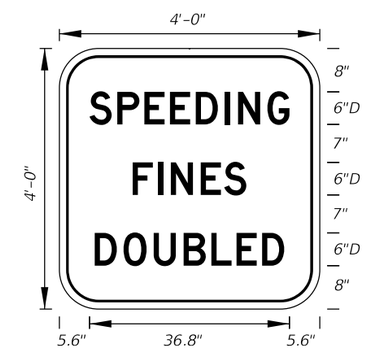


FTP-37-06
9'-6"X 6'
9" Radii 2" Border
8" Series E Legend
White Background
Black Legend and Border

State Line Sign



FTP-38-06
2' X 2'-6"
4" Radii 3/4" Border
3" Series D Legend
White Background
Black Legend and Border



FTP-39-06
4' X 4'
6" Radii 3/4" Border
6" Series D Legend
White Background
Black Legend and Border

Freeway Sign

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FTP-40-06
3'-6" X 4'
6" Radii ¾" Border

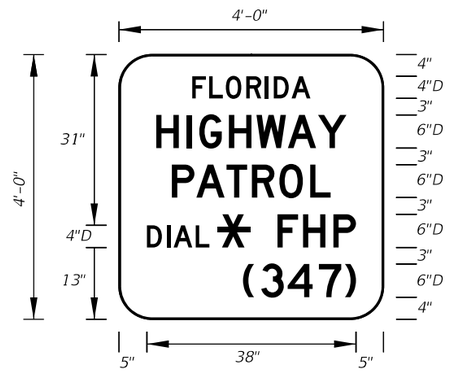
3" and 6" Series C Legend
White Background
Black Legend and Border

FTP-41-06
2'-6"X 3'
4" Radii ¾" Border

2" and 4" Series C Legend
White Background
Black Legend and Border

FTP-42-06
4'X 2'-6"
3" Radii
Top 4" Series C Legend

Bottom 2" Series EM Legend
White Background
Blue Legend and Border



FTP-43-06
4' X 4'
6" Radii 1" Border
Top 4" Series D Legend

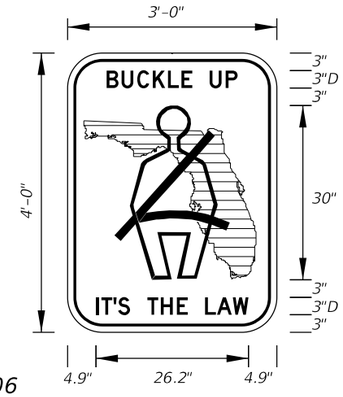
Bottom 6" Series D Legend
Blue Background
White Legend and Border

FTP-44-06
9' X 6'
9" Radii ¾" Border

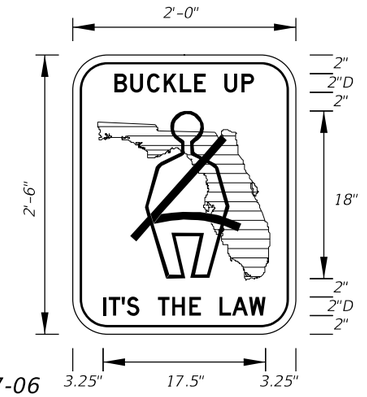
8" Series D Legend
White Background
Black Legend and Border

FTP-45-06
4' X 3'
5" Radii ¾" Border

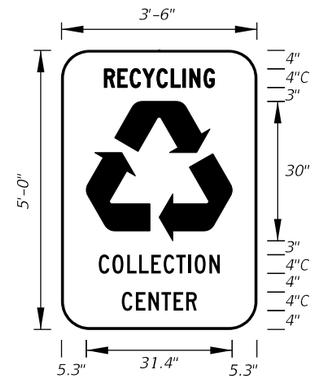
4" Series C Legend
White Background
Black Legend and Border



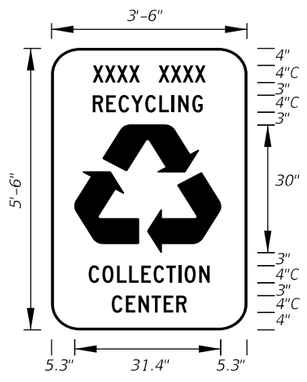
FTP-46-06
3' X 4'
5" Radii ¾" Border
3" Series D Legend
White Background Green Florida Symbol
Black Legend, Border and Man Belt Symbol



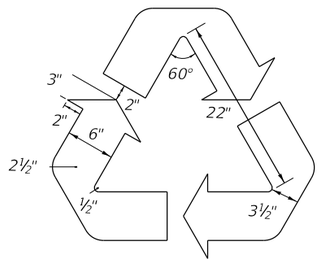
FTP-47-06
2' X 2'-6"
3" Radii ⅝" Border
2" Series D Legend
White Background Green Florida Symbol
Black Legend, Border and Man Belt Symbol



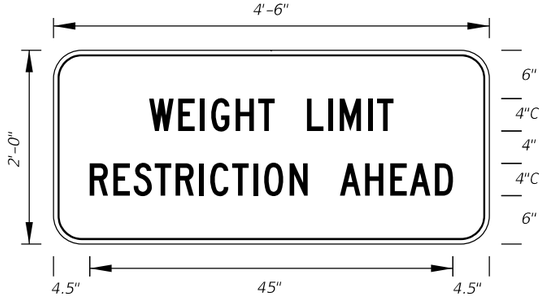
FTP-48-06
3'-6" X 5'
6" Radii
4" Series C Legend
Green Background
White Legend, Border and Symbol



FTP-49-06
3'-6" X 5'-6"
6" Radii
4" Series C Legend
Green Background Municipality Name Optional
White Legend, Border and Symbol



Detail for **FTP-48-06** and **FTP-49-06**



FTP-50-06
4'-6" X 2'
3" Radii ¾" Border
4" Series C Legend
Yellow Background
Black Legend and Border

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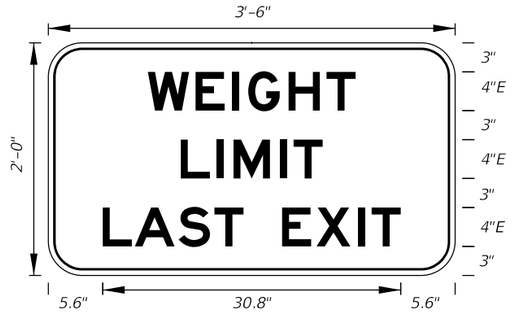
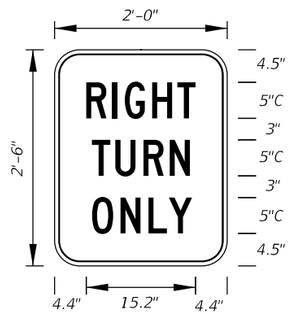


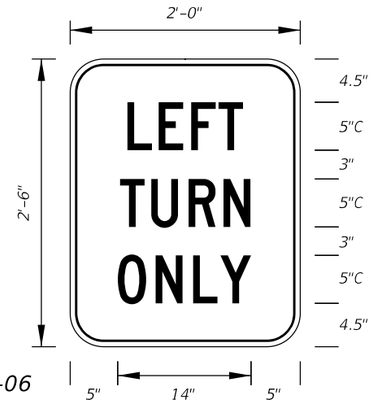
FTP-51-06
3' X 2'
3" Radii 3/4" Border

4" Series E Legend
White Background
Black Legend and Border

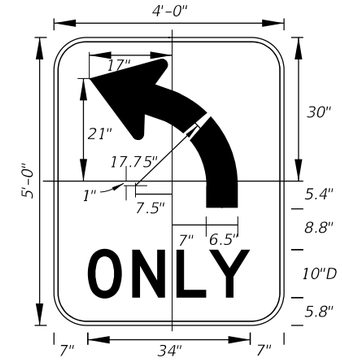


FTP-52-06
2' X 2'-6"
3" Radii 5/8" Border

5" Series C Legend
White Background
Black Legend and Border

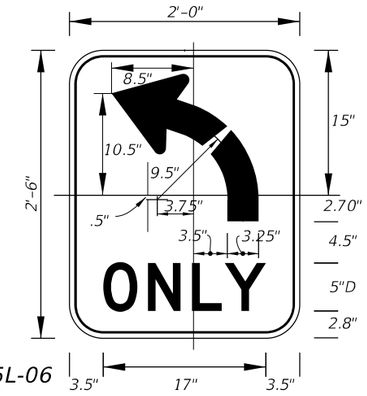


FTP-53-06
2' X 2'-6"
3" Radii 5/8" Border
5" Series C Legend
White Background
Black Legend and Border



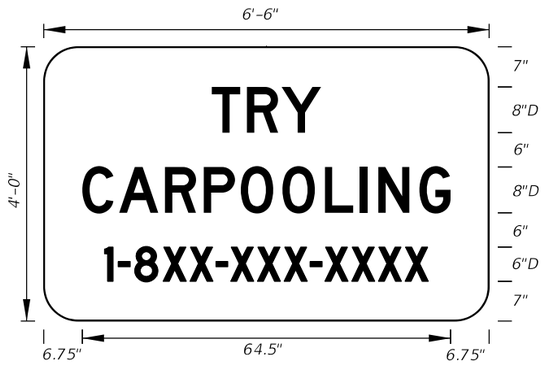
FTP-54L-06
4' X 5'
6" Radii 3/4" Border
10" Series D Legend
White Background
Black Legend and Border

FTP-54R-06 for
(Right Turn Arrow)



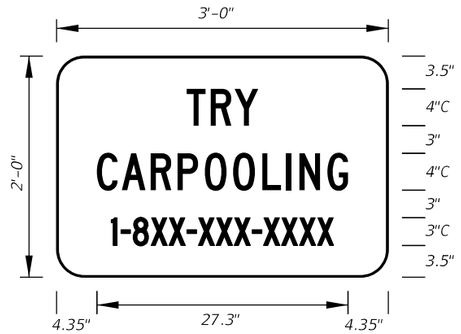
FTP-55L-06
2' X 2'-6"
3" Radii 3/8" Border
5" Series D Legend
White Background
Black Legend and Border

FTP-55R-06 for
(Right Turn Arrow)



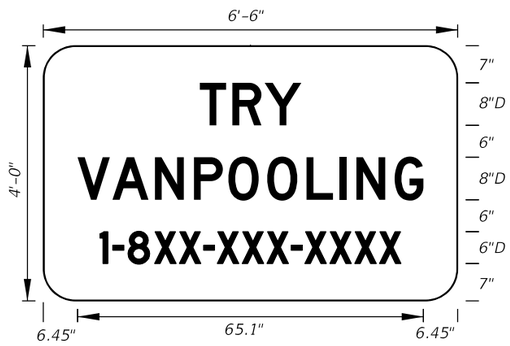
FTP-56-06
6'-6"X 4'
6" Radii 3/4" Border
8" and 6" Series D Legend
Blue Background
White Legend and Border

Design Project Manager
or Transit Administrator
will supply correct 1-8XX
number.



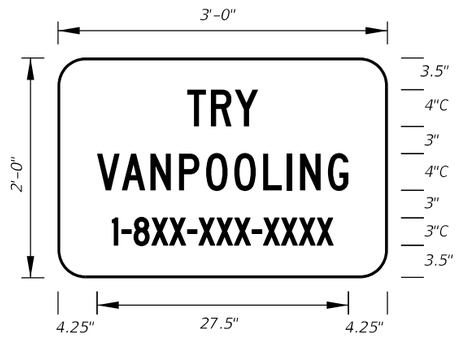
FTP-56A-06
3' X 2'
3" Radii
4" and 3" Series C Legend
Blue Background
White Legend and Border

Design Project Manager
or Transit Administrator
will supply correct 1-8XX
number.



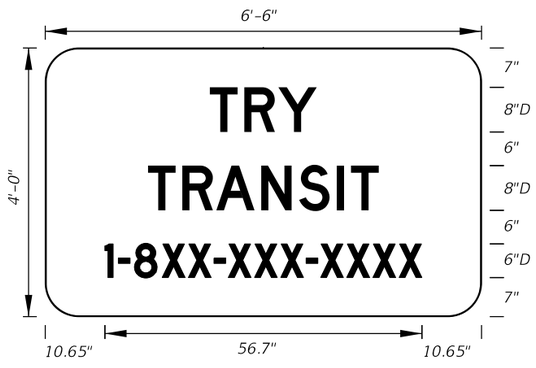
FTP-57-06
6'-6" X 4'
6" Radii
8"and 6" Series D Legend
Blue Background
White Legend and Border

Design Project Manager
or Transit Administrator
will supply correct 1-8XX
number.



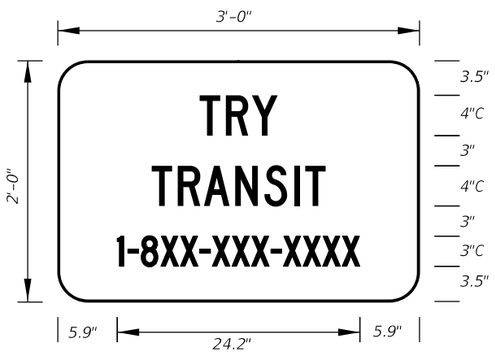
FTP-58-06
3' X 2'
3" Radii
4" and 3" Series C Legend
Blue Background
White Legend and Border

Design Project Manager
or Transit Administrator
will supply correct 1-8XX
number.



FTP-59-06
6'-6" X 4'
6" Radii
8" and 6" Series D Legend
Blue Background
White Legend and Border

Design Project Manager
or Transit Administrator
will supply correct 1-8XX
number.



FTP-60-06
3' X 2'
3" Radii
4"and 3" Series C Legend
Blue Background
White Legend and Border

Design Project Manager
or Transit Administrator
will supply correct 1-8XX
number.

FTP-61-06
3' X 2'
3" Radii 3/4" Border
4" and 3" Series C Legend
Yellow Background
Black Legend and Border

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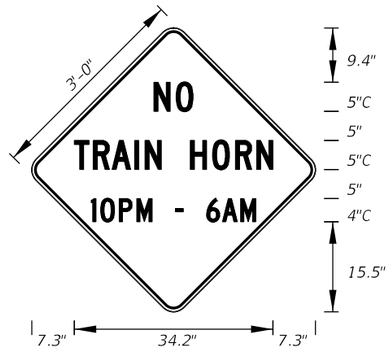
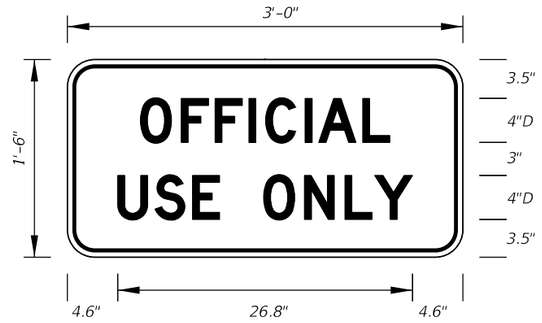


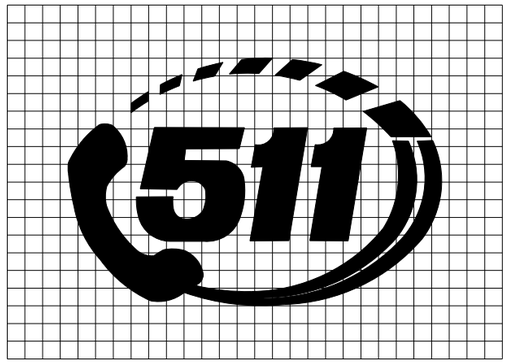
FTP-62-06
3' X 3'
2" Radii ¾" Border 4"and 5" Series C Legend
Yellow Background Black Legend and Border



FTP-65-06
3' X 1'-6"
2" Radii ¾" Border
4" Series D Legend
White Background
Black Legend and Border

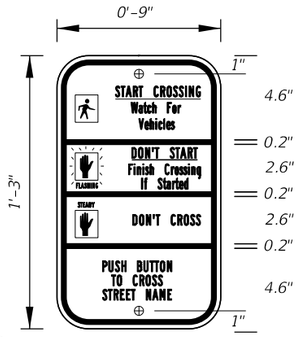
FTP-66-06
4'X 5'
2" Radii ¾" Border
7" Series D Legend
Blue Background
White Legend and Border

FTP-67-06
3' X 4'
2" Radii ¾" Border
5" Series D Legend
Blue Background
White Legend and Border



DETAIL for FTP-66 AND FTP-67

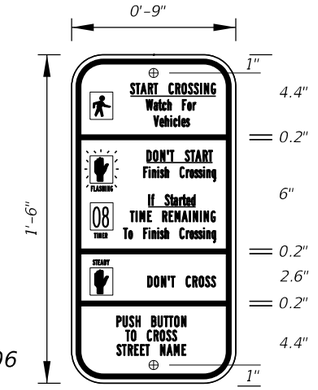
Sign Mounting Holes Can Be Punched Or Field Drilled With No Obstruction To Text Or Symbols From Holes Or Bolts.



FTP-68A-06
9" X 1'-3"
1.5" Radii ¾" Border
Series B Legend
White Background
Black Legend and Border

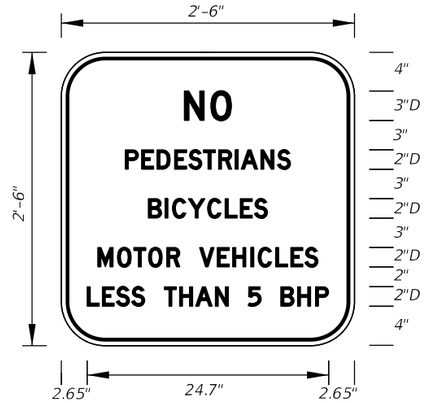
See Standard Highway Signs Manual, Sign R10-3b For Letter Size Spacing And Symbol Sizes.

Sign Mounting Holes Can Be Punched Or Field Drilled With No Obstruction To Text Or Symbols From Holes Or Bolts.



FTP-68B-06
9" X 1'-6"
1.5" Radii ¾" Border
Series B Legend
White Background
Black Legend and Border

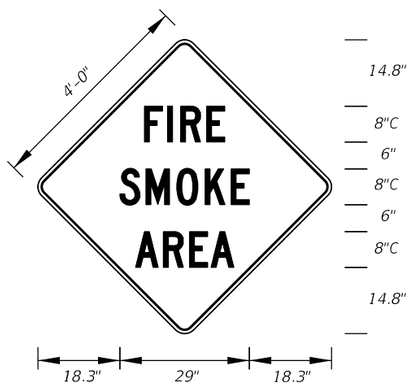
See Standard Highway Signs Manual, Sign R10-3b For Letter Size Spacing And Symbol Sizes.



FTP-69-06
2'-6" X 2'-6"
4" Radii ¾" Border

2" and 3" Series D Legend
White Background
Black Legend and Border

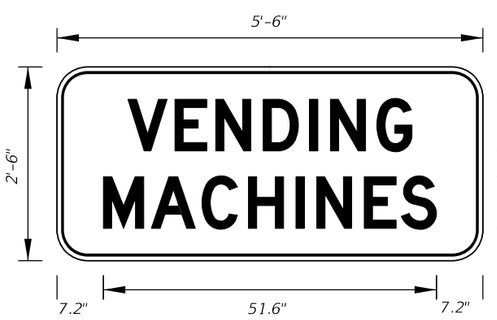
FTP-70-06
3'-6" X 2'-6"
2.25" Radii ¾" Border
5" Series C and 7" Series C Legend
Blue Background
White Legend and Border



FTP-71-06
4' X 4'
2" Radii ¾" Border
8" Series C Legend
Yellow Background
Black Legend and Border

FTP-72-06
3' X 3'
2" Radii ¾" Border

6" Series C Legend
Yellow Background
Black Legend and Border



FTP-73-06
5'-6" X 2'-6"
4" Radii ¾" Border

8" Series D Legend
Blue Background
White Legend and Border

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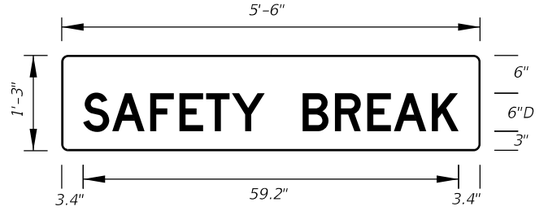
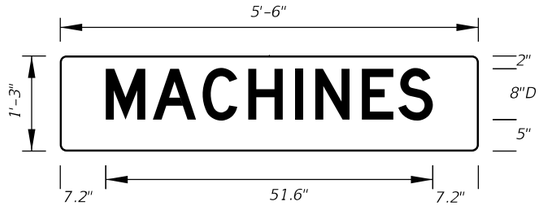
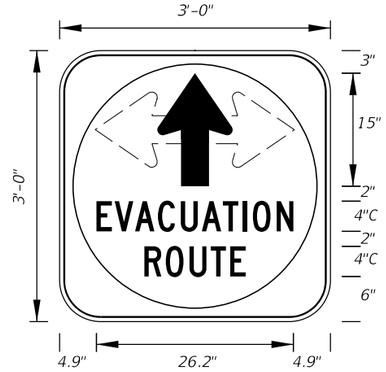
FTP-74-06
5'-6" X 2'-6"
4" Radii ¾" Border
6" Series D Legend
Blue Background
White Legend and Border



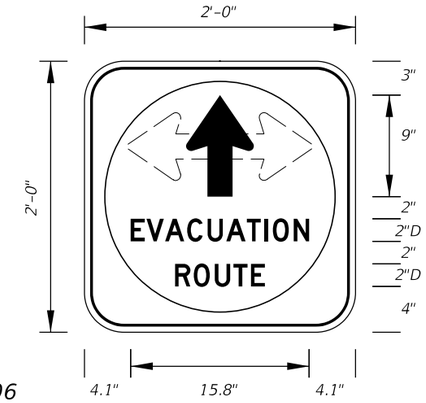
FTP-75-06
5'-6" X 1'-3"
1" Radii
6" Series D Legend
Blue Background
White Legend



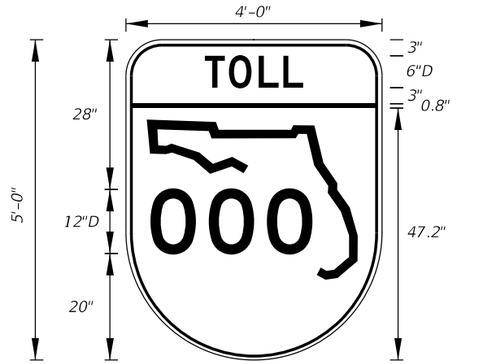
FTP-76-06
5'-6" X 1'-3"
1" Radii
8" Series D Legend
Blue Background
White Legend



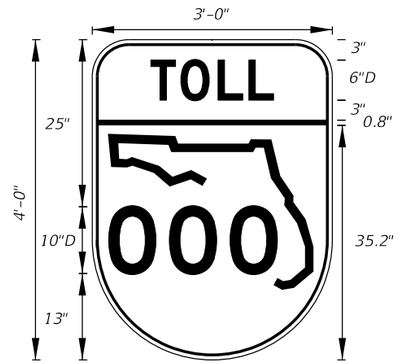
FTP-77-06
3' X 3'
5" Radii ¾" Border
4" Series C Legend
White Background with Blue Circle Background
White Legend and Black Border



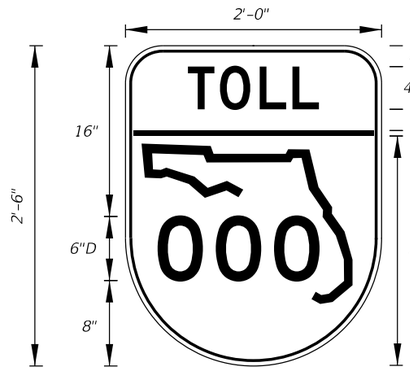
FTP-78-06
2' X 2'
3" Radii ¾" Border
2" Series D Legend
White Background with Blue Circle Background
White Legend and Black Border



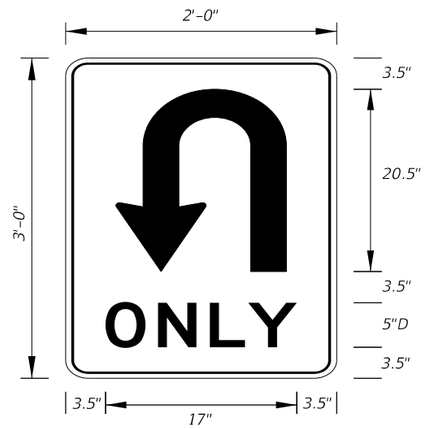
FTP-79-06
4' X 5'
6" Radii ¾" Border
6" and 12" Series D Legend
Top Yellow Background with Black Legend and Black Border
Bottom White Background with Black Legend and Border



FTP-80-06
3' X 4'
5" Radii ¾" Border
6"and 10" Series D Legend
Top Yellow Background with Black Legend and Black Border
Bottom White Background with Black Legend and Border



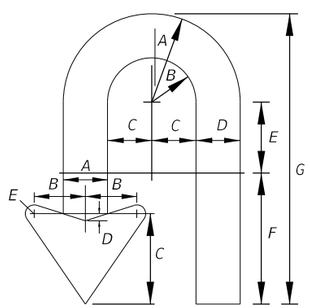
FTP-81-06
2' X 2'-6"
3" Radii ¾" Border
4" and 6" Series D Legend
Top Yellow Background with Black Legend and Black Border
Bottom White Background with Black Legend and Border



FTP-82-08
2' X 3'
1.5" Radii
5" Series D Legend
White Background
Black Legend and Border

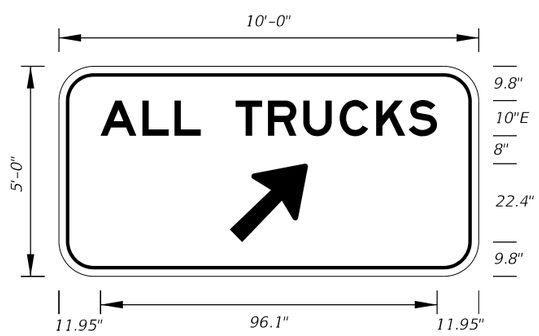
ARROW HEAD

A	3.125
B	3.625
C	6.375
D	.5
E	.625



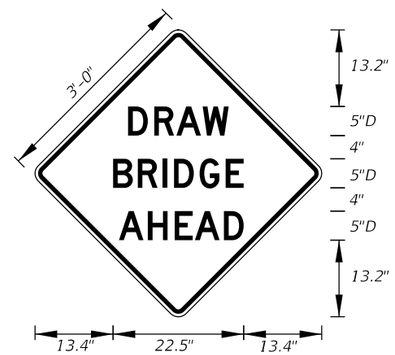
ARROW BODY

A	B	C	D	E	F	G
6.25	3.125	3.125	3.125	5	9.25	20.5



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 Border

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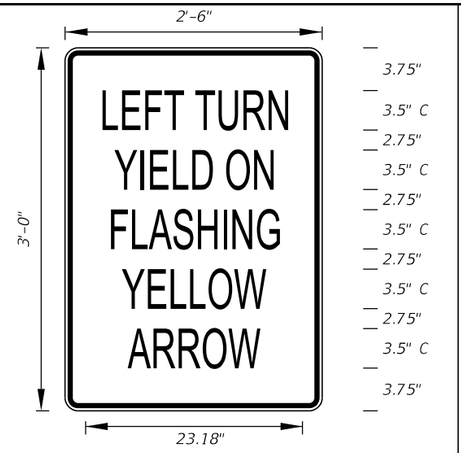
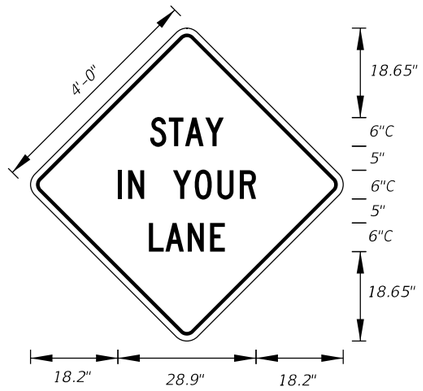


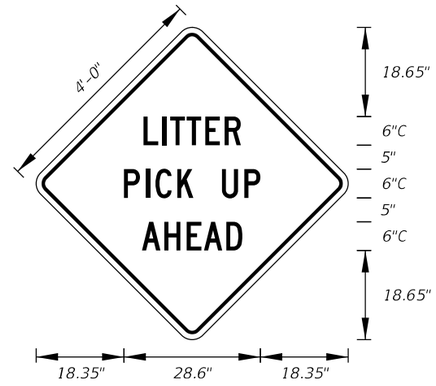
FTP-85-13
3' X 2'-6"
1.875" Radii ¾" Border

3.5" Series C Legend
White Background
Black Legend and Border



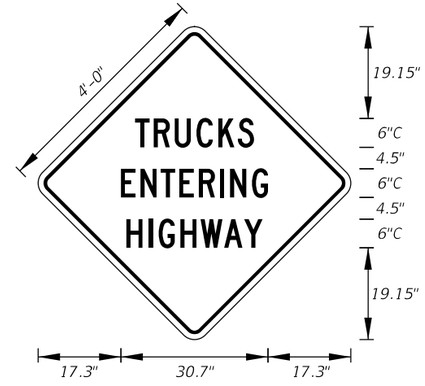
MOT-1-06
4' X 4'
2" Radii ¾" Border

6" Series C Legend
Orange Background
Black Legend and Border



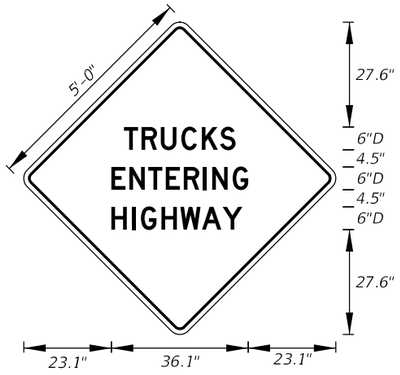
MOT-4-06
4' X 4'
2" Radii ¾" Border

6" Series C Legend
Orange Background
Black Legend and Border



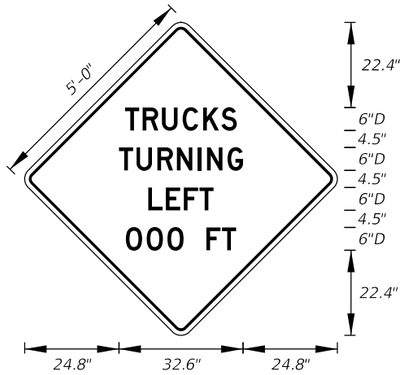
MOT-5-06
4' X 4'
2" Radii ¾" Border

6" Series C Legend
Orange Background
Black Legend and Border



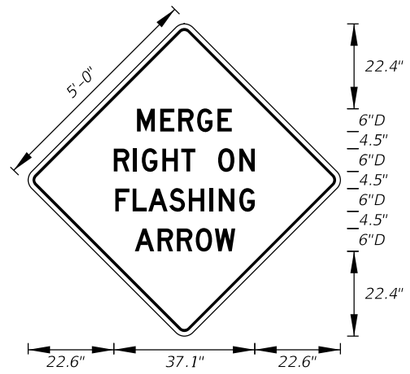
MOT-6-06
5' X 5'
2" Radii ¾" Border

6" Series D Legend
Orange Background
Black Legend and Border



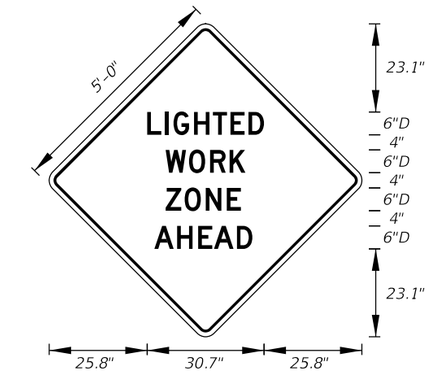
MOT-7-06
5' X 5'
2" Radii ¾" Border

6" Series D Legend
Orange Background
Black Legend and Border



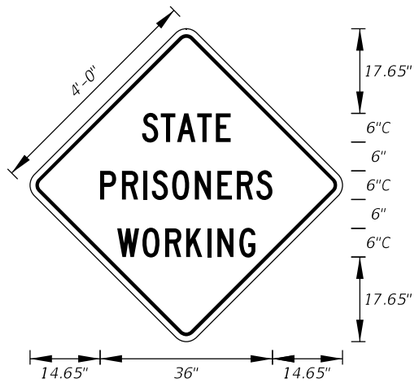
MOT-8-06
5' X 5'
2" Radii ¾" Border

6" Series D Legend
Orange Background
Black Legend and Border



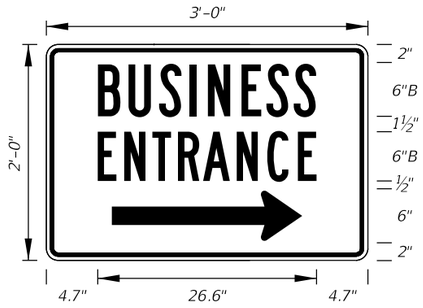
MOT-9-06
5' X 5'
2" Radii ¾" Border

6" Series D Legend
Orange Background
Black Legend and Border



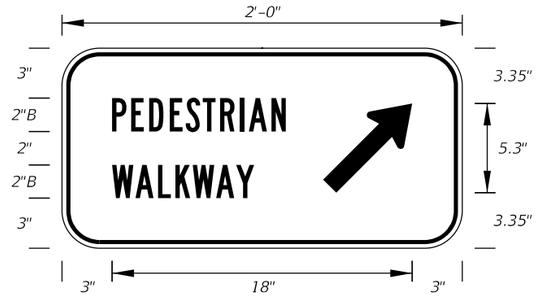
MOT-10-06
4' X 4'
2" Radii ¾" Border

6" Series C Legend
Orange Background
Black Legend and Border



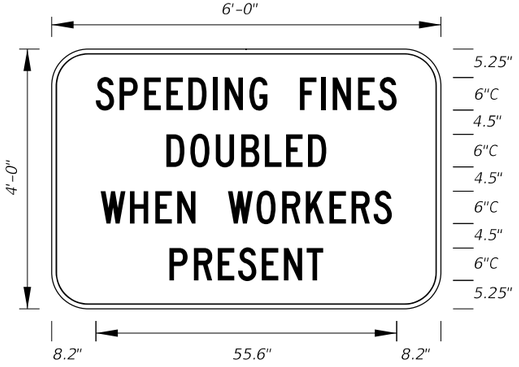
MOT-11-06
3' X 2'
2" Radii ¾" Border

6" Series B Legend
Blue Background
White Legend and Border



MOT-12R-06
2' X 1'
2" Radii ¾" Border
2" Series B Legend
White Background
Black Legend and Border

MOT-12L-06
For Diversion
to the left



MOT-13-06
Freeway Sign
6' X 4'
6" Radii ¾" Border

6" Series C Legend
White Background
Black Legend and Border

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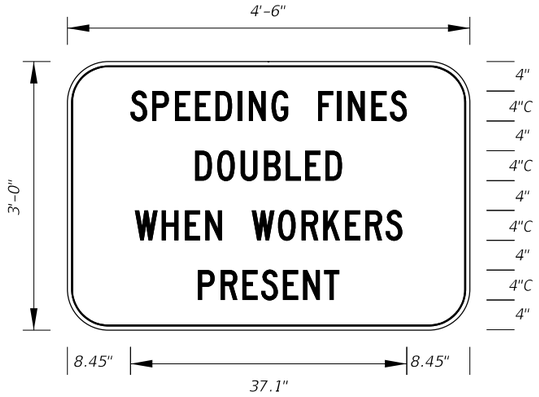
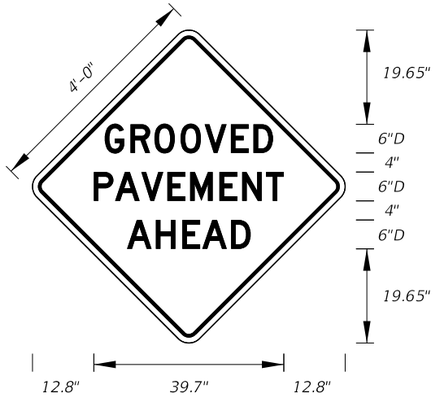


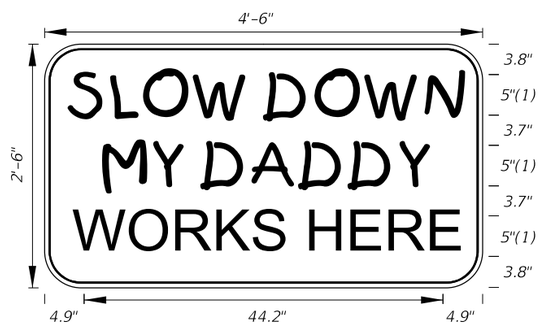
MOT-14-06
Arterial Sign
4'-6" X 3'
5" Radii ¾" Border

4" Series C Legend
White Background
Black Legend and Border



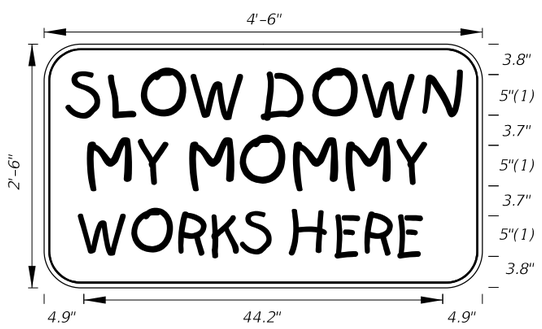
MOT-15-06
4' X 4'
2" Radii ¾" Border

6" Series D Legend
Orange Background
Black Legend and Border



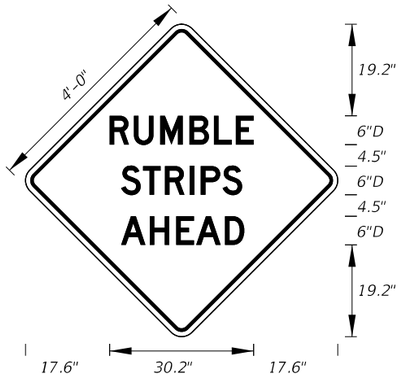
MOT-16-06
4'-6" X 2'-6"
4" Radii ¾" Border

5" Kids Series Legend
Orange Background
Black Legend and Border



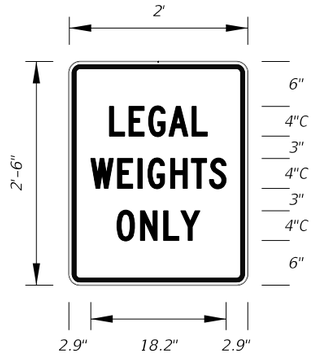
MOT-17-06
4'-6" X 2'-6"
4" Radii ¾" Border

5" Kids Series Legend
Orange Background
Black Legend and Border



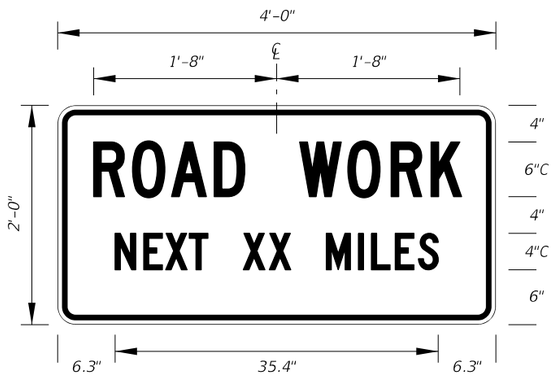
MOT-18-10
4' X 4'
2" Radii ¾" Border

6" Series D Legend
Orange Background
Black Legend and Border



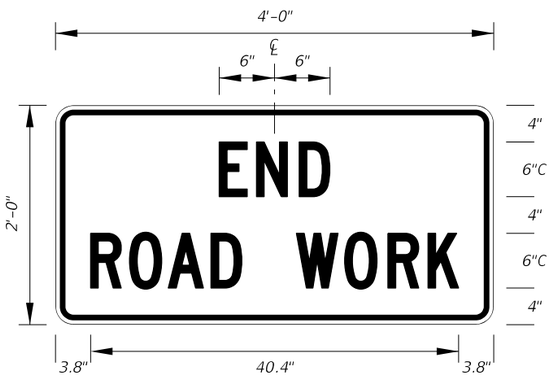
MOT-19-11
2' X 2'-6"
1.13" Radii ¾" Border

4" Series C Legend
White Background
Red Legend and Border



G20-1
2' X 4'
1.5" Radii ¾" Border

Orange Background
Black Legend and Border



G20-2
2' X 4'
1.5" Radii ¾" Border

Orange Background
Black Legend and Border

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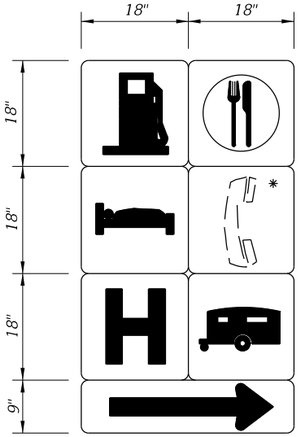
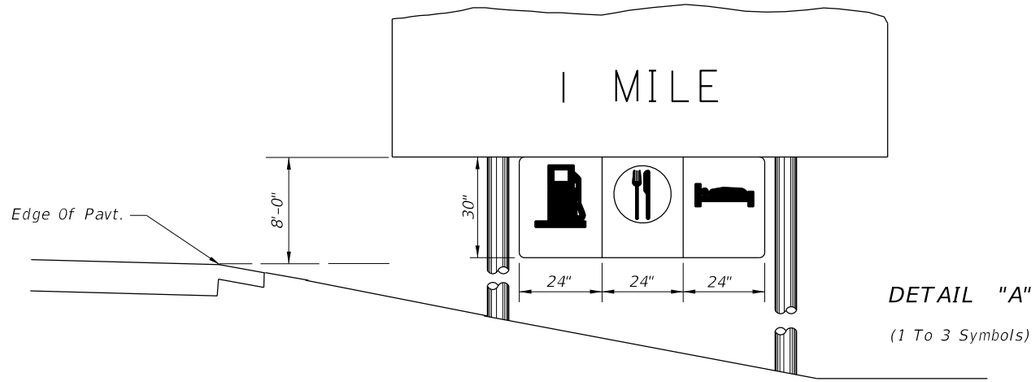
** Note:

Two assemblies are required; one for each side of the ramp, showing those services in each particular direction from the ramp terminal.

Ramp mounted signs shall be installed to avoid conflict with existing signs and in no case should they be placed within 100' of another sign.

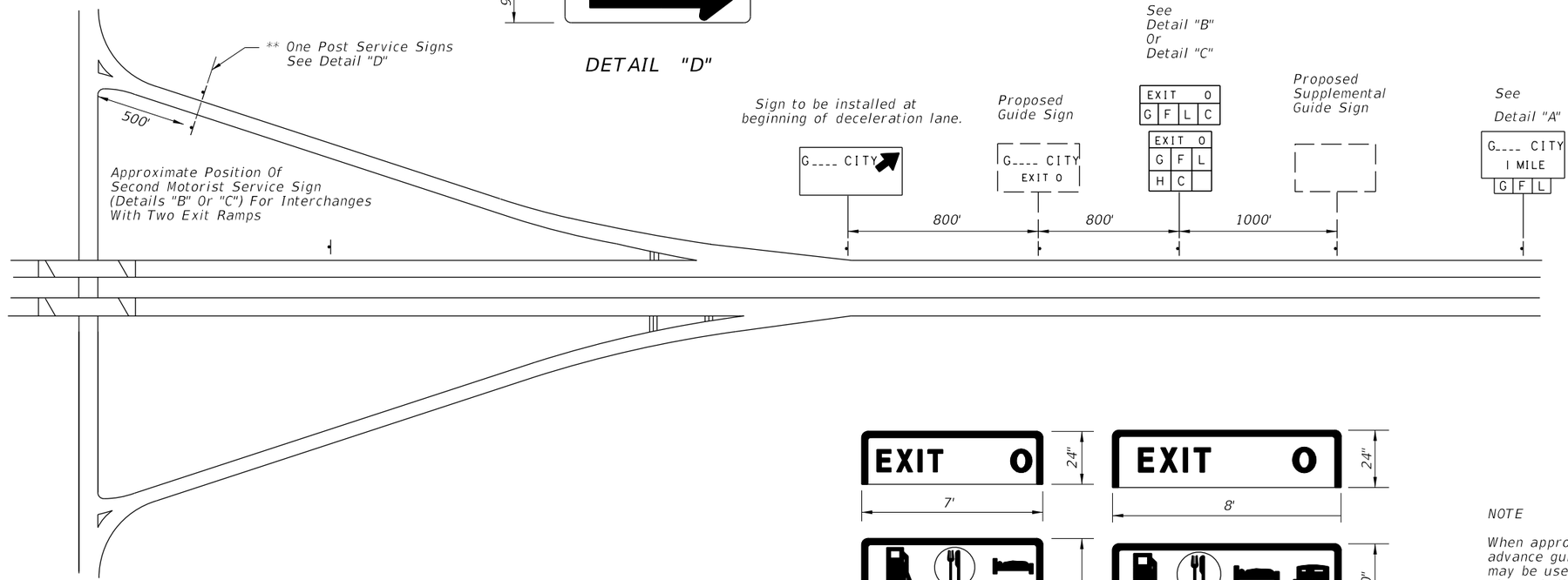


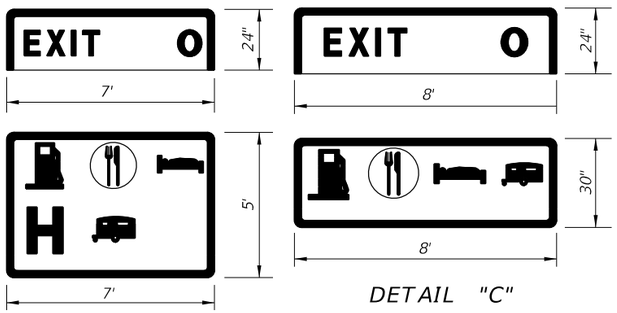
DETAIL "D"



DETAIL "A"

(1 To 3 Symbols)





DETAIL "B"

(4 To 6 Symbols)

DETAIL "C"

(4 Symbols)

GENERAL NOTES

1. Only those services meeting criteria established by the Department and approved by the State Traffic Operations Engineer for each interchange shall be shown. Symbol signs for motorist services shall always appear in the following order reading from left to right and top to bottom: Gas, Food, Lodging, Phone * , Hospital, Camping.

   * The phone symbol shall not be shown whenever any Gas, Food, Lodging or Camping symbol appears.

2. Symbols shall appear consecutively on the sign with no positions left blank or reserved for intermediate symbols not currently approved for a particular interchange.

3. All motorist service signs to have White Legend and Border with Blue Background.

4. For mounting details see Index 700-010 for Single-column Ground Signs or Index 700-020 for Multi-column Ground Signs.

NOTE

When approved for attachment to the advance guide signs, up to 3 services may be used for an exit. The symbol signs shall be suspended from the guide sign panel or existing wind beams. Symbol signs are not to be connected to existing sign posts.

The mounting height of the advance guide sign shall be increased, where necessary, to provide 8' between the level of the pavement edge and the bottom of the guide sign, prior to mounting the supplementary panel.

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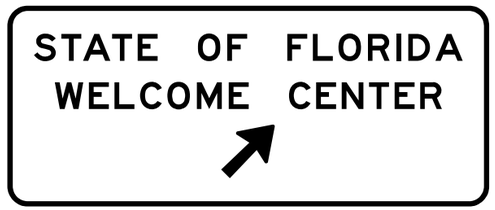
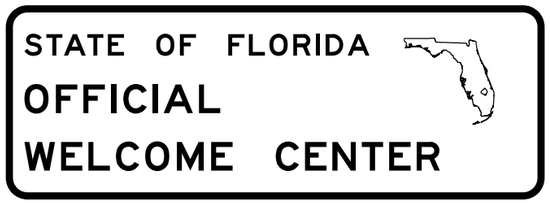
Sign FTP-10-06

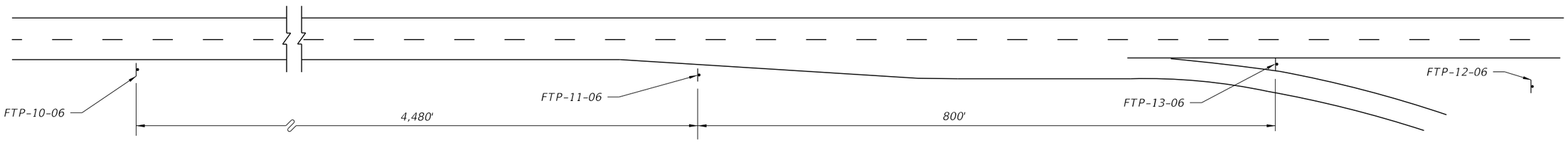


Sign FTP-11-06



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.

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

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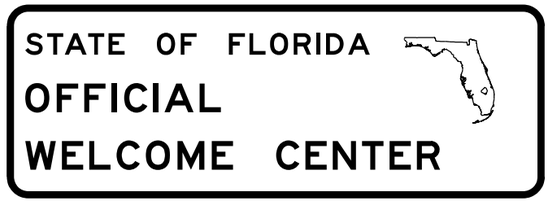
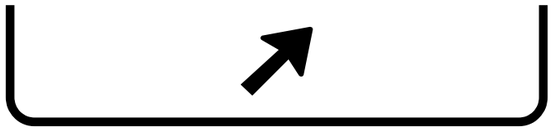
SIGN FTP-15A-06

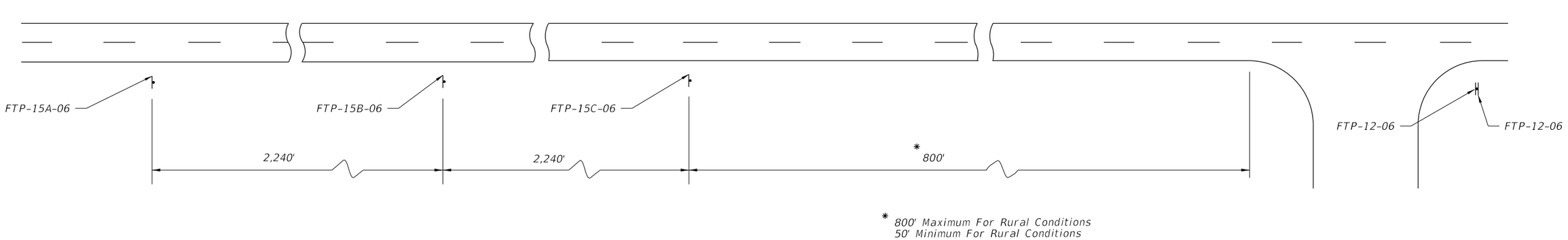


SIGN FTP-12-06

SIGN FTP-15B-06



SIGN FTP-15C-06



* 800' Maximum For Rural Conditions
50' Minimum For Rural Conditions

Notes:

1. Signs and sign structures shall be erected in accordance with the details shown on Index 700-020.
2. Sign FTP-12-06 shall be located on the Welcome Center grounds in proximity to the building and as far from the Main Line Roadway as possible (2 signs back to back).
3. All legend to be Series E.
4. One sign FTP-15A-06 or 15B-06 should be used depending on speed, roadside development & geometric conditions.

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FOR PRIMARY HIGHWAYS

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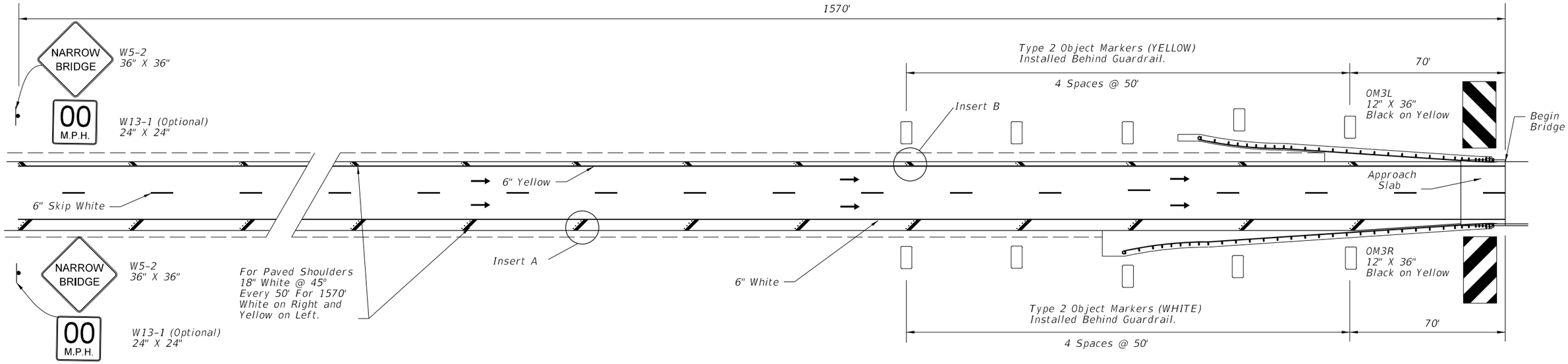
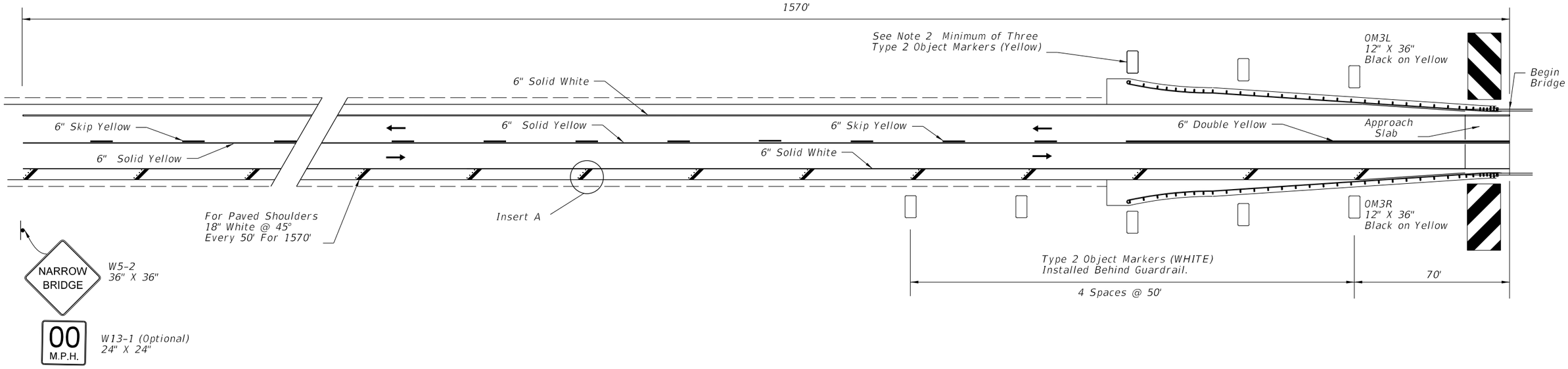


One-Way Traffic



2-Way Traffic

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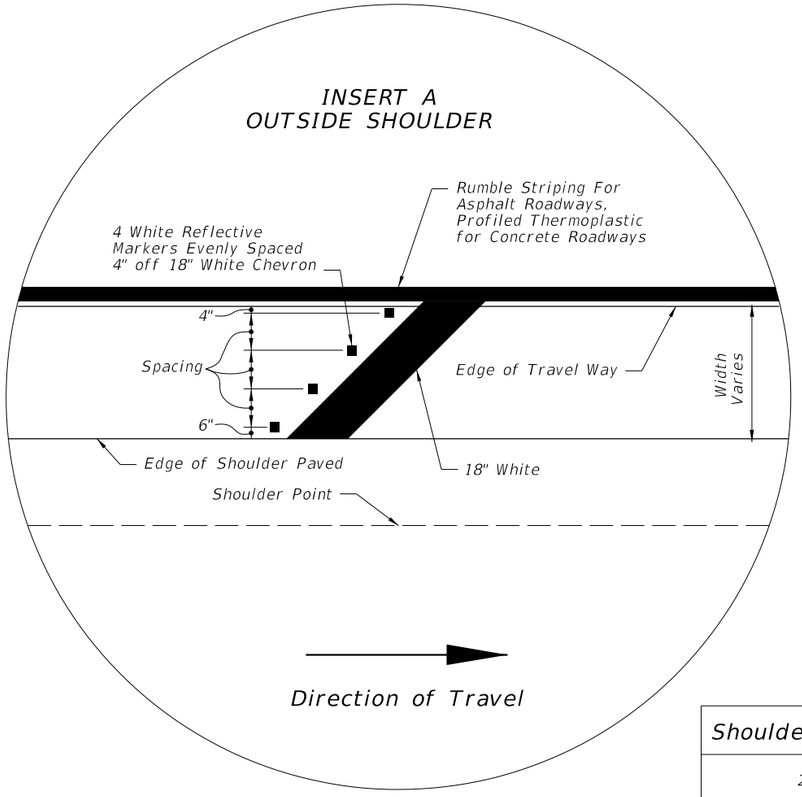
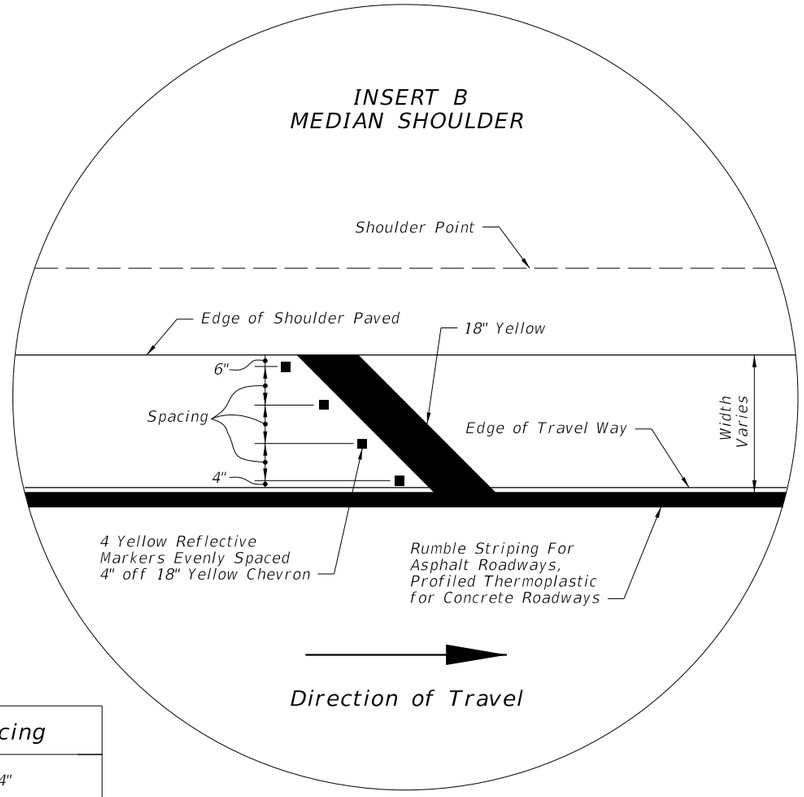
11/01/17			FY 2020-21 STANDARD PLANS	RURAL NARROW BRIDGE TREATMENT	INDEX 700-106	SHEET 1 of 2





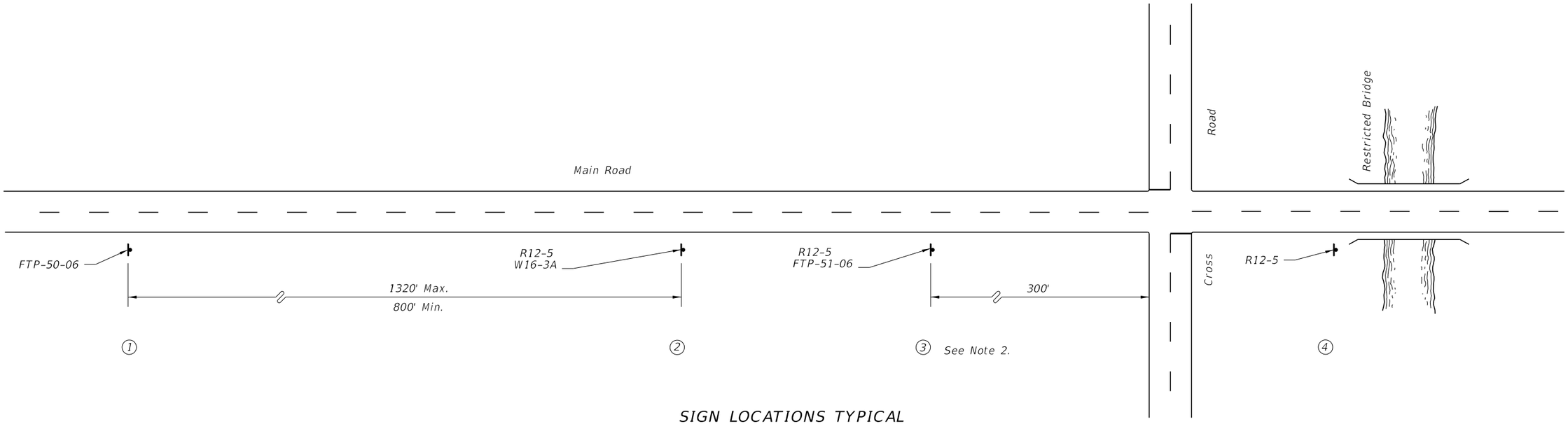
Shoulder Width	No. of RPM's	Spacing
2'	2	14"
3'	3	13"
4'	3	19"
5'	4	16.67"

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.

10/29/2019 8:24:05 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FY 2020-21 STANDARD PLANS	RURAL NARROW BRIDGE TREATMENT	700-106	2 of 2



SIGN LOCATIONS TYPICAL

① WEIGHT LIMIT RESTRICTION AHEAD

FTP-50-06

② WEIGHT LIMIT 8T 12T 16T

R12-5 (24" X 36")

X MILES

W 16-3A

③ WEIGHT LIMIT 8T 12T 16T

R12-5 (24" X 36")

WEIGHT LIMIT LAST EXIT

FTP-51-06

④ WEIGHT LIMIT 8T 12T 16T

R12-5 (24" X 36")

1. See Standard Highway Signs for sign R12-5 and W16-3 details.
2. Location of Sign 3 may require some field adjustment.
3. The Cross Road is the last detour to route around the restricted bridge.
4. Location of Sign 2 should be established from the Cross Road the following approximate distances; Interstate-1 Mile Non- Interstate-1/2 Mile.
5. See Index 700-102 for sign details.

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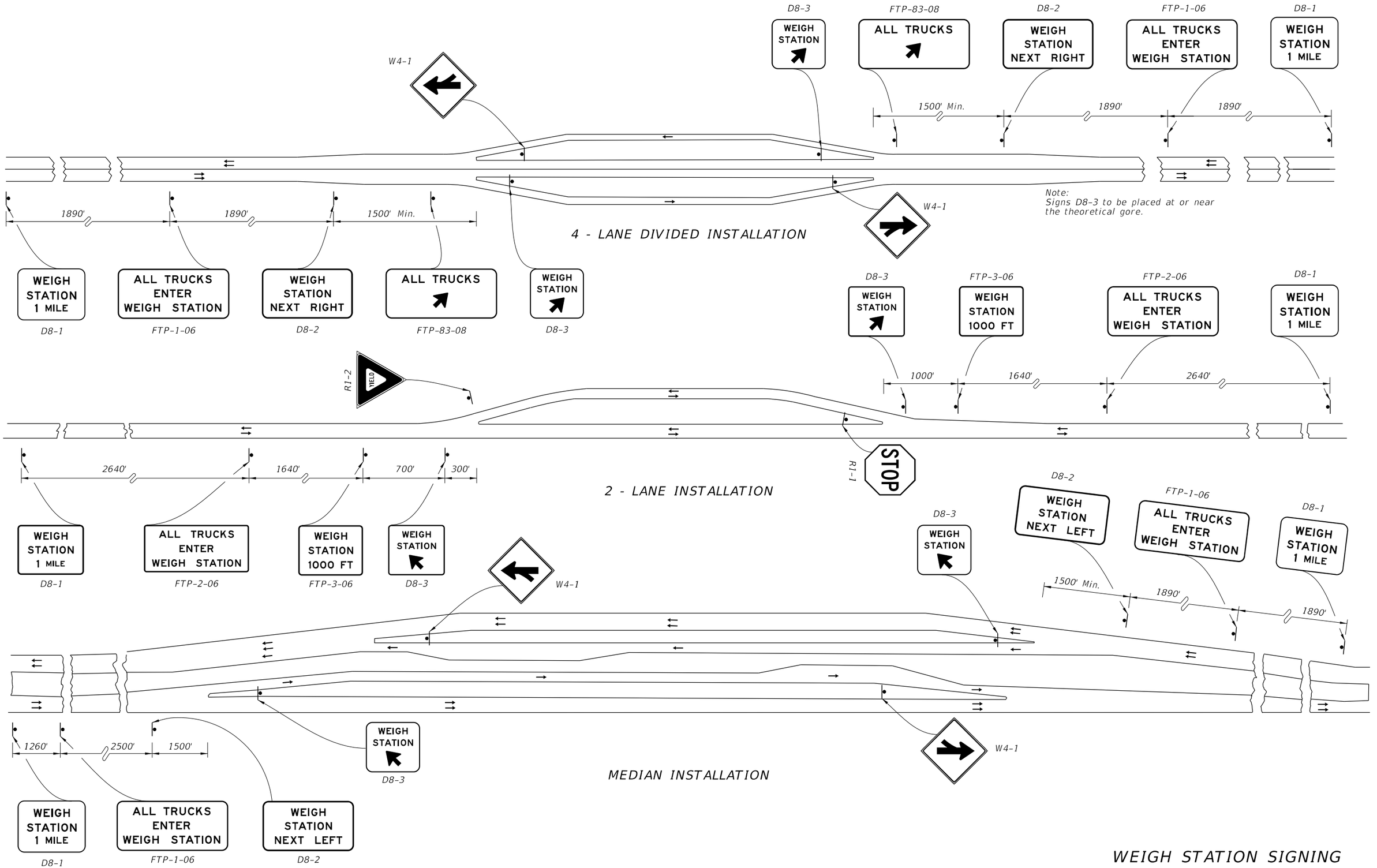
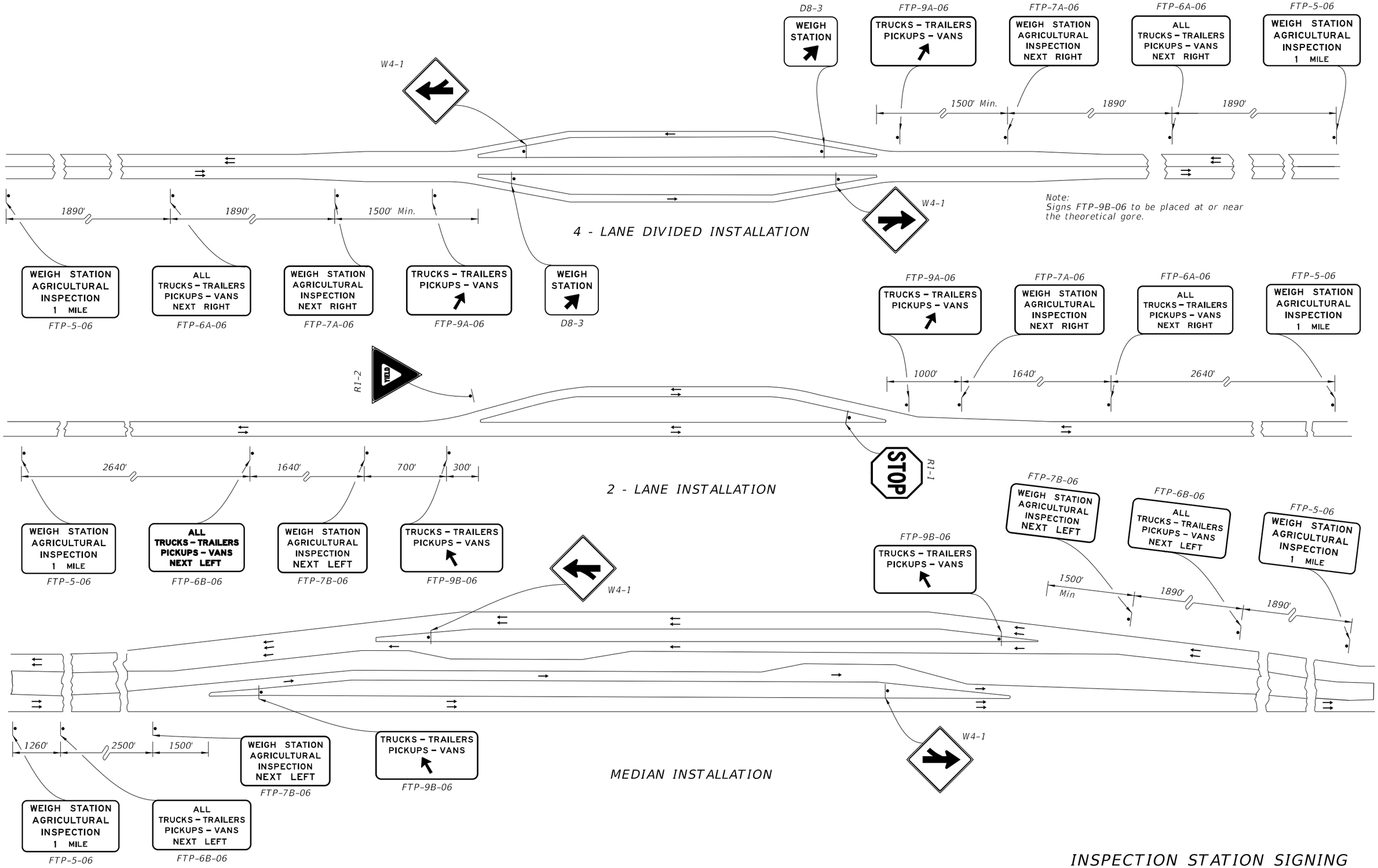
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	BRIDGE WEIGHT RESTRICTIONS	INDEX	SHEET
11/01/17						700-107	1 of 1



10/29/2019 8:24:08 AM

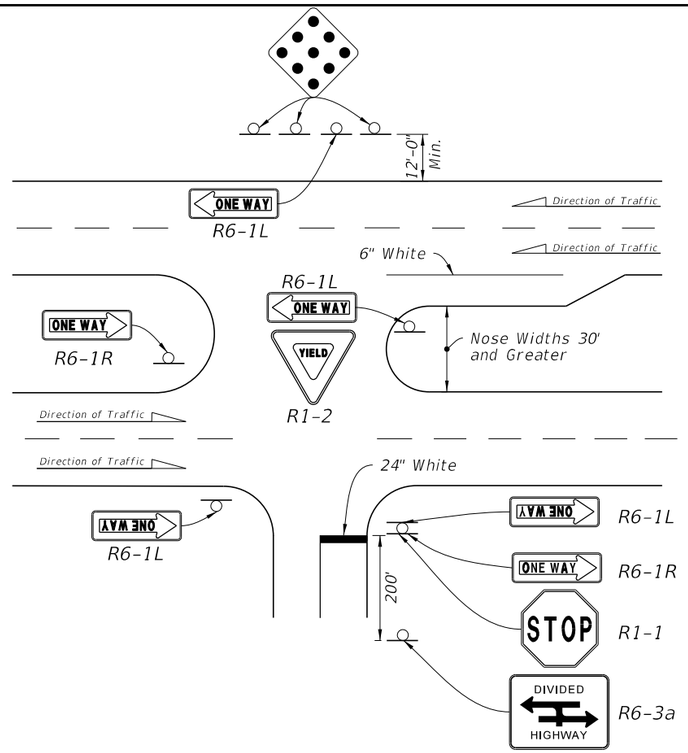
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	TYPICAL SIGNING FOR TRUCK WEIGH AND INSPECTION STATIONS	INDEX 700-108	SHEET 1 of 2

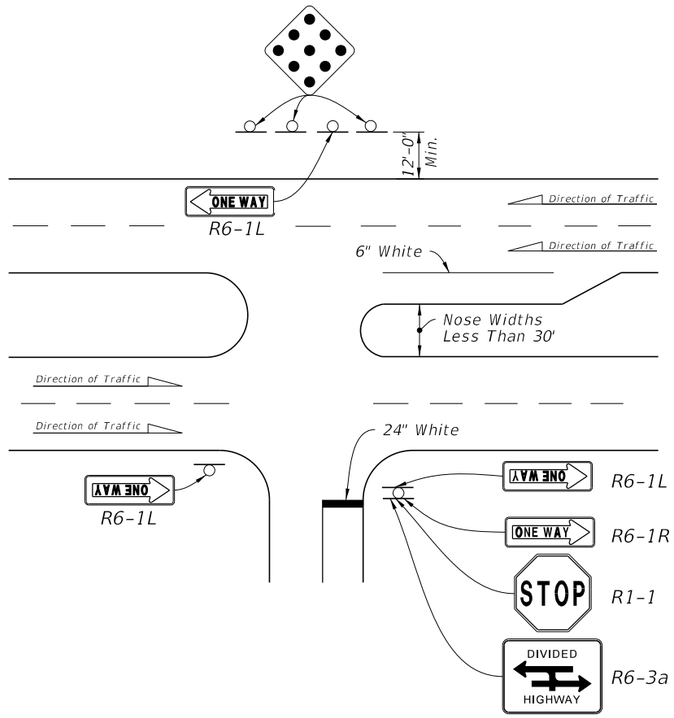


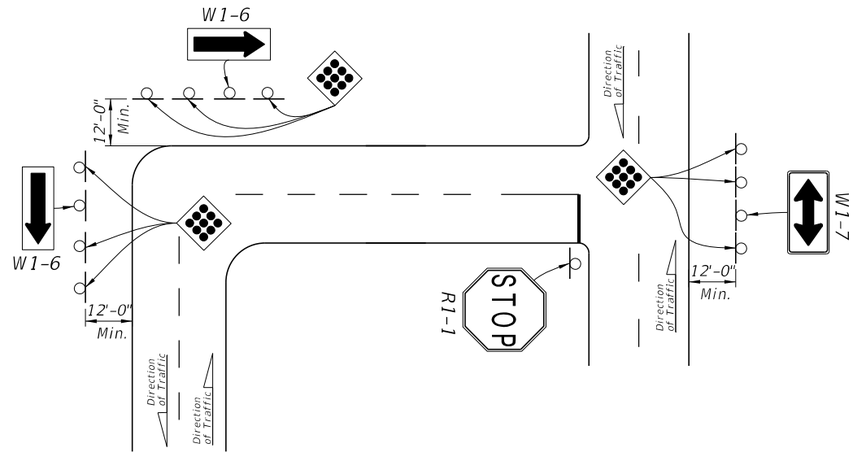
INSPECTION STATION SIGNING

10/29/2019 8:24:09 AM

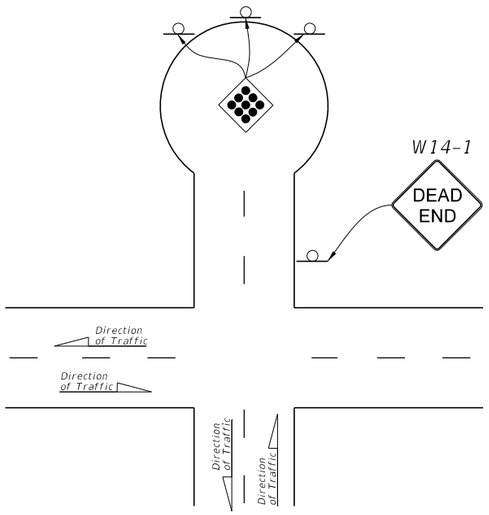
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT	FY 2020-21 STANDARD PLANS	TYPICAL SIGNING FOR TRUCK WEIGH AND INSPECTION STATIONS	INDEX 700-108 / SHEET 2 of 2

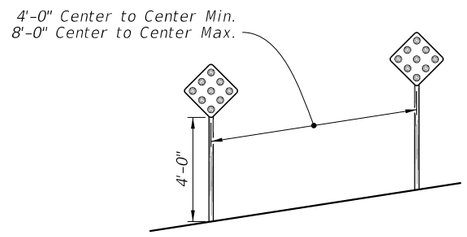


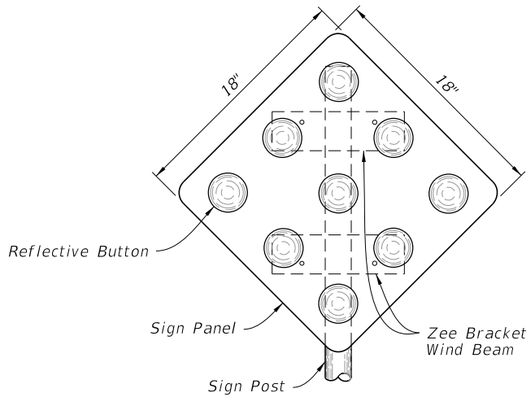




TYPE 1 OBJECT MARKER PLACEMENT







TYPE 4 OBJECT MARKER PLACEMENT

OBJECT MARKER DETAIL

NOTES:

1. Index applicable to residential and minor streets only. Major streets to be evaluated on a case-by-case basis.
2. Install Object Markers in accordance with Index 700-010
3. See Index 711-001 for pavement markings.

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	TRAFFIC CONTROLS FOR STREET TERMINATIONS	700-109	1 of 1

NOTES:

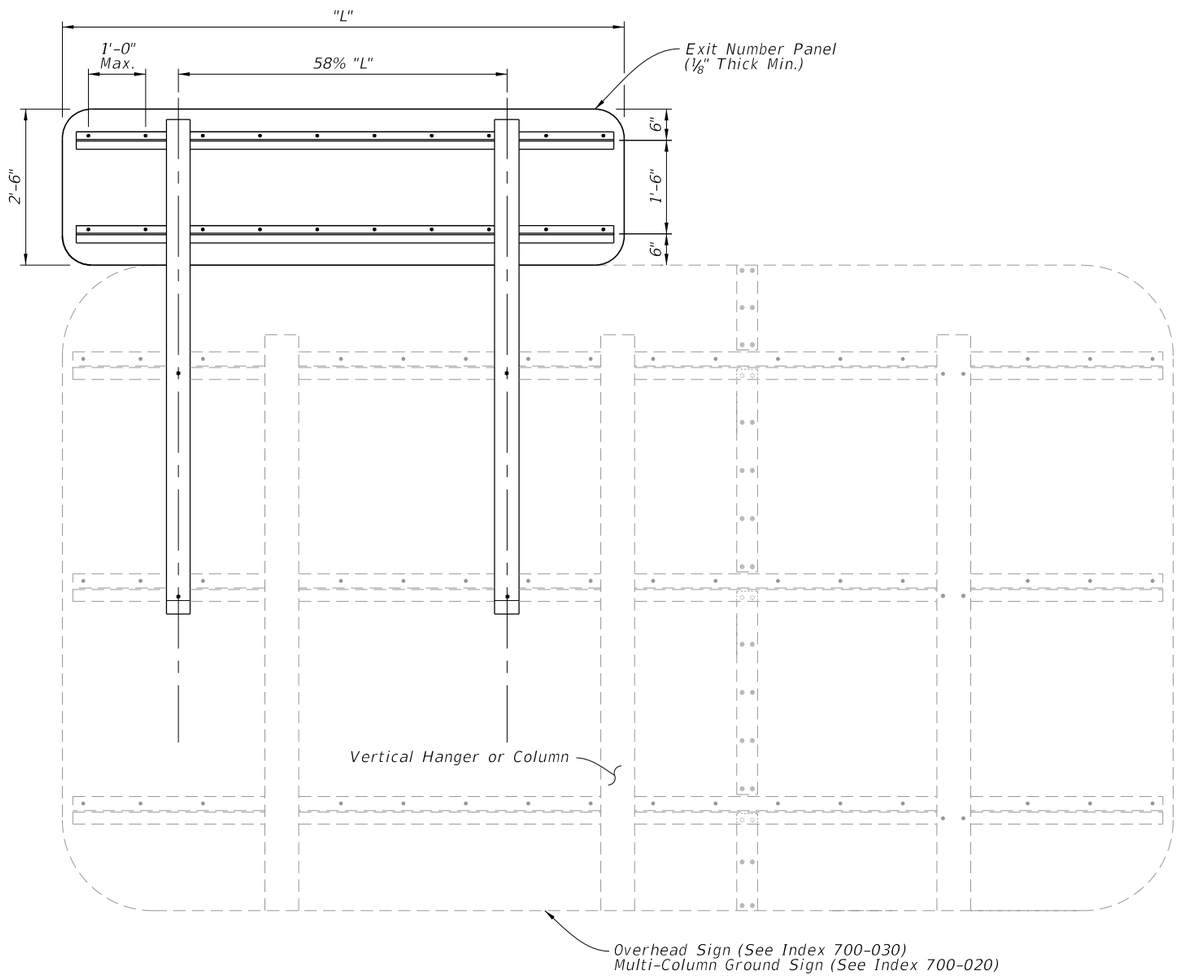
1. Work with Indexes 700-020 and 700-030.

2. Materials (Aluminum):
   A Sheets and Plates: ASTM B209 Alloy 6061-T6
   B. Standard Structural Shapes: ASTM B308 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.

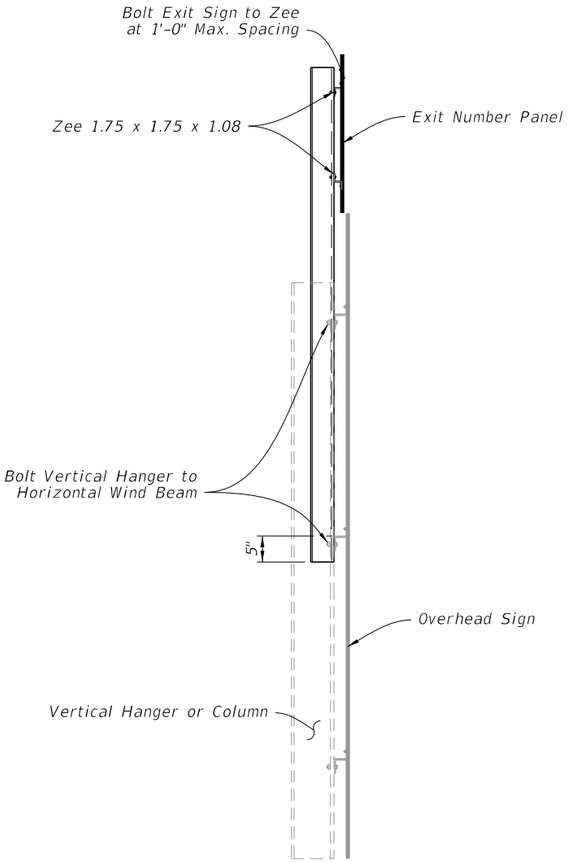
3. Fabrication:
   A. See sign layout sheet for dimension "L" and sign face details in the Plans.
   B. Round all sign corners.

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.



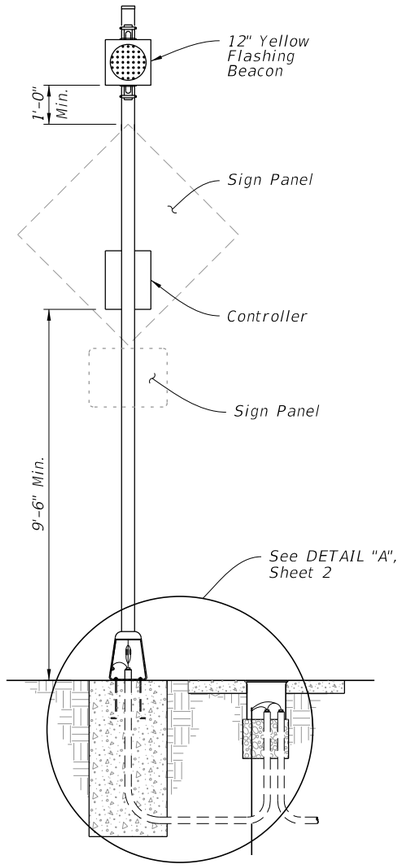
BACK ELEVATION



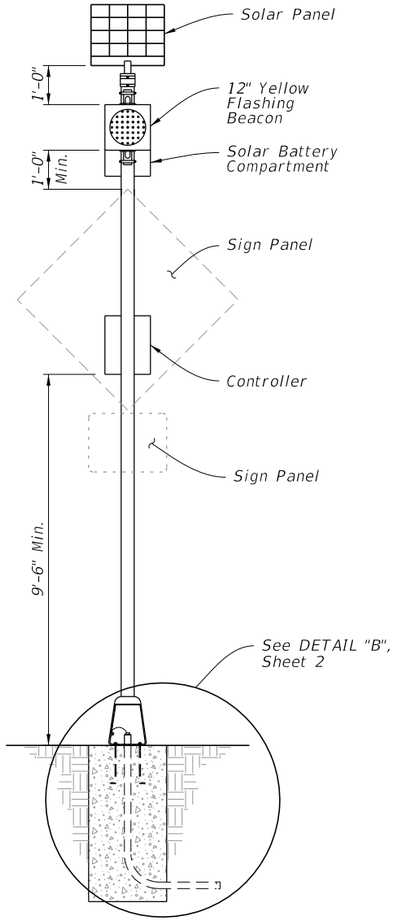
SIDE ELEVATION

2/13/2020 6:46:14 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MOUNTING EXIT NUMBER PANELS TO SIGNS	INDEX	SHEET
11/01/19						700-110	1 of 1

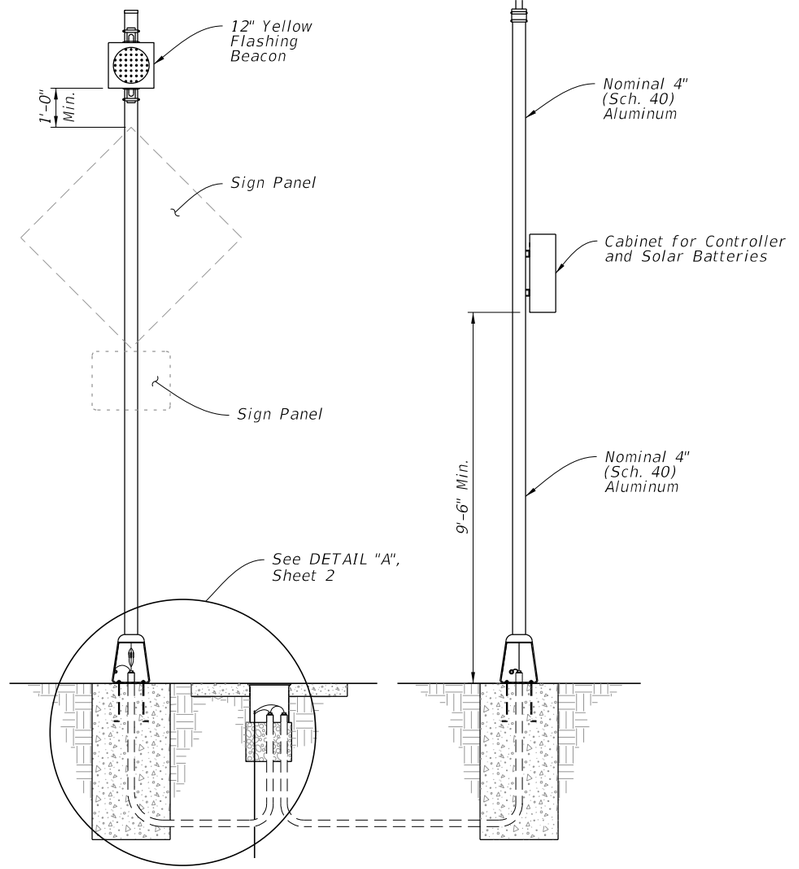


FRONT VIEW



FRONT VIEW

WITHOUT AUXILIARY POLE



SIGN ASSEMBLY FRONT VIEW

AUXILIARY POLE

WITH AUXILIARY POLE

POWER CONFIGURATION 'A'
CONVENTIONALLY-POWERED
(Type A1 Shown)

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 for aluminum poles and transformer bases.
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.

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 as possible.
3. Install the auxiliary pole so that the height is the same as the column for the roadside assembly.
4. Orient solar panel to face South for optimal exposure to sunlight.
5. The controller and the solar batteries may be located in the same compartment.

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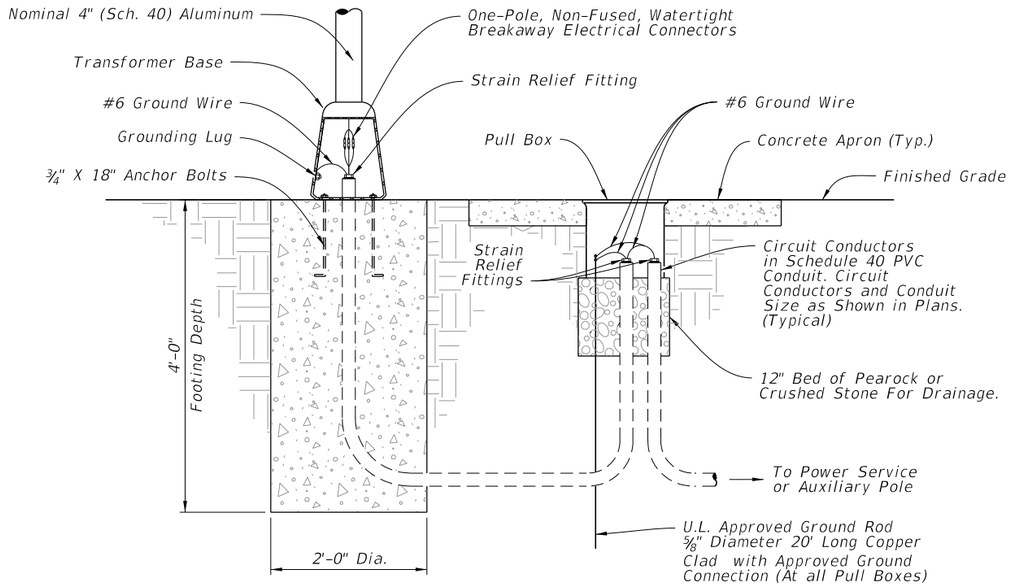
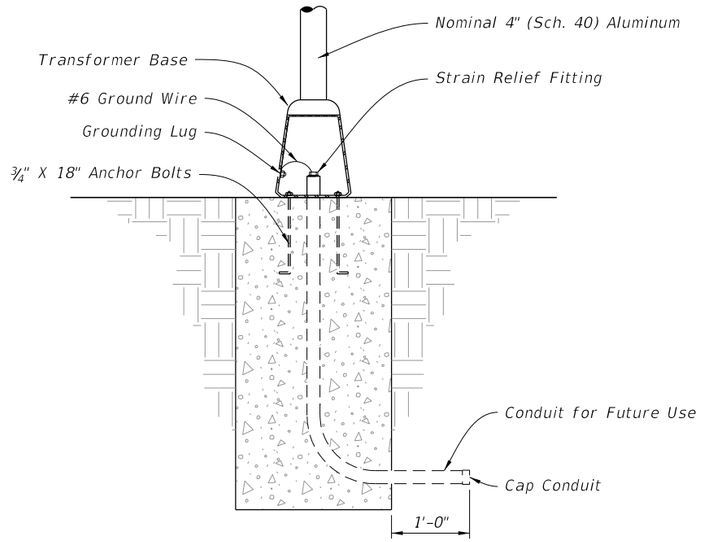
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19						700-120	1 of 10



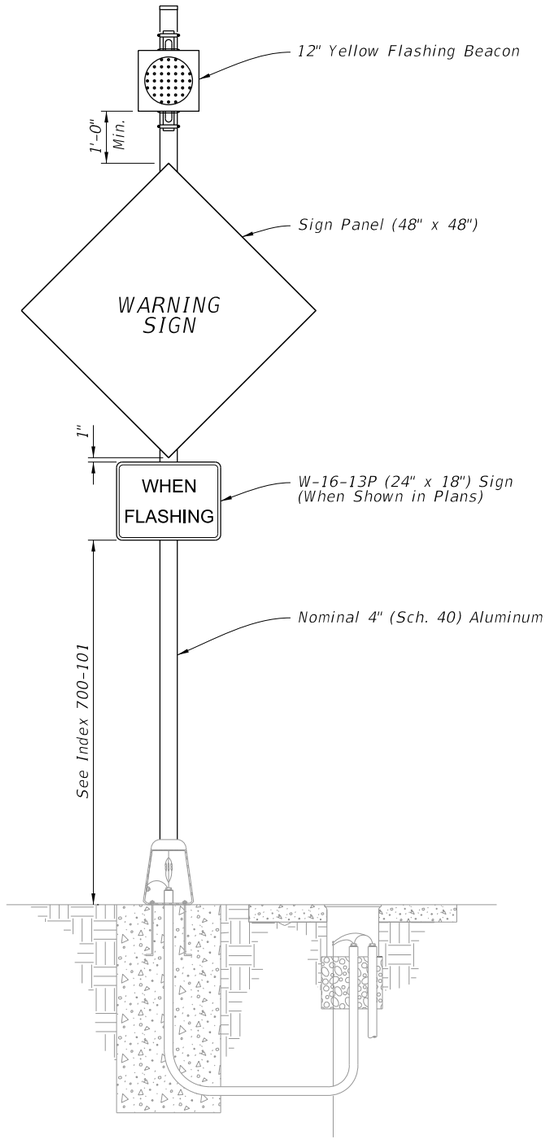
DETAIL "A"



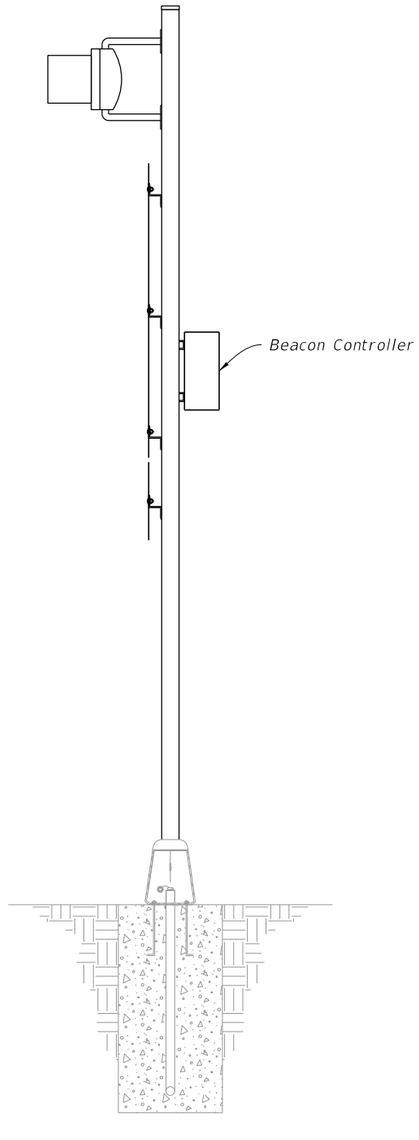
DETAIL "B"

10/29/2019 8:24:12 AM

CONDUIT, WIRING, AND FOUNDATION DETAILS



FRONT VIEW



SIDE VIEW

NOTE:

Type A1 Assembly (conventionally-powered) is shown.
Type B1 Assemblies (solar-powered) similar.

ROADSIDE SIGN ASSEMBLY-1

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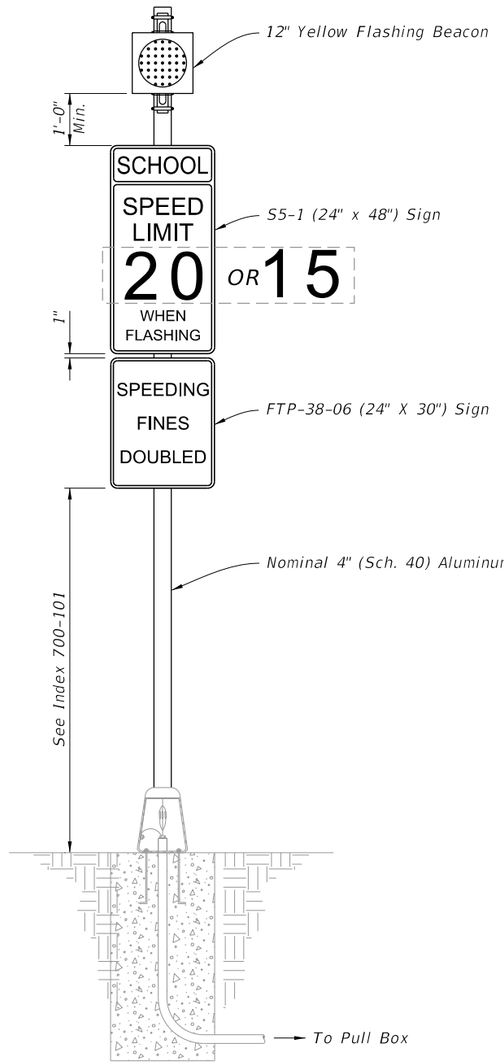
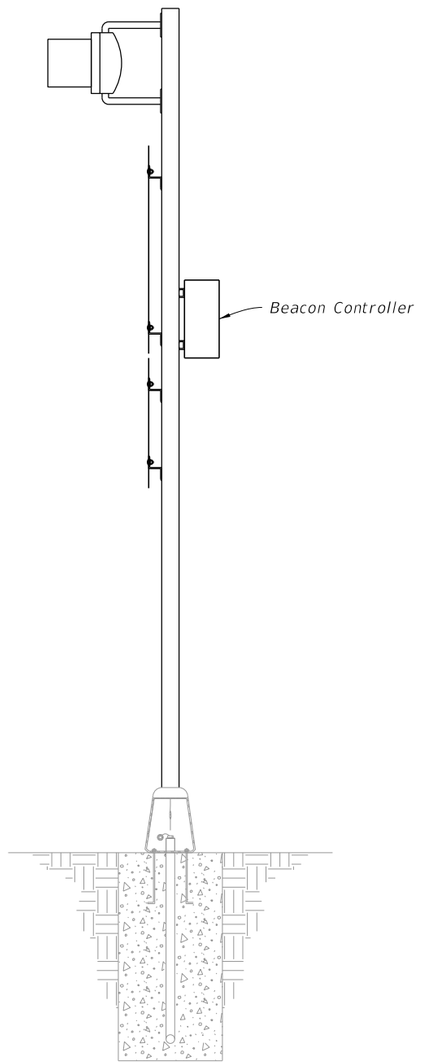
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19						700-120	3 of 10



FRONT VIEW



SIDE VIEW

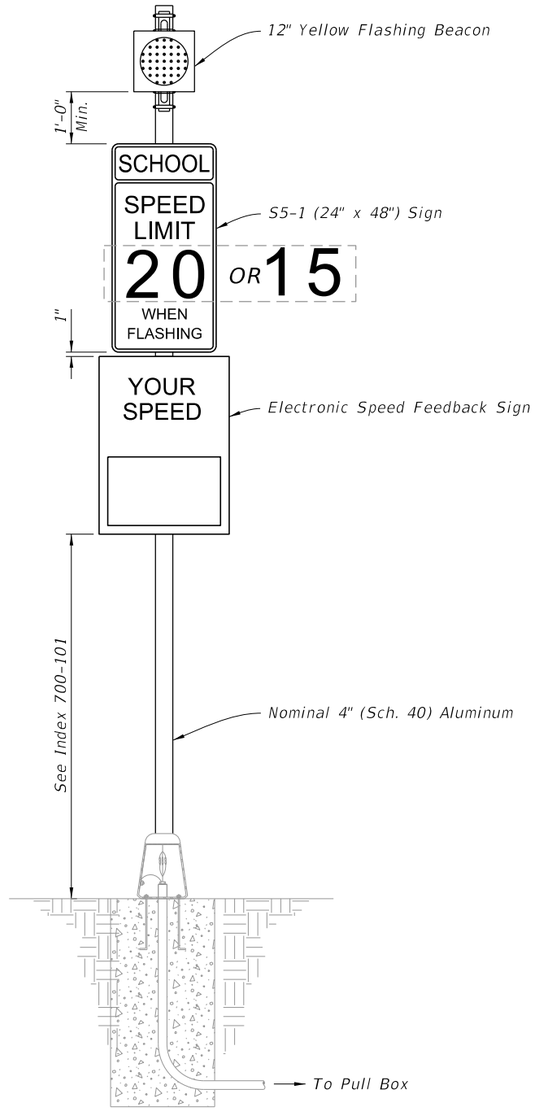
NOTE:

Type A2 Assembly (conventionally-powered) is shown.
Type B2 Assemblies (solar-powered) similar.

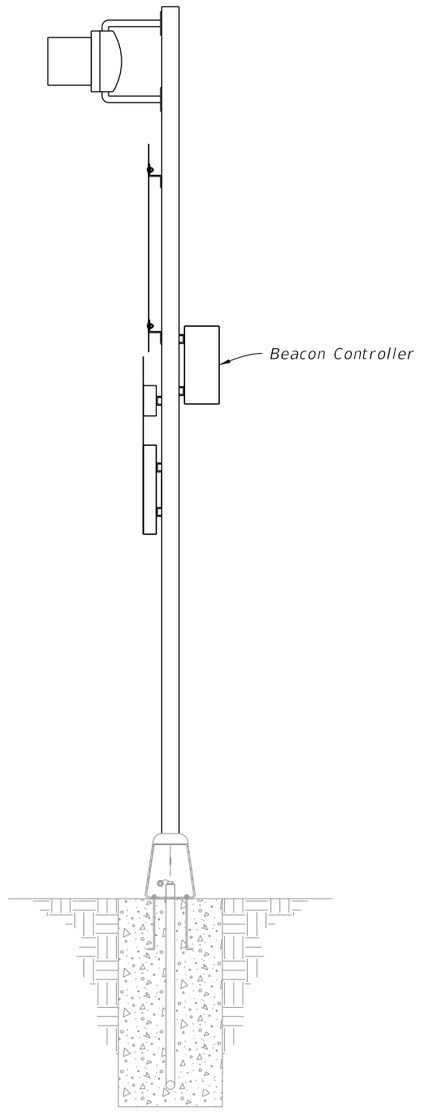
ROADSIDE SIGN ASSEMBLY-2

10/29/2019 8:24:13 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19					700-120	4 of 10



FRONT VIEW



SIDE VIEW

NOTES:

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.

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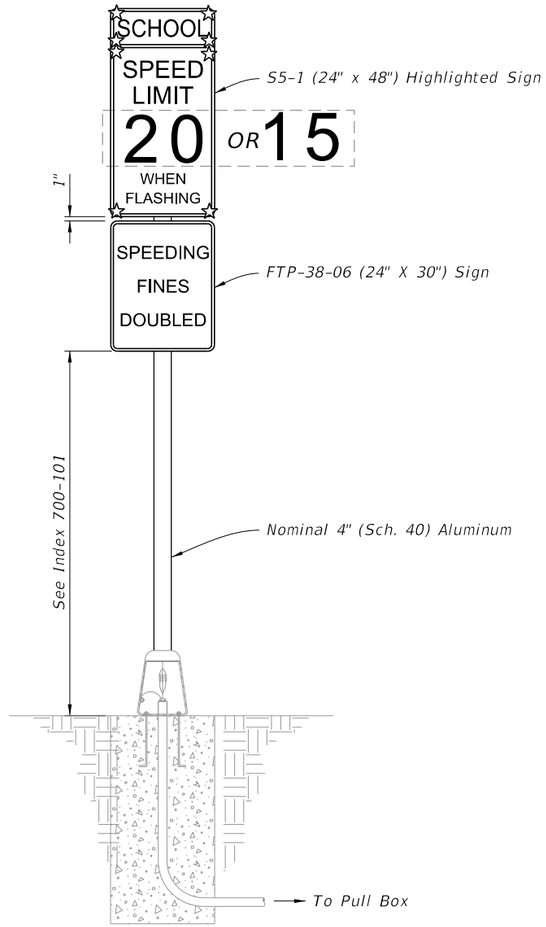
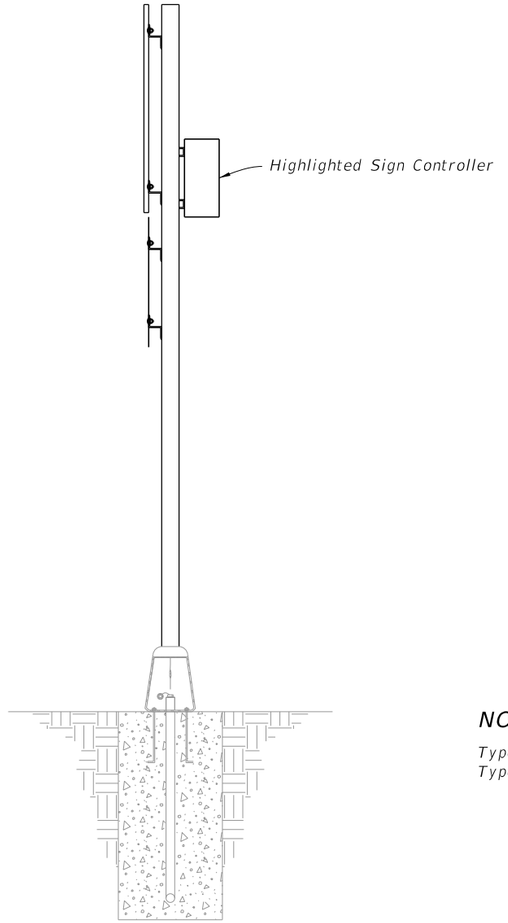
ROADSIDE SIGN ASSEMBLY-3

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19						700-120	5 of 10



FRONT VIEW



SIDE VIEW

NOTE:

Type A4 Assembly (conventionally-powered) is shown.
Type B4 Assemblies (solar-powered) similar.

ROADSIDE SIGN ASSEMBLY-4

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
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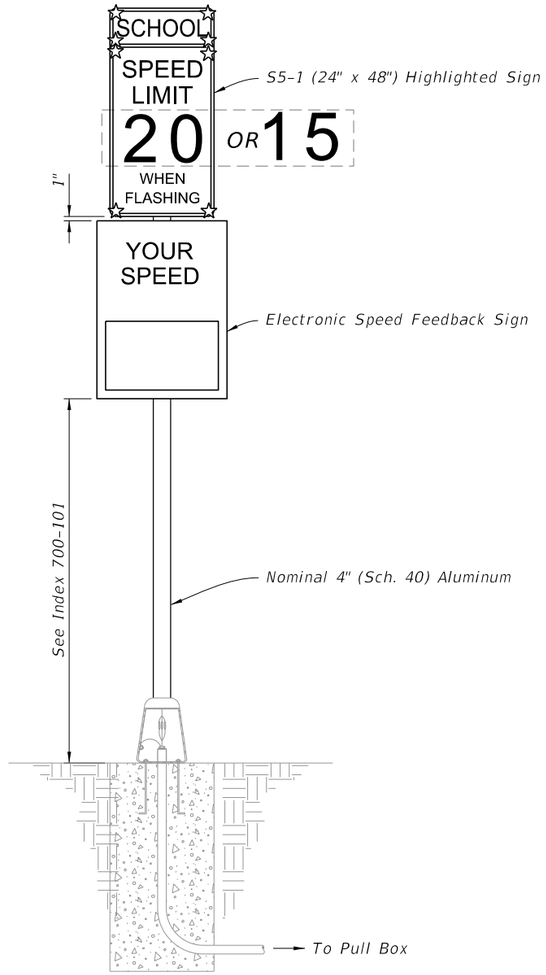
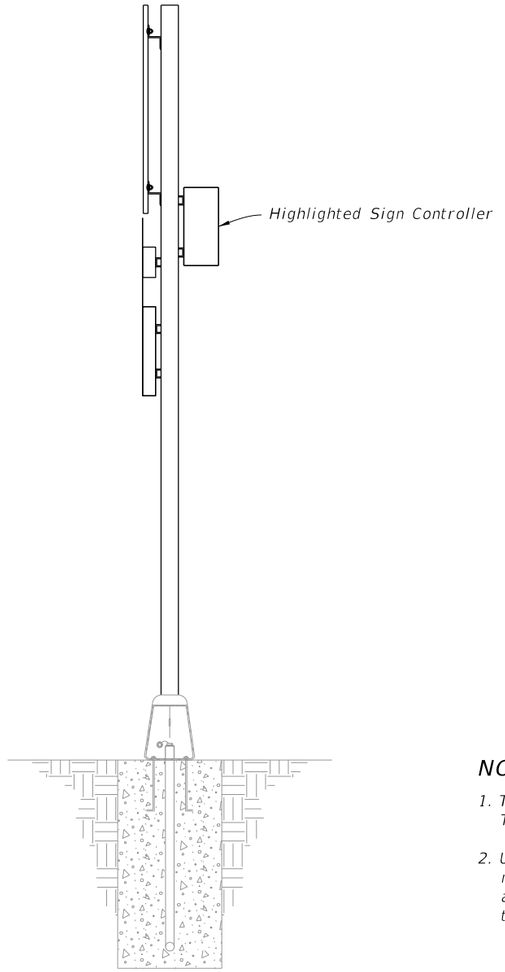


FRONT VIEW



SIDE VIEW

NOTES:

1. Type A5 Assembly (conventionally-powered) is shown. Type B5 Assemblies (solar-powered) similar.
2. Use electronic speed feedback sign with 15" high numerals for posted speed of 45 mph or less, and 18" high numerals for posted speeds greater than 45 mph.

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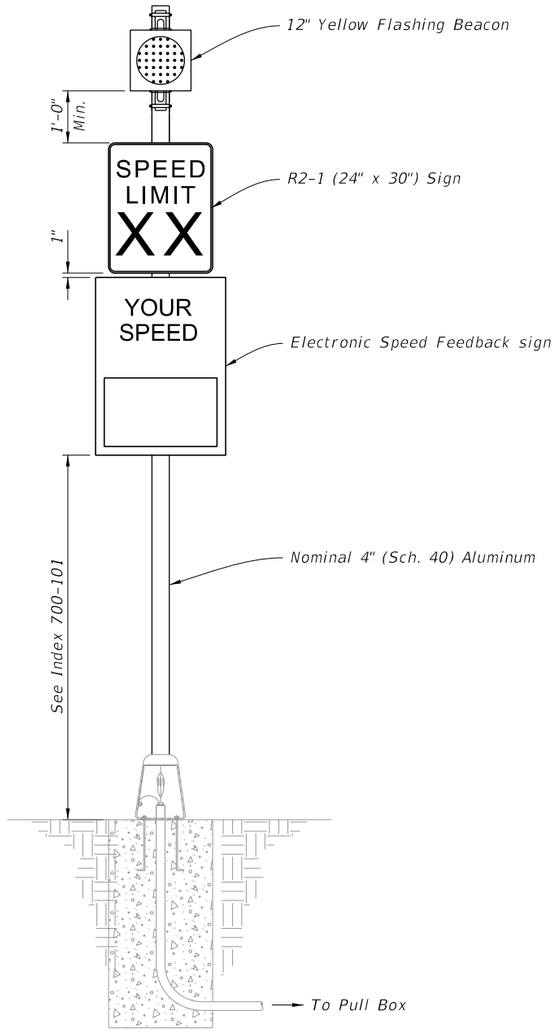
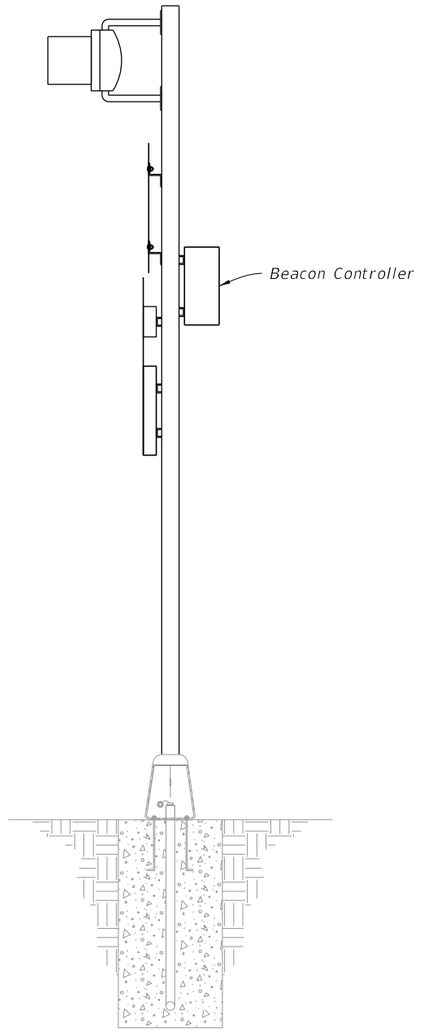
ROADSIDE SIGN ASSEMBLY-5

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19					700-120	7 of 10



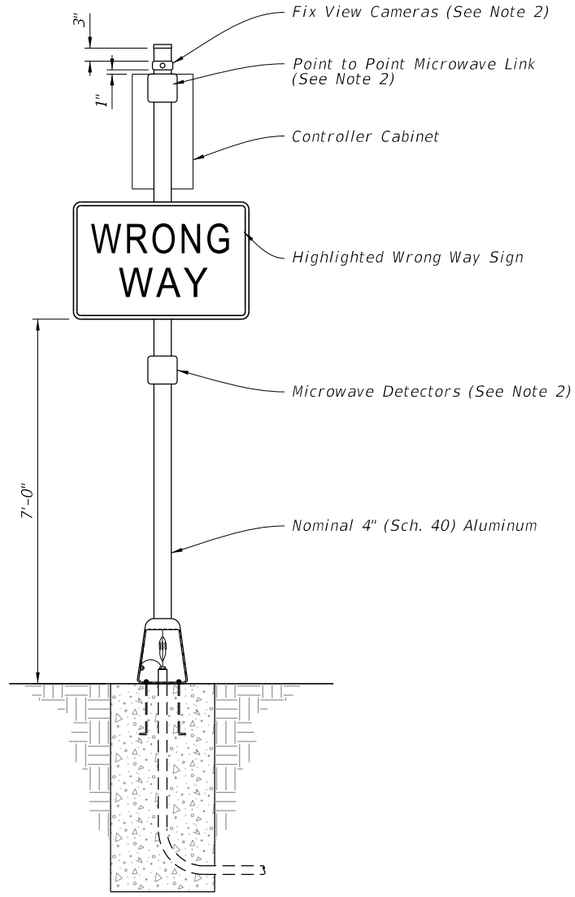
FRONT VIEW



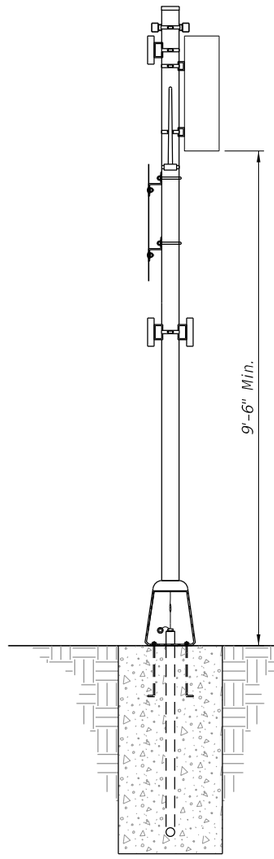
SIDE VIEW

NOTES:

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.



FRONT VIEW



SIDE VIEW

NOTES:

1. Type A7 Assembly (Conventionally-Powered) is shown. Type B7 Assemblies (Solar-Powered) Similar.
2. Install cameras, point to point microwave link, microwave detectors, and antennas in accordance with the manufacturer's instructions.

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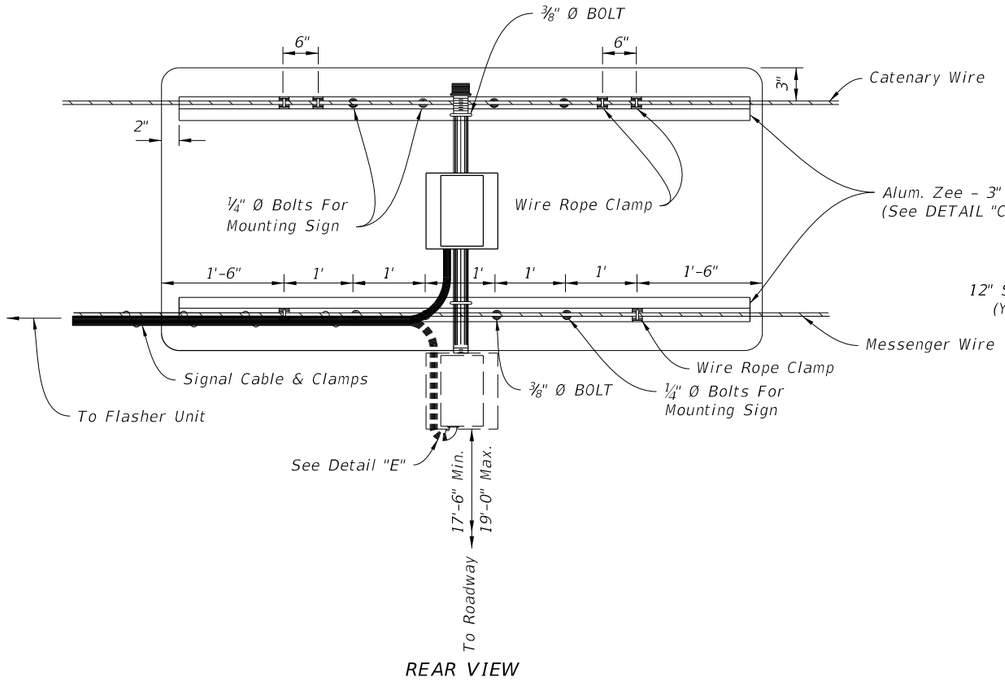
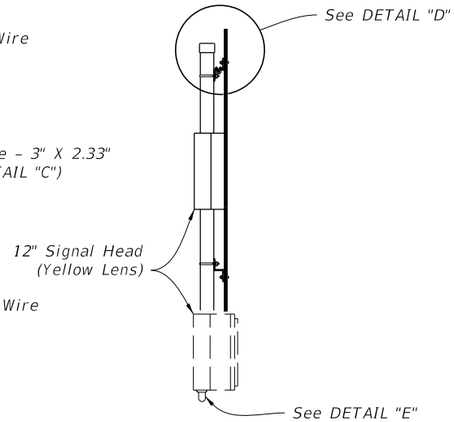
ROADSIDE SIGN ASSEMBLY-7

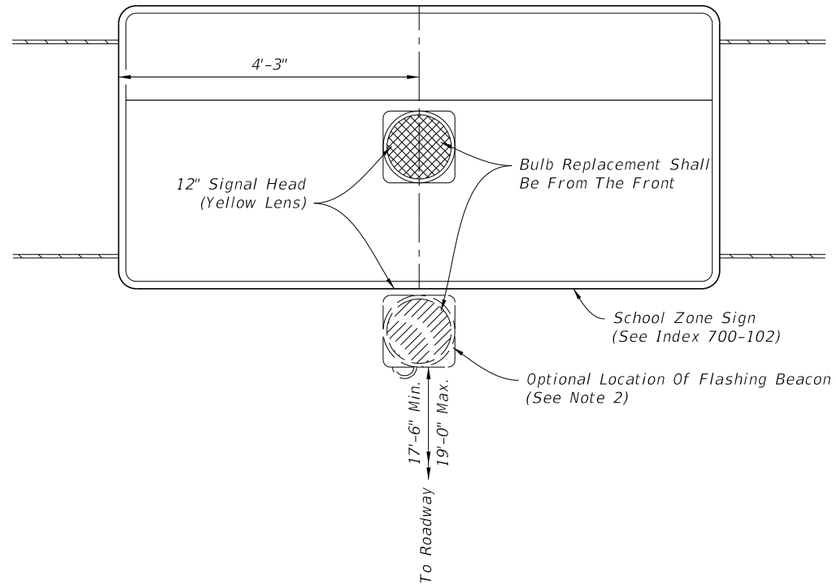
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19						700-120	9 of 10



REAR VIEW

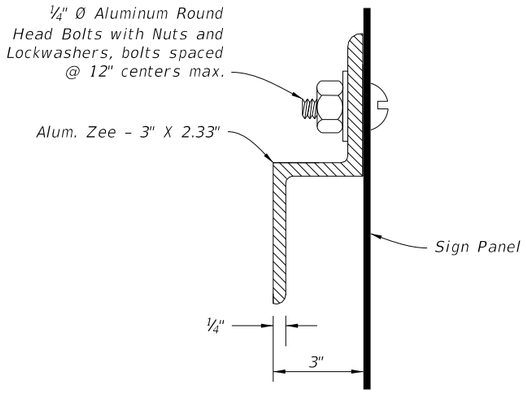


SIDE VIEW



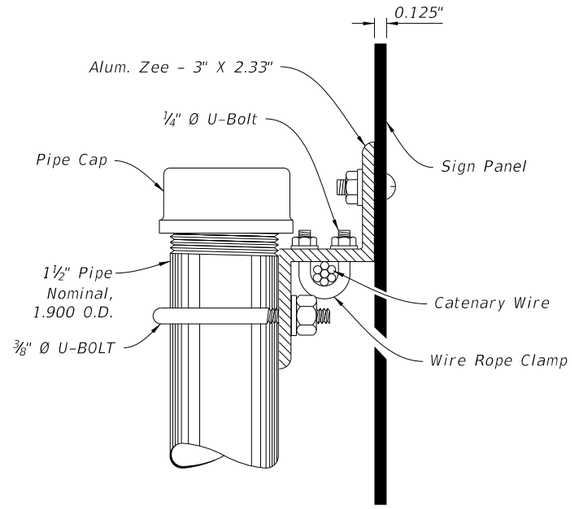
FRONT VIEW

OVERHEAD SCHOOL SIGN ASSEMBLY



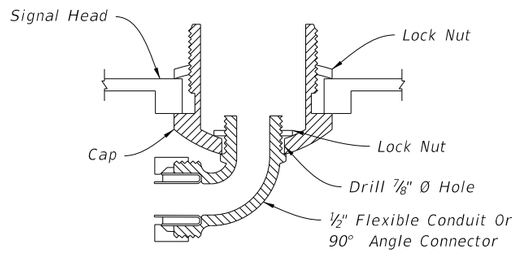
ZEE SECTION DETAIL

DETAIL "C"



MOUNTING DETAIL

DETAIL "D"



CABLE ENTRY DETAIL

DETAIL "E"

NOTES:

1. Flasher unit and cabinet to be placed on the strain pole supporting overhead sign assembly or on service pole. The flasher unit not to overhang private property or sidewalk.
2. Optional flashing beacon will be called for in the Plans. They may be placed within or below the panel, or face to the rear.

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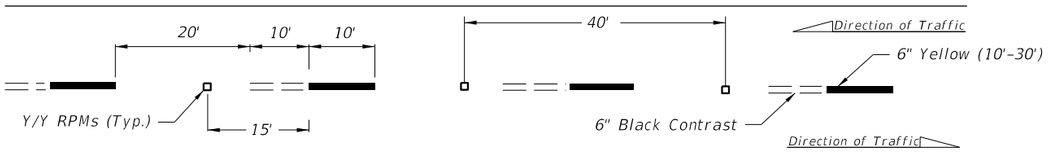
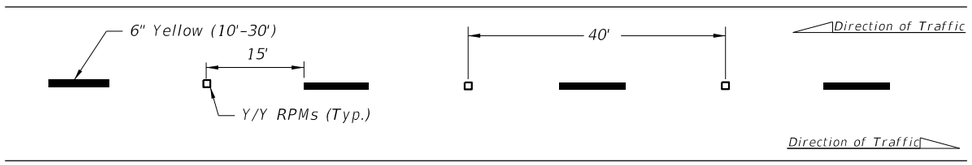
OVERHEAD SIGN ASSEMBLY

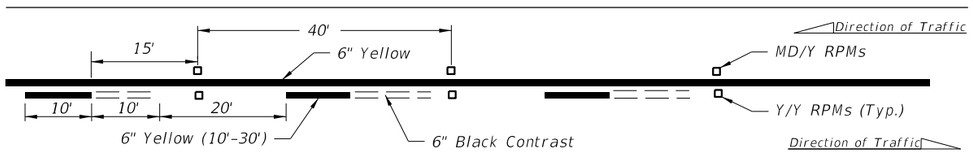
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	ENHANCED HIGHWAY SIGNING ASSEMBLIES	INDEX	SHEET
07/01/19						700-120	10 of 10



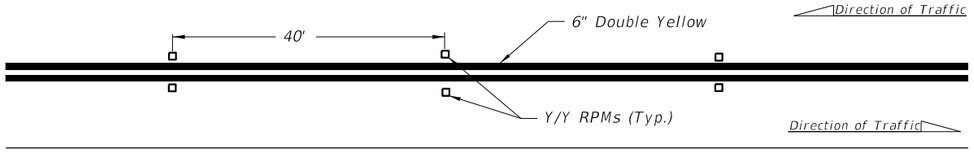
ALTERNATING SKIP LINE



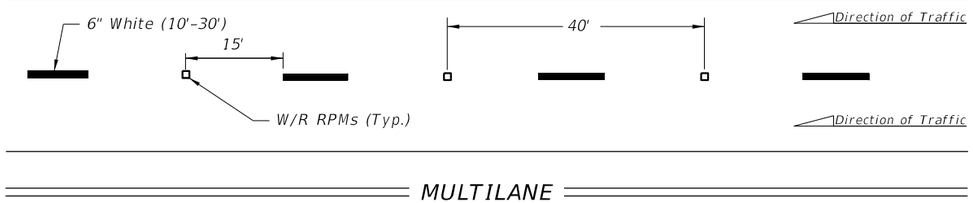
SKIP LINE



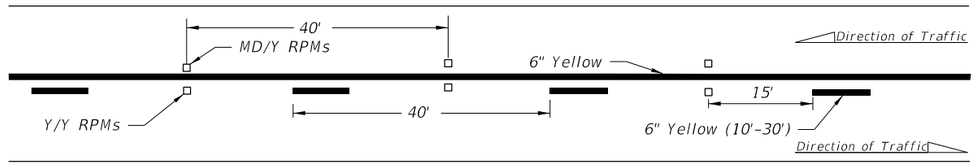
SOLID LINE WITH ALTERNATING SKIP



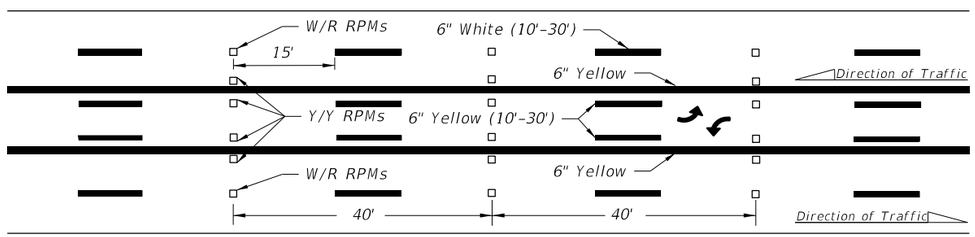
DOUBLE SOLID LINE



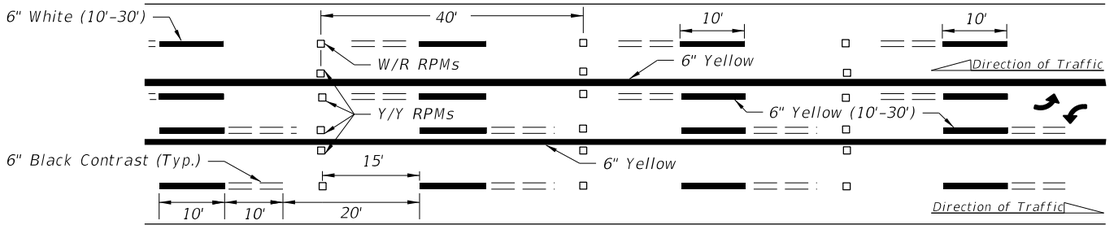
MULTILANE



SOLID LINE WITH SKIP



SKIP LINE WITH TWO-WAY LEFT TURN LANE



ALTERNATING SKIP LINE WITH TWO-WAY LEFT TURN LANE

GENERAL 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

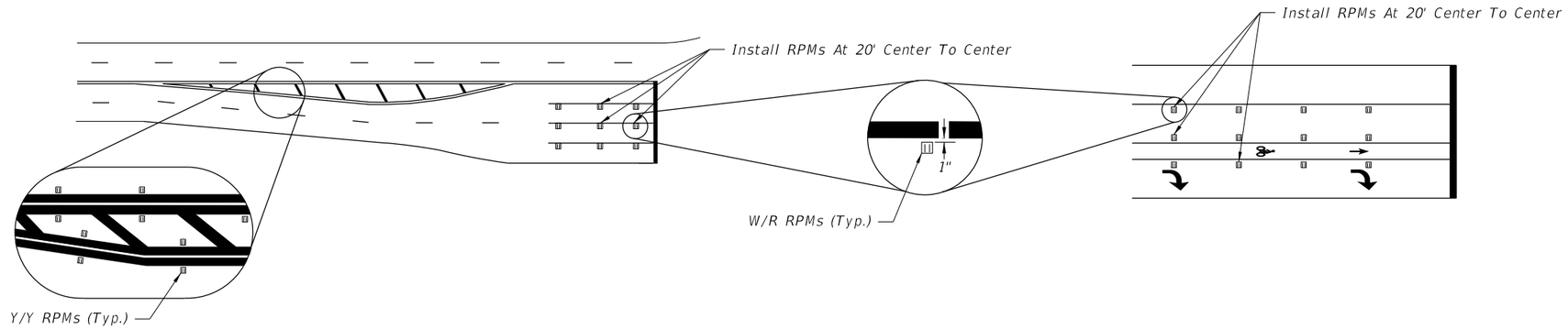
Y/Y = YELLOW/YELLOW RPM

Y/R = YELLOW/RED RPM

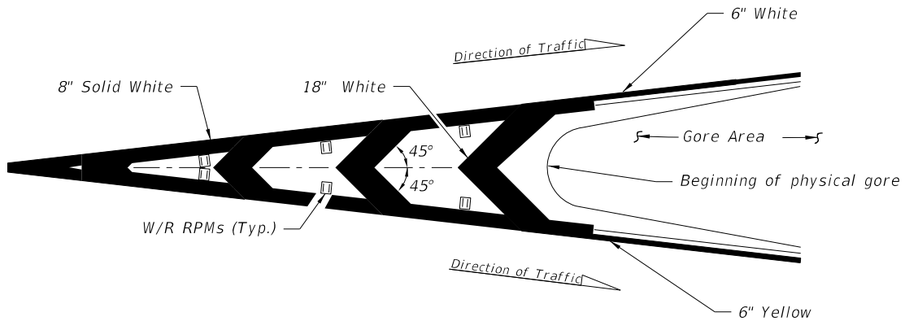
MD/Y = MONO-DIRECTIONAL YELLOW RPM

10/29/2019 8:24:17 AM

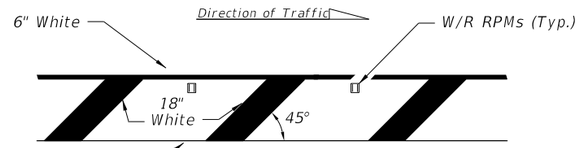
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS	INDEX	SHEET
11/01/18						706-001	1 of 6



RPM PLACEMENT AT INTERSECTIONS

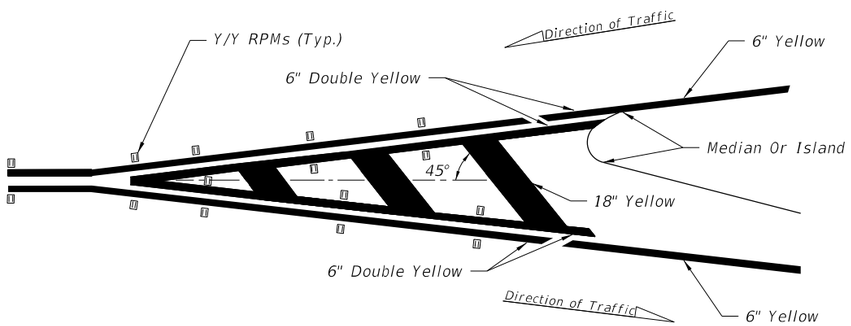


RPM PLACEMENT AT TRAFFIC CHANNELIZATION AT GORE
(Traffic Flows In Same Direction)



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



RPM PLACEMENT AT TRAFFIC SEPARATION
(Traffic Flows In Opposite Direction)

NOTE:

1. 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

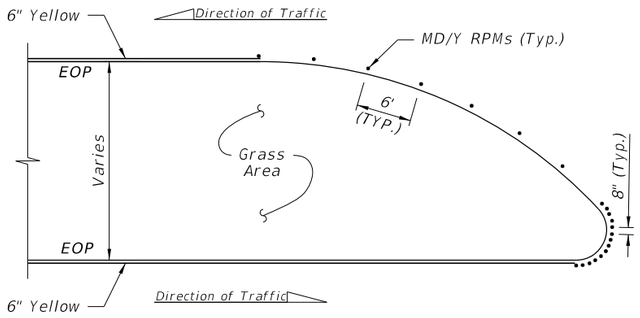
Y/Y = YELLOW/YELLOW RPM

Y/R = YELLOW/RED RPM

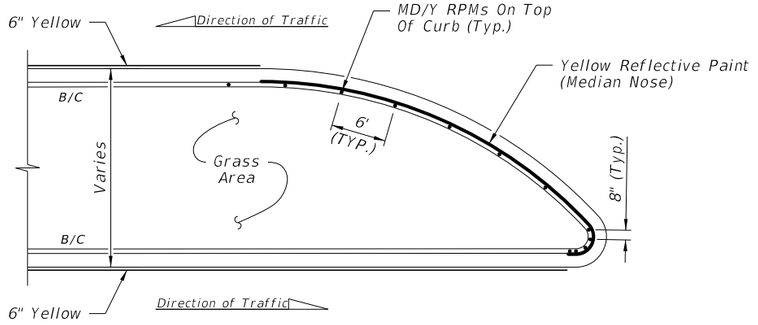
MD/Y = MONO-DIRECTIONAL YELLOW RPM

10/29/2019 8:24:18 AM

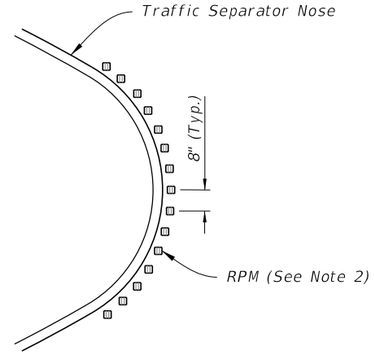
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS	INDEX	SHEET
11/01/18						706-001	2 of 6



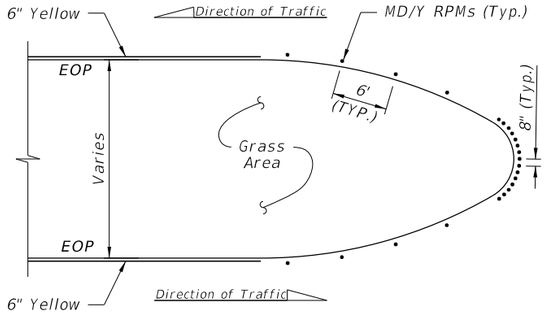
DETAIL "A"



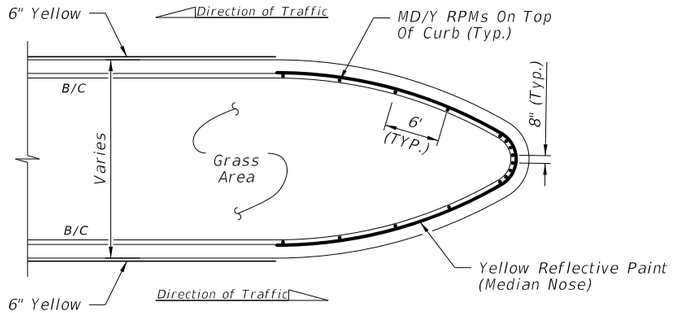
DETAIL "D"



RPM PLACEMENT DETAIL



DETAIL "B'



DETAIL "E"

POSTED SPEED LIMIT MPH	"Y" FEET
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40

LEGEND:

B/C = BACK OF CURB

EOP = EDGE OF PAVEMENT

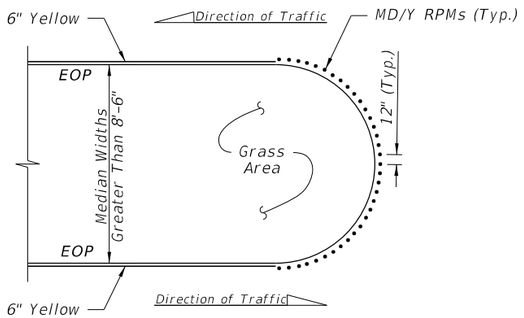
RPM = RAISED PAVEMENT MARKER

W/R = WHITE/RED RPM

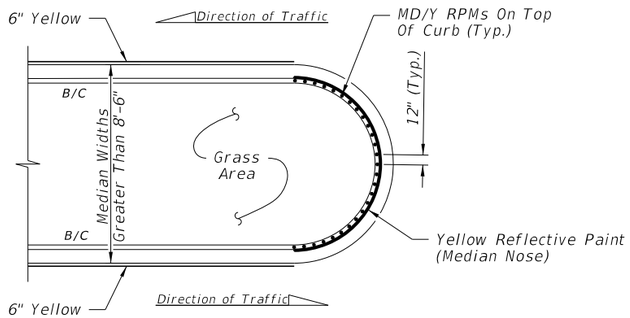
Y/Y = YELLOW/YELLOW RPM

Y/R = YELLOW/RED RPM

MD/Y = MONO-DIRECTIONAL YELLOW RPM



DETAIL "C"



DETAIL "F"

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.

FLUSH MEDIAN OPENINGS

TYPE "D" OR "F" CURB

RPM PLACEMENT AT MEDIAN OPENINGS
(When called for in the Plans)

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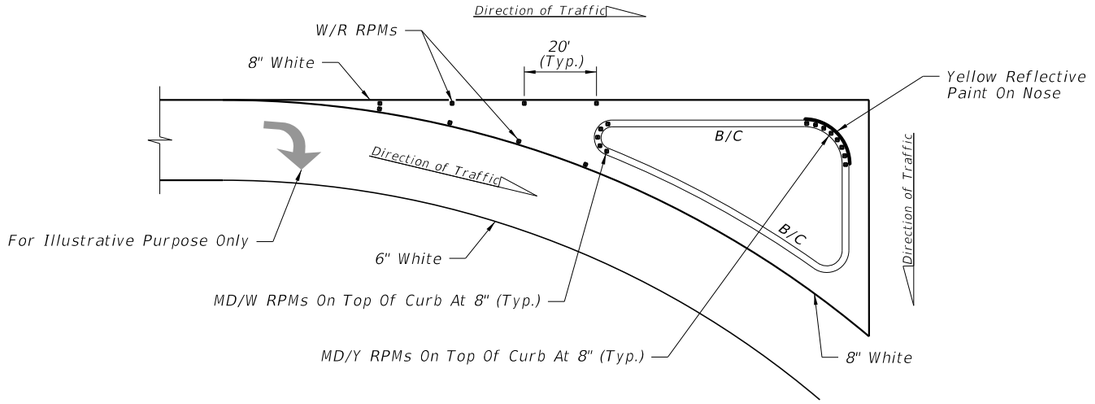
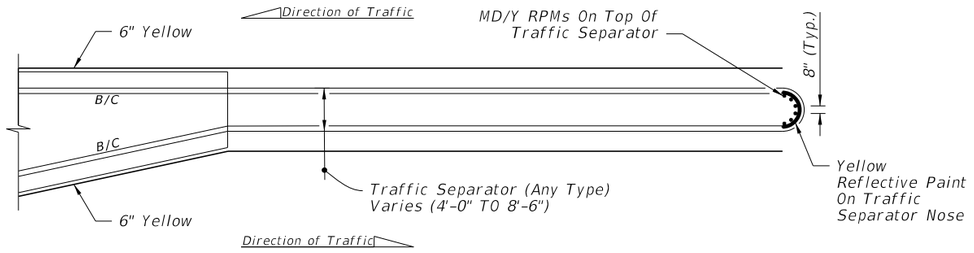
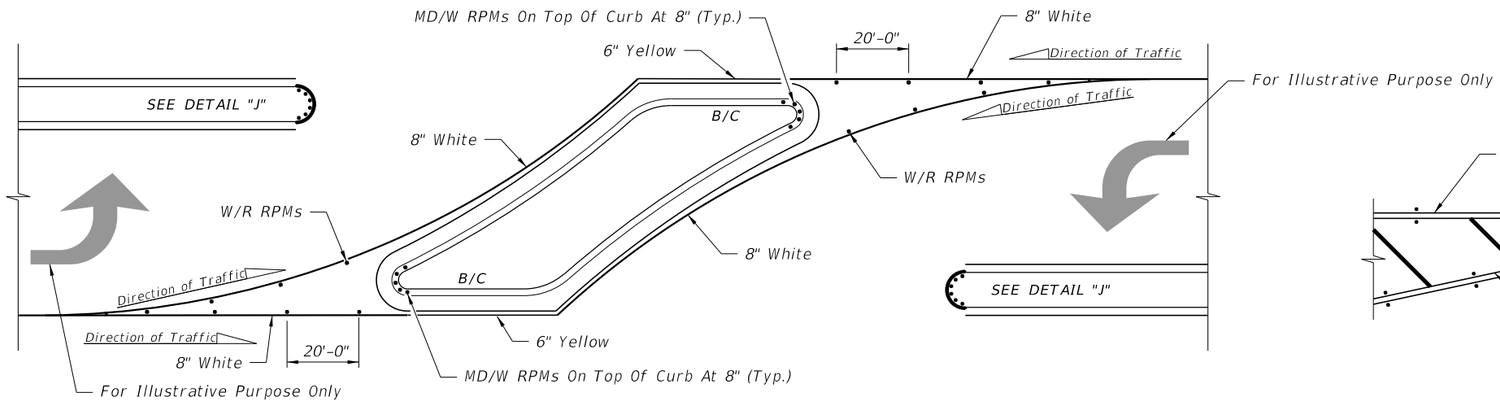
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS	INDEX 706-001	SHEET 3 of 6



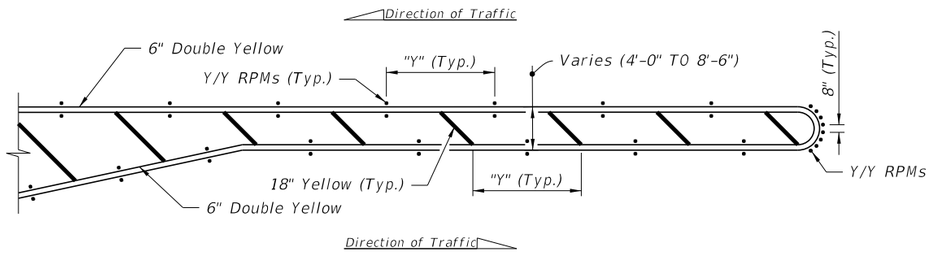
DETAIL "G"



DETAIL "J"



DETAIL "H"



DETAIL "K"

RPM PLACEMENT AT ISLANDS
(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

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-DIRECTIONAL WHITE RPM

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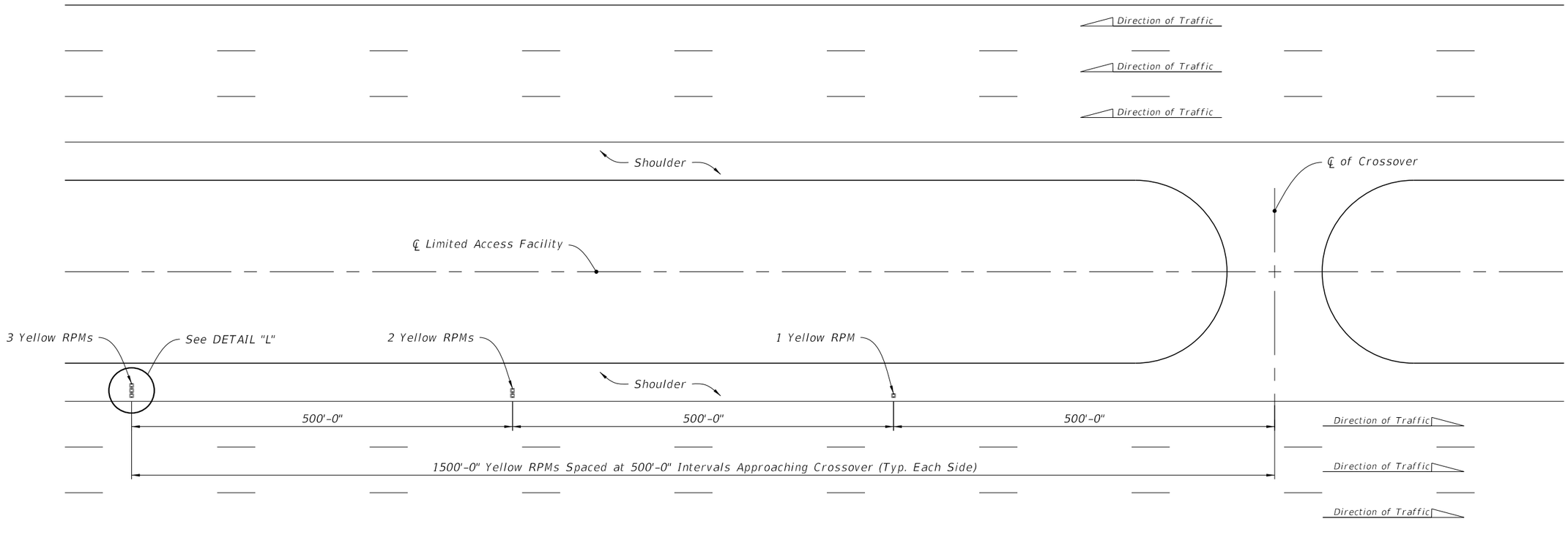
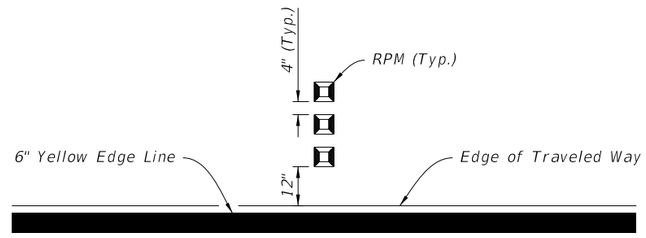
LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS	INDEX	SHEET
11/01/18					706-001	4 of 6



RPM PLACEMENT FOR CROSSOVERS ON LIMITED ACCESS ROADWAYS



DETAIL "L"

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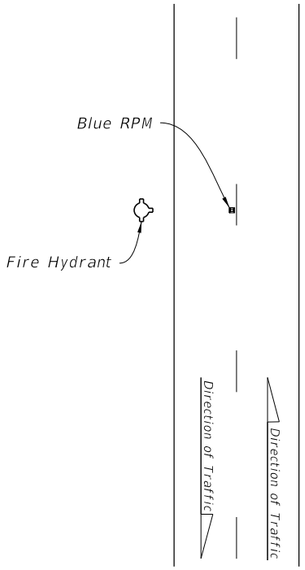
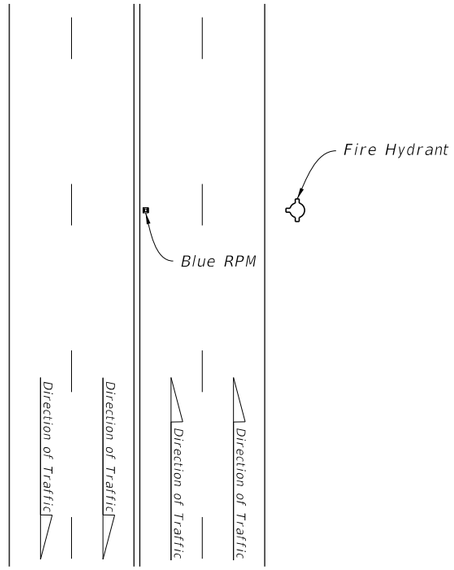
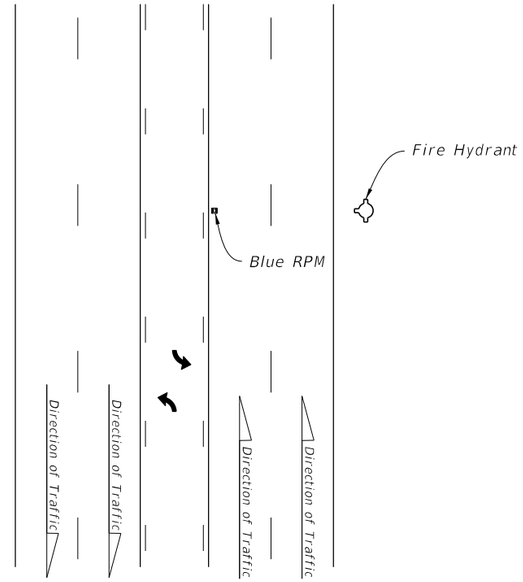
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS	706-001	5 of 6



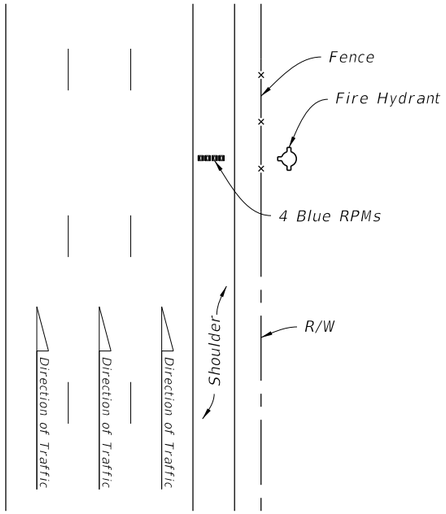
TWO-LANE ROADWAY



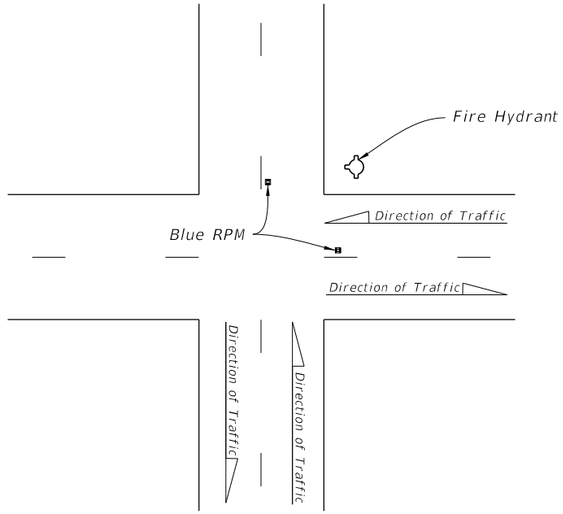
MULTILANE ROADWAY



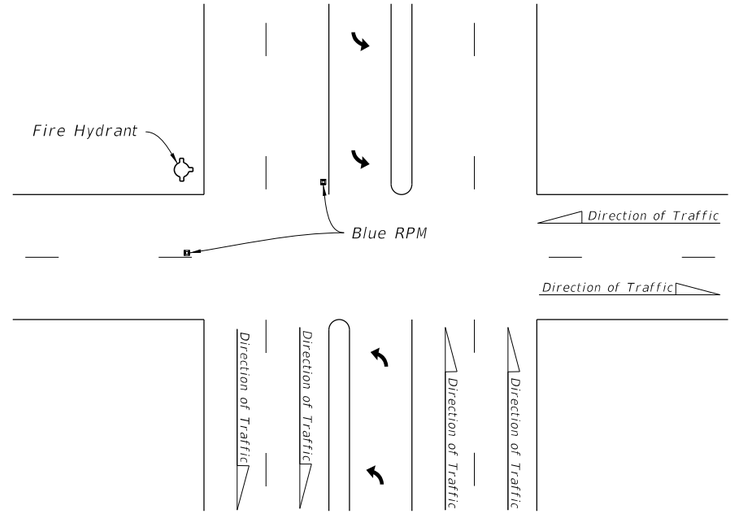
MULTILANE ROADWAY
WITH TURN LANE



LIMITED ACCESS ROADWAY



TWO-LANE ROADWAY
AT INTERSECTION



MULTILANE ROADWAY AT INTERSECTION

BLUE RPM PLACEMENT

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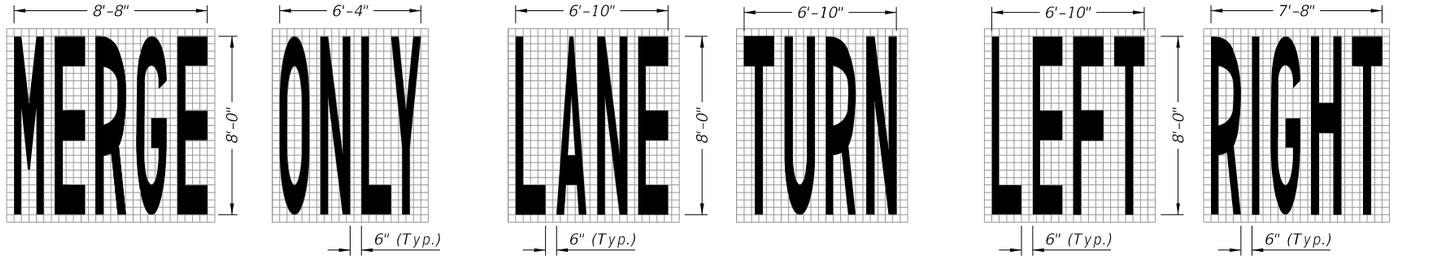
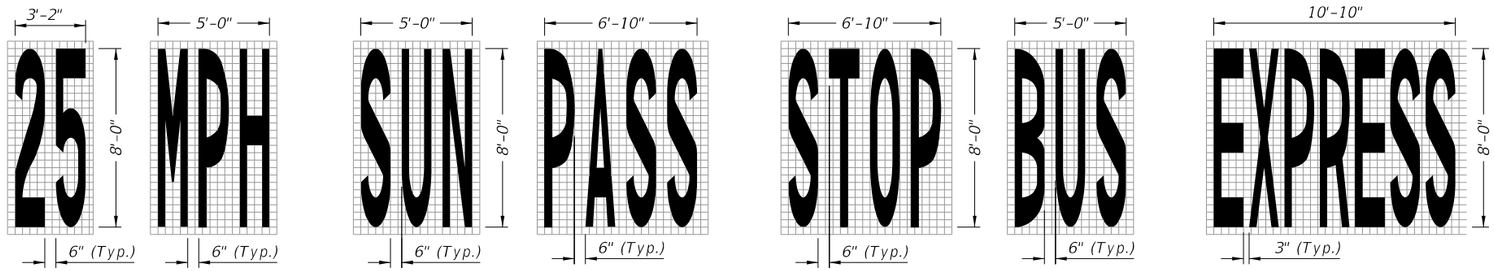
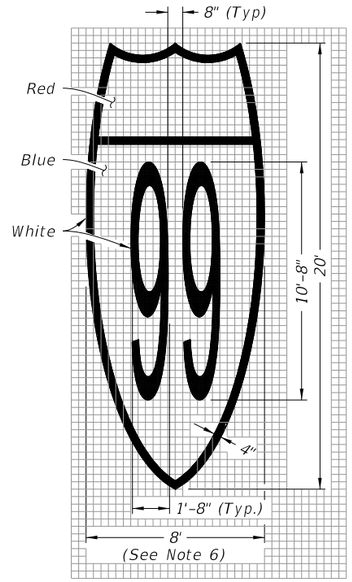
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FDOT FY 2020-21 STANDARD PLANS	TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS	706-001	6 of 6



34 S.F. | 22 S.F. | 23 S.F. | 24 S.F. | 20 S.F. | 26 S.F.

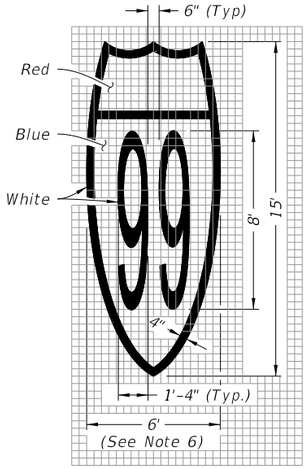


13 S.F. | 20 S.F. | 20 S.F. | 23 S.F. | 22 S.F. | 20 S.F. | 43 S.F.



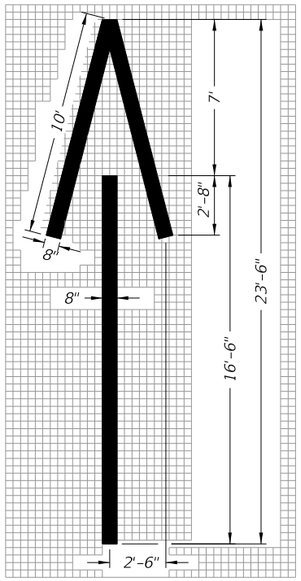
Route Shield for Limited Access Roadways (Interstate Route Shield Shown; U.S. and State Route Shield Similar)

128 S.F.



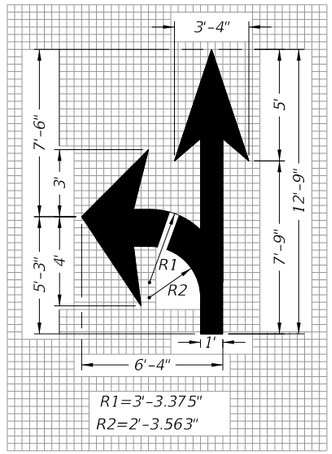
Route Shield for Arterials and Collectors (Interstate Route Shield Shown; U.S. and State Route Shield Similar)

72 S.F.



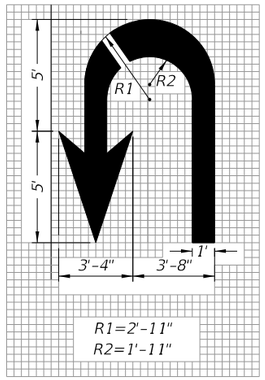
Wrong-Way Arrow

24 S.F.



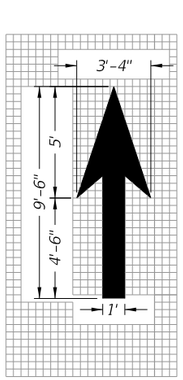
Turn and Through Lane-Use Arrow

29 S.F.



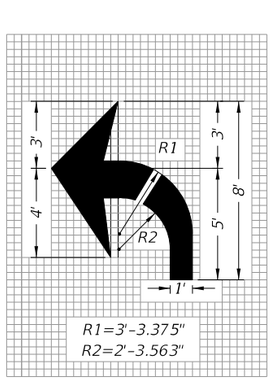
U Turn Lane-Use Arrow

27 S.F.



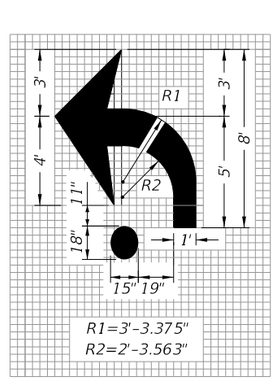
Through Lane-Use Arrow

12 S.F.



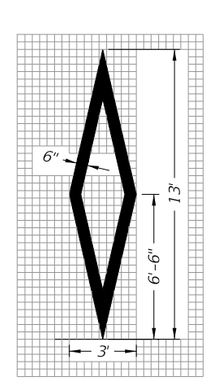
Turn Lane-Use Arrow (Left Turn Shown - Right Turn Similar)

17 S.F.



Roundabout Approach Arrow

19 S.F.



Preferential Lane Symbol

11 S.F.

NOTES FOR PAVEMENT MESSAGES:

1. When an arrow or another pavement message is used with a pavement message, maintain a minimum distance of "S" between items, measured from the base of each item. See the Pavement Message Spacing Table for "S" value.
2. Place all pavement messages 25' back from the stop line.
3. Dimensions are within 1" ±.
4. All grids are 4" x 4".
5. All pavement messages must be white except route shields.
6. Increase width of route shield for routes with three digits.

PAVEMENT MESSAGE SPACING TABLE	
Posted Speed (mph)	Distance "S" (feet)
≤ 25	40
30 - 35	56
40 - 45	72
≥ 50	88

PAVEMENT MESSAGE AND ARROW DETAILS

GENERAL NOTE:

1. See Index 509-070 for pavement markings at railroad crossings.

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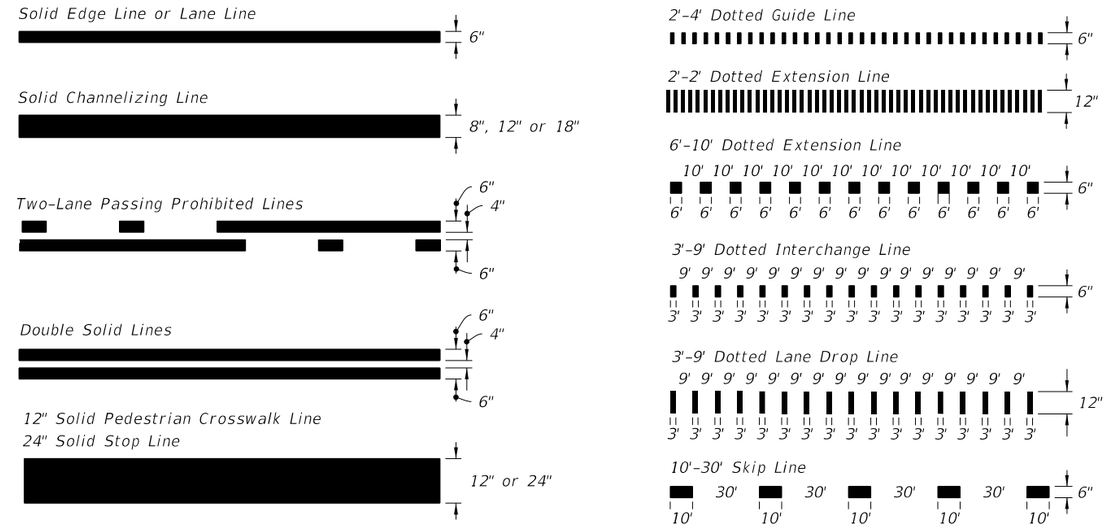
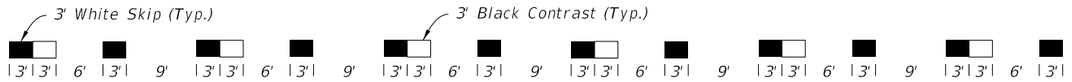
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/19			FDOT FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	711-001	1 of 13



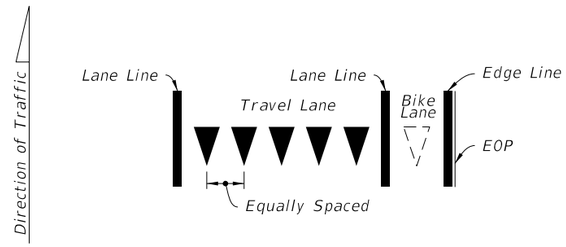
PAVEMENT MARKING LINES

10'-30' SKIP LINE WITH SHADOW MARKINGS



DOTTED LINE WITH ALTERNATING SHADOW MARKINGS

(3'-9' Dotted Line Shown, Other Dotted Lines Similar)

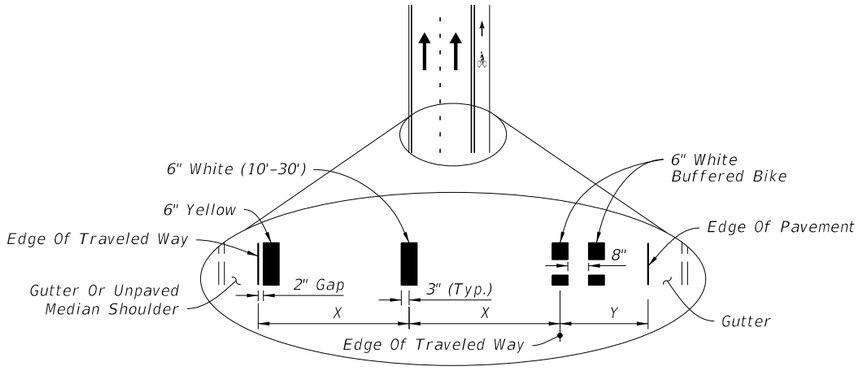


Yield Lines consist of five - 18" X 27" white triangles which face traffic. Equally space triangles within traffic lane. When a bike lane is present, add one additional triangle in the center of the bike lane.

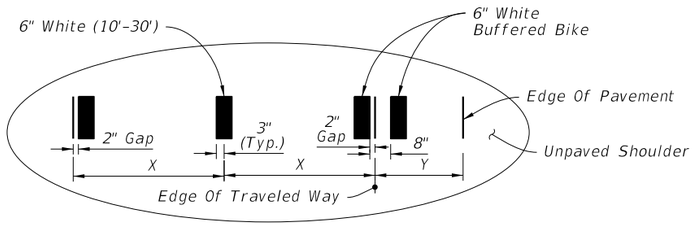
YIELD LINES

11/12/2019 11:17:47 AM

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FDOT FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	INDEX 711-001	SHEET 2 of 13



CURB AND GUTTER

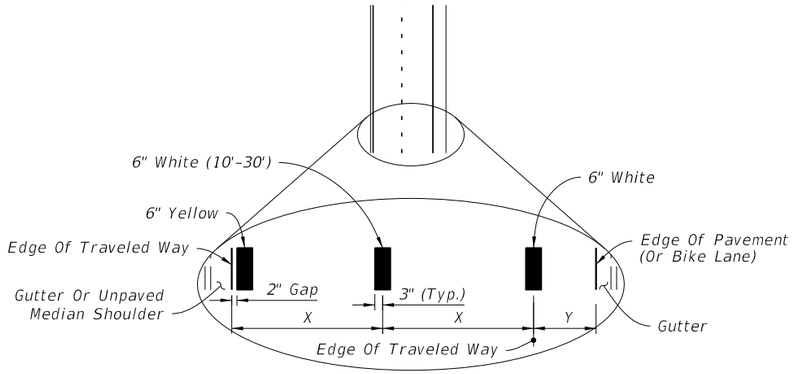


FLUSH SHOULDER

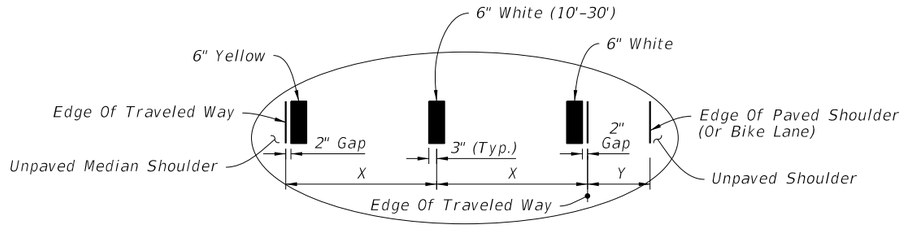
X = LANE WIDTH (FT.)

Y = BUFFERED BIKE LANE WIDTH (FT.)

STRIPING FOR BUFFERED BIKE LANE



CURB AND GUTTER

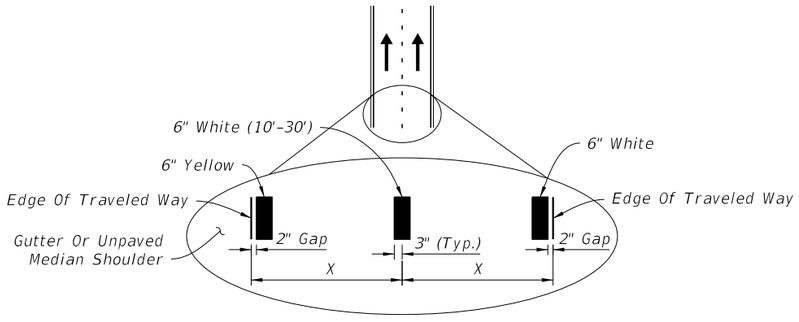


FLUSH SHOULDER

X = LANE WIDTH (FT.)

Y = PAVED SHOULDER / BIKE LANE

STRIPING WITH SHOULDER OR NON-BUFFERED BIKE LANE



X = LANE WIDTH (FT.)

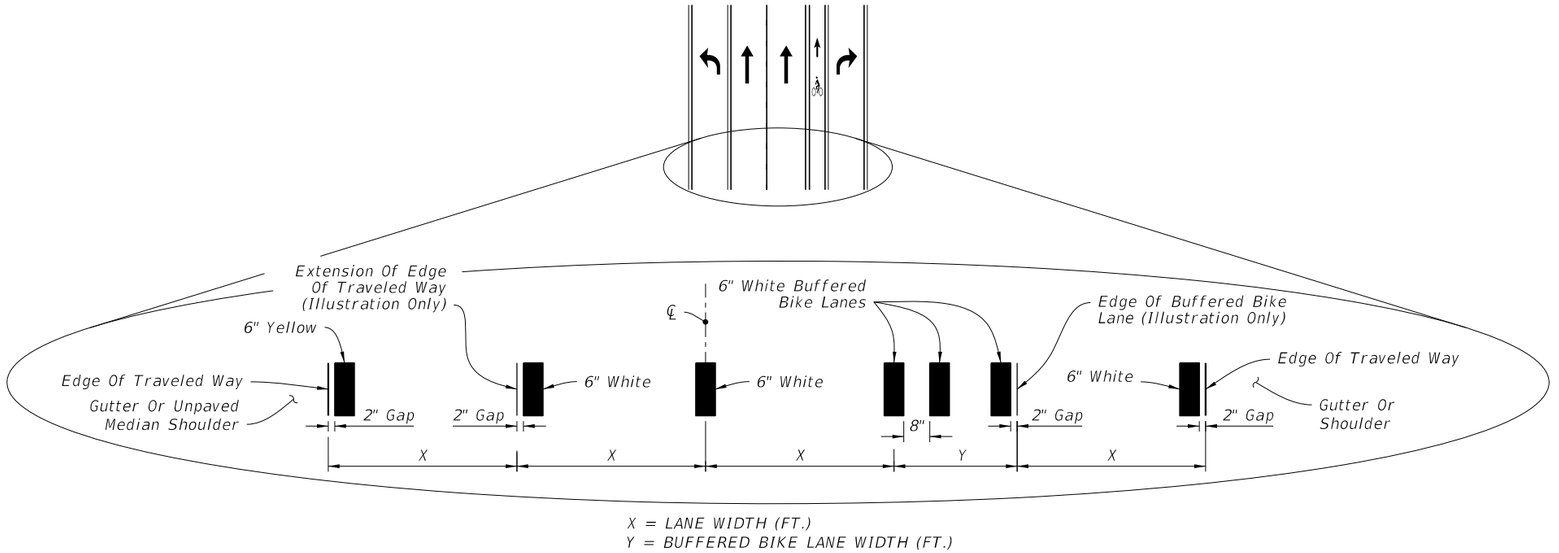
STRIPING WITH NO SHOULDER OR BIKE LANE

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

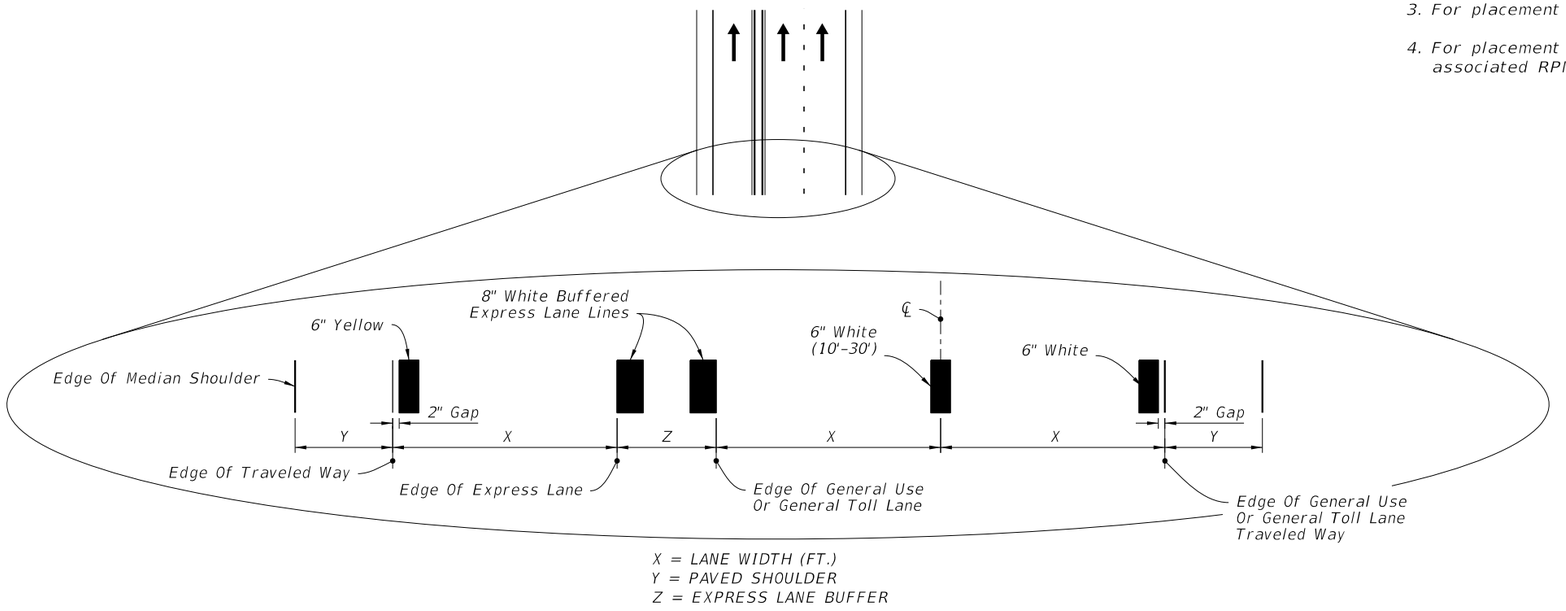
10/29/2019 8:24:25 AM



INTERSECTION APPROACH STRIPING WITH TURN LANES AND BUFFERED BIKE LANE KEY HOLE

NOTES:

1. Lane widths (X) may not be same for each lane in the section.
3. For placement of RPMs, see Index 706-001.
4. For placement of Express Lane markers and associated RPMs, see the Plans.

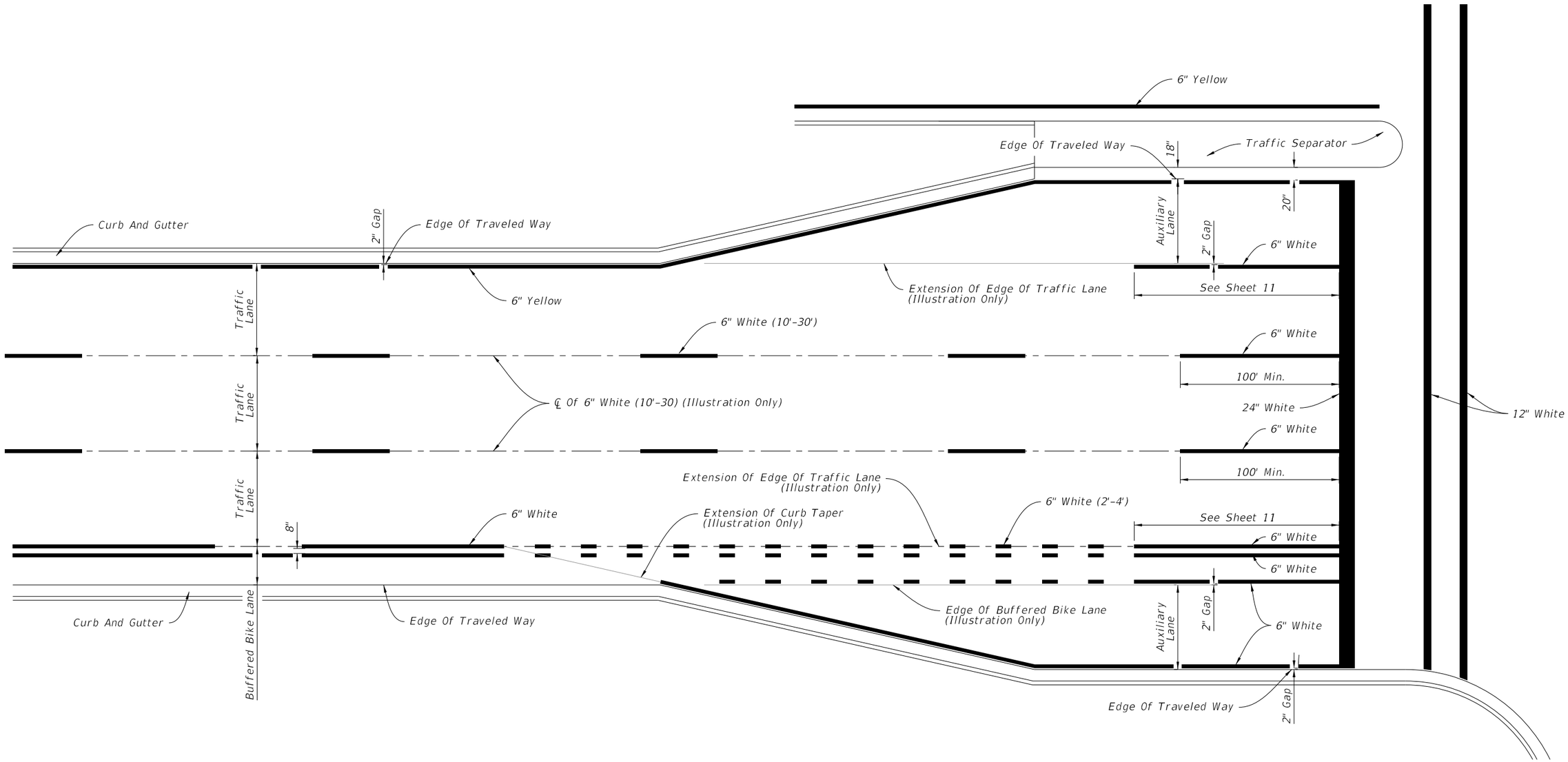


BUFFERED EXPRESS LANE STRIPING

PLACEMENT OF LONGITUDINAL PAVEMENT MARKINGS

10/29/2019 8:24:25 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	INDEX	SHEET
11/01/18						711-001	4 of 13

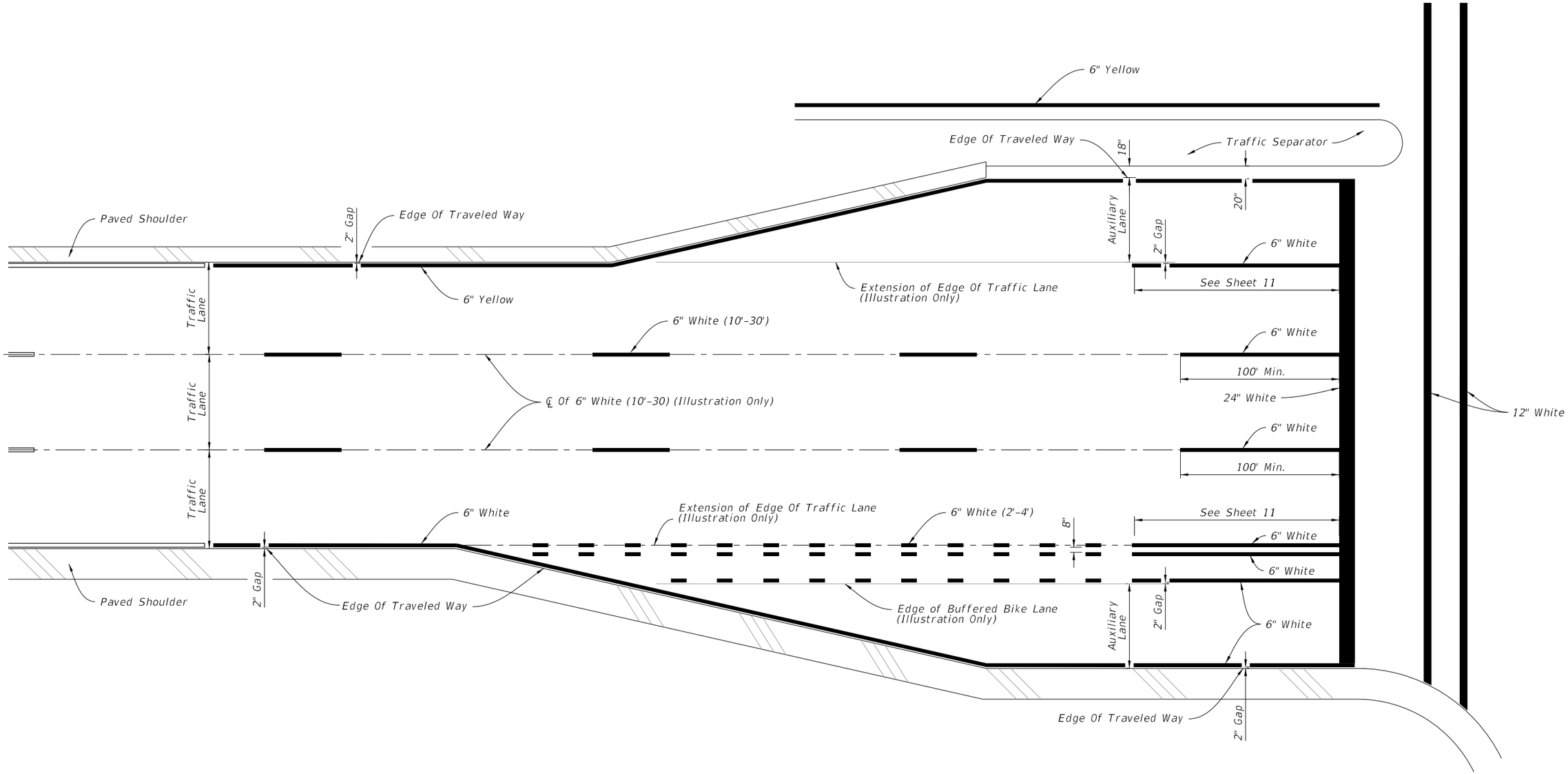


CURB AND GUTTER SHOWN

PLACEMENT OF LONGITUDINAL PAVEMENT MARKINGS

LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	INDEX 711-001	SHEET 5 of 13

10/29/2019 8:24:36 AM

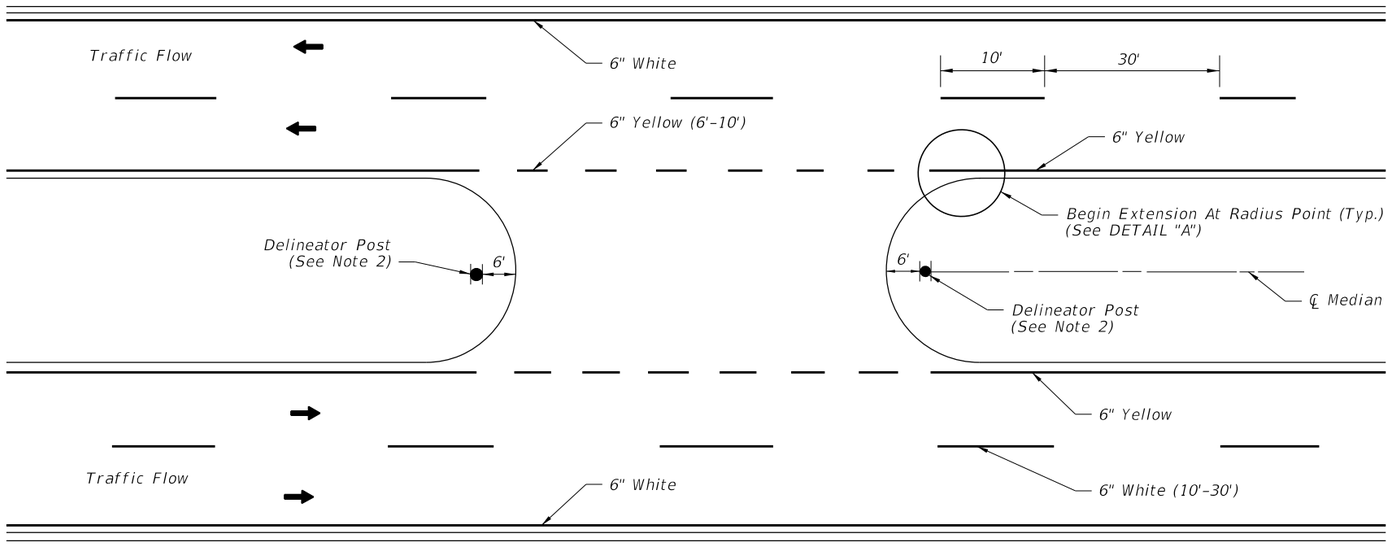


FLUSH SHOULDER SHOWN

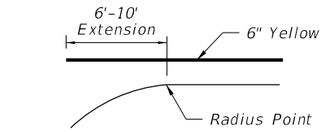
PLACEMENT OF LONGITUDINAL PAVEMENT MARKINGS

10/29/2019 8:24:36 AM

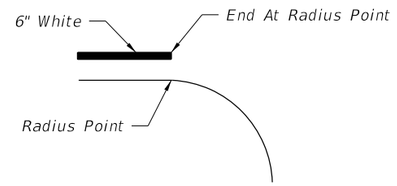
LAST REVISION	REVISION	DESCRIPTION:				
11/01/19			FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	INDEX 711-001	SHEET 6 of 13



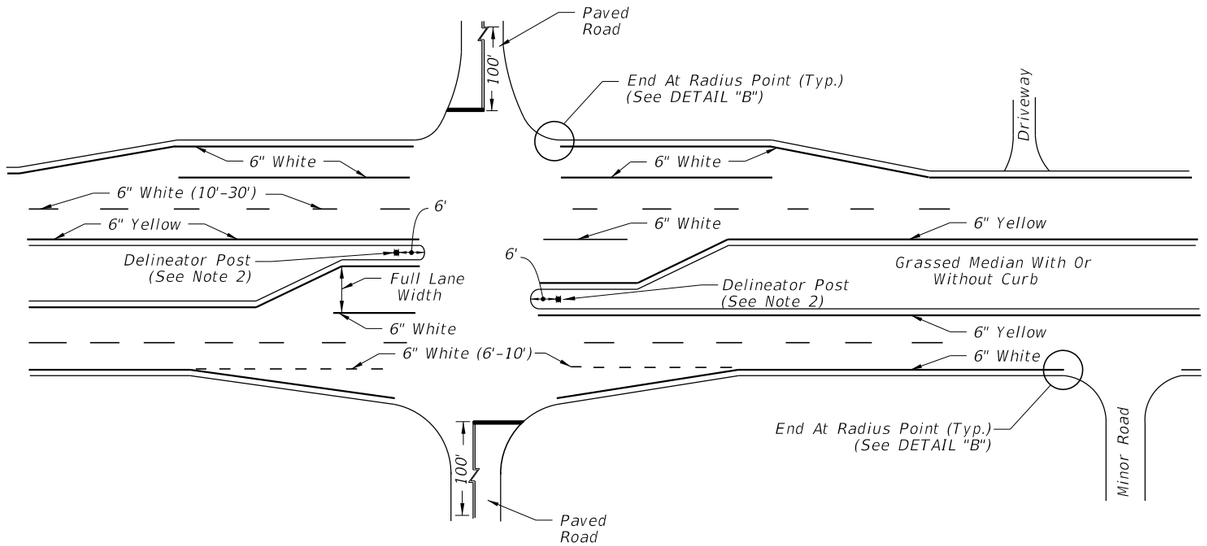
PAVEMENT MARKINGS AND DELINEATORS FOR MEDIAN CROSSOVER

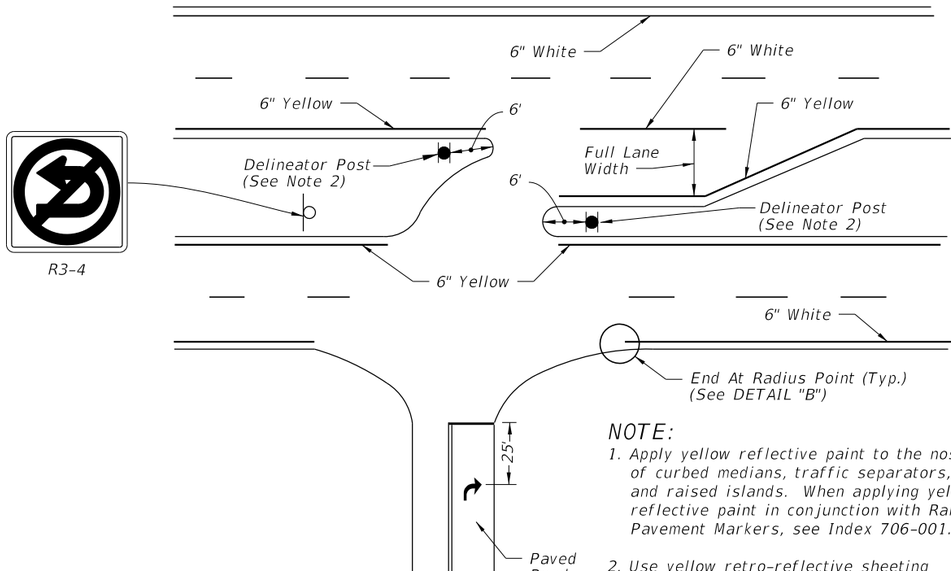


DETAIL "A"



DETAIL "B"





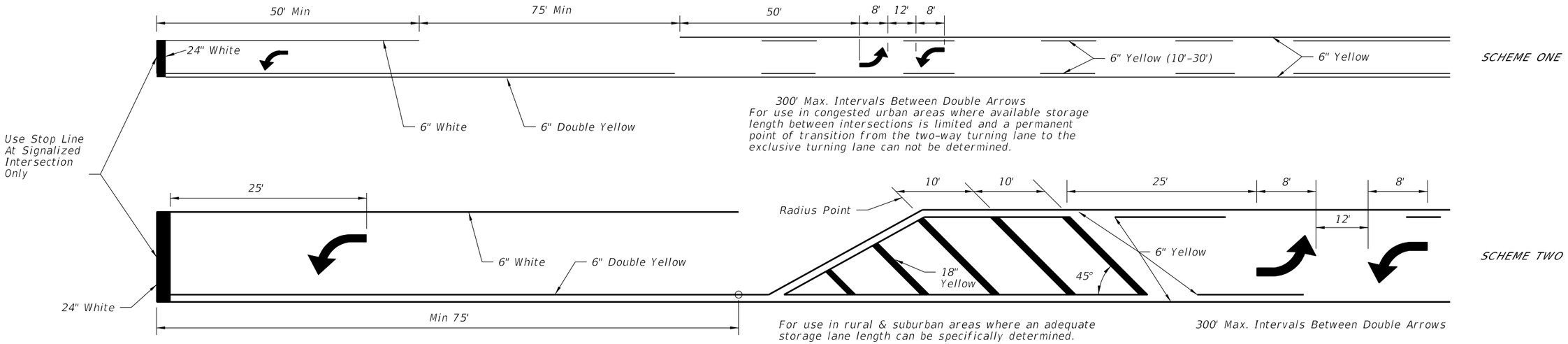
NOTE:

1. Apply yellow reflective paint to the noses of curbed medians, traffic separators, and raised islands. When applying yellow reflective paint in conjunction with Raised Pavement Markers, see Index 706-001.
2. Use yellow retro-reflective sheeting on both sides of the delineator. Install the post so that the top is 4' above the grade at the edge of the pavement.
3. Extend double yellow centerlines 100' back from intersection on all approaches or 50' for unmarked cross roads.

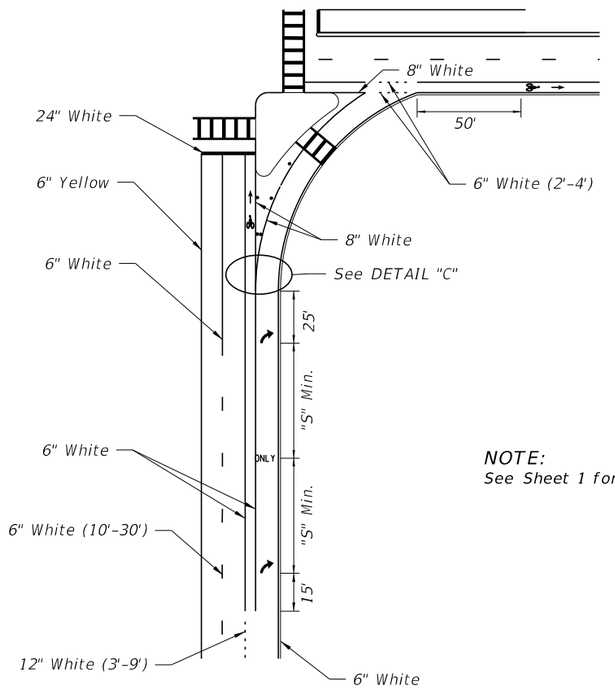
PAVEMENT MARKINGS FOR INTERSECTIONS WITH MAJOR AND MINOR ROADS

10/29/2019 8:24:37 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	711-001	7 of 13

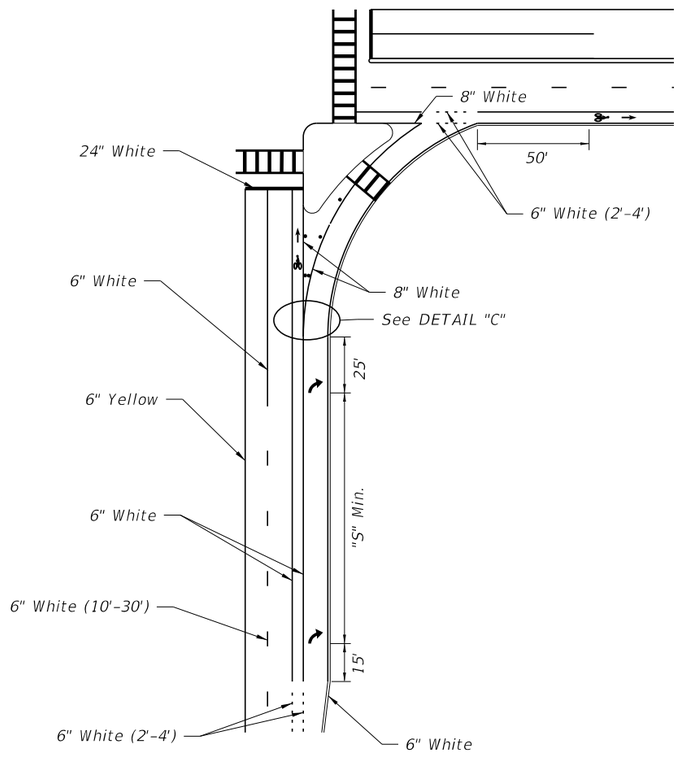


TWO WAY LEFT TURN LANE
(With Single Lane Left Turn Channelization)

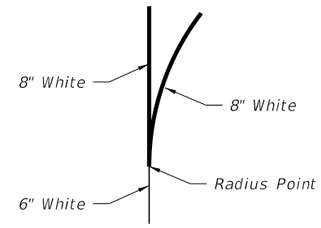


NOTE:
See Sheet 1 for "S" value.

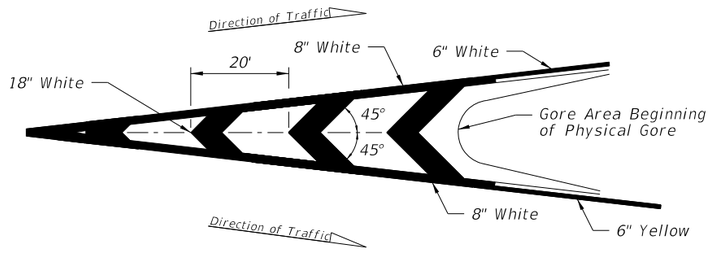
RIGHT TURN LANE DROP AND ISLAND DETAILS
LEFT TURN LANE DROP IS MIRROR IMAGE



RIGHT TURN LANE AND ISLAND DETAILS



DETAIL "C"



TRAFFIC CHANNELIZATION AT GORE

NOTE:
See Sheet 1 for "S" value.

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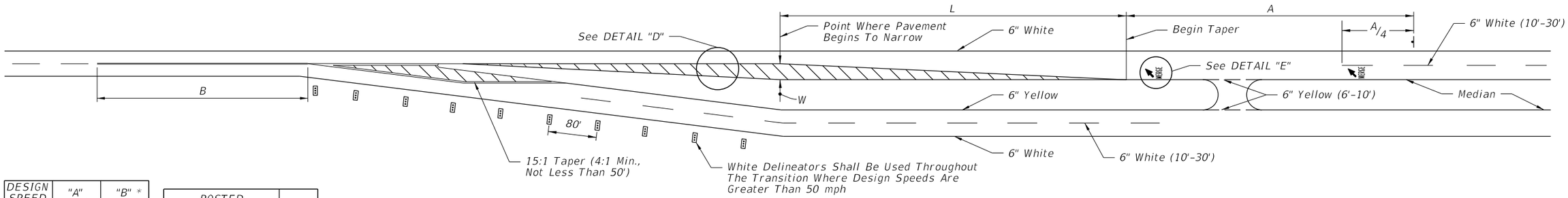
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	INDEX	SHEET
11/01/19						711-001	8 of 13



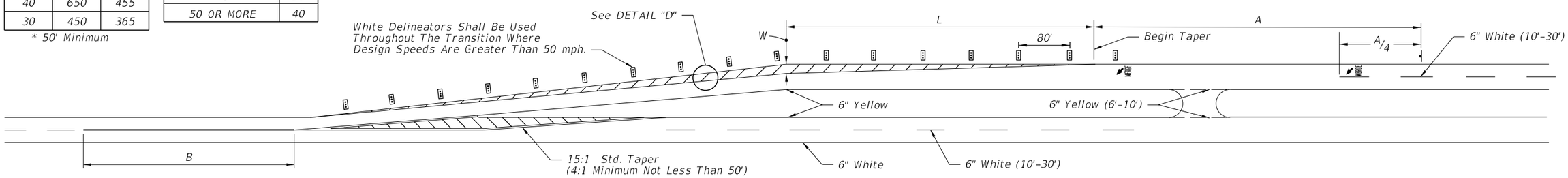
DESIGN SPEED (MPH)	"A" (FT.)	"B" * (FT.)
60	---	640
55	950	595
50	850	550
45	750	500
40	650	455
30	450	365

* 50' Minimum

POSTED SPEED LIMIT MPH	"Y" (FT.)
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40

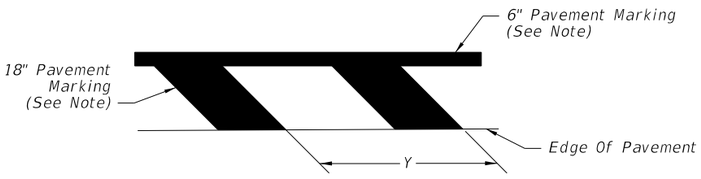
DESIGN SPEED 'S' (MPH)	Length 'L' (FT.)
40 or Less	$L = WS^2/60$
45 or Greater	$L = WS$

LEFT ROADWAY CENTERED ON EXISTING ROADWAY



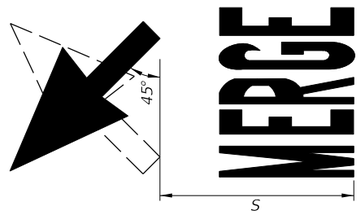
RIGHT ROADWAY CENTERED ON EXISTING ROADWAY

SCHEMES FOR TRANSITION - 2 LANE / 4 LANE ROADWAY



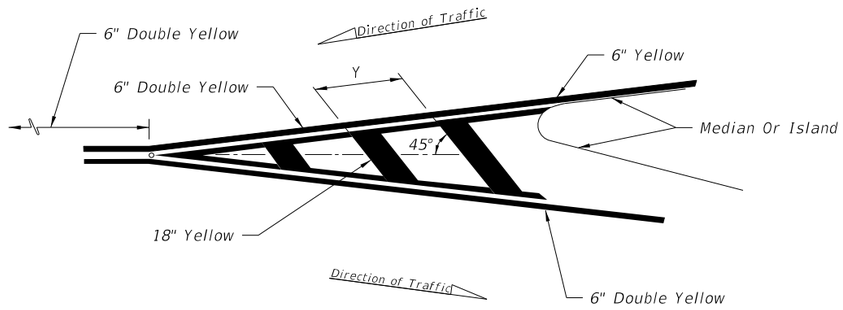
NOTE:
Make pavement markings yellow for left roadway centered on existing roadway. Right roadway centered on existing roadway is similar with white pavement markings.

DETAIL "D"



NOTE: See Sheet 1 for "S" value.

DETAIL "E"



MARKINGS FOR TRAFFIC SEPARATION

LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	INDEX	SHEET
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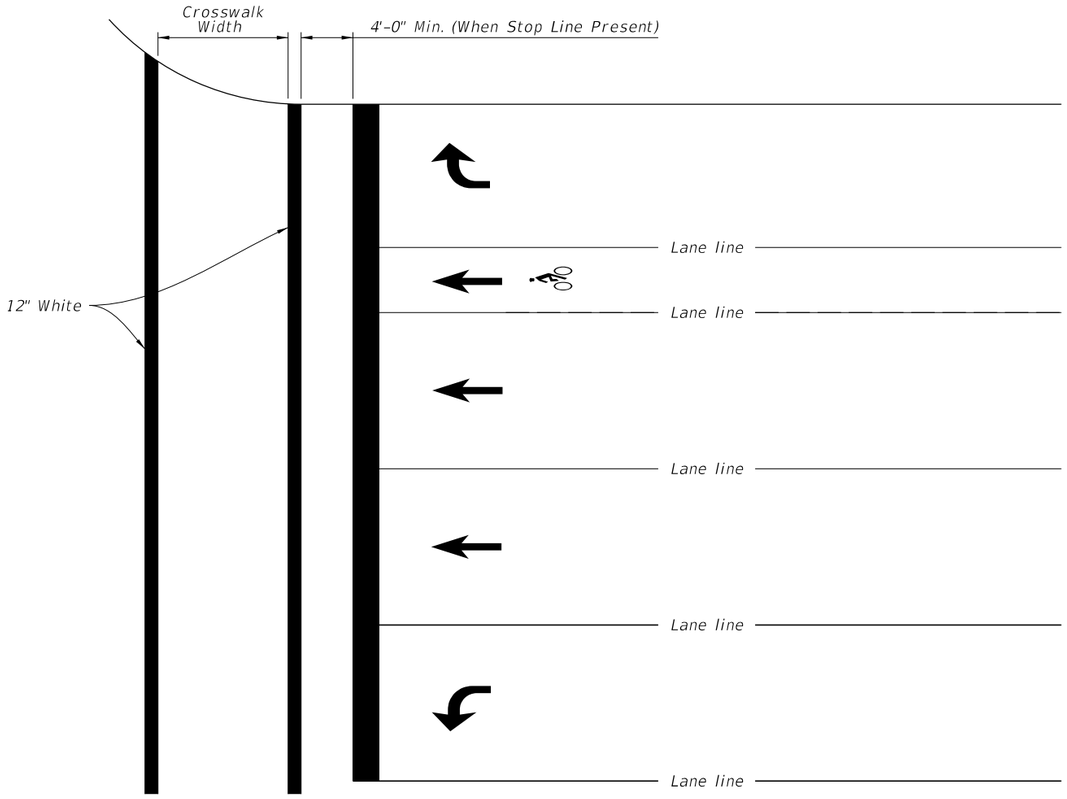
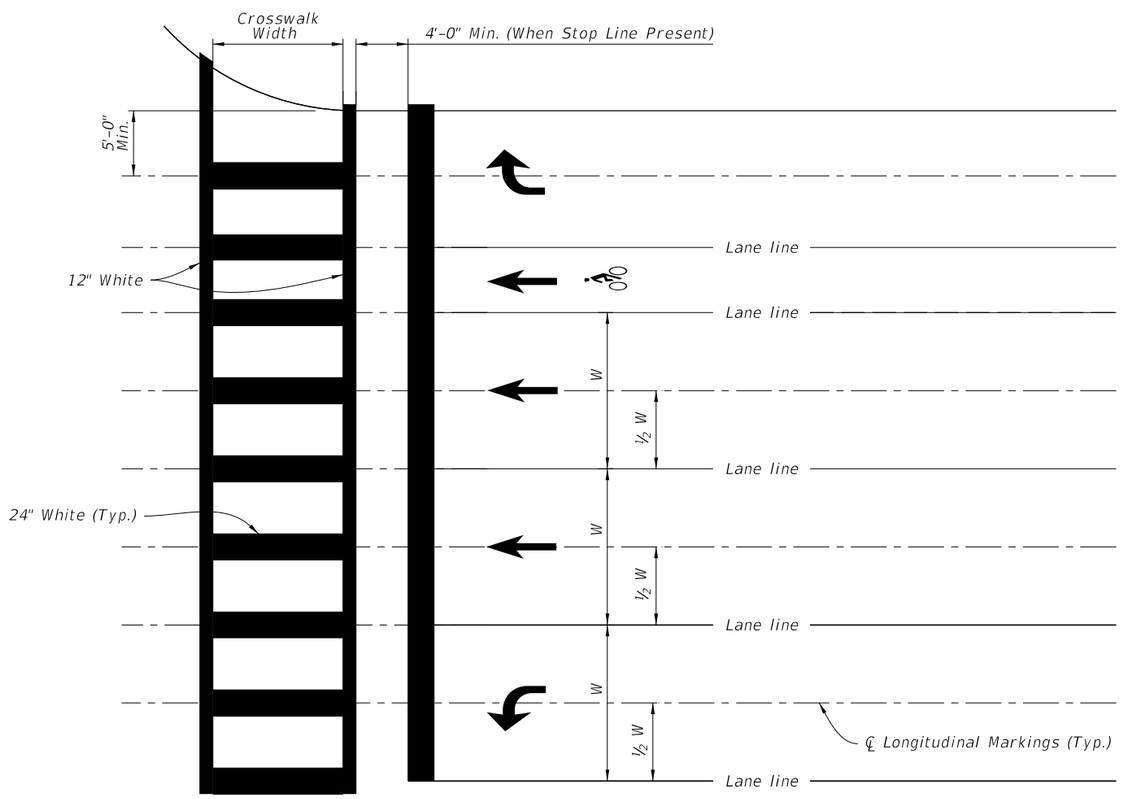


STANDARD CROSSWALK DETAILS



SPECIAL EMPHASIS CROSSWALK DETAILS

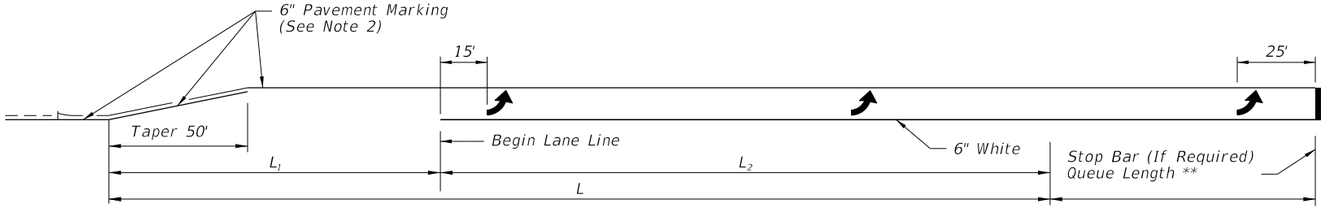
NOTES:

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.

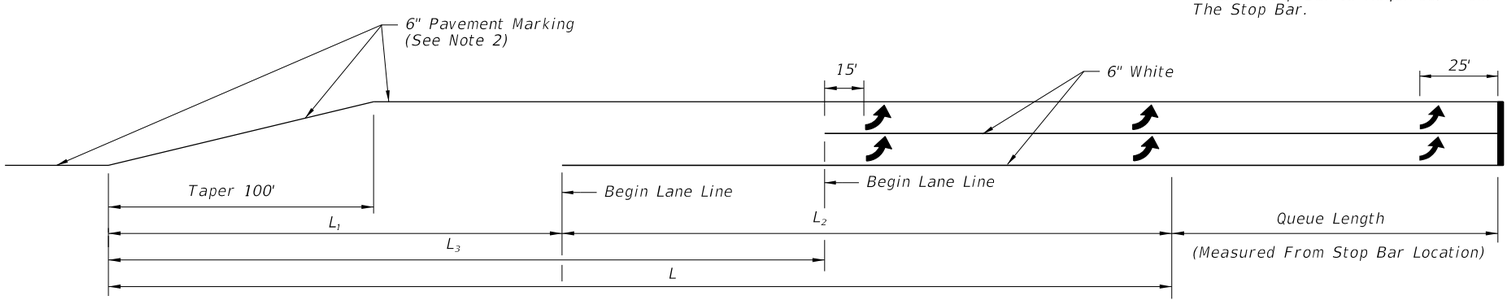
3. Refer to Index 522-002 when Curb Ramps are present.

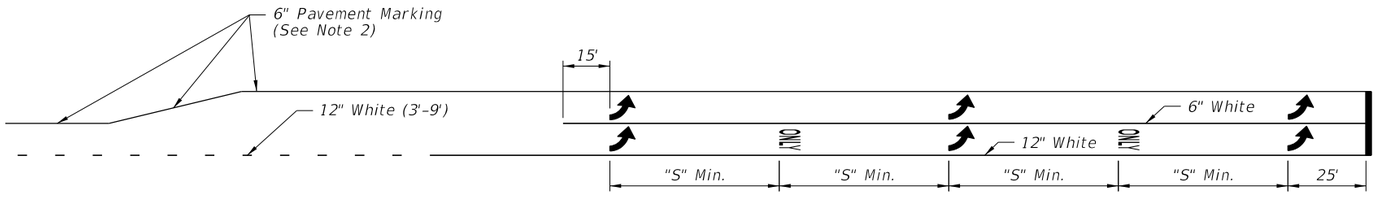
10/29/2019 8:24:39 AM



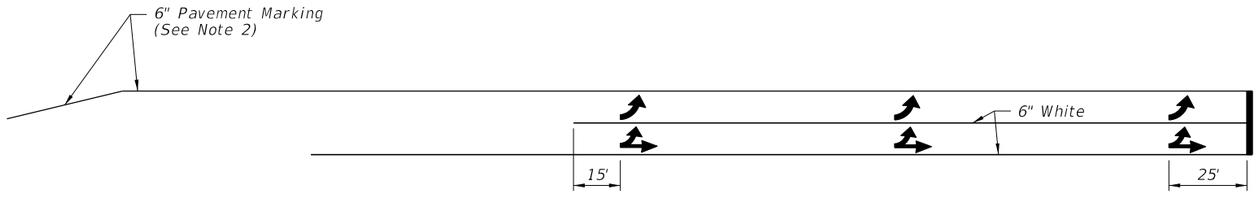
SINGLE LEFT TURNS

** Queue Length Is Measured From The Median Nose Radial Point Or, When A Stop Bar Is Required, From The Stop Bar.





Through Lane Becomes Exclusive Left Turn



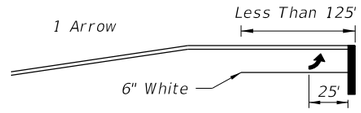
Through Lane Becomes Optional Left Turn

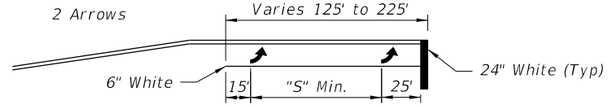
DOUBLE LEFT TURNS

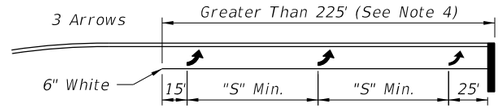
TURN LANES ◦ CURBED AND UNCURBED MEDIANS

Posted Speed (mph)	Clearance Distance L_1	URBAN CONDITIONS			RURAL CONDITIONS		
		Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_3	Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_3
≤30	70'	75'	145'	110'	— —	— —	— —
35	80'	75'	155'	120'	— —	— —	— —
40	85'	100'	185'	135'	— —	— —	— —
45	105'	135'	240'	160'	185'	290'	160'
50	125'	— —	— —	— —	225'	350'	195'
55	145'	— —	— —	— —	260'	405'	230'
≥60	170'	— —	— —	— —	290'	460'	270'

NOTE: When installing lane lines for turn lanes, use the dimensions in the Plans, or use the above values for turn lanes not dimensioned in the Plans.





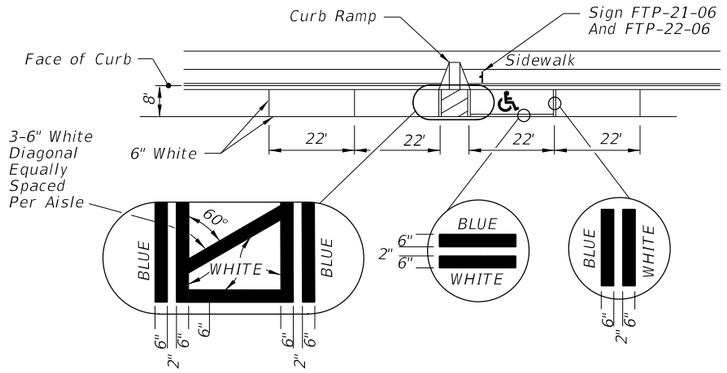


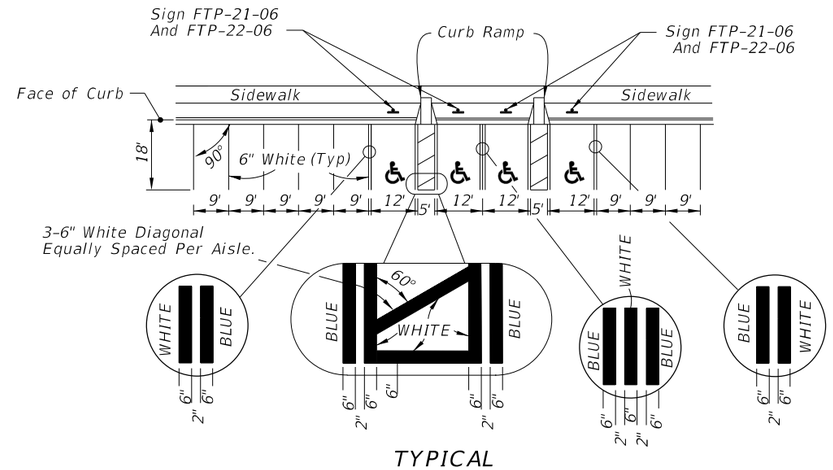
ARROW SPACING

NOTES:

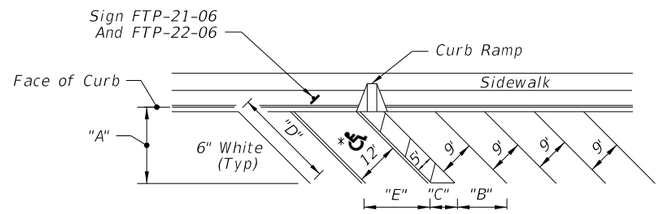
1. This Index also applies to right turn lanes.
2. Make pavement marking yellow for left-turn lanes and white for right-turn lanes.
3. See Sheet 1 for "S" value.
4. Space arrows evenly between the first and last arrow with a minimum spacing of "S" between arrows.
5. For turn lanes greater than 225' in length, use a minimum of three arrows. Use additional arrows in accordance with the Plans or as directed by the Engineer. Space arrows evenly throughout the available length with a minimum spacing of "S" between arrows.

TURN LANE MARKINGS

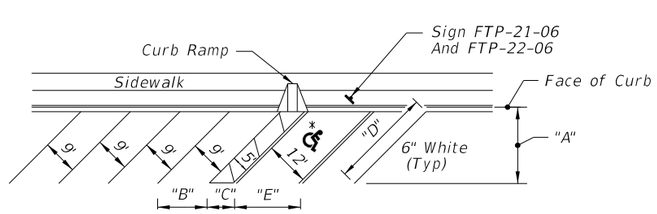




TYPICAL



FORWARD-IN PARKING

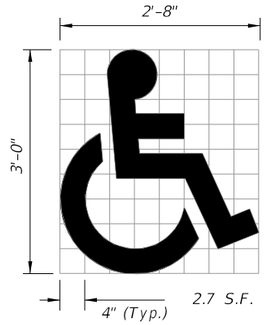


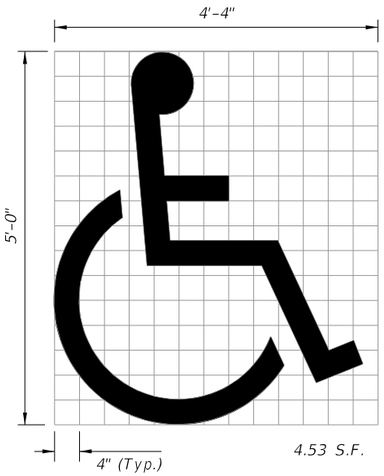
REVERSE-IN PARKING

*FOR ACCESSIBLE MARKINGS - SEE ABOVE

DIMENSIONS					
∠ θ	"A"	"B"	"C"	"D"	"E"
45°	17'-0"	12'-9"	7'-0"	24'-0"	17'-0"

PAVEMENT MARKING FOR PARKING



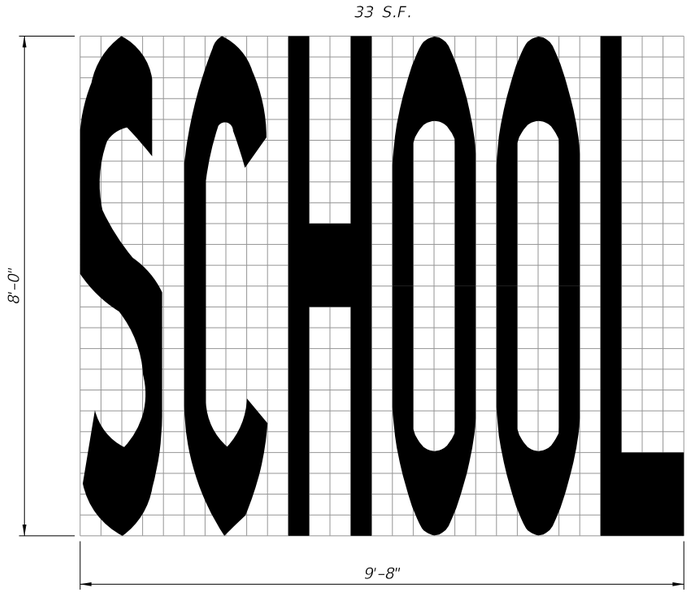


(See Note 6)

UNIVERSAL SYMBOL OF ACCESSIBILITY

NOTES:

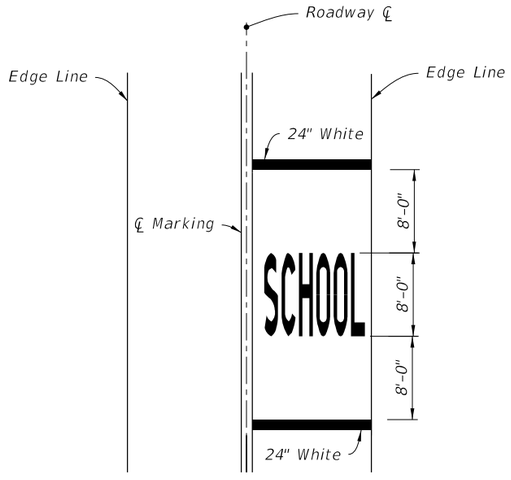
1. Dimensions are to the centerline of markings.
2. An Access Aisle is required for each accessible space when angle parking is used.
3. Criteria for pavement markings only, not public sidewalk curb ramp locations. For ramp locations refer to plans.
4. Tint blue pavement markings to match color 15180 of Federal Standards 595a.
5. Mount FTP-22-06 sign below the FTP-21-06 sign.
6. 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.



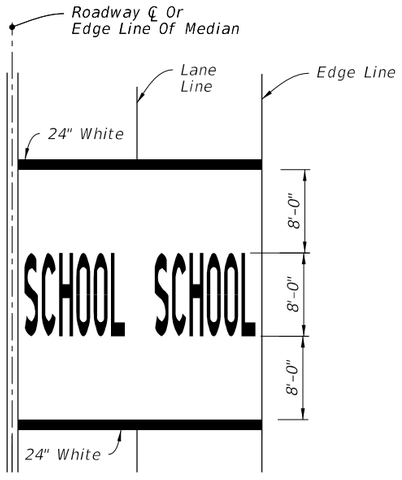
SCHOOL PAVEMENT MARKING

NOTES:

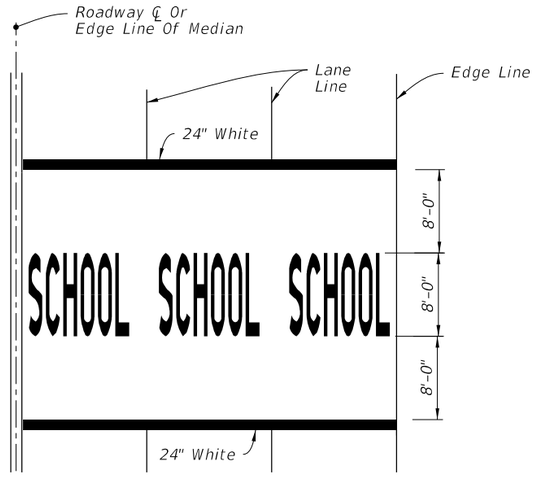
1. All grids are 4" x 4".
2. Pavement Marking Should Not Extend Into Opposing Lane.
3. Center School Pavement Marking in lane.



SINGLE-LANE APPROACH



TWO-LANE APPROACH



MULTI-LANE APPROACH
(Three or More)

MARKINGS FOR SCHOOL ZONES

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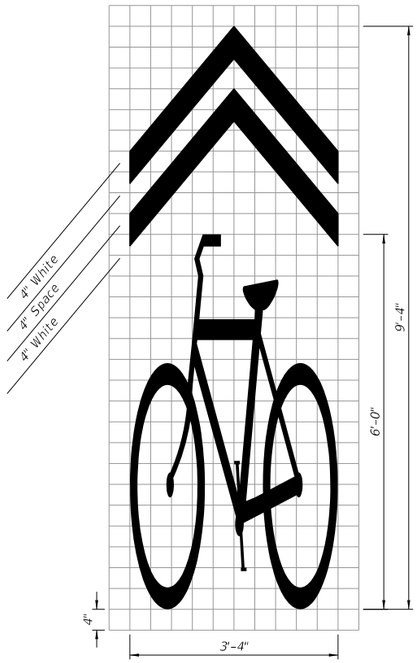
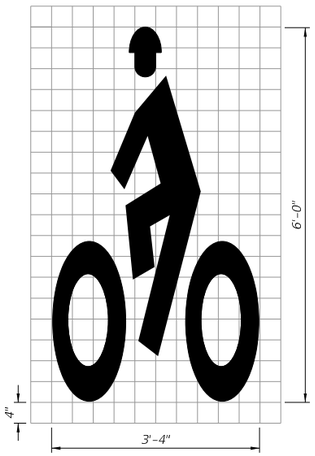
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/18			FY 2020-21 STANDARD PLANS	PAVEMENT MARKINGS	711-001	13 of 13

8.1 S.F.



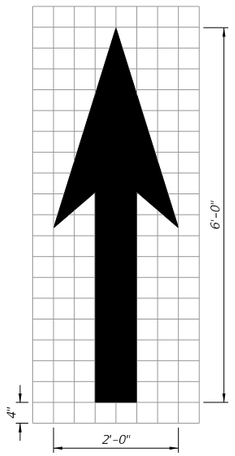
Shared Lane Marking (SLM)

6.3 S.F.



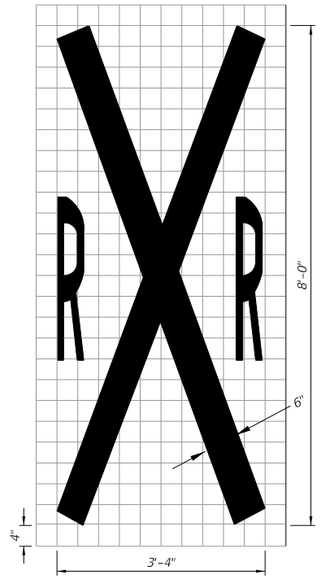
Helmeted Bicyclist Symbol

4.2 S.F.



Bike Lane Arrow

9.0 S.F.



Railroad Crossing
(For Shared Use Path Only)

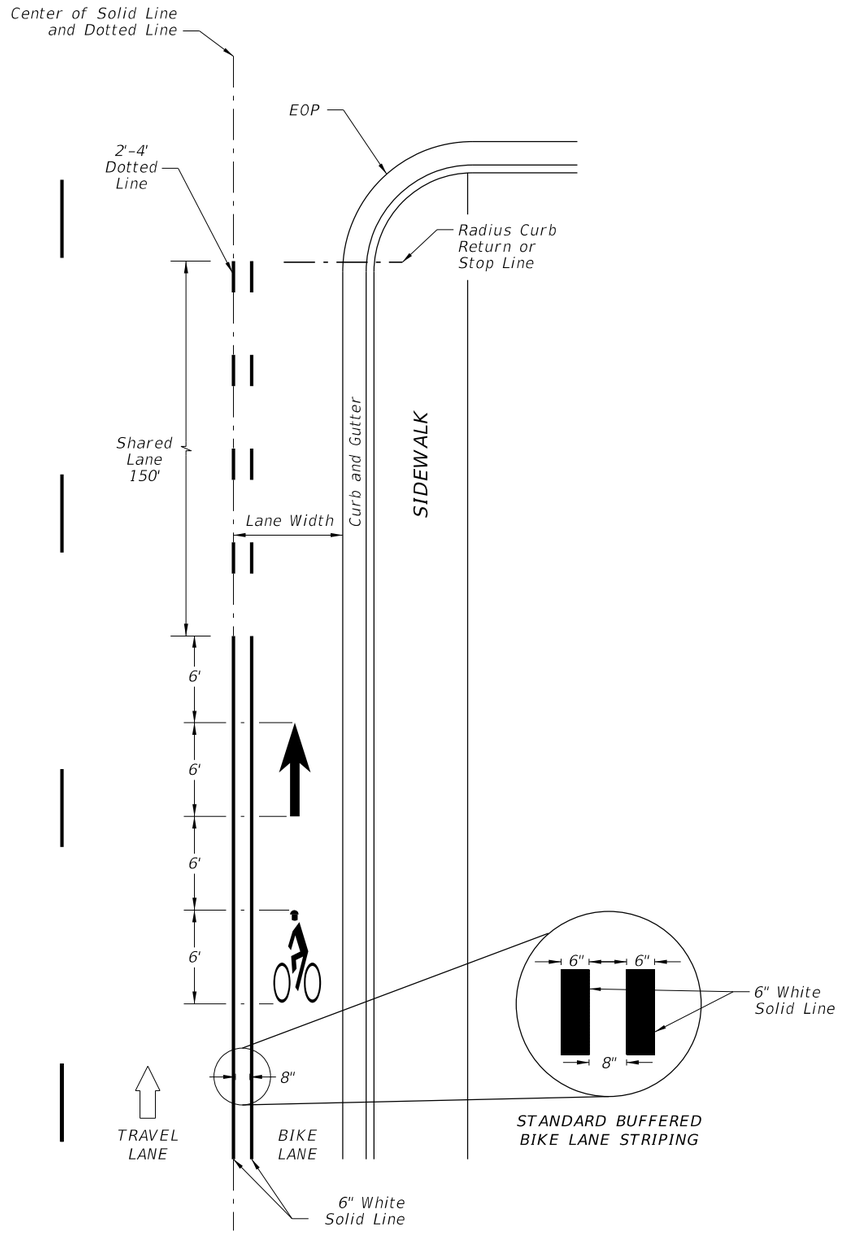
NOTES:

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

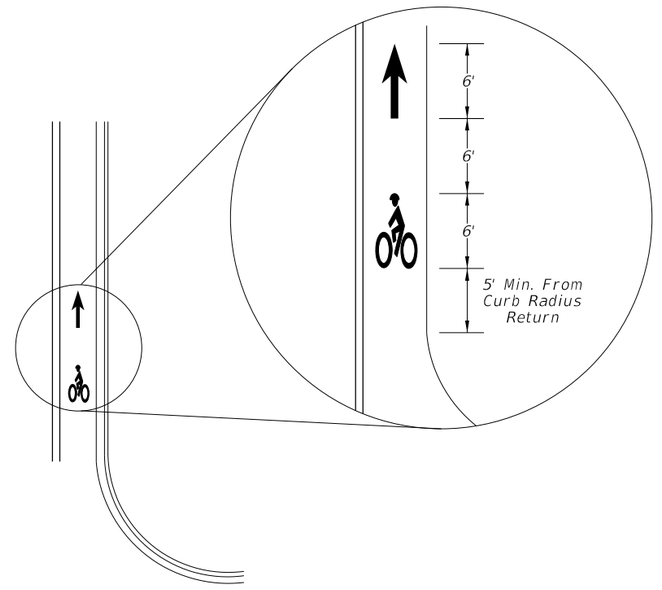
10/29/2019 8:24:43 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	BICYCLE MARKINGS	711-002	1 of 2



STANDARD BUFFERED BIKE LANE STRIPING

APPROACH TO INTERSECTIONS DETAILS

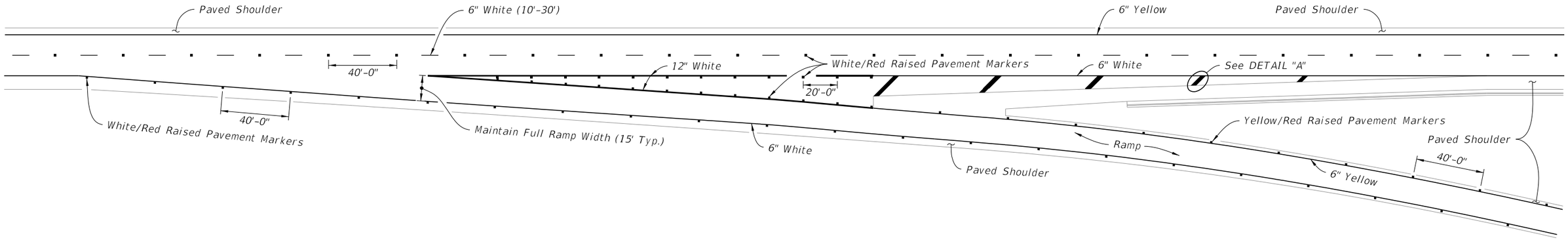


FAR SIDE OF INTERSECTION DETAIL

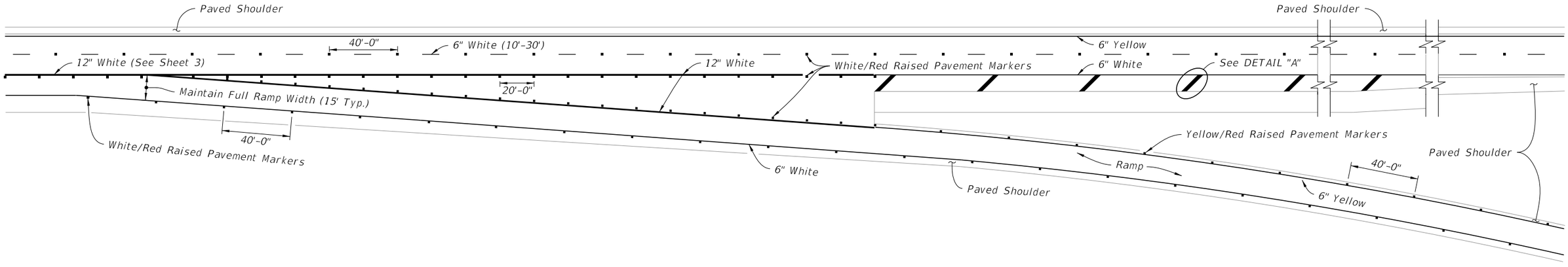
BUFFERED BIKE LANES

10/29/2019 8:24:43 AM

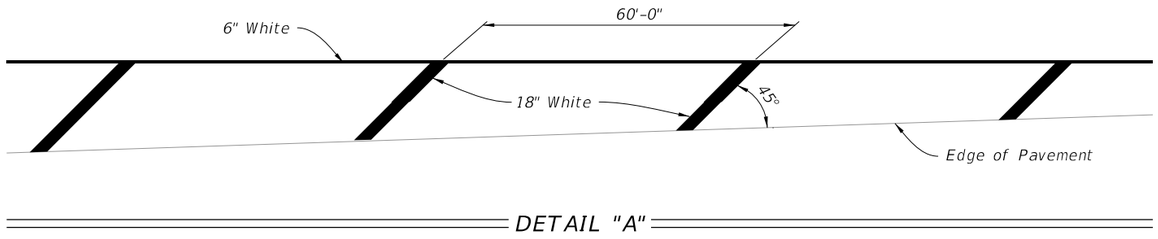
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	BICYCLE MARKINGS	INDEX	SHEET
11/01/17					711-002	2 of 2



TWO THRU LANES



THREE APPROACH LANES - TWO THRU LANES



DETAIL "A"

GENERAL NOTES:

1. Make the traffic face of the raised pavement marker (RPM) the same color as the pavement marking that it is supplementing.
2. See Index 706-001 for additional information on RPMs.

SINGLE LANE RAMPS - EXIT TERMINALS

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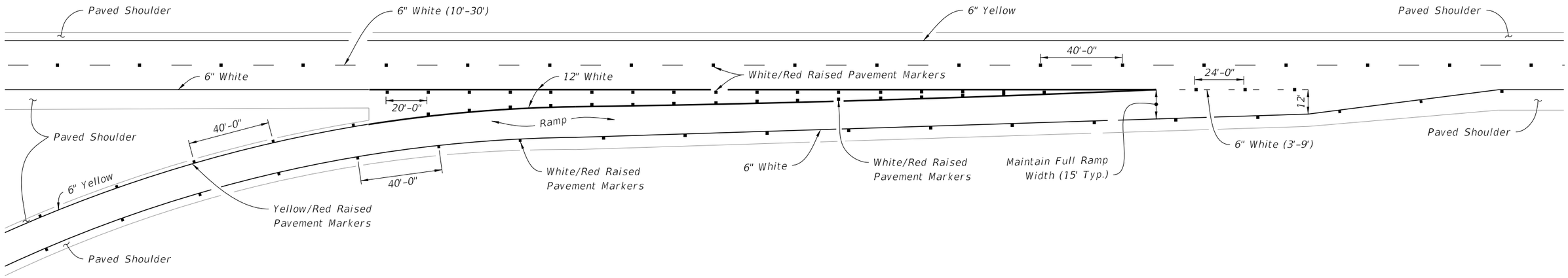
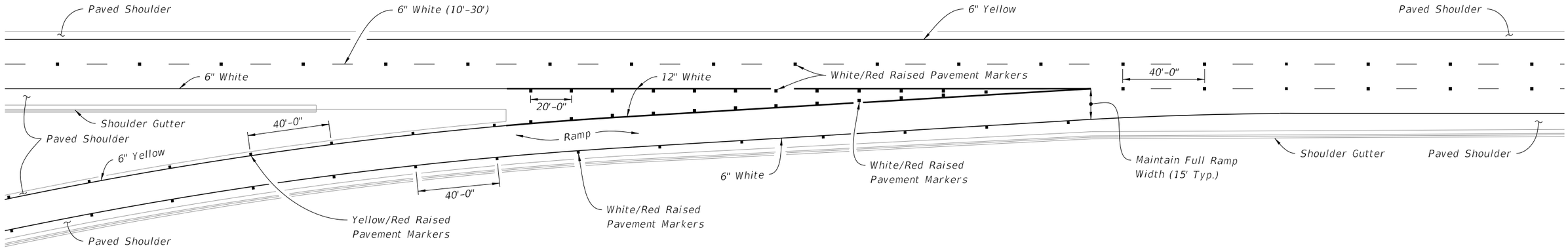
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	INDEX	SHEET
11/01/17						711-003	1 of 7



TAPER - TYPE ENTRANCE



PARALLEL - TYPE ENTRANCE

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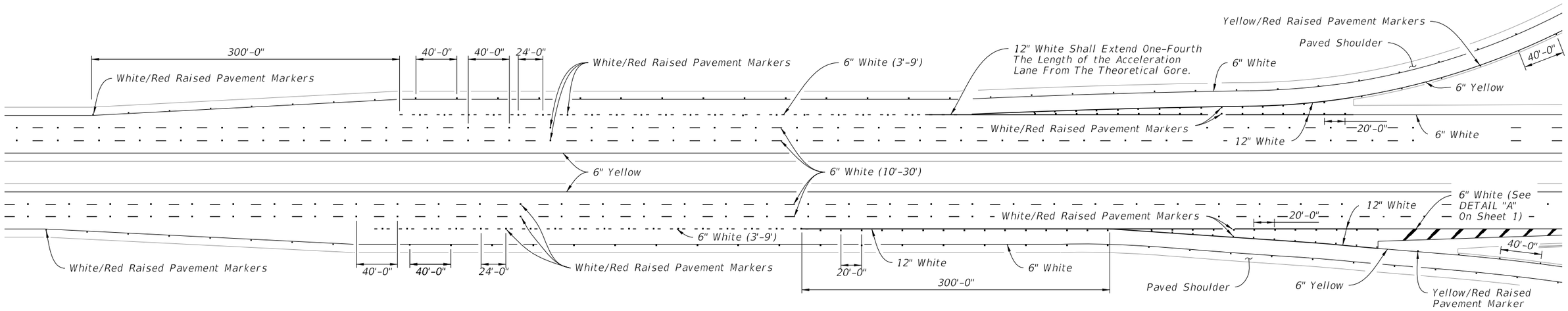
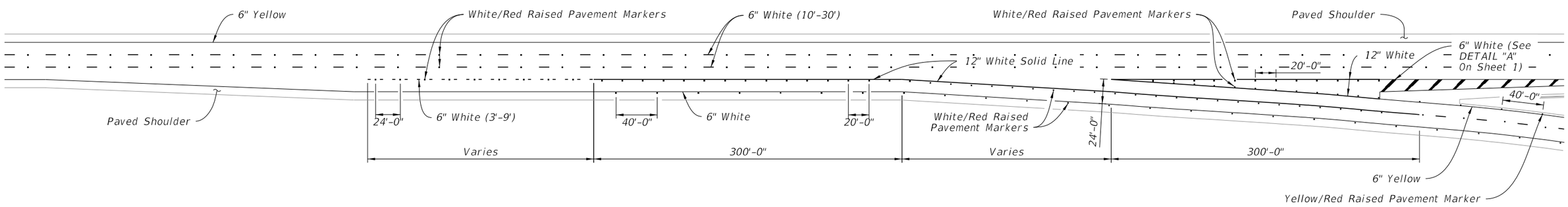
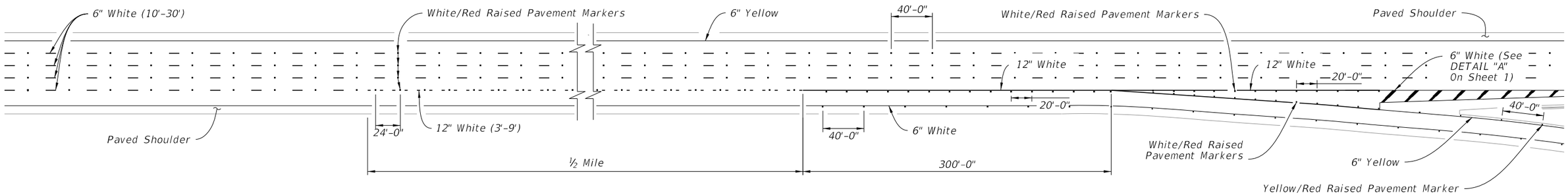
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	INDEX	SHEET
11/01/17						711-003	2 of 7



PARALLEL ACCELERATION AND DECELERATION LANE



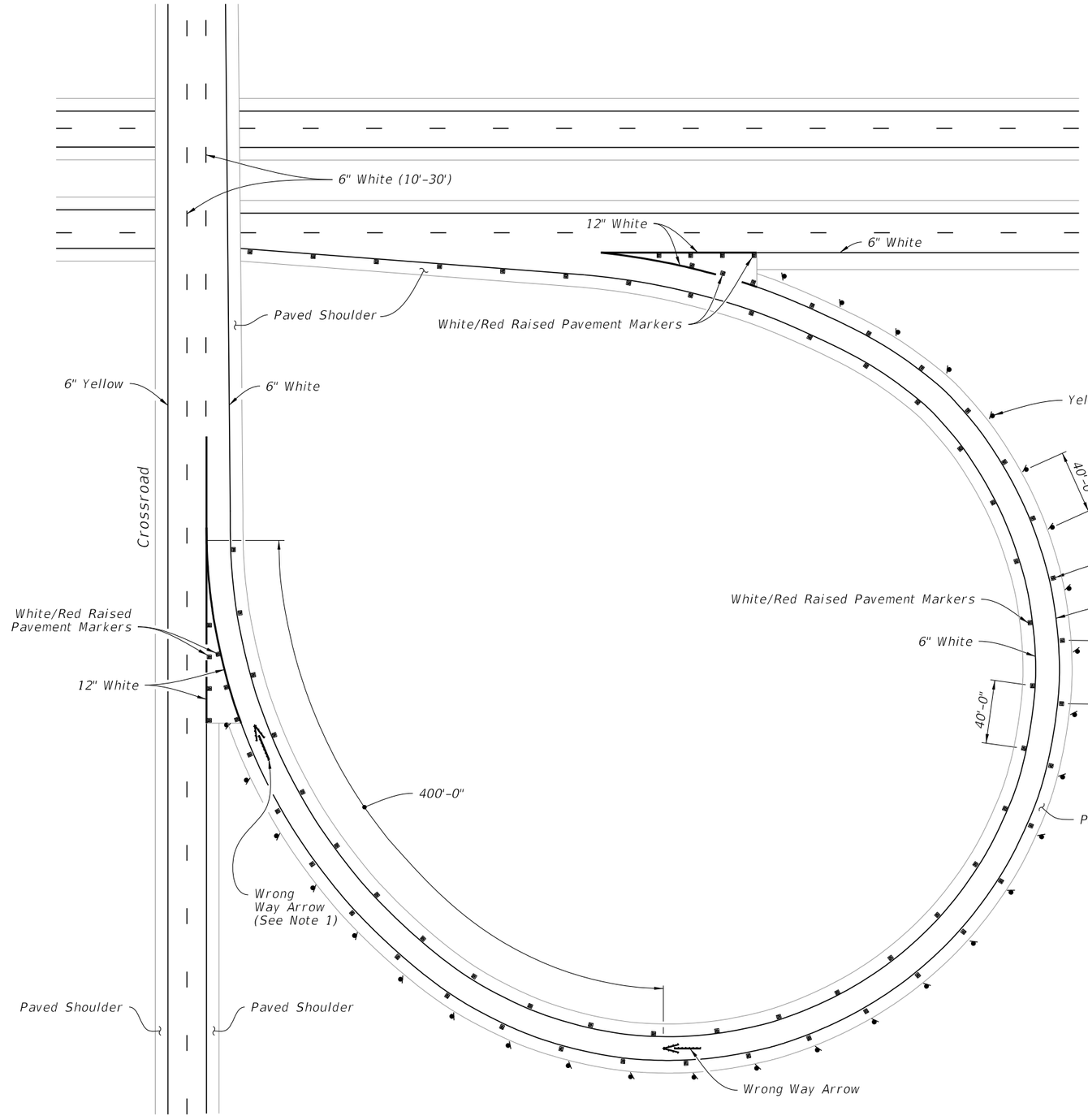
TYPICAL MARKINGS AT DUAL LANE EXITS



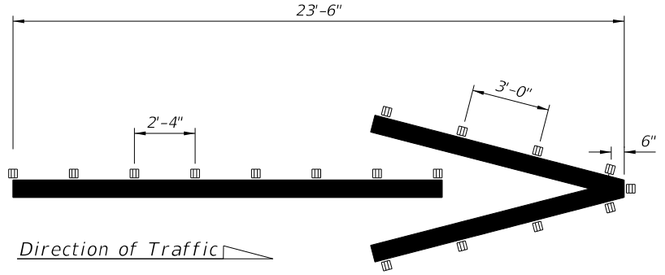
TYPICAL LANE DROP MARKINGS AT EXIT RAMPS

10/29/2019 8:24:45 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	711-003	3 of 7



TYPICAL CURVED EXIT RAMPS



WRONG WAY ARROW

DETAIL "B"

NOTES:

1. Place the Wrong Way Arrow at the physical gore or 100'-0" from the theoretical gore.
2. Post delineators spaced at 40' on curves of the entrance and exit of ramps. The spacing on the tangent portion of the ramp section is 300'-0". All delineators are to be setback 4' from shoulder break. Post delineators should not be discontinued in sections with guardrail.

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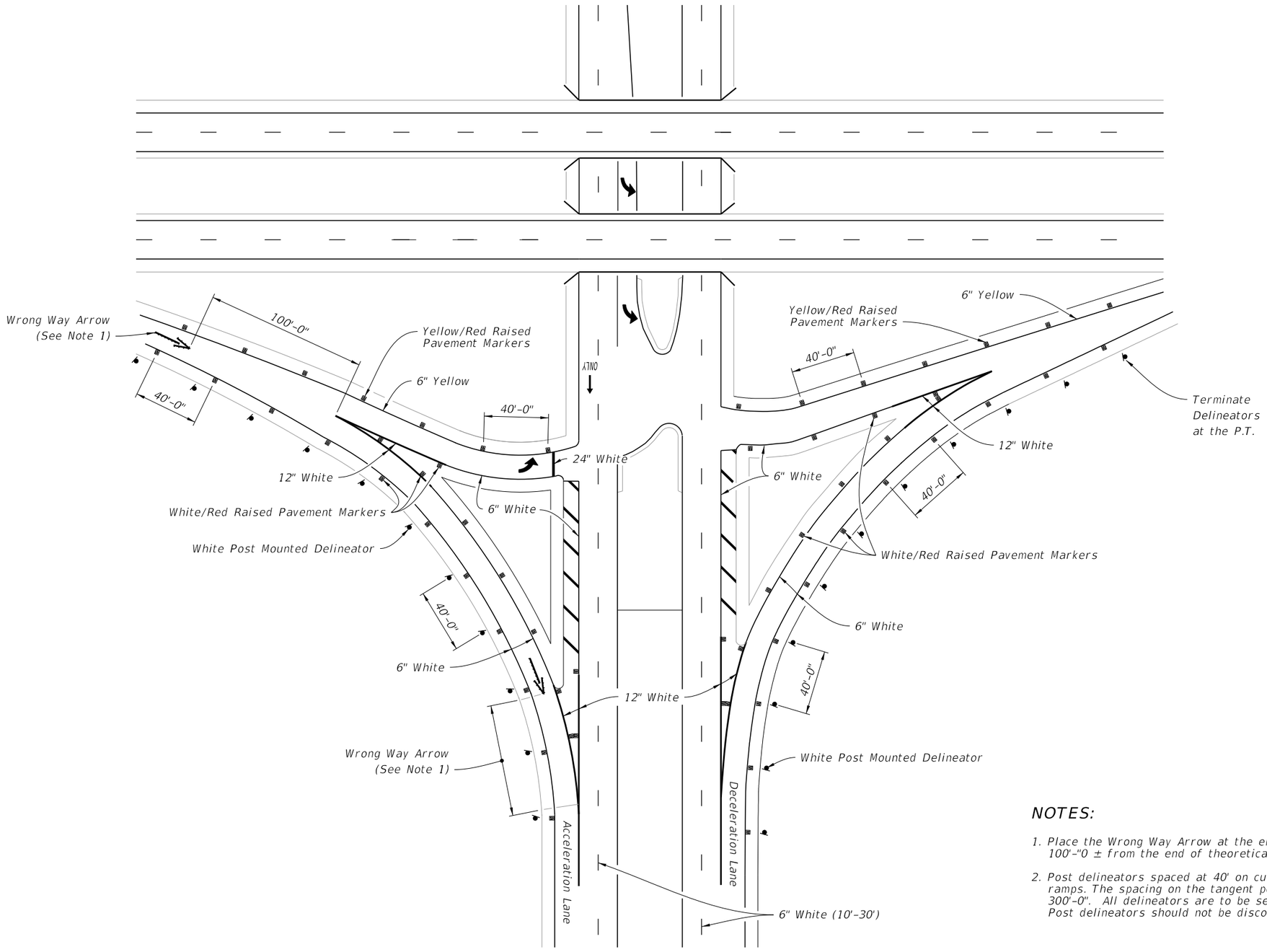
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	INDEX	SHEET
11/01/17					711-003	4 of 7



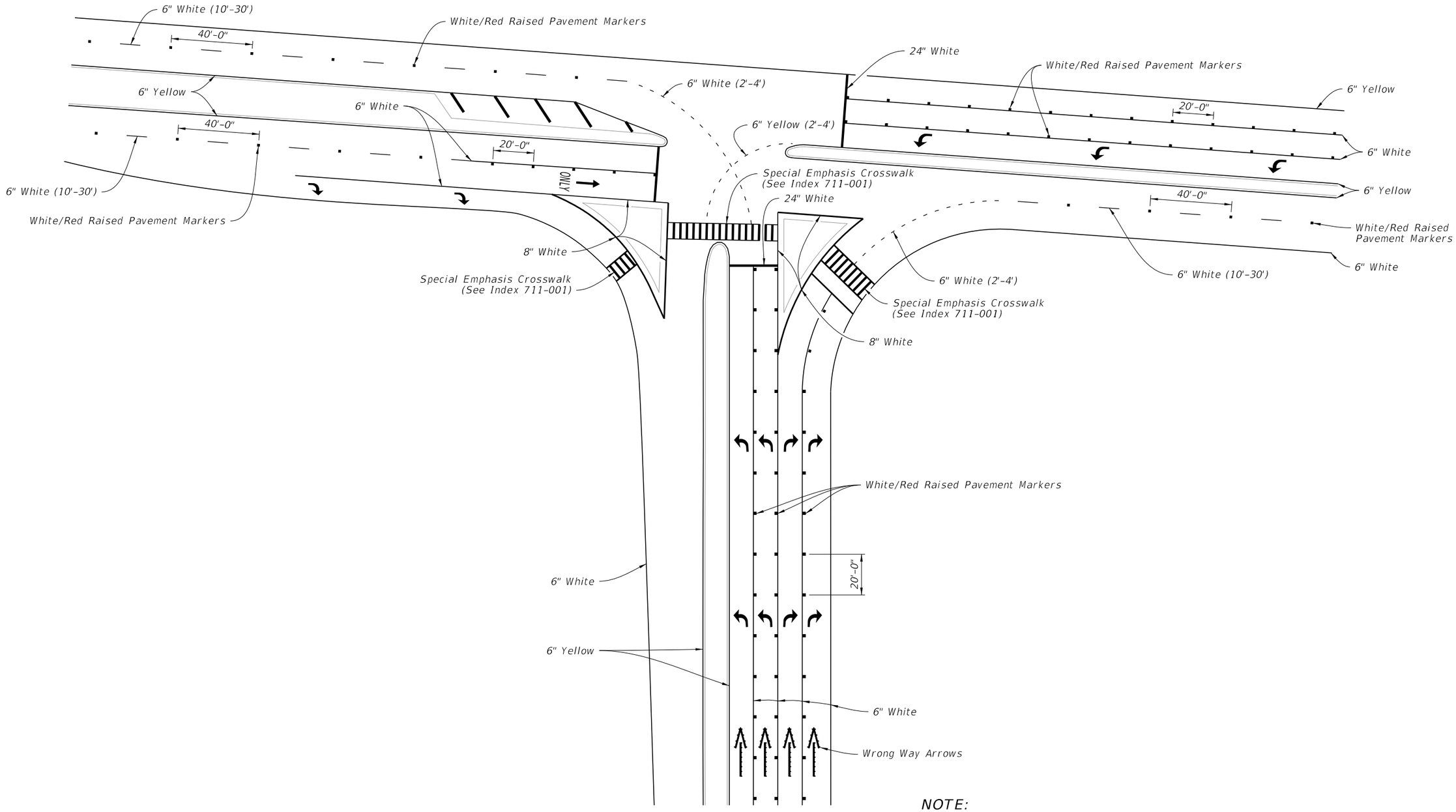
NOTES:

1. Place the Wrong Way Arrow at the end of the physical gore or 100'-"0 ± from the end of theoretical gore.
2. Post delineators spaced at 40' on curves of the entrance and exit of ramps. The spacing on the tangent portion of the ramp section is 300'-0". All delineators are to be setback 4' from shoulder break. Post delineators should not be discontinued in sections with guardrail.

TYPICAL INTERSECTION

10/29/2019 8:24:47 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	INDEX	SHEET
11/01/17					711-003	5 of 7



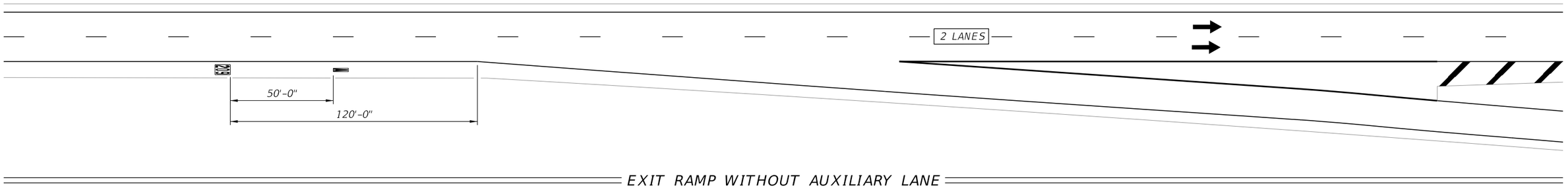
NOTE:

Do not place wrong way arrows in between consecutive directional arrows.

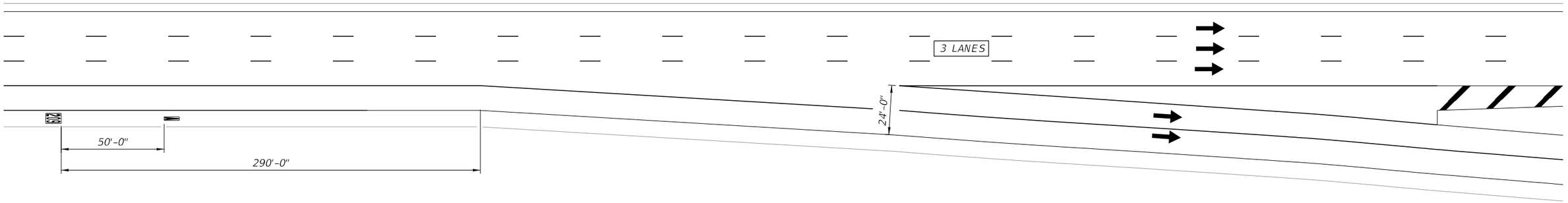
TYPICAL PARTIAL CLOVERLEAF/TRUMPET EXIT RAMP

10/29/2019 8:24:48 AM

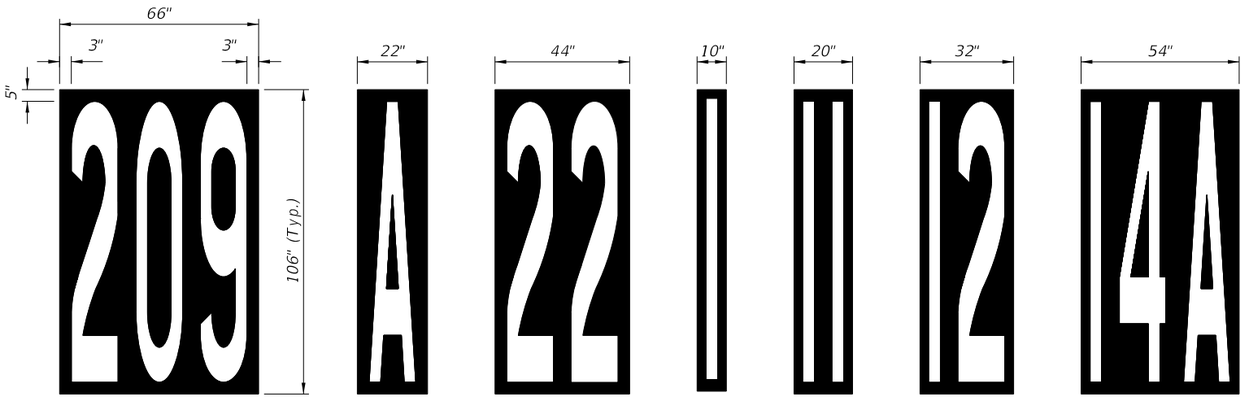
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	INDEX	SHEET
11/01/17					711-003	6 of 7



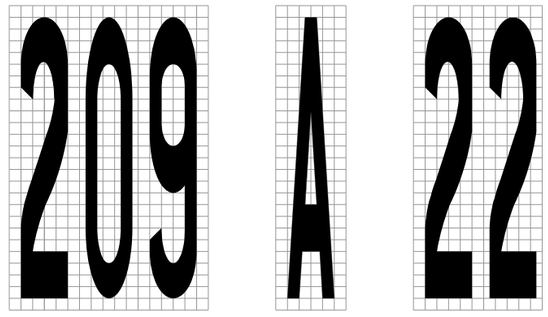
EXIT RAMP WITHOUT AUXILIARY LANE



EXIT RAMP WITH AUXILIARY LANE



MAT DIMENSIONS



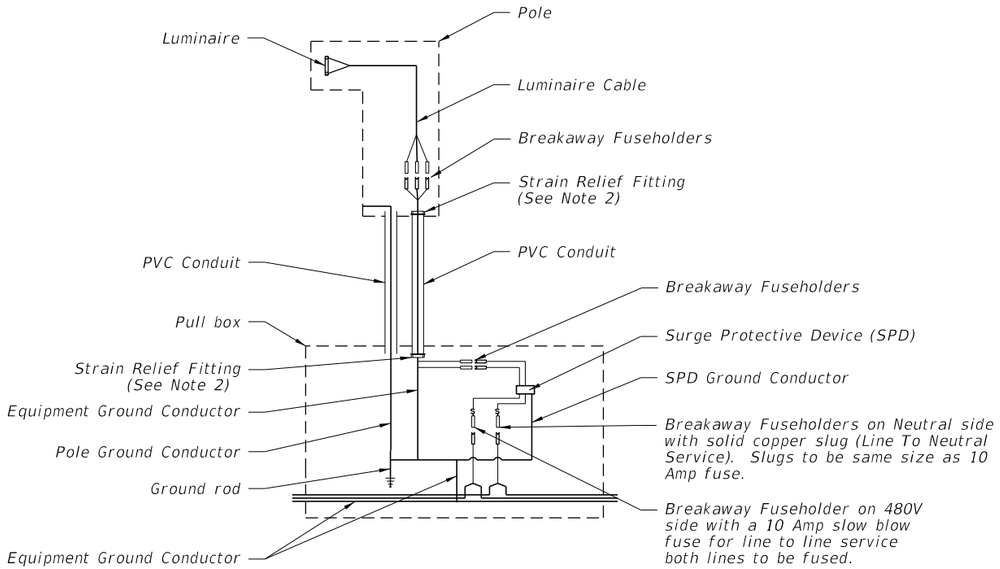
MESSAGE SIZE AND SPACING

NOTES:

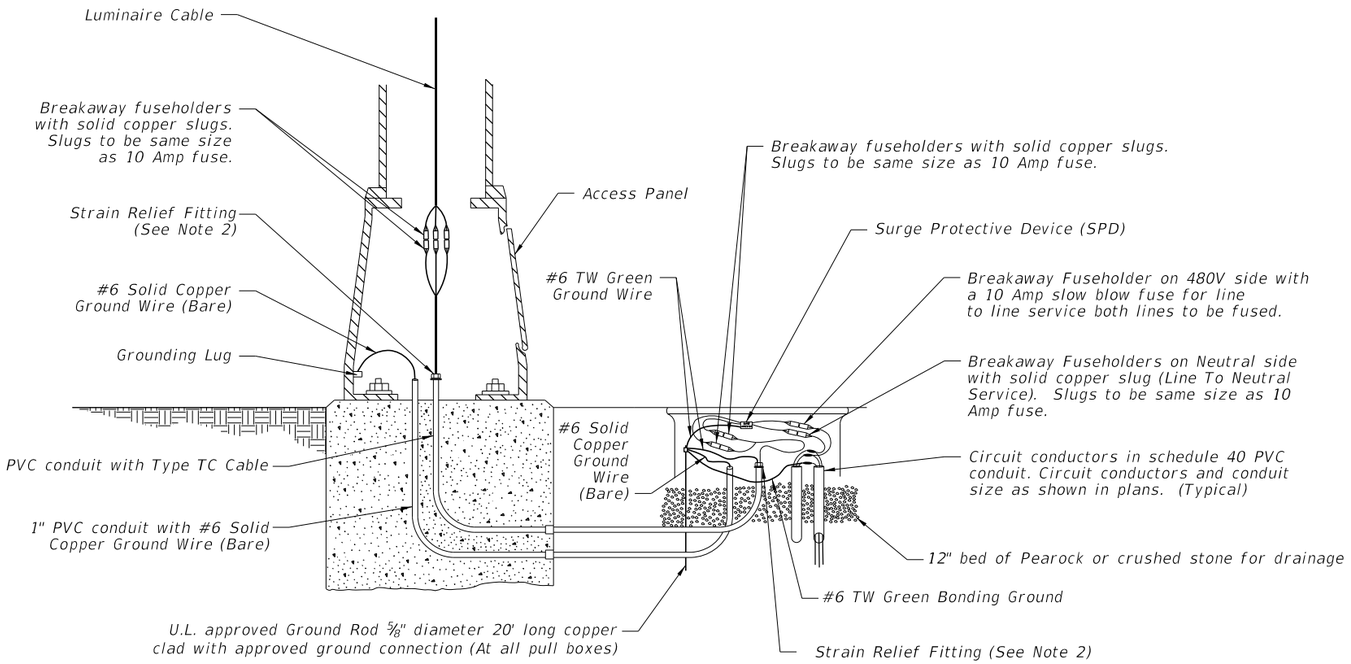
1. This Index shows layouts for 1, 2, and 3 digit numbers and letters.
2. The message consist of white letters and numbers with black contrasting material.
3. The "EXIT NUMBER" position remains the same distance from the beginning of taper regardless of the number of lines of information.
4. All Grids are 4" x4".

10/29/2019 8:24:48 AM

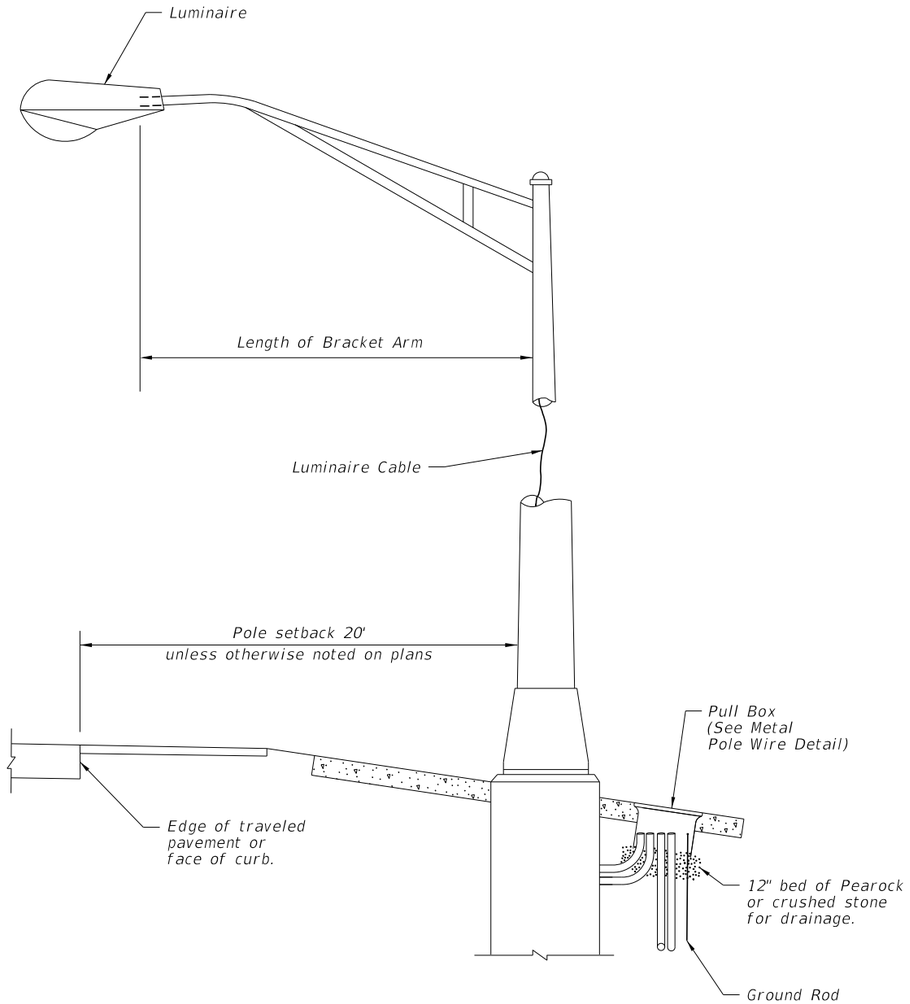
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	INTERCHANGE MARKINGS	INDEX	SHEET
11/01/17						711-003	7 of 7



WIRING DIAGRAM



METAL POLE WIRING DETAIL



METAL POLE DETAIL

NOTES:

1. Barrier wall or bridge mounted poles: The wiring shall be in accordance with Specification 992.

2. Provide cable length to remove fuseholders from transformer base, pole base or pullbox for maintenance. Remove slack from the luminaire cable to provide tension on the fuseholders if the pole breaks away. Pull excess cable into pull box tighten strain relief fittings or cable clamps at both ends of conduit to prevent cable from slipping.

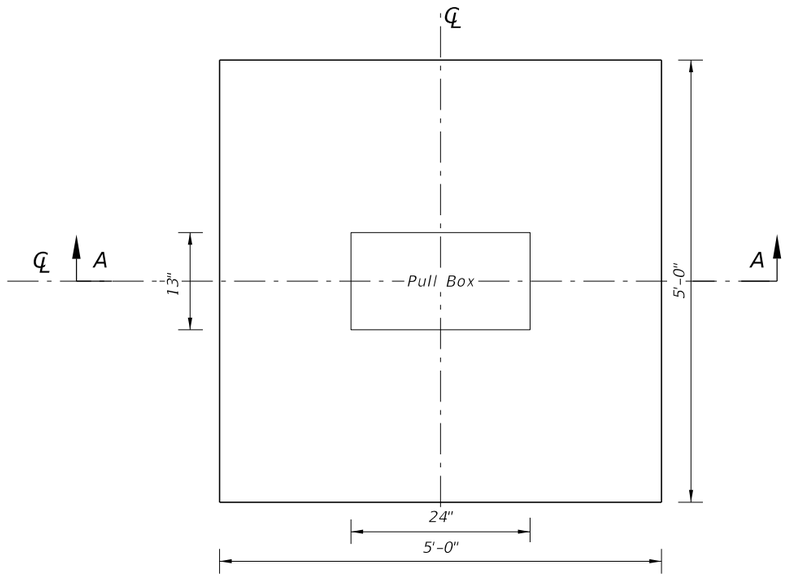
WIRING DETAILS

10/29/2019 8:24:49 AM

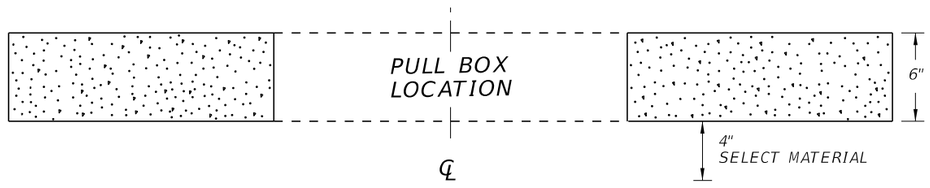
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	CONVENTIONAL LIGHTING	INDEX	SHEET
11/01/17					715-001	1 of 3

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 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



SECTION A-A

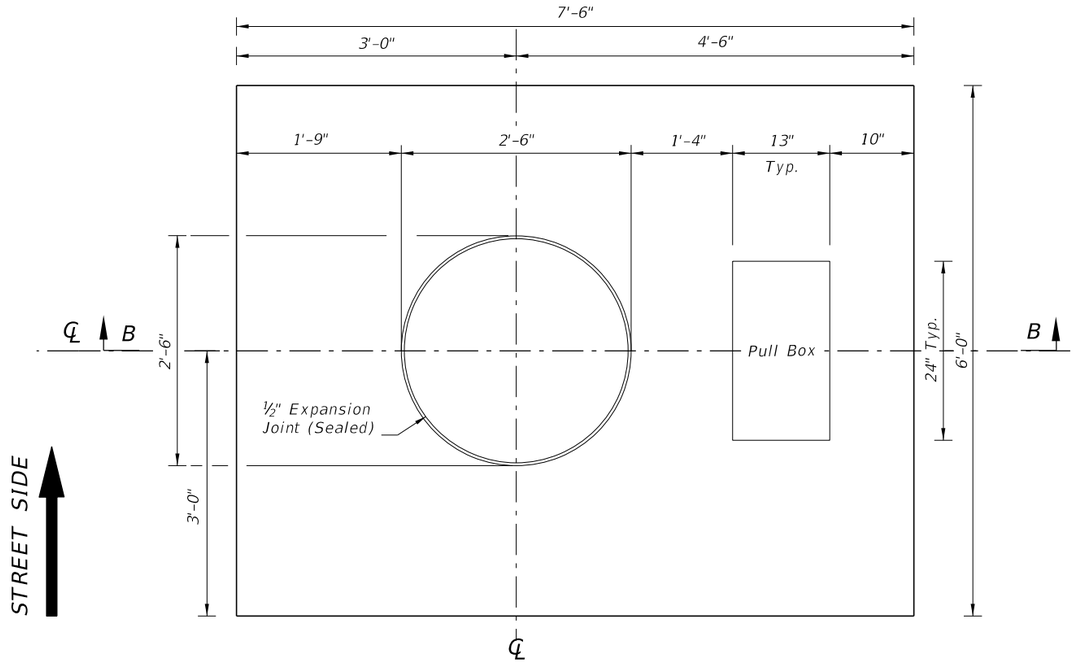
SLAB DETAILS FOR INTERMEDIATE PULLBOX LOCATIONS

10/29/2019 8:24:49 AM

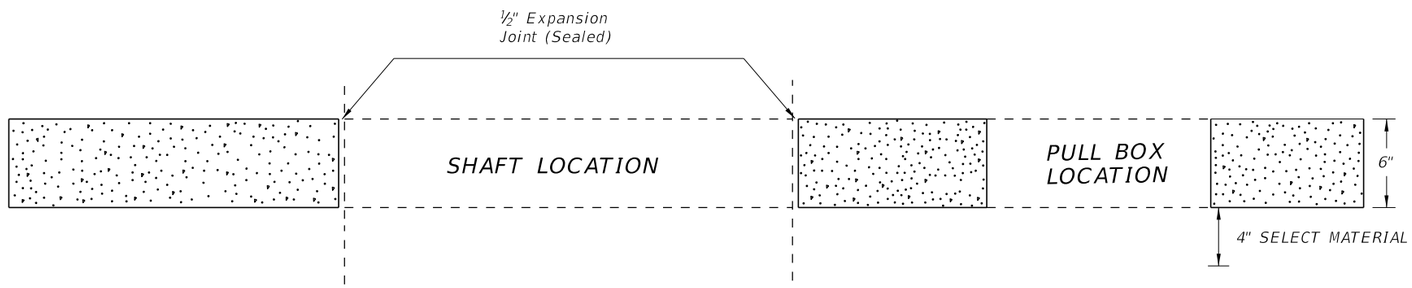
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	CONVENTIONAL LIGHTING	INDEX	SHEET
11/01/17						715-001	2 of 3

NOTES:

1. Use compacted select material in accordance with Index 120-001.
2. Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi.
3. Outside edge of slab shall be cast against formwork.
4. The pull box shown is 13" x 24"; others approved under Specification 635 may be used.
5. Slabs to be placed around all Poles and Pull Boxes. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
6. Concrete for slabs around poles and pull boxes shall be included in the price of pole or pull box.
7. The expansion joint shall consist of ½" of closed-cell polyethylene foam expansion material. The top ½" of expansion material shall be removed after pouring the slab and sealed with an APL approved Type A sealant meeting the requirements of Specification 932.



SLAB DIMENSIONS



SECTION B-B

SLAB DETAILS FOR POLE AND PULL BOX LOCATIONS

10/29/2019 8:24:50 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2020-21 STANDARD PLANS	CONVENTIONAL LIGHTING	715-001	3 of 3

GENERAL NOTES:

1. Poles are designed to support the following:
   A. Luminaire Effective Projected Area (EPA): 1.55 SF
   B. Weight: 75 lb.

2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not included in the Plans.

3. Materials:
   A. Pole, 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
   F. 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
   I. Stainless Steel Fasteners: ASTM F593 Alloy Group 2, Condition A, CW1 or SH1
   J. Nut Covers: ASTM B26 (319-F)
   K. Concrete: Class 1
   L. Reinforcing Steel: Specification 415

4. Fabrication:
   A. Weld Arm and Pole (Alloy 6063) in the T4 temper using 4043 filler. Age the Arm and Pole artificially to the T6 temper after welding.
   B. Transverse welds are only allowed at the base.
   C. Roadway Light Pole Taper: Taper as required to provide a round top O.D. of 6" and a base O.D. of 8" for 20' and 25' mounting heights and 10" O.D. for poles with 30' to 50' mounting heights. Portions of the pole near the base shoe and at the arm connections may be held constant to simplify fabrication.
   D. Median Barrier Mounted Light Pole Taper: Taper as required to provide a 6" O.D. round top with an 11" x 7" O.D. oblong base. Portions of the pole near the base and at the arm connections may be held constant at 11"x 7" oblong and 6" round respectively to simplify fabrication.
   E. Provide 'J', 'S' or 'C' hook at top of pole for electrical wires.
   F. 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 fabrication:
      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 capacity loads.
      d. Complete details and calculations for the reinforced 4"x 6" (Min.) handhole located 1'-6" above the base plate.
   J. Identification Tag: (Submit details for approval.)
      a. 2" x 4" (Max.) aluminum identification tag.
      b. Locate on the inside of the transformer base and visible from the door opening.
      c. Secure to transformer base with ⅛" 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 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.

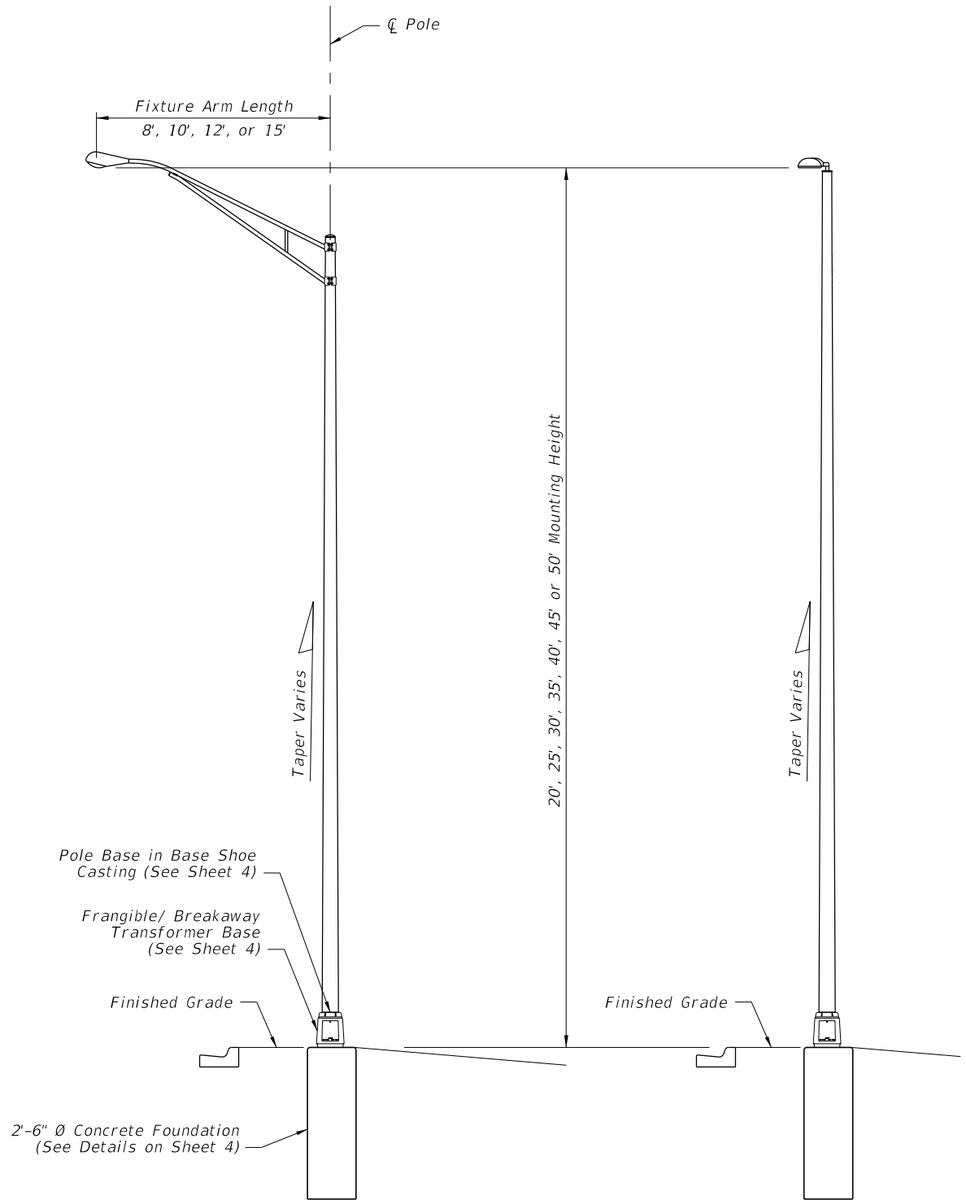
8. Wind Speed by County:

   120 MPH
   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.

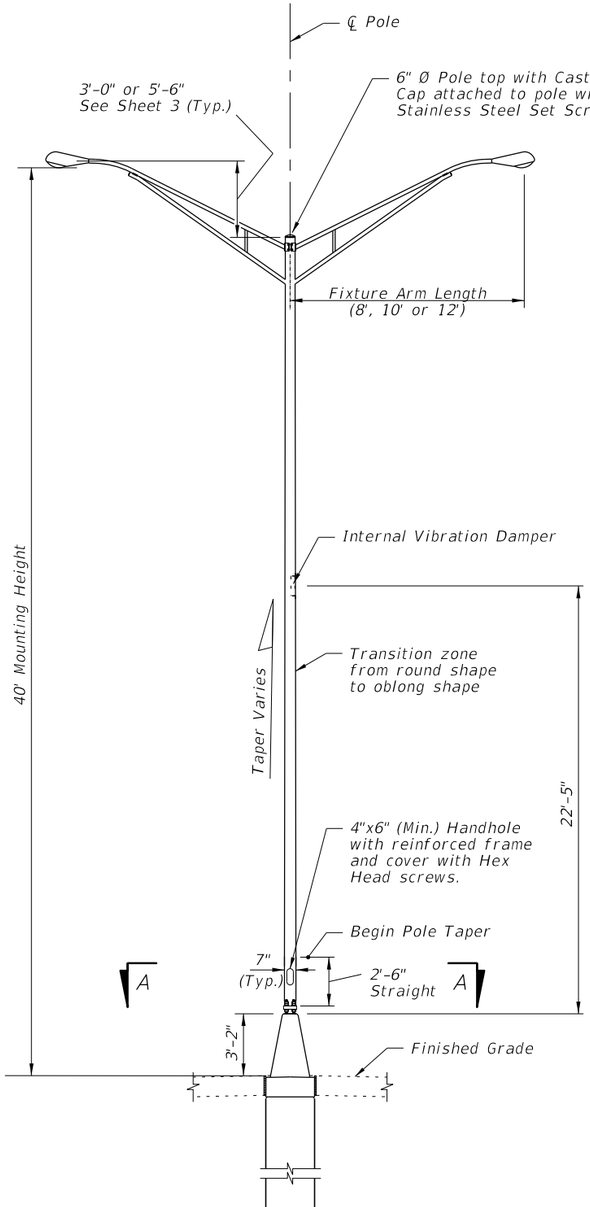
   140 MPH
   Bay, Citrus, De Soto, Flagler, Franklin, Glades, Gulf, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lake, Levy, Manatee, Marion, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Santa Rosa, Seminole, St. Johns, Sumter, Volusia, Walton and Washington Counties.

   160 MPH
   Brevard, Broward, Charlotte, Collier, Escambia, Indian River, Lee, Martin, Miami-Dade, Monroe, Palm Beach, Sarasota and St. Lucie Counties.

10/29/2019 8:24:51 AM

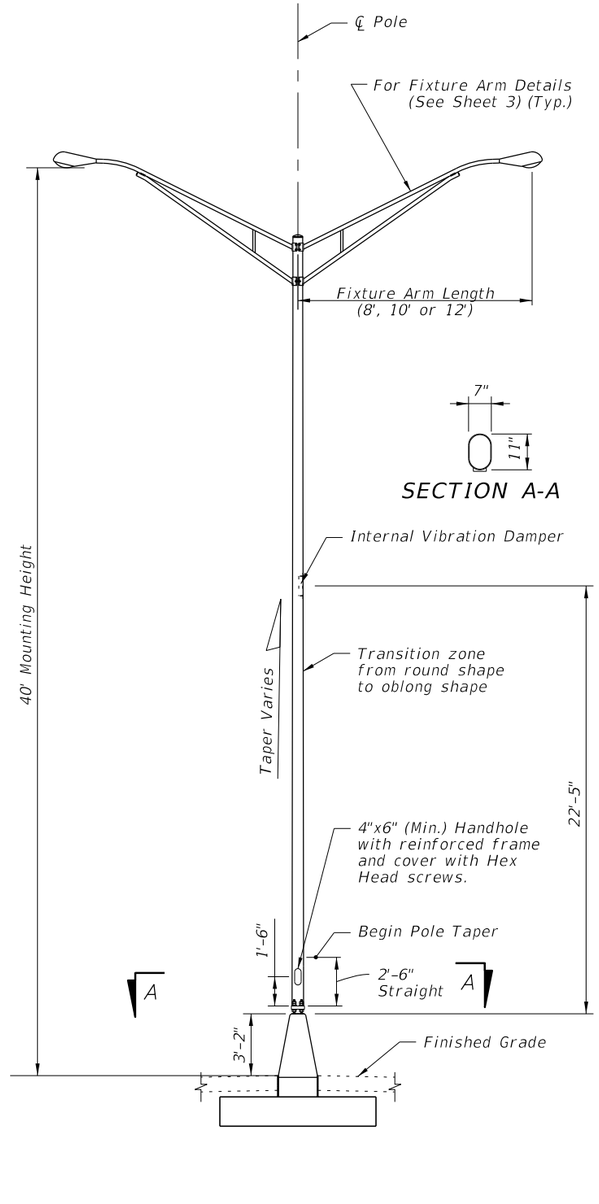


STANDARD ROADWAY ALUMINUM LIGHT POLE W/ARM



STANDARD ROADWAY ALUMINUM LIGHT POLE W/TOP MOUNT

MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE ON CYLINDRICAL FOUNDATION



MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE ON SPREAD FOOTING FOUNDATION

ELEVATIONS

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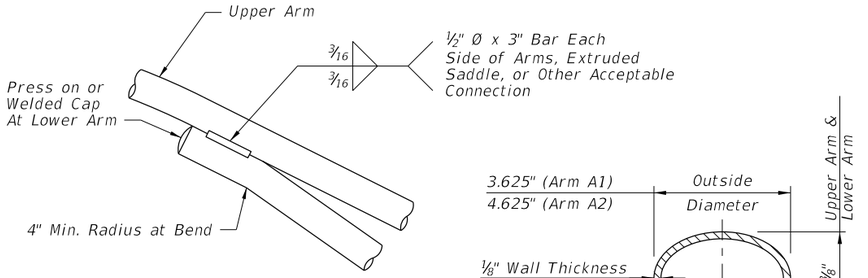
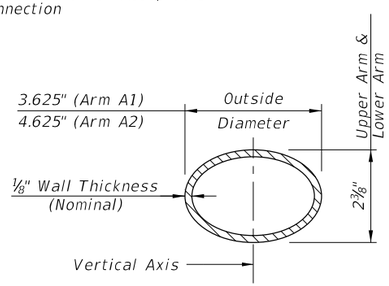
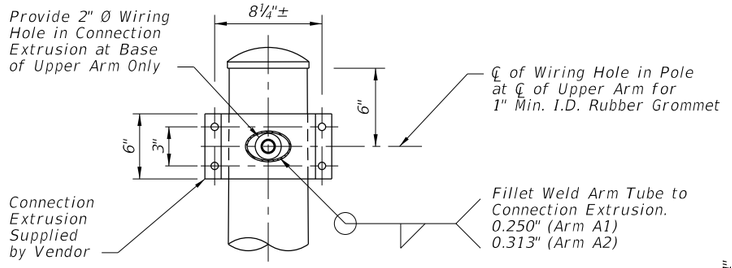
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	STANDARD ALUMINUM LIGHTING	INDEX	SHEET
11/01/19					715-002	2 of 8



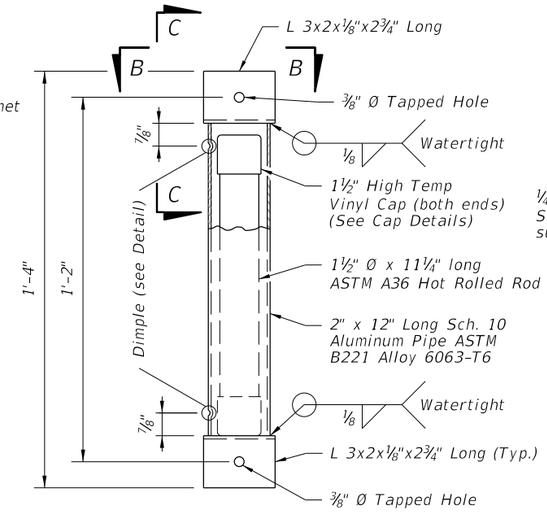
ARM CONNECTION DETAIL



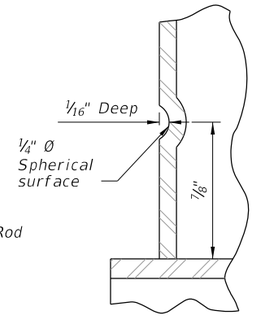
ARM SECTION



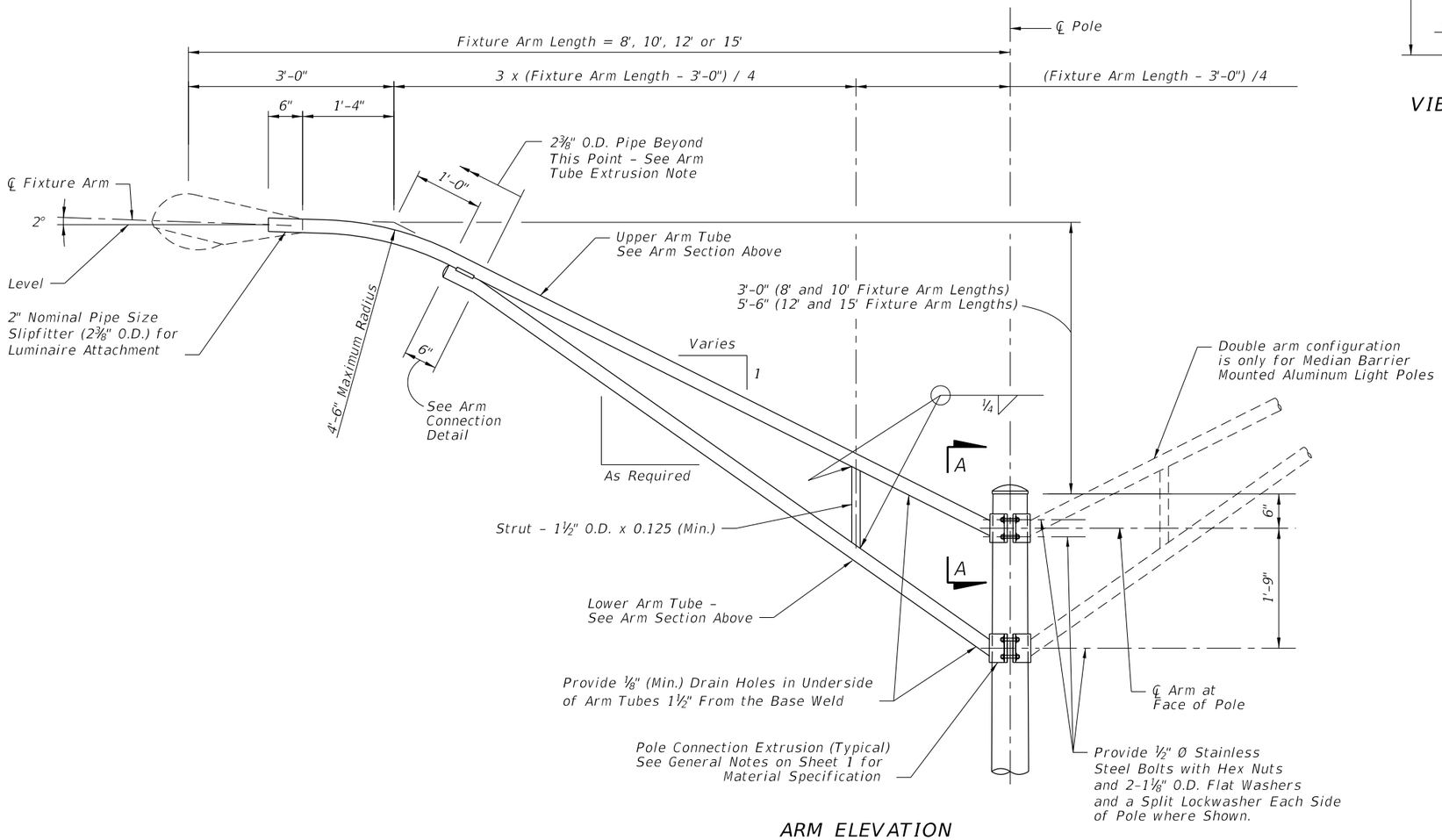
SECTION A-A
(Connection At Lower Arm Similar)



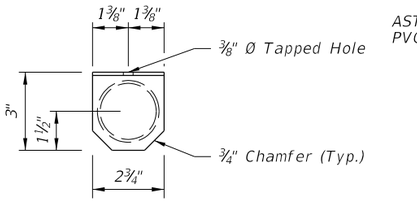
VIBRATION DAMPER ELEVATION



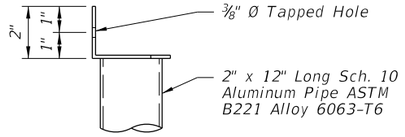
DIMPLE DETAIL



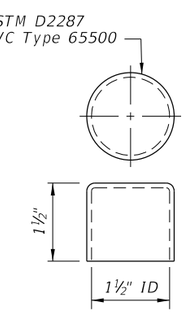
ARM ELEVATION



VIEW B-B



VIEW C-C



HIGH TEMP VINYL CAP DETAIL

ARM TUBE EXTRUSIONS NOTES:

At the pole connections, provide arm tube extrusions with dimensions as shown. Uniformly transition elliptical section to a cylindrical section at the arm connection.

The fabricator may substitute elliptical cross sections other than those tabulated, provided the section properties about the vertical axis and the area of the section equal or exceed that of the required section, and provide minimum wall thickness of ⅛" nominal and within the Aluminum Association Tolerances.

The outside diameter about the minor axis should be held at 2⅜" at the upper and lower arms.

ARM & DAMPER DETAILS

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LAST REVISION	REVISION	DESCRIPTION:				
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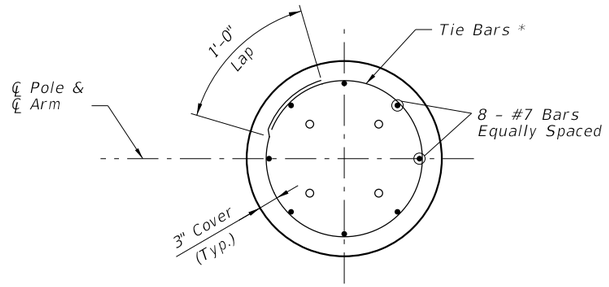
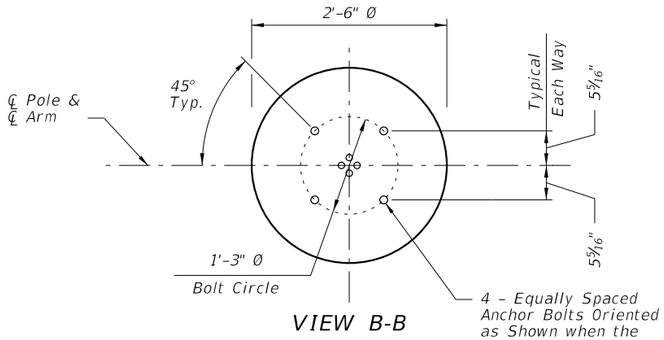
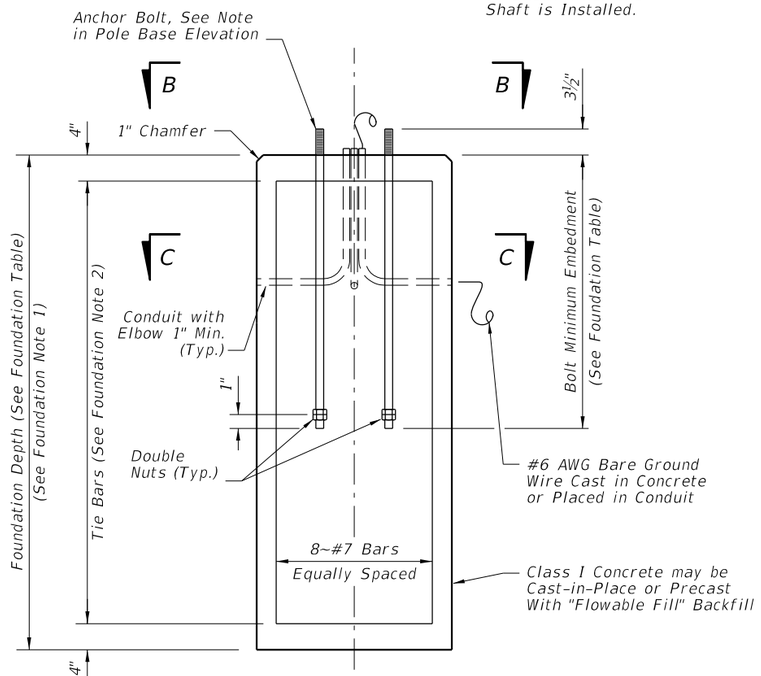


SECTION C-C



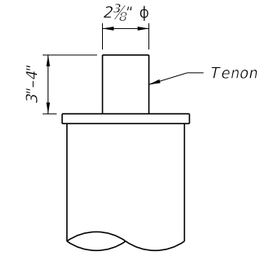
VIEW B-B



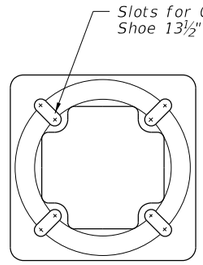
FOUNDATION NOTES:

1. Depths shown are for slopes equal to or flatter than 1:4. For slopes steeper than 1:4 and equal to or flatter than 1:2 add 2'-6" to foundation depths shown.
2. Foundation Tie Bars: #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn bottom.

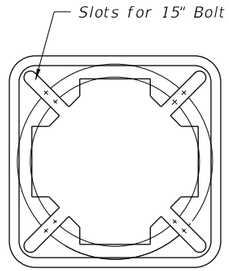
FOUNDATION



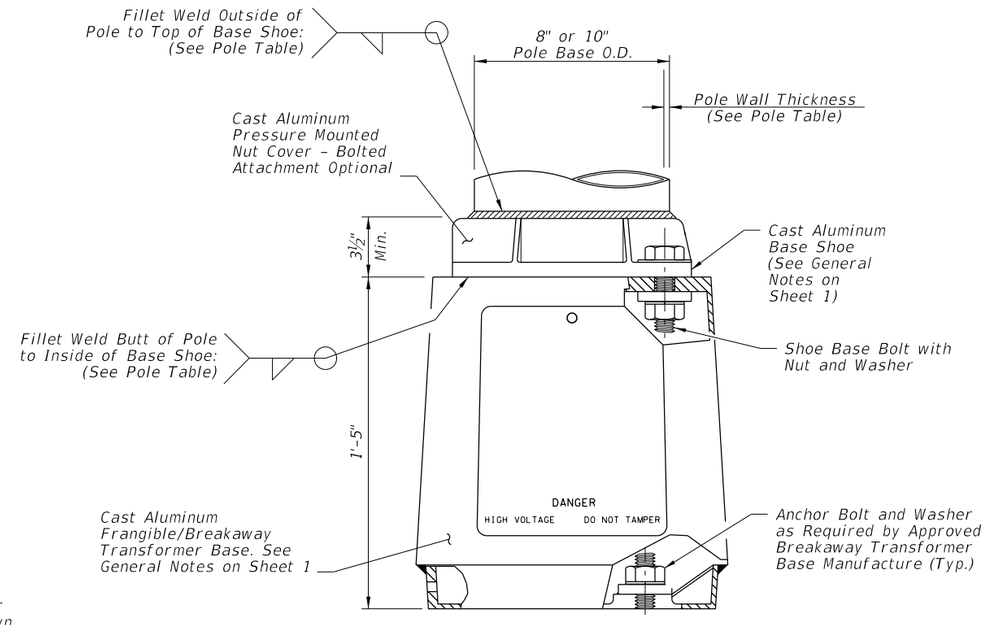
TOP MOUNT TENON



TOP VIEW TRANSFORMER BASE



BOTTOM VIEW TRANSFORMER BASE



POLE BASE ELEVATION

ARM-POLE TABLE

FOR STANDARD ALUMINUM LIGHT POLES WITH ARM

Assembly Height (ft)	Wind Speed and Arm Lengths (ft)				
	120 mph	140 mph		160 mph	
	8, 10, 12, 15	8, 10, 12	15	8, 10	12, 15
30	A1-P1	A1-P1	A2-P1	A1-P1	A2-P1
35					
40				A1-P2	A2-P2
45	A1-P2	A1-P2	A2-P2		
50				A1-P3	A2-P3

ARM POLE NOTES:

1. See ARM SECTION detail on Sheet 3 for all A1 and A2 Values.
2. See Pole Table for all P1, P2, and P3 values.
3. For Median Barrier Mounted Pole, Use Arm A1.
4. For 20' and 25' assembly heights use only 8' or 10' arm A1 with P0.

POLE TABLE

Pole	Pole Wall Thickness	Top of Base Shoe Weld	Inside of Base Shoe Weld
P0	0.156	3/16"	5/32"
P1	0.156	3/16"	5/32"
P2	0.250	1/4"	1/4"
P3	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 Height (ft)	Wind Speed and Arm Lengths (ft)		
	120 mph	140 mph	160 mph
20	Pole P0	Pole P0	Pole P0
25			
30	Pole P1	Pole P1	Pole P1
35			
40			Pole P2
45	Pole P2	Pole P2	
50			

FOUNDATION TABLE

Pole	P0	P1	P2	P3
Depth	6'-0"	7'-0"	8'-0"	8'-0"
Bolt Min. Embedment	2'-6"	3'-6"	3'-6"	3'-6"

POLE AND BASE DETAILS FOR ROADWAY ALUMINUM LIGHT POLE

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11/01/19			FY 2020-21 STANDARD PLANS	STANDARD ALUMINUM LIGHTING	INDEX 715-002 / SHEET 4 of 8

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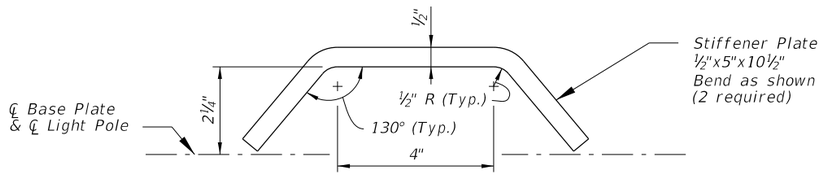
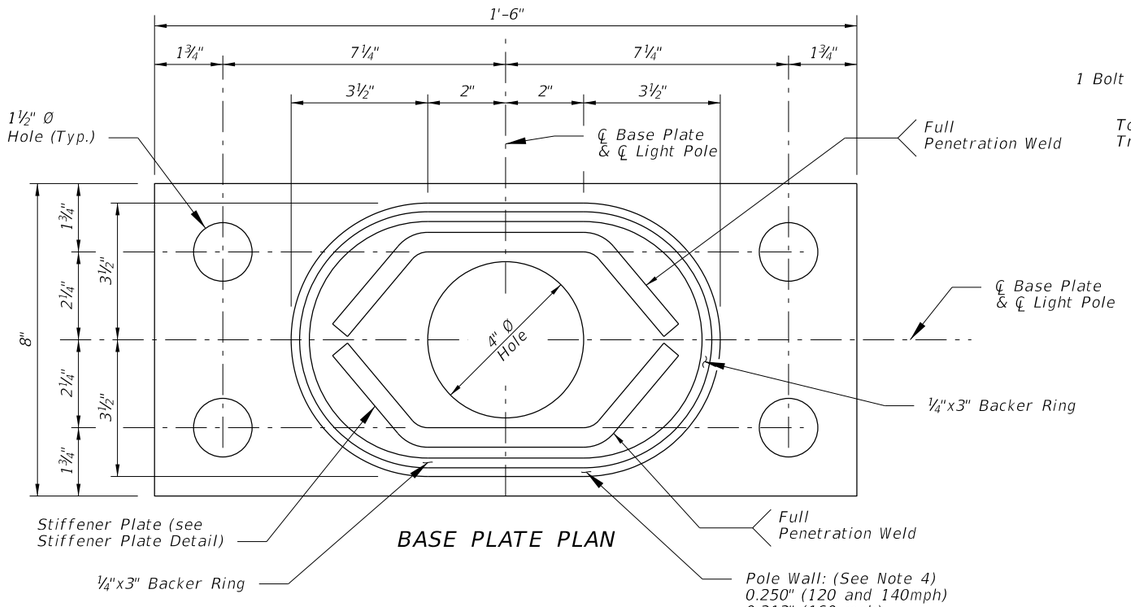
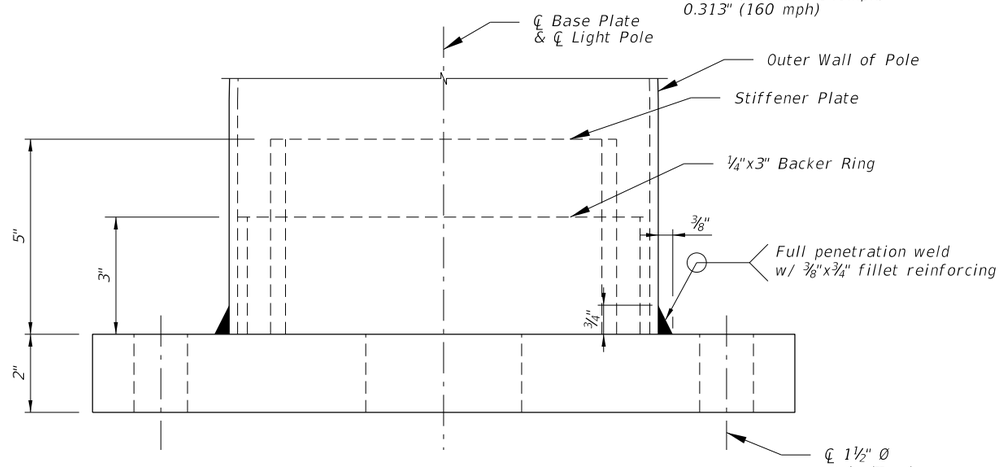


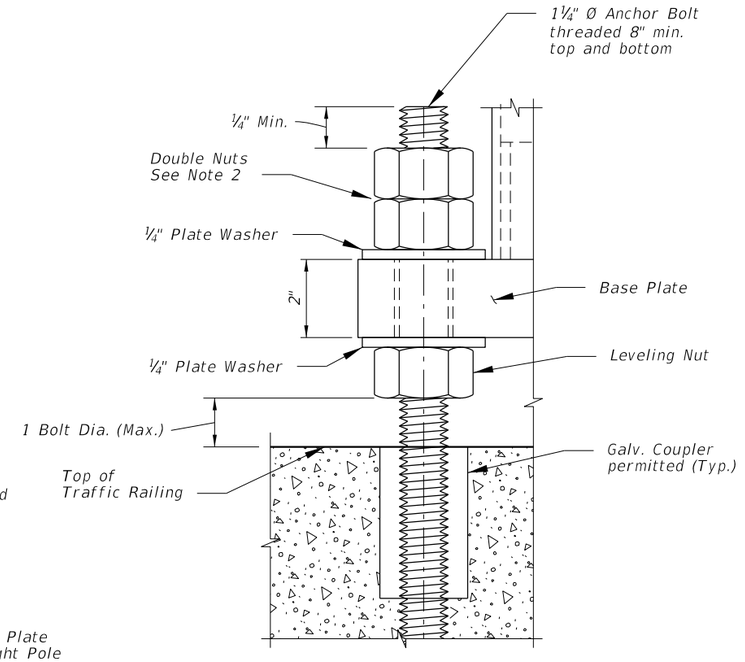
STIFFENER PLATE DETAIL



BASE PLATE PLAN



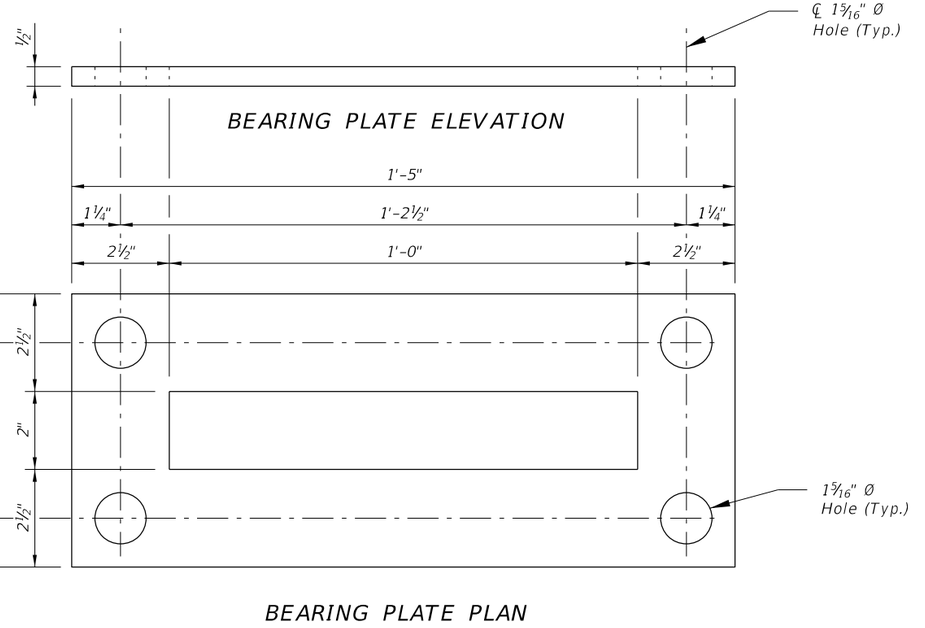
BASE PLATE ELEVATION



DETAIL 'A'

NOTE:

1. For locations of Bearing Plates, Base Plates and Detail 'A' see Sheets 6 & 7.
2. Double Nuts: The bottom hex nut may be substituted by a half-height 'jam' nut.
3. Provide individual nut covers (not shown) for each bolt.
4. Pole wall thicknesses shown are nominal and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used in accordance with the minimum Aluminum Association thicknesses.



BEARING PLATE PLAN

BASE PLATE DETAILS FOR MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE

LAST REVISION	REVISION	DESCRIPTION:	FY 2020-21 STANDARD PLANS	STANDARD ALUMINUM LIGHTING	INDEX	SHEET
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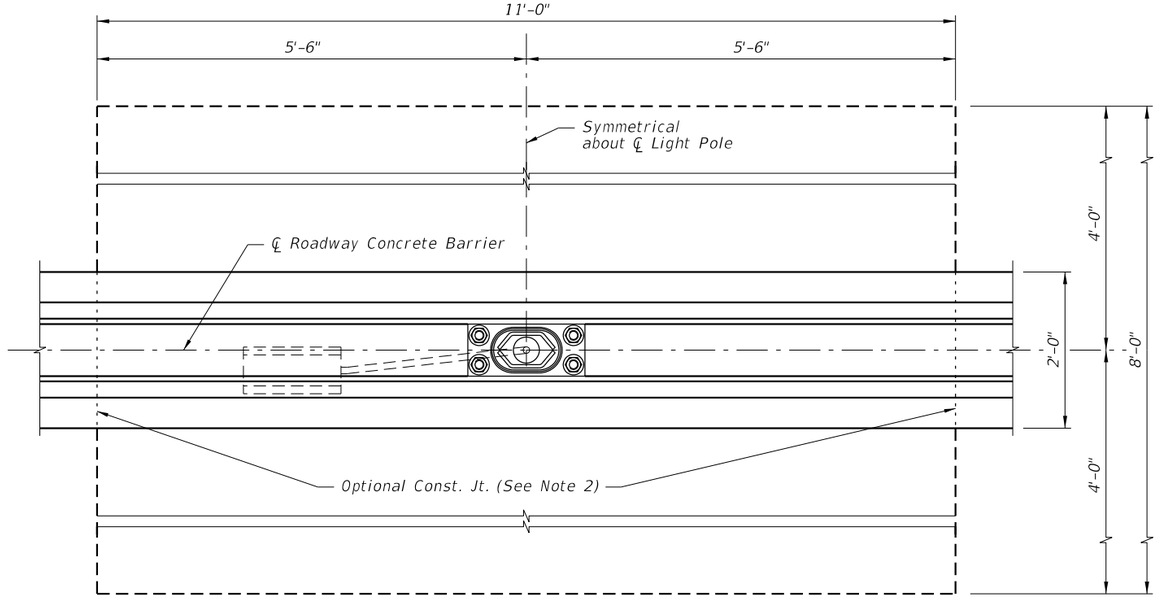
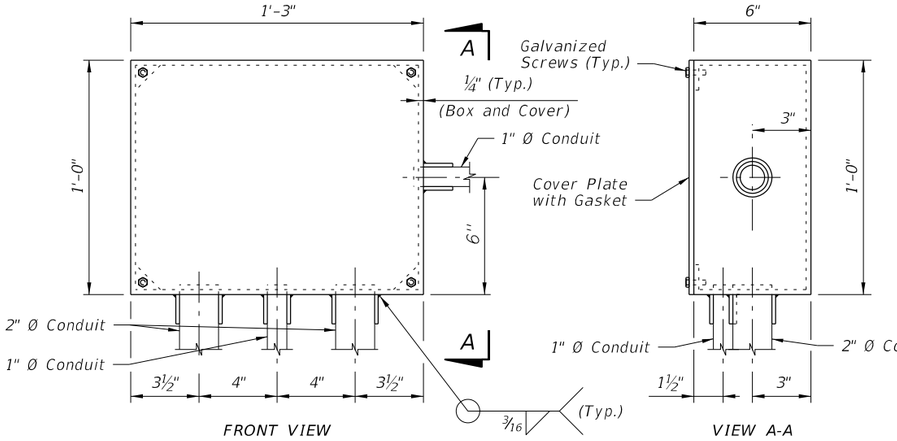
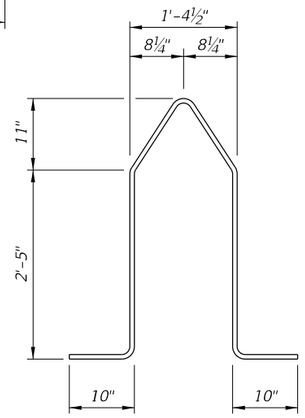


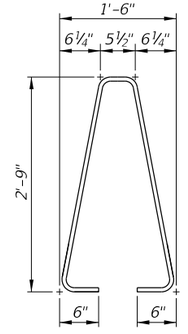
PLAN
(Reinforcing steel not shown)



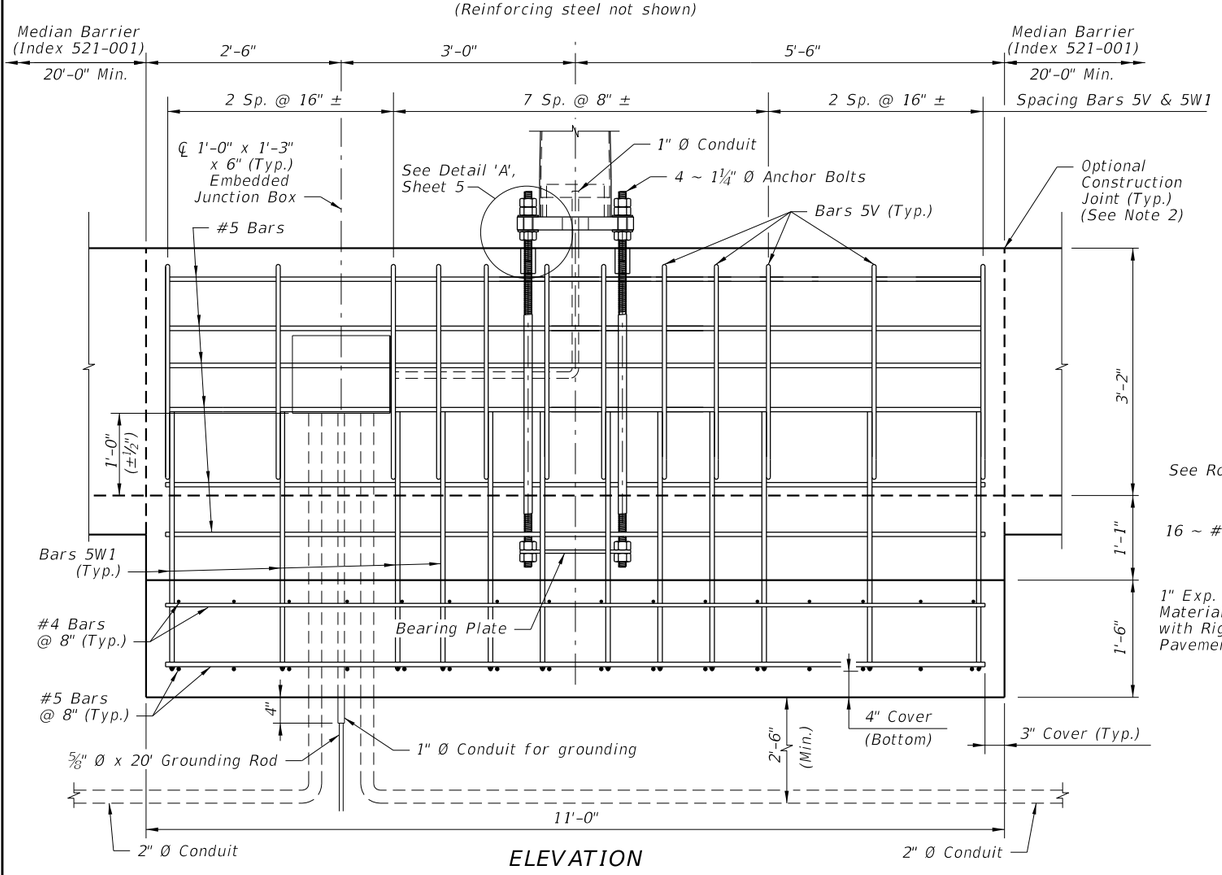
EMBEDDED JUNCTION BOX DETAILS



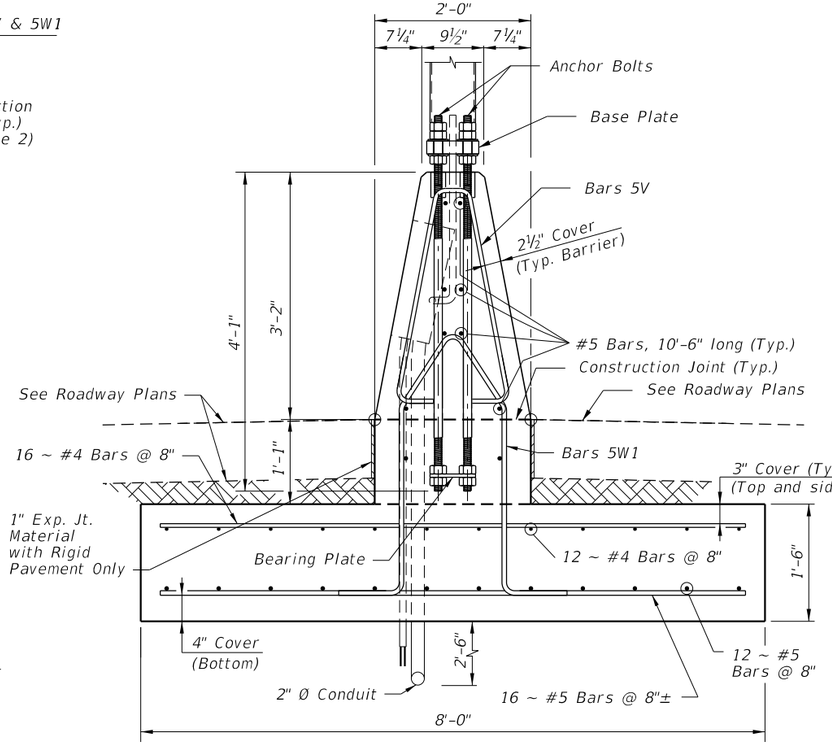
BAR 5W1



BAR 5V



ELEVATION



END VIEW

NOTES:

1. For Bearing Plate and Base Plate Details, see Sheet 5.
2. For connections to adjacent Median Barrier, use the Doweled Joint detail per Index 521-001. Alternatively, a continuous concrete pour or a construction joint may be substituted; these alternatives require the Median Barrier's longitudinal steel to lap a minimum of 2'-0" with the longitudinal steel shown herein.

SPREAD FOOTING DETAILS FOR MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	STANDARD ALUMINUM LIGHTING	INDEX	SHEET
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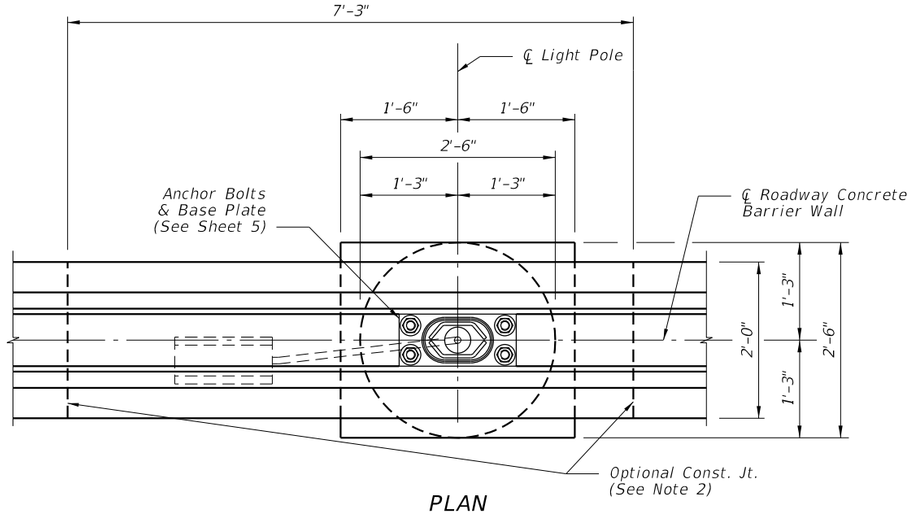
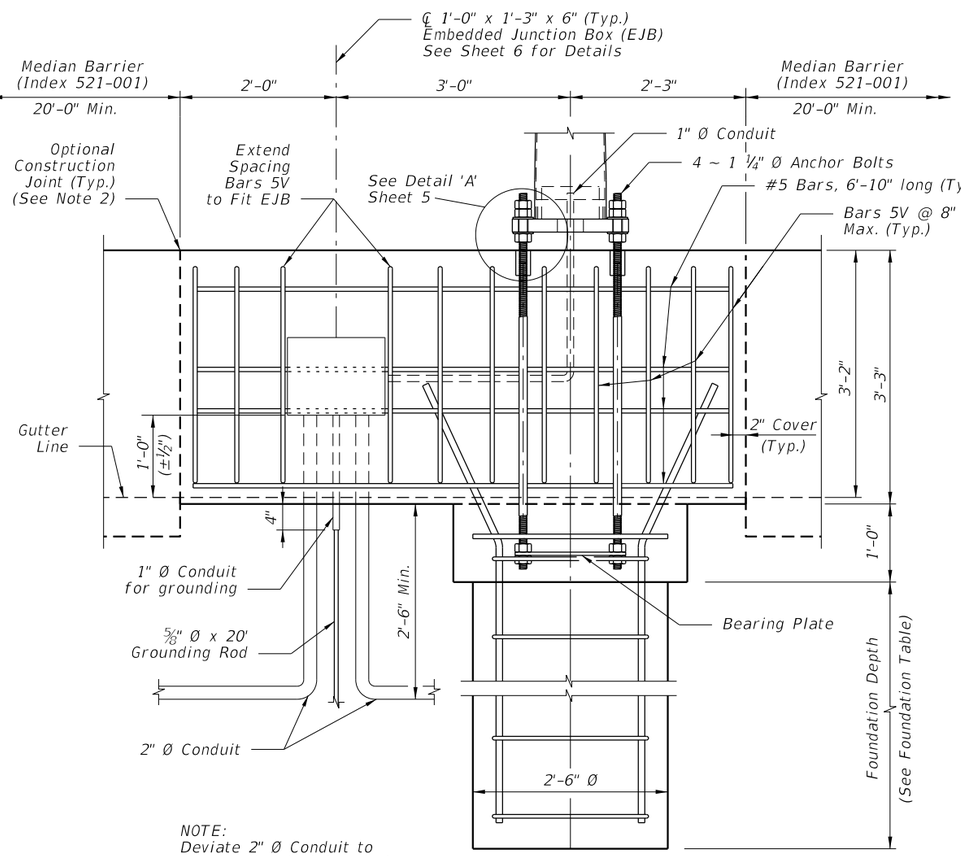


PLAN

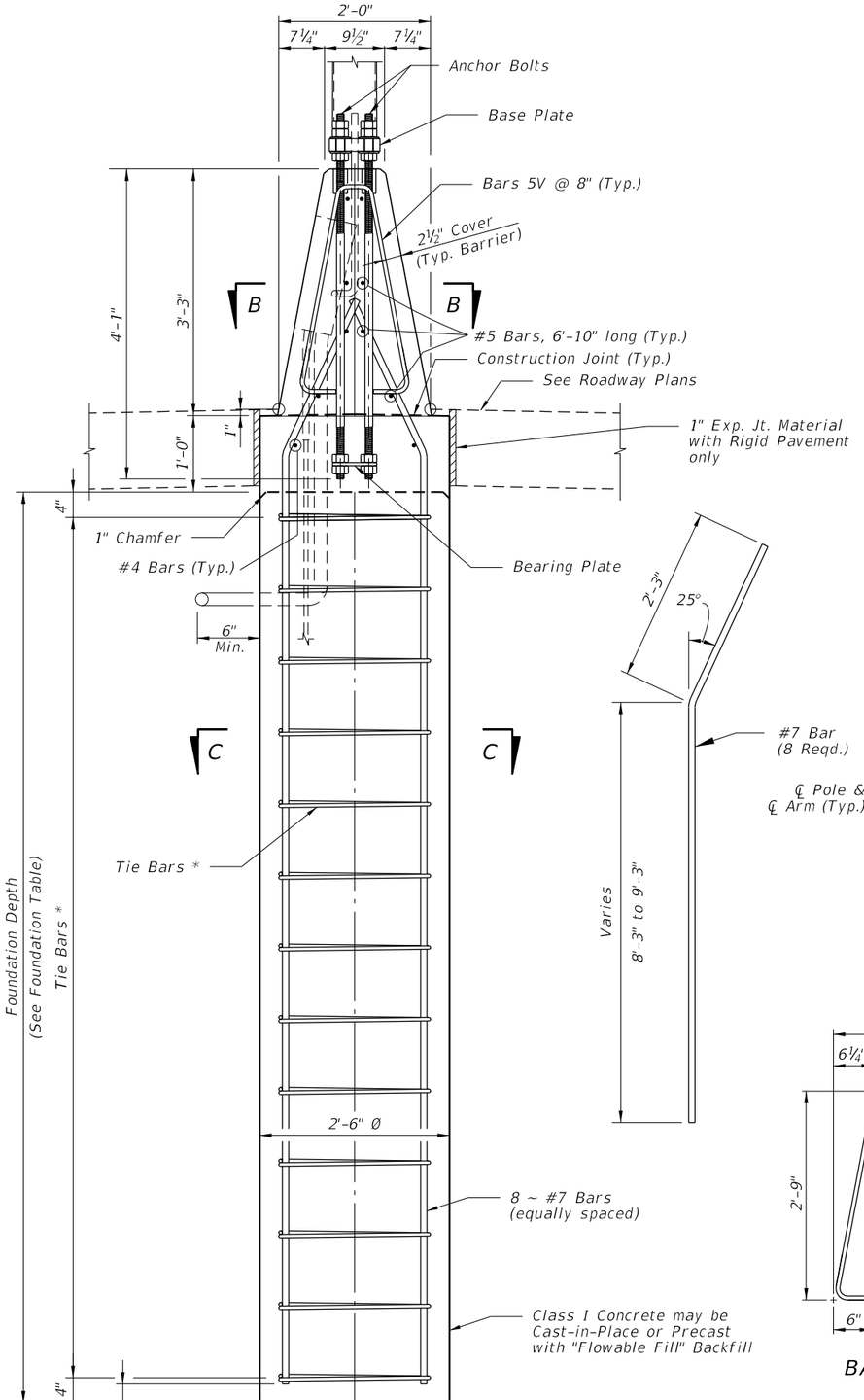
(Reinforcing steel not shown)

Provide dowel bars @ construction joint



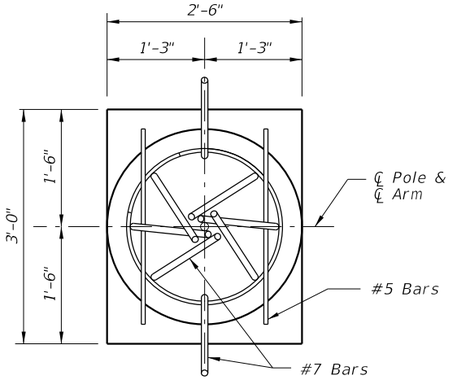
NOTE:
Deviate 2" Ø Conduit to avoid cylindrical foundation.

ELEVATION

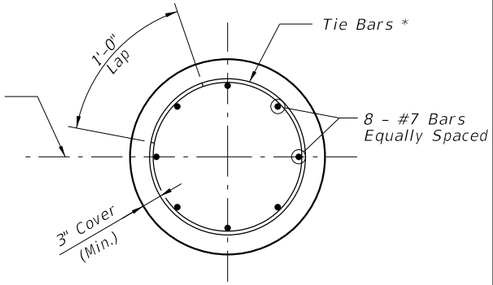


END VIEW

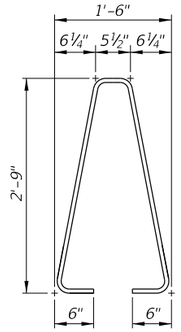
FOUNDATION TABLE		
WIND SPEED (MPH)	DESIGN MOUNTING HEIGHT (FT)	FOUNDATION DEPTH (FT)
120	40	8
140	40	9
160	40	9



VIEW B-B
(Anchor Bolts and Barrier Longitudinal Steel & Stirrups Not Shown)



SECTION C-C



BAR 5V

NOTES:

1. For Bearing Plate and Base Plate Details, see Sheet 5.
2. For connections to adjacent Median Barrier, use the Doweled Joint detail per Index 521-001. Alternatively, a continuous concrete pour or a construction joint may be substituted; these alternatives require the Median Barrier's longitudinal steel to lap a minimum of 2'-0" with the longitudinal steel shown herein.

* #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn bottom.

CYLINDRICAL FOUNDATION DETAILS FOR MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE

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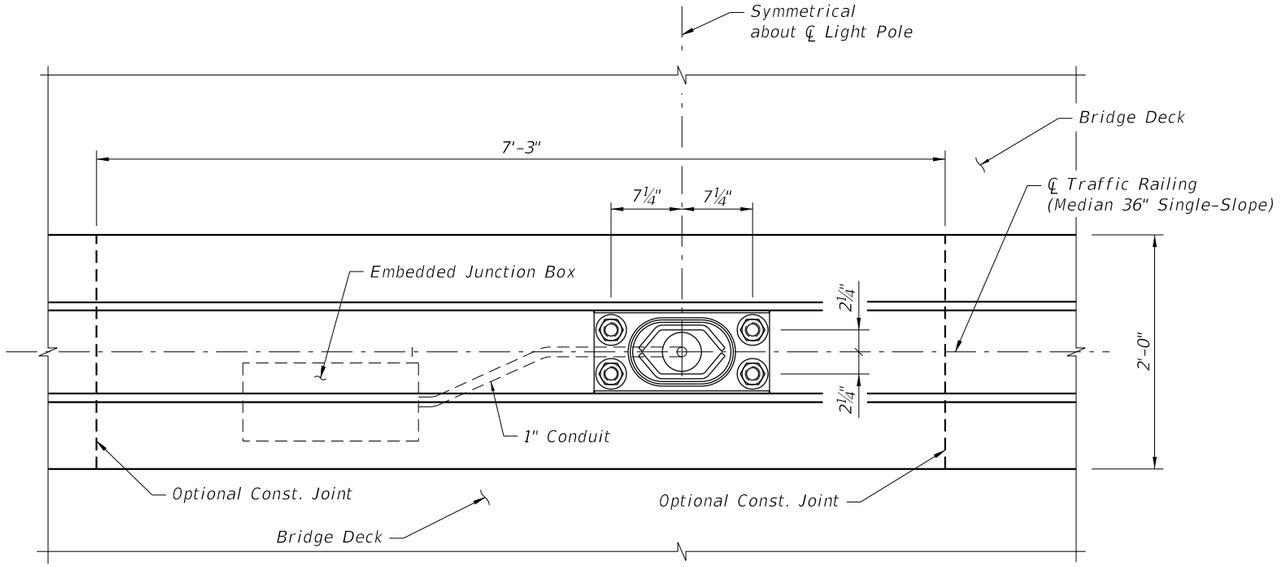
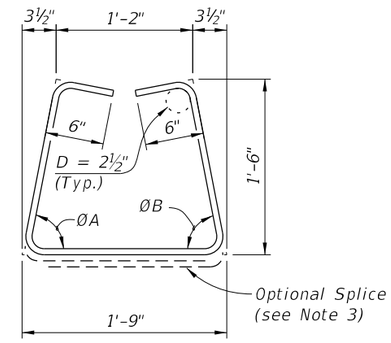
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FDOT FY 2020-21 STANDARD PLANS	STANDARD ALUMINUM LIGHTING	INDEX 715-002	SHEET 7 of 8



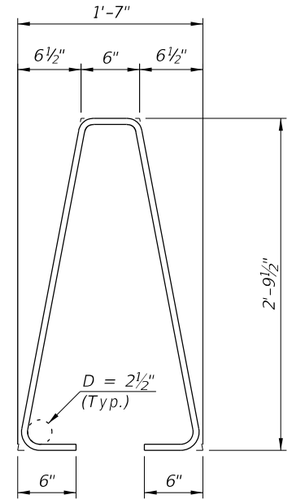
PLAN

(Reinforcing steel and 2" Ø Conduit not shown)

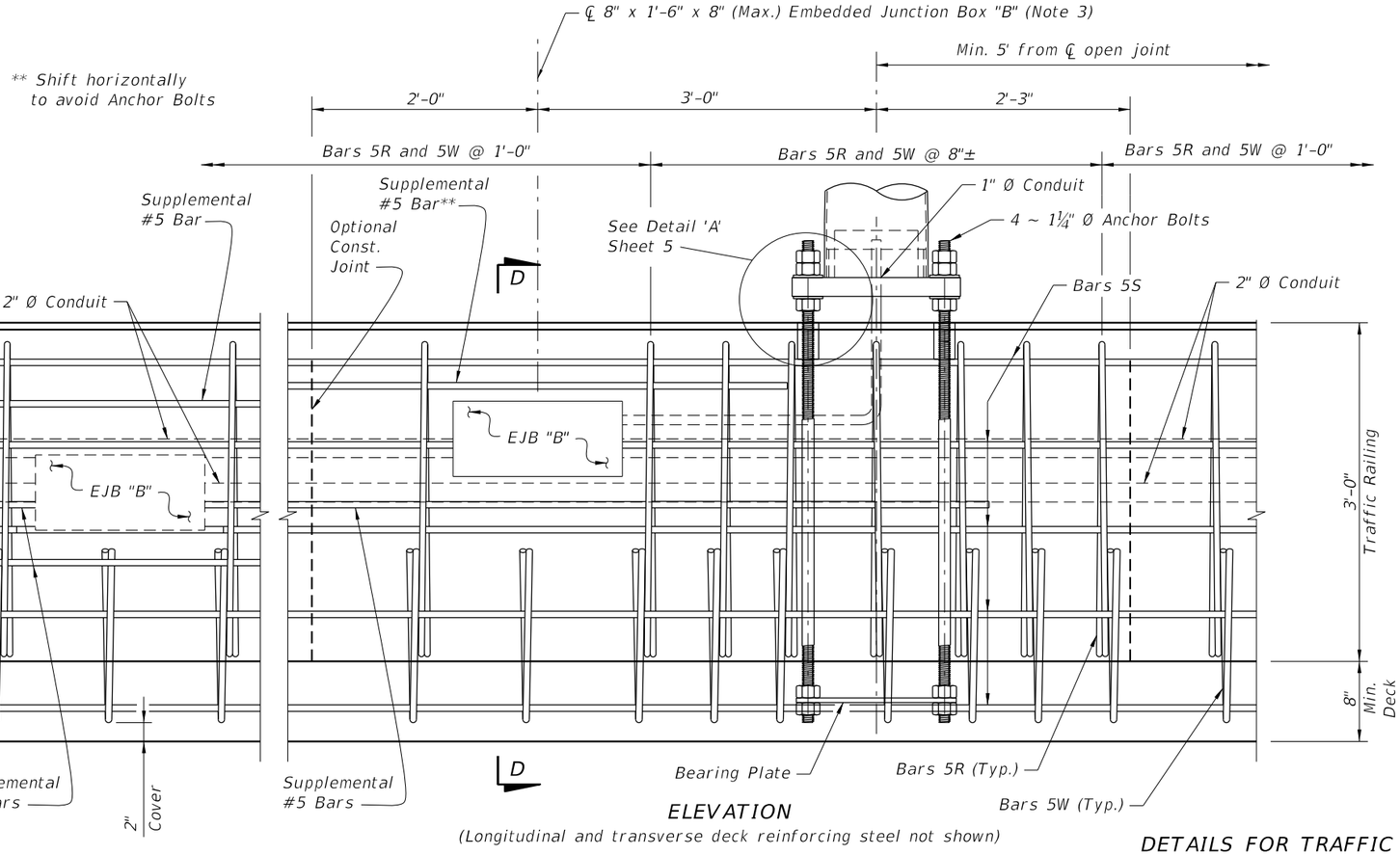
*At the Contractor's option, Bars 5W may be fabricated as a two piece bar with a 1'-2" lap splice at the bottom legs.



BAR 5W*

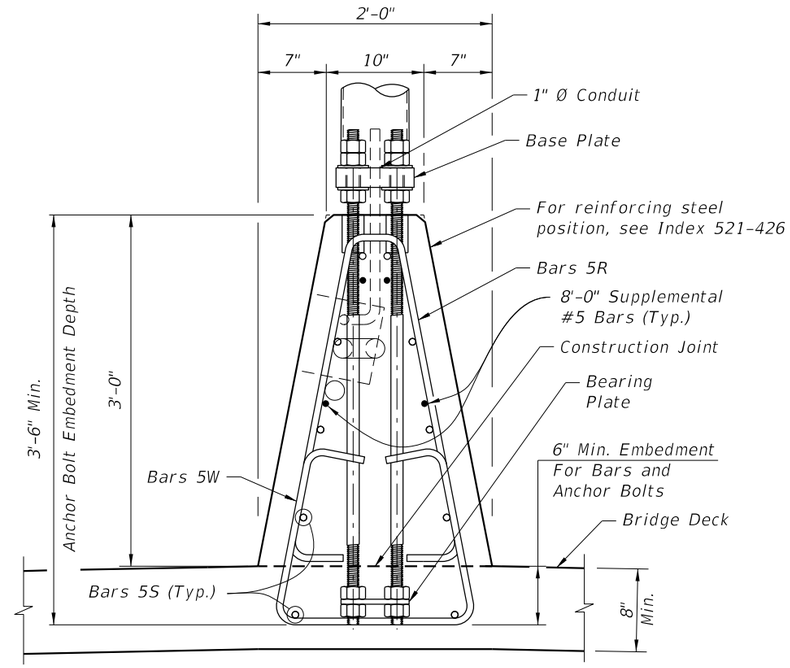


BAR 5R



ELEVATION

(Longitudinal and transverse deck reinforcing steel not shown)



SECTION D-D

(Longitudinal and transverse deck reinforcing steel not shown)

NOTES:

1. For Base Plate Details, Bearing Plate Details, and Detail 'A', see Sheet 5.
2. See Index 521-426 for details of adjacent Traffic Railing (Median 36" Single-Slope) and for angles ∅A and ∅B.
3. See Index 630-010 for Conduit, EJB and supplemental reinforcing details.

DETAILS FOR TRAFFIC RAILING (MEDIAN 36" SINGLE-SLOPE) MOUNTED ALUMINUM LIGHT POLE

HIGHMAST LIGHTING NOTES:

1. Poles are designed to support the following:
   A. One (1) cylindrical head assembly with a maximum effective projected area of 6 sf and 340 lbs (Max.)
   B. Eight (8) cylindrical luminaires with a maximum effective projected are of 1.5 sf and 77 lbs each.

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

3. High Mast Structure Materials:
   A. Poles and Backing Rings:
      a. Less than 3/16": ASTM A1011 Grade 50, 55, 60 or 65
      b. Greater than or equal to 3/16": ASTM A572 Grade 50, 55, 60 or 65
      c. ASTM A595 Grade 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
   B. Poles:
      a. Round or 16-sided (Min.)
      b. Taper pole diameter at 0.14 inches per foot
      c. Pole shaft may be up to three sections (using telescopic field splices)
      d. Circumferentially welded pole shafts and laminated pole shafts are not permitted
      e. Fabricate Pole longitudinal seam welds (2 maximum) with 60 percent minimum penetration or fusion welds except as follows:
         i. Use a 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

5. Coating:
   A. Galvanize Anchor Bolts, Nuts and Washers: ASTM F2329
   B. Hot Dip Galvanize all other steel items including plate washers: ASTM A123

6. Construction:
   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:

130 MPH
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.

150 MPH
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.

170 MPH
Brevard, Broward, Charlotte, Collier, Escambia, Indian River, Lee, Martin, Miami-Dade, Monroe, Palm Beach, Sarasota and St. Lucie Counties.

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STANDARD POLE DESIGN NOTES

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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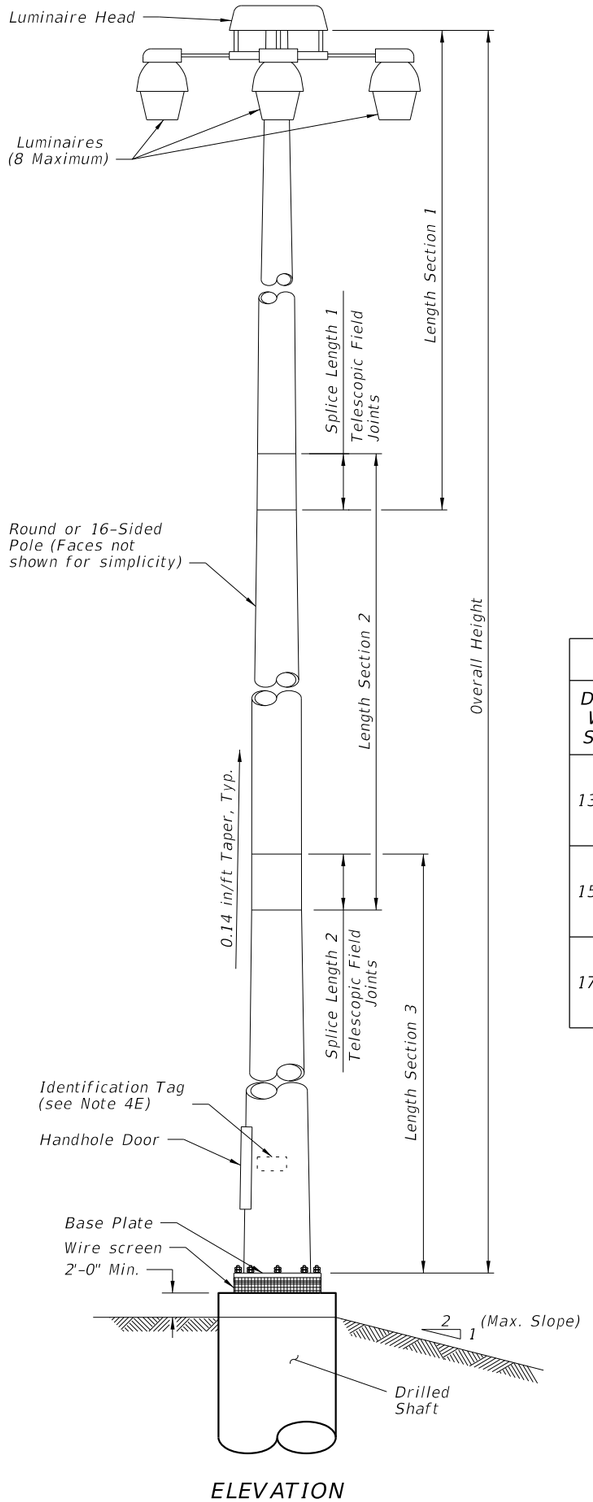

ELEVATION

POLE DESIGN TABLE*												
Design Wind Speed	Pole Overall Height (ft)	SECTION 1 (TOP)				SECTION 2				SECTION 3		
		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.)
130 mph	80	41'-0"	0.250	2'-0"	11	42'-0"	0.250	--	16	—	—	—
	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
150 mph	80	41'-0"	0.250	2'-0"	11	42'-0"	0.313	--	16	—	—	—
	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
170 mph	80	40'-0"	0.250	2'-3"	13	43'-0"	0.313	--	18	--	--	—
	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.)
130 mph	80	30.0	3.000	23.0	8	1.75	38
	100	34.0	3.000	27.0	8	1.75	42
	120	38.0	3.875	30.0	8	2.00	48
150 mph	80	30.0	3.000	23.0	8	1.75	43
	100	36.0	3.875	28.0	8	2.00	47
	120	44.0	3.875	35.0	8	2.25	52
170 mph	80	32.0	3.000	25.0	8	1.75	47
	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
130 mph	80	4'-0"	13'-0"	14-#11
	100	4'-6"	14'-0"	16-#11
	120	4'-6"	16'-0"	16-#11
150 mph	80	4'-0"	14'-0"	14-#11
	100	4'-6"	16'-0"	16-#11
	120	5'-0"	18'-0"	18-#11
170 mph	80	4'-6"	15'-0"	16-#11
	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.

ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE		
Ground Slope	4'-0" Shaft Diameter	5'-0" Shaft Diameter
1:5	3'-0"	4'-0"
1:4	4'-0"	5'-0"
1:3	5'-0"	6'-0"
1:2	7'-0"	9'-0"

POLE DESIGN TABLES

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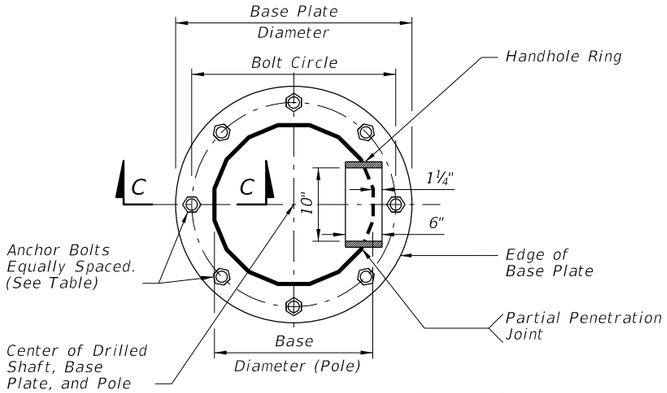
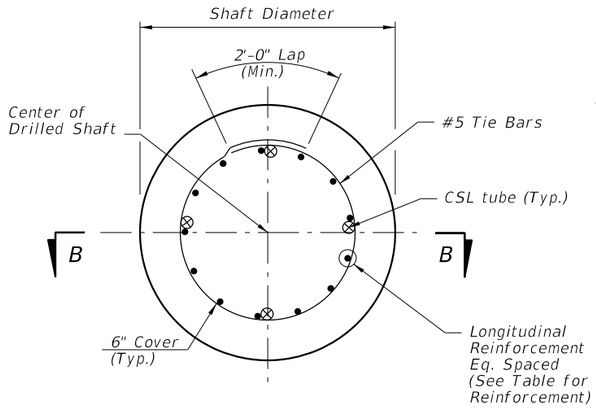
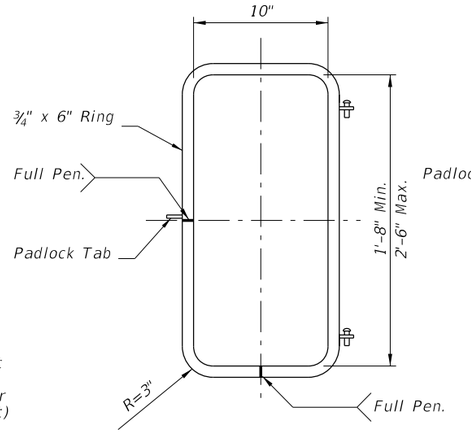


SECTION A-A

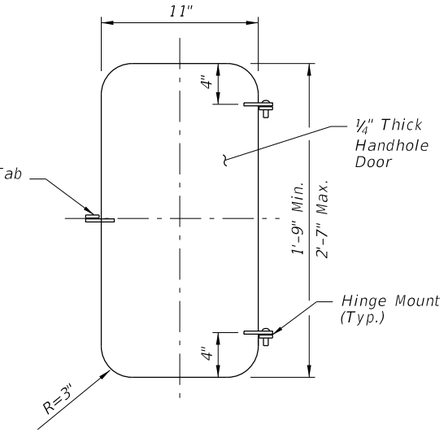


FOUNDATION PLAN

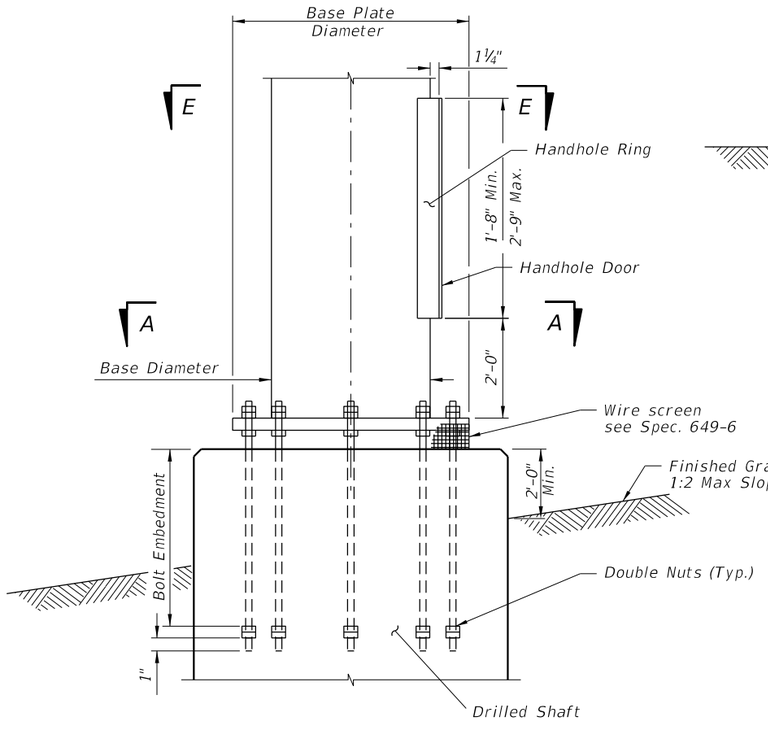
(Anchor Bolts and Conduits Not Shown)



HANDHOLE RING

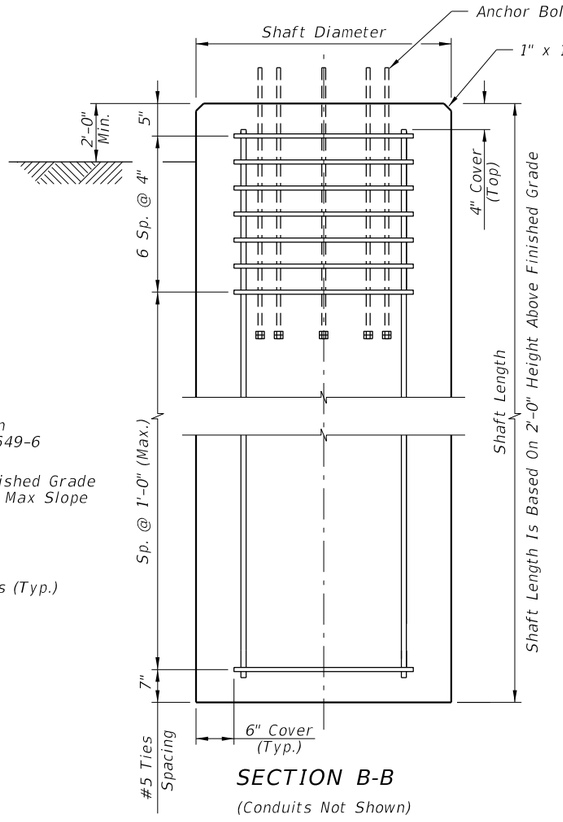


HANDHOLE DOOR



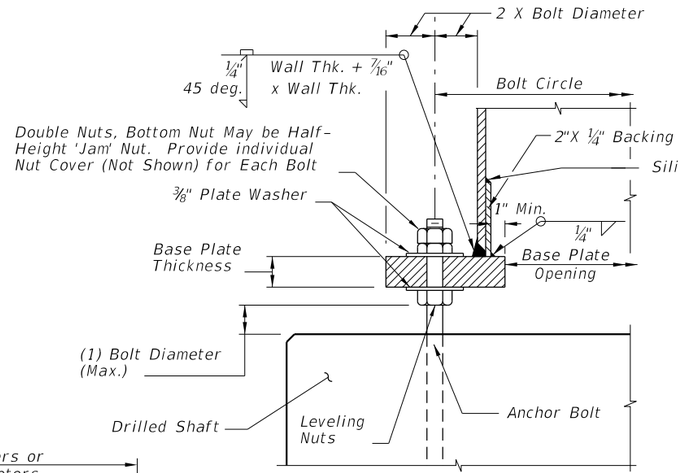
BASE PLATE AND ANCHORAGE ELEVATION

(Conduits Not Shown)

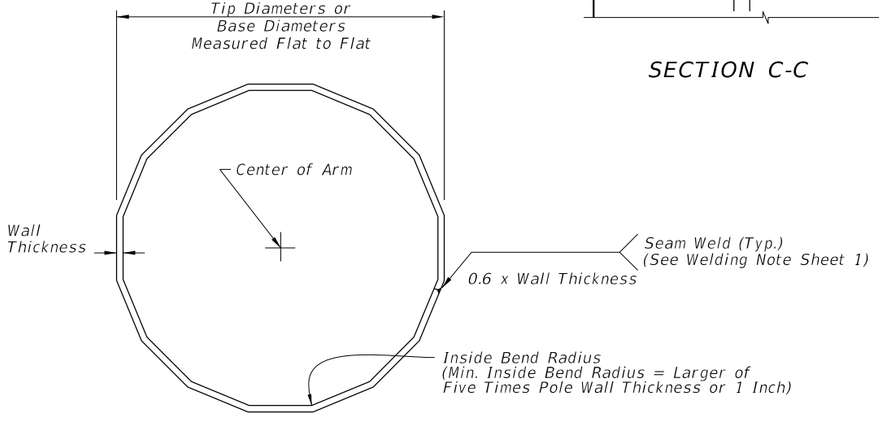


SECTION B-B

(Conduits Not Shown)



SECTION C-C



SECTION E-E

POLE FOUNDATION

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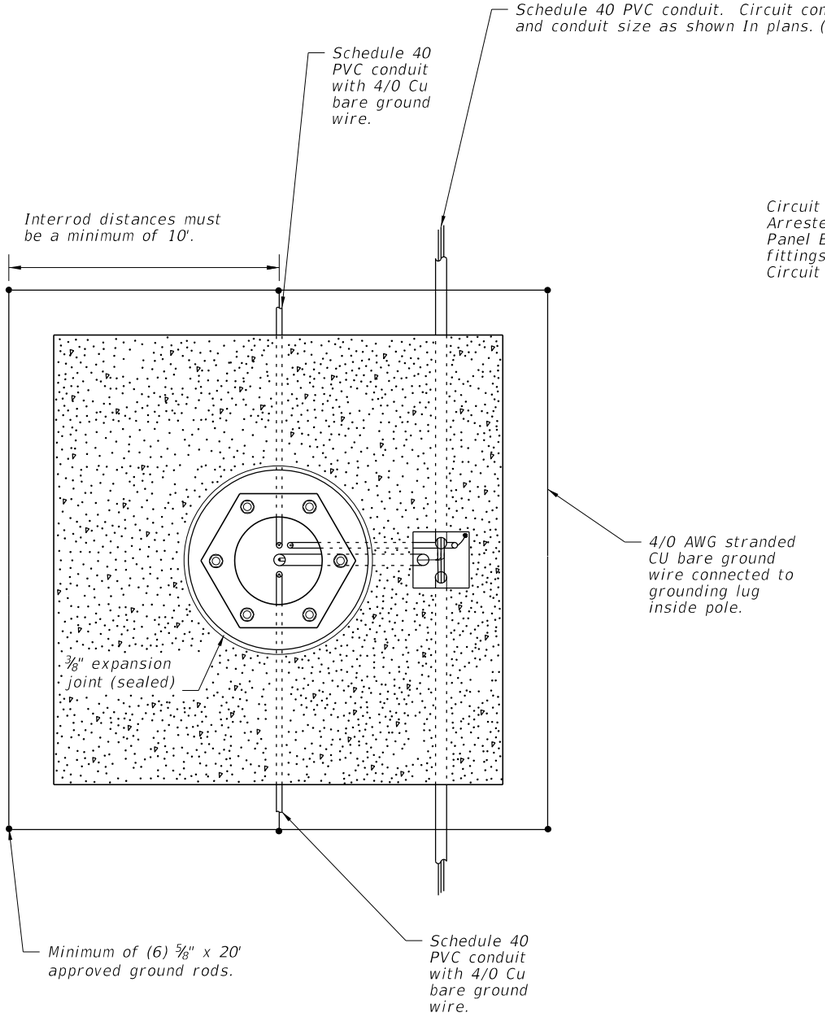

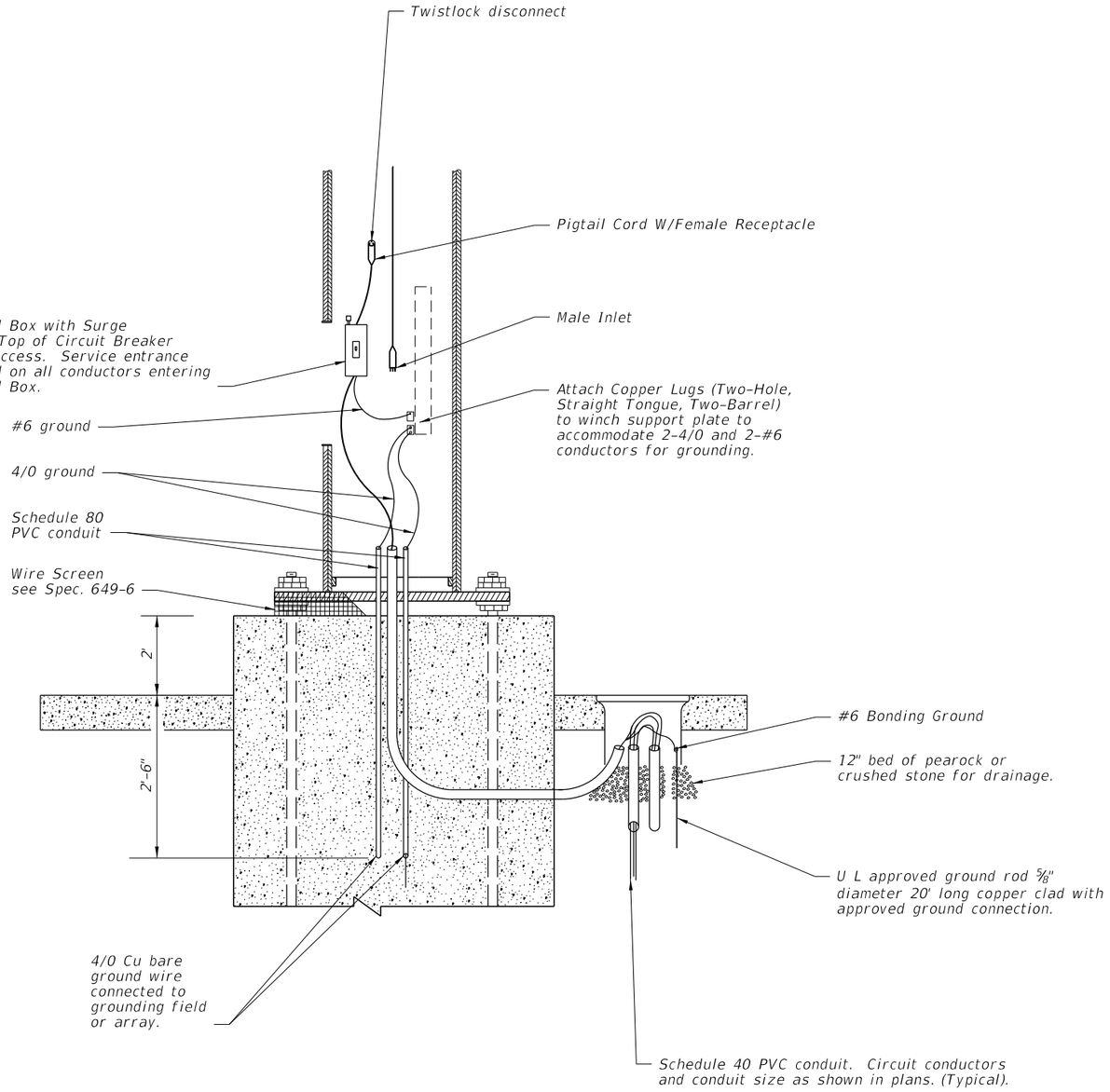

NOTES:

1. At all pull boxes and pole bases, ends of conduit shall be sealed in accordance with Specification 630.
2. Slabs to be placed around all Poles and Pull Boxes.
3. For Pull Boxes between Poles refer to Index 715-001.

WIRING DETAILS

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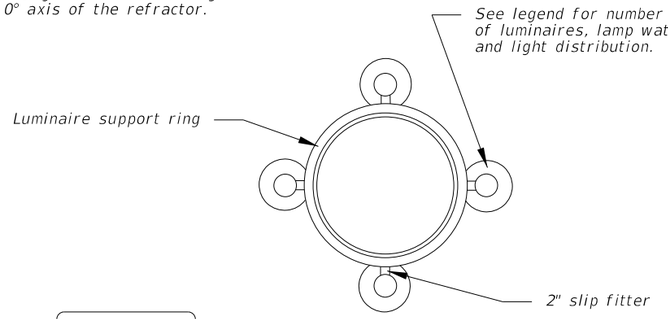
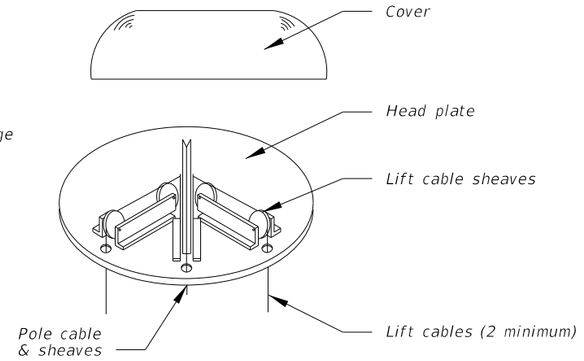
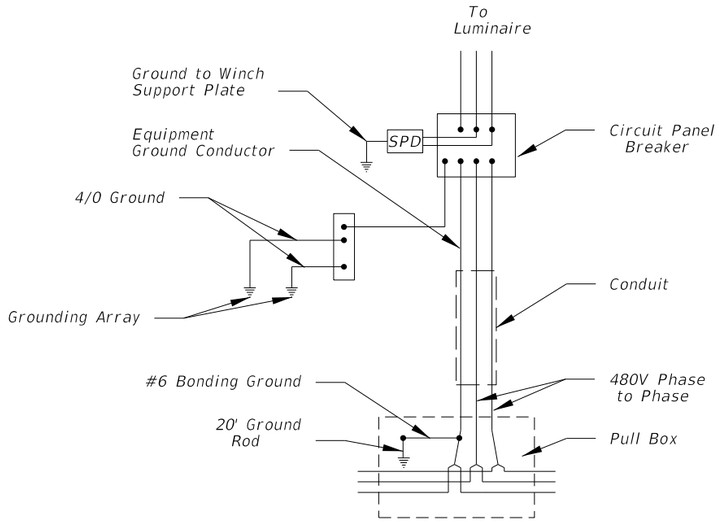
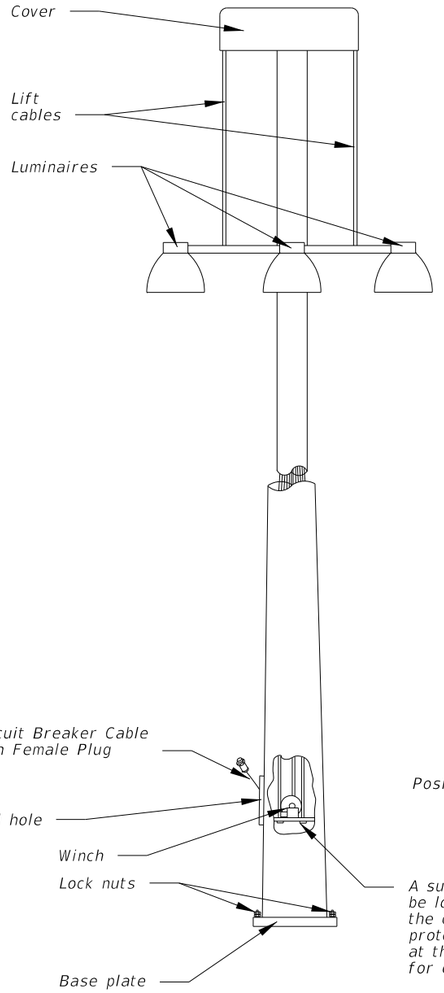
The contractor's attention is directed to those plan sheets detailing the mounting of luminaires at the pole top. Particular attention is directed to alignment of luminaire light distributions. Special attention must be exercised in the physical alignment of these luminaires to ensure that the approved photometric layout is physically produced at each lighting standard in the field. A marking shall be placed on the external face of the refractor to allow visual inspection of alignment. The marking shall correspond to the 0° axis of the refractor.

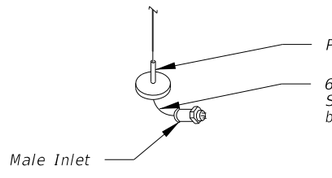


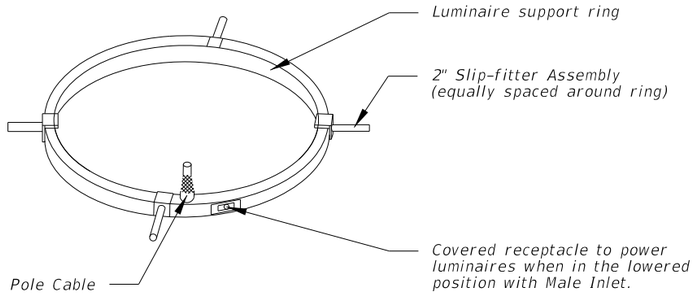


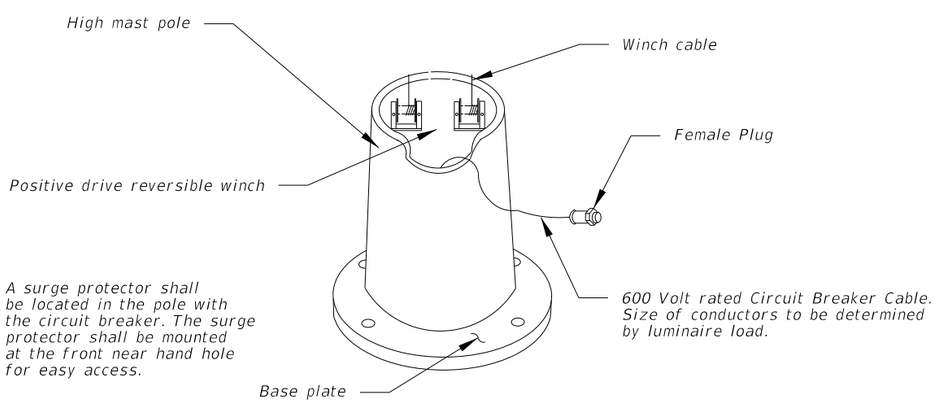


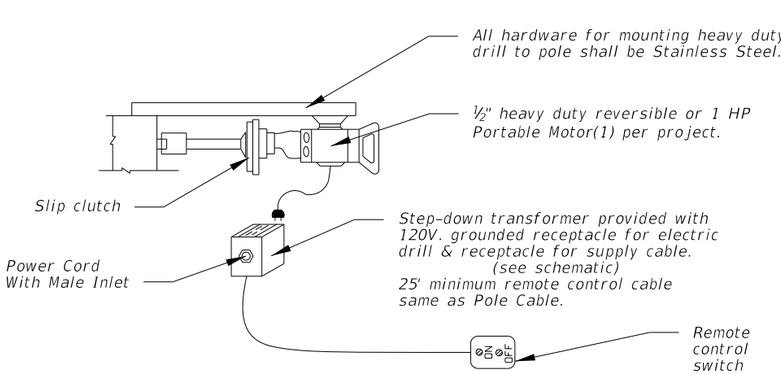
HIGH MAST POLE WIRING DIAGRAM

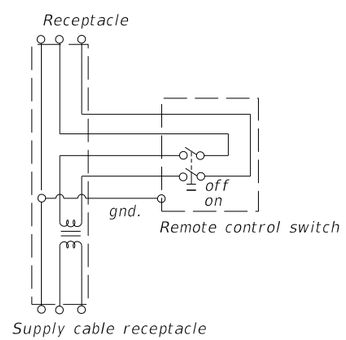












SCHEMATIC OF REMOTE AUXILIARY POWER UNIT

LOWERING DETAILS

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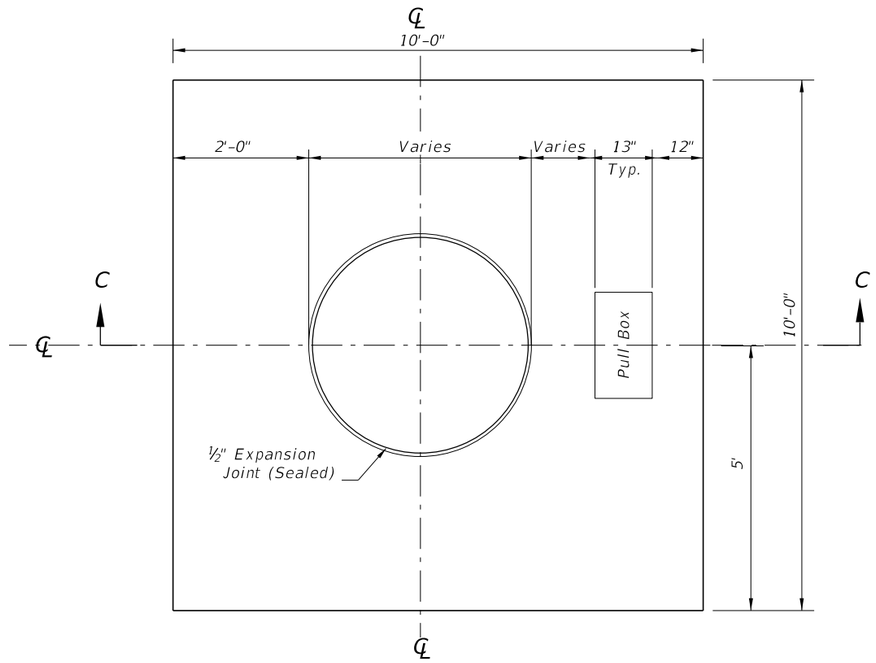
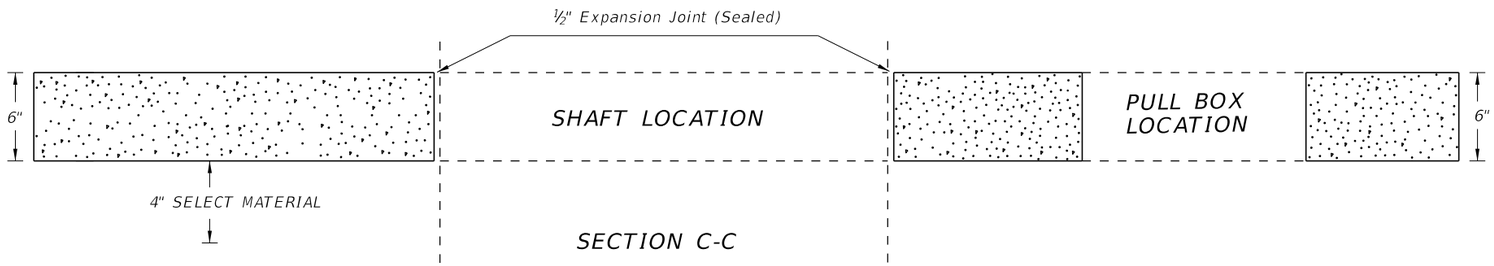
NOTES:

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 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



SLAB DETAILS

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CROSSING SURFACES	
Type	Definition
C	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.

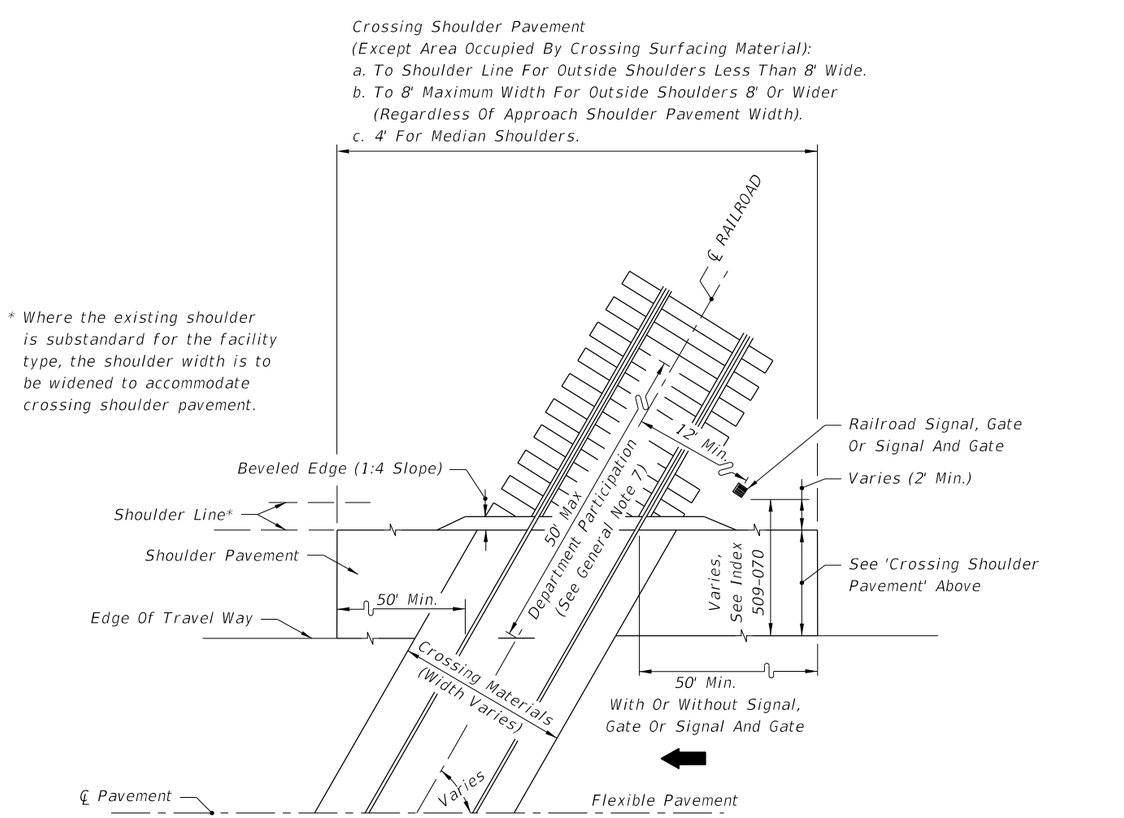
3. The Central Rail Office will maintain a list of currently used Railroad Crossing Products and will periodically distribute the current list to the District Offices as the list is updated.

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.

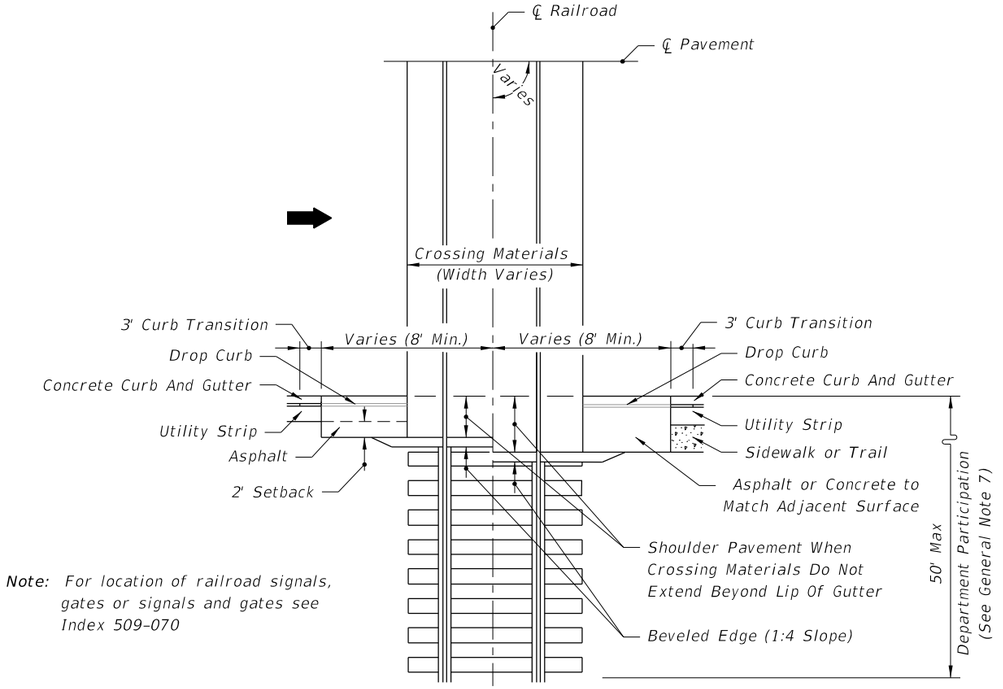
5. Sidewalks shall be constructed through the crossing between approach sidewalks of the crossing. Sidewalks shall be constructed with appropriate material to allow unobstructed travel through the crossing in accordance with ADA requirements.

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.

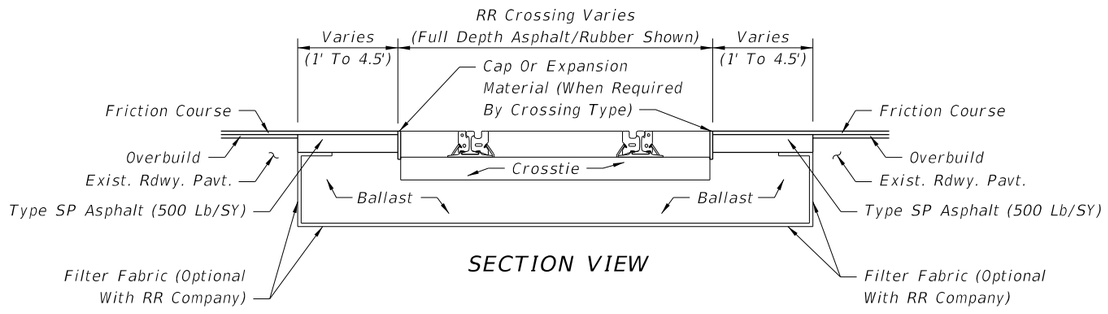


HALF PLAN
ROADWAYS WITH FLUSH SHOULDERS



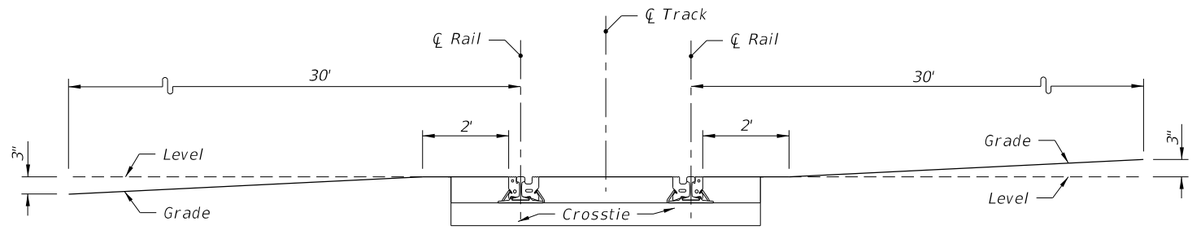
Note: For location of railroad signals, gates or signals and gates see Index 509-070

HALF PLAN
CURBED ROADWAYS



SECTION VIEW

TYPICAL CROSSING MATERIAL REPLACEMENT AT RR CROSSINGS



To prevent low-clearance vehicles from becoming caught on the tracks, the crossing surface should be at the same plane as the top of the rails for a distance of 2 feet outside the rails. The surface of the highway should also not be more than 3 inches higher or lower than the top of the nearest rail at a point 30 feet from the rail unless track superelevation makes a different level appropriate. Vertical curves should be used to traverse from the highway grade to a level plane at the elevation of the rails. Rails that are superelevated, or a roadway approach section that is not level, will necessitate a site specific analysis for rail clearances.

VERTICAL ROADWAY ALIGNMENT THROUGH A RAILROAD CROSSING

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LAST REVISION 11/01/19	REVISION	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	RAILROAD (GRADE) CROSSING	INDEX 830-T01	SHEET 2 of 2