FIELD BOOK

740

B. K. ELLIOTT COMPANY

PLEASE RETURN TO
GEAUGA COUNTY ENGINEER
COURT HOUSE
CHARDON, O.
PHONE 250-X

# TABLE FOR REDUCING PERCHES TO FEET AND INCHES.

| PERCH | FEET. | PERCH. | FEET. | PERCH. | FEET. | PERCH. | FEET. | PERCH. | FEET. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 16.6 in. | 21 | 3.46 6 in. | 41 | 6.76.6 in. | 61 | 10.06.6 in. | 81 | 13.26.6 in. |
| 2 | 33.0 | 22 | 3 63.0 | 42 | 6.93.0 | 62 | 10.23.0 | 82 | 13.43.0 |
| 3 | 49.6 | 23 | 3.79.6 | 43 | 7.09 6 | 63 | 10.39.6 | 83 | 13.59.6 |
| 4 | 66.0 | 24 | 3.96.0 | 44 | 7 26.0 | 64 | 10.56.0 | 84 | 14.16.0 |
| 5 | 82.6 | 25 | 4 12.6 | 45 | 7 42.6 | 65 | 10.72.6 | 85 | 14.32.6 |
| 6 | 99.0 | 26 | 4.29.0 | 46 | 7.59.0 | 66 | 10.89.0 | 86 | 14.49.0 |
| 7 | 1.15.6 | 27 | 4.45.6 | 47 | 7.75.6 | 67 | 11.05.6 | 87 | 15.05.6 |
| 8 | 1.32.0 | 28 | 4.62.0 | 48 | 7.92.0 | 68 | 11.22.0 | 88 | 15.22.0 |
| 9 | 1.48.6 | 29 | 4.78.6 | 49 | 8.08.6 | 69 | 11.38.6 | 89 | 15.38.6 |
| 10 | 1.65.0 | 30 | 4.95.0 | 50 | 8.25.0 | 70 | 11.55.0 | 90 | 15.55.0 |
| 11 | 1.81.6 | 31 | 5 11.6 | 51 | 8.41.6 | 71 | 11.71.6 | 91 | 15.71.6 |
| 12 | 1.98 0 | 32 | 5.28 0 | 52 | 8.58.0 | 72 | 11.88.0 | 92 | 15.88.0 |
| 13 | 2.14.6 | 33 | 5.44.6 | 53 | 8.74.6 | 73 | 12.04 6 | 93 | 16.04 6 |
| 14 | 2.31.0 | 34 | 5.61.0 | 54 | 8.91.0 | 74 | 12.21.0 | 94 | 16.21.0 |
| 15 | 2.47.6 | 35 | 5.77.6 | 55 | 9.07 6 | 75 | 12.37.6 | 95 | 16.37.6 |
| 16 | 2.64.0 | 36 | 5.94.0 | 56 | 9.24.0 | 76 | 12.54.0 | 96 | 16.54.0 |
| 17 | 2.80.6 | 37 | 6.10.6 | 57 | 9.40.6 | 77 | 12.70.6 | 97 | 16.70.6 |
| 18 | 2.97.0 | 38 | 6.27 0 | 58 | 9.57.0 | 78 | 12.87.0 | 98 | 16.87.0 |
| 19 | 3.13.6 | 39 | 6.43.6 | 59 | 9.73.6 | 79 | 13.03.6 | 99 | 16.33.6 |
| 20 | 3.30.0 | 40 | 6.60.0 | 60 | 9.90.0 | 80 | 13.20.0 | 100 | 16.50 0 |

B. K. ELLIOTT COMPANY, PITTSBURG, PA.
DRAWING MATERIALS AND SURVEYING INSTRUMENTS

(8-61) X-sec #87 to Dines Pg. 56
Caves Road Russell Twp
Section A #157
(Haven) T.

Parkin Sec B. #144

X Sec Chag. River ± 500' E of Pg 50

Cedar Rd Sec A & B.
Topo Pg. 55

Cedar Rd. X section cont.
From F.B. 139 Pg. 66-74

1961 Caves - Topo Dines to Fairmount
Topo 87 to Dines Pg 45-49
52-54

137

T.H. #157 Page

CAVE ROAD, Russell Twp. 1 – 23

PERKIN T.H. 144

~~Dines Corners~~ Road

Russell (Sec. A) 24-

20+19.28 P.O.T.

19+48.3 12" Corr. Iron Pipe

15+61 12" Vit. Pipe.

15+00

11+00 Spike, P.O.T.

9+39.6 P.O.T.

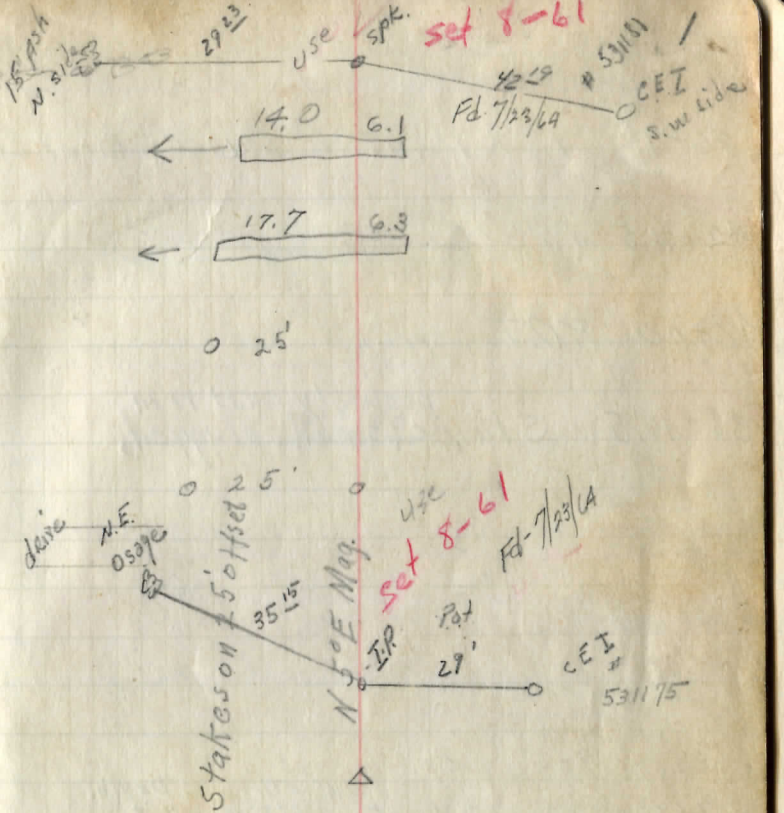
7+86.45 P.O.T. Hub.

5+78

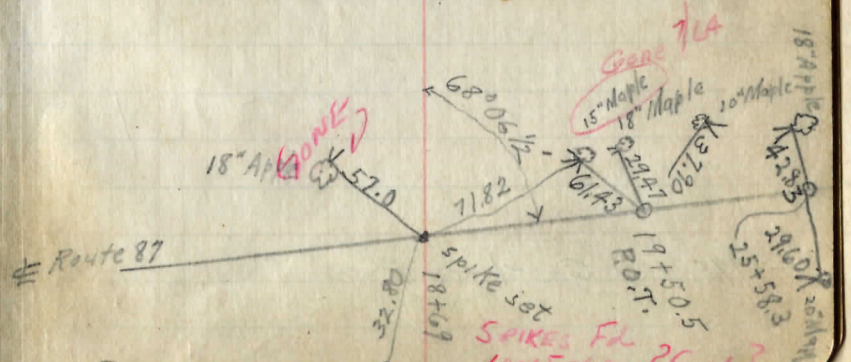
See Pg 111 for 1964 Refs

May 4, 1935, Cloudy, 50°
W.C. Marks, Chas. Rand, F. Bohland

All
0+00, ℄ of Care Rd.
Located at Sta. 18+69, ℄ State Route #87




10" Vitrified Pipe Culvert ← 10' 10" Stone Sluice Vit. Pipe



46+91 1' x 1' Stone Sluice, Broken.

42+96.5

40+00 P.O.T., spike

38+96.5 Sluice, small, plugged, probably cast iron

34+97.99 Pot

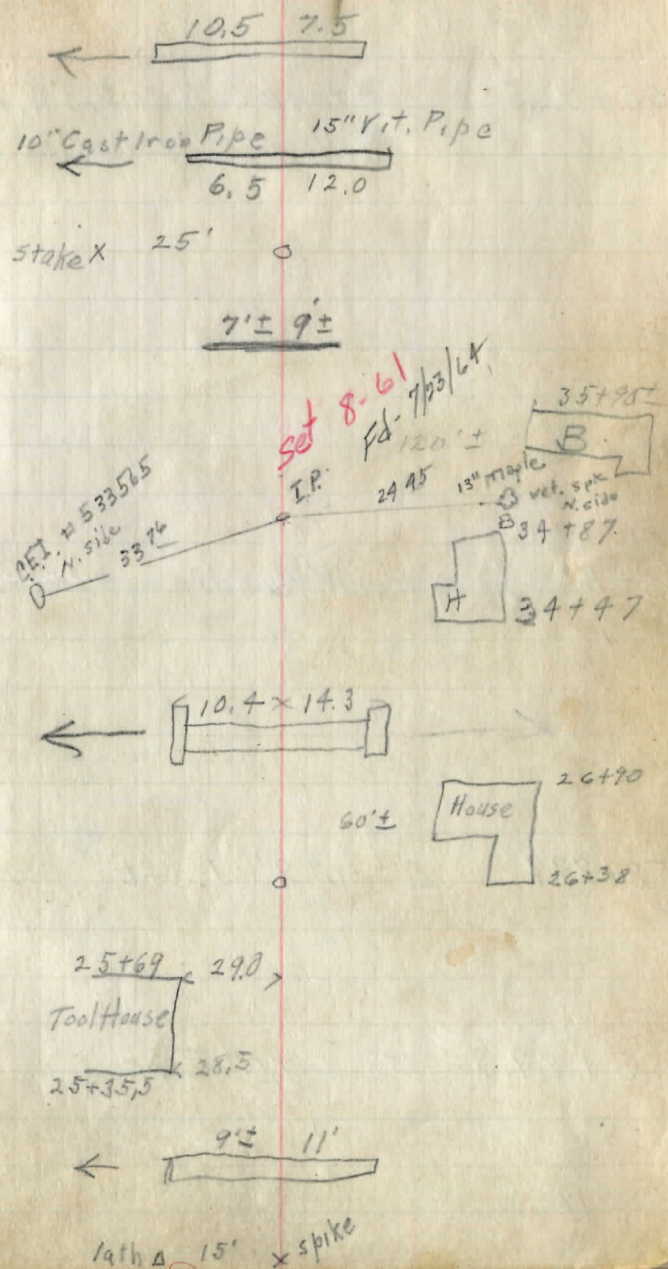
32+14.3 Stone Culvert, W. 2.5'± x Depth 2½'±
Concrete Cover, Forms Left in place
Side Walls, good

26+00 P.O.T. Spike

24+99.5 12" Cast Iron Pipe

21+00 P.O.T. Spike

From Sta. 15 Forward.
30" Wedge stakes at 25' Offset at Stations that are multiples of 5
15" " " " other Stations.



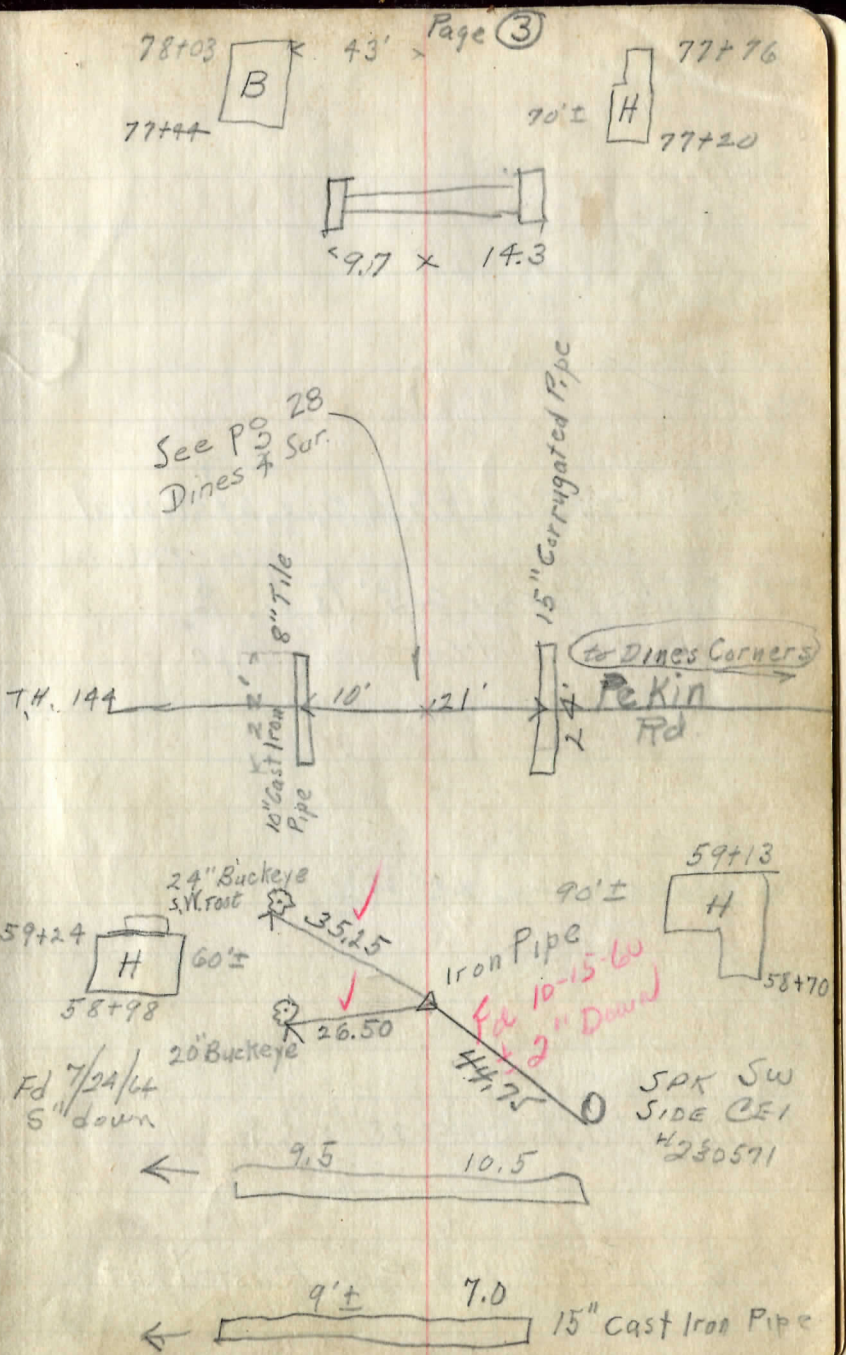
65+92.5 Stone Culvert, 3' W. X 2± D.
Walls good, 1 coverstone broken

63+16± ℄ of E. + W. Road.

58+79.1 Δ = 0° 8' Left

55+89.5 15" Corr. I. Pipe

52+98



99+99

97+00

92+53 16" Cast Iron Pipe, Sectional

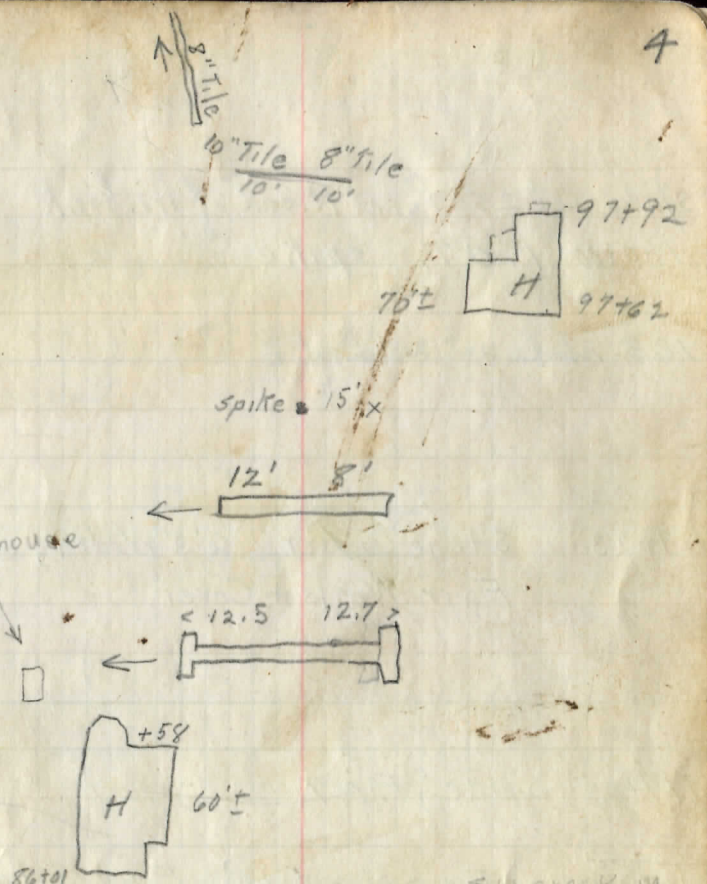
91 Stake found 25' ℔ L. ℄

89+43.0 24" Solid Cast Iron Pipe

85 stake found 25' ℔ L.

83+00 P. O. T. Stake 25' ℔ R ℄

79+76 12" Corr. Iron Pipe, Rusted out



stake set 25' R. at N. end of hi. bank

130+00 P.O.T. spike

125 - stake set 25' L. of ℄

127+23 Stone Culvert 2'3" Width, 3' Height
Fair Walls + Cover

119+00 Spike, P.O.T.

117+00 Requires 15" Pipe Culvert

115 - stake set 25' R ℄

110 - stake set 25 R ℄

107+21.9, Iron Pipe ℄ N. Woodland Rd. Sta. 55+40
Δ = 0°00'

105+24 14" Solid Cast Iron Pipe



Field B. - 139
pg 1, Meeks Survey
7.
130+24.65

Fd 8-16-61
Pipe up

6" Sycamore Tree
S.W.D.

89.16

stake x 25' spike

129+96

55'±

spike

129+37

30" post
S. Tree

< 12.0 × 13.5 >

123+35

50'±

122+97

15" X

spike

Fd 10-15-60
But not dug up

spike

12" Apple Trees

74.8

77.2

CEI O 49.97

CH. #16

Fairmount

I.P.

TEL P.

CEI O 41.36

90°26'

39.65

TEL P.

Fd 7/27/64
4" dn.

15.4

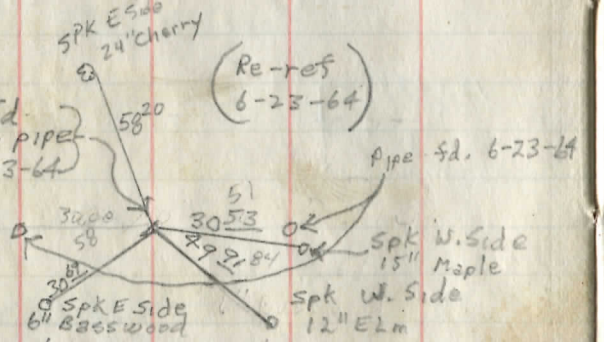
9.0

Hub
022.5

I.P.

76+37.3

Cedar Rd




2½' Wide 2½' Deep

Stone Walls ~~fair~~ Conc. Slab & HW. good

140 Stake 25' L.& - N side drive & W. -

" " " " near Tel. pole

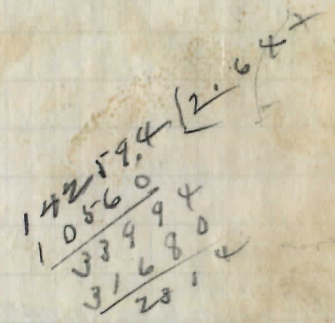
Bridge, Stone Walls, good.

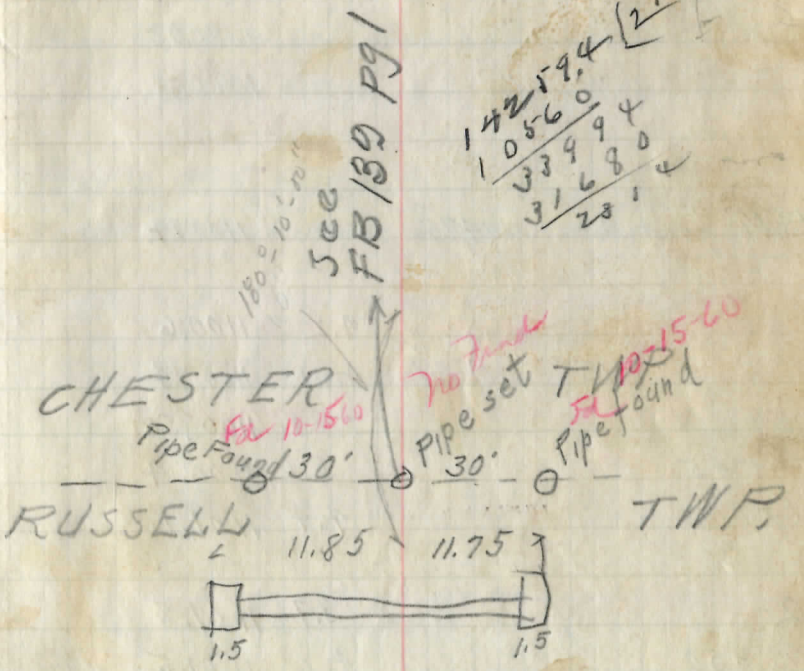
Concrete deck, fair.

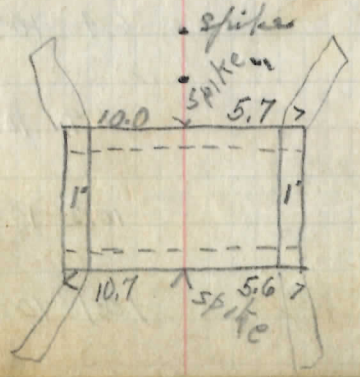
Span, Top, 16', Batter 1/2

Stake 25' L.& 15 ± S, of culv.

□ mon. box




135+25.5

135+06.1

| | | | | | |
|---|---|---|---|---|---|
| B.M. on N. Woodland | | | | 1074.76 | |
| " " " " " | | | | 1058.30 | |
| | | | | 1100.74 | sperry, 2/15 |
| " " " Route 87 | | | | 1100.70 | |
| " " | | | | 1080.05 | |
| " " | | | | 1095.58 | |
| B.M | 4.01 | 1104.75 | | 1100.74 | |
| 0+00 | | | 4.2 | 1100.6 | |
| | 4.75 | 1105.49 | 4.01 | 1100.74 | |
| 0+00 | | | 4.93 | 1100.56 | |
| 0+45 | | | 5.1 | 1100.4 | |
| 1+00 | | | 4.4 | 1101.1 | |
| 2 | | | 3.7 | 1101.8 | |
| +50 | | | 4.0 | 1101.5 | |
| 3 | | | 6.4 | 1099.1 | |
| 4 | | | 9.4 | 1096.1 | |
| 5 | | | 10.2 | 1095.3 | |
| +78 | | | 10.1 | 1095.4 | |

Spike, S. side, 24" Hickory, 26'L. of 64+53
W. root, 30' Ash, 45'R 40+10

34 Spike in S.E. Root, 15" Maple, L., 19+40, School Lot. Hanna, May 29, 1923
X on N.E. Cor., Left Headwall, 8+28 (1923
Spike, W. Root 24" Maple, 25'R., Sta. 0-5, ℄ Rd. to Chag. Falls.

May 10, 1935, Fair, 60°. W.C. Marks, Clair Bliss, Chas. Rand
Spike, S.E. Root, Maple, L, 19+40, N. Kinsman, (R. 87.)

| 1097.9 | 1099.5 | 1100.7 | 1100.6 | 1100.1 | 1098.0 | 1096.3 |
|---|---|---|---|---|---|---|
| 6.9 | 5.3 | 4.1 | 4.2 | 4.7 | 6.8 | 8.5 |
| 16+00 | 17+00 | 18+00 | 18+69 | 19+00 | 20+00 | 21+00 |

Stations on R. 87

1.9/25 2.8/17.5 5.3/12.5 5.0/10 4.4/0 5.4/10 4.1/13.5 3.7/25

2.1/25 2.7/16 4.8/11.8 4.3/9 3.7/0 4.4/9 4.8/10 4.1/12 3.7/18 4.1/25

4.0/25 3.9/15.5 7.3/11-9.5 6.7/8 6.4/0 7.0/8 8.0/10.4 4.3/16 3.4/25

9.2/25 9.7/13 10.4/11.5 10.2/9.5 9.4/0 10.0/8 9.4/17 9.0/25

11.1/25-12.5 11.4/11 10.8/8 10.2/0 10.7/8 10.6/20 10.4/25

1088.7 16.8/100 | 1092.0 13.5/25 | 1092.9 13.1/10 F.L. | 1095.4 10.1/0 | 1093.4 12.1/F.L. 10 | 1094.7 10.8/30

| | | | | |
|---|---|---|---|---|
| | | 1105.49 | | |
| 6 | | | 10.2 | 1095.3 |
| | 4.16 | 1099.07 | 10.58 | 1094.91 |
| 7 | | | | |
| 7 | | | 3.6 | 1095.5 |
| +80 | | | 1.8 | 1097.3 |
| 8 | | | 2.2 | 1096.1 |
| 9 | | | 5.1 | 1094.0 |
| 10 | | | 6.2 | 1092.9 |
| 11 | | | 7.7 | 1091.4 |
| 12 | | | 11.7 | 1087.4 |
| | 1.00 | 1087.08 | 12.99 | 1086.08 |
| 13 | | | 6.4 | 1080.7 |
| 14 | | | 11.2 | 1075.9 |
| | 3.95 | 1080.13 | 10.90 | 1076.18 |
| 15 | | | 5.8 | 1074.3 |
| 15+61 | | | 6.6 | 1073.5 |
| 16 | | | 6.7 | 1073.4 |

12.3/25 11.3/13 11.5/11 10.8/9 10.2/0 10.4/7 11.3/11 11.0/25

2.8/25 3.2/16.5 4.8/12 4.2/10 3.6/0 3.8/5 3.2/15 2.0/25

1.3/25 1.2/19.5 2.5/13.5 3.2/12 2.2/0 2.7/6 1.6/11 0.0/25

5.0/25 4.5/20 5.0/12 5.6/11 5.0/7 5.1/0 5.6/7 4.9/9 4.3/25

7.0/25 6.6/12 6.9/11 6.3/6 6.2/0 7.0/7 7.3/8 6.2/9 5.2/25

7.4/25-13 8.7/11 8.0/6 7.7/0 8.4/7 9.4/8 5.8/14 5.3/25

9.5/25 9.2/14 12.6/10 12.0/8 11.7/0 12.3/9 12.8/12 7.4/23 6.7/25

3.3/25 3.6/17 7.5/12 6.7/10 6.4/0 7.5/8 0.6/20 0.0/25

9.7/25 10.3/18 11.7/13 10.9/5 11.2/0 11.7/6 7.8/16 7.0/25

7.0/25 6.4/15 5.4/4 5.8/0 6.3/5 6.4/25

1068.1 1070.0 1070.2 1073.5 1071.2 1072.6
12.0/60 10.1/25 9.9/17.7 F.L. 6.6/0 8.9/6.3 F.L. 7.5/30

8.3/25 7.5/15 6.5/4 6.7/0 7.8/6 7.1/25

| | | | | |
|---|---|---|---|---|
| | | 1080.13 | | |
| 17 | | | 6.3 | 1073.8 |
| 18 | | | 3.8 | 1076.3 |
| 19 | | | 5.1 | 1075.0 |
| +48.3 | | | 4.9 | 1075.2 |
| 20 | | | 5.0 | 1075.1 |
| 21 | | | 4.8 | 1075.3 |
| | 1.98 | 1073.51 | 8.60 | 1071.53 |
| 22 | | | 2.6 | 1070.9 |
| 23 | | | 6.5 | 1067.0 |
| 24 | | | 8.8 | 1064.7 |
| +97.5 | | | 9.7 | 1063.8 |
| 25 | | | 9.6 | 1063.9 |
| 26 | | | 9.8 | 1063.7 |
| +20 | | | 9.6 | 1063.9 |

4.6/25 4.9/19 7.3/15 6.6/12 6.0/5 | 6.3/0 6.9/6 5.1/10 2.5/25

2.9/25 3.0/18 4.7/15 4.1/13 3.3/4 | 3.8/0 4.8/6 2.6/10 1.2/18 0.8/25

5.3/25 5.7/15 5.2/11 4.7/6 | 5.1/0 5.7/7 4.8/9 3.8/25

1070.4 9.7/75 | 1073.2 6.8/14.0 FL

1075.2 4.9/0 | 1073.5 6.6/6.1 EL | 1075.8 4.3/30

6.6/25 5.4/14 5.6/12 5.0/4 | 5.0/0 5.3/5 5.9/8 5.1/10 4.2/25

4.3/25 4.5/15 5.9/12 5.4/10 4.8/3 | 4.8/0 5.4/6 6.1/9 4.7/11 2.9/21 2.3/25

0.4/25 1.2/15 3.5/11 3.2/8 | 2.6/0 3.1/6 4.0/9 1.1/13 0.0/25

3.4/25 3.8/17 7.3/10 6.9/6 | 6.5/0 7.1/8 7.3/10 5.9/15 4.6/25

8.7/25 -15 9.5/11 9.2/7 | 8.8/0 9.4/6 10 8.8/25

1059.1 14.4/50 | 1060.5 13.0/12 9 Blocked | 1063.8 9.7 | 1060.9 12.6/11 FL | 1062.9 10.6/25

12.5/25 11.7/11 10.2/7 | 9.6/0 10.0/5 11.8/13 10.9/15 10.6/25

9.8/25 10.0/9 | 9.8/0 10.0/12 9.5/25

| | | | | |
|---|---|---|---|---|
| | | 1073.51 | 12.21 | 1061.30 |
| | 1.78 | 1063.08 | | |
| 27 | | | 4.5 | 1058.6 |
| 28 | | | 9.5 | 1053.6 |
| B.M. set, | 1.19 | 1052.54 | 11.73 | 1051.35 |
| 29 | | | 2.7 | 1049.8 |
| 30 | | | 4.7 | 1047.8 |
| 31 | | | 6.0 | 1046.5 |
| 32 | | | 6.0 | 1046.5 |
| +14.3 | | | 5.5 | 1047.0 |
| 33 | | | 3.4 | 1049.1 |
| | 8.47 | 1059.91 | 1.10 | 1051.44 |
| 34 | | | 5.7 | 1054.2 |
| +60 | | | 2.0 | 1057.9 |
| 35 | | | 1.8 | 1058.1 |
| 36 | | | 2.2 | 1057.7 |

1.2/25 2.2/11 5.0/7 — 4.5/0 4.8/8 5.0/12 1.3/17 0.6/25

7.2/25 8.1/10 9.9/7 — 9.5/0 9.4/4 10.1/13 7.7/19 6.7/25

2' above ground.
Spike in E. side, W. cherry, 30'L, Sta. 29+97

2.2/25 2.0/10 3.0/7 — 2.7/0 2.7/10 3.4/12 0.5/22 0.2/25

3.8/25 4.5/11 5.6/8 5.1/5 — 4.7/0 5.0/10 5.9/13 2.9/25

7.8/25 7.6/15 — 6.0/0 6.5/17 6.8/25

8.6/25 7.7/10 6.1/5 — 6.0/0 6.2/10 8.2/15 7.7/25

1042.7 1043.1 1045.2 1048.5
9.8 / 9.4 - 7.3 - 4.0 / 100 / 10.4

1047.0 1048.3 1045.7 1043.1 1044.0
5.5 / 4.2 - 6.8 - 9.4 / 8.5
0 / 14.3 / 30

4.1/25 3.7/10 — 3.4/0 3.7/10 3.2/25

2.0/30 1.5/17 6.2/11 — 5.7/0 6.0/9 2.8/13 1.5/30

3.1/25 2.3/13 2.7/11 — 1.8/0 2.7/9 1.4/12 0.1/25

3.0/25 28/13 3.2/12 3.5/11 2.7/9 — 1.2/0 3.0/9 2.2/12 2.1/25

| | | | | |
|---|---|---|---|---|
| | | 1059.91 | 4.23 | 1055.68 |
| | 4.09 | 1059.77 | | |
| 37 | | | 3.1 | 1056.7 |
| 38 | | | 5.6 | 1054.2 |
| 38+96.5 | | | 6.1 | 1053.7 |
| 39 | | | 6.1 | 1053.7 |
| 40 | | | 5.9 | 1053.9 |
| +60 | | | 5.0 | 1054.8 |
| 41 | | | 6.0 | 1053.8 |
| 42 | | | 8.7 | 1051.1 |
| 42+96.5 | | | 9.1 | 1050.7 |
| 43 | | | 9.2 | 1050.6 |
| 44 | | | 8.0 | 1051.8 |
| +50 | | | 6.8 | 1053.0 |
| 45 | | | 8.8 | 1051.0 |

2.0/25 1.7/17 4.2/12 3.8/8 — 3.1/0 4.4/9 3.3/12 2.1/25

3.4/25 4.1/15 6.2/10 6.0/8 — 5.6/0 6.1/8 5.5/25

1049.3 / 10.5 / 60 — 1051.8 / 8.0 / 10 — 1053.7 / 6.1 / 0 — 1051.6 / 8.2 / 10 — 1053.6 / 6.2 / 25

8.1/25 7.9/11 6.6/7 — 6.1/0 6.2/9 7.5/13 6.2/25

7.1/25 6.9/8 — 5.9/0 6.4/9 5.8/11 5.0/25

5.4/25 5.3/15 7.3/9 6.8/7 — 6.0/0 6.8/6 7.1/11 6.4/12 5.2/25

8.6/25 8.7/15 9.8/9 9.5/6 — 8.7/0 9.3/10 8.7/12 8.3/25

1046.2 / 13.6 / 100 — 1048.2 / 11.6 / 15 — 1047.8 / 12.0 / 6.5 F.L. — 1050.7 / 9.1 / 0 — 1048.2 / 11.6 / 12.0 F.L. — 1049.4 / 10.4 / 25

10.7/25 10.2/12 10.8/10 9.6/6 — 9.2/0 9.8/11 11.1/13 10.2/15 10.2/25

6.0/25 6.7/15 8.2/10 — 8.0/0 8.3/9 8.7/10 8.2/12 7.7/25

4.2/25 4.9/13 7.7/8 — 6.8/0 7.6/11 6.7/13 6.2/25

5.5/25-16 9.5/9 9.2/5 — 8.8/0 9.2/8 9.9/12 8.9/13 7.8/25

| | | | | |
|---|---|---|---|---|
| | | 1059.77 ✓ | | |
| | 4.65 | 1052.80 ✓ | 11.62 | 1048.15 ✓ |
| 46 | | | 6.2 | 1046.6 |
| +91 | | | 6.7 | 1046.1 |
| 47 | | | 6.9 | 1045.9 |
| 48 | | | 6.3 | 1046.5 |
| +80 | | | 2.9 | 1049.9 |
| 49 | | | 3.2 | 1049.6 |
| 50 | | | 5.8 | 1047.0 |
| 51 | | | 8.0 | 1044.8 |
| | 6.40 | 1050.43 ✓ | 8.77 | 1044.03 ✓ |
| 52 | | | 7.7 | 1042.7 |
| +98 | | | 8.3 | 1042.1 |
| 53 | | | 8.3 | 1042.1 |
| 54 | | | 6.5 | 1043.9 |
| +60 | | | 3.2 | 1047.2 |
| 55 | | | 3.9 | 1046.5 |

4.5/25 5.1/15 6.9/9 6.5/4

6.2/0 6.7/8 6.3/25

1041.4 11.4/200 1043.3 9.5/80 1043.5 9.3/30 1043.4 9.4/11

1046.1 6.7 1043.6 9.2/8 1044.5 8.3/30 1045.2 7.6/75

8.4/25 7.9/15 7.2/8

6.9/0 7.2/7 8.3/10 7.6/14 7.5/25

4.6/25 5.5/12 6.9/10

6.3/0 6.8/7 5.6/10 4.2/25

1.6/25 2.5/12 4.0/10

3.2/0 3.9/7 2.7/10 1.9/25

3.4/25 4.3/15 6.4/11

5.8/0 6.3/6 5.5/10 5.3/25

7.1/25 7.7/12 8.9/10

8.0/0 8.2/4 8.5/5 8.6/9 7.2/12 5.8/25

6.7/25 7.2/12 8.3/9

7.7/0 8.3/7 7.1/13 6.5/25

1038.1 12.3/100 1039.8 10.6/9

1042.1 8.3/0 1040.0 10.4/7 1041.9 8.5/25

10.1/25

8.3/0 8.5/25

4.3/25 4.6/14 7.0/9

6.5/0 7.1/7 5.7/9 3.3/25

2.2/25 2.6/12 3.7/10

3.2/0 3.9/8 1.2/10 0.3/25

3.2/25 3.5/11 4.7/10

3.9/0 4.6/8 3.3/10 1.6/25

| | | | | |
|---|---|---|---|---|
| | | 1050.43 | | |
| 55+89.5 | | | 5.2 | 1045.2 |
| 56 | | " | 5.2 | 1045.2 |
| 57 | | | 4.1 | 1046.3 |
| | 2.23 | 1055.49 | 2.17 | 1048.26 |
| B.M. set | | | 2.03 | 1053.46 |

| | | | | |
|---|---|---|---|---|
| B.M | 0.61 | 1054.07 | | 1053.46 |
| 58 | | | 3.7 | 1050.4 |
| +50 | | | 1.9 | 1052.2 |
| 59 | | | 2.3 | 1051.8 |
| 60 | | | 7.4 | 1046.7 |
| 61 | | | 14.0 | 1040.1 |
| | 0.72 | 1038.46 | 16.33 | 1037.74 |
| 62 | | | 4.0 | 1034.5 |
| 63 | | | 8.4 | 1030.1 |
| 63+16 | | | 9.2 | 1029.3 |
| | 0.93 | 1029.32 | 10.07 | 1028.39 |

1040.3 / 10.1 / 100 — 1042.3 / 8.1 / 9.5 F.L.

1045.2 / 5.2 / 0 — 1042.5 / 7.9 / 10.5 F.L. — 1044.9 / 5.5 / 30

7.8 / 25 — 6.1 / 11

5.2 / 0 — 5.5 / 7 — 6.7 / 11 — 6.3 / 25

2.5 / 25 — 3.6 / 15 — 4.9 / 11

4.1 / 0 — 4.8 / 9 — 3.3 / 12 — 1.5 / 25

R.P. spike, S.W. Root 24" Buckeye, 59+01, Left 20'

May 11, 1934, Fair, 55°, Marks, Bliss, Rand

1.2 / 25 — 3.3 / 15 — 4.7 / 13

3.7 / 0 — 4.7 / 8 — 1.8 / 12 — +0.3 / 25

1.2 / 25 — 1.7 / 13 — 3.5 / 12 — 2.7 / 9

2.3 / 0 — 2.8 / 7 — 3.6 / 16 — 1.2 / 13 — 0.4 / 25

3.4 / 25 — 4.5 / 15 — 8.0 / 10

7.4 / 0 — 8.2 / 9 — 6.2 / 12 — 5.0 / 17 — 4.6 / 25

9.1 / 25 — 10.4 / 15 — 15.9 / 9 — 14.4 / 4

14.0 / 0 — 14.6 / 9 — 15.2 / 12 — 12.9 / 15 — 11.1 / 25

+02 / 25 — 1.0 / 15 — 5.1 / 7 — 5.2 / 5 — 4.5 / 4

4.0 / 0 — 3.8 / 6 — 5.2 / 14 — 3.8 / 16 — 2.6 / 25

6.5 / 25 — 7.1 / 15 — 9.2 / 10 — 8.7 / 7 — 8.4 / 5

8.4 / 0 — 8.4 / 10 — 9.0 / 14 — 9.9 / 16 — 7.5 / 25

1035.5 / 3.0 / 200 — 1034.5 / 4.0 / 150 — 1033.3 / 5.1 / 100 — 1032.0 / 6.5 / 50

1029.3 / 9.2 / 0 — 1030.2 / 8.3 / 50 — 1030.8 / 7.7 / 100 — 1031.5 / 7.0 / 150 — 1032.5 / 6.0 / 200

| | | | | |
|---|---|---|---|---|
| | | 1029.32 ✓ | | |
| 64 | | | 2.8 | 1026.5 |
| 65 | | | 4.1 | 1025.2 |
| | +92.5 | | 4.3 | 1025.0 |
| 66 | | | 4.5 | 1024.8 |
| 67 | | | 4.8 | 1024.5 |
| 68 | | | 4.1 | 1025.2 |
| 69 | | | 2.5 | 1026.8 ✓ |
| | 15.50 | 1044.27 ✓ | 0.55 | 1028.77 |
| 70 | | | 15.2 | 1029.1 |
| 71 | | | 9.0 | 1035.3 |
| 72 | | | 5.1 | 1039.2 |
| 73 | | | 2.6 | 1041.7 ✓ |
| | 16.55 | 1060.68 ✓ | 0.14 | 1044.13 |
| 74 | | | 16.0 | 1044.7 |

1.4/25 2.5/11 3.3/8 2.6/6 ~~2.8~~

2.8/0 2.8/9 3.5/14 3.1/15 3.2/25

5.5/25 3.9/3 4.4/2

4.1/0 3.6/6 4.3/13 4.8/25

1020.3 1021.1 1022.3 1022.1 .6 1023 1024.3

9.0/200 8.2/100 7.0/30 7.2 3.7 3.0/9.7

1025.0 1026.3 1023.7 1022.1

4.3/0 3.0 5.6 7.2/14.3 6.7/30

1022.6

5.7/25 6.4/15 5.2/11 4.5/4

4.5/0 4.2/4 4.9/11 6.3/17 5.3/25

6.2/25 6.0/14 5.0/8 ~~5.4~~/4

4.8/0 4.4/4 5.5/25

4.9/25 4.4/7 4.6/3

4.1/0 3.8/3 4.4/9 5.0/25

3.1/25 3.4/8

2.5/0 2.5/4 2.9/15 +1.0 .5

15.7/25 15.3/12 15.9/9

15.2/0 15.2/9 15.9/11 10.4/25

5.0/30 4.6/15 9.8/8.5 9.3/5

9.0/0 9.7/6 10.9/10 2.7/24 2.6/30

5.7/25 5.3/15 4.4/9 5.7/7

5.1/0 5.2/9 5.6/11 4.0/14 3.6/25

2.5/25 10 3.2/6

2.6/0 3.3/10 0.5/18 0.0/20 +0.5/25

14.2/25 14.4/15 16.8/9

16.0/0 17.3/7 12.7/15 12.0/25

| | | | | |
|---|---|---|---|---|
| | | 1060.68 ✓ | | |
| 75 | | | 12.4 | 1048.3 |
| 76 | | " | 9.0 | 1051.7 |
| 77 | | | 3.5 | 1057.2 |
| 77+80 | | | 1.9 | 1058.8 |
| 78 | | | 3.1 | 1057.6 |
| 79 | | | 5.0 | 1055.7 |
| +76 | | | 5.4 | 1055.3 |
| | 11.19 | 1067.87 ✓ | 4.00 | 1056.68 ✓ |
| 80 | | " | 12.4 | 1055.5 |
| 81 | | | 10.7 | 1057.2 |
| 82 | | | 8.3 | 1059.6 |
| 83 | | | 4.8 | 1063.1 |
| B.M. set | | | 1.85 | 1066.02 ✓ |

13.1/25 12.6/11 13.2/9 — 12.4/0 12.7/10 12.1/25

4.9/30-25-16 9.5/15 — 9.0/0 9.8/9 6.5/15 6.5/25

2.3/25 1.8/15 4.2/8 — 3.5/0 4.1/6 1.2/11 1.3/25

1.6/42 1.6/16 — 1.9/0 1.9/6 0.6/10 0.2/25

1.7/43 2.5/19 — 3.1/0 3.0/5 0.8/11 0.1/25

5.2/25 5.5/17 4.6/13 5.0/5 — 5.4/0 4.6/7 3.2/9 2.5/25

1049.0 11.7/200 1051.7 9.0/40 1051.9 8.8/13 — 1055.3 5.4/9 1052.0 8.7/7 1055.2 5.5/30

13.8/25 12.9/11 — 12.4/0 12.6/4 12.6/25

9.7/25 10.2/18 11.9/12 — 10.7/0 11.6/10 10.1/25

6.5/25 8.2/12 9.6/10 — 8.3/0 9.5/7 8.7/12 7.0/25

3.7/25 5.0/12 6.0/11 — 4.8/0 5.5/8 6.1/10 4.6/14 3.2/25

R.P. Spike, N. side 8" Apple, 35' Right, 83+00

| | | | | |
|---|---|---|---|---|
| | | 1067.87 ✓ | | |
| 84 | | | 4.4 | 1063.5 |
| 85 | | " | 5.2 | 1062.7 |
| 86 | | | 5.9 | 1062.0 |
| 87 | | | 7.2 | 1060.7 |
| | 3.32 | 1061.17 ✓ | 10.02 | 1057.85 ✓ |
| 88 | | | 5.2 | 1056.0 |
| 89 | | | 7.2 | 1054.0 |
| +43 | | | 6.9 | 1054.3 |
| 90 | | | 5.4 | 1055.8 |
| | 7.84 | 1065.69 ✓ | 3.32 | 1057.85 ✓ |
| 91 | | | 6.4 | 1059.3 |
| 92 | | | 7.9 | 1057.8 |
| +53 | | | 7.7 | 1058.0 |
| 93 | | | 7.2 | 1058.5 |

5.0/25 5.8/12 4.8/8

4.4/0 4.8/8 5.2/11 3.7/13 2.4/25

5.8/25 6.0/13 6.2/11

5.2/0 5.7/10 4.4/13 3.6/25

4.7/25 5.6/14 6.5/12

5.9/0 6.8/9 2.8/18 2.4/25

6.3/25 6.7/15 7.9/12 7.8/8

7.2/0 8.2/8 8.6/10 4.3/19 2.8/30

4.8/25 5.5/16 6.4/13 6.0/9

5.2/0 5.7/7 6.4/9 2.1/17 0.7/25 0.1/30

9.0/25 7.7/8

7.2/0 7.5/9 8.2/25

1045.3 1048.1 1049.5 1048.4 1050.4 1053.0 1054.3 1053.4 1051.1 1049.1 1052.2

15.9/200 13.1/100 11.7/30 12.8-10.8 -8.2 = 12.5 6.9 7.8-10.1 -12.1 = 12.7 9.0/30

4.1/25 6.3/8

5.4/0 5.8/8 6.7/11 4.6/25

4.7/25 5.2/14 7.3/9

6.4/0 7.2/8 2.9/16 1.9/25

9.9/25 8.5/15

7.9/0 8.5/9 7.2/25

1054.0 1056.1 1055.4 1058.0 1055.2± 1058.1

11.7/100 9.6/30 10.3/12 FL. 7.7/0 10.5±/8 7.6/30

13 Tile from Field

8.5/25 7.8/8

7.2/0 7.9/8 7.6/25

| | | | | |
|---|---|---|---|---|
| | | 1065.69 ✓ | | |
| 94 | | | 5.6 | 1060.1 |
| 95 | | " | 2.5 | 1063.2 |
| | 871 | 1074.40 ✓ | 0.00 | 1065.69 ✓ |
| | | | 7.2 | 1067.2 |
| 96 | | | | |
| 97 | | | 4.1 | 1070.3 |
| 98 | | | 5.0 | 1069.4 |
| 99 | | | 5.6 | 1068.8 |
| 99+99 | | | 5.9 | 1068.5 |
| 100 | | | 5.9 | 1068.5 |
| 101 | | | 5.5 | 1068.9 |
| 102 | | ✓ | 4.2 | 1070.2 ✓ |
| | 4.80 | 1075.85 | 3.35 | 1071.05 |

3.9/25 4.8/12 6.1/8 5.6/0 6.0/9 5.2/11 4.8/25

0.6/25 1.0/14 3.2/8 2.5/0 3.0/7 1.9/11 1.0/25

Top of Stake, 25' right, 95+00

5.9/25 6.5/14 8.3/6 7.2/0 7.7/6 7.7/9 5.7/13 5.2/25

4.9/25 4.6/8 4.1/0 4.5/5 4.7/9 3.4/11 3.0/25

5.1/25 5.1/11 5.5/9 5.0/0 4.9/12 4.0/25

1058.2 16.2 1060.4 4.0 1063.8 10.6 1065.7 8.7 1066.2 8.2 1068.5 5.9 1066.5 7.9 1066.7 7.7

5.8/25 6.1/12-7 5.6/0 6.0/5 5.7/25

400 300 200 100 Ground, Valley to K.W.

12 Inlet to 8" Tile

10 F.L. 1 F.L. 10 13 Tile

5.8/30

6.9/25 6.6/9 5.9/0 6.5/10 6.0/25

6.1/25 6.0/8 5.5/0 6.0/6 5.4/9 4.4/25

3.9/25 4.2/11 4.9/10 4.0/4 4.2/0 4.8/7 2.9/10 2.0/25

| | | | | |
|---|---|---|---|---|
| | | 1075.85 | | |
| 102+55 | | | 4.0 | 1071.9 |
| 103 | | | 4.4 | 1071.5 |
| 104 | | | 7.1 | 1068.8 |
| B.M. Set | | | 5.66 | 1070.19 |
| 105 | | | 8.1 | 1067.8 |
| +24 | | | 8.3 | 1067.6 |
| 106 | | | 7.7 | 1068.2 |
| 107 | | | 6.0 | 1069.9 |
| 107+21.9 | | | 5.11 | 1070.74 |
| 107+21.9 | | | 5.1 | 1070.8 |
| 108 | | | 3.5 | 1072.4 |
| 109 | | | 4.3 | 1071.6 |
| | 5.00 | 1074.85 | 6.00 | 1069.85 |
| | | | 0.44 | 1074.41 |

4.4/25 4.2/12 4.7/11 4.0/0 4.6/7 2.9/9 2.2/25

4.6/25 4.7/12 5.1/11 4.3/6 4.4/0 5.0/6 3.4/10 2.9/25

5.9/25 6.7/13 7.7/10 7.1/0 7.8/7 5.9/10 5.1/25

Spike E. root, 12" Maple 30'± L. Sta 104+50±

9.1/25 8.4/10 8.1/0 9.2/11 9.0/25

1063.0 12.9/140 1064.2 11.7/110 1064.9 11.0/30 1064.4 11.5/15.4 F.L. 1067.6 8.3/0 1064.6 11.3/9.0 F.L. 1066.3 9.6/25

8.6/25 8.1/14 8.3/9 7.7/0 8.2/5 8.0/25

6.2/25 6.7/16 6.0/0 7.0/10 5.6/14 5.0/25

Iron Pipe, ±N. Woodland

1069.6 6.3/300 1070.2 5.7/250 1070.3 5.6/200 1070.4 5.3/150 1070.4 5.5/100 1070.7 5.15/50 1070.8 5.1/0 1070.9 5.0/50 1070.9 5.0/100 1070.9 5.1/150 1070.8 5.7/200 1070.2 6.3/250 1069.6 6.6/300 1069.3

3.2/25 3.4/12 4.0/9 3.5/0 4.3/9 3.6/10 3.0/25

4.7/25 4.4/13 5.0/9 4.3/0 4.6/6 5.4/9 4.1/10 3.7/25

Spike, S. side, 24" Hickory, N. Woodland, 64+53, 1074.76

May 13, 1935, Cloudy, Showers, 60°

W.C. Marks
Chas. Rand
Glen Wilder

Iron Pipe & Care Rd. + N. Woodland

| | | | | |
|---|---|---|---|---|
| | 2.87 | 1073.61 | | 1070.74 |
| 110 | | | 3.6 | 1070.0 |
| 111 | | | 4.6 | 1069.0 |
| 112 | | | 5.0 | 1068.6 |
| 113 | | | 6.3 | 1067.3 |
| 114 | | | 9.1 | 1064.5 |
| 115 | | | 10.8 | 1062.8 |
| | 3.56 | 1067.09 | 10.08 | 1063.53 |
| 116 | | | 5.1 | 1062.0 |
| +50 | | | 5.4 | 1061.7 |
| 117 | | | 5.6 | 1061.5 |
| 118 | | | 4.7 | 1062.4 |
| 119 | | | 3.3 | 1063.8 |

4.0/25 4.3/9 3.6/0 4.4/8 3.4/10 2.6/25

5.7/25 5.3/8 4.6/0 5.5/11 5.1/25

5.4/25 5.8/10 5.0/0 5.1/5 6.6/10 6.0/11 5.8/25

5.7/25 6.2/12 7.4/10 6.3 6.7/7 7.5/10 6.4/13 5.9/25

7.9/25 8.5/14 9.6/9 9.1/0 10.0/9 8.2/11 7.4/25

10.9/25 11.3/11 10.8/0 11.1/10 11.1/25

Top of Stake, 25' R 115+00

6.1/25 5.9/12 5.1/0 5.4/5 6.3/25

1060.9 6.2/30 1061.7 5.4/0 1061.4 5.7/6 1060.5 6.6/30 1060.0 7.1/100 1059.7 7.4/200 1058.4 8.7/300 1057.0 9.5/400 1056.2 9.9/500

outlet same for Sta. 117+00

6.0/25 6.0/9 5.6/0 5.8/8 6.4/25

4.3/25 4.5/16 5.2/12 4.7/0 5.5/7 4.7/9 4.2/25

3.1/25 3.9/13 2.9/5 3.3/0 4.0/5 3.5/8 3.3/25

| | | | | |
|---|---|---|---|---|
| | | 1067.09 | | |
| 120 | | | 4.5 | 1062.6 |
| 121 | | | 5.6 | 1061.5 |
| 122 | | | 7.5 | 1059.6 |
| 123 | | | 10.8 | 1056.3 |
| | 0.72 | 1056.19 | 11.62 | 1055.47 |
| 124 | | | 5.0 | 1051.2 |
| 125 | | | 9.2 | 1047.0 |
| 126 | | | 11.4 | 1044.8 |
| 127 | | | 13.2 | 1043.0 |
| 127+23 | | | 13.4 | 1042.8 |
| 128 | | | 11.9 | 1044.3 |
| 129 | | | 7.3 | 1048.9 |
| | 5.70 | 1060.10 | 1.79 | 1054.40 |
| 130 | | | 4.1 | 1056.0 |

4.3/25 5.0/13 4.2/5 4.5/0 5.3/6 4.6/9 3.9/25

6.0/25 6.0/17 6.4/13 5.6/5-0 6.6/6 5.3/10 4.1/25

7.5/25 7.2/14 8.0/12 7.5/5.0 0 8.3/6 6.3/10 5.4/25

8.5/25 8.6/15 11.1/11 10.8/5-0 12.3/4 8.8/4 7.9/25

2.2/25 3.0/17 4.8/11 5.7/7 5.0/5-0 5.7/3 6.8/6 3.5/12 2.7/25

8.2/25 8.1/15 10.3/11 9.7/8 9.1/3 9.2/0 9.7/7 8.6/12 8.2/25

11.2/28 12.0/11 11.4/0 12.2/8 12.0/25

15.5/25 13.6/9 14.7/7 13.7/5 13.2/0 13.6/6 14.8/25

1037.2 1037.2 1040.6 1041.8 1042.8 1043.4 1040.6 1037.2
19.0 19.0 15.6 14.4 13.4 12.8 15.6 19.0
100 12.0 13.5

14.6/25 14.1/15 12.5/5 11.9/0 12.2/8 13.2/13 13.8/25

2.4/35-28 4.9/15 6.3/9 7.8/6 7.2/4 7.3/0 7.7/12 5.7/17 5.3/25 5.0/30

2.2/30-25-14 5.3/9 4.1/0 4.8/10 2.9/13 2.3/25-30

| | | | | |
|---|---|---|---|---|
| | | 1060.10 | | |
| 130+50 | | | 2.9 | 1057.2 |
| 131 | | | 4.0 | 1056.1 |
| 132 | | | 6.8 | 1053.3 |
| +60 | | | 9.4 | 1050.7 |
| | | | 16.23 | 1043.87 |
| 133 | | | 11.4 | 1048.7 |
| | 5.25 | 1049.12 | | 1043.87 |
| 134 | | | 4.3 | 1044.8 |
| 135 | | | 4.5 | 1044.6 |
| +16 | | | 4.2 | 1044.9 |
| 136 | | | 4.4 | 1044.7 |
| 137 | | | 4.6 | 1044.5 |
| 138 | | | 4.1 | 1045.0 |

2.4/25 1.9/15 3.6/12 — 2.9/0 3.5/8 1.5/12 1.7/25–30

2.1/30–25 1.7/17 4.9/10 — 4.0/0 4.6/5 0.4/13 0.0/30

2.7/30 2.7/20 7.9/10 — 6.8/0 7.9/5 2.2/14 1.8/30

1.9/30 2.2/22 9.9/10 — 9.4/0 10.7/6 1.8/25–30

Spike, E. Side, 15" Elm, 30±L. 133+90

16.0/25 11.6/9 12.1/7 — 11.4/0 12.0/7 11.4/13 7.7/25

7.3/25 6.5/15 4.6/8 — 4.3/0 4.6/3 7.4/15 7.0/25

7.6/25 4.6/7 — 4.5/0 4.6/3 8.6/9 9.0/25

1038.1 11.0/100 — 1037.0 12.1 — 1044.1 5.0–3.2 10.4 — 1045.9 4.2 — 1044.9 3.2 5.1 9.7 5.6 — 1044.6 1039.4 1035.4 13.7 Water

8.3/30–17 4.9/11 — 4.4/0 5.0/7 8.2/11–30

8.4/30 16 — 5.0/8 — 4.6/0 — 5.0/6 — 7.3/11–30

4.0/30 5.3/23 4.5/7 — 4.1/0 4.7/6 — 8.2/19 — 10.2/23 creek

| | | | | |
|---|---|---|---|---|
| | | 1049.12 | | |
| | 6.09 | 1051.56 | 3.65 | 1045.47 |
| 139 | | | 6.4 | 1045.2 |
| 140 | | | 4.6 | 1047.0 |
| 141 | | | 5.3 | 1046.3 |
| 141+39 | | | 5.0 | 1046.6 |
| 142 | | | 4.8 | 1046.8 |
| 142+59.4 | | | 4.3 | 1047.3 |
| 145+60 | | | 2.0 | 1049.6 |

7.4 / 30 — 6.5 / 11 — 6.5 / 8 — 6.4 / 0 — 6.9 / 6 — 8.7 / 10 — 8.3 / 25 — 9.0 / 75 — creek / 80

2.6 / 30 — 4.6 / 0 — 4.5 / 5 — 10.8 / 15-24 creek — 8.8 / 30 — 8.0 / 40

4.0 / 30 — 4.6 / 25 — 5.9 / 18 — 5.1 / 13 — 5.3 / 0 — 4.6 / 5 — 5.9 / 10 — 10.8 / 29-40 creek

1042.9 / 8.7 — 1045.4 / 6.2-3.7 / 11.8 — 1047.9 — 1046.6 — 5.0 — 1047.6 / 4.0 / 11.8 — 1045.3 / 6.3 — 9.0 — 1042.6 — 1041.6 / 10.0 / 40 creek

5.7 / 30-15 — 5.0 / 8 — 4.8 — 5.3 / 9 — 6.2 / 14 — 6.5 / 30

5.2 / 25 — 4.7 / 16 — 5.5 / 14 — 4.5 / 11 — 4.3 / 0 — 4.7 / 9 — 5.8 / 16 — 4.2 / 25

## Pipe Required for Township Culverts

| Station | Pipe 12" | Pipe 15" |
|---|---|---|
| 5+78 | 32' | |
| 15+61 | | 36 |
| 19+48.3 | 12 | |
| 24+97.5 | 16 | |
| 38+96.5 | 32 | |
| 42+96.5 | 32 | |
| 46+91 | | 32 |
| 52+98 | | 36 |
| 55+89.5 | | 12 |
| 63+16 West | | 36 |
| 63+16 East | | 12 |
| 79+76 | | 40 |
| 92+53 | | 32 |
| 100+00 | 36 | |
| 105+24 | | 12 |
| 117+00 | | 32 |
| Total | 160 | 280 |

9.29.42
Pomeroy
Gundersen

# DINES CORNES ROAD T.H. #144

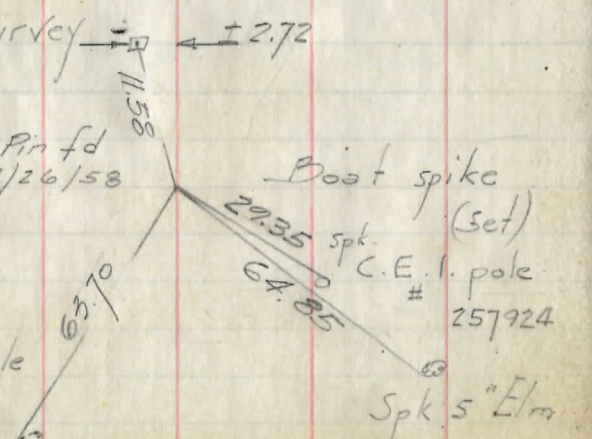
11+0

8+06.20
Δ = 0°-50' Lt

△ Boat spike set

Note: See County Line Rd. Survey (Fd. Bk. #166 pg. 30) for additional information re: intersection

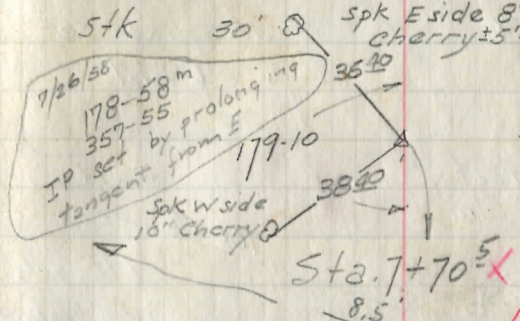
Cleve Regional Survey
Geodetic survey mon.




0+0

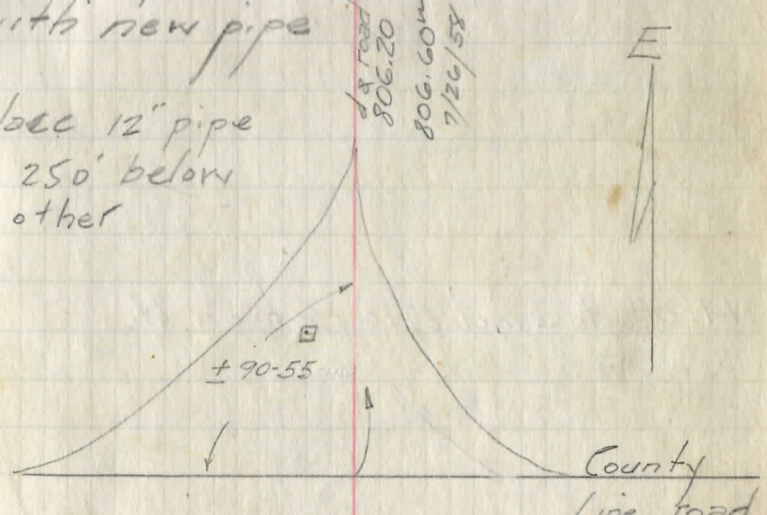


## County line easterly to Caves road.

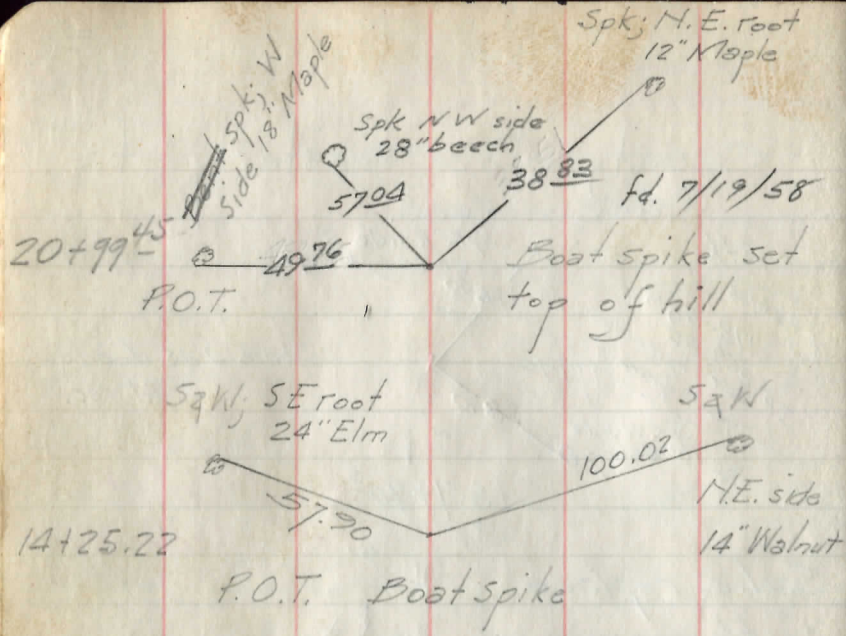



Set & replace with new pipe

Place 12" pipe ± 250' below other



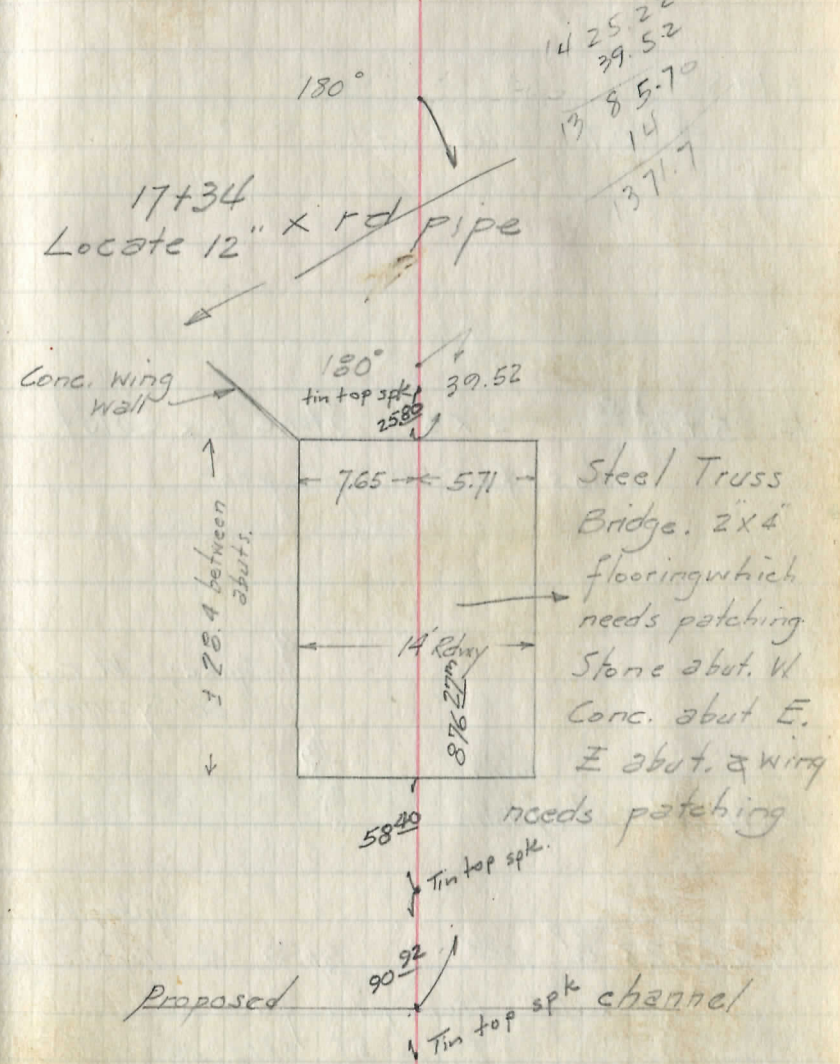

Note: Stakes set every odd Sta. at 30' Rt unless otherwise noted




14+0 to 4 incl. 27+6 set on Lt.

13+85.70 Spike

87.27



31+85

P.O.T. Spike set

Sta. 25+95 $\frac{50}{\text{Rt}}$ 2'x3' Stone box culvt

sides = fair top = poor

Spike; S.W. root 30" Sycamore

109.43

twin

S&W; W. root 11" Ash

Sta. 23+28 $\frac{09}{\text{Rt}}$ 29 $\frac{36}{\text{Rt}}$ 37 $\frac{30}{\text{Rt}}$

Spike; W. root 22" Elm

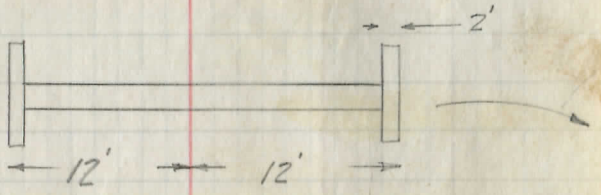
P.O.T. Iron pin fd

I Pipe fd 7/19/58

46 $\frac{87}{\text{Rt}}$

Spk S side 20" Mapk

180°




Cherodan Corp.

P.L. 180°

Bishop

Cherodan Corp.

P.L.

Ginn

Spike N root
12" Elm

82.40

60.15

Fd 7/29/64

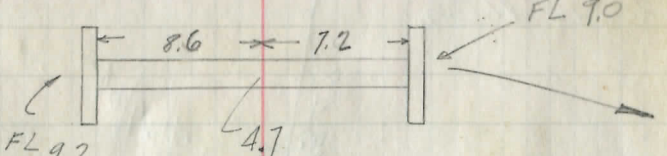
44+39.85 — 38.38 — Boat spike (set)

Spike E side
7" Apple

± Lot line

179-34-30
359-09

37+18.5 3'x3' Stone Culvert
Very poor




Scanlon

Sq W; E side
27" Maple

23.17

33+22.17 Δ = 0°-57'-Lt 81 — Iron pin fd

26.25

16

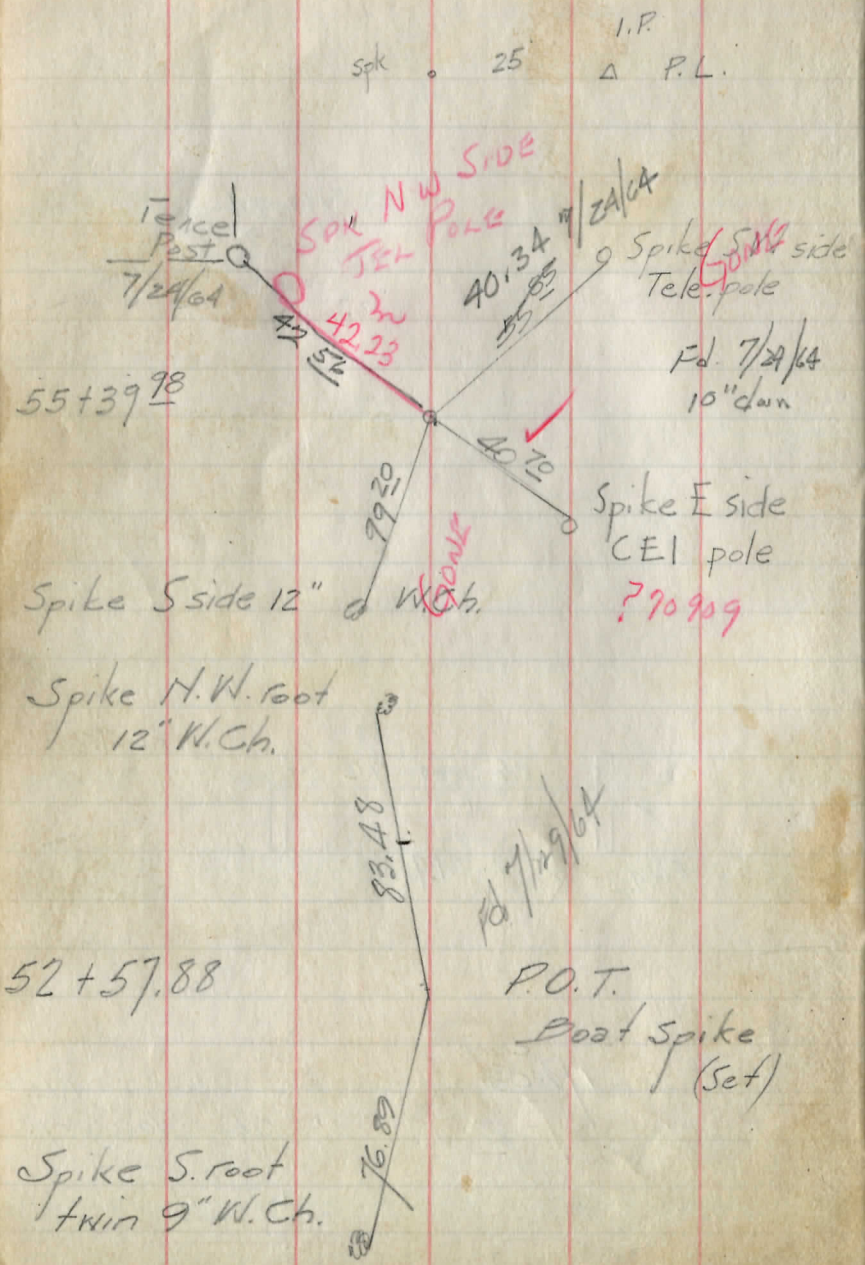
Bent spike S side
14" Maple

Sq W; N.W. root
32" Maple

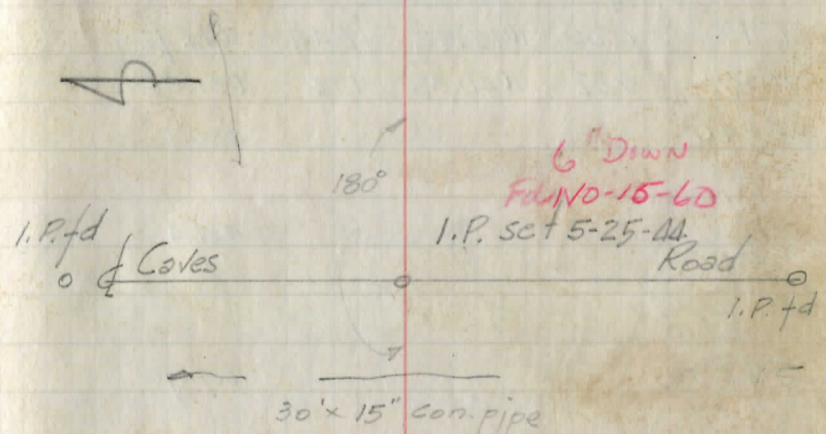
comp.
179-03

F.L.
Cherodan Corp.

H

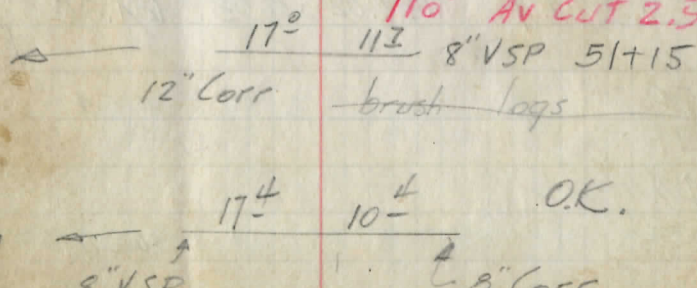



~~Note: No intersection made.~~




Tree Rem
IIII

Channel ch
110' Av cut 2.5'



5-27-43
Parr Snyder Hall

| | + | H.I. | − | E |
|---|---|---|---|---|
| B.M. | 1.74 | 1055.20 | | 1053.46 |
| T.P. | 0.20 | 1042.92 | 12.48 | 1042.72 |
| T.P. | 9.32 | 1040.38 | 11.86 | 1031.06 |
| 55+40 | | | | 1030.7 |
| 55 | | | | 1031.4 |
| 54 | | | | 1033.90 |
| 53 | | | | 1036.1 |
| 52+60 | | | | 1037.2 |
| 52 | | | | 1035.4 |
| 51 | | | | 1034.9 |
| T.P. | 4.17 | 1039.02 | 5.53 | 1034.85 |
| 50 | | | | 1035.4 |
| 49 | | | | 1033.7 |

# DINES CORNERS

S & W; SW root 26" Buckeye ± 300' S on Caves Rd West side road ± 20'

H & S

9.70

7.8 6.7 8.5 9.8 9.0 9.0 9.2 9.9 7.6 6.5 5.5
30 18 10 8 6 9 11 15 18 30
12

7.8 6.4 6.5 7.6 6.7 6.5 — 7.1 1.3 1.0
30 19 12.9 7 6 9 17 30

6.3 4.4 5.1 4.5 4.3 4.5 5.5 2.0 1.3
30 11 8 7 7 9 16 30
3.2

8.3 5.8 5.0 — 5.8 4.2 0.2
30 15 7 9 13 25
20 16

11.3 10.3 5.7 5.5 5.9 7.1 6.3 5.6 2.0
30 23 9 9 11 14 16 30
19

6.5 4.5 3.6 3.7 4.7 3.2 1.7 +0.3
30 19 8 10 12 18 30

5.8 4.7 5.7 5.3 6.3 5.6 5.3 5.5 7.0 2.8 1.3
30 21 15 12 8 6 9 11 17 30

| | | | | |
|---|---|---|---|---|
| | | 1139.02 | | |
| 48 | | | | 1030.80 |
| 47 | | | | 1030.4 |
| 46 | | | | 1027.9 |
| T.P. | 0.37 | 1027.74 | 11.65 | 1027.37 |
| 45 | | | | 1026.2 |
| 44 | | | | 1021.34 |
| 43 | | | | 1013.6 |
| T.P. | 0.19 | 1015.42 | 12.51 | 1015.23 |
| 42 | | | | 1009.7 |
| 6-9-43 | Pom | Hall | Boone | |
| B.M. | 0.97 | 1009.76 | 6.63 | 1008.79 |
| 41 | | | | 1007.1 |

H 5 30

this Sta. only

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5.2 | 7.0 | 9.3 | 8.0 | 8.2 | 8.7 | 9.6 | 11.0 | 11.5 |
| 26 | 16 | 11 | 8 | | 13 | 19 | 24 | 30 |
| 30 | | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10.5 | 8.8 | 8.6 | 8.3 | 8.9 | 5.6 | 4.6 | |
| 30 | 14 | | 11 | 12 | 18 | 30 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10.1 | 11.4 | 11.1 | 11.2 | 11.9 | 9.4 | 8.9 | |
| 20 | 9 | | 10 | 12 | 17 | 30 | |
| 30 | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3.9 | 1.8 | 2.6 | 2.0 | 1.5 | 1.4 | 2.8 | 1.1 | +0.7 |
| 30 | 9 | 8 | 7 | | 10 | 14 | 21 | 30 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4.5 | 3.5 | 6.5 | 6.4 | — | 6.9 | 6.2 | 0.6 | |
| 30 | 24 | 9 | | 6 | 10 | 12 | 21 | |
| | | | | | | | 30 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12.6 | 14.3 | 14.1 | 14.3 | 15.3 | 12.7 | 9.7 | 4.3 | |
| 23 | 19 | | 7 | 10 | 14 | 18 | 30 | |
| 30 | | | | | | 20 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7.1 | 6.8 | 6.0 | 5.7 | 6.4 | 4.6 | 0.3 | +3.5 | |
| 30 | 17 | 12 | | 9 | 20 | 27 | 37 | |

Spike S. root 36" Elm 41 ± 50 20' Nor.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.9 | 2.4 | 2.7 | 2.4 | 2.7 | | 2.6 | 3.3 | 2.8 | 3.1 |
| 30 | 13 | 10 | 8 | | | 6 | 9 | 14 | 30 |

| | | | | |
|---|---|---|---|---|
| | | 1109.76 | | |
| 40 | | | | 1005.6 |
| 39 | | | | 1005.1 |
| 38 | | | | 1004.5 |
| | Culvt gone to H-1 | | | |
| 37 | | | | 1004.5 |
| 36 | | | | 1004.4 |
| T.P | 8.41 | 1102.88 | 5.29 | 1004.47 |
| 35 | | | | 1005.7 |
| 34 | | | | 1008.6 |
| T.P. | 6.60 | 1109.11 | 0.37 | 1012.51 |
| 33 | | | | 1012.0 |
| 32+50 | | | | 1014.7 |

H E S 31

1.9 5.1 5.7 5.4 4.5 4.2 4.1 4.4 4.5
28 22 18 14 11 8 18 30
35

5.5 5.3 6.1 6.9 5.3 4.8 4.7 4.7 5.4 5.6 6.2 4.5 4.9 5.2
35 24 21 18 13 8 5 8 15 17 20 23 30

6.2 6.3 7.9 5.9 5.2 5.3 5.5 7.3 5.8 5.3
35 24 18 12 6 4 14 17 19 30
9.3
30

6.6 6.4 7.6 5.4 5.3 5.4 6.1 7.6 7.0 6.8
35 28 17 7 7 9 14 17 30

6.4 6.8 6.6 — 5.4 5.5 6.8 7.3 7.5
30 19 11 6 6 9 18 30

3.9 7.6 8.5 7.7 7.1 7.2 7.3 8.0 7.4 4.8 5.4
20 12 10 8 7 6 9 11 18 30
30

3.0 2.7 2.8 5.2 4.4 4.3 4.4 5.3 3.2 3.5 3.7 3.8
30 18 11 7 6 8 10 14 17 21 30

5.9 5.7 7.6 7.0 7.1 7.0 7.6 5.5 4.6
30 14 10 9 3 6 9 30

4.4

| | | | | |
|---|---|---|---|---|
| | | 1109.11 | | |
| 31+85 | | | | 1013.8 |
| 31 | | | | 1007.6 |
| T.P. | 4.05 | 1100.27 | 12.94 | 1006.17 |
| 30 | | | | 996.0 |
| T.P. | 0.24 | 1006.41 | | 1006.17 |
| T.P. | 0.46 | 993.97 | 12.90 | 993.51 |
| 29 | | | | 986.4 |
| 28 | | | | 982.9 |
| T.P. | 1.68 | 984.59 | 11.06 | 982.91 |
| 27 | | | | 981.0 |

N E S

4.1 3.9 5.5 5.3 — 5.3 5.8 4.1 4.0
30 21 11 5 6 10 30

7.5 7.4 7.8 11.6 11.7 11.5 — 11.6 12.1 7.7 7.6
30 21 14 9 6 5 7 15 30

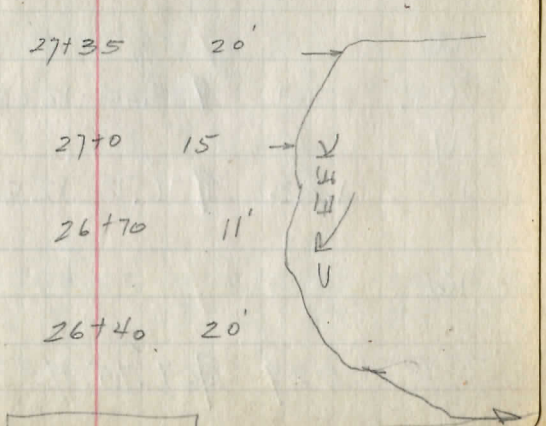
6.0 5.1 — 14.2 — 14.0 13.8 8.8
30 20 6 7 11 30

29+25 Beg. cut sect N side

— — 7.6 — 7.7 9.4 9.7
30 9 13 18 30

11.0 11.3 12.0 — 11.1 — 11.1 12.2 12.2
22 10 7 4 8 12 30
30

4.6 4.2 4.7 3.8 3.6 4.1 5.4 6.9 5.1 4.9 +0.1
30 17 3 10 4 10 15 20 30 40
CK



| | | | | | |
|---|---|---|---|---|---|
| | | 84.59 | | | |
| 26 | | | | 79.7 | |
| 25 | | | | 79.3 | |
| 24 | | | | 82.1 | |
| B.M. | | | 5.96 | 78.63 | |
| T.P. | 12.80 | 95.08 | 2.31 | 82.28 | |
| 23 | | | | 90.1 | |
| T.P. | 13.12 | 100.75 | 0.45 | 94.63 | |
| 22 | | | | 1000.0 | |
| 21 | | | | 1004.6 | |
| 20 | | | | 1000.3 | |
| T.P. | 1.18 | 99.95 | 8.98 | 98.77 | |
| 19 | | | | 93.3 | |
| 18 | | | | 88.4 | |
| T.P. | 0.27 | 88.20 | 12.02 | 87.93 | |
| 17 | | | | 1080.4 | |
| T.P. | 1.23 | 76.78 | 12.65 | 75.55 | Stone |
| 16 | | | | 968.3 | |
| T.P. | 0.29 | 67.75 | 9.32 | 67.46 | |



4.9

C.1 C.1 5.4 — 5.3 — 5.4 6.9 7.3 8.3
30 12 6 5 9 17 30

2.8 3.3 2.7 — 2.5 — 2.6 — 5.6
30 10 7 16 30

Spk N side twin Sycomore 26+15
25 Rt. (18 E of Culot)

+1.3 0.0 6.2 5.3 5.0 4.7 2.2 3.4
30 20 8 6 13 20 30

3.0 4.1 8.8 7.9 — 7.8 — 7.7 8.7 6.6 6.2 7.3
30 14 8 5 6 8 10 18 30

2.8 2.8 3.6 3.2 — 3.8 3.0 3.4
30 ~~3~~ 15 9 ℄ 8 16 30

4.1 5.1 — 8.5 — 7.5 — 7.6 8.2 5.8 5.3 6.2
30 13 8 5 7 11 20 30

3.1 3.4 7.1 6.8 6.7 6.6 7.6 4.0 3.5 3.8
30 15 9 7 4 7 11 18 30

10.1 9.8 10.7 12.4 11.6 11.6 — 12.5 9.9 8.8
30 17 10 8 5 ℄ 6 8 12 30

8.4 8.2 2.3 8.1 7.8 7.9 0.6
30 26 12 6 11 18 30

7.9 8.9 8.0 7.4 7.5 9.4 8.5 — 4.3 +3.9 +4.2
25 22 20 15 11 7 7 12 21 30
30

| | | | | |
|---|---|---|---|---|
| | | ℄67.75 ✓ | | |
| 15 | | | | ℄61.8 |
| 14 | | | | ℄59.5 |
| T.P. | 6.89 | ℄65.18 ✓ | 9.46 | ℄58.29 ✓ |
| ctr brge | | | 5.76 | ℄59.4 |
| 13 | | | | ℄58.9 |
| 12+50 (?) | | ± 12' to top ck bk. | | |
| 12 | | | | ℄60.6 |
| BM. | | | 3.96 | ℄61.22 ✓ |
| T.P | 10.88 | ℄75.65 ✓ | 0.41 | ℄64.77 ✓ |
| 11+10 | ch 7.11 to cut South | | | |
| 11 | | | | ℄66.8 |
| 10+70 | = Max. cut So. | | | |
| T.P. | 10.89 | ℄86.28 ✓ | 0.26 | ℄75.39 ✓ |
| 10 | | | | ℄76.8 |
| 9 | | | | ℄85.7 |
| T.P. | 10.92 | ℄96.98 ✓ | 0.22 | ℄86.06 ✓ |
| 9 | | | | |



8.0 7.0 6.7 7.8 6.5 5.9 6.0 6.2 6.7 5.9 6.2 6.4
30 24 17 15 11 5 ℄ 3 4 7 11 17
30

9.9 9.8 9.4 9.0 – 8.3 – 8.8 9.3 9.8 10.0
30 25 18 11 8 6 9 14 22 30

± 3' bank 12.5 7.3 6.8 6.4 6.3 6.6 6.7 7.0 7.7
on out 20 16 13 9. 8 10 15 30
37
ck

± 11.8 5.8 5.3 4.8 4.7 4.4 4.6 4.3 4.7 5.1 5.4
36 30 26 18 12 9 5 8 13 20
ck 30

Spk Sroot 20" Elm 12+00 25' Lt (on bk of ck.

7.2 6.7 7.6 7.2 9.2 8.9 9.5 7.1 4.4 3.5
28 22 18 14 11 4 8 11 16
30 30

± 24.0 12.5 9.4 7.7 7.1 9.5 9.0 9.7 7.1 +1.0 Level
30 15 11 8 4 10 12 16 24

down
down
& down 10.6 6.9 +0.4 0.5 0.6 0.4 1.1
26 18 6 4 8 9

1094.4
2.6 level
21

| | | | | |
|---|---|---|---|---|
| | | 996.98 ✓ | | |
| 8 | | ✓ | | 993.0 |
| T.P. | 9.42 | 1006.23 | 0.17 | 996.81 ✓ |
| 7 | | | | 997.7 |
| 6 | | | | 1000.5 |
| 5 | | | | 1003.5 |
| T.P. | 10.04 | 1013.93 ✓ | 2.34 | 1003.89 ✓ |
| 4 | | | | 1007.0 |
| 3 | | | | 1010.1 |
| T.P. | 8.72 | 1021.74 ✓ | 0.91 | 1013.02 ✓ |
| 2 | | | | 1012.7 |
| 1 | | | | 1016.8 |
| 0 | | | 6.6 | 1015.1 |
| BM | | | 6.29 | 1015.45 |

2.2 0.2 4.2 3.9 4.0 – 4.5 2.0 +1.0 +1.3
30 15 9 7 3 4 6 10 30

9.3 9.2 8.7 8.0 8.4 8.3 8.5 – 6.4 5.8 6.0 5.9
30 26 20 16 12 10 5 8 13 19 30

6.6 6.3 5.9 5.6 5.7 6.3 4.7 3.6 3.1 3.3
30 24 11 9 4 8 14 20 30
18

2.1 1.9 1.4 3.4 2.4 2.7 3.0 +0.8 +1.0
30 22 15 11 8 5 10 30

5.1 7.4 6 8 6.9 6.7 7.0 6.0 6.2 6.9
14 10 8 4 6 10 16 30
30

3.4 3.5 4.5 3.9 3.8 3.9 4.3 3.4 3.5
30 13 9 7 4 7 11 30

7.6 9.4 7.0 9.6 7.8 7.6
14 9 6 10 18
30 30

4.1 5.7 5.0 4.9 5.0 5.4 4.2 4.0
13 10 8 6 7 12 30
30

Cleve. Regional Survey Monument Marked 857
See pg 24 for Loc.

# Re X Section of Some Sta. Dines ~~Ks~~

| | | | | |
|---|---|---|---|---|
| BM. | 6.51 | 1015.30 | | 1008.79 |
| 42 | | | | 1009.6 |
| 43 | | | | 1013.6 |
| T.P. | 12.83 | 1027.92 | 0.21 | 1015.09 |
| 43 | | | | |
| 44 | | | | 1021.32 |
| 45 | | | | 1026.2 |
| T.P. | 8.14 | 1035.62 | 0.44 | 1027.48 |
| 46 | | | | 1027.8 |
| 47 | | | | 1030.4 |
| | | inlet F.L. 7.2 | | 1028.4 |
| 48 | | | | 1030.92 |

IT 5

5-29-44

Pom - Jackson - Myers

6.8 6.2 5.6 5.7 5.9 6.2 4.5 0.2 up
19.5 14.5 6.5 4.5 9 20.5 26.5
30

1.4 0.0 1.4 2.0 1.7 2.4 3.2
30 21 18 7.5 6.5 8.5
12.5

1024.4
3.5
30

4.5 3.7 5.9 6.6 6.6 6.7 7.1 5.1 0.9
30 24 13.5 8 5 11 17 22.5
30

4.0 2.6 1.7 1.4 2.8 +0.5
30 7.5 8 13.5 25
16.5 30

7.4 7.2 8.0 7.8 7.7 8.6 5.9 6.1
30 15.5 8.5 7.5 13 20.5 29

6.9 6.2 4.9 5.4 5.2 5.1 4.9 5.4 2.0 1.3
30 22 15.5 7 8.5 10.5 11 17.5 30

8.1 7.0 5.5 5.2 4.7 — 5.9 4.7 3.4 1.5
30 21 14 7.5 8 10 13 18 28

| | | | | |
|---|---|---|---|---|
| BM1 | 5.82 | 984.45 | | 978.63 |
| 25 | | ℄ | 5.1 | |
| 24 | | , | | |
| T.P. | 12.70 | 996.90 | 0.25 | 984.20 |
| 23 | | | | 989.9 |

Note: New cut 22+20 to 23+60

| | | | | |
|---|---|---|---|---|
| BM | 6.51 | 985.14 | | 978.63 |
| | 8.61 | 991.57 | 2.18 | 982.96 |
| 29 | | | | 986.0 |
| T.P. | 13.22 | 1004.69 | 0.10 | 991.47 |
| 30 | | | | 996.0 |

New cut on S 29+85 to 30+67

2.6 3.0 2.5 2.3 2.2 2.4 ±5.4
25 15.5 6 8 16 28
30 22

0,7 2.9 6.8 7.9 7.1 7.0 6.9 6.5 3.7 4.6
30 18 10.5 8 6.5 5.5 13 18 24

4.8 5 ✓5.3 5.6 5.4 6.1 7.3 7.5
22.5 14.56 7.5 14 21.5 30

+1.9 6.✓ 8.6 8.7 8.5 6.7 2.1
22 12 6.5 8.5 19 28.5

Vonn Adams Davis-Hue  X-Sec  Fossil Twp.  8-61

78° SUNNY  CAVES Rd.

| | + | H.I. | − | Elev. | | |
|---|---|---|---|---|---|---|
| Bm #1 | 2.17 | 102.17 | | 100. | Use | Sta 0+9 CEI #. caves S. side #SR. 87 (s/t. N side) |
| | 1.32 | 96.82 | 6.69 | 95.48 | | |
| Bm #2 | | | 2.78 | 94.04 | Use | CEI #53176 Sta 11425 spk W. side |
| | | | 11.66 | 86.16 | | |
| | 1.44 | 86.60 | 8.67 | 77.93 | | |
| Bm #3 | 5.53 | 83.46 | 6.71 | 77.75 | Use | CEI #53181 Sta 11490 spk. W. side |
| | 11.61 | 92.90 | 2.17 | 81.29 | | |
| | 8.09 | 100.33 | .66 | 92.24 | | |
| Bm #2 | | | 6.33 | 94.00 | | 83.26 6.71 76.5 |
| | | | .65 | 99.68 | | |
| | 5.29 | 104.97 | | | | |
| Bm #1 | | | 5.01 | 99.96 | | |
| Bm #3 | 0.72 | 78.47 | | 77.75 | | |
| | 1.52 | 68.40 | 11.02 | 67.05 | | |
| Bm #4 | | | 10.20 | 58.20 | Use | CEI #53535 Sta 31+80 spk. E. side |
| | 3.11 | 61.54 | | 58.20 Bm | | |
| | 3.89 | 57.05 | 8.35 | 53.16 | | |
| Bm #5 | | | 8.52 | 48.53 | Use | CEI #602580 Sta 50+60 spk E. side — last CEI on W. side |
| | 9.37 | 62.33 | 4.11 | 52.96 | | |
| | | | 3.92 | 58.41 | | |
| | 10.01 | 69.74 | 3.00 | 59.33 | | |
| | 10.15 | 79.63 | 0.56 | 69.18 | | |
| | | | 1.85 | 77.78 | | |
| Bm #5 | 1.12 | 52.65 | | 48.53 | | |

| | + | HI | - | Elev. |
|---|---|---|---|---|
| | 2.46 | 45.11 | 10.00 | 42.65 |
| Bm#6 | | | 9.77 | 35.34 |
| | 9.25 | 52.30 | 2.06 | 43.05 |
| Bm#5 | | | 3.75 | 48.55 |
| Bm#1 | 5.36 | 105.36 | | 100 |
| 0+0 | | | | |
| 1+0 | | | | |
| 2+0 | | | | |
| 3+0 | | | | |
| TP | 6.46 | 99.71 | 7.11 | 98.25 |
| 4+0 | | | | |
| 5+0 | | | | |
| 6+0 | | | | |
| TP | 6.45 | 100.78 | 5.38 | 94.33 |
| 7+0 | | | | |

E. & W.

CEI # 170909 Sta. 62+80 E. side spk.

99.7
5.7 SL # 87

b) 99.9

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4.8 | 4.95 | 6.2 | 6.6 | 6.4 | 5.5 | 6.3 | 5.8 | 3.2 | | 3.1 |
| 30 | 20 | 17.6 17.7 | 16.3 | 15.8 | 16.3 | 18.9 | 15.4 | 21.5 | | 30 |
| 5.2 | 5.2 | 6.0 | 5.3 | | 4.7 | 5.6 | 3.5 | | | 3.2 |
| 30 | 19.4 | 18.3 16.3 | 11.2 | | | 18.8 | 20 | | | 30 |
| 4.5 | 5.2 | 7.4 | 7.65 | 8.3 | 7.6 | 7.2 | 7.8 | 8.2 | 7.35 | 4.7 |
| 30 | 22.3 | 18 | 16.9 | 16.8 16.3 | 12 | 18.2 | 15.9 | 16.5 | 27.3 | |
| 4.0 | 4.95 | 5.1 | 5.25 | 5.2 | 4.9 | 4.6 | 5.2 | 5.8 | 5.2 | 4.5 |
| 30 | 18.8 | 17.6 | 16.3 | 16.2 14 | 12.6 | | 12.8 | 16 | 16.5 | 23.5 |
| 5.3 | 5.9 | 6.65 | 5.8 | | | 5.5 | 6.1 | 6.7 | 6.5 | 6.4 |
| 30 | 19.9 | 16 | 12.5 | | | | 13.3 | 16 | 17.1 | 21.9 |
| 6.5 | 7.1 | 7.3 | 6.1 | | | 5.4 | 6.0 | | | 8.7 |
| 30 | 18.4 | 17.5 14.2 | 12.8 | | | | 11.5 | | 22 | 15 |
| 5.2 | 5.8 | 6.6 | 7.2 | 6.8 | | 6.2 | 7.1 | 7.5 | 6.7 | 6.6 |
| 30 | 19.4 | 16.9 | 16.9 16.2 | 14.3 | | | 13.1 | 15.3 | 17.8 | 30 |

98.2

95.1

94.2

94.3

94.6

j.6 down

dsiye

| | + | 117.4 / 100.78 H.I. | − | Elev. | |
|---|---|---|---|---|---|
| 8+00 | | | | | |
| 9+00 | | | | | |
| 10+00 | | | | | |
| 11+00 | | | | | |
| Bm #2 | 0.23 | 94.27 | 6.75 | 94.03 | OK |
| 12+00 | | | | | |
| T.P. | 0.91 | 87.66 | 11.52 | 82.75 | |
| 13+00 | | | | | |
| T.P. | 3.93 | 79.83 | 11.76 | 75.90 | |
| 14+00 | | | | | |
| 15+00 | | | | | |
| 16+00 | | | | | |
| 17+00 | | | | | |
| T.P. | 6.06 | 79.97 | 5.92 | 73.91 | |
| 18+00 | | | | | |
| 19+00 | | | | | |
| Bm #3 | | | 3.16 | 76.81 | OK |

## E

3.4 3.8 4.9 5.8 5.4
30 23 3/4 16 1/2 15 1/2 12 1/2

7.1 7.3 8.05 8.5 8.3
30 19 1/2 16 1/2 15 1/2 10 1/2 13 1/2

8.1 8.3 10. 9.2
30 19 1/2 12 1/2 11 1/2

8.1 8.3 12 1/2 10.9
30 23 1/2 17 11 1/2

3.2 3.6 8.5 10.1 9.0
30 27 1/2 17 16 1/2 12 1/2

1.2 1.65 9.9 8.6
30 27 1/2 12 1/2 12 1/2

0.4 1.0 4.7 5.7 4.1
30 21 1/2 10 1/2 12 1/2 10 1/2

5.5 6.6 7.6 6.6
30 16 1/2 12 1/2 11

7.8 8.3 8.7 7.4
30 17 1/2 16 1/2 11 1/2

3.2 4.0 7.0 7.6 6.9
30 22 14 1/2 13 1/2 11 1/2

1.8 2.1 5.9 5.2
30 22 14 10 1/2

4.6 4.9 6.1 6.7 6.6
30 22 17 15 12 1/2

## D

95.6
5.16 5.8 5.3
15 30

92.9
7.9 8.35 8.8 8.3 7.6 7.9
11 1/2 15 15 1/2 18 1/2 30

91.9
8.85 9.5 10.0 9.9 10. 10.
12 16 17 1/2 21 1/2 30

90.4
10.2 11.1 12.2 11.0 10.8 out
10 1/2 17 1/2 18 1/2 21

86.0
8.3 7.8 9.1 7.8 5.9 5.9
10 16 1/2 17 1/2 21 24

80.1
7.6 8.3 9.3 7.6 5.4 5.5
10 1/2 15 1/2 17 1/2 17 1/2 21 1/2 30

75.4
4.4 4.7 drive 4.3
12 30

73.5
6.3 7.0 8.0 7.4 7.9 8.3
10 1/2 14 1/2 18 1/2 17 25 30

72.7
7.1 7.9 8.8 8.4 8.9 9.4
18 1/2 17 18 1/2 22 1/2 30

73.4
6.4 7.4 7.9 5.4 6.2
15 17 1/2 21 1/2 30

75.1
4.85 5.5 5.1 drive 5.6
16 1/2 17 1/2

74.5
5.6 6.4 7.1 6.5 6.1 6.0
14 15 1/2 17 1/2 25 30

76.75

| | + | H.I. | − | Elev. |
|---|---|---|---|---|
| BM #3 | 1.0 | 77.75 | | 76.75 |
| 20+0 | | | | |
| 21+0 | | | | |
| 22+0 | | | | |
| T.P. | 4.46 | 71.30 | 10.91 | 66.84 |
| 23+0 | | | | |
| 24+0 | | | | |
| 25+0 | | | | |
| 26+0 | | | | |
| | 1.63 | 61.92 | 10.99 | 60.31 |
| 27+0 | | | | |
| 28+0 | | | | |
| | 2.36 | 52.35 | 11.95 | 49.99 |
| 29+0 | | | | |
| 30+0 | | | | |

E ℄ W

74.2
2.0 2.9 3.7 4.9 4.3 — 3.6 4.7 5.4 5.5
30 21 18 15½ 12½ — 15⅝ 26 30

73.8
3.3 5.0 4.3 — 4.0 4.1 drive paved 3.6
30 15⅜ 11½ — 12½ 30

69.7
5.5 7.2 9.4 8.6 — 8.1 8.2 9.1 8.2 5.9 6.2
30 18½ 16⅝ 13⅜ 15 — 12 15⅜ 16⅝ 22⅝ 30

66.0
4.1 5.2 6.5 5.6 — 5.3 5.6 6.3 5.6 2.5 2.3
30 16⅝ 13⅜ 10⅝ — 12¼ 14⅜ 15⅜ 22½ 30

63.7
7.7 8.0 8.6 8.0 — 7.6 8.2 8.8 8.2 8.0
30 16⅞ 12⅝ 12¼ — 12⅜ 10½ 15¼ 30

62.6
9.1 9.5 11.4 9.4 8.8 — 8.7 9.3 11.3 11.4
30 20 18¼ 15⅛ 14 10⅜ — 11⅝ 17 30

62.6
7.7 8.4 8.8 — 8.7 9.0 8.6 8.9
30 15 11⅜ — 18½ 19½ 30

58.0
0.1 1.0 3.2 3.9 4.5 4.1 — 3.9 4.3 5.2 1.4 1.6
30 21⅜ 18⅜ 16 15⅜ 11⅜ — 12 15⅜ 21 30

52.8
7.0 7.5 8.9 10.1 9.3 9.2 — 9.1 9.7 10.4 7.7 7.8
30 22⅝ 18½ 16⅜ 15⅛ 13⅝ — 12¼ 15⅜ 19⅜ 30

49.3
0.7 1.8 4.5 3.4 — 3.1 3.4 4.3 3.6 3.0 3.7
30 21⅜ 16⅝ 11 — 8⅜ 12⅜ 15⅛ 18½ 30

46.9
3.4 4.6 4.0 4.2 6.8 6.2 — 5.5 6.3 6.8 6.2 4.5 4.5
30 28 17⅜ 16⅝ 15½ 13⅛ — 11⅝ 13⅜ 14⅛ 19⅜ 30

5.7
10

| | | | | | |
|---|---|---|---|---|---|
| 2.35 | | | | | |
| | | 52.35 | | | |
| 31+0 | | | | | |
| 32+0 | | | | | |
| 33+0 | | | | | |
| | 10.83 | 61.93 | 1.25 | 51.10 | |
| 34+0 | BM# 4 | | 4.52 | 57.41 | ok |
| 35+0 | | | | | |
| 36+0 | | | | | |
| 37+0 | | | | | |
| 38+0 | | | | | |
| | 456 | 57.79 | 8.76 | 53.23 | |
| 39+0 | | | | | |
| 40+0 | | | | | |
| 41+0 | | | | | |
| 42+0 | | | | | |

E ℄ W

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 46.4 | | | | | |
| 7.7 | 7.5 | 8.0 | 7.3 | | 7.0 | 7.6 | 8.7 | 8.2 | 88 | 92 |
| 30 | 16.5 | 15 | 12 | | | 11.3 | 14.6 | 16.2 | 28 | 30 |
| | | | | | 45.9 | | | | | |
| 8.8 | 8.2 | 10.0 | 6.8 | | 6.5 | 6.9 | 8.6 | 10.2 | 8.3 | 9.3 | 10. |
| 30 | 21.1 | 18 | 11.8 | | | 8.5 | 10.9 | 15.6 | 17.8 | 22.4 | 30 |
| | | | | | 48.2 | | | | | |
| 4.0 | 4.3 | 4.9 | 4.4 | | 4.15 | 4.9 | 5.7 | 4.5 | | 5.0 | |
| 30 | 19.6 | 16.2 | 11.8 | | | 11.6 | 14.6 | 15.2 | | 30 | |
| | | | | | 53.6 | | | | | |
| 4.5 | 5.5 | 9.0 | 8.5 | | 8.3 | 8.8 | 9.7 | 8.5 | 5.3 | 5.25 | |
| 30 | 19.5 | 14.7 | 11.8 | | | 11.7 | 14.2 | 15.3 | 21.6 | 30 | |
| | | | | | 54.7 | | | | | |
| 2.7 | 3.6 | 5.3 | 5.9 | 5.3 | 5.2 | 5.8 | 6.4 | 6.1 | | 6.5 | |
| 30 | 20 | 16.2 | 15.5 | 12 | | 13.3 | 15.5 | 19.5 | | 30 | |
| | | | | | 54.4 | | | | | |
| 4.9 | 5.6 | 6.7 | 5.7 | | 5.5 | 6.3 | 6.8 | 6.5 | | 6.8 | |
| 30 | 18.2 | 15.6 | 9.9 | | | 13.6 | 15.6 | 18.6 | | 30 | |
| | | | | | 56.4 | | | | | |
| 5.0 | 5.7 | 7.9 | 7.0 | | 6.5 | 6.7 | drive | | | 5.2 | |
| 30 | 19.6 | 15.9 | 11.2 | | | 12.8 | | | | 30 | |
| | | | | | 53.5 | | | | | |
| 9.0 | 8.9 | 9.1 | 9.0 | | 8.4 | 9.3 | 9.8 | 8.6 | 7.2 | 6.6 | |
| 30 | 17.5 | 15.8 | 12.2 | | | 16 | 16.9 | 17.5 | 21.7 | 30 | |
| | | | | | 52.7 | | | | | |
| 5.1 | 5.8 | 7.3 | 5.5 | | 5.1 | 5.9 | 7.1 | | | 7.1 | |
| 30 | 20.2 | 16.8 | 11.8 | | | 12 | 16.8 | | | 30 | |
| | | | | | 52.8 | | | | | |
| 3.8 | 4.7 | 5.2 | 6.1 | 5.4 | 5.0 | 5.6 | 6.5 | 5.9 | | 6.3 | |
| 30 | 18 | 16.1 | 15.2 | 11.8 | | 10.8 | 16.5 | 17 | | 30 | |
| | | | | | 52.3 | | | | | |
| 4.0 | 4.8 | 6.8 | 5.3 | | 5.5 | 6.2 | 6.7 | 5.5 | 4.4 | 4.6 | |
| 30 | 19.8 | 15.8 | 12.1 | | | 13.6 | 16 | 16.6 | 20.2 | 30 | |
| | | | | | 50.0 | | | | | |
| 7.2 | 8.0 | 8.9 | 8.4 | | 7.8 | 8.3 | 9.1 | 8.0 | 7.6 | 7.9 | |
| 30 | 17.9 | 15.8 | 13.2 | | | 10.6 | 13.3 | 18.2 | 20.3 | 30 | |

51.79

57.79

| | | | | | |
|---|---|---|---|---|---|
| 12+10 | | | | | |
| 13+10 | | throw apple | | drive | |
| 14+0 | | | | | |
| | 14.5 | 52.76 | 9.08 | 08.31 | |
| 15+0 | | | | | |
| 16+0 | | | | | |
| 17+0 | | | | | |
| 18+0 | | | | | |
| 19+0 | | | | | |
| 50+0 | | | | | |
| Bm#5 | 1.41 | 48.94 | 5.18 | 47.58 | 47.53 |
| 51+0 | | | | | |
| 52+0 | | | | | |
| 53+0 | | | | | |

E ℄ W

49.7

8.8 8.4 8.1 8.7 9.3 9.5
30 16 13 15.5 30
7.3 6.6
150' 150'

50.8

6.8 7.6 8.1 8.1 7.5 7.0 7.4 7.7 5.1 4.2
30 18.4 17.5 16.4 13.4 13 15 19.3 30

50.1

2.2 2.7 3.2 3.7 3.4 2.7 3.2 3.4 3.5 4.1 4.0 -4 -6
30 21 18.2 16.4 15 12 9.5 11.4 13.5 15.4 16.3 V V 23 30

46.1

6.5 7.0 7.5 7.5 8.1 7.3 6.7 7.3 7.6 5.7 5.3
30 19.5 18 16.1 15.2 12.3 13.2 15.4 19.6 30

45.1

9.2 9.2 9.4 8.1 7.7 8.7 9.2 10.6 10.5 8.9 9.6
30 16 15 10.5 14 17.3 18.2 20.3 22 30

46.3

5.4 7.2 7.8 7.2 6.5 6.8 7.2 7.6 7.2 6.8
30 15 12.3 10 9.1 14.4 16.3 17.5 30

48.0

4.4 5.2 5.4 5.2 4.8 5.3 6.0 5.0 4.7
30 14.9 10.2 11.5 10.5 15.8 19.5 30

46.1

5.5 7.6 8.0 7.4 6.7 7.1 drive 6.0
30 14.5 13.1 11.1 13 30

48.7

2.7/30 3.5/17.8 6.3/13.2 5.8/10.5 5.2 5.6/11.9 6.4/15.6 6.5/16.3 5.3/18.4 5.3/30

42.0

5.7/30 6.4/12.1 7.3/13.3 7.8/12.6 7.2/6.6 6.9 7.3/17.9 Drive 7.5/30

41.4

7.2/30 8.1/16.2 9.4/13.1 7.8/10.2 7.5 8.4/14.9 Kawa 9.7/30

| | + | HI (48.94) | - | Elev | |
|---|---|---|---|---|---|
| 54+0 | | | | | |
| TP | 8.76 | 54.31 | 3.39 | 45.55 | |
| 55+0 | | | | | |
| 56+0 | | | | | |
| 57+0 | | | | | |
| 58+0 | | | | | |
| 59+0 | | | | | |
| TP | 0.68 | 50.46 | 4.53 | 49.78 | |
| 60+0 | | | | | |
| 61+0 | | | | | |
| TP | 2.91 | 41.59 | 11.78 | 38.68 | |
| BM#6 | | | 7.29 | 34.30 | 34.34 |
| 62+0 | | | | | |
| 63+0 | | | | | |

See Field Book 310 page 6
X-sec. Dines To Fairmount



| | E | | | | ℄ | | W | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2.6 | 3.6 | 5.4 | 6.4 | 5.7 | 5.3 (43.6) | 6.0 | 6.6 | 3.9 | 3.8 |
| | 30 | 18² | 14² | 12² 13¹ | 7² | | 13° | 15⁸ | 21⁴ | 30 |
| | 6.0 | 6.7 | 8.6 | 9.4 | 9.2 | 8.0 (45.3) | 9.2 | 10.3 | 9.3 | 8.0 | 8.2 |
| | 30 | 21⁹ | 14³ | 13⁷ | 11² | | 11⁸ | 14⁶ | 16¹ | 19⁵ | 30 |
| | 10.8 | 12.4 | 12.7 | 10.4 | 10.0 (44.3) | | 10.7 | 12.1 | 12.8 | | |
| | 30 | 21⁵ | 14⁸ | 11² | | | 12⁹ | 15⁷ | 30 | | |
| | 7.2 | Lawn | 8.5 | | 8.4 (45.9) | | 9.2 | 9.8 | 9.3 | 7.8 | 8.4 |
| | 30 | | 12⁹ | | | | 14⁷ | 16⁴ | 17⁶ | 22³ | 30 |
| | 1.2 | 1.5 | 5.1 | 5.9 | 5.3 | 4.9 (49.4) | 5.4 | 5.9 | 5.2 | 2.7 | 2.6 |
| | 30 | 23² | 15⁸ | 15½ | 11⁶ | | 15² | 17⁶ | 18⁵ | 22⁹ | 30 |
| | 1.8 | 2.1 | 4.7 | 4.1 | 3.7 (50.6) | | 4.0 | | 2.9 | | 2.9 |
| | 30 | 20⁸ | 15² | 11⁷ | | | 17⁴ | | 18² | | 30 |
| | 1.7 | 2.7 | 5.8 | 6.0 | 5.9 | 5.3 4.1 (46.4) | 4.3 | 4.7 | 4.5 | 1.1 | 1.0 |
| | 30 | 19² | 15³ | 14⁷ | 13² | 12⁴ | | 11⁸ | 13° | 16¹ | 22 | 30 |
| | 8.1 | 9.4 | 12.8 | 12.5 | 11.9 | 11.1 (39.4) | 11.7 | 12.7 | 11.4 | 7.1 | 6.7 |
| | 30 | 20⁸ | 15⁷ | 13⁹ | 11⁴ | | 11⁸ | 14 | 15⁵ | 23² | 30 |
| | 6.6 | 7.4 | 8.9 | 9.2 | 8.6 | 7.9 (33.7) | 8.5 | 9.1 | 4.3 | | 4.1 |
| | 30 | 20⁵ | 17 | 15 | 12⁵ | | 11³ | 13 14⁴ | 23⁶ | | 30 |
| | 11.8 | 11.8 | 14.8 | 12.1 | 11.2 | 30.4 | 12.4 | 13.7 | 11.6 | | 10.1 |
| | 30 | 22 | 20 | 17 | | | 13⁵ | 15⁹ | 17 4¹ | | 30 |

Cycles 8-10-61
+87 8-10-61

| | E. | & | W. |
|---|---|---|---|
| 0+0 | S.L. #87 | | |
| +30 | | 35' | between - 4" & 10" tree row osage or. |
| +45 | | 23' | 10" ash |
| +70 | | 22' | CEI |
| +63 | map. 13" | | 28' |
| 1+02 | map. 16" | | 28½' |
| +9 | conc. sidewalk | | 15' |
| +31 | maple 13" | | 28' |
| | light post | | 21' |
| +60 | 12"x16' drive & boilers | | 16' |
| +71 | map. 16" | | 27' |
| +80 | | 25' | ash 13" |
| +89 | | 25' | elm 10" |
| 2+00 | 5' apart - 7 pine pine row | | 28' |
| +05 | | 27' | ash 10" |
| | | 27' | triple 23" ash |
| +26 | | 15' | 16'x12" conc. |
| +42 | | 27' | quad ash 26" |
| +44 | CEI | 29' | |
| +77 | | 24' | CEI |
| 3+58 | | 16' | 12"x16 corr |
| 4+0 | | 27' | tree row osage |
| +13 | | 29' | CEI |

| | E. | & | W. |
|---|---|---|---|
| +16 | | 30' | ash 10 |
| +05 | | 30 | CEI |
| 10+03 | | 27 | osage 12" |
| +74 | | 16' | 20'x10" corr |
| +39 | CEI | 29' | |
| 9+23 | | 27' | elm 28" |
| +95 | | 27' | osage 12" |
| +80 | | 27' | triple map. 18" |
| +56 | | 29½ | CEI |
| +53 | | 27½ | osage tree row beg. |
| +38 | | 27' | osage 10" |
| +19 | | 27' | 12" elm |
| | | 16' | 16'x10" corr |
| 8+10 | | 28' | 30" twin cherry & osage |
| +97 | | | |
| 7+68 | CEI | 29' | |
| +83 | | 28' | end tree row (lawn) |
| +70 | 16'x12" corr paved | 16' | 25' elm 13" |
| 6+06 | | 26' | drive No pipe |
| +89 | CEI | 29' | |
| +44 | 16'x12" corr paved | 17' | |
| 5+0 | | 27' | osage 12" |
| +86 | | 28' | osage 12" |
| +47 | | 27' | osage 12" |
| +14 | | 29' | CEI |

| E. | | ℄ | W. |
|---|---|---|---|
| +20 | | 30' | ⊙ elm 12" |
| +34 | | 16' | 16'x12" corr. |
| +56 | | 28' | ⊙ elm 17" |
| +98 | | 26' | ⊙ elm 13" |
| 11+13 | CEI 29' | | |
| +42 | | 28' | ⊙ cherry 13" |
| +62 | 15"x25' conc. pved 15" pipe 29' | | |
| 12+86 | | 16' | 12"x22' corr. |
| +88 | CEI 29.5 | | |
| 13+03 | | 29.5' | ⊙ map 12" |
| +05 | | 27.5' | CEI |
| +07 | | 27' | ⊙ map 10" |
| +26 | | 26' | ⊙ ash 15" |
| +48 | | 27' | ⊙ map. 12" |
| +51 | | 27' | ⊙ map. 10" |
| +77 | | 27' | ⊙ ash 18" |
| +81 | | 26' | ⊙ ash 12" |
| +95 | | 17' | 16'x12" corr |
| 14+05 | | 28' | ⊙ elm 10" |
| +06 | | 29' | ⊙ twin 24" ash |
| +24 | | 27' | ⊙ map 18" |
| +37 | | 28' | ⊙ twin 10" cherry's |
| +43 | | 27' | ⊙ osage 13" |
| +63 | CEI 29' | | |

| E. | | ℄ | W |
|---|---|---|---|
| +95 | | 28' | tree row |
| +84 | | 28' | ⊙ ash 10" |
| +80 | | 28' | ⊙ cherry 13" |
| 17+18 | | 30' | ⊙ 16" elm |
| +80 | | 29' | ⊙ cherry 13" |
| +75 | | 30' | ⊙ ash 13" |
| +72 | | 29' | ⊙ osage 12" |
| +51 | | 15' | 12"x19' corr. |
| +40 | | 28' | ⊙⊙ grp of 6" elms |
| +36 | CEI 29' | | |
| +17 | | 28' | 14" elm |
| +12 | | 28' | ⊙ 13" elm |
| 16+ | | ~~28' ⊙ 14" elm~~ | |
| +87 | | 28' | ⊙ 20" elm |
| +86 | conc 10"x20 | 17' | |
| +60 | 15" conc. | 17' | 21' 15" conc. |
| +55 | | | 24' ⊙ ash 10" |
| +45 | | 28.5 | ⊙ elm 18" |
| +37 | | 27' | ⊙ ash 14" |
| +34 | | 18' | 15" pipe vit. (out of lawn) |
| +17 | | 27' | ⊙ ash 14" |
| +16 | | 28' | ⊙ ash 11" |
| 15+03 | | 27' | ⊙ ash 14 |
| +88 | | 27' | ⊙ elm 14" |
| +75 | | 27' | ⊙ ash 18" |

| | E. | ℄ | W |
|---|---|---|---|
| 18+01 | | 17' | 12"X18' |
| +12 | CEI | 29' | |
| +13 | | 30' ⊖ | triple 8" ashs |
| +66 | | 28' ⊖ | elm 13" |
| +68 | | 28' ⊖ | osage 12" |
| +97 | | 28' ⊖ | base cherry 12" |
| 19+13 | 12"X20' CONC. | 16' | |
| +22 | | 28' ⊖ | osage 12" |
| +41 | | pipe paved | 12" corr. length ? |
| +55 | | 30.5 ⊖ | elm 28" |
| +85 | CEI #531181 | 29' | |
| 20+15 | | 28' | CEI |
| +16 | | 29' ⊖ | osage 12" |
| +49 | | 29.5' | double ash 28" |
| +85 | | 30 | osage 15" |
| +58' | 16'X12" corr | 16' | |
| +81 | | 29' ⊖ | osage 12" |
| 95 | | 29' ⊖ | osage 14" |
| 21+01 | | 16' | paved 20'X12" corr |
| +03 | 12"X20' CONC. | 16' | |
| +43 | | 28' ⊖ | ash 18" |
| +66 | | 32' ⊖ | ash 15" |
| +67 | | 28' | "end free row" |

| | E. | ℄ | W. |
|---|---|---|---|
| +57 | 6" pine | 23' | |
| +68 | corr. 10"X21' | 15' | |
| 30+25 | Map. ⊖ 15" | 27.5 | |
| +78 | CEI (fence ends) | 30' | |
| 33+0 | fence 25' | | |
| | 19' 18' | | |
| +12 | | | 18" CONC. |
| 32+02 | CEI | 29' | |
| +91 | | 28.5 | CEI |
| | ⊖ pine | | |
| +37 | 15' | | 18'X12" corr |
| | pine | | |
| 31+10 | 26' end | | lawn plants |
| +31 | | 26' (10) | lawn plants |
| +30 | CEI | 29.5 | |
| 30+0 | fence start | 30' | |
| +59 | CEI | 29' | |
| 28+12 | 16'X12" | 16' | |
| +98 | CEI | 29' | |
| 26+01 | No pipe | | |
| 25+15 | CEI. | 29' | |
| | 16.5' 14.5' | | |
| 24+96 | ½ pull | | CONC 18" |
| 23+36 | CEI | 29' | |
| +25 | 12" X 24 corr. | 14.5 | |
| 22+0 | lawn w/ pipe | 8" 15' | |

| | E | ℄ | W. |
|---|---|---|---|
| +75 | | 29' | CEI |
| +80 | 15" mtal. 23' | | |
| 35+07 | 12" mtal 23' | | |
| 36+44 | | 28.5 | CEI |
| +93 | | 17' | 18" X 12" corr. |
| 37+11 | | 28.5 | CEI # 533563 |
| +63 | 16' X 12" corr 17' | | |
| 39+74 | | 28.5 | CEI |
| +85 | CEI | 29.5 | |
| 38.95 | | 16.5 17.5 | 15" X 33 CONC. |
| 40+91 | 15' long rail fence paved | 29.5 | |
| 41+12 | 12" X 16' | 16' | |
| +21 | rail fence 15' long | 29.5 | |
| +38 | | 29' | CEI |
| 42+93 | 15' | 17' | 15" ? corr. |
| 43+03 | | 28" | CEI |
| +15 | conc. 32' X 15" 19' | ← THORN Apple Dr. | |
| 44+12 | | 29.5 ℄ | mtal. 15" |
| +41 | | 17' | 12" X 16' corr. |
| +61 | | 28.5 | CEI |
| 45+7 | 16' X 12" corr. 16' | | |
| +20 | | 16' | 24' X 12" |
| 46+23 | | 16' | 12" X 20' corr. |

| | E. | ℄ | W. |
|---|---|---|---|
| +92 | Cast iron 18" 16' | 16' | → CONC. 18" |
| +46 | C.E.I. | | |
| 55+32 | 16' X 12" corr. | 14' | |
| 53+95 | C.E.I. | 29 | |
| | | 13.5 20.5 | |
| +95 | | | 15" CONC. |
| 52+06 | | 17' | 20' X 12" corr. |
| +86 | CEI | 28' | |
| +86 | rail fence ends | 26' | |
| +70 | rail fence light post | 26' | |
| 57 | 15" X 12" corr. | 12' | |
| 51+41 | rail fence light post end | 26' | |
| +67 | | 27' | CEI |
| 50+37 | rail fence beg. | 26' | |
| +92 | | 16' | 10" X 18" corr. |
| 49+32 | 16' X 12" corr. | 14' | |
| 48+66 | | 28' | CEI |
| +70 | | 27.5 | CEI |
| +33 | | | No pipe (Needs 12") |
| 47+11 | 15' X 12" corr. | 14' | |
| | | 15' 17' | |
| +86 | | | 15" CONC. |
| +65 | | 27' | CEI |
| +43 | CEI | 29' | |

| | E | ℄ | W. | |
|---|---|---|---|---|
| 56+43 | | | 23' start lawn tree row | Pine & shrubs |
| +93 | CEI | 28' | | |
| 57+16 | 36'X12" cprr. | 15' | | |
| 57+17 | | | 28' Apple 13" (also tree row) | |
| +45 | CEI 28' | | | |
| +70 | | | 19' rock wall | 6" |
| +79 | | | 28' Buckeye | 22" |
| 57+02 | | | 28' Buckeye | 36" |
| +30 | | | 27' Map. | 18" |
| +44 | | | 27' Map. | 24" |
| +60 | | | 18' Stone wall bends | @ drive |
| +60 | 25'X10" cast iron | 15' | | |
| +66 | | | 16' 6" square tile. | V.T. 32' |
| +76 | | | 18' stone wall | short |
| +89 | | | 29' CEI | |
| 60+01 | CEI -36' | | | |
| 61+20 | | | 30' CEI | |
| +80 | | | 29' end tree row | |
| 62+90 | | | 29' C.E.I. | |
| 63+16 | | | Dikes Rd. | |
| | 15"X33 V.T. | 22' | 15' | CONC. 15"X33' |

| | E | ℄ | W | |
|---|---|---|---|---|
| 63+35 | | | 30' | Row of small Pines ↓ |
| 63+44 | O.B.T. | 29.5' | | |
| 64+49 | O.B.T | 29' | | |
| 64+81 | | | 28.5' | End of Pine Row ↑ |
| 64+88 | | | 28.5' | C.E.I. |
| 64+97 | | | 15' 15' | 12"x16' Corr. |
| 65+54 | O.B.T. | 29' | | |
| 65+91 | Stone Culv. | 14' | 10' | Stone Headwalls ← 3'x2' clearance |
| 66+88 | | 29' | | C.E.I. |
| 66+91 | O.B.T. | 29.5' | | |
| 68+36 | O.B.T. | 28.5' | | |
| 68+91 | | | 29' | C.E.I. |
| 69+25 | | | 17' 21' | 6" steel 12" Conc. x 52.5' |
| 69+70 | | | 19' | 12" Cast Iron |
| 69+76 | O.D.T. | 28' | | |
| 69+82 | | | 27.5' | End of Pipe |
| 70+91 | | | 29' | C.E.I. |
| 71+19 | O.B.T. | 28' | | |
| 72+55 | O.B.T | 27' | | |
| 72+80 | | | 28' | CEI |
| 72+87 | | | 14' 14' | 12" Conc x 25' |
| 73+96 | O.B.T. | 27' | | |
| 74+91 | | | 26' | Multi Rose Hedge → |
| 74+93 | | | 29' | CEI |

cont. page 52

H. Patterson
P. Young
D. Ridenour

# Parkin Road
X Sec. Chag. River

| | | | | | |
|---|---|---|---|---|---|
| B M | 9.20 | 109.20 | | 100.00 | SPK N.E. Root 10" Elm 40' SE of SE⅄ Bridge 10' W. of 34" Sycamore |
| T.P. | 10.11 | 111.70 | 7.61 | 101.59 | |
| T.P. | 9.52, | 119.32 | 1.90 | 109.80 | |
| 0+0 | | | | 111.62 | |
| T.P. | 1.09 | 108.97 | 11.44 | 107.85 | |
| +50 | | | | 106.27 | |
| 1+0 | | | | 102.87 | |
| +50 | | | | 101.37 | |
| T.P. | 3.49 | 104.16 | 8.30 | 100.67 | |
| 2+0 | | | | 100.66 | |
| 3+0 | | | | 100.16 | |
| 4+0 | | | | 99.16 | |
| 5+0 | | | | 99.96 | |
| T.P. | 9.12 | 109.40 | 3.78 | 100.28 | |
| E. Side Bridge | | | | 104.80 | |
| 670 W. Side Bridge | | | | 104.90 | |
| B.M. | 9.71 | 109.71 | 9.41 | 100.00 99.99 | |
| 7+0 | | | | 105.91 | |

S. ⅄ N

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.6/30 | 0.6/22 | | 8.4/10 | 7.9/9 | 7.7 | 8.2/9 | 8.7/13 | 7.9/11 | 2.2/19 | 5.3/30 |
| 1.5/30 | 3.9/20 | 3.4/15 | 3.7/11 | 3.0/9 | 2.7 | 3.4/11 | 5.1/15 | 7.3/22 | | 10.0/30 |
| 8.3/30 | | 7.6/17 | 7.2/15 | 6.3/8 | 6.1 | 6.7/11 | 8.4/16 | | | 9.9/30 |
| 7.0/30 | | 7.1/25 | 7.5/12 | 7.8/10 | 7.6 | 8.2/11 | 8.0/17 | 9.6/18 | | 9.8/30 |
| 4.3/30 | | 4.1/24 | Drive | 3.9/9 | 3.5 | 3.8/12 | 3.2/21 | 2.6/25 | | 4.0/30 |
| 4.5/30 | 3.8/24 | 3.7/15 | 4.5/16 | | 4.0 | 4.6/12 | 5.1/17 | 5.1/21 | | 5.2/30 |
| 6.3/30 | | | 5.5/12 | | 5.0 | 5.4/13 | 6.0/15 | 6.6/22 | | 6.2/30 |
| 4.9/30 | 4.9/20 | 6.3/13 | 5.1/9 | | 4.2 | 4.7/14 | 6.4/13 | 6.6/21 | | 5.5/30 |
| | | | | | 4.6 | | | | | |
| | | | | | 4.5 | | | | | |
| 9.6/20 | 8.8/22 | | 4.9/15 | 4.4/12 | 3.8 | 4.9/19 | | 6.4/30 | | |

| | | | | |
|---|---|---|---|---|
| | | 109.71 | | |
| 7+50 | | | | 109.41 |
| T.P. | 11.82 | 121.40 | 0.13 | 109.58 |
| 8+00 | | | | 114.80 |
| T.P. | 11.81 | 130.59 | 2.62 | 118.78 |
| 8+50 | | | | 120.39 |
| 9+00 | | | | 124.79 |
| 9+50 | | | | 127.49 |
| 10+00 | | | | 126.39 |
| T.P. | 8.71 | 138.57 | 0.73 | 129.86 |
| 9+0 | | | | |
| 9+50 | | | | |
| T.P. | 7.72 | 137.58 | 8.71 | 129.86 |
| 10+00 | | | | |
| T.P | 1.35 | 127.13 | 11.80 | 125.78 |
| 10+50 | | | | 122.43 |
| 11+00 | | | | 119.53 |
| 11+50 | | | | 118.83 |
| T.P. | 5.93 | 130.15 | 2.51 | 124.32 |

S 4 N

8.0/30 5.8/19 3.1/16 1.4/10 0.3 1.1/15 2.4/20 1.8/22 4.7/30

3.0/30 1.6/16 8.0/8 6.6/5 6.6 6.8/15 7.9/17 1.1/26 1.3/30

5.7/30 5.2/18 11.8/9 11.0/7 10.2 10.5/14 11.3/15 4.2/24 4.2/30

6.4/11 6.0/8 5.8 6.0/12 7.0/14

3.3/12 3.1 3.7/12

3.8/14 4.9/11 4.4/10 4.2 4.4/10 5.3/11 4.4/13

9.8/50 6.9/30 6.4/24 7.0/26 7.5/30 10.0/40

4.3/50 2.7/30 2.5/24 0.2/30 1.0/40

6.3/50 5.7/23 3.0/25 2.5/40

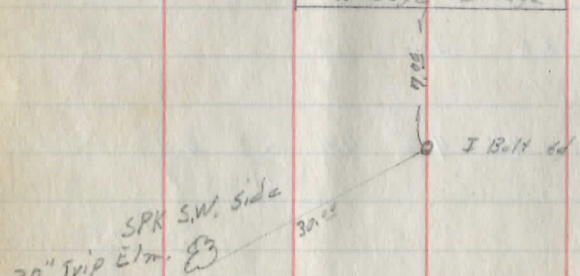
5.3/50 4.5/30 3.8/21 5.1/13 5.6/12 5.3/11 4.7 4.9/11 5.7/14 2.5/20 2.8/30 2.3/40

13.5/50 11.6/28 8.8/22 8.4/18 8.7/16 8.1/12 7.6 7.9/12 8.8/29 9.9/31 10.1/40

13.6/30 11.9/22 9.7/17 8.9/10 8.3 8.4/17 8.8/21 11.7/30

130.15

| | | | | |
|---|---|---|---|---|
| T.P. | 0.20 | 118.57 | 11.78 | 118.37 |
| I.P. | 2.88 | 109.63 | 11.82 | 106.75 |
| B.M. | | | 9.63 | 100.00 |




Caves Rd. Topo

D. Ridenour
B. Moss
S. Smith

Aug. 14, 1961
Warm + Clear

52

| | E | | ℄ | W |
|---|---|---|---|---|
| 75+44 | O.B.T. | 26' | | |
| 76+58 | 12" Ash | 27' | | |
| 76+73 | 12" Cherry | 27' | | |
| 76+93 | CEI | 25.5' | | |
| 76+93 | | | 29' | CEI |
| 77+20 | Lilac Bush | 24' | | |
| 78+00 | | | 29' | 6" Wood Post |
| 78+11 | | | 15.5' ↕ 13' | 12" Corr. x 20.5' |
| 78+18 | | | 29' | 6" Wood Post |
| 78+32 | O.B.T. | 27' | | |
| 78+77 | 12" Corr x 25' | 16' ↕ 14.5' | | |
| 78+87 | 4x4 Wood Post | 27.5' | | |
| 78+92 | | | 29' | CEI |
| 79+14 | | | 32' | 10" Cherry |
| 79+71 | O.B.T. | 27.5' | | |
| 80+37 | | | 26' | Multi Rose Hedge ↓ |
| 80+37 | | | 29' | Woven Wire Fence ↕ |
| 80+58 | | | 26' | End of Hedge End of Fence ↳ |
| 80+76 | | | 15.5' ↕ 19' | 10" Corr. x 20' (paved) |
| 80+95 | | | 28.5' | CEI |
| 81+06 | O.B.T. | 28' | | |
| 82+03 | | | 25' | Start of Hedge ↓ |
| | | | 26' | start of Fence ↓ |
| 82+29 | | | 27' | End of Hedge ↑ |

| | East ℄ | | West |
|---|---|---|---|
| 82+55 | O.B.T. | 28.5' | |
| 82+94 | | 29' | CEI and Fence (Woven) |
| 83+02 | 3" Metal Sign Post (in conc.) | 14' | |
| 83+16 | 12" Corr. × 18' | 14' 14.5' Paved | |
| 83+99 | CEI | 29' | |
| 84+34 | 12" Corr. × 20.5' | 14' 13.5' | |
| 85+00 | | 30' | CEI and Fence |
| 85+06 | 12" Corr. × 20' | 13' 14' | |
| 85+37 | O.B.T. | 27' | |
| 85+39 | | 29' | ℄ End of Fence |
| 85+48 | | 29' | N. Pipe |
| 85+81 | paved | 23' | 10" Pine |
| 86+02 | 12" Corr. × 20' | 14' 15.5' | |
| 86+28 | | 19' | Pine Shrubs |
| 86+53 | | 19' | |
| 86+79 | O.B.T. | 22.5' | |
| 86+97 | | 29' | C.E.I. |
| 87+02 | | 18.5' | 4" Pine |
| 87+15 | | 13.5' 15.5' | 12" × 19.5' CAST IRON |
| 87+24 | | 29' | ℄ Woven Wire Fence |
| 87+48 | | 29' | 10" Cherry |
| 87+53 | CEI | 28' | |
| 87+78 | | 29.5' | 14" Cherry (Fence) |
| 87+84 | | 29.5' | 10" Elm |

| | East ℄ | | West |
|---|---|---|---|
| 88+24 | O.B.T. | 29 | |
| 88+52 | | | 30' 10" Elm |
| 88+54 | | | 30' 8" Elm |
| 88+99 | | | 28' CEI. |
| 89+00 | 4" Pine Shrub | 22' | |
| 89+43 | | 21' 19' | 24" Conc. Crosspipe |
| 89+59 | | | 29' Row of Trees and Fence |
| 89+64 | CEI | 29' | |
| 90+15 | O.B.T. | 29' | |
| 90+63 | | | 28' 18" Twin Cherry in Row |
| 90+63 | | | 28' and Woven Wire Fence |
| 90+72 | No Pipe | 22' | |
| 91+00 | | | 28' CEI and Fence |
| 91+10 | CEI | 30' | |
| 91+12 | | | 28' 10" Cherry Fence |
| 91+73 | | | 29' 20" Twin Cherry End of Row |
| 92+75 | 12" Corr. × 18' | 12' 15.5 | |
| 92+81 | O.B.T. | 28' | |
| 92+84 | | | 29' End of Fence |
| 92+98 | | | 30' CEI |
| 94+22 | O.B.T. | 28.5 | |
| 94+26 | 4" drain pipe | 15' | |
| 94+98 | | | 28' CEI |
| 95+16 | | | 12' 12" Corr. × 28' ℄ Brennon Drive |

| | East | | & West | |
|---|---|---|---|---|
| 95+17 | 4" Steel Post | 22' | | |
| 95+26 | 12" Corr. x 16" | 14' | | |
| 95+69 | O.B.T., 4" Tile Pipe | 28.5' | | |
| 95+87 | | 15' | | |
| 96+98 | | | 29' | CEI |
| 97+23 | C.E.I. | 29' | | |
| 97+76 | 22" Maple | 27' | | |
| 98+10 | 8" Corr x 39.5' | 15' | | |
| 98+94 | O.B.T. | 28.5' | | |
| 98+99 | | | 29' | C.E.I. |
| 100+04 | 18 | 19 | | 18" Conc. Crossover Pipe |
| 101+57 | CEI | 28' | | |
| 101+72 | | | 28.5' | CEI |
| 101+92 | | | James Drive | |
| 101+99 | 12" Corr x 21' | 14.5' | | |
| 102+16 | | | 23.5' | 4x4 Wood Sign Post |
| 102+60 | | | Asphalt drive 24.5' | 15" Pipe |
| 102+85 | | | 29' | CEI. |
| 103+26 | CEI | 28' | | |
| 103+79 | 10" Cast Iron x 17.5 | 13.5 | | |
| 103+90 | 3" Shrub | 19' | | |
| 103+98 | | | 29' | CEI |
| 104+76 | 3" Shrub | 25.5' | | |
| 104+87 | O.B.T. | 28.5' | | |

| | East | | & West | |
|---|---|---|---|---|
| 105+22 | | | 23' | 14" Locust |
| 105+92 | | | 30' | CEI |
| 106+35 | 15" Conc | 17 16 | | 15" Steel Crossover Pipe |
| 106+45 | O.B.T. | 28' | | |
| 106+88 | | | 17' | 10" Corr x 24' |
| 107+94 | CEI | 29' | | |
| 107+94 | | | 29' | CEI |

H. Patterson
P. Young
D. Ridenour

# Cedar Road

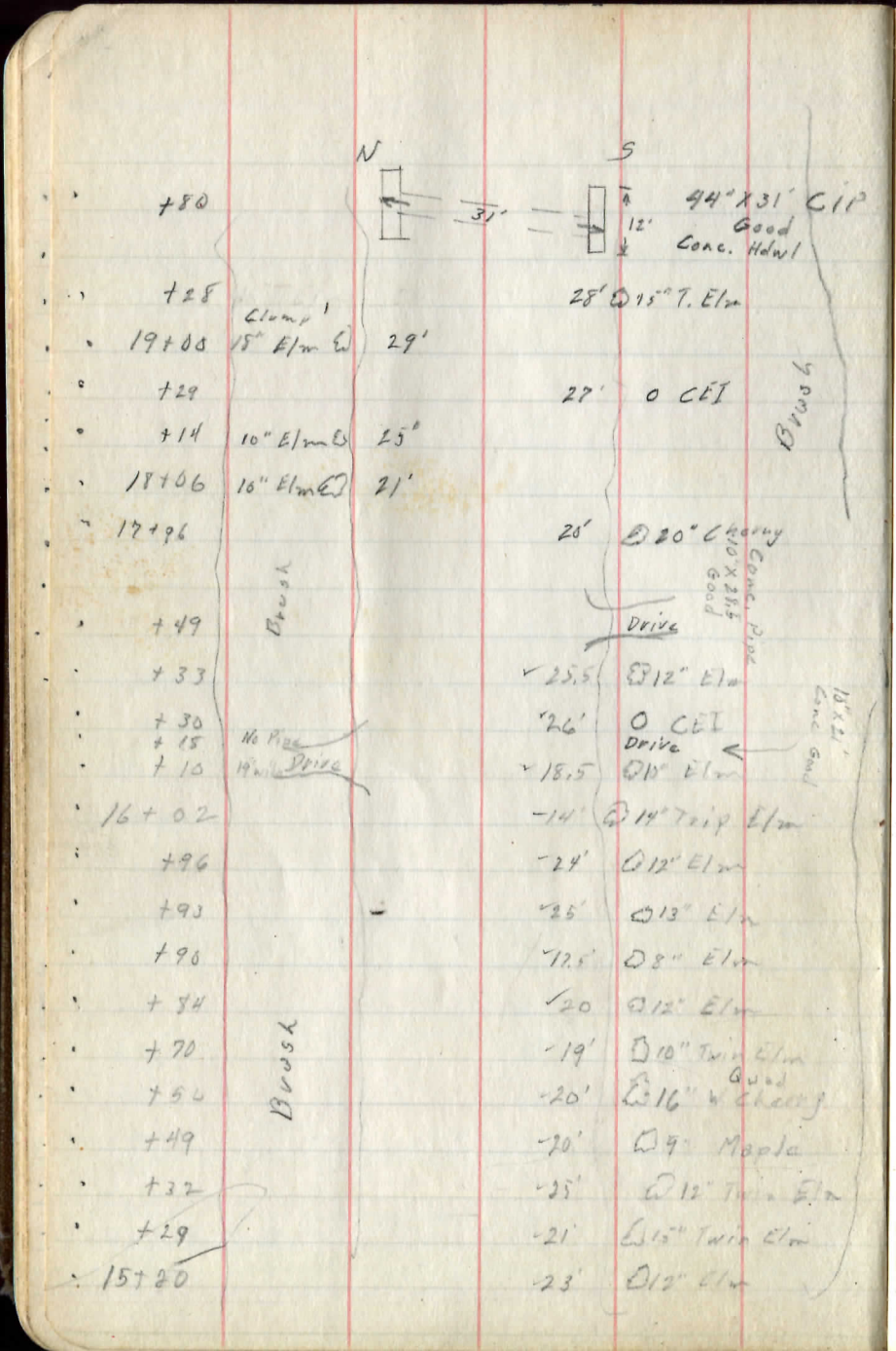
Top

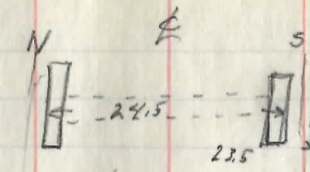
| | | | |
|---|---|---|---|
| | +12 | -20' | ⌀8" Maple |
| | 15+01 | -21' | ⌀10" Elm |
| | +86 | -20' | ⌀8" Elm |
| | +84 | -20' | ⌀10" Elm |
| | +77 | -19' | ⌀9" Elm |
| | +74 | -21' | ⌀10" |
| | +63 | -20' | ⌀10" Elm |
| | +58 | -25' | ⌀ CEI |
| | +50 | -18' | ⌀ Quad Maple |
| | +40 | -18' | ⌀10" Elm |
| | +30 | -21' | ⌀10" Maple |
| | +11 | -16.5' | ⌀12" Cherry |
| | +07 | -22' | ⌀10 Maple |
| | 14+02 | -21' | ⌀10" Twin Elm |
| | +82 | -18' | ⌀9" Elm |
| | +63 | -18' | ⌀15" Elm |
| | +46 | -19' | ⌀10" Elm |
| | +17 | -17' | ⌀10" Elm |
| | 13+00 | -15.5' | ⌀ 5'x0' Twin Elm |
| | +90 | 25' | ⌀ CEI |
| | +80 | 15' → | ⌀13" Elm |
| | +70 | -11' | ⌀16" Twin Maple |
| | +62 | -19' → | ⌀10" Elm |
| Westchester Trail | | | |
| | 12+61 ℄ Rd N. | → 23' ← -11' → | ⌀16" Elm |

Brush

12"x61' CLIP

℄


N
S
+80
31'
12'
94" X 31' CII
Good
Conc. Hdwl
+28
28' 15" T. Elm
19+08
Clump
15" Elm
29'
+29
27' O CEI
+14
10" Elm
25'
18+06
16" Elm
21'
17+96
20' 20" Cherry
Brush
Conc. Pipe
30" X 24.5'
Good
+49
Drive
+33
25.5' 12" Elm
+30
+15
+10
No Pipe
19" Drive
26' O CEI
Drive
18.5' 11" Elm
18" x 24' Conc Culv
16+02
14' 14" Twin Elm
+96
24' 12" Elm
+93
25' 13" Elm
+90
17.5' 8" Elm
+84
20' 12" Elm
+70
19' 10" Twin Elm
Brush
+54
20' 16" Quad Chestnut
+49
20' 9" Maple
+32
25' 12" Twin Elm
+29
21' 15" Twin Elm
15+20
23' 12" Elm




W. 9' H. 6' Stone & Conc. Box Culvt.

25+08

25+04

+98 18" Oak 30'

+80 16" Maple 23.5'

+69 24' 24" T. Oak

+58 22' 10" Dead Elm

+52 22' 15" Dead Elm

+30 28' 20" Elm

24+13 27' Cel

23+52 8.25'

23+41 21' 18" Elm

Brush

+76 8.75' Guard Rail

+46 21' Quad Oak

+40 28' T. Cherry

+33 21' T. Oak

+12 29.5' 25" Maple

2340 29.5' Cel

Brush

Brush

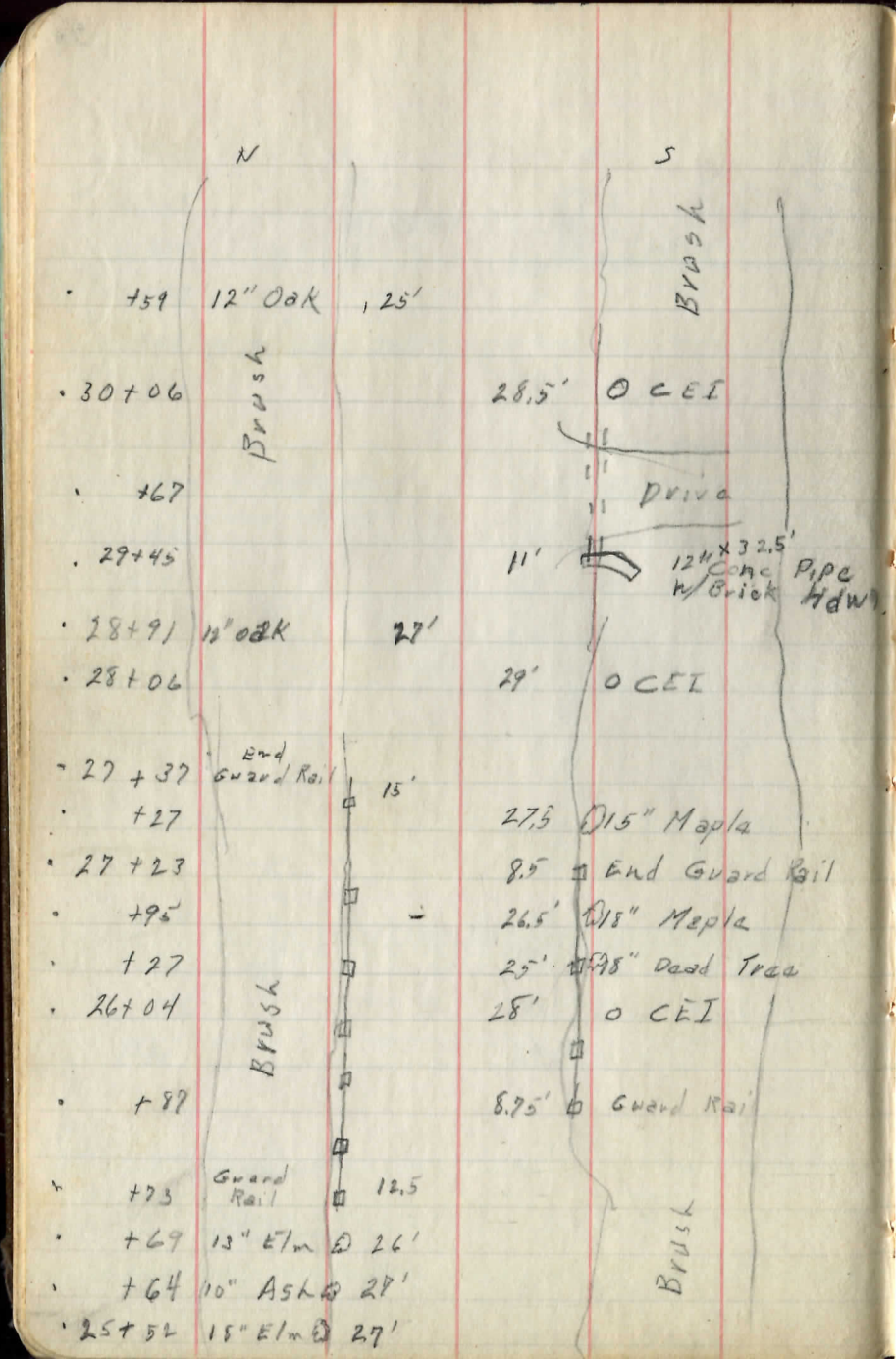
Westgateway Trail

18" x 45.5' Conc.

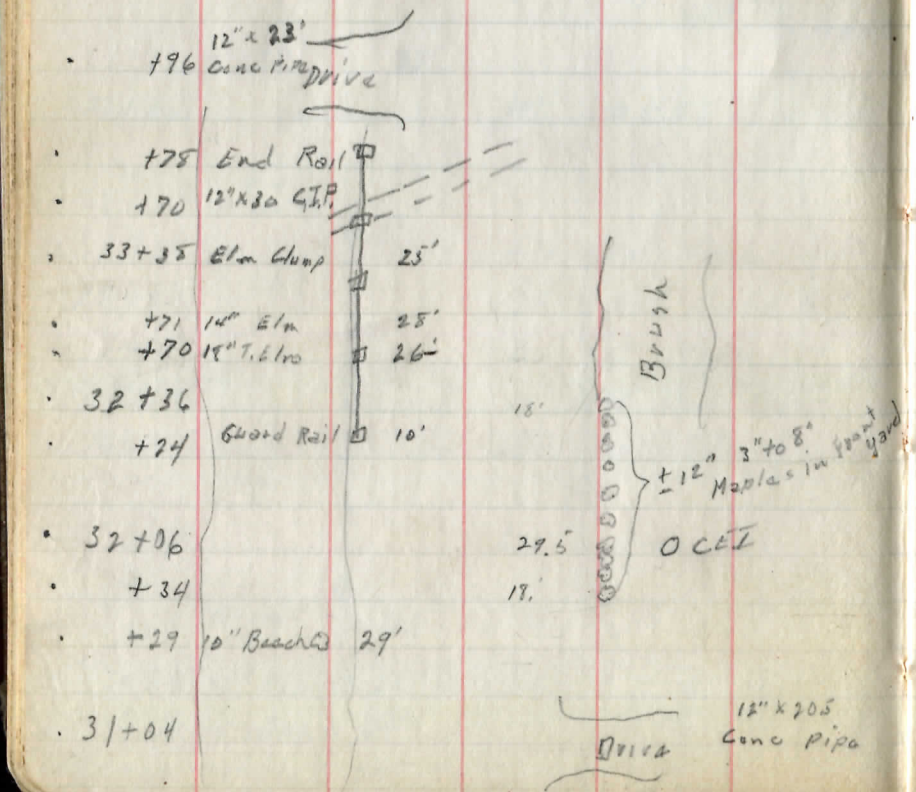
21+29

+27 25' Cel

20+03 29' 10" Maple


N
S
Brush
+59
12" Oak
25'
30+06
28.5'
O CEI
Brush
+67
Drive
29+45
11'
12" x 32.5' Conc Pipe w/ Brick Hdwl
28+91
12" Oak
27'
28+06
29'
O CEI
End Guard Rail
27+37
15'
+27
27.5'
Ø15" Maple
27+23
8.5'
End Guard Rail
+95
26.5'
Ø18" Maple
+27
25'
Ø28" Dead Tree
26+04
28'
O CEI
Brush
+89
8.75'
Guard Rail
Guard Rail
+73
12.5
+69
13" Elm
26'
+64
10" Ash
28'
25+52
15" Elm
27'
Brush

N S


12" x 23'
+96 Conc Pipe Drive
+78 End Rail
+70 12" x 30 C.I.P.
33+35 Elm Clump 25'
+71 14" Elm 25'
+70 18" T. Elm 26'
32+36
+24 Guard Rail 10'
32+06
+34
+29 10" Beech 29'
31+04
Brush
18'
+12" 3" to 8" Maples in front yard
29.5'
OCEAN
18'
Drive
12" x 20.5 Conc Pipe

+37 30' C.E.I

80 +02 29' x 15" Cherry

+54 29' x T. Cherry

+29 29' x 15" Cherry

79 +19 29' x 15" Ash

Brush

Brush

+95 15" X 40.5' C.I.P. Cross Rd Culvt. Rusted Thru bottom

+85 Int. Caves Rd N. & S.

78 +61 28' 0 C.E.I

Brush

12" x 24

+85 C.I.P. Conc Drive

+60 29' 0 C.E.I

76+05 6" Drain Tile 7'

12" x 24 Conc Drive

+85 63'

75+0

| | | | | |
|---|---|---|---|---|
| 83+99 | 12" Ash | 32 | 29 | CEI |
| +72 | 15" Ash | 33 | | |
| +45 | | | 29' | 20" OAK |
| +32 | Brush | | 29' | 15" Quad Ash |
| | 20" Ash | | | |
| | 24" Beech | | | |
| +25 | | | 15' | + + + + Steel Guard rail |
| +23 | | 27' | | Drive |
| +22 | | | | |
| 83+0 | | | 30' to 60' | Grove of ±8 Cherry & Ash Trees |
| +42 | | | | |
| 82+15 | Brush | | 30' | 0 CEI |
| +68 | 18" Maple | 31' | | |
| +47 | | | 30' | 13" Cherry |
| +47 | | | 31' | 8" " |
| +46 | | | 30' | 12" " |
| +26 | | | 30' | 15" Cherry |
| +15 | | | 29' | 12" Cherry |
| 81+06 | 18" Maple | 36' | | |
| 80+97 | Brush | | 29' | 15" Ash |
| | | | | Brush |

Row of Pine Trees 30' off ℄

| | | | | |
|---|---|---|---|---|
| 128+25 | CEI | 28' | | |
| 128+20 | | | 33' | 8" Maple |
| +65 | | | 24' | 3" Pine |
| +57 | | | 17' | Rock Garden |
| 127+26 | | | 21' | 18" Maple |
| +97 | | | 22.5' | 10" Maple |
| +69 | | | 23 | 13" Cherry |
| +37 | | | 24 | 10" Maple |
| +24 | CEI O | 29' | | |
| 126+14 | | | 24' | 15" Maple |
| +85 | Marilyn | | 15' | Dr 10"x34' Conc. |
| +48 | | | 24 | 18" Maple |
| 125+38 | 12"x6" Drive C.L.P. | 14.5' | 21' | 12" Maple |
| +54 | CEI O | 29' | | |
| +24 | Conc. 10"x20 | 15' | | |
| +12 | 2" B.S pruca | 22 | | |
| 124+0 | 16" T. Elm | 18' | | |

| | | | | |
|---|---|---|---|---|
| +30 | Fence X C.E.I. | 32.5' 29' | 17' | Drive Blacktop 12" X 20' C.P. |
| +15 | | | | 8" Spruce |
| 132+0 | | | 25.5 | 3" Arborvita |
| +73 | | | 31.5 | 12" Pine |
| +67 | | | 34. | 8" Pine |
| 131+46 | | | 27' | 15" Ash |
| +96 | | | 36 | 54" Beech |
| +61 | | | | 14" Stump |
| +48 | | | 23 | 12" Elm |
| +35 | | | 23' | 15" Stump & Tree |
| +29 | CEI | 29 | | |
| +18 | 15" Maple | 16.5 | | |
| 130+12 | 24" Stump | 22' | 25' | 24" Stump & Shoots |
| +78 | | | 24' | 18" Elm |
| 129+52 | | 15' | 13.5' | 4.5 x 4.5' Conc Culvt & Stone |
| +89 | | | 27' | 8" Maple |
| +82 | | | 17' | Drive 10" x 24.5' conc |
| 128+58 | | | 29' | Rock Garden CEI |

Brush

Brush

| | | | | | |
|---|---|---|---|---|---|
| +62 | | | 17' | Hedge Row | |
| +47 | | | 15' | Drive | 12" x 29' Vit. Tile |
| +29 | | | 22' | 20" Maple | |
| 137+15 | C.E.I. | 24' | | | |
| +79 | | 17' Conc. | 16" | 3'W x 45" D | Culv. Stone & Conc |
| | | | | | |
| 136+06 | | | 26' | 22" Ash | |
| +68 | Fence C.E.I. | 26' 25' | | | |
| 135+43 | | | 26.5' | Fence | |
| +95 | | | 23' | 24" Maple | |
| +78 | | | 28' | 12" Tulip | |
| | | | | Brush | |
| +15 | | | 30' | 13" Tulip | |
| 134+12 | Fence C.E.I. | 26' 24.5' | | | |
| +83 | | | 26' | 18" Maple | |
| 133+69 | | | 25.5' | 40" Elm | |
| | | | | Brush | |
| +91 | | | 25' | 24" Maple | |
| +60 | | | 25' | C.E.I. | |
| 132+43 | | | 24' | 20" Cherry | |

| | | | | |
|---|---|---|---|---|
| 141+13 | ℄ Intersection SR 306 | | | |
| +80 | | | 28.5' | 3" Pine |
| +63 | Edge Pavt. | | | |
| +53 | | | 24.5' | 15" Maple |
| +30 | | | 23.5' | 16" Maple |
| 140+03 | | 25' | 23' | 15" Maple |
| +83 | | | | Drive 12" x ℄ x CIP Conc. |
| +77 | | | 23' | 12" Maple |
| +68 | | | 15 | Drive |
| +52 | | | 23' | 20" Elm |
| 139+42 | | | 21' | End Hedge & Fence |
| +94 | End Fence | 27 | | |
| +35 | | | 26' | Ø 10" Pine |
| | | | 20 | Hedge |
| +36 | | | 21 25' | Juniper CEI |
| 135+23 | CEI | 24.5 | | |

11/21/59 X Sec Cool 40°

H Patterson
L. Kingston
G. Diedrich

Cedar Rd

| | | | | | |
|---|---|---|---|---|---|
| BM # 1 | 9.27 | 109.27 | | 100.00 | I.P. in |
| | | | | 103.77 | |
| 1+00 | | | | 103.67 | |
| Drive | 15"X 20', | CMP Good | 24 off ℄ | Lt 0+67 | |
| 2+00 | | | | 105.17 | |
| T.P. | 11.57 | 119.50 | 1.34 | 107.93 | |
| | | | | 108.10 | |
| 3+00 | | | | 108.00 | |
| 4+00 | | | | 111.80 | |
| | | | | 115.10 | |
| 5+00 | | | | 115.00 | |
| T.P. | 10.23 | 128.05 | 1.68 | 117.82 | |
| 6+00 | | | | 117.65 | |
| | | | | 120.05 | |
| 7+00 | | | | 119.85 | |
| 8+00 | | - | | 122.55 | |
| +12 | 10"X 20' | Conc. | 18' off ℄ | Lt | |
| TP | 11.22 | 138.73 | 0.34 | 127.71 | |
| | | | | 126.23 | |
| 9+00 | | | | 126.83 | |
| TP | 6.27 | 141.54 | 3.36 | 135.57 | |
| BM # 2 | | | +.31 | 142.15 | Hort. |
| BM # 5 | 2.66 | 131.82 | | 179.16 | R.P. |
| 30+00 | | | | 173.12 | |

Note: Changed to match Profile Elev. (66)
See F.B. 139 pg. 60 start

N ℄ S

Mon box Int. County Line Rd & Cedar

5.8 5.9 7.9 5.6 5.5 5.8 6.9 6.3 7.8
30 21.5 17 13 8 9.5 12 30

4.1 4.0 4.5 4.3 3.7 4.1 4.3 6.2 4.1 4.2
30 21 15.5 15 3 5 7 10 30

10.5 9.2 12.1 11.6 11.3 11.4 11.6 12.2 11.1 8.6 8.5
31 20 17 14 4 4.5 5 8 9 22 30

5.5 6.6 9.1 8.0 7.5 7.7 8.0 8.3 6.8 4.6 5.2
30 32 17 14 4 6 7 10 20 30

3.8 3.4 6.2 4.9 4.3 4.4 4.8 5.2 3.5 3.6
32 23 17 14 3.5 6 8 12 30

10.1 10.2 11.3 10.9 11.3 10.4 10.5 11.4 10.7 10.8
30 21 17.5 15.5 5.5 4 6 11 30

7.7 8.3 8.9 8.3 7.9 6.0 8.2 8.8 8.3 9.6
30 13.5 16 14 4 5.5 8 10 30

4.3 5.3 7.2 5.7 6.5 5.5 5.7 6.5 5.1 6.5
20 15.5 16 12.5 3 6 9 12 30

10.1 10.8 14.5 12.9 12.6 12.7 12.9 13.8 11.9 11.6
30 21 14.5 11 3 5 6.5 13 30

spk. N. side C.E.I. #578627

spk. S. side 28" Beech 30' Lt. & Sta. 31+50

9.3 8.2 9.6 8.7 9.1 9.5 5.9 4.7
30 16 11 9 11 17 30

| | | | | | |
|---|---|---|---|---|---|
| | | 181.82 | | | |
| 31+00 | | | | 176.82 | |
| +06 | 12"×20' | Conc. | 12' dec & Rk | 179.42 | Good |
| 32+00 | | " | | 179.32 | |
| T.P. | 7.55 | 187.24 | 2.13 | 179.69 | |
| | | | | 179.84 | |
| 33+00 | | | | 179.64 | |
| 34+00 | | | | 179.94 | |
| | | | | 181.94 | |
| 35+00 | | | | 181.84 | |
| T.P. | 12.00 | 197.63 | 1.61 | 185.63 | |
| | | | | 186.13 | |
| 36+00 | | | | 186.53 | |
| | | | | 190.73 | |
| 37+00 | | | | 190.53 | |
| T.P. | 7.99 | 203.37 | 2.25 | 195.38 | |
| | | | | 195.37 | |
| 38+00 | | | | 195.27 | |
| 39+00 | | | | 198.07 | |
| 40+00 | | | | 199.67 | |
| | | | | 199.57 | |
| 41+00 | | | | 199.47 | |
| T.P. | 6.52 | 207.24 | 2.65 | 200.72 | |
| B.M. #6 | | | 7.90 | 199.34 | Hort. |
| | | | | 201.34 | |
| 42+00 | | | | 201.04 | |

N 5

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5.4 | 3.6 | 5.7 | | 5.2 | 5.2 | Drive | | 3.1 | |
| 30 | 17 | 12 | | | 8 | | | 30 | |
| 6.4 | 2.8 | 3.0 | 2.7 | 2.4 | 3.0 | 3.0 | | | |
| 30 | 15 | 13 | 9 | | 18 | 12 | 6.0 21 | up 2' 25 | up 1' 30 |
| 14.9 | 12.1 | 7.9 | | 7.4 | 7.8 | 8.3 | 6.9 | 4.8 | |
| 30 | 16 | 10 | | | 11 | 13 | 16 | 30 | |
| 8.0 | 10.3 | 7.8 | | 7.3 | 7.8 | 8.6 | 6.5 | 5.2 | |
| 30 | 16 | 12 | | | 10 | 12 | 16 | 30 | |
| 5.3 | 5.4 | 6.8 | 6.0 | 5.8 | 5.7 | 6.8 | 5.6 | 2.9 | |
| 30 | 18 | 14 | 12 | | 18 | 12 | 15 | 30 | |
| 12.4 | 14.1 | 12.1 | | 11.5 | 11.8 | Drive | | 11.2 | |
| 30 | 13 | 9 | | | 9 | | | 30 | |
| 4.6 | 4.4 | 7.8 | 7.4 | 6.9 | 7.4 | 8.0 | 5.0 | 4.8 | |
| 30 | 11 | 11 | 9 | | 9 | 11 | 17 | 30 | |
| 5.2 | 5.2 | 8.6 | | 8.0 | 8.6 | 9.1 | 5.2 | 5.8 | |
| 30 | 14 | 13 | | | 9 | 11 | 16 | 30 | |
| 4.5 | 4.1 | 5.9 | 5.3 | 5.3 | 5.8 | 3.2 | | 2.7 | |
| 30 | 17 | 12 | 2 | | 10 | 17 | | 30 | |
| 4.7 | 4.4 | 5.0 | 4.2 | 3.7 | 3.5 | | | 2.0 | |
| 30 | 16 | 14 | 12 | | 9 | | | 30 | |
| 6.3 | 4.8 | 4.0 | 3.8 | 3.8 | 4.5 | 5.6 | 5.2 | 4.3 | |
| 30 | 14 | 12 | 1 | | 10 | 12 | 15 | 30 | |

spk. SE. side Quad Ash Clump 72' Lt. Sta. 41+55

| | | | | |
|---|---|---|---|---|
| 5.9 | 6.6 | 7.4 | 6.2 | 6.2 |
| 30 | 10 | 12 | 14 | 30 |

| | | | | | |
|---|---|---|---|---|---|
| | | 207.24 | | | |
| | | | | 203.24 | |
| 43+01 | | | | 203.04 | |
| T.P. | 8.54 | 213.68 | 2.10 | 205.14 | |
| 44+00 | | | | 205.68 | |
| | | | | 208.38 | |
| 45+00 | | | | 208.28 | |
| | | | | 109.68 | |
| 46+00 | | | | | |
| | | | | 210.78 | |
| 47+00 | | | | 210.58 | |
| | | | | 211.18 | |
| 48+00 | | | | 211.08 | |
| BM:TP | 5.33 | 217.01 | 2.00 | 211.68 | Hort. |
| 49+00 | | | | 211.21 | |
| 50+00 | | | | 211.21 | |
| | | | | 211.91 | |
| 51+00 | | | | 211.71 | |
| | | | | 212.61 | |
| 52+00 | | | | 212.41 | |
| | | | | 212.91 | |
| 53+00 | | | | 212.71 | |
| | | | | 213.31 | |
| 54+00 | | | | 213.11 | |
| T.P. | 4.92 | 218.71 | 3.22 | 213.79 | |
| 55+00 | | | | 213.91 | |
| | | | | 213.71 | |

spk. S. side 15" Trip Whitewood 33' Lt. Sta. 49+30

N

5

2.5 3.2 6.4 4.4 3.9 4.0 4.6 4.7 2.9 2.1
30 24 20 13 3 8 10 14 25

6.4 5.7 9.5 8.5 8.0 5.3 9.9 6.6 6.5
30 12 15 11 10 12 15 30

5.6 4.8 6.6 5.7 5.3 5.8 6.7 4.7 4.8
30 19 15 14 10 12 15 30

4.8 4.7 5.4 4.6 4.0 4.6 4.9 3.3 3.4
30 17 15 13 10 11 14 30

2.8 3.5 3.0 2.7 2.9 3.3 4.0 2.4 2.5
30 18 15 3 6 8 11 30

3.1 2.7 3.8 2.9 2.5 3.2 3.6 2.3 1.9
30 20 16 15 9 11 14 30

7.1 6.7 7.1 6.6 5.8 6.6 7.2 6.0 6.0
31 17 14 11 10 12 16 30

5.9 6.6 7.1 6.2 5.8 6.4 7.2 5.7 5.9
30 19 13 10 12 14 17 30

5.2 5.3 5.8 5.6 5.1 5.1 5.5 6.0 3.7 4.3
30 13 11 5 4 13 15 18 30

5.9 4.8 5.1 4.4 4.9 5.0 5.3 3.5 3.5
30 11 10 5 13 15 18 30

4.8 4.6 5.3 4.3 4.1 4.0 4.9 4.3 4.3
30 12 11 7 3.5 14.5 18 30

3.8 3.8 4.6 4.0 3.7 3.6 4.4 3.1 3.2
30 13 10 9 5.5 15.5 18 30

5.8 4.9 6.1 5.4 4.8 4.7 5.4 5.8 4.4 4.6
30 13 10 7 4 15 16 20 30

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 218.71 | | | | |
| 56+00 | | | | 213.91 | | |
| 57+00 | | | | 214.31 | | |
| 58+00 | | | | 214.81 | | |
| 59+00 | | | | 213.71 | | |
| B.M. #8 | 1.61 | 217.62 | 2.70 | 216.61 | Hort. spk | |
| 60+00 | | | | 210.72 | | |
| | | | | 210.62 | | |
| 61+00 | | | | 207.42 | | |
| | | | | 207.22 | | |
| T.P. | 2.51 | 208.41 | 11.72 | 205.90 | | |
| 62+00 | | | | 204.11 | | |
| | | | | 203.91 | | |
| 63+00 | | | | 201.81 | | |
| | | | | 201.61 | | |
| 64+00 | | | | 199.31 | | |
| | | | | 199.21 | | |
| T.P. | | | | | | |
| 65+00 | 4.17 | 202.58 | 10.00 | 198.41 | | |
| | | | | 197.38 | | |
| | | | | 197.18 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5.4 / 30 | 5.4 / 13 | 6.0 / 11 | 4.9 / 8 | 4.8 | 4.7 / 4 | 5.4 / 12 | 5.7 / 14 | 5.0 / 16 | 4.7 / 30 |
| 5.5 / 30 | Drive | | 4.5 / 8 | 4.4 | 4.5 / 12 | 5.2 / 15 | 4.8 / 17 | | 4.7 / 30 |
| 3.1 / 30 | | 4.0 / 13 | 5.0 / 16 | 4.2 / 8 | 3.9 / 3 | 4.9 / 14 | 5.8 / 16 | 3.1 / 17 | 3.0 / 30 |
| 3.8 / 30 | Drive | | 5.0 / 5.5 | 5.3 | 5.0 / 6 | 5.6 / 15 | 6.4 / 16 | 2.8 / 12 | 2.7 / 30 |

s. side C.F.I. # 593614 31 Lt. Sta. 58+81

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5.6 / 30 | 5.5 / 14 | 8.0 / 9 | 7.2 / 7 | 6.9 | 6.8 / 4 | 7.6 / 14 | 8.3 / 15 | 5.1 / 21 | 4.5 / 30 |
| 8.7 / 30 | 10.0 / 14 | 11.5 / 11 | 10.7 / 9 | 10.2 | 10.2 / 3.5 | 10.9 / 12 | 11.8 / 14 | 9.4 / 16 | 8.8 / 30 |
| 3.1 / 30 | 4.1 / 11 | 5.5 / 14 | 4.5 / 7 | 4.3 | 4.3 / 4 | 4.8 / 13 | 5.8 / 16 | 2.2 / 20 | 2.0 / 30 |
| 5.8 / 30 | Drive | | 6.6 / 5 | 6.6 | 6.6 / 5 | 7.2 / 14 | 7.9 / 16 | 7.0 / 17 | 6.9 / 30 |
| 8.1 / 30 | 8.2 / 15 | 10.5 / 10 | 9.4 / 9 | 9.1 | 9.1 / 5 | 9.8 / 13 | 10.3 / 15 | 9.2 / 15 | 9.6 / 30 |
| 4.6 / 30 | 4.6 / 13 | 6.2 / 10 | 5.6 / 9 | 5.2 | 5.2 / 6 | 5.9 / 14 | 6.3 / 16 | 5.0 / 19 | 5.7 / 30 |

12-5-59 Cool

| | | | | |
|---|---|---|---|---|
| BM #11 | 2.12 | 249.70 | | 247.58 |
| T.P. | 0.26 | 237.96 | 12.00 | 237.70 |
| T.P. | 0.46 | 226.59 | 11.83 | 226.13 |
| T.P. | 0.73 | 216.34 | 10.98 | 215.61 |
| 86+0 | | | | 210.44 |
| | | | | 210.24 |
| | | | | 201.45 |
| 87+0 | | | | 201.44 |
| T.P. | 0.75 | 205.58 | 11.51 | 204.83 |
| T.P. | 2.28 | 197.82 | 10.04 | 195.54 |
| 88+0 | | | | 193.14 |
| | | | | 193.02 |
| T.P. | 1.05 | 188.13 | 10.74 | 187.08 |
| 89+0 | | | | 184.83 |
| | | | | 184.43 |
| T.P. | 1.78 | 178.46 | 11.45 | 176.68 |
| 90+0 | | | | 175.76 |
| | | | | 175.96 |
| T.P. | 2.07 | 169.44 | 11.09 | 167.37 |
| 91+0 | | - | | 167.34 |
| | | | | 160.40 |
| 92+0 | | | | 160.34 |
| T.P. | 1.39 | 161.08 | 9.75 | 159.69 |
| 93+0 | | | | 157.08 |
| BM #12 | | | 4.04 | 157.04 |
| 94+0 | | | | 155.48 |
| | | | | 155.88 |
| T.P. | 8.34 | 163.93 | 5.49 | 155.59 |

N S

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.2 | 2.4 | 6.0 | 6.2 | 6.1 | 5.7 | 5.9 | | 6.5 | 7.5 | 6.4 | 7.9 |
| 30 | 29 | 19 | 18 | 19 | 4 | | | 5 | 7 | 8 | 30 |
| 7.0 | | 14.0 | 15.1 | 14.5 | 14.9 | 15.1 | 15.7 | 14.8 | 14.0 | 14.6 | |
| 30 | | 18 | 16 | 5 | | 1 | 6 | 8 | 20 | 30 | |
| 1.0 | 1.7 | 6.3 | 4.8 | 4.6 | 4.8 | | | 5.5 | 4.7 | 5.2 | |
| 30 | 28 | 21 | 19 | 7 | | | | 10 | 11 | 30 | |
| | 3.4 | 4.4 | 3.3 | 3.1 | 3.3 | | | | | 2.9 | |
| | 30 | 24 | 20 | 8 | | | Drive | | | 30 | |
| 2.7 | | 6.9 | 3.1 | 2.6 | 2.7 | 3.1 | | 3.9 | 2.2 | 1.9 | |
| 30 | | 25 | 20 | 6 | 2.5 | 6 | | 6 | 11 | 30 | |
| 0.8 | 5.1 | 4.7 | 2.2 | 2.0 | 2.1 | 2.3 | 3.3 | 1.7 | 3.6 | 3.0 | |
| 36 | 29 | 21 | 14 | 5 | | 7 | 9 | 13 | 20 | 30 | |
| 8.3 | 10.6 | 10.0 | 9.0 | 9.1 | 9.1 | | | 9.7 | 13.3 | 14.6 | |
| 36 | 29 | 17 | 13 | 3 | | | | 12 | 18 | 30 | |
| 5.0 | | 4.3 | 5.9 | 4.2 | 4.0 | | | 4.4 | 6.0 | 6.9 | |
| 30 | | 17 | 15 | 12 | | | | 12 | 17 | 30 | |
| 7.3 | | 6.8 | 6.3 | 5.8 | 5.6 | | | 6.4 | 7.2 | 6.0 | 6.7 |
| 30 | | 23 | 15 | 12 | | | | 14 | 18 | 21 | 30 |
| 6.7 | | 6.3 | | | 5.2 | 5.9 | 6.9 | | 5.6 | 6.2 | |
| 30 | | 22 | | | | 14 | 17 | | 19 | 30 | |

| | | | | |
|---|---|---|---|---|
| | | 163.93 | | |
| 96+0 | | | | 157.03 |
| 97+0 | | | | 159.33 |
| T.P. | 6.20 | 169.61 | 0.52 | 163.41 |
| | | | | 162.16 = 162.21 |
| 98+0 | | | | 162.01 |
| T.P. | 6.55 | 175.22 | 0.94 | 168.67 |
| 99+0 | | | | 165.22 |
| | | | | 168.42 |
| 100+0 | | | | 168.62 |
| 101+0 | | | | 170.72 |
| T.P. | 11.16 | 183.36 | 3.02 | 172.20 |
| 102+0 | | | | 172.76 |
| 103+0 | | | | 175.16 |
| | | | | 177.20 |
| 104+0 | | | | 177.26 |
| 105+0 | | | | 178.86 |
| | | | | 181.30 |
| 106+0 | | | | 181.16 |
| T.P. | 6.75 | 187.91 | 2.20 | 181.16 |
| BM #13 | | | 4.34 | 183.57 |

N

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8.4 / 30 | 7.6 / 16 | 8.2 / 14 | 7.6 / 12 | 6.9 | 8.0 / 14 | 8.8 / 16 | 7.3 / 19 | 6.2 / 30 |
| 5.0 / 30 | 5.4 / 15 | 6.3 / 17 | 5.4 / 14 | 4.6 | 5.1 / 12 | 6.0 / 15 | 3.9 / 19 | 2.8 / 30 |
| 6.9 / ~~7.1~~ / 30 | | | Drive | 7.4 / ~~7.6~~ | | 9.1 / ~~9.3~~ / 16 | 3.5 / ~~3.7~~ / 23 | 3.0 / ~~3.2~~ / 30 |
| 8.4 / 30 | 10.3 / 17 | 11.3 / 15 | 10.8 / 14 | 10.0 | 10.7 / 12 | 11.7 / 16 | 5.1 / 24 | 4.4 / 30 |
| 7.2 / ~~7.0~~ / 30 | 7.1 / ~~6.9~~ / 18 | 7.9 / ~~7.7~~ / 15 | 6.8 / ~~6.6~~ / 3 | 6.8 / ~~6.6~~ | | 7.4 / ~~7.2~~ / 13 | 8.4 / ~~8.2~~ / 16 | 6.5 / ~~6.3~~ / 21 | 5.9 / ~~5.7~~ / 30 |
| 6.0 / 30 | | 5.4 / 15 | 4.5 / 4 | 4.5 | 5.3 / 11 | 6.3 / 14 | 4.2 / 19 | 3.1 / 30 |
| 9.7 / 30 | 10.1 / 20 | 12.6 / 19 | 11.1 / 14 | 10.6 / 3 | 10.6 | 11.4 / 12 | 12.1 / 18 | 5.0 / 21 | 5.0 / 30 |
| 7.8 / 30 | 8.0 / 18 | 9.6 / 15 | 5.6 / 13 | 8.2 | 9.1 / 13 | 10.8 / 16 | 9.3 / 19 | 5.3 / 30 |
| 6.8 / 30 | 6.9 / 17 | 7.7 / 16 | 6.5 / 13 | 6.1 | 7.8 / 13 | 8.5 / 16 | 7.6 / 19 | 7.2 / 30 |
| 3.7 / 30 | | 4.5 / 17 | 5.4 / 14 | 4.5 | 3.5 / 14 | 5.6 / 16 | 4.6 / 19 | 4.5 / 30 |
| -.8 add / 30 | -.4 add / 22 | 2.0 / 18 | 3.0 / 15 | 2.2 | | | 1.8 / 18 | 1.3 / 30 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| | | 187.91 | | | | | | | | | | | |
| 107+0 | | | | 182.11 | 6.6 / 30 | 6.3 / 16 | 6.7 / 14 | 5.8 | 6.3 / 12 | 7.1 / 14 | 6.4 / 16 | 5.8 / 30 | |
| 108+0 | | | | 182.31 | 5.5 / 30 | 5.2 / 18 | 6.1 / 14 | 5.6 | 5.7 / 10 | 6.3 / 13 | 4.1 / 17 | 4.2 / 30 | |
| 109+0 | | | | 182.91 | 5.9 / 30 | | 6.1 / 16 | 5.0 | 5.7 / 12 | 6.7 / 15 | 5.5 / 17 | 5.8 / 30 | |
| 110+0 | | | | 182.51 | 6.9 / 30 | 7.4 / 17 | 6.2 / 12 | 5.4 | 5.7 / 11 | 6.6 / 15 | 6.0 / 16 | 6.9 / 30 | |
| T.P. | 7.10 | 189.60 | 5.41 | 182.50 | | | | | | | | | |
| 111+0 | | | | 182.80 | 7.4 / 30 | 7.8 / 20 | 8.7 / 17 | 7.5 / 13 | 6.5 | 7.4 / 12 | 8.2 / 15 | 7.7 / 16 | 8.4 / 30 |
| | | | | 183.34 | | | | | | | | | |
| 112+0 | | | | 183.40 | 8.2 / 30 | 8.0 / 17 | 7.0 / 12 | 6.2 | 6.9 / 11 | 6.0 / 15 | 7.3 / 17 | 8.1 / 30 | |
| 113+0 | | | | 184.50 | 4.8 / 30 | 4.6 / 19 | 6.0 / 15 | 5.1 | 5.5 / 12 | 6.0 / 15 | 4.8 / 16 | 4.6 / 30 | |
| 114+0 | | | | 187.30 | 0.8 / 30 | 0.9 / 20 | 3.5 / 15 | 2.3 | 2.3 / 12 | 3.0 / 16 | 1.8 / 14 | 1.5 / 30 | |
| T.P. | 7.75 | 195.60 | 1.75 | 187.85 | | | | | | | | | |
| 115+0 | | | | 189.60 | 3.8 / 30 | 3.4 / 21 | 6.5 / 15 | 6.0 | | 7.1 / 14 | 5.7 / 17 | 4.8 / 30 | |
| | | | | 190.74 | | | | | | | | | |
| 116+0 | | | | 190.60 | 2.1 / 30 | 2.0 / 20 | 5.3 / 14 | 5.0 | | 5.5 / 15 | 5.0 / 16 | 4.4 / 30 | |
| 117+0 | | | | 189.50 | 6.7 / 30 | | 7.3 / 15 | 6.1 | Drive | | | 6.3 / 30 | |
| B.M. | 8.00 | 197.43 | 6.17 | 189.43 | | | | | | | | | |
| 119+0 | | | | 188.73 | 8.5 / 30 | 9.9 / 18 | 10.3 / 15 | 9.4 / 13 | 8.7 | 9.4 / 13 | 10.1 / 16 | 8.9 / 19 | 9.5 / 30 |

| | | | | | |
|---|---|---|---|---|---|
| | | 197.43 | | | N S |
| 120+0 | | | | 189.66<br>189.63 | 7.4/30 Road 7.8 8.3/11 9.1/15 6.9/19 7.4/31 |
| 121+0 | | | | 191.33 | 6.2/30 6.4/20 7.9/15 6.8/16 6.1 Drive 5.1/30 |
| 122+0 | | | | 193.03<br>192.73 | 4.7 ~~5.0~~/30 4.9 ~~5.2~~/19 7.1/16 6.0/13 4.4 ~~4.7~~ 4.9/11 6.0/15 4.9/18 5.1/30 |
| 123+0 | | | | 195.03 | 2.1/30 2.7/15 4.9/15 3.2/11 2.4 3.3/13 2.8/18 2.9/30 |
| 124+0 | | | | 196.53 | 1.3/30 1.5/18 3.0/15 1.6/12 0.9 0.9/2 1.7/12 2.7/15 2.0/17 2.9/30 |
| 125+0 | | | | 197.53<br>197.33 | -0.2 0.0/12 1.6/10 0.3/8 -0.1 0.1 0.5/13 1.8/17 1.1/19 0.9/30 |
| BM | | | 8.00 | 189.43 | |
| BM#16 | 7.55 | 212.22 | | 204.64 | |
| 136+0 | | | | 204.92 | 7.0/30 7.7/22 8.8/20 8.2/17 7.3 8.0/13 8.6/16 8.0/30 |
| 137+0 | | | | 204.5 | 10.0/30 10.7/24 11.5/22 11.4/18 8.6/15 7.7 8.0/11 10.8/17 11.9/30 |
| 138+0 | | | | 206.22 | 6.6/30 6.5/19 7.2/17 6.6/15 6.0/3 6.0 6.6/7 7.2/10 7.2/13 7.3/30 |
| 139+0 | | | | 208.46<br>208.32 | 1.7/30 2.0/20 4.7/15 4.2/13 3.7 ~~3.9~~ 4.5/14 2.0/20 2.0/30 |
| T.P. | 11.31 | 220.54 | 2.99 | 209.23 | |

220.54

140+0 211.94

141+13 213.44

N S

5.2/30 6.0/22 9.5/15 8.6 8.9/11 9.3/15 8.3/17 7.6/31

6.1/150 2.2/100 5.1 10.3/100 12.4/150

Patterson 9-11-59 Cedar Rd Sec A & B.
Young 58°
Amendola Burn Protile Side Rds

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BM. #14 | 4.66 | 193.76 | | 189.10 | | | | |
| No Culvt. | Shady Lane | | Sta 113+94 | S | Int. width = 54' | E. Ditch 9.0 | E 6.9 | W. Ditch 8.4 |
| 1+0 | | | | | | | 7.3 | |
| 2+0 | | | | | | | 9.2 | |
| 3+0 | | | | | | | 10.5 | |
| BM #15 | 5.59 | 195.07 | | 189.48 | | | | |
| Culvt. | Dorothy Dr. | Run N. | Sta. 120+24 | | 12" X 61' Conc | E Inlet 5.9 | 4.8 | W outlet 6.4 |
| 1+0 | | | | | | | 4.6 | |
| 2+0 | | | | | | | 5.3 | |
| 3+0 | | | | | | | 6.0 | |
| T.P. | 9.12 | 203.37 | 0.82 | 194.25 | | | | |
| Culvt. | Marilyn Rd. Cedar Acres Drive | Run S. | Sta. 125+82 | | Conc 10" X 36.5' | E Inlet 5.7 | 4.0 | W outlet 6.6 |
| 1+0 | | | | | | | 4.6 | |
| 2+0 | | | | | | | 6.4 | |
| 3+0 | | | | | | | 6.5 | |
| No Culvt | Marilyn Rd. | Run N. | Sta 125+82 | | | E. Ditch 5.0 | 4.6 | W. Ditch 5.8 |
| 1+0 | | | | | | | 4.4 | |
| 2+0 | | | | | | | 3.8 | |
| 3+0 | | | | | | | | |

| | | | | |
|---|---|---|---|---|
| BM #16 | 11.22 | 215.86 | | 204.64 |
| 137+0 | | | 11.32 | 204.54 |
| 139+0 | | | 7.42 | 205.44 |
| 141+13 31 | Int. SR 30 6 t. Cedar | | 0.46 | 215.40 |
| B.M. #16 | | | 11.22 | 204.64 |



Cares Rd.

1964 Ref. Mon. Box Set 9/64

2.4" Buckeye

58+79 10 — 3425 — spk S.W. side

20" Buckeye 26 38 — spk S.S. side — 44 23 — CEI # 230571 spk S.W. side

(58+78.62 Obs STA 2014 mon box fd)

spk N. side

34+97 99 — CEI # 53356 spk. N. side — 33 20 — 24 13 — 13" Map — 25 12 — spk N. side 16" Map

(34+97.69 Obs STA 2014 mon box fd)

Spk N. side

20+19 28 — 15" Ash — 29.28 — 42 13 — CEI # 531181 spk SW side

(20+18.77 Obs STA 2014 mon box Fd)

9+39 66 drive

N.E. Osage — 35.04 — 29.00 — CEI # 531175

(9+39.66 Held 2014 Mon Box Fd)

Caves Rd. 1964 Ref.

STA. 107+20.64
Obs 2014
mon box fd.
original pipe?
INT of caves & fairmount

SW crack in lamp Post

83+00

CEI

Tel. pole

82+98.04
Obs STA 2014
mon box fd
I.P. bent took at bend

63+16

℄ Pekin Rd.

63+17.38
Obs STA 2014
mon box fd
INT of Caves + Dixes (Pekin)

All of CH 30 A+B ℄ monument are placed and offset and errors are on plat for CL of CH 30

# IMPROVED TABLES

## AND

# INFORMATION

# DIRECTIONS FOR USE OF TABLES

## TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope 1½ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

## TABLE No. 9.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections.

Degree of curve with a given I may be found by dividing tangent, (or external), opposite I by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent lenth divided by twice the radius.

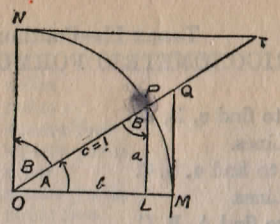



TABLE II

TRIGONOMETRIC FORMULÆ.

$\angle A = \angle MOP \qquad \angle B = \angle PON = \angle OPL$

$R = OB = c = 1$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \tfrac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}} \qquad \cos \tfrac{1}{2} A = \sqrt{\frac{1 + \cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos A \qquad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Lines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C^1}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + b^2 - 2ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \tfrac{1}{2}(A+B)}{\tan \tfrac{1}{2}(A-B)}$$

## Table II—Continued

### TRIGONOMETRIC FORMULAE (continued)

*In any triangle:*

Given a, b, C; to find c, B, A.

Use Law of Lines.

Given A, B, c; to find a, b, C.

Use Law of Lines.

Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)\ (s-b)\ (s-c)}{s}} = r$$

$$\cos \tfrac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \tfrac{1}{2} A = \frac{r}{s-a}$$

$$\tan \tfrac{1}{2} B = \frac{r}{s-b}$$

$$\tan \tfrac{1}{2} C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \tfrac{1}{2} ab \sin C$$

$$\text{Area} = \sqrt{s\ (s-a)\ (s-b)\ (s-c)}$$

PRISMOIDAL FORMULA.

$$\text{Vol.} = \frac{h}{6} (B+b+4M)$$

h = altitude; b, B = bases; M = midsection

## Table III

### INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/16 | .0052 | .0885 | .1719 | .2552 | .3385 | .4219 | .5052 | .5885 | .6719 | .7552 | .8385 | .9219 | 1/16 |
| 1/8 | .0104 | .0938 | .1771 | .2604 | .3438 | .4271 | .5104 | .5938 | .6771 | .7604 | .8438 | .9271 | 1/8 |
| 3/16 | .0156 | .0990 | .1823 | .2656 | .3490 | .4323 | .5156 | .5990 | .6823 | .7656 | .8490 | .9323 | 3/16 |
| 1/4 | .0208 | .1042 | .1875 | .2708 | .3542 | .4375 | .5208 | .6042 | .6875 | .7708 | .8542 | .9375 | 1/4 |
| 5/16 | .0260 | .1094 | .1927 | .2760 | .3594 | .4427 | .5260 | .6094 | .6927 | .7760 | .8594 | .9427 | 5/16 |
| 3/8 | .0313 | .1146 | .1979 | .2813 | .3646 | .4479 | .5313 | .6146 | .6979 | .7813 | .8646 | .9479 | 3/8 |
| 7/16 | .0365 | .1198 | .2031 | .2865 | .3698 | .4531 | .5365 | .6198 | .7031 | .7865 | .8698 | .9531 | 7/16 |
| 1/2 | .0417 | .1250 | .2083 | .2917 | .3750 | .4583 | .5417 | .6250 | .7083 | .7917 | .8750 | .9583 | 1/2 |
| 9/16 | .0469 | .1302 | .2135 | .2969 | .3803 | .4635 | .5469 | .6302 | .7135 | .7969 | .8802 | .9635 | 9/16 |
| 5/8 | .0521 | .1354 | .2188 | .3021 | .3854 | .4688 | .5521 | .6354 | .7188 | .8021 | .8854 | .9688 | 5/8 |
| 11/16 | .0573 | .1406 | .2240 | .3073 | .3906 | .4740 | .5573 | .6406 | .7240 | .8073 | .8906 | .9740 | 11/16 |
| 3/4 | .0625 | .1458 | .2292 | .3125 | .3958 | .4792 | .5625 | .6458 | .7292 | .8125 | .8958 | .9792 | 3/4 |
| 13/16 | .0677 | .1510 | .2344 | .3177 | .4010 | .4844 | .5677 | .6510 | .7344 | .8177 | .9010 | .9844 | 13/16 |
| 7/8 | .0729 | .1563 | .2396 | .3229 | .4063 | .4896 | .5729 | .6563 | .7396 | .8229 | .9063 | .9896 | 7/8 |
| 15/16 | .0781 | .1615 | .2448 | .3281 | .4115 | .4948 | .5781 | .6615 | .7448 | .8281 | .9115 | .9948 | 15/16 |
| 1 | .0833 | .1667 | .2500 | .3333 | .4167 | .5000 | .5833 | .6667 | .7500 | .8333 | .9167 | 1.000 | 1 |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |

## Table IV

### USEFUL RELATIONS.

| | | |
|---|---|---|
| Lineal feet | ×.00019 | = miles |
| Lineal yards | ×.0006 | = miles |
| Square inches | ×.007 | = square feet |
| Square feet | ×.111 | = square yards |
| Square yards | ×.0002067 | = acres |
| Acres | ×4840 | = square yards |
| Cubic inches | ×.00058 | = cubic feet |
| Cubic feet | ×.03704 | = cubic yards |
| Links | ×.22 | = yards |
| Links | ×.66 | = feet |
| Feet | ×1.5 | = links |

360° = 21600′ = 1296000″

Radius = arc of 57.2957790°

Arc of 1° (radius = 1) = .017453292

Arc of 1′ (radius = 1) = .000290888

Arc of 1″ (radius = 1) = .000004848

| | |
|---|---|
| $\pi = 3.141592654$ | $\sqrt{\frac{1}{\pi}} = 0.564190$ |
| $\frac{\pi}{4} = 0.785398163$ | $\sqrt[3]{\frac{6}{\pi}} = 1.240700982$ |
| $\frac{\pi}{6} = 0.523598776$ | $\pi^2 = 9.869604401$ |
| $\sqrt{\frac{4}{\pi}} = 1.128379167$ | $\frac{1}{\pi^2} = 0.101321184$ |
| $\frac{\pi}{6} = 0.523598776$ | $\sqrt{\pi} = 1.772453851$ |
| $\frac{4.\pi}{3} = 4.188790205$ | $\frac{1}{\pi} = 0.3183099$ |

Curvature of Earth's surface = about 0.7 feet in 1 mile

Curvature in feet = 0.667 (Dist. in miles)²

Difference between arc and chord length, 0.05 feet in 11½ miles

Probable error of a single observation = $0.6754 \sqrt{\frac{\Sigma v^2}{n-1}}$

Error in chaining of 0.01 feet in 100 feet:

Due to—

1. Length of tape error of 0.01 feet
2. Alignment. One end 1.4 feet out of line
3. Sag of tape at centre of 0.61 feet.
4. Temperature difference of 15°
5. Difference of pull of 15 lbs.

### STADIA REDUCTION FORMULÆ.

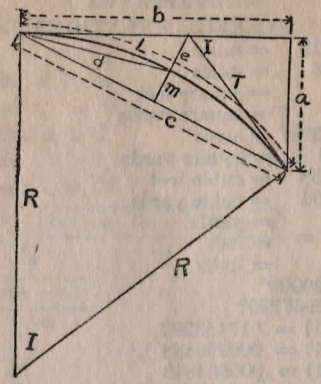
Horizontal Distance = $R - R \sin^2 a + C \cos a$

Vertical Distance = $R \tfrac{1}{2} \sin 2a + C \sin a$

$$R = \text{Reading} \times \frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$$

C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.

a = angle of elevation for mid Reading




## Table V

### CURVE FORMULAE FOR SIMPLE CURVES

Compiled by J. Calvin Locke, C.E.

(1) $c = \sqrt{2Ra}$ (2) $c = \sqrt{a^2+b^2}$

(3) $c = \sqrt{2R\,(R-\sqrt{(R+b)\,(R-b)}} = \sqrt{2R(R-\sqrt{R^2-b^2})}$

(4) $c = 2\sqrt{m\,(2R-m)}$

(5) $c = 2R \sin \frac{1}{2} I$ (6) $c = 2T \cos \frac{1}{2} I$

(7) $e = R \operatorname{exsec} \frac{1}{2} I$

(8) $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$ (9) $e = T \tan \frac{1}{4} I$

(10) $b = \sqrt{a\,(2R-a)}$

(11) $b = \sqrt{\left(c+\frac{c^2}{2R}\right)\left(c-\frac{c^2}{2R}\right)} = \sqrt{c^2-\frac{c^4}{4R^2}}$

(12) $b = R \sin I$ (13) $b = a \cot \frac{1}{2} I$

(14) $R = \frac{a^2+b^2}{2a} = \frac{c^2}{2a}$ (15) $R = \frac{d^2}{2m} = \frac{c^2+4m^2}{8m}$

(16) $d = \sqrt{R\,(2R-\sqrt{(2R+c)\,(2R-c)}} = \sqrt{R(2R-\sqrt{4R^2-c^2})}$

(17) $d = \sqrt{2Rm}$ (18) $d = 2R \sin \frac{1}{4} I$ (19) $m = \frac{d^2}{2R}$

(20) $m = R \mp \sqrt{\left(R+\frac{c}{2}\right)\left(R-\frac{c}{2}\right)} = R \mp \sqrt{R^2-\frac{c^2}{4}}$

(21) $m = R \operatorname{vers} \frac{1}{2} I$ (22) $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$ (23) $m = \frac{1}{2} c \tan \frac{1}{4} I$

(24) $a = \frac{c^2}{2R}$ (25) $a = R - \sqrt{(R+b)\,(R-b)} = R - \sqrt{R^2-b^2}$

(26) $a = 2R\,(\sin^2 \frac{1}{2} I)^2$ (27) $a = R \operatorname{vers} I$ (28) $a = R \sin I \tan \frac{1}{2}$

(29) $a = b \tan \frac{1}{2} I$ (30) $a = T \sin I$ (31) $T = R \tan \frac{1}{2} I$

(32) $I = \frac{L}{R} \times 57.295780$ (33) $R = \frac{L}{I} \times 57.295780$

(34) $L = IR \times 0.01745329$ (35) $L = \frac{8d-c}{3}$

(36) Area Seg. $= \frac{LR - R^2 \sin I}{2} = \frac{LR - Rb}{2}$

## Table VI

### SINES, COSINES, TANGENTS, COTANGENTS

| deg. | sin 0′ | tan 0′ | sin 10′ | tan 10′ | sin 20′ | tan 20′ | sin 30′ | tan 30′ | sin 40′ | tan 40′ | sin 50′ | tan 50′ | deg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0000 | 0000 | 0029 | 0029 | 0058 | 0058 | 0087 | 0087 | 0116 | 0116 | 0145 | 0145 | 89 |
| 1 | 175 | 0175 | 0204 | 0204 | 0233 | 0233 | 0262 | 262 | 291 | 291 | 320 | 320 | 88 |
| 2 | 349 | 349 | 378 | 378 | 407 | 407 | 436 | 437 | 465 | 466 | 494 | 495 | 87 |
| 3 | 523 | 524 | 552 | 553 | 581 | 582 | 610 | 612 | 640 | 641 | 669 | 706 | 86 |
| 4 | 698 | 699 | 727 | 729 | 756 | 758 | 785 | 787 | 814 | 816 | 843 | 864 | 85 |
| 5 | 872 | 875 | 901 | 904 | 929 | 934 | 958 | 963 | 987 | 992 | 1016 | 1022 | 84 |
| 6 | 1045 | 1051 | 1074 | 1080 | 1103 | 1110 | 1132 | 1139 | 1161 | 1169 | 190 | 198 | 83 |
| 7 | 219 | 228 | 248 | 257 | 279 | 287 | 305 | 317 | 334 | 346 | 363 | 376 | 82 |
| 8 | 392 | 405 | 421 | 435 | 449 | 465 | 478 | 495 | 507 | 524 | 536 | 554 | 81 |
| 9 | 564 | 584 | 593 | 614 | 622 | 644 | 650 | 673 | 679 | 703 | 708 | 733 | 80 |
| 10 | 736 | 763 | 765 | 793 | 794 | 823 | 822 | 853 | 851 | 883 | 880 | 914 | 79 |
| 11 | 908 | 944 | 937 | 974 | 965 | 2004 | 994 | 2035 | 2022 | 2065 | 2051 | 2095 | 78 |
| 12 | 2079 | 2126 | 2108 | 2156 | 2136 | 186 | 2164 | 217 | 193 | 247 | 221 | 278 | 77 |
| 13 | 250 | 309 | 278 | 339 | 306 | 370 | 334 | 401 | 363 | 432 | 391 | 462 | 76 |
| 14 | 419 | 493 | 447 | 524 | 476 | 555 | 504 | 586 | 532 | 617 | 560 | 648 | 75 |
| 15 | 588 | 679 | 616 | 711 | 644 | 742 | 672 | 773 | 700 | 805 | 728 | 836 | 74 |
| 16 | 756 | 867 | 784 | 899 | 812 | 931 | 840 | 962 | 868 | 994 | 896 | 3026 | 73 |
| 17 | 924 | 3057 | 952 | 3089 | 2979 | 3121 | 3007 | 3153 | 3035 | 3185 | 3062 | 217 | 72 |
| 18 | 3090 | 249 | 3118 | 281 | 3145 | 314 | 173 | 346 | 201 | 378 | 228 | 411 | 71 |
| 19 | 256 | 443 | 283 | 476 | 311 | 508 | 338 | 541 | 365 | 574 | 393 | 607 | 70 |
| 20 | 420 | 640 | 448 | 673 | 475 | 706 | 502 | 739 | 529 | 772 | 557 | 805 | 69 |
| 21 | 584 | 839 | 611 | 872 | 638 | 906 | 665 | 939 | 692 | 973 | 719 | 4006 | 68 |
| 22 | 746 | 4040 | 773 | 4074 | 800 | 4108 | 827 | 4142 | 854 | 4176 | 881 | 210 | 67 |
| 23 | 907 | 245 | 934 | 279 | 961 | 314 | 987 | 348 | 4014 | 383 | 4041 | 417 | 66 |
| 24 | 4067 | 452 | 4094 | 487 | 4120 | 522 | 4147 | 557 | 173 | 592 | 200 | 628 | 65 |
| 25 | 226 | 663 | 253 | 699 | 279 | 734 | 305 | 770 | 331 | 806 | 358 | 841 | 64 |
| 26 | 384 | 877 | 410 | 913 | 436 | 950 | 4462 | 986 | 488 | 5022 | 514 | 5059 | 63 |
| 27 | 540 | 5095 | 566 | 5132 | 592 | 5169 | 617 | 5206 | 643 | 243 | 669 | 280 | 62 |
| 28 | 695 | 317 | 720 | 354 | 746 | 392 | 772 | 430 | 797 | 467 | 823 | 505 | 61 |
| 29 | 848 | 543 | 874 | 581 | 899 | 619 | 924 | 658 | 950 | 696 | 975 | 735 | 60 |
| 30 | 5000 | 774 | 5025 | 5812 | 5050 | 851 | 5075 | 890 | 5100 | 930 | 5125 | 969 | 59 |
| 31 | 150 | 6009 | 175 | 6048 | 200 | 6088 | 225 | 6128 | 250 | 6168 | 275 | 6208 | 58 |
| 32 | 299 | 249 | 324 | 289 | 348 | 330 | 5373 | 371 | 398 | 412 | 422 | 453 | 57 |
| 33 | 446 | 494 | 471 | 536 | 495 | 577 | 519 | 619 | 544 | 661 | 568 | 703 | 56 |
| 34 | 592 | 745 | 616 | 787 | 640 | 830 | 664 | 873 | 688 | 916 | 712 | 959 | 55 |
| 35 | 736 | 7002 | 760 | 7046 | 783 | 7089 | 807 | 7133 | 831 | 7177 | 854 | 7221 | 54 |
| 36 | 878 | 265 | 901 | 310 | 925 | 355 | 948 | 400 | 972 | 445 | 995 | 490 | 53 |
| 37 | 6018 | 536 | 6041 | 581 | 6065 | 627 | 6088 | 673 | 6111 | 720 | 6134 | 766 | 52 |
| 38 | 157 | 813 | 180 | 860 | 202 | 907 | 225 | 954 | 248 | 8002 | 271 | 8050 | 51 |
| 39 | 293 | 8098 | 316 | 8146 | 338 | 8195 | 361 | 8243 | 383 | 292 | 406 | 342 | 50 |
| 40 | 428 | 391 | 450 | 441 | 472 | 491 | 494 | 541 | 517 | 591 | 539 | 642 | 49 |
| 41 | 561 | 693 | 583 | 744 | 604 | 796 | 626 | 847 | 648 | 899 | 670 | 952 | 48 |
| 42 | 691 | 9004 | 713 | 9057 | 734 | 9110 | 756 | 9163 | 777 | 9217 | 799 | 9271 | 47 |
| 43 | 820 | 325 | 841 | 380 | 862 | 435 | 884 | 490 | 905 | 545 | 926 | 601 | 46 |
| 44 | 947 | 657 | 967 | 713 | 988 | 770 | 7009 | 827 | 7030 | 884 | 7050 | 942 | 45 |
| 45 | 7071 | 1.0000 | 7092 | 1.0058 | 7112 | 1.0117 | 133 | 1.0176 | 153 | 1.0235 | 173 | 1.0295 | 44 |
| deg. | 60′ cos | 60′ cot | 50′ cos | 50′ cot | 40′ cos | 40′ cot | 30′ cos | 30′ cot | 20′ cos | 20 cot | 10′ cos | 10′ cot | deg. |

## Table VI (continued)
## SINES, COSINES, TANGENTS, COTANGENTS (continued)

| deg. | sin 0′ | tan 0′ | sin 10′ | tan 10′ | sin 20′ | tan 20′ | sin 30′ | tan 30′ | sin 40′ | tan 40′ | sin 50′ | tan 50′ | deg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | 7193 | 1.0355 | 7214 | 1.0416 | 7234 | 1.0477 | 7254 | 1.0533 | 7274 | 1.0599 | 7294 | 1.0661 | 43 |
| 47 | 314 | .0724 | 333 | .0786 | 353 | .0850 | 373 | .0913 | 392 | .0977 | 412 | .1041 | 42 |
| 48 | 431 | .1106 | 451 | .1171 | 470 | .1237 | 490 | .1303 | 509 | .1369 | 528 | .1436 | 41 |
| 49 | 547 | .1504 | 566 | .1571 | 585 | .1640 | 604 | .1708 | 623 | .1778 | 642 | .1847 | 40 |
| | | | | | | | | | | 1.2203 | | | |
| 50 | 660 | 1.1918 | 7679 | 1.1988 | 7698 | 1.2059 | 7716 | 1.2131 | 7735 | .2647 | 7753 | 1.2276 | 39 |
| 51 | 771 | .2349 | 790 | .2423 | 808 | .2497 | 826 | .2572 | 844 | .3111 | 862 | .2723 | 38 |
| 52 | 880 | .2799 | 898 | .2876 | 916 | .2954 | 934 | .3032 | 951 | .3597 | 969 | .3190 | 37 |
| 53 | 986 | .3270 | 8004 | .3351 | 8021 | .3452 | 8039 | .3514 | 8056 | .4106 | 8073 | .3680 | 36 |
| 54 | 8090 | .3764 | 107 | .3848 | 124 | .3934 | 141 | .4019 | 158 | .4641 | 175 | .4193 | 35 |
| 55 | 192 | .4281 | 208 | .4370 | 225 | .4460 | 241 | .4550 | 258 | .5204 | 274 | .4733 | 34 |
| 56 | 290 | .4826 | 307 | .4919 | 323 | .5013 | 339 | .5108 | 355 | .5798 | 371 | .5301 | 33 |
| 57 | 387 | .5399 | 403 | .5497 | 418 | .5597 | 434 | .5697 | 450 | .6426 | 465 | .5900 | 32 |
| 58 | 480 | .6003 | 496 | .6107 | 511 | .6212 | 526 | .6319 | 542 | .7090 | 557 | .6534 | 31 |
| 59 | 572 | .6643 | 587 | .6753 | 601 | .6864 | 616 | .6977 | 631 | | 646 | .7205 | 30 |
| 60 | 660 | 1.7321 | 8675 | 1.7437 | 8689 | 1.7556 | 8704 | 1.7675 | 8718 | 1.7797 | 8732 | 1.7917 | 29 |
| 61 | 746 | .8040 | 760 | .8165 | 774 | .8291 | 788 | .8418 | 802 | .8546 | 816 | .8676 | 28 |
| 62 | 829 | .8807 | 843 | .8940 | 857 | .9074 | 870 | .9210 | 884 | .9347 | 897 | .9486 | 27 |
| 63 | 910 | .9626 | 923 | .9768 | 936 | .9912 | 949 | 2.0057 | 962 | 2.0204 | 975 | 2.0353 | 26 |
| 64 | 988 | 2.0503 | 9001 | 2.0655 | 9013 | 2.0809 | 9026 | .0965 | 9038 | .1123 | 9051 | .1283 | 25 |
| 65 | 9063 | .1445 | 075 | .1609 | 088 | .1775 | 100 | .1943 | 112 | .2113 | 124 | .2286 | 24 |
| 66 | 135 | .2460 | 147 | .2637 | 159 | .2817 | 171 | .2998 | 182 | .3183 | 194 | .3369 | 23 |
| 67 | 205 | .3559 | 216 | .3750 | 228 | .3945 | 239 | .4142 | 250 | .4342 | 261 | .4545 | 22 |
| 68 | 272 | .4751 | 283 | .4960 | 293 | .5172 | 304 | .5386 | 315 | .5605 | 325 | .5826 | 21 |
| 69 | 336 | .6051 | 346 | .6279 | 356 | .6511 | 367 | .6746 | 377 | .6985 | 387 | .7228 | 20 |
| 70 | 397 | 2.7475 | 9407 | 2.7725 | 9417 | 2.7980 | 9426 | 2.8239 | 9436 | 2.8502 | 9446 | 2.8770 | 19 |
| 71 | 455 | .9042 | 465 | .9319 | 474 | .9600 | 483 | .9887 | 492 | 3.0178 | 502 | 3.0475 | 18 |
| 72 | 511 | 3.0777 | 520 | 3.1084 | 528 | 3.1397 | 537 | 3.1716 | 546 | .2041 | 555 | .2371 | 17 |
| 73 | 563 | .2709 | 572 | .3052 | 580 | .3402 | 588 | .3759 | 596 | .4124 | 605 | .4495 | 16 |
| 74 | 613 | .4874 | 621 | .5261 | 628 | .5656 | 636 | .6059 | 644 | .6470 | 652 | .6891 | 15 |
| 75 | 659 | .7321 | 667 | .7760 | 674 | .8208 | 681 | .8657 | 689 | .9136 | 696 | .9617 | 14 |
| 76 | 703 | 4.0108 | 710 | 4.0611 | 717 | 4.1126 | 724 | 4.1653 | 730 | 4.2193 | 737 | 4.2747 | 13 |
| 77 | 744 | .3315 | 750 | .3897 | 757 | .4494 | 763 | .5107 | 769 | .5736 | 775 | .6382 | 12 |
| 78 | 781 | .7046 | 787 | .7729 | 793 | .8436 | 799 | .9152 | 805 | .9894 | 811 | 5.0658 | 11 |
| 79 | 816 | .1446 | 822 | 5.2257 | 827 | 5.3093 | 833 | 5.3955 | 838 | 5.4845 | 843 | .5764 | 10 |
| 80 | 9848 | 5.6713 | 9853 | 5.7694 | 9858 | 5.8708 | 9863 | 5.9758 | 9868 | 6.0844 | 9872 | 6.1970 | 9 |
| 81 | 877 | 6.3138 | 881 | 6 4348 | 886 | 6.5606 | 890 | 6.6912 | 894 | .8269 | 899 | .9682 | 8 |
| 82 | 903 | 7.1154 | 907 | 7.2687 | 911 | 7.4287 | 914 | 7.5958 | 918 | 7.7704 | 922 | 7.9530 | 7 |
| 83 | 925 | 8.1443 | 929 | 8.3450 | 932 | 8.5555 | 936 | 8.7769 | 939 | 9.0098 | 942 | 9.2553 | 6 |
| 84 | 945 | 9.5144 | 948 | 9.7882 | 951 | 10.078 | 954 | 10.385 | 957 | 10.711 | 959 | 11.059 | 5 |
| 85 | 962 | 11.430 | 964 | 11.826 | 967 | 12.250 | 969 | 12.706 | 971 | 13.197 | 974 | 13.727 | 4 |
| 86 | 976 | 14.300 | 978 | 14.924 | 980 | 15.605 | 981 | 16.350 | 983 | 17.169 | 985 | 18.075 | 3 |
| 87 | 986 | 19.081 | 988 | 20.206 | 989 | 21.470 | 990 | 22.903 | 992 | 24.542 | 993 | 26.432 | 2 |
| 88 | 994 | 28.636 | 9995 | 31.242 | 9996 | 34.368 | 997 | 38.189 | 997 | 42.964 | 9998 | 49.104 | 1 |
| 89 | 9998 | 57.290 | 9999 | 68.750 | 9999 | 85.940 | 9999 | 114.58 | 1.000 | 171.88 | 1.000 | 343.77 | 0 |
| deg. | 60′ cos | 60′ cot | 50′ cos | 50′ cot | 40′ cos | 40′ cot | 30′ cos | 30′ cot | 20′ cos | 30′ cot | 10′ cos | 10′ cot | deg. |

## TABLE VII
## RODS IN FEET AND INCHES

| Rods | Feet Inches | Rods | Feet Inches | Rods | Feet Inches | Rods | Feet Inches | Rods | Feet Inches |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 16—6 | 21 | 346—6 | 41 | 676—6 | 61 | 1006—6 | 81 | 1336—6 |
| 2 | 33—0 | 22 | 363—0 | 42 | 693—0 | 62 | 1023—0 | 82 | 1353—0 |
| 3 | 49—6 | 23 | 379—6 | 43 | 709—6 | 63 | 1039—6 | 83 | 1369—6 |
| 4 | 66—0 | 24 | 396—0 | 44 | 726—0 | 64 | 1056—0 | 84 | 1386—0 |
| 5 | 82—6 | 25 | 412—6 | 45 | 742—6 | 65 | 1072—6 | 85 | 1402—6 |
| 6 | 99—0 | 26 | 429—0 | 46 | 759—0 | 66 | 1089—0 | 86 | 1419—0 |
| 7 | 115—6 | 27 | 445—6 | 47 | 775—6 | 67 | 1105—6 | 87 | 1435—6 |
| 8 | 132—0 | 28 | 462—0 | 48 | 792—0 | 68 | 1122—0 | 88 | 1452—0 |
| 9 | 148—6 | 29 | 478—6 | 49 | 808—6 | 69 | 1138—6 | 89 | 1468—6 |
| 10 | 165—0 | 30 | 495—0 | 50 | 825—0 | 70 | 1155—0 | 90 | 1485—0 |
| 11 | 181—6 | 31 | 511—6 | 51 | 841—6 | 71 | 1171—6 | 91 | 1501—6 |
| 12 | 198—0 | 32 | 528—0 | 52 | 858—0 | 72 | 1188—0 | 92 | 1518—0 |
| 13 | 214—6 | 33 | 544—6 | 53 | 874—6 | 73 | 1204—6 | 93 | 1534—6 |
| 14 | 231—0 | 34 | 561—0 | 54 | 891—0 | 74 | 1221—0 | 94 | 1551—0 |
| 15 | 247—6 | 35 | 577—6 | 55 | 907—6 | 75 | 1237—6 | 95 | 1567—6 |
| 16 | 264—0 | 36 | 594—0 | 56 | 924—0 | 76 | 1254—0 | 96 | 1584—0 |
| 17 | 280—6 | 37 | 610—6 | 57 | 940—6 | 77 | 1270—6 | 97 | 1600—6 |
| 18 | 297—0 | 38 | 627—0 | 58 | 957—0 | 78 | 1287—0 | 98 | 1617—0 |
| 19 | 313—6 | 39 | 643—6 | 59 | 973—6 | 79 | 1303—6 | 99 | 1633—6 |
| 20 | 330—0 | 40 | 660—0 | 60 | 990—0 | 80 | 1320—0 | 100 | 1650—0 |

## Table VIII
## LINKS IN FEET AND INCHES

| Links | Feet Inches | Links | Feet Inches | Links | Feet Inches | Links | Feet Inches | Links | Feet Inches | Links | Feet Inches |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0– 7.92 | 18 | 11–10.56 | 35 | 23– 1.20 | 52 | 34– 3.84 | 69 | 45– 6.48 | 86 | 56– 9.12 |
| 2 | 1– 3.84 | 19 | 12– 6.48 | 36 | 23– 9.12 | 53 | 34–11.76 | 70 | 46– 2.40 | 87 | 57– 5.04 |
| 3 | 1–11.76 | 20 | 13– 2.40 | 37 | 24– 5.04 | 54 | 35– 7.68 | 71 | 46–10.32 | 88 | 58– 0.96 |
| 4 | 2– 7.68 | 21 | 13–10.32 | 38 | 25– 0.96 | 55 | 36– 3.60 | 72 | 47– 6.24 | 89 | 58– 8.88 |
| 5 | 3– 3.60 | 22 | 14– 6.24 | 39 | 25– 8.88 | 56 | 36–11.52 | 73 | 48– 2.16 | 90 | 59– 4.80 |
| 6 | 3–11.52 | 23 | 15– 2.16 | 40 | 26– 4.80 | 57 | 37– 7.44 | 74 | 48–10.08 | 91 | 60– 0.72 |
| 7 | 4– 7.44 | 24 | 15–10.08 | 41 | 27– 0.72 | 58 | 38– 3.36 | 75 | 49– 6.00 | 92 | 60– 8.64 |
| 8 | 5– 3.36 | 25 | 16– 6.00 | 42 | 27– 8.64 | 59 | 38–11.28 | 76 | 50– 1.92 | 93 | 61– 4.56 |
| 9 | 5–11.28 | 26 | 17– 1.92 | 43 | 28– 4.56 | 60 | 39– 7.20 | 77 | 50– 9.84 | 94 | 62– 0.48 |
| 10 | 6– 7.20 | 27 | 17– 9.84 | 44 | 29– 0.48 | 61 | 40– 3.12 | 78 | 51– 5.76 | 95 | 62– 8.40 |
| 11 | 7– 3.12 | 28 | 18– 5.76 | 45 | 29– 8.40 | 62 | 40–11.04 | 79 | 52– 1.68 | 96 | 63– 4.32 |
| 12 | 7–11.04 | 29 | 19– 1.68 | 46 | 30– 4.32 | 63 | 41– 6.96 | 80 | 52– 9.60 | 97 | 64– 0.24 |
| 13 | 8– 6.96 | 30 | 19– 9.60 | 47 | 31– 0.24 | 64 | 42– 2.88 | 81 | 53– 5.52 | 98 | 64– 8.16 |
| 14 | 9– 2.88 | 31 | 20– 5.52 | 48 | 31– 8.16 | 65 | 42–10.80 | 82 | 54– 1.44 | 99 | 65– 4.08 |
| 15 | 9–10.80 | 32 | 21– 1.44 | 49 | 32– 4.08 | 66 | 43– 6.72 | 83 | 54– 9.36 | 100 | 66– .000 |
| 16 | 10– 6.72 | 33 | 21– 9.36 | 50 | 33– 0.00 | 67 | 44– 2.64 | 84 | 55– 5.28 | 101 | 66 –7.92 |
| 17 | 11– 2.64 | 34 | 22– 5.28 | 51 | 33– 7.92 | 68 | 44–10.56 | 85 | 56– 1.20 | 102 | 67– 3.84 |

## Table IX. TANGENTS AND EXTERNALS TO A 1° CURVE

| I | T | E | I=10° | I | T | E | I=20° | I | T | E | I=30° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1° | 50.00 | .218 | + | 11° | 551.70 | 26.500 | + | 21° | 1061.9 | 97.577 | + |
| 10′ | 58.34 | .297 | 5° C. | 10′ | 560.11 | 27.313 | 5° C | 10′ | 1070.6 | 99.155 | 5° C |
| 20′ | 66.67 | .388 | T | 20′ | 568.53 | 28.137 | T | 20′ | 1079.2 | 100.75 | T |
| 30′ | 75.01 | .491 | .03 | 30′ | 576.95 | 28.974 | .06 | 30′ | 1087.8 | 102.35 | .10 |
| 40′ | 83.34 | .606 | E | 40′ | 585.36 | 29.824 | E | 40′ | 1096.4 | 103.97 | E |
| 50′ | 91.68 | .733 | .001 | 50′ | 593.79 | 30.686 | .006 | 50′ | 1105.1 | 105.60 | .013 |
| 2° | 100.01 | .873 | | 12° | 602.21 | 31.561 | | 22° | 1113.7 | 107.24 | |
| 10′ | 108.35 | 1.024 | | 10′ | 610.64 | 32.447 | | 10′ | 1122.4 | 108.90 | |
| 20′ | 116.68 | 1.188 | | 20′ | 619.07 | 33.347 | | 20′ | 1131.0 | 110.57 | |
| 30′ | 125.02 | 1.364 | | 30′ | 627.50 | 34.259 | | 30′ | 1139.7 | 112.25 | |
| 40′ | 133.36 | 1.552 | | 40′ | 635.93 | 35.183 | | 40′ | 1148.4 | 113.95 | |
| 50′ | 141.70 | 1.752 | | 50′ | 644.37 | 36.120 | | 50′ | 1157.0 | 115.66 | |
| 3° | 150.04 | 1.964 | 10° C. | 13° | 652.81 | 37.070 | 10° C. | 23° | 1165.7 | 117.38 | 10° C. |
| 10′ | 158.38 | 2.188 | T | 10′ | 661.25 | 38.031 | T | 10′ | 1174.4 | 119.12 | T |
| 20′ | 166.72 | 2.425 | .06 | 20′ | 669.70 | 39.006 | .13 | 20′ | 1183.1 | 120.87 | .19 |
| 30′ | 175.06 | 2.674 | E | 30′ | 678.15 | 39.993 | E | 30′ | 1191.8 | 122.63 | E |
| 40′ | 183.40 | 2.934 | .003 | 40′ | 686.60 | 40.992 | .011 | 40′ | 1200.5 | 124.41 | .025 |
| 50′ | 191.74 | 3.207 | | 50′ | 695.06 | 42.004 | | 50′ | 1209.2 | 126.20 | |
| 4° | 200.08 | 3.492 | | 14° | 703.51 | 43.029 | | 24° | 1217.9 | 128.00 | |
| 10′ | 208.43 | 3.790 | | 10′ | 711.97 | 44.066 | | 10′ | 1226.6 | 129.82 | |
| 20′ | 216.77 | 4.099 | | 20′ | 720.44 | 45.116 | | 20′ | 1235.3 | 131.65 | |
| 30′ | 225.12 | 4.421 | | 30′ | 728.90 | 46.178 | | 30′ | 1244.0 | 133.50 | |
| 40′ | 233.47 | 4.755 | | 40′ | 737.37 | 47.253 | | 40′ | 1252.8 | 135.35 | |
| 50′ | 241.81 | 5.100 | 15° C. | 50′ | 745.85 | 48.341 | 15° C. | 50′ | 1261.5 | 137.23 | 15° C. |
| 5° | 250.16 | 5.459 | T | 15° | 754.32 | 49.441 | T | 25° | 1270.2 | 139.11 | T |
| 10′ | 258.51 | 5.829 | .09 | 10′ | 762.80 | 50.554 | .19 | 10′ | 1279.0 | 141.01 | .29 |
| 20′ | 266.86 | 6.211 | E | 20′ | 771.29 | 51.679 | E | 20′ | 1287.7 | 142.93 | E |
| 30′ | 275.21 | 6.606 | .004 | 30′ | 779.77 | 52.818 | .017 | 30′ | 1296.5 | 144.85 | .038 |
| 40′ | 283.57 | 7.013 | | 40′ | 788.26 | 53.969 | | 40′ | 1305.3 | 146.79 | |
| 50′ | 291.92 | 7.432 | | 50′ | 796.75 | 55.132 | | 50′ | 1314.0 | 148.75 | |
| 6° | 300.28 | 7.863 | | 16° | 805.25 | 56.309 | | 26° | 1322.8 | 150.71 | |
| 10′ | 308.64 | 8.307 | | 10′ | 813.75 | 57.498 | | 10′ | 1331.6 | 152.69 | |
| 20′ | 316.99 | 8.762 | | 20′ | 822.25 | 58.699 | | 20′ | 1340.4 | 154.69 | |
| 30′ | 325.35 | 9.230 | | 30′ | 830.76 | 59.914 | | 30′ | 1349.2 | 156.70 | |
| 40′ | 333.71 | 9.710 | 20° C. | 40′ | 839.27 | 61.141 | 20° C. | 40′ | 1358.0 | 158.72 | 20° C. |
| 50′ | 342.08 | 10.202 | T | 50′ | 847.78 | 62.381 | T | 50′ | 1366.8 | 160.76 | T |
| 7° | 350.44 | 10.707 | .13 | 17° | 856.30 | 63.634 | .26 | 27° | 1375.6 | 162.81 | .39 |
| 10′ | 358.81 | 11.224 | E | 10′ | 864.82 | 64.900 | E | 10′ | 1384.4 | 164.86 | E |
| 20′ | 367.17 | 11.753 | .006 | 20′ | 873.35 | 66.178 | .022 | 20′ | 1393.2 | 166.95 | .051 |
| 30′ | 375.54 | 12.294 | | 30′ | 881.88 | 67.470 | | 30′ | 1402.0 | 169.04 | |
| 40′ | 383.91 | 12.847 | | 40′ | 890.41 | 68.774 | | 40′ | 1410.9 | 171.15 | |
| 50′ | 392.28 | 13.413 | | 50′ | 898.95 | 70.091 | | 50′ | 1419.7 | 173.27 | |
| 8° | 400.66 | 13.991 | | 18° | 907.49 | 71.421 | | 28° | 1428.6 | 175.41 | |
| 10′ | 409.03 | 14.582 | | 10′ | 916.03 | 72.764 | | 10′ | 1437.4 | 177.55 | |
| 20′ | 417.41 | 15.184 | 25° C. | 20′ | 924.58 | 74.119 | 25° C. | 20′ | 1446.3 | 179.72 | 25° C. |
| 30′ | 425.79 | 15.799 | T | 30′ | 933.13 | 75.488 | T | 30′ | 1455.1 | 181.89 | T |
| 40′ | 434.17 | 16.426 | .16 | 40′ | 941.69 | 76.869 | .32 | 40′ | 1464.0 | 184.08 | .49 |
| 50′ | 442.55 | 17.065 | E | 50′ | 950.25 | 78.264 | E | 50′ | 1472.9 | 186.29 | E |
| 9° | 450.93 | 17.717 | .007 | 19° | 958.81 | 79.671 | .028 | 29° | 1481.8 | 188.51 | .065 |
| 10′ | 459.32 | 18.381 | | 10′ | 967.38 | 81.092 | | 10′ | 1490.7 | 190.74 | |
| 20′ | 467.71 | 19.058 | | 20′ | 975.96 | 82.525 | | 20′ | 1499.6 | 192.99 | |
| 30′ | 476.10 | 19.746 | | 30′ | 984.53 | 83.972 | | 30′ | 1508.5 | 195.25 | |
| 40′ | 484.49 | 20.447 | | 40′ | 993.12 | 85.431 | | 40′ | 1517.4 | 197.53 | |
| 50′ | 492.88 | 21.161 | | 50′ | 1001.7 | 86.904 | | 50′ | 1526.3 | 199.82 | |
| 10° | 501.28 | 21.887 | 30° C. | 20° | 1010.3 | 88.389 | 30° C. | 30° | 1535.3 | 202.12 | 30° C. |
| 10′ | 509.68 | 22.624 | T | 10′ | 1018.9 | 89.888 | T | 10′ | 1544.2 | 204.44 | T |
| 20′ | 518.08 | 23.375 | .19 | 20′ | 1027.5 | 91.399 | .39 | 20′ | 1553.1 | 206.77 | .59 |
| 30′ | 526.48 | 24.138 | E | 30′ | 1036.1 | 92.924 | E | 30′ | 1562.1 | 209.12 | E |
| 40′ | 534.89 | 24.913 | .008 | 40′ | 1044.7 | 94.462 | .034 | 40′ | 1571.0 | 211.48 | .078 |
| 50′ | 543.29 | 25.700 | | 50′ | 1053.3 | 96.013 | | 50′ | 1580.0 | 213.86 | |

T = R tan ½ I  E = R exsec ½ I

## Table IX. TANGENTS AND EXTERNALS TO A 1° CURVE

| I | T | E | I=40° | I | T | E | I=50° | I | T | E | I=60° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 31° | 1589.0 | 216.3 | + | 41° | 2142.2 | 387.4 | + | 51° | 2732.9 | 618.4 | + |
| 10′ | 1598.0 | 218.7 | 5° C. | 10′ | 2151.7 | 390.7 | 5° C. | 10′ | 2743.1 | 622.8 | 5° C. |
| 20′ | 1606.9 | 221.1 | T | 20′ | 2161.2 | 394.1 | T | 20′ | 2753.4 | 627.2 | T |
| 30′ | 1615.9 | 223.5 | .13 | 30′ | 2170.8 | 397.4 | .17 | 30′ | 2763.7 | 631.7 | .21 |
| 40′ | 1624.9 | 226.0 | E | 40′ | 2180.3 | 400.8 | E | 40′ | 2773.9 | 636.2 | E |
| 50′ | 1633.9 | 228.4 | .023 | 50′ | 2189.9 | 404.2 | .037 | 50′ | 2784.2 | 640.7 | .056 |
| 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 | 10° C. | 43° | 2257.0 | 428.5 | 10° C. | 53° | 2856.7 | 672.7 | 10° C. |
| 10′ | 1706.3 | 248.7 | T | 10′ | 2266.6 | 432.0 | T | 10′ | 2867.1 | 677.3 | T |
| 20′ | 1715.3 | 251.3 | .26 | 20′ | 2276.2 | 435.6 | .34 | 20′ | 2877.5 | 682.0 | .42 |
| 30′ | 1724.4 | 253.9 | E | 30′ | 2285.9 | 439.2 | E | 30′ | 2888.0 | 686.7 | E |
| 40′ | 1733.5 | 256.5 | .046 | 40′ | 2295.6 | 442.8 | .075 | 40′ | 2898.4 | 691.4 | .112 |
| 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 | 15° C. | 50′ | 2363.5 | 468.4 | 15° C. | 50′ | 2972.1 | 725.0 | 15° C. |
| 35° | 1806.6 | 278.1 | T | 45° | 2373.3 | 472.1 | T | 55° | 2982.7 | 729.9 | T |
| 10′ | 1815.7 | 280.8 | .40 | 10′ | 2383.1 | 475.8 | .51 | 10′ | 2993.3 | 734.8 | .63 |
| 20′ | 1824.9 | 283.6 | E | 20′ | 2392.8 | 479.6 | E | 20′ | 3003.9 | 739.7 | E |
| 30′ | 1834.1 | 286.4 | .070 | 30′ | 2402.6 | 483.4 | .116 | 30′ | 3014.5 | 744.6 | .168 |
| 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 | 20° C. | 30′ | 2461.7 | 506.4 | 20° C. | 30′ | 3078.7 | 774.7 | 20° C. |
| 40′ | 1898.6 | 306.4 | T | 40′ | 2471.5 | 510.3 | T | 40′ | 3089.4 | 779.8 | T |
| 50′ | 1907.9 | 309.3 | .53 | 50′ | 2481.4 | 514.3 | .68 | 50′ | 3100.2 | 784.9 | .84 |
| 37° | 1917.1 | 312.2 | E | 47° | 2491.3 | 518.2 | E | 57° | 3110.9 | 790.1 | E |
| 10′ | 1926.4 | 315.2 | .093 | 10′ | 2501.2 | 522.2 | .151 | 10′ | 3121.7 | 795.2 | .225 |
| 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 | 25° C. | 10′ | 2561.0 | 546.3 | 25° C. | 10′ | 3186.9 | 826.7 | 25° C. |
| 20′ | 1991.5 | 336.3 | T | 20′ | 2571.0 | 550.4 | T | 20′ | 3197.8 | 832.0 | T |
| 30′ | 2000.9 | 339.3 | .67 | 30′ | 2581.0 | 554.5 | .85 | 30′ | 3208.8 | 837.3 | 1.05 |
| 40′ | 2010.2 | 342.4 | E | 40′ | 2591.0 | 558.6 | E | 40′ | 3219.7 | 842.7 | E |
| 50′ | 2019.6 | 345.5 | .117 | 50′ | 2601.1 | 562.8 | .189 | 50′ | 3230.7 | 848.1 | .283 |
| 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 | 30° C. | 50° | 2671.8 | 592.3 | 30° C. | 60° | 3308.0 | 886.4 | 30° C. |
| 10′ | 2094.9 | 371.0 | T | 10′ | 2681.9 | 596.6 | T | 10′ | 3319.1 | 892.0 | T |
| 20′ | 2104.3 | 374.2 | .80 | 20′ | 2692.1 | 600.9 | 1.02 | 20′ | 3330.3 | 897.5 | 1.27 |
| 30′ | 2113.8 | 377.5 | E | 30′ | 2702.3 | 605.3 | E | 30′ | 3341.4 | 903.2 | E |
| 40′ | 2123.3 | 380.8 | .141 | 40′ | 2712.5 | 609.6 | .227 | 40′ | 3352.6 | 908.8 | .340 |
| 50′ | 2132.7 | 384.1 | | 50′ | 2722.7 | 614.0 | | 50′ | 3363.8 | 914.5 | |

T = R tan ½ I  E = R exsec ½ I

## TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

| I | T | E | I=70° | I | T | E | I=80° | I | T | E | I=90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 61° | 3375.0 | 920.2 | + | 71° | 4086.9 | 1308.2 | + | 81° | 4893.6 | 1805.3 | + |
| 10′ | 3386.3 | 925.9 | 5° C. | 10′ | 4099.5 | 1315.6 | 5° C. | 10′ | 4908.0 | 1814.7 | 5° C. |
| 20′ | 3397.5 | 931.6 | T | 20′ | 4112.1 | 1322.9 | T | 20′ | 4922.5 | 1824.1 | T |
| 30′ | 3408.8 | 937.3 | .25 | 30′ | 4124.8 | 1330.3 | .30 | 30′ | 4937.0 | 1833.6 | .36 |
| 40′ | 3420.1 | 943.1 | E | 40′ | 4137.4 | 1337.7 | E | 40′ | 4951.5 | 1843.1 | E |
| 50′ | 3431.4 | 948.9 | | 50′ | 4150.1 | 1345.1 | | 50′ | 4966.1 | 1852.6 | |
| 62° | 3442.7 | 954.8 | .080 | 72° | 4162.8 | 1352.6 | .110 | 82° | 4980.7 | 1862.2 | .149 |
| 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 | 10° C. | 73° | 4239.7 | 1398.0 | 10° C. | 83° | 5069.2 | 1920.5 | 10° C. |
| 10′ | 3522.6 | 996.2 | T | 10′ | 4252.6 | 1405.7 | T | 10′ | 5084.0 | 1930.4 | T |
| 20′ | 3534.1 | 1002.3 | .51 | 20′ | 4265.6 | 1413.5 | .61 | 20′ | 5099.0 | 1940.3 | .72 |
| 30′ | 3545.6 | 1008.3 | E | 30′ | 4278.5 | 1421.2 | E | 30′ | 5113.9 | 1950.3 | E |
| 40′ | 3557.2 | 1014.4 | | 40′ | 4291.5 | 1429.0 | | 40′ | 5128.9 | 1960.2 | |
| 50′ | 3568.7 | 1020.5 | .159 | 50′ | 4304.6 | 1436.8 | .220 | 50′ | 5143.9 | 1970.3 | .299 |
| 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 | 15° C. | 50′ | 4383.3 | 1484.4 | 15° C. | 50′ | 5234.9 | 2031.4 | 15° C. |
| 65° | 3650.2 | 1063.9 | T | 75° | 4396.5 | 1492.4 | T | 85° | 5250.3 | 2041.7 | T |
| 10′ | 3661.9 | 1070.2 | .76 | 10′ | 4409.8 | 1500.5 | .91 | 10′ | 5265.6 | 2052.1 | 1.09 |
| 20′ | 3673.7 | 1076.6 | E | 20′ | 4423.1 | 1508.6 | E | 20′ | 5281.0 | 2062.5 | E |
| 30′ | 3685.4 | 1082.9 | .240 | 30′ | 4436.4 | 1516.7 | .332 | 30′ | 5296.4 | 2073.0 | .450 |
| 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 | 20° C. | 30′ | 4516.9 | 1566.3 | 20° C. | 30′ | 5389.9 | 2136.7 | 20° C. |
| 40′ | 3768.5 | 1128.2 | T | 40′ | 4530.4 | 1574.7 | T | 40′ | 5405.6 | 2147.5 | T |
| 50′ | 3780.4 | 1134.8 | 1.02 | 50′ | 4544.0 | 1583.1 | 1.22 | 50′ | 5421.4 | 2158.4 | 1.45 |
| 67° | 3792.4 | 1141.4 | E | 77° | 4557.6 | 1591.6 | E | 87° | 5437.2 | 2169.2 | E |
| 10′ | 3804.4 | 1148.0 | .321 | 10′ | 4571.2 | 1600.1 | .445 | 10′ | 5453.1 | 2180.2 | .603 |
| 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 | 25° C. | 10′ | 4653.6 | 1651.7 | 25° C. | 10′ | 5549.2 | 2246.7 | 25° C. |
| 20′ | 3889.0 | 1195.2 | T | 20′ | 4667.4 | 1660.5 | T | 20′ | 5565.4 | 2258.0 | T |
| 30′ | 3901.2 | 1202.0 | 1.28 | 30′ | 4681.3 | 1669.2 | 1.53 | 30′ | 5581.6 | 2269.3 | 1.83 |
| 40′ | 3913.4 | 1208.9 | E | 40′ | 4695.2 | 1678.1 | E | 40′ | 5597.8 | 2280.6 | E |
| 50′ | 3925.6 | 1215.8 | | 50′ | 4709.2 | 1686.9 | | 50′ | 5614.2 | 2292.0 | |
| 69° | 3937.9 | 1222.7 | .403 | 79° | 4723.2 | 1695.8 | .558 | 89° | 5630.5 | 2303.5 | .756 |
| 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 | 30° C. | 80° | 4807.7 | 1749.9 | 30° C. | 90° | 5729.7 | 2373.3 | 30° C. |
| 10′ | 4024.4 | 1272.1 | T | 10′ | 4822.0 | 1759.0 | T | 10′ | 5746.3 | 2385.1 | T |
| 20′ | 4036.8 | 1279.3 | 1.54 | 20′ | 4836.2 | 1768.2 | 1.84 | 20′ | 5763.1 | 2397.0 | 2.20 |
| 30′ | 4049.3 | 1286.5 | E | 30′ | 4850.5 | 1777.4 | E | 30′ | 5779.9 | 2408.9 | E |
| 40′ | 4061.8 | 1293.6 | | 40′ | 4864.8 | 1786.7 | | 40′ | 5796.7 | 2420.9 | |
| 50′ | 4074.4 | 1300.9 | .485 | 50′ | 4879.2 | 1796.0 | .671 | 50′ | 5813.6 | 2432.9 | .910 |

T = R tan ½ I  E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

| I | T | E | I=100° | I | T | E | I=110° | I | T | E | I=120° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | 5830.5 | 2444.9 | + | 101° | 6950.6 | 3278.1 | + | 111° | 8336.7 | 4386.1 | + |
| 10′ | 5847.5 | 2457.1 | 5° C. | 10′ | 6971.3 | 3294.1 | 5° C. | 10′ | 8362.7 | 4407.6 | 5° C. |
| 20′ | 5864.6 | 2469.3 | T | 20′ | 6992.0 | 3310.1 | T | 20′ | 8388.9 | 4429.2 | T |
| 30′ | 5881.7 | 2481.5 | .43 | 30′ | 7012.7 | 3326.1 | .51 | 30′ | 8415.1 | 4450.9 | .62 |
| 40′ | 5898.8 | 2493.8 | E | 40′ | 7033.6 | 3342.3 | E | 40′ | 8441.5 | 4472.7 | E |
| 50′ | 5916.0 | 2506.1 | | 50′ | 7054.5 | 3358.5 | | 50′ | 8468.0 | 4494.6 | |
| 92° | 5933.2 | 2518.5 | .200 | 102° | 7075.5 | 3374.9 | .268 | 112° | 8494.6 | 4516.6 | .360 |
| 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 | 10° C. | 103° | 7203.2 | 3474.4 | 10° C. | 113° | 8656.6 | 4651.3 | 10° C. |
| 10′ | 6055.4 | 2606.8 | T | 10′ | 7224.7 | 3491.3 | T | 10′ | 8684.0 | 4674.2 | T |
| 20′ | 6073.1 | 2619.7 | .86 | 20′ | 7246.3 | 3508.2 | .103 | 20′ | 8711.5 | 4697.2 | 1.25 |
| 30′ | 6090.8 | 2632.6 | E | 30′ | 7268.0 | 3525.2 | E | 30′ | 8739.2 | 4720.3 | E |
| 40′ | 6108.6 | 2645.5 | | 40′ | 7289.8 | 3542.4 | | 40′ | 8767.0 | 4743.6 | |
| 50′ | 6126.4 | 2658.5 | .401 | 50′ | 7311.7 | 3559.6 | .536 | 50′ | 8794.9 | 4766.9 | .721 |
| 94° | 6144.3 | 2671.6 | | 104° | 7333.6 | 3576.8 | | 114° | 8822.9 | 4790.4 | |
| 10′ | 6162.2 | 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 | 15° C. | 50′ | 7444.6 | 3664.5 | 15° C. | 50′ | 8965.0 | 4909.9 | 15° C. |
| 95° | 6252.8 | 2751.3 | T | 105° | 7467.0 | 3682.3 | T | 115° | 8993.8 | 4934.1 | T |
| 10′ | 6271.1 | 2764.8 | 1.30 | 10′ | 7489.6 | 3700.2 | 1.56 | 10′ | 9022.7 | 4958.6 | 1.93 |
| 20′ | 6289.4 | 2778.3 | E | 20′ | 7512.2 | 3718.2 | E | 20′ | 9051.7 | 4983.1 | E |
| 30′ | 6307.9 | 2792.0 | .604 | 30′ | 7534.9 | 3736.2 | .806 | 30′ | 9080.9 | 5007.8 | 1.09 |
| 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 | 20° C. | 30′ | 7672.9 | 3846.5 | 20° C. | 30′ | 9259.0 | 5158.8 | 20° C. |
| 40′ | 6438.4 | 2889.0 | T | 40′ | 7696.3 | 3865.2 | T | 40′ | 9289.2 | 5184.5 | T |
| 50′ | 6457.3 | 2903.1 | 1.74 | 50′ | 7719.7 | 3884.0 | 2.08 | 50′ | 9319.5 | 5210.3 | 2.52 |
| 97° | 6476.2 | 2917.3 | E | 107° | 7743.2 | 3902.9 | E | 117° | 9349.9 | 5236.2 | E |
| 10′ | 6495.2 | 2931.6 | .809 | 10′ | 7766.8 | 3921.9 | 1.08 | 10′ | 9380.5 | 5262.3 | 1.46 |
| 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 | 25° C. | 10′ | 7910.4 | 4037.8 | 25° C. | 10′ | 9567.2 | 5422.1 | 25° C. |
| 20′ | 6630.1 | 3033.1 | T | 20′ | 7934.6 | 4057.4 | T | 20′ | 9598.9 | 5449.2 | T |
| 30′ | 6649.6 | 3047.9 | 2.18 | 30′ | 7959.0 | 4077.2 | 2.61 | 30′ | 9630.7 | 5476.5 | 3.16 |
| 40′ | 6669.2 | 3062.8 | E | 40′ | 7983.5 | 4097.1 | E | 40′ | 9662.6 | 5504.0 | E |
| 50′ | 6688.8 | 3077.7 | | 50′ | 8008.0 | 4117.0 | | 50′ | 9694.7 | 5531.7 | |
| 99° | 6708.6 | 3092.7 | 1.02 | 109° | 8032.7 | 4137.1 | 1.36 | 119° | 9727.0 | 5559.4 | 1.83 |
| 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 | 30° C. | 110° | 8182.8 | 4259.7 | 30° C. | 120° | 9924.0 | 5729.7 | 30° C. |
| 10′ | 6848.5 | 3199.6 | T | 10′ | 8208.2 | 4280.5 | T | 10′ | 9957.5 | 5758.6 | T |
| 20′ | 6868.8 | 3215.1 | 2.62 | 20′ | 8233.7 | 4301.4 | 3.14 | 20′ | 9991.0 | 5787.7 | 3.81 |
| 30′ | 6889.2 | 3230.8 | E | 30′ | 8259.3 | 4322.4 | E | 30′ | 10025.0 | 5817.0 | E |
| 40′ | 6909.6 | 3246.5 | | 40′ | 8285.0 | 4343.6 | | 40′ | 10059.0 | 5846.5 | |
| 50′ | 6930.1 | 3262.3 | 1.22 | 50′ | 8310.8 | 4364.8 | 1.63 | 50′ | 10093.0 | 5876.1 | 2.20 |

T = R tan ½ I  E = R exsec ½ I

## Table X.

### MIDDLE ORDINATES OF RAILS

Length of Rail (feet)

| C ° ′ | R Feet | 30 Inch | 28 Inch | 26 Inch | 24 Inch | 22 Inch | 20 Inch | C ° | R Feet | 30 Inch | 28 Inch | 26 Inch | 24 Inch | 22 Inch | 20 Inch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-20 | 17189 | .08 | .07 | .06 | .05 | .04 | .03 | 8 | 716.8 | 1.88 | 1.64 | 1.42 | 1.20 | 1.01 | .84 |
| 0-40 | 8594 | .16 | .14 | .12 | .10 | .08 | .07 | 9 | 637.3 | 2.12 | 1.84 | 1.60 | 1.35 | 1.14 | .94 |
| 1-0 | 5730 | .24 | .20 | .18 | .15 | .13 | .10 | 10 | 573.7 | 2.36 | 2.05 | 1.78 | 1.50 | 1.27 | 1.04 |
| 1-20 | 4297 | .31 | .27 | .23 | .20 | .17 | .13 | 11 | 521.7 | 2.59 | 2.26 | 1.95 | 1.65 | 1.39 | 1.15 |
| 1-40 | 3438 | .39 | .34 | .29 | .25 | .21 | .17 | 12 | 478.3 | 3.83 | 2.47 | 2.15 | 1.81 | 1.54 | 1.26 |
| 2-0 | 2865 | .47 | .41 | .35 | .30 | .25 | .20 | 13 | 441.7 | 3.05 | 2.66 | 2.30 | 1.96 | 1.66 | 1.36 |
| 2-20 | 2456 | .55 | .48 | .41 | .35 | .29 | .23 | 14 | 410.3 | 3.30 | 2.87 | 2.48 | 2.10 | 1.78 | 1.46 |
| 2-40 | 2149 | .63 | .55 | .47 | .40 | .33 | .27 | 15 | 383.1 | 3.54 | 3.08 | 2.68 | 2.26 | 1.91 | 1.57 |
| 3-0 | 1910 | .71 | .62 | .53 | .45 | .38 | .31 | 16 | 359.3 | 3.76 | 3.28 | 2.83 | 2.40 | 2.04 | 1.67 |
| 3-20 | 1719 | .78 | .68 | .59 | .50 | .42 | .35 | 17 | 338.3 | 4.00 | 3.48 | 3.02 | 2.57 | 2.16 | 1.78 |
| 3-40 | 1563 | .86 | .75 | .65 | .55 | .46 | .38 | 18 | 319.6 | 4.21 | 3.67 | 3.18 | 2.70 | 2.28 | 1.87 |
| 4-0 | 1433 | .94 | .82 | .71 | .60 | .50 | .42 | 19 | 302.9 | 4.45 | 3.89 | 3.36 | 2.86 | 2.41 | 1.98 |
| 4-20 | 1323 | 1.02 | .89 | .77 | .65 | .55 | .45 | 20 | 287.9 | 4.70 | 4.09 | 3.55 | 3.00 | 2.54 | 2.09 |
| 4-40 | 1228 | 1.10 | .96 | .83 | .70 | .59 | .48 | 22 | 262.0 | 5.16 | 4.44 | 3.84 | 3.30 | 2.80 | 2.29 |
| 5 | 1146 | 1.18 | 1.03 | .89 | .75 | .63 | .52 | 24 | 240.5 | 5.64 | 4.92 | 4.20 | 3.59 | 3.04 | 2.50 |
| 6 | 955.3 | 1.41 | 1.23 | 1.06 | .90 | .76 | .62 | 26 | 222.3 | 6.07 | 5.29 | 4.58 | 3.88 | 3.29 | 2.70 |
| 7 | 819.0 | 1.65 | 1.44 | 1.24 | 1.05 | .89 | .73 | | | | | | | | |

## Table XI.

### SHORT RADIUS CURVES

| Radius Feet | Chord Feet | Central Angle | Deflection Angle | Deflection for 1 Foot |
|---|---|---|---|---|
| 35 | 10 | 16-26 | 8-13 | 49.3 |
| 45 | 10 | 12-46 | 6-23 | 38.3 |
| 50 | 15 | 17-16 | 8-38 | 34.5 |
| 60 | 15 | 14-22 | 7-11 | 28.8 |
| 75 | 15 | 11-30 | 5-45 | 23.0 |
| 100 | 20 | 11-30 | 5-45 | 17.3 |
| 120 | 20 | 9-34 | 4-47 | 14.3 |
| 150 | 20 | 7-39 | 3-49 | 11.5 |
| 190 | 25 | 7-32 | 3-46 | 9.15 |
| 200 | 25 | 7-10 | 3-35 | 8.6 |
| 225 | 25 | 6-25 | 3-12 | 7.7 |
| 240 | 25 | 5-58 | 2-59 | 7.2 |
| 250 | 25 | 5-44 | 2-52 | 6.9 |
| 275 | 25 | 5-12 | 2-36 | 6.2 |
| 288 | 50 | 9-58 | 4-59 | 6.0 |
| 300 | 50 | 9-32 | 4-46 | 5.7 |
| 350 | 50 | 8-12 | 4-06 | 4.9 |
| 376 | 50 | 7-40 | 3-50 | 4.6 |
| 400 | 50 | 7-10 | 3-35 | 4.3 |
| 410 | 50 | 7-00 | 3-30 | 4.2 |

To find length of curve divide angle from P. C. to P. T. by central angle of chord, and multiply by length of chord.

## Table XII.

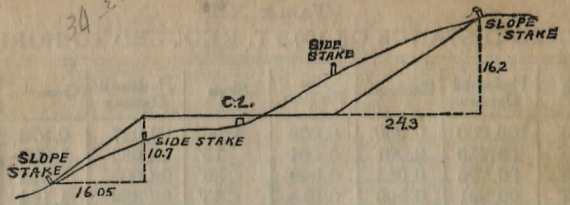
### INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

| Slope | Horizontal Distance | Correction | Rise Per Foot | Slope | Horizontal Distance | Correction | Rise Per Foot |
|---|---|---|---|---|---|---|---|
| 0°00′ | 100.000 | 0.000 | 0.000 | 8°00′ | 99.027 | 0.973 | 0.139 |
| 15′ | 99.999 | 0.001 | 0.004 | 15′ | 98.965 | 1.035 | 0.143 |
| 30′ | 99.996 | 0.004 | 0.009 | 30′ | 98.902 | 1.098 | 0.148 |
| 45′ | 99.991 | 0.009 | 0.013 | 45′ | 98.836 | 1.164 | 0.152 |
| 1 00 | 99.985 | 0.015 | 0.017 | 9 00 | 98.769 | 1.231 | 0.156 |
| 15 | 99.976 | 0.024 | 0.022 | 15 | 98.700 | 1.300 | 0.161 |
| 30 | 99.966 | 0.034 | 0.026 | 30 | 98.629 | 1.371 | 0.165 |
| 45 | 99.953 | 0.047 | 0.031 | 45 | 98.556 | 1.444 | 0.169 |
| 2 00 | 99.939 | 0.061 | 0.035 | 10 00 | 98.481 | 1.519 | 0.174 |
| 15 | 99.923 | 0.077 | 0.039 | 15 | 98.404 | 1.596 | 0.178 |
| 30 | 99.905 | 0.095 | 0.044 | 30 | 98.325 | 1.675 | 0.182 |
| 45 | 99.885 | 0.115 | 0.048 | 45 | 98.245 | 1.755 | 0.187 |
| 3 00 | 99.863 | 0.137 | 0.052 | 11 00 | 98.163 | 1.837 | 0.191 |
| 15 | 99.839 | 0.161 | 0.057 | 15 | 98.079 | 1.921 | 0.195 |
| 30 | 99.813 | 0.187 | 0.061 | 30 | 97.992 | 2.008 | 0.199 |
| 45 | 99.786 | 0.214 | 0.065 | 45 | 97.905 | 2.095 | 0.204 |
| 4 00 | 99.756 | 0.244 | 0.070 | 12 00 | 97.815 | 2.185 | 0.208 |
| 15 | 99.725 | 0.275 | 0.074 | 15 | 97.723 | 2.277 | 0.212 |
| 30 | 99.692 | 0.308 | 0.078 | 30 | 97.630 | 2.370 | 0.216 |
| 45 | 99.657 | 0.343 | 0.083 | 45 | 97.534 | 2.466 | 0.221 |
| 5 00 | 99.619 | 0.381 | 0.087 | 13 00 | 97.437 | 2.563 | 0.225 |
| 15 | 99.580 | 0.420 | 0.092 | 15 | 97.338 | 2.662 | 0.229 |
| 30 | 99.540 | 0.460 | 0.096 | 30 | 97.237 | 2.763 | 0.233 |
| 45 | 99.497 | 0.503 | 0.100 | 45 | 97.134 | 2.866 | 0.238 |
| 6 00 | 99.452 | 0.548 | 0.105 | 14 00 | 97.030 | 2.970 | 0.242 |
| 15 | 99.406 | 0.594 | 0.109 | 15 | 96.923 | 3.077 | 0.246 |
| 30 | 99.357 | 0.643 | 0.113 | 30 | 96.815 | 3.185 | 0.250 |
| 45 | 99.307 | 0.693 | 0.118 | 45 | 96.705 | 3.295 | 0.255 |
| 7 00 | 99.255 | 0.745 | 0.122 | 15 00 | 96.593 | 3.407 | 0.259 |
| 15 | 99.200 | 0.800 | 0.126 | 15 | 96.479 | 3.521 | 0.263 |
| 30 | 99.144 | 0.856 | 0.131 | 30 | 96.363 | 3.637 | 0.267 |
| 45 | 99.087 | 0.913 | 0.135 | 45 | 96.246 | 3.754 | 0.271 |

## Table XIII.

### MINUTES IN DECIMALS OF A DEGREE.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 30″ | .00833 | 10′ 30″ | .17500 | 20′ 30″ | .34167 | 30′ 10″ | .50833 | 40′ 30″ | .67500 | 50′ 10″ | .84167 |
| 1 00 | .01667 | 11 00 | .18333 | 21 00 | .35000 | 31 00 | .51667 | 41 00 | .68333 | 51 00 | .85000 |
| 30 | .02500 | 30 | .19167 | 30 | .35833 | 30 | .52500 | 30 | .69167 | 30 | .85833 |
| 2 00 | .03333 | 12 00 | .20000 | 22 00 | .36667 | 32 00 | .53333 | 42 00 | .70000 | 52 00 | .86667 |
| 30 | .04167 | 30 | .20833 | 30 | .37500 | 30 | .54167 | 30 | .70833 | 30 | .87500 |
| 3 00 | .05000 | 13 00 | .21667 | 23 00 | .38333 | 33 00 | .55000 | 43 00 | .71667 | 53 00 | .88333 |
| 30 | .05833 | 30 | .22500 | 30 | .39167 | 30 | .55833 | 30 | .72500 | 30 | .89167 |
| 4 00 | .06667 | 14 00 | .23333 | 24 00 | .40000 | 34 00 | .56667 | 44 00 | .73333 | 54 00 | .90000 |
| 30 | .07500 | 30 | .24167 | 30 | .40833 | 30 | .57500 | 30 | .74167 | 30 | .90833 |
| 5 00 | .08333 | 15 00 | .25000 | 25 00 | .41667 | 35 00 | .58333 | 45 00 | .75000 | 55 00 | .91667 |
| 30 | .09167 | 30 | .25833 | 30 | .42500 | 30 | .59167 | 30 | .75833 | 30 | .92500 |
| 6 00 | .10000 | 16 00 | .26667 | 26 00 | .43333 | 36 00 | .60000 | 46 00 | .76667 | 56 00 | .93333 |
| 30 | .10833 | 30 | .27500 | 30 | .44167 | 30 | .60833 | 30 | .77500 | 30 | .94167 |
| 7 00 | .11667 | 17 00 | .28333 | 27 00 | .45000 | 37 00 | .61667 | 47 00 | .78333 | 57 00 | .95000 |
| 30 | .12500 | 30 | .29167 | 30 | .45833 | 30 | .62500 | 30 | .79167 | 30 | .95833 |
| 8 00 | .13333 | 18 00 | .30000 | 28 00 | .46667 | 38 00 | .63333 | 48 00 | .80000 | 58 00 | .96667 |
| 30 | .14167 | 30 | .30833 | 30 | .47500 | 30 | .64167 | 30 | .80833 | 30 | .97500 |
| 9 00 | .15000 | 19 00 | .31667 | 29 00 | .48333 | 39 00 | .65000 | 49 00 | .81667 | 59 00 | .98333 |
| 30 | .15833 | 30 | .32500 | 30 | .49167 | 30 | .65833 | 30 | .82500 | 30 | .99167 |
| 10 00 | .16667 | 20 00 | .33333 | 30 00 | .50000 | 40 00 | .66667 | 50 00 | .83333 | 60 00 | 1.00000 |




## DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1½ TO 1. ROADWAY OF ANY WIDTH.

| | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 00 | 0 15 | 0.30 | 0.45 | 0.60 | 0.75 | 0.90 | 1.05 | 1.20 | 1.35 | 0 |
| 1 | 1.50 | 1 65 | 1 80 | 1.95 | 2.10 | 2.25 | 2.40 | 2.55 | 2.70 | 2.85 | 1 |
| 2 | 3.00 | 3.15 | 3.30 | 3 45 | 3.60 | 3 75 | 3.90 | 4.05 | 4.20 | 4 35 | 2 |
| 3 | 4.50 | 4 65 | 4.80 | 4.95 | 5.10 | 5 25 | 5 40 | 5.55 | 5.70 | 5.85 | 3 |
| 4 | 6.00 | 6 15 | 6.30 | 6.45 | 6.60 | 6.75 | 6.90 | 7.05 | 7.20 | 7.35 | 4 |
| 5 | 7 50 | 7.65 | 7.80 | 7.95 | 8.10 | 8.25 | 8.40 | 8.55 | 8.70 | 8.85 | 5 |
| 6 | 9 00 | 9 15 | 9.30 | 9.45 | 9.60 | 9.75 | 9.90 | 10.05 | 10.20 | 10.35 | 6 |
| 7 | 10.50 | 10 65 | 10.80 | 10.95 | 11.10 | 11.25 | 11.40 | 11.55 | 11 70 | 11.85 | 7 |
| 8 | 12.00 | 12 15 | 12.30 | 12.45 | 12.60 | 12.75 | 12.90 | 13 05 | 13.20 | 13.35 | 8 |
| 9 | 13 50 | 13.65 | 13 80 | 13 95 | 14.10 | 14.25 | 14.40 | 14 55 | 14.70 | 14.85 | 9 |
| 10 | 15.00 | 15 15 | 15 30 | 15 45 | 15.60 | 15.75 | 15.90 | 16.05 | 16.20 | 16 35 | 10 |
| 11 | 16 50 | 16 65 | 16 80 | 16.95 | 17 10 | 17.25 | 17.40 | 17.55 | 17.70 | 17.85 | 11 |
| 12 | 18 00 | 18.15 | 18.30 | 18 45 | 18.60 | 18 75 | 18.90 | 19.05 | 19.20 | 19.35 | 12 |
| 13 | 19 50 | 19 65 | 19.80 | 19.95 | 20.10 | 20.25 | 20 40 | 20.55 | 20.70 | 20.85 | 13 |
| 14 | 21.00 | 21 15 | 21.30 | 21.45 | 21 60 | 21.75 | 21.90 | 22 05 | 22 20 | 22 35 | 14 |
| 15 | 22 50 | 22 65 | 22 80 | 22 95 | 23.10 | 23.25 | 23.40 | 23.55 | 23.70 | 23.85 | 15 |
| 16 | 24.00 | 24 15 | 24 30 | 24 45 | 24.60 | 24.75 | 24 90 | 25 05 | 25.20 | 25.35 | 16 |
| 17 | 25.50 | 25 65 | 25.80 | 25 95 | 26.10 | 26 25 | 26 40 | 26.55 | 26.70 | 26.85 | 17 |
| 18 | 27.00 | 27 15 | 27.30 | 27 45 | 27.60 | 27.75 | 27.90 | 28.05 | 28 20 | 28.35 | 18 |
| 19 | 28 50 | 28 65 | 28 80 | 28.95 | 29.10 | 29.25 | 29.40 | 29.55 | 29.70 | 29.85 | 19 |
| 20 | 30 00 | 30.15 | 30.30 | 30.45 | 30.60 | 30.75 | 30.90 | 31.05 | 31.20 | 31.35 | 20 |
| 21 | 31 50 | 31 65 | 31.80 | 31.95 | 32 10 | 32 25 | 32.40 | 32.55 | 32 70 | 32 85 | 21 |
| 22 | 33 00 | 33 15 | 33 30 | 33 45 | 33.60 | 33 75 | 33.90 | 34.05 | 34.20 | 34.35 | 22 |
| 23 | 34 50 | 34 65 | 34.80 | 34.95 | 35.10 | 35 25 | 35 40 | 35.55 | 35.70 | 35 85 | 23 |
| 24 | 36.00 | 36 15 | 36.30 | 36 45 | 36.60 | 36.75 | 36.90 | 37.05 | 37.20 | 37.35 | 24 |
| 25 | 37.50 | 37.65 | 37 80 | 37.95 | 38.10 | 38.25 | 38.40 | 38.55 | 38.70 | 38.85 | 25 |
| 26 | 39 00 | 39 15 | 39.30 | 39 45 | 39 60 | 39.75 | 39.90 | 40.05 | 40.20 | 40.35 | 26 |
| 27 | 40 50 | 40 65 | 40 80 | 40.95 | 41.10 | 41.25 | 41 40 | 41.55 | 41.70 | 41.85 | 27 |
| 28 | 42 00 | 42 15 | 42.30 | 42.45 | 42.60 | 42 75 | 42.90 | 43.05 | 43.20 | 43.35 | 28 |
| 29 | 43.50 | 43 65 | 43.80 | 43 95 | 44.10 | 44 25 | 44 40 | 44.55 | 44.70 | 44 85 | 29 |
| 30 | 45 00 | 45 15 | 45.30 | 45 45 | 45.60 | 45.75 | 45.90 | 46.05 | 46 20 | 46.35 | 30 |
| 31 | 46.50 | 46.65 | 46.80 | 46 95 | 47.10 | 47.25 | 47.40 | 47.55 | 47.70 | 47.85 | 31 |
| 32 | 48 00 | 48.15 | 48.30 | 48 45 | 48.60 | 48 75 | 48.90 | 49.05 | 49 20 | 49.35 | 32 |
| 33 | 49.50 | 49 65 | 49.80 | 49.95 | 50.10 | 50.25 | 50.40 | 50.55 | 50.70 | 50.85 | 33 |
| 34 | 51 00 | 51.15 | 51.30 | 51.45 | 51.60 | 51.75 | 51.90 | 52.05 | 52.20 | 52.35 | 34 |
| 35 | 52 50 | 52.65 | 52.80 | 52.95 | 53.10 | 53.25 | 53.40 | 53.55 | 53.70 | 53.85 | 35 |
| 36 | 54 00 | 54.15 | 54.30 | 54 45 | 54.60 | 54.75 | 54.90 | 55.05 | 55.20 | 55.35 | 36 |
| 37 | 55 50 | 55 65 | 55.80 | 55.95 | 56.10 | 56.25 | 56.40 | 56.55 | 56.70 | 56.85 | 37 |
| 38 | 57.00 | 57.15 | 57.30 | 57 45 | 57.60 | 57.75 | 57.90 | 58.05 | 58.20 | 58 35 | 38 |
| 39 | 58 50 | 58.65 | 58 80 | 58.95 | 59.10 | 59 25 | 59.40 | 59 55 | 59.70 | 59.85 | 39 |
| 40 | 60 00 | 60.15 | 60 30 | 60 45 | 60 60 | 60.75 | 60 90 | 61.05 | 61 20 | 61.35 | 40 |
| 41 | 61.50 | 61 65 | 61 80 | 61 95 | 62 10 | 62 25 | 62.40 | 62 55 | 62 70 | 62.85 | 41 |
| 42 | 63 00 | 63.15 | 63 30 | 63 45 | 63 60 | 63 75 | 63 90 | 64 05 | 64 20 | 64.35 | 42 |
| 43 | 64.50 | 64 65 | 64 80 | 64.95 | 65.10 | 65 25 | 65 40 | 65.55 | 65.70 | 65.85 | 43 |
| 44 | 66 00 | 66 15 | 66 30 | 66.45 | 66.60 | 66.75 | 66.90 | 67.05 | 67.20 | 67.35 | 44 |
| 45 | 67 50 | 67 65 | 67 80 | 67.95 | 68.10 | 68.25 | 68.40 | 68.55 | 68.70 | 68.85 | 45 |
| 46 | 69 00 | 69 15 | 69 30 | 69.45 | 69.60 | 69.75 | 69.90 | 70.05 | 70.20 | 70.35 | 46 |
| 47 | 70.50 | 70 65 | 70 80 | 70 95 | 71.10 | 71.25 | 71.40 | 71.55 | 71.70 | 71.85 | 47 |
| 48 | 72.00 | 72 15 | 72.30 | 72.45 | 72.60 | 72.75 | 72.90 | 73 05 | 73.20 | 73 35 | 48 |
| 49 | 73 50 | 73 65 | 73.80 | 73.95 | 74.10 | 74.25 | 74.40 | 74.55 | 74.70 | 74.85 | 49 |
| 50 | 75.00 | 75.15 | 75.30 | 75.45 | 75.60 | 75.75 | 75.90 | 76.05 | 76.20 | 76.35 | 50 |

Computed by L. Leland Locke.

# TABLE OF INCHES REDUCED TO DECIMALS OF A FOOT.

| Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. | Ins. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/16 | .0052 | 1 5/16 | .1094 | 2 9/16 | .2135 | 3 13/16 | .3177 | 5 1/16 | .4219 | 6 5/16 | .5260 | 7 9/16 | .6302 | 8 13/16 | .7344 | 10 1/16 | .8385 | 11 5/16 | .9427 |
| 1/8 | .0104 | 1 3/8 | .1146 | 2 5/8 | .2188 | 3 7/8 | .3229 | 5 1/8 | .4271 | 6 3/8 | .5313 | 7 5/8 | .6354 | 8 7/8 | .7396 | 10 1/8 | .8438 | 11 3/8 | .9479 |
| 3/16 | .0156 | 1 7/16 | .1198 | 2 11/16 | .2240 | 3 15/16 | .3281 | 5 3/16 | .4323 | 6 7/16 | .5365 | 7 11/16 | .6406 | 8 15/16 | .7448 | 10 3/16 | .8490 | 11 7/16 | .9531 |
| 1/4 | .0208 | 1 1/2 | .1250 | 2 3/4 | .2292 | 4— | .3333 | 5 1/4 | .4375 | 6 1/2 | .5417 | 7 3/4 | .6458 | 9— | .7500 | 10 1/4 | .8542 | 11 1/2 | .9583 |
| 5/16 | .0260 | 1 9/16 | .1302 | 2 13/16 | .2344 | 4 1/16 | .3385 | 5 5/16 | .4427 | 6 9/16 | .5469 | 7 13/16 | .6510 | 9 1/16 | .7552 | 10 5/16 | .8594 | 11 9/16 | .9635 |
| 3/8 | .0313 | 1 5/8 | .1354 | 2 7/8 | .2396 | 4 1/8 | .3438 | 5 3/8 | .4479 | 6 5/8 | .5521 | 7 7/8 | .6563 | 9 1/8 | .7604 | 10 3/8 | .8646 | 11 5/8 | .9688 |
| 7/16 | .0365 | 1 11/16 | .1406 | 2 15/16 | .2448 | 4 3/16 | .3490 | 5 7/16 | .4531 | 6 11/16 | .5573 | 8 1/16 | .6615 | 9 3/16 | .7656 | 10 7/16 | .8698 | 11 11/16 | .9740 |
| 1/2 | .0417 | 1 3/4 | .1458 | 3— | .2500 | 4 1/4 | .3542 | 5 1/2 | .4583 | 6 3/4 | .5625 | 8 1/4 | .6667 | 9 1/4 | .7708 | 10 1/2 | .8750 | 11 3/4 | .9792 |
| 9/16 | .0469 | 1 13/16 | .1510 | 3 1/16 | .2552 | 4 5/16 | .3594 | 5 9/16 | .4635 | 6 13/16 | .5677 | 8 5/16 | .6719 | 9 5/16 | .7760 | 10 9/16 | .8802 | 11 13/16 | .9844 |
| 5/8 | .0521 | 1 7/8 | .1563 | 3 1/8 | .2604 | 4 3/8 | .3646 | 5 5/8 | .4688 | 6 7/8 | .5729 | 8 3/8 | .6771 | 9 3/8 | .7813 | 10 5/8 | .8854 | 11 7/8 | .9896 |
| 11/16 | .0573 | 1 15/16 | .1615 | 3 3/16 | .2656 | 4 7/16 | .3698 | 5 11/16 | .4740 | 7— | .5781 | 8 7/16 | .6823 | 9 7/16 | .7865 | 10 11/16 | .8906 | 11 15/16 | .9948 |
| 3/4 | .0625 | 2— | .1667 | 3 1/4 | .2708 | 4 1/2 | .3750 | 5 3/4 | .4792 | 7 1/16 | .5833 | 8 1/2 | .6875 | 9 1/2 | .7917 | 10 3/4 | .8958 | | |
| 13/16 | .0677 | 2 1/16 | .1719 | 3 5/16 | .2760 | 4 9/16 | .3802 | 5 13/16 | .4844 | 7 1/8 | .5885 | 8 9/16 | .6927 | 9 9/16 | .7969 | 10 13/16 | .9010 | | |
| 7/8 | .0729 | 2 1/8 | .1771 | 3 3/8 | .2812 | 4 5/8 | .3854 | 6— | .4896 | 7 3/16 | .5938 | 8 5/8 | .6979 | 9 5/8 | .8021 | 11— | .9063 | | |
| 15/16 | .0781 | 2 3/16 | .1823 | 3 7/16 | .2865 | 4 11/16 | .3906 | 6 1/16 | .4948 | 7 1/4 | .5990 | 8 11/16 | .7031 | 9 11/16 | .8073 | 11 1/16 | .9115 | | |
| 1— | .0833 | 2 1/4 | .1875 | 3 1/2 | .2917 | 4 3/4 | .3958 | 6 1/8 | .5000 | 7 5/16 | .6042 | 8 3/4 | .7083 | 9 3/4 | .8125 | 11 1/8 | .9167 | | |
| 1 1/16 | .0885 | 2 5/16 | .1927 | 3 9/16 | .2969 | 4 13/16 | .4010 | 6 3/16 | .5052 | 7 3/8 | .6094 | 8 13/16 | .7135 | 9 13/16 | .8177 | 11 3/16 | .9219 | | |
| 1 1/8 | .0938 | 2 3/8 | .1979 | 3 5/8 | .3021 | 4 7/8 | .4063 | 6 1/4 | .5104 | 7 7/16 | .6146 | 8 7/8 | .7188 | 9 7/8 | .8229 | 11 1/4 | .9271 | | |
| 1 3/16 | .0990 | 2 7/16 | .2031 | 3 11/16 | .3073 | 4 15/16 | .4115 | 6 5/16 | .5156 | 7 1/2 | .6198 | 8 15/16 | .7240 | 10— | .8281 | 11 5/16 | .9323 | | |
| 1 1/4 | .1042 | 2 1/2 | .2083 | 3 3/4 | .3125 | 5— | .4167 | 6 3/8 | .5208 | 7 9/16 | .6250 | 9— | .7292 | 10 1/16 | .8333 | 11 3/8 | .9375 | | |

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