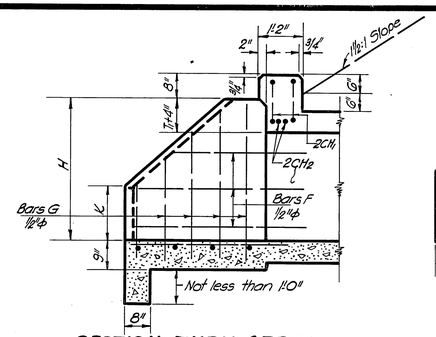
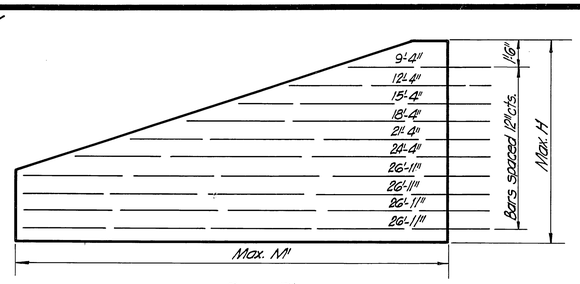
BC-65IR

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

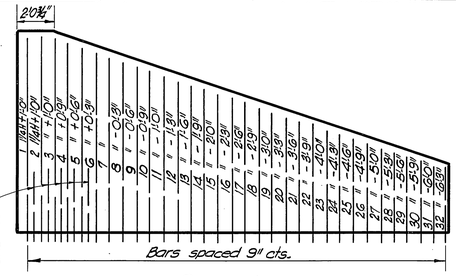
Rev. - Note for Reinf. w/s. 5-7-63



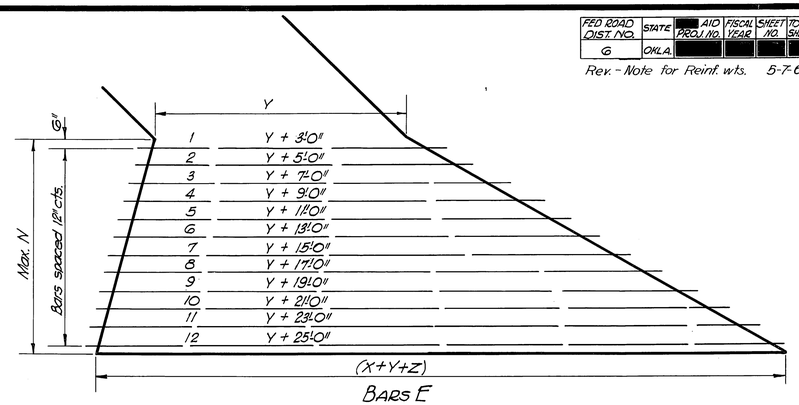
SECTION THRU APRON



BARS F'



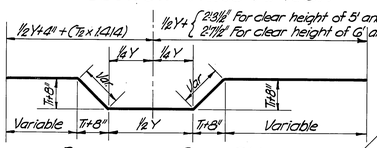
BARS G'



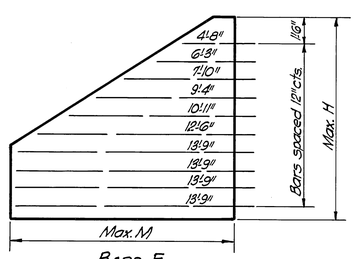
BARS E

½ Y+4'-11" + (7⅛ x 1.414)

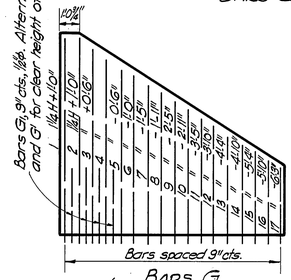
½ Y + { 2'-9 1/2" For clear height of 5' and less. / 2'-11 1/2" For clear height of 6' and over.



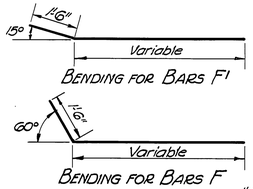
BENDING FOR BARS CH1



BARS F

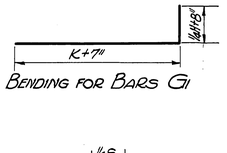


BARS G

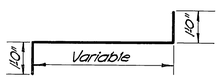


BENDING FOR BARS F

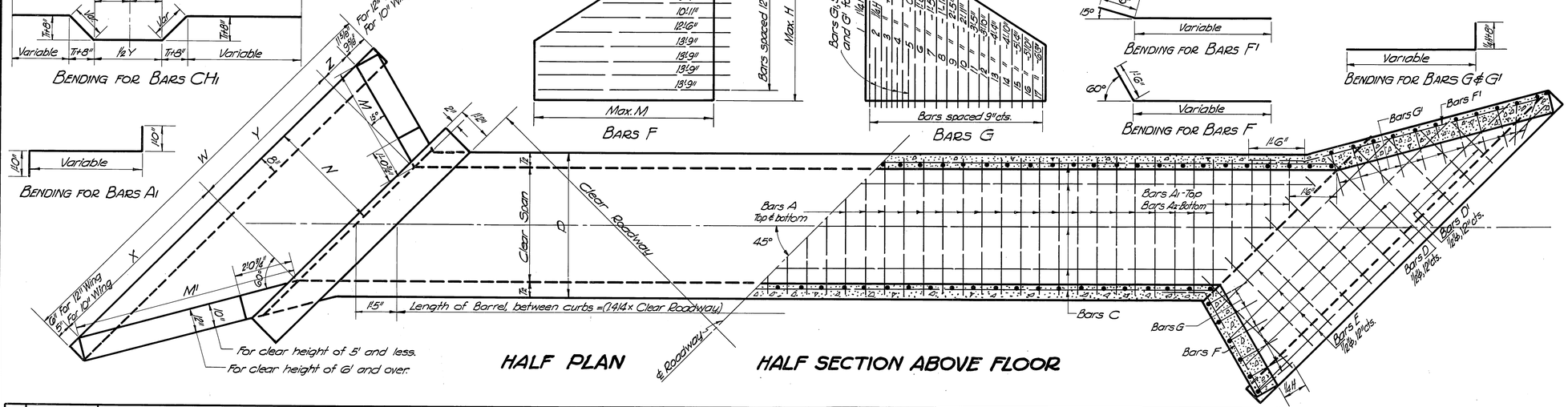
BENDING FOR BARS G & G'



BENDING FOR BARS G1

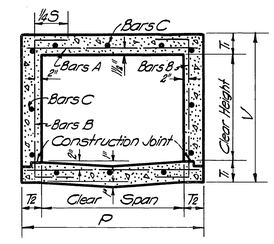


BENDING FOR BARS A1



HALF PLAN

HALF SECTION ABOVE FLOOR



CROSS SECTION OF BARREL

GENERAL NOTES

All reinforcing steel shall be deformed round bars. The design and table are based upon net areas of bars as follows: ½"ø = 0.1963 sq.in; ⅝"ø = 0.3068 sq.in; ¾"ø = 0.442 sq.in. Other sizes may be used provided they are spaced so as to give as much net sectional area per foot of slab. Plans showing such changed sizes and spacing must be approved. Bars when lapped shall be lapped 50 diameters.

All exposed surfaces to have carborundum finish and this shall be included in price bid per cubic yard for concrete.

All exposed edges shall have ¾" chamfer.

DESIGN DATA

Dead Load 1000 Lbs.
Live Load None
Impact None

Quantities shown for reinforcing steel shall be redu ed by 1.94% (.015) to comply with approved C.R.S.I. weights per foot for reinforcing bars.

OKLAHOMA STATE STANDARD CONCRETE BOX CULVERTS SKEWED 45° RT. FORWARD SPANS 2 TO 10 FT. FOR FILLS 3 TO 10 FT.

Supervision By: H.X. White
Drawn By: D.S. Marshall - April, 1930
Checked By: H.B. Shelton - Jan., 1931
Retraced By: Campbell & Covey - July, 1937
Checked By: WW.M. Aug., 1937

DESIGN NO.	WATERWAY Clear Span	Clear Height	Area of Opening	BARREL OF CULVERT DIMENSIONS Ti	T2	V	D	REINFORCING STEEL BARS A, A1 & A2 Size and Spacing	A Length	A1 and A2 No.	A1 Length	A2 Length	BARS B BENT Size and Spacing	B Length	BARS C Size and Spacing	C Length	No.	QUANTITIES Steel per Lin.Ft. Lbs.	Concrete per Lin.Ft. cu. Yds.	TWO WINGS AND ONE APRON DIMENSIONS H	K	M	M'	N	W	X	Y	Z	REINFORCING STEEL BARS D No.	BARS D Length	BARS D' No.	BARS D' Length	BARS E No.	BARS E Length	BARS F No.	BARS F Length	BARS F1 No.	BARS F1 Length	BARS G No.	BARS G Length	BARS G' No.	BARS G' Length	BARS G1 No.	BARS G1 Length	QUANTITIES Reinf. Steel Lbs.	Concrete cu. Yds.	TWO CURBS Reinf. Bars same size as A bars 4CH. Length	4CHz Length	QUANT'S. Steel Lbs.	Concrete cu. Yds.	Concrete in one curb and/or curb & gutter section not to exceed	TOTAL QUANTITIES 38' Clear Rdwy. Reinf. Steel Lbs.	Class A Concrete cu. Yds.	DESIGN NO.
1	2	2'-0"	4.0	6"	6"	3'-0"	3'-0"	½"ø - 6"	3'-8"	4	4'-1" & 3'-7"	2'-7" & 1'-7"	½"ø - 9"	3'-8"	½"ø - 18"	3'-8"	8	19.34	0.165	2'-0"	1'-8"	2'-10 1/2"	5'-6"	2'-9"	3'-6 7/8"	4'-9 1/8"	2'-1'-0"	0'-8 3/8"	4	3'-2"	4	3'-0 7/8"	3	4'-2"			2	8'-6"			4		79	1.25	7'-2"	4'-5"	31	0.50	0.236	1294	18.93	1
2		2'-0"	6.0	6"	6"	3'-0"	4'-0"	"	3'-8"	8	5'-1" & 3'-7"	3'-1" & 1'-7"	"	4'-8"	"	4'-8"	10	22.97	0.222	2'-0"	1'-8"	2'-10 1/2"	5'-6"	2'-9"	1'-0 11/16"	4'-9 1/8"	4'-2"	0'-8 3/8"	G	3'-2"	3	2'-8"	3	4'-2"			2	8'-6"			4		85	1.35	8'-1"	5'-1"	33	0.61	0.271	1525	16.41	2
3	3	2'-6"	7.5	6"	6"	3'-6"	4'-0"	"	3'-8"	8	5'-1" & 3'-7"	3'-1" & 1'-7"	"	4'-8"	"	4'-8"	10	23.88	0.241	2'-1"	1'-10"	3'-5 1/4"	6'-6"	3'-1"	1'-0 3/8"	5'-9 1/4"	4'-2"	0'-10 3/8"	G	3'-9"	4	3'-4"	3	4'-2"	1	4'-8"	1	4'-11"			4		104	1.80	8'-7"	5'-10"	39	0.61	0.300	1617	18.44	3
4		3'-0"	9.0	6"	6"	4'-0"	4'-0"	"	3'-8"	8	5'-1" & 3'-7"	3'-1" & 1'-7"	"	5'-2"	"	5'-2"	10	26.14	0.259	2'-1"	1'-11"	4'-0 3/8"	7'-1"	3'-5 1/8"	1'-0 1/8"	6'-1"	4'-2"	1'-0 1/8"	G	4'-4"	5	3'-10"	4	4'-8"	2	5'-1"	2	10'-10"	6		10		142	2.29	8'-1"	5'-10"	39	0.61	0.327	1824	20.49	4
5		2'-0"	8.0	7"	6"	3'-2"	5'-0"	⅝"ø - 6"	4'-8"	8	5'-7" & 3'-7"	3'-7" & 1'-7"	½"ø - 9"	4'-8"	½"ø - 18"	4'-8"	10	30.40	0.290	2'-1"	1'-9"	2'-10 1/2"	5'-6"	2'-9"	1'-2 1/4"	4'-9 1/8"	5'-7"	1'-6 3/8"	G	7	3'-2"	3	2'-10"	3	4'-2"					4		91	1.48	10'-0"	7'-3"	73	0.73	0.306	2001	20.70	5
6	4	2'-6"	10.0	7"	6"	3'-8"	5'-0"	"	4'-8"	8	5'-7" & 3'-7"	3'-7" & 1'-7"	"	5'-4"	"	5'-4"	10	31.31	0.308	2'-1"	1'-11"	3'-5 1/4"	6'-8"	3'-4"	1'-6 1/16"	5'-9 1/4"	"	1'-10 3/8"	G	7	3'-9"	4	3'-6 1/8"	3						4		110	1.96	10'-0"	7'-3"	73	0.73	0.331	2090	22.19	6
7		3'-0"	12.0	7"	6"	4'-2"	5'-0"	"	4'-8"	8	5'-7" & 3'-7"	3'-7" & 1'-7"	"	5'-4"	"	5'-4"	12	33.58	0.327	2'-1"	2'-0"	4'-0 3/8"	7'-9 1/2"	3'-10 3/4"	1'-9 3/16"	6'-1"	"	2'-1 1/8"	G	7	4'-1"	5	4'-0 1/8"	3						4		150	2.48	10'-0"	7'-3"	73	0.73	0.362	2301	24.91	7
8		4'-0"	16.0	7"	8"	5'-2"	5'-2"	"	5'-0"	8	5'-9" & 3'-9"	3'-9" & 1'-9"	"	6'-1"	"	6'-1"	12	36.45	0.428	2'-1"	2'-3"	5'-2 5/8"	10'-1"	5'-0 1/8"	2'-6 1/16"	8'-2 3/4"	"	2'-11 3/8"	G	7	5'-1"	7	5'-0 5/8"	5						4		218	3.60	10'-3"	7'-6"	75	0.75	0.419	2601	33.00	8
9		2'-0"	10.0	8"	6"	3'-4"	5'-4"	⅝"ø - 6"	5'-6"	8	6'-1" & 3'-7"	3'-7" & 1'-7"	½"ø - 9"	5'-6"	½"ø - 18"	5'-6"	12	38.72	0.370	2'-1"	2'-0"	4'-0 3/8"	7'-9 1/2"	3'-10 3/4"	1'-9 3/16"	6'-1"	"	2'-1 1/8"	G	9	3'-2"	3	2'-8"	3	4'-2"					4		98	1.61	11'-6"	8'-5"	86	0.85	0.340	2499	25.68	9
10		3'-0"	15.0	8"	6"	4'-4"	6'-0"	"	5'-8"	14	7'-1" & 3'-7"	5'-1" & 1'-7"	"	6'-6"	"	6'-6"	14	41.90	0.407	2'-0"	2'-1"	4'-0 3/8"	7'-9 1/2"	3'-10 3/4"	1'-6"	6'-1"	"	1'-10 1/8"	G	9	4'-4"	4	3'-8 1/2"	4						4		139	2.06	11'-6"	8'-5"	86	0.85	0.397	2803	29.96	10
11		4'-0"	20.0	8"	8"	5'-4"	6'-8"	"	6'-0"	14	7'-6"	5'-6"	"	7'-6"	"	7'-6"	16	44.92	0.511	2'-0"	2'-3"	5'-2 5/8"	10'-1"	5'-0 1/8"	1'-3 1/16"	8'-2 3/4"	"	1'-4 1/8"	G	9	5'-1"	6	4'-10 1/2"	5						4		229	3.82	11'-9"	8'-11"	88	0.87	0.454	3102	39.36	11
12	5	5'-0"	25.0	8"	10"	6'-4"	6'-8"	"	6'-4"	14	7'-5 1/2"	5'-5 1/2"	"	8'-1"	"	8'-1"	16	49.30	0.638	2'-0"	2'-6"	6'-5 1/8"	12'-5"	6'-2 1/8"	2'-0 1/16"	10'-1 3/4"	"	1'-8"	G	9	6'-8"	8	6'-0 1/2"	6						4		313	5.25	11'-11"	9'-1"	89	0.89	0.511	3532	48.50	12
13		6'-0"	30.0	8"	10"	7'-4"	6'-8"	"	6'-4"	14	7'-5 1/2"	5'-5 1/2"	"	9'-6"	"	9'-6"	18	52.47	0.700	2'-0"	2'-9"	7'-7 3/4"	14'-2 1/2"	7'-1 1/4"	2'-3 5/16"	12'-0 7/8"	"	1'-11 5/8"	G	9	7'-9"	10	7'-1"	7						4		419	7.70	12'-9"	9'-6"	92	0.91	0.574	3917	57.06	13
14		7'-0"	35.0	8"	10"	8'-4"	6'-8"	"	6'-4"	14	7'-5 1/2"	5'-5 1/2"	"	10'-6"	"	10'-6"	18	54.30	0.761	2'-0"	3'-0"	8'-3 5/8"	15'-0"	7'-6"	2'-6 1/16"	14'-1 3/4"	"	2'-3 3/8"	G	9	8'-11"	12	8'-6 1/2"	9						4		574	9.80	12'-3"	9'-6"	92	0.91	0.631	4545	64.81	14
15		2'-0"	12.0	9"	6"	3'-6"	7'-0"	⅝"ø - 6"	6'-8"	20	8'-1" & 3'-7"	5'-7" & 1'-7"	½"ø - 9"	6'-2"	½"ø - 18"	6'-2"	12	47.61	0.423	3'-1"	2'-1"	4'-10 1/2"	9'-4"	4'-8"	2'-1 9/16"	7'-2 1/8"	4'-9 1/8"	0'-11 3/8"	G	4	3'-2"	4	3'-0 7/8"	3	4'-2"					4		105	1.75	13'-0"	9'-10"	97	0.97	0.376	3038	31.41	15
16	6	3'-0"	18.0	9"	8"	4'-6"	7'-0"	"	7'-0"	20	8'-9" & 3'-9"	6'-9" & 1'-9"	"	7'-11"	"	7'-11"	14	52.19	0.556	2'-1"	2'-6"	6'-0 3/8"	11'-7 1/2"	6'-0 1/8"	2'-7 13/16"	9'-0 7/8"	"	2'-6 1/8"	G	5	4'-6"	5	4'-0 1/2"	4						4		169	2.80	13'-9"	10'-1"	99	0.99	0.432	3428	38.90	16
17		4'-0"	24.0	9"	8"	5'-6"	7'-0"	"	7'-0"	20	8'-9" & 3'-9"	6'-9" & 1'-9"	"	8'-10"	"	8'-10"	16	54.01	0.605	2'-1"	2'-9"	7'-1 1/4"	13'-5"	6'-10 1/2"	2'-10 1/16"	10'-5 3/4"	"	2'-9 3/8"	G	5	5'-6"	7	5'-2"	5						4		241	4.06	13'-9"	10'-1"	99	0.99	0.489	3675	44.31	17
18		5'-0"	30.0	9"	10"	6'-6"	7'-0"	"	7'-4"	20	8'-5" & 3'-11"	6'-5" & 1'-11"	"	9'-2"	"	9'-2"	16	58.59	0.784	2'-1"	2'-7"	6'-5 1/8"	12'-5"	6'-2 1/8"	2'-2 1/16"	10'-1"	"	2'-1"	G	10	6'-8"	9	6'-4"	6						4		329	5.54	13'-5"	10'-5"	100	1.01	0.546	4172	54.70	18
19		6'-0"	36.0	9"	10"	7'-6"	7'-0"	"	7'-4"	20	8'-5" & 3'-11"	6'-5" & 1'-11"	"	10'-2"	"	10'-2"	18	61.76	0.896	2'-1"	3'-0"	8'-3 5/8"	15'-0"	7'-6"	2'-6 1/16"	14'-1 3/4"	"	2'-3 3/8"	G	10	7'-9"	11	7'-6"	7						4		430	6.05	13'-9"	10'-6"	103	1.03	0.609	4499	63.38	19
20		3'-0"	24.0	12"	8"	5'-0"	9'-4"	⅝"ø - 6"	9'-0"	26	10'-5" & 3'-5"	8'-3" & 1'-5"	½"ø - 9"	8'-8"	½"ø - 18"	8'-8"	18	78.46	0.889	2'-1"	2'-5"	6'-0 3/8"	11'-7 1/2"	6'-0 1/8"	2'-7 13/16"	9'-0 7/8"	11'-3 3/4"	1'-0 1/8"	G	13	4'-4"	5	4'-0"	4								188	3.19	16'-2"	12'-1"	177	1.21	0.502	5072	56.05	20
21		4'-0"	32.0	12"	8"	6'-0"	9'-4"	"	9'-0"	26	10'-5" & 3'-5"	8'-3" & 1'-5"	"	9'-6"	"	9'-6"	18	80.47	0.869	2'-1"	2'-9"	7'-1 1/4"	13'-5"	6'-10 1/2"	2'-10 1/16"	10'-5 3/4"	"	2'-9 3/8"	G	13	5'-6"	7	5'-0"	5								266	4.57	16'-2"	12'-1"	177	1.21	0.558	5331	61.76	21
22		5'-0"	40.0	12"	10"	7'-0"	9'-4"	"	9'-4"	26	10'-5" & 3'-11"	8'-5" & 1'-11"	"	10'-2"	"	10'-2"	20	83.32	1.025	2'-1"	2'-11"	6'-5 1/8"	12'-5"	6'-2 1/8"	2'-11 5/16"	10'-1"	"	1'-8"	G	13	6'-8"	9	6'-4"	6								357	6.19	16'-4"	12'-1"	179	1.24	0.616	5801	72.33	22
23		6'-0"	48.0	12"	10"	8'-0"	9'-4"	"	9'-4"	26	10'-5" & 3'-8"	8'-5" & 1'-8"	"	11'-8"	"	11'-8"	22	88.43	1.096	2'-1"	3'-1"	7'-7 1/8"	14'-8 1/2"	7'-4 1/8"	2'-11 5/16"	12'-8 1/2"	"	2'-9 3/8"	G	13	7'-9"	11	7'-6"	7								466	8.82	16'-6"	13'-1"	182	1.27	0.679	6205	81.70	23
24		7'-0"	56.0	12"	10"	9'-0"	9'-4"	"	9'-4"	26	10'-5" & 3'-8"	8'-5" & 1'-8"	"	12'-8"	"	12'-8"	22	90.30	1.145	2'-1"	3'-4"	8'-5 3/4"	17'-0"	8'-6"	2'-9 3/8"	14'-7 5/8"	"	2'-7 1/8"	G	13	8'-11"	13	8'-6"	8								623	11.09	16'-8"	13'-1"	182	1.27	0.735	6868	89.86	24
25		8'-0"	64.0	12"	11"	10'-0"	9'-10"	"	9'-6"	26	10'-6" & 4'-0"	8'-6" & 2'-0"	"	13'-5"	"	13'-5"	24	90.41	1.272	2'-1"	3'-7"	9'-1"	19'-2"	9'-1"	3'-2 7/16"	16'-0 5/8"	"	2'-7 1/8"	G	13	10'-1"	15	9'-10"	10								746	13.57	16'-10"	13'-7"	185	1.28	0.793	7434	101.96	25
26		6'-0"	60.0	14½"	10"	8'-5"	11'-9"	⅝"ø - 5"	11'-4"	42	12'-7" & 3'-11"	10'-7" & 1'-11"	½"ø - 9"	13'-1"	½"ø - 18"	13'-1"	24	122.72	1.415	2'-1"	3'-3"	7'-7 1/8"	14'-8 1/2"	7'-4 1/8"	3'-0 3/4"	12'-8 1/2"	11'-3 3/4"	1'-1 5/8"	G	16	7'-9"	10	7'-6"	8								497	9.56	19'-10"	16'-3"	219	1.50	0.749	8236	102.16	26
27	10	7'-0"	70.0	14½"	10"	9'-5"	11'-9"	"	11'-4"	42	12'-7" & 3'-11"	10'-7" & 1'-11"	"	14'-1"	"	14'-1"	24	124.54	1.477	2'-6 1/2"	3'-6"	8'-5 3/8"	17'-0"	8'-6"	3'-2 7/16"	14'-8 1/2"	"	2'-3 3/8"	G	16	8'-11"	12	8'-6"	9								623	11.94	19'-10"	16'-3"	219	1.50	0.805	8927	110.54	27
28		8'-0"	80.0	14½"	11"	10'-5"	11'-9"	"	11'-6"	42	12'-8" & 4'-0"	10'-8" & 2'-0"	"	15'-1"	"	15'-1"	26	128.93	1.609	2'-6 1/2"	3'-9"	9'-1 5/8"	18'-4"	9'-2"	3'-6 1/8"	16'-0 5/8"	"	2'-7 1/8"	G	16	10'-1"	14	9'-8 1/2"	10								746	14.53	20'-0"	16'-5"	221	1.51	0.863	9515	122.97	28
29		9'-0"	90.0	14½"	12"	11'-5"	12'-0"	"	11'-8"	42	12'-9" & 4'-1"	10'-9" & 2'-1"	"	16'-1"	"	16'-1"	28	133.32	1.741	2'-6 1/2"	4'-0"	9'-11 7/8"	20'-1"	10'-1"	3'-9 3/16"	18'-9 1/8"	"	2'-10 7/8"	G	16	11'-3"	16	10'-10 1/2"	11								911	17.38	20'-1"	16'-6"	222	1.52	0.920	10118	136.60	29
30		10'-0"	100.0	14½"	12"	12'-5"	12'-0"	"	11'-8"	42	12'-9" & 4'-1"	10'-9" & 2'-1"	"	17'-1"	"	17'-1"	28	135.13	1.815	2'-6 1/2"	4'-3"	12'-5 7/8"	23'-1"	11'-1 1/16"	3'-9 7/16"	20'-8 1/4"	"	3'-2 1/8"	G	16	12'-5"	18	12'-0"	12								1334	20.41	20'-1"	16'-6"	222	1.52	0.976	10620	146.96	30