

ORIGINATION FORM

Proposed Revisions to a Standard Plans Index
(Please provide all information – Incomplete forms will be returned)

Contact Information:

Date: May 7, 2018
Originator: Rick Jenkins
Phone: (850) 414-4355
Email: Rick.Jenkins@dot.state.fl.us

Standard Plans:

Index Number: 430-001
Sheet Number (s): 1-3 of 3
Index Title: Miscellaneous Drainage Details

Summary of the changes:

Reorganized Index, Added additional Sheets. Moved callout information to Notes.
Clarified Note 4 on new Sheet 3.

Commentary / Background:

Reorganized Details and Sheets to declutter Index. Moved information from detail callouts to Notes in order to decrease clutter of the drawing. Reworded Note 4 on new Sheet 3 to remove confusion on usage of concrete jackets.

Other Affected Offices / Documents: (Provide name of responsible personnel)

- | Yes | No | |
|--------------------------|-------------------------------------|-----------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other Standard Plans – |
| <input type="checkbox"/> | <input type="checkbox"/> | FDOT Design Manual – |
| <input type="checkbox"/> | <input type="checkbox"/> | Basis of Estimates Manual – |
| <input type="checkbox"/> | <input type="checkbox"/> | Standard Specifications – |
| <input type="checkbox"/> | <input type="checkbox"/> | Approved Product List – |
| <input type="checkbox"/> | <input type="checkbox"/> | Construction – |
| <input type="checkbox"/> | <input type="checkbox"/> | Maintenance – |

Origination Package Includes: (Email or hand deliver package to Derwood Sheppard)

- | Yes | N/A | |
|-------------------------------------|--------------------------|-------------------------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Redline Mark-ups |
| <input type="checkbox"/> | <input type="checkbox"/> | Proposed Standard Plan Instructions (SPI) |
| <input type="checkbox"/> | <input type="checkbox"/> | Revised SPI |
| <input type="checkbox"/> | <input type="checkbox"/> | Other Support Documents |

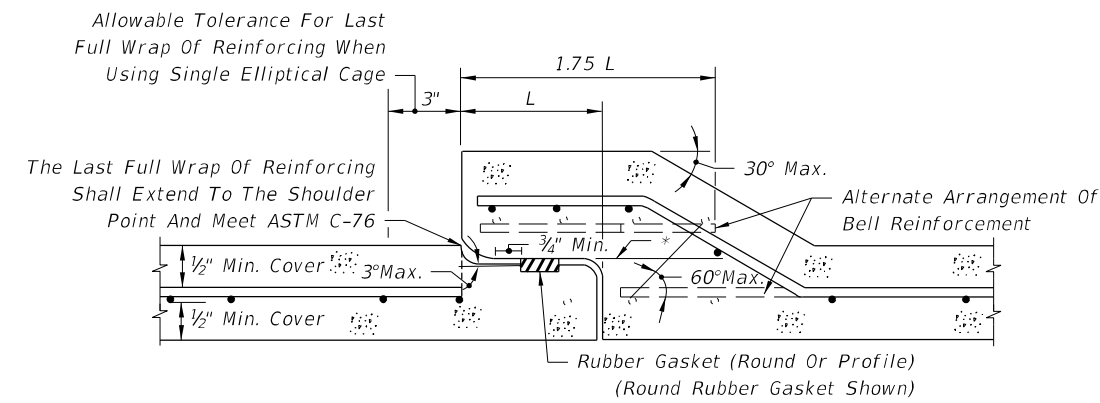
Implementation:

- Design Bulletin (Interim) DCE Memo Program Mgmt. Bulletin FY-Standard Plans (Next Release)

Contact the Roadway Design Office for assistance in completing this form

SCHEDULE OF BELL REINFORCEMENT
Classes II,III,IV,V; Wall A,B,C

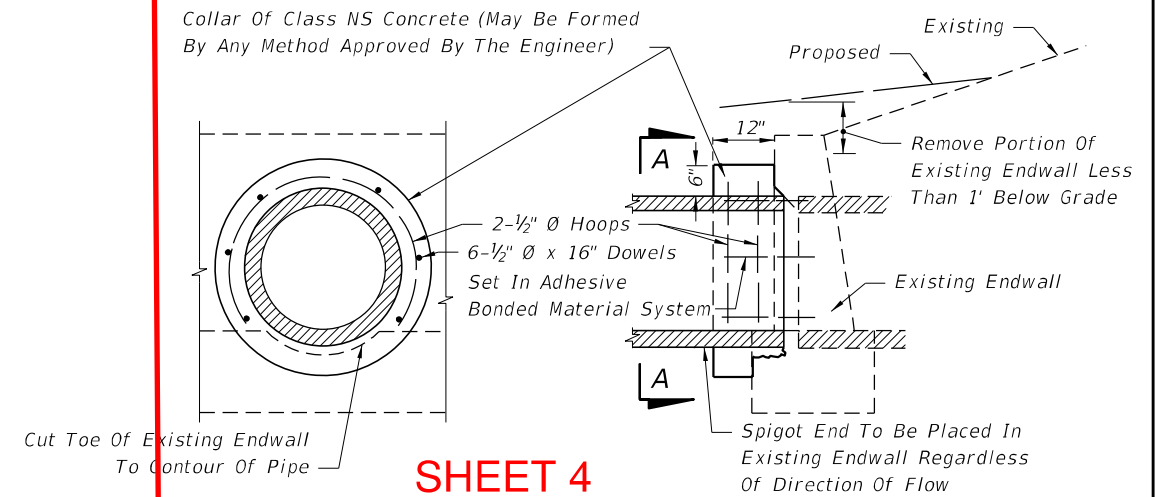
Nominal Pipe Diameter	Design Bell Reinforcement in ² per foot	Maximum Reinforcement Under Tolerance in ² per foot
15"	0.07	0.010
18"	0.07	0.010
24"	0.09	0.010
30"	0.12	0.010
36"	0.14	0.010
42"	0.16	0.010
48"	0.19	0.011
54"	0.21	0.012
60"	0.23	0.0135
66"	0.26	0.015
72"	0.28	0.0165
78"	0.30	0.018
84"	0.33	0.0195
90"	0.35	0.021
96"	0.37	0.0225
102"	0.40	0.024
108"	0.42	0.0255



SHEET 2

* All circumferential steel located above this line within 1.75 L is defined as bell reinforcement.

**ROUND RUBBER GASKET SHOWN
DETAIL OF BELL & SPIGOT CONCRETE PIPE JOINT
USING ROUND OR PROFILE RUBBER GASKET**



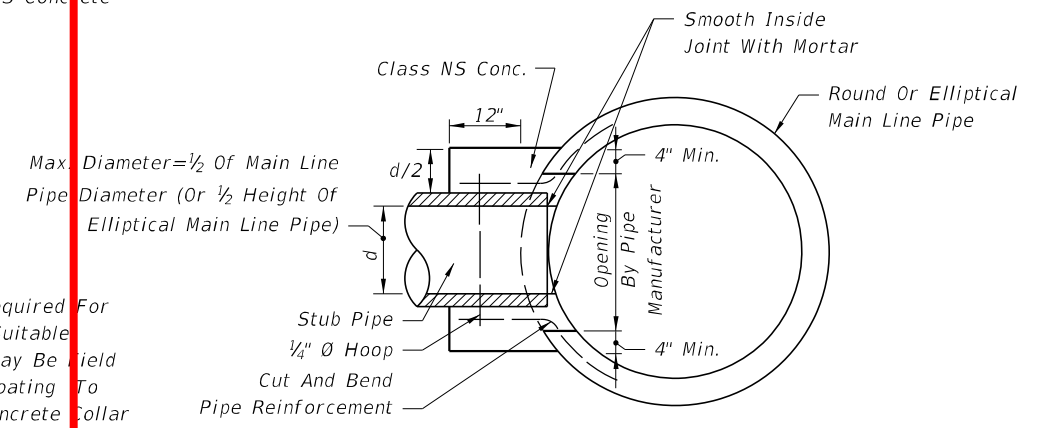
SHEET 4

SECTION AA

LONGITUDINAL SECTION

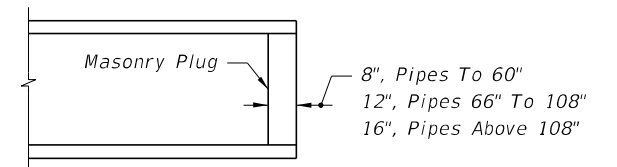
Note: Cost for removal and disposal of portions of top and toe of existing endwall and cost of concrete, reinforcing steel and construction of collar to be included in the contract unit price for pipe culvert.

**CONCRETE COLLAR FOR EXTENSION
OF EXISTING PIPE CULVERTS**



**CONCRETE COLLAR FOR JOINING
MAINLINE PIPE AND STUB PIPE**

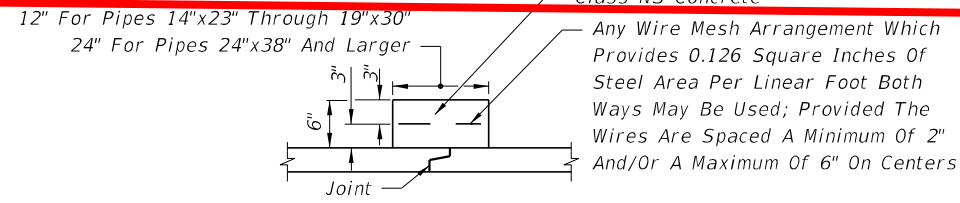
Cost of concrete and steel to be included in contract unit price for pipe culvert.



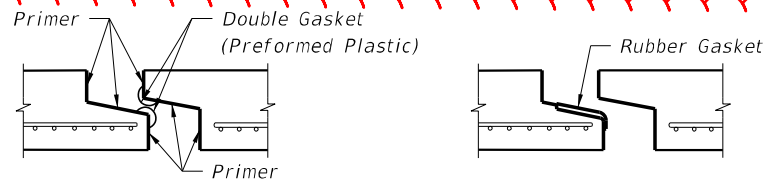
Note: Unless otherwise called for in the plans, the cost of plugging pipes to be included in contract unit price for new pipe.

PIPE PLUG

RENUMBERED



CONCRETE JACKET

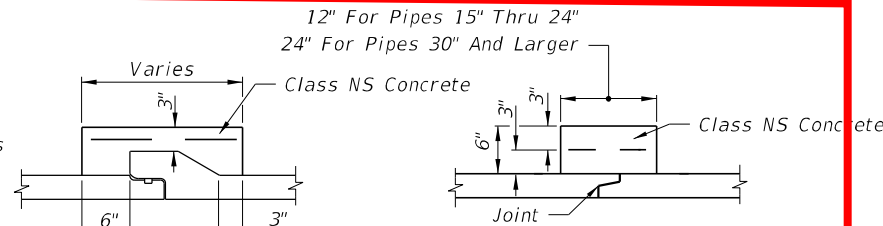


Filter Fabric Jacket Required
**PREFORMED PLASTIC JOINT
(BEFORE PULL-UP)**

Filter Fabric Jacket Required
**PROFILE RUBBER GASKET
(BEFORE PULL-UP)**

Cost of concrete jacket or filter fabric jacket to be included in cost of elliptical concrete pipe culverts.

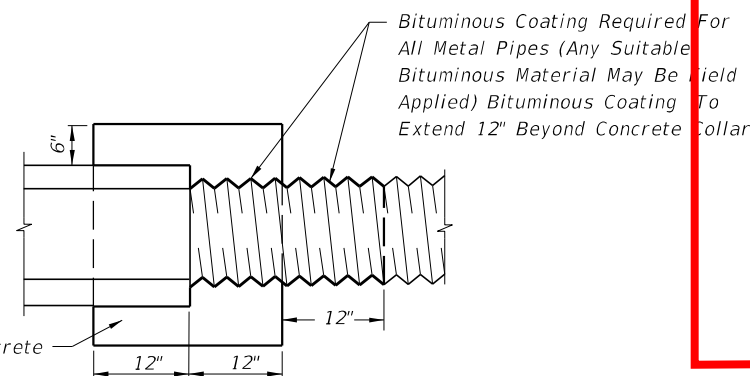
SHEET 2 ELLIPTICAL CONCRETE PIPE JOINTS



**BELL AND SPIGOT
DISSIMILAR JOINTS**

**TONGUE & GROOVE
DISSIMILAR JOINTS**

Note: For reinforcement see elliptical pipe concrete jacket. (All Pipe Sizes)



Note: Cost of concrete and bituminous coating to be included in contract unit price for either new pipe or Mitered End Section.

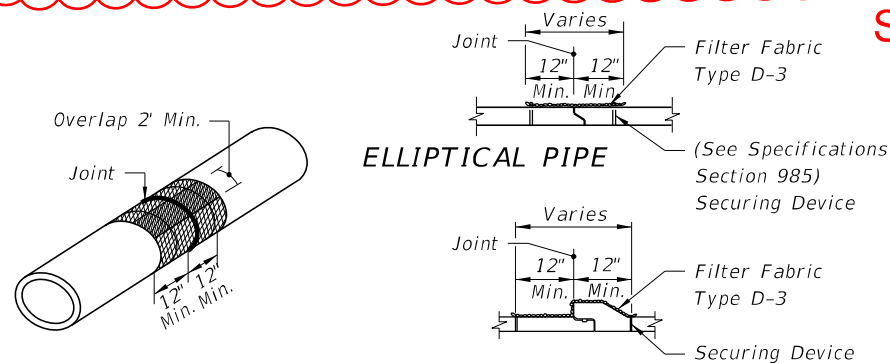
Alternate connection must be approved by the State Drainage Engineer.

Do not use a concrete jacket to join metal pipes of dissimilar materials.

CLARIFIED NOTE

DISSIMILAR TYPES

**CONCRETE JACKET FOR CONNECTING DISSIMILAR TYPES
OF PIPE AND CONCRETE PIPES WITH DISSIMILAR JOINTS**



**ELLIPTICAL PIPE SHOWN
ISOMETRIC VIEW**

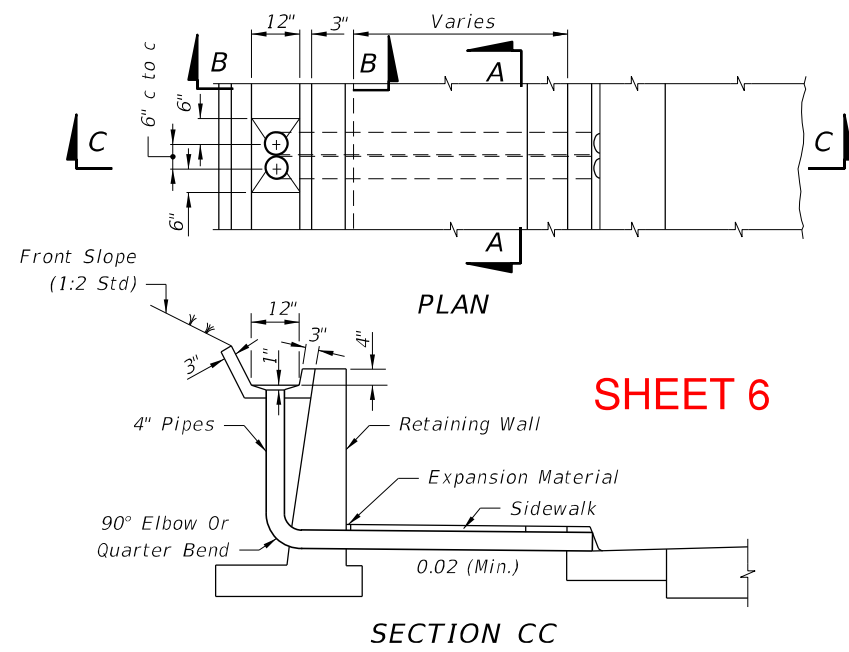
**ROUND PIPE
PIPE SECTIONS**

Cost of filter fabric jacket to be included in cost of pipe culverts.

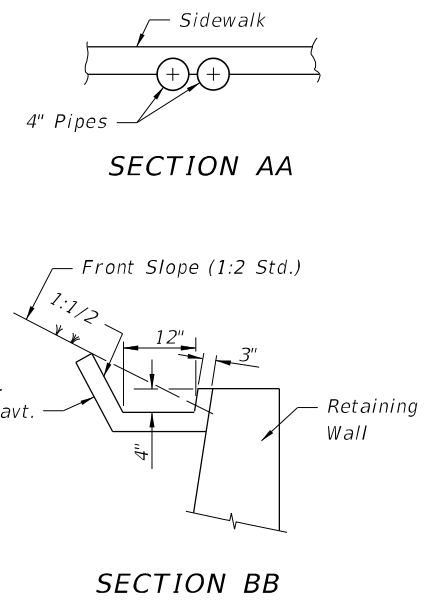
**FOR ALL PIPE TYPES - CONCRETE PIPE SHOWN
FILTER FABRIC JACKET**

10/30/2018 8:16:03 AM

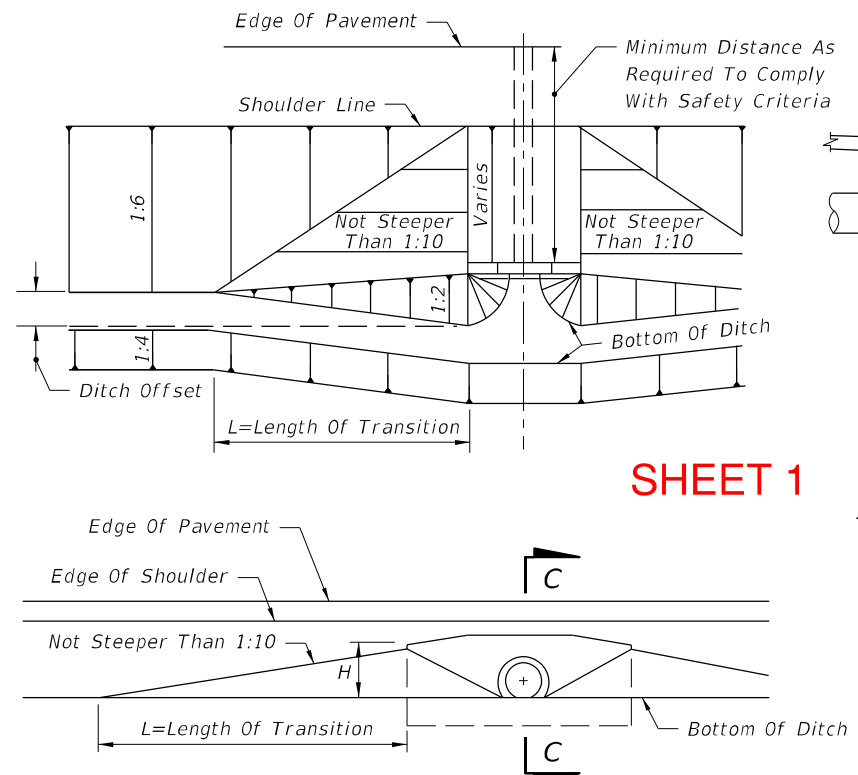
LAST REVISION	DESCRIPTION:
11/01/17	
11/01/19	



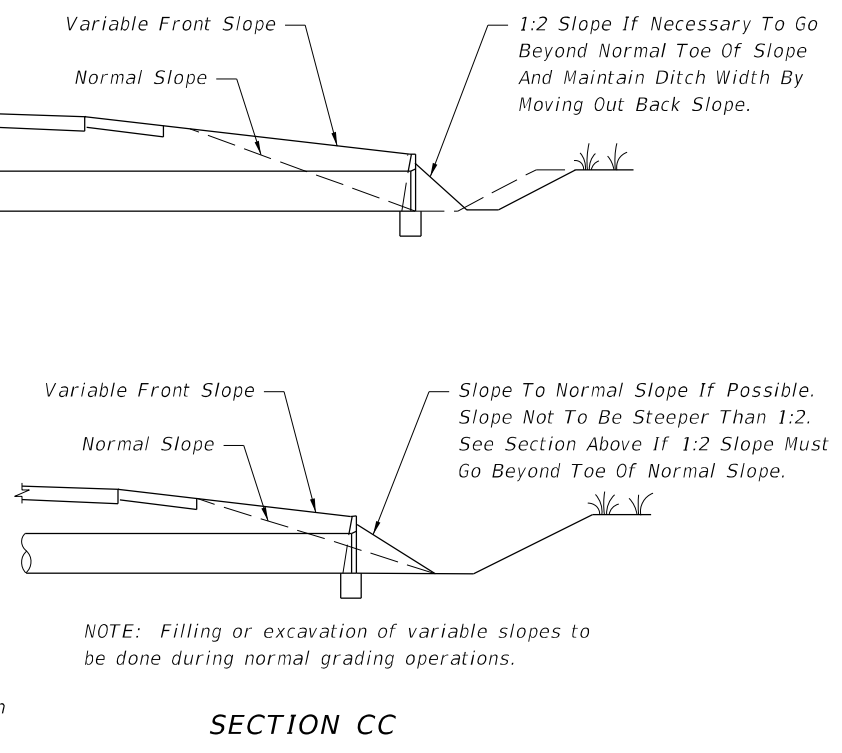
SHEET 6



Note: PVC pipe, Schedule 40, to be paid for under the contract unit price for Polyvinyl Chloride Pipe Culvert (4"), LF.
CONCRETE GUTTER AND DRAINS AT RETAINING WALLS

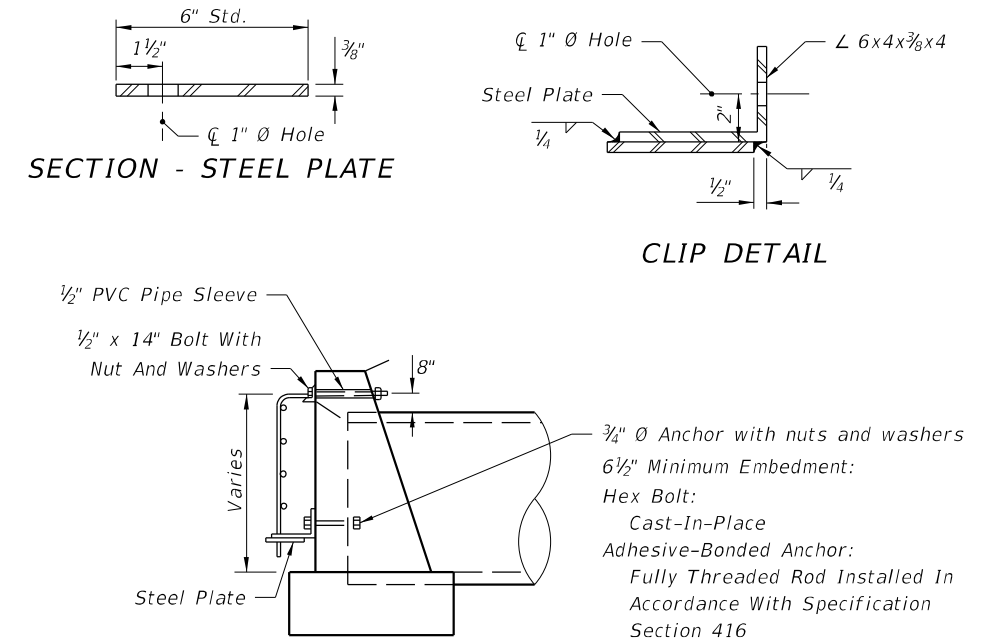


SHEET 1

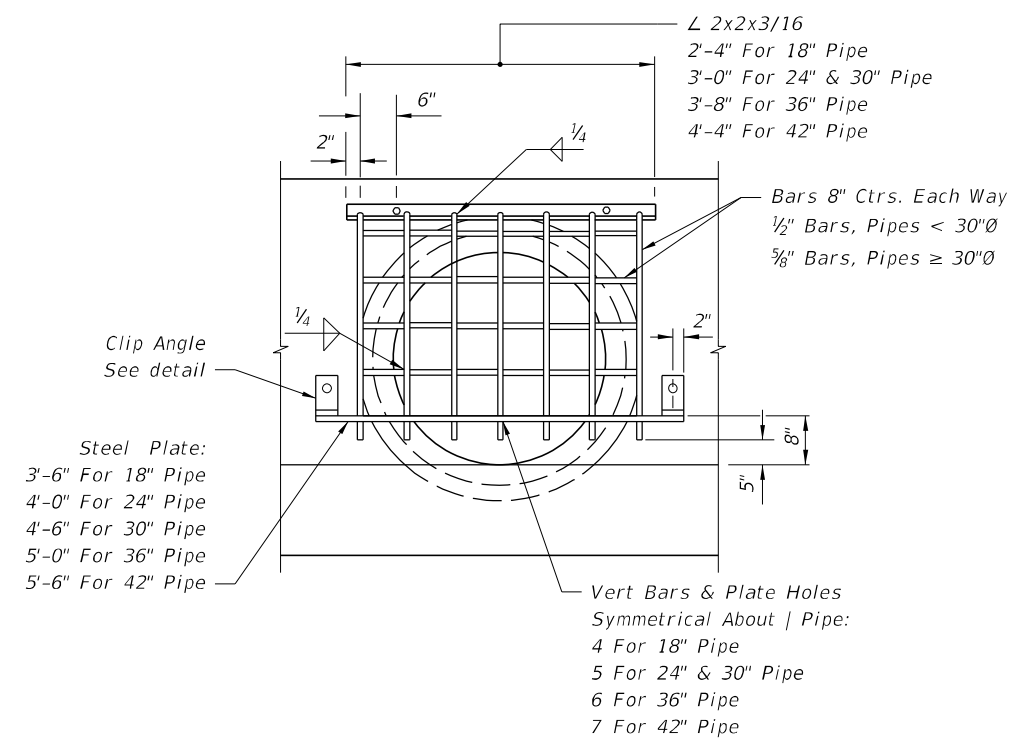
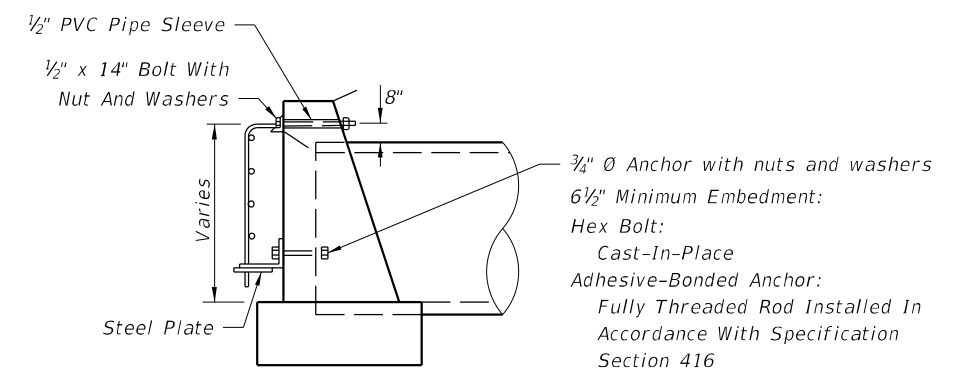


NOTE: Filling or excavation of variable slopes to be done during normal grading operations.

Use Larger Value Of Either:
 1. $L=10 \times H$ (No Maximum)
 2. $L=10 \times \text{Ditch Offset}$ (Maximum $L=100'$)
METHOD FOR SETTING LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES



SHEET 5



Pipe Dia.	18"	24"	30"	36"	42"
Grate (Lbs.)	48	58	74	90	111

Note: Guards to be constructed only at locations specifically called for in plans.

GUARD AT PIPE ENDS

RENUMBERED

10/30/2018 8:16:07 AM

LAST REVISION	DESCRIPTION:
11/01/19	

FDOT FY 2019-20 STANDARD PLANS

MISCELLANEOUS DRAINAGE DETAILS

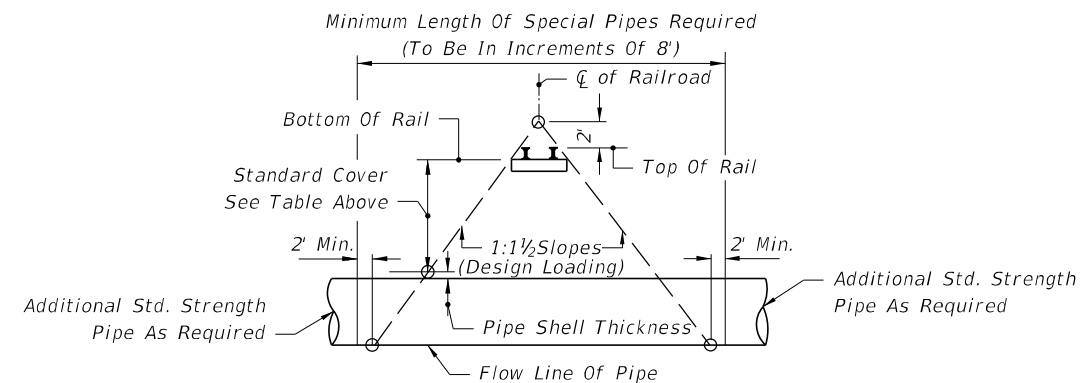
INDEX	SHEET
430-001	2 of 3

RAILROAD COMPANY	CLEARANCE BELOW BOTTOM OF RAIL (FEET) ⁽²⁾	STRENGTH
		ASTM (C76) CLASS
Alabama & Gulf Coast Railway (Rail America)	5.5	IV
AN Railway & Bay Line Railroad (Genesee & Wyoming)	5.5 / 4.5 ⁽¹⁾	V
CSX Transportation	5.5	V
First Coast Railroad (Genesee & Wyoming)	5.5 / 4.5 ⁽¹⁾	V
Florida Midland, Central, and Northern Railroads (Pinsly Railroad)	5.5	V
Florida East Coast (FEC) Railway Company	5.5	IV
Florida West Coast Railroad Company	5.5	V
Georgia & Florida Railway, Inc.	5.5	V
Norfolk Southern (NS) Railway Corporation	5.5 / 4.5 ⁽¹⁾	V
Port of Palm Beach District Railroad	5.5	IV
Seminole Gulf Railway (LP)	6.0	V
South Central Florida Express	6.0	V
Talleyrand Terminal Railroad (Genesee & Wyoming)	5.5 / 4.5 ⁽¹⁾	V
South Florida Regional Transportation Authority (Tri-County Commuter Rail)	5.5	V

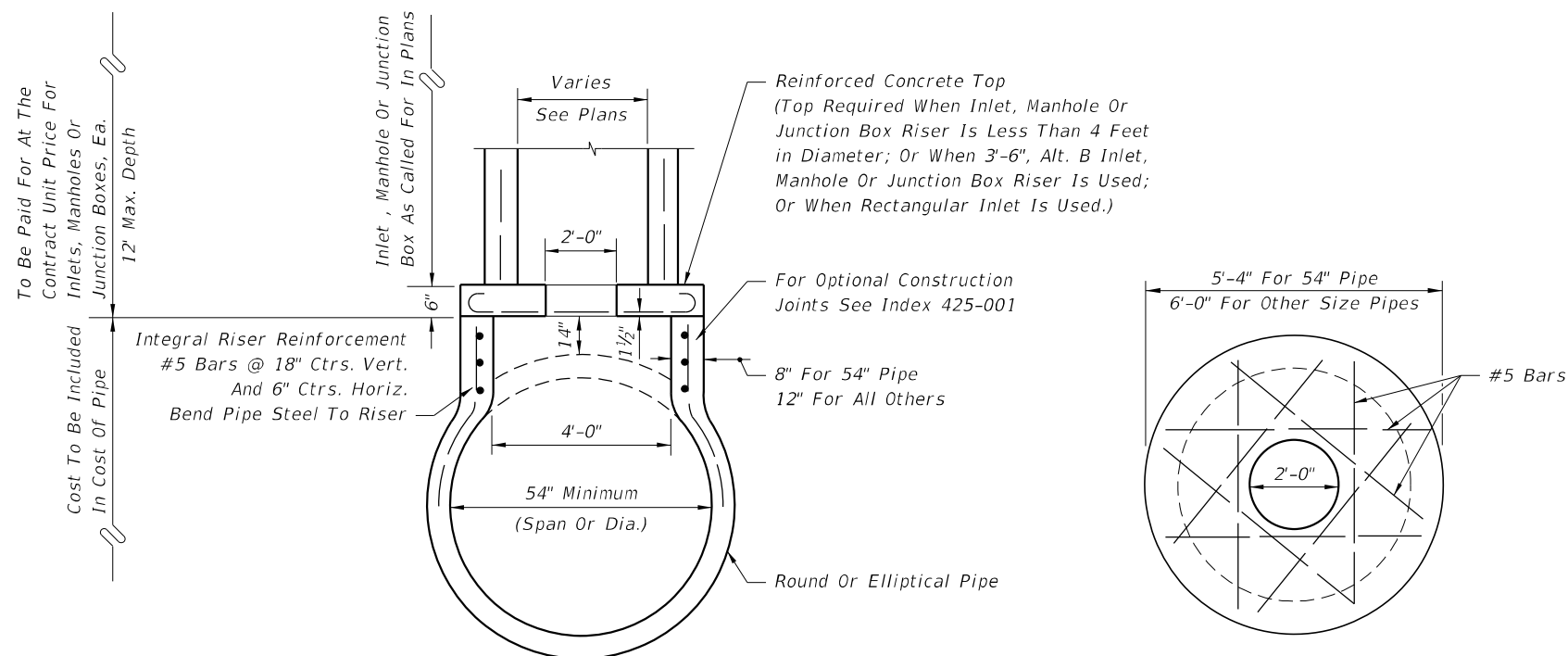
(1) - Distance standard for yard and industrial tracks.

(2) - Clearance is for casing pipe. All subgrade carrier pipelines and wirelines will be installed within a casing pipe which will extend from Right-of-Way line to Right-of-Way line.

Moved to Drainage Manual



METHOD FOR DETERMINING THE LENGTH OF SPECIAL PIPE REQUIRED UNDER RAILROADS



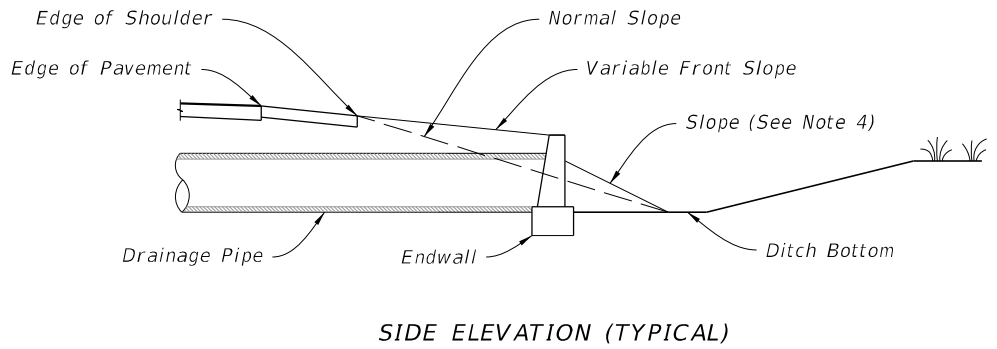
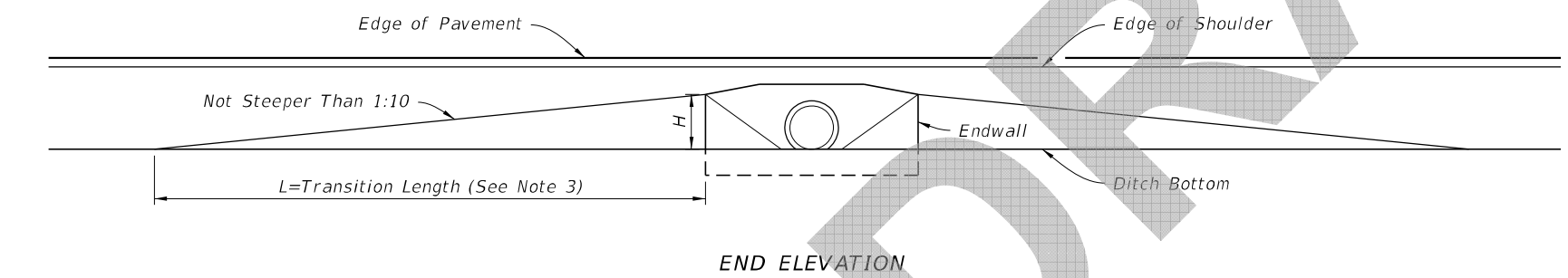
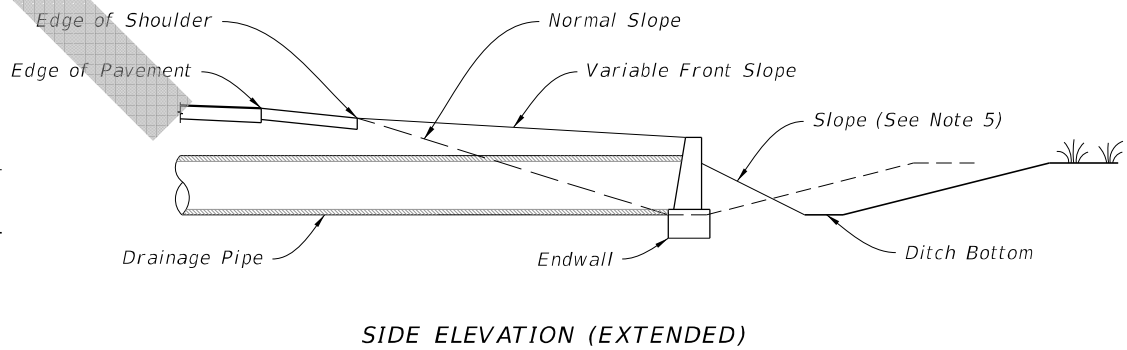
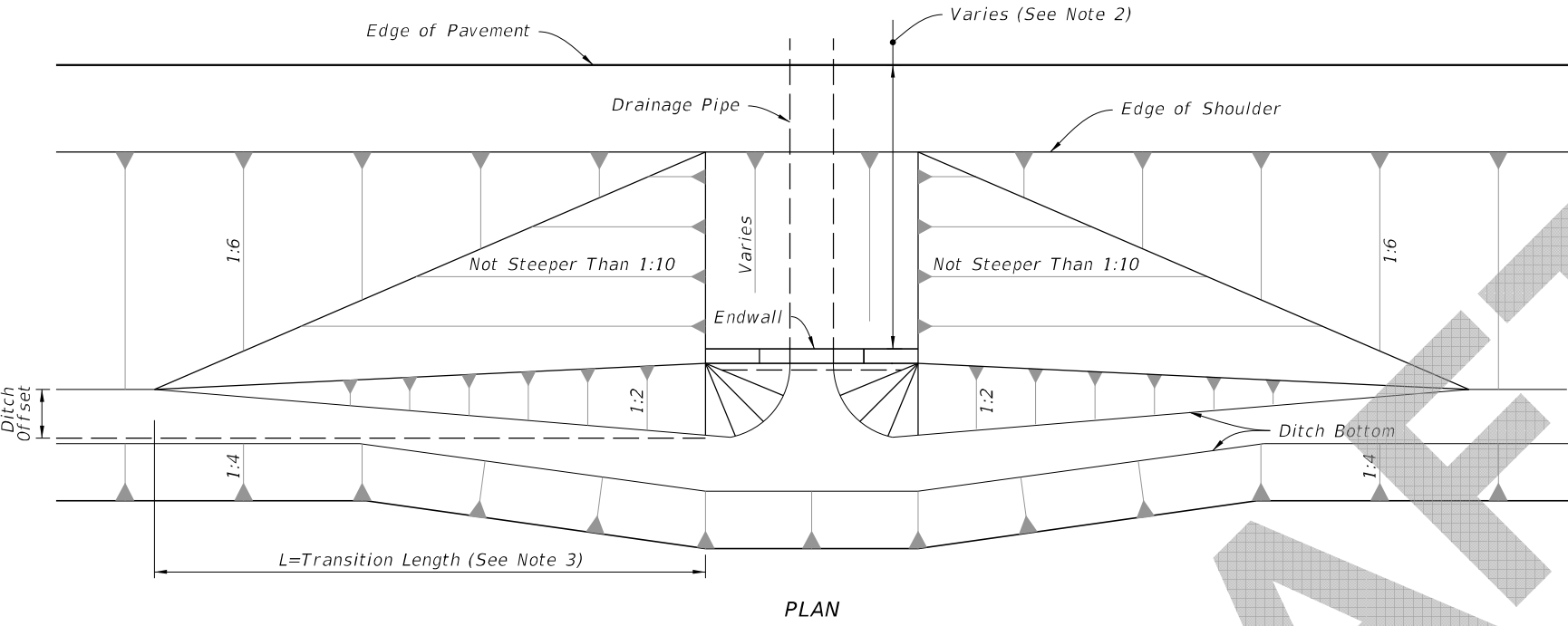
Deleted Detail. Designers can use standard Junction Box.

INLETS, MANHOLES OR JUNCTION BOXES ON INTEGRAL PRECAST CONCRETE RISER FOR CONCRETE PIPE

10/30/2018 8:16:16 AM

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:
 $L=10 \times H$ (No Maximum)
 $L=10 \times \text{Ditch Offset}$ (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.



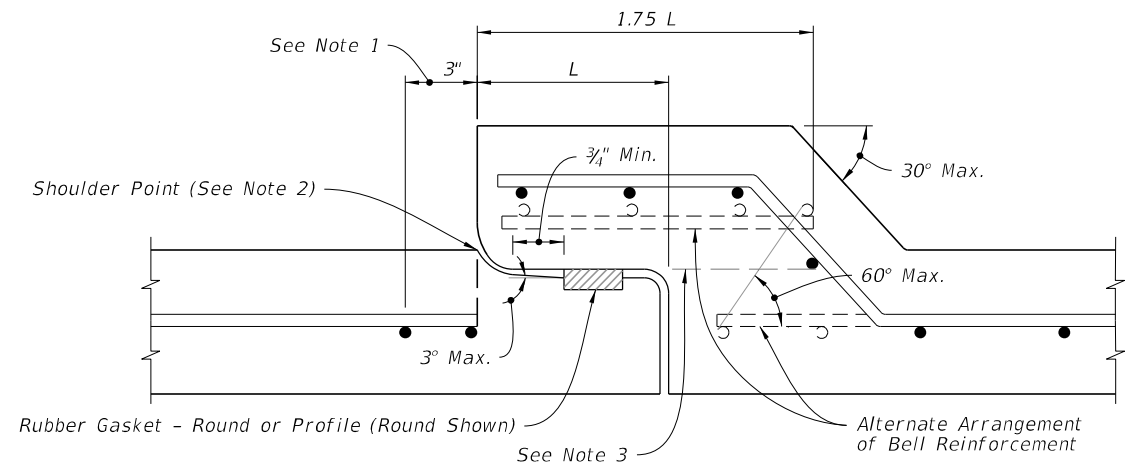
FRONT SLOPES AT DRAINAGE STRUCTURES

TABLE OF CONTENTS:

Sheet	Description
1	Limits of Variable Front Slopes at Drainage Structures
2	Round and Elliptical Concrete Pipe Joint
3	Filter Fabric Jacket, Concrete Jacket, and Pipe Plug
4	Concrete Collars
5	Pipe End Guard
6	Retaining Wall Concrete Gutter and Drains

LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES

8/12/2019 2:22:33 PM

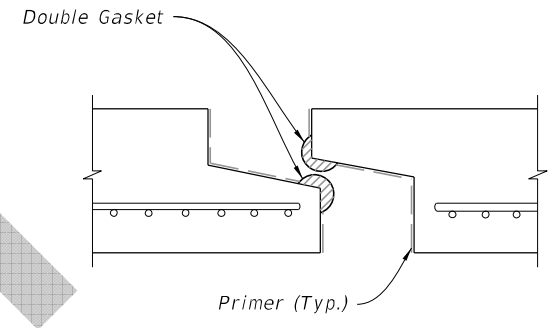


SCHEDULE OF BELL REINFORCEMENT
Classes II,III,IV,V; Wall A,B,C

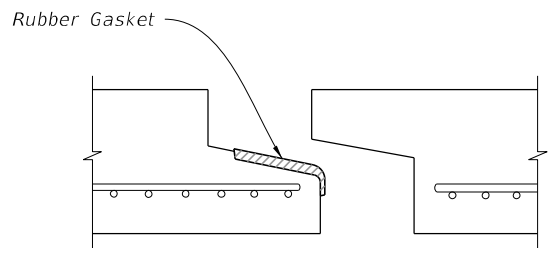
Nominal Pipe Diameter	Design Bell Reinforcement	Maximum Reinforcement Under Tolerance
	in ² per foot	in ² per foot
15"	0.07	0.010
18"	0.07	0.010
24"	0.09	0.010
30"	0.12	0.010
36"	0.14	0.010
42"	0.16	0.010
48"	0.19	0.011
54"	0.21	0.012
60"	0.23	0.0135
66"	0.26	0.015
72"	0.28	0.0165
78"	0.30	0.018
84"	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



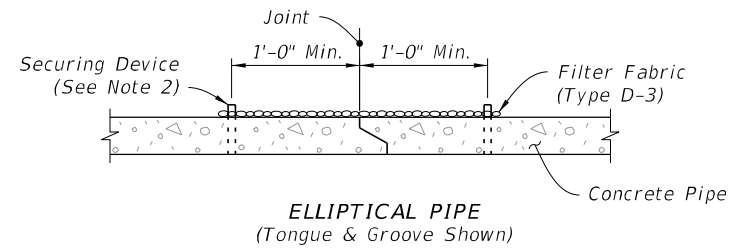
PROFILE RUBBER GASKET

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

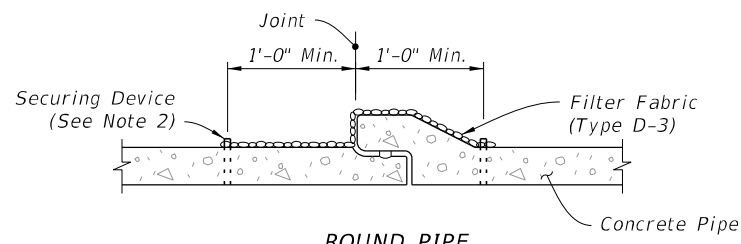
ELLIPTICAL CONCRETE PIPE JOINT DETAIL

ROUND AND ELLIPTICAL CONCRETE PIPE JOINT

8/12/2019 2:22:33 PM

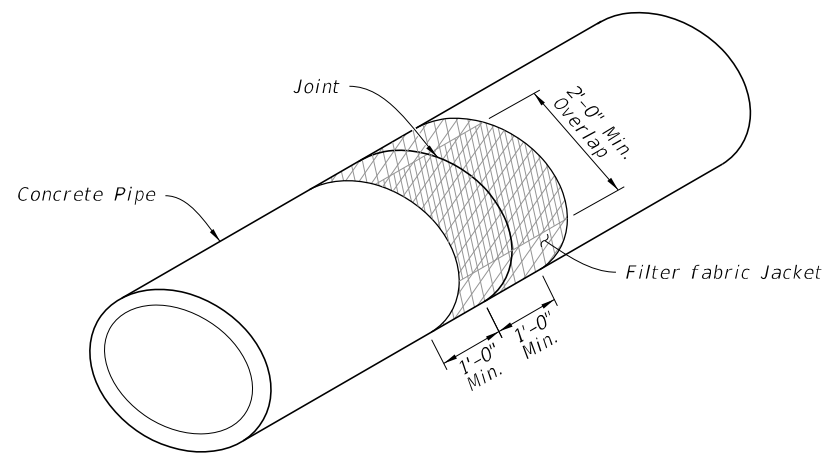


ELLIPTICAL PIPE
(Tongue & Groove Shown)



ROUND PIPE
(Bell & Spigot Shown)

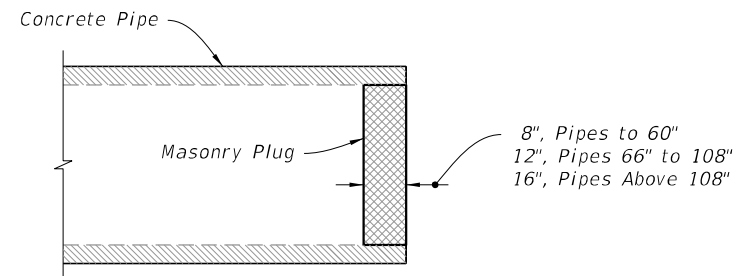
SECTION VIEW



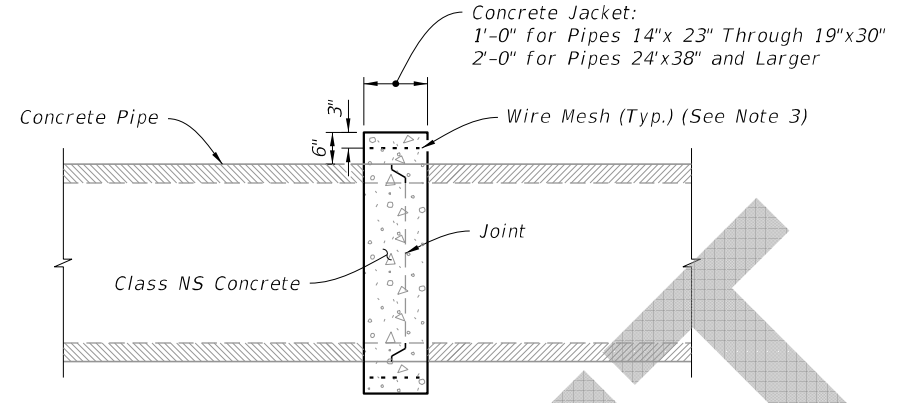
ISOMETRIC VIEW

FILTER FABRIC JACKET

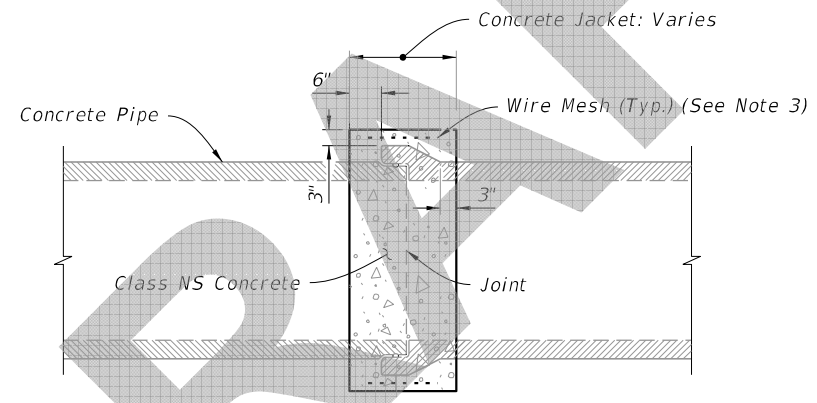
(For All Pipe Types - Concrete Elliptical Pipe Shown)



PIPE PLUG



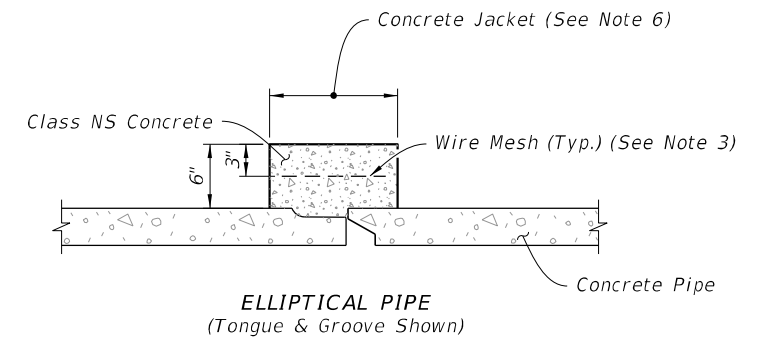
ELLIPTICAL PIPE



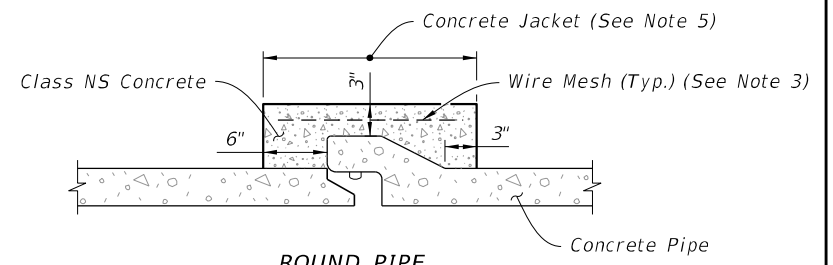
ROUND PIPE

SIMILAR TYPES

(Only When Called For In The Plans)

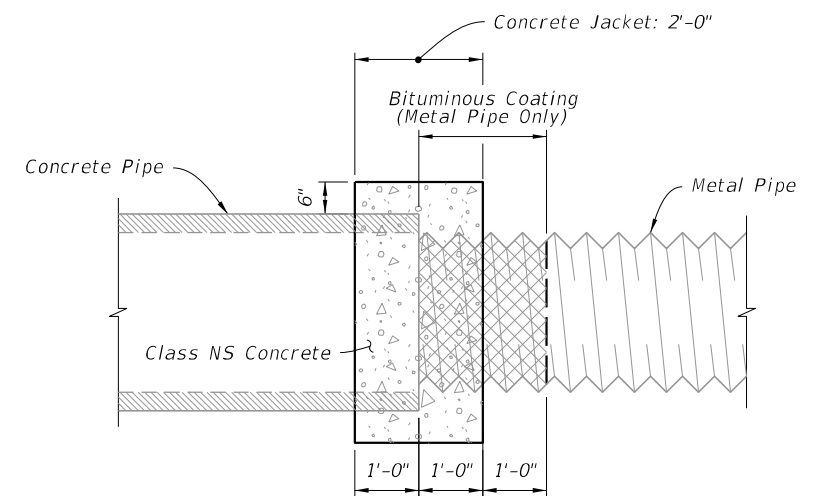


ELLIPTICAL PIPE
(Tongue & Groove Shown)



ROUND PIPE
(Bell & Spigot Shown)

DISSIMILAR JOINTS



CONCRETE AND METAL PIPE SHOWN
(Others Similar)

DISSIMILAR TYPES

CONCRETE JACKET

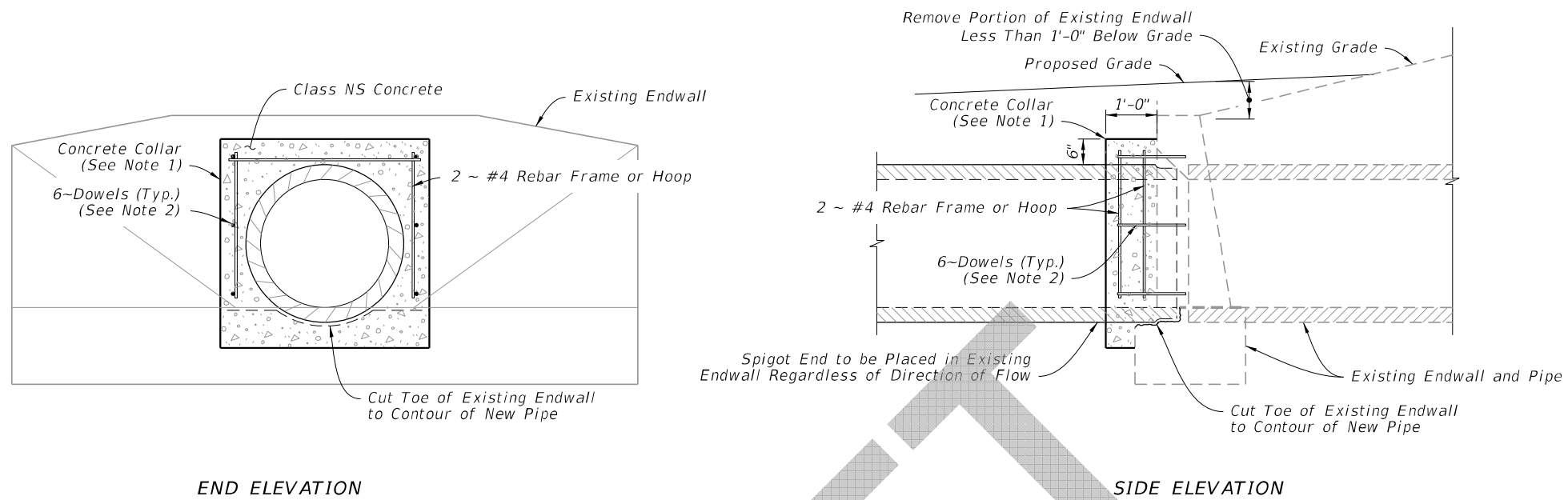
NOTES:

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.

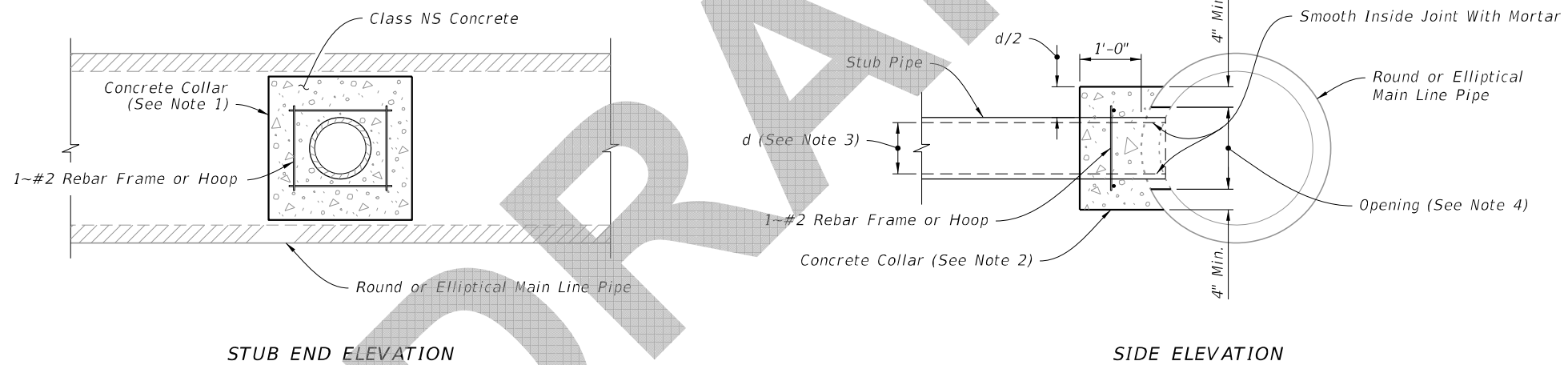
FILTER FABRIC JACKET, CONCRETE JACKET, AND PIPE PLUG

8/12/2019 2:22:34 PM

LAST REVISION 11/01/19	DESCRIPTION:	FDOT FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX 430-001	SHEET 3 of 6
---------------------------	--------------	--------------------------------------	--------------------------------	------------------	-----------------



EXTENSION OF EXISTING PIPE CULVERTS




JOINING MAINLINE PIPE TO STUB PIPE

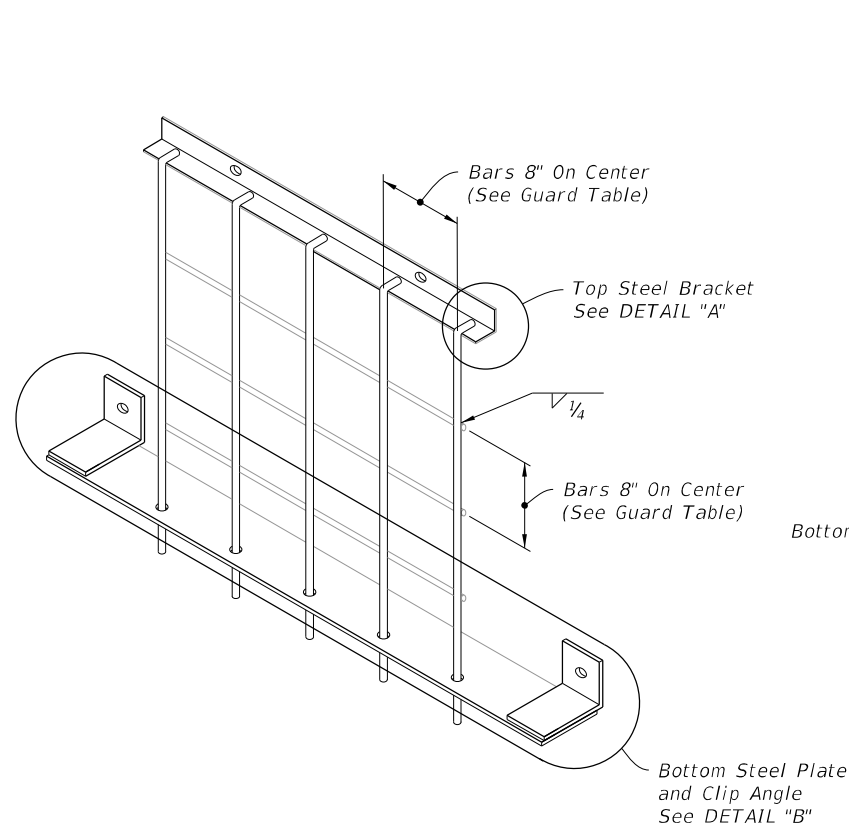
NOTES:

1. The collar may be formed by any method approved by the Engineer.
2. Install 1/2"x16" dowels in adhesive bond material.
3. Stub Pipes maximum diameter: 1/2 of a round main line pipe diameter, or 1/2 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.

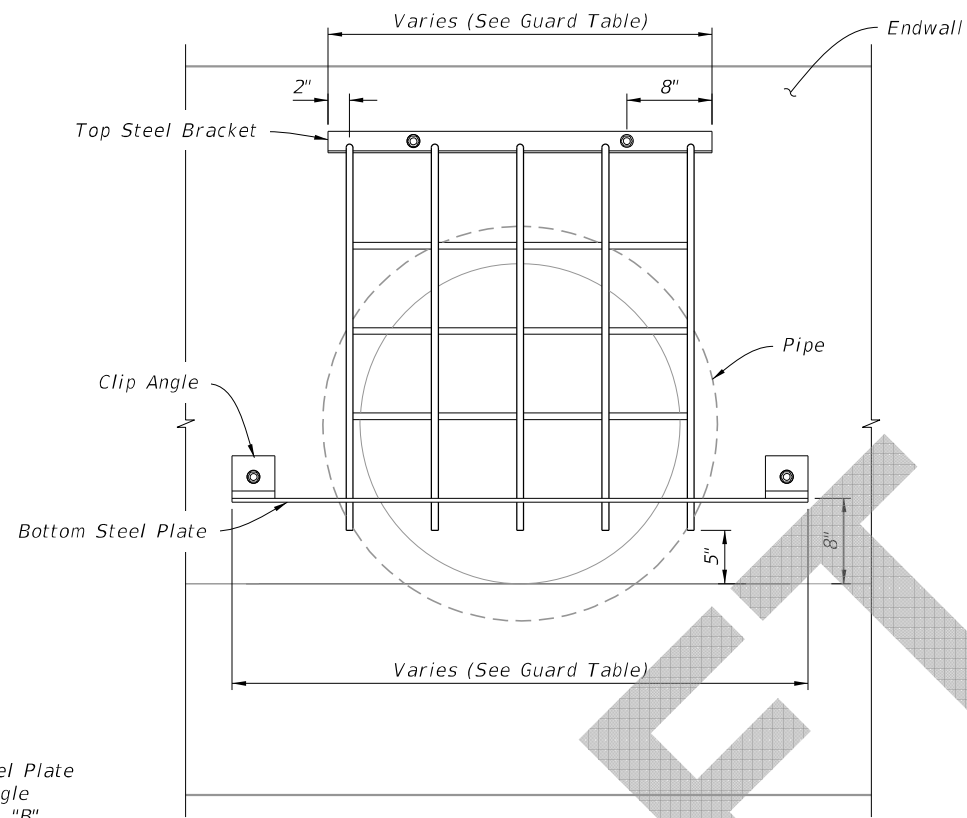
8/12/2019 2:22:35 PM

CONCRETE COLLARS

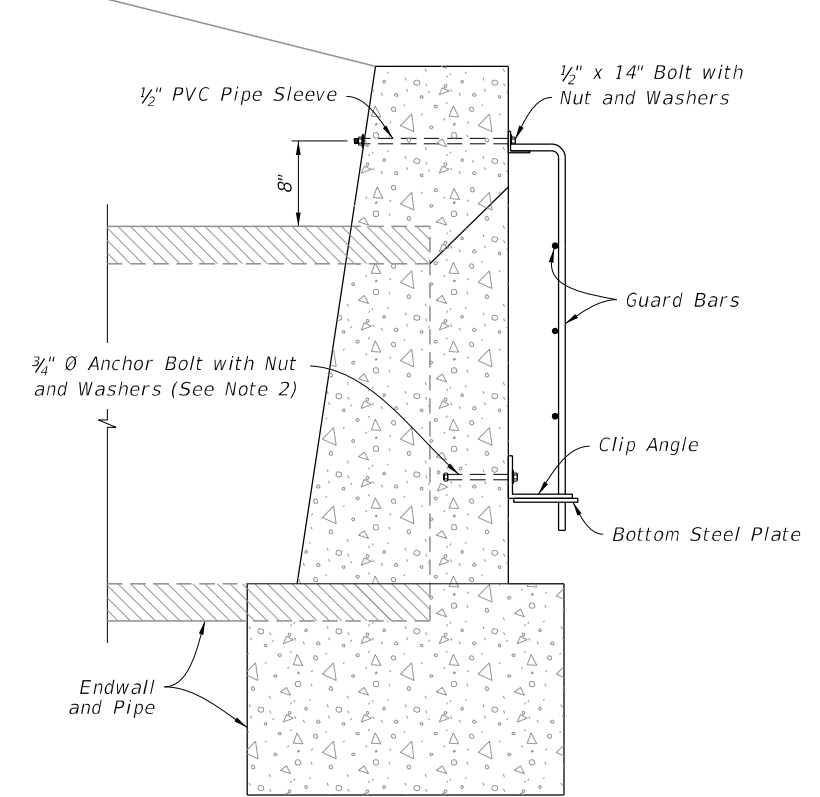
LAST REVISION 11/01/19	REVISION	DESCRIPTION:	 FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX 430-001	SHEET 4 of 6
---------------------------	----------	--------------	-----------------------------------------------------------------------------------------------------------------------	--------------------------------	------------------	-----------------



ISOMETRIC VIEW

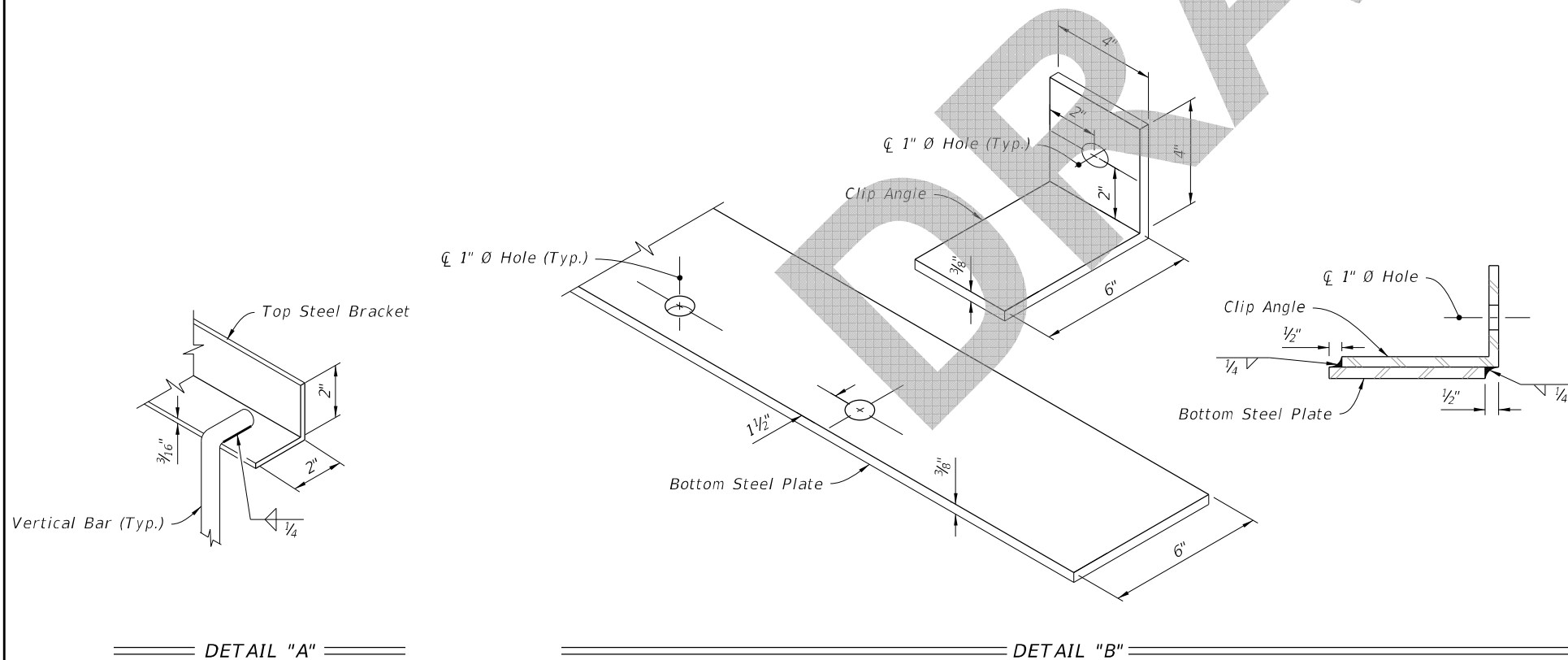


END ELEVATION



SIDE ELEVATION

GUARD



DETAIL "A"

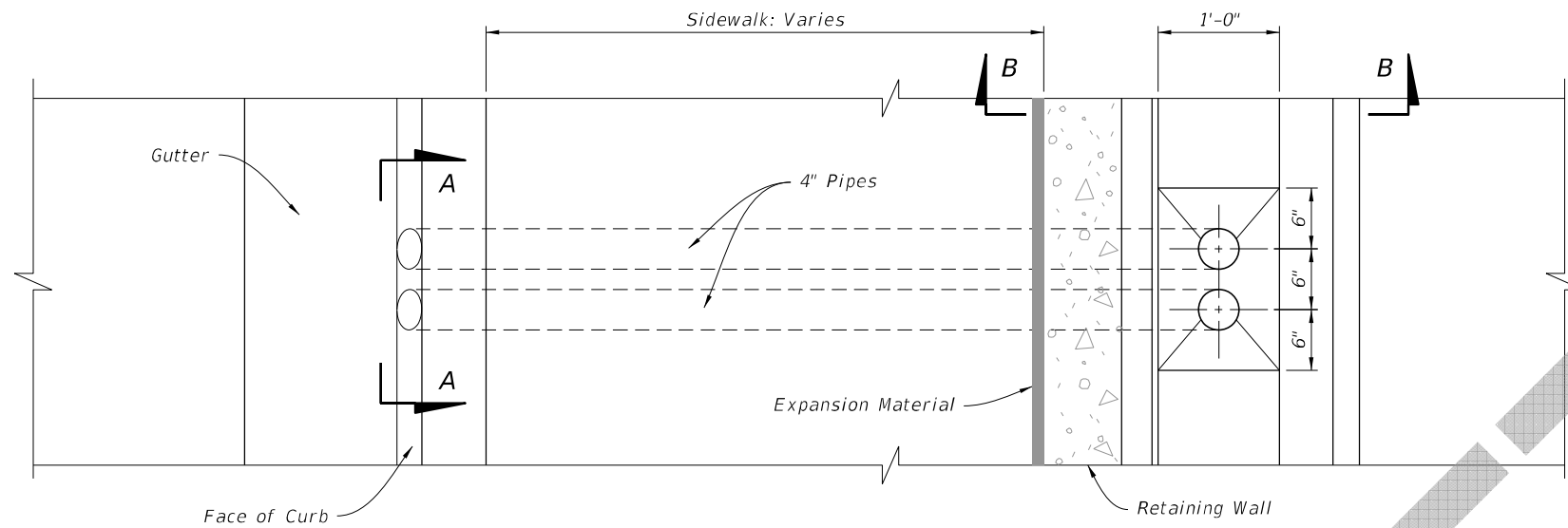
DETAIL "B"

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	1/2"	48
24"	3'-0"	4'-0"	5	2	1/2"	58
30"	3'-0"	4'-6"	5	3	5/8"	74
36"	3'-8"	5'-0"	6	4	5/8"	90
42"	4'-4"	5'-6"	7	5	5/8"	111

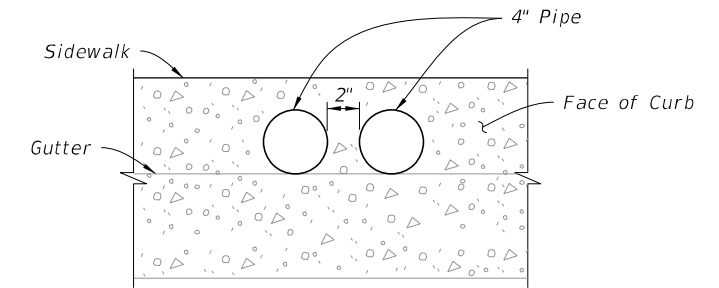
NOTES:

- Construct guards only at locations specifically called for in Plans.
- Install anchor bolt to a 6 1/2" minimum embedment. Hex Bolt: cast-in-place. Adhesive-bonded anchor: fully threaded rod installed in accordance with Specification 416.

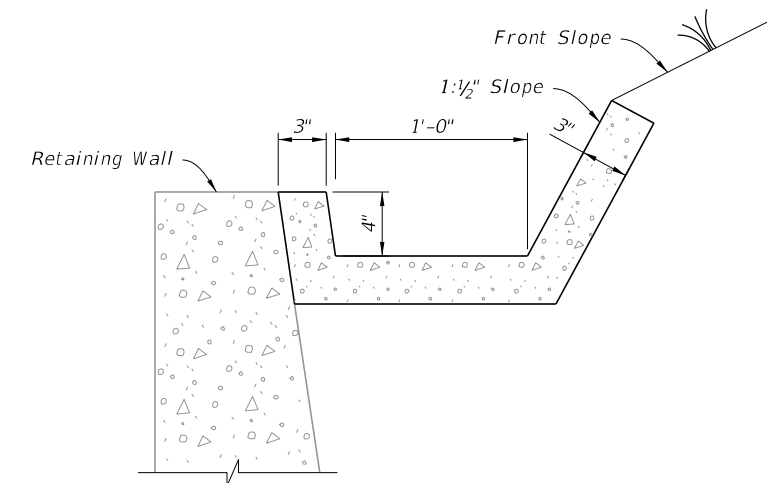
8/12/2019 2:22:35 PM



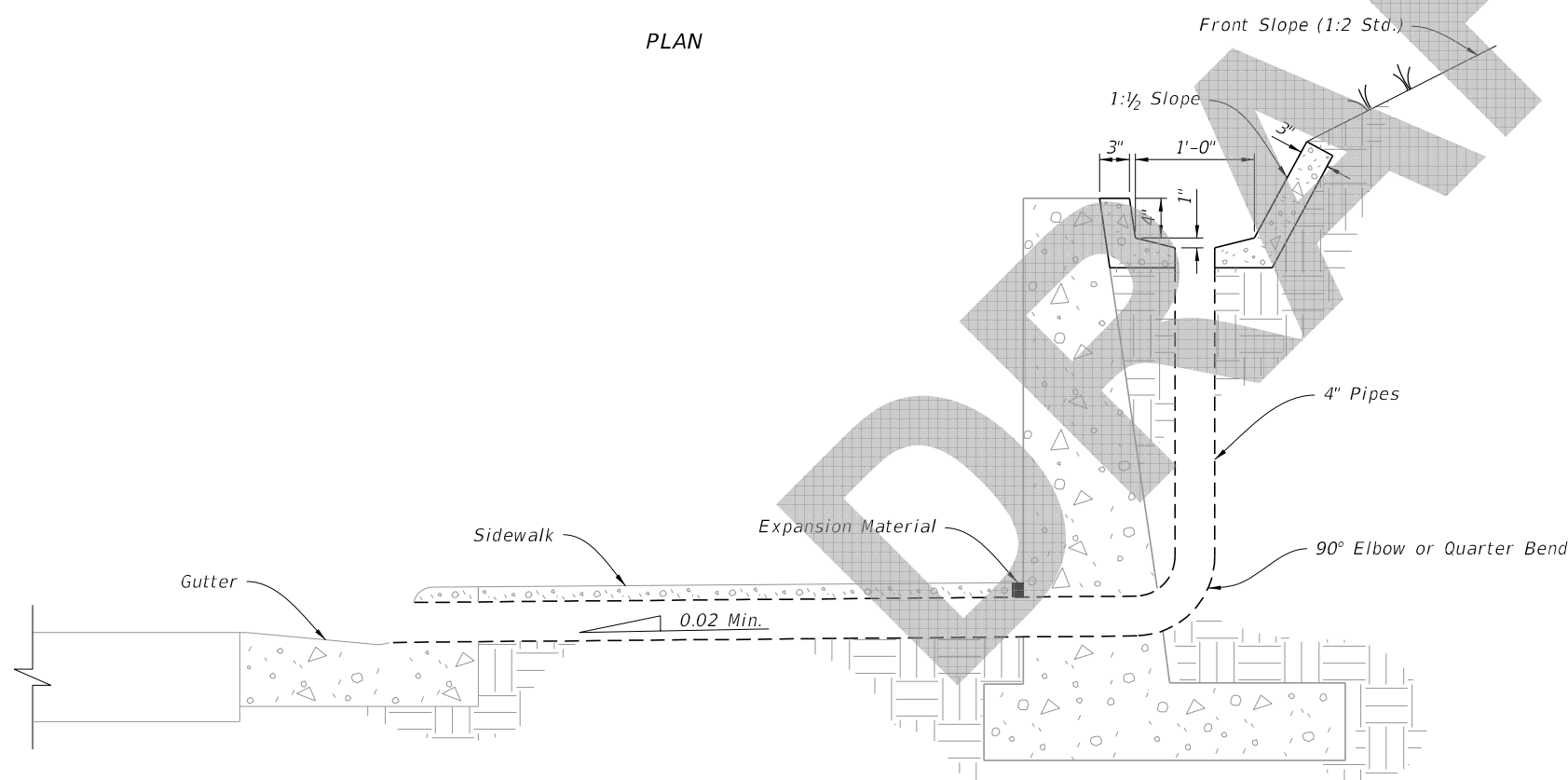
PLAN



SECTION A-A



SECTION B-B




ELEVATION

GUTTER AND DRAINS

RETAINING WALL CONCRETE GUTTER AND DRAINS

8/12/2019 2:22:36 PM

LAST REVISION 11/01/19	REVISION	DESCRIPTION:	 FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX 430-001	SHEET 6 of 6
---------------------------	----------	--------------	--------------------------------------------------------------------------------------------------------------------	--------------------------------	------------------	-----------------