



DESIGN NO.	WATERWAY	BARREL OF CULVERT										TWO WINGS AND ONE APRON										TOTAL QUANTITIES		DESIGN NO.																					
		DIMENSIONS				REINFORCING STEEL			QUANTITIES			DIMENSIONS				REINFORCING STEEL			QUANTITIES																										
		T	V	D	P	Size #	A	A1	A2	Size #	Length	Spacing	No.	Steel per Lin. Ft.	Concrete	Cu. Yds.	H	K	M	N	W	X	Y		Z	Bars D	Bars D'	Bars E	Bars F	Bars F1	Bars G	Bars G'	Bars G''	Steel Lbs.	Concrete Cu. Yds.	Steel Lbs.	Concrete Cu. Yds.								
1	2	20'	4.0'	6"	6"	30"	30"	12"	6"	2.8"	4	40%	3.6"	20%	16"	9"	3.8"	12"	16"	8	19.34	0.185	21.0"	14.8"	21.0"	51.6"	21.9"	9.6%	4.9%	21.0"	0.8%	4	3.2"	4	3.0%	3	79	1.25	42.5"	31	0.50	0.236	1075	11.85	1

GENERAL NOTES
 All reinforcing steel shall be deformed round bars. The design and table are based upon net areas of bars as follows: 1/4" = 0.1963 sq. in., 3/8" = 0.3068 sq. in., 1/2" = 0.442 sq. in. Other sizes may be used provided they are spaced so as to give as much net sectional area per ft. width of slab. Plans showing such changed sizes and spacing must be approved. All exposed surfaces to have a Carborundum finish and this shall be included in price bid per Cu. Yd. for Concrete. All exposed edges shall have 3/4" chamfer.

DESIGN DATA
 Concrete Slab 6' span 8 1/2" 106 lbs. L.L.M. = 909 x 404 = 36,590 m.lbs.
 Dirt Fill 100 lbs. I = 30 x L.L.M. = 10,980 m.lbs.
 Paving 6" 75 lbs. D.L.M. = 1/8 W.L.
 Total D.L. 281 lbs. = 1/8 x 281 x 6.66 x 12 = 18,792 m.lbs.
 66,300 m.lbs.

L.L. 1/8" # 5.5 @ 20,000
 909# 6-8" 909# 4,818

OKLAHOMA STATE STANDARD CONC. BOX CULVERTS SKEWED 45° SPANS 2 TO 10 FT. FOR FILLS NOT OVER 3 FT.

5 BC-55i

Supervision By: H.X. White
 Drawn By: D.S. Marshall - Feb. 1930
 Estimated By: Muncie & Covey - July, 1937
 Checked By: H.C.M.