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Highway Engineering

**Field Tables
1984**



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NOMENCLATURE FOR CIRCULAR CURVES

P.O.T.	Point on tangent outside the effect of any curve.
P.O.C.	Point on a circular curve.
P.O.S.T.	Point on semi-tangent (<i>within the limits of a curve</i>).
P.I.	Point of intersection of back tangent and forward tangent.
P.C.	Point of Curvature—Point of change from back tangent to circular curve.
P.T.	Point of Tangency—Point of change from circular curve to forward tangent.
P.C.C.	Point of Compound Curve—Point common to two curves in the same direction and of different radii.
P.R.C.	Point of Reserve Curve—Point common to two curves in opposite directions and with the same or different radii.
L	Total length of any circular curve measured along its arc in feet.
L _c	Length between any two points on circular curve in feet.
R	Radius of circular curve in feet.
Δ	Total intersection (<i>or central</i>) angle between back and forward tangents.
DC	Deflection angle for full circular curve measured from tangent at P.C. or P.T.
dc	Deflection angle required from tangent to a circular curve to any other point on a circular curve.
C	Total chord length, or long chord, for a circular curve in feet.
C ¹	Chord length between any two points on a circular curve in feet.
T	Distance along semi-tangent from the point of intersection of the back and forward tangents to the origin of curvature from that tangent in feet.
tx	Distance along semi-tangent from the P.C. (<i>or P.T.</i>) to the perpendicular offset to any point on a circular curve in feet. (<i>Abscissa of any point on a circular curve referred to the beginning of curvature as origin and semi-tangent as axis.</i>)
ty	The perpendicular offset, or ordinate, in feet, from the semi-tangent to a point on a circular curve.
E	External distance (<i>radial distance</i>) in feet from P.I. to mid-point on a simple circular curve.

NOTES

CIRCULAR CURVE EQUATIONS

Symbol	Equation	Unit
* L	= R Δ (0.017453293)	Feet
* T	= R tan $\frac{\Delta}{2}$	Feet
* E	= $\frac{R}{\cos \frac{\Delta}{2}} - R$, also = R exsec $\frac{\Delta}{2}$	Feet
* C	= 2 R sin $\frac{\Delta}{2}$, also = 2 R sin DC	Feet
* MO	= R (1 - cos $\frac{\Delta}{2}$), also = R vers $\frac{\Delta}{2}$	Feet
DC	= $\frac{\Delta}{2}$	Degrees
**dc	= $\frac{L_c}{L} \left(\frac{\Delta}{2}\right)$	Degrees
C'	= 2 R sin dc	Feet
tx	= (2 R sin dc) (cos dc), also = R sin 2 dc	Feet
ty	= (2 R sin dc) (sin dc), also = R vers 2 dc	Feet

* Values of L, T, E, C, and MO may be conveniently obtained by using the table "Functions of a 10,000-ft. Radius Curve". Multiply tabular values by R/10,000.

Example, Given: $\Delta = 25^\circ 33'$
 $R = 3000'$

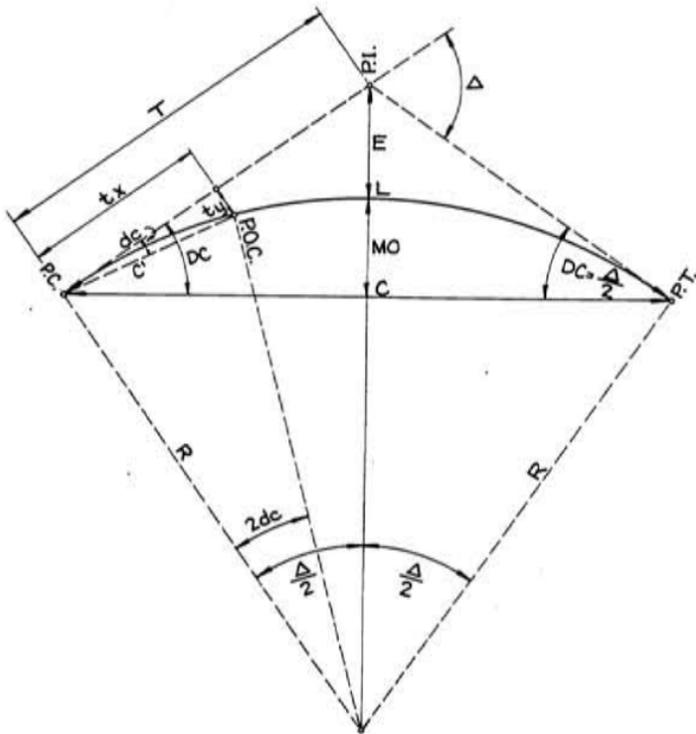
$$\begin{aligned}
 L &= (0.3) (4459.316) = 1337.79' \\
 T &= (0.3) (2267.356) = 680.21' \\
 E &= (0.3) (253.823) = 76.15' \\
 C &= (0.3) (4422.460) = 1326.74' \\
 MO &= (0.3) (247.541) = 74.26'
 \end{aligned}$$

The table "Arc Lengths for Radius = 1" is helpful when calculating L.

Add tabular values for degrees, minutes, and seconds of Δ and multiply by R.

**Refer to table "Deflections and Chords for Radius Curves".

Figure No. 1



SIMPLE CIRCULAR CURVE

TABLE I
DEFLECTIONS AND CHORDS FOR RADIUS CURVES

Radius Ft.	Deflections for Arcs of				Chords for Arcs of		
	1 Ft. Min.	25 Ft. Deg. Min.	50 Ft. Deg. Min.	100 Ft. Deg. Min.	25 Ft.	50 Ft.	100 Ft.
30	57.296	23 52.39	47 44.79		24.28	44.41	
40	42.972	17 54.30	35 48.59		24.60	46.81	
50	34.377	14 19.94	28 38.87		24.74	47.94	
60	28.648	11 56.20	23 52.39		24.82	48.57	
70	24.555	10 13.88	20 27.77		24.87	48.94	
80	21.486	8 57.15	17 54.30		24.90	49.19	
90	19.099	7 57.46	15 54.93		24.92	49.36	
100	17.189	7 09.72	14 19.44		24.93	49.48	
110	15.626	6 30.65	13 01.31		24.95	49.57	
120	14.324	5 58.10	11 56.20		24.95	49.64	
130	13.222	5 30.55	11 01.11		24.96	49.69	
140	12.278	5 06.94	10 13.88		24.97	49.74	
150	11.459	4 46.48	9 32.96	19 05.92	24.97	49.77	98.16
160	10.743	4 28.57	8 57.15	17 54.30	24.97	49.80	98.38
170	10.111	4 12.78	8 25.55	16 51.10	24.98	49.82	98.56
180	9.549	3 58.73	7 57.46	15 54.92	24.98	49.84	98.72
190	9.047	3 46.17	7 32.34	15 04.67	24.98	49.86	98.85
200	8.594	3 34.86	7 09.72	14 19.44	24.98	49.87	98.96
210	8.185	3 24.63	6 49.26	13 38.51	24.99	49.88	99.06
220	7.813	3 15.33	6 30.65	13 01.31	24.99	49.89	99.14
230	7.473	3 06.83	6 13.67	12 27.34	24.99	49.90	99.21
240	7.162	2 59.05	5 58.10	11 56.20	24.99	49.91	99.28
250	6.876	2 51.89	5 43.77	11 27.55	24.99	49.92	99.33
260	6.611	2 45.28	5 30.55	11 01.11	24.99	49.92	99.39
270	6.366	2 39.15	5 18.31	10 36.62	24.99	49.93	99.43
280	6.139	2 33.47	5 06.94	10 13.88	24.99	49.93	99.47
290	5.927	2 28.18	4 56.36	9 52.71	24.99	49.94	99.50
300	5.730	2 23.24	4 46.48	9 32.96	24.99	49.94	99.54
310	5.545	2 18.62	4 37.24	9 14.48	24.99	49.95	99.57
320	5.371	2 14.29	4 28.57	8 57.15	24.99	49.95	99.59
330	5.209	2 10.22	4 20.44	8 40.87	24.99	49.95	99.62
340	5.056	2 06.39	4 12.78	8 25.55	24.99	49.96	99.64
350	4.911	2 02.78	4 05.55	8 11.11	25.00	49.96	99.66
360	4.775	1 59.37	3 58.73	7 57.46	25.00	49.96	99.68
370	4.646	1 56.14	3 52.28	7 44.56	25.00	49.96	99.70
380	4.523	1 53.08	3 46.17	7 32.34	25.00	49.96	99.71
390	4.407	1 50.19	3 40.37	7 20.74	25.00	49.97	99.73
400	4.297	1 47.43	3 34.86	7 09.72	25.00	49.97	99.74
410	4.193	1 44.81	3 29.62	6 59.24	25.00	49.97	99.75
420	4.093	1 42.31	3 24.63	6 49.26	25.00	49.97	99.76
430	3.997	1 39.93	3 19.87	6 39.74	25.00	49.97	99.77
440	3.907	1 37.66	3 15.13	6 30.65	25.00	49.97	99.78
450	3.820	1 35.49	3 10.99	6 21.97	25.00	49.97	99.79
460	3.737	1 33.42	3 06.83	6 13.67	25.00	49.98	99.80
470	3.657	1 31.43	3 02.86	6 05.72	25.00	49.98	99.81

TABLE I
DEFLECTIONS AND CHORDS FOR RADIUS CURVES

Ra- dius Ft.	Deflections for Arcs of				Chords for Arcs of		
	1 Ft. Min.	25 Ft. Deg. Min.	50 Ft. Deg. Min.	100 Ft. Deg. Min.	25 Ft.	50 Ft.	100 Ft.
480	3.581	1 29.52	2 59.05	5 58.10	25.00	49.98	99.82
490	3.508	1 27.70	2 55.40	5 50.79	25.00	49.98	99.83
500	3.438	1 25.94	2 51.89	5 43.77	25.00	49.98	99.83
510	3.370	1 24.26	2 48.52	5 37.03	25.00	49.98	99.84
520	3.306	1 22.64	2 45.28	5 30.55	25.00	49.98	99.85
530	3.243	1 21.08	2 42.16	5 24.32	25.00	49.98	99.85
540	3.183	1 19.58	2 39.15	5 18.31	25.00	49.98	99.86
550	3.125	1 18.13	2 36.26	5 12.52	25.00	49.98	99.86
560	3.069	1 16.74	2 33.47	5 06.94	25.00	49.98	99.87
570	3.016	1 15.39	2 30.78	5 01.56	25.00	49.98	99.87
580	2.964	1 14.09	2 28.18	4 56.36	25.00	49.99	99.88
590	2.913	1 12.84	2 25.67	4 51.33	25.00	49.99	99.88
600	2.8648	1 11.62	2 23.24	4 46.48	25.00	49.99	99.88
700	2.4555	1 01.39	2 02.78	4 05.55	25.00	49.99	99.91
800	2.1486	0 53.71	1 47.43	3 34.86	25.00	49.99	99.93
900	1.9099	0 47.75	1 35.49	3 11.00	25.00	49.99	99.95
1000	1.7189	0 42.97	1 25.94	2 51.89	25.00	49.99	99.96
1100	1.5626	0 39.07	1 18.13	2 36.26	25.00	49.99	99.97
1200	1.4324	0 35.81	1 11.62	2 23.24	25.00	49.99	99.97
1300	1.3222	0 33.06	1 06.11	2 12.22	25.00	49.99	99.97
1400	1.2278	0 30.69	1 01.39	2 02.78	25.00	49.99	99.98
1500	1.1459	0 28.65	0 57.30	1 54.59	25.00	49.99	99.98
1600	1.0743	0 26.86	0 53.71	1 47.43	25.00	49.99	99.98
1700	1.0111	0 25.28	0 50.56	1 41.11	25.00	50.00	99.99
1800	0.95493	0 23.87	0 47.75	1 35.49	25.00	50.00	99.99
1900	0.90467	0 22.62	0 45.23	1 30.47	25.00	50.00	99.99
2000	0.85944	0 21.49	0 42.97	1 25.94	25.00	50.00	99.99
2100	0.81851	0 20.46	0 40.93	1 21.85	25.00	50.00	99.99
2200	0.78131	0 19.53	0 39.07	1 18.13	25.00	50.00	99.99
2300	0.74734	0 18.68	0 37.37	1 14.73	25.00	50.00	99.99
2400	0.71620	0 17.90	0 35.81	1 11.62	25.00	50.00	99.99
2500	0.68755	0 17.19	0 34.38	1 08.75	25.00	50.00	99.99
2600	0.66111	0 16.53	0 33.06	1 06.11	25.00	50.00	99.99
2700	0.63662	0 15.92	0 31.83	1 03.66	25.00	50.00	99.99
2800	0.61388	0 15.35	0 30.69	1 01.39	25.00	50.00	99.99
2900	0.59271	0 14.82	0 29.64	0 59.27	25.00	50.00	100.00
3000	0.57296	0 14.32	0 28.65	0 57.30	25.00	50.00	100.00
3100	0.55448	0 13.86	0 27.72	0 55.45	25.00	50.00	100.00
3200	0.53715	0 13.43	0 26.86	0 53.71	25.00	50.00	100.00
3300	0.52087	0 13.02	0 26.04	0 52.09	25.00	50.00	100.00
3400	0.50555	0 12.64	0 25.28	0 50.56	25.00	50.00	100.00
3500	0.49111	0 12.28	0 24.56	0 49.11	25.00	50.00	100.00
3600	0.47746	0 11.94	0 23.87	0 47.75	25.00	50.00	100.00
3700	0.46456	0 11.61	0 23.23	0 46.46	25.00	50.00	100.00
3800	0.45234	0 11.31	0 22.62	0 45.23	25.00	50.00	100.00

TABLE I
DEFLECTIONS AND CHORDS FOR RADIUS CURVES

Radius Ft.	Deflections for Arcs of				Chords for Arcs of		
	1 Ft. Min.	25 Ft. Deg. Min.	50 Ft. Deg. Min.	100 Ft. Deg. Min.	25 Ft.	50 Ft.	100 Ft.
3900	0.44074	0 11.02	0 22.04	0 44.07			
4000	0.42972	0 10.74	0 21.49	0 42.97			
4100	0.41924	0 10.48	0 20.96	0 41.92			
4200	0.40926	0 10.23	0 20.46	0 40.93			
4300	0.39974	0 9.99	0 19.99	0 39.97			
4400	0.39065	0 9.77	0 19.53	0 39.07			
4500	0.38197	0 9.55	0 19.10	0 38.20			
4600	0.37367	0 9.34	0 18.68	0 37.37			
4700	0.36572	0 9.14	0 18.29	0 36.57			
4800	0.35810	0 8.95	0 17.90	0 35.81			
4900	0.35079	0 8.77	0 17.54	0 35.08			
5000	0.34377	0 8.59	0 17.19	0 34.38			
5100	0.33703	0 8.43	0 16.85	0 33.70			
5200	0.33055	0 8.26	0 16.53	0 33.06			
5300	0.32432	0 8.11	0 16.22	0 32.43			
5400	0.31831	0 7.96	0 15.92	0 31.83			
5500	0.31252	0 7.81	0 15.63	0 31.25			
5600	0.30694	0 7.67	0 15.35	0 30.69			
5700	0.30156	0 7.54	0 15.08	0 30.16			
5800	0.29636	0 7.41	0 14.82	0 29.64			
5900	0.29133	0 7.28	0 14.57	0 29.13			
6000	0.28648	0 7.16	0 14.32	0 28.65			
6100	0.28178	0 7.04	0 14.09	0 28.18			
6200	0.27724	0 6.93	0 13.86	0 27.72			
6300	0.27284	0 6.82	0 13.64	0 27.28			
6400	0.268574	0 6.71	0 13.43	0 26.86			
6500	0.264442	0 6.61	0 13.22	0 26.44			
6600	0.260435	0 6.51	0 13.02	0 26.04			
6700	0.256548	0 6.41	0 12.83	0 25.65			
6800	0.252775	0 6.32	0 12.64	0 25.28			
6900	0.249112	0 6.23	0 12.46	0 24.91			
7000	0.245553	0 6.14	0 12.28	0 24.56			
7100	0.242095	0 6.05	0 12.10	0 24.21			
7200	0.238732	0 5.97	0 11.94	0 23.87			
7300	0.235462	0 5.87	0 11.77	0 23.55			
7400	0.232280	0 5.81	0 11.61	0 23.23			
7500	0.229183	0 5.73	0 11.46	0 22.92			
7600	0.226168	0 5.65	0 11.31	0 22.62			
7700	0.223230	0 5.58	0 11.16	0 22.32			
7800	0.220368	0 5.51	0 11.02	0 22.04			
7900	0.217579	0 5.44	0 10.88	0 21.76			
8000	0.214859	0 5.37	0 10.74	0 21.49			
8100	0.212206	0 5.31	0 10.61	0 21.22			
8200	0.209618	0 5.24	0 10.48	0 20.96			
8300	0.207093	0 5.18	0 10.35	0 20.71			

Arc Length=
Chord Length

TABLE I
DEFLECTIONS AND CHORDS FOR RADIUS CURVES

Ra- dius Ft.	Deflections for Arcs of				Chords for Arcs of		
	1 Ft. Min.	25 Ft. Deg. Min.	50 Ft. Deg. Min.	100 Ft. Deg. Min.	25 Ft.	50 Ft.	100 Ft.
8400	0.204628	0 5.12	0 10.23	0 20.46			
8500	0.202220	0 5.06	0 10.11	0 20.22			
8600	0.199869	0 5.00	0 9.99	0 19.99			
8700	0.197571	0 4.94	0 9.88	0 19.76			
8800	0.195327	0 4.88	0 9.77	0 19.53			
8900	0.193132	0 4.83	0 9.66	0 19.31			
9000	0.190986	0 4.77	0 9.55	0 19.10			
9200	0.186834	0 4.67	0 9.34	0 18.68			
9400	0.182859	0 4.57	0 9.14	0 18.29			
9600	0.179049	0 4.48	0 8.95	0 17.90			
9800	0.175395	0 4.38	0 8.77	0 17.54			
10000	0.171887	0 4.30	0 8.59	0 17.19			
11000	0.156261	0 3.91	0 7.81	0 15.63			
12000	0.143239	0 3.58	0 7.16	0 14.32			
13000	0.132221	0 3.31	0 6.61	0 13.22			
14000	0.122777	0 3.07	0 6.14	0 12.28			
15000	0.114591	0 2.86	0 5.73	0 11.46			
16000	0.107429	0 2.69	0 5.37	0 10.74			
17000	0.101110	0 2.53	0 5.06	0 10.11			
18000	0.095493	0 2.39	0 4.77	0 9.55			
19000	0.090467	0 2.26	0 4.52	0 9.05			
20000	0.085944	0 2.15	0 4.30	0 8.59			
21000	0.081851	0 2.05	0 4.09	0 8.19			
22000	0.078131	0 1.95	0 3.91	0 7.81			
23000	0.074734	0 1.87	0 3.74	0 7.47			
24000	0.071620	0 1.79	0 3.58	0 7.16			
25000	0.068755	0 1.72	0 3.44	0 6.88			
26000	0.066110	0 1.65	0 3.31	0 6.61			
27000	0.063662	0 1.59	0 3.18	0 6.37			
28000	0.061388	0 1.53	0 3.07	0 6.14			
29000	0.059271	0 1.48	0 2.96	0 5.93			
30000	0.057296	0 1.43	0 2.86	0 5.73			
31000	0.055448	0 1.39	0 2.77	0 5.54			
32000	0.053715	0 1.34	0 2.69	0 5.37			
33000	0.052087	0 1.30	0 2.60	0 5.21			
34000	0.050555	0 1.26	0 2.53	0 5.06			
35000	0.049111	0 1.23	0 2.46	0 4.91			

Arc Length=
Chord Length

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
0 01	2.909	1.454	.000	2.909	.001
0 02	5.818	2.909	.000	5.818	.001
0 03	8.727	4.363	.001	8.727	.001
0 04	11.636	5.818	.001	11.635	.002
0 05	14.544	7.272	.002	14.544	.003
0 06	17.453	8.727	.003	17.453	.004
0 07	20.362	10.181	.005	20.362	.006
0 08	23.271	11.636	.006	23.271	.007
0 09	26.180	13.090	.008	26.180	.009
0 10	29.089	14.544	.010	29.089	.011
0 11	31.998	15.999	.012	31.998	.013
0 12	34.907	17.453	.015	34.906	.016
0 13	37.815	18.908	.017	37.815	.018
0 14	40.724	20.362	.020	40.724	.021
0 15	43.633	21.817	.023	43.633	.024
0 16	46.542	23.271	.027	46.542	.028
0 17	49.451	24.725	.030	49.451	.031
0 18	52.360	26.180	.034	52.360	.035
0 19	55.269	27.634	.038	55.269	.039
0 20	58.178	29.089	.042	58.177	.043
0 21	61.087	30.543	.046	61.086	.047
0 22	63.995	31.998	.051	63.995	.052
0 23	66.904	33.452	.056	66.904	.056
0 24	69.813	34.907	.061	69.813	.061
0 25	72.722	36.361	.066	72.722	.067
0 26	75.631	37.816	.071	75.631	.072
0 27	78.540	39.270	.077	78.539	.078
0 28	81.449	40.725	.083	81.448	.083
0 29	84.358	42.179	.089	84.357	.089
0 30	87.266	43.633	.095	87.266	.096
0 31	90.175	45.088	.101	90.175	.102
0 32	93.084	46.542	.108	93.084	.109
0 33	95.993	47.997	.115	95.993	.116
0 34	98.902	49.451	.122	98.901	.123
0 35	101.811	50.906	.129	101.810	.130
0 36	104.720	52.360	.137	104.719	.138
0 37	107.629	53.815	.144	107.628	.145
0 38	110.538	55.269	.152	110.537	.153
0 39	113.446	56.724	.160	113.446	.161
0 40	116.355	58.178	.169	116.355	.170
0 41	119.264	59.633	.177	119.263	.178
0 42	122.173	61.087	.186	122.172	.187
0 43	125.082	62.542	.195	125.081	.196
0 44	127.991	63.996	.204	127.990	.205
0 45	130.900	65.451	.214	130.899	.215

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
0	46	133.809	66.905	.223	133.807	.224
0	47	136.717	68.360	.233	136.716	.234
0	48	139.626	69.814	.243	139.625	.244
0	49	142.535	71.269	.254	142.534	.254
0	50	145.444	72.723	.264	145.443	.265
0	51	148.353	74.178	.275	148.352	.276
0	52	151.262	75.632	.286	151.260	.286
0	53	154.171	77.087	.297	154.169	.298
0	54	157.080	78.541	.308	157.078	.309
0	55	159.989	79.996	.320	159.987	.320
0	56	162.897	81.450	.331	162.895	.332
0	57	165.806	82.905	.343	165.804	.344
0	58	168.715	84.360	.355	168.713	.356
0	59	171.624	85.814	.368	171.622	.369
1	00	174.533	87.269	.380	174.531	.381
1	01	177.442	88.723	.393	177.439	.394
1	02	180.351	90.178	.406	180.348	.407
1	03	183.260	91.632	.419	183.257	.420
1	04	186.168	93.087	.433	186.166	.434
1	05	189.077	94.541	.446	189.074	.447
1	06	191.986	95.996	.460	191.983	.461
1	07	194.895	97.451	.474	194.892	.475
1	08	197.804	98.905	.489	197.801	.490
1	09	200.713	100.360	.503	200.709	.504
1	10	203.622	101.814	.518	203.618	.519
1	11	206.531	103.269	.533	206.527	.534
1	12	209.440	104.724	.548	209.436	.549
1	13	212.348	106.178	.563	212.344	.564
1	14	215.257	107.633	.579	215.253	.580
1	15	218.166	109.087	.595	218.162	.595
1	16	221.075	110.542	.611	221.070	.611
1	17	223.984	111.997	.627	223.979	.628
1	18	226.893	113.451	.643	226.888	.644
1	19	229.802	114.906	.660	229.797	.661
1	20	232.711	116.360	.677	232.705	.677
1	21	235.619	117.815	.694	235.614	.694
1	22	238.528	119.270	.711	238.523	.712
1	23	241.437	120.724	.728	241.431	.729
1	24	244.346	122.179	.746	244.340	.747
1	25	247.255	123.634	.764	247.249	.765
1	26	250.164	125.088	.782	250.157	.783
1	27	253.073	126.543	.800	253.066	.801
1	28	255.982	127.998	.819	255.975	.820
1	29	258.891	129.452	.837	258.883	.838
1	30	261.799	130.907	.856	261.792	.857

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
1 31	264.708	132.362	.875	264.700	.876
1 32	267.617	133.816	.895	267.609	.896
1 33	270.526	135.271	.914	270.518	.915
1 34	273.435	136.726	.934	273.426	.935
1 35	276.344	138.181	.954	276.335	.955
1 36	279.253	139.635	.974	279.244	.975
1 37	282.162	141.090	.995	282.152	.996
1 38	285.070	142.545	1.015	285.061	1.016
1 39	287.979	144.000	1.036	287.969	1.037
1 40	290.888	145.454	1.057	290.878	1.058
1 41	293.797	146.909	1.079	293.786	1.079
1 42	296.706	148.364	1.100	296.695	1.101
1 43	299.615	149.819	1.122	299.604	1.123
1 44	302.524	151.273	1.144	302.512	1.144
1 45	305.433	152.728	1.166	305.421	1.167
1 46	308.342	154.183	1.188	308.329	1.189
1 47	311.250	155.638	1.211	311.238	1.211
1 48	314.159	157.092	1.233	314.146	1.234
1 49	317.068	158.547	1.256	317.055	1.257
1 50	319.977	160.002	1.279	319.963	1.280
1 51	322.886	161.457	1.303	322.872	1.304
1 52	325.795	162.912	1.326	325.780	1.327
1 53	328.704	164.367	1.350	328.689	1.351
1 54	331.613	165.821	1.374	331.597	1.375
1 55	334.521	167.276	1.398	334.506	1.399
1 56	337.430	168.731	1.423	337.414	1.424
1 57	340.339	170.186	1.448	340.323	1.448
1 58	343.248	171.641	1.473	343.231	1.473
1 59	346.157	173.096	1.498	346.140	1.498
2 00	349.066	174.551	1.523	349.048	1.524
2 01	351.975	176.005	1.548	351.956	1.549
2 02	354.884	177.460	1.574	354.865	1.575
2 03	357.793	178.915	1.600	357.773	1.601
2 04	360.701	180.370	1.626	360.682	1.627
2 05	363.610	181.825	1.652	363.590	1.653
2 06	366.519	183.280	1.679	366.499	1.680
2 07	369.428	184.735	1.706	369.407	1.706
2 08	372.337	186.190	1.733	372.315	1.733
2 09	375.246	187.645	1.760	375.224	1.761
2 10	378.155	189.100	1.787	378.132	1.788
2 11	381.064	190.555	1.815	381.040	1.816
2 12	383.972	192.010	1.843	383.949	1.843
2 13	386.881	193.465	1.871	386.857	1.871
2 14	389.790	194.920	1.899	389.765	1.900
2 15	392.699	196.375	1.927	392.674	1.928

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
2 16	395.608	197.830	1.956	395.582	1.957
2 17	398.517	199.285	1.985	398.490	1.986
2 18	401.426	200.740	2.014	401.399	2.015
2 19	404.335	202.195	2.044	404.307	2.044
2 20	407.244	203.650	2.073	407.215	2.074
2 21	410.152	205.105	2.103	410.124	2.103
2 22	413.061	206.560	2.133	413.032	2.133
2 23	415.970	208.015	2.163	415.940	2.163
2 24	418.879	209.470	2.193	418.848	2.194
2 25	421.788	210.925	2.224	421.757	2.224
2 26	424.697	212.380	2.255	424.665	2.255
2 27	427.606	213.835	2.286	427.573	2.286
2 28	430.515	215.290	2.317	430.481	2.317
2 29	433.423	216.746	2.348	433.389	2.349
2 30	436.332	218.201	2.380	436.298	2.380
2 31	439.241	219.656	2.412	439.206	2.412
2 32	442.150	221.111	2.444	442.114	2.444
2 33	445.059	222.566	2.476	445.022	2.476
2 34	447.968	224.021	2.509	447.930	2.509
2 35	450.877	225.476	2.541	450.838	2.542
2 36	453.786	226.932	2.574	453.747	2.574
2 37	456.694	228.387	2.607	456.655	2.608
2 38	459.603	229.842	2.641	459.563	2.641
2 39	462.512	231.297	2.674	462.471	2.674
2 40	465.421	232.753	2.708	465.379	2.708
2 41	468.330	234.208	2.742	468.287	2.742
2 42	471.239	235.663	2.776	471.195	2.776
2 43	474.148	237.118	2.810	474.103	2.811
2 44	477.057	238.574	2.845	477.011	2.845
2 45	479.966	240.029	2.880	479.919	2.880
2 46	482.874	241.484	2.915	482.827	2.915
2 47	485.783	242.939	2.950	485.735	2.950
2 48	488.692	244.395	2.986	488.643	2.986
2 49	491.601	245.850	3.021	491.551	3.021
2 50	494.510	247.305	3.057	494.459	3.057
2 51	497.419	248.761	3.093	497.367	3.093
2 52	500.328	250.216	3.129	500.275	3.129
2 53	503.237	251.671	3.166	503.183	3.166
2 54	506.145	253.127	3.203	506.091	3.203
2 55	509.054	254.582	3.240	508.999	3.240
2 56	511.963	256.037	3.277	511.907	3.277
2 57	514.872	257.493	3.314	514.815	3.314
2 58	517.781	258.948	3.352	517.723	3.352
2 59	520.690	260.404	3.389	520.631	3.389
3 00	523.599	261.859	3.427	523.539	3.427

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
3 01	526.508	263.315	3.466	526.447	3.465
3 02	529.417	264.770	3.504	529.355	3.504
3 03	532.325	266.225	3.543	532.262	3.542
3 04	535.234	267.681	3.582	535.170	3.581
3 05	538.143	269.137	3.621	538.078	3.620
3 06	541.052	270.592	3.660	540.986	3.659
3 07	543.961	272.048	3.699	543.894	3.699
3 08	546.870	273.503	3.739	546.802	3.739
3 09	549.779	274.959	3.779	549.709	3.778
3 10	552.688	276.414	3.819	552.617	3.819
3 11	555.596	277.870	3.859	555.525	3.859
3 12	558.505	279.325	3.900	558.433	3.899
3 13	561.414	280.781	3.941	561.340	3.940
3 14	564.323	282.236	3.982	564.248	3.981
3 15	567.232	283.692	4.023	567.156	4.022
3 16	570.141	285.148	4.064	570.064	4.063
3 17	573.050	286.603	4.106	572.971	4.105
3 18	575.959	288.059	4.148	575.879	4.147
3 19	578.868	289.515	4.190	578.787	4.189
3 20	581.776	290.970	4.232	581.694	4.231
3 21	584.685	292.426	4.274	584.602	4.273
3 22	587.594	293.882	4.317	587.510	4.316
3 23	590.503	295.337	4.360	590.417	4.359
3 24	593.412	296.793	4.403	593.325	4.402
3 25	596.321	298.249	4.446	596.232	4.445
3 26	599.230	299.705	4.490	599.140	4.489
3 27	602.139	301.160	4.533	602.048	4.532
3 28	605.047	302.616	4.577	604.955	4.576
3 29	607.956	304.072	4.621	607.863	4.620
3 30	610.865	305.528	4.666	610.770	4.665
3 31	613.774	306.983	4.710	613.678	4.709
3 32	616.683	308.439	4.755	616.585	4.754
3 33	619.592	309.895	4.800	619.493	4.799
3 34	622.501	311.351	4.845	622.400	4.844
3 35	625.410	312.807	4.891	625.308	4.889
3 36	628.319	314.263	4.936	628.215	4.935
3 37	631.227	315.719	4.982	631.123	4.981
3 38	634.136	317.174	5.028	634.030	5.027
3 39	637.045	318.630	5.075	636.937	5.073
3 40	639.954	320.086	5.121	639.845	5.119
3 41	642.863	321.542	5.168	642.752	5.166
3 42	645.772	322.998	5.215	645.660	5.213
3 43	648.681	324.454	5.262	648.567	5.260
3 44	651.590	325.910	5.309	651.474	5.307
3 45	654.498	327.366	5.357	654.382	5.355

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
3	46	657.407	328.822	5.404	657.289	5.402
3	47	660.316	330.278	5.452	660.196	5.450
3	48	663.225	331.734	5.500	663.103	5.498
3	49	666.134	333.190	5.549	666.011	5.547
3	50	669.043	334.646	5.597	668.918	5.595
3	51	671.952	336.102	5.646	671.825	5.644
3	52	674.861	337.558	5.695	674.732	5.693
3	53	677.770	339.015	5.744	677.640	5.742
3	54	680.678	340.471	5.794	680.547	5.791
3	55	683.587	341.927	5.844	683.454	5.841
3	56	686.496	343.383	5.893	686.361	5.891
3	57	689.405	344.839	5.944	689.268	5.941
3	58	692.314	346.295	5.994	692.176	5.991
3	59	695.223	347.751	6.044	695.083	6.042
4	00	698.132	349.208	6.095	697.990	6.092
4	01	701.041	350.664	6.146	700.897	6.143
4	02	703.949	352.120	6.197	703.804	6.194
4	03	706.858	353.576	6.248	706.711	6.245
4	04	709.767	355.033	6.300	709.618	6.297
4	05	712.676	356.489	6.352	712.525	6.349
4	06	715.585	357.945	6.404	715.432	6.401
4	07	718.494	359.401	6.456	718.339	6.453
4	08	721.403	360.858	6.508	721.246	6.505
4	09	724.312	362.314	6.561	724.153	6.558
4	10	727.221	363.771	6.614	727.060	6.610
4	11	730.129	365.227	6.667	729.967	6.663
4	12	733.038	366.683	6.720	732.874	6.717
4	13	735.947	368.140	6.774	735.781	6.770
4	14	738.856	369.596	6.827	738.688	6.824
4	15	741.765	371.053	6.881	741.595	6.877
4	16	744.674	372.509	6.935	744.502	6.931
4	17	747.583	373.966	6.990	747.409	6.986
4	18	750.492	375.422	7.044	750.315	7.040
4	19	753.400	376.878	7.099	753.222	7.095
4	20	756.309	378.335	7.154	756.129	7.150
4	21	759.218	379.792	7.209	759.036	7.205
4	22	762.127	381.248	7.264	761.943	7.260
4	23	765.036	382.705	7.320	764.849	7.316
4	24	767.945	384.161	7.376	767.756	7.371
4	25	770.854	385.618	7.432	770.663	7.427
4	26	773.763	387.074	7.488	773.570	7.483
4	27	776.672	388.531	7.544	776.476	7.540
4	28	779.580	389.988	7.601	779.383	7.596
4	29	782.489	391.444	7.658	782.290	7.653
4	30	785.398	392.901	7.715	785.196	7.710

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
4 31	788.307	394.358	7.772	788.103	7.767
4 32	791.216	395.814	7.830	791.009	7.825
4 33	794.125	397.271	7.888	793.916	7.882
4 34	797.034	398.728	7.946	796.823	7.940
4 35	799.943	400.185	8.004	799.729	7.998
4 36	802.851	401.641	8.062	802.636	8.057
4 37	805.760	403.098	8.121	805.542	8.115
4 38	808.669	404.555	8.179	808.449	8.174
4 39	811.578	406.012	8.238	811.355	8.233
4 40	814.487	407.469	8.298	814.262	8.292
4 41	817.396	408.926	8.357	817.168	8.351
4 42	820.305	410.382	8.417	820.075	8.411
4 43	823.214	411.839	8.477	822.981	8.470
4 44	826.123	413.296	8.537	825.888	8.530
4 45	829.031	414.753	8.597	828.794	8.590
4 46	831.940	416.210	8.657	831.700	8.651
4 47	834.849	417.667	8.718	834.607	8.711
4 48	837.758	419.124	8.779	837.513	8.772
4 49	840.667	420.581	8.840	840.419	8.833
4 50	843.576	422.038	8.901	843.326	8.894
4 51	846.485	423.495	8.963	846.232	8.956
4 52	849.394	424.952	9.025	849.138	9.018
4 53	852.302	426.409	9.087	852.044	9.079
4 54	855.211	427.866	9.149	854.951	9.141
4 55	858.120	429.324	9.211	857.857	9.204
4 56	861.029	430.781	9.274	860.763	9.266
4 57	863.938	432.238	9.337	863.669	9.329
4 58	866.847	433.695	9.400	866.575	9.392
4 59	869.756	435.152	9.463	869.482	9.455
5 00	872.665	436.609	9.526	872.388	9.518
5 01	875.574	438.067	9.590	875.294	9.582
5 02	878.482	439.524	9.654	878.200	9.646
5 03	881.391	440.981	9.718	881.106	9.710
5 04	884.300	442.438	9.782	884.012	9.774
5 05	887.209	443.896	9.847	886.918	9.838
5 06	890.118	445.353	9.912	889.824	9.903
5 07	893.027	446.810	9.977	892.730	9.968
5 08	895.936	448.268	10.042	895.636	10.033
5 09	898.845	449.725	10.107	898.542	10.098
5 10	901.753	451.182	10.173	901.448	10.163
5 11	904.662	452.640	10.238	904.354	10.229
5 12	907.571	454.097	10.304	907.260	10.295
5 13	910.480	455.555	10.371	910.166	10.361
5 14	913.389	457.012	10.437	913.071	10.427
5 15	916.298	458.470	10.504	915.977	10.494

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
5 16	919.207	459.927	10.571	918.883	10.560
5 17	922.116	461.385	10.638	921.789	10.627
5 18	925.025	462.842	10.705	924.695	10.694
5 19	927.933	464.300	10.772	927.600	10.762
5 20	930.842	465.757	10.840	930.506	10.829
5 21	933.751	467.215	10.908	933.412	10.897
5 22	936.660	468.673	10.976	936.318	10.965
5 23	939.569	470.130	11.045	939.223	11.033
5 24	942.478	471.588	11.113	942.129	11.102
5 25	945.387	473.046	11.182	945.035	11.170
5 26	948.296	474.503	11.251	947.940	11.239
5 27	951.204	475.961	11.320	950.846	11.308
5 28	954.113	477.419	11.389	953.751	11.377
5 29	957.022	478.877	11.459	956.657	11.447
5 30	959.931	480.334	11.529	959.562	11.517
5 31	962.840	481.792	11.599	962.468	11.587
5 32	965.749	483.250	11.669	965.373	11.657
5 33	968.658	484.708	11.740	968.279	11.727
5 34	971.567	486.166	11.810	971.184	11.797
5 35	974.476	487.624	11.881	974.090	11.868
5 36	977.384	489.082	11.952	976.995	11.939
5 37	980.293	490.539	12.024	979.901	12.010
5 38	983.202	491.997	12.095	982.806	12.082
5 39	986.111	493.455	12.167	985.711	12.153
5 40	989.020	494.913	12.239	988.617	12.225
5 41	991.929	496.371	12.311	991.522	12.297
5 42	994.838	497.829	12.384	994.427	12.369
5 43	997.747	499.287	12.456	997.333	12.442
5 44	1000.655	500.746	12.529	1000.238	12.514
5 45	1003.564	502.204	12.602	1003.143	12.587
5 46	1006.473	503.662	12.675	1006.048	12.660
5 47	1009.382	505.120	12.749	1008.954	12.733
5 48	1012.291	506.578	12.822	1011.859	12.807
5 49	1015.200	508.036	12.896	1014.764	12.881
5 50	1018.109	509.495	12.970	1017.669	12.955
5 51	1021.018	510.953	13.045	1020.574	13.029
5 52	1023.927	512.411	13.119	1023.479	13.103
5 53	1026.835	513.869	13.194	1026.384	13.177
5 54	1029.744	515.328	13.269	1029.289	13.252
5 55	1032.653	516.786	13.344	1032.194	13.327
5 56	1035.562	518.244	13.419	1035.099	13.402
5 57	1038.471	519.703	13.495	1038.004	13.478
5 58	1041.380	521.161	13.571	1040.909	13.553
5 59	1044.289	522.619	13.647	1043.814	13.629
6 00	1047.198	524.078	13.723	1046.719	13.705

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
6	01	1050.106	525.536	13.799	1049.624	13.781
6	02	1053.015	526.995	13.876	1052.529	13.858
6	03	1055.924	528.453	13.953	1055.434	13.934
6	04	1058.833	529.912	14.030	1058.338	14.011
6	05	1061.742	531.370	14.107	1061.243	14.088
6	06	1064.651	532.829	14.185	1064.148	14.166
6	07	1067.560	534.287	14.263	1067.053	14.243
6	08	1070.469	535.746	14.340	1069.957	14.321
6	09	1073.377	537.204	14.419	1072.862	14.399
6	10	1076.286	538.663	14.497	1075.767	14.477
6	11	1079.195	540.122	14.576	1078.671	14.555
6	12	1082.104	541.581	14.654	1081.576	14.634
6	13	1085.013	543.039	14.733	1084.481	14.713
6	14	1087.922	544.498	14.813	1087.385	14.792
6	15	1090.831	545.957	14.892	1090.290	14.871
6	16	1093.740	547.416	14.971	1093.194	14.950
6	17	1096.648	548.874	15.051	1096.099	15.030
6	18	1099.557	550.333	15.131	1099.003	15.110
6	19	1102.466	551.792	15.212	1101.908	15.190
6	20	1105.375	553.251	15.292	1104.812	15.270
6	21	1108.284	554.710	15.373	1107.717	15.350
6	22	1111.193	556.169	15.454	1110.621	15.431
6	23	1114.102	557.628	15.535	1113.526	15.512
6	24	1117.011	559.087	15.616	1116.430	15.593
6	25	1119.920	560.546	15.698	1119.334	15.674
6	26	1122.828	562.005	15.780	1122.239	15.756
6	27	1125.737	563.464	15.862	1125.143	15.837
6	28	1128.646	564.923	15.944	1128.047	15.919
6	29	1131.555	566.382	16.026	1130.951	16.001
6	30	1134.464	567.841	16.109	1133.856	16.084
6	31	1137.373	569.300	16.192	1136.760	16.166
6	32	1140.282	570.759	16.275	1139.664	16.249
6	33	1143.191	572.219	16.358	1142.568	16.332
6	34	1146.099	573.678	16.441	1145.472	16.415
6	35	1149.008	575.137	16.525	1148.376	16.499
6	36	1151.917	576.596	16.609	1151.280	16.582
6	37	1154.826	578.056	16.693	1154.184	16.666
6	38	1157.735	579.515	16.777	1157.088	16.750
6	39	1160.644	580.974	16.862	1159.992	16.834
6	40	1163.553	582.434	16.947	1162.896	16.919
6	41	1166.462	583.893	17.032	1165.800	17.004
6	42	1169.371	585.352	17.117	1168.704	17.088
6	43	1172.279	586.812	17.202	1171.608	17.174
6	44	1175.188	588.271	17.288	1174.512	17.259
6	45	1178.097	589.731	17.374	1177.416	17.344

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
6 46	1181.006	591.190	17.460	1180.320	17.430
6 47	1183.915	592.650	17.546	1183.223	17.516
6 48	1186.824	594.109	17.632	1186.127	17.602
6 49	1189.733	595.569	17.719	1189.031	17.689
6 50	1192.642	597.029	17.806	1191.935	17.775
6 51	1195.550	598.488	17.893	1194.838	17.862
6 52	1198.459	599.948	17.980	1197.742	17.949
6 53	1201.368	601.408	18.068	1200.646	18.036
6 54	1204.277	602.867	18.156	1203.549	18.124
6 55	1207.186	604.327	18.243	1206.453	18.211
6 56	1210.095	605.787	18.332	1209.357	18.299
6 57	1213.004	607.247	18.420	1212.260	18.387
6 58	1215.913	608.706	18.509	1215.164	18.475
6 59	1218.822	610.166	18.597	1218.067	18.564
7 00	1221.731	611.626	18.686	1220.971	18.653
7 01	1224.639	613.086	18.776	1223.874	18.741
7 02	1227.548	614.546	18.865	1226.777	18.831
7 03	1230.457	616.006	18.955	1229.681	18.920
7 04	1233.366	617.466	19.045	1232.584	19.009
7 05	1236.275	618.926	19.135	1235.488	19.099
7 06	1239.184	620.386	19.225	1238.391	19.189
7 07	1242.093	621.846	19.316	1241.294	19.279
7 08	1245.002	623.306	19.406	1244.197	19.370
7 09	1247.910	624.766	19.497	1247.101	19.460
7 10	1250.819	626.226	19.588	1250.004	19.551
7 11	1253.728	627.686	19.680	1252.907	19.642
7 12	1256.637	629.147	19.771	1255.810	19.733
7 13	1259.546	630.607	19.863	1258.713	19.825
7 14	1262.455	632.067	19.955	1261.617	19.916
7 15	1265.364	633.527	20.047	1264.520	20.008
7 16	1268.273	634.988	20.140	1267.423	20.100
7 17	1271.181	636.448	20.232	1270.326	20.192
7 18	1274.090	637.908	20.325	1273.229	20.285
7 19	1276.999	639.369	20.418	1276.132	20.378
7 20	1279.908	640.829	20.512	1279.035	20.471
7 21	1282.817	642.289	20.605	1281.937	20.564
7 22	1285.726	643.750	20.699	1284.840	20.657
7 23	1288.635	645.210	20.793	1287.743	20.751
7 24	1291.544	646.671	20.887	1290.646	20.844
7 25	1294.453	648.131	20.981	1293.549	20.938
7 26	1297.361	649.592	21.076	1296.452	21.032
7 27	1300.270	651.053	21.171	1299.354	21.127
7 28	1303.179	652.513	21.266	1302.257	21.221
7 29	1306.088	653.974	21.361	1305.160	21.316
7 30	1308.997	655.435	21.456	1308.062	21.411

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
7 31	1311.906	656.895	21.552	1310.965	21.506
7 32	1314.815	658.356	21.648	1313.868	21.602
7 33	1317.724	659.817	21.744	1316.770	21.698
7 34	1320.632	661.278	21.840	1319.673	21.793
7 35	1323.541	662.738	21.937	1322.575	21.890
7 36	1326.450	664.199	22.033	1325.478	21.986
7 37	1329.359	665.660	22.130	1328.380	22.082
7 38	1332.268	667.121	22.227	1331.283	22.179
7 39	1335.177	668.582	22.325	1334.185	22.276
7 40	1338.086	670.043	22.422	1337.088	22.373
7 41	1340.995	671.504	22.520	1339.990	22.470
7 42	1343.904	672.965	22.618	1342.892	22.568
7 43	1346.812	674.426	22.716	1345.795	22.666
7 44	1349.721	675.887	22.815	1348.697	22.764
7 45	1352.630	677.348	22.913	1351.599	22.862
7 46	1355.539	678.809	23.012	1354.501	22.960
7 47	1358.448	680.270	23.111	1357.404	23.059
7 48	1361.357	681.732	23.211	1360.306	23.158
7 49	1364.266	683.193	23.310	1363.208	23.257
7 50	1367.175	684.654	23.410	1366.110	23.356
7 51	1370.083	686.115	23.510	1369.012	23.455
7 52	1372.992	687.577	23.610	1371.914	23.555
7 53	1375.901	689.038	23.710	1374.816	23.655
7 54	1378.810	690.499	23.811	1377.718	23.755
7 55	1381.719	691.961	23.911	1380.620	23.855
7 56	1384.628	693.422	24.012	1383.522	23.956
7 57	1387.537	694.884	24.114	1386.424	24.057
7 58	1390.446	696.345	24.215	1389.326	24.157
7 59	1393.355	697.807	24.317	1392.228	24.259
8 00	1396.263	699.268	24.418	1395.129	24.360
8 01	1399.172	700.730	24.521	1398.031	24.462
8 02	1402.081	702.191	24.623	1400.933	24.563
8 03	1404.990	703.653	24.725	1403.835	24.665
8 04	1407.899	705.114	24.828	1406.736	24.767
8 05	1410.808	706.576	24.931	1409.638	24.870
8 06	1413.717	708.038	25.034	1412.540	24.973
8 07	1416.626	709.500	25.137	1415.441	25.075
8 08	1419.534	710.961	25.241	1418.343	25.178
8 09	1422.443	712.423	25.345	1421.244	25.282
8 10	1425.352	713.885	25.449	1424.146	25.385
8 11	1428.261	715.347	25.553	1427.047	25.489
8 12	1431.170	716.809	25.657	1429.949	25.593
8 13	1434.079	718.271	25.762	1432.850	25.697
8 14	1436.988	719.733	25.867	1435.752	25.801
8 15	1439.897	721.195	25.972	1438.653	25.906

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
8 16	1442.806	722.657	26.077	1441.554	26.010
8 17	1445.714	724.119	26.183	1444.455	26.115
8 18	1448.623	725.581	26.288	1447.357	26.220
8 19	1451.532	727.043	26.394	1450.258	26.326
8 20	1454.441	728.505	26.500	1453.159	26.431
8 21	1457.350	729.967	26.607	1456.060	26.537
8 22	1460.259	731.430	26.713	1458.962	26.643
8 23	1463.168	732.892	26.820	1461.863	26.749
8 24	1466.077	734.354	26.927	1464.764	26.856
8 25	1468.985	735.816	27.034	1467.665	26.962
8 26	1471.894	737.279	27.142	1470.566	27.069
8 27	1474.803	738.741	27.249	1473.467	27.176
8 28	1477.712	740.203	27.357	1476.368	27.283
8 29	1480.621	741.666	27.465	1479.269	27.391
8 30	1483.530	743.128	27.574	1482.170	27.499
8 31	1486.439	744.591	27.682	1485.071	27.607
8 32	1489.348	746.053	27.791	1487.971	27.715
8 33	1492.257	747.516	27.900	1490.872	27.823
8 34	1495.165	748.978	28.009	1493.773	27.931
8 35	1498.074	750.441	28.118	1496.674	28.040
8 36	1500.983	751.904	28.228	1499.574	28.149
8 37	1503.892	753.366	28.337	1502.475	28.258
8 38	1506.801	754.829	28.447	1505.376	28.368
8 39	1509.710	756.292	28.558	1508.276	28.477
8 40	1512.619	757.755	28.668	1511.177	28.587
8 41	1515.528	759.217	28.779	1514.077	28.697
8 42	1518.436	760.680	28.890	1516.978	28.807
8 43	1521.345	762.143	29.001	1519.878	28.918
8 44	1524.254	763.606	29.112	1522.779	29.028
8 45	1527.163	765.069	29.223	1525.679	29.139
8 46	1530.072	766.532	29.335	1528.580	29.250
8 47	1532.981	767.995	29.447	1531.480	29.361
8 48	1535.890	769.458	29.559	1534.380	29.473
8 49	1538.799	770.921	29.671	1537.281	29.585
8 50	1541.708	772.384	29.784	1540.181	29.697
8 51	1544.616	773.847	29.897	1543.081	29.809
8 52	1547.525	775.310	30.010	1545.981	29.921
8 53	1550.434	776.774	30.123	1548.882	30.034
8 54	1553.343	778.237	30.236	1551.782	30.146
8 55	1556.252	779.700	30.350	1554.682	30.259
8 56	1559.161	781.163	30.464	1557.582	30.372
8 57	1562.070	782.627	30.578	1560.482	30.486
8 58	1564.979	784.090	30.692	1563.382	30.599
8 59	1567.887	785.554	30.807	1566.282	30.713
9 00	1570.796	787.017	30.922	1569.182	30.827

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
9 01	1573.705	788.480	31.036	1572.082	30.941
9 02	1576.614	789.944	31.152	1574.981	31.056
9 03	1579.523	791.407	31.267	1577.881	31.170
9 04	1582.432	792.871	31.382	1580.781	31.285
9 05	1585.341	794.335	31.498	1583.681	31.400
9 06	1588.250	795.798	31.614	1586.581	31.516
9 07	1591.158	797.262	31.731	1589.480	31.631
9 08	1594.067	798.726	31.847	1592.380	31.747
9 09	1596.976	800.189	31.964	1595.280	31.863
9 10	1599.885	801.653	32.080	1598.179	31.979
9 11	1602.794	803.117	32.198	1601.079	32.095
9 12	1605.703	804.581	32.315	1603.978	32.212
9 13	1608.612	806.045	32.432	1606.878	32.328
9 14	1611.521	807.509	32.550	1609.777	32.445
9 15	1614.430	808.972	32.668	1612.677	32.563
9 16	1617.338	810.437	32.786	1615.576	32.680
9 17	1620.247	811.900	32.905	1618.475	32.798
9 18	1623.156	813.365	33.023	1621.375	32.915
9 19	1626.065	814.829	33.142	1624.274	33.033
9 20	1628.974	816.293	33.261	1627.173	33.152
9 21	1631.883	817.757	33.380	1630.073	33.270
9 22	1634.792	819.221	33.500	1632.972	33.389
9 23	1637.701	820.685	33.619	1635.871	33.508
9 24	1640.609	822.150	33.739	1638.770	33.627
9 25	1643.518	823.614	33.859	1641.669	33.746
9 26	1646.427	825.078	33.979	1644.568	33.865
9 27	1649.336	826.543	34.100	1647.467	33.985
9 28	1652.245	828.007	34.221	1650.366	34.105
9 29	1655.154	829.471	34.342	1653.265	34.225
9 30	1658.063	830.936	34.463	1656.164	34.345
9 31	1660.972	832.400	34.584	1659.063	34.466
9 32	1663.881	833.865	34.706	1661.962	34.587
9 33	1666.789	835.330	34.828	1664.861	34.708
9 34	1669.698	836.794	34.950	1667.759	34.829
9 35	1672.607	838.259	35.072	1670.658	34.950
9 36	1675.516	839.723	35.194	1673.557	35.072
9 37	1678.425	841.188	35.317	1676.455	35.194
9 38	1681.334	842.653	35.440	1679.354	35.316
9 39	1684.243	844.118	35.563	1682.253	35.438
9 40	1687.152	845.582	35.686	1685.151	35.560
9 41	1690.060	847.047	35.810	1688.050	35.683
9 42	1692.969	848.512	35.934	1690.948	35.806
9 43	1695.878	849.977	36.058	1693.847	35.929
9 44	1698.787	851.442	36.182	1696.745	36.052
9 45	1701.696	852.907	36.306	1699.643	36.176

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
9 46	1704.605	854.372	36.431	1702.542	36.299
9 47	1707.514	855.837	36.556	1705.440	36.423
9 48	1710.423	857.302	36.681	1708.338	36.548
9 49	1713.332	858.768	36.806	1711.237	36.672
9 50	1716.240	860.233	36.931	1714.135	36.796
9 51	1719.149	861.698	37.057	1717.033	36.921
9 52	1722.058	863.163	37.183	1719.931	37.046
9 53	1724.967	864.628	37.309	1722.829	37.171
9 54	1727.876	866.094	37.435	1725.727	37.297
9 55	1730.785	867.559	37.562	1728.625	37.422
9 56	1733.694	869.025	37.689	1731.523	37.548
9 57	1736.603	870.490	37.816	1734.421	37.674
9 58	1739.511	871.955	37.943	1737.319	37.800
9 59	1742.420	873.421	38.070	1740.217	37.927
10 00	1745.329	874.887	38.198	1743.115	38.054
10 01	1748.238	876.352	38.326	1746.013	38.180
10 02	1751.147	877.818	38.454	1748.910	38.307
10 03	1754.056	879.283	38.582	1751.808	38.435
10 04	1756.965	880.749	38.711	1754.706	38.562
10 05	1759.874	882.215	38.839	1757.603	38.690
10 06	1762.783	883.681	38.968	1760.501	38.818
10 07	1765.691	885.147	39.097	1763.399	38.946
10 08	1768.600	886.612	39.227	1766.296	39.074
10 09	1771.509	888.078	39.356	1769.194	39.203
10 10	1774.418	889.544	39.486	1772.091	39.332
10 11	1777.327	891.010	39.616	1774.989	39.461
10 12	1780.236	892.476	39.746	1777.886	39.590
10 13	1783.145	893.942	39.877	1780.783	39.719
10 14	1786.054	895.408	40.007	1783.681	39.849
10 15	1788.963	896.874	40.138	1786.578	39.979
10 16	1791.871	898.341	40.269	1789.475	40.109
10 17	1794.780	899.807	40.401	1792.372	40.239
10 18	1797.689	901.273	40.532	1795.269	40.369
10 19	1800.598	902.739	40.664	1798.166	40.500
10 20	1803.507	904.206	40.796	1801.064	40.631
10 21	1806.416	905.672	40.928	1803.961	40.762
10 22	1809.325	907.138	41.060	1806.858	40.893
10 23	1812.234	908.605	41.193	1809.755	41.025
10 24	1815.142	910.071	41.326	1812.651	41.157
10 25	1818.051	911.538	41.459	1815.548	41.288
10 26	1820.960	913.004	41.592	1818.445	41.421
10 27	1823.869	914.471	41.725	1821.342	41.553
10 28	1826.778	915.937	41.859	1824.239	41.685
10 29	1829.687	917.404	41.993	1827.136	41.818
10 30	1832.596	918.871	42.127	1830.032	41.951

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
10 31	1835.505	920.338	42.261	1832.929	42.084
10 32	1838.414	921.804	42.396	1835.826	42.218
10 33	1841.322	923.271	42.531	1838.722	42.351
10 34	1844.231	924.738	42.666	1841.619	42.485
10 35	1847.140	926.205	42.801	1844.515	41.619
10 36	1850.049	927.672	42.936	1847.412	42.754
10 37	1852.958	929.139	43.072	1850.308	42.888
10 38	1855.867	930.606	43.208	1853.204	43.023
10 39	1858.776	932.073	43.344	1856.101	43.157
10 40	1861.685	933.540	43.480	1858.997	43.293
10 41	1864.593	935.007	43.616	1861.893	43.428
10 42	1867.502	936.474	43.753	1864.790	43.563
10 43	1870.411	937.942	43.890	1867.686	43.699
10 44	1873.320	939.409	44.027	1870.582	43.835
10 45	1876.229	940.876	44.164	1873.478	43.971
10 46	1879.138	942.344	44.302	1876.374	44.108
10 47	1882.047	943.811	44.440	1879.270	44.244
10 48	1884.956	945.278	44.578	1882.166	44.381
10 49	1887.865	946.746	44.716	1885.062	44.518
10 50	1890.773	948.213	44.854	1887.958	44.655
10 51	1893.682	949.681	44.993	1890.854	44.792
10 52	1896.591	951.148	45.132	1893.750	44.930
10 53	1899.500	952.616	45.271	1896.646	45.068
10 54	1902.409	954.084	45.410	1899.541	45.206
10 55	1905.318	955.551	45.550	1902.437	45.344
10 56	1908.227	957.019	45.689	1905.333	45.483
10 57	1911.136	958.487	45.829	1908.228	45.621
10 58	1914.044	959.955	45.970	1911.124	45.760
10 59	1916.953	961.423	46.110	1914.019	45.899
11 00	1919.862	962.890	46.251	1916.915	46.039
11 01	1922.771	964.358	46.391	1919.810	46.178
11 02	1925.680	965.826	46.532	1922.706	46.318
11 03	1928.589	967.294	46.674	1925.601	46.458
11 04	1931.498	968.762	46.815	1928.497	46.598
11 05	1934.407	970.231	46.957	1931.392	46.738
11 06	1937.315	971.699	47.099	1934.287	46.879
11 07	1940.224	973.167	47.241	1937.182	47.019
11 08	1943.133	974.635	47.383	1940.078	47.160
11 09	1946.042	976.103	47.526	1942.973	47.302
11 10	1948.951	977.572	47.668	1945.868	47.443
11 11	1951.860	979.040	47.811	1948.763	47.585
11 12	1954.769	980.508	47.954	1951.658	47.726
11 13	1957.678	981.977	48.098	1954.553	47.869
11 14	1960.587	983.445	48.241	1957.448	48.011
11 15	1963.495	984.914	48.385	1960.343	48.153

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
11 16	1966.404	986.383	48.529	1963.238	48.296
11 17	1969.313	987.851	48.674	1966.132	48.439
11 18	1972.222	989.320	48.818	1969.027	48.582
11 19	1975.131	990.788	48.963	1971.922	48.725
11 20	1978.040	992.257	49.108	1974.817	48.869
11 21	1980.949	993.726	49.253	1977.711	49.012
11 22	1983.858	995.195	49.398	1980.606	49.156
11 23	1986.766	996.664	49.544	1983.500	49.300
11 24	1989.675	998.133	49.689	1986.395	49.445
11 25	1992.584	999.602	49.836	1989.289	49.589
11 26	1995.493	1001.071	49.982	1992.184	49.734
11 27	1998.402	1002.540	50.128	1995.078	49.879
11 28	2001.311	1004.009	50.275	1997.972	50.024
11 29	2004.220	1005.478	50.422	2000.867	50.170
11 30	2007.129	1006.947	50.569	2003.761	50.315
11 31	2010.038	1008.416	50.716	2006.655	50.461
11 32	2012.946	1009.885	50.864	2009.550	50.607
11 33	2015.855	1011.355	51.011	2012.444	50.753
11 34	2018.764	1012.824	51.159	2015.338	50.900
11 35	2021.673	1014.293	51.308	2018.232	51.047
11 36	2024.582	1015.763	51.456	2021.126	51.193
11 37	2027.491	1017.232	51.604	2024.020	51.340
11 38	2030.400	1018.702	51.753	2026.914	51.488
11 39	2033.309	1020.171	51.902	2029.808	51.635
11 40	2036.217	1021.641	52.052	2032.701	51.783
11 41	2039.126	1023.111	52.201	2035.595	51.931
11 42	2042.035	1024.580	52.351	2038.489	52.079
11 43	2044.944	1026.050	52.501	2041.383	52.227
11 44	2047.853	1027.520	52.651	2044.276	52.376
11 45	2050.762	1028.990	52.801	2047.170	52.525
11 46	2053.671	1030.459	52.952	2050.063	52.674
11 47	2056.580	1031.929	53.103	2052.957	52.823
11 48	2059.489	1033.399	53.253	2055.851	52.972
11 49	2062.397	1034.869	53.405	2058.744	53.122
11 50	2065.306	1036.339	53.556	2061.637	53.272
11 51	2068.215	1037.810	53.708	2064.531	53.422
11 52	2071.124	1039.280	53.860	2067.424	53.572
11 53	2074.033	1040.750	54.012	2070.317	53.722
11 54	2076.942	1042.220	54.164	2073.211	53.873
11 55	2079.851	1043.690	54.316	2076.104	54.024
11 56	2082.760	1045.161	54.469	2078.997	54.175
11 57	2085.668	1046.631	54.622	2081.890	54.326
11 58	2088.577	1048.101	54.775	2084.783	54.478
11 59	2091.486	1049.572	54.929	2087.676	54.630
12 00	2094.395	1051.042	55.082	2090.569	54.782

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
12 01	2097.304	1052.513	55.236	2093.462	54.934
12 02	2100.213	1053.983	55.390	2096.355	55.086
12 03	2103.122	1055.454	55.544	2099.248	55.239
12 04	2106.031	1056.925	55.699	2102.141	55.391
12 05	2108.940	1058.395	55.854	2105.033	55.544
12 06	2111.848	1059.866	56.008	2107.926	55.697
12 07	2114.757	1061.337	56.164	2110.819	55.851
12 08	2117.666	1062.808	56.319	2113.711	56.004
12 09	2120.575	1064.279	56.475	2116.604	56.158
12 10	2123.484	1065.750	56.630	2119.496	56.312
12 11	2126.393	1067.221	56.786	2122.389	56.467
12 12	2129.302	1068.692	56.943	2125.281	56.621
12 13	2132.211	1070.163	57.099	2128.174	56.776
12 14	2135.119	1071.634	57.256	2131.066	56.931
12 15	2138.028	1073.105	57.412	2133.958	57.086
12 16	2140.937	1074.576	57.570	2136.851	57.241
12 17	2143.846	1076.047	57.727	2139.743	57.396
12 18	2146.755	1077.519	57.884	2142.635	57.552
12 19	2149.664	1078.990	58.042	2145.527	57.708
12 20	2152.573	1080.461	58.200	2148.419	57.864
12 21	2155.482	1081.933	58.358	2151.311	58.021
12 22	2158.391	1083.404	58.517	2154.203	58.177
12 23	2161.299	1084.876	58.675	2157.095	58.334
12 24	2164.208	1086.348	58.834	2159.987	58.491
12 25	2167.117	1087.819	58.993	2162.879	58.648
12 26	2170.026	1089.291	59.152	2165.771	58.805
12 27	2172.935	1090.763	59.312	2168.662	58.963
12 28	2175.844	1092.234	59.472	2171.554	59.121
12 29	2178.753	1093.706	59.631	2174.446	59.279
12 30	2181.662	1095.178	59.791	2177.337	59.437
12 31	2184.570	1096.650	59.952	2180.229	59.596
12 32	2187.479	1098.122	60.112	2183.120	59.754
12 33	2190.388	1099.594	60.273	2186.012	59.913
12 34	2193.297	1101.066	60.434	2188.903	60.072
12 35	2196.206	1102.538	60.595	2191.795	60.231
12 36	2199.115	1104.010	60.757	2194.686	60.391
12 37	2202.024	1105.482	60.919	2197.577	60.551
12 38	2204.933	1106.955	61.080	2200.469	60.711
12 39	2207.842	1108.427	61.242	2203.360	60.871
12 40	2210.750	1109.899	61.405	2206.251	61.031
12 41	2213.659	1111.372	61.567	2209.142	61.192
12 42	2216.568	1112.844	61.730	2212.033	61.352
12 43	2219.477	1114.317	61.893	2214.924	61.513
12 44	2222.386	1115.789	62.056	2217.815	61.674
12 45	2225.295	1117.262	62.220	2220.706	61.836

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
12 46	2228.204	1118.734	62.383	2223.597	61.997
12 47	2231.113	1120.207	62.547	2226.488	62.159
12 48	2234.021	1121.680	62.711	2229.379	62.321
12 49	2236.930	1123.152	62.875	2232.269	62.484
12 50	2239.839	1124.625	63.040	2235.160	62.646
12 51	2242.748	1126.098	63.205	2238.050	62.809
12 52	2245.657	1127.571	63.370	2240.941	62.971
12 53	2248.566	1129.044	63.535	2243.832	63.135
12 54	2251.475	1130.517	63.700	2246.722	63.298
12 55	2254.384	1131.990	63.866	2249.613	63.461
12 56	2257.292	1133.463	64.032	2252.503	63.625
12 57	2260.201	1134.936	64.198	2255.393	63.789
12 58	2263.110	1136.409	64.364	2258.284	63.953
12 59	2266.019	1137.883	64.530	2261.174	64.117
13 00	2268.928	1139.356	64.697	2264.064	64.282
13 01	2271.837	1140.829	64.864	2266.954	64.447
13 02	2274.746	1142.303	65.031	2269.844	64.612
13 03	2277.655	1143.776	65.198	2272.734	64.777
13 04	2280.564	1145.250	65.366	2275.624	64.942
13 05	2283.472	1146.723	65.533	2278.514	65.108
13 06	2286.381	1148.197	65.701	2281.404	65.274
13 07	2289.290	1149.670	65.870	2284.294	65.440
13 08	2292.199	1151.144	66.038	2287.184	65.606
13 09	2295.108	1152.618	66.207	2290.074	65.772
13 10	2298.017	1154.092	66.376	2292.964	65.939
13 11	2300.926	1155.566	66.545	2295.853	66.106
13 12	2303.835	1157.039	66.714	2298.743	66.273
13 13	2306.743	1158.513	66.884	2301.632	66.440
13 14	2309.652	1159.987	67.053	2304.522	66.608
13 15	2312.561	1161.461	67.223	2307.411	66.775
13 16	2315.470	1162.935	67.393	2310.301	66.943
13 17	2318.379	1164.409	67.564	2313.190	67.111
13 18	2321.288	1165.884	67.734	2316.080	67.280
13 19	2324.197	1167.358	67.905	2318.969	67.448
13 20	2327.106	1168.832	68.076	2321.858	67.617
13 21	2330.015	1170.307	68.248	2324.747	67.786
13 22	2332.923	1171.781	68.419	2327.636	67.955
13 23	2335.832	1173.255	68.591	2330.525	68.124
13 24	2338.741	1174.730	68.763	2333.414	68.294
13 25	2341.650	1176.204	68.935	2336.304	68.464
13 26	2344.559	1177.679	69.107	2339.192	68.634
13 27	2347.468	1179.154	69.280	2342.081	68.804
13 28	2350.377	1180.628	69.453	2344.970	68.974
13 29	2353.286	1182.103	69.626	2347.859	69.145
13 30	2356.194	1183.578	69.799	2350.748	69.316

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
13 31	2359.103	1185.053	69.972	2353.636	69.487
13 32	2362.012	1186.528	70.146	2356.525	69.658
13 33	2364.921	1188.003	70.320	2359.414	69.830
13 34	2367.830	1189.477	70.494	2362.302	70.001
13 35	2370.739	1190.953	70.668	2365.191	70.173
13 36	2373.648	1192.428	70.843	2368.079	70.345
13 37	2376.557	1193.903	71.018	2370.968	70.518
13 38	2379.466	1195.378	71.193	2373.856	70.690
13 39	2382.374	1196.853	71.368	2376.744	70.863
13 40	2385.283	1198.329	71.543	2379.632	71.036
13 41	2388.192	1199.804	71.719	2382.521	71.209
13 42	2391.101	1201.279	71.895	2385.409	71.382
13 43	2394.010	1202.755	72.071	2388.297	71.556
13 44	2396.919	1204.230	72.247	2391.185	71.730
13 45	2399.828	1205.706	72.424	2394.073	71.904
13 46	2402.737	1207.181	72.600	2396.961	72.078
13 47	2405.645	1208.657	72.777	2399.849	72.252
13 48	2408.554	1210.133	72.954	2402.736	72.427
13 49	2411.463	1211.609	73.132	2405.624	72.602
13 50	2414.372	1213.084	73.310	2408.512	72.777
13 51	2417.281	1214.560	73.487	2411.400	72.952
13 52	2420.190	1216.036	73.665	2414.287	73.128
13 53	2423.099	1217.512	73.844	2417.175	73.303
13 54	2426.008	1218.988	74.022	2420.063	73.479
13 55	2428.917	1220.464	74.201	2422.950	73.655
13 56	2431.825	1221.940	74.380	2425.837	73.832
13 57	2434.734	1223.417	74.559	2428.725	74.008
13 58	2437.643	1224.893	74.738	2431.612	74.185
13 59	2440.552	1226.369	74.918	2434.499	74.362
14 00	2443.461	1227.846	75.098	2437.387	74.539
14 01	2446.370	1229.322	75.278	2440.274	74.716
14 02	2449.279	1230.798	75.458	2443.161	74.894
14 03	2452.188	1232.275	75.639	2446.048	75.072
14 04	2455.097	1233.751	75.819	2448.935	75.250
14 05	2458.005	1235.228	76.000	2451.822	75.428
14 06	2460.914	1236.705	76.181	2454.709	75.606
14 07	2463.823	1238.181	76.363	2457.596	75.785
14 08	2466.732	1239.658	76.544	2460.483	75.964
14 09	2469.641	1241.135	76.726	2463.369	76.143
14 10	2472.550	1242.612	76.908	2466.256	76.322
14 11	2475.459	1244.089	77.090	2469.143	76.501
14 12	2478.368	1245.566	77.273	2472.029	76.681
14 13	2481.276	1247.043	77.455	2474.916	76.861
14 14	2484.185	1248.520	77.638	2477.802	77.041
14 15	2487.094	1249.997	77.821	2480.689	77.221

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
14 16	2490.003	1251.474	78.005	2483.575	77.402
14 17	2492.912	1252.951	78.188	2486.462	77.583
14 18	2495.821	1254.429	78.372	2489.348	77.764
14 19	2498.730	1255.906	78.556	2492.234	77.945
14 20	2501.639	1257.384	78.740	2495.120	78.126
14 21	2504.548	1258.861	78.925	2498.006	78.308
14 22	2507.456	1260.339	79.109	2500.893	78.489
14 23	2510.365	1261.816	79.294	2503.779	78.671
14 24	2513.274	1263.294	79.479	2506.664	78.853
14 25	2516.183	1264.771	79.665	2509.550	79.036
14 26	2519.092	1266.249	79.850	2512.436	79.218
14 27	2522.001	1267.727	80.036	2515.322	79.401
14 28	2524.910	1269.205	80.222	2518.208	79.584
14 29	2527.819	1270.683	80.408	2521.094	79.768
14 30	2530.727	1272.161	80.594	2523.979	79.951
14 31	2533.636	1273.639	80.781	2526.865	80.135
14 32	2536.545	1275.117	80.968	2529.750	80.319
14 33	2539.454	1276.595	81.155	2532.636	80.503
14 34	2542.363	1278.073	81.342	2535.521	80.687
14 35	2545.272	1279.551	81.530	2538.407	80.871
14 36	2548.181	1281.029	81.717	2541.292	81.056
14 37	2551.090	1282.508	81.905	2544.177	81.241
14 38	2553.999	1283.986	82.094	2547.062	81.426
14 39	2556.907	1285.465	82.282	2549.948	81.611
14 40	2559.816	1286.943	82.471	2552.833	81.797
14 41	2562.725	1288.422	82.659	2555.718	81.983
14 42	2565.634	1289.900	82.848	2558.603	82.169
14 43	2568.543	1291.379	83.038	2561.488	82.355
14 44	2571.452	1292.858	83.227	2564.373	82.541
14 45	2574.361	1294.337	83.417	2567.258	82.728
14 46	2577.270	1295.815	83.607	2570.142	82.915
14 47	2580.178	1297.294	83.797	2573.027	83.102
14 48	2583.087	1298.773	83.987	2575.912	83.289
14 49	2585.996	1300.252	84.178	2578.796	83.476
14 50	2588.905	1301.731	84.369	2581.681	83.664
14 51	2591.814	1303.210	84.560	2584.565	83.852
14 52	2594.723	1304.690	84.751	2587.450	84.040
14 53	2597.632	1306.169	84.943	2590.334	84.228
14 54	2600.541	1307.648	85.134	2593.219	84.417
14 55	2603.450	1309.127	85.326	2596.103	84.605
14 56	2606.358	1310.607	85.518	2598.987	84.794
14 57	2609.267	1312.086	85.711	2601.871	84.983
14 58	2612.176	1313.566	85.903	2604.756	85.173
14 59	2615.085	1315.045	86.096	2607.640	85.362
15 00	2617.994	1316.525	86.289	2610.524	85.552

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
15 01	2620.903	1318.005	86.482	2613.408	85.742
15 02	2623.812	1319.484	86.676	2616.292	85.932
15 03	2626.721	1320.964	86.870	2619.175	86.122
15 04	2629.629	1322.444	87.063	2622.059	86.313
15 05	2632.538	1323.924	87.258	2624.943	86.504
15 06	2635.447	1325.404	87.452	2627.827	86.695
15 07	2638.356	1326.884	87.647	2630.710	86.886
15 08	2641.265	1328.364	87.841	2633.594	87.077
15 09	2644.174	1329.844	88.036	2636.477	87.269
15 10	2647.083	1331.324	88.231	2639.361	87.461
15 11	2649.992	1332.805	88.427	2642.244	87.653
15 12	2652.900	1334.285	88.623	2645.128	87.845
15 13	2655.809	1335.765	88.819	2648.011	88.038
15 14	2658.718	1337.246	89.015	2650.894	88.230
15 15	2661.627	1338.726	89.211	2653.777	88.423
15 16	2664.536	1340.207	89.407	2656.661	88.616
15 17	2667.445	1341.687	89.604	2659.544	88.809
15 18	2670.354	1343.168	89.801	2662.427	89.003
15 19	2673.263	1344.649	89.999	2665.310	89.197
15 20	2676.172	1346.129	90.196	2668.192	89.391
15 21	2679.080	1347.610	90.394	2671.075	89.585
15 22	2681.989	1349.091	90.592	2673.958	89.779
15 23	2684.898	1350.572	90.790	2676.841	89.974
15 24	2687.807	1352.053	90.988	2679.724	90.168
15 25	2690.716	1353.534	91.186	2682.606	90.363
15 26	2693.625	1355.015	91.385	2685.489	90.559
15 27	2696.534	1356.496	91.584	2688.371	90.754
15 28	2699.443	1357.977	91.783	2691.254	90.950
15 29	2702.351	1359.459	91.983	2694.136	91.145
15 30	2705.260	1360.940	92.183	2697.018	91.342
15 31	2708.169	1362.422	92.382	2699.901	91.538
15 32	2711.078	1363.903	92.582	2702.783	91.734
15 33	2713.987	1365.385	92.783	2705.665	91.931
15 34	2716.896	1366.866	92.983	2708.547	92.128
15 35	2719.805	1368.348	93.184	2711.429	92.325
15 36	2722.714	1369.829	93.385	2714.311	92.522
15 37	2725.623	1371.311	93.586	2717.193	92.720
15 38	2728.531	1372.793	93.788	2720.075	92.917
15 39	2731.440	1374.275	93.989	2722.957	93.115
15 40	2734.349	1375.757	94.191	2725.839	93.313
15 41	2737.258	1377.239	94.393	2728.720	93.512
15 42	2740.167	1378.721	94.596	2731.602	93.710
15 43	2743.076	1380.203	94.798	2734.484	93.909
15 44	2745.985	1381.685	95.001	2737.365	94.108
15 45	2748.894	1383.167	95.204	2740.247	94.307

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
15 46	2751.802	1384.650	95.407	2743.128	94.506
15 47	2754.711	1386.132	95.611	2746.009	94.706
15 48	2757.620	1387.615	95.814	2748.891	94.906
15 49	2760.529	1389.097	96.018	2751.772	95.106
15 50	2763.438	1390.580	96.222	2754.653	95.306
15 51	2766.347	1392.062	96.427	2757.534	95.507
15 52	2769.256	1393.545	96.631	2760.415	95.707
15 53	2772.165	1395.028	96.836	2763.296	95.908
15 54	2775.074	1396.510	97.041	2766.177	96.109
15 55	2777.982	1397.993	97.246	2769.058	96.310
15 56	2780.891	1399.476	97.451	2771.939	96.512
15 57	2783.800	1400.959	97.657	2774.820	96.713
15 58	2786.709	1402.442	97.863	2777.701	96.915
15 59	2789.618	1403.925	98.069	2780.581	97.117
16 00	2792.527	1405.408	98.275	2783.462	97.320
16 01	2795.436	1406.891	98.482	2786.342	97.522
16 02	2798.345	1408.375	98.689	2789.223	97.725
16 03	2801.253	1409.858	98.895	2792.103	97.928
16 04	2804.162	1411.341	99.103	2794.984	98.131
16 05	2807.071	1412.825	99.310	2797.864	98.335
16 06	2809.980	1414.308	99.518	2800.744	98.538
16 07	2812.889	1415.792	99.726	2803.624	98.742
16 08	2815.798	1417.276	99.934	2806.505	98.946
16 09	2818.707	1418.759	100.142	2809.385	99.150
16 10	2821.616	1420.243	100.351	2812.265	99.354
16 11	2824.525	1421.727	100.559	2815.145	99.559
16 12	2827.433	1423.211	100.768	2818.024	99.764
16 13	2830.342	1424.695	100.977	2820.904	99.969
16 14	2833.251	1426.179	101.187	2823.784	100.174
16 15	2836.160	1427.663	101.397	2826.664	100.380
16 16	2839.069	1429.147	101.606	2829.543	100.585
16 17	2841.978	1430.631	101.816	2832.423	100.791
16 18	2844.887	1432.115	102.027	2835.303	100.997
16 19	2847.796	1433.599	102.237	2838.182	101.204
16 20	2850.704	1435.084	102.448	2841.061	101.410
16 21	2853.613	1436.568	102.659	2843.941	101.617
16 22	2856.522	1438.053	102.870	2846.820	101.824
16 23	2859.431	1439.537	103.082	2849.699	102.031
16 24	2862.340	1441.022	103.293	2852.578	102.238
16 25	2865.249	1442.507	103.505	2855.458	102.446
16 26	2868.158	1443.991	103.717	2858.337	102.653
16 27	2871.067	1445.476	103.930	2861.216	102.861
16 28	2873.975	1446.961	104.142	2864.095	103.070
16 29	2876.884	1448.446	104.355	2866.973	103.278
16 30	2879.793	1449.931	104.568	2869.852	103.487

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
16 31	2882.702	1451.416	104.781	2872.731	103.695
16 32	2885.611	1452.901	104.994	2875.610	103.904
16 33	2888.520	1454.386	105.208	2878.488	104.114
16 34	2891.429	1455.871	105.422	2881.367	104.323
16 35	2894.338	1457.357	105.636	2884.245	104.533
16 36	2897.247	1458.842	105.850	2887.124	104.743
16 37	2900.155	1460.328	106.065	2890.002	104.953
16 38	2903.064	1461.813	106.280	2892.881	105.163
16 39	2905.973	1463.299	106.495	2895.759	105.373
16 40	2908.882	1464.784	106.710	2898.637	105.584
16 41	2911.791	1466.270	106.925	2901.515	105.795
16 42	2914.700	1467.756	107.141	2904.393	106.006
16 43	2917.609	1469.241	107.357	2907.271	106.217
16 44	2920.518	1470.727	107.573	2910.149	106.429
16 45	2923.426	1472.213	107.789	2913.027	106.641
16 46	2926.335	1473.699	108.006	2915.905	106.853
16 47	2929.244	1475.185	108.222	2918.783	107.065
16 48	2932.153	1476.671	108.440	2921.660	107.277
16 49	2935.062	1478.158	108.657	2924.538	107.490
16 50	2937.971	1479.644	108.874	2927.416	107.703
16 51	2940.880	1481.130	109.092	2930.293	107.915
16 52	2943.789	1482.617	109.310	2933.171	108.129
16 53	2946.698	1484.103	109.528	2936.048	108.342
16 54	2949.606	1485.590	109.746	2938.925	108.556
16 55	2952.515	1487.076	109.965	2941.803	108.770
16 56	2955.424	1488.563	110.183	2944.680	108.984
16 57	2958.333	1490.049	110.402	2947.557	109.198
16 58	2961.242	1491.536	110.622	2950.434	109.412
16 59	2964.151	1493.023	110.841	2953.311	109.627
17 00	2967.060	1494.510	111.061	2956.188	109.842
17 01	2969.969	1495.997	111.281	2959.065	110.057
17 02	2972.878	1497.484	111.501	2961.942	110.272
17 03	2975.786	1498.971	111.721	2964.819	110.488
17 04	2978.695	1500.458	111.942	2967.695	110.703
17 05	2981.604	1501.945	112.162	2970.572	110.919
17 06	2984.513	1503.433	112.384	2973.449	111.136
17 07	2987.422	1504.920	112.605	2976.325	111.352
17 08	2990.331	1506.407	112.826	2979.202	111.568
17 09	2993.240	1507.895	113.048	2982.078	111.785
17 10	2996.149	1509.383	113.270	2984.954	112.002
17 11	2999.058	1510.870	113.492	2987.831	112.219
17 12	3001.966	1512.358	113.714	2990.707	112.437
17 13	3004.875	1513.846	113.937	2993.583	112.654
17 14	3007.784	1515.333	114.160	2996.459	112.872
17 15	3010.693	1516.821	114.383	2999.335	113.090

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
17 16	3013.602	1518.309	114.606	3002.211	113.308
17 17	3016.511	1519.797	114.829	3005.087	113.527
17 18	3019.420	1521.285	115.053	3007.963	113.745
17 19	3022.329	1522.773	115.277	3010.838	113.964
17 20	3025.237	1524.262	115.501	3013.714	114.183
17 21	3028.146	1525.750	115.726	3016.590	114.403
17 22	3031.055	1527.238	115.950	3019.465	114.622
17 23	3033.964	1528.726	116.175	3022.341	114.842
17 24	3036.873	1530.215	116.400	3025.216	115.062
17 25	3039.782	1531.703	116.625	3028.092	115.282
17 26	3042.691	1533.192	116.851	3030.967	115.502
17 27	3045.600	1534.681	117.076	3033.842	115.723
17 28	3048.508	1536.169	117.302	3036.717	115.943
17 29	3051.417	1537.658	117.529	3039.592	116.164
17 30	3054.326	1539.147	117.755	3042.468	116.385
17 31	3057.235	1540.636	117.982	3045.343	116.607
17 32	3060.144	1542.125	118.208	3048.218	116.828
17 33	3063.053	1543.614	118.435	3051.092	117.050
17 34	3065.962	1545.103	118.663	3053.967	117.272
17 35	3068.871	1546.593	118.890	3056.842	117.494
17 36	3071.780	1548.082	119.118	3059.717	117.717
17 37	3074.688	1549.571	119.346	3062.591	117.939
17 38	3077.597	1551.060	119.574	3065.466	118.162
17 39	3080.506	1552.550	119.802	3068.340	118.385
17 40	3083.415	1554.039	120.031	3071.215	118.608
17 41	3086.324	1555.529	120.260	3074.089	118.832
17 42	3089.233	1557.019	120.489	3076.963	119.055
17 43	3092.142	1558.508	120.718	3079.837	119.279
17 44	3095.051	1559.998	120.948	3082.712	119.503
17 45	3097.959	1561.488	121.178	3085.586	119.728
17 46	3100.868	1562.978	121.408	3088.460	119.952
17 47	3103.777	1564.468	121.638	3091.334	120.177
17 48	3106.686	1565.958	121.868	3094.208	120.402
17 49	3109.595	1567.448	122.099	3097.081	120.627
17 50	3112.504	1568.939	122.330	3099.955	120.852
17 51	3115.413	1570.429	122.561	3102.829	121.078
17 52	3118.322	1571.919	122.792	3105.703	121.304
17 53	3121.231	1573.410	123.024	3108.576	121.530
17 54	3124.139	1574.900	123.256	3111.450	121.756
17 55	3127.048	1576.391	123.487	3114.323	121.982
17 56	3129.957	1577.881	123.720	3117.196	122.209
17 57	3132.866	1579.372	123.952	3120.070	122.435
17 58	3135.775	1580.863	124.185	3122.943	122.662
17 59	3138.684	1582.354	124.418	3125.816	122.890
18 00	3141.593	1583.844	124.651	3128.689	123.117

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
18 01	3144.502	1585.335	124.884	3131.562	123.345
18 02	3147.410	1586.826	125.118	3134.435	123.573
18 03	3150.319	1588.317	125.351	3137.308	123.801
18 04	3153.228	1589.809	125.586	3140.181	124.029
18 05	3156.137	1591.300	125.820	3143.054	124.257
18 06	3159.046	1592.791	126.054	3145.926	124.486
18 07	3161.955	1594.282	126.289	3148.799	124.715
18 08	3164.864	1595.774	126.524	3151.672	124.944
18 09	3167.773	1597.266	126.759	3154.544	125.173
18 10	3170.682	1598.757	126.994	3157.416	125.403
18 11	3173.590	1600.249	127.230	3160.289	125.632
18 12	3176.499	1601.740	127.466	3163.161	125.862
18 13	3179.408	1603.232	127.702	3166.033	126.093
18 14	3182.317	1604.724	127.938	3168.906	126.323
18 15	3185.226	1606.216	128.175	3171.778	126.553
18 16	3188.135	1607.708	128.411	3174.650	126.784
18 17	3191.044	1609.200	128.648	3177.522	127.015
18 18	3193.953	1610.692	128.885	3180.394	127.246
18 19	3196.861	1612.184	129.123	3183.265	127.478
18 20	3199.770	1613.677	129.360	3186.137	127.709
18 21	3202.679	1615.169	129.598	3189.009	127.941
18 22	3205.588	1616.661	129.836	3191.881	128.173
18 23	3208.497	1618.154	130.075	3194.752	128.405
18 24	3211.406	1619.647	130.313	3197.624	128.638
18 25	3214.315	1621.139	130.552	3200.495	128.870
18 26	3217.224	1622.632	130.791	3203.366	129.103
18 27	3220.133	1624.125	131.030	3206.238	129.336
18 28	3223.041	1625.617	131.270	3209.109	129.570
18 29	3225.950	1627.110	131.509	3211.980	129.803
18 30	3228.859	1628.603	131.749	3214.851	130.037
18 31	3231.768	1630.096	131.989	3217.722	130.271
18 32	3234.677	1631.589	132.230	3220.593	130.505
18 33	3237.586	1633.083	132.470	3223.464	130.739
18 34	3240.495	1634.576	132.711	3226.335	130.974
18 35	3243.404	1636.069	132.952	3229.205	131.208
18 36	3246.312	1637.563	133.193	3232.076	131.443
18 37	3249.221	1639.056	133.435	3234.947	131.678
18 38	3252.130	1640.550	133.676	3237.818	131.914
18 39	3255.039	1642.043	133.918	3240.688	132.149
18 40	3257.948	1643.537	134.160	3243.558	132.385
18 41	3260.857	1645.031	134.403	3246.429	132.621
18 42	3263.766	1646.525	134.645	3249.299	132.857
18 43	3266.675	1648.019	134.888	3252.169	133.094
18 44	3269.584	1649.513	135.131	3255.039	133.330
18 45	3272.492	1651.007	135.374	3257.909	133.567

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
18 46	3275.401	1652.501	135.618	3260.779	133.804
18 47	3278.310	1653.995	135.862	3263.649	134.041
18 48	3281.219	1655.489	136.106	3266.519	134.279
18 49	3284.128	1656.983	136.350	3269.389	134.517
18 50	3287.037	1658.478	136.594	3272.259	134.754
18 51	3289.946	1659.972	136.839	3275.128	134.992
18 52	3292.855	1661.467	137.084	3277.998	135.231
18 53	3295.763	1662.962	137.329	3280.867	135.469
18 54	3298.672	1664.456	137.574	3283.737	135.708
18 55	3301.581	1665.951	137.820	3286.606	135.947
18 56	3304.490	1667.446	138.065	3289.475	136.186
18 57	3307.399	1668.941	138.311	3292.345	136.425
18 58	3310.308	1670.436	138.557	3295.214	136.665
18 59	3313.217	1671.931	138.804	3298.083	136.905
19 00	3316.126	1673.426	139.051	3300.952	137.144
19 01	3319.034	1674.921	139.297	3303.821	137.385
19 02	3321.943	1676.416	139.544	3306.690	137.625
19 03	3324.852	1677.912	139.792	3309.559	137.866
19 04	3327.761	1679.407	140.039	3312.427	138.106
19 05	3330.670	1680.903	140.287	3315.296	138.347
19 06	3333.579	1682.398	140.535	3318.165	138.589
19 07	3336.488	1683.894	140.783	3321.033	138.830
19 08	3339.397	1685.390	141.032	3323.902	139.072
19 09	3342.306	1686.885	141.281	3326.770	139.313
19 10	3345.214	1688.381	141.530	3329.638	139.555
19 11	3348.123	1689.877	141.779	3332.507	139.798
19 12	3351.032	1691.373	142.028	3335.375	140.040
19 13	3353.941	1692.869	142.278	3338.243	140.283
19 14	3356.850	1694.366	142.528	3341.111	140.526
19 15	3359.759	1695.862	142.778	3343.979	140.769
19 16	3362.668	1697.358	143.028	3346.847	141.012
19 17	3365.577	1698.854	143.278	3349.714	141.255
19 18	3368.485	1700.351	143.529	3352.582	141.499
19 19	3371.394	1701.847	143.780	3355.450	141.743
19 20	3374.303	1703.344	144.031	3358.318	141.987
19 21	3377.212	1704.841	144.283	3361.185	142.232
19 22	3380.121	1706.338	144.534	3364.053	142.476
19 23	3383.030	1707.834	144.786	3366.920	142.721
19 24	3385.939	1709.331	145.038	3369.787	142.966
19 25	3388.848	1710.828	145.291	3372.655	143.211
19 26	3391.757	1712.325	145.543	3375.522	143.456
19 27	3394.665	1713.822	145.796	3378.389	143.702
19 28	3397.574	1715.320	146.049	3381.256	143.948
19 29	3400.483	1716.817	146.302	3384.123	144.194
19 30	3403.392	1718.314	146.556	3386.990	144.440

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
19 31	3406.301	1719.812	146.809	3389.857	144.686
19 32	3409.210	1721.309	147.063	3392.724	144.933
19 33	3412.119	1722.807	147.318	3395.590	145.180
19 34	3415.028	1724.304	147.572	3398.457	145.427
19 35	3417.936	1725.802	147.827	3401.323	145.674
19 36	3420.845	1727.300	148.081	3404.190	145.921
19 37	3423.754	1728.798	148.336	3407.056	146.169
19 38	3426.663	1730.296	148.592	3409.922	146.417
19 39	3429.572	1731.794	148.847	3412.789	146.665
19 40	3432.481	1733.292	149.103	3415.655	146.913
19 41	3435.390	1734.790	149.359	3418.521	147.162
19 42	3438.299	1736.288	149.615	3421.387	147.411
19 43	3441.208	1737.786	149.872	3424.253	147.660
19 44	3444.116	1739.285	150.128	3427.119	147.909
19 45	3447.025	1740.783	150.385	3429.985	148.158
19 46	3449.934	1742.282	150.642	3432.850	148.408
19 47	3452.843	1743.781	150.900	3435.716	148.657
19 48	3455.752	1745.279	151.157	3438.582	148.907
19 49	3458.661	1746.778	151.415	3441.447	149.157
19 50	3461.570	1748.277	151.673	3444.313	149.408
19 51	3464.479	1749.776	151.931	3447.178	149.658
19 52	3467.387	1751.275	152.190	3450.044	149.909
19 53	3470.296	1752.774	152.448	3452.909	150.160
19 54	3473.205	1754.273	152.707	3455.774	150.411
19 55	3476.114	1755.772	152.966	3458.639	150.663
19 56	3479.023	1757.272	153.226	3461.504	150.914
19 57	3481.932	1758.771	153.485	3464.369	151.166
19 58	3484.841	1760.271	153.745	3467.234	151.418
19 59	3487.750	1761.770	154.005	3470.099	151.671
20 00	3490.659	1763.270	154.266	3472.964	151.923
20 01	3493.567	1764.770	154.526	3475.828	152.176
20 02	3496.476	1766.269	154.787	3478.693	152.428
20 03	3499.385	1767.769	155.048	3481.557	152.682
20 04	3502.294	1769.269	155.309	3484.422	152.935
20 05	3505.203	1770.769	155.571	3487.286	153.188
20 06	3508.112	1772.269	155.832	3490.150	153.442
20 07	3511.021	1773.769	156.094	3493.014	153.696
20 08	3513.930	1775.270	156.356	3495.879	153.950
20 09	3516.839	1776.770	156.619	3498.743	154.204
20 10	3519.747	1778.270	156.881	3501.607	154.459
20 11	3522.656	1779.771	157.144	3504.471	154.714
20 12	3525.565	1781.271	157.407	3507.334	154.969
20 13	3528.474	1782.772	157.670	3510.198	155.224
20 14	3531.383	1784.273	157.934	3513.062	155.479
20 15	3534.292	1785.773	158.198	3515.926	155.735

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
20 16	3537.201	1787.274	158.461	3518.789	155.991
20 17	3540.110	1788.775	158.726	3521.652	156.247
20 18	3543.018	1790.276	158.990	3524.516	156.503
20 19	3545.927	1791.777	159.255	3527.379	156.759
20 20	3548.836	1793.279	159.520	3530.243	157.016
20 21	3551.745	1794.780	159.785	3533.106	157.273
20 22	3554.654	1796.281	160.050	3535.969	157.530
20 23	3557.563	1797.782	160.316	3538.832	157.787
20 24	3560.472	1799.284	160.581	3541.695	158.044
20 25	3563.381	1800.786	160.847	3544.558	158.302
20 26	3566.290	1802.287	161.114	3547.420	158.560
20 27	3569.198	1803.789	161.380	3550.283	158.818
20 28	3572.107	1805.291	161.647	3553.146	159.076
20 29	3575.016	1806.793	161.914	3556.008	159.335
20 30	3577.925	1808.295	162.181	3558.871	159.594
20 31	3580.834	1809.797	162.448	3561.733	159.852
20 32	3583.743	1811.299	162.716	3564.596	160.112
20 33	3586.652	1812.801	162.984	3567.458	160.371
20 34	3589.561	1814.303	163.252	3570.320	160.630
20 35	3592.469	1815.806	163.520	3573.182	160.890
20 36	3595.378	1817.308	163.789	3576.044	161.150
20 37	3598.287	1818.810	164.057	3578.906	161.410
20 38	3601.196	1820.313	164.326	3581.768	161.671
20 39	3604.105	1821.816	164.596	3584.630	161.931
20 40	3607.014	1823.318	164.865	3587.492	162.192
20 41	3609.923	1824.821	165.135	3590.353	162.453
20 42	3612.832	1826.324	165.405	3593.215	162.714
20 43	3615.741	1827.827	165.675	3596.076	162.976
20 44	3618.649	1829.330	165.945	3598.938	163.237
20 45	3621.558	1830.833	166.216	3601.799	163.499
20 46	3624.467	1832.337	166.487	3604.660	163.761
20 47	3627.376	1833.840	166.758	3607.522	164.023
20 48	3630.285	1835.343	167.029	3610.383	164.286
20 49	3633.194	1836.847	167.300	3613.244	164.548
20 50	3636.103	1838.350	167.572	3616.105	164.811
20 51	3639.012	1839.854	167.844	3618.966	165.074
20 52	3641.920	1841.358	168.116	3621.827	165.338
20 53	3644.829	1842.862	168.389	3624.687	165.601
20 54	3647.738	1844.365	168.661	3627.548	165.865
20 55	3650.647	1845.869	168.934	3630.409	166.129
20 56	3653.556	1847.373	169.207	3633.269	166.393
20 57	3656.465	1848.878	169.481	3636.130	166.657
20 58	3659.374	1850.382	169.754	3638.990	166.922
20 59	3662.283	1851.886	170.028	3641.850	167.186
21 00	3665.192	1853.390	170.302	3644.710	167.451

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
21 01	3668.100	1854.895	170.576	3647.570	167.717
21 02	3671.009	1856.399	170.851	3650.431	167.982
21 03	3673.918	1857.904	171.126	3653.290	168.247
21 04	3676.827	1859.409	171.401	3656.151	168.513
21 05	3679.736	1860.913	171.676	3659.010	168.779
21 06	3682.645	1862.418	171.951	3661.870	169.045
21 07	3685.554	1863.923	172.227	3664.730	169.312
21 08	3688.463	1865.428	172.503	3667.589	169.578
21 09	3691.371	1866.933	172.779	3670.449	169.845
21 10	3694.280	1868.438	173.055	3673.308	170.112
21 11	3697.189	1869.944	173.332	3676.168	170.380
21 12	3700.098	1871.449	173.609	3679.027	170.647
21 13	3703.007	1872.954	173.886	3681.886	170.915
21 14	3705.916	1874.460	174.163	3684.745	171.183
21 15	3708.825	1875.966	174.440	3687.604	171.451
21 16	3711.734	1877.471	174.718	3690.463	171.719
21 17	3714.642	1878.977	174.996	3693.322	171.987
21 18	3717.551	1880.483	175.274	3696.181	172.256
21 19	3720.460	1881.989	175.553	3699.040	172.525
21 20	3723.369	1883.495	175.831	3701.898	172.794
21 21	3726.278	1885.001	176.110	3704.757	173.063
21 22	3729.187	1886.507	176.389	3707.615	173.333
21 23	3732.096	1888.013	176.669	3710.474	173.603
21 24	3735.005	1889.520	176.948	3713.332	173.873
21 25	3737.914	1891.026	177.228	3716.190	174.143
21 26	3740.822	1892.532	177.508	3719.049	174.413
21 27	3743.731	1894.039	177.788	3721.907	174.684
21 28	3746.640	1895.546	178.069	3724.765	174.954
21 29	3749.549	1897.052	178.350	3727.623	175.225
21 30	3752.458	1898.559	178.631	3730.481	175.497
21 31	3755.367	1900.066	178.912	3733.338	175.768
21 32	3758.276	1901.573	179.193	3736.196	176.039
21 33	3761.185	1903.080	179.475	3739.054	176.311
21 34	3764.093	1904.587	179.757	3741.911	176.583
21 35	3767.002	1906.095	180.039	3744.769	176.856
21 36	3769.911	1907.602	180.321	3747.626	177.128
21 37	3772.820	1909.109	180.604	3750.483	177.401
21 38	3775.729	1910.617	180.886	3753.341	177.673
21 39	3778.638	1912.124	181.169	3756.198	177.947
21 40	3781.547	1913.632	181.453	3759.055	178.220
21 41	3784.456	1915.140	181.736	3761.912	178.493
21 42	3787.365	1916.648	182.020	3764.769	178.767
21 43	3790.273	1918.156	182.304	3767.626	179.041
21 44	3793.182	1919.664	182.588	3770.482	179.315
21 45	3796.091	1921.172	182.872	3773.339	179.589

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
21 46	3799.000	1922.680	183.157	3776.196	179.864
21 47	3801.909	1924.188	183.442	3779.052	180.138
21 48	3804.818	1925.696	183.727	3781.909	180.413
21 49	3807.727	1927.205	184.012	3784.765	180.688
21 50	3810.636	1928.713	184.298	3787.621	180.964
21 51	3813.544	1930.222	184.584	3790.478	181.239
21 52	3816.453	1931.731	184.870	3793.334	181.515
21 53	3819.362	1933.239	185.156	3796.190	181.791
21 54	3822.271	1934.748	185.443	3799.046	182.067
21 55	3825.180	1936.257	185.729	3801.902	182.344
21 56	3828.089	1937.766	186.016	3804.757	182.620
21 57	3830.998	1939.275	186.304	3807.613	182.897
21 58	3833.907	1940.784	186.591	3810.469	183.174
21 59	3836.816	1942.294	186.879	3813.324	183.451
22 00	3839.724	1943.803	187.166	3816.180	183.729
22 01	3842.633	1945.312	187.455	3819.035	184.006
22 02	3845.542	1946.822	187.743	3821.890	184.284
22 03	3848.451	1948.332	188.032	3824.746	184.562
22 04	3851.360	1949.841	188.320	3827.601	184.840
22 05	3854.269	1951.351	188.609	3830.456	185.119
22 06	3857.178	1952.861	188.899	3833.311	185.398
22 07	3860.087	1954.371	189.188	3836.166	185.676
22 08	3862.995	1955.881	189.478	3839.021	185.955
22 09	3865.904	1957.391	189.768	3841.875	186.235
22 10	3868.813	1958.901	190.058	3844.730	186.514
22 11	3871.722	1960.412	190.349	3847.585	186.794
22 12	3874.631	1961.922	190.639	3850.439	187.074
22 13	3877.540	1963.432	190.930	3853.294	187.354
22 14	3880.449	1964.943	191.221	3856.148	187.634
22 15	3883.358	1966.454	191.513	3859.002	187.915
22 16	3886.267	1967.964	191.804	3861.856	188.196
22 17	3889.175	1969.475	192.096	3864.710	188.476
22 18	3892.084	1970.986	192.388	3867.565	188.758
22 19	3894.993	1972.497	192.680	3870.418	189.039
22 20	3897.902	1974.008	192.973	3873.272	189.321
22 21	3900.811	1975.519	193.266	3876.126	189.602
22 22	3903.720	1977.031	193.559	3878.980	189.884
22 23	3906.629	1978.542	193.852	3881.833	190.167
22 24	3909.538	1980.053	194.145	3884.687	190.449
22 25	3912.446	1981.565	194.439	3887.540	190.732
22 26	3915.355	1983.076	194.733	3890.394	191.014
22 27	3918.264	1984.588	195.027	3893.247	191.297
22 28	3921.173	1986.100	195.322	3896.100	191.581
22 29	3924.082	1987.612	195.616	3898.953	191.864
22 30	3926.991	1989.124	195.911	3901.806	192.148

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
22 31	3929.900	1990.636	196.206	3904.659	192.432
22 32	3932.809	1992.148	196.501	3907.512	192.716
22 33	3935.718	1993.660	196.797	3910.365	193.000
22 34	3938.626	1995.172	197.093	3913.217	193.284
22 35	3941.535	1996.685	197.389	3916.070	193.569
22 36	3944.444	1998.197	197.685	3918.923	193.854
22 37	3947.353	1999.710	197.982	3921.775	194.139
22 38	3950.262	2001.222	198.278	3924.628	194.424
22 39	3953.171	2002.735	198.575	3927.480	194.710
22 40	3956.080	2004.248	198.873	3930.332	194.996
22 41	3958.989	2005.761	199.170	3933.184	195.281
22 42	3961.897	2007.274	199.468	3936.036	195.568
22 43	3964.806	2008.787	199.765	3938.888	195.854
22 44	3967.715	2010.300	200.064	3941.740	196.140
22 45	3970.624	2011.813	200.362	3944.592	196.427
22 46	3973.533	2013.327	200.660	3947.443	196.714
22 47	3976.442	2014.840	200.959	3950.295	197.001
22 48	3979.351	2016.354	201.258	3953.147	197.289
22 49	3982.260	2017.867	201.558	3955.998	197.576
22 50	3985.169	2019.381	201.857	3958.849	197.864
22 51	3988.077	2020.895	202.157	3961.701	198.152
22 52	3990.986	2022.409	202.457	3964.552	198.440
22 53	3993.895	2023.923	202.757	3967.403	198.729
22 54	3996.804	2025.437	203.058	3970.254	199.017
22 55	3999.713	2026.951	203.358	3973.105	199.306
22 56	4002.622	2028.465	203.659	3975.956	199.595
22 57	4005.531	2029.979	203.960	3978.807	199.884
22 58	4008.440	2031.494	204.262	3981.657	200.174
22 59	4011.348	2033.008	204.563	3984.508	200.464
23 00	4014.257	2034.523	204.865	3987.359	200.753
23 01	4017.166	2036.038	205.167	3990.209	201.043
23 02	4020.075	2037.552	205.470	3993.059	201.334
23 03	4022.984	2039.067	205.772	3995.910	201.624
23 04	4025.893	2040.582	206.075	3998.760	201.915
23 05	4028.802	2042.097	206.378	4001.610	202.206
23 06	4031.711	2043.612	206.681	4004.460	202.497
23 07	4034.619	2045.128	206.985	4007.310	202.788
23 08	4037.528	2046.643	207.289	4010.160	203.080
23 09	4040.437	2048.158	207.592	4013.010	203.372
23 10	4043.346	2049.674	207.897	4015.859	203.663
23 11	4046.255	2051.189	208.201	4018.709	203.956
23 12	4049.164	2052.705	208.506	4021.558	204.248
23 13	4052.073	2054.221	208.811	4024.408	204.541
23 14	4054.982	2055.737	209.116	4027.257	204.833
23 15	4057.891	2057.253	209.421	4030.106	205.126

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
23 16	4060.799	2058.769	209.727	4032.956	205.419
23 17	4063.708	2060.285	210.033	4035.805	205.713
23 18	4066.617	2061.801	210.339	4038.653	206.006
23 19	4069.526	2063.317	210.645	4041.502	206.300
23 20	4072.435	2064.834	210.951	4044.351	206.594
23 21	4075.344	2066.350	211.258	4047.200	206.888
23 22	4078.253	2067.867	211.565	4050.049	207.183
23 23	4081.162	2069.384	211.872	4052.897	207.478
23 24	4084.070	2070.900	212.180	4055.746	207.772
23 25	4086.979	2072.417	212.488	4058.594	208.067
23 26	4089.888	2073.934	212.796	4061.443	208.363
23 27	4092.797	2075.451	213.104	4064.291	208.658
23 28	4095.706	2076.968	213.412	4067.139	208.954
23 29	4098.615	2078.486	213.721	4069.987	209.250
23 30	4101.524	2080.003	214.030	4072.835	209.546
23 31	4104.433	2081.520	214.339	4075.683	209.842
23 32	4107.342	2083.038	214.648	4078.530	210.139
23 33	4110.250	2084.556	214.958	4081.378	210.435
23 34	4113.159	2086.073	215.268	4084.226	210.732
23 35	4116.068	2087.591	215.578	4087.073	211.029
23 36	4118.977	2089.109	215.888	4089.921	211.327
23 37	4121.886	2090.627	216.198	4092.768	211.624
23 38	4124.795	2092.145	216.509	4095.616	211.922
23 39	4127.704	2093.663	216.820	4098.463	212.220
23 40	4130.613	2095.181	217.131	4101.310	212.518
23 41	4133.521	2096.699	217.443	4104.157	212.816
23 42	4136.430	2098.218	217.755	4107.004	213.115
23 43	4139.339	2099.736	218.067	4109.851	213.414
23 44	4142.248	2101.255	218.379	4112.697	213.713
23 45	4145.157	2102.774	218.691	4115.544	214.012
23 46	4148.066	2104.293	219.004	4118.391	214.311
23 47	4150.975	2105.811	219.317	4121.237	214.611
23 48	4153.884	2107.330	219.630	4124.084	214.911
23 49	4156.793	2108.849	219.943	4126.930	215.211
23 50	4159.701	2110.369	220.257	4129.776	215.511
23 51	4162.610	2111.888	220.570	4132.622	215.811
23 52	4165.519	2113.407	220.885	4135.468	216.112
23 53	4168.428	2114.927	221.199	4138.314	216.413
23 54	4171.337	2116.446	221.513	4141.160	216.714
23 55	4174.246	2117.966	221.828	4144.006	217.015
23 56	4177.155	2119.486	222.143	4146.852	217.317
23 57	4180.064	2121.005	222.458	4149.697	217.618
23 58	4182.972	2122.525	222.774	4152.543	217.920
23 59	4185.881	2124.045	223.090	4155.388	218.222
24 00	4188.790	2125.566	223.405	4158.234	218.524

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta		Length	Tangent	External	Long Chord	Middle Ordinate
Deg.	Min.					
24	01	4191.699	2127.086	223.722	4161.079	218.827
24	02	4194.608	2128.606	224.038	4163.924	219.130
24	03	4197.517	2130.126	224.355	4166.769	219.433
24	04	4200.426	2131.647	224.672	4169.614	219.736
24	05	4203.335	2133.168	224.989	4172.459	220.039
24	06	4206.244	2134.688	225.306	4175.304	220.343
24	07	4209.152	2136.209	225.624	4178.149	220.646
24	08	4212.061	2137.730	225.941	4180.993	220.950
24	09	4214.970	2139.251	226.260	4183.838	221.254
24	10	4217.879	2140.772	226.578	4186.682	221.559
24	11	4220.788	2142.293	226.896	4189.527	221.863
24	12	4223.697	2143.814	227.215	4192.371	222.168
24	13	4226.606	2145.336	227.534	4195.215	222.473
24	14	4229.515	2146.857	227.853	4198.060	222.778
24	15	4232.424	2148.378	228.173	4200.903	223.084
24	16	4235.332	2149.900	228.493	4203.748	223.389
24	17	4238.241	2151.422	228.813	4206.591	223.695
24	18	4241.150	2152.944	229.133	4209.435	224.001
24	19	4244.059	2154.466	229.453	4212.279	224.307
24	20	4246.968	2155.988	229.774	4215.122	224.614
24	21	4249.877	2157.510	230.095	4217.966	224.920
24	22	4252.786	2159.032	230.416	4220.809	225.227
24	23	4255.695	2160.554	230.737	4223.653	225.534
24	24	4258.603	2162.076	231.059	4226.496	225.842
24	25	4261.512	2163.599	231.381	4229.339	226.149
24	26	4264.421	2165.122	231.703	4232.182	226.457
24	27	4267.330	2166.644	232.025	4235.025	226.765
24	28	4270.239	2168.167	232.348	4237.868	227.073
24	29	4273.148	2169.690	232.670	4240.711	227.381
24	30	4276.057	2171.213	232.994	4243.553	227.689
24	31	4278.966	2172.736	233.317	4246.396	227.998
24	32	4281.875	2174.259	233.640	4249.238	228.307
24	33	4284.783	2175.782	233.964	4252.081	228.616
24	34	4287.692	2177.306	234.288	4254.923	228.925
24	35	4290.601	2178.829	234.612	4257.765	229.235
24	36	4293.510	2180.353	234.937	4260.608	229.545
24	37	4296.419	2181.876	235.261	4263.450	229.855
24	38	4299.328	2183.400	235.586	4266.292	230.165
24	39	4302.237	2184.924	235.911	4269.134	230.475
24	40	4305.146	2186.448	236.237	4271.975	230.786
24	41	4308.054	2187.972	236.562	4274.817	231.097
24	42	4310.963	2189.496	236.888	4277.659	231.408
24	43	4313.872	2191.020	237.214	4280.500	231.719
24	44	4316.781	2192.544	237.541	4283.342	232.030
24	45	4319.690	2194.069	237.867	4286.183	232.342

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
24 46	4322.599	2195.593	238.194	4289.024	232.653
24 47	4325.508	2197.118	238.521	4291.865	232.965
24 48	4328.417	2198.643	238.849	4294.706	233.278
24 49	4331.326	2200.167	239.176	4297.547	233.590
24 50	4334.234	2201.692	239.504	4300.388	233.903
24 51	4337.143	2203.217	239.832	4303.229	234.216
24 52	4340.052	2204.742	240.160	4306.070	234.529
24 53	4342.961	2206.267	240.489	4308.910	234.842
24 54	4345.870	2207.793	240.817	4311.751	235.155
24 55	4348.779	2209.318	241.146	4314.591	235.469
24 56	4351.688	2210.844	241.475	4317.432	235.783
24 57	4354.597	2212.369	241.805	4320.272	236.097
24 58	4357.505	2213.895	242.135	4323.112	236.411
24 59	4360.414	2215.421	242.465	4325.952	236.726
25 00	4363.323	2216.947	242.795	4328.792	237.040
25 01	4366.232	2218.473	243.125	4331.632	237.355
25 02	4369.141	2219.999	243.456	4334.472	237.670
25 03	4372.050	2221.525	243.787	4337.312	237.986
25 04	4374.959	2223.051	244.118	4340.151	238.301
25 05	4377.868	2224.577	244.449	4342.991	238.617
25 06	4380.776	2226.104	244.781	4345.830	238.933
25 07	4383.685	2227.630	245.112	4348.669	239.249
25 08	4386.594	2229.157	245.445	4351.509	239.565
25 09	4389.503	2230.684	245.777	4354.348	239.882
25 10	4392.412	2232.211	246.109	4357.187	240.199
25 11	4395.321	2233.738	246.442	4360.026	240.516
25 12	4398.230	2235.265	246.775	4362.865	240.833
25 13	4401.139	2236.792	247.108	4365.704	241.150
25 14	4404.048	2238.319	247.442	4368.542	241.468
25 15	4406.956	2239.847	247.776	4371.381	241.786
25 16	4409.865	2241.374	248.110	4374.219	242.104
25 17	4412.774	2242.902	248.444	4377.058	242.422
25 18	4415.683	2244.429	248.778	4379.896	242.740
25 19	4418.592	2245.957	249.113	4382.734	243.059
25 20	4421.501	2247.485	249.448	4385.572	243.378
25 21	4424.410	2249.013	249.783	4388.410	243.697
25 22	4427.319	2250.541	250.118	4391.248	244.016
25 23	4430.227	2252.069	250.454	4394.086	244.335
25 24	4433.136	2253.597	250.790	4396.924	244.655
25 25	4436.045	2255.126	251.126	4399.762	244.975
25 26	4438.954	2256.654	251.462	4402.599	245.295
25 27	4441.863	2258.183	251.799	4405.437	245.615
25 28	4444.772	2259.711	252.136	4408.274	245.936
25 29	4447.681	2261.240	252.473	4411.111	246.256
25 30	4450.590	2262.769	252.810	4413.949	246.577

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
25	31	4453.499	2264.298	253.148	4416.786	246.898
25	32	4456.407	2265.827	253.485	4419.623	247.220
25	33	4459.316	2267.356	253.823	4422.460	247.541
25	34	4462.225	2268.885	254.162	4425.296	247.863
25	35	4465.134	2270.415	254.500	4428.133	248.185
25	36	4468.043	2271.944	254.839	4430.970	248.507
25	37	4470.952	2273.474	255.178	4433.806	248.829
25	38	4473.861	2275.003	255.517	4436.643	249.152
25	39	4476.770	2276.533	255.857	4439.479	249.475
25	40	4479.678	2278.063	256.196	4442.315	249.798
25	41	4482.587	2279.593	256.536	4445.152	250.121
25	42	4485.496	2281.123	256.876	4447.988	250.444
25	43	4488.405	2282.653	257.217	4450.824	250.768
25	44	4491.314	2284.184	257.557	4453.660	251.091
25	45	4494.223	2285.714	257.898	4456.495	251.415
25	46	4497.132	2287.244	258.240	4459.331	251.740
25	47	4500.041	2288.775	258.581	4462.167	252.064
25	48	4502.950	2290.306	258.923	4465.002	252.389
25	49	4505.858	2291.836	259.264	4467.838	252.713
25	50	4508.767	2293.367	259.606	4470.673	253.038
25	51	4511.676	2294.898	259.949	4473.508	253.364
25	52	4514.585	2296.429	260.291	4476.343	253.689
25	53	4517.494	2297.961	260.634	4479.178	254.015
25	54	4520.403	2299.492	260.977	4482.013	254.340
25	55	4523.312	2301.023	261.321	4484.848	254.667
25	56	4526.221	2302.555	261.664	4487.683	254.993
25	57	4529.129	2304.086	262.008	4490.518	255.319
25	58	4532.038	2305.618	262.352	4493.352	255.646
25	59	4534.947	2307.150	262.696	4496.187	255.973
26	00	4537.856	2308.682	263.041	4499.021	256.300
26	01	4540.765	2310.214	263.385	4501.855	256.627
26	02	4543.674	2311.746	263.730	4504.689	256.955
26	03	4546.583	2313.278	264.075	4507.523	257.282
26	04	4549.492	2314.811	264.421	4510.358	257.610
26	05	4552.401	2316.343	264.767	4513.191	257.938
26	06	4555.309	2317.875	265.113	4516.025	258.267
26	07	4558.218	2319.408	265.459	4518.859	258.595
26	08	4561.127	2320.941	265.805	4521.692	258.924
26	09	4564.036	2322.474	266.152	4524.526	259.253
26	10	4566.945	2324.007	266.499	4527.359	259.582
26	11	4569.854	2325.540	266.846	4530.193	259.911
26	12	4572.763	2327.073	267.193	4533.026	260.241
26	13	4575.672	2328.606	267.541	4535.859	260.571
26	14	4578.580	2330.139	267.889	4538.692	260.901
26	15	4581.489	2331.673	268.237	4541.525	261.231

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta		Length	Tangent	External	Long Chord	Middle Ordinate
Deg.	Min.					
26	16	4584.398	2333.206	268.585	4544.358	261.561
26	17	4587.307	2334.740	268.934	4547.191	261.892
26	18	4590.216	2336.274	269.283	4550.023	262.222
26	19	4593.125	2337.808	269.632	4552.856	262.553
26	20	4596.034	2339.342	269.981	4555.688	262.885
26	21	4598.943	2340.876	270.331	4558.521	263.216
26	22	4601.852	2342.410	270.680	4561.353	263.548
26	23	4604.760	2343.944	271.030	4564.185	263.879
26	24	4607.669	2345.479	271.381	4567.017	264.211
26	25	4610.578	2347.013	271.731	4569.849	264.544
26	26	4613.487	2348.548	272.082	4572.681	264.876
26	27	4616.396	2350.083	272.433	4575.513	265.209
26	28	4619.305	2351.617	272.784	4578.344	265.542
26	29	4622.214	2353.152	273.136	4581.176	265.875
26	30	4625.123	2354.687	273.487	4584.008	266.208
26	31	4628.031	2356.223	273.839	4586.839	266.541
26	32	4630.940	2357.758	274.192	4589.670	266.875
26	33	4633.849	2359.293	274.544	4592.502	267.209
26	34	4636.758	2360.828	274.897	4595.333	267.543
26	35	4639.667	2362.364	275.250	4598.164	267.877
26	36	4642.576	2363.900	275.603	4600.995	268.212
26	37	4645.485	2365.436	275.956	4603.825	268.546
26	38	4648.394	2366.971	276.310	4606.656	268.881
26	39	4651.303	2368.507	276.664	4609.487	269.216
26	40	4654.211	2370.043	277.018	4612.317	269.552
26	41	4657.120	2371.580	277.372	4615.148	269.887
26	42	4660.029	2373.116	277.727	4617.978	270.223
26	43	4662.938	2374.652	278.082	4620.808	270.559
26	44	4665.847	2376.189	278.437	4623.638	270.895
26	45	4668.756	2377.725	278.792	4626.468	271.231
26	46	4671.665	2379.262	279.148	4629.298	271.568
26	47	4674.574	2380.799	279.504	4632.128	271.905
26	48	4677.482	2382.336	279.860	4634.958	272.242
26	49	4680.391	2383.873	280.216	4637.788	272.579
26	50	4683.300	2385.410	280.573	4640.617	272.916
26	51	4686.209	2386.947	280.929	4643.447	273.254
26	52	4689.118	2388.485	281.286	4646.276	273.592
26	53	4692.027	2390.022	281.644	4649.105	273.930
26	54	4694.936	2391.560	282.001	4651.934	274.268
26	55	4697.845	2393.098	282.359	4654.763	274.606
26	56	4700.753	2394.635	282.717	4657.592	274.945
26	57	4703.662	2396.173	283.075	4660.421	275.284
26	58	4706.571	2397.711	283.434	4663.250	275.623
26	59	4709.480	2399.249	283.792	4666.079	275.962
27	00	4712.389	2400.788	284.151	4668.907	276.301

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
27 01	4715.298	2402.326	284.511	4671.736	276.641
27 02	4718.207	2403.864	284.870	4674.564	276.981
27 03	4721.116	2405.403	285.230	4677.392	277.321
27 04	4724.025	2406.941	285.590	4680.220	277.661
27 05	4726.934	2408.480	285.950	4683.048	278.002
27 06	4729.842	2410.019	286.310	4685.876	278.342
27 07	4732.751	2411.558	286.671	4688.704	278.683
27 08	4735.660	2413.097	287.032	4691.532	279.024
27 09	4738.569	2414.636	287.393	4694.360	279.365
27 10	4741.478	2416.176	287.755	4697.187	279.707
27 11	4744.387	2417.715	288.116	4700.015	280.049
27 12	4747.296	2419.255	288.478	4702.842	280.390
27 13	4750.205	2420.794	288.840	4705.669	280.733
27 14	4753.113	2422.334	289.203	4708.497	281.075
27 15	4756.022	2423.874	289.565	4711.324	281.417
27 16	4758.931	2425.414	289.928	4714.151	281.760
27 17	4761.840	2426.954	290.291	4716.978	282.103
27 18	4764.749	2428.494	290.655	4719.804	282.446
27 19	4767.658	2430.034	291.018	4722.631	282.790
27 20	4770.567	2431.575	291.382	4725.458	283.133
27 21	4773.476	2433.115	291.746	4728.284	283.477
27 22	4776.385	2434.656	292.111	4731.110	283.821
27 23	4779.293	2436.196	292.475	4733.937	284.165
27 24	4782.202	2437.737	292.840	4736.763	284.509
27 25	4785.111	2439.278	293.205	4739.589	284.854
27 26	4788.020	2440.819	293.570	4742.415	285.199
27 27	4790.929	2442.360	293.936	4745.241	285.544
27 28	4793.838	2443.901	294.302	4748.066	285.889
27 29	4796.747	2445.443	294.668	4750.892	286.234
27 30	4799.656	2446.984	295.034	4753.718	286.580
27 31	4802.564	2448.526	295.400	4756.543	286.926
27 32	4805.473	2450.068	295.767	4759.369	287.272
27 33	4808.382	2451.610	296.134	4762.194	287.618
27 34	4811.291	2453.151	296.501	4765.019	287.964
27 35	4814.200	2454.693	296.869	4767.844	288.311
27 36	4817.109	2456.236	297.237	4770.669	288.658
27 37	4820.018	2457.778	297.605	4773.494	289.005
27 38	4822.927	2459.320	297.973	4776.319	289.352
27 39	4825.836	2460.863	298.341	4779.143	289.699
27 40	4828.744	2462.405	298.710	4781.968	290.047
27 41	4831.653	2463.948	299.079	4784.792	290.395
27 42	4834.562	2465.491	299.448	4787.617	290.743
27 43	4837.471	2467.034	299.818	4790.441	291.091
27 44	4840.380	2468.577	300.187	4793.265	291.440
27 45	4843.289	2470.120	300.557	4796.089	291.788

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
27 46	4846.198	2471.663	300.928	4798.913	292.137
27 47	4849.107	2473.206	301.298	4801.737	292.486
27 48	4852.015	2474.750	301.669	4804.561	292.836
27 49	4854.924	2476.293	302.040	4807.384	293.185
27 50	4857.833	2477.837	302.411	4810.208	293.535
27 51	4860.742	2479.381	302.782	4813.031	293.885
27 52	4863.651	2480.925	303.154	4815.855	294.235
27 53	4866.560	2482.469	303.526	4818.678	294.585
27 54	4869.469	2484.013	303.898	4821.501	294.936
27 55	4872.378	2485.557	304.270	4824.324	295.286
27 56	4875.286	2487.102	304.643	4827.147	295.637
27 57	4878.195	2488.646	305.016	4829.970	295.989
27 58	4881.104	2490.191	305.389	4832.793	296.340
27 59	4884.013	2491.735	305.762	4835.615	296.691
28 00	4886.922	2493.280	306.136	4838.438	297.043
28 01	4889.831	2494.825	306.510	4841.260	297.395
28 02	4892.740	2496.370	306.884	4844.082	297.747
28 03	4895.649	2497.915	307.258	4846.905	298.100
28 04	4898.558	2499.460	307.633	4849.727	298.452
28 05	4901.466	2501.006	308.008	4852.549	298.805
28 06	4904.375	2502.551	308.383	4855.371	299.158
28 07	4907.284	2504.097	308.758	4858.193	299.511
28 08	4910.193	2505.642	309.134	4861.014	299.865
28 09	4913.102	2507.188	309.509	4863.836	300.218
28 10	4916.011	2508.734	309.885	4866.657	300.572
28 11	4918.920	2510.280	310.262	4869.479	300.926
28 12	4921.829	2511.826	310.638	4872.300	301.280
28 13	4924.737	2513.373	311.015	4875.121	301.635
28 14	4927.646	2514.919	311.392	4877.942	301.989
28 15	4930.555	2516.465	311.769	4880.763	302.344
28 16	4933.464	2518.012	312.147	4883.584	302.699
28 17	4936.373	2519.559	312.525	4886.405	303.055
28 18	4939.282	2521.106	312.903	4889.226	303.410
28 19	4942.191	2522.653	313.281	4892.046	303.766
28 20	4945.100	2524.200	313.660	4894.867	304.122
28 21	4948.009	2525.747	314.038	4897.687	304.478
28 22	4950.917	2527.294	314.417	4900.508	304.834
28 23	4953.826	2528.841	314.797	4903.328	305.190
28 24	4956.735	2530.389	315.176	4906.148	305.547
28 25	4959.644	2531.937	315.556	4908.968	305.904
28 26	4962.553	2533.484	315.936	4911.787	306.261
28 27	4965.462	2535.032	316.316	4914.607	306.618
28 28	4968.371	2536.580	316.697	4917.427	306.976
28 29	4971.280	2538.128	317.077	4920.246	307.333
28 30	4974.188	2539.676	317.458	4923.066	307.691

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
28	31	4977.097	2541.225	317.840	4925.885	308.050
28	32	4980.006	2542.773	318.221	4928.704	308.408
28	33	4982.915	2544.322	318.603	4931.523	308.766
28	34	4985.824	2545.870	318.985	4934.342	309.125
28	35	4988.733	2547.419	319.367	4937.161	309.484
28	36	4991.642	2548.968	319.749	4939.980	309.843
28	37	4994.551	2550.517	320.132	4942.799	310.203
28	38	4997.460	2552.066	320.515	4945.617	310.562
28	39	5000.368	2553.615	320.898	4948.436	310.922
28	40	5003.277	2555.165	321.282	4951.254	311.282
28	41	5006.186	2556.714	321.665	4954.073	311.642
28	42	5009.095	2558.264	322.049	4956.891	312.002
28	43	5012.004	2559.813	322.434	4959.709	312.363
28	44	5014.913	2561.363	322.818	4962.527	312.724
28	45	5017.822	2562.913	323.203	4965.345	313.085
28	46	5020.731	2564.463	323.588	4968.162	313.446
28	47	5023.639	2566.013	323.973	4970.980	313.807
28	48	5026.548	2567.564	324.358	4973.798	314.169
28	49	5029.457	2569.114	324.744	4976.615	314.531
28	50	5032.366	2570.664	325.130	4979.432	314.893
28	51	5035.275	2572.215	325.516	4982.250	315.255
28	52	5038.184	2573.766	325.902	4985.067	315.617
28	53	5041.093	2575.317	326.289	4987.884	315.980
28	54	5044.002	2576.868	326.676	4990.701	316.343
28	55	5046.911	2578.419	327.063	4993.517	316.706
28	56	5049.819	2579.970	327.451	4996.334	317.069
28	57	5052.728	2581.521	327.838	4999.151	317.433
28	58	5055.637	2583.073	328.226	5001.967	317.796
28	59	5058.546	2584.624	328.614	5004.784	318.160
29	00	5061.455	2586.176	329.003	5007.600	318.524
29	01	5064.364	2587.727	329.391	5010.416	318.888
29	02	5067.273	2589.279	329.780	5013.232	319.253
29	03	5070.182	2590.831	330.169	5016.048	319.617
29	04	5073.090	2592.384	330.559	5018.864	319.982
29	05	5075.999	2593.936	330.948	5021.680	320.347
29	06	5078.908	2595.488	331.338	5024.495	320.713
29	07	5081.817	2597.041	331.728	5027.311	321.078
29	08	5084.726	2598.593	332.119	5030.126	321.444
29	09	5087.635	2600.146	332.509	5032.942	321.810
29	10	5090.544	2601.699	332.900	5035.757	322.176
29	11	5093.453	2603.252	333.291	5038.572	322.542
29	12	5096.361	2604.805	333.683	5041.387	322.909
29	13	5099.270	2606.358	334.074	5044.202	323.275
29	14	5102.179	2607.911	334.466	5047.017	323.642
29	15	5105.088	2609.465	334.858	5049.831	324.010

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
29 16	5107.997	2611.018	335.251	5052.646	324.377
29 17	5110.906	2612.572	335.643	5055.460	324.744
29 18	5113.815	2614.126	336.036	5058.275	325.112
29 19	5116.724	2615.680	336.429	5061.089	325.480
29 20	5119.633	2617.234	336.823	5063.903	325.848
29 21	5122.541	2618.788	337.216	5066.717	326.217
29 22	5125.450	2620.342	337.610	5069.531	326.585
29 23	5128.359	2621.896	338.004	5072.345	326.954
29 24	5131.268	2623.451	338.399	5075.159	327.323
29 25	5134.177	2625.005	338.793	5077.972	327.692
29 26	5137.086	2626.560	339.188	5080.786	328.062
29 27	5139.995	2628.115	339.583	5083.599	328.431
29 28	5142.904	2629.670	339.978	5086.412	328.801
29 29	5145.812	2631.225	340.374	5089.226	329.171
29 30	5148.721	2632.780	340.770	5092.039	329.541
29 31	5151.630	2634.336	341.166	5094.852	329.912
29 32	5154.539	2635.891	341.562	5097.665	330.282
29 33	5157.448	2637.447	341.959	5100.477	330.653
29 34	5160.357	2639.002	342.356	5103.290	331.024
29 35	5163.266	2640.558	342.753	5106.103	331.395
29 36	5166.175	2642.114	343.150	5108.915	331.767
29 37	5169.084	2643.670	343.548	5111.727	332.138
29 38	5171.992	2645.226	343.946	5114.540	332.510
29 39	5174.901	2646.782	344.344	5117.352	332.882
29 40	5177.810	2648.339	344.742	5120.164	333.254
29 41	5180.719	2649.895	345.141	5122.976	333.627
29 42	5183.628	2651.452	345.540	5125.787	333.999
29 43	5186.537	2653.009	345.939	5128.599	334.372
29 44	5189.446	2654.566	346.338	5131.411	334.745
29 45	5192.355	2656.122	346.738	5134.222	335.119
29 46	5195.263	2657.680	347.137	5137.033	335.492
29 47	5198.172	2659.237	347.537	5139.845	335.866
29 48	5201.081	2660.794	347.938	5142.656	336.240
29 49	5203.990	2662.352	348.338	5145.467	336.614
29 50	5206.899	2663.909	348.739	5148.278	336.988
29 51	5209.808	2665.467	349.140	5151.088	337.363
29 52	5212.717	2667.025	349.542	5153.899	337.737
29 53	5215.626	2668.583	349.943	5156.710	338.112
29 54	5218.535	2670.141	350.345	5159.520	338.487
29 55	5221.443	2671.699	350.747	5162.331	338.863
29 56	5224.352	2673.257	351.150	5165.141	339.238
29 57	5227.261	2674.816	351.552	5167.951	339.614
29 58	5230.170	2676.374	351.955	5170.761	339.990
29 59	5233.079	2677.933	352.358	5173.571	340.366
30 00	5235.988	2679.492	352.761	5176.381	340.742

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
30 01	5238.897	2681.051	353.165	5179.190	341.119
30 02	5241.806	2682.610	353.569	5182.000	341.496
30 03	5244.715	2684.169	353.973	5184.810	341.872
30 04	5247.623	2685.728	354.377	5187.619	342.250
30 05	5250.532	2687.288	354.782	5190.428	342.627
30 06	5253.441	2688.847	355.187	5193.237	343.005
30 07	5256.350	2690.407	355.592	5196.047	343.382
30 08	5259.259	2691.967	355.997	5198.855	343.760
30 09	5262.168	2693.527	356.403	5201.664	344.138
30 10	5265.077	2695.087	356.809	5204.473	344.517
30 11	5267.986	2696.647	357.215	5207.282	344.895
30 12	5270.894	2698.207	357.621	5210.090	345.274
30 13	5273.803	2699.767	358.028	5212.898	345.653
30 14	5276.712	2701.328	358.434	5215.707	346.032
30 15	5279.621	2702.889	358.841	5218.515	346.412
30 16	5282.530	2704.449	359.249	5221.323	346.791
30 17	5285.439	2706.010	359.656	5224.131	347.171
30 18	5288.348	2707.571	360.064	5226.939	347.551
30 19	5291.257	2709.132	360.472	5229.747	347.931
30 20	5294.166	2710.694	360.881	5232.554	348.312
30 21	5297.074	2712.255	361.289	5235.362	348.692
30 22	5299.983	2713.816	361.698	5238.169	349.073
30 23	5302.892	2715.378	362.107	5240.976	349.454
30 24	5305.801	2716.940	362.517	5243.784	349.836
30 25	5308.710	2718.502	362.926	5246.591	350.217
30 26	5311.619	2720.064	363.336	5249.398	350.599
30 27	5314.528	2721.626	363.746	5252.204	350.980
30 28	5317.437	2723.188	364.157	5255.011	351.363
30 29	5320.345	2724.750	364.567	5257.818	351.745
30 30	5323.254	2726.313	364.978	5260.624	352.127
30 31	5326.163	2727.876	365.389	5263.431	352.510
30 32	5329.072	2729.438	365.801	5266.237	352.893
30 33	5331.981	2731.001	366.212	5269.043	353.276
30 34	5334.890	2732.564	366.624	5271.849	353.659
30 35	5337.799	2734.127	367.036	5274.655	354.043
30 36	5340.708	2735.690	367.449	5277.461	354.426
30 37	5343.617	2737.254	367.861	5280.267	354.810
30 38	5346.525	2738.817	368.274	5283.072	355.194
30 39	5349.434	2740.381	368.687	5285.878	355.579
30 40	5352.343	2741.945	369.101	5288.683	355.963
30 41	5355.252	2743.509	369.514	5291.489	356.348
30 42	5358.161	2745.072	369.928	5294.294	356.733
30 43	5361.070	2746.637	370.342	5297.099	357.118
30 44	5363.979	2748.201	370.757	5299.904	357.503
30 45	5366.888	2749.765	371.172	5302.708	357.889

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
30 46	5369.796	2751.330	371.586	5305.513	358.274
30 47	5372.705	2752.894	372.002	5308.318	358.660
30 48	5375.614	2754.459	372.417	5311.122	359.046
30 49	5378.523	2756.024	372.833	5313.927	359.433
30 50	5381.432	2757.589	373.249	5316.731	359.819
30 51	5384.341	2759.154	373.665	5319.535	360.206
30 52	5387.250	2760.719	374.081	5322.339	360.593
30 53	5390.159	2762.284	374.498	5325.143	360.980
30 54	5393.068	2763.850	374.915	5327.947	361.368
30 55	5395.976	2765.416	375.332	5330.751	361.755
30 56	5398.885	2766.981	375.749	5333.554	362.143
30 57	5401.794	2768.547	376.167	5336.358	362.531
30 58	5404.703	2770.113	376.585	5339.161	362.919
30 59	5407.612	2771.679	377.003	5341.964	363.307
31 00	5410.521	2773.245	377.422	5344.768	363.696
31 01	5413.430	2774.812	377.840	5347.570	364.085
31 02	5416.339	2776.378	378.259	5350.373	364.474
31 03	5419.247	2777.945	378.679	5353.176	364.863
31 04	5422.156	2779.512	379.098	5355.979	365.252
31 05	5425.065	2781.079	379.518	5358.782	365.642
31 06	5427.974	2782.646	379.938	5361.584	366.032
31 07	5430.883	2784.213	380.358	5364.386	366.422
31 08	5433.792	2785.780	380.778	5367.189	366.812
31 09	5436.701	2787.347	381.199	5369.991	367.202
31 10	5439.610	2788.915	381.620	5372.793	367.593
31 11	5442.519	2790.482	382.041	5375.595	367.984
31 12	5445.427	2792.050	382.463	5378.396	368.375
31 13	5448.336	2793.618	382.885	5381.198	368.766
31 14	5451.245	2795.186	383.307	5383.999	369.157
31 15	5454.154	2796.754	383.729	5386.801	369.549
31 16	5457.063	2798.322	384.151	5389.602	369.941
31 17	5459.972	2799.891	384.574	5392.403	370.333
31 18	5462.881	2801.459	384.997	5395.205	370.725
31 19	5465.790	2803.028	385.420	5398.006	371.118
31 20	5468.698	2804.597	385.844	5400.807	371.510
31 21	5471.607	2806.166	386.268	5403.607	371.903
31 22	5474.516	2807.735	386.692	5406.408	372.296
31 23	5477.425	2809.304	387.116	5409.208	372.690
31 24	5480.334	2810.873	387.541	5412.009	373.083
31 25	5483.243	2812.443	387.965	5414.809	373.477
31 26	5486.152	2814.012	388.390	5417.609	373.871
31 27	5489.061	2815.582	388.816	5420.409	374.265
31 28	5491.969	2817.152	389.241	5423.209	374.659
31 29	5494.878	2818.721	389.667	5426.009	375.053
31 30	5497.787	2820.292	390.093	5428.809	375.448

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
31 31	5500.696	2821.862	390.520	5431.608	375.843
31 32	5503.605	2823.432	390.946	5434.408	376.238
31 33	5506.514	2825.003	391.373	5437.207	376.633
31 34	5509.423	2826.573	391.800	5440.007	377.029
31 35	5512.332	2828.144	392.227	5442.806	377.425
31 36	5515.241	2829.715	392.655	5445.605	377.821
31 37	5518.149	2831.286	393.083	5448.404	378.217
31 38	5521.058	2832.857	393.511	5451.203	378.613
31 39	5523.967	2834.428	393.939	5454.001	379.010
31 40	5526.876	2835.999	394.368	5456.800	379.406
31 41	5529.785	2837.571	394.797	5459.598	379.803
31 42	5532.694	2839.143	395.226	5462.397	380.200
31 43	5535.603	2840.714	395.655	5465.195	380.598
31 44	5538.512	2842.286	396.085	5467.993	380.995
31 45	5541.420	2843.858	396.515	5470.791	381.393
31 46	5544.329	2845.430	396.945	5473.589	381.791
31 47	5547.238	2847.002	397.375	5476.387	382.189
31 48	5550.147	2848.575	397.806	5479.184	382.587
31 49	5553.056	2850.147	398.237	5481.982	382.986
31 50	5555.965	2851.720	398.668	5484.779	383.385
31 51	5558.874	2853.293	399.099	5487.576	383.784
31 52	5561.783	2854.866	399.531	5490.374	384.183
31 53	5564.692	2856.439	399.963	5493.171	384.582
31 54	5567.600	2858.012	400.395	5495.968	384.982
31 55	5570.509	2859.585	400.828	5498.765	385.382
31 56	5573.418	2861.159	401.260	5501.561	385.782
31 57	5576.327	2862.732	401.693	5504.358	386.182
31 58	5579.236	2864.306	402.127	5507.154	386.582
31 59	5582.145	2865.880	402.560	5509.951	386.983
32 00	5585.054	2867.454	402.994	5512.747	387.384
32 01	5587.963	2869.028	403.428	5515.543	387.785
32 02	5590.871	2870.602	403.862	5518.339	388.186
32 03	5593.780	2872.176	404.297	5521.135	388.587
32 04	5596.689	2873.751	404.731	5523.931	388.989
32 05	5599.598	2875.326	405.166	5526.727	389.391
32 06	5602.507	2876.900	405.602	5529.522	389.793
32 07	5605.416	2878.475	406.037	5532.318	390.195
32 08	5608.325	2880.050	406.473	5535.118	390.597
32 09	5611.234	2881.625	406.909	5537.908	391.000
32 10	5614.143	2883.201	407.345	5540.703	391.403
32 11	5617.051	2884.776	407.782	5543.498	391.806
32 12	5619.960	2886.352	408.219	5546.293	392.209
32 13	5622.869	2887.927	408.656	5549.088	392.612
32 14	5625.778	2889.503	409.093	5551.882	393.016
32 15	5628.687	2891.079	409.531	5554.677	393.420

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
32 16	5631.596	2892.655	409.969	5557.471	393.824
32 17	5634.505	2894.231	410.407	5560.265	394.228
32 18	5637.414	2895.808	410.845	5563.060	394.633
32 19	5640.322	2897.384	411.284	5565.854	395.037
32 20	5643.231	2898.961	411.722	5568.647	395.442
32 21	5646.140	2900.538	412.162	5571.441	395.847
32 22	5649.049	2902.114	412.601	5574.235	396.252
32 23	5651.958	2903.691	413.041	5577.029	396.658
32 24	5654.867	2905.269	413.481	5579.822	397.064
32 25	5657.776	2906.846	413.921	5582.615	397.469
32 26	5660.685	2908.423	414.361	5585.409	397.876
32 27	5663.594	2910.001	414.802	5588.202	398.282
32 28	5666.502	2911.578	415.243	5590.994	398.688
32 29	5669.411	2913.156	415.684	5593.787	399.095
32 30	5672.320	2914.734	416.125	5596.580	399.502
32 31	5675.229	2916.312	416.567	5599.373	399.909
32 32	5678.138	2917.890	417.009	5602.165	400.316
32 33	5681.047	2919.469	417.451	5604.958	400.724
32 34	5683.956	2921.047	417.894	5607.750	401.132
32 35	5686.865	2922.626	418.336	5610.542	401.539
32 36	5689.773	2924.205	418.779	5613.334	401.948
32 37	5692.682	2925.783	419.223	5616.126	402.356
32 38	5695.591	2927.363	419.666	5618.918	402.764
32 39	5698.500	2928.942	420.110	5621.709	403.173
32 40	5701.409	2930.521	420.554	5624.501	403.582
32 41	5704.318	2932.100	420.998	5627.292	403.991
32 42	5707.227	2933.680	421.443	5630.084	404.400
32 43	5710.136	2935.260	421.888	5632.875	404.810
32 44	5713.045	2936.839	422.333	5635.666	405.220
32 45	5715.953	2938.419	422.778	5638.457	405.630
32 46	5718.862	2939.999	423.223	5641.248	406.040
32 47	5721.771	2941.580	423.669	5644.038	406.450
32 48	5724.680	2943.160	424.115	5646.829	406.861
32 49	5727.589	2944.740	424.562	5649.619	407.271
32 50	5730.498	2946.321	425.008	5652.410	407.682
32 51	5733.407	2947.902	425.455	5655.200	408.094
32 52	5736.316	2949.483	425.902	5657.990	408.505
32 53	5739.224	2951.064	426.350	5660.780	408.917
32 54	5742.133	2952.645	426.797	5663.570	409.328
32 55	5745.042	2954.226	427.245	5666.360	409.740
32 56	5747.951	2955.808	427.693	5669.149	410.152
32 57	5750.860	2957.389	428.142	5671.939	410.565
32 58	5753.769	2958.971	428.591	5674.728	410.977
32 59	5756.678	2960.553	429.039	5677.518	411.390
33 00	5759.587	2962.135	429.489	5680.307	411.803

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
33 01	5762.495	2963.717	429.938	5683.096	412.216
33 02	5765.404	2965.299	430.388	5685.885	412.630
33 03	5768.313	2966.882	430.838	5688.674	413.043
33 04	5771.222	2968.464	431.288	5691.462	413.457
33 05	5774.131	2970.047	431.739	5694.251	413.871
33 06	5777.040	2971.630	432.189	5697.039	414.285
33 07	5779.949	2973.213	432.640	5699.827	414.700
33 08	5782.858	2974.796	433.092	5702.616	415.114
33 09	5785.767	2976.379	433.543	5705.404	415.529
33 10	5788.675	2977.962	433.995	5708.192	415.944
33 11	5791.584	2979.546	434.447	5710.980	416.359
33 12	5794.493	2981.129	434.899	5713.767	416.775
33 13	5797.402	2982.713	435.352	5716.555	417.190
33 14	5800.311	2984.297	435.805	5719.342	417.606
33 15	5803.220	2985.881	436.258	5722.130	418.022
33 16	5806.129	2987.465	436.711	5724.917	418.438
33 17	5809.038	2989.050	437.165	5727.704	418.855
33 18	5811.946	2990.634	437.619	5730.491	419.271
33 19	5814.855	2992.219	438.073	5733.278	419.688
33 20	5817.764	2993.803	438.527	5736.065	420.105
33 21	5820.673	2995.388	438.982	5738.851	420.523
33 22	5823.582	2996.973	439.437	5741.638	420.940
33 23	5826.491	2998.558	439.892	5744.424	421.358
33 24	5829.400	3000.144	440.347	5747.210	421.776
33 25	5832.309	3001.729	440.803	5749.996	422.194
33 26	5835.218	3003.315	441.259	5752.782	422.612
33 27	5838.126	3004.900	441.715	5755.568	423.030
33 28	5841.035	3006.486	442.172	5758.354	423.449
33 29	5843.944	3008.072	442.629	5761.140	423.868
33 30	5846.853	3009.658	443.085	5763.925	424.287
33 31	5849.762	3011.245	443.543	5766.711	424.706
33 32	5852.671	3012.831	444.000	5769.496	425.126
33 33	5855.580	3014.417	444.458	5772.281	425.545
33 34	5858.489	3016.004	444.916	5775.066	425.965
33 35	5861.397	3017.591	445.374	5777.851	426.385
33 36	5864.306	3019.178	445.833	5780.636	426.805
33 37	5867.215	3020.765	446.292	5783.421	427.226
33 38	5870.124	3022.352	446.751	5786.205	427.647
33 39	5873.033	3023.940	447.210	5788.990	428.068
33 40	5875.942	3025.527	447.670	5791.774	428.489
33 41	5878.851	3027.115	448.130	5794.558	428.910
33 42	5881.760	3028.703	448.590	5797.342	429.331
33 43	5884.669	3030.290	449.050	5800.126	429.753
33 44	5887.577	3031.879	449.511	5802.910	430.175
33 45	5890.486	3033.467	449.972	5805.693	430.597

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
33	46	5893.395	3035.055	450.433	5808.477	431.019
33	47	5896.304	3036.644	450.894	5811.260	431.442
33	48	5899.213	3038.232	451.356	5814.044	431.865
33	49	5902.122	3039.821	451.818	5816.827	432.288
33	50	5905.031	3041.410	452.280	5819.610	432.711
33	51	5907.940	3042.999	452.743	5822.393	433.134
33	52	5910.848	3044.588	453.206	5825.176	433.558
33	53	5913.757	3046.177	453.669	5827.958	433.981
33	54	5916.666	3047.767	454.132	5830.741	434.405
33	55	5919.575	3049.357	454.595	5833.524	434.829
33	56	5922.484	3050.946	455.059	5836.306	435.254
33	57	5925.393	3052.536	455.523	5839.088	435.678
33	58	5928.302	3054.126	455.988	5841.870	436.103
33	59	5931.211	3055.716	456.452	5844.652	436.528
34	00	5934.120	3057.307	456.917	5847.434	436.953
34	01	5937.028	3058.897	457.382	5850.216	437.378
34	02	5939.937	3060.488	457.848	5852.997	437.804
34	03	5942.846	3062.079	458.313	5855.779	438.230
34	04	5945.755	3063.669	458.779	5858.560	438.655
34	05	5948.664	3065.261	459.245	5861.341	439.082
34	06	5951.573	3066.852	459.712	5864.122	439.508
34	07	5954.482	3068.443	460.178	5866.903	439.935
34	08	5957.391	3070.035	460.645	5869.684	440.361
34	09	5960.300	3071.626	461.113	5872.465	440.788
34	10	5963.208	3073.218	461.580	5875.246	441.215
34	11	5966.117	3074.810	462.048	5878.026	441.643
34	12	5969.026	3076.402	462.516	5880.806	442.070
34	13	5971.935	3077.994	462.984	5883.587	442.498
34	14	5974.844	3079.586	463.453	5886.367	442.926
34	15	5977.753	3081.179	463.921	5889.147	443.354
34	16	5980.662	3082.771	464.391	5891.927	443.783
34	17	5983.571	3084.364	464.860	5894.706	444.211
34	18	5986.479	3085.957	465.329	5897.486	444.640
34	19	5989.388	3087.550	465.799	5900.265	445.069
34	20	5992.297	3089.143	466.269	5903.045	445.498
34	21	5995.206	3090.736	466.740	5905.824	445.928
34	22	5998.115	3092.330	467.210	5908.603	446.357
34	23	6001.024	3093.923	467.681	5911.382	446.787
34	24	6003.933	3095.517	468.152	5914.161	447.217
34	25	6006.842	3097.111	468.624	5916.940	447.647
34	26	6009.751	3098.705	469.096	5919.718	448.077
34	27	6012.659	3100.299	469.568	5922.497	448.508
34	28	6015.568	3101.893	470.040	5925.275	448.939
34	29	6018.477	3103.488	470.512	5928.053	449.370
34	30	6021.386	3105.082	470.985	5930.831	449.801

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
34	31	6024.295	3106.677	471.458	5933.609	450.232
34	32	6027.204	3108.272	471.931	5936.387	450.664
34	33	6030.113	3109.867	472.405	5939.165	451.096
34	34	6033.022	3111.462	472.879	5941.943	451.528
34	35	6035.930	3113.058	473.353	5944.720	451.960
34	36	6038.839	3114.653	473.827	5947.497	452.392
34	37	6041.748	3116.249	474.302	5950.275	452.825
34	38	6044.657	3117.845	474.777	5953.052	453.258
34	39	6047.566	3119.440	475.252	5955.829	453.691
34	40	6050.475	3121.036	475.727	5958.606	454.124
34	41	6053.384	3122.633	476.203	5961.382	454.558
34	42	6056.293	3124.229	476.679	5964.159	454.991
34	43	6059.202	3125.825	477.155	5966.935	455.425
34	44	6062.110	3127.422	477.631	5969.712	455.859
34	45	6065.019	3129.019	478.108	5972.488	456.293
34	46	6067.928	3130.616	478.585	5975.264	456.728
34	47	6070.837	3132.213	479.062	5978.040	457.162
34	48	6073.746	3133.810	479.540	5980.816	457.597
34	49	6076.655	3135.407	480.018	5983.592	458.032
34	50	6079.564	3137.005	480.496	5986.367	458.467
34	51	6082.473	3138.602	480.974	5989.142	458.903
34	52	6085.381	3140.200	481.453	5991.918	459.339
34	53	6088.290	3141.798	481.931	5994.693	459.774
34	54	6091.199	3143.396	482.411	5997.468	460.210
34	55	6094.108	3144.995	482.890	6000.243	460.647
34	56	6097.017	3146.593	483.370	6003.018	461.083
34	57	6099.926	3148.191	483.850	6005.793	461.520
34	58	6102.835	3149.790	484.330	6008.567	461.957
34	59	6105.744	3151.389	484.810	6011.342	462.394
35	00	6108.653	3152.988	485.291	6014.116	462.831
35	01	6111.561	3154.587	485.772	6016.890	463.268
35	02	6114.470	3156.186	486.253	6019.664	463.706
35	03	6117.379	3157.786	486.734	6022.438	464.144
35	04	6120.288	3159.385	487.216	6025.212	464.582
35	05	6123.197	3160.985	487.698	6027.986	465.020
35	06	6126.106	3162.585	488.181	6030.759	465.459
35	07	6129.015	3164.185	488.663	6033.533	465.897
35	08	6131.924	3165.785	489.146	6036.306	466.336
35	09	6134.832	3167.385	489.629	6039.079	466.775
35	10	6137.741	3168.986	490.112	6041.852	467.215
35	11	6140.650	3170.586	490.596	6044.625	467.654
35	12	6143.559	3172.187	491.080	6047.398	468.094
35	13	6146.468	3173.788	491.564	6050.170	468.534
35	14	6149.377	3175.389	492.049	6052.943	468.974
35	15	6152.286	3176.990	492.533	6055.715	469.414

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
35	16	6155.195	3178.591	493.018	6058.488	469.855
35	17	6158.103	3180.193	493.504	6061.260	470.295
35	18	6161.012	3181.794	493.989	6064.032	470.736
35	19	6163.921	3183.396	494.475	6066.804	471.177
35	20	6166.830	3184.998	494.961	6069.575	471.618
35	21	6169.739	3186.600	495.447	6072.347	472.060
35	22	6172.648	3188.202	495.934	6075.119	472.502
35	23	6175.557	3189.805	496.420	6077.890	472.944
35	24	6178.466	3191.407	496.908	6080.661	473.386
35	25	6181.375	3193.010	497.395	6083.432	473.828
35	26	6184.283	3194.612	497.883	6086.203	474.270
35	27	6187.192	3196.215	498.371	6088.974	474.713
35	28	6190.101	3197.819	498.859	6091.745	475.156
35	29	6193.010	3199.422	499.347	6094.515	475.599
35	30	6195.919	3201.025	499.836	6097.286	476.042
35	31	6198.828	3202.629	500.325	6100.056	476.486
35	32	6201.737	3204.232	500.814	6102.826	476.930
35	33	6204.646	3205.836	501.304	6105.597	477.374
35	34	6207.554	3207.440	501.793	6108.366	477.818
35	35	6210.463	3209.044	502.283	6111.136	478.262
35	36	6213.372	3210.649	502.774	6113.906	478.707
35	37	6216.281	3212.253	503.264	6116.676	479.151
35	38	6219.190	3213.858	503.755	6119.445	479.596
35	39	6222.099	3215.463	504.246	6122.214	480.041
35	40	6225.008	3217.067	504.738	6124.983	480.487
35	41	6227.917	3218.672	505.229	6127.753	480.932
35	42	6230.826	3220.278	505.721	6130.521	481.378
35	43	6233.734	3221.883	506.213	6133.290	481.824
35	44	6236.643	3223.489	506.706	6136.059	482.270
35	45	6239.552	3225.094	507.199	6138.827	482.716
35	46	6242.461	3226.700	507.692	6141.596	483.163
35	47	6245.370	3228.306	508.185	6144.364	483.610
35	48	6248.279	3229.912	508.678	6147.132	484.056
35	49	6251.188	3231.518	509.172	6149.900	484.504
35	50	6254.097	3233.125	509.666	6152.668	484.951
35	51	6257.005	3234.731	510.161	6155.436	485.398
35	52	6259.914	3236.338	510.655	6158.203	485.846
35	53	6262.823	3237.945	511.150	6160.971	486.294
35	54	6265.732	3239.552	511.645	6163.738	486.742
35	55	6268.641	3241.159	512.141	6166.506	487.191
35	56	6271.550	3242.766	512.636	6169.273	487.639
35	57	6274.459	3244.374	513.132	6172.040	488.088
35	58	6277.368	3245.981	513.629	6174.807	488.537
35	59	6280.277	3247.589	514.125	6177.573	488.986
36	00	6283.185	3249.197	514.622	6180.340	489.435

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
36 01	6286.094	3250.805	515.119	6183.106	489.885
36 02	6289.003	3252.413	515.616	6185.872	490.335
36 03	6291.912	3254.022	516.114	6188.639	490.785
36 04	6294.821	3255.630	516.612	6191.405	491.235
36 05	6297.730	3257.239	517.110	6194.171	491.685
36 06	6300.639	3258.848	517.608	6196.936	492.136
36 07	6303.548	3260.456	518.107	6199.702	492.586
36 08	6306.456	3262.066	518.606	6202.468	493.037
36 09	6309.365	3263.675	519.105	6205.233	493.488
36 10	6312.274	3265.284	519.604	6207.998	493.940
36 11	6315.183	3266.894	520.104	6210.763	494.391
36 12	6318.092	3268.504	520.604	6213.528	494.843
36 13	6321.001	3270.114	521.104	6216.293	495.295
36 14	6323.910	3271.724	521.605	6219.058	495.747
36 15	6326.819	3273.334	522.106	6221.823	496.200
36 16	6329.728	3274.944	522.607	6224.587	496.652
36 17	6332.636	3276.555	523.108	6227.351	497.105
36 18	6335.545	3278.165	523.610	6230.116	497.558
36 19	6338.454	3279.776	524.112	6232.880	498.011
36 20	6341.363	3281.387	524.614	6235.644	498.465
36 21	6344.272	3282.998	525.116	6238.408	498.918
36 22	6347.181	3284.610	525.619	6241.171	499.372
36 23	6350.090	3286.221	526.122	6243.935	499.826
36 24	6352.999	3287.833	526.625	6246.698	500.280
36 25	6355.907	3289.444	527.129	6249.462	500.734
36 26	6358.816	3291.056	527.632	6252.225	501.189
36 27	6361.725	3292.668	528.136	6254.988	501.644
36 28	6364.634	3294.281	528.641	6257.751	502.099
36 29	6367.543	3295.893	529.145	6260.513	502.554
36 30	6370.452	3297.505	529.650	6263.276	503.009
36 31	6373.361	3299.118	530.155	6266.038	503.465
36 32	6376.270	3300.731	530.661	6268.801	503.921
36 33	6379.179	3302.344	531.166	6271.563	504.377
36 34	6382.087	3303.957	531.672	6274.325	504.833
36 35	6384.996	3305.570	532.179	6277.087	505.289
36 36	6387.905	3307.184	532.685	6279.849	505.746
36 37	6390.814	3308.797	533.192	6282.611	506.203
36 38	6393.723	3310.411	533.699	6285.372	506.659
36 39	6396.632	3312.025	534.206	6288.134	507.117
36 40	6399.541	3313.639	534.714	6290.895	507.574
36 41	6402.450	3315.253	535.222	6293.656	508.032
36 42	6405.358	3316.868	535.730	6296.417	508.489
36 43	6408.267	3318.482	536.238	6299.178	508.947
36 44	6411.176	3320.097	536.747	6301.939	509.406
36 45	6414.085	3321.712	537.256	6304.700	509.864

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
36 46	6416.994	3323.327	537.765	6307.460	510.323
36 47	6419.903	3324.942	538.274	6310.220	510.781
36 48	6422.812	3326.557	538.784	6312.981	511.240
36 49	6425.721	3328.173	539.294	6315.741	511.700
36 50	6428.630	3329.788	539.805	6318.501	512.159
36 51	6431.538	3331.404	540.315	6321.260	512.619
36 52	6434.447	3333.020	540.826	6324.020	513.078
36 53	6437.356	3334.636	541.337	6326.780	513.538
36 54	6440.265	3336.252	541.849	6329.539	513.999
36 55	6443.174	3337.869	542.360	6332.298	514.459
36 56	6446.083	3339.485	542.872	6335.058	514.920
36 57	6448.992	3341.102	543.384	6337.817	515.380
36 58	6451.901	3342.719	543.897	6340.576	515.841
36 59	6454.809	3344.336	544.410	6343.334	516.303
37 00	6457.718	3345.953	544.923	6346.093	516.764
37 01	6460.627	3347.571	545.436	6348.852	517.226
37 02	6463.536	3349.188	545.950	6351.610	517.687
37 03	6466.445	3350.806	546.463	6354.368	518.149
37 04	6469.354	3352.424	546.977	6357.126	518.612
37 05	6472.263	3354.042	547.492	6359.884	519.074
37 06	6475.172	3355.660	548.007	6362.642	519.537
37 07	6478.081	3357.278	548.521	6365.400	519.999
37 08	6480.989	3358.896	549.037	6368.157	520.462
37 09	6483.898	3360.515	549.552	6370.915	520.926
37 10	6486.807	3362.134	550.068	6373.672	521.389
37 11	6489.716	3363.753	550.584	6376.429	521.853
37 12	6492.625	3365.372	551.100	6379.186	522.316
37 13	6495.534	3366.991	551.617	6381.943	522.780
37 14	6498.443	3368.610	552.134	6384.700	523.245
37 15	6501.352	3370.230	552.651	6387.456	523.709
37 16	6504.261	3371.850	553.168	6390.213	524.174
37 17	6507.169	3373.470	553.686	6392.969	524.638
37 18	6510.078	3375.090	554.204	6395.725	525.103
37 19	6512.987	3376.710	554.722	6398.481	525.569
37 20	6515.896	3378.330	555.241	6401.237	526.034
37 21	6518.805	3379.951	555.759	6403.993	526.500
37 22	6521.714	3381.572	556.279	6406.749	526.966
37 23	6524.623	3383.192	556.798	6409.504	527.432
37 24	6527.532	3384.813	557.317	6412.260	527.898
37 25	6530.440	3386.434	557.837	6415.015	528.364
37 26	6533.349	3388.056	558.357	6417.770	528.831
37 27	6536.258	3389.677	558.878	6420.525	529.299
37 28	6539.167	3391.299	559.399	6423.280	529.765
37 29	6542.076	3392.921	559.920	6426.035	530.232
37 30	6544.985	3394.543	560.441	6428.789	530.699

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
37 31	6547.894	3396.165	560.962	6431.544	531.167
37 32	6550.803	3397.787	561.484	6434.298	531.635
37 33	6553.712	3399.409	562.006	6437.052	532.103
37 34	6556.620	3401.032	562.529	6439.806	532.571
37 35	6559.529	3402.655	563.051	6442.560	533.039
37 36	6562.438	3404.278	563.574	6445.314	533.508
37 37	6565.347	3405.901	564.097	6448.068	533.977
37 38	6568.256	3407.524	564.621	6450.821	534.446
37 39	6571.165	3409.147	565.144	6453.574	534.915
37 40	6574.074	3410.771	565.668	6456.328	535.384
37 41	6576.983	3412.395	566.193	6459.081	535.854
37 42	6579.891	3414.019	566.717	6461.834	536.324
37 43	6582.800	3415.643	567.242	6464.586	536.794
37 44	6585.709	3417.267	567.767	6467.339	537.264
37 45	6588.618	3418.891	568.293	6470.092	537.734
37 46	6591.527	3420.516	568.818	6472.844	538.205
37 47	6594.436	3422.140	569.344	6475.596	538.676
37 48	6597.345	3423.765	569.870	6478.348	539.147
37 49	6600.254	3425.390	570.397	6481.100	539.618
37 50	6603.163	3427.015	570.924	6483.852	540.090
37 51	6606.071	3428.641	571.451	6486.604	540.561
37 52	6608.980	3430.266	571.978	6489.355	541.033
37 53	6611.889	3431.892	572.506	6492.107	541.505
37 54	6614.798	3433.518	573.033	6494.858	541.977
37 55	6617.707	3435.144	573.562	6497.609	542.450
37 56	6620.616	3436.770	574.090	6500.360	542.922
37 57	6623.525	3438.396	574.619	6503.111	543.395
37 58	6626.434	3440.023	575.148	6505.862	543.868
37 59	6629.342	3441.649	575.677	6508.613	544.341
38 00	6632.251	3443.276	576.206	6511.363	544.815
38 01	6635.160	3444.903	576.736	6514.113	545.288
38 02	6638.069	3446.530	577.266	6516.864	545.762
38 03	6640.978	3448.157	577.797	6519.614	546.236
38 04	6643.887	3449.785	578.327	6522.364	546.710
38 05	6646.796	3451.413	578.858	6525.113	547.185
38 06	6649.705	3453.040	579.389	6527.863	547.659
38 07	6652.613	3454.668	579.921	6530.612	548.134
38 08	6655.522	3456.296	580.452	6533.362	548.609
38 09	6658.431	3457.925	580.985	6536.111	549.085
38 10	6661.340	3459.553	581.517	6538.860	549.560
38 11	6664.249	3461.182	582.049	6541.609	550.036
38 12	6667.158	3462.810	582.582	6544.358	550.511
38 13	6670.067	3464.439	583.115	6547.106	550.987
38 14	6672.976	3466.069	583.649	6549.855	551.464
38 15	6675.885	3467.698	584.182	6552.603	551.940

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
38 16	6678.793	3469.327	584.716	6555.352	552.417
38 17	6681.702	3470.957	585.251	6558.100	552.893
38 18	6684.611	3472.586	585.785	6560.848	553.370
38 19	6687.520	3474.216	586.320	6563.596	553.848
38 20	6690.429	3475.846	586.855	6566.343	554.325
38 21	6693.338	3477.477	587.390	6569.091	554.803
38 22	6696.247	3479.107	587.926	6571.838	555.281
38 23	6699.156	3480.738	588.462	6574.586	555.759
38 24	6702.064	3482.369	588.998	6577.333	556.237
38 25	6704.973	3483.999	589.535	6580.080	556.715
38 26	6707.882	3485.630	590.071	6582.827	557.194
38 27	6710.791	3487.262	590.608	6585.573	557.673
38 28	6713.700	3488.893	591.146	6588.320	558.152
38 29	6716.609	3490.525	591.683	6591.067	558.631
38 30	6719.518	3492.156	592.221	6593.813	559.110
38 31	6722.427	3493.788	592.759	6596.559	559.590
38 32	6725.336	3495.420	593.298	6599.305	560.070
38 33	6728.244	3497.053	593.836	6602.051	560.550
38 34	6731.153	3498.685	594.375	6604.797	561.030
38 35	6734.062	3500.317	594.914	6607.542	561.510
38 36	6736.971	3501.950	595.454	6610.288	561.991
38 37	6739.880	3503.583	595.994	6613.033	562.472
38 38	6742.789	3505.216	596.534	6615.778	562.953
38 39	6745.698	3506.849	597.074	6618.523	563.434
38 40	6748.607	3508.483	597.615	6621.268	563.915
38 41	6751.515	3510.116	598.156	6624.013	564.397
38 42	6754.424	3511.750	598.697	6626.758	564.879
38 43	6757.333	3513.384	599.239	6629.502	565.361
38 44	6760.242	3515.018	599.780	6632.247	565.843
38 45	6763.151	3516.652	600.322	6634.991	566.325
38 46	6766.060	3518.287	600.865	6637.735	566.808
38 47	6768.969	3519.921	601.407	6640.479	567.291
38 48	6771.878	3521.556	601.950	6643.223	567.774
38 49	6774.787	3523.191	602.493	6645.966	568.257
38 50	6777.695	3524.826	603.037	6648.710	568.741
38 51	6780.604	3526.461	603.580	6651.453	569.224
38 52	6783.513	3528.096	604.124	6654.196	569.708
38 53	6786.422	3529.732	604.669	6656.939	570.192
38 54	6789.331	3531.368	605.213	6659.682	570.676
38 55	6792.240	3533.004	605.758	6662.425	571.161
38 56	6795.149	3534.640	606.303	6665.168	571.645
38 57	6798.058	3536.276	606.849	6667.910	572.130
38 58	6800.966	3537.912	607.394	6670.653	572.615
38 59	6803.875	3539.549	607.940	6673.395	573.100
39 00	6806.784	3541.186	608.487	6676.137	573.586

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
39	01	6809.693	3542.823	609.033	6678.879	574.071
39	02	6812.602	3544.460	609.580	6681.621	574.557
39	03	6815.511	3546.097	610.127	6684.363	575.043
39	04	6818.420	3547.734	610.674	6687.104	575.529
39	05	6821.329	3549.372	611.222	6689.846	576.016
39	06	6824.237	3551.010	611.770	6692.587	576.502
39	07	6827.146	3552.648	612.318	6695.328	576.989
39	08	6830.055	3554.286	612.867	6698.069	577.476
39	09	6832.964	3555.924	613.415	6700.810	577.963
39	10	6835.873	3557.562	613.964	6703.550	578.451
39	11	6838.782	3559.201	614.514	6706.291	578.938
39	12	6841.691	3560.840	615.063	6709.031	579.426
39	13	6844.600	3562.479	615.613	6711.772	579.914
39	14	6847.509	3564.118	616.163	6714.512	580.402
39	15	6850.417	3565.757	616.714	6717.252	580.891
39	16	6853.326	3567.397	617.265	6719.991	581.379
39	17	6856.235	3569.036	617.816	6722.731	581.868
39	18	6859.144	3570.676	618.367	6725.471	582.357
39	19	6862.053	3572.316	618.919	6728.210	582.846
39	20	6864.962	3573.956	619.471	6730.949	583.336
39	21	6867.871	3575.596	620.023	6733.689	583.825
39	22	6870.780	3577.237	620.575	6736.428	584.315
39	23	6873.688	3578.878	621.128	6739.166	584.805
39	24	6876.597	3580.518	621.681	6741.905	585.295
39	25	6879.506	3582.159	622.234	6744.644	585.785
39	26	6882.415	3583.800	622.788	6747.382	586.276
39	27	6885.324	3585.442	623.342	6750.120	586.767
39	28	6888.233	3587.083	623.896	6752.858	587.258
39	29	6891.142	3588.725	624.450	6755.596	587.749
39	30	6894.051	3590.367	625.005	6758.334	588.240
39	31	6896.960	3592.009	625.560	6761.072	588.732
39	32	6899.868	3593.651	626.115	6763.810	589.224
39	33	6902.777	3595.293	626.670	6766.547	589.716
39	34	6905.686	3596.936	627.226	6769.284	590.208
39	35	6908.595	3598.579	627.782	6772.021	590.700
39	36	6911.504	3600.221	628.339	6774.758	591.193
39	37	6914.413	3601.865	628.895	6777.495	591.686
39	38	6917.322	3603.508	629.452	6780.232	592.179
39	39	6920.231	3605.151	630.010	6782.968	592.672
39	40	6923.139	3606.795	630.567	6785.705	593.165
39	41	6926.048	3608.438	631.125	6788.441	593.659
39	42	6928.957	3610.082	631.683	6791.177	594.152
39	43	6931.866	3611.726	632.241	6793.913	594.646
39	44	6934.775	3613.371	632.800	6796.649	595.141
39	45	6937.684	3615.015	633.359	6799.385	595.635

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
39	46	6940.593	3616.660	633.918	6802.120	596.129
39	47	6943.502	3618.304	634.478	6804.856	596.624
39	48	6946.411	3619.949	635.038	6807.591	597.119
39	49	6949.319	3621.595	635.598	6810.326	597.614
39	50	6952.228	3623.240	636.158	6813.061	598.110
39	51	6955.137	3624.885	636.719	6815.796	598.605
39	52	6958.046	3626.531	637.280	6818.531	599.101
39	53	6960.955	3628.177	637.841	6821.265	599.597
39	54	6963.864	3629.823	638.402	6824.000	600.093
39	55	6966.773	3631.469	638.964	6826.734	600.590
39	56	6969.682	3633.115	639.526	6829.468	601.086
39	57	6972.590	3634.762	640.089	6832.202	601.583
39	58	6975.499	3636.408	640.651	6834.936	602.080
39	59	6978.408	3638.055	641.214	6837.669	602.577
40	00	6981.317	3639.702	641.777	6840.403	603.074
40	01	6984.226	3641.350	642.341	6843.136	603.572
40	02	6987.135	3642.997	642.905	6845.869	604.070
40	03	6990.044	3644.645	643.469	6848.603	604.568
40	04	6992.953	3646.292	644.033	6851.335	605.066
40	05	6995.862	3647.940	644.598	6854.068	605.564
40	06	6998.770	3649.588	645.162	6856.801	606.063
40	07	7001.679	3651.236	645.728	6859.533	606.561
40	08	7004.588	3652.885	646.293	6862.266	607.060
40	09	7007.497	3654.533	646.859	6864.998	607.559
40	10	7010.406	3656.182	647.425	6867.730	608.059
40	11	7013.315	3657.831	647.991	6870.462	608.558
40	12	7016.224	3659.480	648.558	6873.194	609.058
40	13	7019.133	3661.130	649.125	6875.926	609.558
40	14	7022.042	3662.779	649.692	6878.657	610.058
40	15	7024.950	3664.429	650.260	6881.388	610.558
40	16	7027.859	3666.079	650.827	6884.120	611.059
40	17	7030.768	3667.729	651.395	6886.851	611.560
40	18	7033.677	3669.379	651.964	6889.582	612.061
40	19	7036.586	3671.029	652.532	6892.312	612.562
40	20	7039.495	3672.680	653.101	6895.043	613.063
40	21	7042.404	3674.330	653.671	6897.773	613.565
40	22	7045.313	3675.981	654.240	6900.504	614.066
40	23	7048.221	3677.632	654.810	6903.234	614.568
40	24	7051.130	3679.284	655.380	6905.964	615.070
40	25	7054.039	3680.935	655.950	6908.694	615.573
40	26	7056.948	3682.587	656.521	6911.424	616.075
40	27	7059.857	3684.238	657.092	6914.153	616.578
40	28	7062.766	3685.890	657.663	6916.883	617.081
40	29	7065.675	3687.542	658.234	6919.612	617.584
40	30	7068.584	3689.195	658.806	6922.341	618.087

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
40 31	7071.493	3690.847	659.378	6925.070	618.591
40 32	7074.401	3692.500	659.951	6927.799	619.094
40 33	7077.310	3694.153	660.523	6930.528	619.598
40 34	7080.219	3695.806	661.096	6933.256	620.102
40 35	7083.128	3697.459	661.669	6935.985	620.607
40 36	7086.037	3699.112	662.243	6938.713	621.111
40 37	7088.946	3700.766	662.817	6941.441	621.616
40 38	7091.855	3702.420	663.391	6944.169	622.121
40 39	7094.764	3704.074	663.965	6946.897	622.626
40 40	7097.672	3705.728	664.540	6949.625	623.131
40 41	7100.581	3707.382	665.115	6952.352	623.637
40 42	7103.490	3709.036	665.690	6955.080	624.142
40 43	7106.399	3710.691	666.265	6957.807	624.648
40 44	7109.308	3712.346	666.841	6960.534	625.154
40 45	7112.217	3714.001	667.417	6963.261	625.661
40 46	7115.126	3715.656	667.994	6965.988	626.167
40 47	7118.035	3717.311	668.570	6968.714	626.674
40 48	7120.944	3718.967	669.147	6971.441	627.181
40 49	7123.852	3720.622	669.724	6974.167	627.688
40 50	7126.761	3722.278	670.302	6976.894	628.195
40 51	7129.670	3723.934	670.880	6979.620	628.702
40 52	7132.579	3725.591	671.458	6982.346	629.210
40 53	7135.488	3727.247	672.036	6985.071	629.718
40 54	7138.397	3728.904	672.615	6987.797	630.226
40 55	7141.306	3730.560	673.194	6990.522	630.734
40 56	7144.215	3732.217	673.773	6993.248	631.243
40 57	7147.123	3733.874	674.353	6995.973	631.751
40 58	7150.032	3735.532	674.933	6998.698	632.260
40 59	7152.941	3737.189	675.513	7001.423	632.769
41 00	7155.850	3738.847	676.093	7004.148	633.279
41 01	7158.759	3740.505	676.674	7006.872	633.788
41 02	7161.668	3742.163	677.255	7009.597	634.298
41 03	7164.577	3743.821	677.836	7012.321	634.808
41 04	7167.486	3745.479	678.418	7015.045	635.318
41 05	7170.395	3747.138	679.000	7017.769	635.828
41 06	7173.303	3748.796	679.582	7020.493	636.338
41 07	7176.212	3750.455	680.164	7023.217	636.849
41 08	7179.121	3752.115	680.747	7025.940	637.360
41 09	7182.030	3753.774	681.330	7028.664	637.871
41 10	7184.939	3755.433	681.913	7031.387	638.382
41 11	7187.848	3757.093	682.497	7034.110	638.894
41 12	7190.757	3758.753	683.081	7036.833	639.405
41 13	7193.666	3760.413	683.665	7039.556	639.917
41 14	7196.574	3762.073	684.249	7042.278	640.429
41 15	7199.483	3763.733	684.834	7045.001	640.941

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
41 16	7202.392	3765.394	685.419	7047.723	641.454
41 17	7205.301	3767.055	686.004	7050.445	641.966
41 18	7208.210	3768.716	686.590	7053.167	642.479
41 19	7211.119	3770.377	687.176	7055.890	642.992
41 20	7214.028	3772.038	687.762	7058.611	643.505
41 21	7216.937	3773.700	688.349	7061.333	644.019
41 22	7219.846	3775.361	688.936	7064.054	644.532
41 23	7222.754	3777.023	689.523	7066.776	645.046
41 24	7225.663	3778.685	690.110	7069.497	645.560
41 25	7228.572	3780.347	690.698	7072.218	646.074
41 26	7231.481	3782.010	691.286	7074.939	646.589
41 27	7234.390	3783.672	691.874	7077.659	647.103
41 28	7237.299	3785.335	692.462	7080.380	647.618
41 29	7240.208	3786.998	693.051	7083.100	648.133
41 30	7243.117	3788.661	693.640	7085.821	648.648
41 31	7246.025	3790.324	694.230	7088.541	649.164
41 32	7248.934	3791.988	694.819	7091.261	649.679
41 33	7251.843	3793.652	695.409	7093.981	650.195
41 34	7254.752	3795.315	696.000	7096.700	650.711
41 35	7257.661	3796.979	696.590	7099.420	651.227
41 36	7260.570	3798.644	697.181	7102.139	651.744
41 37	7263.479	3800.308	697.772	7104.858	652.260
41 38	7266.388	3801.973	698.364	7107.578	652.777
41 39	7269.297	3803.637	698.955	7110.296	653.294
41 40	7272.205	3805.302	699.548	7113.015	653.811
41 41	7275.114	3806.968	700.140	7115.734	654.329
41 42	7278.023	3808.633	700.732	7118.452	654.846
41 43	7280.932	3810.298	701.325	7121.171	655.364
41 44	7283.841	3811.964	701.919	7123.889	655.882
41 45	7286.750	3813.630	702.512	7126.607	656.400
41 46	7289.659	3815.296	703.106	7129.325	656.918
41 47	7292.568	3816.962	703.700	7132.042	657.437
41 48	7295.476	3818.629	704.294	7134.760	657.956
41 49	7298.385	3820.295	704.889	7137.477	658.475
41 50	7301.294	3821.962	705.484	7140.195	658.994
41 51	7304.203	3823.629	706.079	7142.912	659.513
41 52	7307.112	3825.296	706.675	7145.629	660.033
41 53	7310.021	3826.964	707.271	7148.346	660.553
41 54	7312.930	3828.631	707.867	7151.062	661.072
41 55	7315.839	3830.299	708.463	7153.779	661.593
41 56	7318.747	3831.967	709.060	7156.495	662.113
41 57	7321.656	3833.635	709.657	7159.211	662.633
41 58	7324.565	3835.303	710.254	7161.927	663.154
41 59	7327.474	3836.972	710.852	7164.643	663.675
42 00	7330.383	3838.640	711.450	7167.359	664.196

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
42 01	7333.292	3840.309	712.048	7170.075	664.718
42 02	7336.201	3841.978	712.646	7172.790	665.239
42 03	7339.110	3843.648	713.245	7175.505	665.761
42 04	7342.019	3845.317	713.844	7178.220	666.283
42 05	7344.927	3846.986	714.443	7180.935	666.805
42 06	7347.836	3848.656	715.043	7183.650	667.327
42 07	7350.745	3850.326	715.643	7186.365	667.850
42 08	7353.654	3851.996	716.243	7189.080	668.372
42 09	7356.563	3853.667	716.844	7191.794	668.895
42 10	7359.472	3855.337	717.444	7194.508	669.418
42 11	7362.381	3857.008	718.046	7197.222	669.942
42 12	7365.290	3858.679	718.647	7199.936	670.465
42 13	7368.198	3860.350	719.249	7202.650	670.989
42 14	7371.107	3862.021	719.851	7205.363	671.513
42 15	7374.016	3863.693	720.453	7208.077	672.037
42 16	7376.925	3865.364	721.056	7210.790	672.561
42 17	7379.834	3867.036	721.658	7213.503	673.086
42 18	7382.743	3868.708	722.262	7216.216	673.610
42 19	7385.652	3870.380	722.865	7218.929	674.135
42 20	7388.561	3872.053	723.469	7221.642	674.660
42 21	7391.470	3873.725	724.073	7224.355	675.185
42 22	7394.378	3875.398	724.677	7227.067	675.711
42 23	7397.287	3877.071	725.282	7229.779	676.237
42 24	7400.196	3878.744	725.887	7232.491	676.762
42 25	7403.105	3880.418	726.492	7235.203	677.289
42 26	7406.014	3882.091	727.098	7237.915	677.815
42 27	7408.923	3883.765	727.703	7240.627	678.341
42 28	7411.832	3885.439	728.310	7243.338	678.868
42 29	7414.741	3887.113	728.916	7246.049	679.395
42 30	7417.649	3888.787	729.523	7248.761	679.922
42 31	7420.558	3890.462	730.130	7251.472	680.449
42 32	7423.467	3892.136	730.737	7254.183	680.976
42 33	7426.376	3893.811	731.345	7256.893	681.504
42 34	7429.285	3895.486	731.953	7259.604	682.032
42 35	7432.194	3897.162	732.561	7262.314	682.560
42 36	7435.103	3898.837	733.169	7265.024	683.088
42 37	7438.012	3900.513	733.778	7267.735	683.617
42 38	7440.921	3902.188	734.387	7270.445	684.145
42 39	7443.829	3903.865	734.997	7273.154	684.674
42 40	7446.738	3905.541	735.606	7275.864	685.203
42 41	7449.647	3907.217	736.216	7278.573	685.732
42 42	7452.556	3908.894	736.826	7281.283	686.262
42 43	7455.465	3910.570	737.437	7283.992	686.791
42 44	7458.374	3912.247	738.048	7286.701	687.321
42 45	7461.283	3913.925	738.659	7289.410	687.851

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
42 46	7464.192	3915.602	739.270	7292.119	688.381
42 47	7467.100	3917.279	739.882	7294.827	688.912
42 48	7470.009	3918.957	740.494	7297.536	689.442
42 49	7472.918	3920.635	741.107	7300.244	689.973
42 50	7475.827	3922.313	741.719	7302.952	690.504
42 51	7478.736	3923.991	742.332	7305.660	691.035
42 52	7481.645	3925.670	742.945	7308.368	691.567
42 53	7484.554	3927.349	743.559	7311.075	692.098
42 54	7487.463	3929.027	744.173	7313.783	692.630
42 55	7490.372	3930.707	744.787	7316.490	693.162
42 56	7493.280	3932.386	745.401	7319.197	693.694
42 57	7496.189	3934.065	746.016	7321.904	694.227
42 58	7499.098	3935.745	746.631	7324.611	694.759
42 59	7502.007	3937.425	747.246	7327.318	695.292
43 00	7504.916	3939.105	747.862	7330.024	695.825
43 01	7507.825	3940.785	748.478	7332.731	696.358
43 02	7510.734	3942.465	749.094	7335.437	696.891
43 03	7513.643	3944.146	749.711	7338.143	697.425
43 04	7516.551	3945.827	750.327	7340.849	697.959
43 05	7519.460	3947.508	750.945	7343.555	698.493
43 06	7522.369	3949.189	751.562	7346.260	699.027
43 07	7525.278	3950.870	752.180	7348.966	699.561
43 08	7528.187	3952.552	752.798	7351.671	700.096
43 09	7531.096	3954.234	753.416	7354.376	700.630
43 10	7534.005	3955.916	754.034	7357.081	701.165
43 11	7536.914	3957.598	754.653	7359.786	701.700
43 12	7539.822	3959.280	755.273	7362.491	702.236
43 13	7542.731	3960.963	755.892	7365.195	702.771
43 14	7545.640	3962.645	756.512	7367.900	703.307
43 15	7548.549	3964.328	757.132	7370.604	703.843
43 16	7551.458	3966.011	757.752	7373.308	704.379
43 17	7554.367	3967.695	758.373	7376.012	704.915
43 18	7557.276	3969.378	758.994	7378.716	705.452
43 19	7560.185	3971.062	759.615	7381.419	705.988
43 20	7563.094	3972.746	760.237	7384.123	706.525
43 21	7566.002	3974.430	760.859	7386.826	707.062
43 22	7568.911	3976.114	761.481	7389.529	707.600
43 23	7571.820	3977.799	762.103	7392.232	708.137
43 24	7574.729	3979.483	762.726	7394.935	708.675
43 25	7577.638	3981.168	763.349	7397.638	709.213
43 26	7580.547	3982.853	763.973	7400.340	709.751
43 27	7583.456	3984.538	764.596	7403.043	710.289
43 28	7586.365	3986.224	765.220	7405.745	710.827
43 29	7589.273	3987.910	765.845	7408.447	711.366
43 30	7592.182	3989.595	766.469	7411.149	711.905

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
43 31	7595.091	3991.281	767.094	7413.850	712.444
43 32	7598.000	3992.968	767.719	7416.552	712.983
43 33	7600.909	3994.654	768.345	7419.253	713.523
43 34	7603.818	3996.341	768.971	7421.955	714.062
43 35	7606.727	3998.028	769.597	7424.656	714.602
43 36	7609.636	3999.715	770.223	7427.357	715.142
43 37	7612.545	4001.402	770.850	7430.057	715.682
43 38	7615.453	4003.089	771.477	7432.758	716.223
43 39	7618.362	4004.777	772.104	7435.458	716.764
43 40	7621.271	4006.465	772.732	7438.159	717.304
43 41	7624.180	4008.153	773.360	7440.859	717.845
43 42	7627.089	4009.841	773.988	7443.559	718.387
43 43	7629.998	4011.529	774.616	7446.259	718.928
43 44	7632.907	4013.218	775.245	7448.958	719.470
43 45	7635.816	4014.907	775.874	7451.658	720.011
43 46	7638.724	4016.596	776.504	7454.357	720.553
43 47	7641.633	4018.285	777.133	7457.056	721.096
43 48	7644.542	4019.974	777.763	7459.756	721.638
43 49	7647.451	4021.664	778.394	7462.454	722.181
43 50	7650.360	4023.354	779.024	7465.153	722.723
43 51	7653.269	4025.044	779.655	7467.852	723.266
43 52	7656.178	4026.734	780.286	7470.550	723.809
43 53	7659.087	4028.424	780.918	7473.248	724.353
43 54	7661.996	4030.115	781.550	7475.946	724.896
43 55	7664.904	4031.805	782.182	7478.645	725.440
43 56	7667.813	4033.496	782.814	7481.342	725.984
43 57	7670.722	4035.187	783.447	7484.040	726.528
43 58	7673.631	4036.879	784.080	7486.737	727.073
43 59	7676.540	4038.570	784.713	7489.435	727.617
44 00	7679.449	4040.262	785.347	7492.132	728.162
44 01	7682.358	4041.954	785.981	7494.829	728.707
44 02	7685.267	4043.646	786.615	7497.526	729.252
44 03	7688.176	4045.339	787.250	7500.222	729.797
44 04	7691.084	4047.031	787.885	7502.919	730.343
44 05	7693.993	4048.724	788.520	7505.615	730.889
44 06	7696.902	4050.417	789.155	7508.311	731.435
44 07	7699.811	4052.110	789.791	7511.007	731.981
44 08	7702.720	4053.803	790.427	7513.703	732.527
44 09	7705.629	4055.497	791.063	7516.399	733.073
44 10	7708.538	4057.191	791.700	7519.095	733.620
44 11	7711.447	4058.885	792.337	7521.790	734.167
44 12	7714.355	4060.579	792.974	7524.485	734.714
44 13	7717.264	4062.273	793.612	7527.180	735.261
44 14	7720.173	4063.968	794.250	7529.875	735.809
44 15	7723.082	4065.663	794.888	7532.570	736.357

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
44 16	7725.991	4067.358	795.526	7535.265	736.905
44 17	7728.900	4069.053	796.165	7537.959	737.453
44 18	7731.809	4070.748	796.804	7540.653	738.001
44 19	7734.718	4072.444	797.444	7543.348	738.549
44 20	7737.627	4074.139	798.083	7546.041	739.098
44 21	7740.535	4075.835	798.723	7548.735	739.647
44 22	7743.444	4077.531	799.364	7551.429	740.196
44 23	7746.353	4079.228	800.004	7554.122	740.745
44 24	7749.262	4080.924	800.645	7556.816	741.295
44 25	7752.171	4082.621	801.286	7559.509	741.844
44 26	7755.080	4084.318	801.928	7562.202	742.394
44 27	7757.989	4086.015	802.570	7564.895	742.944
44 28	7760.898	4087.713	803.212	7567.587	743.494
44 29	7763.806	4089.410	803.854	7570.280	744.045
44 30	7766.715	4091.108	804.497	7572.972	744.595
44 31	7769.624	4092.806	805.140	7575.665	745.146
44 32	7772.533	4094.504	805.783	7578.357	745.697
44 33	7775.442	4096.203	806.427	7581.049	746.249
44 34	7778.351	4097.901	807.071	7583.740	746.800
44 35	7781.260	4099.600	807.715	7586.432	747.352
44 36	7784.169	4101.299	808.360	7589.123	747.903
44 37	7787.078	4102.998	809.005	7591.814	748.455
44 38	7789.986	4104.698	809.650	7594.506	749.008
44 39	7792.895	4106.397	810.295	7597.196	749.560
44 40	7795.804	4108.097	810.941	7599.887	750.112
44 41	7798.713	4109.797	811.587	7602.578	750.665
44 42	7801.622	4111.497	812.234	7605.268	751.218
44 43	7804.531	4113.198	812.881	7607.959	751.771
44 44	7807.440	4114.898	813.527	7610.649	752.325
44 45	7810.349	4116.599	814.175	7613.339	752.878
44 46	7813.257	4118.300	814.822	7616.028	753.432
44 47	7816.166	4120.001	815.470	7618.718	753.986
44 48	7819.075	4121.703	816.119	7621.408	754.540
44 49	7821.984	4123.404	816.767	7624.097	755.095
44 50	7824.893	4125.106	817.416	7626.786	755.649
44 51	7827.802	4126.808	818.065	7629.475	756.204
44 52	7830.711	4128.510	818.715	7632.164	756.759
44 53	7833.620	4130.213	819.365	7634.853	757.314
44 54	7836.529	4131.915	820.015	7637.541	757.869
44 55	7839.437	4133.618	820.665	7640.229	758.425
44 56	7842.346	4135.321	821.316	7642.918	758.980
44 57	7845.255	4137.025	821.967	7645.605	759.536
44 58	7848.164	4138.728	822.618	7648.293	760.092
44 59	7851.073	4140.432	823.270	7650.981	760.649
45 00	7853.982	4142.136	823.922	7653.669	761.205

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
45 01	7856.891	4143.840	824.574	7656.356	761.762
45 02	7859.800	4145.544	825.226	7659.043	762.319
45 03	7862.708	4147.248	825.879	7661.730	762.876
45 04	7865.617	4148.953	826.532	7664.417	763.433
45 05	7868.526	4150.658	827.186	7667.104	763.991
45 06	7871.435	4152.363	827.840	7669.790	764.548
45 07	7874.344	4154.069	828.494	7672.477	765.106
45 08	7877.253	4155.774	829.148	7675.163	765.664
45 09	7880.162	4157.480	829.803	7677.849	766.222
45 10	7883.071	4159.186	830.458	7680.535	766.781
45 11	7885.980	4160.892	831.113	7683.221	767.339
45 12	7888.888	4162.598	831.769	7685.906	767.898
45 13	7891.797	4164.305	832.425	7688.592	768.457
45 14	7894.706	4166.011	833.081	7691.277	769.017
45 15	7897.615	4167.719	833.738	7693.962	769.576
45 16	7900.524	4169.426	834.394	7696.647	770.136
45 17	7903.433	4171.133	835.052	7699.332	770.695
45 18	7906.342	4172.841	835.709	7702.017	771.255
45 19	7909.251	4174.548	836.367	7704.701	771.816
45 20	7912.159	4176.257	837.025	7707.385	772.376
45 21	7915.068	4177.965	837.683	7710.069	772.937
45 22	7917.977	4179.673	838.342	7712.753	773.497
45 23	7920.886	4181.382	839.001	7715.437	774.058
45 24	7923.795	4183.091	839.660	7718.121	774.620
45 25	7926.704	4184.800	840.320	7720.804	775.181
45 26	7929.613	4186.509	840.980	7723.488	775.743
45 27	7932.522	4188.218	841.640	7726.171	776.304
45 28	7935.430	4189.928	842.301	7728.854	776.866
45 29	7938.339	4191.638	842.962	7731.536	777.428
45 30	7941.248	4193.348	843.623	7734.219	777.991
45 31	7944.157	4195.058	844.284	7736.902	778.553
45 32	7947.066	4196.769	844.946	7739.584	779.116
45 33	7949.975	4198.480	845.608	7742.266	779.679
45 34	7952.884	4200.190	846.271	7744.948	780.242
45 35	7955.793	4201.902	846.934	7747.630	780.805
45 36	7958.702	4203.613	847.597	7750.312	781.369
45 37	7961.610	4205.325	848.260	7752.993	781.933
45 38	7964.519	4207.036	848.924	7755.675	782.497
45 39	7967.428	4208.748	849.588	7758.356	783.061
45 40	7970.337	4210.460	850.252	7761.037	783.625
45 41	7973.246	4212.173	850.916	7763.718	784.189
45 42	7976.155	4213.885	851.582	7766.398	784.754
45 43	7979.064	4215.598	852.247	7769.079	785.319
45 44	7981.973	4217.311	852.912	7771.759	785.884
45 45	7984.881	4219.024	853.578	7774.439	786.449

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
45	46	7987.790	4220.738	854.244	7777.119	787.015
45	47	7990.699	4222.451	854.911	7779.799	787.581
45	48	7993.608	4224.165	855.578	7782.479	788.146
45	49	7996.517	4225.880	856.245	7785.159	788.713
45	50	7999.426	4227.594	856.912	7787.838	789.279
45	51	8002.335	4229.308	857.580	7790.517	789.845
45	52	8005.244	4231.023	858.248	7793.196	790.412
45	53	8008.153	4232.738	858.916	7795.875	790.979
45	54	8011.061	4234.453	859.585	7798.554	791.546
45	55	8013.970	4236.168	860.254	7801.232	792.113
45	56	8016.879	4237.884	860.923	7803.911	792.680
45	57	8019.788	4239.600	861.593	7806.589	793.248
45	58	8022.697	4241.316	862.263	7809.267	793.816
45	59	8025.606	4243.032	862.933	7811.945	794.384
46	00	8028.515	4244.748	863.603	7814.622	794.952
46	01	8031.424	4246.465	864.274	7817.300	795.520
46	02	8034.332	4248.182	864.945	7819.977	796.089
46	03	8037.241	4249.899	865.617	7822.655	796.658
46	04	8040.150	4251.616	866.289	7825.332	797.227
46	05	8043.059	4253.333	866.961	7828.009	797.796
46	06	8045.968	4255.051	867.633	7830.685	798.365
46	07	8048.877	4256.769	868.306	7833.362	798.935
46	08	8051.786	4258.487	868.979	7836.038	799.505
46	09	8054.695	4260.205	869.652	7838.715	800.075
46	10	8057.604	4261.924	870.326	7841.391	800.645
46	11	8060.512	4263.643	871.000	7844.067	801.215
46	12	8063.421	4265.361	871.674	7846.742	801.786
46	13	8066.330	4267.081	872.349	7849.418	802.356
46	14	8069.239	4268.800	873.024	7852.093	802.927
46	15	8072.148	4270.520	873.699	7854.768	803.498
46	16	8075.057	4272.239	874.375	7857.444	804.070
46	17	8077.966	4273.959	875.050	7860.118	804.641
46	18	8080.875	4275.679	875.726	7862.793	805.213
46	19	8083.783	4277.400	876.403	7865.468	805.785
46	20	8086.692	4279.121	877.080	7868.142	806.357
46	21	8089.601	4280.842	877.757	7870.816	806.929
46	22	8092.510	4282.563	878.434	7873.490	807.502
46	23	8095.419	4284.284	879.112	7876.164	808.074
46	24	8098.328	4286.006	879.790	7878.838	808.647
46	25	8101.237	4287.727	880.468	7881.512	809.220
46	26	8104.146	4289.449	881.147	7884.185	809.793
46	27	8107.055	4291.171	881.826	7886.858	810.367
46	28	8109.963	4292.894	882.506	7889.531	810.941
46	29	8112.872	4294.616	883.185	7892.204	811.514
46	30	8115.781	4296.339	883.865	7894.877	812.088

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
46 31	8118.690	4298.062	884.545	7897.550	812.663
46 32	8121.599	4299.785	885.226	7900.222	813.237
46 33	8124.508	4301.509	885.907	7902.894	813.812
46 34	8127.417	4303.232	886.588	7905.566	814.386
46 35	8130.326	4304.956	887.270	7908.238	814.961
46 36	8133.234	4306.680	887.951	7910.910	815.537
46 37	8136.143	4308.405	888.634	7913.581	816.112
46 38	8139.052	4310.129	889.316	7916.253	816.688
46 39	8141.961	4311.854	889.999	7918.924	817.263
46 40	8144.870	4313.579	890.682	7921.595	817.839
46 41	8147.779	4315.304	891.365	7924.266	818.416
46 42	8150.688	4317.029	892.049	7926.937	818.992
46 43	8153.597	4318.755	892.733	7929.608	819.569
46 44	8156.506	4320.481	893.418	7932.278	820.145
46 45	8159.414	4322.207	894.102	7934.948	820.722
46 46	8162.323	4323.933	894.787	7937.618	821.299
46 47	8165.232	4325.660	895.472	7940.288	821.877
46 48	8168.141	4327.386	896.158	7942.958	822.454
46 49	8171.050	4329.113	896.844	7945.627	823.032
46 50	8173.959	4330.841	897.531	7948.297	823.610
46 51	8176.868	4332.568	898.217	7950.966	824.188
46 52	8179.777	4334.295	898.904	7953.635	824.766
46 53	8182.685	4336.023	899.591	7956.304	825.345
46 54	8185.594	4337.751	900.279	7958.973	825.923
46 55	8188.503	4339.479	900.967	7961.641	826.502
46 56	8191.412	4341.208	901.655	7964.309	827.081
46 57	8194.321	4342.936	902.343	7966.978	827.661
46 58	8197.230	4344.665	903.032	7969.646	828.240
46 59	8200.139	4346.394	903.721	7972.314	828.820
47 00	8203.048	4348.124	904.411	7974.981	829.400
47 01	8205.957	4349.853	905.100	7977.649	829.980
47 02	8208.865	4351.583	905.790	7980.316	830.560
47 03	8211.774	4353.313	906.481	7982.983	831.140
47 04	8214.683	4355.043	907.172	7985.651	831.721
47 05	8217.592	4356.774	907.863	7988.317	832.302
47 06	8220.501	4358.504	908.554	7990.984	832.883
47 07	8223.410	4360.235	909.246	7993.651	833.464
47 08	8226.319	4361.966	909.938	7996.317	834.046
47 09	8229.228	4363.697	910.630	7998.983	834.627
47 10	8232.137	4365.429	911.323	8001.649	835.209
47 11	8235.045	4367.161	912.016	8004.315	835.791
47 12	8237.954	4368.893	912.709	8006.981	836.373
47 13	8240.863	4370.625	913.402	8009.646	836.956
47 14	8243.772	4372.357	914.096	8012.312	837.538
47 15	8246.681	4374.090	914.791	8014.977	838.121

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
47 16	8249.590	4375.823	915.485	8017.642	838.704
47 17	8252.499	4377.556	916.180	8020.307	839.287
47 18	8255.408	4379.289	916.875	8022.971	839.870
47 19	8258.316	4381.022	917.571	8025.636	840.454
47 20	8261.225	4382.756	918.266	8028.300	841.038
47 21	8264.134	4384.490	918.963	8030.964	841.622
47 22	8267.043	4386.224	919.659	8033.628	842.206
47 23	8269.952	4387.958	920.356	8036.292	842.790
47 24	8272.861	4389.693	921.053	8038.956	843.375
47 25	8275.770	4391.428	921.750	8041.619	843.959
47 26	8278.679	4393.163	922.448	8044.282	844.544
47 27	8281.588	4394.898	923.146	8046.945	845.129
47 28	8284.496	4396.634	923.844	8049.608	845.715
47 29	8287.405	4398.369	924.543	8052.271	846.300
47 30	8290.314	4400.105	925.242	8054.934	846.886
47 31	8293.223	4401.841	925.942	8057.596	847.472
47 32	8296.132	4403.578	926.641	8060.258	848.058
47 33	8299.041	4405.314	927.341	8062.921	848.644
47 34	8301.950	4407.051	928.042	8065.583	849.230
47 35	8304.859	4408.788	928.742	8068.244	849.817
47 36	8307.767	4410.526	929.443	8070.906	850.404
47 37	8310.676	4412.263	930.144	8073.567	850.991
47 38	8313.585	4414.001	930.846	8076.229	851.578
47 39	8316.494	4415.739	931.548	8078.890	852.165
47 40	8319.403	4417.477	932.250	8081.550	852.753
47 41	8322.312	4419.215	932.953	8084.211	853.341
47 42	8325.221	4420.954	933.655	8086.872	853.929
47 43	8328.130	4422.693	934.359	8089.532	854.517
47 44	8331.039	4424.432	935.062	8092.193	855.105
47 45	8333.947	4426.171	935.766	8094.853	855.694
47 46	8336.856	4427.910	936.470	8097.513	856.283
47 47	8339.765	4429.650	937.175	8100.172	856.872
47 48	8342.674	4431.390	937.880	8102.832	857.461
47 49	8345.583	4433.130	938.585	8105.491	858.050
47 50	8348.492	4434.871	939.290	8108.150	858.640
47 51	8351.401	4436.611	939.996	8110.809	859.230
47 52	8354.310	4438.352	940.702	8113.468	859.820
47 53	8357.218	4440.093	941.408	8116.127	860.410
47 54	8360.127	4441.834	942.115	8118.785	861.000
47 55	8363.036	4443.576	942.822	8121.444	861.590
47 56	8365.945	4445.318	943.530	8124.102	862.181
47 57	8368.854	4447.060	944.237	8126.760	862.772
47 58	8371.763	4448.802	944.945	8129.418	863.363
47 59	8374.672	4450.544	945.654	8132.075	863.954
48 00	8377.581	4452.287	946.362	8134.733	864.546

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
48 01	8380.489	4454.030	947.071	8137.390	865.138
48 02	8383.398	4455.773	747.781	8140.047	865.729
48 03	8386.307	4457.516	948.490	8142.704	866.322
48 04	8389.216	4459.260	949.200	8145.361	866.914
48 05	8392.125	4461.004	949.911	8148.018	867.506
48 06	8395.034	4462.747	950.621	8150.674	868.099
48 07	8397.943	4464.492	951.332	8153.330	868.692
48 08	8400.852	4466.236	952.043	8155.987	869.285
48 09	8403.761	4467.981	952.755	8158.642	869.878
48 10	8406.669	4469.726	953.467	8161.298	870.471
48 11	8409.578	4471.471	954.179	8163.954	871.065
48 12	8412.487	4473.216	954.892	8166.609	871.659
48 13	8415.396	4474.962	955.605	8169.264	872.253
48 14	8418.305	4476.708	956.318	8171.919	872.847
48 15	8421.214	4478.454	957.031	8174.574	873.441
48 16	8424.123	4480.200	957.745	8177.229	874.036
48 17	8427.032	4481.946	958.459	8179.884	874.631
48 18	8429.940	4483.693	959.174	8182.538	875.226
48 19	8432.849	4485.440	959.889	8185.192	875.821
48 20	8435.758	4487.187	960.604	8187.846	876.416
48 21	8438.667	4488.935	961.319	8190.500	877.012
48 22	8441.576	4490.682	962.035	8193.154	877.607
48 23	8444.485	4492.430	962.751	8195.807	878.203
48 24	8447.394	4494.178	963.468	8198.461	878.799
48 25	8450.303	4495.927	964.185	8201.114	879.396
48 26	8453.212	4497.675	964.902	8203.767	879.992
48 27	8456.120	4499.424	965.619	8206.420	880.589
48 28	8459.029	4501.173	966.337	8209.072	881.186
48 29	8461.938	4502.922	967.055	8211.725	881.783
48 30	8464.847	4504.672	967.774	8214.377	882.380
48 31	8467.756	4506.421	968.492	8217.029	882.978
48 32	8470.665	4508.171	969.211	8219.681	883.575
48 33	8473.574	4509.921	969.931	8222.333	884.173
48 34	8476.483	4511.672	970.650	8224.984	884.771
48 35	8479.391	4513.422	971.371	8227.636	885.369
48 36	8482.300	4515.173	972.091	8230.287	885.968
48 37	8485.209	4516.924	972.812	8232.938	886.566
48 38	8488.118	4518.676	973.533	8235.589	887.165
48 39	8491.027	4520.427	974.254	8238.240	887.764
48 40	8493.936	4522.179	974.976	8240.890	888.363
48 41	8496.845	4523.931	975.698	8243.541	888.963
48 42	8499.754	4525.683	976.420	8246.191	889.562
48 43	8502.663	4527.435	977.143	8248.841	890.162
48 44	8505.571	4529.188	977.866	8251.491	890.762
48 45	8508.480	4530.941	978.589	8254.141	891.362

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
48 46	8511.389	4532.694	979.313	8256.790	891.963
48 47	8514.298	4534.448	980.037	8259.439	892.563
48 48	8517.207	4536.201	980.761	8262.089	893.164
48 49	8520.116	4537.955	981.486	8264.738	893.765
48 50	8523.025	4539.709	982.211	8267.386	894.366
48 51	8525.934	4541.463	982.936	8270.035	894.967
48 52	8528.842	4543.218	983.661	8272.683	895.569
48 53	8531.751	4544.973	984.387	8275.332	896.170
48 54	8534.660	4546.728	985.114	8277.980	896.772
48 55	8537.569	4548.483	985.840	8280.628	897.374
48 56	8540.478	4550.238	986.567	8283.275	897.977
48 57	8543.387	4551.994	987.295	8285.923	898.579
48 58	8546.296	4553.750	988.022	8288.570	899.182
48 59	8549.205	4555.506	988.750	8291.218	899.785
49 00	8552.114	4557.263	989.478	8293.865	900.388
49 01	8555.022	4559.019	990.207	8296.512	900.991
48 02	8557.931	4560.776	990.936	8299.158	901.594
49 03	8560.840	4562.533	991.665	8301.805	902.198
49 04	8563.749	4564.291	992.395	8304.451	902.802
49 05	8566.658	4566.048	993.124	8307.097	903.406
49 06	8569.567	4567.806	993.855	8309.743	904.010
49 07	8572.476	4569.564	994.585	8312.389	904.615
49 08	8575.385	4571.322	995.316	8315.035	905.219
49 09	8578.293	4573.081	996.047	8317.680	905.824
49 10	8581.202	4574.839	996.779	8320.326	906.429
49 11	8584.111	4576.598	997.511	8322.971	907.034
49 12	8587.020	4578.357	998.243	8325.616	907.639
49 13	8589.929	4580.117	998.975	8328.260	908.245
49 14	8592.838	4581.877	999.708	8330.905	908.851
49 15	8595.747	4583.636	1000.442	8333.550	909.457
49 16	8598.656	4585.397	1001.175	8336.194	910.063
49 17	8601.564	4587.157	1001.909	8338.838	910.669
49 18	8604.473	4588.918	1002.643	8341.482	911.276
49 19	8607.382	4590.678	1003.378	8344.126	911.882
49 20	8610.291	4592.439	1004.112	8346.769	912.489
49 21	8613.200	4594.201	1004.848	8349.412	913.096
49 22	8616.109	4595.962	1005.583	8352.056	913.704
49 23	8619.018	4597.724	1006.319	8354.699	914.311
49 24	8621.927	4599.486	1007.055	8357.341	914.919
49 25	8624.836	4601.248	1007.792	8359.984	915.527
49 26	8627.744	4603.011	1008.528	8362.627	916.135
49 27	8630.653	4604.774	1009.266	8365.269	916.743
49 28	8633.562	4606.536	1010.003	8367.911	917.351
49 29	8636.471	4608.300	1010.741	8370.553	917.960
49 30	8639.380	4610.063	1011.479	8373.195	918.569

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
49 31	8642.289	4611.827	1012.218	8375.836	919.178
49 32	8645.198	4613.591	1012.956	8378.478	919.787
49 33	8648.107	4615.355	1013.696	8381.119	920.396
49 34	8651.015	4617.119	1014.435	8383.760	921.006
49 35	8653.924	4618.884	1015.175	8386.401	921.616
49 36	8656.833	4620.649	1015.915	8389.042	922.226
49 37	8659.742	4622.414	1016.656	8391.682	922.836
49 38	8662.651	4624.179	1017.396	8394.323	923.446
49 39	8665.560	4625.945	1018.137	8396.963	924.057
49 40	8668.469	4627.710	1018.879	8399.603	924.668
49 41	8671.378	4629.476	1019.621	8402.242	925.278
49 42	8674.287	4631.243	1020.363	8404.882	925.890
49 43	8677.195	4633.009	1021.106	8407.522	926.501
49 44	8680.104	4634.776	1021.848	8410.161	927.112
49 45	8683.013	4636.543	1022.591	8412.800	927.724
49 46	8685.922	4638.310	1023.335	8415.439	928.336
49 47	8688.831	4640.078	1024.079	8418.078	928.948
49 48	8691.740	4641.845	1024.823	8420.716	929.560
49 49	8694.649	4643.613	1025.567	8423.355	930.173
49 50	8697.558	4645.382	1026.312	8425.993	930.786
49 51	8700.466	4647.150	1027.057	8428.631	931.398
49 52	8703.375	4648.919	1027.803	8431.269	932.011
49 53	8706.284	4650.688	1028.549	8433.906	932.625
49 54	8709.193	4652.457	1029.295	8436.544	933.238
49 55	8712.102	4654.226	1030.041	8439.181	933.852
49 56	8715.011	4655.996	1030.788	8441.818	934.465
49 57	8717.920	4657.765	1031.535	8444.455	935.079
49 58	8720.829	4659.536	1032.283	8447.092	935.694
49 59	8723.738	4661.306	1033.031	8449.729	936.308
50 00	8726.647	4663.077	1033.779	8452.365	936.923
50 01	8729.555	4664.847	1034.527	8455.001	937.537
50 02	8732.464	4666.619	1035.276	8457.638	938.152
50 03	8735.373	4668.390	1036.025	8460.273	938.768
50 04	8738.282	4670.161	1036.775	8462.909	939.383
50 05	8741.191	4671.933	1037.525	8465.545	939.998
50 06	8744.100	4673.705	1038.275	8468.180	940.614
50 07	8747.009	4675.477	1039.025	8470.815	941.230
50 08	8749.918	4677.250	1039.776	8473.450	941.846
50 09	8752.826	4679.023	1040.527	8476.085	942.462
50 10	8755.735	4680.796	1041.279	8478.720	943.079
50 11	8758.644	4682.569	1042.031	8481.354	943.696
50 12	8761.553	4684.342	1042.783	8483.988	944.313
50 13	8764.462	4686.116	1043.535	8486.623	944.930
50 14	8767.371	4687.890	1044.288	8489.257	945.547
50 15	8770.280	4689.664	1045.042	8491.890	946.164

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
50 16	8773.189	4691.439	1045.795	8494.524	946.782
50 17	8776.097	4693.213	1046.549	8497.157	947.400
50 18	8779.006	4694.988	1047.303	8499.790	948.018
50 19	8781.915	4696.763	1048.058	8502.423	948.636
50 20	8784.824	4698.539	1048.812	8505.056	949.254
50 21	8787.733	4700.314	1049.568	8507.689	949.873
50 22	8790.642	4702.090	1050.323	8510.321	950.492
50 23	8793.551	4703.866	1051.079	8512.954	951.111
50 24	8796.460	4705.643	1051.835	8515.586	951.730
50 25	8799.369	4707.419	1052.592	8518.218	952.349
50 26	8802.277	4709.196	1053.349	8520.850	952.969
50 27	8805.186	4710.973	1054.106	8523.481	953.589
50 28	8808.095	4712.751	1054.864	8526.112	954.209
50 29	8811.004	4714.528	1055.622	8528.744	954.829
50 30	8813.913	4716.306	1056.380	8531.375	955.449
50 31	8816.822	4718.084	1057.138	8534.006	956.070
50 32	8819.731	4719.863	1057.897	8536.636	956.690
50 33	8822.640	4721.641	1058.657	8539.267	957.311
50 34	8825.548	4723.420	1059.416	8541.897	957.932
50 35	8828.457	4725.199	1060.176	8544.527	958.554
50 36	8831.366	4726.978	1060.936	8547.157	959.175
50 37	8834.275	4728.758	1061.697	8549.787	959.797
50 38	8837.184	4730.538	1062.458	8552.417	960.419
50 39	8840.093	4732.318	1063.219	8555.046	961.041
50 40	8843.002	4734.098	1063.981	8557.675	961.663
50 41	8845.911	4735.879	1064.743	8560.304	962.285
50 42	8848.820	4737.659	1065.505	8562.933	962.908
50 43	8851.728	4739.440	1066.268	8565.562	963.531
50 44	8854.637	4741.222	1067.031	8568.190	964.154
50 45	8857.546	4743.003	1067.794	8570.819	964.777
50 46	8860.455	4744.785	1068.558	8573.447	965.400
50 47	8863.364	4746.567	1069.322	8576.075	966.024
50 48	8866.273	4748.349	1070.086	8578.703	966.648
50 49	8869.182	4750.132	1070.851	8581.330	967.272
50 50	8872.091	4751.914	1071.616	8583.958	967.896
50 51	8874.999	4753.697	1072.381	8586.585	968.520
50 52	8877.908	4755.481	1073.147	8589.212	969.145
50 53	8880.817	4757.264	1073.913	8591.839	969.769
50 54	8883.726	4759.048	1074.679	8594.466	970.394
50 55	8886.635	4760.832	1075.446	8597.092	971.019
50 56	8889.544	4762.616	1076.213	8599.718	971.645
50 57	8892.453	4764.400	1076.981	8602.344	972.270
50 58	8895.362	4766.185	1077.748	8604.971	972.896
50 59	8898.271	4767.970	1078.517	8607.596	973.522
51 00	8901.179	4769.755	1079.285	8610.222	974.148

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
51 01	8904.088	4771.541	1080.054	8612.847	974.774
51 02	8906.997	4773.327	1080.823	8615.473	975.400
51 03	8909.906	4775.112	1081.592	8618.098	976.027
51 04	8912.815	4776.899	1082.362	8620.722	976.654
51 05	8915.724	4778.685	1083.132	8623.347	977.281
51 06	8918.633	4780.472	1083.903	8625.972	977.908
51 07	8921.542	4782.259	1084.674	8628.596	978.535
51 08	8924.450	4784.046	1085.445	8631.220	979.163
51 09	8927.359	4785.833	1086.216	8633.844	979.791
51 10	8930.268	4787.621	1086.988	8636.468	980.419
51 11	8933.177	4789.409	1087.760	8639.092	981.047
51 12	8936.086	4791.197	1088.533	8641.715	981.675
51 13	8938.995	4792.986	1089.306	8644.338	982.304
51 14	8941.904	4794.774	1090.079	8646.961	982.933
51 15	8944.813	4796.563	1090.853	8649.584	983.561
51 16	8947.722	4798.353	1091.626	8652.207	984.191
51 17	8950.630	4800.142	1092.401	8654.829	984.820
51 18	8953.539	4801.932	1093.175	8657.452	985.449
51 19	8956.448	4803.722	1093.950	8660.074	986.079
51 20	8959.357	4805.512	1094.726	8662.696	986.709
51 21	8962.266	4807.302	1095.501	8665.317	987.339
51 22	8965.175	4809.093	1096.277	8667.939	987.969
51 23	8968.084	4810.884	1097.053	8670.560	988.600
51 24	8970.993	4812.675	1097.830	8673.182	989.230
51 25	8973.901	4814.467	1098.607	8675.803	989.861
51 26	8976.810	4816.258	1099.384	8678.424	990.492
51 27	8979.719	4818.050	1100.162	8681.044	991.123
51 28	8982.628	4819.842	1100.940	8683.665	991.755
51 29	8985.537	4821.635	1101.718	8686.285	992.386
51 30	8988.446	4823.427	1102.497	8688.905	993.018
51 31	8991.355	4825.220	1103.276	8691.525	993.650
51 32	8994.264	4827.014	1104.056	8694.145	994.282
51 33	8997.173	4828.807	1104.835	8696.764	994.915
51 34	9000.081	4830.601	1105.615	8699.384	995.547
51 35	9002.990	4832.395	1106.396	8702.003	996.180
51 36	9005.899	4834.189	1107.177	8704.622	996.813
51 37	9008.808	4835.983	1107.958	8707.241	997.446
51 38	9011.717	4837.778	1108.739	8709.859	998.079
51 39	9014.626	4839.573	1109.521	8712.478	998.713
51 40	9017.535	4841.368	1110.303	8715.096	999.346
51 41	9020.444	4843.164	1111.086	8717.714	999.980
51 42	9023.352	4844.959	1111.869	8720.332	1000.614
51 43	9026.261	4846.755	1112.652	8722.950	1001.249
51 44	9029.170	4848.552	1113.435	8725.568	1001.883
51 45	9032.079	4850.348	1114.219	8728.185	1002.518

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
51 46	9034.988	4852.145	1115.003	8730.802	1003.152
51 47	9037.897	4853.942	1115.788	8733.419	1003.788
51 48	9040.806	4855.739	1116.573	8736.036	1004.423
51 49	9043.715	4857.537	1117.358	8738.652	1005.058
51 50	9046.624	4859.334	1118.144	8741.269	1005.694
51 51	9049.532	4861.132	1118.930	8743.885	1006.329
51 52	9052.441	4862.931	1119.716	8746.501	1006.965
51 53	9055.350	4864.729	1120.503	8749.117	1007.602
51 54	9058.259	4866.528	1121.290	8751.733	1008.238
51 55	9061.168	4868.327	1122.077	8754.348	1008.874
51 56	9064.077	4870.126	1122.865	8756.963	1009.511
51 57	9066.986	4871.926	1123.653	8759.579	1010.148
51 58	9069.895	4873.726	1124.441	8762.194	1010.785
51 59	9072.803	4875.526	1125.230	8764.808	1011.423
52 00	9075.712	4877.326	1126.019	8767.423	1012.060
52 01	9078.621	4879.126	1126.808	8770.037	1012.698
52 02	9081.530	4880.927	1127.598	8772.652	1013.336
52 03	9084.439	4882.728	1128.388	8775.265	1013.974
52 04	9087.348	4884.530	1129.179	8777.879	1014.612
52 05	9090.257	4886.331	1129.970	8780.493	1015.250
52 06	9093.166	4888.133	1130.761	8783.106	1015.889
52 07	9096.074	4889.935	1131.552	8785.720	1016.528
52 08	9098.983	4891.737	1132.344	8788.333	1017.167
52 09	9101.892	4893.540	1133.136	8790.946	1017.806
52 10	9104.801	4895.343	1133.929	8793.558	1018.445
52 11	9107.710	4897.146	1134.722	8796.171	1019.085
52 12	9110.619	4898.949	1135.515	8798.783	1019.725
52 13	9113.528	4900.753	1136.309	8801.395	1020.365
52 14	9116.437	4902.557	1137.103	8804.008	1021.005
52 15	9119.346	4904.361	1137.897	8806.619	1021.645
52 16	9122.254	4906.166	1138.692	8809.231	1022.286
52 17	9125.163	4907.970	1139.487	8811.842	1022.926
52 18	9128.072	4909.775	1140.282	8814.453	1023.567
52 19	9130.981	4911.580	1141.078	8817.065	1024.208
52 20	9133.890	4913.386	1141.874	8819.675	1024.850
52 21	9136.799	4915.191	1142.670	8822.286	1025.491
52 22	9139.708	4916.997	1143.467	8824.897	1026.133
52 23	9142.617	4918.804	1144.264	8827.507	1026.775
52 24	9145.525	4920.610	1145.061	8830.117	1027.417
52 25	9148.434	4922.417	1145.859	8832.727	1028.059
52 26	9151.343	4924.224	1146.657	8835.337	1028.701
52 27	9154.252	4926.031	1147.456	8837.946	1029.344
52 28	9157.161	4927.838	1148.255	8840.556	1029.987
52 29	9160.070	4929.646	1149.054	8843.165	1030.630
52 30	9162.979	4931.454	1149.853	8845.774	1031.273

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
52 31	9165.888	4933.263	1150.653	8848.383	1031.916
52 32	9168.797	4935.071	1151.454	8850.991	1032.560
52 33	9171.705	4936.880	1152.254	8853.600	1033.204
52 34	9174.614	4938.689	1153.055	8856.208	1033.848
52 35	9177.523	4940.498	1153.856	8858.816	1034.492
52 36	9180.432	4942.308	1154.658	8861.424	1035.136
52 37	9183.341	4944.118	1155.460	8864.031	1035.781
52 38	9186.250	4945.928	1156.262	8866.639	1036.425
52 39	9189.159	4947.738	1157.065	8869.246	1037.070
52 40	9192.068	4949.549	1157.868	8871.853	1037.715
52 41	9194.976	4951.360	1158.672	8874.460	1038.361
52 42	9197.885	4953.171	1159.475	8877.067	1039.006
52 43	9200.794	4954.982	1160.280	8879.674	1039.652
52 44	9203.703	4956.794	1161.084	8882.280	1040.298
52 45	9206.612	4958.606	1161.889	8884.886	1040.944
52 46	9209.521	4960.418	1162.694	8887.492	1041.590
52 47	9212.430	4962.230	1163.499	8890.098	1042.236
52 48	9215.339	4964.043	1164.305	8892.704	1042.883
52 49	9218.248	4965.856	1165.112	8895.309	1043.530
52 50	9221.156	4967.669	1165.918	8897.914	1044.177
52 51	9224.065	4969.483	1166.725	8900.519	1044.824
52 52	9226.974	4971.296	1167.532	8903.124	1045.471
52 53	9229.883	4973.111	1168.340	8905.729	1046.119
52 54	9232.792	4974.925	1169.148	8908.333	1046.766
52 55	9235.701	4976.739	1169.956	8910.938	1047.414
52 56	9238.610	4978.554	1170.765	8913.542	1048.063
52 57	9241.519	4980.369	1171.574	8916.146	1048.711
52 58	9244.427	4982.185	1172.384	8918.749	1049.359
52 59	9247.336	4984.000	1173.193	8921.353	1050.008
53 00	9250.245	4985.816	1174.003	8923.956	1050.657
53 01	9253.154	4987.632	1174.814	8926.559	1051.306
53 02	9256.063	4989.448	1175.625	8929.162	1051.955
53 03	9258.972	4991.265	1176.436	8931.765	1052.605
53 04	9261.881	4993.082	1177.247	8934.368	1053.254
53 05	9264.790	4994.899	1178.059	8936.970	1053.904
53 06	9267.698	4996.717	1178.872	8939.572	1054.554
53 07	9270.607	4998.534	1179.684	8942.174	1055.204
53 08	9273.516	5000.352	1180.497	8944.776	1055.855
53 09	9276.425	5002.171	1181.310	8947.378	1056.505
53 10	9279.334	5003.989	1182.124	8949.979	1057.156
53 11	9282.243	5005.808	1182.938	8952.581	1057.807
53 12	9285.152	5007.627	1183.752	8955.182	1058.458
53 13	9288.061	5009.446	1184.567	8957.783	1059.109
53 14	9290.970	5011.266	1185.382	8960.383	1059.761
53 15	9293.878	5013.086	1186.198	8962.984	1060.413

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
53 16	9296.787	5014.906	1187.013	8965.584	1061.065
53 17	9299.696	5016.726	1187.830	8968.184	1061.717
53 18	9302.605	5018.547	1188.646	8970.784	1062.369
53 19	9305.514	5020.368	1189.463	8973.384	1063.021
53 20	9308.423	5022.189	1190.280	8975.984	1063.674
53 21	9311.332	5024.010	1191.098	8978.583	1064.327
53 22	9314.241	5025.832	1191.916	8981.182	1064.980
53 23	9317.149	5027.654	1192.734	8983.781	1065.633
53 24	9320.058	5029.476	1193.553	8986.380	1066.287
53 25	9322.967	5031.299	1194.372	8988.979	1066.940
53 26	9325.876	5033.121	1195.191	8991.577	1067.594
53 27	9328.785	5034.944	1196.011	8994.175	1068.248
53 28	9331.694	5036.768	1196.831	8996.773	1068.902
53 29	9334.603	5038.591	1197.651	8999.371	1069.557
53 30	9337.512	5040.415	1198.472	9001.969	1070.211
53 31	9340.421	5042.239	1199.293	9004.566	1070.866
53 32	9343.329	5044.063	1200.115	9007.164	1071.521
53 33	9346.238	5045.888	1200.936	9009.761	1072.176
53 34	9349.147	5047.713	1201.759	9012.357	1072.831
53 35	9352.056	5049.538	1202.581	9014.954	1073.487
53 36	9354.965	5051.364	1203.404	9017.551	1074.142
53 37	9357.874	5053.189	1204.227	9020.147	1074.798
53 38	9360.783	5055.015	1205.051	9022.743	1075.454
53 39	9363.692	5056.841	1205.875	9025.339	1076.111
53 40	9366.600	5058.668	1206.699	9027.935	1076.767
53 41	9369.509	5060.495	1207.524	9030.530	1077.424
53 42	9372.418	5062.322	1208.349	9033.126	1078.080
53 43	9375.327	5064.149	1209.175	9035.721	1078.737
53 44	9378.236	5065.977	1210.000	9038.316	1079.395
53 45	9381.145	5067.804	1210.827	9040.911	1080.052
53 46	9384.054	5069.632	1211.653	9043.505	1080.709
53 47	9386.963	5071.461	1212.480	9046.100	1081.367
53 48	9389.872	5073.289	1213.307	9048.694	1082.025
53 49	9392.780	5075.119	1214.135	9051.288	1082.683
53 50	9395.689	5076.948	1214.963	9053.882	1083.342
53 51	9398.598	5078.777	1215.791	9056.476	1084.000
53 52	9401.507	5080.607	1216.620	9059.069	1084.659
53 53	9404.416	5082.437	1217.449	9061.662	1085.318
53 54	9407.325	5084.267	1218.278	9064.256	1085.977
53 55	9410.234	5086.098	1219.108	9066.848	1086.636
53 56	9413.143	5087.928	1219.938	9069.441	1087.296
53 57	9416.051	5089.760	1220.768	9072.034	1087.955
53 58	9418.960	5091.591	1221.599	9074.626	1088.615
53 59	9421.869	5093.423	1222.430	9077.218	1089.275
54 00	9424.778	5095.255	1223.262	9079.810	1089.935

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
54 01	9427.687	5097.087	1224.094	9082.402	1090.596
54 02	9430.596	5098.919	1224.926	9084.993	1091.256
54 03	9433.505	5100.752	1225.759	9087.585	1091.917
54 04	9436.414	5102.585	1226.592	9090.176	1092.578
54 05	9439.323	5104.418	1227.425	9092.767	1093.239
54 06	9442.231	5106.252	1228.259	9095.358	1093.900
54 07	9445.140	5108.085	1229.093	9097.948	1094.562
54 08	9448.049	5109.920	1229.927	9100.539	1095.224
54 09	9450.958	5111.754	1230.762	9103.129	1095.886
54 10	9453.867	5113.589	1231.597	9105.719	1096.548
54 11	9456.776	5115.423	1232.433	9108.309	1097.210
54 12	9459.685	5117.258	1233.269	9110.898	1097.872
54 13	9462.594	5119.094	1234.105	9113.488	1098.535
54 14	9465.503	5120.930	1234.942	9116.077	1099.198
54 15	9468.411	5122.766	1235.779	9118.666	1099.861
54 16	9471.320	5124.602	1236.616	9121.255	1100.524
54 17	9474.229	5126.438	1237.454	9123.843	1101.188
54 18	9477.138	5128.275	1238.292	9126.432	1101.851
54 19	9480.047	5130.112	1239.130	9129.020	1102.515
54 20	9482.956	5131.950	1239.969	9131.608	1103.179
54 21	9485.865	5133.787	1240.808	9134.196	1103.843
54 22	9488.774	5135.625	1241.648	9136.784	1104.508
54 23	9491.682	5137.463	1242.487	9139.371	1105.172
54 24	9494.591	5139.302	1243.328	9141.959	1105.837
54 25	9497.500	5141.141	1244.168	9144.546	1106.502
54 26	9500.409	5142.980	1245.009	9147.133	1107.167
54 27	9503.318	5144.819	1245.851	9149.719	1107.832
54 28	9506.227	5146.659	1246.692	9152.306	1108.498
54 29	9509.136	5148.498	1247.534	9154.892	1109.163
54 30	9512.045	5150.339	1248.377	9157.478	1109.829
54 31	9514.954	5152.179	1249.219	9160.064	1110.495
54 32	9517.862	5154.019	1250.063	9162.650	1111.161
54 33	9520.771	5155.860	1250.906	9165.236	1111.828
54 34	9523.680	5157.702	1251.750	9167.821	1112.494
54 35	9526.589	5159.543	1252.594	9170.406	1113.161
54 36	9529.498	5161.385	1253.439	9172.991	1113.828
54 37	9532.407	5163.227	1254.284	9175.576	1114.495
54 38	9535.316	5165.069	1255.129	9178.160	1115.163
54 39	9538.225	5166.912	1255.975	9180.745	1115.830
54 40	9541.133	5168.755	1256.821	9183.329	1116.498
54 41	9544.042	5170.598	1257.667	9185.913	1117.166
54 42	9546.951	5172.441	1258.514	9188.497	1117.834
54 43	9549.860	5174.285	1259.361	9191.081	1118.502
54 44	9552.769	5176.129	1260.209	9193.664	1119.171
54 45	9555.678	5177.973	1261.057	9196.247	1119.840

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
54 46	9558.587	5179.818	1261.905	9198.830	1120.508
54 47	9561.496	5181.663	1262.754	9201.413	1121.177
54 48	9564.405	5183.508	1263.603	9203.996	1121.847
54 49	9567.313	5185.353	1264.452	9206.578	1122.516
54 50	9570.222	5187.199	1265.302	9209.160	1123.186
54 51	9573.131	5189.045	1266.152	9211.742	1123.855
54 52	9576.040	5190.891	1267.002	9214.324	1124.526
54 53	9578.949	5192.737	1267.853	9216.906	1125.196
54 54	9581.858	5194.584	1268.704	9219.488	1125.866
54 55	9584.767	5196.431	1269.556	9222.069	1126.537
54 56	9587.676	5198.278	1270.408	9224.650	1127.207
54 57	9590.584	5200.126	1271.260	9227.231	1127.878
54 58	9593.493	5201.974	1272.113	9229.811	1128.549
54 59	9596.402	5203.822	1272.966	9232.392	1129.221
55 00	9599.311	5205.670	1273.819	9234.972	1129.892
55 01	9602.220	5207.519	1274.673	9237.552	1130.564
55 02	9605.129	5209.368	1275.527	9240.132	1131.236
55 03	9608.038	5211.218	1276.381	9242.712	1131.908
55 04	9610.947	5213.067	1277.236	9245.292	1132.580
55 05	9613.856	5214.917	1278.092	9247.871	1133.252
55 06	9616.764	5216.767	1278.947	9250.450	1133.925
55 07	9619.673	5218.617	1279.803	9253.029	1134.598
55 08	9622.582	5220.468	1280.659	9255.608	1135.271
55 09	9625.491	5222.319	1281.516	9258.186	1135.944
55 10	9628.400	5224.170	1282.373	9260.765	1136.617
55 11	9631.309	5226.022	1283.231	9263.343	1137.291
55 12	9634.218	5227.874	1284.089	9265.921	1137.965
55 13	9637.127	5229.726	1284.947	9268.498	1138.639
55 14	9640.035	5231.578	1285.805	9271.076	1139.313
55 15	9642.944	5233.431	1286.664	9273.653	1139.987
55 16	9645.853	5235.284	1287.523	9276.231	1140.662
55 17	9648.762	5237.137	1288.383	9278.808	1141.336
55 18	9651.671	5238.990	1289.243	9281.384	1142.011
55 19	9654.580	5240.844	1290.104	9283.961	1142.686
55 20	9657.489	5242.698	1290.964	9286.537	1143.361
55 21	9660.398	5244.553	1291.825	9289.114	1144.037
55 22	9663.307	5246.407	1292.687	9291.689	1144.712
55 23	9666.215	5248.262	1293.549	9294.265	1145.388
55 24	9669.124	5250.117	1294.411	9296.841	1146.064
55 25	9672.033	5251.973	1295.274	9299.416	1146.740
55 26	9674.942	5253.829	1296.137	9301.992	1147.417
55 27	9677.851	5255.685	1297.000	9304.566	1148.093
55 28	9680.760	5257.541	1297.864	9307.141	1148.770
55 29	9683.669	5259.398	1298.728	9309.716	1149.447
55 30	9686.578	5261.255	1299.592	9312.290	1150.124

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
55 31	9689.486	5263.112	1300.457	9314.865	1150.801
55 32	9692.395	5264.969	1301.323	9317.439	1151.479
55 33	9695.304	5266.827	1302.188	9320.013	1152.157
55 34	9698.213	5268.685	1303.054	9322.586	1152.834
55 35	9701.122	5270.543	1303.920	9325.159	1153.513
55 36	9704.031	5272.402	1304.787	9327.733	1154.191
55 37	9706.940	5274.261	1305.654	9330.306	1154.869
55 38	9709.849	5276.120	1306.522	9332.879	1155.548
55 39	9712.758	5277.979	1307.389	9335.451	1156.227
55 40	9715.666	5279.839	1308.258	9338.024	1156.906
55 41	9718.575	5281.699	1309.126	9340.596	1157.585
55 42	9721.484	5283.560	1309.995	9343.168	1158.264
55 43	9724.393	5285.420	1310.865	9345.740	1158.944
55 44	9727.302	5287.281	1311.734	9348.312	1159.623
55 45	9730.211	5289.142	1312.604	9350.883	1160.303
55 46	9733.120	5291.004	1313.475	9353.454	1160.983
55 47	9736.029	5292.865	1314.346	9356.025	1161.664
55 48	9738.937	5294.728	1315.217	9358.596	1162.344
55 49	9741.846	5296.590	1316.088	9361.167	1163.025
55 50	9744.755	5298.453	1316.960	9363.738	1163.706
55 51	9747.664	5300.315	1317.832	9366.308	1164.387
55 52	9750.573	5302.178	1318.705	9368.878	1165.068
55 53	9753.482	5304.042	1319.578	9371.448	1165.749
55 54	9756.391	5305.906	1320.452	9374.017	1166.431
55 55	9759.300	5307.770	1321.325	9376.587	1167.113
55 56	9762.208	5309.634	1322.200	9379.156	1167.795
55 57	9765.117	5311.499	1323.074	9381.725	1168.477
55 58	9768.026	5313.364	1323.949	9384.294	1169.159
55 59	9770.935	5315.229	1324.824	9386.863	1169.842
56 00	9773.844	5317.094	1325.700	9389.431	1170.525
56 01	9776.753	5318.960	1326.576	9392.000	1171.208
56 02	9779.662	5320.826	1327.453	9394.568	1171.891
56 03	9782.571	5322.693	1328.329	9397.136	1172.574
56 04	9785.480	5324.559	1329.207	9399.703	1173.257
56 05	9788.388	5326.426	1330.084	9402.271	1173.941
56 06	9791.297	5328.293	1330.962	9404.838	1174.625
56 07	9794.206	5330.161	1331.840	9407.405	1175.309
56 08	9797.115	5332.029	1332.719	9409.972	1175.993
56 09	9800.024	5333.897	1333.598	9412.539	1176.678
56 10	9802.933	5335.765	1334.478	9415.105	1177.362
56 11	9805.842	5337.634	1335.357	9417.671	1178.047
56 12	9808.751	5339.503	1336.237	9420.238	1178.732
56 13	9811.659	5341.372	1337.118	9422.804	1179.417
56 14	9814.568	5343.242	1337.999	9425.369	1180.102
56 15	9817.477	5345.111	1338.880	9427.935	1180.788

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
56	16	9820.386	5346.981	1339.762	9430.500	1181.474
56	17	9823.295	5348.852	1340.644	9433.065	1182.159
56	18	9826.204	5350.723	1341.526	9435.630	1182.846
56	19	9829.113	5352.594	1342.409	9438.195	1183.532
56	20	9832.022	5354.465	1343.292	9440.759	1184.218
56	21	9834.931	5356.337	1344.176	9443.324	1184.905
56	22	9837.839	5358.208	1345.060	9445.888	1185.592
56	23	9840.748	5360.081	1345.944	9448.452	1186.279
56	24	9843.657	5361.953	1346.829	9451.015	1186.966
56	25	9846.566	5363.826	1347.714	9453.579	1187.653
56	26	9849.475	5365.699	1348.600	9456.142	1188.341
56	27	9852.384	5367.572	1349.486	9458.705	1189.029
56	28	9855.293	5369.446	1350.372	9461.268	1189.717
56	29	9858.202	5371.320	1351.258	9463.831	1190.405
56	30	9861.110	5373.194	1352.145	9466.393	1191.093
56	31	9864.019	5375.068	1353.033	9468.956	1191.782
56	32	9866.928	5376.943	1353.920	9471.518	1192.470
56	33	9869.837	5378.818	1354.809	9474.080	1193.159
56	34	9872.746	5380.694	1355.697	9476.641	1193.848
56	35	9875.655	5382.569	1356.586	9479.203	1194.538
56	36	9878.564	5384.445	1357.475	9481.764	1195.227
56	37	9881.473	5386.322	1358.365	9484.325	1195.917
56	38	9884.382	5388.198	1359.255	9486.886	1196.606
56	39	9887.290	5390.075	1360.145	9489.447	1197.296
56	40	9890.199	5391.952	1361.036	9492.007	1197.987
56	41	9893.108	5393.829	1361.927	9494.568	1198.677
56	42	9896.017	5395.707	1362.819	9497.128	1199.368
56	43	9898.926	5397.585	1363.711	9499.688	1200.058
56	44	9901.835	5399.464	1364.603	9502.247	1200.749
56	45	9904.744	5401.342	1365.496	9504.807	1201.440
56	46	9907.653	5403.221	1366.389	9507.366	1202.132
56	47	9910.561	5405.100	1367.282	9509.925	1202.823
56	48	9913.470	5406.980	1368.176	9512.484	1203.515
56	49	9916.379	5408.860	1369.070	9515.043	1204.207
56	50	9919.288	5410.740	1369.965	9517.601	1204.899
56	51	9922.197	5412.620	1370.859	9520.160	1205.591
56	52	9925.106	5414.501	1371.755	9522.718	1206.283
56	53	9928.015	5416.382	1372.651	9525.276	1206.976
56	54	9930.924	5418.263	1373.547	9527.833	1207.669
56	55	9933.833	5420.145	1374.443	9530.391	1208.362
56	56	9936.741	5422.026	1375.340	9532.948	1209.055
56	57	9939.650	5423.909	1376.237	9535.505	1209.748
56	58	9942.559	5425.791	1377.135	9538.062	1210.442
56	59	9945.468	5427.674	1378.033	9540.619	1211.135
57	00	9948.377	5429.557	1378.931	9543.175	1211.829

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
57 01	9951.286	5431.440	1379.830	9545.732	1212.523
57 02	9954.195	5433.324	1380.729	9548.288	1213.218
57 03	9957.104	5435.208	1381.629	9550.843	1213.912
57 04	9960.013	5437.092	1382.529	9553.399	1214.607
57 05	9962.921	5438.977	1383.429	9555.955	1215.302
57 06	9965.830	5440.862	1384.330	9558.510	1215.997
57 07	9968.739	5442.747	1385.231	9561.065	1216.692
57 08	9971.648	5444.632	1386.132	9563.620	1217.387
57 09	9974.557	5446.518	1387.034	9566.174	1218.083
57 10	9977.466	5448.404	1387.936	9568.729	1218.779
57 11	9980.375	5450.290	1388.839	9571.283	1219.475
57 12	9983.284	5452.177	1389.742	9573.837	1220.171
57 13	9986.192	5454.064	1390.646	9576.391	1220.867
57 14	9989.101	5455.951	1391.549	9578.945	1221.564
57 15	9992.010	5457.839	1392.453	9581.498	1222.260
57 16	9994.919	5459.727	1393.358	9584.051	1222.957
57 17	9997.828	5461.615	1394.263	9586.604	1223.654
57 18	10000.736	5463.503	1395.168	9589.157	1224.351
57 19	10003.645	5465.391	1396.074	9591.709	1225.049
57 20	10006.554	5467.281	1396.980	9594.262	1225.746
57 21	10009.463	5469.170	1397.886	9596.814	1226.444
57 22	10012.372	5471.060	1398.793	9599.366	1227.142
57 23	10015.281	5472.950	1399.700	9601.918	1227.840
57 24	10018.190	5474.840	1400.608	9604.470	1228.539
57 25	10021.099	5476.731	1401.516	9607.021	1229.237
57 26	10024.007	5478.621	1402.424	9609.572	1229.936
57 27	10026.916	5480.512	1403.333	9612.123	1230.635
57 28	10029.825	5482.404	1404.242	9614.674	1231.334
57 29	10032.734	5484.296	1405.152	9617.225	1232.033
57 30	10035.643	5486.188	1406.062	9619.775	1232.733
57 31	10038.552	5488.080	1406.972	9622.325	1233.433
57 32	10041.461	5489.973	1407.883	9624.875	1234.132
57 33	10044.370	5491.866	1408.794	9627.425	1234.833
57 34	10047.278	5493.759	1409.705	9629.974	1235.533
57 35	10050.187	5495.652	1410.617	9632.524	1236.233
57 36	10053.096	5497.546	1411.529	9635.073	1236.934
57 37	10056.005	5499.440	1412.442	9637.622	1237.634
57 38	10058.914	5501.335	1413.355	9640.171	1238.335
57 39	10061.823	5503.230	1414.269	9642.720	1239.037
57 40	10064.732	5505.125	1415.182	9645.268	1239.738
57 41	10067.641	5507.020	1416.097	9647.816	1240.439
57 42	10070.550	5508.916	1417.011	9650.364	1241.141
57 43	10073.458	5510.812	1417.926	9652.911	1241.843
57 44	10076.367	5512.708	1418.841	9655.459	1242.545
57 45	10079.276	5514.605	1419.757	9658.006	1243.247

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
57	46	10082.185	5516.502	1420.673	9660.554	1243.950
57	47	10085.094	5518.399	1421.590	9663.101	1244.652
57	48	10088.003	5520.296	1422.507	9665.647	1245.355
57	49	10090.912	5522.194	1423.424	9668.194	1246.058
57	50	10093.821	5524.093	1424.342	9670.741	1246.761
57	51	10096.729	5525.990	1425.260	9673.286	1247.465
57	52	10099.638	5527.889	1426.178	9675.832	1248.168
57	53	10102.547	5529.788	1427.097	9678.378	1248.872
57	54	10105.456	5531.688	1428.016	9680.923	1249.576
57	55	10108.365	5533.587	1428.936	9683.469	1250.280
57	56	10111.274	5535.487	1429.856	9686.014	1250.984
57	57	10114.183	5537.388	1430.777	9688.559	1251.689
57	58	10117.092	5539.288	1431.697	9691.104	1252.394
57	59	10120.001	5541.189	1432.619	9693.648	1253.098
58	00	10122.909	5543.090	1433.540	9696.192	1253.803
58	01	10125.817	5544.991	1434.462	9698.735	1254.508
58	02	10128.726	5546.893	1435.384	9701.279	1255.214
58	03	10131.635	5548.795	1436.307	9703.823	1255.919
58	04	10134.544	5550.697	1437.230	9706.366	1256.625
58	05	10137.453	5552.600	1438.154	9708.910	1257.331
58	06	10140.362	5554.503	1439.078	9711.453	1258.037
58	07	10143.271	5556.407	1440.002	9713.996	1258.744
58	08	10146.180	5558.310	1440.927	9716.538	1259.450
58	09	10149.088	5560.214	1441.852	9719.080	1260.157
58	10	10151.997	5562.118	1442.777	9721.622	1260.864
58	11	10154.906	5564.023	1443.703	9724.165	1261.571
58	12	10157.815	5565.928	1444.629	9726.706	1262.278
58	13	10160.724	5567.833	1445.556	9729.248	1262.985
58	14	10163.633	5569.739	1446.483	9731.790	1263.693
58	15	10166.542	5571.644	1447.411	9734.331	1264.401
58	16	10169.451	5573.551	1448.339	9736.872	1265.109
58	17	10172.359	5575.456	1449.266	9739.412	1265.817
58	18	10175.268	5577.363	1450.195	9741.953	1266.525
58	19	10178.177	5579.270	1451.124	9744.493	1267.234
58	20	10181.086	5581.178	1452.054	9747.033	1267.943
58	21	10183.995	5583.085	1452.984	9749.573	1268.652
58	22	10186.904	5584.993	1453.914	9752.113	1269.361
58	23	10189.813	5586.902	1454.845	9754.653	1270.070
58	24	10192.722	5588.811	1455.776	9757.192	1270.780
58	25	10195.631	5590.719	1456.707	9759.732	1271.489
58	26	10198.539	5592.628	1457.639	9762.270	1272.199
58	27	10201.448	5594.538	1458.571	9764.809	1272.909
58	28	10204.357	5596.448	1459.503	9767.347	1273.619
58	29	10207.266	5598.358	1460.436	9769.886	1274.330
58	30	10210.175	5600.268	1461.370	9772.424	1275.040

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS, CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
58 31	10213.084	5602.179	1462.304	9774.962	1275.751
58 32	10215.993	5604.090	1463.238	9777.500	1276.462
58 33	10218.902	5606.002	1464.172	9780.037	1277.173
58 34	10221.810	5607.913	1465.107	9782.574	1277.884
58 35	10224.719	5609.825	1466.042	9785.111	1278.596
58 36	10227.628	5611.737	1466.978	9787.648	1279.307
58 37	10230.537	5613.650	1467.914	9790.184	1280.019
58 38	10233.446	5615.563	1468.851	9792.721	1280.731
58 39	10236.355	5617.476	1469.788	9795.257	1281.444
58 40	10239.264	5619.390	1470.725	9797.793	1282.156
58 41	10242.173	5621.304	1471.663	9800.329	1282.869
58 42	10245.082	5623.218	1472.601	9802.865	1283.582
58 43	10247.990	5625.132	1473.539	9805.400	1284.294
58 44	10250.899	5627.047	1474.478	9807.935	1285.008
58 45	10253.808	5628.962	1475.418	9810.470	1285.721
58 46	10256.717	5630.878	1476.357	9813.005	1286.434
58 47	10259.626	5632.794	1477.297	9815.540	1287.148
58 48	10262.535	5634.710	1478.238	9818.074	1287.862
58 49	10265.444	5636.626	1479.179	9820.608	1288.576
58 50	10268.353	5638.543	1480.120	9823.142	1289.291
58 51	10271.261	5640.459	1481.061	9825.675	1290.005
58 52	10274.170	5642.377	1482.004	9828.209	1290.719
58 53	10277.079	5644.294	1482.946	9830.742	1291.434
58 54	10279.988	5646.213	1483.889	9833.276	1292.149
58 55	10282.897	5648.131	1484.832	9835.809	1292.865
58 56	10285.806	5650.050	1485.776	9838.341	1293.580
58 57	10288.715	5651.969	1486.720	9840.874	1294.296
58 58	10291.624	5653.888	1487.665	9843.406	1295.011
58 59	10294.533	5655.807	1488.609	9845.939	1295.727
59 00	10297.442	5657.727	1489.555	9848.471	1296.443
59 01	10300.350	5659.647	1490.500	9851.001	1297.159
59 02	10303.259	5661.567	1491.446	9853.533	1297.876
59 03	10306.168	5663.488	1492.393	9856.064	1298.593
59 04	10309.077	5665.410	1493.340	9858.595	1299.310
59 05	10311.986	5667.331	1494.287	9861.126	1300.027
59 06	10314.895	5669.253	1495.235	9863.657	1300.744
59 07	10317.804	5671.175	1496.183	9866.188	1301.461
59 08	10320.713	5673.098	1497.131	9868.718	1302.179
59 09	10323.621	5675.020	1498.080	9871.247	1302.896
59 10	10326.530	5676.943	1499.029	9873.777	1303.614
59 11	10329.439	5678.866	1499.979	9876.307	1304.333
59 12	10332.348	5680.790	1500.929	9878.836	1305.051
59 13	10335.257	5682.714	1501.879	9881.365	1305.769
59 14	10338.166	5684.638	1502.830	9883.894	1306.488
59 15	10341.075	5686.563	1503.781	9886.423	1307.207

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
59 16	10343.984	5688.488	1504.733	9888.952	1307.926
59 17	10346.892	5690.413	1505.685	9891.480	1308.645
59 18	10349.801	5692.338	1506.637	9894.008	1309.365
59 19	10352.710	5694.264	1507.590	9896.536	1310.084
59 20	10355.619	5696.191	1508.544	9899.064	1310.804
59 21	10358.528	5698.117	1509.497	9901.591	1311.524
59 22	10361.437	5700.044	1510.451	9904.118	1312.244
59 23	10364.346	5701.971	1511.406	9906.646	1312.965
59 24	10367.255	5703.899	1512.361	9909.173	1313.685
59 25	10370.164	5705.827	1513.316	9911.699	1314.406
59 26	10373.072	5707.754	1514.271	9914.225	1315.127
59 27	10375.981	5709.683	1515.228	9916.751	1315.848
59 28	10378.890	5711.611	1516.184	9919.277	1316.569
59 29	10381.799	5713.541	1517.141	9921.803	1317.290
59 30	10384.708	5715.470	1518.098	9924.329	1318.012
59 31	10387.617	5717.400	1519.056	9926.855	1318.734
59 32	10390.526	5719.330	1520.014	9929.380	1319.456
59 33	10393.435	5721.260	1520.973	9931.905	1320.178
59 34	10396.343	5723.191	1521.931	9934.429	1320.900
59 35	10399.252	5725.122	1522.891	9936.954	1321.623
59 36	10402.161	5727.053	1523.850	9939.478	1322.346
59 37	10405.070	5728.985	1524.810	9942.002	1323.069
59 38	10407.979	5730.917	1525.771	9944.526	1323.792
59 39	10410.888	5732.849	1526.732	9947.050	1324.515
59 40	10413.797	5734.782	1527.693	9949.574	1325.238
59 41	10416.706	5736.715	1528.655	9952.097	1325.962
59 42	10419.615	5738.648	1529.617	9954.620	1326.686
59 43	10422.523	5740.581	1530.580	9957.142	1327.410
59 44	10425.432	5742.515	1531.542	9959.665	1328.134
59 45	10428.341	5744.450	1532.506	9962.188	1328.858
59 46	10431.250	5746.384	1533.470	9964.710	1329.583
59 47	10434.159	5748.319	1534.434	9967.232	1330.308
59 48	10437.068	5750.254	1535.398	9969.754	1331.033
59 49	10439.977	5752.190	1536.363	9972.276	1331.758
59 50	10442.886	5754.126	1537.329	9974.797	1332.483
59 51	10445.794	5756.061	1538.294	9977.317	1333.208
59 52	10448.703	5757.998	1539.260	9979.839	1333.934
59 53	10451.612	5759.935	1540.227	9982.359	1334.660
59 54	10454.521	5761.872	1541.194	9984.880	1335.386
59 55	10457.430	5763.810	1542.161	9987.400	1336.112
59 56	10460.339	5765.748	1543.129	9989.921	1336.839
59 57	10463.248	5767.686	1544.098	9992.441	1337.565
59 58	10466.157	5769.624	1545.066	9994.960	1338.292
59 59	10469.066	5771.563	1546.035	9997.480	1339.019
60 00	10471.975	5773.502	1547.005	10000.000	1339.746

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
60	01	10474.883	5775.441	1547.974	10002.517	1340.473
60	02	10477.792	5777.381	1548.945	10005.036	1341.201
60	03	10480.701	5779.321	1549.915	10007.555	1341.929
60	04	10483.610	5781.262	1550.886	10010.074	1342.657
60	05	10486.519	5783.202	1551.858	10012.592	1343.385
60	06	10489.428	5785.144	1552.830	10015.110	1344.113
60	07	10492.337	5787.085	1553.802	10017.628	1344.841
60	08	10495.246	5789.027	1554.775	10020.146	1345.570
60	09	10498.154	5790.968	1555.748	10022.662	1346.298
60	10	10501.063	5792.911	1556.721	10025.179	1347.027
60	11	10503.972	5794.853	1557.695	10027.696	1347.757
60	12	10506.881	5796.796	1558.670	10030.213	1348.486
60	13	10509.790	5798.740	1559.644	10032.730	1349.216
60	14	10512.699	5800.684	1560.619	10035.246	1349.945
60	15	10515.608	5802.628	1561.595	10037.762	1350.675
60	16	10518.517	5804.572	1562.571	10040.279	1351.405
60	17	10521.425	5806.516	1563.547	10042.793	1352.135
60	18	10524.334	5808.461	1564.524	10045.309	1352.866
60	19	10527.243	5810.407	1565.501	10047.824	1353.596
60	20	10530.152	5812.352	1566.479	10050.339	1354.327
60	21	10533.061	5814.298	1567.457	10052.854	1355.058
60	22	10535.970	4816.245	1568.435	10055.369	1355.789
60	23	10538.879	5818.191	1569.414	10057.884	1356.521
60	24	10541.788	5820.138	1570.393	10060.398	1357.252
60	25	10544.697	5822.086	1571.373	10062.912	1357.984
60	26	10547.605	5824.033	1572.353	10065.425	1358.716
60	27	10550.514	5825.981	1573.333	10067.939	1359.448
60	28	10553.423	5827.929	1574.314	10070.452	1360.180
60	29	10556.332	5829.878	1575.296	10072.965	1360.913
60	30	10559.241	5831.827	1576.277	10075.478	1361.645
60	31	10562.150	5833.776	1577.259	10077.991	1362.378
60	32	10565.059	5835.726	1578.242	10080.504	1363.111
60	33	10567.968	5837.676	1579.225	10083.016	1363.844
60	34	10570.876	5839.626	1580.208	10085.527	1364.577
60	35	10573.785	5841.576	1581.192	10088.039	1365.311
60	36	10576.694	5843.527	1582.176	10090.551	1366.045
60	37	10579.603	5845.479	1583.161	10093.062	1366.779
60	38	10582.512	5847.430	1584.146	10095.574	1367.513
60	39	10585.421	5849.382	1585.131	10098.085	1368.247
60	40	10588.330	5851.335	1586.117	10100.596	1368.981
60	41	10591.239	5853.287	1587.103	10103.106	1369.716
60	42	10594.148	5855.240	1588.090	10105.617	1370.451
60	43	10597.056	5857.193	1589.077	10108.126	1371.186
60	44	10599.965	5859.147	1590.064	10110.636	1371.921
60	45	10602.874	5861.101	1591.052	10113.146	1372.656

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
60 46	10605.783	5863.055	1592.040	10115.656	1373.392
60 47	10608.692	5865.010	1593.029	10118.165	1374.128
60 48	10611.601	5866.965	1594.018	10120.674	1374.864
60 49	10614.510	5868.920	1595.008	10123.183	1375.600
60 50	10617.419	5870.876	1595.998	10125.692	1376.336
60 51	10620.327	5872.831	1596.988	10128.199	1377.072
60 52	10623.236	5874.787	1597.979	10130.708	1377.809
60 53	10626.145	5876.744	1598.970	10133.216	1378.546
60 54	10629.054	5878.701	1599.962	10135.724	1379.283
60 55	10631.963	5880.658	1600.954	10138.231	1380.020
60 56	10634.872	5882.616	1601.946	10140.739	1380.757
60 57	10637.781	5884.574	1602.939	10143.246	1381.495
60 58	10640.690	5886.532	1603.932	10145.753	1382.233
60 59	10643.599	5888.491	1604.926	10148.260	1382.971
61 00	10646.508	5890.450	1605.920	10150.766	1383.709
61 01	10649.416	5892.408	1606.915	10153.272	1384.447
61 02	10652.325	5894.368	1607.910	10155.778	1385.185
61 03	10655.234	5896.328	1608.905	10158.284	1385.924
61 04	10658.143	5898.289	1609.901	10160.790	1386.663
61 05	10661.052	5900.249	1610.897	10163.295	1387.402
61 06	10663.961	5902.210	1611.894	10165.801	1388.141
61 07	10666.870	5904.172	1612.891	10168.306	1388.880
61 08	10669.779	5906.133	1613.888	10170.810	1389.620
61 09	10672.687	5908.095	1614.886	10173.314	1390.360
61 10	10675.596	5910.057	1615.884	10175.819	1391.100
61 11	10678.505	5912.020	1616.883	10178.323	1391.840
61 12	10681.414	5913.983	1617.882	10180.827	1392.580
61 13	10684.323	5915.946	1618.882	10183.331	1393.320
61 14	10687.232	5917.910	1619.882	10185.834	1394.061
61 15	10690.141	5919.874	1620.882	10188.338	1394.802
61 16	10693.050	5921.838	1621.883	10190.841	1395.543
61 17	10695.958	5923.802	1622.884	10193.343	1396.284
61 18	10698.867	5925.767	1623.885	10195.846	1397.025
61 19	10701.776	5927.733	1624.887	10198.348	1397.767
61 20	10704.685	5929.699	1625.890	10200.850	1398.509
61 21	10707.594	5931.665	1626.893	10203.352	1399.251
61 22	10710.503	5933.631	1627.896	10205.854	1399.993
61 23	10713.412	5935.598	1628.900	10208.356	1400.735
61 24	10716.321	5937.565	1629.904	10210.857	1401.478
61 25	10719.230	5939.533	1630.909	10213.359	1402.220
61 26	10722.138	5941.500	1631.913	10215.859	1402.963
61 27	10725.047	5943.468	1632.919	10218.359	1403.706
61 28	10727.956	5945.436	1633.925	10220.860	1404.449
61 29	10730.865	5947.405	1634.931	10223.360	1405.193
61 30	10733.774	5949.374	1635.938	10225.860	1405.936

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
61 31	10736.683	5951.344	1636.945	10228.360	1406.680
61 32	10739.592	5953.313	1637.952	10230.860	1407.424
61 33	10742.501	5955.284	1638.960	10233.360	1408.168
61 34	70745.409	5957.254	1639.968	10235.858	1408.912
61 35	10748.318	5959.224	1640.977	10238.357	1409.657
61 36	10751.227	5961.196	1641.986	10240.856	1410.401
61 37	10754.136	5963.167	1642.996	10243.354	1411.146
61 38	10757.045	5965.139	1644.006	10245.853	1411.891
61 39	10759.954	5967.111	1645.016	10248.351	1412.636
61 40	10762.863	5969.084	1646.027	10250.849	1413.382
61 41	10765.772	5971.057	1647.039	10253.347	1414.127
61 42	10768.681	5973.030	1648.050	10255.844	1414.873
61 43	10771.589	5975.003	1649.062	10258.341	1415.619
61 44	10774.498	5975.977	1650.075	10260.838	1416.365
61 45	10777.407	5978.951	1651.088	10263.335	1417.111
61 46	10780.316	5980.926	1652.101	10265.831	1417.858
61 47	10783.225	5982.901	1653.115	10268.328	1418.604
61 48	10786.134	5984.876	1654.129	10270.824	1419.351
61 49	10789.043	5986.852	1655.144	10273.320	1420.098
61 50	10791.952	5988.828	1656.159	10275.816	1420.845
61 51	10794.860	5990.803	1657.174	10278.310	1421.593
61 52	10797.769	5992.780	1658.190	10280.806	1422.340
61 53	10800.678	5994.757	1659.207	10283.301	1423.088
61 54	10803.587	5996.734	1660.224	10285.796	1423.836
61 55	10806.496	5998.712	1661.241	10288.290	1424.584
61 56	10809.405	6000.690	1662.258	10290.785	1425.332
61 57	10812.314	6002.669	1663.277	10293.279	1426.081
61 58	10815.223	6004.647	1664.295	10295.773	1426.829
61 59	10818.132	6006.626	1665.314	10298.267	1427.578
62 00	10821.041	6008.606	1666.333	10300.761	1428.327
62 01	10823.949	6010.585	1667.353	10303.253	1429.076
62 02	10826.858	6012.565	1668.373	10305.746	1429.826
62 03	10829.767	6014.546	1669.394	10308.239	1430.575
62 04	10832.676	6016.526	1670.415	10310.732	1431.325
62 05	10835.585	6018.508	1671.436	10313.225	1432.075
62 06	10838.494	6020.489	1672.458	10315.717	1432.825
62 07	10841.403	6022.471	1673.481	10318.209	1433.575
62 08	10844.312	6024.453	1674.503	10320.701	1434.326
62 09	10847.220	6026.435	1675.526	10323.192	1435.076
62 10	10850.129	6028.418	1676.550	10325.683	1435.827
62 11	10853.038	6030.401	1677.574	10328.174	1436.578
62 12	10855.947	6032.385	1678.598	10330.665	1437.329
62 13	10858.856	6034.369	1679.623	10333.156	1438.081
62 14	10861.765	6036.353	1680.649	10335.647	1438.832
62 15	10864.674	6038.338	1681.674	10338.137	1439.584

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
62 16	10867.583	6040.323	1682.701	10340.627	1440.336
62 17	10870.491	6042.308	1683.727	10343.116	1441.088
62 18	10873.400	6044.293	1684.754	10345.606	1441.840
62 19	10876.309	6046.279	1685.781	10348.095	1442.593
62 20	10879.218	6048.266	1686.809	10350.584	1443.345
62 21	10882.127	6050.252	1687.837	10353.073	1444.098
62 22	10885.036	6052.240	1688.866	10355.562	1444.851
62 23	10887.945	6054.227	1689.895	10358.051	1445.604
62 24	10890.854	6056.215	1690.925	10360.539	1446.358
62 25	10893.763	6058.203	1691.955	10363.027	1447.111
62 26	10896.671	6060.191	1692.985	10365.514	1447.865
62 27	10899.580	6062.180	1694.016	10368.002	1448.619
62 28	10902.489	6064.169	1695.047	10370.490	1449.373
62 29	10905.398	6066.158	1696.079	10372.977	1450.127
62 30	10908.307	6068.148	1697.111	10375.464	1450.882
62 31	10911.216	6070.139	1698.144	10377.951	1451.636
62 32	10914.125	6072.129	1699.177	10380.437	1452.391
62 33	10917.034	6074.120	1700.211	10382.924	1453.146
62 34	10919.942	6076.111	1701.244	10385.409	1453.901
62 35	10922.851	6078.102	1702.278	10387.895	1454.656
62 36	10925.760	6080.094	1703.313	10390.381	1455.412
62 37	10928.669	6082.087	1704.348	10392.866	1456.168
62 38	10931.578	6084.080	1705.384	10395.352	1456.924
62 39	10934.487	6086.073	1706.420	10397.837	1457.680
62 40	10937.396	6088.066	1707.456	10400.321	1458.436
62 41	10940.305	6090.060	1708.493	10402.806	1459.192
62 42	10943.214	6092.054	1709.531	10405.291	1459.949
62 43	10946.122	6094.048	1710.568	10407.774	1460.706
62 44	10949.031	6096.043	1711.606	10410.258	1461.463
62 45	10951.940	6098.038	1712.645	10412.742	1462.220
62 46	10954.849	6100.033	1713.684	10415.225	1462.977
62 47	10957.758	6102.029	1714.724	10417.708	1463.735
62 48	10960.667	6104.026	1715.764	10420.192	1464.492
62 49	10963.576	6106.022	1716.804	10422.674	1465.250
62 50	10966.485	6108.019	1717.845	10425.157	1466.008
62 51	10969.393	6110.016	1718.886	10427.639	1466.766
62 52	10972.302	6112.013	1719.927	10430.121	1467.525
62 53	10975.211	6114.011	1720.969	10432.603	1468.283
62 54	10978.120	6116.010	1722.012	10435.085	1469.042
62 55	10981.029	6118.009	1723.055	10437.566	1469.801
62 56	10983.938	6120.008	1724.098	10440.047	1470.560
62 57	10986.847	6122.007	1725.142	10442.529	1471.320
62 58	10989.756	6124.007	1726.187	10445.009	1472.079
62 59	10992.665	6126.007	1727.231	10447.490	1472.839
63 00	10995.574	6128.008	1728.276	10449.971	1473.599

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
63	01	10998.482	6130.008	1729.322	10452.450	1474.359
63	02	11001.391	6132.009	1730.368	10454.930	1475.119
63	03	11004.300	6134.011	1731.414	10457.410	1475.879
63	04	11007.209	6136.013	1732.461	10459.889	1476.640
63	05	11010.118	6138.015	1733.508	10462.369	1477.401
63	06	11013.027	6140.018	1734.556	10464.848	1478.162
63	07	11015.936	6142.021	1735.604	10467.327	1478.923
63	08	11018.845	6144.024	1736.653	10469.805	1479.684
63	09	11021.753	6146.027	1737.702	10472.283	1480.445
63	10	11024.662	6148.031	1738.751	10474.761	1481.207
63	11	11027.571	6150.036	1739.801	10477.239	1481.969
63	12	11030.480	6152.040	1740.851	10479.717	1482.731
63	13	11033.389	6154.046	1741.902	10482.194	1483.493
63	14	11036.298	6156.051	1742.953	10484.672	1484.256
63	15	11039.207	6158.057	1744.005	10487.149	1485.018
63	16	11042.116	6160.063	1745.057	10489.626	1485.781
63	17	11045.024	6162.069	1746.109	10492.102	1486.544
63	18	11047.933	6164.076	1747.162	10494.578	1487.307
63	19	11050.842	6166.083	1748.216	10497.054	1488.070
63	20	11053.751	6168.091	1749.270	10499.530	1488.834
63	21	11056.660	6170.099	1750.324	10502.006	1489.597
63	22	11059.569	6172.108	1751.379	10504.482	1490.361
63	23	11062.478	6174.116	1752.434	10506.957	1491.125
63	24	11065.387	6176.126	1753.490	10509.432	1491.889
63	25	11068.296	6178.135	1754.546	10511.907	1492.654
63	26	11071.204	6180.144	1755.602	10514.381	1493.418
63	27	11074.113	6182.154	1756.659	10516.855	1494.183
63	28	11077.022	6184.165	1757.716	10519.330	1494.948
63	29	11079.931	6186.176	1758.774	10521.804	1495.713
63	30	11082.840	6188.187	1759.832	10524.277	1496.478
63	31	11085.749	6190.199	1760.891	10526.751	1497.243
63	32	11088.658	6192.211	1761.950	10529.224	1498.009
63	33	11091.567	6194.223	1763.009	10531.697	1498.775
63	34	11094.475	6196.235	1764.069	10534.169	1499.541
63	35	11097.384	6198.248	1765.130	10536.642	1500.307
63	36	11100.293	6200.262	1766.190	10539.115	1501.073
63	37	11103.202	6202.276	1767.252	10541.587	1501.840
63	38	11106.111	6204.290	1768.314	10544.059	1502.607
63	39	11109.020	6206.305	1769.376	10546.531	1503.373
63	40	11111.929	6208.319	1770.438	10549.002	1504.141
63	41	11114.838	6210.335	1771.502	10551.473	1504.908
63	42	11117.747	6212.350	1772.565	10553.945	1505.675
63	43	11120.655	6214.366	1773.629	10556.415	1506.443
63	44	11123.564	6216.382	1774.693	10558.885	1507.210
63	45	11126.473	6218.399	1775.758	10561.356	1507.978

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
63 46	11129.382	6220.416	1776.823	10563.826	1508.747
63 47	11132.291	6222.433	1777.889	10566.296	1509.515
63 48	11135.200	6224.451	1778.955	10568.766	1510.283
63 49	11138.109	6226.470	1780.022	10571.235	1511.052
63 50	11141.018	6228.488	1781.089	10573.705	1511.821
63 51	11143.926	6230.506	1782.156	10576.173	1512.590
63 52	11146.835	6232.526	1783.224	10578.642	1513.359
63 53	11149.744	6234.545	1784.292	10581.110	1514.128
63 54	11152.653	6236.565	1785.361	10583.579	1514.898
63 55	11155.562	6238.586	1786.430	10586.047	1515.668
63 56	11158.471	6240.607	1787.500	10588.515	1516.438
63 57	11161.380	6242.628	1788.570	10590.983	1517.208
63 58	11164.289	6244.649	1789.641	10593.450	1517.978
63 59	11167.198	6246.671	1790.712	10595.918	1518.749
64 00	11170.107	6248.693	1791.783	10598.385	1519.519
64 01	11173.015	6250.715	1792.855	10600.851	1520.290
64 02	11175.924	6252.738	1793.927	10603.317	1521.061
64 03	11178.833	6254.761	1795.000	10605.784	1521.832
64 04	11181.742	6256.785	1796.074	10608.250	1522.604
64 05	11184.651	6258.809	1797.147	10610.716	1523.375
64 06	11187.560	6260.834	1798.221	10613.182	1524.147
64 07	11190.469	6262.859	1799.296	10615.647	1524.919
64 08	11193.378	6264.884	1800.371	10618.112	1525.691
64 09	11196.286	6266.909	1801.446	10620.577	1526.463
64 10	11199.195	6268.935	1802.522	10623.041	1527.236
64 11	11202.104	6270.961	1803.599	10625.506	1528.008
64 12	11205.013	6272.988	1804.675	10627.970	1528.781
64 13	11207.922	6275.015	1805.753	10630.435	1529.554
64 14	11210.831	6277.042	1806.830	10632.898	1530.327
64 15	11213.740	6279.070	1807.909	10635.362	1531.101
64 16	11216.649	6281.098	1808.987	10637.826	1531.874
64 17	11219.557	6283.126	1810.066	10640.288	1532.648
64 18	11222.466	6285.155	1811.146	10642.751	1533.422
64 19	11225.375	6287.184	1812.226	10645.214	1534.196
64 20	11228.284	6289.214	1813.306	10647.677	1534.970
64 21	11231.193	6291.244	1814.387	10650.139	1535.744
64 22	11234.102	6293.274	1815.468	10652.601	1536.519
64 23	11237.011	6295.305	1816.550	10655.063	1537.294
64 24	11239.920	6297.336	1817.632	10657.525	1538.069
64 25	11242.829	6299.367	1818.715	10659.986	1538.844
64 26	11245.737	6301.398	1819.797	10662.447	1539.619
64 27	11248.646	6303.431	1820.881	10664.908	1540.394
64 28	11251.555	6305.463	1821.965	10667.368	1541.170
64 29	11254.464	6307.496	1823.049	10669.829	1541.946
64 30	11257.373	6309.530	1824.134	10672.289	1542.722

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
64 31	11260.282	6311.563	1825.220	10674.749	1543.498
64 32	11263.191	6313.597	1826.306	10677.209	1544.275
64 33	11266.100	6315.632	1827.392	10679.669	1545.051
64 34	11269.008	6317.666	1828.478	10682.127	1545.828
64 35	11271.917	6319.701	1829.565	10684.587	1546.605
64 36	11274.826	6321.737	1830.653	10687.046	1547.382
64 37	11277.735	6323.773	1831.741	10689.504	1548.159
64 38	11280.644	6325.809	1832.829	10691.963	1548.937
64 39	11283.553	6327.846	1833.918	10694.421	1549.714
64 40	11286.462	6329.883	1835.008	10696.879	1550.492
64 41	11289.371	6331.920	1836.098	10699.337	1551.270
64 42	11292.280	6333.958	1837.188	10701.795	1552.048
64 43	11295.188	6335.996	1838.278	10704.251	1552.826
64 44	11298.097	6338.034	1839.369	10706.709	1553.605
64 45	11301.006	6340.073	1840.461	10709.165	1554.384
64 46	11303.915	6342.113	1841.553	10711.622	1555.163
64 47	11306.824	6344.152	1842.646	10714.079	1555.942
64 48	11309.733	6346.193	1843.739	10716.535	1556.721
64 49	11312.642	6348.233	1844.832	10718.991	1557.501
64 50	11315.551	6350.274	1845.926	10721.447	1558.280
64 51	11318.459	6352.314	1847.020	10723.902	1559.060
64 52	11321.368	6354.356	1848.115	10726.357	1559.840
64 53	11324.277	6356.398	1849.210	10728.812	1560.620
64 54	11327.186	6358.440	1850.306	10731.267	1561.400
64 55	11330.095	6360.483	1851.402	10733.722	1562.181
64 56	11333.004	6362.526	1852.499	10736.176	1562.961
64 57	11335.913	6364.570	1853.596	10738.630	1563.742
64 58	11338.822	6366.614	1854.694	10741.084	1564.523
64 59	11341.731	6368.658	1855.791	10743.538	1565.305
65 00	11344.640	6370.702	1856.890	10745.992	1566.086
65 01	11347.548	6372.747	1857.988	10748.444	1566.867
65 02	11350.457	6374.792	1859.088	10750.897	1567.649
65 03	11353.366	6376.838	1860.188	10753.350	1568.431
65 04	11356.275	6378.884	1861.288	10755.803	1569.213
65 05	11359.184	6380.931	1862.389	10758.255	1569.995
65 06	11362.093	6382.978	1863.490	10760.707	1570.778
65 07	11365.002	6385.025	1864.591	10763.159	1571.561
65 08	11367.911	6387.072	1865.694	10765.611	1572.343
65 09	11370.819	6389.120	1866.796	10768.061	1573.126
65 10	11373.728	6391.168	1867.899	10770.513	1573.909
65 11	11376.637	6393.217	1869.002	10772.964	1574.693
65 12	11379.546	6395.266	1870.106	10775.415	1575.476
65 13	11382.455	6397.316	1871.211	10777.865	1576.260
65 14	11385.364	6399.366	1872.315	10780.316	1577.044
65 15	11388.273	6401.416	1873.421	10782.766	1577.828

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
65 16	11391.182	6403.467	1874.526	10785.216	1578.612
65 17	11394.090	6405.517	1875.632	10787.664	1579.396
65 18	11396.999	6407.569	1876.739	10790.114	1580.181
65 19	11399.908	6409.621	1877.846	10792.563	1580.966
65 20	11402.817	6411.673	1878.954	10795.012	1581.751
65 21	11405.726	6413.725	1880.062	10797.461	1582.536
65 22	11408.635	6415.778	1881.170	10799.909	1583.321
65 23	11411.544	6417.832	1882.279	10802.358	1584.107
65 24	11414.453	6419.886	1883.388	10804.806	1584.893
65 25	11417.362	6421.940	1884.498	10807.253	1585.678
65 26	11420.270	6423.994	1885.608	10809.700	1586.464
65 27	11423.179	6426.049	1886.719	10812.148	1587.250
65 28	11426.088	6428.104	1887.830	10814.595	1588.037
65 29	11428.997	6430.160	1888.942	10817.042	1588.823
65 30	11431.906	6432.216	1890.054	10819.488	1589.610
65 31	11434.815	6434.272	1891.167	10821.935	1590.397
65 32	11437.724	6436.329	1892.280	10824.381	1591.184
65 33	11440.633	6438.386	1893.393	10826.827	1591.972
65 34	11443.541	6440.443	1894.507	10829.272	1592.759
65 35	11446.450	6442.501	1895.621	10831.718	1593.546
65 36	11449.359	6444.560	1896.736	10834.163	1594.334
65 37	11452.268	6446.618	1897.852	10836.608	1595.122
65 38	11455.177	6448.678	1898.968	10839.053	1595.910
65 39	11458.086	6450.737	1900.084	10841.498	1596.699
65 40	11460.995	6452.797	1901.201	10843.942	1597.487
65 41	11463.904	6454.857	1902.318	10846.386	1598.276
65 42	11466.813	6456.918	1903.436	10848.830	1599.065
65 43	11469.721	6458.978	1904.553	10851.273	1599.854
65 44	11472.630	6461.040	1905.672	10853.716	1600.643
65 45	11475.539	6463.102	1906.791	10856.160	1601.432
65 46	11478.448	6465.164	1907.911	10858.603	1602.222
65 47	11481.357	6467.227	1909.031	10861.046	1603.012
65 48	11484.266	6469.290	1910.151	10863.488	1603.802
65 49	11487.175	6471.353	1911.272	10865.930	1604.592
65 50	11490.084	6473.417	1912.393	10868.373	1605.382
65 51	11492.992	6475.480	1913.515	10870.814	1606.172
65 52	11495.901	6477.545	1914.637	10873.255	1606.963
65 53	11498.810	6479.610	1915.760	10875.697	1607.754
65 54	11501.719	6481.675	1916.883	10878.138	1608.545
65 55	11504.628	6483.741	1918.007	10880.579	1609.336
65 56	11507.537	6485.807	1919.131	10883.020	1610.128
65 57	11510.446	6487.874	1920.256	10885.460	1610.919
65 58	11513.355	6489.941	1921.381	10887.900	1611.711
65 59	11516.264	6492.008	1922.506	10890.340	1612.503
66 00	11519.173	6494.076	1923.632	10892.780	1613.295

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
66 01	11522.081	6496.143	1924.759	10895.219	1614.087
66 02	11524.990	6498.212	1925.886	10897.658	1614.879
66 03	11527.899	6500.281	1927.013	10900.097	1615.672
66 04	11530.808	6502.350	1928.141	10902.536	1616.465
66 05	11533.717	6504.420	1929.269	10904.975	1617.258
66 06	11536.626	6506.490	1930.398	10907.413	1618.051
66 07	11539.535	6508.560	1931.527	10909.851	1618.844
66 08	11542.444	6510.631	1932.657	10912.289	1619.638
66 09	11545.352	6512.701	1933.787	10914.726	1620.431
66 10	11548.261	6514.773	1934.918	10917.164	1621.225
66 11	11551.170	6516.845	1936.049	10919.601	1622.019
66 12	11554.079	6518.918	1937.180	10922.038	1622.813
66 13	11556.988	6520.990	1938.312	10924.475	1623.608
66 14	11559.897	6523.064	1939.445	10926.912	1624.402
66 15	11562.806	6525.137	1940.578	10929.348	1625.197
66 16	11565.715	6527.211	1941.711	10931.784	1625.992
66 17	11568.623	6529.285	1942.845	10934.219	1626.787
66 18	11571.532	6531.360	1943.979	10936.655	1627.582
66 19	11574.441	6533.435	1945.114	10939.090	1628.377
66 20	11577.350	6535.510	1946.250	10941.525	1629.173
66 21	11580.259	6537.586	1947.386	10943.960	1629.969
66 22	11583.168	6539.663	1948.522	10946.395	1630.765
66 23	11586.077	6541.739	1949.659	10948.830	1631.561
66 24	11588.986	6543.816	1950.796	10951.264	1632.357
66 25	11591.895	6545.894	1951.934	10953.698	1633.154
66 26	11594.803	6547.971	1953.071	10956.131	1633.950
66 27	11597.712	6550.050	1954.210	10958.564	1634.747
66 28	11600.621	6552.128	1955.349	10960.998	1635.544
66 29	11603.530	6554.207	1956.489	10963.431	1636.341
66 30	11606.439	6556.287	1957.629	10965.864	1637.139
66 31	11609.348	6558.367	1958.769	10968.296	1637.936
66 32	11612.257	6560.447	1959.910	10970.729	1638.734
66 33	11615.166	6562.528	1961.052	10973.161	1639.532
66 34	11618.074	6564.608	1962.193	10975.592	1640.330
66 35	11620.983	6566.690	1963.336	10978.024	1641.128
66 36	11623.892	6568.772	1964.479	10980.455	1641.927
66 37	11626.801	6570.854	1965.622	10982.886	1642.725
66 38	11629.710	6572.937	1966.766	10985.317	1643.524
66 39	11632.619	6575.020	1967.910	10987.748	1644.323
66 40	11635.528	6577.103	1969.055	10990.179	1645.122
66 41	11638.437	6579.187	1970.200	10992.609	1645.922
66 42	11641.346	6581.271	1971.346	10995.039	1646.721
66 43	11644.254	6583.355	1972.492	10997.468	1647.521
66 44	11647.163	6585.440	1973.638	10999.898	1648.320
66 45	11650.072	6587.526	1974.786	11002.327	1649.121

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
66 46	11652.981	6589.612	1975.933	11004.756	1649.921
66 47	11655.890	6591.698	1977.081	11007.185	1650.721
66 48	11658.799	6593.785	1978.230	11009.614	1651.522
66 49	11661.708	6595.872	1979.379	11012.042	1652.322
66 50	11664.617	6597.959	1980.528	11014.471	1653.123
66 51	11667.525	6600.046	1981.678	11016.898	1653.924
66 52	11670.434	6602.135	1982.828	11019.326	1654.726
66 53	11673.343	6604.223	1983.979	11021.753	1655.527
66 54	11676.252	6606.313	1985.131	11024.180	1656.329
66 55	11679.161	6608.402	1986.283	11026.607	1657.131
66 56	11682.070	6610.492	1987.435	11029.034	1657.933
66 57	11684.979	6612.582	1988.588	11031.461	1658.735
66 58	11687.888	6614.673	1989.741	11033.887	1659.537
66 59	11690.797	6616.764	1990.895	11036.313	1660.340
67 00	11693.706	6618.856	1992.049	11038.739	1661.142
67 01	11696.614	6620.947	1993.203	11041.164	1661.945
67 02	11699.523	6623.039	1994.359	11043.589	1662.748
67 03	11702.432	6625.132	1995.514	11046.015	1663.551
67 04	11705.341	6627.225	1996.670	11048.440	1664.355
67 05	11708.250	6629.318	1997.827	11050.864	1665.158
67 06	11711.159	6631.412	1998.984	11053.289	1665.962
67 07	11714.068	6633.507	2000.142	11055.713	1666.766
67 08	11716.977	6635.601	2001.300	11058.137	1667.570
67 09	11719.885	6637.696	2002.458	11060.560	1668.374
67 10	11722.794	6639.791	2003.617	11062.984	1669.178
67 11	11725.703	6641.887	2004.776	11065.407	1669.983
67 12	11728.612	6643.984	2005.936	11067.830	1670.788
67 13	11731.521	6646.080	2007.097	11070.253	1671.593
67 14	11734.430	6648.178	2008.258	11072.675	1672.398
67 15	11737.339	6650.275	2009.419	11075.098	1673.203
67 16	11740.248	6652.373	2010.581	11077.520	1674.009
67 17	11743.156	6654.471	2011.743	11079.941	1674.814
67 18	11746.065	6656.570	2012.906	11082.363	1675.620
67 19	11748.974	6658.669	2014.069	11084.784	1676.426
67 20	11751.883	6660.768	2015.233	11087.205	1677.233
67 21	11754.792	6662.868	2016.397	11089.626	1678.039
67 22	11757.701	6664.969	2017.562	11092.047	1678.846
67 23	11760.610	6667.070	2018.727	11094.468	1679.652
67 24	11763.519	6669.171	2019.893	11096.888	1680.459
67 25	11766.428	6671.272	2021.059	11099.308	1681.266
67 26	11769.336	6673.374	2022.226	11101.727	1682.073
67 27	11772.245	6675.476	2023.393	11104.146	1682.881
67 28	11775.154	6677.579	2024.560	11106.566	1683.688
67 29	11778.063	6679.682	2025.728	11108.985	1684.496
67 30	11780.972	6681.786	2026.897	11111.404	1685.304

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
67 31	11783.881	6683.890	2028.066	11113.822	1686.112
67 32	11786.790	6685.995	2029.236	11116.241	1686.921
67 33	11789.699	6688.100	2030.406	11118.659	1687.729
67 34	11792.607	6690.204	2031.576	11121.076	1688.538
67 35	11795.516	6692.310	2032.747	11123.494	1689.347
67 36	11798.425	6694.416	2033.918	11125.911	1690.156
67 37	11801.334	6696.523	2035.091	11128.328	1690.965
67 38	11804.243	6698.629	2036.263	11130.745	1691.774
67 39	11807.152	6700.737	2037.436	11133.162	1692.584
67 40	11810.061	6702.845	2038.609	11135.579	1693.394
67 41	11812.970	6704.953	2039.783	11137.995	1694.203
67 42	11815.879	6707.061	2040.958	11140.411	1695.014
67 43	11818.787	6709.170	2042.132	11142.826	1695.824
67 44	11821.696	6711.279	2043.307	11145.241	1696.634
67 45	11824.605	6713.389	2044.483	11147.657	1697.445
67 46	11827.514	6715.499	2045.660	11150.072	1698.255
67 47	11830.423	6717.610	2046.836	11152.487	1699.066
67 48	11833.332	6719.721	2048.014	11154.901	1699.878
67 49	11836.241	6721.832	2049.192	11157.316	1700.689
67 50	11839.150	6723.944	2050.370	11159.730	1701.500
67 51	11842.058	6726.056	2051.548	11162.143	1702.312
67 52	11844.967	6728.169	2052.728	11164.557	1703.124
67 53	11847.876	6730.282	2053.907	11166.970	1703.936
67 54	11850.785	6732.395	2055.087	11169.383	1704.748
67 55	11853.694	6734.509	2056.268	11171.796	1705.560
67 56	11856.603	6736.623	2057.449	11174.209	1706.373
67 57	11859.512	6738.738	2058.631	11176.622	1707.186
67 58	11862.421	6740.854	2059.813	11179.034	1707.998
67 59	11865.330	6742.969	2060.996	11181.446	1708.812
68 00	11868.239	6745.085	2062.179	11183.858	1709.625
68 01	11871.147	6747.201	2063.362	11186.268	1710.438
68 02	11874.056	6749.318	2064.546	11188.680	1711.252
68 03	11876.965	6751.435	2065.731	11191.091	1712.065
68 04	11879.874	6753.553	2066.916	11193.502	1712.879
68 05	11882.783	6755.671	2068.102	11195.912	1713.693
68 06	11885.692	6757.789	2069.288	11198.323	1714.508
68 07	11888.601	6759.908	2070.474	11200.733	1715.322
68 08	11891.510	6762.028	2071.661	11203.143	1716.137
68 09	11894.418	6764.147	2072.849	11205.551	1716.951
68 10	11897.327	6766.267	2074.037	11207.961	1717.766
68 11	11900.236	6768.388	2075.225	11210.370	1718.582
68 12	11903.145	6770.509	2076.414	11212.779	1719.397
68 13	11906.054	6772.630	2077.604	11215.188	1720.213
68 14	11908.963	6774.752	2078.794	11217.596	1721.028
68 15	11911.872	6776.874	2079.984	11220.004	1721.844

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
68 16	11914.781	6778.997	2081.175	11222.412	1722.660
68 17	11917.689	6781.119	2082.366	11224.819	1723.476
68 18	11920.598	6783.243	2083.558	11227.227	1724.293
68 19	11923.507	6785.367	2084.750	11229.634	1725.109
68 20	11926.416	6787.491	2085.943	11232.041	1725.926
68 21	11929.325	6789.616	2087.137	11234.448	1726.743
68 22	11932.234	6791.741	2088.331	11236.855	1727.560
68 23	11935.143	6793.867	2089.525	11239.261	1728.377
68 24	11938.052	6795.993	2090.720	11241.667	1729.195
68 25	11940.961	6798.119	2091.915	11244.073	1730.012
68 26	11943.869	6800.245	2093.111	11246.478	1730.830
68 27	11946.778	6802.373	2094.307	11248.883	1731.648
68 28	11949.687	6804.501	2095.504	11251.288	1732.466
68 29	11952.596	6806.629	2096.701	11253.693	1733.284
68 30	11955.505	6808.757	2097.899	11256.098	1734.103
68 31	11958.414	6810.886	2099.098	11258.502	1734.922
68 32	11961.323	6813.016	2100.296	11260.906	1735.740
68 33	11964.232	6815.146	2101.496	11263.310	1736.559
68 34	11967.140	6817.275	2102.695	11265.713	1737.378
68 35	11970.049	6819.406	2103.895	11268.117	1738.198
68 36	11972.958	6821.537	2105.096	11270.520	1739.017
68 37	11975.867	6823.669	2106.298	11272.923	1739.837
68 38	11978.776	6825.800	2107.499	11275.326	1740.657
68 39	11981.685	6827.933	2108.702	11277.728	1741.477
68 40	11984.594	6830.066	2109.904	11280.130	1742.297
68 41	11987.503	6832.199	2111.108	11282.533	1743.118
68 42	11990.412	6834.333	2112.311	11284.934	1743.938
68 43	11993.320	6836.466	2113.515	11287.335	1744.759
68 44	11996.229	6838.600	2114.720	11289.736	1745.580
68 45	11999.138	6840.735	2115.925	11292.138	1746.401
68 46	12002.047	6842.871	2117.131	11294.538	1747.222
68 47	12004.956	6845.006	2118.337	11296.939	1748.044
68 48	12007.865	6847.143	2119.544	11299.339	1748.865
68 49	12010.774	6849.279	2120.751	11301.739	1749.687
68 50	12013.683	6851.416	2121.959	11304.139	1750.509
68 51	12016.591	6853.553	2123.167	11306.538	1751.331
68 52	12019.500	6855.691	2124.376	11308.938	1752.154
68 53	12022.409	6857.829	2125.585	11311.337	1752.976
68 54	12025.318	6859.968	2126.795	11313.736	1753.799
68 55	12028.227	6862.107	2128.005	11316.134	1754.622
68 56	12031.136	6864.247	2129.216	11318.533	1755.445
68 57	12034.045	6866.387	2130.427	11320.931	1756.268
68 58	12036.954	6868.528	2131.639	11323.329	1757.091
68 59	12039.863	6870.668	2132.851	11325.727	1757.915
69 00	12042.772	6872.810	2134.064	11328.124	1758.739

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
69	01	12045.680	6874.951	2135.276	11330.521	1759.562
69	02	12048.589	6877.093	2136.490	11332.918	1760.386
69	03	12051.498	6879.235	2137.704	11335.315	1761.211
69	04	12054.407	6881.379	2138.919	11337.711	1762.035
69	05	12057.316	6883.522	2140.134	11340.107	1762.860
69	06	12060.225	6885.666	2141.350	11342.504	1763.685
69	07	12063.134	6887.810	2142.566	11344.899	1764.509
69	08	12066.043	6889.955	2143.783	11347.295	1765.335
69	09	12068.951	6892.099	2145.000	11349.689	1766.160
69	10	12071.860	6894.245	2146.218	11352.085	1766.985
69	11	12074.769	6896.391	2147.436	11354.479	1767.811
69	12	12077.678	6898.538	2148.655	11356.874	1768.637
69	13	12080.587	6900.684	2149.874	11359.268	1769.463
69	14	12083.496	6902.832	2151.094	11361.663	1770.289
69	15	12086.405	6904.980	2152.314	11364.056	1771.115
69	16	12089.314	6907.128	2153.535	11366.450	1771.942
69	17	12092.222	6909.276	2154.756	11368.843	1772.768
69	18	12095.131	6911.425	2155.977	11371.236	1773.595
69	19	12098.040	6913.574	2157.199	11373.629	1774.422
69	20	12100.949	6915.724	2158.422	11376.022	1775.249
69	21	12103.858	6917.874	2159.645	11378.414	1776.077
69	22	12106.767	6920.025	2160.869	11380.806	1776.904
69	23	12109.676	6922.177	2162.094	11383.198	1777.732
69	24	12112.585	6924.328	2163.318	11385.590	1778.560
69	25	12115.494	6926.480	2164.543	11387.981	1779.388
69	26	12118.402	6928.632	2165.769	11390.372	1780.216
69	27	12121.311	6930.785	2166.995	11392.763	1781.045
69	28	12124.220	6932.938	2168.222	11395.154	1781.873
69	29	12127.129	6935.092	2169.449	11397.544	1782.702
69	30	12130.038	6937.247	2170.677	11399.934	1783.531
69	31	12132.947	6939.401	2171.905	11402.325	1784.360
69	32	12135.856	6941.556	2173.134	11404.714	1785.189
69	33	12138.765	6943.712	2174.363	11407.104	1786.019
69	34	12141.673	6945.867	2175.593	11409.492	1786.848
69	35	12144.582	6948.024	2176.823	11411.882	1787.678
69	36	12147.491	6950.181	2178.054	11414.270	1788.508
69	37	12150.400	6952.338	2179.285	11416.659	1789.338
69	38	12153.309	6954.496	2180.517	11419.047	1790.169
69	39	12156.218	6956.654	2181.750	11421.435	1790.999
69	40	12159.127	6958.813	2182.982	11423.823	1791.830
69	41	12162.036	6960.972	2184.216	11426.211	1792.661
69	42	12164.945	6963.131	2185.450	11428.598	1793.492
69	43	12167.853	6965.290	2186.684	11430.985	1794.323
69	44	12170.762	6967.451	2187.919	11433.372	1795.154
69	45	12173.671	6969.611	2189.154	11435.758	1795.986

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
69 46	12176.580	6971.773	2190.390	11438.145	1796.818
69 47	12179.489	6973.934	2191.626	11440.531	1797.650
69 48	12182.398	6976.096	2192.863	11442.917	1798.482
69 49	12185.307	6978.259	2194.101	11445.303	1799.314
69 50	12188.216	6980.422	2195.338	11447.688	1800.146
69 51	12191.124	6982.585	2196.577	11450.072	1800.979
69 52	12194.033	6984.749	2197.816	11452.457	1801.812
69 53	12196.942	6986.913	2199.055	11454.842	1802.644
69 54	12199.851	6989.078	2200.295	11457.227	1803.478
69 55	12202.760	6991.243	2201.535	11459.611	1804.311
69 56	12205.669	6993.409	2202.776	11461.995	1805.144
69 57	12208.578	6995.575	2204.018	11464.379	1805.978
69 58	12211.487	6997.741	2205.260	11466.762	1806.812
69 59	12214.396	6999.908	2206.503	11469.145	1807.646
70 00	12217.305	7002.076	2207.746	11471.528	1808.480
70 01	12220.213	7004.243	2208.989	11473.910	1809.314
70 02	12223.122	7006.411	2210.233	11476.293	1810.149
70 03	12226.031	7008.580	2211.477	11478.675	1810.983
70 04	12228.940	7010.749	2212.722	11481.057	1811.818
70 05	12231.849	7012.919	2213.968	11483.439	1812.653
70 06	12234.758	7015.088	2215.214	11485.821	1813.489
70 07	12237.667	7017.259	2216.461	11488.202	1814.324
70 08	12240.576	7019.430	2217.708	11490.583	1815.159
70 09	12243.484	7021.601	2218.955	11492.963	1815.995
70 10	12246.393	7023.772	2220.203	11495.344	1816.831
70 11	12249.302	7025.945	2221.452	11497.724	1817.667
70 12	12252.211	7028.117	2222.701	11500.104	1818.503
70 13	12255.120	7030.291	2223.951	11502.484	1819.340
70 14	12258.029	7032.464	2225.201	11504.864	1820.176
70 15	12260.938	7034.638	2226.452	11507.243	1821.013
70 16	12263.847	7036.813	2227.703	11509.622	1821.850
70 17	12266.755	7038.987	2228.954	11512.000	1822.687
70 18	12269.664	7041.162	2230.207	11514.379	1823.524
70 19	12272.573	7043.338	2231.459	11516.757	1824.362
70 20	12275.482	7045.514	2232.713	11519.136	1825.199
70 21	12278.391	7047.691	2233.967	11521.514	1826.037
70 22	12281.300	7049.868	2235.221	11523.891	1826.875
70 23	12284.209	7052.046	2236.476	11526.269	1827.713
70 24	12287.118	7054.224	2237.731	11528.646	1828.552
70 25	12290.027	7056.403	2238.987	11531.023	1829.390
70 26	12292.935	7058.581	2240.243	11533.399	1830.228
70 27	12295.844	7060.760	2241.500	11535.775	1831.067
70 28	12298.753	7062.940	2242.757	11538.151	1831.906
70 29	12301.662	7065.120	2244.015	11540.527	1832.745
70 30	12304.571	7067.301	2245.274	11542.903	1833.585

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
70 31	12307.480	7069.482	2246.533	11545.279	1834.424
70 32	12310.389	7071.664	2247.792	11547.654	1835.264
70 33	12313.298	7073.846	2249.053	11550.029	1836.104
70 34	12316.206	7076.028	2250.313	11552.403	1836.944
70 35	12319.115	7078.211	2251.574	11554.777	1837.784
70 36	12322.024	7080.394	2252.835	11557.152	1838.624
70 37	12324.933	7082.578	2254.097	11559.526	1839.465
70 38	12327.842	7084.762	2255.360	11561.899	1840.306
70 39	12330.751	7086.947	2256.623	11564.273	1841.147
70 40	12333.660	7089.133	2257.887	11566.646	1841.988
70 41	12336.569	7091.318	2259.151	11569.019	1842.829
70 42	12339.478	7093.504	2260.416	11571.392	1843.671
70 43	12342.386	7095.690	2261.681	11573.764	1844.512
70 44	12345.295	7097.877	2262.946	11576.136	1845.354
70 45	12348.204	7100.065	2264.212	11578.508	1846.196
70 46	12351.113	7102.253	2265.479	11580.880	1847.038
70 47	12354.022	7104.441	2266.747	11583.252	1847.880
70 48	12356.931	7106.630	2268.014	11585.623	1848.722
70 49	12359.840	7108.819	2269.283	11587.994	1849.565
70 50	12362.749	7111.009	2270.552	11590.365	1850.408
70 51	12365.657	7113.199	2271.821	11592.735	1851.251
70 52	12368.566	7115.389	2273.091	11595.105	1852.094
70 53	12371.475	7117.580	2274.361	11597.475	1852.937
70 54	12374.384	7119.772	2275.632	11599.845	1853.781
70 55	12377.293	7121.964	2276.903	11602.214	1854.624
70 56	12380.202	7124.156	2278.176	11604.584	1855.468
70 57	12383.111	7126.349	2279.448	11606.953	1856.312
70 58	12386.020	7128.543	2280.721	11609.322	1857.156
70 59	12388.929	7130.737	2281.995	11611.690	1858.001
71 00	12391.838	7132.931	2283.269	11614.059	1858.845
71 01	12394.746	7135.125	2284.543	11616.426	1859.690
71 02	12397.655	7137.320	2285.818	11618.794	1860.535
71 03	12400.564	7139.516	2287.094	11621.162	1861.380
71 04	12403.473	7141.712	2288.370	11623.529	1862.225
71 05	12406.382	7143.908	2289.647	11625.896	1863.070
71 06	12409.291	7146.105	2290.924	11628.263	1863.916
71 07	12412.200	7148.303	2292.202	11630.630	1864.762
71 08	12415.109	7150.501	2293.480	11632.996	1865.608
71 09	12418.017	7152.699	2294.758	11635.362	1866.453
71 10	12420.926	7154.898	2296.038	11637.728	1867.300
71 11	12423.835	7157.097	2297.318	11640.093	1868.146
71 12	12426.744	7159.297	2298.598	11642.459	1868.993
71 13	12429.653	7161.497	2299.879	11644.824	1869.840
71 14	12432.562	7163.698	2301.161	11647.189	1870.687
71 15	12435.471	7165.899	2302.443	11649.553	1871.534

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
71 16	12438.380	7168.100	2303.725	11651.918	1872.381
71 17	12441.288	7170.302	2305.008	11654.281	1873.228
71 18	12444.197	7172.504	2306.291	11656.645	1874.076
71 19	12447.106	7174.707	2307.575	11659.009	1874.924
71 20	12450.015	7176.911	2308.860	11661.372	1875.772
71 21	12452.924	7179.114	2310.145	11663.736	1876.620
71 22	12455.833	7181.319	2311.431	11666.099	1877.468
71 23	12458.742	7183.524	2312.717	11668.461	1878.317
71 24	12461.651	7185.729	2314.004	11670.824	1879.165
71 25	12464.560	7187.935	2315.291	11673.186	1880.014
71 26	12467.468	7190.140	2316.579	11675.547	1880.863
71 27	12470.377	7192.347	2317.867	11677.909	1881.712
71 28	12473.286	7194.554	2319.156	11680.270	1882.561
71 29	12476.195	7196.762	2320.445	11682.632	1883.411
71 30	12479.104	7198.970	2321.735	11684.993	1884.261
71 31	12482.013	7201.178	2323.026	11687.353	1885.111
71 32	12484.922	7203.387	2324.317	11689.714	1885.961
71 33	12487.831	7205.597	2325.608	11692.074	1886.811
71 34	12490.739	7207.806	2326.900	11694.433	1887.661
71 35	12493.648	7210.016	2328.192	11696.793	1888.511
71 36	12496.557	7212.227	2329.485	11699.153	1889.362
71 37	12499.466	7214.438	2330.779	11701.512	1890.213
71 38	12502.375	7216.650	2332.073	11703.871	1891.064
71 39	12505.284	7218.862	2333.368	11706.230	1891.915
71 40	12508.193	7221.075	2334.663	11708.588	1892.767
71 41	12511.102	7223.288	2335.959	11710.946	1893.618
71 42	12514.011	7225.502	2337.255	11713.305	1894.470
71 43	12516.919	7227.715	2338.552	11715.661	1895.322
71 44	12519.828	7229.930	2339.849	11718.019	1896.174
71 45	12522.737	7232.145	2341.147	11720.376	1897.026
71 46	12525.646	7234.360	2342.445	11722.733	1897.879
71 47	12528.555	7236.576	2343.744	11725.090	1898.731
71 48	12531.464	7238.793	2345.044	11727.447	1899.584
71 49	12534.373	7241.010	2346.344	11729.803	1900.437
71 50	12537.282	7243.227	2347.645	11732.159	1901.290
71 51	12540.190	7245.444	2348.945	11734.514	1902.143
71 52	12543.099	7247.662	2350.247	11736.869	1902.997
71 53	12546.008	7249.881	2351.549	11739.225	1903.850
71 54	12548.917	7252.100	2352.852	11741.580	1904.704
71 55	12551.826	7254.320	2354.155	11743.935	1905.558
71 56	12554.735	7256.540	2355.459	11746.289	1906.412
71 57	12557.644	7258.761	2356.763	11748.643	1907.267
71 58	12560.553	7260.982	2358.068	11750.998	1908.121
71 59	12563.462	7263.204	2359.373	11753.351	1908.976
72 00	12566.370	7265.425	2360.679	11755.704	1909.830

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
72 01	12569.278	7267.647	2361.985	11758.057	1910.685
72 02	12572.187	7269.869	2363.292	11760.410	1911.540
72 03	12575.096	7272.093	2364.600	11762.762	1912.396
72 04	12578.005	7274.317	2365.908	11765.115	1913.251
72 05	12580.914	7276.541	2367.216	11767.467	1914.107
72 06	12583.823	7278.766	2368.526	11769.819	1914.963
72 07	12586.732	7280.991	2369.835	11772.171	1915.819
72 08	12589.641	7283.217	2371.146	11774.523	1916.675
72 09	12592.549	7285.443	2372.456	11776.873	1917.531
72 10	12595.458	7287.669	2373.767	11779.224	1918.388
72 11	12598.367	7289.897	2375.079	11781.575	1919.244
72 12	12601.276	7292.124	2376.392	11783.926	1920.101
72 13	12604.185	7294.353	2377.705	11786.276	1920.958
72 14	12607.094	7296.581	2379.018	11788.626	1921.816
72 15	12610.003	7298.810	2380.332	11790.976	1922.673
72 16	12612.912	7301.040	2381.647	11793.325	1923.531
72 17	12615.820	7303.269	2382.961	11795.674	1924.388
72 18	12618.729	7305.500	2384.277	11798.023	1925.246
72 19	12621.638	7307.731	2385.593	11800.372	1926.104
72 20	12624.547	7309.962	2386.910	11802.720	1926.962
72 21	12627.456	7312.194	2388.227	11805.069	1927.821
72 22	12630.365	7314.427	2389.545	11807.417	1928.679
72 23	12633.274	7316.660	2390.863	11809.765	1929.538
72 24	12636.183	7318.893	2392.182	11812.112	1930.397
72 25	12639.092	7321.127	2393.502	11814.460	1931.256
72 26	12642.000	7323.360	2394.821	11816.806	1932.115
72 27	12644.909	7325.595	2396.142	11819.153	1932.975
72 28	12647.818	7327.831	2397.463	11821.499	1933.834
72 29	12650.727	7330.066	2398.785	11823.846	1934.694
72 30	12653.636	7332.303	2400.107	11826.192	1935.554
72 31	12656.545	7334.539	2401.430	11828.537	1936.414
72 32	12659.454	7336.776	2402.753	11830.883	1937.275
72 33	12662.363	7339.014	2404.077	11833.228	1938.135
72 34	12665.271	7341.251	2405.401	11835.573	1938.995
72 35	12668.180	7343.490	2406.725	11837.917	1939.856
72 36	12671.089	7345.729	2408.051	11840.262	1940.717
72 37	12673.998	7347.969	2409.377	11842.606	1941.578
72 38	12676.907	7350.209	2410.703	11844.950	1942.440
72 39	12679.816	7352.449	2412.030	11847.294	1943.301
72 40	12682.725	7354.690	2413.358	11849.638	1944.163
72 41	12685.634	7356.932	2414.686	11851.981	1945.025
72 42	12688.543	7359.174	2416.015	11854.324	1945.887
72 43	12691.451	7361.416	2417.344	11856.666	1946.749
72 44	12694.360	7363.658	2418.674	11859.009	1947.611
72 45	12697.269	7365.902	2420.004	11861.351	1948.474

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
72	46	12700.178	7368.146	2421.335	11863.693	1949.336
72	47	12703.087	7370.390	2422.666	11866.035	1950.199
72	48	12705.996	7372.635	2423.998	11868.376	1951.062
72	49	12708.905	7374.880	2425.331	11870.718	1951.925
72	50	12711.814	7377.126	2426.664	11873.059	1952.789
72	51	12714.722	7379.372	2427.997	11875.399	1953.652
72	52	12717.631	7381.619	2429.331	11877.739	1954.516
72	53	12720.540	7383.866	2430.666	11880.080	1955.380
72	54	12723.449	7386.114	2432.002	11882.420	1956.244
72	55	12726.358	7388.362	2433.337	11884.760	1957.108
72	56	12729.267	7390.611	2434.674	11887.099	1957.972
72	57	12732.176	7392.860	2436.011	11889.438	1958.837
72	58	12735.085	7395.109	2437.348	11891.777	1959.702
72	59	12737.994	7397.360	2438.686	11894.116	1960.567
73	00	12740.903	7399.610	2440.025	11896.455	1961.432
73	01	12743.811	7401.861	2441.364	11898.792	1962.297
73	02	12746.720	7404.112	2442.703	11901.130	1963.162
73	03	12749.629	7406.364	2444.044	11903.468	1964.028
73	04	12752.538	7408.617	2445.384	11905.806	1964.893
73	05	12755.447	7410.870	2446.726	11908.143	1965.759
73	06	12758.356	7413.124	2448.068	11910.480	1966.625
73	07	12761.265	7415.378	2449.410	11912.817	1967.492
73	08	12764.174	7417.632	2450.753	11915.153	1968.358
73	09	12767.082	7419.887	2452.096	11917.489	1969.225
73	10	12769.991	7422.142	2453.441	11919.825	1970.091
73	11	12772.900	7424.398	2454.785	11922.161	1970.958
73	12	12775.809	7426.654	2456.130	11924.496	1971.825
73	13	12778.718	7428.911	2457.476	11926.831	1972.693
73	14	12781.627	7431.169	2458.823	11929.166	1973.560
73	15	12784.536	7433.427	2460.169	11931.501	1974.428
73	16	12787.445	7435.685	2461.517	11933.836	1975.296
73	17	12790.353	7437.943	2462.865	11936.169	1976.163
73	18	12793.262	7440.203	2464.213	11938.503	1977.031
73	19	12796.171	7442.463	2465.562	11940.837	1977.900
73	20	12799.080	7444.723	2466.912	11943.170	1978.768
73	21	12801.989	7446.984	2468.262	11945.504	1979.637
73	22	12804.898	7449.245	2469.613	11947.837	1980.506
73	23	12807.807	7451.507	2470.964	11950.169	1981.375
73	24	12810.716	7453.770	2472.316	11952.502	1982.244
73	25	12813.625	7456.032	2473.669	11954.834	1983.113
73	26	12816.533	7458.295	2475.021	11957.165	1983.982
73	27	12819.442	7460.559	2476.375	11959.497	1984.852
73	28	12822.351	7462.823	2477.729	11961.829	1985.722
73	29	12825.260	7465.088	2479.084	11964.160	1986.592
73	30	12828.169	7467.353	2480.439	11966.491	1987.462

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
73 31	12831.078	7469.619	2481.795	11968.821	1988.332
73 32	12833.987	7471.885	2483.151	11971.152	1989.203
73 33	12836.896	7474.152	2484.508	11973.482	1990.074
73 34	12839.804	7476.419	2485.865	11975.811	1990.944
73 35	12842.713	7478.686	2487.223	11978.141	1991.815
73 36	12845.622	7480.955	2488.582	11980.470	1992.686
73 37	12848.531	7483.223	2489.941	11982.800	1993.558
73 38	12851.440	7485.493	2491.301	11985.129	1994.429
73 39	12854.349	7487.762	2492.661	11987.457	1995.301
73 40	12857.258	7490.033	2494.022	11989.786	1996.173
73 41	12860.167	7492.303	2495.383	11992.114	1997.045
73 42	12863.076	7494.575	2496.745	11994.442	1997.917
73 43	12865.984	7496.846	2498.107	11996.769	1998.789
73 44	12868.893	7499.118	2499.470	11999.096	1999.662
73 45	12871.802	7501.391	2500.834	12001.423	2000.534
73 46	12874.711	7503.664	2502.198	12003.750	2001.407
73 47	12877.620	7505.937	2503.563	12006.077	2002.280
73 48	12880.529	7508.212	2504.928	12008.403	2003.154
73 49	12883.438	7510.486	2506.294	12010.729	2004.027
73 50	12886.347	7512.762	2507.661	12013.055	2004.901
73 51	12889.255	7515.036	2509.027	12015.380	2005.774
73 52	12892.164	7517.313	2510.395	12017.706	2006.648
73 53	12895.073	7519.589	2511.763	12020.031	2007.522
73 54	12897.982	7521.867	2513.132	12022.356	2008.396
73 55	12900.891	7524.144	2514.501	12024.680	2009.271
73 56	12903.800	7526.422	2515.871	12027.005	2010.145
73 57	12906.709	7528.701	2517.241	12029.329	2011.020
73 58	12909.618	7530.980	2518.612	12031.653	2011.895
73 59	12912.527	7533.260	2519.984	12033.976	2012.770
74 00	12915.436	7535.540	2521.356	12036.300	2013.645
74 01	12918.344	7537.820	2522.728	12038.622	2014.520
74 02	12921.253	7540.101	2524.101	12040.945	2015.396
74 03	12924.162	7542.383	2525.475	12043.267	2016.272
74 04	12927.071	7544.665	2526.850	12045.590	2017.148
74 05	12929.980	7546.948	2528.224	12047.912	2018.024
74 06	12932.889	7549.231	2529.600	12050.234	2018.900
74 07	12935.798	7551.515	2530.976	12052.555	2019.776
74 08	12938.707	7553.799	2532.353	12054.876	2020.653
74 09	12941.615	7556.083	2533.729	12057.197	2021.530
74 10	12944.524	7558.368	2535.107	12059.518	2022.406
74 11	12947.433	7560.653	2536.486	12061.838	2023.284
74 12	12950.342	7562.940	2537.864	12064.158	2024.161
74 13	12953.251	7565.226	2539.244	12066.478	2025.038
74 14	12956.160	7567.514	2540.624	12068.798	2025.916
74 15	12959.069	7569.801	2542.005	12071.118	2026.794

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
74 16	12961.978	7572.089	2543.386	12073.437	2027.672
74 17	12964.886	7574.377	2544.767	12075.755	2028.550
74 18	12967.795	7576.667	2546.150	12078.074	2029.428
74 19	12970.704	7578.956	2547.532	12080.393	2030.306
74 20	12973.613	7581.247	2548.916	12082.711	2031.185
74 21	12976.522	7583.537	2550.300	12085.029	2032.064
74 22	12979.431	7585.829	2551.685	12087.347	2032.943
74 23	12982.340	7588.120	2553.070	12089.664	2033.822
74 24	12985.249	7590.413	2554.456	12091.981	2034.701
74 25	12988.158	7592.705	2555.842	12094.298	2035.581
74 26	12991.066	7594.998	2557.228	12096.614	2036.460
74 27	12993.975	7597.292	2558.616	12098.931	2037.340
74 28	12996.884	7599.586	2560.004	12101.247	2038.220
74 29	12999.793	7601.881	2561.392	12103.563	2039.100
74 30	13002.702	7604.176	2562.782	12105.879	2039.980
74 31	13005.611	7606.472	2564.171	12108.194	2040.861
74 32	13008.520	7608.768	2565.562	12110.509	2041.741
74 33	13011.429	7611.065	2566.953	12112.824	2042.622
74 34	13014.337	7613.361	2568.344	12115.138	2043.503
74 35	13017.246	7615.659	2569.736	12117.452	2044.384
74 36	13020.155	7617.958	2571.128	12119.767	2045.265
74 37	13023.064	7620.256	2572.521	12122.080	2046.147
74 38	13025.973	7622.556	2573.915	12124.394	2047.028
74 39	13028.882	7624.856	2575.310	12126.707	2047.910
74 40	13031.791	7627.156	2576.705	12129.021	2048.792
74 41	13034.700	7629.457	2578.100	12131.333	2049.674
74 42	13037.609	7631.758	2579.496	12133.646	2050.557
74 43	13040.517	7634.059	2580.892	12135.958	2051.439
74 44	13043.426	7636.362	2582.290	12138.270	2052.322
74 45	13046.335	7638.665	2583.687	12140.582	2053.204
74 46	13049.244	7640.968	2585.086	12142.893	2054.087
74 47	13052.153	7643.272	2586.485	12145.205	2054.971
74 48	13055.062	7645.577	2587.884	12147.516	2055.854
74 49	13057.971	7647.882	2589.284	12149.826	2056.738
74 50	13060.880	7650.187	2590.685	12152.137	2057.621
74 51	13063.788	7652.492	2592.086	12154.447	2058.505
74 52	13066.697	7654.799	2593.488	12156.757	2059.389
74 53	13069.606	7657.106	2594.890	12159.066	2060.273
74 54	13072.515	7659.413	2596.293	12161.376	2061.157
74 55	13075.424	7661.721	2597.697	12163.685	2062.042
74 56	13078.333	7664.030	2599.101	12165.994	2062.927
74 57	13081.242	7666.339	2600.506	12168.303	2063.811
74 58	13084.151	7668.649	2601.911	12170.612	2064.696
74 59	13087.060	7670.959	2603.317	12172.920	2065.582
75 00	13089.969	7673.270	2604.723	12175.228	2066.467

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
75 01	13092.877	7675.580	2606.130	12177.535	2067.352
75 02	13095.786	7677.892	2607.538	12179.842	2068.238
75 03	13098.695	7680.204	2608.946	12182.149	2069.124
75 04	13101.604	7682.516	2610.355	12184.456	2070.010
75 05	13104.513	7684.830	2611.764	12186.763	2070.896
75 06	13107.422	7687.143	2613.174	12189.070	2071.782
75 07	13110.331	7689.458	2614.585	12191.376	2072.669
75 08	13113.240	7691.772	2615.996	12193.682	2073.556
75 09	13116.148	7694.087	2617.407	12195.987	2074.442
75 10	13119.057	7696.403	2618.819	12198.292	2075.329
75 11	13121.966	7698.719	2620.232	12200.597	2076.216
75 12	13124.875	7701.036	2621.646	12202.902	2077.104
75 13	13127.784	7703.353	2623.060	12205.207	2077.991
75 14	13130.693	7705.671	2624.474	12207.511	2078.879
75 15	13133.602	7707.990	2625.890	12209.815	2079.767
75 16	13136.511	7710.309	2627.306	12212.119	2080.655
75 17	13139.419	7712.627	2628.722	12214.422	2081.543
75 18	13142.328	7714.947	2630.138	12216.725	2082.431
75 19	13145.237	7717.268	2631.556	12219.028	2083.320
75 20	13148.146	7719.589	2632.974	12221.331	2084.208
75 21	13151.055	7721.910	2634.393	12223.634	2085.097
75 22	13153.964	7724.232	2635.812	12225.936	2085.986
75 23	13156.873	7726.555	2637.232	12228.238	2086.876
75 24	13159.782	7728.878	2638.653	12230.540	2087.765
75 25	13162.691	7731.201	2640.074	12232.841	2088.655
75 26	13165.599	7733.525	2641.495	12235.142	2089.544
75 27	13168.508	7735.849	2642.917	12237.443	2090.434
75 28	13171.417	7738.175	2644.340	12239.744	2091.324
75 29	13174.326	7740.500	2645.763	12242.044	2092.214
75 30	13177.235	7742.827	2647.187	12244.344	2093.104
75 31	13180.144	7745.153	2648.612	12246.644	2093.995
75 32	13183.053	7747.481	2650.037	12248.944	2094.886
75 33	13185.962	7749.808	2651.463	12251.244	2095.777
75 34	13188.870	7752.136	2652.889	12253.542	2096.667
75 35	13191.779	7754.465	2654.316	12255.841	2097.559
75 36	13194.688	7756.794	2655.743	12258.140	2098.450
75 37	13197.597	7759.124	2657.172	12260.438	2099.342
75 38	13200.506	7761.454	2658.600	12262.736	2100.233
75 39	13203.415	7763.785	2660.030	12265.034	2101.125
75 40	13206.324	7766.117	2661.460	12267.332	2102.017
75 41	13209.233	7768.449	2662.890	12269.629	2102.909
75 42	13212.142	7770.781	2664.321	12271.926	2103.802
75 43	13215.050	7773.114	2665.752	12274.222	2104.694
75 44	13217.959	7775.447	2667.185	12276.519	2105.587
75 45	13220.868	7777.781	2668.618	12278.815	2106.480

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
75 46	13223.777	7780.116	2670.051	12281.111	2107.373
75 47	13226.686	7782.451	2671.485	12283.407	2108.266
75 48	13229.595	7784.787	2672.920	12285.703	2109.159
75 49	13232.504	7787.123	2674.355	12287.998	2110.053
75 50	13235.413	7789.460	2675.791	12290.293	2110.947
75 51	13238.321	7791.796	2677.227	12292.587	2111.840
75 52	13241.230	7794.134	2678.664	12294.882	2112.734
75 53	13244.139	7796.473	2680.101	12297.176	2113.629
75 54	13247.048	7798.812	2681.540	12299.470	2114.523
75 55	13249.957	7801.151	2682.979	12301.764	2115.418
75 56	13252.866	7803.491	2684.418	12304.057	2116.312
75 57	13255.775	7805.831	2685.858	12306.351	2117.207
75 58	13258.684	7808.172	2687.299	12308.644	2118.102
75 59	13261.593	7810.514	2688.740	12310.936	2118.997
76 00	13264.502	7812.856	2690.182	12313.229	2119.893
76 01	13267.410	7815.198	2691.623	12315.520	2120.788
76 02	13270.319	7817.541	2693.066	12317.812	2121.684
76 03	13273.228	7819.885	2694.510	12320.104	2122.580
76 04	13276.137	7822.229	2695.954	12322.395	2123.476
76 05	13279.046	7824.574	2697.399	12324.686	2124.372
76 06	13281.955	7826.919	2698.844	12326.977	2125.268
76 07	13284.864	7829.265	2700.290	12329.268	2126.165
76 08	13287.773	7831.611	2701.737	12331.558	2127.062
76 09	13290.681	7833.957	2703.183	12333.848	2127.958
76 10	13293.590	7836.304	2704.631	12336.137	2128.855
76 11	13296.499	7838.652	2706.080	12338.427	2129.753
76 12	13299.408	7841.001	2707.529	12340.716	2130.650
76 13	13302.317	7843.350	2708.978	12343.005	2131.548
76 14	13305.226	7845.699	2710.428	12345.294	2132.445
76 15	13308.135	7848.050	2711.879	12347.583	2133.343
76 16	13311.044	7850.400	2713.330	12349.871	2134.241
76 17	13313.952	7852.750	2714.782	12352.158	2135.139
76 18	13316.861	7855.102	2716.234	12354.446	2136.038
76 19	13319.770	7857.454	2717.688	12356.733	2136.936
76 20	13322.679	7859.807	2719.141	12359.021	2137.835
76 21	13325.588	7862.160	2720.596	12361.308	2138.734
76 22	13328.497	7864.514	2722.051	12363.594	2139.633
76 23	13331.406	7866.869	2723.506	12365.881	2140.532
76 24	13334.315	7869.224	2724.962	12368.167	2141.431
76 25	13337.224	7871.579	2726.419	12370.453	2142.331
76 26	13340.132	7873.934	2727.876	12372.738	2143.230
75 27	13343.041	7876.291	2729.334	12375.023	2144.130
76 28	13345.950	7878.648	2730.793	12377.308	2145.030
76 29	13348.859	7881.005	2732.252	12379.593	2145.931
76 30	13351.768	7883.364	2733.712	12381.878	2146.831

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
76 31	13354.677	7885.722	2735.172	12384.162	2147.731
76 32	13357.586	7888.082	2736.633	12386.446	2148.632
76 33	13360.495	7890.441	2738.095	12388.730	2149.533
76 34	13363.403	7892.801	2739.556	12391.013	2150.434
76 35	13366.312	7895.162	2741.019	12393.296	2151.335
76 36	13369.221	7897.523	2742.483	12395.579	2152.236
76 37	13372.130	7899.885	2743.947	12397.862	2153.138
76 38	13375.039	7902.248	2745.411	12400.145	2154.040
76 39	13377.948	7904.611	2746.876	12402.427	2154.942
76 40	13380.857	7906.974	2748.342	12404.709	2155.844
76 41	13383.766	7909.338	2749.809	12406.991	2156.746
76 42	13386.675	7911.703	2751.276	12409.272	2157.648
76 43	13389.583	7914.067	2752.743	12411.552	2158.550
76 44	13392.492	7916.433	2754.211	12413.833	2159.453
76 45	13395.401	7918.800	2755.680	12416.114	2160.356
76 46	13398.310	7921.167	2757.150	12418.395	2161.259
76 47	13401.219	7923.534	2758.620	12420.675	2162.162
76 48	13404.128	7925.902	2760.091	12422.955	2163.066
76 49	13407.037	7928.270	2761.562	12425.234	2163.969
76 50	13409.946	7930.639	2763.034	12427.514	2164.873
76 51	13412.854	7933.008	2764.506	12429.792	2165.777
76 52	13415.763	7935.378	2765.979	12432.071	2166.681
76 53	13418.672	7937.749	2767.453	12434.349	2167.585
76 54	13421.581	7940.120	2768.927	12436.628	2168.489
76 55	13424.490	7942.492	2770.402	12438.906	2169.394
76 56	13427.399	7944.864	2771.878	12441.183	2170.298
76 57	13430.308	7947.237	2773.354	12443.461	2171.203
76 58	13433.217	7949.610	2774.831	12445.738	2172.108
76 59	13436.126	7951.984	2776.308	12448.015	2173.013
77 00	13439.035	7954.359	2777.786	12450.292	2173.919
77 01	13441.943	7956.733	2779.264	12452.568	2174.824
77 02	13444.852	7959.109	2780.743	12454.844	2175.730
77 03	13447.761	7961.485	2782.223	12457.120	2176.636
77 04	13450.670	7963.862	2783.704	12459.396	2177.542
77 05	13453.579	7966.239	2785.185	12461.671	2178.448
77 06	13456.488	7968.617	2786.667	12463.946	2179.354
77 07	13459.397	7970.995	2788.149	12466.221	2180.261
77 08	13462.306	7973.374	2789.632	12468.496	2181.167
77 09	13465.214	7975.753	2791.115	12470.769	2182.074
77 10	13468.123	7978.133	2792.599	12473.043	2182.981
77 11	13471.032	7980.513	2794.084	12475.317	2183.888
77 12	13473.941	7982.894	2795.569	12477.591	2184.796
77 13	13476.850	7985.276	2797.055	12479.864	2185.703
77 14	13479.759	7987.658	2798.542	12482.137	2186.611
77 15	13482.668	7990.041	2800.029	12484.410	2187.519

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
77 16	13485.577	7992.424	2801.517	12486.682	2188.427
77 17	13488.485	7994.807	2803.005	12488.954	2189.334
77 18	13491.394	7997.192	2804.494	12491.226	2190.243
77 19	13494.303	7999.577	2805.984	12493.498	2191.151
77 20	13497.212	8001.962	2807.474	12495.769	2192.060
77 21	13500.121	8004.349	2808.965	12498.040	2192.969
77 22	13503.030	8006.735	2810.457	12500.311	2193.878
77 23	13505.939	8009.122	2811.949	12502.582	2194.787
77 24	13508.848	8011.510	2813.442	12504.852	2195.696
77 25	13511.757	8013.899	2814.935	12507.122	2196.606
77 26	13514.665	8016.287	2816.429	12509.392	2197.515
77 27	13517.574	8018.676	2817.923	12511.661	2198.425
77 28	13520.483	8021.066	2819.419	12513.930	2199.335
77 29	13523.392	8023.457	2820.915	12516.200	2200.245
77 30	13526.301	8025.848	2822.411	12518.468	2201.155
77 31	13529.210	8028.240	2823.908	12520.737	2202.066
77 32	13532.119	8030.632	2825.406	12523.005	2202.977
77 33	13535.028	8033.025	2826.904	12525.273	2203.887
77 34	13537.936	8035.417	2828.403	12527.540	2204.798
77 35	13540.845	8037.811	2829.902	12529.808	2205.709
77 36	13543.754	8040.206	2831.403	12532.075	2206.621
77 37	13546.663	8042.601	2832.903	12534.342	2207.532
77 38	13549.572	8044.996	2834.405	12536.609	2208.444
77 39	13552.481	8047.392	2835.907	12538.875	2209.355
77 40	13555.390	8049.789	2837.410	12541.141	2210.267
77 41	13558.299	8052.186	2838.913	12543.407	2211.180
77 42	13561.208	8054.584	2840.417	12545.673	2212.092
77 43	13564.116	8056.982	2841.921	12547.937	2213.004
77 44	13567.025	8059.381	2843.427	12550.202	2213.917
77 45	13569.934	8061.780	2844.933	12552.467	2214.829
77 46	13572.843	8064.180	2846.439	12554.732	2215.742
77 47	13575.752	8066.581	2847.946	12556.996	2216.656
77 48	13578.661	8068.982	2849.454	12559.260	2217.569
77 49	13581.570	8071.384	2850.962	12561.524	2218.482
77 50	13584.479	8073.786	2852.471	12563.787	2219.396
77 51	13587.387	8076.189	2853.980	12566.050	2220.309
77 52	13590.296	8078.592	2855.491	12568.313	2221.223
77 53	13593.205	8080.996	2857.001	12570.576	2222.137
77 54	13596.114	8083.401	2858.513	12572.838	2223.052
77 55	13599.023	8085.806	2860.025	12575.100	2223.966
77 56	13601.932	8088.212	2861.538	12577.362	2224.881
77 57	13604.841	8090.618	2863.051	12579.624	2225.796
77 58	13607.750	8093.025	2864.565	12581.885	2226.710
77 59	13610.659	8095.432	2866.080	12584.146	2227.626
78 00	13613.568	8097.840	2867.595	12586.407	2228.541

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
78 01	13616.476	8100.248	2869.111	12588.667	2229.456
78 02	13619.385	8102.657	2870.627	12590.927	2230.372
78 03	13622.294	8105.067	2872.144	12593.187	2231.287
78 04	13625.203	8107.477	2873.662	12595.447	2232.203
78 05	13628.112	8109.888	2875.180	12597.707	2233.119
78 06	13631.021	8112.299	2876.699	12599.966	2234.036
78 07	13633.930	8114.711	2878.219	12602.225	2234.952
78 08	13636.839	8117.124	2879.739	12604.484	2235.869
78 09	13639.747	8119.536	2881.260	12606.741	2236.785
78 10	13642.656	8121.950	2882.781	12609.000	2237.702
78 11	13645.565	8124.364	2884.304	12611.257	2238.619
78 12	13648.474	8126.779	2885.826	12613.515	2239.536
78 13	13651.383	8129.194	2887.350	12615.772	2240.454
78 14	13654.292	8131.610	2888.874	12618.030	2241.371
78 15	13657.201	8134.027	2890.399	12620.286	2242.289
78 16	13660.110	8136.444	2891.924	12622.543	2243.207
78 17	13663.018	8138.861	2893.450	12624.799	2244.125
78 18	13665.927	8141.279	2894.976	12627.055	2245.043
78 19	13668.836	8143.698	2896.504	12629.310	2245.961
78 20	13671.745	8146.117	2898.031	12631.566	2246.880
78 21	13674.654	8148.537	2899.560	12633.821	2247.798
78 22	13677.563	8150.958	2901.089	12636.076	2248.717
78 23	13680.472	8153.379	2902.619	12638.331	2249.636
78 24	13683.381	8155.801	2904.149	12640.585	2250.555
78 25	13686.290	5158.223	2905.681	12642.839	2251.475
78 26	13689.198	8160.645	2907.212	12645.093	2252.394
78 27	13692.107	8163.068	2908.744	12647.346	2253.314
78 28	13695.016	8165.492	2910.277	12649.600	2254.234
78 29	13697.925	8167.917	2911.811	12651.853	2255.154
78 30	13700.834	8170.342	2913.345	12654.106	2256.074
78 31	13703.743	8172.768	2914.880	12656.358	2256.994
78 32	13706.652	8175.194	2916.416	12658.610	2257.915
78 33	13709.561	8177.621	2917.952	12660.862	2258.835
78 34	13712.469	8180.048	2919.488	12663.113	2259.756
78 35	13715.378	8182.476	2921.025	12665.365	2260.677
78 36	13718.287	8184.904	2922.563	12667.616	2261.598
78 37	13721.196	8187.334	2924.102	12669.867	2262.519
78 38	13724.105	8189.763	2925.642	12672.118	2263.441
78 39	13727.014	8192.194	2927.182	12674.368	2264.363
78 40	13729.923	8194.625	2928.722	12676.618	2265.284
78 41	13732.832	8197.056	2930.264	12678.868	2266.206
78 42	13735.741	8199.488	2931.806	12681.118	2267.129
78 43	13738.649	8201.920	2933.348	12683.367	2268.051
78 44	13741.558	8204.353	2934.891	12685.616	2268.973
78 45	13744.467	8206.787	2936.435	12687.865	2269.896

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
78 46	13747.376	8209.221	2937.979	12690.113	2270.818
78 47	13750.285	8211.657	2939.524	12692.361	2271.741
78 48	13753.194	8214.092	2941.070	12694.609	2272.665
78 49	13756.103	8216.528	2942.617	12696.857	2273.588
78 50	13759.012	8218.965	2944.164	12699.105	2274.511
78 51	13761.920	8221.402	2945.711	12701.351	2275.435
78 52	13764.829	8223.839	2947.259	12703.598	2276.358
78 53	13767.738	8226.278	2948.808	12705.845	2277.282
78 54	13770.647	8228.717	2950.358	12708.091	2278.207
78 55	13773.556	8231.157	2951.908	12710.337	2279.131
78 56	13776.465	8233.597	2953.459	12712.583	2280.055
78 57	13779.374	8236.038	2955.011	12714.829	2280.980
78 58	13782.283	8238.479	2956.563	12717.074	2281.905
78 59	13785.192	8240.921	2958.116	12719.319	2282.830
79 00	13788.101	8243.364	2959.670	12721.564	2283.755
79 01	13791.009	8245.806	2961.223	12723.808	2284.680
79 02	13793.918	8248.250	2962.778	12726.052	2285.605
79 03	13796.827	8250.694	2964.333	12728.296	2286.531
79 04	13799.736	8253.139	2965.890	12730.540	2287.456
79 05	13802.645	8255.585	2967.446	12732.783	2288.382
79 06	13805.554	8258.031	2969.004	12735.026	2289.308
79 07	13808.463	8260.477	2970.562	12737.269	2290.235
79 08	13811.372	8262.925	2972.121	12739.512	2291.161
79 09	13814.280	8265.372	2973.679	12741.753	2292.087
79 10	13817.189	8267.820	2975.239	12743.995	2293.014
79 11	13820.098	8270.269	2976.800	12746.237	2293.941
79 12	13823.007	8272.719	2978.361	12748.479	2294.868
79 13	13825.916	8275.169	2979.923	12750.720	2295.795
79 14	13828.825	8277.620	2981.486	12752.961	2296.722
79 15	13831.734	8280.071	2983.049	12755.202	2297.650
79 16	13834.643	8282.523	2984.613	12757.442	2298.578
79 17	13837.551	8284.975	2986.177	12759.682	2299.505
79 18	13840.460	8287.428	2987.742	12761.922	2300.433
79 19	13843.369	8289.882	2989.308	12764.161	2301.361
79 20	13846.278	8292.336	2990.875	12766.401	2302.290
79 21	13849.187	8294.791	2992.442	12768.640	2303.218
79 22	13852.096	8297.247	2994.010	12770.879	2304.147
79 23	13855.005	8299.703	2995.578	12773.117	2305.076
79 24	13857.914	8302.160	2997.148	12775.356	2306.005
79 25	13860.823	8304.617	2998.717	12777.594	2306.934
79 26	13863.731	8307.074	3000.287	12779.831	2307.863
79 27	13866.640	8309.533	3001.858	12782.068	2308.793
79 28	13869.549	8311.992	3003.430	12784.305	2309.722
79 29	13872.458	8314.451	3005.003	12786.542	2310.652
79 30	13875.367	8316.912	3006.576	12788.779	2311.582

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
79	31	13878.276	8319.373	3008.149	12791.016	2312.512
79	32	13881.185	8321.834	3009.724	12793.252	2313.442
79	33	13884.094	8324.296	3011.299	12795.488	2314.373
79	34	13887.002	8326.758	3012.874	12797.722	2315.303
79	35	13889.911	8329.221	3014.450	12799.958	2316.234
79	36	13892.820	8331.685	3016.027	12802.193	2317.165
79	37	13895.729	8334.150	3017.605	12804.428	2318.096
79	38	13898.638	8336.615	3019.183	12806.662	2319.027
79	39	13901.547	8339.080	3020.762	12808.896	2319.959
79	40	13904.456	8341.547	3022.342	12811.130	2320.890
79	41	13907.365	8344.014	3023.922	12813.364	2321.822
79	42	13910.274	8346.481	3025.503	12815.598	2322.754
79	43	13913.182	8348.948	3027.084	12817.830	2323.686
79	44	13916.091	8351.417	3028.666	12820.063	2324.618
79	45	13919.000	8353.886	3030.249	12822.296	2325.551
79	46	13921.909	8356.356	3031.833	12824.528	2326.483
79	47	13924.818	8358.826	3033.417	12826.760	2327.416
79	48	13927.727	8361.297	3035.002	12828.992	2328.349
79	49	13930.636	8363.769	3036.588	12831.223	2329.282
79	50	13933.545	8366.241	3038.174	12833.455	2330.215
79	51	13936.453	8368.713	3039.761	12835.685	2331.148
79	52	13939.362	8371.187	3041.348	12837.916	2332.082
79	53	13942.271	8373.661	3042.936	12840.146	2333.015
79	54	13945.180	8376.136	3044.525	12842.376	2333.949
79	55	13948.089	8378.611	3046.115	12844.606	2334.883
79	56	13950.998	8381.087	3047.705	12846.836	2335.818
79	57	13953.907	8383.563	3049.296	12849.065	2336.752
79	58	13956.816	8386.040	3050.887	12851.294	2337.686
79	59	13959.725	8388.518	3052.479	12853.523	2338.621
80	00	13962.634	8390.996	3054.072	12855.752	2339.556
80	01	13965.542	8393.474	3055.665	12857.979	2340.491
80	02	13968.451	8395.954	3057.260	12860.207	2341.426
80	03	13971.360	8398.434	3058.855	12862.435	2342.361
80	04	13974.269	8400.915	3060.450	12864.662	2343.297
80	05	13977.178	8403.396	3062.046	12866.890	2344.232
80	06	13980.087	8405.878	3063.643	12869.117	2345.168
80	07	13982.996	8408.360	3065.241	12871.343	2346.104
80	08	13985.905	8410.844	3066.839	12873.570	2347.040
80	09	13988.813	8413.326	3068.437	12875.795	2347.976
80	10	13991.722	8415.811	3070.037	12878.021	2348.913
80	11	13994.631	8418.296	3071.637	12880.246	2349.849
80	12	13997.540	8420.781	3073.238	12882.472	2350.786
80	13	14000.449	8423.268	3074.839	12884.697	2351.723
80	14	14003.358	8425.754	3076.442	12886.921	2352.660
80	15	14006.267	8428.242	3078.045	12889.146	2353.598

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
80 16	14009.176	8430.730	3079.648	12891.370	2354.535
80 17	14012.084	8433.217	3081.252	12893.593	2355.472
80 18	14014.993	8435.707	3082.857	12895.817	2356.410
80 19	14017.902	8438.197	3084.462	12898.040	2357.348
80 20	14020.811	8440.687	3086.068	12900.263	2358.286
80 21	14023.720	8443.178	3087.675	12902.486	2359.224
80 22	14026.629	8445.670	3089.283	12904.709	2360.163
80 23	14029.538	8448.162	3090.891	12906.931	2361.101
80 24	14032.447	8450.655	3092.500	12909.153	2362.040
80 25	14035.356	8453.149	3094.110	12911.375	2362.979
80 26	14038.264	8455.642	3095.719	12913.596	2363.918
80 27	14041.173	8458.137	3097.330	12915.817	2364.857
80 28	14044.082	8460.632	3098.942	12918.038	2365.796
80 29	14046.991	8463.128	3100.554	12920.258	2366.736
80 30	14049.900	8465.624	3102.167	12922.479	2367.676
80 31	14052.809	8468.122	3103.781	12924.699	2368.615
80 32	14055.718	8470.619	3105.395	12926.919	2369.556
80 33	14058.627	8473.118	3107.010	12929.138	2370.496
80 34	14061.535	8475.616	3108.625	12931.357	2371.436
80 35	14064.444	8478.116	3110.242	12933.576	2372.376
80 36	14067.353	8480.616	3111.859	12935.794	2373.317
80 37	14070.262	8483.117	3113.476	12938.013	2374.258
80 38	14073.171	8485.618	3115.095	12940.231	2375.199
80 39	14076.080	8488.121	3116.714	12942.449	2376.140
80 40	14078.989	8490.623	3118.333	12944.667	2377.081
80 41	14081.898	8493.127	3119.954	12946.884	2378.023
80 42	14084.807	8495.631	3121.575	12949.101	2378.964
80 43	14087.715	8498.134	3123.196	12951.317	2379.906
80 44	14090.624	8500.640	3124.819	12953.534	2380.848
80 45	14093.533	8503.145	3126.442	12955.750	2381.790
80 46	14096.442	8505.652	3128.066	12957.966	2382.732
80 47	14099.351	8508.159	3129.690	12960.182	2383.675
80 48	14102.260	8510.667	3131.315	12962.397	2384.617
80 49	14105.169	8513.175	3132.941	12964.612	2385.560
80 50	14108.078	8515.684	3134.567	12966.827	2386.503
80 51	14110.986	8518.193	3136.194	12969.041	2387.446
80 52	14113.895	8520.703	3137.822	12971.256	2388.389
80 53	14116.804	8523.214	3139.451	12973.470	2389.332
80 54	14119.713	8525.725	3141.080	12975.683	2390.276
80 55	14122.622	8528.237	3142.710	12977.897	2391.220
80 56	14125.531	8530.750	3144.340	12980.110	2392.164
80 57	14128.440	8533.263	3145.972	12982.323	2393.108
80 58	14131.349	8535.777	3147.604	12984.536	2394.052
80 59	14134.258	8538.292	3149.236	12986.748	2394.996
81 00	14137.167	8540.807	3150.870	12988.961	2395.941

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
81 01	14140.075	8543.322	3152.503	12991.172	2396.885
81 02	14142.984	8545.838	3154.138	12993.383	2397.830
81 03	14145.893	8548.355	3155.773	12995.595	2398.775
81 04	14148.802	8550.873	3157.409	12997.806	2399.720
81 05	14151.711	8553.391	3159.046	13000.016	2400.666
81 06	14154.620	8555.910	3160.683	13002.227	2401.611
81 07	14157.529	8558.430	3162.322	13004.437	2402.557
81 08	14160.438	8560.950	3163.960	13006.647	2403.503
81 09	14163.346	8563.470	3165.599	13008.856	2404.448
81 10	14166.255	8565.991	3167.240	13011.065	2405.394
81 11	14169.164	8568.513	3168.880	13013.275	2406.341
81 12	14172.073	8571.036	3170.522	13015.483	2407.287
81 13	14174.982	8573.559	3172.164	13017.692	2408.234
81 14	14177.891	8576.083	3173.807	13019.900	2409.181
81 15	14180.800	8578.608	3175.451	13022.108	2410.128
81 16	14183.709	8581.133	3177.095	13024.316	2411.075
81 17	14186.617	8583.658	3178.740	13026.523	2412.022
81 18	14189.526	8586.185	3180.385	13028.730	2412.969
81 19	14192.435	8588.712	3182.032	13030.937	2413.917
81 20	14195.344	8591.239	3183.679	13033.144	2414.864
81 21	14198.253	8593.768	3185.326	13035.350	2415.812
81 22	14201.162	8596.297	3186.975	13037.556	2416.760
81 23	14204.071	8598.827	3188.624	13039.762	2417.709
81 24	14206.980	8601.357	3190.274	13041.967	2418.657
81 25	14209.889	8603.888	3191.925	13044.173	2419.606
81 26	14212.797	8606.418	3193.575	13046.377	2420.554
81 27	14215.706	8608.951	3195.227	13048.582	2421.503
81 28	14218.615	8611.483	3196.880	13050.786	2422.452
81 29	14221.524	8614.017	3198.533	13052.990	2423.401
81 30	14224.433	8616.551	3200.187	13055.194	2424.351
81 31	14227.342	8619.086	3201.842	13057.398	2425.300
81 32	14230.251	8621.621	3203.497	13059.601	2426.250
81 33	14233.160	8624.157	3205.153	13061.804	2427.200
81 34	14236.068	8626.693	3206.809	13064.006	2428.149
81 35	14238.977	8629.230	3208.467	13066.209	2429.099
81 36	14241.886	8631.768	3210.125	13068.411	2430.050
81 37	14244.795	8634.306	3211.784	13070.613	2431.000
81 38	14247.704	8636.846	3213.444	13072.815	2431.951
81 39	14250.613	8639.385	3215.104	13075.016	2432.902
81 40	14253.522	8641.926	3216.765	13077.217	2433.853
81 41	14256.431	8644.467	3218.426	13079.418	2434.804
81 42	14259.340	8647.008	3220.089	13081.619	2435.755
81 43	14262.248	8649.550	3221.751	13083.818	2436.706
81 44	14265.157	8652.093	3223.415	13086.018	2437.658
81 45	14268.066	8654.637	3225.079	13088.218	2438.609

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
81 46	14270.975	8657.181	3226.744	13090.417	2439.561
81 47	14273.884	8659.726	3228.410	13092.617	2440.513
81 48	14276.793	8662.271	3230.077	13094.816	2441.466
81 49	14279.702	8664.818	3231.744	13097.014	2442.418
81 50	14282.611	8667.365	3233.412	13099.213	2443.371
81 51	14285.519	8669.911	3235.080	13101.410	2444.323
81 52	14288.428	8672.459	3236.750	13103.608	2445.276
81 53	14291.337	8675.008	3238.420	13105.805	2446.229
81 54	14294.246	8677.557	3240.090	13108.002	2447.182
81 55	14297.155	8680.107	3241.762	13110.199	2448.136
81 56	14300.064	8682.658	3243.434	13112.396	2449.089
81 57	14302.973	8685.210	3245.107	13114.593	2450.043
81 58	14305.882	8687.762	3246.780	13116.789	2450.997
81 59	14308.791	8690.314	3248.455	13118.985	2451.951
82 00	14311.700	8692.868	3250.130	13121.180	2452.905
82 01	14314.608	8695.421	3251.805	13123.375	2453.859
82 02	14317.517	8697.975	3253.481	13125.570	2454.813
82 03	14320.426	8700.530	3255.158	13127.765	2455.768
82 04	14323.335	8703.086	3256.836	13129.959	2456.723
82 05	14326.244	8705.643	3258.514	13132.153	2457.678
82 06	14329.153	8708.200	3260.193	13134.347	2458.633
82 07	14332.062	8710.758	3261.873	13136.541	2459.588
82 08	14334.971	8713.316	3263.554	13138.734	2460.543
82 09	14337.879	8715.874	3265.235	13140.926	2461.499
82 10	14340.788	8718.434	3266.917	13143.119	2462.454
82 11	14343.697	8720.995	3268.600	13145.312	2463.410
82 12	14346.606	8723.556	3270.283	13147.504	2464.366
82 13	14349.515	8726.117	3271.967	13149.696	2465.323
82 14	14352.424	8728.680	3273.652	13151.888	2466.279
82 15	14355.333	8731.243	3275.337	13154.079	2467.236
82 16	14358.242	8733.806	3277.024	13156.270	2468.192
82 17	14361.150	8736.370	3278.710	13158.460	2469.149
82 18	14364.059	8738.935	3280.398	13160.651	2470.106
82 19	14366.968	8741.500	3282.086	13162.841	2471.063
82 20	14369.877	8744.067	3283.775	13165.031	2472.020
82 21	14372.786	8746.633	3285.465	13167.221	2472.978
82 22	14375.695	8749.201	3287.156	13169.411	2473.936
82 23	14378.604	8751.769	3288.847	13171.600	2474.893
82 24	14381.513	8754.338	3290.539	13173.789	2475.851
82 25	14384.422	8756.908	3292.232	13175.977	2476.810
82 26	14387.330	8759.477	3293.924	13178.165	2477.767
82 27	14390.239	8762.048	3295.618	13180.353	2478.726
82 28	14393.148	8764.619	3297.313	13182.541	2479.685
82 29	14396.057	8767.192	3299.009	13184.728	2480.643
82 30	14398.966	8769.764	3300.705	13186.916	2481.602

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
82 31	14401.875	8772.338	3302.402	13189.103	2482.561
82 32	14404.784	8774.912	3304.100	13191.289	2483.521
82 33	14407.693	8777.487	3305.798	13193.476	2484.480
82 34	14410.601	8780.061	3307.497	13195.661	2485.439
82 35	14413.510	8782.637	3309.196	13197.847	2486.399
82 36	14416.419	8785.214	3310.897	13200.032	2487.359
82 37	14419.328	8787.791	3312.598	13202.218	2488.319
82 38	14422.237	8790.369	3314.300	13204.403	2489.279
82 39	14425.146	8792.948	3316.003	13206.587	2490.240
82 40	14428.055	8795.528	3317.706	13208.772	2491.200
82 41	14430.964	8798.108	3319.410	13210.956	2492.161
82 42	14433.873	8800.689	3321.115	13213.140	2493.122
82 43	14436.781	8803.269	3322.820	13215.323	2494.082
82 44	14439.690	8805.851	3324.526	13217.506	2495.043
82 45	14442.599	8808.434	3326.233	13219.689	2496.005
82 46	14445.508	8811.017	3327.941	13221.872	2496.966
82 47	14448.417	8813.601	3329.649	13224.054	2497.928
82 48	14451.326	8816.186	3331.359	13226.237	2498.890
82 49	14454.235	8818.771	3333.068	13228.419	2499.852
82 50	14457.144	8821.357	3334.779	13230.600	2500.814
82 51	14460.052	8823.943	3336.490	13232.781	2501.776
82 52	14462.961	8826.530	3338.202	13234.962	2502.738
82 53	14465.870	8829.118	3339.914	13237.143	2503.701
82 54	14468.779	8831.707	3341.628	13239.323	2504.664
82 55	14471.688	8834.296	3343.342	13241.504	2505.626
82 56	14474.597	8836.886	3345.057	13243.684	2506.589
82 57	14477.506	8839.477	3346.773	13245.863	2507.553
82 58	14480.415	8842.068	3348.489	13248.043	2508.516
82 59	14483.324	8844.660	3350.206	13250.222	2509.480
83 00	14486.233	8847.253	3351.924	13252.401	2510.443
83 01	14489.141	8849.845	3353.642	13254.578	2511.407
83 02	14492.050	8852.439	3355.361	13256.757	2512.371
83 03	14494.959	8855.034	3357.081	13258.935	2513.335
83 04	14497.868	8857.629	3358.802	13261.112	2514.299
83 05	14500.777	8860.225	3360.523	13263.290	2515.264
83 06	14503.686	8862.822	3362.245	13265.467	2516.229
83 07	14506.595	8865.419	3363.968	13267.644	2517.193
83 08	14509.504	8868.017	3365.692	13269.821	2518.158
83 09	14512.412	8870.615	3367.416	13271.996	2519.123
83 10	14515.321	8873.214	3369.141	13274.172	2520.088
83 11	14518.230	8875.814	3370.866	13276.348	2521.054
83 12	14521.139	8878.415	3372.593	13278.523	2522.019
83 13	14524.048	8881.016	3374.320	13280.699	2522.985
83 14	14526.957	8883.619	3376.048	13282.874	2523.951
83 15	14529.866	8886.221	3377.777	13285.048	2524.917

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
83	16	14532.775	8888.825	3379.506	13287.223	2525.883
83	17	14535.683	8891.428	3381.236	13289.396	2526.849
83	18	14538.592	8894.033	3382.967	13291.570	2527.816
83	19	14541.501	8896.638	3384.698	13293.743	2528.783
83	20	14544.410	8899.244	3386.431	13295.916	2529.750
83	21	14547.319	8901.851	3388.164	13298.089	2530.717
83	22	14550.228	8904.458	3389.898	13300.262	2531.684
83	23	14553.137	8907.066	3391.632	13302.434	2532.651
83	24	14556.046	8909.675	3393.368	13304.607	2533.619
83	25	14558.955	8912.284	3395.104	13306.778	2534.586
83	26	14561.863	8914.894	3396.840	13308.949	2535.554
83	27	14564.772	8917.505	3398.577	13311.121	2536.522
83	28	14567.681	8920.116	3400.316	13313.291	2537.490
83	29	14570.590	8922.728	3402.054	13315.462	2538.458
83	30	14573.499	8925.341	3403.794	13317.633	2539.427
83	31	14576.408	8927.955	3405.535	13319.803	2540.395
83	32	14579.317	8930.569	3407.276	13321.973	2541.364
83	33	14582.226	8933.184	3409.018	13324.142	2542.333
83	34	14585.134	8935.798	3410.760	13326.311	2543.302
83	35	14588.043	8938.414	3412.503	13328.480	2544.271
83	36	14590.952	8941.031	3414.247	13330.648	2545.240
83	37	14593.861	8943.649	3415.992	13332.817	2546.210
83	38	14596.770	8946.267	3417.738	13334.985	2547.180
83	39	14599.679	8948.886	3419.484	13337.153	2548.149
83	40	14602.588	8951.506	3421.231	13339.321	2549.119
83	41	14605.497	8954.126	3422.979	13341.488	2550.090
83	42	14608.406	8956.747	3424.727	13343.655	2551.060
83	43	14611.314	8959.368	3426.476	13345.821	2552.030
83	44	14614.223	8961.990	3428.226	13347.987	2553.001
83	45	14617.132	8964.613	3429.977	13350.154	2553.972
83	46	14620.041	8967.237	3431.728	13352.320	2554.943
83	47	14622.950	8969.862	3433.481	13354.485	2555.914
83	48	14625.859	8972.487	3435.234	13356.651	2556.885
83	49	14628.768	8975.113	3436.988	13358.816	2557.856
83	50	14631.677	8977.739	3438.742	13360.980	2558.828
83	51	14634.585	8980.365	3440.497	13363.144	2559.799
83	52	14637.494	8982.993	3442.253	13365.308	2560.771
83	53	14640.403	8985.622	3444.009	13367.472	2561.743
83	54	14643.312	8988.251	3445.767	13369.636	2562.716
83	55	14646.221	8990.881	3447.525	13371.799	2563.688
83	56	14649.130	8993.511	3449.284	13373.962	2564.661
83	57	14652.039	8996.143	3451.043	13376.125	2565.633
83	58	14654.948	8998.775	3452.804	13378.288	2566.606
83	59	14657.857	9001.407	3454.565	13380.450	2567.579
84	00	14660.766	9004.041	3456.327	13382.612	2568.552

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
84	01	14663.674	9006.674	3458.089	13384.773	2569.525
84	02	14666.583	9009.309	3459.852	13386.934	2570.499
84	03	14669.492	9011.944	3461.617	13389.095	2571.472
84	04	14672.401	9014.580	3463.382	13391.256	2572.446
84	05	14675.310	9017.217	3465.147	13393.417	2573.420
84	06	14678.219	9019.854	3466.914	13395.577	2574.394
84	07	14681.128	9022.493	3468.681	13397.737	2575.369
84	08	14684.037	9025.132	3470.449	13399.897	2576.343
84	09	14686.945	9027.770	3472.217	13402.055	2577.317
84	10	14689.854	9030.410	3473.986	13404.214	2578.292
84	11	14692.763	9033.052	3475.756	13406.373	2579.267
84	12	14695.672	9035.693	3477.527	13408.532	2580.242
84	13	14698.581	9038.335	3479.299	13410.690	2581.217
84	14	14701.490	9040.979	3481.071	13412.848	2582.193
84	15	14704.399	9043.622	3482.844	13415.006	2583.168
84	16	14707.308	9046.267	3484.618	13417.163	2584.144
84	17	14710.216	9048.911	3486.392	13419.319	2585.119
84	18	14713.125	9051.557	3488.168	13421.476	2586.095
84	19	14716.034	9054.203	3489.944	13423.633	2587.071
84	20	14718.943	9056.850	3491.721	13425.789	2588.048
84	21	14721.852	9059.498	3493.499	13427.945	2589.024
84	22	14724.761	9062.147	3495.277	13430.101	2590.001
84	23	14727.670	9064.796	3497.056	13432.256	2590.978
84	24	14730.579	9067.446	3498.836	13434.411	2591.955
84	25	14733.488	9070.097	3500.617	13436.566	2592.932
84	26	14736.396	9072.748	3502.397	13438.720	2593.909
84	27	14739.305	9075.400	3504.180	13440.874	2594.886
84	28	14742.214	9078.053	3505.963	13443.028	2595.864
84	29	14745.123	9080.706	3507.746	13445.182	2596.841
84	30	14748.032	9083.360	3509.531	13447.336	2597.819
84	31	14750.941	9086.015	3511.316	13449.489	2598.797
84	32	14753.850	9088.671	3513.102	13451.642	2599.775
84	33	14756.759	9091.327	3514.889	13453.794	2600.754
84	34	14759.667	9093.983	3516.676	13455.946	2601.732
84	35	14762.576	9096.641	3518.464	13458.098	2602.711
84	36	14765.485	9099.299	3520.253	13460.249	2603.689
84	37	14768.394	9101.959	3522.043	13462.401	2604.668
84	38	14771.303	9104.618	3523.833	13464.552	2605.647
84	39	14774.212	9107.279	3525.624	13466.703	2606.627
84	40	14777.121	9109.940	3527.417	13468.853	2607.606
84	41	14780.030	9112.602	3529.209	13471.004	2608.586
84	42	14782.939	9115.265	3531.003	13473.154	2609.566
84	43	14785.847	9117.927	3532.797	13475.303	2610.545
84	44	14788.756	9120.591	3534.592	13477.452	2611.525
84	45	14791.665	9123.256	3536.388	13479.601	2612.505

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
84 46	14794.574	9125.922	3538.184	13481.750	2613.486
84 47	14797.483	9128.588	3539.982	13483.899	2614.466
84 48	14800.392	9131.255	3541.780	13486.047	2615.447
84 49	14803.301	9133.922	3543.579	13488.195	2616.428
84 50	14806.210	9136.591	3545.379	13490.343	2617.409
84 51	14809.118	9139.259	3547.178	13492.490	2618.390
84 52	14812.027	9141.928	3548.979	13494.637	2619.371
84 53	14814.936	9144.599	3550.782	13496.784	2620.353
84 54	14817.845	9147.270	3552.584	13498.930	2621.334
84 55	14820.754	9149.942	3554.388	13501.077	2622.316
84 56	14823.663	9152.614	3556.192	13503.223	2623.298
84 57	14826.572	9155.288	3557.997	13505.368	2624.280
84 58	14829.481	9157.962	3559.803	13507.514	2625.262
84 59	14832.390	9160.637	3561.609	13509.659	2626.245
85 00	14835.299	9163.312	3563.417	13511.804	2627.227
85 01	14838.207	9165.987	3565.224	13513.948	2628.210
85 02	14841.116	9168.664	3567.033	13516.092	2629.192
85 03	14844.025	9171.342	3568.843	13518.236	2630.176
85 04	14846.934	9174.020	3570.653	13520.380	2631.159
85 05	14849.843	9176.699	3572.464	13522.523	2632.142
85 06	14852.752	9179.379	3574.276	13524.666	2633.126
85 07	14855.661	9182.059	3576.089	13526.809	2634.109
85 08	14858.570	9184.740	3577.903	13528.952	2635.093
85 09	14861.478	9187.421	3579.716	13531.094	2636.077
85 10	14864.387	9190.104	3581.532	13533.236	2637.061
85 11	14867.296	9192.787	3583.347	13535.377	2638.045
85 12	14870.205	9195.471	3585.164	13537.519	2639.030
85 13	14873.114	9198.156	3586.981	13539.660	2640.014
85 14	14876.023	9200.841	3588.799	13541.801	2640.999
85 15	14878.932	9203.527	3590.618	13543.941	2641.984
85 16	14881.841	9206.214	3592.438	13546.082	2642.969
85 17	14884.749	9208.901	3594.258	13548.221	2643.954
85 18	14887.658	9211.589	3596.079	13550.361	2644.939
85 19	14890.567	9214.279	3597.901	13552.500	2645.925
85 20	14893.476	9216.968	3599.724	13554.639	2646.910
85 21	14896.385	9219.659	3601.548	13556.778	2647.896
85 22	14899.294	9222.350	3603.372	13558.917	2648.882
85 23	14902.203	9225.042	3605.197	13561.055	2649.868
85 24	14905.112	9227.734	3607.023	13563.193	2650.855
85 25	14908.021	9230.428	3608.850	13565.331	2651.841
85 26	14910.929	9233.121	3610.677	13567.467	2652.827
85 27	14913.838	9235.816	3612.505	13569.605	2653.814
85 28	14916.747	9238.511	3614.334	13571.741	2654.801
85 29	14919.656	9241.208	3616.164	13573.878	2655.788
85 30	14922.565	9243.905	3617.994	13576.014	2656.775

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
85	31	14925.474	9246.603	3619.826	13578.150	2657.763
85	32	14928.383	9249.301	3621.658	13580.286	2658.750
85	33	14931.292	9252.000	3623.490	13582.421	2659.738
85	34	14934.200	9254.699	3625.324	13584.556	2660.726
85	35	14937.109	9257.400	3627.158	13586.691	2661.714
85	36	14940.018	9260.101	3628.993	13588.825	2662.702
85	37	14942.927	9262.803	3630.830	13590.960	2663.690
85	38	14945.836	9265.506	3632.666	13593.094	2664.678
85	39	14948.745	9268.210	3634.504	13595.227	2665.667
85	40	14951.654	9270.914	3636.342	13597.361	2666.656
85	41	14954.563	9273.619	3638.181	13599.494	2667.645
85	42	14957.472	9276.325	3640.021	13601.627	2668.634
85	43	14960.380	9279.030	3641.862	13603.758	2669.623
85	44	14963.289	9281.737	3643.703	13605.891	2670.612
85	45	14966.198	9284.445	3645.545	13608.023	2671.602
85	46	14969.107	9287.154	3647.389	13610.154	2672.592
85	47	14972.016	9289.863	3649.233	13612.286	2673.581
85	48	14974.925	9292.573	3651.077	13614.417	2674.571
85	49	14977.834	9295.284	3652.923	13616.548	2675.562
85	50	14980.743	9297.996	3654.769	13618.678	2676.552
85	51	14983.651	9300.707	3656.615	13620.808	2677.542
85	52	14986.560	9303.420	3658.463	13622.938	2678.533
85	53	14989.469	9306.134	3660.312	13625.067	2679.524
85	54	14992.378	9308.849	3662.161	13627.197	2680.515
85	55	14995.287	9311.564	3664.012	13629.326	2681.506
85	56	14998.196	9314.280	3665.862	13631.455	2682.497
85	57	15001.105	9316.997	3667.714	13633.583	2683.488
85	58	15004.014	9319.714	3669.567	13635.711	2684.480
85	59	15006.923	9322.432	3671.420	13637.839	2685.472
86	00	15009.831	9325.150	3673.274	13639.966	2686.463
86	01	15012.739	9327.869	3675.128	13642.093	2687.455
86	02	15015.648	9330.589	3676.984	13644.220	2688.447
86	03	15018.557	9333.311	3678.840	13646.347	2689.440
86	04	15021.466	9336.032	3680.698	13648.473	2690.432
86	05	15024.375	9338.755	3682.556	13650.599	2691.425
86	06	15027.284	9341.479	3684.415	13652.725	2692.418
86	07	15030.193	9344.203	3686.274	13654.851	2693.410
86	08	15033.102	9346.928	3688.135	13656.976	2694.404
86	09	15036.010	9349.652	3689.996	13659.101	2695.397
86	10	15038.919	9352.378	3691.858	13661.225	2696.390
86	11	15041.828	9355.106	3693.721	13663.350	2697.384
86	12	15044.737	9357.833	3695.585	13665.474	2698.377
86	13	15047.646	9360.562	3697.449	13667.598	2699.371
86	14	15050.555	9363.291	3699.314	13669.722	2700.365
86	15	15053.464	9366.021	3701.180	13671.845	2701.359

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
86 16	15056.373	9368.752	3703.047	13673.968	2702.354
86 17	15059.281	9371.483	3704.914	13676.090	2703.348
86 18	15062.190	9374.215	3706.783	13678.212	2704.343
86 19	15065.099	9376.948	3708.652	13680.335	2705.338
86 20	15068.008	9379.682	3710.522	13682.456	2706.332
86 21	15070.917	9382.416	3712.393	13684.578	2707.328
86 22	15073.826	9385.152	3714.265	13686.699	2708.323
86 23	15076.735	9387.888	3716.137	13688.820	2709.318
86 24	15079.644	9390.624	3718.011	13690.941	2710.314
86 25	15082.553	9393.362	3719.885	13693.062	2711.310
86 26	15085.461	9396.099	3721.759	13695.181	2712.305
86 27	15088.370	9398.838	3723.635	13697.301	2713.301
86 28	15091.279	9401.578	3725.511	13699.420	2714.298
86 29	15094.188	9404.318	3727.388	13701.540	2715.294
86 30	15097.097	9407.060	3729.267	13703.659	2716.290
86 31	15100.006	9409.802	3731.145	13705.777	2717.287
86 32	15102.915	9412.544	3733.025	13707.896	2718.284
86 33	15105.824	9415.288	3734.906	13710.014	2719.281
86 34	15108.732	9418.031	3736.786	13712.131	2720.278
86 35	15111.641	9420.776	3738.668	13714.248	2721.275
86 36	15114.550	9423.522	3740.551	13716.366	2722.272
86 37	15117.459	9426.269	3742.435	13718.483	2723.270
86 38	15120.368	9429.016	3744.320	13720.599	2724.268
86 39	15123.277	9431.764	3746.205	13722.716	2725.266
86 40	15126.186	9434.513	3748.091	13724.832	2726.264
86 41	15129.095	9437.262	3749.978	13726.947	2727.262
86 42	15132.004	9440.012	3751.866	13729.063	2728.260
86 43	15134.912	9442.763	3753.754	13731.177	2729.259
86 44	15137.821	9445.514	3755.644	13733.292	2730.257
86 45	15140.730	9448.267	3757.534	13735.407	2731.256
86 46	15143.639	9451.020	3759.425	13737.521	2732.255
86 47	15146.548	9453.774	3761.317	13739.635	2733.254
86 48	15149.457	9456.529	3763.209	13741.749	2734.253
86 49	15152.366	9459.285	3765.103	13743.863	2735.253
86 50	15155.275	9462.041	3766.997	13745.976	2736.252
86 51	15158.183	9464.797	3768.892	13748.088	2737.252
86 52	15161.092	9467.555	3770.787	13750.200	2738.252
86 53	15164.001	9470.314	3772.684	13752.313	2739.252
86 54	15166.910	9473.073	3774.582	13754.425	2740.252
86 55	15169.819	9475.833	3776.480	13756.536	2741.252
86 56	15172.728	9478.594	3778.379	13758.648	2742.253
86 57	15175.637	9481.356	3780.279	13760.759	2743.254
86 58	15178.546	9484.118	3782.180	13762.870	2744.254
86 59	15181.455	9486.881	3784.082	13764.980	2745.255
87 00	15184.364	9489.645	3785.984	13767.091	2746.257

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
87 01	15187.272	9492.409	3787.887	13769.200	2747.258
87 02	15190.181	9495.174	3789.791	13771.310	2748.259
87 03	15193.090	9497.941	3791.695	13773.419	2749.261
87 04	15195.999	9500.708	3793.601	13775.528	2750.262
87 05	15198.908	9503.475	3795.508	13777.637	2751.264
87 06	15201.817	9506.244	3797.415	13779.745	2752.266
87 07	15204.726	9509.013	3799.323	13781.854	2753.268
87 08	15207.635	9511.783	3801.232	13783.962	2754.271
87 09	15210.543	9514.553	3803.141	13786.068	2755.273
87 10	15213.452	9517.325	3805.052	13788.176	2756.276
87 11	15216.361	9520.097	3806.963	13790.283	2757.279
87 12	15219.270	9522.870	3808.876	13792.390	2758.281
87 13	15222.179	9525.644	3810.789	13794.496	2759.285
87 14	15225.088	9528.419	3812.703	13796.602	2760.288
87 15	15227.997	9531.194	3814.617	13798.708	2761.291
87 16	15230.906	9533.970	3816.533	13800.814	2762.295
87 17	15233.814	9536.747	3818.449	13802.918	2763.298
87 18	15236.723	9539.524	3820.366	13805.023	2764.302
87 19	15239.632	9542.303	3822.284	13807.128	2765.306
87 20	15242.541	9545.082	3824.203	13809.232	2766.310
87 21	15245.450	9547.862	3826.122	13811.337	2767.315
87 22	15248.359	9550.643	3828.043	13813.440	2768.319
87 23	15251.268	9553.424	3829.964	13815.544	2769.324
87 24	15254.177	9556.207	3831.886	13817.647	2770.329
87 25	15257.086	9558.990	3833.809	13819.750	2771.334
87 26	15259.994	9561.773	3835.732	13821.852	2772.339
87 27	15262.903	9564.558	3837.657	13823.955	2773.344
87 28	15265.812	9567.343	3839.583	13826.057	2774.349
87 29	15268.721	9570.129	3841.509	13828.158	2775.355
87 30	15271.630	9572.917	3843.436	13830.260	2776.361
87 31	15274.539	9575.704	3845.364	13832.361	2777.366
87 32	15277.448	9578.493	3847.293	13834.462	2778.372
87 33	15280.357	9581.282	3849.222	13836.563	2779.379
87 34	15283.265	9584.071	3851.152	13838.662	2780.385
87 35	15286.174	9586.862	3853.083	13840.762	2781.391
87 36	15289.083	9589.654	3855.015	13842.862	2782.398
87 37	15291.992	9592.446	3856.948	13844.962	2783.405
87 38	15294.901	9595.240	3858.882	13847.061	2784.412
87 39	15297.810	9598.034	3860.817	13849.160	2785.419
87 40	15300.719	9600.829	3862.752	13851.258	2786.426
87 41	15303.628	9603.624	3864.688	13853.356	2787.433
87 42	15306.537	9606.421	3866.626	13855.454	2788.441
87 43	15309.445	9609.217	2868.563	13857.551	2789.448
87 44	15312.354	9612.015	3870.501	13859.649	2790.456
87 45	15315.263	9614.813	3872.441	13861.746	2791.464

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
87 46	15318.172	9617.613	3874.382	13863.843	2792.472
87 47	15321.081	9620.413	3876.323	13865.939	2793.481
87 48	15323.990	9623.214	3878.265	13868.035	2794.489
87 49	15326.899	9626.016	3880.208	13870.131	2795.498
87 50	15329.808	9628.819	3882.152	13872.227	2796.506
87 51	15332.716	9631.621	3884.096	13874.322	2797.515
87 52	15335.625	9634.425	3886.041	13876.417	2798.524
87 53	15338.534	9637.230	3887.988	13878.511	2799.533
87 54	15341.443	9640.036	3889.935	13880.606	2800.543
87 55	15344.352	9642.843	3891.883	13882.700	2801.552
87 56	15347.261	9645.650	3893.832	13884.794	2802.562
87 57	15350.170	9648.458	3895.781	13886.888	2803.572
87 58	15353.079	9651.267	3897.732	13888.981	2804.582
87 59	15355.988	9654.077	3899.683	13891.074	2805.592
88 00	15358.897	9656.887	3901.635	13893.167	2806.602
88 01	15361.805	9659.698	3903.588	13895.258	2807.612
88 02	15364.714	9662.510	3905.541	13897.350	2808.623
88 03	15367.623	9665.323	3907.496	13899.442	2809.634
88 04	15370.532	9668.136	3909.452	13901.534	2810.645
88 05	15373.441	9670.951	3911.408	13903.625	2811.656
88 06	15376.350	9673.766	3913.365	13905.716	2812.667
88 07	15379.259	9676.582	3915.323	13907.807	2813.678
88 08	15382.168	9679.399	3917.282	13909.897	2814.690
88 09	15385.076	9682.215	3919.242	13911.986	2815.701
88 10	15387.985	9685.034	3921.202	13914.076	2816.713
88 11	15390.894	9687.853	3923.164	13916.166	2817.725
88 12	15393.803	9690.673	3925.126	13918.255	2818.737
88 13	15396.712	9693.494	3927.089	13920.344	2819.749
88 14	15399.621	9696.316	3929.053	13922.432	2820.762
88 15	15402.530	9699.138	3931.018	13924.520	2821.774
88 16	15405.439	9701.961	3932.984	13926.608	2822.787
88 17	15408.347	9704.784	3934.950	13928.695	2823.800
88 18	15411.256	9707.609	3936.917	13930.783	2824.813
88 19	15414.165	9710.435	3938.885	13932.870	2825.826
88 20	15417.074	9713.261	3940.854	13934.957	2826.839
88 21	15419.983	9716.088	3942.825	13937.043	2827.853
88 22	15422.892	9718.916	3944.795	13939.130	2828.866
88 23	15425.801	9721.745	3946.767	13941.215	2829.880
88 24	15428.710	9724.574	3948.740	13943.301	2830.894
88 25	15431.619	9727.405	3950.713	13945.386	2831.908
88 26	15434.527	9730.235	3952.687	13947.471	2832.922
88 27	15437.436	9733.067	3954.662	13949.556	2833.937
88 28	15440.345	9735.900	3956.638	13951.640	2834.951
88 29	15443.254	9738.733	3958.614	13953.724	2835.966
88 30	15446.163	9741.568	3960.592	13955.808	2836.981

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
88 31	15449.072	9744.403	3962.571	13957.892	2837.996
88 32	15451.981	9747.239	3964.550	13959.975	2839.011
88 33	15454.890	9750.076	3966.530	13962.058	2840.026
88 34	15457.798	9752.912	3968.511	13964.140	2841.041
88 35	15460.707	9755.751	3970.493	13966.222	2842.057
88 36	15463.616	9758.590	3972.475	13968.304	2843.073
88 37	15466.525	9761.430	3974.459	13970.386	2844.089
88 38	15469.434	9764.271	3976.444	13972.468	2845.105
88 39	15472.343	9767.113	3978.429	13974.549	2846.121
88 40	15475.252	9769.955	3980.415	13976.630	2847.137
88 41	15478.161	9772.798	3982.402	13978.710	2848.154
88 42	15481.070	9775.642	3984.390	13980.791	2849.171
88 43	15483.978	9778.486	3986.378	13982.870	2850.187
88 44	15486.887	9781.332	3988.368	13984.950	2851.204
88 45	15489.796	9784.178	3990.359	13987.029	2852.221
88 46	15492.705	9787.026	3992.350	13989.108	2853.238
88 47	15495.614	9789.874	3994.342	13991.187	2854.256
88 48	15498.523	9792.723	3996.336	13993.266	2855.273
88 49	15501.432	9795.572	3998.329	13995.344	2856.291
88 50	15504.341	9798.423	4000.324	13997.422	2857.309
88 51	15507.249	9801.273	4002.319	13999.499	2858.327
88 52	15510.158	9804.126	4004.316	14001.576	2859.345
88 53	15513.067	9806.979	4006.313	14003.653	2860.363
88 54	15515.976	9809.832	4008.312	14005.730	2861.382
88 55	15518.885	9812.687	4010.311	14007.807	2862.400
88 56	15521.794	9815.542	4012.311	14009.883	2863.419
88 57	15524.703	9818.399	4014.312	14011.959	2864.438
88 58	15527.612	9821.256	4016.314	14014.034	2865.457
88 59	15530.521	9824.114	4018.316	14016.110	2866.476
89 00	15533.430	9826.972	4020.320	14018.185	2867.496
89 01	15536.338	9829.831	4022.324	14020.259	2868.515
89 02	15539.247	9832.691	4024.329	14022.333	2869.535
89 03	15542.156	9835.552	4026.335	14024.407	2870.555
89 04	15545.065	9838.414	4028.342	14026.481	2871.575
89 05	15547.974	9841.277	4030.350	14028.554	2872.595
89 06	15550.883	9844.141	4032.359	14030.628	2873.615
89 07	15553.792	9847.005	4034.368	14032.700	2874.636
89 08	15556.701	9849.870	4036.379	14034.773	2875.656
89 09	15559.609	9852.735	4038.390	14036.845	2876.677
89 10	15562.518	9855.602	4040.402	14038.917	2877.697
89 11	15565.427	9858.470	4042.415	14040.988	2878.718
89 12	15568.336	9861.338	4044.429	14043.060	2879.740
89 13	15571.245	9864.208	4046.444	14045.131	2880.761
89 14	15574.154	9867.078	4048.460	14047.202	2881.783
89 15	15577.063	9869.949	4050.476	14049.272	2882.804

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
89 16	15579.972	9872.821	4052.494	14051.343	2883.826
89 17	15582.880	9875.692	4054.511	14053.412	2884.848
89 18	15585.789	9878.566	4056.531	14055.482	2885.870
89 19	15588.698	9881.440	4058.551	14057.551	2886.892
89 20	15591.607	9884.316	4060.572	14059.620	2887.914
89 21	15594.516	9887.191	4062.594	14061.689	2888.937
89 22	15597.425	9890.068	4064.616	14063.757	2889.960
89 23	15600.334	9892.946	4066.640	14065.825	2890.983
89 24	15603.243	9895.824	4068.665	14067.893	2892.006
89 25	15606.152	9898.704	4070.690	14069.961	2893.029
89 26	15609.060	9901.583	4072.716	14072.027	2894.052
89 27	15611.969	9904.463	4074.743	14074.094	2895.075
89 28	15614.878	9907.345	4076.771	14076.161	2896.099
89 29	15617.787	9910.228	4078.800	14078.227	2897.123
89 30	15620.696	9913.111	4080.830	14080.293	2898.146
89 31	15623.605	9915.995	4082.860	14082.359	2899.170
89 32	15626.514	9918.881	4084.892	14084.425	2900.195
89 33	15629.423	9921.766	4086.924	14086.490	2901.219
89 34	15632.331	9924.652	4088.957	14088.554	2902.243
89 35	15635.240	9927.540	4090.991	14090.619	2903.268
89 36	15638.149	9930.428	4093.026	14092.683	2904.293
89 37	15641.058	9933.318	4095.062	14094.747	2905.318
89 38	15643.967	9936.208	4097.099	14096.811	2906.343
89 39	15646.876	9939.098	4099.137	14098.874	2907.368
89 40	15649.785	9941.990	4101.176	14100.937	2908.393
89 41	15652.694	9944.883	4103.215	14103.000	2909.419
89 42	15655.603	9947.776	4105.256	14105.062	2910.445
89 43	15658.511	9950.669	4107.296	14107.124	2911.470
89 44	15661.420	9953.565	4109.339	14109.186	2912.496
89 45	15664.329	9956.461	4111.382	14111.247	2913.522
89 46	15667.238	9959.357	4113.426	14113.309	2914.549
89 47	15670.147	9962.255	4115.471	14115.370	2915.575
89 48	15673.056	9965.153	4117.516	14117.430	2916.602
89 49	15675.965	9968.053	4119.563	14119.491	2917.629
89 50	15678.874	9970.953	4121.611	14121.551	2918.656
89 51	15681.782	9973.853	4123.659	14123.610	2919.682
89 52	15684.691	9976.755	4125.708	14125.670	2920.709
89 53	15687.600	9979.657	4127.758	14127.729	2921.737
89 54	15690.509	9982.561	4129.809	14129.788	1922.764
89 55	15693.418	9985.465	4131.861	14131.846	2923.792
89 56	15696.327	9988.370	4133.914	14133.905	2924.820
89 57	15699.236	9991.276	4135.968	14135.963	2925.848
89 58	15702.145	9994.183	4138.023	14138.020	2926.876
89 59	15705.054	9997.091	4140.078	14140.078	2927.904
90 00	15707.963	10000.000	4142.135	14142.135	2928.933

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
90 01	15710.871	10002.908	4144.192	14144.191	2929.961
90 02	15713.780	10005.818	4146.250	14146.248	2930.989
90 03	15716.689	10008.729	4148.309	14148.304	2932.018
90 04	15719.598	10011.641	4150.369	14150.360	2933.047
90 05	15722.507	10014.554	4152.430	14152.415	2934.077
90 06	15725.416	10017.467	4154.492	14154.471	2935.106
90 07	15728.325	10020.382	4156.555	14156.526	2936.135
90 08	15731.234	10023.297	4158.619	14158.580	2937.165
90 09	15734.142	10026.213	4160.683	14160.634	2938.194
90 10	15737.051	10029.130	4162.748	14162.688	2939.224
90 11	15739.960	10032.048	4164.815	14164.742	2940.254
90 12	15742.869	10034.966	4166.882	14166.796	2941.284
90 13	15745.778	10037.886	4168.950	14168.849	2942.315
90 14	15748.687	10040.806	4171.019	14170.902	2943.345
90 15	15751.596	10043.728	4173.089	14172.954	2944.376
90 16	15754.505	10046.650	4175.160	14175.007	2945.407
90 17	15757.413	10049.572	4177.231	14177.058	2946.437
90 18	15760.322	10052.496	4179.304	14179.110	2947.468
90 19	15763.231	10055.420	4181.378	14181.161	2948.500
90 20	15766.140	10058.346	4183.453	14183.212	2949.531
90 21	15769.049	10061.272	4185.528	14185.263	2950.563
90 22	15771.958	10064.200	4187.604	14187.314	2951.594
90 23	15774.867	10067.128	4189.682	14189.364	2952.626
90 24	15777.776	10070.057	4191.760	14191.414	2953.658
90 25	15780.685	10072.987	4193.839	14193.464	2954.690
90 26	15783.593	10075.917	4195.918	14195.512	2955.722
90 27	15786.502	10078.848	4197.999	14197.561	2956.755
90 28	15789.411	10081.781	4200.081	14199.610	2957.787
90 29	15792.320	10084.714	4202.164	14201.658	2958.820
90 30	15795.229	10087.648	4204.247	14203.706	2959.853
90 31	15798.138	10090.583	4206.332	14205.754	2960.886
90 32	15801.047	10093.519	4208.418	14207.802	2961.919
90 33	15803.956	10096.456	4210.504	14209.849	2962.953
90 34	15806.864	10099.392	4212.590	14211.895	2963.986
90 35	15809.773	10102.331	4214.679	14213.942	2965.019
90 36	15812.682	10105.270	4216.768	14215.988	2966.053
90 37	15815.591	10108.211	4218.858	14218.034	2967.087
90 38	15818.500	10111.152	4220.949	14220.080	2968.121
90 39	15821.409	10114.094	4223.041	14222.125	2969.155
90 40	15824.318	10117.037	4225.134	14224.171	2970.190
90 41	15827.227	10119.980	4227.227	14226.215	2971.224
90 42	15830.136	10122.925	4229.322	14228.260	2972.259
90 43	15833.044	10125.869	4231.417	14230.303	2973.293
90 44	15835.953	10128.815	4233.513	14232.347	2974.328
90 45	15838.862	10131.762	4235.611	14234.391	2975.363

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta		Length	Tangent	External	Long Chord	Middle Ordinate
Deg.	Min.					
90	46	15841.771	10134.710	4237.709	14236.434	2976.399
90	47	15844.680	10137.659	4239.808	14238.477	2977.434
90	48	15847.589	10140.609	4241.908	14240.520	2978.470
90	49	15850.498	10143.560	4244.009	14242.562	2979.505
90	50	15853.407	10146.511	4246.111	14244.605	2980.541
90	51	15856.315	10149.463	4248.214	14246.646	2981.577
90	52	15859.224	10152.416	4250.317	14248.687	2982.613
90	53	15862.133	10155.370	4252.422	14250.728	2983.649
90	54	15865.042	10158.325	4254.528	14252.769	2984.686
90	55	15867.951	10161.281	4256.635	14254.810	2985.723
90	56	15870.860	10164.238	4258.742	14256.850	2986.759
90	57	15873.769	10167.195	4260.850	14258.890	2987.796
90	58	15876.678	10170.154	4262.960	14260.930	2988.833
90	59	15879.587	10173.113	4265.070	14262.969	2989.870
91	00	15882.496	10176.073	4267.181	14265.008	2990.908
91	01	15885.404	10179.033	4269.293	14267.046	2991.945
91	02	15888.313	10181.995	4271.406	14269.085	2992.983
91	03	15891.222	10184.958	4273.520	14271.123	2994.020
91	04	15894.131	10187.922	4275.635	14273.161	2995.058
91	05	15897.040	10190.886	4277.751	14275.199	2996.096
91	06	15899.949	10193.852	4279.868	14277.236	2997.135
91	07	15902.858	10196.818	4281.985	14279.273	2998.173
91	08	15905.767	10199.786	4284.104	14281.310	2999.212
91	09	15908.675	10202.753	4286.223	14283.345	3000.250
91	10	15911.584	10205.722	4288.343	14285.381	3001.289
91	11	15914.493	10208.692	4290.465	14287.417	3002.328
91	12	15917.402	10211.663	4292.587	14289.453	3003.367
91	13	15920.311	10214.634	4294.710	14291.488	3004.406
91	14	15923.220	10217.607	4296.835	14293.523	3005.445
91	15	15926.129	10220.580	4298.960	14295.557	3006.485
91	16	15929.038	10223.554	4301.086	14297.591	3007.525
91	17	15931.946	10226.528	4303.212	14299.625	3008.564
91	18	15934.855	10229.505	4305.341	14301.658	3009.604
91	19	15937.764	10232.482	4307.469	14303.692	3010.644
91	20	15940.673	10235.460	4309.599	14305.725	3011.685
91	21	15943.582	10238.438	4311.730	14307.757	3012.725
91	22	15946.491	10241.418	4313.862	14309.790	3013.766
91	23	15949.400	10244.398	4315.994	14311.822	3014.807
91	24	15952.309	10247.380	4318.128	14313.854	3015.847
91	25	15955.218	10250.362	4320.263	14315.885	3016.889
91	26	15958.126	10253.344	4322.397	14317.916	3017.929
91	27	15961.035	10256.328	4324.534	14319.947	3018.971
91	28	15963.944	10259.313	4326.671	14321.978	3020.012
91	29	15966.853	10262.299	4328.810	14324.008	3021.054
91	30	15969.762	10265.286	4330.949	14326.038	3022.096

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
91 31	15972.671	10268.274	4333.089	14328.068	3023.138
91 32	15975.580	10271.262	4335.230	14330.097	3024.180
91 33	15978.489	10274.252	4337.372	14332.126	3025.222
91 34	15981.397	10277.241	4339.515	14334.154	3026.264
91 35	15984.306	10280.232	4341.659	14336.183	3027.306
91 36	15987.215	10283.224	4343.804	14338.211	3028.349
91 37	15990.124	10286.217	4345.949	14340.239	3029.392
91 38	15993.033	10289.211	4348.096	14342.266	3030.435
91 39	15995.942	10292.206	4350.244	14344.294	3031.478
91 40	15998.851	10295.202	4352.393	14346.321	3032.521
91 41	16001.760	10298.198	4354.542	14348.347	3033.565
91 42	16004.669	10301.196	4356.693	14350.374	3034.608
91 43	16007.577	10304.193	4358.844	14352.399	3035.652
91 44	16010.486	10307.192	4360.996	14354.425	3036.695
91 45	16013.395	10310.192	4363.150	14356.450	3037.739
91 46	16016.304	10313.193	4365.304	14358.476	3038.784
91 47	16019.213	10316.196	4367.459	14360.501	3039.828
91 48	16022.122	10319.198	4369.616	14362.525	3040.872
91 49	16025.031	10322.202	4371.773	14364.549	3041.917
91 50	16027.940	10325.207	4373.931	14366.573	3042.962
91 51	16030.848	10328.211	4376.089	14368.596	3044.006
91 52	16033.757	10331.218	4378.250	14370.620	3045.051
91 53	16036.666	10334.225	4380.411	14372.643	3046.096
91 54	16039.575	10337.234	4382.573	14374.665	3047.142
91 55	16042.484	10340.243	4384.736	14376.688	3048.187
91 56	16045.393	10343.253	4386.900	14378.710	3049.233
91 57	16048.302	10346.264	4389.064	14380.732	3050.279
91 58	16051.211	10349.276	4391.230	14382.753	3051.324
91 59	16054.120	10352.289	4393.397	14384.775	3052.371
92 00	16057.029	10355.302	4395.565	14386.795	3053.417
92 01	16059.937	10358.316	4397.733	14388.815	3054.463
92 02	16062.846	10361.332	4399.903	14390.836	3055.509
92 03	16065.755	10364.348	4402.073	14392.856	3056.556
92 04	16068.664	10367.366	4404.245	14394.875	3057.603
92 05	16071.573	10370.384	4406.417	14396.895	3058.650
92 06	16074.482	10373.403	4408.591	14398.914	3059.697
92 07	16077.391	10376.423	4410.765	14400.933	3060.744
92 08	16080.300	10379.444	4412.941	14402.951	3061.791
92 09	16083.208	10382.465	4415.116	14404.969	3062.838
92 10	16086.117	10385.488	4417.294	14406.986	3063.886
92 11	16089.026	10388.512	4419.472	14409.004	3064.934
92 12	16091.935	10391.536	4421.651	14411.021	3065.982
92 13	16094.844	10394.562	4423.831	14413.038	3067.030
92 14	16097.753	10397.588	4426.013	14415.055	3068.078
92 15	16100.662	10400.616	4428.195	14417.071	3069.127

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
92 16	16103.571	10403.644	4430.378	14419.087	3070.175
92 17	16106.479	10406.672	4432.561	14421.102	3071.224
92 18	16109.388	10409.703	4434.746	14423.118	3072.272
92 19	16112.297	10412.734	4436.932	14425.133	3073.321
92 20	16115.206	10415.766	4439.120	14427.148	3074.371
92 21	16118.115	10418.798	4441.307	14429.162	3075.420
92 22	16121.024	10421.832	4443.496	14431.176	3076.469
92 23	16123.933	10424.867	4445.686	14433.190	3077.519
92 24	16126.842	10427.903	4447.877	14435.204	3078.569
92 25	16129.751	10430.939	4450.069	14437.217	3079.619
92 26	16132.659	10433.976	4452.261	14439.229	3080.668
92 27	16135.568	10437.014	4454.455	14441.242	3081.718
92 28	16138.477	10440.054	4456.650	14443.255	3082.769
92 29	16141.386	10443.094	4458.845	14445.267	3083.819
92 30	16144.295	10446.135	4461.042	14447.278	3084.870
92 31	16147.204	10449.177	4463.240	14449.290	3085.920
92 32	16150.113	10452.220	4465.438	14451.301	3086.971
92 33	16153.022	10455.264	4467.638	14453.312	3088.022
92 34	16155.930	10458.308	4469.838	14455.322	3089.073
92 35	16158.839	10461.354	4472.039	14457.332	3090.125
92 36	16161.748	10464.401	4474.242	14459.342	3091.176
92 37	16164.657	10467.448	4476.446	14461.351	3092.228
92 38	16167.566	10470.497	4478.650	14463.361	3093.279
92 39	16170.475	10473.547	4480.856	14465.370	3094.331
92 40	16173.384	10476.597	4483.062	14467.378	3095.383
92 41	16176.293	10479.649	4485.269	14469.387	3096.436
92 42	16179.202	10482.701	4487.478	14471.395	3097.488
92 43	16182.110	10485.753	4489.687	14473.402	3098.540
92 44	16185.019	10488.807	4491.897	14475.410	3099.593
92 45	16187.928	10491.863	4494.108	14477.417	3100.646
92 46	16190.837	10494.919	4496.321	14479.424	3101.699
92 47	16193.746	10497.976	4498.534	14481.430	3102.752
92 48	16196.655	10501.033	4500.748	14483.436	3103.805
92 49	16199.564	10504.092	4502.964	14485.442	3104.858
92 50	16202.473	10507.152	4505.180	14487.448	3105.912
92 51	16205.381	10510.212	4507.396	14489.453	3106.965
92 52	16208.290	10513.274	4509.615	14491.458	3108.019
92 53	16211.199	10516.336	4511.834	14493.462	3109.073
92 54	16214.108	10519.400	4514.054	14495.467	3110.127
92 55	16217.017	10522.464	4516.275	14497.471	3111.181
92 56	16219.926	10525.530	4518.498	14499.475	3112.236
92 57	16222.835	10528.596	4520.721	14501.478	3113.290
92 58	16225.744	10531.663	4522.945	14503.481	3114.345
92 59	16228.653	10534.732	4525.170	14505.484	3115.400
93 00	16231.562	10537.801	4527.396	14507.487	3116.455

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
93 01	16234.470	10540.870	4529.623	14509.488	3117.509
93 02	16237.379	10543.941	4531.851	14511.490	3118.565
93 03	16240.288	10547.013	4534.080	14513.492	3119.620
93 04	16243.197	10550.086	4536.310	14515.493	3120.676
93 05	16246.106	10553.160	4538.541	14517.494	3121.731
93 06	16249.015	10556.234	4540.773	14519.495	3122.787
93 07	16251.924	10559.310	4543.006	14521.496	3123.843
93 08	16254.833	10562.387	4545.240	14523.496	3124.899
93 09	16257.741	10565.463	4547.475	14525.495	3125.955
93 10	16260.650	10568.542	4549.711	14527.494	3127.012
93 11	16263.559	10571.622	4551.948	14529.494	3128.068
93 12	16266.468	10574.702	4554.186	14531.492	3129.125
93 13	16269.377	10577.784	4556.425	14533.491	3130.182
93 14	16272.286	10580.866	4558.665	14535.489	3131.239
93 15	16275.195	10583.950	4560.906	14537.487	3132.296
93 16	16278.104	10587.034	4563.148	14539.485	3133.354
93 17	16281.012	10590.118	4565.391	14541.482	3134.411
93 18	16283.921	10593.204	4567.635	14543.479	3135.468
93 19	16286.830	10596.291	4569.880	14545.475	3136.526
93 20	16289.739	10599.379	4572.126	14547.472	3137.584
93 21	16292.648	10602.469	4574.373	14549.468	3138.642
93 22	16295.557	10605.559	4576.621	14551.464	3139.700
93 23	16298.466	10608.649	4578.870	14553.459	3140.758
93 24	16301.375	10611.741	4581.120	14555.454	3141.817
93 25	16304.284	10614.834	4583.371	14557.449	3142.875
93 26	16307.192	10617.927	4585.622	14559.443	3143.934
93 27	16310.101	10621.022	4587.875	14561.438	3144.993
93 28	16313.010	10624.118	4590.129	14563.432	3146.052
93 29	16315.919	10627.214	4592.384	14565.425	3147.111
93 30	16318.828	10630.312	4594.640	14567.419	3148.170
93 31	16321.737	10633.411	4596.898	14569.412	3149.230
93 32	16324.646	10636.510	4599.156	14571.404	3150.290
93 33	16327.555	10639.611	4601.415	14573.397	3151.349
93 34	16330.463	10642.711	4603.674	14575.388	3152.409
93 35	16333.372	10645.814	4605.935	14577.380	3153.469
93 36	16336.281	10648.917	4608.197	14579.372	3154.529
93 37	16339.190	10652.021	4610.461	14581.363	3155.589
93 38	16342.099	10655.127	4612.725	14583.354	3156.650
93 39	16345.008	10658.233	4614.990	14585.344	3157.711
93 40	16347.917	10661.340	4617.256	14587.334	3158.771
93 41	16350.826	10664.449	4619.523	14589.324	3159.832
93 42	16353.735	12667.558	4621.791	14591.314	3160.893
93 43	16356.643	10670.667	4624.060	14593.303	3161.954
93 44	16359.552	10673.778	4626.330	14595.292	3163.016
93 45	16362.461	10676.890	4628.601	14597.280	3164.077

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
93 46	16365.370	10680.003	4630.874	14599.269	3165.139
93 47	16368.279	10683.117	4633.147	14601.257	3166.201
93 48	16371.188	10686.232	4635.421	14603.245	3167.263
93 49	16374.097	10689.348	4637.696	14605.232	3168.325
93 50	16377.006	10692.465	4639.973	14607.219	3169.387
93 51	16379.914	10695.582	4642.249	14609.206	3170.449
93 52	16382.823	10698.701	4644.528	14611.192	3171.511
93 53	16385.732	10701.820	4646.807	14613.178	3172.574
93 54	16388.641	10704.941	4649.088	14615.164	3173.637
93 55	16391.550	10708.063	4651.369	14617.150	3174.700
93 56	16394.459	10711.186	4653.651	14619.135	3175.763
93 57	16397.368	10714.310	4655.935	14621.120	3176.826
93 58	16400.277	10717.434	4658.219	14623.105	3177.890
93 59	16403.186	10720.560	4660.505	14625.089	3178.953
94 00	16406.095	10723.687	4662.791	14627.074	3180.017
94 01	16409.003	10726.813	4665.078	14629.057	3181.080
94 02	16411.912	10729.942	4667.367	14631.040	3182.144
94 03	16414.821	10733.071	4669.656	14633.023	3183.208
94 04	16417.730	10736.202	4671.947	14635.006	3184.273
94 05	16420.639	10739.333	4674.239	14636.989	3185.337
94 06	16423.548	10742.466	4676.531	14638.971	3186.402
94 07	16426.457	10745.599	4678.825	14640.953	3187.466
94 08	16429.366	10748.734	4681.120	14642.934	3188.531
94 09	16432.274	10751.868	4683.415	14644.915	3189.596
94 10	16435.183	10755.005	4685.712	14646.896	3190.661
94 11	16438.092	10758.142	4688.009	14648.877	3191.726
94 12	16441.001	10761.280	4690.308	14650.857	3192.792
94 13	16443.910	10764.420	4692.608	14652.837	3193.857
94 14	16446.819	10767.560	4694.909	14654.817	3194.923
94 15	16449.728	10770.702	4697.211	14656.796	3195.989
94 16	16452.637	10773.844	4699.514	14658.775	3197.055
94 17	16455.545	10776.986	4701.817	14660.754	3198.120
94 18	16458.454	10780.131	4704.122	14662.732	3199.187
94 19	16461.363	10783.276	4706.428	14664.710	3200.253
94 20	16464.272	10786.422	4708.735	14666.688	3201.320
94 21	16467.181	10789.569	4711.043	14668.666	3202.386
94 22	16470.090	10792.718	4713.353	14670.643	3203.453
94 23	16472.999	10795.867	4715.663	14672.620	3204.520
94 24	16475.908	10799.017	4717.974	14674.597	3205.587
94 25	16478.817	10802.168	4720.287	14676.573	3206.655
94 26	16481.725	10805.319	4722.599	14678.548	3207.722
94 27	16484.634	10808.473	4724.913	14680.524	3208.789
94 28	16487.543	10811.627	4727.229	14682.500	3209.857
94 29	16490.452	10814.782	4729.545	14684.475	3210.925
94 30	16493.361	10817.938	4731.863	14686.449	3211.993

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.		Length	Tangent	External	Long Chord	Middle Ordinate
94	31	16496.270	10821.095	4734.181	14688.424	3213.061
94	32	16499.179	10824.253	4736.501	14690.398	3214.129
94	33	16502.088	10827.413	4738.822	14692.372	3215.198
94	34	16504.996	10830.572	4741.142	14694.345	3216.266
94	35	16507.905	10833.733	4743.465	14696.318	3217.335
94	36	16510.814	10836.895	4745.789	14698.291	3218.404
94	37	16513.723	10840.058	4748.114	14700.264	3219.473
94	38	16516.632	10843.222	4750.439	14702.236	3220.542
94	39	16519.541	10846.387	4752.766	14704.208	3221.611
94	40	16522.450	10849.553	4755.094	14706.179	3222.680
94	41	16525.359	10852.720	4757.423	14708.151	3223.750
94	42	16528.268	10855.889	4759.753	14710.122	3224.820
94	43	16531.176	10859.057	4762.083	14712.092	3225.889
94	44	16534.085	10862.227	4764.416	14714.062	3226.959
94	45	16536.994	10865.398	4766.749	14716.033	3228.029
94	46	16539.903	10868.570	4769.083	14718.002	3229.100
94	47	16542.812	10871.743	4771.418	14719.972	3230.170
94	48	16545.721	10874.917	4773.755	14721.941	3231.241
94	49	16548.630	10878.093	4776.092	14723.910	3232.311
94	50	16551.539	10881.269	4778.430	14725.878	3233.382
94	51	16554.447	10884.445	4780.769	14727.846	3234.453
94	52	16557.356	10887.623	4783.110	14729.814	3235.524
94	53	16560.265	10890.802	4785.451	14731.782	3236.595
94	54	16563.174	10893.982	4787.794	14733.749	3237.667
94	55	16566.083	10897.164	4790.138	14735.716	3238.738
94	56	16568.992	10900.346	4792.482	14737.683	3239.810
94	57	16571.901	10903.529	4794.828	14739.649	3240.882
94	58	16574.810	10906.713	4797.175	14741.615	3241.954
94	59	16577.719	10909.898	4799.523	14743.581	3243.026
95	00	16580.628	10913.085	4801.872	14745.546	3244.098
95	01	16583.536	10916.271	4804.221	14747.511	3245.171
95	02	16586.445	10919.459	4806.572	14749.476	3246.243
95	03	16589.354	10922.648	4808.925	14751.440	3247.316
95	04	16592.263	10925.839	4811.278	14753.404	3248.389
95	05	16595.172	10929.030	4813.632	14755.368	3249.462
95	06	16598.081	10932.222	4815.987	14757.332	3250.535
95	07	16600.990	10935.415	4818.344	14759.295	3251.608
95	08	16603.899	10938.610	4820.701	14761.258	3252.682
95	09	16606.807	10941.804	4823.059	14763.220	3253.755
95	10	16609.716	10945.000	4825.419	14765.182	3254.829
95	11	16612.625	10948.198	4827.779	14767.144	3255.902
95	12	16615.534	10951.396	4830.141	14769.106	3256.976
95	13	16618.443	10954.596	4832.504	14771.067	3258.051
95	14	16621.352	10957.796	4834.868	14773.028	3259.125
95	15	16624.261	10960.998	4837.233	14774.989	3260.199

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
95 16	16627.170	10964.200	4839.599	14776.950	3261.274
95 17	16630.078	10967.403	4841.965	14778.909	3262.348
95 18	16632.987	10970.607	4844.333	14780.869	3263.423
95 19	16635.896	10973.813	4846.702	14782.828	3264.498
95 20	16638.805	10977.019	4849.072	14784.788	3265.573
95 21	16641.714	10980.227	4851.444	14786.747	3266.649
95 22	16644.623	10983.436	4853.816	14788.705	3267.724
95 23	16647.532	10986.645	4856.190	14790.663	3268.800
95 24	16650.441	10989.856	4858.564	14792.621	3269.875
95 25	16653.350	10993.068	4860.940	14794.579	3270.951
95 26	16656.258	10996.279	4863.316	14796.536	3272.027
95 27	16659.167	10999.493	4865.694	14798.493	3273.103
95 28	16662.076	11002.708	4868.072	14800.449	3274.179
95 29	16664.985	11005.924	4870.452	14802.406	3275.256
95 30	16667.894	11009.140	4872.833	14804.362	3276.332
95 31	16670.803	11012.358	4875.215	14806.318	3277.409
95 32	16673.712	11015.577	4877.599	14808.273	3278.486
95 33	16676.621	11018.797	4879.983	14810.228	3279.563
95 34	16679.529	11022.017	4882.367	14812.182	3280.640
95 35	16682.438	11025.239	4884.754	14814.137	3281.717
95 36	16685.347	11028.462	4887.141	14816.091	3282.794
95 37	16688.256	11031.686	4889.530	14818.045	3283.872
95 38	16691.165	11034.911	4891.920	14819.998	3284.950
95 39	16694.074	11038.137	4894.310	14821.952	3286.027
95 40	16696.983	11041.365	4896.702	14823.905	3287.105
95 41	16699.892	11044.593	4899.095	14825.857	3288.184
95 42	16702.801	11047.822	4901.489	14827.810	3289.262
95 43	16705.709	11051.051	4903.883	14829.761	3290.340
95 44	16708.618	11054.283	4906.279	14831.713	3291.419
95 45	16711.527	11057.515	4908.677	14833.664	3292.497
95 46	16714.436	11060.749	4911.075	14835.615	3293.576
95 47	16717.345	11063.983	4913.474	14837.566	3294.655
95 48	16720.254	11067.218	4915.875	14839.516	3295.734
95 49	16723.163	11070.455	4918.276	14841.466	3296.813
95 50	16726.072	11073.693	4920.679	14843.416	3297.893
95 51	16728.980	11076.930	4923.082	14845.365	3298.972
95 52	16731.889	11080.170	4925.487	14847.314	3300.052
95 53	16734.798	11083.411	4927.893	14849.263	3301.132
95 54	16737.707	11086.652	4930.300	14851.211	3302.212
95 55	16740.616	11089.895	4932.708	14853.160	3303.292
95 56	16743.525	11093.139	4935.117	14855.108	3304.372
95 57	16746.434	11096.384	4937.528	14857.055	3305.452
95 58	16749.343	11099.630	4939.939	14859.003	3306.532
95 59	16752.252	11102.877	4942.352	14860.949	3307.612
96 00	16755.161	11106.125	4944.765	14862.896	3308.692

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
96 01	16758.069	11109.373	4947.179	14864.842	3309.775
96 02	16760.978	11112.623	4949.595	14866.788	3310.856
96 03	16763.887	11115.874	4952.012	14868.734	3311.937
96 04	16766.796	11119.126	4954.430	14870.679	3313.019
96 05	16769.705	11122.380	4956.849	14872.624	3314.100
96 06	16772.614	11125.634	4959.269	14874.569	3315.182
96 07	16775.523	11128.889	4961.690	14876.513	3316.264
96 08	16778.432	11132.146	4964.113	14878.457	3317.346
96 09	16781.340	11135.402	4966.536	14880.401	3318.428
96 10	16784.249	11138.661	4968.960	14882.344	3319.510
96 11	16787.158	11141.920	4971.386	14884.287	3320.592
96 12	16790.067	11145.181	4973.812	14886.230	3321.675
96 13	16792.976	11148.443	4976.240	14888.173	3322.757
96 14	16795.885	11151.706	4978.669	14890.115	3323.840
96 15	16798.794	11154.970	4981.100	14892.057	3324.923
96 16	16801.703	11158.235	4983.531	14893.999	3326.006
96 17	16804.611	11161.499	4985.962	14895.939	3327.089
96 18	16807.520	11164.766	4988.396	14897.880	3328.173
96 19	16810.429	11168.034	4990.830	14899.821	3329.256
96 20	16813.338	11171.304	4993.266	14901.761	3330.340
96 21	16816.247	11174.574	4995.703	14903.701	3331.424
96 22	16819.156	11177.845	4998.140	14905.641	3332.507
96 23	16822.065	11181.117	5000.579	14907.580	3333.592
96 24	16824.974	11184.391	5003.020	14909.520	3334.676
96 25	16827.883	11187.665	5005.461	14911.458	3335.760
96 26	16830.791	11190.940	5007.902	14913.396	3336.844
96 27	16833.700	11194.216	5010.346	14915.334	3337.929
96 28	16836.609	11197.494	5012.790	14917.272	3339.014
96 29	16839.518	11200.773	5015.236	14919.210	3340.099
96 30	16842.427	11204.053	5017.683	14921.147	3341.184
96 31	16845.336	11207.334	5020.131	14923.084	3342.269
96 32	16848.245	11210.615	5022.579	14925.020	3343.354
96 33	16851.154	11213.898	5025.030	14926.957	3344.440
96 34	16854.062	11217.181	5027.480	14928.892	3345.525
96 35	16856.971	11220.466	5029.932	14930.827	3346.611
96 36	16859.880	11223.753	5032.386	14932.763	3347.697
96 37	16862.789	11227.040	5034.840	14934.698	3348.783
96 38	16865.698	11230.328	5037.296	14936.632	3349.869
96 39	16868.607	11233.618	5039.753	14938.567	3350.955
96 40	16871.516	11236.908	5042.211	14940.501	3352.042
96 41	16874.425	11240.200	5044.670	14942.435	3353.128
96 42	16877.334	11243.493	5047.130	14944.368	3354.215
96 43	16880.242	11246.785	5049.591	14946.300	3355.302
96 44	16883.151	11250.080	5052.053	14948.233	3356.389
96 45	16886.060	11253.376	5054.517	14950.166	3357.476

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tan ^c ent	External	Long Chord	Middle Ordinate
96 46	16888.969	11256.673	5056.981	14952.098	3358.563
96 47	16891.878	11259.971	5059.447	14954.030	3359.651
96 48	16894.787	11263.270	5061.914	14955.961	3360.738
96 49	16897.696	11266.571	5064.382	14957.892	3361.826
96 50	16900.605	11269.872	5066.851	14959.823	3362.914
96 51	16903.513	11273.173	5069.321	14961.753	3364.002
96 52	16906.422	11276.477	5071.792	14963.683	3365.090
96 53	16909.331	11279.781	5074.265	14965.613	3366.178
96 54	16912.240	11283.087	5076.739	14967.543	3367.266
96 55	16915.149	11286.394	5079.213	14969.472	3368.355
96 56	16918.058	11289.701	5081.689	14971.401	3369.444
96 57	16920.967	11293.010	5084.167	14973.330	3370.533
96 58	16923.876	11296.320	5086.645	14975.258	3371.622
96 59	16926.785	11299.632	5089.124	14977.186	3372.711
97 00	16929.694	11302.943	5091.605	14979.114	3373.800
97 01	16932.602	11306.256	5094.086	14981.041	3374.889
97 02	16935.511	11309.570	5096.568	14982.968	3375.979
97 03	16938.420	11312.886	5099.052	14984.895	3377.068
97 04	16941.329	11316.202	5101.537	14986.821	3378.158
97 05	16944.238	11319.520	5104.023	14988.747	3379.248
97 06	16947.147	11322.838	5106.511	14990.673	3380.338
97 07	16950.056	11326.158	5108.999	14992.599	3381.429
97 08	16952.965	11329.479	5111.489	14994.524	3382.519
97 09	16955.873	11332.800	5113.979	14996.448	3383.609
97 10	16958.782	11336.123	5116.471	14998.373	3384.700
97 11	16961.691	11339.447	5118.964	15000.297	3385.791
97 12	16964.600	11342.773	5121.458	15002.221	3386.882
97 13	16967.509	11346.099	5123.953	15004.144	3387.973
97 14	16970.418	11349.426	5126.450	15006.068	3389.064
97 15	16973.327	11352.755	5128.947	15007.991	3390.155
97 16	16976.236	11356.085	5131.446	15009.913	3391.247
97 17	16979.144	11359.414	5133.945	15011.835	3392.338
97 18	16982.053	11362.746	5136.446	15013.757	3393.430
97 19	16984.962	11366.079	5138.948	15015.679	3394.522
97 20	16987.871	11369.413	5141.452	15017.600	3395.614
97 21	16990.780	11372.749	5143.956	15019.521	3396.706
97 22	16993.689	11376.085	5146.462	15021.442	3397.799
97 23	16996.598	11379.422	5148.968	15023.362	3398.891
97 24	16999.507	11382.761	5151.477	15025.282	3399.984
97 25	17002.416	11386.100	5153.986	15027.202	3401.077
97 26	17005.324	11389.440	5156.495	15029.121	3402.169
97 27	17008.233	11392.782	5159.006	15031.040	3403.262
97 28	17011.142	11396.125	5161.519	15032.959	3404.355
97 29	17014.051	11399.469	5164.033	15034.877	3405.449
97 30	17016.960	11402.814	5166.547	15036.796	3406.542

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
97 31	17019.869	11406.160	5169.063	15038.713	3407.636
97 32	17022.778	11409.508	5171.581	15040.631	3408.730
97 33	17025.687	11412.856	5174.099	15042.548	3409.824
97 34	17028.595	11416.204	5176.617	15044.464	3410.917
97 35	17031.504	11419.555	5179.138	15046.381	3412.011
97 36	17034.413	11422.907	5181.660	15048.297	3413.106
97 37	17037.322	11426.260	5184.183	15050.213	3414.200
97 38	17040.231	11429.614	5186.707	15052.129	3415.295
97 39	17043.140	11432.969	5189.232	15054.044	3416.389
97 40	17046.049	11436.325	5191.759	15055.959	3417.484
97 41	17048.958	11439.683	5194.286	15057.874	3418.579
97 42	17051.867	11443.041	5196.815	15059.788	3419.675
97 43	17054.775	11446.400	5199.344	15061.702	3420.769
97 44	17057.684	11449.760	5201.875	15063.616	3421.865
97 45	17060.593	11453.122	5204.408	15065.529	3422.960
97 46	17063.502	11456.485	5206.941	15067.442	3424.056
97 47	17066.411	11459.849	5209.475	15069.355	3425.152
97 48	17069.320	11463.215	5212.011	15071.267	3426.248
97 49	17072.229	11466.581	5214.548	15073.179	3427.344
97 50	17075.138	11469.948	5217.086	15075.091	3428.440
97 51	17078.046	11473.316	5219.625	15077.002	3429.536
97 52	17080.955	11476.686	5222.165	15078.913	3430.633
97 53	17083.864	11480.056	5224.707	15080.824	3431.730
97 54	17086.773	11483.428	5227.249	15082.735	3432.826
97 55	17089.682	11486.802	5229.793	15084.645	3433.923
97 56	17092.591	11490.176	5232.339	15086.555	3435.021
97 57	17095.500	11493.551	5234.885	15088.464	3436.118
97 58	17098.409	11496.928	5237.432	15090.374	3437.215
97 59	17101.318	11500.305	5239.981	15092.283	3438.313
98 00	17104.227	11503.684	5242.531	15094.191	3439.410
98 01	17107.135	11507.063	5245.081	15096.099	3440.508
98 02	17110.044	11510.444	5247.633	15098.007	3441.606
98 03	17112.953	11513.826	5250.186	15099.915	3442.704
98 04	17115.862	11517.209	5252.741	15101.822	3443.802
98 05	17118.771	11520.593	5255.296	15103.729	3444.900
98 06	17121.680	11523.979	5257.853	15105.636	3445.999
98 07	17124.589	11527.366	5260.412	15107.542	3447.097
98 08	17127.498	11530.753	5262.971	15109.448	3448.196
98 09	17130.406	11534.141	5265.530	15111.353	3449.295
98 10	17133.315	11537.531	5268.092	15113.259	3450.394
98 11	17136.224	11540.923	5270.655	15115.164	3451.493
98 12	17139.133	11544.315	5273.219	15117.069	3452.592
98 13	17142.042	11547.708	5275.784	15118.973	3453.692
98 14	17144.951	11551.103	5278.350	15120.877	3454.791
98 15	17147.860	11554.499	5280.918	15122.781	3455.891

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
98 16	17150.769	11557.896	5283.486	15124.685	3456.991
98 17	17153.677	11561.293	5286.055	15126.587	3458.091
98 18	17156.586	11564.692	5288.626	15128.490	3459.191
98 19	17159.495	11568.092	5291.199	15130.393	3460.291
98 20	17162.404	11571.494	5293.772	15132.295	3461.391
98 21	17165.313	11574.896	5296.347	15134.197	3462.492
98 22	17168.222	11578.300	5298.923	15136.098	3463.593
98 23	17171.131	11581.705	5301.500	15138.000	3464.694
98 24	17174.040	11585.111	5304.078	15139.901	3465.795
98 25	17176.949	11588.518	5306.657	15141.801	3466.896
98 26	17179.857	11591.926	5309.237	15143.701	3467.997
98 27	17182.766	11595.335	5311.819	15145.601	3469.098
98 28	17185.675	11598.746	5314.402	15147.501	3470.199
98 29	17188.584	11602.158	5316.986	15149.400	3471.301
98 30	17191.493	11605.571	5319.572	15151.299	3472.403
98 31	17194.402	11608.985	5322.158	15153.198	3473.505
98 32	17197.311	11612.400	5324.746	15155.096	3474.607
98 33	17200.220	11615.816	5327.335	15156.994	3475.709
98 34	17203.128	11619.233	5329.924	15158.891	3476.811
98 35	17206.037	11622.652	5332.515	15160.789	3477.914
98 36	17208.946	11626.072	5335.108	15162.686	3479.016
98 37	17211.855	11629.493	5337.702	15164.583	3480.119
98 38	17214.764	11632.915	5340.297	15166.479	3481.222
98 39	17217.673	11636.338	5342.893	15168.375	3482.325
98 40	17220.582	11639.763	5345.490	15170.271	3483.428
98 41	17223.491	11643.189	5348.089	15172.167	3484.532
98 42	17226.400	11646.615	5350.689	15174.062	3485.635
98 43	17229.308	11650.042	5353.289	15175.956	3486.738
98 44	17232.217	11653.471	5355.891	15177.851	3487.842
98 45	17235.126	11656.902	5358.495	15179.745	3488.946
98 46	17238.035	11660.333	5361.099	15181.639	3490.050
98 47	17240.944	11663.766	5363.705	15183.532	3491.154
98 48	17243.853	11667.200	5366.312	15185.426	3492.258
98 49	17246.762	11670.635	5368.920	15187.319	3493.363
98 50	17249.671	11674.071	5371.530	15189.211	3494.467
98 51	17252.579	11677.507	5374.140	15191.103	3495.572
98 52	17255.488	11680.945	5376.751	15192.995	3496.676
98 53	17258.397	11684.385	5379.365	15194.886	3497.781
98 54	17261.306	11687.826	5381.979	15196.778	3498.887
98 55	17264.215	11691.268	5384.595	15198.669	3499.992
98 56	17267.124	11694.711	5387.211	15200.560	3501.097
98 57	17270.033	11698.155	5389.829	15202.450	3502.203
98 58	17272.942	11701.601	5392.448	15204.340	3503.308
98 59	17275.851	11705.048	5395.069	15206.230	3504.414
99 00	17278.760	11708.496	5397.690	15208.119	3505.520

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
99 01	17281.668	11711.944	5400.312	15210.008	3506.626
99 02	17284.577	11715.394	5402.936	15211.896	3507.732
99 03	17287.486	11718.845	5405.562	15213.785	3508.838
99 04	17290.395	11722.298	5408.188	15215.673	3509.945
99 05	17293.304	11725.751	5410.816	15217.561	3511.052
99 06	17296.213	11729.206	5413.445	15219.448	3512.158
99 07	17299.122	11732.662	5416.075	15221.335	3513.265
99 08	17302.031	11736.120	5418.706	15223.222	3514.372
99 09	17304.939	11739.577	5421.338	15225.108	3515.479
99 10	17307.848	11743.037	5423.972	15226.994	3516.586
99 11	17310.757	11746.498	5426.607	15228.880	3517.694
99 12	17313.666	11749.960	5429.243	15230.766	3518.801
99 13	17316.575	11753.423	5431.881	15232.651	3519.909
99 14	17319.484	11756.887	5434.519	15234.536	3521.017
99 15	17322.393	11760.353	5437.159	15236.420	3522.125
99 16	17325.302	11763.819	5439.801	15238.304	3523.233
99 17	17328.210	11767.286	5442.442	15240.188	3524.341
99 18	17331.119	11770.755	5445.086	15242.071	3525.449
99 19	17334.028	11774.226	5447.731	15243.955	3526.558
99 20	17336.937	11777.697	5450.377	15245.838	3527.667
99 21	17339.846	11781.170	5453.024	15247.720	3528.775
99 22	17342.755	11784.644	5455.673	15249.603	3529.884
99 23	17345.664	11788.119	5458.323	15251.485	3530.994
99 24	17348.573	11791.595	5460.974	15253.366	3532.103
99 25	17351.482	11795.072	5463.626	15255.248	3533.212
99 26	17354.390	11798.550	5466.279	15257.128	3534.321
99 27	17357.299	11802.030	5468.934	15259.009	3535.431
99 28	17360.208	11805.511	5471.589	15260.889	3536.541
99 29	17363.117	11808.993	5474.247	15262.769	3537.651
99 30	17366.026	11812.476	5476.905	15264.649	3538.761
99 31	17368.935	11815.961	5479.565	15266.528	3539.871
99 32	17371.844	11819.447	5482.226	15268.407	3540.981
99 33	17374.753	11822.934	5484.888	15270.286	3542.092
99 34	17377.661	11826.421	5487.551	15272.164	3543.202
99 35	17380.570	11829.910	5490.216	15274.042	3544.313
99 36	17383.479	11833.401	5492.882	15275.920	3545.423
99 37	17386.388	11836.893	5495.549	15277.797	3546.534
99 38	17389.297	11840.386	5498.217	15279.674	3547.646
99 39	17392.206	11843.880	5500.887	15281.551	3548.757
99 40	17395.115	11847.376	5503.558	15283.428	3549.868
99 41	17398.024	11850.872	5506.230	15285.304	3550.980
99 42	17400.933	11854.370	5508.903	15287.180	3552.092
99 43	17403.841	11857.868	5511.577	15289.055	3553.203
99 44	17406.750	11861.368	5514.253	15290.930	3554.315
99 45	17409.659	11864.870	5516.930	15292.805	3555.427

TABLE II
FUNCTIONS OF A 10,000-FT. RADIUS CURVE

Delta Deg. Min.	Length	Tangent	External	Long Chord	Middle Ordinate
99 46	17412.568	11868.372	5519.609	15294.679	3556.539
99 47	17415.477	11871.876	5522.289	15296.554	3557.652
99 48	17418.386	11875.381	5524.970	15298.428	3558.764
99 49	17421.295	11878.888	5527.652	15300.301	3559.877
99 50	17424.204	11882.395	5530.335	15302.174	3560.990
99 51	17427.112	11885.903	5533.019	15304.047	3562.102
99 52	17430.021	11889.413	5535.705	15305.919	3563.215
99 53	17432.930	11892.924	5538.392	15307.792	3564.328
99 54	17435.839	11896.436	5541.081	15309.664	3565.442
99 55	17438.748	11899.950	5543.771	15311.535	3566.555
99 56	17441.657	11903.465	5546.462	15313.407	3567.669
99 57	17444.566	11906.981	5549.154	15315.278	3568.783
99 58	17447.475	11910.498	5551.847	15317.148	3569.896
99 59	17450.384	11914.016	5554.542	15319.019	3571.010

TABLE III
TANGENT OFFSETS FOR A 10,000 FT. RADIUS CURVE

Deg. Min. Deflection	Length	TX	TY	Deg. Min. Deflection	Length	TX	TY
0 01	5.82	5.82	0.00	1 00	349.07	348.99	6.09
0 02	11.64	11.64	0.01	1 01	354.88	354.81	6.30
0 03	17.45	17.45	0.02	1 02	360.70	360.62	6.50
0 04	23.27	23.27	0.03	1 03	366.52	366.44	6.72
0 05	29.09	29.09	0.04	1 04	372.34	372.25	6.93
0 06	34.91	34.91	0.06	1 05	378.15	378.06	7.15
0 07	40.72	40.72	0.08	1 06	383.97	383.88	7.37
0 08	46.54	46.54	0.11	1 07	389.79	389.69	7.60
0 09	52.36	52.36	0.14	1 08	395.61	395.50	7.82
0 10	58.18	58.18	0.17	1 09	401.43	401.32	8.06
0 11	64.00	63.99	0.20	1 10	407.24	407.13	8.29
0 12	69.81	69.81	0.24	1 11	413.06	412.94	8.53
0 13	75.63	75.63	0.29	1 12	418.88	418.76	8.77
0 14	81.45	81.45	0.33	1 13	424.70	424.57	9.02
0 15	87.27	87.27	0.38	1 14	430.51	430.38	9.27
0 16	93.08	93.08	0.43	1 15	436.33	436.19	9.52
0 17	98.90	98.90	0.49	1 16	442.15	442.01	9.77
0 18	104.72	104.72	0.55	1 17	447.97	447.82	10.03
0 19	110.54	110.54	0.61	1 18	453.79	453.63	10.29
0 20	116.36	116.35	0.68	1 19	459.60	459.44	10.56
0 21	122.17	122.17	0.75	1 20	465.42	465.25	10.83
0 22	127.99	127.99	0.82	1 21	471.24	471.06	11.10
0 23	133.81	133.80	0.90	1 22	477.06	476.88	11.38
0 24	139.63	139.62	0.97	1 23	482.87	482.69	11.66
0 25	145.44	145.44	1.06	1 24	488.69	488.50	11.94
0 26	151.26	151.26	1.14	1 25	494.51	494.31	12.22
0 27	157.08	157.07	1.23	1 26	500.33	500.12	12.51
0 28	162.90	162.89	1.33	1 27	506.15	505.93	12.81
0 29	168.72	168.71	1.42	1 28	511.96	511.74	13.10
0 30	174.53	174.52	1.52	1 29	517.78	517.55	13.40
0 31	180.35	180.34	1.63	1 30	523.60	523.36	13.70
0 32	186.17	186.16	1.73	1 31	529.42	529.17	14.01
0 33	191.99	191.97	1.84	1 32	535.23	534.98	14.32
0 34	197.80	197.79	1.96	1 33	541.05	540.79	14.63
0 35	203.62	203.61	2.07	1 34	546.87	546.60	14.95
0 36	209.44	209.42	2.19	1 35	552.69	552.41	15.27
0 37	215.26	215.24	2.32	1 36	558.51	558.22	15.59
0 38	221.08	221.06	2.44	1 37	564.32	564.02	15.92
0 39	226.89	226.87	2.57	1 38	570.14	569.83	16.25
0 40	232.71	232.69	2.71	1 39	575.96	575.64	16.58
0 41	238.53	238.51	2.84	1 40	581.78	581.45	16.92
0 42	244.35	244.32	2.99	1 41	587.59	587.26	17.26
0 43	250.16	250.14	3.13	1 42	593.41	593.06	17.60
0 44	255.98	255.95	3.28	1 43	599.23	598.87	17.95
0 45	261.80	261.77	3.43	1 44	605.05	604.68	18.30
0 46	267.62	267.59	3.58	1 45	610.87	610.49	18.65
0 47	273.43	273.40	3.74	1 46	616.68	616.29	19.01
0 48	279.25	279.22	3.90	1 47	622.50	622.10	19.37
0 49	285.07	285.03	4.06	1 48	628.32	627.91	19.73
0 50	290.89	290.85	4.23	1 49	634.14	633.71	20.10
0 51	296.71	296.66	4.40	1 50	639.95	639.52	20.47
0 52	302.52	302.48	4.58	1 51	645.77	645.32	20.84
0 53	308.34	308.29	4.75	1 52	651.59	651.13	21.22
0 54	314.16	314.11	4.93	1 53	657.41	656.93	21.60
0 55	319.98	319.92	5.12	1 54	663.23	662.74	21.99
0 56	325.79	325.74	5.31	1 55	669.04	668.54	22.37
0 57	331.61	331.55	5.50	1 56	674.86	674.35	22.76
0 58	337.43	337.37	5.69	1 57	680.68	680.15	23.16
0 59	343.25	343.18	5.89	1 58	686.50	685.96	23.55
				1 59	692.31	691.76	23.96

TABLE III
TANGENT OFFSETS FOR A 10,000 FT. RADIUS CURVE

Deflection				Deflection					
Deg.	Min.	Length	TX	TY	Deg.	Min.	Length	TX	TY
2	00	698.13	697.56	24.36	3	00	1047.20	1045.28	54.78
2	01	703.95	703.37	24.77	3	01	1053.02	1051.07	55.39
2	02	709.77	709.17	25.18	3	02	1058.83	1056.86	56.00
2	03	715.59	714.97	25.59	3	03	1064.65	1062.64	56.62
2	04	721.40	720.78	26.01	3	04	1070.47	1068.43	57.24
2	05	727.22	726.58	26.43	3	05	1076.29	1074.21	57.86
2	06	733.04	732.38	26.86	3	06	1082.10	1079.99	58.49
2	07	738.86	738.18	27.28	3	07	1087.92	1085.78	59.12
2	08	744.67	743.99	27.71	3	08	1093.74	1091.56	59.75
2	09	750.49	749.79	28.15	3	09	1099.56	1097.34	60.39
2	10	756.31	755.59	28.59	3	10	1105.38	1103.13	61.03
2	11	762.13	761.39	29.03	3	11	1111.19	1108.91	61.67
2	12	767.94	767.19	29.47	3	12	1117.01	1114.69	62.32
2	13	773.76	772.99	29.92	3	13	1122.83	1120.47	62.97
2	14	779.58	778.79	30.37	3	14	1128.65	1126.25	63.62
2	15	785.40	784.59	30.83	3	15	1134.46	1132.03	64.28
2	16	791.22	790.39	31.28	3	16	1140.28	1137.81	64.94
2	17	797.03	796.19	31.75	3	17	1146.10	1143.59	65.61
2	18	802.85	801.99	32.21	3	18	1151.92	1149.37	66.27
2	19	808.67	807.79	32.68	3	19	1157.74	1155.15	66.94
2	20	814.49	813.59	33.15	3	20	1163.55	1160.93	67.62
2	21	820.30	819.39	33.63	3	21	1169.37	1166.71	68.29
2	22	826.12	825.18	34.10	3	22	1175.19	1172.49	68.97
2	23	831.94	830.98	34.59	3	23	1181.01	1178.26	69.66
2	24	837.76	836.78	35.07	3	24	1186.82	1184.07	70.34
2	25	843.58	842.58	35.56	3	25	1192.64	1189.82	71.04
2	26	849.39	848.37	36.05	3	26	1198.46	1195.59	71.73
2	27	855.21	854.17	36.55	3	27	1204.28	1201.37	72.43
2	28	861.03	859.97	37.05	3	28	1210.09	1207.14	73.13
2	29	866.85	865.76	37.55	3	29	1215.91	1212.92	73.83
2	30	872.66	871.56	38.05	3	30	1221.73	1218.69	74.54
2	31	878.48	877.35	38.56	3	31	1227.55	1224.47	75.25
2	32	884.30	883.15	39.07	3	32	1233.37	1230.24	75.96
2	33	890.12	888.94	39.59	3	33	1239.18	1236.01	76.68
2	34	895.94	894.74	40.11	3	34	1245.00	1241.79	77.40
2	35	901.75	900.53	40.63	3	35	1250.82	1247.56	78.13
2	36	907.57	906.33	41.16	3	36	1256.64	1253.33	78.85
2	37	913.39	912.12	41.68	3	37	1262.45	1259.10	79.58
2	38	919.21	917.91	42.22	3	38	1268.27	1264.88	80.32
2	39	925.02	923.71	42.75	3	39	1274.09	1270.65	81.06
2	40	930.84	929.50	43.29	3	40	1279.91	1276.42	81.80
2	41	936.66	935.29	43.83	3	41	1285.73	1282.19	82.54
2	42	942.48	941.08	44.38	3	42	1291.54	1287.96	83.29
2	43	948.30	946.87	44.93	3	43	1297.36	1293.73	84.04
2	44	954.11	952.67	45.48	3	44	1303.18	1299.49	84.79
2	45	959.93	958.46	46.04	3	45	1309.00	1305.26	85.55
2	46	965.75	964.25	46.60	3	46	1314.81	1311.03	86.31
2	47	971.57	970.04	47.16	3	47	1320.63	1316.80	87.08
2	48	977.38	975.83	47.73	3	48	1326.45	1322.56	87.84
2	49	983.20	981.62	48.30	3	49	1332.27	1328.33	88.62
2	50	989.02	987.41	48.87	3	50	1338.09	1334.10	89.39
2	51	994.84	993.20	49.44	3	51	1343.90	1339.86	90.17
2	52	1000.66	998.99	50.02	3	52	1349.72	1345.63	90.95
2	53	1006.47	1004.77	50.61	3	53	1355.54	1351.39	91.73
2	54	1012.29	1010.56	51.19	3	54	1361.36	1357.16	92.52
2	55	1018.11	1016.35	51.78	3	55	1367.17	1362.92	93.31
2	56	1023.93	1022.14	52.38	3	56	1372.99	1368.68	94.11
2	57	1029.74	1027.93	52.97	3	57	1378.81	1374.45	94.91
2	58	1035.56	1033.71	53.57	3	58	1384.63	1380.21	95.71
2	59	1041.38	1039.50	54.17	3	59	1390.45	1385.97	96.51

TABLE III
TANGENT OFFSETS FOR A 10,000 FT. RADIUS CURVE

Deflection Deg. Min.	Length	TX	TY	Deflection Deg. Min.	Length	TX	TY
4 00	1396.26	1391.73	97.32	5 00	1745.33	1736.48	151.92
4 01	1402.08	1397.49	98.13	5 01	1751.15	1742.21	152.93
4 02	1407.90	1403.25	98.95	5 02	1756.96	1747.94	153.95
4 03	1413.72	1409.01	99.76	5 03	1762.78	1753.67	154.97
4 04	1419.53	1414.77	100.58	5 04	1768.60	1759.39	155.99
4 05	1425.35	1420.53	101.41	5 05	1774.42	1765.12	157.02
4 06	1431.17	1426.29	102.24	5 06	1780.24	1770.85	158.04
4 07	1436.99	1432.05	103.07	5 07	1786.05	1776.57	159.08
4 08	1442.81	1437.80	103.90	5 08	1791.87	1782.30	160.11
4 09	1448.62	1443.56	104.74	5 09	1797.69	1788.02	161.15
4 10	1454.44	1449.32	105.58	5 10	1803.51	1793.75	162.19
4 11	1460.26	1455.07	106.43	5 11	1809.32	1799.47	163.24
4 12	1466.08	1460.83	107.28	5 12	1815.14	1805.19	164.29
4 13	1471.89	1466.59	108.13	5 13	1820.96	1810.91	165.34
4 14	1477.71	1472.24	108.98	5 14	1826.78	1816.63	166.39
4 15	1483.53	1478.09	109.84	5 15	1832.60	1822.36	167.45
4 16	1489.35	1483.85	110.70	5 16	1838.41	1828.08	168.51
4 17	1495.17	1489.60	111.57	5 17	1844.23	1833.79	169.58
4 18	1500.98	1495.35	112.44	5 18	1850.05	1839.51	170.65
4 19	1506.80	1501.11	113.31	5 19	1855.87	1845.23	171.72
4 20	1512.62	1506.86	114.18	5 20	1861.68	1850.95	172.79
4 21	1518.44	1512.61	115.06	5 21	1867.50	1856.67	173.87
4 22	1524.25	1518.36	115.94	5 22	1873.32	1862.38	174.95
4 23	1530.07	1524.11	116.83	5 23	1879.14	1868.10	176.04
4 24	1535.89	1529.86	117.72	5 24	1884.96	1873.81	177.13
4 25	1541.71	1535.61	118.61	5 25	1890.77	1879.53	178.22
4 26	1547.53	1541.36	119.50	5 26	1896.59	1885.24	179.31
4 27	1553.34	1547.10	120.40	5 27	1902.41	1890.95	180.41
4 28	1559.16	1552.85	121.30	5 28	1908.23	1896.67	181.51
4 29	1564.98	1558.60	122.21	5 29	1914.04	1902.38	182.62
4 30	1570.80	1564.34	123.12	5 30	1919.86	1908.09	183.73
4 31	1576.61	1570.09	124.03	5 31	1925.68	1913.80	184.84
4 32	1582.43	1575.84	124.94	5 32	1931.50	1919.51	185.95
4 33	1588.25	1581.58	125.86	5 33	1937.32	1925.22	187.07
4 34	1594.07	1587.32	126.78	5 34	1943.13	1930.93	188.20
4 35	1599.89	1593.07	127.71	5 35	1948.95	1936.64	189.32
4 36	1605.70	1598.81	128.64	5 36	1954.77	1942.34	190.45
4 37	1611.52	1604.55	129.57	5 37	1960.59	1948.05	191.58
4 38	1617.34	1610.30	130.50	5 38	1966.40	1953.76	192.72
4 39	1623.16	1616.04	131.44	5 39	1972.22	1959.46	193.85
4 40	1628.97	1621.78	132.38	5 40	1978.04	1965.17	195.00
4 41	1634.79	1627.52	133.33	5 41	1983.86	1970.87	196.14
4 42	1640.61	1633.26	134.28	5 42	1989.68	1976.57	197.29
4 43	1646.43	1639.00	135.23	5 43	1995.49	1982.28	198.44
4 44	1652.25	1644.74	136.19	5 44	2001.31	1987.98	199.59
4 45	1658.06	1650.48	137.14	5 45	2007.13	1993.68	200.75
4 46	1663.88	1656.21	138.11	5 46	2012.95	1999.38	201.91
4 47	1669.70	1661.95	139.07	5 47	2018.76	2005.08	203.08
4 48	1675.52	1667.69	140.04	5 48	2024.58	2010.78	204.25
4 49	1681.33	1673.42	141.01	5 49	2030.40	2016.48	205.42
4 50	1687.15	1679.16	141.99	5 50	2036.22	2022.18	206.59
4 51	1692.97	1684.89	142.97	5 51	2042.04	2027.87	207.77
4 52	1698.79	1690.63	143.95	5 52	2047.85	2033.57	208.95
4 53	1704.60	1696.36	144.93	5 53	2053.67	2039.27	210.14
4 54	1710.42	1702.10	145.92	5 54	2059.49	2044.96	211.33
4 55	1716.24	1707.83	146.91	5 55	2065.31	2050.66	212.52
4 56	1722.06	1713.56	147.91	5 56	2071.12	2056.35	213.71
4 57	1727.88	1719.29	148.91	5 57	2076.94	2062.04	214.91
4 58	1733.69	1725.02	149.91	5 58	2082.76	2067.73	216.11
4 59	1739.51	1730.75	150.91	5 59	2088.58	2073.43	217.32

TABLE III
TANGENT OFFSETS FOR A 10,000 FT. RADIUS CURVE

Deflection				Deflection					
Deg.	Min.	Length	TX	TY	Deg.	Min.	Length	TX	TY
6	00	2094.40	2079.12	218.52	7	00	2443.46	2419.22	297.04
6	01	2100.21	2084.81	219.74	7	01	2449.28	2424.86	298.45
6	02	2106.03	2090.50	220.95	7	02	2455.10	2430.51	299.86
6	03	2111.85	2096.19	222.17	7	03	2460.91	2436.15	301.28
6	04	2117.67	2101.87	223.39	7	04	2466.73	2441.79	302.70
6	05	2123.48	2107.56	224.61	7	05	2472.55	2447.43	304.12
6	06	2129.30	2113.25	225.84	7	06	2478.37	2453.07	305.55
6	07	2135.12	2118.93	227.07	7	07	2484.19	2458.71	306.98
6	08	2140.94	2124.62	228.31	7	08	2490.00	2464.35	308.41
6	09	2146.76	2130.30	229.54	7	09	2495.82	2469.99	309.84
6	10	2152.57	2135.99	230.79	7	10	2501.64	2475.63	311.28
6	11	2158.39	2141.67	232.03	7	11	2507.46	2481.26	312.72
6	12	2164.21	2147.35	233.28	7	12	2513.27	2486.90	314.17
6	13	2170.03	2153.04	234.53	7	13	2519.09	2492.53	315.62
6	14	2175.84	2158.72	235.78	7	14	2524.91	2498.17	317.07
6	15	2181.66	2164.40	237.04	7	15	2530.73	2503.80	318.52
6	16	2187.48	2170.08	238.30	7	16	2536.55	2509.43	319.98
6	17	2193.30	2175.75	239.56	7	17	2542.36	2515.06	321.44
6	18	2199.11	2181.43	240.83	7	18	2548.18	2520.69	322.91
6	19	2204.93	2187.11	242.10	7	19	2554.00	2526.32	324.38
6	20	2210.75	2192.79	243.38	7	20	2559.82	2531.95	325.85
6	21	2216.57	2198.46	244.65	7	21	2565.63	2537.58	327.32
6	22	2222.39	2204.14	245.94	7	22	2571.45	2543.21	328.80
6	23	2228.20	2209.81	247.22	7	23	2577.27	2548.83	330.28
6	24	2234.02	2215.49	248.51	7	24	2583.09	2554.46	331.77
6	25	2239.84	2221.16	249.80	7	25	2588.91	2560.08	333.25
6	26	2245.66	2226.83	251.09	7	26	2594.72	2565.71	334.74
6	27	2251.47	2232.50	252.39	7	27	2600.54	2571.33	336.24
6	28	2257.29	2238.17	253.69	7	28	2606.36	2576.95	337.74
6	29	2263.11	2243.84	254.99	7	29	2612.18	2582.57	339.24
6	30	2268.93	2249.51	256.30	7	30	2617.99	2588.19	340.74
6	31	2274.75	2255.18	257.61	7	31	2623.81	2593.81	342.25
6	32	2280.56	2260.85	258.92	7	32	2629.63	2599.43	343.76
6	33	2286.38	2266.51	260.24	7	33	2635.45	2605.05	345.27
6	34	2292.20	2272.18	261.56	7	34	2641.27	2610.66	346.79
6	35	2298.02	2277.84	262.88	7	35	2647.08	2616.28	348.31
6	36	2303.83	2283.51	264.21	7	36	2652.90	2621.89	349.84
6	37	2309.65	2289.17	265.54	7	37	2658.72	2627.51	351.36
6	38	2315.47	2294.84	266.87	7	38	2664.54	2633.12	352.89
6	39	2321.29	2300.50	268.21	7	39	2670.35	2638.73	354.43
6	40	2327.11	2306.16	269.55	7	40	2676.17	2644.34	355.96
6	41	2332.92	2311.82	270.89	7	41	2681.99	2649.95	357.50
6	42	2338.74	2317.48	272.24	7	42	2687.81	2655.56	359.05
6	43	2344.56	2323.14	273.59	7	43	2693.62	2661.17	360.59
6	44	2350.38	2328.80	274.94	7	44	2699.44	2666.78	362.14
6	45	2356.19	2334.45	276.30	7	45	2705.26	2672.38	363.70
6	46	2362.01	2340.11	277.66	7	46	2711.08	2677.99	365.25
6	47	2367.83	2345.77	279.02	7	47	2716.90	2683.59	366.81
6	48	2373.65	2351.42	280.39	7	48	2722.71	2689.20	368.37
6	49	2379.47	2357.08	281.76	7	49	2728.53	2694.80	369.94
6	50	2385.28	2362.73	283.13	7	50	2734.35	2700.40	371.51
6	51	2391.10	2368.38	284.51	7	51	2740.17	2706.00	373.08
6	52	2396.92	2374.03	285.89	7	52	2745.98	2711.60	374.66
6	53	2402.74	2379.68	287.27	7	53	2751.80	2717.20	376.24
6	54	2408.55	2385.33	288.66	7	54	2757.62	2722.80	377.82
6	55	2414.37	2390.98	290.05	7	55	2763.44	2728.40	379.41
6	56	2420.19	2396.63	291.44	7	56	2769.26	2734.00	380.99
6	57	2426.01	2402.28	292.84	7	57	2775.07	2739.59	382.59
6	58	2431.83	2407.93	294.23	7	58	2780.89	2745.19	384.18
6	59	2437.64	2413.57	295.64	7	59	2786.71	2750.78	385.78

TABLE III
TANGENT OFFSETS FOR A 10,000 FT. RADIUS CURVE

Deflection Deg. Min.	Length	TX	TY	Deflection Deg. Min.	Length	TX	TY
8 00	2792.53	2756.37	387.38	9 00	3141.59	3090.17	489.43
8 01	2798.34	2761.97	388.99	9 01	3147.41	3095.70	491.23
8 02	2804.16	2767.56	390.60	9 02	3153.23	3101.23	493.04
8 03	2809.98	2773.15	392.21	9 03	3159.05	3106.76	494.84
8 04	2815.80	2778.74	393.82	9 04	3164.86	3112.29	496.65
8 05	2821.62	2784.32	395.44	9 05	3170.68	3117.82	498.46
8 06	2827.43	2789.91	397.06	9 06	3176.50	3123.35	500.28
8 07	2833.25	2795.50	398.69	9 07	3182.32	3128.88	502.10
8 08	2839.07	2801.08	400.32	9 08	3188.13	3134.40	503.92
8 09	2844.89	2806.67	401.95	9 09	3193.95	3139.92	505.75
8 10	2850.70	2812.25	403.58	9 10	3199.77	3145.45	507.57
8 11	2856.52	2817.83	405.22	9 11	3205.59	3150.97	509.41
8 12	2862.34	2823.41	406.86	9 12	3211.41	3156.49	511.24
8 13	2868.16	2829.00	408.50	9 13	3217.22	3162.01	513.08
8 14	2873.98	2834.57	410.15	9 14	3223.04	3167.53	514.92
8 15	2879.79	2840.15	411.80	9 15	3228.86	3173.05	516.76
8 16	2885.61	2845.73	413.46	9 16	3234.68	3178.56	518.61
8 17	2891.43	2851.31	415.11	9 17	3240.49	3184.08	520.46
8 18	2897.25	2856.88	416.77	9 18	3246.31	3189.59	522.32
8 19	2903.06	2862.46	418.44	9 19	3252.13	3195.11	524.17
8 20	2908.88	2868.03	420.10	9 20	3257.95	3200.62	526.03
8 21	2914.70	2873.61	421.78	9 21	3263.77	3206.13	527.90
8 22	2920.52	2879.18	423.45	9 22	3269.58	3211.64	529.76
8 23	2926.34	2884.75	425.13	9 23	3275.40	3217.15	531.63
8 24	2932.15	2890.32	426.81	9 24	3281.22	3222.66	533.51
8 25	2937.97	2895.89	428.49	9 25	3287.04	3228.16	535.38
8 26	2943.79	2901.45	430.17	9 26	3292.85	3233.67	537.26
8 27	2949.61	2907.02	431.86	9 27	3298.67	3239.17	539.15
8 28	2955.42	2912.59	433.56	9 28	3304.49	3244.68	541.03
8 29	2961.24	2918.15	435.25	9 29	3310.31	3250.18	542.92
8 30	2967.06	2923.72	436.95	9 30	3316.13	3255.68	544.81
8 31	2972.88	2929.28	438.66	9 31	3321.94	3261.18	546.71
8 32	2978.70	2934.84	440.36	9 32	3327.76	3266.68	548.61
8 33	2984.51	2940.40	442.07	9 33	3333.58	3272.18	550.51
8 34	2990.33	2945.96	443.78	9 34	3339.40	3277.68	552.42
8 35	2996.15	2951.52	445.50	9 35	3345.21	3283.17	554.32
8 36	3001.97	2957.08	447.22	9 36	3351.03	3288.67	556.24
8 37	3007.78	2962.64	448.94	9 37	3356.85	3294.16	558.15
8 38	3013.60	2968.19	450.66	9 38	3362.67	3299.65	560.07
8 39	3019.42	2973.75	452.39	9 39	3368.49	3305.14	561.99
8 40	3025.24	2979.30	454.12	9 40	3374.30	3310.63	563.91
8 41	3031.06	2984.86	455.86	9 41	3380.12	3316.12	565.84
8 42	3036.87	2990.41	457.60	9 42	3385.94	3321.61	567.77
8 43	3042.69	2995.96	459.34	9 43	3391.76	3327.10	569.71
8 44	3048.51	3001.51	461.08	9 44	3397.57	3332.58	571.64
8 45	3054.33	3007.06	462.83	9 45	3403.39	3338.07	573.59
8 46	3060.14	3012.61	464.58	9 46	3409.21	3343.55	575.53
8 47	3065.96	3018.15	466.34	9 47	3415.03	3349.03	577.48
8 48	3071.78	3023.70	468.09	9 48	3420.85	3354.52	579.43
8 49	3077.60	3029.24	469.85	9 49	3426.66	3360.00	581.38
8 50	3083.42	3034.79	471.62	9 50	3432.48	3365.47	583.34
8 51	3089.23	3040.33	473.39	9 51	3438.30	3370.95	585.29
8 52	3095.05	3045.87	475.16	9 52	3444.12	3376.43	587.26
8 53	3100.87	3051.41	476.93	9 53	3449.93	3381.90	589.22
8 54	3106.69	3056.95	478.71	9 54	3455.75	3387.38	591.19
8 55	3112.50	3062.49	480.49	9 55	3461.57	3392.85	593.16
8 56	3118.32	3068.03	482.27	9 56	3467.39	3398.32	595.14
8 57	3124.14	3073.57	484.06	9 57	3473.21	3403.80	597.12
8 58	3129.96	3079.10	485.85	9 58	3479.02	3409.27	599.10
8 59	3135.77	3084.64	487.64	9 59	3484.84	3414.73	601.09

TABLE III
TANGENT OFFSETS FOR A 10,000 FT. RADIUS CURVE

Deflection Deg. Min.	Length	TX	TY	Deflection Deg. Min.	Length	TX	TY
10 00	3490.66	3420.20	603.07	11 00	3839.72	3746.07	723.16
10 01	3496.48	3425.67	605.07	11 01	3845.54	3751.46	730.34
10 02	3502.29	3431.13	607.06	11 02	3851.36	3756.85	732.53
10 03	3508.11	3436.60	609.06	11 03	3857.18	3762.24	734.71
10 04	3513.93	3442.06	611.06	11 04	3863.00	3767.63	736.90
10 05	3519.75	3447.52	613.06	11 05	3868.81	3773.02	739.10
10 06	3525.57	3452.98	615.07	11 06	3874.63	3778.41	741.29
10 07	3531.38	3458.44	617.08	11 07	3880.45	3783.79	743.49
10 08	3537.20	3463.90	619.09	11 08	3886.27	3789.18	745.70
10 09	3543.02	3469.36	621.11	11 09	3892.08	3794.56	747.90
10 10	3548.84	3474.81	623.13	11 10	3897.90	3799.94	750.11
10 11	3554.65	3480.27	625.15	11 11	3903.72	3805.32	752.32
10 12	3560.47	3485.72	627.18	11 12	3909.54	3810.70	754.54
10 13	3566.29	3491.17	629.21	11 13	3915.36	3816.08	756.76
10 14	3572.11	3496.62	631.24	11 14	3921.17	3821.46	758.98
10 15	3577.93	3502.07	633.28	11 15	3926.99	3826.83	761.20
10 16	3583.74	3507.52	635.32	11 16	3932.81	3832.21	763.43
10 17	3589.56	3512.97	637.36	11 17	3938.63	3837.58	765.66
10 18	3595.38	3518.42	639.40	11 18	3944.44	3842.95	767.90
10 19	3601.20	3523.86	641.45	11 19	3950.26	3848.32	770.14
10 20	3607.01	3529.31	643.50	11 20	3956.08	3853.69	772.38
10 21	3612.83	3534.75	645.56	11 21	3961.90	3859.06	774.62
10 22	3618.65	3540.19	647.62	11 22	3967.72	3864.43	776.87
10 23	3624.47	3545.63	649.68	11 23	3973.53	3869.79	779.12
10 24	3630.28	3551.07	651.74	11 24	3979.35	3875.16	781.37
10 25	3636.10	3556.51	653.81	11 25	3985.17	3880.52	783.62
10 26	3641.92	3561.94	655.88	11 26	3990.99	3885.88	785.88
10 27	3647.74	3567.38	657.96	11 27	3996.80	3891.24	788.15
10 28	3653.56	3572.81	660.03	11 28	4002.62	3896.60	790.41
10 29	3659.37	3578.25	662.11	11 29	4008.44	3901.96	792.68
10 30	3665.19	3583.68	664.20	11 30	4014.26	3907.31	794.95
10 31	3671.01	3589.11	666.28	11 31	4020.08	3912.67	797.23
10 32	3676.83	3594.54	668.37	11 32	4025.89	3918.02	799.50
10 33	3682.64	3599.97	670.46	11 33	4031.71	3923.37	801.79
10 34	3688.46	3605.40	672.56	11 34	4037.53	3928.72	804.07
10 35	3694.28	3610.82	674.66	11 35	4043.35	3934.07	806.36
10 36	3700.10	3616.25	676.76	11 36	4049.16	3939.42	808.65
10 37	3705.92	3621.67	678.87	11 37	4054.98	3944.77	810.94
10 38	3711.73	3627.09	680.98	11 38	4060.80	3950.11	813.24
10 39	3717.55	3632.51	683.09	11 39	4066.62	3955.46	815.54
10 40	3723.37	3637.93	685.20	11 40	4072.44	3960.80	817.84
10 41	3729.19	3643.35	687.32	11 41	4078.25	3966.14	820.14
10 42	3735.00	3648.77	689.44	11 42	4084.07	3971.48	822.45
10 43	3740.82	3654.18	691.57	11 43	4089.89	3976.82	824.77
10 44	3746.64	3659.60	693.69	11 44	4095.71	3982.15	827.08
10 45	3752.46	3665.01	695.82	11 45	4101.52	3987.49	829.40
10 46	3758.28	3670.42	697.96	11 46	4107.34	3992.83	831.72
10 47	3764.09	3675.84	700.10	11 47	4113.16	3998.16	834.05
10 48	3769.91	3681.25	702.24	11 48	4118.98	4003.49	836.37
10 49	3775.73	3686.65	704.38	11 49	4124.79	4008.82	838.70
10 50	3781.55	3692.06	706.52	11 50	4130.61	4014.15	841.04
10 51	3787.36	3697.47	708.67	11 51	4136.43	4019.48	843.37
10 52	3793.18	3702.87	710.83	11 52	4142.25	4024.80	845.71
10 53	3799.00	3708.28	712.98	11 53	4148.07	4030.13	848.06
10 54	3804.82	3713.68	715.14	11 54	4153.88	4035.45	850.40
10 55	3810.64	3719.08	717.30	11 55	4159.70	4040.78	852.75
10 56	3816.45	3724.48	719.47	11 56	4165.52	4046.10	855.11
10 57	3822.27	3729.88	721.64	11 57	4171.34	4051.42	857.46
10 58	3828.09	3735.28	723.81	11 58	4177.15	4056.73	859.82
10 59	3833.91	3740.67	725.98	11 59	4182.97	4062.05	862.18

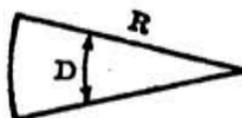
TABLE IV
ARC LENGTHS FOR RADIUS = 1

Deg.	Length	Deg.	Length	Min.	Length	Sec.	Length
1	0.0174533	61	1.0646508	1	0.0002909	1	0.0000048
2	0.0349066	62	1.0821041	2	0.0005818	2	0.0000097
3	0.0523599	63	1.0995574	3	0.0008727	3	0.0000145
4	0.0698132	64	1.1170107	4	0.0011636	4	0.0000194
5	0.0872665	65	1.1344640	5	0.0014544	5	0.0000242
6	0.1047198	66	1.1519173	6	0.0017453	6	0.0000291
7	0.1221730	67	1.1693706	7	0.0020362	7	0.0000339
8	0.1396263	68	1.1868239	8	0.0023271	8	0.0000388
9	0.1570796	69	1.2042772	9	0.0026180	9	0.0000436
10	0.1745329	70	1.2217305	10	0.0029089	10	0.0000485
11	0.1919862	71	1.2391838	11	0.0031998	11	0.0000533
12	0.2094395	72	1.2566371	12	0.0034907	12	0.0000582
13	0.2268928	73	1.2740904	13	0.0037815	13	0.0000630
14	0.2443461	74	1.2915436	14	0.0040724	14	0.0000679
15	0.2617994	75	1.3089969	15	0.0043633	15	0.0000727
16	0.2792527	76	1.3264502	16	0.0046542	16	0.0000776
17	0.2967060	77	1.3439035	17	0.0049451	17	0.0000824
18	0.3141593	78	1.3613568	18	0.0052360	18	0.0000873
19	0.3316126	79	1.3788101	19	0.0055269	19	0.0000921
20	0.3490659	80	1.3962634	20	0.0058178	20	0.0000970
21	0.3665191	81	1.4137167	21	0.0061087	21	0.0001018
22	0.3839724	82	1.4311700	22	0.0063995	22	0.0001067
23	0.4014257	83	1.4486233	23	0.0066904	23	0.0001115
24	0.4188790	84	1.4660766	24	0.0069813	24	0.0001164
25	0.4363323	85	1.4835299	25	0.0072722	25	0.0001212
26	0.4537856	86	1.5009832	26	0.0075631	26	0.0001261
27	0.4712389	87	1.5184364	27	0.0078540	27	0.0001309
28	0.4886922	88	1.5358897	28	0.0081449	28	0.0001357
29	0.5061455	89	1.5533430	29	0.0084358	29	0.0001406
30	0.5235988	90	1.5707963	30	0.0087266	30	0.0001454
31	0.5410521	91	1.5882496	31	0.0090175	31	0.0001503
32	0.5585054	92	1.6057029	32	0.0093084	32	0.0001551
33	0.5759587	93	1.6231562	33	0.0095993	33	0.0001600
34	0.5934119	94	1.6406095	34	0.0098902	34	0.0001648
35	0.6108652	95	1.6580628	35	0.0101811	35	0.0001697
36	0.6283185	96	1.6755161	36	0.0104720	36	0.0001745
37	0.6457718	97	1.6929694	37	0.0107629	37	0.0001794
38	0.6632251	98	1.7104227	38	0.0110538	38	0.0001842
39	0.6806784	99	1.7278760	39	0.0113446	39	0.0001891
40	0.6981317	100	1.7453293	40	0.0116355	40	0.0001939
41	0.7155850	101	1.7627825	41	0.0119264	41	0.0001988
42	0.7330383	102	1.7802358	42	0.0122173	42	0.0002036
43	0.7504916	103	1.7976891	43	0.0125082	43	0.0002085
44	0.7679449	104	1.8151424	44	0.0127991	44	0.0002133
45	0.7853982	105	1.8325957	45	0.0130900	45	0.0002182
46	0.8028515	106	1.8500490	46	0.0133809	46	0.0002230
47	0.8203047	107	1.8675023	47	0.0136717	47	0.0002279
48	0.8377580	108	1.8849556	48	0.0139626	48	0.0002327
49	0.8552113	109	1.9024089	49	0.0142535	49	0.0002376
50	0.8726646	110	1.9198622	50	0.0145444	50	0.0002424
51	0.8901179	111	1.9373155	51	0.0148353	51	0.0002473
52	0.9075712	112	1.9547688	52	0.0151262	52	0.0002521
53	0.9250245	113	1.9722221	53	0.0154171	53	0.0002570
54	0.9424778	114	1.9896753	54	0.0157080	54	0.0002618
55	0.9599311	115	2.0071286	55	0.0159989	55	0.0002666
56	0.9773844	116	2.0245819	56	0.0162897	56	0.0002715
57	0.9948377	117	2.0420352	57	0.0165806	57	0.0002763
58	1.0122910	118	2.0594885	58	0.0168715	58	0.0002812
59	1.0297443	119	2.0769418	59	0.0171624	59	0.0002860
60	1.0471976	120	2.0943951	60	0.0174533	60	0.0002909

TABLE V
DEGREES OF CURVATURE
for Various Feet of Radii

$$D = \frac{5729.578}{R}$$

$$\text{arc length} = 100$$

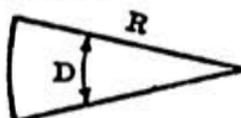


R	D	R	D	R	D
150	38.1972	900	6.3662	3000	1.9099
200	28.6479	1000	5.7296	3500	1.6370
250	22.9183	1100	5.2087	4000	1.4324
300	19.0986	1200	4.7746	4500	1.2732
350	16.3702	1400	4.0926	5000	1.1459
400	14.3239	1600	3.5810	6000	0.9549
450	12.7324	1800	3.1831	8000	0.7162
500	11.4592	2000	2.8648	10000	0.5730
550	10.4174	2200	2.6044	12000	0.4775
600	9.5493	2400	2.3873	20000	0.2865
700	8.1851	2600	2.2037		
800	7.1620	2800	2.0463		

TABLE VI
FEET OF RADII
for Various Degrees of Curvature

$$R = \frac{5729.578}{D}$$

$$\text{arc length} = 100$$



D		R	D		R	D		R
Deg.	Min.		Deg.	Min.		Deg.	Min.	
0	15	22,918.31	4	00	1,432.39	10	00	572.96
0	30	11,459.16	4	15	1,348.14	10	30	545.67
0	45	7,639.44	4	30	1,273.24	11	00	520.87
1	00	5,729.58	4	45	1,206.23	11	30	498.22
1	15	4,583.66	5	00	1,145.92	12	00	477.46
1	30	3,819.72	5	15	1,091.35	12	30	458.37
1	45	3,274.04	5	30	1,041.74	13	00	440.74
2	00	2,864.79	5	45	996.45	13	30	424.41
2	15	2,546.48	6	00	954.93	14	00	409.26
2	30	2,291.83	6	30	881.47	14	30	395.14
2	45	2,083.48	7	00	818.51	15	00	381.97
3	00	1,909.86	7	30	763.94	16	00	358.10
3	15	1,762.45	8	00	716.20	17	00	337.03
3	30	1,637.02	8	30	674.07	18	00	318.31
3	45	1,527.89	9	00	636.62	19	00	301.56
			9	30	603.11	20	00	286.48

TABLE VII
MINUTES AND SECONDS IN DECIMALS OF A DEGREE

Min.	0"	5"	10"	15"	20"	25"	30"	35"	40"	45"	50"	55"
0	.00000	.00139	.00278	.00417	.00556	.00694	.00833	.00972	.01111	.01250	.01389	.01528
1	.01667	.01806	.01944	.02083	.02222	.02361	.02500	.02639	.02778	.02917	.03056	.03194
2	.03333	.03472	.03611	.03750	.03889	.04028	.04167	.04306	.04444	.04583	.04722	.04861
3	.05000	.05139	.05278	.05417	.05556	.05694	.05833	.05972	.06111	.06250	.06389	.06528
4	.06667	.06806	.06944	.07083	.07222	.07361	.07500	.07639	.07778	.07917	.08056	.08194
5	.08333	.08472	.08611	.08750	.08889	.09028	.09167	.09306	.09444	.09583	.09722	.09861
6	.10000	.10139	.10278	.10417	.10556	.10694	.10833	.10972	.11111	.11250	.11389	.11528
7	.11667	.11806	.11944	.12083	.12222	.12361	.12500	.12639	.12778	.12917	.13056	.13194
8	.13333	.13472	.13611	.13750	.13889	.14028	.14167	.14306	.14444	.14583	.14722	.14861
9	.15000	.15139	.15278	.15417	.15556	.15694	.15833	.15972	.16111	.16250	.16389	.16528
10	.16667	.16806	.16944	.17083	.17222	.17361	.17500	.17639	.17778	.17917	.18056	.18194
11	.18333	.18472	.18611	.18750	.18889	.19028	.19167	.19306	.19444	.19583	.19722	.19861
12	.20000	.20139	.20278	.20417	.20556	.20694	.20833	.20972	.21111	.21250	.21389	.21528
13	.21667	.21806	.21944	.22083	.22222	.22361	.22500	.22639	.22778	.22917	.23056	.23194
14	.23333	.23472	.23611	.23750	.23889	.24028	.24167	.24306	.24444	.24583	.24722	.24861
15	.25000	.25139	.25278	.25417	.25556	.25694	.25833	.25972	.26111	.26250	.26389	.26528
16	.26667	.26806	.26944	.27083	.27222	.27361	.27500	.27639	.27778	.27917	.28056	.28194
17	.28333	.28472	.28611	.28750	.28889	.29028	.29167	.29306	.29444	.29583	.29722	.29861
18	.30000	.30139	.30278	.30417	.30556	.30694	.30833	.30972	.31111	.31250	.31389	.31528
19	.31667	.31806	.31944	.32083	.32222	.32361	.32500	.32639	.32778	.32917	.33056	.33194
20	.33333	.33472	.33611	.33750	.33889	.34028	.34167	.34306	.34444	.34583	.34722	.34861
21	.35000	.35139	.35278	.35417	.35556	.35694	.35833	.35972	.36111	.36250	.36389	.36528
22	.36667	.36806	.36944	.37083	.37222	.37361	.37500	.37639	.37778	.37917	.38056	.38194
23	.38333	.38472	.38611	.38750	.38889	.39028	.39167	.39306	.39444	.39583	.39722	.39861
24	.40000	.40139	.40278	.40417	.40556	.40694	.40833	.40972	.41111	.41250	.41389	.41528
25	.41667	.41806	.41944	.42083	.42222	.42361	.42500	.42639	.42778	.42917	.43056	.43194
26	.43333	.43472	.43611	.43750	.43889	.44028	.44167	.44306	.44444	.44583	.44722	.44861
27	.45000	.45139	.45278	.45417	.45556	.45694	.45833	.45972	.46111	.46250	.46389	.46528
28	.46667	.46806	.46944	.47083	.47222	.47361	.47500	.47639	.47778	.47917	.48056	.48194
29	.48333	.48472	.48611	.48750	.48889	.49028	.49167	.49306	.49444	.49583	.49722	.49861
30	.50000	.50139	.50278	.50417	.50556	.50694	.50833	.50972	.51111	.51250	.51389	.51528

TABLE VII
MINUTES AND SECONDS IN DECIMALS OF A DEGREE

Min.	0"	5"	10"	15"	20"	25"	30"	35"	40"	45"	50"	55"
31	.51667	.51806	.51944	.52083	.52222	.52361	.52500	.52639	.52778	.52917	.53056	.53194
32	.53333	.53472	.53611	.53750	.53889	.54028	.54167	.54306	.54444	.54583	.54722	.54861
33	.55000	.55139	.55278	.55417	.55556	.55694	.55833	.55972	.56111	.56250	.56389	.56528
34	.56667	.56806	.56944	.57083	.57222	.57361	.57500	.57639	.57778	.57917	.58056	.58194
35	.58333	.58472	.58611	.58750	.58889	.59028	.59167	.59306	.59444	.59583	.59722	.59861
36	.60000	.60139	.60278	.60417	.60556	.60694	.60833	.60972	.61111	.61250	.61389	.61528
37	.61667	.61806	.61944	.62083	.62222	.62361	.62500	.62639	.62778	.62917	.63056	.63194
38	.63333	.63472	.63611	.63750	.63889	.64028	.64167	.64306	.64444	.64583	.64722	.64861
39	.65000	.65139	.65278	.65417	.65556	.65694	.65833	.65972	.66111	.66250	.66389	.66528
40	.66667	.66806	.66944	.67083	.67222	.67361	.67500	.67639	.67778	.67917	.68056	.68194
41	.68333	.68472	.68611	.68750	.68889	.69028	.69167	.69306	.69444	.69583	.69722	.69861
42	.70000	.70139	.70278	.70417	.70556	.70694	.70833	.70972	.71111	.71250	.71389	.71528
43	.71667	.71806	.71944	.72083	.72222	.72361	.72500	.72639	.72778	.72917	.73056	.73194
44	.73333	.73472	.73611	.73750	.73889	.74028	.74167	.74306	.74444	.74583	.74722	.74861
45	.75000	.75139	.75278	.75417	.75556	.75694	.75833	.75972	.76111	.76250	.76389	.76528
46	.76667	.76806	.76944	.77083	.77222	.77361	.77500	.77639	.77778	.77917	.78056	.78194
47	.78333	.78472	.78611	.78750	.78889	.79028	.79167	.79306	.79444	.79583	.79722	.79861
48	.80000	.80139	.80278	.80417	.80556	.80694	.80833	.80972	.81111	.81250	.81389	.81528
49	.81667	.81806	.81944	.82083	.82222	.82361	.82500	.82639	.82778	.82917	.83056	.83194
50	.83333	.83472	.83611	.83750	.83889	.84028	.84167	.84306	.84444	.84583	.84722	.84861
51	.85000	.85139	.85278	.85417	.85556	.85694	.85833	.85972	.86111	.86250	.86389	.86528
52	.86667	.86806	.86944	.87083	.87222	.87361	.87500	.87639	.87778	.87917	.88056	.88194
53	.88333	.88472	.88611	.88750	.88889	.89028	.89167	.89306	.89444	.89583	.89722	.89861
54	.90000	.90139	.90278	.90417	.90556	.90694	.90833	.90972	.91111	.91250	.91389	.91528
55	.91667	.91806	.91944	.92083	.92222	.92361	.92500	.92639	.92778	.92917	.93056	.93194
56	.93333	.93472	.93611	.93750	.93889	.94028	.94167	.94306	.94444	.94583	.94722	.94861
57	.95000	.95139	.95278	.95417	.95556	.95694	.95833	.95972	.96111	.96250	.96389	.96528
58	.96667	.96806	.96944	.97083	.97222	.97361	.97500	.97639	.97778	.97917	.98056	.98194
59	.98333	.98472	.98611	.98750	.98889	.99028	.99167	.99306	.99444	.99583	.99722	.99861

TABLE VIII
INCHES IN DECIMALS OF A FOOT

Inches	0	1	2	3	4	5
0	Feet	.0833	.1667	.2500	.3333	.4167
1/32	.0026	.0859	.1693	.2526	.3359	.4193
1/16	.0052	.0885	.1719	.2552	.3385	.4219
3/32	.0078	.0911	.1745	.2578	.3411	.4245
1/8	.0104	.0938	.1771	.2604	.3438	.4271
5/32	.0130	.0964	.1797	.2630	.3464	.4297
3/16	.0156	.0990	.1823	.2656	.3490	.4323
7/32	.0182	.1016	.1849	.2682	.3516	.4349
1/4	.0208	.1042	.1875	.2708	.3542	.4375
9/32	.0234	.1068	.1901	.2734	.3568	.4401
5/16	.0260	.1094	.1927	.2760	.3594	.4427
11/32	.0286	.1120	.1953	.2786	.3620	.4453
3/8	.0313	.1146	.1979	.2813	.3646	.4479
13/32	.0339	.1172	.2005	.2839	.3672	.4506
7/16	.0365	.1198	.2031	.2865	.3698	.4531
15/32	.0391	.1224	.2057	.2891	.3724	.4557
1/2	.0417	.1250	.2083	.2917	.3750	.4583
17/32	.0443	.1276	.2109	.2943	.3776	.4609
9/16	.0469	.1302	.2135	.2969	.3802	.4635
19/32	.0495	.1328	.2161	.2995	.3828	.4661
5/8	.0521	.1354	.2188	.3021	.3854	.4688
21/32	.0547	.1380	.2214	.3047	.3880	.4714
11/16	.0573	.1406	.2240	.3073	.3906	.4740
23/32	.0599	.1432	.2266	.3099	.3932	.4766
3/4	.0625	.1458	.2292	.3125	.3958	.4792
25/32	.0651	.1484	.2318	.3151	.3984	.4818
13/16	.0677	.1510	.2344	.3177	.4010	.4844
27/32	.0703	.1536	.2370	.3203	.4036	.4870
7/8	.0729	.1563	.2396	.3229	.4063	.4896
29/32	.0755	.1589	.2422	.3255	.4089	.4922
15/16	.0781	.1615	.2448	.3281	.4115	.4948
31/32	.0807	.1641	.2474	.3307	.4141	.4974
Inches	0	1	2	3	4	5

TABLE VIII
INCHES IN DECIMALS OF A FOOT

Inches	6	7	8	9	10	11
0	.5000	.5833	.6667	.7500	.8333	.9167
1/32	.5026	.5859	.6693	.7526	.8359	.9193
1/16	.5052	.5885	.6719	.7552	.8385	.9219
3/32	.5078	.5911	.6745	.7578	.8411	.9245
1/8	.5104	.5938	.6771	.7604	.8438	.9271
5/32	.5130	.5964	.6797	.7630	.8464	.9297
3/16	.5156	.5990	.6823	.7656	.8490	.9323
7/32	.5182	.6016	.6849	.7682	.8516	.9349
1/4	.5208	.6042	.6875	.7708	.8542	.9375
9/32	.5234	.6068	.6901	.7734	.8568	.9401
5/16	.5260	.6094	.6927	.7760	.8594	.9427
11/32	.5286	.6120	.6953	.7786	.8620	.9453
3/8	.5313	.6146	.6979	.7813	.8646	.9479
13/32	.5339	.6172	.7005	.7839	.8672	.9505
7/16	.5365	.6198	.7031	.7865	.8698	.9531
15/32	.5391	.6224	.7057	.7891	.8724	.9557
1/2	.5417	.6250	.7083	.7917	.8750	.9583
17/32	.5443	.6276	.7109	.7943	.8776	.9609
9/16	.5469	.6302	.7135	.7969	.8802	.9635
19/32	.5495	.6328	.7161	.7995	.8828	.9661
5/8	.5521	.6354	.7188	.8021	.8854	.9688
21/32	.5547	.6380	.7214	.8047	.8880	.9714
11/16	.5573	.6406	.7240	.8073	.8906	.9740
23/32	.5599	.6432	.7266	.8099	.8932	.9766
3/4	.5625	.6458	.7292	.8125	.8958	.9792
25/32	.5651	.6484	.7318	.8151	.8984	.9818
13/16	.5677	.6510	.7344	.8177	.9010	.9844
27/32	.5703	.6536	.7370	.8203	.9036	.9870
7/8	.5729	.6563	.7396	.8229	.9063	.9896
29/32	.5755	.6589	.7422	.8255	.9089	.9922
15/16	.5781	.6615	.7448	.8281	.9115	.9948
31/32	.5807	.6641	.7474	.8307	.9141	.9974
Inches	6	7	8	9	10	11

TABLE IX
STEEL TAPE TEMPERATURE CORRECTIONS

Thermometer Reading	Temperature Correction	Thermometer Reading	Temperature Correction	Thermometer Reading	Temperature Correction
-10	-.050	28	-.026	66	-.001
- 9	-.050	29	-.025	67	-.001
- 8	-.049	30	-.025	68	.000
- 7	-.048	31	-.024	69	+.001
- 6	-.048	32	-.023	70	+.001
- 5	-.047	33	-.023	71	+.002
- 4	-.046	34	-.022	72	+.003
- 3	-.046	35	-.021	73	+.003
- 2	-.045	36	-.021	74	+.004
- 1	-.045	37	-.020	75	+.005
0	-.044	38	-.019	76	+.005
1	-.043	39	-.019	77	+.006
2	-.043	40	-.018	78	+.006
3	-.042	41	-.017	79	+.007
4	-.042	42	-.017	80	+.008
5	-.041	43	-.016	81	+.008
6	-.040	44	-.015	82	+.009
7	-.039	45	-.015	83	+.010
8	-.039	46	-.014	84	+.010
9	-.038	47	-.014	85	+.011
10	-.037	48	-.013	86	+.012
11	-.037	49	-.012	87	+.012
12	-.036	50	-.012	88	+.013
13	-.035	51	-.011	89	+.014
14	-.035	52	-.010	90	+.014
15	-.034	53	-.010	91	+.015
16	-.034	54	-.009	92	+.015
17	-.033	55	-.008	93	+.016
18	-.032	56	-.008	94	+.017
19	-.032	57	-.007	95	+.017
20	-.031	58	-.006	96	+.018
21	-.030	59	-.006	97	+.019
22	-.030	60	-.005	98	+.019
23	-.029	61	-.005	99	+.020
24	-.028	62	-.004	100	+.021
25	-.028	63	-.003	101	+.021
26	-.027	64	-.003	102	+.022
27	-.026	65	-.002	103	+.023

Temperature Correction Normal 68 Degrees. Tape Temperature Correction for each Degree 0.000645 per 100 Ft. based on the formula $C = 0.0000645 (T - 68)L$. Where; C = Correction in Ft., T = present temperature, in Degrees Fahrenheit, and L = distance measured to nearest foot.

EXAMPLE

When chaining 200 feet to set a hub when the temperature is 40° F., the correction from the table is shown as -.018 for 100 feet or .036 for 200 feet. This means that the tape is .018 feet too
(Cont.)

TABLE IX
STEEL TAPE TEMPERATURE CORRECTIONS

(Cont.)

short due to the difference in temperature and must be added to each 100 foot measurement. Therefore, 200.036 feet would be measured with the steel tape to set a hub at the actual distance of 200 feet.

In measuring the distance between two known points with this tape the inverse of the above would apply. A 200 foot measurement between the two known points would be 200 feet $-.036$ feet for an actual distance of 199.964 feet.

A mercurial Fahrenheit thermometer with at least 2° graduations from -20° to $+120^{\circ}$ should be used to ascertain the proper temperature correction. Thermometers that can be attached directly to the tape are readily available.

TABLE X
STEEL TAPE WORKING TENSIONS

Tensions in pounds when supported throughout or at ends only.

LENGTH Type		50 Ft.		100 Ft.		200 Ft.		300 Ft.	
		ST	SE	ST	SE	ST	SE	ST	SE
1/8"	Chain	10	10	10	19	20	30	20	37
1/4"	Chain	10	13	10	27	20	45	20	57
5/16"	Chain	10	15	10	31	20	50	20	64

ST = Supported throughout entire length (tension in pounds)

SE = Supported at ends only (tension in pounds)

A tension handle capable of measuring 0 to 60 pounds of pull should be used for accurate chaining.

When measuring distances shorter than the length of the steel tape being used, a palm sized clamping handle should always be used to provide a steady pull and to prevent damage to the tape.

TABLE XI
MAP SCALES AND EQUIVALENTS

Feet Per Inch	Fractional Scale	Inches Per 1000 Ft.	Inches Per Mile	Miles Per Inch	Acres Per Sq. Inch	Sq. Inch Per Acre	Sq. Mi. Per Sq. Inch
20.00	1:240	50.000	264.000	0.004	0.0092	108.9000	0.000014
40.00	1:480	25.000	132.000	0.008	0.0367	27.2250	0.000057
50.00	1:600	20.000	105.600	0.009	0.0574	17.4240	0.000090
100.00	1:1200	10.000	52.800	0.019	0.2296	4.3560	0.000359
200.00	1:2400	5.000	26.400	0.379	0.9183	1.0890	0.001435
400.00	1:4800	2.500	13.200	0.076	3.6731	0.2723	0.005739
500.00	1:6000	2.000	10.560	0.095	5.7392	0.1742	0.008968
1000.00	1:12000	1.000	5.280	0.189	22.9568	0.0436	0.035870
1320.00	1:15840	0.758	4.000	0.250	40.0000	0.0250	0.062500
1666.667	1:20000	0.600	3.168	0.316	63.7690	0.0157	0.099639
2000.00	1:24000	0.500	2.640	0.379	91.8274	0.0109	0.143480
2640.00	1:31680	0.379	2.000	0.500	160.0000	0.0063	0.250000
4000.00	1:48000	0.250	1.320	0.758	367.3095	0.0027	0.573921
5280.00	1:63360	0.189	1.000	1.000	640.0000	0.0016	1.000000
8000.00	1:96000	0.125	0.660	1.515	1469.2378	0.0007	2.295684
10560.00	1:126720	0.095	0.500	2.000	2560.0000	0.0004	4.000000
16000.00	1:192000	0.063	0.330	3.030	5876.9513	0.0002	9.182736
20833.333	1:250000	0.048	0.253	3.946	9963.9067	0.0001	15.568604
21120.00	1:253440	0.047	0.250	4.000	10240.0000	0.0001	16.000000

TABLE XII

ENGINEERING CONSTANTS AND MEASURING EQUIVALENTS

32 deg. F. (0 deg. C) = Freezing point of water
 212 deg. F. (100 deg. C) = Boiling point of water under pressure of one atmosphere
 1 cu. ft. of water at 60° F. = 62.37 lbs.
 1 gal. of water at 60° F. = 8.3377 lbs.
 33,000 ft. lbs. per min. = 1 horsepower (hp)
 1.3410 hp = 1 kilowatt (kw)
 $\pi = 3.14159265$ = number of diameters in circumference of a circle

LINEAR MEASURE EQUIVALENTS

Inches	Feet	Yards	Rods	Miles
1	0.0833	0.0278	0.00505	0.0000158
12	1	0.3333	0.06061	0.0001894
36	3	1	0.18182	0.0005682
198	16.5	5.5	1	0.0031250
63,360	5,280	1,760	320	1

1 kilometer (km) = 1,000 meters (m) = 10,000 decimeters (dm)
 = 100,000 centimeters (cm) = 1,000,000 millimeters (mm)
 1 kilometer = 3,280.83 ft. = 0.621369 mile
 1 meter = 3.280833 ft. = 39.37 in.

SQUARE MEASURE EQUIVALENTS

Square Inches	Square Feet	Square Yards	Square Rods	Acres	Square Miles
1	0.00694	0.00077			
144	1	0.11111			
1,296	9	1	0.03306	0.0002066	
39,204	272.25	30.25	1	0.0062500	0.00000977
	43,560	4,840	160	1	0.00156250
				640	1

CUBIC MEASURE EQUIVALENTS

Cubic Inches	Gallons	Cubic Feet	Cubic Yards
1	0.004329	0.0005787	0.000021433
231	1	0.1336806	0.004951132
1,728	7.480519	1	0.037037037
46,656	201.974026	27	1

TABLE XII
ENGINEERING CONSTANTS AND MEASURING
EQUIVALENTS

STANDARD RAILROAD CONSTANTS

Dist. between inside edges of rails = 4 ft. 8½ in. at ⅝" below top of rail	
Height of 90 lb. Rail = 5.63"	Width of 90 lb. Rail = 2.56"
Height of 100 lb. Rail = 6.0"	Width of 100 lb. Rail = 2.69"
Height of 115 lb. Rail = 6.63"	Width of 115 lb. Rail = 2.72"
Height of 132 lb. Rail = 7.13"	Width of 132 lb. Rail = 3.00"

CEMENT CONSTANTS

1 Sack Cement = 94 lbs.
1 Sack Cement = 1.0 cu. ft. (approx.)
1 Gal. Water = 8.3453 lbs. at 39.2° F.
4 Sacks Cement = 1 Barrel
1 Barrel Cement = 376 lbs.
1 Barrel Cement = 4.0 cu. ft. (approx.)

TABLE XIII

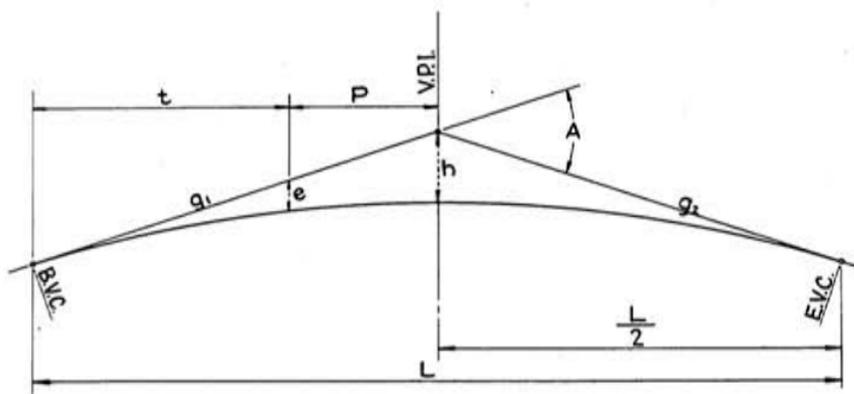
DEFORMED STEEL BARS FOR REINFORCED CONCRETE
NOMINAL DIMENSIONS

Bar Designation Number ^a	Unit Weight, lb. per ft.	Diameter, in.	Cross Sectional Area, sq. in.	Perimeter, in.
3	0.376	0.375	0.11	1.178
4	0.668	0.500	0.20	1.571
5	1.043	0.625	0.31	1.963
6	1.502	0.750	0.44	2.356
7	2.044	0.875	0.60	2.749
8	2.670	1.000	0.79	3.142
9 ^b	3.400	1.128	1.00	3.544
10 ^b	4.303	1.270	1.27	3.990
11 ^b	5.313	1.410	1.56	4.430
14s	7.65	1.693	2.25	5.32
18s	13.60	2.257	4.00	7.09

(^a) Bar numbers are based on the number of eighths of an inch included in the nominal diameter of the bars. The nominal diameter of a deformed bar is equivalent to the diameter of a plain bar having the same weight per foot as the deformed bar.

(^b) Bars of designation Nos. 9, 10, and 11 correspond to the former 1-in. square, 1⅛-in. square, and 1¼-in. square sizes and are equivalent to those former standard bar sizes in weight and nominal cross-sectional areas.

VERTICAL CURVE EQUATIONS STANDARDS



LEGEND

EQUATIONS

g_1 & g_2 = Intersecting gradients in %

A = Algebraic difference in gradients

$$A = (\pm g_2) - (\pm g_1)$$

L = Length of vertical curve in stations

B.V.C. = Beginning of Vertical Curve

$$h = \frac{AL}{8}$$

E.V.C. = End of Vertical Curve

V.P.I. = Vertical Point of Intersection

t = Horizontal distance to any point on the curve from B.V.C. or E.V.C. in stations

$$e = \frac{4ht^2}{L^2}$$

P = Horizontal distance to any point on the curve from the V.P.I. in stations

h = Vertical distance from point of intersection to the curve V.P.I. in feet

e = Vertical distance at any point on the curve to the tangent grade in feet

$$e = Kt^2$$

K = A constant for any particular curve =

$$\frac{A}{2L}$$

$$e = \frac{At^2}{2L}$$

L_i = Length of a vertical curve which will pass through a given point

$$= \frac{2(AP + 2e + 2\sqrt{APe + e^2})}{A}$$

A

VERTICAL CURVE EQUATIONS

SLIDE-RULE METHOD

1. Place algebraic difference in gradient (a) on the B scale opposite 2 times the length of the vertical curve (2L) on the A scale.
2. Set the hairline of the indicator over 1/2L on the D scale. 1/2L squared will then be under the hairline on the A scale and H will appear on the B scale.
3. Without moving the slide, move the indicator to any distance t on the D scale and the correction will appear on the B scale under the hairline.

ALTERNATE SLIDE RULE METHOD

Compute the value for "h" and place on the A or square scale of the slide rule. Opposite this value on the A scale set $\frac{1}{2}$ of the value for "L" on the C scale. Any value for "e" can be obtained by sliding the indicator hairline to the desired distance from the beginning of curve BVC or End of curve EVC on the C scale and reading the correction to 3 significant digits on the A scale.

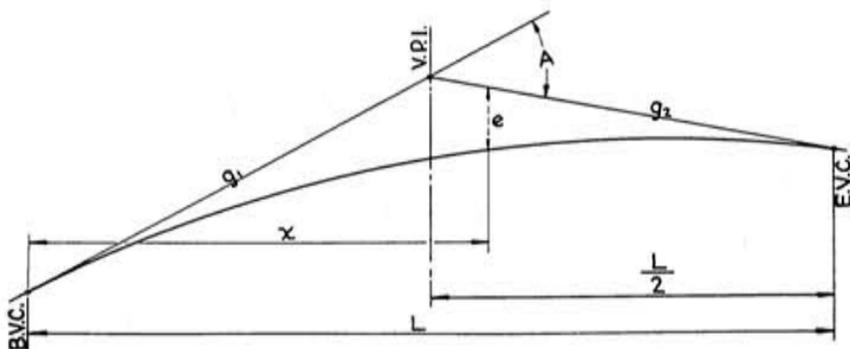
Percent of Grade at any distance from B.V.C.

$$\% \text{ Grade} = g_1 - \frac{At}{L}$$

Distance from B.V.C. to a 0.0% Grade Point.

$$t = \frac{(g_1)L}{A}$$

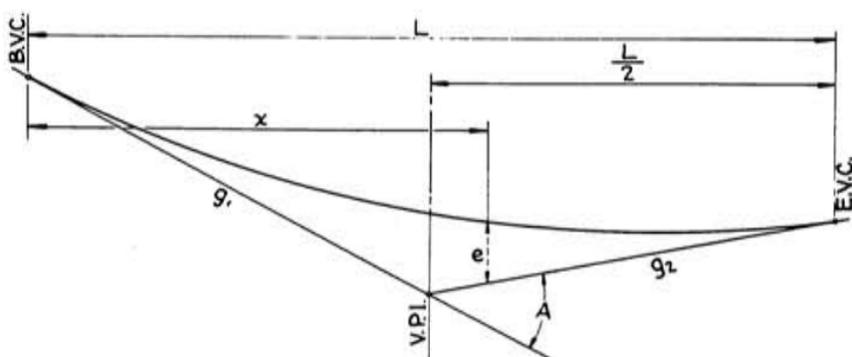
HIGH POINT OF A SUMMIT CURVE OR LOW POINT OF A SAG CURVE



VERTICAL CURVE EQUATIONS

HIGH POINT OF A SUMMIT CURVE OR LOW POINT
OF A SAG CURVE (Cont.)

LEGEND	EQUATIONS
g_1 = Approach gradient in %	
A = Algebraic difference in gradients	
L = Length of vertical curve stations	
	$X = g_1 \left\{ \frac{L}{A} \right\}$
B.V.C. = Beginning of Vertical Curve	
V.P.I. = Vertical Point of Intersection	
E.V.C. = End of Vertical Curve	
X = Distance from the B.V.C. to the low or high point in stations.	



EXAMPLE FOR A SAG CURVE

Given:

$$g_1 = -3.00\%, \quad g_2 = +2.00\%, \quad L = 4.00, \quad A = 5.00$$

Required:

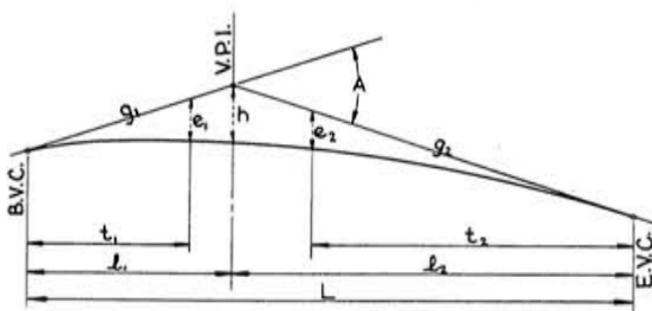
X and e

Solution:

$$X = 3.0 \left\{ \frac{4.0}{5} \right\} = 2.4 \text{ stations}$$

VERTICAL CURVE EQUATIONS

NONSYMMETRICAL CURVES



LEGEND

EQUATIONS

g_1 & g_2 = Intersecting gradients in %

A = Algebraic difference in gradients

l_1 = Length of $\frac{1}{2}$ of first vertical curve in stations $h = \frac{l_1 \ l_2}{2 (l_1 + l_2)} A$

l_2 = Length of $\frac{1}{2}$ of second vertical curve in stations

L = Length of vertical curve in stations
 $= l_1 + l_2$

B.V.C. = Beginning of Vertical Curve

V.P.I. = Vertical Point of Intersection

E.V.C. = End of Vertical Curve

t_1 = Horizontal distance to any point on the curve from B.V.C. to V.P.I. in stations

$$e_1 = h \left\{ \frac{t_1}{l_1} \right\}^2$$

t_2 = Horizontal distance to any point on the curve from E.V.C. to V.P.I. in stations

$$e_2 = h \left\{ \frac{t_2}{l_2} \right\}^2$$

e_1 = Vertical distance at any point on the curve from B.V.C. to V.P.I. in feet

e_2 = Vertical distance at any point on the curve from E.V.C. to V.P.I. in feet

h = Vertical distance from point of intersection to the curve (V.P.I.) in feet

VERTICAL CURVE EQUATIONS

NONSYMMETRICAL CURVES (Cont.)

EXAMPLE

Given:

$g_1 = + 3.00\%$, $g_2 = - 2.00\%$, $l_1 = 1.50$, $l_2 = 2.50$, $t_1 = 0.50$,
 $t_2 = 1.00$

Required:

h , e_1 , e_2

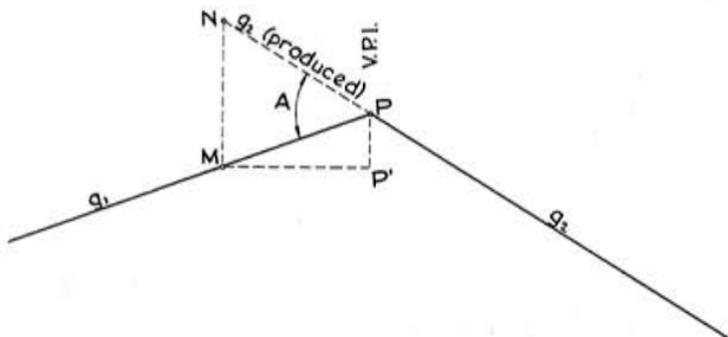
Solution:

$$h = \frac{1.50(2.50)}{2(1.50+2.50)} \left\{ (+3.00) - (-2.00) \right\} = \frac{3.75}{2(4.00)} (+5.00) = \frac{3.75}{8.00} (+5.00) = 2.34 \text{ ft.}$$

$$e_1 = 2.34 \left\{ \frac{0.50}{1.50} \right\}^2 = 2.34 (.3333)^2 = 2.34 (.1111) = 0.26 \text{ ft.}$$

$$e_2 = 2.34 \left\{ \frac{1.00}{2.50} \right\}^2 = 2.34 (.40)^2 = 2.34 (.16) = 0.37 \text{ ft.}$$

DETERMINING INTERSECTION OF GRADES



$$\text{Equation: } MP' = \frac{100 \times MN}{A}$$

Legend: A = Algebraic difference in gradients = $(\pm g_1) - (\pm g_2)$

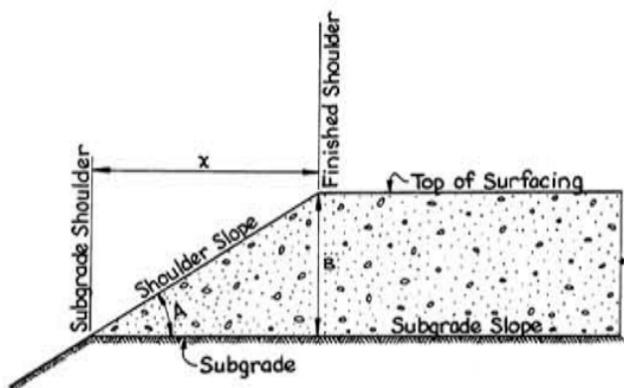
M = Known station

MN = Difference in elevation in feet between elevation of M on true gradient and on opposite gradient produced

MP' = Horizontal distance in feet from M to point of intersection of gradients

V.P.I. = Vertical point of intersection

**DETERMINATION OF DISTANCE FROM FINISHED
SHOULDER TO SUBGRADE SHOULDER AND
SLOPE EQUIVALENTS**



$$\text{Equation: } X = \frac{100B}{A}$$

A = Algebraic difference in percent between shoulder slope and subgrade slope

B = Depth of surfacing at finished shoulder

X = Distance from finished shoulder to subgrade shoulder

SHOULDER SLOPE	EQUIVALENT RATE OF GRADE	EQUIVALENT VERTICAL ANGLE
1.5 :1	66.67%	33° 41.4'
1.75:1	57.14%	29° 44.7'
2 :1	50.00%	26° 33.9'
2.5 :1	40.00%	21° 48.1'
3 :1	33.33%	18° 26.1'
4 :1	25.00%	14° 02.2'
5 :1	20.00%	11° 18.6'
6 :1	16.67%	9° 27.7'
8 :1	12.50%	7° 07.5'
10 :1	10.00%	5° 42.6'

SUBGRADE SLOPE	EQUIVALENT RATE OF GRADE	EQUIVALENT VERTICAL ANGLE
.02' /1	2.00%	1° 08.7'
.025'/1	2.50%	1° 25.9'
.03' /1	3.00%	1° 43.1'
.035'/1	3.50%	2° 00.3'
.04' /1	4.00%	2° 17.4'
.05' /1	5.00%	2° 51.7'

PILE DRIVING FORMULAS

For Gravity Hammers
$$P = \frac{2WH}{S+1.0}$$

For Single Acting Steam or Air Hammer
$$P = \frac{2WH}{S+0.1}$$

For Double Acting Steam or Air Hammer
$$P = \frac{2H(W+A_p)}{S+0.1}$$

WHERE P = Safe Bearing Power in pounds.

W = Weight of striking part of hammer in pounds.
(For drop hammers this weight should not be less than 3,000 lbs. for piling less than 50 feet in length, nor less than 4,000 lbs. for piling longer than 50 feet in length.)

H = Drop of hammer or stroke of ram, in feet.
(For wooden piling this max. height shall be 10 feet.)

A = Area of Piston in Square Inches.

p = Steam pressure in pounds per square inch at the hammer.

S = The average penetration in inches per blow for the last 5 - 10 blows for gravity hammers or the last 10 - 20 blows for steam or air hammers.

The above formulas are applicable only when:

- (a) The hammer has a free fall.
- (b) The head of the pile is free from broomed or crushed wood fiber.
- (c) The penetration is at a reasonably quick and uniform rate.
- (d) There is no sensible bounce after the blow. Twice the height of the bounce shall be deducted from "H" to determine its true value in the formula.

TOWNSHIPS & SECTION SUBDIVISIONS

FIGURE III
TYPICAL SECTION

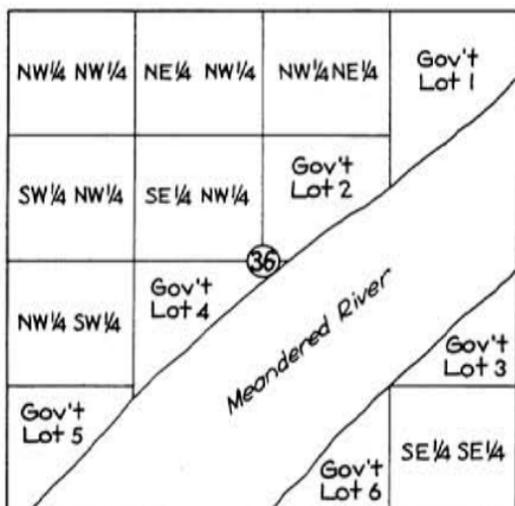
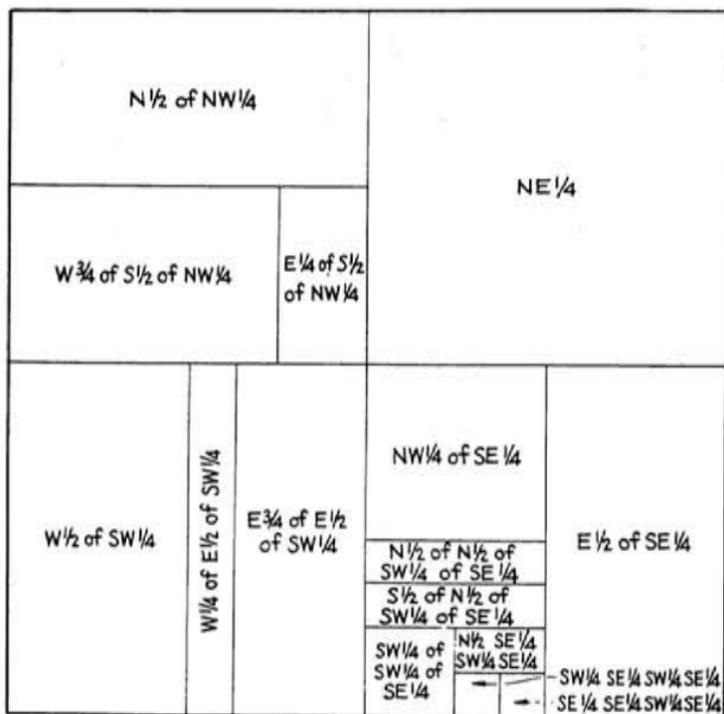
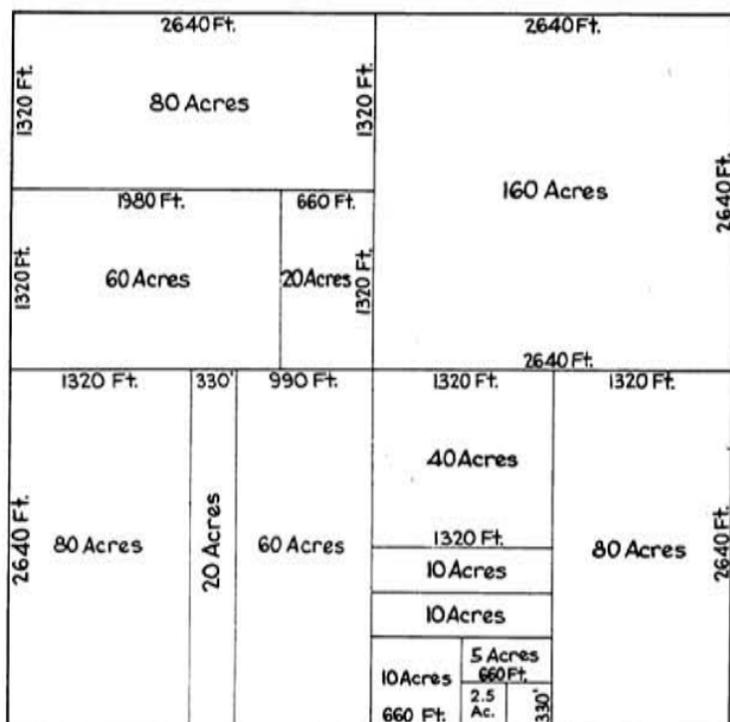


FIGURE IV
LEGAL DESCRIPTION OF A SECTION



TOWNSHIPS & SECTION SUBDIVISIONS

FIGURE V
ACREAGE AND STANDARD DIMENSIONS



A rod is $16\frac{1}{2}$ feet.

A chain is 66 feet or 4 rods.

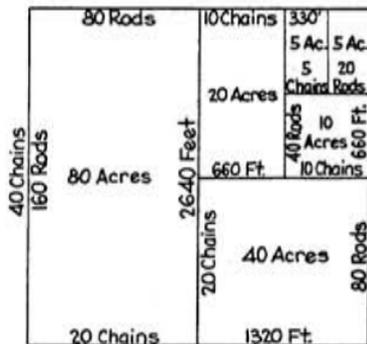
A mile is 320 rods, 80 chains or 5,280 feet.

A square rod is $272\frac{1}{4}$ square feet.

An acre contains 43,560 square feet.

An acre contains 160 square rods.

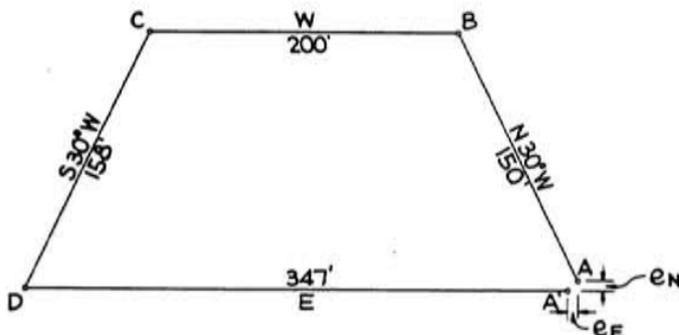
An acre is about $208\frac{3}{4}$ feet square.



BALANCING AND ADJUSTING A TRAVERSE BY THE COMPASS RULE

THE COMPASS RULE STATES: The correction to be applied to the latitude and departure of any course is to the total correction in latitude and departure as the length of the course is to the length of the traverse.

EXAMPLE:



COURSE	BEARING	DISTANCE	LAT.	DEP.	N. COORDS	E. COORDS
A					10,000.00	10,000.00
AB	N30°W	150.0'	+129.90'	- 75.00'	10,129.90	9,925.00
BC	W	200.0'	0.00	-200.00'	10,129.90	9,725.00
CD	S30°W	158.0'	-136.83'	- 79.00'	9,993.07	9,646.00
DA ¹	E	347.0'	0.00	+347.00'	9,993.07	9,993.00

Latitude Correction = $e_n = 10,000.00 - 9,993.07' = +6.93'$

Departure Correction = $e_e = 10,000.00 - 9,993.00 = +7.00'$

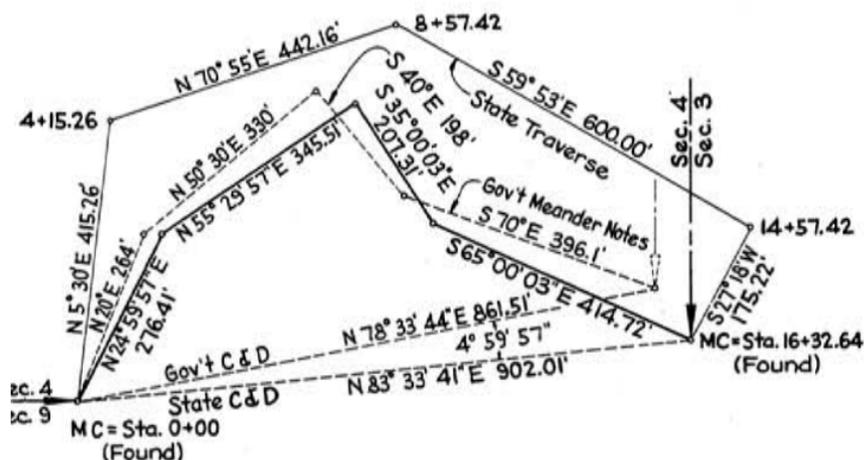
Σd = Total Distance of all Courses in the traverse = 855.0'

COURSE		COURSE	
LATITUDE CORRECTIONS		DEPARTURE CORRECTIONS	
Distance		Distance	
Σd	(e_n)	Σd	(e_e)
AB	$= (150.0/855.0)(6.93) = 1.22$	AB	$= (150.0/855.0)(7.00) = 1.23$
BC	$= (200.0/855.0)(6.93) = 1.62$	BC	$= (200.0/855.0)(7.00) = 1.64$
CD	$= (158.0/855.0)(6.93) = 1.28$	CD	$= (158.0/855.0)(7.00) = 1.29$
DA ¹	$= (347.0/855.0)(6.93) = 2.81$	DA ¹	$= (347.0/855.0)(7.00) = 2.84$

**BALANCING AND ADJUSTING A TRAVERSE BY THE
COMPASS RULE (Cont.)**

COORDINATE CORRECTIONS		BEARING AND DISTANCE CORRECTION EQUATIONS	
N. E.			
COURSE	COORDS	COORDS	
A	10,000.00	10,000.00	Coord. Departure of Course
	+129.90	- 75.00	$\tan \text{ Bearing} = \frac{\text{Coord. Departure of Course}}{\text{Coord. Latitude of Course}}$
	+ 1.22	+ 1.23	
AB	10,131.12	9,926.23	EXAMPLE:
	0.00	-200.00	
	+ 1.62	+ 1.64	$\tan \text{ Bearing Course AB} = \frac{73.77}{131.12} = .56261$
BC	10,132.74	9,727.87	Bearing = N 29°21'45" W
	-136.83	- 79.00	
	+ 1.28	+ 1.29	
CD	9,997.19	9,650.16	Distance = $\frac{\text{Coord. Latitude of Course}}{\text{Cosine of Corr. Bearing}}$
	0.00	+347.00	
	+ 2.81	+ 2.84	
DA'	10,000.00	10,000.00	EXAMPLE:
			$\text{Distance Course AB} = \frac{131.12}{.87153} = 150.45 \text{ Ft.}$

BALANCING A GOVERNMENT MEANDER LINE SWING METHOD



It is desired to correct a government meander line between two known meander corners, having established positions by balancing the line to the correct co-ordinates of the corners as determined by the new survey.

In this method it is assumed that the angles of the government line are rigid and that any correction is made to the chained distances only, either lengthening or shortening them; so that when the entire survey, hinged at one M.C., is swung, the final course will pass through the other M.C. and also that the final distance coincides with the M.C.

In detail the method is as follows:

1. Compute the closing course and distance for the government meander notes.
2. Compute the closing course and distance between the meander corners from the State's traverse or from their established co-ordinates.
3. Take the angular difference between the closing course as obtained from the known co-ordinates of the meander corners and of the closing course as obtained from the government notes and correct all courses by this amount.
4. Take the ratio of the closing distance for the State's traverse between meander corners to the closing distance as derived from the government meander notes, and adjust all meander distances by this ratio.

An example can also be found in the *Computer Manual*.

STATE TRAVERSE BETWEEN MEANDER CORNERS

Station	Course	Dist.	Cos	Sin	Lats. and Deps.	Co-ords.	
						N	E
M.C. 4/9 0+00						0.00	0.00
	N 5°30'E	415.26	.99540	.09585	+413.35 + 39.80		
4+15.26						+413.35	+ 39.80
	N 70°55'E	442.16	.32694	.94504	+144.56 +417.86		
8+57.42						+557.91	+457.66
	S 59°53'E	600.00	.50176	.86501	-301.06 +519.01		
14+57.42						+256.85	+976.67
	S 27°18'W	175.22	.88862	.45865	-155.70 - 80.36		
M.C. ¾ 16+32.64						+101.15	+896.31
					+557.91	+976.67	
					-456.76	- 80.36	
					N 101.15	E 896.31	

Closing Course: $896.31 \div 101.15 = 8.861196 = \tan 83^\circ 33' 41''$, N & E

Closing Distance: $896.31 \div \sin 83^\circ 33' 41'' = 902.00$

Use Cos Distance

$101.15 \div \cos 83^\circ 33' 41'' = 902.01$

GOVERNMENT MEANDER NOTES

Station	Course	Dist.	Cos	Sin	Lats. and Deps.	Co-ords.	
						N	E
M.C. 4/9						0.00	0.00
1	N 20° E	264	.93969	.34202	+248.08 + 90.29		
	N 50°30'E	330	.63608	.77162	+209.91 +254.63	+248.08	+ 90.29
2	S 40° E	198	.76604	.64279	-151.68 +127.27	+457.99	+344.92
3	S 70° E	396.1	.34202	.93969	-135.47 +372.21	+306.31	+472.19
M.C. ¾						+170.84	+844.40
					+457.99	+844.40	
					-287.15	- 0.00	
					N 170.84	E 844.40	

Closing Course: $844.40 \div 170.84 = 4.94264 = \tan 78^\circ 33' 44''$, N & E

Closing Distance: $844.40 \div \sin 78^\circ 33' 44'' = 861.51$

Check

$170.84 \div \cos 78^\circ 33' 44'' = 861.51$

Correction to Courses of Gov't. Meander = $(83^\circ 33' 41'') - (78^\circ 33' 44'') = 4^\circ 59' 57''$

N 20°00'00" E	N 50°30'00" E	S 40°00'00" E	S 70°00'00" E
+ 4°59'57"	+ 4°59'57"	- 4°59'57"	- 4°59'57"

N 24°59'57" E	N 55°29'57" E	S 35°00'03" E	S 65°00'03" E
---------------	---------------	---------------	---------------

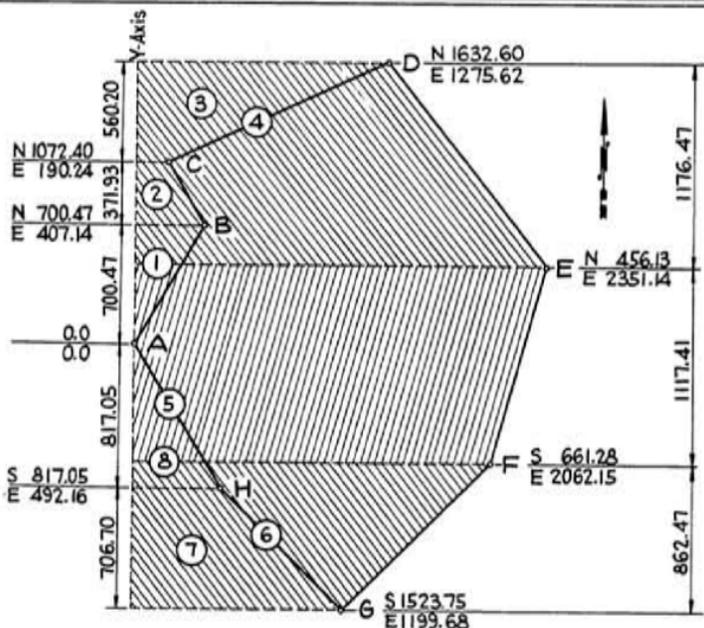
Correction to Distances of Gov't. Meander (Factor) = $902.01 \div 861.51 = 1.04701$

264	×	1.04701	=	276.41
330	×	1.04701	=	345.51
198	×	1.04701	=	207.31
396.1	×	1.04701	=	414.72

BALANCED GOVERNMENT MEANDER LINE (And Check on Work)

Station	Course	Dist.	Cos	Sin	Lats. and Deps.		Co-ords.	
							N	E
M.C. 4/9							0.00	0.00
1	N 24°59'57" E	276.41	.90631	.42261	+250.51	+116.81	+250.51	+116.81
2	N 55°29'57" E	345.51	.56642	.82412	+195.70	+284.74	+446.21	+401.55
3	S 35°00'03" E	207.31	.81914	.57359	-169.82	+118.91	+276.39	+520.46
M.C. 3/4	S 65°00'03" E	414.72	.42261	.90631	-175.26	+375.86	+101.13	+896.32
							=101.15	=896.31

COMPUTATION OF AREAS BY DOUBLE MERIDIAN DISTANCES (DMD's)



For this particular figure the Y-Axis which passes through the most westerly point A. The computation by double meridian distances gives double areas for the trapezoids numbers 4, 5 and 6, from which are subtracted the trapezoids 3, 2, 1, 8 and 7; 1 and 8 being trapezoids with one parallel side equal to zero.

Areas may be very conveniently and rapidly computed by the method known as "Double Meridian Distances."

In the figure, which shows the geometry of this method, there are eight angle points assigned: A, B, C, D, etc. It is assumed that the co-ordinates shown represent a balanced survey and thus show a perfect closure.

From the co-ordinates shown the corresponding latitudes and departures have been computed.

COMPUTATION OF AREAS BY DOUBLE MERIDIAN DISTANCES (DMD's)—Continued

From the departures (meridian distances) the double meridian distances are computed as follows:

The DMD at B is the algebraic sum of the departure at A and the departure to B.

The DMD at C is the algebraic sum of the DMD at B and the departures on either side of B.

The DMD at D is the algebraic sum of the DMD at C and the departures on either side of C, etc.

Thus, in the accompanying example:

$$\text{the DMD at B} = 0 + (+407.14) = +407.14$$

$$\text{the DMD at C} = +407.14 + (+407.14) + (-216.90) = +597.38$$

$$\text{the DMD at D} = +597.38 + (-216.90) + (+1085.38) = 1465.86$$

The check on this series of calculations is that the final DMD is equal to the last departure but of opposite sign.

To obtain the double areas each DMD is multiplied by its corresponding latitude distance. The result is a plus or minus double area, depending on the sign of the DMD and the sign of the latitude distance.

The algebraic summation of the double areas gives a final double area of either a + or - sign. At this stage of the computation the algebraic sign is discarded. The algebraic result of the summation whether + or - is the numerical value of the double area.

DMD AREA—BASE MERIDIAN (Y-Axis)

Station	Co-ordinates		Lats. (+or-)	Deps. (+or-)	DMD	Double Area
	N & S (+or-)	E & W (+or-)				
A	0.00	0.00				
B	+ 700.47	+ 407.14	+ 700.47	+ 407.14	+ 407.14	+ 285,189.36
C	+1,072.40	+ 190.24	+ 371.93	- 216.90	+ 597.38	+ 222,183.54
D	+1,632.60	+1,275.62	+ 560.20	+1,085.38	+1,465.86	+ 821,174.77
E	+ 456.13	+2,351.14	-1,176.47	+1,075.52	+3,626.76	-4,266,774.34
F	- 661.28	+2,062.15	-1,117.41	- 288.99	+4,413.29	-4,931,454.38
G	-1,523.75	+1,199.68	- 862.47	- 862.47	+3,261.83	-2,813,230.52
H	- 817.05	+ 492.16	+ 706.70	- 707.52	+1,691.84	+1,195,623.33
A	0.00	0.00	+ 817.05	- 492.16	+ 492.16	+ 402,119.33
	+3,156.35	+2,568.04				+ 2,926,290.33
	-3,156.35	-2,568.04				-12,011,459.24
					Double Area Area	9,085,168.91 4,542,584.45

FIGURE VI
AREAS OF PLANE FIGURES

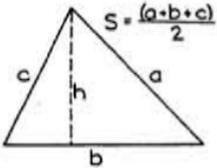
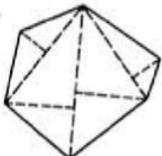
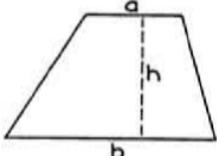
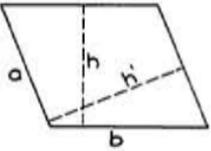
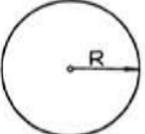
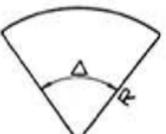
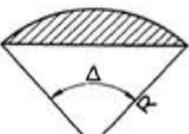
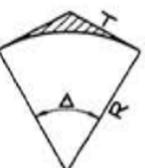
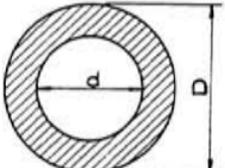
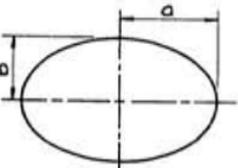
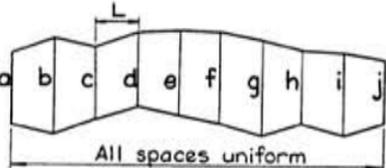
<p align="center">TRIANGLE</p>  <p align="center">$S = \frac{(a+b+c)}{2}$</p> <p align="center">$A = \frac{bh}{2}$</p> <p align="center">$A = \sqrt{s(s-a)(s-b)(s-c)}$</p>	<p align="center">POLYGON</p>  <p align="center">Divide into triangles</p> <p align="center">$A = \text{Sum of all triangles}$</p>	<p align="center">TRAPEZOID</p>  <p align="center">$A = \frac{(a+b)h}{2}$</p>
<p align="center">PARALLELOGRAM</p>  <p align="center">$A = bh$</p> <p align="center">$A = ah'$</p>	<p align="center">CIRCLE</p>  <p align="center">$A = \pi R^2$</p>	<p align="center">SECTOR</p>  <p align="center">$A = \pi R^2 \left(\frac{\Delta}{360} \right)$</p>
<p align="center">SEGMENT</p>  <p align="center">$A = \pi R^2 \left(\frac{\Delta}{360} \right) - \frac{R^2 \sin \Delta}{2}$</p>	<p align="center">FILLET</p>  <p align="center">$A = RT - \left(\frac{\Delta}{360} \right) \pi R^2$</p> <p align="center">When $\Delta = 90^\circ$, $A = 0.2146R^2$</p>	<p align="center">CIRCULAR RING</p>  <p align="center">$A = \frac{\pi}{4} (D^2 - d^2)$</p> <p align="center">$A = \frac{\pi}{4} (D+d)(D-d)$</p>
<p align="center">ELLIPSE</p>  <p align="center">$A = \pi ab$</p>	<p align="center">IRREGULAR FIGURE</p>  <p align="center">All spaces uniform</p> <p align="center">$A = \left(\frac{a+j}{2} + b+c+d+e+f+g+h+i \right) L$</p>	

FIGURE VIIa
SURFACES AND VOLUMES OF SOLIDS

SYMBOLS

S = Lateral Surface Area

V = Volume

A = Area of Section Perpendicular to Sides

B = Area of Base

P = Perimeter of Base

P_A = Perimeter of Section Perpendicular to Sides

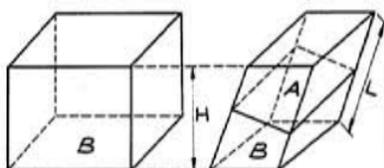
R = Radius of Sphere or Circle

L = Slant Height or Lateral Length

H = Perpendicular Height

C = Circumference of Circle of Sphere

PARALLELEPIPED

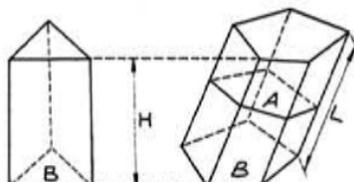


$$S = PH$$

$$S = P_A L$$

$$V = BH = AL$$

PRISM, RIGHT OR OBLIQUE, REGULAR OR IRREGULAR

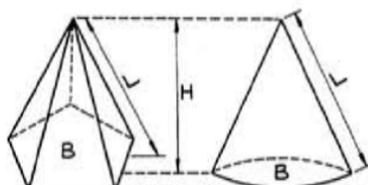


$$S = PH$$

$$S = P_A L$$

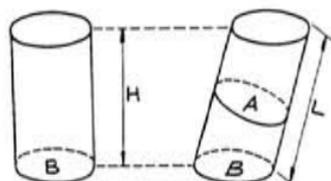
$$V = BH = AL$$

PYRAMID OR CONE, RIGHT AND REGULAR



$$S = \frac{1}{2} PL \quad V = \frac{1}{3} BH$$

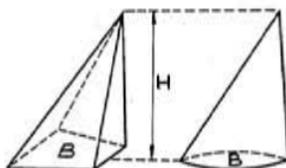
CYLINDER, RIGHT OR OBLIQUE, CIRCULAR OR ELLIPTIC



$$S = PH = P_A L$$

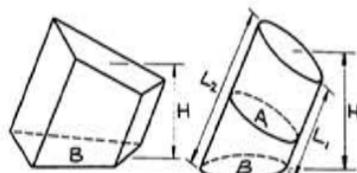
$$V = BH = AL$$

PYRAMID OR CONE, RIGHT OR OBLIQUE, REGULAR OR IRREGULAR



$$V = \frac{1}{3} BH$$

FRUSTUM OF ANY PRISM OR CYLINDER



$$V = BH$$

$$V = \frac{1}{2} A(L_1 + L_2) \text{ for cylinder}$$

FIGURE VIIb
SURFACES AND VOLUMES OF SOLIDS

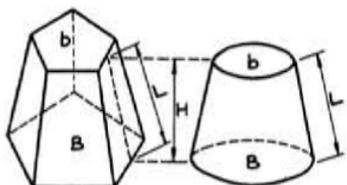
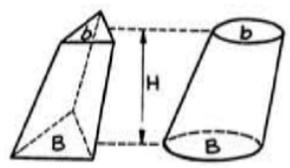
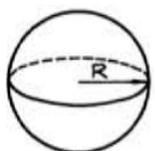
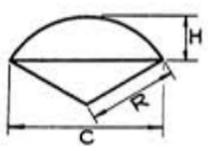
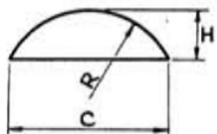
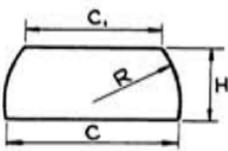
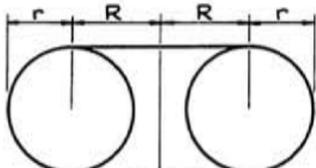
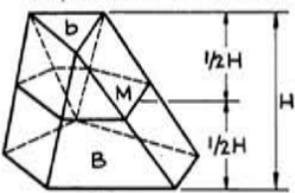
<p align="center">FRUSTUM OF PYRAMID OR CONE RIGHT AND REGULAR, PARALLEL ENDS</p>  <p> $S = \frac{1}{2} L (P+p)$ $V = \frac{1}{3} H (B+b + \sqrt{Bb})$ (p=perimeter of top base) (b=area of top base) </p>	<p align="center">FRUSTUM OF ANY PYRAMID OR CONE, PARALLEL ENDS</p>  <p> $V = \frac{1}{3} H (B+b + \sqrt{Bb})$ b= Area of top base </p>
<p align="center">SPHERE</p>  <p> $S = 4 \pi R^2$ $V = \frac{4}{3} \pi R^3$ </p>	<p align="center">SPHERICAL SECTOR</p>  <p> $S = \frac{1}{2} \pi R (4H+C)$ $V = \frac{2}{3} \pi R^2 H$ </p>
<p align="center">SPHERICAL SEGMENT</p>  <p> $S = 2 \pi R H = \frac{1}{4} \pi (4H^2 + C^2)$ $V = \frac{1}{3} \pi H^2 (3R-H)$ </p>	<p align="center">SPHERICAL ZONE</p>  <p> $S = 2 \pi R H$ $V = \frac{1}{24} \pi H (3C_1^2 + 3C^2 + 4H^2)$ </p>
<p align="center">CIRCULAR RING</p>  <p> $S = 4 \pi^2 R r$ $V = 2 \pi^2 R r^2$ </p>	<p align="center">PRISMOIDAL FORMULA</p>  <p> $V = \frac{H}{6} (B+b + 4M)$ M= Area of Section Parallel to Bases, Midway between them. </p>

FIGURE VIIIa

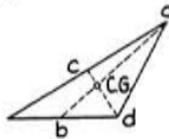
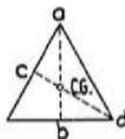
CENTERS OF GRAVITY OF ORDINARY PLANE FIGURES

Squares, Rectangles & Parallelograms



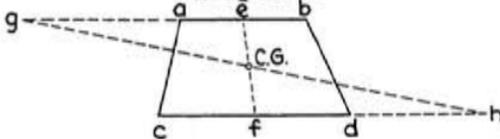
Center of gravity is at the intersection of the diagonals or midway between the bases on a line drawn between the centers of those bases.

Triangles



Center of gravity is at the intersection of the medial lines $a b$ and $c d$; a medial line is a line drawn from any apex to the middle of the opposite side. The distance b (C.G.) = $\frac{1}{3} a b$; that is, the center of gravity is on the medial line $\frac{1}{3}$ of the distance from the base to the apex.

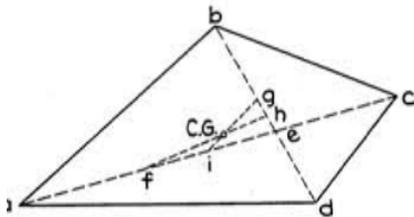
Trapezoid



Graphic Method. Prolong $b a$ to g , making $a g = c d$. Prolong $c d$ to h , making $d h = a b$. Connect $g h$. Bisect $a b$ at e . Bisect $c d$ at f . Connect $e f$: the intersection of $g h$ and $e f$ is the center of gravity.

$$\text{The distance } f \text{ (C.G.)} = \frac{ef}{3} \times \frac{2ab + cd}{ab + cd}$$

Any Quadrilateral



Graphic Method. Draw the diagonals ac and bd intersecting at e .

Lay off $af = ec$

Lay off $bg = ed$

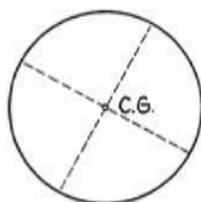
Bisect eg at h ; bisect ef at i .

The intersection of fh and gi is the center of gravity of the figure.

FIGURE VIIIb

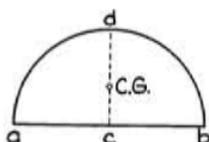
CENTERS OF GRAVITY OF ORDINARY PLANE FIGURES— (Continued)

Circles



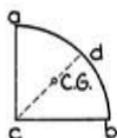
Center of gravity at the center

Semicircle



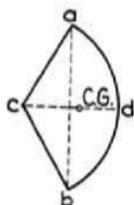
The center of gravity lies on the radius perpendicular to the diameter. The distance c (C.G.) = radius $\times 0.4244$

Quadrant



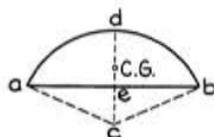
The center of gravity lies on the radius which bisects the $\angle acb$. The distance c (C.G.) = radius $\times 0.6002$

Sector



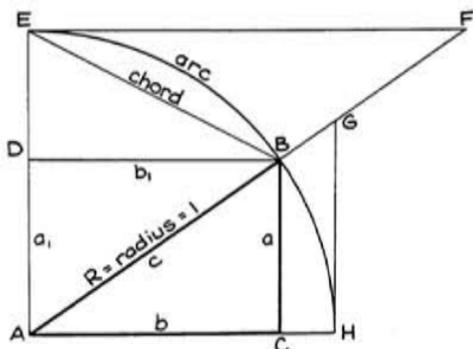
The center of gravity lies on the radius bisecting the $\angle acb$. The distance c (C.G.) = $\frac{2}{3}$ radius \times chord ab / $\frac{\text{radius}^2 \times \text{chord}}{3 \times \text{area}}$

Segment



The center of gravity lies on the perpendicular erected at the center of the chord ab .
The distance c (C.G.) = $\frac{\text{chord } ab^3}{12 \times \text{area of segment}}$

TRIGONOMETRIC FUNCTIONS



$$\tan \angle BAC = GH = (\tan \angle BAC)R = a/b = \cot \angle ABC$$

$$\sin \angle BAC = BC = (\sin \angle BAC)R = a/c = \cos \angle ABC = \sqrt{c^2 - b^2}$$

$$\cos \angle BAC = AC = (\cos \angle BAC)R = b/c = \sin \angle ABC = \sqrt{c^2 - a^2}$$

$$\sin \angle ABD = AD = (\sin \angle ABD)R = a_1/c = \cos \angle DAB$$

$$\cos \angle ABD = BD = (\cos \angle ABD)R = b_1/c = \sin \angle DAB$$

$$\sec \angle BAC = AG = \left(\frac{1}{\cos \angle BAC}\right)R = c/b = \operatorname{cosec} \angle ABC$$

$$\operatorname{cosec} \angle BAC = AF = \left(\frac{1}{\sin \angle BAC}\right)R = c/a = \sec \angle ABC$$

$$\cot \angle BAC = EF = \left(\frac{1}{\tan \angle BAC}\right)R = b/a = \tan \angle ABC$$

$$\operatorname{exsec} \angle BAC = BG = \left(\frac{1}{\cos \angle BAC} - 1\right)R = \frac{c-b}{b} = \operatorname{coexsec} \angle ABC$$

$$\operatorname{vers} \angle BAC = CH = (1 - \cos \angle BAC)R = \frac{c-b}{c} = \operatorname{covers} \angle ABC$$

$$\operatorname{coexsec} \angle BAC = BF = \left(\frac{1}{\sin \angle BAC} - 1\right)R = \frac{c-a}{a} = \operatorname{exsec} \angle ABC$$

$$\operatorname{covers} \angle BAC = DE = (1 - \sin \angle BAC)R = \frac{c-a}{c} = \operatorname{vers} \angle ABC$$

$$\text{Chord of } EB = \left(\sin \frac{\angle EAB}{2}\right)2R = \sqrt{ED^2 + DB^2}$$

$$\text{Arc of } EB = \frac{100 (\angle EAB) (R)}{5729.58}$$

$$\text{Length of } R = AB = \frac{a}{\sin \angle BAC} = \frac{b}{\cos \angle BAC} = \sqrt{a^2 + b^2}$$

TRIGONOMETRIC LAWS

LAW OF SINES:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

LAW OF COSINES:

$$a^2 = b^2 + c^2 - 2bc \cos A$$

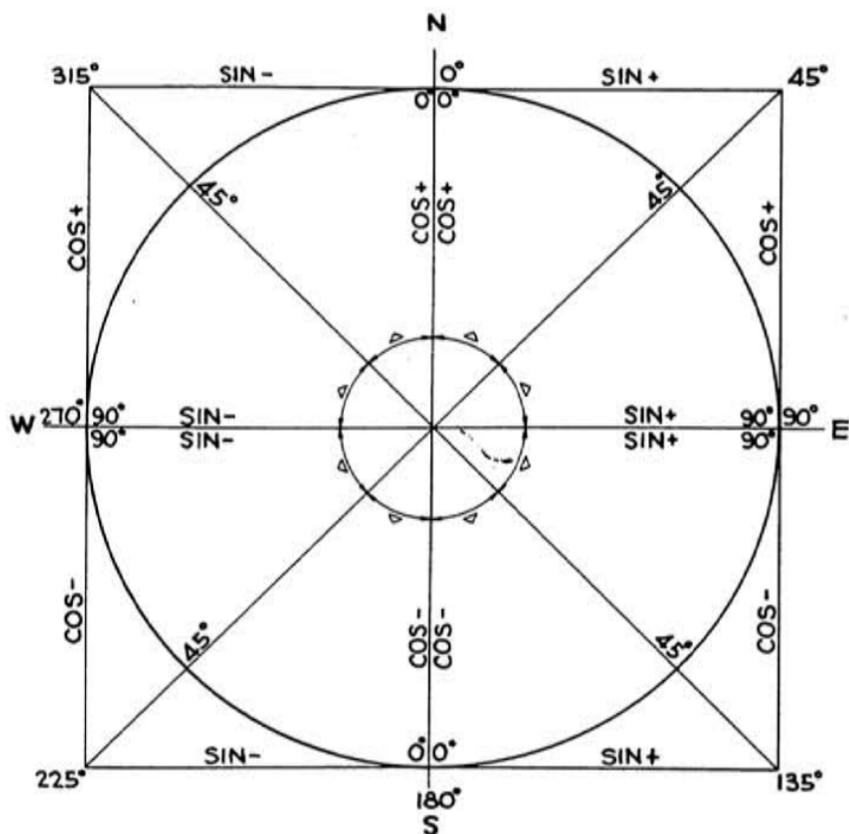
LAW OF TANGENTS:

$$\tan \frac{1}{2} A = \sqrt{\frac{(s-b)(s-c)}{s(s-a)}}$$

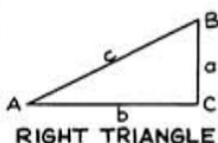
$$\text{where } s = \frac{1}{2} (a + b + c)$$

SIGNS OF TRIGONOMETRIC FUNCTIONS FOR ALL QUADRANTS

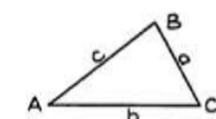
(CARTESIAN COORDINATE SYSTEM)



TRIGONOMETRIC SOLUTIONS OF TRIANGLES



RIGHT TRIANGLE



OBLIQUE TRIANGLE

$$A + B + C = 180^\circ$$

$$K = \text{Area}$$

$$s = \frac{a + b + c}{2}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

RIGHT TRIANGLES

GIVEN	TO FIND	EQUATION		
a, c	A, B, b K	$\sin A = \frac{a}{c}$	$\cos B = \frac{a}{c}$ $K = \frac{a}{2} \sqrt{c^2 - a^2}$	$b = \sqrt{c^2 - a^2}$
a, b	A, B, c K	$\tan A = \frac{a}{b}$	$\tan B = \frac{b}{a}$ $K = \frac{ab}{2}$	$c = \sqrt{a^2 + b^2}$
A, a	B, b, c K	$B = 90^\circ - A$	$b = a \cdot \cot A$ $K = \frac{a^2 \cdot \cot A}{2}$	$c = \frac{a}{\sin A}$
A, b	B, a, c K	$B = 90^\circ - A$	$a = b \cdot \tan A$ $K = \frac{b^2 \cdot \tan A}{2}$	$c = \frac{b}{\cos A}$
A, c	B, a, b K	$B = 90^\circ - A$	$a = c \cdot \sin A$ $K = \frac{c^2 \cdot \sin A \cdot \cos A}{2} = \frac{c^2 \cdot \sin 2A}{4}$	$b = c \cdot \cos A$

OBLIQUE TRIANGLES

GIVEN	TO FIND	EQUATION		
a, b, c	A	$\sin \frac{A}{2} = \sqrt{\frac{(s-b)(s-c)}{bc}}$	$\cos \frac{A}{2} = \sqrt{\frac{s(s-a)}{bc}}$	$\tan \frac{A}{2} = \sqrt{\frac{(s-b)(s-c)}{s(s-a)}}$
	B	$\sin \frac{B}{2} = \sqrt{\frac{(s-a)(s-c)}{ac}}$	$\cos \frac{B}{2} = \sqrt{\frac{s(s-b)}{ac}}$	$\tan \frac{B}{2} = \sqrt{\frac{(s-a)(s-c)}{s(s-b)}}$
	C	$\sin \frac{C}{2} = \sqrt{\frac{(s-a)(s-b)}{ab}}$	$\cos \frac{C}{2} = \sqrt{\frac{s(s-c)}{ab}}$	$\tan \frac{C}{2} = \sqrt{\frac{(s-a)(s-b)}{s(s-c)}}$
	K	$K = \sqrt{s(s-a)(s-b)(s-c)}$		
a, A, B	b, c	$b = \frac{a \cdot \sin B}{\sin A}, \quad c = \frac{a \cdot \sin(A+B)}{\sin A}$		
	K	$K = \frac{ab \cdot \sin C}{2} = \frac{a^2 \cdot \sin B \cdot \sin C}{2 \cdot \sin A}$		
a, b, A	B	$\sin B = \frac{b \cdot \sin A}{a}$		
	c	$c = \frac{a \cdot \sin C}{\sin A} = \frac{b \cdot \sin C}{\sin B} = \sqrt{a^2 + b^2 - 2ab \cdot \cos C}$		
	K	$K = \frac{ab \cdot \sin C}{2}$		
a, b, C	A	$\tan A = \frac{a \cdot \sin C}{b - a \cdot \cos C}$		
	c	$c = \frac{a \cdot \sin(A+B)}{\sin A} = \sqrt{a^2 + b^2 - 2ab \cdot \cos C}$		
	K	$K = \frac{ab \cdot \sin C}{2}$		

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

0°					1°						
/	Sin	Tan	Cot	Cos	/	/	Sin	Tan	Cot	Cos	/
0	.00000	.00000	1.0000	60	0	.01745	.01746	57.290	.99985	60
1	.00029	.00029	3437.7	1.0000	59	1	.01774	.01775	56.351	.99984	59
2	.00058	.00058	1718.9	1.0000	58	2	.01803	.01804	55.442	.99984	58
3	.00087	.00087	1145.9	1.0000	57	3	.01832	.01833	54.561	.99983	57
4	.00116	.00116	859.44	1.0000	56	4	.01862	.01862	53.709	.99983	56
5	.00145	.00145	687.55	1.0000	55	5	.01891	.01891	52.882	.99982	55
6	.00175	.00175	572.96	1.0000	54	6	.01920	.01920	52.081	.99982	54
7	.00204	.00204	491.11	1.0000	53	7	.01949	.01949	51.303	.99981	53
8	.00233	.00233	429.72	1.0000	52	8	.01978	.01978	50.549	.99980	52
9	.00262	.00262	381.97	1.0000	51	9	.02007	.02007	49.816	.99980	51
10	.00291	.00291	343.77	1.0000	50	10	.02036	.02036	49.104	.99979	50
11	.00320	.00320	312.52	.99999	49	11	.02065	.02066	48.412	.99979	49
12	.00349	.00349	286.48	.99999	48	12	.02094	.02095	47.740	.99978	48
13	.00378	.00378	264.44	.99999	47	13	.02123	.02124	47.085	.99977	47
14	.00407	.00407	245.55	.99999	46	14	.02152	.02153	46.449	.99977	46
15	.00436	.00436	229.18	.99999	45	15	.02181	.02182	45.829	.99976	45
16	.00465	.00465	214.86	.99999	44	16	.02211	.02211	45.226	.99976	44
17	.00495	.00495	202.22	.99999	43	17	.02240	.02240	44.639	.99975	43
18	.00524	.00524	190.98	.99999	42	18	.02269	.02269	44.066	.99974	42
19	.00553	.00553	180.93	.99998	41	19	.02298	.02298	43.508	.99974	41
20	.00582	.00582	171.89	.99998	40	20	.02327	.02328	42.964	.99973	40
21	.00611	.00611	163.70	.99998	39	21	.02356	.02357	42.433	.99972	39
22	.00640	.00640	156.26	.99998	38	22	.02385	.02386	41.916	.99972	38
23	.00669	.00669	149.47	.99998	37	23	.02414	.02415	41.411	.99971	37
24	.00698	.00698	143.24	.99998	36	24	.02443	.02444	40.917	.99970	36
25	.00727	.00727	137.51	.99997	35	25	.02472	.02473	40.436	.99969	35
26	.00756	.00756	132.22	.99997	34	26	.02501	.02502	39.965	.99969	34
27	.00785	.00785	127.32	.99997	33	27	.02530	.02531	39.506	.99968	33
28	.00814	.00815	122.77	.99997	32	28	.02560	.02560	39.057	.99967	32
29	.00844	.00844	118.54	.99996	31	29	.02589	.02589	38.618	.99966	31
30	.00873	.00873	114.59	.99996	30	30	.02618	.02619	38.188	.99966	30
31	.00902	.00902	110.89	.99996	29	31	.02647	.02648	37.769	.99965	29
32	.00931	.00931	107.43	.99996	28	32	.02676	.02677	37.358	.99964	28
33	.00960	.00960	104.17	.99995	27	33	.02705	.02706	36.956	.99963	27
34	.00989	.00989	101.11	.99995	26	34	.02734	.02735	36.563	.99963	26
35	.01018	.01018	98.218	.99995	25	35	.02763	.02764	36.178	.99962	25
36	.01047	.01047	95.489	.99995	24	36	.02792	.02793	35.801	.99961	24
37	.01076	.01076	92.908	.99994	23	37	.02821	.02822	35.431	.99960	23
38	.01105	.01105	90.463	.99994	22	38	.02850	.02851	35.070	.99959	22
39	.01134	.01135	88.144	.99994	21	39	.02879	.02881	34.715	.99959	21
40	.01164	.01164	85.940	.99993	20	40	.02908	.02910	34.368	.99958	20
41	.01193	.01193	83.844	.99993	19	41	.02938	.02939	34.027	.99957	19
42	.01222	.01222	81.847	.99993	18	42	.02967	.02968	33.694	.99956	18
43	.01251	.01251	79.943	.99992	17	43	.02996	.02997	33.366	.99955	17
44	.01280	.01280	78.125	.99992	16	44	.03025	.03026	33.045	.99954	16
45	.01309	.01309	76.390	.99991	15	45	.03054	.03055	32.730	.99953	15
46	.01338	.01338	74.729	.99991	14	46	.03083	.03084	32.421	.99952	14
47	.01367	.01367	73.139	.99991	13	47	.03112	.03114	32.118	.99951	13
48	.01396	.01396	71.615	.99990	12	48	.03141	.03143	31.821	.99951	12
49	.01425	.01425	70.153	.99990	11	49	.03170	.03172	31.528	.99950	11
50	.01454	.01455	68.750	.99989	10	50	.03199	.03201	31.242	.99949	10
51	.01483	.01484	67.402	.99989	9	51	.03228	.03230	30.960	.99948	9
52	.01513	.01513	66.105	.99989	8	52	.03257	.03259	30.683	.99947	8
53	.01542	.01542	64.858	.99988	7	53	.03286	.03288	30.412	.99946	7
54	.01571	.01571	63.657	.99988	6	54	.03316	.03317	30.145	.99945	6
55	.01600	.01600	62.499	.99987	5	55	.03345	.03346	29.882	.99944	5
56	.01629	.01629	61.383	.99987	4	56	.03374	.03376	29.624	.99943	4
57	.01658	.01658	60.306	.99986	3	57	.03403	.03405	29.371	.99942	3
58	.01687	.01687	59.266	.99986	2	58	.03432	.03434	29.122	.99941	2
59	.01716	.01716	58.261	.99985	1	59	.03461	.03463	28.877	.99940	1
60	.01745	.01746	57.290	.99985	0	60	.03490	.03492	28.636	.99939	0
/	Cos	Cot	Tan	Sin	/	/	Cos	Cot	Tan	Sin	/
			89°						88°		

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

2°					3°						
°	Sin	Tan	Cot	Cos	°	Sin	Tan	Cot	Cos	°	
0	.03490	.03492	28.636	.99939	60	0	.05234	.05241	19.081	.99863	60
1	.03519	.03521	28.399	.99938	59	1	.05263	.05270	18.976	.99861	59
2	.03548	.03550	28.166	.99937	58	2	.05292	.05299	18.871	.99860	58
3	.03577	.03579	27.937	.99936	57	3	.05321	.05328	18.768	.99858	57
4	.03606	.03609	27.712	.99935	56	4	.05350	.05357	18.666	.99857	56
5	.03635	.03638	27.490	.99934	55	5	.05379	.05387	18.564	.99855	55
6	.03664	.03667	27.271	.99933	54	6	.05408	.05416	18.464	.99854	54
7	.03693	.03696	27.057	.99932	53	7	.05437	.05445	18.366	.99852	53
8	.03723	.03725	26.845	.99931	52	8	.05466	.05474	18.268	.99851	52
9	.03752	.03754	26.637	.99930	51	9	.05495	.05503	18.171	.99849	51
10	.03781	.03783	26.432	.99929	50	10	.05524	.05533	18.075	.99847	50
11	.03810	.03812	26.230	.99927	49	11	.05553	.05562	17.980	.99846	49
12	.03839	.03842	26.031	.99926	48	12	.05582	.05591	17.886	.99844	48
13	.03868	.03871	25.835	.99925	47	13	.05611	.05620	17.793	.99842	47
14	.03897	.03900	25.642	.99924	46	14	.05640	.05649	17.702	.99841	46
15	.03926	.03929	25.452	.99923	45	15	.05669	.05678	17.611	.99839	45
16	.03955	.03958	25.264	.99922	44	16	.05698	.05708	17.521	.99838	44
17	.03984	.03987	25.080	.99921	43	17	.05727	.05737	17.431	.99836	43
18	.04013	.04016	24.898	.99919	42	18	.05756	.05766	17.343	.99834	42
19	.04042	.04046	24.719	.99918	41	19	.05785	.05795	17.256	.99833	41
20	.04071	.04075	24.542	.99917	40	20	.05814	.05824	17.169	.99831	40
21	.04100	.04104	24.368	.99916	39	21	.05843	.05854	17.084	.99829	39
22	.04129	.04133	24.196	.99915	38	22	.05873	.05883	16.999	.99827	38
23	.04159	.04162	24.026	.99913	37	23	.05902	.05912	16.915	.99826	37
24	.04188	.04191	23.859	.99912	36	24	.05931	.05941	16.832	.99824	36
25	.04217	.04220	23.695	.99911	35	25	.05960	.05970	16.750	.99822	35
26	.04246	.04250	23.532	.99910	34	26	.05989	.05999	16.668	.99821	34
27	.04275	.04279	23.372	.99909	33	27	.06018	.06029	16.587	.99819	33
28	.04304	.04308	23.214	.99907	32	28	.06047	.06058	16.507	.99817	32
29	.04333	.04337	23.058	.99906	31	29	.06076	.06087	16.428	.99815	31
30	.04362	.04366	22.904	.99905	30	30	.06105	.06116	16.350	.99813	30
31	.04391	.04395	22.752	.99904	29	31	.06134	.06145	16.272	.99812	29
32	.04420	.04424	22.602	.99902	28	32	.06163	.06175	16.195	.99810	28
33	.04449	.04454	22.454	.99901	27	33	.06192	.06204	16.119	.99808	27
34	.04478	.04483	22.308	.99900	26	34	.06221	.06233	16.043	.99806	26
35	.04507	.04512	22.164	.99898	25	35	.06250	.06262	15.969	.99804	25
36	.04536	.04541	22.022	.99897	24	36	.06279	.06291	15.895	.99803	24
37	.04565	.04570	21.881	.99896	23	37	.06308	.06321	15.821	.99801	23
38	.04594	.04599	21.743	.99894	22	38	.06337	.06350	15.748	.99799	22
39	.04623	.04628	21.606	.99893	21	39	.06366	.06379	15.676	.99797	21
40	.04653	.04658	21.470	.99892	20	40	.06395	.06408	15.605	.99795	20
41	.04682	.04687	21.337	.99890	19	41	.06424	.06438	15.534	.99793	19
42	.04711	.04716	21.205	.99889	18	42	.06453	.06467	15.464	.99792	18
43	.04740	.04745	21.075	.99888	17	43	.06482	.06496	15.394	.99790	17
44	.04769	.04774	20.946	.99886	16	44	.06511	.06525	15.325	.99788	16
45	.04798	.04803	20.819	.99885	15	45	.06540	.06554	15.257	.99786	15
46	.04827	.04833	20.693	.99883	14	46	.06569	.06584	15.189	.99784	14
47	.04856	.04862	20.569	.99882	13	47	.06598	.06613	15.122	.99782	13
48	.04885	.04891	20.446	.99881	12	48	.06627	.06642	15.056	.99780	12
49	.04914	.04920	20.325	.99879	11	49	.06656	.06671	14.990	.99778	11
50	.04943	.04949	20.206	.99878	10	50	.06685	.06700	14.924	.99776	10
51	.04972	.04978	20.087	.99876	9	51	.06714	.06730	14.860	.99774	9
52	.05001	.05007	19.970	.99875	8	52	.06743	.06759	14.795	.99772	8
53	.05030	.05037	19.855	.99873	7	53	.06773	.06788	14.732	.99770	7
54	.05059	.05066	19.740	.99872	6	54	.06802	.06817	14.669	.99768	6
55	.05088	.05095	19.627	.99870	5	55	.06831	.06847	14.606	.99766	5
56	.05117	.05124	19.516	.99869	4	56	.06860	.06876	14.544	.99764	4
57	.05146	.05153	19.405	.99867	3	57	.06889	.06905	14.482	.99762	3
58	.05175	.05182	19.296	.99866	2	58	.06918	.06934	14.421	.99760	2
59	.05205	.05212	19.188	.99864	1	59	.06947	.06963	14.361	.99758	1
60	.05234	.05241	19.081	.99863	0	60	.06976	.06993	14.301	.99756	0
	Cos	Cot	Tan	Sin			Cos	Cot	Tan	Sin	

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86°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

6°					7°					
$\acute{\circ}$	Sin	Tan	Cot	Cos	$\acute{\circ}$	Sin	Tan	Cot	Cos	$\acute{\circ}$
0	.10453	.10510	9.5144	.99452	60	.12187	.12278	8.1443	.99255	60
1	.10482	.10540	9.4878	.99449	59	.12216	.12308	8.1248	.99251	59
2	.10511	.10569	9.4614	.99446	58	.12245	.12338	8.1054	.99248	58
3	.10540	.10599	9.4352	.99443	57	.12274	.12367	8.0860	.99244	57
4	.10569	.10628	9.4090	.99440	56	.12302	.12397	8.0667	.99240	56
5	.10597	.10657	9.3831	.99437	55	.12331	.12426	8.0476	.99237	55
6	.10626	.10687	9.3572	.99434	54	.12360	.12456	8.0285	.99233	54
7	.10655	.10716	9.3315	.99431	53	.12389	.12485	8.0095	.99230	53
8	.10684	.10746	9.3060	.99428	52	.12418	.12515	7.9906	.99226	52
9	.10713	.10775	9.2806	.99424	51	.12447	.12544	7.9718	.99222	51
10	.10742	.10805	9.2553	.99421	50	.12476	.12574	7.9530	.99219	50
11	.10771	.10834	9.2302	.99418	49	.12504	.12603	7.9344	.99215	49
12	.10800	.10863	9.2052	.99415	48	.12533	.12633	7.9158	.99211	48
13	.10829	.10893	9.1803	.99412	47	.12562	.12662	7.8973	.99208	47
14	.10858	.10922	9.1555	.99409	46	.12591	.12692	7.8789	.99204	46
15	.10887	.10952	9.1309	.99406	45	.12620	.12722	7.8606	.99200	45
16	.10916	.10981	9.1065	.99402	44	.12649	.12751	7.8424	.99197	44
17	.10945	.11011	9.0821	.99399	43	.12678	.12781	7.8243	.99193	43
18	.10973	.11040	9.0579	.99396	42	.12706	.12810	7.8062	.99189	42
19	.11002	.11070	9.0338	.99393	41	.12735	.12840	7.7882	.99186	41
20	.11031	.11099	9.0098	.99390	40	.12764	.12869	7.7704	.99182	40
21	.11060	.11128	8.9860	.99386	39	.12793	.12899	7.7525	.99178	39
22	.11089	.11158	8.9623	.99383	38	.12822	.12929	7.7348	.99175	38
23	.11118	.11187	8.9387	.99380	37	.12851	.12958	7.7171	.99171	37
24	.11147	.11217	8.9152	.99377	36	.12880	.12988	7.6996	.99167	36
25	.11176	.11246	8.8919	.99374	35	.12908	.13017	7.6821	.99163	35
26	.11205	.11276	8.8686	.99370	34	.12937	.13047	7.6647	.99160	34
27	.11234	.11305	8.8455	.99367	33	.12966	.13076	7.6473	.99156	33
28	.11263	.11335	8.8225	.99364	32	.12995	.13106	7.6301	.99152	32
29	.11292	.11364	8.7996	.99361	31	.13024	.13136	7.6129	.99148	31
30	.11320	.11394	8.7769	.99357	30	.13053	.13165	7.5958	.99144	30
31	.11349	.11423	8.7542	.99354	29	.13081	.13195	7.5787	.99141	29
32	.11378	.11452	8.7317	.99351	28	.13110	.13224	7.5618	.99137	28
33	.11407	.11482	8.7093	.99347	27	.13139	.13254	7.5449	.99133	27
34	.11436	.11511	8.6870	.99344	26	.13168	.13284	7.5281	.99129	26
35	.11465	.11541	8.6648	.99341	25	.13197	.13313	7.5113	.99125	25
36	.11494	.11570	8.6427	.99337	24	.13226	.13343	7.4947	.99122	24
37	.11523	.11600	8.6208	.99334	23	.13254	.13372	7.4781	.99118	23
38	.11552	.11629	8.5989	.99331	22	.13283	.13402	7.4615	.99114	22
39	.11580	.11659	8.5772	.99327	21	.13312	.13432	7.4451	.99110	21
40	.11609	.11688	8.5555	.99324	20	.13341	.13461	7.4287	.99106	20
41	.11638	.11718	8.5340	.99320	19	.13370	.13491	7.4124	.99102	19
42	.11667	.11747	8.5126	.99317	18	.13399	.13521	7.3962	.99098	18
43	.11696	.11777	8.4913	.99314	17	.13427	.13550	7.3800	.99094	17
44	.11725	.11806	8.4701	.99310	16	.13456	.13580	7.3639	.99091	16
45	.11754	.11836	8.4490	.99307	15	.13485	.13609	7.3479	.99087	15
46	.11783	.11865	8.4280	.99303	14	.13514	.13639	7.3319	.99083	14
47	.11812	.11895	8.4071	.99300	13	.13543	.13669	7.3160	.99079	13
48	.11840	.11924	8.3863	.99297	12	.13572	.13698	7.3002	.99075	12
49	.11869	.11954	8.3656	.99293	11	.13600	.13728	7.2844	.99071	11
50	.11898	.11983	8.3450	.99290	10	.13629	.13758	7.2687	.99067	10
51	.11927	.12013	8.3245	.99286	9	.13658	.13787	7.2531	.99063	9
52	.11956	.12042	8.3041	.99283	8	.13687	.13817	7.2375	.99059	8
53	.11985	.12072	8.2838	.99279	7	.13716	.13846	7.2220	.99055	7
54	.12014	.12101	8.2636	.99276	6	.13744	.13876	7.2066	.99051	6
55	.12043	.12131	8.2434	.99272	5	.13773	.13906	7.1912	.99047	5
56	.12071	.12160	8.2234	.99269	4	.13802	.13935	7.1759	.99043	4
57	.12100	.12190	8.2035	.99265	3	.13831	.13965	7.1607	.99039	3
58	.12129	.12219	8.1837	.99262	2	.13860	.13995	7.1455	.99035	2
59	.12158	.12249	8.1640	.99258	1	.13889	.14024	7.1304	.99031	1
60	.12187	.12278	8.1443	.99255	0	.13917	.14054	7.1154	.99027	0
$\acute{\circ}$	Cos	Cot	Tan	Sin	$\acute{\circ}$	Cos	Cot	Tan	Sin	$\acute{\circ}$

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82°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

8°					9°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.13917	.14054	7.1154	.99027	60	.15643	.15838	6.3138	.98769	60
1	.13946	.14084	7.1004	.99023	59	.15672	.15868	6.3019	.98764	59
2	.13975	.14113	7.0855	.99019	58	.15701	.15898	6.2901	.98760	58
3	.14004	.14143	7.0706	.99015	58	.15730	.15928	6.2783	.98755	57
4	.14033	.14173	7.0558	.99011	56	.15758	.15958	6.2666	.98751	56
5	.14061	.14202	7.0410	.99006	55	.15787	.15988	6.2549	.98746	55
6	.14090	.14232	7.0264	.99002	54	.15816	.16017	6.2432	.98741	54
7	.14119	.14262	7.0117	.98998	53	.15845	.16047	6.2316	.98737	53
8	.14148	.14291	6.9972	.98994	52	.15873	.16077	6.2200	.98732	52
9	.14177	.14321	6.9827	.98990	51	.15902	.16107	6.2085	.98728	51
10	.14205	.14351	6.9682	.98986	50	.15931	.16137	6.1970	.98723	50
11	.14234	.14381	6.9538	.98982	49	.15959	.16167	6.1856	.98718	49
12	.14263	.14410	6.9395	.98978	48	.15988	.16196	6.1742	.98714	48
13	.14292	.14440	6.9252	.98973	47	.16017	.16226	6.1628	.98709	47
14	.14320	.14470	6.9110	.98969	46	.16046	.16256	6.1515	.98704	46
15	.14349	.14499	6.8969	.98965	45	.16074	.16286	6.1402	.98700	45
16	.14378	.14529	6.8828	.98961	44	.16103	.16316	6.1290	.98695	44
17	.14407	.14559	6.8687	.98957	43	.16132	.16346	6.1178	.98690	43
18	.14436	.14588	6.8548	.98953	42	.16160	.16376	6.1066	.98686	42
19	.14464	.14618	6.8408	.98948	41	.16189	.16405	6.0955	.98681	41
20	.14493	.14648	6.8269	.98944	40	.16218	.16435	6.0844	.98676	40
21	.14522	.14678	6.8131	.98940	39	.16246	.16465	6.0734	.98671	39
22	.14551	.14707	6.7994	.98936	38	.16275	.16495	6.0624	.98667	38
23	.14580	.14737	6.7856	.98931	37	.16304	.16525	6.0514	.98662	37
24	.14608	.14767	6.7720	.98927	36	.16333	.16555	6.0405	.98657	36
25	.14637	.14796	6.7584	.98923	35	.16361	.16585	6.0296	.98652	35
26	.14666	.14826	6.7448	.98919	34	.16390	.16615	6.0188	.98648	34
27	.14695	.14856	6.7313	.98914	33	.16419	.16645	6.0080	.98643	33
28	.14723	.14886	6.7179	.98910	32	.16447	.16674	5.9972	.98638	32
29	.14752	.14915	6.7045	.98906	31	.16476	.16704	5.9865	.98633	31
30	.14781	.14945	6.6912	.98902	30	.16505	.16734	5.9758	.98629	30
31	.14810	.14975	6.6779	.98897	29	.16533	.16764	5.9651	.98624	29
32	.14838	.15005	6.6646	.98893	28	.16562	.16794	5.9545	.98619	28
33	.14867	.15034	6.6514	.98889	27	.16591	.16824	5.9439	.98614	27
34	.14896	.15064	6.6383	.98884	26	.16620	.16854	5.9333	.98609	26
35	.14925	.15094	6.6252	.98880	25	.16648	.16884	5.9228	.98604	25
36	.14954	.15124	6.6122	.98876	24	.16677	.16914	5.9124	.98600	24
37	.14982	.15153	6.5992	.98871	23	.16706	.16944	5.9019	.98595	23
38	.15011	.15183	6.5863	.98867	22	.16734	.16974	5.8915	.98590	22
39	.15040	.15213	6.5734	.98863	21	.16763	.17004	5.8811	.98585	21
40	.15069	.15243	6.5606	.98858	20	.16792	.17033	5.8708	.98580	20
41	.15097	.15272	6.5478	.98854	19	.16820	.17063	5.8605	.98575	19
42	.15126	.15302	6.5350	.98849	18	.16849	.17093	5.8502	.98570	18
43	.15155	.15332	6.5223	.98845	17	.16878	.17123	5.8400	.98565	17
44	.15184	.15362	6.5097	.98841	16	.16906	.17153	5.8298	.98561	16
45	.15212	.15391	6.4971	.98836	15	.16935	.17183	5.8197	.98556	15
46	.15241	.15421	6.4846	.98832	14	.16964	.17213	5.8095	.98551	14
47	.15270	.15451	6.4721	.98827	13	.16992	.17243	5.7994	.98546	13
48	.15299	.15481	6.4596	.98823	12	.17021	.17273	5.7894	.98541	12
49	.15327	.15511	6.4472	.98818	11	.17050	.17303	5.7794	.98536	11
50	.15356	.15540	6.4348	.98814	10	.17078	.17333	5.7694	.98531	10
51	.15385	.15570	6.4225	.98809	9	.17107	.17363	5.7594	.98526	9
52	.15414	.15600	6.4103	.98805	8	.17136	.17393	5.7495	.98521	8
53	.15442	.15630	6.3980	.98800	7	.17164	.17423	5.7396	.98516	7
54	.15471	.15660	6.3859	.98796	6	.17193	.17453	5.7297	.98511	6
55	.15500	.15689	6.3737	.98791	5	.17222	.17483	5.7199	.98506	5
56	.15529	.15719	6.3617	.98787	4	.17250	.17513	5.7101	.98501	4
57	.15557	.15749	6.3496	.98782	3	.17279	.17543	5.7004	.98496	3
58	.15586	.15779	6.3376	.98778	2	.17308	.17573	5.6906	.98491	2
59	.15615	.15809	6.3257	.98773	1	.17336	.17603	5.6809	.98486	1
60	.15643	.15838	6.3138	.98769	0	.17365	.17633	5.6713	.98481	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

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NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

10°					11°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.17365	.17633	5.6713	.98481	60	.19081	.19438	5.1446	.98163	60
1	.17393	.17663	5.6617	.98476	59	.19109	.19468	5.1366	.98157	59
2	.17422	.17693	5.6521	.98471	58	.19138	.19498	5.1286	.98152	58
3	.17451	.17723	5.6425	.98466	57	.19167	.19529	5.1207	.98146	57
4	.17479	.17753	5.6329	.98461	56	.19195	.19559	5.1128	.98140	56
5	.17508	.17783	5.6234	.98455	55	.19224	.19589	5.1049	.98135	55
6	.17537	.17813	5.6140	.98450	54	.19252	.19619	5.0970	.98129	54
7	.17565	.17843	5.6045	.98445	53	.19281	.19649	5.0892	.98124	53
8	.17594	.17873	5.5951	.98440	52	.19309	.19680	5.0814	.98118	52
9	.17623	.17903	5.5857	.98435	51	.19338	.19710	5.0736	.98112	51
10	.17651	.17933	5.5764	.98430	50	.19366	.19740	5.0658	.98107	50
11	.17680	.17963	5.5671	.98425	49	.19395	.19770	5.0581	.98101	49
12	.17708	.17993	5.5578	.98420	48	.19423	.19801	5.0504	.98096	48
13	.17737	.18023	5.5485	.98414	47	.19452	.19831	5.0427	.98090	47
14	.17766	.18053	5.5393	.98409	46	.19481	.19861	5.0350	.98084	46
15	.17794	.18083	5.5301	.98404	45	.19509	.19891	5.0273	.98079	45
16	.17823	.18113	5.5209	.98399	44	.19538	.19921	5.0197	.98073	44
17	.17852	.18143	5.5118	.98394	43	.19566	.19952	5.0121	.98067	43
18	.17880	.18173	5.5026	.98389	42	.19595	.19982	5.0045	.98061	42
19	.17909	.18203	5.4936	.98383	41	.19623	.20012	4.9969	.98056	41
20	.17937	.18233	5.4845	.98378	40	.19652	.20042	4.9894	.98050	40
21	.17966	.18263	5.4755	.98373	39	.19680	.20073	4.9819	.98044	39
22	.17995	.18293	5.4665	.98368	38	.19709	.20103	4.9744	.98039	38
23	.18023	.18323	5.4575	.98362	37	.19737	.20133	4.9669	.98033	37
24	.18052	.18353	5.4486	.98357	36	.19766	.20164	4.9594	.98027	36
25	.18081	.18384	5.4397	.98352	35	.19794	.20194	4.9520	.98021	35
26	.18109	.18414	5.4308	.98347	34	.19823	.20224	4.9446	.98016	34
27	.18138	.18444	5.4219	.98341	33	.19851	.20254	4.9372	.98010	33
28	.18166	.18474	5.4131	.98336	32	.19880	.20285	4.9298	.98004	32
29	.18195	.18504	5.4043	.98331	31	.19908	.20315	4.9225	.97998	31
30	.18224	.18534	5.3955	.98325	30	.19937	.20345	4.9152	.97992	30
31	.18252	.18564	5.3868	.98320	29	.19965	.20376	4.9078	.97987	29
32	.18281	.18594	5.3781	.98315	28	.19994	.20406	4.9006	.97981	28
33	.18309	.18624	5.3694	.98310	27	.20022	.20436	4.8933	.97975	27
34	.18338	.18654	5.3607	.98304	26	.20051	.20466	4.8860	.97969	26
35	.18367	.18684	5.3521	.98299	25	.20079	.20497	4.8788	.97963	25
36	.18395	.18714	5.3435	.98294	24	.20108	.20527	4.8716	.97958	24
37	.18424	.18745	5.3349	.98288	23	.20136	.20557	4.8644	.97952	23
38	.18452	.18775	5.3263	.98283	22	.20165	.20588	4.8573	.97946	22
39	.18481	.18805	5.3178	.98277	21	.20193	.20618	4.8501	.97940	21
40	.18509	.18835	5.3093	.98272	20	.20222	.20648	4.8430	.97934	20
41	.18538	.18865	5.3008	.98267	19	.20250	.20679	4.8359	.97928	19
42	.18567	.18895	5.2924	.98261	18	.20279	.20709	4.8288	.97922	18
43	.18595	.18925	5.2839	.98256	17	.20307	.20739	4.8218	.97916	17
44	.18624	.18955	5.2755	.98250	16	.20336	.20770	4.8147	.97910	16
45	.18652	.18986	5.2672	.98245	15	.20364	.20800	4.8077	.97905	15
46	.18681	.19016	5.2588	.98240	14	.20393	.20830	4.8007	.97899	14
47	.18710	.19046	5.2505	.98234	13	.20421	.20861	4.7937	.97893	13
48	.18738	.19076	5.2422	.98229	12	.20450	.20891	4.7867	.97887	12
49	.18767	.19106	5.2339	.98223	11	.20478	.20921	4.7798	.97881	11
50	.18795	.19136	5.2257	.98218	10	.20507	.20952	4.7729	.97875	10
51	.18824	.19166	5.2174	.98212	9	.20535	.20982	4.7659	.97869	9
52	.18852	.19197	5.2092	.98207	8	.20563	.21013	4.7591	.97863	8
53	.18881	.19227	5.2011	.98201	7	.20592	.21043	4.7522	.97857	7
54	.18910	.19257	5.1929	.98196	6	.20620	.21073	4.7453	.97851	6
55	.18938	.19287	5.1848	.98190	5	.20649	.21104	4.7385	.97845	5
56	.18967	.19317	5.1767	.98185	4	.20677	.21134	4.7317	.97839	4
57	.18995	.19347	5.1686	.98179	3	.20706	.21164	4.7249	.97833	3
58	.19024	.19378	5.1606	.98174	2	.20734	.21195	4.7181	.97827	2
59	.19052	.19408	5.1526	.98168	1	.20763	.21225	4.7114	.97821	1
60	.19081	.19438	5.1446	.98163	0	.20791	.21256	4.7046	.97815	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

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NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

12°					13°						
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'	
0	.20791	.21256	4.7046	.97815	60	0	.22495	.23087	4.3315	.97437	60
1	.20820	.21286	4.6979	.97809	59	1	.22523	.23117	4.3257	.97430	59
2	.20848	.21316	4.6912	.97803	58	2	.22552	.23148	4.3200	.97424	58
3	.20877	.21347	4.6845	.97797	57	3	.22580	.23179	4.3143	.97417	57
4	.20905	.21377	4.6779	.97791	56	4	.22608	.23209	4.3086	.97411	56
5	.20933	.21408	4.6712	.97784	55	5	.22637	.23240	4.3029	.97404	55
6	.20962	.21438	4.6646	.97778	54	6	.22665	.23271	4.2972	.97398	54
7	.20990	.21469	4.6580	.97772	53	7	.22693	.23301	4.2916	.97391	53
8	.21019	.21499	4.6514	.97766	52	8	.22722	.23332	4.2859	.97384	52
9	.21047	.21529	4.6448	.97760	51	9	.22750	.23363	4.2803	.97378	51
10	.21076	.21560	4.6382	.97754	50	10	.22778	.23393	4.2747	.97371	50
11	.21104	.21590	4.6317	.97748	49	11	.22807	.23424	4.2691	.97365	49
12	.21132	.21621	4.6252	.97742	48	12	.22835	.23455	4.2635	.97358	48
13	.21161	.21651	4.6187	.97735	47	13	.22863	.23485	4.2580	.97351	47
14	.21189	.21682	4.6122	.97729	46	14	.22892	.23516	4.2524	.97345	46
15	.21218	.21712	4.6057	.97723	45	15	.22920	.23547	4.2468	.97338	45
16	.21246	.21743	4.5993	.97717	44	16	.22948	.23578	4.2413	.97331	44
17	.21275	.21773	4.5929	.97711	43	17	.22977	.23608	4.2358	.97325	43
18	.21303	.21804	4.5864	.97705	42	18	.23005	.23639	4.2303	.97318	42
19	.21331	.21834	4.5800	.97698	41	19	.23033	.23670	4.2248	.97311	41
20	.21360	.21864	4.5736	.97692	40	20	.23062	.23700	4.2193	.97304	40
21	.21388	.21895	4.5673	.97686	39	21	.23090	.23731	4.2139	.97298	39
22	.21417	.21925	4.5609	.97680	38	22	.23118	.23762	4.2084	.97291	38
23	.21445	.21956	4.5546	.97673	37	23	.23146	.23793	4.2030	.97284	37
24	.21474	.21986	4.5483	.97667	36	24	.23175	.23823	4.1976	.97278	36
25	.21502	.22017	4.5420	.97661	35	25	.23203	.23854	4.1922	.97271	35
26	.21530	.22047	4.5357	.97655	34	26	.23231	.23885	4.1868	.97264	34
27	.21559	.22078	4.5294	.97648	33	27	.23259	.23916	4.1814	.97257	33
28	.21587	.22108	4.5232	.97642	32	28	.23288	.23946	4.1760	.97251	32
29	.21616	.22139	4.5169	.97636	31	29	.23316	.23977	4.1706	.97244	31
30	.21644	.22169	4.5107	.97630	30	30	.23345	.24008	4.1653	.97237	30
31	.21672	.22200	4.5045	.97623	29	31	.23373	.24039	4.1600	.97230	29
32	.21701	.22231	4.4983	.97617	28	32	.23401	.24069	4.1547	.97223	28
33	.21729	.22261	4.4922	.97611	27	33	.23429	.24100	4.1493	.97217	27
34	.21758	.22292	4.4860	.97604	26	34	.23458	.24131	4.1441	.97210	26
35	.21786	.22322	4.4799	.97598	25	35	.23486	.24162	4.1388	.97203	25
36	.21814	.22353	4.4737	.97592	24	36	.23514	.24193	4.1335	.97196	24
37	.21843	.22383	4.4676	.97585	23	37	.23542	.24223	4.1282	.97189	23
38	.21871	.22414	4.4615	.97579	22	38	.23571	.24254	4.1230	.97182	22
39	.21899	.22444	4.4555	.97573	21	39	.23599	.24285	4.1178	.97176	21
40	.21928	.22475	4.4494	.97566	20	40	.23627	.24316	4.1126	.97169	20
41	.21956	.22505	4.4434	.97560	19	41	.23656	.24347	4.1074	.97162	19
42	.21985	.22536	4.4373	.97553	18	42	.23684	.24377	4.1022	.97155	18
43	.22013	.22567	4.4313	.97547	17	43	.23712	.24408	4.0970	.97148	17
44	.22041	.22597	4.4253	.97541	16	44	.23740	.24439	4.0918	.97141	16
45	.22070	.22628	4.4191	.97534	15	45	.23769	.24470	4.0867	.97134	15
46	.22098	.22658	4.4131	.97528	14	46	.23797	.24501	4.0815	.97127	14
47	.22126	.22689	4.4075	.97521	13	47	.23825	.24532	4.0764	.97120	13
48	.22155	.22719	4.4015	.97515	12	48	.23853	.24562	4.0713	.97113	12
49	.22183	.22750	4.3956	.97508	11	49	.23882	.24593	4.0662	.97106	11
50	.22212	.22781	4.3897	.97502	10	50	.23910	.24624	4.0611	.97100	10
51	.22240	.22811	4.3838	.97496	9	51	.23938	.24655	4.0560	.97093	9
52	.22268	.22842	4.3779	.97489	8	52	.23966	.24686	4.0509	.97086	8
53	.22297	.22872	4.3721	.97483	7	53	.23995	.24717	4.0459	.97079	7
54	.22325	.22903	4.3662	.97476	6	54	.24023	.24747	4.0408	.97072	6
55	.22353	.22934	4.3604	.97470	5	55	.24051	.24778	4.0358	.97065	5
56	.22382	.22964	4.3546	.97463	4	56	.24079	.24809	4.0308	.97058	4
57	.22410	.22995	4.3488	.97457	3	57	.24108	.24840	4.0257	.97051	3
58	.22438	.23026	4.3430	.97450	2	58	.24136	.24871	4.0207	.97044	2
59	.22467	.23056	4.3372	.97444	1	59	.24164	.24902	4.0156	.97037	1
60	.22495	.23087	4.3315	.97437	0	60	.24192	.24933	4.0106	.97030	0
	Cos	Cot	Tan	Sin			Cos	Cot	Tan	Sin	

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NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

14°					15°				
°	Sin	Tan	Cot	Cos	°	Sin	Tan	Cot	Cos
0	.24192	.24933	4.0108	.97030	60	.25882	.26795	3.7321	.96593
1	.24220	.24964	4.0058	.97023	59	.25910	.26826	3.7277	.96585
2	.24249	.24995	4.0009	.97015	58	.25938	.26857	3.7234	.96578
3	.24277	.25026	3.9959	.97008	57	.25966	.26888	3.7191	.96570
4	.24305	.25056	3.9910	.97001	56	.25994	.26920	3.7148	.96562
5	.24333	.25087	3.9861	.96994	55	.26022	.26951	3.7105	.96555
6	.24362	.25118	3.9812	.96987	54	.26050	.26982	3.7062	.96547
7	.24390	.25149	3.9763	.96980	53	.26079	.27013	3.7019	.96540
8	.24418	.25180	3.9714	.96973	52	.26107	.27044	3.6976	.96532
9	.24446	.25211	3.9665	.96966	51	.26135	.27076	3.6933	.96524
10	.24474	.25242	3.9617	.96959	50	.26163	.27107	3.6891	.96517
11	.24503	.25273	3.9568	.96952	49	.26191	.27138	3.6848	.96509
12	.24531	.25304	3.9520	.96945	48	.26219	.27169	3.6806	.96502
13	.24559	.25335	3.9471	.96937	47	.26247	.27201	3.6764	.96494
14	.24587	.25366	3.9423	.96930	46	.26275	.27232	3.6722	.96486
15	.24615	.25397	3.9375	.96923	45	.26303	.27263	3.6680	.96479
16	.24644	.25428	3.9327	.96916	44	.26331	.27294	3.6638	.96471
17	.24672	.25459	3.9279	.96909	43	.26359	.27326	3.6596	.96463
18	.24700	.25490	3.9232	.96902	42	.26387	.27357	3.6554	.96456
19	.24728	.25521	3.9184	.96894	41	.26415	.27388	3.6512	.96448
20	.24756	.25552	3.9136	.96887	40	.26443	.27419	3.6470	.96440
21	.24784	.25583	3.9089	.96880	39	.26471	.27451	3.6428	.96433
22	.24813	.25614	3.9042	.96873	38	.26500	.27482	3.6387	.96425
23	.24841	.25645	3.8995	.96866	37	.26528	.27513	3.6346	.96417
24	.24869	.25676	3.8947	.96859	36	.26556	.27545	3.6305	.96410
25	.24897	.25707	3.8900	.96851	35	.26584	.27576	3.6264	.96402
26	.24925	.25738	3.8854	.96844	34	.26612	.27607	3.6222	.96394
27	.24954	.25769	3.8807	.96837	33	.26640	.27638	3.6181	.96386
28	.24982	.25800	3.8760	.96830	32	.26668	.27670	3.6140	.96379
29	.25010	.25831	3.8714	.96822	31	.26696	.27701	3.6100	.96371
30	.25038	.25862	3.8667	.96815	30	.26724	.27732	3.6059	.96363
31	.25066	.25893	3.8621	.96807	29	.26752	.27764	3.6018	.96355
32	.25094	.25924	3.8575	.96800	28	.26780	.27795	3.5978	.96347
33	.25122	.25955	3.8528	.96793	27	.26808	.27826	3.5937	.96340
34	.25151	.25986	3.8482	.96786	26	.26836	.27858	3.5897	.96332
35	.25179	.26017	3.8436	.96778	25	.26864	.27889	3.5856	.96324
36	.25207	.26048	3.8391	.96771	24	.26892	.27921	3.5816	.96316
37	.25235	.26079	3.8345	.96764	23	.26920	.27952	3.5776	.96308
38	.25263	.26110	3.8299	.96756	22	.26948	.27983	3.5736	.96301
39	.25291	.26141	3.8254	.96749	21	.26976	.28015	3.5696	.96293
40	.25320	.26172	3.8208	.96742	20	.27004	.28046	3.5656	.96285
41	.25348	.26203	3.8163	.96734	19	.27032	.28077	3.5616	.96277
42	.25376	.26235	3.8118	.96727	18	.27060	.28109	3.5576	.96269
43	.25404	.26266	3.8073	.96719	17	.27088	.28140	3.5536	.96261
44	.25432	.26297	3.8028	.96712	16	.27116	.28172	3.5497	.96253
45	.25460	.26328	3.7983	.96705	15	.27144	.28203	3.5457	.96246
46	.25488	.26359	3.7938	.96697	14	.27172	.28234	3.5418	.96238
47	.25516	.26390	3.7893	.96690	13	.27200	.28266	3.5379	.96230
48	.25545	.26421	3.7848	.96682	12	.27228	.28297	3.5339	.96222
49	.25573	.26452	3.7804	.96675	11	.27256	.28329	3.5300	.96214
50	.25601	.26483	3.7760	.96667	10	.27284	.28360	3.5261	.96206
51	.25629	.26515	3.7715	.96660	9	.27312	.28391	3.5222	.96198
52	.25657	.26546	3.7671	.96653	8	.27340	.28423	3.5183	.96190
53	.25685	.26577	3.7627	.96645	7	.27368	.28454	3.5144	.96182
54	.25713	.26608	3.7583	.96638	6	.27396	.28486	3.5105	.96174
55	.25741	.26639	3.7539	.96630	5	.27424	.28517	3.5067	.96166
56	.25769	.26670	3.7495	.96623	4	.27452	.28549	3.5028	.96158
57	.25797	.26701	3.7451	.96615	3	.27480	.28580	3.4989	.96150
58	.25826	.26733	3.7408	.96608	2	.27508	.28612	3.4951	.96142
59	.25854	.26764	3.7364	.96600	1	.27536	.28643	3.4912	.96134
60	.25882	.26795	3.7321	.96593	0	.27564	.28675	3.4874	.96126

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NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

16°					17°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.27564	.28675	3.4874	.96126	60	.29237	.30573	3.2709	.95630	60
1	.27592	.28706	3.4836	.96118	59	.29265	.30605	3.2675	.95622	59
2	.27620	.28738	3.4798	.96110	58	.29293	.30637	3.2641	.95613	58
3	.27648	.28769	3.4760	.96102	57	.29321	.30669	3.2607	.95605	57
4	.27676	.28801	3.4722	.96094	56	.29348	.30700	3.2573	.95596	56
5	.27704	.28832	3.4684	.96086	55	.29376	.30732	3.2539	.95588	55
6	.27731	.28864	3.4646	.96078	54	.29404	.30764	3.2506	.95579	54
7	.27759	.28895	3.4608	.96070	53	.29432	.30796	3.2472	.95571	53
8	.27787	.28927	3.4570	.96062	52	.29460	.30828	3.2438	.95562	52
9	.27815	.28958	3.4533	.96054	51	.29487	.30860	3.2405	.95554	51
10	.27843	.28990	3.4495	.96046	50	.29515	.30891	3.2371	.95545	50
11	.27871	.29021	3.4458	.96037	49	.29543	.30923	3.2338	.95536	49
12	.27899	.29053	3.4420	.96029	48	.29571	.30955	3.2305	.95528	48
13	.27927	.29084	3.4383	.96021	47	.29599	.30987	3.2272	.95519	47
14	.27955	.29116	3.4346	.96013	46	.29626	.31019	3.2238	.95511	46
15	.27983	.29147	3.4308	.96005	45	.29654	.31051	3.2205	.95502	45
16	.28011	.29179	3.4271	.95997	44	.29682	.31083	3.2172	.95493	44
17	.28039	.29210	3.4234	.95989	43	.29710	.31115	3.2139	.95485	43
18	.28067	.29242	3.4197	.95981	42	.29737	.31147	3.2106	.95476	42
19	.28095	.29274	3.4160	.95972	41	.29765	.31178	3.2073	.95467	41
20	.28123	.29305	3.4124	.95964	40	.29793	.31210	3.2041	.95459	40
21	.28150	.29337	3.4087	.95956	39	.29821	.31242	3.2008	.95450	39
22	.28178	.29368	3.4050	.95948	38	.29849	.31274	3.1975	.95441	38
23	.28206	.29400	3.4014	.95940	37	.29876	.31306	3.1943	.95433	37
24	.28234	.29432	3.3977	.95931	36	.29904	.31338	3.1910	.95424	36
25	.28262	.29463	3.3941	.95923	35	.29932	.31370	3.1878	.95415	35
26	.28290	.29495	3.3904	.95915	34	.29960	.31402	3.1845	.95407	34
27	.28318	.29526	3.3868	.95907	33	.29987	.31434	3.1813	.95398	33
28	.28346	.29558	3.3832	.95898	32	.30015	.31466	3.1780	.95389	32
29	.28374	.29590	3.3796	.95890	31	.30043	.31498	3.1748	.95380	31
30	.28402	.29621	3.3759	.95882	30	.30071	.31530	3.1716	.95372	30
31	.28429	.29653	3.3723	.95874	29	.30098	.31562	3.1684	.95363	29
32	.28457	.29685	3.3687	.95865	28	.30126	.31594	3.1652	.95354	28
33	.28485	.29716	3.3652	.95857	27	.30154	.31626	3.1620	.95345	27
34	.28513	.29748	3.3616	.95849	26	.30182	.31658	3.1588	.95337	26
35	.28541	.29780	3.3580	.95841	25	.30209	.31690	3.1556	.95328	25
36	.28569	.29811	3.3544	.95832	24	.30237	.31722	3.1524	.95319	24
37	.28597	.29843	3.3509	.95824	23	.30265	.31754	3.1492	.95310	23
38	.28625	.29875	3.3473	.95816	22	.30292	.31786	3.1460	.95301	22
39	.28652	.29906	3.3438	.95807	21	.30320	.31818	3.1429	.95292	21
40	.28680	.29938	3.3402	.95799	20	.30348	.31850	3.1397	.95284	20
41	.28708	.29970	3.3367	.95791	19	.30376	.31882	3.1366	.95275	19
42	.28736	.30001	3.3332	.95782	18	.30403	.31914	3.1334	.95266	18
43	.28764	.30033	3.3297	.95774	17	.30431	.31946	3.1303	.95257	17
44	.28792	.30065	3.3261	.95766	16	.30459	.31978	3.1271	.95248	16
45	.28820	.30097	3.3226	.95757	15	.30486	.32010	3.1240	.95240	15
46	.28847	.30128	3.3191	.95749	14	.30514	.32042	3.1209	.95231	14
47	.28875	.30160	3.3156	.95740	13	.30542	.32074	3.1178	.95222	13
48	.28903	.30192	3.3122	.95732	12	.30570	.32106	3.1146	.95213	12
49	.28930	.30224	3.3087	.95724	11	.30597	.32139	3.1115	.95204	11
50	.28959	.30255	3.3052	.95715	10	.30625	.32171	3.1084	.95195	10
51	.28987	.30287	3.3017	.95707	9	.30653	.32203	3.1053	.95186	9
52	.29015	.30319	3.2983	.95698	8	.30680	.32235	3.1022	.95177	8
53	.29042	.30351	3.2948	.95690	7	.30708	.32267	3.0991	.95168	7
54	.29070	.30382	3.2914	.95681	6	.30736	.32299	3.0961	.95159	6
55	.29098	.30414	3.2879	.95673	5	.30763	.32331	3.0930	.95150	5
56	.29126	.30446	3.2845	.95664	4	.30791	.32363	3.0899	.95142	4
57	.29154	.30478	3.2811	.95655	3	.30819	.32396	3.0868	.95133	3
58	.29182	.30509	3.2777	.95647	2	.30846	.32428	3.0838	.95124	2
59	.29209	.30541	3.2743	.95639	1	.30874	.32460	3.0807	.95115	1
60	.29237	.30573	3.2709	.95630	0	.30902	.32492	3.0777	.95106	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

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NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

18°				19°							
°	Sin	Tan	Cot	Cos	°	Sin	Tan	Cot	Cos	°	
0	.30902	.32492	3.0777	.95106	60	0	.32557	.34433	2.9042	.94552	60
1	.30929	.32524	3.0746	.95097	59	1	.32584	.34465	2.9015	.94542	59
2	.30957	.32556	3.0716	.95088	58	2	.32612	.34498	2.8987	.94533	58
3	.30985	.32588	3.0686	.95079	57	3	.32639	.34530	2.8960	.94523	57
4	.31012	.32621	3.0655	.95070	56	4	.32667	.34563	2.8933	.94514	56
5	.31040	.32653	3.0625	.95061	55	5	.32694	.34596	2.8905	.94504	55
6	.31068	.32685	3.0595	.95052	54	6	.32722	.34628	2.8878	.94495	54
7	.31095	.32717	3.0565	.95043	53	7	.32749	.34661	2.8851	.94485	53
8	.31123	.32749	3.0535	.95033	52	8	.32777	.34693	2.8824	.94476	52
9	.31151	.32782	3.0505	.95024	51	9	.32804	.34726	2.8797	.94466	51
10	.31178	.32814	3.0475	.95015	50	10	.32832	.34758	2.8770	.94457	50
11	.31206	.32846	3.0445	.95006	49	11	.32859	.34791	2.8743	.94447	49
12	.31233	.32878	3.0415	.94997	48	12	.32887	.34824	2.8716	.94438	48
13	.31261	.32911	3.0385	.94988	47	13	.32914	.34856	2.8689	.94428	47
14	.31289	.32943	3.0356	.94979	46	14	.32942	.34889	2.8662	.94418	46
15	.31316	.32975	3.0326	.94970	45	15	.32969	.34922	2.8636	.94409	45
16	.31344	.33007	3.0296	.94961	44	16	.32997	.34954	2.8609	.94399	44
17	.31372	.33040	3.0267	.94952	43	17	.33024	.34987	2.8582	.94390	43
18	.31399	.33072	3.0237	.94943	42	18	.33051	.35020	2.8556	.94380	42
19	.31427	.33104	3.0208	.94933	41	19	.33079	.35052	2.8529	.94370	41
20	.31454	.33136	3.0178	.94924	40	20	.33106	.35085	2.8502	.94361	40
21	.31482	.33169	3.0149	.94915	39	21	.33134	.35118	2.8476	.94351	39
22	.31510	.33201	3.0120	.94906	38	22	.33161	.35150	2.8449	.94342	38
23	.31537	.33233	3.0090	.94897	37	23	.33189	.35183	2.8423	.94332	37
24	.31565	.33266	3.0061	.94888	36	24	.33216	.35216	2.8397	.94322	36
25	.31593	.33298	3.0032	.94878	35	25	.33244	.35248	2.8370	.94313	35
26	.31620	.33330	3.0003	.94869	34	26	.33271	.35281	2.8344	.94303	34
27	.31648	.33363	2.9974	.94860	33	27	.33298	.35314	2.8318	.94293	33
28	.31675	.33395	2.9945	.94851	32	28	.33326	.35346	2.8291	.94284	32
29	.31703	.33427	2.9916	.94842	31	29	.33353	.35379	2.8265	.94274	31
30	.31730	.33460	2.9887	.94833	30	30	.33381	.35412	2.8239	.94264	30
31	.31758	.33492	2.9858	.94823	29	31	.33408	.35445	2.8213	.94254	29
32	.31786	.33524	2.9829	.94814	28	32	.33436	.35477	2.8187	.94245	28
33	.31813	.33557	2.9800	.94805	27	33	.33463	.35510	2.8161	.94235	27
34	.31841	.33589	2.9772	.94795	26	34	.33490	.35543	2.8135	.94226	26
35	.31868	.33621	2.9743	.94786	25	35	.33518	.35576	2.8109	.94215	25
36	.31896	.33654	2.9714	.94777	24	36	.33545	.35608	2.8083	.94206	24
37	.31923	.33686	2.9686	.94768	23	37	.33573	.35641	2.8057	.94196	23
38	.31951	.33718	2.9657	.94758	22	38	.33600	.35674	2.8032	.94186	22
39	.31979	.33751	2.9629	.94749	21	39	.33627	.35707	2.8006	.94176	21
40	.32006	.33783	2.9600	.94740	20	40	.33655	.35740	2.7980	.94167	20
41	.32034	.33816	2.9572	.94730	19	41	.33682	.35772	2.7955	.94157	19
42	.32061	.33848	2.9544	.94721	18	42	.33710	.35805	2.7929	.94147	18
43	.32089	.33881	2.9515	.94712	17	43	.33737	.35838	2.7903	.94137	17
44	.32116	.33913	2.9487	.94702	16	44	.33764	.35871	2.7878	.94127	16
45	.32144	.33945	2.9459	.94693	15	45	.33792	.35904	2.7852	.94118	15
46	.32171	.33978	2.9431	.94684	14	46	.33819	.35937	2.7827	.94108	14
47	.32199	.34010	2.9403	.94674	13	47	.33846	.35969	2.7801	.94098	13
48	.32227	.34043	2.9375	.94665	12	48	.33874	.36002	2.7776	.94088	12
49	.32254	.34075	2.9347	.94656	11	49	.33901	.36035	2.7751	.94078	11
50	.32282	.34108	2.9319	.94646	10	50	.33929	.36068	2.7725	.94068	10
51	.32309	.34140	2.9291	.94637	9	51	.33956	.36101	2.7700	.94058	9
52	.32337	.34173	2.9263	.94627	8	52	.33983	.36134	2.7675	.94049	8
53	.32364	.34205	2.9235	.94618	7	53	.34011	.36167	2.7650	.94039	7
54	.32392	.34238	2.9208	.94609	6	54	.34038	.36199	2.7625	.94029	6
55	.32419	.34270	2.9180	.94599	5	55	.34065	.36232	2.7600	.94019	5
56	.32447	.34303	2.9152	.94590	4	56	.34093	.36265	2.7575	.94009	4
57	.32474	.34335	2.9125	.94580	3	57	.34120	.36298	2.7550	.93999	3
58	.32502	.34368	2.9097	.94571	2	58	.34147	.36331	2.7525	.93989	2
59	.32529	.34400	2.9070	.94561	1	59	.34175	.36364	2.7500	.93979	1
60	.32557	.34433	2.9042	.94552	0	60	.34202	.36397	2.7475	.93969	0
°	Cos	Cot	Tan	Sin	°	Cos	Cot	Tan	Sin	°	

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NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

20°					21°						
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'	
0	.34202	.36397	2.7475	.93969	60	.35837	.38386	2.6051	.93358	60	
1	.34229	.36430	2.7450	.93959	59	1	.35864	.38420	2.6028	.93348	59
2	.34257	.36463	2.7425	.93949	58	2	.35891	.38453	2.6006	.93337	58
3	.34284	.36496	2.7400	.93939	57	3	.35918	.38487	2.5983	.93327	57
4	.34311	.36529	2.7376	.93929	56	4	.35945	.38520	2.5961	.93316	56
5	.34339	.36562	2.7351	.93919	55	5	.35973	.38553	2.5938	.93306	55
6	.34366	.36595	2.7326	.93909	54	6	.36000	.38587	2.5916	.93295	54
7	.34393	.36628	2.7302	.93899	53	7	.36027	.38620	2.5893	.93285	53
8	.34421	.36661	2.7277	.93889	52	8	.36054	.38654	2.5871	.93274	52
9	.34448	.36694	2.7253	.93879	51	9	.36081	.38687	2.5848	.93264	51
10	.34475	.36727	2.7228	.93869	50	10	.36108	.38721	2.5826	.93253	50
11	.34503	.36760	2.7204	.93859	49	11	.36135	.38754	2.5804	.93243	49
12	.34530	.36793	2.7179	.93849	48	12	.36162	.38787	2.5782	.93232	48
13	.34557	.36826	2.7155	.93839	47	13	.36190	.38821	2.5760	.93222	47
14	.34584	.36859	2.7130	.93829	46	14	.36217	.38854	2.5737	.93211	46
15	.34612	.36892	2.7106	.93819	45	15	.36244	.38888	2.5715	.93201	45
16	.34639	.36925	2.7082	.93809	44	16	.36271	.38921	2.5693	.93190	44
17	.34666	.36958	2.7058	.93799	43	17	.36298	.38955	2.5671	.93180	43
18	.34694	.36991	2.7034	.93789	42	18	.36325	.38988	2.5649	.93169	42
19	.34721	.37024	2.7009	.93779	41	19	.36352	.39022	2.5627	.93159	41
20	.34748	.37057	2.6985	.93769	40	20	.36379	.39055	2.5605	.93148	40
21	.34775	.37090	2.6961	.93759	39	21	.36406	.39089	2.5583	.93137	39
22	.34803	.37123	2.6937	.93748	38	22	.36434	.39122	2.5561	.93127	38
23	.34830	.37157	2.6913	.93738	37	23	.36461	.39156	2.5539	.93116	37
24	.34857	.37190	2.6889	.93728	36	24	.36488	.39190	2.5517	.93106	36
25	.34884	.37223	2.6865	.93718	35	25	.36515	.39223	2.5495	.93095	35
26	.34912	.37256	2.6841	.93708	34	26	.36542	.39257	2.5473	.93084	34
27	.34939	.37289	2.6818	.93698	33	27	.36569	.39290	2.5452	.93074	33
28	.34966	.37322	2.6794	.93688	32	28	.36596	.39324	2.5430	.93063	32
29	.34993	.37355	2.6770	.93677	31	29	.36623	.39357	2.5408	.93053	31
30	.35021	.37388	2.6746	.93667	30	30	.36650	.39391	2.5386	.93042	30
31	.35048	.37422	2.6723	.93657	29	31	.36677	.39425	2.5365	.93031	29
32	.35075	.37455	2.6699	.93647	28	32	.36704	.39458	2.5343	.93020	28
33	.35102	.37488	2.6675	.93637	27	33	.36731	.39492	2.5322	.93010	27
34	.35130	.37521	2.6652	.93626	26	34	.36758	.39526	2.5300	.92999	26
35	.35157	.37554	2.6628	.93616	25	35	.36785	.39559	2.5279	.92988	25
36	.35184	.37588	2.6605	.93606	24	36	.36812	.39593	2.5257	.92978	24
37	.35211	.37621	2.6581	.93596	23	37	.36839	.39626	2.5236	.92967	23
38	.35239	.37654	2.6558	.93586	22	38	.36866	.39660	2.5214	.92956	22
39	.35266	.37687	2.6534	.93575	21	39	.36894	.39694	2.5193	.92945	21
40	.35293	.37720	2.6511	.93565	20	40	.36921	.39727	2.5172	.92935	20
41	.35320	.37754	2.6488	.93555	19	41	.36948	.39761	2.5150	.92924	19
42	.35347	.37787	2.6464	.93544	18	42	.36975	.39795	2.5129	.92913	18
43	.35375	.37820	2.6441	.93534	17	43	.37002	.39829	2.5108	.92902	17
44	.35402	.37853	2.6418	.93524	16	44	.37029	.39862	2.5086	.92892	16
45	.35429	.37887	2.6395	.93514	15	45	.37056	.39896	2.5065	.92881	15
46	.35456	.37920	2.6371	.93503	14	46	.37083	.39930	2.5044	.92870	14
47	.35484	.37953	2.6348	.93493	13	47	.37110	.39963	2.5023	.92859	13
48	.35511	.37986	2.6325	.93483	12	48	.37137	.39997	2.5002	.92849	12
49	.35538	.38020	2.6302	.93472	11	49	.37164	.40031	2.4981	.92838	11
50	.35565	.38053	2.6279	.93462	10	50	.37191	.40065	2.4960	.92827	10
51	.35592	.38086	2.6256	.93452	9	51	.37218	.40098	2.4939	.92816	9
52	.35619	.38120	2.6233	.93441	8	52	.37245	.40132	2.4918	.92805	8
53	.35647	.38153	2.6210	.93431	7	53	.37272	.40166	2.4897	.92794	7
54	.35674	.38186	2.6187	.93420	6	54	.37299	.40200	2.4876	.92784	6
55	.35701	.38220	2.6165	.93410	5	55	.37326	.40234	2.4855	.92773	5
56	.35728	.38253	2.6142	.93400	4	56	.37353	.40267	2.4834	.92762	4
57	.35755	.38286	2.6119	.93389	3	57	.37380	.40301	2.4813	.92751	3
58	.35782	.38320	2.6096	.93379	2	58	.37407	.40335	2.4792	.92740	2
59	.35810	.38353	2.6074	.93368	1	59	.37434	.40369	2.4772	.92729	1
60	.35837	.38386	2.6051	.93358	0	60	.37461	.40403	2.4751	.92718	0
'	Cos	Cot	Tan	Sin	'	'	Cos	Cot	Tan	Sin	'
69°					68°						

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

22°					23°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.37451	.40403	2.4751	.92718	60	.39073	.42447	2.3559	.92050	60
1	.37488	.40436	2.4730	.92707	59	.39100	.42482	2.3539	.92039	59
2	.37515	.40470	2.4709	.92697	58	.39127	.42516	2.3520	.92028	58
3	.37542	.40504	2.4689	.92686	57	.39153	.42551	2.3501	.92016	57
4	.37569	.40538	2.4668	.92675	56	.39180	.42585	2.3483	.92005	56
5	.37595	.40572	2.4648	.92664	55	.39207	.42619	2.3464	.91994	55
6	.37622	.40606	2.4627	.92653	54	.39234	.42654	2.3445	.91982	54
7	.37649	.40640	2.4606	.92642	53	.39260	.42688	2.3426	.91971	53
8	.37676	.40674	2.4586	.92631	52	.39287	.42722	2.3407	.91959	52
9	.37703	.40707	2.4566	.92620	51	.39314	.42757	2.3388	.91948	51
10	.37730	.40741	2.4545	.92609	50	.39341	.42791	2.3369	.91936	50
11	.37757	.40775	2.4525	.92598	49	.39367	.42826	2.3351	.91925	49
12	.37784	.40809	2.4504	.92587	48	.39394	.42860	2.3332	.91914	48
13	.37811	.40843	2.4484	.92576	47	.39421	.42894	2.3313	.91902	47
14	.37838	.40877	2.4464	.92565	46	.39448	.42929	2.3294	.91891	46
15	.37865	.40911	2.4443	.92554	45	.39474	.42963	2.3276	.91879	45
16	.37892	.40945	2.4423	.92543	44	.39501	.42998	2.3257	.91868	44
17	.37919	.40979	2.4403	.92532	43	.39528	.43032	2.3238	.91856	43
18	.37946	.41013	2.4383	.92521	42	.39555	.43067	2.3220	.91845	42
19	.37973	.41047	2.4362	.92510	41	.39581	.43101	2.3201	.91833	41
20	.37999	.41081	2.4342	.92499	40	.39608	.43136	2.3183	.91822	40
21	.38026	.41115	2.4322	.92488	39	.39635	.43170	2.3164	.91810	39
22	.38053	.41149	2.4302	.92477	38	.39661	.43205	2.3146	.91799	38
23	.38080	.41183	2.4282	.92466	37	.39688	.43239	2.3127	.91787	37
24	.38107	.41217	2.4262	.92455	36	.39715	.43274	2.3109	.91775	36
25	.38134	.41251	2.4242	.92444	35	.39741	.43308	2.3090	.91764	35
26	.38161	.41285	2.4222	.92432	34	.39768	.43343	2.3072	.91752	34
27	.38188	.41319	2.4202	.92421	33	.39795	.43378	2.3053	.91741	33
28	.38215	.41353	2.4182	.92410	32	.39822	.43412	2.3035	.91729	32
29	.38241	.41387	2.4162	.92399	31	.39848	.43447	2.3017	.91718	31
30	.38268	.41421	2.4142	.92388	30	.39875	.43481	2.2998	.91706	30
31	.38295	.41455	2.4122	.92377	29	.39902	.43516	2.2980	.91694	29
32	.38322	.41490	2.4102	.92366	28	.39928	.43550	2.2962	.91683	28
33	.38349	.41524	2.4083	.92355	27	.39955	.43585	2.2944	.91671	27
34	.38376	.41558	2.4063	.92343	26	.39982	.43620	2.2925	.91660	26
35	.38403	.41592	2.4043	.92332	25	.40008	.43654	2.2907	.91648	25
36	.38430	.41626	2.4023	.92321	24	.40035	.43689	2.2889	.91636	24
37	.38456	.41660	2.4004	.92310	23	.40062	.43724	2.2871	.91625	23
38	.38483	.41694	2.3984	.92299	22	.40088	.43758	2.2853	.91613	22
39	.38510	.41728	2.3964	.92287	21	.40115	.43793	2.2835	.91601	21
40	.38537	.41763	2.3945	.92276	20	.40141	.43828	2.2817	.91590	20
41	.38564	.41797	2.3925	.92265	19	.40168	.43862	2.2799	.91578	19
42	.38591	.41831	2.3906	.92254	18	.40195	.43897	2.2781	.91566	18
43	.38617	.41865	2.3886	.92243	17	.40221	.43932	2.2763	.91555	17
44	.38644	.41899	2.3867	.92231	16	.40248	.43966	2.2745	.91543	16
45	.38671	.41933	2.3847	.92220	15	.40275	.44001	2.2727	.91531	15
46	.38698	.41968	2.3828	.92209	14	.40301	.44036	2.2709	.91519	14
47	.38725	.42002	2.3808	.92198	13	.40328	.44071	2.2691	.91508	13
48	.38752	.42036	2.3789	.92186	12	.40355	.44105	2.2673	.91496	12
49	.38778	.42070	2.3770	.92175	11	.40381	.44140	2.2655	.91484	11
50	.38805	.42105	2.3750	.92164	10	.40408	.44175	2.2637	.91472	10
51	.38832	.42139	2.3731	.92152	9	.40434	.44210	2.2620	.91461	9
52	.38859	.42173	2.3712	.92141	8	.40461	.44244	2.2602	.91449	8
53	.38886	.42207	2.3693	.92130	7	.40488	.44279	2.2584	.91437	7
54	.38912	.42242	2.3673	.92119	6	.40514	.44314	2.2566	.91425	6
55	.38939	.42276	2.3654	.92107	5	.40541	.44349	2.2549	.91414	5
56	.38966	.42310	2.3635	.92096	4	.40567	.44384	2.2531	.91402	4
57	.38993	.42345	2.3616	.92085	3	.40594	.44418	2.2513	.91390	3
58	.39020	.42379	2.3597	.92073	2	.40621	.44453	2.2496	.91378	2
59	.39046	.42413	2.3578	.92062	1	.40647	.44488	2.2478	.91366	1
60	.39073	.42447	2.3559	.92050	0	.40674	.44523	2.2460	.91355	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

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66°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

24°					25°						
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'	
0	.40674	.44523	2.2460	.91355	60	0	.42262	.46631	2.1445	.90631	60
1	.40700	.44558	2.2443	.91343	59	1	.42288	.46666	2.1429	.90618	59
2	.40727	.44593	2.2425	.91331	58	2	.42315	.46702	2.1413	.90606	58
3	.40753	.44627	2.2408	.91319	57	3	.42341	.46737	2.1396	.90594	57
4	.40780	.44662	2.2390	.91307	56	4	.42367	.46772	2.1380	.90582	56
5	.40806	.44697	2.2373	.91295	55	5	.42394	.46808	2.1364	.90569	55
6	.40833	.44732	2.2355	.91283	54	6	.42420	.46843	2.1348	.90557	54
7	.40860	.44767	2.2338	.91272	53	7	.42446	.46879	2.1332	.90545	53
8	.40886	.44802	2.2320	.91260	52	8	.42473	.46914	2.1315	.90532	52
9	.40913	.44837	2.2303	.91248	51	9	.42499	.46950	2.1299	.90520	51
10	.40939	.44872	2.2286	.91236	50	10	.42525	.46985	2.1283	.90507	50
11	.40966	.44907	2.2268	.91224	49	11	.42552	.47021	2.1267	.90495	49
12	.40992	.44942	2.2251	.91212	48	12	.42578	.47056	2.1251	.90483	48
13	.41019	.44977	2.2234	.91200	47	13	.42604	.47092	2.1235	.90470	47
14	.41045	.45012	2.2216	.91188	46	14	.42631	.47128	2.1219	.90458	46
15	.41072	.45047	2.2199	.91176	45	15	.42657	.47163	2.1203	.90446	45
16	.41098	.45082	2.2182	.91164	44	16	.42683	.47199	2.1187	.90433	44
17	.41125	.45117	2.2165	.91152	43	17	.42709	.47234	2.1171	.90421	43
18	.41151	.45152	2.2148	.91140	42	18	.42736	.47270	2.1155	.90408	42
19	.41178	.45187	2.2130	.91128	41	19	.42762	.47305	2.1139	.90396	41
20	.41204	.45222	2.2113	.91116	40	20	.42788	.47341	2.1123	.90383	40
21	.41231	.45257	2.2096	.91104	39	21	.42815	.47377	2.1107	.90371	39
22	.41257	.45292	2.2079	.91092	38	22	.42841	.47412	2.1092	.90358	38
23	.41284	.45327	2.2062	.91080	37	23	.42867	.47448	2.1076	.90346	37
24	.41310	.45362	2.2045	.91068	36	24	.42894	.47483	2.1060	.90334	36
25	.41337	.45397	2.2028	.91056	35	25	.42920	.47519	2.1044	.90321	35
26	.41363	.45432	2.2011	.91044	34	26	.42946	.47555	2.1028	.90309	34
27	.41390	.45467	2.1994	.91032	33	27	.42972	.47590	2.1013	.90296	33
28	.41416	.45502	2.1977	.91020	32	28	.42999	.47626	2.0997	.90284	32
29	.41443	.45537	2.1960	.91008	31	29	.43025	.47662	2.0981	.90271	31
30	.41469	.45573	2.1943	.90996	30	30	.43051	.47698	2.0965	.90259	30
31	.41496	.45608	2.1926	.90984	29	31	.43077	.47733	2.0950	.90246	29
32	.41522	.45643	2.1909	.90972	28	32	.43104	.47769	2.0934	.90233	28
33	.41549	.45678	2.1892	.90960	27	33	.43130	.47805	2.0918	.90221	27
34	.41575	.45713	2.1876	.90948	26	34	.43156	.47840	2.0903	.90208	26
35	.41602	.45748	2.1859	.90936	25	35	.43182	.47876	2.0887	.90196	25
36	.41628	.45784	2.1842	.90924	24	36	.43209	.47912	2.0872	.90183	24
37	.41655	.45819	2.1825	.90911	23	37	.43235	.47948	2.0856	.90171	23
38	.41681	.45854	2.1808	.90899	22	38	.43261	.47984	2.0840	.90158	22
39	.41707	.45889	2.1792	.90887	21	39	.43287	.48019	2.0825	.90146	21
40	.41734	.45924	2.1775	.90875	20	40	.43313	.48055	2.0809	.90133	20
41	.41760	.45960	2.1758	.90863	19	41	.43340	.48091	2.0794	.90120	19
42	.41787	.45995	2.1742	.90851	18	42	.43366	.48127	2.0778	.90108	18
43	.41813	.46030	2.1725	.90839	17	43	.43392	.48163	2.0763	.90095	17
44	.41840	.46065	2.1708	.90826	16	44	.43418	.48198	2.0748	.90082	16
45	.41866	.46101	2.1692	.90814	15	45	.43445	.48234	2.0732	.90070	15
46	.41892	.46136	2.1675	.90802	14	46	.43471	.48270	2.0717	.90057	14
47	.41919	.46171	2.1659	.90790	13	47	.43497	.48306	2.0701	.90045	13
48	.41945	.46206	2.1642	.90778	12	48	.43523	.48342	2.0686	.90032	12
49	.41972	.46242	2.1625	.90766	11	49	.43549	.48378	2.0671	.90019	11
50	.41998	.46277	2.1609	.90753	10	50	.43575	.48414	2.0655	.90007	10
51	.42024	.46312	2.1592	.90741	9	51	.43602	.48450	2.0640	.89994	9
52	.42051	.46348	2.1576	.90729	8	52	.43628	.48486	2.0625	.89981	8
53	.42077	.46383	2.1560	.90717	7	53	.43654	.48521	2.0609	.89968	7
54	.42104	.46418	2.1543	.90704	6	54	.43680	.48557	2.0594	.89956	6
55	.42130	.46454	2.1527	.90692	5	55	.43706	.48593	2.0579	.89943	5
56	.42156	.46489	2.1510	.90680	4	56	.43733	.48629	2.0564	.89930	4
57	.42183	.46525	2.1494	.90668	3	57	.43759	.48665	2.0549	.89918	3
58	.42209	.46560	2.1478	.90655	2	58	.43785	.48701	2.0533	.89905	2
59	.42235	.46595	2.1461	.90643	1	59	.43811	.48737	2.0518	.89892	1
60	.42262	.46631	2.1445	.90631	0	60	.43837	.48773	2.0503	.89879	0
'	Cos	Cot	Tan	Sin	'	'	Cos	Cot	Tan	Sin	'

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64°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

26°					27°						
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'	
0	.43837	.48773	2.0503	.89879	60	0	.45399	.50953	1.9626	.89101	60
1	.43863	.48809	2.0488	.89867	59	1	.45425	.50989	1.9612	.89087	59
2	.43889	.48845	2.0473	.89854	58	2	.45451	.51026	1.9598	.89074	58
3	.43916	.48881	2.0458	.89841	57	3	.45477	.51063	1.9584	.89061	57
4	.43942	.48917	2.0443	.89828	56	4	.45503	.51099	1.9570	.89048	56
5	.43968	.48953	2.0428	.89816	55	5	.45529	.51136	1.9556	.89035	55
6	.43994	.48989	2.0413	.89803	54	6	.45554	.51173	1.9542	.89021	54
7	.44020	.49026	2.0398	.89790	53	7	.45580	.51209	1.9528	.89008	53
8	.44046	.49062	2.0383	.89777	52	8	.45606	.51246	1.9514	.88995	52
9	.44072	.49098	2.0368	.89764	51	9	.45632	.51283	1.9500	.88981	51
10	.44098	.49134	2.0353	.89752	50	10	.45658	.51319	1.9486	.88968	50
11	.44124	.49170	2.0338	.89739	49	11	.45684	.51356	1.9472	.88955	49
12	.44151	.49206	2.0323	.89726	48	12	.45710	.51393	1.9458	.88942	48
13	.44177	.49242	2.0308	.89713	47	13	.45736	.51430	1.9444	.88929	47
14	.44203	.49278	2.0293	.89700	46	14	.45762	.51467	1.9430	.88915	46
15	.44229	.49315	2.0278	.89687	45	15	.45787	.51503	1.9416	.88902	45
16	.44255	.49351	2.0263	.89674	44	16	.45813	.51540	1.9402	.88888	44
17	.44281	.49387	2.0248	.89662	43	17	.45839	.51577	1.9388	.88875	43
18	.44307	.49423	2.0233	.89649	42	18	.45865	.51614	1.9375	.88862	42
19	.44333	.49459	2.0219	.89636	41	19	.45891	.51651	1.9361	.88848	41
20	.44359	.49495	2.0204	.89623	40	20	.45917	.51688	1.9347	.88835	40
21	.44385	.49532	2.0189	.89610	39	21	.45942	.51724	1.9333	.88822	39
22	.44411	.49568	2.0174	.89597	38	22	.45968	.51761	1.9319	.88808	38
23	.44437	.49604	2.0160	.89584	37	23	.45994	.51798	1.9306	.88795	37
24	.44463	.49640	2.0145	.89571	36	24	.46020	.51835	1.9292	.88782	36
25	.44489	.49677	2.0130	.89558	35	25	.46046	.51872	1.9278	.88768	35
26	.44515	.49713	2.0115	.89545	34	26	.46072	.51909	1.9265	.88755	34
27	.44541	.49749	2.0101	.89532	33	27	.46097	.51946	1.9251	.88741	33
28	.44567	.49786	2.0086	.89519	32	28	.46123	.51983	1.9237	.88728	32
29	.44593	.49822	2.0072	.89506	31	29	.46149	.52020	1.9223	.88715	31
30	.44620	.49858	2.0057	.89493	30	30	.46175	.52057	1.9210	.88701	30
31	.44646	.49894	2.0042	.89480	29	31	.46201	.52094	1.9196	.88688	29
32	.44672	.49931	2.0028	.89467	28	32	.46226	.52131	1.9183	.88674	28
33	.44698	.49967	2.0013	.89454	27	33	.46252	.52168	1.9169	.88661	27
34	.44724	.50004	1.9999	.89441	26	34	.46278	.52205	1.9155	.88647	26
35	.44750	.50040	1.9984	.89428	25	35	.46304	.52242	1.9142	.88634	25
36	.44776	.50076	1.9970	.89415	24	36	.46330	.52279	1.9128	.88620	24
37	.44802	.50113	1.9955	.89402	23	37	.46355	.52316	1.9115	.88607	23
38	.44828	.50149	1.9941	.89389	22	38	.46381	.52353	1.9101	.88593	22
39	.44854	.50185	1.9926	.89376	21	39	.46407	.52390	1.9088	.88580	21
40	.44880	.50222	1.9912	.89363	20	40	.46433	.52427	1.9074	.88566	20
41	.44906	.50258	1.9897	.89350	19	41	.46458	.52464	1.9061	.88553	19
42	.44932	.50295	1.9883	.89337	18	42	.46484	.52501	1.9047	.88539	18
43	.44958	.50331	1.9868	.89324	17	43	.46510	.52538	1.9034	.88526	17
44	.44984	.50368	1.9854	.89311	16	44	.46536	.52575	1.9020	.88512	16
45	.45010	.50404	1.9840	.89298	15	45	.46561	.52613	1.9007	.88499	15
46	.45036	.50441	1.9825	.89285	14	46	.46587	.52650	1.8993	.88485	14
47	.45062	.50477	1.9811	.89272	13	47	.46613	.52687	1.8980	.88472	13
48	.45088	.50514	1.9797	.89259	12	48	.46639	.52724	1.8967	.88458	12
49	.45114	.50550	1.9782	.89245	11	49	.46664	.52761	1.8953	.88445	11
50	.45140	.50587	1.9768	.89232	10	50	.46690	.52798	1.8940	.88431	10
51	.45166	.50623	1.9754	.89219	9	51	.46716	.52836	1.8927	.88417	9
52	.45192	.50660	1.9740	.89206	8	52	.46742	.52873	1.8913	.88404	8
53	.45218	.50696	1.9725	.89193	7	53	.46767	.52910	1.8900	.88390	7
54	.45243	.50733	1.9711	.89180	6	54	.46793	.52947	1.8887	.88377	6
55	.45269	.50769	1.9697	.89167	5	55	.46819	.52985	1.8873	.88363	5
56	.45295	.50806	1.9683	.89153	4	56	.46844	.53022	1.8860	.88349	4
57	.45321	.50843	1.9669	.89140	3	57	.46870	.53059	1.8847	.88336	3
58	.45347	.50879	1.9654	.89127	2	58	.46896	.53096	1.8834	.88322	2
59	.45373	.50916	1.9640	.89114	1	59	.46921	.53133	1.8820	.88308	1
60	.45399	.50953	1.9626	.89101	0	60	.46947	.53171	1.8807	.88295	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'	

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62°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

28°					29°						
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'	
0	.46947	.53171	1.8807	.88295	60	0	.48481	.55431	1.8040	.87462	60
1	.46973	.53208	1.8794	.88281	59	1	.48506	.55469	1.8028	.87448	59
2	.46999	.53246	1.8781	.88267	58	2	.48532	.55507	1.8016	.87434	58
3	.47024	.53283	1.8768	.88254	57	3	.48557	.55545	1.8003	.87420	57
4	.47050	.53320	1.8755	.88240	56	4	.48583	.55583	1.7991	.87406	56
5	.47076	.53358	1.8741	.88226	55	5	.48608	.55621	1.7979	.87391	55
6	.47101	.53395	1.8728	.88213	54	6	.48634	.55659	1.7966	.87377	54
7	.47127	.53432	1.8715	.88199	53	7	.48659	.55697	1.7954	.87363	53
8	.47153	.53470	1.8702	.88185	52	8	.48684	.55736	1.7942	.87349	52
9	.47178	.53507	1.8689	.88172	51	9	.48710	.55774	1.7930	.87335	51
10	.47204	.53545	1.8676	.88158	50	10	.48735	.55812	1.7917	.87321	50
11	.47229	.53582	1.8663	.88144	49	11	.48761	.55850	1.7905	.87306	49
12	.47255	.53620	1.8650	.88130	48	12	.48786	.55888	1.7893	.87292	48
13	.47281	.53657	1.8637	.88117	47	13	.48811	.55926	1.7881	.87278	47
14	.47306	.53694	1.8624	.88103	46	14	.48837	.55964	1.7868	.87264	46
15	.47332	.53732	1.8611	.88089	45	15	.48862	.56003	1.7856	.87250	45
16	.47358	.53769	1.8598	.88075	44	16	.48888	.56041	1.7844	.87235	44
17	.47383	.53807	1.8585	.88062	43	17	.48913	.56079	1.7832	.87221	43
18	.47409	.53844	1.8572	.88048	42	18	.48938	.56117	1.7820	.87207	42
19	.47434	.53882	1.8559	.88034	41	19	.48964	.56156	1.7808	.87193	41
20	.47460	.53920	1.8546	.88020	40	20	.48989	.56194	1.7796	.87178	40
21	.47486	.53957	1.8533	.88006	39	21	.49014	.56232	1.7783	.87164	39
22	.47511	.53995	1.8520	.87993	38	22	.49040	.56270	1.7771	.87150	38
23	.47537	.54032	1.8507	.87979	37	23	.49065	.56309	1.7759	.87136	37
24	.47562	.54070	1.8495	.87965	36	24	.49090	.56347	1.7747	.87121	36
25	.47588	.54107	1.8482	.87951	35	25	.49116	.56385	1.7735	.87107	35
26	.47614	.54145	1.8469	.87937	34	26	.49141	.56424	1.7723	.87093	34
27	.47639	.54183	1.8456	.87923	33	27	.49166	.56462	1.7711	.87079	33
28	.47665	.54220	1.8443	.87909	32	28	.49192	.56501	1.7699	.87064	32
29	.47690	.54258	1.8430	.87896	31	29	.49217	.56539	1.7687	.87050	31
30	.47716	.54296	1.8418	.87882	30	30	.49242	.56577	1.7675	.87036	30
31	.47741	.54333	1.8405	.87868	29	31	.49268	.56616	1.7663	.87021	29
32	.47767	.54371	1.8392	.87854	28	32	.49293	.56654	1.7651	.87007	28
33	.47793	.54409	1.8379	.87840	27	33	.49318	.56693	1.7639	.86993	27
34	.47818	.54446	1.8367	.87826	26	34	.49344	.56731	1.7627	.86978	26
35	.47844	.54484	1.8354	.87812	25	35	.49369	.56769	1.7615	.86964	25
36	.47869	.54522	1.8341	.87798	24	36	.49394	.56808	1.7603	.86949	24
37	.47895	.54560	1.8329	.87784	23	37	.49419	.56846	1.7591	.86935	23
38	.47920	.54597	1.8316	.87770	22	38	.49444	.56885	1.7579	.86921	22
39	.47946	.54635	1.8303	.87756	21	39	.49470	.56923	1.7567	.86906	21
40	.47971	.54673	1.8291	.87743	20	40	.49495	.56962	1.7555	.86892	20
41	.47997	.54711	1.8278	.87729	19	41	.49521	.57000	1.7544	.86878	19
42	.48022	.54748	1.8265	.87715	18	42	.49546	.57039	1.7532	.86863	18
43	.48048	.54786	1.8253	.87701	17	43	.49571	.57078	1.7520	.86849	17
44	.48073	.54824	1.8240	.87687	16	44	.49596	.57116	1.7508	.86834	16
45	.48099	.54862	1.8228	.87673	15	45	.49622	.57155	1.7496	.86820	15
46	.48124	.54900	1.8215	.87659	14	46	.49647	.57193	1.7485	.86805	14
47	.48150	.54938	1.8202	.87645	13	47	.49672	.57232	1.7473	.86791	13
48	.48175	.54975	1.8190	.87631	12	48	.49697	.57271	1.7461	.86777	12
49	.48201	.55013	1.8177	.87617	11	49	.49723	.57309	1.7449	.86762	11
50	.48226	.55051	1.8165	.87603	10	50	.49748	.57348	1.7437	.86748	10
51	.48252	.55089	1.8152	.87589	9	51	.49773	.57386	1.7426	.86733	9
52	.48277	.55127	1.8140	.87575	8	52	.49798	.57425	1.7414	.86719	8
53	.48303	.55165	1.8127	.87561	7	53	.49824	.57464	1.7402	.86704	7
54	.48328	.55203	1.8115	.87546	6	54	.49849	.57503	1.7391	.86690	6
55	.48354	.55241	1.8103	.87532	5	55	.49874	.57541	1.7379	.86675	5
56	.48379	.55279	1.8090	.87518	4	56	.49899	.57580	1.7367	.86661	4
57	.48405	.55317	1.8078	.87504	3	57	.49924	.57619	1.7355	.86646	3
58	.48430	.55355	1.8065	.87490	2	58	.49950	.57657	1.7344	.86632	2
59	.48456	.55393	1.8053	.87476	1	59	.49975	.57696	1.7332	.86617	1
60	.48481	.55431	1.8043	.87462	0	60	.50000	.57735	1.7321	.86603	0
'	Cos	Cot	Tan	Sin	'	'	Cos	Cot	Tan	Sin	'

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60°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

30°					31°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.50000	.57735	1.7321	.86603	60	.51504	.60086	1.6643	.85717	60
1	.50025	.57774	1.7309	.86588	59	.51529	.60126	1.6632	.85702	59
2	.50050	.57813	1.7297	.86573	58	.51554	.60165	1.6621	.85687	58
3	.50076	.57851	1.7286	.86559	57	.51579	.60205	1.6610	.85672	57
4	.50101	.57890	1.7274	.86544	56	.51604	.60245	1.6599	.85657	56
5	.50126	.57929	1.7262	.86530	55	.51628	.60284	1.6588	.85642	55
6	.50151	.57968	1.7251	.86515	54	.51653	.60324	1.6577	.85627	54
7	.50176	.58007	1.7239	.86501	53	.51678	.60364	1.6566	.85612	53
8	.50201	.58046	1.7228	.86486	52	.51703	.60403	1.6555	.85597	52
9	.50227	.58085	1.7216	.86471	51	.51728	.60443	1.6545	.85582	51
10	.50252	.58124	1.7205	.86457	50	.51753	.60483	1.6534	.85567	50
11	.50277	.58162	1.7193	.86442	49	.51778	.60522	1.6523	.85551	49
12	.50302	.58201	1.7182	.86427	48	.51803	.60562	1.6512	.85536	48
13	.50327	.58240	1.7170	.86413	47	.51828	.60602	1.6501	.85521	47
14	.50352	.58279	1.7159	.86398	46	.51852	.60642	1.6490	.85506	46
15	.50377	.58318	1.7147	.86384	45	.51877	.60681	1.6479	.85491	45
16	.50403	.58357	1.7136	.86369	44	.51902	.60721	1.6469	.85476	44
17	.50428	.58396	1.7124	.86354	43	.51927	.60761	1.6458	.85461	43
18	.50453	.58435	1.7113	.86340	42	.51952	.60801	1.6447	.85446	42
19	.50478	.58474	1.7102	.86325	41	.51977	.60841	1.6436	.85431	41
20	.50503	.58513	1.7090	.86310	40	.52002	.60881	1.6426	.85416	40
21	.50528	.58552	1.7079	.86295	39	.52026	.60921	1.6415	.85401	39
22	.50553	.58591	1.7067	.86281	38	.52051	.60960	1.6404	.85385	38
23	.50578	.58631	1.7056	.86266	37	.52076	.61000	1.6393	.85370	37
24	.50603	.58670	1.7045	.86251	36	.52101	.61040	1.6383	.85355	36
25	.50628	.58709	1.7033	.86237	35	.52126	.61080	1.6372	.85340	35
26	.50654	.58748	1.7022	.86222	34	.52151	.61120	1.6361	.85325	34
27	.50679	.58787	1.7011	.86207	33	.52175	.61160	1.6351	.85310	33
28	.50704	.58826	1.6999	.86192	32	.52200	.61200	1.6340	.85294	32
29	.50729	.58865	1.6988	.86178	31	.52225	.61240	1.6329	.85279	31
30	.50754	.58905	1.6977	.86163	30	.52250	.61280	1.6319	.85264	30
31	.50779	.58944	1.6965	.86148	29	.52275	.61320	1.6308	.85249	29
32	.50804	.58983	1.6954	.86133	28	.52300	.61360	1.6297	.85234	28
33	.50829	.59022	1.6943	.86119	27	.52325	.61400	1.6287	.85218	27
34	.50854	.59061	1.6932	.86104	26	.52349	.61440	1.6276	.85203	26
35	.50879	.59101	1.6920	.86089	25	.52374	.61480	1.6265	.85188	25
36	.50904	.59140	1.6909	.86074	24	.52399	.61520	1.6255	.85173	24
37	.50929	.59179	1.6898	.86059	23	.52423	.61561	1.6244	.85157	23
38	.50954	.59218	1.6887	.86045	22	.52448	.61601	1.6234	.85142	22
39	.50979	.59258	1.6875	.86030	21	.52473	.61641	1.6223	.85127	21
40	.51004	.59297	1.6864	.86015	20	.52498	.61681	1.6212	.85112	20
41	.51029	.59336	1.6853	.86000	19	.52522	.61721	1.6202	.85096	19
42	.51054	.59376	1.6842	.85985	18	.52547	.61761	1.6191	.85081	18
43	.51079	.59415	1.6831	.85970	17	.52572	.61801	1.6181	.85066	17
44	.51104	.59454	1.6820	.85956	16	.52597	.61842	1.6170	.85051	16
45	.51129	.59494	1.6808	.85941	15	.52621	.61882	1.6160	.85035	15
46	.51154	.59533	1.6797	.85926	14	.52646	.61922	1.6149	.85020	14
47	.51179	.59573	1.6786	.85911	13	.52671	.61962	1.6139	.85005	13
48	.51204	.59612	1.6775	.85896	12	.52696	.62003	1.6128	.84989	12
49	.51229	.59651	1.6764	.85881	11	.52720	.62043	1.6118	.84974	11
50	.51254	.59691	1.6753	.85866	10	.52745	.62083	1.6107	.84959	10
51	.51279	.59730	1.6742	.85851	9	.52770	.62124	1.6097	.84943	9
52	.51304	.59770	1.6731	.85836	8	.52794	.62164	1.6087	.84928	8
53	.51329	.59809	1.6720	.85821	7	.52819	.62204	1.6076	.84913	7
54	.51354	.59849	1.6709	.85806	6	.52844	.62245	1.6066	.84897	6
55	.51379	.59888	1.6698	.85792	5	.52869	.62285	1.6055	.84882	5
56	.51404	.59928	1.6687	.85777	4	.52893	.62325	1.6045	.84866	4
57	.51429	.59967	1.6676	.85762	3	.52918	.62366	1.6034	.84851	3
58	.51454	.60007	1.6665	.85747	2	.52943	.62406	1.6024	.84836	2
59	.51479	.60046	1.6654	.85732	1	.52967	.62446	1.6014	.84820	1
60	.51504	.60086	1.6643	.85717	0	.52992	.62487	1.6003	.84805	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

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58°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

32°					33°					
°	Sin	Tan	Cot	Cos	°	Sin	Tan	Cot	Cos	
0	.52992	.62487	1.6003	.84805	60	.54464	.64941	1.5399	.83867	60
1	.53017	.62527	1.5993	.84789	59	.54488	.64982	1.5389	.83851	59
2	.53041	.62568	1.5983	.84774	58	.54513	.65024	1.5379	.83835	58
3	.53066	.62608	1.5972	.84759	57	.54537	.65065	1.5369	.83819	57
4	.53091	.62649	1.5962	.84743	56	.54561	.65106	1.5359	.83804	56
5	.53115	.62689	1.5952	.84728	55	.54586	.65148	1.5350	.83788	55
6	.53140	.62730	1.5941	.84712	54	.54610	.65189	1.5340	.83772	54
7	.53164	.62770	1.5931	.84697	53	.54635	.65231	1.5330	.83756	53
8	.53189	.62811	1.5921	.84681	52	.54659	.65272	1.5320	.83740	52
9	.53214	.62852	1.5911	.84666	51	.54683	.65314	1.5311	.83724	51
10	.53238	.62892	1.5900	.84650	50	.54708	.65355	1.5301	.83708	50
11	.53263	.62933	1.5890	.84635	49	.54732	.65397	1.5291	.83692	49
12	.53288	.62973	1.5880	.84619	48	.54756	.65438	1.5282	.83676	48
13	.53312	.63014	1.5869	.84604	47	.54781	.65480	1.5272	.83660	47
14	.53337	.63055	1.5859	.84588	46	.54805	.65521	1.5262	.83644	46
15	.53361	.63095	1.5849	.84573	45	.54829	.65563	1.5253	.83629	45
16	.53386	.63136	1.5839	.84557	44	.54854	.65604	1.5243	.83613	44
17	.53411	.63177	1.5829	.84542	43	.54878	.65646	1.5233	.83597	43
18	.53435	.63217	1.5818	.84526	42	.54902	.65688	1.5224	.83581	42
19	.53460	.63258	1.5808	.84511	41	.54927	.65729	1.5214	.83565	41
20	.53484	.63299	1.5798	.84495	40	.54951	.65771	1.5204	.83549	40
21	.53509	.63340	1.5788	.84480	39	.54975	.65813	1.5195	.83533	39
22	.53534	.63380	1.5778	.84464	38	.54999	.65854	1.5185	.83517	38
23	.53558	.63421	1.5768	.84448	37	.55024	.65896	1.5175	.83501	37
24	.53583	.63462	1.5757	.84433	36	.55048	.65938	1.5166	.83485	36
25	.53607	.63503	1.5747	.84417	35	.55072	.65980	1.5156	.83469	35
26	.53632	.63544	1.5737	.84402	34	.55097	.66021	1.5147	.83453	34
27	.53656	.63584	1.5727	.84386	33	.55121	.66063	1.5137	.83437	33
28	.53681	.63625	1.5717	.84370	32	.55145	.66105	1.5127	.83421	32
29	.53705	.63666	1.5707	.84355	31	.55169	.66147	1.5118	.83405	31
30	.53730	.63707	1.5697	.84339	30	.55194	.66189	1.5108	.83389	30
31	.53754	.63748	1.5687	.84324	29	.55218	.66230	1.5099	.83373	29
32	.53779	.63789	1.5677	.84308	28	.55242	.66272	1.5089	.83356	28
33	.53804	.63830	1.5667	.84292	27	.55266	.66314	1.5080	.83340	27
34	.53828	.63871	1.5657	.84277	26	.55291	.66356	1.5070	.83324	26
35	.53853	.63912	1.5647	.84261	25	.55315	.66398	1.5061	.83308	25
36	.53877	.63953	1.5637	.84245	24	.55339	.66440	1.5051	.83292	24
37	.53902	.63994	1.5627	.84230	23	.55363	.66482	1.5042	.83276	23
38	.53926	.64035	1.5617	.84214	22	.55388	.66524	1.5032	.83260	22
39	.53951	.64076	1.5607	.84198	21	.55412	.66566	1.5023	.83244	21
40	.53975	.64117	1.5597	.84182	20	.55436	.66608	1.5013	.83228	20
41	.54000	.64158	1.5587	.84167	19	.55460	.66650	1.5004	.83212	19
42	.54024	.64199	1.5577	.84151	18	.55484	.66692	1.4994	.83196	18
43	.54049	.64240	1.5567	.84135	17	.55509	.66734	1.4985	.83179	17
44	.54073	.64281	1.5557	.84120	16	.55533	.66776	1.4975	.83163	16
45	.54097	.64322	1.5547	.84104	15	.55557	.66818	1.4966	.83147	15
46	.54122	.64363	1.5537	.84088	14	.55581	.66860	1.4957	.83131	14
47	.54146	.64404	1.5527	.84072	13	.55605	.66902	1.4947	.83115	13
48	.54171	.64446	1.5517	.84057	12	.55630	.66944	1.4938	.83098	12
49	.54195	.64487	1.5507	.84041	11	.55654	.66986	1.4928	.83082	11
50	.54220	.64528	1.5497	.84025	10	.55678	.67028	1.4919	.83066	10
51	.54244	.64569	1.5487	.84009	9	.55702	.67071	1.4910	.83050	9
52	.54269	.64610	1.5477	.83994	8	.55726	.67113	1.4900	.83034	8
53	.54293	.64652	1.5468	.83978	7	.55750	.67155	1.4891	.83017	7
54	.54317	.64693	1.5458	.83962	6	.55775	.67197	1.4882	.83001	6
55	.54342	.64734	1.5448	.83946	5	.55799	.67239	1.4872	.82985	5
56	.54366	.64775	1.5438	.83930	4	.55823	.67282	1.4863	.82969	4
57	.54391	.64817	1.5428	.83915	3	.55847	.67324	1.4854	.82953	3
58	.54415	.64858	1.5418	.83899	2	.55871	.67366	1.4844	.82936	2
59	.54440	.64899	1.5408	.83883	1	.55895	.67409	1.4835	.82920	1
60	.54464	.64941	1.5399	.83867	0	.55919	.67451	1.4826	.82904	0
°	Cos	Cot	Tan	Sin	°	Cos	Cot	Tan	Sin	

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56°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

34°					35°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.55919	.67451	1.4826	.82904	60	.57358	.70021	1.4281	.81915	60
1	.55943	.67493	1.4816	.82887	59	.57381	.70064	1.4273	.81899	59
2	.55968	.67536	1.4807	.82871	58	.57405	.70107	1.4264	.81882	58
3	.55992	.67578	1.4798	.82855	57	.57429	.70151	1.4255	.81865	57
4	.56016	.67620	1.4788	.82839	56	.57453	.70194	1.4246	.81848	56
5	.56040	.67663	1.4779	.82822	55	.57477	.70238	1.4237	.81832	55
6	.56064	.67705	1.4770	.82806	54	.57501	.70281	1.4229	.81815	54
7	.56088	.67748	1.4761	.82790	53	.57524	.70325	1.4220	.81798	53
8	.56112	.67790	1.4751	.82773	52	.57548	.70368	1.4211	.81782	52
9	.56136	.67832	1.4742	.82757	51	.57572	.70412	1.4202	.81765	51
10	.56160	.67875	1.4733	.82741	50	.57596	.70455	1.4193	.81748	50
11	.56184	.67917	1.4724	.82724	49	.57619	.70499	1.4185	.81731	49
12	.56208	.67960	1.4715	.82708	48	.57643	.70542	1.4176	.81714	48
13	.56232	.68002	1.4705	.82692	47	.57667	.70586	1.4167	.81698	47
14	.56256	.68045	1.4696	.82675	46	.57691	.70629	1.4158	.81681	46
15	.56280	.68088	1.4687	.82659	45	.57715	.70673	1.4150	.81664	45
16	.56305	.68130	1.4678	.82643	44	.57738	.70717	1.4141	.81647	44
17	.56329	.68173	1.4669	.82626	43	.57762	.70760	1.4132	.81631	43
18	.56353	.68215	1.4659	.82610	42	.57786	.70804	1.4124	.81614	42
19	.56377	.68258	1.4650	.82593	41	.57810	.70848	1.4115	.81597	41
20	.56401	.68301	1.4641	.82577	40	.57833	.70891	1.4106	.81580	40
21	.56425	.68343	1.4632	.82561	39	.57857	.70935	1.4097	.81563	39
22	.56449	.68386	1.4623	.82544	38	.57881	.70979	1.4089	.81546	38
23	.56473	.68429	1.4614	.82528	37	.57904	.71023	1.4080	.81530	37
24	.56497	.68471	1.4605	.82511	36	.57928	.71066	1.4071	.81513	36
25	.56521	.68514	1.4596	.82495	35	.57952	.71110	1.4063	.81496	35
26	.56545	.68557	1.4586	.82478	34	.57976	.71154	1.4054	.81479	34
27	.56569	.68600	1.4577	.82462	33	.57999	.71198	1.4045	.81462	33
28	.56593	.68642	1.4568	.82446	32	.58023	.71242	1.4037	.81445	32
29	.56617	.68685	1.4559	.82429	31	.58047	.71285	1.4028	.81428	31
30	.56641	.68728	1.4550	.82413	30	.58070	.71329	1.4019	.81412	30
31	.56665	.68771	1.4541	.82396	29	.58094	.71373	1.4011	.81395	29
32	.56689	.68814	1.4532	.82380	28	.58118	.71417	1.4002	.81378	28
33	.56713	.68857	1.4523	.82363	27	.58141	.71461	1.3994	.81361	27
34	.56736	.68900	1.4514	.82347	26	.58165	.71505	1.3985	.81344	26
35	.56760	.68942	1.4505	.82330	25	.58189	.71549	1.3976	.81327	25
36	.56784	.68985	1.4496	.82314	24	.58212	.71593	1.3968	.81310	24
37	.56808	.69028	1.4487	.82297	23	.58236	.71637	1.3959	.81293	23
38	.56832	.69071	1.4478	.82281	22	.58260	.71681	1.3951	.81276	22
39	.56856	.69114	1.4469	.82264	21	.58283	.71725	1.3942	.81259	21
40	.56880	.69157	1.4460	.82248	20	.58307	.71769	1.3934	.81242	20
41	.56904	.69200	1.4451	.82231	19	.58330	.71813	1.3925	.81225	19
42	.56928	.69243	1.4442	.82214	18	.58354	.71857	1.3916	.81208	18
43	.56952	.69286	1.4433	.82198	17	.58378	.71901	1.3908	.81191	17
44	.56976	.69329	1.4424	.82181	16	.58401	.71946	1.3899	.81174	16
45	.57000	.69372	1.4415	.82165	15	.58425	.71990	1.3891	.81157	15
46	.57024	.69416	1.4406	.82148	14	.58449	.72034	1.3882	.81140	14
47	.57047	.69459	1.4397	.82132	13	.58472	.72078	1.3874	.81123	13
48	.57071	.69502	1.4388	.82115	12	.58496	.72122	1.3865	.81106	12
49	.57095	.69545	1.4379	.82098	11	.58519	.72167	1.3857	.81089	11
50	.57119	.69588	1.4370	.82082	10	.58543	.72211	1.3848	.81072	10
51	.57143	.69631	1.4361	.82065	9	.58567	.72255	1.3840	.81055	9
52	.57167	.69675	1.4352	.82048	8	.58590	.72299	1.3831	.81038	8
53	.57191	.69718	1.4344	.82032	7	.58614	.72344	1.3823	.81021	7
54	.57215	.69761	1.4335	.82015	6	.58637	.72388	1.3814	.81004	6
55	.57238	.69804	1.4326	.81999	5	.58661	.72432	1.3806	.80987	5
56	.57262	.69847	1.4317	.81982	4	.58684	.72477	1.3798	.80970	4
57	.57286	.69891	1.4308	.81965	3	.58708	.72521	1.3789	.80953	3
58	.57310	.69934	1.4299	.81949	2	.58731	.72565	1.3781	.80936	2
59	.57334	.69977	1.4290	.81932	1	.58755	.72610	1.3772	.80919	1
60	.57358	.70021	1.4281	.81915	0	.58779	.72654	1.3764	.80902	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

55°

54°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

36°					37°						
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'	
0	.58779	.72654	1.3764	.80902	60	0	.60182	.75355	1.3270	.79864	60
1	.58802	.72699	1.3755	.80885	59	1	.60205	.75401	1.3262	.79846	59
2	.58826	.72743	1.3747	.80867	58	2	.60228	.75447	1.3254	.79829	58
3	.58849	.72788	1.3739	.80850	57	3	.60251	.75492	1.3246	.79811	57
4	.58873	.72832	1.3730	.80833	56	4	.60274	.75538	1.3238	.79793	56
5	.58896	.72877	1.3722	.80816	55	5	.60298	.75584	1.3230	.79776	55
6	.58920	.72921	1.3713	.80799	54	6	.60321	.75629	1.3222	.79758	54
7	.58943	.72966	1.3705	.80782	53	7	.60344	.75675	1.3214	.79741	53
8	.58967	.73010	1.3697	.80765	52	8	.60367	.75721	1.3206	.79723	52
9	.58990	.73055	1.3688	.80748	51	9	.60390	.75767	1.3198	.79706	51
10	.59014	.73100	1.3680	.80730	50	10	.60414	.75812	1.3190	.79688	50
11	.59037	.73144	1.3672	.80713	49	11	.60437	.75858	1.3182	.79671	49
12	.59061	.73189	1.3663	.80696	48	12	.60460	.75904	1.3175	.79653	48
13	.59084	.73234	1.3655	.80679	47	13	.60483	.75950	1.3167	.79635	47
14	.59108	.73278	1.3647	.80662	46	14	.60506	.75996	1.3159	.79618	46
15	.59131	.73323	1.3638	.80644	45	15	.60529	.76042	1.3151	.79600	45
16	.59154	.73368	1.3630	.80627	44	16	.60553	.76088	1.3143	.79583	44
17	.59178	.73413	1.3622	.80610	43	17	.60576	.76134	1.3135	.79565	43
18	.59201	.73457	1.3613	.80593	42	18	.60599	.76180	1.3127	.79547	42
19	.59225	.73502	1.3605	.80576	41	19	.60622	.76226	1.3119	.79530	41
20	.59248	.73547	1.3597	.80558	40	20	.60645	.76272	1.3111	.79512	40
21	.59272	.73592	1.3588	.80541	39	21	.60668	.76318	1.3103	.79494	39
22	.59295	.73637	1.3580	.80524	38	22	.60691	.76364	1.3095	.79477	38
23	.59318	.73681	1.3572	.80507	37	23	.60714	.76410	1.3087	.79459	37
24	.59342	.73726	1.3564	.80489	36	24	.60738	.76456	1.3079	.79441	36
25	.59365	.73771	1.3555	.80472	35	25	.60761	.76502	1.3072	.79424	35
26	.59389	.73816	1.3547	.80455	34	26	.60784	.76548	1.3064	.79406	34
27	.59412	.73861	1.3539	.80438	33	27	.60807	.76594	1.3056	.79388	33
28	.59436	.73906	1.3531	.80420	32	28	.60830	.76640	1.3048	.79371	32
29	.59459	.73951	1.3522	.80403	31	29	.60853	.76686	1.3040	.79353	31
30	.59482	.73996	1.3514	.80386	30	30	.60876	.76733	1.3032	.79335	30
31	.59506	.74041	1.3506	.80368	29	31	.60899	.76779	1.3024	.79318	29
32	.59529	.74086	1.3498	.80351	28	32	.60922	.76825	1.3017	.79300	28
33	.59552	.74131	1.3490	.80334	27	33	.60945	.76871	1.3009	.79282	27
34	.59576	.74176	1.3481	.80316	26	34	.60968	.76918	1.3001	.79264	26
35	.59599	.74221	1.3473	.80299	25	35	.60991	.76964	1.2993	.79247	25
36	.59622	.74267	1.3465	.80282	24	36	.61015	.77010	1.2985	.79229	24
37	.59646	.74312	1.3457	.80264	23	37	.61038	.77057	1.2977	.79211	23
38	.59669	.74357	1.3449	.80247	22	38	.61061	.77103	1.2970	.79193	22
39	.59693	.74402	1.3440	.80230	21	39	.61084	.77149	1.2962	.79176	21
40	.59716	.74447	1.3432	.80212	20	40	.61107	.77196	1.2954	.79158	20
41	.59739	.74492	1.3424	.80195	19	41	.61130	.77242	1.2946	.79140	19
42	.59763	.74538	1.3416	.80177	18	42	.61153	.77289	1.2938	.79122	18
43	.59786	.74583	1.3408	.80160	17	43	.61176	.77335	1.2931	.79105	17
44	.59809	.74628	1.3400	.80143	16	44	.61199	.77382	1.2923	.79087	16
45	.59832	.74674	1.3392	.80125	15	45	.61222	.77428	1.2915	.79069	15
46	.59856	.74719	1.3384	.80108	14	46	.61245	.77475	1.2907	.79051	14
47	.59879	.74764	1.3375	.80091	13	47	.61268	.77521	1.2900	.79033	13
48	.59902	.74810	1.3367	.80073	12	48	.61291	.77568	1.2892	.79016	12
49	.59926	.74855	1.3359	.80056	11	49	.61314	.77615	1.2884	.78998	11
50	.59949	.74900	1.3351	.80038	10	50	.61337	.77661	1.2876	.78980	10
51	.59972	.74946	1.3343	.80021	9	51	.61360	.77708	1.2869	.78962	9
52	.59995	.74991	1.3335	.80003	8	52	.61383	.77754	1.2861	.78944	8
53	.60019	.75037	1.3327	.79986	7	53	.61406	.77801	1.2853	.78926	7
54	.60042	.75082	1.3319	.79968	6	54	.61429	.77848	1.2846	.78908	6
55	.60065	.75128	1.3311	.79951	5	55	.61451	.77895	1.2838	.78891	5
56	.60089	.75173	1.3303	.79934	4	56	.61474	.77941	1.2830	.78873	4
57	.60112	.75219	1.3295	.79916	3	57	.61497	.77988	1.2822	.78855	3
58	.60135	.75264	1.3287	.79899	2	58	.61520	.78035	1.2815	.78837	2
59	.60158	.75310	1.3278	.79881	1	59	.61543	.78082	1.2807	.78819	1
60	.60182	.75355	1.3270	.79864	0	60	.61566	.78129	1.2799	.78801	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'	
53°					52°						

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

38°					39°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.61566	.78129	1.2799	.78801	60	.62932	.80978	1.2349	.77715	60
1	.61589	.78175	1.2792	.78783	59	.62955	.81027	1.2342	.77696	59
2	.61612	.78222	1.2784	.78765	58	.62977	.81075	1.2334	.77678	58
3	.61635	.78269	1.2776	.78747	57	.63000	.81123	1.2327	.77660	57
4	.61658	.78316	1.2769	.78729	56	.63022	.81171	1.2320	.77641	56
5	.61681	.78363	1.2761	.78711	55	.63045	.81220	1.2312	.77623	55
6	.61704	.78410	1.2753	.78694	54	.63068	.81268	1.2305	.77605	54
7	.61726	.78457	1.2746	.78676	53	.63090	.81316	1.2298	.77586	53
8	.61749	.78504	1.2738	.78658	52	.63113	.81364	1.2290	.77568	52
9	.61772	.78551	1.2731	.78640	51	.63135	.81413	1.2283	.77550	51
10	.61795	.78598	1.2723	.78622	50	.63158	.81461	1.2276	.77531	50
11	.61818	.78645	1.2715	.78604	49	.63180	.81510	1.2268	.77513	49
12	.61841	.78692	1.2708	.78586	48	.63203	.81558	1.2261	.77494	48
13	.61864	.78739	1.2700	.78568	47	.63225	.81606	1.2254	.77476	47
14	.61887	.78786	1.2693	.78550	46	.63248	.81655	1.2247	.77458	46
15	.61909	.78834	1.2685	.78532	45	.63271	.81703	1.2239	.77439	45
16	.61932	.78881	1.2677	.78514	44	.63293	.81752	1.2232	.77421	44
17	.61955	.78928	1.2670	.78496	43	.63316	.81800	1.2225	.77402	43
18	.61978	.78975	1.2662	.78478	42	.63338	.81849	1.2218	.77384	42
19	.62001	.79022	1.2655	.78460	41	.63361	.81898	1.2210	.77366	41
20	.62024	.79070	1.2647	.78442	40	.63383	.81946	1.2203	.77347	40
21	.62046	.79117	1.2640	.78424	39	.63406	.81995	1.2196	.77329	39
22	.62069	.79164	1.2632	.78405	38	.63428	.82044	1.2189	.77310	38
23	.62092	.79212	1.2624	.78387	37	.63451	.82092	1.2181	.77292	37
24	.62115	.79259	1.2617	.78369	36	.63473	.82141	1.2174	.77273	36
25	.62138	.79306	1.2609	.78351	35	.63496	.82190	1.2167	.77255	35
26	.62160	.79354	1.2602	.78333	34	.63518	.82238	1.2160	.77236	34
27	.62183	.79401	1.2594	.78315	33	.63540	.82287	1.2153	.77218	33
28	.62206	.79449	1.2587	.78297	32	.63563	.82336	1.2145	.77199	32
29	.62229	.79496	1.2579	.78279	31	.63585	.82385	1.2138	.77181	31
30	.62251	.79544	1.2572	.78261	30	.63608	.82434	1.2131	.77162	30
31	.62274	.79591	1.2564	.78243	29	.63630	.82483	1.2124	.77144	29
32	.62297	.79639	1.2557	.78225	28	.63653	.82531	1.2117	.77125	28
33	.62320	.79686	1.2549	.78206	27	.63675	.82580	1.2110	.77107	27
34	.62342	.79734	1.2542	.78188	26	.63698	.82629	1.2102	.77088	26
35	.62365	.79781	1.2534	.78170	25	.63720	.82678	1.2095	.77070	25
36	.62388	.79829	1.2527	.78152	24	.63742	.82727	1.2088	.77051	24
37	.62411	.79877	1.2519	.78134	23	.63765	.82776	1.2081	.77033	23
38	.62433	.79924	1.2512	.78116	22	.63787	.82825	1.2074	.77014	22
39	.62456	.79972	1.2504	.78098	21	.63810	.82874	1.2066	.76996	21
40	.62479	.80020	1.2497	.78079	20	.63832	.82923	1.2059	.76977	20
41	.62502	.80067	1.2489	.78061	19	.63854	.82972	1.2052	.76959	19
42	.62524	.80115	1.2482	.78043	18	.63877	.83022	1.2045	.76940	18
43	.62547	.80163	1.2475	.78025	17	.63899	.83071	1.2038	.76921	17
44	.62570	.80211	1.2467	.78007	16	.63922	.83120	1.2031	.76903	16
45	.62592	.80258	1.2460	.77988	15	.63944	.83169	1.2024	.76884	15
46	.62615	.80306	1.2452	.77970	14	.63966	.83218	1.2017	.76866	14
47	.62638	.80354	1.2445	.77952	13	.63989	.83268	1.2010	.76847	13
48	.62660	.80402	1.2437	.77934	12	.64011	.83317	1.2002	.76828	12
49	.62683	.80450	1.2430	.77916	11	.64033	.83366	1.1995	.76810	11
50	.62706	.80498	1.2423	.77897	10	.64056	.83415	1.1988	.76791	10
51	.62728	.80546	1.2415	.77879	9	.64078	.83465	1.1981	.76772	9
52	.62751	.80594	1.2408	.77861	8	.64100	.83514	1.1974	.76754	8
53	.62774	.80642	1.2401	.77843	7	.64123	.83564	1.1967	.76735	7
54	.62796	.80690	1.2393	.77824	6	.64145	.83613	1.1960	.76717	6
55	.62819	.80738	1.2386	.77806	5	.64167	.83662	1.1953	.76698	5
56	.62842	.80786	1.2378	.77788	4	.64190	.83712	1.1946	.76679	4
57	.62864	.80834	1.2371	.77769	3	.64212	.83761	1.1939	.76661	3
58	.61887	.80882	1.2364	.77751	2	.64234	.83811	1.1932	.76642	2
59	.62909	.80930	1.2356	.77733	1	.64256	.83860	1.1925	.76623	1
60	.62932	.80978	1.2349	.77715	0	.64279	.83910	1.1918	.76604	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

51°

50°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

42°					43°					
'	Sin	Tan	Cot	Cos	'	Sin	Tan	Cot	Cos	'
0	.66913	.90040	1.1106	.74314	60	.68200	.93252	1.0724	.73135	60
1	.66935	.90093	1.1100	.74295	59	.68221	.93306	1.0717	.73116	59
2	.66956	.90146	1.1093	.74276	58	.68242	.93360	1.0711	.73096	58
3	.66978	.90199	1.1087	.74256	57	.68264	.93415	1.0705	.73076	57
4	.66999	.90251	1.1080	.74237	56	.68285	.93469	1.0699	.73056	56
5	.67021	.90304	1.1074	.74217	55	.68306	.93524	1.0692	.73036	55
6	.67043	.90357	1.1067	.74198	54	.68327	.93578	1.0686	.73016	54
7	.67064	.90410	1.1061	.74178	53	.68349	.93633	1.0680	.72996	53
8	.67086	.90463	1.1054	.74159	52	.68370	.93688	1.0674	.72976	52
9	.67107	.90516	1.1048	.74139	51	.68391	.93742	1.0668	.72957	51
10	.67129	.90569	1.1041	.74120	50	.68412	.93797	1.0661	.72937	50
11	.67151	.90621	1.1035	.74100	49	.68434	.93852	1.0655	.72917	49
12	.67172	.90674	1.1028	.74080	48	.68455	.93906	1.0649	.72897	48
13	.67194	.90727	1.1022	.74061	47	.68476	.93961	1.0643	.72877	47
14	.67215	.90781	1.1016	.74041	46	.68497	.94016	1.0637	.72857	46
15	.67237	.90834	1.1009	.74022	45	.68518	.94071	1.0630	.72837	45
16	.67258	.90887	1.1003	.74002	44	.68539	.94125	1.0624	.72817	44
17	.67280	.90940	1.0996	.73983	43	.68561	.94180	1.0618	.72797	43
18	.67301	.90993	1.0990	.73963	42	.68582	.94235	1.0612	.72777	42
19	.67323	.91046	1.0983	.73944	41	.68603	.94290	1.0606	.72757	41
20	.67344	.91099	1.0977	.73924	40	.68624	.94345	1.0599	.72737	40
21	.67366	.91153	1.0971	.73904	39	.68645	.94400	1.0593	.72717	39
22	.67387	.91206	1.0964	.73885	38	.68666	.94455	1.0587	.72697	38
23	.67409	.91259	1.0958	.73865	37	.68688	.94510	1.0581	.72677	37
24	.67430	.91313	1.0951	.73846	36	.68709	.94565	1.0575	.72657	36
25	.67452	.91366	1.0945	.73826	35	.68730	.94620	1.0569	.72637	35
26	.67473	.91419	1.0939	.73806	34	.68751	.94676	1.0562	.72617	34
27	.67495	.91473	1.0932	.73787	33	.68772	.94731	1.0556	.72597	33
28	.67516	.91526	1.0926	.73767	32	.68793	.94786	1.0550	.72577	32
29	.67538	.91580	1.0919	.73747	31	.68814	.94841	1.0544	.72557	31
30	.67559	.91633	1.0913	.73728	30	.68835	.94896	1.0538	.72537	30
31	.67580	.91687	1.0907	.73708	29	.68857	.94952	1.0532	.72517	29
32	.67602	.91740	1.0900	.73688	28	.68878	.95007	1.0526	.72497	28
33	.67623	.91794	1.0894	.73669	27	.68899	.95062	1.0519	.72477	27
34	.67645	.91847	1.0888	.73649	26	.68920	.95118	1.0513	.72457	26
35	.67666	.91901	1.0881	.73629	25	.68941	.95173	1.0507	.72437	25
36	.67688	.91955	1.0875	.73610	24	.68962	.95229	1.0501	.72417	24
37	.67709	.92008	1.0869	.73590	23	.68983	.95284	1.0495	.72397	23
38	.67730	.92062	1.0862	.73570	22	.69004	.95340	1.0489	.72377	22
39	.67752	.92116	1.0856	.73551	21	.69025	.95395	1.0483	.72357	21
40	.67773	.92170	1.0850	.73531	20	.69046	.95451	1.0477	.72337	20
41	.67795	.92224	1.0843	.73511	19	.69067	.95506	1.0470	.72317	19
42	.67816	.92277	1.0837	.73491	18	.69088	.95562	1.0464	.72297	18
43	.67837	.92331	1.0831	.73472	17	.69109	.95618	1.0458	.72277	17
44	.67859	.92385	1.0824	.73452	16	.69130	.95673	1.0452	.72257	16
45	.67880	.92439	1.0818	.73432	15	.69151	.95729	1.0446	.72236	15
46	.67901	.92493	1.0812	.73413	14	.69172	.95785	1.0440	.72216	14
47	.67923	.92547	1.0805	.73393	13	.69193	.95841	1.0434	.72196	13
48	.67944	.92601	1.0799	.73373	12	.69214	.95897	1.0428	.72176	12
49	.67965	.92655	1.0793	.73353	11	.69235	.95952	1.0422	.72156	11
50	.67987	.92709	1.0786	.73333	10	.69256	.96008	1.0416	.72136	10
51	.68008	.92763	1.0780	.73314	9	.69277	.96064	1.0410	.72116	9
52	.68029	.92817	1.0774	.73294	8	.69298	.96120	1.0404	.72096	8
53	.68051	.92872	1.0768	.73274	7	.69319	.96176	1.0398	.72076	7
54	.68072	.92926	1.0761	.73254	6	.69340	.96232	1.0392	.72056	6
55	.68093	.92980	1.0755	.73234	5	.69361	.96288	1.0385	.72035	5
56	.68115	.93034	1.0749	.73215	4	.69382	.96344	1.0379	.72015	4
57	.68136	.93088	1.0742	.73195	3	.69403	.96400	1.0373	.71995	3
58	.68157	.93143	1.0736	.73175	2	.69424	.96457	1.0367	.71974	2
59	.68179	.93197	1.0730	.73155	1	.69445	.96513	1.0361	.71954	1
60	.68200	.93252	1.0724	.73135	0	.69466	.96569	1.0355	.71934	0
'	Cos	Cot	Tan	Sin	'	Cos	Cot	Tan	Sin	'

47°

46°

NATURAL TANGENTS, CO-TANGENTS, SINES AND CO-SINES

44°					
/	Sin	Tan	Cot	Cos	/
0	.69466	.96569	1.0355	.71934	60
1	.69487	.96625	1.0349	.71914	59
2	.69508	.96681	1.0343	.71894	58
3	.69529	.96738	1.0337	.71873	57
4	.69549	.96794	1.0331	.71853	56
5	.69570	.96850	1.0325	.71833	55
6	.69591	.96907	1.0319	.71813	54
7	.69612	.96963	1.0313	.71792	53
8	.69633	.97020	1.0307	.71772	52
9	.69654	.97076	1.0301	.71752	51
10	.69675	.97133	1.0295	.71732	50
11	.69696	.97189	1.0289	.71711	49
12	.69717	.97246	1.0283	.71691	48
13	.69737	.97302	1.0277	.71671	47
14	.69758	.97359	1.0271	.71650	46
15	.69779	.97416	1.0265	.71630	45
16	.69800	.97472	1.0259	.71610	44
17	.69821	.97529	1.0253	.71590	43
18	.69842	.97586	1.0247	.71569	42
19	.69862	.97643	1.0241	.71549	41
20	.69883	.97700	1.0235	.71529	40
21	.69904	.97756	1.0230	.71508	39
22	.69925	.97813	1.0224	.71488	38
23	.69946	.97870	1.0218	.71468	37
24	.69966	.97927	1.0212	.71447	36
25	.69987	.97984	1.0206	.71427	35
26	.70008	.98041	1.0200	.71407	34
27	.70029	.98098	1.0194	.71386	33
28	.70049	.98155	1.0188	.71366	32
29	.70070	.98213	1.0182	.71345	31
30	.70091	.98270	1.0176	.71325	30
31	.70112	.98327	1.0170	.71305	29
32	.70132	.98384	1.0164	.71284	28
33	.70153	.98441	1.0158	.71264	27
34	.70174	.98499	1.0152	.71243	26
35	.70195	.98556	1.0147	.71223	25
36	.70215	.98613	1.0141	.71203	24
37	.70236	.98671	1.0135	.71182	23
38	.70257	.98728	1.0129	.71162	22
39	.70277	.98786	1.0123	.71141	21
40	.70298	.98843	1.0117	.71121	20
41	.70319	.98901	1.0111	.71100	19
42	.70339	.98958	1.0105	.71080	18
43	.70360	.99016	1.0099	.71059	17
44	.70381	.99073	1.0094	.71039	16
45	.70401	.99131	1.0088	.71019	15
46	.70422	.99189	1.0082	.70998	14
47	.70443	.99247	1.0076	.70978	13
48	.70463	.99304	1.0070	.70957	12
49	.70484	.99362	1.0064	.70937	11
50	.70505	.99420	1.0058	.70916	10
51	.70525	.99478	1.0052	.70896	9
52	.70546	.99536	1.0047	.70875	8
53	.70567	.99594	1.0041	.70855	7
54	.70587	.99652	1.0035	.70834	6
55	.70608	.99710	1.0029	.70813	5
56	.70628	.99768	1.0023	.70793	4
57	.70649	.99826	1.0017	.70772	3
58	.70670	.99884	1.0012	.70752	2
59	.70690	.99942	1.0006	.70731	1
60	.70711	1.0000	1.0000	.70711	0
/	Cos	Cot	Tan	Sin	/

45°

NATURAL SECANTS AND CO-SECANTS

'	0°		1°		2°		3°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0000	Infinite	1.0001	57.299	1.0006	28.654	1.0014	19.107	60
1	1.0000	3437.70	1.0001	56.359	1.0006	28.417	1.0014	19.002	59
2	1.0000	1718.90	1.0002	55.450	1.0006	28.184	1.0014	18.897	58
3	1.0000	1145.90	1.0002	54.570	1.0006	27.955	1.0014	18.794	57
4	1.0000	859.44	1.0002	53.718	1.0006	27.730	1.0014	18.692	56
5	1.0000	687.55	1.0002	52.891	1.0007	27.508	1.0014	18.591	55
6	1.0000	572.96	1.0002	52.090	1.0007	27.290	1.0015	18.491	54
7	1.0000	491.11	1.0002	51.313	1.0007	27.075	1.0015	18.393	53
8	1.0000	429.72	1.0002	50.558	1.0007	26.864	1.0015	18.295	52
9	1.0000	381.97	1.0002	49.826	1.0007	26.655	1.0015	18.198	51
10	1.0000	343.77	1.0002	49.114	1.0007	26.450	1.0015	18.103	50
11	1.0000	312.52	1.0002	48.422	1.0007	26.249	1.0015	18.008	49
12	1.0000	286.48	1.0002	47.750	1.0007	26.050	1.0016	17.914	48
13	1.0000	264.44	1.0002	47.096	1.0007	25.854	1.0016	17.821	47
14	1.0000	245.55	1.0002	46.460	1.0008	25.661	1.0016	17.730	46
15	1.0000	229.18	1.0002	45.840	1.0008	25.471	1.0016	17.639	45
16	1.0000	214.86	1.0002	45.237	1.0008	25.284	1.0016	17.549	44
17	1.0000	202.22	1.0002	44.650	1.0008	25.100	1.0016	17.460	43
18	1.0000	190.99	1.0002	44.077	1.0008	24.918	1.0017	17.372	42
19	1.0000	180.73	1.0003	43.520	1.0008	24.739	1.0017	17.285	41
20	1.0000	171.89	1.0003	42.976	1.0008	24.562	1.0017	17.198	40
21	1.0000	163.70	1.0003	42.445	1.0008	24.388	1.0017	17.113	39
22	1.0000	156.26	1.0003	41.928	1.0008	24.216	1.0017	17.028	38
23	1.0000	149.47	1.0003	41.423	1.0009	24.047	1.0017	16.944	37
24	1.0000	143.24	1.0003	40.930	1.0009	23.880	1.0018	16.861	36
25	1.0000	137.51	1.0003	40.448	1.0009	23.716	1.0018	16.779	35
26	1.0000	132.22	1.0003	39.978	1.0009	23.553	1.0018	16.698	34
27	1.0000	127.32	1.0003	39.518	1.0009	23.393	1.0018	16.617	33
28	1.0000	122.78	1.0003	39.069	1.0009	23.235	1.0018	16.538	32
29	1.0000	118.54	1.0003	38.631	1.0009	23.079	1.0018	16.459	31
30	1.0000	114.59	1.0003	38.201	1.0009	22.925	1.0019	16.380	30
31	1.0000	110.90	1.0003	37.782	1.0010	22.774	1.0019	16.303	29
32	1.0000	107.43	1.0003	37.371	1.0010	22.624	1.0019	16.226	28
33	1.0000	104.17	1.0004	36.969	1.0010	22.476	1.0019	16.150	27
34	1.0000	101.11	1.0004	36.576	1.0010	22.330	1.0019	16.075	26
35	1.0000	98.223	1.0004	36.191	1.0010	22.186	1.0019	16.000	25
36	1.0000	95.495	1.0004	35.814	1.0010	22.044	1.0020	15.926	24
37	1.0000	92.914	1.0004	35.445	1.0010	21.904	1.0020	15.853	23
38	1.0001	92.469	1.0004	35.084	1.0010	21.765	1.0020	15.780	22
39	1.0001	88.149	1.0004	34.729	1.0011	21.629	1.0020	15.708	21
40	1.0001	85.946	1.0004	34.382	1.0011	21.494	1.0020	15.637	20
41	1.0001	83.849	1.0004	34.042	1.0011	21.360	1.0021	15.566	19
42	1.0001	81.853	1.0004	33.708	1.0011	21.228	1.0021	15.496	18
43	1.0001	79.950	1.0004	33.381	1.0011	21.098	1.0021	15.427	17
44	1.0001	78.133	1.0004	33.060	1.0011	20.970	1.0021	15.358	16
45	1.0001	76.396	1.0005	32.745	1.0011	20.843	1.0021	15.290	15
46	1.0001	74.736	1.0005	32.437	1.0012	20.717	1.0022	15.222	14
47	1.0001	73.146	1.0005	32.134	1.0012	20.593	1.0022	15.155	13
48	1.0001	71.622	1.0005	31.836	1.0012	20.471	1.0022	15.089	12
49	1.0001	71.160	1.0005	31.544	1.0012	20.350	1.0022	15.023	11
50	1.0001	68.757	1.0005	31.257	1.0012	20.230	1.0022	14.958	10
51	1.0001	67.409	1.0005	30.976	1.0012	20.112	1.0023	14.893	9
52	1.0001	66.113	1.0005	30.699	1.0012	19.995	1.0023	14.829	8
53	1.0001	64.866	1.0005	30.428	1.0013	19.880	1.0023	14.765	7
54	1.0001	63.664	1.0005	30.161	1.0013	19.766	1.0023	14.702	6
55	1.0001	62.507	1.0005	29.899	1.0013	19.653	1.0023	14.640	5
56	1.0001	61.391	1.0006	29.641	1.0013	19.541	1.0024	14.578	4
57	1.0001	61.314	1.0006	29.388	1.0013	19.431	1.0024	14.517	3
58	1.0001	59.274	1.0006	29.139	1.0013	19.322	1.0024	14.456	2
59	1.0001	58.270	1.0006	28.894	1.0013	19.214	1.0024	14.395	1
60	1.0001	57.299	1.0006	28.654	1.0014	19.107	1.0024	14.335	0
	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	
	89°		88°		87°		86°		

NATURAL SECANTS AND CO-SECANTS

'	4°		5°		6°		7°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0024	14.335	1.0038	11.474	1.0055	9.5668	1.0075	8.2055	60
1	1.0025	14.276	1.0038	11.436	1.0055	9.5404	1.0075	8.1861	59
2	1.0025	14.217	1.0039	11.398	1.0056	9.5141	1.0076	8.1668	58
3	1.0025	14.159	1.0039	11.360	1.0056	9.4880	1.0076	8.1476	57
4	1.0025	14.101	1.0039	11.323	1.0056	9.4620	1.0076	8.1285	56
5	1.0025	14.043	1.0039	11.286	1.0057	9.4362	1.0077	8.1094	55
6	1.0026	13.986	1.0040	11.249	1.0057	9.4105	1.0077	8.0905	54
7	1.0026	13.930	1.0040	11.213	1.0057	9.3850	1.0078	8.0717	53
8	1.0026	13.874	1.0040	11.176	1.0057	9.3596	1.0078	8.0529	52
9	1.0026	13.818	1.0040	11.140	1.0058	9.3343	1.0078	8.0342	51
10	1.0026	13.763	1.0041	11.104	1.0058	9.3092	1.0079	8.0156	50
11	1.0027	13.708	1.0041	11.069	1.0058	9.2842	1.0079	7.9971	49
12	1.0027	13.654	1.0041	11.033	1.0059	9.2593	1.0079	7.9787	48
13	1.0027	13.600	1.0041	10.988	1.0059	9.2346	1.0080	7.9604	47
14	1.0027	13.547	1.0042	10.963	1.0059	9.2100	1.0080	7.9421	46
15	1.0027	13.494	1.0042	10.929	1.0060	9.1855	1.0080	7.9240	45
16	1.0028	13.441	1.0042	10.894	1.0060	9.1612	1.0081	7.9059	44
17	1.0028	13.389	1.0043	10.860	1.0060	9.1370	1.0081	7.8879	43
18	1.0028	13.337	1.0043	10.826	1.0061	9.1129	1.0082	7.8700	42
19	1.0028	13.286	1.0043	10.792	1.0061	9.0890	1.0082	7.8522	41
20	1.0029	13.235	1.0043	10.758	1.0061	9.0651	1.0082	7.8344	40
21	1.0029	13.184	1.0044	10.725	1.0062	9.0414	1.0083	7.8168	39
22	1.0029	13.134	1.0044	10.692	1.0062	9.0179	1.0083	7.7992	38
23	1.0029	13.084	1.0044	10.659	1.0062	8.9944	1.0084	7.7817	37
24	1.0029	13.034	1.0044	10.626	1.0063	8.9711	1.0084	7.7642	36
25	1.0030	12.985	1.0045	10.593	1.0063	8.9479	1.0084	7.7469	35
26	1.0030	12.937	1.0045	10.561	1.0063	8.9248	1.0085	7.7296	34
27	1.0030	12.888	1.0045	10.529	1.0064	8.9018	1.0085	7.7124	33
28	1.0030	12.840	1.0046	10.497	1.0064	8.8790	1.0085	7.6953	32
29	1.0031	12.793	1.0046	10.465	1.0064	8.8563	1.0086	7.6783	31
30	1.0031	12.745	1.0046	10.433	1.0065	8.8337	1.0086	7.6613	30
31	1.0031	12.698	1.0046	10.402	1.0065	8.8112	1.0087	7.6444	29
32	1.0031	12.652	1.0047	10.371	1.0065	8.7888	1.0087	7.6276	28
33	1.0032	12.606	1.0047	10.340	1.0066	8.7665	1.0087	7.6108	27
34	1.0032	12.560	1.0047	10.309	1.0066	8.7444	1.0088	7.5942	26
35	1.0032	12.514	1.0048	10.278	1.0066	8.7223	1.0088	7.5776	25
36	1.0032	12.469	1.0048	10.248	1.0067	8.7004	1.0089	7.5611	24
37	1.0032	12.424	1.0048	10.217	1.0067	8.6786	1.0089	7.5446	23
38	1.0033	12.379	1.0048	10.187	1.0067	8.6569	1.0089	7.5282	22
39	1.0033	12.335	1.0049	10.157	1.0068	8.6353	1.0090	7.5119	21
40	1.0033	12.291	1.0049	10.127	1.0068	8.6138	1.0090	7.4957	20
41	1.0033	12.248	1.0049	10.098	1.0068	8.5924	1.0090	7.4795	19
42	1.0034	12.204	1.0050	10.068	1.0069	8.5711	1.0091	7.4634	18
43	1.0034	12.161	1.0050	10.039	1.0069	8.5499	1.0091	7.4474	17
44	1.0034	12.118	1.0050	10.010	1.0069	8.5289	1.0092	7.4315	16
45	1.0034	12.076	1.0050	9.9812	1.0070	8.5079	1.0092	7.4156	15
46	1.0035	12.034	1.0051	9.9525	1.0070	8.4871	1.0092	7.3998	14
47	1.0035	11.992	1.0051	9.9239	1.0070	8.4663	1.0093	7.3840	13
48	1.0035	11.950	1.0051	9.8955	1.0071	8.4457	1.0093	7.3683	12
49	1.0035	11.909	1.0052	9.8672	1.0071	8.4251	1.0094	7.3527	11
50	1.0036	11.868	1.0052	9.8391	1.0071	8.4046	1.0094	7.3372	10
51	1.0036	11.828	1.0052	9.8112	1.0072	8.3843	1.0094	7.3217	9
52	1.0036	11.787	1.0053	9.7834	1.0072	8.3640	1.0095	7.3063	8
53	1.0036	11.747	1.0053	9.7558	1.0073	8.3439	1.0095	7.2909	7
54	1.0037	11.707	1.0053	9.7283	1.0073	8.3238	1.0096	7.2757	6
55	1.0037	11.668	1.0053	9.7010	1.0073	8.3039	1.0096	7.2604	5
56	1.0037	11.628	1.0054	9.6739	1.0074	8.2840	1.0097	7.2453	4
57	1.0037	11.589	1.0054	9.6469	1.0074	8.2642	1.0097	7.2302	3
58	1.0038	11.550	1.0054	9.6200	1.0074	8.2446	1.0097	7.2152	2
59	1.0038	11.512	1.0055	9.5933	1.0075	8.2250	1.0098	7.2002	1
60	1.0038	11.474	1.0055	9.5668	1.0075	8.2055	1.0098	7.1853	0
'	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	'
	85°		84°		83°		82°		

NATURAL SECANTS AND CO-SECANTS

'	8°		9°		10°		11°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0098	7.1853	1.0125	6.3924	1.0154	5.7588	1.0178	5.2408	60
1	1.0099	7.1704	1.0125	6.3807	1.0155	5.7493	1.0188	5.2330	59
2	1.0099	7.1557	1.0125	6.3690	1.0155	5.7398	1.0188	5.2252	58
3	1.0099	7.1409	1.0126	6.3574	1.0156	5.7304	1.0189	5.2174	57
4	1.0100	7.1263	1.0126	6.3458	1.0156	5.7210	1.0189	5.2097	56
5	1.0100	7.1117	1.0127	6.3343	1.0157	5.7117	1.0190	5.2019	55
6	1.0101	7.0972	1.0127	6.3228	1.0157	5.7023	1.0191	5.1942	54
7	1.0101	7.0827	1.0128	6.3113	1.0158	5.6930	1.0191	5.1865	53
8	1.0102	7.0683	1.0128	6.2999	1.0158	5.6838	1.0192	5.1788	52
9	1.0102	7.0539	1.0129	6.2885	1.0159	5.6745	1.0192	5.1712	51
10	1.0102	7.0396	1.0129	6.2772	1.0159	5.6653	1.0193	5.1635	50
11	1.0103	7.0254	1.0130	6.2659	1.0160	5.6561	1.0193	5.1560	49
12	1.0103	7.0112	1.0130	6.2546	1.0160	5.6470	1.0194	5.1484	48
13	1.0104	6.9971	1.0131	6.2434	1.0161	5.6379	1.0195	5.1409	47
14	1.0104	6.9830	1.0131	6.2322	1.0162	5.6288	1.0195	5.1333	46
15	1.0104	6.9690	1.0132	6.2211	1.0162	5.6197	1.0196	5.1258	45
16	1.0105	6.9550	1.0132	6.2100	1.0163	5.6107	1.0196	5.1183	44
17	1.0105	6.9411	1.0133	6.1990	1.0163	5.6017	1.0197	5.1109	43
18	1.0106	6.9273	1.0133	6.1880	1.0164	5.5928	1.0198	5.1034	42
19	1.0106	6.9135	1.0134	6.1770	1.0164	5.5838	1.0198	5.0960	41
20	1.0107	6.8998	1.0134	6.1661	1.0165	5.5749	1.0199	5.0886	40
21	1.0107	6.8861	1.0135	6.1552	1.0165	5.5660	1.0199	5.0812	39
22	1.0107	6.8725	1.0135	6.1443	1.0166	5.5572	1.0200	5.0739	38
23	1.0108	6.8589	1.0136	6.1335	1.0166	5.5484	1.0201	5.0666	37
24	1.0108	6.8454	1.0136	6.1227	1.0167	5.5396	1.0201	5.0593	36
25	1.0109	6.8320	1.0136	6.1120	1.0167	5.5308	1.0202	5.0520	35
26	1.0109	6.8185	1.0137	6.1013	1.0168	5.5221	1.0202	5.0447	34
27	1.0110	6.8052	1.0137	6.0906	1.0169	5.5134	1.0203	5.0375	33
28	1.0110	6.7919	1.0138	6.0800	1.0169	5.5047	1.0204	5.0302	32
29	1.0111	6.7787	1.0138	6.0694	1.0170	5.4960	1.0204	5.0230	31
30	1.0111	6.7655	1.0139	6.0588	1.0170	5.4874	1.0205	5.0158	30
31	1.0111	6.7523	1.0139	6.0483	1.0171	5.4788	1.0205	5.0087	29
32	1.0112	6.7392	1.0140	6.0379	1.0171	5.4702	1.0206	5.0015	28
33	1.0112	6.7262	1.0140	6.0274	1.0172	5.4617	1.0207	4.9944	27
34	1.0113	6.7132	1.0141	6.0170	1.0172	5.4532	1.0207	4.9873	26
35	1.0113	6.7003	1.0141	6.0066	1.0173	5.4447	1.0208	4.9802	25
36	1.0114	6.6874	1.0142	5.9963	1.0174	5.4362	1.0208	4.9732	24
37	1.0114	6.6745	1.0142	5.9860	1.0174	5.4278	1.0209	4.9661	23
38	1.0115	6.6617	1.0143	5.9758	1.0175	5.4194	1.0210	4.9591	22
39	1.0115	6.6490	1.0143	5.9655	1.0175	5.4110	1.0210	4.9521	21
40	1.0115	6.6363	1.0144	5.9554	1.0176	5.4026	1.0211	4.9452	20
41	1.0116	6.6237	1.0144	5.9452	1.0176	5.3943	1.0211	4.9382	19
42	1.0116	6.6111	1.0145	5.9351	1.0177	5.3860	1.0212	4.9313	18
43	1.0117	6.5985	1.0145	5.9250	1.0177	5.3777	1.0213	4.9244	17
44	1.0117	6.5860	1.0146	5.9150	1.0178	5.3695	1.0213	4.9175	16
45	1.0118	6.5736	1.0146	5.9049	1.0179	5.3612	1.0214	4.9106	15
46	1.0118	6.5612	1.0147	5.8950	1.0179	5.3530	1.0215	4.9037	14
47	1.0119	6.5488	1.0147	5.8850	1.0180	5.3449	1.0215	4.8969	13
48	1.0119	6.5365	1.0148	5.8751	1.0180	5.3367	1.0216	4.8901	12
49	1.0119	6.5243	1.0148	5.8652	1.0181	5.3286	1.0216	4.8833	11
50	1.0120	6.5121	1.0149	5.8554	1.0181	5.3205	1.0217	4.8765	10
51	1.0120	6.4999	1.0150	5.8456	1.0182	5.3124	1.0218	4.8697	9
52	1.0121	6.4878	1.0150	5.8358	1.0182	5.3044	1.0218	4.8630	8
53	1.0121	6.4757	1.0151	5.8261	1.0183	5.2963	1.0219	4.8563	7
54	1.0122	6.4637	1.0151	5.8163	1.0184	5.2883	1.0220	4.8496	6
55	1.0122	6.4517	1.0152	5.8067	1.0184	5.2803	1.0220	4.8429	5
56	1.0123	6.4398	1.0152	5.7970	1.0185	5.2724	1.0221	4.8362	4
57	1.0123	6.4279	1.0153	5.7874	1.0185	5.2645	1.0221	4.8296	3
58	1.0124	6.4160	1.0153	5.7778	1.0186	5.2566	1.0222	4.8229	2
59	1.0124	6.4042	1.0154	5.7683	1.0186	5.2487	1.0223	4.8163	1
60	1.0125	6.3924	1.0154	5.7588	1.0187	5.2408	1.0223	4.8097	0
/	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	/
	81°		80°		79°		78°		

NATURAL SECANTS AND CO-SECANTS

'	12°		13°		14°		15°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0223	4.8097	1.0263	4.4454	1.0306	4.1336	1.0353	3.8637	60
1	1.0224	4.8032	1.0264	4.4398	1.0307	4.1287	1.0353	3.8595	59
2	1.0225	4.7966	1.0264	4.4342	1.0308	4.1239	1.0354	3.8553	58
3	1.0225	4.7901	1.0265	4.4287	1.0308	4.1191	1.0355	3.8512	57
4	1.0226	4.7835	1.0266	4.4231	1.0309	4.1144	1.0356	3.8470	56
5	1.0226	4.7770	1.0266	4.4176	1.0310	4.1096	1.0357	3.8428	55
6	1.0227	4.7706	1.0267	4.4121	1.0311	4.1048	1.0358	3.8387	54
7	1.0228	4.7641	1.0268	4.4065	1.0311	4.1001	1.0358	3.8346	53
8	1.0228	4.7576	1.0268	4.4011	1.0312	4.0953	1.0359	3.8304	52
9	1.0229	4.7512	1.0269	4.3956	1.0313	4.0906	1.0360	3.8263	51
10	1.0230	4.7448	1.0270	4.3910	1.0314	4.0859	1.0361	3.8222	50
11	1.0230	4.7384	1.0271	4.3847	1.0314	4.0812	1.0362	3.8181	49
12	1.0231	4.7320	1.0271	4.3792	1.0315	4.0765	1.0362	3.8140	48
13	1.0232	4.7257	1.0272	4.3738	1.0316	4.0718	1.0363	3.8100	47
14	1.0232	4.7193	1.0273	4.3684	1.0317	4.0672	1.0364	3.8059	46
15	1.0233	4.7130	1.0273	4.3630	1.0317	4.0625	1.0365	3.8018	45
16	1.0234	4.7067	1.0274	4.3576	1.0318	4.0579	1.0366	3.7978	44
17	1.0234	4.7004	1.0275	4.3522	1.0319	4.0532	1.0367	3.7937	43
18	1.0235	4.6942	1.0276	4.3469	1.0320	4.0486	1.0367	3.7897	42
19	1.0235	4.6879	1.0276	4.3415	1.0320	4.0440	1.0368	3.7857	41
20	1.0236	4.6817	1.0277	4.3362	1.0321	4.0394	1.0369	3.7816	40
21	1.0237	4.6754	1.0278	4.3309	1.0322	4.0348	1.0370	3.7776	39
22	1.0237	4.6692	1.0278	4.3256	1.0323	4.0302	1.0371	3.7736	38
23	1.0238	4.6631	1.0279	4.3203	1.0323	4.0256	1.0371	3.7697	37
24	1.0239	4.6569	1.0280	4.3150	1.0324	4.0211	1.0372	3.7657	36
25	1.0239	4.6507	1.0280	4.3098	1.0325	4.0165	1.0373	3.7617	35
26	1.0240	4.6446	1.0281	4.3045	1.0326	4.0120	1.0374	3.7577	34
27	1.0241	4.6385	1.0282	4.2993	1.0327	4.0074	1.0375	3.7538	33
28	1.0241	4.6324	1.0283	4.2941	1.0327	4.0029	1.0376	3.7498	32
29	1.0242	4.6263	1.0283	4.2888	1.0328	3.9984	1.0376	3.7459	31
30	1.0243	4.6202	1.0284	4.2836	1.0329	3.9939	1.0377	3.7420	30
31	1.0243	4.6142	1.0285	4.2785	1.0330	3.9894	1.0378	3.7380	29
32	1.0244	4.6081	1.0285	4.2733	1.0330	3.9850	1.0379	3.7341	28
33	1.0245	4.6021	1.0286	4.2681	1.0331	3.9805	1.0380	3.7302	27
34	1.0245	4.5961	1.0287	4.2630	1.0332	3.9760	1.0381	3.7263	26
35	1.0246	4.5901	1.0288	4.2579	1.0333	3.9716	1.0382	3.7224	25
36	1.0247	4.5841	1.0288	4.2527	1.0334	3.9672	1.0382	3.7186	24
37	1.0247	4.5782	1.0289	4.2476	1.0334	3.9627	1.0383	3.7147	23
38	1.0248	4.5722	1.0290	4.2425	1.0335	3.9583	1.0384	3.7108	22
39	1.0249	4.5663	1.0291	4.2375	1.0336	3.9539	1.0385	3.7070	21
40	1.0249	4.5604	1.0291	4.2324	1.0337	3.9495	1.0386	3.7031	20
41	1.0250	4.5545	1.0292	4.2273	1.0338	3.9451	1.0387	3.6993	19
42	1.0251	4.5486	1.0293	4.2223	1.0338	3.9408	1.0387	3.6955	18
43	1.0251	4.5428	1.0293	4.2173	1.0339	3.9364	1.0388	3.6917	17
44	1.0252	4.5369	1.0294	4.2122	1.0340	3.9320	1.0389	3.6878	16
45	1.0253	4.5311	1.0295	4.2072	1.0341	3.9277	1.0390	3.6840	15
46	1.0253	4.5253	1.0296	4.2022	1.0341	3.9234	1.0391	3.6802	14
47	1.0254	4.5195	1.0296	4.1972	1.0342	3.9191	1.0392	3.6765	13
48	1.0255	4.5137	1.0297	4.1923	1.0343	3.9147	1.0393	3.6727	12
49	1.0255	4.5079	1.0298	4.1873	1.0344	3.9104	1.0393	3.6689	11
50	1.0256	4.5021	1.0299	4.1824	1.0345	3.9061	1.0394	3.6651	10
51	1.0257	4.4964	1.0299	4.1774	1.0345	3.9018	1.0395	3.6614	9
52	1.0257	4.4907	1.0300	4.1725	1.0346	3.8976	1.0396	3.6576	8
53	1.0258	4.4850	1.0301	4.1676	1.0347	3.8933	1.0397	3.6539	7
54	1.0259	4.4793	1.0302	4.1627	1.0348	3.8890	1.0398	3.6502	6
55	1.0260	4.4736	1.0302	4.1578	1.0349	3.8848	1.0399	3.6464	5
56	1.0260	4.4679	1.0303	4.1529	1.0349	3.8805	1.0399	3.6427	4
57	1.0261	4.4623	1.0304	4.1481	1.0350	3.8763	1.0400	3.6390	3
58	1.0262	4.4566	1.0305	4.1432	1.0351	3.8721	1.0401	3.6353	2
59	1.0262	4.4510	1.0305	4.1384	1.0352	3.8679	1.0402	3.6316	1
60	1.0263	4.4454	1.0306	4.1336	1.0353	3.8637	1.0403	3.6279	0
'	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	'
	77°		76°		75°		74°		

NATURAL SECANTS AND CO-SECANTS

'	16°		17°		18°		19°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0403	3.6279	1.0457	3.4203	1.0515	3.2361	1.0576	3.0715	60
1	1.0404	3.6243	1.0458	3.4170	1.0516	3.2332	1.0577	3.0690	59
2	1.0405	3.6206	1.0459	3.4138	1.0517	3.2303	1.0578	3.0664	58
3	1.0406	3.6169	1.0460	3.4106	1.0518	3.2274	1.0579	3.0638	57
4	1.0406	3.6133	1.0461	3.4073	1.0519	3.2245	1.0580	3.0612	56
5	1.0407	3.6096	1.0461	3.4041	1.0520	3.2216	1.0581	3.0586	55
6	1.0408	3.6060	1.0462	3.4009	1.0521	3.2188	1.0582	3.0561	54
7	1.0409	3.6024	1.0463	3.3977	1.0522	3.2159	1.0584	3.0535	53
8	1.0410	3.5987	1.0464	3.3945	1.0523	3.2131	1.0585	3.0509	52
9	1.0411	3.5951	1.0465	3.3913	1.0524	3.2102	1.0586	3.0484	51
10	1.0412	3.5915	1.0466	3.3881	1.0525	3.2074	1.0587	3.0458	50
11	1.0413	3.5879	1.0467	3.3849	1.0526	3.2045	1.0588	3.0433	49
12	1.0413	3.5843	1.0468	3.3817	1.0527	3.2017	1.0589	3.0407	48
13	1.0414	3.5807	1.0469	3.3785	1.0528	3.1989	1.0590	3.0382	47
14	1.0415	3.5772	1.0470	3.3754	1.0529	3.1960	1.0591	3.0357	46
15	1.0416	3.5736	1.0471	3.3722	1.0530	3.1932	1.0592	3.0331	45
16	1.0417	3.5700	1.0472	3.3690	1.0531	3.1904	1.0593	3.0306	44
17	1.0418	3.5665	1.0473	3.3659	1.0532	3.1876	1.0594	3.0281	43
18	1.0419	3.5629	1.0474	3.3627	1.0533	3.1848	1.0595	3.0256	42
19	1.0420	3.5594	1.0475	3.3596	1.0534	3.1820	1.0596	3.0231	41
20	1.0420	3.5559	1.0476	3.3565	1.0535	3.1792	1.0598	3.0206	40
21	1.0421	3.5523	1.0477	3.3534	1.0536	3.1764	1.0599	3.0181	39
22	1.0422	3.5488	1.0478	3.3502	1.0537	3.1736	1.0600	3.0156	38
23	1.0423	3.5453	1.0478	3.3471	1.0538	3.1708	1.0601	3.0131	37
24	1.0424	3.5418	1.0479	3.3440	1.0539	3.1681	1.0602	3.0106	36
25	1.0425	3.5383	1.0480	3.3409	1.0540	3.1653	1.0603	3.0081	35
26	1.0426	3.5348	1.0481	3.3378	1.0541	3.1625	1.0604	3.0056	34
27	1.0427	3.5313	1.0482	3.3347	1.0542	3.1598	1.0605	3.0031	33
28	1.0428	3.5279	1.0483	3.3316	1.0543	3.1570	1.0606	3.0007	32
29	1.0428	3.5244	1.0484	3.3286	1.0544	3.1543	1.0607	2.9982	31
30	1.0429	3.5209	1.0485	3.3255	1.0545	3.1515	1.0608	2.9957	30
31	1.0430	3.5175	1.0486	3.3224	1.0546	3.1488	1.0609	2.9933	29
32	1.0431	3.5140	1.0487	3.3194	1.0547	3.1461	1.0611	2.9908	28
33	1.0432	3.5106	1.0488	3.3163	1.0548	3.1433	1.0612	2.9884	27
34	1.0433	3.5072	1.0489	3.3133	1.0549	3.1406	1.0613	2.9859	26
35	1.0434	3.5037	1.0490	3.3102	1.0550	3.1379	1.0614	2.9835	25
36	1.0435	3.5003	1.0491	3.3072	1.0551	3.1352	1.0615	2.9810	24
37	1.0436	3.4969	1.0492	3.3042	1.0552	3.1325	1.0616	2.9786	23
38	1.0437	3.4935	1.0493	3.3011	1.0553	3.1298	1.0617	2.9762	22
39	1.0438	3.4901	1.0494	3.2981	1.0554	3.1271	1.0618	2.9738	21
40	1.0438	3.4867	1.0495	3.2951	1.0555	3.1244	1.0619	2.9713	20
41	1.0439	3.4833	1.0496	3.2921	1.0556	3.1217	1.0620	2.9689	19
42	1.0440	3.4799	1.0497	3.2891	1.0557	3.1190	1.0622	2.9665	18
43	1.0441	3.4766	1.0498	3.2861	1.0558	3.1163	1.0623	2.9641	17
44	1.0442	3.4732	1.0499	3.2831	1.0559	3.1137	1.0624	2.9617	16
45	1.0443	3.4698	1.0500	3.2801	1.0560	3.1110	1.0625	2.9593	15
46	1.0444	3.4665	1.0501	3.2772	1.0561	3.1083	1.0626	2.9569	14
47	1.0445	3.4632	1.0502	3.2742	1.0562	3.1057	1.0627	2.9545	13
48	1.0446	3.4598	1.0503	3.2712	1.0563	3.1030	1.0628	2.9521	12
49	1.0447	3.4565	1.0504	3.2683	1.0565	3.1004	1.0629	2.9497	11
50	1.0448	3.4532	1.0505	3.2653	1.0566	3.0977	1.0630	2.9474	10
51	1.0448	3.4498	1.0506	3.2624	1.0567	3.0951	1.0632	2.9450	9
52	1.0449	3.4465	1.0507	3.2594	1.0568	3.0925	1.0633	2.9426	8
53	1.0450	3.4432	1.0508	3.2565	1.0569	3.0898	1.0634	2.9402	7
54	1.0451	3.4399	1.0509	3.2535	1.0570	3.0872	1.0635	2.9379	6
55	1.0452	3.4366	1.0510	3.2506	1.0571	3.0846	1.0636	2.9355	5
56	1.0453	3.4334	1.0511	3.2477	1.0572	3.0820	1.0637	2.9332	4
57	1.0454	3.4301	1.0512	3.2448	1.0573	3.0793	1.0638	2.9308	3
58	1.0455	3.4268	1.0513	3.2419	1.0574	3.0767	1.0639	2.9285	2
59	1.0456	3.4236	1.0514	3.2390	1.0575	3.0741	1.0641	2.9261	1
60	1.0457	3.4203	1.0515	3.2361	1.0576	3.0715	1.0642	2.9238	0
'	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	'

73°

72°

71°

70°

NATURAL SECANTS AND CO-SECANTS

'	20°		21°		22°		23°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0642	2.9238	1.0711	2.7904	1.0785	2.6695	1.0864	2.5593	60
1	1.0643	2.9215	1.0713	2.7883	1.0787	2.6675	1.0865	2.5575	59
2	1.0644	2.9191	1.0714	2.7862	1.0788	2.6656	1.0866	2.5558	58
3	1.0645	2.9168	1.0715	2.7841	1.0789	2.6637	1.0868	2.5540	57
4	1.0646	2.9145	1.0716	2.7820	1.0790	2.6618	1.0869	2.5523	56
5	1.0647	2.9122	1.0717	2.7799	1.0792	2.6599	1.0870	2.5506	55
6	1.0648	2.9098	1.0719	2.7778	1.0793	2.6580	1.0872	2.5488	54
7	1.0650	2.9075	1.0720	2.7757	1.0794	2.6561	1.0873	2.5471	53
8	1.0651	2.9052	1.0721	2.7736	1.0795	2.6542	1.0874	2.5453	52
9	1.0652	2.9029	1.0722	2.7715	1.0797	2.6523	1.0876	2.5436	51
10	1.0653	2.9006	1.0723	2.7694	1.0798	2.6504	1.0877	2.5419	50
11	1.0654	2.8983	1.0725	2.7674	1.0799	2.6485	1.0878	2.5402	49
12	1.0655	2.8960	1.0726	2.7653	1.0801	2.6466	1.0880	2.5384	48
13	1.0656	2.8937	1.0727	2.7632	1.0802	2.6447	1.0881	2.5367	47
14	1.0658	2.8915	1.0728	2.7611	1.0803	2.6428	1.0882	2.5350	46
15	1.0659	2.8892	1.0729	2.7591	1.0804	2.6410	1.0884	2.5333	45
16	1.0660	2.8869	1.0731	2.7570	1.0806	2.6391	1.0885	2.5316	44
17	1.0661	2.8846	1.0732	2.7550	1.0807	2.6372	1.0886	2.5299	43
18	1.0662	2.8824	1.0733	2.7529	1.0808	2.6353	1.0888	2.5281	42
19	1.0663	2.8801	1.0734	2.7509	1.0810	2.6335	1.0889	2.5264	41
20	1.0664	2.8778	1.0736	2.7488	1.0811	2.6316	1.0891	2.5247	40
21	1.0666	2.8756	1.0737	2.7468	1.0812	2.6297	1.0892	2.5230	39
22	1.0667	2.8733	1.0738	2.7447	1.0813	2.6279	1.0893	2.5213	38
23	1.0668	2.8711	1.0739	2.7427	1.0815	2.6260	1.0895	2.5196	37
24	1.0669	2.8688	1.0740	2.7406	1.0816	2.6242	1.0896	2.5179	36
25	1.0670	2.8666	1.0742	2.7386	1.0817	2.6223	1.0897	2.5163	35
26	1.0671	2.8644	1.0743	2.7366	1.0819	2.6205	1.0899	2.5146	34
27	1.0673	2.8621	1.0744	2.7346	1.0820	2.6186	1.0900	2.5129	33
28	1.0674	2.8599	1.0745	2.7325	1.0821	2.6168	1.0902	2.5112	32
29	1.0675	2.8577	1.0747	2.7305	1.0823	2.6150	1.0903	2.5095	31
30	1.0676	2.8554	1.0748	2.7285	1.0824	2.6131	1.0904	2.5078	30
31	1.0677	2.8532	1.0749	2.7265	1.0825	2.6113	1.0906	2.5062	29
32	1.0678	2.8510	1.0750	2.7245	1.0826	2.6095	1.0907	2.5045	28
33	1.0679	2.8488	1.0751	2.7225	1.0828	2.6076	1.0908	2.5028	27
34	1.0681	2.8466	1.0753	2.7205	1.0829	2.6058	1.0910	2.5011	26
35	1.0682	2.8444	1.0754	2.7185	1.0830	2.6040	1.0911	2.4995	25
36	1.0683	2.8422	1.0755	2.7165	1.0832	2.6022	1.0913	2.4978	24
37	1.0684	2.8400	1.0756	2.7145	1.0833	2.6003	1.0914	2.4961	23
38	1.0685	2.8378	1.0758	2.7125	1.0834	2.5985	1.0915	2.4945	22
39	1.0686	2.8356	1.0759	2.7105	1.0836	2.5967	1.0917	2.4928	21
40	1.0688	2.8334	1.0760	2.7085	1.0837	2.5949	1.0918	2.4912	20
41	1.0689	2.8312	1.0761	2.7065	1.0838	2.5931	1.0920	2.4895	19
42	1.0690	2.8290	1.0763	2.7045	1.0840	2.5913	1.0921	2.4879	18
43	1.0691	2.8269	1.0764	2.7026	1.0841	2.5895	1.0922	2.4862	17
44	1.0692	2.8247	1.0765	2.7006	1.0842	2.5877	1.0924	2.4846	16
45	1.0694	2.8225	1.0766	2.6986	1.0844	2.5859	1.0925	2.4829	15
46	1.0695	2.8204	1.0768	2.6967	1.0845	2.5841	1.0927	2.4813	14
47	1.0696	2.8182	1.0769	2.6947	1.0846	2.5823	1.0928	2.4797	13
48	1.0697	2.8160	1.0770	2.6927	1.0847	2.5805	1.0929	2.4780	12
49	1.0698	2.8139	1.0771	2.6908	1.0849	2.5787	1.0931	2.4764	11
50	1.0699	2.8117	1.0773	2.6888	1.0850	2.5770	1.0932	2.4748	10
51	1.0701	2.8096	1.0774	2.6869	1.0851	2.5752	1.0934	2.4731	9
52	1.0702	2.8074	1.0775	2.6849	1.0853	2.5734	1.0935	2.4715	8
53	1.0703	2.8053	1.0776	2.6830	1.0854	2.5716	1.0936	2.4699	7
54	1.0704	2.8032	1.0778	2.6810	1.0855	2.5699	1.0938	2.4683	6
55	1.0705	2.8010	1.0779	2.6791	1.0857	2.5681	1.0939	2.4666	5
56	1.0707	2.7989	1.0780	2.6772	1.0858	2.5663	1.0941	2.4650	4
57	1.0708	2.7968	1.0781	2.6752	1.0859	2.5646	1.0942	2.4634	3
58	1.0709	2.7947	1.0783	2.6733	1.0861	2.5628	1.0943	2.4618	2
59	1.0710	2.7925	1.0784	2.6714	1.0862	2.5610	1.0945	2.4602	1
60	1.0711	2.7904	1.0785	2.6695	1.0864	2.5593	1.0946	2.4586	0
'	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	'
	69°		68°		67°		66°		

NATURAL SECANTS AND CO-SECANTS

/	24°		25°		26°		27°		/
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.0946	2.4586	1.1034	2.3662	1.1126	2.2812	1.1223	2.2027	60
1	1.0948	2.4570	1.1035	2.3647	1.1127	2.2798	1.1225	2.2014	59
2	1.0949	2.4554	1.1037	2.3632	1.1129	2.2784	1.1226	2.2002	58
3	1.0951	2.4538	1.1038	2.3618	1.1131	2.2771	1.1228	2.1989	57
4	1.0952	2.4522	1.1040	2.3603	1.1132	2.2757	1.1230	2.1977	56
5	1.0953	2.4506	1.1041	2.3588	1.1134	2.2744	1.1231	2.1964	55
6	1.0955	2.4490	1.1043	2.3574	1.1135	2.2730	1.1233	2.1952	54
7	1.0956	2.4474	1.1044	2.3559	1.1137	2.2717	1.1235	2.1939	53
8	1.0958	2.4458	1.1046	2.3544	1.1139	2.2703	1.1237	2.1927	52
9	1.0959	2.4442	1.1047	2.3530	1.1140	2.2690	1.1238	2.1914	51
10	1.0961	2.4426	1.1049	2.3515	1.1142	2.2676	1.1240	2.1902	50
11	1.0962	2.4411	1.1050	2.3501	1.1143	2.2663	1.1242	2.1889	49
12	1.0963	2.4395	1.1052	2.3486	1.1145	2.2650	1.1243	2.1877	48
13	1.0965	2.4379	1.1053	2.3472	1.1147	2.2636	1.1245	2.1865	47
14	1.0966	2.4363	1.1055	2.3457	1.1148	2.2623	1.1247	2.1852	46
15	1.0968	2.4347	1.1056	2.3443	1.1150	2.2610	1.1248	2.1840	45
16	1.0969	2.4332	1.1058	2.3428	1.1151	2.2596	1.1250	2.1828	44
17	1.0971	2.4316	1.1059	2.3414	1.1153	2.2583	1.1252	2.1815	43
18	1.0972	2.4300	1.1061	2.3399	1.1155	2.2570	1.1253	2.1803	42
19	1.0973	2.4285	1.1062	2.3385	1.1156	2.2556	1.1255	2.1791	41
20	1.0975	2.4269	1.1064	2.3371	1.1158	2.2543	1.1257	2.1778	40
21	1.0976	2.4254	1.1065	2.3356	1.1159	2.2530	1.1258	2.1766	39
22	1.0978	2.4238	1.1067	2.3342	1.1161	2.2517	1.1260	2.1754	38
23	1.0979	2.4222	1.1068	2.3328	1.1163	2.2503	1.1262	2.1742	37
24	1.0981	2.4207	1.1070	2.3313	1.1164	2.2490	1.1264	2.1730	36
25	1.0982	2.4191	1.1072	2.3299	1.1166	2.2477	1.1265	2.1717	35
26	1.0984	2.4176	1.1073	2.3285	1.1167	2.2464	1.1267	2.1705	34
27	1.0985	2.4160	1.1075	2.3271	1.1169	2.2451	1.1269	2.1693	33
28	1.0986	2.4145	1.1076	2.3256	1.1171	2.2438	1.1270	2.1681	32
29	1.0988	2.4130	1.1078	2.3242	1.1172	2.2425	1.1272	2.1669	31
30	1.0989	2.4114	1.1079	2.3228	1.1174	2.2411	1.1274	2.1657	30
31	1.0991	2.4099	1.1081	2.3214	1.1176	2.2398	1.1275	2.1645	29
32	1.0992	2.4083	1.1082	2.3200	1.1177	2.2385	1.1277	2.1633	28
33	1.0994	2.4068	1.1084	2.3186	1.1179	2.2372	1.1279	2.1620	27
34	1.0995	2.4053	1.1085	2.3172	1.1180	2.2359	1.1281	2.1608	26
35	1.0997	2.4037	1.1087	2.3158	1.1182	2.2346	1.1282	2.1596	25
36	1.0998	2.4022	1.1088	2.3143	1.1184	2.2333	1.1284	2.1584	24
37	1.1000	2.4007	1.1090	2.3129	1.1185	2.2320	1.1286	2.1572	23
38	1.1001	2.3992	1.1092	2.3115	1.1187	2.2307	1.1287	2.1560	22
39	1.1003	2.3976	1.1093	2.3101	1.1189	2.2294	1.1289	2.1548	21
40	1.1004	2.3961	1.1095	2.3087	1.1190	2.2282	1.1291	2.1536	20
41	1.1005	2.3946	1.1096	2.3073	1.1192	2.2269	1.1293	2.1525	19
42	1.1007	2.3931	1.1098	2.3059	1.1193	2.2256	1.1294	2.1513	18
43	1.1008	2.3916	1.1099	2.3046	1.1195	2.2243	1.1296	2.1501	17
44	1.1010	2.3901	1.1101	2.3032	1.1197	2.2230	1.1298	2.1489	16
45	1.1011	2.3886	1.1102	2.3018	1.1198	2.2217	1.1299	2.1477	15
46	1.1013	2.3871	1.1104	2.3004	1.1200	2.2204	1.1301	2.1465	14
47	1.1014	2.3856	1.1106	2.2990	1.1202	2.2192	1.1303	2.1453	13
48	1.1016	2.3841	1.1107	2.2976	1.1203	2.2179	1.1305	2.1441	12
49	1.1017	2.3826	1.1109	2.2962	1.1205	2.2166	1.1306	2.1430	11
50	1.1019	2.3811	1.1110	2.2949	1.1207	2.2153	1.1308	2.1418	10
51	1.1020	2.3796	1.1112	2.2935	1.1208	2.2141	1.1310	2.1406	9
52	1.1022	2.3781	1.1113	2.2921	1.1210	2.2128	1.1312	2.1394	8
53	1.1023	2.3766	1.1115	2.2907	1.1212	2.2115	1.1313	2.1382	7
54	1.1025	2.3751	1.1116	2.2894	1.1213	2.2103	1.1315	2.1371	6
55	1.1026	2.3736	1.1118	2.2880	1.1215	2.2090	1.1317	2.1359	5
56	1.1028	2.3721	1.1120	2.2866	1.1217	2.2077	1.1319	2.1347	4
57	1.1029	2.3706	1.1121	2.2853	1.1218	2.2065	1.1320	2.1335	3
58	1.1031	2.3691	1.1123	2.2839	1.1220	2.2052	1.1322	2.1324	2
59	1.1032	2.3677	1.1124	2.2825	1.1222	2.2039	1.1324	2.1312	1
60	1.1034	2.3662	1.1126	2.2812	1.1223	2.2027	1.1326	2.1300	0
7	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	7
	65°		64°		63°		62°		

NATURAL SECANTS AND CO-SECANTS

'	28°		29°		30°		31°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.1326	2.1300	1.1433	2.0627	1.1547	2.0000	1.1666	1.9416	60
1	1.1327	2.1289	1.1435	2.0616	1.1549	1.9990	1.1668	1.9407	59
2	1.1329	2.1277	1.1437	2.0605	1.1551	1.9980	1.1670	1.9397	58
3	1.1331	2.1266	1.1439	2.0594	1.1553	1.9970	1.1672	1.9388	57
4	1.1333	2.1254	1.1441	2.0583	1.1555	1.9960	1.1674	1.9378	56
5	1.1334	2.1242	1.1443	2.0573	1.1557	1.9950	1.1676	1.9369	55
6	1.1336	2.1231	1.1445	2.0562	1.1559	1.9940	1.1678	1.9360	54
7	1.1338	2.1219	1.1446	2.0551	1.1561	1.9930	1.1681	1.9350	53
8	1.1340	2.1208	1.1448	2.0540	1.1562	1.9920	1.1683	1.9341	52
9	1.1341	2.1196	1.1450	2.0530	1.1564	1.9910	1.1685	1.9332	51
10	1.1343	2.1185	1.1452	2.0519	1.1566	1.9900	1.1687	1.9322	50
11	1.1345	2.1173	1.1454	2.0508	1.1568	1.9890	1.1689	1.9313	49
12	1.1347	2.1162	1.1456	2.0498	1.1570	1.9880	1.1691	1.9304	48
13	1.1349	2.1150	1.1458	2.0487	1.1572	1.9870	1.1693	1.9295	47
14	1.1350	2.1139	1.1459	2.0476	1.1574	1.9860	1.1695	1.9285	46
15	1.1352	2.1127	1.1461	2.0466	1.1576	1.9850	1.1697	1.9276	45
16	1.1354	2.1116	1.1463	2.0455	1.1578	1.9840	1.1699	1.9267	44
17	1.1356	2.1104	1.1465	2.0444	1.1580	1.9830	1.1701	1.9258	43
18	1.1357	2.1093	1.1467	2.0434	1.1582	1.9820	1.1703	1.9248	42
19	1.1359	2.1082	1.1469	2.0423	1.1584	1.9811	1.1705	1.9239	41
20	1.1361	2.1070	1.1471	2.0413	1.1586	1.9801	1.1707	1.9230	40
21	1.1363	2.1059	1.1473	2.0402	1.1588	1.9791	1.1709	1.9221	39
22	1.1365	2.1048	1.1474	2.0392	1.1590	1.9781	1.1712	1.9212	38
23	1.1366	2.1036	1.1476	2.0381	1.1592	1.9771	1.1714	1.9203	37
24	1.1368	2.1025	1.1478	2.0370	1.1594	1.9761	1.1716	1.9193	36
25	1.1370	2.1014	1.1480	2.0360	1.1596	1.9752	1.1718	1.9184	35
26	1.1372	2.1002	1.1482	2.0349	1.1598	1.9742	1.1720	1.9175	34
27	1.1373	2.0991	1.1484	2.0339	1.1600	1.9732	1.1722	1.9166	33
28	1.1375	2.0980	1.1486	2.0329	1.1602	1.9722	1.1724	1.9157	32
29	1.1377	2.0969	1.1488	2.0318	1.1604	1.9713	1.1726	1.9148	31
30	1.1379	2.0957	1.1489	2.0308	1.1606	1.9703	1.1728	1.9139	30
31	1.1381	2.0946	1.1491	2.0297	1.1608	1.9693	1.1730	1.9130	29
32	1.1382	2.0935	1.1493	2.0287	1.1610	1.9683	1.1732	1.9121	28
33	1.1384	2.0924	1.1495	2.0276	1.1612	1.9674	1.1734	1.9112	27
34	1.1386	2.0912	1.1497	2.0266	1.1614	1.9664	1.1737	1.9102	26
35	1.1388	2.0901	1.1499	2.0256	1.1616	1.9654	1.1739	1.9093	25
36	1.1390	2.0890	1.1501	2.0245	1.1618	1.9645	1.1741	1.9084	24
37	1.1391	2.0879	1.1503	2.0235	1.1620	1.9635	1.1743	1.9075	23
38	1.1393	2.0868	1.1505	2.0224	1.1622	1.9625	1.1745	1.9066	22
39	1.1395	2.0857	1.1507	2.0214	1.1624	1.9616	1.1747	1.9057	21
40	1.1397	2.0846	1.1508	2.0204	1.1626	1.9606	1.1749	1.9048	20
41	1.1399	2.0835	1.1510	2.0194	1.1628	1.9596	1.1751	1.9039	19
42	1.1401	2.0824	1.1512	2.0183	1.1630	1.9587	1.1753	1.9030	18
43	1.1402	2.0812	1.1514	2.0173	1.1632	1.9577	1.1756	1.9021	17
44	1.1404	2.0801	1.1516	2.0163	1.1634	1.9568	1.1758	1.9013	16
45	1.1406	2.0790	1.1518	2.0152	1.1636	1.9558	1.1760	1.9004	15
46	1.1408	2.0779	1.1520	2.0142	1.1638	1.9549	1.1762	1.8995	14
47	1.1410	2.0768	1.1522	2.0132	1.1640	1.9539	1.1764	1.8986	13
48	1.1411	2.0757	1.1524	2.0122	1.1642	1.9530	1.1766	1.8977	12
49	1.1413	2.0746	1.1526	2.0111	1.1644	1.9520	1.1768	1.8968	11
50	1.1415	2.0735	1.1528	2.0101	1.1646	1.9510	1.1770	1.8959	10
51	1.1417	2.0725	1.1530	2.0091	1.1648	1.9501	1.1772	1.8950	9
52	1.1419	2.0714	1.1531	2.0081	1.1650	1.9491	1.1775	1.8941	8
53	1.1421	2.0703	1.1533	2.0071	1.1652	1.9482	1.1777	1.8932	7
54	1.1422	2.0692	1.1535	2.0061	1.1654	1.9473	1.1779	1.8924	6
55	1.1424	2.0681	1.1537	2.0050	1.1656	1.9463	1.1781	1.8915	5
56	1.1426	2.0670	1.1539	2.0040	1.1658	1.9454	1.1783	1.8906	4
57	1.1428	2.0659	1.1541	2.0030	1.1660	1.9444	1.1785	1.8897	3
58	1.1430	2.0648	1.1543	2.0020	1.1662	1.9435	1.1787	1.8888	2
59	1.1432	2.0637	1.1545	2.0010	1.1664	1.9425	1.1790	1.8879	1
60	1.1433	2.0627	1.1547	2.0000	1.1666	1.9416	1.1792	1.8871	0
7	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	7
	61°		60°		59°		58°		

NATURAL SECANTS AND CO-SECANTS

'	32°		33°		34°		35°		'
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.1792	1.8871	1.1924	1.8361	1.2062	1.7883	1.2208	1.7434	60
1	1.1794	1.8862	1.1926	1.8352	1.2064	1.7875	1.2210	1.7427	59
2	1.1796	1.8853	1.1928	1.8344	1.2067	1.7867	1.2213	1.7420	58
3	1.1798	1.8844	1.1930	1.8336	1.2069	1.7860	1.2215	1.7413	57
4	1.1800	1.8836	1.1933	1.8328	1.2072	1.7852	1.2218	1.7405	56
5	1.1802	1.8827	1.1935	1.8320	1.2074	1.7844	1.2220	1.7398	55
6	1.1805	1.8818	1.1937	1.8311	1.2076	1.7837	1.2223	1.7391	54
7	1.1807	1.8809	1.1939	1.8303	1.2079	1.7829	1.2225	1.7384	53
8	1.1809	1.8801	1.1942	1.8295	1.2081	1.7821	1.2228	1.7377	52
9	1.1811	1.8792	1.1944	1.8287	1.2083	1.7814	1.2230	1.7369	51
10	1.1813	1.8783	1.1946	1.8279	1.2086	1.7806	1.2233	1.7362	50
11	1.1815	1.8775	1.1948	1.8271	1.2088	1.7798	1.2235	1.7355	49
12	1.1818	1.8766	1.1951	1.8263	1.2091	1.7791	1.2238	1.7348	48
13	1.1820	1.8757	1.1953	1.8255	1.2093	1.7783	1.2240	1.7341	47
14	1.1822	1.8749	1.1955	1.8246	1.2095	1.7776	1.2243	1.7334	46
15	1.1824	1.8740	1.1958	1.8238	1.2098	1.7768	1.2245	1.7327	45
16	1.1826	1.8731	1.1960	1.8230	1.2100	1.7760	1.2248	1.7319	44
17	1.1828	1.8723	1.1962	1.8222	1.2103	1.7753	1.2250	1.7312	43
18	1.1831	1.8714	1.1964	1.8214	1.2105	1.7745	1.2253	1.7305	42
19	1.1833	1.8706	1.1967	1.8206	1.2107	1.7738	1.2255	1.7298	41
20	1.1835	1.8697	1.1969	1.8198	1.2110	1.7730	1.2258	1.7291	40
21	1.1837	1.8688	1.1971	1.8190	1.2112	1.7723	1.2260	1.7284	39
22	1.1839	1.8680	1.1974	1.8182	1.2115	1.7715	1.2263	1.7277	38
23	1.1841	1.8671	1.1976	1.8174	1.2117	1.7708	1.2265	1.7270	37
24	1.1844	1.8663	1.1978	1.8166	1.2119	1.7700	1.2268	1.7263	36
25	1.1846	1.8654	1.1980	1.8158	1.2122	1.7693	1.2270	1.7256	35
26	1.1848	1.8646	1.1983	1.8150	1.2124	1.7685	1.2273	1.7249	34
27	1.1850	1.8637	1.1985	1.8142	1.2127	1.7678	1.2276	1.7242	33
28	1.1852	1.8629	1.1987	1.8134	1.2129	1.7670	1.2278	1.7234	32
29	1.1855	1.8620	1.1990	1.8126	1.2132	1.7663	1.2281	1.7227	31
30	1.1857	1.8611	1.1992	1.8118	1.2134	1.7655	1.2283	1.7220	30
31	1.1859	1.8603	1.1994	1.8110	1.2136	1.7648	1.2286	1.7213	29
32	1.1861	1.8595	1.1997	1.8102	1.2139	1.7640	1.2288	1.7206	28
33	1.1863	1.8586	1.1999	1.8094	1.2141	1.7633	1.2291	1.7199	27
34	1.1866	1.8578	1.2001	1.8086	1.2144	1.7625	1.2293	1.7192	26
35	1.1868	1.8569	1.2004	1.8078	1.2146	1.7618	1.2296	1.7185	25
36	1.1870	1.8561	1.2006	1.8070	1.2149	1.7610	1.2298	1.7178	24
37	1.1872	1.8552	1.2008	1.8062	1.2151	1.7603	1.2301	1.7171	23
38	1.1874	1.8544	1.2010	1.8054	1.2153	1.7596	1.2304	1.7164	22
39	1.1877	1.8535	1.2013	1.8047	1.2156	1.7588	1.2306	1.7157	21
40	1.1879	1.8527	1.2015	1.8039	1.2158	1.7581	1.2309	1.7151	20
41	1.1881	1.8519	1.2017	1.8031	1.2161	1.7573	1.2311	1.7144	19
42	1.1883	1.8510	1.2020	1.8023	1.2163	1.7566	1.2314	1.7137	18
43	1.1886	1.8502	1.2022	1.8015	1.2166	1.7559	1.2316	1.7130	17
44	1.1888	1.8493	1.2024	1.8007	1.2168	1.7551	1.2319	1.7123	16
45	1.1890	1.8485	1.2027	1.7999	1.2171	1.7544	1.2322	1.7116	15
46	1.1892	1.8477	1.2029	1.7992	1.2173	1.7537	1.2324	1.7109	14
47	1.1894	1.8468	1.2031	1.7984	1.2175	1.7529	1.2327	1.7102	13
48	1.1897	1.8460	1.2034	1.7976	1.2178	1.7522	1.2329	1.7095	12
49	1.1899	1.8452	1.2036	1.7968	1.2180	1.7514	1.2332	1.7088	11
50	1.1901	1.8443	1.2039	1.7960	1.2183	1.7507	1.2335	1.7081	10
51	1.1903	1.8435	1.2041	1.7953	1.2185	1.7500	1.2337	1.7075	9
52	1.1906	1.8427	1.2043	1.7945	1.2188	1.7493	1.2340	1.7068	8
53	1.1908	1.8418	1.2046	1.7937	1.2190	1.7485	1.2342	1.7061	7
54	1.1910	1.8410	1.2048	1.7929	1.2193	1.7478	1.2345	1.7054	6
55	1.1912	1.8402	1.2050	1.7921	1.2195	1.7471	1.2348	1.7047	5
56	1.1915	1.8394	1.2053	1.7914	1.2198	1.7463	1.2350	1.7040	4
57	1.1917	1.8385	1.2055	1.7906	1.2200	1.7456	1.2353	1.7033	3
58	1.1919	1.8377	1.2057	1.7898	1.2203	1.7449	1.2355	1.7027	2
59	1.1921	1.8369	1.2060	1.7891	1.2205	1.7442	1.2358	1.7020	1
60	1.1922	1.8361	1.2062	1.7883	1.2208	1.7434	1.2361	1.7013	0

Co-sec.

57°

Co-sec.

56°

Co-sec.

55°

Co-sec.

54°

Sec.

NATURAL SECANTS AND CO-SECANTS

°	36°		37°		38°		39°		°
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.2361	1.7013	1.2521	1.6616	1.2690	1.6243	1.2867	1.5890	60
1	1.2363	1.7006	1.2524	1.6610	1.2693	1.6237	1.2871	1.5884	59
2	1.2366	1.6999	1.2527	1.6603	1.2696	1.6231	1.2874	1.5879	58
3	1.2368	1.6993	1.2530	1.6597	1.2699	1.6224	1.2877	1.5873	57
4	1.2371	1.6986	1.2532	1.6591	1.2702	1.6218	1.2880	1.5867	56
5	1.2374	1.6979	1.2535	1.6584	1.2705	1.6212	1.2883	1.5862	55
6	1.2376	1.6972	1.2538	1.6578	1.2707	1.6206	1.2886	1.5856	54
7	1.2379	1.6965	1.2541	1.6572	1.2710	1.6200	1.2889	1.5850	53
8	1.2382	1.6959	1.2543	1.6565	1.2713	1.6194	1.2892	1.5845	52
9	1.2384	1.6952	1.2546	1.6559	1.2716	1.6188	1.2895	1.5839	51
10	1.2387	1.6945	1.2549	1.6552	1.2719	1.6182	1.2898	1.5833	50
11	1.2389	1.6938	1.2552	1.6546	1.2722	1.6176	1.2901	1.5828	49
12	1.2392	1.6932	1.2554	1.6540	1.2725	1.6170	1.2904	1.5822	48
13	1.2395	1.6925	1.2557	1.6533	1.2728	1.6164	1.2907	1.5816	47
14	1.2397	1.6918	1.2560	1.6527	1.2731	1.6159	1.2910	1.5811	46
15	1.2400	1.6912	1.2563	1.6521	1.2734	1.6153	1.2913	1.5805	45
16	1.2403	1.6905	1.2565	1.6514	1.2737	1.6147	1.2916	1.5799	44
17	1.2405	1.6898	1.2568	1.6508	1.2739	1.6141	1.2919	1.5794	43
18	1.2408	1.6891	1.2571	1.6502	1.2742	1.6135	1.2922	1.5788	42
19	1.2411	1.6885	1.2574	1.6496	1.2745	1.6129	1.2926	1.5783	41
20	1.2413	1.6878	1.2577	1.6489	1.2748	1.6123	1.2929	1.5777	40
21	1.2416	1.6871	1.2579	1.6483	1.2751	1.6117	1.2932	1.5771	39
22	1.2419	1.6865	1.2582	1.6477	1.2754	1.6111	1.2935	1.5766	38
23	1.2421	1.6858	1.2585	1.6470	1.2757	1.6105	1.2938	1.5760	37
24	1.2424	1.6851	1.2588	1.6464	1.2760	1.6099	1.2941	1.5755	36
25	1.2427	1.6845	1.2591	1.6458	1.2763	1.6093	1.2944	1.5749	35
26	1.2429	1.6838	1.2593	1.6452	1.2766	1.6087	1.2947	1.5743	34
27	1.2432	1.6831	1.2596	1.6445	1.2769	1.6081	1.2950	1.5738	33
28	1.2435	1.6825	1.2599	1.6439	1.2772	1.6077	1.2953	1.5732	32
29	1.2437	1.6818	1.2602	1.6433	1.2775	1.6070	1.2956	1.5727	31
30	1.2440	1.6812	1.2605	1.6427	1.2778	1.6064	1.2960	1.5721	30
31	1.2443	1.6805	1.2607	1.6420	1.2781	1.6058	1.2963	1.5716	29
32	1.2445	1.6798	1.2610	1.6414	1.2784	1.6052	1.2966	1.5710	28
33	1.2448	1.6792	1.2613	1.6408	1.2787	1.6046	1.2969	1.5705	27
34	1.2451	1.6785	1.2616	1.6402	1.2790	1.6040	1.2972	1.5699	26
35	1.2453	1.6779	1.2619	1.6396	1.2793	1.6034	1.2975	1.5694	25
36	1.2456	1.6772	1.2622	1.6389	1.2795	1.6029	1.2978	1.5688	24
37	1.2459	1.6766	1.2624	1.6383	1.2798	1.6023	1.2981	1.5683	23
38	1.2461	1.6759	1.2627	1.6377	1.2801	1.6017	1.2985	1.5677	22
39	1.2464	1.6752	1.2630	1.6371	1.2804	1.6011	1.2988	1.5672	21
40	1.2467	1.6746	1.2633	1.6365	1.2807	1.6005	1.2991	1.5666	20
41	1.2470	1.6739	1.2636	1.6359	1.2810	1.6000	1.2994	1.5661	19
42	1.2472	1.6733	1.2639	1.6352	1.2813	1.5994	1.2997	1.5655	18
43	1.2475	1.6726	1.2641	1.6346	1.2816	1.5988	1.3000	1.5650	17
44	1.2478	1.6720	1.2644	1.6340	1.2819	1.5982	1.3003	1.5644	16
45	1.2480	1.6713	1.2647	1.6334	1.2822	1.5976	1.3006	1.5639	15
46	1.2483	1.6707	1.2650	1.6328	1.2825	1.5971	1.3010	1.5633	14
47	1.2486	1.6700	1.2653	1.6322	1.2828	1.5965	1.3013	1.5628	13
48	1.2488	1.6694	1.2656	1.6316	1.2831	1.5959	1.3016	1.5622	12
49	1.2490	1.6687	1.2659	1.6309	1.2834	1.5953	1.3019	1.5617	11
50	1.2494	1.6681	1.2661	1.6303	1.2837	1.5947	1.3022	1.5611	10
51	1.2497	1.6674	1.2664	1.6297	1.2840	1.5942	1.3025	1.5606	9
52	1.2499	1.6668	1.2667	1.6291	1.2843	1.5936	1.3029	1.5600	8
53	1.2502	1.6661	1.2670	1.6285	1.2846	1.5930	1.3032	1.5595	7
54	1.2505	1.6655	1.2673	1.6279	1.2849	1.5924	1.3035	1.5590	6
55	1.2508	1.6648	1.2676	1.6273	1.2852	1.5919	1.3038	1.5584	5
56	1.2510	1.6642	1.2679	1.6267	1.2855	1.5913	1.3041	1.5579	4
57	1.2513	1.6636	1.2681	1.6261	1.2858	1.5907	1.3044	1.5573	3
58	1.2516	1.6629	1.2684	1.6255	1.2861	1.5901	1.3048	1.5568	2
59	1.2519	1.6623	1.2687	1.6249	1.2864	1.5896	1.3051	1.5563	1
60	1.2521	1.6616	1.2690	1.6243	1.2867	1.5890	1.3054	1.5557	0
°	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	°
	53°		52°		51°		50°		

NATURAL SECANTS AND CO-SECANTS

°	40°		41°		42°		43°		°
	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	Sec.	Co-sec.	
0	1.3054	1.5557	1.3250	1.5242	1.3456	1.4945	1.3673	1.4663	60
1	1.3057	1.5552	1.3253	1.5237	1.3460	1.4940	1.3677	1.4658	59
2	1.3060	1.5546	1.3257	1.5232	1.3463	1.4935	1.3681	1.4654	58
3	1.3064	1.5541	1.3260	1.5227	1.3467	1.4930	1.3684	1.4649	57
4	1.3067	1.5536	1.3263	1.5222	1.3470	1.4925	1.3688	1.4644	56
5	1.3070	1.5530	1.3267	1.5217	1.3474	1.4921	1.3692	1.4640	55
6	1.3073	1.5525	1.3270	1.5212	1.3477	1.4916	1.3695	1.4635	54
7	1.3076	1.5520	1.3274	1.5207	1.3481	1.4911	1.3699	1.4631	53
8	1.3080	1.5514	1.3277	1.5202	1.3485	1.4906	1.3703	1.4626	52
9	1.3083	1.5509	1.3280	1.5197	1.3488	1.4901	1.3707	1.4622	51
10	1.3086	1.5503	1.3284	1.5192	1.3492	1.4897	1.3710	1.4617	50
11	1.3089	1.5498	1.3287	1.5187	1.3495	1.4892	1.3714	1.4613	49
12	1.3092	1.5493	1.3290	1.5182	1.3499	1.4887	1.3718	1.4608	48
13	1.3096	1.5487	1.3294	1.5177	1.3502	1.4882	1.3722	1.4604	47
14	1.3099	1.5482	1.3297	1.5171	1.3506	1.4877	1.3725	1.4599	46
15	1.3102	1.5477	1.3301	1.5166	1.3509	1.4873	1.3729	1.4595	45
16	1.3105	1.5471	1.3304	1.5161	1.3513	1.4868	1.3733	1.4590	44
17	1.3109	1.5466	1.3307	1.5156	1.3517	1.4863	1.3737	1.4586	43
18	1.3112	1.5461	1.3311	1.5151	1.3520	1.4858	1.3740	1.4581	42
19	1.3115	1.5456	1.3314	1.5146	1.3524	1.4854	1.3744	1.4577	41
20	1.3118	1.5450	1.3318	1.5141	1.3527	1.4849	1.3748	1.4572	40
21	1.3121	1.5445	1.3321	1.5136	1.3531	1.4844	1.3752	1.4568	39
22	1.3125	1.5440	1.3324	1.5131	1.3534	1.4839	1.3756	1.4563	38
23	1.3128	1.5434	1.3328	1.5126	1.3538	1.4835	1.3759	1.4559	37
24	1.3131	1.5429	1.3331	1.5121	1.3542	1.4830	1.3763	1.4554	36
25	1.3134	1.5424	1.3335	1.5116	1.3545	1.4825	1.3767	1.4550	35
26	1.3138	1.5419	1.3338	1.5111	1.3549	1.4821	1.3771	1.4545	34
27	1.3141	1.5413	1.3342	1.5106	1.3552	1.4816	1.3774	1.4541	33
28	1.3144	1.5408	1.3345	1.5101	1.3556	1.4811	1.3778	1.4536	32
29	1.3148	1.5403	1.3348	1.5096	1.3560	1.4806	1.3782	1.4532	31
30	1.3151	1.5398	1.3352	1.5092	1.3563	1.4802	1.3786	1.4527	30
31	1.3154	1.5392	1.3355	1.5087	1.3567	1.4797	1.3790	1.4523	29
32	1.3157	1.5387	1.3359	1.5082	1.3571	1.4792	1.3794	1.4518	28
33	1.3161	1.5382	1.3362	1.5077	1.3574	1.4788	1.3797	1.4514	27
34	1.3164	1.5377	1.3366	1.5072	1.3578	1.4783	1.3801	1.4510	26
35	1.3167	1.5371	1.3369	1.5067	1.3581	1.4778	1.3805	1.4505	25
36	1.3170	1.5366	1.3372	1.5062	1.3585	1.4774	1.3809	1.4501	24
37	1.3174	1.5361	1.3376	1.5057	1.3589	1.4769	1.3813	1.4496	23
38	1.3177	1.5356	1.3379	1.5052	1.3592	1.4764	1.3816	1.4492	22
39	1.3180	1.5351	1.3383	1.5047	1.3596	1.4760	1.3820	1.4487	21
40	1.3184	1.5345	1.3386	1.5042	1.3600	1.4755	1.3824	1.4483	20
41	1.3187	1.5340	1.3390	1.5037	1.3603	1.4750	1.3828	1.4479	19
42	1.3190	1.5335	1.3393	1.5032	1.3607	1.4746	1.3832	1.4474	18
43	1.3193	1.5330	1.3397	1.5027	1.3611	1.4741	1.3836	1.4470	17
44	1.3197	1.5325	1.3400	1.5022	1.3614	1.4736	1.3839	1.4465	16
45	1.3200	1.5319	1.3404	1.5018	1.3618	1.4732	1.3843	1.4461	15
46	1.3203	1.5314	1.3407	1.5013	1.3622	1.4727	1.3847	1.4457	14
47	1.3207	1.5309	1.3411	1.5008	1.3625	1.4723	1.3851	1.4452	13
48	1.3210	1.5304	1.3414	1.5003	1.3629	1.4718	1.3855	1.4448	12
49	1.3213	1.5299	1.3418	1.4998	1.3633	1.4713	1.3859	1.4443	11
50	1.3217	1.5294	1.3421	1.4993	1.3636	1.4709	1.3863	1.4439	10
51	1.3220	1.5289	1.3425	1.4988	1.3640	1.4704	1.3867	1.4435	9
52	1.3223	1.5283	1.3428	1.4983	1.3644	1.4699	1.3870	1.4430	8
53	1.3227	1.5278	1.3432	1.4979	1.3647	1.4695	1.3874	1.4426	7
54	1.3230	1.5273	1.3435	1.4974	1.3651	1.4690	1.3878	1.4422	6
55	1.3233	1.5268	1.3439	1.4969	1.3655	1.4686	1.3882	1.4417	5
56	1.3237	1.5263	1.3442	1.4964	1.3658	1.4681	1.3886	1.4413	4
57	1.3240	1.5258	1.3446	1.4959	1.3662	1.4676	1.3890	1.4408	3
58	1.3243	1.5253	1.3449	1.4954	1.3666	1.4672	1.3894	1.4404	2
59	1.3247	1.5248	1.3453	1.4949	1.3669	1.4667	1.3898	1.4400	1
60	1.3250	1.5242	1.3456	1.4945	1.3673	1.4663	1.3902	1.4395	0

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48°

47°

46°

NATURAL SECANTS AND CO-SECANTS

44°			
/	Sec.	Co-sec.	/
0	1.3902	1.4395	60
1	1.3905	1.4391	59
2	1.3909	1.4387	58
3	1.3913	1.4382	57
4	1.3917	1.4378	56
5	1.3921	1.4374	55
6	1.3925	1.4370	54
7	1.3929	1.4365	53
8	1.3933	1.4361	52
9	1.3937	1.4357	51
10	1.3941	1.4352	50
11	1.3945	1.4348	49
12	1.3949	1.4344	48
13	1.3953	1.4339	47
14	1.3957	1.4335	46
15	1.3960	1.4331	45
16	1.3964	1.4327	44
17	1.3968	1.4322	43
18	1.3972	1.4318	42
19	1.3976	1.4314	41
20	1.3980	1.4310	40
21	1.3984	1.4305	39
22	1.3988	1.4301	38
23	1.3992	1.4297	37
24	1.3996	1.4292	36
25	1.4000	1.4288	35
26	1.4004	1.4284	34
27	1.4008	1.4280	33
28	1.4012	1.4276	32
29	1.4016	1.4271	31
30	1.4020	1.4267	30
31	1.4024	1.4263	29
32	1.4028	1.4259	28
33	1.4032	1.4254	27
34	1.4036	1.4250	26
35	1.4040	1.4246	25
36	1.4044	1.4242	24
37	1.4048	1.4238	23
38	1.4052	1.4233	22
39	1.4056	1.4229	21
40	1.4060	1.4225	20
41	1.4065	1.4221	19
42	1.4069	1.4217	18
43	1.4073	1.4212	17
44	1.4077	1.4208	16
45	1.4081	1.4204	15
46	1.4085	1.4200	14
47	1.4089	1.4196	13
48	1.4093	1.4192	12
49	1.4097	1.4188	11
50	1.4101	1.4183	10
51	1.4105	1.4179	9
52	1.4109	1.4175	8
53	1.4113	1.4171	7
54	1.4117	1.4167	6
55	1.4122	1.4163	5
56	1.4126	1.4159	4
57	1.4130	1.4154	3
58	1.4134	1.4150	2
59	1.4138	1.4146	1
60	1.4142	1.4142	0

/ Co-sec. Sec. /

45°

TABLE XVI
FUNCTIONS OF NUMBERS

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
1	1	1	1.	1.	51	2601	132651	7.1414	3.7084
2	4	8	1.4142	1.2599	52	2704	140608	7.2111	3.7325
3	9	27	1.7321	1.4422	53	2809	148877	7.2801	3.7563
4	16	64	2.0000	1.5874	54	2916	157464	7.3485	3.7798
5	25	125	2.2361	1.7100	55	3025	166375	7.4162	3.8030
6	36	216	2.4495	1.8171	56	3136	175616	7.4833	3.8259
7	49	343	2.6458	1.9129	57	3249	185193	7.5498	3.8485
8	64	512	2.8284	2.0000	58	3364	195112	7.6158	3.8709
9	81	729	3.0000	2.0801	59	3481	205379	7.6811	3.8930
10	100	1000	3.1623	2.1544	60	3600	216000	7.7460	3.9149
11	121	1331	3.3166	2.2240	61	3721	226981	7.8102	3.9365
12	144	1728	3.4641	2.2894	62	3844	238328	7.8740	3.9579
13	169	2197	3.6056	2.3513	63	3969	250047	7.9373	3.9791
14	196	2744	3.7417	2.4101	64	4096	262144	8.	4.
15	225	3375	3.8730	2.4662	65	4225	274625	8.0623	4.0207
16	256	4096	4.	2.5198	66	4356	287496	8.1240	4.0412
17	289	4913	4.1231	2.5713	67	4489	300763	8.1854	4.0615
18	324	5832	4.2426	2.6207	68	4624	314432	8.2462	4.0817
19	361	6859	4.3589	2.6684	69	4761	328509	8.3066	4.1016
20	400	8000	4.4721	2.7144	70	4900	343000	8.3666	4.1213
21	441	9261	4.5826	2.7589	72	5041	357911	8.4261	4.1408
22	484	10648	4.6904	2.8020	72	5184	373248	8.4853	4.1602
23	529	12167	4.7958	2.8439	73	5329	389017	8.5440	4.1793
24	576	13824	4.8990	2.8845	74	5476	405224	8.6023	4.1983
25	625	15625	5.	2.9240	75	5625	421875	8.6603	4.2172
26	676	17576	5.0990	2.9625	76	5776	438976	8.7178	4.2358
27	729	19683	5.1962	3.0000	77	5929	456533	8.7750	4.2543
28	784	21952	5.2915	3.0366	78	6084	474552	8.8318	4.2727
29	841	24389	5.3852	3.0723	79	6241	493039	8.8882	4.2908
30	900	27000	5.4772	3.1072	80	6400	512000	8.9443	4.3089
31	961	29791	5.5678	3.1414	81	6561	531441	9.	4.3267
32	1024	32768	5.6569	3.1748	82	6724	551368	9.0554	4.3445
33	1089	35937	5.7446	3.2075	83	6889	571787	9.1104	4.3621
34	1156	39304	5.8310	3.2396	84	7056	592704	9.1652	4.3795
35	1225	42875	5.9161	3.2711	85	7225	614125	9.2195	4.3968
36	1296	46656	6.	3.3019	86	7396	636056	9.2736	4.4140
37	1369	50653	6.0828	3.3322	87	7569	658503	9.3274	4.4310
38	1444	54872	6.1644	3.3620	88	7744	681472	9.3808	4.4480
39	1521	59319	6.2450	3.3912	89	7921	704969	9.4340	4.4647
40	1600	64000	6.3246	3.4200	90	8100	729000	9.4868	4.4814
41	1681	68921	6.4031	3.4482	91	8281	753571	9.5394	4.4979
42	1764	74088	6.4807	3.4760	92	8464	778688	9.5917	4.5144
43	1849	79507	6.5574	3.5034	93	8649	804357	9.6437	4.5307
44	1936	85184	6.6332	3.5303	94	8836	830584	9.6954	4.5468
45	2025	91125	6.7082	3.5569	95	9025	857375	9.7468	4.5629
46	2116	97336	6.7823	3.5830	96	9216	884736	9.7980	4.5789
47	2209	103823	6.8557	3.6088	97	9409	912673	9.8489	4.5947
48	2304	110592	6.9282	3.6342	98	9604	941192	9.8995	4.6104
49	2401	117649	7.	3.6593	99	9801	970299	9.9499	4.6261
50	2500	125000	7.0711	3.6840	100	10000	1000000	10.	4.6416

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
101	10201	1030301	10.0499	4.6570	151	22801	3442951	12.2882	5.3251
102	10404	1061208	10.0995	4.6723	152	23104	3511808	12.3288	5.3368
103	10609	1092727	10.1489	4.6875	153	23409	3581577	12.3693	5.3485
104	10816	1124864	10.1980	4.7027	154	23716	3652264	12.4097	5.3601
105	11025	1157625	10.2470	4.7177	155	24025	3723875	12.4499	5.3717
106	11236	1191016	10.2956	4.7326	156	24336	3796416	12.4900	5.3832
107	11449	1225043	10.3441	4.7475	157	24649	3869893	12.5300	5.3947
108	11664	1259712	10.3923	4.7622	158	24964	3944312	12.5698	5.4061
109	11881	1295029	10.4403	4.7769	159	25281	4019679	12.6095	5.4175
110	12100	1331000	10.4881	4.7914	160	25600	4096000	12.6491	5.4288
111	12321	1367631	10.5357	4.8059	161	25921	4173281	12.6886	5.4401
112	12544	1404928	10.5830	4.8203	162	26244	4251528	12.7279	5.4514
113	12769	1442897	10.6301	4.8346	163	26569	4330747	12.7671	5.4626
114	12996	1481544	10.6771	4.8488	164	26896	4410944	12.8062	5.4737
115	13225	1520875	10.7238	4.8629	165	27225	4492125	12.8452	5.4848
116	13456	1560896	10.7703	4.8770	166	27556	4574296	12.8841	5.4959
117	13689	1601613	10.8167	4.8910	167	27889	4657463	12.9228	5.5069
118	13924	1643032	10.8628	4.9049	168	28224	4741632	12.9615	5.5178
119	14161	1685159	10.9087	4.9187	169	28561	4826809	13.	5.5288
120	14400	1728000	10.9545	4.9324	170	28900	4913000	13.0384	5.5397
121	14641	1771561	11.	4.9461	171	29241	5000211	13.0767	5.5505
122	14884	1815848	11.0454	4.9597	172	29584	5088448	13.1149	5.5613
123	15129	1860867	11.0905	4.9732	173	29929	5177717	13.1529	5.5721
124	15376	1906624	11.1355	4.9866	174	30276	5268024	13.1909	5.5828
125	15625	1953125	11.1803	5.	175	30625	5359375	13.2288	5.5934
126	15876	2000376	11.2250	5.0133	176	30976	5451776	13.2665	5.6041
127	16129	2048383	11.2694	5.0265	177	31329	5545233	13.3041	5.6147
128	16384	2097152	11.3137	5.0397	178	31684	5639752	13.3417	5.6252
129	16641	2146689	11.3578	5.0528	179	32041	5735339	13.3791	5.6357
130	16900	2197000	11.4018	5.0658	180	32400	5832000	13.4164	5.6462
131	17161	2248091	11.4455	5.0788	181	32761	5929741	13.4536	5.6567
132	17424	2299968	11.4891	5.0916	182	33124	6028568	13.4907	5.6671
133	17689	2352637	11.5326	5.1045	183	33489	6128487	13.5277	5.6774
134	17956	2406104	11.5758	5.1172	184	33856	6229504	13.5647	5.6877
135	18225	2460375	11.6190	5.1299	185	34225	6331625	13.6015	5.6980
136	18496	2515456	11.6619	5.1426	186	34596	6434856	13.6382	5.7083
137	18769	2571353	11.7047	5.1551	187	34969	6539203	13.6748	5.7185
138	19044	2628072	11.7473	5.1676	188	35344	6644672	13.7113	5.7287
139	19321	2685619	11.7898	5.1801	189	35721	6751269	13.7477	5.7388
140	19600	2744000	11.8322	5.1925	190	36100	6859000	13.7840	5.7489
141	19881	2803221	11.8743	5.2048	191	36481	6967871	13.8203	5.7590
142	20164	2863288	11.9164	5.2171	192	36864	7077888	13.8564	5.7690
143	20449	2924207	11.9583	5.2293	193	37249	7189057	13.8924	5.7790
144	20736	2985984	12.	5.2415	194	37636	7301384	13.9284	5.7890
145	21025	3048625	12.0416	5.2536	195	38025	7414875	13.9642	5.7989
146	21316	3112136	12.0830	5.2656	196	38416	7529536	14.	5.8088
147	21609	3176523	12.1244	5.2776	197	38809	7645373	14.0357	5.8186
148	21904	3241792	12.1655	5.2896	198	39204	7762392	14.0712	5.8285
149	22201	3307949	12.2066	5.3015	199	39601	7880599	14.1067	5.8383
150	22500	3375000	12.2474	5.3133	200	40000	8000000	14.1421	5.8480

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
201	40401	8120601	14.1774	5.8578	251	63001	15813251	15.8430	6.3080
202	40804	8242408	14.2127	5.8675	252	63504	16003008	15.8745	6.3164
203	41209	8365427	14.2478	5.8771	253	64009	16194277	15.9060	6.3247
204	41616	8489664	14.2829	5.8868	254	64516	16387064	15.9374	6.3330
205	42025	8615125	14.3178	5.8964	255	65025	16581375	15.9687	6.3413
206	42436	8741816	14.3527	5.9059	256	65536	16777216	16.	6.3496
207	42849	8869743	14.3875	5.9155	257	66049	16974593	16.0312	6.3579
208	43264	8998912	14.4222	5.9250	258	66564	17173512	16.0624	6.3661
209	43681	9129329	14.4568	5.9345	259	67081	17373979	16.0935	6.3743
210	44100	9261000	14.4914	5.9439	260	67600	17576000	16.1245	6.3825
211	44521	9393931	14.5258	5.9533	261	68121	17779581	16.1555	6.3907
212	44944	9528128	14.5602	5.9627	262	68644	17984728	16.1864	6.3988
213	45369	9663597	14.5945	5.9721	263	69169	18191447	16.2173	6.4070
214	45796	9800344	14.6287	5.9814	264	69696	18399744	16.2481	6.4151
215	46225	9938375	14.6629	5.9907	265	70225	18609625	16.2788	6.4232
216	46656	10077696	14.6969	6.	266	70756	18821096	16.3095	6.4312
217	47089	10218313	14.7309	6.0092	267	71289	19034163	16.3401	6.4393
218	47524	10360232	14.7648	6.0185	268	71824	19248832	16.3707	6.4473
219	47961	10503459	14.7986	6.0277	269	72361	19465109	16.4012	6.4553
220	48400	10648000	14.8324	6.0368	270	72900	19683000	16.4317	6.4633
221	48841	10793861	14.8661	6.0459	271	73441	19902511	16.4621	6.4713
222	49284	10941048	14.8997	6.0550	272	73984	20123648	16.4924	6.4792
223	49729	11089567	14.9332	6.0641	273	74529	20346417	16.5227	6.4872
224	50176	11239424	14.9666	6.0732	274	75076	20570824	16.5529	6.4951
225	50625	11390625	15.	6.0822	275	75625	20796875	16.5831	6.5030
226	51076	11543176	15.0333	6.0912	276	76176	21024576	16.6132	6.5108
227	51529	11697083	15.0665	6.1002	277	76729	21253933	16.6433	6.5187
228	51984	11852352	15.0997	6.1091	278	77284	21484952	16.6733	6.5265
229	52441	12008989	15.1327	6.1180	279	77841	21717639	16.7033	6.5343
230	52900	12167000	15.1658	6.1269	280	78400	21952000	16.7332	6.5421
231	53361	12326391	15.1987	6.1358	281	78961	22188041	16.7631	6.5499
232	53824	12487168	15.2315	6.1446	282	79524	22425768	16.7929	6.5577
233	54289	12649337	15.2643	6.1534	283	80089	22665187	16.8226	6.5654
234	54756	12812904	15.2971	6.1622	284	80656	22906304	16.8523	6.5731
235	55225	12977875	15.3297	6.1710	285	81225	23149125	16.8819	6.5808
236	55696	13144256	15.3623	6.1797	286	81796	23393656	16.9115	6.5885
237	56169	13312053	15.3948	6.1885	287	82369	23639903	16.9411	6.5962
238	56644	13481272	15.4272	6.1972	288	82944	23887872	16.9706	6.6039
239	57121	13651919	15.4596	6.2058	289	83521	24137569	17.	6.6115
240	57600	13824000	15.4919	6.2145	290	84100	24389000	17.0294	6.6191
241	58081	13997521	15.5242	6.2231	291	84681	24642171	17.0587	6.6267
242	58564	14172488	15.5563	6.2317	292	85264	24897088	17.0880	6.6343
243	59049	14348907	15.5885	6.2403	293	85849	25153757	17.1172	6.6419
244	59536	14526784	15.6205	6.2488	294	86436	25412184	17.1464	6.6494
245	60025	14706125	15.6525	6.2573	295	87025	25672375	17.1756	6.6569
246	60516	14886936	15.6844	6.2658	296	87616	25934336	17.2047	6.6644
247	61009	15069223	15.7162	6.2743	297	88209	26198073	17.2337	6.6719
248	61504	15252992	15.7480	6.2828	298	88804	26463592	17.2627	6.6794
249	62001	15438249	15.7797	6.2912	299	89401	26730899	17.2916	6.6869
250	62500	15625000	15.8114	6.2996	300	90000	27000000	17.3205	6.6943

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
301	90601	27270901	17.3494	6.7018	351	123201	43243551	18.7350	7.0540
302	91204	27543608	17.3781	6.7092	352	123904	43614208	18.7617	7.0607
303	91809	27818127	17.4069	6.7166	353	124609	43986977	18.7883	7.0674
304	92416	28094464	17.4356	6.7240	354	125316	44361864	18.8149	7.0740
305	93025	28372625	17.4642	6.7313	355	126025	44738875	18.8414	7.0807
306	93636	28652616	17.4929	6.7387	356	126736	45118016	18.8680	7.0873
307	94249	28934443	17.5214	6.7460	357	127449	45499293	18.8944	7.0940
308	94864	29218112	17.5499	6.7533	358	128164	45882712	18.9209	7.1006
309	95481	29503629	17.5784	6.7606	359	128881	46268279	18.9473	7.1072
310	96100	29791000	17.6068	6.7679	360	129600	46656000	18.9737	7.1138
311	96721	30080231	17.6352	6.7752	361	130321	47045881	19.	7.1204
312	97344	30371328	17.6635	6.7824	362	131044	47437928	19.0263	7.1269
313	97969	30664297	17.6918	6.7897	363	131769	47832147	19.0526	7.1335
314	98596	30959144	17.7200	6.7969	364	132496	48228544	19.0788	7.1400
315	99225	31255875	17.7482	6.8041	365	133225	48627125	19.1050	7.1466
316	99856	31554496	17.7764	6.8113	366	133956	49027896	19.1311	7.1531
317	100489	31855013	17.8045	6.8185	367	134689	49430863	19.1572	7.1596
318	101124	32157432	17.8326	6.8256	368	135424	49836032	19.1833	7.1661
319	101761	32461759	17.8606	6.8328	369	136161	50243409	19.2094	7.1726
320	102400	32768000	17.8885	6.8399	370	136900	50653000	19.2354	7.1791
321	103041	33076161	17.9165	6.8470	371	137641	51064811	19.2614	7.1855
322	103684	33386248	17.9444	6.8541	372	138384	51478848	19.2873	7.1920
323	104329	33698267	17.9722	6.8612	373	139129	51895117	19.3132	7.1984
324	104976	34012224	18.	6.8683	374	139876	52313624	19.3391	7.2048
325	105625	34328125	18.0278	6.8753	375	140625	52734375	19.3649	7.2112
326	106276	34645976	18.0555	6.8824	376	141376	53157376	19.3907	7.2177
327	106929	34965783	18.0831	6.8894	377	142129	53582633	19.4165	7.2240
328	107584	35287552	18.1108	6.8964	378	142884	54010152	19.4422	7.2304
329	108241	35611289	18.1384	6.9034	379	143641	54439939	19.4679	7.2368
330	108900	35937000	18.1659	6.9104	380	144400	54872000	19.4936	7.2432
331	109561	36264691	18.1934	6.9174	381	145161	55306341	19.5192	7.2495
332	110224	36594368	18.2209	6.9244	382	145924	55742968	19.5448	7.2558
333	110889	36926037	18.2483	6.9313	383	146689	56181887	19.5704	7.2622
334	111556	37259704	18.2757	6.9382	384	147456	56623104	19.5959	7.2685
335	112225	37595375	18.3030	6.9451	385	148225	57066625	19.6214	7.2748
336	112896	37933056	18.3303	6.9521	386	148996	57512456	19.6469	7.2811
337	113569	38272753	18.3576	6.9589	387	149769	57960603	19.6723	7.2874
338	114244	38614472	18.3848	6.9658	388	150544	58411072	19.6977	7.2936
339	114921	38958219	18.4120	6.9727	389	151321	58863869	19.7231	7.2999
340	115600	39304000	18.4391	6.9795	390	152100	59319000	19.7484	7.3061
341	116281	39651821	18.4662	6.9864	391	152881	59776471	19.7737	7.3124
342	116964	40001688	18.4932	6.9932	392	153664	60236288	19.7990	7.3186
343	117649	40353607	18.5203	7.	393	154449	60698457	19.8242	7.3248
344	118336	40707584	18.5472	7.0068	394	155236	61162984	19.8494	7.3310
345	119025	41063625	18.5742	7.0136	395	156025	61629875	19.8746	7.3372
346	119716	41421736	18.6011	7.0203	396	156816	62099136	19.8997	7.3434
347	120409	41781923	18.6279	7.0271	397	157609	62570773	19.9249	7.3496
348	121104	42144192	18.6548	7.0338	398	158404	63044792	19.9499	7.3558
349	121801	42508549	18.6815	7.0406	399	159201	63521199	19.9750	7.3619
350	122500	42875000	18.7083	7.0473	400	160000	64000000	20.	7.3681

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
401	160801	64481201	20.2050	7.3742	451	203401	91733851	21.2368	7.6688
402	161604	64964808	20.0499	7.3803	452	204304	92345408	21.2603	7.6744
403	162409	65450827	20.0749	7.3864	453	205209	92959677	21.2838	7.6801
404	163216	65939264	20.0998	7.3925	454	206116	93576664	21.3073	7.6857
405	164025	66430125	20.1246	7.3986	455	207025	94196375	21.3307	7.6914
406	164836	66923416	20.1494	7.4047	456	207936	94818816	21.3542	7.6970
407	165649	67419143	20.1742	7.4108	457	208849	95443993	21.3776	7.7026
408	166464	67917312	20.1990	7.4169	458	209764	96071912	21.4009	7.7082
409	167281	68417929	20.2237	7.4229	459	210681	96702579	21.4243	7.7138
410	168100	68921000	20.2485	7.4290	460	211600	97336000	21.4476	7.7194
411	168921	69426531	20.2731	7.4350	461	212521	97972181	21.4709	7.7250
412	169744	69934528	20.2978	7.4410	462	213444	98611128	21.4942	7.7306
413	170569	70444997	20.3224	7.4470	463	214369	99252847	21.5174	7.7362
414	171396	70957944	20.3470	7.4530	464	215296	99897344	21.5407	7.7418
415	172225	71473375	20.3715	7.4590	465	216225	100544625	21.5639	7.7473
416	173056	71991296	20.3961	7.4650	466	217156	101194696	21.5870	7.7529
417	173889	72511713	20.4206	7.4710	467	218089	101847563	21.6102	7.7584
418	174724	73034632	20.4450	7.4770	468	219024	102503232	21.6333	7.7639
419	175561	73560059	20.4695	7.4829	469	219961	103161709	21.6564	7.7695
420	176400	74088000	20.4939	7.4889	470	220900	103823000	21.6795	7.7750
421	177241	74618461	20.5183	7.4948	471	221841	104487111	21.7025	7.7805
422	178084	75151448	20.5426	7.5007	472	222784	105154048	21.7256	7.7860
423	178929	75686967	20.5670	7.5067	473	223729	105823817	21.7486	7.7915
424	179776	76225024	20.5913	7.5126	474	224676	106496424	21.7715	7.7970
425	180625	76765625	20.6155	7.5185	475	225625	107171875	21.7945	7.8025
426	181476	77308776	20.6398	7.5244	476	226576	107850176	21.8174	7.8079
427	182329	77854483	20.6640	7.5302	477	227529	108531333	21.8403	7.8134
428	183184	78402752	20.6882	7.5361	478	228484	109215352	21.8632	7.8188
429	184041	78953589	20.7123	7.5420	479	229441	109902239	21.8861	7.8243
430	184900	79507000	20.7364	7.5478	480	230400	110592000	21.9089	7.8297
431	185761	80062991	20.7605	7.5537	481	231361	111284641	21.9317	7.8352
432	186624	80621568	20.7846	7.5595	482	232324	111980168	21.9545	7.8406
433	187489	81182737	20.8087	7.5654	483	233289	112678587	21.9773	7.8460
434	188356	81746504	20.8327	7.5712	484	234256	113379904	22.	7.8514
435	189225	82312875	20.8567	7.5770	485	235225	114084125	22.0227	7.8568
436	190096	82881856	20.8806	7.5828	486	236196	114791256	22.0454	7.8622
437	190969	83453453	20.9045	7.5886	487	237169	115501303	22.0681	7.8676
438	191844	84027672	20.9284	7.5944	488	238144	116214272	22.0907	7.8730
439	192721	84604519	20.9523	7.6001	489	239121	116930169	22.1133	7.8784
440	193600	85184000	20.9762	7.6059	490	240100	117649000	22.1359	7.8837
441	194481	85766121	21.	7.6117	491	241081	118370771	22.1585	7.8891
442	195364	86350888	21.0238	7.6174	492	242064	119095488	22.1811	7.8944
443	196249	86938307	21.0476	7.6232	493	243049	119823157	22.2036	7.8998
444	197136	87528384	21.0713	7.6289	494	244036	120553784	22.2261	7.9051
445	198025	88121125	21.0950	7.6346	495	245025	121287375	22.2486	7.9105
446	198916	88716536	21.1187	7.6403	496	246016	122023936	22.2711	7.9158
447	199809	89314623	21.1424	7.6460	497	247009	122763473	22.2935	7.9211
448	200704	89915392	21.1660	7.6517	498	248004	123505992	22.3159	7.9264
449	201601	90518849	21.1896	7.6574	499	249001	124251499	22.3383	7.9317
450	202500	91125000	21.2132	7.6631	500	250000	125000000	22.3607	7.9370

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
501	251001	125751501	22.3830	7.9423	551	303601	167284151	23.4734	8.1982
502	252004	126506008	22.4054	7.9476	552	304704	168196608	23.4947	8.2031
503	253009	127263527	22.4277	7.9528	553	305809	169112377	23.5160	8.2081
504	254016	128024064	22.4499	7.9581	554	306916	170031464	23.5372	8.2130
505	255025	128787625	22.4722	7.9634	555	308025	170953875	23.5584	8.2180
506	256036	129554216	22.4944	7.9686	556	309136	171879616	23.5797	8.2229
507	257049	130323843	22.5167	7.9739	557	310249	172808693	23.6008	8.2278
508	258064	131096512	22.5389	7.9791	558	311364	173741112	23.6220	8.2327
509	259081	131872729	22.5610	7.9843	559	312481	174676879	23.6432	8.2377
510	260100	132651000	22.5832	7.9896	560	313600	175616000	23.6643	8.2426
511	261121	133432831	22.6053	7.9948	561	314721	176558481	23.6854	8.2475
512	262144	134217728	22.6274	8.	562	315844	177504328	23.7065	8.2524
513	263169	135005697	22.6495	8.0052	563	316969	178453547	23.7276	8.2573
514	264196	135796744	22.6716	8.0104	564	318096	179406144	23.7487	8.2621
515	265225	136590875	22.6936	8.0156	565	319225	180362125	23.7697	8.2670
516	266256	137388096	22.7156	8.0208	566	320356	181321496	23.7908	8.2719
517	267289	138188413	22.7376	8.0260	567	321489	182284263	23.8118	8.2768
518	268324	138991832	22.7596	8.0311	568	322624	183250432	23.8328	8.2816
519	269361	139798359	22.7816	8.0363	569	323761	184220009	23.8537	8.2865
520	270400	140608000	22.8035	8.0415	570	324900	185193000	23.8747	8.2913
521	271441	141420761	22.8254	8.0466	571	326041	186169411	23.8956	8.2962
522	272484	142236664	22.8473	8.0517	572	327184	187149248	23.9165	8.3010
523	273529	143055667	22.8692	8.0569	573	328329	188132517	23.9374	8.3059
524	274576	143877824	22.8910	8.0620	574	329476	189119224	23.9583	8.3107
525	275625	144703125	22.9129	8.0671	575	330625	190109375	23.9792	8.3155
526	276676	145531576	22.9347	8.0723	576	331776	191102976	24.	8.3203
527	277729	146363183	22.9565	8.0774	577	332929	192100033	24.0208	8.3251
528	278784	147197952	22.9783	8.0825	578	334084	193100552	24.0416	8.3300
529	279841	148035889	23.	8.0876	579	335241	194104539	24.0624	8.3348
530	280900	148877000	23.0217	8.0927	580	336400	195112000	24.0832	8.3396
531	281961	149721291	23.0434	8.0978	581	337561	196122941	24.1039	8.3443
532	283024	150568768	23.0651	8.1028	582	338724	197137376	24.1247	8.3491
533	284089	151419437	23.0868	8.1079	583	339889	198155287	24.1454	8.3539
534	285156	152273304	23.1084	8.1130	584	341056	199176704	24.1661	8.3587
535	286225	153130375	23.1301	8.1180	585	342225	200201625	24.1868	8.3634
536	287296	153990656	23.1517	8.1231	586	343396	201230056	24.2074	8.3682
537	288369	154854153	23.1733	8.1281	587	344569	202262003	24.2281	8.3730
538	289444	155720872	23.1948	8.1332	588	345744	203297472	24.2487	8.3777
539	290521	156590819	23.2164	8.1382	589	346921	204336479	24.2693	8.3825
540	291600	157464000	23.2379	8.1433	590	348100	205379000	24.2899	8.3872
541	292681	158340421	23.2594	8.1483	591	349281	206425071	24.3105	8.3919
542	293764	159220088	23.2809	8.1533	592	350464	207474688	24.3311	8.3967
543	294849	160103007	23.3024	8.1583	593	351649	208527857	24.3516	8.4014
544	295936	160989184	23.3238	8.1633	594	352836	209584584	24.3721	8.4061
545	297025	161878625	23.3452	8.1683	595	354025	210644875	24.3926	8.4108
546	298116	162771336	23.3666	8.1733	596	355216	211708736	24.4131	8.4155
547	299209	163667323	23.3880	8.1783	597	356409	212776173	24.4336	8.4202
548	300304	164566592	23.4094	8.1833	598	357604	213847192	24.4540	8.4249
549	301401	165469149	23.4307	8.1882	599	358801	214921799	24.4745	8.4296
550	302500	166375000	23.4521	8.1932	600	360000	216000000	24.4949	8.4343

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
601	361201	217081801	24.5153	8.4390	651	423801	275894451	25.5147	8.6668
602	362404	218167208	24.5357	8.4437	652	425104	277167808	25.5343	8.6713
603	363609	219252627	24.5561	8.4484	653	426409	278445077	25.5539	8.6757
604	364816	220348864	24.5764	8.4530	654	427716	279722664	25.5734	8.6801
605	366025	221445125	24.5967	8.4577	655	429025	281011375	25.5930	8.6845
606	367236	222545016	24.6171	8.4623	656	430336	282300416	25.6125	8.6890
607	368449	223648543	24.6374	8.4670	657	431649	283593393	25.6320	8.6934
608	369664	224755712	24.6577	8.4716	658	432964	284890312	25.6515	8.6978
609	370881	225866529	24.6779	8.4763	659	434281	286191179	25.6710	8.7022
610	372100	226981000	24.6982	8.4809	660	435600	287496000	25.6905	8.7066
611	373321	228099131	24.7184	8.4856	661	436921	288804781	25.7099	8.7110
612	374544	229220928	24.7386	8.4902	662	438244	290117528	25.7294	8.7154
613	375769	230346397	24.7588	8.4948	663	439569	291434247	25.7488	8.7198
614	376996	231475544	24.7790	8.4994	664	440896	292754944	25.7682	8.7241
615	378225	232608375	24.7992	8.5040	665	442225	294079625	25.7876	8.7285
616	379456	233744896	24.8193	8.5086	666	443556	295408296	25.8070	8.7329
617	380689	234885113	24.8395	8.5132	667	444889	296740963	25.8263	8.7373
618	381924	236029032	24.8596	8.5178	668	446224	298077632	25.8457	8.7416
619	383161	237176659	24.8797	8.5224	669	447561	299418309	25.8650	8.7460
620	384400	238328000	24.8998	8.5270	670	448900	300763000	25.8844	8.7503
621	385641	239483061	24.9199	8.5316	671	450241	302111711	25.9037	8.7547
622	386884	240641848	24.9399	8.5362	672	451584	303464448	25.9230	8.7590
623	388129	241804367	24.9600	8.5408	673	452929	304821217	25.9422	8.7634
624	389376	242970624	24.9800	8.5453	674	454276	306182024	25.9615	8.7677
625	390625	244140625	25.	8.5499	675	455625	307546875	25.9808	8.7721
626	391876	245314376	25.0200	8.5544	676	456976	308915776	26.	8.7764
627	393129	246491883	25.0400	8.5590	677	458329	310288733	26.0192	8.7807
628	394384	247673152	25.0599	8.5635	678	459684	311665752	26.0384	8.7850
629	395641	248858189	25.0799	8.5681	679	461041	313046839	26.0576	8.7893
630	396900	250047000	25.0998	8.5726	680	462400	314432000	26.0768	8.7937
631	398161	251239591	25.1197	8.5772	681	463761	315821241	26.0960	8.7980
632	399424	252435968	25.1396	8.5817	682	465124	317214568	26.1151	8.8023
633	400689	253636137	25.1595	8.5862	683	466489	318611987	26.1343	8.8066
634	401956	254840104	25.1794	8.5907	684	467856	320013504	26.1534	8.8109
635	403225	256047875	25.1992	8.5952	685	469225	321419125	26.1725	8.8152
636	404496	257259456	25.2190	8.5997	686	470596	322828856	26.1916	8.8194
637	405769	258474853	25.2389	8.6043	687	471969	324242703	26.2107	8.8237
638	407044	259694072	25.2587	8.6088	688	473344	325660672	26.2298	8.8280
639	408321	260917119	25.2784	8.6132	689	474721	327082769	26.2488	8.8323
640	409600	262144000	25.2982	8.6177	690	476100	328509000	26.2679	8.8366
641	410881	263374721	25.3180	8.6222	691	477481	329939371	26.2869	8.8408
642	412164	264609288	25.3377	8.6267	692	478864	331373888	26.3059	8.8451
643	413449	265847707	25.3574	8.6312	693	480249	332812557	26.3249	8.8493
644	414736	267089984	25.3772	8.6357	694	481636	334255384	26.3439	8.8536
645	416025	268336125	25.3969	8.6401	695	483025	335702375	26.3629	8.8578
646	417316	269586136	25.4165	8.6446	696	484416	337153536	26.3818	8.8621
647	418609	270840023	25.4362	8.6490	697	485809	338608873	26.4008	8.8663
648	419904	272097792	25.4558	8.6535	698	487204	340068392	26.4197	8.8706
649	421201	273359449	25.4755	8.6579	699	488601	341532099	26.4386	8.8748
650	422500	274625000	25.4951	8.6624	700	490000	343000000	26.4575	8.8790

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
701	491401	344472101	26.4764	8.8833	751	564001	423564751	27.4044	9.0896
702	492804	345948408	26.4953	8.8875	752	565504	425259008	27.4226	9.0937
703	494209	347428927	26.5141	8.8917	753	567009	426957777	27.4408	9.0977
704	495616	348913664	26.5330	8.8959	754	568516	428661064	27.4591	9.1017
705	497025	350402625	26.5518	8.9001	755	570025	430368875	27.4773	9.1057
706	498436	351895816	26.5707	8.9043	756	571536	432081216	27.4955	9.1098
707	499849	353393243	26.5895	8.9085	757	573049	433798093	27.5136	9.1138
708	501264	354894912	26.6083	8.9127	758	574564	435519512	27.5318	9.1178
709	502681	356400829	26.6271	8.9169	759	576081	437245479	27.5500	9.1218
710	504100	357911000	26.6458	8.9211	760	577600	438976000	27.5681	9.1258
711	505521	359425431	26.6646	8.9253	761	579121	440711081	27.5862	9.1298
712	506944	360944128	26.6833	8.9295	762	580644	442450728	27.6043	9.1338
713	508369	362467097	26.7021	8.9337	763	582169	444194947	27.6225	9.1378
714	509796	363994344	26.7208	8.9378	764	583696	445943744	27.6405	9.1418
715	511225	365525875	26.7395	8.9420	765	585225	447697125	27.6586	9.1458
716	512656	367061696	26.7582	8.9462	766	586756	449455096	27.6767	9.1498
717	514089	368601813	26.7769	8.9503	767	588289	451217663	27.6948	9.1537
718	515524	370146232	26.7955	8.9545	768	589824	452984832	27.7128	9.1577
719	516961	371694959	26.8142	8.9587	769	591361	454756609	27.7308	9.1617
720	518400	373248000	26.8328	8.9628	770	592900	456533000	27.7489	9.1657
721	519841	374805361	26.8514	8.9670	771	594441	458314011	27.7669	9.1696
722	521284	376367048	26.8701	8.9711	772	595984	460099648	27.7849	9.1736
723	522729	377933067	26.8887	8.9752	773	597529	461889917	27.8029	9.1775
724	524176	379503424	26.9072	8.9794	774	599076	463684824	27.8209	9.1815
725	525625	381078125	26.9258	8.9835	775	600625	465484375	27.8388	9.1855
726	527076	382657176	26.9444	8.9876	776	602176	467288576	27.8568	9.1894
727	528529	384240583	26.9629	8.9918	777	603729	469097433	27.8747	9.1933
728	529984	385828352	26.9815	8.9959	778	605284	470910952	27.8927	9.1973
729	531441	387420489	27.	9.	779	606841	472729139	27.9106	9.2012
730	532900	389017000	27.0185	9.0041	780	608400	474552000	27.9285	9.2052
731	534361	390617891	27.0370	9.0082	781	609961	476379541	27.9464	9.2091
732	535824	392223168	27.0555	9.0123	782	611524	478211768	27.9643	9.2130
733	537289	393832837	27.0740	9.0164	783	613089	480048687	27.9821	9.2170
734	538756	395446904	27.0924	9.0205	784	614656	481890304	28.	9.2209
735	540225	397065375	27.1109	9.0246	785	616225	483736625	28.0179	9.2248
736	541696	398688256	27.1293	9.0287	786	617796	485587656	28.0357	9.2287
737	543169	400315553	27.1477	9.0328	787	619369	487443403	28.0535	9.2326
738	544644	401947272	27.1662	9.0369	788	620944	489303872	28.0713	9.2365
739	546121	403583419	27.1846	9.0410	789	622521	491169069	28.0891	9.2404
740	547600	405224000	27.2029	9.0450	790	624100	493039000	28.1069	9.2443
741	549081	406869021	27.2213	9.0491	791	625681	494913671	28.1247	9.2482
742	550564	408518488	27.2397	9.0532	792	627264	496793088	28.1425	9.2521
743	552049	410172407	27.2580	9.0572	793	628849	498677257	28.1603	9.2560
744	553536	411830784	27.2764	9.0613	794	630436	500566184	28.1780	9.2599
745	555025	413493625	27.2947	9.0654	795	632025	502459875	28.1957	9.2638
746	556516	415160936	27.3130	9.0694	796	633616	504358336	28.2135	9.2677
747	558009	416832723	27.3313	9.0735	797	635209	506261573	28.2312	9.2716
748	559504	418508992	27.3496	9.0775	798	636804	508169592	28.2489	9.2754
749	561001	420189749	27.3679	9.0816	799	638401	510082399	28.2666	9.2793
750	562500	421875000	27.3861	9.0856	800	640000	512000000	28.2843	9.2832

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
801	641601	513922401	28.3019	9.2870	851	724201	616295051	29.1719	9.4764
802	643204	515849608	28.3196	9.2909	852	725904	618470708	29.1890	9.4801
803	644809	517781627	28.3373	9.2948	853	727609	620650477	29.2062	9.4838
804	646416	519718464	28.3549	9.2986	854	729316	622835864	29.2233	9.4875
805	648025	521660125	28.3725	9.3025	855	731025	625026375	29.2404	9.4912
806	649636	523606616	28.3901	9.3063	856	732736	627222016	29.2575	9.4949
807	651249	525557943	28.4077	9.3102	857	734449	629422793	29.2746	9.4986
808	652864	527514112	28.4253	9.3140	858	736164	631628712	29.2916	9.5023
809	654481	529475129	28.4429	9.3179	859	737881	633839779	29.3087	9.5060
810	656100	531441000	28.4605	9.3217	860	739600	636056000	29.3258	9.5097
811	657721	533411731	28.4781	9.3255	861	741321	638277381	29.3428	9.5134
812	659344	535387328	28.4956	9.3294	862	743044	640503928	29.3598	9.5171
813	660969	537367797	28.5132	9.3332	863	744769	642735647	29.3769	9.5207
814	662596	539353144	28.5307	9.3370	864	746496	644972544	29.3939	9.5244
815	664225	541343375	28.5482	9.3408	865	748225	647214625	29.4109	9.5281
816	665856	543338496	28.5657	9.3447	866	749956	649461896	29.4279	9.5317
817	667489	545338513	28.5832	9.3485	867	751689	651714363	29.4449	9.5354
818	669124	547343432	28.6007	9.3523	868	753424	653972032	29.4618	9.5391
819	670761	549353259	28.6182	9.3561	869	755161	656234909	29.4788	9.5427
820	672400	551368000	28.6356	9.3599	870	756900	658503000	29.4958	9.5464
821	674041	553387661	28.6531	9.3637	871	758641	660776311	29.5127	9.5501
822	675684	555412248	28.6705	9.3675	872	760384	663054848	29.5296	9.5537
823	677329	557441767	28.6880	9.3713	873	762129	665338617	29.5466	9.5574
824	678976	559476224	28.7054	9.3751	874	763876	667627624	29.5635	9.5610
825	680625	561515625	28.7228	9.3789	875	765625	669921875	29.5804	9.5647
826	682276	563559976	28.7402	9.3827	876	767376	672221376	29.5973	9.5683
827	683929	565609283	28.7576	9.3865	877	769129	674526133	29.6142	9.5719
828	685584	567663552	28.7750	9.3902	878	770884	676836152	29.6311	9.5756
829	687241	569722789	28.7924	9.3940	879	772641	679151439	29.6479	9.5792
830	688900	571787000	28.8097	9.3978	880	774400	681472000	29.6648	9.5828
831	690561	573856191	28.8271	9.4016	881	776161	683797841	29.6816	9.5865
832	692224	575930368	28.8444	9.4053	882	777924	686128968	29.6985	9.5901
833	693889	578009537	28.8617	9.4091	883	779689	688465387	29.7153	9.5937
834	695556	580093704	28.8791	9.4129	884	781456	690807104	29.7321	9.5973
835	697225	582182875	28.8964	9.4166	885	783225	693154125	29.7489	9.6010
836	698896	584277056	28.9137	9.4204	886	784996	695506456	29.7658	9.6046
837	700569	586376253	28.9310	9.4241	887	786769	697864103	29.7825	9.6082
838	702244	588480472	28.9482	9.4279	888	788544	700227072	29.7993	9.6118
839	703921	590589719	28.9655	9.4316	889	790321	702595369	29.8161	9.6154
840	705600	592704000	28.9828	9.4354	890	792100	704969000	29.8329	9.6190
841	707281	594823321	29.	9.4391	891	793881	707347971	29.8496	9.6226
842	708964	596947688	29.0172	9.4429	892	795664	709732288	29.8664	9.6262
843	710649	599077107	29.0345	9.4466	893	797449	712121957	29.8831	9.6298
844	712336	601211584	29.0517	9.4503	894	799236	714516984	29.8998	9.6334
845	714025	603351125	29.0689	9.4541	895	801025	716917375	29.9166	9.6370
846	715716	605495736	29.0861	9.4578	896	802816	719323136	29.9333	9.6406
847	717409	607645423	29.1033	9.4615	897	804609	721734273	29.9500	9.6442
848	719104	609800192	29.1204	9.4652	898	806404	724150792	29.9666	9.6477
849	720801	611960049	29.1376	9.4690	899	808201	726572699	29.9833	9.6513
850	722500	614125000	29.1548	9.4727	900	810000	729000000	30.	9.6549

TABLE XVI
FUNCTIONS OF NUMBERS—Continued

No.	Square	Cube	Square Root	Cube Root	No.	Square	Cube	Square Root	Cube Root
901	811801	731432701	30.0167	9.6585	951	904401	860085351	30.8383	9.8339
902	813604	733870808	30.0333	9.6620	952	906304	862801408	30.8545	9.8374
903	815409	736314327	30.0500	9.6656	953	908209	865523177	30.8707	9.8408
904	817216	738763264	30.0666	9.6692	954	910116	868250664	30.8869	9.8443
905	819025	741217625	30.0832	9.6727	955	912025	870983875	30.9031	9.8477
906	820836	743677416	30.0998	9.6763	956	913936	873722816	30.9192	9.8511
907	822649	746142643	30.1164	9.6799	957	915849	876467493	30.9354	9.8546
908	824464	748613312	30.1330	9.6834	958	917764	879217912	30.9516	9.8580
909	826281	751089429	30.1496	9.6870	959	919681	881974079	30.9677	9.8614
910	828100	753571000	30.1662	9.6905	960	921600	884736000	30.9839	9.8648
911	829921	756058031	30.1828	9.6941	961	923521	887503681	31.	9.8683
912	831744	758550528	30.1993	9.6976	962	925444	890277128	31.0161	9.8717
913	833569	761048497	30.2159	9.7012	963	927369	893056347	31.0322	9.8751
914	835396	763551944	30.2324	9.7047	964	929296	895841344	31.0483	9.8785
915	837225	766060875	30.2490	9.7082	965	931225	898632125	31.0644	9.8819
916	839056	768575296	30.2655	9.7118	966	933156	901428696	31.0805	9.8854
917	840889	771095213	30.2820	9.7153	967	935089	904231063	31.0966	9.8888
918	842724	773620632	30.2985	9.7188	968	937024	907039232	31.1127	9.8922
919	844561	776151559	30.3150	9.7224	969	938961	909853209	31.1288	9.8956
920	846400	778688000	30.3315	9.7259	970	940900	912673000	31.1448	9.8990
921	848241	781229961	30.3480	9.7294	971	942841	915498611	31.1609	9.9024
922	850084	783777448	30.3645	9.7329	972	944784	918330048	31.1769	9.9058
923	851929	786330467	30.3809	9.7364	973	946729	921167317	31.1929	9.9092
924	853776	788889024	30.3974	9.7400	974	948676	924010424	31.2090	9.9126
925	855625	791453125	30.4138	9.7435	975	950625	926859375	31.2250	9.9160
926	857476	794022776	30.4302	9.7470	976	952576	929714176	31.2410	9.9194
927	859329	796597983	30.4467	9.7505	977	954529	932574833	31.2570	9.9227
928	861184	799178752	30.4631	9.7540	978	956484	935441352	31.2730	9.9261
929	863041	801765089	30.4795	9.7575	979	958441	938313739	31.2890	9.9295
930	864900	804357000	30.4959	9.7610	980	960400	941192000	31.3050	9.9329
931	866761	806954491	30.5123	9.7645	981	962361	944076141	31.3209	9.9363
932	868624	809557568	30.5287	9.7680	982	964324	946966168	31.3369	9.9396
933	870489	812166237	30.5450	9.7715	983	966289	949862087	31.3528	9.9430
934	872356	814780504	30.5614	9.7750	984	968256	952763904	31.3688	9.9464
935	874225	817400375	30.5778	9.7785	985	970225	955671625	31.3847	9.9497
936	876096	820025856	30.5941	9.7819	986	972196	958585256	31.4006	9.9531
937	877969	822656953	30.6105	9.7854	987	974169	961504803	31.4166	9.9565
938	879844	825293672	30.6268	9.7889	988	976144	964430272	31.4325	9.9598
939	881721	827936019	30.6431	9.7924	989	978121	967361669	31.4484	9.9632
940	883600	830584000	30.6594	9.7959	990	980100	970299000	31.4643	9.9666
941	885481	833237621	30.6757	9.7993	991	982081	973242271	31.4802	9.9699
942	887364	835896888	30.6920	9.8028	992	984064	976191488	31.4960	9.9733
943	889249	838561807	30.7083	9.8063	993	986049	979146657	31.5119	9.9766
944	891136	841232384	30.7246	9.8097	994	988036	982107784	31.5278	9.9800
945	893025	843908625	30.7409	9.8132	995	990025	985074875	31.5436	9.9833
946	894916	846590536	30.7571	9.8167	996	992016	988047936	31.5595	9.9866
947	896809	849278123	30.7734	9.8201	997	994009	991026973	31.5753	9.9900
948	898704	851971392	30.7896	9.8236	998	996004	994011992	31.5911	9.9933
949	900601	854670349	30.8058	9.8270	999	998001	997002999	31.6070	9.9967
950	902500	857375000	30.8221	9.8305	1000	1000000	1000000000	31.6228	10.

CRISS CROSS METHOD OF COMPUTING ROADWAY CROSS SECTIONS

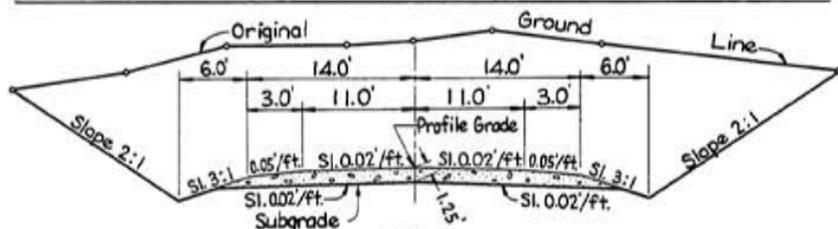


FIG. I

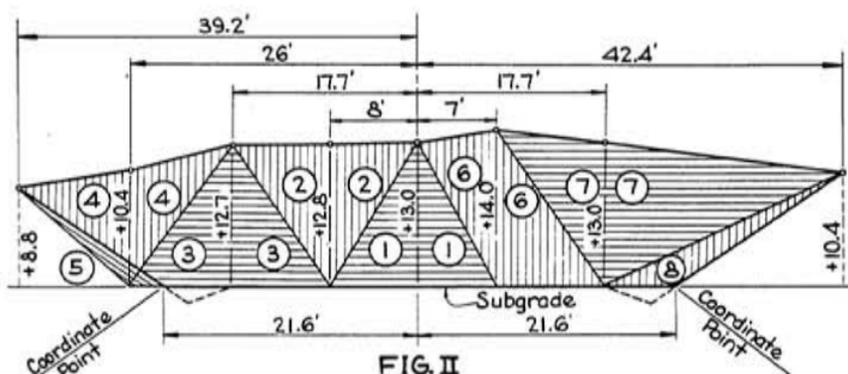


FIG. II

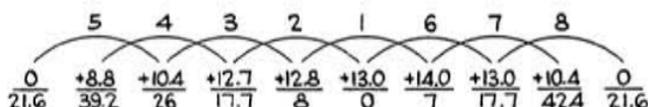


Figure I shows a typical roadway section as it would appear on the contract plans for a project. An original ground line has been added to illustrate the roadway section in full cut.

Figure II is basically the same section, and shows the various triangles involved in computing the area of the section by the "Criss Cross" method. Below Figure II the cross section is shown as it would be recorded in the cross section field notes. Each step in the criss cross method of computation is numbered to show the relationship between the computation and the triangles involved, bearing that same number.

Compu- tation No.	Compu- tation No.
1 $13.0 \times (8 + 7) = 195.00$	5 $8.8 \times (26 - 21.6) = 38.72$
	Minus
2 $12.8 \times (17.7 - 0) = 226.56$	6 $14.0 \times (17.7 - 0) = 247.80$
3 $12.7 \times (26 - 8) = 228.60$	7 $13.0 \times (42.4 - 7) = 460.20$
4 $10.4 \times (39.2 - 17.7) = 223.60$	8 $10.4 \times (21.6 - 17.7) = 40.56$
	Double Area = 1583.60
	Area of Prism = 791.80
	Sq. Ft.

CRISS CROSS METHOD OF COMPUTING ROADWAY CROSS SECTION (Cont.)

In taking cross sections in the field for construction purposes, readings with level and rod are taken to the left and right of center line to show the relationship of the original ground to the grade of the roadway to be constructed. These readings are recorded in the cross section notes as cuts (+) and fills (-).

It is apparent from Figure I that this roadway section will have to be constructed to the ground below the surfacing, which will be known as "grading grade" or "subgrade." It is further apparent that the crown will have to be built in, as will superelevation, where curves are introduced. The readings between the grading shoulder lines must, therefore, be adjusted for any crown or superelevation at the time they are taken in the field, and before readings are recorded in the cross section notes (in this case 17.7' left and 17.7' right of center line) and requires that readings be taken and recorded at the center line, for each grading shoulder, for any point where the ground line and the subgrade coincide, and for all variations, or breaks of the ground line. The cross section may then be illustrated as in Figure II as being taken from a horizontal plane.

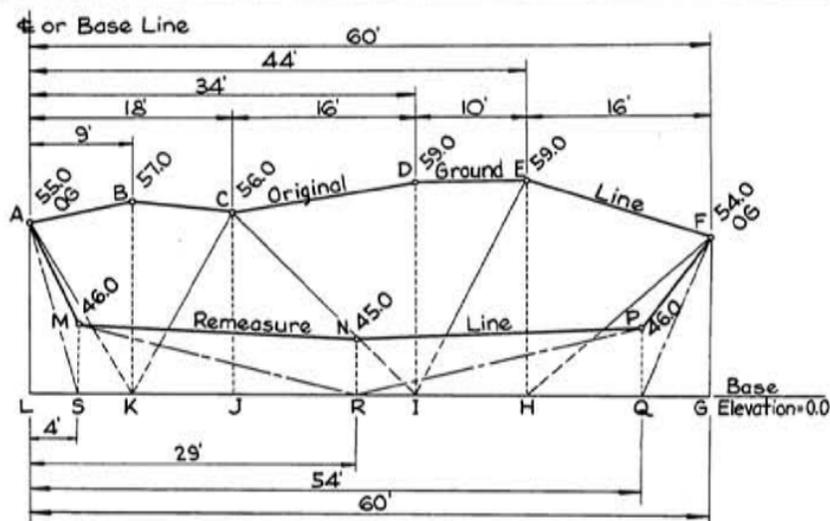
The distance right and left of center line representing the points where the roadway slopes meet subgrade, known as the coordinate points of the subgrade, must be computed before the slope stakes can be figured and set. A reading on the original ground at the coordinate points is not required in computing the cross section, but the distance to them should be recorded as the last entry, left and right, of the completed cross section.

With the cross section recorded in the manner illustrated, the product of the bases and altitudes are additive each direction from center line so long as the distances from center line are progressively larger. When this distance becomes smaller, there is indicated an area being computed which is outside the roadway prism, and, therefore, must be subtracted (area 5). As a general rule, either in cut sections or fill sections, whenever readings are taken and recorded which are outside of the coordinate point of the subgrade, there will be a subtractive computation.

In computing the various triangles involved in the "criss cross" method, each triangle will have a base and an altitude. It will be noted that in many instances two triangles are computed simultaneously. The computations are a summation of the products of the bases and altitudes of the various triangles, and since the area of a triangle is actually one-half the product of the base and the altitude, the sum must be divided by two to obtain the correct area of the prism.

After the area of the prism in excavation has been obtained, the ditch areas and the area for Class A slope treatment should be added to the result so as to give the full excavated area.

CRISS CROSS METHODS FOR DETERMINING THE AREA OF ANY PRISM



The above figure may represent a cross-section of a roadway, a cross-section of a borrow area or a prism on a horizontal plane; in each case the area of the prism being desired. It has been divided into triangles in order to explain the procedure in the method of computation. There are two methods that can be used: One, by computing gross area from common ordinates and abscissas and deducting areas outside the area being measured; the other, by a rotating calculation around the limits of the area being measured. Both of the following methods are predicated on the figure shown as being a borrow cross-section, on which the original ground line and remeasure line are shown by elevations.

Method No. 1: In this problem the ordinate lies through one extreme point of the borrow section, A, and the abscissa is a horizontal line, or base elevation, which is common to both the original section and remeasure section. The area of the remeasured prism is subtracted from the area of the original prism, and would be represented in the field notes in the following manner:

Original Ground	0.0	55.0	57.0	56.0	59.0	59.0	54.0	0.0	
	0	0	9	18	34	44	60	60	Area = 3426.5
		1		2		3		4	
		5		6					
Remeasure	0.0	55.0	46.0	45.0	46.0	54.0	60	0.0	Area = 2777.0
	0	0	4	29	54	60	60	60	
		7		8		9		10	
		11							
								Net Area 649.5	

CRISS CROSS METHODS FOR DETERMINING THE AREA OF ANY PRISM (Cont.)

This can be explained by the following combination of triangles, the net value of which must be divided by 2 since no recognition has been given in the computations to the formula

for the area of a triangle or $\frac{bh}{2}$.

Orig. Ground

Triangle AKL	No. 1	$55.0 \times (9 - 0) = 495.0$	
Triangles ABK & BCK	2	$57.0 \times (18 - 0) = 1026.0$	
Triangles KCJ & JCI	3	$56.0 \times (34 - 9) = 1400.0$	
Triangles CDI & DEI	4	$59.0 \times (44 - 18) = 1534.0$	
Triangles IEH & EHF	5	$59.0 \times (60 - 34) = 1534.0$	
Triangle HFG	6	$54.0 \times (60 - 44) = 864.0$	
		<u>6853.0</u>	
		Total	6853.0
		$\frac{6853.0}{2} = 3426.5$	Area in Sq. Ft.

Remeasure

Triangle AML	No. 7	$55.0 \times (4 - 0) = 220.0$	
Triangles LMS & SMR	8	$46.0 \times (29 - 0) = 1334.0$	
Triangles MNR & RNP	9	$45.0 \times (54 - 4) = 2250.0$	
Triangles RPQ & PQG	10	$46.0 \times (60 - 29) = 1426.0$	
Triangle GPF	11	$54.0 \times (60 - 54) = 324.0$	
		<u>5554.0</u>	
		Total	5554.0
		$\frac{5554.0}{2} = 2777.0$	Area in Sq. Ft.
		2	
		Net Area	649.5 Sq. Ft.

As illustrated, the area of the prism bounded by the original ground, the two extreme ordinates and the base elevation or abscissa is computed from which is deducted the prism bounded by the remeasure line, the two extreme ordinates and the base elevation. In order to include all of the area in each case, the horizontal distance from the extreme elevation to the base elevation, or zero, must be indicated. In the field notes above,

this is represented by $\frac{0.0}{0}$ and $\frac{0.0}{60}$.

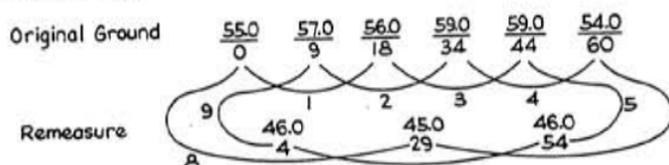
The ordinates and abscissas may be located in any convenient position as long as all elevations or distances are normal to them.

This method may also be used for computing volumes of borrow pits; first by computing the volume above an assumed plane; and later by computing and subtracting the remeasured volume above that plane. By computing volumes in this manner, it is not mandatory that the intermediate points of remeasure be taken at the same points or sections as the originals.

CRISS CROSS METHODS FOR DETERMINING THE AREA OF ANY PRISM (Cont.)

In the use of this method it is necessary to remember that the extremities of a plane figure or the horizontal boundaries of a borrow pit must be identical, both for the original measure and for the remeasure, interpolation in some instances being required.

Method No. 2: The ordinate and abscissa may be established the same as for method 1. In this method, however, the original and remeasure elevations are combined into a single step in the determination of the area. The extremities of the section may have to be interpolated if original ground elevations were not taken at those points. Field notes would be recorded as follows for this method:



This is explained by the following combination of triangles, the net value of which must be divided by 2, as explained in method 1.

Triangles ABK & BCK	No. 1	$57.0 \times (18 - 0)$	(Plus)	= + 1026.0
Triangles KCJ & CJI	2	$56.0 \times (34 - 9)$	(Plus)	= + 1400.0
Triangles CDI & DEI	3	$59.0 \times (44 - 18)$	(Plus)	= + 1534.0
Triangles IEH & EFH	4	$59.0 \times (60 - 34)$	(Plus)	= + 1534.0
Triangle HFQ	5	$54.0 \times (54 - 44)$	(Plus)	= + 540.0
Triangles QPF & RPQ	6	$46.0 \times (60 - 29)$	(Minus)	= - 1426.0
Triangles MNR & RNP	7	$45.0 \times (54 - 4)$	(Minus)	= - 2250.0
Triangles SMR & AMS	8	$46.0 \times (29 - 0)$	(Minus)	= - 1334.0
Triangle AKS	9	$55.0 \times (9 - 4)$	(Plus)	= + 275.0

Total	1299.0
1299.0	
2	= 649.5 Area in Sq. Ft

In computing the area of a prism by this method, the following rules should be observed:

1. Be sure to supply the original ground readings at the outer terminals of the original elevations and rule out any other original elevations beyond these outer terminals.

2. Record all of the remeasure elevations inside of the outer terminal points directly below the original elevations.

3. Go entirely around the section to form a complete closure; that is, use every elevation in the complete section as a base for the computation of the triangles once, and only once.

CRISS CROSS METHODS FOR DETERMINING THE AREA OF ANY PRISM (Cont.)

4. When the base line, or center line, lies at or outside of an outer terminal point, begin the computations at the point of least recorded distance. Proceed in the direction the distances are increasing and go completely around the section in that direction. As the distances are increasingly larger, the product of the base and altitudes will be additive, and when the distances are decreasing, that product will be subtractive.

5. When the base line, or center line, lies within the area involved, commence at the centerline elevation of the original elevations which will be additive, proceed in one direction from centerline and around the section in that direction until the centerline distance on the remeasure elevations has been reached. Continue the computations from the centerline of the original elevations in the other direction and around that side of the section until the remeasure centerline has been reached. Complete the closure of the section across centerline of the remeasure elevations, which is a subtractive computation. Excepting for the first computation across centerline of the original elevations, and the closing computation across the remeasure centerline, the rule in each direction from the starting point remains the same, that is, when the distances are increasing, the product of the base and altitudes will be additive, and when the distances are decreasing, that product will be subtractive.

TRIANGULATION TO CIRCUMVENT AN OBSTRUCTION USING AN ISOSCELES TRIANGLE

Example

$$a = b$$

$$c = \cos \Delta (a) 2$$

Given:

A = Sta. 120+00 P.O.T.

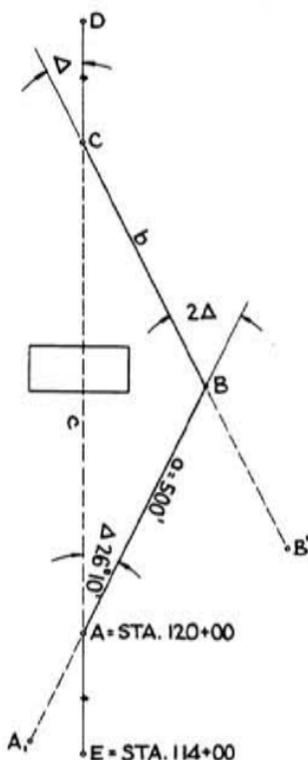
E = Sta. 114+00 P.O.T.

a = 500 ft. = b

$\Delta = 26^{\circ} 10'$

$$c = \cos 26^{\circ} 10' (500.0) 2 = 897.52 \text{ ft.}$$

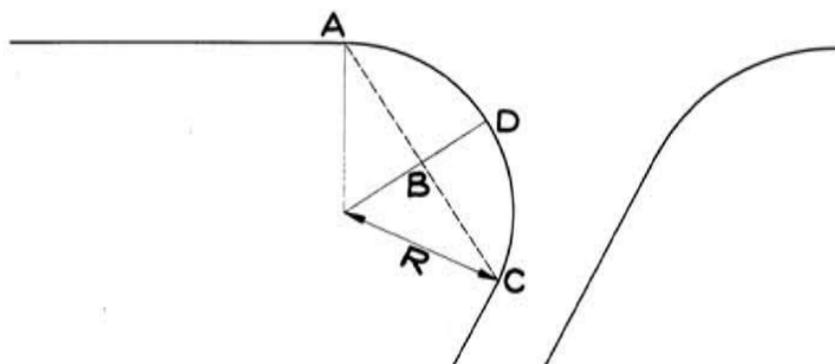
$$C = (\text{Sta. } 120+00) + (8+97.52) = \text{Sta. } 128+97.52$$



With plunged transit set up on point A and backsighting on point E, turn a sufficient angle to get by the obstruction with a clear view of point B from points A and C. In the above example, an angle of $26^{\circ} 10'$ was found to satisfy this condition. Distance a was found to be 500.0 ft. and a point was set at point B.

Set plunged transit up on point B and backsight on point A or on point A' if possible to obtain a longer backsight. Turn twice the angle of point A, $2(26^{\circ} 10') = 52^{\circ} 20'$, and set point C, measuring 500.0 from point B to point C. Set plunged transit up on point C and backsight on point B or on point B' if possible to obtain a longer backsight. Turn the angle of point A ($26^{\circ} 10'$) to return to original bearing, measure approximately 500 ft. and set foresight at point D. Compute a value for $c = \cos \Delta (a) 2$ and add to the station value of point A giving the station value of point C.

DETERMINING RADII OF SHARP CURVES BY FIELD MEASUREMENTS



FORMULA:

$$R = \frac{BC^2}{2BD} + \frac{BD}{2}$$

EXAMPLE:

Step 1. Chain the chord length from A to C

$$AC = 53.8' \quad BC = \frac{AC}{2} = 26.9'$$

NOTE: Points A and C may be any two points on the curve.

Step 2. Chain the middle ordinate length from D to B

$$DB = 10.4'$$

Step 3. Compute radius

$$R = \frac{26.9^2}{20.8} + \frac{10.4}{2} = 40.0 \text{ Ft.}$$

EXAMPLE OF STRUCTURE NOTES FOR DRAINAGE

			Page 95	☐ - Smith ☒ - Jones
STATION 517+00				
SCHEDULE A CULVERT PIPE				
18" DIAMETER				
M-LINE				
F.L. 743				F.L. 75.1
+0.2 74	0.0 33	+0.1 5	+1.2 0	
QUANTITIES				
SCHEDULE A CULVERT PIPE 18" DIAM. 72 LIN. FT.				
STRUCTURE EXCAVATION			1.3 CU. YDS.	
MECHANICAL TAMPER			1.5 HRS.	
CARRIED TO DRAINAGE ITEM SUMMARY - PAGE 99				

CIRCULAR CURVES

LAYING OUT CIRCULAR CURVES

The following steps are usually followed in laying out a circular curve in the field:

1. Starting from a known control point for alinement as established by the Locator, run in and physically position each intersection of tangents (P.I.).
2. Measure the tangent distance (T) from each point of intersection (P.I.) along each tangent and set points P.C. and P.T. using a transit and steel measuring tape.
3. Set all intermediate points required on the curve by the method shown below.

EXAMPLE PROBLEM—SIMPLE CIRCULAR CURVES

Computing Deflections:

Data for this example problem is as follows:

$$\begin{aligned} \text{P.I. Sta.} &= 100+00 \\ \Delta &= 26^{\circ}29' \text{ Rt.} \\ R &= 2000' \end{aligned}$$

Compute values for L and T (see page 6) as follows:

$$\begin{aligned} L &= (0.2) 4622.214 = 924.44' \\ T &= (0.2) 2353.152 = 470.63' \end{aligned}$$

The stationing of the P.C. and P.T. of the curve should now be determined as follows:

$$\text{P.C. Station} = \text{P.I. Station} - T = 100+00.00 - 4+70.63 = 95+29.37$$

$$\text{P.T. Station} = \text{P.C. Station} + L = 95+29.37 + 9+24.44 = 104+53.81$$

Deflections (dc) will be required to the intermediate points to be set on the curve, and in all cases the deflections should be computed and recorded for at least each fifty feet of stationing. Special conditions may require 25 or 10 ft. increments. Deflections for a circular curve are recorded from the P.C. towards the P. T., beginning at the bottom of the sheet. One set of deflections for a circular curve is adaptable to all points on the circular curve, and can be used either back or ahead of intermediate instrument setup points on the curve. The unit deflection per foot of arc, as shown on pages 9 to 12 multiplied by the various lengths on the curve in feet will yield the deflections to those points in minutes, which are then converted to degrees and minutes for recording in the field notes. See the example of field transit notes on page 242 to record deflections.

CIRCULAR CURVES

Deflection Field Note Example

Station	Point	Deflection	Curve Data	Calc. Crse.	Mag. Crse.
110+00	P.O.T.			N38°41'W	N38½°W
104+53.81	P.T.	13°14.5'			
+50		13°11.2'			
104		12°28.2'			
+50		11°45.3'			
103		11°02.3'			
+50		10°19.3'			
102		9°36.3'	P.I. Ahd.		
			119+25		
+50		8°53.4'	P.I. 100+00.0		
101		8°10.4'	△ 26°29' Rt.		
+50		7°27.4'	R 2000.0'		
100		6°44.5'	T 470.63'		
+50		6°01.5'	L 924.44'		
99		5°18.5'	P.I. Bk. 80+00		
+75	P.O.C.	4°57.0'			
+50		4°35.6'			
98		3°52.6'			
+50		3°09.6'			
97		2°26.6'			
+50		1°43.7'			
96		1°00.7'			
+50		0°17.7'			
95+29.37	P.C.	0°00.0'			
90+00	P.O.T.			N65°10'W	N65°W

After setting the points for the P.C. and P.T., the usual practice is to begin the curve at the P.C., carrying stationing ahead. With the transit occupying the point P.C., leveled and with the horizontal circle set at 0°, sight on the P.I. The deflection angle (dc) for the first point ahead of the transit (0°17.7') is set off on the circle, and the distance to that point (20.63') is chained from the P.C. The deflection angle for the second point (1°00.7') is then turned, and chainage made from the first point to the second point using chord values as shown on pages 9 to 12 (Sta. 95+50.0 to Sta. 96+00.0). This procedure is followed until the full deflection (DC) has been reached, or until local conditions require an intermediate setup on the curve.

For this illustrative problem, as shown in the Deflection Field Note Example, a setup on the curve is required at station 98+75.0. A point is carefully set at this station with the transit. If the circle is clamped at the deflection for the new setup, the direction in which to set the horizontal circle at the new setup is more easily identified. The instrument is then moved ahead to point 98+75.0, make setup, and level transit, facing ahead on line. From any intermediate setup on a circular curve, the deflection for the point backsighted upon shall be first set on the transit circle. In this case, the P.C. will be used as a back sight; hence, the deflection recorded for the P.C. is 0°00.0' which will be set on the circle. To eliminate repeated trips around the instrument, the back sight on the P.C. is taken with the

CIRCULAR CURVES

instrument plunged. When the telescope is reversed back to normal, and the deflection for the point occupied is set off the circle, the line of sight is tangent to the curve at that point, and the instrument is ready to set off the deflections to the remaining points on the curve. Chainage is made between the intermediate points as previously described. Deflections can also be backed-in from the P.T.

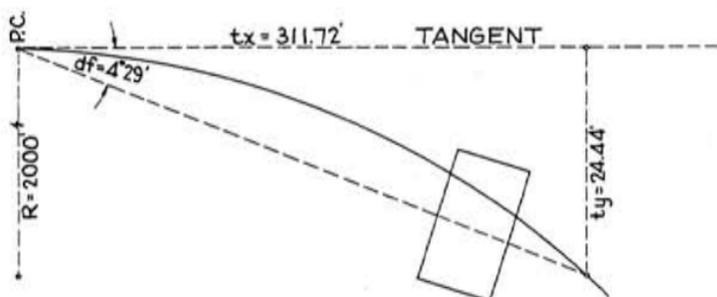
TANGENT OFFSET:

Occasions arise on location where the use of offsets from the semi-tangents to intermediate points on a circular curve are mandatory. The accuracy of points set by offsets is dependent upon the method used in setting them, and the practice of placing curve points by lining in stakes by eye and turning of right-angles by hand methods is unsatisfactory. Even though tangent offsets are used, the field notes for the curve should be completed showing the deflections in the normal manner shown on page 248.

The method of tangent offsets requires that distances (tx) be established along the semi-tangent, measured from the P.C. (or P.T.) and offsets (ty) perpendicular to that tangent be measured out to the points required on the curve.

The tangent offset values of " tx " and " ty " for a 2000 ft. radius curve to a point with a deflection angle of $4^{\circ}29'$ as shown in the illustration below can be computed using values shown on page 149 as follows:

$$\begin{aligned}tx &= (0.2) 1558.60 = 311.72' \\ty &= (0.2) 122.21 = 24.44'\end{aligned}$$



The tangent offset method can be used advantageously many times when an obstruction prevents placement of a point on a circular curve by the deflection method.

ADJUSTMENTS OF INSTRUMENTS

TRANSIT

In order that the effect of one adjustment may not be reflected in the others, adjustments must be made in the following order. 1. Plate bubbles. 2. Vertical Cross-hair. 3. Line of sight. 4. Standards. 5. Telescope bubble.

No. 1. Adjustment of Plate Bubbles.

Problem: To have the axis of each plate bubble perpendicular to the vertical axis of the transit.

Test: Set up the transit and center both plate bubbles. Next turn the instrument 180° about its vertical axis, observing each bubble separately and determine whether the bubble remains in the center.

Correction: Turn the capstan-headed screws on the bubble-tube casing by means of an adjusting pin, thus raising or lowering one end until the bubble moves half-way back to its center. After these steps are completed for both plate bubbles re-center using the leveling screws and repeat the test. If this correction has been carefully made the bubbles will remain centered.

No. 2. Adjustment for Vertical Cross-Hair.

Problem: To make the vertical cross-hair truly vertical.

Test: Bisect a well defined point near the upper end of the vertical cross-hair as viewed in the telescope. Slowly rotate the telescope about its horizontal axis until the point appears near the lower end of the hair. If the point appears to remain on the vertical hair during this maneuver, the hair is in adjustment.

Correction: Rotate the cross-hair diaphragm in its plane by loosening slightly the four capstan-headed screws holding it in place, tap one of the screws with a pencil, and repeat the operation until the point remains on the hair line, then tighten the screws.

No. 3. Adjustment for Line of Sight.

Problem: Line of sight should be perpendicular to the horizontal axis.

Test: Set up transit, level it, clamp both plates, and sight on some point. Plunge the telescope and set another point at about the same level as the first point. This should result in a straight line between the two points and the transit.

Turn the instrument 180° about the vertical axis until the 1st point is again sighted. Clamp the plate, reverse the telescope and observe if the 2nd point is in line. If not set this third point.

Correction: Move the cross-hair ring laterally until the vertical hair appears to have moved $\frac{1}{4}$ the distance from the 3rd point to the 2nd. The cross-hair ring is moved by loosening the screw on one side of the telescope tube and tightening the opposite screw. Repeat this process until no further adjustment is required. When finished the screws should be holding the ring firmly without straining it.

ADJUSTMENTS OF INSTRUMENTS (Cont.)

No. 4. Adjustment of Standards.

Problem: When the instrument is set up and leveled, the horizontal axis should be truly horizontal, and perpendicular to the vertical axis.

Test: Set the transit up near a building and sight some definite point on the building as high up as possible to observe with the telescope. Lower the telescope to a horizontal position and mark a second point on the building in the line of sight. Plunge the telescope and turn the transit about its vertical axis 180° . Sight on the first or upper point again then lower the telescope and set a third point on the building at the same level as the second point. Check whether the third point falls on the second point. If these two points coincide then the standards are in adjustment.

Correction: Set a 4th point on the building half-way between the 2nd and 3rd points then raise or lower the adjustable end of the horizontal axis by means of the capstan-headed screw until the 4th point coincides on the vertical cross-hair with the upper 1st point.

No. 5. Adjustment of the Telescope Bubble.

Problem: The line of sight and the axis of the telescope bubble must be parallel.

Test: Drive two stakes equidistant from the instrument in exactly opposite directions, level the plate carefully, clamp the telescope in a horizontal position and observe a rod placed on each stake. Center the telescope bubble before each observation. Have the two stakes driven by trial until the rod reads alike on both. Remove the instrument beyond one of the stakes and set it up in line with the two stakes. Level the plate and elevate or depress the telescope to a position which will again give equal readings on the stakes. When equal readings are obtained, the line of collimation is level. The telescope bubble should now be in the center of the tube.

Correction: If the readings were not equal then Adjustment No. 1 was not properly made and should be repeated. If the readings are equal and the telescope bubble is not centered then the bubble should be brought to its center by turning the nuts at the adjustable end of the bubble tube.

ADJUSTMENTS OF INSTRUMENTS (Cont.)

LEVEL

1. Adjustment of Plate Bubbles.

Problem: The bubble should center when the axis of the spindle is vertical.

Test: Same as Transit Adjustment No. 1.

Correction: Same as Transit Adjustment No. 1.

2. Adjustment of the Telescope Bubble.

Problem: The bubble of the attached telescope level should center when the axis of the telescope is horizontal.

Test: Same as Transit Adjustment No. 5.

Correction: Change the position of the reticule which carries the cross-hairs while the telescope bubble remains centered for sightings on both stakes.

SELF COMPENSATING LEVEL

Problem: The line of collimation should be truly horizontal.

Test: Set instrument up between 2 stakes 200 ft. apart. Center box level and take a reading on the lower stake and record, then take a reading on the upper stake and subtract this reading from the lower reading and record as the pegged difference. Set up the instrument about $11\frac{1}{2}$ feet from the upper stake and take a reading on the upper stake. Add this reading to the pegged difference and record. This recorded value should equal the reading of the lower stake within 0.01 ft.

Correction: Follow the instructions to adjust, as given for each type of instrument by the manufacturer.

SPECIFICATIONS FOR TRAVERSE, TRIANGULATION AND LEVELING

TRAVERSE			
ITEM	FIRST ORDER	SECOND ORDER	THIRD ORDER
Number of azimuth courses between azimuth checks not to exceed	15	25	50
Astronomical azimuths, probable error of results	0.5"	2"	5"
Azimuth closure at azimuth check points not to exceed	$2'' \sqrt{N}$ or $1''$ per station	$10'' \sqrt{N}$ or $3''$ per station	$30'' \sqrt{N}$ or $8''$ per station
Distance measurements, accurate within	1 in 35,000	1 in 15,000	1 in 7,500
After azimuth adjustment, closing error in position not to exceed	$0.66 \text{ Ft. } \sqrt{M}$ or 1:25,000	$1.67 \text{ Ft. } \sqrt{M}$ or 1:10,000	$3.34 \text{ Ft. } \sqrt{M}$ or 1:5,000
Type of instrument and method	First-order theodolite	First-order theodolite or theodolite such as Kern DKM -2 or Wild T-2 1", EDM or precise taping procedures	Theodolite or transit and standard procedures, EDM or tape or combination, or subtense bar

TRIANGULATION						
ITEM	FIRST ORDER			SECOND ORDER		THIRD ORDER
	Class I	Class II	Class III	Class I	Class II	Topographic
	Principal Use	Urban surveys, scientific studies	Basic network of United States	State, County, private	Area networks and supplemental cross arcs in national net	
Base measurement, probable error not to exceed	$1 \text{ in } 10^6$	$1 \text{ in } 10^6$	$1 \text{ in } 10^6$	$1 \text{ in } 10^6$	$1 \text{ in } 0.5 \times 10^6$	$1 \text{ in } 0.25 \times 10^6$
Triangle closure, average not to exceed	1"	1"	1"	1.5"	3"	5"
Closure in length, discrepancy between computed length and measured length of base, or adjusted length of check line not to exceed	1 in 100,000	1 in 50,000	1 in 25,000	1 in 20,000	1 in 10,000	1 in 5,000
Type of instrument and method	First-order theodolite			First-order theodolite or theodolite such as Kern DKM-2 or Wild T-2 1" and precise base measurement		Theodolite or transit and standard procedures

LEVELING			
ITEM	FIRST ORDER	SECOND ORDER	THIRD ORDER
Check between forward and backward running between fixed elevations or loop closures, not to exceed	$4 \text{ mm } \sqrt{K}$ or $0.017 \text{ Ft. } \sqrt{K}$	$8.4 \text{ mm } \sqrt{K}$ or $0.035 \text{ Ft. } \sqrt{K}$	$12 \text{ mm } \sqrt{K}$ or $0.05 \text{ Ft. } \sqrt{K}$
Type of instrument and method	First-order level	First-order or level such as Wild or Kern	Self-leveling or Dumpy level with standard procedures

NOTES: N is the number of stations for carrying azimuth.

M is the distance in miles.

K is the distance in kilometers.

The expression containing the square root is designed for longer lines where higher proportional accuracy is required. The formula which gives the smaller permissible closure will be used.

SURVEY ORDERS OF ACCURACY

TYPE OF WORK	ORDER OF SURVEY			
	FIRST	SECOND	THIRD	LOWER
MAPPING (LARGE AND HIGH-DENSITY AREAS)				
PRIMARY CONTROL				
MAJOR STRUCTURES				
MINOR STRUCTURES				
CENTERLINE SURVEY (HIGH-DENSITY URBAN AREA)				
FINAL LOCATION SURVEY				
PRELIMINARY LOCATION SURVEY				
ADVANCE PLANNING SURVEY				

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