

6



METAL APRON ENDWALLS											
PIPE	E MIN. THICK.			DIMENSIONS (Inches)					APPROX.		
DIA.	(Inches)		A	В	H L	L	Li	L ₂	W	SLOPE	BODY
(IN")	STEEL	ALUM.	(±]")	(MAX.)	(±1")	(±1 ½")	0	0	(±2")	3L0. L	
12	.064	.060	6	6	6	21	12	171/2	₽4	21/2+o 1	1Pc.
15	.064	.060	7	8	6	2-6	14	213/4	3 0	21/2+o 1	1Pc.
18	.064	.060	8	10	6	31	15	281/4	3 6	21/2+o 1	1Pc.
21	.064	.060	9	12	6	36	18	295/8	42	2½+o 1	1Pc.
24	.064	.075	10	13	6	41	18	371/4	48	21/2+o 1	1Pc.
30	.079	.075	12	16	8	51	18	521/4	6 0	21/2+o 1	1Pc.
36	.079	.105	14	19	9	60	አ	59¾	7 2	21/2+o 1	2 Pc.
42	.109	.105	16	22	H	69	አ	₹5%	8 4	2½+o 1	2 Pc.
48	.109	.105	18	2.7	12	7-8	24	8 1	90	21/4+o 1	3 Pc.
54	.109	.105	18	30	12	84	30	851/2	102	21/4+0 1	3 Pc.
60	.109×	.105×	18	3-3	12	8-7	_	_	114	2 to 1	3 Pc.
66	.109×	.105×	18	36	12	8-7	_	_	120	2 to 1	3 Pc.
72	.109×	.105×	18	39	12	87	_	_	126	2 to 1	3 Pc.
78	.109×	.105×	18	42	12	87	_	_	132	11/2 to 1	3 Pc.
84	.109×	.105×	18	45	12	87	_	_	138	11/2+0 1	3 Pc.
90	.109×	.105×	18	37	12	87		_	144	11/2+0 1	3 Pc.
96	.109×	.105×	18	35	12	87		_	150	1/2+0 1	3 Pc.

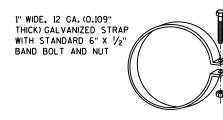
* EXCEPT CENTER PANEL

SEE GENERAL NOTES

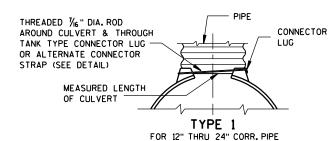
REINFORCED CONCRETE APRON ENDWALLS									
PIPE	DIMENSIONS (Inches)							APPROX.	
DIA.	ī	A	В	С	D	E	G	SLOPE	
12	2	4	24	48 1/8	721/8	24	2	3 to 1	
15	21/4	6	27	46	73	30	21/4	3 to 1	
18	21/2	9	27	46	73	36	21/2	3 to 1	
21	23/4	9	36	371/2	731/2	42	23/4	3 to 1	
24	3	91/2	431/2	30	731/2	48	3	3 to 1	
27	31/4	101/2	491/2	24	731/2	54	31/4	3 to 1	
30	31/2		54	193/4	731/2	60	31/2	3 to 1	
36	4	15	63	343/4	973/4	72	4	3 to 1	
42	41/2	21	63	35	98	78	41/2	3 to 1	
48	5	24	72	26	98	84	5	3 to 1	
54	51/2		65	* ** 331/4-35	* 98 ¹ / ₄ - 100	90	51/2	2% to 1	
60	6	* ** 30-35	60	39	99	96	5	2 to 1	
66	61/2	* ** 24-30	* ** 72-78	* ** 21-27	99	102	51/2	2 to 1	
72	7	* ** 24-36	78	21	99	108	6	2 to 1	
78	71/2	* ** 24-36	78	21	99	114	61/2	2 to 1	
84	8	36	901/2	21	1111/2	120	61/2	1½+o 1	
90	81/2	41	871/2	24	1111/2	132	61/2	11/2+0 1	

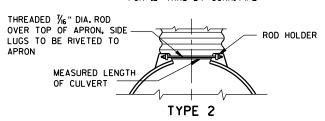
*MINIMI IM

**MAXIMUM

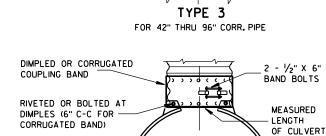


ALTERNATE FOR TYPE 1 CONNECTION END SECTION CONNECTOR STRAP





FOR 30" THRU 96" CORR. PIPE COUPLING BAND MEASURED LENGTH REQUIRED OF CULVERT CONNECTOR SECTION RIVETED OR CONNECTOR SECTION TO BE PAID FOR AS BOLTED PART OF END SECTION TYPE 3



TYPE 5 ALTERNATE FOR: ALL SIZES CORRUGATED CIRCULAR PIPE

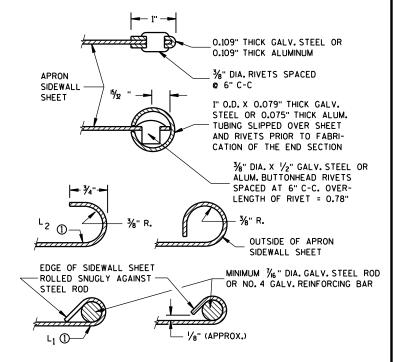
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY

> FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

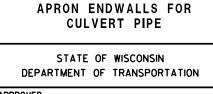
CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE

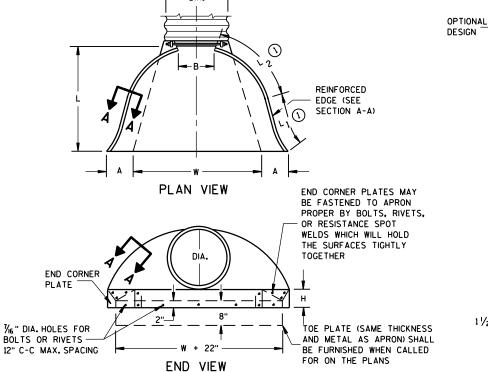
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER. THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

(1) FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.



APPROVED /S/ Rory L. Rhinesmith 8-30-94 CHIEF ROADWAY DEVELOPMENT ENGINEER



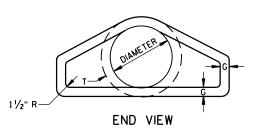
SHOULDER

SLOPE

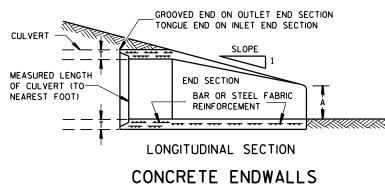
SIDE ELEVATION

METAL ENDWALLS

SLOPE



PLAN



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Standard Detail Drawing 8F1

July 28, 2011

Apron Endwalls for Culvert Pipe

References:

FDM 13-1-15 FDM 13-1-17 FDM 13-1-30 FDM 13-15-5

Bid items associated with this drawing:

ITEM NUMBER	DESCRIPTION	<u>UNIT</u>
520.1000 - 1199	Apron Endwalls for Culvert Pipe (size)	EACH
521.1000 - 1199	Apron Endwalls for Culvert Pipe Steel (size)	EACH
522.1000 - 1199	Apron Endwalls for Culvert Pipe Reinforced Concrete (size)	EACH
525.0300 - 0399	Apron Endwalls for Culvert Pipe Aluminum (size)	EACH

Standardized Special Provisions associated with this drawing:

STSP NUMBER TITLE

SPV.0060 if non-standard size is specified.

Other SDDs associated with this drawing:

SDD 8F4 Joint Ties for Concrete Pipe

Design Notes:

Joint ties are required for the apron endwall and the last 2 sections of culvert and storm sewer pipe installations. See Standard Specifications.

Contact Person:

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