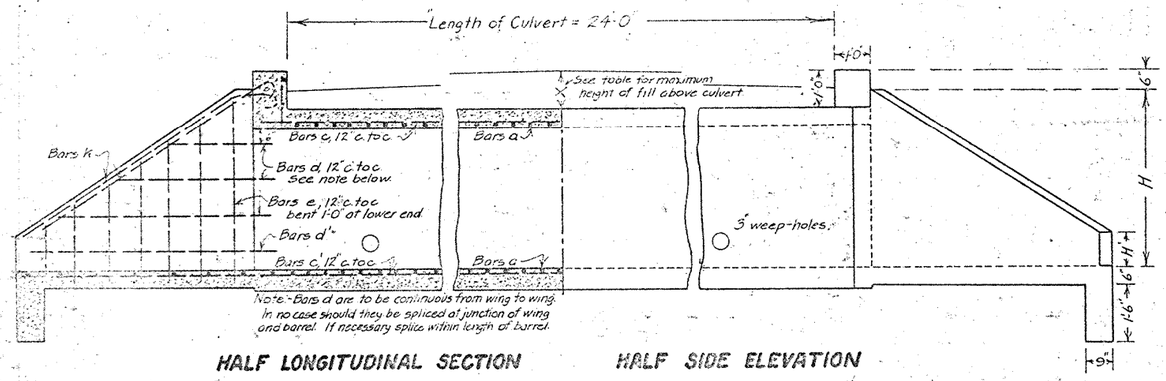
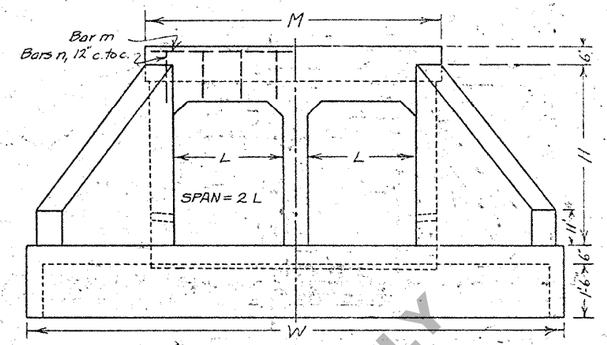
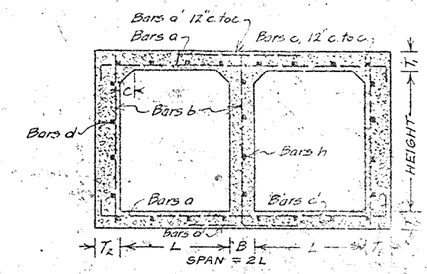


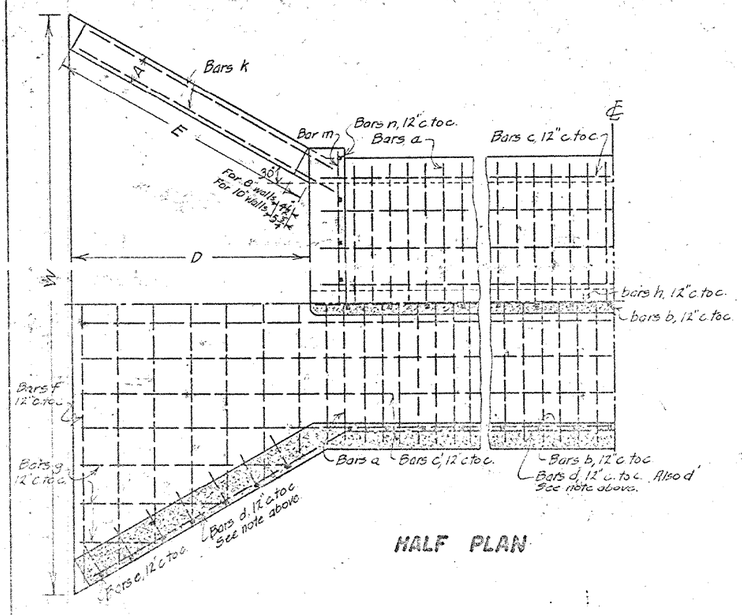
HALF LONGITUDINAL SECTION HALF SIDE ELEVATION



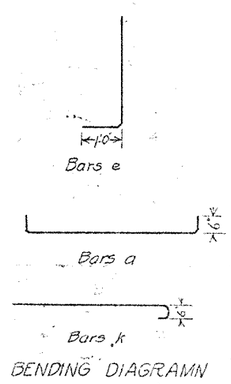
END VIEW



SECTION OF BARREL



HALF PLAN



BENDING DIAGRAMN

STEEL SCHEDULE FOR 24'-0" CULVERT

OPENING		BARREL REINFORCEMENT (All ½" Bars (except a' for 16' span))																		WING-WALL & FLOOR REINFORCEMENT (All ½" bars)																			
CLEAR SPAN (2L) FT.	CLEAR HEIGHT FT-IN.	Bars a			Spa	Bars a'		Bars b		Bars c		Bars c'		Bars d, t			Bars d'		Bars e, t			Bars f, t			No. of each length	Bars g, t			No. of each length	Bars k		Bars m		Bars n		Bars h	
		No.	Size	Length		No.	Length	No.	Length	No.	Length	No.	Length	Short bar	Variation	Long bar	No. of each length	No.	Length	Short bar	Variation	Long bar	Short bar	Variation	Long bar		Short bar	Variation	Long bar		No.	Length	No.	Length	No.	Length	No.	Length
8	2-0	100	½"	10-5	6"	50	4-0	75	2-10	10	25-9	10	32-6	3-6	1-6		2	2	33-4	2-4	7"	4-4	4	10-8	1-2	13-0	2		1-5	3-0	2	8	5-6	2	10-0	22	1-4	2	25-9
	2-6	100	½"	10-5	6"	50	4-0	75	3-4	10	25-9	10	33-6	3-6	2-6		2	2	34-4	2-6	7"	4-10	4	10-8	1-2	13-0	2	1-9	1-9	3-6	4	8	6-2	2	10-0	22	1-4	2	25-9
	3-0	100	½"	10-5	6"	50	4-0	75	3-10	10	25-9	10	34-6	3-6	3-6	35-0	2	2	30-6	2-8	7"	5-0	4	10-8	1-2	14-2	2	2-3	1-9	4-0	4	8	6-10	2	10-0	22	1-4	3	25-9
	4-0	100	½"	10-11	6"	50	4-0	75	4-10	10	25-9	10	36-9	3-6	5-6	35-0	2	4	37-8	3-0	7"	5-11	4	10-8	1-2	15-4	2	1-6	1-9	5-0	4	8	8-3	2	10-6	22	1-4	4	25-9
	5-0	100	½"	10-11	6"	50	4-0	75	6-10	10	25-9	10	39-6	3-6	3-6	35-6	2	4	40-0	3-2	7"	7-3	4	10-8	1-2	16-6	2	2-9	1-9	6-3	4	8	10-0	2	10-6	22	1-4	5	25-9
10	2-0	100	½"	12-5	6"	50	5-0	75	3-0	12	25-9	12	32-9	3-6			2	2	33-6	2-4	7"	4-1	4	12-8	1-2	15-0	2		1-9	3-0	4	8	6-8	2	12-0	26	1-4	2	25-9
	2-6	100	½"	12-5	6"	50	5-0	75	3-6	12	25-9	12	33-9	3-6	3-6		2	2	34-6	2-6	7"	4-10	4	12-8	1-2	15-0	2	1-9	1-9	3-6	4	8	6-3	2	12-0	26	1-4	2	25-9
	3-0	100	½"	12-5	6"	50	5-0	75	4-0	12	25-9	12	34-9	3-6	3-6	35-2	2	2	35-6	2-8	7"	5-0	4	12-8	1-2	16-2	2	2-3	1-9	4-0	4	8	7-0	2	12-0	26	1-4	3	25-9
	4-0	100	½"	12-11	6"	50	5-0	75	5-0	12	25-9	12	37-0	3-6	3-6	35-2	2	4	37-10	3-0	7"	5-11	4	12-8	1-2	17-4	2	1-6	1-9	6-2	4	8	8-4	2	12-6	26	1-4	4	25-9
	5-0	100	½"	12-11	6"	50	5-0	75	6-0	12	25-9	12	39-6	3-6	3-6	35-6	2	4	40-10	3-2	7"	7-3	4	12-8	1-2	18-6	2	2-10	1-9	6-4	4	8	10-0	2	12-6	26	1-4	5	25-9
12	2-0	120	½"	14-5	5"	50	6-0	75	3-0	14	25-9	14	33-0	3-10	3-6		2	2	33-8	2-4	7"	4-1	4	14-8	1-2	17-0	2		1-9	3-0	4	8	6-2	2	14-0	30	1-5	2	25-9
	2-6	120	½"	14-5	5"	50	6-0	75	3-6	14	25-9	14	34-0	3-10	3-6		2	2	34-10	2-6	7"	4-10	4	14-8	1-2	18-2	2	1-9	1-9	3-6	4	8	6-6	2	14-0	30	1-5	2	25-9
	3-0	120	½"	14-5	5"	50	6-0	75	4-0	14	25-9	14	35-0	3-10	3-6	35-4	2	2	36-0	2-8	7"	5-0	4	14-8	1-2	19-2	2	2-3	1-9	4-0	4	8	7-2	2	14-0	30	1-5	3	25-9
	4-0	120	½"	14-11	5"	50	6-0	75	5-0	14	25-9	14	37-0	3-10	3-6	35-4	2	4	38-2	3-0	7"	5-11	4	14-8	1-2	19-4	2	1-6	1-9	5-2	4	8	8-6	2	14-6	30	1-5	4	25-9
	5-0	120	½"	14-11	5"	50	6-0	75	6-0	14	25-9	14	39-6	3-10	3-6	35-10	2	4	41-0	3-2	7"	7-3	4	14-8	1-2	20-6	2	2-10	1-9	6-6	4	8	10-3	2	14-6	30	1-5	5	25-9
16	2-0	100	⅝"	18-9	6"	50	8-0	75	3-4	18	25-9	18	33-3	3-6	3-6		2	2	34-2	2-4	7"	4-1	4	18-8	1-2	21-0	2		1-9	3-3	4	8	6-0	2	18-0	35	1-6	2	25-9
	2-6	100	⅝"	18-9	6"	50	8-0	75	3-10	18	25-9	18	34-0	3-3	3-6		2	2	35-4	2-6	7"	4-3	4	18-8	1-2	22-2	2	2-0	1-9	3-9	4	8	6-9	2	18-0	35	1-6	2	25-9
	3-0	100	⅝"	18-9	6"	50	8-0	75	4-4	18	25-9	18	35-3	3-3	3-6	35-9	2	2	36-6	2-8	7"	5-0	4	18-8	1-2	22-2	2	2-6	1-9	4-3	4	8	7-5	2	18-0	35	1-6	3	25-9
	4-0	100	⅝"	18-11	6"	50	8-0	75	5-4	18	25-9	18	37-6	3-3	3-6	35-9	2	4	38-2	3-0	7"	5-6	4	18-8	1-2	23-4	2	3-0	1-9	4-6	4	8	8-0	2	18-0	35	1-6	4	25-9
	5-0	100	⅝"	18-11	6"	50	8-0	75	6-4	18	25-9	18	39-6	3-3	3-6	36-3	2	4	41-0	3-2	7"	7-3	4	18-8	1-2	24-6	2	3-6	1-9	5-0	4	8	10-6	2	18-0	35	1-6	5	25-9

Note:- To obtain lengths of intermediate bars, use 'variation' as an increment between short and long bars. No. of bars for each length is also given.

DIMENSIONS & QUANTITIES FOR 24'-0" CULVERT

OPENING			BARREL				WINGS & FLOOR							X	PER LIN. FT. BARREL		TOTAL QUANTITIES	
CLEAR SPAN (2L)	CLEAR HEIGHT	AREA	T_1	T_2	B	C	M	H	H'	E	A	W	D		STEEL	CONC	STEEL	CONC
FT.	FT-IN.	SQ. FT.	IN.	IN.	IN.	IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	IN.	FT-IN.	FT-IN.	FT.	LBS.	CU. YDS.	LBS.	CU. YDS.
8	2-0	16.0	7	6	8	4	10-2	3-1	1-0	4-0	8	14-2	2-3	9	115	1.510	2060	18.6
	2-6	20.0	7	6	8	4	10-2	3-7	1-2	4-6	8	14-8	3-10	9	73.0	1.679	2190	18.9
	3-0	24.0	7	6	8	4	10-2	4-1	1-4	5-0	8	15-2	4-5	9	76.5	1.810	2310	21.3
	4-0	32.0	7	8	10	6	10-9	5-1	1-5	6-4	10	17-1	5-8	9	83.5	1.980	2600	27.9
	5-0	40.0	7	8	10	6	10-9	6-1	1-10	7-10	10	19-2	6-8	9	89.5	2.161	2820	32.
10	2-0	20.0	7½	6	9	4	12-2	3-10	1-0	[illegible]	8	16-5	[illegible]	5	84.0	1.672	2475	22.4
	2-6	25.0	7½	6	8	4	12-2	4-7	1-2	4-7	8	16-9	[illegible]	5	85.0	1.702	2495	23.7
	3-0	30.0	7½	6	8	4	12-2	4-12	1-4	5-2	8	17-4	[illegible]	5	89.0	1.733	2615	25.2
	4-0	40.0	7½	8	10	6	12-9	5-12	1-8	6-8	10	19-2	5-7	5	96.5	2.002	2960	31.8
	5-0	60.0	7½	8	10	6	12-9	6-12	1-10	7-11	10	20-6	6-6	5	105.5	2.264	3250	36.3
12	2-0	24.0	8	8	8	4	14-2	3-12	1-0	4-2	8	[illegible]	5-7	4	107.0	1.850	3040	27.7
	2-6	30.0	8	8	8	4	14-2	4-9	1-2	4-9	8	[illegible]	4-1	4	106.0	1.918	3142	29.5
	3-0	36.0	8	8	8	4	14-2	5-4	1-4	5-4	8	18-5	4-10	4	112.0	1.982	3285	31.
	4-0	48.0	8	8	10	6	14-9	6-4	1-6	6-10	10	20-2	5-8	4	117.5	2.634	3550	36.4
	5-0	60.0	8	8	10	6	14-9	7-4	1-10	8-10	10	22-9	6-11	4	123.0	3.116	3768	40.7
16	2-0	32.0	9½	8	8	4	18-2	3-9	1-0	4-2	8	22-7	5-10	4	158.0	2.224	4398	35.7
	2-6	40.0	9½	8	8	6	18-2	4-9	1-2	5-0	8	23-2	7-3	4	160.0	2.3[illegible]	4470	40.4
	3-0	48.0	9	8	8	6	18-2	5-3	1-4	5-7	8	24-3	8-1	4	163.0	2.5[illegible]	[illegible]	[illegible]
	4-0	64.0	9	8	10	6	18-9	6-3	1-6	7-1	10	26-1	9-7	4	172.0	2.9[illegible]	[illegible]	[illegible]
	5-0	80.0	9	8	10	6	18-9	7-3	1-10	8-9	10	28-6	11-0	4	179.0	3.4[illegible]	[illegible]	[illegible]

Note:- Quantities for barrel are for one barrel only.

GENERAL NOTES & DESIGN DATA

General Specifications:- La. State Highway Dept. Spec.
Concrete - all class A, 1:2:4 mix.
Steel - all ½" deformed bars. (bars a for 16' span are ⅝")
All exposed corners to be chamfered ¾ in.
All exposed surfaces to be given a smooth finish.
Design Loads:-
Concentrated load - 15 ton typical truck, with 30% impact allowance distributed as specified in general specifications.
Entire weight of fill above culvert assumed as acting on culvert.
Horizontal component of earth pressure taken as 30 lbs. per sq. ft.
Steel in tension - 16000 lbs. Concrete in compression - 650 lbs.
Fill above slab of culvert is not to exceed the maximum height X as given in table.
All dimensions relating to bars are to centers of bars.
Bars at splices are 18" apart 2'-0", and separated 2".
Reinforcing bars should be tied at intersections and properly secured against displacement during depositing of concrete.

Designed:- [illegible]
Drawn & Traced:- [illegible]
Checked:-
Revised:-

DOUBLE CONCRETE BOX CULVERTS
FLARING WING-WALLS
8 FT. TO 16 FT. SPANS
LOUISIANA HIGHWAY COMMISSION
NEW ORLEANS, LA. CLEAR HEIGHT IN FT.
APPROVED:
STATE HIGHWAY ENGINEER

B-2-5d

FOR INFORMATION ONLY