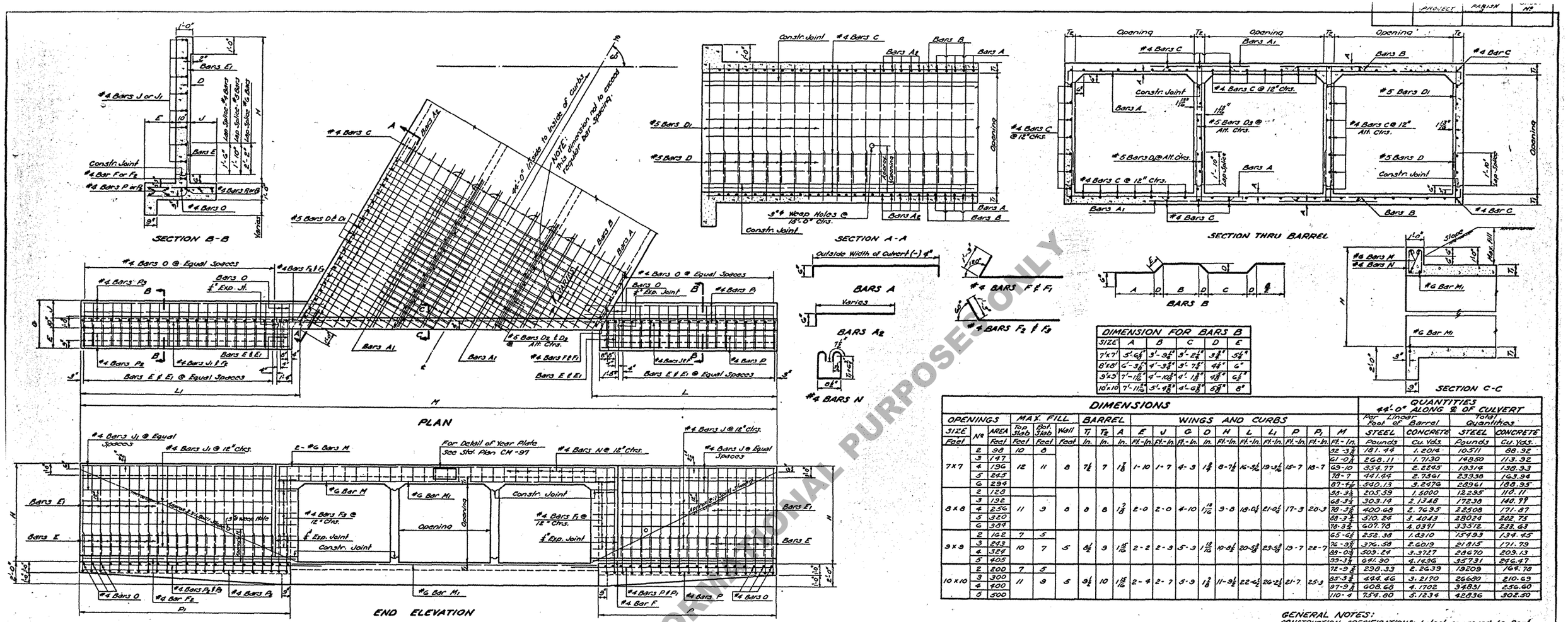

DIMENSION FOR BARS B					
SIZE	A	B	C	D	E
7'x7'	5'-6⅝"	3'-9⅝"	3'-2⅝"	3⅜"	5¼"
8'x8'	6'-3⅝"	4'-3⅝"	3'-7⅝"	4½"	6"
9'x9'	7'-1 11/16"	4'-10⅝"	4'-1⅝"	4⅞"	6½"
10'x10'	7'-11 5/16"	5'-4⅝"	4'-6⅝"	5⅜"	8"

DIMENSIONS

OPENINGS SIZE Feet	Nº	AREA Feet	MAX. FILL Top Slab Feet	MAX. FILL Bot. Slab Feet	BARREL Wall Feet	T_1 In.	T_2 In.	A In.	WINGS AND CURBS E Ft.-In.	J Ft.-In.	G Ft.-In.	D In.	H Ft.-In.	L Ft.-In.	L_1 Ft.-In.	P Ft.-In.	P_1 Ft.-In.	M Ft.-In.	QUANTITIES 44'-0" ALONG ℄ OF CULVERT Per Linear Foot of Barrel STEEL Pounds	CONCRETE Cu. Yds.	Total Quantities STEEL Pounds	CONCRETE Cu. Yds.
7x7	2	98	10	8	8	7½	7	1⅞	1-10	1-7	4-3	1¾	8-7½	16-3½	19-3 1/16	15-7	18-7	32-3⅞	181.44	1.2014	10511	88.92
	3	147																61-0⅞	268.11	1.7130	14850	113.92
	4	196	12	11														69-10	354.77	2.2245	19314	138.93
	5	245																78-7	441.44	2.7361	23938	163.94
	6	294																87-4½	540.13	3.2476	28961	188.95
8x8	2	128	11	9	8	8	8	2⅛	2-0	2-0	4-10	1 11/16	9-8	18-0½	21-0½	17-3	20-3	53-3½	205.59	1.5000	12295	110.11
	3	192																68-3½	303.14	2.1348	17238	140.99
	4	256																76-3⅝	400.68	2.7695	22508	171.87
	5	320																88-3½	510.24	3.4043	28024	202.75
	6	384																98-3½	607.78	4.0391	33512	233.63
9x9	2	162	7	5	5	6½	9	1 15/16	2-2	2-9	5-3	1 13/16	10-6½	20-5⅜	23-5⅜	19-7	22-7	65-6½	252.38	1.6310	15493	134.45
	3	243	10	7														76-3⅝	376.58	2.6019	21815	171.79
	4	324																88-0⅜	509.24	3.3727	28670	203.13
	5	405																99-3⅞	691.90	4.1436	35731	246.47
10x10	2	200	7	5	5	9½	10	1 15/16	2-4	2-7	5-9	1⅞	11-9½	22-4½	26-2½	21-7	25-3	72-9⅞	298.33	2.2639	19209	164.78
	3	300	11	9														85-3⅞	444.46	3.2170	26690	210.69
	4	400																97-9⅞	608.68	4.1702	34831	256.60
	5	500																110-4	754.90	5.1234	42836	302.50

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS Size Feet	Nº	Bars A Size	Nº	Length Ft.-In.	Spac. In.	Bars A1 Size	Nº	Length Ft.-In.	Spac. In.	Bars A2 Size	Nº	Short Bar Ft.-In.	Variation In.	Long Bar Ft.-In.	Spac. In.	Bars B Size	Nº	Length Ft.-In.	Spac. In.	Nº5 Bars D & D1 Nº	Length Bars D Ft.-In.	Length Bars D1 Ft.-In.	Spac. In.	Nº5 Bars D2 & D3 Nº	Length Bars D2 Ft.-In.	Length Bars D3 Ft.-In.	Spac. In.	Nº4 Bars C Nº	Length Ft.-In.
7x7	2	#6	68	16-5	13	#6	88	5-8	12½	#6	60	2-4	11.2143	15-5	6½	#6	68	16-8	13	112	2-10	6-11	10	47	2-10	6-11	12	59	47-5
	3	#6	60	24-0	13	#6	192	5-8	12½	#6	92	2-4	11.2233	22-11	6½	#6	60	24-6	13	112	2-10	6-11	10	94	2-10	6-11	12	86	47-5
	4	#6	52	31-7	13	#6	312	5-8	12½	#6	124	2-4	11.2333	30-5	6½	#6	52	32-4	13	112	2-10	6-11	10	141	2-10	6-11	12	113	47-5
	5	#6	44	39-2	13	#6	440	5-8	12½	#6	156	2-4	11.2368	37-11	6½	#6	44	40-2	13	112	2-10	6-11	10	188	2-10	6-11	12	140	47-5
	6	#6	36	46-11	13	#6	600	5-8	12½	#6	188	2-4	11.2391	45-3	6½	#6	36	50-2	13	112	2-10	6-11	10	235	2-10	6-11	12	167	47-5
8x8	2	#6	66	18-8	13	#6	90	6-3	12½	#6	68	2-5	11.2500	17-5	6½	#6	68	18-11½	13	118	2-10	8-0	9½	47	2-10	8-0	12	66	47-5
	3	#6	58	27-4	13	#6	206	6-3	12½	#6	104	2-5	11.2500	25-10	6½	#6	58	27-11	13	118	2-10	8-0	9½	74	2-10	8-0	12	96	47-5
	4	#6	48	36-0	13	#6	332	6-3	12½	#6	144	2-5	11.2571	35-3	6½	#6	48	36-10½	13	118	2-10	8-0	9½	141	2-10	8-0	12	126	47-5
	5	#6	38	46-10	13	#6	472	6-3	12½	#6	180	2-5	11.2500	43-8	6½	#6	40	48-0	13	118	2-10	8-0	9½	188	2-10	8-0	12	156	47-5
	6	#6	30	55-6	13	#6	638	6-3	12½	#6	216	2-5	11.2453	52-11	6½	#6	30	56-11½	13	118	2-10	8-0	9½	235	2-10	8-0	12	186	47-5
9x9	2	#7	56	20-11	15	#7	80	7-1	12¾	#7	68	2-6	13.0000	19-10	7½	#7	56	21-6⅜	15	106	2-11	9-0	10½	53	2-11	9-0	12	73	47-5
	3	#7	46	30-8	15	#7	176	7-1	12¾	#7	104	2-6	13.0000	29-7	7½	#7	48	31-3½	15	106	2-11	9-0	10½	106	2-11	9-0	12	106	47-5
	4	#7	38	40-5	15	#7	294	7-1	12¾	#7	140	2-6	13.0000	39-4	7½	#7	38	43-11½	15	106	2-11	9-0	10½	159	2-11	9-0	12	139	47-5
	5	#7	28	52-9	15	#7	424	7-1	12¾	#7	176	2-6	13.0000	49-9	7½	#7	30	54-0	15	106	2-11	9-0	10½	212	2-11	9-0	12	172	47-5
10x10	2	#7	56	23-2	14	#7	84	7-7	14¾	#7	80	2-7	12.1053	21-9	7	#7	58	23-6⅜	14	124	3-0	10-1	9	62	3-0	10-1	9	80	47-5
	3	#7	46	34-0	14	#7	138	7-7	14¾	#7	124	2-7	12.1000	32-10	7	#7	46	34-9½	14	124	3-0	10-1	9	124	3-0	10-1	9	116	47-5
	4	#7	36	47-3	14	#7	192	7-7	14¾	#7	168	2-7	12.1119	44-0	7	#7	36	48-7½	14	124	3-0	10-1	9	186	3-0	10-1	9	152	47-5
	5	#7	28	58-3	14	#7	246	7-7	14¾	#7	208	2-7	12.1176	54-1	7	#7	26	59-10	14	124	3-0	10-1	9	248	3-0	10-1	9	188	47-5

WINGS AND CURB REINFORCEMENT

OPENINGS Size Feet	Nº	Bars E Size	Nº	Length Ft.-In.	Spac. In.	Bars E1 Size	Nº	Length Ft.-In.	Spac. In.	Nº4 Bars F Nº	Length Ft.-In.	Nº4 Bars F1 Nº	Length Ft.-In.	Nº4 Bars F2 Nº	Length Ft.-In.	Nº4 Bars F3 Nº	Length Ft.-In.	Nº4 Bars J Nº	Length Ft.-In.	Nº4 Bars J1 Nº	Length Ft.-In.	Nº4 Bars O Nº	Length Ft.-In.	Spac. In.	Nº4 Bars P Nº	Length Ft.-In.	Nº4 Bars P1 Nº	Length Ft.-In.	Nº4 Bars P2 Nº	Length Ft.-In.	Nº4 Bars P3 Nº	Length Ft.-In.	Nº4 Bars N Nº	Length Ft.-In.	Nº6 Bars M Nº	Length Ft.-In.	Nº6 Bars M1 Nº	Length Ft.-In.
7x7	2	#4	84	5-0	10	#4	84	7-11	10	2	16-8½	14	2-8½	2	20-3½	14	3-1½	16	13-7	16	16-11	64	3-10	10	8	15-3	6	16-9	8	18-3	6	21-3	36	4-4	6	20-7	4	17-3
	3																																58	4-4	6	29-4	4	26-6
	4																																72	4-4	6	38-1	4	35-3
	5																																90	4-4	6	49-0	4	46-8
	6																																106	4-4	6	57-9	4	55-0
8x8	2																																42	4-5	6	23-4	4	20-4
	3																																62	4-5	6	33-4	4	30-4
	4																																82	4-5	6	45-6	4	42-6
	5																																102	4-5	6	55-6	4	52-6
	6																																122	4-5	6	65-6	4	62-6
9x9	2	#5	92	5-6	10	#4	92	9-0	10	2	18-6	16	2-9	2	22-3	16	3-3	18	15-3	18	18-7	92	4-5	10	8	16-11	6	18-5	8	19-11	6	22-3	46	4-6	6	25-10	4	23-0
	3																																70	4-6	6	37-0	4	34-3
	4																																92	4-6	6	50-6	4	47-8
	5																																114	4-6	6	61-9	4	58-11
10x10	2	#5	126	5-8	8	#4	126	10-0	8	2	20-11	18	2-11	2	24-8	18	3-4	20	17-7	20	20-11	126	4-10	8	12	19-3	6	20-7	12	23-3	6	25-6	52	4-8	6	28-4	4	25-7
	3																																78	4-8	6	43-1	4	38-1
	4																																102	4-8	6	55-7	4	52-3
	5	#6	140	6-1	8	#5	140	11-1	8	2	23-1	20	3-0	2	27-5	20	3-5	22	19-7	22	23-7	140	5-4	8	12	21-3	8	23-0	12	24-11	8	28-6	128	4-8	6	68-1	4	65-3

- ● Includes 2'-2" Lap-Splice.
- † Does not include Lap-Splice. When Length of Bar Exceeds 40'-0", Add 2'-2" Lap Splice.
- ⊙ Includes 1'-6" Lap-Splice.
- ⊕ Does not include Lap-Splice. When Length of Bar Exceeds 40'-0", Add 2'-7" Lap Splice.
- ⊗ Includes 2'-7" Lap-Splice.

GENERAL NOTES:
CONSTRUCTION SPECIFICATIONS: Latest approved La. Dept. of Highways Standard Specifications.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1957 as amended to Dec. 31, 1958
Live Load: H-20-S16-44.
All concrete to be Class "A".
All exposed corners to have ¾" chamfer, unless otherwise noted.
Reinforcement shall be Intermediate or Hard Grade A.S.T.M. A15, or Rail Steel A.S.T.M. A16, conforming to A.S.T.M. A305.
Dimensions relating to reinforcing steel are to bar centers.
Place about 2 cu. ft. of large size gravel or loose rock behind and around each weep-hole.
For details of expansion and construction joints, see Standard Plan CM-49.

VOID 11.7.61 CEA

DATE	DESCRIPTION	BY
5-10-61	All 9'x9' CULV. ADDED	[illegible]
4-11-60	Rev. Vertical Bars in Inter. Walls & Lgth. of Bars N	W.H.W./L.V.
9-1-59	Added 2,3,5,6 & 8x8 Cont.	W.H.W./L.V.
6-25-59	7'x7' & 10'x10' CULVERTS ADDED	G.H./L.V.

REVISIONS

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED MARCH 30, 1959 7'x 7' TO 10'x 10'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
DESIGNED W.C. Wanamaker DETAILED W.C. Wanamaker TRACED E. Kline Roberts
CHECKED Louis Valentine CHECKED Louis Valentine CHECKED W.C. Wanamaker
BRIDGE DESIGN SECTION

FOR ILLUSTRATIONAL PURPOSES ONLY