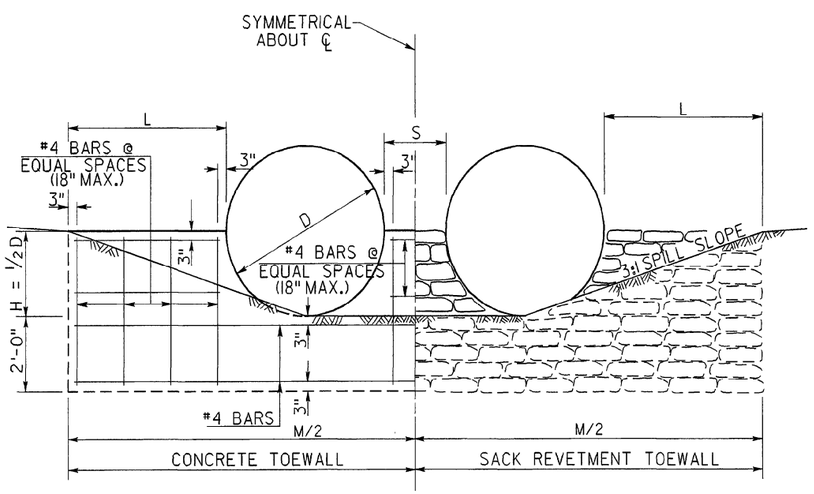
28-NOV-2007 11:21

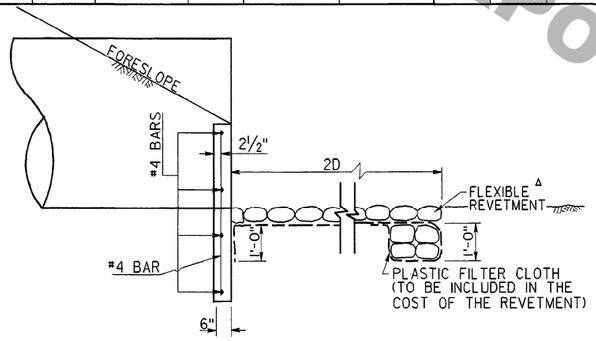
FEDERAL PROJECT	STATE PROJECT	PARISH	SHEET NO.

TOEWALL FOR CORRUGATED METAL PIPE

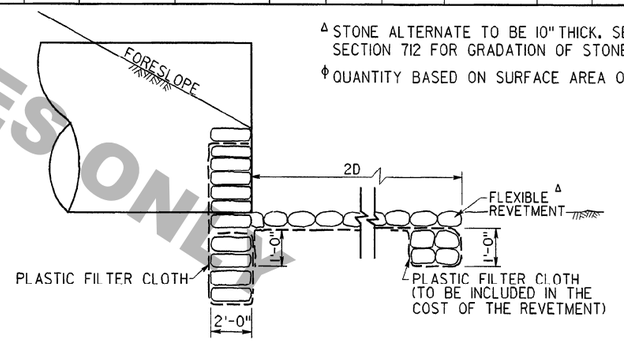
Diameter	H	No. Of Pipes	90°CROSSING S	L	M	Concrete Toewall Concrete (Cu.Yds.)	Steel (lbs)	Flexible Δ Revetment (Sq.Yds.)	Sack ϕ Toewall (Sq.Yds.)	75°CROSSING S	L	M	Concrete Toewall Concrete (Cu.Yds.)	Steel (lbs)	Flexible Δ Revetment (Sq.Yds.)	Sack ϕ Toewall (Sq.Yds.)	60°CROSSING S	L	M	Concrete Toewall Concrete (Cu.Yds.)	Steel (lbs)	Flexible Δ Revetment (Sq.Yds.)	Sack ϕ Toewall (Sq.Yds.)	45°CROSSING S	L	M	Concrete Toewall Concrete (Cu.Yds.)	Steel (lbs)	Flexible Δ Revetment (Sq.Yds.)	Sack ϕ Toewall (Sq.Yds.)
54"	2'-3"	1	-	4'-6"	13'-6"	0.92	49	14	5	-	4'-8"	14'-0"	0.95	50	14	6	-	5'-2"	15'-6"	1.05	54	16	6	-	6'-4"	19'-0"	1.29	67	19	8
		2	1'-9"	4'-6"	19'-9"	1.26	64	20	8	1'-10"	4'-8"	20'-6"	1.31	66	21	8	2'-0"	5'-2"	22'-9"	1.45	71	23	9	2'-6"	6'-4"	27'-11"	1.78	87	28	11
		3	1'-9"	4'-6"	26'-0"	1.60	80	26	10	1'-10"	4'-8"	27'-0"	1.67	82	27	10	2'-0"	5'-2"	29'-11"	1.84	87	30	11	2'-6"	6'-4"	36'-9"	2.27	106	37	14
		4	1'-9"	4'-6"	32'-3"	1.95	95	32	12	1'-10"	4'-8"	33'-6"	2.03	97	34	12	2'-0"	5'-2"	37'-1"	2.24	104	37	13	2'-6"	6'-4"	45'-7"	2.75	126	46	17
		5	1'-9"	4'-6"	38'-6"	2.29	110	39	14	1'-10"	4'-8"	40'-0"	2.39	113	40	14	2'-0"	5'-2"	44'-4"	2.64	121	44	16	2'-6"	6'-4"	54'-6"	3.25	146	55	19
60"	2'-6"	1	-	5'-0"	15'-0"	1.07	60	17	6	-	5'-2"	15'-6"	1.10	61	17	7	-	5'-9"	17'-3"	1.23	72	19	7	-	7'-1"	21'-3"	1.51	82	24	9
		2	1'-11"	5'-0"	21'-11"	1.46	78	24	9	2'-0"	5'-2"	22'-8"	1.51	79	25	9	2'-3"	5'-9"	25'-4"	1.69	91	28	10	2'-9"	7'-1"	31'-1"	2.08	108	35	12
		3	1'-11"	5'-0"	28'-10"	1.86	95	32	11	2'-0"	5'-2"	29'-10"	1.92	98	33	12	2'-3"	5'-9"	33'-4"	2.15	111	37	13	2'-9"	7'-1"	40'-11"	2.64	134	45	16
		4	1'-11"	5'-0"	35'-9"	2.25	113	40	14	2'-0"	5'-2"	37'-0"	2.33	116	41	14	2'-3"	5'-9"	41'-4"	2.61	131	46	16	2'-9"	7'-1"	50'-8"	3.19	160	56	19
		5	1'-11"	5'-0"	42'-8"	2.65	131	47	16	2'-0"	5'-2"	44'-3"	2.75	134	49	16	2'-3"	5'-9"	49'-4"	3.06	151	55	18	2'-9"	7'-1"	60'-6"	3.76	186	67	23
72"	3'-0"	1	-	6'-0"	18'-0"	1.40	77	24	8	-	6'-3"	18'-9"	1.47	79	25	9	-	6'-11"	20'-9"	1.62	84	28	10	-	8'-6"	25'-6"	1.99	103	34	12
		2	2'-0"	6'-0"	26'-0"	1.88	97	35	11	2'-1"	6'-3"	27'-0"	1.96	99	36	12	2'-4"	6'-11"	30'-0"	2.17	106	40	13	2'-10"	8'-6"	36'-10"	2.67	132	49	16
		3	2'-0"	6'-0"	34'-0"	2.36	117	45	14	2'-1"	6'-3"	35'-4"	2.46	120	47	15	2'-4"	6'-11"	39'-3"	2.73	129	52	16	2'-10"	8'-6"	48'-1"	3.34	161	64	20
		4	2'-0"	6'-0"	42'-0"	2.84	137	56	17	2'-1"	6'-3"	43'-7"	2.95	140	58	18	2'-4"	6'-11"	48'-7"	3.29	151	65	20	2'-10"	8'-6"	59'-5"	4.02	191	79	24
		5	2'-0"	6'-0"	50'-0"	3.32	157	67	20	2'-1"	6'-3"	51'-11"	3.45	161	69	21	2'-4"	6'-11"	57'-10"	3.84	173	77	23	2'-10"	8'-6"	70'-9"	4.70	220	94	28
84"	3'-6"	1	-	7'-0"	21'-0"	1.78	88	33	11	-	7'-3"	21'-9"	1.85	97	34	11	-	8'-1"	24'-3"	2.06	104	38	12	-	9'-11"	29'-9"	2.53	125	46	15
		2	3'-0"	7'-0"	31'-0"	2.45	117	48	15	3'-1"	7'-3"	32'-1"	2.53	126	50	15	3'-6"	8'-1"	35'-10"	2.83	136	56	17	4'-3"	9'-11"	43'-11"	3.47	166	68	21
		3	3'-0"	7'-0"	41'-0"	3.11	146	64	19	3'-1"	7'-3"	42'-5"	3.21	156	66	19	3'-6"	8'-1"	47'-5"	3.60	167	74	22	4'-3"	9'-11"	58'-0"	4.40	206	90	26
		4	3'-0"	7'-0"	51'-0"	3.77	174	79	23	3'-1"	7'-3"	52'-9"	3.90	185	82	23	3'-6"	8'-1"	59'-0"	4.36	199	92	26	4'-3"	9'-11"	72'-2"	5.34	246	112	32
		5	3'-0"	7'-0"	61'-0"	4.43	203	95	27	3'-1"	7'-3"	63'-1"	4.58	214	98	27	3'-6"	8'-1"	70'-7"	5.13	231	110	31	4'-3"	9'-11"	86'-4"	6.27	286	134	38
96"	4'-0"	1	-	8'-0"	24'-0"	2.20	117	43	13	-	8'-3"	24'-9"	2.27	119	44	14	-	9'-3"	27'-9"	2.55	136	49	15	-	11'-4"	34'-0"	3.12	163	60	19
		2	3'-0"	8'-0"	35'-0"	2.96	150	62	18	3'-1"	8'-3"	36'-2"	3.06	153	64	18	3'-6"	9'-3"	40'-6"	3.43	173	72	21	4'-3"	11'-4"	49'-7"	4.19	209	88	25
		3	3'-0"	8'-0"	46'-0"	3.72	183	82	22	3'-1"	8'-3"	47'-6"	3.83	186	84	23	3'-6"	9'-3"	53'-3"	4.31	209	95	26	4'-3"	11'-4"	65'-1"	5.26	255	116	32
		4	3'-0"	8'-0"	57'-0"	4.47	215	101	27	3'-1"	8'-3"	58'-11"	4.62	220	105	28	3'-6"	9'-3"	65'-11"	5.18	246	117	31	4'-3"	11'-4"	80'-8"	6.33	301	143	38
		5	3'-0"	8'-0"	68'-0"	5.23	248	121	31	3'-1"	8'-3"	70'-3"	5.40	253	125	32	3'-6"	9'-3"	78'-8"	6.05	282	140	36	4'-3"	11'-4"	96'-3"	7.40	347	171	44
108"	4'-6"	1	-	9'-0"	27'-0"	2.66	139	54	16	-	9'-4"	28'-0"	2.76	142	56	17	-	10'-5"	31'-3"	3.08	160	63	18	-	12'-9"	38'-3"	3.77	190	77	23
		2	3'-0"	9'-0"	39'-0"	3.52	174	78	21	3'-1"	9'-4"	40'-5"	3.65	178	81	22	3'-6"	10'-5"	45'-1"	4.07	199	90	24	4'-3"	12'-9"	55'-2"	4.98	239	110	30
		3	3'-0"	9'-0"	51'-0"	4.37	209	102	26	3'-1"	9'-4"	52'-9"	4.52	213	106	27	3'-6"	10'-5"	59'-0"	5.06	238	118	30	4'-3"	12'-9"	72'-2"	6.19	289	144	37
		4	3'-0"	9'-0"	63'-0"	5.23	244	126	31	3'-1"	9'-4"	65'-2"	5.41	249	130	32	3'-6"	10'-5"	72'-11"	6.06	277	146	36	4'-3"	12'-9"	89'-2"	7.40	338	178	44
		5	3'-0"	9'-0"	75'-0"	6.08	279	150	37	3'-1"	9'-4"	77'-7"	6.29	285	155	38	3'-6"	10'-5"	86'-10"	7.05	316	174	42	4'-3"	12'-9"	106'-2"	8.62	387	212	52
120"	5'-0"	1	-	10'-0"	30'-0"	3.16	153	67	19	-	10'-4"	31'-0"	3.27	165	69	20	-	11'-7"	34'-9"	3.67	177	77	22	-	14'-2"	42'-6"	4.48	218	94	27
		2	3'-0"	10'-0"	43'-0"	4.12	190	96	25	3'-1"	10'-4"	44'-5"	4.25	203	99	26	3'-6"	11'-7"	49'-9"	4.77	218	111	29	4'-3"	14'-2"	60'-10"	5.83	271	135	35
		3	3'-0"	10'-0"	56'-0"	5.08	228	124	30	3'-1"	10'-4"	57'-11"	5.25	241	129	32	3'-6"	11'-7"	64'-10"	5.89	259	144	35	4'-3"	14'-2"	79'-3"	7.19	323	176	43
		4	3'-0"	10'-0"	69'-0"	6.04	265	153	36	3'-1"	10'-4"	71'-4"	6.24	280	159	37	3'-6"	11'-7"	79'-10"	6.99	301	177	42	4'-3"	14'-2"	97'-8"	8.55	376	217	51
		5	3'-0"	10'-0"	82'-0"	7.00	302	182	42	3'-1"	10'-4"	84'-9"	7.22	318	188	43	3'-6"	11'-7"	94'-11"	8.11	342	211	49	4'-3"	14'-2"	116'-1"	9.91	428	258	59



ELEVATION VIEW



PROFILE VIEW
SHOWING CONCRETE TOEWALL



PROFILE VIEW
SHOWING SACK REVETMENT TOEWALL

Δ STONE ALTERNATE TO BE 10" THICK. SEE STD. SPECIFICATIONS, SECTION 712 FOR GRADATION OF STONE.

ϕ QUANTITY BASED ON SURFACE AREA OF TOEWALL FACE.

STATE OF LOUISIANA
WILLIAM M. RAY
REG. No. 24936
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
7-25-01

GENERAL NOTES:

1. CONSTRUCTION SPECIFICATIONS SHALL BE THE LATEST LA. D.O.T.D. STANDARD SPECIFICATIONS.
2. ALL CONCRETE TO BE CLASS A.
3. DIMENSIONS RELATING TO REINF. STEEL ARE TO BAR CENTERS.
4. REINFORCEMENT SHALL BE AS PER D.O.T.D. SPECS.
5. QUANTITIES GIVEN ARE FOR ONE TOEWALL.
6. TOEWALL REQUIRED ON UPSTREAM AND DOWNSTREAM END OF PIPES UNLESS OTHERWISE NOTED ON PLANS.

DATE	DESCRIPTION	BY
8-28-98	Added Special Detail Name TW-90CMP2	JCM

REVISIONS

SPECIAL DETAIL NO. TW-90CMP2 — SHEET 1 OF 1

SPECIAL DETAIL

TOEWALL FOR 54" THRU 120" CMP
ONE THRU FIVE OPENINGS
CROSSING ANGLE: 90°, 75°, 60°, 45°

DATED JULY 13, 1990

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DESIGNED	LAB	DETAILED	KAJ
CHECKED	MN	CHECKED	MN

DIR. spdetail/toewall
FILE tw-90cmp2.dgn

HYDRAULICS SECTION

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