

T140 R27

26+40

25

24

23+10

22

21

20

19

18

17

16+50

15

14 189

13

12

11

10

9+10

8+26

~~ROAD SWINGS TO NORTH~~

7

6

5

4

3+30

2

1+22

0+00

marked C.P.C.
Road swings S. No. - I.P. at int. with state
STARTED FROM ROAD INT. ²²/₁₀ T140-MI-R27

N 84° 0' E

3233
514

Jan. 2, 1938

S 7

BIRCH-OSPEN
TIMBER

W 91° E

BIRCH-OSPEN
TIMBER

0. I.P. S.C. ³²/₁₄ 141-27

T140 R27

33
4/3

52+86

set 3' inch OAK FOX MINE post sec.

52+13

Keelwood App. Sec. COY. 52+86 E OF SEC.

50

Leave SW swamp N.S.
Enter SW swamp N.S.

49+50

48

47

46

46+67

~~LEFT SWAMP~~

45

44

43

42

42+90

41

40+00

~~CANtered SWAMP~~

39

38

37

36

36+30

35

34

33

32

31

30

29

29+70

28

27

~~32+39~~
5/4

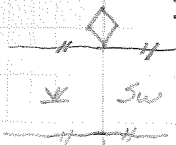
Jan 3, 1938

33/3

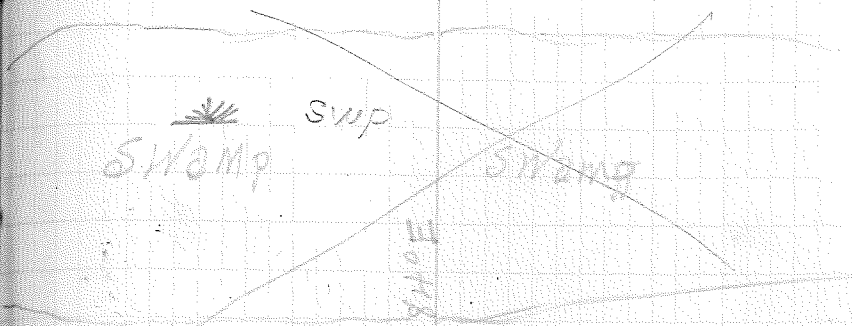
60

N 84° E

BURCH
ASPEN
TIMBER



BURCH
ASPEN
TIMBER



BURCH ASPEN
TIMBER

BURCH ASPEN
TIMBER

T 140 R 27

- 26+40
- 25
- 24
- 23+10
- 22
- 21
- 20
- 19
- 18
- 17
- 16+50
- 15
- 14
- 13
- 12
- 11
- 10
- 9+90
- 8
- 7
- 6
- 5
- 4
- 3+30
- 2
- 1

0+01 Start east from appri. 50

$\frac{33}{4 \frac{1}{2}}$ 140-141-27

$\frac{3334}{413}$

Jan. 4 1939

N 84° E

G/1
 party Woods. TOD
 Groves ch
 Finney ch
 Bain axe
 Bushy axe

BUTCH-ASPEN
TIMBER

N 81° E

BUTCH-ASPEN
TIMBER

◇ Appri. stake

cor. $\frac{35}{31}$

52+80 FOUND ORIGINAL SECTION OF 1/2 INCH PINE
 51 2 Feet long BLED ON TWO SIDES SCRIBED
 50 1/4 IN N R 27 W S-34 - 1/4 IN N R 27 W S-35
 49 BT. 2 INCH NORWAY PINE SCRIBED 1/4 IN N R 27 W S-36
 48 N 54° E DISTANCE 51 FEET.
 47+55 FOUND 2 INCH ASPEN STAKE KEPT
 46 SEC 34 SEC 35 SEC 36 SEC 37
 45 @ 250 12 INCH NORWAY PINE SCRIBED 1/4 IN N
 44 R 27 W S-35 1/2 IN W DISTANCE ~~27~~ 26.3 FT.
 43 2 INCH ASPEN SCRIBED 1/4 IN N R 27 W S-36
 42+90 S-55° E DISTANCE ~~27~~ 34.1 FEET
 41 CROSSED ROAD N-S
 40
 39
 38
 37+67 ENTERED PINE TIMBER.
 36+30
 35
 34
 33
 32+00 LEFT SWAMP.
 31
 30+37 ENTERED ~~SWAMP~~ SWAMP.
 29+70
 28
 27

Jan 11 1938
 $\frac{33341}{4312}$
 $\frac{341}{372}$ C 2

N 84° E

PINE TIMBER

N 84° E

PINE TIMBER

~~ROAD~~

~~BUTCH ASPEN
TIMBER.~~

~~BUTCH ASPEN
TIMBER~~

~~M. G. R. SWAMP~~

~~BUTCH ASPEN
TIMBER.~~

~~ASPEND
TIMBER~~

T140 R 27

26+40

25

24

23+10

22

21

20

19

19

17

16+50

15

14

13

12

11

10

9+90

8

7

6

5

4

3+30

2

T140 N R27 W 535

10+64
0700

Found stake scribble T140 N R27 W, 534
STARTED FROM SEC. COR. ~~BT~~

34|35
3|2

Jan. 11 1938

63

same party

N 84° E

PINE TIMBER

N 84° E

PINE TIMBER

sec. $\frac{34}{3} | \frac{35}{2}$

140-141-27

W.

BT.

Wooden Stake - Keel.

BT.

53+43¹/₂ 4" wooden stake led corner to ^{35/36} 11 141-27

53+10¹/₂ FOUND 2" square pine stump 1 1/2 feet long

52+80 FOUND 14 inch pine stump 5 FT LONG

N-E-W-D

51

50

41+50

Set app. S.C. ^{35/} 211

48

47

46

45

44

43

42+90

41

40

39

38

37

36+30

35

34

33

32

31

30

29+70

28

27

~~3837~~ Jan 1938

N 84° E ^{34/35} 312 app. S.C. 9 4

PINE TIMBER

N 84° E

PINE TIMBER

T140 R27

26+40

25

24

23+10

22

21

20

19

18

17

16+50

15

14

13

12

11

10

9+90

8+88

7

6

5

4

3+30

2+00

1

0+00

LEFT BITCH TIMBER CENTERED TAM. SWAMP.

LEFT pine TIMBER CENTERED BITCH TIMBER.

STARTED WEST FROM SEC. COR.

18713
75132

T140 R27

Jan. 6 1938 L.S.

PATTY WOODSTAD

ETAPESCH

BAIN CH

FINNEY AXE

EVANS AXE

S 83° W

Mag. Bearing S 83° W

6 INCH WHITE PINE BOARDS
SSDPW DISTANCE IS FEET
SCRIBED B.T.

4 FOOT ASPEN STAKE.

T140 R27

52+80 set 3 inch Tamrack For section $\frac{14}{13}$
51 Keel'd App. sec. core, etc. $\frac{27}{27}$
50 $\frac{14}{13}$
 $\frac{27}{27}$

49+50
48

47+59 crossed fence North-South
46+77 entered M.B.R. Swamp.

45
44
43

42+90 Left pine timber entered spruce Swamp
41

40
39

38+16 Crossed fence North-South entered pine timber
37

36+30 quit For Day Jan. 6, 1938
35

34
33

32
31

30
29+70

28
27

S 83° W

Jan. 6 1938
Jan 7 1938
CC

1
110385
both

T 140 R 27

24+40

25

24

23+40

22

21

20

19

18

17

16+50

15

14

13

12+00

STRUCK EDGE OF LAKE

11+00

CROSSED ROAD

10+95

LEFT OPEN FIELD

10

HOUSE W/PECT TO NORTH OF LINE

9+00

TELEPHONE LINE OPEN FIELD

8+00

LEFT SPRUCE SWAMP

7

6

5

4

3+30

2

1+00

LEFT N.E.R SWAMP, ENTERED SPRUCE SWAMP

0+00

STARTED WEST FROM ^{APR} SEC. 307, T31N, R27W

out

Jan 7, 1939

S 93° W

~~party~~ WOODS ROAD

Graves Ch

Bain Ch

Finnegone

Evans Ch

MEX'S SWAMP

N

T 140 R 27

Jan 7 1938

S 83° W

~~all~~

~~Mag bearing S 83° W
Range 1.1 mi~~

36 + 30 LEFT LAKE entered spruce swamp. quit for day Jan 7 1938

35

34

33

32

31

30

29 + 70

28

27

T140R27

26+74 CROSSED FENCE N-S 2750 OPEN FIELD

26+40

25

24

23+10

22

21

20

19

18

17

16+50

15

14

13+67 FENCE RUNS NORTH

13+53 ROAD CLIVES SOUTH

13+05 FENCE AND TELEPHONE LINE NORTH.

12+30 ENTERED SWAMP

11+20 LEFT SWAMP

10

9+90

8

7

6

5

4

3+30

2

1

0+00

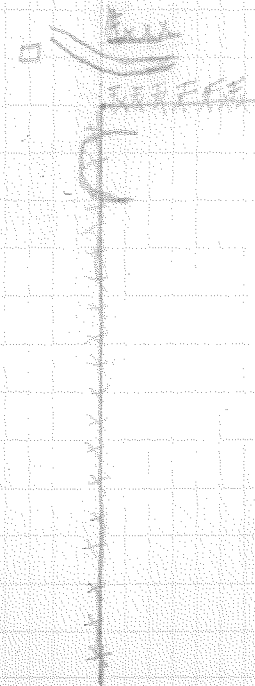
STARTED WEST FROM APP. SEC. COR. 24¹¹ T140R27

OPEN FIELD
~~XXXX~~ Jan. 11 1938
 67

S 83° W

PARTY MISDIRECTED
 CHUPKA CH
 WOODS CH
 CUM STOCK AXE
 BAIN AXE
 PEASE AXE

MAG. BEARING S 83° W
 1000 P.M. LINE



XXX 67

53+44
 53+11 Telephone line N-S
 52
 51
 50
 49+50
 48
 47+30 LEFT Hay meadow
 46
 45
 44+69 Hay meadow
 43
 42+90 Crossed Road LEFT Swamp.
 41
 40
 39
 38
 37+24
 36+30
 35
 34
 33+90
 32
 31+52 entered Spruce Swamp.
 30
 29+70 LEFT open Field
 28
 27+94 east side of house 25 ft. North of Line.

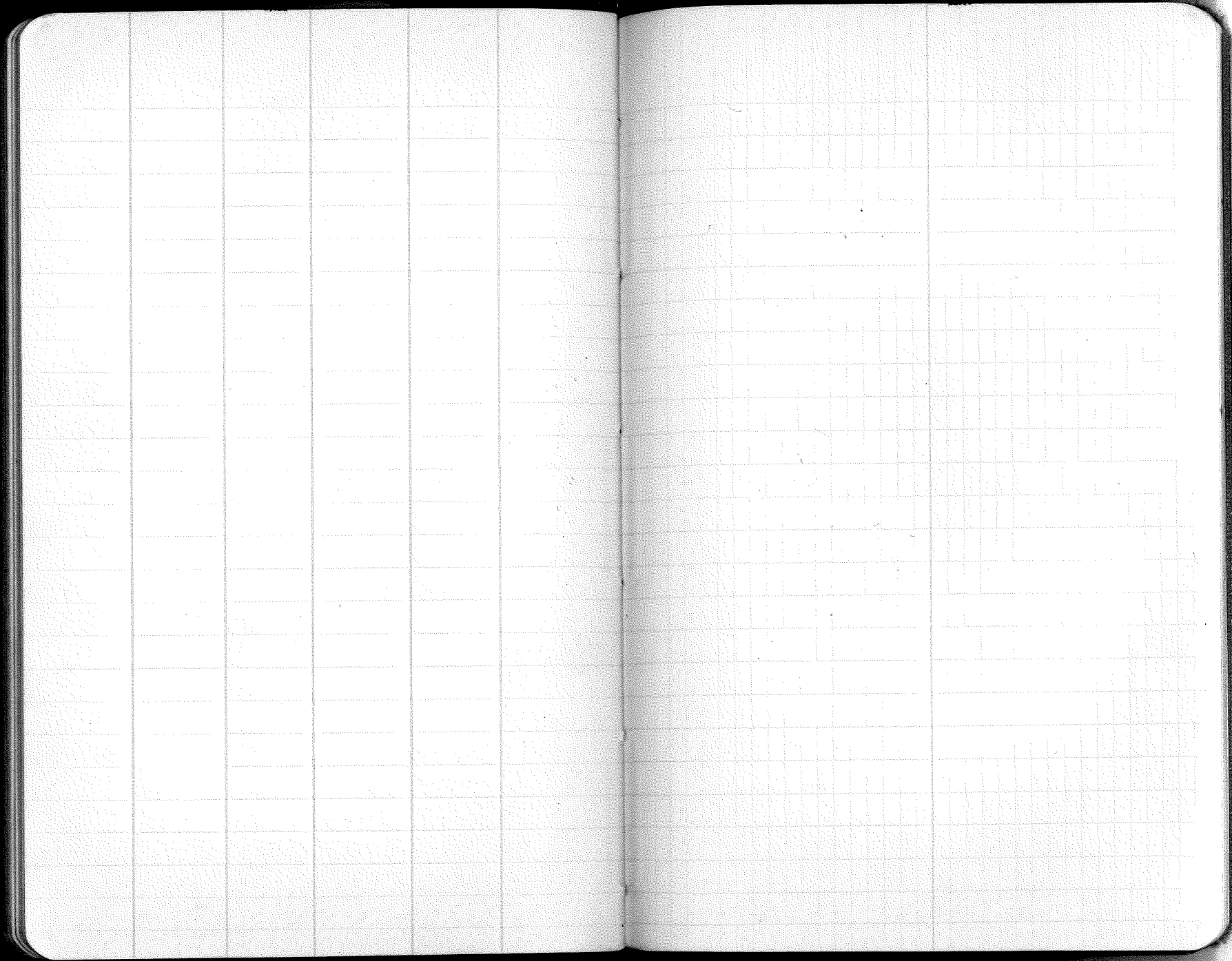
CENTER OF ROAD OFFSET 4 1/4"
 SOUTH TO FENCE RUNNING E-W
 APP. SEC. COR. 15114
 SET 4" Birch HI LONG 10' WFF 10M
 CENTER OF ROAD IN FENCE KEENED
 APP. SEC. COR. E.C.W. SEC. 15114
 20123

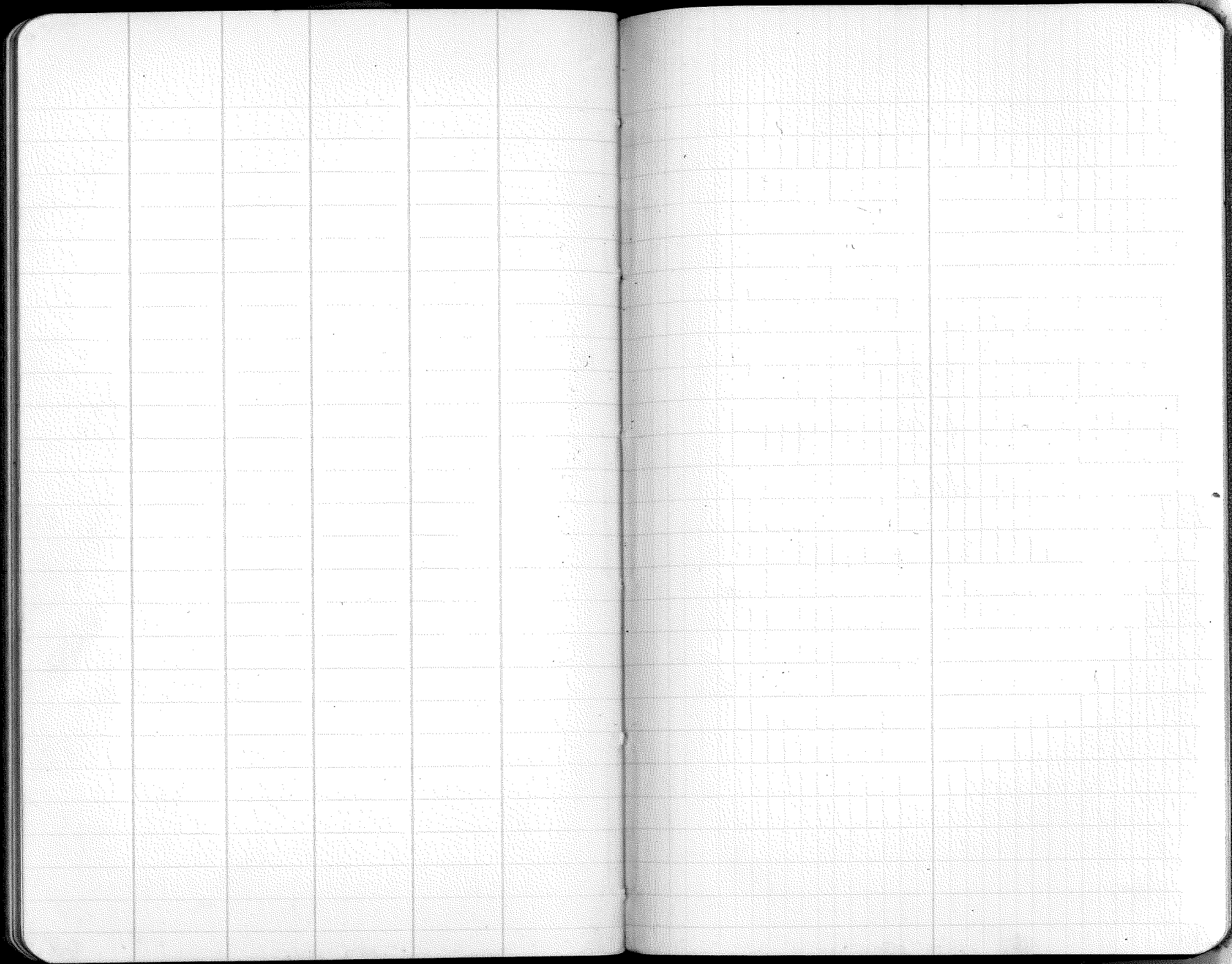
Jan 11, 1938
 68

OFFSET 12" NORTH TO 2" I.P. 21
 ABOVE GROUND. ALSO 1 1/2" I.P. STICK IN
 IN 2" I.P. STAKED NEW LINE
 FROM I.P.
 FOUND 2" IRON PIPE WITH CAP
 9.4 FEET SOUTH OF LINE. 2 FEET
 ABOVE GROUND.
 2 INCH SPRUCE STAKE 2 FEET LONG
 SQUARED ON TWO SIDES 5.8 FEET
 NORTH OF LINE.

Mag Bearing 5.83 W
 Remains Line

open field





DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope $1\frac{1}{2}$ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

TABLE No. 9.

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

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

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

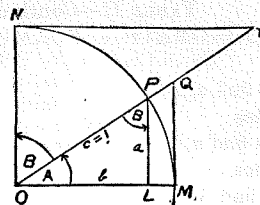


TABLE II
TRIGONOMETRIC FORMULÆ.

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

$$R = OB = c = 1$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

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

Use Law of Lines.

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

Use Law of Lines.

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

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

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

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

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

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

Area of a triangle:

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

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

PRISMOIDAL FORMULA.

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

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

TABLE III
INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11	
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219	$\frac{1}{16}$
$\frac{1}{8}$	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271	$\frac{1}{8}$
$\frac{3}{16}$	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323	$\frac{3}{16}$
$\frac{1}{4}$	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375	$\frac{1}{4}$
$\frac{5}{16}$	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427	$\frac{5}{16}$
$\frac{3}{8}$	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479	$\frac{3}{8}$
$\frac{7}{16}$	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531	$\frac{7}{16}$
$\frac{1}{2}$	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583	$\frac{1}{2}$
$\frac{9}{16}$	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635	$\frac{9}{16}$
$\frac{5}{8}$	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688	$\frac{5}{8}$
$\frac{11}{16}$	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740	$\frac{11}{16}$
$\frac{3}{4}$	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792	$\frac{3}{4}$
$\frac{13}{16}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844	$\frac{13}{16}$
$\frac{7}{8}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896	$\frac{7}{8}$
$\frac{15}{16}$	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948	$\frac{15}{16}$
1	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.0000	1
	0	1	2	3	4	5	6	7	8	9	10	11	

TABLE IV
USEFUL RELATIONS.

Lineal feet	×.00019	= miles
Lineal yards	×.0006	= miles
Square inches	×.007	= square feet
Square feet	×.111	= square yards
Square yards	×.0002067	= acres
Acres	×4840	= square yards
Cubic inches	×.00058	= cubic feet
Cubic feet	×.03704	= cubic yards
Links	×.22	= yards
Links	×.66	= feet
Feet	×1.5	= links
360°	= 21600'	= 1296000"
Radius	= arc of 57.2957790°	
Arc of 1° (radius = 1)	= .017453292	
Arc of 1' (radius = 1)	= .000290888	
Arc of 1" (radius = 1)	= .000004848	

$$\pi = 3.141592654 \quad \sqrt{\frac{1}{\pi}} = 0.564190$$

$$\frac{\pi}{4} = 0.785398163 \quad \sqrt[3]{\frac{6}{\pi}} = 1.240700982$$

$$\frac{\pi}{6} = 0.523598776 \quad \pi^2 = 9.869604401$$

$$\sqrt{\frac{4}{\pi}} = 1.128379167 \quad \frac{1}{\pi^2} = 0.101321184$$

$$\frac{\pi}{6} = 0.523598776 \quad \sqrt{\pi} = 1.772453851$$

$$\frac{4\pi}{3} = 4.188790205 \quad \frac{1}{\pi} = 0.3183099$$

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

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

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

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

Error in chaining of 0.01 feet in 100 feet:

Due to—

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

STADIA REDUCTION FORMULAE.

Horizontal Distance = R - R sin² a + C cos a

Vertical Distance = R ½ sin 2 a + C sin a

distance from Object glass to cross hairs

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

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

a = angle of elevation for mid Reading

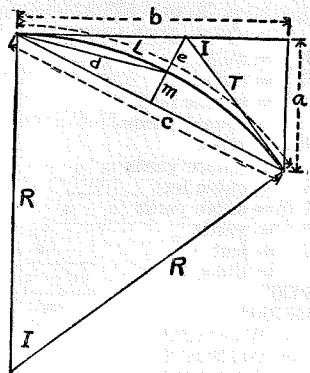


TABLE V
CURVE FORMULAE FOR SIMPLE CURVES
COMPILED BY J. CALVIN LOCKE, C.E.

- (1) $c = \sqrt{2Ra}$ (2) $c = \sqrt{a^2 + b^2}$
 (3) $c = \sqrt{2R(R - \sqrt{(R+b)(R-b)})} = \sqrt{2R(R - \sqrt{R^2 - b^2})}$
 (4) $c = 2\sqrt{m(2R - m)}$
 (5) $c = 2R \sin \frac{1}{2} I$ (6) $c = 2T \cos \frac{1}{2} I$
 (7) $e = R \operatorname{exsec} \frac{1}{2} I$
 (8) $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$ (9) $e = T \tan \frac{1}{4} I$
 (10) $b = \sqrt{a(2R - a)}$
 (11) $b = \sqrt{\left(c + \frac{c^2}{2R}\right)\left(c - \frac{c^2}{2R}\right)} = \sqrt{c^2 - \frac{c^4}{4R^2}}$
 (12) $b = R \sin I$ (13) $b = a \cot \frac{1}{2} I$
 (14) $R = \frac{a^2 + b^2}{2a} = \frac{c^2}{2a}$ (15) $R = \frac{d^2}{2m} = \frac{c^2 + 4m^2}{8m}$
 (16) $d = \sqrt{R(2R - \sqrt{(2R+c)(2R-c)})} = \sqrt{R(2R - \sqrt{4R^2 - c^2})}$
 (17) $d = \sqrt{2Rm}$ (18) $d = 2R \sin \frac{1}{4} I$ (19) $m = \frac{d^2}{2R}$
 (20) $m = R \mp \sqrt{\left(R + \frac{c}{2}\right)\left(R - \frac{c}{2}\right)} = R \mp \sqrt{R^2 - \frac{c^2}{4}}$
 (21) $m = R \operatorname{vers} \frac{1}{2} I$ (22) $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$ (23) $m = \frac{1}{2} c \tan \frac{1}{4} I$
 (24) $a = \frac{c^2}{2R}$ (25) $a = R - \sqrt{(R+b)(R-b)} = R - \sqrt{R^2 - b^2}$
 (26) $a = 2R(\sin^2 \frac{1}{2} I)^2$ (27) $a = R \operatorname{vers} I$ (28) $a = R \sin I \tan \frac{1}{2} I$
 (29) $a = b \tan \frac{1}{2} I$ (30) $a = T \sin I$ (31) $T = R \tan \frac{1}{2} I$
 (32) $I = \frac{L}{R} \times 57.295780$ (33) $R = \frac{L}{I} \times 57.295780$
 (34) $L = IR \times 0.01745329$ (35) $L = \frac{8d - c}{3}$
 (36) $\text{Area Seg.} = \frac{LR - R^2 \sin I}{2} = \frac{LR - Rb}{2}$

TABLE VI
SINES, COSINES, TANGENTS, COTANGENTS

deg.	sin 0'	tan 0'	sin 10'	tan 10'	sin 20'	tan 20'	sin 30'	tan 30'	sin 40'	tan 40'	sin 50'	tan 50'	sin 60'	tan 60'
0	0000	0000	0029	0029	0058	0058	0087	0087	0116	0116	0145	0145	0174	0174
1	175	0175	0204	0204	0233	0233	0262	0262	291	291	320	320	349	349
2	349	349	378	378	407	407	436	436	465	465	494	494	523	523
3	523	524	552	553	581	582	610	612	640	641	669	669	698	698
4	698	699	727	729	756	758	785	787	814	816	843	843	872	872
5	872	875	901	904	929	934	958	963	987	992	1016	1016	1045	1045
6	1045	1051	1074	1080	1103	1110	1132	1139	1161	1169	1190	1190	1219	1219
7	1219	1228	1248	1257	1279	1287	1305	1317	1334	1346	1363	1363	1392	1392
8	1392	1405	1421	1435	1449	1465	1478	1495	1507	1524	1536	1536	1564	1564
9	1564	1584	1593	1614	1622	1644	1650	1673	1679	1703	1708	1733	1738	1738
10	1736	1763	1765	1793	1794	1823	1822	1853	1851	1883	1880	1914	1914	1914
11	1908	1944	1937	1974	1965	2004	1994	2035	2022	2065	2051	2095	2095	2095
12	2079	2126	2108	2156	2136	186	2164	217	193	247	221	278	277	277
13	250	309	278	339	306	370	334	401	363	432	391	462	426	426
14	419	493	447	524	476	555	504	586	532	617	560	648	586	586
15	588	679	616	711	644	742	672	773	700	805	728	836	748	748
16	756	867	784	899	812	931	840	962	868	994	896	1026	916	916
17	924	1057	952	1089	939	1110	1035	1153	1065	1185	1082	1212	1092	1092
18	1090	1249	1118	1281	1145	1314	1173	1446	1291	1524	1363	1451	1311	1311
19	1256	1443	1283	1476	1311	1508	1338	1541	1365	1574	1393	1607	1470	1470
20	1420	1640	1448	1673	1475	1706	1502	1739	1529	1772	1557	1805	1639	1639
21	1584	1839	1611	1872	1638	1906	1665	1939	1692	1973	1719	1996	1751	1751
22	1746	2040	1773	2074	1808	2108	1827	2142	1854	2176	1881	2207	1916	1916
23	1907	2245	1934	2279	1961	2314	1987	2348	2014	2383	2041	2416	2066	2066
24	2067	2452	2094	2487	2120	2522	2147	2557	2173	2592	2200	2623	2223	2223
25	2226	2663	2153	2699	2179	2734	2205	2770	2231	2806	2258	2841	2281	2281
26	2384	2877	2281	2913	2306	2950	2232	2986	2258	3022	2284	3059	2306	2306
27	2540	3095	2406	3132	2332	3169	2358	3206	2384	3243	2411	3280	2433	2433
28	2695	3317	2523	3354	2457	3392	2483	3430	2509	3467	2536	3505	2559	2559
29	2848	3543	2640	3591	2581	3619	2609	3658	2637	3696	2665	3735	2693	2693
30	3000	3774	2757	3812	2705	3851	2735	3890	2765	3930	2795	3969	2825	2825
31	3150	4009	2875	4048	2830	4088	2865	4128	2900	4168	2935	4208	2965	2965
32	3299	4249	2994	4289	2955	4330	2990	4371	3030	4412	3065	4453	3095	3095
33	3446	4494	3113	4336	3075	4371	3110	4412	3150	4453	3190	4494	3225	3225
34	3592	4745	3232	4387	3210	4412	3245	4453	3285	4494	3325	4535	3360	3360
35	3736	5002	3351	4440	3350	4453	3385	4494	3425	4535	3465	4576	3500	3500
36	3878	5265	3470	4495	3490	4504	3520	4535	3565	4576	3605	4617	3640	3640
37	4018	5536	3589	4552	3610	4565	3650	4576	3695	4617	3745	4658	3785	3785
38	4157	5813	3708	4610	3730	4617	3785	4658	3830	4699	3885	4700	3925	3925
39	4293	6098	3827	4670	3850	4676	3935	4700	3975	4741	4030	4782	4070	4070
40	4428	6391	3946	4731	3970	4732	4040	4741	4115	4782	4170	4823	4210	4210
41	4561	6693	4065	4794	4095	4796	4160	4823	4255	4864	4315	4864	4355	4355
42	4691	7004	4184	4859	4215	4857	4270	4864	4350	4905	4440	4905	4485	4485
43	4820	7325	4303	4926	4335	4922	4375	4905	4485	4946	4565	4946	4625	4625
44	4947	7657	4422	4995	4455	4988	4490	4946	4625	4987	4745	4987	4765	4765
45	5071	8000	4541	5066	4575	5088	4615	5000	4800	5035	4900	5035	4985	4985
46	5192	8355	4660	5143	4700	5171	4760	5100	4950	5171	5045	5171	5085	5085
47	5311	8722	4779	5222	4815	5260	4875	5200	5100	5260	5165	5260	5185	5185
48	5428	9101	4898	5303	4930	5349	4995	5300	5200	5349	5285	5349	5305	5305
49	5543	9492	5017	5386	5045	5438	5110	5400	5300	5499	5400	5499	5425	5425
50	5656	9895	5136	5471	5175	5528	5230	5500	5400	5599	5500	5599	5545	5545
51	5767	10310	5255	5558	5300	5619	5355	5600	5500	5699	5600	5699	5655	5655
52	5876	10737	5374	5647	5425	5710	5480	5700	5600	5800	5700	5800	5765	5765
53	5983	11176	5493	5738	5550	5802	5595	5800	5700	5900	5800	5900	5870	5870
54	6088	11627	5612	5831	5675	5895	5710	5900	5800	6000	5900	6000	5935	5935
55	6191	12090	5731	5926	5800	5988	5825	6000	5900	6100	6000	6100	6000	6000
56	6292	12565	5850	6023	5925	6082	5950	6100	6000	6200	6100	6200	6065	6065
57	6391	13052	5969	6122	6050	6177	6075	6200	6100	6300	6200	6300	6130	6130
58	6488	13551	6088	6223	6175	6274	6200	6300	6200	6400	6300	6400	6195	6195
59	6583	14062	6207	6326	6300	6372	6325	6400	6300	6500	6400	6500	6260	6260
60	6676	14585	6326	6431	6425	6471	6450	6500	6400	6600	6500	6600	6325	6325

TABLE VI (continued)
SINES, COSINES, TANGENTS, COTANGENTS (continued)

deg.	sin 0'	tan 0'	sin 10'	tan 10'	sin 20'	tan 20'	sin 30'	tan 30'	sin 40'	tan 40'	sin 50'	tan 50'	deg.
46	7193	1.0355	7214	1.0416	7234	1.0477	7254	1.0533	7274	1.0599	7294	1.0661	43
47	314	.0724	333	.0786	353	.0850	373	.0913	392	.0977	412	.1041	42
48	431	.1106	451	.1171	470	.1237	490	.1303	509	.1369	528	.1436	41
49	547	.1504	566	.1571	585	.1640	604	.1708	623	.1778	642	.1847	40
										1.2203			
50	660	1.1918	7679	1.1988	7698	1.2059	7716	1.2131	7735	.2647	7753	1.2276	39
51	771	.2349	790	.2423	808	.2497	826	.2572	844	.3111	862	.2723	38
52	880	.2799	898	.2876	916	.2954	934	.3032	951	.3597	969	.3190	37
53	986	.3270	8004	.3351	8021	.3452	8039	.3514	8056	.4106	8073	.3680	36
54	8090	.3764	107	.3848	124	.3934	141	.4019	158	.4641	175	.4193	35
55	192	.4281	208	.4370	225	.4460	241	.4550	258	.5204	274	.4733	34
56	290	.4826	307	.4919	323	.5013	339	.5108	355	.5798	371	.5301	33
57	387	.5399	403	.5497	418	.5597	434	.5697	450	.6426	465	.5900	32
58	480	.6003	496	.6107	511	.6212	526	.6319	542	.7090	557	.6534	31
59	572	.6643	587	.6753	601	.6864	616	.6977	631		646	.7205	30
60	660	1.7321	8675	1.7437	8689	1.7556	8704	1.7675	8718	1.7797	8732	1.7917	29
61	746	.8040	760	.8165	774	.8291	788	.8418	802	.8546	816	.8676	28
62	829	.8807	843	.8940	857	.9074	870	.9210	884	.9347	897	.9486	27
63	910	.9626	923	.9768	936	.9912	949	2.0057	962	2.0204	975	2.0353	26
64	988	2.0503	9001	2.0655	9013	2.0809	9026	.0965	9038	.1123	9051	.1283	25
65	9063	.1445	075	.1609	088	.1775	100	.1943	112	.2113	124	.2286	24
66	135	.2460	147	.2637	159	.2817	171	.2998	182	.3183	194	.3369	23
67	205	.3559	216	.3750	228	.3945	239	.4142	250	.4342	261	.4545	22
68	272	.4751	283	.4960	293	.5172	304	.5386	315	.5605	325	.5826	21
69	336	.6051	346	.6279	356	.6511	367	.6746	377	.6985	387	.7228	20
70	397	2.7475	9407	2.7725	9417	2.7980	9426	2.8239	9436	2.8502	9446	2.8770	19
71	455	.9042	465	.9319	474	.9600	483	.9887	492	3.0178	502	3.0475	18
72	511	3.0777	520	3.1084	528	3.1397	537	3.1716	546	.2041	555	.2371	17
73	563	.2709	572	.3052	580	.3402	588	.3759	596	.4124	605	.4495	16
74	613	.4874	621	.5261	628	.5656	636	.6059	644	.6470	652	.6891	15
75	659	.7321	667	.7760	674	.8208	681	.8657	689	.9136	696	.9617	14
76	703	4.0108	710	4.0611	717	4.1126	724	4.1653	730	4.2193	737	4.2747	13
77	744	.3315	750	.3897	757	.4494	763	.5107	769	.5736	775	.6382	12
78	781	.7046	787	.7729	793	.8430	799	.9152	805	.9894	811	5.0658	11
79	816	.1446	822	5.2257	827	5.3093	833	5.3955	838	5.4845	843	.5764	10
80	9848	5.6713	9853	5.7694	9858	5.8708	9863	5.9758	9868	6.0844	9872	6.1970	9
81	877	6.3138	881	6.4348	886	6.5606	890	6.6912	894	.8269	899	.9682	8
82	903	7.1154	907	7.2687	911	7.4287	914	7.5958	918	7.7704	922	7.9530	7
83	925	8.1443	929	8.3450	932	8.5555	936	8.7769	939	9.0098	942	9.2553	6
84	945	9.5144	948	9.7832	951	10.078	954	10.385	957	10.711	959	11.059	5
85	962	11.4300	964	11.826	967	12.250	969	12.706	971	13.197	974	13.727	4
86	976	14.300	978	14.924	980	15.605	981	16.350	983	17.169	985	18.075	3
87	986	19.081	988	20.206	989	21.470	990	22.903	992	24.542	993	26.432	2
88	994	28.636	995	31.242	996	34.368	997	38.189	997	42.964	998	49.104	1
89	9998	57.290	9999	68.750	9999	85.940	9999	114.58	1.000	171.88	1.000	343.77	0
60'	60'	50'	50'	40'	40'	30'	30'	20'	20'	30'	10'	10'	
cos	cot	cos	cot	cos	cot	cos	cot	cos	cot	cos	cot		

TABLE VII
RODS IN FEET AND INCHES

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

TABLE VIII
LINKS IN FEET AND INCHES

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

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°			
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.9	97.577	+			
10'	58.34	.297	5° C.	10'	560.11	27.313	5° C.	10'	1070.6	99.155	5° C.			
20'	66.67	.388		20'	568.53	28.137		20'	1079.2	100.75		20'	1079.2	100.75
30'	75.01	.491		30'	576.95	28.974		30'	1087.8	102.35		30'	1087.8	102.35
40'	83.34	.606		40'	585.36	29.824		40'	1096.4	103.97		40'	1096.4	103.97
50'	91.68	.733		50'	593.79	30.686		50'	1105.1	105.60		50'	1105.1	105.60
2°	100.01	.873	.001	12°	602.21	31.561	.006	22°	1113.7	107.24	.013			
10'	108.35	1.024		10'	610.64	32.447		10'	1122.4	108.90				
20'	116.68	1.188		20'	619.07	33.347		20'	1131.0	110.57		20'	1131.0	110.57
30'	125.02	1.364		30'	627.50	34.259		30'	1139.7	112.25		30'	1139.7	112.25
40'	133.36	1.552		40'	635.93	35.183		40'	1148.4	113.95		40'	1148.4	113.95
50'	141.70	1.752		50'	644.37	36.120		50'	1157.0	115.66		50'	1157.0	115.66
3°	150.04	1.964	10° C.	13°	652.81	37.070	10° C.	23°	1165.7	117.38	10° C.			
10'	158.38	2.188	T	10'	661.25	38.031	T	10'	1174.4	119.12	T			
20'	166.72	2.425		20'	669.70	39.006		20'	1183.1	120.87		20'	1183.1	120.87
30'	175.06	2.674		30'	678.15	39.993		30'	1191.8	122.63		30'	1191.8	122.63
40'	183.40	2.934		40'	686.60	40.992		40'	1200.5	124.41		40'	1200.5	124.41
50'	191.74	3.207		50'	695.06	42.004		50'	1209.2	126.20		50'	1209.2	126.20
4°	200.08	3.492	.003	14°	703.51	43.029	.011	24°	1217.9	128.00	.025			
10'	208.43	3.790		10'	711.97	44.066		10'	1226.6	129.82				
20'	216.77	4.099		20'	720.44	45.116		20'	1235.3	131.65		20'	1235.3	131.65
30'	225.12	4.421		30'	728.90	46.178		30'	1244.0	133.50		30'	1244.0	133.50
40'	233.47	4.755		40'	737.37	47.253		40'	1252.8	135.35		40'	1252.8	135.35
50'	241.81	5.100		50'	745.85	48.341		50'	1261.5	137.23		50'	1261.5	137.23
5°	250.16	5.459	T	15°	754.32	49.441	T	25°	1270.2	139.11	T			
10'	258.51	5.829	.09	10'	762.80	50.554	.19	10'	1279.0	141.01	.29			
20'	266.86	6.211		20'	771.29	51.679		20'	1287.7	142.93		20'	1287.7	142.93
30'	275.21	6.606		30'	779.77	52.818		30'	1296.5	144.85		30'	1296.5	144.85
40'	283.57	7.013		40'	788.26	53.969		40'	1305.3	146.79		40'	1305.3	146.79
50'	291.92	7.432		50'	796.75	55.132		50'	1314.0	148.75		50'	1314.0	148.75
6°	300.28	7.863	.004	16°	805.25	56.309	.017	26°	1322.8	150.71	.038			
10'	308.64	8.307		10'	813.75	57.498		10'	1331.6	152.69				
20'	316.99	8.762		20'	822.25	58.699		20'	1340.4	154.69		20'	1340.4	154.69
30'	325.35	9.230		30'	830.76	59.914		30'	1349.2	156.70		30'	1349.2	156.70
40'	333.71	9.710		40'	839.27	61.141		40'	1358.0	158.72		40'	1358.0	158.72
50'	342.08	10.202		50'	847.78	62.381		50'	1366.8	160.76		50'	1366.8	160.76
7°	350.44	10.707	T	17°	856.30	63.634	T	27°	1375.6	162.81	T			
10'	358.81	11.224	.13	10'	864.82	64.900	.26	10'	1384.4	164.86	.39			
20'	367.17	11.753		20'	873.35	66.178		20'	1393.2	166.95		20'	1393.2	166.95
30'	375.54	12.294		30'	881.88	67.470		30'	1402.0	169.04		30'	1402.0	169.04
40'	383.91	12.847		40'	890.41	68.774		40'	1410.9	171.15		40'	1410.9	171.15
50'	392.28	13.413		50'	898.95	70.091		50'	1419.7	173.27		50'	1419.7	173.27
8°	400.66	13.991	.006	18°	907.49	71.421	.022	28°	1428.6	175.41	.051			
10'	409.03	14.582	T	10'	916.03	72.764	T	10'	1437.4	177.55	T			
20'	417.41	15.184		20'	924.58	74.119		20'	1446.3	179.72		20'	1446.3	179.72
30'	425.79	15.799		30'	933.13	75.488		30'	1455.1	181.89		30'	1455.1	181.89
40'	434.17	16.426		40'	941.69	76.869		40'	1464.0	184.08		40'	1464.0	184.08
50'	442.55	17.065		50'	950.25	78.264		50'	1472.9	186.29		50'	1472.9	186.29
9°	450.93	17.717	.007	19°	958.81	79.671	.028	29°	1481.8	188.51	.065			
10'	459.32	18.381		10'	967.38	81.092		10'	1490.7	190.74				
20'	467.71	19.058		20'	975.96	82.525		20'	1499.6	192.99		20'	1499.6	192.99
30'	476.10	19.746		30'	984.53	83.972		30'	1508.5	195.25		30'	1508.5	195.25
40'	484.49	20.447		40'	993.12	85.431		40'	1517.4	197.53		40'	1517.4	197.53
50'	492.88	21.161		50'	1001.7	86.904		50'	1526.3	199.82		50'	1526.3	199.82
10°	501.28	21.887	30° C.	20°	1010.3	88.389	30° C.	30°	1535.3	202.12	30° C.			
10'	509.68	22.624	T	10'	1018.9	89.888	T	10'	1544.2	204.44	T			
20'	518.08	23.375		20'	1027.5	91.399		20'	1553.1	206.77		20'	1553.1	206.77
30'	526.48	24.138		30'	1036.1	92.924		30'	1562.1	209.12		30'	1562.1	209.12
40'	534.89	24.913		40'	1044.7	94.462		40'	1571.0	211.48		40'	1571.0	211.48
50'	543.29	25.700		50'	1053.3	96.013		50'	1580.0	213.86		50'	1580.0	213.86

T = R tan 1/2 I E = R exsec 1/2 I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=40°	I	T	E	I=50°	I	T	E	I=60°			
31°	1589.0	216.3	+	41°	2142.2	387.4	+	51°	2732.9	618.4	+			
10'	1598.0	218.7	5° C.	10'	2151.7	390.7	5° C.	10'	2743.1	622.8	5° C.			
20'	1606.9	221.1		20'	2161.2	394.1		20'	2753.4	627.2		20'	2753.4	627.2
30'	1615.9	223.5		30'	2170.8	397.4		30'	2763.7	631.7		30'	2763.7	631.7
40'	1624.9	226.0		40'	2180.3	400.8		40'	2773.9	636.2		40'	2773.9	636.2
50'	1633.9	228.4		50'	2189.9	404.2		50'	2784.2	640.7		50'	2784.2	640.7
32°	1643.0	230.9	.023	42°	2199.4	407.6	.037	52°	2794.5	645.2	.056			
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		20'	2815.2	654.3
30'	1670.0	238.4		30'	2228.1	418.0		30'	2825.6	658.8		30'	2825.6	658.8
40'	1679.1	241.0		40'	2237.7	421.4		40'	2835.9	663.4		40'	2835.9	663.4
50'	1688.1	243.5		50'	2247.3	425.0		50'	2846.3	668.0		50'	2846.3	668.0
33°	1697.2	246.1	10° C.	43°	2257.0	428.5	10° C.	53°	2856.7	672.7	10° C.			
10'	1706.3	248.7	T	10'	2266.6	432.0	T	10'	2867.1	677.3	T			
20'	1715.3	251.3		20'	2276.2	435.6		20'	2877.5	682.0		20'	2877.5	682.0
30'	1724.4	253.9		30'	2285.9	439.2		30'	2888.0	686.7		30'	2888.0	686.7
40'	1733.5	256.5		40'	2295.6	442.8		40'	2898.4	691.4		40'	2898.4	691.4
50'	1742.6	259.1		50'	2305.2	446.4		50'	2908.9	696.1		50'	2908.9	696.1
34°	1751.7	261.8	.046	44°	2314.9	450.0	.075	54°	2919.4	700.9	.112			
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		20'	2940.4	710.5
30'	1779.1	269.9		30'	2344.1	461.0		30'	2951.0	715.3		30'	2951.0	715.3
40'	1788.2	272.6		40'	2353.8	464.6		40'	2961.5	720.1		40'	2961.5	720.1
50'	1797.4	275.3		50'	2363.5	468.4		50'	2972.1	725.0		50'	2972.1	725.0
35°	1806.6	278.1	15° C.	45°	2373.3	472.1	15° C.	55°	2982.7	729.9	15° C.			
10'	1815.7	280.8	T	10'	2383.1	475.8	T	10'	2993.3	734.8	T			
20'	1824.9	283.6		20'	2392.8	479.6		20'	3003.9	739.7		20'	3003.9	739.7
30'	1834.1	286.4		30'	2402.6	483.4		30'	3014.5	744.6		30'	3014.5	744.6
40'	1843.3	289.2		40'	2412.4	487.2		40'	3025.2	749.6		40'	3025.2	749.6
50'	1852.5	292.0		50'	2422.3	491.0		50'	3035.8	754.6		50'	3035.8	754.6
36°	1861.7	294.9	.070	46°	2432.1	494.8	.116	56°	3046.5	759.6	.168			
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		20'	3067.9	769.7
30'	1889.4	303.5		30'	2461.7	506.4		30'	3078.7	774.7		30'	3078.7	774.7
40'	1898.6	306.4		40'	2471.5	510.3		40'	3089.4	779.8		40'	3089.4	779.8
50'	1907.9	309.3		50'	2481.4	514.3		50'	3100.2	784.9		50'	3100.2	784.9
37°	1917.1	312.2	20° C.	47°	2491.3	518.2	20° C.	57°	3110.9	790.1	20° C.			
10'	1926.4	315.2	T	10'	2501.2	522.2	T	10'	3121.7	795.2	T			
20'	1935.7	318.1		20'	2511.2	526.1		20'	3132.6	800.4		20'	3132.6	800.4

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2	+	71°	4086.9	1308.2	+	81°	4893.6	1805.3	+
10'	3386.3	925.9	5° C.	10'	4099.5	1315.6	5° C.	10'	4908.0	1814.7	5° C.
20'	3397.5	931.6	T	20'	4112.1	1322.9	T	20'	4922.5	1824.1	T
30'	3408.8	937.3	.25	30'	4124.8	1330.3	.30	30'	4937.0	1833.6	.36
40'	3420.1	943.1	E	40'	4137.4	1337.7	E	40'	4951.5	1843.1	E
50'	3431.4	948.9	.080	50'	4150.1	1345.1	.110	50'	4966.1	1852.6	.149
62°	3442.7	954.8	10° C.	72°	4162.8	1352.6	10° C.	82°	4980.7	1862.2	10° C.
10'	3454.1	960.6	T	10'	4175.6	1360.1	T	10'	4995.4	1871.8	T
20'	3465.4	966.5	.51	20'	4188.5	1367.6	.61	20'	5010.0	1881.5	.72
30'	3476.8	972.4	E	30'	4201.2	1375.2	E	30'	5024.8	1891.2	E
40'	3488.3	978.3	.159	40'	4214.0	1382.8	.220	40'	5039.5	1900.9	.299
50'	3499.7	984.3	15° C.	50'	4226.8	1390.4	15° C.	50'	5054.3	1910.7	15° C.
63°	3511.1	990.2	T	73°	4239.7	1398.0	T	83°	5069.2	1920.5	T
10'	3522.6	996.2	.76	10'	4252.6	1405.7	.91	10'	5084.0	1930.4	.91
20'	3534.1	1002.3	E	20'	4265.6	1413.5	E	20'	5099.0	1940.3	E
30'	3545.6	1008.3	.240	30'	4278.5	1421.2	.332	30'	5113.9	1950.3	.450
40'	3557.2	1014.4	T	40'	4291.5	1429.0	T	40'	5128.8	1960.2	T
50'	3568.7	1020.5	15° C.	50'	4304.6	1436.8	15° C.	50'	5143.9	1970.3	15° C.
64°	3580.3	1026.6	20° C.	74°	4317.6	1444.6	20° C.	84°	5159.0	1980.4	20° C.
10'	3591.9	1032.8	T	10'	4330.7	1452.5	T	10'	5174.1	1990.5	T
20'	3603.5	1039.0	.76	20'	4343.8	1460.4	.91	20'	5189.3	2000.6	.91
30'	3615.1	1045.2	E	30'	4356.9	1468.4	E	30'	5204.4	2010.8	E
40'	3626.8	1051.4	.240	40'	4370.1	1476.4	.332	40'	5219.7	2021.1	.450
50'	3638.5	1057.7	15° C.	50'	4383.3	1484.4	15° C.	50'	5234.9	2031.4	15° C.
65°	3650.2	1063.9	20° C.	75°	4396.5	1492.4	20° C.	85°	5250.3	2041.7	20° C.
10'	3661.9	1070.2	T	10'	4409.8	1500.5	T	10'	5265.6	2052.1	T
20'	3673.7	1076.6	.76	20'	4423.1	1508.6	.91	20'	5281.0	2062.5	.91
30'	3685.4	1082.9	E	30'	4436.4	1516.7	E	30'	5296.4	2073.0	E
40'	3697.2	1089.3	.240	40'	4449.7	1524.9	.332	40'	5311.9	2083.5	.450
50'	3709.0	1095.7	15° C.	50'	4463.1	1533.1	15° C.	50'	5327.4	2094.1	15° C.
66°	3720.9	1102.2	20° C.	76°	4476.5	1541.4	20° C.	86°	5343.0	2104.7	20° C.
10'	3732.7	1108.6	T	10'	4489.9	1549.7	T	10'	5358.6	2115.3	T
20'	3744.6	1115.1	.76	20'	4503.4	1558.0	.91	20'	5374.2	2126.0	.91
30'	3756.5	1121.7	E	30'	4516.9	1566.3	E	30'	5389.9	2136.7	E
40'	3768.5	1128.2	.240	40'	4530.4	1574.7	.332	40'	5405.6	2147.5	.450
50'	3780.4	1134.8	15° C.	50'	4544.0	1583.1	15° C.	50'	5421.4	2158.4	15° C.
67°	3792.4	1141.4	20° C.	77°	4557.6	1591.6	20° C.	87°	5437.2	2169.2	20° C.
10'	3804.4	1148.0	T	10'	4571.2	1600.1	T	10'	5453.1	2180.2	T
20'	3816.4	1154.7	.76	20'	4584.8	1608.6	.91	20'	5469.0	2191.1	.91
30'	3828.4	1161.3	E	30'	4598.5	1617.1	E	30'	5484.9	2202.2	E
40'	3840.5	1168.1	.240	40'	4612.2	1625.7	.332	40'	5500.9	2213.2	.450
50'	3852.6	1174.8	15° C.	50'	4626.0	1634.4	15° C.	50'	5517.0	2224.3	15° C.
68°	3864.7	1181.6	20° C.	78°	4639.8	1643.0	20° C.	88°	5533.1	2235.5	20° C.
10'	3876.8	1188.4	T	10'	4653.6	1651.7	T	10'	5549.2	2246.7	T
20'	3889.0	1195.2	.76	20'	4667.4	1660.5	.91	20'	5565.4	2258.0	.91
30'	3901.2	1202.0	E	30'	4681.3	1669.2	E	30'	5581.6	2269.3	E
40'	3913.4	1208.9	.240	40'	4695.2	1678.1	.332	40'	5597.9	2280.6	.450
50'	3925.6	1215.8	15° C.	50'	4709.2	1686.9	15° C.	50'	5614.2	2292.0	15° C.
69°	3937.9	1222.7	20° C.	79°	4723.2	1695.8	20° C.	89°	5630.5	2303.5	20° C.
10'	3950.2	1229.7	T	10'	4737.2	1704.7	T	10'	5646.9	2315.0	T
20'	3962.5	1236.7	.76	20'	4751.2	1713.7	.91	20'	5663.4	2326.6	.91
30'	3974.8	1243.7	E	30'	4765.3	1722.7	E	30'	5679.9	2338.2	E
40'	3987.2	1250.8	.240	40'	4779.4	1731.7	.332	40'	5696.4	2349.8	.450
50'	3999.5	1257.9	15° C.	50'	4793.6	1740.8	15° C.	50'	5713.0	2361.5	15° C.
70°	4011.9	1265.0	20° C.	80°	4807.7	1749.9	20° C.	90°	5729.7	2373.3	20° C.
10'	4024.4	1272.1	T	10'	4822.0	1759.0	T	10'	5746.3	2385.1	T
20'	4036.8	1279.3	.76	20'	4836.2	1768.2	.91	20'	5763.1	2397.0	.91
30'	4049.3	1286.5	E	30'	4850.5	1777.4	E	30'	5779.9	2408.9	E
40'	4061.8	1293.6	.240	40'	4864.8	1786.7	.332	40'	5796.7	2420.9	.450
50'	4074.4	1300.9	15° C.	50'	4879.2	1796.0	15° C.	50'	5813.6	2432.9	15° C.

T = R tan ½ I

E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5830.5	2444.9	+	101°	6950.6	3278.1	+	111°	8336.7	4386.1	+
10'	5847.5	2457.1	5° C.	10'	6971.3	3294.1	5° C.	10'	8362.7	4407.6	5° C.
20'	5864.6	2469.3	T	20'	6992.0	3310.1	T	20'	8388.9	4429.2	T
30'	5881.7	2481.5	.43	30'	7012.7	3326.1	.51	30'	8415.1	4450.9	.62
40'	5898.8	2493.8	E	40'	7033.6	3342.3	E	40'	8441.5	4472.7	E
50'	5916.0	2506.1	.200	50'	7054.5	3358.5	.268	50'	8468.0	4494.6	.360
92°	5933.2	2518.5	10° C.	102°	7075.5	3374.9	10° C.	112°	8494.6	4516.6	10° C.
10'	5950.5	2531.0	T	10'	7096.6	3391.2	T	10'	8521.3	4538.8	T
20'	5967.9	2543.5	.51	20'	7117.8	3407.7	.61	20'	8548.1	4561.1	.62
30'	5985.3	2556.0	E	30'	7139.0	3424.3	E	30'	8575.0	4583.4	E
40'	6002.7	2568.6	.200	40'	7160.3	3440.9	.268	40'	8602.1	4606.0	.360
50'	6020.2	2581.3	10° C.	50'	7181.7	3457.6	10° C.	50'	8629.3	4628.6	10° C.
93°	6037.8	2594.0	10° C.	103°	7203.2	3474.4	10° C.	113°	8656.6	4651.3	10° C.
10'	6055.4	2606.8	T	10'	7224.7	3491.3	T	10'	8684.0	4674.2	T
20'	6073.1	2619.7	.86	20'	7246.3	3508.2	.93	20'	8711.5	4697.2	.93
30'	6090.8	2632.6	E	30'	7268.0	3525.2	E	30'	8739.2	4720.3	E
40'	6108.6	2645.5	.401	40'	7289.8	3542.4	.536	40'	8767.0	4743.6	.536
50'	6126.4	2658.5	15° C.	50'	7311.7	3559.6	15° C.	50'	8794.9	4766.9	15° C.
94°	6144.3	2671.6	15° C.	104°	7333.6	3576.8	15° C.	114°	8822.9	4790.4	15° C.
10'	6162.2	2684.7	T	10'	7355.6	3594.2	T	10'	8851.0	4814.1	T
20'	6180.2	2697.9	.86	20'	7377.8	3611.7	.93	20'	8879.3	4837.8	.93
30'	6198.3	2711.2	E	30'	7399.9	3629.2	E	30'	8907.7	4861.7	E
40'	6216.4	2724.5	.401	40'	7422.2	3646.8	.536	40'	8936.3	4885.7	.536
50'	6234.6	2737.9	15° C.	50'	7444.6	3664.5	15° C.	50'	8965.0	4909.9	15° C.
95°	6252.8	2751.3	15° C.	105°	7467.0	3682.3	15° C.	115°	8993.8	4934.1	15° C.
10'	6271.1	2764.8	T	10'	7489.6	3700.2	T	10'	9022.7	4958.6	T
20'	6289.4	2778.3	.86	20'	7512.2	3718.2	.93	20'	9051.7	4983.1	.93
30'	6307.9	2792.0	E	30'	7534.9	3736.2	E	30'	9080.9	5007.8	E
40'	6326.3	2805.6	.401	40'	7557.7	3754.4	.536	40'	9110.3	5032.6	.536
50'	6344.8	2819.4	15° C.	50'	7580.5	3772.6	15° C.	50'	9139.8	5057.6	15° C.
96°	6363.4	2833.2	15° C.	106°	7603.5	3791.0	15° C.	116°	9169.4	5082.7	15° C.
10'	6382.1	2847.0	T	10'	7626.6	3809.4	T	10'	9199.1	5107.9	T
20'	6400.8	2861.0	.86	20'	7649.7	3827.9	.93	20'	9229.0	5133.3	.93
30'	6419.5	2875.0	E	30'	7672.9	3846.5	E	30'	9259.0	5158.8	E
40'	6438.4	2889.0	.401	40'	7696.3	3865.2	.536	40'	9289.2	5184.5	.536
50'	6457.3	2903.1	15° C.	50'	7719.7	3884.0	15° C.	50'	9319.5	5210.3	15° C.
97°	6476.2	2917.3	15° C.	107°	7743.2	3902.9	15° C.	117°	9349.9	5236.2	15° C.
10'	6495.2	2931.6	T	10'	7766.8	3921.9	T	10'	9380.5	5262.3	T
20'	6514.3	2945.9	.86	20'	7790.5	3940.9	.93	20'	9411.3	5288.6	.93
30'	6533.4	2960.3	E	30'	7814.3	3960.1	E	30'	9442.2	5315.0	E
40'	6552.6	2974.7	.401	40'	7838.1	3979.4	.536	40'	9473.2	5341.5	.536
50'	6571.9	2989.2	15° C.	50'	7862.1	3998.7	15° C.	50'	9504.4	5368.2	15° C.
98°	6591.2	3003.8									

TABLE X.
MIDDLE ORDINATES OF RAILS
Length of Rail (feet)

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

TABLE XI.
SHORT RADIUS CURVES

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

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

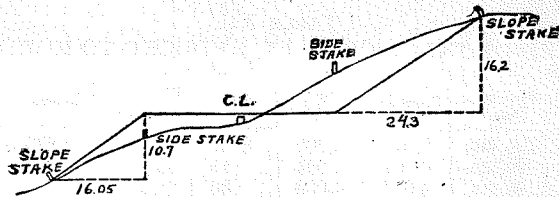
TABLE XII.
INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

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

TABLE XIII.
MINUTES IN DECIMALS OF A DEGREE.

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

C
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4-20
4-40
5
6
7



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0 30	0 45	0 60	0 75	0 90	1 05	1 20	1 35	0
1	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70	2 85	1
2	3 00	3 15	3 30	3 45	3 60	3 75	3 90	4 05	4 20	4 35	2
3	4 50	4 65	4 80	4 95	5 10	5 25	5 40	5 55	5 70	5 85	3
4	6 00	6 15	6 30	6 45	6 60	6 75	6 90	7 05	7 20	7 35	4
5	7 50	7 65	7 80	7 95	8 10	8 25	8 40	8 55	8 70	8 85	5
6	9 00	9 15	9 30	9 45	9 60	9 75	9 90	10 05	10 20	10 35	6
7	10 50	10 65	10 80	10 95	11 10	11 25	11 40	11 55	11 70	11 85	7
8	12 00	12 15	12 30	12 45	12 60	12 75	12 90	13 05	13 20	13 35	8
9	13 50	13 65	13 80	13 95	14 10	14 25	14 40	14 55	14 70	14 85	9
10	15 00	15 15	15 30	15 45	15 60	15 75	15 90	16 05	16 20	16 35	10
11	16 50	16 65	16 80	16 95	17 10	17 25	17 40	17 55	17 70	17 85	11
12	18 00	18 15	18 30	18 45	18 60	18 75	18 90	19 05	19 20	19 35	12
13	19 50	19 65	19 80	19 95	20 10	20 25	20 40	20 55	20 70	20 85	13
14	21 00	21 15	21 30	21 45	21 60	21 75	21 90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23 10	23 25	23 40	23 55	23 70	23 85	15
16	24 00	24 15	24 30	24 45	24 60	24 75	24 90	25 05	25 20	25 35	16
17	25 50	25 65	25 80	25 95	26 10	26 25	26 40	26 55	26 70	26 85	17
18	27 00	27 15	27 30	27 45	27 60	27 75	27 90	28 05	28 20	28 35	18
19	28 50	28 65	28 80	28 95	29 10	29 25	29 40	29 55	29 70	29 85	19
20	30 00	30 15	30 30	30 45	30 60	30 75	30 90	31 05	31 20	31 35	20
21	31 50	31 65	31 80	31 95	32 10	32 25	32 40	32 55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33 60	33 75	33 90	34 05	34 20	34 35	22
23	34 50	34 65	34 80	34 95	35 10	35 25	35 40	35 55	35 70	35 85	23
24	36 00	36 15	36 30	36 45	36 60	36 75	36 90	37 05	37 20	37 35	24
25	37 50	37 65	37 80	37 95	38 10	38 25	38 40	38 55	38 70	38 85	25
26	39 00	39 15	39 30	39 45	39 60	39 75	39 90	40 05	40 20	40 35	26
27	40 50	40 65	40 80	40 95	41 10	41 25	41 40	41 55	41 70	41 85	27
28	42 00	42 15	42 30	42 45	42 60	42 75	42 90	43 05	43 20	43 35	28
29	43 50	43 65	43 80	43 95	44 10	44 25	44 40	44 55	44 70	44 85	29
30	45 00	45 15	45 30	45 45	45 60	45 75	45 90	46 05	46 20	46 35	30
31	46 50	46 65	46 80	46 95	47 10	47 25	47 40	47 55	47 70	47 85	31
32	48 00	48 15	48 30	48 45	48 60	48 75	48 90	49 05	49 20	49 35	32
33	49 50	49 65	49 80	49 95	50 10	50 25	50 40	50 55	50 70	50 85	33
34	51 00	51 15	51 30	51 45	51 60	51 75	51 90	52 05	52 20	52 35	34
35	52 50	52 65	52 80	52 95	53 10	53 25	53 40	53 55	53 70	53 85	35
36	54 00	54 15	54 30	54 45	54 60	54 75	54 90	55 05	55 20	55 35	36
37	55 50	55 65	55 80	55 95	56 10	56 25	56 40	56 55	56 70	56 85	37
38	57 00	57 15	57 30	57 45	57 60	57 75	57 90	58 05	58 20	58 35	38
39	58 50	58 65	58 80	58 95	59 10	59 25	59 40	59 55	59 70	59 85	39
40	60 00	60 15	60 30	60 45	60 60	60 75	60 90	61 05	61 20	61 35	40
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.



Standard Engineer's Field Book

Description

	Size	Rulings
No. 1307	7 1/4 x 4 5/8	"Level"
No. 1308	"	"Field"

Specify by Number, the Book desired

Made in U. S. A.

To find

Everett Tucker
Cardwell, Mo
1938 CCC cadet

4 + 68 T.L.

5 + 43 C.Y. R

2640
330

2970
230

3060
530

4290
330

4620
330

3465
2260

5720

Everett Tucker
Cardwell, Mo
1938 CCC cadet

4768 T.L.

5743 C.Y. R

2440
330

2970
330

3060
530

4290
330

4620
330

3465
2260
5720



101

101