ORIGINATION FORM

Proposed Revisions to a Standard Plans Index

(Please provide all information — Incomplete forms will be returned)

Contact Information:

Date: August 1, 2020

Originator: Cheryl Hudson

Phone: (850) 414-5332

Email: cheryl.Hudson@dot.stat.fl.us

Standard Plans:

Index Number: 430-001

Sheet Number (s): ALL

Index Title: Miscellaneous Drainage Details

Summary of the changes:

Sheet 1: Update the Table of Contents; Renumbered Sheet.
Sheet 2: Updated Table Title; Renumbered Sheet.
Sheet 3: Renumbered Sheet.
Sheet 4:Renumbered Sheet.
Sheet 5 Updated Sheet to show Single Pipe End Guard; Renumbered Sheet.
Sheet 6: New Sheet - Double Pipe End Guard
Sheet 7: Renumbered Sheet.

Commentary / Background:

Per requests from Districts, Double Pipe End Guards added to accomodate larger pipe diameters while keeping the grate weight managable.

Other Affected Offices / Documents: (Provide name of person contacted)

Yes	No	
☐	☐	Other Standard Plans –
☐	☐	FDOT Design Manual –
☐	☐	Basis of Estimates Manual –
☐	☐	Standard Specifications –
☐	☐	Approved Product List –
☐	☐	Construction –
☐	☐	Maintenance –

Origination Package Includes:

(Email or hand deliver package to Rick Jenkins)

Yes	N/A	
☑	☐	Redline Mark-ups
☐	☐	Proposed Standard Plan Instruction (SPI)
☐	☐	Revised SPI
☐	☐	Other Support Documents

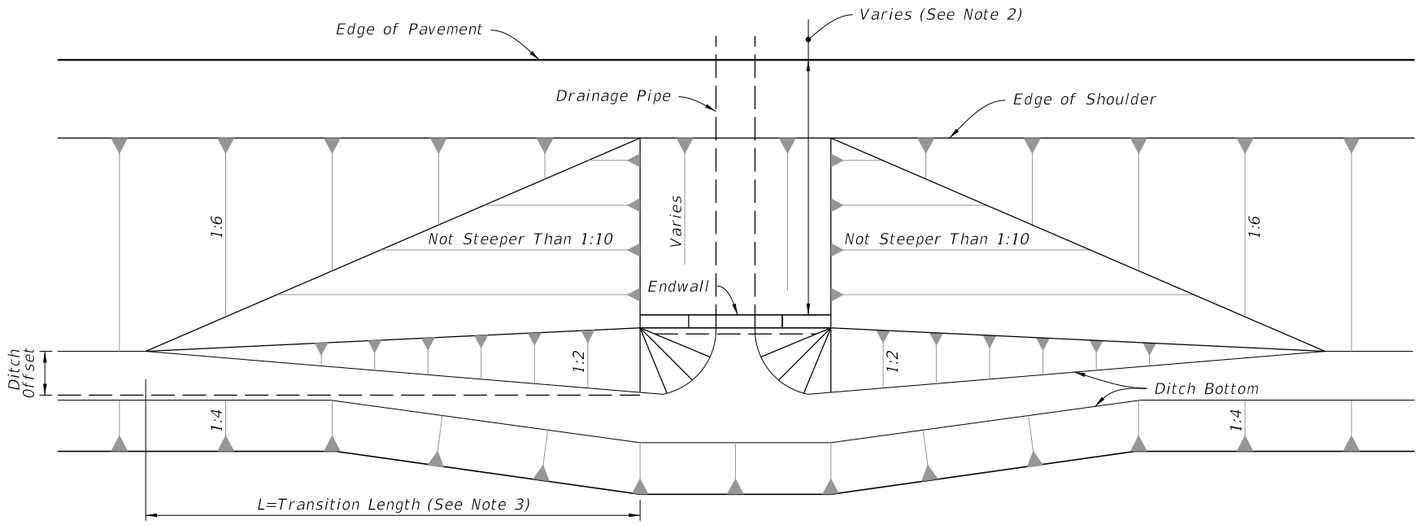
Implementation:

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

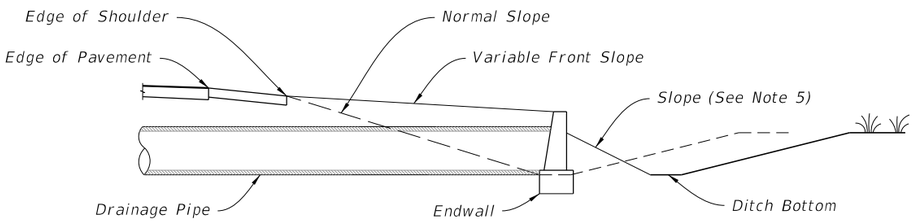
Contact the Roadway Design Office for assistance in completing this form

NOTES:

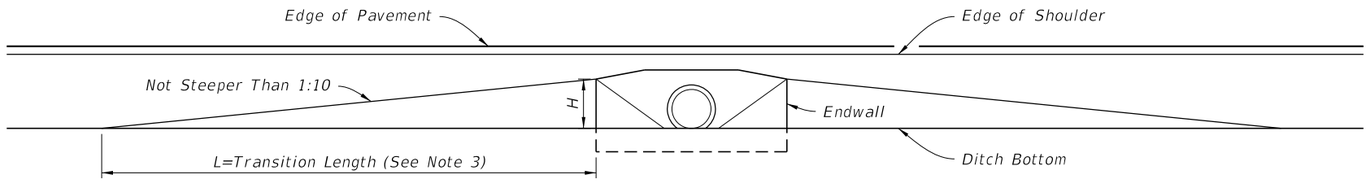
1. Fill or excavate variable slopes during normal grading operations.
2. Minimum distance as required to comply with safety criteria.
3. Use Larger Value Of Either:
   L=10xH (No Maximum)
   L=10xDitch Offset (Maximum L=100')
4. Slope to normal slope if possible. Slope not to be steeper than 1:2. See 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.



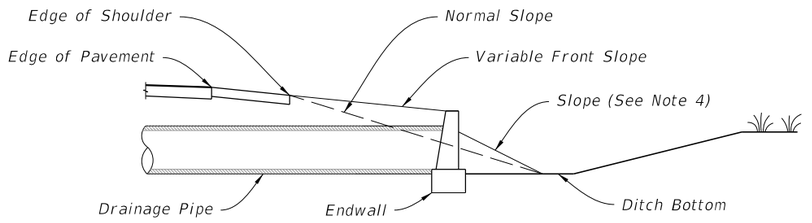
PLAN



SIDE ELEVATION (EXTENDED)



END ELEVATION



SIDE ELEVATION (TYPICAL)

FRONT SLOPES AT DRAINAGE STRUCTURES

Updated

TABLE OF CONTENTS:

Renumbered

LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
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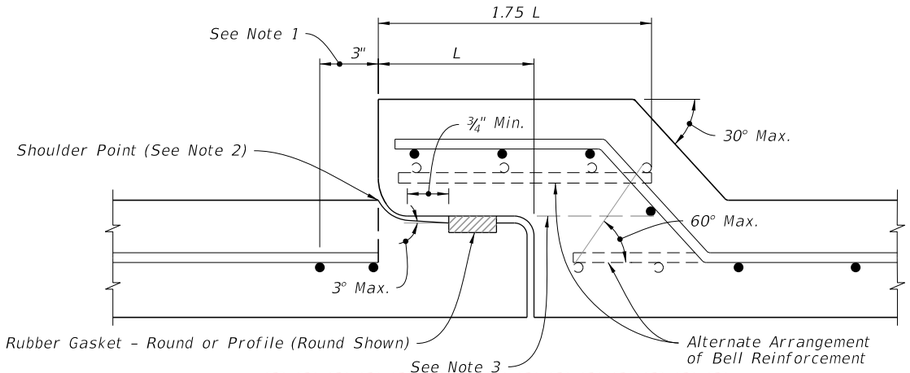

Updated Title

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
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30"	0.12	0.010
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42"	0.16	0.010
48"	0.19	0.011
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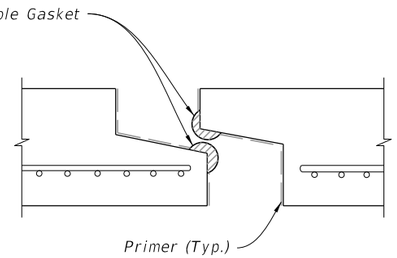
78"	0.30	0.018
84"	0.33	0.0195
90"	0.35	0.021
96"	0.37	0.0225
102"	0.40	0.024
108"	0.42	0.0255

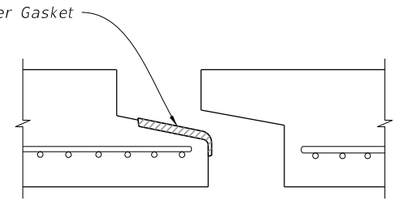
NOTES:

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

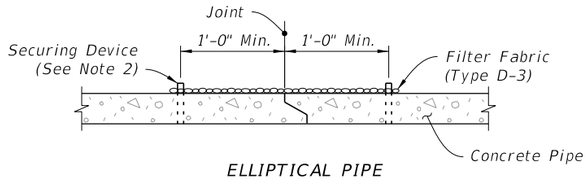
NOTES:

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

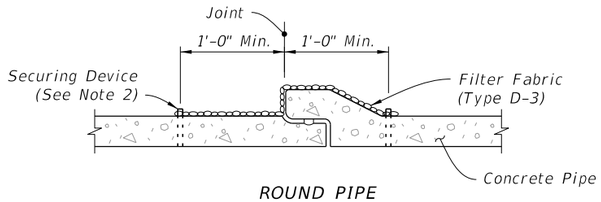
ELLIPTICAL CONCRETE PIPE JOINT DETAIL

Renumbered

ROUND AND ELLIPTICAL CONCRETE PIPE JOINT

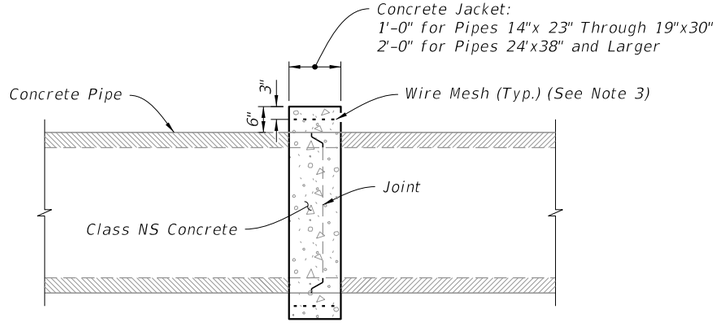


ELLIPTICAL PIPE
(Tongue & Groove Shown)

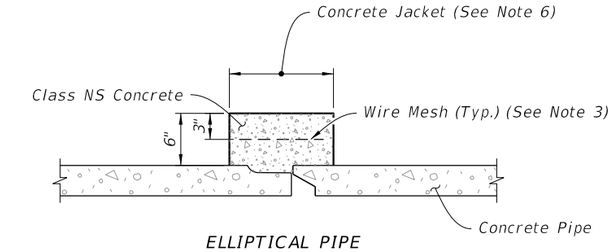


ROUND PIPE
(Bell & Spigot Shown)

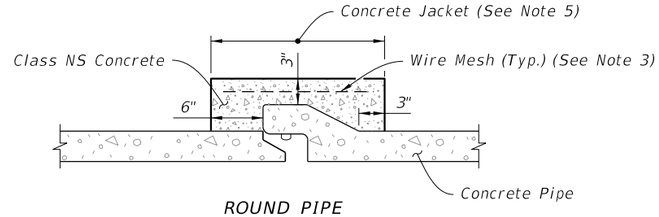
SECTION VIEW



ELLIPTICAL PIPE

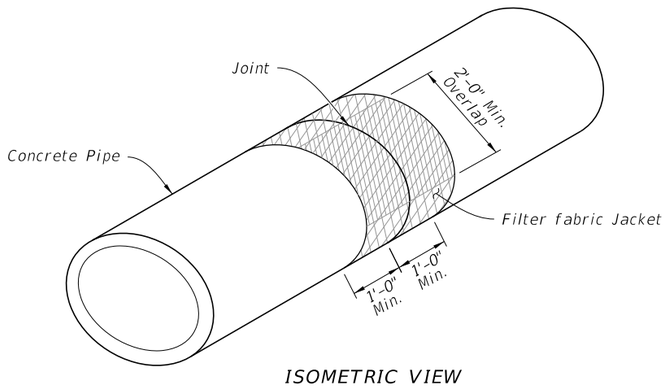


ELLIPTICAL PIPE
(Tongue & Groove Shown)



ROUND PIPE
(Bell & Spigot Shown)

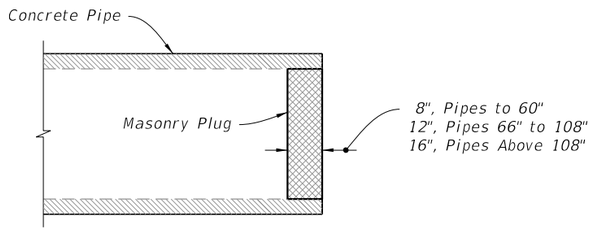
DISSIMILAR JOINTS



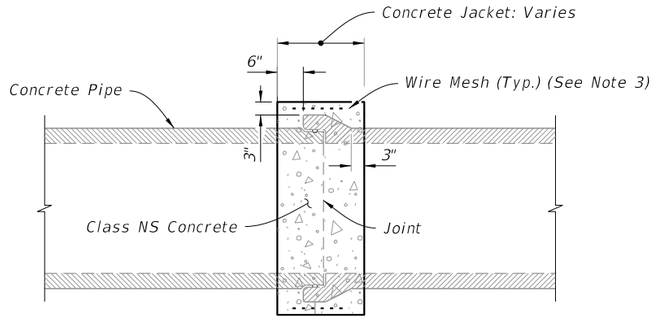
ISOMETRIC VIEW

FILTER FABRIC JACKET

(For All Pipe Types - Concrete Elliptical Pipe Shown)

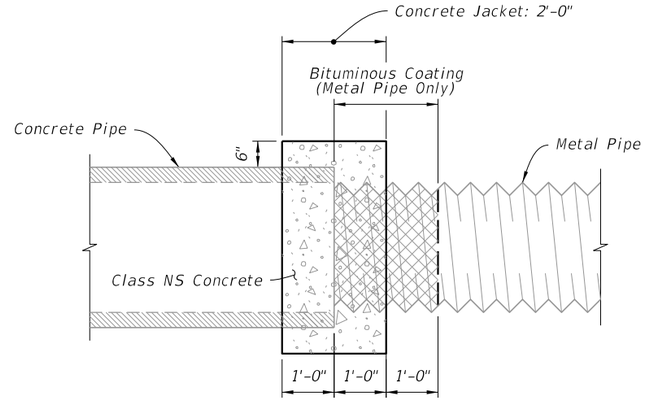


PIPE PLUG



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.

Renumbered

FILTER FABRIC JACKET, CONCRETE JACKET, AND PIPE PLUG

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
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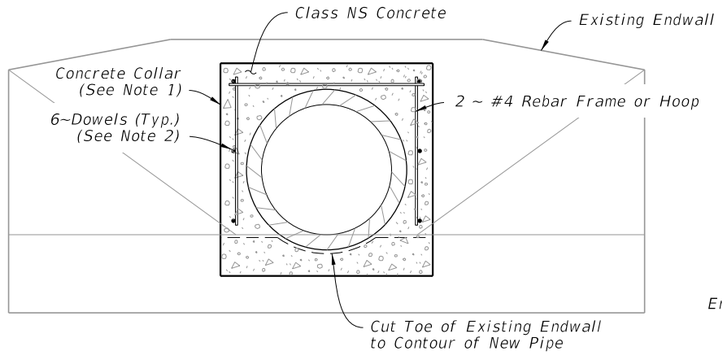
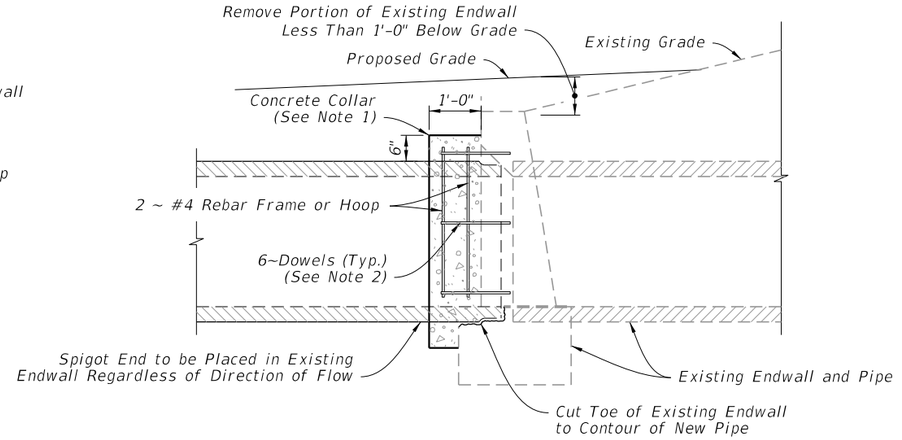
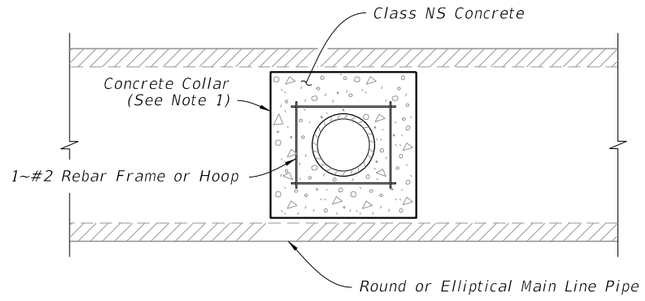


END ELEVATION

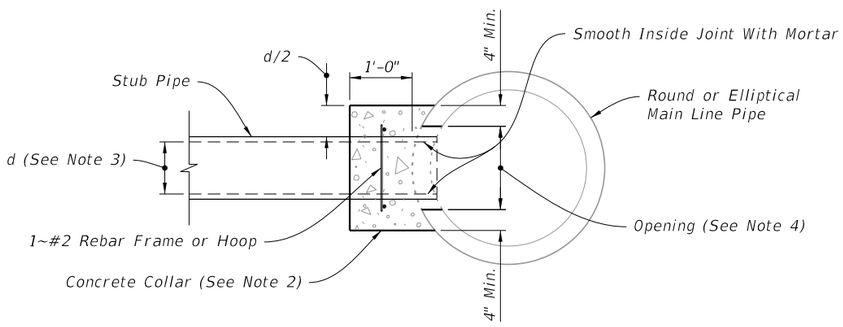


SIDE ELEVATION

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.

Renumbered

CONCRETE COLLARS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
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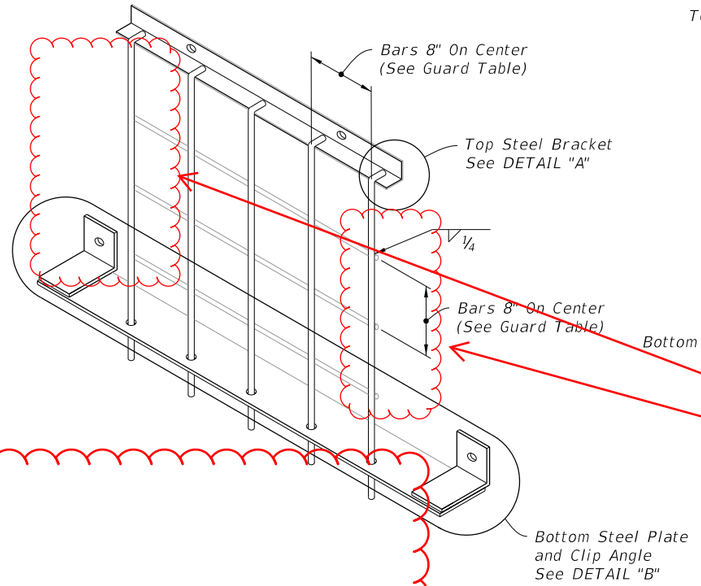
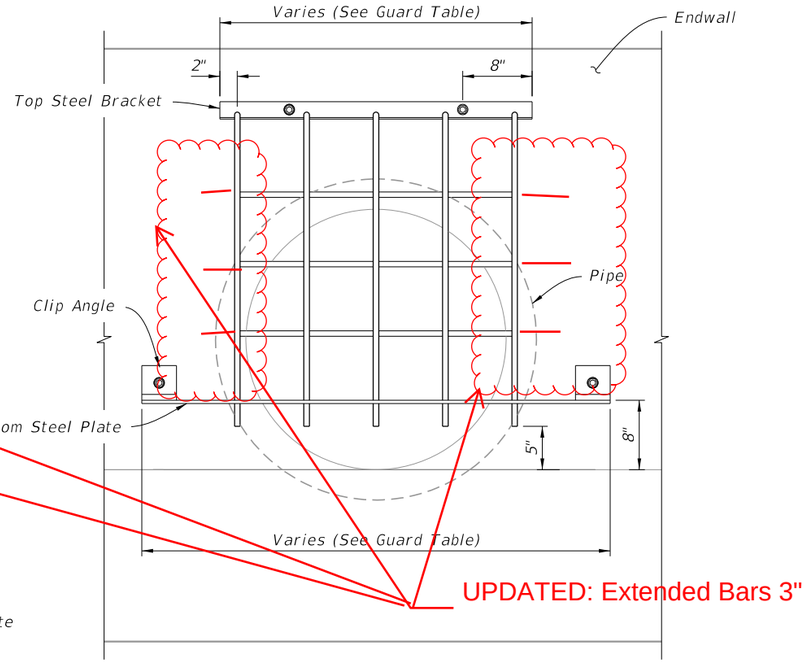


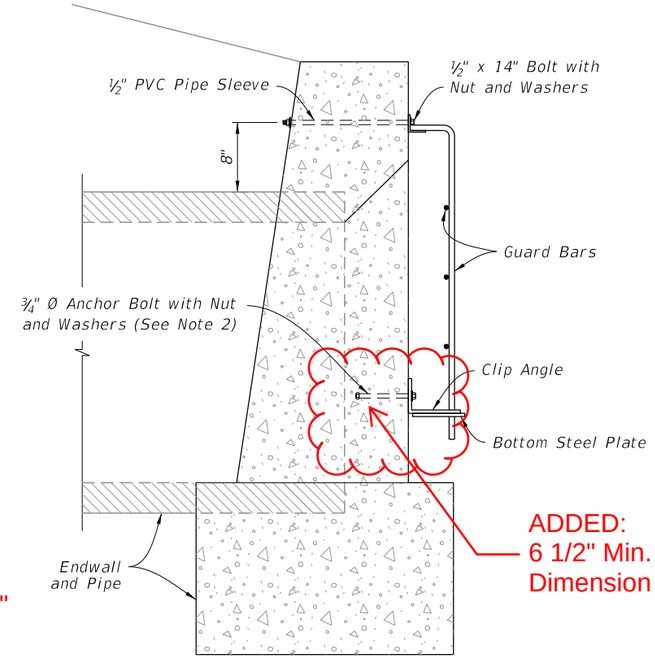
ADDED: New Double Grate Detail

ISOMETRIC VIEW



UPDATED: Extended Bars 3"

END ELEVATION

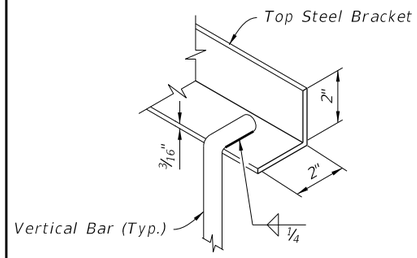


ADDED: 6 1/2" Min. Dimension

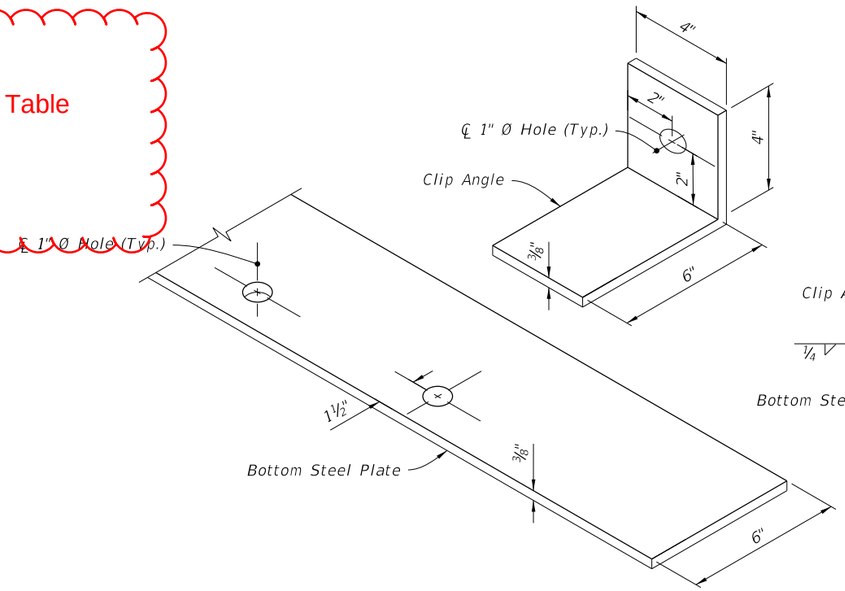
SIDE ELEVATION

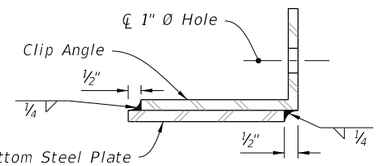
GUARD

ADDED: New Double Grate Table



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

Added 60" option

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.

CHANGED: Note 2

Updated Title

PIPE END GUARD

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LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2020-21 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
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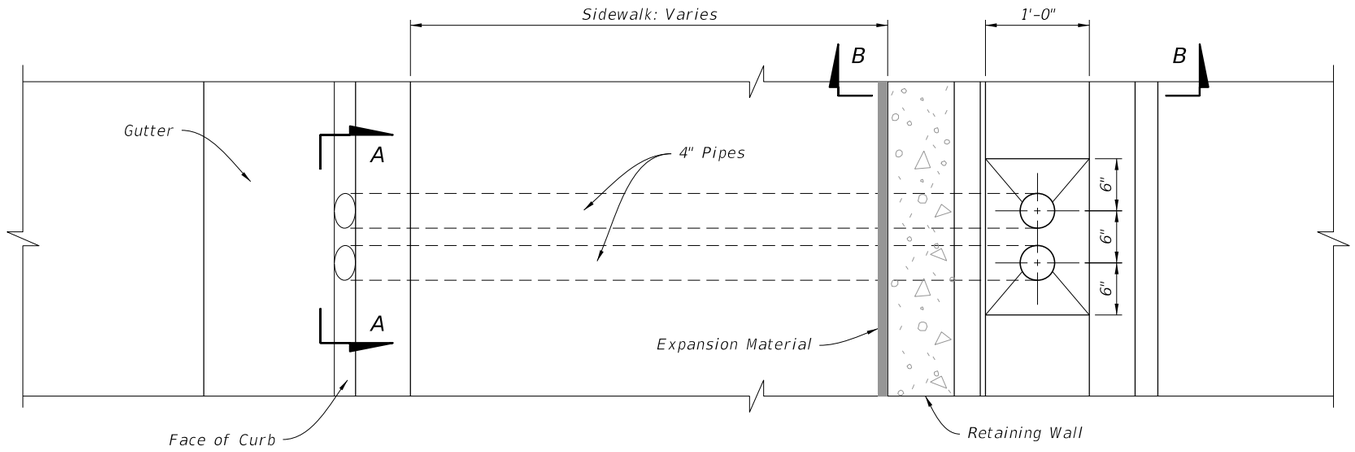
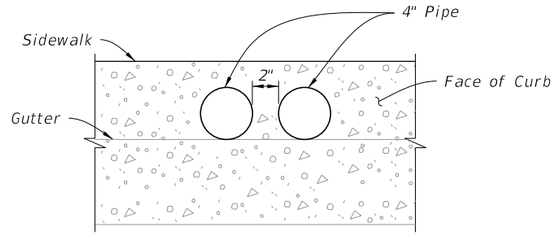
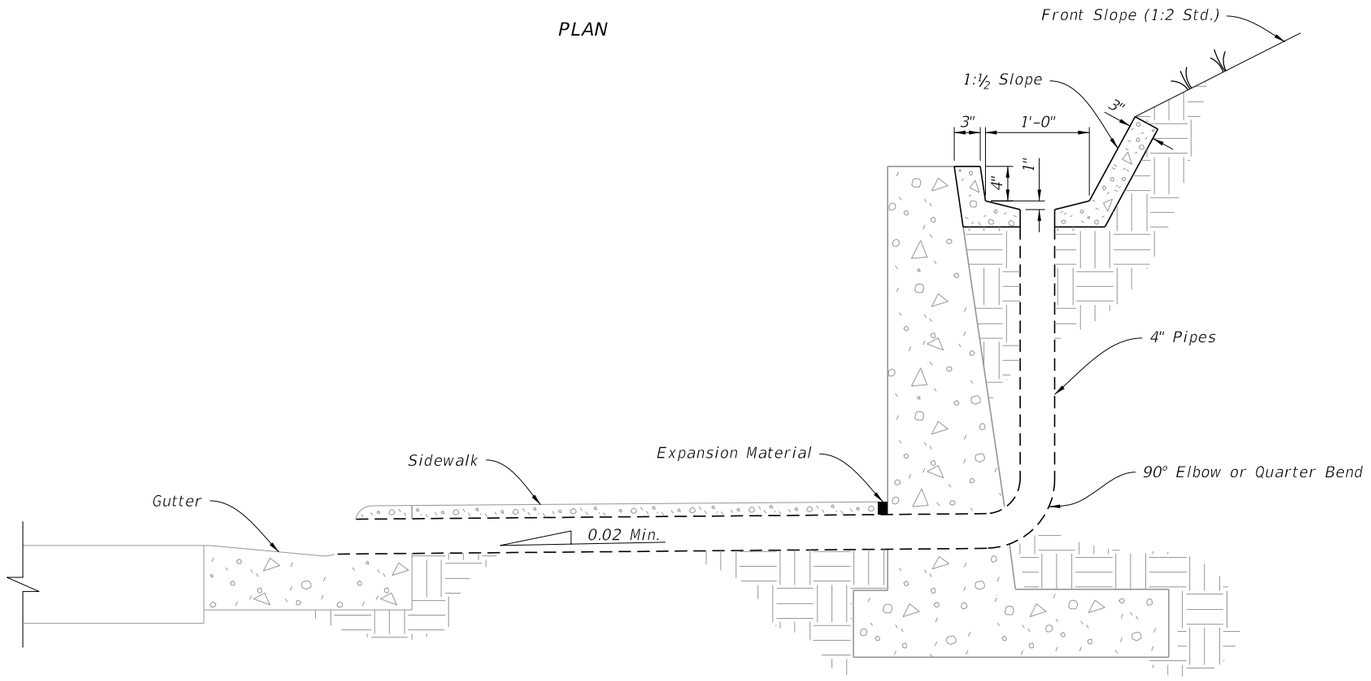
NEW SHEET 6
DOUBLE PIPE END GUARD



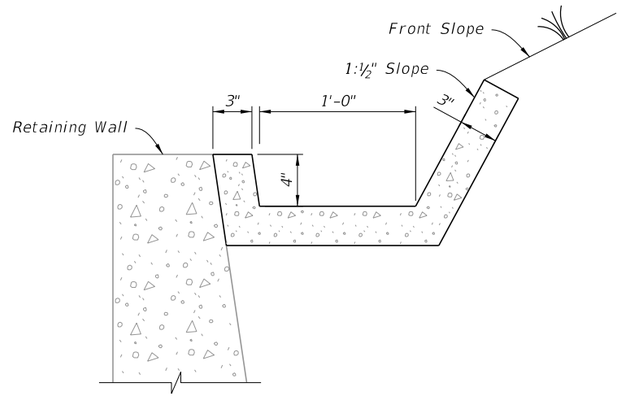
PLAN



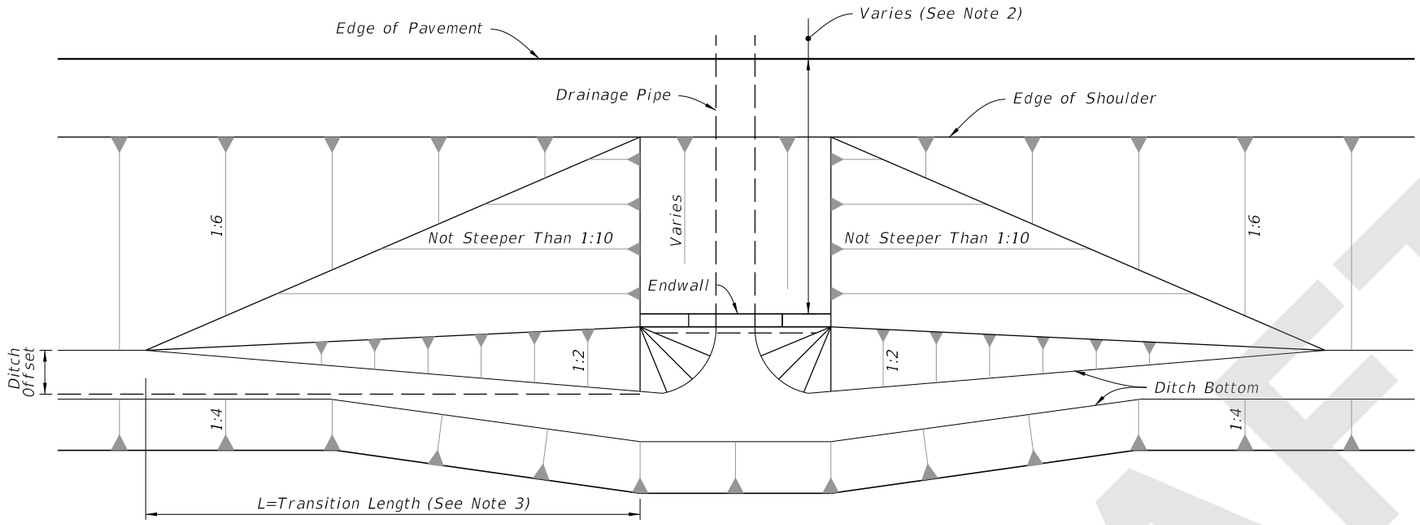
SECTION A-A



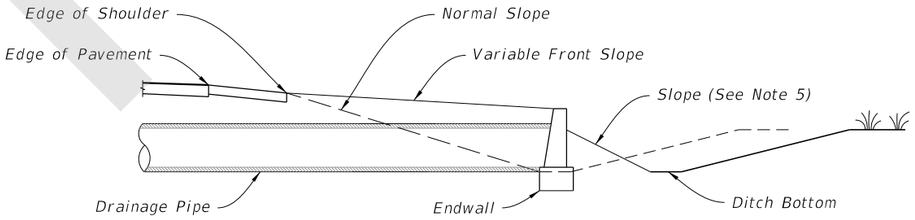
ELEVATION



SECTION B-B



PLAN



SIDE ELEVATION (EXTENDED)

NOTES:

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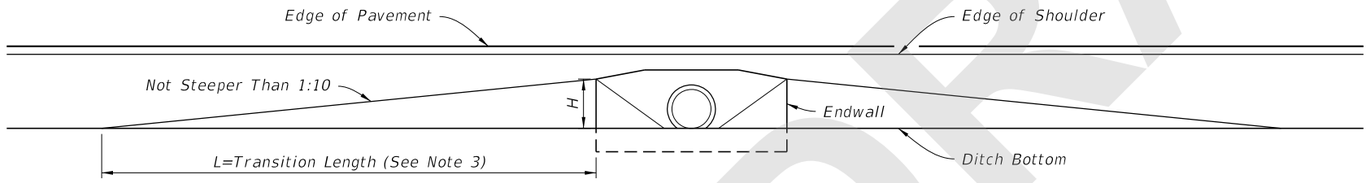
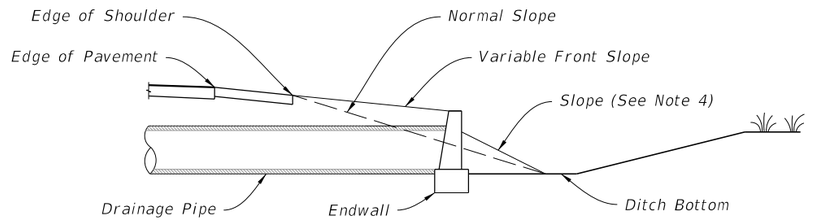


END ELEVATION



SIDE ELEVATION (TYPICAL)

FRONT SLOPES AT DRAINAGE STRUCTURES

TABLE OF CONTENTS:

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LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES

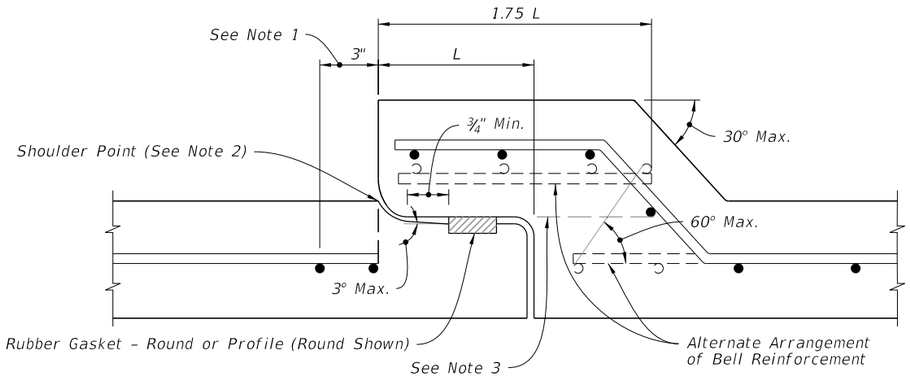

TABLE 1
SCHEDULE OF BELL REINFORCEMENT
Classes II,III,IV,V; Wall A,B,C

Nominal Pipe Diameter	Design Bell Reinforcement	Maximum Reinforcement Under Tolerance
	in^2 per foot	in^2 per foot
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42"	0.16	0.010
48"	0.19	0.011
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78"	0.30	0.018
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102"	0.40	0.024
108"	0.42	0.0255

NOTES:

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2. Extend the last full wrap of reinforcing to the shoulder point and meet ASTM C-76 requirements.
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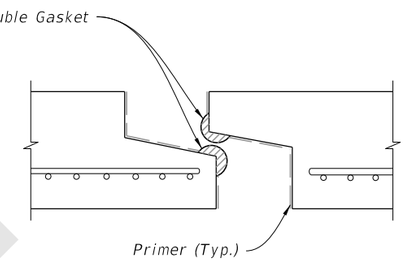
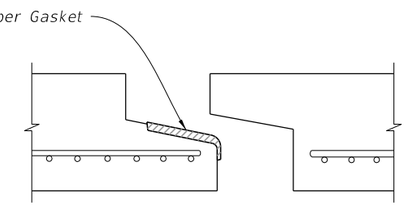
ROUND CONCRETE PIPE JOINT DETAIL



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

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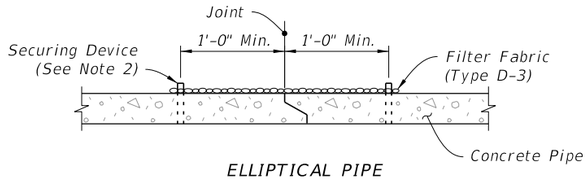
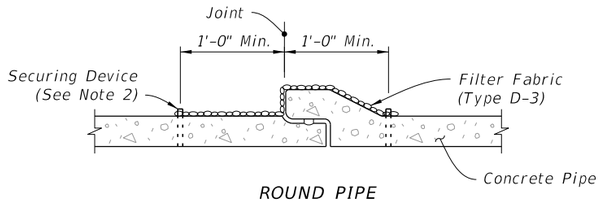
ROUND AND ELLIPTICAL CONCRETE PIPE JOINT

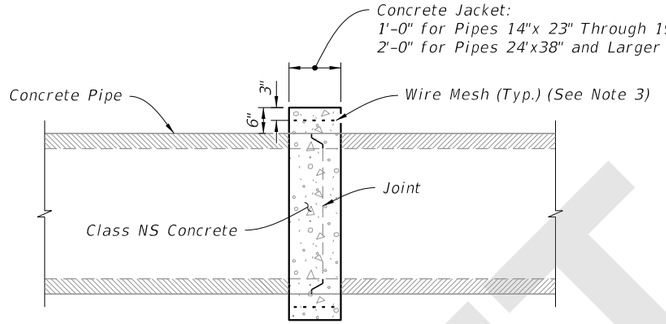


ELLIPTICAL PIPE
(Tongue & Groove Shown)

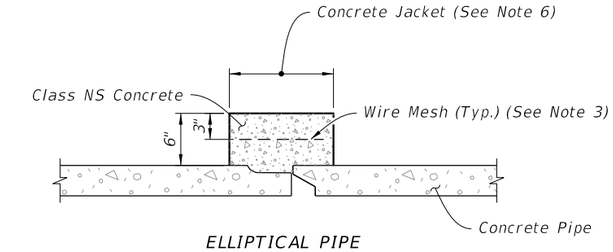


ROUND PIPE
(Bell & Spigot Shown)

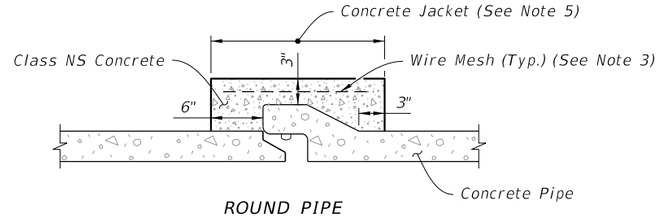
SECTION VIEW



ELLIPTICAL PIPE

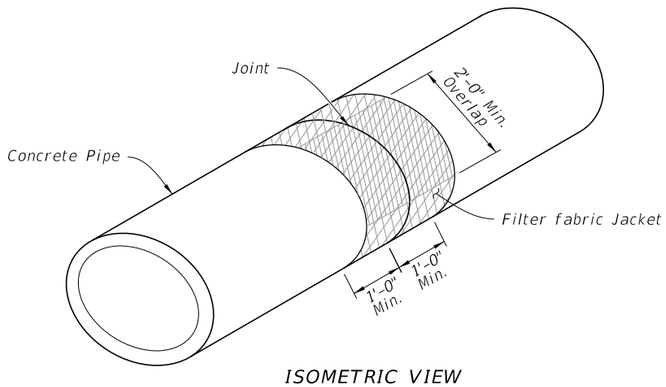


ELLIPTICAL PIPE
(Tongue & Groove Shown)



ROUND PIPE
(Bell & Spigot Shown)

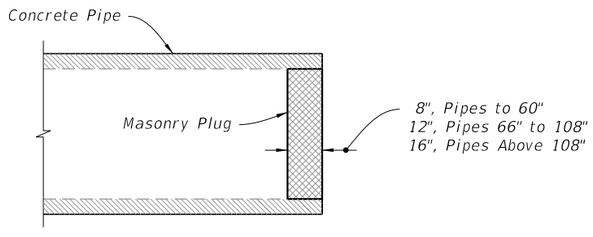
DISSIMILAR JOINTS



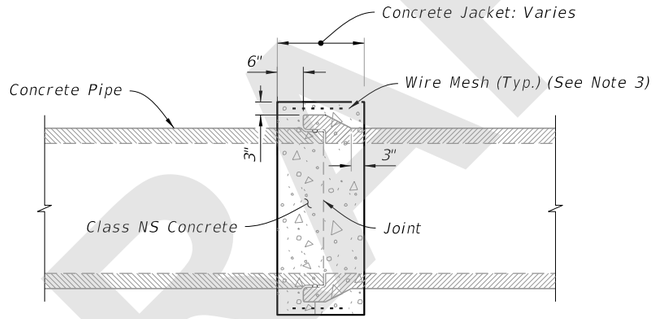
ISOMETRIC VIEW

FILTER FABRIC JACKET

(For All Pipe Types - Concrete Elliptical Pipe Shown)

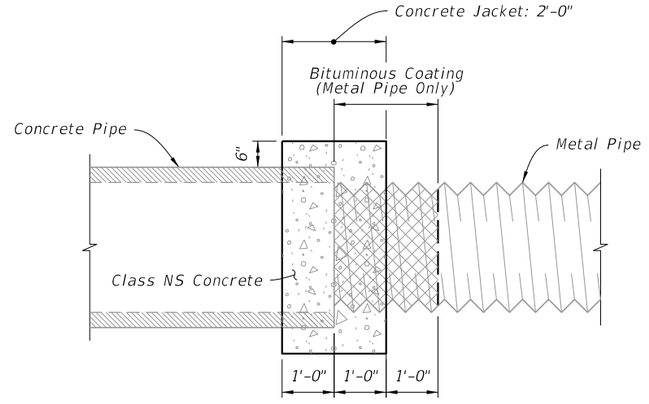


PIPE PLUG



ROUND PIPE

SIMILAR TYPES
(Only When Called For In The Plans)



CONCRETE AND METAL PIPE SHOWN
(Others Similar)

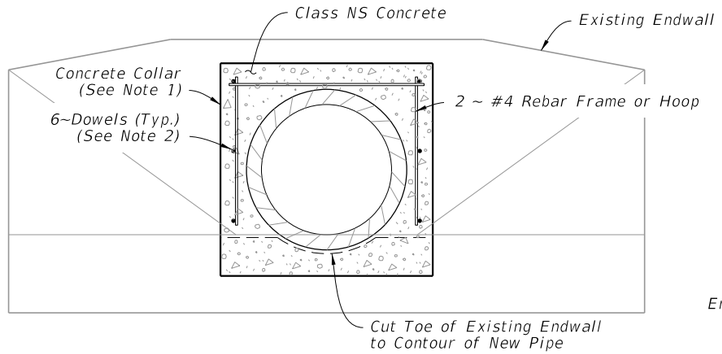
DISSIMILAR TYPES

CONCRETE JACKET

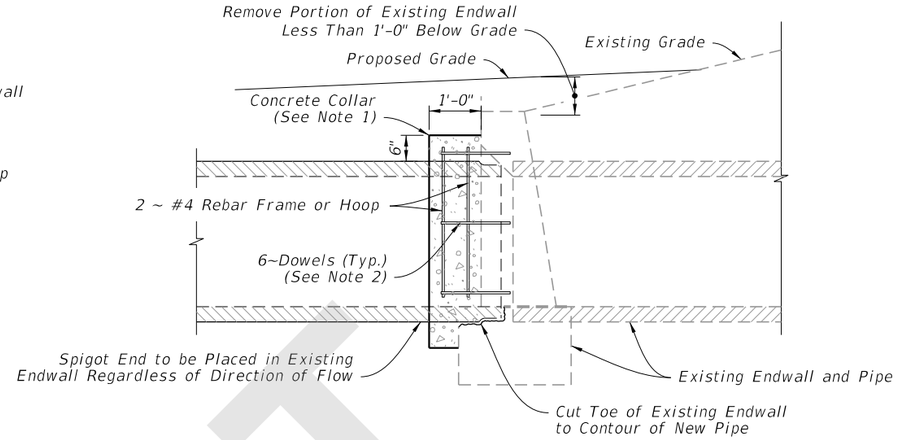
NOTES:

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

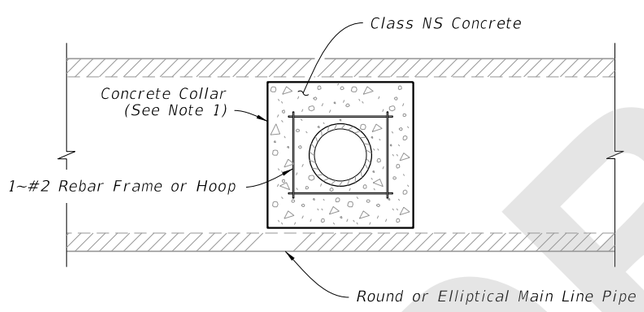


END ELEVATION

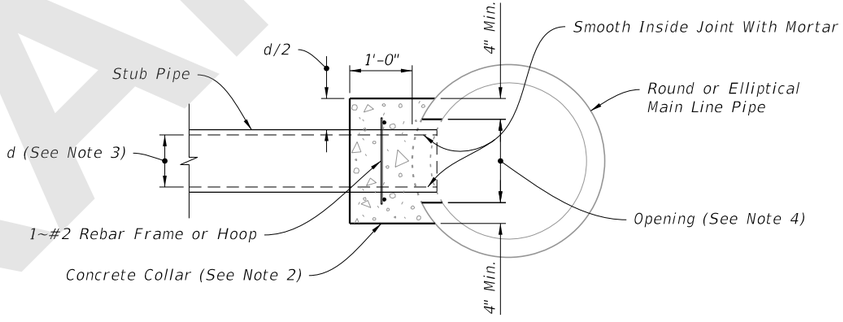


SIDE ELEVATION

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

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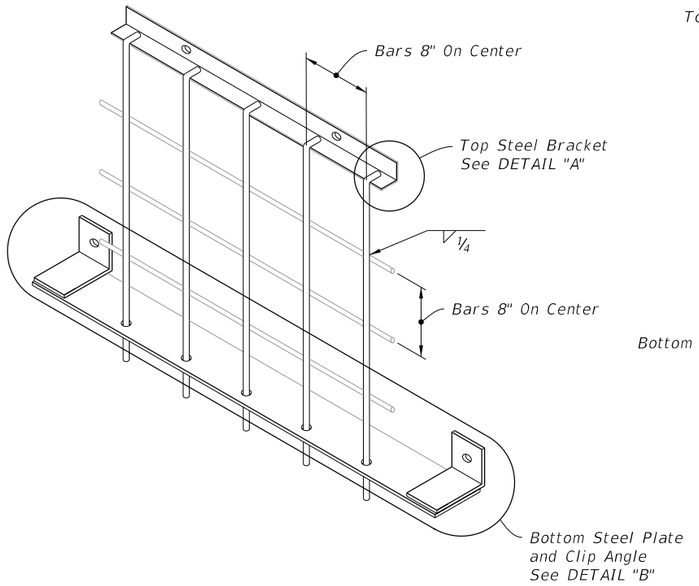
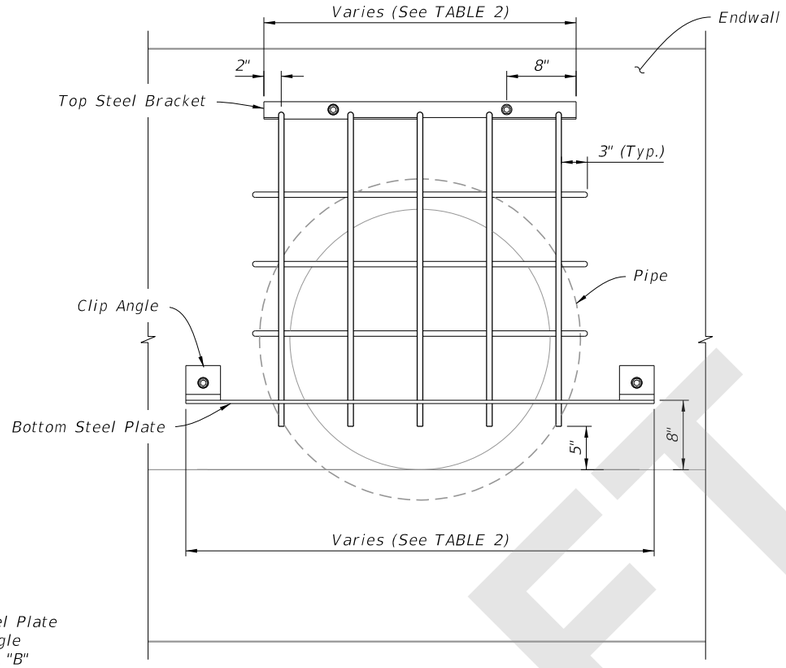
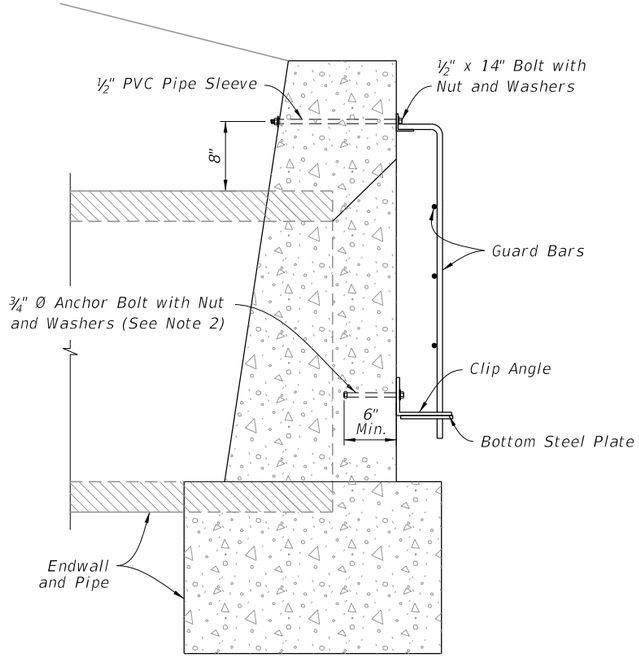


ISOMETRIC VIEW

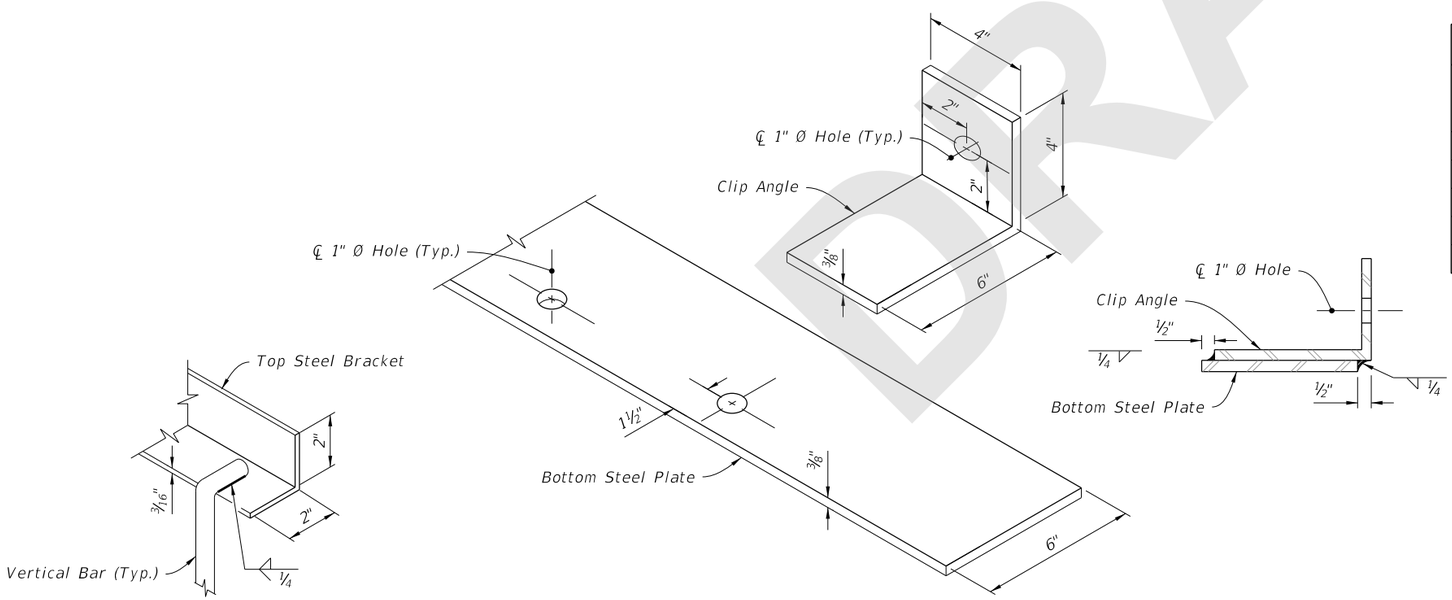


END ELEVATION



SIDE ELEVATION

SINGLE GUARD
(30" Pipe Shown)



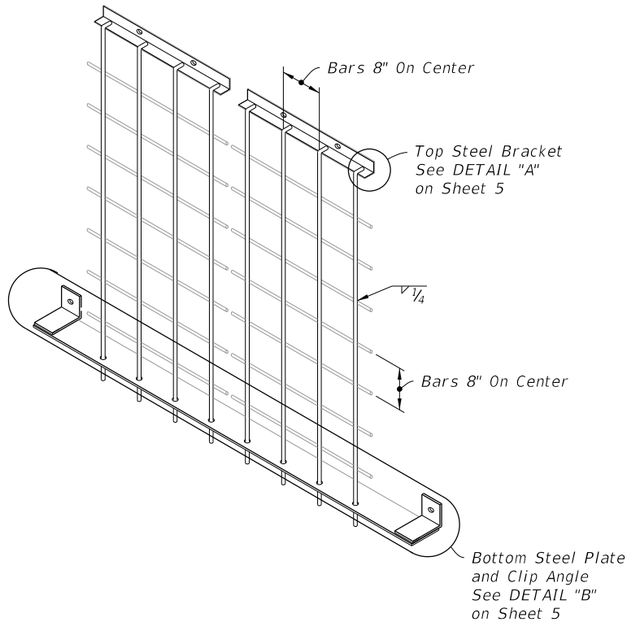
DETAIL "A" DETAIL "B"

TABLE 2 - SINGLE GUARD								
Pipe Dia. (in)	Top Steel Bracket	Bottom Steel Plate	Number of Holes	Number of Vert. Bars	Vertical Bars Size	Number of Horiz. Bars	Horizontal Bars Size	Weight lbs.
18	2'-4"	3'-6"	4	4	½"	4	½"	48
24	3'-0"	4'-0"	5	5	½"	5	½"	58
30	3'-0"	4'-6"	5	5	⅝"	5	⅝"	74
36	3'-8"	5'-0"	6	6	⅝"	6	⅝"	90
42	4'-4"	5'-6"	7	7	⅝"	7	⅝"	111

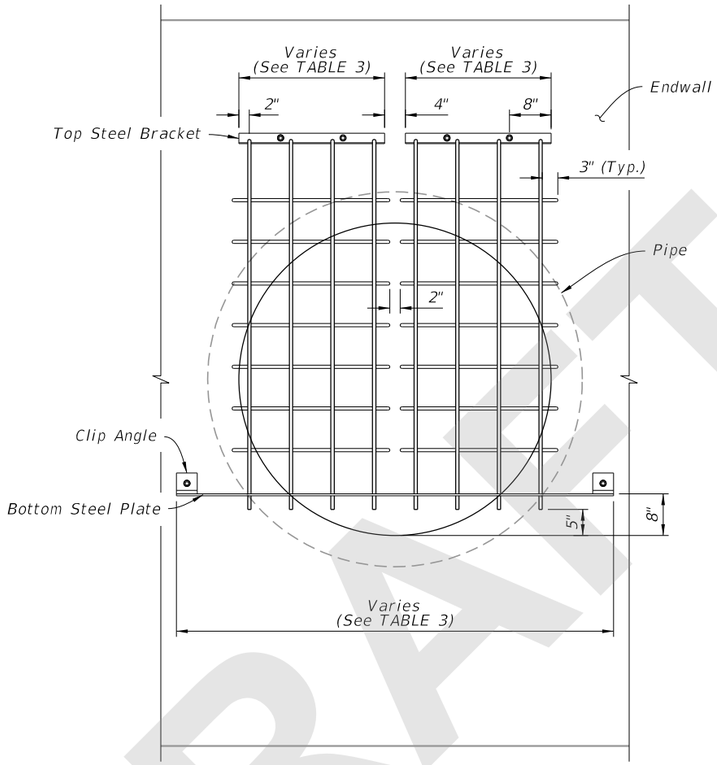
NOTES:

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

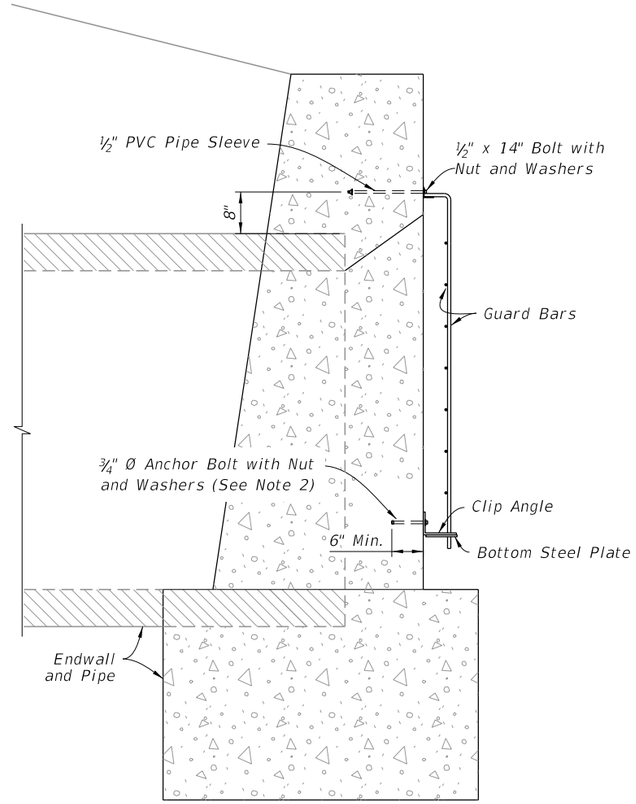
SINGLE PIPE END GUARD



ISOMETRIC VIEW



END ELEVATION



SIDE ELEVATION

DOUBLE GUARD
(60" Pipe Shown)

NOTES:

1. Construct guards only at locations specifically called for in Plans.

2. Anchor Bolts (Galvanized): Use C-I-P Hex Head bolts or fully threaded adhesive anchors, installed in accordance with Specification 416.

TABLE 3 - DOUBLE GUARD

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

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DOUBLE PIPE END GUARD

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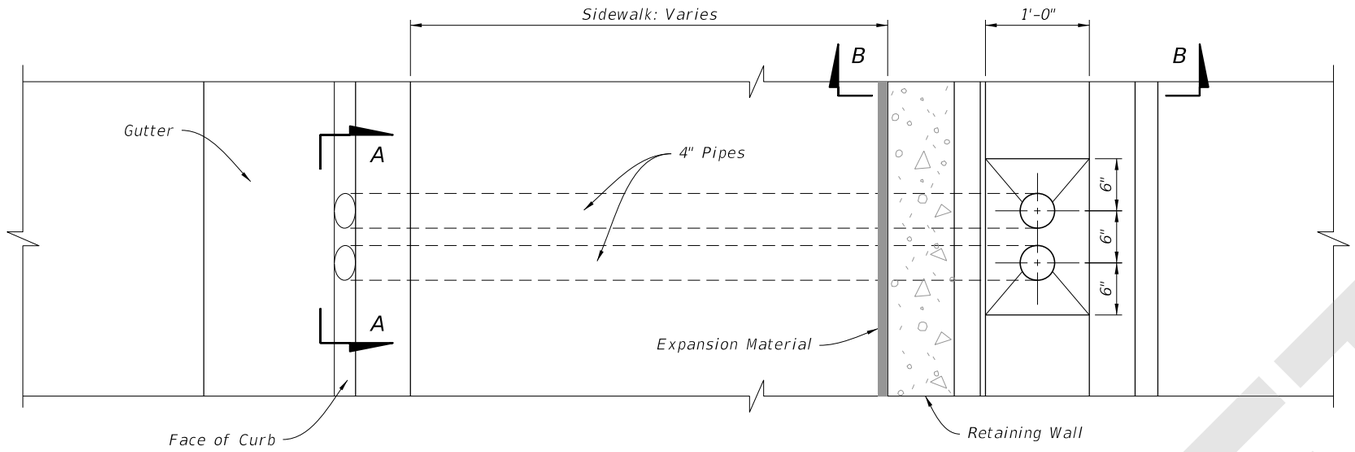
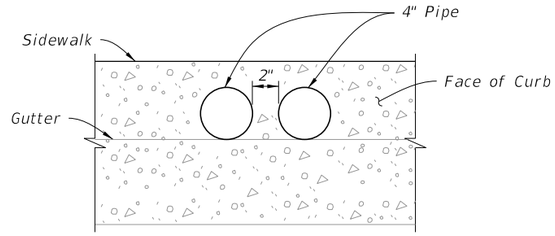
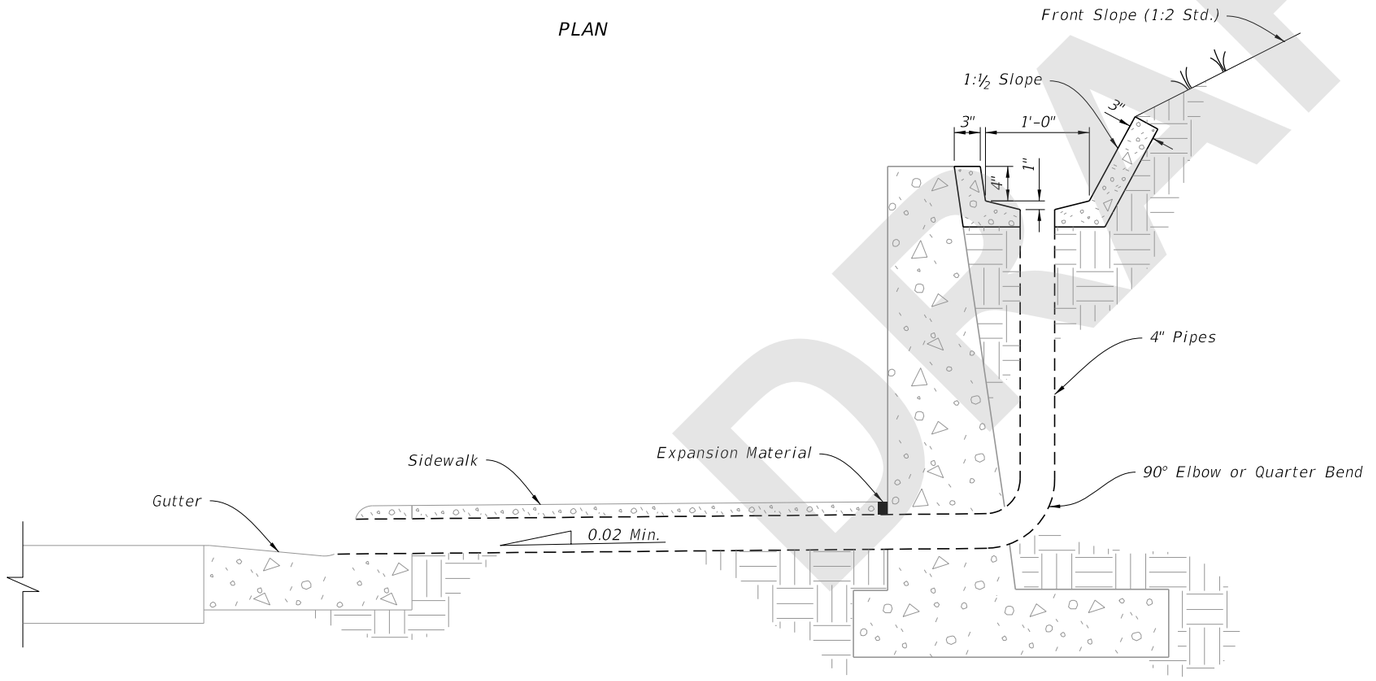


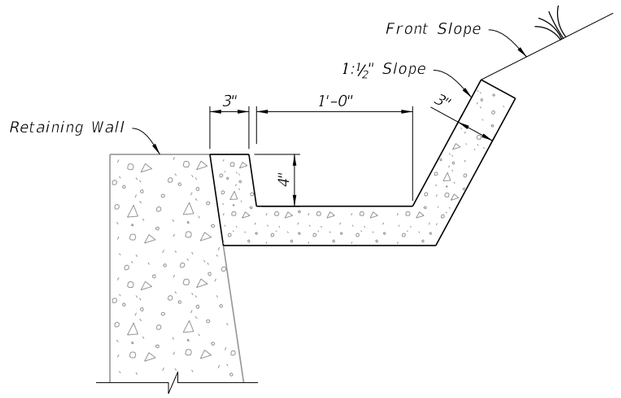
PLAN



SECTION A-A



ELEVATION



SECTION B-B

GUTTER AND DRAINS

RETAINING WALL CONCRETE GUTTER AND DRAINS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2021-22 STANDARD PLANS	MISCELLANEOUS DRAINAGE DETAILS	INDEX	SHEET
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