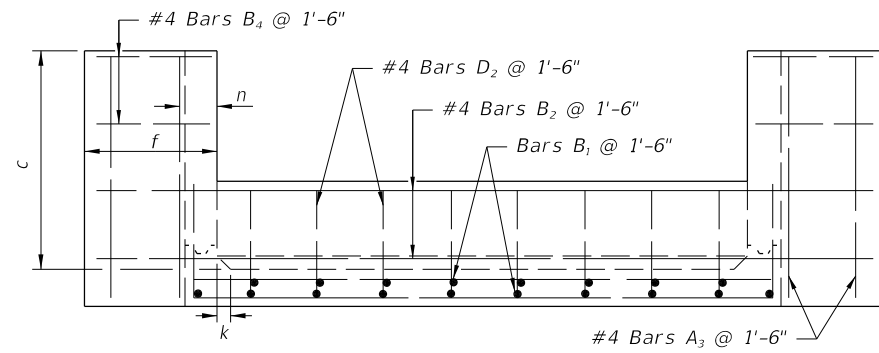
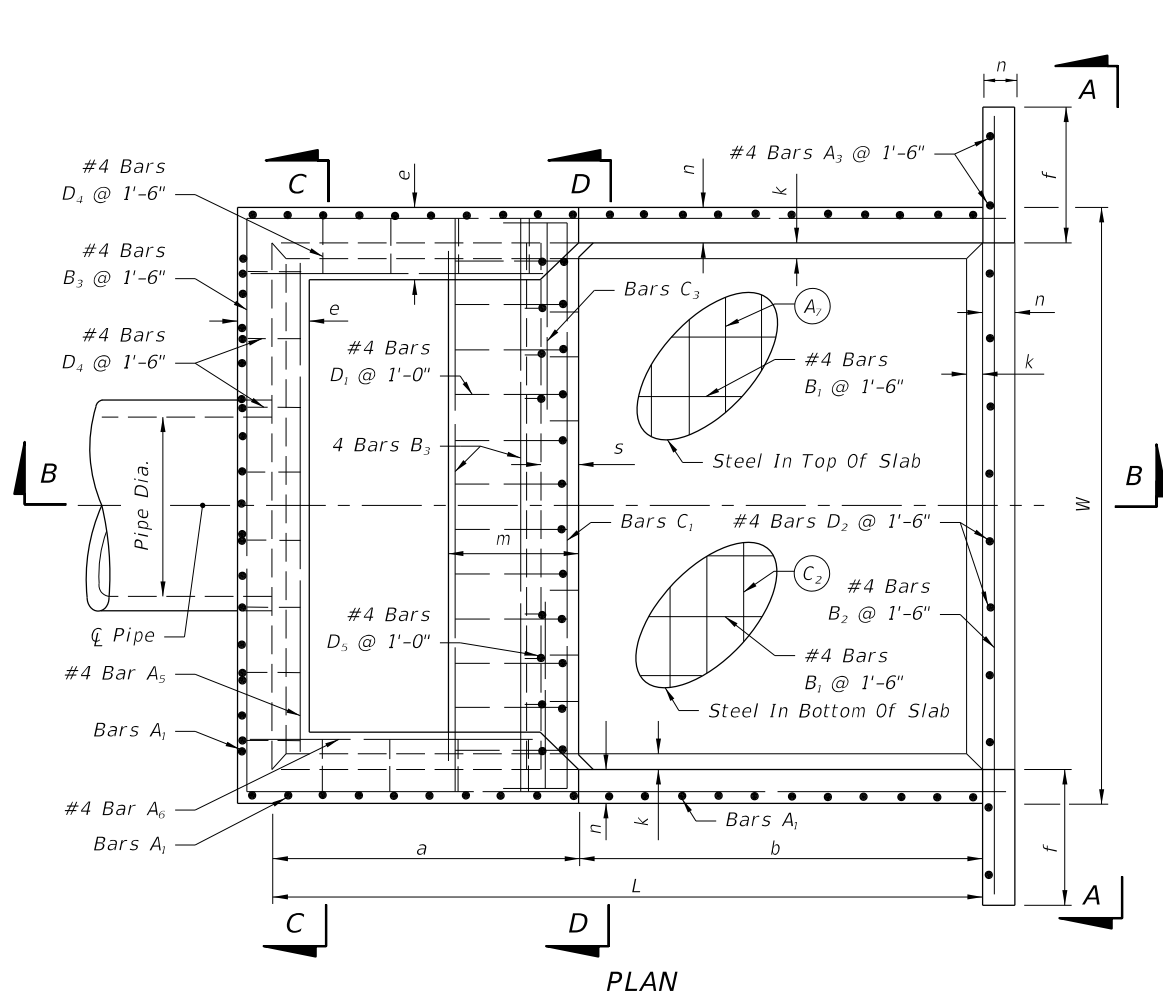


GENERAL NOTES

1. U-type concrete endwall energy dissipators are intended for use outside the clear zone.
2. Chamfer all exposed edges $\frac{3}{4}$ ".
3. Concrete shall be Class I, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications.
4. Reinforcing steel shall have 2" min. cover.
5. Endwall to be paid for under the contract unit price for Class I Concrete (Endwalls), CY and Reinforcing Steel (Roadway), LB. Riprap to be paid for under the contract unit price for Riprap (Sand-Cement) (Roadway), CY. Cost of plastic filter fabric to be included in the contract unit price for riprap.
6. Fencing, when called for in the plans, to be paid for under the contract unit price for Fencing, Type B, LF. See Index No. 802 for details of Type B fencing.

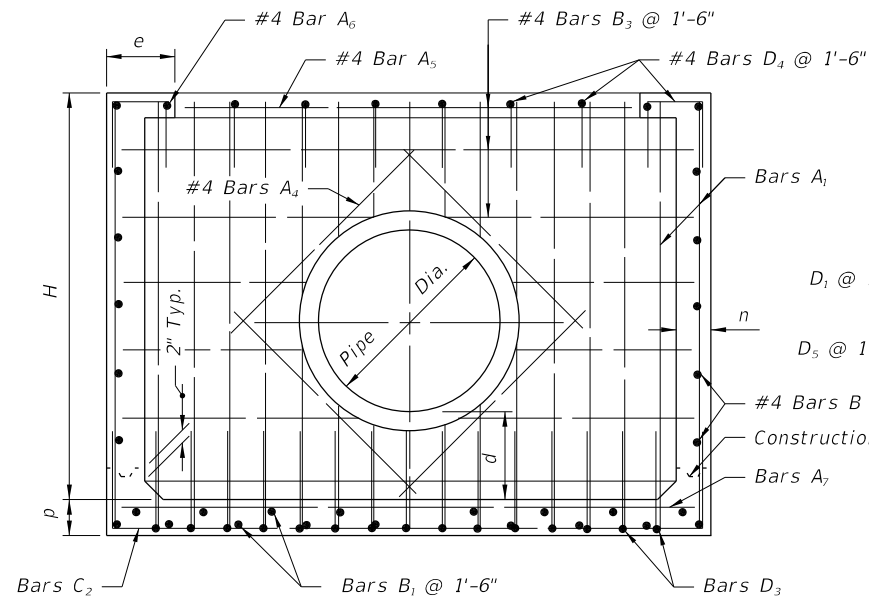
Pipe Size		Q (Max) (cfs)	Dimensions																Concrete Class I (CY)	Reinf. Steel (lb)	Sand-Cement Riprap (Nom.) (CY)
Dia. (in)	Area (SF)		Feet - Inches													Inches					
			W	H	L	a	b	c	d	e	f	g	m	n	p	s	t	k			
30	4.91	59	9-0	6-3	10-8	4-7	6-1	3-4	1-4	1-2	2-6	3-0	1-11	6	6 1/2	7	7	3	6.72	736	10.6
36	7.07	85	10-5	7-3	12-4	5-3	7-1	3-10	1-7	1-3	3-0	3-6	2-3	7	7 1/2	8	8	3	10.34	1,072	13.6
42	9.62	115	11-10	8-0	14-0	6-0	8-0	4-5	1-9	1-6	3-0	3-11	2-6	8	8 1/2	9	8	4	14.82	1,429	17.5
48	12.57	151	13-3	9-0	15-8	6-9	8-11	4-11	2-0	1-7	3-0	4-5	2-10	9	9 1/2	10	8	4	20.36	2,000	22.1
54	15.90	191	14-8	9-9	17-4	7-4	10-0	5-5	2-2	1-10	3-0	4-11	3-0	10	10 1/2	10	8	4	27.19	2,659	27.2
60	13.63	236	16-1	10-9	19-0	8-0	11-0	5-11	2-5	1-11	3-0	5-4	3-4	11	11 1/2	11	8	6	34.49	3,552	32.5
66	23.76	285	17-3	11-6	20-6	8-8	11-10	6-5	2-7	2-1	3-0	5-9	3-7	12	12 1/2	12	8	6	42.82	4,472	38.3
72	28.27	339	18-6	12-3	22-0	9-3	12-9	6-11	2-9	2-3	3-0	6-2	3-9	12	12 1/2	12	8	6	50.68	5,426	44.5

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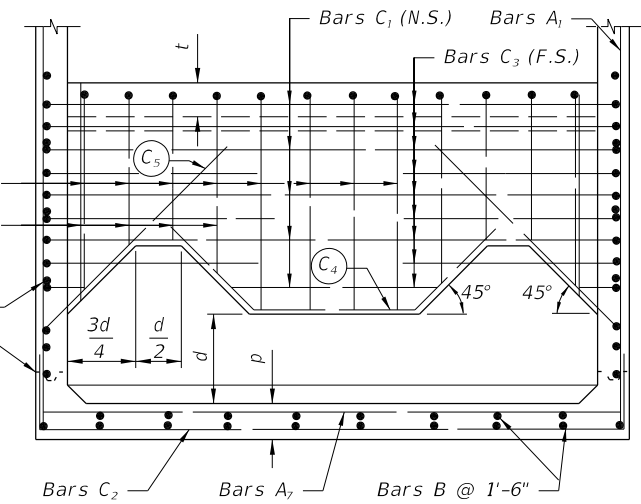


SECTION AA

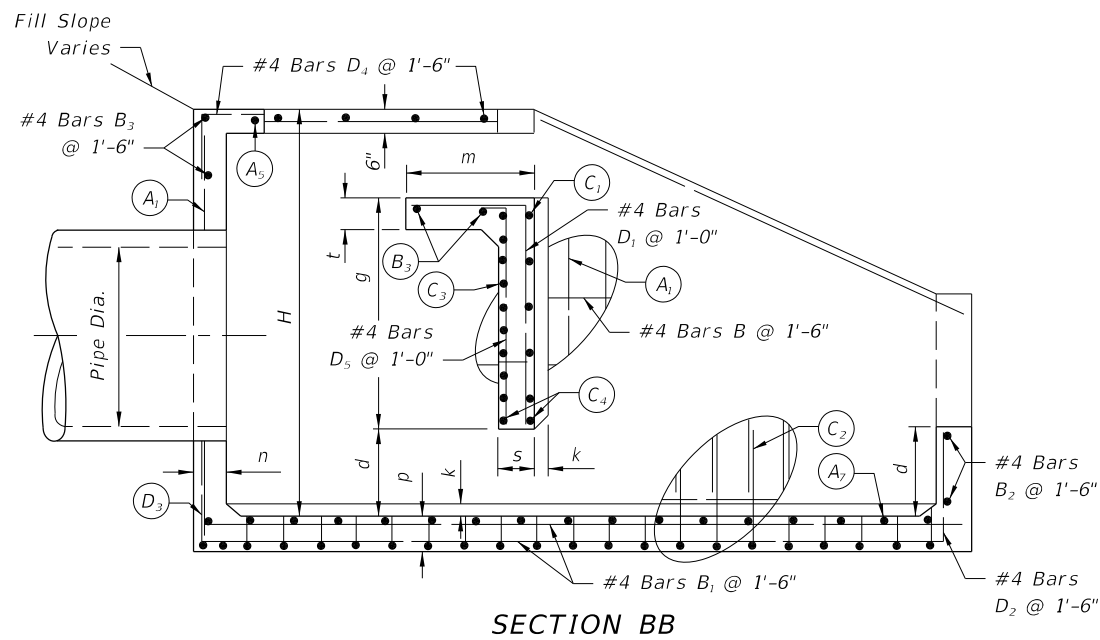
Note: Bars C₄ & C₅ (N.S. & F.S.) equivalent in size to C₃ (cut and bend as required)



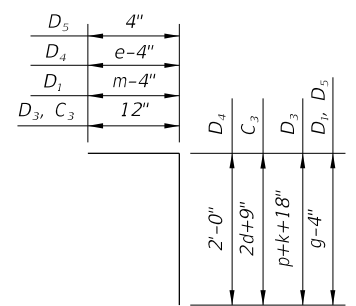
SECTION CC



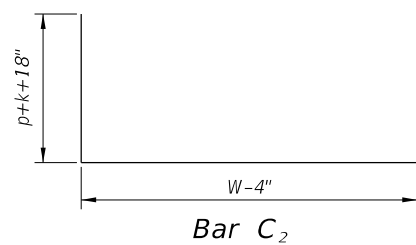
SECTION DD



SECTION BB



Bars: C₃, D₁, D₃, D₄, D₅



Bar C₂

Note: All bar dimensions are out to out.

BENDING DIAGM

Pipe Size	A ₁		A ₇		C ₁		C ₂		C ₃		D ₃	
	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)	Size (No.)	Spacing (Ft.-In.)
30"	4	0-9½	4	1-6	5	0-11	4	0-9½	5	0-5½	4	0-9½
36"	5	1-0	4	1-6	5	0-10	5	1-0	5	0-5	5	1-0
42"	5	0-11	4	1-6	6	1-1	5	0-11	6	0-6½	5	0-11
48"	5	0-9½	4	1-0	6	1-0	5	0-9½	6	0-6	5	0-9½
54"	5	0-8½	4	0-10	7	1-1	5	0-8½	7	0-6½	5	0-8½
60"	6	0-10	5	1-1	7	1-0	6	0-10	7	0-6	6	0-10
66"	6	0-8½	5	0-11½	7	0-11	6	0-8½	7	0-5½	6	0-8½
72"	6	0-7½	5	0-10	7	0-10	6	0-7½	7	0-5	6	0-7½

Note: Bars A₂, A₃, A₄, A₅, A₆, B₁, B₂, B₃, B₄, B are straight bars.

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LAST REVISION	DESCRIPTION:
11/01/16	



FY 2017-18
DESIGN STANDARDS

U-TYPE CONCRETE ENDWALL
ENERGY DISSIPATOR 30" TO 72" PIPE

INDEX NO.
264

SHEET NO.
2 of 2