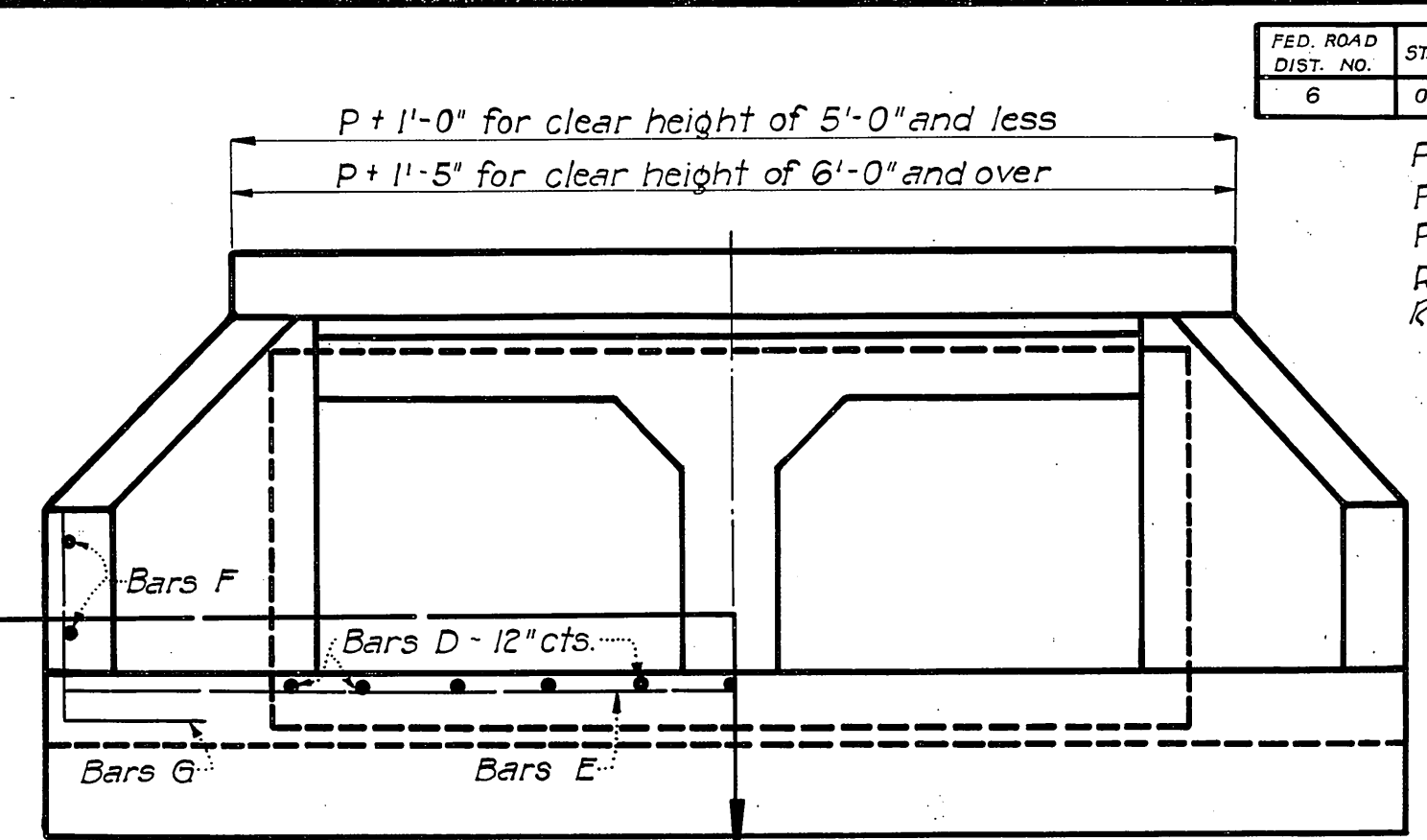
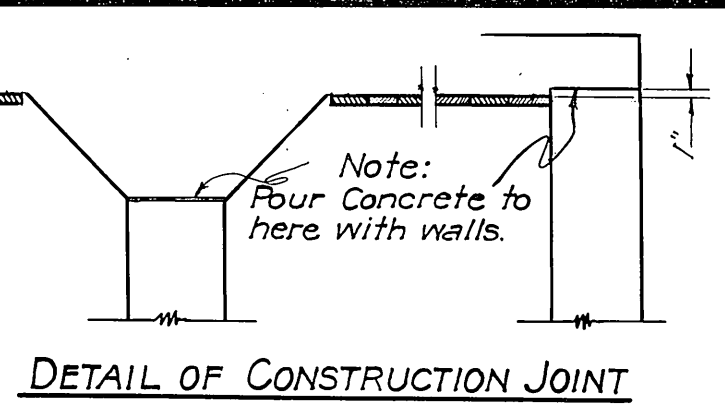
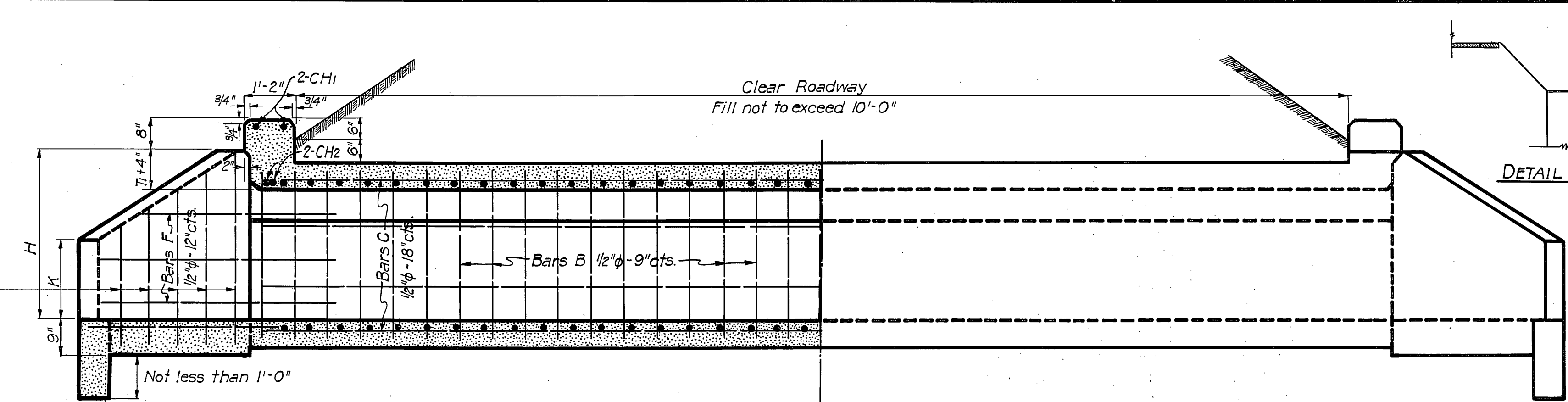


Revised 2-14-33
 Revised 1-26-34
 Revised 5-3-34
 Revised 7-24-51
 Rev. Note for Rein. Wk. 5-7-63

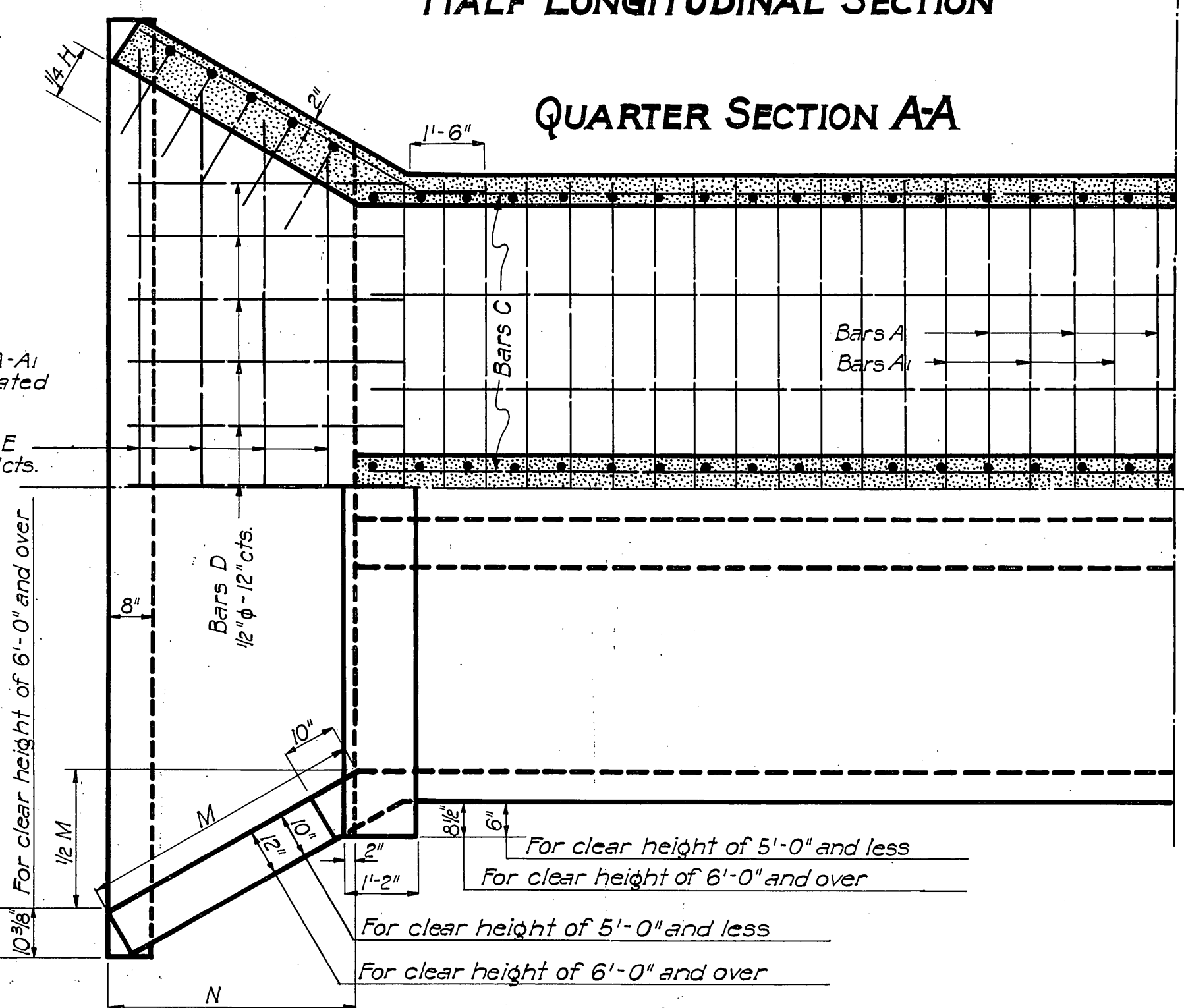


Bars G - 1/2" φ - 9" cts. for clear height of 6'-0" and less. For 7'-0" and over see diagram for spacing.

HALF LONGITUDINAL SECTION

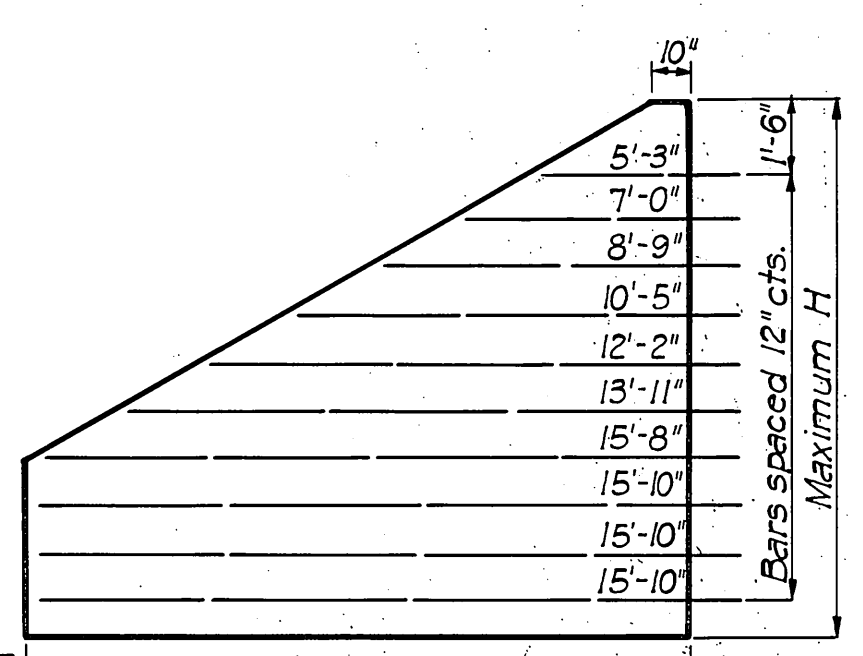
HALF SIDE ELEVATION

END ELEVATION

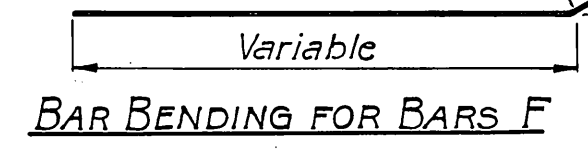


QUARTER SECTION AA

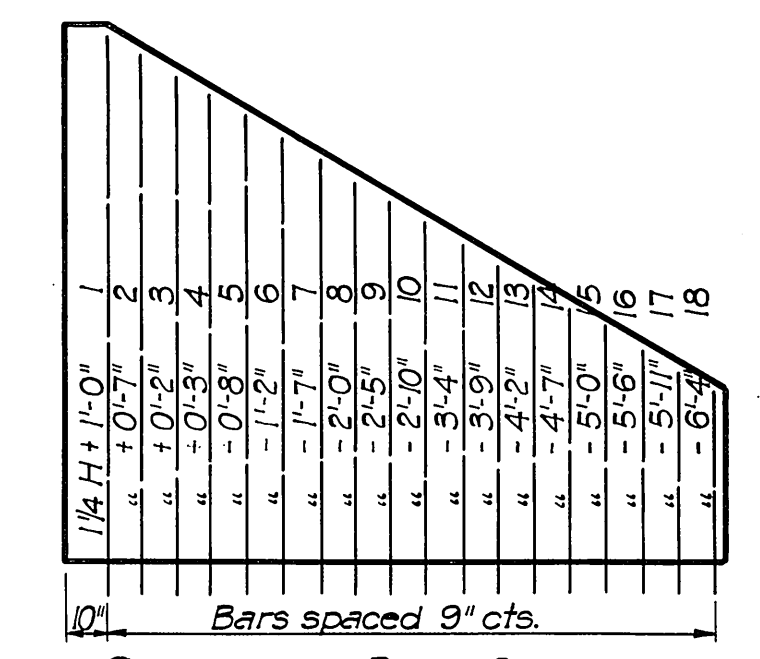
QUARTER PLAN



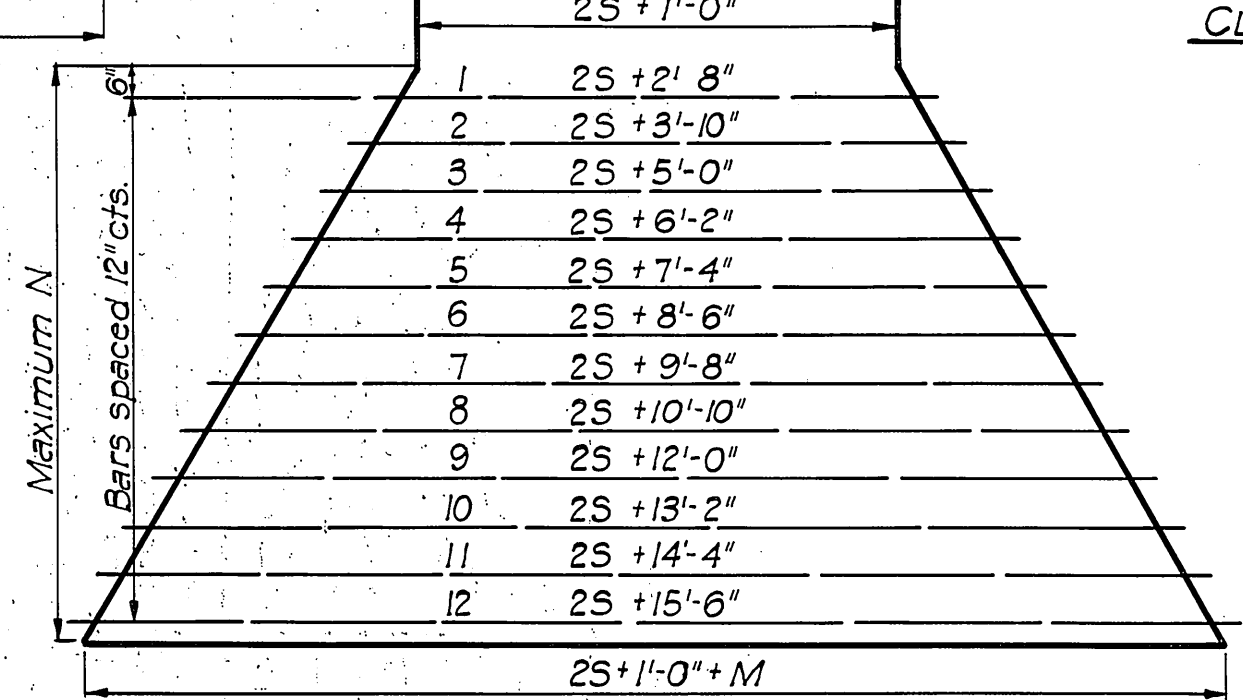
BAR BENDING FOR BARS F



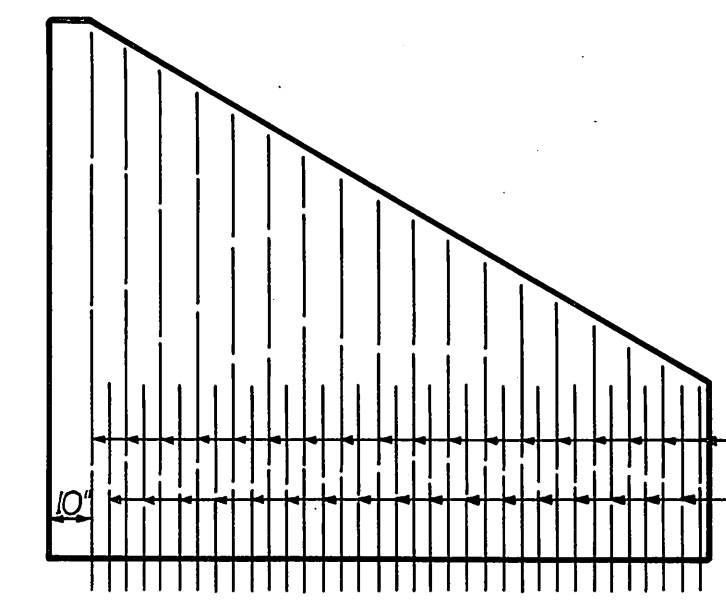
BAR BENDING FOR BARS G



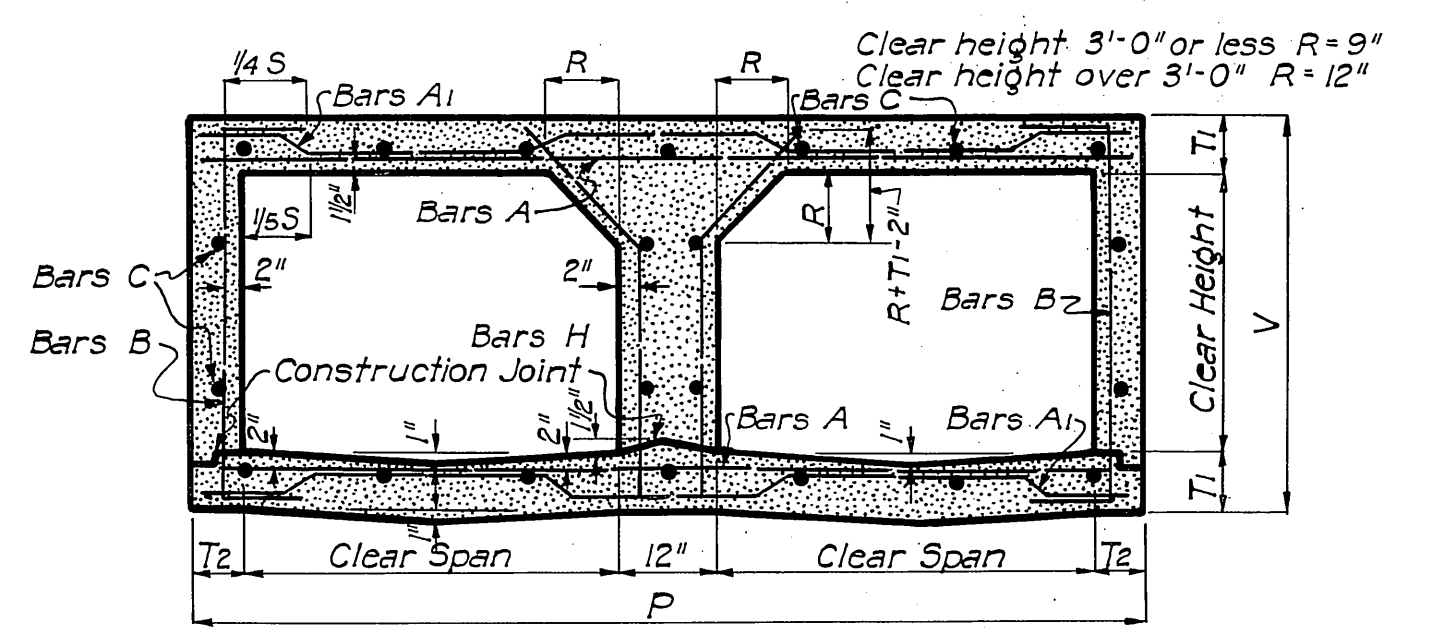
SPACING OF BARS G FOR CLEAR HEIGHT OF 6'-0" AND LESS



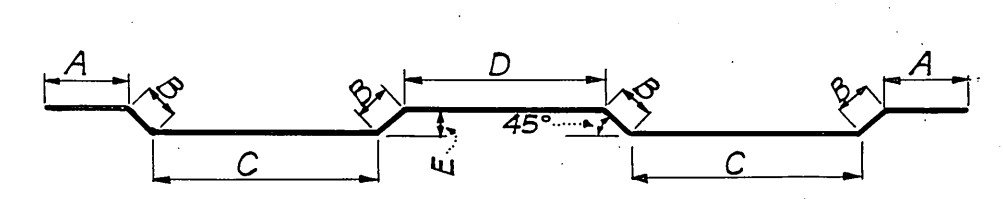
SPACING OF BARS E



SPACING OF BARS G & G1 FOR CLEAR HEIGHT OF 7'-0" AND OVER



CROSS SECTION OF BARREL



BENDING DIAGRAM FOR BARS A1

Bars G - 1/2" φ - 9" cts. Same length as above
 Bars G1 - 1/2" φ - 9" cts. length 1/4 H + K + 1'-3"

All slab reinforcing steel shall be supported on approved metal supports.

BAR BENDING FOR BARS G1

DESIGN NO.	WATERWAY										BARREL OF CULVERT										TWO WINGS AND ONE APRON										TWO CURBS										TOTAL QUANTITIES						
	Clear Span Ft.	Clear Height Ft.	Area of Opening Sq. Ft.	DIMENSIONS				REINFORCING STEEL						QUANTITIES		DIMENSIONS				REINFORCING STEEL						QUANTITIES		Class 'A' Conc. C.Y.	Rein. Steel (Same Size as A Bars) Cu. Yds. per Ft. of depth	38' ROADWAY Steel Lbs.	40' ROADWAY Steel Lbs.	DESIGN NO.															
				T1	T2	V	P	Bars A Size & Spacing	Bars A1 Size & Spacing	Bars B-Bent Size & Spacing	Bars C Size & Spacing	Bars H Size & Spacing	Steel per Lin. Ft. Lbs.	Conc. per Lin. Ft. Cu. Yds.	H	K	M	N	Bars D No. Length	Bars E No. Length	Bars F No. Length	Bars G No. Length	Steel Lbs.	Class 'A' Conc. C.Y.																							
1	2'-0"	16	7'	6"	3'-2"	10'-0"	5/8" φ - 16"	9'-8"	5/8" φ - 16"	10'-11"	10 1/2" φ - 4 1/4"	2'-5"	2'-11"	3"	1/2" φ - 9"	4'-10"	1/2" φ - 18"	20	1/2" φ - 9"	3'-4"	59.81	0.601	2'-11"	1'-7"	3'-2"	2'-9"	11	3'-2"	3	2	5'-2"	2	5'-2"	8	84	1.43	0.89	10'-8"	9'-8"	86	0.336	2646	28.46	2766	29.66	1	
2	2'-6"	20	7'	6"	3'-8"	10'-0"	"	9'-8"	"	10'-11"	10 1/2" φ - 4 1/4"	2'-5"	2'-11"	3"	"	5'-4"	"	20	"	3'-10"	61.62	0.638	3'-5"	1'-8"	3'-10"	3'-4"	11	3'-9"	3	2	5'-3"	2	5'-0"	10	97	1.84	0.89	10'-8"	9'-8"	86	0.353	2745	30.80	2868	32.07	2	
3	3'-0"	24	7'	6"	4'-2"	10'-0"	"	9'-8"	"	10'-11"	10 1/2" φ - 4 1/4"	2'-5"	2'-11"	3"	"	5'-10"	"	22	"	4'-4"	64.79	0.675	3'-11"	1'-10"	4'-6"	3'-10"	11	4'-4"	4	2	5'-3"	4	6'-0"	10	125	2.28	0.89	10'-8"	9'-8"	86	0.369	2928	33.19	3057	34.54	3	
4	4'-0"	32	7'	8"	5'-2"	10'-4"	"	10'-0"	"	10'-5"	12 1/2" φ - 4 1/4"	2'-5"	2'-11"	3"	"	6'-10"	"	26	"	5'-5"	72.35	0.829	4'-11"	2'-0"	5'-10"	5'-0"	11	5'-6"	5	4	Var.	4	7'-0"	14	179	3.21	0.91	11'-0"	10'-0"	89	0.402	3341	41.29	3486	42.95	4	
5	2'-0"	20	8'	6"	3'-4"	12'-0"	5/8" φ - 14"	11'-8"	5/8" φ - 14"	12'-3"	12 1/2" φ - 5 3/4"	3'-0"	2'-4"	4"	1/2" φ - 9"	5'-6"	1/2" φ - 18"	24	1/2" φ - 9"	2'-9"	3'-6"	76.08	0.782	3'-0"	1'-8"	3'-2"	2'-9"	13	3'-2"	3	2	5'-2"	2	5'-2"	8	93	1.60	1.05	12'-8"	11'-8"	103	0.386	3333	35.50	3485	37.03	5
6	3'-0"	30	8'	6"	4'-4"	12'-0"	"	11'-8"	"	12'-3"	12 1/2" φ - 5 3/4"	3'-0"	2'-4"	4"	"	6'-6"	"	24	"	4'-6"	79.72	0.836	4'-0"	1'-11"	4'-6"	3'-10"	13	4'-4"	4	2	5'-3"	4	6'-6"	10	137	2.51	1.05	12'-8"	11'-8"	103	0.418	3566	40.35	3725	42.02	6	
7	4'-0"	40	8'	8"	5'-4"	12'-4"	"	12'-0"	"	12'-7"	12 1/2" φ - 5 3/4"	3'-0"	2'-4"	4"	"	7'-6"	"	28	"	5'-7"	87.50	0.992	5'-0"	2'-11"	5'-10"	5'-0"	15	5'-6"	5	4	Var.	4	7'-0"	14	194	3.52	1.07	13'-0"	12'-0"	106	0.451	3994	48.69	4169	50.68	7	
8	5'-0"	50	8'	10"	6'-4"	12'-8"	"	12'-4"	"	12'-11"	14'-4"	5 3/4" φ - 3'-0"	2'-4"	4"	"	8'-6"	"	32	"	6'-7"	95.05	1.157	6'-0"	2'-4"	7'-2"	6'-2"	13	6'-8"	6	6	Var.	4	9'-2"	18	259	4.70	1.10	13'-4"	12'-4"	108	0.484	4429	57.75	4619	60.06	8	
9	6'-0"	60	10'	7'-4"	7'-4"	12'-8"	"	12'-4"	"	12'-11"	14'-4"	5 3/4" φ - 3'-0"	2'-4"	4"	"	9'-6"	"	32	"	7'-7"	98.68	1.252	7'-0"	2'-7"	8'-6"	7'-4"	13	7'-9"	7	6	Var.	6	10'-6"	22	331	6.64	1.13	13'-9"	12'-4"	111	0.524	4720	65.66	4918	68.17	9	
10	2'-0"	24	9'	6"	3'-6"	14'-0"	5/8" φ - 12"	13'-8"	5/8" φ - 12"	14'-4"	11-1/2" φ - 7"	3'-7"	2'-7"	5"	1/2" φ - 9"	6'-2"	1/2" φ - 18"	26	1/2" φ - 9"	3'-8"	94.94	0.947	3'-1"	1'-9"	3'-2"	2'-9"	15	3'-2"	3	2	5'-2"	2	5'-2"	8	102	1.76	1.22	14'-8"	13'-8"	120	0.435	4122	43.49	4371	45.38	10	
11	3'-0"	36	9'	8"	4'-6"	14'-4"	"	14'-0"	"	14'-8"	13-3/4" φ - 7"	3'-7"	2'-7"	5"	"	7'-2"	"	30	"	4'-8"	102.70	1.076	4'-1"	2'-0"	4'-6"	3'-10"	15	4'-4"	4	2	5'-3"	4	6'-6"	10	149	2.72	1.25	15'-0"	14'-0"	123	0.468	4529	50.67	4734	52.82	11	
12	4'-0"	48	9'	8"	5'-6"	14'-4"	"	14'-0"	"	14'-8"	13-3/4" φ - 7"	3'-7"	2'-7"	5"	"	8'-2"	"	30	"	5'-10"	106.56	1.179	5'-1"	2'-2"	5'-10"	5'-0"	15	5'-6"	5	4	Var.	4	7'-0"	14	210	3.83	1.25	15'-0"	14'-0"	123	0.501	4805	57.07	5019	53.45	12	
13	5'-0"	60	9'	10"	6'-6"	14'-8"	"	14'-4"	"	15'-0"	15-1/2" φ - 7"	3'-7"	2'-7"	5"	"	9'-2"	"	34	"	6'-10"	114.31	1.346	6'-1"	2'-5"	7'-2"	6'-2"	15	6'-8"	6	6	Var.	4	9'-2"	18	277	5.08	1.27	15'-4"	14'-4"	126	0.534	5252	66.34	5481	63.03	13	
14	6'-0"	72	9'	10'	7'-6"	14'-8"	"	14'-4"	"	15'-0"	15-1/2" φ - 7"	3'-7"	2'-7"	5"	"	10'-2"	"	38	"	7'-10"	120.66	1.444	7'-1"	2'-8"	8'-6"	7'-4"	15	7'-9"	7	6	Var.	6	10'-6"	22	352	7.10	1.30	15'-9"	14'-4"	128	0.574	5658	74.41	5900	77.30	14	
15	3'-0"	48	12'	8"	5'-0"	18'-4"	3/4" φ - 13"	18'-0"	3/4" φ - 13"	19'-11"	15-3/4" φ - 11 1/4"	4'-9"	2'-0"	8"	1/2" φ - 9"	8'-3"	1/2" φ - 18"	32	1/2" φ - 9"	5'-4"	151.19	1.638	4'-4"	2'-3"	4'-6"	3'-10"	19	4'-4"	4	2	5'-3"	4	6'-6"	10	174	3.22	1.57	19'-0"	18'-0"	225	0.567	6621	74.66	6923	77.94	15	
16	4'-0"	64	12'	8"	6'-0"	18'-4"	"	18'-0"	"	19'-11"	15-3/4" φ - 11 1/4"	4'-9"	2'-0"	8"	"	9'-3"	"	36	"	6'-5"	157.69	1.741	5'-4"	2'-5"	5'-10"	5'-0"	19	5'-6"	5	4	Var.	4	7'-0"	14	241	4.47	1.57	19'-0"	18'-0"	225	0.600	7015	81.35	7330	84.83	16	
17	5'-0"	80	12'	10"	7'-0"	18'-8"	"	18'-4"	"	19'-5"	17-7/8" φ - 11 1/4"	4'-9"	2'-0"	8"	"	10'-8"	"	40	"	7'-5"	165.91	1.913	6'-4"	2'-8"	7'-2"	6'-2"	19	6'-8"	6	6	Var.	4	9'-2"	18	316	5.88	1.59	19'-4"	18'-4"	229	0.633	7497	91.14	7829	94.96	17	
18	6'-0"	96	12'	10"	8'-0"	18'-8"	"	18'-4"	"	19'-5"	17-7/8" φ - 11 1/4"	4'-9"	2'-0"	8"	"	11'-8"	"	40	"	8'-5"	169.53	2.012	7'-4"	2'-11"	8'-6"	7'-4"	19	7'-9"	7	6	Var.	6	10'-6"	22	397	8.07	1.62	19'-9"	18'-4"	232	0.673	7807	99.59	8146	103.61	18	
19	7'-0"	112	12'	10"	9'-0"	18'-8"	"	18'-4"	"	19'-5"	17-7/8" φ - 11 1/4"	4'-9"	2'-0"	8"	"	12'-8"	"	44	"	9'-5"	175.98	2.111	8'-4"	3'-2"	9'-10"	8'-6"	19	8'-11"	9	8	Var.	6	11'-0"	26	497	9.95	1.62	19'-9"	18'-4"	232	0.706	8489	107.37	8841	111.59	19	
20	8'-0"	128	12'	11"	10'-0"	18'-10"	"	18'-4"	"	19'-5"	17-7/8" φ - 11 1/4"	4'-9"	2'-0"	8"	"	13'-8"	"	48	"	10'-5"	183.16	2.272	9'-4"	3'-5"	11'-2"	9'-8"	19	10'-1"	10	10	Var.	6	11'-0"	26	577	11.97	1.63	19'-11"	18'-6"	234	0.739	9014	117.93	9381	122.47	20	
21	6'-0"	120	14 1/2"	10"	8'-5"	22'-8"	3/4" φ - 10"	22'-4"	3/4" φ - 10"	23'-9"	1-9/16" φ - 12 3/4"	6'-0"	3'-3"	10 1/2"	1/2" φ - 9"	13'-1"	1/2" φ - 18"	46	1/2" φ - 9"	8'-11"	239.27	2.659	7'-6"	3'-2"	8'-6"	7'-4"	23	7'-9"	7	6	Var.	6	10'-6"	22	641	13.03	1.96	23'-9"	22'-4"	280	0.771	10733	127.92	11211	133.24	21	
22	7'-0"	140	14 1/2"	10"	9'-5"	22'-8"	"	22'-4"	"	23'-9"	1-9/16" φ - 12 3/4"	6'-0"	3'-3"	10 1/2"	"	14'-1"	"	50	"	9'-11"	245.62	2.757	8'-6"	3'-4"	9'-10"	8'-6"	23	8'-11"	9	8	Var.	6	11'-0"	26	727	11.97	1.96	23'-9"	22'-4"	280	0.804	11443	135.91	11234	141.42	22	
23	8'-0"	160	14 1/2"	11"	10'-5"	22'-10"	"	22'-6"	"	23'-11"	1-10/16" φ - 12 3/4"	6'-0"	3'-3"	10 1/2"	"	15'-1"	"																														