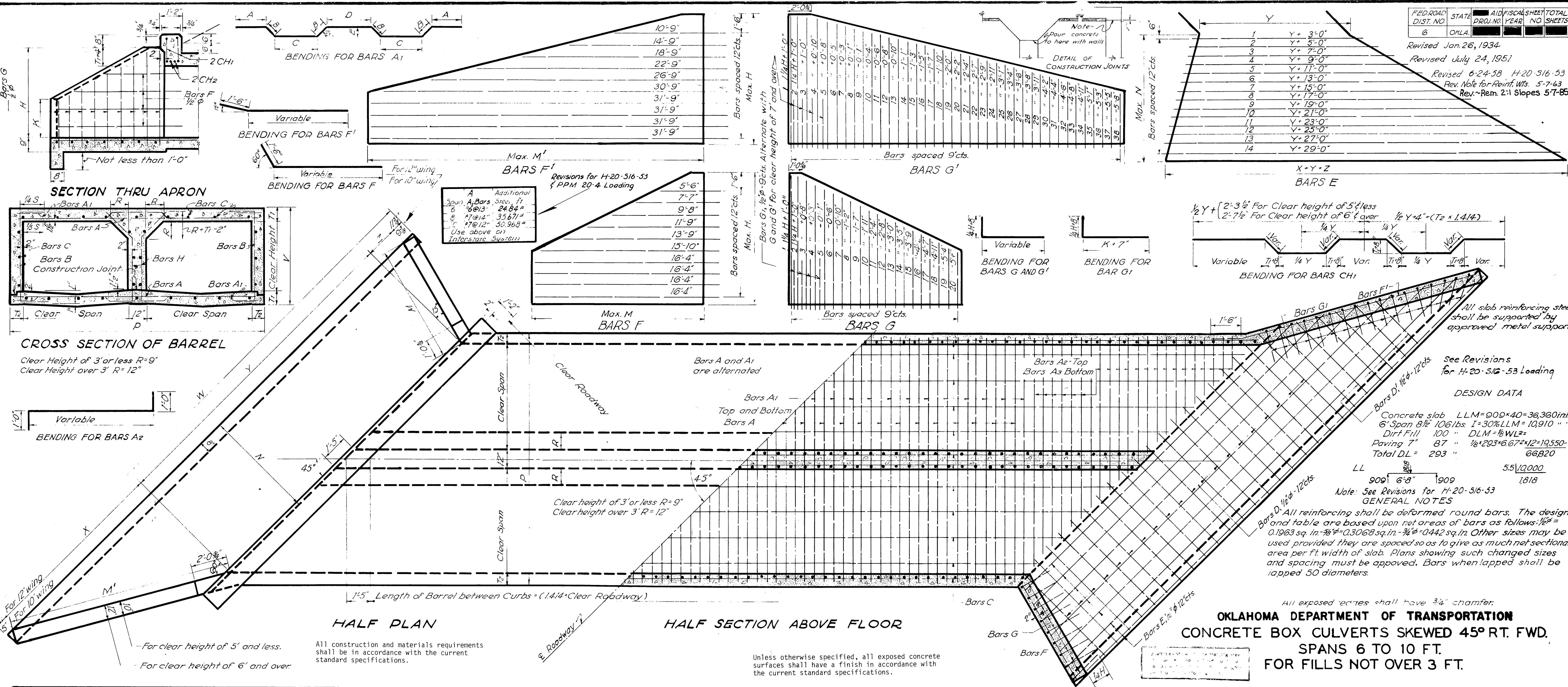


FED. ROAD DIST. NO.	STATE	AID/FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.			

Revised Jan. 26, 1934
 Revised July 24, 1951
 Revised 6-24-58 H-20 3/6-53
 Rev. Note for Reinf. Wts. 5-7-63
 Rev. Rem. 2:1 Slopes 5-7-65



All slab reinforcing steel shall be supported by approved metal supports.
 See Revisions for H-20-S/G-53 Loading
DESIGN DATA
 Concrete slab LLM=909x40=36,360 in²
 6' Span 8 1/2" 106 lbs I=30% LLM=10,910
 Dirt Fill 100 " DLM=1/2 WL=2
 Paving 7" 87 " 1/2*293*6.67*12=19,550
 Total DL= 293 " 66,820
 LL 909 6'8" 909 5.5/1000 1818
 Note: See Revisions for H-20-3/6-53
GENERAL NOTES
 All reinforcing shall be deformed round bars. The design and table are based upon net areas of bars as follows: 1/2" = 0.1963 sq in. 3/8" = 0.3068 sq in. 1/4" = 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. Bars when lapped shall be lapped 50 diameters.
 All exposed corners shall have 3/4" chamfer.

OKLAHOMA DEPARTMENT OF TRANSPORTATION
CONCRETE BOX CULVERTS SKEWED 45° RT. FWD.
 SPANS 6 TO 10 FT.
 FOR FILLS NOT OVER 3 FT.

DESIGN NO.	WATERWAY	BARREL OF CULVERT												TWO WINGS AND ONE REINFORCING APRON												TWO CURBS			TOTAL QUANTS																			
		DIMENSIONS				REINFORCING STEEL				REINFORCING STEEL				REINFORCING STEEL				REINFORCING STEEL			REINFORCING STEEL																											
		Clear Span	Clear Height	Area of Opening	Ti	Tz	V	p	Size and Spacing	A	Length	A1 Bending	Length	A2	Length	A3	Length	B BENT	Length	C	Length	H	Length	M	Length	N	Length	W	Length	X	Length	Y	Length	Z	Length	Reinf. same size as Bars	QUANT'S	QUANT'S	Steel Lbs.	Concrete Cu Yds.								
1	2'-0"	24	8 1/2	6'	3'-5"	14'-0"	3/8"x13	17-1/2	14'-3"	1'-2"	6#	3'-7"	2'-6"	4 1/2	44	18'-0"	12'-0"	6'-1"	12'-0"	26	1/2"x9"	3'-7"	89.83	0.903	3'-0"	1'-8"	3'-1 1/2"	7'-8"	3'-10"	27'-3 1/2"	6'-7 1/2"	18'-4 1/2"	1'-0"	19	4'-3"	5	4'-3"	4	200	3.54	24'-0"	19'-9"	185	1.78	0.673	5,528	58.73	1
2	2'-6"	30	8 1/2	6'	3'-11"	14'-0"	3/8"x13	17-1/2	14'-3"	1'-2"	6#	3'-7"	2'-8"	4 1/2	44	18'-0"	12'-0"	6'-1"	12'-0"	26	1/2"x9"	3'-7"	91.64	0.940	3'-6"	1'-10"	4'-7 1/2"	8'-1 1/2"	4'-5 1/2"	28'-6 1/2"	7'-9 1/2"	1'-2 1/2"	19	4'-11"	6	4'-9 1/2"	5	245	4.36	24'-0"	19'-9"	185	1.78	0.705	5,716	62.42	2	
3	3'-0"	36	8 1/2	8'	4'-5"	14'-4"	3/8"x13	17-1/2	14'-3"	1'-4"	6#	3'-7"	2'-8"	4 1/2	44	18'-0"	12'-0"	6'-1"	12'-0"	26	1/2"x9"	3'-7"	97.48	1.032	4'-0"	2'-0"	5'-3 1/2"	10'-3"	5'-0"	29'-10 1/2"	8'-10 1/2"	1'-4 1/2"	19	5'-7"	7	288	5.20	24'-3"	20'-0"	188	1.80	0.737	6,124	69.13	3			
4	4'-0"	48	9 1/2	8'	5'-5"	14'-4"	3/8"x13	17-1/2	14'-3"	1'-4"	6#	3'-7"	2'-8"	4 1/2	44	18'-0"	12'-0"	6'-1"	12'-0"	26	1/2"x9"	3'-7"	101.41	1.135	5'-0"	2'-4"	6'-7 1/2"	12'-10"	6'-5"	32'-5 1/2"	11'-1 1/2"	1'-6 1/2"	19	6'-10"	9	414	7.15	24'-3"	20'-0"	188	1.80	0.801	6,589	78.69	4			
5	5'-0"	60	8 1/2	10'	6'-5"	14'-8"	3/8"x13	17-1/2	14'-3"	1'-6"	6#	3'-7"	2'-8"	4 1/2	44	18'-0"	12'-0"	6'-1"	12'-0"	26	1/2"x9"	3'-7"	109.06	1.300	6'-0"	2'-9"	7'-1 1/2"	15'-3 1/2"	7'-3 1/2"	37'-4 1/2"	13'-3 1/2"	1'-8 1/2"	19	8'-1"	11	529	9.26	24'-6"	20'-2"	190	1.82	0.862	7,237	91.90	5			
6	6'-0"	72	8 1/2	10'	7'-5"	14'-8"	3/8"x13	17-1/2	14'-3"	1'-6"	6#	3'-7"	2'-8"	4 1/2	44	18'-0"	12'-0"	6'-1"	12'-0"	26	1/2"x9"	3'-7"	115.40	1.399	7'-0"	3'-1"	8'-1 1/2"	17'-11"	8'-1 1/2"	43'-6 1/2"	15'-6 1/2"	1'-10 1/2"	19	9'-5"	13	684	12.74	24'-10"	20'-5"	193	1.85	0.933	7,858	104.37	6			
7	2'-6"	40	10'	8'	4'-2"	18'-4"	3/4"x12	18'-0"	18'-10"	1'-7 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	139.93	1.368	3'-8"	1'-11"	4'-9 1/2"	9'-3"	4'-7 1/2"	34'-6 1/2"	8'-0"	24'-0"	1'-2 1/2"	26	5'-7"	6	306	5.28	30'-7"	25'-8"	339	2.26	0.852	8,225	87.37	7		
8	3'-0"	48	10'	8'	4'-8"	18'-4"	3/4"x12	18'-0"	18'-10"	1'-7 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	141.74	1.411	4'-2"	2'-1"	5'-5 1/2"	10'-6 1/2"	5'-3 1/2"	35'-9 1/2"	9'-1 1/2"	1'-5 1/2"	26	5'-8"	7	340	6.25	30'-1"	25'-8"	339	2.26	0.884	8,792	92.34	8			
9	4'-0"	64	10'	8'	5'-8"	18'-4"	3/4"x12	18'-0"	18'-10"	1'-7 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	148.24	1.514	5'-2"	2'-5"	6'-9 1/2"	13'-1 1/2"	6'-3 1/2"	38'-4 1/2"	11'-4 1/2"	1'-9 1/2"	26	7'-0"	9	480	8.43	30'-1"	25'-8"	339	2.26	0.948	9,428	102.37	9			
10	5'-0"	80	10'	10'	6'-8"	18'-8"	3/4"x12	18'-0"	18'-10"	1'-9 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	159.95	1.781	7'-2"	3'-2"	9'-4 1/2"	18'-2"	9'-1"	43'-0 1/2"	13'-6 1/2"	1'-10 1/2"	26	8'-3"	11	606	10.73	30'-4"	25'-10"	342	2.29	1.008	10,122	116.20	10			
11	6'-0"	96	10'	10'	7'-8"	18'-8"	3/4"x12	18'-0"	18'-10"	1'-9 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	166.29	1.880	8'-2"	3'-6"	10'-9 1/2"	20'-9 1/2"	10'-4 1/2"	46'-3 1/2"	18'-0 1/2"	1'-11 1/2"	26	9'-5"	13	748	14.48	30'-8"	26'-1"	345	2.32	1.078	10,608	129.14	11			
12	7'-0"	112	10'	10'	8'-8"	18'-8"	3/4"x12	18'-0"	18'-10"	1'-9 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	173.51	2.039	9'-2"	3'-10"	12'-0 1/2"	23'-3 1/2"	11'-7 1/2"	48'-9 1/2"	20'-1 1/2"	1'-12 1/2"	26	10'-11"	15	912	17.49	30'-8"	26'-1"	345	2.32	1.143	11,718	141.11	12			
13	8'-0"	128	10'	11'	9'-8"	18'-10"	3/4"x12	18'-0"	18'-10"	1'-10 1/2"	8#	4'-9"	3'-2 1/2"	6"	54	18'-0"	12'-0"	6'-1"	12'-0"	32	1/2"x9"	4'-5"	182.00	2.209	10'-0"	3'-11"	13'-0 1/2"	25'-3 1/2"	12'-4 1/2"	51'-9 1/2"	20'-1 1/2"	1'-13 1/2"	26	12'-11"	18	1104	20.07	30'-10"	26'-4"	348	2.33	1.204	12,513	156.44	13			
14	2'-6"	50	11'	8'	4'-4"	22'-4"	3/4"x12	22'-0"	23'-0"	1'-11"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	187.26	1.734	3'-9"	1'-11"	4'-11"	9'-6 1/2"	4'-10 1/2"	38'-3 1/2"	8'-3 1/2"	29'-8 1/2"	1'-3 1/2"	31	5'-2"	6	351	6.21	35'-11"	31'-3"	409	2.73	0.999	11,446	111.40	14		
15	3'-0"	60	11'	8'	4'-10"	22'-4"	3/4"x12	22'-0"	23'-0"	1'-11"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	189.08	1.797	4'-3"	2'-11"	5'-7 1/2"	10'-5 1/2"	4'-11"	41'-9 1/2"	8'-4 1/2"	1'-5 1/2"	31	5'-10"	7	415	7.32	35'-11"	31'-3"	409	2.73	1.031	11,672	115.99	15			
16	4'-0"	80	11'	8'	5'-10"	22'-4"	3/4"x12	22'-0"	23'-0"	1'-11"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	195.73	1.900	5'-3"	2'-5"	6'-10 1/2"	13'-3 1/2"	6'-7 1/2"	44'-2 1/2"	11'-6 1/2"	1'-9 1/2"	31	7'-4"	9	536	9.63	35'-5"	31'-3"	409	2.73	1.092	12,279	126.27	16			
17	5'-0"	100	11'	10'	6'-10"	22'-8"	3/4"x12	22'-0"	23'-4"	2'-1"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	201.38	2.070	6'-3"	2'-10"	8'-2 1/2"	15'-10 1/2"	14'-6 1/2"	46'-9 1/2"	13'-9 1/2"	1'-10 1/2"	31	8'-4"	11	673	12.28	36'-1"	31'-3"	411	2.76	1.155	12,857	140.86	17			
18	6'-0"	120	11'	10'	7'-10"	22'-8"	3/4"x12	22'-0"	23'-4"	2'-1"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	207.72	2.169	7'-3"	3'-2"	9'-5 1/2"	18'-4"	9'-2"	49'-6 1/2"	15'-10 1/2"	1'-11 1/2"	31	9'-7"	13	821	16.12	36'-5"	31'-9"	415	2.78	1.222	13,500	154.01	18			
19	7'-0"	140	11'	10'	8'-10"	22'-8"	3/4"x12	22'-0"	23'-4"	2'-1"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	214.07	2.268	8'-3"	3'-6"	10'-9 1/2"	20'-11 1/2"	18'-1 1/2"	52'-1 1/2"	18'-1 1/2"	1'-12 1/2"	31	10'-11"	16	995	19.56	36'-5"	31'-9"	415	2.78	1.286	14,696	166.34	19			
20	8'-0"	160	11'	11'	9'-10"	22'-10"	3/4"x12	22'-0"	23'-6"	2'-2"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	218.71	2.428	9'-3"	3'-11"	12'-2"	23'-6 1/2"	19'-5 1/2"	54'-8 1/2"	20'-4 1/2"	1'-13 1/2"	31	12'-2"	18	1188	22.00	36'-7"	31'-9"	417	2.79	1.358	15,308	182.56	20			
21	9'-0"	180	11'	12'	10'-10"	23'-0"	3/4"x12	22'-0"	22'-8"	2'-3"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	228.07	2.599	10'-3"	4'-3"	13'-5 1/2"	26'-0"	13'-0"	57'-2 1/2"	22'-6 1/2"	1'-14 1/2"	31	13'-5"	20	1440	27.18	36'-8"	32'-0"	418	2.80	1.411	16,212	199.63	21			
22	10'-0"	200	11'	12'	11'-10"	23'-0"	3/4"x12	22'-0"	22'-8"	2'-3"	10'	6'-0"	3'-10"	7"	80	23'-0"	12'-0"	6'-1"	12'-0"	38	1/2"x9"	4'-7"	232.42	2.710	11'-3"	4'-7"	14'-9 1/2"	28'-7"	14'-3 1/2"	59'-9 1/2"	24'-9 1/2"	1'-15 1/2"	31	14'-9"	22	1764	31.47	36'-9"	32'-0"	418	2.80	1.475	17,068	214.31	22			

Designed by H.W. & D.I.M.
 Drawn by J.M.B. & L.T.D. June 1931. Checked by D.S.M. & L.T.D.
 Re-Traced by H.R.H. July 1941.
 Re-Tracing Checked by J.H.C. 1-27-48

OLD 4-6-89