MUNSON-CHESTER
Town Line Road

95

FIELD BOOK
364

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 ROADWAY 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 Julien A. Hall, M. Am. Soc. C. E.

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

B.M. on Wilson's Mills Rd. in Munson. Spike in N. Root 20" Appl. E. side of Town-line Rd. 165' South of Wilson's Mills Rd. El. 1014.83

B.M. on Wilson's Mills Rd. in Chester. The same Tree was used El. established 1014.73'

B.M. on Mayfield Rd 150' W. of Townline Rd. Spike in E. Root 20" Maple IN Ryder's yard. 1100.88

(Raiters)

Heath ~~Harvard~~ Road - No. 105 - Sec. C & D
" " Sec. A = Pg 81
Align. - Pg - 3-20
X-Sections - pg - 21-35
Benchmarks - 26-43
Slope Stakes - 44-

HEATH RD. See B 62

HILLCREST Dr. (Beaver Creek Estates) 78 & 79
Sylvanhurst " " 79-80

Heath Rd (#105 Sec. A) 81

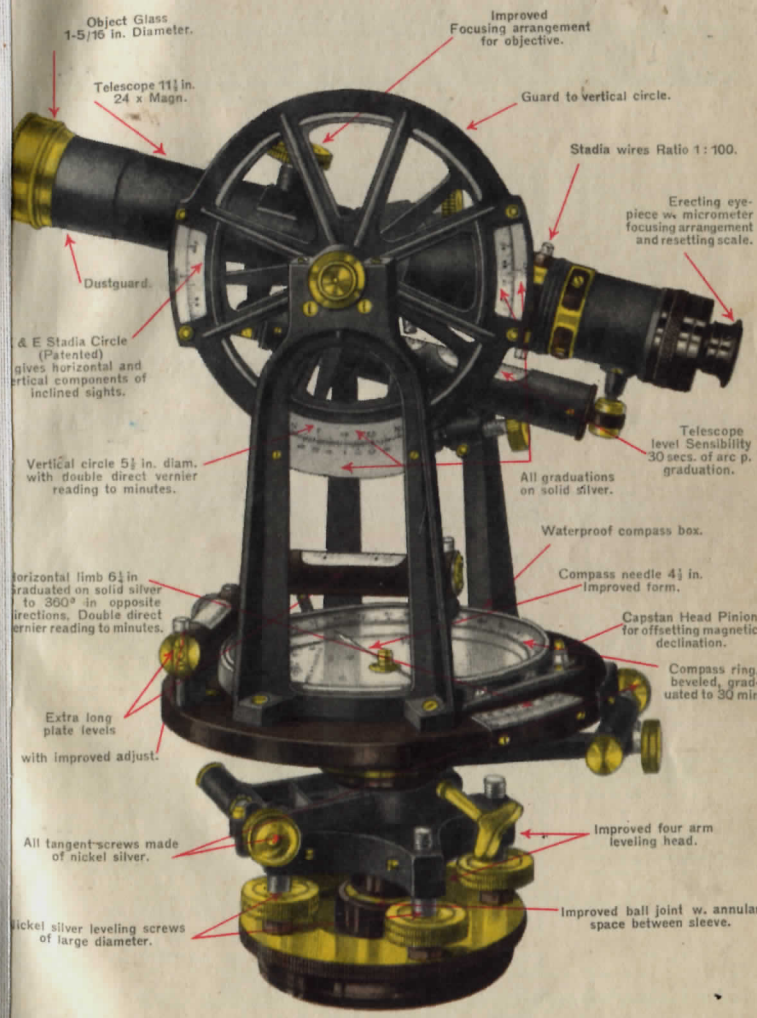
TR 105BC HARVARD-TOWN LINE-HEATH TOPO 1982 P. 82

Nov 20 1875 Reduced To 40' wide
Vol D Pg. 522

EXTRA FINE ENGINEERS' TRANSIT

No. 5060 S

KEUFFEL & ESSER CO., N.Y.



ALSO MADE WITH

INTERNAL FOCUSING TELESCOPE

PRACTICALLY DUST AND MOISTURE PROOF.

2

CHESTER-MUNSON TOWNLINE ROAD.

T.H. 105 HEATHROW

from Mayfield Road to Wilson Mills Road.

June 11, 1931, Fair, 80° Marks, Merritt Barton

Sta. 0+00 to 25+00 today

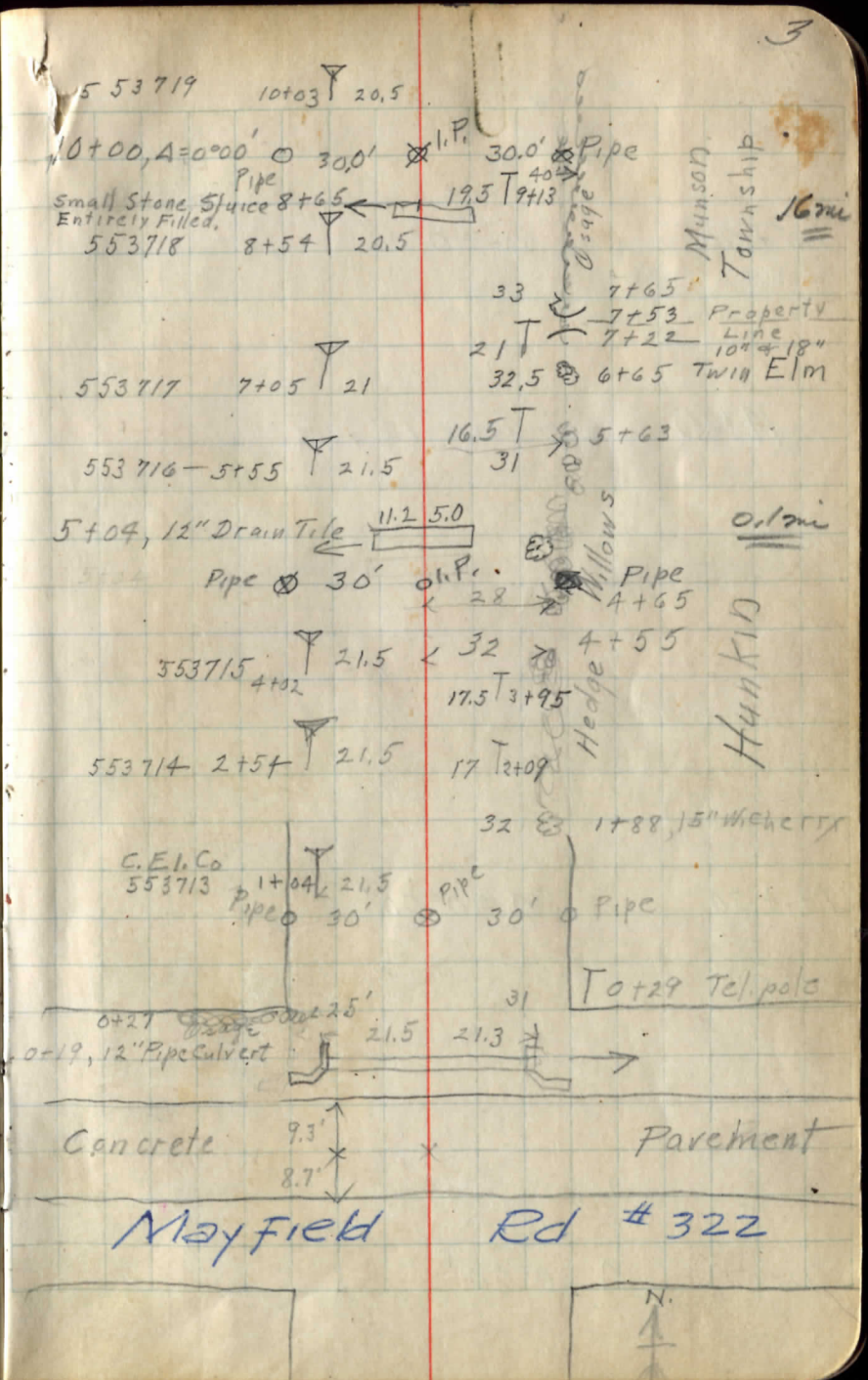
5+04 Requires 15" Pipe

5 +00 Δ = 0°00'

1+00

0+00 ℄ Mayfield Road, Sta. 112+66

3

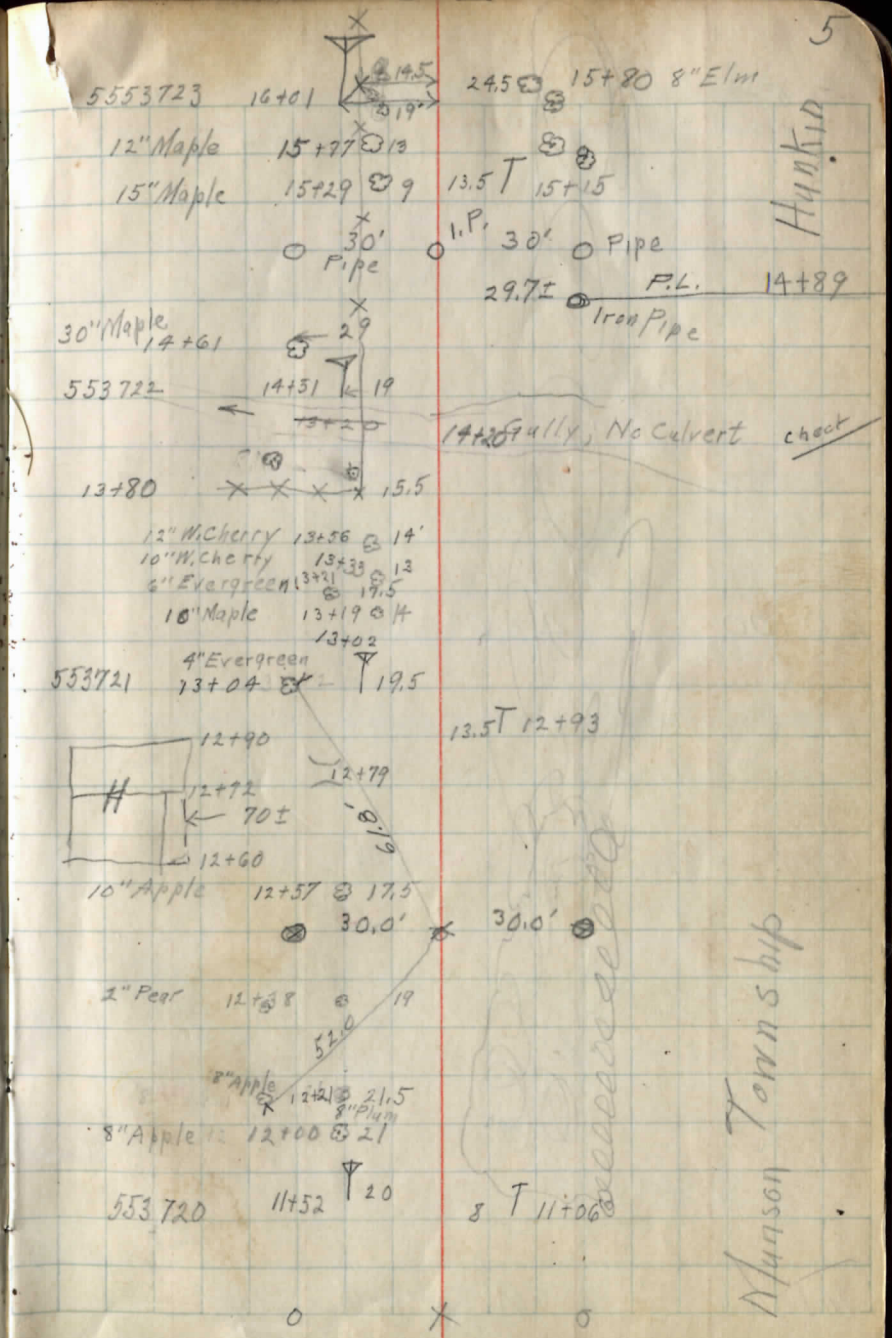


15+00 Δ = 0°00'

14+20 requires 15" pipe

12+50 Δ = 0°00'

10+00 Δ = 0°00'



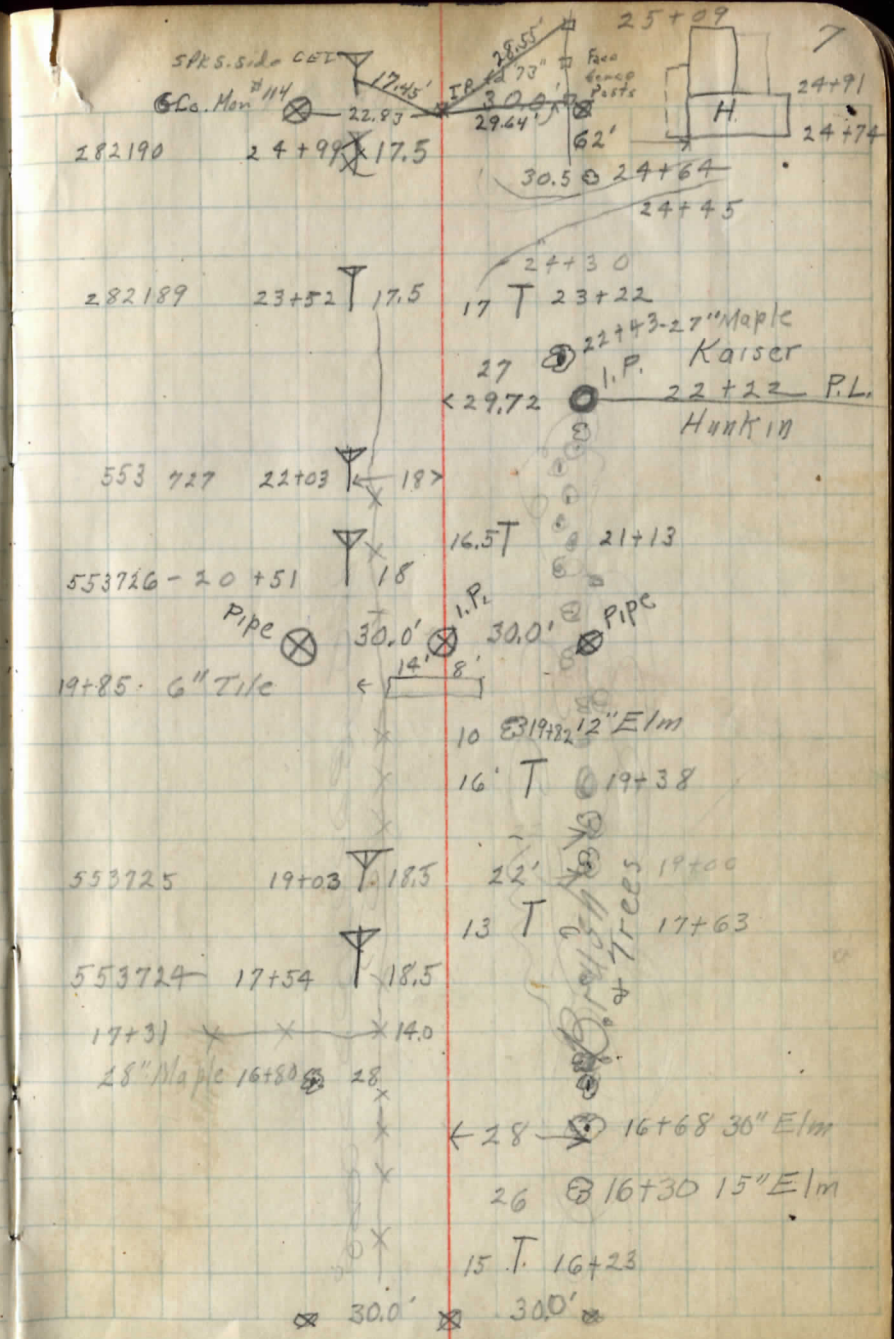
6

25+00 Δ = 0°00' fd "73"

20+00 Δ = 0°00'

16+00 Δ = 0°00'

7



June 13, 1931, Fair, 80°+, Marks, Merritt, Barton.

Sta. 25+00 to 54+87.5

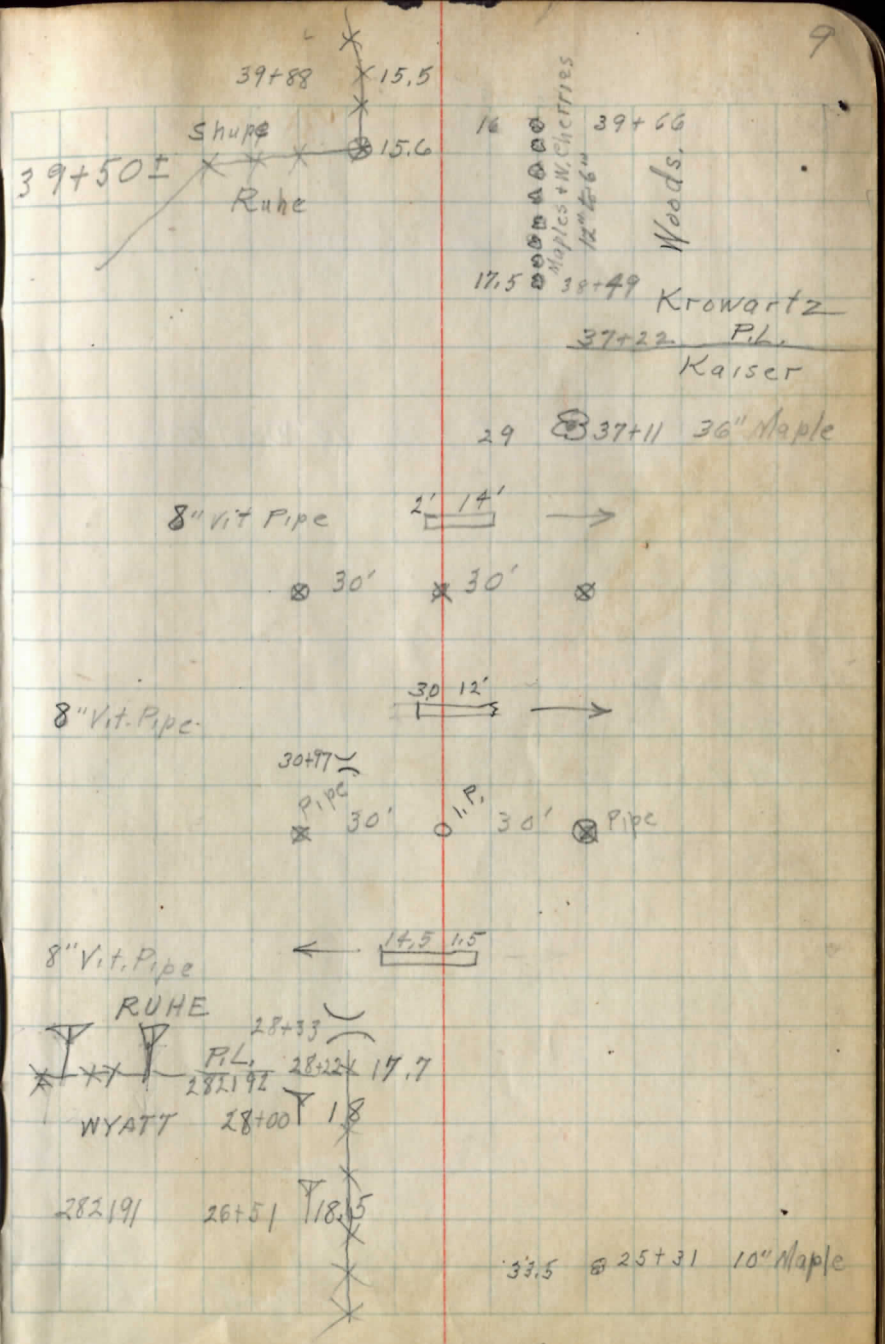
35+80.5 Requires 12" Pipe

35+00

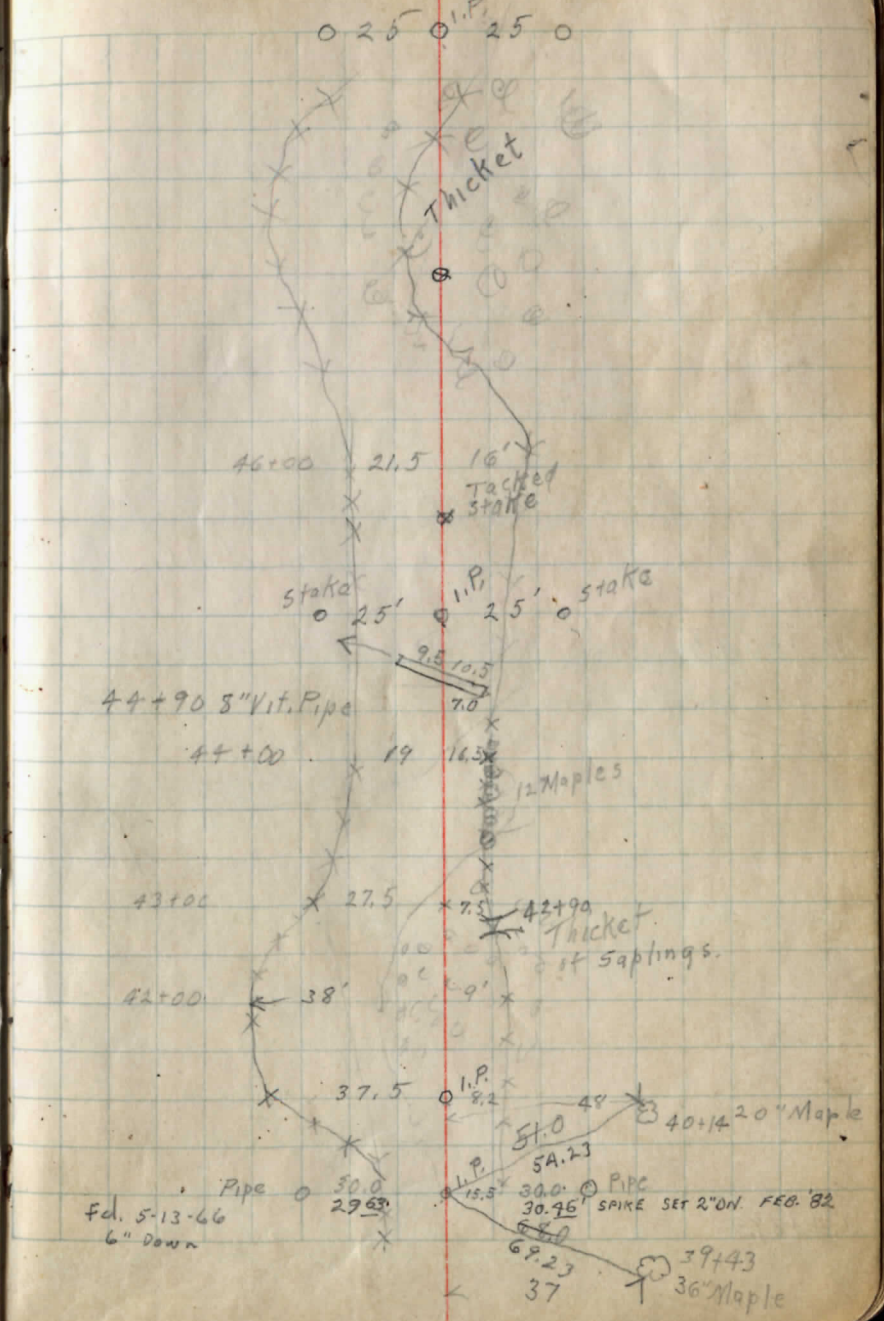
33+85 Requires 15" Pipe

30+00 0°00'

28+78.5 Requires 12" Pipe



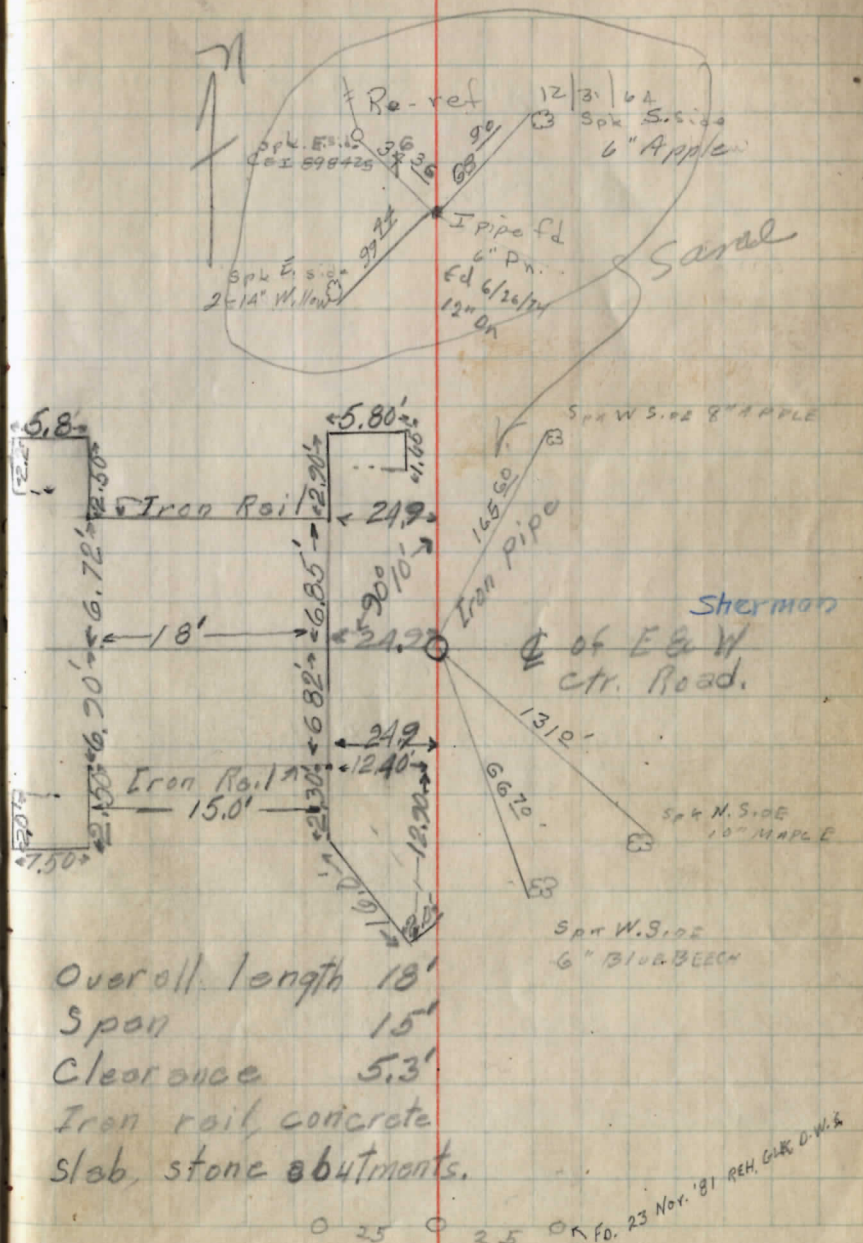
49+87.8	0°00'
48+17.9	0°00'
47+15	12" Vit. pipe, 16' West ℄
45+96.3	
44+97.01	
44+90	
41+22.8	0°00'
40+00	000' (1951 ref. pg 79 this bk)



replace structure w/
3 - 36" C.M.P.

55+44.5 0-00?

54+87.5 0°00'

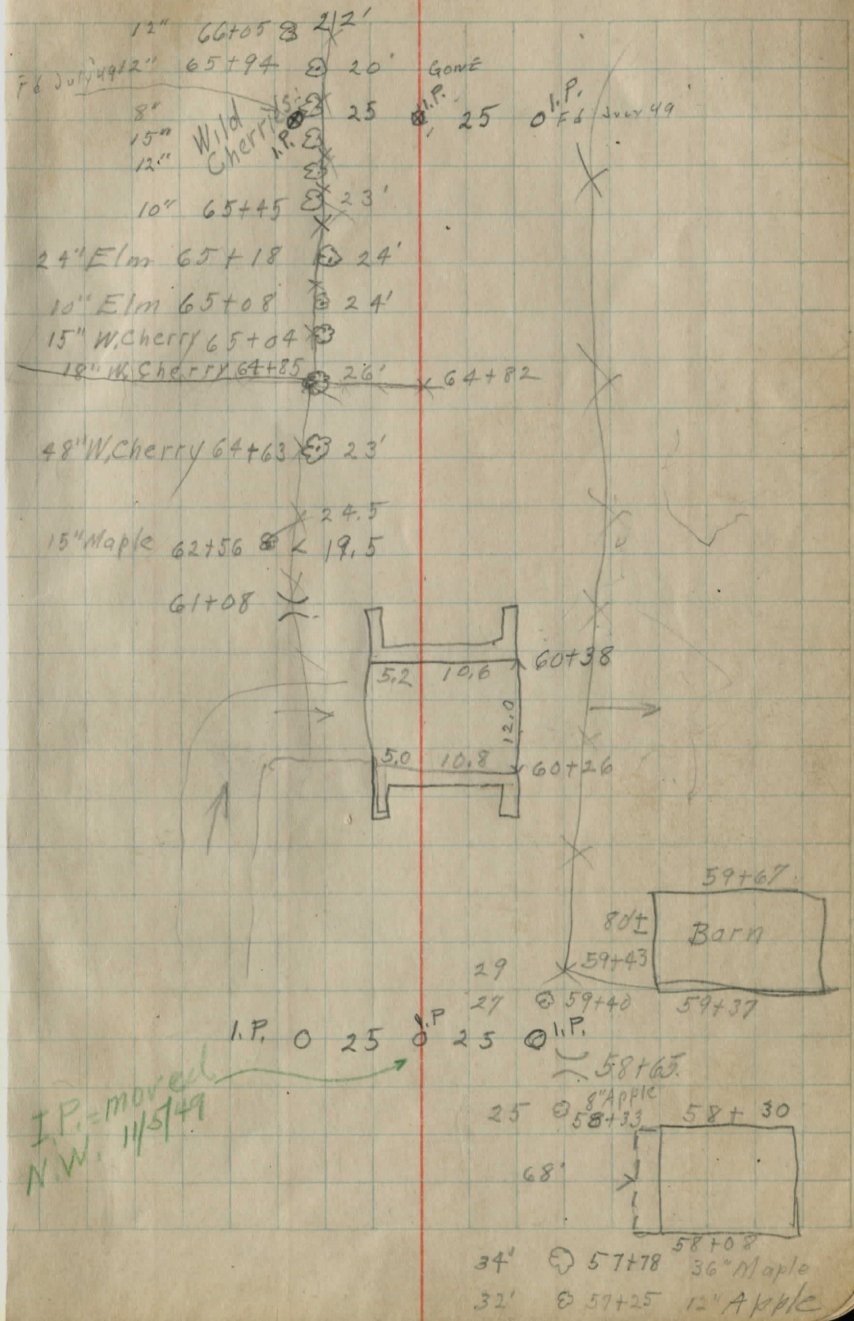


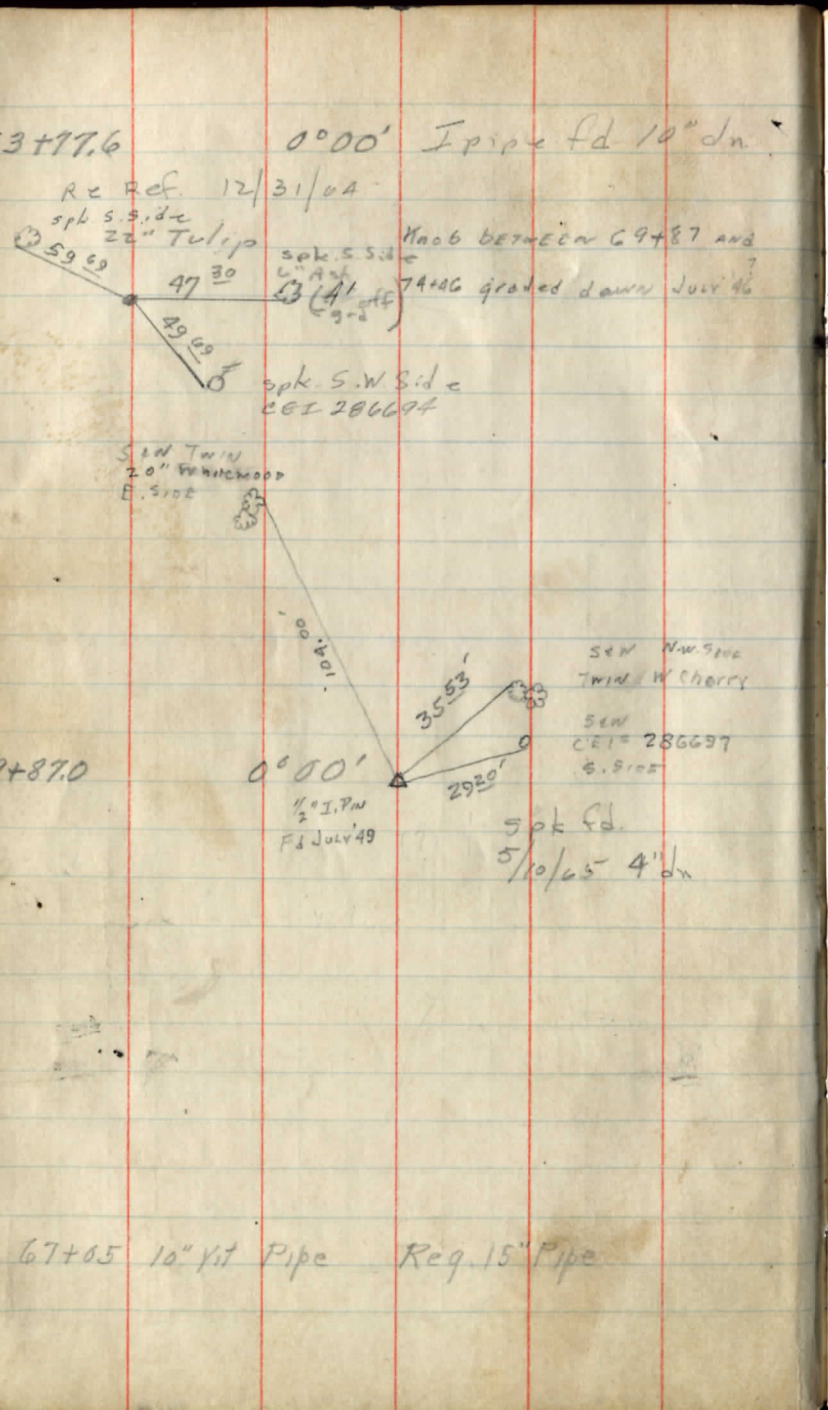
65+62.2 0°00' Knob graded down ± 3' Surv '49

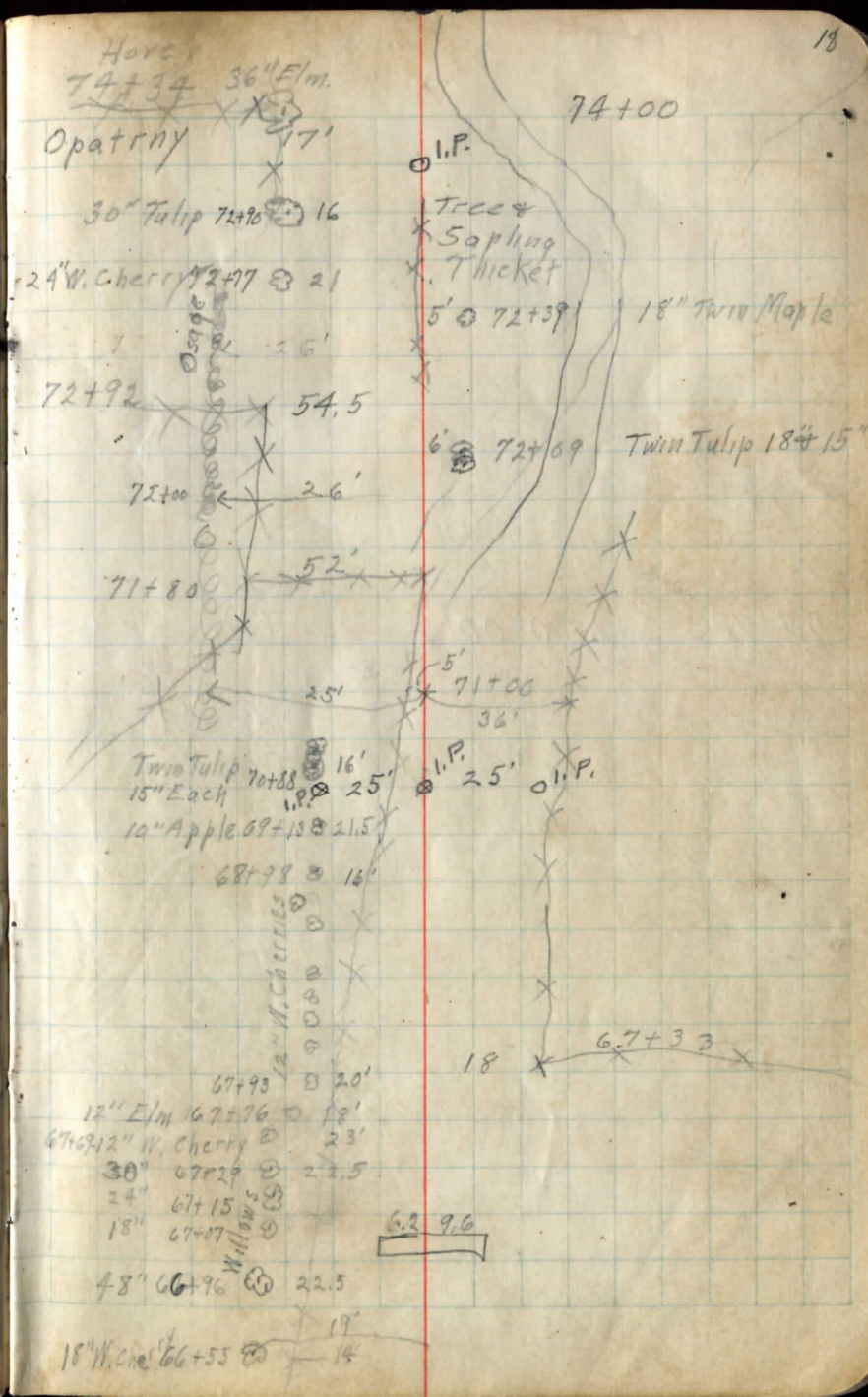
(?) 12/3/64

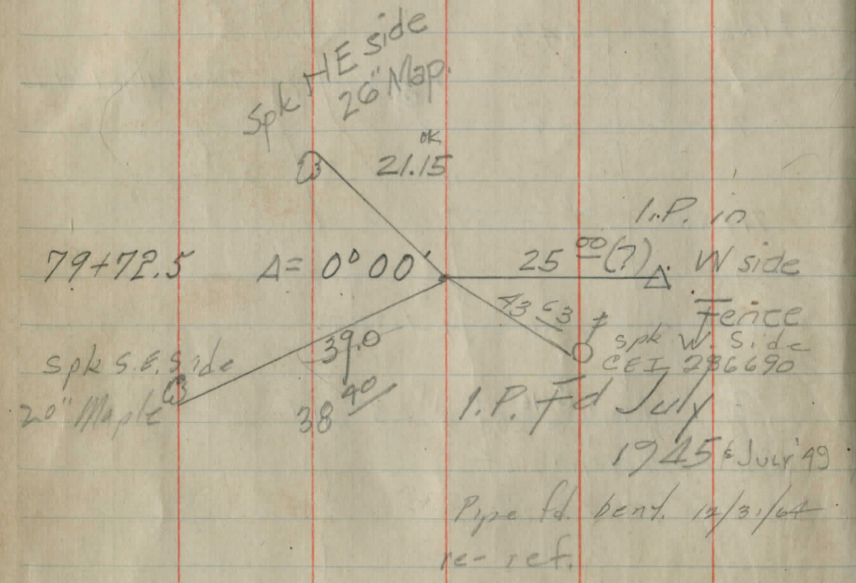
60+32 Bridge, Stone & Conc. Abuts, 10" Conc Slab replaced w/ dble brll. eliptical C.I.P.

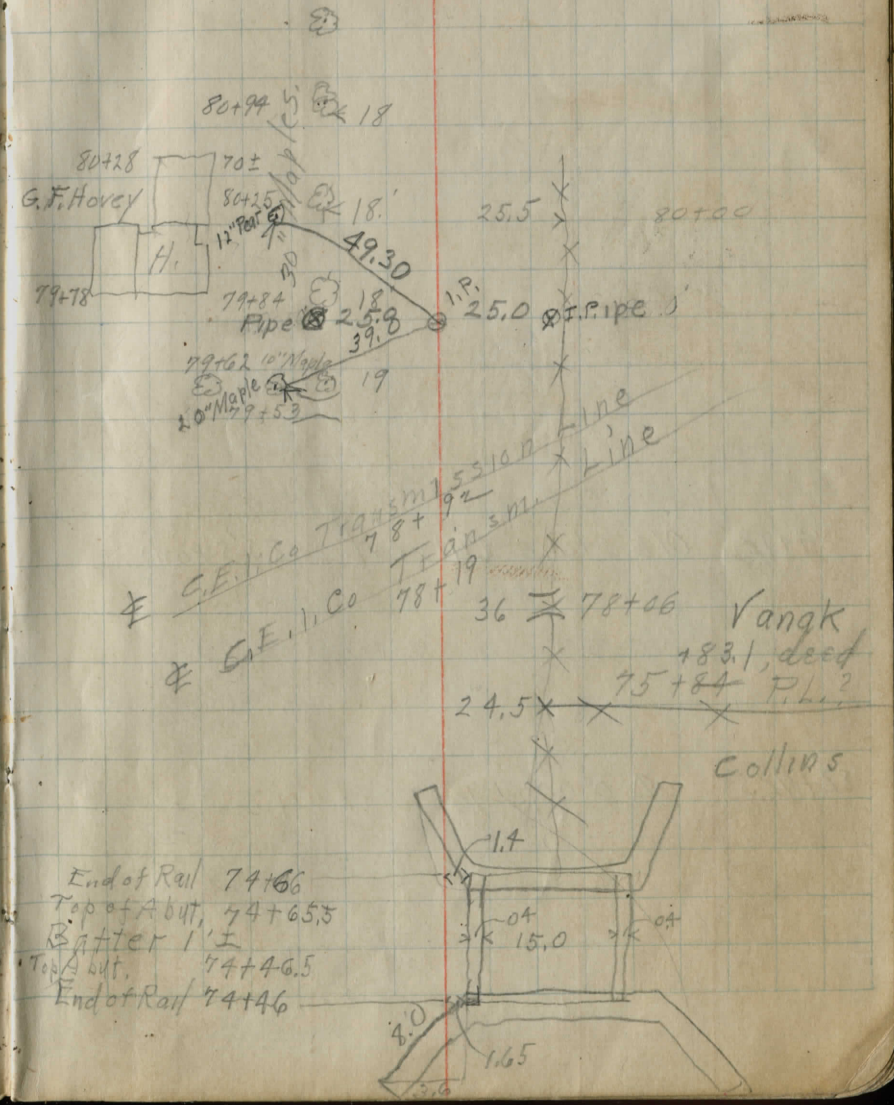
58+87.5 0°00' (?) 12/31/64




73+77.6
0°00' I pipe fd 10" dn.
Rt Ref 12/31/04
spk S.Side
22" Tulip
59 69
47 30
49 69
spk. S. Side
Knob between 69+87 and 74+06 graded down July 49
spk S.W Side
CEI 286694
S&W Twin 20" Whitewood E. Side
69+87.0
0°00'
1/2" I.P.W
Fd July '49
35 53'
29 20'
S&W N.W. Side
Twin W. Cherry
S&W CEI 286697 S. Side
Spk fd.
5/10/65 - 4" dn
67+05 10" V.it Pipe Req. 15" Pipe


18
Hore
74+34 36" Elm.
74+00
Opatrny 17'
I.P.
30" Tulip 72+90 16
Tree
Sapling
Thicket
24" W. Cherry 72+77 21
5' 72+39
18" Twin Maple
72+92
54.5
6' 72+69 Twin Tulip 18" & 15"
72+00
26'
71+80
52'
5'
71+66
25'
36'
Twin Tulip 70+88 16'
15" Each
25'
I.P.
25'
I.P.
10" Apple 69+13 21.5
68+98 16'
12" W. Cherries
67+93 20'
12" Elm 67+76 18'
67+69 12" W. Cherry 23'
30" 67+29 22.5
24" 67+15
18" 67+07
W. Willows
6.2 9.6
48" 66+96 22.5
19'
18" W. Che 66+55 14'
6.7+33
18

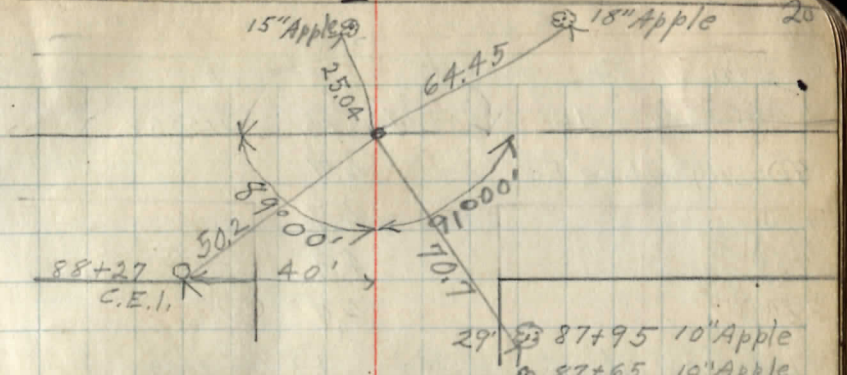

Spk HE side
26" Map
OK
21.15
I.P. 10
79+72.5
Δ = 0°00'
25 00 (?)
W side
Fence
43 ± 3
spk W. side
CEI 286690
spk S.E. side
20" Maple
39.0
38 40
I.P. Fd July
1925 6 July '49
Pipe fd bent. 12/31/64
re-ref.


80+94
18
80+28
70±
G.F. Hovey
80+35
18'
12" Pear
49.30
H.
79+78
79+84
Pipe
2.5
18
39.
I.P.
25.0
I.P. Pipe
79+62 10" Maple
19
20" Maple 79+53
25.5
80+00
C.E.I. Co Transmission Line
78+92
Transm. Line
C.E.I. Co
78+19
36
78+66
Vangk
183.1, deed
75+84 P.L.?
24.5
Collins
End of Rail 74+66
Top of Abut. 74+65.5
Batter 1' ±
Top of Abut. 74+46.5
End of Rail 74+46
1.4
0.4
15.0
0.4
4.0
1.65
3.6

88+55.5 ℄ Wilson Mills Road
mon. set 1963?

1949 - 30" Conn. fd & extended
84+92 ~~Old stone Culvert~~ 2.5's Pan:
4 ft 30" cone on east
& 8 ft 30" " on west

82+72.5 Δ 0°00' Knob graded off July '49



87+95 10" Apple
87+65 10" Apple
24 87+52 C.E.I. Pole 73895
30 87+30 14" Apple
29.5 20" Apple 86+93
86+92.5 15" Cor. Pipe
86+90 Drive way
25.5 End of fence 86+53
22 10" cherry 86+32
22 8" cherry 86+09
23 73,896 86+06
23 10" cherry 85+91
26 Fence 85+66
22.5 (73,897) 85+00
13' 84+92
21 12" cherry 84+46
Fence at 26' 22 73,898 84+12

No Find July '49
21.5 10" Maple 83+61
25.0' pin 25.0' Found July 49
90°0'
82+17 12" apple 34 21.5 73,899 82+21
+12
Shed
82+07 30" Maple 18 21.5 73,900 81+10

X Sections

STA.	+	H.I.	−	E.M. T.P.	Rem.
	E.46	1103.34	5.25	1100.88	
50	San Town line Rd		4.7		
100	"		4.7		
150			4.8		
200			4.7		
110+00	Mayfield Rd,		1.1	1102.2	
111	" "		2.7	1100.6	
112	" "		4.3	1099.0	
0+00	T.L. Rd.				
112+66	Mayfield Rd.		5.25	1098.1	
113	" "		4.8	1098.5	
114	" "		5.9	1097.4	
115	" "		6.9	1096.4	
0.+19.0	Culvert 12" Vit. Pipe			1098.4	
		1103:34			
1+00			5.3	1098.0	
2+00			5.5	1097.8	
3+00			7.0	1096.3	
BM	9.61	1104.94	8.01	1095.33	
4+00			9.9	1095.0	
5+00			11.5	1093.4	

June 16 1931
Fair warm.

Merrit
Snyder
Barton
Salem

Spike in E Root 20" Maple 30' R. of Mayfield Rd
150' West of Townline Rd.

6.7 / 35. 6.8-5.8-3.9 / 21.5 3.9-5.0 / 20.5 4.9 / 0 5.2 4.6 / 20.3 4.6 6.4 7.5 / 21.8 7.5 / 35.

5.7 / 30 6.9 / 13.0 6.1 / 11.0 5.5 / 8.0 5.3 / 0 5.6 / 12.0 5.4 / 30.0

4.2 4.4 6.1 / 30 25.0 2.5 6.8 5.9 5.5 / 9.0 6.5 5.5 / 0 6.0 / 10.0 5.8 / 12.0 5.1 / 38.0

8.5 / 25. 8.7 / 20.0 8.1 / 8.5 7.5 / 7.0 7.0 / 0 6.8 / 2.0 7.4 / 10.0 7.6 / 11.0 7.5 / 25.5 7.3 / 30.0

10.6 / 30. 10.1 / 12.5 10.8 / 9.0 9.9 / 0 10.6 / 11.0 9.3 / 17.0 8.7 / 20 8.6 / 22.5 7.4 / 30

13.3 / 30. 13.2 / 19.0 12.4 / 12.0 11.8 / 10.0 11.8 / 2.0 11.5 / 0 11.6 / 5.0 12.8 / 6.5 13.2 / 11.0 13.4 / 30.

	+	H.I.	−	T.P.
5+04	culvert	1104.94		1093.5
6+00			10.2	1094.7
F.M.	F.M.			
B.M.			9.62	1095.32
6+75				1094.7
7+00			11.1	1094.2
T.P.	6.09	1098.99	12.04	1092.90
7+60				
8+00			7.6	1091.2
8+65	Culvert.		7.9	
9+00			7.3	1091.6
9+75			5.2	
	5.98	1102.61	2.36	1096.63
9+90			12.0	
10+00			11.7	1094.4
10+10			11.4	

16.5/225 15.5/120. 13.6/30.0 13.3 11.7/14.0 11.4/E 11.8/4.5 13.3/5.0 13.8/30

9.9/30. 5.0/22.5 7.1/18.0 9.3/11.0 10.7/10.0 10.2/E 10.5/6.5 11.3/10.0 11.5/22.5 11.6/30.0

W. Root Twin Elm 32' R. sta. 6+65

4.2/30. 4.0/19.5 6.8/9.5 9.7/5.5 10.5/4.5 10.2/E 9.9/5.0 10.2/10.5 10.2/25.0 10.4/30

6.8/30. 6.0/22. 6.2/15.0 7.2/9.5 8.0/4.0 9.9/2.0 11.1/1.0 11.1/E 10.6/6.0 10.8/15.0 10.5/21. 11.0/25. 10.9/30

7.8/30 7.5/25 7.2/15 7.7/13 7.2/11.5 6.1/4.5 6.7/1.0 7.1/E 6.7/8.0 6.9/16. 6.6/16.5 5.9/25 5.2/30

9.8/30 9.2/20.5 9.0/16.0 9.5/13.0 8.8/11.0 8.2/5.5 7.6/E 9.2/9.0 7.6/15.0 7.2/16.5 7.3/21. 5.8/30

12.1/235 11.6/150.0 9.4/14.0 9.2/5.2 8.3/5.0 7.7/E 7.3/7.0 7.1/15.5 7.5/14.0 7.8-8.8/15.0 7.4/16.5 5.3/30

10.5/30 9.8/22 9.7/16.5 9.9/15. 8.6/7.0 9.6/5.0 7.3/E 7.1/6.0 7.5/11.0 7.1/11.5 7.1/17.0 5.8/30

9.2/30 8.9/25. 8.0/23.0 7.9/8.0 6.4/14.0 5.6/10.5 4.9/2.5 5.2/E 5.3/5.5 5.0/18.5 3.2/30

Spike in C.E.I. Pole 10+.05 4.0 4.P

15.5/30. 14.2/22. 14.1/18.0 12.5/15.0 12.2/11.5 12.6/10.5 11.6/5.0 12.0/E 12.3/3.0 11.9/4.0 10.7/10. 1.9/26. 1.7/30.

11.7/E

14.5/30 12.9/21.5 12.2/18. 11.2/14. 11.8/12.0 10.8/4.0 11.4/E 11.7/2.0 11.3/3.0 11.0/10.0 10.7/30.

Sta.	+	H.I.	−	T.P.
10+65		1102.61		
10+80			8.2	1094.4
11+00	8.50	1105.12	5.99	1099.2 1096.62
11+40				1098.1
12+00			6.72	1101.8 1098.40
13+00			7.53	1101.0 1097.59
~~B.M.~~	~~5.8~~		~~2.03~~	~~1097.22~~
~~Took Turn on tree to establish level~~				
14+00	5.88	1099.25	11.75	1093.37
B.M.			2.03	1100.79
15+00			4.20	1098.8
11	12.36	1108.98		1096.62
10+80				1094.4
11+00		1108.98		
11+40	10.58	1108.98		1098.4
12+00		1108.98		1098.4

June 17-31
Fair-Warm

Merrit Barton
Snyder Salem

7.7/30. 6.7/17.5 8.8/13.5 7.8/6.0 8.7/E 8.9/1.0 7.5/1.5 5.7/10.0 4.4/15.0 5.2/25. 2.8/35

6.3/30 4.8/19.0 8.3/13.0 7.3/5.5 8.2/E 6.9/0.5 5.2/5.0 2.2/10 0.4/13.0

4.8/30. 3.7/20. 3.4/18.0 7.2/13.5 6.6/9.0 7.1/E

10.7/30. 9.1/20.5 8.9/14.5 7.3/13.0 6.7/6.0 7.0/E 7.4/2.0 6.8/3.0 6.4/9.0 4.9/12.5

6.72/E

7.53/E

Spike in E. Root of 18" Maple 45' L. Sta 13+85

11.75/E

B.M. set
Spike, E root, 18" Maple, 45' Left, Sta. 13+85

4.20/E

14.6 6.7/13.0 5.2/19.5 1.7/23.5 2.3 2.6/30.40

10.9 11.8/0.5 6.9 2.8/16.0 1.2/30. 6.1/40.

7.0/21.0 3.8/30. 1.9/40.

15.7/40. 13.5/15. 10.6/11. 10.6/E 10.7/4.0 9.4/5.0 6.7/14.5 4.3/25 3.1/30 0.5/40

Sta.	+	H.I.	−	T.P.
12+75	8.37	1104.99		1096.62
12+06	apple	Tree	9.6	
12+20	"	"	7.9	
12+60	"	"	6.1	
12+70	10.51	~~1110.82~~ 1114.0	4.68	~~1100.31~~ 1103.4
13+00	13.35	1110.94		1101.0
13+40	5.44	1098.81		1093.37
14+00	5.44	1098.81		1096.8
14+20		1098.81	Culvert	needs 10" Pipe
				1098.8
15+00	3.12	1100.34		~~1098.8~~
15+35			2.4	1097.9
T.P.	9.98	1107.96	2.36	1097.98
		1092.22		
15+35		1107.96		
16+00		1107.96		1101.4
17+00	8.68	1098.66		1090.4

2
1

11.5/30 10.7/12.5 10.9/2.5 10.6/E 10.9/4. 8.5/5.5 5.7/15. 3.0/28 2.0/40

9.9/30 11.4/14.5 12.5/11.0 13.7/8.5 12.9/3.0 13.4/E 13.7/4.5 12.0/6.0 8.3/9.5 5.5/16.0 4.0/29. 3.7/30. 1.7/40.

2.5/30 3.6/25. 3.9/11.0 4.1/9.5 3.2/3.0 3.6/E 4.1/4.5 3.5/6.0 3.2/14.0 0.9/30 1.0

7.0/30 7.3/20.5 6.6/10.5 5.7/8.5 5.4/E 5.7/5.5 6.6/10.5 6.6/19.5 5.6/30

12.9/100. 8.9/50. 8.2/30. 7.6/17.0 6.0/8.5 5.5/E 5.7/60 6.5/11.5 5.5/30

3.4/30 4.5/10.5 5.3 5.0/8.5 5.8/E 4.9/5.5 0.8/7.5 0.8/30

5.0/30 4.7/22 2.7/9.5 2.9/7.0 2.4/E 3.2/6.0 1.4/8.5 1.8/14.5

10.0/0

6.6/23 4.5/30. 3.7/38.

7.9/40. 4.9/2.4 4.3/5.0 4.5/11.5 10.2/6.5 10.7/5.0 10.0/E 9.6/1.5 10.4/17.5 9.1/11.5 5.4/13.5 5.4/24. 5.8/30 6.6/40.

14.9/30 14.2/25 13.9/13. 11.9/7.5 12.3/6.0 11.8/E 12.4/8.5 11.8/10. 12.5/16. 12.0/30

Sta.	+	H.I. 1098.66	−	T.P. 1080.63
T.P.	0.68	1087.75	11.59	1087.07 ✓
17+55		1081.31		
18+00		1087.75		1082.7
		1075.01		1071.58
T.P.	3.43	1081.45	9.73	1078.02
19+00		1081.45		1080.2
19+85	Culvert	1081.45	Needs	10" Pipe
20+00		1081.45		1079.1
		1084.37		
T.P.	9.56	1090.81	0.20	1081.25 ✓ 1074.81
20+50		1090.81		
21+00		1090.81		1085.0
22+00		1090.81		1087.7
T.P.	7.71	1092.87	5.65	1085.16 ✓ 1074.72
B.M.		1086.93	7.03	1085.84 − 1079.40
23+00		1092.87		
	11.46	1097.30		1085.84
24+00		1090.86		1093.4 1089.1
T.P.	4.48	1100.90	0.88	1096.42 1089.98
24+85		1094.76		1099.3
25+00				1099.2

1.9/30 8.6/16.0 5.3/8.5 4.8/E 5.4/6.3 4.3/9.5-9.5 2.1/14.5 0.6/24. 0.0/30

15.2/40. 12.7/30. 10.0/16.5 7.8/12.5 9.5/E 8.3/4.5 6.7/6.+8. 3.4/12.5 E.3/18.5 +2.0/30

4.2/30 3.9/19.5 3.1/9+12. 9.6/11.5 5.6/E 4.6/8.5 4.1/E 1.8/16. 1.1/28 0.5/30

14.5/100. 12.1/50 10.3/30 8.4/19.0 8.0/17.5 5.6/7.0 4.6/E 5.2/11.0 6.7/12.0 6.0/30. 5.0/65.

outlet

10.2/30 8.8/14.0 7.1/8.0 5.0/5.0 4.8/E 4.4/3.5 4.8/10.5 5.3/12.5 5.8/24. 5.8/30

Fence

10.5/30. 9.4/12.5 8.4/10.0 8.7/5.5 12.8/20 12.9/E 12.5/4.5 12.9/11.5 11.1/13 8.4/17.5 7.0/29

6.5/40. 4.1/30. 3.+/9.5 4.1/30 7.3/E 7.9/5.5 8.7/11.0 3.6/15.0 3.2/22.5 0.5/30

8.4/30 7.7/25. 6.9/13.5 6.2/10.0 5.6/E 5.2/4.0 5.8/11.0 6.5/14. 7.9/25. 8.5/30

W. root 27" Maple Sta 22+43. 27' Rt.

15.7/40. 13.6/30 10.2/16.0 8.8/12.0 7.2/10.5 6.3/E 6.7/9.5 5.7/10. 3.6/30

4.5/30 3.9/20.5 3.7/10.5 3.2/6.0 7.5/E 7.6/10.0 5.2/14.0 4.5/30

3.6/30 2.6/20.0 2.5/8.5 4.7/6.0 4.0/E 4.1/7.5 2.0/10.0 2.0/25.0+30

4.4/30 3.3/21.0 3.0/15.0 2.9/7.5 4.6/6.5 3.9/E 4.3/7.5 3.1/10.5 2.7/30

1100.90

Sta.	+	H.I.	−	Elev.	Rem's
26+00				1095.9	
T.P.	5.56	1094.15	12.31	1088.59	1082.15
27+00		1087.71		1086.8	
T.P	3.23	1084.60	12.78	1081.37	1074.93
28+00		1078.16		1082.7	
28+78	8" vit. Pipe, Inlet plugged			(1080.6) Drains about 2 A. 12" pipe drains Needed.	
29+00				1080.4	
30+00				1080.8	
T.P.	7.77	1085.67	6.70	1077.90	1071.46
31+00		1079.23		1080.0	
—	Check —	R.L. H 1079.69			
31+55	7.12	~~1071.92~~ 1073.25	13.10	1075.5	1066.13
32+00				1070.4	
		1068.59		1067.77	
	0.82	~~1060.84~~ 1062.15	11.92	~~1060.02~~	1061.33
33+00				1064.8	
33+85	culvert 15" Pipe Needed			1062.6	
34+00				1062.6	
34+75				1061.6	

June 18-1931
Fair-warm

Snyder & Barton
Merritt Salem

check

7.2/30 5.8/21.5 5.1/10.0 8.5/6.0 7.7/℄ 8.7/7.0 5.4/8.5 5.3/30 —

9.9/30 8.2/24.5 7.2/16.5 6.4/9.0 10.1/6.0 9.7/℄ 10.4/5.0 9.3/5.5 4.2/11.5 4.7/14.0 2.2/30

10.5/30 6.3/15.5 4.2/8.0 5.9/7.0 4.5/℄ 5.3/8.0 3.4/9.5 3.1/20.0 1.9/30

18.0/100 12.5/50 2.4/F.L. 7.3/14.5 6.5/14.0 7.2/5.0 7.8/℃ 7.8/1.5 7.8/3.0+4.0 ditch 6.3/6.0 6.0/20.0 4.5/30 4.9/30

9.0/30 7.4/15.5 6.6/4.0 7.2/℄ 7.5/5.0+7.0 6.6/7.5 5.9/21.0

7.2/30 6.6/15.5 6.8/15.0 5.7/5.5 6.4/℄ 6.1/2.0 4.2/3.5 4.5/8.0 3.7/25.0 3.3/30

9.4/30 8.3/11.0 7.7/3.5 8.2/℄ 8.5/5.0 5.3/8.0 3.1/26 2.9/30

10.7/30 10.1/10.0 12.2/9.5 11.8/5.0 12.7/℄ 13.2/3.5 10.1/7.0 5.2/12.0 4.3/22 3.8/30

7.1/30 7.1/12.0 11.6/7.5 11.3/2.5 11.2/℄ 12.0/3.0 10.4/4.0 6.9/7.5 3.0/12.5 1.4/30

7.0/30 7.7/12.0 7.6/5.5 8.1/℄ 6.7/2.0 7.5/10.0 9.0/11.5 7.3/22. 6.8/30

9.7/100. 10.5/50 10.8/30 9.5/2.5 9.3/℄ 8.7/4.0 9.5/11.5 11.3/14.0 11.9/50. 13.5/100. 15.0/250.

10.5/30 10.3/5.5 9.0/2.0 9.4/℄ 8.5/8.0 9.4/12.0 10.9/15.0 11.1/19.5 11.3/30

3.7/30 5.5/7.0 10.8/2.0 10.7/℄ 10.0/5.0 11.0/11.0 8.0/14.0 8.3/30.

	+	H.I.	−	El.	
35+00		1068.59 ~~1064.84~~ 1062.15		1060.4	
35+50				1059.8	
36+00	6.18	1069.13 ~~1061.38~~ 1062.69	5.64	1059.8 1055.20	1056.51
37+00				1061.6	
B.M.		1072.81 1079.25	10.12	1062.42	
38+00	10.19	~~1071.50~~ 1080.64	0.07	1068.5 1067.85	1062.62
	12.79	~~1072.89~~ 1074.20	11.40	~~1060.10~~	1061.41
39+00		1086.13		1080.0 1079.64	
	6.49	~~1078.38~~ 1079.69	1.00	~~1071.89~~	1073.20
39+75				1084.7	
40+00				1083.0	
B.M.		1086.13	2.88	1086.69	
40+35		~~1078.38~~ 1082.02		1079.6 1080.47	
41+00	1.55	~~1074.27~~ 1075.58	5.66	~~1072.72~~	1074.03
41+00			3.06	1082.2	078.96
T.P.	.79	1071.06 ~~1063.31~~ 1064.62	12.05	~~1062.22~~	1063.53 1069.97
42+00			4.81	1069.5	
T.P.	0.20	1058.68 ~~1050.93~~ 1052.24	12.58	~~1050.73~~	1052.04 1058.48
43+00			6.81	1055.2	1051.87
T.P.	2.00	1048.83 ~~1041.08~~ 1042.39	11.85	~~1039.08~~	1040.39 1046.83
44+00			3.60	1048.7	1045.23

5.0 7.4 9.4 11.7 11.7 11.0 11.9 9.7 10.4
30 12.5 6.0 2.0 ℄ 5.0 11.0 13.5 30

10.5 11.5 12.6 12.3 12.0 12.6 13.5 14.5
30 8.0 3.0 4 6.0 12.0 18.0 30.

11.4 11.9 11.6 12.5 12.2 11.7 12.8 13.6 16.0
30. 10.0 6.0 30 ℄ 6.0 12.5 16.0 30.

9.3 6.9 9.0 10.2 10.6 10.2 10.8 11.4 12.5
30. 16.0 6.0 3.0 ℄ 4.5 14 21 30

W. Root 36" Maple 29 R Sta 37+11
5.5 6.0 5.2 10.6 14.5 13.5 13.8 14.0 10.2 12.5 13.6
30. 22. 16.5 7.0 3.5 ℄ 2.0 7.5 12.5 26 30

6.6 4.1 2.7 4.3 3.9 4.9 0.7 0.7 2.2
30 22 10.5 7.5 ℄ 5.5 8.0 14.5 30

9.9 3.7 5.7 4.6 4.9 5.2 3.0 3.5 3.8
30. 11.0 8.5 3.0 ℄ 5.0 11.5 18.0 30

6.7 5.6 4.5 4.9 7.0 5.9 6.5 6.7 3.1 3.5
30 21.0 17.0 13.0 11.0 5.0 ℄ 3.0 8.5 40

Horizontal R.R. spike in N. side of 20" Maple 48' R 40+14
10.7 8.4 10.1 9.1 10.1 8.8 5.2 4.2 4.0
30 17.0 15.0 9.0 ℄ 3.0 8.0 15.5 30.

	+	H.I.	−		
		~~1048.08~~			
		1048.83			
45+00		1042.39	9.87	1042.4	
		1040.72			1030.10
T.P.	4.18	~~1032.97~~	12.29	~~1028.79~~	1036.54
		1034.28			
46+00			6.44	1037.5	
47+00			7.23	1036.9	1027.05

June 19, 1931 Snyder, Salem, Hassel

		1083.75			
41+00	4.79	~~1076.00~~		1082.7	
42+00	8.11	1074.36		1069.5	
		~~1066.61~~			
42+50	11.38	1063.23		1058.12	
		~~1055.50~~			
43+00		1063.25		1055.2	
		~~1055.50~~			
44+00	10.82	1056.05		1048.7	
		~~1047.30~~			
~~45+00~~	12.79	1051.75		1042.4	
		~~1044.50~~			
46+00	13.84	1048.12		~~1034.28~~	
	0.9	1040.37		~~1026.53~~	1037.5
		1035.18	13.84	1034.28	
47+00	10.60	1044.09		1036.9	
	0.5	~~1036.54~~		1037.5	1027.05
		1033.99	10.6	1033.49	
47+12.5	0.48	1033.97	Culvert	1034.2	
		~~1026.22~~			

Drains hill from Sta. 42+40, also drains 3A 15" pipe

T.P.	6.60	1040.09		~~1033.49~~	1027.05
		~~1032.34~~			
		1033.65			

W E

19.6 12.0 13.5 12.7 13.8 9.6 6.9 4.8 1.3 1.1
45.0 31.0 28.0 23.0 17.0 11.0 8.0 ℄ 22.5 40

15.2 14.5 18.0 17.5 18.0 14.1 9.1 8.1 5.6 3.9 0.5
40.0 35.0 31.0 26.0 18.0 13.5 4.0 ℄ 18.0 25.0-30.0 40.0

11.9 10.2 10.9 9.4 10.7 9.6 9.4 0.9
37.0 30.0 28.0 20.0 11.0 9.5 ℄ 40.0

14.5 12.6 13.6 12.0 13.5 12.8 11.4 5.2
40.0 24.0 22.0 13.0 5.0 3.0 ℄ 40.0

15.2 10.3 11.9 10.1 10.8 12.1 9.8 3.3
40.0 15.0 13.0 5.5 ℄ 4.0 7.0 40.0

19.7 18.7 13.8 13.0 12.8 13.5 12.0 11.2 2.8
40.0 37.0 15.0 5.0 ℄ 9.0 11.0-14.0 29.0 40

13.8 5.4 0.2 +3.0
℄ 15.0 31.0 40.0

16.4 12.7 3.3 6.3 5.7 6.7 0.9
50.0 40.0 28.5 17.5 12.0 4.0 ℄

10.6 3.4
℄ 40.0

8.4 8.6 7.5 8.3 4.2 0.5
42.0 28.0 32.0 27.0 16.0 ℄

15.2 12.0 9.0 10.0 5.7 8.8 1.3 +7.0
40.0 31.0 30.0 16.0 12.0 ℄ 40.0

℄ Hub, 47+00

	+	H.I.	−	
		1040.09		
		~~1032.34~~		
		1033.65		
48+00			4.17	1039.4
49+60			12.14	1031.3 1021.51
48+00	9.42	1045.34		1039.9
		~~1035.9~~		
T.P	1.03	1031.65		1030.62
		~~1029.90~~	14.72	~~1022.87~~
49+00	8.44	1036.39 1029.95		1027.95 1021.51
		~~1028.64~~		
T.P	11.47	1032.91 1026.47		1021.47
		~~1025.16~~	14.95	~~1013.69~~ 1015.00
T.P	13.23	1029.75 1023.31		1016.52
		~~1022.00~~	16.39	~~1008.77~~ 1010.04
49+40		1029.75		1017.8
		~~1022.00~~		
49+60		1029.75		
		~~1022.00~~	16.2	1007.1
T.P.	13.47	1040.48		1027.01 1020.57
		~~1032.73~~	2.74	~~1019.26~~
49+40		1034.04	16.4	1017.1
49+60				1007.1
T.P	1.35	1017.87		1016.52
		~~1010.12~~		~~1008.79~~ 1010.04
50+00		1011.43	8.0	1003.3
50+15		Gully – drain	8.6	1002.5
T.P.	4.03	1010.50		1006.47 1000.03
		~~1002.75~~	11.40	~~998.72~~
51+00		1004.06	3.4	1000.5
52+00			5.3	998.7
B.M			4.08	1003.78
			3.96	999.98
52+35				998.2

W E

14.72 9.4 4.1 2.9
28.0 0 25.0 40.0

8.0 13.0 12.2 13.2 7.6
62.0 42.0 40.0 38.0 34.0

14.95 9.7 8.4 1.3
11.0 5.0 0 42.0

10.8 14.2 14.6 15.6 10.7 5.9
50.0 43.0 32.0 30.0 24.0

11.7
20.4 18.7 16.2 15.6 15.8 11.0
43.0 30.0 23.0 18.0 14.0 12.0 0

20.3 16.7 17.8 16.9 13.5 16.2
40.0 17.0 16.0 11.0 3.0 0

16.4 8.6 0.7
0 11.0 41.0

2.74 2.2
30.0 52.0

11.3 7.5 8.2 7.5 8.0 8.7 8.1 1.5 1.2
35.0 11.0 10.0 4.8 0 5.0 7.0 25.0 30.0

14.0 11.0 8.6 7.0 8.2 8.6 9.9 8.5 3.4 0.4
100.0 22.0 12.0 7.0 2.0 0 5.5 8.0 25.0 30.0

7.5 8.6 7.5 4.4 3.4 3.9 4.5 4.1
35.0 17.0 10.5 7.0 0 10.0 25.0 30.0

9.0 8.6 6.0 6.1 5.3 6.0 4.0
30.0 10.0 8.0 7.0 0 8.0 30.0

Sta. 51+90, 35 ft. Right W. Root Twin Ash

8.5 10.8 7.3 6.4 5.7 6.6
34.0 22.0 8.0 16.0 7.0 0 22.0
Creek

		1010.50 ~~1002.75~~ 1004.06			
53+00			6.3	997.7	
53+25			6.5	997.6	
T.P	15.52	1024.81 ~~1017.06~~ 1018.37	1.21	1009.29 ~~1001.54~~ 998.2	1002.85
52+35					
53+00				999.7	
	1.13	1010.42 ~~1002.67~~ 1003.98		1009.29 ~~1001.54~~ 996.6	1002.85
54+00					
T.P.			7.21	996.68	996.77

June 20, 1931
Snyder, Barton, Hassel

T.P	4.21	1007.42 ~~999.67~~ 1000.98		1003.21 ~~995.46~~	996.77
55+00			5.0	996.0	
55+64.4 E+W. Road		1001.0	5.0	996.0	
56+00			5.7	995.3	
57+00			7.6	993.4	

W E

9.3 9.8 8.3 6.9 6.3 6.8 4.9 3.4
40.0 23.0 18.0 7.0 ℄ 8.0 10.0 12.0 14.0

10.0 9.7 7.3 6.5 7.0 6.5 4.3
35.0 12.0 7.0 ℄ 8.0 18.0 30.0

20.0
℄ 12.1 8.4 4.9
30 35.0 40.0

20.6
℄ 11.7 6.6 0.5
23.0 33.0 45.0

8.6 11.4 11.5 9.2 7.4 6.7 7.8 7.1
30.0 21.8 19.0 12.0 9.5 ℄ 2.0 14.0 25.0 30.0

℄ Iron Pipe Sta. 54+87.5

℄ Iron Pipe Sta 54+87.5

7.6 10.8 7.8 4.9 4.9 5.0 4.4 5.1 5.1 4.9 5.5
30.0 26.0 14.0 11.0 9.0 ℄ 5.0 11.5 18.0 21.0 25.0 30.0

991.2 996.5 997.4 996.0 996.1 996.6 999.8 1000.9
9.8 4.5 4.4 4.6 4.6 4.5 3.6 5.0 4.9 4.4 4.2 2.1
33.5 33.5 42.9 42.9 24.9 24.9 29.9 ℄ 50.0 100.0 150.0 175.0

Top F.L opening - Bridge Seat ℄ of Bridge
SW NW SE NE

1000.8 999.5 998.0
0.2 1.5 3.0 10.1 4.5
175.0 125.0 50.0 38.5 33.5

K Profile → F.L Top openings

10.7 5.6 5.9 5.7 5.9 6.1 5.7 5.6
34.0 27.5 12.0 ℄ 18.5 21.0 29.0 30.0
F

9.6 6.3 6.9 7.1 7.6 7.0 6.5 7.3 6.8 7.0
30.0 20.0 11.5 4.0 ℄ 6.0 13.0 21.0 25.0 30.0
F

	+	H.I	−	Elev.	
		1007.42			
		~~999.67~~			
T.P	5.17	1005.83	6.76	1000.66	994.22
		~~998.08~~		~~992.91~~	
		999.39			
58+00			6.3	993.1	
B.M			5.08	994.31	
59+00			7.8	991.6	
59+25		Creek within 12'± ℄			
T.P	2.40	1000.97	7.26	998.57	992.13
		~~993.22~~		~~990.82~~	
		994.53			
60+00			2.7	991.9	
		Stone Walls, Concrete slab,			
60+32		12'X4' X 15.5 Bridge	2.2	992.3	
			4.1		
61+00			~~3.9~~	990.4	
			3.8		
62+00			~~3.6~~	990.7	
		1002.82		996.85	
T.P.	5.97	~~995.07~~	4.12	~~989.10~~	990.41
62+40		996.38	5.5	991.2	
				~~989.8~~	
63+00			6.6	~~998.8~~	
↑ Possible Culvert Location, ~~18~~ 24" Pipe required					
64+00			6.3	989.9	
		1010.07		1002.57	
T.P	7.50	~~1062.32~~	0.25	~~994.82~~	996.13
		1003.63			
~~65+00~~					
		1024.57		1009.16	
T.P	15.41	~~1016.82~~	0.91	~~1001.41~~	1002.72
		1018.13			
65+00			16.3	1001.8	

W E

6.0 5.7 5.9 7.2 6.3 5.9 6.6 6.4 5.8
30.0 15.0 10.5 F 5.0 ℄ 11.0 20.0 21.0 27.0

Right Stg, 59+75, 30" Maple W Root,

11.8 6.8 6.9 8.3 7.9 7.2 6.8 2.6 2.2 2.2
30.0 19.0 11.0 F 30 ℄ 3.0 11.0 17.0 18.0 30.0

7.5 8.9 10.5 12.0 8.0 8.0 6.7 7.6 7.6
30.0 25.0 12.0 ~~12.0~~ 10.0 ℄ 10.0 17.0 25.0

6.9 4.2 3.4 4.1 2.7 2.7 2.3 2.7 3.1 4.6 4.6 3.9
25.0 23.0 20.0 6.0 2.0 ℄ 6.5 14.0 17.0 20.0 25.0 27.0 F
Creek

6.1 5.9 7.2 3.2 2.3 2.2 2.4 3.2 6.9 7.4 7.8 8.7 10.0
50.0 25.0 4.5 ℄ 11.0 25.0 75.0 125.0 200

4.4 4.4 4.3 4.8 4.3 3.9 4.6 4.3 4.8
25.0 16.0 F 12.0 10.0 7.0 ℄ 9.5 10.5 25.0 F

2.8 2.9 3.3 4.3 3.9 4.6 3.9 4.2 6.5
30.0 19.0 F 14.0 8.0 11.0 ℄ 7.0 8.0 16.0 25.0 F

0.5 1.9 5.2 6.0 5.2 5.5 6.3 3.1 4.0
27.0 17.0 10.0 8.5 2.0 ℄ 5.0 9.5 25.0 F

6.8 6.9 6.6 7.3 7.2 6.4 7.3 6.7 7.8 8.6 8.7 8.7 12.5
25.0 21.0 F 13.5 11.0 2.0 ℄ 7.0 8.0 14.0 25.0 F 50.0 100 200

5.5 5.6 5.6 6.0 5.8 6.3 7.4 8.6 8.8 8.8 Swamp
25.0 22.0 13.0 11.0 5.0 ℄ 4.0 12.0 25.0 28.0 F

4.1 9.3 1.8 0.8 15.3 16.0
11.0 1.5 ℄ 2.0 28.0 35.0

1.4 1.7 5.4 16.3
40.0 33.0 28.0 ℄

	+	H.I.	−	Elev.	
		~~1016.82~~ 1024.57			
65+70				1004.1	
		1013.68		1008.35	
T.P.	5.33	~~1005.93~~	16.22	1000.60	1001.91
		1007.24			
66+00			4.9	1002.1	
67+00			10.5	996.7	
67+05	10" Vit. Pipe Requires 15" pipe			996.7	
		1010.39		1004.83	
T.P.	5.56	~~1002.69~~	8.85	997.08	998.39
		1003.95			
68+00				1000.3	
B.M:			3.33	1000.58	
69+00			6.0	997.7	
70+00			9.0	994.9	
70+45±	Probable Culvert Location			994.4	15" pipe required
71+00			8.2	995.6	
		1020.54		1007.15	
T.P.	13.39	~~1012.79~~	3.24	~~999.40~~	1000.71
		1014.10			
72+00				1011.7	
		1026.65		1019.04	
T.P.	7.61	~~1018.90~~	1.50	~~1011.29~~	1012.60
		1020.21			
72+00			8.3	1011.7	
72+35			6.4	1013.7	
		1021.20		1013.13	
T.P	8.07 ?	~~1013.46~~	13.52	1005.38	1006.69
		1014.76			
72+35			2.9	1013.7	
				1013.8	

W E 32

15.0 12.0 10.7 14.4 13.2 14.0 14.2 13.3 13.4 11.9 8.3
36.0 25.0 18.0 12.0 6.0 ℄ 2.0 3.0 15.0 26.0 32.

3.5 3.4 4.3 5.3 4.7 4.9 5.5 4.6 4.4 0.5 +1.0
30.0 18.0 12.0 10.0 5.0 ℄ 4.0 5.0 11.0 15.0 25.0 30.0
F

12.1 11.9 12.0 10.5 10.5 11.0 12.7 15.5
30 20 9.0 5.0 ℄ 7.0 9.0 25.0

12.0 12.8 10.6 10.5 11.1 14.6 17.5 20.0
30.0 6.0 4.0 ℄ 7.0 11.0 50.0 100.0
F.L. F.L.

4.2 3.7 4.2 4.2 3.5 4.2 2.6 2.5 2.5
25.0 11.5 9.0 6.0 ℄ 7.0 8.0 15.5 25.0
F F

68+07, S.E. Rob + 18" W cherry 25' Left

5.2 5.3 6.2 6.0 6.3 3.5 3.2 3.6
25.0 13.0 9.0 ℄ 5.0 7.0 14.0 25.0
F ℄

9.3 9.0 9.4 9.0 9.5 9.0 8.0 7.9
25.0 11.0 5.0 ℄ 9.0 11.0 20.0 25.0
10.3 F 10.3 9.6 9.5 9.1 9.6 10.2 11.2 F 12.0 14.3
F F 9.0 7.0 ℄ 5.0 12.0 16.0 24.5 50.0 150.0
3.1 4.0 6.1 7.3 8.2 8.3 9.2 8.9 9.5 11.2 12.0
30.0 24.0 11.0 6.0 ℄ 3.0 5.0 14.0 21.0 28.0 37.0
Hedge F F

2.2 4.0 8.5 14.2 14.4 16.7 16.5
℄ 9.0 23.5 35.0 42.0 45.0 56.0

℄ Stake Sta 72+00
2.2 2.3 3.0 4.9 8.3
50.0 35.0 22.0 9.5 ℄
Hedge

3.0 4.2 4.9 6.4 7.8 10.0 13.9
50.0 25.0 9.0 ℄ 15.0 22.0 36.0
Hedge

2.9 ?
℄

14.2 15.9 17.4 16.2 17.0
42.0 47.0 50.0 56.0 64.0

June 22, 1931 Snyder, Parks, Hassel

T.P	5.23	1024.27 ~~1016.52~~ 1017.83		1019.04 ~~1011.29~~	1012.60
72+70			8.3	1009.0	
73+00			14.1	1003.6 ~~1002.6~~	
T.P	8.00	1016.43 ~~1008.68~~ 1009.99	15.84	1008.43 ~~1000.68~~	1001.99
73+17			10.1	999.7	
72+70				1009.0	
73+00				1002.6	
T.P	2.69	1002.67 ~~994.92~~ 996.23	16.45	1002.6	993.54
73+55			9.8	985.7	
T.P	1.70	990.61 ~~982.86~~ 984.17	13.96	988.71 ~~980.96~~	982.27
74+00				981.1	
74+46.5		74+34	2.9 →	P.L. Fence W	
74+56	19'x10'x16' I Beam Bridge		5.1		
74+65.5			5.2		
75+00		754 85.	P.L. Fence	976.5	
T.P	3.86	987.63 ~~979.88~~ 981.19	6.84	983.77 ~~975.92~~	977.33
76+08				976.3	
B.M			5.44	975.72	
77+00				976.3	

W E

E. Stake, Sta. 72+00

2.6/40.0 2.5/25.0 3.0/18.0 3.6/14.0 7.4/5.0 8.3/E 8.8/5.0 10.6/10.0 12.8/18.0 15.8/21.0

3.7/45.0 3.5/37.0 13.9/16.0 14.1/E 18.1/16.0

+3.7/45.0 0.8/35.0 5.8/27.0 10.4/11.0 10.1/E 11.7/4.0 20.5/20.0 21.0/21.5 19.9/36.0 19.9/38.0 18.4/49.0

0.5 14.5/27.0 14.0/32.0 15.0/42.0 15.7/43.0 15.6/58.0

6.3/0 19.3/32.0 19.1/47.0 16.9/53.0

+1.9/40.0 1.1/30.0 1.0/25.0 2.6/18.0 6.9/8.0 7.5/4.0 9.8/E 10.3/10.0 10.7/11.0 10.2/17.0 11.2/25.0 10.8/27.0 9.2/31.0 9.3/35.0 12.0/40.0

2.1/32.0 3.5/26.0 2.9/24.0 3.5/3.5 2.9/E 3.6/12.5 7.2/25.0 9.4/35.0

S. Edge Bridge

18.0/2000 16.3/100.0 16.1/50.0 15.8/E 6.2 15.8 5.2 1.3 5.2/9.5 5.2 6.2/17.0 15.9/25.0 15.8/75.0

N. Edge Bridge

8.9/30.0 7.6/E 7.5/13.0 10.4/27.0 F 10.7/30.0

7.7/35.0 4.8/E 4.3/7.0 5.1/14.0 5.3/25.0 F

Twin Sycmore 65' Right Sta. 76+35 W. Root

6.3/32.0 4.8/E 4.3/7.0 3.7/13.0 4.3/14.0 5.0/26.0 5.2/35.0

		987.63			
		~~979.88~~			
78+00			3.3	977.8	
T.P	15.02	1002.42	0.23	987.40	980.96
		~~996.67~~		~~972.65~~	
78+20		995.98	17.3	978.7	
78+70			6.9	989.1	
		994.41			
		14.96			
		1009.37			
79+00			4.4	991.7	
T.P	14.96	1017.12	0.26	1002.16	995.72
		1010.68		~~994.41~~	
80+00			16.0	994.5	
80+86					
81+00			11.7	999.1	
T.P.	13.78	1030.82	0.08	1017.04	1010.60
		~~1008.44~~		~~994.53~~	
		1024.38			
82+00			15.1	1009.2	
82+72			6.6	1017.8	
83+00			6.8	1017.5	
		1026.33		1020.05	
T.P.	6.28	~~1003.62~~	10.77	~~999.54~~	1013.61
		1019.89			
84+00			9.0	1010.7	
84+40			14.0	1005.9	
84+80			15.8	1003.7	
		1014.98		1010.09	
T.P	4.99	~~992.27~~	16.24	~~987.38~~	1003.65
		1008.54			
84+40				1005.9	

Error 7.75' J.A.P.

W E

5.2 3.3 1.7 2.1 1.3 1.8 1.2
30.0 ℄ 10.0 11.5 18.0 25.0 28.0

19.8 17.3 15.8 16.2 15.2 15.5 16.0 14.9 14.0
30.0 ℄ 8.0 10.0 16.5 21.5 23.0 29.5 36.0 F

8.6 6.2 6.9 7.0 11.7 11.5 1.2 0.7
30.0 15.0 ℄ 3.0 7.0 19.0 31.0 F 40.0

3.8 3.9 4.4 7.8 7.0 8.2 2.0 1.0 0.6
30.0 1.0 ℄ 2.0 8.5 15.0 21.0 26.5 F 40.0

17.2 17.0 16.1 17.0 16.0 15.9 16.7 15.6 15.3 15.2
30.0 16.0 5.5 4.0 ℄ 4 12.5 17.0 26.0 F 30.0

13.7 12.0 12.0 12.3 11.7 11.4 12.3 11.6 9.8 8.7 8.5
30.0 12.0 6.0 4.0 ℄ 3.0 10.5 12.0 17.0 25.5 F 30.0

12.7 10.9 7.9 15.6 15.1 16.0 13.5 8.0 6.9 6.6
30.0 19.5 13.0 6.0 ℄ 7.0 9.0 17.0 25.0 F 30.0

6.4 5.0 7.2 6.6 4.2 7.4 5.5 4.7 4.8
30.0 6.0 5.0 ℄ 3.0 9.5 12.0 25.0 F 30.0

6.7 6.0 5.6 7.3 6.8 6.3 7.4 5.9 5.9
30.0 10.0 4.0 2.5 ℄ 4.0 12.0 14.0 25.0, 30.0

7.4 3.2 9.5 9.0 8.4 9.8 4.4 4.2 5.8 25.0
30.0 12.0 2.0 ℄ 4.0 13.0 20.0 26.0 30.0 50.0 F

9.6 6.8 14.4 14.0
35.0 20.0 6.0 ℄

10.1 8.5 16.6 15.9 15.8
40.0 30.0 15.0 4.5 ℄

0.0
3.4 2.5 8.8 8.9 8.8
8.0 10.0 22.0 26.0 F 35.0

		1014.98 ~~992.27~~		
84+80				1003.7
84+92.5	old stone culvert 2½' skew			1003.8
85+00			5.2	1003.2
T.P	10.20	1023.74 ~~1006.03~~ 1017.3	1.44	1013.54 ~~990.83~~ 1007.1
85+70			12.7	1004.7
86+00			10.4	1006.9
86+25			6.5	1009.9
86+92	15" Cor. Iron Pipe 16' Long. V.G. Condition 45° Skew			1012.8
B.M			2.47	1014.84 1021.27
87+00			4.3	1013.0
88+00			4.0	1013.1
88+55.5			5.3	1012.0
T.P 05				

June 23, 1931, Cloudy, 75°, Marks, Snyder & Hassel

1021.27

B.M., W. Root, 24" Apple, 28' Right Sta. 86+93

W E

4.4 / 6.0 — 5.0 / 7.0 — 9.0 / 16.0 — 9.2 / 35.0

15.4 / 100.0 — 13.1 / 50.0 — 11.1 / 25.0 — 10.3 — 8.0, 6.8 / 4.0 — 5.3 / 2.0 E — 5.1 / 9.0 — 6.9, 7.8, 10.3, 10.6 / 13.0 — 10.0 / 19.0 — 9.7 / 30.0 — 9.4 / 50.0

11.9 / 30.0 — 10.6 / 13.0 — 8.1 / 6.0 — 5.7 / 2.0 — 5.2 / E — 5.0 / 9.0 — 8.3 / 14.0 — 8.9 / 25.0 F — 30.0

9.7 / 30.0 — 8.5 / 20.0 — 9.0 / 10.0 — 13.3 / 3.5 — 12.9 / 1.5 — 12.7 / E — 12.2 / 10.0 — 10.3 / 14.0 — 1.7 / 25.0 F — 1.2 / 35.0

5.1 / 30.0 — 5.8 / 8.0 — 10.6 / 5.0 — 10.4 / E — 10.9 — 8.8 / 12.0 — 6.1 / 16.0 — 2.8 / 21.0 — 2.5 / 26.0 E — 2.0 / 40.0

S. of Pipe

6.5 / 31.1 — 4.4 / 30.0 — 4.5 / 6.5 — 6.2 — 5.2 / 4.5 — 4.8 — 4.5 / 3.5 E — 4.2 / 13.0 — 4.5 — 5.9 / 13.5 — 3.4 / 16.0 — 2.9 / 30.0 — N. of Pipe 5.2 / 30.0

old ditch 2.1

W. Root, 24" Apple, 28' Right Sta. 86+93

4.2 / 30.0 — 4.1 / 6.0 — 5.2 / 4.0 — 4.3 / E — 4.3 / 9.0 — 5.4 / 11.0 — 3.5 / 13.0 — 2.9 / 30.0

3.9 / 30.0 — 4.1 / 8.0 — 5.1 / 5.0 — 4.4 / 3.0 — 4.0 / E — 4.2 / 16.5 — 5.3 / 18.0 — 3.5 / 22.0 — 3.3 / 30.0

7.4 / 200.0 — 7.3 / 100.0 — 6.5 / 50.0 — 5.9 / 30.0 — 5.3 / E — 4.5 / 30.0 — 4.1 / 50.0 — 3.0 / 100.0 — 1.3 / 200.0

Sta. [illegible] S. Gate [illegible] C.L.

June 23, 1931 – Cloudy 75° Rain

Snyder, Hassel

Check Levels

B.M	2.25	1103.13		1100.88	
T.P	2.18	1098.40	6.91	1096.22	
B.M			3.02	1095.38	Established 1095.32
T.P	15.16	1106.56	7.00	1091.40	
T.P.	8.16	1105.76	8.96	1097.60	
B.M.			4.97	1100.79	Established 1097.22
	3.04	1098.36		1095.32	
7+00			4.2	1094.2	✓
8+00			7.2	1091.2	✓
9+00			6.8	1091.6	✓
10+00			4.0	1094.4	✓
T.P.	7.40	1105.04	0.72	1097.64	✓
11+00			5.8	1099.2	✓
11+40				1101.8	
12+00			3.2	1101.8	✓
12+70			1.6	1103.4	
13+00			4.0	1101.0	
B.M			4.37	1100.72	

E. Root 20" Maple, 150' W. Town line Rd. on Mayfield

W. Root Twin Elm 32' R. Sta 6+65

E. Root 18" Maple 45' L, Sta 13+85
W Root Twin Elm 32' R, Sta 6+65

E. Root 18" Maple 45' L Sta. 13+85

B.M.	4.32	1105.04		1100.72	
T.P.	0.77	1091.73	14.08	1090.96	
T.P.	12.00	1091.93	11.80	1079.93	Original Corrected
B.M			3.54	1088.39	1085.84
B.M	4.94	1105.66		1100.72	
14+00			8.9	1096.8	
15+00			6.9	1098.8	
16+00			4.3	1101.4	
17			15.3	1090.4	
	4.32	1094.29	15.69	1089.97	
18			11.6	1082.7	
19			14.1	1080.2	
20			15.2	1079.1	
21			9.3	1085.0	
22			6.6	1087.7	
			5.90	1088.39	Diff. Corr. 1085.84
	9.00	1100.53	2.76	1091.53	
	1.92	1086.30	16.15	1084.38	
	6.07	1088.48	3.89	1082.41	
			1.69	1086.79	1083.25
			16.31	1072.17	
	1.05	1073.41	16.12	1072.36	
	3.86	1067.88	9.39	1064.02	
			5.39	1062.43	1059.01

E. Root 18" Maple 45'L Sta 13+85

W. Root 27" Maple 27'R., Sta. 22+43
E Root 18" Maple 45'L Sta, 13+85

B.M. 1 Rt. 22+43

B.M. Rt. 40+13
Stone L. side of Rd. 41±

B.M., R. 37+11

June 29, 1931
Marks, Snyder, Hassel

B. M	15.10	1103.49		1088.39
22+00			14.4	1087.1
24+00			11.1	1092.4
24+85			4.1	1099.3
25+00			4.2	1099.2
26+00			7.6	1095.9
T. P.	9.81	1087.87	16.43	1087.06
27+00			1.1	1086.8
28+00			5.2	1082.7
28+78			7.3	1080.6
29+00			7.5	1080.4
30+00			7.1	1080.8
31+00			7.9	1080.0
31+55			12.4	1075.5
T. P.	1.22	1092.88	16.21	1071.66
32			2.5	1070.4
33			8.1	1064.8
33+85			10.3	1062.6
34+00			10.3	1062.6
34+75			11.3	1061.6
35+00			12.5	1060.4
35+80.5			13.2	1059.7
36+00			13.1	1059.8
37+00			11.3	1061.6

Calculations Checked
by J.A.P. .02 Error.

B.M., Right, 22+43

Peg in W. Bank Sta 32+00

			F.L.				Top Dirt Open F.L.		
12.2	13.1	15.2	14.5	13.2	12.7	13.8	15.1	15.1	16.2
30.0	50	2.0		0	5.5	12.5	14.0	17.3	35.0
							19.3		
							60.0		

		1072.88		
T.P	4.37	1067.89	9.38	1063.50
B.M			5.45	1062.42
T.P	14.10	1077.60	4.37	1063.50
38+00			9.1	1068.5
T.P	12.00	1089.09	0.51	1077.09
39+00			7.1	1080.0
39+75			4.4	1084.7
40+00			6.1	1083.0
B.M			2.40	1086.69
40+37			7.5	1079.6
41+00			6.9	1082.2
T.P	0.02	1073.47	15.62	1073.47
42+00			4.0	1069.5
42+50			15.2	1058.23
T.P	0.75	1059.86	14.36	1059.11
43+00			4.7	1055.2
44+00			11.2	1048.7
T.P	0.54	1044.43	15.97	1043.89
45+00			2.0	1042.4
46+00			6.9	1037.5
47+50			7.5	1036.9
47+12.5			10.2	1034.2
48+00			5.0	1039.4
49+00			13.1	1031.3
T.P.	1.50	1033.42	12.51	1031.92

Hub in L bank, 37+15

R. Sta. 37+11

R. 40+13 R.P. 5 pike

		1033.42		
49+40			15.6	1017.8
T.P.	0.84	1018.18	16.08	1017.34
49+60			11.1	1007.1
50+05			14.9	1003.3
T.P.	0.26	1003.58	14.86	1003.32
50+15			1.1	1002.5
51+00			3.1	1000.5
52+00			4.8	998.78
52+25			5.3	998.28
53+00			5.8	997.78
53+25			6.0	997.6
54+01			7.0	996.6
55+00			7.6	996.0
B.M			3.60	999.98
T.P	2.10	998.78	6.90	996.68
55+64.5			2.8	996.0
56+00			3.5	995.3
57+00			5.4	993.4
B.M			4.47	994.31
58+00			5.7	993.1
59+00			7.2	991.6
60+06			6.9	991.9
61+00			8.4	990.4
62+08			8.1	990.7
62+40			7.6	991.2

℄ No. 1 Sta. 50+00

R. Sta 51+70

I.P. ℄ Sta. 54+87.5

℄ E+W Rd.

R. Sta. 57+76

		998.78			
63+00			9.0	989.8	
T.P.	16.08	1005.82	7.04	989.74	℄ spike 63+00
64+00			15.9	989.9	
65+00			4.0	1001.8	
65+70			1.7	1004.1	
66+00			3.7	1002.1	
67+00			9.1	996.7	
67+05			9.1	996.7	
68+00			5.5	1000.3	
T.P	4.83	1005.11	5.54	1008, 28	℄ spike Sta 68+01
B.M			4.53	1008, 58	
69+00			7.4	997.7	
70+00			10.2	994.9	
70+45			10.7	994.4	
71+00			9.5	995.6	
T.P	12.85	1016.95	1.01	1004.10	
72+00			5.3	1011.7	
72+35			3.2	1013.8	
72+70			8.0	1009.0	
73+00			13.4	~~1002.6~~ 1003.6	
T.P.	0.40	1001.39	15.96	1000.99	
73+17			1.7	999.7	
73+55			15.7	985.7	
T.P.	0.26	986.53	15.12	986.27	
74+00			5.4	981.1	

		986.53			
74+43			7.2	999.3	
74+47			16.2	990.3	
74+46.2			7.5	999.0	Bridge floor
74+56			18.6	967.9 ~~967.9~~	stream bed
74+66			18.6	967.9 ~~967.9~~	
74+66			7.6	978.9	Bridge floor
74+70			7.5	979.0	
75+08			10.0	976.5	
76+00			10.2	976.3	
77+00			10.2	976.3	
78+00			8.7	977.8	
T.P.	4.12	982.65	8.00	978.53	Top of Stake, Sta. 78+00
			6.93	975.72	Orig. 982.19 W. side, Triple Sycamore, 65' R, 76+35
T.P.	15.29	993.82	4.12	978.53	
78+20			15.1	978.7	
78+70			4.7	989.1	
79+00			2.1	991.7	
T.P.	14.14	1007.68	0.30	993.52	
80+00			13.3	994.5	
81+00			8.6	999.1	
T.P.	13.68	1021.31	0.00	1007.68	
82+00			12.1	1009.2	
82+72			3.5	1017.8	
83+00			3.9	1017.5	
84+00			10.6	1010.7	

		1021.31			
84+40			15.4	1005.9	
T.P.	12.75	1018.22	15.84	1005.47	
84+80			14.5	1003.7	
84+92.5			14.9	1003.3	
85+00			15.0	1003.2	
85+70			13.5	1004.7	
86+00			11.3	1006.9	
86+25			8.3	1009.9	
86+92			5.4	1012.8	
87+00			5.2	1013.0	
88+00			5.1	1013.1	
88+55.5			6.2	1012.0	
B.M			3.38	1014.84	1014.83 1014.73
			(correct.	1014.86)	

rec., Wilson Mills Rd. survey in Munson.
" " " " " " Chester.

B.M	2.08	1102.96		1100.88	
1					1098.0
2					1097.3
3	6.14	1102.42	6.68	1096.28	1096.3
4					1095.0
5					1094.0
6					1095.0
			7.10	1095.32	
B.M				1095.32	record
7					1095.0
8	10.13	1101.59	10.96	1091.46	1092.0
9					1092.0
9+75					1095.0
9+90					1095.6
10-					1096.0
10+65					1099.25
10+80	12.55	1113.18	0.96	1100.63	1100.00
9.+90					1095.6
10+80					1100.00
11					1101.00
12					1103.0
12+70	8.40	1112.18	9.40	1103.78	1103.5
12					1103.0
12+70					1103.5
13	1.90	1102.48	11.60	1100.58	1103.0

Oct. 5, 1931
D. Parks
T. Snyder

Spike in E root 20" Maple 30's. of & of Mayfield Rd. 150W of T.L.

4.24	5.37	F0.4 / 17.0	5.07	F0.1 / 20.0
5.66	4.01	C1.7 / 21.5	4.85	C0.8 / 21.6
6.66	7.98	F1.3 / 17.0	7.11	F0.5 / 20.0
7.42	6.73	C0.5 / 20.5	6.02	C2.4 / 23.0
8.42	10.45	F2.0 / 17.0	10.65	F2.2 / 17.5
7.42	2.54	C4.9 / 26.5	8.80	F1.4 / 17.0

W. Root Twin Elm 32' R. Sta. 6+65

7.42	3.89	C3.5 / 26.0	7.77	F0.4 / 18.5
9.59	11.62	F2.0 / 18.0	10.13	F0.5 / 18.0
9.59	12.19	F2.6 / 19.0	9.44	C0.2 / 19.5
6.59	10.32	F3.7 / 21.0	7.28	F0.7 / 17.0
5.99	9.22	F3.2 / 18.0		
5.59	8.36	F2.8 / 17.0	5.70	F0.1 / 18.0
2.34	2.11	C0.2 / 17.0	0.72	C1.6 / 22.0
1.59	1.42	C0.2 / 17.0		
17.58			8.51	C9.1 / 33.0
13.18			2.18	C11.0 / 35.5
12.18	11.19	C1.0 / 17.0	1.80	C10.4 / 30.0
10.18			4.58	C5.6 / 26.5
9.68			1.49	C8.2 / 30.0
9.18	13.37	F4.2 / 21.5		
8.68	8.72	0.0 / 18.5		
9.18	8.18	C1.0 / 19.5	0.62	C8.6 / 31.0

	1102.48							
		1.76	1100.72					
B. M.			1100.79					
14				1098.0				
15				1100.5				
		3.13	1099.35					

E. root 18" Maple 45' Lt. Sta. 13+85

		F2.8			F 2.2
4.48	7.26	19.0		6.68	18.0
		F0.7			C 0.4
1.98	2.88	18.0		1.58	19.5

B.M	5.11	1105.90		1100.79	
15+35					1101.0
	7.60	1109.23	4.27	1101.63	
16					1100.5
	0.51	1097.17	12.57	1096.66	
17					1092.0
	5.90	1091.31	11.70	1085.47	
17+55					1087.6
	8.93	1092.24	8.06	1083.31	
18					1084.0
	3.48	1084.11	11.61	1080.63	
19					1080.5
20					1081.0
	9.76	1092.58	1.29	1082.82	
20+50					1083.0
21					1085.0
22					1087.5
			4.20	1088.38	
B.M	6.03	1094.42		1088.39	record
23					1090.0
	9.40	1103.53	0.29	1094.13	
24					1095.0
24+85					1098.5
25					1099.0
26					1096.0
	0.38	1094.35	9.56	1093.97	
27					1089.0
28					1083.0
	4.62	1086.06	12.91	1081.44	
29					1081.5
30					1081.5
31					1080.0
	6.04	1081.67	10.43	1075.63	
32					1074.0
	0.89	1071.88	10.68	1070.99	
33					1067.0
34					1064.0

6.50 F1.6/17.0

E. root 18" Maple 45' Lt. sta. 13+85

4.90	6.50	F1.6/17.0	0.51	C4.4/24.5
8.73	3.08	C5.7/28.0	3.23	C5.5/27.5
5.17	8.61	F3.4/19.0	7.05	F1.9/18.0
3.77	12.05	F8.3/28.0	2.00	C1.8/21.0
8.24	12.69	F4.5/21.5	0.23	C8.0/29.0
3.61	3.83	F0.2/19.5	1.21	C2.4/21.5
3.11	9.67	F6.6/23.0	5.65	F2.4/19.0
9.58	9.76	F0.2/20.5	6.76	C2.6/23.0
7.58	3.61	C4.0/26.0	2.56	C5.0/27.5
5.08	5.91	F0.8/17.0	7.14	F2.1/18.0

W. root 27" Maple 27' Rt. sta. 22+43

4.42	11.72	F7.3/25.0	3.56	C0.9/20.0
8.53	7.21	C1.3/20.5	8.37	C0.2/19.0
5.03	3.06	C2.0/23.0	1.85	C3.2/23.6
4.53	3.35	C1.2/20.5	2.80	C1.7/20.5
7.53	5.49	C2.0/20.0	5.09	C2.4/23.0
5.35	5.32	0.0/19.5	0.38	C5.0/26.5
11.35	13.07	F1.7/17.0	9.87	C1.5/21.0
4.56	6.46	F1.9/17.0	4.62	F0.1/19.0
4.56	5.23	F0.7/17.0	2.16	C2.4/21.5
6.06	6.28	F0.2/19.0	0.96	C5.1/26.5
7.67	6.04	C1.6/20.5	0.87	C6.8/29.0
4.88	6.93	F2.1/19.0	6.97	F2.1/18.0
7.88	10.01	F2.1/18.0	10.54	F2.7/18.5

Slope Hub Lt. Sta 32+08

		1071.88			
35					1063.0
36	5.39	1067.65	9.62	1062.26	1062.0
37			5.00	1062.65	1063.0
B.M.				1062.42	record

8,88	5.26	C 3,6 / 23,0	9.40	F 0.5 / 18.5
9,88	11.36	F 1.5 / 17.0	13.74	F 3.9 / 20.0
4,65	1,90	C 2,8 / 23.0	5,39	F 0.7 / 17.0

W. root 36" Maple 29' Rt. sta. 37+11

Check Levels

B.M.	2.59	1065.01		1062.42	
37					1063.00
36					1062.0
35					1063.0
	12.99	1075.71	2.29	1062.72	
34					1064.0
33					1067.0
	10.44	1085.86	0.29	1075.42	
32					1074.0
31					1080.0
30					1081.5
	12.88	1094.72	4.62	1081.27	
22					1081.5
28					1083.0
	9.86	1103.64	0.34	1093.78	
27					1089.0
26					1096.0
25					1099.0
24+85					1098.5
24					1095.0
	1.60	1092.29	12.95	1090.69	
23					1090.1
			4.07	1088.22	
B.M.				1088.39	

W. root 36" Maple 29' Rt, sta. 37+11

2.01		2.98
3.01		7.12
2.01		2.78
11.71	14.16	14.16
8.71	10.97	
11.86	10.44	
5.86	6.28	
4.36	5.24	
12.62		12.88
11.12		9.79
14.64		9.86
7.64		5.39
4.64		3.10
5.14		2.15
8.64		8.68
2.29		1.60

W. root 27" Maple 27' Rt, sta. 22+43

Culvert Stakes

	10.48	1084.92	1074.97	
19+85	36' of 15" pipe			
				1077.6
				1075.0
14+20	36' of 15" Pipe			
B.M	1.38	1102.17	1100.79	
8+65	32' of 15" pipe			
	4.20	1096.35	1092.15	
				1090.21
				1089.31

Sept. 13, 1931
D. Parks T. Snyder Cloudy. 49

Slope Hub Lt sta. 20+00 (700)

7.32	5.32	cut	cut 2'6" stake 30' Rt
9.92	9.92	cut	0'0" stake 30' Lt

F. root 18" Maple 45' Lt. sta. 13+85

1094.34	7.83	6.33	cut 1'6" stake 30' Lt.
1075.18	6.97	4.47	cut 2'6" stake 30' Rt

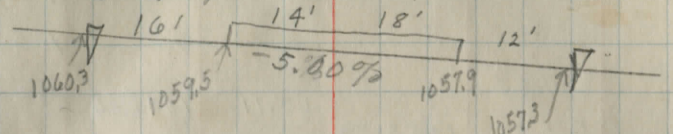
Slope Hub Rt. sta. 19+00

6.14	2.14	cut	4'0" stake 30' Rt.
7.04	7.04	0.0	stake 30' Lt.

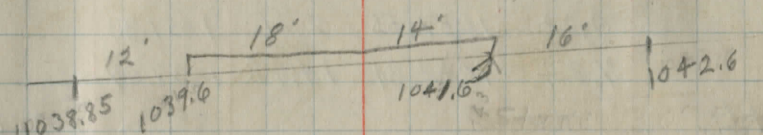
Oct. 14, 1931, Drizzle, 65°.
Marks, Parks Snyder.

36+00	32' of 15" Pipe			
B.M.	2.56	1064.98	1062.42	
			6.68	1057.3
			2.68	1060.3
44+90	32' of 12" Pipe			
		1053.59		
			12.74	1038.85
			1.99	1042.60
~~47+12.5~~	~~40' of 15" Pipe~~			
50+90	40' of 18" Pipe	1064.68		
			2.95	999.6
			6.45	996.6
+11.5 47+12.5				
		1044.31		
			14.81	1028.5
			4.81	1034.5

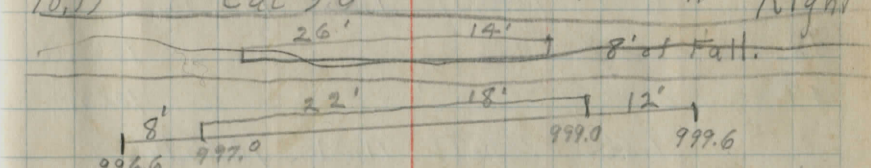
W. root 36" Maple 29' Rt. sta. 37+11



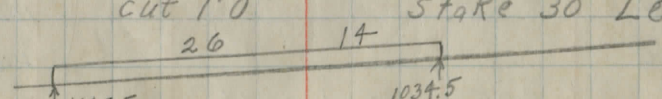
7.68	cut 1' 0"	Stake, 30' Right
4.68	cut 2' 0"	Stake, 30' Left



14.74	cut 2'0"	Stake 30' Left
10.99	cut 9'0"	" " Right



4.45	cut 1'6"	Stake 30' Right
7.45	cut 1'0"	Stake 30' Left



15.81	Cut 1'0"	Stake 26' Left
9.81	cut 5'0"	Stake 14' Right

Oct. 19, 1931 clear Warm 75° D. Parks, T. Snyder

	0.37	1073.32		1072.95						
	1.48	1063.17	11.83	1061.49						
42+50					1066.5			FC 6.0		F1.0
						0.67	6.48	25.0 ft to slope	1.68	17.0
43					1057.0	6.17	9.52	F3.4 20.0	4.54	C1.6 20.5
44					1049.0	14.17	15.11	F0.9 21.0	9.82	C4.4 25.0
			15.11	1048.06						
	5.53	1053.59								
45					1043.0	10.59	12.39	F1.8 17.0	4.48	C 5.9 25.5
46					1039.0	14.59			2.26	C 12.3 32.0
	0.22	1051.55	2.26	1051.33						
	7.24	1044.31	14.48	1037.07						
46					1032.0	5.31	11.41	F6.1 23.5		
47					1037.0	7.24	15.05	F7.8 25.0	2.23	C5.0 25.0
	6.89	1046.37	4.83	1039.48						
48					1033.0	13.37			0.36	C13.0 33.0
49					1025.0	21.37			9.80	C11.6 32.0
	1.01	1036.17	11.21	1035.16						
48					1033.0	3.17	6.99	F3.8 33.0		
49+45					1020.2	15.97			8.77	C 7.2 30.0
49+60					1017.8	18.37			12.61	C 5.8 33.0
	5.95	1029.51	12.61	1023.56						
	12.16	1025.19	14.48	1013.03		rock in & traveled Road				
49					1025.0	0.19	14.09	F13.9 28.5		
	0.59	1013.62		1013.03						
49+40					1020.2	+6.58	9.53	F16.1 38.5		
49+60					1017.8	+4.18	9.86	F14.0 34.0		
50					1013.0	0.62	13.03	F12.4 32.0	3.93	F3.3 22.5

		1013,62			
	8.67	1004,05	13.24	1000.38	
51					1001.0
			3.93	1000.12	
B.M.	3.93	1003.91		999.98	record
52					999.0
53					998.0
	15.79	1018.54	1.16	1002.75	
53					998.0

3.05	7.25	F 4.2 / 23.0		4.23	F 1.2 / 24.5
W. foot	Twin	Ash	Rt.	sta. 51+70	
4.91	8.09	F 3.2 / 20.0		3.68	C 1.2 / 25.0
5.91	7.85	F 1.9 / 17.0			
20.54				1.67	C 18.9 / 43.0

B.M.	2.11	1002.09		999.98	
54					997.0
55					996.0
56					995.5
	3.12	999.16	6.05	996.04	
57					994.0
B.M			4.91	994.25	
	4.91	999.22		994.31	record
58					993.5
	4.32	996.79	6.75	992.47	
59					992.0
60					992.0
61					991.0
62					991.0
62+40					991.0
	1.73	994.52	4.00	992.79	
63					991.0
64					991.0
65					992.5
	12.48	1006.60	0.40	994.12	
	11.60	1017.89	0.31	1006.29	
65					992.5
	1.77	1007.96	11.70	1006.19	
65+70					1003.0
64					1002.5

D. Parks
T. Snyder
R. Fenton

Oct. 20, 1931
Clear 75°

W. root Twin Ash Rt. sta. 54+70

				0.0
5.09	6.04	F1.0 33.0	5.08	26.0
6.09	10.38	F4.3 23.0	5.77	C0.3 25.5
6.59	6.69	F0.1 19.0	7.37	F0.8 18.5

℄ stake sta. 56+00

5.16	4.24	C0.9 20.0	5.46	F0.3 19.0

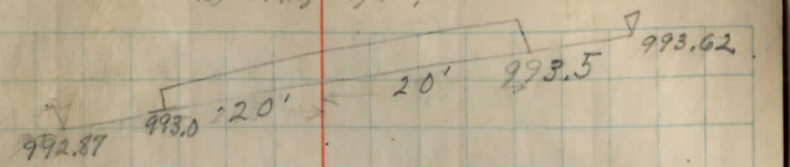
W. root 30" Maple Rt. sta. 57+75

5.72	4.94	C0.8 18.5	6.20	F0.6 20.0
4.79	4.03	C0.8 19.0	4.32	C0.5 20.0
4.79	5.51	F0.9 14.5	6.32	F1.5 20.0
5.79	5.98	F0.1 15.0	6.38	F0.6 20.0
5.79	4.91	C0.9 21.5	6.98	F1.2 19.0
5.79	0.39	C5.4 29.5	4.60	C1.8 24.0
3.52	4.32	F0.8 15.0	6.06	F2.5 20.0
3.52	3.36	C0.2 18.5	6.52	F3.0 20.0
+5.02			6.40	F11.4 30.0
18.39	1.75	C16.6 33.0		
4.96	1.77	C3.2 25.0	2.41	C2.6 23.0
5.46	4.11	C1.4 21.0	2.05	C3.4 21.0

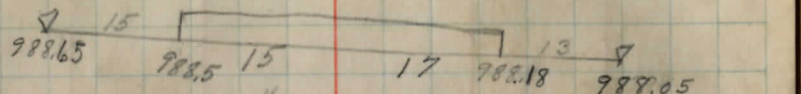
55+35	40' of 24" Pipe				
		999.16			
			1.54	993.62	
			5.79	992.87	
63+00	36' of 24" Pipe				
		994.52			
			3.97	988.65	
			2.87	988.65	
67+05	36' of 15" Pipe				
		1001.27			
			7.67	993.60	
			4.17	995.10	
70+50	36' of 15" Pipe				
		999.41			
			5.05	992.86	
			4.45	993.46	
84+92	40' of 30" pipe				
		1008.57			
			7.47	999.1	
			10.47	996.1	

Oct. 20, 1931
Marks, Parks, Snyder, Fenton

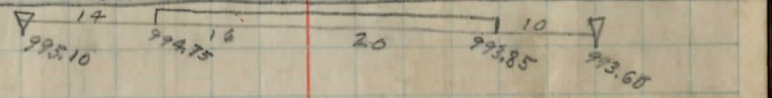
54



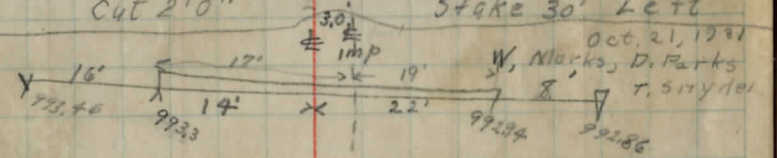
5.54	cut 4'0"	stake 30' Rt
6.29	cut 0'6"	stake 30' Lt



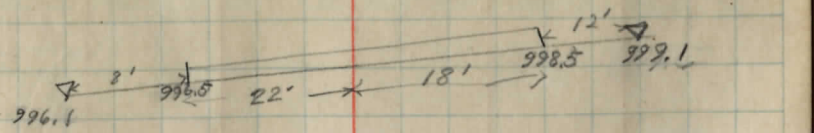
6.47	cut 2'6"	stake 30' Right
5.87	cut 3'0"	Stake 30' Left



7.67	Grade	Stake 30' Right
6.17	Cut 2'0"	Stake 30' Left



6.55	cut 1'6"	stake 30' Right
5.95	Cut 1'6"	Stake 30' Left



9.47	cut 2'0"	stake 30' Rt
12.47	Cut 2'0"	Stake 30' Lt

		1007.96			
	5.41	1001.27	12.10	995.86	
67					997.0
B.M			0.66	1000.61	
				1000.58	record

4.27	5.41	F1.1 18.0	9.30	F5.0 21.5

S.E. root 18" W. cherry Lt. sta. 68+07

B.M.	3.88	1004.46		1000.58	
68					1000.0
69					998.0
70					996.0
	4.34	999.41	9.39	995.07	
71					999.0
	15.07	1013.37	1.11	998.30	
72					1000.0
	7.02	1019.51	0.88	1012.49	
72.					1000.0
72+35					998.5
72+70					995.0
73					992.0
	0.35	1003.42	16.44	1003.07	
72+70					995.0
73					992.0
73+55					986.5
	0.06	987.39	16.09	987.33	
73+65					986.5
74					982.0
	6.78	983.08	11.09	976.30	
75					979.0
76					977.0
B.M.			7.40	975.68	
	7.40	983.12		975.72	record

S.E. root 18" W. cherry Lt. Sta. 68+07

4.46	3.99	C0.5 / 19.0	3.02	C1.4 / 21.0
6.46	5.79	C0.8 / 19.5	4.22	C2.2 / 22.0
8.46	9.39	F0.9 / 10.0	8.38	C0.1 / 20.5
0.41	1.11	F0.7 / 13.0	5.91	F5.5 / 25.0
13.37			9.14	C4.2 / 26.0
19.51	1.90	C17.6 / 25.0		
21.01	3.35	C17.7 / 25.5	11.70	C9.3 / 31.0
24.51	4.21	C20.3 / 27.0		
27.51	15.09	C12.4 / 17.0		
8.42			5.37	C3.1 / 26.0
11.42			9.46	C2.0 / 25.0
16.92	11.85	C5.1 / 18.0		
0.89			0.82	C0.1 / 26.0
5.39	6.90	F1.5 / 6.5	12.33	F6.9 / 34.0
4.08	6.78	F2.7 / 9.0	9.13	F5.1 / 33.0
6.08	7.27	F1.2 / 9.5	6.92	F0.8 / 25.5

W.S. Triple sycamore 65' Rt. sta. 76+35

		983.12			
77					977.0
78					980.0
78+20					981.7
	15.29	998.30	0.11	983.01	
78+70					986.0
79					988.5
80					994.5
	11.04	1009.00	0.34	997.96	
81					999.5
	13.62	1022.43	0.19	1008.81	
82					1011.5
82+72					1017.5
83					1017.5
84					1011.0
	2.14	1008.57	16.00	1006.43	
85					1004.5
	9.44	1017.98	0.03	1008.54	
86					1008.5
87					1013.0
88					1013.1
B.M.			3.18	1014.80	
				1014.83	record

		F1.9		C0.1
6,12	8.02	12.0	6.03	24.0
3.12	6.53	F3.4 15.5	4.21	F1.1 23.0
1.42	6.15	F4.7 17.0	2.82	F1.4 22.0
		C2.8		F0.3
12,30	9.54	21.5	12.63	19.5
9,80	5.89	C3.9 22.5	2.95	C4.9 31.0
3,80	4.33	F0.5 18.0	3,11	C0.7 19.5
		F1.5		C1.8
9.50	11.04	18.5	7.63	21.5
		C2.1		C6.2
10,95	8.82	22.5	4,70	28.5
4,93	4,06	C0.9 21.5	2,86	C2.1 22.0
4,93	4,44	C0.5 20.0	3,58	C1.4 21.0
11,43	8.75	C2.7 24.0	6,85	C4.6 25.5
		F7.3		F4.6
4,07	11.36	24.5	8,66	21.0
		C3.8		C6.4
9,48	5.70	24.0	3.06	28.5
4,98	4,57	C0.4 19.5	3,89	C1.1 21.0
4,88	4.33	C0.6 19.0	5,43	F0.5 19.0

Spike N. root 20" Apple E.S. Townline Rd. 165.6
Wilsons Mills Rd.

Nov. 5, 1931, P.K. Windy, Hall Storm
Works & Parks

					Grade
	1.46	1088.15		1086.69	
40					1083.3
41					1079.0
	0.53	1079.52	9.16	1078.99	
42					1068.0
	0.83	1066.09	14.26	1063.26	
43					1057.0
44					1049.0
	0.39	1050.57	15.91	1050.18	
45					1043.6
46					1039.0
47					1037.0
	1.39	1038.44	13.52	1037.05	
48					1033.0
48+50					1029.0
49					1025.0

Grade Rod

40+13 R.,

	5.0	5.1		5.1
4.85				
	10.0	9.5		9.8
9.15				
	11.1	10.9		11.1
11.52				
	7.5 / 10	7.0		7.5 / 7
9.09				
	15.8 / 11	15.4		15.9 / 11
17.09				
	7.1	7.2		7.5
7.57				
	10.6 / 10	10.7		10.8 / 11
11.57				
	13.9 / 14	14.0		13.9 / 9
13.57				
	5.8 / 27	5.8 / 11	5.6	5.8 / 11
5.44				
	8.7 / 27	8.7 / 11	8.7	8.9 / 10
9.44				
		13.9	14.3	14.3
13.44				

No Ditch

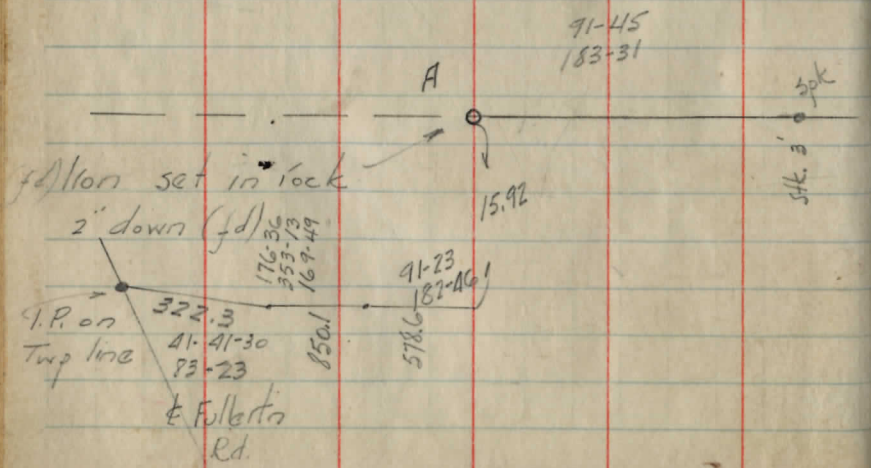
Heath
~~HARVARD~~ ROAD
South line Newbury & Chester
Twp's north to Mayfield road.
Random Traverse

B

473 $\frac{05}{}$ ✓

2+0

1+0 Traveled Rd. 19' ?



9/26/40 Pomeroy IIII
Richards IIII
Petrik III

39

D

550 $\frac{00}{}$ ✓

179°14'
358°29'
537°43'
C

430 $\frac{00}{}$ ✓

178°59'
357°58'
B

9/30/40
Fremont
Richards
Patrick

447 50'

177°37'
355°14'

N-Trow bridge?

Iron

E.

C'l. of Traveled Rd.

671 65'

2/26

Middle line Trow.?

I. Bolt fd.

122 50'

180°38'
361°16'

D

176°36'
353°12'

over

Fence

27'

179°38'
359°17'
538°56'

I.P.
N-of Andre

31 35'

87°26'
174°53'

921 ee'

497 15'

178°40'
357°20'

G

590 ee'

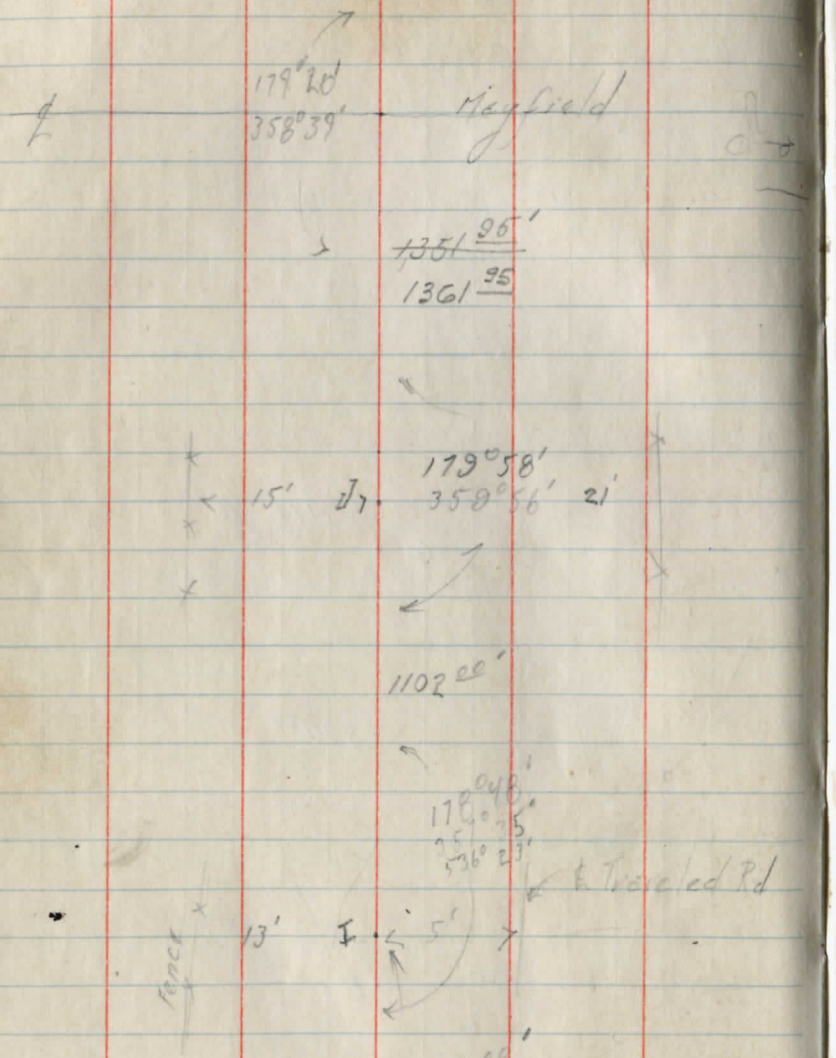
I. Pin fd.
S.-Andre

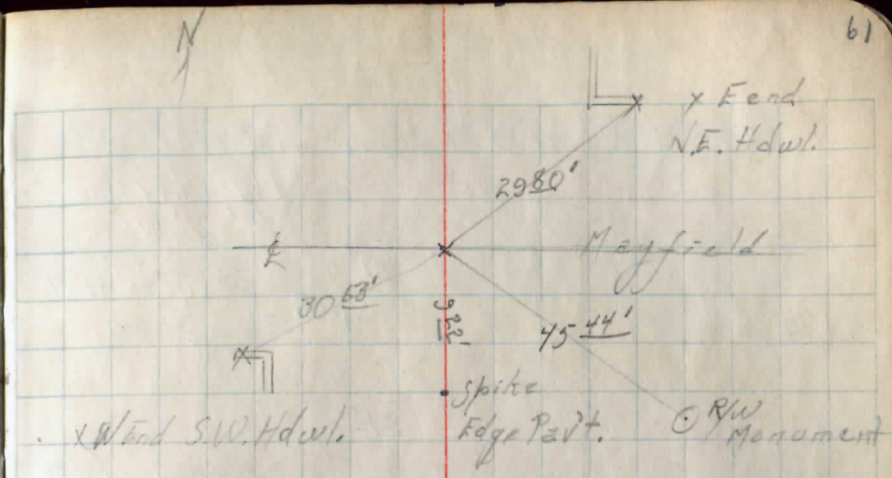
38'

F

183°05'
366°09'

86°57'
179°54'


℄
179°20'
358°39'
Mayfield
1351 96'
1361 95
179°58'
15'
358°56'
21'
1102 00'
179°48'
358°23'
℄ Traveled Rd
13'
5'
Fence
1302 00'


N
x E end
N.E. Hdwl.
298.0'
℄
Mayfield
30 63'
5 12'
45 44'
Spike
Edge Pvt.
⊙ RW Monument
x W end S.W. Hdwl.

Two Lane Rd.

10/4/40 Formaloy Richards 10/8/40 Form Rich Pat.

Harvard Road (Munson - Chester south

Now HEATH R.D

S&W; NW side 7" W.Ch.

Spk 68 81 52 39 99 40 95 Spk S&W; Hside 7" Map.

A+74 62

39 14

37 50

FINAL

Spk N Root 14" Beech

S&W; N root 9" poplar. dead

S&W; E side 18" Map. 4' up

S&W in NE side 10" maple

71.40

60.25

S&W; W side 15" Map.

20.23

Iron (fd) in rock 2" below surface

Spk S side 13" maple

30.69

76.05

116.72

S&W; S.W. side 18" Map.

Blaze W side 5' up

40" Beech

67

twp line north to Mayfield

Fd S/66 10" dr. re-ref fd "73"

Bolt set P.O.T.

N 46° W 11.79

COMP. Chester 70-30-00 Munson

to I.P. Fullertown 1750.82 ours

Road & Twp line 1751.30 FRE

COMP. 89-53 to I.P. Fullertown Rd.

Russell

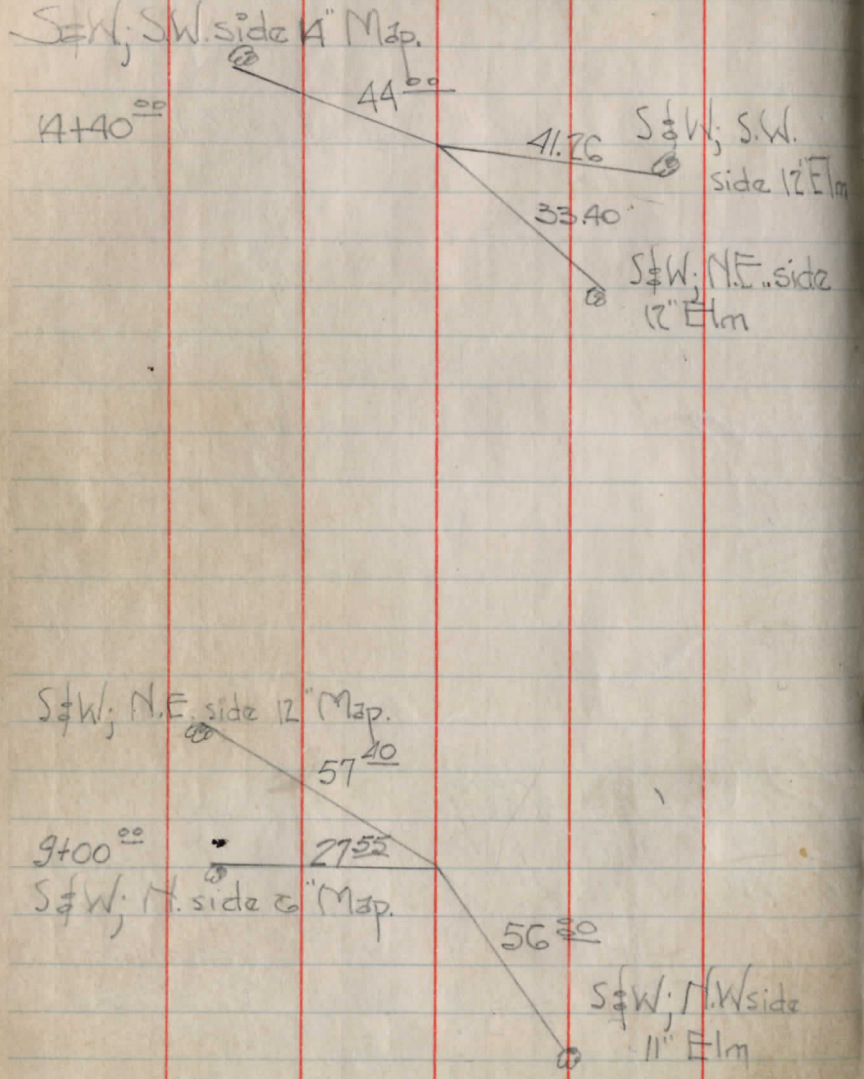
Newbury

2795.5

See pg 81

Sperry

Rd.



Bolt (set) P.O.T.

Fd 5/66

New ref FB 316

Fd 5/66 Fd "73" Bolt (set) P.O.T.

New ref FB 316

Spike S.E. side 16" Map.

Spike S.W. root 14" Elm

50.00

30.00

26+00.00

42.40

× × × × ×

Lpin (Prop. line mon.)

23+26.23

S&W; N.W

S&W; N.W. root 12" W.Ch.

44.59

34.32

21+00.00

fd '73'

49.32

S&W; N.E. root 26" Elm

SPK. S. side 10" Elm

24.36

Pipe (set) fd. 8-59 out 5/00

P.O.T. 20.50

SPK S. side 8" Maple in Clump

SPK S. Side 18" Maple

Gone 8-59 SPK. Set Pot 18.50

19.32

SPK S. Side 10" Maple

SPK S.E. side 30" Elm Cherry Stump

34.40

Bolt (set) fd. 8-59 Fd 5/00 NEW 10+ FB 316

P.O.T. 24.85

SPK NW Side 15" Maple

26.93

SPK NW Side 24" Elm

S & W; S. side 16" Map.

52+18.00

33.55

36.39 S & W; N. Side

? 43 16" twin

Map S & W. Ch.

S & W; S.E. side

13" Tullip

34.82

51+0 30'

50+0 30'

49+0 30'

~~Headless~~ spk NE Side 24"

Maple Gone

86.00

S & R. S. foot 11" Map.

40+24 44.40

40+94 ±

57.45

Gone

S & W; N foot 24" Map

31+63.45

Remains of old fence.

Occup. Lot Line

62

35.22 S.W. 100 ft

43

Bolt (set) 178-59

IPin (Set 59') 357-58

fd. '73"

fd. '74"

Δ = 1°-00'-40" Rt

Bent.

SPK. N.E. Side

16" Maple

8/74

75.22

± 6' N. = Int. & Rd. West

? Kim Dr.

F.O.T.

Bolt (set)

SPK set 8-59

(8.8 W & E) ← IP. fd bent 5/66 fd '73' 9.3

Fd 8/74 6

Spk S.E. side

18" Maple

SPK. N Side

50.40 12" Basswood

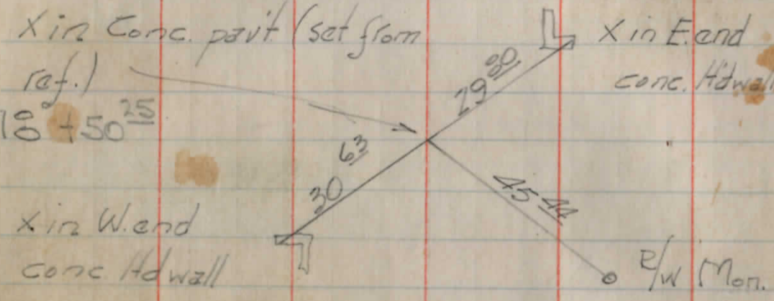
F.O.T.

Gone Spike (set) 8-59

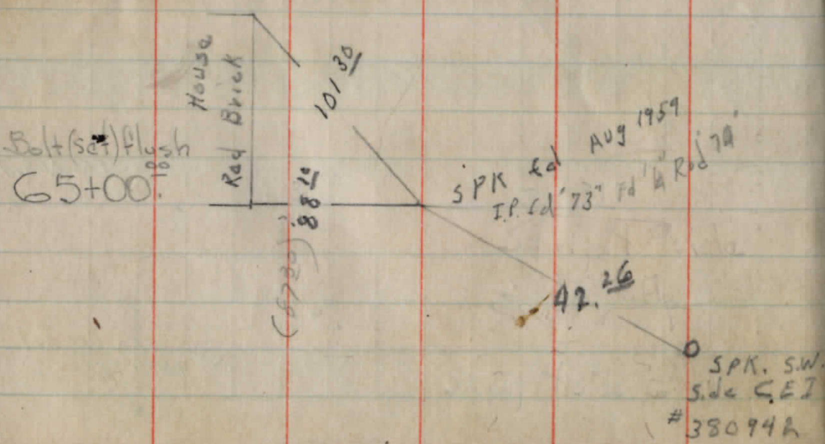
36.13

SPK. N Side

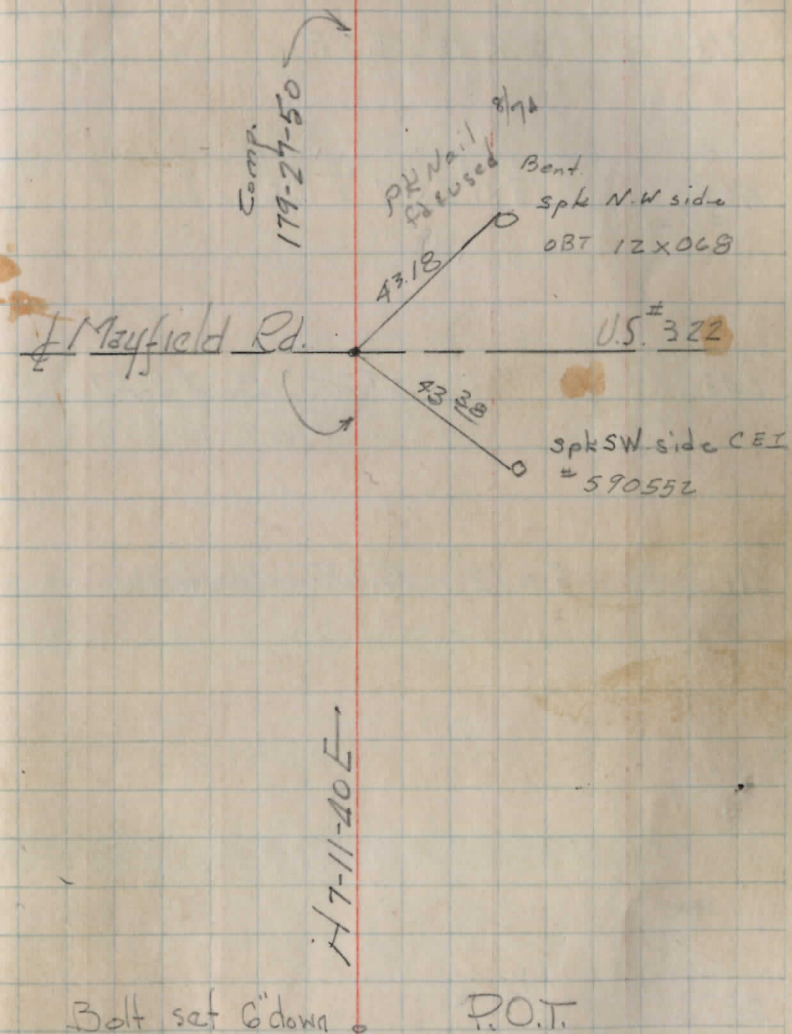
10" Elm



X in Conc. pav't (set from ref.)
78+50 25
X in E. end conc. Hdwall
29 38
30 63
45 44
X in W. end conc. Hdwall
R/W Mon.



Red Brick House
101 30
Bolt (set) flush
65+00 00
SPK fd Aug 1959
I.P. fd "73" fd 1/2 Rod 74
88 12
(58.73)
42. 26
SPK. S.W. side C.E.I #380942



Comp. 179-27-50
PK Nail fd used 8/74
Bent spk N.W. side OBT 12x068
43.18
℄ Mayfield Rd.
U.S. #322
43 38
spk SW side CEI #590552
177-11-20 E
Bolt set 6" down
P.O.T.

Culverts Heath See 13.
~~Excavated~~ Road

47+ 8'x 15' V.S.P.

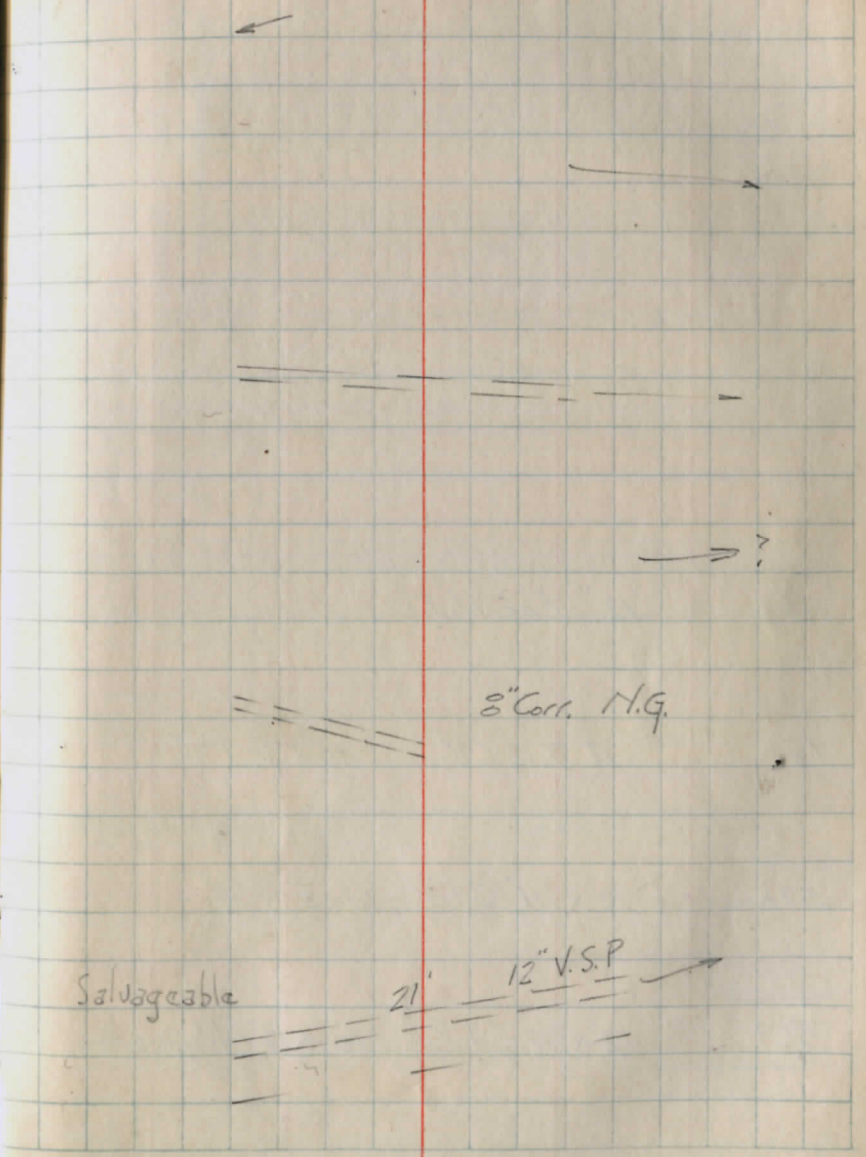
46+ 1½x1½x17½ Stone box Replace

34+ 18"x16' Corr. Good cond.

31+ 8"x12' C.I.P. salvageable

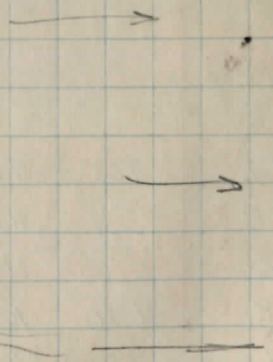
20+

8+



78+	12" Enc. V.S.P.		
75+	12" x 12' C.I.P.	10" x 4' V.S.P.	
59+	12" x 11' C.I.P.	10" x 2' V.S.P.	
56+	12" x 12' C.I.P.	10" x 2' V.S.P.	

Salvageable



PROFILE & SECTIONS

	+	H.I.	-	E	
T.P.	11.90	1159.81	0.24	1147.91	
OW 50					48.1
OW 100					36.2
T.P.	12.86	1148.15	0.20	1135.29	
OW 100					13.6
OW 150					30.3
OW 200					1125.3
T.P	12.90	1135.49	0.04	1122.59	
OW 300					1118.5
OW 400					1112.6
T.P.	9.63	1122.63	0.00	1113.00	
T.P.	12.24	1113.00	0.91	1100.76	
T.P.	12.72	1101.67	0.00	1088.95	
T.P.	10.86	1088.95	2.35	1078.09	
B.M.	11.61	1080.44		1068.83	

10/11/40 Pomeroy 1/2 1
Richards 1/2 1
Patrick 0 1
Vaccarello 0 1
E

1.4 0.0 — 2.6 6.5 6.2 5.6 6.1 2.1 0.7
30 E — 23 30 32 43 46 54 62
35 E

13.4 11.9 — 11.1 9.3 8.5
30 E — 15 43 55

1.4 0.9 0.9 0.9 1.4
21.5 24 30 E 34.5 36

6.4 5.2 — 5.0 6.8 6.0 6.0 6.0 7.0 4.6
30 E — 12.5 15.5 16.5 19 23.5 E 29 31.5 35

11.0 10.2 — 9.6 11.1 10.2 10.2 10.2 11.2 9.7
30 E — 10 13.5 16 20 E 24 27 30

6.0 4.1 4.1 5.1 4.2 4.1 4.1 4.7 4.5 4.4
30 E — 5.5 7.5 9.5 14 E 18 21.5 22.5 30

H — 10.0 E — 10.4 18 E — S

Rock front of blazed Map. Rt.

Spike E Foot 13" Fir 28' Lt 140+98 Fullerton Road

	+	H.I.	−	E	
0 S 400					63.5
0 S 300					61.8
T.P.	6.91	1166.69 ✓		1159.78	
0 E 530	rock to beyond here				87.3
0 E 400					82.1
0 E 300					77.1
T.P.	12.04	1183.55	0.12	1171.51 ✓	
0 E 200					
0 E 100					64.2
T.P.	12.05	1171.63 ✓	0.23	1159.58 ✓	
0 E 50					59.1
T.P 30			0.03	1159.78 ✓	
0 S 200					57.9
0 S 100					52.41
0 S 42 ℄					52.6
T.P. →			12.68	1147.13 ✓	
BM # 1			7.01	1152.80 ✓	
0 to 0					54.6
0 S 18					54.1
0 S 19.5					53.2
0 S 30					52.3
		1159.81 ✓			

3.2 1.9
10.5
℄

7.5 5.9 4.9 5.5 4.4 4.1 4.4 4.9 3.7 2.0
30 16 2 5.5 10.5 17 20 26 40
℄

+3.8 +3.8
℄ ℄

1.4 1.9
℄ 23
℄

8.4 7.5 6.5 6.6 8.2 7.6 7.1 7.4 7.5 6.6
30 14 ℄ 9 13.5 16 22 30 32 36

2.7 1.4 0.8 2.5 2.1 2.0 2.8 +0.5 0.0
30 2.5 5 11.5 13.5 20 30 44.5 55

9.4 8.0 7.4 7.4 8.0 7.4 8.1 9.5 10.1 7.3 7.6
30 10 ℄ 2.5 7 15 24 30 32 38 46
℄

N 3.1 2.7 +0.7 1.2 0.7 0.4 0.7 1.5 1.8 0.7 S
30 20 ℄ 3 5 18 26 30 32 35
℄

3.1 1.4 2.7 1.6 1.9 1.6 1.9 3.2 0.0 +0.9
30 9 5.5 2 ℄ 5 11 14 22 30
℄

W 11.5 10.0 8.0 7.4 7.8 8.9 6.9 4.1 E
30 19 13 4 7 10.5 30
7.2

Spike W root 15" Map. 60' N.E of 0 to 0

W 8.2 7.6 5.2 5.2 4.9 6.0 6.0 3.9 E
32.5 15 6 9 18 23.5 30
5.7
6.6
7.5

	+	H.I.	−	E	
11+0					91.2
B.M			0.00	1094.97 ✓	
10+0					90.0
T.P.	6.24	1094.97 ✓	10.36	1088.73 ✓	
9+0					88.7
8+0					90.2
7+0					93.6
T.P.	0.28	1099.09 ✓	11.84	1098.81 ✓	
6+0					1097.6
.					
5+0					1103.8
T.P.	0.44	1110.65 ✓	12.75	1110.21 ✓	
4+0	Probable end of rock				12.5
T.P.	0.19	1122.96 ✓	13.28	1122.77 ✓	
3+0					22.7
2+0					33.2
T.P.	0.71	1136.05 ✓	12.44	1135.34 ✓	
1+50					37.6
T.P. →	0.65	1147.78 ✓		1147.13 ✓	
1+0					44.4
0+50					
-					48.3
T.P	8.01	1155.14 ✓		1147.13 ✓	

W E

3.8

Spike W. root 12" Beach ± 25 Lt Sta. 11+20

5.8 5.5 6.0 5.0 ℄ 5.5 5.6 5.5
30 8 6 5 12 18 30

10.4

8.9

5.5
℄

13.6 13.2 11.9 13.1 ℄ 12.9 11.9 10.6 9.7
30 22 6.5 ℄ 5 10.5 13.5 19 30

5.0 5.2 6.4 6.9 6.4 6.5 5.1 3.6
30 7 4 ℄ 7 10.5 15 30
℄

11.8 9.4 10.3 10.5 10.6 8.7 6.6
31.5 9 4 ℄ 5.5 13.5 30

16.1 12.3 13.3 14.6 ℄ 13.7 10.9 10.2
30 3 4 7 11.5 17 30

6.3 6.2 2.0 2.9 3 2.9 1.1 1.0 +3.5
30 28 5 ℄ ℄ 8.5 15 26 30

13.5 12.7 9.9 10.6 10.2 3.1 2.2 2.6 up
33 27 12 5.5 ℄ 1.7 24 30

13.2 9.6 11.4 ℄ 10.5 10.7 9.3 5.1 up
40 25 11 9 3 5 30

up 1.7 1.2 5.3 6.8 6.8 6.7 9.0 11.5
30 27.5 10 5 ℄ 8 28 35
℄

	+	H.I	−	E	
29		.7 C			94.1
28		Lel			94.9
T.P	2.07	1097.52 ✓	5.53	1095.45 ✓	
27		.5' Fill			95.4
26		Lel			95.5
25					96.6
24		Level			97.8
T.P	4.62	1101.28 ✓	0.41	1096.66 ✓	
23					95.4
22					93.2
21					92.6
B.M #3			3.74	1093.33 ✓	
20+0					92.3
T.P.	2.73	1097.07 ✓	11.75	1094.34 ✓	
19		C			94.5
18		C			1100.6
17		C			02.5
16		C			03.1
T.P.	3.40	1106.09 ✓	3.56	1102.69 ✓	
15					03.6
14+0		C			1105.2
13+0		C			1100.8
12+0		C			95.5
T.P.	11.28	1106.25 ✓	0.00	1194.97 ✓	
		1194.97 ✓			

3.4

2.6

5.9

5.8

3.7 4.2 5.1 4.7 5.0 5.4 4.8 4.9
30 13 5 ℄ 5.5 8 11 30
℄

3.5 ℄
3

Vert. spk in small stump 23±25 Rt

1.7

3.9

4.5 4.5
⊄ 5'

Spike N.W. root 16" Elm 29' Rt Sta. 20+05

5.0 4.2 ℄ 4.0 4.8 4.8
18 12 7 4.5 30
30

11.7 11.6
12
7.0 ⊄ 12' ⊅ 5.5
3.6 ⊄ 8' ⊅ 3.6'
3.0

Bolt (Middle line Trowbridge)

2.5 3.0 2.1 2.7 1.7
21 19 10℄ 3
30 ℄ 1.1 30
3'
5.5

10.8

STA.	+	H.I.	−	E	
46					91.7
45					92.6
44					92.5
T.P.	0.45	1097.75	11.97	1097.30	
BM #5			0.85	1108.42	
3	up W		Lev E		1096.5
2	up W		Level E		05.1
1	raise W		slight drop E		07.2
40		Lev			01.9
39		Lev			1100.5
38		Lev			99.5
T.P.	10.55	1109.27	0.54	1098.72	
37		Lev			97.0
36		.5 C			95.9
35	F-L		C-R		94.3
34	.5	Fill			94.2
33		Lev			93.6
T.P.	5.71	1099.26	3.97	1093.55	
32	-	5' Fill			92.4
31		Lev.			92.1
BM #4			1.91	1095.61	
30					93.0
		1097.52			

.5 down 5.4 E 6.1 1' down

.5 up. 4.9 E 5.2 1' down

up 3.8 E 5.3 down

Spike N.E. root 26" Map. 35' Lt 40 ± 45

12.8

4.2

2.1

7.4

8.8

7.8

2.3

3.45

5.0

5.0

5.7

5.1

5.4

Spike N.E. root 14" Map. ± 75 Lt Sta 30 + 20

4.2	3.8	4.6	4.5	4.5	4.5	4.1	4.7	4.8
4	21	17	9	5		5.5	16	30
30				E				

59					16.8
58					17.4
+50					17.9
57					16.4
T.P.	5.02	1122.37	3.98	1114.35	
56					15.0
~~55~~					15.3
54					16.7
53					12.1
52					06.7
T.P.	12.40	1118.33	0.02	1105.93	
B.M.			3.59	1102.36	
51					01.9
50					97.5
49					95.0
T.P.	11.41	1105.95	3.21	1094.54	
48					93.0
47					91.8
		1097.75			

down	4.7 7 E	5.5	down
Lev	4.5 7 E	5.0	down
Lev		4.4	Lev
cl'	5.7 6 E	6.0	cl'

Top ball E end culvt 56 to

Lev		3.3	Lev
up .5		3.0	dow .5
up .6		1.6	.5 down
up 3'		6.2	up 2.5'
up 1'		11.6	up 2.'

Spike S.E. root twin Hyp. 31' Lt 51+18

down .8	3.4 6	4.1	Lev
Lev	7.8 6 E 7	8.5	Lev
down 2'	10.4 5 E	11.0	down 2'
down 2'	3.8 4 E	4.8	down 1'
down 1'	4.7 3 E 4	6.0	down 1'

± 200' channel relocation

	+	H.I.	−	E	
70					15.3
69					19.8
68					25.6
T.P.	0.09	1128.06 ✓	12.74	1127.97 ✓	
+25					33.2
67					33.0
66					34.1
65					39.2
+85					39.6
T.P.	6.27	1140.71 ✓	0.16	1134.44 ✓	
64					33.4
63					26.7
62					23.6
B.M.			11.53	1123.01 ✓	
T.P.	12.84	1134.60 ✓	0.61	1121.76 ✓	
61					20.8
60					18.4
		1122.37 ✓			

12.6
42
up 12.8 down

7.4 9.8 8.4 8.1 8.3 8.9 9.5 7.8 7.6 8.0
17 14 10 6 4 5 7 15 30
30

+2.2 +1.2 2.6 2.3 1.8 2.5 3.0 0.6 0.2 0.8 1.7
30 20 14.5 11 7 2 4.5 8 13 30

6.9 7.5
9
E

7.0 7.6 8.0 7.5 7.1 7.7 8.6 8.3 8.6 7.8
30 17 15 13 4 3 5 19 30
E

5.5 6.8 7.3 7.0 6.6 6.7 7.6 6.4 6.3 5.8
30 13 11 9 4 6 10 18 30

+3.7 +1.3 0.2 1.9 1.4 1.6 1.3 2.1 0.8 2.5
30 13 7.5 5.5 3 5 8.5 10.5 30
1.1

+3.2 +2.4 1.9 1.4 1.2 1.4 2.0 +2.0
30 12 6.5 5 5 8 16
30

4.5 5.0 6.4 8.5 8.2 7.9 8.0 8.5 5.8 5.7
30 18 10 6 4 6 9 15 30

12.2 11.2 11.9 11.3 11.0 11.0 12.0 11.1 12.2
30 12 10 7 3 6.5 8 30

Spike N.W. root 28" Hick 25 rt. Sta. 61+60

Lev 1.1 1.6 Lev
1
E

down 3.4 4.0 down
11
E

BM			5.55	1095.39	(1095.32)
BM	1.79	1100.94	5.47	1099.15	
+	E Mayfield				98.5
78					98.6
77					98.5
76					99.2
75					00.6
74					01.6
T.P	1.30	1104.62	12.79	1103.32	
73					03.6
72					06.6
71					11.3
T.P.	0.72	1116.11	12.67	1115.39	
		1128.06			

Spk W root Elm stump 6+65 Twp line Yd Mgy.
X W end S wk Hdwall

		6.1	
Lev		6.0	Lev
down		6.1	down
up	6.7	5.4	Lev
down	3 ft	4.6	down
down		3.0	down
down		12.5	down
up 2.5'		1.5	Lev
up 2'	4.5	4.8	up 1.5'
	5 ft		

12-27-41
Portage Rich.

Levels for culvt Sta.

B.M#	0.66	1103.02		1102.36	
T.P.	4.93	1098.90	9.05	1093.97	
Swamp N of drive			6.8		
F.L. (inlet) 8" tile		across rd	7.1		
" (outlet) " "		"	7.1		
Ch. opp. 8" tile			7.1		
F.L. culvt (in)			8.2		
" " (out)			9.0	1089.9	
1 ch			8.55	1090.35	
1 st			6.80	92.10	C 2'-7"
1+15 ch			8.95	1090.0	
" st			5.89	93.01	C 3'-7"
2 to ch			9.1	89.8	
" st.			6.74	92.16	C 3'-0"
3 to ch			10.2	88.7	
" stk			7.02	91.88	C 3'-0"

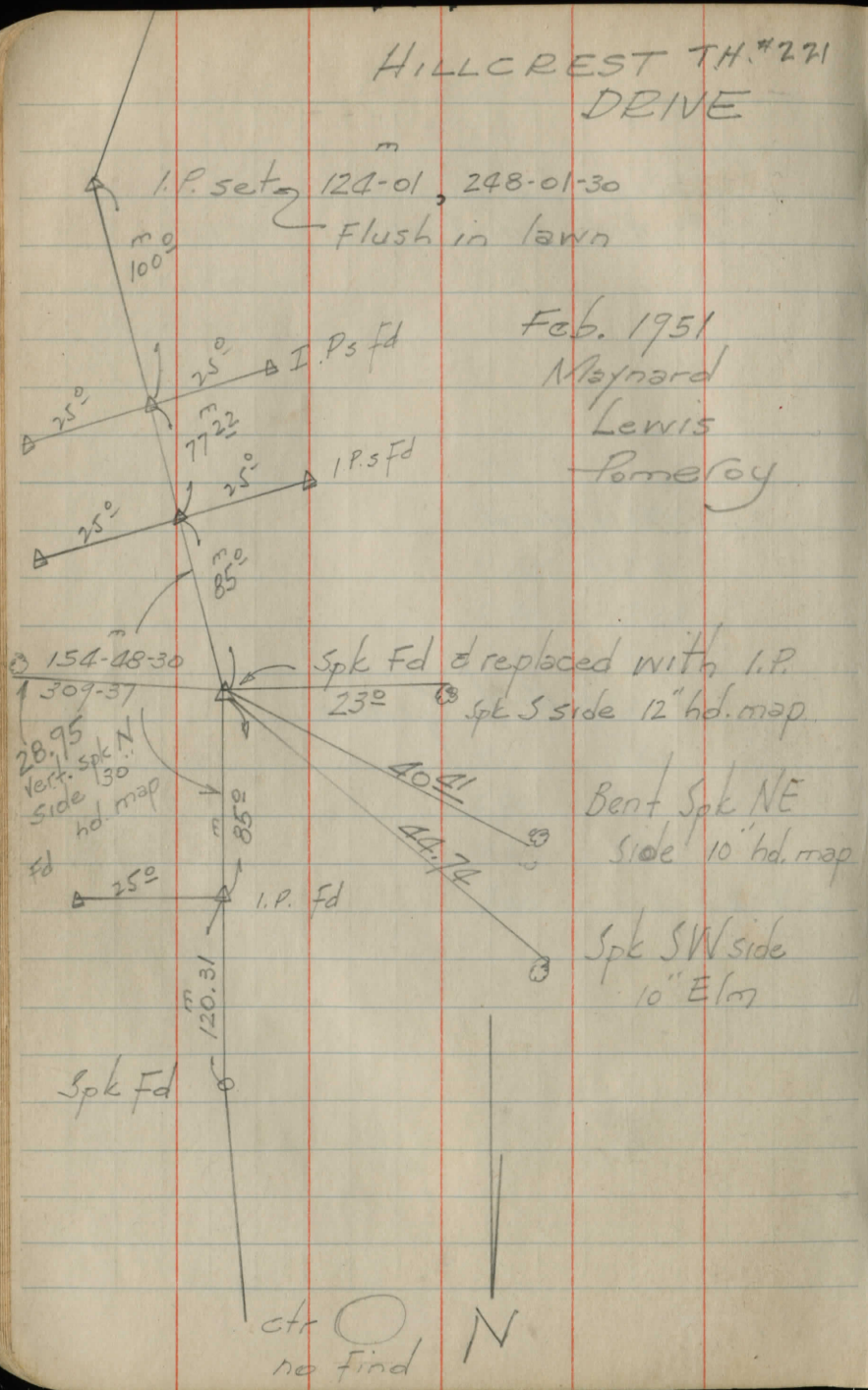
Sta 51+18 31' Lt.
H.E & E hdwl.

± 5" Below ground

0.4 % Grade

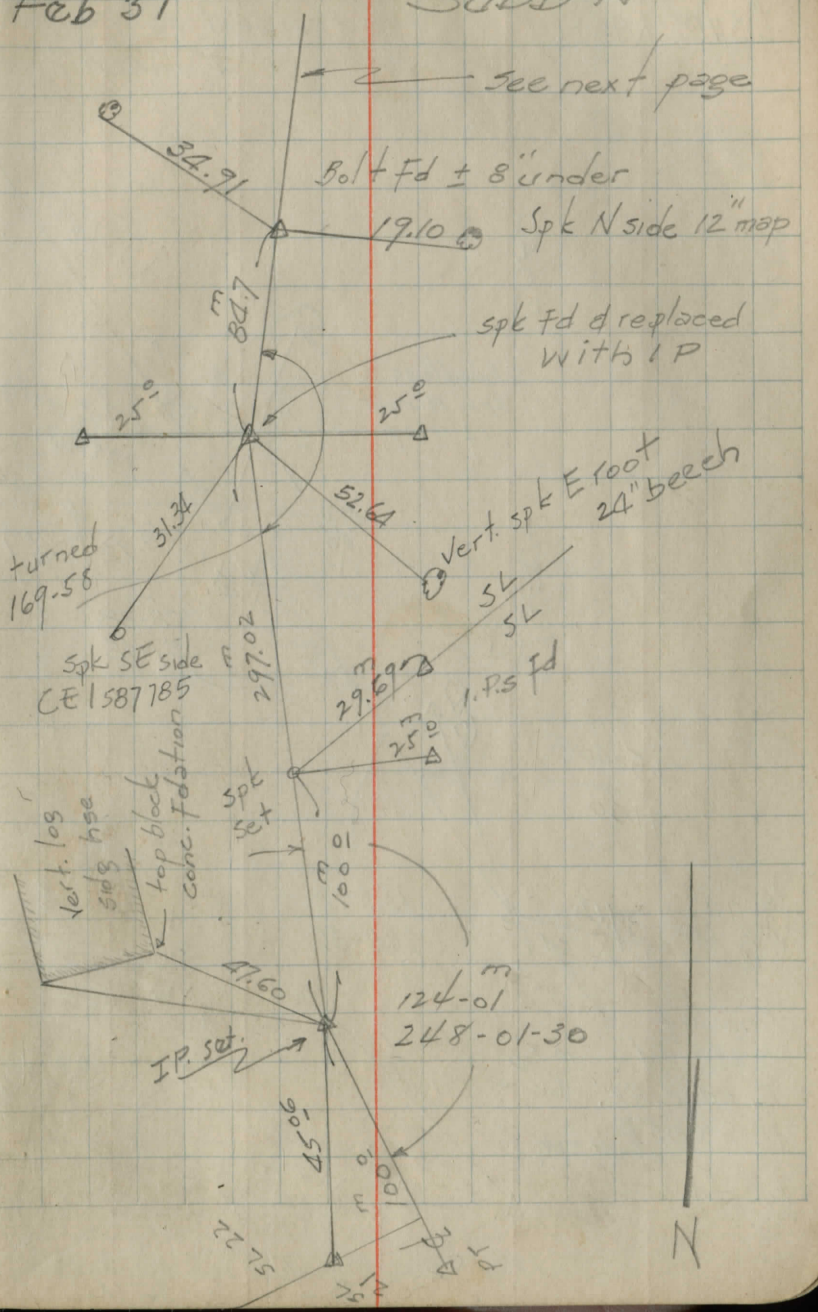
C 3'-2"

HILLCREST TH. #271 DRIVE

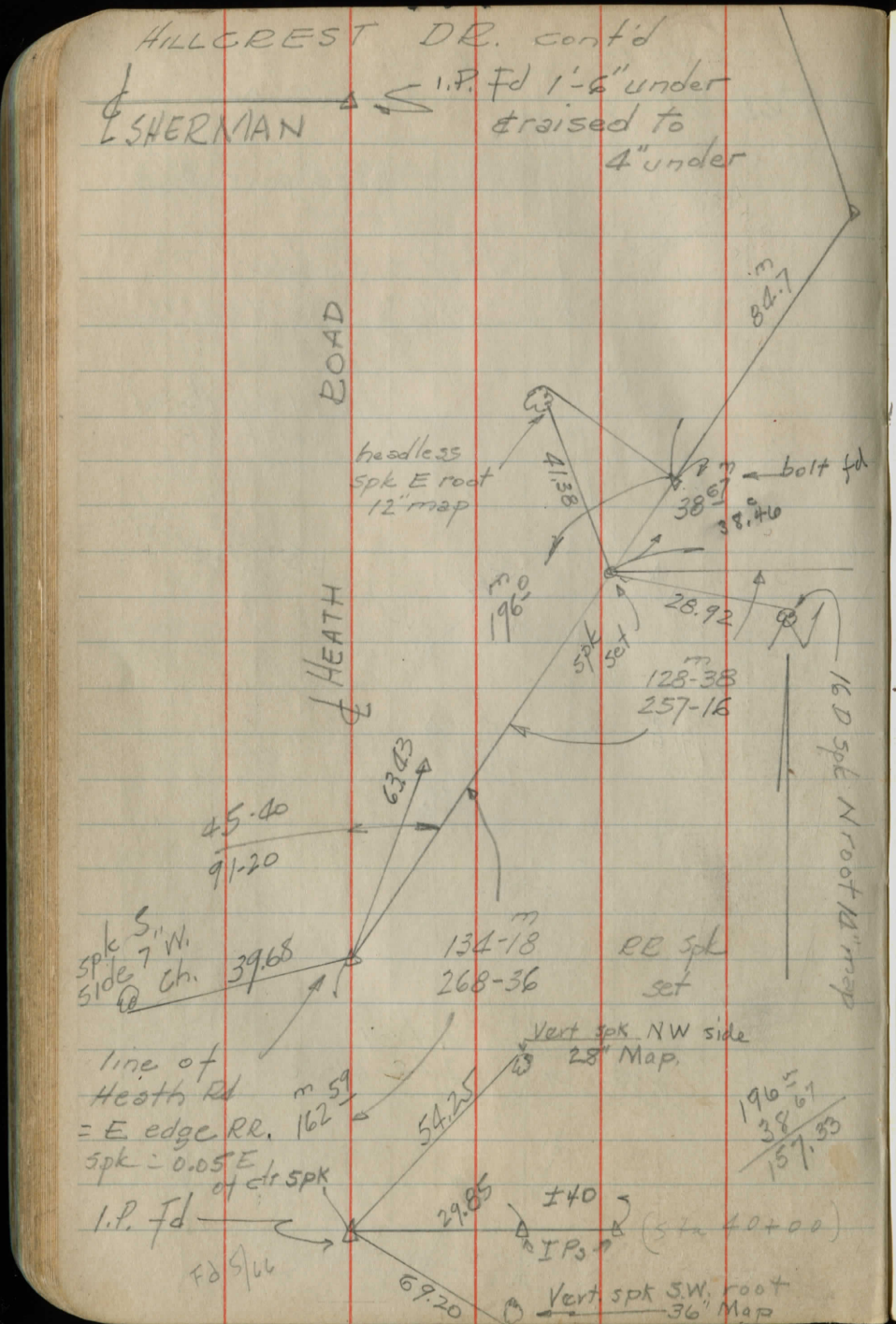


BEAVER CREEK ESTATES SUBD'N

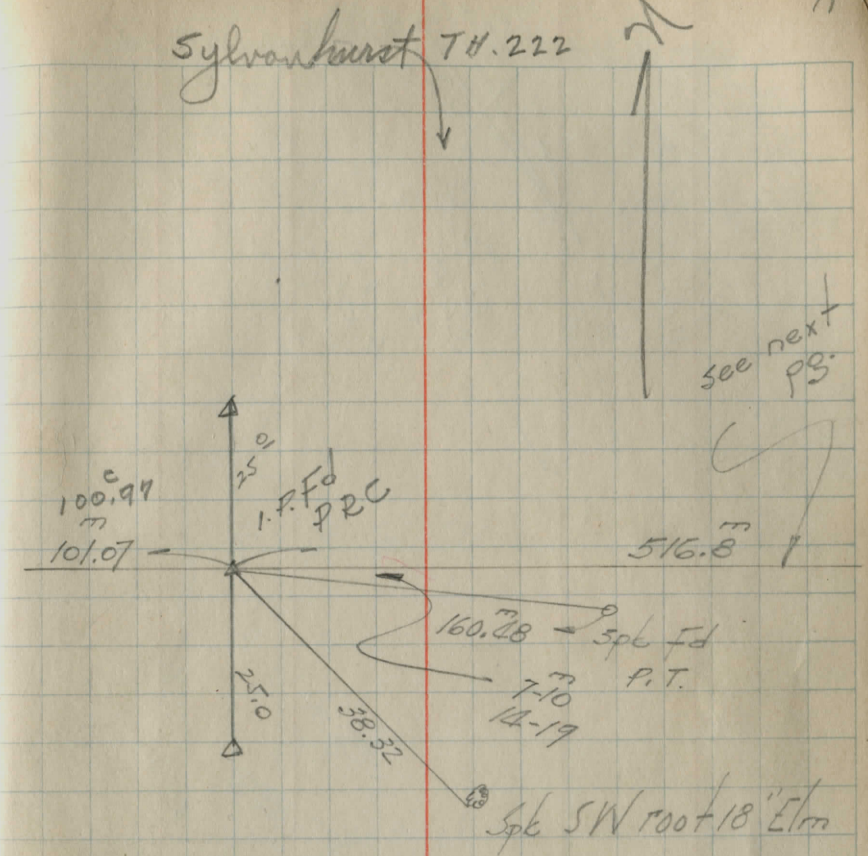
Feb '51

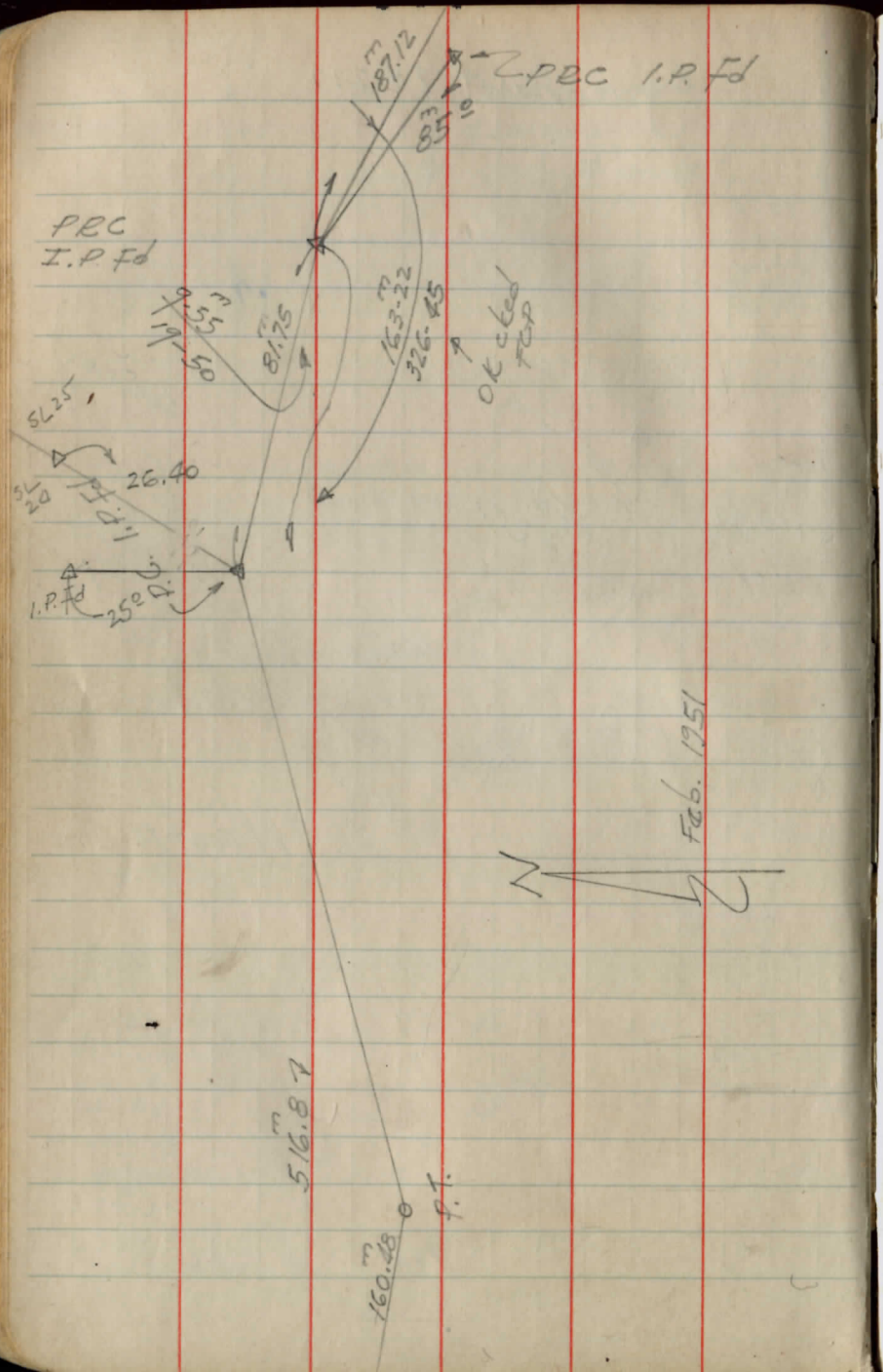


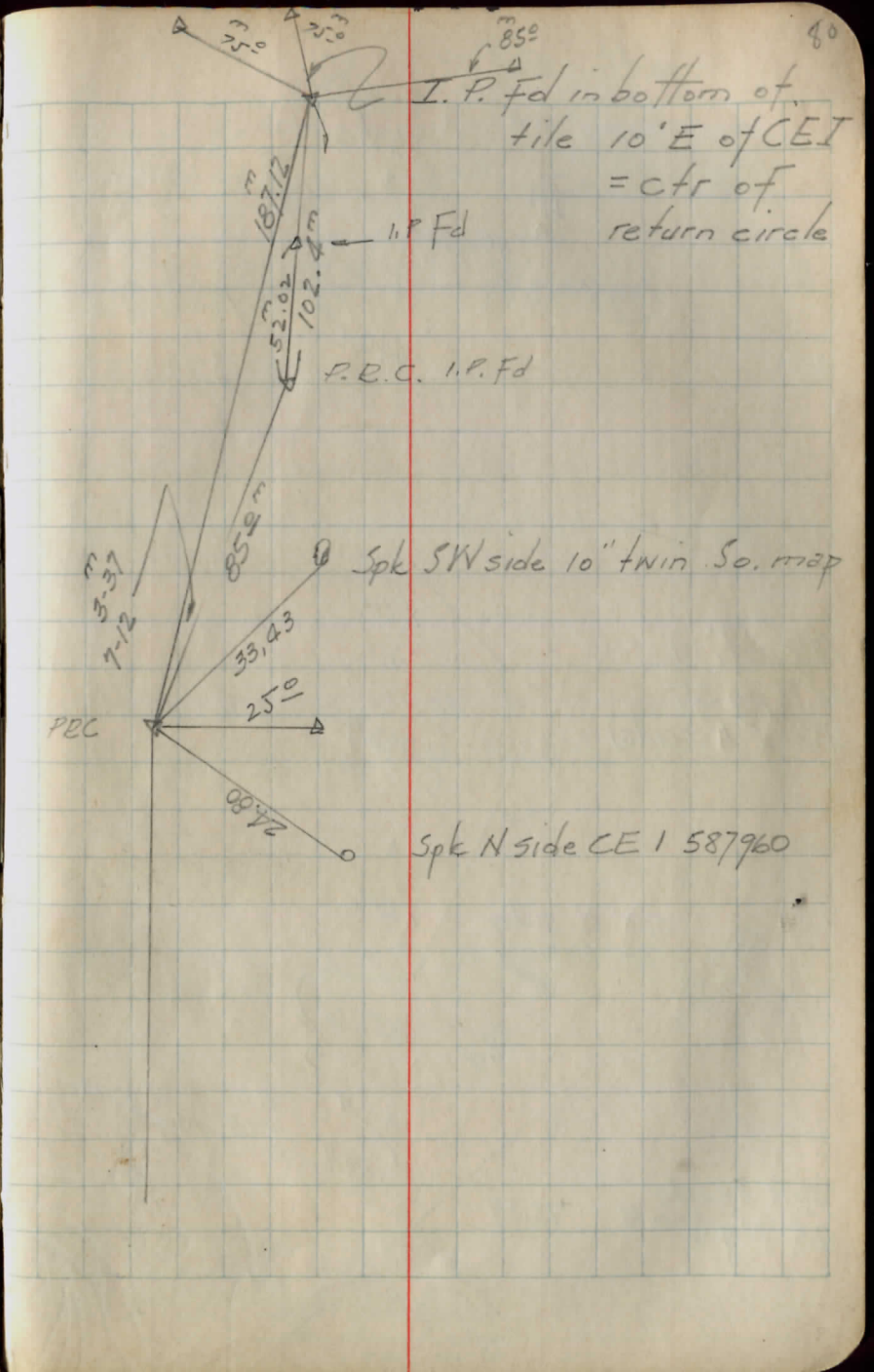
HILLCREST DR. cont'd

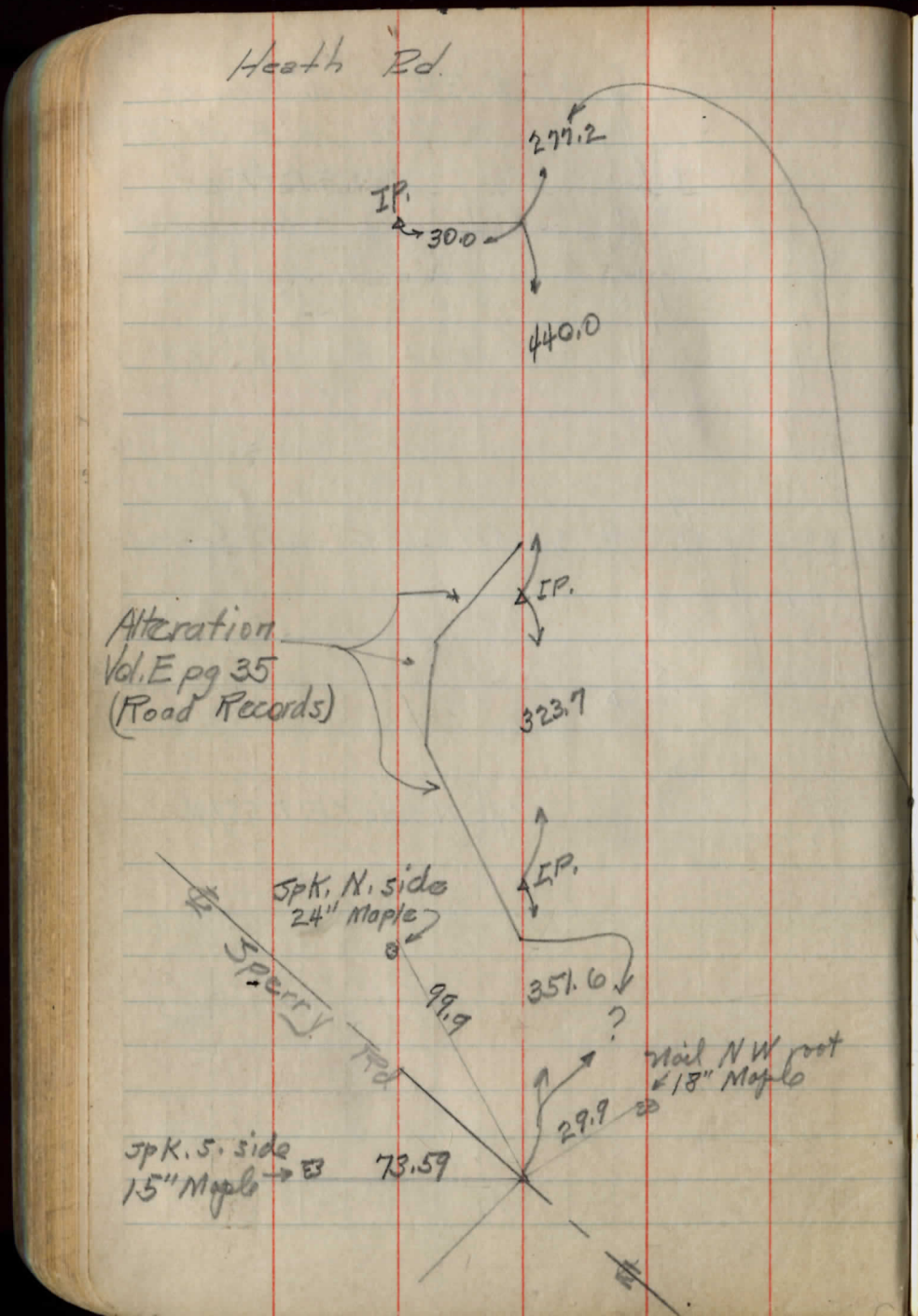


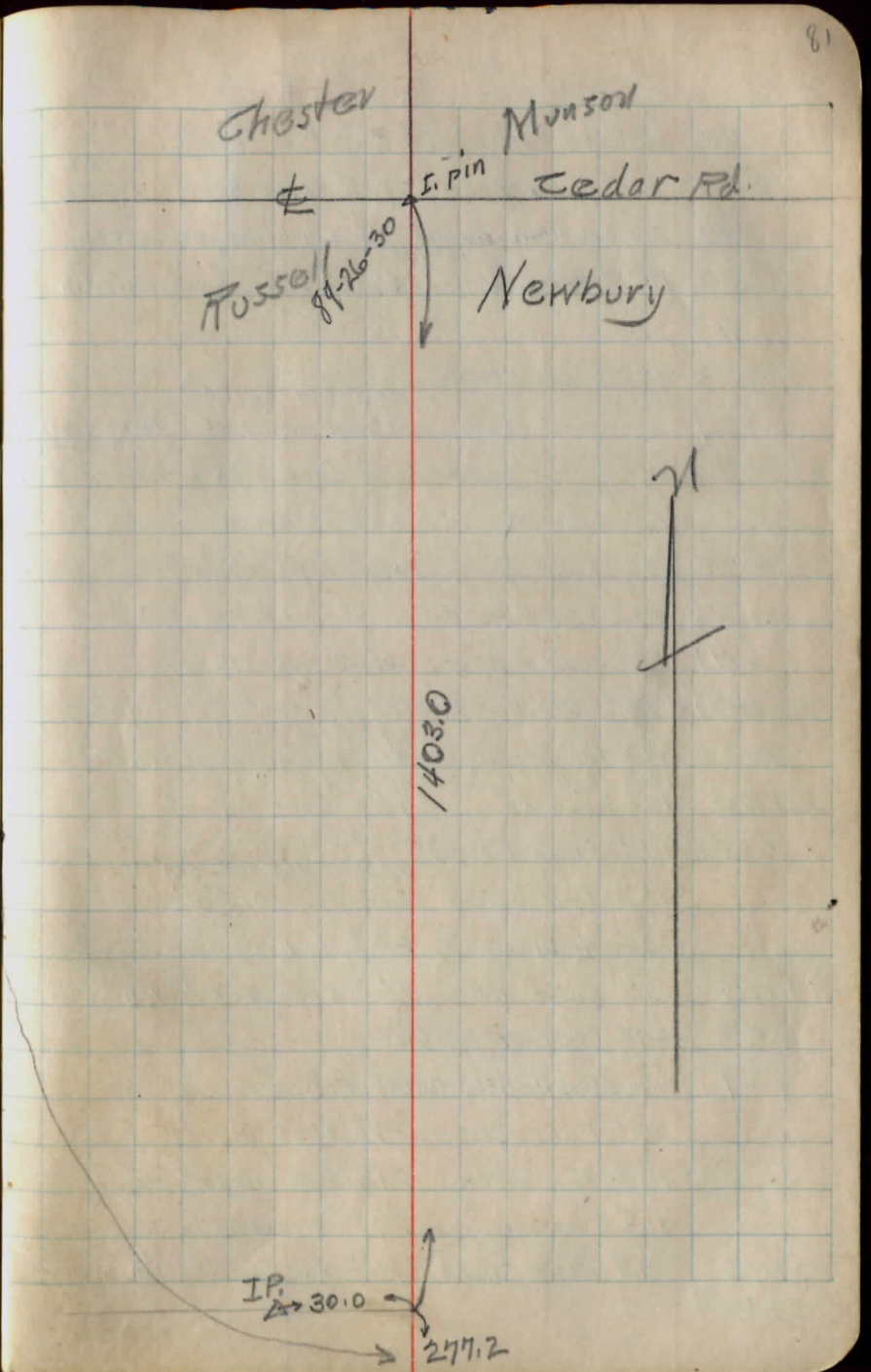
Sylvan Hurst TH. 222




PRC
I.P Fd
187.12
85°
81.25
163-22
326-45
OK cked
FSP
SL 25
SL 20
26.40
I.P Fd
25°
516.87
160.28
P.T.
Feb. 1951


25°
25°
85°
I. P. Fd in bottom of tile 10' E of CEI = ctr of return circle
187.12
I.P Fd
102.4
52.02
P.R.C. I.P. Fd
85°
3-37
7-12
Spk SW side 10" twin So. map
33.43
25°
PRC
24.88
Spk N side CE 1 587960


Heath Rd.
277.2
IP.
30.0
440.0
IP.
Alteration
Vol. E pg 35
(Road Records)
323.7
IP.
5pK. N. side
24" Maple
99.9
351.6
?
℄ Sperry Rd.
Nail NW root
18" Maple
29.9
5pK. S. side
15" Maple
73.59


Chester
Munson
℄
I. pin
Cedar Rd.
Russell
89-26-30
Newbury
1403.0
IP.
30.0
277.2

SOUTH OF MAYFIELD

STA.	L	℄	R
78+50 25 = 3700	℄ CLEVE-MEADVILLE RD. - STA. 112+66 0		3' PAVED
89	BEG. PAVED BERM	BEG. PAVED BERM	3' GRASS
83	21 5 END HDWL, BEG. DITCH 12" YCP	30 8 END HDWL., BEG. DITCH	
80	17 5 ℄ MAYFIELD DITCH	27 0 ℄ DITCH ALONG MAYFIELD	
79		26 4 START HDWL.	
78	17 2 START HDWL.		
		49 I GUY ANCHOR	
71		33 0 POWER POLE T MYERSON SIGN	9.700 SIGN
69		19 0 STOP SIGN	
	13 5 TOP DITCH	23 4 TOP DITCH	
	12 5 ℄ DITCH	22 0 ℄ DITCH	
+50	9 5 EDGE RD.	16 0 EDGE RD.	
+42	17 2 OBT POLE		
+41	22 2 GUY ANCHOR	END BRUSH	
+31	30 0 20' BLUE SPRUCE		
		24 5 EDGE BRUSH	
	14 2 TOP DITCH	21 0 TOP DITCH	
	13 5 ℄ DITCH	20 6 ℄ DITCH	
2+00	12 7 EDGE RD.	16 0 EDGE RD.	
+26	14 0 SPEED LIMIT 35		
		22 3 EDGE OF BRUSH	
	13 0 TOP DITCH	21 0 TOP DITCH	
	12 0 ℄ DITCH	20 5 ℄ DITCH	
1+00	9 5 EDGE RD.	16 0 EDGE TRAV. RD.	
+53	34 0 SPOT OF BRUSH		
+17	END BRUSH - BEG. GRASSLAND		
	20 0 EDGE BRUSH	24 0 EDGE BRUSH	
	17 0 TOP DITCH	21 0 TOP DITCH	
	11 8 ℄ DITCH	20 0 ℄ DITCH	
0+00 = 75+50 25	9 8 EDGE TRAV. RD.	16 5 EDGE TRAV. RD.	

R.E. HERSHBERGER
J.W. BEWELL

HEATH-MAYFIELD INT.

26 MAY 1982
70°F., N-C., BREEZE, HUMID

		38 ℄ 1. PINE
		33 1. PINE
	26 0 1. PINE	34 3 RAIL FENCE
	21 5 FENCE	31 5 11.2" AVS. PINE
	NO DITCH	NO DITCH
	8 0 EDGE BERM	25 0 EDGE BERM
1+00	2 8 EDGE TRAV. RD.	20 2 EDGE TRAV. RD.
96	16 5 10" FORKED SCOTS PINE	
93	21 5 START 2 RAIL WHITE FENCE	
76	22 5 2" NOR. SPRUCE	
64	20 0 8" FLOW. CRAB	
53	25 6 3" NOR. SP.	
42	25 3 10" FLOW. CRAB.	
31 5		34 2 START 3 RAIL FENCE
28	33 3 NO # POLE	33 5 POLE 48837 OBT
27	11 5 STOP SIGN	
25		32 3 HEATH RD. SIGN
23	BACK OF SHAL. DITCH	BACK DITCH
21 3	16 2 END HDWL.	24 7 END HDWL.
20	℄ DITCH 12" YCP	℄ DITCH
18	END BERM	END BERM
16	17 0 START HDWL.	27 3 START HDWL.
15	END APRON	
13	EDGE PAVED BERM	
11	EDGE PAVEMENT	
0+00	TRAV. ℄ CLEVE-MEADVILLE RD.	

REH
DWS

HEATH RD

2 JUNE 1982
FAIR, BREEZE, 69°F.

	6.7 EDGE BERM, LAWN	17.2 EDGE TRAV. RD.	
2+00	3.0 EDGE TRAV. RD.	6' ℄ TRAV. RD.	
92.5	18.5 1½' AZALEA		
88	18.5 3½' EUONYMUS VEGETUS		
87	20.3 START 2 RAIL WHITE FENCE		
81	℄ 11.0 ASPHALT DR.		
75	15.0 END TAXUS HEDGE		
74	20.2 END FENCE	34.0 START 3 RAIL FENCE	
71	26.5 LIGHT POST		
66	9.0 START ℄ 3.5 FLAGSTONE WALK		
62	7.0 M.B. & P. TUBE	℄ 9.5 DRIVE - STONE	
59	14.7 END FLOWER BED, BEG. TAXUS HEDGE		
55		29.5 START RR TIE DRIVE CURB.	
53		34 END 3 RAIL FENCE	
48		24.2 MAIL & NEWS	
38		31.5 12" AVS. PINE	
21	16 START FLOWER BED		
17	20.0 SPIREA BUSH		
1+12	19.0 POLE # 380586		
+36	END DITCHES		
	18 TOP DITCH	29 TOP DITCH	
	16.3 ℄ DITCH	27.2 ℄ DITCH	
	14 EDGE DITCH	EDGE DITCH	
	11.5 EDGE BERM	25.0 EDGE BERM	
0+30	7.0 EDGE TRAV. RD.	22.0 EDGE TRAV. RD.	

91	17.5 6' PRIVET	
86	18.3 6' VIBURNUM	
72		20.4 START DITCH
81	28.3 START 3 RAIL FENCE	
77	18.3 SIGN POST, NO SIGN	
67	℄ 9' SEMI-STONE DRIVE	
53.5	18.5 4" ASH	
47		33.7 START 3 RAIL FENCE
49.5	17.4 POLE # 380587	
		34.5 ELECTRICAL OUTLET
46		33.0 ℄ HOLLY
37		℄ 10' ASPHALT DR.
34	21.5 COR. DOG HSE.	
	26.0 COR. DOG RUN	
33	16.3 8" APPLE	
25.5	18.0 9" COL. BL. SP.	
		27.0 EDGE HOLLY
25		37' NORWAY SPRUCE
23	29.0 18" NORWAY SPRUCE	
16	21.5 DEAD 4" DOGWOOD IN LEMON LILY PATCH	
17	19.9 END 2 RAIL WHITE FENCE	
16	15.0 9" NORWAY SPRUCE	
7	15.5 8" BLUE SPRUCE	
		33.7 3-RAIL FENCE
2+00		19.5 EDGE BERM, START LAWN

AREA
DWS

11 HEATH RD 2 JUNE 1982

	L	℄	R
			33 3-RAIL FENCE
			22.5 TOP DITCH - LAWN
	28.3 3-RAIL FENCE		20.5 ℄ DITCH
	LAWN, NO DITCH		19.0 EDGE BERM
	9.8 EDGE BERM		16.5 EDGE TRAV. RD.
3+00	4.2 EDGE RD.		4.2 TRAV. ℄

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

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.)

300-

543+86.86

5

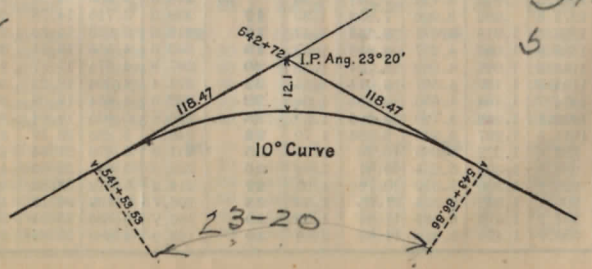


Table I. — Minutes in Decimals of a Degree.

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

Table II. — Inches in Decimals of a Foot.

1-16	3-32	1/8	3-16	1/4	5-16	3/8	1/2	5/8	3/4	7/8
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

Table III. — Radii, Ordinates and Deflections.

Deg.	Radius	Mid. Ord.	Tan. Def.	Chd. Def.	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Def.	Chd. Def.	Def. for 1 Foot
0° 10′	34377.	.036	.145	.291	0.05′	7°	819.0	1.528	6.105	12.21	2.10′
20	17189.	.073	.291	.582	0.10	20′	781.8	1.600	6.395	12.79	2.20
30	11459.	.109	.436	.873	0.15	30	764.5	1.637	6.540	13.08	2.25
40	8594.4	.145	.582	1.164	0.20	40	747.9	1.673	6.685	13.37	2.30
50	6875.5	.182	.727	1.454	0.25	8	716.8	1.746	6.976	13.95	2.40
1	5729.6	.218	.873	1.745	0.30	20	688.2	1.819	7.266	14.53	2.50
10	4911.2	.255	1.018	2.036	0.35	30	674.7	1.855	7.411	14.82	2.55
20	4297.3	.291	1.164	2.327	0.40	40	661.7	1.892	7.556	15.11	2.60
30	3819.8	.327	1.309	2.618	0.45	9	637.3	1.965	7.846	15.69	2.70
40	3437.9	.364	1.454	2.909	0.50	20	614.6	2.037	8.136	16.27	2.80
50	3125.4	.400	1.600	3.200	0.55	30	603.8	2.074	8.281	16.56	2.85
2	2864.9	.436	1.745	3.490	0.60	40	593.4	2.110	8.426	16.85	2.90
10	2644.6	.473	1.891	3.781	0.65	10	573.7	2.183	8.716	17.43	3.00
20	2455.7	.509	2.036	4.072	0.70	30	546.4	2.292	9.150	18.30	3.15
30	2292.0	.545	2.181	4.363	0.75	11	521.7	2.402	9.585	19.16	3.30
40	2148.8	.582	2.327	4.654	0.80	30	499.1	2.511	10.02	20.04	3.45
50	2022.4	.618	2.472	4.945	0.85	12	478.3	2.620	10.45	20.91	3.60
3	1910.1	.655	2.618	5.235	0.90	30	459.3	2.730	10.89	21.77	3.75
10	1809.6	.691	2.763	5.526	0.95	13	441.7	2.839	11.32	22.64	3.90
20	1719.1	.727	2.908	5.817	1.00	30	425.4	2.949	11.75	23.51	4.05
30	1637.3	.764	3.054	6.108	1.05	14	410.3	3.058	12.18	24.37	4.20
40	1562.9	.800	3.199	6.398	1.10	30	396.2	3.168	12.62	25.24	4.35
50	1495.0	.836	3.345	6.689	1.15	15	383.1	3.277	13.05	26.11	4.50
4	1432.7	.873	3.490	6.980	1.20	30	370.8	3.387	13.49	26.97	4.65
10	1375.4	.909	3.635	7.271	1.25	16	359.3	3.496	13.92	27.84	4.80
20	1322.5	.945	3.781	7.561	1.30	30	348.5	3.606	14.35	28.70	4.95
30	1273.6	.982	3.926	7.852	1.35	17	338.3	3.716	14.78	29.56	5.10
40	1228.1	1.018	4.071	8.143	1.40	18	319.6	3.935	15.64	31.29	5.40
50	1185.8	1.055	4.217	8.433	1.45	19	302.9	4.155	16.51	33.01	5.70
5	1146.3	1.091	4.362	8.724	1.50	20	287.9	4.374	17.37	34.73	6.00
10	1109.3	1.127	4.507	9.014	1.55	21	274.4	4.594	18.22	36.44	6.30
20	1074.7	1.164	4.653	9.305	1.60	22	262.0	4.814	19.08	38.16	6.60
30	1042.1	1.200	4.798	9.596	1.65	23	250.8	5.035	19.94	39.87	6.90
40	1011.5	1.237	4.943	9.886	1.70	24	240.5	5.255	20.79	41.58	7.20
50	982.6	1.273	5.088	10.18	1.75	25	231.0	5.476	21.64	43.28	7.50
6	955.4	1.309	5.234	10.47	1.80	26	222.3	5.697	22.50	44.99	7.80
10	929.6	1.346	5.379	10.76	1.85	27	214.2	5.918	23.35	46.69	8.10
20	905.1	1.382	5.524	11.05	1.90	28	206.7	6.139	24.19	48.38	8.40
30	881.9	1.418	5.669	11.34	1.95	29	199.7	6.360	25.04	50.07	8.70
40	859.9	1.455	5.814	11.63	2.00	30	193.2	6.583	25.88	51.76	9.00

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

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

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

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	2225.5
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 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 12.5 Ft.	15 Ft.	20 Ft.	25 Ft.	Length of arc for 100 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.

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

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

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

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

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

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

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

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

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

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

$\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$

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	9848	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.
0	0000	0029	0058	0087	0116	0145	89
1	0175	0204	0233	0262	0291	0320	88
2	0349	0378	0407	0437	0466	0495	87
3	0524	0553	0582	0612	0641	0670	86
4	0699	0729	0758	0787	0816	0846	85
5	0875	0904	0934	0963	0992	1022	84
6	1051	1080	1110	1139	1169	1198	83
7	1228	1257	1287	1317	1346	1376	82
8	1405	1435	1465	1495	1524	1554	81
9	1584	1614	1644	1673	1703	1733	80
10	1763	1793	1823	1853	1883	1914	79
11	1944	1974	2004	2035	2065	2095	78
12	2126	2156	2186	2217	2247	2278	77
13	2309	2339	2370	2401	2432	2462	76
14	2493	2524	2555	2586	2617	2648	75
15	2679	2711	2742	2773	2805	2836	74
16	2867	2899	2931	2962	2994	3026	73
17	3057	3089	3121	3153	3185	3217	72
18	3249	3281	3314	3346	3378	3411	71
19	3443	3476	3508	3541	3574	3607	70
20	3640	3673	3706	3739	3772	3805	69
21	3839	3872	3906	3939	3973	4006	68
22	4040	4074	4108	4142	4176	4210	67
23	4245	4279	4314	4348	4383	4417	66
24	4452	4487	4522	4557	4592	4628	65
25	4663	4699	4734	4770	4806	4841	64
26	4877	4913	4950	4986	5022	5059	63
27	5095	5132	5169	5206	5243	5280	62
28	5317	5354	5392	5430	5467	5505	61
29	5543	5581	5619	5658	5696	5735	60
30	5774	5812	5851	5890	5930	5969	59
31	6009	6048	6088	6128	6168	6208	58
32	6249	6289	6330	6371	6412	6453	57
33	6494	6536	6577	6619	6661	6703	56
34	6745	6787	6830	6873	6916	6959	55
35	7002	7046	7089	7133	7177	7221	54
36	7265	7310	7355	7400	7445	7490	53
37	7536	7581	7627	7673	7720	7766	52
38	7813	7860	7907	7954	8002	8050	51
39	8098	8146	8195	8243	8292	8342	50

deg.	60′	50′	40′	30′	20′	10′	deg.

deg.	0′	10′	20′	30′	40′	50′	deg.
40	8391	8441	8491	8541	8591	8642	49
41	8693	8744	8796	8847	8899	8952	48
42	9004	9057	9110	9163	9217	9271	47
43	9325	9380	9435	9490	9545	9601	46
44	9657	9713	9770	9827	9884	9942	45
45	1.0000	1.0058	1.0117	1.0176	1.0235	1.0295	44
46	1.0355	1.0416	1.0477	1.0533	1.0599	1.0661	43
47	1.0724	1.0786	1.0850	1.0913	1.0977	1.1041	42
48	1.1106	1.1171	1.1237	1.1303	1.1369	1.1436	41
49	1.1504	1.1571	1.1640	1.1708	1.1778	1.1847	40
50	1.1918	1.1988	1.2059	1.2131	1.2203	1.2276	39
51	1.2349	1.2423	1.2497	1.2572	1.2647	1.2723	38
52	1.2799	1.2876	1.2954	1.3032	1.3111	1.3190	37
53	1.3270	1.3351	1.3432	1.3514	1.3597	1.3680	36
54	1.3764	1.3848	1.3934	1.4019	1.4106	1.4193	35
55	1.4281	1.4370	1.4460	1.4550	1.4641	1.4733	34
56	1.4826	1.4919	1.5013	1.5108	1.5204	1.5301	33
57	1.5399	1.5497	1.5597	1.5697	1.5798	1.5900	32
58	1.6003	1.6107	1.6212	1.6319	1.6426	1.6534	31
59	1.6643	1.6753	1.6864	1.6977	1.7090	1.7205	30
60	1.7321	1.7437	1.7556	1.7675	1.7797	1.7917	29
61	1.8040	1.8165	1.8291	1.8418	1.8546	1.8676	28
62	1.8807	1.8940	1.9074	1.9210	1.9347	1.9486	27
63	1.9626	1.9768	1.9912	2.0057	2.0204	2.0353	26
64	2.0503	2.0655	2.0809	2.0965	2.1123	2.1283	25
65	2.1445	2.1609	2.1775	2.1943	2.2113	2.2286	24
66	2.2460	2.2637	2.2817	2.2998	2.3183	2.3369	23
67	2.3559	2.3750	2.3945	2.4142	2.4342	2.4545	22
68	2.4751	2.4960	2.5172	2.5386	2.5605	2.5826	21
69	2.6051	2.6279	2.6511	2.6746	2.6985	2.7228	20
70	2.7475	2.7725	2.7980	2.8239	2.8502	2.8770	19
71	2.9042	2.9319	2.9600	2.9887	3.0178	3.0475	18
72	3.0777	3.1084	3.1397	3.1716	3.2041	3.2371	17
73	3.2709	3.3052	3.3402	3.3759	3.4124	3.4495	16
74	3.4874	3.5261	3.5656	3.6059	3.6470	3.6891	15
75	3.7321	3.7760	3.8208	3.8667	3.9136	3.9617	14
76	4.0108	4.0611	4.1126	4.1653	4.2193	4.2747	13
77	4.3315	4.3897	4.4494	4.5107	4.5736	4.6382	12
78	4.7046	4.7729	4.8430	4.9152	4.9894	5.0658	11
79	5.1446	5.2257	5.3093	5.3955	5.4845	5.5764	10

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

320

67.3
255
1095.0
32 23
390.8
1084.31

78+50.25
40 09
38+30.75

52 18
40 90
11 28

.014
11.5
20
14
14
1560

9.46
5.89
3.57

65 42
58 87
6 75

.15
4
.06

31 +63.45

74465
73772
69.9

170
7
1190

6987
39.06

10.2
9.0
1.2

3 | 1.2
.4

9.8
6.70
3.06

F.L. 9.0
1 = 9.4
2 = 9.8
3 = 10.2

9.4
6.8
2.6

52+78
40 54
12 34

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

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK 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.

1011.80

29.69

MADE IN GERMANY.

R.