

FINAL CROSS SECTIONS

HUDSON-EAGLE CENTER ROAD
112

FILE FIGURES - EAGLE CENTER RD.
EAGLE TWP.

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be $30.6 + (20 - 16) \div 2$ or 2 ft. added to 30.6 = 32.6. For slopes of 1 on 1½ see inside of back cover.

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Final X-Secs.

37

Hudson-Eagle Center Rd. 1920

File Figures-Eagle Center Rd.

Eagle Twp.

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Court House
Waterloo Iowa

Entered 2-1923 CRH

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Final Cross-Sections - Hudson - Eagle -
Center Road - Sec

Sec $\frac{28}{33}$ $\frac{29}{32}$ $\frac{30}{31}$ Orange Twp - 4-22

Title Construction Figures - Waterloo
Eagle Center Road Thru Eagle Twp - 25-60

4

114

113

T.A.	4.33	185.17	3.72	180.84
+90				

111

110

109

108

T.P. 4.52 (184.56) 7.44 180 104
+50

107

166

105

BM 3.25-187.48 187.23

[illegible]

Spoke 5 side Trans. Pole Sta 105795

fsd

121

+ 50

120

T.P. 10.52 (201.08) · 1.51 190.56

119

118

117

752

B.M. 11.80 (19207) 180-27

116

750

115

114750

1758	1832	1872	1958	1963	1989	1997	1998
59	78	74	52	48	72	72	58
29	24	20	14	13	21	23	28

$$\begin{array}{r} 194.8 \\ 63 \\ \hline 29 \end{array} \quad \begin{array}{r} 193.3 \\ 78 \\ \hline 23 \end{array} \quad \begin{array}{r} 193.5 \\ 76 \\ \hline 21 \end{array} \quad \begin{array}{r} 195.7 \\ 32 \\ \hline 14 \end{array} \quad \begin{array}{r} 195.8 \\ 54 \\ \hline 14 \end{array} \quad \begin{array}{r} 195.6 \\ 55 \\ \hline 14 \end{array} \quad \begin{array}{r} 193.7 \\ 72 \\ \hline 20 \end{array} \quad \begin{array}{r} 193.4 \\ 77 \\ \hline 24 \end{array} \quad \begin{array}{r} 196.6 \\ 22 \\ \hline 30 \end{array}$$
$$\begin{array}{r} 99.5 \\ 66 \\ \hline 29 \end{array} \quad \begin{array}{r} 192.7 \\ 84 \\ \hline 24 \end{array} \quad \begin{array}{r} 931 \\ 180 \\ \hline 19 \end{array} \quad \begin{array}{r} 1951 \\ 60 \\ \hline 12 \end{array} \quad \begin{array}{r} 950 \\ 161 \\ \hline 6 \end{array} \quad \begin{array}{r} 194.8 \\ 63 \\ \hline 14 \end{array} \quad \begin{array}{r} 193.0 \\ 81 \\ \hline 20 \end{array} \quad \begin{array}{r} 1926 \\ 85 \\ \hline 23 \end{array} \quad \begin{array}{r} 1957 \\ 54 \\ \hline 30 \end{array}$$

1944	191.8	192.0	193.8	193.9	193.7	191.5	191.3	193.6
6.9	9.3	9.1	7.3	7.4	9.6	9.8	7.5	
29	24	20	14	12	14	20	23	28

$$\begin{array}{r} 1924 \\ - 03 \\ \hline 29 \end{array}$$

$$\begin{array}{r} 88.8 \\ 33 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 99.0 \\ 31 \\ \hline 21 \end{array}$$

$$\begin{array}{r} 91.3 \\ 08 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 194 \\ 0 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 1909 \\ 12 \\ \hline 21 \end{array}$$

$$\begin{array}{r} 88.5 \\ 36 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 88.5 \\ 36 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 91.6 \\ 05 \\ \hline 30 \end{array}$$

[illegible]

$$\begin{array}{r} 52 \\ 29 \end{array} \begin{array}{r} 845 \\ 28 \end{array} \begin{array}{r} 183 \\ 26 \end{array} \begin{array}{r} 2826 \\ 24 \end{array} \begin{array}{r} 1819 \\ 23 \end{array} \begin{array}{r} 1021 \\ 20 \end{array} \begin{array}{r} 1846 \\ 13 \end{array} \begin{array}{r} 215 \\ 76 \end{array} \begin{array}{r} 844 \\ 13 \end{array} \begin{array}{r} 815 \\ 19 \end{array} \begin{array}{r} 1922 \\ 23 \end{array} \begin{array}{r} 1850 \\ 28 \end{array}$$

183.4	84.1	80.6	81.0	81.6	82.3	183.2	83.0	80.1	80.2	81.3
8.7	11.0	11.5	11.1	10.5	8.8	8.1	12.0	11.9	10.8	
20	23	23	19	16	12	89	13	20	25	29

$$\begin{array}{r} 1919 \\ \underline{33} \\ 30 \end{array} \quad \begin{array}{r} 28.7 \\ \underline{93} \\ 23 \end{array} \quad \begin{array}{r} 1722 \\ \underline{60} \\ 79 \end{array} \quad \begin{array}{r} 30.1 \\ \underline{9.11} \\ 13 \end{array} \quad \begin{array}{r} 2181.80.0 \\ \underline{34} \\ 14 \end{array} \quad \begin{array}{r} 180.0 \\ \underline{52} \\ 14 \end{array} \quad \begin{array}{r} 180.0 \\ \underline{52} \\ 24 \end{array} \quad \begin{array}{r} 180.8 \\ \underline{121} \\ 27 \end{array}$$

89.1	72.8	77.7	78.9	81.0	81.2	81.2	77.6	77.6	79.1
$\frac{51}{29}$	$\frac{24}{24}$	$\frac{75}{20}$	$\frac{63}{72}$	$\frac{42}{13}$	$\frac{40}{13}$	$\frac{29}{19}$	$\frac{26}{21}$	$\frac{76}{26}$	$\frac{21}{29}$

78.9	76.5	76.6	81	80.6	80.8	76.6	75.4	74	77.5
64	87	86	71	46	46	77	88	88	27
24	25	21	18	13	44	12	18	20	25

177k	175.6	175.8	177.9	180.2	180.4	180.5	176.2	175.5	175.1	177.1
7.6	9.6	9.4	7.3	5.0	4.6	4.9	9.0	9.7	9.7	9.1
30	26	21	17	12		12	18	21	2.5	28

132

+80

B.M.

9.13

(206.87)

4/18

197.61

corr
197.74

131

130

129

128

127

126

125

T.P.

124

123

122

4.45

(201.79)

3.74

197.34

(201.08)

197.1	196.7	195.5	196.0	197.8	198.0	197.6	195.6	195.1	195.9
9.8	10.0	11.2	10.9	7.1	8.9	9.3	11.3	11.8	11.0
27	22	19	14	12	13	13	19	22	26
196.8	194.8	195.0	197.8	197.5	197.2	194.2	194.5	195.2	
10.9	12.1	11.9	9.7	9.4	9.7	12.7	12.4	11.7	
28	24	18	13	13	13	21	24	26	
194.1	193.7	194.1	196.8	197.0	197.0	194.4	193.9	195.6	
7.7	8.1	7.7	4.9	4.8	4.8	7.4	7.9	6.2	
32	23	18	12	48	12	19	23	27	
193.7	192.9	193.4	196.3	196.7	196.3	193.8	193.4	195.4	
8.1	8.9	7.9	5.5	5.1	5.3	8.0	8.4	6.4	
29	23	17	12	31	13	18	24	30	
194.5	192.0	193.8	196.7	196.6	196.3	193.9	193.6	196.0	
7.3	8.8	8.0	5.3	5.2	5.3	7.9	8.2	5.8	
30	26	21	13	52	13	19	23	29	
195.2	193.3	193.7	196.5	196.8	196.7	194.0	193.8	196.8	
6.5	8.3	8.1	5.3	5.3	5.3	7.8	8.0	5.0	
30	25	21	13	50	12	20	25	30	
194.7	193.1	193.6	196.2	196.7	196.5	194.3	193.9	196.8	
7.1	8.7	8.2	5.6	5.7	5.3	7.5	7.9	5.0	
29	24	19	13	31	13	19	23	28	
194.7	193.1	193.5	196.1	196.5	196.4	193.8	193.8	195.9	
7.1	8.7	8.3	5.7	5.3	5.4	8.0	8.3	5.9	
29	24	20	12	53	12	18	23	27	
195.5	192.6	194.1	196.4	197.1	196.9	194.0	193.8	196.8	
6.3	8.2	7.7	5.4	5.4	5.4	7.8	8.0	5.0	
28	23	17	14	47	13	18	22	27	
195.9	194.13	194.6	196.9	197.0	197.1	194.9	194.6	198.7	
5.2	6.8	6.5	4.2	4.2	4.2	6.2	6.5	2.4	
30	24	20	14	47	14	19	23	30	
195.7	194.4	194.8	196.8	197.0	197.0	194.9	194.9	198.7	
5.4	6.7	6.3	4.3	4.3	4.3	6.2	6.2	2.7	
29	24	21	14	43	14	20	23	30	
195.4	193.7	194.8	196.3	196.4	196.5	194.8	194.5	192.7	
5.7	6.3	6.9	4.8	4.6	4.6	6.3	6.6	3.4	
30	24	20	14	47	14	20	23	30	

143

142

T.D 9.88 (224.76) 0.06 214.88

141

140

139

138

137

T.D 840 (214.94) 0.33 206.64

136

135

134

133

132+50

(206.67)

218.3 215.2 215.6 217.3
 $\frac{6.5}{25} - \frac{7.6}{19} \frac{7.2}{12} \frac{7.5}{12} \frac{7.7}{12} \frac{7.8}{19} \frac{7.8}{19} \frac{7.8}{19} \frac{7.8}{19}$

216.1 213.3 213.6 215.3 215.3 215.0 212.9 212.4 214.1
 $\frac{8.7}{25} - \frac{11.5}{19} \frac{11.2}{12} \frac{11.5}{12} \frac{11.5}{12} \frac{11.5}{12} \frac{11.5}{12} \frac{11.5}{12} \frac{11.5}{12}$

214.1 211.4 211.3 213.3 213.3 213.1 211.2 210.7 210.3
 $\frac{0.8}{26} \frac{3.5}{21} \frac{3.6}{17} \frac{1.6}{12} \frac{1.6}{12} \frac{1.8}{12} \frac{3.7}{18} \frac{2.2}{21} \frac{2.6}{26}$

211.7 209.4 209.2 211.3 211.3 211.0 209.3 209.0 210.8
 $\frac{3.2}{26} \frac{5.8}{20} \frac{5.7}{17} \frac{3.4}{12} \frac{3.4}{12} \frac{3.9}{13} \frac{5.6}{17} \frac{5.9}{22} \frac{4.1}{26}$

208.2 207.7 207.7 209.5 209.5 207.2 207.0 208.5
 $\frac{4.7}{26} \frac{7.2}{20} \frac{7.2}{16} \frac{5.4}{12} \frac{5.4}{12} \frac{1.7}{19} \frac{1.7}{19} \frac{6.2}{26}$

209.2 206.5 206.8 208.1 207.9 207.6 205.7 205.4 207.3
 $\frac{5.7}{25} \frac{8.4}{20} \frac{8.1}{17} \frac{4.8}{13} \frac{7.0}{10} \frac{7.3}{14} \frac{7.2}{18} \frac{9.5}{21} \frac{7.4}{26}$

208.1 206.1 206.4 207.0 206.8 206.6 206.1 204.7 206.6
 $\frac{6.8}{25} \frac{7.8}{19} \frac{7.5}{17} \frac{7.9}{13} \frac{8.1}{14} \frac{8.3}{14} \frac{9.8}{18} \frac{10.2}{22} \frac{8.3}{26}$

206.6 203.8 204.1 205.6 205.6 203.7 203.4 205.6
 $\frac{0.3}{26} \frac{3.1}{20} \frac{2.8}{17} \frac{1.3}{13} \frac{1.3}{13} \frac{1.7}{13} \frac{3.2}{18} \frac{3.5}{21} \frac{1.3}{25}$

203.9 201.2 201.4 203.3 203.4 201.9 201.5 202.6
 $\frac{3.9}{24} \frac{5.7}{20} \frac{5.5}{17} \frac{3.6}{13} \frac{3.3}{13} \frac{5.0}{17} \frac{5.0}{21} \frac{5.3}{25}$

201.9 199.2 199.3 201.2 201.2 201.1 199.2 199.9 201.4
 $\frac{5.0}{25} \frac{7.7}{21} \frac{7.6}{17} \frac{5.7}{12} \frac{5.6}{13} \frac{5.8}{13} \frac{7.7}{17} \frac{8.0}{21} \frac{5.5}{25}$

200.7 197.5 197.2 199.4 199.5 199.2 197.0 198.7
 $\frac{4.2}{25} \frac{9.0}{21} \frac{7.2}{17} \frac{7.5}{13} \frac{7.5}{13} \frac{7.7}{13} \frac{7.9}{17} \frac{8.2}{22} \frac{8.2}{26}$

198.1 196.6 197.2 198.7 198.7 198.5 196.9 196.4 197.4
 $\frac{8.8}{25} \frac{10.3}{20} \frac{9.7}{17} \frac{8.2}{13} \frac{8.2}{13} \frac{8.4}{12} \frac{10.5}{18} \frac{10.8}{21} \frac{8.5}{25}$

+50

15-2

151 +50

T.P.

9.47

232.77

3.19

223.30

150450

151

150

149

148

147

146

BM

399

226.49

2.60

222.16

222.50

145

144

224.76

2240	2223	2226	2243	2246	2242	2222	2222	2237
8.8	10.5	10.3	8.5	8.3	8.4	10.4	10.6	9.1
27	23	19	14	13	13	20	25	25

2207	2217	2220	2238	2238	2236	2216	2213	2226
10.1	11.1	10.8	9.0	9.2	11.2	11.5	10.3	10.3
28	24	18	13	14	20	25	25	25

2216	2206	2209	2231	2231	2230	2211	2208	2221
11.3	12.3	11.9	9.7	9.8	11.7	12.0	10.7	10.7
28	23	24	14	14	20	24	25	25

2205	2196	2199	2211	2233	2222	2198	2196	2213
5.7	6.9	6.6	4.4	4.3	6.7	6.7	6.2	5.2
28	23	20	14	14	20	24	24	25

2209	2201	2201	2226	2227	2226	2203	2202	2219
5.4	6.4	6.4	4.0	4.0	6.2	6.3	4.6	4.6
28	24	21	13	13	20	25	25	29

2204	2189	2185	2217	2219	2218	2194	2190	2206
6.1	7.6	7.2	4.8	4.7	7.1	7.5	6.0	6.0
28	24	20	13	12	19	24	27	27

2187	2184	2189	2217	2215	2189	2189	2202	2202
7.8	8.1	7.6	4.8	4.8	7.6	7.6	6.5	6.5
24	23	20	12	13	19	23	27	27

2194	2183	2186	2211	2212	2212	2192	2198	2202
7.1	8.0	8.0	5.4	5.3	7.1	7.7	6.0	6.0
27	21	14	14	14	19	24	27	27

2210	2198	2192	2211	2213	2209	2187	2187	2220
5.5	7.7	7.3	5.4	5.2	5.6	7.8	7.8	4.5
28	23	20	14	12	14	19	22	27

2221	2191	2194	2210	2212	2211	2195	2190	2218
4.4	7.4	7.1	5.5	5.3	5.4	6.9	7.5	4.7
28	21	18	12	13	13	19	22	27

2221	2184	2185	2214	2205	2170	2179	2204	2204
2.6	6.4	6.3	4.4	4.3	6.8	6.9	6.1	6.1
28	22	18	13	12	19	22	26	26

2202	2186	2179	2193	2184	2184	2176	2168	2185
4.1	7.2	6.9	5.5	5.4	5.4	7.6	8.0	6.3
26	20	17	12	14	14	21	24	29

13M

+203

7.10 221.10

161

+50

160

157

158

157

T.F.

156

+50

155

+50

154

163

(232.77)

2197 2187 2185

83 75 77

32 30 33

2186	2176	2178	2192	2192	2191	2176	2171
16	10	10	70	70	71	106	111
34	31	25	17	90	14	22	26

2201	2183	2185	2198	2200	2195	2176	2172	2190
81	79	77	84	82	87	105	118	92
26	23	19	14	82	12	15	19	23

2211	2192	2193	2204	2207	2204	2182	2182	2201
71	72	87	73	75	75	100	100	81
21	21	17	13	12	12	18	20	24

2229	2203	2207	2223	2226	2222	2204	2200	2210
53	29	73	55	60	60	78	82	72
26	20	18	13	57	12	17	22	24

2238	2218	2221	2242	2244	2240	2192	2195	2231
44	64	81	40	40	42	63	67	51
28	23	18	13	38	13	18	22	25

2265	2244	2249	2264	2261	2263	2244	2241	2266
17	38	53	18	14	19	38	41	16
27	21	17	12	14	14	19	22	26

2293	2267	2270	2284	2282	2283	2270	2269	2300
33	61	58	44	45	45	58	59	28
26	21	18	13	4	4	17	22	27

2302	2272	2274	2287	2289	2290	2274	2276	2302
26	56	54	41	39	38	54	53	26
27	21	18	14	39	14	20	22	27

2298	2271	2274	2288	2288	2289	2274	2273	2294
30	57	54	40	40	39	54	55	34
26	21	18	13	40	14	19	22	27

2286	2283	2266	2283	2282	2265	2264	2286	2286
40	65	62	45	46	63	64	40	40
26	21	18	13	46	14	19	23	28

2277	2263	2266	2274	2276	2274	2266	2266	2279
51	25	72	52	53	54	72	73	55
26	21	18	13	53	15	20	23	29

2251	2236	2238	2252	2264	2251	2231	2232	2248
77	73	70	76	72	77	97	96	80
27	22	18	13	72	14	21	25	29

54

450

T. P. 9.70 (209.65) 421 199.95

53109.8

450

52

450

51

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450

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B17

5.11

(204.19)

199.08

2015	1994	1995	2022	2023	2024	2004	2002	2021
$\frac{8.2}{28}$	$\frac{10.3}{24}$	$\frac{10.2}{20}$	$\frac{7.5}{14}$	$\frac{7.4}{14}$	$\frac{7.1}{13}$	$\frac{7.3}{18}$	$\frac{7.5}{23}$	$\frac{7.4}{25}$

2009	1990	1991	2020	2022	2019	2004	2003	2020
$\frac{8.8}{28}$	$\frac{10.7}{25}$	$\frac{10.2}{20}$	$\frac{7.7}{13}$	$\frac{7.5}{13}$	$\frac{7.8}{13}$	$\frac{7.3}{16}$	$\frac{7.2}{22}$	$\frac{7.7}{25}$

2007

2011

2016

2016

 $\frac{7.5}{36}$
 $\frac{7.1}{19}$
 $\frac{2.6}{15}$
 $\frac{2.4}{32}$

2002

1984

1984

2006

2007

2006

1989

2006

 $\frac{4.0}{26}$
 $\frac{5.8}{24}$
 $\frac{5.8}{20}$
 $\frac{3.7}{13}$
 $\frac{3.5}{14}$
 $\frac{3.6}{14}$
 $\frac{5.3}{19}$
 $\frac{5.3}{23}$
 $\frac{3.7}{26}$

1992

1991

1970

2000

2000

1998

1974

1973

1993

 $\frac{5.2}{26}$
 $\frac{7.3}{24}$
 $\frac{7.2}{19}$
 $\frac{4.2}{13}$
 $\frac{4.2}{12}$
 $\frac{4.4}{12}$
 $\frac{6.8}{18}$
 $\frac{6.8}{21}$
 $\frac{4.9}{26}$

1977

1960

1961

1994

1996

1995

1969

1969

1986

 $\frac{6.5}{27}$
 $\frac{8.2}{25}$
 $\frac{8.1}{21}$
 $\frac{4.5}{13}$
 $\frac{4.6}{13}$
 $\frac{4.7}{13}$
 $\frac{7.3}{18}$
 $\frac{7.3}{22}$
 $\frac{5.7}{26}$

1970

1967

1968

1990

1992

1992

1970

1963

1986

 $\frac{7.2}{26}$
 $\frac{8.5}{24}$
 $\frac{8.4}{20}$
 $\frac{5.2}{14}$
 $\frac{5.0}{14}$
 $\frac{5.0}{12}$
 $\frac{7.2}{17}$
 $\frac{7.9}{20}$
 $\frac{5.7}{26}$

1977

1961

1964

1986

1988

1986

1964

1961

1990

 $\frac{6.5}{26}$
 $\frac{7.1}{23}$
 $\frac{8.8}{20}$
 $\frac{4.7}{13}$
 $\frac{5.2}{12}$
 $\frac{5.6}{12}$
 $\frac{7.8}{18}$
 $\frac{8.1}{20}$
 $\frac{5.2}{26}$

1981

1952

1952

1982

1986

1988

1969

1988

 $\frac{6.1}{26}$
 $\frac{2.9}{23}$
 $\frac{2.0}{20}$
 $\frac{6.0}{12}$
 $\frac{5.6}{13}$
 $\frac{5.9}{13}$
 $\frac{6.3}{20}$
 $\frac{8.3}{21}$
 $\frac{5.4}{26}$

1973

1948

1960

1980

1982

1984

1963

1952

1979

 $\frac{6.9}{26}$
 $\frac{7.4}{23}$
 $\frac{9.2}{19}$
 $\frac{6.2}{12}$
 $\frac{5.0}{12}$
 $\frac{5.8}{12}$
 $\frac{8.9}{19}$
 $\frac{2.0}{21}$
 $\frac{6.8}{26}$

1966

1946

1948

1983

1983

1983

1955

1966

1963

 $\frac{8.6}{27}$
 $\frac{7.7}{26}$
 $\frac{9.4}{19}$
 $\frac{5.9}{11}$
 $\frac{5.9}{11}$
 $\frac{8.7}{18}$
 $\frac{8.7}{24}$
 $\frac{7.9}{25}$

Center N. Hardball Court 5th 4/7/90

62

+50

61

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60

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59

T.P. 8.73 (215.38) 3.00 20665-

+50

58

57

56

55-

2104	2083	2083	2102	2104	2103	2082	2079	2099
$\frac{5.0}{26}$	$\frac{7.1}{21}$	$\frac{7.1}{18}$	$\frac{5.2}{13}$	$\frac{5.0}{50}$	$\frac{5.1}{12}$	$\frac{7.2}{17}$	$\frac{7.5}{21}$	$\frac{8.5}{25}$

2102	2179	2078	2102	2103	2100	2081	2076	2100
$\frac{5.2}{25}$	$\frac{7.5}{22}$	$\frac{7.6}{19}$	$\frac{5.2}{13}$	$\frac{5.1}{51}$	$\frac{5.4}{12}$	$\frac{7.3}{17}$	$\frac{7.6}{21}$	$\frac{5.0}{25}$

2096	2079	2190	2101	2098	2079	2077	2099
$\frac{5.8}{24}$	$\frac{7.5}{19}$	$\frac{5.4}{13}$	$\frac{5.3}{53}$	$\frac{5.6}{12}$	$\frac{7.5}{16}$	$\frac{7.7}{20}$	$\frac{5.5}{25}$

2099	2073	2072	2097	2101	2097	2077	2076	2098
$\frac{5.5}{27}$	$\frac{8.1}{21}$	$\frac{8.2}{19}$	$\frac{5.7}{13}$	$\frac{5.3}{53}$	$\frac{5.7}{11}$	$\frac{7.7}{16}$	$\frac{7.9}{20}$	$\frac{5.6}{24}$

2097	2069	2072	2097	2095	2094	2072	2072	2097
$\frac{5.7}{27}$	$\frac{8.5}{21}$	$\frac{8.2}{19}$	$\frac{6.1}{14}$	$\frac{5.9}{59}$	$\frac{6.0}{10}$	$\frac{8.2}{17}$	$\frac{8.2}{20}$	$\frac{5.7}{24}$

2089	2063	2065	2090	2090	2090	2072	2068	2096
$\frac{6.8}{26}$	$\frac{9.1}{22}$	$\frac{8.9}{19}$	$\frac{6.4}{13}$	$\frac{6.4}{64}$	$\frac{6.4}{11}$	$\frac{8.2}{15}$	$\frac{8.6}{19}$	$\frac{5.8}{26}$

2083	2069	2060	2086	2086	2087	2069	2067	2091
$\frac{7.1}{27}$	$\frac{9.5}{23}$	$\frac{9.4}{19}$	$\frac{6.9}{12}$	$\frac{6.8}{68}$	$\frac{6.7}{11}$	$\frac{8.5}{16}$	$\frac{8.7}{20}$	$\frac{6.3}{24}$

2076	2053	2067	2061	2083	2092	2061	2061	2087
$\frac{2.1}{26}$	$\frac{4.0}{21}$	$\frac{4.0}{18}$	$\frac{1.6}{12}$	$\frac{1.4}{14}$	$\frac{1.5}{11}$	$\frac{3.4}{16}$	$\frac{3.6}{20}$	$\frac{1.0}{25}$

2071	2048	2050	2075	2078	2078	2044	2060	2086
$\frac{2.6}{27}$	$\frac{4.7}{23}$	$\frac{4.7}{20}$	$\frac{2.2}{15}$	$\frac{1.9}{19}$	$\frac{1.7}{12}$	$\frac{3.3}{15}$	$\frac{3.7}{22}$	$\frac{1.1}{24}$

2063	2039	2042	2067	2069	2070	2064	2069	2081
$\frac{3.2}{27}$	$\frac{5.8}{23}$	$\frac{5.3}{20}$	$\frac{3.0}{13}$	$\frac{2.8}{28}$	$\frac{2.7}{13}$	$\frac{4.3}{18}$	$\frac{4.5}{21}$	$\frac{1.6}{26}$

2053	2024	2028	2066	2066	2066	2039	2066	2067
$\frac{4.4}{27}$	$\frac{1.3}{22}$	$\frac{6.9}{20}$	$\frac{4.2}{13}$	$\frac{4.2}{42}$	$\frac{4.2}{13}$	$\frac{5.8}{18}$	$\frac{6.2}{20}$	$\frac{3.0}{25}$

2035	2006	2009	2037	2039	2038	2014	2020	2044
$\frac{6.2}{29}$	$\frac{9.1}{23}$	$\frac{8.8}{20}$	$\frac{6.0}{13}$	$\frac{5.8}{58}$	$\frac{5.8}{13}$	$\frac{8.3}{14}$	$\frac{9.7}{22}$	$\frac{5.3}{26}$

(20965)

To
 BM 4.60 (707.59) 6.77 203.08 203.09

69

+50

68

+50

67

66

65

T.P. 3.16 (20945) 8.69 206.69

+50

64

+50

63

(21538)

2011 1986 1991 2021 2024 2021 1987 1983 1977
 $\frac{6.5}{32}$ $\frac{8.8}{25}$ $\frac{9.5}{19}$ $\frac{8.2}{12}$ $\frac{5.2}{5.2}$ $\frac{5.5}{13}$ $\frac{8.7}{21}$ $\frac{9.3}{25}$ $\frac{7.9}{29}$

2011 1973 1995 2024 2025 2025 1992 1990 2006
 $\frac{8.8}{31}$ $\frac{10.6}{24}$ $\frac{10.4}{19}$ $\frac{7.5}{13}$ $\frac{7.4}{7.4}$ $\frac{7.2}{12}$ $\frac{10.7}{20}$ $\frac{10.9}{25}$ $\frac{9.3}{29}$

2016 2002 2000 2027 2026 2027 2001 1998 2023
 $\frac{8.3}{31}$ $\frac{7.7}{27}$ $\frac{7.7}{20}$ $\frac{7.2}{13}$ $\frac{7.3}{7.3}$ $\frac{7.9}{12}$ $\frac{7.8}{19}$ $\frac{10.1}{22}$ $\frac{7.6}{28}$

20219 2009 2009 2033 2033 2032 2008 2006 2036
 $\frac{7.0}{29}$ $\frac{9.0}{25}$ $\frac{9.0}{18}$ $\frac{6.6}{13}$ $\frac{6.6}{6.6}$ $\frac{6.7}{13}$ $\frac{7.8}{18}$ $\frac{9.3}{23}$ $\frac{6.3}{28}$

2043 2017 2017 2012 2041 2040 2021 2014 2049
 $\frac{5.6}{28}$ $\frac{8.2}{23}$ $\frac{8.2}{19}$ $\frac{5.7}{13}$ $\frac{5.8}{5.8}$ $\frac{5.9}{13}$ $\frac{7.8}{18}$ $\frac{8.0}{23}$ $\frac{5.8}{27}$

20516 2026 2028 2050 2051 2052 2033 2030 2038 2061
 $\frac{4.3}{27}$ $\frac{7.3}{21}$ $\frac{7.1}{18}$ $\frac{4.9}{13}$ $\frac{4.8}{4.8}$ $\frac{4.7}{12}$ $\frac{6.6}{18}$ $\frac{6.9}{20}$ $\frac{3.8}{25}$

2074 2054 2054 2073 2076 2076 2052 2055 2082
 $\frac{2.5}{26}$ $\frac{4.5}{23}$ $\frac{4.5}{19}$ $\frac{2.6}{14}$ $\frac{2.3}{23}$ $\frac{2.3}{12}$ $\frac{4.2}{17}$ $\frac{4.4}{20}$ $\frac{1.7}{25}$

2083 2068 2068 2070 2070 2072 2090 2072 2070 2092
 $\frac{0.6}{27}$ $\frac{3.1}{22}$ $\frac{3.1}{20}$ $\frac{0.9}{14}$ $\frac{0.9}{0.9}$ $\frac{0.9}{11}$ $\frac{2.7}{17}$ $\frac{2.7}{21}$ $\frac{0.2}{26}$

2099 2076 2076 2099 2099 2100 2081 2079 2104
 $\frac{5.5}{26}$ $\frac{7.8}{22}$ $\frac{7.8}{18}$ $\frac{5.5}{13}$ $\frac{5.5}{5.5}$ $\frac{5.4}{12}$ $\frac{7.3}{17}$ $\frac{7.5}{21}$ $\frac{5.0}{26}$

2107 2082 2082 2103 2103 2103 2083 2083 2106
 $\frac{4.7}{26}$ $\frac{7.2}{22}$ $\frac{7.2}{19}$ $\frac{5.1}{14}$ $\frac{5.1}{5.1}$ $\frac{5.1}{12}$ $\frac{7.1}{18}$ $\frac{7.1}{22}$ $\frac{4.8}{26}$

2108 2086 2087 2106 2106 2104 2086 2084 2107
 $\frac{4.6}{26}$ $\frac{6.8}{21}$ $\frac{6.7}{18}$ $\frac{4.8}{14}$ $\frac{4.8}{4.8}$ $\frac{5.0}{13}$ $\frac{6.9}{17}$ $\frac{7.0}{22}$ $\frac{4.7}{26}$

2110 2086 2086 2106 2107 2106 2086 2083 2106
 $\frac{4.4}{26}$ $\frac{6.9}{21}$ $\frac{6.9}{19}$ $\frac{4.8}{13}$ $\frac{4.7}{4.7}$ $\frac{4.8}{12}$ $\frac{6.8}{17}$ $\frac{7.1}{21}$ $\frac{4.9}{26}$

150

77

750

+ 50

T.P. 6.54 (209.39) 4.74 202.85

74

75v

73

72

7

$\frac{2078}{1.6} = 27$
 $\frac{2040}{48} = 21$
 $\frac{2047}{47} = 18$
 $\frac{2064}{30} = 12$
 $\frac{2066}{28} = 13$
 $\frac{2062}{32} = 19$
 $\frac{2043}{31} = 21$
 $\frac{2040}{52} = 21$
 $\frac{2062}{32} = 26$

$\frac{2060}{3} \quad \frac{2036}{4} \quad \frac{2038}{5} \quad \frac{2055}{6} \quad \frac{2050}{7} \quad \frac{2034}{8} \quad \frac{2071}{9} \quad \frac{2050}{10}$
 $\frac{28}{28} \quad \frac{55}{24} \quad \frac{56}{18} \quad \frac{41}{12} \quad \frac{38}{12} \quad \frac{60}{17} \quad \frac{63}{20} \quad \frac{24}{14}$

2052	2028	2031	2048	2045	2025	2023	2042
$\frac{4.2}{27}$	$\frac{6.6}{21}$	$\frac{6.3}{17}$	$\frac{4.6}{13}$	$\frac{4.9}{13}$	$\frac{6.9}{18}$	$\frac{7}{21}$	$\frac{5.2}{25}$

2024/2	2021	2021	2028	2042	2039	2015	2014	2034
5.0	7.3	7.3	21.6	5.5	7.6	8.0	6.0	
28	25	18	13	13	19	26	2	

2036	2018	2032	2036	2009	2008	2026
$\frac{5.88}{28}$	$\frac{7.6}{18}$	$\frac{6.2}{14}$	$\frac{6.0}{13}$	$\frac{8.5}{20}$	$\frac{8.6}{25}$	$\frac{6.5}{29}$
24	24	58	58	30	25	29

<u>2031</u>	<u>2060</u>	<u>2012</u>	<u>2031</u>	<u>2081</u>	<u>2030</u>	<u>2014</u>	<u>2007</u>	<u>2015</u>
63	84	82	63	64	70	91	79	
28	24	18	13	13	20	25	28	

2020	2021	2022	2023	2024	2025
6.7	8.5	8.4	6.7	6.9	6.2
27	22	18	14	13	20

2026	2007	2005	2024	2027	2026	2002	999	2014
510	49	71	52	49	510	74	77	62
28	23	18	12		13	19	24	28

2828	2005	2005	2004	2002	2025	2001	149.8	2022
48	11	11	62	51	51	75	77	114
29	24	17	12	49	13	20	24	27

2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
48	76	73	69	19	50	74	76	52				
28	23	19	11		12	19	23	27				

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
5.1	7.6	7.3	4.9	20.8	3.1	7.6	7.8	5.4	2.4
2.9	2.3	1.7	1.1	4.8	1.2	1.9	2.3	2.7	2.7

2017. 09.8 79.8 2024 2015 23.992 1984 200.0

$\frac{82}{30}$ $\frac{7.5}{20}$ $\frac{5.2}{12}$ $\frac{5}{13}$ $\frac{5.2}{13}$ $\frac{84}{21}$ $\frac{87}{25}$ $\frac{6.8}{29}$

207-59

86

85

84

T.P. 8-26 22228 5.00 214.02

83

82

+50

81

+60

80.

79

+50

T.P. 10-83 219.02 1-20 208.19

78

209.39

216.7	215.0	215.2	216.8	217.1	216.9	214.3	213.9	215.1
$\frac{5.2}{22}$	$\frac{7.3}{19}$	$\frac{7.1}{16}$	$\frac{3.5}{12}$	$\frac{5.2}{12}$	$\frac{5.2}{12}$	$\frac{8.0}{18}$	$\frac{8.2}{22}$	$\frac{7.2}{25}$
216.1	213.9	214.3	216.1	216.3	216.1	213.6	213.2	214.3
$\frac{6.2}{23}$	$\frac{8.2}{20}$	$\frac{8.2}{16}$	$\frac{6.2}{12}$	$\frac{6.0}{13}$	$\frac{6.2}{13}$	$\frac{8.7}{17}$	$\frac{9.1}{21}$	$\frac{8.0}{24}$
215.7	214.4	213.5	213.9	215.8	215.4	215.5	213	212.6
$\frac{6.6}{24}$	$\frac{7.9}{21}$	$\frac{8.8}{19}$	$\frac{8.2}{14}$	$\frac{4.5}{12}$	$\frac{6.5}{12}$	$\frac{4.8}{12}$	$\frac{9.3}{18}$	$\frac{8.7}{21}$
216.1	213.5	213.8	215.7	215.4	215.4	212.9	213.1	214.9
$\frac{8.9}{26}$	$\frac{2.5}{21}$	$\frac{5.2}{17}$	$\frac{3.3}{13}$	$\frac{3.4}{13}$	$\frac{3.4}{13}$	$\frac{6.1}{19}$	$\frac{5.9}{21}$	$\frac{4.5}{24}$
217.1	217.1	213.6	213.6	215.2	214.4	215.2	213.3	213.2
$\frac{1.8}{26}$	$\frac{1.9}{26}$	$\frac{4.1}{20}$	$\frac{5.2}{18}$	$\frac{3.8}{13}$	$\frac{4.0}{14}$	$\frac{3.8}{14}$	$\frac{5.7}{18}$	$\frac{5.5}{22}$
216.3	214.9	213.4	213.5	215.7	215.2	213.1	212.8	214.4
$\frac{1.8}{26}$	$\frac{4.1}{21}$	$\frac{5.2}{21}$	$\frac{5.3}{18}$	$\frac{3.9}{14}$	$\frac{4.0}{14}$	$\frac{3.8}{14}$	$\frac{5.9}{19}$	$\frac{6.2}{21}$
216.1	214.5	212.6	212.9	214.5	214.6	212.4	212.6	215.2
$\frac{2.9}{25}$	$\frac{4.5}{24}$	$\frac{6.4}{21}$	$\frac{6.1}{18}$	$\frac{4.5}{12}$	$\frac{4.5}{14}$	$\frac{6.6}{19}$	$\frac{6.4}{21}$	$\frac{3.8}{25}$
214.7	213.4	211.6	211.7	212.6	213.6	213.8	211.6	211.3
$\frac{4.3}{26}$	$\frac{5.9}{24}$	$\frac{7.4}{22}$	$\frac{7.3}{18}$	$\frac{5.4}{13}$	$\frac{5.4}{13}$	$\frac{5.2}{13}$	$\frac{7.4}{18}$	$\frac{7.7}{20}$
213.3	216.3	210.7	212.2	212.5	212.3	210.1	209.9	212.7
$\frac{5.7}{26}$	$\frac{8.7}{20}$	$\frac{8.3}{17}$	$\frac{6.5}{12}$	$\frac{6.5}{13}$	$\frac{6.7}{13}$	$\frac{8.9}{17}$	$\frac{9.1}{20}$	$\frac{6.3}{25}$
210.4	207.9	208.2	207.9	208.8	208.7	208.0	207.6	210.1
$\frac{8.6}{26}$	$\frac{11.1}{21}$	$\frac{10.5}{16}$	$\frac{7.1}{11}$	$\frac{7.2}{12}$	$\frac{7.3}{13}$	$\frac{11.0}{18}$	$\frac{11.4}{21}$	$\frac{8.9}{26}$
208.3	206.6	206.8	208.5	208.6	208.5	206.2	206.0	208.4
$\frac{9.7}{25}$	$\frac{12.4}{20}$	$\frac{12.1}{17}$	$\frac{10.5}{12}$	$\frac{10.4}{13}$	$\frac{10.5}{13}$	$\frac{12.5}{19}$	$\frac{13.0}{21}$	$\frac{10.6}{26}$
208.3	205.7	205.8	207.4	207.2	207.5	205.3	205.3	207.1
$\frac{1.1}{26}$	$\frac{3.7}{21}$	$\frac{3.6}{17}$	$\frac{2.9}{12}$	$\frac{1.8}{18}$	$\frac{1.9}{15}$	$\frac{4.1}{19}$	$\frac{4.1}{23}$	$\frac{2.3}{27}$

95

94

T.P 1.21 (210.73) 11.35 209.69

93

92

+50

91

+50

T.P 0.07 (221.04) 1.31 220.97

90

7.29
213 7.3

+50

89

88

87

(222.28)

207.0 <u>38</u> 22	204.8 <u>60</u> 20	204.7 <u>59</u> 16	203 <u>38</u> 11	202 <u>38</u> 12	206.8 <u>39</u> 12	204.7 <u>61</u> 18	205.0 <u>55</u> 21	206.8 <u>40</u> 22
209.1 <u>17</u> 24	207.3 <u>31</u> 20	202.7 <u>31</u> 12	219.5 <u>13</u> 11	209.6 1.2	209.4 <u>14</u> 17	207.5 <u>33</u> 17	207.3 <u>35</u> 20	209.3 <u>1.4</u> 22
211.8 <u>72</u> 25	209.8 <u>12</u> 20	210.2 <u>108</u> 17	212.4 <u>86</u> 11	212.4 86	212.1 <u>89</u> 11	210.5 <u>103</u> 16	210.3 <u>107</u> 19	212.4 <u>86</u> 23
214.6 <u>64</u> 24	213.1 <u>79</u> 19	213.6 <u>74</u> 16	215.1 <u>59</u> 12	215.3 57	215.3 <u>57</u> 13	213.8 <u>72</u> 17	213.6 <u>74</u> 20	216.2 <u>45</u> 23
215.4 <u>58</u> 22	214.4 <u>66</u> 19	214.9 <u>61</u> 16	216.7 <u>43</u> 11	216.9 4	216.7 <u>43</u> 12	215.2 <u>58</u> 17	215.2 <u>58</u> 19	217.5 <u>35</u> 20
217.1 <u>39</u> 21	215.8 <u>52</u> 18	216.1 <u>49</u> 16	217.9 <u>31</u> 11	218.0 30	218.0 <u>30</u> 13	216.3 <u>47</u> 18	216.1 <u>49</u> 20	218.6 <u>24</u> 22
218.2 <u>25</u> 22	218 <u>50</u> 17	218.7 <u>23</u> 12	218.7 23	218.9 2.1	217.6 <u>34</u> 18	217.5 <u>35</u> 22	219.4 <u>16</u> 20	
218.0 <u>33</u> 21	219.1 <u>42</u> 18	218 <u>43</u> 17	218.5 <u>35</u> 13	219.1 33	219.1 <u>32</u> 14	217.6 <u>47</u> 19	217.5 <u>48</u> 22	219.2 <u>31</u> 26
219.1 <u>33</u> 23	219.1 <u>32</u> 19	218.7 34	218.8 <u>35</u> 14	218.2 34	218.3 <u>40</u> 14	216.5 <u>58</u> 19	216.2 <u>61</u> 22	217.7 <u>46</u> 26
217.2 <u>51</u> 21	215.8 <u>65</u> 19	216.1 <u>62</u> 15	217.4 <u>49</u> 12	217.5 48	217.3 <u>50</u> 13	215.2 <u>71</u> 19	214.8 <u>75</u> 22	215.9 <u>64</u> 24
217.4 <u>49</u> 23	216.5 <u>68</u> 20	215.8 <u>65</u> 16	217.2 <u>51</u> 12	217.4 49	217.1 <u>52</u> 12	214.9 <u>74</u> 19	214.7 <u>76</u> 22	215.7 <u>66</u> 25

B.M. 1.25 9.48 184.32 186.23

104

103

102

T.P. 1.85 193.80 10.02 191.95

101

100

99

98

T.P. 1.29 201.97 10.05 200.68

97

96

21073

186.5	184.8	185.2	187.5	187.4	187.4	185.6	185.6	188.7
73	9.0	8.6	6.3	6.4	6.4	5.2	5.2	5.1
30	26	19	13	12	12	15	22	29
189.6	187.1	187.5	189.6	189.5	189.6	187.9	188.2	190.2
4.2	6.8	6.3	4.2	4.3	4.2	5.7	5.6	3.6
30	23	20	12	13	13	15	22	26
191.8	189.6	189.9	191.6	191.7	191.7	190.1	189.9	192.4
2.0	4.2	3.9	2.2	2.1	2.1	3.5	3.9	1.4
29	22	18	12	13	13	17	20	25
193.6	192.0	192.0	193.8	193.8	193.8	192.3	192.1	194.4
8.4	10.0	10.0	8.2	8.1	8.3	9.7	10.0	7.6
27	22	18	13	12	12	17	20	24
195.7	193.9	194.2	196.1	196.1	196.1	194.2	194.1	196.6
6.3	8.1	7.5	5.9	5.9	6.0	7.5	7.9	5.4
27	23	18	12	12	13	19	21	25
198.7	196.5	196.6	198.5	198.5	198.6	197.1	196.8	199.3
3.3	5.2	5.2	3.1	3.5	3.4	5.0	5.2	2.7
26	21	19	12	13	13	18	21	26
200.5	198.7	199.1	200.7	200.7	200.9	199.4	199.2	201.3
1.5	3.3	2.9	1.3	1.3	1.1	2.6	2.5	0.7
26	21	17	12	13	12	17	20	24
202.2	201.4	200.6	202.4	202.4	202.5	200.9	200.7	202.8
8.5	10.3	10.1	8.3	8.3	8.2	9.8	10.0	7.9
26	21	17	13	13	13	17	20	25
204.5	202.3	202.7	204.5	204.5	204.5	202.5	202.3	204.4
6.2	8.4	8.0	6.2	6.2	6.2	8.2	8.4	6.3
25	20	16	11	12	12	18	20	25

+50

7

+50

6

T.P. 10.15 (181.79) 0.14 171.64

5

4

3

2

1

0+50

D

BM 0 7.68 (171.78) 162.10

178.0	175.1	175.6	177.7	177.6	177.9	176.3	176.9	180.0
$\frac{38}{26}$	$\frac{67}{21}$	$\frac{62}{19}$	$\frac{41}{12}$	42	$\frac{39}{11}$	$\frac{55}{15}$	$\frac{49}{19}$	$\frac{1.8}{26}$

177.0	174.0	174.3	176.4	176.6	176.8	174.8	174.7	178.6
$\frac{48}{25}$	$\frac{78}{21}$	$\frac{75}{19}$	$\frac{34}{12}$	52	$\frac{50}{11}$	$\frac{70}{16}$	$\frac{71}{17}$	$\frac{32}{27}$

176.3	172.8	173.4	175.4	175.5	175.6	172.3	174.8	176.9
$\frac{55}{25}$	$\frac{20}{21}$	$\frac{84}{17}$	$\frac{64}{12}$	63	$\frac{62}{11}$	$\frac{85}{17}$	$\frac{70}{23}$	$\frac{49}{29}$

174.6	171.7	172.1	173.9	174.1	174.1	171.4	175.1
$\frac{72}{25}$	$\frac{101}{20}$	$\frac{97}{17}$	$\frac{78}{12}$	77	$\frac{77}{11}$	$\frac{104}{17}$	$\frac{67}{27}$

171.8	169.7	169.3	171.3	171.5	171.1	169.2	169.0	171.5
$\frac{0.9}{25}$	$\frac{2}{22}$	$\frac{2.5}{18}$	$\frac{0.8}{12}$	9.3	$\frac{0.7}{12}$	$\frac{2.6}{17}$	$\frac{2.8}{19}$	$\frac{0.3}{27}$

164.8	166.6	166.9	168.8	168.6	168.3	166.3	166.4	168.1
$\frac{240}{24}$	$\frac{22}{19}$	$\frac{47}{16}$	$\frac{30}{11}$	32	$\frac{35}{13}$	$\frac{55}{18}$	$\frac{54}{20}$	$\frac{37}{25}$

166.0	165.3	164.1	164.3	166.0	165.9	165.9	167.7	163.9	165.3
$\frac{5.8}{25}$	$\frac{65}{23}$	$\frac{77}{20}$	$\frac{75}{19}$	$\frac{4.8}{11}$	59	$\frac{5.9}{13}$	$\frac{81}{19}$	$\frac{79}{21}$	$\frac{63}{26}$

163.1	161.6	161.7	163.4	162.7	162.6	162.2	162.1	163.6
$\frac{87}{27}$	$\frac{102}{23}$	$\frac{101}{19}$	$\frac{84}{13}$	81	$\frac{82}{13}$	$\frac{96}{17}$	$\frac{77}{21}$	$\frac{82}{25}$

160.3	159.4	159.4	161.4	161.3	161.3	159.9	159.9	160.0
$\frac{11.5}{24}$	$\frac{124}{22}$	$\frac{124}{19}$	$\frac{104}{11}$	105	$\frac{105}{15}$	$\frac{119}{19}$	$\frac{119}{21}$	$\frac{108}{28}$

159.8	158.7	159.0	160.7	160.4	160.7	159.2	159.2	160.3
$\frac{12.0}{23}$	$\frac{131}{20}$	$\frac{128}{16}$	$\frac{111}{11}$	109	$\frac{111}{15}$	$\frac{126}{21}$	$\frac{126}{22}$	$\frac{113}{26}$

160.7	160.7	160.7
$\frac{11.1}{30}$	$\frac{11.1}{30}$	$\frac{11.1}{30}$

450		180.7	179.6	179.7	182.1	182.4	182.6	180.6	180.6	183.8	✓
		$\frac{91}{24}$	$\frac{102}{21}$	$\frac{101}{18}$	$\frac{77}{11}$	74	$\frac{72}{14}$	$\frac{92}{19}$	$\frac{92}{20}$	$\frac{60}{26}$	
15		180.0	178.4	178.9	181.3	181.6	181.5	180.3	180.2	183.4	✓
		$\frac{98}{26}$	$\frac{114}{22}$	$\frac{109}{14}$	$\frac{85}{12}$	82	$\frac{83}{14}$	$\frac{73}{18}$	$\frac{76}{21}$	$\frac{64}{26}$	
450		179.5	178.1	178.2	180.8	181.0	181.3	179.7	182.7		✓
		$\frac{103}{25}$	$\frac{117}{21}$	$\frac{116}{20}$	$\frac{90}{12}$	88	$\frac{88}{14}$	$\frac{101}{19}$	$\frac{71}{25}$		
T.P.	9.12	189.82	3.27	180.70							
14		179.1	177.9	178.9	180.4	180.9	180.7	179.0	178.9	182.5	✓
		$\frac{47}{27}$	$\frac{61}{23}$	$\frac{57}{18}$	$\frac{36}{12}$	33	$\frac{33}{13}$	$\frac{30}{17}$	$\frac{51}{18}$	$\frac{18}{26}$	
450		178.7	177.2	177.8	179.8	180.0	180.2	178.5	178.5	181.8	✓
		$\frac{53}{27}$	$\frac{66}{23}$	$\frac{62}{18}$	$\frac{42}{12}$	40	$\frac{38}{12}$	$\frac{55}{17}$	$\frac{55}{18}$	$\frac{22}{23}$	
13		177.9	177.2	179.4	179.6	179.9	178.2	178.2	181.3		✓
		$\frac{61}{27}$	$\frac{68}{23}$	$\frac{46}{13}$	44	$\frac{41}{12}$	$\frac{58}{17}$	$\frac{58}{19}$	$\frac{27}{24}$		
12		177.2	175.6	178.6	179.0	179.0	177.4	180.5			✓
		$\frac{68}{27}$	$\frac{84}{22}$	$\frac{54}{13}$	50	$\frac{50}{13}$	$\frac{66}{19}$	$\frac{35}{24}$			
11		176.6	175.3	175.8	178.4	178.6	178.8	177.0	180.1		✓
		$\frac{74}{26}$	$\frac{87}{22}$	$\frac{82}{20}$	$\frac{56}{13}$	54	$\frac{52}{13}$	$\frac{70}{18}$	$\frac{39}{25}$		
10		176.9	175.4	175.8	178.3	178.5	178.5	177.1	176.9	180.2	✓
		$\frac{93}{26}$	$\frac{86}{23}$	$\frac{82}{19}$	$\frac{57}{14}$	55	$\frac{55}{12}$	$\frac{69}{16}$	$\frac{71}{17}$	$\frac{38}{29}$	
T.P.	2.98	183.97	0.80	180.99							
9		177.4	175.3	176.1	178.1	178.3	178.3	176.9	177.1	179.4	✓
		$\frac{44}{28}$	$\frac{65}{23}$	$\frac{57}{20}$	$\frac{31}{14}$	35	$\frac{33}{11}$	$\frac{49}{12}$	$\frac{47}{18}$	$\frac{24}{24}$	
450		177.8	175.4	176.2	178.2	178.4	178.9	177.0	177.1	180.5	✓
		$\frac{40}{28}$	$\frac{64}{23}$	$\frac{56}{19}$	$\frac{36}{13}$	34	$\frac{32}{11}$	$\frac{48}{12}$	$\frac{47}{18}$	$\frac{13}{24}$	
8		178.2	175.5	176.0	178.3	178.1	178.4	177.1	177.2	180.3	✓
		$\frac{36}{27}$	$\frac{63}{22}$	$\frac{58}{17}$	$\frac{36}{12}$	37	$\frac{34}{11}$	$\frac{47}{16}$	$\frac{40}{18}$	$\frac{15}{24}$	

74

+50

T.D. 3.56 (197.45) 3.09 19389

23

22

21

20

+50

19

+50

T.D. 8.16 (196.98) 1.00 18882

18

17

16

(189.82)

12 17 514

191.7	190.4	191.2	193.6	193.9	193.7	192.0	196.4
57	70	62	35	35	37	34	10
29	20	19	13	35	13	20	28

192.2	191.2	191.7	193.6	193.8	194.0	192.8	197.0
52	62	57	35	36	34	46	20
28	23	18	13	36	14	20	27

192.3	190.0	191.6	193.6	193.7	194.2	193.0	192.5	197.3
47	60	54	34	33	25	40	45	-0.3
28	23	20	14	33	14	17	20	29

190.3	188.7	192.4	192.6	192.6	190.4	194.6
67	83	46	44	44	60	24
29	22	13	13	13	20	28

188.7	187.4	191.5	192.1	190.2	189.6	193.4
83	76	35	49	68	72	36
28	22	12	13	18	21	28

189	187.1	191.1	194.5	191.7	189.3	193.5
80	79	57	55	33	77	35
28	22	13	35	13	19	28

188.9	187.5	187.2	190.7	191.2	192.4	188.8	193.8
81	75	78	63	58	56	82	32
27	24	21	13	58	72	20	30

189.1	187.1	187.9	190.4	190.9	190.8	188.4	192.3	194.0
79	99	91	66	61	62	86	47	30
28	22	20	14	61	13	21	28	31

189.4	187.0	187.7	187.6	190.2	190.4	187.5	189.9	192.9
76	108	113	70	68	66	93	71	41
28	22	20	13	68	14	20	26	32

188.3	186.1	186.7	188.6	188.7	186.7	186.8	191.4
15	37	31	12	14	11	35	1.6
26	21	18	12	14	13	19	27

185.2	183.4	183.6	185.5	185.9	185.4	183.9	183.8	187.4
46	64	62	43	41	39	57	60	24
25	21	18	12	41	12	17	19	26

182.1	180.8	181.2	183.2	183.2	183.5	181.4	181.3	184.3
77	70	56	66	66	63	54	53	55
24	20	17	11	66	13	19	20	20

34

33

32+46

32

31

T.P

30

29

28

BM 6.74

27

26

25

24+50

8.73

204.44

253

195.71

198.24

6.00

191.65

191.50

197.45

197.4 70 26	195.4 90 20	195.4 90 17	197.8 66 11	197.9 65	198.2 62 13	196.7 83 18	196.1 83 22	198.2 62 27
204.4 40 26	197.3 71 20	197.4 70 19	199.5 49 11	199.4 60	199.5 49 14	197.8 66 18	197.9 65 20	200.7 37 26
	204.0 34 27	198.2 62 19	199.8 46 13	199.6 48	199.8 46 14	198.5 57 18	198.7 57 21	201.6 28 27
	202.5 39 27	199.8 66 22	199.2 67 20	199.2 62 13	199.5 49 14	197.8 66 18	198.0 64 21	201.2 32 26
	197.7 67 28	194.8 76 21	196.9 73 13	197.4 70	199.1 72 12	194.6 28 18	198.2 62 27	
	193.7 43 28	191.5 67 23	191.9 63 19	194.4 38 12	194.5 37	194.6 36 13	192.4 58 18	191.9 62 22
	190.7 75 28	189.5 67 24	190.4 78 16	192.7 58 12	193.0 52	193.2 50 12	190.0 82 18	189.8 84 21
	188.6 86 30	187.9 103 23	188.8 94 17	1920 62 12	1920 62	1921 61 11	189.5 87 17	189.1 91 21
	189.7 91 37	187.4 102 24	188.9 94 20	191.9 35 13	192.0 34	192.0 34 13	189.0 54 19	190.8 84 22
	190.0 74 30	188.2 92 23	191.8 56 12	191.8 56	192.0 54 13	189.5 79 21	192.7 47 21	192.7 47 28
	190.9 65 30	189.1 83 25	189.7 77 20	192.6 48 13	192.8 46	1926 48 12	1926 70 20	194.5 29 27
	191.1 63 28	189.7 77 23	190.4 70 19	193.1 43 13	193.5 41 13	193.3 41	191.2 63 20	195.5 19 29

42

4

+50

T.P. 10.99 (202.04) 349 191.05

40

+50

39

+50

38

+50

37

36

T.P. 1.93 (196.54) 9 83 19461

35

(204.44)

196.9	194.8	194.5	196.3	196.5	194.7	197.2			
5.1	72	75	57	196.3	35	73	48		
29	24	19	53	57	12	19	25		
193.8	191.3	191.0	192.9	193.1	192.8	191.1	191.3	193.7	
82	107	110	91	87	92	104	107	83	
28	22	19	12	11	18	20	20	25	
191.7	189.8	189.7	191.7	191.8	191.6	189.4	191.2		
103	122	123	103	102	100	126	108		
28	23	19	12	10	12	19	25		
189.3	189.9	188.6	191.0	190.9	190.6	188.8	189.2		
72	82	79	53	59	59	82	73		
27	23	19	12	56	12	18	21	25	
187.2	186.6	190.1	190.4	190.3	187.8	187.5	189.2		
93	99	64	61	62	87	90	73		
28	23	13	61	12	17	22	26		
187.1	186.6	190.0	190.2	190.1	187.8	187.6	189.4		
94	99	63	63	64	87	89	71		
28	24	13	63	12	17	21	26		
188.1	187.5	187.4	190.5	190.3	190.2	188.1	187.7	189.9	
94	99	91	60	62	53	82	88	66	
28	24	21	11	62	12	17	20	25	
189.7	188.2	188.3	190.5	190.6	190.6	188.8	188.8	191.1	
65	83	82	60	59	59	77	77	54	
25	24	18	11	12	17	20	20	25	
191.2	189.3	189.3	191.2	191.3	191.2	189.9	189.5	192.0	
53	92	91	52	52	32	62	61	65	
24	21	17	12	52	11	16	20	25	
192.4	190.5	190.5	192.4	192.1	192.3	190.6	190.7	193.1	
91	60	60	42	44	42	59	58	38	
25	21	18	12	44	11	17	19	25	
194.2	192.6	192.3	194.2	194.2	194.2	192.8	192.6	194.9	
21	39	42	23	23	23	37	31	16	
26	23	18	12	21	13	17	21	26	
195.7	193.7	193.7	195.8	196.2	196.4	194.5	194.2	196.5	
57	107	107	86	82	88	99	102	79	
25	21	18	11	82	13	18	22	26	

D.M

5-25 199.05' 199.08

47+50

47

46

45

+50

T.D

44

+50

48

42+50

436

(201.30)

2.10

199.94

(202.04)

195.1	193.7	197.9	198.2	198.0	196.2	195.1	197.3
92	102	64	61	63	81	92	70
27	23	13		10	15	19	26
195.3	194.0	194.8	198.1	198.1	198.5	196.5	195.5
90	103	75	62	62	65	75	85
29	23	20	12	12	12	15	21
198.9	196.0	196.0	199.0	198.9	199.0	196.5	196.5
52	83	83	53	54	53	75	78
30	24	22	13	11	11	18	20
199.3	197.4	197.4	199.8	199.5	199.7	197.7	197.6
52	69	67	43	48	40	66	67
28	24	20	12	18	12	18	20
199.4	197.5	197.3	199.5	199.6	199.7	197.9	198.0
49	65	70	48	47	46	66	63
24	25	20	13	17	12	18	20
199.1	197.5	197.0	199.5	199.6	199.7	197.5	197.6
29	50	50	25	24	23	45	44
29	25	20	13	24	11	18	20
198.9	197.2	197.1	199.4	199.3	199.5	198.0	197.9
31	45	47	26	27	23	40	41
24	26	21	13	27	12	16	18
199.0	199.0	196.8	198.7	198.9	199.0	199.0	199.9
30	50	52	33	33	30	50	21
29	25	20	14	11	11	18	25
198.1	195.9	195.6	197.6	197.7	197.8	196.1	198.7
39	61	64	44	43	42	57	33
29	25	20	13	13	13	19	26

Tile Construction Figures

Waterloo-Eagle Center Road
Thru Eagle Twp.

10/16/22

{ Hoff
Matthews
Noonan

East

BM # 15	12.63	(200.52)	187.89		
159	7.8		7.38	193.14	189.00 4.14
+50	6.7		6.39	194.13	190.62 3.51
160	4.6		3.74	196.78	192.25 4.53
+50	3.0		2.34	198.18	193.87 4.31
161	0.9		0.10	200.42	195.50 4.92

no

1806

East #3

13
2.00
2.3

1319 #17	6.61	(194.09)	187.48		
182+B1			12.60	181.49	
182+21	8.9	186.2	8.38	185.71	181.60 4.11
181+92	7.6	186.5	6.74	187.35	182.00 5.35
181+63	8.1	186.0	7.44	186.65	182.60 4.05
181+50	7.9		7.00	187.09	182.85 4.24
181	7.1		6.11	187.98	183.85 4.13
+50	6.2		5.39	187.70	184.60 3.10
180	5.2		4.65	189.44	185.35 4.09
+50	4.1	190.0	3.35	190.74	186.10 4.64
179	2.9	191.2	2.22	191.87	186.85 5.02
+50	1.5	192.6	0.93	193.36	188.15 5.21
T.D	10.85	(203.36)	1.58	192.51	

Inct 5" Private Tile

3.2

4.5

3.4

100

10 Inct = 181 + 79 W

P

V

50

50

1.0

2.00

4.4

.40

East #3

2.8

$$\begin{array}{r} .8 \quad 7.8 \quad 2.5 \\ 2.3 \end{array}$$

West

BM# 15	12.63	(200.52)	187.89
159	7.4	6.91	193.61 189.00 4.61
+50	5.9	5.30	195.22 190.62 4.60
160	3.6	2.84	197.68 192.25 5.43
+50	2.5	1.65	198.87 193.87 5.00
161	0.8	0.20	200.32 195.50 4.82

 Bal
 Adj # 3

BM# 17 6.61 (194.09) 187.48

181+79	7.6	186.5	6.74	187.35	182.00	5.35	4.5	100.00	Incl = 181+92 Ead
181+50	7.5	186.6	6.59	187.50	182.70	4.80	3.9	2.30	
181	6.8	187.3	5.50	188.29	183.85	4.44			
+50	6.2		5.41	188.68	184.60	4.08			
180	5.6		4.81	189.28	185.35	3.93			
+50	4.5		4.05	190.02	186.70	3.32			
179	3.7		2.95	191.14	186.85	4.29			
+50	2.8		1.58	192.51	188.15	4.36			
T.D	10.85	(203.3)	1.58	192.51					

 June
 Adj # 3

East

(20336)

179	9.3	194.1	8.25	194.81	189.45	5.36	4.6
+50	8.1	195.3	7.17	196.19	190.75	5.44	4.5 50c
177	7.2	196.2	6.78	196.58	192.05	4.53	4.2 30c
+50	6.5		6.06	197.30	193.35	3.95	
176	5.5		4.83	198.53	194.65	3.88	do
+50	4.1		3.36	200.00	195.95	4.05	2.6
175	2.6		1.83	201.53	197.25	4.28	2
T.P	10.25	(211.78)	1.83	201.53	—	—	
+50	9.1	202.7	8.19	203.59	198.55	5.04	4.1 30c
174	7.4	204.4	6.51	205.27	199.85	5.42	4.5 40c
+50	5.8	206.0	4.72	207.06	201.15	5.91	4.8 60c
173	4.9	206.9	3.97	207.81	202.45	5.36	4.4 20c
+50	5.0	206.8	4.26	207.52	202.85	4.67	3.9
172	5.1	206.7	4.15	207.63	203.25	5.38	3.4
+50	4.8		3.94	207.84	203.65	5.19	do
171	4.4		3.50	208.28	204.05	5.23	do
+50	3.9		—		204.45	—	do
170	3.1		2.32	209.46	204.85	5.61	—
T.P	9.31	(218.77)	2.32	209.46	—	—	—
+50	9.0		8.34	210.43	206.25	4.23	
169	7.8		7.16	211.61	207.55	4.06	
+50	6.5		5.62	213.15	208.95	4.25	
168	4.8	214.0	4.20	214.57	210.25	4.32	3.8
End +50	2.9	215.8	1.94	216.83	211.75	5.13	4.1
+67							

17
 16
 15
 14
 13
 12
 11
 10
 9
 8
 7
 6
 5
 4
 3
 2
 1

West

(203.36)

182.00
167.50
14.50

28

178	10.4	143.0	9.46	193.90	189.45	4.46	3.5
+50	8.4	195.0	7.64	195.72	190.75	4.97	4.2
177	7.4	196.0	6.66	196.70	192.05	4.65	3.9
+50	6.8		5.99	197.37	193.35	4.02	
176	6.0		4.98	198.38	194.65	3.73	
+50	4.7		3.80	199.56	195.95	3.61	
175	3.2		2.41	200.95	197.25	3.70	
T.P	10.25	(211.78)	1.83	201.53	—	—	
+50	9.6	202.2	8.84	202.94	198.55	4.39	3.7
174	7.8	204.0	6.94	204.84	199.85	4.99	4.2
+50	6.5	205.3	5.46	206.32	201.15	5.17	4.2
173	5.4	206.4	4.49	207.29	202.45	5.84	4.0
+50	5.2	206.6	4.45	207.33	202.85	5.48	3.8
172	5.5		4.57	209.21	203.25	5.96	
+50	5.2		4.45	207.33	203.65	5.68	
171	4.7		3.79	207.99	204.05	5.94	
+50	4.1		3.30	208.48	204.45	5.03	
170	3.4		2.47	209.31	204.85	5.46	
T.P	9.31	(218.70)	2.32	209.46	—	—	
+50	9.3		8.35	210.42	206.20	5.22	
169	7.9		7.23	211.54	207.55	5.99	
+50	6.4		5.67	213.10	208.90	5.20	
168	5.0		4.15	214.62	210.25	5.37	
+50	3.2		2.37	216.40	211.70	5.70	

5.0
2.6
2.1

2.00
1.00

8.00

June
West #3

5.00
1.00
2.1

5149	6.01	(157.93)		151.92		
#			13.3	14.6		Creek Bed
219+90	11.7	146.2	10.94	146.99	145.50	1.49 0.7
219+50	7.3	150.6	6.27	151.66	146.50	5.16 4.1
219	7.8	150.1	7.02	150.91	146.92	3.99 3.2
218	6.5		5.91	152.02	147.77	1.25 0.0
217	5.2	152.7	4.49	153.44	148.62	5.82 4.1
216	4.0	153.9	3.58	154.85	149.49	7.38 4.4
215	3.4	154.5	2.50	155.43	150.32	7.11 4.2
214	2.5	155.4	1.30	156.63	152.07	1.56 3.3
T.P	9.69	(166.29)	1.33	156.60		
213	9.6		8.62	159.64	153.82	5.85 1.75
212	7.9		7.17	159.12	155.57	3.55 1.25
211	6.6		5.22	161.07	157.32	3.75 1.0
210	3.5		2.75	163.64	159.07	4.47 0.5
TP	12.91	(177.98)	1.22	165.07		
209	12.9		11.59	166.39	161.56	4.89 2.5
208	9.5		8.82	169.16	164.50	4.66 2.00
207	6.0		5.02	172.96	168.90	4.06 4.4
206	1.7		0.96	177.02	173.30	3.72 4.4
T.P	13.02	(190.04)	0.96	177.02		
205	8.3		7.63	182.41	177.70	4.71 4.0
204	3.9		3.06	186.98	182.10	4.88 4.00
203=202	0.16	(-0.62)	190.66	186.70	4.56	

East #3

Bob

37#19 6.01 (157.93) 151.92

219+66	7.3	150.6	6.27	157.66	146.50	5.16	4.1	3000/10	-119+50E
219+40	6.7	151.2	5.77	152.16	146.70	5.46	4.5	3000/10	
219	6.7	151.2	6.10	151.83	147.00	4.83	4.2	0	
218	6.6	151.3	5.69	152.24	147.85	4.39	3.5	0	
217	5.4	152.5	4.62	153.31	148.70	4.61	3.8	0	
216	3.9	154.0	3.15	154.78	149.55	5.23	4.5	0	
215	3.4	154.5	2.55	155.38	150.40	6.98	4.1	0	
214	2.2	155.7	1.33	156.60	152.15	4.45	3.5	0	
T.P.	9.69	(166.29)	1.33	156.60	—	—	—	0	
213	9.1		8.38	157.91	153.90	4.01	1.75	0	
212	7.9		6.85	159.44	155.65	3.79	—	0	
211	5.6		4.53	161.76	157.40	4.36	—	0	
210	3.3		2.66	163.63	159.15	4.48	—	0	
T.P.	12.91	(177.98)	1.22	165.07	—	—	—	0	
209	12.6		11.82	166.16	161.55	4.61	2.40	0	
208	9.5		8.77	169.21	164.55	4.66	3.0	0	
207	6.3		5.43	172.55	168.95	6.0	—	0	
206	2.2		1.48	176.52	173.35	1.17	0.7	0	
T.P.	13.02	(190.04)	0.96	177.02	—	—	—	0	
205	8.8		8.10	181.94	177.75	4.19	—	0	
204	4.5		3.52	186.52	182.15	4.37	—	0	
203=202	1.0		0.30	189.74	185.75	3.99	—	0	

Bob or Jim

201/43

8.60

19031

172.30

177.52
166

$$\begin{array}{r} 179.16 \\ 166 \end{array}$$
$$\begin{array}{r} 185.80 \\ 166. \\ \hline 187.46 \end{array}$$
$$\begin{array}{r} 180.82 \\ 166 \end{array}$$

18248
166

18414
166

185.80
171.17

1.66

176.33

175-50
166

17916

187.50
77.50

10.00

$$\begin{array}{r} 2 \overline{) 333} \\ \underline{166} \end{array}$$

5.23

250

1.66

Ex # 3

BM #1	4.35	(176.49)	172.14			
2			2.44	174.06	170.30	3.76
+50	12.88	(188.6)	0.76	175.73	172.30	3.43
3			10.55	178.06	174.30	3.76
+50			8.28	180.33	176.30	4.03
4			6.08	182.53	178.30	4.23
+50			3.85	184.76	180.30	4.46
5			2.04	186.57	182.30	4.27
+50	8.43	(196.16)	0.88	187.73	183.40	4.33
6			6.94	189.22	184.50	4.72
+50			5.89	190.27	185.60	4.67
7			5.69	190.47	186.70	3.77
+50			5.58	190.58	187.00	3.58
8			4.43	191.73	187.30	4.43
+50			4.64	191.52	187.60	3.92
9			4.60	191.56	187.40	3.66
+50			4.48	191.68	188.20	3.48
10			4.16	192.00	188.50	3.50
+50			3.81	192.35	188.80	3.55
11			3.42	192.74	189.10	3.64
+50			2.71	193.45	189.40	4.05
12			1.91	194.25	189.70	4.55

use these 3th onto and
Grand onto Book #31 Page 38

4.00%

2.2%

5.0%

Wls - Shs - 2nd to end

Est #3

Outlet tile Thru Lighty Cut

West side
18+50
West
18+50

3.11	180.01	176.90	X
3.45	<u>180.07</u>	176.68	X
	180.13		

Road tile West side Road - Line North

18+50	<u>180.07</u>	3.11	176.96	3.90
18+75		3.64	176.43	170.48 5.95

cut 4 3
wells

= 21+86 outlet tile

Road tile West Side Road - Line South

18+75	<u>180.07</u>	4.53	175.52	170.70	4.82
19		4.87	175.20	171.80	3.40
19+50		3.45	176.62	173.94	2.68

cut 4 3
wells

200
wells

4 1/2

= 22+00 outlet tile

Road tile East Side Road - Line South

18+72	<u>180.07</u>	4.97	175.10	170.08	5.02
19+05		4.41	175.66	171.75	3.91
19+50		2.96	177.11	174.00	3.11

cut 4 3
wells

5 in 3

= 21+58 outlet tile

Outlet Line

180.07

22+00	4.55	175.52	170.70	4.82
21+86	3.64	176.43	170.48	5.95
21+58	4.97	175.10	170.08	5.02
21	7.55	172.52	169.15	3.37
20	9.02	171.05	167.60	3.45

Shop - Cement Pipe
Contract
Price 14.9 per ft
Complete

180.07

1.17

168.71

19		10.94	169.13	166.05	3.08
18		12.53	167.54	164.50	3.04
+50		2.13	166.58	163.72	2.86
17		2.75	165.96	162.95	3.01
+50		2.66	165.08	162.60	3.45
16		3.36	165.35	162.25	3.10
15		3.85	164.86	161.55	3.31
14		5.28	163.43	159.90	3.53
13		6.82	161.89	158.25	3.64
12		8.53	160.18	156.60	3.58
11	1.83	10.50	158.21	154.95	3.26
10		2.54	157.50	153.42	3.08
9		3.26	156.78	152.90	3.88
+50		4.46	155.58	152.32	3.26
8		4.54	155.50	151.80	3.70
7		5.54	154.50	150.75	3.75
6		6.70	153.34	149.70	3.64
5		8.14	151.90	148.65	3.25
4	3.56	8.89	151.15	147.60	3.55
3		4.63	150.08	147.00	3.04
2		5.12	149.59	146.40	3.19
1		6.12	148.59	145.80	2.79
+50		6.68	148.03	145.50	2.53
0		8.75	145.96	145.20	0.76
J.L.		9.70	145.01		

1.55

1.65%

1.65%

1.65%

1.05%

1.05%

0.60

Shore - Current Product. Product

BM 20 6.64 (167.74) 151.30

1E		9.6	148.34		
226+40	9.6	9.07	148.87	148.30	0.57
226+50	7.6	6.90	151.04	148.55	2.49
226+75	6.3	5.49	152.45	149.18	3.27
227	4.8	4.15	153.79	149.80	3.99
+50	3.3	2.49	155.45	151.65	3.80
228	1.3	0.50	157.44	153.50	3.94
T.P	13.08	(170.52)	0.50	157.44	—
+50	11.8	11.05	159.47	155.35	4.12
229	9.7	8.96	161.56	157.20	4.36
+50	8.0	7.32	163.20	159.05	4.15
230	6.1	5.29	165.23	160.90	4.33
+50	3.8	166.7	2.82	167.70	162.75 4.95
231	1.5	169.0	0.72	169.80	167.60 5.20
T.P	12.87	(182.67)	0.72	169.80	—
+50	12.00	170.7	11.18	171.49	166.30 5.19
232	10.4	172.3	9.67	173.00	168.60 5.00
+50	9.2	173.5	8.40	174.27	168.90 5.37
233	8.5	174.2	7.80	174.87	169.80 5.07
+50	7.7	175.0	6.88	175.79	170.70 5.09
234	6.9	175.8	6.41	176.26	171.60 4.66
+50	6.2	176.5	5.53	177.14	172.50 4.64
235	5.7		4.93	177.74	173.40 4.34

do
S
W

3.7%

4.00
4.4 20c

4.4 40c

4.3 30c

4.6 50c

4.4 50c

4.3 30c

4.2 20c

4.0 10c

226+40 - 237+00 - 1060' - 1.6 Slope H Ac
This line not given on E-1 #3

Purchased #4

East

(182.67)

235+50	48	4.42	178.25	174.30	3.95	
236	3.7	179.0	2.90	179.77	175.24	4.57
+50	1.9	180.8	1.17	181.50	176.50	5.00
237	-0.2	182.9	-0.40	183.37	177.80	5.57
						3.8
						4.3
						5.1

1000
2.60
who

Qst 1/3 M

East

(190.45)

Qst 1/7	2.97	181.17	9.25	187.48		
TOP SITE	6.4	181.75	5.75	184.70	180.70	4.00
182	6.7	182.42	6.11	184.34	180.95	3.39
182+43	5.0	182.46	3.78	186.67	181.38	5.29
182+60	5.1	183	4.39	186.06	181.51	4.55
183	5.1	+50	4.45	186.00	181.90	4.10
+50	5.5	184	4.75	185.70	182.10	3.60
184	5.4	750	4.65	185.80	182.30	3.50
750	5.0	185	4.28	186.17	182.60	3.67
185	4.2	186	3.45	186.90	182.70	4.20
186	3.0	TD	2.36	188.09	182.90	5.19
186	2.7	+50	2.09	188.36	183.10	5.26
TD	5.35	187	2.81	187.64		
+50	5.3	188	4.29	188.70	183.30	5.40
187	5.4	+50	4.74	188.25	183.50	4.75
+50	5.4	188	4.69	188.30	183.70	4.60
188	5.5	+50	4.77	188.22	183.90	4.32
+50	5.2		4.55	188.44	184.10	4.34

West

Inct with Private Site

= Inct T. 10 W Side

1.000

4.100

who - Broken by Bof

Qst 1/4 M

West

BM#17 297 (190.45)

18748

182+61	5.0	185.5	3.78	186.67	181.38	5.29
183	5.6		4.91	185.54	181.90	3.64
+50	5.9		4.97	185.48	182.10	3.38
184	5.7		4.81	185.64	182.30	3.24
+50	5.7		4.91	185.54	182.50	3.02
185	5.1		4.35	186.10	182.70	3.40
+50	4.2		3.16	187.29	182.90	4.39
186	3.6		2.51	187.64	183.10	4.54
TD	5.35	(192.99)	2.81	187.64	—	
+50	6.3		5.50	187.49	183.30	4.19
187	6.4		5.46	187.53	183.50	4.03
+50	4.5		5.64	187.35	183.70	3.65
188	6.2		5.46	187.53	183.90	3.63
+50	6.0		5.09	187.90	184.10	3.80

$$1.33^{10} \text{ Inct} = 182+43 \text{ E}$$

$\frac{1}{10}$
 24 + 2464 from - Bottom by Bob
 2464
 801 23

East

(192.99)

189	4.7	188.3	3.92	189.07	184.30	4.77	4.0
+50	3.7	189.3	3.01	189.98	185.85	4.14	3.5
190	2.0	191.0	1.14	191.85	187.40	4.45	3.6
T.P	8.63	(199.54)	2.08	190.91	—	—	—
+50	6.3	193.2	3.42	194.12	188.95	5.17	4.2
191	4.2	195.3	3.43	196.11	190.55	5.61	4.8
+50	3.6	195.9	2.70	196.84	191.00	5.84	4.9

~~3.100~~
 3.100
 1.500
 1.600
 1.200

Est #3

Top 226 ft from
 Bottom by 1306

West

39

(192.99)

189	5.7	4.92	188.07	184.30	3.77
+50	4.9	3.92	189.0	185.70	1.37
190	3.1	2.08	190.91	187.10	3.81
T.D	8.63	2.08	190.91	—	
+50	7.3	6.46	193.08	188.50	4.58
191	6.1	5.11	194.43	189.90	4.53
+50	5.5	4.51	195.03	190.40	4.63

(199.54)

no de

~~2.60~~

2.60

1.00%

with

Est # 3

Apr 24 by Jim Blumby Bob

All figures ahead of the Pine
1-243 except 191
Est # 226-140 - 237100 Out pay 3536

East

BM #21	6.20	189.87	6.22	183.67	
238	7.4		6.52	183.35	181.222.13
+50	7.4		6.65	183.22	181.172.05
239	8.4		7.79	182.08	181.120.96
+50	8.6	181.3	7.97	181.90	181.070.83
240	9.5		7.91	181.96	181.02
+16	7.3		6.67	183.20	181.00

E Culo Floor

9.95 180.92

2

n40+20	7.3	6.64	183.23	181.00
+50	8.4	7.78	182.09	
n41	7.7	6.97	182.90	
+50	6.4	5.47	184.40	
242	4.3	3.42	186.45	
+50	1.7	0.89	188.98	

Voiced - Cattle. Invaluable depth
 found. Silo nearly full and connect

West

BM# 21	6.20	189.87	183.67	179.95	
238	7.8	7.09	182.78	179.83	2.95
+50	8.1	6.98	182.89	179.93	
239	8.6	7.66	182.21	179.63	
+50	9.0	8.10	181.77	179.53	
740	9.0	8.42	181.45	179.43	
+16	7.9	7.33	182.54	179.40	

E Cule Flare

10.57 179.30

740+20	7.1	7.19	182.68	179.40	
+50	8.8	7.96	181.91		
741	8.1	7.22	182.65		
+50	6.9	6.38	183.49		
742	4.8	3.91	185.96		
+50	2.3	1.27	188.60		

Ford - Out to Stronghurst 11 Sept 44
 Found 400 - 500 feet of Peewee and Cornet

East

.28
.30
.0640.30
.04
.20.45
.3
.125.20
.04.23
.20

42

B1141	6.44	(190.11)	183.67
238	7.6	182.5	6.76 183.35 178.17 4.98
+50	7.6	182.5	6.86 183.25 178.02 5.13
239	8.7	181.4	8.03 182.08 177.89 4.21
+50	8.9		8.20 181.91 177.72 4.19
x Road 239+95	8.3		7.54 182.54 177.56 4.99
240+18	9.2		8.42 181.69 177.51 4.18
240+22	9.9		9.9 180.20 177.50 2.70
240+32	11.5		10.88 179.23 177.40 1.83
E		12.7	177.41
239+82	11.0	9.91	180.20 177.50 2.70
740	10.8	10.08	180.03 177.68 2.35
240+31	9.0	7.95	182.16 177.99 4.17
x Road 240+53	8.2	7.24	182.54 178.23 4.34
241	8.0	7.20	182.91 178.68 4.23
+50	6.6	5.73	184.38 180.28 4.10
242	4.6	185.5 3.67	186.44 181.88 4.56
End +50	1.9	189.2 1.12	188.99 183.48 5.51
T.P	5.14	(194.13) 1.12	188.99

4.34

4.6

3.5

0.10
3

Inet = 240 - on W

Inet = 239+82 E Line from S

outlet to Road F

WLP

Inet = 240+22 E Line from N

Wend 2x2x26 PCB

Inet = 240+50 W

3.6

4.7

200
3

River End #4

BM# 21	6.44	190.11	183.67	
238	8.1	7.22	182.79	178.31 4.48
+50	8.3	7.20	182.91	178.11 4.80
239	8.7	7.92	182.19	177.91 4.28
+50	9.0	8.35	181.76	177.71 4.05
240 End	9.2	8.42	181.69	177.51 4.18

note 4.70

Inset = 240 + 18 - E

not 50	9.0	7.95	182.16	178.00 4.16
241	8.4	7.50	182.61	178.50 4.11
+50	7.2	6.64	183.49	180.10 3.37
242	4.9	4.16	185.95	181.80 4.25
End +50	2.5	1.52	188.59	183.30 5.29

1.20

Inset = 240 + 31 East

3.5

4.3

3.00

note

241
#4
Furn. Wot

East

190.11

T.P. 5.14 194.13 1.12 188.99

243+52	2.8	190.3	2.02	191.11	185.85.23	4.4	182.88
244	5.3	188.8	4.56	189.57	184.88.69	3.9	184.88
+50	6.7		6.12	188.01	183.88.4.13		
245	7.7		6.91	187.22	182.88.4.34		
+50	8.4		7.61	186.52	182.08.4.44		
246	9.2		8.34	185.79	181.28.4.51		
T.P.	2.25	188.04	8.34	185.79			
+50	4.0		3.30	184.74	180.48.4.26		
247	4.7		4.00	184.02	179.68.4.36		
+50	5.2		4.60	183.44	179.18.4.26		
248	5.6		4.94	183.10	178.68.4.42		
+50	5.8	183.2	5.23	182.81	178.18.4.63	4.0	
+65	5.7	182.3	4.80	183.24	178.03.5.21	4.3	
+95	7.7		7.07	180.94	177.73.3.24		
249+18	8.4		7.60	180.44	177.52.94		

Top of file

10.22 177.82 Gr = 177.4

BM

3.87 184.17

Enter at New Head wall E end Culv sta 248+96
old BM # 22 Destroyed.

177.68

1.60

151.28

1.60

182.88

.20e

184.88

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

1.60

East

3

11.90 / 3.00 / 1.50 / 1.50 / 1.50
 11.90 / 3.00 / 1.50 / 1.50 / 1.50
 11.90 / 3.00 / 1.50 / 1.50 / 1.50
 11.90 / 3.00 / 1.50 / 1.50 / 1.50

B M 5.14 (189.31) 184.17
 Top of West 11.47 177.84

249+10 6.4 182.9 5.64 183.67 178.65.67

+50 6.3 183.0 5.61 183.70 178.605.10

250 5.8 183.5 5.03 184.28 179.35.93

+50 5.2 184.1 4.65 184.63 180.10.53

251 4.5 3.76 185.55 180.83.70

+50 3.7 3.00 186.3 181.85.46

252 2.8 2.36 186.95 182.65.10

T.P 10.00 (196.77) 2.36 186.95

+50 9.6 8.86 188.11 183.85.26

253 8.5 8.72 188.73 184.85.88

+50 7.4 6.74 190.23 185.85.38

254 6.5 5.77 191.20 186.85.35

+50 5.3 191.7 4.51 192.26 187.85.61

255 4.1 192.9 3.37 193.60 188.85.75

+50 3.1 193.9 2.26 194.71 189.85.96

256 1.7 0.96 196.01 191.42.59

T.P 10.69 (206.70) 0.96 196.01

+50 10.1 9.42 197.28 192.99.29

257 8.5 7.84 198.86 194.56.30

+50 6.8 6.21 200.49 196.13.36

258 5.2 4.57 202.13 197.70.43

+50 3.5 2.80 203.90 199.24.63

Present
 Note Relays "line with 6' and corner Road file 540 240

4.9 .7 cc (33' land across Road)
 4.4 .3 cc
 4.2 .5 .1 cc
 4.0

200.80
 189.85
 3.50 11.00 3.14
 10.50
 5.00
 3.14
 1.00

Box
 12.00

3.8

4.1

4.1

3.14

.100

Green End of Highway

1.5
 200.8

West

46

$$2170 \quad 22) 3.50 (1.75$$

$$\begin{array}{r} 1500 \\ 1500 \\ \hline 1000 \end{array}$$

B M 5.14 (189.31) 184.17
Top 4" West 11.47 177.84

6" in field west and connect road tile
Note: Replace present 4" tile with 6" to present

~~50' Total distance~~
to 6" line
(25' land to connect
to private 5" line)

1.70

149102	8.8	8.10	181.21	177.463.76
+50	7.7	6.82	182.49	178.304.19
252	6.8	6.22	183.09	179.153.94
+50	5.9	5.11	184.20	180.004.20
251	5.1	4.28	185.03	180.854.18
+50	4.2	3.56	185.75	181.853.90
252	3.2	2.55	186.76	182.853.91
T.P	10.02	2.36	186.95	—
+50	9.8	9.01	187.96	183.884.11
253	9.1	8.27	188.70	184.883.85
+50	8.1	7.23	189.74	185.853.89
254	7.0	6.12	190.85	186.853.00
+50	6.0	5.34	191.63	187.853.78
255	4.8	4.17	192.80	188.853.75
+50	3.5	2.76	194.21	189.853.36
256	2.1	1.33	195.64	191.422.22
T.P	10.69	0.96	196.01	—
+50	10.1	9.27	197.43	192.421.44
257	8.6	7.71	198.99	194.561.43
+50	7.0	6.17	200.53	196.134.40
258	5.3	4.62	202.08	197.704.38
+50	3.6	2.76	203.04	199.274.69

2.00

2.00
Green End #1

3.14

20670

1.50) 2.00
1.50
500
600

259	1.9	1.08	205.62	20085 +.77	3.10	
T.P.	11.64	217.26	1.08	205.62	275	
+50	10.9	9.99	207.27	202.60	4.67	
266	9.1	8.50	208.76	204.35	4.41	
+50	7.2	6.39	210.87	206.10	4.77	
261	5.7	4.68	212.58	207.85	4.73	
+50	4.2	3.57	213.72	209.25	4.47	
262	3.1	2.29	214.99	210.65	4.84	
+50	1.8	1.00	216.26	212.00	4.21	
T.P.	9.04	225.74	0.56	216.70	—	
263	9.0	8.15	217.59	213.45	4.14	
+50	7.8	217.9	6.87	218.84	214.45	4.42
264	6.1	219.6	5.20	220.52	215.45	4.09
+50	4.7	221.0	3.67	222.04	216.45	5.62
B.M.		1.90	223.84			

Book

		<u>West</u>					
259	2.1	(206.70)	1.34	205.36	200.85	4.51	3.14
T.P.	11.64	(217.26)	1.08	205.62	—		
+50	11.0		10.18	207.08	202.66	4.48	3.50
260	9.1		8.23	209.03	204.35	4.68	
+50	6.9		6.12	211.14	206.10	5.04	
261	5.3		4.73	212.53	207.85	4.68	
+50	4.0		3.38	213.88	209.24	4.63	
262	2.7		1.91	215.35	210.65	4.70	2.80
+50	1.3		0.56	216.70	212.05	4.65	
T.P.	9.4	(225.74)	0.56	216.70	—		
263	8.5	217.2	7.01	218.23	213.45	4.78	3.8
+50	7.1	218.6	6.22	219.52	214.55	5.07	4.1
264	5.7	220.0	4.97	220.77	215.65	5.12	4.4
+50	4.5	221.2	3.68	222.06	216.95	5.31	4.5

W.C.
Finner

2.80
300
400

East

B/M 25 7.55 (209.34)

201.79 old Hub

$$\begin{array}{r} 3 \overline{) 4.00} \\ 1.33 \end{array}$$

B/M			6.23	203.11	note E Hwall New 2x2x26 RCB 5/2 286+50				
ÆCUL			10.20	199.14					
286+52	7.5		6.78	202.56	199.25	3.31			
286	8.1		7.29	202.05	199.35	2.70			
+50	7.1		6.35	202.77	199.45	3.54			
285	5.9		5.30	204.02	199.55	1.49			
+50	3.9		3.14	206.20	201.55	1.65			
284	1.8	207.5	1.15	208.19	203.55	4.64	4.0	4.00	
T.P	12.15	(210.37)	1.15	208.19					
+50	10.8	209.6	10.17	210.20	205.25	4.95	4.4	3.40	2.00
283	9.~	211.2	8.47	211.90	206.95	4.95	4.3	3.40	4.00
+50	8.3	212.1	7.51	212.56	207.95	4.91	4.2	3.40	2.00
282	7.2	213.2	6.47	213.90	208.95	4.95	4.4	3.40	3.00
+50	6.7	213.9	5.94	214.43	209.95	4.48	3.8	2.00	1.00
281	6.2		5.33	215.04	210.95	4.09			1.2
+50	5.6		4.91	215.46	211.45	4.01			
280	4.9		4.09	216.28	211.95	1.33			
+50	4.1		3.32	217.05	212.45	1.60			
279	3.3		2.72	217.65	212.95	1.70			

1.00

Dune land

West

BM 25 7.53 209.34 201.79 old Hub

203.30

199.80

3.50

B/M 623 203.11 Enter ~~East~~ Hwall New 2x2x26 PCB Sta 286+50

#C/L

28652

7.1

9.95 199.39

621 203.13 199.50 1.63

286 7.6

687 202.47 199.60 81

+50 6.9

6.05 203.29 199.90 59

285 5.6

4.85 204.49 199.80 69

+50 4.3

3.70 205.6 201.80 84

284 2.6

1.75 207.59 203.80 79

T.P 12.18

270.37

1.15 208.19

+50 11.4

10.61 209.76 208.10 436

283 9.5

210.9

8.65 211.42 207.04 72

+50 8.2

212.2

7.32 213.05 208.05 05

282 7.2

213.2

6.40 213.97 209.04 97

+50 6.4

214.0

5.64 214.73 210.04 73

281 5.8

214.6

5.10 215.21 211.00 21

+50 5.0

215.4

4.16 216.21 211.50 671

280 4.4

216.0

3.61 216.76 212.04 76

+50 3.6

216.8

2.99 217.88 212.54 88

279 3.0

217.4

2.10 218.21 213.05 21

5/6
2 1/6

4.0%

3.2%

1.0e

2.0e

1.0e

2.0e 1.0e

4.0e

Do not land 1922

East

512

209.60
203 ~

26.60
3.20
1.65

Nov 27 7.31

(210.22)

203.11

#Col V

11.28 199.14

286+55 8.5

7.67 202.76 199.25 3.50

287 9.8

9.07 201.85 199.30 2.05

+50 9.3

8.70 201.72 199.35 2.37

288 8.1

7.52 202.90 199.40 3.50

+50 7.1

6.30 204.12 200.80 3.82

289 6.4

5.66 204.76 201.20 3.56

+50 5.5

4.90 205.52 201.10 3.42

290 4.1

3.30 207.12 203.00 4.12

T.D 11.12

(218.24)

330 207.12

+50 9.9

208.3 9.13 209.11 201.60 4.46 3.7

291 7.6

210.6 6.92 211.32 206.30 5.02 4.3

+50 6.7

212.5 5.05 213.19 207.95 5.14 4.6

wd 292 4.0

214.12 3.29 214.95 209.60 5.35 4.6

0.10
1.10

1.80

W.L.

Green East #4

400
600
100

Lines

Note: All figures ahead here included
Est # 1, 2, 3 & 4 Except West Side Sta. 279-286+52

See page 50

West

$$\begin{array}{r} 213.30 \\ 11.66 \\ \hline 83 \end{array}$$

32

New BM	7.31	210.42	203.11		
ECULV			18.05	199.37	
28655	8.12		7.28	203.14	199.50 3.64
287	8.8		8.06	202.36	199.55 2.81
+50	8.4		7.25	202.87	199.60 3.27
288	7.7		6.83	203.59	199.65 3.94
+50	6.7		5.92	204.50	200.48 4.02
289	5.7		4.85	205.67	201.31 4.26
+50	4.6		3.87	206.55	201.4 4.41
290	3.6	206.8	2.65	207.77	202.97 4.80
TD	11.12	218.22	3.20	207.12	
+50	10.0	208.2	9.20	209.02	204.62 4.42
291	8.0	210.2	6.92	211.32	206.27 5.05
+50	5.8	212.4	4.90	213.32	207.92 5.42
292	3.9	214.3	2.99	215.25	209.57 5.68

$$\begin{array}{r} 5.0 \\ 10 \end{array}$$

$$\begin{array}{r} 1.66 \\ 10 \end{array}$$

$$\begin{array}{r} 3.3 \\ 3.6 \end{array}$$

$$\begin{array}{r} 3.9 \\ 4.5 \end{array}$$

$$\begin{array}{r} 4.7 \end{array}$$

W.L.

$$\begin{array}{r} 4.00 \\ 1.600 \end{array}$$

Green Road 45

Fast

1.40

53

BY #26 3.59 (18.93)

175.34

Hno Lard 1 1/2 hr

12.80

166.13

305+75 12.3 16.6.6 11.46 167.44 166.10 1.37

305+50 10.0 9.21 169.72 166.35 3.37

305+10 10.0 8.28 170.65 166.75 3.90

305 10.0 9.09 169.84 166.85 2.99

304+50 9.7 8.91 170.02 167.35 2.67

304 9.2 8.42 170.61 167.85 2.66

150 8.0 7.07 171.86 168.35 3.51

303 6.6 5.77 173.16 168.85 4.31

+50 4.7 3.97 174.96 170.60 4.36

302 3.1 2.13 176.80 172.35 4.45

T.D 12.64 (189.44) 2.13 176.80

+50 11.7 10.80 178.64 174.35 4.29

301 9.4 8.58 180.86 176.35 4.51

+50 6.8 6.12 183.32 179.35 3.99

300 3.8 3.01 186.43 182.35 4.08

+50 1.0 0.04 189.40 185.35 4.05

T.D 12.43 (201.25) 0.62 188.82

299 9.9 9.16 192.09 188.35 3.74

+50 6.3 5.56 195.67 191.35 4.32

298 2.6 1.88 199.37 194.35 5.02

T.D 9.11 (208.48) 1.88 199.37

+50 6.3 5.56 202.92 197.35 5.57

297 3.3 2.62 205.86 200.35 5.51

1.00

Inet = 305+26 W

172.35
168.85
3.50
1.75

172.35
3.50
175.85

3.50

Hno

Low

Wells
Given last 5

3.6

4.3

4.8

4.8

.600

.800

BM#26 3.59 178.93 175.4

305+26	10.0	8.28	170.65	166.75	3.90	
305	10.2	9.23	169.70	167.00	2.70	
304+50	9.2	8.45	170.48	167.50	2.98	
304	8.9	7.75	171.18	168.00	3.18	1.50
+50	7.4	6.78	172.15	168.50	3.65	
203	6.5	5.67	173.26	169.00	4.26	
+50	5.0	4.18	174.75	170.50	4.25	
302	3.2	2.50	176.43	172.00	4.43	3.00
T.P.	12.64	189.40	2.13	176.80	—	
+50	11.5	10.71	178.73	174.00	4.73	4.00
301	9.4	8.86	180.58	176.00	4.58	
+50	6.8	6.18	183.26	179.00	4.26	
300	4.2	3.36	186.08	182.00	4.08	
+50	1.4	0.62	188.82	185.00	3.82	6.00
T.P.	12.43	201.25	0.62	188.82	—	
299	11.1	10.18	191.07	188.00	3.07	
+52	7.5	6.51	194.74	191.00	3.74	
298	3.5	197.8	2.55	198.70	194.00	4.70 -3.8
T.P.	9.11	208.48	1.88	199.34	—	20.00
+50	7.0	201.5	6.18	202.30	197.00	5.30 4.5
297+20	3.9	204.6	3.07	205.41	200.00	5.41 4.6 60.00

Wnet = 305+40E

26 feet land 1922

East

311#26 2.76 (178.80)

175.34

Hnd level 12 1/2

11.90

166.20

305+85 10.60

10.27

167.83 166.20 1.63

306 8.5

7.83

170.24 166.35 3.92

306+40 8.5

7.10

171.00 166.75 4.25

+50 8.0

6.61

171.49 166.85 4.64

307 7.7

6.85

171.25 167.35 3.90

+50 7.1

6.23

171.84 167.85 4.02

308 6.0

5.19

172.91 168.35 4.56

+50 5.0

4.00

174.10 169.35 4.75

309 4.2

3.38

174.42 170.35 4.37

+50 3.1

2.22

175.88 171.65 4.23

310 1.7

0.88

177.22 172.96 4.24

TP 12.71 (189.93)

0.88

177.22

+50 11.8

178.1

10.84

179.09 174.26 4.84

311 10.0

179.9

9.18

180.76 175.53 5.20

+50 8.5

181.4

7.82

182.11 177.05 5.02

312 7.3

6.51

183.42 178.53 4.87

+50 6.0

5.11

184.82 180.08 4.74

313 4.6

3.84

186.09 181.53 4.52

+50 2.8

2.06

187.87 183.30 4.57

314 1.2

0.70

189.23 185.04 4.18

TP 13.05 (202.28)

0.70

189.23

+50 11.7

10.75

191.53 187.04 4.45

315 9.7

8.85

193.43 189.04 4.38

1.00 Inet = 306 + 2 322

2.00

3.8 12.60

4.4

4.4

3.00

3.50

4.00

Bob Carroll
Sta 305+85
311+50
Given East #5

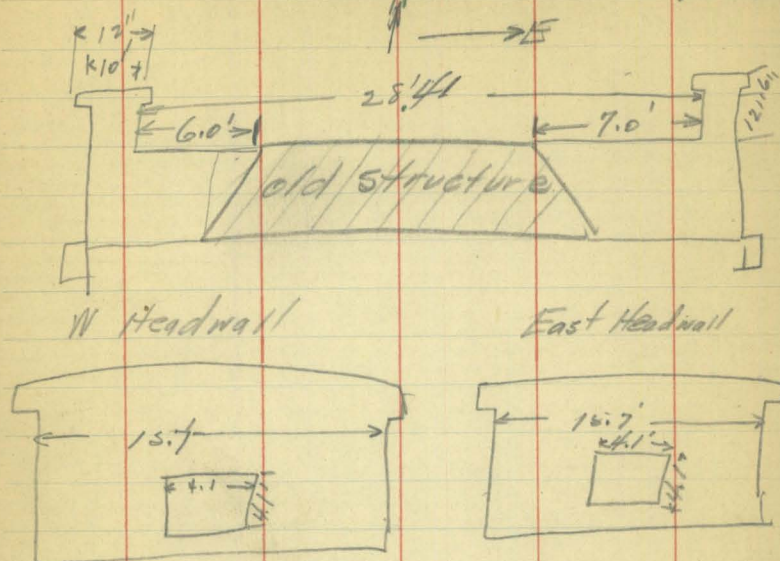
File and to
Sta 314+50-12-11-1922

BM#26	2.76	178.10		175.34					
306 23	8.8		7.10	171.00	166.75	4.25			
+50	7.8		6.63	171.47	167.05	4.42			
307	6.6	171.5	5.71	172.39	167.55	4.84	3.9		
+50	6.0	172.1	5.20	172.90	168.05	4.85	4.0		
308	5.2	172.9	4.48	173.62	168.55	5.07	4.3	20c	
+50	4.6	173.5	3.61	174.49	169.55	4.94	3.9	20c	
309	3.6	174.5	2.59	175.51	170.55	4.96	4.0	2.00	
+50	2.6	175.5	1.52	176.68	171.55	4.73	3.7		
310	1.3	176.8	0.37	177.73	173.15	4.58	3.4	2.60	
TP	12.71	189.93	0.88	177.22					
+50	11.6	178.3	10.82	179.11	174.45	4.66	3.9		
311	10.2	179.7	9.15	180.75	175.15	5.03	4.0		
+50	8.8	181.1	8.08	181.85	177.25	4.60	3.9		
312	7.8	182.1	6.72	183.21	178.75	4.46	3.4	3.00	
+50	6.4		5.54	184.39	180.25	4.14			
313	4.9		4.04	185.89	181.75	4.14			
+50	3.3		2.63	187.30	183.50	3.80		3.00	
314	1.6		0.74	189.19	185.25	3.94			
TP	13.05	202.78	0.70	189.23					
+50	12.3		1.33	190.95	187.25	3.70		4.00	
315	10.5		9.73	192.55	189.25	3.30			

Jnc + = 308 + 408

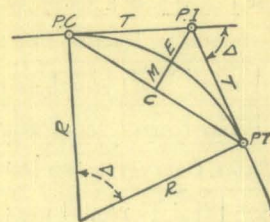
Solved April 1922

Culu Ex + N5cc 3-4 Eagle Tr



DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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CURVE FORMULAS

Radius= $R=\frac{50}{\sin. \frac{D}{2}}$ (1) Degree of Curve= D and $\sin. \frac{D}{2}=\frac{50}{R}$ (2)

$$\text{Tangent} = T = R \tan \frac{\Delta}{2} \quad (3) \quad \text{Length of Curve} = L = 100 \frac{\Delta}{D} \quad (4)$$
$$\text{Middle ordinate} = M = R(1 - \cos. \frac{\Delta}{2}) \quad (5) = R \text{vers } \frac{\Delta}{2} \quad (6)$$
$$\text{External} = E = T \tan \frac{\Delta}{4} \quad (7) = R \div \cos. \frac{\Delta}{2} - R \quad (8) = R \sec \frac{\Delta}{2} \quad (9)$$

Long Chord = $C = 2 R \sin. \frac{\Delta}{2}$ (10) Δ = Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta=62^{\circ} 10'$ $D=8^{\circ} 20'$. From Table IV for 1° curve $T=3454.1$ and $+8\frac{1}{2}=414.49$ ft. From Table V correction=.36 or $T=414.85$ ft. P. C.=Sta. P. I.— $T=157+45.50$. Also from (4) $L=746.00$ and P. T.=Sta. P. C. $+L=164+91.50$.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$ =2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26)$ =2.16 ft.

Deflections.—Deflection angle= $\frac{1}{2}$ D for 100 ft., $\frac{1}{4}$ D for 50 ft., etc. For c ft.=(n minutes) $.3 \times C \times D^\circ$ or=defl. for 1 ft. from Table III $\times C$. For Sta. 158 of above curve=.3 $\times 54.5 \times 8\frac{1}{2}$ =136.2' or $2^\circ 16.2'$, or=2.50 $\times 54.5$ =136.2' from Table III. For Sta. 159 deflection angle= $2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve E=960.6 for 8° 20'=960.6÷8½=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30'.

TABLE I.—MINUTES IN DECIMALS OF A DEGREE.

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

TABLE II.—INCHES IN DECIMALS OF A FOOT.

1-16	3-32	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

TABLE III.—RADI, ORDINATES AND DEFLECTIONS.

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot
0° 10'	34377.5	.036	.145	0.05'	7° 20'	819.02	1.528	6.105	2.10'
20	17188.8	.073	.291	0.10	30	781.84	1.600	6.395	2.20
30	11459.2	.109	.436	0.15	40	764.49	1.637	6.540	2.25
40	8594.42	.145	.582	0.20	50	747.89	1.673	6.685	2.30
50	6875.55	.182	.727	0.25	8	716.78	1.746	6.976	2.40
1 10	5729.65	.218	.873	0.30	20	688.16	1.819	7.266	2.50
20	4911.15	.255	1.018	0.35	30	674.69	1.855	7.411	2.55
30	4297.28	.291	1.164	0.40	40	661.74	1.892	7.556	2.60
40	3819.83	.327	1.309	0.45	9	637.28	1.965	7.846	2.70
50	3437.87	.364	1.454	0.50	20	614.56	2.037	8.136	2.80
2 10	3125.36	.400	1.600	0.55	30	603.80	2.074	8.281	2.85
20	2864.93	.436	1.745	0.60	40	593.42	2.110	8.426	2.90
30	2644.58	.473	1.891	0.65	10	573.69	2.183	8.716	3.00
40	2455.70	.509	2.036	0.70	20	546.44	2.292	9.150	3.15
50	2292.01	.545	2.181	0.75	30	521.67	2.402	9.585	3.30
3 10	2148.79	.582	2.327	0.80	40	499.06	2.511	10.02	3.45
20	2022.41	.618	2.472	0.85	50	478.34	2.620	10.45	3.60
30	1910.08	.655	2.618	0.90	12	459.28	2.730	10.89	3.75
40	1809.57	.691	2.763	0.95	13	441.68	2.839	11.32	3.90
50	1719.12	.727	2.908	1.00	30	425.40	2.949	11.75	4.05
4 10	1637.28	.764	3.054	1.05	40	410.28	3.058	12.18	4.20
20	1562.88	.800	3.199	1.10	50	396.20	3.168	12.62	4.35
30	1494.95	.836	3.345	1.15	15	383.07	3.277	13.05	4.50
40	1432.69	.873	3.490	1.20	20	370.78	3.387	13.49	4.65
50	1375.40	.909	3.635	1.25	30	359.27	3.496	13.92	4.80
5 10	1322.53	.945	3.718	1.30	40	348.45	3.606	14.35	4.95
20	1273.57	.982	3.926	1.35	50	338.27	3.716	14.78	5.10
30	1228.11	1.018	4.071	1.40	17	319.62	3.935	15.64	5.40
40	1185.78	1.055	4.217	1.45	18	302.94	4.155	16.51	5.70
50	1146.28	1.091	4.362	1.50	21	287.94	4.374	17.37	6.00
6 10	1109.33	1.127	4.507	1.55	20	274.37	4.594	18.22	6.30
20	1074.68	1.164	4.653	1.60	30	262.04	4.814	19.08	6.60
30	1042.14	1.200	4.798	1.65	40	250.79	5.035	19.94	6.90
40	1011.51	1.237	4.943	1.70	50	240.49	5.255	20.79	7.20
50	982.64	1.273	5.088	1.75	25	231.01	5.476	21.64	7.50
7 10	955.37	1.309	5.234	1.80	26	222.27	5.697	22.50	7.80
20	929.57	1.346	5.379	1.85	27	214.18	5.918	23.35	8.10
30	905.13	1.382	5.524	1.90	28	206.68	6.139	24.19	8.40
40	881.95	1.418	5.669	1.95	29	199.70	6.360	25.04	8.70
50	859.92	1.455	5.814	2.00	30	193.18	6.583	25.88	9.00

Note. Chord Deflection=2 times tangent deflection.

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
1°	50.00	.22	11°	551.70	26.50	21°	1061.9	97.57
10'	58.34	.30	10'	560.11	27.31	10'	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2	100.01	.87	12	602.21	31.56	22	1113.7	107.24
10	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
20	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
30	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
40	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
50	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
3	150.04	1.96	13	652.81	37.07	23	1165.7	117.38
10	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
20	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
30	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
40	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
50	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
4	200.08	3.49	14	703.51	43.03	24	1217.9	128.00
10	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
20	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
30	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
40	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
50	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
5	250.16	5.46	15	754.32	49.44	25	1270.2	139.11
10	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
20	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
30	275.21	6.61	30	779.77	52.89	30	1296.5	144.85
40	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
50	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
6	300.28	7.86	16	805.25	56.31	26	1322.8	150.71
10	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
20	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
30	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
40	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
50	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
7	350.44	10.71	17	856.30	63.63	27	1375.6	162.81
10	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
20	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
30	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
40	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
50	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
8	400.66	13.99	18	907.49	71.42	28	1428.6	175.41
10	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
20	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
30	425.79	15.80	30	933.13	75.49	30	1455.1	181.89
40	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
50	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
9	450.93	17.72	19	958.81	79.67	29	1481.8	188.51
10	459.32	18.38	10	967.38	81.09	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
10	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
20	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
30	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
40	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
50	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
40	543.29	25.70	50	1053.3	96.01	50	1580.0	213.86

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
31°	1589.0	216.3	41°	2142.2	387.4	51°	2732.9	618.4
10'	1598.0	218.7	10'	2151.7	390.7	10'	2743.1	622.8
20	1606.9	221.1	20	2161.2	394.1	20	2753.4	627.2
30	1615.9	223.5	30	2170.8	397.4	30	2763.7	631.7
40	1624.9	226.0	40	2180.3	400.8	40	2773.9	636.2
50	1633.9	228.4	50	2189.9	404.2	50	2784.2	640.7
32°	1643.0	230.9	42°	2199.4	407.6	52°	2794.5	645.2
10	1652.0	233.4	10	2209.0	411.1	10	2804.9	649.7
20	1661.0	235.9	20	2218.6	414.5	20	2815.2	654.3
30	1670.0	238.4	30	2228.1	418.0	30	2825.6	658.8
40	1679.1	241.0	40	2237.7	421.4	40	2835.9	663.4
50	1688.1	243.5	50	2247.3	425.0	50	2846.3	668.0
33°	1697.2	246.1	43°	2257.0	428.5	53°	2856.7	672.7
10	1706.3	248.7	10	2266.6	432.0	10	2867.1	677.3
20	1715.3	251.3	20	2276.2	435.6	20	2877.5	682.0
30	1724.4	253.9	30	2285.9	439.2	30	2888.0	686.7
40	1733.5	256.5	40	2295.6	442.8	40	2898.4	691.4
50	1742.6	259.1	50	2305.2	446.4	50	2908.9	696.1
34°	1751.7	261.8	44°	2314.9	450.0	54°	2919.4	700.9
10	1760.8	264.5	10	2324.6	453.6	10	2929.9	705.7
20	1770.0	267.2	20	2334.3	457.3	20	2940.4	710.5
30	1779.1	269.9	30	2344.1	461.0	30	2951.0	715.3
40	1788.2	272.6	40	2353.8	464.6	40	2961.5	720.1
50	1797.4	275.3	50	2363.5	468.4	50	2972.1	725.0
35°	1806.6	278.1	45°	2373.3	472.1	55°	2982.7	729.9
10	1815.7	280.8	10	2383.1	475.8	10	2993.3	734.8
20	1824.9	283.6	20	2392.8	479.6	20	3003.9	739.7
30	1834.1	286.4	30	2402.6	483.8	30	3014.5	744.6
40	1843.3	289.2	40	2412.4	487.2	40	3025.2	749.6
50	1852.5	292.0	50	2422.3	491.0	50	3035.8	754.6
36°	1861.7	294.9	46°	2432.1	494.8	56°	3046.5	759.6
10	1870.9	297.7	10	2441.9	498.7	10	3057.2	764.6
20	1880.1	300.6	20	2451.8	502.5	20	3067.9	769.7
30	1889.4	303.5	30	2461.7	506.4	30	3078.7	774.7
40	1898.6	306.4	40	2471.5	510.3	40	3089.4	779.8
50	1907.9	309.3	50	2481.4	514.3	50	3100.2	784.9
37°	1917.1	312.2	47°	2491.3	518.2	57°	3110.9	790.1
10	1926.4	315.2	10	2501.2	522.2	10	3121.7	795.2
20	1935.7	318.1	20	2511.2	526.1	20	3132.6	800.4
30	1945.0	321.1	30	2521.1	530.1	30	3143.4	805.6
40	1954.3	324.1	40	2531.1	534.2	40	3154.2	810.9
50	1963.6	327.1	50	2541.0	538.2	50	3165.1	816.1
38°	1972.9	330.2	48°	2551.0	542.2	58°	3176.0	821.4
10	1982.2	333.2	10	2561.0	546.3	10	3186.9	826.7
20	1991.5	336.3	20	2571.0	550.4	20	3197.8	832.0
30	2000.9	339.3	30	2581.0	554.5	30	3208.8	837.3
40	2010.2	342.4	40	2591.0	558.6	40	3219.7	842.7
50	2019.6	345.5	50	2601.1	562.8	50	3230.7	848.1
39°	2029.0	348.6	49°	2611.2	566.9	59°	3241.7	853.5
10	2038.4	351.8	10	2621.2	571.1	10	3252.7	858.9
20	2047.8	354.9	20	2631.3	575.3	20	3263.7	864.3
30	2057.2	358.1	30	2641.4	579.5	30	3274.8	869.8
40	2066.6	361.3	40	2651.5	583.8	40	3285.8	875.3
50	2076.0	364.5	50	2661.6	588.0	50	3296.9	880.8
40°	2085.4	367.7	50°	2671.8	592.3	60°	3308.0	886.4
10	2094.9	371.0	10	2681.9	596.6	10	3319.1	892.0
20	2104.3	374.2	20	2692.1	600.9	20	3330.3	897.5
30	2113.8	377.5	30	2702.3	605.3	30	3341.4	903.2
40	2123.3	380.8	40	2712.5	609.6	40	3352.6	908.8
50	2132.7	384.1	50	2722.7	614.0	50	3363.8	914.5

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
61°	3375.0	920.2	71°	4086.9	1308.2	81°	4893.6	1805.3
10'	3386.3	925.9	10'	4099.5	1315.6	10'	4908.0	1814.7
20	3397.5	931.6	20	4112.1	1322.9	20	4922.5	1824.1
30	3408.8	937.3	30	4124.8	1330.3	30	4937.0	1833.6
40	3420.1	943.1	40	4137.4	1337.7	40	4951.5	1843.1
50	3431.4	948.9	50	4150.1	1345.1	50	4966.1	1852.6
62°	3442.7	954.8	72°	4162.8	1352.6	82°	4980.7	1862.2
10	3454.1	960.6	10	4175.6	1360.1	10	4995.4	1871.8
20	3465.4	966.5	20	4188.5	1367.6	20	5010.0	1881.5
30	3476.8	972.4	30	4201.2	1375.2	30	5024.8	1891.2
40	3488.3	978.3	40	4214.0	1382.8	40	5039.5	1900.9
50	3499.7	984.3	50	4226.8	1390.4	50	5054.3	1910.7
63°	3511.1	990.2	73°	4239.7	1398.0	83°	5069.2	1920.5
10	3522.6	996.2	10	4252.6	1405.7	10	5084.0	1930.4
20	3534.1	1002.3	20	4265.6	1413.5	20	5099.0	1940.3
30	3545.6	1008.3	30	4278.5	1421.2	30	5113.9	1950.3
40	3557.2	1014.4	40	4291.5	1429.0	40	5128.9	1960.2
50	3568.7	1020.5	50	4304.6	1436.8	50	5143.9	1970.3
64°	3580.3	1026.6	74°	4317.6	1444.6	84°	5159.0	1980.4
10	3591.9	1032.8	10	4330.7	1452.5	10	5174.1	1990.5
20	3603.5	1039.0	20	4343.8	1460.4	20	5189.3	2000.6
30	3615.1	1045.2	30	4356.9	1468.4	30	5204.4	2010.8
40	3626.8	1051.4	40	4370.1	1476.4	40	5219.7	2021.1
50	3638.5	1057.7	50	4383.3	1484.4	50	5234.9	2031.4
65°	3650.2	1063.9	75°	4396.5	1492.4	85°	5250.3	2041.7
10	3661.9	1070.2	10	4409.8	1500.5	10	5265.6	2052.1
20	3673.7	1076.6	20	4423.1	1508.6	20	5281.0	2062.5
30	3685.4	1082.9	30	4436.4	1516.7	30	5296.4	2073.0
40	3697.2	1089.3	40	4449.7	1524.9	40	5311.9	2083.5
50	3709.0	1095.7	50	4463.1	1533.1	50	5327.4	2094.1
66°	3720.9	1102.2	76°	4476.5	1541.4	86°	5343.0	2104.7
10	3732.7	1108.6	10	4489.9	1549.7	10	5358.6	2115.3
20	3744.6	1115.1	20	4503.4	1558.0	20	5374.2	2126.0
30	3756.5	1121.7	30	4516.9	1566.3	30	5389.9	2136.7
40	3768.5	1128.2	40	4530.4	1574.7	40	5405.6	2147.5
50	3780.4	1134.8	50	4544.0	1583.1	50	5421.4	2158.4
67°	3792.4	1141.4	77°	4557.6	1591.6	87°	5437.2	2169.2
10	3804.4	1148.0	10	4571.2	1600.1	10	5453.1	2180.2
20	3816.4	1154.7	20	4584.8	1608.6	20	5469.0	2191.1
30	3828.4	1161.3	30	4598.5	1617.1	30	5484.9	2202.2
40	3840.5	1168.1	40	4612.2	1625.7	40	5500.9	2213.2
50	3852.6	1174.8	50	4626.0	1634.4	50	5517.0	2224.3
68°	3864.7	1181.6	78°	4639.8	1643.0	88°	5533.1	2235.5
10	3876.8	1188.4	10	4653.6	1651.7	10	5549.2	2246.7
20	3889.0	1195.2	20	4667.4	1660.5	20	5565.4	2258.0
30	3901.2	1202.0	30	4681.3	1669.2	30	5581.6	2269.3
40	3913.4	1208.9	40	4695.2	1678.1	40	5597.8	2280.6
50	3925.6	1215.8	50	4709.2	1686.9	50	5614.2	2292.0
69°	3937.9	1222.7	79°	4723.2	1695.8	89°	5630.5	2303.5
10	3950.2	1229.7	10	4737.2	1704.7	10	5646.9	2315.0
20	3962.5	1236.7	20	4751.2	1713.7	20	5663.4	2326.6
30	3974.8	1243.7	30	4765.3	1722.7	30	5679.9	2338.2
40	3987.2	1250.8	40	4779.4	1731.7	40	5696.4	2349.8
50	3999.5	1257.9	50	4793.6	1740.8	50	5713.0	2361.5
70°	4011.9	1265.0	80°	4807.7	1749.9	90°	5729.7	2373.3
10	4024.4	1272.1	10	4822.0	1759.0	10	5746.3	2385.1
20	4036.8	1279.3	20	4836.2	1768.2	20	5763.1	2397.0
30	4049.3	1286.5	30	4850.5	1777.4	30	5779.9	2408.9
40	4061.8	1293.6	40	4864.8	1786.7	40	5796.7	2420.9
50	4074.4	1300.9	50	4879.2	1796.0	50	5813.6	2432.9

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
91°	5830.5	2444.9	101°	6950.6	3278.1	111°	8336.7	4386.1
10'	5847.5	2457.1	10'	6971.3	3294.1	10'	8362.7	4407.6
20	5864.6	2469.3	20	6992.0	3310.1	20	8388.9	4429.2
30	5881.7	2481.5	30	7012.7	3326.1	30	8415.1	4450.9
40	5898.8	2493.8	40	7033.6	3342.3	40	8441.5	4472.7
50	5916.0	2506.1	50	7054.5	3358.5	50	8468.0	4494.6
92	5933.2	2518.5	102	7075.5	3374.9	112	8494.6	4516.6
10	5950.5	2531.0	10	7096.6	3391.2	10	8521.3	4538.8
20	5967.9	2543.5	20	7117.8	3407.7	20	8548.1	4561.1
30	5985.3	2556.0	30	7139.0	3424.3	30	8575.0	4583.4
40	6002.7	2568.6	40	7160.3	3440.9	40	8602.1	4606.0
50	6020.2	2581.3	50	7181.7	3457.6	50	8629.3	4628.6
93	6037.8	2594.0	103	7203.2	3474.4	113	8656.6	4651.3
10	6055.4	2606.8	10	7224.7	3491.3	10	8684.0	4674.2
20	6073.1	2619.7	20	7246.3	3508.2	20	8711.5	4697.2
30	6090.8	2632.6	30	7268.0	3525.2	30	8739.2	4720.3
40	6108.6	2645.5	40	7289.8	3542.4	40	8767.0	4743.6
50	6126.4	2658.5	50	7311.7	3559.6	50	8794.9	4766.9
94	6144.3	2671.6	104	7333.6	3576.8	114	8822.9	4790.4
10	6162.6	2684.7	10	7355.6	3594.2	10	8851.0	4814.1
20	6180.2	2697.9	20	7377.8	3611.7	20	8879.3	4837.8
30	6198.3	2711.2	30	7399.9	3629.2	30	8907.7	4861.7
40	6216.4	2724.5	40	7422.2	3646.8	40	8936.3	4885.7
50	6234.6	2737.9	50	7444.6	3664.5	50	8965.0	4909.9
95	6252.8	2751.3	105	7467.0	3682.3	115	8993.8	4934.1
10	6271.1	2764.8	10	7489.6	3700.2	10	9022.7	4958.6
20	6289.4	2778.3	20	7512.2	3718.2	20	9051.7	4983.1
30	6307.9	2792.0	30	7534.9	3736.2	30	9080.9	5007.8
40	6326.3	2805.6	40	7557.7	3754.4	40	9110.3	5032.6
50	6344.8	2819.4	50	7580.5	3772.6	50	9139.8	5057.6
96	6363.4	2833.2	106	7603.5	3791.0	116	9169.4	5082.7
10	6382.1	2847.0	10	7626.6	3809.4	10	9199.1	5107.9
20	6400.8	2861.0	20	7649.7	3827.9	20	9229.0	5133.3
30	6419.5	2875.0	30	7672.9	3846.5	30	9259.0	5158.8
40	6438.4	2889.0	40	7696.3	3865.2	40	9289.2	5184.5
50	6457.3	2903.1	50	7719.7	3884.0	50	9319.5	5210.3
97	6476.2	2917.3	107	7743.2	3902.9	117	9349.9	5236.2
10	6495.2	2931.6	10	7766.8	3921.9	10	9380.5	5262.3
20	6514.3	2945.9	20	7790.5	3940.9	20	9411.3	5288.6
30	6533.4	2960.3	30	7814.3	3960.1	30	9442.2	5315.0
40	6552.6	2974.7	40	7838.1	3979.4	40	9473.2	5341.5
50	6571.9	2989.2	50	7862.1	3998.7	50	9504.4	5368.2
98	6591.2	3003.8	108	7886.2	4018.2	118	9535.7	5395.1
10	6610.6	3018.4	10	7910.4	4037.8	10	9567.2	5422.1
20	6630.1	3033.1	20	7934.6	4057.4	20	9598.9	5449.2
30	6649.6	3047.9	30	7959.0	4077.2	30	9630.7	5476.5
40	6669.2	3062.8	40	7983.5	4097.1	40	9662.6	5504.0
50	6688.8	3077.7	50	8008.0	4117.0	50	9694.7	5531.7
99	6708.6	3092.7	109	8032.7	4137.1	119	9727.0	5559.4
10	6728.4	3107.7	10	8057.4	4157.3	10	9759.4	5587.4
20	6748.2	3122.9	20	8082.3	4177.5	20	9792.0	5615.5
30	6768.1	3138.1	30	8107.3	4197.9	30	9824.8	5643.8
40	6788.1	3153.3	40	8132.3	4218.4	40	9857.7	5672.3
50	6808.2	3168.7	50	8157.5	4239.0	50	9890.8	5700.9
100	6828.3	3184.1	110	8182.8	4259.7	120	9924.0	5729.7
10	6848.5	3199.6	10	8208.2	4280.5	10	9957.5	5758.6
20	6868.8	3215.1	20	8233.7	4301.4	20	9991.0	5787.7
30	6889.2	3230.8	30	8259.3	4322.4	30	10025.0	5817.0
40	6909.6	3246.5	40	8285.0	4343.6	40	10059.0	5846.5
50	6930.1	3262.3	50	8310.8	4364.8	50	10093.0	5876.1

TABLE V.—CORRECTIONS FOR TANGENTS AND EXTERNALS.

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table IV) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.79	.81	.92	1.04	1.19	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.06
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	.43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22

FOR EXTERNALS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.032	.036	.043	.049	.053	.057	.061
20°	.003	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.127	.135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.297	.329	.351	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.456	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.771	.845	.922	1.01
70°	.090	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.286	.383	.480	.578	.678	.777	.877	.977	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.76	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.885	1.06	1.25	1.43	1.62	1.80	1.99	2.18	2.38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2.06	2.28	2.50	2.73	2.96
110°	.268	.536	.806	1.08	1.35	1.63	1.91	2.20	2.48	2.76	3.05	3.35	3.66	3.96
120°	.360	.721	1.08	1.45	1.82	2.19	2.57	2.95	3.33	3.72	4.11	4.50	4.91	5.32

TABLE VI.—CORRECTIONS FOR SUB-CHORDS AND LONG CHORDS.

FOR SUB-CHORDS ADD										Excess of arc per 100 ft.	LONG CHORDS				
D	10	20	30	40	50	60	70	80	90		D	200	300	400	500
4°	.00	.00	.01	.01	.01	.01	.01	.01	.06	.02	1	199.99	299.97	399.92	499.85
6	.00	.01	.01	.02	.02	.02	.02	.02	.01	.05	2	199.97	299.88	399.70	499.39
8	.01	.02	.02	.03	.03	.03	.03	.03	.02	.08	3	199.93	299.73	399.32	498.63
10	.01	.02	.03	.04	.05	.05	.05	.04	.02	.13	4	199.88	299.51	398.78	497.57
12	.02	.04	.05	.06	.07	.07	.07	.05	.03	.18	5	199.81	299.24	398.10	496.20
14	.02	.05	.07	.08	.09	.10	.09	.07	.04	.25	6	199.73	298.90	397.26	494.53
16	.03	.06	.09	.11	.12	.12	.12	.09	.05	.33	7	199.63	298.51	396.28	492.57
18	.04	.08	.11	.14	.15	.16	.15	.12	.07	.41	8	199.51	298.05	395.14	490.31
20	.05	.10	.14	.17	.19	.20	.18	.15	.09	.51	9	199.38	297.54	393.86	487.75
22	.06	.12	.17	.21	.23	.24	.22	.18	.10	.62	10	199.24	296.96	392.42	484.90
24	.07	.14	.20	.25	.28	.28	.26	.21	.12	.74	12	198.90	295.63	389.12	478.34
26	.09	.17	.24	.29	.32	.33	.31	.25	.15	.86	14	198.51	294.06	385.22	470.65
28	.10	.19	.27	.34	.37	.38	.36	.29	.17	1.00	16	198.05	292.25	380.76	461.86
30	.11	.22	.31	.39	.43	.44	.41	.33	.19	1.15	18	197.54	290.21	375.74	452.02
32	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31	20	196.96	287.94	370.17	441.15
34	.15	.28	.40	.50	.55	.57	.53	.43	.25	1.48	22	196.32	285.44	364.06	429.30
36	.17	.32	.45	.56	.62	.64	.59	.48	.28	1.66	24	195.63	282.71	357.43	416.53
38	.18	.36	.51	.62	.70	.71	.66	.53	.31	1.86	26	194.87	279.76	350.30	402.89
40	.21	.40	.56	.69	.77	.79	.73	.59	.35	2.06	28	194.06	276.59	342.69	388.43
42	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28	30	193.18	273.20	334.61	373.20
44	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50	32	192.25	269.61	326.08	357.28
46	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74	34	191.26	265.81	317.12	340.73
48	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99	36	190.21	261.80	307.77	323.61
50	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24	38	189.10	257.60	298.03	305.99
52	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52	40	187.94	253.21	287.94	287.94
54	.38	.73	1.04	1.28	1.42	1.46	1.35	1.09	.64	3.80	42	186.72	248.63	277.51	269.54
56	.41	.78	1.12	1.38	1.53	1.57	1.46	1.17	.69	4.09	44	185.44	243.87	266.78	250.85
58	.44	.84	1.20	1.48	1.65	1.69	1.57	1.26	.74	4.40	46	184.10	239.93	255.78	231.95
60	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72	48	182.71	233.83	244.51	212.92

NOTE.—When a chord of less than 100 ft. is used the corrections given in the above table should be added to the nominal length of chord to get the length which should be used in order that the 100 ft. points will check with those obtained by using the standard 100 ft. chord. Thus in locating a 14° curve by 25 ft. chords measure 25'.06 for each chord. Long chords are useful in passing obstacles.

TABLE VII.—MIDDLE ORDINATES FOR RAILS IN FEET.

Deg. of Curve	LENGTH OF RAILS							Deg. of Curve	LENGTH OF RAILS.						
	32	30	28	26	24	22	20		32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.037	.058	.051	.044	.037	.031	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.069	.060	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.099	.086	.074	.063	.053	.044	20	.445	.392	.341	.296	.250	.212	.174
6	.134	.117	.102	.088	.076	.064	.052	21	.466	.410	.357	.309	.262	.222	.182
7	.156	.137	.120	.104	.088	.074	.061	22	.487	.430	.375	.325	.275	.233	.191
8	.179	.158	.137	.119	.100	.085	.070	23	.509	.450	.390	.338	.287	.243	.199
9	.201	.175	.153	.133	.112	.095	.078	24	.531	.469	.408	.354	.299	.253	.208
10	.223	.196	.171	.148	.125	.106	.087	25	.552	.486	.424	.367	.311	.263	.216
11	.245	.216	.188	.163	.139	.117	.096	26	.573	.506	.441	.382	.323	.274	.225
12	.268	.236	.206	.179	.151	.128	.105	27	.594	.524	.457	.396	.335	.284	.233
13	.290	.254	.222	.192	.163	.138	.113	28	.618	.545	.475	.411	.348	.294	.242
14	.312	.275	.239	.207	.175	.148	.122	29	.638	.564	.491	.424	.361	.303	.250
15	.334	.295	.257	.223	.188	.159	.131	30	.660	.583	.508	.438	.374	.313	.259

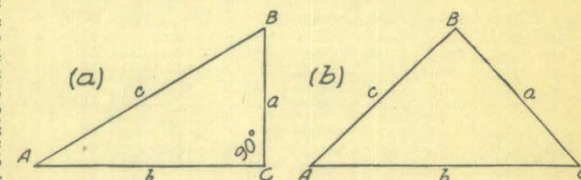
SLOPE REDUCTIONS.

When distances are measured on a slope they may be reduced to the equivalent horizontal distance by the following approximate rule:—subtract from the slope distance the square of the rise divided by twice the slope distance. Thus for a slope distance of 250.3 ft. and a rise of 15 ft. correction= $15^2 \div 2 \times 250.3 = .45$ (by slide rule) or horizontal distance= $250.3 - .45 = 249.85$. When vertical angle= $V. A.$ is measured horizontal distance= $\text{slope distance} - \text{slope distance} (1 - \cos. V. A.)$. Thus for slope distance of 248.7 ft. and $V. A.$ of $4^\circ 20'$ from Table VIII $\cos = .99714$ and correction= $1 - .99714 = .00286$ per foot or total of $.286 \times 21\frac{1}{2}$ (near enough) = .57 and horizontal distance= $248.7 - .57 = 248.13$ ft.

See fig. (a).

TRIGONOMETRICAL FORMULAS.

$$\begin{aligned}\sin. & A = \frac{a}{c} \\ \cos. & A = \frac{b}{c} \\ \tan. & A = \frac{a}{b} \\ \cot. & A = \frac{b}{a} \\ \sec. & A = \frac{c}{b} \\ \text{cosec.} & A = \frac{c}{a}\end{aligned}$$



FORMULA FOR SOLVING TRIANGLES.

Given	Sought.	Right triangles. See fig. (a).
a, c	A, B, b	$\sin. A = \frac{a}{c}, \cos. B = \frac{a}{c}, b = \sqrt{(c+a)(c-a)}$
a, b	A, B, c	$\tan. A = \frac{a}{b}, \cot. B = \frac{a}{b}, c = \sqrt{a^2 + b^2}$
A, a	B, b, c	$B = 90^\circ - A, b = a \cot. A, c = \frac{a}{\sin. A}$
A, b	B, a, c	$B = 90^\circ - A, a = b \tan. A, c = \frac{b}{\cos. A}$
A, c	B, a, b	$B = 90^\circ - A, a = c \sin. A, b = c \cos. A$
Given	Sought.	Oblique triangles. See fig. (b).
A, B, a	b	$b = \frac{a \sin. B}{\sin. A}$
A, a, b	B	$\sin. B = \frac{b \sin. A}{a}$
a, b, C	$A - B$	$\tan. \frac{1}{2}(A - B) = \frac{(a - b) \tan. \frac{1}{2}(A + B)}{a + b}$
a, b, c	A	$\left\{ \begin{aligned} \text{If } s = \frac{1}{2}(a + b + c), \sin. \frac{1}{2} A &= \sqrt{\frac{(s - b)(s - c)}{bc}} \\ \cos. \frac{1}{2} A &= \sqrt{\frac{s(s - a)}{bc}}, \tan. \frac{1}{2} A = \sqrt{\frac{(s - b)(s - c)}{s(s - a)}}, \\ \sin. A &= \frac{2V(s - a)(s - b)(s - c)}{bc} \end{aligned} \right.$
A, B, C, a	area	$\text{area} = \frac{a^2 \sin. B \sin. C}{2 \sin. A}$
A, b, c	area	$\text{area} = \frac{1}{2} bc \sin. A$
a, b, c	area	$s = \frac{1}{2}(a + b + c), \text{area} = \sqrt{s(s - a)(s - b)(s - c)}$

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

Angle	Sine.	Tan.	Cotg.	Cosin.	Angle	Sine.	Tan.	Cotg.	Cosin.
0°	0	0	00	1	90				
10	.0029	.0029	343.8	I	50				
20	.0058	.0058	171.9	.99998	40				
30	.0087	.0087	114.6	.99996	30				
40	.0116	.0116	85.94	.99993	20				
50	.0145	.0145	68.75	.99989	10				
1	.0175	.0175	57.29	.99985	89				
10	.0204	.0204	49.10	.99979	50				
20	.0233	.0233	42.96	.99973	40				
30	.0262	.0262	38.19	.99966	30				
40	.0291	.0291	34.37	.99958	20				
50	.0320	.0320	31.24	.99949	10				
2	.0349	.0349	28.64	.99939	88				
10	.0378	.0378	26.43	.99929	50				
20	.0407	.0407	24.54	.99917	40				
30	.0436	.0437	22.90	.99905	30				
40	.0465	.0466	21.47	.99892	20				
50	.0494	.0495	20.21	.99878	10				
3	.0523	.0524	19.08	.99863	87				
10	.0552	.0553	18.07	.99847	50				
20	.0581	.0582	17.17	.99831	40				
30	.0610	.0612	16.35	.99813	30				
40	.0640	.0641	15.60	.99795	20				
50	.0669	.0670	14.92	.99776	10				
4	.0698	.0699	14.30	.99756	86				
10	.0727	.0729	13.73	.99736	50				
20	.0756	.0758	13.20	.99714	40				
30	.0785	.0787	12.71	.99692	30				
40	.0814	.0816	12.25	.99668	20				
50	.0843	.0846	11.83	.99644	10				
5	.0872	.0875	11.43	.99619	85				
10	.0901	.0904	11.06	.99594	50				
20	.0929	.0934	10.71	.99567	40				
30	.0958	.0963	10.39	.99540	30				
40	.0987	.0992	10.08	.99511	20				
50	.1016	.1022	9.788	.99482	10				
6	.1045	.1051	9.514	.99452	84				
10	.1074	.1080	9.255	.99421	50				
20	.1103	.1110	9.010	.99390	40				
30	.1132	.1139	8.777	.99357	30				
40	.1161	.1169	8.556	.99324	20				
50	.1190	.1198	8.345	.99290	10				
7	.1219	.1228	8.144	.99255	83				
10	.1248	.1257	7.953	.99219	50				
20	.1276	.1287	7.770	.99182	40				
30	.1305	.1317	7.596	.99144	30				
40	.1334	.1346	7.429	.99106	20				
50	.1363	.1376	7.269	.99067	10				
					E2				
Cosin.	Cotg.	Tan.	Sine.	Angle.	Cosin.	Cotg.	Tan.	Sine.	Angle.

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

Angle	Sine.	Tan.	Cotg.	Cosin.	Angle	Sine.	Tan.	Cotg.	Cosin.
16°	.2756	.2867	3.487	.96126	74				
10	.2784	.2899	3.450	.96046	50				
20	.2812	.2931	3.412	.95964	40				
30	.2840	.2962	3.376	.95882	30				
40	.2868	.2994	3.340	.95799	20				
50	.2896	.3026	3.305	.95715	10				
17	.2924	.3057	3.271	.95615	73				
10	.2952	.3089	3.237	.95545	50				
20	.2979	.3121	3.204	.95459	40				
30	.3007	.3153	3.172	.95372	30				
40	.3035	.3185	3.140	.95284	20				
50	.3062	.3217	3.108	.95195	10				
18	.3090	.3249	3.078	.95106	72				
10	.3118	.3281	3.048	.95015	50				
20	.3145	.3314	3.018	.94924	40				
30	.3173	.3346	2.989	.94832	30				
40	.3201	.3378	2.960	.94740	20				
50	.3228	.3411	2.932	.94646	10				
19	.3256	.3443	2.904	.94552	71				
10	.3283	.3476	2.877	.94457	50				
20	.3311	.3508	2.850	.94361	40				
30	.3338	.3541	2.824	.94264	30				
40	.3365	.3574	2.798	.94167	20				
50	.3393	.3607	2.773	.94068	10				
20	.3420	.3640	2.747	.93969	70				
10	.3448	.3673	2.723	.93869	50				
20	.3475	.3706	2.699	.93769	40				
30	.3502	.3739	2.675	.93667	30				
40	.3529	.3772	2.651	.93565	20				
50	.3557	.3805	2.628	.93462	10				
21	.3584	.3839	2.605	.93358	69				
10	.3611	.3872	2.583	.93253	50				
20	.3638	.3906	2.560	.93148	40				
30	.3665	.3939	2.539	.93042	30				
40	.3692	.3973	2.517	.92935	20				
50	.3719	.4006	2.496	.92827	10				
22	.3746	.4040	2.475	.92718	68				
10	.3773	.4074	2.455	.92609	50				
20	.3800	.4108	2.434	.92499	40				
30	.3827	.4142	2.414	.92388	30				
40	.3854	.4176	2.394	.92276	20				
50	.3881	.4210	2.375	.92164	10				
23	.3907	.4245	2.356	.92050	67				
10	.3934	.4279	2.337	.91936	50				
20	.3961	.4314	2.318	.91822	40				
30	.3987	.4348	2.300	.91706	30				
40	.4014	.4383	2.282	.91590	20				
50	.4041	.4417	2.264	.91472	10				
					66				
Cosin.	Cotg.	Tan.	Sine.	Angle.	Cosin.	Cotg.	Tan.	Sine.	Angle.

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

Angle	Sine.	Tan.	Cotg.	Cosin.	Angle	Sine.	Tan.	Cotg.	Cosin.
<i>or</i>					<i>or</i>				
32	.5299	.6249	1.600	.84805	58	.30	.6225	.7954	1.257
10	.5324	.6289	1.590	.84650	50	40	.6248	.8002	1.250
20	.5348	.6330	1.580	.84495	40	50	.6271	.8050	1.242
30	.5373	.6371	1.570	.84339	30				.77897
40	.5398	.6412	1.560	.84182	20	39	.6293	.8098	1.235
50	.5422	.6453	1.550	.84025	10	10	.6316	.8146	1.228
33	.5446	.6494	1.540	.83867	57	20	.6338	.8195	1.220
10	.5471	.6536	1.530	.83708	50	30	.6361	.8243	1.213
20	.5495	.6577	1.520	.83549	40	40	.6383	.8292	1.206
30	.5519	.6619	1.511	.83389	30	50	.6406	.8342	1.199
40	.5544	.6661	1.501	.83228	20	40	.6428	.8391	1.192
50	.5568	.6703	1.492	.83066	10	10	.6450	.8441	1.185
34	.5592	.6745	1.483	.82904	56	20	.6472	.8491	1.178
10	.5616	.6787	1.473	.82741	50	30	.6494	.8541	1.171
20	.5640	.6830	1.464	.82577	40	40	.6517	.8591	1.164
30	.5664	.6873	1.455	.82413	30	50	.6539	.8642	1.157
40	.5688	.6916	1.446	.82248	20	41	.6561	.8693	1.150
50	.5712	.6959	1.437	.82082	10	10	.6583	.8744	1.144
35	.5736	.7002	1.428	.81915	55	20	.6604	.8796	1.137
10	.5760	.7046	1.419	.81748	50	30	.6626	.8847	1.130
20	.5783	.7089	1.411	.81580	40	40	.6648	.8899	1.124
30	.5807	.7133	1.402	.81412	30	50	.6670	.8952	1.117
40	.5831	.7177	1.393	.81242	20	42	.6691	.9004	1.111
50	.5854	.7221	1.385	.81072	10	10	.6713	.9057	1.104
36	.5878	.7265	1.376	.80902	54	20	.6734	.9110	1.098
10	.5901	.7310	1.368	.80730	50	30	.6756	.9163	1.091
20	.5925	.7355	1.360	.80558	40	40	.6777	.9217	1.085
30	.5948	.7400	1.351	.80386	30	50	.6799	.9271	1.079
40	.5972	.7445	1.343	.80212	20	43	.6820	.9325	1.072
50	.5995	.7490	1.335	.80038	10	10	.6841	.9380	1.066
37	.6018	.7536	1.327	.79864	53	20	.6862	.9435	1.060
10	.6041	.7581	1.319	.79688	50	30	.6884	.9490	1.054
20	.6065	.7627	1.311	.79512	40	40	.6905	.9545	1.048
30	.6088	.7673	1.303	.79335	30	50	.6926	.9601	1.042
40	.6111	.7720	1.295	.79158	20	44	.6947	.9657	1.036
50	.6134	.7766	1.288	.78980	10	10	.6967	.9713	1.030
38	.6157	.7813	1.280	.78801	52	20	.6988	.9770	1.024
10	.6180	.7860	1.272	.78622	50	30	.7009	.9827	1.018
20	.6202	.7907	1.265	.78442	40	40	.7030	.9884	1.012
					30	50	.7050	.9942	1.006
							.7071	1.	1.
								.70711	45
									<i>or</i>
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.
									Sine.
									Angle.

TABLE IX.—CALCULATION OF EARTHWORK.

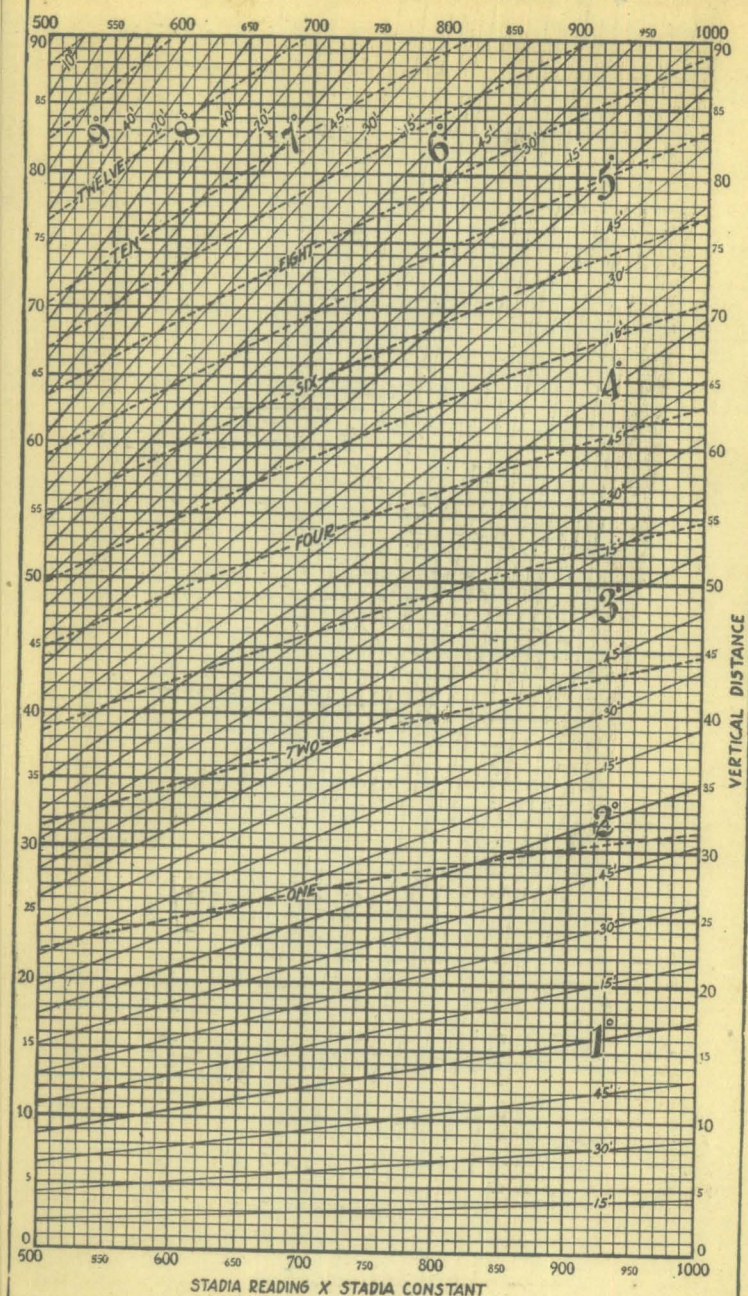
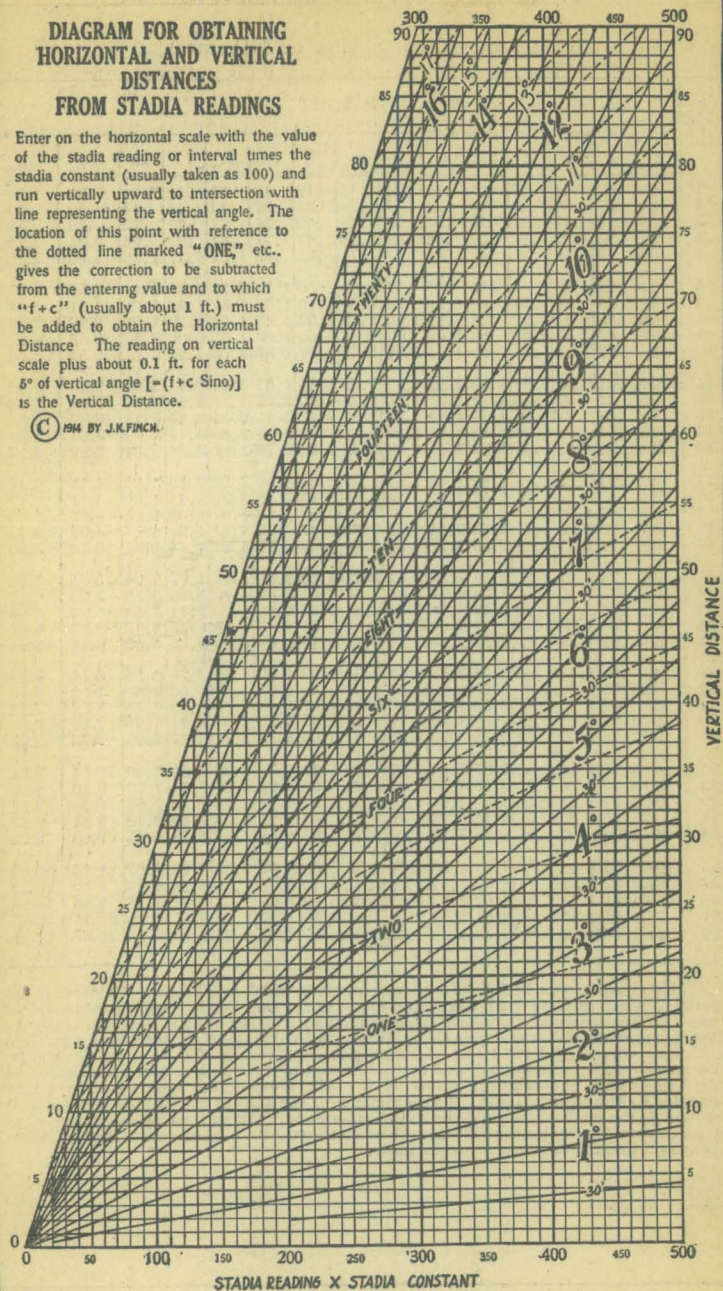
Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if $w = 16.2$ and $h = 5.3$, cu. yds. $= 1.48 + .023 + .089 = 1.597$ cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) $= h$, and $\frac{1}{2}$ the roadbed $= w$, add the triangles formed by taking the distance out to each break in turn ($= w$'s) by the difference between the cuts (or fills) on each side of it ($= h$'s) always subtracting the outer from the inner.

DIAGRAM FOR OBTAINING HORIZONTAL AND VERTICAL DISTANCES FROM STADIA READINGS

Enter on the horizontal scale with the value of the stadia reading or interval times the stadia constant (usually taken as 100) and run vertically upward to intersection with line representing the vertical angle. The location of this point with reference to the dotted line marked "ONE" etc., gives the correction to be subtracted from the entering value and to which "f+c" (usually about 1 ft.) must be added to obtain the Horizontal Distance. The reading on vertical scale plus about 0.1 ft. for each 5° of vertical angle $[(f+c \sin \alpha)]$ is the Vertical Distance.

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$$\begin{array}{r} 6.3 - 1.65 \\ 1.65 \\ \hline 18 \\ 1320 \\ 165 \end{array}$$

$$\begin{array}{r} 2970 \\ 6 \\ \hline 34.7 \\ 10.0 \\ \hline 39.7 \end{array}$$

$$\begin{array}{r} 297 \\ 10.0 \\ \hline 39.7 \end{array}$$

46

$$4 \overline{) 27}$$

$$6.3 \overline{) 54}$$

12

$$\begin{array}{r} 3.8 \\ 6 \\ \hline 22.8 \\ 12 \\ \hline 108 \end{array}$$

$$1.9 \overline{) 6.75} \quad 3.5$$

~~5.9~~

~~3.9~~

$$\begin{array}{r} 1.800 \\ 977 \end{array}$$

$$6.75 \overline{) 19.0}$$

$$\begin{array}{r} 1.9 \overline{) 6.75} \quad 3.5 \\ 576 \\ \hline 105 \\ 95 \end{array}$$

$$\begin{array}{r} 800 \overline{) 2.80} \quad 6 \\ 4800 \\ \hline 480 \end{array}$$

$$5.4$$

27

$$\left[\leftarrow 4-6' \rightarrow \right]$$

12.1

$$\begin{array}{r} 4.5 \\ 7 \end{array}$$

3.54

6 mi

$$31.5 \overline{) 540} \quad 1.71$$

315

$$\begin{array}{r} 2250 \\ 2205 \end{array}$$

450

5

20

27

1.80

.27

$$\begin{array}{r} 10 \\ 15 \\ 09 \\ 1.25 \\ \hline 135 \\ 1162 \\ 216 \\ \hline 3.78 \end{array}$$

36

180

$$\begin{array}{r} 2116 \end{array}$$

BB Canall Nov Found - 24th Apr

24.50
9.6

9.6⁰⁰

40 hrs @ .50¢

20.00

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9+(20-16)÷2 or 2 ft. added to 41.9 =43.9. For slopes of 1 on 1 see inside of front cover.