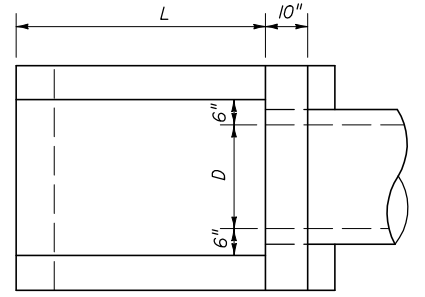
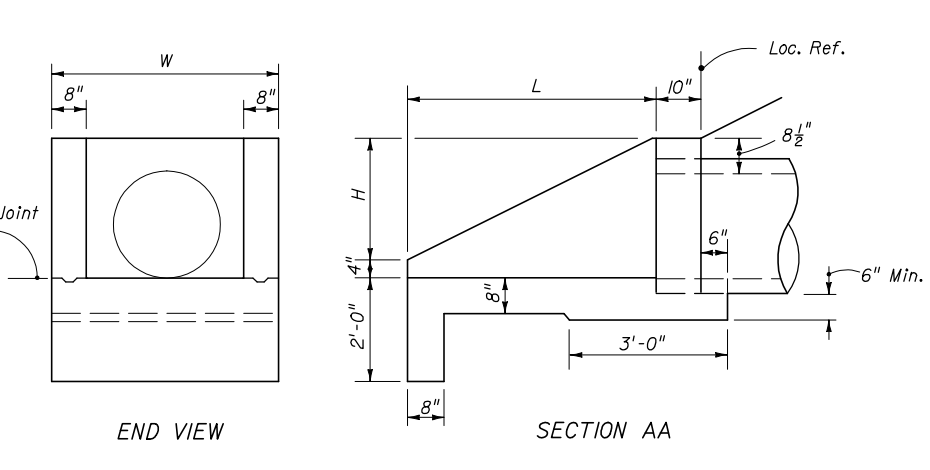
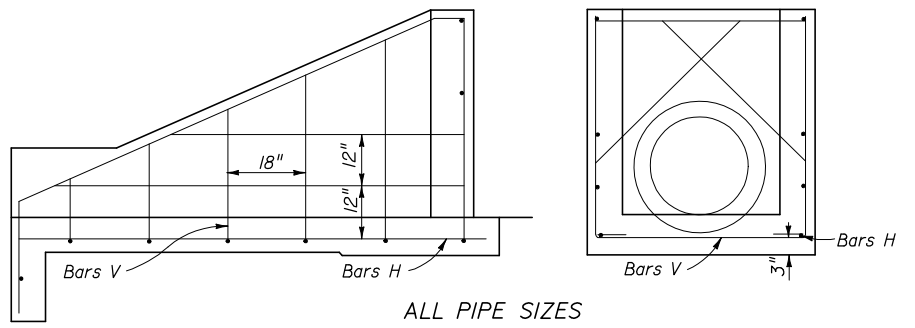


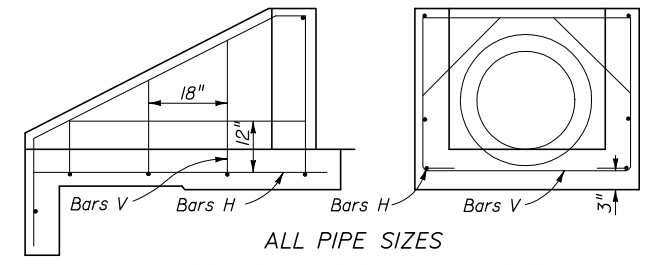
DIMENSIONAL DETAILS



DIMENSIONAL DETAILS



ALL PIPE SIZES  
SIDE VIEW AND BACKWALL SECTION  
REINFORCING DETAIL



ALL PIPE SIZES  
SIDE VIEW AND BACKWALL SECTION  
REINFORCING DETAIL

**DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL**

Pipe Size		L	H	W	S	B	C	X Baffle			Y Baffle Reinf. Steel		Class I Concrete Cu. Yd.	Reinf. Steel Lbs.
D	Area Sq. Ft.							P	Q	R	Bar M	Bar N		
15"	1.23	5'-9"	2'-3 1/2"	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

WITH BAFFLES

**DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL**

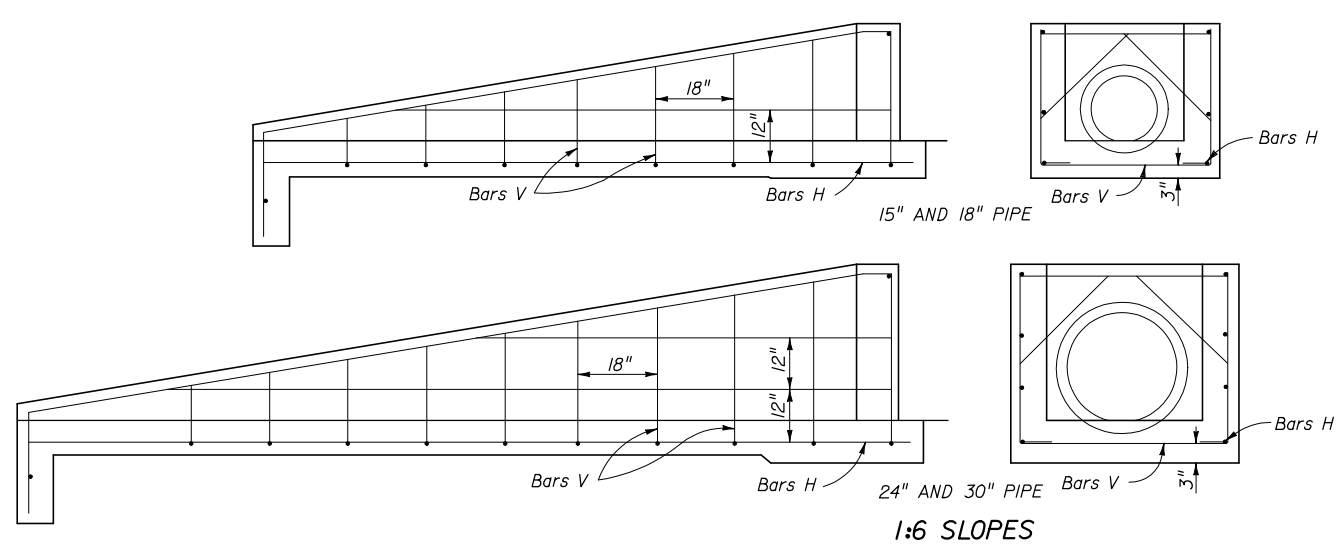
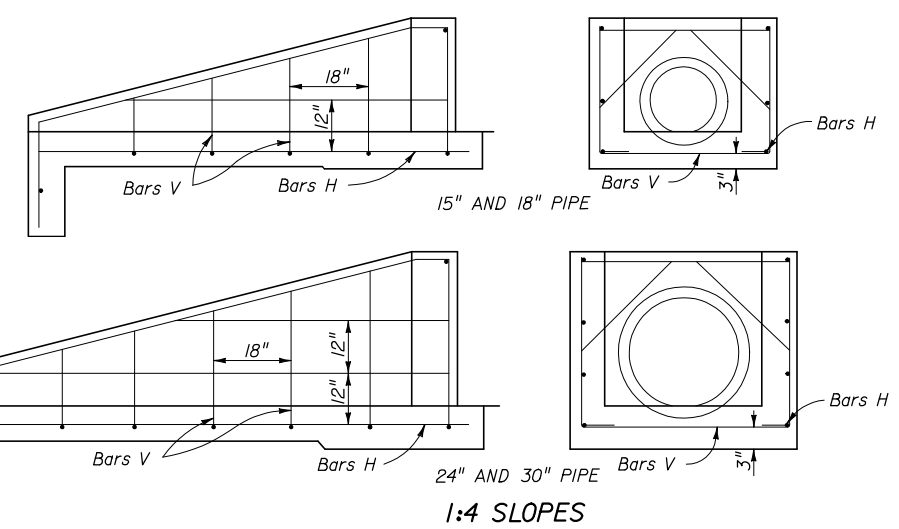
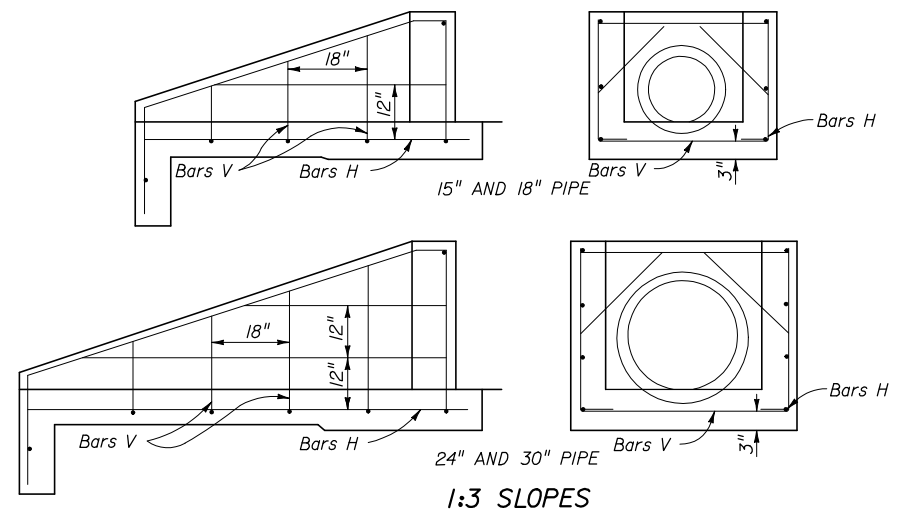
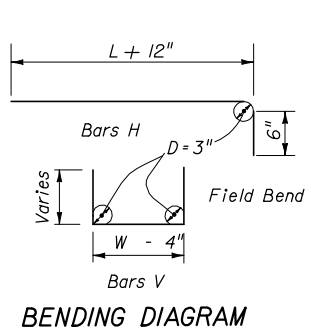
Pipe Size		L	H	W	Class I Concrete Cu. Yd.	Reinf. Steel Lbs.
D	Area Sq. Ft.					
15"	1.23	3'-3"	1'-7 1/2"	3'-7"	0.89	39
18"	1.77	3'-9"	1'-10 1/2"	3'-10"	1.05	43
24"	3.14	4'-9"	2'-4 1/2"	4'-4"	1.40	55
30"	4.91	5'-9"	2'-10 1/2"	4'-10"	1.88	64

WITHOUT BAFFLES

**GENERAL NOTES**

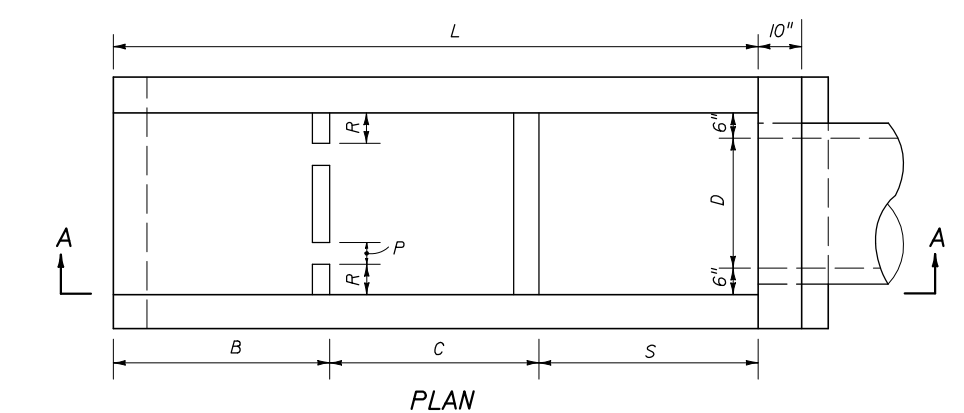
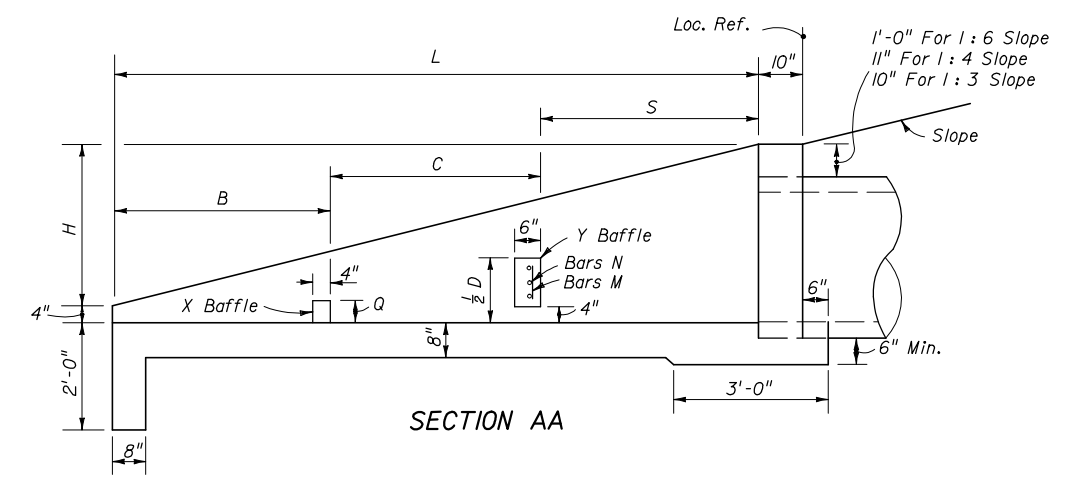
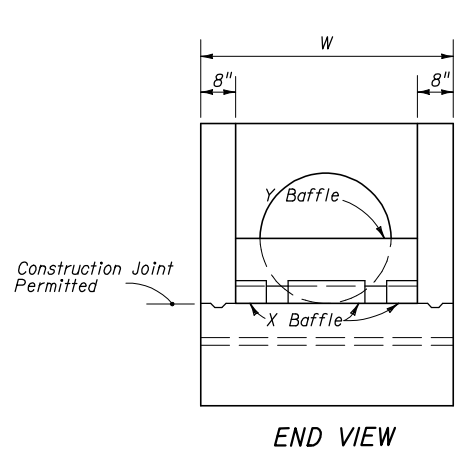
- Baffles to be constructed only when called for in plans.
- When steel grating is required on endwall see Sheet 3 of 3 for details.
- All reinforcing No. 4 bars with 2" clearance except as noted.
- All angles, channels and bars shall be ASTM A242/A242M, A572/A572M or A588/A588M Grade 50 steel. When designated Alternate G in the plans galvanize in accordance with Section 962 and 425-3.2 of the Standard Specifications.
- Channel section C 3 x 6 may be substituted for C 4 x 5.4 channel.
- Precasting of this endwall will be permitted. Precast units shall conform to the dimensions shown or in accordance with approved shop drawings. Request for shop drawing approval shall be directed to the State Drainage Engineer. Use Index No. 201 for opening and grouting details.
- Concrete meeting the requirements of ASTM C-478 (4000 psi) may be used in lieu of Class I concrete in precast units manufactured in plants which are under the Standard Operating Procedures for the inspection of precast drainage products.
- Sodding shall be in accordance with Index No. 281, and paid for under the contract unit price for Performance Turf, SY.
- Endwall to be paid for under the contract unit price for U-Endwall, Each. Payment shall include cost of concrete, reinforcing steel, and when called for in the plans, steel grating, baffles and accessories. Quantities shown are for estimating purposes only.

**ENDWALLS FOR 1:2 SLOPES**



**SIDE VIEWS AND BACKWALL SECTIONS REINFORCING DETAILS**

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



**DIMENSIONAL DETAILS**

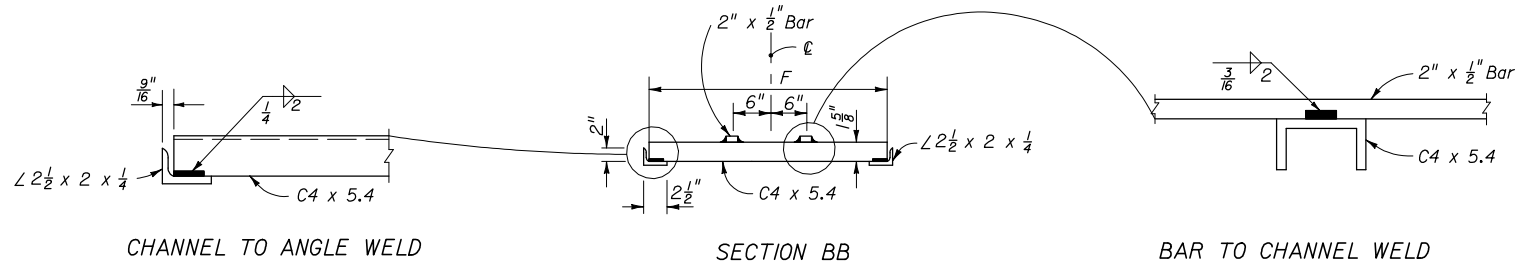
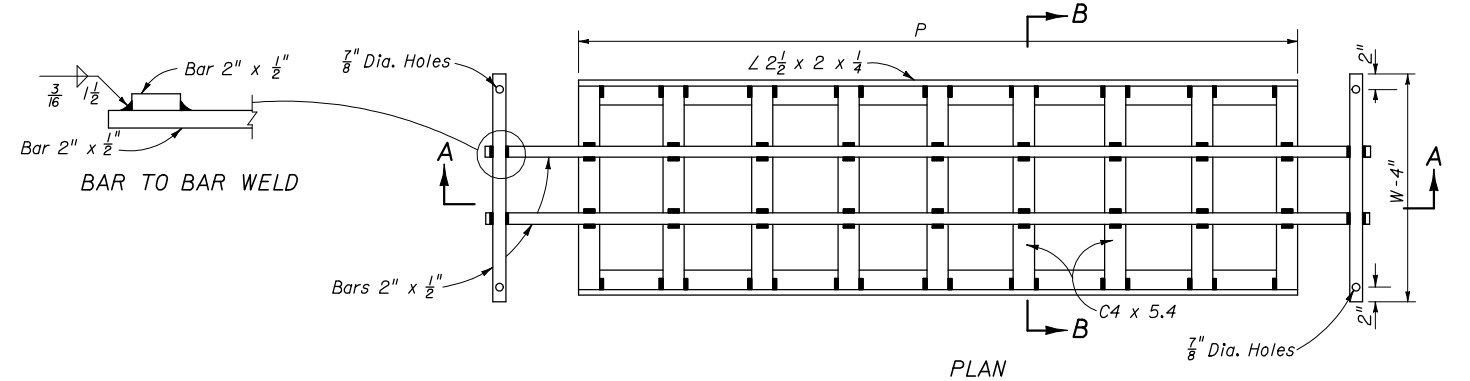
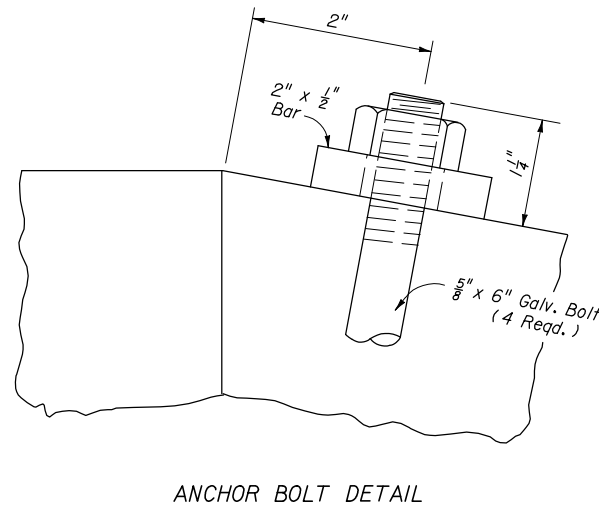
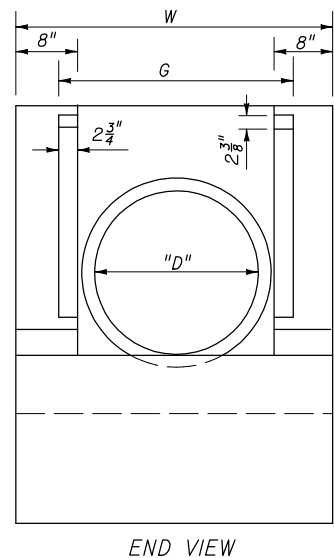
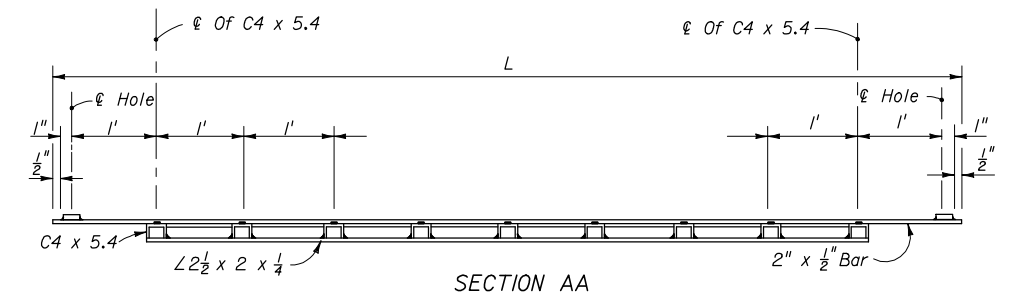
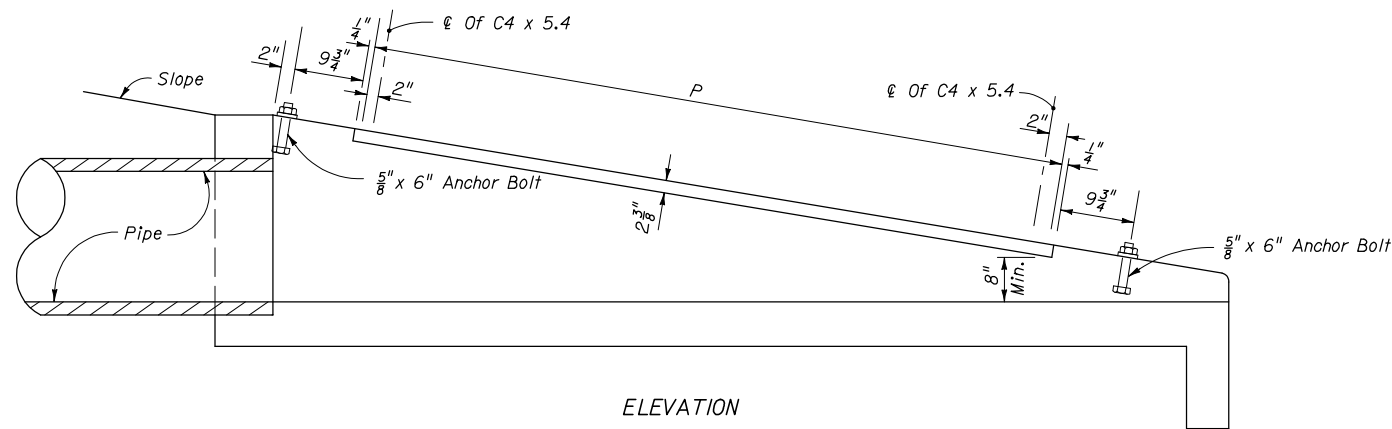
**DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL**

Rate Of Slope	Pipe Size		Dimensions			Baffle Locations (When Required)			Concrete Class I Cu. Yd.	Reinf. Steel Lbs.
	D	Area Sq. Ft.	L	H	W	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

**DIMENSIONS AND QUANTITIES FOR BAFFLES**

Pipe Size D	X Baffle			Y Baffle Reinf. Steel		Concrete Class I Cu. Yd.	Reinf. Steel Lbs.
	P Width	Q Height	R Length	Bar M	Bar N		
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





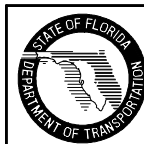
**MOUNTING FOR STEEL GRATE**

**STEEL GRATE**

STEEL GRATING USE CRITERIA

1. Grates to be used on pipe culvert endwalls located within the designated clear zone. Positive debris control shall be provided at all upgradient openings. Grates shall not be used unless one or more of the following conditions exist:
  - A. Drainage area to culvert consists of median or infield areas or areas where debris and/or drift is negligible.
  - B. Runoff to culvert is by sheet flow or in such ill defined channels that debris transport is not considered a major problem.
  - C. Runoff to culvert is minor except on an infrequent basis (10 to 15 year frequency); for example a drainage basin in flat sandy terrain with normally low ground water table.
  - D. Areas where culvert blockage with resultant backwater would not seriously affect roadway embankment, traffic operation or upland property.
2. Steel grating to be used only where called for in plans.

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE GRATE											
Rate Of Slope	Size Pipe " D "	G	2 Each Bars @ 3.4 Lbs./L.F.			(X) Channels @ 5.4 Lbs./L.F.			2 Angles @ 3.62 Lbs./L.F.		Total Weight Lbs.
			L	W-4"	Lbs.	(X)	F	Lbs.	P	Lbs.	
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
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
1:3	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



2008 FDOT Design Standards

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

Last Revision 00  
Sheet No. 3 of 3  
Index No. 261