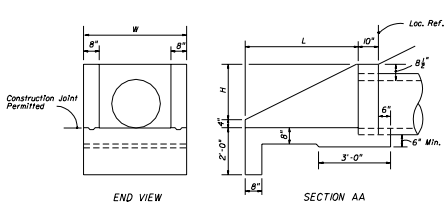


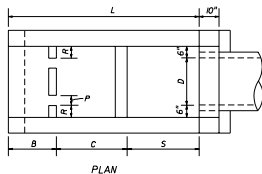
END VIEW

SECTION AA

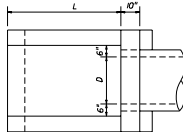


END VIEW

SECTION AA



PLAN



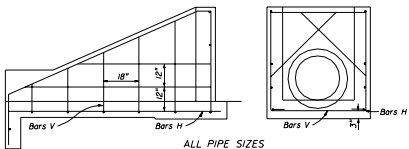
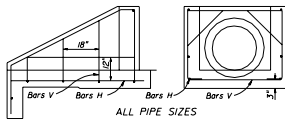
PLAN

DIMENSIONAL DETAILS

DIMENSIONAL DETAILS

GENERAL NOTES

- Baffles to be constructed only when called for in plans.
- When steel grating is required an 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/A424M, A572/A57M or A588/A588M Grade 50 steel, when designated Alternate G in the plans galvanized in accordance with Section 962-7 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 Sodding, SF.
- Endwall to be paid for under the contract unit price for Class I Concrete (Endwalls), Cy and Reinforcing Steel (Roadways), LB. Cost of grates to be paid for under the contract unit price for Endwall Grate, LB, plan quantity. Cost of galvanized bolts and nuts to be included in the bid price for the grate.

ALL PIPE SIZES
SIDE VIEW AND BACKWALL SECTION
REINFORCING DETAILALL PIPE SIZES
SIDE VIEW AND BACKWALL SECTION
REINFORCING DETAIL

DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL														
Pipe Size		x Baffle						y Baffle Reinf. Steel		Concrete Class I Cu. Yd.	Reinf. Steel Lbs.			
D	Area Sq. Ft.	L	H	W	S	B	C	P	D			R	Bar M	Bar N
15"	1.23	5'-9"	2'-3 1/2"	3'-7"	2'-3"	1'-3"	2'-3"	4"	4"	5"	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

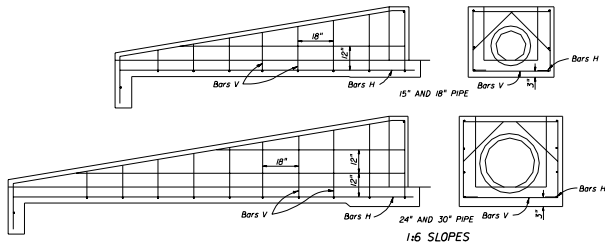
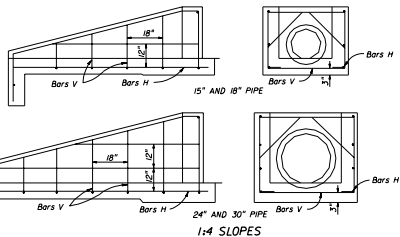
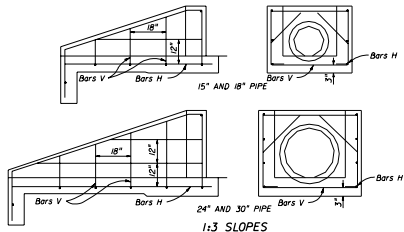
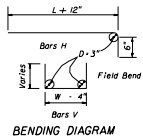
DIMENSIONS AND QUANTITIES FOR ONE U-ENDWALL						
Pipe Size		L	H	W	Concrete Class I Cu. Yd.	Reinf. Steel Lbs.
D	Area Sq. Ft.					
15"	1.23	3'-3"	1'-7 1/2"	3'-7"	0.89	39
18"	1.77	3'-9"	1'-10 1/2"	3'-10"	1.05	43
24"	3.14	4'-9"	2'-4 1/2"	4'-4"	1.40	55
30"	4.91	5'-9"	2'-10 1/2"	4'-10"	1.88	64

WITHOUT BAFFLES

ENDWALLS FOR 2:1 SLOPES

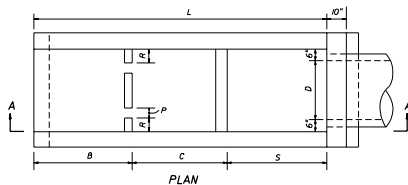
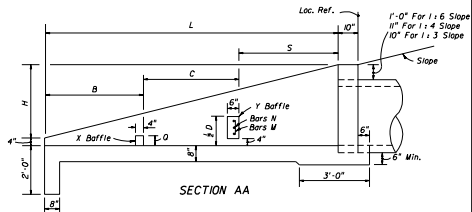
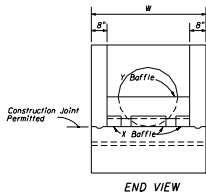
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGNU-TYPE CONCRETE ENDWALLS
BAFFLES AND GRATE OPTIONAL
15" TO 30" PIPE

Revised By	DATE	Approved By	DATE
Drawn By	08/05	Checked By	08/05
Checked By	00	1 of 3	261



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		L	H	W	Baffle Locations (When Required)			Concrete Class I Cu. Yd.	Reinf. Steel Lbs.
	D	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"	2.55	92
	30"	4.91	12'-4"	3'-1"	4'-10"	4'-2"	4'-2"	4'-0"	3.54	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

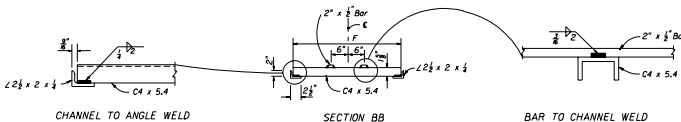
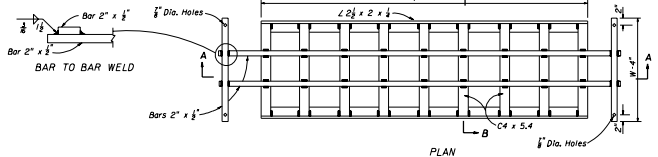
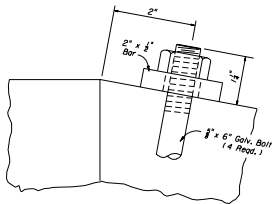
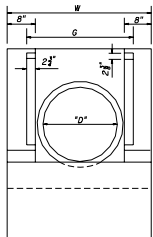
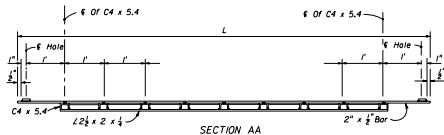
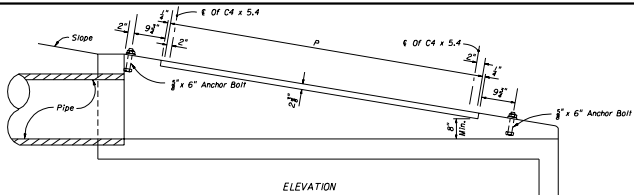
DIMENSIONS AND QUANTITIES FOR BAFFLES							
Pipe Size D	X Baffle		Y Baffle	Reinf. Steel		Concrete Class I Cu. Yd.	Reinf. Steel Lbs.
	p Width	q Height		R Length	Bar M		
15"	4"	4"	4"	2-#4	1-#4	0.0	4
18"	4"	4"	5"	3-#4	2-#4	0.0	8
24"	5"	5"	6"	4-#4	3-#4	0.0	12
30"	5"	5"	7"	4-#4	4-#4	0.0	16

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

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

Designed By: J & M Engineers
Drawn By: 00 9/85
Checked By: 00

Approved By: J & M Engineers
Scale: AS SHOWN
Sheet No. 2 of 3



MOUNTING FOR 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 to 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 25 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.			1 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 1/2"	111	7'-4"	53	249	
	18"	2'-11 1/2"	10'-3"	3'-6"	94	9	2'-9 1/2"	137	8'-4"	62	292	
	24"	3'-5 1/2"	13'-3"	4'-0"	117	12	3'-3 1/2"	215	11'-4"	82	464	
	30"	3'-11 1/2"	16'-3"	4'-6"	141	15	3'-9 1/2"	310	14'-4"	104	555	
1:4	15"	2'-6 1/2"	6'-3"	3'-3"	65	5	2'-6 1/2"	70	4'-4"	32	167	
	18"	2'-11 1/2"	7'-3"	3'-6"	73	6	2'-9 1/2"	92	5'-4"	39	204	
	24"	3'-5 1/2"	9'-3"	4'-0"	90	8	3'-3 1/2"	144	7'-4"	53	287	
	30"	3'-11 1/2"	11'-3"	4'-6"	107	10	3'-9 1/2"	206	9'-4"	68	381	
1:3	15"	2'-8 1/2"	4'-3"	3'-3"	51	3	2'-6 1/2"	42	2'-4"	17	110	
	18"	2'-11 1/2"	5'-3"	3'-6"	60	4	2'-9 1/2"	61	3'-4"	24	145	
	24"	3'-5 1/2"	6'-3"	4'-0"	70	5	3'-3 1/2"	90	4'-4"	31	191	
	30"	3'-11 1/2"	8'-3"	4'-6"	87	7	3'-9 1/2"	145	6'-4"	46	278	

STEEL GRATE

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

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

Designed By: _____
 Drawn By: **GP** **g/m**
 Checked By: _____
 Approved By: **A. A. McLaughlin**
 STATE ENGINEER
 Date: _____
 Scale: _____
 00 of 3
 261