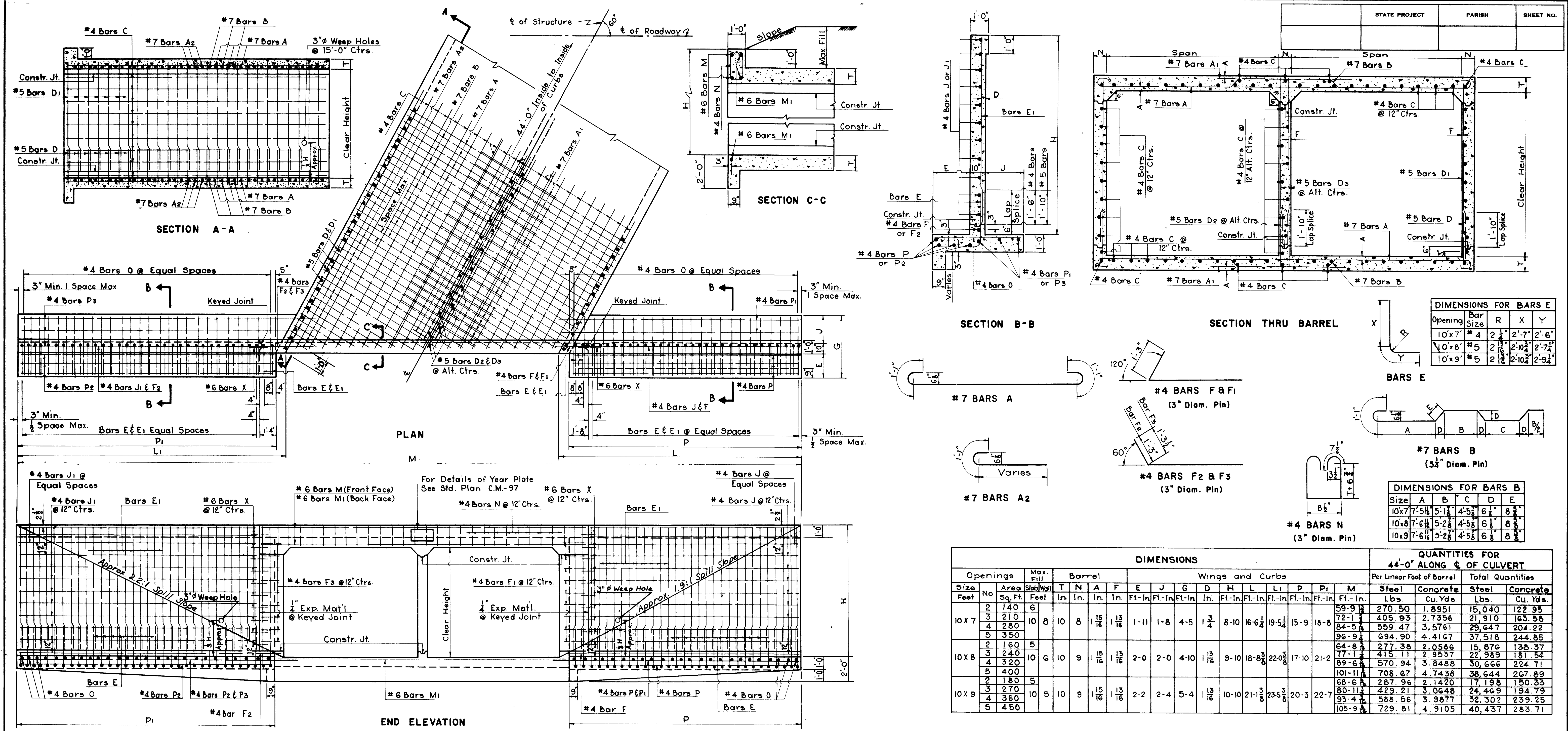

STATE PROJECT	PARISH	SHEET NO.

DIMENSIONS FOR BARS E

Opening	Bar Size	R	X	Y
10'x7'	#4	2 1/4"	2'-7"	2'-6"
10'x8'	#5	2 13/16"	2'-10 3/4"	2'-7 1/4"
10'x9'	#5	2 13/16"	2'-10 3/4"	2'-9 1/4"

DIMENSIONS FOR BARS B

Size	A	B	C	D	E
10'x7	7'-5 11/16"	5'-1 7/8"	4'-5 7/8"	6 1/8"	8 5/8"
10'x8	7'-6 11/16"	5'-2 7/8"	4'-5 7/8"	6 1/8"	8 5/8"
10'x9	7'-6 11/16"	5'-2 7/8"	4'-5 7/8"	6 1/8"	8 5/8"

DIMENSIONS / **QUANTITIES FOR 44'-0" ALONG ℄ OF CULVERT**

Openings Size (Feet)	No.	Area (Sq. Ft.)	Max. Fill Slab (Feet)	Max. Fill Wall (Feet)	Barrel T (In.)	Barrel N (In.)	Barrel A (In.)	Barrel F (In.)	E (Ft.-In.)	J (Ft.-In.)	G (Ft.-In.)	D (In.)	H (Ft.-In.)	L (Ft.-In.)	L1 (Ft.-In.)	P (Ft.-In.)	P1 (Ft.-In.)	M (Ft.-In.)	Per Lin. Ft. of Barrel Steel (Lbs.)	Per Lin. Ft. of Barrel Concrete (Cu. Yds.)	Total Steel (Lbs.)	Total Concrete (Cu. Yds.)
10 X 7	2	140	6	8	10	8	1 15/16	1 13/16	1-11	1-8	4-5	1 3/4	8-10	16-6 1/4	19-5 1/4	15-9	18-8	59-9 13/16	270.50	1.8951	15,040	122.95
	3	210	10															72-1 5/8	405.93	2.7356	21,910	163.58
	4	280																84-5 7/16	559.47	3.5761	29,647	204.22
	5	350																96-9 1/4	694.90	4.4167	37,518	244.85
10 X 8	2	160	5	6	10	9	1 15/16	1 13/16	2-0	2-0	4-10	1 13/16	9-10	18-8 3/8	22-0 3/8	17-10	21-2	64-8 5/16	277.38	2.0586	15,876	138.37
	3	240	10															77-1 1/4	415.11	2.9537	22,989	181.54
	4	320																89-6 3/16	570.94	3.8488	30,666	224.71
	5	400																101-11 3/16	708.67	4.7438	38,644	267.89
10 X 9	2	180	5	5	10	9	1 15/16	1 13/16	2-2	2-4	5-4	1 13/16	10-10	21-1 3/8	23-5 3/8	20-3	22-7	68-6 5/16	287.96	2.1420	17,198	150.33
	3	270	10															80-11 1/4	429.21	3.0648	24,469	194.79
	4	360																93-4 3/16	588.56	3.9877	32,302	239.25
	5	450																105-9 3/16	729.81	4.9105	40,437	283.71

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

Openings Size (Ft.)	No.	#7 Bars A No.	A Length (Ft.-In.)	A SP. (In.)	#7 Bars A1 No.	A1 Length (Ft.-In.)	A1 SP. (In.)	#7 Bars A2 No.	A2 Short Bar (Ft.-In.)	A2 Variation (Ft.-In.)	A2 Long Bar (Ft.-In.)	A2 SP. (In.)	#7 Bars B No.	B Length (Ft.-In.)	B SP. (In.)	#5 Bars D & D1 No.	Lgth. Bars D (Ft.-In.)	Lgth. Bars D1 (Ft.-In.)	SP. (In.)	#5 Bars D2 & D3 No.	Lgth. Bars D2 (Ft.-In.)	Lgth. Bars D3 (Ft.-In.)	SP. (In.)	#4 Bars C No.	C Length② (Ft.-In.)
10X7	2	58	23-3 1/2	14	86	7-7	7 14	80	2-8	12.1053	21-10	7	58	23-8 1/2	14	94	3-0	7-2	12	47	3-0	7-2	12	71	47-5
	3	46	33-11 1/2	14	192	7-7	7 14	124	2-8	12.1333	33-0	7	46	34-9 1/2	14	94	3-0	7-2	12	94	3-0	7-2	12	104	47-5
	4	36	47-2 1/2①	14	316	7-7	7 14	164	2-8	12.1250	43-1⊕	7	38	48-5 1/2①	14	94	3-0	7-2	12	141	3-0	7-2	12	137	47-5
	5	26	57-10 1/2①	14	472	7-7	7 14	208	2-8	12.1176	54-2⊕	7	26	59-6 1/2①	14	94	3-0	7-2	12	188	3-0	7-2	12	170	47-5
10X8	2	58	23-6 1/2	14	86	7-7	7 14	80	2-9	12.1053	21-11	7	58	23-11 1/2	14	94	3-0	8-2	12	47	3-0	8-2	12	74	47-5
	3	46	34-3 1/2	14	192	7-7	7 14	124	2-9	12.1333	33-1	7	48	35-1 1/2	14	94	3-0	8-2	12	94	3-0	8-2	12	108	47-5
	4	36	47-7 1/2①	14	316	7-7	7 14	164	2-9	12.1250	43-2⊕	7	38	48-10 1/2①	14	94	3-0	8-2	12	141	3-0	8-2	12	142	47-5
	5	26	58-4 1/2①	14	472	7-7	7 14	208	2-9	12.1176	54-3⊕	7	26	60-0 1/2①	14	94	3-0	8-2	12	188	3-0	8-2	12	176	47-5
10X9	2	58	23-6 1/2	14	86	7-7	7 14	80	2-9	12.1053	21-11	7	58	23-11 1/2	14	106	3-0	9-2	10 1/2	53	3-0	9-2	10 1/2	77	47-5
	3	46	34-3 1/2	14	192	7-7	7 14	124	2-9	12.1333	33-1	7	48	35-1 1/2	14	106	3-0	9-2	10 1/2	106	3-0	9-2	10 1/2	112	47-5
	4	36	47-7 1/2①	14	316	7-7	7 14	164	2-9	12.1250	43-2⊕	7	38	48-10 1/2①	14	106	3-0	9-2	10 1/2	159	3-0	9-2	10 1/2	147	47-5
	5	26	58-4 1/2①	14	472	7-7	7 14	208	2-9	12.1176	54-3⊕	7	26	60-0 1/2①	14	106	3-0	9-2	10 1/2	212	3-0	9-2	10 1/2	182	47-5

WINGS AND CURBS REINFORCEMENT

Openings Size (Ft.)	No.	Bars E Size	E No.	E Length (Ft.-In.)	E SP. (In.)	Bars E1 Size	E1 No.	E1 Length (Ft.-In.)	E1 SP. (In.)	#4 Bars F No.	F Length	#4 Bars F1 No.	F1 Length	#4 Bars F2 No.	F2 Length	#4 Bars F3 No.	F3 Length	#4 Bars J No.	J Length	#4 Bars J1 No.	J1 Length	#4 Bars O No.	O Length	O SP. (In.)	#4 Bars P No.	P Length	#4 Bars P1 No.	P1 Length	#4 Bars P2 No.	P2 Length	#4 Bars P3 No.	P3 Length	#4 Bars N No.	N Length	#6 Bars M No.	M Length	#6 Bars M1 No.	M1 Length	#6 Bars X Ⓐ No.	X Length
10X7	2	#4	84	5-1	10	#4	84	8-2	10	2	17-0	14	2-10	2	20-8	14	3-3	18	13-9	18	17-0	70	4-0	12	8	15-5	6	16-9	8	18-4	6	21-4	50	4-9	4	27-10	6	25-0	32	2-0
	3																																74	4-9	4	42-4③	6	37-4	32	2-0
	4																																100	4-9	4	54-8③	6	51-9③	32	2-0
	5																																124	4-9	4	66-11③	6	64-1③	32	2-0
10X8	2	#5	88	5-6	11	#4	88	9-2	11	2	19-2	16	2-11	2	23-3	16	3-4	20	15-10	20	19-6	78	4-5	12	8	17-6	6	18-10	8	20-10	6	24-0	50	4-9	4	28-1	6	25-3	36	2-0
	3																																76	4-9	4	42-8③	6	37-8	36	2-0
	4																																100	4-9	4	55-1③	6	52-3③	36	2-0
	5																																126	4-9	4	67-6③	6	64-8③	36	2-0
10X9	2	#5	128	5-8	8	#4	128	10-2	8	2	21-7	18	2-11	2	24-8	18	3-4	22	18-3	22	20-11	102	4-11	10	8	19-11	6	21-2	8	22-3	6	25-7	50	4-9	4	28-1	6	25-3	40	2-0
	3																																76	4-9	4	42-8③	6	37-8	40	2-0
	4																																100	4-9	4	55-1③	6	52-3③	40	2-0
	5																																126	4-9	4	67-6③	6	64-8③	40	2-0

① Includes 1-2'-7" Lap Splice.
② Includes 1-1'-6" Lap Splice.
③ Includes 1-2'-2" Lap Splice.
⊕ Does not Include Lap Splice. When Bar Length Exceeds 40'-0", Add 1-2'-7" Lap Splice.

Ⓐ #6 Bars X to be 3/4" Smooth and Greased for 1'-0" of Length.

APPROVED BY:
Original Signed by Chief Engineer
CHIEF ENGINEER DATE

GENERAL NOTES:

Design Specifications: A.A.S.H.O. 1969 as Amended to 1971.
Construction Specifications: Latest Approved Louisiana Department of Highways Standard Specifications.
All Concrete to be Class "A".
All Exposed Corners to Have 3/4" Chamfer Unless Otherwise Noted.
Reinforcement Shall be Intermediate or Hard Grade A.S.T.M. A15, or Axle Steel A.S.T.M. A160, or Rail Steel A.S.T.M. A16, Conforming to A.S.T.M. A305.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
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. 2 Cu. Ft. of Concrete Sand.
For Details of Joints, See Standard Plan CM-49

CC·S·M-10·R·60°·1

REVISIONS		
DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
8-1-75	Rev. Spill Slope	W.T.J.

STANDARD PLAN

MULTIPLE OPENINGS REINFORCED CONCRETE BOX CULVERTS STRAIGHT WINGS 60° CROSSING 2:1 SPILL SLOPE NORMAL TO CHANNEL

DATED May 28 1975 10'x7', 10'x8' & 10'x9'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	DETAILED Barousse	TRACED A.L. Carrick
CHECKED	CHECKED Bacci	CHECKED Barousse

CC·S·M-10·R·60°·1