BURTON ST.
Hubbard's Corners Easterly
of Jug St.

77

FIELD BOOK
360

KEUFFEL & ESSER CO.

DRAWING MATERIALS
AND
SURVEYING INSTRUMENTS.
NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROAD WAY FOR CROSS-SECTIONING.
ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.
FOR SINGLE TRACK EXCAVATION.

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

Calculated by Julion A. Hall, M. Am. Soc. C. E.

For Keith's Railroad Curve Tabels see end of book.

BURTON TWP.

T.H. 138
Hubbard's Corners Easterly & Jug St.
132

SEE HUBBARD RD. SEC.
B per CEI Co. survey
pasted in sheet pg 59

T.H. 302
Colony Lane (Proposed CH. #302) Pg 61

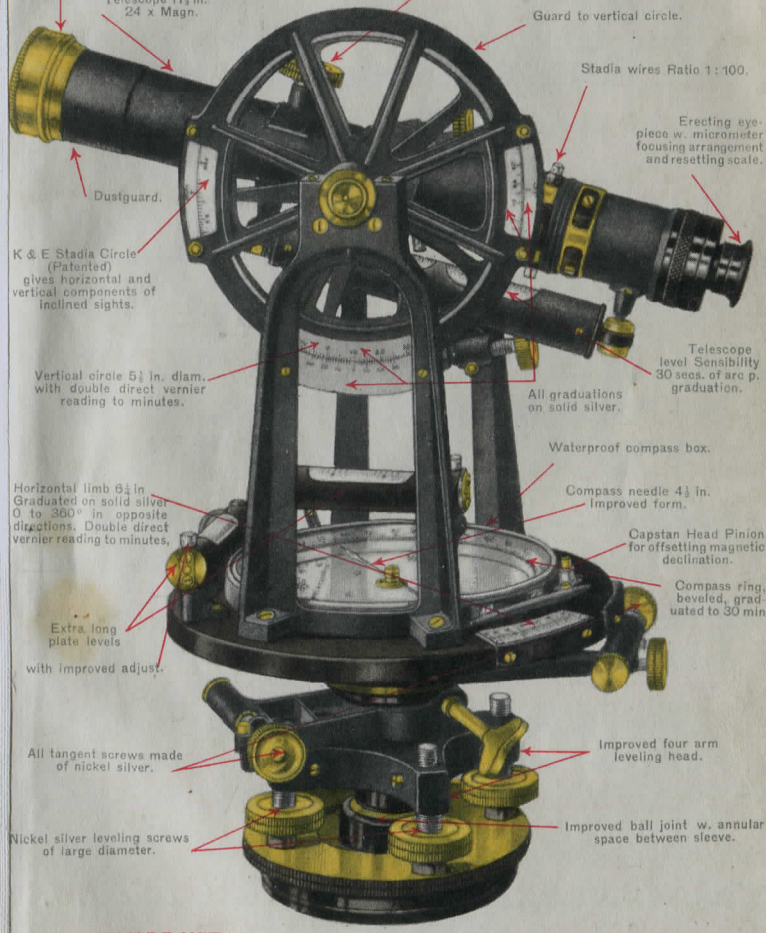
Jug Street CH 46 Pg 31

77

EXTRA FINE ENGINEERS' TRANSIT

No. 5060 S

KEUFFEL & ESSER CO., N.Y.



ALSO MADE WITH

INTERNAL FOCUSING TELESCOPE

PRACTICALLY DUST AND MOISTURE PROOF.

Jug. Street

Note: 2 pair of U. Dist. wire were placed about 18" underground and about 9' East or Rt of ℄ by the Ohio Bell Tel Co. Oct 29 1935

Drop leads across ditch:

Sta 1+13	Rt.
22+40	Lt.
42+30	Lt.

Note 2 pair of U. Dist wire were placed about 18" underground and about 9' West or Lt of ℄ by the Ohio Bell Tel Co. July 29, 1937.

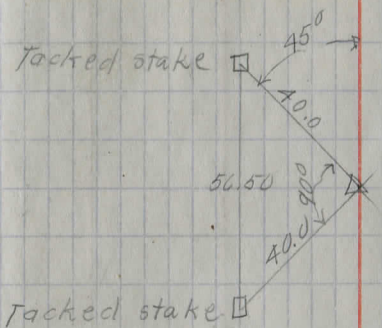
T.H. 138 - HUBBARD

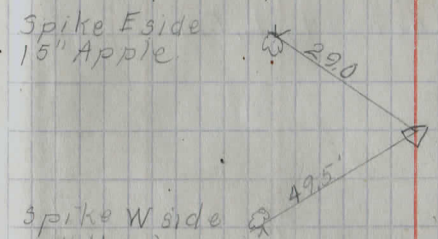
10+00 Δ = 0°00'

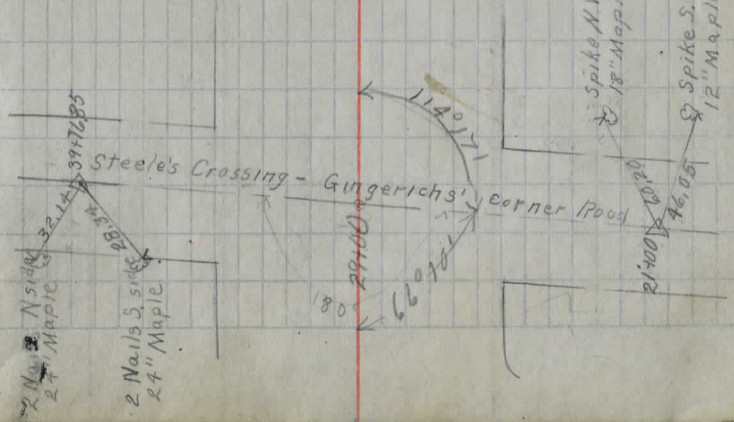
1+00 Δ = 0°00'

See pg. 55

0+00 ℄ Hubbard Rd. = Sta. 29+00 ℄ Steele's Crossing - Gingerichs Corner Rd.







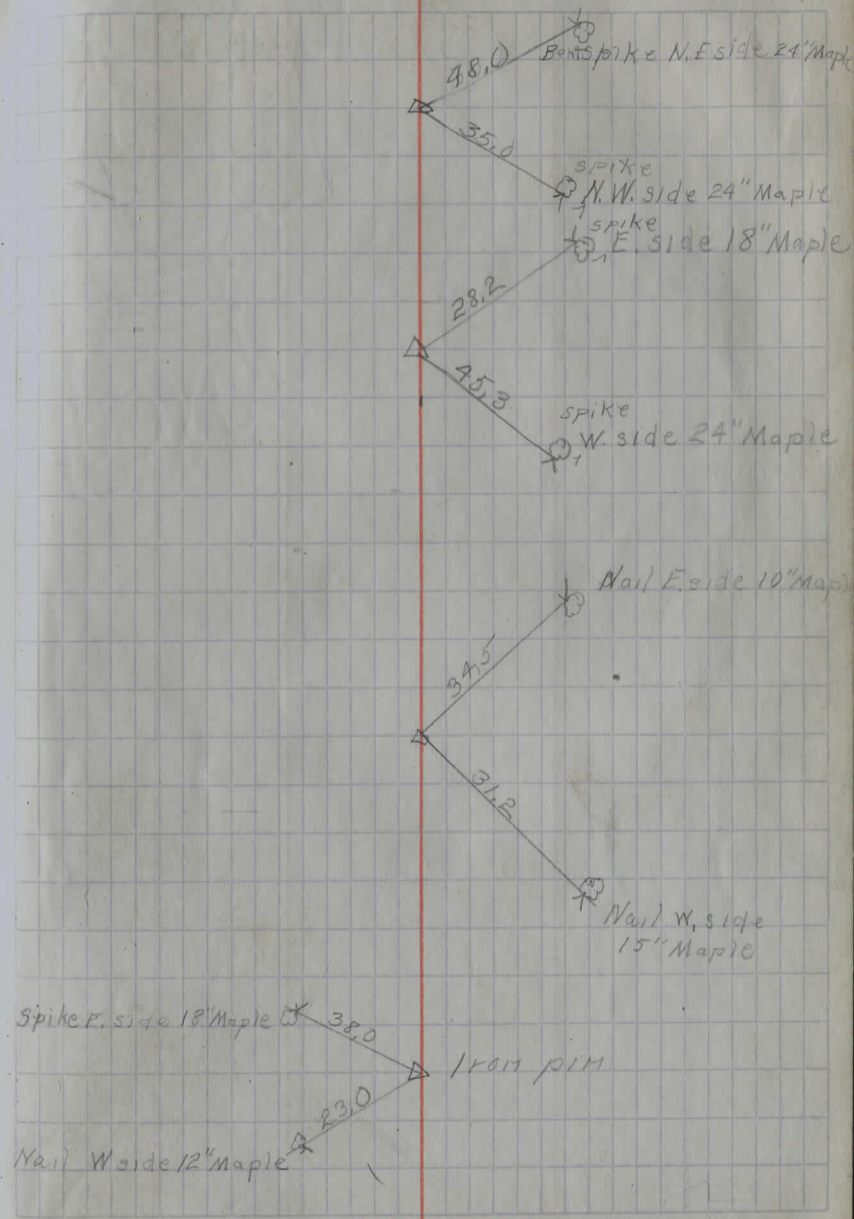
44+50 Δ = 0°00'

38+30 Δ = 0°00'

W. O. Marks Stopped April 25, 1930
D. Parks, F. Grau, E. Ashcraft, L. Ernst

30+00 Δ = 0°00'
± 100' W of W. line Graham

21+00 Δ = 0°00'



D. Parks, F. Ashcraft, L. Ernst, F. Grau

Stopped April 26, 1930

66+00 approximate ℄ of Jug 67

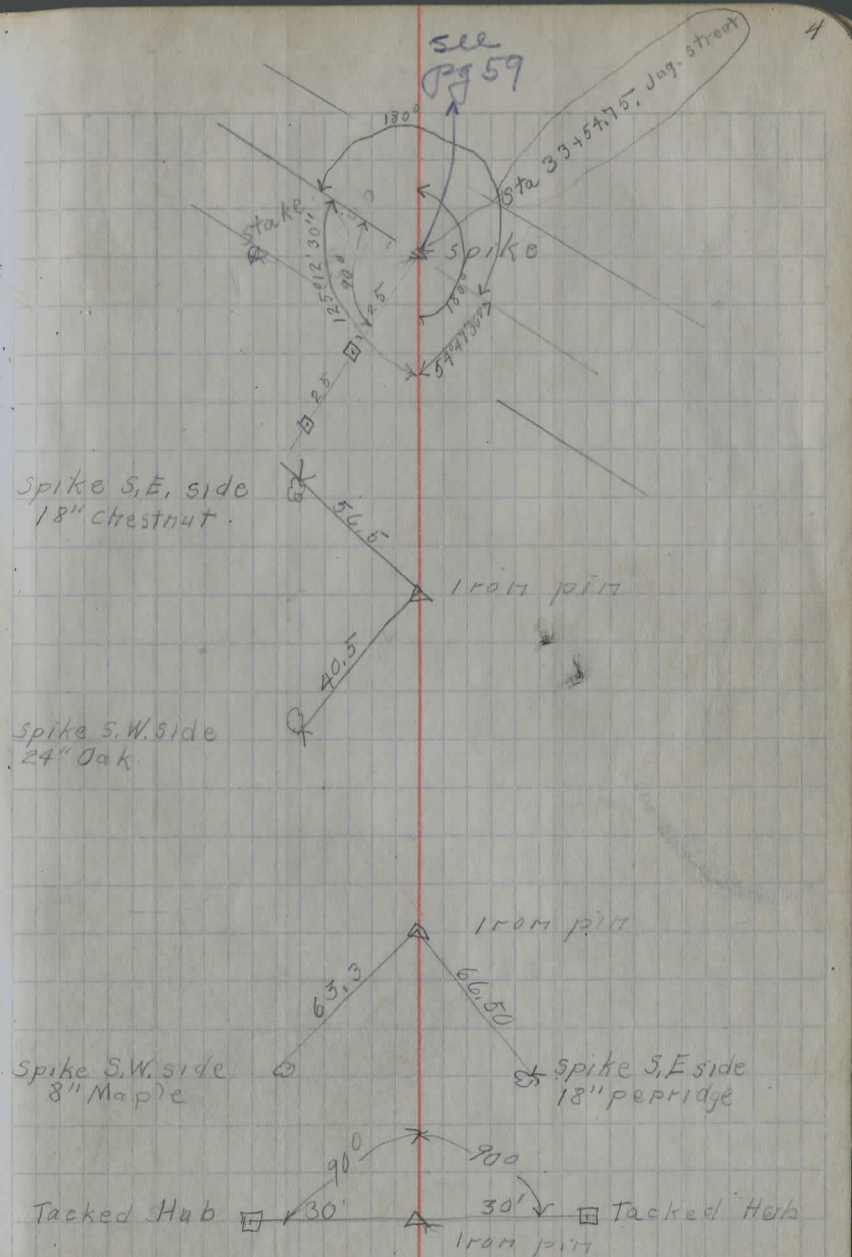
See Pg 55

58+00 △ = 0°00'

52+00 △ = 0°00'

47+00 △ = 0°00'

see Pg 59



@ 15 × 10+00

9+56 < 195 >

@ 15 × 9+00

8+02 < 19 >

@ 15 × 8+00

@ 15 × 7+00

6+57 < 19 >

@ 15 × 6+00

5+07 < 19 >

@ 15 × 5+00

4+25 12" Apple @ 21 >

@ 15 × 4+00

3+97 12" Apple @ 21 >

3+56 < 19 >

@ 15 × 3+00

2+07 < 19 >

@ 15 × 200

@ 23 >

@ 15 × 1+00

0+68 < 17.5 >

0+56 24" Maple @ 29 >

< 19 > 0+18

× 5+00

13+80 3X2 stone culvert good condition

@ 15 x 17+00

16+32 30" Maple ⟨ 39.5

16+25 ⟨ 75'

H

16+08 ⟨ 75'

@ 15 x 16+00

15+74 18" oak ⟨ 26.5 ⟩

15+66 ⟨ 20 ⟩

15+51 24" oak ⟨ 41 ⟩

@ 15 x 15+00

14+72 12" Mapple ⟨ 29 ⟩

14+84 8" Apple ⟨ 23 ⟩

14+15 20" Ash stump ⟨ 21 ⟩

17+01 ⟨ 20 ⟩

@ 15 x 14+00

1,7 1,7

10

4" Maple 13+84

10,7 x 9,5

13+54 7" Elm ⟨ 21 ⟩

13+00 30" Maple ⟨ 50 @ 15 x 13+00

12+63 30" Maple ⟨ 41.5 ⟩

12+57 ⟨ 19,5 ⟩

@ 15 x 12+00

11+28 x ⟨ 19

11+04 ⟨ 19,5 ⟩

@ 15 x 11+00

22+76 10" sectional iron pipe culvert

18+56 Completely Filled

9.5 5.5 End Broken

22+53 20 >

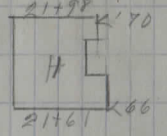
22+43 8" Elm ⊗ 27

22+29 10" Maple ⊗ 24 >

22+20 10" Maple ⊗ 83

22+10

22+00 ×15 ⊗



21+28 12" Maple ⊗ 23 >

21+15

21+03 20 >

⊗ 15 × 21+00

20+93 10" Maple ⊗ 22.5 >

20+37 12" Maple ⊗ 23 >

20+13 6" Ash ⊗ 24.5 >

⊗ 15 × 20+00

19+64 ×××× 26

19+64 20 >

⊗ 15 × 19+00

7.6 6.8 needs pipe

18+58 21 >

⊗ 15 × 18+00

17+55 ××× 23

17+02 19.5 >

27+16 3 x 2 stone Box good condition

28+27 30" Maple ⊙ 26.5 28+27 18" Maple
19.5 28+16
30 28+02 12" Maple
15 28+00
27+98 26.5
27+98 12" Maple
27+76 8" Maple 25
2.2 2.4
10.0 11.0
30.5 27+16 10 Hemlock
23 27+15 4" Maple
21 27+14
27+02 20
15 27+00
15 26+00
25+76 15" Maple 25
25+73 rock 22
25+51 21
25+11 15" Maple 24
15 25+00
23 24+70 10" Maple
24+42 10" Maple 25
24+12 15" Maple 24.5
24+02 20
15 24+00
25.5 10" Maple 23+88
23+47 16" Maple 24
15 23+00

@15 x 32+00

31+70

31+43 x 20 > < 29.5 @ 31+61 stump

Pl 31+26 x x < 26 >

< 29.5 @ 31+25 stump

@15 x 31+00

30+98 stump @ x 26 >

< 29.5 @ 30+90 stump

30+68 36" Maple @ x 26 > < 29.5 @ 30+60 stump

30+40 stump @ x 26 > < 29.5 @ 30+32 18" Maple stump

< 29.5 @ 30+17 10" Maple

30+09

@15 x 30+00 29.5 @ 31+01 15" Maple

29+96 x 26.5 > < 29.5 @ 29+88 12" Maple

29+78 16" Maple stump @ x 26 > < 29.5 @ 29+72 12" Maple

29+47 24" Maple stump @ x 26.5 > < 29.5 @ 29+61 12" Maple

< 29.5 @ 29+40 12" Maple

< 29.5 @ 29+26 12" Maple

29+18 18" Maple stump @ x 26 > < 29.5 @ 29+13 10" Maple

@15 x 29+00

29+45 100 H 29+20

< 29.5 @ 28+96 12" Maple

28+82 stump @ x 26.5 > < 25.5 28771 garage 28772

< 26.5 >

< 29.5 @ 28+69 12" Maple

< 28.5 28+60

28+55 29" Maple @ x 26 > < 29.5 @ 28+54 8" Maple

28+45 x CO >

⊗15 × 37+00 24 ⊗ 37+00 stump

< 24 ⊗ 36+88 24" Maple
< 24 ⊗ 36+64 stump
< 24 ⊗ 36+46 stump
< 24 ⊗ 36+30 stump
< 24 ⊗ 36+11 24" Maple

⊗15 × 36+00

35+94 < 20.5

< 24 ⊗ 35+94 stump
< 24 ⊗ 36+75 24" Maple
< 24 ⊗ 35+58 stump
< 24 ⊗ 35+37 24" Maple
< 24 ⊗ 35+22 stump
< 24 ⊗ 35+04 24" Maple

⊗15 × 35+00

< 24 ⊗ 34+86 stump
< 24 ⊗ 34+67 18" Maple
< 24 ⊗ 34+50 stump

34+45 < 20.5

< 24 ⊗ 34+32 18" Maple

34+45
B
34+01 < 100

⊗15 × 34+00

< 23 ⊗ 33+86 Edge of P.L. ?
< 24 ⊗ 33+62 stump
< 25.5 ⊗ 33+39 stump

⊗15 × 33+00

32+97 < 20.5

32+81
32+77 < 42.
24" Pine
32+55
32+38 < 60
32+34

32+35 18" Pine < 42.5 >
32+19 12" Maple < 42.5

< 29 ⊗ 32+27 stump

39+75 culvert pipe needed

< 25 ⊗ 41+79 X X P.I.?
41+83 < 20 >
< 25 ⊗ 41+52 20" Maple
< 25 ⊗ 41+35 stump
< 25 ⊗ 41+16 28" Maple
⊗ 15 X 41+00
< 25 ⊗ 41+00 stump

< 25,5 ⊗ 40+81 20" Maple
< 25 ⊗ 40+62 stump
< 25 ⊗ 40+46 stump
< 25 ⊗ 40+28 stump
< 25 ⊗ 40+04 stump

⊗ 15 X 40+00
39+81 18" Walnut ⊗ 04 >

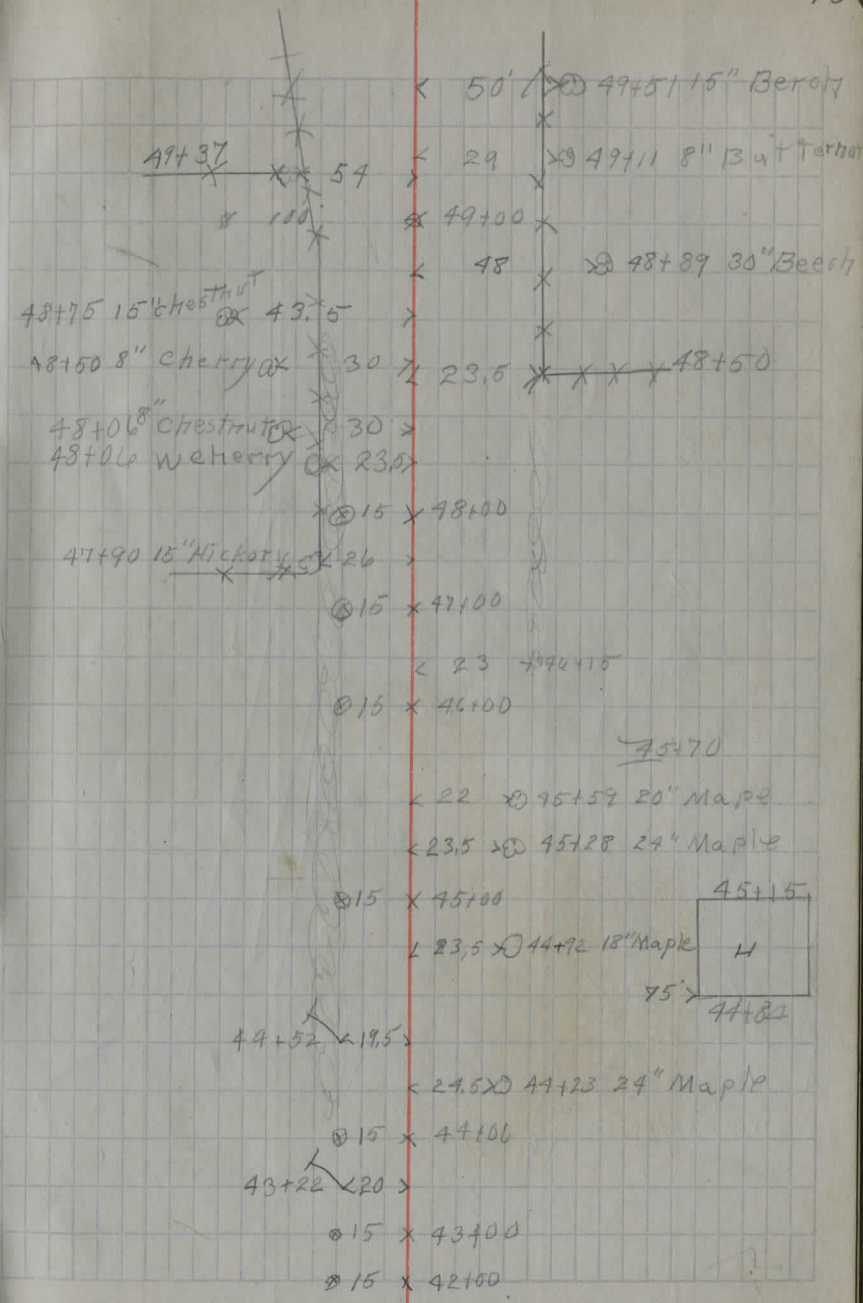
39+75 < 20.5 >
< 25 ⊗ 39+54 24" Maple
< 25 ⊗ 39+32 12" Maple
39+32 6" Walnut ⊗ 10 >

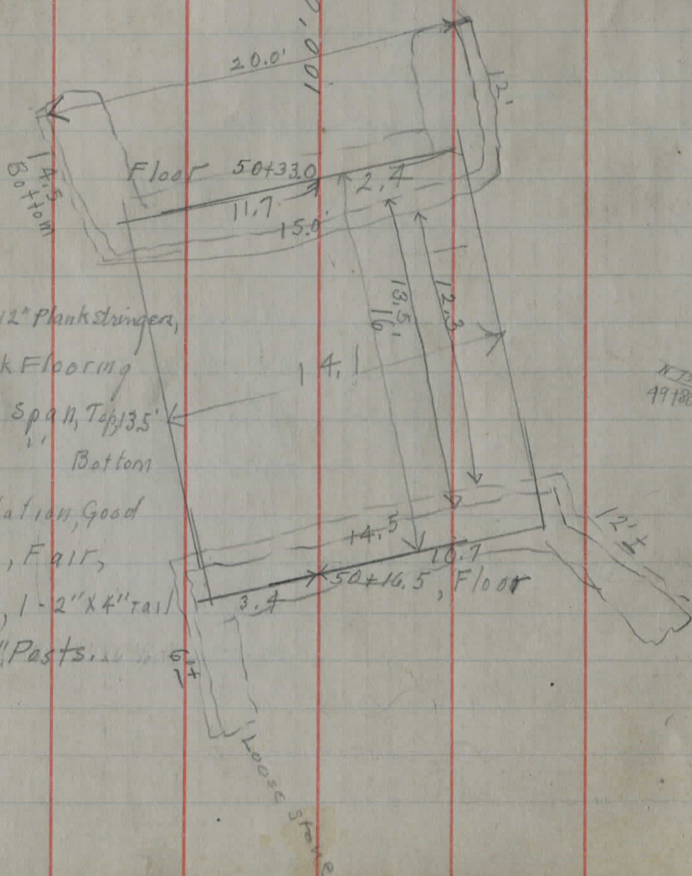
39+12 < 25 >
< 25 ⊗ 39+04 24" Maple
⊗ 15 X 39+00

38+99
H
38+56
< 24,5 ⊗ 38+75 12" Maple
75 >

< 24 ⊗ 38+46 12" Maple
38+32

⊗ 15 X 38+00
< 25 ⊗ 37+73 24" Maple
< 25 ⊗ 37+73 stump
< 25 ⊗ 37+54 18" Maple
37+44 < 21 >
< 25 ⊗ 37+38 stump
< 25 ⊗ 37+19 18" Maple


50'
49+51 15" Beech
49+37
54
29
49+11 8" 13 at Terminal
100'
49+00
48
48+89 30" Beech
48+75 15" Chestnut
43.5
48+50 8" Cherry
30
23.5
48+50
48+06 8" Chestnut
30
48+06 W Cherry
23.5
15
48+00
47+90 15" Hickory
26
15
47+00
23
46+75
15
46+00
45+70
22
45+59 20" Maple
23.5
45+28 24" Maple
15
45+00
45+15
23.5
44+92 18" Maple
H
75'
44+82
44+52
19.5
24.5
44+23 24" Maple
15
44+00
43+22
20
15
43+00
15
42+00



10. 2"X12" Plank Stringers,
2" Plank Flooring
Clear Span, Top 13.5'
" 12.3 " Bottom
Foundation, Good
Floor, Fair,
Rails, 1-2"X4" rail
on 2"X6" Posts.

52+90 10" Elm ⊗X 28
52+60 15" Elm ⊗X 53
52+55 24" Maple ⊗X 51.5
52+45 8" Beech ⊗X 51.5
52+35 30" Maple ⊗X 40
52+10 8" Maple ⊗X 35

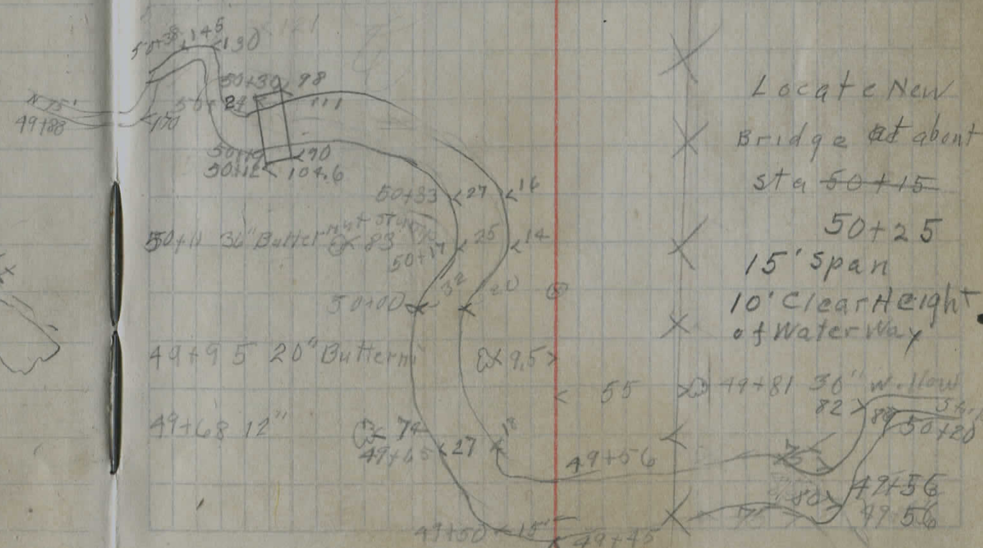
52+46.

65 > 52+28
H
<13.5 ⊗ 52+08 15" pine
65 > 52+00

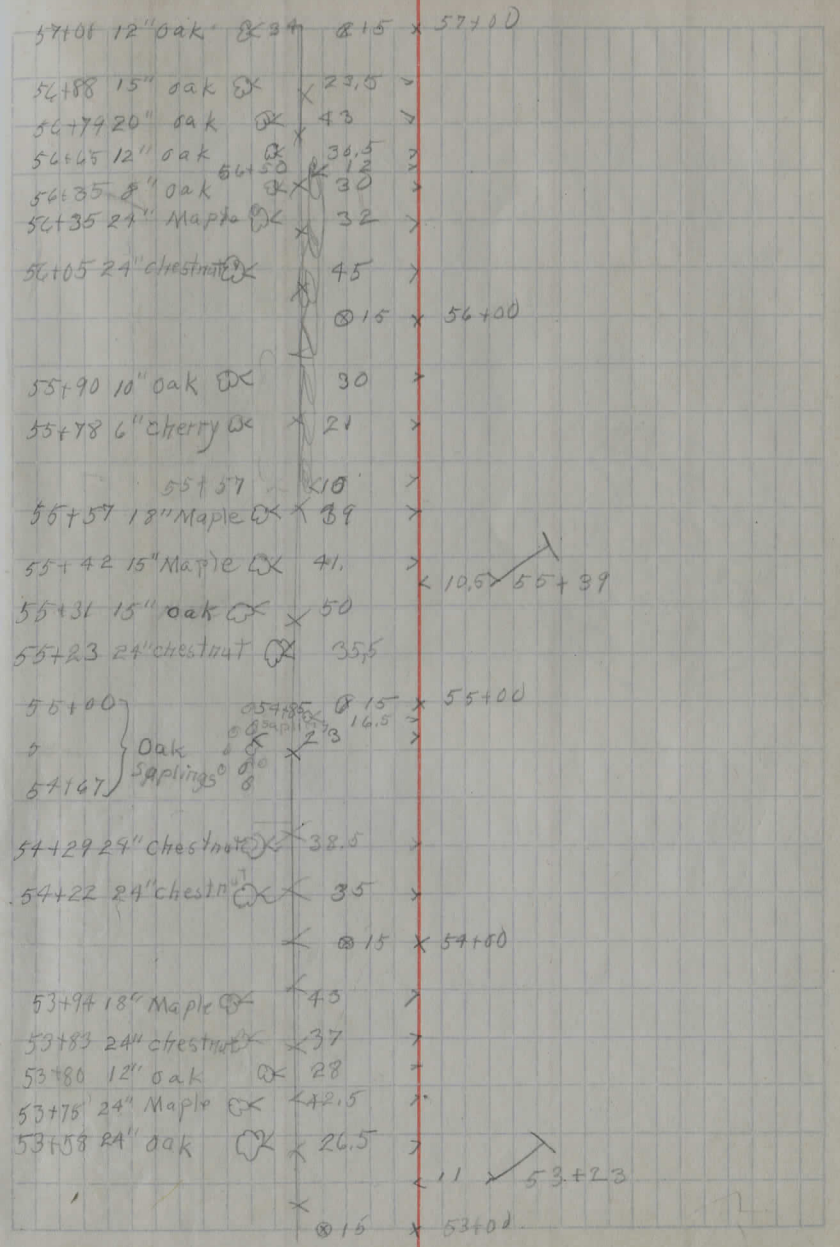
51+95 8" Maple ⊗X 35
51+68 8" Maple ⊗X 60
51+27 8" Maple ⊗X 50
51+17 8" Maple ⊗X 55
51+01 8" Maple ⊗X 60
50+98 8" Maple ⊗X 55
3-8" Butternuts 50+82 ⊗X 36

27 > ⊗ 51+58 18" Beech
21 > ⊗ 51+58 8" Beech
16 > ⊗ 51+58 stump
17 > ⊗ 51+55 stump
27 > ⊗ 51+50 30" Pepridge
21 > ⊗ 51+46 24" stump
18 > ⊗ 51+36 30" stump
20 > ⊗ 51+07 24" Beech
21 × 50+92
⊗ 30" Chestnut 50+87

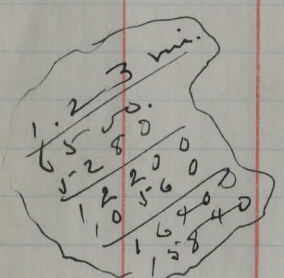
50+50 Twin 10" ⊗X 125
50+48 30" Butternut ⊗X 130
50+46 8" Maple ⊗X 121

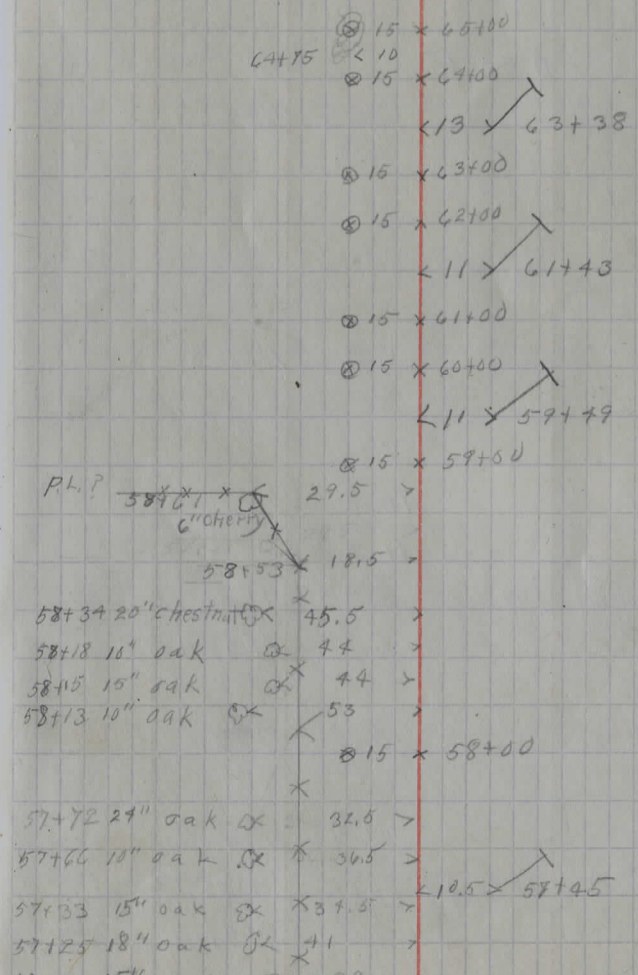


Locate New
Bridge at about
sta ~~50+15~~
50+25
15' Span
10' Clear Height
of Water Way


57+08 12" Oak
34
15
57+00
56+88 15" Oak
23.5
56+79 20" Oak
43
56+45 12" Oak
30.5
56+50
12
56+35 8" Oak
30
56+35 24" Maple
32
56+05 24" chestnut
45
15
56+00
55+90 10" Oak
30
55+78 6" Cherry
21
55+57
10
55+57 18" Maple
39
55+42 15" Maple
41.
10.5
55+39
55+31 15" Oak
50
55+23 24" chestnut
35.5
55+00
54+85
15
55+00
16.5
Oak Saplings
54+73
54+47
54+29 24" Chestnut
38.5
54+22 24" Chestnut
35
15
54+00
53+97 18" Maple
43
53+83 24" chestnut
37
53+80 12" Oak
28
53+75 24" Maple
42.5
53+58 24" Oak
26.5
11
53+23
15
53+00

Cloudy Warm Stopped April 29, 1930
D. Parks, L. Ernst, F. Asboraft
65+00 Apoximate end of project





B.M.	9.35	1140.23		1130.88
	1.65	1140.06		1138.41
		1140.15		
B.M.			3.65	1136.50
0+00			3.9	1136.3
0-50			7.5	
0-100			9.6	
0-150			10.8	
0-200			11.3	
	7.03	1143.85 ✓	3.33	1134.82 ✓
1			6.8	1137.1
2			5.4	1138.5
3			4.4	1139.5
	6.60	1147.53 ✓	2.92	1140.93 ✓
4			6.5	1141.0

X - N.E. cor. W. parapet culvert 34+70 Burton Troy Rd.

Rec. 1138.41
X on N.W. cor. W. parapet, Culv. 26+95± Burton Troy Rd.

Average H.I.

3.65 Middle of three Maples, in line with North side of Bouba's house.

B.M #4 Burton Troy Rd. Found spar Butts nails

1135.8	1136.0	1136.0	1135.9	1136.0	1136.3	1136.3	1136.6	1136.7	1136.7	1137.1	1137.1	1137.2
4.4 / 300	4.2 / 250	4.2 / 200	4.3 / 150	4.2 / 100	3.9 / 50	3.9 / 0	3.6 / 50	3.5 / 100	3.5 / 150	3.1 / 200	3.1 / 250	3.0 / 300

6.7 / 30	6.4 / 15	7.0 / 9.5	8.1 / 7.5	7.4 / 6	6.8 / 4	6.7 / 2	6.6 / 7	7.8 / 11	6.3 / 13.5	5.4 / 23	4.9 / 30
6.2 / 30	5.6 / 15	6.8 / 9	6.1 / 6	5.4 / 4	5.8 / 3.5	8.0 / 9.5	8.7 / 11.5	4.8 / 20	4.1 / 30		
4.9 / 30	4.4 / 15	4.8 / 9	5.4 / 7	4.4 / 4	6.0 / 8	4.7 / 10	3.6 / 20	2.7 / 30			
6.1 / 30	5.5 / 22	6.3 / 15	7.2 / 9.5	8.1 / 8.5	7.3 / 6.5	6.5 / 4	6.7 / 4	8.5 / 7	7.1 / 10	5.9 / 19	4.9 / 30

		1147.53		
5			5.3	1142.2
6			4.6	1142.9
	5.64	1149.14	4.05	1143.48
7			5.5	1143.7
8			4.7	1144.5
9			4.1	1145.1
	5.30	1152.21	2.23	1146.91
10			6.0	1146.2
11			4.8	1147.4
12			5.0	1147.2
B M.	5.18	1153.03	4.36	1147.85
13			5.2	1147.8
13+80			3.7	1149.3
14			4.5	1148.5

5.2/30 5.8/10 5.5/1.5 6.7/7 6.0/7.5 5.2/1.5 5.3/E 5.8/4 6.9/6.5 5.4/10 4.3/20 4.0/30

4.7/30 4.3/15 4.7/11.5 5.6/8.5 5.7/6.5 4.5/1.5 4.6/E 5.5/5 5.9/7.5 4.8/9 4.1/20 3.6/30

5.7/30 5.2/15 5.9/10 6.5/8.5 6.2/7 5.4/1 5.5/E 6.0/7.5 6.8/7.5 5.8/9 5.3/17 4.4/30

5.5/30 5.1/18 5.2/10.5 5.7/9 5.3/7.5 4.7/2.5 4.7/E 4.9/4 6.1/8 5.1/9.5 4.8/19 4.5/30

4.9/30 4.9/15 4.6/11 5.1/7.5 4.5/7 3.9/2 4.1/E 4.3/4 5.3/6.5 4.6/7.5 4.2/22 3.9/30

5.4/30 5.4/17 6.2/10.5 7.0/7 5.7/1.5 6.0/E 6.4/3.5 7.6/7 5.9/10 5.7/15 5.4/30

5.2/30 5.2/10 5.8/8.5 4.7/2.5 4.8/E 5.1/3 6.2/7 5.3/8.5 4.6/17 4.2/30

5.2/30 5.2/11.5 5.6/10 4.9/3.5 5.0/E 4.9/4 5.8/7.5 5.1/9 4.6/15 4.7/30

Bent spike

1 S. W. root 30" Maple 40' Lt sta. 12+60

5.7/30 5.7/15 6.2/10 5.7/8 5.2/2.5 5.2/E 5.4/3 6.7/6.5 5.5/8.5 5.1/15 4.5/30

1149.8 1145.4 1146.6 1146.7 1147.2 1148.5 1150.8 1149.6 1149.3 1149.3 1149.2 1149.8 1150.9 1149.6 1146.5 1146.5 1148.1 1148.4

8.2/30 7.6/10 6.4/30 6.3/30 5.8-4.5-2.2/7.0 10.7 3.7/8.5 3.7/8 3.7/E 3.8/4 3.2/7.5 E.1/8.5 4.7-4.5/FL 6.5/1.21 4.7/30 4.6/50

FL and at field drain title.

5.0/30 5.2/10 A.F./7.5 4.5/E 4.7/6 5.6/8.5 4.9/12.5 4.7/30

		1153.03		
15			4.2	1148.8
	4.71	1156.83	0.91	1152.12
16			6.2	1150.6
17			4.7	1152.1
18			5.5	1151.3
	5.45	1156.77	5.51	1151.32
18+56			5.0	1151.8
19			5.2	1151.6
20			4.6	1152.2
	4.80	1157.62	3.95	1152.82
21			5.5	1152.1
B.M.			3.81	1153.81

strong West Wind
Stopped May 1 1930
D. Parks, L. Ernst, F. Ashcraft

4.6/30 4.5/15 4.3/11 4.8/10 4.6/8 4.1/1 4.2/2 4.7/4 5.1/6 4.0/9 3.7/15 3.7/30

6.3/30 6.2/15 6.2/10 7.3/7 6.8/2.5 6.0/2 6.2/2 6.4/3.5 7.2/6 5.5/7.5 5.5/30

5.3/30 5.3/15 6.1/11 5.8/10 5.2/7 4.7/2 5.1/3.5 6.1/7.5 5.2/8.5 4.4/11 4.2/30

5.8/30 5.6/15 5.4/11 5.8/9 5.3/3 5.5/2 5.6/3.5 4.1/2.5 5.7/8 5.2/15 4.7/30

1145.2 1146.7 1147.4 1148.1 1148.2 1148.6 1149.6 1150.4 1150.1 1151.0 1151.8 1151.7 1151.3 1150.8 1150.1 1151.2 1151.4 1151.9
11.6/360 10.1/300 9.4/250 8.7/200 8.6/150 8.2/100 7.2/50 6.7/20 6.1/7 5.8/2 5.0/2 5.1/4 5.0-6.4 F.L. 6.8 6.7/12 5.6/17 5.4/30 5.1/50

6.0/30 6.0/15 5.6/11 6.0/9 5.0/2 5.2/2 5.4/6 6.1/9 5.4/13 5.8/30

4.8/30 4.8/11 5.7/8.5 4.6/2 4.9/4.5 6.1/9 3.7/13 3.6/30

6.0/30 5.0/15 5.4/12 5.8/8 5.3/2 5.1/2 5.3/4 6.8/8 4.8/13 4.8/30

R.P. spike E. side 18" Maple 23 Lt. sta 21+28

B.M.	2.19	1156.00		1153.81
22			4.8	1151.2
22+76			5.2	1150.8
23			5.4	1150.6
	4.53	1155.97	4.56	1151.44
24			5.1	1150.9
25			4.7	1151.3
26			4.3	1151.7
	8.53	1160.64	3.86	1152.11
27			8.5	1152.1
27+14			8.2	1152.4
28			5.7	1154.9
29			2.5	1158.1
B.M.			3.14	1157.50
	11.97	1171.20	1.41	1159.23
30			8.5	1162.7

R.P. spike E. side 18" Maple 23' Lt. sta. 21+28

6.5/30 5.2/21 5.3/9 4.7/2.5 4.8/2 4.9/3 5.8/7 3.9/12 3.4/22 2.9/80

1145.3 1146.6 1147.7 1148.7 1149.3 1150.0 1150.5 1150.8 1150.8 1150.6 1150.7 1149.5 1151.0 1151.6 1152.5

10.7/150 9.4/100 8.3/50 7.3/30 6.7-6.0/9.5 5.5-5.2/7 5.2/55 5.7/3 5.0-6.5/5.5 5.0/11 4.7/30 3.0/60

4.3/30 5.8/12 6.3/10.5 5.8/8.5 5.2/2.5 5.4/2 5.6/7.5 6.6/7 5.1/11 4.8/30

6.2/30 5.5/12 6.0/9.5 5.5/8 5.0/1.5 5.1/2 5.7/6 6.2/7 5.3/9.5 4.6/21 4.2/30

5.7/30 5.4/12.5 6.0/10 5.3/8 4.7/2 5.0/5 5.7/8 4.8/15.5 4.2/23 4.0/30

4.8/30 5.0/20.5 4.9/10 4.3/2 4.7/6 5.6/9 4.6/13 3.4/21 3.7/30

10.5/30 9.7/16 9.1/9 8.6/7 8.5/2 8.3/7 7.9/13 8.3/25 9.7/30

1145.9 1147.6 1148.1 1148.6 1149.4 1149.6 1151.3 1153.8 1153.0 1152.6 1152.4 1152.6 1152.9 1153.2 1151.4 1149.2 1151.0 1151.3

14.7/200 13.0/130 12.5/100 12.2/50 11.2/30 11.0-9.3-6.8/F.L. 7.6-8.0/10.0 8.2/2.6 8.0/4 7.9/9 6.4-9.2-11.7/11.0 8.6/25 8.3/30

4.6/30 4.8/15 6.6/9 4.9/8 6.4/2.5 5.7/2 6.3/5 6.8/8 6.9/10 6.3/20 6.3/25

edge of Pond

Pond 6ft 30

0.9/30 1.3/18.5 2.3/16 3.2/11 4.3/9.5 3.2/7 2.5/2 3.1/8 2.1/14 2.1/30

Bent spike N.W. root 12" Maple 29.5' Rt. sta. 28+69

6.7/30 7.9/15 8.3/11 10.2/8.5 9.0/6 8.5/2 8.7/5 9.1/8 6.6/17 6.3/30

		1171.20		
31			4.6	1166.6
32			3.4	1167.8
33			2.1	1169.1
34			0.5	1170.7
	12.99	1182.10	2.09	1169.11
35			8.9	1173.2
36			5.9	1176.2
	11.27	1192.59	0.78	1181.32
37			11.4	1181.2
38			5.5	1187.1
39			5.3	1187.3
39+75			5.8	1186.8
40			5.6	1187.0
	8.59	1200.12	1.06	1191.53
41			10.4	1189.7
42			6.9	1193.2

2.9/30 3.1/2.1 4.9/15 5.2/10 6.5/8 5.2/4 4.6/2 5.2/6 6.1/8 4.7/12.6 4.7/30

3.6/30 3.6/1.5 4.3/6 3.8/3 3.4/2 3.8/5.5 4.6/8.5 4.2/10 4.2/30

2.2/30 2.2/15 3.1/14 3.3/6 2.5/3.5 2.1/2 2.0/1 2.8/5.5 3.4/8 2.8/9 3.7/11 3.7/30

0.1/30 0.1/15 0.7/14 1.7/6 0.9/2.5 0.5/2 0.8/6 1.7/9 1.0/10.5 1.0/30

9.0/30 9.2/15 9.1/7.5 10/6 9.3/8 8.9/2 9.3/5 10.1/8 9.6/10 9.2/15 9.2/30

5.6/30 5.8/15 5.7/8 7.3/6 6.2/3 5.9/2 6.1/5 7.0/8 6.5/10 5.9/15 5.9/30

10.6/30 10.6/15 11.1/9 12.9/6 12.0/3.5 11.4/2 11.3/1.5 11.6/6 12.7/9 10.3/15 9.1/30

6.4/30 5.1/8.5 6.5/7.5 5.7/2 5.5/2 5.0/3.5 5.3/7 6.3/10.5 3.8/16 3.1/30

8.1/30 5.9/11 5.1/3 5.8/1 5.3/2 4.7/2.5 4.1/7 4.6/10 5.4/12.5 3.7/15 2.3/30

1180.0 1181.3 1180.4 1183.5 1183.9 1184.5 1186.8 1187.9 1188.1 1187.7 1187.1 1187.8 1188.0 1186.5 1186.5 1188.8

12.6/200 11.3/150 10.2/100 9.1/50 8.7/30 8.1/19 5.8/2 4.8/3.5 4.5/7.5 4.9/12 5.5/14 4.8/15 4.6/24 6.1/30 6.0/50 3.8/100

6.9/30 6.9/16 5.6/2 4.5/3.5 4.1/7.5 4.7/12 5.4/14 5.0/15 5.1/30

9.4/30 8.4/7 10.7/1 10.4/2 9.8/2 9.2/6 9.6/9.5 10.7/12.5 8.0/16 8.0/30

6.1/30 6.1/5.5 7.8/2.5 6.9/2 6.2/5.5 6.8/10 7.8/13 6.1/16 5.6/30

		1200.12		
43			6.3	1193.8
44			5.7	1194.4
B.M.			2.13	1197.99
45			6.0	1194.1
46			8.4	1191.7
	4.35	1195.50	8.97	1191.15
47			6.3	1189.2
	0.85	1185.18	11.17	1184.33
48			6.6	1178.6
T.P.			4.64	1180.54

Showers Stopped May 5, 1930
D. Parks, L. Ernst, F. Ashcraft

6.3/30 6.3/15 6.0/5 6.9/2.5 6.3/2 5.8/5.5 4.1/10.5 7.0/13.5 6.2/15 5.8/26 6.5/30

4.9/30 4.9/5.5 6.3/2 5.7/2 5.1/5.5 5.7/10 6.5/13 5.4/15 5.4/30

R.P. spike N.W. side 24" Maple 24.5' Rt. sta. 41+23

4.7/30 5.2/15 6.1/5 7.1/3 6.0/2 5.4/5 5.8/9 6.6/12.5 5.2/15 5.2/30

10.2/30 9.6/15 8.9/4 9.5/2.5 8.4/2 7.9/5.5 8.1/11.5 8.7/15 8.0/30

3.1/30 3.1/15 3.4/12 7.5/5.5 6.5/3 6.3/2 6.0/3.5 6.0/8 7.4/11 2.7/17 1.7/30

1.7/30 2.5/15 8.3/7 6.6/5 6.6/2 6.8/5 8.2/8 3.0/10 2.8/30

Large rock 15' Lt sta 48+10

T.P.	0.30	1180.84		1180.54
48+50			9.8	1171.0
	0.15	1168.24	12.75	1168.09
49			2.2	1166.0
49+21			9.0	1159.1
49+45			11.4	1156.8
B.M.			9.14	1159.10

9.3/40 8.6/25 8.7/18 10.5/14 9.9/11.5 9.8/E 9.6/2 11.3/5 10.1/7 9.1/14 8.9/30

7.8/100 6.6/90 5.9/70 5.0/49 3.7/37 4.6/33 3.8/30 3.6/15 4.3/13 2.1/9.5 2/E 2.7/12 3.4/27 4.1/30

11.5/100 10.4/78 8.4/60 5.3/41 5.3/21 5.0/17 7.4/10 9.0/E 9.8/30

11.9/100 10.8/70 6.1/47 5.9/39.5 7.8/25 9.8/7 11.4/E 10.6/30

Spike W. rail 15" Birch 50' Rt. Sta 49+51

B.M	7.93	1167.03		1159.10
49+47			11.5	1155.5
49+55			11.2	1155.8
49+56			9.8	1157.2
49+75			9.0	1158.0
50+00			9.1	1157.9
50+25			9.7	1157.3
	10.80	1168.40	9.43	1157.60
50+50			11.2	1157.2
50+50				
50+75			11.2	1157.2
	9.92	1176.25	2.07	1166.33
51+00			8.4	1167.9
	11.07	1186.92	0.40	1175.85
	8.97	1194.49	1.40	1185.52
51+50			7.3	1187.2

9+ ft N. root 15" Beech 50' Rt sta 49+51

10+ 8.7 5.1 5.0 8.3 12.0 11.5 11.3 11.3 9.5
0 77 70 60 47 13 13 E 30 60 52

10.5 10.3 8.4 5.2 5.1 8.1 12.2 11.2 11.4 9.3 8.9
100 77 68 63 51 25 18 E 30 50 60

10.5 10.5 10.1 8.6 5.3 5.0 7.8 12.5 11.4 10.1 9.8 10.2 11.7 11.7 10.6 10.6 11.3 11.5
100 82 87 70 61 31 29 20 7 6 E 12 12 26 30 36 38 50

10.2 10.1 5.3 5.4 5.2 6.3 8.6 11.6 11.1 10.3 9.3 9.0 8.9 8.5
70 52 74 72 63 57 36 32 22 20 13 E 17 30

9.6 9.6 8.5 5.1 5.2 8.8 9.7 12.3 11.5 10.1 9.1 9.0 9.0
120 110 98.5 77 84 78 36 23 23 20 E 20 30

13' ridge floor 11547
5.8 12.7 12.0 11.7 12.7 9.3 12.7 10.7 9.8 10.2 12.3 12.3 10.0 9.7 9.1 9.1
200 150 125 108 100 89 83 76 27 20 16 14 E 17 30
Ft.

9.1 7.8 8.0 14.4 14.7 10.7 10.9 14.1 13.3 11.7 11.2 10.9 10.9
105 100 90 80 70 63 52 40 35 34 E 15 30

9.4 7.6 4.3 4.6 7.4
150 125 116 114.5 107.5

July 18, 1924
W.C. Marks, E.A. Parks
Test Pit
1157.3
muck
Blue sand
Pebbles
sand stone
gray sand
Blue Clay
5'
4.0'
3.5'
2.8'

Blue clay + quick-sand under stream bed, sounded to depth of 5' and did not strike solid Bottom.
Marks + Hassel
June 24 1930
Soundings with ½" Pipe

30
2.5 3.6 2.6 2.7 2.8 5.6 6.5 8.3 10.2 11.5 11.7 11.2 10.8 10.8
131 129 124 112 110 100 90 73 40 11 6 E 15 30

10.2 8.3 8.7 8.5 10.1 7.8 6.7 7.0 6.3 8.4 9.9 14.8 16.8 16.8
123 121 111 104 100 85 60 37 21 E 12 30 34 50

8.8 8.8
130 126

12.0 9.8 8.6 7.3 6.4 7.2 7.2
64 35 21 E 17 30 40

		1194.49		
52+00			2.7	1191.8
	1.43	1189.46	6.46	1188.03
51+50				
52+00				
	11.43	1199.46		1188.03
52+55			9.9	1189.6
53			8.6	1190.9
54			4.3	1195.2
	8.25	1204.56	3.15	1196.31
55			7.1	1197.5
B.M.			5.69	1198.87
56			4.9	1199.7
57			3.2	1201.4
58			2.0	1202.6
	5.73	1209.12	1.17	1203.39
59			5.8	1203.3
60			5.1	1204.0

4.3 3.6 2.7 3.0 2.6
40 15 ℄ 15 30

Large stone at Drive intersection 15' Lt Sta 52+50

10.8 10.8 16.6 19.5 15.6 14.7 15.1
25 117 100 95 94 78 72

4.4 4.6 3.2 8.9 7.7 6.5 6.9
100 86 72 6.5 20 49 42

8.0 8.0 8.1 12.8 10.4 9.9 10.2 7.6 7.6 7.5
100 40 30 24 19 ℄ 2.5 8 18 30

5.6 5.6 9.5 8.3 8.1 8.6 9.4 5.6 5.1
30 19 12.5 9 5 ℄ 3 10 30

3.2 3.4 5.6 4.5 4.1 4.3 4.4 5.5 3.1 2.6 2.6
30 15 9.5 7 2 ℄ 2 5.5 11.5 20 30

8.0 8.0 8.2 7.4 7.1 7.5 8.1 6.5 6.2 6.2
30 15 10 5 ℄ 4 6 12 15 30

Spike E. root 15" oak 50 Lt. Sta 55+31

4.6 4.6 6.7 5.7 4.9 5.4 6.2 4.2 4.6 4.6
30 15 7 5 ℄ 5 8 11 15 30

3.9 3.9 4.6 3.6 3.0 3.5 4.6 3.7 3.3 3.3
30 10.5 8.5 5 ℄ 3.5 6 9 15 30

2.1 2.1 2.5 3.1 2.5 2.0 2.5 3.4 2.7 2.1 2.1
30 15 10.5 8.5 6.5 ℄ 2.5 6 8 15 30

6.1 6.1 6.9 5.9 5.4 5.8 6.0 6.9 5.6 5.6
30 11.5 10 7 2.5 ℄ 2 5 8 30

5.1 5.1 5.9 5.0 4.6 5.1 5.2 6.0 4.6 4.8 4.8
30 13 14.5 7 4 ℄ 1.5 3.5 8 17 30

		1209.12 ✓		
61			5.5	1203.6
62			5.1	1204.0
63			4.6	1204.5
64			4.8	1204.3
65			7.2	1201.9
	3.69	1208.76 ✓	4.05	1205.07 ✓
65	@ Jug Street		6.9	1201.7
65+50			6.2	1202.6
66			6.6	1202.2
66+50			6.8	1202.0
67			7.0	1201.8
67+50			7.6	1201.2
B.M.			5.07	1203.69 ✓

5.6 / 30	5.6 / 13	6.4 / 12	5.4 / 8	5.3 / 3	5.5 / 2	5.6 / 2	6.2 / 4.5	5.6 / 8	5.1 / 15	5.1 / 30
5.4 / 30	5.2 / 19	5.4 / 13	6.2 / 10.5	5.3 / 8	4.9 / 3	5.1 / 2	5.2 / 3	6.4 / 7	5.7 / 7	5.0 / 15	5.0 / 30
5.3 / 30	5.2 / 12	6.1 / 10	4.6 / 4.5	4.6 / 2	4.8 / 3	6.0 / 8	5.0 / 14	5.0 / 30		
5.2 / 30	5.4 / 11	6.1 / 9.5	4.9 / 6	4.8 / 2	4.8 / 5	6.5 / 10	5.4 / 12	4.6 / 20	4.6 / 30	
5.5 / 30	5.5 / 18	7.3 / 15	7.9 / 10.5	7.3 / 8	7.2 / 4	6.4 / 11	6.6 / 16	5.8 / 21	5.2 / 30	
1197.9 / 10.9 / 250	1197.7 / 11.1 / 200	1198.8 / 10.5 / 150	1198.1 / 10.1 / 100	1200.0 / 8.8 / 50	1201.9 / 6.9 / 2	1204.3 / 4.5 / 50	1204.8 / 4.0 / 100	1205.4 / 3.4 / 150	1205.8 / 3.0 / 200	1206.7 / 2.1 / 250

Spike N root 36" Chestnut 150' E of Jug Street
25' S of ℄ of Hubbard Rd. E of Intersection

Jug Street Burton Township

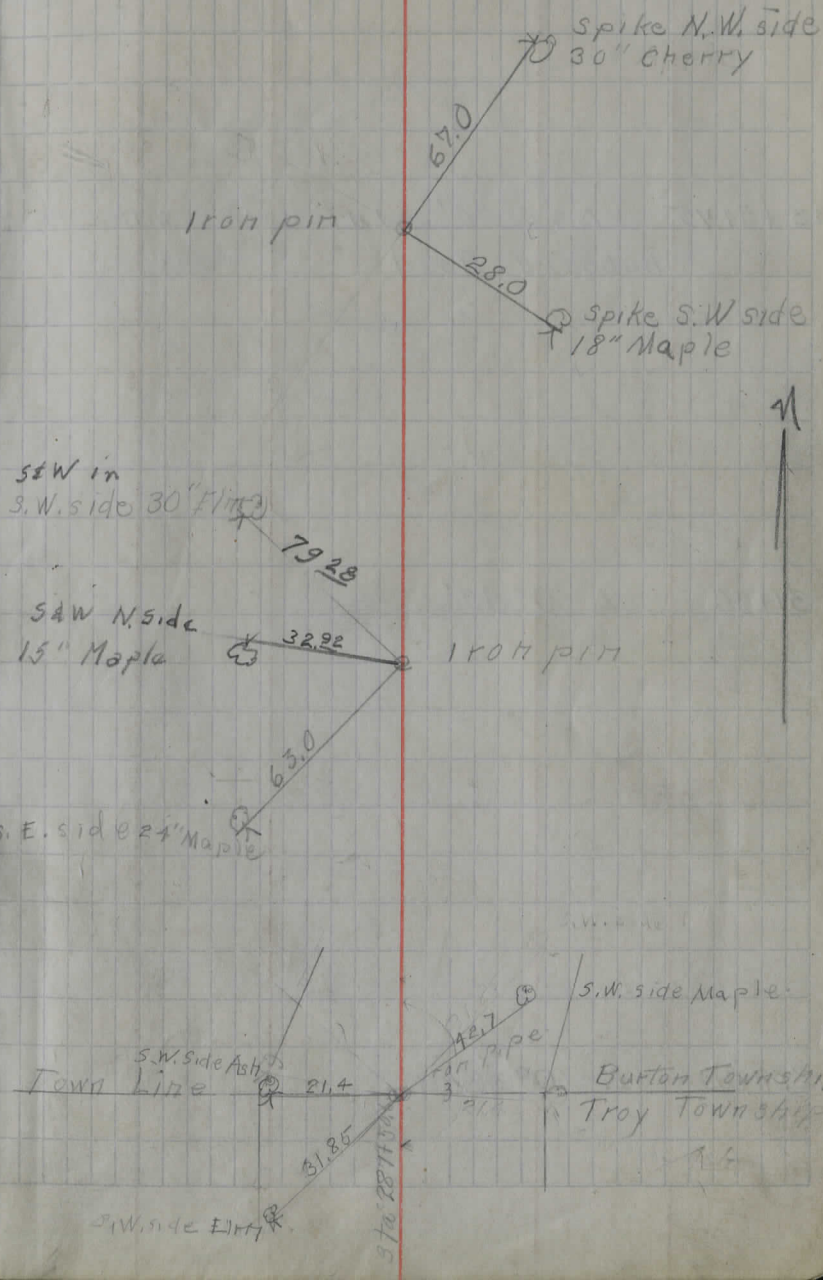
C.H.4L

16+00 Δ = 0°00'

10+00 Δ = 0°00'

See fg 57
for min'nts

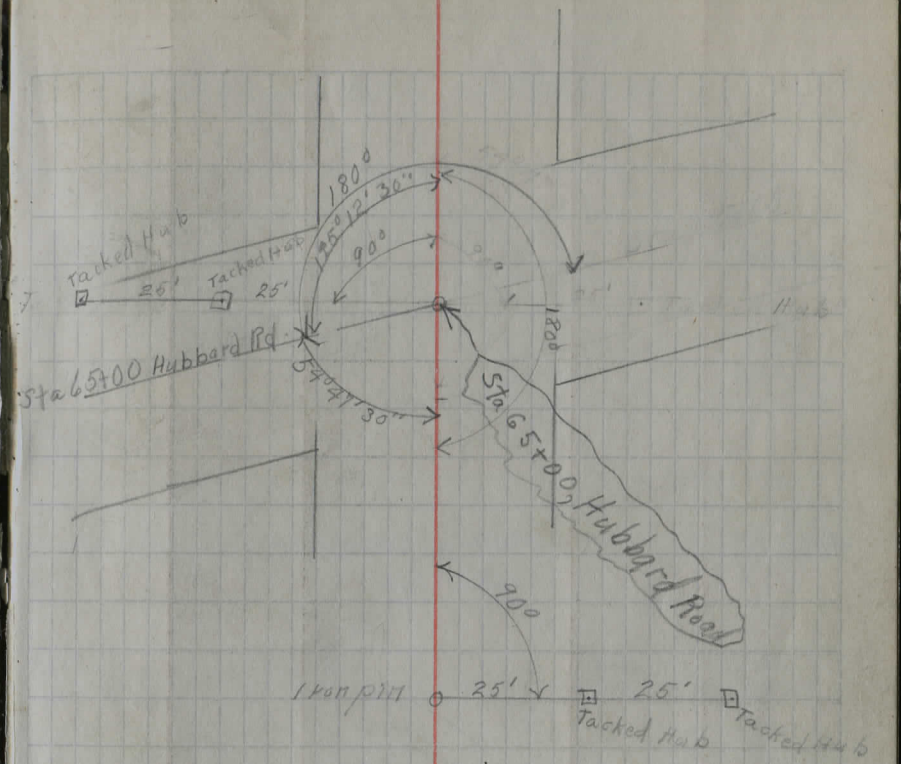
0+00 Δ = 35°27' R

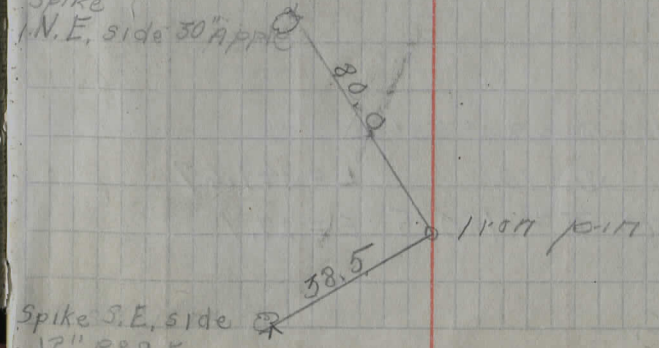


33 +54.75 $\Delta = 0°00'$ Intersection with Hubbard Road.

31+00 $\Delta = 0°00'$

23+00 $\Delta = 0°38\frac{1}{2}'$ L

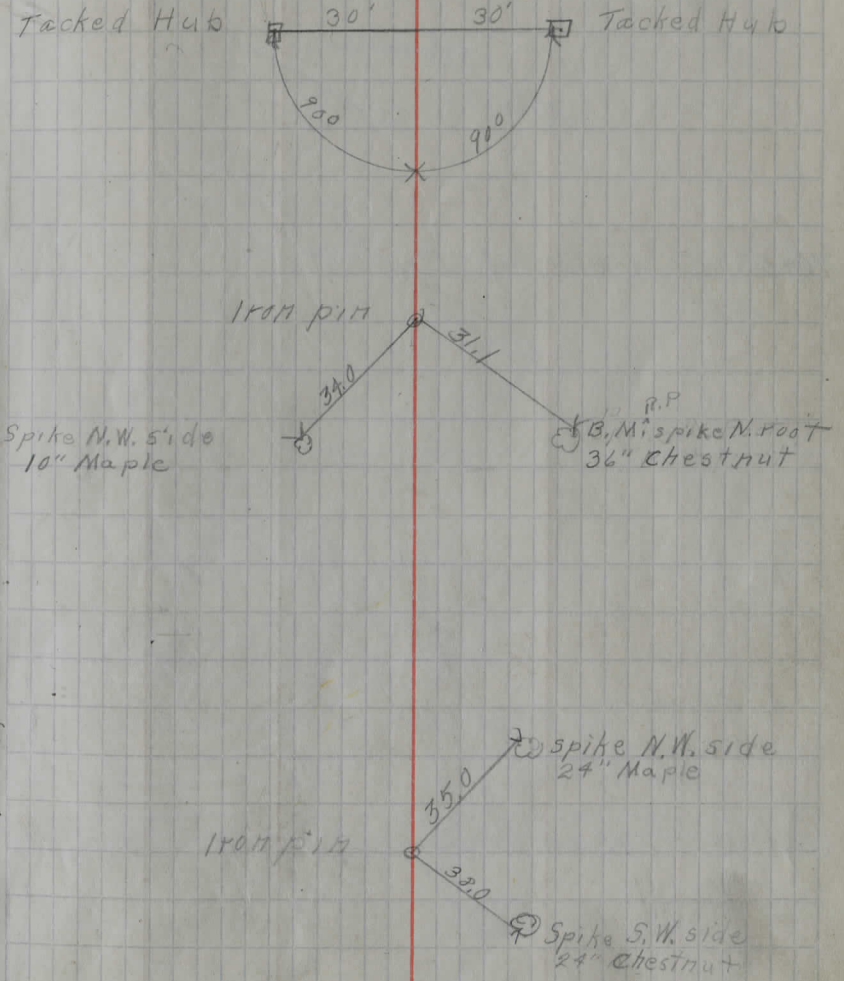




44+30

41+25 $\Delta = 0°00'$

	P.T.
38+03.02	17°29'
38	17°20'
37+50	14°50'
37	12°20'
36+50	9°50'
36+33.85	P.I. $\Delta = 34°58'$ L
36	7°20' $D = 10°$ $L = 349.67$
35+50	4°50' $T = 180.5$ $E = 27.7$
35	2°20'
34+53.35	P.C.



Stopped May 9, 1930

D. Parks, L. Ernst, H. Quiggle, F. Ashcraft

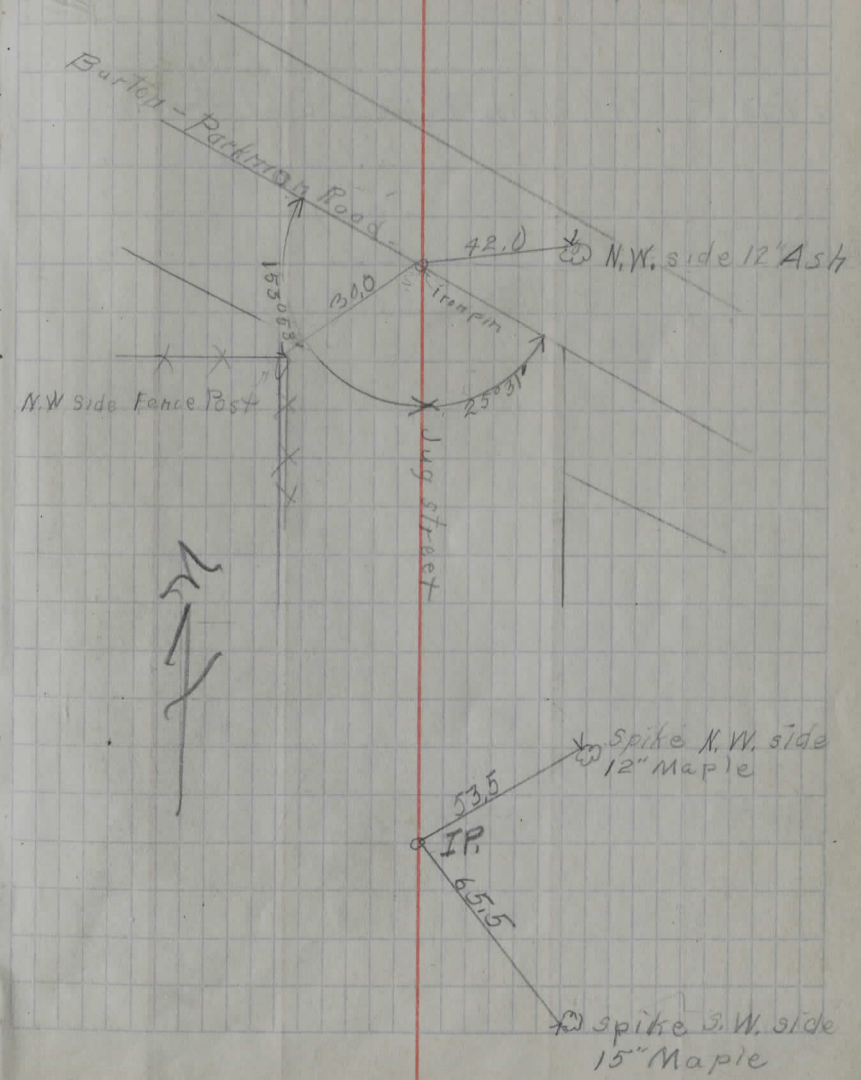
1.336 miles.

5280 | 7053.6

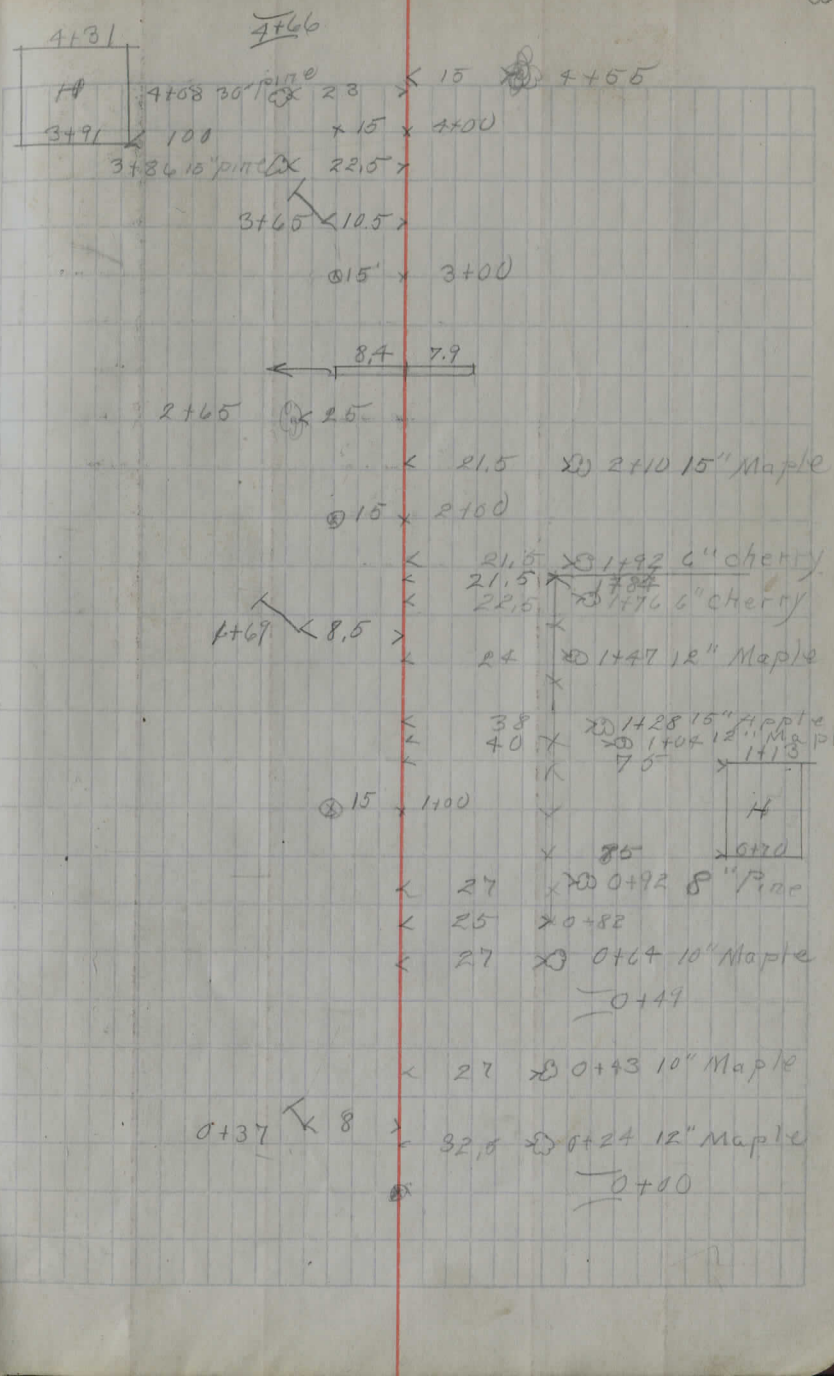
70+53.65 end of Project

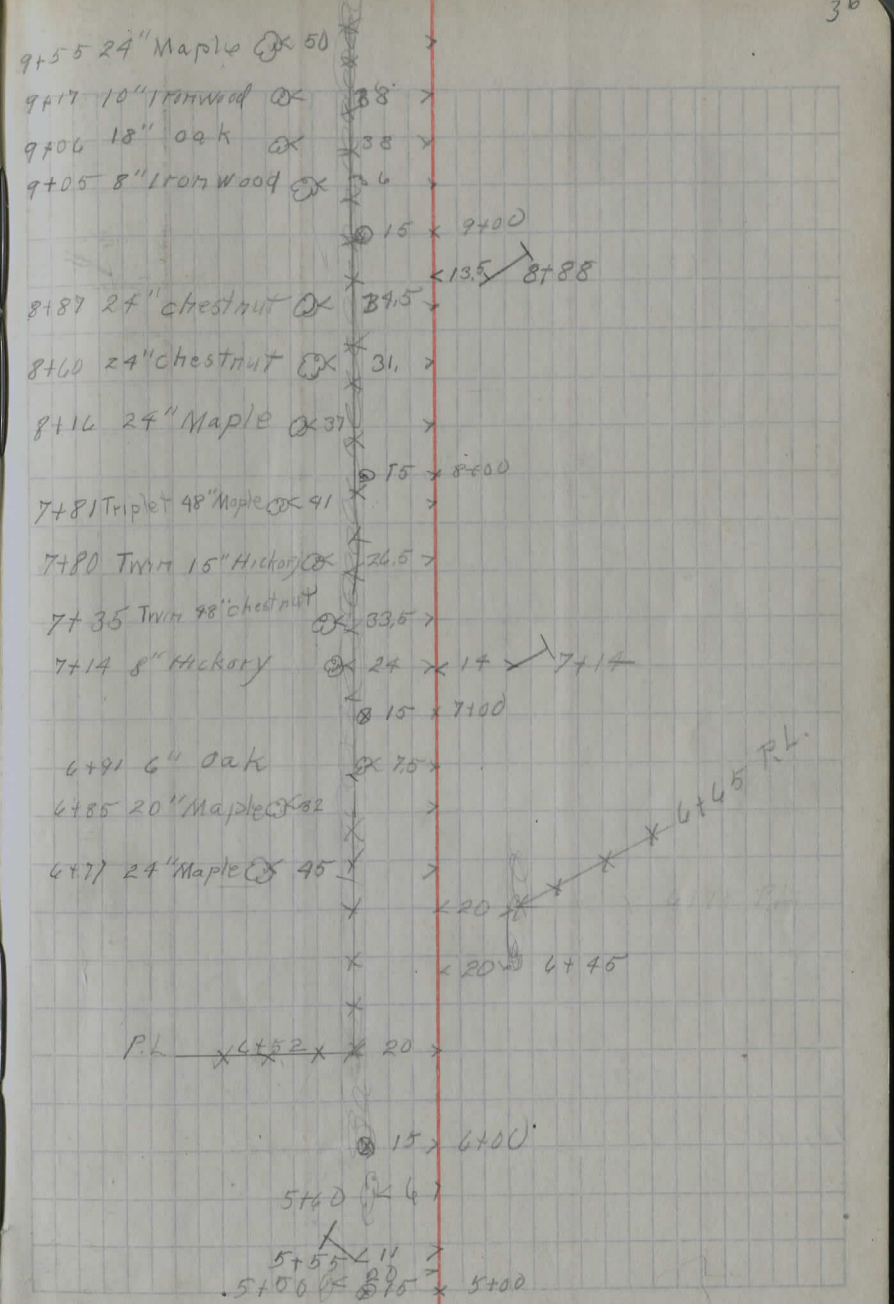
See fg 57 for more info

56+00 Δ = 0°00'

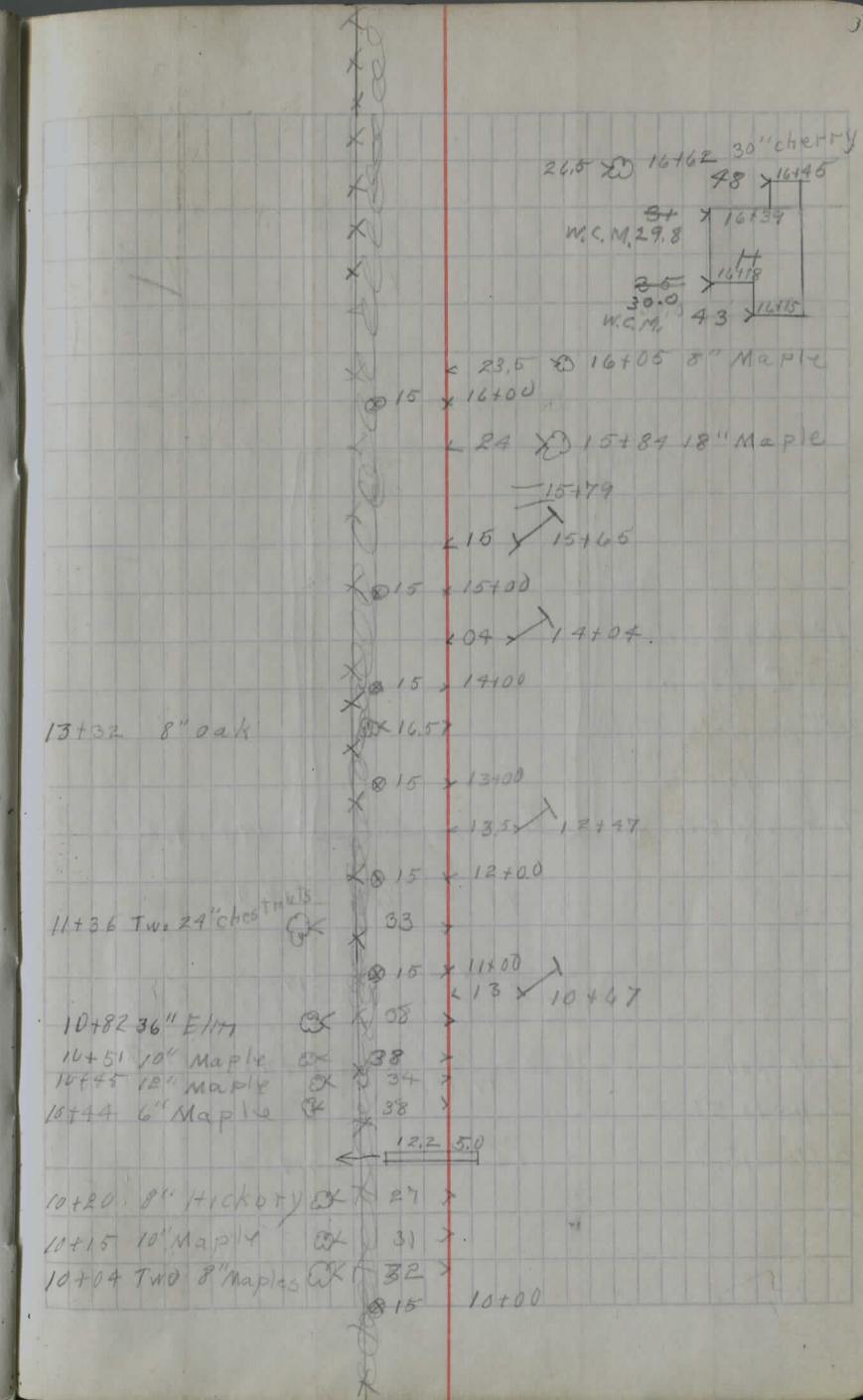


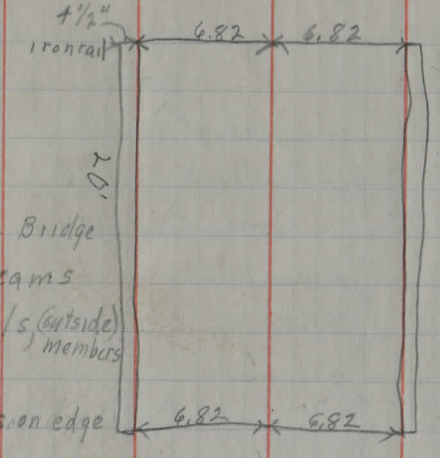
2+78,5 14" Iron boiler used as culvert



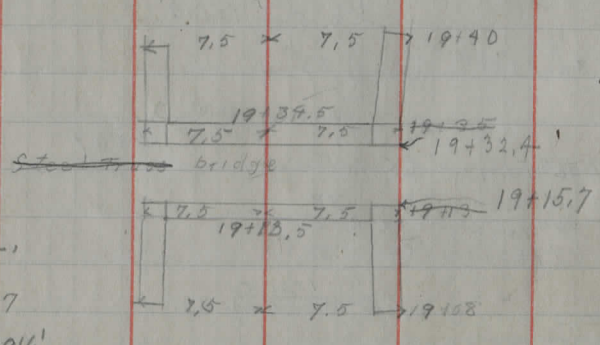

9+55 24" Maple 50
9+17 10" Ironwood 38
9+06 18" oak 38
9+05 8" Ironwood 6
15 x 9+00
<13.5 8+88
8+87 24" chestnut 39.5
8+60 24" chestnut 31.
8+16 24" Maple 37
15 x 8+00
7+81 Triplet 48" Maple 41
7+80 Twin 15" Hickory 26.5
7+35 Twin 48" chestnut 33.5
7+14 8" Hickory 24 x 14 7+14
15 x 7+00
6+91 6" oak 7.5
6+85 20" Maple 82
6+71 24" Maple 45
6+45 P.L.
20
20 6+45
P.L. 6+52 20
15 6+00
5+60 41
5+55 11
5+00 20
15 5+00

10+40 10" sectional iron pipe



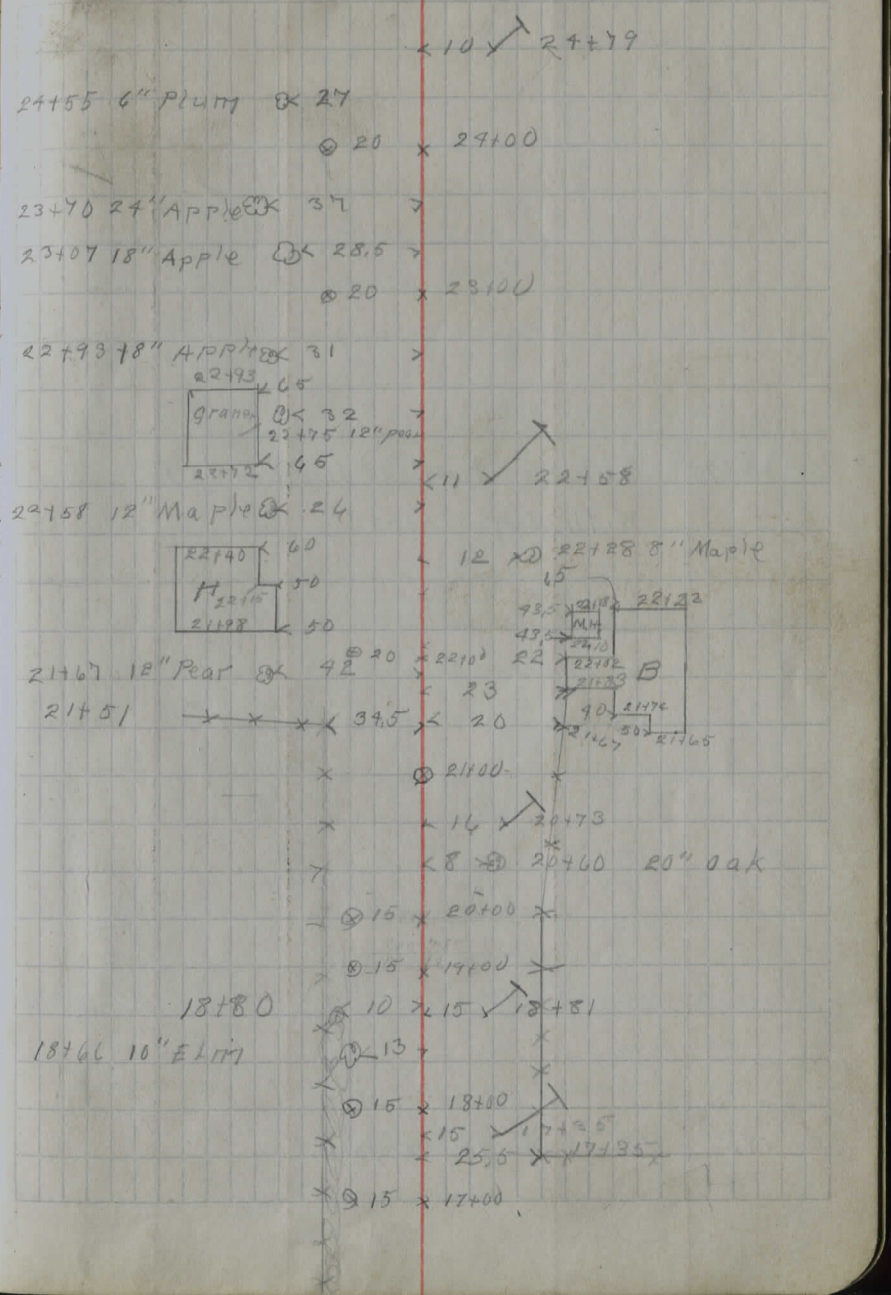


19+24.2 Bridge
5-9" I Beams
2-9" Channels (outside) members
good,
Floor, 2X4s on edge



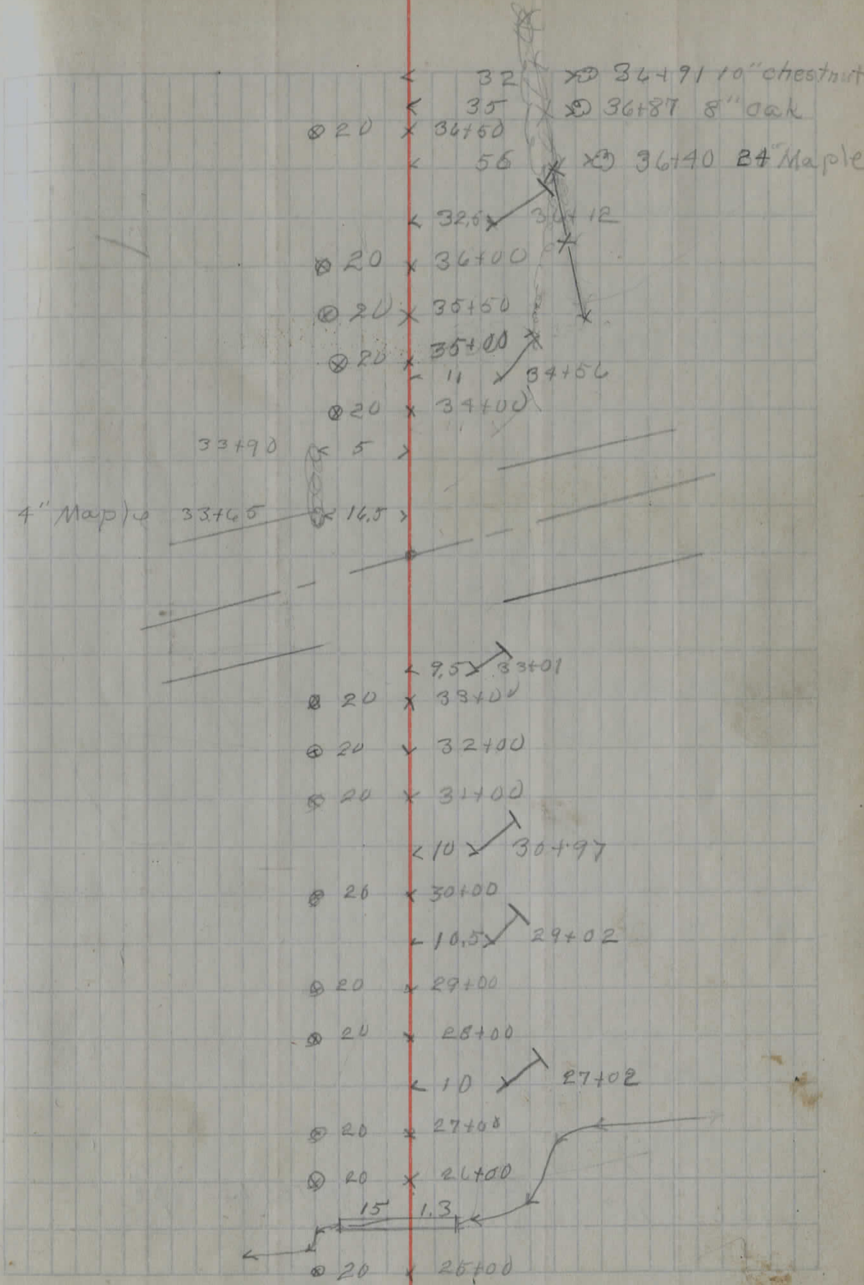
Clear Span
Top 16.5'
Bottom 15.7
Clear Height 9½'

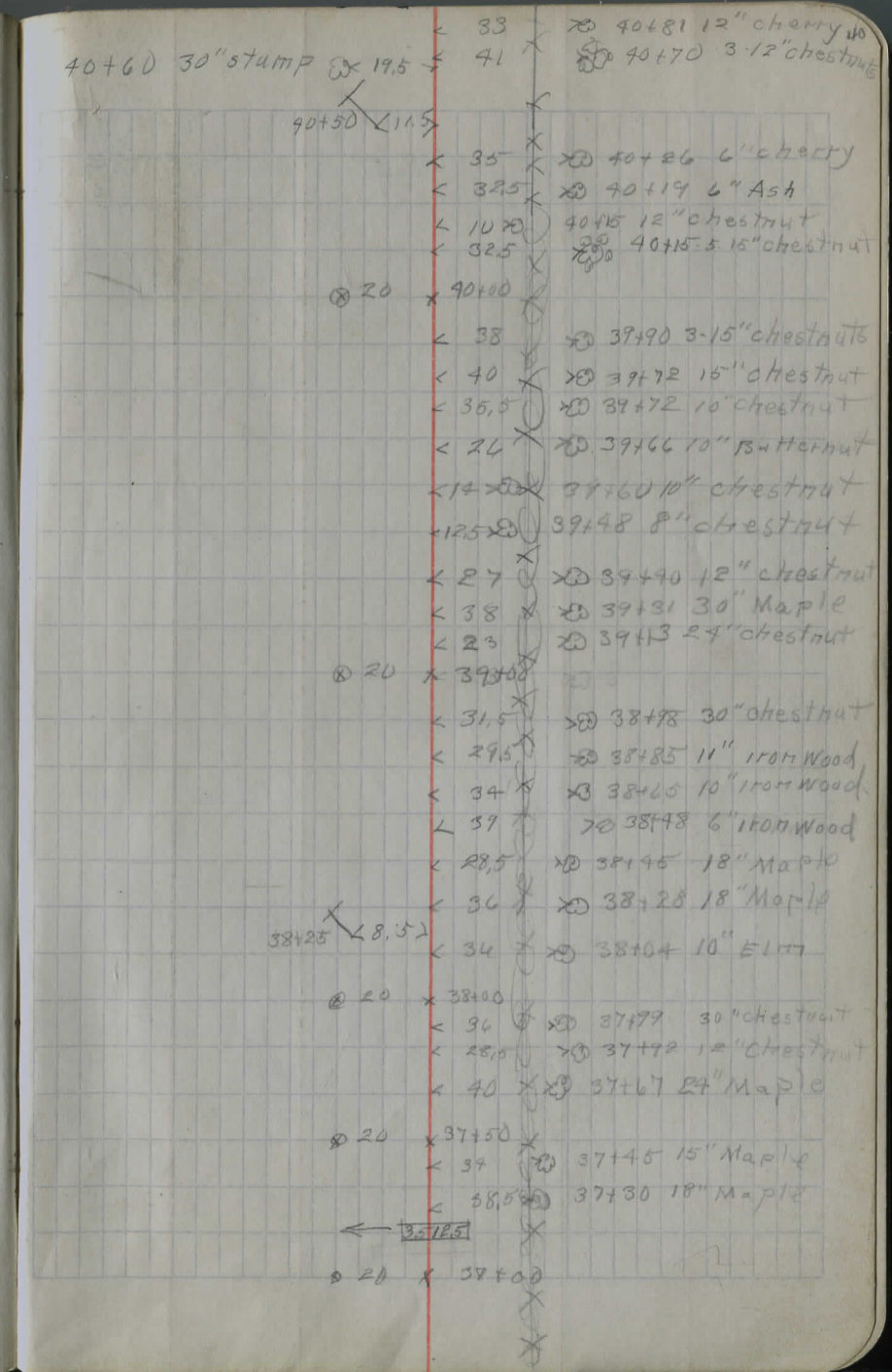
Conc. Deck '51



33+54.75 Intersection of Hubbard Rd. With Sug street

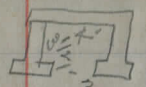
25+95 10" Sec. iron pipe





37+26 10" Sec Iron Pipe

Requires 15" Pipe



48+62 2.5x2.5 Stone Box poor condition Replace with 4' x 3 1/2

42+80 8" Section Pipe Requires 15" Pipe

48+72 X 19

1.5 1.5 1.5 1.5

12.7 X 8.5

20 X 48+00

15 47+86 24" Maple

47+65 28

14 47+66

47+28 23.5?

20 X 47+00

46+90 19

46+88 19

20 X 46+00

R.L.? 45+37 19

45+35 15

20 X 45+00

20 X 44+00

43+62 X 12

20 X 43+00

2.8 13.2 22.5 42+84 P.L.?

42+37 50 42+01 09

30" Maple 42+00 26 20 X 42+00

H

41+80 50

41+28 15" Maple 17.5

41+20

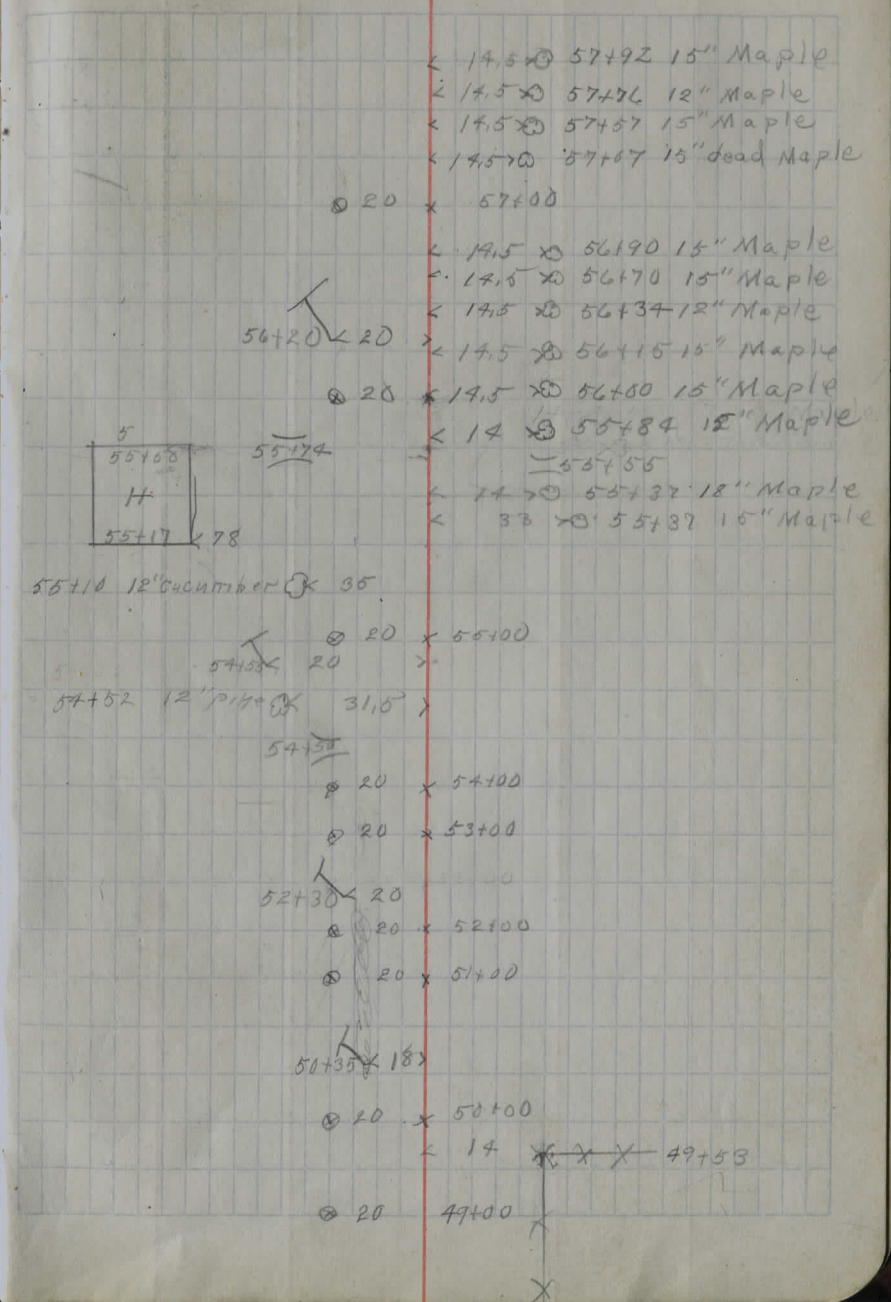
41+07 15" Maple 28.5 X 29.5 41+10 36" Chestnut

41+07 12" Maple 13.5

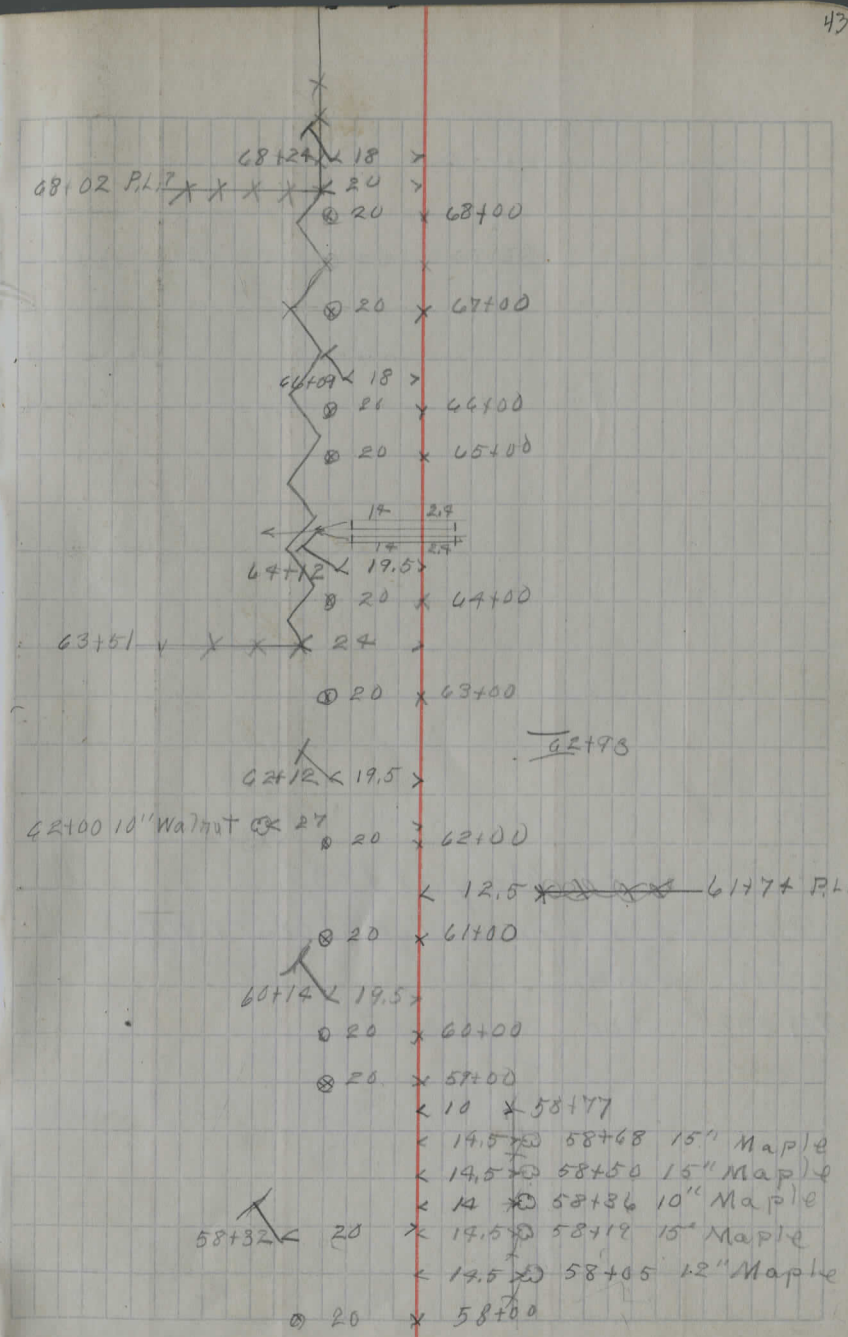
20 X 41+00

32 40+95 8" Elm

15.5 40+88 10" Chestnut Stump


14.5 57+92 15" Maple
14.5 57+76 12" Maple
14.5 57+57 15" Maple
14.5 57+07 15" dead Maple
20 57+00
14.5 56+90 15" Maple
14.5 56+70 15" Maple
14.5 56+34 12" Maple
56+20 20
14.5 56+15 15" Maple
20 14.5 56+00 15" Maple
14 55+84 15" Maple
55+74
55+56
14 55+37 18" Maple
33 55+37 15" Maple
5
55+08
55+17
78
55+10 12" Cucumber 35
20 55+00
54+68 20
54+52 12" Pine 31.0
54+50
20 54+00
20 53+00
52+30 20
20 52+00
20 51+00
50+35 18
20 50+00
14 49+53
20 47+00

64+61.5 10" sec iron pipe
10" sec iron pipe

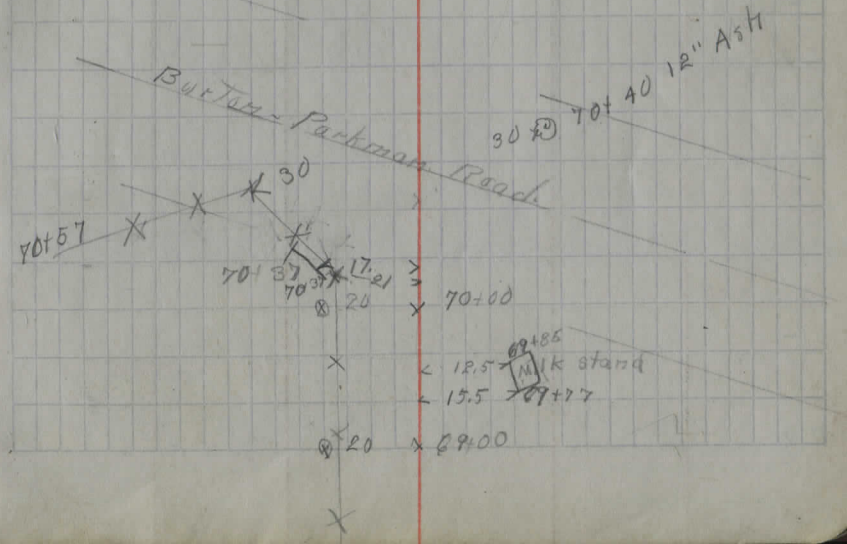


Stopped May, 12, 1930

D. Parks, L. Ernst, F. Ashcraft, H. Quiggle

Fair Warm

70+53.65 end of project



B.M.	6.08	1209.77		1203.69
33+54.75			7.9	1201.9
33			5.9	1203.9
32			5.2	1204.6
31			4.2	1205.6
30			3.1	1206.7
29			4.1	1205.4
	3.80	1208.11	5.46	1204.31
28			3.5	1204.6
27			4.4	1203.7
26			4.7	1203.4
25+95			4.7	1203.4
25			5.0	1203.1
24			4.5	1203.6

Spike W. root 36" chestnut 150 E of ℄ of Sug. St
25 S of ℄ of Hubbard Rd. E. of Intersection

5.1 4.9 5.2 5.8 7.9 ↓ ℄ ↓ 7.3 7.9 8.6
200 100 100 30 60 100 150

1204.7 1204.9 1204.6 1204.0 1201.9 1202.5 1204 1201.8

5.5 5.8 6.1 5.7 5.6 5.9 6.6 6.0 5.3 5.0
30 20 15 10.5 3 ℄ 5 7.5 20 30

4.7 5.4 5.6 5.2 4.6 4.8 5.2 5.6 5.3 4.5 4.6
30 17 16 13 .8 2 ℄ 3.5 6 20 30

3.9 3.0 3.8 4.3 3.8 3.3 3.7 4.2 4.0 2.8 3.2
35 30 18 16 13 9 3.5 ℄ 3 20 30

2.2 2.7 3.0 2.6 2.1 2.5 3.1 2.7 1.9 1.7
30 17 15 12 8 2.5 ℄ 4 20 30

3.8 3.8 4.1 4.4 4.0 3.7 3.7 4.7 4.6 4.4 3.5 3.5
30 22 18 15 12.5 8 3 ℄ 1.5 2.5 12 30

2.9 3.7 4.2 3.0 3.5 3.9 3.6 3.8 3.7
30 17.5 16 7 ℄ 3 5.5 15 30

4.0 4.5 5.1 4.8 4.2 4.4 4.5 5.2 4.5 4.1 4.1
30 18 15 13 6 ℄ 2 6 8 17 30

3.7 5.1 5.9 4.8 4.2 4.7 5.9 4.9 3.7 3.7
30 19 16 14 7 ℄ 3.5 5 17 30

1198.1 1199.0 1199.4 1200.3 1201.4 1201.8 1202.1 1202.4 1203.8 1203.3 1203.9 1203.4 1203.2 1202.3 1203.8 1202.3 1203.2 1203.4 1203.4 1204.1

10.2 9.1 8.7 7.8 6.7 6.3 6.0 5.7 5.0 4.8 4.2 4.7 4.9 5.8 5.0 5.8 4.9 4.7 4.7 4.0
250 214 150 100 50 30 15 5 2.5 15 30 7 ℄ 1.3 ft. 4.5 4.5 20 40 50 100

In ditch 25.8 South

In ditch 20' North

4.8 4.8 5.3 5.0 4.7 5.0 5.5 4.8 4.0 4.0
30 18.5 16 14 2 ℄ 1.5 3.5 15 30

3.5 4.0 4.9 4.7 3.9 4.1 4.3 4.9 4.2 4.3 4.3
30 18.5 15.5 13 7.5 2 ℄ 2 5 17 30

		1208.11		
	5.24	1209.64	3.71	1204.40
23			5.2	1204.4
B.M			3.86	1205.78
22+27			5.0	1204.6
22			6.3	1203.3
21				
	1.28	1199.51	11.41	1198.23
21			6.2	1193.3
	2.11	1191.05	10.57	1188.94
20			3.4	1187.7
19+34.5			2.0	1189.1 bridge floor
19+13			1.9	1189.2 bridge floor
19+23.75			1.9	1189.2
19			1.7	1189.4
	11.86	1200.82	2.09	1188.96
18			7.4	1193.4
	12.21	1211.82	1.21	1199.61
17			6.9	1204.9

5.2 5.2 5.5 5.2 4.9 5.2 6.0 4.9 4.4 4.7
30 18 16 14.5 8.5 E 3 6 15 30

R.F. spike S.E. side 12" pear 32' Left sta 22+27

4.3 4.5 5.0 4.9 5.0 5.4 5.0 4.7 4.2 4.2
30 22 18 8.5 E 0.5 1.5 9.5 20 30

4.5 4.7 6.3 6.8 6.3 4.7 3.8
30 18 16 10 E 12.5 30

16.3
E

8.4 7.0 5.5 3.3
9 15 30 60

8.7 7.5 5.1 7.7 6.8 6.7 7.1 6.2
35 30 20 16.5 11 3 1.5 E

7.3 7.0 5.4 3.6 3.4 3.4 4.0 3.7 4.1 1.4 0.8
35 30 15 8 E 2 5 7 18 30 35

14.7 13.9 13.7 12.6 1.9 12.3 12.0
110 50 30 8.8 E 8.5 30
FL. FL.

8.4 9.4 5.4 2.0 1.7 1.4 3.9 4.6 2.4 6.4
35 30 15 0.5 E 3.5 9.5 20 30 70

5.4 5.4 6.4 7.9 7.4 7.5 8.2 6.6 6.3
30 15 11 6.5 E 5 8 15 30

0.9 1.2 4.0 7.8 7.1 6.9 7.1 7.7 2.3 2.3
30 19 11 4.5 4 E 5.5 7 16 30

		1211.82		
	7.78	1218.01	1.59	1210.23
16			5.7	1212.3
15			4.0	1214.0
14			3.3	1214.7
	4.46	1220.42	2.05	1215.96
13			4.9	1215.5
12			4.9	1215.5
	3.79	1218.73	5.48	1214.94
11			4.9	1213.8
10+40			4.7	1214.0
10			4.1	1214.6
	4.41	1220.92	2.22	1216.51
B.M.			3.17	1217.75
9			4.4	1216.5
8			2.2	1218.7
	4.08	1222.79	2.21	1218.71
7			4.3	1218.5

4.7 4.4 5.0 6.8 6.1 5.7 5.5 6.0 6.7 4.3 4.3
30 15 9 6.5 3 2 2 7 9 15 30

3.8 4.6 5.2 4.5 4.0 4.4 5.0 4.7 5.3
30 9 7 7.5 2 7 10 12 30

3.2 3.3 4.5 4.0 3.3 3.6 4.1 3.9 3.3
30 10 7 5 2 6 9 10 30

5.1 5.1 5.3 6.0 5.4 4.9 5.3 5.6 5.2 4.7
30 15 10 8 5 2 5.5 8 10 30

5.3 5.3 6.4 5.5 4.7 4.9 5.2 6.1 5.5 5.0
30 12 9.5 7 2 2 4 6.5 8.5 30

4.9 4.9 5.3 5.0 4.5 4.9 5.1 5.4 4.7
30 12.5 10 8.5 3 2 5 5.5 30

1209.7 1210.0 1211.2 1211.9 1212.5 1212.4 1212.3 1212.7 1213.7 1214.8 1214.0 1213.7 1213.2 1212.3 1213.0 1213.1 1213.2
9.0 8.7 7.5 6.8 6.2 6.3 6.4 6.0 5.0 4.7 5.0 5.5 6.3 5.7 5.4 5.5
250 200 130 100 50 30 12.2 10 3 2 4.5 5 EL. 30 60 100

5.0 5.2 4.7 5.1 4.5 3.8 4.1 4.3 5.4 4.7 4.7
30 15 10 9.5 7.5 2 2 4 7 7.5 30

R.P. spike S.E. side 24" Maple 50' left sta. 9+55

4.6 4.9 4.8 5.7 5.0 4.3 4.7 4.8 5.8 5.1 4.6 3.3
30 15 11 9 6.5 2 2 3 7 9 16 30

2.9 2.9 3.5 2.8 2.2 2.5 4.0 2.9 2.8
30 15 8 6 2 5 9 11 30

5.0 5.0 4.9 5.4 4.5 4.3 4.1 4.9 5.7 4.7 4.3
30 15 7.5 6.5 4 2 2.5 8.5 11 13 30

		1222.79		
6			4.8	1218.0
5			4.5	1218.3
4			5.5	1217.3
	4.96	1222.07	5.68	1217.11
3			5.4	1216.7
			3	
2+78.5			5.1	1217.0
2			4.9	1217.2
1			4.6	1217.5
0			3.3	1218.8
50			2.2	1219.9
100			2.0	1220.1
150			1.7	1220.4
200			1.4	1220.7
250			0.6	1221.5
	5.87	1226.25	1.69	1220.38
B.M.			3.54	1222.71
				1222.55

4.7	4.2	4.5	5.2	4.8	4.3	4.8	5.4	5.0	4.7
30	15	7	3.5	2	5	12	16	17	30
5.0	4.6	5.7	4.7	4.5	4.1	4.5	5.5	5.0	4.6
30	7.5	5	3	2	4.5	11	14	17	30
4.6	4.6	5.1	6.2	5.8	5.5	5.3	5.9	6.5	4.5	4.8
30	15	9	6.5	5	2	2.5	6.5	11	14	30
			5.8	5.8	6.2	5.9	5.4	5.7	6.0	5.7	6.3
			30	15	13	11	2	6	8	10	30

1212.3 1212.8 1213.2 1213.6 1213.7 1213.9 1214.1 1214.0 1215.5 1216.4 1217.0 1216.6 1215.9 1214.6 1215.9 1216.3 1216.7

98	83	89	85	84	8.2	8.0	8.1	6.6	5.7	5.1	5.5	6.2-7.5		6.2	5.8	5.7
300	250	200	150	100	50	30	5.1	8.4	5.5	2	6.5	7.9	4.2	13	30	50

5.2	5.5	5.3	6.2	5.4	4.9	4.7	5.0	6.3	5.0	4.7
30	15	9	7	4	2	2	9	12	15	30
5.6	5.0	4.9	4.4	5.1	4.7	4.6	4.2	4.5	5.6	4.6	4.0
35	30	24	15	8.5	4	2	4	13	16	19	30

4.4	4.0	5.0	3.3	2.9	3.4
30	6.5	3	2	11	28

B.M. "24" sta 284+90 spike in root 18" Hickory 25' L.Y. of 2

B.M.	1.40	1205.09		1203.69
34			5.4	1199.7
35			6.8	1198.3
35+50			7.3	1197.8
36			7.9	1197.2
36+50			6.6	1198.5
	4.72	1201.66	8.15	1196.94
37			5.2	1196.5
37+26			5.1	1196.6
37+50			4.5	1197.2
	5.86	1203.37	4.15	1197.51
38			6.2	1197.2
38+50			4.6	1198.8
39			3.6	1199.8
	9.98	1209.23	4.12	1199.25
40			9.1	1200.1

Spike N. root 36" chestnut 150 E of ℄ Jug 6+

1.8/30 2.0/9.5 6.0/3 6.6/1 5.4/℄ 5.0/4 4.6/12 3.1/23.5 3.0/30

11.2/100 9.7/50 8.8/30 8.3/20 7.1/8 7.3/7 6.8/℄ 7.0/6 7.9/9.5 7.2/14.5 7.8/22 7.8/30

8.6/30 7.6/7 7.9/5 7.3/℄ 7.2/7 8.5/11.5 7.9/13.5 7.7/30

7.3/30 7.3/20 7.0/8 7.5/3.5 7.9/℄ 7.2/6.5 7.5/13.5 8.4/16.5 8.0/18.5 8.0/30

7.2/30 6.7/25 6.6/℄ 8.2/3.5 7.0/11 7.4/18.5 8.7/21 7.6/23 6.1/26 6.1/30

4.6/30 4.4/20 4.2/8.5 4.6/4 5.3/3 5.2/℄ 4.8/7 7.4/13.5 5.8/17.5 7.7/20 7.1/23 4.1/30

1190.5 1192.0 1093.1 1194.4 1194.9 1195.6 1196.5 1196.6 1197.1 1197.1 1196.6 1195.8 1196.6 1196.3 1196.4 1197.4

11.2/200 9.7/150 8.6/100 7.3/50 6.8/30 6.1-5.2/14 3.5 5.1/℄ 4.6/4.5 4.6/12 5.1-5.9/12.5 5.1/16.5 5.9/24.5 5.3/30 4.3/50

6.3/30 5.9/20 5.3/4.5 5.5/5 5.0/4 4.5/℄ 4.2/2 4.3/8.0 5.8/12.5 5.1/13.5 5.1/30

5.5/30 5.5/20 5.9/7 6.7/4.5 6.2/℄ 5.7/3.5 6.0/9 6.7/10.5 6.4/13 7.6/20 7.6/30

8.1/80 2.9/20 2.6/5 5.0/3 7.6/℄ 4.1/4.5 4.3/10 5.1/13 2.5/22 2.5/30

4.6/30 3.7/20 4.2/7 4.4/5.5 3.6/℄ 3.7/2 3.7/7.5 4.3/10 4.1/11.5 3.6/20 3.6/30

11.0/30 10.4/20 9.5/10 8.6/8.5 9.1/2 9.1/℄ 8.3/3 9.8/5 9.4/6.5 9.7/20 9.3/30

		1209.23		
40+65			6.9	1202.3
41			5.4	1203.8
B.M	3.42	1209.66	2.99	1206.24
41+25			4.7	1205.0
42			8.9	1200.8
42+30			10.4	1199.3
	4.77	1203.18	11.25	1198.41
42+70			4.8	1198.4
42+80			4.8	1198.4
43+00			4.9	1198.3
43+55			4.7	1198.5
43+63			4.5	1198.7
44			3.1	1200.1
44+30			2.3	1200.9

5.6/30 5.1/20 5.1/7.5 7.7/6 7.2/5 6.9/4 7.8/5.5 4.5/3.5 4.2/20 4.2/30

4.3/30 4.3/20 4.2/9.5 5.5/7 5.4/4 5.4/6 5.6/7 5.0/11.5 3.7/15 3.5/22 3.5/30

R.P. spike N. root 36" chestnut 29.5' Rt. Sta 41+10

4.7/30 4.5/6 4.9/4 4.7/4 5.2/6.5 5.7/8.5 4.5/10.5 4.1/20 4.1/30

5.7/30 5.7/20 6.2/9.5 7.0/4.0 9.0/1.5 8.9/4 8.6/3 8.7/8.5 9.2/9.5 7.7/11 5.0/20 5.0/30

7.7/30 7.4/25 8.1/14 9.7/2.5 10.5/1.5 10.4/4 10.0/3.5 10.7/9 10.8/10 10.5/11.5 8.8/25 8.6/30

7.9/30 7.8/24 7.8/20 6.5/6 4.8/4 4.7/5 4.8/10 5.7/14 6.0/21.5 6.0/30

1191.5 11/100 1192.8 10.7/100 1193.9 8.3/50 1194.5 8.7/30 1196.2 8.0 1196.9 6.3 1198.4 4.8/28 1198.4 4.8/11 1198.0 5.2/13 1197.2 6.0-6.8/13.2 1196.4 6.1/21.5 1197.1 6.0/30 1197.2 5.7/50 1197.5 4.5/100 1198.9

8.1/30 8.7/20 7.5/14 6.0/3.5 4.9/4 4.8/5 5.0/12 5.7/14 5.7/22 5.7/30

6.8/30 6.8/23 6.3/13 5.5/11.5 4.8/5 5.3/3.5 4.8/1 4.7/4 4.3/5 4.7/11 5.1/12 3.9/15 3.3/30

3.5/30 3.4/14.5 3.7/6 5.0/3.5 4.6/1.5 4.5/4 4.3/5 4.5/10 4.8/12 3.5/16 2.9/30

2.1/30 2.0/20 2.0/9.5 2.5/6 3.9/4 3.3/2 3.1/4 2.9/9.5 3.3/11 3.6/14 1.8/22 1.8/22 1.8/30

1.6/30 1.4/19.5 1.9/8 3.1/5.5 2.5/2.5 2.3/4 1.9/2 2.6/8.5 2.9/10 1.2/13.5 1.0/20 0.9/30

		1203.18		
45		1°	5.3	1197.9
	1.63	1196.36	8.45	1194.73
46			3.3	1193.1
46+70			6.2	1190.2
47			9.5	1186.9
	3.27	1187.66	11.97	1184.39
47+30			3.2	1184.5
48			4.8	1182.9
T.P.			3.51	1184.15

Stopped May 21 1930

D. Parks, L. Ernst, H. Quiggle

5.0 / 30	4.7 / 20	5.2 / 9	6.2 / 6.5	5.6 / 4.5	5.3 / ℄	5.7 / 6	6.3 / 7.5	4.0 / 11.5	3.2 / 13	3.2 / 30
3.5 / 30	2.7 / 20	2.6 / 15.5	4.0 / 10.5	4.8 / 8.5	3.8 / 6.5	3.3 / ℄	3.9 / 5	4.7 / 6.5	1.7 / 11.5	0.7 / 19	0.2 / 30
10.8 / 30	10.3 / 20	7.2 / 13.5	6.5 / 7	6.7 / 6	6.2 / ℄	6.5 / 4.5	6.7 / 7	6.7 / 8	7.9 / 9	7.9 / 17	5.7 / 30	
12.0 / 30	11.5 / 21.5	11.2 / 13	9.5 / 7	9.5 / ℄	8.6 / 5	9.3 / 7.5	12.5 / 8.5	10.3 / 15	9.5 / 30			
4.3 / 30	3.8 / 15	3.2 / 7	3.2 / 2	3.2 / ℄	3.3 / 7.5	3.7 / 9	3.2 / 12	2.2 / 19	1.5 / 30			
6.7 / 30	5.9 / 20	5.7 / 16	5.2 / 10	4.8 / 9	4.8 / ℄	5.0 / 5.5	5.2 / 7	5.0 / 8.5	5.3 / 14.5	3.7 / 27	3.7 / 30	

X - S.W. cor. W Headwall culvert sta. 48+62

T.P.	6.63	1190.78		1184.15
48+62			7.4	1183.4
49			6.8	1184.0
49+40			5.7	1185.1
49+55			5.2	1185.6
50			3.2	1187.6
	12.59	1203.18	0.19	1190.59
51			10.3	1192.9
52			4.3	1198.9
	12.83	1215.83	0.18	1203.00
53			10.3	1205.5
	12.95	1225.71	3.07	1212.76
54			12.1	1213.6
55			6.8	1218.9
56			4.2	1221.5
57			3.2	1222.5
	2.62	1226.27	2.06	1223.65

1175.6 1179.5 1178.3 1179.5 1178.9 1179.5 1179.4 1181.7 1184.1 1183.0 1183.5 1183.4 1183.4 1183.8 1181.4 1179.1 1180.7 1180.6 1181.5

15	13	12.5	1.0	1.4	1.7	1.4	8.1	6.7	7.8	7.3	7.4	7.0	9.4	11.7	10.1	10.2	9.3	
25	20	10	0.0	2.0	2.5	12.7	11	7	5	6	5	8.5	FL	20	50	100		

0.4	6.6	7.1	6.7	6.5	6.8							6.9	7.5	7.7	9.0			
30	15	12.5	11	7.5	℄							1.5	4	12.5	30			

4.3	4.5	5.6	6.3	6.8	5.6	5.7	5.7	6.3	5.5	5.6	7.2	8.9						
30	23.5	13	11	9	7	℄	1	3	5	11	20	30						

3.1	3.4	5.2	6.1	5.2	4.9	5.2	5.2	5.7	7.2	3.8	4.1							
30	19	12.5	11	8.5	7	℄	1.5	3.5	11.5	21.5	30							

0.4	1.4	2.7	4.3	3.2	2.8	3.2	3.4	4.4	3.0	1.0	1.2	1.5						
30	20	16	11.5	9	7	℄	1	3	7.5	10	22.5	30						

6.8	7.0	7.3	10.9	10.0	9.8	10.3	11.5	9.8	8.7	8.6	8.7							
30	26.5	18.5	12.5	10	5	℄	2.5	4.	8	18	30							

1.9	2.3	3.8	5.5	4.2	3.9	4.3	5.7	3.6	2.6	2.4								
30	19	15	12	9	4.5	℄	2	4.5	9	30								

6.4	6.2	11.2	10.2	7.9	10.3	10.9	6.0	6.2	6.7									
30	20	12.5	10	5	℄	2	4.5	20	30									

7.3	9.7	12.7	11.8	11.5	12.1	18.1	8.9	9.0	8.9									
30	21.5	15.5	11.5	6	℄	1.5	7	17.5	30									

5.9	5.8	7.1	6.1	5.8	6.2	6.8	7.5	4.3	4.3									
30	12.5	17	13	7	1	℄	1.5	6.5	30									

4.0	3.7	4.1	4.8	4.0	3.7	4.2	4.2	4.9	3.4	2.5	2.6							
30	20	16.5	15.5	12.5	5.5	℄	1.5	3.5	6.5	16	30							

3.5	3.6	4.0	3.4	2.8	3.2	3.7	3.0	2.7	1.9	2.2								
30	15	14	11	5.5	℄	2.5	4.5	7.5	23.5	30								

		1226.27		
58			4.2	1222.1
59			4.8	1221.5
B.M.	2.40	1225.94	2.73	1223.54
60			4.7	1221.2
61			4.6	1221.3
62			4.1	1221.8
63			4.0	1221.9
	4.74	1226.90	3.78	1222.16
64			5.7	1221.2
64+61.5			5.7	1221.2
65			5.2	1221.7
66			5.7	1221.2
67			3.7	1223.2
68			3.3	1223.6

4.3	4.3	4.7	4.8	3.9	3.3	4.2	4.9	3.4	2.8	2.9	
30	20	16	15	12	6.5	℄	1.5	5	18	30	
5.0	5.0	5.3	4.6	4.0	4.4	4.8	5.7	4.8	4.1	3.8	
30	14.5	15.5	13	4.5	1	℄	2	3.5	14	30	

N. root 15" Maple 40' Rt sta. 58+70

4.8	4.8	5.0	3.3	4.1	4.2	4.7	4.8	5.5	4.8	4.4	4.4
30	20	15.5	13.5	12.5	5	℄	1.5	2.5	4	15.5	30
4.9	4.9	5.0	4.8	4.3	4.6	4.7	5.2	4.8	4.8	4.1	4.1
30	15	17	12.5	9.5	2	1	2.5	3.5	11	26	30
4.1	4.3	4.7	5.0	4.3	3.6	4.1	5.1	4.1	3.7	3.4	2.9
30	20	15	14	11.5	6	℄	3	4.5	9	15.5	30
5.2	5.0	4.5	5.0	4.6	4.0	4.0	4.1	5.2	4.2	3.6	3.5	3.3
30	20	17	13	11	3.5	℄	1	3	4.5	10	20	30
5.5	5.5	5.7	5.6	5.1	5.7	6.3	5.7	5.2	5.2		
30	15	13.5	10	6	℄	2	4	7.5	30		

12.18.0	12.18.3	12.19.1	12.19.1	12.19.4	1220.1	1220.3	1220.2	1220.5	1221.0	1221.7	1221.2	1221.0	1220.8	1220.3	1221.3	1221.9	1221.8	1222.0	1222.9
7.9	8.6	7.8	7.8	7.5	6.8	6.6	6.7	6.4	5.9	5.2	5.7	5.9	6.1	6.6	5.6	5.0	6.1	7.9	4.0
250	200	150	100	50	30	14		12.5	5	℄	1.5	2.4	Fl.		6.5	13.5	27	50	100
6.1	5.7	5.7	5.9	5.6	4.9	5.2	5.2	6.3	5.3	4.9	4.6								
30	20	18.5	13.5	12	5	℄	1	3	5.5	14	30								
5.1	5.1	5.1	5.6	6.3	4.2	4.7	5.7	5.9	4.8	4.2	3.7								
30	20	17.5	17	16	8.5	2.5	℄	1	3	11.5	30								
4.9	4.7	4.5	5.2	4.5	3.6	3.7	3.8	5.5	4.1	3.7	3.5								
30	20	14	12.6	12.5	3	℄	3	7	10	19	30								
4.8	3.9	4.6	4.1	3.1		3.3	3.6	5.0	3.6	3.2	2.9								
30	12	10.5	9	2		℄	4.5	8	11	18	30								

		1226.90		
	7.24	1231.13	3.03	1223.87
69			7.2	1223.9
70			6.6	1224.5
70+53.65			4.4	1226.7
B.M			3.56	1227.57

Fair Warm Stopped May 22 1930
D. Parks, L. Ernst, H. Quiggle

8.1 / 30 | 8.1 / 20 | 7.8 / 20 | 7.7 / 15 | 8.2 / 10.5 | 7.9 / 9 | 7.1 / 2.5 | 7.2 / E | 7.3 / 15.5 / 5.5. | 8.5 / 9 | 7.4 / 13 | 7.0 / 25 | 7.2 / 30

6.7 / 30 | 6.7 / 20 | 6.5 / 15 | 7.5 / 14 | 7.0 / 6 | 6.6 / E | 6.5 / 11.5 | 5.7 / 21 | 6.0 / 30

1228.5 1227.9 1227.4 1227.1 1226.7 1226.8 1226.7 1226.3 1226.2 1226.1 1226.2 1226.6 1226.9

2.6 / 250 | 3.2 / 200 | 3.7 / 150 | 4.0 / 100 | 4.4 / 50 | 4.3 / 30 | 4.7 / E | 4.8 / 30 | 4.9 / 50 | 5.0 / 100 | 4.9 / 150 | 4.6 / 200 | 4.2 / 250

R.P. spike N. W. side 12" Ash 30' Rt sta 70+40

Iron Pipe Set Hubbard Road

30+00 Δ = 0°00'

38+30 Δ = 0°00'

44+50 Δ = 0°00'

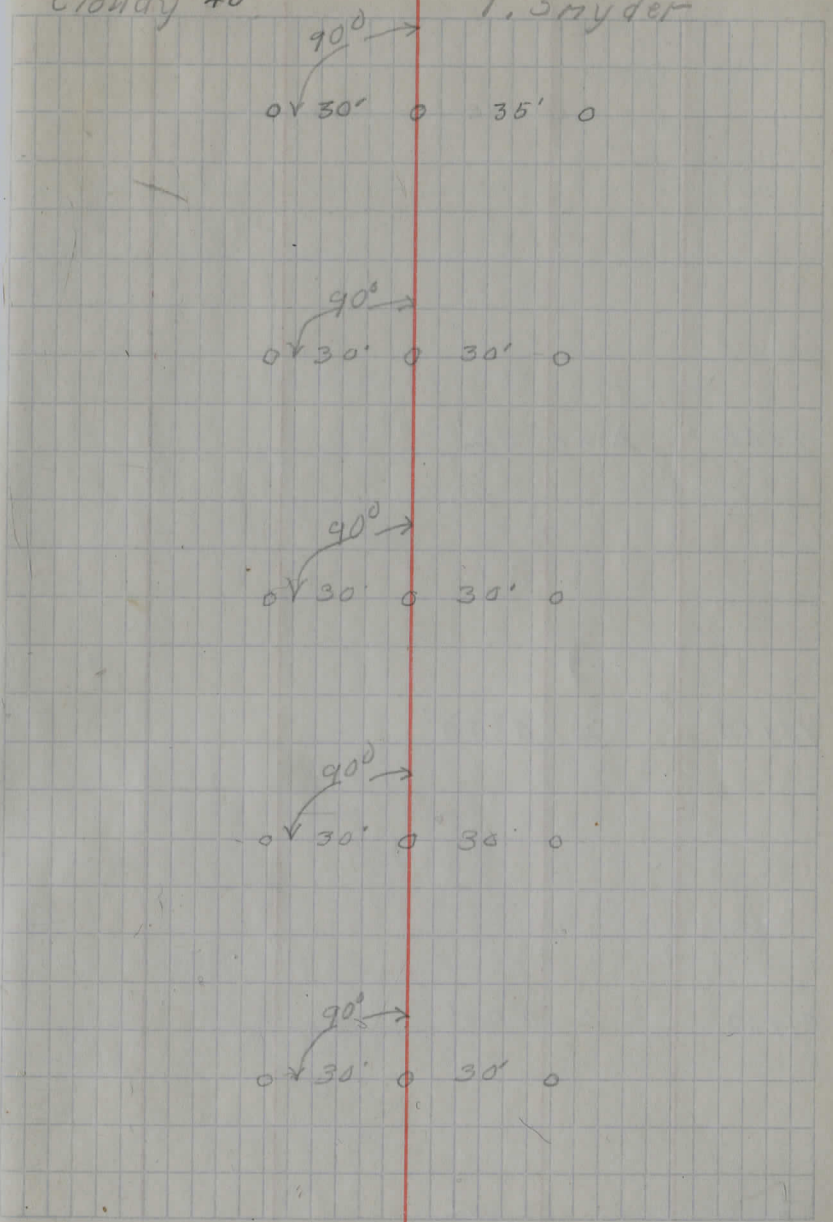
52+00 Δ = 0°00'

58+00 Δ = 0°00'

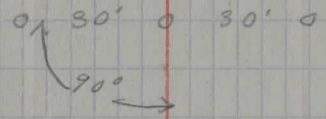
Oct. 24, 1930

Cloudy 40°

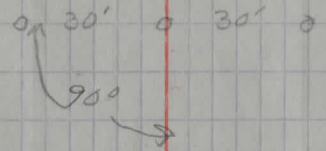
D. Parks
R. Hassel
T. Snyder



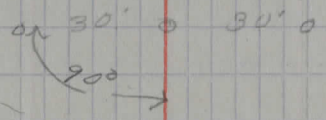
1+00 $\Delta = 0°00'$



10+00 $\Delta = 0°00'$



21+00 $\Delta = 0°00'$



Iron pipe set Jug Street

? 0+00 ? = 35-27 ?

1+00 Δ = 37°27' R

10+00 Δ = 0°00'

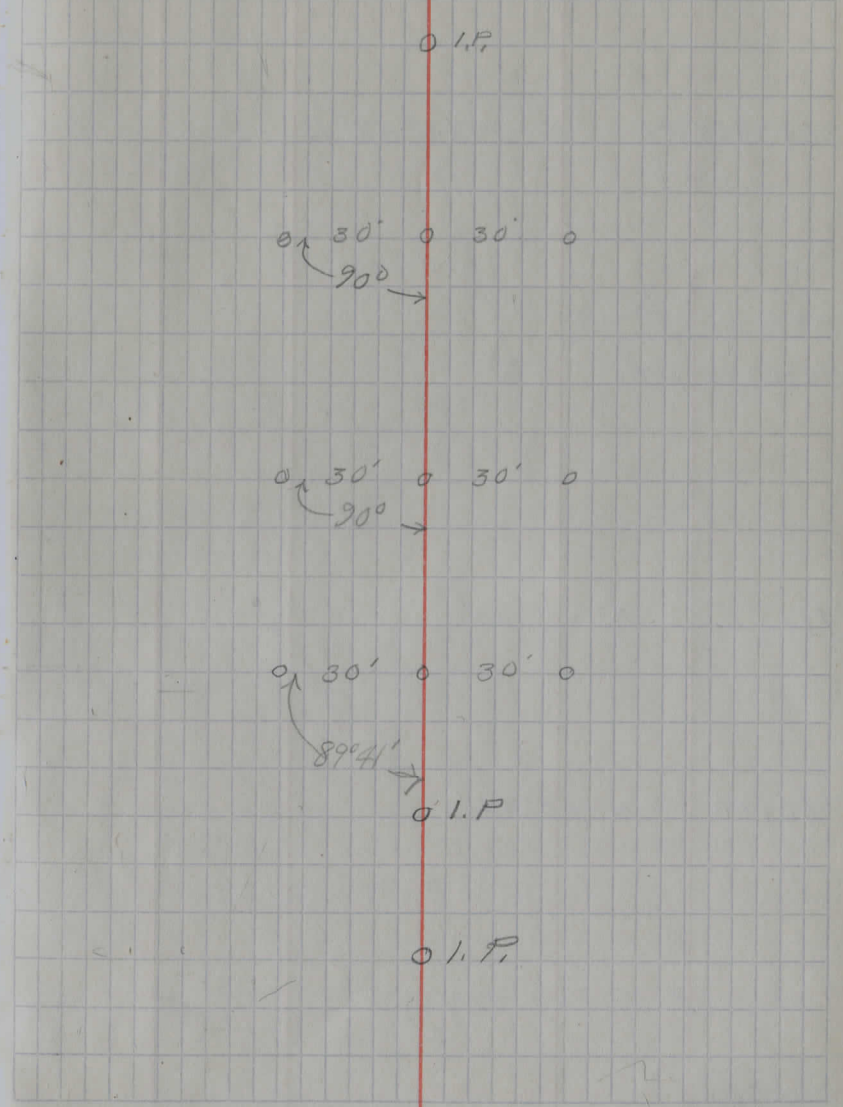
16+00 Δ = 0°00'

23+00 Δ = 0° 38' L

31+00 Δ = 0° 00'

33+54.75 Δ = 0°00'

Dec. 10, 1930
D. Parks
F. Belding



34+53.35 P.C.

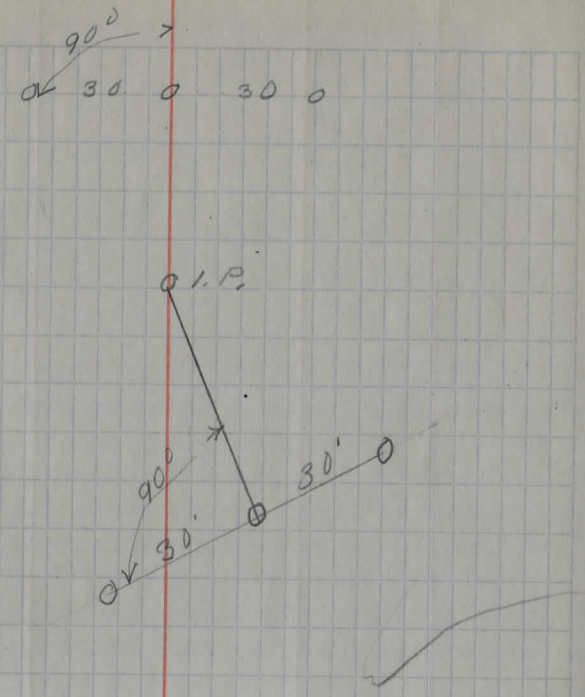
36+33.85 P.I. $\Delta = 34^\circ 58' L$

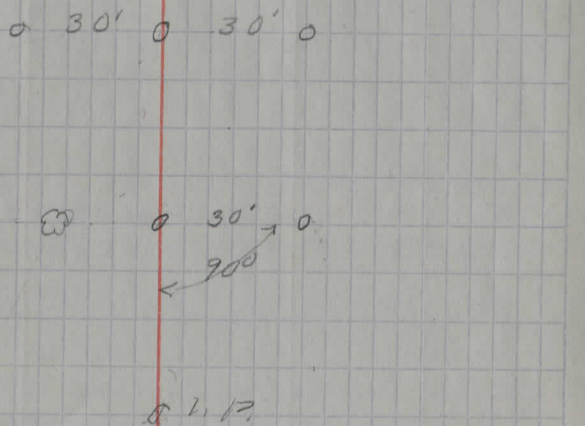
38+03.02 P.T

41+25 $\Delta = 0^\circ 00'$

56+00 $\Delta = 0^\circ 00'$

76+53.65 end of Project





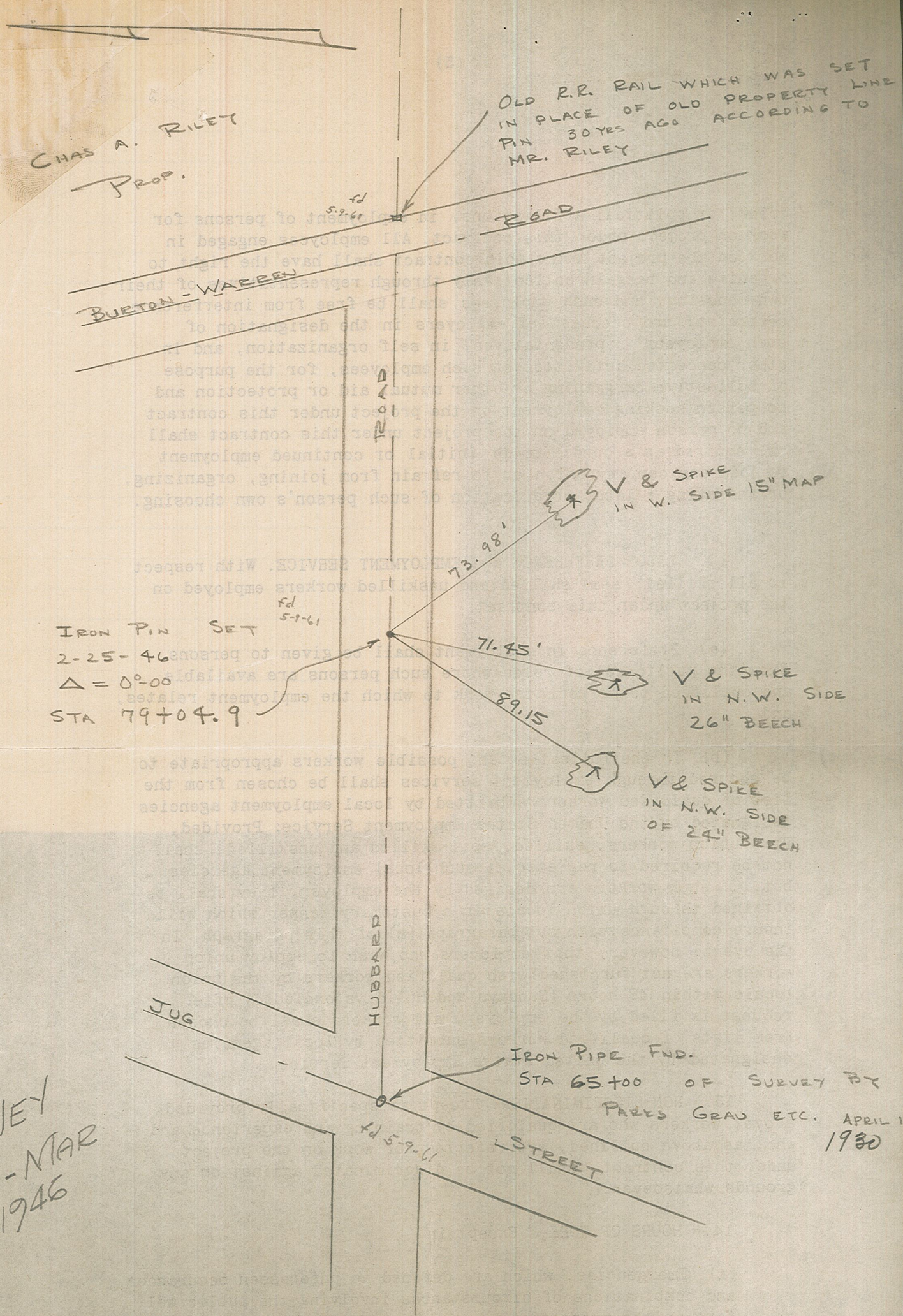
Hubbard Rd
Sec. B

(5)

color, or political affiliations, i
work on project under this contract
work on the project under this contr
organize and bargain collectively th
own choosing, and such employees sh
restraint, and coercion of employer
such employees' representatives, in
other concerted activities of such
of collective bargaining or other m
no person seeking employment on the
and no person employed on the projec
be required as a condition of initi
to join any company union or to refr
or assisting a labor organization o

12. LABOR PREFERENCE and EMP
to all skilled, semi-skilled and un
the project under this contract:

(a) Preference in employment
from the public relief roles where
and qualified to perform the work t
and



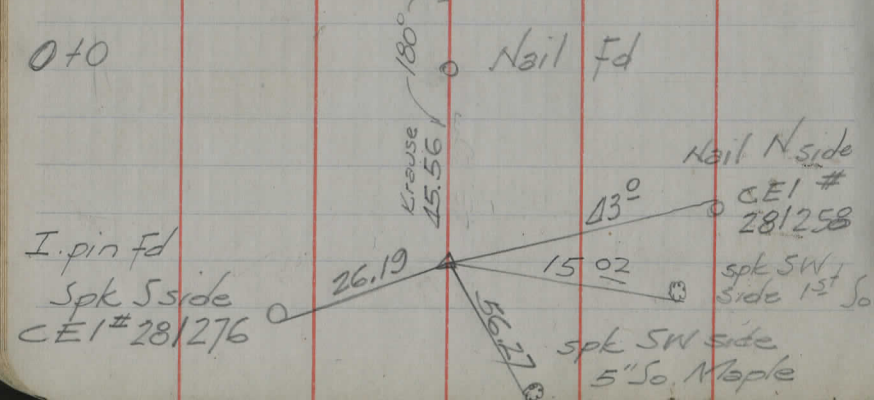
SURVEY FEB-MAR 1946

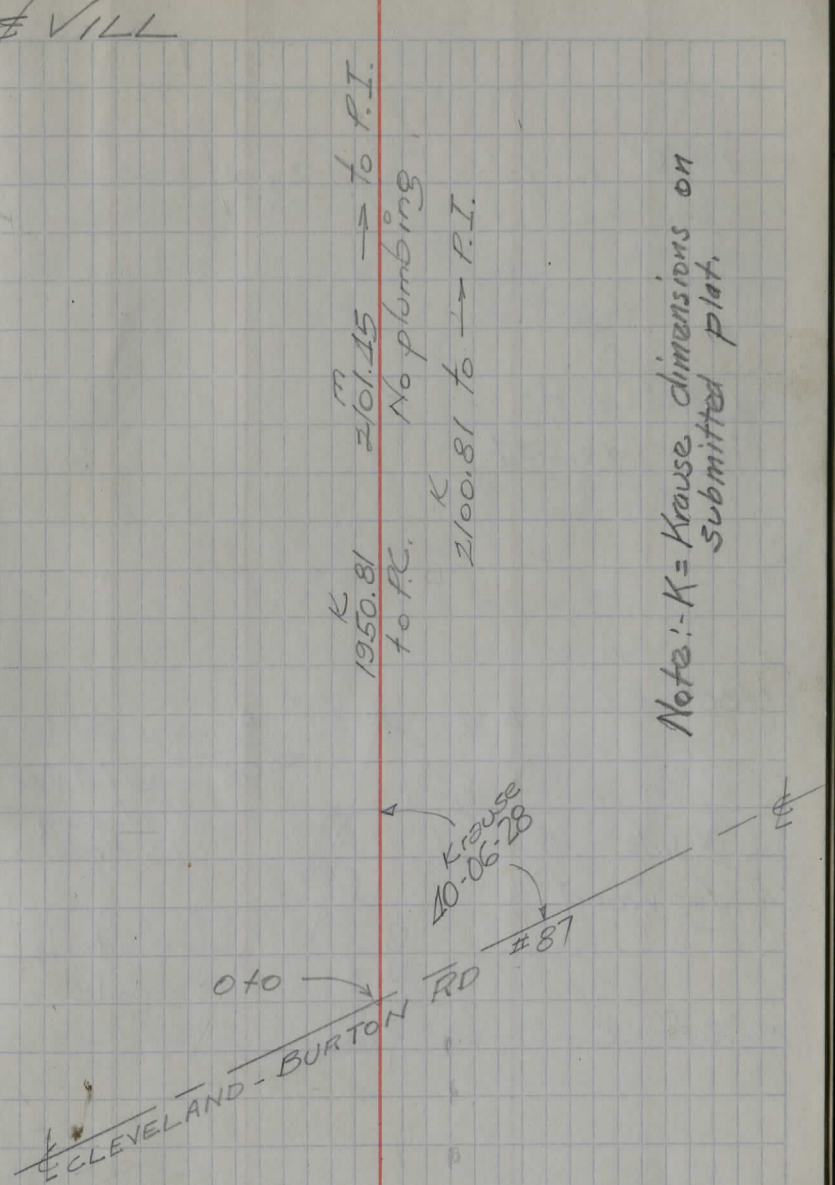
CLYDE HERE ARE THE TIES FOR A PIN WHICH I SET ON HUBBARD RD. IT LINES WELL BETWEEN PIPE AT JUG ST AND APPARENT ORIGINAL LOT LINE BETWEEN 90 & 100 ACTUAL ℄ OF ROAD IS ALONG NORTH BERM BUT PROPERTY OWNERS SAY THAT THEY REALIZE THAT TRAVELLED ROAD IS SOUTH OF WHERE IT SHOULD BE. Keating (C.E.I.Co.)

TH-302

COLONY LANE BURTON TWP & VILL

8/2-49 Pom - Temple - Wedge

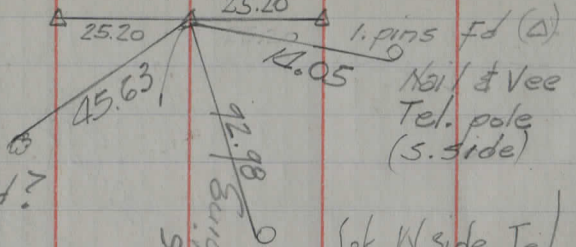




Note:- K = Krause dimensions on submitted plat.

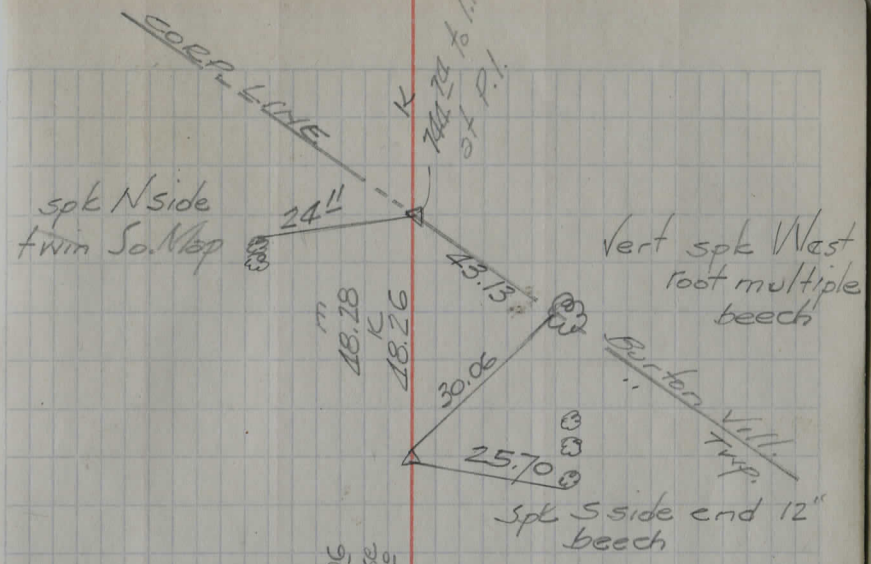
22+97.61 Pin fd Corp. Line

22+49.35 P.T.
1. Pin fd

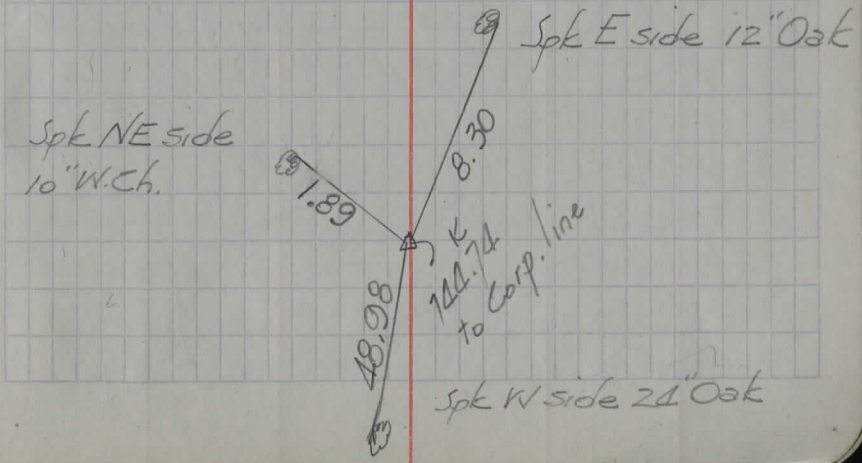


Over

62



P.I
pin fd
± 30' W of ctr. rd.



Topo Colony LANE

8+0 berm 11 — berm 9 — ditch 11

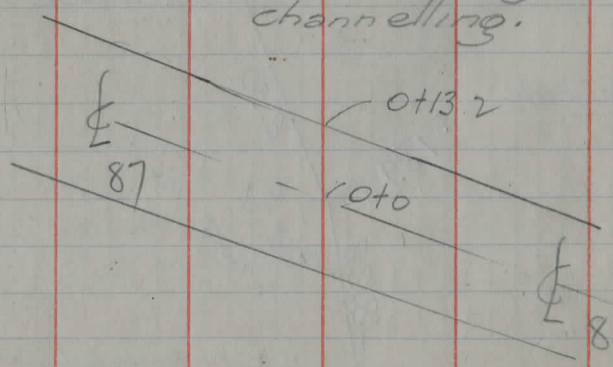
6+18 small pipe culvt plugged 3/4 clean out & open ± 20' outlet — ← ± opened

6+0 berm 12' — berm 10' — ditch 11'

4+0 berm 12 — H₂O in ditch 7+0 to 3+50 — berm 9' — ditch 10'

2+0 berm 13 — Berm 11

0+76 12.8 — 10.0 — 18" Vit. needs cleaning & outlet channelling.



Burton

8/2/49 Porn Temp Wedge

64

spring creek → 17+21 — 15.7 — 8.5 — 30" ~~27~~" V.S.P. culvt ± 4 lengths smashed on out let end ± 3.5' cover better replace with conc. & extend ± 12' — extend ± 6'

Berm 7.5' — 16+0 — Berm 6'

± 6' fill — looks OK opened up so could flush out

15+97 — 12" Vit. tile culvt — 10' excav. at outlet req'd — 23.5 — 13.5 — open up inlet

14+0 down → berm 9' — berm 8.5' — wide deep ditch 17'

12+0 berm 13' — gravel — berm 9' — wide shallow ditch 16'

10+0 berm 11 — fill both sides — Berm 9.5

somewhere 9+0 to 10+0 should be culvt no fund to much brush

21+01 ±5

20+0 berm ← 19' → berm

12" VSP ±6' Fill

outlet plugged

18+94

17'10" 13.2

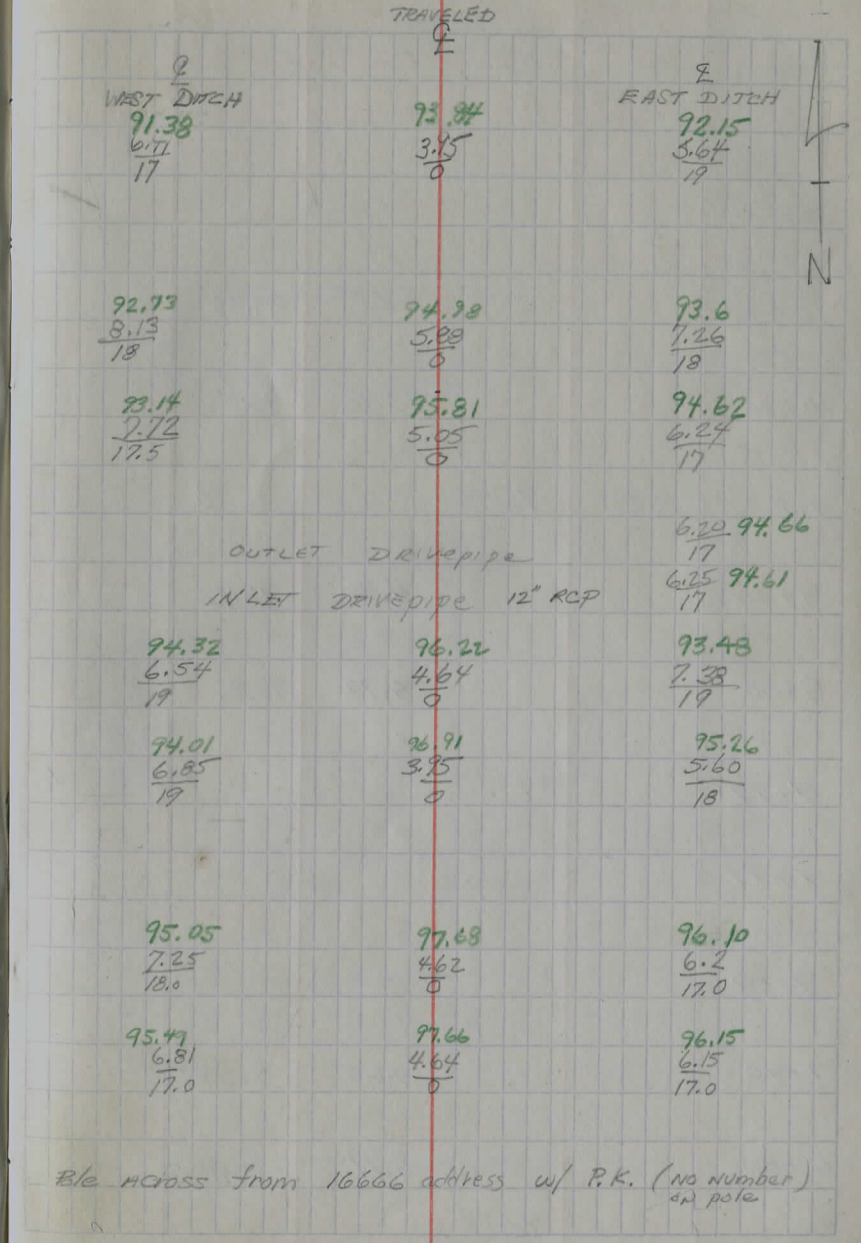
berm 8.5	18+0	berm 11.5	no ditch

Jud Street Drainage Project

Profiles of E. & W. ditches + TR

STATION	+BS	H.I.	-F.S.	ELEV.
6+00			3.95	93.84
		97.79		
T.P.	2.81			
5+00			5.88	94.98
4+00			5.05	95.91
3+78			6.20	94.66
3+78			6+25	94.61
3+00			4.64	96.22
2+00			3.95	96.91
		100.86		
TP	3.18			
1+00			4.62	97.68
0+00			4.64	97.66
		102.30		
TBM	2.30			100.0

July 10, 1984 — Neil Burt - rod, Mitch Ferguson - leveler



B/c across from 16666 address w/ P.K. (no number on pole

Surf St Profiles

Station	BS	HI	FS	ELEV
10+66				
10+47			6.65	89.83
10+00			3.98	92.5
T.P	3.55	96.48		
9+00			4.86	92.93
8+00			4.93	92.86
7+77				
7+77				
7+09				
7+00			4.65	93.14
6+88			6.99	90.80
		97.79		

TRAVELED

WEST ℄ Ditch ℄ EAST ℄ DITCH

89.75
6.73
19

Outlet

89.83
6.65
18

12" Cmp drivepipe inlet

89.99
6.49
18

92.5
3.98
0

91.25
5.23
17

90.2
7.50
18

92.93
4.86
0

91.9
5.89
16

90.47
7.32
18

92.86
4.93
0

91.55
6.24
18

90.69
7.10
17

OUTLET x culvert

90.95
6.84
17

Concrete 15" INLET X-CULVERT

90.67
7.12
20

15" cmp OUTLET

93.14
4.65
0

91.91
5.88
17

6.99
20

15" cmp drivepipe inlet

Aug 87 Profiles

Station	B.S.	H.I.	F.S.	ELEV
15+20				
15+00			5.14	90.82
14+92			7.29	88.67
14+00			5.36	90.6
13+60			7.44	88.52
13+44			7.47	88.49
TP	5.64	95.96		
13+00			6.16	90.32
12+00			5.68	90.8
11+00			4.74	91.74
		96.48		

Traveled

West ℄ ditch	℄	East ℄ DITCH
		88.32 7.64 21.5
15" drivepipe cmp		
88.63 7.33 16	90.82 5.14 0	
		88.67 7.29 21
15" drivepipe cmp		
DITCH WEST - See pg 72 NOTES		
88.0 7.76 18	90.6 5.36 0	88.29 7.67 17
		88.52 7.44 16
OUTLET ?		
		88.49 7.49 16
12" RCP inlet		
88.15 8.33 18	90.32 6.16 0	88.5 7.98 18
88.69 7.77 18	90.8 5.82 0	89.05 7.43 18
89.25 7.25 18	91.74 4.74 0	90.29 6.19 17

Jig Street Profiles

Station	B.S.	H.I.	F.S.	ELEV.
19+21				
19+00			5.10	93.65
18+77				
18+60				
18+00			5.90	92.85
		98.75		
T.P.	6.79			
17+00			4.00	91.96
16+86				
16+65				
16+00			4.74	
15+31				
		95.96		

Traveled

WEST ℄ DITCH	℄	EAST ℄ Ditch
		91.20 7.55 18
END of clay tile 8"		
	93.65 5.10 0	92.72 6.03 19
driveway		
		92.54 6.21 19
outlet drivepipe 12" cmp		
		92.66 6.09 18
drivepipe 12" cmp		
91.52 7.23 18	92.85 5.90 0	91.96 6.79 17
91.23 4.73 19	91.96 4.00 0	90.23 5.73 20
89.31 6.65 18	drivepipe and Begin 12" clay TILE	
89.16 6.80 18	drivepipe 12 cmp	
88.97 6.99 18	91.22 4.74 0	88.65 7.31 20
87.90 8.06 17.5 X-CULVERT		87.68 8.28 18

Surf Street Profiles

Station	B.S.	H.I.	F.S.	ELEV.
25+00			5.36	96.25
24+00			6.54	95.07
23+00			7.41	94.20
		101.61		
T.P.	7.88			
22+00			5.02	93.73
21+09				
21+00			5.26	93.49
20+64				
20+40				
20+00			5.13	93.62
19+77				
		98.75		

TRAVELED

WEST DITCH	℄	EAST DITCH
94.41 / 7.20 / 18	96.25 / 5.36 / 0	94.16 / 7.45 / 19
93.36 / 8.25 / 18	95.07 / 6.54 / 0	93.07 / 8.54 / 19
92.66 / 8.95 / 19	94.2 / 7.41 / 0	92.27 / 9.34 / 18
92.2 / 6.55 / 19	93.73 / 0	91.55 / 7.20 / 20
90.47 / 8.28 / 14	x-culvert 18" RCP	90.67 / 8.08 / 20
91.3 / 7.45 / 19	93.49 / 5.26 / 0	91.3 / 7.45 / 21
	12" cmp outlet drivepipe	91.51 / 7.24 / 19
	12" cmp drivepipe	91.53 / 7.22 / 19
91.19 / 7.56 / 19.5	93.62 / 5.13 / 0	92.05 / 6.70 / 19
91.42 / 7.33 / 19.5	end 12" clay tile	

Surf Street Profiles

Station	B.S.	H.I.	F.S.	ELEV.
	4.82	98.32		
TP			5.83	93.5
	3.34	99.33		
TP			7.26	95.79
		103.25		
28+00	3.74			
28+00			5.35	99.51
27+00			5.83	99.03
26+55				
26+50				
26+29				
26+09				
		104.86		
T.P.	7.13			
TP 26+00			3.88	97.73
		101.61		

Traveled

& WEST	&	& EAST
98.56 6.30 18'	99.51 0	99.34 5.52 17
96.4 8.46 18	99.03 5.83 0	driveway
	(top) ground elev Begin of clay tile?	97.82 7.04 20
96.05 8.81 19	12" CMP inlet	
96.0 8.86 19	12" CMP outlet	
	drive pipe 8" clay tile	95.8 9.06 20
96.14 5.47 17		95.48 6.13 19

2nd Street Profiles

STATION	B.S.	HI	F.S.	ELEV.
TBM # POLE			2.68	99.97
	5.34	102.65		
TP			5.19	97.31
	5.89	102.50		
TP			4.03	96.61
	6.52	100.64		
TP			3.87	94.12
	5.25	97.99		
TP			4.36	92.74
	6.51	97.1		
TP			4.91	90.59
14+78				
	4.64	95.5		
TP			6.04	90.86
	3.85	96.90		
TP			5.27	93.05
		98.32		

℄

87.32 DITCH	87.51 WEST	88.29	90.65 ℄
8.18 / 100	7.99 / 50	7.21 / 19	4.85 / 0

	+ BS	HI	− FS	Elev	
Hubbard Rd. Drainage		100.00			
18+56			6.86	93.14	
27+76			8.2	91.8	
	6.82	99.44	7.38	92.62	
27+16			7.4	92.0	
T.O			4.75	94.7	
			Top stake	Elev	Grade
8+60			1.77	97.67	92.80
8			2.60	96.84	92.24
7			3.40	96.04	92.36
6			4.06	95.38	92.48
5			4.14	95.30	92.60
4	5.39	100.71	4.12	95.32	92.72
3			4.65	96.06	92.84
2			4.07	96.64	92.96
1			4.35	96.36	93.08
0			4.53	96.18	93.20
Flow			7.5	93.2	

Flow Tile from south.

Flow culv.

1856
860
1716

Flow

Top opening

Cut		
5.87		5' 10½"
4.60	5+8	4' 7¼"
3.68		3' 8¼"
2.90		2' 10¾"
2.70		2' 8½"
2.60		2' 7¼"
3.22		3' 2½"
3.68		3' 8¼"
3.28		3' 3½"
2.98		2' 11½"

-0.129

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

Entered according to Act of Congress in the year 1883,
by W. Keuffel & H. Esser, in the office of the Librarian of Congress,
in Washington, D.C.

HOW TO USE KEITH'S TABLES.

EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P.=23° 20′ to the R. at Station 542+72.

Ext. in Tab. IV opposite 23° 20′=120.87
120.87÷12=10.07. Say a 10° Curve.

Tan. in Tab. IV opp. 23° 20′=1183.1
1183.1÷10=118.31.

Tab. V. correction for A. 23° 20′ for a 10° Cur.=0.16
118.31+0.16=118.47=corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′=23.33°÷10=2.3333=L. C.

2° 19½′=def. for sta.	542	I. P.=sta.	542+72
4° 49½′= " " "	+50	Tan.=	1.18.47
7° 19½′= " " "	543	B. C.=sta.	541+53.53
9° 49½′= " " "	+50	L. C.=	2.33.33
11° 40′= " " "	543+	E. C.=sta.	543+86.86
	86.86		

100—53.53=46.47×3′(def. for 1 ft. of 10° Cur.)=139.41′=
2° 19½″=def. for sta. 542.

Def. for 50 ft.=2° 30′ for a 10° Curve.

Def. for 36.86 ft.=1° 50½′ for a 10° Curve

(These tables are published in Field Books of
KEUFFEL & ESSER Co., New York, N. Y.)

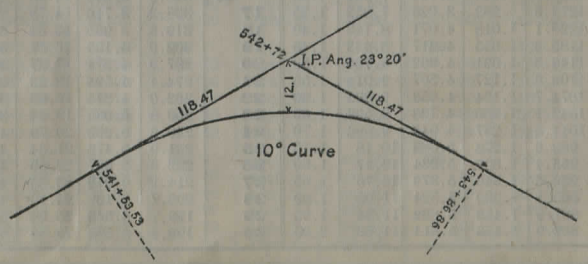


TABLE IV. — Tangents and Externals to a 1° Curve.

Angle	Tangent	External	Angle	Tangent	External	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	483.4	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	2o31.1	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.

Angle	Tangent	External	Angle	Tangent	External	Angle	Tangent	External
61°	3375.0	920.2	**71°**	4086.9	1308.2	**81°**	4893.6	1805.3
10′	3386.3	925.9	10′	4099.5	1315.6	10′	4908.0	1814.7
20	3397.5	931.6	20	4112.1	1322.9	20	4922.5	1824.1
30	3408.8	937.3	30	4124.8	1330.3	30	4937.0	1833.6
40	3420.1	943.1	40	4137.4	1337.7	40	4951.5	1843.1
50	3431.4	948.9	50	4150.1	1345.1	50	4966.1	1852.6
62	3442.7	954.8	**72**	4162.8	1352.6	**82**	4980.7	1862.2
10	3454.1	960.6	10	4175.6	1360.1	10	4995.4	1871.8
20	3465.4	966.5	20	4188.5	1367.6	20	5010.0	1881.5
30	3476.8	972.4	30	4201.2	1375.2	30	5024.8	1891.2
40	3488.3	978.3	40	4214.0	1382.8	40	5039.5	1900.9
50	3499.7	984.3	50	4226.8	1390.4	50	5054.3	1910.7
63	3511.1	990.2	**73**	4239.7	1398.0	**83**	5069.2	1920.5
10	3522.6	996.2	10	4252.6	1405.7	10	5084.0	1930.4
20	3534.1	1002.3	20	4265.6	1413.5	20	5099.0	1940.3
30	3545.6	1008.3	30	4278.5	1421.2	30	5113.9	1950.3
40	3557.2	1014.4	40	4291.5	1429.0	40	5128.9	1960.2
50	3568.7	1020.5	50	4304.6	1436.8	50	5143.9	1970.3
64	3580.3	1026.6	**74**	4317.6	1444.6	**84**	5159.0	1980.4
10	3591.9	1032.8	10	4330.7	1452.5	10	5174.1	1990.5
20	3603.5	1039.0	20	4343.8	1460.4	20	5189.3	2000.6
30	3615.1	1045.2	30	4356.9	1468.4	30	5204.4	2010.8
40	3626.8	1051.4	40	4370.1	1476.4	40	5219.7	2021.1
50	3638.5	1057.7	50	4383.3	1484.4	50	5234.9	2031.4
65	3650.2	1063.9	**75**	4396.5	1492.4	**85**	5250.3	2041.7
10	3661.9	1070.2	10	4409.8	1500.5	10	5265.6	2052.1
20	3673.7	1076.6	20	4423.1	1508.6	20	5281.0	2062.5
30	3685.4	1082.9	30	4436.4	1516.7	30	5296 4	2073.0
40	3697.2	1089.3	40	4449.7	1524.9	40	5311.9	2083.5
50	3709.0	1095.7	50	4463.1	1533.1	50	5327.4	2094.1
66	3720.9	1102.2	**76**	4476.5	1541.4	**86**	5343.0	2104.7
10	3732.7	1108.6	10	4489.9	1549.7	10	5358.6	2115.3
20	3744.6	1115.1	20	4503.4	1558.0	20	5374.2	2126.0
30	3756.5	1121.7	30	4516.9	1566.3	30	5389.9	2136.7
40	3768.5	1128.2	40	4530.4	1574.7	40	5405.6	2147.5
50	3780.4	1134.8	50	4544.0	1583.1	50	5421.4	2158.4
67	3792.4	1141.4	**77**	4557.6	1591.6	**87**	5437.2	2169.2
10	3804.4	1148.0	10	4571.2	1600.1	10	5453.1	2180.2
20	3816.4	1154.7	20	4584.8	1608.6	20	5469.0	2191.1
30	3828.4	1161.3	30	4598.5	1617.1	30	5484.9	2202.2
40	3840.5	1168.1	40	4612.2	1625.7	40	5500.9	2213.2
50	3852.6	1174.8	50	4626.0	1634.4	50	5517.0	2224.3
68	3864.7	1181.6	**78**	4639.8	1643.0	**88**	5533.1	2235.5
10	3876.8	1188.4	10	4653.6	1651.7	10	5549.2	2246.7
20	3889.0	1195.2	20	4667.4	1660.5	20	5565.4	2258.0
30	3901.2	1202.0	30	4681.3	1669.2	30	5581.6	2269.3
40	3913.4	1208.9	40	4695.2	1678.1	40	5597.8	2280.6
50	3925.6	1215.8	50	4709.2	1686.9	50	5614.2	2292.0
69	3937.9	1222.7	**79**	4723.2	1695.8	**89**	5630.5	2303.5
10	3950.2	1229.7	10	4737.2	1704.7	10	5646.9	2315.0
20	3962.5	1236.7	20	4751.2	1713.7	20	5663.4	2326.6
30	3974.8	1243.7	30	4765.3	1722.7	30	5679.9	2338.2
40	3987.2	1250.8	40	4779.4	1731.7	40	5696.4	2349.8
50	3999.5	1257.9	50	4793.6	1740.8	50	5713.0	2361.5
70	4011.9	1265.0	**80**	4807.7	1749.9	**90**	5729.7	2373.3
10	4024.4	1272.1	10	4822.0	1759.0	10	5746.3	2385.1
20	4036.8	1279.3	20	4836.2	1768.2	20	5763.1	2397.0
30	4049.3	1286.5	30	4850.5	1777.4	30	5779.9	2408.9
40	4061.8	1293.6	40	4864.8	1786.7	40	5796.7	2420.9
50	4074.4	1300.9	50	4879.2	1796.0	50	5813.6	2432.9

TABLE IV. — Tangents and Externals to a 1° Curve.

Angle	Tangent	External	Angle	Tangent	External	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 use with Table IV,

For Tangents Add

△ ANGLE / 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	.70	.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	4.49	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

For Externals Add

ANGLE / 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°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.711	.845	922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.286	.383	.480	.578	.678	.777	.877	977	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1 62	1.76	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.985	1.06	1.25	1.43	1.62	1.80	1 99	2.18	2 38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2 06	2.28	2.50	2.73	2.96

Table VI. Deflections for Sub Chords for Short Radius Curves.

Degree of Curve	Radius 50 / sin. def. ang.	½ sub chord / R = sin of def. angle				Length of arc for 100 ft.
		12.5 Ft.	15 Ft.	20 Ft.	25 Ft.	
30°	193.18	1° 51′	2° 17′	2° 58′	3° 43′	101.15
32°	181.39	1° 59′	2° 25′	3° 10′	3° 58′	101.33
34°	171.01	2° 06′	2° 33′	3° 21′	4° 12′	101.48
36°	161.80	2° 13′	2° 41′	3° 33′	4° 26′	101.66
38°	153.58	2° 20′	2° 49′	3° 44′	4° 40′	101.85
40°	146.19	2° 27′	2° 57′	3° 55	4° 54′	102.06
42°	139.52	2° 34′	3° 05′	4° 07′	5° 08′	102.29
44°	133.47	2° 41′	3° 13′	4° 18′	5° 22′	102.53
46°	127.97	2° 48′	3° 21′	4° 29′	5° 36′	102.76
48°	122.92	2° 55′	3° 29′	4° 40′	5° 50′	103.00
50°	118 31	3° 02′	3° 38′	4° 51′	6° 04′	103 24
52°	114.06	3° 09′	3° 46′	5° 02′	6° 17′	103 54
54°	110.11	3° 16′	3° 54′	5° 13′	6° 31′	103 84
56°	106.50	3° 22′	4° 02′	5° 23′	6° 44′	104.14
58°	103.14	3° 29′	4° 10′	5° 34′	6° 57′	104.43
60°	100.00	3° 35′	4° 18′	5° 44′	7° 11′	104.72

CURVE FORMULAS.

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan. \frac{1}{2} I}{\text{Sin. D}}$

$\text{Sin. D} = \frac{50}{R}$

$\text{Sin. D} = \frac{50 \tan. \frac{1}{2} I}{T}$

$R = T \cot. \frac{1}{2} I$

$R = \frac{50}{\text{Sin. D}}$

$E = R \text{ ex. sec. } \frac{1}{2} I$

$E = T \tan \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{\frac{1}{2} I}{D}$

Tan. def. = ½ chord def.

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

Table IV. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found, nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Ext. opposite the given Central Angle by the given External.

To find. Nat. Tan. and Nat. Ex. Sec. for any angle by Table IV.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.), and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance: Multiply the angle by .01745, and the product by the distance.

Right Angle Triangles.—Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt 10. $10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. 25. $25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875$ = Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Natural Sines

Deg.	0′	10′	20′	30′	40′	50′	Deg.	Deg.	0′	10′	20′	30′	40′	50′	Deg.
0	0000	0029	0058	0087	0116	0145	89	40	6428	6450	6472	6494	6517	6539	49
1	0175	0204	0233	0262	0291	0320	88	41	6561	6583	6604	6626	6648	6670	48
2	0349	0378	0407	0436	0465	0494	87	42	6691	6713	6734	6756	6777	6799	47
3	0523	0552	0581	0610	0640	0669	86	43	6820	6841	6862	6884	6905	6926	46
4	0698	0727	0756	0785	0814	0843	85	44	6947	6967	6988	7009	7030	7050	45
5	0872	0901	0929	0958	0987	1016	84	45	7071	7092	7112	7133	7153	7173	44
6	1045	1074	1103	1132	1161	1190	83	46	7193	7214	7234	7254	7274	7294	43
7	1219	1248	1276	1305	1334	1363	82	47	7314	7333	7353	7373	7392	7412	42
8	1392	1421	1449	1478	1507	1536	81	48	7431	7451	7470	7490	7509	7528	41
9	1564	1593	1622	1650	1679	1708	80	49	7547	7566	7585	7604	7623	7642	40
10	1736	1765	1794	1822	1851	1880	79	50	7660	7679	7698	7716	7735	7753	39
11	1908	1937	1965	1994	2022	2051	78	51	7771	7790	7808	7826	7844	7862	38
12	2079	2108	2136	2164	2193	2221	77	52	7880	7898	7916	7934	7951	7969	37
13	2250	2278	2306	2334	2363	2391	76	53	7986	8004	8021	8039	8056	8073	36
14	2419	2447	2476	2504	2532	2560	75	54	8090	8107	8124	8141	8158	8175	35
15	2588	2616	2644	2672	2700	2728	74	55	8192	8208	8225	8241	8258	8274	34
16	2756	2784	2812	2840	2868	2896	73	56	8290	8307	8323	8339	8355	8371	33
17	2924	2952	2979	3007	3035	3062	72	57	8387	8403	8418	8434	8450	8465	32
18	3090	3118	3145	3173	3201	3228	71	58	8480	8496	8511	8526	8542	8557	31
19	3256	3283	3311	3338	3365	3393	70	59	8572	8587	8601	8616	8631	8646	30
20	3420	3448	3475	3502	3529	3557	69	60	8660	8675	8689	8704	8718	8732	29
21	3584	3611	3638	3665	3692	3719	68	61	8746	8760	8774	8788	8802	8816	28
22	3746	3773	3800	3827	3854	3881	67	62	8829	8843	8857	8870	8884	8897	27
23	3907	3934	3961	3987	4014	4041	66	63	8910	8923	8936	8949	8962	8975	26
24	4067	4094	4120	4147	4173	4200	65	64	8988	9001	9013	9026	9038	9051	25
25	4226	4253	4279	4305	4331	4358	64	65	9063	9075	9088	9100	9112	9124	24
26	4384	4410	4436	4462	4488	4514	63	66	9135	9147	9159	9171	9182	9194	23
27	4540	4566	4592	4617	4643	4669	62	67	9205	9216	9228	9239	9250	9261	22
28	4695	4720	4746	4772	4797	4823	61	68	9272	9283	9293	9304	9315	9325	21
29	4848	4874	4899	4924	4950	4975	60	69	9336	9346	9356	9367	9377	9387	20
30	5000	5025	5050	5075	5100	5125	59	70	9397	9407	9417	9426	9436	9446	19
31	5150	5175	5200	5225	5250	5275	58	71	9455	9465	9474	9483	9492	9502	18
32	5299	5324	5348	5373	5398	5422	57	72	9511	9520	9528	9537	9546	9555	17
33	5446	5471	5495	5519	5544	5568	56	73	9563	9572	9580	9588	9596	9605	16
34	5592	5616	5640	5664	5688	5712	55	74	9613	9621	9628	9636	9644	9652	15
35	5736	5760	5783	5807	5831	5854	54	75	9659	9667	9674	9681	9689	9696	14
36	5878	5901	5925	5948	5972	5995	53	76	9703	9710	9717	9724	9730	9737	13
37	6018	6041	6065	6088	6111	6134	52	77	9744	9750	9757	9763	9769	9775	12
38	6157	6180	6202	6225	6248	6271	51	78	9781	9787	9793	9799	9805	9811	11
39	6293	6316	6338	6361	6383	6406	50	79	9816	9822	9827	9833	9838	9843	10
Deg.	60′	50′	40′	30′	20′	10′	Deg.	Deg.	60′	50′	40′	30′	20′	10′	Deg.

Deg.	0′	10′	20′	30′	40′	50′	Deg.
80	9818	9853	9858	9863	9868	9872	9
81	9877	9881	9886	9890	9894	9899	8
82	9903	9907	9911	9914	9918	9922	7
83	9925	9929	9932	9936	9939	9942	6
84	9945	9948	9951	9954	9957	9959	5
85	9962	9964	9967	9969	9971	9974	4
86	9976	9978	9980	9981	9983	9985	3
87	9986	9988	9989	9990	9992	9993	2
88	9994	9995	9996	9997	9997	9998	1
89	9998	9999	9999	9999	1.0000	1.0000	0
Deg.	60′	50′	40′	30′	20′	10′	Deg.

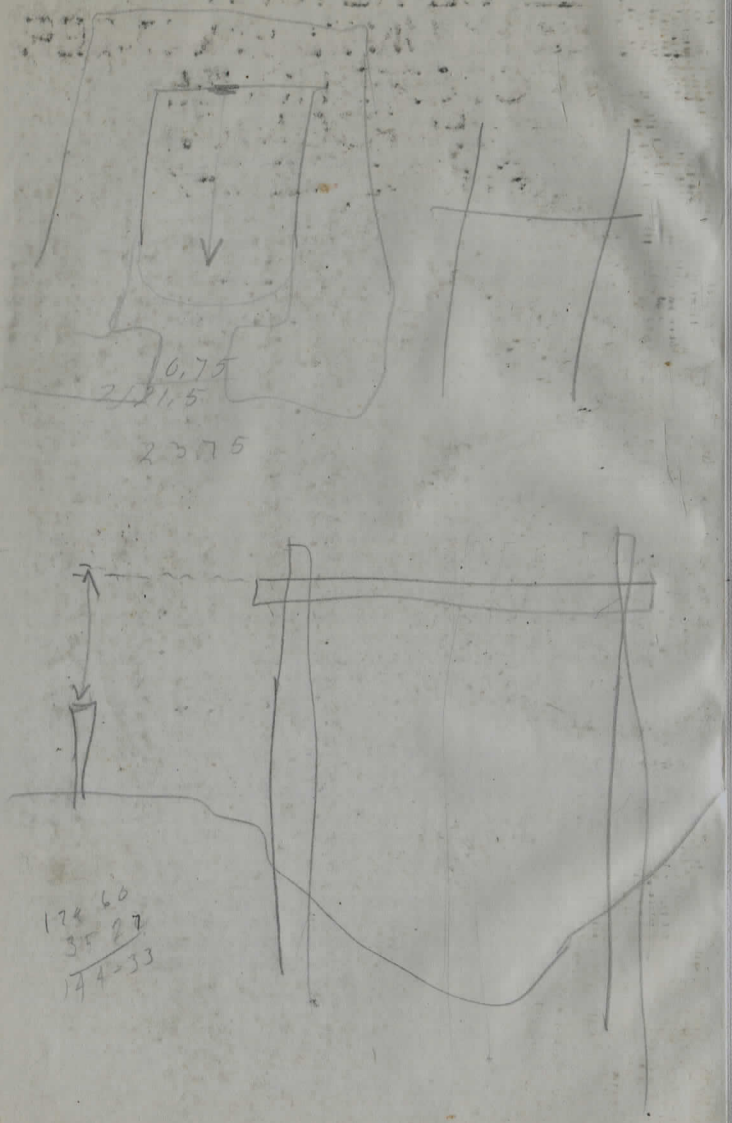
Natural Cosines

Natural Tangents

deg.	0′	10′	20′	30′	40′	50′	deg.	deg.	0′	10′	20′	30′	40′	50′	deg.
0	0000	0029	0058	0087	0116	0145	89	40	8391	8441	8491	8541	8591	8642	49
1	0175	0204	0233	0262	0291	0320	88	41	8693	8744	8796	8847	8899	8952	48
2	0349	0378	0407	0437	0466	0495	87	42	9004	9057	9110	9163	9217	9271	47
3	0524	0553	0582	0612	0641	0670	86	43	9325	9380	9435	9490	9545	9601	46
4	0699	0729	0758	0787	0816	0846	85	44	9657	9713	9770	9827	9884	9942	45
5	0875	0904	0934	0963	0992	1022	84	45	1.0000	1.0058	1.0117	1.0176	1.0235	1.0295	44
6	1051	1080	1110	1139	1169	1198	83	46	1.0355	1.0416	1.0477	1.0533	1.0599	1.0661	43
7	1228	1257	1287	1317	1346	1376	82	47	1.0724	1.0786	1.0850	1.0913	1.0977	1.1041	42
8	1405	1435	1465	1495	1524	1554	81	48	1.1106	1.1171	1.1237	1.1303	1.1369	1.1436	41
9	1584	1614	1644	1673	1703	1733	80	49	1.1504	1.1571	1.1640	1.1708	1.1778	1.1847	40
10	1763	1793	1823	1853	1883	1914	79	50	1.1918	1 1988	1.2059	1.2131	1.2203	1.2276	39
11	1944	1974	2004	2035	2065	2095	78	51	1.2349	1.2423	1.2497	1.2572	1.2647	1.2723	38
12	2126	2156	2186	2217	2247	2278	77	52	1.2799	1.2876	1.2954	1.3032	1.3111	1.3190	37
13	2309	2339	2370	2401	2432	2462	76	53	1.3270	1.3351	1.3432	1.3514	1.3597	1.3680	36
14	2493	2524	2555	2586	2617	2648	75	54	1.3764	1.3848	1,3934	1.4019	1.4106	1.4193	35
15	2679	2711	2742	2773	2805	2836	74	55	1.4281	1.4370	1.4460	1.4550	1.4641	1.4733	34
16	2867	2899	2931	2962	2994	3026	73	56	1.4826	1.4919	1.5013	1.5108	1.5204	1.5301	33
17	3057	3089	3121	3153	3185	3217	72	57	1.5399	1.5497	1.5597	1.5697	1.5798	1.5900	32
18	3249	3281	3314	3346	3378	3411	71	58	1,6003	1.6107	1.6212	1.6319	1.6426	1.6534	31
19	3443	3476	3508	3541	3574	3607	70	59	1.6643	1 6753	1.6864	1.6977	1.7090	1.7205	30
20	3640	3673	3706	3739	3772	3805	69	60	1.7321	1.7437	1.7556	1.7675	1.7797	1.7917	29
21	3839	3872	3906	3939	3973	4006	68	61	1.8040	1.8165	1.8291	1.8418	1.8546	1.8676	28
22	4040	4074	4108	4142	4176	4210	67	62	1.8807	1.8940	1.9074	1.9210	1.9347	1.9486	27
23	4245	4279	4314	4348	4383	4417	66	63	1.9626	1.9768	1.9912	2.0057	2.0204	2.0353	26
24	4452	4487	4522	4557	4592	4628	65	64	2.0503	2.0655	2.0809	2.0965	2,1123	2.1283	25
25	4663	4699	4734	4770	4806	4841	64	65	2.1445	2.1609	2.1775	2.1943	2.2113	2.2286	24
26	4877	4913	4950	4986	5022	5059	63	66	2.2460	2.2637	2.2817	2.2998	2.3183	2.3369	23
27	5095	5132	5169	5206	5243	5280	62	67	2.3559	2.3750	2.3945	2.4142	2.4342	2.4545	22
28	5317	5354	5392	5430	5467	5505	61	68	2.4751	2.4960	2.5172	2.5386	2.5605	2.5826	21
29	5543	5581	5619	5658	5696	5735	60	69	2.6051	2 6279	2.6511	2.6746	2.6985	2.7228	20
30	5774	5812	5851	5890	5930	5969	59	70	2.7475	2.7725	2.7980	2.8239	2.8502	2.8770	19
31	6009	6048	6088	6128	6168	6208	58	71	2.9042	2.9319	2.9600	2.9887	3.0178	3.0475	18
32	6249	6289	6330	6371	6412	6453	57	72	3,0777	3.1084	3.1397	3.1716	3.2041	3.2371	17
33	6494	6536	6577	6619	6661	6703	56	73	3.2709	3.3052	3.3402	3.3759	3.4124	3.4495	16
34	6745	6787	6830	6873	6916	6959	55	74	3.4874	3.5261	3.5656	3.6059	3.6470	3.6891	15
35	7002	7046	7089	7133	7177	7221	54	75	3.7321	3.7760	3.8208	3.8667	3.9136	3.9617	14
36	7265	7310	7355	7400	7445	7490	53	76	4.0108	4.0611	4.1126	4.1653	4.2193	4.2747	13
37	7536	7581	7627	7673	7720	7766	52	77	4.3315	4.3897	4.4494	4.5107	4.5736	4.6382	12
38	7813	7860	7907	7954	8002	8050	51	78	4.7046	4.7729	4.8430	4.9152	4.9894	5.0658	11
39	8098	8146	8195	8243	8292	8342	50	79	5.1446	5.2257	5,3093	5.3955	5.4845	5.5764	10
deg.	60′	50′	40′	30	20′	10′	deg.	deg.	60′	50′	40′	30′	20′	10′	deg.

deg.	0′	10′	20′	30′	40′	50′	deg.
80	5.6713	5.7694	5.8708	5.9758	6.0844	6.1970	9
81	6.3138	6.4348	6.5606	6.6912	6.8269	6.9682	8
82	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	7
83	8.1443	8.3450	8.5555	8.7769	9.0098	9.2553	6
84	9.5144	9.7882	10.078	10.385	10.711	11.059	5
85	11.430	11.826	12.250	12.706	13.197	13.727	4
86	14.300	14.924	15.605	16.350	17.169	18.075	3
87	19.081	20.206	21.470	22.903	24.542	26.432	2
88	28.636	31.242	34.368	38.189	42.964	49.104	1
89	57.290	68.750	85.940	114.588	171.885	343.77	0
deg.	60′	50′	40′	30′	20′	10′	deg.

Natural Cotangents



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

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 16 FEET WIDE. SIDE SLOPES 1½ TO 1.
FOR SINGLE TRACK ELECTRIC RAILWAY EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

MADE IN GERMANY.

R.