FEDERAL PROJECT	STATE PROJECT	PARISH	SHEET NO.

OPENING					H	E	C	J	D	L	M	S	BARS E							BARS E1			
Eq. Dia.	Span	Rise	No.	Area	Lgth. ft.in.	Lgth. ft.in.	Lgth. ft.in.	Lgth. ft.in.	Lgth. ft.in.	Lgth. ft.in.	Lgth. ft.in.	Lgth. ft.in.	Size	No.	Lgth. ft.in.	Spc. in.	X ft.in.	Y in.	Z ft.in.	Size	No.	Lgth. ft.in.	Spc. in.
60	71	47	1	18.1	4-11	0- 9	0- 6	4- 2	0-10	11- 4	29- 6	2- 0	4	40	6- 2	7.0	0-10	2	5- 2	4	0	0- 0	0.0
60	71	47	2	36.2	4-11	0- 9	0- 6	4- 2	0-10	11- 4	38- 8	2- 0	4	44	6- 2	7.0	0-10	2	5- 2	4	0	0- 0	0.0
60	71	47	3	54.3	4-11	0- 9	0- 6	4- 2	0-10	11- 4	47-10	2- 0	4	48	6- 2	7.0	0-10	2	5- 2	4	0	0- 0	0.0
60	71	47	4	72.4	4-11	0- 9	0- 6	4- 2	0-10	11- 4	57- 0	2- 0	4	52	6- 2	7.0	0-10	2	5- 2	4	0	0- 0	0.0
60	71	47	5	90.5	4-11	0- 9	0- 6	4- 2	0-10	11- 4	66- 2	2- 0	4	56	6- 2	7.0	0-10	2	5- 2	4	0	0- 0	0.0
60	71	47	6	108.6	4-11	0- 9	0- 6	4- 2	0-10	11- 4	75- 4	2- 0	4	60	6- 2	7.0	0-10	2	5- 2	4	0	0- 0	0.0
66	77	52	1	21.9	5- 4	0-10	0- 8	4- 3	1- 0	12- 4	32- 1	2- 2	4	34	7- 0	9.0	1- 1	2	5- 9	4	0	0- 0	0.0
66	77	52	2	43.8	5- 4	0-10	0- 8	4- 3	1- 0	12- 4	42- 0	2- 2	4	38	7- 0	9.0	1- 1	2	5- 9	4	0	0- 0	0.0
66	77	52	3	65.7	5- 4	0-10	0- 8	4- 3	1- 0	12- 4	51-11	2- 2	4	42	7- 0	9.0	1- 1	2	5- 9	4	0	0- 0	0.0
66	77	52	4	87.6	5- 4	0-10	0- 8	4- 3	1- 0	12- 4	61-10	2- 2	4	46	7- 0	9.0	1- 1	2	5- 9	4	0	0- 0	0.0
66	77	52	5	109.5	5- 4	0-10	0- 8	4- 3	1- 0	12- 4	71- 9	2- 2	4	50	7- 0	9.0	1- 1	2	5- 9	4	0	0- 0	0.0
66	77	52	6	131.4	5- 4	0-10	0- 8	4- 3	1- 0	12- 4	81- 7	2- 2	4	54	7- 0	9.0	1- 1	2	5- 9	4	0	0- 0	0.0
72	83	57	1	26.0	5- 9	0-10	0- 8	4- 5	1- 0	13- 3	34- 6	2- 3	4	44	7- 5	7.5	1- 1	2	6- 2	4	0	0- 0	0.0
72	83	57	2	52.0	5- 9	0-10	0- 8	4- 5	1- 0	13- 3	45- 1	2- 3	4	49	7- 5	7.5	1- 1	2	6- 2	4	0	0- 0	0.0
72	83	57	3	78.0	5- 9	0-10	0- 8	4- 5	1- 0	13- 3	55- 8	2- 3	4	54	7- 5	7.5	1- 1	2	6- 2	4	0	0- 0	0.0
72	83	57	4	104.0	5- 9	0-10	0- 8	4- 5	1- 0	13- 3	66- 2	2- 3	4	59	7- 5	7.5	1- 1	2	6- 2	4	0	0- 0	0.0
72	83	57	5	130.0	5- 9	0-10	0- 8	4- 5	1- 0	13- 3	76- 9	2- 3	4	64	7- 5	7.5	1- 1	2	6- 2	4	0	0- 0	0.0
72	83	57	6	156.0	5- 9	0-10	0- 8	4- 5	1- 0	13- 3	87- 4	2- 3	4	69	7- 5	7.5	1- 1	2	6- 2	4	0	0- 0	0.0
84	95	67	1	37.0	6- 7	1- 0	0- 8	4-10	1- 0	15- 2	39- 6	2- 7	4	66	4- 4	5.5	1- 3	2	2-11	4	33	5- 1	11.0
84	95	67	2	74.0	6- 7	1- 0	0- 8	4-10	1- 0	15- 2	51- 7	2- 7	4	73	4- 4	5.5	1- 3	2	2-11	4	37	5- 1	11.0
84	95	67	3	111.0	6- 7	1- 0	0- 8	4-10	1- 0	15- 2	63- 9	2- 7	4	80	4- 4	5.5	1- 3	2	2-11	4	41	5- 1	11.0
84	95	67	4	148.0	6- 7	1- 0	0- 8	4-10	1- 0	15- 2	75-11	2- 7	4	87	4- 4	5.5	1- 3	2	2-11	4	45	5- 1	11.0
84	95	67	5	185.0	6- 7	1- 0	0- 8	4-10	1- 0	15- 2	88- 0	2- 7	4	94	4- 4	5.5	1- 3	2	2-11	4	49	5- 1	11.0
84	95	67	6	222.0	6- 7	1- 0	0- 8	4-10	1- 0	15- 2	100- 2	2- 7	4	101	4- 4	5.5	1- 3	2	2-11	4	53	5- 1	11.0
96	112	75	1	48.0	7- 3	1- 1	0- 8	5- 2	1- 0	16- 9	44- 3	3- 0	4	90	4- 7	4.5	1- 4	2	3- 1	4	45	5- 8	9.0
96	112	75	2	96.0	7- 3	1- 1	0- 8	5- 2	1- 0	16- 9	58- 7	3- 0	4	99	4- 7	4.5	1- 4	2	3- 1	4	50	5- 8	9.0
96	112	75	3	144.0	7- 3	1- 1	0- 8	5- 2	1- 0	16- 9	72-10	3- 0	4	108	4- 7	4.5	1- 4	2	3- 1	4	55	5- 8	9.0
96	112	75	4	192.0	7- 3	1- 1	0- 8	5- 2	1- 0	16- 9	87- 1	3- 0	4	117	4- 7	4.5	1- 4	2	3- 1	4	60	5- 8	9.0
96	112	75	5	240.0	7- 3	1- 1	0- 8	5- 2	1- 0	16- 9	101- 5	3- 0	4	126	4- 7	4.5	1- 4	2	3- 1	4	65	5- 8	9.0
96	112	75	6	288.0	7- 3	1- 1	0- 8	5- 2	1- 0	16- 9	115- 8	3- 0	4	135	4- 7	4.5	1- 4	2	3- 1	4	70	5- 8	9.0
108	128	83	1	60.5	7-11	1- 2	0- 9	5- 4	1- 0	18- 3	48-10	4- 0	4	110	4-10	4.0	1- 6	2	3- 2	4	55	6- 2	8.0
108	128	83	2	121.0	7-11	1- 2	0- 9	5- 4	1- 0	18- 3	65- 9	4- 0	4	124	4-10	4.0	1- 6	2	3- 2	4	62	6- 2	8.0
108	128	83	3	181.5	7-11	1- 2	0- 9	5- 4	1- 0	18- 3	82- 7	4- 0	4	138	4-10	4.0	1- 6	2	3- 2	4	69	6- 2	8.0
108	128	83	4	242.0	7-11	1- 2	0- 9	5- 4	1- 0	18- 3	99- 6	4- 0	4	152	4-10	4.0	1- 6	2	3- 2	4	76	6- 2	8.0
108	128	83	5	302.5	7-11	1- 2	0- 9	5- 4	1- 0	18- 3	116- 5	4- 0	4	166	4-10	4.0	1- 6	2	3- 2	4	83	6- 2	8.0
108	128	83	6	363.0	7-11	1- 2	0- 9	5- 4	1- 0	18- 3	133- 4	4- 0	4	180	4-10	4.0	1- 6	2	3- 2	4	90	6- 2	8.0
120	142	91	1	74.5	8- 7	1- 3	0-10	5- 7	1- 0	19-10	53- 4	4- 0	4	120	5- 2	4.0	1- 8	2	3- 4	4	60	6- 8	8.0
120	142	91	2	149.0	8- 7	1- 3	0-10	5- 7	1- 0	19-10	71- 7	4- 0	4	134	5- 2	4.0	1- 8	2	3- 4	4	67	6- 8	8.0
120	142	91	3	223.5	8- 7	1- 3	0-10	5- 7	1- 0	19-10	89-10	4- 0	4	148	5- 2	4.0	1- 8	2	3- 4	4	74	6- 8	8.0
120	142	91	4	298.0	8- 7	1- 3	0-10	5- 7	1- 0	19-10	108- 1	4- 0	4	162	5- 2	4.0	1- 8	2	3- 4	4	81	6- 8	8.0
120	142	91	5	372.5	8- 7	1- 3	0-10	5- 7	1- 0	19-10	126- 4	4- 0	4	176	5- 2	4.0	1- 8	2	3- 4	4	88	6- 8	8.0
120	142	91	6	447.0	8- 7	1- 3	0-10	5- 7	1- 0	19-10	144- 7	4- 0	4	190	5- 2	4.0	1- 8	2	3- 4	4	95	6- 8	8.0

OPENING		#4 BARS J		BARS O				#4 BARS P		#4BARS H		#4BARS V		BARS M			#4 BARS TH		#4 BARS TH1		#4 BARS TV		#4 BARS TV1		CONC.	STEEL
Eq. Dia.	No.	No.	Lgth. ft.in.	Size	No.	Lgth. ft.in.	Spc. in.	No.	Lgth. ft.in.	No.	Lgth. ft.in.	No.	Lgth. in.	Size	No.	Lgth. ft.in.	No.	Lgth. ft.in.	No.	Lgth. ft.in.	No.	Lgth. ft.in.	No.	Lgth. in.	CU. YDS.	LBS.
60	1	8	11- 0	4	30	5- 1	12.0	8	29- 2	0	0- 0	6	8	4	2	29- 2	0	0- 0	0	0- 0	0	0- 0	0	0	8.19	523
60	2	8	11- 0	4	39	5- 1	12.0	8	38- 4	4	2- 0	12	8	4	2	38- 4	0	0- 0	0	0- 0	0	0- 0	0	0	10.46	639
60	3	8	11- 0	4	49	5- 1	12.0	8	47- 6	8	2- 0	18	8	4	2	47- 6	0	0- 0	0	0- 0	0	0- 0	0	0	12.74	759
60	4	8	11- 0	4	58	5- 1	12.0	8	56- 8	12	2- 0	24	8	4	2	56- 8	0	0- 0	0	0- 0	0	0- 0	0	0	15.02	875
60	5	8	11- 0	4	67	5- 1	12.0	8	65-10	16	2- 0	30	8	4	2	65-10	0	0- 0	0	0- 0	0	0- 0	0	0	17.29	991
60	6	8	11- 0	4	76	5- 1	12.0	8	75- 0	20	2- 0	36	8	4	2	75- 0	0	0- 0	0	0- 0	0	0- 0	0	0	19.57	1108
66	1	8	12- 0	4	33	5- 5	12.0	9	31- 9	0	0- 0	7	8	4	2	31- 9	0	0- 0	0	0- 0	0	0- 0	0	0	11.32	579
66	2	8	12- 0	4	43	5- 5	12.0	9	41- 8	4	2- 2	14	8	4	2	41- 8	0	0- 0	0	0- 0	0	0- 0	0	0	14.39	715
66	3	8	12- 0	4	53	5- 5	12.0	9	51- 7	8	2- 2	21	8	4	2	51- 7	0	0- 0	0	0- 0	0	0- 0	0	0	17.46	852
66	4	8	12- 0	4	63	5- 5	12.0	9	61- 6	12	2- 2	28	8	4	2	61- 6	0	0- 0	0	0- 0	0	0- 0	0	0	20.53	989
66	5	8	12- 0	4	72	5- 5	12.0	9	71- 5	16	2- 2	35	8	4	2	71- 5	0	0- 0	0	0- 0	0	0- 0	0	0	23.60	1122
66	6	8	12- 0	4	82	5- 5	12.0	9	81- 3	20	2- 2	42	8	4	2	81- 3	0	0- 0	0	0- 0	0	0- 0	0	0	26.63	1258
72	1	10	12-11	4	37	5- 7	11.5	9	34- 2	0	0- 0	7	8	4	2	34- 2	0	0- 0	0	0- 0	0	0- 0	0	0	12.67	696
72	2	10	12-11	4	48	5- 7	11.5	9	44- 9	5	2- 3	14	8	4	2	44- 9	0	0- 0	0	0- 0	0	0- 0	0	0	16.05	850
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84	1	12	14-10	4	56	6- 2	8.5	10	39- 2	0	0- 0	8	8	4	2	39- 2	0	0- 0	0	0- 0	0	0- 0	0	0	15.97	970
84	2	12	14-10	4	73	6- 2	8.5	10	51- 3	6	2- 8	16	8	4	2	51- 3	0	0- 0	0	0- 0	0	0- 0	0	0	20.12	1185
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84	4	12	14-10	4	108	6- 2	8.5	10	75- 7	18	2- 8	32	8	4	2	75- 7	0	0- 0	0	0- 0	0	0- 0	0	0	28.50	1620
84	5	12	14-10	4	125	6- 2	8.5	10	87- 8	24	2- 8	40	8	4	2	87- 8	0	0- 0	0	0- 0	0	0- 0	0	0	32.66	1835
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96	1	12	16- 5	4	71	6- 7	7.5	11	43-11	0	0- 0	10	8	4	2	43-11	0	0- 0	0	0- 0	0	0- 0	0	0	19.12	1275
96	2	12	16- 5	4	94	6- 7	7.5	11	58- 3	6	3- 2	20	8	4	2	58- 3	0	0- 0	0	0- 0	0	0- 0	0	0	24.38	1564
96	3	12	16- 5	4	117	6- 7	7.5	11	72- 6	12	3- 2	30	8	4	2	72- 6	0	0- 0	0	0- 0	0	0- 0	0	0	29.61	1853
96	4	12	16- 5	4	140	6- 7	7.5	11	86- 9	18	3- 2	40	8	4	2	86- 9	0	0- 0	0	0- 0	0	0- 0	0	0	34.84	2141
96	5	12	16- 5	4	163	6- 7	7.5	11	101- 1	24	3- 2	50	8	4	2	101- 1	0	0- 0	0	0- 0	0	0- 0	0	0	40.10	2431
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108	3	14	17-11	4	166	6-11	6.0	11	82- 3	14	4- 3	36	8	4	2	82- 3	0	0- 0	0	0- 0	0	0- 0	0	0	36.80	2434
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108	6	14	17-11	4	267	6-11	6.0	11	133- 0	35	4- 3	72	8	4	2	133- 0	0	0- 0	0	0- 0	0	0- 0	0	0	57.18	3639
120	1	16	19- 6	4	128	7- 4	5.0	12	53- 0	0	0- 0	13	8	5	4	53- 0	10	19- 6	0	0- 0	28	8- 3	8	8	28.10	2456
120	2	16	19- 6	4	172	7- 4	5.0	12	71- 3	8	4- 3	26	8	5	4	71- 3	10	19- 6	5	4- 3	32	8- 3	16	8	35.96	3042
120	3	16	19- 6	4	216	7- 4	5.0	12	89- 6	16	4- 3	39	8	5	4	89- 6	10	19- 6	10	4- 3	36	8- 3	24	8	43.83	3628
120	4	16	19- 6	4	260	7- 4	5.0	12	107- 9	24	4- 3	52	8	5	4	107- 9	10	19- 6	15	4- 3	40	8- 3	32	8	51.70	4214
120	5	16	19- 6	4	303	7- 4	5.0	12	126- 0	32	4- 3	65	8	5	4	126- 0	10	19- 6	20	4- 3	44	8- 3	40	8	59.57	4794
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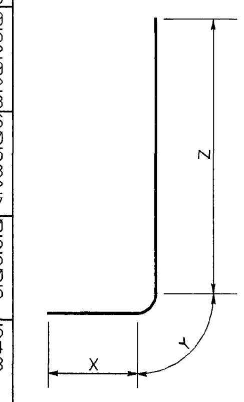
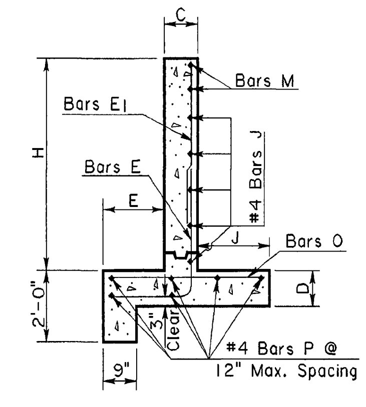
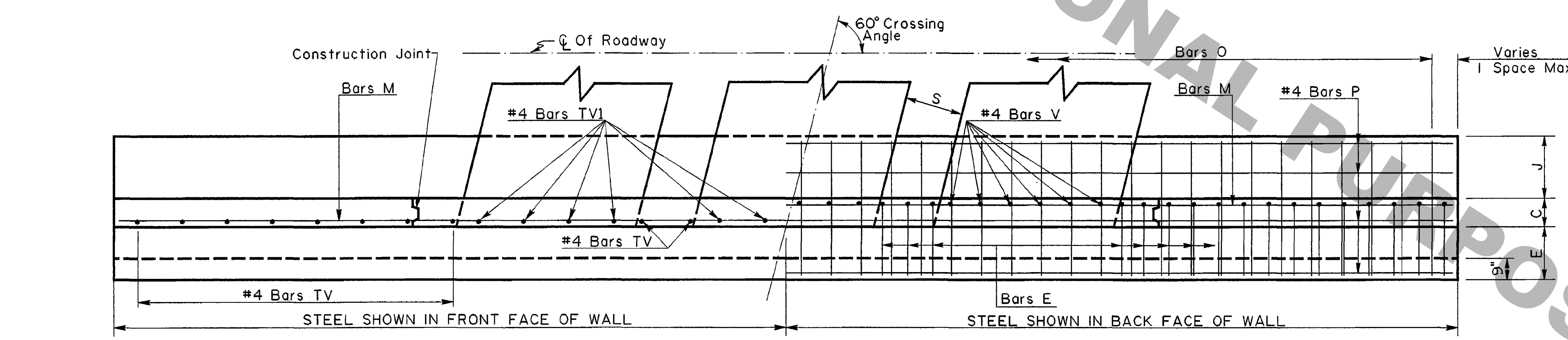


BARS E

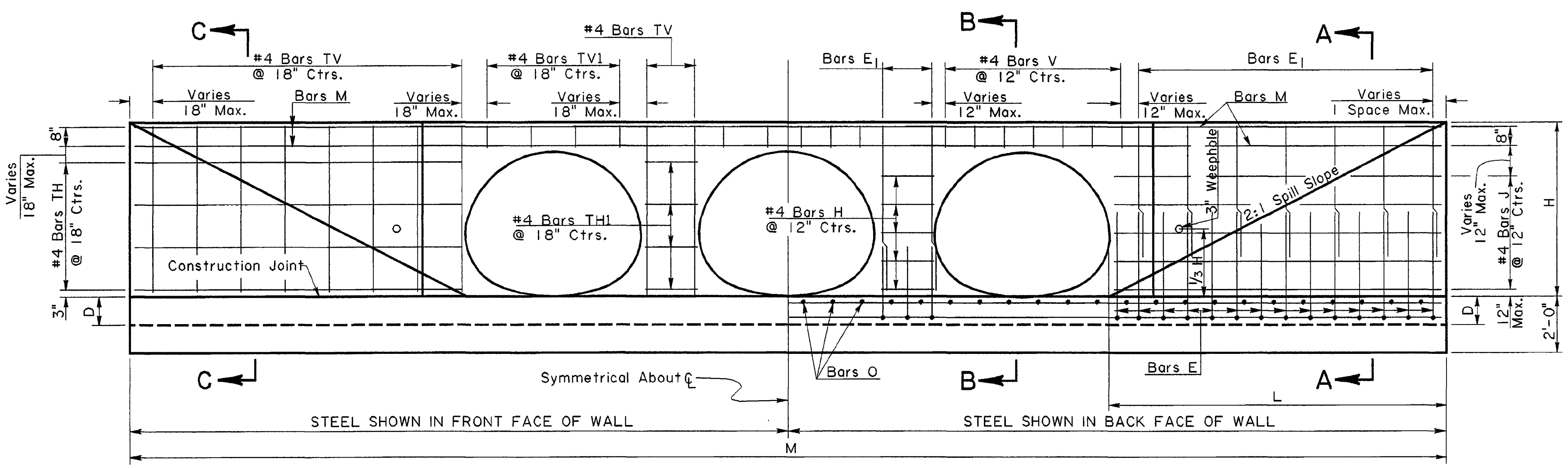


SECTION A-A

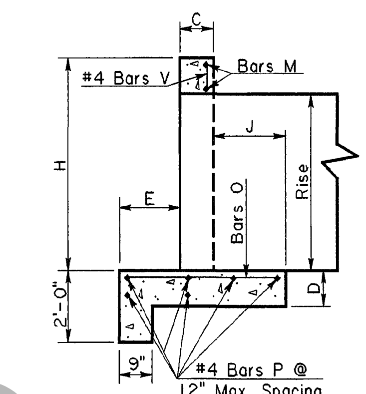
STEEL SHOWN IN BACK FACE OF WALL



PLAN

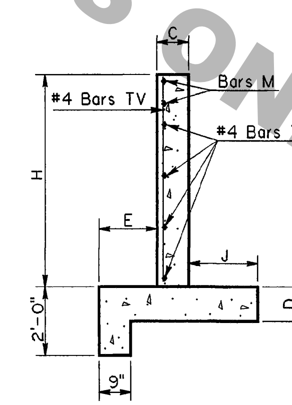


ELEVATION



SECTION B-B

STEEL SHOWN IN BACK FACE OF WALL



SECTION C-C

STEEL SHOWN IN FRONT FACE OF WALL

GENERAL NOTES

DESIGN: Method- Headwalls are designed as retaining walls according to current AASHTO working stress procedures. Walls are designed for a lateral earth pressure of 40 psf with 2.0 feet of surcharge. Overturning- A minimum safety factor of 2.0 is provided against overturning. The resultant of loads is within the middle third of the footing. Sliding - A minimum safety factor of 1.5 is provided against sliding. The coefficient of friction between the footing and soil is 0.5. Foundation - The design soil bearing pressure is 1800 psf. When strength of the soil at the site is less than 1800 psf, bedding material shall be added under the footing as directed.

MATERIALS: Concrete- All concrete shall be class A. All exposed edges shall be ¾ inch chamfered. Reinforcing Steel- Reinforcement shall be Grade 60. Bar spacing dimensions are to bar centers. Steel required for lap splices not detailed shall not be measured for payment. Reinforcing steel shall have 2" cover unless otherwise specified. Steel and concrete quantities shown in table are for one headwall.

A 1'-6" square of geotextile fabric (see Section 1019 of the LA DOTD Standard Specifications) shall be placed in contact with concrete behind each weephole in addition to approximately 2 cu.ft. of concrete sand (see Section 1003.02 of the LA DOTD Standard Specifications).

CONSTRUCTION JOINTS: All construction joints shown are optional. For details of keyed construction joints see Standard Plan CM-49. For construction joints without key, the joint surface shall be roughened. Hardened surface shall be cleaned. Immediately before new concrete is placed, joint surface shall be saturated with water.

SPECIAL DETAIL NO. HW60CMPA2

SHEET 1 OF 1

STRAIGHT HEADWALL FOR CMPA ON A 60° CROSSING 60" EQUIV. THRU 120" EQUIV.

DATED March 22, 1993

DATE	DESCRIPTION	BY
11-14-97	Revised General Notes And Assigned Name HW60CMPA2	JCM

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DESIGNED PAA	DETAILED KAJ	DIR. spdetail/headwall/
CHECKED	CHECKED PAA	FILE HW60cmpa.dgn

HYDRAULICS SECTION