
ORIGINATION FORM

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

Contact Information:

Date: June 3, 2021
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Standard Plans:

Index Number: 430-011
Sheet Number (s): 1-5 of 5
Index Title:
U-Type Concrete Endwalls Baffles & Grate
Optional 15" to 30" Pipe



Summary of the changes:

- Sheet 1: Changed GENERAL NOTE 1 from "Class I" to "Class II".
- Sheet 2: Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR ONE U-ENDWALL TABLE and added TABLE 1 to the title.
- Sheet 3: Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR ONE U-ENDWALL TABLE and added TABLE 2 to the title.
- Sheet 4: Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR BAFFLES TABLE and added TABLE 3 to the title.
Changed "Class I" to "Class II" in the DIMENSION AND QUANTITIES FOR ONE U-ENDWALL TABLE and added TABLE 4 to the title.
- Sheet 5: Added TABLE 5 to the title of the TABLE OF DIMENSION AND QUANTITIES FOR ONE GRATE.

Commentary / Background:

Changed to reflect Materials specification change that removes the designation for Class I Concrete. Please see the attached Standard Specification Section 346 DRAFT for the Class I revisions proposed by the State Materials Office.

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

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

Origination Package Includes:

(Email or hand deliver package to Rick Jenkins)

- | Yes | N/A | |
|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Redline Mark-ups |
| <input type="checkbox"/> | <input type="checkbox"/> | Proposed Standard Plan Instruction (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

Email to: Rick Jenkins rick.jenkins@dot.state.fl.us and Darren Martin darren.martin@dot.state.fl.us

STRUCTURAL PORTLAND CEMENT CONCRETE.**(REV 7-14-21)**

SUB ARTICLE 346-2.3 is deleted and the following substituted:

346-2.3 Supplementary Cementitious Materials: Supplementary cementitious materials are required to produce binary or ternary concrete mixes in all classes of concrete specified in Table 346-3, except for the following when used in slightly aggressive environments: **Class I**, Class I (Pavement), and Class II.

The quantity of portland cement replaced with supplementary cementitious materials must be on an equal weight replacement basis of the total cementitious materials in accordance with Table 346-2.

346-2.3.1 Highly Reactive Pozzolans: Materials that have a very high degree of pozzolanic reactivity due to their very fine particle sizes, including silica fume, metakaolin and ultrafine fly ash.

346-2.3.2 Binary Concrete Mixes: Concrete mixes containing portland cement and one supplementary cementitious material.

346-2.3.3 Ternary Concrete Mixes: Concrete mixes containing portland cement and any two of supplementary cementitious materials, either fly ash, slag, or highly reactive pozzolans.

ARTICLE 346-3.1 is deleted and the following substituted:

346-3.1 General: The classifications of concrete are designated as **Class I**, Class I (Pavement), Class II, Class II (Bridge Deck), Class III, Class III (Seal), Class IV, Class IV (Drilled Shaft), Class V, Class V (Special), Class VI, and Class VII. The 28-day specified minimum compressive strength, maximum water to cementitious materials ratio and target slump of each class are detailed in Table 346-3. The required air content for all classes of concrete is less than or equal to 6.0%.

For purposes of this Specification the concrete is further classified as follows:

1. Conventional Concrete: The target slump is described in Table 346-3 with a tolerance of ± 1.5 inches.
2. Increased Slump Concrete: The maximum target slump is 7 inches with a tolerance of ± 1.5 inches when a Type F, G, I or II admixture is used.
3. Slip-form Concrete: The target slump is 1.5 inches with a tolerance of ± 1.5 inches.
4. Flowing Concrete: Use flowing concrete only in the manufacturing of precast and prestressed products. Request Engineer's authorization to use flowing concrete for cast-in-place applications. The target slump is 9 inches with a tolerance of ± 1.5 inches. Meet the requirements of Section 8.6 Volume II of the Materials Manual.

5. Self-Consolidating Concrete (SCC): Use SCC only in the manufacturing of precast and prestressed products. The minimum target slump flow is 22.5 inches with a tolerance of ± 2.5 inches. Meet the requirements of Section 8.4 Volume II of the Materials Manual.

ARTICLE 346-3.3 is deleted and the following substituted:

346-3.3 Master Proportion Table: Proportion the materials to produce the classes of concrete in accordance with Table 346-3.

The calculation of the water to cementitious materials ratio (w/cm) is based on the total cementitious materials including portland cement and any supplementary cementitious materials used in the mix.

Class of Concrete	28-day Specified Minimum Compressive Strength (f'c) (psi)	Maximum Water to Cementitious Materials Ratio (pounds per pounds)	Target Slump Value (inches)
I (1)	3,000	0.53	3 (2)
I (Pavement)	3,000	0.50	1.5 or 3 (3)
II (1)	3,400	0.53	3 (2)
II (Bridge Deck)	4,500	0.44	3 (2)
III (4)	5,000	0.44	3 (2)
III (Seal)	3,000	0.53	8
IV	5,500	0.41(4)	3 (2)
IV (Drilled Shaft)	4,000	0.41	8.5
V (Special)	6,000	0.37(4)	3 (2)
V	6,500	0.37(4)	3 (2)
VI	8,500	0.37(4)	3 (2)
VII	10,000	0.37(4)	3 (2)

Notes:

(1) For precast three-sided culverts, box culverts, endwalls, inlets, manholes and junction boxes, the target slump value and air content will not apply. The maximum allowable slump is 6 inches, except as noted in (2). The Contractor is permitted to use concrete meeting the requirements of ASTM C478 (4,000 psi) in lieu of the specified ~~Class I or~~ Class II concrete for precast endwalls, inlets, manholes and junction boxes.

(2) Increased slump and slip form concrete as defined in 346-3.1

(3) Meet the requirements of Section 350.

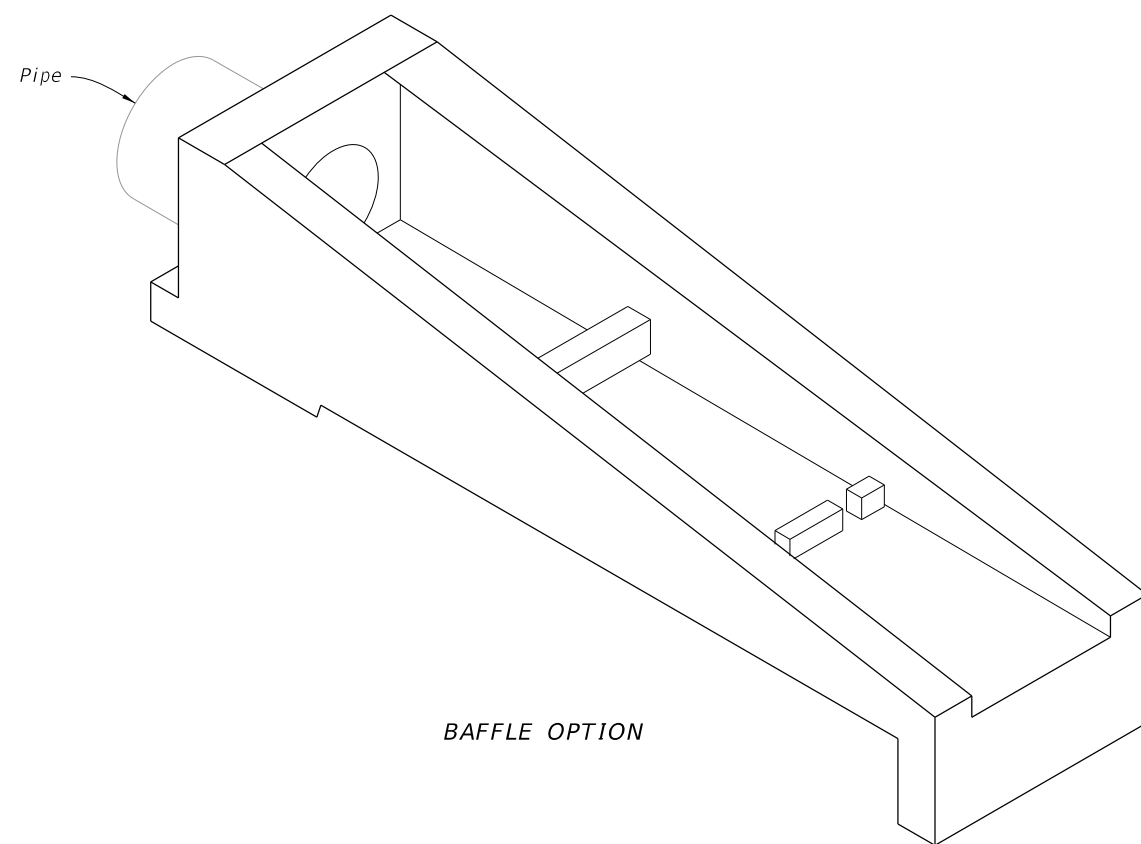
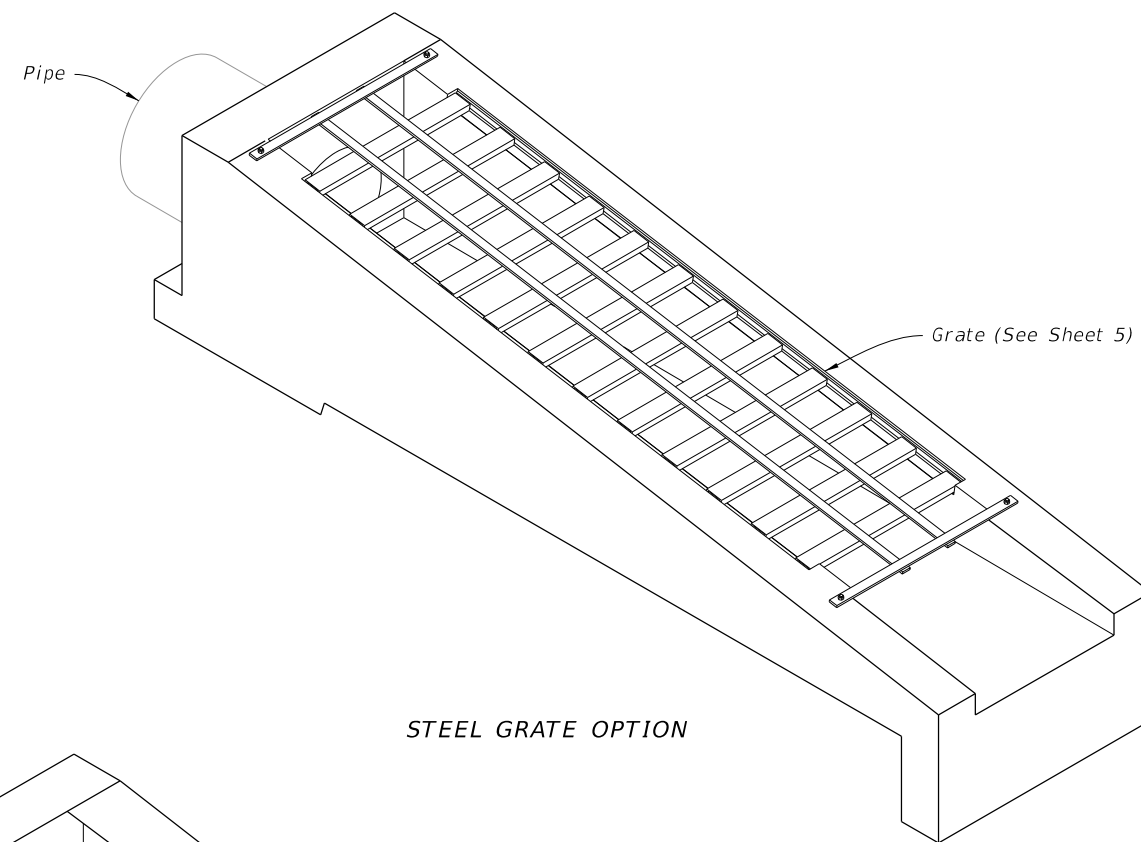
(4) When silica fume or metakaolin is required, the maximum water to cementitious material ratio will be 0.35. When ultrafine fly ash is used, the maximum water to cementitious material ratio will be 0.30.

CHANGED TO: Class II

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



U-TYPE CONCRETE ENDWALLS

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11/01/21

LAST REVISION	DESCRIPTION:
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11/01/21	

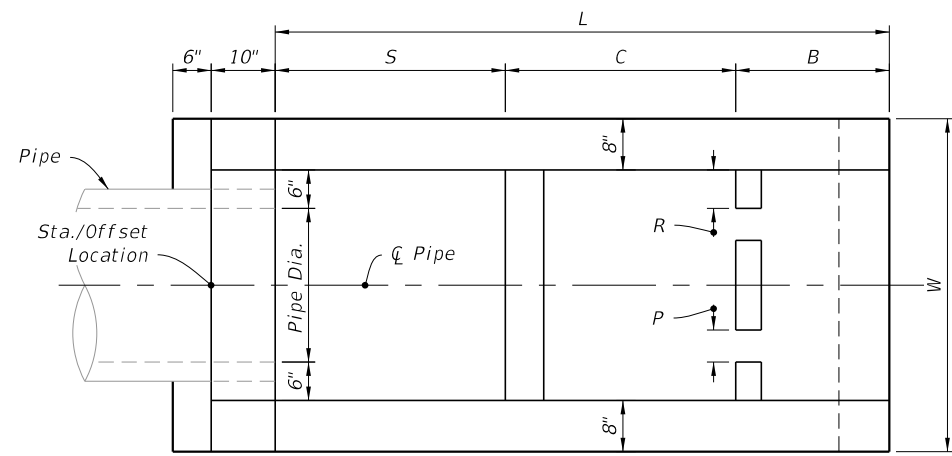


FY 2021-22
STANDARD PLANS

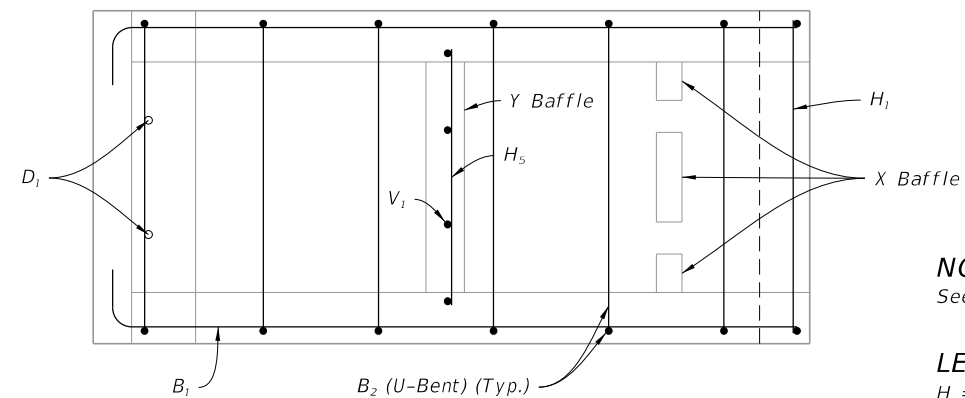
U-TYPE CONCRETE ENDWALLS BAFFLES
& GRATE OPTIONAL 15" TO 30" PIPE

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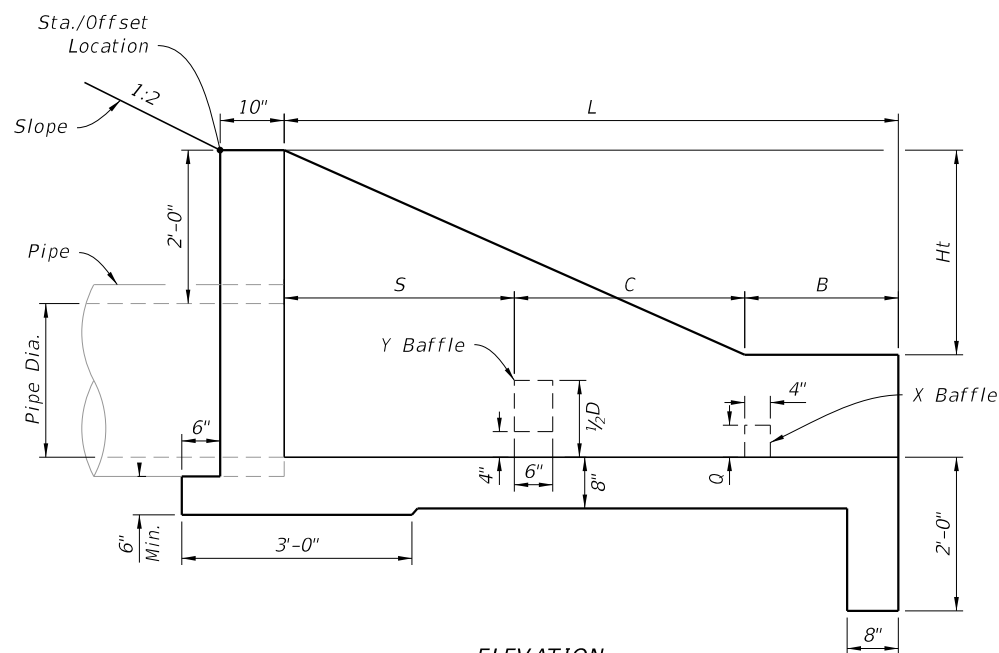
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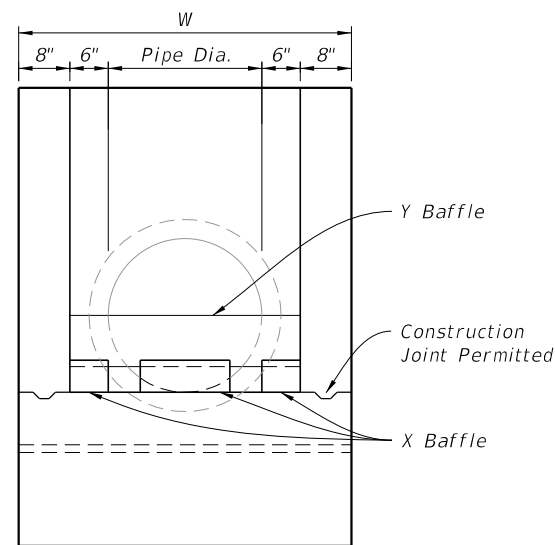
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NOTE:
See Sheet 3 for Bar Bending Diagram.

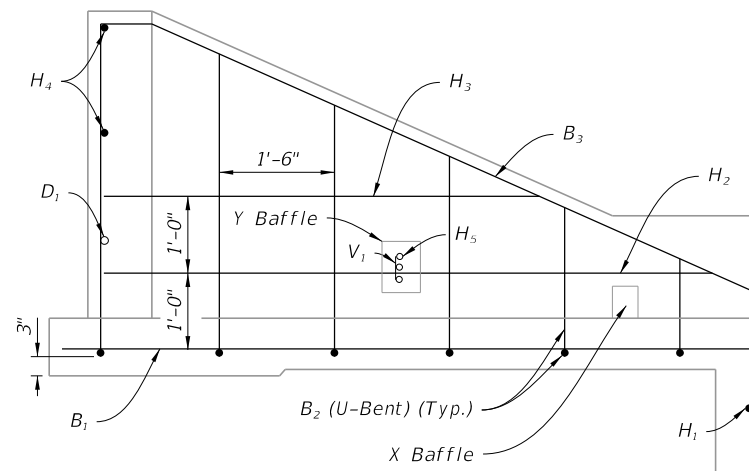
LEGEND:
H = Horizontal Bars
V = Vertical Bars
B = Bent Bars
D = Dowels or Diagonal Bars



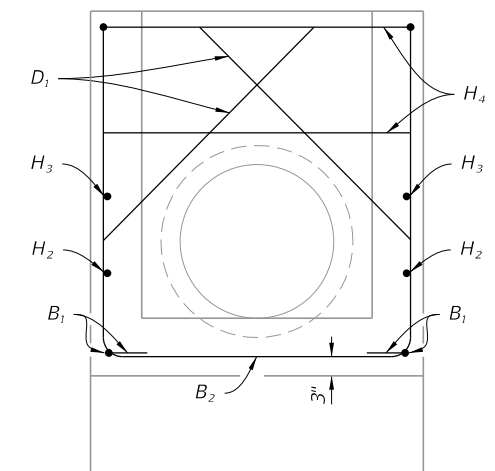
ELEVATION



FRONT VIEW



ELEVATION



BACK VIEW

DIMENSIONAL DETAILS

TABLE 1

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

CHANGED TO: Class II

11/01/21

ENDWALLS FOR 1:2 SLOPES WITH BAFFLES

LAST REVISION 11/01/19	REVISION	DESCRIPTION:
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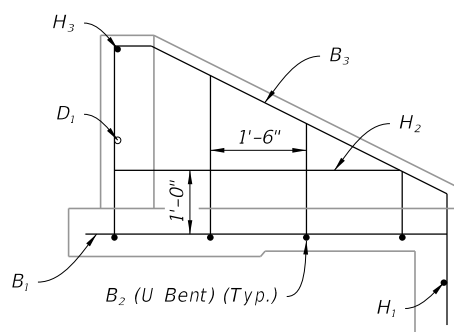
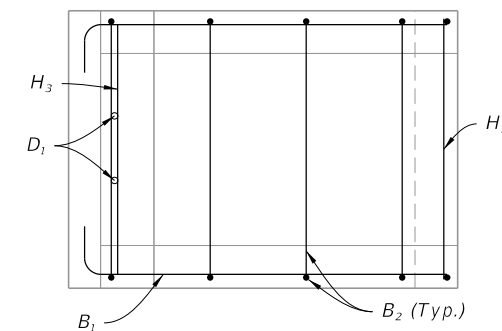
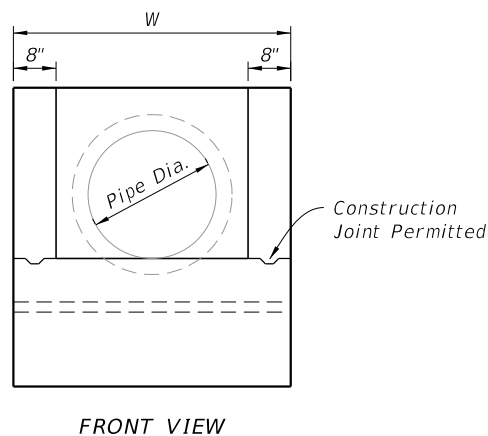
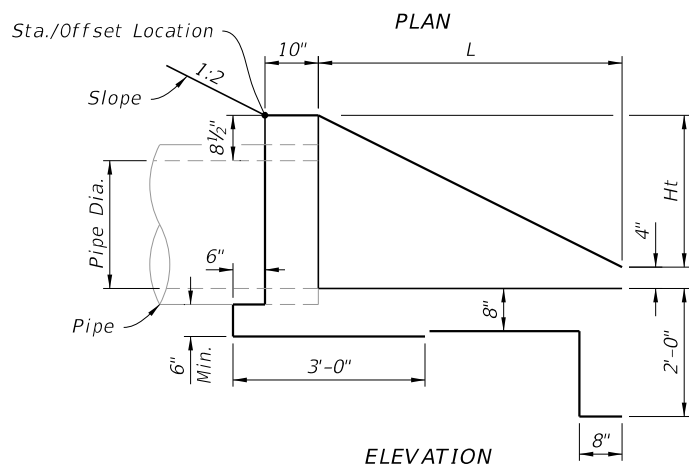
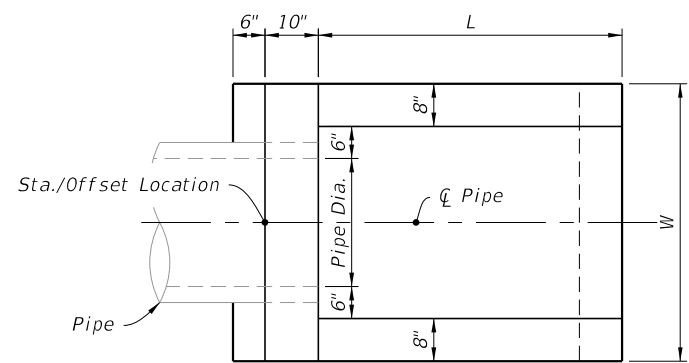


FY 2021-22
STANDARD PLANS

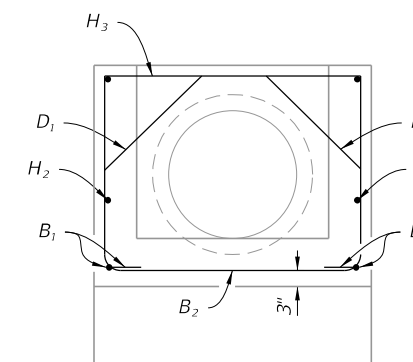
U-TYPE CONCRETE ENDWALLS BAFFLES
& GRATE OPTIONAL 15" TO 30" PIPE

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SHEET
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LEGEND:
 H = Horizontal Bars
 V = Vertical Bars
 B = Bent Bars
 D = Dowels or Diagonal Bars



DIMENSIONAL DETAILS

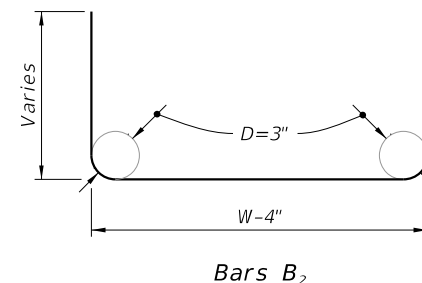
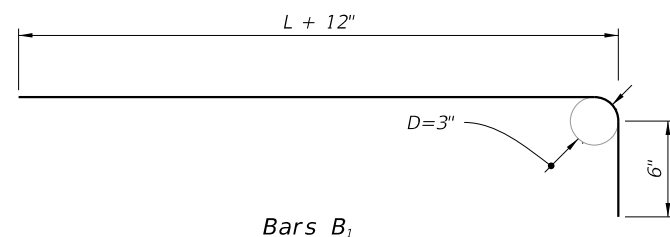
REINFORCING DETAILS

TABLE 2

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'-7 1/2"	3'-7"	0.89	39
18"	1.77	3'-9"	1'-10 1/2"	3'-10"	1.05	43
24"	3.14	4'-9"	2'-4 1/2"	4'-4"	1.40	55
30"	4.91	5'-9"	2'-10 1/2"	4'-10"	1.88	64

CHANGED TO: Class II

ENDWALL WITHOUT BAFFLES



BENDING DIAGRAM

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

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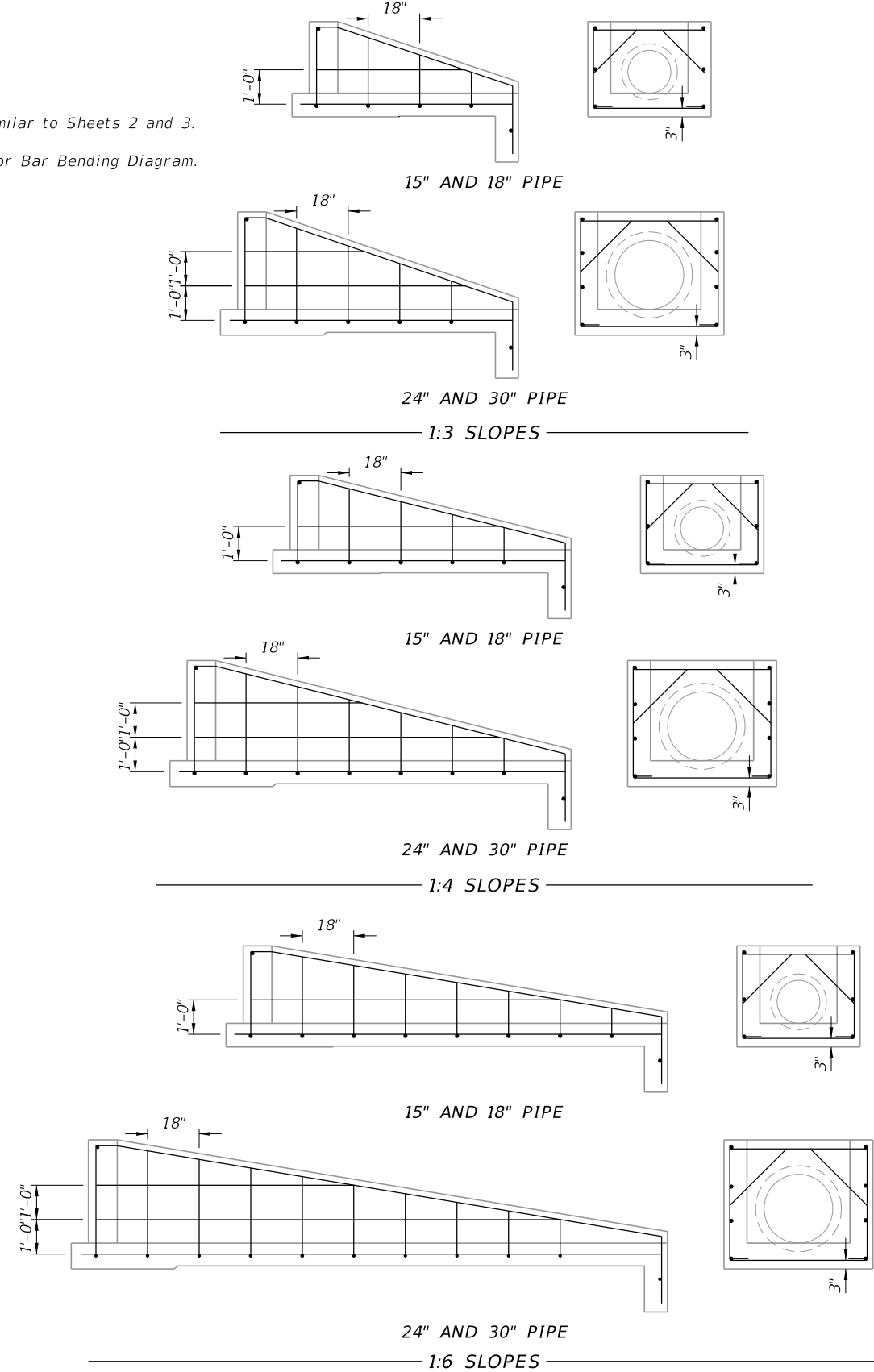


U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE

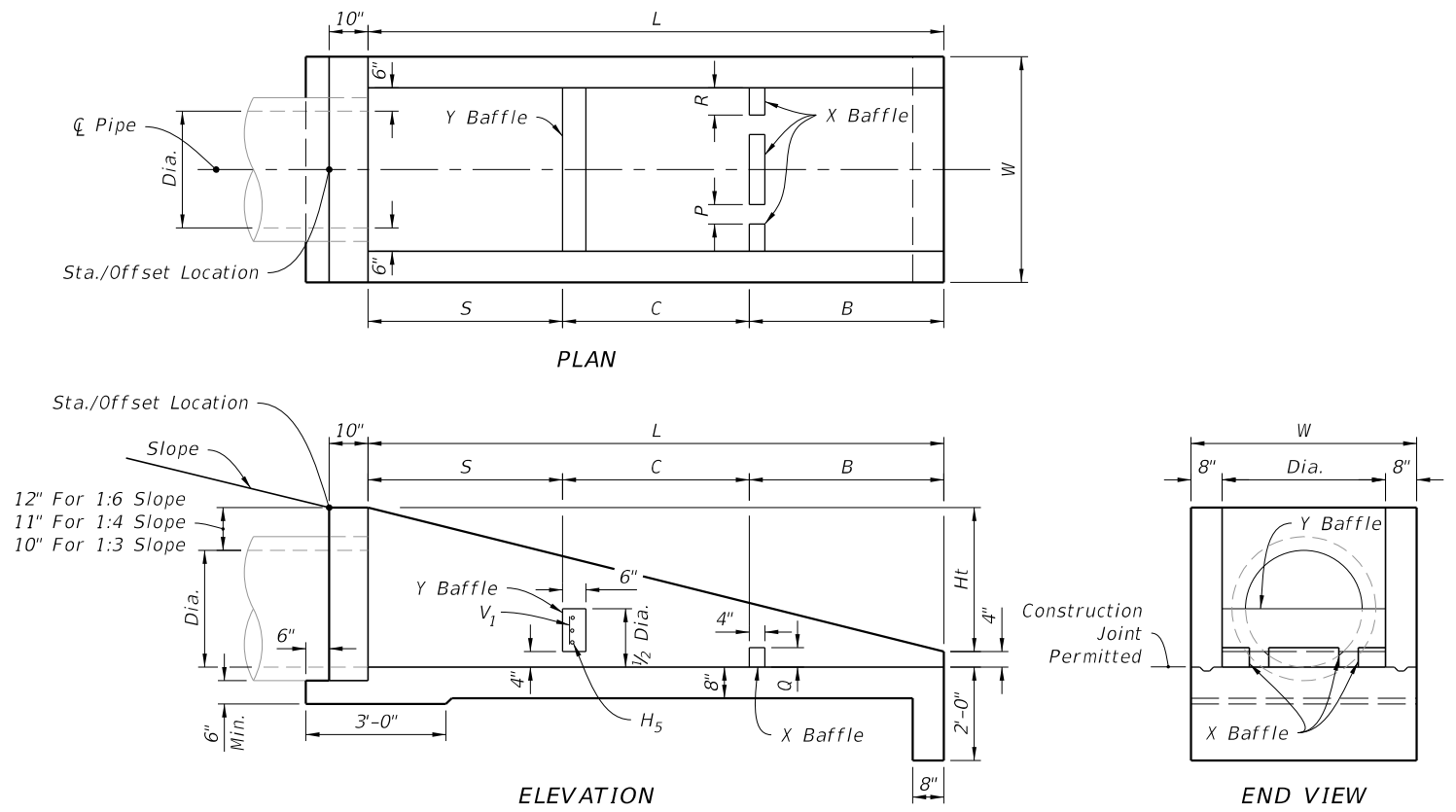
INDEX 430-011

SHEET 3 of 5

NOTE:
 1. Reinforcing similar to Sheets 2 and 3.
 2. See Sheet 3 for Bar Bending Diagram.



REINFORCING DETAILS
 (Side Views And Backwall Sections Shown)



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

TABLE 4

DIMENSIONS AND QUANTITIES FOR ONE J-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"	1.17	7'-6"	2'-6"	4'-4"	1'-9"	1'-9"	1'-9"	1.19	51
	18"	1.77	8'-4"	2'-6"	4'-4"	2'-0"	2'-0"	2'-0"	1.42	56
	24"	3.14	9'-0"	3'-0"	4'-10"	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
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

CHANGED TO: Class II

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

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

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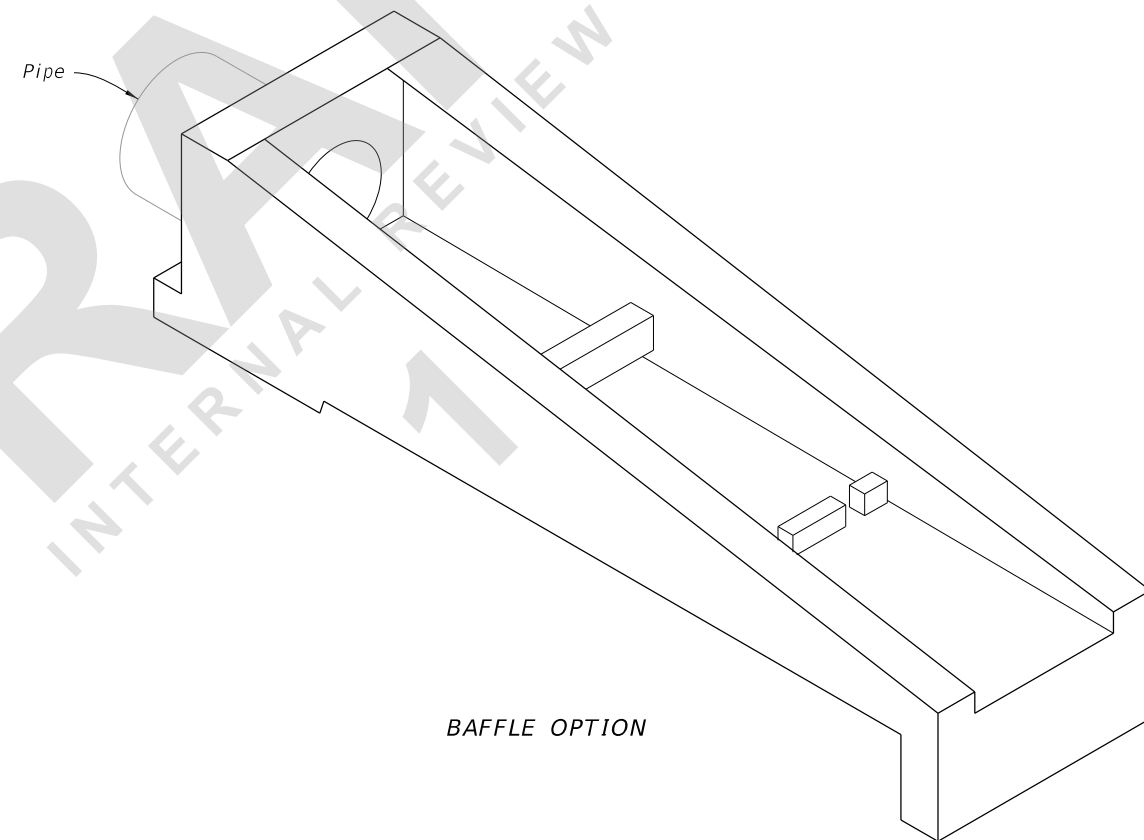
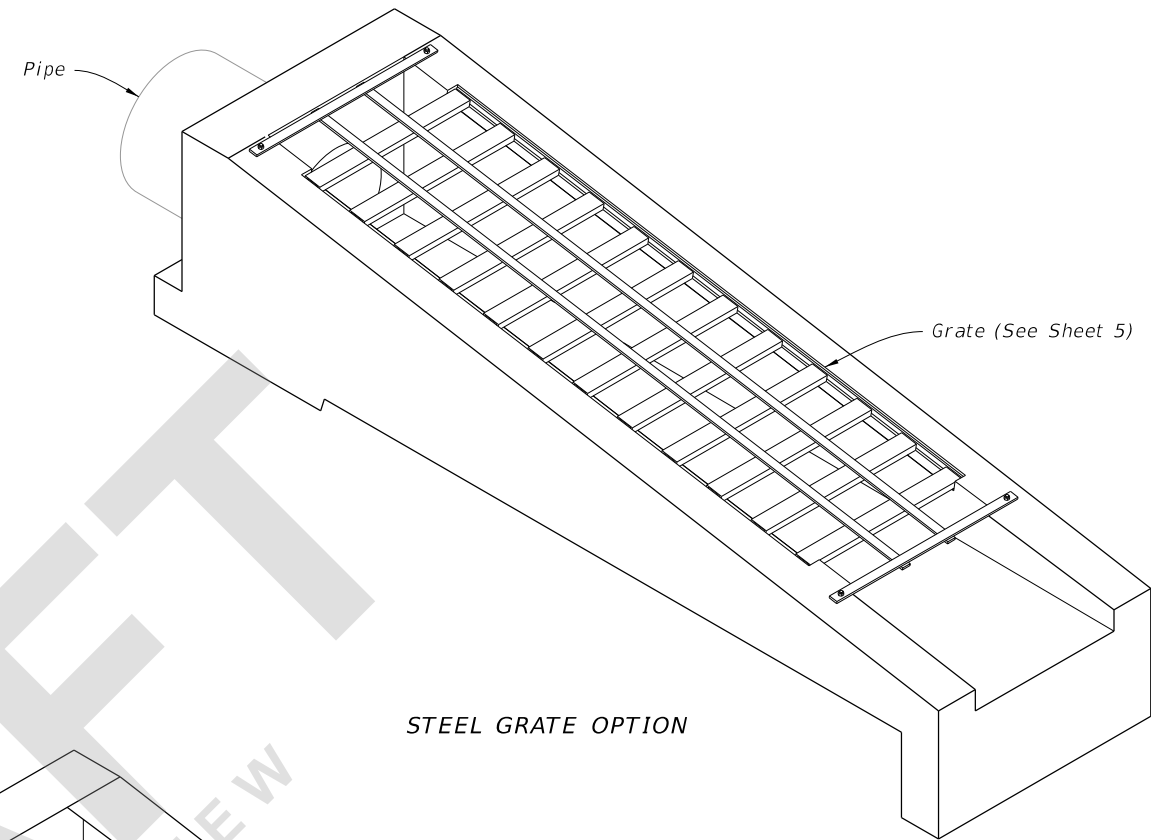
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LAST REVISION	DESCRIPTION:
11/01/19	

GENERAL NOTES:

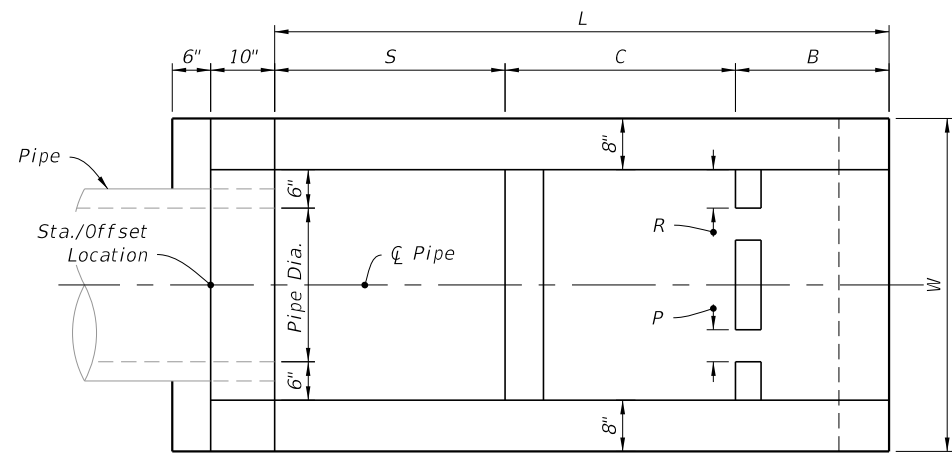
1. Use Class II concrete.
2. Construct Baffles only when called for in Plans.
3. See Sheet 5 when steel grating is required on endwall.
4. All reinforcing #4 bars with 2" clearance except as noted.
5. Channel section C 3x6 may be substituted for C 4x5.4 channel.
6. Endwall may be cast in place or precast concrete. Construct precast units to dimensions shown, or as shown in approved shop drawings. Submit requests for shop drawing approvals to the Engineer. Use Index 425-001 for opening and grouting details.
7. Quantities shown are for estimating purposes only.

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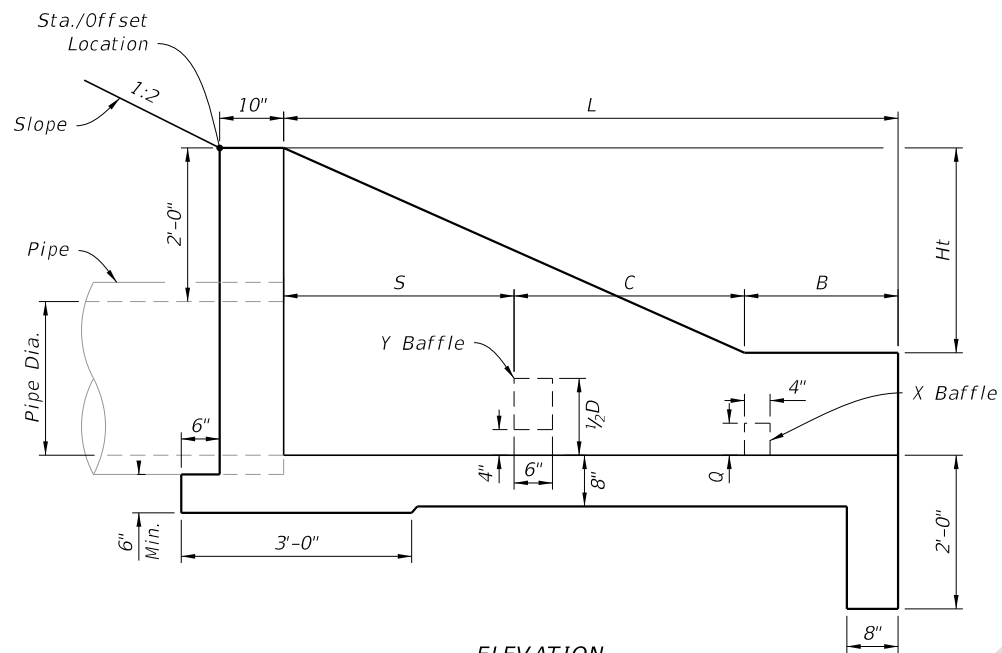


U-TYPE CONCRETE ENDWALLS

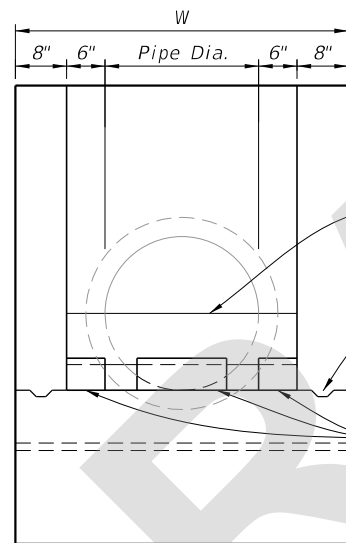
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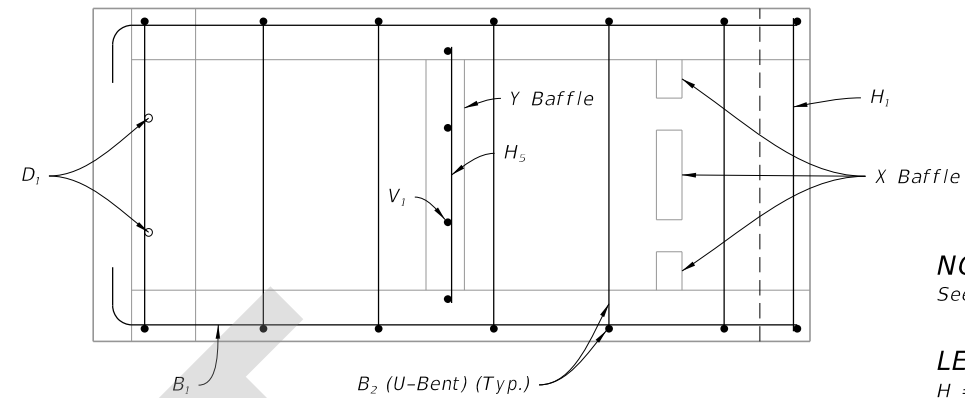
PLAN



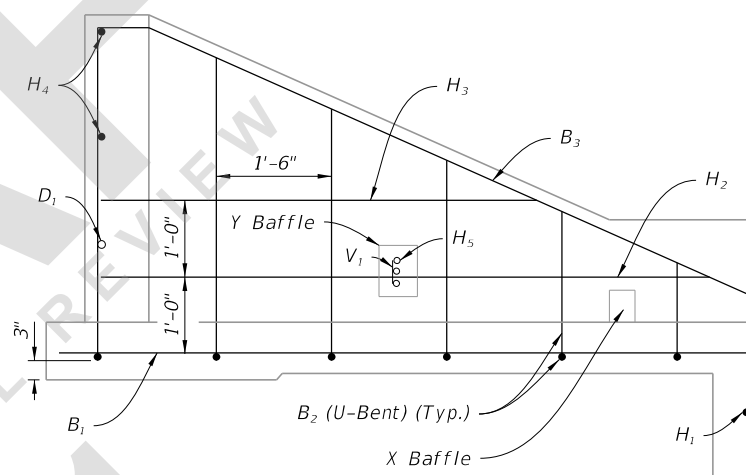
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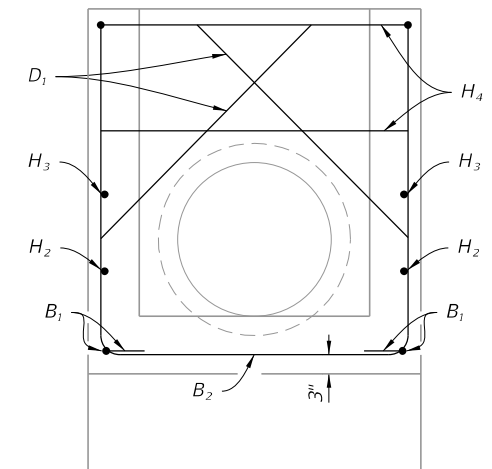
FRONT VIEW



PLAN



ELEVATION



BACK VIEW

NOTE:
See Sheet 3 for Bar Bending Diagram.

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

DIMENSIONAL DETAILS

REINFORCING DETAILS

TABLE-1 DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL														
Pipe		L	Ht	W	S	B	C	X Baffle			Y Baffle Reinf. Steel		Class II 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

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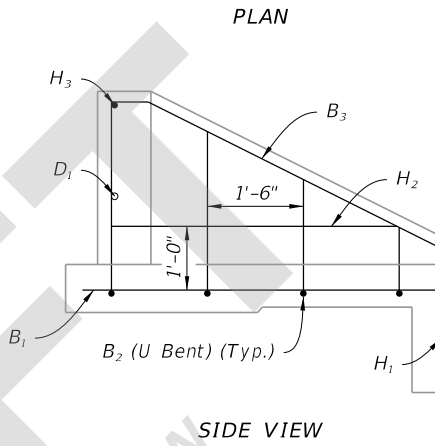
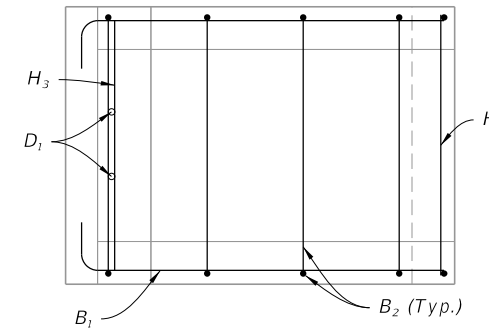
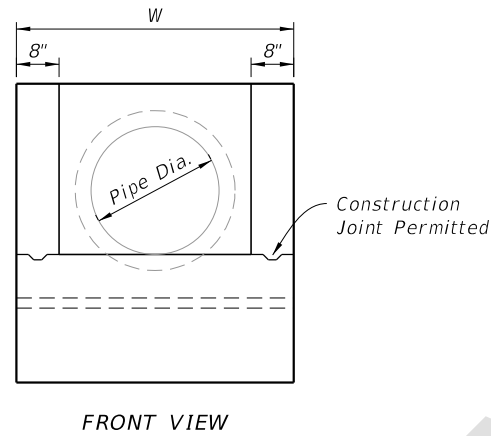
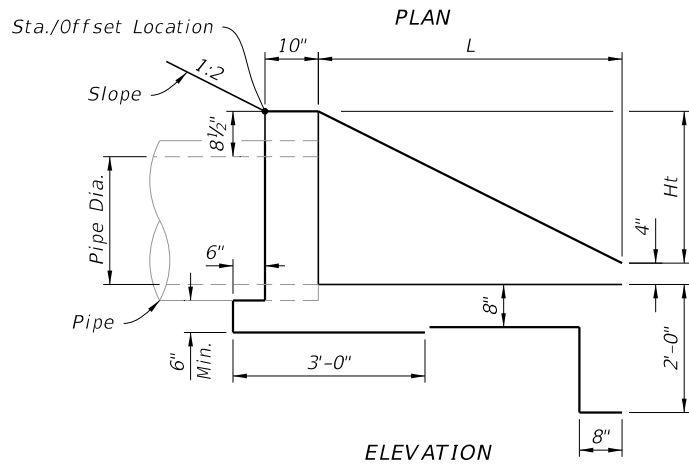
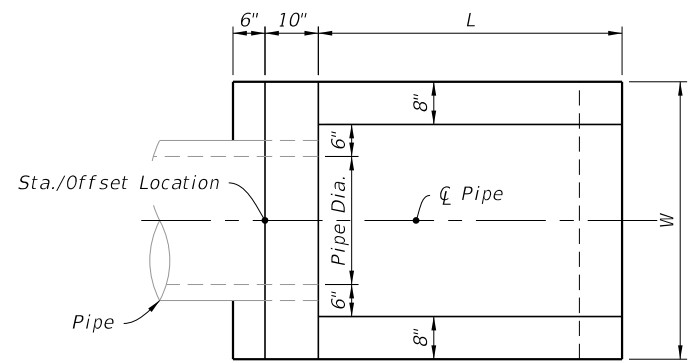
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**FY 2022-23
STANDARD PLANS**

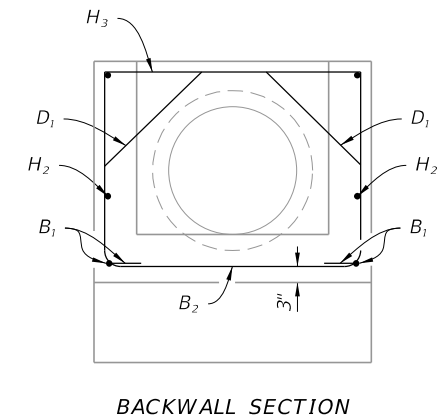
**U-TYPE CONCRETE ENDWALLS BAFFLES
& GRATE OPTIONAL 15" TO 30" PIPE**

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ENDWALLS FOR 1:2 SLOPES WITH BAFFLES



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



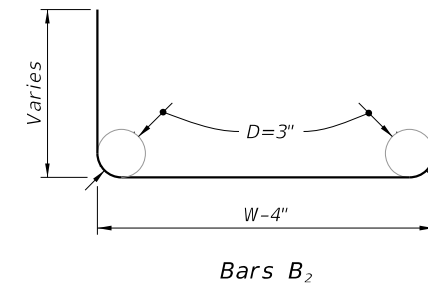
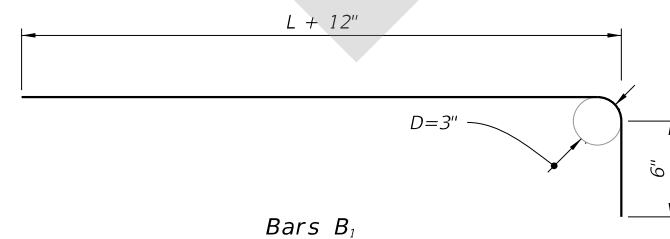
DIMENSIONAL DETAILS

REINFORCING DETAILS

TABLE-2
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL

Pipe		L	Ht	W	Class II 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



BENDING DIAGRAM

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

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FY 2022-23
STANDARD PLANS

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

INDEX
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SHEET
3 of 5

NOTE:

1. Reinforcing similar to Sheets 2 and 3.
2. See Sheet 3 for Bar Bending Diagram.

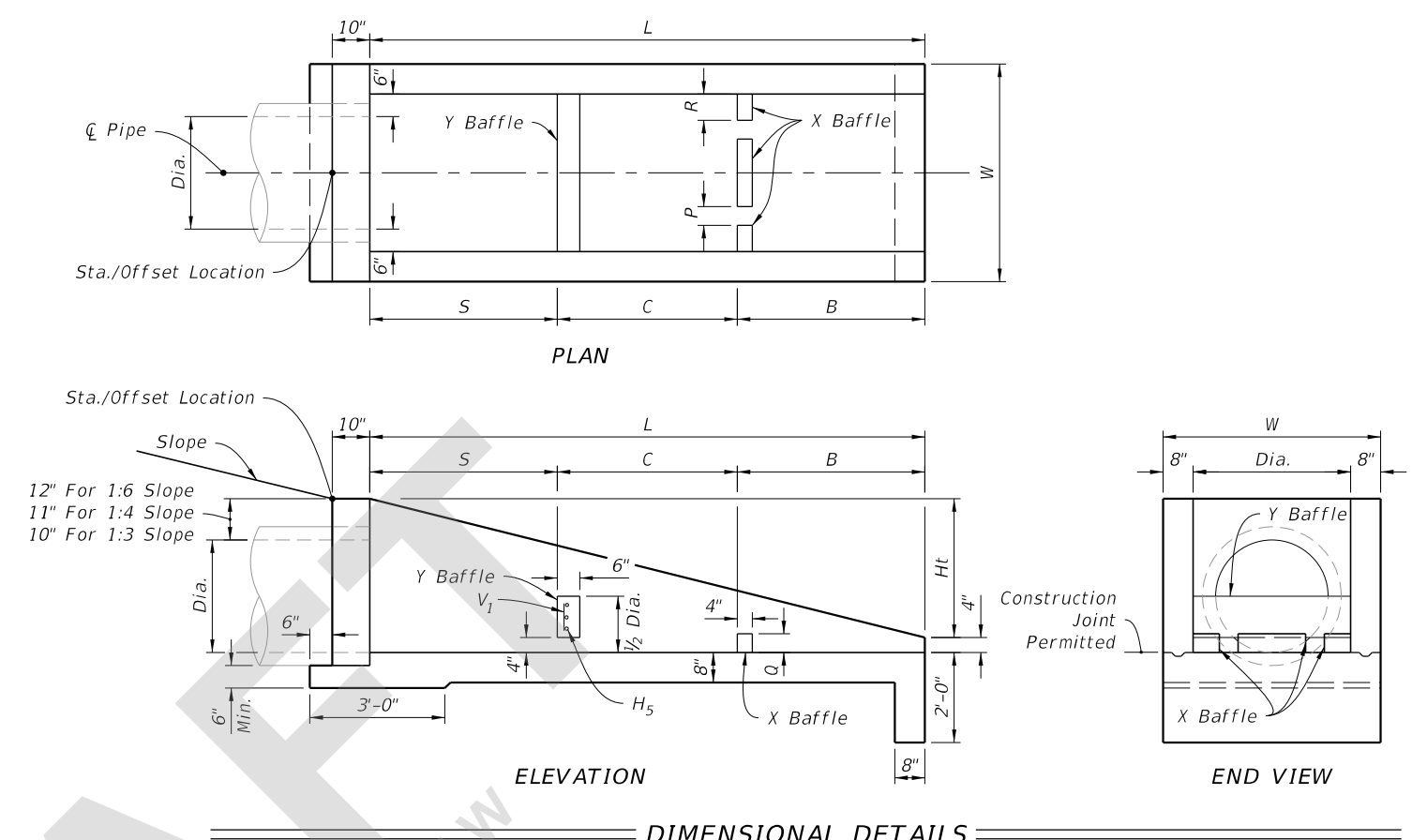
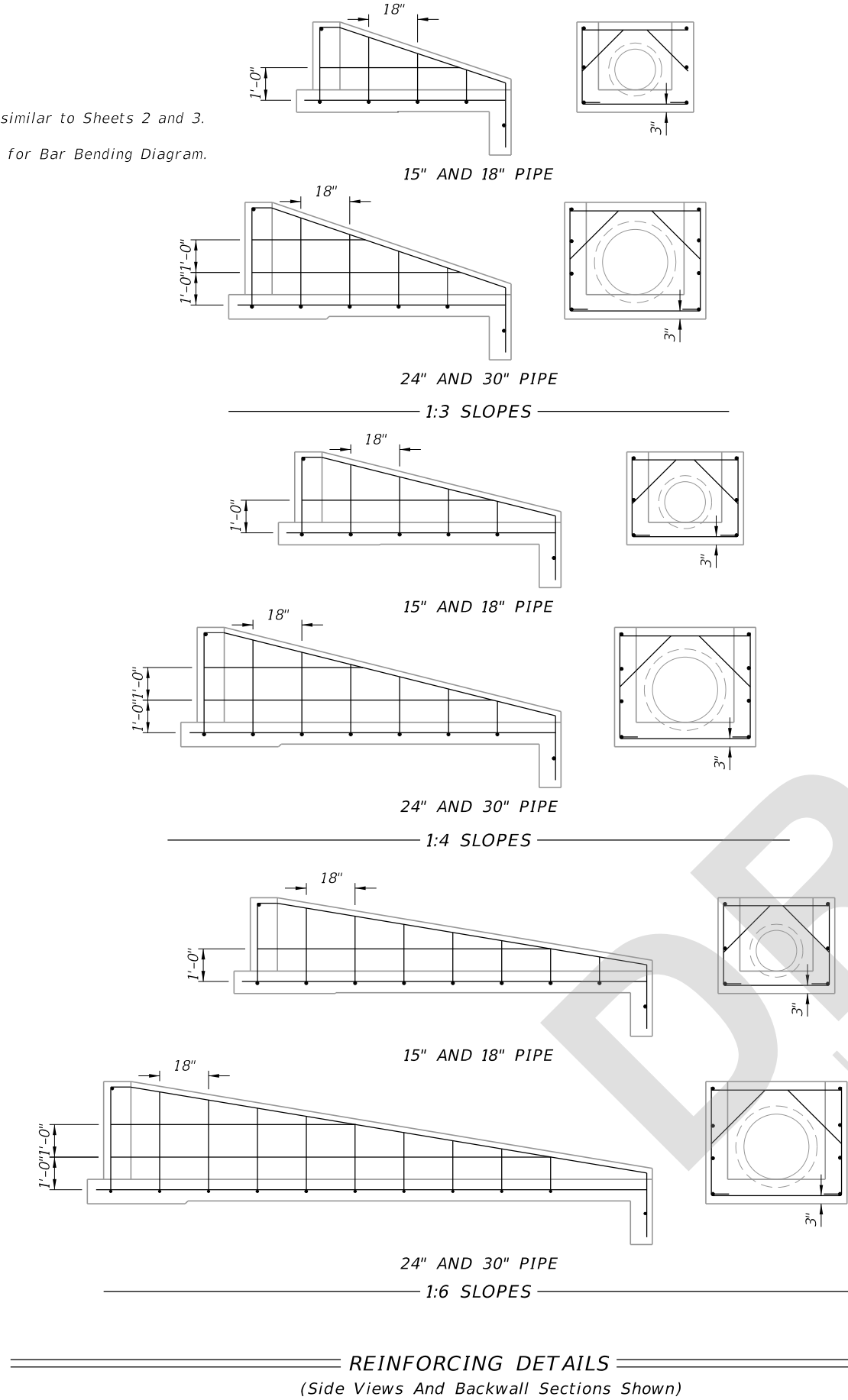


TABLE-3
DIMENSIONS AND QUANTITIES FOR BAFFLES

Pipe Dia.	X Baffle			Y Baffle Reinf. Steel		Class II 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

TABLE-4
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL

Rate Of Slope	Pipe		L	Ht	W	Baffle Locations (When Required)			Class II 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
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

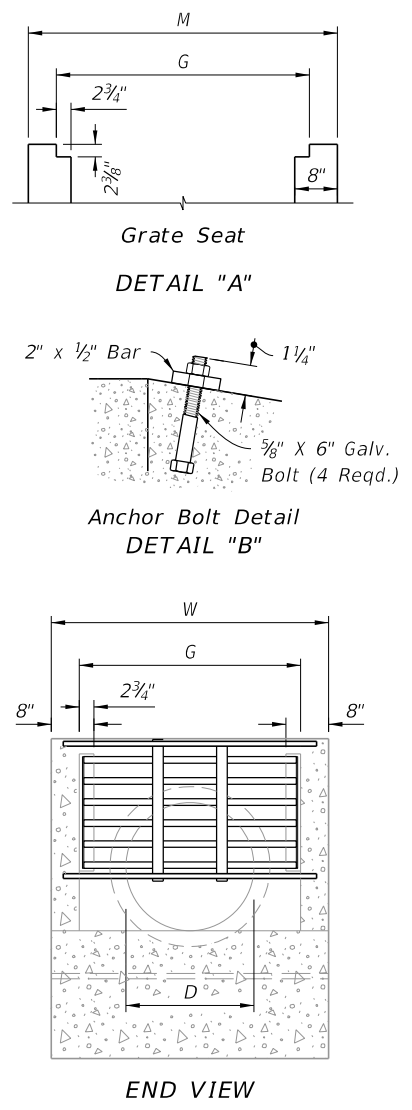
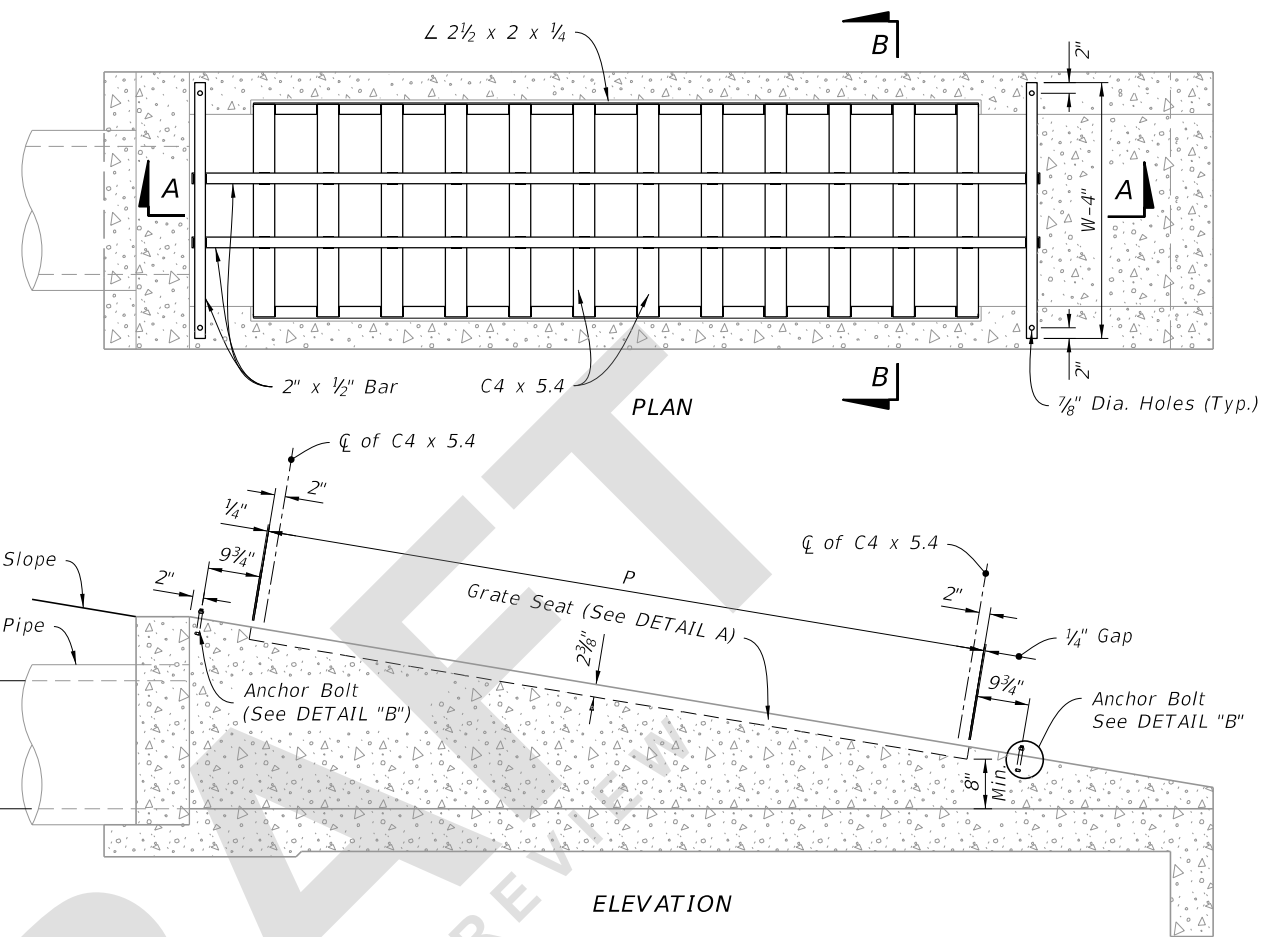
ENDWALLS WITH AND WITHOUT BAFFLES FOR 1:3, 1:4, AND 1:6 SLOPES

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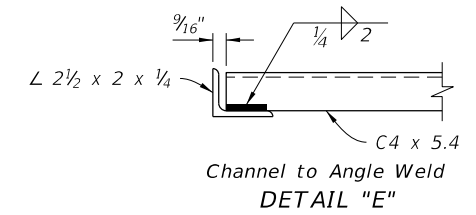
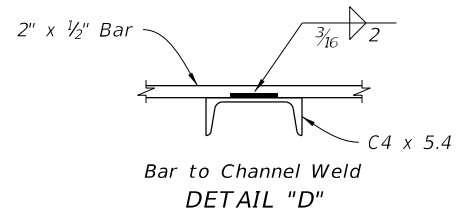
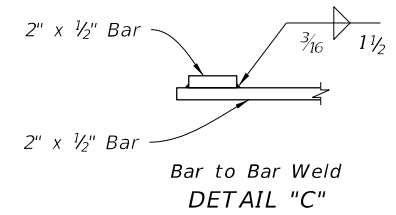
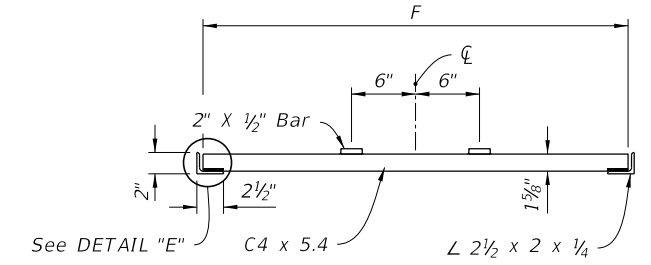
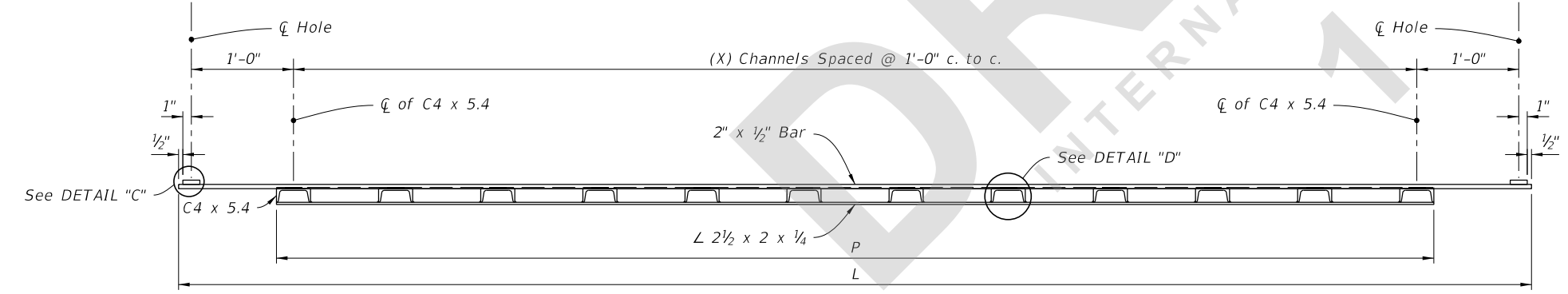
LAST REVISION 11/01/21	REVISION	DESCRIPTION:	 FY 2022-23 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX 430-011	SHEET 4 of 5
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TABLE-5
TABLE OF DIMENSIONS AND QUANTITIES FOR ONE GRATE

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' - 8 1/2"	4'-3"	3'-3"	51	3	2' - 6 7/8"	42	2'-4"	17	110
	18"	2' - 11 1/2"	5'-3"	3'-6"	60	4	2' - 9 7/8"	61	3'-4"	24	145
	24"	3' - 5 1/2"	6'-3"	4'-0"	70	5	3' - 3 7/8"	90	4'-4"	31	191
	30"	3' - 11 1/2"	8'-3"	4'-6"	87	7	3' - 9 7/8"	145	6'-4"	46	278
1:4	15"	2' - 8 1/2"	6'-3"	3'-3"	65	5	2' - 6 7/8"	70	4'-4"	32	167
	18"	2' - 11 1/2"	7'-3"	3'-6"	73	6	2' - 9 7/8"	92	5'-4"	39	204
	24"	3' - 5 1/2"	9'-3"	4'-0"	90	8	3' - 3 7/8"	144	7'-4"	53	287
	30"	3' - 11 1/2"	11'-3"	4'-6"	107	10	3' - 9 7/8"	206	9'-4"	68	381
1:6	15"	2' - 8 1/2"	9'-3"	3'-3"	85	8	2' - 6 7/8"	111	7'-4"	53	249
	18"	2' - 11 1/2"	10'-3"	3'-6"	94	9	2' - 9 7/8"	137	8'-4"	62	292
	24"	3' - 5 1/2"	13'-3"	4'-0"	117	12	3' - 3 7/8"	215	11'-4"	82	414
	30"	3' - 11 1/2"	16'-3"	4'-6"	141	15	3' - 9 7/8"	310	14'-4"	104	555



STEEL GRATE MOUNTING



STEEL GRATE DETAILS

STEEL GRATE OPTION

6/28/2021 9:52:05 AM

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