FED. ROAD DIV. No.	STATE	FED. AID PROJ. No.	STATE AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
3	GA.	TSAP-193(6)			55	135

DELETED 5-19-83

REINFORCING STEEL

BARREL DESIGN NO. 1 (1.5' TO 12.0' FILL OVER BBL. INCL. PAVING) and BARREL DESIGN NO. 2 (FOR 12.1' TO 20.0' FILL)

CLEAR SPAN	CLEAR HEIGHT	D1 "A" BARS Number	D1 "A" Size	D1 "A" Length	D1 "A" Spacing	D1 "B" BARS Number	D1 "B" Size	D1 "B" Length	D1 "B" Spacing	D1 "C" ½"φ Number	D1 "C" Length	D1 "D" ½"φ Number	D1 "D" Length	D2 "A" BARS Number	D2 "A" Size	D2 "A" Length	D2 "A" Spacing	D2 "B" BARS Number	D2 "B" Size	D2 "B" Length	D2 "B" Spacing	D2 "C" ½"φ Number	D2 "C" Length	D2 "D" ½"φ Number	D2 "D" Length
7'	4'	2 x ("L" in inches ÷ Spacing) + 2 Bars	7/8"φ	10'-0"	7½"	2 x ("L" in inches ÷ Spacing) + 2 Bars	½"φ	5'-3"	12"	16	Lap + 2T1 + lap; ½ at "L" in Ft. + 4'-2" + 2'-0" for each lap; ½ at "L" in Ft. + 5'-10" + 2'-0" for each lap	8	"L" in Feet + 4'-6" + 2'-0" for each Lap	2 x ("L" in inches ÷ Spacing) + 2 Bars	7/8"φ	10'-4"	6"	2 x ("L" in inches ÷ Spacing) + 2 Bars	½"φ	5'-6"	12"	16	Lap + 2T1 + lap; ½ at "L" in Ft. + 4'-2" + 2'-0" for each lap; ½ at "L" in Ft. + 5'-10" + 2'-0" for each lap	8	"L" in Feet + 4'-6" + 2'-0" for each Lap
	5'			10'-0"	7½"		½"φ	6'-3"	12"	16		10				10'-4"	6"		½"φ	6'-6"	12"	16		10	
	6'			10'-0"	7½"		5/8"φ	7'-3"	12"	16		12				10'-4"	6"		5/8"φ	7'-6"	12"	16		12	
	7'			10'-0"	7½"		5/8"φ	8'-3"	10"	16		14				10'-8"	6"		5/8"φ	8'-7"	10"	16		14	
8'	4'			11'-0"	7"		½"φ	5'-4"	12"	18		8			1"φ	11'-4"	7"		½"φ	5'-8"	12"	18		8	
	5'			11'-0"	7"		½"φ	6'-4"	12"	18		10				11'-4"	7"		½"φ	6'-8"	12"	18		10	
	6'			11'-0"	7"		5/8"φ	7'-4"	12"	18		12				11'-4"	7"		5/8"φ	7'-8"	12"	18		12	
	7'			11'-0"	7"		5/8"φ	8'-5"	10"	18		14				11'-8"	7"		5/8"φ	8'-9"	10"	18		14	
	8'			11'-4"	7"		¾"φ	9'-5"	12"	18		16				11'-8"	7"		¾"φ	9'-10"	12"	18		16	
9'	4'			12'-2"	6½"		½"φ	5'-6"	12"	20		8			1"φ	12'-8"	6½"		½"φ	5'-10"	12"	20		8	
	5'			12'-2"	6"		½"φ	6'-6"	12"	20		10				12'-8"	6½"		½"φ	6'-10"	12"	20		10	
	6'			12'-2"	6"		5/8"φ	7'-6"	12"	20		12				12'-8"	6½"		5/8"φ	7'-11"	12"	20		12	
	7'			12'-2"	6"		5/8"φ	8'-6"	10"	20		14				13'-0"	6½"		5/8"φ	9'-0"	10"	20		14	
	8'			12'-6"	5½"		¾"φ	9'-7"	12"	20		16				13'-0"	6½"		¾"φ	10'-0"	12"	20		16	
	9'			12'-6"	5½"		¾"φ	10'-7"	10"	20		18				13'-4"	6½"		¾"φ	11'-2"	10"	20		18	
	10'			12'-6"	5½"		¾"φ	11'-7"	10"	20		20				13'-6"	6½"		¾"φ	12'-2"	10"	20		20	

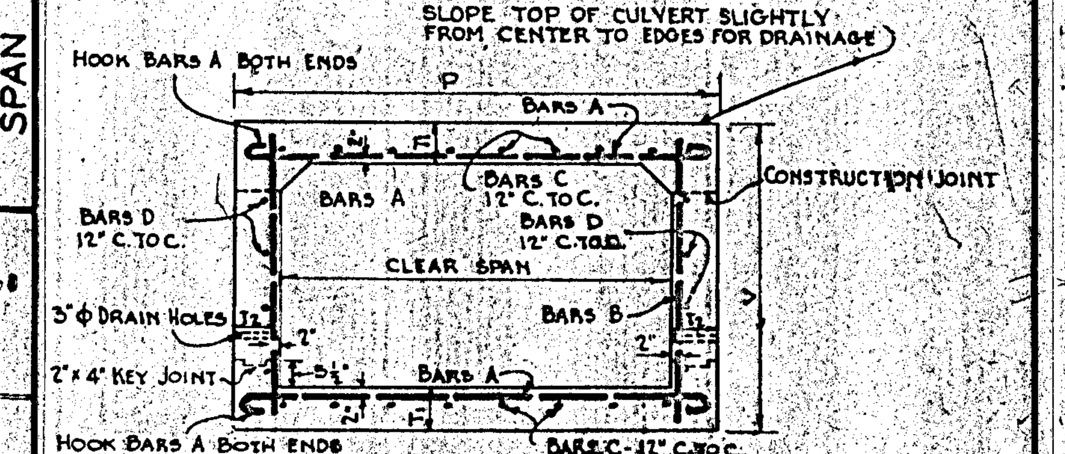
WING WALLS AND PARAPETS — SAME FOR ALL DEPTHS OF FILLS

"E" BARS AT 12" C. TO C. — "F" BARS ½"φ AT 12" C.TO C. — "J" BARS ¾"φ AT 12" C.TO C. TOP & BOTTOM — "K" BARS 5/8"φ

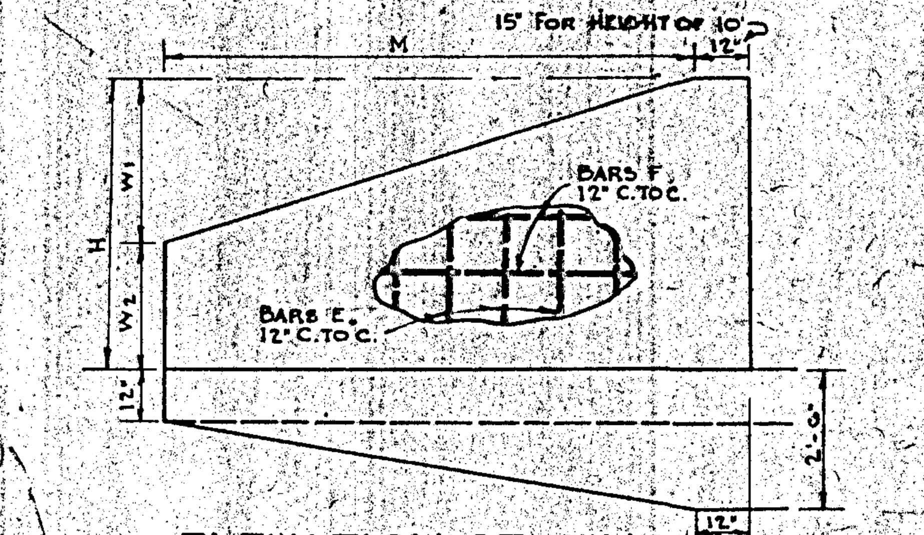
CLEAR SPAN	CLEAR HEIGHT	E Size		E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	F1	F2	F3	F4	F5	F6	F7	J1	J2	J3	J4	J5	J6	J7	K NO.	K LENGTH
7'	4'	5/8"φ	Number	8	8	8	8	8						20	4	4	4											8	8'-10"
			Length	7'-7"	6'-11"	6'-2"	5'-6	4'-10"						9'-8"	7'-7"	4'-8"	1'-9"												
	5'	5/8"φ	Number	8	8	8	8	8	8					20	4	4	4	4										8	8'-10"
			Length	8'-7"	7'-10"	7'-2"	6'-5"	5'-9"	5'-0"					11'-2"	10'-4	7'-5"	4'-7"	1'-9"											
	6'	5/8"φ	Number	8	8	8	8	8	8	4				24	4	4	4	4										8	8'-10"
			Length	9'-7"	8'-10"	8'-1"	7'-5"	6'-8"	6'-0"	5'-7"				12'-8"	10'-1"	7'-4"	4'-7"	1'-9"											
	7'	5/8"φ	Number	8	8	8	8	8	8	8	4			24	4	4	4	4	4									8	8'-10"
			Length	10'-7"	9'-10"	9'-1"	8'-5"	7'-8"	6'-11"	6'-3"	5'-10"			14'-2"	12'-9"	10'-0"	7'-3"	4'-6"	1'-9"										
8'	4'	5/8"φ	Number	8	8	8	8	8						20	4	4	4											8	9'-10"
			Length	7'-8"	7'-0"	6'-3"	5'-8"	5'-0"						9'-8"	8'-0"	5'-0"	2'-0"												
	5'	5/8"φ	Number	8	8	8	8	8	8					20	4	4	4	4										8	9'-10"
			Length	8'-8"	7'-11"	7'-3"	6'-7"	5'-11"	5'-2"					11'-2"	10'-9"	7'-10"	4'-11"	2'-0"											
	6'	5/8"φ	Number	8	8	8	8	8	8	4				24	4	4	4	4										8	9'-10"
			Length	9'-8"	8'-11"	8'-3"	7'-6"	6'-10"	6'-1"	5'-9"				12'-8"	10'-6"	7'-8"	4'-10"	2'-0"											
	7'	5/8"φ	Number	8	8	8	8	8	8	8	4			24	4	4	4	4	4									8	9'-10"
			Length	10'-8"	9'-11"	9'-3"	8'-6"	7'-10"	7'-1"	6'-4"	6'-0"			14'-2"	13'-2"	10'-4"	7'-7"	4'-9"	2'-0"										
	8'	7/8"φ	Number	8	8	8	8	8	8	8	8			28	4	4	4	4	4		24	24	24	24	32			8	10'-2"
			Length	12'-10"	11'-11"	11'-0"	10'-2"	9'-4"	8'-5"	7'-7"	6'-8"			15'-8"	13'-1"	10'-4"	7'-6"	4'-10"	2'-0"		4'-10"	4'-7"	4'-4"	4'-1"	3'-10"				
9'	4'	5/8"φ	Number	8	8	8	8	8	4					20	4	4	4											8	10'-10"
			Length	7'-9"	7'-1"	6'-5"	5'-9"	5'-1"	4'-9"					10'-2"	8'-4"	5'-4"	2'-4"												
	5'	5/8"φ	Number	8	8	8	8	8	8					20	4	4	4	4										8	10'-10"
			Length	8'-9"	8'-1"	7'-4"	6'-8"	6'-0"	5'-4"					11'-8"	11'-2"	8'-2"	5'-3"	2'-3"											
	6'	5/8"φ	Number	8	8	8	8	8	8	8				24	4	4	4	4										8	10'-10"
			Length	9'-9"	9'-0"	8'-4"	7'-8"	7'-0"	6'-4"	5'-7"				13'-2"	10'-11"	8'-1"	5'-2"	2'-3"											
	7'	5/8"φ	Number	8	8	8	8	8	8	8	4			24	4	4	4	4	4									8	10'-10"
			Length	10'-9"	10'-0"	9'-4"	8'-8"	7'-11"	7'-3"	6'-6"	6'-2"			14'-8"	13'-7"	10'-8"	7'-11"	5'-1"	2'-3"										
	8'	7/8"φ	Number	8	8	8	8	8	8	8	8	4		28	4	4	4	4	4		24	24	24	28	28			8	11'-2"
			Length	12'-11"	12'-0"	11'-2"	10'-4"	9'-6"	8'-7"	7'-9"	6'-11"	6'-5"		16'-2"	13'-5"	10'-4"	7'-10"	5'-1"	2'-3"		4'-10"	4'-7"	4'-4"	4'-1"	3'-10"				
	9'	7/8"φ	Number	8	8	8	8	8	8	8	8	8		28	4	4	4	4	4	4	16	24	16	24	24	40		8	11'-2"
			Length	14'-4"	13'-4"	12'-5"	11'-6"	10'-8"	9'-0"	8'-10"	7'-11"	7'-0"		17'-2"	16'-0"	13'-4"	10'-6"	7'-9"	5'-0"	2'-3"	5'-4"	5'-1"	4'-10"	4'-7"	4'-4"	3'-10"			
	10'	7/8"φ	Number	8	8	8	8	8	8	8	8	8	8	32	4	4	4	4	4	4	24	32	16	16	16	16	40	8	11'-2"
			Length	15'-10"	14'-10"	13'-11"	12'-11"	12'-0"	11'-1"	10'-1"	9'-3"	8'-3"	7'-4"	18'-11"	16'-8"	13'-5"	10'-9"	7'-11"	5'-2"	2'-6"	5'-7"	5'-4"	5'-1"	4'-10"	4'-7"	4'-4"	3'-10"		

DIMENSIONS / QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	D1 T1	D1 T2	D1 V	D1 P	D1 R	D1 H	D1 W1	D2 T1	D2 T2	D2 V	D2 P	D2 R	D2 H	D2 W1	M	W2	X	Steel lbs per lin. ft. of barrel Design No. 1	Design No. 2	Wing Walls & Parapets Total Lbs.	Concrete cu. yds. per lin. of barrel Design No. 1	Design No. 2	Wingwalls & Parapets Total Cu. Yds. Des. 1	Des. 2	CLEAR HEIGHT	CLEAR SPAN
7'	4'	9½"	10"	5'-7"	8'-8"	9'-2"	5'-4"	3'-2½"	11"	10"	5'-10"	8'-8"	9'-2"	5'-6"	3'-4½"	9'-0"	2'-1½"	0	92.6	112.1	499	0.764	0.845	12.59	12.71	4'	7'
	5'	9½"	10"	6'-7"	8'-8"	9'-6"	6'-4"	3'-9½"	11"	10"	6'-10"	8'-8"	9'-6"	6'-6"	3'-11½"	10'-6"	2'-6½"	0	95.5	115.0	627	0.826	0.906	15.12	15.25	5'	
	6'	9½"	10"	7'-7"	8'-8"	9'-6"	7'-4"	4'-5"	11"	10"	7'-10"	8'-8"	9'-6"	7'-6"	4'-7"	12'-0"	2'-11"	0	104.0	123.7	752	0.888	0.968	17.84	17.99	6'	
	7'	9½"	10"	8'-7"	8'-8"	9'-10"	8'-4"	5'-0"	11½"	12"	8'-11"	9'-0"	9'-10"	8'-6"	5'-2"	13'-6"	3'-4"	0	111.2	133.9	912	0.950	1.167	20.89	21.19	7'	
8'	4'	10"	10"	5'-8"	9'-8"	10'-2"	5'-5"	3'-1½"	12"	10"	6'-0"	9'-8"	10'-2"	5'-7½"	3'-4"	9'-0"	2'-3½"	0	106.6	134.3	515	0.853	0.972	13.08	13.23	4'	8'
	5'	10"	10"	6'-8"	9'-8"	10'-6"	6'-5"	3'-8½"	12"	10"	7'-0"	9'-8"	10'-6"	6'-7½"	3'-11"	10'-6"	2'-8½"	0	109.5	137.2	646	0.915	1.034	15.64	15.80	5'	
	6'	10"	10"	7'-8"	9'-8"	10'-6"	7'-5"	4'-4"	12"	10"	8'-0"	9'-8"	10'-6"	7'-7½"	4'-6½"	12'-0"	3'-1"	0	118.1	146.0	770	0.976	1.096	18.38	18.56	6'	
	7'	10½"	10"	8'-9"	9'-8"	10'-10"	8'-5"	4'-11"	12½"	12"	9'-1"	10'-0"	10'-10"	8'-7½"	5'-1½"	13'-6"	3'-6"	0	125.5	156.7	932	1.068	1.299	21.45	21.83	7'	
	8'	10½"	12"	9'-9"	10'-0"	10'-10"	9'-5"	5'-6"	13"	12"	10'-2"	10'-0"	10'-10"	9'-7½"	5'-8½"	15'-0"	3'-11"	1'-0"	136.9	166.2	2579	1.250	1.404	26.13	26.41	8'	
9'	4'	11"	10"	5'-10"	10'-8"	11'-2"	5'-6½"	3'-3½"	13"	10"	6'-2"	10'-8"	11'-2"	5'-9"	3'-6"	9'-6"	2'-3"	0	123.0	157.1	556	0.980	1.112	13.95	14.17	4'	9'
	5'	11"	10"	6'-10"	10'-8"	11'-6"	6'-6½"	3'-10½"	13"	10"	7'-2"	10'-8"	11'-6"	6'-9"	4'-1"	11'-0"	2'-8"	0	133.4	160.0	670	1.042	1.174	16.56	16.79	5'	
	6'	11"	10"	7'-10"	10'-8"	11'-6"	7'-6½"	4'-5½"	13½"	10"	8'-3"	10'-8"	11'-6"	7'-9"	4'-8"	12'-6"	3'-1	0	142.1	169.1	820	1.104	1.269	19.38	19.66	6'	
	7'	11"	10"	8'-10"	10'-8"	11'-10"	8'-6½"	5'-1"	14"	12"	9'-4"	11'-0"	11'-10"	8'-9"	5'-3½"	14'-0"	3'-5½"	0	149.3	180.1	961	1.166	1.478	22.47	22.95	7'	
	8'	11½"	12"	9'-11"	11'-0"	11'-10"	9'-6½"	5'-8"	14"	12"	10'-4"	11'-0"	11'-10"	9'-9"	5'-10½"	15'-6"	3'-10½"	1'-0"	170.4	189.5	2675	1.383	1.552	27.24	27.59	8'	
	9'	11½"	12"	10'-11"	11'-0"	12'-0"	10'-6½"	6'-1"	15"	14"	11'-6"	11'-4"	12'-0"	10'-9"	6'-3½"	16'-6"	4'-5½"	1'-6"	181.4	204.7	3106	1.457	1.836	31.00	31.85	9'	
	10'	11½"	12"	11'-11"	11'-0"	12'-4"	11'-6½"	6'-8"	15"	15"	12'-6"	11'-6"	12'-4"	11'-9"	6'-10½"	18'-0"	4'-10½"	2'-0"	186.6	211.6	3676	1.531	2.000	36.17	37.35	10'	



SECTION OF BARREL



ELEVATION OF WING

15" FOR HEIGHT OF 10'

GENERAL NOTES

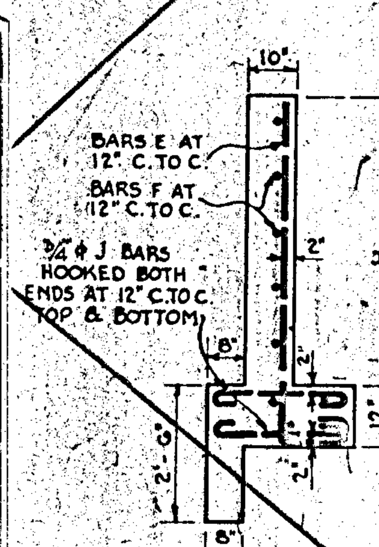
CHAMFER ALL EXPOSED EDGES 3/4".

APRON WALLS - APRON WALLS MAY BE OMITTED IF ENGINEER APPROVES. ENGINEER MAY ALSO REQUIRE BOTTOM SLAB TO EXTEND TO ENDS OF WINGS AND APRON PLACED AT THIS POINT.

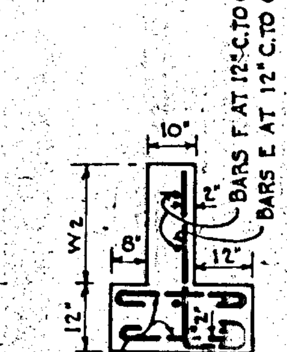
QUANTITIES - QUANTITIES FOR STEEL SHOWN ON THIS SHEET COMPUTED CONSIDERING ALL A, B, C AND D BARS AS PART OF BARREL QUANTITIES. STEEL PER LINEAL FOOT IS AN AVERAGE VALUE FOR A CULVERT OF 40' LENGTH ALLOWING ONE LAP IN LONGITUDINAL BARS.

SIZE OF CULVERT - IN DESIGNATING SIZES OF CULVERTS STATE CLEAR SPAN FIRST, I.E., A 7'×5' CULVERT HAS A 7' CLEAR SPAN AND A 5' CLEAR HEIGHT. L = LENGTH OF CULVERT = DISTANCE BETWEEN BACKS OF PARAPETS.

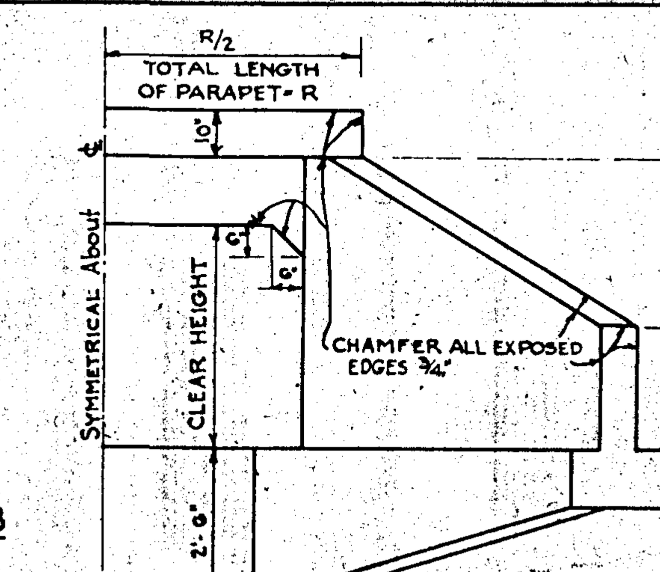
COVER - CULVERT TO HAVE MINIMUM COVER OF 1.0' BELOW BOTTOM OF BASE OR CONCRETE PAVEMENT.



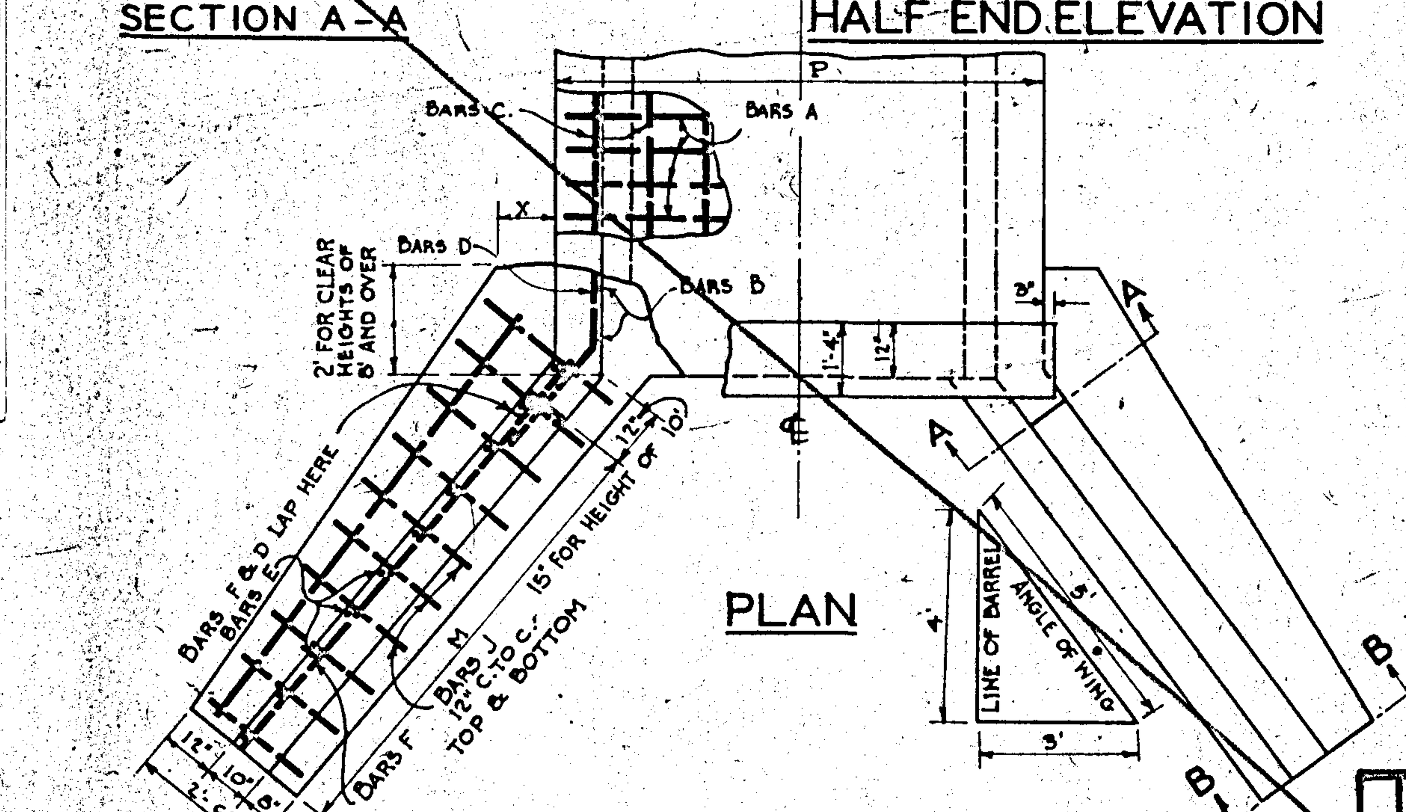
SECTION A-A



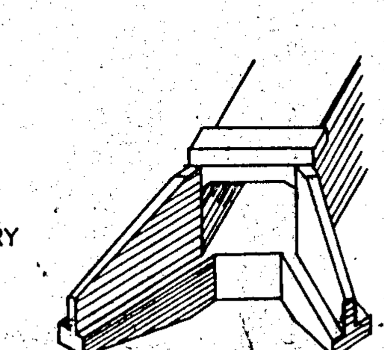
SECTION B-B



HALF END ELEVATION

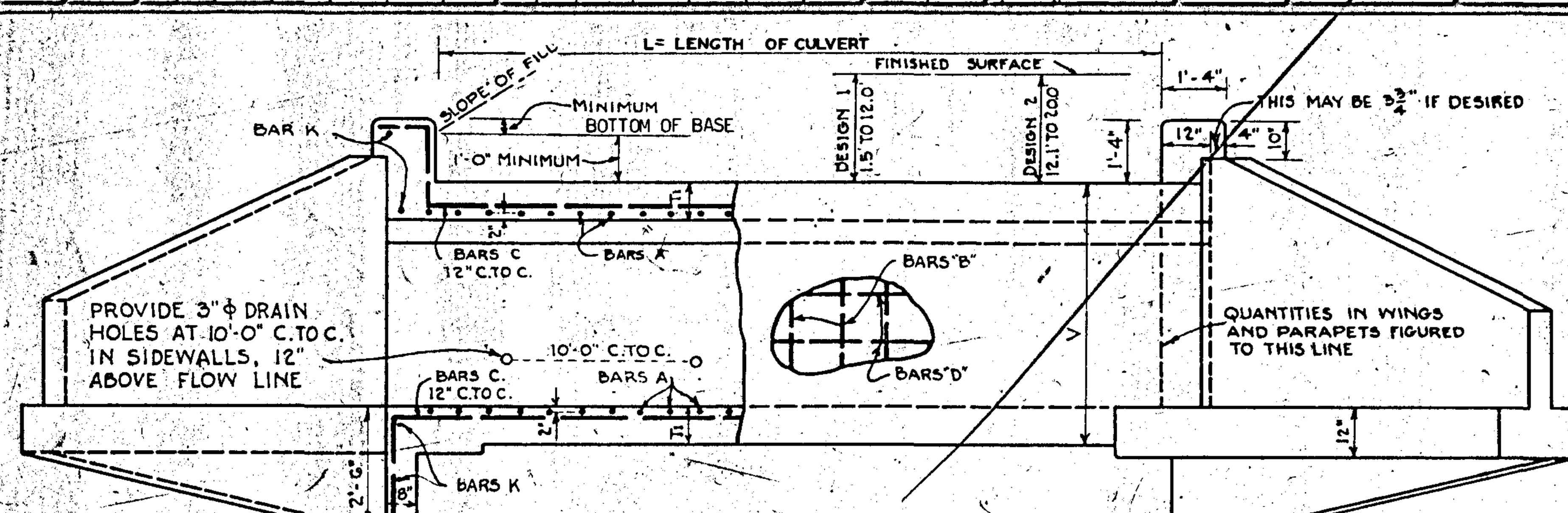


PLAN

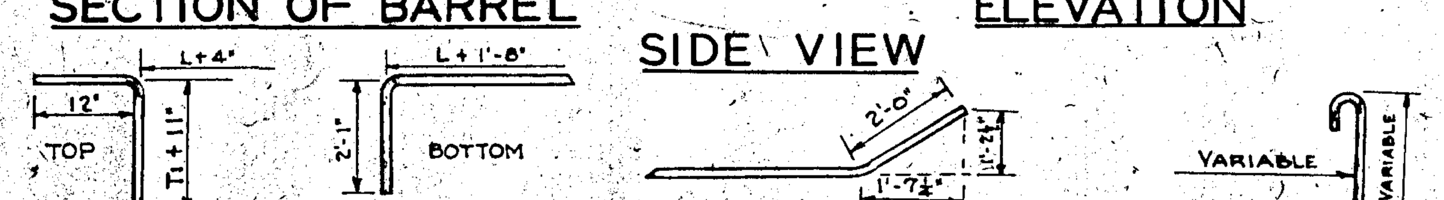


DESIGN DATA

LOADING - TYPICAL H-20 S16-44 AND/OR MILITARY SPECIFICATIONS-A.A.S.H.O. 1957, T 58.



SECTION OF BARREL — SIDE VIEW — ELEVATION



C BARS — D BARS — E BARS

REVISIONS		
DATE	4-22-69	
	QUANTITIES	
BY	G.H.S.-A.J.H.	

STATE HIGHWAY BOARD OF GEORGIA
BRIDGE DEPARTMENT

S T A N D A R D
REINFORCED CONCRETE BOX CULVERTS
SINGLE 7'X4' TO SINGLE 9'X10'
FOR DEPTHS OF FILL UP TO 20 FT.

NO SCALE — DECEMBER 1959

DESIGNED R.B.D.
TRACED B.H.J.
CHECKED O.P.G. Jr.
REVISED

SUBMITTED [signature]
APPROVED M. L. Shadburn

NUMBER 2323