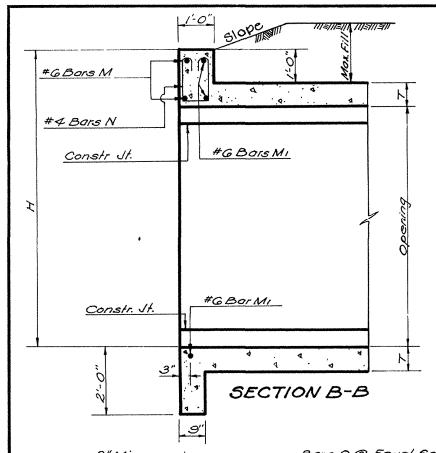
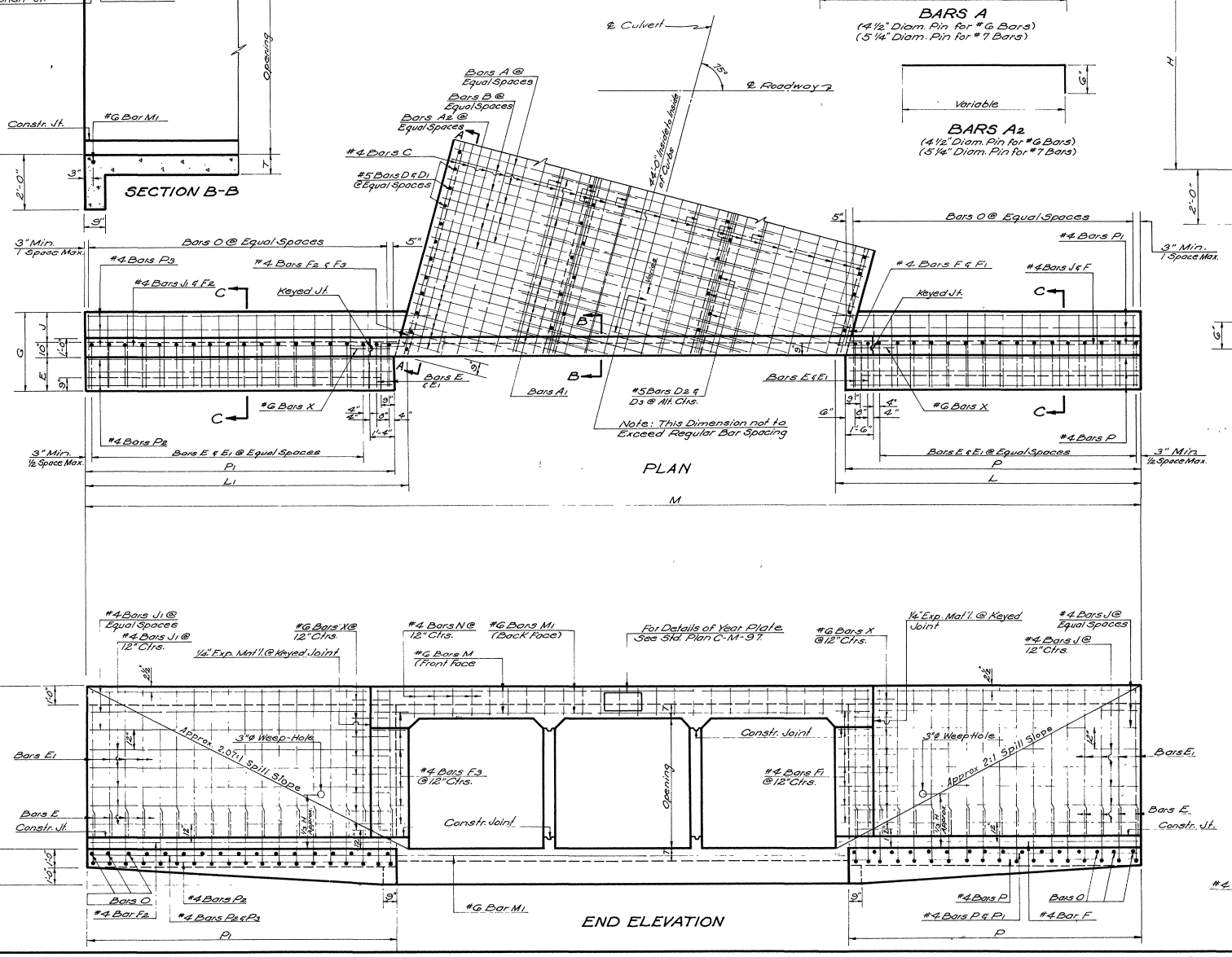
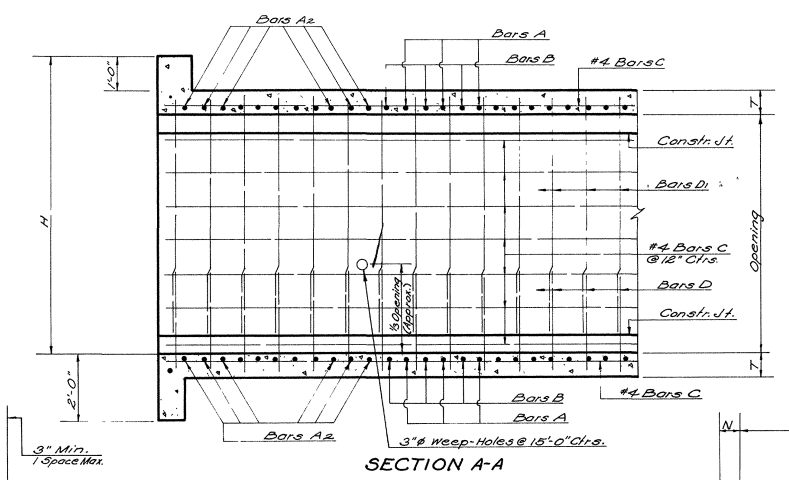
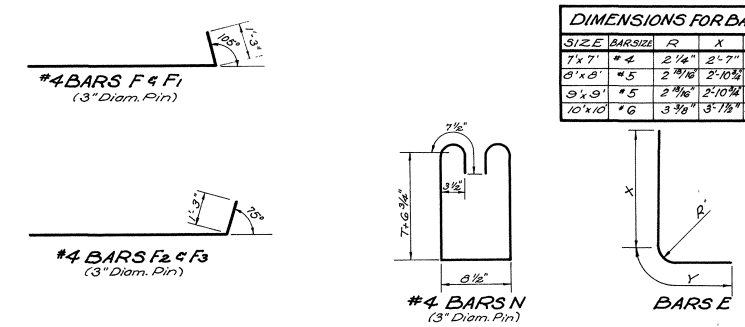
STATE PROJECT	PARISH	SHEET NO.

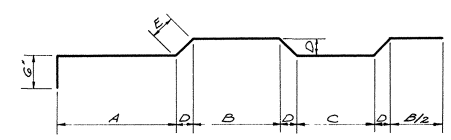




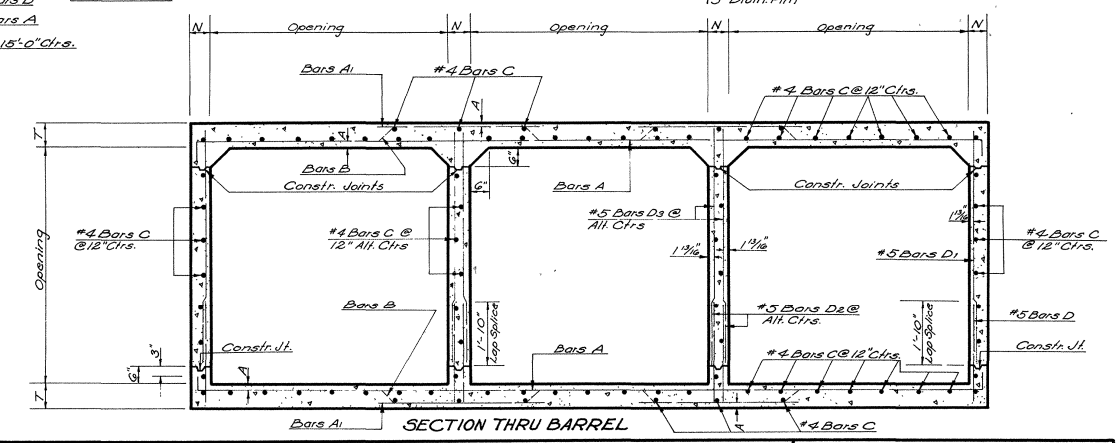


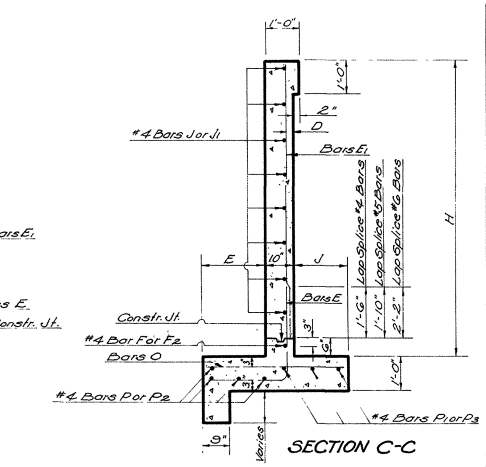


DIMENSIONS FOR BARS E				
SIZE	BARS SIZE	R	X	Y
7'x7'	#4	2 1/4"	2'-7"	2'-5"
8'x8'	#5	2 9/16"	2'-10 3/4"	2'-7 1/4"
9'x9'	#5	2 9/16"	2'-10 3/4"	2'-8 1/4"
10'x10'	#6	3 3/8"	3'-1 7/8"	3'-0 7/8"



DIMENSIONS FOR BARS B						
SIZE	PIN DIAM.	A	B	C	D	E
7'x7'	4 1/2"	5'-5 5/8"	3'-8 1/4"	3'-1 1/4"	4-3/16"	6 3/16"
8'x8'	4.5"	6'-3 7/8"	4'-2 3/4"	3'-6 3/4"	5 1/2"	7 7/8"
9'x9'	4 1/2"	7'-1 7/8"	4'-9 3/4"	4'-0 1/4"	5 3/4"	8 1/8"
10'x10'	5 1/4"	7'-10 9/16"	5'-3 7/8"	4'-5 7/8"	6 1/8"	8 5/8"





DIMENSIONS																	QUANTITIES			
OPENINGS			MAX. FILL		BARREL			WINGS AND CURBS									PER LIN. FT. OF BARREL		44'-0" CULVERT	
SIZE	No.	AREA	SLAB	WALL	T	N	A	E	J	G	D	H	L	L1	P	P1	M	STEEL	CONC.	STEEL	CONC.
Ft.		Sq. Ft.	Ft.	Ft.	In.	In.	In.	Ft.-In.	Ft.-In.	Ft.-In.	In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Pounds	Cu. Yds.	Pounds	Cu. Yds.
7x7	2	98	11	6	8½	7	1⅞	1'-10	1'-7	4'-3	1¾	8'-8½	16'-5¼	17'-3¼	16'-10	16'-8	43'-9 7/16	177.86	10.227	91.46	
	3	147															56'-7 7/16	264.85	1.8570	14.486	1.18.33
	4	196															64'-6 1/16	351.83	2.4154	18.737	145.20
	5	245															72'-4 5/16	438.82	2.9738	23.159	172.07
	6	294															80'-2 1/2	537.82	3.5322	28.127	198.94
8x8	2	128	9	5	9	8	1⅞	2'-0	2'-0	4'-10	1 3/16	9'-9	18'-7 5/16	19'-4 5/16	17'-11	18'-8	55'-2 7/16	210.50	1.6111	12.452	113.76
	3	192															64'-2 7/16	313.92	2.2994	17.467	146.74
	4	256	13														73'-2	417.94	2.9877	22.642	179.74
	5	320															82'-1 11/16	533.76	3.6759	28.447	212.74
	6	384															91'-1 7/16	637.20	4.3642	33.698	245.73
9x9	2	162	7	5	9½	9	1⅞	2'-2	2'-4	5'-4	1 13/16	10'-9½	20'-10 5/16	21'-5 5/16	20'-1	20'-8	61'-8 3/16	252.18	1.9560	15.209	138.24
	3	243															71'-9 7/16	375.85	2.7870	21.192	177.95
	4	324	11														81'-10 13/16	499.44	3.6181	27.444	217.66
	5	405															91'-11 15/16	637.39	4.4491	34.331	257.37
10x10	2	200	5	5	10	10	1 15/16	2'-5	2'-8	5'-11	1⅞	11'-10	22'-9⅝	24'-0⅜	21'-11	23'-2	68'-4 3/16	299.05	2.3333	18.930	185.54
	3	300	9														79'-7 5/8	445.65	3.3200	26.123	212.55
	4	400															90'-9 3/4	610.35	4.3066	34.078	259.57
	5	500															102'-0 5/16	756.94	5.2932	41.656	306.58

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		BARS A				BARS A1				BARS A2						BARS B				#5 BARS D & D1				#5 BARS D2 & D3				#4 BARS C	
Size	No.	Size	No	Length	Sp.	Size	No.	Length	Sp.	Size	No.	Short Bar	Variation	Long Bar	Sp.	Size	No.	Length	Sp.	Lgth. Bars D	Lgth. Bars D1	Sp.	No.	Lgth. Bars D2	Lgth. Bars D3	Sp.	No.	Length
Ft.				Ft.-In.	In.			Ft.-In.	In.			Ft.-In.	In.	Ft.-In.	In.			Ft.-In.	In.	Ft.-In.	Ft.-In.	In.		Ft.-In.	Ft.-In.	In.		Ft.-In.
7x7	2	#6	76	16'-5	13	#6	88	5'-8	6 7/16 13	#6	28	3'-1	24.3333	15'-3	6½	#6	78	16'-9	13	92	2'-10	7'-0	12	46	2'-10	7'-0	12	59	47'-2
	3	#6	72	24'-0	13	#6	180	5'-8	6 7/16 13	#6	44	3'-1	24.3000	23'-4	6½	#6	74	24'-8	13	92	2'-10	7'-0	12	92	2'-10	7'-0	12	86	47'-2
	4	#6	70	31'-7	13	#6	282	5'-8	6 7/16 13	#6	56	3'-1	24.2308	29'-4	6½	#6	70	32'-7	13	92	2'-10	7'-0	12	138	2'-10	7'-0	12	113	47'-2
	5	#6	66	39'-2	13	#6	392	5'-8	6 7/16 13	#6	72	3'-1	24.2353	37'-5	6½	#6	66	40'-6	13	92	2'-10	7'-0	12	184	2'-10	7'-0	12	140	47'-2
	6	#6	62	⑥48'-11	13	#6	514	5'-8	6 7/16 13	#6	88	3'-1	24.2381	⑥45'-6	6½	#6	62	⑥50'-7	13	92	2'-10	7'-0	12	230	2'-10	7'-0	12	167	47'-2
8x8	2	#6	82	18'-8	12	#6	98	6'-3	6 1/2 12	#6	36	3'-2	22.3750	18'-1	6	#6	82	19'-0 1/4	12	92	2'-11	8'-1	12	46	2'-11	8'-1	12	66	47'-2
	3	#6	78	27'-4	12	#6	200	6'-3	6 1/2 12	#6	52	3'-2	22.4167	25'-7	6	#6	78	28'-0 1/4	12	92	2'-11	8'-1	12	92	2'-11	8'-1	12	96	47'-2
	4	#6	72	36'-0	12	#6	312	6'-3	6 1/2 12	#6	72	3'-2	22.4118	34'-11	6	#6	74	37'-0 3/4	12	92	2'-11	8'-1	12	138	2'-11	8'-1	12	126	47'-2
	5	#6	70	⑥46'-10	12	#6	436	6'-3	6 1/2 12	#6	88	3'-2	22.3810	⑥42'-4	6	#6	70	⑥48'-3	12	92	2'-11	8'-1	12	184	2'-11	8'-1	12	156	47'-2
	6	#6	64	⑥55'-6	12	#6	568	6'-3	6 1/2 12	#6	100	3'-2	22.3846	⑥51'-6	6	#6	64	⑥57'-3 1/4	12	92	2'-11	8'-1	12	230	2'-11	8'-1	12	186	47'-2
9x9	2	#6	88	20'-11	11	#6	104	6'-9	6 5/8 11	#6	44	3'-3	20.5000	20'-4	5½	#6	88	21'-3 3/4	11	106	2'-11	9'-1	10½	53	2'-11	9'-1	10½	73	47'-2
	3	#6	82	30'-8	11	#6	216	6'-9	6 5/8 11	#6	64	3'-3	20.5333	28'-11	5½	#6	84	31'-5½	11	106	2'-11	9'-1	10½	106	2'-11	9'-1	10½	106	47'-2
	4	#6	76	40'-5	11	#6	344	6'-9	6 5/8 11	#6	88	3'-3	20.5238	39'-2	5½	#6	78	41'-7½	11	106	2'-11	9'-1	10½	159	2'-11	9'-1	10½	139	47'-2
	5	#6	70	⑥52'-4	11	#6	484	6'-9	6 5/8 11	#6	112	3'-3	20.5105	⑥49'-5	5½	#6	72	⑥53'-11	11	106	2'-11	9'-1	10½	212	2'-11	9'-1	10½	172	47'-2
10x10	2	#7	68	23'-2	14	#7	80	7'-8	7 14	#7	36	3'-4	26.1250	20'-9	7	#7	70	23'-7	14	124	3'-0	10'-2	9	62	3'-0	10'-2	9	80	47'-2
	3	#7	64	34'-0	14	#7	172	7'-8	7 14	#7	56	3'-4	26.1538	31'-8	7	#7	64	34'-10	14	124	3'-0	10'-2	9	124	3'-0	10'-2	9	116	47'-2
	4	#7	58	⑥47'-5	14	#7	270	7'-8	7 14	#7	76	3'-4	26.1111	⑥42'-6	7	#7	60	⑥48'-8	14	124	3'-0	10'-2	9	186	3'-0	10'-2	9	152	47'-2
	5	#7	54	⑥58'-3	14	#7	384	7'-8	7 14	#7	96	3'-4	26.1304	⑥53'-5	7	#7	54	⑥59'-11	14	124	3'-0	10'-2	9	248	3'-0	10'-2	9	188	47'-2

WINGS AND CURBS REINFORCEMENT

BARS E				BARS E1				#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		BARS O				#4 BARS P		#4 BARS P2		#4 BARS P3		#4 BARS N		#6 BARS M		#6 BARS M1		#6 BARS X Ⓐ	
Size	No.	Length	Sp.	Size	No.	Length	Sp.	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	Size	No.	Length	Sp.	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length
		Ft.-In.	In.			Ft.-In.	In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.	In.			Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.
#4	74	5'-0	11	#4	74	8'-0	11	2	17'-2	14	2'-8½	2	18'-4	14	2'-10½	16	14'-0	16	15'-0	#4	66	3'-10	12	8	15'-6	6	17'-0	8	16'-4	6	18'-8	32	4'-6	4	18'-7	6	15'-11	32	2'-0
																																48	4'-6	4	26'-5	6	23'-9	32	2'-0
																																62	4'-6	4	34'-3	6	31'-8	32	2'-0
																																80	4'-6	4	⑥24'-4	6	39'-6	32	2'-0
																																94	4'-6	4	⑥52'-2	6	⑥29'-6	32	2'-0
#5	90	5'-6	10	#4	90	9'-1	10	2	19'-4	16	2'-9½	2	20'-5	16	2'-11½	18	16'-1	18	17'-0	#4	74	4'-5	12	8	17'-7	6	19'-1	8	18'-4	6	20'-8	36	4'-7	4	20'-11	6	18'-3	36	2'-0
																																54	4'-7	4	29'-11	6	27'-3	36	2'-0
																																72	4'-7	4	38'-10	6	36'-2	36	2'-0
																																90	4'-7	4	⑥50'-0	6	⑥47'-4	36	2'-0
																																108	4'-7	4	⑥59'-0	6	⑥56'-4	36	2'-0
																																40	4'-8	4	23'-3	6	20'-7	40	2'-0
																																60	4'-8	4	33'-4	6	30'-8	40	2'-0
																																82	4'-8	4	⑥45'-7	6	⑥42'-11	40	2'-0
																																102	4'-8	4	⑥55'-8	6	⑥53'-0	40	2'-0
#6	128	6'-2	6½	#5	128	11'-2	8½	2	23'-6	20	2'-11½	2	25'-1	20	3'-1½	24	20'-1	24	21'-6	#5	98	5'-6	11	8	21'-7	6	23'-1	8	22'-10	6	25'-4	46	4'-9	4	25'-7	6	22'-11	44	2'-0
																																68	4'-9	4	36'-9	6	34'-2	44	2'-0
																																90	4'-9	4	⑥50'-2	6	⑥47'-6	44	2'-0
																																112	4'-9	4	⑥61'-5	6	⑥58'-9	44	2'-0

Ⓐ #6 Bars X to be ¾"ϕ Smooth and Greased for 1'-0" of Length

① Includes 1'-1'-6" Lap Splice.
② Includes 1'-2'-2" Lap Splice.
③ Does not include Lap Splice; When Length of Bar Exceeds 40'-0", Add 2'-2" Lap Splice.
④ Includes 1'-2'-7" Lap Splice
⑤ Does not include Lap Splice; When Length of Bar Exceeds 40'-0", Add 2'-7" Lap Splice.

DATE	REVISIONS	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.

DATE	REVISIONS	BY
6-8-72	Rev. General Note for Steel	W.E.M.
4-27-67	Added Axle Steel	W.E.M.
12-16-64	Rev. General Notes	W.E.M.
4-5-64	DEFORMED DOWELS 1" TO SMOOTH	W.E.M.

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Std. Specs.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as amended by Int. Spec. 1964.
LIVE LOAD: H. 20-44, or Military Loading, whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, unless Otherwise noted.
Reinforcement shall be Billet Steel A.S.T.M. A 615 or Rail Steel A.S.T.M. A 616 or Axle Steel A.S.T.M. A 617.
Dimensions relating to Reinforcing Steel are to Bar Clrs.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to Approx. ⅔ Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

APPROVED BY:
Original Signed by Chief Engineer
CHIEF ENGINEER DATE

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 75° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED June 19, 1962 7'x7' TO 10'x10'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED M. Yoshie	DETAILED G.A.H. Allen	TRACED Y. Mitchell
CHECKED G.A.H.	CHECKED M. Yoshie	CHECKED W.C. Marcum
IN CHARGE OF		

C·C·S·M·7-10·S·75°-1