

S.P. 27-516-01 & 62-511-01

ORIGINAL X-SECTIONS

TRAVEL BOOK

1940

ORIGINAL X-SECTIONS

2

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

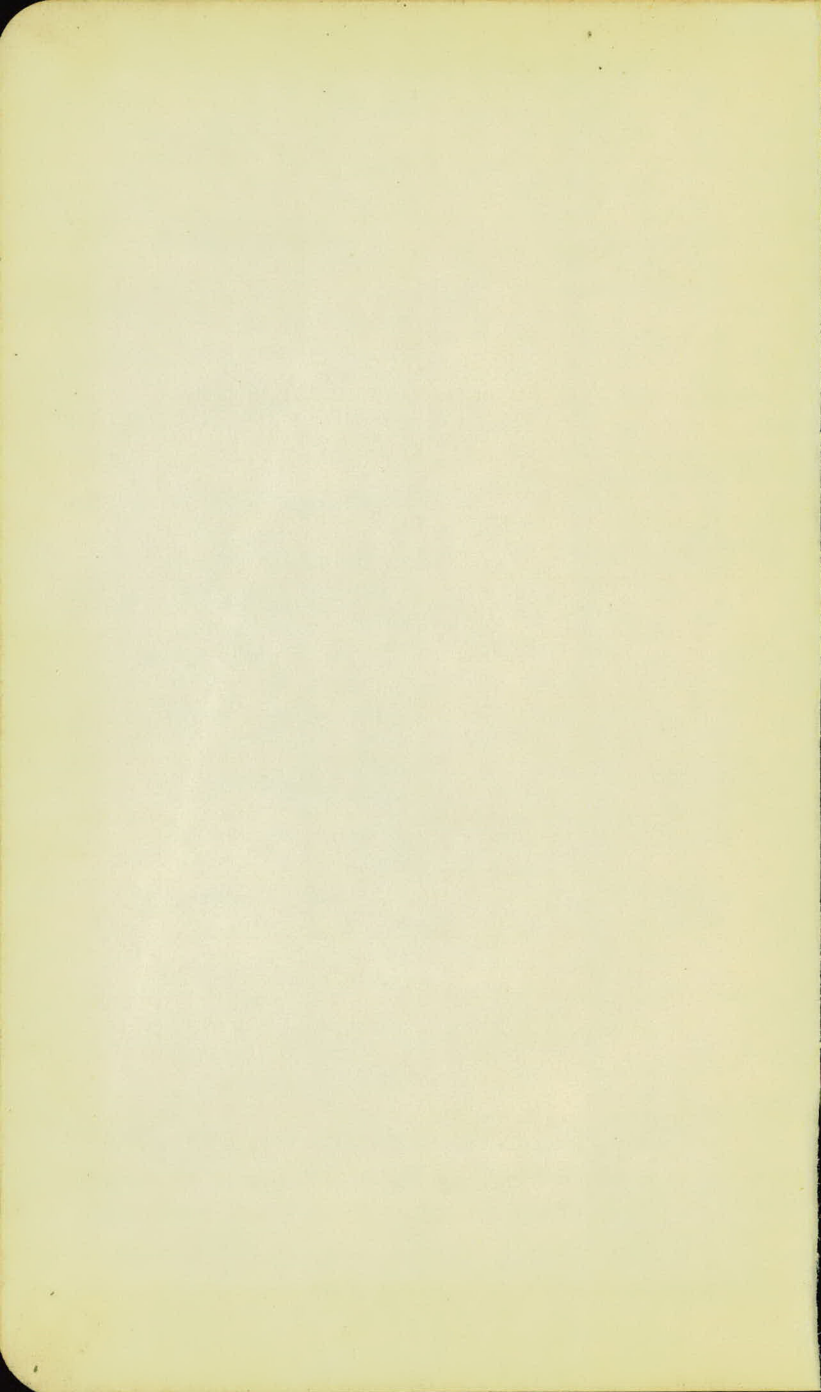
Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be $30.6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

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This Field Book is manufactured of a High Grade 50% Rag Paper having a **WATER RESISTING SURFACE**, and is sewed with Bing Special Enamel Waterproof thread.

Made in U. S. A.



| Page | to | Page | Sta | to | Sta. | | |
|------|----|------|-------|----|------------------|-----------------------|---|
| 5 | " | 9 | 0+00 | " | 12+83.7: 0+00 | orig. X-sec | See |
| 9 | " | 40 | 0+00 | " | 73+53.8 | " | " " |
| 41 | " | 54 | 79+70 | " | 105+54 | " | " " |
| 58 | " | 60 | 74+00 | " | 79+61.8 | " | " " |
| 61 | " | 61 | 10+50 | " | 12+60 | " | X Sub Cut |
| 62 | " | 62 | 10+50 | " | 12+60 | Final | X Sub Cut |
| 65 | " | 65 | 81+80 | " | 83+35 | " | " ^{Bulldozing} _{fill} |
| 66 | " | 66 | 77+00 | " | 79+24 | odd. orig. X-sec | Rt. |
| 68 | " | 68 | 50+90 | " | 54+10 | Final X-sec | Sub Cut |
| 69 | " | 69 | 25+15 | " | 25+55 | Elev. for Top of Rail | |
| 70 | " | 70 | 25+48 | " | 25+49.3 | Elev. on St. Lakes | Slab |
| 71 | " | 72 | 75+66 | " | 81+50 | Set stakes | Sewer Rt. |
| 73 | " | 73 | 75+66 | " | 81+50.6 | Sewer Alignment | |
| 74 | " | 74 | 50+90 | " | 54+10 | orig. X-sec. | Sub Cut. |
| 75 | " | 75 | 85+50 | " | 85+50 | Sub Tile | Notes |
| 76 | " | 76 | 84+90 | " | 88+60 | orig. X-sec. | Sub Cut |
| 77 | " | 77 | 84+90 | " | 88+60 | Final X-sec. | Sub Cut |
| 63 | " | 63 | | | | orig. X-sec. Sub. Cut | Cleveland Ave |
| 64 | " | 64 | | | | Final X-sec. | " " " |

| | | |
|------|--------|--------|
| B.M. | 912.33 | 944.33 |
| " | | 951.01 |
| " | | 951.48 |
| " | | 932.17 |
| " | | 924.80 |
| " | | 912.72 |
| " | | 914.55 |
| " | | 927.75 |
| " | | 922.95 |
| " | | 924.75 |

- SPK. 17 20" Oak 50' Lt. 1+00
- Top of Rock SE. Cor. Porch of House 102' Lt. 3+45
- 30" Oak 103' Lt. 13+20
- SPK. 17 18" Elm 52' Rt. 29+75
- SPK. 17 12" Boxelder 65' Rt. 36+69
- SPK. 17 20" Oak 150' Rt. 43+50
- SPK. 17 12" Oak 125' Rt. 52+65
- SPK. 17 24" Oak 65' Lt. 63+10
- X. Mark. N. End R.R. Colvt. 65' Rt. 68+80
- SPK. 17 R.R. 36' Lt. 79+33 (New Brighton Rd)

| | | | | |
|-----|------|--------|--|--------|
| B.M | 1.88 | 923.67 | | 921.79 |
|-----|------|--------|--|--------|

| | | | | |
|-----|------|--------|------|--------|
| T.P | 3.13 | 919.25 | 2.55 | 916.12 |
|-----|------|--------|------|--------|

| | | | | |
|-----|--|--|--|-------------|
| 100 | | | | 7.6 11.7 |
|-----|--|--|--|-------------|

+50

7.7
11.6

101

7.8
11.5

+50

7.9
11.4

102

8.0
11.3

+45

8.1
11.2

May. 19. 1943

SPK. 17 12" oak 65 2t 94 + 25 1200
75 + 54
50

1205
7.1 7.2
51.0 53

1210
6.7 6.9 6.0
52.0 53 57

1218
6.0 5.8 5.8
53.6 56 58

1208
7.1 7.0
51.6 57

1202
7.8 7.8
50.6 55

1200
8.1

Ditch stakes Rt

91925

103+65 10.8 08.5

104 10.9 08.4

+50 11.0 08.3

105+15 11.1 08.2

Blue Tops in Ditch Lt Lt.

98+37 7.40 11.85

99 7.40 11.79

+50 7.51 11.74

100 7.56 11.69

+50 7.61 11.64

101 7.66 11.59

101+75 7.74 11.51

7.94

780

May 19-43

1200

10.8 10.7 10.5

50 53 57

1204

10.5 10.3

55.8 58

1206

10.4

56.2

inlet Culvert under Snelling Ave

746 ✓

746 ✓

751 ✓

756 ✓

761 ✓

766

inlet West End Col. Lt 101475

" E. " " " "

inlet Col. E

885

0700

3.01

B.M.

3.22

947.55

944.33

0717.6

0750

1400

+15

+50

2400

+50

3700

2.7

2.18

45.37

+52 Guy Pole
30

2.7 2.7

45.38

3.4

2.85

44.7

4.1

3.6

43.95

+38 T.P.
37

4.9

T.P.
21

4.35

43.2

5.6

5.1

42.45

July 30 1942
Part cloudy - cool

C. Van Loon 5
Chandler
Law

Spk. in 20" Oak 50' L. sta. 1-00

$\frac{1.91}{50}$ $\frac{2.08}{33}$ $\frac{2.28}{19}$ $\frac{2.53}{0}$ $\frac{2.90}{19}$ $\frac{3.33}{33}$ $\frac{3.78}{50}$

$\frac{1.92}{38}$ $\frac{1.7}{17}$ $\frac{2.4}{0}$ $\frac{2.8}{9}$ $\frac{2.9}{13}$ $\frac{5.7}{21}$ $\frac{5.4}{25}$ $\frac{4.7}{30}$ $\frac{4.9}{27.8}$ $\frac{6.7}{5.8}$
-2.2
4.1

$\frac{2.8}{5.5}$ $\frac{30.2}{4.1}$ $\frac{4.5}{50}$ $\frac{5.1}{34}$ $\frac{3.8}{26}$ $\frac{3.2}{5h.}$ $\frac{3.0}{21}$ $\frac{3.1}{17}$ $\frac{3.4}{0}$ $\frac{7.6}{6}$ $\frac{8.4}{10}$ $\frac{8.4}{21}$ $\frac{8.4}{41.8}$ $\frac{8.4}{4.5}$
-5.7

$\frac{8.6}{4.5}$ $\frac{7.2}{8.9}$ $\frac{4.5}{22}$ $\frac{2.5}{19}$ $\frac{3.3}{16}$ $\frac{3.5}{0}$ $\frac{3.3}{7}$ $\frac{3.5}{11}$ $\frac{7.8}{2.2}$ $\frac{8.4}{29}$ $\frac{9.0}{4.5}$
5h.

$\frac{10.5}{5.5}$ $\frac{10.4}{47.0}$ $\frac{10.2}{29}$ $\frac{4.7}{17}$ $\frac{4.4}{15}$ $\frac{4.2}{0}$ $\frac{4.3}{0.8}$ $\frac{4.8}{11}$ $\frac{7.7}{19}$ $\frac{8.7}{2.9}$ $\frac{8.8}{4.7}$
-7.0

$\frac{8.8}{40.6}$
-5.4

$\frac{10.9}{5.5}$ $\frac{10.9}{36}$ $\frac{10.2}{26}$ $\frac{5.7}{17}$ $\frac{5.3}{14}$ $\frac{5.1}{0}$ $\frac{5.3}{0.9}$ $\frac{5.5}{12}$ $\frac{6.5}{15}$ $\frac{9.0}{20}$ $\frac{9.3}{33}$ $\frac{9.2}{35.4}$ $\frac{8.0}{4.5}$
-4.1

$\frac{11.1}{3.5}$ $\frac{10.3}{24}$ $\frac{6.6}{17}$ $\frac{6.0}{14}$ $\frac{5.9}{0}$ $\frac{5.9}{8}$ $\frac{6.2}{11}$ $\frac{8.4}{19}$ $\frac{8.7}{2.8}$ $\frac{9.4}{36}$ $\frac{9.4}{37}$ $\frac{8.6}{4.6}$
-4.5

$\frac{10.5}{50}$ $\frac{10.3}{37.8}$ $\frac{10.3}{36}$ $\frac{10.0}{23}$ $\frac{6.7}{16}$ $\frac{6.5}{14}$ $\frac{6.4}{0}$ $\frac{6.5}{10}$ $\frac{6.7}{12}$ $\frac{9.4}{19}$ $\frac{9.0}{2.5}$ $\frac{9.6}{35.0}$ $\frac{9.6}{3.8}$ $\frac{9.3}{4.5}$
-4.7
-4.0

36

947.55

3450

6.4
8.9 - 5.85
41.7

2.55

942.89

7.21

940.34

4400

2.4
4.9 - 1.93
40.95

19

450

3.2
5.7 - 2.65
40.24

5400

3.7
6.2 - 3.2
39.69

3945

450

4.1
6.6 - 3.61
39.28

457

4.8
100.24" x 10' CM 4.29
15" x 285 CM. 386

Remove.

Pl. 24" x 66 S.C. culv

Haul 15" x 285 To 51493 Rt.

20.0
 $\frac{88}{44}$ $\frac{89}{36.0}$ $\frac{94}{33}$ $\frac{101}{28}$ $\frac{102}{23}$ $\frac{70}{15}$ $\frac{70}{13}$ $\frac{70}{0}$ $\frac{72}{19}$ $\frac{72}{12}$ $\frac{9.6}{18}$ $\frac{9.1}{22}$ $\frac{-3.1}{31.4}$ $\frac{9.5}{27}$ $\frac{9.6}{42}$

bit.mat.

22.1
 $\frac{28}{23}$ $\frac{27}{36}$ $\frac{40}{32}$ $\frac{-2.5}{29.0}$ $\frac{6.2}{27}$ $\frac{6.2}{24}$ $\frac{2.7}{16}$ $\frac{2.7}{13}$ $\frac{-0.9}{0}$ $\frac{2.8}{11}$ $\frac{3.1}{13}$ $\frac{3.1}{17}$ $\frac{4.6}{22}$ $\frac{3.9}{22}$ $\frac{4.8}{36}$ $\frac{-1.4}{38}$ $\frac{24.6}{24.6}$

$\frac{2.8}{50}$

22.4
 $\frac{33}{32}$ $\frac{34}{35}$ $\frac{56}{28.5}$ $\frac{63}{27}$ $\frac{70}{26}$ $\frac{70}{24}$ $\frac{35}{16}$ $\frac{35}{12}$ $\frac{-0.9}{0}$ $\frac{3.7}{07}$ $\frac{3.8}{14}$ $\frac{5.6}{19}$ $\frac{5.4}{24}$ $\frac{4.9}{25.8}$ $\frac{5.7}{36}$ $\frac{-1.7}{20.0}$

$\frac{33}{50}$

20.0
 $\frac{-2.4}{6.1}$ $\frac{5.8}{33}$ $\frac{6.4}{27}$ $\frac{7.5}{26}$ $\frac{7.7}{22}$ $\frac{5.5}{16}$ $\frac{5.5}{12}$ $\frac{-1.1}{0}$ $\frac{4.3}{11}$ $\frac{4.6}{14}$ $\frac{4.6}{14}$ $\frac{7.3}{20}$ $\frac{7.2}{22}$ $\frac{6.7}{23}$ $\frac{6.5}{30}$ $\frac{6.5}{30.2}$ $\frac{6.7}{23}$ $\frac{20}{42}$ $\frac{-2.8}{20.0}$

$\frac{6.2}{50}$

80
 $\frac{-3.3}{4.5}$ $\frac{7.4}{32.2}$ $\frac{7.4}{27}$ $\frac{8.1}{26}$ $\frac{8.2}{21}$ $\frac{4.8}{15}$ $\frac{4.8}{12}$ $\frac{-1.1}{0}$ $\frac{4.7}{11}$ $\frac{4.8}{11}$ $\frac{4.9}{14}$ $\frac{7.7}{22}$ $\frac{8.0}{28}$ $\frac{-4.2}{35.8}$ $\frac{8.3}{50}$ $\frac{8.0}{50}$

c1.0
 7.80
 57.35.0
 (5) 2'

8.8
 34.09
 33.0

9.0
 33.89
 33

c0.6
 8.40
 57.35.0
 (5) 2'

942.89

85
50

44

69 - 3.85

39.04

6400

45

70 - 3.95

38.94

+50

T.P.

6.67

942.39

7.17

935.72

64 3.9
3.4

39.0

7400

+50

5.8 3.3
3.8

39.59

8400

+17 @ 10" x 33' V.P. RT imp.
15' x 6' CMP 4

+50

6+25

2500

36

885

7

89
33

775
1.15

-31

-1.0

-3.6

| | | | | | | | | | | | | |
|----|------|----|----|----|----|----|----|----|----|----|------|----|
| 75 | 75 | 73 | 80 | 83 | 49 | 49 | 49 | 51 | 51 | 78 | 80 | 15 |
| 43 | 31.4 | 26 | 25 | 21 | 15 | 11 | 0 | 12 | 14 | 20 | 33.4 | 47 |

1.2

-1.4

-1.1

-3.7

| | | | | | | | | | | | | |
|---|----|----|------|----|----|----|----|----|----|----|----|------|
| 8 | 62 | 57 | 59 | 72 | 75 | 56 | 50 | 50 | 52 | 52 | 75 | 88 |
| 6 | 33 | 32 | 24.6 | 23 | 20 | 15 | 11 | 0 | 12 | 16 | 21 | 33.8 |
| | | | | | | | | | | | | 50 |

5.7
52

42.4

42
377

End of G.M. Cul. Rt. sta 5+57

July 31-1922

B.T.

| | | | | | | | | | | | |
|------|------|------|------|----|----|----|------|----|----|------|-----|
| 50.8 | 12/3 | F1.6 | | | | | F1.1 | | | F4.1 | |
| 47 | 4.8 | 51 | 55 | 69 | 70 | 46 | 45 | 49 | 79 | 80 | 8.6 |
| 50 | 50 | 39.9 | 25.4 | 23 | 19 | 15 | | 15 | 21 | 35.4 | 50 |

50°
59 + 76
36.0

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 48 | 23 | 18 | 20 | 16 | 45 | 49 | 26 | 85 |
| 50 | 26 | 23 | 19 | 14 | | 15 | 21 | 50 |

42.40
59
3.5

B.T.

| | | | | | | | | | | | |
|------|----|------|----|----|----|----|------|----|----|------|----|
| 52.8 | | F3.3 | | | | | F1.8 | | | F4.5 | |
| 61 | 63 | 66 | 64 | 72 | 75 | 47 | 46 | 51 | 78 | 78 | 82 |
| 50 | 50 | 32.2 | 25 | 24 | 19 | 14 | | 17 | 24 | 37.0 | 50 |

58

| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 64 | 69 | 74 | 77 | 17 | 44 | 46 | 67 | 69 | 63 | 69 | 74 |
| 50 | 15 | 24 | 21 | 13 | | 17 | 23 | 26 | 27 | 32 | 50 |

942.39

2.1
4.6 1.4
40.82

9+00

+50

T.P.

10.73

950.78

2.34

940.05

10

11.4 8.9
8.4
42.40

+50

10.6 8.1
7.6
43.2

11

9.8 7.3
6.8
44.0

+50

9.0 6.5
6.0
44.8

| F3.1 | | F3.8 | | | | | F3.4 | | | | | F3.6 | | |
|------|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|--|
| 5.2 | 5.4 | 5.9 | 5.9 | 6.3 | 6.8 | 4.3 | 4.0 | 1.2 | 5.8 | 5.8 | 4.7 | 5.7 | 6.1 | |
| 50 | 50 | 32.2 | 24 | 22 | 19 | 14 | | 18 | 21 | 23 | 25 | 33.4 | 50 | |

| F3.1 | | F3.8 | | | | | F3.4 | | | | | F3.6 | | |
|------|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|--|--|
| 3.9 | 3.6 | 3.1 | 3.8 | 3.9 | 2.9 | 2.9 | 2.9 | 4.5 | 4.5 | 2.9 | 4.0 | 4.7 | | |
| 50 | 40 | 23 | 22 | 18 | 15 | | 17 | 21 | 22 | 26 | 32 | 50 | | |

1200
3.7 + 6.3
36

| F1.0 | | F1.4 | | | | | F1.2 | | | | | | |
|------|------|------|------|------|-----|-----|------|------|-----|------|------|------|------|
| 9.5 | 9.9 | 11.1 | 11.1 | 10.0 | 9.8 | 9.9 | 11.2 | 11.4 | 9.5 | 10.1 | 10.1 | 10.3 | 10.2 |
| 24 | 23.0 | 22 | 19 | 13 | | 16 | 31 | 22 | 24 | 31 | 23.8 | 39.3 | 50 |

| F0.7 | | F0.2 000 | | | | | 024.5 | | | | | |
|------|------|----------|-----|-----|-----|-----|-------|-----|-----|-----|------|--|
| 2.4 | 8.8 | 9.5 | 9.3 | 8.1 | 7.8 | 8.1 | 9.2 | 9.2 | 6.6 | 6.5 | 6.1 | |
| 24 | 21.8 | 26 | 18 | 13 | | 19 | 21 | 22 | 26 | 40 | 49.5 | |

| F0.5 | | 00.8 | | | | | 156.5 | | | | | | |
|------|-----|------|-----|-----|-----|-----|-------|-----|-----|-----|-----|------|-----|
| 8.0 | 7.7 | 7.8 | 7.7 | 7.7 | 6.2 | 6.0 | 6.3 | 7.2 | 7.2 | 3.7 | 3.1 | 3.3 | 3.3 |
| 31 | 22 | 20.5 | 21 | 18 | 14 | | 19 | 31 | 22 | 25 | 44 | 58.5 | 65 |

| F1.9 | | 01.3 | | | | | 126.9 | | | | | | |
|------|-----|------|------|-----|-----|-----|-------|-----|-----|-----|-----|------|-----|
| 8.4 | 8.6 | 7.8 | 6.8 | 6.8 | 5.2 | 4.7 | 5.3 | 5.8 | 5.8 | 2.1 | 2.3 | 2.1 | 2.2 |
| 50 | 50 | 39.6 | 20.2 | 18 | 15 | | 20 | 21 | 22 | 27 | 42 | 56.7 | 65 |

950.78

82 57

52

156

12

+50

49.20

13.11

6.73

955.92

1.59

949.79

949.21

+83.67 = 0+00

120 95
900

46.94

0+50

113 89

83

47.66

1

106 81

76

48.29

+50

101 74

71

48.83

| F01 | 120.7 | | | | | | | | C14 | | | | | 126.0 | |
|-----|-------|----|----|----|----|----|----|----|-----|----|----|----|----|-------|-----|
| 58 | 59 | 55 | 53 | 47 | 53 | 53 | 40 | 38 | 41 | 50 | 50 | 24 | 17 | 26 | 1.3 |
| 50 | 44 | 33 | 22 | 20 | 17 | 13 | | | 18 | 20 | 21 | 26 | 41 | 558 | 65 |

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|-----|------|----|
| 37 | 34 | 32 | 29 | 41 | 41 | 27 | 24 | 28 | 40 | 40 | 16 | 0.7 | +0.4 | |
| 60 | 50 | 35 | 22 | 19 | 16 | 14 | | | 18 | 21 | 22 | 26 | 48 | 65 |

T.P.J.M. & sta. 1248767

| B.T | 125.5 | | | | | | | C23 | | | | 127.5 | | | |
|-----|-------|------|----|----|----|----|-----|-----|----|----|----|-------|-----|-----|----|
| 65 | 66 | 65 | 63 | 67 | 79 | 73 | 6.7 | 70 | 80 | 80 | 57 | 5.1 | 4.5 | 0.2 | |
| 60 | 60 | 52.5 | 40 | 24 | 17 | 13 | | | 17 | 20 | 21 | 24 | 29 | 585 | 70 |

| B.T | 123.8 | | | | | | C21 | | | | 127.4 | | | | |
|-----|-------|----|------|----|----|-----|-----|----|----|----|-------|-----|-----|-----|----|
| 74 | 79 | 75 | 75 | 71 | 72 | 6.8 | 6.2 | 66 | 69 | 67 | 4.6 | 4.5 | 4.3 | 4.3 | |
| 50 | 60 | 50 | 47.4 | 40 | 18 | 14 | | | 19 | 20 | 23 | 26 | 32 | 580 | 70 |

| B.T | 123.7 | | | | | | C10 | | | | 125.8 | | | | | |
|-----|-------|----|------|----|----|----|-----|-----|-----|-----|-------|-----|-----|-----|------|----|
| 69 | 72 | 70 | 69 | 70 | 78 | 76 | 7.1 | 6.6 | 6.8 | 7.5 | 7.4 | 6.9 | 5.2 | 4.8 | 4.6 | |
| 50 | 60 | 50 | 47.1 | 33 | 22 | 17 | 15 | | | 18 | 21 | 23 | 27 | 42 | 53.4 | 70 |

| B.T | 122.0 | | | | | | C04 | | | | 123.8 | | | | | | |
|-----|-------|----|------|----|------|----|-----|----|-----|----|-------|----|-----|-----|-----|------|----|
| 80 | 80 | 81 | 81 | 81 | 83 | 86 | 85 | 70 | 6.7 | 70 | 77 | 80 | 6.7 | 6.7 | 6.3 | 5.7 | |
| 50 | 60 | 50 | 47.0 | 35 | 21.8 | 21 | 17 | 14 | | | 18 | 20 | 24 | 28 | 37 | 47.4 | 65 |

955.92

2100

9.6 7.1
6.6
49.29

150

9.3 6.8
6.3
49.65

T.P.

5.60

954.12

7.40

948.52

761

3

7.2 4.7
4.20
49.94

125

164

2x 15" x 26" C.M.P. INF

150

7.0 4.5
4.0
56.11

4:1 9
3:1 36

| | | | | | | | | | | | | | | | | | | |
|------|----|----|------|------|------|----|------|----|----|------|----|------|----|------|----|----|--|--|
| 157 | | | | | | | | | | | | | | | | | | |
| F0.1 | | | 10.9 | F1.0 | | | F0.3 | | | F1.3 | | 21.1 | | | | | | |
| 75 | 74 | 76 | 77 | 80 | 81 | 83 | 71 | 69 | 73 | 86 | 83 | 84 | 86 | 85 | 92 | 79 | | |
| 50 | 60 | 50 | 41.7 | 35 | 23.0 | 17 | 14 | | 17 | 24 | 27 | 24.2 | 35 | 39.3 | 50 | 60 | | |

| | | | | | | | | | | | | | | | | | | |
|------|----|----|------|------|----|----|------|----|----|------|------|-------|----|----|----|----|--|--|
| | | | | | | | | | | | | | | | | | | |
| F0.7 | | | 12.3 | F0.9 | | | F0.7 | | | F2.1 | 36.5 | 12.00 | | | | | | |
| 57 | 68 | 70 | 70 | 77 | 28 | 80 | 71 | 70 | 75 | 89 | 90 | 89 | 94 | 83 | 95 | 96 | | |
| 75 | 50 | 30 | 42.9 | 22.6 | 21 | 17 | 14 | | 17 | 20 | 24 | 27.4 | 35 | 36 | 50 | 60 | | |

SOK. 17 T=1.P. 25 21 21 85 Aug 3-1947

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 48 | 52 | 58 | 59 | 60 | 57 | 52 | 57 | 72 | 75 | 77 | 82 | 85 | 86 | |
| 65 | 50 | 30 | 20 | 16 | 14 | | | 17 | 21 | 25 | 31 | 32 | 50 | 65 |

| | | | | | | | | | | | | | |
|------|----|------|-------|------|----|----|------|----|----|------|------|----|--|
| | | | | | | | | | | | | | |
| F1.0 | | F2.0 | 12.12 | | | | F4.1 | | | F3.8 | | | |
| 57 | 55 | 58 | 67 | 60 | 69 | 56 | 53 | 56 | 74 | 85 | 85 | | |
| 50 | 60 | 50 | 27.0 | 39.6 | 22 | 17 | 14 | | 16 | 20 | 34.2 | 65 | |

| | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 48 | 63 | 62 | 67 | 67 | 56 | 59 | 53 | 68 | 69 | 67 | 78 | 81 |
| 85 | 50 | 35 | 22 | 17 | 13 | | 18 | 22 | 25 | 31 | 50 | 65 |

200.
71 + 37
36

| | | | | | | | | | | | | | |
|----|----|----|-------|------|------|----|------|----|----|------|------|-------|------|
| | | | | | | | | | | | | | |
| 18 | | | 120.5 | F1.7 | | | F1.2 | | | F1.7 | | 120.5 | |
| 67 | 64 | 63 | 64 | 65 | 62 | 63 | 57 | 52 | 57 | 64 | 62 | 64 | 65 |
| 50 | 50 | 75 | 47 | 37.5 | 25.8 | 22 | 18 | | 16 | 23 | 28.8 | 35 | 37.5 |

50 65

954.12

69 4.4

3.9

50.21

4

+50

70 4.5

4.0

50.14

5

B.M.

51.01

3.12

951.00

72 4.7

4.2

49.97

+50

74 4.9

4.4

49.72

6

77 5.2

4.7

49.46

+50

+64

4:1 = 19
3:1 = 36

BT

| F06 | | R1.8 | F1.7 | F1.3 | | | | F0.9 | R1.6 | | | | | | | | |
|-----|----|------|------|------|-----|-----|-----|------|------|-----|-----|------|-----|-----|------|-----|-----|
| 50 | 56 | 52 | 5.1 | 5.6 | 6.3 | 6.2 | 5.3 | 5.2 | 5.4 | 6.2 | 6.2 | 5.3 | 4.8 | 5.0 | 5.3 | 5.2 | 5.3 |
| 50 | 65 | 50 | 4.14 | 25.8 | 2.1 | 1.7 | 1.4 | | 1.6 | 1.8 | 2.2 | 22.6 | 30 | 35 | 40.8 | 50 | 65 |

58 58 61 63 60 52 50 52 6.4 6.4 5.2 5.8 5.7 5.7
65 50 30 22 17 14 15 19 22 25 30 50 65

BT

| F0.3 | | R1.8 | F1.1 | F0.9 | | | | F2.3 | R1.0 | | | | | | | | |
|------|----|------|------|------|-----|-----|-----|------|------|-----|-----|-----|------|-----|------|-----|-----|
| 0.8 | 51 | 50 | 5.2 | 5.6 | 5.7 | 5.8 | 5.2 | 4.9 | 5.3 | 6.8 | 7.1 | 7.1 | 6.8 | 5.9 | 6.0 | 5.9 | 5.5 |
| 0 | 65 | 50 | 4.14 | 23.4 | 2.3 | 1.7 | 1.4 | | 1.6 | 2.0 | 2.4 | 2.7 | 28.2 | 3.2 | 39.0 | 50 | 65 |

1) Rock SE Cor. Patch of House 107' ft. 3+45 (NW)

| R2.2 | | R3.0 | F0.5 | | F0.7 | | | | F2.2 | R5.3 | | | | | | | |
|------|----|------|------|-----|------|-----|-----|-----|------|------|-----|-----|-----|------|-----|------|-----|
| 5 | 36 | 37 | 36 | 5.2 | 5.2 | 5.3 | 5.6 | 5.1 | 4.9 | 5.2 | 7.1 | 7.1 | 6.7 | 6.9 | 1.8 | 1.9 | 2.2 |
| 0 | 65 | 50 | 46.8 | 3.5 | 21.0 | 2.0 | 1.7 | 1.4 | | 1.6 | 2.0 | 2.5 | 3.0 | 27.8 | 3.0 | 51.9 | 65 |

| R2.5 | | F1.2 | | F0.8 | | | | F2.8 | R2.2 | | | | | | | | | |
|------|----|------|------|------|-----|------|-----|------|------|-----|-----|-----|-----|------|-----|------|-----|-----|
| 4 | 48 | 42 | 3.9 | 3.9 | 3.2 | 6.1 | 6.6 | 6.5 | 5.4 | 5.2 | 5.5 | 7.6 | 8.1 | 7.7 | 4.4 | 4.8 | 4.3 | 4.3 |
| 6 | 65 | 50 | 46.5 | 3.5 | 2.8 | 23.9 | 2.2 | 1.7 | 1.4 | | 1.5 | 2.0 | 2.8 | 30.2 | 3.5 | 43.8 | 50 | 65 |

| R4 | | R2.6 | F2.0 | | F1.1 | | | | F4.9 | R0.0 | | | | | | | | |
|----|-----|------|------|-----|------|-----|-----|-----|------|------|-----|-----|------|------|--|--|--|--|
| 6 | 8.2 | 7.8 | 7.1 | 7.1 | 7.2 | 7.3 | 7.4 | 5.8 | 5.8 | 6.2 | 8.7 | 9.9 | 10.1 | 10.3 | | | | |
| 0 | 65 | 50 | 37.8 | 3.5 | 27.0 | 2.5 | 2.0 | 1.5 | | 1.5 | 2.3 | 3.5 | 38.6 | 5.0 | | | | |

R2.0

8.1 15.7

36

R0.0

7.6 13.2

36

27
43
76

88

49
30

954.12 29 5.4
4.90
49.19

7 + 00

48

84

48
36

8.1 5.6
5.1
48.99

+ 50

48

5
5

7 + 09 (4 29' x 49' up) S.C.C.

48.65

11.0
17 43.1

13.5
40.6

8

8.2 5.7
5.2
48.9

84

48
36

+ 16

+ 20 1 1/2 12' x 20' C.M.P. in p Good

+ 30

+ 34

433
390
8.5
F5.0
10.4
50

41

411 19
311 36

1.5
36
20
C
2.4

F5.3
10.7
50

F14
10.9
50

105 63
24 15

6.3 6.7 11.0
1.5 2.3 3.7

F8.4
13.7 13.8
50 52.6

14.1
60

10.7
F4.2
9.8
50

F3.0
9.9 9.8
50 40

F1.3
9.2 10.1 9.9
29 23 1.5

6.6 6.4 6.9 12.1 13.1 13.8 14.2
1.4 2.5 3.5 4.8 6.0

F8.2
13.8 14.2
60

2.4
8

11.0
OS 3'
Ext 12' Lt.

0.1.0
10.0
32
1200
81 + 68
36

0.0
13.5
93
OS 3'
Ext 22' Rt.

13.5

12.4
F1.4
F1.2
F5.3 4.1

4.56 5.5 5.8 6.1 6.1 7.1 7.9 7.8 6.4 6.4 6.7 11.9 12.0 10.7 11.0 11.3 11.7
6.5 5.0 4.2 3.5 2.8 2.6 2.3 1.8 1.5 1.5 2.7 2.9 3.3 4.0 2.5 5.0 6.5

4.3 4.4 5.1 6.0 6.2 6.3 6.7 11.4 11.4 9.8 10.3 10.8
6.5 5.0 3.1 2.0 1.6 1.5 2.5 2.9 3.2 5.0 6.5

4.1 4.4 5.6 6.1 6.2 6.7 11.2 11.3 9.1 9.7 10.2
6.5 5.0 2.5 1.5 1.5 2.5 2.9 3.4 5.0 6.5

4.7 5.2 6.1 6.4 6.7 6.2 6.6 10.9 11.2 9.0 9.7 10.0
6.5 5.0 2.8 2.0 1.5 1.5 2.4 2.8 3.4 5.0 6.5

954.12

+41

T.P. 6.07 953.41 6.78 947.34

8 +50

75 50
45
48.94

9

73 48
43
49.10

+50

10

66 41
36
49.77

+50

11

55 3.0
2.5
50.93

4.1 = 19
3.1 = 26

2.1 2.3 3.2 6.9 7.7 6.2 6.2 6.6 11.1 11.1 8.7 9.3 9.9
6.5 5.0 3.2 2.0 1.8 1.5 1.6 2.5 2.9 3.5 5.0 6.5

BT

F3.7 F12 F2.0 F3.2
1.3 6.2 1.3 1.6 1.5 2.1 6.6 6.8 5.5 5.5 5.8 10.1 10.1 7.8 8.2 8.5 9.2
5.0 2.8 6.5 5.0 5.4 0 3.2 2.2 1.9 1.6 1.6 2.5 2.9 3.6 3.8 5.0 6.5

F1.3 F1.1 F3.6
10.4 3.0 3.0 3.3 3.2 6.1 6.6 6.6 5.5 5.4 5.6 9.8 10.1 8.4 8.4 8.6 9.0
5.0 4.8 9.0 4.0 3.0 2.4 2.2 1.8 1.5 1.6 2.5 2.9 3.5 3.3 4.2 5.0

47.9 47.7

4.8 5.6 6.2 6.0 7.4 7.0 5.7 5.5 5.7 9.9 10.0 9.9 10.9
6.5 5.0 3.5 2.9 2.3 1.9 1.5 1.4 2.5 3.3 5.0 6.5

F2.0
6.9 + 6.2
3.6

F3.7 F0.9 F7.6
2.2 6.5 7.3 7.7 7.8 7.5 7.5 5.8 5.5 5.6 9.7 10.7 11.7 11.7
5.0 6.5 5.0 4.0 3.3 2.6 2.0 1.6 1.4 2.3 3.4 4.4 5.5

6.9 7.4 7.8 7.4 7.8 5.6 5.3 5.5 9.4 10.1 11.0 11.3 11.5
6.5 5.0 3.5 2.8 1.9 1.5 1.4 2.4 3.0 3.3 5.0 6.0

BT

F3.2 F3.8 F2.1 F7.0
6.2 5.9 6.4 6.8 6.9 6.9 5.0 4.6 4.9 8.7 9.5 10.0 10.0 10.0 9.9
5.0 6.5 5.6 3.4 2.5 2.0 1.5 1.5 2.3 3.1 4.0 4.7 5.5 6.5

953.41 48 2.3
1.8
51.63

11750

✓
4.1 1.6

12

1.1
52.33

T.R. 10.90 961.93 238 951.03 51.48

B.M. 10.46 961.96 10.46 951.47 951.50

+50

53.03

13

11.2 8.7
8.2
53.79

+50

105 8.0
7.5
54.43

14

99 7.4
6.9
55.02

961.96

14750

94 69
6.4
55.56

15

95 70
6.5
55.50

750

97 72
6.7
55.71

16

T.P. 6.40 960.89 7.47 954.49
6.40

92 67
6.2
54.71

750

188 ft. 12" x 20" C.M.P. Good

99 74
6.9
54.0

17

T.P. 4.72 955.43 10.18 950.71
" "

3.1 = 30
4.1 = 19

85 80 79 75 91 89 78 76 77 88 87 60 59 55 50
65 50 35 27 23 19 16 14 17 22 26 35 50 65

B.T.
1.3 1240 F11 F08 1237
56 24 52 53 54 54 55 80 83 80 72 72 74 87 90 60 61 57 56 50
50 41 57 50 48 35 29 23 23 20 16 15 18 22 27 35 47 50 65

B.T.
C27 1242 F10 F04 F12 1217
33 43 44 33 54 53 80 79 71 69 72 84 86 73 82 75 76 75 75
50 50 50 48 35 29 23 19 17 15 19 22 27 23 35 41 50 65

B.T.
R28 F11 F05 F10 1227
14 64 69 68 67 63 83 84 84 74 72 74 86 82 65 66 70 71 70
63 55 44 50 36 28 23 23 21 17 15 18 23 26 35 41 50 65

B.T.
1215 F12 F05 F10 1245
25 27 27 27 27 26 71 79 83 83 69 67 70 90 79 77 49 48 47 46 43
50 65 50 40 40 34 26 23 22 21 16 16 19 22 23 28 35 47 55 65

B.T.
2.0 1205 F13 F08 F08 1242
94 96 94 93 93 87 87 96 95 81 77 76 84 85 82 71 70 65 57 58 50
50 50 37 35 30 25 24 23 21 16 15 18 20 22 24 31 30 48 50 65

SPL. 17 Tol. P. 21 B.T. 18+29

955.13

17+50

5.4 2.7
2.4
53.06

18

6.4 3.9
3.4
52.01

+50

7.5 5.0
4.5
50.96

19

8.5 6.0
5.5
49.91

+50

9.6 7.1
6.6
48.86

20

10.6 8.1
7.6
47.81

T.P

4.43

955.14

4.72

950.71

107

4:1 - 19
31 = 36

2/20/1000 16
Aug. 4-1942

BT

| | 1200 | F2.2 | | | | | | | F0.8 | | | | F0.9 | | | | 1220 | | |
|----|------|------|----|------|----|----|----|----|------|-----|-----|-----|------|------|-----|-----|------|-----|-----|
| 55 | 54 | 55 | 54 | 51 | 50 | 53 | 53 | 36 | 3.2 | 3.4 | 4.5 | 4.6 | 3.6 | 3.8 | 3.3 | 3.4 | 3.4 | 3.4 | 3.0 |
| 50 | 65 | 50 | 36 | 27.8 | 25 | 24 | 22 | 17 | | 15 | 18 | 21 | 24 | 22.6 | 30 | 44 | 42.0 | 50 | 65 |

BT

| | 1203 | F2.2 | | | | F0.5 | | | | F0.1 | | | | 122.1 | | | | |
|-----|------|------|------|------|----|------|-----|-----|-----|------|------|-----|-----|-------|-----|-----|--|--|
| 6.2 | 59 | 63 | 61 | 61 | 58 | 4.3 | 3.9 | 4.3 | 5.4 | 5.6 | 5.0 | 3.6 | 3.7 | 4.3 | 4.7 | 4.6 | | |
| 50 | 65 | 50 | 36.9 | 27.8 | 21 | 17 | | 15 | 18 | 22 | 23.4 | 27 | 35 | 42.3 | 50 | 65 | | |

1200
6.8 + 25
36

BT

| | F4.6 | | | | F0.5 | | | | F1.8 | | | | 1209 | | | | |
|-----|------|----|------|----|------|----|----|-----|------|-----|------|-----|------|-----|-----|--|--|
| 9.0 | 92 | 96 | 96 | 90 | 84 | 57 | 50 | 5.3 | 6.5 | 7.0 | 6.8 | 6.6 | 6.6 | 6.5 | 6.2 | | |
| 50 | 50 | 40 | 37.4 | 30 | 22 | 16 | | 14 | 17 | 22 | 26.2 | 35 | 38.7 | 50 | 65 | | |

BT

| | F3.5 | | | | F0.6 | | | | F1.6 | | | | 1210 | | | | |
|-----|------|----|------|----|------|----|----|-----|------|-----|------|-----|------|-----|-----|--|--|
| 6.5 | 66 | 97 | 95 | 93 | 88 | 70 | 61 | 6.5 | 7.7 | 7.7 | 7.6 | 7.4 | 7.6 | 6.6 | 5.6 | | |
| 42 | 42 | 37 | 33.0 | 32 | 23 | 17 | | 14 | 17 | 21 | 25.4 | 30 | 39.0 | 50 | 65 | | |

1200
9.4 + 33
36

BT

| | 1204 | F3.3 | | | | F0.6 | | | | F1.2 | | | | 1214 | | | |
|-----|------|------|----|------|----|------|-----|-----|-----|------|-----|------|-----|------|-----|-----|--|
| 6.7 | 92 | 67 | 93 | 94 | 93 | 7.6 | 7.2 | 7.4 | 8.6 | 8.6 | 8.3 | 8.3 | 8.1 | 8.2 | 8.2 | 7.6 | |
| 42 | 37.2 | 42 | 36 | 28.2 | 23 | 17 | | 15 | 18 | 22 | 23 | 23.8 | 32 | 40.2 | 50 | 65 | |

BT

| | 1218 | F1.5 | | | | F0.5 | | | | F1.0 | | | | 1218 | | | | |
|-----|------|------|-------|-----|-----|-------|-----|-----|-----|------|-----|-----|-------|------|-----|-------|-----|-----|
| 8.5 | 70 | 8.7 | 8.8 | 8.8 | 9.5 | 9.6 | 9.5 | 8.5 | 8.1 | 8.3 | 9.2 | 9.4 | 9.1 | 8.3 | 8.6 | 8.8 | 8.8 | 8.8 |
| 48 | 5.5 | 4.8 | 4.1.4 | 3.4 | 2.8 | 2.6.0 | 2.1 | 1.7 | | 1.5 | 1.9 | 2.2 | 2.3.0 | 2.5 | 3.0 | 4.1.4 | 5.5 | 6.5 |

955.14 114 8.9

20750

8.4
46.76

124 9.9

21.

9.4
45.71

135 11.0

750

10.5
44.66

146 12.1

22

11.6
43.53
1.5

158 13.3

750

12.8
42.34

T.P.

8.65

950.21

13.58

941.56

122 9.7

23

9.2
41.0

4.1 = 19
3.1 = 36

3.T

| 122.9 | | | | F1.4 | | | | F0.3 | | | | F0.9 | | | | 125.1 | | | |
|-------|----|----|------|------|----|-----|------|------|----|----|----|------|-----|------|-----|-------|-----|------|-----|
| 84 | 90 | 87 | 85 | 86 | 89 | 103 | 103 | 103 | 92 | 87 | 90 | 99 | 100 | 98 | 5.6 | 6.1 | 6.3 | 6.3 | 6.3 |
| 0 | 80 | 50 | 44.7 | 36 | 30 | 26 | 24.6 | 22 | 17 | | 16 | 19 | 23 | 22.6 | 30 | 40 | 50 | 51.3 | 55 |

| 123.9 | | | | F1.3 | | | | F0.6 | | | | F0.7 | | | | 126.6 | | | |
|-------|----|----|------|------|----|-----|------|------|-----|------|-----|------|-----|------|-----|-------|------|-----|--|
| 85 | 90 | 85 | 85 | 87 | 87 | 110 | 112 | 113 | 103 | 10.0 | 100 | 104 | 105 | 106 | 4.8 | 5.3 | 5.8 | 6.2 | |
| 64 | 59 | 50 | 42.7 | 40 | 33 | 27 | 24.2 | 20 | 17 | | 15 | 17 | 24 | 21.8 | 32 | 40 | 55.8 | 65 | |

7.

| 125.0 | | | | F1.1 | | | | F0.4 | | | | F0.6 | | | | 127.2 | | | |
|-------|------|----|----|------|------|-----|-----|------|-----|------|-----|------|------|-----|-----|-------|------|-----|--|
| 86 | 85 | 84 | 84 | 116 | 121 | 122 | 121 | 114 | 109 | 11.1 | 117 | 113 | 115 | 5.2 | 5.4 | 6.2 | 6.3 | 6.5 | |
| 65 | 58.0 | 42 | 33 | 27 | 23.4 | 24 | 19 | 17 | | 16 | 18 | 23 | 21.4 | 32 | 40 | 50 | 57.6 | 65 | |

| 125.7 | | | | F1.1 | | | | F0.3 | | | | F1.0 | | | | 122.7 | | | |
|-------|------|----|----|------|------|-----|------|------|-----|------|------|------|-----|------|------|-------|-----|------|-----|
| 86 | 89 | 90 | 74 | 92 | 12.6 | 132 | 132 | 133 | 123 | 11.9 | 12.2 | 130 | 132 | 13.1 | 11.6 | 113 | 119 | 11.9 | 118 |
| 60 | 53.1 | 50 | 40 | 34 | 28 | 25 | 23.4 | 19 | 15 | | 15 | 18 | 22 | 23.0 | 26 | 33 | 40 | 44.1 | 50 |

| 127.6 | | | | F1.3 | | | | F0.1 | | | | F0.9 | | | | 122.3 | | | |
|-------|-----|------|------|------|----|------|--|------|------|------|------|------|------|------|------|-------|------|------|------|
| 44 | 7.9 | 8.2 | -7.9 | 92 | 96 | 14.6 | | 14.9 | 13.4 | 12.9 | 13.3 | 14.7 | 14.8 | 14.2 | 13.5 | 13.5 | 13.5 | 13.4 | 12.9 |
| 64 | 54 | 51.2 | 53 | 40 | 33 | 24.2 | | 19 | 15 | | 14 | 18 | 22 | 22.6 | 26 | 35 | 42.9 | 50 | 65 |

var 5166

| 127.2 | | | | F1.4 | | | | F0.0 | | | | F1.0 | | | | 125.7 | | | |
|-------|-----|------|----|------|------|-----|-----|------|----|-----|-----|------|------|-----|-----|-------|------|-----|--|
| 08 | 102 | 00 | 46 | 74 | 111 | 113 | 118 | 97 | 92 | 9.6 | 113 | 116 | 107 | 9.4 | 8.6 | 6.3 | 6.5 | 5.6 | |
| 58.8 | 56 | 52.5 | 40 | 33 | 24.6 | 23 | 19 | 14 | | 14 | 17 | 21 | 23.0 | 27 | 36 | 55 | 53.1 | 65 | |

950.21

13.7 11.2

23+50

10.7

39.56

52 12.7

12.2

38.06

24

T.P

210

939.89

12.42

937.79

55 9.0

2.5

37.35

+24

62 3.7

3.2

36.65

+50

700 4.5

4.00

35.85

25

72 4.7

4.2

35.71

+24

| | | | | | | | | | | | | | | | |
|-------|-------|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|-----|--------|
| B.T. | 2.1 | | | | | | | | | | | | | | |
| C10.6 | 123.0 | F3.1 | | | | Co.1 | | | | F1.6 | | | | | R1.7 |
| 0.6 | 0.7 | 143 | 139 | 149 | 149 | 111 | 106 | 108 | 132 | 132 | 128 | 124 | 122 | 116 | 120 95 |
| 62 | 620 | 314 | 34 | 28 | 23 | 15 | | 13 | 19 | 23 | 254 | 28 | 36 | 50 | 411 65 |

| | | | | | | | | | | | | | | | |
|------|-----------|------|-----|------|-----|------|-----|------|------|------|-----|------|------|-----|--------------|
| B.T. | 13.00 | | | | | | | | | | | | | | |
| C5.8 | 13.8 + 53 | F4.9 | | | | Co.5 | | | | F1.9 | | | | | R1.8 |
| 8.9 | 76 | 112 | 171 | 126 | 126 | 124 | 123 | 11.7 | 12.0 | 13.6 | 144 | 14.9 | 14.6 | 140 | 12.9 134 124 |
| 65 | | 60 | 98 | 38.6 | 34 | 25 | 14 | 14 | 18 | 24 | 29 | 266 | 36 | 50 | 414 65 |

| | | | | | | | | | | | | | | | |
|------|----|------|----|----|----|------|----|----|-----|------|------|-----|----|----|--|
| B.T. | | | | | | | | | | | | | | | |
| B4.6 | | F4.8 | | | | Co.6 | | | | F1.9 | R1.0 | | | | |
| 7.6 | 78 | 78 | 81 | 76 | 73 | 1.9 | 22 | 50 | 4.9 | 4.9 | 4.9 | 45 | 44 | 52 | |
| 51 | 50 | 38.2 | 33 | 24 | 15 | | 14 | 20 | 28 | 32 | 246 | 390 | 50 | 65 | |

| | | | | | | | | | | | | | | | |
|------|----|------|----|----|----|------|----|----|----|------|-----|----|----|--|--|
| F4.2 | | F4.4 | | | | Co.7 | | | | F2.1 | 200 | | | | |
| 7.9 | 81 | 81 | 82 | 82 | 28 | 25 | 27 | 60 | 60 | 58 | 62 | 67 | 71 | | |
| 50 | 50 | 38.6 | 34 | 25 | 15 | | 14 | 20 | 24 | 27.4 | 360 | 50 | 65 | | |

| | | | | | | | | | | | | | | | |
|------|----|------|------|----|----|------|----|----|-----|------|----|--|--|--|--|
| F3.9 | | F3.6 | | | | Co.6 | | | | F2.2 | | | | | |
| 8.4 | 86 | 86 | 81 | 79 | 39 | 34 | 34 | 67 | 67 | 70 | 70 | | | | |
| 50 | 50 | 41 | 33.4 | 25 | 15 | | 13 | 25 | 228 | 35 | 50 | | | | |

| | | | | | | | | | | | | | | | |
|----|----|----|-----|-----|-----|------|-----|----|------|------|--|--|--|--|--|
| | | | | | | Co.5 | | | | F3.4 | | | | | |
| 88 | 43 | 42 | 412 | 296 | 3.7 | 37 | 7.9 | 82 | 8.1 | 63 | | | | | |
| 85 | 49 | 41 | 293 | 192 | | 14 | 22 | 30 | 32.6 | 50 | | | | | |

93989

58

25+50

+55

B.M.

4.60

935.29

35.27

935.26

4.8

4.3

+60

35.61

4.9

4.4

26

35.50

12

4.9

4.4

+16

35.46

+28

T.P

1.88

937.17

4.60

935.29

48 23

1.8

+43

35.38

26+51.1 = 26+52.3

Kar 4.45
 Poi 4.48

Top R
 4.08
 Top R
 4.10

Top Mt 2 26 + 52.28

| | | | | | |
|----|-----|-----|----|-----|---------|
| | F02 | C01 | | F32 | |
| 51 | 19 | 08 | 42 | 54 | 82 89 |
| 53 | 198 | 16 | 14 | 20 | 32.6 39 |

F37

| | | | | | | | | |
|-----|-----|---------|-----|----|----|-------|-----|---------------|
| F35 | F35 | | F01 | | | | F48 | |
| 8.4 | 85 | 86 84 | 72 | 50 | 45 | 45 93 | 106 | 107 93 97 92 |
| 50 | 50 | 36 33.0 | 22 | 12 | 11 | 22 | 30 | 35 39 38.2 50 |

BT

| | | | | | | |
|-----|-----|---------|-----|----|-----|-------|
| F34 | F43 | | C00 | | F36 | |
| 83 | 72 | 92 85 | 51 | 44 | 43 | 73 85 |
| 50 | 40 | 36.2 30 | 13 | 12 | 25 | 33.4 |

| | | | | | | |
|----|----|----|----|----|-----|----|
| 80 | 57 | 48 | 43 | 44 | 5.0 | 51 |
| 62 | 23 | 15 | | 11 | 26 | 60 |

Top Mt 2 26 + 52.28

| | | | | | |
|-----|-----|--------|-----|-------|---------|
| F02 | C00 | | F23 | | |
| 25 | 26 | 24 1.8 | 1.8 | 19 28 | 46 7.8 |
| 48 | 50 | 32 14 | | 13 19 | 28.2 50 |

937.17 4.9 2.4

26 + 68

1.9
35.31

+ 83

+ 90

49 2.4
1.9
35.25

27

51 2.6
2.1
35.08

+ 50

57 3.2
2.7
34.49

28

64 3.9
3.4
33.77

| | | | | | | | | |
|------|------|------|-----|-----|-----|------|------|------|
| F7.0 | | F0.2 | | | | F7.8 | | |
| 9.4 | 9.4 | 8.0 | 2.3 | 2.1 | 2.3 | 8.4 | 10.2 | 10.1 |
| 55 | 47.0 | 28 | 15 | | 13 | 27 | 50.2 | 60 |

| | | | | | | | |
|-----|----|----|-----|-----|-----|-----|-----|
| 100 | 98 | 83 | 2.7 | 2.3 | 2.5 | 8.0 | 8.3 |
| 55 | 42 | 28 | 16 | | 12 | 29 | 50 |

| | | | | | | | | | | | | |
|-----|------|-----|-----|------|-----|-----|-----|------|-----|-----|------|-----|
| F33 | | | | F0.5 | | | | F5.5 | | | | |
| 78 | 5.7 | 4.9 | 4.8 | 7.2 | 7.6 | 2.7 | 2.4 | 2.6 | 7.5 | 7.8 | 7.9 | 7.8 |
| 55 | 32.2 | 43 | 35 | 28 | 25 | 16 | | 12 | 2.4 | 30 | 41.0 | 50 |

| | | | | | | | | | | | | | | |
|-------|------|-----|------|-----|------|-----|-----|-----|------|-----|-----|------|-----|-----|
| 12.05 | F3.2 | | | | F0.4 | | | | F4.5 | | | | | |
| 4.3 | 4.6 | 4.7 | 5.8 | 4.8 | 7.1 | 7.1 | 2.8 | 2.5 | 2.8 | 7.0 | 7.3 | 7.1 | 7.6 | 7.5 |
| 50 | 37.5 | 40 | 31.8 | 34 | 29 | 25 | 16 | | 12 | 2.2 | 35 | 37.0 | 43 | 50 |

12.00
5.2 +
36

| | | | | | | | | | | | | |
|------|------|-----|-----|------|-----|-----|-----|------|-----|------|----|--|
| F4.8 | | | | F0.4 | | | | F4.6 | | | | |
| 90 | 8.0 | 7.3 | 7.1 | 3.4 | 3.1 | 3.3 | 6.7 | 7.7 | 7.8 | 7.3 | | |
| 57 | 38.2 | 30 | 27 | 16 | | | 13 | 2.2 | 3.2 | 37.4 | 50 | |

13.7

65

| | | | | | | | | | | | | |
|------|-----|------|------|-----|-----|------|-----|-----|-----|------|-----|-----|
| F4.6 | | F3.5 | | | | F0.5 | | | | F2.9 | | |
| 8.5 | 8.7 | 8.5 | 7.4 | 7.5 | 7.6 | 4.2 | 3.9 | 4.1 | 6.7 | 6.8 | 6.7 | |
| 50 | 50 | 42 | 33.0 | 28 | 22 | 16 | | 13 | 2.1 | 30.2 | 50 | 200 |

6.5 + 0.5
30

937.17 2.1 4.6
4.1
33.04

28750

79 5.4
4.9
32.31

29

8.6 6.1
5.6
31.59

+50

49d Lt 15" x 22' CMP Rt. 15' x 16'

93 6.8
6.3
30.87

30

75 7.0
6.5
30.72

+10

B.M 0.25 932.44 4.98 932.19 3

32.17

53 2.8
2.3
30.15

+50

60 3.5
3.0
29.42

31

+50 Lt 12" x 20' CMP 19P

BT

| F27 | | 120.3 F2.1 | | F0.5 | | | | F1.0 | | | 123.4 | | | | |
|-----|----|------------|------|------|----|----|----|------|-----|-----|-------|------|-----|------|-----|
| 79 | 76 | 68 | 67 | 75 | 75 | 50 | 46 | 49 | 7.1 | 7.1 | 5.1 | 5.6 | 4.0 | 3.7 | 3.5 |
| 50 | 50 | 30.9 | 27.4 | 24 | 22 | 17 | | 14 | 20 | 21 | 24 | 23.0 | 36 | 46.2 | 55 |

| F1.8 | | 121.0 F2.0 | | F0.4 | | | | F1.0 | | | 123.1 | | | | | |
|------|----|------------|------|------|----|----|----|------|-----|-----|-------|-----|-----|-----|------|-----|
| 72 | 73 | 69 | 74 | 78 | 77 | 57 | 53 | 55 | 7.5 | 7.2 | 6.4 | 5.5 | 5.0 | 4.8 | 4.8 | 4.4 |
| 55 | 55 | 39.0 | 27.0 | 24 | 20 | 15 | | 12 | 19 | 21 | 23.0 | 24 | 30 | 40 | 45.3 | 55 |

BT

| F1.1 | | 121.5 | | F1.5 | | F0.3 | | | | F0.7 | | | 123.3 | | | | | |
|------|----|-------|----|------|------|------|-----|----|----|------|-----|-----|-------|-----|-----|-----|------|-----|
| 72 | 73 | 71 | 70 | 67 | 7.6 | 79 | 8.0 | 64 | 59 | 6.1 | 7.2 | 7.2 | 6.8 | 6.0 | 5.2 | 5.4 | 5.3 | 5.2 |
| 46 | 46 | 40.5 | 36 | 28 | 25.0 | 23 | 21 | 16 | | 14 | 18 | 21 | 21.8 | 24 | 30 | 40 | 45.9 | 55 |

AUG. 5-1942

Ent. Lt

| BT | | F1.0 | | 121.3 | | F0.4 | | | | 122.4 | | |
|----|------|------|----|-------|-----|------|-----|-----|-----|-------|------|-----|
| | | 79 | 78 | 77 | 7.3 | 67 | 7.0 | 6.8 | 6.7 | 6.8 | 6.9 | 7.1 |
| | | 48 | 40 | 25 | 16 | | 12 | 18 | 24 | 30 | 42.2 | 50 |
| 80 | 8.2 | | | | | | | | | | | |
| 50 | 39.9 | | | | | | | | | | | |

SPK. 17 18 E1.0 52' Rt. 29+75 New.

T

| 8 | | 120.6 | | F1.9 | | F0.6 | | | | F1.5 | | | 121.0 | | | | |
|---|--|-------|----|------|------|------|----|-----|----|------|-----|-----|-------|-----|-----|-----|------|
| 6 | | 47 | 48 | 47 | 49 | 48 | 49 | 3.1 | 29 | 3.3 | 4.9 | 5.0 | 4.3 | 4.7 | 4.2 | 3.7 | 4.3 |
| | | 37.8 | 53 | 40 | 26.6 | 14 | 19 | 16 | | 14 | 18 | 21 | 25.0 | 31 | 45 | 55 | 39.0 |

BT

| F2.3 | | 120.3 | | F1.9 | | F0.6 | | | | F0.9 | | | 121.5 | | | | |
|------|----|-------|----|------|----|------|----|----|-----|------|-----|-----|-------|-----|-----|------|-----|
| 58 | 59 | 57 | 56 | 54 | 54 | 53 | 40 | 36 | 4.0 | 5.4 | 5.5 | 4.3 | 4.4 | 4.8 | 4.5 | 4.5 | 4.6 |
| 50 | 50 | 36.9 | 34 | 26.6 | 24 | 20 | 16 | | 14 | 18 | 20 | 23 | 22.6 | 28 | 34 | 40.5 | 50 |

| | | | | | | | | | | |
|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| 58 | 55 | 56 | 47 | 45 | 4.7 | 6.2 | 6.3 | 5.1 | 5.1 | 5.0 |
| 30 | 35 | 24 | 15 | | 13 | 18 | 21 | 25 | 35 | 50 |

932.44

75 5.0

4.5

27.97

32

82 5.7

5.2

27.22

+50

90 6.5

6.0

26.45

33

41

152

41

152

121
127 12

98 7.3

6.8

25.68

+50

106 8.1

7.6

24.83

34

115 9.0

8.5

23.95

+50

T.P.

3.03

925.64

9.83

922.61

56 3.1

2.6

23.02

35

513

41

42

21.9

| | R12 | | | F11 | | | F06 | | | F11 | | | R20 | | | | |
|---|-----|------|----|-----|------|----|-----|----|----|-----|----|----|------|----|----|------|----|
| 3 | 66 | 63 | 57 | 51 | 61 | 63 | 64 | 54 | 51 | 52 | 66 | 69 | 61 | 58 | 56 | 55 | 55 |
| 2 | 50 | 39.6 | 35 | 24 | 23.4 | 23 | 20 | 17 | | 13 | 18 | 21 | 23.4 | 24 | 35 | 42.0 | 50 |

21.5

| | R16 | | | F13 | | | F07 | | | F11 | | | R27 | | | | |
|----|-----|------|----|-----|------|----|-----|----|----|-----|----|----|------|----|----|------|----|
| 64 | 66 | 66 | 62 | 63 | 70 | 73 | 73 | 62 | 59 | 60 | 73 | 75 | 68 | 56 | 55 | 55 | 56 |
| 42 | 50 | 40.8 | 36 | 27 | 24.2 | 23 | 21 | 18 | | 14 | 18 | 22 | 22.4 | 25 | 36 | 44.1 | 53 |

25.1

| | R34 | | | F10 | | | F07 | | | F10 | | | R21 | | | | |
|----|-----|----|----|------|----|----|-----|----|----|-----|----|----|------|----|----|------|----|
| 58 | 57 | 56 | 50 | 75 | 76 | 77 | 69 | 67 | 70 | 74 | 80 | 80 | 75 | 59 | 60 | 59 | 59 |
| 60 | 50 | 42 | 35 | 23.0 | 23 | 21 | 18 | | 12 | 17 | 19 | 22 | 23.0 | 26 | 36 | 45.1 | 60 |

24.8

| | R39 | | | F10 | | | F08 | | | F09 | | | R41 | | | |
|----|-----|------|----|-----|------|----|-----|----|-----|-----|----|------|-----|----|------|----|
| 57 | 58 | 59 | 59 | 49 | 83 | 83 | 78 | 76 | 7.8 | 87 | 89 | 82 | 57 | 60 | 57 | 57 |
| 0 | 55 | 47.7 | 45 | 35 | 23.0 | 20 | 18 | | 15 | 18 | 21 | 22.6 | 26 | 35 | 48.3 | 55 |

23.9

| | R25 | | | F12 | | | F09 | | | F11 | | | R48 | | | | |
|---|-----|----|------|-----|----|------|-----|----|----|-----|----|----|-----|------|----|----|------|
| 0 | 81 | 83 | 81 | 79 | 69 | 93 | 93 | 94 | 88 | 85 | 97 | 96 | 92 | 61 | 60 | 58 | 56 |
| 0 | 60 | 50 | 43.5 | 40 | 33 | 23.8 | 24 | 21 | 19 | | 15 | 19 | 22 | 23.4 | 27 | 35 | 50.4 |

23.1

| | R15 | | | F12 | | | F08 | | | F11 | | | R52 | | | | | |
|-----|-----|------|----|-----|----|------|-----|-----|----|-----|----|-----|-----|------|----|----|----|------|
| 111 | 108 | 100 | 87 | 84 | 95 | 102 | 103 | 105 | 98 | 93 | 95 | 107 | 106 | 101 | 61 | 64 | 63 | 64 |
| 66 | 50 | 40.5 | 35 | 31 | 28 | 23.8 | 23 | 21 | 18 | | 16 | 20 | 22 | 23.4 | 28 | 40 | 50 | 51.6 |

21.2

| | R12 | | | F12 | | | F08 | | | F09 | | | R54 | | | | | | |
|-----|-----|----|----|-----|------|----|-----|----|----|-----|----|----|-----|------|----|----|----|------|----|
| 44 | 44 | 34 | 32 | 39 | 43 | 42 | 45 | 45 | 39 | 34 | 36 | 44 | 44 | 40 | 00 | 00 | 02 | 02 | 03 |
| 396 | 39 | 35 | 31 | 28 | 23.8 | 24 | 23 | 21 | 18 | | 15 | 17 | 21 | 22.6 | 28 | 40 | 50 | 52.2 | 60 |

925.64

66 4.1

3.6

22.09

35+50

75 5.0

4.5

21.17

36

84 5.9

5.4

20.24

750

+54

+58 15" x 20" CMPRT 146.

+64

+69

| D1.8 | | F11 | | F06 | | F09 | | 125.5 | | | | | | | | | | |
|------|------|-----|----|-----|----|------|----|-------|----|----|----|----|------|-----|----|----|------|-----|
| 57 | 48 | 54 | 47 | 36 | 47 | 52 | 53 | 46 | 42 | 43 | 52 | 53 | 50 | 0.8 | 11 | 11 | 11 | 1.2 |
| 60 | 41.4 | 50 | 39 | 32 | 26 | 23.4 | 21 | 19 | | 15 | 18 | 22 | 22.6 | 29 | 35 | 45 | 52.5 | 60 |

| 122.4 | | F10 | | F06 | | F05 | | 126.7 | | | | | | | | | | | |
|-------|----|------|----|-----|----|-----|------|-------|----|----|----|----|----|------|----|----|----|------|-----|
| 57 | 54 | 51 | 47 | 41 | 49 | 56 | 60 | 62 | 55 | 51 | 51 | 58 | 58 | 55 | 15 | 12 | 10 | 0.8 | 0.7 |
| 60 | 50 | 43.2 | 39 | 33 | 28 | 25 | 23.0 | 21 | 18 | | 15 | 17 | 20 | 21.0 | 29 | 36 | 45 | 56.1 | 65 |

| 122.4 | | F10 | | F04 | | 127.6 | | | | | | | | | | | |
|-------|----|------|----|-----|----|-------|------|----|----|----|----|----|----|----|----|------|-----|
| 57 | 62 | 60 | 47 | 47 | 47 | 65 | 69 | 73 | 73 | 63 | 58 | 56 | 54 | 20 | 13 | 0.8 | 0.6 |
| 60 | 50 | 43.2 | 37 | 32 | 28 | 25 | 23.0 | 22 | 21 | 18 | | 15 | 22 | 32 | 45 | 58.8 | 65 |

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 64 | 60 | 47 | 44 | 52 | 70 | 72 | 63 | 59 | 59 | 52 | 47 | 33 | 15 |
| 55 | 41 | 37 | 32 | 29 | 23 | 21 | 19 | | 14 | 23 | 40 | 55 | 65 |

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 70 | 64 | 52 | 54 | 65 | 73 | 74 | 66 | 61 | 61 | 56 | 53 | 37 | 26 |
| 55 | 40 | 36 | 30 | 26 | 23 | 21 | 19 | | 13 | 23 | 28 | 50 | 65 |

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 74 | 74 | 56 | 55 | 68 | 73 | 73 | 61 | 62 | 61 | 61 | 32 | 18 | 13 |
| 60 | 50 | 36 | 32 | 26 | 24 | 22 | 19 | | 13 | 23 | 31 | 50 | 65 |

925.64 93 4.5

6.3

1932

37

10.3 7.8

7.3

18.39

750

24.80

B.M

0.92

924.82

T.P

1.63

919.74

753

918.11

44 1.9

1.4

18.39

37+50

53 2.8

2.3

17.47

38

62 3.7

3.2

16.58

150

| | 1210 | | | | F18 | | | | F06 | | | | F09 | | | | 1234 | | | |
|---|------|----|----|----|-----|----|----|----|-----|----|----|----|------|----|------|----|------|----|--|--|
| 8 | 94 | 89 | 83 | 76 | 80 | 85 | 86 | 85 | 72 | 69 | 71 | 80 | 79 | 27 | 65 | 59 | 51 | 47 | | |
| 7 | 55 | 45 | 39 | 37 | 30 | 28 | 26 | 23 | 19 | 14 | 16 | 22 | 22.6 | 26 | 40.2 | 50 | 55 | | | |

| F06 | | | | F20 1204 | | | |
|-----|----|----|----|----------|------|------|----|
| 102 | 83 | 79 | 81 | 101 | 101 | 98 | 99 |
| 23 | 19 | 14 | 20 | 23 | 27.0 | 39.2 | 50 |
| | | | | | | | 60 |

12" Box c/d r 65' 12t Ste- 36 + 69 (New)

1200
4.1 + 37
36

| | F2.4 | | | | | | | |
|---|------|----|----|----|----|------|----|--|
| 9 | 51 | 51 | 50 | 47 | 42 | 43 | 45 | |
| 3 | 60 | 50 | 41 | 36 | 30 | 28.6 | 28 | |

| | 1203 | | F2.4 | | | | F07 | | | | F19 | | 1203 | | | | |
|----|------|----|------|----|------|----|-----|----|----|----|-----|------|------|------|----|----|----|
| 54 | 34 | 55 | 50 | 46 | 52 | 52 | 50 | 34 | 30 | 31 | 49 | 50 | 47 | 49 | 50 | 50 | 51 |
| 65 | 53 | 40 | 36.9 | 30 | 27.6 | 28 | 22 | 19 | 14 | 18 | 25 | 26.6 | 35 | 36.9 | 50 | 65 | |

| | 1210 | | | | F2.1 | | | | F07 | | | | A1.4 | | | | 1215 | | | |
|-----|------|------|----|----|------|-----|----|----|-----|-----|-----|------|------|-----|------|-----|------|--|--|--|
| 5.8 | 5.8 | 52 | 49 | 50 | 5.8 | 5.6 | 42 | 39 | 4.1 | 5.6 | 5.6 | 5.1 | 4.8 | 4.7 | 4.7 | 4.9 | 5.0 | | | |
| 60 | 50 | 39.0 | 37 | 36 | 27.4 | 21 | 18 | | 14 | 19 | 22 | 24.6 | 25 | 31 | 40.5 | 50 | 60 | | | |

919.74

20 4.5

4.0

1575

39

+50

84 5.9

5.4

14.35

40

90 6.5

6.0

1378

+50

95 2.0

6.5

13.27

41

T.P.

2.64

915.65

6.73

913.01

59 3.4

2.9

12.74

+50

4:1 = 19
7:1 = 36

| 121.2 | | | | F2.1 | | | | F0.7 | | | | F1.4 | | | | 121.8 | | | |
|-------|----|------|----|------|----|------|----|------|----|----|-----|------|----|------|----|-------|------|----|----|
| 60 | 63 | 58 | 54 | 58 | 61 | 66 | 68 | 65 | 50 | 47 | 5.0 | 62 | 65 | 59 | 51 | 51 | 52 | 53 | 52 |
| 60 | 50 | 37.6 | 37 | 31 | 29 | 27.4 | 27 | 21 | 18 | | 15 | 19 | 24 | 24.6 | 28 | 35 | 41.4 | 50 | 60 |

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|
| 63 | 64 | 58 | 58 | 81 | 79 | 58 | 53 | 56 | 68 | 6.9 | 52 | 52 | 56 | 56 |
| 60 | 50 | 39 | 33 | 28 | 23 | 18 | | 15 | 18 | 13 | 27 | 36 | 50 | 60 |

| 122.1 | | | | F2.6 | | | | F0.6 | | | | F1.1 | | | | 122.8 | | | |
|-------|----|------|----|------|------|----|----|------|----|-----|----|------|------|-----|----|-------|----|-----|--|
| 68 | 72 | 67 | 62 | 55 | 85 | 88 | 83 | 64 | 60 | 6.0 | 73 | 74 | 7.0 | 5.1 | 54 | 56 | 57 | 5.6 | |
| 60 | 50 | 42.3 | 40 | 35 | 29.4 | 29 | 22 | 18 | | 15 | 18 | 22 | 23.4 | 28 | 34 | 44.4 | 50 | 60 | |

| 121.4 | | | | F2.6 | | | | F0.7 | | | | F1.2 | | | | 122.0 | | | |
|-------|----|------|----|------|------|----|----|------|----|----|----|------|-----|-----|------|-------|----|----|--|
| 90 | 87 | 76 | 74 | 65 | 91 | 97 | 97 | 72 | 67 | 67 | 78 | 77 | 7.7 | 5.6 | 60 | 64 | 62 | 64 | |
| 60 | 50 | 40.2 | 40 | 36 | 29.4 | 28 | 23 | 18 | 16 | 18 | 24 | 23.8 | 28 | 35 | 43.9 | 50 | 60 | | |

| 1200 | | | | F2.7 | | | | F0.8 | | | | F1.2 | | | | 122.1 | | | |
|------|-----|----|----|------|----|------|-----|------|----|----|----|------|------|----|----|-------|----|----|----|
| 101 | 101 | 96 | 95 | 94 | 94 | 97 | 102 | 102 | 78 | 73 | 75 | 8.8 | 89 | 82 | 69 | 74 | 74 | 75 | 76 |
| 60 | 50 | 39 | 36 | 37 | 31 | 29.8 | 29 | 21 | 17 | 17 | 20 | 23 | 23.8 | 28 | 36 | 42.3 | 50 | 60 | |

| B.T | | | | F2.7 | | | | F1.0 | | | | F1.3 | | | | 121.4 | | | |
|-----|----|----|------|------|----|----|----|------|----|----|------|------|----|------|----|-------|--|--|--|
| 63 | 64 | 64 | 61 | 69 | 67 | 44 | 39 | 41 | 56 | 56 | 47 | 4.5 | 46 | 4.5 | 45 | 46 | | | |
| 50 | 50 | 38 | 29.8 | 27 | 21 | 17 | | 15 | 18 | 23 | 24.2 | 25 | 35 | 40.2 | 50 | 60 | | | |

915.65

63 3.4

3.3

12.32

42

68 4.3

3.8

11.83

+50

73 4.8

4.3

11.32

43

79 5.4

4.9

10.79

+50

8.4 5.9

5.4

10.23

44

9.0 6.5

6.0

09.64

+50

9.6 7.1

6.6

09.02

45

T.P.

2.78

910.69

7.74

907.91

4:1 = 19
3:1 = 36

BT.

| F2.8 | 1200 | F2.3 | F1.1 | | | | | F1.4 | | | 1215 | | |
|------|------|---------------|-------------------|-----|-----|-----|------|------|-----|------|------|----|--|
| 66 | 66 | 67 63 61 60 | 68 68 49 44 46 59 | 5.9 | 5.2 | 4.6 | 48 | 48 | 4.8 | 4.7 | | | |
| 50 | 55 | 45 36 28.2 24 | 22 20 16 | 16 | 19 | 23 | 24.6 | 25 | 35 | 40.5 | 50 | 60 | |

BT.

| F1.1 | F0.8 | | | F1.0 | | | | F1.5 | | | 1229 | | | | | |
|------------|------|-----|------|------|-----|-----|-----|------|-----|-----|------|-----|----|------|-----|-----|
| 63 63 5.7 | 5.3 | 4.7 | 5.1 | 65 | 6.6 | 5.2 | 4.8 | 4.9 | 6.2 | 6.7 | 5.7 | 5.3 | 35 | 39 | 4.1 | 4.1 |
| 60 50 39.3 | 38 | 23 | 22.2 | 20 | 18 | 16 | | 16 | 19 | 24 | 25.0 | 33 | 39 | 44.7 | 50 | 60 |

BT.

| 121.6 | F1.0 | | | F0.9 | | | F1.6 | | | 1233 | | | 2.6 | | | | | |
|------------|------|-----|------|------|-----|-----|------|-----|-----|------|------|-----|-----|----|----|------|-----|-----|
| 5.9 61 5.7 | 5.5 | 5.0 | 5.8 | 73 | 7.3 | 5.6 | 5.2 | 5.3 | 6.6 | 6.7 | 6.4 | 5.4 | 5.0 | 43 | 42 | 4.0 | 5.1 | 7.9 |
| 60 50 40.8 | 38 | 25 | 23.0 | 21 | 19 | 16 | | 17 | 20 | 24 | 25.4 | 27 | 32 | 34 | 48 | 45.9 | 53 | 63 |

BT.

| 122.2 | F1.1 | | | F0.7 | | | | F1.7 | | | 1242 | | | | | | | |
|------------|------|-----|------|------|-----|-----|-----|------|-----|-----|------|-----|-----|-----|------|-----|-----|-----|
| 60 61 5.7 | 5.2 | 4.7 | 6.5 | 75 | 7.6 | 6.0 | 5.6 | 5.8 | 7.1 | 7.3 | 7.1 | 6.4 | 2.8 | 2.6 | 3.7 | 4.4 | 4.6 | 4.3 |
| 60 50 42.6 | 39 | 27 | 23.4 | 21 | 19 | 16 | | 16 | 20 | 24 | 25.8 | 30 | 37 | 43 | 48.6 | 51 | 56 | 70 |

BT.

| 122.9 | F1.8 | | | F0.8 | | | | F1.9 | | | 1252 | | | | | | |
|------------|------|-----|------|------|-----|-----|-----|------|-----|-----|------|-----|-----|-----|------|-----|-----|
| 59 5.8 5.5 | 4.8 | 4.6 | 7.7 | 84 | 8.3 | 6.7 | 6.2 | 6.4 | 7.6 | 8.2 | 7.8 | 7.4 | 3.0 | 3.1 | 3.2 | 3.3 | 5.7 |
| 60 50 44.7 | 39 | 32 | 26.2 | 24 | 20 | 16 | | 16 | 19 | 23 | 26.6 | 28 | 36 | 50 | 51.6 | 71 | 79 |

BT.

| 124.0 | F1.8 | | | F0.9 | | | | F1.9 | | | 1258 | | | | | | | | |
|------------------|------|--|--|------|-----|-----|-----|------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 52 50 48 41 40 | 8.3 | | | 89 | 8.8 | 7.2 | 6.9 | 7.1 | 8.7 | 8.9 | 8.4 | 8.2 | 5.1 | 6.2 | 6.4 | 6.7 | 6.9 | 7.2 | 8.4 |
| 52 48.0 45 39 34 | 26.2 | | | 25 | 20 | 16 | | 16 | 20 | 25 | 26.6 | 29 | 35 | 44 | 50 | 60 | 72 | 84 | 94 |

BT.

| 121.1 | F2.2 | | | F1.0 | | | | F2.5 | | | 20.6 | | | | | | | |
|-------------|------|-----|------|------|------|-----|-----|------|-----|-----|------|-----|------|-----|-----|-----|--|--|
| 8.3 7.9 7.5 | 1.8 | 6.7 | 9.3 | 108 | 10.3 | 7.8 | 7.6 | 8.0 | 9.8 | 9.7 | 9.6 | 9.0 | 9.0 | 9.0 | 9.1 | 9.6 | | |
| 60 50 42.3 | 37 | 32 | 27.8 | 25 | 21 | 16 | | 15 | 18 | 25 | 29.0 | 32 | 37.8 | 46 | 50 | 6.7 | | |

910.69

5.3 2.8
2.3
08.4

45750

5.9 3.4

2.9

46

07.8

T.P.

5.68

908.92

745

903.24

365

2.2

1.7

+50

07.24

2.5

2.0

47

06.92

2.6

2.1

+50

06.80

53.0

53.0

57.5

62

10.3

9.2

+52 ϕ 24" X 50' S.C.C 1st

10.0

98.6

99.7

26.5 17 23.5 17

2.6

2.1

48

06.84

1200
51428
36

BT

| F3.2 | 1200 F2.8 | | | | F0.9 | | | | F3.1 | | | | | |
|------|-----------|----|----|------|------|----|----|----|------|----|----|------|----|----|
| 60 | 62 | 62 | 55 | 56 | 68 | 63 | 37 | 32 | 37 | 56 | 58 | 59 | 60 | 60 |
| 50 | 60 | 50 | 36 | 30.2 | 27 | 22 | 18 | | 14 | 19 | 25 | 31.4 | 50 | 60 |

37
544

78
50

| F4.1 | | | | F12 | | | | F4.2 | | | | | |
|------|----|------|----|-----|----|----|----|------|----|------|----|----|----|
| 79 | 80 | 75 | 73 | 84 | 85 | 46 | 41 | 46 | 76 | 76 | 77 | 77 | 77 |
| 60 | 50 | 35.4 | 30 | 28 | 25 | 16 | | 14 | 23 | 35.8 | 45 | 60 | |

SPK. in 76.1.17 25' 101 49+00

1909.6-1942

| F6.1 | | ws. | | F13 | | F5.4 | | 6.5 | | |
|------|------|-----|----|-----|----|------|----|-----|------|----|
| 83 | 83 | 67 | 70 | 35 | 30 | 35 | 70 | 70 | 76 | 75 |
| 48 | 43.4 | | 21 | 16 | | 14 | 22 | 30 | 40.6 | 57 |

| F6.8 | | F17 | | F6.2 | | | | |
|------|----|-----|----|------|----|----|------|----|
| 93 | 91 | 70 | 41 | 37 | 40 | 73 | 87 | 83 |
| 462 | 33 | 21 | 16 | | 13 | 20 | 43.8 | 55 |

| F8.0 | | F2.3 | | | | F6.5 | | | | | | |
|------|------|------|----|----|----|------|-----|----|----|----|------|----|
| 109 | 106 | 107 | 81 | 48 | 44 | 4.7 | 5.2 | 73 | 91 | 91 | 91 | 91 |
| 60 | 51.0 | 36 | 18 | 15 | | 13 | 17 | 20 | 23 | 33 | 45.0 | 55 |

st. 20

Ext. 18' 27

OS 10'

OS 10'

| F7.4 | | F8.3 | | F2.8 | | | | F6.1 | | | |
|------|-----|------|----|------|----|----|-----|------|----|------|----|
| 10.8 | 100 | 96 | 94 | 77 | 51 | 49 | 5.1 | 7.5 | 90 | 87 | 89 |
| 60 | 480 | 40 | 31 | 20 | 14 | | 14 | 19 | 25 | 43.4 | 55 |

908.92

10.7

48 + 50

2.3
1.8
07.10

49

1.9
1.4
07.55

750

1.2
0.7
08.19

T.R

10.07

913.31

5.68

903.24

50

73 4.8
4.3
08.04

+50

64 3.9
3.4
09.96

51

54 2.9
2.4
10.89

4.1 = 19

5 28

75

373

| | | | | | | | | | | | |
|------|------|----|----|----|-----|-----|----|----|----|-----|-----|
| F80 | | | | | F32 | | | | | F66 | |
| 10.5 | 103 | 97 | 90 | 80 | 75 | 5.2 | 50 | 53 | 76 | 71 | 89 |
| 60 | 51.0 | 33 | 23 | 22 | 20 | 15 | | 14 | 19 | 29 | 454 |

| | | | | | | | | | | | |
|------|----|----|----|-----|-----|-----|----|----|------|-----|--|
| F84 | | | | | F30 | | | | | F66 | |
| 103 | 99 | 99 | 82 | 5.1 | 44 | 4.7 | 77 | 89 | 8.5 | 82 | |
| 52.6 | 40 | 32 | 20 | 15 | | 14 | 20 | 25 | 45.4 | 55 | |

| | | | | | | | | | | | |
|------|----|----|----|-----|-----|-----|----|-----|------|-----|----|
| F87 | | | | | F24 | | | | | F62 | |
| 99 | 99 | 71 | 76 | 3.8 | 31 | 3.5 | 72 | 7.8 | 7.4 | 70 | 61 |
| 53.8 | 43 | 33 | 25 | 16 | | 14 | 22 | 30 | 43.8 | 46 | 59 |

| | | | | | | | | | | | | |
|-----|------|-----|-----|----|-----|-----|-----|------|------|-----|----|----|
| F87 | | | | | F16 | | | | | F50 | | |
| 126 | 135 | 122 | 113 | 67 | 59 | 6.4 | 109 | 11.1 | 10.1 | 9.8 | 72 | 88 |
| 60 | 53.4 | 30 | 23 | 16 | | 15 | 24 | 27 | 36 | 390 | 50 | 65 |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|----|-----|-----|-----|----|----|------|----|-----|------|-----|
| F24 | | | | | F11 | | | | | F42 | | | DF11 | |
| 116 | 113 | 113 | 106 | 96 | 5.5 | 4.5 | 4.9 | 78 | 77 | 81 | 50 | 4.7 | 3.6 | 6.4 |
| 55 | 48.4 | 45 | 33 | 25 | 16 | | 14 | 24 | 34 | 35.8 | 43 | 50 | 65 | 42 |

| | | | | | | | | | | | | | | |
|-----|------|----|----|-----|-----|-----|----|----|------|-----|----|----|--------|--|
| F62 | | | | | F07 | | | | | F41 | | | DF1100 | |
| 94 | 91 | 88 | 71 | 3.9 | 31 | 3.4 | 78 | 77 | 70 | 32 | 14 | 11 | 5.4 | |
| 55 | 43.8 | 35 | 22 | 16 | | 15 | 23 | 34 | 35.4 | 42 | 50 | 55 | 38.5 | |

913.31

51 + 25

2.5
2.0
11.3

+50

4.5 2.0
1.5
11.81

T.P.

6.78

918.35

174

911.57

B.M.

3.27

915.08

915.03
915.00

B.M.

3.75

14.55
914.60

51 + 50

8.5 2.0
6.5
11.81

112
82

+73

+90

Rt.

12" x 20 S.C e

52

2.6 6.1
3.6
12.74

115 105 66 0.6
195/83 169 150

F42
 78 96 72 6.7 62 29 24 27 65 62 13 08 1.0
 60 55 45 358 28 14 15 22 28 39 50 55

F1.0 F03 F2.2 R26
 30 35 36 29 18 21 54 62 39 42 13 09 09 04
 230 22 18 15 14 22 26 30 27.8 38 468 50 60

Top of Mt. Sta. 534

SPL 14 12" OOK 125' RT. 52+65

1200
9.7 + 33
36

8
 7 107 94 79 35 27 37
 4 75 63 56 39 35 30

69 15 +11 +42 +29 08 65 77 69 64 6.8 94 92 58 56 55
 25 100 75 48 37 32 22 17 15 15 23 27 35 50 40

12 16.2 F03 123.3 F2.0 C12
 9 +75 +76 +78 +70 +32 63 70 64 59 61 66 83 56 54 55 51 81 49
 100 84.6 68 54 33 22 18 15 12 21 26 31 40 41.9 50 27.0 50

91835

52+30

+50

27 5.2
47
13.66

.+62

25 5.0
4.5
13.88

918.35

7.2 4.7
4.2
14.13

52775

B.M.

5.88

920.43

375

914.55

914.60

6.8
6.3

52775

14.13

+91.5

Edge B.T. Cleveland Ave

53+01.5
=

53+02.6

9

"

"

+13

Edge B.T. "

6.0

5.54

+19

14.94

19 = 41
26 = 3:1

Aug. 21. 1944

| 002 | | | | 203 | | | 222 | | | | | | | | |
|-----|-----|-----|----|-----|----|----|-----|----|----|----|----|----|----|----|----|
| 91 | 87 | 87 | 86 | 83 | 70 | 70 | 50 | 46 | 39 | 42 | 47 | 48 | 46 | 44 | 40 |
| 150 | 125 | 100 | 75 | 50 | 36 | 30 | 23 | 21 | | 27 | 30 | 40 | 43 | 50 | 75 |

12' 00" 12' 125' 127' 52 + 65'

| | |
|-----|------|
| 200 | 205 |
| 68 | 63 |
| 19 | 19.0 |

| | | | | | | |
|-----|-----|-----|-----|-----|-----|----|
| 715 | 639 | 576 | 545 | 515 | 485 | 44 |
| 50 | 31 | 11 | | 11 | 31 | 50 |

| | | | | | | |
|-----|-----|-----|----|-----|-----|-----|
| 665 | 615 | 555 | 53 | 497 | 452 | 384 |
| 50 | 31 | 11 | | 11 | 31 | 52 |

| | | | | | | |
|----|-----|----|-----|-----|-----|-----|
| 69 | 632 | 55 | 525 | 505 | 468 | 420 |
| 50 | 33 | 11 | | 11 | 31 | 50 |

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 23 | 63 | 58 | 56 | 53 | 52 | 50 | 45 | |
| 50 | 31 | 19 | 11 | | 11 | 19 | 34 | 50 |

| | | | | |
|---------|--|--------|-------|--------|
| | | 920.43 | 58 | 520.04 |
| | | | 53 | |
| 53 + 30 | | | 15.16 | |

| | | | | |
|-----|--|--|--------|------|
| | | | 8.0 55 | |
| | | | 5.0 | 9.2 |
| +46 | | | 15.44 | 11.2 |

| | | | | |
|-----|---------------------|--|------|-----------------|
| +50 | P. 24" x 64' S.C.C. | | 10.2 | 8.9 rt. 11.6 |
| | 12" x 58 C.M.P. 176 | | | |

+76

| | | | | |
|-----|--|--|-------|-------|
| | | | 70 45 | |
| | | | 1.0 | 8.9 |
| 521 | | | 16.44 | 11.52 |

| | | | | |
|------|------|--------|------|--------|
| T.P. | 6.46 | 923.47 | 3.42 | 917.01 |
|------|------|--------|------|--------|

| | | | | |
|-----|--|--|-------|-------|
| | | | 81 60 | |
| | | | 6.1 | 11.6 |
| +50 | | | 17.37 | 11.82 |

| | | | | |
|------|-----|--------|-----|--------|
| B.M. | 670 | 921.25 | 9.8 | 914.55 |
|------|-----|--------|-----|--------|

923.47

82 5.7

DGRT

55

12.5

5.2

11.4

18.29

12.12

+27

+50

2.8

4.3

11.0

19.22

12.42

+63

12" x 68 Remove

3.8

3.3

56

20.14

120°
8.4 + 93
36

| | F3.4 | | | | F0.6 | | | | F0.5 | | | | F2.2 | | | | 1241 | | | | | | | |
|-----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|----|----|------|----|
| 104 | 91 | 97 | 90 | 65 | 63 | 59 | 58 | 57 | 56 | 57 | 58 | 59 | 60 | 67 | 87 | 92 | 92 | 79 | 65 | 69 | 70 | 76 | 75 | 73 |
| 45 | 32.6 | 38 | 32 | 26 | 21.4 | 16 | 16 | 05 | | 03 | 03 | 07 | 14 | 20 | 24 | 27 | 27.8 | 29 | 37 | 46 | 60 | 75 | 73.2 | |

12.7
75

81 76
95 80

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|
| 133 | 122 | 117 | 89 | 63 | 55 | 54 | 51 | 51 | 52 | 53 | 54 | 63 | 87 | 85 | 89 | 100 | 94 | 94 |
| 70 | 52 | 37 | 31 | 23 | 17 | 17 | 04 | | 03 | 03 | 12 | 15 | 21 | 28 | 41 | 62 | 80 | 100 |

| | F9.1 | | | | F9.0 | | | | F0.5 | | | | F5.8 | | | | 1203 | |
|-----|------|------|-----|-----|------|----|----|----|------|----|----|----|------|-----|------|-----|------|-----|
| 139 | 145 | 138 | 114 | 103 | 57 | 52 | 51 | 47 | 48 | 50 | 51 | 54 | 77 | 102 | 106 | 107 | 107 | 109 |
| 70 | 70 | 55.0 | 36 | 32 | 22 | 17 | 17 | 05 | | 03 | 03 | 10 | 19 | 25 | 42.2 | 70 | 65 | 85 |

| | F9.0 | | | | F0.7 | | | | F5.8 | | | | 1200 | | | | | |
|-----|------|-----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|
| 133 | 128 | 119 | 92 | 60 | 55 | 47 | 45 | 40 | 40 | 41 | 42 | 43 | 48 | 76 | 92 | 95 | 93 | 89 |
| 70 | 55.0 | 39 | 32 | 25 | 23 | 17 | 17 | 06 | | 03 | 03 | 08 | 14 | 20 | 24 | 32 | 41.0 | 60 |

923.47

D.G. R+

56+50

5.0 2.4

2.6 21.07

2.25

T.P.

6.48

927.41

2.54

920.93

57

8.2 5.7 5.4 5.6

21.99

8.0

18.98

7.5 5.0 4.5 3.9 7.9

+50

22.92

19.48

+60 15x20' EMP imp. H.

58

6.7 4.2 3.6 3.4 7.4

23.84

19.98

T.P.

12.19

936.48

3.12

924.29

+50

14.7 12.2 11.7 11.1 16.0

24.77

20.48

59

13.9 11.4 10.8 10.2

25.68

15.5
20.98

936.48

59+50

13.0 10.5 10.0 9.4 15.00
26.5 21.4/8

T.P.

3.46

939.42

0.52

938.90

60

15.0 12.8 12.2 11.6 17.4
27.2/ 21.98

+50

14.7 12.2 11.6 11.0 17.0
27.82 22.48

T.P.

5.24

934.61

10.05

929.37

61

9.4 6.9 6.3 5.7 11.6
28.32 22.98

+50

8.8 6.3 5.9 5.5 11.1
28.73 23.48

+70

4:1 = 19
3:1 = 36

6.5

35 BT
23.7
13.1
7.4

| 1213.7 | | C17 | | | | C14 | | | | F0.7 | | | | C15 | | | | | | | | |
|--------|------|------|----|----|----|-----|----|----|----|------|----|----|-----|------|------|------|-----|-----|-----|------|------|------|
| 11.1 | 70.7 | 74.1 | 93 | 97 | 87 | 88 | 88 | 88 | 85 | 8.6 | 88 | 88 | 9.1 | 10.4 | 10.7 | 10.1 | 9.9 | 8.9 | 8.8 | 13.2 | 13.5 | 13.4 |
| 9.0 | 78.1 | 4.1 | 28 | 25 | 24 | 19 | 15 | 15 | 06 | | 06 | 06 | 14 | 18 | 20 | 21.8 | 2.9 | 3.9 | 4.5 | 5.6 | 6.0 | 7.4 |

9.4

BT
F 1.6
13.2
8.0

| 244.1 | | C20 | | | | C17 | | | | F0.7 | | | | 1200 | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1.2 | 1.4 | 1.2 | 1.8 | 1.6 | 1.5 | 1.6 | 1.7 | 1.6 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 | 1.2 | 1.3 | 1.3 | 1.2 | 1.0 | 1.1 | 1.6 | 1.5 | 1.6 | 1.7 | 1.4 |
| 78.3 | 65 | 46 | 39 | 29 | 23 | 22 | 19 | 13 | 13 | 04 | | 07 | 07 | 15 | 19 | 21.8 | 2.9 | 3.2 | 4.2 | 5.2 | 5.8 | | | |

| 1213.1 | | C2.1 | | | | C1.7 | | | | F0.7 | | | | BT | | | | | | | | | | |
|--------|-----|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1.7 | 1.6 | 1.1 | 2.1 | 1.8 | 1.3 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.8 | 1.6 | 1.7 | 1.4 | 1.4 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 8.5 | 7.8 | 6.0 | 3.7 | 2.6 | 2.3 | 2.1 | 1.9 | 1.2 | 1.2 | | 0.9 | 0.9 | 1.7 | 2.1 | 2.5 | 2.1.8 | 3.2 | 4.1 | 5.1 | 5.3 | 5.3 | 5.0 | 5.0 | 5.0 |

Hub 27 of 60 + 25 Aug 24 1942

4.6

BT
F1.8
7.5 8.1 11.1
7.5 7.4 66.0

| 26.2 | | C1.8 | | | | C1.6 | | | | C0.2 | | | | F0.6 | | | | | | | | | | |
|------|-----|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|
| 4.0 | 3.4 | 3.2 | 2.3 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 1.9 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 7.5 | 6.4 | 5.6 | 3.9 | 3.5 | 2.5 | 2.2 | 1.9 | 1.8 | 1.2 | 1.2 | | 0.9 | 0.9 | 1.8 | 1.9 | 2.1 | 2.6 | 2.1.2 | 3.9 | 4.1 | 5.1 | 5.0 | 5.0 | 5.0 |

| BT | | 20.7 | | | | C0.4 | | | | C1.1 | | | | C0.4 | | | | 1200 | | | | F1.8 | | | |
|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|------|-----|-----|------|--|--|--|
| 8.6 | 9.0 | 8.8 | 8.1 | 7.2 | 6.7 | 5.9 | 5.3 | 5.3 | 5.1 | 4.9 | 5.0 | 5.1 | 5.4 | 5.1 | 4.8 | 4.7 | 9.5 | 11.1 | 10.8 | 7.6 | 7.1 | | | | |
| 5.0 | 6.0 | 5.7 | 3.6 | 2.8 | 2.4 | 1.9 | 1.8 | 1.2 | 1.2 | | 0.9 | 0.9 | 1.4 | 1.9 | 3.5 | 3.9 | 4.8 | 5.6 | 6.5 | 7.3 | 7.5 | | | | |

200
8.7 4.5
4.1

4.6

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|--|--|--|--|--|
| 10.3 | 9.8 | 9.2 | 6.0 | 5.2 | 5.4 | 5.3 | 5.0 | 5.1 | 5.2 | 5.3 | 5.9 | 5.8 | 5.4 | 5.3 | 6.3 | 10.2 | 10.9 | 10.6 | 7.3 | | | | | |
| 5.0 | 4.2 | 2.9 | 1.9 | 1.5 | 1.1 | 1.1 | | 0.8 | 0.8 | 1.2 | 1.5 | 1.6 | 2.0 | 3.3 | 4.0 | 4.8 | 5.4 | 6.5 | 7.5 | | | | | |

934.61

D. 6. 51

0.5 L

| | | | | | | | |
|------|----------------------|--------|-------|-----|-----|--------|--------|
| 62 | -23 | +23 | 5.8 | 5.6 | 5.4 | 10.6 | 9.0 |
| | | | 28.98 | | | 23.98 | 25.0 |
| | | | | | | 5 | |
| | | | | | 78 | | |
| +50 | -14 | +14 | 5.6 | 5.4 | 5.3 | | 9.1 |
| | | | 29.17 | | | | 25.8 |
| T.P. | 3.75 | 932.84 | 5.52 | | | 929.09 | |
| | | | 4.1 | 6.6 | | | 7.4 |
| 63 | End of Block Top | | 3.6 | | | | 25.4 |
| | | | 29.25 | | | | |
| | | | | 4.1 | 6.6 | | |
| | | | 3.6 | | | | 7.5 |
| 450 | | | 29.23 | | | | 25.3 |
| +97 | LT 12" x 20 CMP 17/2 | | 4.2 | | | | |
| | | | 3.7 | | | | 7.7 |
| 64 | | | 29.14 | | | | 25.1 |
| B.M. | | | 4.89 | | | 927.95 | 927.94 |
| | | | 4.3 | | | | |
| +50 | | | 3.8 | | | | 8.0 |
| | | | 29.01 | | | | 24.8 |
| B.M. | | | 5.09 | | | 927.75 | |

B.T

| F0.7 | 020 | F1.8 | C0.5 | | | | | F0.1 | | | | | 1000 | F1.4 | B.T | | | | | |
|------|-----|------|------|-----|----|----|----|------|----|----|----|------|------|------|-----|----|-----|-----|-----|----|
| 65 | 68 | 69 | 70 | 76 | 57 | 55 | 54 | 51 | 53 | 53 | 54 | 59 | 55 | 54 | 60 | 70 | 104 | 106 | 103 | 68 |
| 50 | 60 | 50 | 420 | 262 | 16 | 10 | 10 | 10 | 10 | 12 | 15 | 19.4 | 30 | 41 | 46 | 52 | 54 | 65 | 75 | |

A.6

B.T

| 04.0 | F0.2 | | C0.2 | | | | | F0.2 | | | | | 1000 | F1.2 | B.T | | | | | | | | |
|------|------|----|------|------|----|----|----|------|----|----|----|----|------|------|-----|----|----|----|----|----|----|----|----|
| 51 | 51 | 55 | 54 | 58 | 66 | 60 | 57 | 56 | 55 | 52 | 54 | 55 | 56 | 59 | 55 | 53 | 60 | 78 | 81 | 82 | 81 | 70 | 65 |
| 60 | 50 | 30 | 22 | 19.8 | 18 | 16 | 13 | 10 | 10 | 09 | 09 | 13 | 15 | 18.8 | 36 | 44 | 49 | 50 | 60 | 67 | 70 | 75 | |

2.8

B.T

| 0.5 | 00.8 | | F2.7 | | F0.6 | | | | | F0.4 | | | | | 1000 | B.T | | | | | | | |
|-----|------|------|------|----|------|----|----|----|----|------|------|----|----|----|------|-----|----|----|--|--|--|--|--|
| 52 | 62 | 66 | 68 | 70 | 45 | 45 | 49 | 42 | 45 | 46 | 47 | 45 | 50 | 58 | 63 | 66 | 61 | 49 | | | | | |
| 60 | 50 | 40.4 | 29.8 | 18 | 13 | 09 | 09 | 08 | 08 | 14 | 20.6 | 28 | 35 | 45 | 53 | 60 | 73 | | | | | | |

1200
67 + 17
50

B.T

| F2.3 | 00.2 | | F3.3 | | F1.0 | | | | | F3.6 | | | | |
|------|------|------|------|----|------|----|----|----|----|------|----|----|----|--|
| 64 | 68 | 73 | 74 | 75 | 53 | 49 | 46 | 53 | 63 | 75 | 77 | 76 | 75 | |
| 55 | 55 | 38.6 | 32.2 | 18 | 14 | 10 | 14 | 26 | 25 | 33.4 | 42 | 55 | | |

B.T

| F0.8 | 00.2 | | F1.6 | | F1.0 | | | | | F3.7 | | | | |
|------|------|------|------|----|------|----|----|----|------|------|----|----|--|--|
| 50 | 50 | 55 | 58 | 55 | 48 | 47 | 51 | 61 | 77 | 79 | 78 | 83 | | |
| 55 | 62 | 44.6 | 25.4 | 19 | 12 | 15 | 22 | 28 | 33.8 | 45 | 50 | | | |

P.K. 17 R.P 26.17 64 + 16

B.T

| 0.5 | 100.5 | | F3.1 | | F1.2 | | | | | F4.5 | | | | |
|-----|-------|------|------|----|------|----|----|----|----|------|----|------|----|----|
| 8 | 71 | 75 | 74 | 75 | 72 | 55 | 52 | 50 | 55 | 62 | 77 | 88 | 88 | 83 |
| 0 | 65 | 39.5 | 31.4 | 29 | 18 | 13 | 10 | 14 | 19 | 25 | 28 | 37.0 | 45 | |

SP. 16. 17 24" 00K 65. 17. 67 + 10

| | | | | | |
|-------|-----|-----------------|------------|----------------|----------------|
| | | 932.84 | 45 40 | D.G. Lt 8.3 | D.G. Rt 9.2 |
| 65 | | | 28.88 | 24.5 | 23.6 |
| | | | 46 41 | 8.5 | 9.5 |
| +50 | | | 28.75 | 24.3 | 23.3 |
| | | | 47 42 | 8.8 | 9.7 |
| 66 | | | 28.62 | 24.0 | 23.1 |
| | | | 48 43 | 9.0 | 10.0 |
| +50 | | | 28.49 | 23.8 | 22.8 |
| T. 10 | 403 | 930.72 | 6.15 | 926.69 | |
| | +90 | beg 13/6/66 Top | 2.9 2.4 | 7.1 | 8.1 |
| 67 | | | 28.36 | 23.6 | 22.6 |
| | | | 30 2.5 | 7.4 | 8.4 |
| +50 | | | 28.23 | 23.3 | 22.3 |

B.T.

| | | | | | | | | | | | | | | |
|-----|------|------|----|----|----|----|----|----|----|----|----|------|------|-----|
| 2.4 | F3.9 | F1.3 | | | | | | | | | | F4.2 | 46.7 | |
| 6.8 | 75 | 84 | 78 | 59 | 52 | 53 | 56 | 59 | 64 | 70 | 79 | 90 | 8.7 | 8.5 |
| 5 | 70 | 346 | 18 | 14 | 11 | | 10 | 16 | 17 | 22 | 25 | 30 | 308 | 364 |

B.T.

| | | | | | | | | | | | | | | | |
|------|------|------|-----|----|----|----|------|----|----|----|----|------|-----|------|------|
| F2.2 | 40.7 | F3.4 | | | | | F1.4 | | | | | F2.6 | | 43.6 | |
| 6.8 | 73 | 78 | 80 | 79 | 69 | 64 | 61 | 55 | 57 | 58 | 64 | 70 | 82 | 79 | 5.9 |
| 95 | 95 | 394 | 326 | 21 | 17 | 15 | 12 | | 11 | 14 | 19 | 24 | 334 | 45 | 72.2 |

T

| | | | | | | | | | | | | | | | | | | | | |
|----|-------|------|------|----|----|----|------|----|-----|----|----|------|----|------|----|----|-------|----|------|-----|
| 6 | 121.7 | F2.6 | | | | | F1.7 | | | | | F2.9 | | | | | 123.8 | | | |
| 7 | 64 | 71 | 70 | 73 | 74 | 69 | 63 | 61 | 5.9 | 61 | 60 | 65 | 70 | 74 | 76 | 76 | 61 | 62 | 70 | 5.9 |
| 60 | 48.1 | 40 | 29.4 | 22 | 20 | 14 | 12 | | 14 | 16 | 19 | 24 | 27 | 30.6 | 41 | 50 | 58 | 61 | 72.6 | |

T

| | | | | | | | | | | | | | | | | | | | | | |
|----|-------|------|----|----|------|----|------|----|----|-----|-----|------|----|----|------|----|-------|----|------|----|----|
| 3 | 124.2 | F1.6 | | | | | F1.9 | | | | | F2.1 | | | | | 125.0 | | | | |
| 5 | 46 | 48 | 46 | 47 | 60 | 64 | 75 | 76 | 65 | 6.2 | 6.2 | 63 | 62 | 71 | 76 | 69 | 5.9 | 49 | 50 | 50 | 54 |
| 60 | 55.6 | 46 | 40 | 26 | 25.4 | 23 | 20 | 17 | | 11 | 16 | 20 | 24 | 25 | 27.4 | 30 | 45 | 65 | 75.0 | 78 | |

T

| | | | | | | | | | | | | | | | | | | | | | | |
|-------|------|----|----|----|------|------|----|----|----|----|------|----|----|----|----|-------------------|----|------|----|----|----|------|
| 122.4 | F1.7 | | | | | F1.8 | | | | | F1.8 | | | | | 52 77 125.4 | | | | | | |
| 32 | 47 | 32 | 26 | 39 | 46 | 59 | 59 | 48 | 46 | 45 | 4.2 | 44 | 45 | 47 | 52 | 49 | 43 | 47 | 14 | 13 | 22 | 27 |
| 60 | 50.2 | 38 | 31 | 29 | 25.8 | 21 | 19 | 14 | 10 | 10 | | 10 | 14 | 18 | 22 | 25 | 28 | 26.2 | 34 | 40 | 60 | 75.8 |

1200

| | | | | | | | | | | | | | | | | | | | | | |
|------|---------|------|------|----|----|----|------|----|----|-----|-----|------|----|----|----|------|-------|----|------|----|--|
| B.T. | 76 + 44 | F5.2 | | | | | F2.2 | | | | | F2.7 | | | | | 125.4 | | | | |
| 5.1 | 43 | F5.2 | | | | | F2.2 | | | | | F2.7 | | | | | 125.4 | | | | |
| 8.1 | 92 | 86 | 82 | 78 | 69 | 56 | 51 | 51 | 50 | 4.7 | 5.0 | 60 | 61 | 55 | 61 | 5.7 | 29 | 31 | 30 | 38 | |
| 5 | 70 | 55 | 39.8 | 22 | 19 | 15 | 12 | 10 | 10 | | 09 | 09 | 13 | 20 | 24 | 29.8 | 38 | 56 | 75.8 | 77 | |

930.72

DGRT

68

+06

-06

2.5 2.6 3.7

28.10

8.6
22.1

+58.6

+28

-28

2.5 2.8 3.1

27.95

+65

Pl. 24" X 92' S.C.C.

176. 24 X 32' C.M.P.

11.4

10.9

19.3

19.8

0+00 = End of culvt

0+17

11.5

19.2

0+39

2.5 2.9 3.3

69

+44

-44

27.84

4:1=17

38

| | | | | | | | | | | | | | | | | | |
|--|------|------|------|-----|------|-----|------|-----|------|-----|-----|------|-----|-----|------|-----|-----|
| | F7.1 | | F2.3 | | F5.1 | | F2.3 | | F1.0 | | | | | | | | |
| | 11.6 | 11.6 | 10.7 | 5.4 | 5.3 | 5.3 | 4.9 | 5.1 | 5.1 | 5.5 | 9.2 | 7.8 | 4.2 | 9.0 | 9.3 | 4.0 | 3.7 |
| | 6.5 | 55.4 | 21 | 10 | 09 | 00 | | 09 | 14 | 18 | 27 | 39.4 | 47 | 58 | 73.6 | 77 | 76 |

200
90 + 37
65

B.T.

B.T.

| | | | | | | | | | | | | | | | | | |
|--|------|------|------|------|------|-----|------|-----|------|-----|-----|-----|------|------|------|--|-----|
| | F7.9 | | F8.4 | | F2.2 | | F7.8 | | F1.6 | | | | | | | | |
| | 10.4 | 10.9 | 10.9 | 10.3 | 9.6 | 6.5 | 5.4 | 5.0 | 5.2 | 5.2 | 5.8 | 9.6 | 10.7 | 10.9 | 11.0 | | 4.7 |
| | 7.0 | 6.5 | 52.6 | 34 | 16 | 11 | 08 | | 11 | 14 | 19 | 28 | 33 | 50.2 | 60 | | 7.9 |

C2.0
9.4
47

05.7

C2.0
8.4
45

05.7

| | | | | | | | |
|---|------|-------|------|-------|------|------|--|
| } | | 10.7 | 10.6 | 10.6 | | | |
| | | 0.4 | | 0.4 | | | |
| | | 120.6 | | 120.7 | | | |
| | | 11.0 | 10.9 | 10.6 | 10.7 | 10.7 | |
| | | 0.4 | 02.2 | | 02.6 | 0.4 | |
| | | 120.0 | | 0.0 | | | |
| | 11.5 | 11.5 | 11.5 | 11.5 | 11.4 | | |
| | 0.5 | 01.0 | | 01.0 | 0.4 | | |

} ST D. Id Lt. of
68+65

B.T.

2

B.T.

| | | | | | | | | | | | | | | | | | |
|--|------|-----|------|------|------|-----|------|-----|------|-----|-----|-----|-----|-----|------|------|-----|
| | F5.2 | | F6.0 | | F2.0 | | F7.8 | | F2.3 | | | | | | | | |
| | 7.7 | 7.8 | 7.9 | 8.5 | 9.6 | 9.8 | 6.1 | 5.3 | 4.9 | 5.0 | 5.4 | 5.4 | 6.8 | 9.8 | 11.1 | 11.1 | 6.6 |
| | 5.0 | 6.0 | 5.5 | 43.0 | 31 | 1.7 | 1.1 | 0.7 | | 0.2 | 1.3 | 1.5 | 2.2 | 3.0 | 50.2 | 6.0 | 7.8 |

930.72

49 24 3.0 3.5

69 + 33.6

+ 57 - 57

2775

+ 60

52 27 3.1 3.4 59

+ 87.8

+ 36 - 36

27.61

B.M.

11.03

933.98

7.77

922.95

86 61 6.40 6.7 92

70

+ 32 - 32

27.58

89 63 6.6 6.9 94

+ 55.4

+ 29 - 29

27.43

87 62 6.7 7.2 91

71

+ 45 - 45

27.32

| F4.1 | | | | | | | | | | F1.8 | | | | | F7.5 | | | B.T. | |
|------|----|----|----|----|----|----|----|----|----|------|----|----|----|-----|------|------|----|------|--|
| | | | | | | | | | | | | | | | | | | F1.3 | |
| 1 | 55 | 54 | 65 | 70 | 77 | 75 | 56 | 52 | 51 | 48 | 51 | 52 | 57 | 9.5 | 11.0 | 11.0 | 48 | | |
| 2 | 55 | 42 | 35 | 42 | 22 | 18 | 12 | 07 | 07 | | 12 | 17 | 23 | 30 | 49.0 | 60 | 80 | | |

200
50 + 41
38

37.0

| | | | | | | | | | | | | | | | | | | |
|----|----|----|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|--|--|
| 44 | 33 | 22 | 2.3 | 60 | 62 | 53 | 51 | 49 | 4.6 | 4.7 | 5.0 | 5.3 | 6.3 | 8.0 | 9.7 | 10.4 | | |
| 85 | 65 | 42 | 28 | 21 | 18 | 14 | 07 | 07 | | 04 | 13 | 17 | 24 | 31 | 50 | 65 | | |

| D4.6 | | | | | | | | | | F1.5 | | | | | F3.5 | | | B.T. | | | |
|------|----|-----|-----|----|----|----|----|----|----|------|-----|-----|-----|-----|------|-----|------|------|-----|-----|----|
| | | | | | | | | | | | | | | | | | | F1.7 | | | |
| 23 | 06 | 0.0 | 1.5 | 53 | 62 | 57 | 51 | 50 | 49 | 4.6 | 4.9 | 5.0 | 5.2 | 6.0 | 7.8 | 8.1 | 6.9 | 8.4 | 8.9 | 5.1 | |
| 75 | 49 | 47 | 34 | 23 | 18 | 17 | 13 | 08 | 18 | | 12 | 12 | 16 | 23 | 28 | 31 | 33.0 | 40 | 55 | 70 | 80 |

109.25-1942

X-Mark Top of R.R. Colvt N. End 65' Rt 68 + 80

| R5.3 | | | | | | | | | | F1.5 | | | | | F3.4 | | | R0.2 | | | | | | |
|------|----|----|----|----|----|----|----|----|----|------|----|-----|-----|-----|------|-----|------|------|------|-----|-----|------|------|-----|
| | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 33 | 26 | 25 | 77 | 82 | 93 | 97 | 87 | 83 | 82 | 81 | 7.9 | 8.1 | 8.2 | 8.4 | 8.9 | 10.7 | 11.0 | 10.1 | 8.9 | 9.7 | 11.0 | 11.7 | 9.0 |
| 1 | 87 | 45 | 35 | 25 | 4 | 19 | 18 | 16 | 13 | 08 | 88 | | 12 | 12 | 16 | 22 | 27 | 32 | 32 | 35 | 42 | 55 | 70 | 366 |

| R3.6 | | | | | | | | | | F1.5 | | | | | F1.3 | | | F2.3 | | | R2.9 | | | |
|------|----|----|----|----|------|----|----|----|----|------|----|-----|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|--|
| | | | | | | | | | | | | | | | | | | | | | B.T. | | | |
| | | | | | | | | | | | | | | | | | | | | | F1.4 | | | |
| 89 | 69 | 52 | 40 | 41 | 78 | 91 | 92 | 86 | 81 | 82 | 81 | 7.9 | 8.3 | 8.3 | 8.4 | 8.7 | 9.0 | 9.2 | 5.8 | 6.9 | 6.5 | 8.8 | 8.0 | |
| 75 | 61 | 46 | 36 | 33 | 25.0 | 20 | 18 | 16 | 14 | 09 | 09 | | 12 | 12 | 17 | 23 | 26 | 28.2 | 33 | 38 | 44 | 65 | 80 | |

| R7 | | | | | | | | | | F1.1 | | | | | F2.8 | | | R1.7 | | | B.T. | | | | |
|----|------|-----|------|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|------|------|-----|------|------|------|-----|--|--|
| | | | | | | | | | | | | | | | | | | | | | F1.8 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 84 | 10.8 | 8.8 | 7.3 | 6.2 | 7.8 | 7.2 | 9.6 | 8.4 | 8.1 | 8.0 | 7.8 | 8.2 | 8.3 | 8.7 | 8.9 | 7.9 | 10.0 | 9.5 | 7.5 | 8.0 | 9.8 | 10.7 | 8.6 | | |
| 50 | 70 | 36 | 41.2 | 29 | 25.4 | 20 | 18 | 13 | 09 | 09 | | 12 | 12 | 20 | 24 | 28 | 30.2 | 33 | 36 | 41.1 | 55 | 61 | 50 | | |

933.98

D.G. Rt

71+30.4

+57 -57

86 61 6.7
2724

22 97

72

+57 -57

88 63 6.9 74 99
22.06

T.P.

6.39

932.23

8.14

925.84

+50

72 47 5.3
2697

58 8.3

+78.8

48 5.4 59
2686

73

+49 -49

74 49 5.4 59
2680

11.0
21.2

+53.8

+29 -29

78 53 5.6 59
2666

11.2
21.0

Continued on Page 58

| | | | | | | | | | | | | F3.2 20.3 | | | | B.T. | | | | | |
|------|------|----|----|------|-----|-----|----|----|----|----|----|-----------|----|----|----|------|------|------|----|-----|----|
| F1.8 | | | | F1.0 | | | | | | | | F1.9 | | | | | | | | | |
| 92 | 76 | 70 | 62 | 79 | 101 | 101 | 93 | 83 | 82 | 81 | 77 | 81 | 82 | 84 | 87 | 98 | 104 | 94 | 92 | 103 | 91 |
| 50 | 39.0 | 32 | 29 | 26.2 | 21 | 19 | 16 | 13 | 09 | 09 | | 12 | 12 | 15 | 22 | 25 | 31.8 | 36.9 | 43 | 50 | 45 |

| | | | | | | | | | | | | F3.0 20.1 | | B.T. | | | | | | | |
|------|----|------|----|------|----|----|----|----|----|-----|-----|-----------|----|------|----|-----|------|------|-----|-----|--|
| F1.5 | | | | F1.0 | | | | | | | | F2.0 | | | | | | | | | |
| 70 | 77 | 66 | 57 | 28 | 91 | 73 | 82 | 83 | 82 | 7.9 | 7.9 | 82 | 83 | 83 | 93 | 102 | 10.4 | 98 | 104 | 9.4 | |
| 50 | 60 | 42.2 | 30 | 28.0 | 21 | 18 | 15 | 09 | 09 | | | 10 | 10 | 16 | 23 | 20 | 31.0 | 36.3 | 45 | 40 | |

| | | | | | | | | | | | | F3.0 20.1 | | B.T. | | | | | | | |
|------|------|----|----|------|----|----|----|----|----|----|----|-----------|----|------|----|------|------|-----|-----|--|--|
| F1.4 | | | | F1.1 | | | | | | | | F1.9 | | | | | | | | | |
| 8 | 22 | 21 | 18 | 63 | 68 | 76 | 78 | 73 | 68 | 66 | 64 | 66 | 68 | 72 | 74 | 8.8 | 8.2 | 8.9 | 7.7 | | |
| 5 | 51.0 | 41 | 34 | 25.4 | 34 | 30 | 18 | 17 | 12 | 09 | | 09 | 09 | 18 | 23 | 31.0 | 36.3 | 50 | 40 | | |

| | | | | | | | | | | | | F2.0 | | B.T. | | | | | | | |
|------|-----|-----|-----|------|----|----|----|-----|-----|-----|-----|------|-----|------|------|---|--|--|--|-----|--|
| F1.3 | | | | F1.0 | | | | | | | | F2.0 | | | | | | | | | |
| 35 | 3.9 | 3.7 | 3.3 | 80 | 82 | 73 | 69 | 6.6 | 7.0 | 7.1 | 7.4 | 9.4 | 9.1 | 10.7 | 10.4 | 8 | | | | 7.9 | |
| 65 | 65 | 50 | 33 | 21 | 18 | 14 | 09 | | 11 | 11 | 23 | 29 | 33 | 52 | 78 | | | | | 78 | |

22

| | | | | | | | | | | | | F4.6 20.3 | | F1.5 | | | | | | | |
|------|------|----|------|------|----|----|----|----|-----|-----|-----|-----------|------|------|------|-----|--|--|--|-----|--|
| F1.8 | | | | F1.5 | | | | | | | | F1.5 | | | | | | | | | |
| 60 | 61 | 59 | 6.7 | 62 | 82 | 84 | 74 | 72 | 6.9 | 7.3 | 7.6 | 8.2 | 10.4 | 10.5 | 10.7 | 9.9 | | | | 7.4 | |
| 60 | 39.9 | 36 | 26.2 | 29 | 22 | 19 | 04 | 09 | 10 | 15 | 23 | 30 | 37.4 | 65.6 | 70 | | | | | 75 | |

| | | | | | | | | | | | | F2.2 | | B.T. | | | | | | | |
|------|----|----|----|------|----|----|----|----|----|----|----|------|----|------|----|----|--|--|--|----|--|
| F5.6 | | | | F1.8 | | | | | | | | F1.5 | | | | | | | | | |
| 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | | | | 78 | |
| 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | | | | 90 | |

| | | | | | | | | | | | | F2.2 | | B.T. | | | | | | | |
|------|------|------|-----|------|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|-----|------|-----|-----|-----|--|
| F5.6 | | | | F1.8 | | | | | | | | F1.5 | | | | | | | | | |
| 11.4 | 10.9 | 10.3 | 9.5 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.5 | 8.0 | 8.8 | 8.8 | 8.1 | 7.4 | 7.5 | 7.7 | 7.5 | |
| 50 | 41.4 | 26 | 22 | 13 | 10 | | | 11 | 14 | 16 | 20 | 22 | 24 | 26 | 27.8 | 44 | 72.4 | 75 | 75 | | |

B.M. 2.30 922.05 924.75

79+41.8 W. Edge of Slab.

+ 51.8 E of Slab.

+ 61.8 E. Edge of Slab

79+70

+ 81

80

6.0 3.5
2.0
24.05

+ 50

6.2 3.7
3.22
23.83

81

6.5 1.0
3.5
23.6

T.P.

3.87

923.45

7.47

919.58

cloudy morning 41

Aug 7 1942

SPK. 17 P.P. 30' Lt. 79 + 33

| | | |
|-----|-----|-----|
| 296 | 288 | 284 |
| 11 | | 11 |
| 282 | 273 | 272 |
| 11 | | 11 |
| 271 | 289 | 288 |
| 11 | | 11 |

(71)

| | | | | | | | | |
|----|----|----|----|------|------|-----|----|----|
| 30 | 34 | 33 | 28 | 3.05 | 3.05 | 275 | 30 | 28 |
| 75 | 54 | 42 | | 32 | 36 | 37 | 46 | 65 |

| | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 43 | 40 | 38 | 34 | 30 | 33 | 31 | 33 | 58 | 56 | 39 | 42 | 56 |
| 75 | 60 | 39 | 29 | | 24 | 24 | 31 | 50 | 53 | 57 | 64 | 68 |

| | | | | | | | | | | | | | | | | | | | |
|------|----|------|----|------|------|----|----|------|----|----|----|------|----|----|------|------|----|----|--|
| K2.6 | | | | F2.2 | | | | F0.5 | | | | F1.0 | | | | K0.5 | | | |
| 32 | 33 | 34 | 37 | 40 | 57 | 65 | 62 | 40 | 35 | 39 | 46 | 45 | 56 | 59 | 55 | 57 | 56 | 61 | |
| 60 | 56 | 43.4 | 40 | 34 | 27.8 | 27 | 23 | 18 | | 15 | 23 | 23.0 | 27 | 31 | 32.5 | 45 | 51 | 57 | |

| | | | | | | | | | | | | | | | | | | | |
|------|----|------|----|------|----|----|----|------|-----|----|----|------|----|------|----|------|--|--|--|
| 1227 | | | | F2.5 | | | | F2.5 | | | | F1.9 | | | | 1306 | | | |
| 24 | 32 | 35 | 41 | 62 | 78 | 78 | 61 | 57 | 6.4 | 88 | 86 | 5.6 | 54 | 56 | 51 | 66 | | | |
| 60 | 50 | 44.1 | 38 | 29.0 | 21 | 16 | 11 | | 13 | 19 | 22 | 22.6 | 35 | 37.8 | 45 | 55 | | | |

1200
64 + 59
36

| | | | | | | | | | | | | | | | | | |
|-------|----|------|----|------|----|----|----|------|-----|-----|-----|------|------|----|----|----|----|
| 121.4 | | | | F2.9 | | | | F3.4 | | | | F3.5 | | | | | |
| 34 | 38 | 51 | 52 | 69 | 84 | 87 | 74 | 69 | 7.7 | 101 | 101 | 77 | 75 | 75 | 70 | 67 | 45 |
| 66 | 55 | 40.2 | 39 | 30.6 | 23 | 15 | 11 | | 15 | 26 | 23 | 25 | 33.0 | 40 | 50 | 53 | 61 |

| | | | |
|-------|--------|---------|--------|
| | 923.45 | 3.1 0.6 | 0.6 RT |
| 81750 | | 0.1 | 8.5 |
| | | 23.37 | 95.0 |

| | | | |
|----|--|---------|-------|
| | | 3.3 0.8 | |
| 82 | | 0.7 | 8.3 |
| | | 23.15 | 15.15 |

| | | | |
|-----|--|---------|------|
| | | 3.5 1.0 | |
| +50 | | 0.5 | 8.2 |
| | | 22.96 | 15.3 |

| | | | |
|----|--|-------|-------|
| | | 1.0 | 8.0 |
| 83 | | 0.5 | |
| | | 22.94 | 15.45 |

125 bet B. Top

| | | | |
|-----|--|-------|------|
| | | 0.9 | 7.9 |
| +50 | | 0.4 | |
| | | 23.08 | 15.6 |

| | | | |
|----|--|-------|-------|
| | | 0.6 | |
| 84 | | 0.1 | 7.7 |
| | | 23.38 | 15.25 |

3.5

1200

35 + 25
36

| B.T | F6.1 | | | | | | | | | | F24 | | | | | F10.0 D.F.00 | | | | |
|-----|------|----|----|------|----|----|----|----|----|-----|------|-----|-----|-----|----|--------------|------|------|----|--|
| | 67 | 65 | 70 | 71 | 73 | 72 | 40 | 35 | 43 | 9.7 | 10.0 | 9.3 | 8.3 | 106 | 85 | 75 | 59.0 | 62.5 | 65 | |
| | 55 | 65 | 52 | 45.0 | 34 | 19 | 13 | 12 | 26 | 38 | 46 | 53 | | | | | | | | |

T

| B.T | F12.8 | | | | | | | | | | F34 | | | | | F9.0 D.F.00 | | | | |
|-----|-------|-----|-----|-----|-----|-----|----|-----|-----|------|------|------|-----|------|----|-------------|--|--|--|--|
| | 136 | 132 | 131 | 112 | 118 | 121 | 43 | 3.7 | 4.0 | 11.7 | 11.9 | 11.0 | 9.8 | 92 | 83 | 74 | | | | |
| | 70.2 | 60 | 47 | 43 | 36 | 24 | 10 | 10 | 21 | 42 | 50 | 55.0 | 60 | 63.5 | 65 | | | | | |

B.T.

| B.T | F12.4 | | | | | | | | | | F21 | | | | | F4.2 | | | | | F26 D.F.00 | | | | |
|-----|-------|-----|-----|------|-----|-----|----|-----|-----|------|------|------|------|------|----|------|--|--|--|--|------------|--|--|--|--|
| | 134 | 136 | 133 | 131 | 130 | 127 | 50 | 4.7 | 4.8 | 14.3 | 14.3 | 11.1 | 11.4 | 146 | 82 | 20 | | | | | | | | | |
| | 80 | 80 | 75 | 67.4 | 50 | 26 | 16 | 07 | 10 | 28 | 32 | 34 | 51 | 57.4 | 64 | 66 | | | | | | | | | |

T

| B.T | F13.7 | | | | | | | | | | F4.8 | | | | | F9.5 D.F.00 | | | | |
|-----|-------|------|-----|-----|----|-----|-----|----|-----|-----|------|------|------|------|-----|-------------|--|--|--|--|
| | 145 | 147 | 143 | 140 | 99 | 108 | 108 | 54 | 5.3 | 5.6 | 12.6 | 11.9 | 11.5 | 10.5 | 8.0 | 7.2 | | | | |
| | 80 | 77.8 | 50 | 32 | 32 | 20 | 16 | 08 | 09 | 18 | 38 | 51 | 57.0 | 64 | 65 | | | | | |

B.T

5.0

| B.T | F13.3 | | | | | | | | | | F12.6 | | | | | F3.8 | | | | | F8.8 D.F.00 | | | | |
|-----|-------|------|-----|-----|-----|-----|----|-----|-----|------|-------|------|------|-----|-----|------|--|--|--|--|-------------|--|--|--|--|
| | 142 | 135 | 146 | 144 | 133 | 134 | 49 | 4.2 | 4.9 | 12.9 | 13.1 | 12.2 | 9.7 | 7.9 | 6.7 | | | | | | | | | | |
| | 90 | 69.4 | 80 | 65 | 46 | 28 | 14 | 13 | 28 | 40 | 43 | 57.2 | 67.5 | 66 | | | | | | | | | | | |

T

| B.T | F44.1 | | | | | | | | | | F2.1 | | | | | F3 D.F.00 | | | | |
|-----|-------|------|------|------|----|------|------|-----|-----|-----|------|-----|------|------|------|-----------|-----|-----|-----|-----|
| | 11.7 | 14.7 | 14.0 | 13.4 | 27 | 29 | 28 | 26 | 22 | 24 | 26 | 26 | 11.8 | 12.5 | 11.2 | 10.5 | 9.9 | 9.2 | 7.7 | 5.8 |
| | 7.4 | 5.7 | 4.1 | 30 | 15 | 10.5 | 10.5 | 0.9 | 0.9 | 1.2 | 3.4 | 3.7 | 4.1 | 5.2 | 5.7 | 6.0 | 6.3 | 6.3 | 6.3 | |

40

923.45

D.G. RT

84 + 50

0.1
+ 0.4
23.98

7.3
15.9

T.P.

7.37

929.60

1.22

922.23

85

5.5
5.0
24.56

12.4
17.2

+ 39

7.5 5.0
4.5
25.1

8.4
21.2

211 7.4
21 5
234 0

+ 42

+ 50

72 4.7
1.2
25.38
0.1

8.3
21.3

86

64 3.9
3.4
26.2

8.1
21.5

T.P.

19.58

942.14

1.04

928.56
13.58

| | | | |
|--|-----|-----|--------|
| F08 | F02 | F09 | F04 DF |
| 13.1 173 135 131 127 102 17 10 09 0.5 06 08 1.1 87 109 95 86 86 85 75 61 | | | |
| 85 85 75 71.8 58 40 70 10 10 09 09 13 29 42 46 60 65 52.6 65 68 | | | |

6.5 15.17 84-50 4.9.8.1942

| | | | |
|---|-----|-----|-----|
| F03 | F92 | F03 | F70 |
| 14.8 15.3 14.7 14.6 12.4 12 5.9 67 53 56 58 61 12.7 130 12.8 12.5 127 122 11.4 98 | | | |
| 65 75 55.8 45 35 19 107 107 09 09 16 30 40 42 47.0 51 55 63 69 | | | |

1100
26 137
70

| | | | |
|--|--|--|--|
| 2 76 75 59 53 44 64 63 44 4.9 47 43 46 48 50 57 41 39 35 7.9 7.9 74 79 79 90 | | | |
| 0 75 65 46 36 28 23 21 17 11 11 09 09 13 17 25 34 53 63 61.5 68 71 72 75 | | | |

| | | | |
|--|--|--|--|
| 65 63 59 50 38 62 62 49 48 46 43 46 49 61 57 56 53 2.8 25 76 71 7.9 72 | | | |
| 100 75 55 42 29 24 21 18 106 106 09 09 14 18 30 35 44 55 65 68 71 75 | | | |

| | | | | |
|--|-----|-----|-----|------|
| 123.4 | F10 | C02 | F08 | 1203 |
| 46 44 3.8 33 24 57 59 46 46 41 46 14 46 51 5.5 64 20 21 79 80 71 65 | | | | |
| 75 60 46.2 42 32 23.0 21 17 114 116 09 09 15 22.8 35 14 54 72 70.6 74 77 | | | | |

| | | | | |
|---|-----|-----|-----|------|
| 1192 | F05 | C07 | F02 | 1105 |
| 115 122 118 123 140 22 42 44 34 34 32 27 31 33 34 40 39 41 48 43 35 20 116 110 76 60 | | | | |
| 100 75 63.6 55 42 29 24 21.0 18 105 105 09 09 14 17 21 19.8 33 40 48 52 56 58 72.0 70 | | | | |

942.14 181 15.6

15.1

20.4

2703

21.7

86+50

~~788~~

+94

177 16.8

143

2786

87

B.M. T.P.

236

942.67

183

940.31

131 12.6

14.1

2859

+50

125 14.0

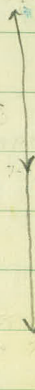
135

2912

88

1213.0 20.8 21.1
 55 51 43 37 151 151 165 143 146 144 140 142 144 148 143 140 55
 100 75.0 60 49 22 20 19 18 10 10 095 095 17 21 44 52

See page 47
 for extra
 X-Section Pt.



43 42 47 39 41 139 135 135 132 129 132 134 135 141 139 134 38 38 133
 150 75 53 50 46 22 19 09 09 10 10 15 18 26 36 45 51 64 71 73

(12.1)

90 80 10 41 132 128 130 127 130 132 133 140 130 36 35 134
 100 75.60 46 19 09 09 10 10 14 18 33 39 51 64 70 71

See Page 48

1113.6 21.1 21.7 20.1
 35 37 39 37 12.7 12.9 131 129 126 129 121 132 141 14.9 149 12.9 37 36
 100 76.8 55 45 19 18 09 09 10 10 15 17 19.4 21 27 38 50

16' 00K. 85' LT 87+50

(12.7)

1113.8 21.0 20.3
 34 33 10 38 11.7 12.4 126 124 121 123 125 126 123 11.7 35 34
 100 77.4 50 32 12 15 09.5 09.5 10 10 17 19 22 33 45

1112.5 21.1 21.7
 40 40 4.1 4.6 11.7 11.9 11.7 11.4 11.7 11.9 12.3 10.8 4.5 4.7
 100 73.5 50 27 16 09 09 10.5 10.5 19 30 36 45

942.67 162 13.7
13.2
2947

88750

+60

+65

89

160 13.5
13.0
2962

+58

161 13.6
13.1
2959

90

163 13.8
13.3
2935

T.P.

646

936.84

12.29

930.38

12.29

8940°
P.O.T.

3:1 = 36

(127)

45

See page 48
for add. x-sec.

1210

c 2.1

c 14

| | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 | 53 | 52 | 54 | 51 | 115 | 119 | 116 | 115 | 111 | 114 | 116 | 118 | 119 | 113 | 108 | 6.1 | 6.1 |
| 100 | 80 | 69 | 50 | 28 | 18 | 17 | 69 | 09 | | 09 | 09 | 190 | 22 | 24 | 39 | 43 | 45 |

| | | | | | | | | | | | | | | | |
|-----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| 51 | 54 | 56 | 53 | 113 | 117 | 117 | 115 | 111 | 114 | 116 | 118 | 118 | 104 | 58 | 59 |
| 100 | 70 | 50 | 28 | 19 | 17 | 10 | 10 | | 10 | 10 | 22 | 29 | 37 | 41 | 44 |

10.4

| | | | | | | | | | | | | | | |
|-----|----|----|----|-----|-----|-----|-----|-----|--|-----|-----|-----|----|----|
| 52 | 54 | 58 | 56 | 113 | 117 | 116 | 114 | 111 | | 114 | 115 | 119 | 58 | 59 |
| 100 | 73 | 47 | 29 | 19 | 16 | 10 | 10 | | | 10 | 11 | 19 | 30 | 43 |

12104

c 1.8

c 12

| | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 54 | 56 | 56 | 60 | 61 | 116 | 117 | 115 | 112 | 116 | 117 | 117 | 113 | 111 | 115 | 115 | 6.6 | 6.8 | |
| 100 | 75 | 62 | 50 | 27 | 16 | 13 | 09 | 09 | | 11 | 11 | 17 | 19 | 21 | 24 | 26 | 31 | 47 |

(127)

See Page 49
for add. x-sec.

1293

c 1.5

c 14

| | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 62 | 66 | 68 | 68 | 70 | 113 | 120 | 121 | 120 | 126 | 118 | 120 | 121 | 122 | 123 | 7.9 | 8.1 |
| 100 | 75 | 63 | 50 | 27 | 19 | 14 | 09.5 | 07.5 | | 11 | 11 | 18 | 19 | 26 | 31 | 48 |

1279

c 1.0

c 13

| | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| 81 | 83 | 84 | 85 | 84 | 77 | 120 | 127 | 128 | 126 | 128 | 129 | 130 | 125 | 119 | 82 | 85 | | |
| 100 | 75 | 59 | 50 | 36 | 24 | 17 | 12 | 08 | 08 | | 11 | 11 | 15 | 18 | 19 | 20 | 24 | 46 |

936.84 109 8.4
7.9
28.92

90+50

115 9.0
8.5
28.3

91

124 9.9
9.4
27.49

+50

114 10.9
10.4
26.48

92

145 12.0
11.5
25.38

+50

156 13.1
12.6
24.28

93

T.P.

5.10

928.19

13.75

923.09

(18)

46
See Page 49
for add. x-sec

1273

ca.5

ca.5

| | | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 35 | 35 | 36 | 36 | 36 | 37 | 71 | 78 | 79 | 77 | 74 | 78 | 79 | 78 | 69 | 62 | 62 | 29 | 30 | 31 |
| 100 | 75 | 57 | 50 | 38 | 26 | 21 | 15 | 09 | 09 | | 10 | 10 | 17 | 19 | 21 | 22 | 26 | 37 | 50 |

1275

ca.1

ca.1

| | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 40 | 39 | 40 | 39 | 38 | 36 | 89 | 92 | 91 | 86 | 90 | 92 | 89 | 43 | 45 | 50 |
| 100 | 80 | 58 | 50 | 43 | 25 | 14 | 08 | 08 | | 11 | 11 | 19 | 24 | 39 | 51 |

1271

ca.3

ca.1

| | | | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|----|----|----|----|
| 99 | 50 | 53 | 53 | 54 | 57 | 89 | 100 | 103 | 100 | 97 | 101 | 103 | 103 | 106 | 114 | 88 | 64 | 65 | 68 | 71 |
| 100 | 75 | 57 | 55 | 46 | 35 | 19 | 14 | 08 | 08 | | 11 | 11 | 15 | 16 | 17 | 19 | 23 | 38 | 52 | 56 |

(18)

1263

ca.5

ca.1

| | | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| 74 | 67 | 71 | 70 | 71 | 72 | 110 | 112 | 114 | 112 | 109 | 114 | 115 | 115 | 121 | 110 | 71 | 72 | 74 | 77 |
| 100 | 75 | 54 | 50 | 40 | 26 | 18 | 14 | 08 | 08 | | 10 | 10 | 14 | 17 | 19 | 23 | 35 | 50 | 58 |

1265

ca.3

ca.1

| | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|
| 77 | 75 | 80 | 80 | 80 | 82 | 115 | 121 | 123 | 121 | 118 | 121 | 123 | 124 | 130 | 116 | 85 | 84 | 87 |
| 100 | 78 | 55 | 50 | 42 | 23 | 17 | 13 | 09 | 09 | | 105 | 105 | 14 | 16 | 19 | 22 | 35 | 58 |

See Page 50

1262

ca.1

ca.6

| | | | | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|
| 88 | 92 | 94 | 94 | 96 | 92 | 94 | 129 | 132 | 132 | 130 | 127 | 131 | 133 | 133 | 140 | 125 | 100 | 99 | 99 | 106 | 115 |
| 100 | 75 | 57 | 50 | 32 | 31 | 24 | 16 | 14 | 09 | 09 | | 11 | 11 | 14 | 16 | 19 | 21 | 38 | 55 | 62 | 66 |

928.19

80 5.5
5.0
23.18

93+50

9.1 6.6
6.1
22.08

94

10.2 7.7
7.2
26.98

+50

8.5
19.7

B.M

5.12

926.91

6.40

921.79
5.07

T.P

5.48

928.77

3.62

923.29
5.07

86+50

7.1
21.7

+88

+94

3:1 = 36
4:1 = 19

(92)

47
See Page 50
for extra Sec.

| 3.1 | 25.1 | | | | | | | | | | F02 | | | | | 004 | | | | | |
|-----|------|----|-----|----|----|----|----|----|----|----|-----|----|----|----|----|-----|----|----|----|----|----|
| 24 | 17 | 24 | 29 | 31 | 30 | 29 | 56 | 57 | 55 | 52 | 54 | 56 | 57 | 63 | 63 | 51 | 42 | 44 | 44 | 45 | 43 |
| 65 | 101 | 75 | 513 | 41 | 31 | 21 | 15 | 09 | 09 | 10 | 10 | 14 | 16 | 17 | 19 | 25 | 38 | 50 | 59 | 47 | |

| 3.7 | 23.0 | | | | | | | | | | F03 | | | | | F14 | | | | | | | |
|-----|------|------|----|----|----|----|----|----|----|----|-----|----|----|----|----|------|----|----|----|----|----|----|----|
| 57 | 54 | 61 | 60 | 65 | 63 | 62 | 67 | 70 | 69 | 67 | 64 | 67 | 69 | 70 | 88 | 86 | 80 | 82 | 86 | 80 | 86 | 60 | 43 |
| 55 | 76 | 45.0 | 42 | 33 | 30 | 24 | 18 | 12 | 09 | 09 | 10 | 10 | 13 | 14 | 21 | 24.6 | 31 | 43 | 52 | 61 | 66 | 69 | |

| 3.7 | 20.8 | | | | | | | | | | F03 | | | | | F07 | | | | | |
|-----|------|----|-----|----|----|----|----|----|----|----|-----|----|----|-----|-----|-----|-----|-----|-----|----|----|
| 9.3 | 90 | 94 | 94 | 93 | 95 | 89 | 84 | 81 | 79 | 75 | 78 | 79 | 81 | 101 | 104 | 104 | 105 | 103 | 101 | 80 | 78 |
| 48 | 65 | 50 | 384 | 40 | 31 | 17 | 14 | 10 | 10 | 09 | 09 | 13 | 18 | 25 | 258 | 41 | 50 | 63 | 68 | 71 | |

200
104 + 64
36

Clear, warm

Aug. 10 - 1942

SPK. 17 12" o.p.R. 65 Lt 94 + 25

20.7

3.8 6.3 59 54 64
69 72 73 77 724

65 65 58 54
70 72 73 77

6.6 5.8 5.3
70 72 71

92877

87

6.9
21.9

+50

6.7
22.1

-88

6.5
22.3

+50

6.7
22.1

+60

+65

89

6.9
21.9

120.3

66 66 5.3

70.6 73 77

120.7

0.8 6.0 5.7 53 5.3

65 71.4 72 73 77

120.0

1.3 6.5 6.3 54

65 68 72 77

120.5

5.4 6.2 6.2 54

66 72.5 73 77

1.2 1.4 6.3 6.2 5.5

62 66 72 73 77

1.3 1.7 6.4 6.4 5.6

61 63 72 73 77

120.6

1.3 1.9 6.3 6.3 5.6

60 68 72.2 73 77

928.77

7.1
21.7

89+50

7.3
21.5

90

7.5
21.3

+50

7.7
21.1

91

7.9
20.9

+50

8.1
20.7

92

T.R

3.63

926.92

5.48

927.29

6.4
20.5

+50

1205

| | | | | |
|----|----|----|----|----|
| 24 | 28 | 66 | 60 | 55 |
| 60 | 66 | 70 | 75 | 77 |

506

| | | | | |
|----|----|------|----|----|
| 32 | 38 | 67 | 61 | 58 |
| 62 | 67 | 72.2 | 75 | 77 |

1200.6

| | | | | | |
|----|----|------|----|----|----|
| 29 | 33 | 69 | 68 | 63 | 58 |
| 63 | 66 | 72.2 | 73 | 76 | 78 |

507

| | | | | | |
|----|----|------|----|----|-----|
| 32 | 37 | 70 | 63 | 63 | 5.6 |
| 62 | 66 | 72.4 | 74 | 76 | 78 |

1209

| | | | | |
|----|----|------|----|----|
| 40 | 43 | 70 | 65 | 59 |
| 64 | 67 | 71.8 | 75 | 78 |

1205

| | | | | |
|----|----|----|----|----|
| 37 | 76 | 74 | 68 | 62 |
| 66 | 72 | 73 | 75 | 78 |

1205

| | | | |
|----|----|----|----|
| 16 | 59 | 54 | 47 |
| 65 | 72 | 75 | 78 |

926.92

93

6.6

20.3

450

6.8

20.1

94

7.0

19.9

450

7.2

19.7

B.M.

8.32

922.11

5.13

921.79

921.79

5.2 2.7

2.2

95

19.88

450

6.7 3.8

3.3

18.86

50.4

62 5.5 5.1

72.8 75 78

1200

68 62 53

72 75 78

~~1200~~~~62 70 65 60~~~~62 73 75 78~~

1200

72 76 70 62

72.73 75 78

BT

(2.1)

F28

F30

F04

F31

46 54 57 57 52 35 32 30 26 29 22 24 48 50 58 62 62

40 50 31.0 26 19 14 10 10 09 09 13 17 21 31.4 36 50

F23

F30

F05

F35

21 73 73 68 70 69 45 43 41 38 40 43 46 66 72 73 75

40 50 40 31.0 25 19 14 10.5 10.5 09 09 12 18 27 33.0 50

922.11

4.6

4.1

18.01

96

78 5.3

4.8

17.33

+50

8.3 5.8

5.3

16.83

97

8.6 6.1

5.6

16.51

+50

8.7 6.3

5.8

16.36

98

6.3

5.8

16.72

+50

T.P.

5.23

926.45

6.89

915.22

6.50

4:1 = 19

51

(21)

T

| | F34 | | | | | F35 | | | | | F35 | | | | | |
|---|-----|------|----|----|----|-----|----|----|----|----|-----|----|----|----|------|----|
| 2 | 84 | 80 | 78 | 80 | 78 | 55 | 52 | 49 | 46 | 49 | 52 | 54 | 77 | 80 | 81 | 81 |
| 5 | 50 | 32.6 | 30 | 27 | 16 | 13 | 10 | 10 | | 09 | 09 | 13 | 18 | 25 | 33.0 | 50 |

T

| | F30 | | | | | F34 | | | | | F38 | | | | | |
|---|-----|----|------|----|----|-----|------|------|----|------|------|----|----|----|------|----|
| 5 | 89 | 87 | 83 | 88 | 83 | 60 | 59 | 56 | 52 | 54 | 56 | 59 | 84 | 90 | 91 | 90 |
| 5 | 50 | 40 | 31.0 | 25 | 19 | 13 | 10.5 | 10.5 | | 08.5 | 08.5 | 12 | 17 | 25 | 34.2 | 50 |

T

| | F3.6 | | | | | F3.4 | | | | | F4.2 | | | | | |
|---|------|----|------|----|----|------|----|----|----|-----|------|----|----|----|------|-----|
| 3 | 96 | 90 | 94 | 98 | 94 | 67 | 64 | 61 | 57 | 59 | 62 | 63 | 95 | 99 | 100 | 100 |
| 5 | 50 | 45 | 32.4 | 25 | 19 | 13 | 10 | 10 | | 087 | 087 | 12 | 20 | 25 | 35.4 | 50 |

T

| | F40 | | | | | F3.6 | | | | | F4.8 | | | | | 10.5 |
|---|-----|------|----|-----|----|------|----|----|----|----|------|-----|-----|------|-----|------|
| 2 | 101 | 101 | 99 | 105 | 71 | 68 | 65 | 62 | 65 | 67 | 69 | 101 | 110 | 109 | 109 | 95 |
| 5 | 50 | 36.0 | 31 | 19 | 13 | 10 | 10 | | 09 | 09 | 13 | 20 | 27 | 38.2 | 50 | |

T

| | F41 | | | | | F3.6 | | | | | F4.4 | | | | | |
|---|-----|------|-----|-----|-----|------|----|----|----|----|------|----|----|-----|------|-----|
| 2 | 103 | 104 | 100 | 105 | 102 | 73 | 71 | 68 | 64 | 65 | 67 | 68 | 99 | 107 | 107 | 110 |
| 5 | 50 | 35.4 | 31 | 26 | 19 | 12 | 10 | 10 | | 09 | 09 | 12 | 19 | 30 | 36.6 | 50 |

(21)

| | F3.6 | | | | | F3.7 | | | | | F3.9 | | | | | |
|----|------|------|-----|-----|-----|------|----|----|----|----|------|----|-----|-----|------|-----|
| 98 | 160 | 99 | 100 | 107 | 105 | 73 | 72 | 69 | 65 | 68 | 70 | 71 | 100 | 102 | 102 | 102 |
| 92 | 50 | 33.4 | 27 | 25 | 18 | 13 | 10 | 10 | | 09 | 09 | 12 | 16 | 33 | 34.0 | 50 |

920.45

99

72 4.7
4.2
16.27

+50

72 4.7
4.2
16.22

100

73 4.8
4.3
16.17

+50

73 4.8
4.3
16.12

101

74 4.9
4.2
16.07

+50

74 4.9
4.4
16.02

+89 2' x 32' CMR H

102

75 5.0
4.5
15.97

(05)

F3.0

F0.6

F3.5

79 29 71 84 91 72 57 55 53 48 51 53 54 83 82 82 81
50 40 31.0 27 25 19 13 10.2 10.2 11 11 13 19 31 33.0 50

F2.8

F0.6

F3.6

75 75 75 80 90 90 57 54 52 48 52 54 55 82 78 86 83 83 82
50 35 30.2 27 24 19 14 10 10 10 10 10 13 20 28 31 33.4 42 50

1200
73+90
36

F2.4

F0.5

F3.4

71 71 67 72 76 88 88 56 54 52 48 51 54 55 85 82 79 81
0 30.6 31 28.6 27 24 19 14 10 10 10 10 13 20 32.6 39 52

1200
73+46
36

(05)

1200
8 73+30
36

F2.2

F0.5

F3.7

1202

78 72 70 66 66 88 89 58 54 52 48 52 54 57 95 94 85 70 71 70
50 33 27.8 32 29 23 19 13 09.5 09.5 10 10 13 19 27 33.8 36 36.6 50

1204

F2.1

F0.4

F2.6

1209

72 70 65 67 70 90 90 59 54 52 48 52 54 55 61 94 96 74 75 84 65 68
5 37.2 32 28 27.4 24 19 14 09.3 09.3 10 10 12 14 19 25 30 29.4 53 38.7 60

1200
74+32/
36

1205

F1.8

F0.5

F3.6

68 69 70 66 67 64 89 91 85 53 52 49 52 54 55 91 93 79 81 89 85 81 81 83
50 37.5 40 34 26.2 26 23 19 13 09.3 09.3 09.8 09.8 13 19 25 27 30 32 33.4 34.4 3 50

(05)

1207

F2.5

F0.5

F3.9

68 70 68 75 77 92 90 54 53 51 49 52 54 55 94 96 86 86 96 89 88 87
38.1 50 40 29.0 29 24 21 18 09 09 10.10 12 19 24 27 29 32 34.6 40 50

920.85 75 6.0

102+50

4.5
15.92

26 5.1

103

0.6

15.87

T.P.

5.67

920.92

5.20

915.25

5.67

8.1 5.2

+50

5.1

15.82

82 5.7

104

5.2

15.77

+16 ϕ 24" X 12' conc. rt

20' C.M.D. LT

8.9

11.1

+16 ϕ EXT 24' X 59 S.C.C.

912.0

909.8

82 5.7

+50

5.2

15.72

86 5.5

105

5.0

15.92

3.47

921.38

917.91

| | | | | | | | | | | | | | | | | | | | |
|-------|-----------|-------------|-------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|-----|
| 1200 | | | | | | | | | | | | | | | | | | | |
| 75+16 | | | | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | | | | |
| | F34 | | | | | | | | | | | | | | | | | | F40 |
| 23 25 | 84 89 91 | 58 55 54 51 | 54 56 | 60 90 | 87 90 | 95 90 | 88 90 | | | | | | | | | | | | |
| 50 90 | 326 30 20 | 13 095 095 | 09 09 | 14 18 | 21 29 | 33 35 | 36 50 | | | | | | | | | | | | |

(0.5)

| | | | | | | | | | | | | | | | | | | | |
|-----------|-----------|-------------|-------|-----------|---------|---------|---------|--|--|--|--|--|--|--|--|--|--|--|-----|
| 1206 | | | | | | | | | | | | | | | | | | | |
| 78 70 76 | 84 90 91 | 58 57 55 51 | 54 55 | 60 95 | 102 104 | 105 107 | 10.7 | | | | | | | | | | | | |
| 378 50 40 | 322 31 19 | 14 10 10 | | 08.4 08.0 | 11 18 | 30 35 | 40.6 50 | | | | | | | | | | | | |
| | F33 | | | | | | | | | | | | | | | | | | F34 |
| | | | | | | | | | | | | | | | | | | | |

F0.5

(0.9)

| | | | | | | | | | | | | | | | | | | | |
|--------------|-------------|-------------------|---------|---------|---------|---------|--|--|--|--|--|--|--|--|--|--|--|--|-----|
| | | | | | | | | | | | | | | | | | | | |
| 24 26 29 85 | 86 93 94 72 | 62 60 58 56 59 61 | 64 106 | 112 117 | 115 121 | | | | | | | | | | | | | | |
| 50 45 38 306 | 29 25 20 16 | 13 098 098 | 081 081 | 11 18 | 30 40 | 43.8 50 | | | | | | | | | | | | | |
| | F29 | | | | | | | | | | | | | | | | | | F62 |

F0.5

| | | | | | | | | | | | | | | | | | | | |
|--------------|----------|-------------|---------|----------|---------|------------|--|--|--|--|--|--|--|--|--|--|--|--|-----|
| | | | | | | | | | | | | | | | | | | | |
| 24 26 83 77 | 88 92 74 | 59 57 55 52 | 56 57 | 63 97 99 | 105 110 | 117 121 | | | | | | | | | | | | | |
| 45 36 294 33 | 27 25 20 | 14 104 104 | 083 083 | 12 19 | 22 24 | 30 43.0 50 | | | | | | | | | | | | | |
| | F26 | | | | | | | | | | | | | | | | | | F60 |

C00

| | | | | | | | | | | | | | | | | | | | |
|-------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | |
| | C2.0 | | | | | | | | | | | | | | | | | | |
| | 6.9 | | | | | | | | | | | | | | | | | | |
| 05'15 | 27 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

C0.0

(0.9)

| | | | | | | | | | | | | | | | | | | | |
|-----------|--------------|-------------|---------|-----------|---------|---------|--|--|--|--|--|--|--|--|--|--|--|--|-----|
| | | | | | | | | | | | | | | | | | | | |
| | 1202 | | | | | | | | | | | | | | | | | | |
| 75 78 80 | 83 85 95 94 | 58 54 53 49 | 52 53 | 63 58 113 | 116 120 | 119 | | | | | | | | | | | | | |
| 55 45 366 | 32 302 26 19 | 13 103 103 | 078 078 | 09 11 | 20 35 | 43.8 55 | | | | | | | | | | | | | |
| | F28 | | | | | | | | | | | | | | | | | | F62 |

C03

| | | | | | | | | | | | | | | | | | | | |
|--------------------|-------------|----------|--------|---------|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | |
| | 1230 | | | | | | | | | | | | | | | | | | |
| 82 83 88 95 98 | 54 54 51 49 | 50 57 54 | 77 116 | 123 123 | 125 | | | | | | | | | | | | | | |
| 50 42 322 28 18 11 | 103 09 | 08 08 09 | 14 25 | 39 462 | 55 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

C01

(0.9)

920.92

48

4.3

16.60

105750

+ 52

+ 67

105 + 54.0

=

105 + 54.37

B.M.

5.04

915.88

915.88

B.M.

3.01

912.91

912.91

B.T

3.9

F4.4

r0.6

0.9

F5.0

| | | | | | | | | | | | | | | | | |
|----|----|-----|----|----|----|----|------|----|----|----|----|----|----|------|-----|-----|
| 87 | 89 | 92 | 90 | 94 | 80 | 56 | 53 | 49 | 53 | 55 | 55 | 76 | 91 | 86 | 104 | 110 |
| 0 | 50 | 366 | 40 | 29 | 26 | 15 | 12.6 | 09 | 12 | 16 | 25 | 27 | 29 | 41.4 | 50 | |

| | | | | | | | | | | | |
|----|----|----|----|----|-----------------|----|-----------------|----|-----|----|----|
| 82 | 85 | 83 | 69 | 58 | 54 | 47 | 53 | 53 | 5.6 | 86 | 75 |
| 70 | 53 | 42 | 34 | 24 | 19 _x | | 21 _x | 23 | 37 | 55 | 66 |

| | | | | | | | | | |
|----|----|----|-----------------|----|-----------------|----|----|----|----|
| 59 | 59 | 54 | 53 | 47 | 53 | 53 | 54 | 50 | 47 |
| 70 | 50 | 27 | 24 _x | | 23 _x | 27 | 45 | 62 | 72 |

| | | | | | | | | | | | | | | | |
|----|----|----|----|----|-----------------|----|-----------------|----|----|----|----|----|----|----|----|
| 83 | 90 | 92 | 67 | 56 | 54 | 48 | 53 | 55 | 55 | 67 | 83 | 96 | 97 | 92 | 54 |
| 75 | 50 | 32 | 24 | 17 | 19 _x | | 12 _x | 14 | 18 | 28 | 36 | 47 | 60 | 66 | 75 |

SP16 m Tel/P 29' rt. 106+62
5

SP16 m Tel/P 31' rt. 108+19

(New)

Side Culvt. Notes

| | | | |
|-------|---|----------------|------------------------------|
| B.M. | 3.77 | 954.78 | 951.01 |
| 3+64 | Ent. Lt 15'x20' CMP | ✓ 50.1 | 4.7 4.6 50.2 |
| | old pipe - Relay good shape | | |
| 4+50 | Pl. Ent. Rt | ✓ | |
| 8+50 | Top pvt & | 466 953.60 | 4894 |
| 8+26 | Ent. Lt. 12'x20' CMP | 45.9 | 4.6 4.5 49.1 |
| | old pipe Relay Cust. damaged pipe taking it out. ← Pl. 15'x28 S.C.C. New | | |
| B.M. | 7.74 | 959.22 | 951.88 |
| 16+92 | Ent. Rt 12'x20' ← | 15'x28 S.C.C | 42.0 New |
| 22+58 | 15'x40 S.C.C. New Rt | 3.13 946.40 | 5.3 5.1 54.1 943.53 |
| B.M. | 3.55 | 935.72 | 932.17 |
| 29+98 | 12'x20' CMP Lt Ent from 31+50 | 4.7 31.0 | 4.8 30.9 |
| B.M. | 10.65 | 942.22 | 932.17 |
| 24+47 | 15'x40' S.C.C | New Rt | 33.99 |
| 29+94 | 15'x16' CMP Rt Add 12' from 16+92 | | 8.23 |

Nov. 10. 1942

Top of Rock SE. Cor. Porch of House 102' 3+45

W. End E. End

COO COO

Hub OS 2'

77 76
10 10

Hub OS 2'

32

W. End E. End

COO COO

Hub OS 2'

76 75
14 14

Hub OS 2'

32

40

30" oak 103' rt. 13+26

E. End W. End

COO COO

Hub OS 2'

23 8.1
14 14

Hub OS 2'

31

OS 2'

COO
7.3 6.9
20 20

OS 2'

S.P.K. 14 18" Elm 52' rt. 29+75

W. E.

COO COO

Hub OS 2'

5.7 5.8
7.7 7.8
10 10

Hub OS 2'

29

R. 14 18" Elm 52' rt. 29+75

W
COO
6.23
8.23

OS 2'

E
COO W
COO COO
7.8 7.7
08 04

COO

9.1

OS 2'

31

B.M. 2.60 934.77 932.17

31+50 12"x20' C.M.P. Lt. old pipe 28.93 28.75
from 29+98
5.24 6.02

B.M. 0.62 925.42 924.80

36+62 15"x22' Rt. Pipe ^{up} Good (15"x28' S.C.C. New)
12"x26' Relayed. Top Poor Pipe

5.42 5.02
20.0 20.40

B.M. 1.55 916.10 914.58

51+95 Ent Rt Pl 15"x28.5' ← 12.10 12.60
Hauled from Sta. 51+57 12"x20' old pipe S.C.C.

± put
57+00 626 925.25 21.99

57+62 15"x20' C.M.P. Lt. ← 23.00 23.40
Pl. at 63+98
5.25 4.55

(15"x28' New)

B.M. 6.50 934.25 927.75

63+98 10"x16' C.M.P. Lt. 25.10 25.0
Pl. 15"x20'
from 57+62
9.15 9.25

26 3.0

| | |
|-----|------|
| W | E |
| 600 | 600 |
| 884 | 9.02 |
| 10 | 10 |

Hub os 2'

Hub os 2'

29'

2" Box c/dec 65' 12+ 36+69

OS 2'

| | |
|--------|------|
| E 0.80 | W |
| 7.62 | 600 |
| 8.42 | 8.02 |
| 13 | 13 |

OS 2'

31'

12" oak 125' 12+ 52+65

OS 6'

| | |
|------|------|
| 0.20 | W |
| 40 | 620 |
| 6.00 | 45 |
| 10 | 6.5 |
| | 10.5 |

OS 2'

30

1625

OS 2'

| | |
|-----|------|
| W | E |
| 600 | 6100 |
| 825 | 6.81 |
| 10 | 7.85 |
| | 10 |

OS 2'

31'

24" oak 65' 12+ 63+10

OS 2'

| | |
|-----|------|
| W | E |
| 620 | 6100 |
| 715 | 8.25 |
| 8 | 8 |

OS 2'

32'

3

B.M. 3.18 921.09 917.91

101+86 Ent. 2'

24'x20' C.H.P. old Pipe

Haul 24" by 6' From 5+57

B.M. 3.24 915.96 912.72

~~42+00 18"x28' S.C.C. New Rt~~ ^{3.64} 12.32

~~42+00 18"x28' S.C.C. New Lt.~~

B.M. 9.11 932.06 922.95

~~71+64 15"x28' S.C.C. New Lt.~~ ^{4.93} 27.13

B.M. 5.17 929.92 924.75

85+45 18"x28' S.C.C. New Lt. ^{4.6} 25.3 ^{4.21}

B.M. 1.29 933.46 932.17

32+81 18"x28' S.C.C. New Lt. ^{6.72} 26.74

797

801

57

Nov. 12, 1942

SPK. 14 Tel 31 Rt. 108+19 E

| | | |
|---|-----|-----|
| W | C10 | C10 |
| | 82 | 83 |
| | 10 | 10 |

955 in tel
 E Count 32'

SPK. 17 20' oak 150 Rt 43+56

| | | |
|---|------|------|
| W | C00 | C00 |
| | 6.54 | 6.44 |
| | 14 | 14 |

OS 2'

| | | |
|---|------|------|
| E | C00 | C00 |
| | 6.44 | 6.54 |
| | 14 | 14 |

| | | |
|---|-----|-----|
| W | C00 | C00 |
| | 6.7 | 6.8 |
| | 14 | 14 |

D.P. 36' Lt 79+33

| | | |
|---|-----|------|
| W | C00 | C00 |
| | 7.6 | 7.15 |
| | 14 | 14 |

34

18' Elm 52' Rt 29+75 W.

| | | |
|---|------|------|
| E | C00 | C00 |
| | 9.50 | 9.70 |
| | 14 | 14 |

74150 End of Good B. T. R.
 continued from Page 40
 932.23

D. G. R. T

| | | | | | | | |
|------|------------------|--------|-------|-----|--------|------|-------|
| 74 | +12 | -12 | 5.6 | 5.7 | 5.8 | 11.4 | 20.8 |
| | | | 26.53 | | | | |
| +50 | | | 6.4 | 5.9 | | 11.6 | 20.6 |
| | | | 26.37 | | | | |
| T.P. | 4.74 | 928.50 | 8.47 | | 923.26 | | |
| 75 | | | 2.8 | 2.3 | | 5.1 | 20.4 |
| | | | 26.23 | | | | |
| +50 | | | 3.0 | 2.5 | | 8.3 | 20.2 |
| | | | 26.02 | | | | |
| +66 | 10' x 56' C.M.P. | 17/1 | | | | 8.4 | 20.14 |
| T.P. | 4.89 | 928.65 | 4.74 | | 923.76 | | |
| +66 | 24" x 90' S.C.C. | Pl. | | | 9.7 | 12.9 | |
| | | | | | 19.0 | 15.8 | |
| 76 | | | 3.3 | 2.8 | | 8.4 | 20.28 |
| | | | 25.82 | | | | |
| T.P. | 4.92 | 928.88 | 4.69 | | 923.96 | | |
| | | | | | 4.92 | | |

| | | | | |
|-------|------|--------|-------------------------|--------|
| | | 92888 | | |
| 76+50 | | | 63 3.8 3.3 25.61 | 20.48 |
| | | | 65 4.0 3.5 25.41 | 20.68 |
| | | | 67 4.2 3.7 25.18 | 20.88 |
| | | | 69 4.4 3.9 24.95 | 21.08 |
| J.P. | 4.19 | 927.51 | 5.54 | 923.32 |
| | | | 5.8 3.3 2.8 24.72 | 21.28 |
| | | | 60 3.5 3.0 24.50 | 21.48 |

for Extra X. See
See Page 66

+24

89

BT

F5.1

F1.7

F1.2

124.0

00.4

| | | | | | | | | | | | | | | | | | |
|----|------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|
| 89 | 89 | 83 | 77 | 69 | 53 | 51 | 5.0 | 5.2 | 5.3 | 5.6 | 5.7 | 4.9 | 5.0 | 3.6 | 4.4 | 3.8 | 3.4 |
| 45 | 39.4 | 33 | 24 | 20 | 12 | 09 | | 10 | 15 | 18 | 19 | 26 | 23.8 | 54 | 73.0 | 75 | 75 |

1200

F2.9

F1.4

F2.1

1242

| | | | | | | | | | | | | | | | | | |
|----|----|----|------|----|----|----|----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|
| 67 | 55 | 63 | 69 | 69 | 70 | 55 | 54 | 4.9 | 5.4 | 5.6 | 5.6 | 6.3 | 5.3 | 6.1 | 5.2 | 4.0 | 4.3 |
| 50 | 36 | 34 | 30.6 | 28 | 20 | 15 | 10 | | 11 | 15 | 21 | 27 | 29 | 27.4 | 42 | 73.4 | 75 |

121.9

F1.6

F1.6

F1.6

| | | | | | | | | | | | | | | | | | | |
|----|------|----|----|----|------|----|----|----|----|----|----|----|----|------|----|----|----|----|
| 26 | 48 | 50 | 44 | 50 | 58 | 68 | 72 | 60 | 57 | 53 | 57 | 59 | 63 | 58 | 57 | 41 | 40 | 45 |
| 60 | 41.7 | 45 | 35 | 30 | 25.4 | 22 | 20 | 16 | 09 | | 10 | 15 | 23 | 25.4 | 27 | 43 | 58 | 76 |

X

123.6

F1.6

F1.9

F2.0

122.7

| | | | | | | | | | | | | | | | | | | |
|----|------|----|----|------|----|----|----|----|----|----|-----|------|-----|--|--|--|--|------|
| 29 | 33 | 28 | 34 | 60 | 72 | 73 | 62 | 62 | 58 | 61 | 6.3 | 6.4 | 7.0 | | | | | 5.1 |
| 65 | 46.8 | 38 | 31 | 25.4 | 21 | 19 | 16 | 10 | | 10 | 16 | 27.0 | 40 | | | | | 20.4 |

7.5

121.2

F1.8

F2.2

F1.8

| | | | | | | | | | | | | | | | | | | |
|----|------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|--|--|--|
| 28 | 4.6 | 4.4 | 4.1 | 5.1 | 6.4 | 6.6 | 5.6 | 5.2 | 5.0 | 5.1 | 5.2 | 5.2 | 5.1 | 5.6 | 4.4 | | | |
| 50 | 39.6 | 39 | 33 | 26.2 | 23 | 19 | 17 | 08 | | 10 | 17 | 21 | 26.2 | 40 | 58 | | | |

BT

F3.2

1260

F1.9

F1.5

F1.2

| | | | | | | | | | | | | | | | | | | |
|-----|----|----|-----|----|----|------|-----|-----|-----|-----|-----|------|-----|-----|--|--|--|--|
| 6.7 | 60 | 70 | 7.4 | 21 | 55 | 5.4 | 4.9 | 4.5 | 4.7 | 5.1 | 5.1 | 4.7 | 4.9 | 4.2 | | | | |
| 60 | 32 | 75 | 53 | 36 | 30 | 26.6 | 11 | | 10 | 16 | 22 | 23.8 | 40 | 52 | | | | |

BT

BT

| | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|
| 71 | 68 | 46 | 41 | 36 | 39 | 36 | 37 | 39 | 53 | 38 | | | | | | | | |
| 85 | 66 | 65 | 40 | 26 | 20 | | 12 | 18 | 40 | 55 | | | | | | | | |

927.51

B.M. 4.25 929.02 2.74 924.77 924.75

79730

+41.8 W. Edge of Slab

+51.8 E. of Pavement (New Brighton Rd.)

+61.8 E. Edge of Pavement.

B.M. 4.53 924.49

Continued on Page 41

Orig. X. Sec. Sub Cot

B.M. 1.81 952.83 951.01

10750 - 00 Cot

11700 11.6
41.2

11750 11.0
41.8

12700 10.2
42.6

12760 - 00 Cot.

Top of Rock SE. Cor. Porch of House 102' 21" 3+45

106 101 10.9
12 12

OS 6' C23 C24
93 93 92 92 93 OS 6'
15 13.2 13.2 15

OS 7' C23 C24
91 87 86 86 87 OS 7'
15 13.2 13.2 15

OS 7' C22 C24
79 80 78 78 79 OS 7'
15 13.1 13.2 15

OS 7' 70 67 70 OS 7'
12 12

Final X-See SP27.
Sub Cut

| | | | |
|-----|------|--------|--------|
| B.M | 1.77 | 952.78 | 951.01 |
|-----|------|--------|--------|

| | | | |
|--------|----|------|--|
| 10150: | 00 | Exc. | |
|--------|----|------|--|

| | | | |
|-------|--|--|--|
| 11700 | | | |
|-------|--|--|--|

| | | | |
|-------|--|--|--|
| 11750 | | | |
|-------|--|--|--|

| | | | |
|-------|--|--|--|
| 12700 | | | |
|-------|--|--|--|

| | | | |
|----------|------|--|--|
| +60 = 00 | Exc. | | |
|----------|------|--|--|

SE. Cor. District of House

| | | | | |
|----|-----|-----|-----|----|
| 93 | 104 | 101 | 105 | 92 |
| 13 | 11 | | 11 | 13 |

| | | | | |
|----|----|----|-----|----|
| 85 | 98 | 97 | 101 | 86 |
| 12 | 11 | | 11 | 12 |

| | | | | |
|----|----|----|-----|----|
| 76 | 98 | 99 | 100 | 79 |
| 12 | 11 | | 11 | 12 |

Orig. X-Sec Sub Cut.

Lt. of \pm Cleveland Road

B.M. 586 920.41 914.55

0+00 = \pm 53+01.5

0+11 Edge Pnt. Vert Sec.

0+40

1+00

0+00 = \pm Rt. of \pm

0+11 Edge Pnt. Vert. Sec.

0+40

0+70

1+00

1+30

12" OOK 125' RT. 52 + 65

| | | | | |
|------|----|-----|----|------|
| C30 | | | | C30 |
| 6.1 | 60 | 5.2 | 57 | 5.7 |
| 13.5 | 12 | | 12 | 13.5 |

| | | | |
|------|----|----|------|
| C20 | | | C25 |
| 72 | 68 | 44 | 6.5 |
| 13.0 | 09 | | 13.2 |

| | | | |
|-----|----|----|-----|
| C00 | | | C00 |
| 8.0 | 26 | 74 | 77 |
| 12 | 09 | | 09 |

| | | | | | |
|------|----|-----|-----|-----|------|
| C30 | | | | | C3.3 |
| 5.3 | 53 | 5.0 | 5.1 | 5.3 | 5.6 |
| 13.5 | 12 | 08 | | 09 | 12 |

| | | | | |
|------|----|-----|-----|------|
| C23 | | | | C23 |
| 49 | 44 | 4.2 | 4.5 | 4.8 |
| 13.1 | 09 | | 10 | 13.1 |

| | | | | |
|------|----|-----|-----|------|
| C25 | | | | C20 |
| 37 | 35 | 3.2 | 3.7 | 4.2 |
| 13.2 | 10 | | 10 | 13.0 |

| | | | | |
|----|----|----|-----|-----|
| 30 | 26 | 23 | 2.6 | 2.9 |
| 12 | 09 | | 10 | 12 |

| | | | |
|-----|----|----|-----|
| C00 | | | C00 |
| 15 | 14 | 15 | 1.8 |
| 12 | | 10 | 12 |

Final X. Sec. Sub Cut
Cleveland Road.

R.H. 5.70 920.25 914.55

0+00 = 53+02.4 Lt. of $\frac{1}{2}$

0+11 Vert. Sec

0+40

1+00 = 00 Cot rt of $\frac{1}{2}$

742 921.97 914.55

0+11 Vert. Sec.

0+40

0+70

1+00

1+30 = 00 Cot

Nov. 23-1942

64

12" 09K 125' RA 52+65

63 95 9.0 9.3 59
14 12 12 14

73 96 96 95 63
13 12 12 13

Scapegoe Trench
224' x 18'

74 97 98 10.0 7.8
13 12 12 13

68 93 95 96 71
13 12 12 13

Scapegoe Trench

62 83 81 84 60
13 12 12 13

3 x 3 x 10 =

46 62 63 63 48
13 12 12 13

Field X- Sec. for Bull dozing
down fill - for Settlement

B.M. 2.52 927.27 924.75

T.P. 3.01 923.02 720 920.01.

81+80 = 00 EXC.

82

+50

83

+50

84

+50 = 00 EXC.

Aug-15-1942

SPK. 14 RP 36' Lt. 79433

| | | | | |
|-----|----|----|----|----|
| 79 | 61 | 58 | 67 | 87 |
| 175 | 10 | | 10 | 17 |

| | | | | |
|-----|----|----|----|------|
| 105 | 93 | 89 | 93 | 108 |
| 135 | 07 | | 10 | 24.5 |

| | | | | |
|-----|----|----|----|-----|
| 105 | 92 | 88 | 92 | 108 |
| 16 | 08 | | 09 | 16 |

| | | | | |
|------|-----|-----|-----|------|
| 10.5 | 8.4 | 7.8 | 8.3 | 11.1 |
| 24 | 9 | £ | 9 | 25 |

| | | | | |
|-----|-----|-----|-----|-----|
| 9.5 | 6.4 | 6.0 | 6.5 | 9.0 |
| 33 | 9 | £ | 9 | 28 |

Additional X- Sec.

| | | | |
|----|------|--------|--------|
| BM | 5.13 | 929.88 | 924.75 |
|----|------|--------|--------|

| | | | |
|----|--|--|-------|
| | | | 9.2 |
| 77 | | | 20.68 |

| | | | |
|-----|--|--|-------|
| | | | 9.0 |
| +50 | | | 20.88 |

| | | | |
|----|--|--|-------|
| | | | 8.80 |
| 78 | | | 21.08 |

| | | | |
|-----|--|--|-------|
| | | | 8.6 |
| +50 | | | 21.28 |

| | | | |
|----|--|--|-------|
| | | | 8.46 |
| 79 | | | 21.42 |

| | | | |
|-----|--|--|-------|
| | | | 8.41 |
| +16 | | | 21.47 |

| | | | |
|-----|--|--|--|
| +24 | | | |
|-----|--|--|--|

Nov. 10.

1942

SPK. 14 P.P. 36' Lt. 79 + 33

123.7

53

72.4

8.1

122.1

72.20 6.7 6.4

50.2 6.92 7.5

121.4

7.2 7.2 6.7

6.78 7.0 7.5

121.8

7.3 6.3 6.7

6.1 7.5 6.8.6

121.9

6.5

6.8.8

6.7 6.8 6.0

6.0 6.5 7.5

5.91 43.61 37.70

$\frac{1.2}{76}$

8.93 34.68

6

+50

7.8
35.8

7

12 ditch B. ^{Should be} 7.3 7.6

7.74
35.85

+50

7.71
35.9

8

7.64
35.95

+50

7.9 36.0

B Tops in Ditch Lt 2.9 67

S.P. 27-516-01

June. 11-1923

Bloc Top Lt. 7+00

17/24 Culvt. Sta. 5757

200

2.9

01.0

6.8

01.0

6.76

01.0

6.7

Fingl X- Sec.
Sub Cot.

B.M. 5.05 919.60 914.55

50 + 90 = 00 Cot

51 + 50

52

750

53 + 015
=
53 + 02.6

+ 50

54 + 10 = 00 Cot.

Sept.

SPK. 17 12' 09K 125' 12t 52+65'

| | | | | |
|-----|-----|-----|------|-----|
| 8.9 | 108 | 107 | 10.8 | 8.9 |
| 13 | 12 | | 12 | 13 |

| | | | | |
|----|-----|-----|-----|-----|
| 77 | 9.7 | 9.5 | 9.9 | 7.5 |
| 13 | 11 | | 12 | 13 |

| | | | | |
|-----|-----|-----|-----|-----|
| 6.7 | 8.9 | 8.9 | 9.0 | 6.4 |
| 13 | 12 | | 12 | 13 |

| | | | | |
|-----|-----|-----|-----|-----|
| 4.7 | 7.7 | 7.6 | 7.6 | 4.1 |
| 13 | 12 | | 12 | 13 |

| | | | | |
|-----|-----|-----|-----|-----|
| 4.7 | 7.2 | 7.1 | 7.3 | 5.6 |
| 13 | 12 | | 12 | 13 |

Elev for Top of Rails

| | | | |
|---------|----------|--------|--------|
| B.M. | 676 | 938.93 | 932.17 |
| 25715 | | | |
| + 28 | | | |
| + 45 | | | |
| + 50 | w Rail | | |
| + 55 | E Rail | | |
| 26+33.2 | w Rail | | |
| + 382 | E Rail | | |
| B.M. | | 676 | 932.17 |
| B.M. | 449 | 940.08 | 935.59 |
| 25+50 | ♀ w Rail | | |
| 25705 | E Rail | | |

SRL 111 18' Elm 52' RT 29+75
 W. edge slab Ent. to 65' holes
 3.00
 19.4

85.20 35.95 center of slab
 298
 19.7

35.64
 326 E. Edge of slab
 198

| | | |
|-------|-------|-------|
| 35.70 | 35.78 | 35.78 |
| 322 | 3.15 | 3.15 |
| 17 | | 11 |

| | | |
|-------|-------|-------|
| 35.67 | 35.77 | 35.79 |
| 326 | 3.16 | 3.14 |
| 11 | | 11 |

| | | |
|-------|-------|-------|
| 35.39 | 35.41 | 35.41 |
| 327 | 3.12 | 3.12 |
| 11 | | 11 |

| | | |
|-------|-------|-------|
| 35.37 | 35.38 | 35.37 |
| 352 | 3.15 | 3.16 |
| | | 11 |

SRL 111 18' Elm 52' RT 29+75

SRL 111 W Post 28' RT 25+80
 35.72 35.81 35.80
 434 427 428
 11 11

| | | |
|-------|-------|-------|
| 35.69 | 35.78 | 35.81 |
| 440 | 430 | 427 |

Elev. on slab
great Lakes slab

B.M. 6.46 938.63 932.17

25+14.8 W. Edge 19.6

+22.0 20' Line 19.5

+32.0 E 19.4

+42.0 20' Line 19.2

+49.3 E Edge 19.4

B.M. 6.54 938.71 932.17

2.93

3578

422

3449

SPK. in 18' Elm 52' Rt. 29775

272 35.91

19.6

357 346 320 302 293 273 35.90

100 90 70 50 35.8 195

347 335 312 293 287 272 35.91

100 90 70 50 80 194

368 355 333 312 295 285 35.78

100 90 70 50 721 192

297

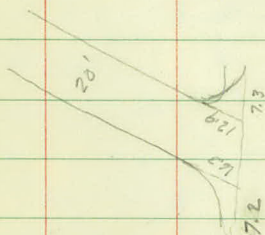
194 35.66

Sept. 29, 1942

SPK. in 18' Elm 52' Rt. 29775

421

432



Cuts for Sewer
 Rt. Sta. 75+66

| | | | |
|-------|------|--------|---------------------------------|
| B.M. | 5.10 | 929.85 | 924.75 |
| 75+66 | | | 9.75 14.44 20.14 15.41 |
| 76 | | | 14.54 15.31 |
| +50 | | | 12.69 15.16 |
| 77 | | | 14.84 15.07 |
| +50 | | | 12.99 14.86 |
| 78 | | | 15.14 14.71 |

Cloudy warm 71

Aug. 7 1942

SPK in P.P. 36 lt. 77 + 33

T.N.H

c 5.30 c 10.1

4.45 4.34

c 10.10

4.44

c 10.70

3.99

29.43

4.65

27.8

c 10.1

4.74

c 10.0

4.99

c 9.30

5.84

929.85

78 + 50

15.29

14.56

79

15.44

14.41

+ 16

8.38

15.49

21.47

14.36

80

17.17

12.68

T.P.

571

927.39

8.17

921.68

+ 50

15.71

11.68

81

16.71

10.68

T.P.

442

919.11

12.70

914.69

+ 50

915.00

09.68

20.91

9.20

C870

659

C920

624

T.H.M.H

C180

C900

658

649

C900

817

C1050

521

C940

731

4.14 with Ring

5.04 with out Ring

$$\frac{9}{4.14}$$

01

1000

2000

3000

4000

£

200 18/11

100 10/11

0119 x. Sec. Sub Cot.

B.M. 2.43 918.98 914.55

50+90 = 00 Cot
6

51+50

10.2
08.5

52

8.3
09.7

+50

8.3
10.7

53+615 =

6.9
11.0

53+02.6

+50

6.5
12.5

54+10 = 00 Cot.

Sept. 12-1942 74

SPK. in 12" oak 125 RT. 52+65

| | | | |
|----|----|----|------|
| 97 | 91 | 94 | |
| 12 | | 12 | 19.0 |

| | | | | |
|----|------|----|------|----|
| | c19 | | c19 | |
| 85 | 83 | 76 | 83 | 82 |
| 15 | 13.0 | | 13.0 | 15 |

| | | | | |
|----|------|-----|------|----|
| | c22 | | c24 | |
| 73 | 71 | 6.6 | 6.9 | 71 |
| 15 | 13.1 | | 13.2 | 15 |

Sec. Reversed

| | | | | |
|----|------|----|------|----|
| | rt | | rt | |
| | c25 | | c22 | |
| 39 | 5.8 | 55 | 6.1 | 63 |
| 15 | 13.2 | | 13.1 | 15 |

| | | | | |
|----|------|----|------|----|
| | c28 | | c34 | |
| 42 | 41 | 38 | 35 | 34 |
| 15 | 13.4 | | 13.7 | 15 |

| | | | | |
|----|------|----|------|----|
| | c24 | | c15 | |
| 42 | 41 | 40 | 50 | 54 |
| 15 | 13.2 | | 12.8 | 15 |

12' 2t outlet

outlet

12' 2t

D.S. 1t

Sub Cut

B. 17.

3.70

928.45

924.75

22.5

6.4
22.1

23.4

93
19.2

22.5

T. P.

5.00

929.90

924.90

7.9
22.0

7.6
22.3

10.7
19.2

Title Notes
Sta. 85+50

Sept 21, 1942

SPK. 17 P.R. 36' at. 79+33

60
24

| | | | | | |
|-------|------|-----|-----|-----|----------|
| | C1.0 | | C00 | | C4.0 |
| | 54 | 595 | 545 | 595 | 53 |
| 05 2' | 37 | 12 | 12 | 12 | 33 05 2' |

B.T.p 85+60

Oct 2, 1942

| | | | |
|--------|------|--|------|
| | C3.0 | | C3.0 |
| 0.5 8' | 4.6 | | 4.6 |
| | 12 | | 12 |

| | | | |
|--------|------|--|------|
| | C1.0 | | C4.0 |
| 0.5 2' | 6.9 | | 67 |
| | 33 | | 33 |

0119. X-See Sub Cut.

| | | | | |
|-------|---------|--------|-------|--------|
| B.M. | 029 | 940.60 | | 940.31 |
| T.P. | 552 | 934.65 | 11.47 | 929.13 |
| 84+90 | 00 Exc. | | | |

| | | | | |
|-------|--|-------|--|------|
| 85+50 | | 22.90 | | 11.8 |
|-------|--|-------|--|------|

| | | | | |
|----|--|------|--|------|
| 86 | | 23.2 | | 11.5 |
|----|--|------|--|------|

| | | | | |
|-----|--|------|--|------|
| +50 | | 24.0 | | 10.7 |
|-----|--|------|--|------|

| | | | | |
|----|--|------|--|-----|
| 87 | | 24.9 | | 9.8 |
|----|--|------|--|-----|

| | | | | |
|-----|--|------|--|-----|
| +50 | | 25.6 | | 9.1 |
|-----|--|------|--|-----|

| | | | | |
|----|--|------|--|-----|
| 88 | | 26.1 | | 8.6 |
|----|--|------|--|-----|

+60 = 00 Cut.

Sept. 16. 1942

76

16° 09' N 85° 21' 87+50

| | | | | |
|------|------|------|------|------|
| 11.1 | 11.2 | 10.7 | 11.6 | 11.7 |
| 15 | 11 | | 12 | 15 |

| | | | | |
|----|------|-----|------|------|
| | C22 | | C21 | |
| 96 | 9.6 | 9.4 | 9.7 | 10.1 |
| 15 | 13.1 | | 13.0 | 15 |

| | | | | |
|----|------|-----|------|-----|
| | C34 | | C31 | |
| 81 | 8.1 | 8.1 | 8.4 | 8.8 |
| 15 | 13.7 | | 13.5 | 15 |

| | | | | |
|----|------|-----|------|-----|
| | C37 | | C36 | |
| 69 | 7.0 | 6.7 | 7.1 | 7.2 |
| 15 | 13.8 | | 13.8 | 15 |

| | | | | |
|----|------|-----|------|-----|
| | C46 | | C43 | |
| 51 | 5.2 | 5.2 | 5.5 | 5.5 |
| 15 | 14.3 | | 14.2 | 15 |

| | | | | |
|----|------|-----|------|-----|
| | C44 | | C46 | |
| 49 | 4.7 | 4.3 | 4.5 | 4.5 |
| 15 | 14.2 | | 14.3 | 15 |

| | | | | |
|----|------|-----|------|-----|
| | C42 | | C45 | |
| 44 | 4.4 | 4.2 | 4.1 | 3.9 |
| 15 | 14.1 | | 14.3 | 15 |

| | | | | |
|----|-----|-----|-----|-----|
| 46 | 4.7 | 4.8 | 5.1 | 5.3 |
| 15 | 11 | | 11 | 15 |

B.M

3.70

928.45

924.75

84+90 = 00 Exc

85+50

86

+50

87

+50

88

+60

Final/Sec
Sub. Cont.

77

Sept. 21, 1942

SPR 14 P.P. 36' Lt. 79+33

37 57 57 57 40
13 12 11 13

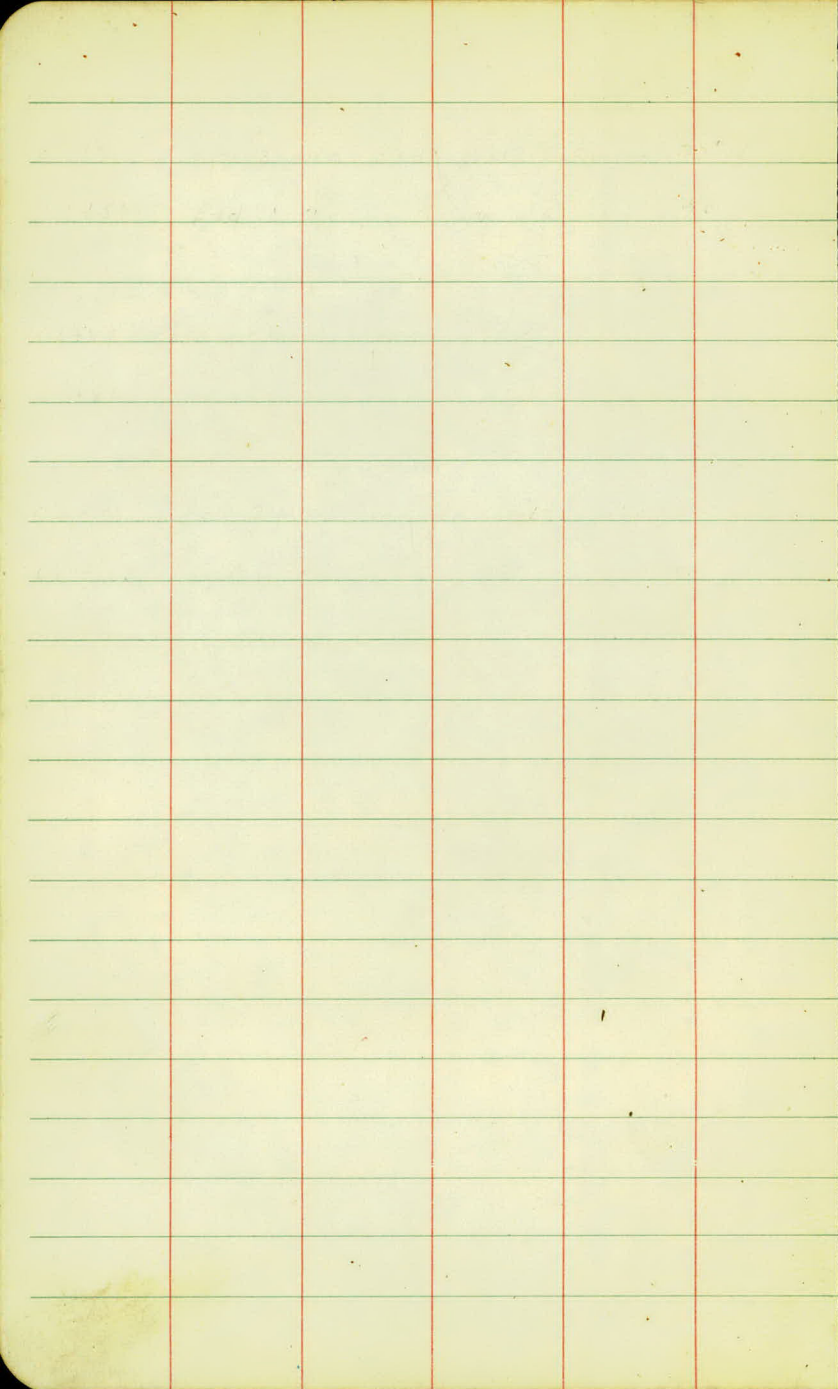
26 49 56 52 28
13 11 12 14

21 42 48 39 21 ✓
12 11 14 15

15 37 37 37 11
14 12 13 15

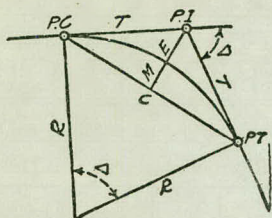
19 35 37 33 13
13 12 13 15

10.8 22 28 24 06
13 12 13 14



DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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CURVE FORMULAS

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

Tangent= $T = R \tan \frac{\Delta}{2}$ (3) Length of Curve= $L = 100 \frac{\Delta}{D}$ (4)

Middle ordinate= $M = R(1 - \cos. \frac{\Delta}{2})$ (5) $= R \text{vers} \frac{\Delta}{2}$ (6)

External= $E = T \tan \frac{\Delta}{4}$ (7) $= R \div \cos. \frac{\Delta}{2} - R$ (8) $= R \text{exsec} \frac{\Delta}{2}$ (9)

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

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta = 62^\circ 10'$ $D = 8^\circ 20'$. From Table IV for 1° curve $T = 3454.1$ and $\div 8\frac{1}{3} = 414.49$ ft. From Table V correction=.36 or $T = 414.85$ ft. P. C.=Sta. P.I.— $T = 157 + 45.50$. Also from (4) $L = 746.00$ and P. T.=Sta. P. C. + $L = 164 + 91.50$.

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

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

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve $E = 960.6$ for $8^\circ 20' = 960.6 \div 8\frac{1}{3} = 91.27$ and from Table V correction=.10 or $E = 91.37$ ft. Or suppose $\Delta = 32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E = 230.9$ and $\div 42 = 5.5$ or $D = 5^\circ 30'$.

TABLE I.—MINUTES IN DECIMALS OF A DEGREE.

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

TABLE II.—INCHES IN DECIMALS OF A FOOT.

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

TABLE III.—RADI, ORDINATES AND DEFLECTIONS.

| Deg. | Radius | Mid. Ord. | Tan. Offset | Def. for 1 Foot | Deg. | Radius | Mid. Ord. | Tan. Offset | Def. for 1 Foot |
|--------|----------|-----------|-------------|-----------------|------|--------|-----------|-------------|-----------------|
| 0° 10' | 34377.5 | .036 | .145 | 0.05' | 7° | 819.02 | 1.528 | 6.105 | 2.10' |
| 20 | 17188.8 | .073 | .291 | 0.10 | 20' | 781.84 | 1.600 | 6.395 | 2.20 |
| 30 | 11459.2 | .109 | .436 | 0.15 | 30 | 764.49 | 1.637 | 6.540 | 2.25 |
| 40 | 8594.42 | .145 | .582 | 0.20 | 40 | 747.89 | 1.673 | 6.685 | 2.30 |
| 50 | 6875.55' | .182 | .727 | 0.25 | | | | | |
| 1 | 5729.65 | .218 | .873 | 0.30 | 8 | 716.78 | 1.746 | 6.976 | 2.40 |
| 10 | 4911.15 | .255 | 1.018 | 0.35 | 20 | 688.16 | 1.819 | 7.266 | 2.50 |
| 20 | 4297.28 | .291 | 1.164 | 0.40 | 30 | 674.69 | 1.855 | 7.411 | 2.55 |
| 30 | 3819.83 | .327 | 1.309 | 0.45 | 40 | 661.74 | 1.892 | 7.556 | 2.60 |
| 40 | 3437.87 | .364 | 1.454 | 0.50 | 9 | 637.28 | 1.965 | 7.846 | 2.70 |
| 50 | 3125.36 | .400 | 1.600 | 0.55 | 20 | 614.56 | 2.037 | 8.136 | 2.80 |
| | | | | | 30 | 603.80 | 2.074 | 8.281 | 2.85 |
| 2 | 2864.93 | .436 | 1.745 | 0.60 | 40 | 593.42 | 2.110 | 8.426 | 2.90 |
| 10 | 2644.58 | .473 | 1.891 | 0.65 | | | | | |
| 20 | 2455.70 | .509 | 2.036 | 0.70 | 10 | 573.69 | 2.183 | 8.716 | 3.00 |
| 30 | 2292.01 | .545 | 2.181 | 0.75 | 30 | 546.44 | 2.292 | 9.150 | 3.15 |
| 40 | 2148.79 | .582 | 2.327 | 0.80 | 11 | 521.67 | 2.402 | 9.585 | 3.30 |
| 50 | 2022.41 | .618 | 2.472 | 0.85 | 30 | 499.06 | 2.511 | 10.02 | 3.45 |
| 3 | 1910.08 | .655 | 2.618 | 0.90 | 12 | 478.34 | 2.620 | 10.45 | 3.60 |
| 10 | 1809.57 | .691 | 2.763 | 0.95 | 30 | 459.28 | 2.730 | 10.89 | 3.75 |
| 20 | 1719.12 | .727 | 2.908 | 1.00 | 13 | 441.68 | 2.839 | 11.32 | 3.90 |
| 30 | 1637.28 | .764 | 3.054 | 1.05 | 30 | 425.40 | 2.949 | 11.75 | 4.05 |
| 40 | 1562.88 | .800 | 3.199 | 1.10 | 14 | 410.28 | 3.058 | 12.18 | 4.20 |
| 50 | 1494.95 | .836 | 3.345 | 1.15 | 30 | 396.20 | 3.168 | 12.62 | 4.35 |
| 4 | 1432.69 | .873 | 3.490 | 1.20 | 15 | 383.07 | 3.277 | 13.05 | 4.50 |
| 10 | 1375.40 | .909 | 3.635 | 1.25 | 30 | 370.78 | 3.387 | 13.49 | 4.65 |
| 20 | 1322.53 | .945 | 3.718 | 1.30 | 16 | 359.27 | 3.496 | 13.92 | 4.80 |
| 30 | 1273.57 | .982 | 3.926 | 1.35 | 30 | 348.45 | 3.606 | 14.35 | 4.95 |
| 40 | 1228.11 | 1.018 | 4.071 | 1.40 | 17 | 338.27 | 3.716 | 14.78 | 5.10 |
| 50 | 1185.78 | 1.055 | 4.217 | 1.45 | 18 | 319.62 | 3.935 | 15.64 | 5.40 |
| | | | | | 19 | 302.94 | 4.155 | 16.51 | 5.70 |
| 5 | 1146.28 | 1.091 | 4.362 | 1.50 | 20 | 287.94 | 4.374 | 17.37 | 6.00 |
| 10 | 1109.33 | 1.127 | 4.507 | 1.55 | 21 | 274.37 | 4.594 | 18.22 | 6.30 |
| 20 | 1074.68 | 1.164 | 4.653 | 1.60 | 22 | 262.04 | 4.814 | 19.08 | 6.60 |
| 30 | 1042.14 | 1.200 | 4.798 | 1.65 | 23 | 250.79 | 5.035 | 19.94 | 6.90 |
| 40 | 1011.51 | 1.237 | 4.943 | 1.70 | 24 | 240.49 | 5.255 | 20.79 | 7.20 |
| 50 | 982.64 | 1.273 | 5.088 | 1.75 | | | | | |
| 6 | 955.37 | 1.309 | 5.234 | 1.80 | 25 | 231.01 | 5.476 | 21.64 | 7.50 |
| 10 | 929.57 | 1.346 | 5.379 | 1.85 | 26 | 222.27 | 5.697 | 22.50 | 7.80 |
| 20 | 905.13 | 1.382 | 5.524 | 1.90 | 27 | 214.18 | 5.918 | 23.35 | 8.10 |
| 30 | 881.95 | 1.418 | 5.669 | 1.95 | 28 | 206.68 | 6.139 | 24.19 | 8.40 |
| 40 | 859.92 | 1.455 | 5.814 | 2.00 | 29 | 199.70 | 6.360 | 25.04 | 8.70 |
| | | | | | 30 | 193.18 | 6.583 | 25.88 | 9.00 |

Note. Chord Deflection=2 times tangent deflection.

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

| Central Angle | Tangent | External | Central Angle | Tangent | External | Central Angle | Tangent | External |
|---------------|---------|----------|---------------|---------|----------|---------------|---------|----------|
| 1° | 50.00 | .22 | 11° | 551.70 | 26.50 | 21° | 1061.9 | 97.57 |
| 10' | 58.34 | .30 | 10' | 560.11 | 27.31 | 10' | 1070.6 | 99.16 |
| 20 | 66.67 | .39 | 20 | 568.53 | 28.14 | 20 | 1079.2 | 100.75 |
| 30 | 75.01 | .49 | 30 | 576.95 | 28.97 | 30 | 1087.8 | 102.35 |
| 40 | 83.34 | .61 | 40 | 585.36 | 29.82 | 40 | 1096.4 | 103.97 |
| 50 | 91.68 | .73 | 50 | 593.79 | 30.68 | 50 | 1105.1 | 105.60 |
| 2 | 100.01 | .87 | 12 | 602.21 | 31.56 | 22 | 1113.7 | 107.24 |
| 10 | 108.35 | 1.02 | 10 | 610.64 | 32.45 | 10 | 1122.4 | 108.90 |
| 20 | 116.68 | 1.19 | 20 | 619.07 | 33.35 | 20 | 1131.0 | 110.57 |
| 30 | 125.02 | 1.36 | 30 | 627.50 | 34.26 | 30 | 1139.7 | 112.25 |
| 40 | 133.36 | 1.55 | 40 | 635.93 | 35.18 | 40 | 1148.4 | 113.95 |
| 50 | 141.70 | 1.75 | 50 | 644.37 | 36.12 | 50 | 1157.0 | 115.66 |
| 3 | 150.04 | 1.96 | 13 | 652.81 | 37.07 | 23 | 1165.7 | 117.38 |
| 10 | 158.38 | 2.19 | 10 | 661.25 | 38.03 | 10 | 1174.4 | 119.12 |
| 20 | 166.72 | 2.43 | 20 | 669.70 | 39.01 | 20 | 1183.1 | 120.87 |
| 30 | 175.06 | 2.67 | 30 | 678.15 | 39.99 | 30 | 1191.8 | 122.63 |
| 40 | 183.40 | 2.93 | 40 | 686.60 | 40.99 | 40 | 1200.5 | 124.41 |
| 50 | 191.74 | 3.21 | 50 | 695.06 | 42.00 | 50 | 1209.2 | 126.20 |
| 4 | 200.08 | 3.49 | 14 | 703.51 | 43.03 | 24 | 1217.9 | 128.00 |
| 10 | 208.43 | 3.79 | 10 | 711.97 | 44.07 | 10 | 1226.6 | 129.82 |
| 20 | 216.77 | 4.10 | 20 | 720.44 | 45.12 | 20 | 1235.3 | 131.65 |
| 30 | 225.12 | 4.42 | 30 | 728.90 | 46.18 | 30 | 1244.0 | 133.50 |
| 40 | 233.47 | 4.76 | 40 | 737.37 | 47.25 | 40 | 1252.8 | 135.35 |
| 50 | 241.81 | 5.10 | 50 | 745.85 | 48.34 | 50 | 1261.5 | 137.23 |
| 5 | 250.16 | 5.46 | 15 | 754.32 | 49.44 | 25 | 1270.2 | 139.11 |
| 10 | 258.51 | 5.83 | 10 | 762.80 | 50.55 | 10 | 1279.0 | 141.01 |
| 20 | 266.86 | 6.21 | 20 | 771.29 | 51.68 | 20 | 1287.7 | 142.93 |
| 30 | 275.21 | 6.61 | 30 | 779.77 | 52.89 | 30 | 1296.5 | 144.85 |
| 40 | 283.57 | 7.01 | 40 | 788.26 | 53.97 | 40 | 1305.3 | 146.79 |
| 50 | 291.92 | 7.43 | 50 | 796.75 | 55.13 | 50 | 1314.0 | 148.75 |
| 6 | 300.28 | 7.86 | 16 | 805.25 | 56.31 | 26 | 1322.8 | 150.71 |
| 10 | 308.64 | 8.31 | 10 | 813.75 | 57.50 | 10 | 1331.6 | 152.69 |
| 20 | 316.99 | 8.76 | 20 | 822.25 | 58.70 | 20 | 1340.4 | 154.69 |
| 30 | 325.35 | 9.23 | 30 | 830.76 | 59.91 | 30 | 1349.2 | 156.70 |
| 40 | 333.71 | 9.71 | 40 | 839.27 | 61.14 | 40 | 1358.0 | 158.72 |
| 50 | 342.08 | 10.20 | 50 | 847.78 | 62.38 | 50 | 1366.8 | 160.76 |
| 7 | 350.44 | 10.71 | 17 | 856.30 | 63.63 | 27 | 1375.6 | 162.81 |
| 10 | 358.81 | 11.22 | 10 | 864.82 | 64.90 | 10 | 1384.4 | 164.86 |
| 20 | 367.17 | 11.75 | 20 | 873.35 | 66.18 | 20 | 1393.2 | 166.95 |
| 30 | 375.54 | 12.29 | 30 | 881.88 | 67.47 | 30 | 1402.0 | 169.04 |
| 40 | 383.91 | 12.85 | 40 | 890.41 | 68.77 | 40 | 1410.9 | 171.15 |
| 50 | 392.28 | 13.41 | 50 | 898.95 | 70.09 | 50 | 1419.7 | 173.27 |
| 8 | 400.66 | 13.99 | 18 | 907.49 | 71.42 | 28 | 1428.6 | 175.41 |
| 10 | 409.03 | 14.58 | 10 | 916.03 | 72.76 | 10 | 1437.4 | 177.55 |
| 20 | 417.41 | 15.18 | 20 | 924.58 | 74.12 | 20 | 1446.3 | 179.72 |
| 30 | 425.79 | 15.80 | 30 | 933.13 | 75.49 | 30 | 1455.1 | 181.89 |
| 40 | 434.17 | 16.43 | 40 | 941.69 | 76.86 | 40 | 1464.0 | 184.08 |
| 50 | 442.55 | 17.07 | 50 | 950.25 | 78.26 | 50 | 1472.9 | 186.29 |
| 9 | 450.93 | 17.72 | 19 | 958.81 | 79.67 | 29 | 1481.8 | 188.51 |
| 10 | 459.32 | 18.38 | 10 | 967.38 | 81.09 | 10 | 1490.7 | 190.74 |
| 20 | 467.71 | 19.06 | 20 | 975.96 | 82.53 | 20 | 1499.6 | 192.99 |
| 30 | 476.10 | 19.75 | 30 | 984.53 | 83.97 | 30 | 1508.5 | 195.25 |
| 40 | 484.49 | 20.45 | 40 | 993.12 | 85.43 | 40 | 1517.4 | 197.53 |
| 50 | 492.88 | 21.16 | 50 | 1001.7 | 86.90 | 50 | 1526.3 | 199.82 |
| 10 | 501.28 | 21.89 | 20 | 1010.3 | 88.39 | 30 | 1535.3 | 202.12 |
| 10 | 509.68 | 22.62 | 10 | 1018.9 | 89.89 | 10 | 1544.2 | 204.44 |
| 20 | 518.08 | 23.33 | 20 | 1027.5 | 91.40 | 20 | 1553.1 | 206.77 |
| 30 | 526.48 | 24.14 | 30 | 1036.1 | 92.92 | 30 | 1562.1 | 209.12 |
| 40 | 534.89 | 24.91 | 40 | 1044.7 | 94.46 | 40 | 1571.0 | 211.48 |
| 50 | 543.29 | 25.70 | 50 | 1053.3 | 96.01 | 50 | 1580.0 | 213.86 |

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

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

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

| Central Angle | Tangent | External | Central Angle | Tangent | External | Central Angle | Tangent | External |
|---------------|---------|----------|---------------|---------|----------|---------------|---------|----------|
| 61° | 3375.0 | 920.2 | 71° | 4086.9 | 1308.2 | 81° | 4893.6 | 1805.3 |
| 10' | 3386.3 | 925.9 | 10' | 4099.5 | 1315.6 | 10' | 4908.0 | 1814.7 |
| 20 | 3397.5 | 931.6 | 20 | 4112.1 | 1322.9 | 20 | 4922.5 | 1824.1 |
| 30 | 3408.8 | 937.3 | 30 | 4124.8 | 1330.3 | 30 | 4937.0 | 1833.6 |
| 40 | 3420.1 | 943.1 | 40 | 4137.4 | 1337.7 | 40 | 4951.5 | 1843.1 |
| 50 | 3431.4 | 948.9 | 50 | 4150.1 | 1345.1 | 50 | 4966.1 | 1852.6 |
| 62 | 3442.7 | 954.8 | 72 | 4162.8 | 1352.6 | 82 | 4980.7 | 1862.2 |
| 10 | 3454.1 | 960.6 | 10 | 4175.6 | 1360.1 | 10 | 4995.4 | 1871.8 |
| 20 | 3165.4 | 966.5 | 20 | 4188.5 | 1367.6 | 20 | 5010.0 | 1881.5 |
| 30 | 3476.8 | 972.4 | 30 | 4201.2 | 1375.2 | 30 | 5024.8 | 1891.2 |
| 40 | 3488.3 | 978.3 | 40 | 4214.0 | 1382.8 | 40 | 5039.5 | 1900.9 |
| 50 | 3499.7 | 984.3 | 50 | 4226.8 | 1390.4 | 50 | 5054.3 | 1910.7 |
| 63 | 3511.1 | 990.2 | 73 | 4239.7 | 1398.0 | 83 | 5069.2 | 1920.5 |
| 10 | 3522.6 | 996.2 | 10 | 4252.6 | 1405.7 | 10 | 5084.0 | 1930.4 |
| 20 | 3534.1 | 1002.3 | 20 | 4265.6 | 1413.5 | 20 | 5099.0 | 1940.3 |
| 30 | 3545.6 | 1008.3 | 30 | 4278.5 | 1421.2 | 30 | 5113.9 | 1950.3 |
| 40 | 3557.2 | 1014.4 | 40 | 4291.5 | 1429.0 | 40 | 5128.9 | 1960.2 |
| 50 | 3568.7 | 1020.5 | 50 | 4304.6 | 1436.8 | 50 | 5143.9 | 1970.3 |
| 64 | 3580.3 | 1026.6 | 74 | 4317.6 | 1444.6 | 84 | 5159.0 | 1980.4 |
| 10 | 3591.9 | 1032.8 | 10 | 4330.7 | 1452.5 | 10 | 5174.1 | 1990.5 |
| 20 | 3603.5 | 1039.0 | 20 | 4343.8 | 1460.4 | 20 | 5189.3 | 2000.6 |
| 30 | 3615.1 | 1045.2 | 30 | 4356.9 | 1468.4 | 30 | 5204.4 | 2010.8 |
| 40 | 3626.8 | 1051.4 | 40 | 4370.1 | 1476.4 | 40 | 5219.7 | 2021.1 |
| 50 | 3638.5 | 1057.7 | 50 | 4383.3 | 1484.4 | 50 | 5234.9 | 2031.4 |
| 65 | 3650.2 | 1063.9 | 75 | 4396.5 | 1492.4 | 85 | 5250.3 | 2041.7 |
| 10 | 3661.9 | 1070.2 | 10 | 4409.8 | 1500.5 | 10 | 5265.6 | 2052.1 |
| 20 | 3673.7 | 1076.6 | 20 | 4423.1 | 1508.6 | 20 | 5281.0 | 2062.5 |
| 30 | 3685.4 | 1082.9 | 30 | 4436.4 | 1516.7 | 30 | 5296.4 | 2073.0 |
| 40 | 3697.2 | 1089.3 | 40 | 4449.7 | 1524.9 | 40 | 5311.9 | 2083.5 |
| 50 | 3709.0 | 1095.7 | 50 | 4463.1 | 1533.1 | 50 | 5327.4 | 2094.1 |
| 66 | 3720.9 | 1102.2 | 76 | 4476.5 | 1541.4 | 86 | 5343.0 | 2104.7 |
| 10 | 3732.7 | 1108.6 | 10 | 4489.9 | 1549.7 | 10 | 5358.6 | 2115.3 |
| 20 | 3744.6 | 1115.1 | 20 | 4503.4 | 1558.0 | 20 | 5374.2 | 2126.0 |
| 30 | 3756.5 | 1121.7 | 30 | 4516.9 | 1566.3 | 30 | 5389.9 | 2136.7 |
| 40 | 3768.5 | 1128.2 | 40 | 4530.4 | 1574.7 | 40 | 5405.6 | 2147.5 |
| 50 | 3780.4 | 1134.8 | 50 | 4544.0 | 1583.1 | 50 | 5421.4 | 2158.4 |
| 67 | 3792.4 | 1141.4 | 77 | 4557.6 | 1591.6 | 87 | 5437.2 | 2169.2 |
| 10 | 3804.4 | 1148.0 | 10 | 4571.2 | 1600.1 | 10 | 5453.1 | 2180.2 |
| 20 | 3816.4 | 1154.7 | 20 | 4584.8 | 1608.6 | 20 | 5469.0 | 2191.1 |
| 30 | 3828.4 | 1161.3 | 30 | 4598.5 | 1617.1 | 30 | 5484.9 | 2202.2 |
| 40 | 3840.5 | 1168.1 | 40 | 4612.2 | 1625.7 | 40 | 5500.9 | 2213.2 |
| 50 | 3852.6 | 1174.8 | 50 | 4626.0 | 1634.4 | 50 | 5517.0 | 2224.3 |
| 68 | 3864.7 | 1181.6 | 78 | 4639.8 | 1643.0 | 88 | 5533.1 | 2235.5 |
| 10 | 3876.8 | 1188.4 | 10 | 4653.6 | 1651.7 | 10 | 5549.2 | 2246.7 |
| 20 | 3889.0 | 1195.2 | 20 | 4667.4 | 1660.5 | 20 | 5565.4 | 2258.0 |
| 30 | 3901.2 | 1202.0 | 30 | 4681.3 | 1669.2 | 30 | 5581.6 | 2269.3 |
| 40 | 3913.4 | 1208.9 | 40 | 4695.2 | 1678.1 | 40 | 5597.8 | 2280.6 |
| 50 | 3925.6 | 1215.8 | 50 | 4709.2 | 1686.9 | 50 | 5614.2 | 2292.0 |
| 69 | 3937.9 | 1222.7 | 79 | 4723.2 | 1695.8 | 89 | 5630.5 | 2303.5 |
| 10 | 3950.2 | 1229.7 | 10 | 4737.2 | 1704.7 | 10 | 5646.9 | 2315.0 |
| 20 | 3962.5 | 1236.7 | 20 | 4751.2 | 1713.7 | 20 | 5663.4 | 2326.6 |
| 30 | 3974.8 | 1243.7 | 30 | 4765.3 | 1722.7 | 30 | 5679.9 | 2338.2 |
| 40 | 3987.2 | 1250.8 | 40 | 4779.4 | 1731.7 | 40 | 5696.4 | 2349.8 |
| 50 | 3999.5 | 1257.9 | 50 | 4793.6 | 1740.8 | 50 | 5713.0 | 2361.5 |
| 70 | 4011.9 | 1265.0 | 80 | 4807.7 | 1749.9 | 90 | 5729.7 | 2373.3 |
| 10 | 4024.4 | 1272.1 | 10 | 4822.0 | 1759.0 | 10 | 5746.3 | 2385.1 |
| 20 | 4036.8 | 1279.3 | 20 | 4836.2 | 1768.2 | 20 | 5763.1 | 2397.0 |
| 30 | 4049.3 | 1286.5 | 30 | 4850.5 | 1777.4 | 30 | 5779.9 | 2408.9 |
| 40 | 4061.8 | 1293.6 | 40 | 4864.8 | 1786.7 | 40 | 5796.7 | 2420.9 |
| 50 | 4074.4 | 1300.9 | 50 | 4879.2 | 1796.0 | 50 | 5813.6 | 2432.9 |

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

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

TABLE V.—CORRECTIONS FOR TANGENTS AND EXTERNALS.

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

FOR TANGENTS ADD

| Central Angle | DEGREE OF CURVE | | | | | | | | | | | | | |
|---------------|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° |
| 10° | .03 | .06 | .09 | .13 | .16 | .19 | .22 | .25 | .28 | .31 | .34 | .38 | .42 | .46 |
| 15° | .04 | .10 | .14 | .19 | .24 | .29 | .34 | .39 | .45 | .51 | .53 | .58 | .63 | .68 |
| 20° | .06 | .13 | .19 | .26 | .32 | .39 | .45 | .51 | .58 | .65 | .72 | .79 | .84 | .90 |
| 25° | .08 | .16 | .24 | .33 | .40 | .49 | .58 | .67 | .75 | .83 | .90 | .99 | 1.06 | 1.14 |
| 30° | .10 | .19 | .29 | .39 | .49 | .59 | .69 | .79 | .89 | .99 | 1.09 | 1.20 | 1.29 | 1.39 |
| 35° | .11 | .22 | .34 | .47 | .58 | .69 | .79 | .81 | .92 | 1.04 | 1.29 | 1.42 | 1.54 | 1.66 |
| 40° | .13 | .26 | .40 | .53 | .67 | .80 | .93 | 1.06 | 1.20 | 1.34 | 1.49 | 1.64 | 1.79 | 1.94 |
| 45° | .15 | .30 | .44 | .60 | .76 | .91 | 1.06 | 1.21 | 1.37 | 1.52 | 1.70 | 1.87 | 2.04 | 2.21 |
| 50° | .17 | .34 | .51 | .68 | .85 | 1.02 | 1.19 | 1.36 | 1.54 | 1.72 | 1.91 | 2.10 | 2.29 | 2.48 |
| 55° | .19 | .38 | .57 | .76 | .95 | 1.14 | 1.32 | 1.52 | 1.72 | 1.92 | 2.14 | 2.35 | 2.56 | 2.77 |
| 60° | .21 | .42 | .63 | .84 | 1.05 | 1.27 | 1.49 | 1.71 | 1.94 | 2.17 | 2.38 | 2.60 | 2.83 | 3.07 |
| 65° | .23 | .46 | .69 | .93 | 1.16 | 1.40 | 1.64 | 1.88 | 2.13 | 2.38 | 2.63 | 2.88 | 3.13 | 3.39 |
| 70° | .25 | .51 | .76 | 1.02 | 1.28 | 1.54 | 1.80 | 2.06 | 2.33 | 2.60 | 2.88 | 3.16 | 3.44 | 3.72 |
| 75° | .27 | .56 | .83 | 1.12 | 1.40 | 1.69 | 1.98 | 2.27 | 2.57 | 2.87 | 3.16 | 3.47 | 3.78 | 4.09 |
| 80° | .30 | .61 | .91 | 1.22 | 1.53 | 1.84 | 2.15 | 2.46 | 2.78 | 3.10 | 3.44 | 3.78 | 4.12 | 4.46 |
| 85° | .33 | .66 | 1.00 | 1.33 | 1.68 | 2.02 | 2.36 | 2.70 | 3.05 | 3.40 | 3.77 | 4.14 | 4.55 | 4.89 |
| 90° | .36 | .72 | 1.09 | 1.45 | 1.83 | 2.20 | 2.57 | 2.94 | 3.32 | 3.70 | 4.10 | 4.50 | 4.91 | 5.32 |
| 95° | .39 | .79 | 1.19 | 1.55 | 2.00 | 2.40 | 2.80 | 3.20 | 3.61 | 4.02 | 4.40 | 4.98 | 5.38 | 5.83 |
| 100° | .43 | .86 | 1.30 | 1.74 | 2.18 | 2.62 | 3.06 | 3.50 | 3.95 | 4.40 | 4.88 | 5.37 | 5.85 | 6.34 |
| 110° | .51 | 1.03 | 1.56 | 2.08 | 2.61 | 3.14 | 3.67 | 4.21 | 4.76 | 5.31 | 5.86 | 6.43 | 7.01 | 7.60 |
| 120° | .62 | 1.25 | 1.93 | 2.52 | 3.16 | 3.81 | 4.45 | 5.11 | 5.77 | 6.44 | 7.12 | 7.80 | 8.50 | 9.22 |

FOR EXTERNALS ADD

| Central Angle | DEGREE OF CURVE | | | | | | | | | | | | | |
|---------------|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° |
| 10° | .001 | .003 | .004 | .006 | .007 | .008 | .009 | .011 | .012 | .014 | .015 | .017 | .018 | .020 |
| 15° | .003 | .007 | .010 | .014 | .018 | .023 | .027 | .029 | .032 | .035 | .039 | .043 | .047 | .051 |
| 20° | .006 | .011 | .017 | .022 | .028 | .034 | .038 | .045 | .051 | .057 | .063 | .070 | .076 | .083 |
| 25° | .009 | .018 | .027 | .036 | .046 | .056 | .065 | .074 | .083 | .093 | .106 | .120 | .127 | .135 |
| 30° | .013 | .025 | .038 | .051 | .065 | .078 | .090 | .103 | .116 | .129 | .149 | .170 | .179 | .188 |
| 35° | .018 | .035 | .054 | .072 | .086 | .109 | .131 | .153 | .175 | .197 | .213 | .230 | .247 | .264 |
| 40° | .023 | .046 | .070 | .093 | .117 | .141 | .172 | .203 | .234 | .265 | .277 | .290 | .315 | .341 |
| 45° | .030 | .060 | .093 | .119 | .153 | .184 | .216 | .254 | .289 | .325 | .351 | .378 | .411 | .445 |
| 50° | .037 | .075 | .116 | .151 | .189 | .227 | .266 | .305 | .345 | .384 | .425 | .467 | .508 | .550 |
| 55° | .046 | .093 | .142 | .188 | .236 | .283 | .332 | .381 | .420 | .479 | .530 | .582 | .641 | .700 |
| 60° | .055 | .112 | .168 | .225 | .283 | .340 | .398 | .457 | .516 | .575 | .636 | .697 | .774 | .851 |
| 65° | .067 | .135 | .204 | .273 | .343 | .412 | .483 | .554 | .625 | .697 | .771 | .845 | .922 | 1.01 |
| 70° | .080 | .159 | .240 | .321 | .403 | .485 | .568 | .652 | .735 | .819 | .906 | .994 | 1.08 | 1.17 |
| 75° | .095 | .182 | .266 | .353 | .440 | .528 | .617 | .707 | .797 | .877 | .971 | 1.07 | 1.18 | 1.29 |
| 80° | .110 | .220 | .332 | .445 | .558 | .671 | .787 | .903 | 1.02 | 1.13 | 1.25 | 1.38 | 1.50 | 1.62 |
| 85° | .128 | .259 | .391 | .524 | .657 | .790 | .926 | 1.06 | 1.20 | 1.34 | 1.47 | 1.62 | 1.76 | 1.91 |
| 90° | .149 | .299 | .450 | .603 | .756 | .910 | 1.07 | 1.22 | 1.38 | 1.54 | 1.70 | 1.87 | 2.03 | 2.20 |
| 95° | .174 | .350 | .522 | .706 | .885 | 1.08 | 1.25 | 1.43 | 1.62 | 1.80 | 1.99 | 2.18 | 2.38 | 2.58 |
| 100° | .200 | .401 | .604 | .809 | 1.01 | 1.22 | 1.43 | 1.64 | 1.85 | 2.06 | 2.28 | 2.50 | 2.73 | 2.96 |
| 110° | .268 | .536 | .806 | 1.08 | 1.35 | 1.63 | 1.91 | 2.20 | 2.48 | 2.76 | 3.05 | 3.35 | 3.66 | 3.96 |
| 120° | .360 | .721 | 1.08 | 1.45 | 1.82 | 2.19 | 2.57 | 2.95 | 3.33 | 3.72 | 4.11 | 4.50 | 4.91 | 5.32 |

VIII

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

| FOR SUB-CHORDS ADD | | | | | | | | | | Excess of arc per 100 ft. | LONG CHORDS | | | | |
|--------------------|-----|-----|------|------|------|------|------|------|-----|------------------------------------|-------------|--------|--------|--------|--------|
| D | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | | D | 200 | 300 | 400 | 500 |
| 4° | .00 | .00 | .01 | .01 | .01 | .01 | .01 | .01 | .00 | .02 | 1 | 199.99 | 299.97 | 399.92 | 499.85 |
| 6 | .00 | .01 | .01 | .02 | .02 | .02 | .02 | .01 | .01 | .05 | 2 | 199.97 | 299.88 | 399.70 | 499.39 |
| 8 | .01 | .02 | .02 | .03 | .03 | .03 | .03 | .02 | .01 | .08 | 3 | 199.93 | 299.73 | 399.32 | 498.63 |
| 10 | .01 | .02 | .03 | .04 | .05 | .05 | .05 | .04 | .02 | .13 | 4 | 199.88 | 299.51 | 398.78 | 497.57 |
| 12 | .02 | .04 | .05 | .06 | .07 | .07 | .07 | .05 | .03 | .18 | 5 | 199.81 | 299.24 | 398.10 | 496.20 |
| 14 | .02 | .05 | .07 | .08 | .09 | .10 | .09 | .07 | .04 | .25 | 6 | 199.73 | 298.90 | 397.26 | 494.53 |
| 16 | .03 | .06 | .09 | .11 | .12 | .12 | .12 | .09 | .05 | .33 | 7 | 199.63 | 298.51 | 396.28 | 492.57 |
| 18 | .04 | .08 | .11 | .14 | .15 | .16 | .15 | .12 | .07 | .41 | 8 | 199.51 | 298.05 | 395.14 | 490.31 |
| 20 | .05 | .10 | .14 | .17 | .19 | .20 | .18 | .15 | .09 | .51 | 9 | 199.38 | 297.54 | 393.86 | 487.75 |
| 22 | .06 | .12 | .17 | .21 | .23 | .24 | .22 | .18 | .10 | .62 | 10 | 199.24 | 296.96 | 392.42 | 484.90 |
| 24 | .07 | .14 | .20 | .25 | .28 | .28 | .26 | .21 | .12 | .74 | 12 | 198.90 | 295.63 | 389.12 | 478.34 |
| 26 | .09 | .17 | .24 | .29 | .32 | .33 | .31 | .25 | .15 | .86 | 14 | 198.51 | 294.06 | 385.22 | 470.65 |
| 28 | .10 | .19 | .27 | .34 | .37 | .38 | .36 | .29 | .17 | 1.00 | 16 | 198.05 | 292.25 | 380.76 | 461.86 |
| 30 | .11 | .22 | .31 | .39 | .43 | .44 | .41 | .33 | .19 | 1.15 | 18 | 197.54 | 290.21 | 375.74 | 452.02 |
| 32 | .13 | .25 | .36 | .44 | .49 | .50 | .47 | .38 | .22 | 1.31 | 20 | 196.90 | 287.94 | 370.17 | 441.15 |
| 34 | .15 | .28 | .40 | .50 | .55 | .57 | .53 | .43 | .25 | 1.48 | 22 | 196.32 | 285.44 | 364.06 | 429.30 |
| 36 | .17 | .32 | .45 | .56 | .62 | .64 | .59 | .48 | .28 | 1.66 | 24 | 195.63 | 282.71 | 357.43 | 416.53 |
| 38 | .18 | .36 | .51 | .62 | .70 | .71 | .66 | .53 | .31 | 1.86 | 26 | 194.87 | 279.76 | 350.30 | 402.89 |
| 40 | .21 | .40 | .56 | .69 | .77 | .79 | .73 | .59 | .35 | 2.06 | 28 | 194.06 | 276.59 | 342.69 | 388.42 |
| 42 | .23 | .44 | .62 | .76 | .85 | .87 | .81 | .65 | .38 | 2.28 | 30 | 193.18 | 273.20 | 334.61 | 373.20 |
| 44 | .25 | .48 | .68 | .84 | .94 | .96 | .89 | .72 | .42 | 2.50 | 32 | 192.25 | 269.61 | 326.08 | 357.28 |
| 46 | .27 | .52 | .75 | .92 | 1.02 | 1.05 | .98 | .78 | .46 | 2.74 | 34 | 191.26 | 265.81 | 317.12 | 340.73 |
| 48 | .30 | .57 | .81 | 1.00 | 1.12 | 1.14 | 1.06 | .86 | .50 | 2.99 | 36 | 190.21 | 261.80 | 307.77 | 323.61 |
| 50 | .32 | .62 | .89 | 1.09 | 1.21 | 1.24 | 1.15 | .93 | .55 | 3.24 | 38 | 189.10 | 257.60 | 298.03 | 305.99 |
| 52 | .35 | .67 | .96 | 1.18 | 1.31 | 1.35 | 1.25 | 1.01 | .59 | 3.52 | 40 | 187.94 | 253.21 | 287.94 | 287.94 |
| 54 | .38 | .73 | 1.04 | 1.28 | 1.42 | 1.46 | 1.35 | 1.09 | .64 | 3.80 | 42 | 186.72 | 248.63 | 277.51 | 269.54 |
| 56 | .41 | .78 | 1.12 | 1.38 | 1.53 | 1.57 | 1.46 | 1.17 | .69 | 4.09 | 44 | 185.44 | 243.87 | 266.78 | 250.85 |
| 58 | .44 | .84 | 1.20 | 1.48 | 1.65 | 1.69 | 1.57 | 1.20 | .74 | 4.40 | 46 | 184.10 | 239.93 | 255.78 | 231.95 |
| 60 | .47 | .91 | 1.29 | 1.59 | 1.76 | 1.81 | 1.68 | 1.35 | .80 | 4.72 | 48 | 182.71 | 233.83 | 244.61 | 212.92 |

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

TABLE VII.—MIDDLE ORDINATES FOR RAILS IN FEET.

| Deg. of Curve | LENGTH OF RAILS | | | | | | | Deg. of Curve | LENGTH OF RAILS. | | | | | | |
|---------------------|-----------------|------|------|------|------|------|------|---------------------|------------------|------|------|------|------|------|------|
| | 32 | 30 | 28 | 26 | 24 | 22 | 20 | | 32 | 30 | 28 | 26 | 24 | 22 | 20 |
| 1° | .022 | .020 | .016 | .013 | .011 | .009 | .008 | 16° | .366 | .313 | .273 | .236 | .200 | .170 | .139 |
| 2 | .045 | .038 | .034 | .029 | .025 | .021 | .017 | 17 | .378 | .333 | .290 | .252 | .213 | .180 | .148 |
| 3 | .067 | .058 | .051 | .044 | .037 | .031 | .026 | 18 | .400 | .351 | .306 | .265 | .225 | .190 | .156 |
| 4 | .089 | .079 | .069 | .060 | .050 | .042 | .035 | 19 | .423 | .371 | .324 | .280 | .238 | .201 | .165 |
| 5 | .112 | .099 | .086 | .074 | .063 | .053 | .044 | 20 | .445 | .392 | .341 | .296 | .250 | .212 | .174 |
| 6 | .134 | .117 | .102 | .088 | .076 | .064 | .052 | 21 | .466 | .410 | .357 | .309 | .262 | .222 | .182 |
| 7 | .156 | .137 | .120 | .104 | .088 | .074 | .061 | 22 | .487 | .430 | .375 | .325 | .275 | .233 | .191 |
| 8 | .179 | .158 | .137 | .119 | .100 | .085 | .070 | 23 | .509 | .450 | .390 | .338 | .287 | .243 | .199 |
| 9 | .201 | .175 | .153 | .133 | .112 | .095 | .078 | 24 | .531 | .469 | .408 | .354 | .299 | .253 | .208 |
| 10 | .223 | .196 | .171 | .148 | .125 | .106 | .087 | 25 | .552 | .486 | .424 | .367 | .311 | .263 | .216 |
| 11 | .245 | .216 | .188 | .163 | .139 | .117 | .096 | 26 | .573 | .506 | .441 | .382 | .323 | .274 | .225 |
| 12 | .268 | .236 | .206 | .179 | .151 | .128 | .105 | 27 | .594 | .524 | .457 | .396 | .335 | .284 | .233 |
| 13 | .290 | .254 | .222 | .192 | .163 | .138 | .113 | 28 | .618 | .545 | .475 | .411 | .348 | .294 | .242 |
| 14 | .312 | .275 | .239 | .207 | .175 | .148 | .122 | 29 | .638 | .564 | .491 | .424 | .361 | .303 | .250 |
| 15 | .334 | .295 | .257 | .223 | .188 | .159 | .131 | 30 | .660 | .583 | .508 | .438 | .374 | .313 | .259 |

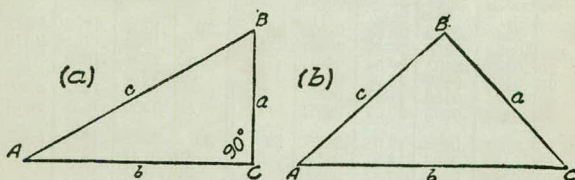
SLOPE REDUCTIONS.

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

See fig. (a).

TRIGONOMETRICAL FORMULAS.

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



FORMULA FOR SOLVING TRIANGLES.

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

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

| Angle | Sine. | Tan. | Cotg. | Cosin. | | Angle | Sine. | Tan. | Cotg. | Cosin. | |
|-------|--------|-------|-------|--------|--------|-------|--------|-------|-------|--------|--------|
| 0 | 0 | 0 | ∞ | 1 | 90 | 8 | .1392 | .1405 | 7.115 | .99027 | 82 |
| 10 | .0029 | .0029 | 343.8 | 1 | 50 | 10 | .1421 | .1435 | 6.968 | .98986 | 50 |
| 20 | .0058 | .0058 | 171.9 | .99998 | 40 | 20 | .1449 | .1465 | 6.827 | .98944 | 40 |
| 30 | .0087 | .0087 | 114.6 | .99996 | 30 | 30 | .1478 | .1495 | 6.691 | .98902 | 30 |
| 40 | .0116 | .0116 | 85.94 | .99993 | 20 | 40 | .1507 | .1524 | 6.561 | .98858 | 20 |
| 50 | .0145 | .0145 | 68.75 | .99989 | 10 | 50 | .1536 | .1554 | 6.435 | .98814 | 10 |
| 1 | .0175 | .0175 | 57.29 | .99985 | 89 | 9 | .1564 | .1584 | 6.314 | .98769 | 81 |
| 10 | .0204 | .0204 | 49.10 | .99979 | 50 | 10 | .1593 | .1614 | 6.197 | .98723 | 50 |
| 20 | .0233 | .0233 | 42.96 | .99973 | 40 | 20 | .1622 | .1644 | 6.084 | .98676 | 40 |
| 30 | .0262 | .0262 | 38.19 | .99966 | 30 | 30 | .1650 | .1673 | 5.976 | .98629 | 30 |
| 40 | .0291 | .0291 | 34.37 | .99958 | 20 | 40 | .1679 | .1703 | 5.871 | .98580 | 20 |
| 50 | .0320 | .0320 | 31.24 | .99949 | 10 | 50 | .1708 | .1733 | 5.769 | .98531 | 10 |
| 2 | .0349 | .0349 | 28.64 | .99939 | 88 | 10 | .1736 | .1763 | 5.671 | .98481 | 80 |
| 10 | .0378 | .0378 | 26.43 | .99929 | 50 | 10 | .1765 | .1793 | 5.576 | .98430 | 50 |
| 20 | .0407 | .0407 | 24.54 | .99917 | 40 | 20 | .1794 | .1823 | 5.485 | .98378 | 40 |
| 30 | .0436 | .0437 | 22.90 | .99905 | 30 | 30 | .1822 | .1853 | 5.396 | .98325 | 30 |
| 40 | .0465 | .0466 | 21.47 | .99892 | 20 | 40 | .1851 | .1883 | 5.309 | .98272 | 20 |
| 50 | .0494 | .0495 | 20.21 | .99878 | 10 | 50 | .1880 | .1914 | 5.228 | .98218 | 10 |
| 3 | .0523 | .0524 | 19.08 | .99863 | 87 | 11 | .1908 | .1944 | 5.145 | .98163 | 79 |
| 10 | .0552 | .0553 | 18.07 | .99847 | 50 | 10 | .1937 | .1974 | 5.066 | .98107 | 50 |
| 20 | .0581 | .0582 | 17.17 | .99831 | 40 | 20 | .1965 | .2004 | 4.989 | .98050 | 40 |
| 30 | .0610 | .0612 | 16.35 | .99813 | 30 | 30 | .1994 | .2035 | 4.915 | .97992 | 30 |
| 40 | .0640 | .0641 | 15.60 | .99795 | 20 | 40 | .2022 | .2065 | 4.843 | .97934 | 20 |
| 50 | .0669 | .0670 | 14.92 | .99776 | 10 | 50 | .2051 | .2095 | 4.773 | .97875 | 10 |
| 4 | .0698 | .0699 | 14.30 | .99756 | 86 | 12 | .2079 | .2126 | 4.705 | .97815 | 78 |
| 10 | .0727 | .0729 | 13.73 | .99736 | 50 | 10 | .2108 | .2156 | 4.638 | .97754 | 50 |
| 20 | .0756 | .0758 | 13.20 | .99714 | 40 | 20 | .2136 | .2186 | 4.574 | .97692 | 40 |
| 30 | .0785 | .0787 | 12.71 | .99692 | 30 | 30 | .2164 | .2217 | 4.511 | .97630 | 30 |
| 40 | .0814 | .0816 | 12.25 | .99668 | 20 | 40 | .2193 | .2247 | 4.449 | .97566 | 20 |
| 50 | .0843 | .0846 | 11.83 | .99644 | 10 | 50 | .2221 | .2278 | 4.390 | .97502 | 10 |
| 5 | .0872 | .0875 | 11.43 | .99619 | 85 | 13 | .2250 | .2309 | 4.331 | .97437 | 77 |
| 10 | .0901 | .0904 | 11.06 | .99594 | 50 | 10 | .2278 | .2339 | 4.275 | .97371 | 50 |
| 20 | .0929 | .0934 | 10.71 | .99567 | 40 | 20 | .2306 | .2370 | 4.219 | .97304 | 40 |
| 30 | .0958 | .0963 | 10.39 | .99540 | 30 | 30 | .2334 | .2401 | 4.165 | .97237 | 30 |
| 40 | .0987 | .0992 | 10.08 | .99511 | 20 | 40 | .2363 | .2432 | 4.113 | .97169 | 20 |
| 50 | .1016 | .1022 | 9.788 | .99482 | 10 | 50 | .2391 | .2462 | 4.061 | .97100 | 10 |
| 6 | .1045 | .1051 | 9.514 | .99452 | 84 | 14 | .2419 | .2493 | 4.011 | .97030 | 76 |
| 10 | .1074 | .1080 | 9.255 | .99421 | 50 | 10 | .2447 | .2524 | 3.962 | .96959 | 50 |
| 20 | .1103 | .1110 | 9.010 | .99390 | 40 | 20 | .2476 | .2555 | 3.914 | .96887 | 40 |
| 30 | .1132 | .1139 | 8.777 | .99357 | 30 | 30 | .2504 | .2586 | 3.867 | .96815 | 30 |
| 40 | .1161 | .1169 | 8.556 | .99324 | 20 | 40 | .2532 | .2617 | 3.821 | .96742 | 20 |
| 50 | .1190 | .1198 | 8.345 | .99290 | 10 | 50 | .2560 | .2648 | 3.776 | .96667 | 10 |
| 7 | .1219 | .1228 | 8.144 | .99255 | 83 | 15 | .2588 | .2679 | 3.732 | .96593 | 75 |
| 10 | .1248 | .1257 | 7.953 | .99219 | 50 | 10 | .2616 | .2711 | 3.689 | .96517 | 50 |
| 20 | .1276 | .1287 | 7.770 | .99182 | 40 | 20 | .2644 | .2742 | 3.647 | .96440 | 40 |
| 30 | .1305 | .1317 | 7.596 | .99144 | 30 | 30 | .2672 | .2773 | 3.606 | .96363 | 30 |
| 40 | .1334 | .1346 | 7.429 | .99106 | 20 | 40 | .2700 | .2805 | 3.566 | .96285 | 20 |
| 50 | .1363 | .1376 | 7.269 | .99067 | 10 | 50 | .2728 | .2836 | 3.526 | .96206 | 10 |
| | | | | | 82 | | | | | | 74 |
| | Cosin. | Cotg. | Tan. | Sine. | Angle. | | Cosin. | Cotg. | Tan. | Sine. | Angle. |

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

| Angle | Sine. | Tan. | Cotg. | Cosin. | | Angle | Sine. | Tan. | Cotg. | Cosin. | |
|-----------|--------|-------|-------|--------|-----------|-----------|--------|-------|-------|--------|-----------|
| 16 | .2756 | .2867 | 3.487 | .96126 | 74 | 24 | .4067 | .4452 | 2.246 | .91355 | 66 |
| 10 | .2784 | .2899 | 3.450 | .96046 | 50 | 10 | .4094 | .4487 | 2.229 | .91236 | 50 |
| 20 | .2812 | .2931 | 3.412 | .95964 | 40 | 20 | .4120 | .4522 | 2.211 | .91116 | 40 |
| 30 | .2840 | .2962 | 3.376 | .95882 | 30 | 30 | .4147 | .4557 | 2.194 | .90996 | 30 |
| 40 | .2868 | .2994 | 3.340 | .95799 | 20 | 40 | .4173 | .4592 | 2.177 | .90875 | 20 |
| 50 | .2896 | .3026 | 3.305 | .95715 | 10 | 50 | .4200 | .4628 | 2.161 | .90753 | 10 |
| 17 | .2924 | .3057 | 3.271 | .95615 | 73 | 25 | .4228 | .4663 | 2.145 | .90631 | 65 |
| 10 | .2952 | .3089 | 3.237 | .95545 | 50 | 10 | .4253 | .4699 | 2.128 | .90507 | 50 |
| 20 | .2979 | .3121 | 3.204 | .95459 | 40 | 20 | .4279 | .4734 | 2.112 | .90383 | 40 |
| 30 | .3007 | .3153 | 3.172 | .95372 | 30 | 30 | .4305 | .4770 | 2.097 | .90259 | 30 |
| 40 | .3035 | .3185 | 3.140 | .95284 | 20 | 40 | .4331 | .4806 | 2.081 | .90133 | 20 |
| 50 | .3062 | .3217 | 3.108 | .95195 | 10 | 50 | .4358 | .4841 | 2.066 | .90007 | 10 |
| 18 | .3090 | .3249 | 3.078 | .95106 | 72 | 26 | .4384 | .4877 | 2.050 | .89879 | 64 |
| 10 | .3118 | .3281 | 3.048 | .95015 | 50 | 10 | .4410 | .4913 | 2.035 | .89752 | 50 |
| 20 | .3145 | .3314 | 3.018 | .94924 | 40 | 20 | .4436 | .4950 | 2.020 | .89623 | 40 |
| 30 | .3173 | .3346 | 2.989 | .94832 | 30 | 30 | .4462 | .4986 | 2.006 | .89493 | 30 |
| 40 | .3201 | .3378 | 2.960 | .94740 | 20 | 40 | .4488 | .5022 | 1.991 | .89363 | 20 |
| 50 | .3228 | .3411 | 2.932 | .94646 | 10 | 50 | .4514 | .5059 | 1.977 | .89232 | 10 |
| 19 | .3256 | .3443 | 2.904 | .94552 | 71 | 27 | .4540 | .5095 | 1.963 | .89101 | 63 |
| 10 | .3283 | .3476 | 2.877 | .94457 | 50 | 10 | .4566 | .5132 | 1.949 | .88968 | 50 |
| 20 | .3311 | .3508 | 2.850 | .94361 | 40 | 20 | .4592 | .5169 | 1.935 | .88835 | 40 |
| 30 | .3338 | .3541 | 2.824 | .94264 | 30 | 30 | .4617 | .5206 | 1.921 | .88701 | 30 |
| 40 | .3365 | .3574 | 2.798 | .94167 | 20 | 40 | .4643 | .5243 | 1.907 | .88566 | 20 |
| 50 | .3393 | .3607 | 2.773 | .94068 | 10 | 50 | .4669 | .5280 | 1.894 | .88431 | 10 |
| 20 | .3420 | .3640 | 2.747 | .93969 | 70 | 28 | .4695 | .5317 | 1.881 | .88295 | 62 |
| 10 | .3448 | .3673 | 2.723 | .93869 | 50 | 10 | .4720 | .5354 | 1.868 | .88158 | 50 |
| 20 | .3475 | .3706 | 2.699 | .93769 | 40 | 20 | .4746 | .5392 | 1.855 | .88020 | 40 |
| 30 | .3502 | .3739 | 2.675 | .93667 | 30 | 30 | .4772 | .5430 | 1.842 | .87882 | 30 |
| 40 | .3529 | .3772 | 2.651 | .93565 | 20 | 40 | .4797 | .5467 | 1.829 | .87743 | 20 |
| 50 | .3557 | .3805 | 2.628 | .93462 | 10 | 50 | .4823 | .5505 | 1.816 | .87603 | 10 |
| 21 | .3584 | .3839 | 2.605 | .93358 | 69 | 29 | .4848 | .5543 | 1.804 | .87462 | 61 |
| 10 | .3611 | .3872 | 2.583 | .93253 | 50 | 10 | .4874 | .5581 | 1.792 | .87321 | 50 |
| 20 | .3638 | .3906 | 2.560 | .93148 | 40 | 20 | .4899 | .5619 | 1.780 | .87178 | 40 |
| 30 | .3665 | .3939 | 2.539 | .93042 | 30 | 30 | .4924 | .5658 | 1.767 | .87036 | 30 |
| 40 | .3692 | .3973 | 2.517 | .92935 | 20 | 40 | .4950 | .5696 | 1.756 | .86892 | 20 |
| 50 | .3719 | .4006 | 2.496 | .92827 | 10 | 50 | .4975 | .5735 | 1.744 | .86748 | 10 |
| 22 | .3746 | .4040 | 2.475 | .92718 | 68 | 30 | .5000 | .5774 | 1.732 | .86603 | 60 |
| 10 | .3773 | .4074 | 2.455 | .92609 | 50 | 10 | .5025 | .5812 | 1.720 | .86457 | 50 |
| 20 | .3800 | .4108 | 2.434 | .92499 | 40 | 20 | .5050 | .5851 | 1.709 | .86310 | 40 |
| 30 | .3827 | .4142 | 2.414 | .92388 | 30 | 30 | .5075 | .5890 | 1.698 | .86163 | 30 |
| 40 | .3854 | .4176 | 2.394 | .92276 | 20 | 40 | .5100 | .5930 | 1.686 | .86015 | 20 |
| 50 | .3881 | .4210 | 2.375 | .92164 | 10 | 50 | .5125 | .5969 | 1.675 | .85866 | 10 |
| 23 | .3907 | .4245 | 2.356 | .92050 | 67 | 31 | .5150 | .6009 | 1.664 | .85717 | 59 |
| 10 | .3934 | .4279 | 2.337 | .91936 | 50 | 10 | .5175 | .6048 | 1.653 | .85567 | 50 |
| 20 | .3961 | .4314 | 2.318 | .91822 | 40 | 20 | .5200 | .6088 | 1.643 | .85416 | 40 |
| 30 | .3987 | .4348 | 2.300 | .91706 | 30 | 30 | .5225 | .6128 | 1.632 | .85264 | 30 |
| 40 | .4014 | .4383 | 2.282 | .91590 | 20 | 40 | .5250 | .6168 | 1.621 | .85112 | 20 |
| 50 | .4041 | .4417 | 2.264 | .91472 | 10 | 50 | .5275 | .6208 | 1.611 | .84959 | 10 |
| | | | | | 66 | | | | | | 58 |
| | Cosin. | Cotg. | Tan. | Sine. | Angle. | | Cosin. | Cotg. | Tan. | Sine. | Angle. |

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

| Angle | Sine. | Tan. | Cotg. | Cosin. | Angle | Sine. | Tan. | Cotg. | Cosin. | | |
|-------|--------|-------|-------|--------|--------|-------|--------|-------|--------|--------|--------|
| ° | | | | | ° | | | | | | |
| 32 | .5299 | .6249 | 1.600 | .84805 | 58 | 30 | .6225 | .7954 | 1.257 | 78261 | 30 |
| 10 | .5324 | .6289 | 1.590 | .84650 | 50 | 40 | .6248 | .8002 | 1.250 | 78079 | 20 |
| 20 | .5348 | .6330 | 1.580 | .84495 | 40 | 50 | .6271 | .8050 | 1.242 | .77897 | 10 |
| 30 | .5373 | .6371 | 1.570 | .84339 | 30 | | | | | | |
| 40 | .5398 | .6412 | 1.560 | .84182 | 20 | 39 | .6293 | .8098 | 1.235 | .77715 | 51 |
| 50 | .5422 | .6453 | 1.550 | .84025 | 10 | 10 | .6316 | .8146 | 1.228 | .77531 | 50 |
| | | | | | | 20 | .6338 | .8195 | 1.220 | .77347 | 40 |
| 33 | .5446 | .6494 | 1.540 | .83867 | 57 | 30 | .6361 | .8243 | 1.213 | .77162 | 30 |
| 10 | .5471 | .6536 | 1.530 | .83708 | 50 | 40 | .6383 | .8292 | 1.206 | .76977 | 20 |
| 20 | .5495 | .6577 | 1.520 | .83549 | 40 | 50 | .6406 | .8342 | 1.199 | .76791 | 10 |
| 30 | .5519 | .6619 | 1.511 | .83389 | 30 | | | | | | |
| 40 | .5544 | .6661 | 1.501 | .83228 | 20 | 40 | .6428 | .8391 | 1.192 | .76604 | 50 |
| 50 | .5568 | .6703 | 1.492 | .83066 | 10 | 10 | .6450 | .8441 | 1.185 | .76417 | 50 |
| | | | | | | 20 | .6472 | .8491 | 1.178 | .76229 | 40 |
| 34 | .5592 | .6745 | 1.483 | .82904 | 56 | 30 | .6494 | .8541 | 1.171 | .76041 | 30 |
| 10 | .5616 | .6787 | 1.473 | .82741 | 50 | 40 | .6517 | .8591 | 1.164 | .75851 | 20 |
| 20 | .5640 | .6830 | 1.464 | .82577 | 40 | 50 | .6539 | .8642 | 1.157 | .75661 | 10 |
| 30 | .5664 | .6873 | 1.455 | .82413 | 30 | | | | | | |
| 40 | .5688 | .6916 | 1.446 | .82248 | 20 | 41 | .6561 | .8693 | 1.150 | .75471 | 49 |
| 50 | .5712 | .6959 | 1.437 | .82082 | 10 | 10 | .6583 | .8744 | 1.144 | .75280 | 50 |
| | | | | | | 20 | .6604 | .8796 | 1.137 | .75088 | 40 |
| 35 | .5736 | .7002 | 1.428 | .81915 | 55 | 30 | .6626 | .8847 | 1.130 | .74896 | 30 |
| 10 | .5760 | .7046 | 1.419 | .81748 | 50 | 40 | .6648 | .8899 | 1.124 | .74703 | 20 |
| 20 | .5783 | .7089 | 1.411 | .81580 | 40 | 50 | .6670 | .8952 | 1.117 | .74509 | 10 |
| 30 | .5807 | .7133 | 1.402 | .81412 | 30 | | | | | | |
| 40 | .5831 | .7177 | 1.393 | .81242 | 20 | 42 | .6691 | .9004 | 1.111 | .74314 | 48 |
| 50 | .5854 | .7221 | 1.385 | .81072 | 10 | 10 | .6713 | .9057 | 1.104 | .74120 | 50 |
| | | | | | | 20 | .6734 | .9110 | 1.098 | .73924 | 40 |
| 36 | .5878 | .7265 | 1.376 | .80902 | 54 | 30 | .6756 | .9163 | 1.091 | .73728 | 30 |
| 10 | .5901 | .7310 | 1.368 | .80730 | 50 | 40 | .6777 | .9217 | 1.085 | .73531 | 20 |
| 20 | .5925 | .7355 | 1.360 | .80558 | 40 | 50 | .6799 | .9271 | 1.079 | .73333 | 10 |
| 30 | .5948 | .7400 | 1.351 | .80386 | 30 | | | | | | |
| 40 | .5972 | .7445 | 1.343 | .80212 | 20 | 43 | .6820 | .9325 | 1.072 | .73135 | 47 |
| 50 | .5995 | .7490 | 1.335 | .80038 | 10 | 10 | .6841 | .9380 | 1.066 | .72937 | 50 |
| | | | | | | 20 | .6862 | .9435 | 1.060 | .72737 | 40 |
| 37 | .6018 | .7536 | 1.327 | .79864 | 53 | 30 | .6884 | .9490 | 1.054 | .72537 | 30 |
| 10 | .6041 | .7581 | 1.319 | .79688 | 50 | 40 | .6905 | .9545 | 1.048 | .72337 | 20 |
| 20 | .6065 | .7627 | 1.311 | .79512 | 40 | 50 | .6926 | .9601 | 1.042 | .72136 | 10 |
| 30 | .6088 | .7673 | 1.303 | .79335 | 30 | | | | | | |
| 40 | .6111 | .7720 | 1.295 | .79158 | 20 | 44 | .6947 | .9657 | 1.036 | .71934 | 46 |
| 50 | .6134 | .7766 | 1.288 | .78980 | 10 | 10 | .6967 | .9713 | 1.030 | .71732 | 50 |
| | | | | | | 20 | .6988 | .9770 | 1.024 | .71529 | 40 |
| 38 | .6157 | .7813 | 1.280 | .78801 | 52 | 30 | .7009 | .9827 | 1.018 | .71325 | 30 |
| 10 | .6180 | .7860 | 1.272 | .78622 | 50 | 40 | .7030 | .9884 | 1.012 | .71121 | 20 |
| 20 | .6202 | .7907 | 1.265 | .78442 | 40 | 50 | .7050 | .9942 | 1.006 | .70916 | 10 |
| | | | | | | | .7071 | 1. | 1. | .70711 | 45 |
| | | | | | | | | | | | ° |
| | Cosin. | Cotg. | Tan. | Sine. | Angle. | | Cosin. | Cotg. | Tan. | Sine. | Angle. |

TABLE IX.—CALCULATION OF EARTHWORK.

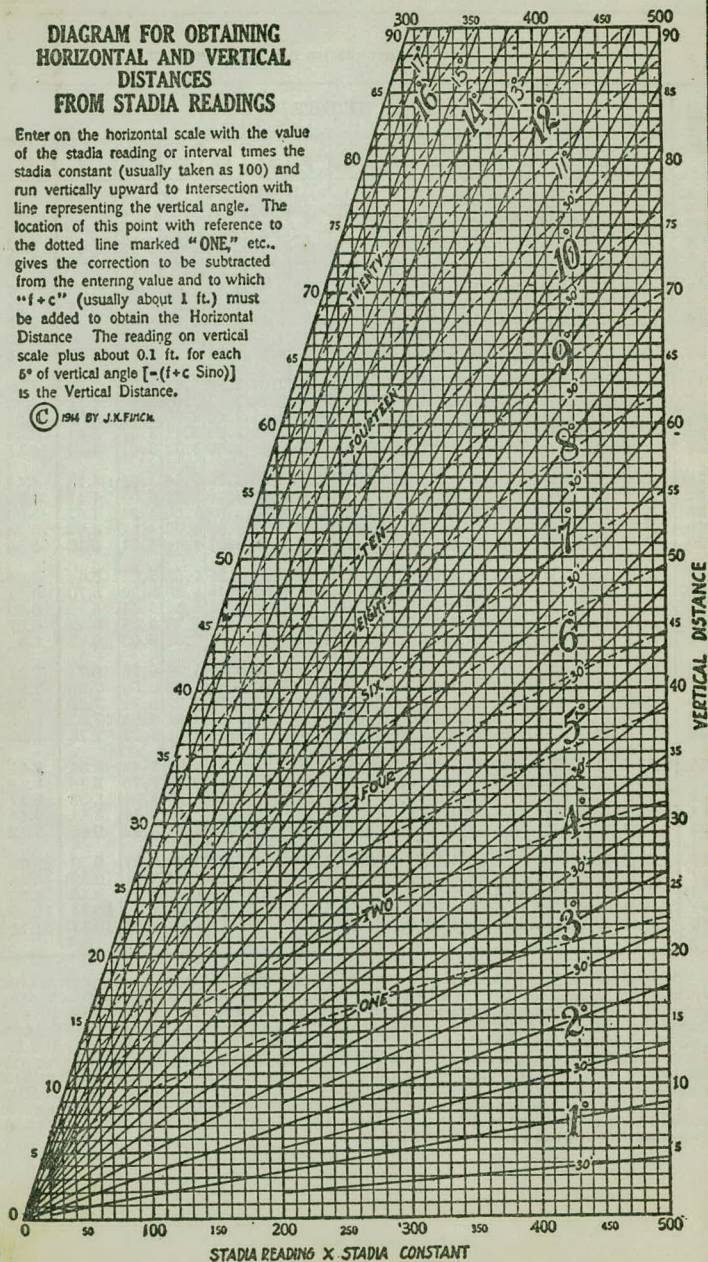
| Width | HEIGHT | | | | | | | | | | | | | | |
|-------|--------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | .02 | .04 | .06 | .07 | .09 | .11 | .13 | .15 | .17 | .18 |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

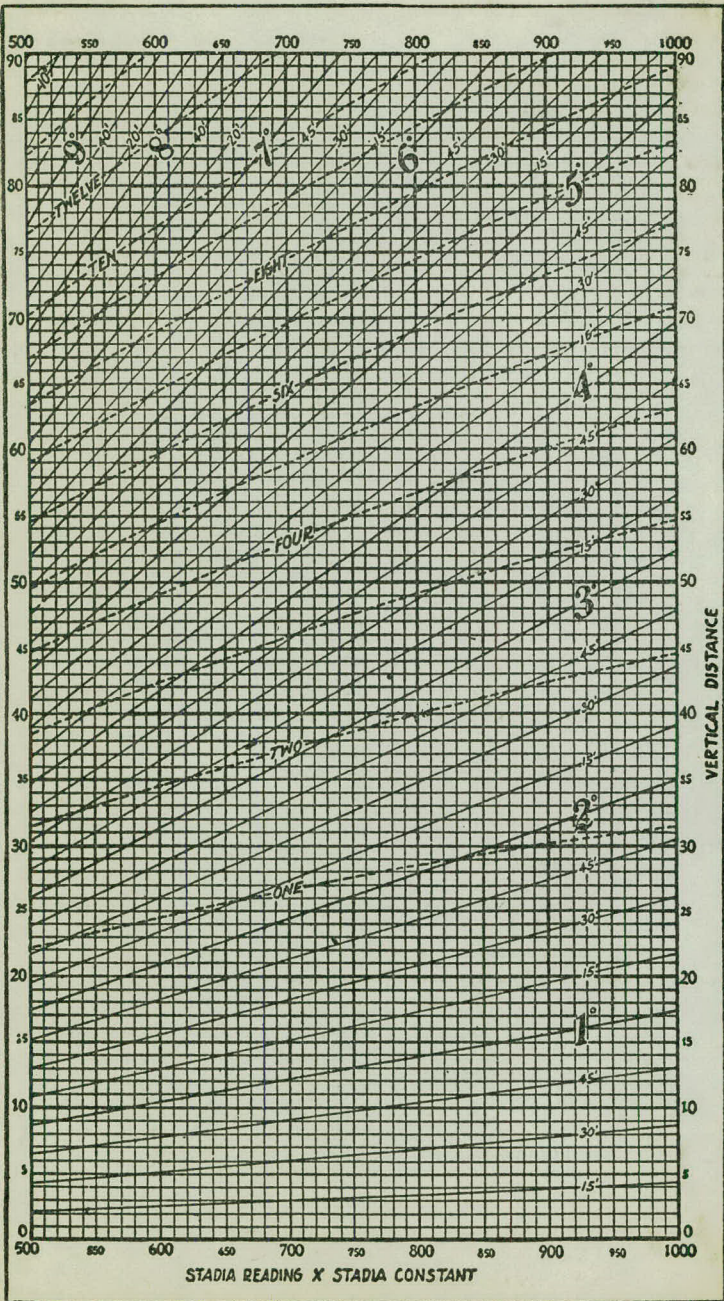
Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if $w=16.2$ and $h=5.3$, cu. yds. $=1.48+.028+.089=1.597$ cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) $=h$, and $\frac{1}{2}$ the roadbed $=w$, add the triangles formed by taking the distance out to each break in turn ($=w$'s) by the difference between the cuts (or fills) on each side of it ($=h$'s) always subtracting the outer from the inner.

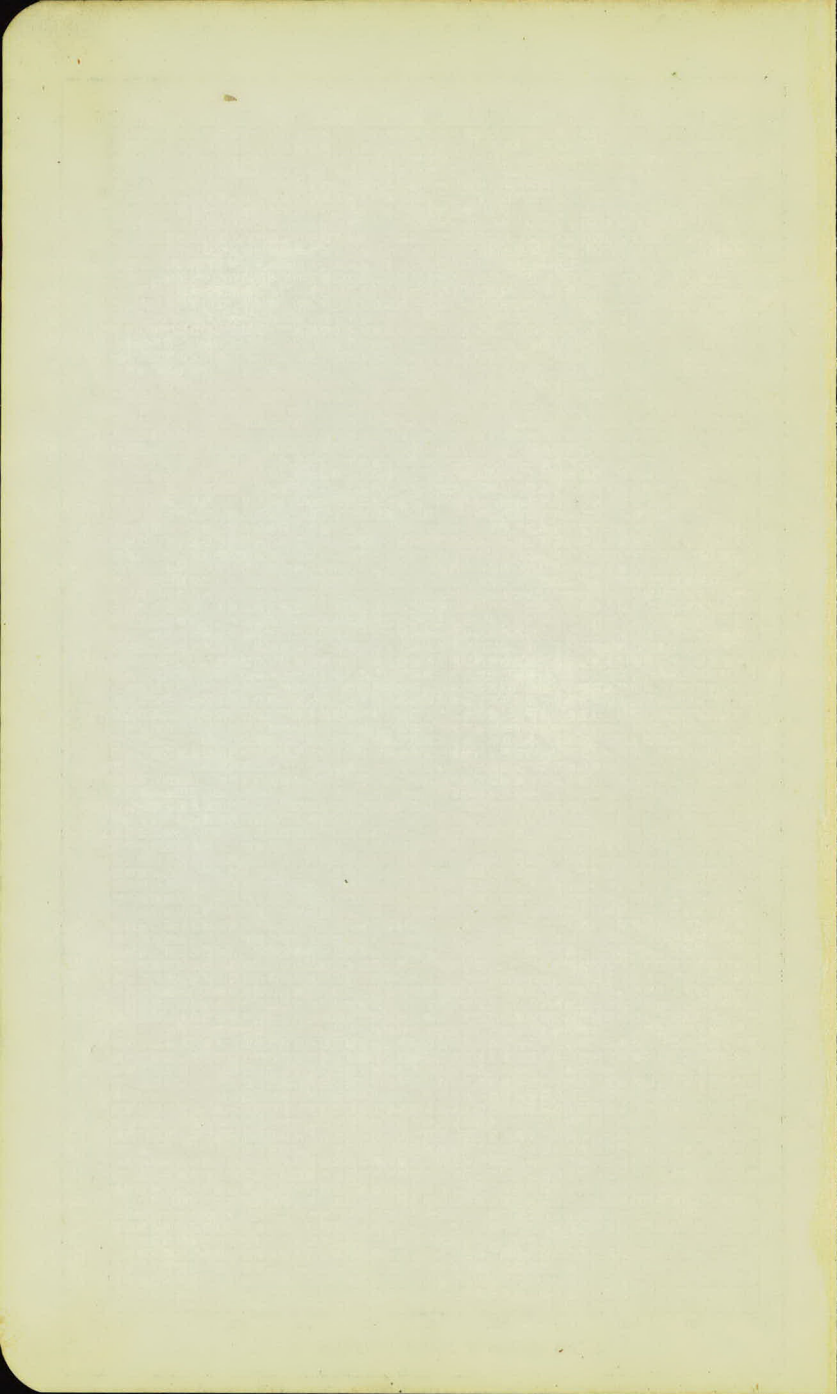
DIAGRAM FOR OBTAINING HORIZONTAL AND VERTICAL DISTANCES FROM STADIA READINGS

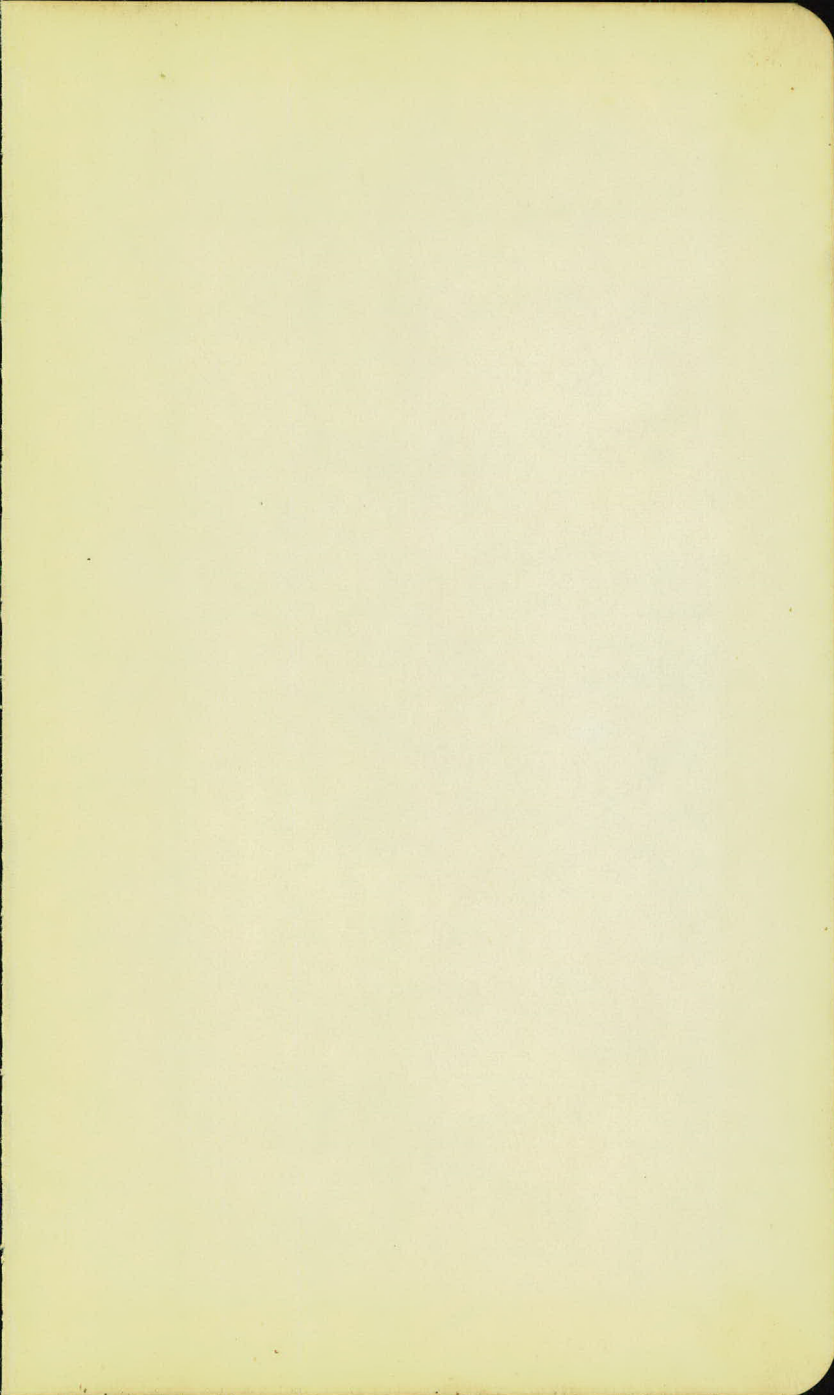
Enter on the horizontal scale with the value of the stadia reading or interval times the stadia constant (usually taken as 100) and run vertically upward to intersection with line representing the vertical angle. The location of this point with reference to the dotted line marked "ONE," etc., gives the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

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12.7
11.8

2.97

250

260

2640

5

00375
1500

189

37

54.1

125

486

400

8

3

23

19

43

279

1172

1172

**DISTANCES FROM CENTER OF ROADWAY FOR
CROSS-SECTIONING.**

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

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

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