

29
82

FIELD BOOK

740

PLEASE RETURN TO
 GEAUGA COUNTY ENGINEER

TABLE FOR REDUCING PERCHES TO FEET AND INCHES.

PERCH	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.
1	16.6 in.	21	3.46.6 in.	41	6.76.6 in.	61	10.06.6 in.	81	13.06.6 in.	101	16.06.6 in.	121	19.06.6 in.
2	33.0	22	3.63.0	42	6.93.0	62	10.23.0	82	13.23.0	102	16.23.0	122	19.23.0
3	49.6	23	3.79.6	43	7.09.6	63	10.39.6	83	13.39.6	103	16.39.6	123	19.39.6
4	66.0	24	3.96.0	44	7.26.0	64	10.56.0	84	13.56.0	104	16.56.0	124	19.56.0
5	82.6	25	4.12.6	45	7.42.6	65	10.72.6	85	13.72.6	105	16.72.6	125	19.72.6
6	99.0	26	4.29.0	46	7.59.0	66	10.89.0	86	13.89.0	106	16.89.0	126	19.89.0
7	1.15.6	27	4.45.6	47	7.75.6	67	11.05.6	87	14.05.6	107	17.05.6	127	19.05.6
8	1.32.0	28	4.62.0	48	7.92.0	68	11.22.0	88	14.22.0	108	17.22.0	128	19.22.0
9	1.48.6	29	4.78.6	49	8.08.6	69	11.38.6	89	14.38.6	109	17.38.6	129	19.38.6
10	1.65.0	30	4.95.0	50	8.25.0	70	11.55.0	90	14.55.0	110	17.55.0	130	19.55.0
11	1.81.6	31	5.11.6	51	8.41.6	71	11.71.6	91	14.71.6	111	17.71.6	131	19.71.6
12	1.98.0	32	5.28.0	52	8.58.0	72	11.88.0	92	14.88.0	112	17.88.0	132	19.88.0
13	2.14.6	33	5.44.6	53	8.74.6	73	12.04.6	93	15.04.6	113	18.04.6	133	19.04.6
14	2.31.0	34	5.61.0	54	8.91.0	74	12.21.0	94	15.21.0	114	18.21.0	134	19.21.0
15	2.47.6	35	5.77.6	55	9.07.6	75	12.37.6	95	15.37.6	115	18.37.6	135	19.37.6
16	2.64.0	36	5.94.0	56	9.24.0	76	12.54.0	96	15.54.0	116	18.54.0	136	19.54.0
17	2.80.6	37	6.10.6	57	9.40.6	77	12.70.6	97	15.70.6	117	18.70.6	137	19.70.6
18	2.97.0	38	6.27.0	58	9.57.0	78	12.87.0	98	15.87.0	118	18.87.0	138	19.87.0
19	3.13.6	39	6.43.6	59	9.73.6	79	13.03.6	99	16.03.6	119	19.03.6	139	19.03.6
20	3.30.0	40	6.60.0	60	9.90.0	80	13.20.0	100	16.20.0	120	19.20.0	140	19.20.0

COURT HOUSE
 CHARDON, O.
 PHONE 250-X

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

BAINBRIDGE CENTER-CHAGRIN FALLS
 ROAD CH-9

BAINBRIDGE TWP. GEAUGA CO., O.

L. J. McNAUGHTON
 County Engineer

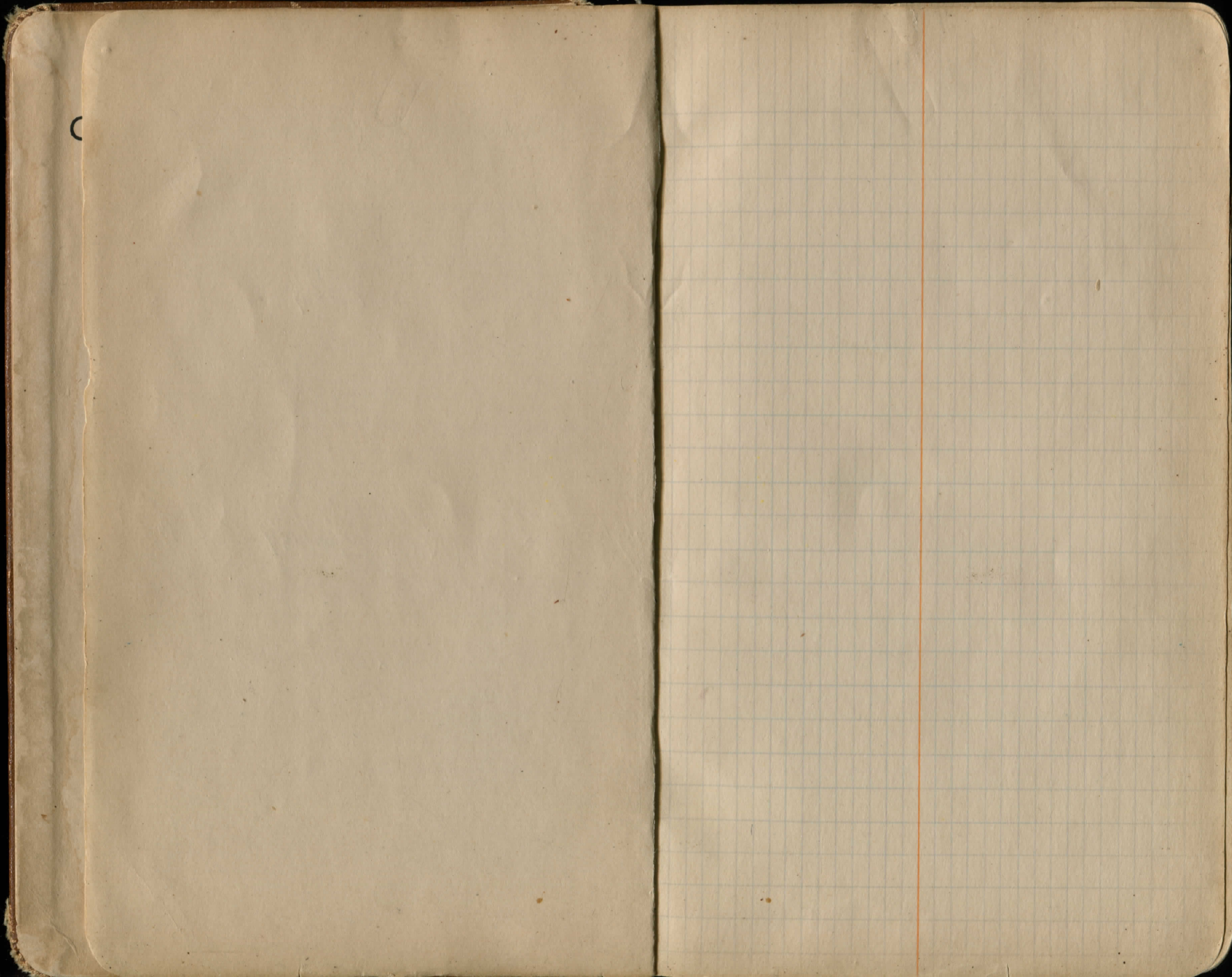
1919

~~Catsden~~ Chagrin-Bainbridge Rd Jg 2+10
~~Hayes~~ Rd (N. end) #189 pg 45
 STORM SEWER NXP, ECH-49 pg 48

1958
 Chagrin-Bain Rd. B.M. st Pg. 60 -
 Topo 1958 Xsec Pg 63
 Pg 55

82

CHAGRIN P. A. I. N BRIDGE
 GEAUGA CO. OH



Chagrin falls

Co & Corp Line

Geauga Co

CEAL COUNTY ENGINEER
ENGINEERING DEPARTMENT

N



(Oct 1919)

Field Book 81 Pg. 1-4

" " 82 Pg. 2-3

Chagrin-Bainbridge Road

F.B. 536.47

F.B. Dist 2392.15'

Flat Iron Bar P.O.T

Flat Iron Bar

Stone Post 37

25.2

37.33

P.E. to 3/6/57

Sta 15741.12

Sta 6199.82

Sta 1213.17

Sta 10106.52

Bent S&W T.P. 26 Maple

Iron S&W T.P.

Iron S&W T.P.

Iron S&W T.P.

Iron S&W T.P.

Iron S&W T.P.

Iron S&W T.P.

Iron S&W T.P.

694.81
409.51
281.38
332.80

160.00
19.16
80.00

Same

TOTAL

Highway Department

RESURFACING & WIDENING

of Plains

Miller Oct. 23. CH # 9
 1919.

+94⁸⁹ P.I. $\Delta = 12^{\circ}-13'$ Lt.

+33⁵⁰ P.G.

6

5

+49⁵¹ P.T.

4
 3+89³⁶ P.I. $\Delta = 70^{\circ}-50'$ Rt.
 3+11²⁴ P.C.

8+0⁹⁴ P.T.

+38²⁵ P.I. $\Delta = 75^{\circ}-50'$ Lt.

2

+40[±] P.G.

1

0

$\Delta = 12^{\circ}-13'$ Lt.
 $D = 10^{\circ}-00'$
 $P.I. = 6 + 94⁸⁹$
 $T = 61³²$
 $P.C. = 6 + 33⁵⁰$
 $L = 1 22¹⁷$
 $P.T. = 7 + 55⁶⁷$
 $E = 32[±]$
 Def. per. ft. = 0.05°
 R = 573.69

$\Delta = 70^{\circ}-50'$ Rt.
 $D = 48^{\circ}-00'$
 $P.I. = 3 + 89³⁶$
 $T = 87⁴²$
 $P.C. = 3 + 01²⁴$
 $L = 1 47²⁷$
 $P.T. = 4 + 49⁵¹$
 $E = 27²¹$
 Def. per. ft. = 0.24°
 R = 122.93

$\Delta = 75^{\circ}-50'$ Lt.
 $D = 47^{\circ}-00'$
 $P.I. = 2 + 38²⁵$
 $T = 97²⁵$
 $P.C. = 1 + 40[±]$
 $L = 1 61⁵⁶$
 $P.T. = 3 + 01⁹⁶$
 $E = 33⁶⁶$
 Def. per. ft. = 0.235°
 R = 125.39

offset stakes as to unless
 W otherwise noted

81.00
 72.55 I
 8.43

10+06.5
 6+94.9
 3+11.6

P.T. 3

6+94.9
 3+99.2
 3405.4

2nd $\Delta = 66^{\circ}-16'$
 2nd Tan 200.8'

3+89.4
 2+38.3
 151.7
 89.36
 38.25
 51.11

Extend Tangent 19.7

1st $\Delta = 73^{\circ}-19'$
 Tan 223.1'

See new ret
 pg 19

See pg 48 for
 Storm sewer fd
 July '49

238.25
 97.55
 336.70

2.5° stake
 R. B. Lyon
 R. B. Lyon

Spk S side
24" map

+41.15 Hub. on Tang.

15

14

13

12

11

10+26.00 P.T.

10+06.00 P.I. 419°16' L. 12° Curve

10

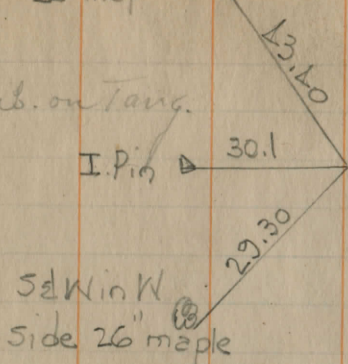
9+25.45 P.C.

9

8

+55.97 P.T.

7



POT spk EW
set 3-14-57
I Pin Set
Oct 1958

Curve Notes

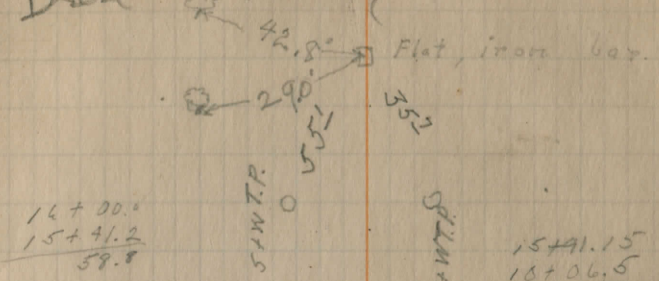
- $\Delta = 19^\circ-16' L$
- $D = 122-00'$
- $PI = 10+06.50$
- $T = 81-19'$
- $PC = 9+25.21$
- $L = 160-56'$
- $PT = 10+25.87$
- $E = 6.81$
- Def. per. ft. = 0.06'
- $R = 473.34$

Act
449-4270

7+55.3 3

11257
912
11166.5

Dred Trench

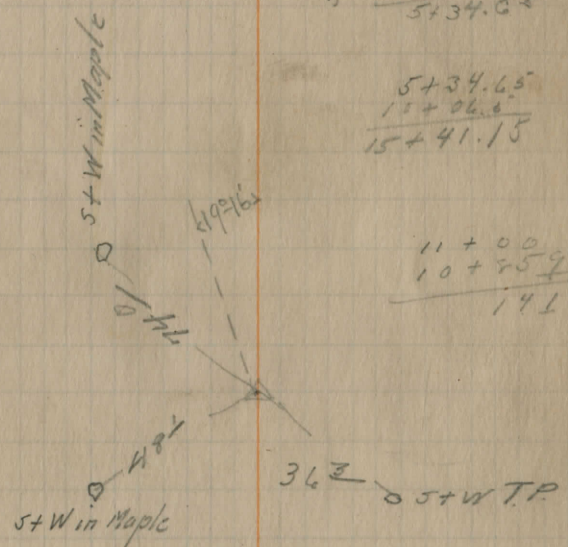


14+00.0
15+41.2
59.8

15+41.15
16+06.5
5+34.65

5+34.65
15+06.5
15+41.15

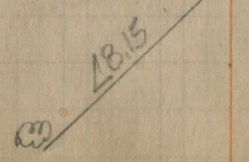
11+00.0
10+25.9
141-11+00



I. Pin
30.7

I.P. fd 3-6-57
± 6" into S
edge post

Bent S&W
26" map



Fidler
Graham
Thompson

Oct.
23.
1919

28

27

+22.77

MON. BOX

26

25

24

23

22

21

20

19

18

17

16

433.3

PI Δ

6° 45' R

$\Delta = 6^\circ 45' R$
 $D = 50 - 00'$
 $PI = 39 + 33.30$
 $T = 67.61$
 $PC = 38 + 65.69$
 $L = 1 35.00$
 $PT = 40 + 00.69$
 $E = 1.32$
 $Def. per ft. = 0.025'$
 $R = 1142.28$

39

+6572

P.O.

5° 0.8' 20' 67.58

38

37

36

35

34

33

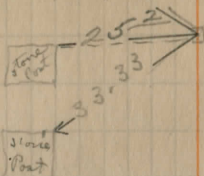
32

31

30

29

SW in F.P. Δ



6° 45'

flat iron bar
 pin f d 3-14-57
 used Oct 58

15.7	100	100
.025	657	407
	34.3	593
	.025	
	1715	
	686	
	5575	

933.30

Sta.

51

50

49

□ 48

47

46

45

44

43

42

41

+00⁰⁰ R.T.

70

Tape busted)
Hub. Tangent.

L.T.

R.T.

6

SW NE Side 24"
Maple 2 feet up

C. Harris

Drive

6545

25

7

SW SE side 6-1818
tele pole

32.15'

18" wood stake-spiked

I Pin Set
Oct 58 POT

gone
nail in N.

root 20" locust

63

62

61

~~49~~ = HARVEY ROAD
60 Now Catsden "

~~47~~

59

58

57

56

55

54

53

52

Mon Box 1970 60+51.40

76

75

74 Hub. Tangent

73

72

71

70

69

68

67

66

65

64

spike set pot

Vert sdw S side
35" Map

27.10

I pipa set
Oct 58 POT
td 70"

sdw W side
50" Map

46.32

51.21

sdw N side
21" Map

SW 4 W.
Hdwl.

13.10

12.10

SE 4 E.
Hdwl Culvert

89

88

87

86

85 spike on $\frac{1}{2}$ Measure sth 30 h

84

83

82

81

80

79

78

77

102

101

100

99

98

97

96

△ 95 Hub. 0° - 05" L.

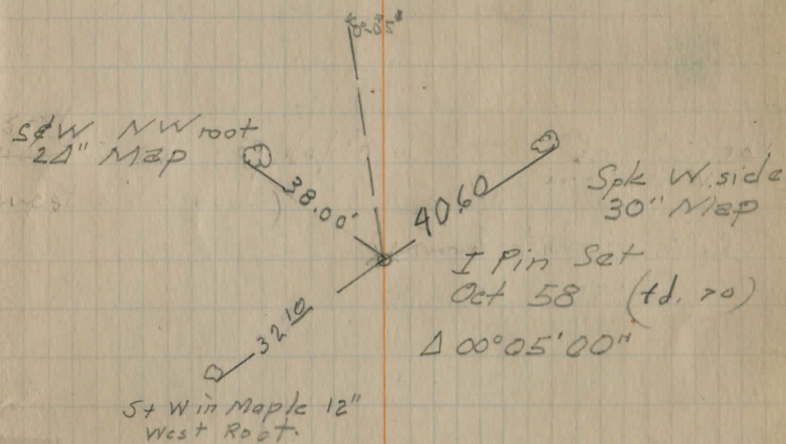
94

93

92

91

90



114

129.21

Holbrook County
Main Rd Lane

113

112

117067
110036
783.1

111

+ 03.6 10006

110

+20

Savage Rd ?

109

108

107

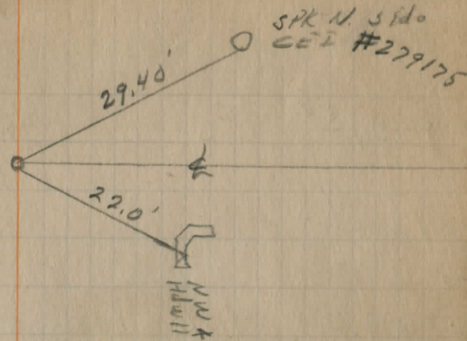
106

105

104

103

I.P. fd 70



26.00 I Pin Set Oct 58
 POT (fd 70)
 SPK NW side CEI #64126

123 + 59.90

+ 01 ⁵³ PG

124

123 + 59.9 Hub Tangent

122

121

120

119

118

+ 06.7 Hub Tangent

117

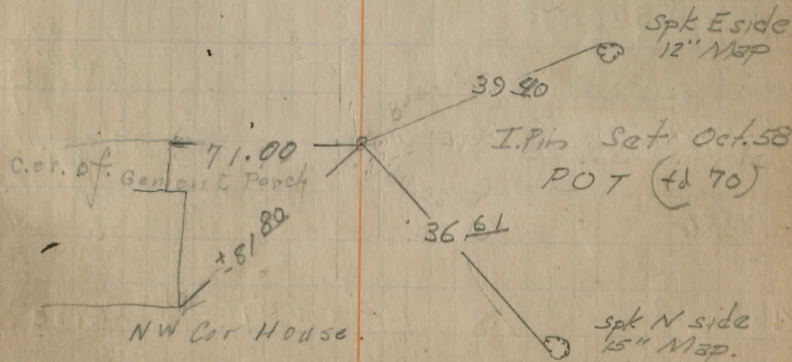
116

115

124
123 + 599
404

124

□ wood stake nailed



137 ofst 30' R

+19.13 P.C.

133

132

131

130

129

128

+41⁵³ PT

127

126

$\Delta + 72.50$ P.I. Δ 170-00' L 5° Curve.

$\Delta = 170-00$
 $D = 50-00'$
 $P.I. = 125 + 72.80$
 $T = 1 \quad 71.31$
 $P.C. = 124 + 01.49$
 $L = 3 \quad 40'$
 $P.T. = 127 + 41.45$
 $E = 12 \quad 73'$
 $\text{Det. per } \% = 0.025$
 $R = 1146.25$

125

125-72.8
23.55
212.7

13

100
72.8
27.2

134 + 93.4
126
8 + 93.4

138 + 48.7
126
7 + 48.7

30' A stk

T.P. # 3P52
SPK. S. side

T.P. # 151 P1
SPK. E. side

43.8

29.9°

(I.P. + 170)

16.52

CEI # 64137

Same

P.I. set 11/22/67

I.P. see pg 77

5+WT.P

42 L

24 L 5+WT TEL.P

6° 125 + 72.8 P.I.
5+WT F.P.

+60²⁵ P.T.

141

+78 P.I. Δ 26°-49' Lt.

140

+93⁶⁴ P.O.

139

138

(Rain)

137

+234 P.T.

136

135

+93.4 P.I. Δ 43°-53' R. 10°

34

T. 85.36

Δ 16°

Δ = 26°-49' Lt.

D = 16°-00'

P.I. = 140 + 78.00

T = 85.64

P.C. = 139 + 92.36

L = 1. (7.5)

P.T. = 141 + 59.27

E = 10.27

Def per ft. = 0.08°

R = 359.265

Δ = 43°-53' Rt.

D = 16°-00'

P.I. = 134 + 93.40

T = 1. 44.73

P.C. = 133 + 48.67

L = 2 74.27

P.T. = 136 + 22.94

E = 28.25

Def per ft. = 0.08°

R = 359.265

+14.5 to P.I.

+14.5 to P.I.

Sta 140+78

New Δ 26°-50'

Bothways

140+78

136+23.4

4+54.6

140+78

134+93.4

5.84.6

140+07 New

P.C.

141+74.5 New

P.T.

S+W.T.P.

36.2

Δ

140+78

S+W.T.P.

57.8

Δ

S+W in Walnut T

S = C P. 99 Ref set 11/25/07

P.I. inaccessible

56.2

S+W in Elm

Stake 197

S+W

Nail in NE side of hole

153

+30% spike

152

151

150

149

148

147

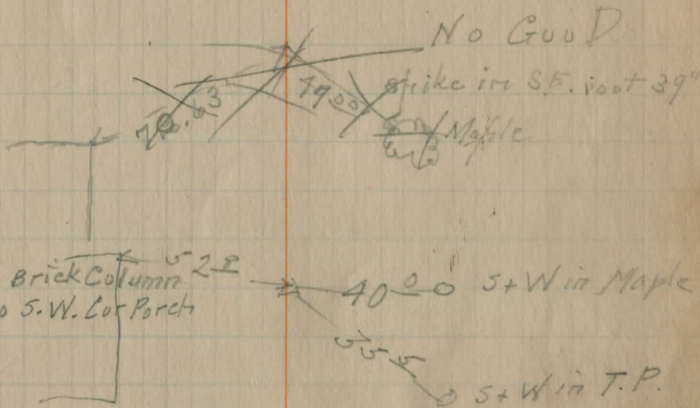
146

145

144

143

142



166

165

164

163

52
+86.34

161

160

159

o 158 spike

Tang.

157

156

155

154

Spike in stump

572

New Ret Sta 167+00
6713 - stW in Maple

559

stW in stump

CEP # 64163

67.86'

IP

90.52'

19.70'

CEP # 64162

Tele. Pol. # 3P22

170 o stW TP

58

stW in Maple

178

177

176

175

174

+ 31.80

173

172

171

170

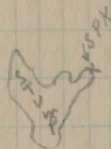
169

+ 27.94

168

167

173 84.80
 167
 15 31.80
 21 69



Nail in S. side
 12" Maple



26.94

Tacked Hub.

Nail in W.
 side 10" Maple



33.85

Tele. Pole No. #
 Nail S. side



31.59

P.K. set.

10" Maple
 Nail S. side



35.41

15.01

Nail N. side
 Tele. Pole
 #3P17



+ 48 Terminal of Chik. Rd.

+ 89 of Culvert.

187

186

85

184

183

182

181

180

179

528 18847 13 1/2 miles

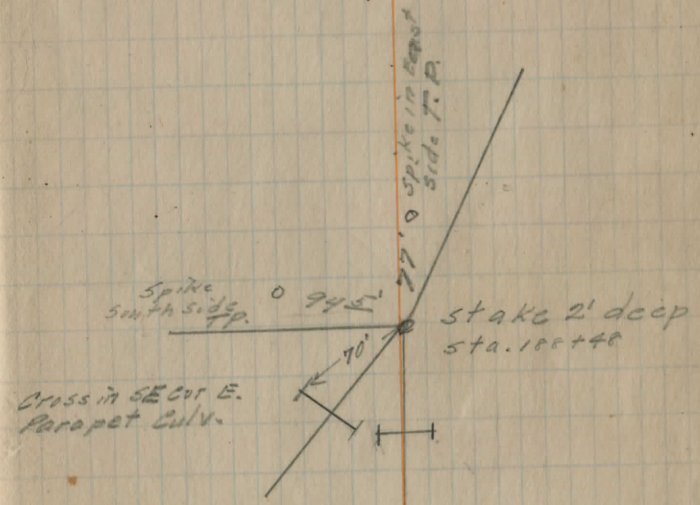
1587
3008
2540
4480
2224
4556

strike in S. side Tel. Pole

Iron Pin at int. of E & S. road margins. STIKED in East Tel. hole.

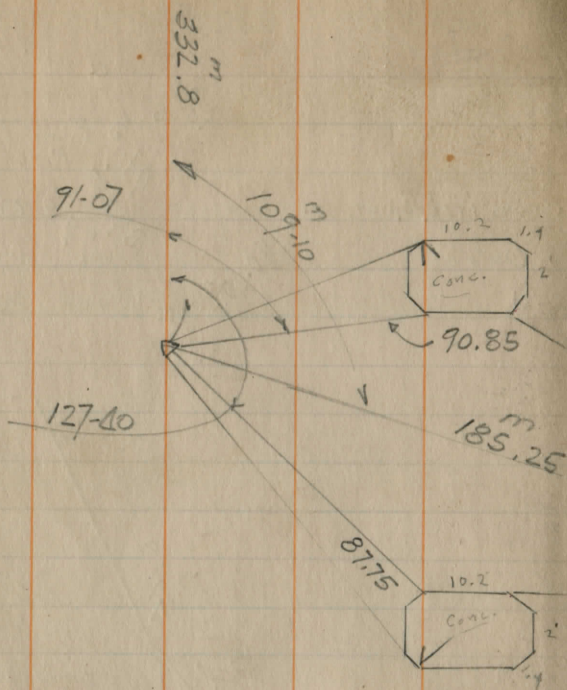
Cross in S.E. cor. E. Parapet of Culvert. 70.00'

wood hub. 3" below sur.



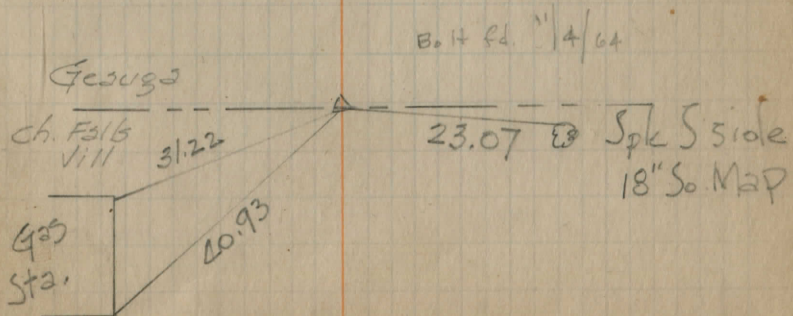
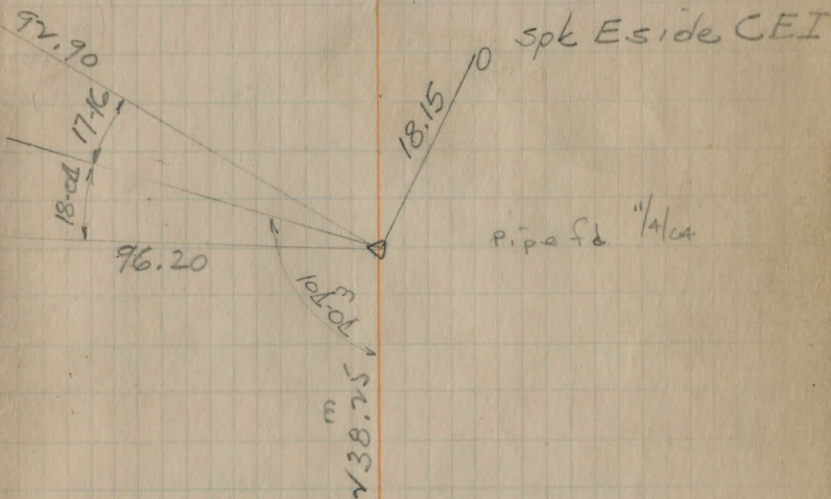
Improved Road

Chagrin Rd #9
March '57

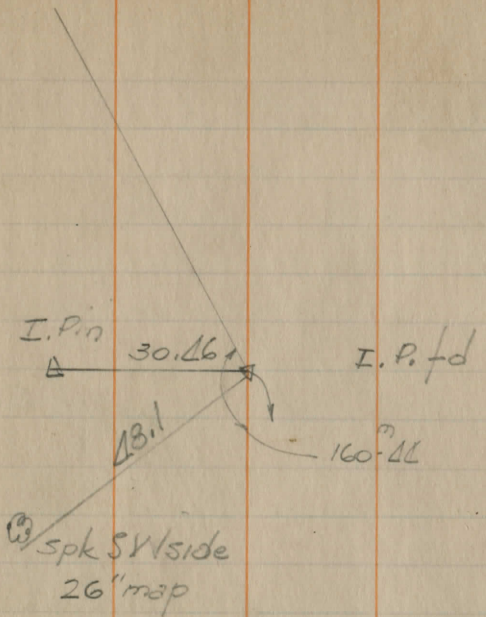


104.04
11.16
121.20

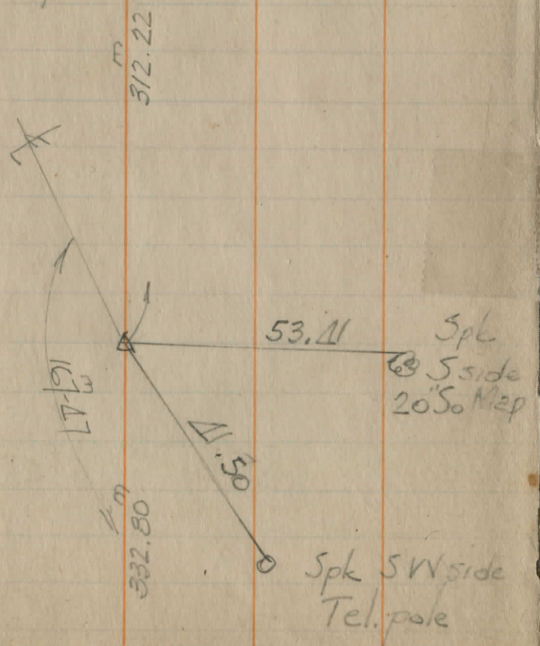
104.04
11.16
121.20
86



10206



6+9

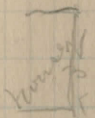


W^m Larkworthy to Steph. Reminos. 150' front.

+ 13

drive

7



+ 95

60
12" 18"

+ 70

3" 15"

6

+ 60 House

60'

+ 35
130
50

5 + 46.

drive

Ran

+ 735 Prop. line

J. J. Davis

drive

+ 8936

37.9' 1.4037 stake

+ 87

26.3

Est. 27.91
11.4
29.81

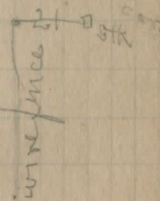
+ 0.1

W. L. E. R. Co.

3

Street

2



+ 73

+ 15.4

+ 31

23

0

+28 2nd walk
 +34
 72
 +97
 +50 7th walk 22
 +28
 11
 + 97
 + 91
 10+70 25

23.7 T
 23.5 F
 28 House
 24 T
 24 F

+75 10th walk 25
 +85
 +46
 +40
 8. ~~10th walk~~
 8. ~~10th walk~~
 58' House

5 houses - 18' apart

9
 +16
 +08
 8
 +43 16th walk 23.5
 +43 5th walk 15

Drive

+51			25	+
+45				+
21				
+90				+
+85				+
+78	0	24		
+27	0	~		
+9				
+73	0	~		
+36				+
+30			30	+
+28	0	~		+
13				
+75	0	24		
+25	0	24		
17				
+92				
+67				
+21	0	23		
16	0	23		
+15				
+075				
15				
59			29.2	+
55			23.4	+
13				

+

 Profit line
 rail fence

+70

38 + 46

+12

+35

+33

29

+27

28

+30

+72

+78.5

27

+50

22.5

+20.5

+10

26

25

+69

+66

24

+13

+11

23 + 08

fence

29'

sample

sample

27

27 + 57
15.3 11.2 5

9°

concrete walk
drive

+

F

Oldstone Culv

3E by 2E Box OK

23

Est 250'

take

House

22.5

23

Handy Est. 250'

drive

G.G. Ober

23

90°

Prok

Line

End of Line

+58
+32 aft
37+10
+90
+28
36+04
+96
+48
85+05 end fence

+93
+47

34+30
34+38
+93

33+45
+66
+32
32

+58
31
+ 93.7
30+8+5

Barbery Hedge & Spindles
16 Stone
16 Stone

20.4

29
E.D. Coulton

20
Prof. Line

21

43.10

End - G.S. Agford

Prof. Line
G.G. Ober

23

30

Prof. line ?

19

19
4 miles
across

19

19.5

19.2

Prof. line
20

20

G.V. Smith

23

41

23

~~Prop line~~

+95			
+90	Endy	32'	
+82			
+18			
+72			
+39	F	17.4	
+34	+	18.4	
+29			24' @
+22			23' @ 18" maple
+48			23' @ 20" maple
+36	F	19.4	
+09			22' @ 24" "
41			
+93			22' @ 26" maple
+86			22' @ 18" maple
+15	F	19	
+13	F	18'	
40			
+35			
+27.5			
+18			
+11			16' @
39+07			
+95			
+85			
+40			
38+12			

stone post
stone post 29'
drive

stone post
stone post in 26'
23'

120.00
cross

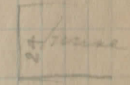
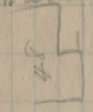
17' @ 29" Maple
19.5'

62+0
+85
+70
+30
+20
61+10
+70
+65
+45
60+30
+90
+35
59+0
+70
+65
+30
58+20
+34
+75
57+36
56+0
+75
55+0
+70
+30
54+0
+50
+30
53+20
+60
+55
+40
52+20

20 Map
20 Map
18'
25
12" Maple
24
15'
3
18'
25'
45' Map
Drive
16'
16" Map
21
16'
22
22
16'

21 T
30' Dogwood
30' Dogwood
Road
31 E 10' Sassafras
21 T
32 15' Map
32 38' Apple
21 T
32 10 Map
31 20 Map
Paved Drive
26 36" Locust
21 T
23 T
Paved Drive
24 T
28 11" W. cherry
26 16" Ash
27 T
27 20 W. cherry

+49 end of fence R & Apples, int of Red R.
60+34 F 14
+50 T 14
59
+33 W. end of fence 24
+75 65' cut
+72 F 14
+44
+32
58+31 drive
+58
+60 T 14
57+15 F 14
+76 T 13
55+65 F 14
+14 T 15.5
54+10 F 15
53+46 10' Elm 23
+55 T 14.6
52+53 F 14.6
+44 12" Maple 22
51+27 E. end fence on h.
51+15 12" maple 24
+95 F 15.0
+93 / 15.0



+80
 +51
 76+0
 +53
 +47
 +24
 75+07
 +48
 +30
 +10
 74+0
 190
 +55
 +75
 +65
 +50
 +30
 +10
 73+0
 +90
 +50
 +35
 +25
 72+65
 +85
 +59
 +30
 71+0
 +68
 +60
 +25
 70+15
 69+75

T 16
 26 Map 26
 T 16
 8 Map 26
 21 Map 25
 20 Map 25
 11 P 30
 T 17
 Drive
 20 29
 23 T
 29 30 30' Map
 25 Done Post
 27 30 Map
 28 30
 T 16
 26
 25 10 map
 27
 26
 23 T
 33 40 Map
 27
 30' Drive + 23 Maps
 30
 30
 30
 30
 22 T
 26
 T 18
 28 10 Talip
 25 8' Map

23 T
 23 T
 30
 25
 27
 28
 25
 23 T
 33
 27
 22 T
 28
 25

+90 F 12.3
 77+55 T 71.6
 +52 Wind fence
 77
 +98
 +67 15' points
 +37 24
 +37 F 12.2
 +88 T 11.9
 +24 House
 76+07 6' and fence
 75+36
 +77 F 12.
 74+74 T 12.
 +50 2' west end fence
 +11 F 12.7
 73+08 T 12.5
 +81 12.5
 +76
 +66 F 12.
 71+53 T 12.4
 +93 F 12.3
 +90 T 12.3
 +40
 69+12 13.
 68+73

21.1
 Drive
 70' Ext. House
 +24
 Profile
 Profile
 23
 est. 75
 Drive
 80' ext

90+20		21 @ 15 Map
+85	T 17	26 @ 28 Ash
89+15	26	22 T
+70	30	24 @ 29
+50	15 @ 30 T 17	25 @ 24 1/2
+25	15 @ 30	
88+0	20 @ 30	25 @ 27
+70	20 @ 27	
+60		22 T
+30	20 @ 29	
87+50	T 17	
	19 Map	
+60	@ 29	27 @ 22 Map
+35	18 Map @ 28	22 T
+30		24 @ 20 Map
+10	T 17	25 @ 18 Map
86+0		
85+70	T 16	23 T
84+20	T 16	
+40		23 T
83+15	T 16	
82+12		
81+60	T 16	
+80		
80+15		23 T
79+50	T 16	
+50		23 T
78+15	T 16	
+15	@ 20	
77+10		Drive

31

+55		
+45	†	17.4
+41	†	14.5
+25	3" Maple	
90+22	14" oak	
+90	† 22	
+77	†	14.
+74	†	14.
77+80		
+33	†	14.5
+30	†	14.5
77		
+10	Tree trunk @ 22	
+04	10" maple	
76		
+20		
+24		
75+65		
+24	†	14
74+22	†	13.9
+69	†	13.7
72+65	†	13.7
+11	†	13.3
71+09	†	13.3
+51	†	12.
+45	†	12.9
+40	wood chips	
79+3	8" sand lime pine	

A. Jenkins
Tenant
Prop. line 21
25
L.M. & F.J. Morris
24 @ 10" maple
24
W.H. Bosworth
Prop. line 13.9
L.M. & F.J. Morris
13.5
25
23.2

1 Rain

~~Map~~

103+53
+35
+27
+21
102+20

T 15
T 19

21 Drive
26 26" Map

101+75
+98
+79
+25

T 18

Drive
19 0 Light Post in conc.
21 T

100+6
+70
+50
+38

T 18

22 30 Map

99+0
+85
+75
+40

T 17

Drive
26 319

98+10
+70

T 17

29 330

97+21

Barn 23

22 T

+70
+50
+30

T 18

30 22

96+15
+90
+55

T 23

29 20

+35
95+30

T 23

28 20

T 19

29 20

22 T

Drive

29 29

22 T

23 28

23 30

21 24 Map

+98 18'
106+96 18'
+29 18

105+24 18.
+47 17.9
103+45 17.7

+80 18.3
101+25 18.3
100+80 14" maple 22

+97 12" maple 25
+92.5 17.5
+93 17.8
99

98+71 14" maple 25
+10 17.4
+06 17.4
98

+48
+19

+17 2.3
97
+70 2.3

+49 17
96+45 17

22

25

25

115

Drive

Barn + E. end of fence

105 maple

5" House
fence
pines

+48 T 18 24 36 Map
 +58 20 12 Ash
 114+29 24
 +75
 +52 22 T
 113+30 Road Moon
 113+12 T 18 15' tile w/heads. Need Clean
 +84 T 15 22 T
 111+74
 +43 T 15 drive
 +30 28
 110+05 23 T
 +26 T 18
 109+15 Road
 +60 12 112 25 15" tile w/heads
 108+50 22 Apple
 +85 T 18
 10770 21
 +90 22 T
 106+33 T 19
 +50 21 T
 +16 29 30 Map
 105+0 drive
 104+30 T
 104+10 23 T
 103+90 25

+97 E end of small fruit trees 24
 14
 +64 72
 +30 15" maple 22
 +18 20'
 116+16 T 20'
 115+5 10" maple 25
 +92 19.4
 +67 T 19
 +65 12" Apple 20
 +35 10" maple 24
 114 24
 113+60 W end of fence 25
 +30 1/2 Road
 +30.5 18.5
 113+15 T 19.
 +63 18.8
 111+60 T 18.7
 109+35 23 1/2 small tame chuey
 +03 18.7
 110 T 18.7 = Prop. line
 109+20
 +44 24 Broad pole
 +47 18.4
 108+44 28.4
 M.W. Fertig
 A.V. Jenks

J.D. S. Haggart 86

A.V. Jenks

= Prop. line

+95 Drive 25 24
 +30 25 15
 +17 22 T
 +10 27 28 Map
 11940 26 15
 +85 26 15 Map
 +70 27 9 cherry
 +50 26 9 Map
 +35 T-18
 118433 29 25 Map
 +70 22 T
 +50 26 30 Map
 +37 26 12 Map
 +31 T-18 27 1 cherry
 +17 Drive
 11740 Drive
 +85 27 15
 +30 24 30 Map
 116715 22 T
 +85 T-18
 +45 26 30
 +30 27 15
 11570 10 cherry 22 25 25 Map
 11473 22 T

R.W.M. Glutlock
M.W. Fertig

122+10 = Prop R + ~~drive~~
 122+10
 +45 230 12" maple
 +23 24 10" maple
 +14 # 22.7
 121+10 = T 22.7
 +97
 +85 Haggart
 +65 25 8" maple
 +51 10" Apple 25 8 5 "
 120+16 25 0 5 "
 +97 16 10
 +59 # 23 23 10" maple
 +52 + 23 25 8" u
 +38 24 14" u
 +32 14 12" u
 +25 24 10" u
 119
 118+23 2.5, 5- W. end ^{row} small fruit trees
 +99 8" maple 20- 10
 +80 8" maple 25- 10
 +08 # 21.5
 118 # 213
 +92 10" maple 22 10
 +56 15" Maple 25 10
 117+15

Chas B. La Rue Vol. 119 / 253 x 255
 Alex. Pintye & Margaret Pintye 146 / 387
 Grace M. Wright 149 / 62
 Stephen & Theresa Remines
 Grace Lee Hepburn 135 / 160
 G.L. Hale

Pintye on Road = 6.6067 = 435.6'
 La Rue - - - = 8.19 " = 540.54'
 " - - - - = 9.55 " = 630.30

W end bridge x 29' *Emale's bridge*
 26 1/2' *Picket fence beg. on L*
 26 1/2' *drive to creek*

127	80	29'
+89		
+85		
+50		
124	Guy pole	18'
126		
+95		
+95	Guy pole	18'
x04		
125		
127+75=122	maple	10.5'
+84	Guy pole	16.8'
+82		4.3'
+80		23.7'
+79	Guy pole	16.8'
123+45	10" Maple	23.5'
+64		
+62		23.5'
+62		
+51		
+49		
+30		
W. end +30		24'
122+19	W end fence	28'

Emale's bridge
Picket fence beg. on L
drive to creek
6" Maples
4" Maples
W end fence

+72⁵⁰

API Curve

+82

10 T

125+0

λ 30

23 T

124+10

+62

T 20

27 T

123+13

23 T

+33

+26

T 19

20 T

122+13

12" tile
with
= 60° skew

15.5 19.5 20

Drive

2310 Map

+85

+81

Drive

+70

27

+23

29 16

121+0

29 16 Map

+95

T 13

25 12 Map

+85

+80

22

+65

28 13 M

+50

29 10

+35

27 15 Map

+20

25 12 Map

120+0

26 15 Map

+55

27 20 Map

119+70

T 18

30 10 Map

368
25
115

+71

+ 115

+69

11.5

133

+70

23

+55

24

132+50

24

+60

cherry

18'

25'

+55

25.7

+53

25.7

131

+48

18'

36" 5' m

+53

W end fence 30'

J.B. Laroc

130

+95

24 1/2

R.N.M. 6' 1/2
Prof. line

+92

25

+82

drive

+74

E end fence

129+69 5' Evergreen

18

+87

13 stone laterally

+73

37

+60

E end fence

15

+41

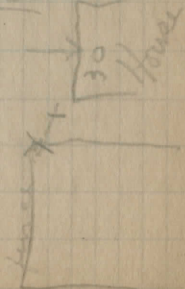
25 1/2

+40

26

127+92 W end board fence

145



139 approx ³ Pop line L + end of Picket fence, + 4 1/2' W of pole line 38

139+10	18" Maple	25	☐
+69	15" wild cherry	16 1/2	☐
+64	15" Maple	22	☐
+40	6" Elm	20	○
+37		21	☐ 10" Maple
138 +92		16 ft.	14" Wild Cherry
+64		22.2	
+60		22.	
137			
+08		29	
+15			
137			
+56	18" Elm	11	draw to mill
+15	18"	8	☐
+11	12"	7.8	5" maple
+06	12"	7.0	10" Maple
156	15"	15	13" Elm
+64		21.5	
+80		21.1	
+65	20" Elm	16	☐
+17	20" Elm	18.	☐
135			
+78		19.2	
+80		26	
134+75		18.3	

Picket fence

~~La Rue~~
~~La Rue~~

~~La Rue~~
~~La Rue~~
~~La Rue~~

147+67	≠	19.5
+90	≠	19
146+88	+	19.2
+66	≠	19
+63	≠	19
145		
+14	+	19.5
144+60	≠	19.
143		
+61	+	19.5
142+57	≠	19.6
+61		
+54	≠	2.8
+54	≠	2.0
+50	+	2.4
141		
78	≠	23½
+33	+	21.8
+27	≠	16.2
+27	≠	2.4
+04		
140		
+32		
+39	+	21.3
+24	≠	2.1
139+20		

La Rue
 (142+35)
 Pintya

75-Eat

guy

guy
 La Rue

30
 House
 La Rue

25

30

Prof. LaRue
? ?
? ?
drive

152+04
+98
+71
+68

16.5 +
16.5 #

151+62 10" cherry

24 ⊙

House

167+50

150+50 ⊙ 22

6" maple

151

24.5

+99 wild cherry 8"

24

+39 12" wild cherry

25

+30 10" cherry

29.2

+13

14.7

+10

14.7

+150

+53 6" maple

21

+67 12" maple

21

+88 14" Elm

23 ft. ⊙

149

22 1/2

+53

128

+50

12.5

148

+55

14

+52

14.2

147+44 Wink fence

21

148+96

Wink fence
Wink fence
Wink fence

77
87
drive

+87

3
3
wire fence

24

8" walnut(?)

+40

24

15.2

+37

15.2

+32

drive #

156

25

fence

+27

10" ash

25

+22

+58 10" ash

⊙

+32

12" ash

23

⊙

155+06
La Rue

155

+75 12" ash

23

⊙

+75

15.3

+70

15.2

+55 12" Maple

22

10" maple
⊙

+16 14" white wood

22

154

23

+95 ⊙ 22

10" better nut

+75

+45 ⊙ 24

14" walnut

+08

16.5

153

16.5

753+0

168

+94

+92

167

+04

166+22

+64

+60

164

+86 end x 16

163

+97

162

+30

161+27

160

+60

+58

159

+96

+05

+02

158

+47 @ 21

157

10¹⁰ underhand

finger-wind

16.7 +

16.4 #

25 >

17.7 +

17 #

19.2 +

19 #

19.6 +

16.5 #

25 >

16. +

16. #

16 +

16. #

25

15.6 +

157 #

7th maple

12th underhand

red pencil

Prop?

170		18.	+
180 + 66		18.	≠
+ 09		18.	+
179 + 05		18	≠
175			
+ 45		18.5	+
177 + 44		19.0	≠
+ 52		8" end of fence	
723 8" end of fence	23	25	
176 + 15	22	8" maple	
+ 15		17.5	
+ 74		15.5	
+ 60	21	10" maple	
+ 56	19	7" chest	
175			
+ 60	20	8"	
+ 31	20.5	18.4	+
174 + 25		18.4	≠
+ 96	20	10" maple	
173 + 66	21	Wood fence	
+ 79		17.2	
172 + 73		16.7	
+ 22		17.	
171 + 19		16.5	
+ 58		16.5	
169 + 55		16.4	

188 + 10

21

189 + 09

21.6 \neq
30 \neq

156

185 + 75

19
19

+ 45

25 \neq

+ 44

21.5 \neq

185

+ 60

22

12th Maple

184

44

19.2 \neq

88

18 \neq

+ 51 E end

26

183

+ 69 W end of fence

25

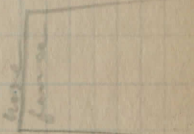
+ 31

18.9 \neq End of

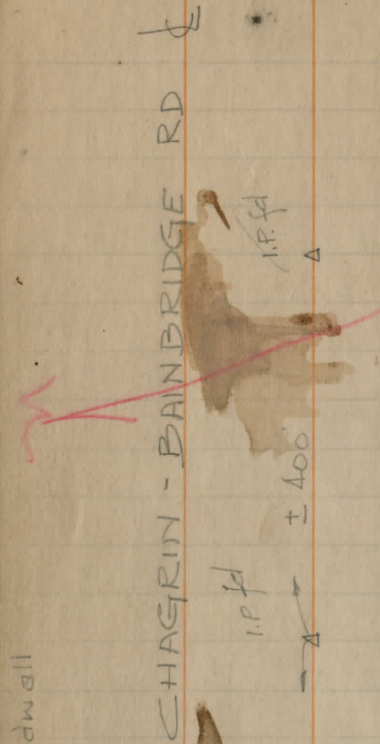
182 + 26

18.9 \neq under

181



N.W. cor N. headwall



CHAGRIN - BAINBRIDGE RD

I.P. fd

± 400

473.12

471.82

I.P. fd

I.P. set

54.70

60

29.14

Spk N side
G. Catalpa

56-14

1.37 to far W
see file

Catsden
HARVEY RD

Note ϕ to S edge pavt = +10'

Harvey Rd = ± 13' wide

See F.R.Z. file (Harrison & Harris)
for ~~Harvey~~ Rd ϕ per print



10" C.I.P. Conc. Hdwls OK

1.32" pipe
to carry to
Side catsden
to catsden

24.5

45

22.5

15x0

2" EVER
GL'S

20.5

29.5

33

33

7

3-28-44
Pom
Randles

B.M.	1.01	101.01	100.00
		1.58	99.43
		1.17	
		1.0	
		1.80	99.21
		1.62	
		4.50	
		1.6	99.4
		4.50	96.51

0+36

1+0

95.2

2+0

93.6

3+0

91.9

N.W. corner N Hdwl
Intersection

50' W

100' W

50' E

100' E

FL (outlet)

top hdwl (S)

0+36

East

West

21	3.9	4.4	5.0	4.4	4.5	4.6	5.3	4.7	5.0
30	23	13	10	7		10	15	20	30

4.3	5.4	5.0	6.3	5.9	5.8	5.6	5.9	7.0	5.7	6.4
30	16	13.5	8	6		4	9	14	20	25

5.0	5.8	6.4	8.3	7.4	7.5	8.1	8.5
30	20	10	5		12	18	30

9.1

3-28-44

6.66

NE X

2.44

NW

8.51

SW

3.60

SE

2.74

5.51

McFARLAND CREEK BRIDGE 41

Break W wall \pm 18' from Send

SHOWING STORM Sewer
East of W&LE RR
on Bambridge
July 49

10/22/54

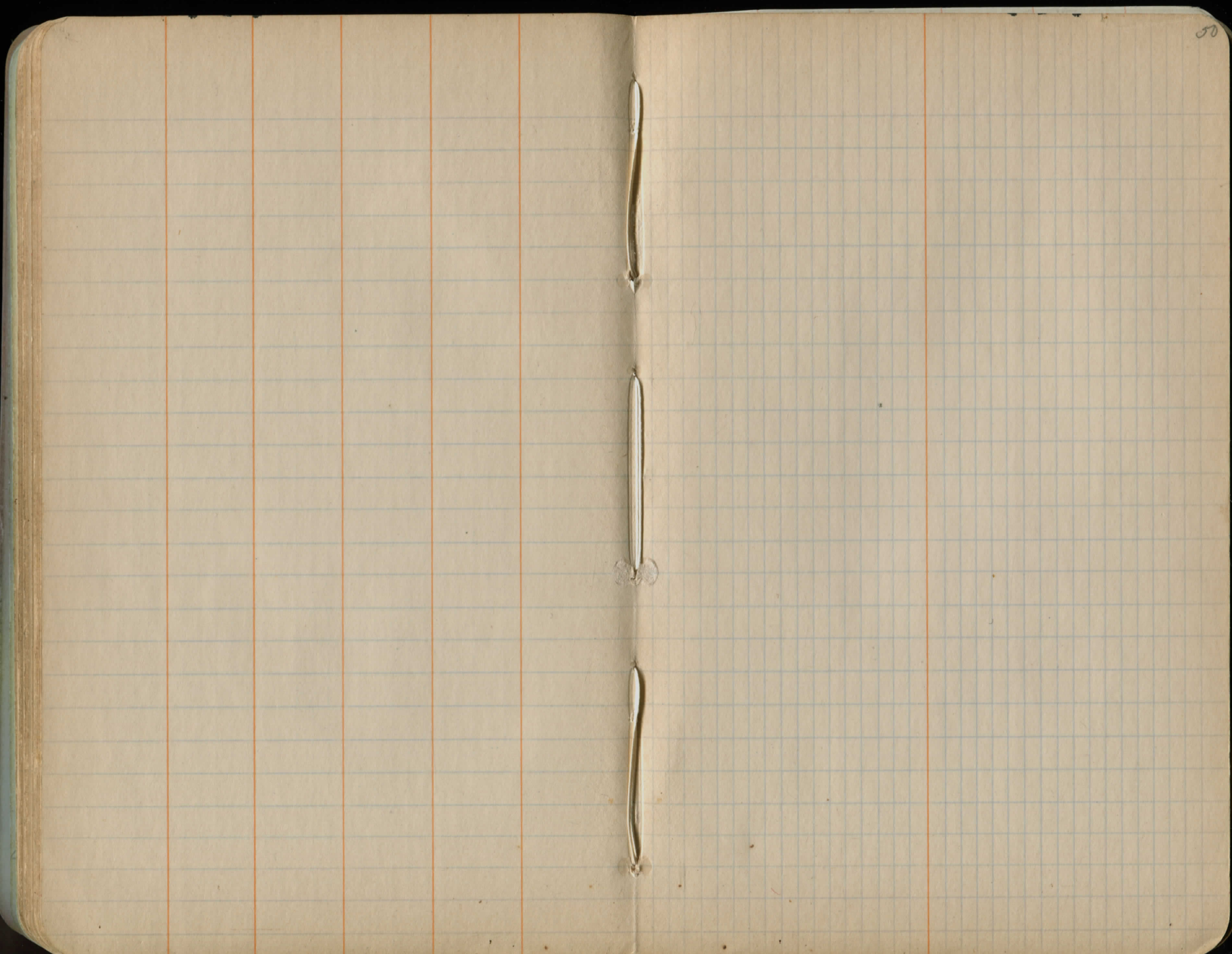
cover = 14 7/8" Dia
tile broken
+ 12" Vit. Storm
Sewer → 11' +42'

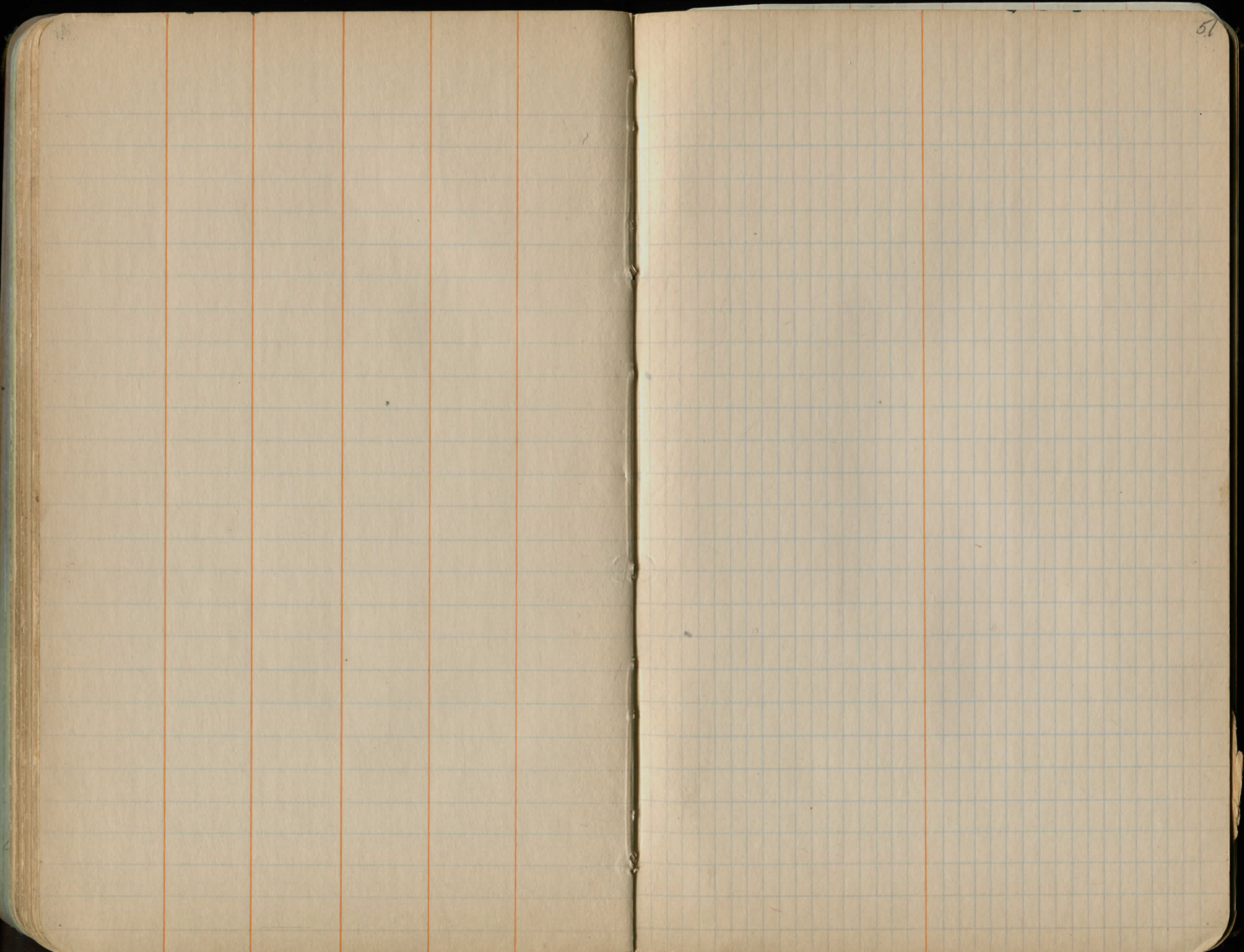
cover = 17 13/16" dia → 11' inlet
6'

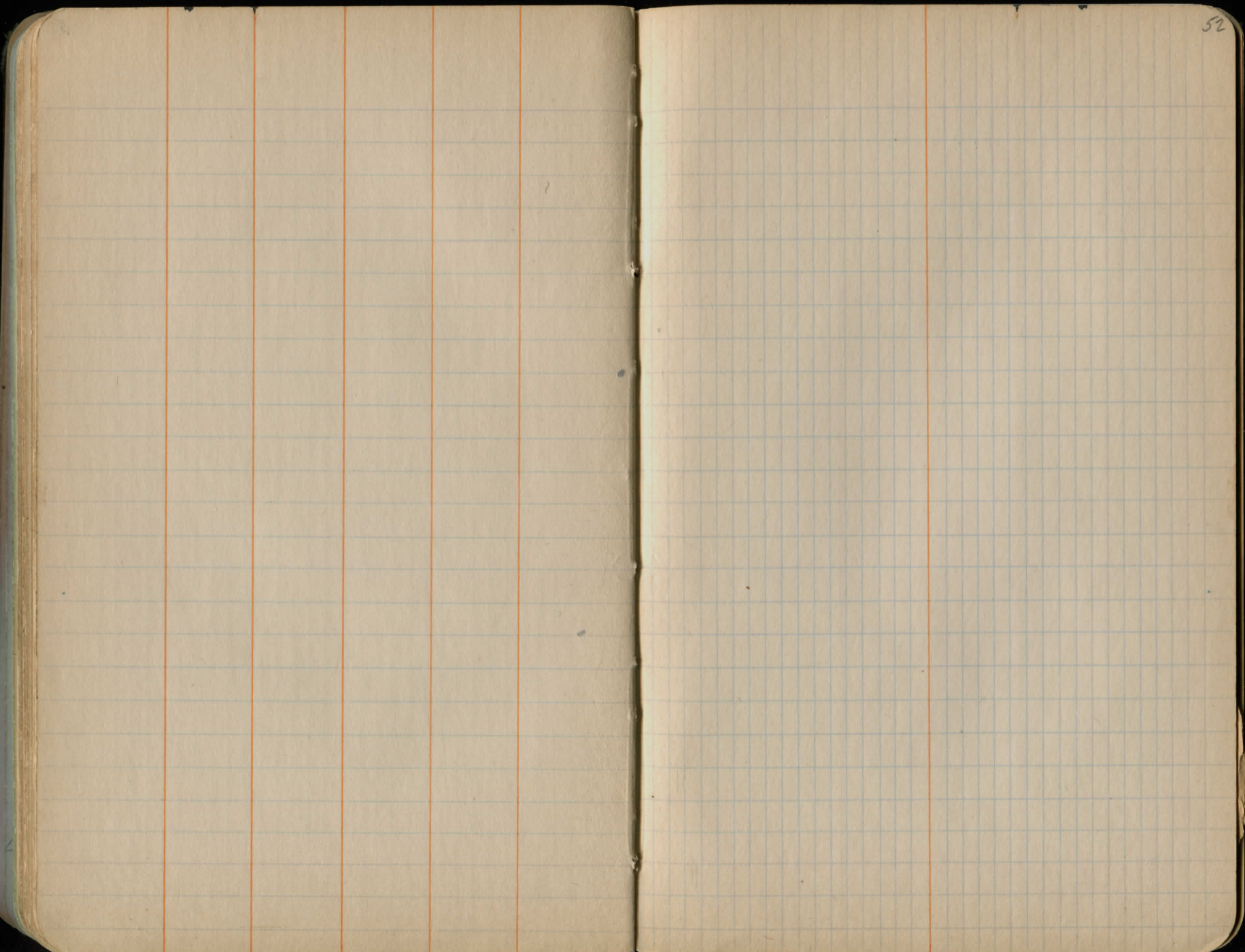
clean outlet
W&LE RR
+60'

Arch

CEDAR







Finish Grade

188+48
188+00
187+50
187+00
186+50
186+00
185+50
185+00
184+50
184+00
183+50
183+00
182+50
182+00
181+50
181+00
180+50
180+00
179+50
179+00
178+50
178+00
177+50
177+00

Elev 1166.18
1166.00 16
1166.03
1166.24
1166.84

$$\Delta 6^\circ - 45 \quad 10.0 \cdot T = 339.9$$

$$C = 5^\circ \left) \frac{10.3}{2.06} = \text{Ext.}$$

$$C = 5^\circ \left) \frac{342.9}{68.58} = 1$$

$$PT = 39 + 33.3$$

$$PG = 38 + 67.58$$

$$L = 1 + 35$$

$$5 \left) \frac{6.75 - 40}{137}$$

$$5 \left) \frac{337.9}{67.58} = 1$$

$$5 \left) \frac{6.75}{135}$$

lit +

$$59 + 4740 = 2000$$

$$\Delta 6^\circ - 45 \quad 10.3 \cdot T = 22.5$$

$$C = 5^\circ$$

$$T = 67.58$$

$$P.C. 38 + 65 \frac{72}{72}$$

$$P.T. 40 + 00 \frac{72}{72}$$

$$\text{Ext } 2.00$$

$$\text{Def. part } 1.5 \text{ min}$$

$$.025$$

$$60$$

$$1.00$$

$$342.5$$

$$651.2$$

$$10000$$

$$343$$

$$1.5$$

$$765$$

$$343$$

$$5145$$

19° - 16

478339

(80)

9° - 38

- 1 = .1697

(9)

$$\begin{array}{r}
 3348373 \\
 4305051 \\
 2870034 \\
 478339 \\
 \hline
 81.1741283
 \end{array}$$

(7)

9.8

45

72

7.65

813.75

821.40

~~8.58~~

~~4548~~

96738

971928

97596

96738

8.58

51.78

96738

120

972528 (81.040)

96

12

52

48

A. Patterson
T. Adams
P. Young

Topo Bainbridge Rd. #9

1958

20+00

+91

+75

+60

+55

+25

17+09

+80

+75

+60

+44

+29

+09

18+0

+75

+60

+28

19+10

+95

+90

+80

16+25

+91

+76

+64

+42

+25

15+0

15" Map
23'
26'

16" Map
25'

17" Map
25'

19'

12" Map
26"

16" Map
25'

16" Map
26'

18'

16" Map
25'

16" Map
26'

18'

16" Map
25'

Paved Drive

22' T 62' I
24' 83 Shrub

24' 83 Shrub

13.5' Stone Abut Drive Paved
10" Tree
Stone Abut

23' T

28" Evergreens

23' T

13' Drive 62' I
30' 8" Spruce I

13.5' 12" Tile w/one Hdwl E side

24' T

24+30

24+25

+30

23+23

+90

+58

+56

+37

+22

22+0

+85

+61

+43

+35

21+15

+76

+58

+53

+30

+10

20+0

T 22'

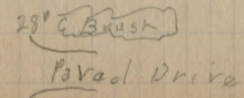
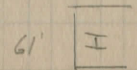
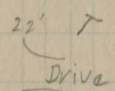
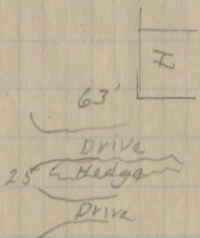
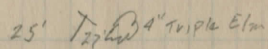
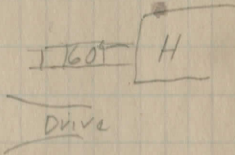
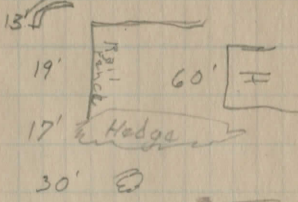
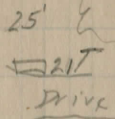
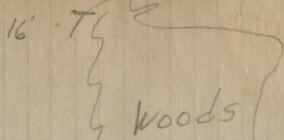
T 22'

8" Elm 23'

8" Elm 24'

10" Elm 22'

T 19'



31+27 X 27'

+87 X 21' T

+75 40' E 10" spruce

+64 Drive

30+42 X T 27' 39' E 10" spruce

X

29+66 X 8" Walnut 21' T

3 E 12'

X 16-19 3X3 Stone box Galut

29+0 Tree X

+79 T 29'

+30 12" Mod 21' T

28+15 9" E 24'

+90 10" Apple 24'

+74 15" Mod 24'

+36 9" E 21'

27+27 T 24'

+86 21' T

+55 12" E 21'

26+19 Road 12" Mod 36'

25+68 T 23' 21' T

100
30
64

37+14
+64

20' locust
E 27'

21' T

+30

24' Map
26'

36+0
35+94

* * * R X 18'
25'
36" Map

21' T

+77

Drive 75'

32' 12" spruce

+74

conc
steps

21' T

+45

H 41' 13'

39' 12" Map

+22

24" Map 27'

+12

15" Map 28'

34+0

15" Map 27'

57' H

+95

48" Map 27'

39' O

+76

15" Map 28'

Drive

+33

15" Map 28'

21' T

G

+27

15" Map 29'

Paved Drive

33+19

32+60

Fence
steps

+17

15" Map 30'

21' T

+15

15" Map 27'

+05

15" Map 21'

32+0

15" Map 22'

31+75

43+0

+95
+90
+85
+77

+65
+65
+50

42+10

+75
+50

41+05

+37
+21

40+0

+7
+60

37+18

+93

+88

+76

+66

+55

+40

38+10

+67

+55
+50

37+45

Drive

35
30
31
17

Locust { 11" 27
12" 29
13" 28

Drive

Locust 27'
Clamp 17'

32

18'

Drive

Drive

8" Pop 30'

store 25'

Post-Drive 25'

19'

Ball fence

Drive Post

Rail fence

25' 12" Elm

35' 10" Elm

18' T

30' 11" Elm

20' T

10" Locust 25

9" Locust 25'
15'

9" Locust 29'

22 Hedge

59

Drive

Continued
on Page 29

23 T

27 30

Drive

24 T

27' 11" Elm

Ball fence

Drive Post

Rail fence

25' 12" Elm

35' 10" Elm

18' T

30' 11" Elm

20' T

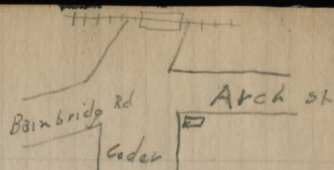
Drive

8-22-58 Est. B.M. Chag-bain bridge Road

H. Patterson
D. Burgess
D. Parks

Cloudy
Cool 65°
+

	HL	-	Elav
BM #3	9.64	946.58	936.94
T.P.	9.77	956.29	0.06 946.52
T.P.	10.68	966.90	0.07 956. ²² 59
T.P.	11.21	978. ⁷⁹ 03	0.15 966. ⁷⁵ 82
T.P.	11.55	989. ⁴ 54	0.07 977. ⁸⁹ 96
T.P.	11.50	1000. ⁸⁶ 93	0.08 989. ³⁶ 43
B.M. #1			4.03 996. ⁸³ 90
T.P.	11.43	1012. ¹⁸ 19	0.17 1000. ⁶⁹ 76
T.P.	4.96	1014. ³³ 40	2.75 1009. ³⁷ 44
B.M. #2			0.24 1014. ⁰⁹ 16
T.P.	11.67	1025. ⁸⁶ 93	0.14 1014. ¹⁹ 26
T.P.	11.52	1037. ²⁰ 27	0.18 1025. ⁶⁸ 75
B.M. #3	5.82	1040. ⁴¹ 48	2.61 1034. ⁵⁹ 66
T.P.	10.62	1050. ⁹⁹ 06	0.04 1040. ³⁷ 44
	11.50	1062. ⁴⁵ 52	0.04 1050. ⁹⁵ 02
	10.52	1072. ⁸⁹ 96	0.08 1062. ³⁷ 44
	10.44	1083. ³⁰ 37	0.03 1072. ⁸⁶ 93
BM #4			2.30 1081.00
	8.46	1081. ¹ 38	0.45 1082. ⁵ 92
	9.52	1090. ⁵⁸ 65	0.25 1081. ⁹ 63
BM #5			2.83 1087. ⁷⁵ 32
	10.08	1098. ²¹ 79	2.45 1088. ¹³ 70
	10.90	1108. ⁵⁴ 11	0.57 1099. ¹⁰ 67
BM #6			4.86 1103. ¹ 68
	9.66	1113. ¹⁰ 67	5.10 1102. ¹³ 69



x NW & W. Hdwl at + Cedar & Arch St.

x NW & E. Hdwl. Sta.

13' Lt. of E

Vert. Spk NW Root 20" Maple Fork of Samuel Lord Dr. Sta. 25+75

Vert. Spk. NW Root 22" Maple Sta. 34+26 30' Lt. ±

Hortz. Rat spk. N side 24" Maple 2' up Sta

Vert. Spk. W. side 24" Maple Sta. 61+00

Vert. Spk S side 28" Maple Sta. 74+00 29' Lt. of E

		1113. ¹⁰ 67		
TP	11.84	1125. ⁴⁹¹ 48	0.03	1123. ² 64 ⁰⁷
TP	6.53	1131. ³⁷ 94	0.07	1125. ³⁴ 41 ⁸⁴
BM #7			2.80	1128. ³ 14 ⁵⁷
TP	0.31	1120. ³ 79 ⁹²	10.76	1120. ³ 18 ⁶¹
T.P.	2.26	1114. ³ 84 ⁸⁴	9.74	1121. ¹⁸ 25
B.M. #8	0.89	1113. ³⁰ 94	1.93	1122. ¹⁵¹ 08
T.P.	0.19	1102. ⁰² 69	11.47	1121. ¹ 53 ⁵³
TP	0.53	1091. ²⁰ 77	11.35	1090. ¹⁰ 34 ⁶⁷
TP	0.17	1079. ⁷¹ 38	11.66	1089. ³⁴ 21
B.M. #9	1.88	1077. ³⁶ 36	4.23	1085. ⁴⁸ 98
T.P.	0.80	1066. ^{7.16} 28	11.10	1065. ⁷ 93 ⁶²⁶
TP	0.16	1056. 44	10.88	1062. ⁶²⁸ 95
TP	0.76	1046. ²⁶ 03	10.84	1055. ⁵ 60
TP	0.09	1034. 92	11.70	1034. ⁴ 93 ⁶⁶
TP	0.93	1023. 83	11.52	1022. ³ 90
B.M. #10	0.06	1012. 17	11.72	1022. 11
TP	4.74	1007. 86	9.05	1023. 12
TP	10.95	1015. 06	3.78	1024. 08
TP	9.53	1023. 84	0.75	1024. 31
TP	11.80	1035. 98	0.16	1023. ³ 68
B.M. #11			1.63	1023. ⁴ 85
T.P.	11.83	1047. 29	0.02	1025. ⁴ 46
TP	11.76	1058. 77	0.30	1026. ⁵ 99
	11.72	1070. 94	0.05	1068. 72

*

Vert. Spk S.E. Side 18" Maple Sta. 96+45 32' Rt. of E

*

Hort. Rat Spk NW Side 22" Maple Sta 110+25 30' Rt E

Vert. Spk E. Root 20 Maple Sta. 118+25 30' Rt E

X ^{top} 1/4 NW & NW Bridge Guard Post Sta.

Hortz Spk E side 18" Maple Sta. 30' Rt E

1070.44

T.P.	11.05	1081.96	0.86	1080.38
T.P.	11.58	1092.97	0.07	1081.39
T.P.	10.80	1103.76	0.01	1092.96
T.P.	11.83	1115.57	0.02	1103.74
T.P.	11.62	1127.18	0.01	1125.56
T.P.	11.97	1139.05	0.10	1127.08

T.P. 0.87 1139.05

BM #12 1.77 1137.28

T.P. 11.90 1150.56 0.39 1138.66

T.P. 11.49 1161.85 0.20 1140.36

T.P. 10.54 1172.04 0.35 1141.50

T.P. 4.65 1174.89 1.80 1180.24

BM #13 7.82 1167.07

T.P. 0.17 1165.08 9.98 1144.91

2.95 1160.88 7.15 1167.93

BM # 0.78 4.14 1146.74

Vert Spk NE Root 15" Maple, Sta 154+58 30' RT E

Horty. Spk Road face C&E¹ (6th Pole No 4 + 306) Sta. 28' LT E

H. Patterson 8-30-58 X Sec Chag - Bainbridge Rd
 D. Cantild
 D. Parks

BM #1	+	MZ	-	Elev
	8.20	1005.03		996.53

16+0

17+0

18+0

19+

20+

TP	7.51	1011.09 1010.98	7.56	1003.97
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21+

22+0

23+0

24+0

25+0

	5.31	1013.72	2.57	1008.97
--	------	---------	------	---------

	6.26	1016.77	3.21	1010.51
--	------	---------	------	---------

BM #2	3.10	1017.20	2.67	1014.10
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X NW 4 E. Hdwl Culvt Sta. 157 88⁰⁰ 13' Lt ±

	W		E				
	$\frac{9.8}{30}$ Drive	$\frac{8.9}{9}$	996.4 ✓ $\frac{8.6}{15}$	$\frac{8.6}{15}$	$\frac{10.5}{18}$	$\frac{6.4}{27}$	$\frac{6.0}{30}$
	$\frac{8.6}{30}$ Drive	$\frac{6.8}{9}$	998.5 ✓ $\frac{6.0}{12}$	$\frac{6.8}{12}$	$\frac{8.5}{17}$	$\frac{4.8}{27}$	$\frac{4.3}{35}$
	$\frac{8.1}{30}$	$\frac{7.1}{14}$	1000.1 ✓ $\frac{5.5}{10}$	4.9	$\frac{4.9}{9}$ Drive		$\frac{4.2}{30}$
	$\frac{5.5}{30}$	$\frac{5.3}{17}$	1001.5 ✓ $\frac{3.7}{12}$	3.5	$\frac{3.7}{12}$	$\frac{5.3}{18}$	$\frac{3.2}{23}$ $\frac{3.0}{30}$
	$\frac{2.2}{30}$ Drive	$\frac{2.1}{10}$	1003.1 ✓ $\frac{1.9}{13}$	1.9	$\frac{2.0}{13}$	$\frac{2.1}{17}$	$\frac{1.1}{27}$ $\frac{1.0}{35}$
	$\frac{6.6}{30}$ Drive	$\frac{6.4}{10}$	1004.9 ✓ $\frac{6.1}{12}$	6.1	$\frac{6.4}{12}$	$\frac{7.5}{15}$	$\frac{3.6}{27}$ $\frac{3.0}{30}$
	$\frac{7.4}{30}$	$\frac{6.2}{15}$	1006.3 ✓ $\frac{5.2}{11}$	4.7	$\frac{5.2}{13}$	$\frac{6.5}{15}$	$\frac{3.9}{27}$ $\frac{3.6}{30}$
	$\frac{6.7}{30}$ Drive	$\frac{5.0}{10}$	1006.7 ✓ $\frac{4.3}{16}$	4.3	$\frac{4.7}{14}$	$\frac{5.5}{16}$	$\frac{4.8}{26}$ $\frac{4.3}{30}$
	$\frac{4.7}{30}$	$\frac{4.6}{16}$	1007.5 ✓ $\frac{5.4}{13}$	3.5	$\frac{3.7}{12}$	$\frac{4.4}{16}$	$\frac{3.0}{23}$ $\frac{2.6}{30}$
	$\frac{2.9}{30}$	$\frac{2.6}{17}$	1008.6 ✓ $\frac{3.7}{15}$	2.4	$\frac{2.5}{15}$	$\frac{3.7}{17}$	$\frac{-1}{25}$ $\frac{-1.5}{30}$

1017.20

26+0
TP 4.53 1011.95 9.78 1007.42

27+0

28+0

29+0

Calvt
29+50

30+0
TP 11.18 1022.93 0.20 1011.75

31+0

32+0
TP 10.64 1033.50 0.09 1022.8⁶

33+0

34+0
TP 7.83 1037.21 4.12 1029.38
BM #3 2.25 1036.88 2.58 1034.63

35+0
TP 9.41 1045.67 0.32 1036.56

36+0

64

1009.4 ✓

$\frac{0.0}{30}$ $\frac{9.3}{16}$ $\frac{8.0}{13}$ 7.8 $\frac{7.6}{8}$ Road $\frac{5.0}{30}$

1007.6 ✓

$\frac{6.9}{30}$ $\frac{6.0}{18}$ $\frac{4.6}{11}$ 4.3 $\frac{4.4}{13}$ $\frac{5.3}{16}$ $\frac{2.1}{30}$

1005.8 ✓

out $\frac{7.4}{21}$ $\frac{7.8}{16}$ $\frac{6.4}{11}$ 6.1 $\frac{5.8}{12}$ $\frac{6.0}{16}$ $\frac{3.0}{30}$

1005.0 ✓

Swamp $\frac{10.3}{18}$ $\frac{6.5}{12}$ 5.9 $\frac{6.3}{13}$ $\frac{8.4}{19}$ $\frac{8.4}{30}$

← 13.2 | 12.2 Swamp

1008.2 ✓

Swamp $\frac{7.1}{19}$ $\frac{9.6}{13}$ 3.7 $\frac{9.4}{14}$ $\frac{6.8}{20}$ $\frac{7.0}{30}$

1010.7 ✓

$\frac{8.0}{30}$ $\frac{11.2}{16}$ $\frac{10.6}{13}$ 10.2 $\frac{10.2}{13}$ $\frac{11.5}{19}$ $\frac{11.5}{20}$ $\frac{13.0}{30}$

1008.9 ✓

$\frac{0.7}{30}$ $\frac{0.9}{25}$ $\frac{5.2}{14}$ $\frac{9.3}{12}$ 4.0 $\frac{4.3}{13}$ $\frac{5.9}{16}$ $\frac{1.0}{23}$ out

1025.0 ✓

out $\frac{5.5}{19}$ $\frac{9.7}{14}$ $\frac{8.8}{12}$ 8.5 $\frac{8.6}{12}$ $\frac{9.6}{14}$ $\frac{5.4}{18}$ $\frac{5.4}{30}$

1029.5 ✓

$\frac{2.5}{30}$ $\frac{2.4}{26}$ $\frac{4.6}{15}$ 4.0 $\frac{4.2}{11}$ $\frac{5.4}{14}$ $\frac{1.0}{18}$ $\frac{0.6}{30}$

1033.5 ✓

out $\frac{0.1}{26}$ $\frac{4.3}{14}$ 3.4 $\frac{3.4}{9}$ Drive $\frac{2.3}{30}$

1037.7

$\frac{7.8}{30}$ $\frac{8.4}{15}$ 8.0 $\frac{8.1}{11}$ $\frac{9.7}{15}$ $\frac{6.5}{23}$ out

1045.67

37+0

38+0

39+0

40+0

T.P.

41+0

42+0

T.P.

43+0

44+0

45+0

T.P.

T.P.

BM #4

46+0

47+0

9.51 1055.05 0.13 1095.54

11.92 1065.52 1.35 1053.90

11.28 1076.26 0.54 1064.98

8.14 1083.70 0.70 1075.56

2.87 1083.95 2.62 1081.08

8.2/30 8.5/14 6.5/11 5.7 5.9/11 7.3/14 6.2/30
1040.0

8.1/30 7.3/14 5.6/11 4.8 4.7/11 6.1/15 5.1/30 up
1040.9

4.7/30 1.4/15 3.9/11 3.5 3.9/14 4.8/18 3.6/21 out
1042.2

9.0/30 3.5/20 3.5/13 2.1/9 1.6 1.4/9 Drive 0.8/34
1042.1

9.1/30 Drive 8.1/9 7.8 7.8/13 9.0/15 8.4/23 6.1/30
1047.3

5.6/30 4.7/15 3.5/3 3.5 3.3/12 9.7/15 2.2/30
1051.6

out 12.2/20 13.0/16 10.9/10 10.4/3 10.4 10.4/8 Drive 9.4/30
1055.1

7.0/30 6.3/9 6.4/3 6.4 6.6/12 8.1/16 6.0/30 3.1/35
1059.1

1.0/30 0.8/17 1.3/14 0.8/12 0.7/3 0.7 0.8/11 2.1/15 0.9/20 out
1064.8

11.6/30 12.0/23 13.3/18 12.7/15 12.7/3 12.8 13.0/8 14.2/12 9.7/20 8.8/30
1071.1 572.58+58

5.7/30 6.0/24 7.4/12 7.1/3 7.3 7.6/9 7.9/11 1.7/23 0.20/30
1076.6

1083.75

48+0

49+0

50+0

51+0
TP 8.81 1090.94 1.86 1082.13

52+0

53+0

54+0

55+0

56+0
TP 10.66 1099.15 2.45 1088.49

57+0

58+0

59+0

60+0

o = Tang &
□ = occ. &

W 1079.3 ✓ E

4.4 9.6 5.6 4.8 4.5 4.6 4.2 4.2 0.10 0.0
30 20 15 12 3 9 14 20 30

out 13.0 5.7 4.8 4.9 5.2 14.4 out Ravine
20 13 3 7 13

down easy 10.9 4.9 4.2 4.7 4.7 4.7 4.7
30 13 3 7 14 30

5.3 Drive 3.4 3.0 3.0 3.0 3.0 1.0 0.0 up
30 12 3 7 11 20 30

10.1 9.8 8.8 8.6 8.6 8.6 6.6 3.3
30 18 14 3 6 10 30

13.9 11.2 10.7 8.7 8.2 8.2 8.4 Drive 7.9
30 28 18 14 3 9 30

7.7 7.6 7.4 7.4 7.8 9.5 8.9
30 11 3 7 13 30

6.0 5.4 5.0 4.9 5.2 6.7 4.5 3.4
30 11 3 10 13 15 30

4.1 3.3 2.6 2.1 2.1 2.4 3.7 1.3 0.9
30 18 15 3 9 12 16 30

8.4 7.9 9.4 8.7 8.2 8.2 8.2 9.6 6.8 5.3
30 23 18 15 3 6 11 16 30

5.6 6.2 5.9 5.5 5.4 5.5 6.4 3.6 2.9
30 18 15 3 8 10 15 30

3.7 5.0 3.2 2.9 2.9 2.8 3.1 0.40 0.0
30 19 13 3 7 10 16 30

4.3 4.8 2.7 2.7 2.7 2.6 3.2 2.4
30 18 14 3 6 12 30

1099.15
 T.P. 6.17 1101.97 3.35 1095.80
 61+0
 BM # 5 4.16 1097.81 90 61+60

62+0

63+0

64+0

65+0

66+0

T.P. -10.43 1110.21 2.21 1099.78

67+0

68+0

69+0

70+0

71+0

T.P. 9.91 1115.09 2.03 1106.18

72+0

1095.9
 $\frac{7.5}{30}$ $\frac{6.9}{20}$ $\frac{6.4}{10}$ $\frac{6.1}{2}$ 6.1 $\frac{6.0}{7}$ $\frac{7.7}{12}$ $\frac{6.6}{19}$ $\frac{5.1}{30}$

1096.9
 $\frac{6.0}{30}$ $\frac{6.5}{12}$ $\frac{5.3}{13}$ $\frac{5.1}{2}$ 5.1 $\frac{5.3}{7}$ $\frac{6.2}{10}$ $\frac{5.3}{15}$ $\frac{4.5}{30}$

1097.0
 $\frac{6.8}{30}$ $\frac{6.6}{12}$ $\frac{5.3}{12}$ $\frac{5.0}{2}$ 5.0 $\frac{5.4}{7}$ $\frac{6.8}{11}$ $\frac{5.8}{17}$ $\frac{4.8}{30}$

Ditch
 1097.1
 $\frac{10.0}{30}$ $\frac{8.9}{13}$ $\frac{4.9}{11}$ $\frac{4.8}{2}$ 9.9 $\frac{5.4}{9}$ $\frac{8.9}{12}$ $\frac{6.8}{15}$ $\frac{6.9}{30}$

1098.3
 $\frac{4.3}{30}$ $\frac{4.0}{10}$ $\frac{3.7}{2}$ 3.7 $\frac{3.8}{8}$ $\frac{5.2}{11}$ $\frac{4.3}{17}$ $\frac{4.2}{30}$

1099.8
 $\frac{5.8}{30}$ $\frac{3.9}{15}$ $\frac{2.4}{13}$ $\frac{2.1}{2}$ 2.2 $\frac{2.1}{7}$ $\frac{3.0}{30}$

1101.0
 $\frac{9.7}{30}$ $\frac{9.4}{20}$ $\frac{10.6}{17}$ $\frac{9.3}{15}$ $\frac{9.2}{2}$ 9.2 $\frac{9.3}{7}$ $\frac{9.7}{30}$

1102.7
 $\frac{7.8}{30}$ $\frac{7.6}{11}$ $\frac{7.5}{2}$ 7.5 $\frac{7.6}{7}$ $\frac{7.4}{30}$

1104.4
 $\frac{5.9}{30}$ $\frac{5.9}{11}$ $\frac{5.8}{2}$ 5.8 $\frac{5.9}{8}$ $\frac{5.0}{30}$

1106.1
 $\frac{4.3}{30}$ $\frac{4.3}{12}$ $\frac{4.0}{1.5}$ 4.1 $\frac{4.0}{9}$ $\frac{3.5}{30}$

1108.2
 $\frac{1.6}{30}$ $\frac{2.2}{13}$ $\frac{2.0}{1.5}$ 2.0 $\frac{2.2}{7}$ $\frac{3.0}{11}$ $\frac{1.8}{30}$

1111.1
 $\frac{6.7}{30}$ $\frac{7.0}{21}$ $\frac{7.9}{16}$ $\frac{7.5}{13}$ $\frac{7.0}{15}$ 7.0 $\frac{7.3}{8}$ $\frac{8.1}{12}$ $\frac{6.5}{15}$ $\frac{6.4}{30}$

1118.09

73+0

74+0

B.M.#6 4.89 1118.70 4.28 1113.81 74+00

75+0

76+0

77+6

T.P. 5.58 1119.82 4.46 1114.24

78+0

79+0

80+0

81+0

82+0

83+0

84+0

T.P. 9.91 1127.74 0.99 1119.83

4.9/30 5.7/17 5.0/13 4.9/15 5.0/15 5.5/8 6.1/11 5.3/12 5.4/30

4.2/30 5.2/14 4.3/10 4.1/15 4.1/15 4.5/8 5.2/16 5.3/24 5.7/30

4.8/30 5.4/16 4.4/12 4.4/2 4.4/2 4.7/7 6.2/12 5.7/30

3.6/25 4.6/16 4.1/11 3.9/2 3.9/2 4.1/6 5.3/12 4.5/14 4.3/30

4.3/30 Drive 4.4/11 4.3/2 4.3/2 4.3/6 4.7/11 5.2/18 out

6.6/30 7.6/15 6.0/11 6.0/2 6.0/2 6.6/7 8.5/13 7.1/30

7.6/30 8.4/19 6.3/11 6.3/2 6.4/2 6.6/7 8.6/14 8.1/30

7.0/30 7.9/14 5.9/13 5.9/2 6.0/2 6.0/8 7.8/13 7.4/30

6.5/30 7.1/20 5.2/13 5.1/2 5.2/2 5.3/7 7.0/13 6.9/30

6.0/30 6.3/19 4.6/13 4.5/2 4.6/2 4.6/5 6.4/13 6.0/30 out

4.7/30 5.2/20 3.4/12 3.4/2 3.4/2 3.4/7 5.1/14 5.1/30

3.9/30 3.7/20 2.4/14 2.0/2 2.1/2 2.3/9 3.7/14 3.9/30

1113.1
1112.0
1114.3
1112.8
1112.4
1113.8
1113.4
1113.8
1112.6
1115.2
1116.4
1117.7

1127.74

8540

8640

8740

8840

T.P

9.60

1135.74

1.60

1126.14

8940

9040

9140

9240

T.P

7.74

1142.41

1.07

1134.67

9340

9440

9540

9640

T.P

4.70

1142.41

4.70

1137.71

BM #7

1.84

1140.42

3.83

1138.58

W

E

$\frac{9.8}{30}$	$\frac{9.7}{17}$	$\frac{8.6}{13}$	$\frac{8.6}{2}$	8.6	$\frac{8.8}{7}$	$\frac{9.9}{14}$		$\frac{10.6}{30}$
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$\frac{6.1}{30}$	$\frac{7.6}{18}$	$\frac{7.1}{12}$	$\frac{6.7}{2}$	6.8	$\frac{7.0}{10}$	$\frac{8.9}{14}$	$\frac{6.7}{21}$	$\frac{7.0}{30}$
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$\frac{3.4}{30}$	$\frac{5.6}{17}$	$\frac{4.7}{13}$	$\frac{4.4}{2}$	4.4	$\frac{4.5}{8}$	$\frac{6.6}{14}$	$\frac{3.9}{21}$	$\frac{4.2}{30}$
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$\frac{0.0}{30}$	$\frac{0.60}{19}$	$\frac{3.1}{16}$	$\frac{2.9}{13}$	$\frac{2.6}{15}$	2.5	$\frac{2.6}{9}$	$\frac{4.8}{12}$	$\frac{1.8}{18}$	$\frac{1.8}{30}$
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$\frac{7.0}{30}$	$\frac{7.3}{21}$	$\frac{9.6}{16}$	$\frac{8.4}{12}$	$\frac{8.2}{7}$	$\frac{8.2}{7}$	$\frac{8.4}{9}$	$\frac{10.2}{13}$	$\frac{8.0}{18}$	$\frac{7.8}{30}$
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$\frac{4.9}{30}$	$\frac{5.1}{23}$	$\frac{6.9}{16}$	$\frac{5.9}{14}$	$\frac{5.6}{5}$	5.6	$\frac{5.8}{10}$	$\frac{7.6}{13}$	$\frac{6.0}{19}$	$\frac{5.8}{30}$
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$\frac{3.3}{30}$	$\frac{3.5}{22}$	$\frac{4.5}{16}$	$\frac{4.0}{12}$		3.5	$\frac{3.8}{10}$	$\frac{3.9}{25}$	$\frac{4.2}{30}$
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$\frac{1.9}{30}$	$\frac{1.9}{22}$	$\frac{3.0}{15}$	$\frac{2.0}{12}$		1.7	$\frac{1.9}{11}$	Lawn	$\frac{2.3}{30}$
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$\frac{6.6}{30}$	$\frac{7.5}{15}$	$\frac{7.0}{12}$			6.7	$\frac{7.3}{11}$	$\frac{8.7}{15}$	$\frac{7.9}{30}$
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$\frac{5.2}{30}$		$\frac{6.3}{15}$	$\frac{5.4}{10}$		5.2	$\frac{5.7}{11}$	$\frac{6.7}{15}$	$\frac{6.0}{30}$
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$\frac{4.8}{30}$		$\frac{6.0}{14}$	$\frac{5.2}{11}$		4.7	$\frac{5.2}{12}$	$\frac{6.1}{15}$	$\frac{5.7}{30}$
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$\frac{4.6}{30}$		$\frac{5.9}{15}$	$\frac{5.0}{11}$		4.5	$\frac{5.0}{12}$	$\frac{6.1}{18}$	$\frac{5.7}{30}$
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1119.1

1120.9

1123.3

1125.2

1127.5

1130.1

1132.2

1134.0

1135.7

1137.2

1137.9

1137.9

1137.9

1140.42

97+0

98+0

99+0

100+0

TP

1.04

1130.62

10.84

1129.58

101+0

102+0

103+0

104+0

2.51

1126.50

6.63

1123.99

105+0

106+0

107+0

108+0

4.18

1123.97

6.71

1119.79

109+0

W

C

$\frac{3.0}{30}$	$\frac{3.2}{17}$	$\frac{3.9}{15}$	$\frac{3.5}{12}$	3.2	$\frac{3.5}{10}$	$\frac{4.5}{15}$	$\frac{4.0}{22}$	out
------------------	------------------	------------------	------------------	-----	------------------	------------------	------------------	-----

$\frac{4.4}{30}$	$\frac{4.8}{17}$	$\frac{5.2}{14}$	$\frac{5.7}{10}$	4.9	$\frac{5.3}{9}$	$\frac{6.0}{14}$	$\frac{5.1}{18}$	$\frac{5.4}{30}$
------------------	------------------	------------------	------------------	-----	-----------------	------------------	------------------	------------------

$\frac{6.5}{30}$	$\frac{6.6}{20}$	$\frac{6.7}{9}$	6.5	$\frac{6.8}{10}$	$\frac{7.8}{15}$	$\frac{6.7}{19}$	out
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$\frac{8.7}{30}$	$\frac{8.6}{22}$	$\frac{8.7}{10}$	8.5	$\frac{8.8}{10}$	$\frac{9.7}{15}$	$\frac{8.6}{20}$	$\frac{8.7}{30}$
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$\frac{1.0}{30}$	down	$\frac{1.3}{9}$	1.04	$\frac{1.4}{9}$	$\frac{1.5}{13}$	$\frac{2.4}{18}$	$\frac{1.1}{17}$	$\frac{1.2}{30}$
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$\frac{3.0}{30}$	$\frac{3.0}{24}$	$\frac{3.3}{11}$	2.9	$\frac{3.4}{8+12}$	$\frac{4.4}{15}$	$\frac{3.4}{17}$	$\frac{3.6}{30}$
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$\frac{4.4}{30}$	$\frac{5.0}{15}$	$\frac{4.6}{10}$	4.5	$\frac{4.8}{9+11}$	$\frac{6.2}{14}$	$\frac{5.4}{19}$	$\frac{5.0}{30}$
------------------	------------------	------------------	-----	--------------------	------------------	------------------	------------------

$\frac{6.0}{30}$	$\frac{6.2}{17}$	$\frac{7.4}{15}$	$\frac{6.3}{13}$	5.8	$\frac{6.1}{9}$	$\frac{6.2}{12}$	$\frac{7.5}{14}$	$\frac{7.8}{19}$	$\frac{7.6}{30}$
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$\frac{3.3}{30}$	$\frac{2.8}{9}$	2.5	$\frac{2.9}{10+13}$	$\frac{4.2}{16}$	$\frac{4.5}{20}$	$\frac{4.8}{30}$
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$\frac{3.6}{30}$	$\frac{3.9}{10}$	3.6	$\frac{3.9}{10}$	$\frac{4.7}{14}$	$\frac{5.3}{15}$	$\frac{4.7}{20}$	$\frac{5.0}{30}$
------------------	------------------	-----	------------------	------------------	------------------	------------------	------------------

$\frac{4.6}{30}$	$\frac{5.0}{17}$	$\frac{7.1}{15}$	$\frac{5.8}{13}$	$\frac{5.0}{10}$	4.9	$\frac{5.2}{11}$	$\frac{6.4}{15}$	$\frac{4.9}{19}$	$\frac{5.3}{30}$
------------------	------------------	------------------	------------------	------------------	-----	------------------	------------------	------------------	------------------

$\frac{6.6}{30}$	$\frac{4.8}{19}$	$\frac{8.3}{16}$	$\frac{6.7}{13}$	6.3	$\frac{6.7}{12}$	$\frac{7.5}{15}$	$\frac{6.7}{18}$	$\frac{7.0}{30}$
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$\frac{7.0}{30}$	$\frac{4.9}{20}$	$\frac{5.9}{16}$	$\frac{4.9}{13}$	4.2	$\frac{4.6}{11}$	4 Savage Rodol	$\frac{5.4}{22}$	$\frac{5.3}{30}$
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1139.2
 135.5
 133.9
 131.9
 129.6
 127.5
 126.1
 124.8
 124.0
 122.9
 121.6
 120.2
 119.8

1124.0
1123.97

110+0
BM # 8 0.78 1122.72 2.03 1121.94

111+0

112+0

113+0
T.P. 0.87 1112.32 11.27 1111.45

114+0

115+0
T.P. 2.44 1102.37 10.39 1101.93

116+0

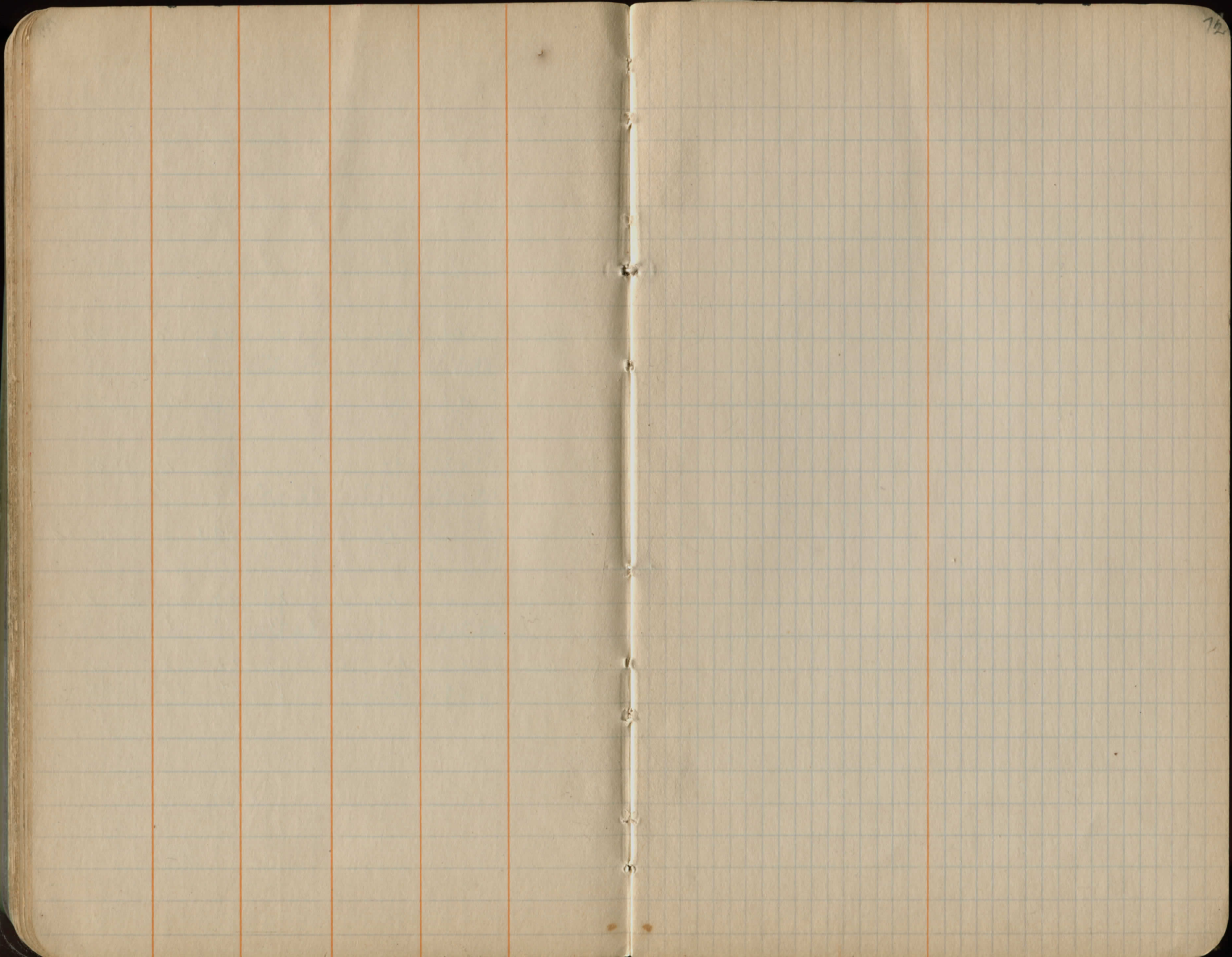
117+0
T.P. 4.77 1097.63 11.51 1092.86

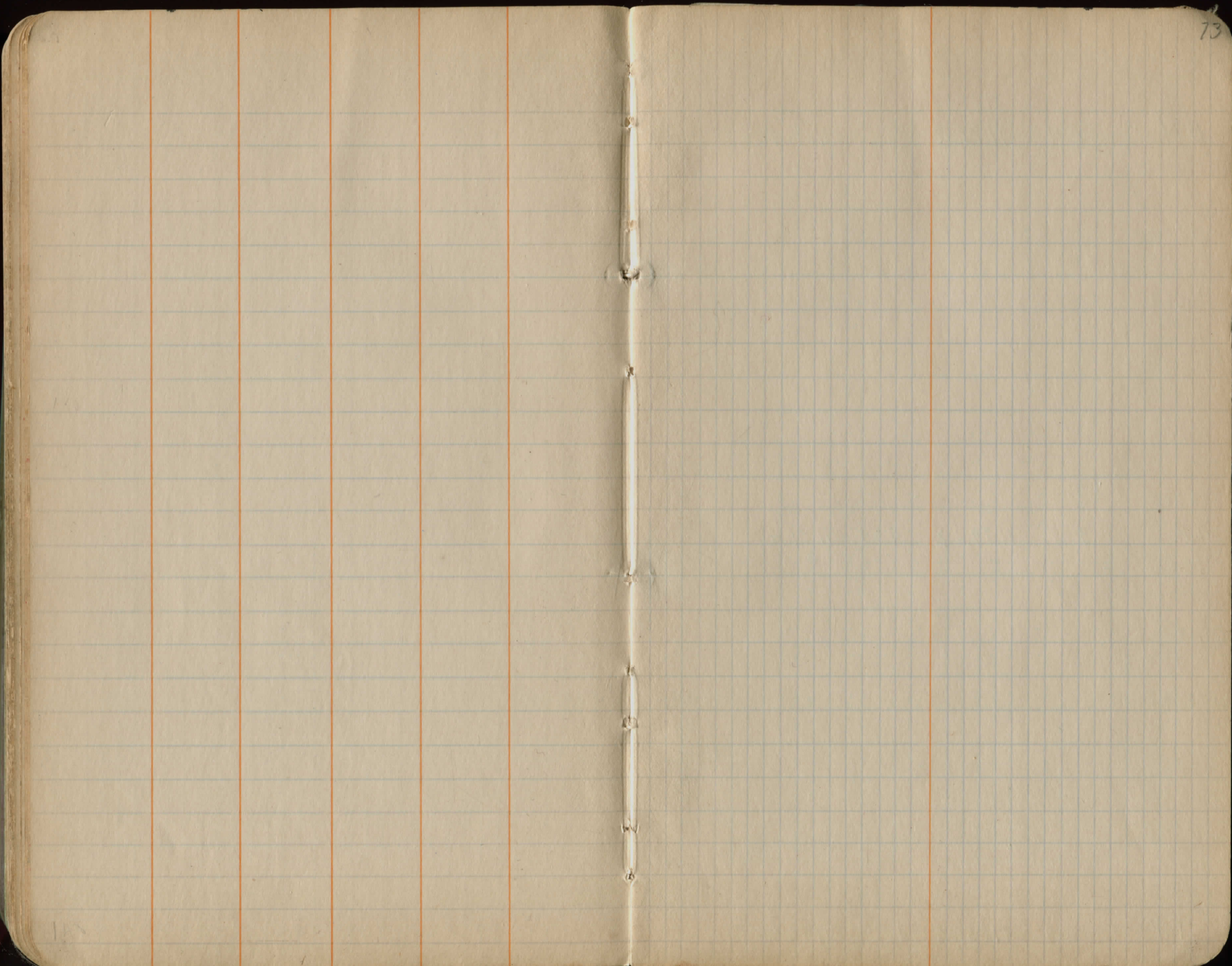
118+0
B.M.T.P. 0.59 1097.04

Vert spk
Ret sta 115715

W					E				
$\frac{3.5}{30}$	$\frac{4.0}{21}$	$\frac{6.6}{14}$	$\frac{5.4}{11}$	5.2	$\frac{5.5}{12}$	$\frac{6.5}{14}$	$\frac{5.1}{18}$	$\frac{5.6}{30}$	
$\frac{3.1}{30}$	$\frac{4.4}{20}$	$\frac{5.5}{12}$	$\frac{5.5}{10}$	5.3	$\frac{5.8}{12}$	$\frac{7.1}{14}$	$\frac{5.7}{18}$	$\frac{5.7}{30}$	
$\frac{5.4}{30}$		$\frac{7.0}{19}$	$\frac{7.5}{10}$	7.5	$\frac{7.9}{10}$	$\frac{9.3}{14}$	$\frac{7.6}{18}$	$\frac{8.2}{30}$	
$\frac{8.3}{30}$		$\frac{10.0}{16}$	$\frac{10.5}{9}$	10.3	$\frac{10.5}{10}$	$\frac{12.3}{14}$	$\frac{10.6}{19}$	$\frac{11.1}{30}$	
$\frac{2.9}{30}$	$\frac{3.2}{17}$	$\frac{4.6}{13}$	$\frac{3.5}{9}$	3.3	$\frac{3.8}{11}$	$\frac{5.1}{15}$	$\frac{4.4}{19}$	$\frac{3.9}{30}$	
$\frac{5.3}{30}$	$\frac{5.0}{20}$	$\frac{7.6}{15}$	$\frac{6.8}{12}$	6.7	$\frac{7.7}{12}$	$\frac{8.2}{15}$	$\frac{7.4}{19}$	$\frac{8.9}{30}$	
$\frac{0.0}{30}$	$\frac{0.0}{22}$	$\frac{2.5}{18}$	$\frac{3.5}{15}$	2.9	$\frac{3.0}{12}$	$\frac{4.3}{14}$	$\frac{3.2}{19}$	$\frac{3.0}{20}$	$\frac{3.4}{30}$
$\frac{5.8}{30}$		Drive	$\frac{7.4}{10}$	7.0	$\frac{7.3}{9}$	$\frac{6.9}{10}$	$\frac{8.7}{14}$	$\frac{7.0}{19}$	$\frac{7.4}{30}$
$\frac{0.0}{30}$	$\frac{0.1}{25}$	$\frac{5.9}{16}$	$\frac{6.5}{14}$	6.6	5.9	$\frac{6.7}{11}$	$\frac{7.9}{14}$	$\frac{6.3}{29}$	$\frac{6.7}{30}$

1115.8
1117.2
1118.2
1119.0
1120.0
1121.0
1122.0
1123.0
1124.0
1125.0
1126.0
1127.0
1128.0
1129.0
1130.0
1131.0
1132.0
1133.0
1134.0
1135.0
1136.0
1137.0
1138.0
1139.0
1140.0
1141.0
1142.0
1143.0
1144.0
1145.0
1146.0
1147.0
1148.0
1149.0
1150.0
1151.0
1152.0
1153.0
1154.0
1155.0
1156.0
1157.0
1158.0
1159.0
1160.0
1161.0
1162.0
1163.0
1164.0
1165.0
1166.0
1167.0
1168.0
1169.0
1170.0
1171.0
1172.0
1173.0
1174.0
1175.0
1176.0
1177.0
1178.0
1179.0
1180.0
1181.0
1182.0
1183.0
1184.0
1185.0
1186.0
1187.0
1188.0
1189.0
1190.0
1191.0
1192.0
1193.0
1194.0
1195.0
1196.0
1197.0
1198.0
1199.0
1200.0





B.M. 6.11 117252 1166.41

188+0

USGS Tab. in Adv. Culv. + 306 & Chap-bair Rd.

$\frac{10.3}{30}$ $\frac{7.7}{21}$ $\frac{6.5}{11}$ $\frac{6.4}{11}$ $\frac{6.6}{14}$ $\frac{7.3}{20}$ $\frac{10.3}{30}$

187+0

$\frac{7.2}{30}$ $\frac{8.3}{15}$ $\frac{6.9}{11}$ $\frac{6.0}{11}$ $\frac{6.2}{11}$ $\frac{7.3}{13}$ $\frac{5.0}{20}$ $\frac{4.6}{30}$

186+0

$\frac{5.7}{25}$ $\frac{6.8}{16}$ $\frac{5.9}{13}$ $\frac{5.4}{11}$ $\frac{5.8}{11}$ $\frac{6.3}{12}$ $\frac{4.7}{20}$ $\frac{9.7}{30}$

185+0

$\frac{4.3}{30}$ $\frac{4.5}{20}$ $\frac{5.9}{16}$ $\frac{5.1}{18}$ $\frac{4.8}{10}$ $\frac{5.1}{13}$ $\frac{6.6}{18}$ $\frac{3.5}{18}$ $\frac{3.3}{30}$

184+0

$\frac{5.0}{30}$ $\frac{4.7}{20}$ $\frac{6.3}{15}$ $\frac{5.1}{11}$ $\frac{4.7}{11}$ $\frac{4.9}{13}$ $\frac{5.9}{18}$ $\frac{3.9}{18}$ $\frac{4.3}{30}$

183+0

$\frac{7.4}{30}$ $\frac{6.3}{19}$ $\frac{6.6}{15}$ $\frac{5.0}{10}$ $\frac{4.8}{10}$ $\frac{5.0}{10}$ $\frac{6.3}{14}$ $\frac{5.7}{19}$ $\frac{5.5}{30}$

T.P. 9.15 1177.62 4.05 1168.47

182+0

$\frac{10.1}{29}$ $\frac{9.9}{16}$ $\frac{10.6}{13}$ $\frac{9.4}{10}$ $\frac{9.2}{11}$ $\frac{9.3}{11}$ $\frac{10.5}{15}$ $\frac{9.0}{22}$ $\frac{7.1}{30}$

181+0

$\frac{7.7}{30}$ $\frac{8.3}{17}$ $\frac{9.5}{14}$ $\frac{8.4}{11}$ $\frac{7.8}{11}$ $\frac{8.0}{11}$ $\frac{9.1}{16}$ $\frac{7.9}{22}$ $\frac{7.9}{30}$

180+0

$\frac{7.1}{30}$ $\frac{7.1}{16}$ $\frac{7.7}{14}$ $\frac{6.7}{11}$ $\frac{6.2}{12}$ $\frac{6.6}{12}$ $\frac{7.6}{15}$ $\frac{5.8}{22}$ $\frac{5.1}{30}$

179+0

$\frac{6.8}{30}$ $\frac{6.2}{18}$ $\frac{6.7}{14}$ $\frac{5.3}{11}$ $\frac{4.6}{11}$ $\frac{4.7}{11}$ $\frac{6.0}{16}$ $\frac{5.0}{20}$ $\frac{4.3}{30}$

178+0

$\frac{3.5}{30}$ $\frac{3.7}{17}$ $\frac{4.6}{14}$ $\frac{3.6}{11}$ $\frac{3.2}{12}$ $\frac{3.2}{12}$ $\frac{4.2}{16}$ $\frac{2.8}{21}$ $\frac{1.9}{30}$

177+0

$\frac{5.0}{30}$ $\frac{5.0}{22}$ $\frac{4.8}{15}$ $\frac{2.8}{10}$ $\frac{2.4}{12}$ $\frac{2.2}{12}$ Drive $\frac{1.5}{30}$

T.P. 9.03 1185.44 1.27 1176.35

1166.1
1166.5
1167.1
1167.7
1167.8
1167.7
1168.2
1169.8
1171.0
1173.0
1174.4
1175.2

1185.94

B.M.#13

8.53 1176.91

176+0

175+0

174+0

173+0

172+0

T.P.

2.52 1183.26 4.50 1180.94

171+0

170+0

169+0

168+0

167+0

166+0

T.P.

0.10 1176.21 7.65 1176.11

165+0

W

E

$\frac{9.0}{30}$ $\frac{9.1}{21}$ $\frac{10.9}{14}$ $\frac{9.9}{11}$ 9.1 $\frac{9.2}{12}$ $\frac{9.4}{18}$ $\frac{9.3}{30}$

$\frac{5.8}{30}$ $\frac{5.8}{20}$ $\frac{8.1}{12}$ $\frac{7.1}{9}$ 6.9 $\frac{7.3}{13}$ $\frac{6.6}{24}$ $\frac{5.8}{30}$

$\frac{5.2}{30}$ $\frac{5.0}{17}$ $\frac{6.3}{12}$ $\frac{5.2}{10}$ 5.2 $\frac{5.2}{12}$ $\frac{4.8}{25}$ $\frac{4.3}{30}$

$\frac{5.0}{30}$ $\frac{4.5}{16}$ $\frac{5.2}{13}$ $\frac{4.7}{10}$ 4.0 $\frac{9.1}{17}$ $\frac{3.9}{22}$ $\frac{3.1}{30}$

$\frac{6.7}{30}$ $\frac{6.2}{20}$ $\frac{6.0}{17}$ $\frac{4.9}{10}$ 4.1 $\frac{4.4}{13}$ $\frac{4.7}{16}$ $\frac{4.5}{22}$ $\frac{4.4}{30}$

$\frac{5.2}{30}$ $\frac{5.4}{23}$ $\frac{4.7}{15}$ $\frac{3.4}{10}$ 2.8 3.0 $\frac{3.3}{18}$ $\frac{3.0}{30}$

$\frac{5.3}{30}$ $\frac{5.3}{21}$ $\frac{5.5}{14}$ $\frac{3.7}{9}$ 3.6 $\frac{3.7}{13}$ $\frac{4.3}{18}$ $\frac{3.6}{30}$

$\frac{5.7}{30}$ $\frac{5.2}{18}$ $\frac{5.5}{13}$ $\frac{4.3}{11}$ 4.0 $\frac{4.1}{10}$ $\frac{4.6}{20}$ $\frac{4.0}{30}$

$\frac{6.6}{30}$ $\frac{5.4}{9}$ 4.6 $\frac{4.9}{13}$ $\frac{4.9}{15}$ $\frac{4.1}{30}$

$\frac{6.9}{30}$ $\frac{6.7}{15}$ $\frac{5.3}{9}$ 5.1 $\frac{5.4}{13}$ $\frac{5.9}{17}$ $\frac{4.1}{30}$

$\frac{7.5}{30}$ $\frac{7.1}{23}$ $\frac{7.3}{14}$ $\frac{6.1}{9}$ 5.9 $\frac{6.0}{10}$ $\frac{6.4}{15}$ $\frac{6.0}{30}$

$\frac{0.0}{30}$ $\frac{0.4}{16}$ $\frac{1.0}{14}$ $\frac{0.4}{12}$ 0.1 $\frac{0.2}{11}$ $\frac{-0.7}{30}$

1176.3
1178.5
1180.2
1181.4
1181.3
1181.0
1180.2
1179.8
1179.2
1178.7
1177.9
1176.1

164+0

1176.21

163+0

162+0

T.P.

0.49

1165.62

11.08

1165.13

161+0

160+0

159+0

158+0

157+0

T.P.

0.05

1153.92

11.75

1153.87

156+0

155+0

B.M. #12

6.57

1147.35

T.P.

2.96

1145.25

11.63

1142.29

154+0

153+0

out $\frac{3.4}{23}$ $\frac{4.4}{19}$ $\frac{3.4}{11}$

3.0

 $\frac{3.4}{12}$ $\frac{4.5}{16}$ $\frac{2.6}{21}$ $\frac{1.5}{30}$ $\frac{6.4}{30}$ $\frac{7.5}{14}$ $\frac{6.6}{12}$

5.9

 $\frac{6.3}{12}$ $\frac{7.5}{15}$ $\frac{7.1}{21}$ $\frac{4.9}{25}$ $\frac{9.5}{30}$ $\frac{9.3}{30}$ $\frac{9.7}{17}$ $\frac{10.5}{19}$ $\frac{9.4}{12}$

8.5

 $\frac{9.1}{11}$ $\frac{10.3}{19}$ $\frac{9.5}{21}$ $\frac{8.6}{27}$ $\frac{9.5}{30}$ $\frac{1.6}{30}$ $\frac{2.0}{19}$ $\frac{2.7}{16}$ $\frac{1.7}{12}$

1.8

 $\frac{1.6}{12}$ $\frac{2.8}{16}$ $\frac{1.3}{21}$ $\frac{1.3}{30}$ $\frac{6.0}{30}$ $\frac{5.0}{17}$ $\frac{5.3}{15}$ $\frac{3.8}{11}$

3.4

 $\frac{3.9}{12}$ $\frac{5.1}{14}$ $\frac{4.4}{19}$ $\frac{4.7}{30}$ $\frac{5.0}{30}$ $\frac{6.6}{17}$ $\frac{6.9}{15}$

5.4

5.1

 $\frac{5.6}{12}$ $\frac{8.2}{20}$ $\frac{9.4}{30}$ $\frac{5.5}{30}$ $\frac{5.8}{24}$ $\frac{7.8}{19}$ $\frac{7.2}{12}$

7.1

 $\frac{7.2}{11}$ $\frac{8.3}{14}$ $\frac{6.4}{12}$ $\frac{7.0}{30}$ $\frac{9.0}{30}$ $\frac{9.1}{16}$ $\frac{11.4}{19}$ $\frac{10.2}{11}$

10.0

 $\frac{10.4}{11}$ $\frac{11.0}{14}$ $\frac{9.3}{23}$ $\frac{9.0}{30}$ $\frac{1.2}{31}$

Drive

 $\frac{1.8}{20}$ $\frac{2.6}{9}$

2.4

 $\frac{2.7}{11}$ $\frac{3.5}{11}$ $\frac{1.4}{20}$ $\frac{1.1}{30}$ out $\frac{4.9}{20}$ $\frac{8.0}{14}$ $\frac{7.3}{10}$

6.9

 $\frac{7.1}{11}$ $\frac{8.5}{14}$ $\frac{6.2}{30}$ $\frac{1.8}{30}$ $\frac{1.9}{17}$ $\frac{4.1}{14}$ $\frac{3.4}{10}$

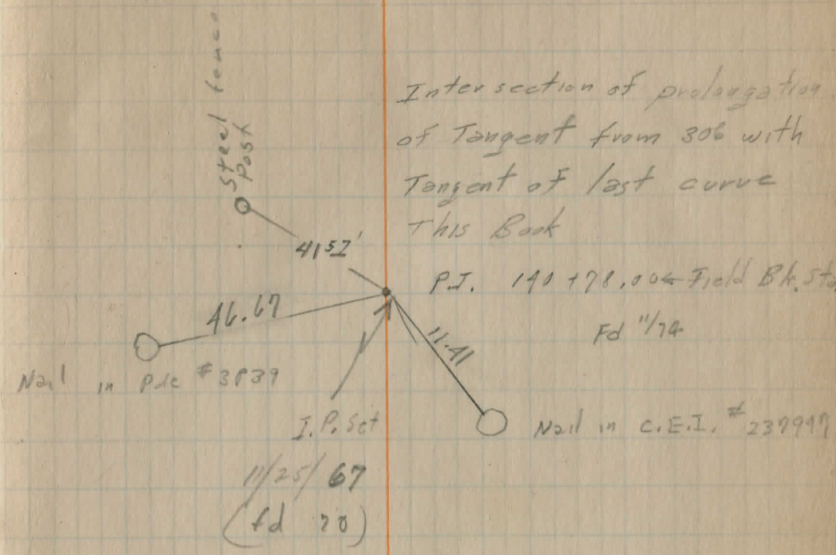
3.0

 $\frac{3.0}{11}$ $\frac{4.1}{15}$ $\frac{2.5}{18}$ $\frac{2.5}{30}$ $\frac{6.9}{30}$ $\frac{8.9}{14}$ $\frac{8.0}{10}$

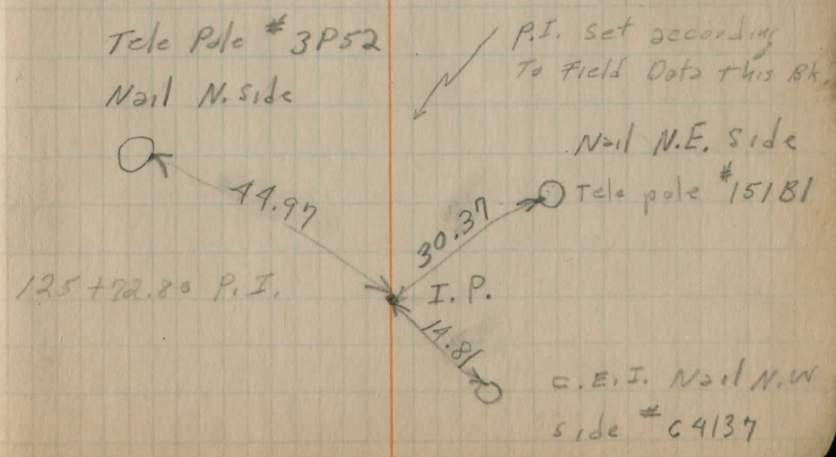
7.6

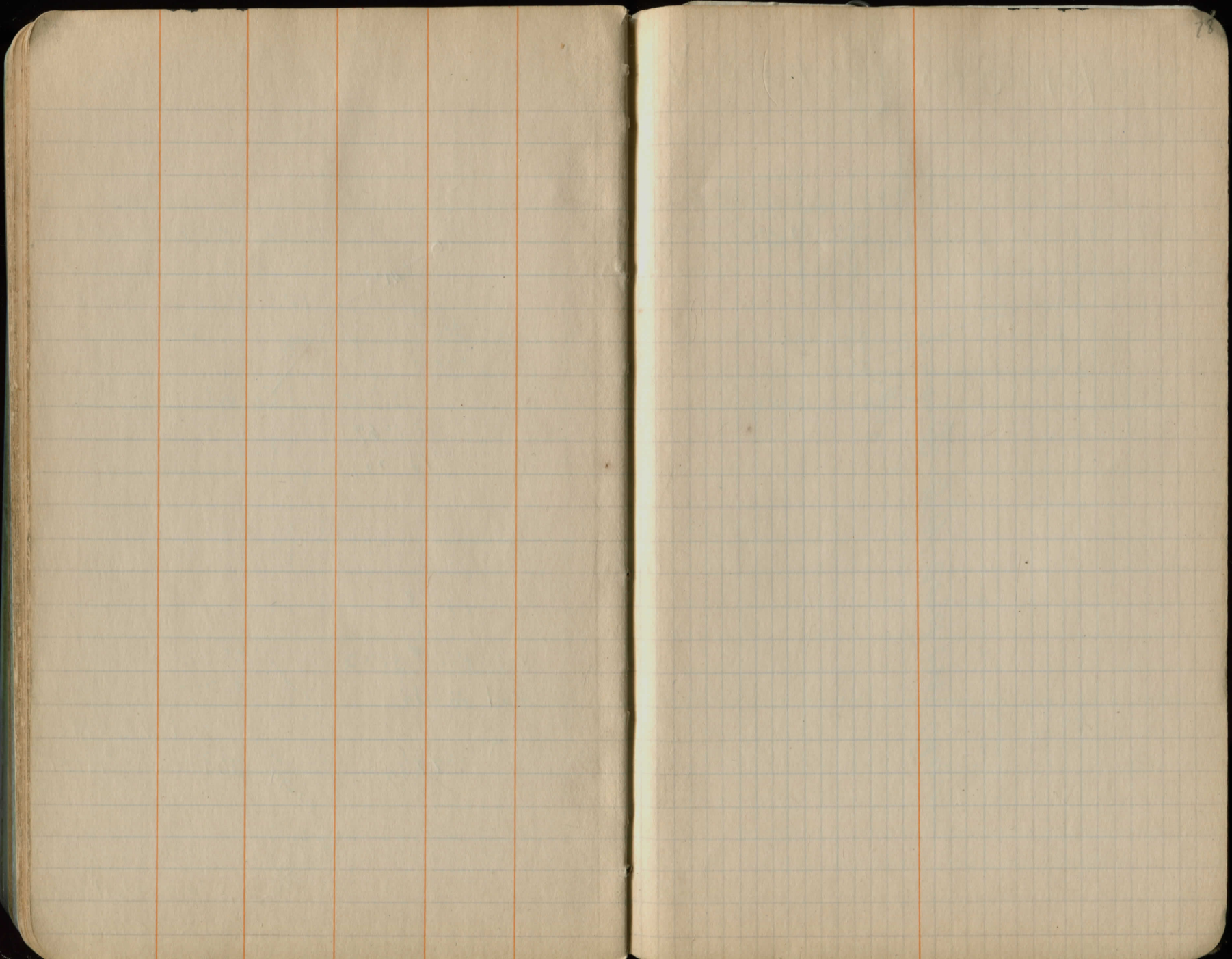
 $\frac{7.7}{11}$ $\frac{9.5}{15}$ $\frac{7.7}{19}$ $\frac{8.4}{30}$ 1173.2
1170.3
1167.4
1164.3
1162.2
1160.5
1158.5
1155.5
1157.5
1147.0
1142.3
1137.7

#7
from pg 14

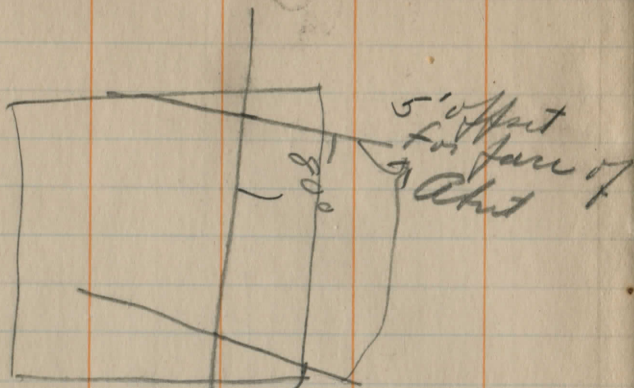


#9 from pg 13





BT Sta 136+23.7



50' cord on ground.

$$\begin{array}{r} 179.69 \\ 153-18.00 \\ \hline 26.42 \end{array}$$

$$\begin{array}{r} 152 \\ 149.80 \\ \hline 25 \end{array}$$

$$\begin{array}{r} 11.62 \\ 1039.75 \\ 85.64 \\ \hline 1125.39 \end{array}$$

$$14116025$$

$$\begin{array}{r} 140+78 \\ 1284.55 \\ \hline 1536255 \end{array}$$

$$\begin{array}{r} 188+48.00 \\ 2020.06 \\ \hline \end{array}$$

$$\begin{array}{r} 168+27.94 \\ 641.60 \\ \hline \end{array}$$

$$\begin{array}{r} 161+86.34 \\ 80060 \\ \hline \end{array}$$

$$153+5574$$

$$01998$$

$$119+06.90$$

$$125+92.80$$

$$\begin{array}{r} 125+92.8 \\ 119+06.9 \end{array}$$

Center Line Control
Chagrin Rd

Bob Kosic
Don Kasie 12/5/67
Paul Romney

Temp. 40°

Field Bk 82

P.T. 136+22.94

Correct 153°-18'-00"

153°-24'-30" I.P. Ed 11/70

C.E.I. # 237947 Nail

Tele. Pole

46.67

3939 Nail

P.T.

Correct
1284.55

1286.32

140+74.54

I.P. Fnd.

Ed 11/70

11.90

23.99

C.E.I. No # Nail S Side

Tele pole Nail

N. Side

Tele Pole # 3922

19.70

153+55.34

I.P. Fnd

90.62

C.E.I. # 69162 Nail

Ed 11/70

67.96

C.E.I. # 69163 Nail

Nail N. Side

Tele Pole

3919

161+85.74

15.01

P.K. Set

35.41

10" Maple Nail S. Side

51.59

Tele Pole North Nail S. Side

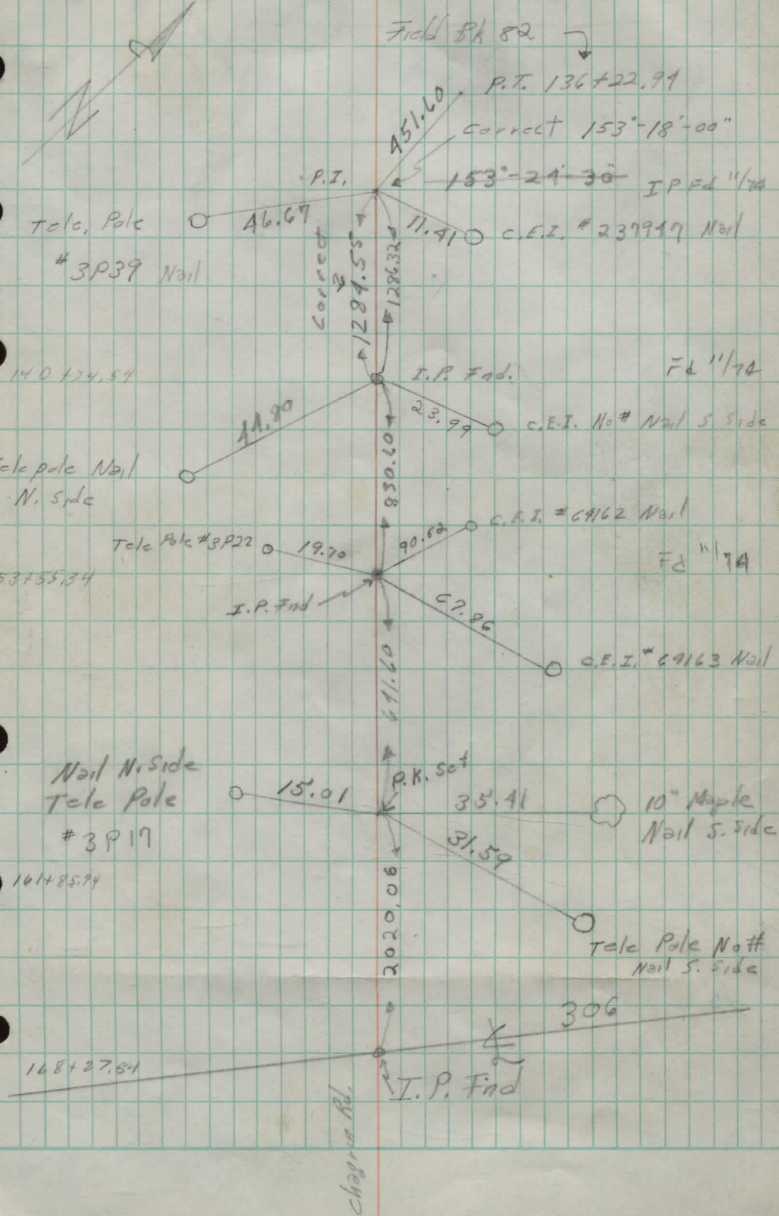
2020.06

306

168+27.54

I.P. Fnd

Chagrin Rd.



T.P. # 3P52
SPK. S. SIDE



43 18

T.P. # 151P1
SPK. E. SIDE

29 90



125 + 72 86

IP

16 52

CEI # 6A137
SPK. N. SIDE



$$\begin{array}{r} 134.934 \\ 125 + 72.50 \\ \hline .9206 \end{array}$$

$$\begin{array}{r} 158 \\ 152 + 30.70 \\ 140.75 \\ \hline 1158.70 \end{array}$$

$$17.22$$

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder
stake for any width roadway, slope 1 1/2 to 1.
If ground is nearly level, the cut or fill at side
stake is located by the double entry method in

IMPROVED TABLES

AND

INFORMATION

TABLE No. 2.

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

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

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

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

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

TABLE No. 9.

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

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

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

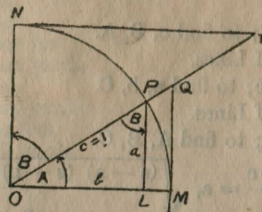


TABLE II

TRIGONOMETRIC FORMULÆ.

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

$$R = OB = c = 1$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

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

Use Law of Lines.

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

Use Law of Lines.

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

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

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

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

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

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

Area of a triangle:

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

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

PRISMOIDAL FORMULA.

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

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

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

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

TABLE IV
USEFUL RELATIONS.

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

$$360^\circ = 21600' = 1296000''$$

$$\text{Radius} = \text{arc of } 57.2957790^\circ$$

$$\text{Arc of } 1^\circ (\text{radius} = 1) = .017453292$$

$$\text{Arc of } 1' (\text{radius} = 1) = .000290888$$

$$\text{Arc of } 1'' (\text{radius} = 1) = .000004848$$

$$\pi = 3.141592654 \quad \sqrt{\frac{1}{4}} = 0.564190$$

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

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

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

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

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

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

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

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

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

Error in chaining of 0.01 feet in 100 feet:

Due to—

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

STADIA REDUCTION FORMULAE.

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

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

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

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

a = angle of elevation for mid Reading

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.9	97.577	+
10'	58.34	.297	5° C.	10'	560.11	27.313	5° C	10'	1070.6	99.155	5° C
20'	66.67	.385	T	20'	568.53	28.137	T	20'	1079.2	100.75	T
30'	75.01	.491	T	30'	576.95	28.974	T	30'	1087.8	102.35	T
40'	83.34	.606	.03	40'	585.36	29.824	.06	40'	1096.4	103.97	.10
50'	91.68	.733	E	50'	593.79	30.686	E	50'	1105.1	105.60	E
2°	100.01	.873	.001	12°	602.21	31.561	.006	22°	1113.7	107.24	.013
10'	108.35	1.024		10'	610.64	32.447		10'	1122.4	108.90	
20'	116.68	1.188		20'	619.07	33.347		20'	1131.0	110.57	
30'	125.02	1.364		30'	627.50	34.259		30'	1139.7	112.25	
40'	133.36	1.552		40'	635.93	35.183		40'	1148.4	113.95	
50'	141.70	1.752		50'	644.37	36.120		50'	1157.0	115.66	
3°	150.04	1.964	10° C.	13°	652.81	37.070	10° C.	23°	1165.7	117.38	10° C.
10'	158.38	2.188	T	10'	661.25	38.031	T	10'	1174.4	119.12	T
20'	166.72	2.425	.06	20'	669.70	39.006	.13	20'	1183.1	120.87	.19
30'	175.06	2.674	E	30'	678.15	39.993	E	30'	1191.8	122.63	E
40'	183.40	2.934	.003	40'	686.60	40.992	.011	40'	1200.5	124.41	.025
50'	191.74	3.207		50'	695.06	42.004		50'	1209.2	126.20	
4°	200.08	3.492		14°	703.51	43.029		24°	1217.9	128.00	
10'	208.43	3.790		10'	711.97	44.066		10'	1226.6	129.82	
20'	216.77	4.099		20'	720.44	45.116		20'	1235.3	131.65	
30'	225.12	4.421		30'	728.90	46.178		30'	1244.0	133.50	
40'	233.47	4.755		40'	737.37	47.253		40'	1252.8	135.35	
50'	241.81	5.100		50'	745.85	48.341		50'	1261.5	137.23	
5°	250.16	5.459	T	15°	754.32	49.441	T	25°	1270.2	139.11	T
10'	258.51	5.829	.09	10'	762.80	50.554	.19	10'	1279.0	141.01	.29
20'	266.86	6.211	E	20'	771.29	51.679	E	20'	1287.7	142.93	E
30'	275.21	6.606	.004	30'	779.77	52.818	.017	30'	1296.5	144.85	.038
40'	283.57	7.013		40'	788.26	53.969		40'	1305.3	146.79	.08
50'	291.92	7.432		50'	796.75	55.132		50'	1314.0	148.75	
6°	300.28	7.863		16°	805.25	56.309		26°	1322.8	150.71	
10'	308.64	8.307		10'	813.75	57.498		10'	1331.6	152.69	
20'	316.99	8.762		20'	822.25	58.699		20'	1340.4	154.69	
30'	325.35	9.230		30'	830.76	59.914		30'	1349.2	156.70	
40'	333.71	9.710	20° C.	40'	839.27	61.141	20° C.	40'	1358.0	158.72	20° C.
50'	342.08	10.202	T	50'	847.78	62.381	T	50'	1366.8	160.76	T
7°	350.44	10.707	.13	17°	856.30	63.634	.26	27°	1375.6	162.81	.39
10'	358.81	11.224	E	10'	864.82	64.900	E	10'	1384.4	164.86	E
20'	367.17	11.753	.006	20'	873.35	66.178	.022	20'	1393.2	166.95	.051
30'	375.54	12.294		30'	881.88	67.470		30'	1402.0	169.04	
40'	383.91	12.847		40'	890.41	68.774		40'	1410.9	171.15	
50'	392.28	13.413		50'	898.95	70.091		50'	1419.7	173.27	
8°	400.66	13.991		18°	907.49	71.421		28°	1428.6	175.41	
10'	409.03	14.582		10'	916.03	72.764		10'	1437.4	177.55	
20'	417.41	15.184	25° C.	20'	924.58	74.119	25° C.	20'	1446.3	179.72	25° C.
30'	425.79	15.799	T	30'	933.13	75.488	T	30'	1455.1	181.89	T
40'	434.17	16.426	.16	40'	941.69	76.869	.32	40'	1464.0	184.08	.49
50'	442.55	17.065	E	50'	950.25	78.264	E	50'	1472.9	186.29	E
9°	450.93	17.717	.007	19°	958.81	79.671	.028	29°	1481.8	188.51	.065
10'	459.32	18.381		10'	967.38	81.092		10'	1490.7	190.74	
20'	467.71	19.058		20'	975.96	82.525		20'	1499.6	192.99	
30'	476.10	19.746		30'	984.53	83.972		30'	1508.5	195.25	
40'	484.49	20.447		40'	993.12	85.431		40'	1517.4	197.53	
50'	492.88	21.161		50'	1001.7	86.904		50'	1526.3	199.82	
10°	501.28	21.887	30° C.	20°	1010.3	88.389	30° C.	30°	1535.3	202.12	30° C.
10'	509.68	22.624	T	10'	1018.9	89.888	T	10'	1544.2	204.44	T
20'	518.08	23.375	.19	20'	1027.5	91.399	.39	20'	1553.1	206.77	.59
30'	526.48	24.138	E	30'	1036.1	92.924	E	30'	1562.1	209.12	E
40'	534.89	24.913	.008	40'	1044.7	94.462	.034	40'	1571.0	211.48	.078
50'	543.29	25.700		50'	1053.3	96.013		50'	1580.0	213.86	

T = R tan ½ I

E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=40°	I	T	E	I=50°	I	T	E	I=60°
31°	1589.0	216.3	+	41°	2142.2	387.4	+	51°	2732.9	618.4	+
10'	1598.0	218.7	5° C.	10'	2151.7	390.7	5° C.	10'	2743.1	622.8	5° C.
20'	1606.9	221.1	T	20'	2161.2	394.1	T	20'	2753.4	627.2	T
30'	1615.9	223.5	.10	30'	2170.8	397.4	.17	30'	2763.7	631.7	.21
40'	1624.9	226.0	.13	40'	2180.3	400.8	.20	40'	2773.9	636.2	.25
50'	1633.9	228.4	E	50'	2189.9	404.2	E	50'	2784.2	640.7	E
32°	1643.0	230.9	.023	42°	2199.4	407.6	.037	52°	2794.5	645.2	.056
10'	1652.0	233.4		10'	2209.0	411.1		10'	2804.9	649.7	
20'	1661.0	235.9		20'	2218.6	414.5		20'	2815.2	654.3	
30'	1670.0	238.4		30'	2228.1	418.0		30'	2825.6	658.8	
40'	1679.1	241.0		40'	2237.7	421.4		40'	2835.9	663.4	
50'	1688.1	243.5		50'	2247.3	425.0		50'	2846.3	668.0	
33°	1697.2	246.1	10° C.	43°	2257.0	428.5	10° C.	53°	2856.7	672.7	10° C.
10'	1706.3	248.7	T	10'	2266.6	432.0	T	10'	2867.1	677.3	T
20'	1715.3	251.3	.26	20'	2276.2	435.6	.34	20'	2877.5	682.0	.42
30'	1724.4	253.9	E	30'	2285.9	439.2	E	30'	2888.0	686.7	E
40'	1733.5	256.5	.046	40'	2295.6	442.8	.075	40'	2898.4	691.4	.112
50'	1742.6	259.1		50'	2305.2	446.4		50'	2908.9	696.1	
34°	1751.7	261.8		44°	2314.9	450.0		54°	2919.4	700.9	
10'	1760.8	264.5		10'	2324.6	453.6		10'	2929.9	705.7	
20'	1770.0	267.2		20'	2334.3	457.3		20'	2940.4	710.5	
30'	1779.1	269.9		30'	2344.1	461.0		30'	2951.0	715.3	
40'	1788.2	272.6		40'	2353.8	464.6		40'	2961.5	720.1	
50'	1797.4	275.3		50'	2363.5	468.4		50'	2972.1	725.0	
35°	1806.6	278.1	T	45°	2373.3	472.1	T	55°	2982.7	729.9	T
10'	1815.7	280.8	.40	10'	2383.1	475.8	.51	10'	2993.3	734.8	.63
20'	1824.9	283.6	E	20'	2392.8	479.6	E	20'	3003.9	739.7	E
30'	1834.1	286.4	.070	30'	2402.6	483.4	.116	30'	3014.5	744.6	.168
40'	1843.3	289.2		40'	2412.4	487.2	.06	40'	3025.2	749.6	.168
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	20° C.	40'	2471.5	510.3	20° C.	40'	3089.4	779.8	20° C.
50'	1907.9	309.3	T	50'	2481.4	514.3	T	50'	3100.2	784.9	T
37°	1917.1	312.2	.53	47°	2491.3	518.2	.68	57°	3110.9	790.1	.84
10'	1926.4	315.2	E	10'	2501.2	522.2	E	10'	3121.7	795.2	E
20'	1935.7	318.1	.093	20'	2511.2	526.1	.151	20'	3132.6	800.4	.225
30'	1945.0	321.1		30'	2521.1	530.1		30'	3143.4	805.6	
40'	1954.3	324.1		40'	2531.1	534.2		40'	3154.2	810.9	
50'	1963.6	327.1		50'	2541.0	538.2		50'	3165.1	816.1	
38°	1972.9	330.2		48°	2551.0	542.2		58°	3176.0	821.4	
10'	1982.2	333.2		10'	2561.0	546.3		10'	3186.9	826.7	
20'	1991.5	336.3	25° C.	20'	2571.0	550.4	25° C.	20'	3197.8	832.0	25° C.
30'	2000.9	339.3	T	30'	2581.0	554.5	T	30'	3208.8	837.3	T
40'	2010.2	342.4	.67	40'	2591.0	558.6	.85	40'	3219.		

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2	+	71°	4086.9	1308.2	+	81°	4893.6	1805.3	+
10'	3386.3	925.9		10'	4099.5	1315.6		10'	4908.0	1814.7	
20'	3397.5	931.6	5° C.	20'	4112.1	1322.9	5° C.	20'	4922.5	1824.1	5° C.
30'	3408.8	937.3		30'	4124.8	1330.3		30'	4937.0	1833.6	
40'	3420.1	943.1	.25	40'	4137.4	1337.7	.30	40'	4951.5	1843.1	.36
50'	3431.4	948.9	E	50'	4150.1	1345.1	E	50'	4966.1	1852.6	E
62°	3442.7	954.8	.080	72°	4162.8	1352.6	.110	82°	4980.7	1862.2	.149
10'	3454.1	960.6		10'	4175.6	1360.1		10'	4995.4	1871.8	
20'	3465.4	966.5		20'	4188.5	1367.6		20'	5010.0	1881.5	
30'	3476.8	972.4		30'	4201.2	1375.2		30'	5024.8	1891.2	
40'	3488.3	978.3		40'	4214.0	1382.8		40'	5039.5	1900.9	
50'	3499.7	984.3		50'	4226.8	1390.4		50'	5054.3	1910.7	
63°	3511.1	990.2	10° C.	73°	4239.7	1398.0	10° C.	83°	5069.2	1920.5	10° C.
10'	3522.6	996.2	T	10'	4252.6	1405.7	T	10'	5084.0	1930.4	T
20'	3534.1	1002.3		20'	4265.6	1413.5		20'	5099.0	1940.3	
30'	3545.6	1008.3	.51	30'	4278.5	1421.2	.61	30'	5113.9	1950.3	.72
40'	3557.2	1014.4	E	40'	4291.5	1429.0	E	40'	5128.9	1960.2	E
50'	3568.7	1020.5	.159	50'	4304.6	1436.8	.220	50'	5143.9	1970.3	.299
64°	3580.3	1026.6		74°	4317.6	1444.6		84°	5159.0	1980.4	
10'	3591.9	1032.8		10'	4330.7	1452.5		10'	5174.1	1990.5	
20'	3603.5	1039.0		20'	4343.8	1460.4		20'	5189.3	2000.6	
30'	3615.1	1045.2		30'	4356.9	1468.4		30'	5204.4	2010.8	
40'	3626.8	1051.4		40'	4370.1	1476.4		40'	5219.7	2021.1	
50'	3638.5	1057.7	15° C.	50'	4383.3	1484.4	15° C.	50'	5234.9	2031.4	15° C.
65°	3650.2	1063.9	T	75°	4396.5	1492.4	T	85°	5250.3	2041.7	T
10'	3661.9	1070.2	.76	10'	4409.8	1500.5	.91	10'	5265.6	2052.1	1.09
20'	3673.7	1076.6	E	20'	4423.1	1508.6	E	20'	5281.0	2062.5	E
30'	3685.4	1082.9		30'	4436.4	1516.7		30'	5296.4	2073.0	
40'	3697.2	1089.3	.240	40'	4449.7	1524.9	.332	40'	5311.9	2083.5	.450
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	20° C.	40'	4530.4	1574.7	20° C.	40'	5405.6	2147.5	20° C.
50'	3780.4	1134.8	T	50'	4544.0	1583.1	T	50'	5421.4	2158.4	T
67°	3792.4	1141.4	1.02	77°	4557.6	1591.6	1.22	87°	5437.2	2169.2	1.45
10'	3804.4	1148.0	E	10'	4571.2	1600.1	E	10'	5453.1	2180.2	E
20'	3816.4	1154.7	.321	20'	4584.8	1608.6	.445	20'	5469.0	2191.1	.603
30'	3828.4	1161.3		30'	4598.5	1617.1		30'	5484.9	2202.2	
40'	3840.5	1168.1		40'	4612.2	1625.7		40'	5500.9	2213.2	
50'	3852.6	1174.8		50'	4626.0	1634.4		50'	5517.0	2224.3	
68°	3864.7	1181.6		78°	4639.8	1643.0		88°	5533.1	2235.5	
10'	3876.8	1188.4		10'	4653.6	1651.7		10'	5549.2	2246.7	
20'	3889.0	1195.2	25° C.	20'	4667.4	1660.5	25° C.	20'	5565.4	2258.0	25° C.
30'	3901.2	1202.0		30'	4681.3	1669.2		30'	5581.6	2269.3	
40'	3913.4	1208.9	T	40'	4695.2	1678.1	1.53	40'	5597.8	2280.6	1.83
50'	3925.6	1215.8	E	50'	4709.2	1686.9	E	50'	5614.2	2292.0	E
69°	3937.9	1222.7	.403	79°	4723.2	1695.8	.558	89°	5630.5	2303.5	.756
10'	3950.2	1229.7		10'	4737.2	1704.7		10'	5646.9	2315.0	
20'	3962.5	1236.7		20'	4751.2	1713.7		20'	5663.4	2326.6	
30'	3974.8	1243.7		30'	4765.3	1722.7		30'	5679.9	2338.2	
40'	3987.2	1250.8		40'	4779.4	1731.7		40'	5696.4	2349.8	
50'	3999.5	1257.9		50'	4793.6	1740.8		50'	5713.0	2361.5	
70°	4011.9	1265.0	30° C.	80°	4807.7	1749.9	30° C.	90°	5729.7	2373.3	30° C.
10'	4024.4	1272.1	T	10'	4822.0	1759.0	T	10'	5746.3	2385.1	T
20'	4036.8	1279.3	1.54	20'	4836.2	1768.2	1.84	20'	5763.1	2397.0	2.20
30'	4049.3	1286.5		30'	4850.5	1777.4		30'	5779.9	2408.9	
40'	4061.8	1293.6	E	40'	4864.8	1786.7	E	40'	5796.7	2420.9	E
50'	4074.4	1300.9	.485	50'	4879.2	1796.0	.671	50'	5813.6	2432.9	.910

T = R tan ½ I

E = R exsec ½ I

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5830.5	2444.9	+	101°	6950.6	3278.1	+	111°	8336.7	4386.1	+
10'	5847.5	2457.1		10'	6971.3	3294.1		10'	8362.7	4407.6	
20'	5864.0	2469.3	5° C.	20'	6992.0	3310.1	5° C.	20'	8388.9	4429.2	5° C.
30'	5881.7	2481.5		30'	7012.7	3326.1		30'	8415.1	4450.9	
40'	5898.8	2493.8	.43	40'	7033.6	3342.3	.51	40'	8441.5	4472.7	.62
50'	5916.0	2506.1	E	50'	7054.5	3358.5	E	50'	8468.0	4494.6	E
82°	5933.2	2518.5	.200	102°	7075.6	3374.9	.268	112°	8494.6	4516.6	.360
10'	5950.5	2531.0		10'	7096.6	3391.2		10'	8521.3	4538.8	
20'	5967.9	2543.5		20'	7117.8	3407.7		20'	8548.1	4561.1	
30'	5985.3	2556.0		30'	7139.0	3424.3		30'	8575.0	4583.4	
40'	6002.7	2568.6		40'	7160.3	3440.9		40'	8602.1	4606.0	
50'	6020.2	2581.3		50'	7181.7	3457.6		50'	8629.3	4628.6	
93°	6037.8	2594.0	10° C.	103°	7203.2	3474.4	10° C.	113°	8656.6	4651.3	10° C.
10'	6055.4	2606.8	T	10'	7224.7	3491.3	T	10'	8684.0	4674.2	T
20'	6073.1	2619.7		20'	7246.3	3508.2		20'	8711.5	4697.2	
30'	6090.8	2632.6	.86	30'	7268.0	3525.2	.103	30'	8739.3	4720.3	.125
40'	6108.6	2645.5	E	40'	7289.8	3542.4	E	40'	8767.0	4743.6	E
50'	6126.4	2658.5	.401	50'	7311.7	3559.6	.536	50'	8794.9	4766.9	.721
94°	6144.3	2671.6		104°	7333.6	3576.8		114°	8822.9	4790.4	
10'	6162.2	2684.7		10'	7355.6	3594.2		10'	8851.0	4814.1	
20'	6180.2	2697.9		20'	7377.8	3611.7		20'	8879.3	4837.8	
30'	6198.3	2711.2		30'	7399.9	3629.2		30'	8907.7	4861.7	
40'	6216.4	2724.5		40'	7422.2	3646.8		40'	8936.3	4885.7	
50'	6234.6	2737.9	15° C.	50'	7444.6	3664.5	15° C.	50'	8965.0	4909.9	15° C.
95°	6252.8	2751.3	T	105°	7467.0	3682.3	T	115°	8993.8	4934.1	T
10'	6271.1	2764.8	1.30	10'	7489.6	3700.2	1.56	10'	9022.7	4958.6	1.93
20'	6289.4	2778.3		20'	7512.2	3718.2	E	20'	9051.7	4983.1	E
30'	6307.9	2792.0		30'	7534.9	3736.2	.806	30'	9080.9	5007.8	.109
40'	6326.3	2805.6	.604	40'	7557.7	3754.4	E	40'	9110.3	5032.6	E
50'	6344.8	2819.4		50'	7580.5	3772.6		50'	9139.8	5057.6	
96°	6363.4	2833.2		106°	7603.5	3791.0		116°	9169.4	5082.7	
10'	6382.1	2847.0		10'	7626.6	3809.4		10'	9199.1	5107.9	
20'	6400.8	2861.0		20'	7649.7	3827.9		20'	9229.0	5133.3	
30'	6419.5	2875.0		30'	7672.9	3846.5		30'	9259.0	5158.8	
40'	6438.2	2889.0	20° C.	40'	7696.3	3865.2	20° C.	40'	9289.2	5184.5	20° C.
50'	6457.3	2903.1	T	50'	7719.7	3884.0	T	50'	9319.5	5210.3	T
97°	6476.2	2917.3	1.74	107°	7743.2	3902.9	2.08	117°	9349.9	5236.2	2.52
10'	6495.2	2931.6	E	10'	7766.8	3921.9	E	10'	9380.5	5262.3	E
20'	6514.3	2945.9	.809	20'	7790.5	3940.9	1.08	20'	9411.3	5288.6	1.46
30'	6533.4	2960.3		30'	7814.3	3960.1		30'	9442.2	5315.0	
40'	6552.6	2974.7		40'	7838.1	3979.4		40'	9473.2	5341.5	
50'	6571.9	2989.2		50'	7862.1	3998.7		50'	9504.4	5368.2	
98°	6591.2	3003.8		108°	7886.2	4018.2		118°	9535.7	5395.1	
10'	6610.6	3018.4		10'	7910.4	4037.8		10'	9567.2	5422.1	
20'	6630.1	3033.1	25° C.	20'	7934.6	4057.4	25° C.	20'	9598.9	5449.2	25° C.
30'	6649.6	3047.9		30'	7959.0	4077.2		30'	9630.7	5476.5	
40'	6669.2	3062.8	T	40'	7983.5	4097.2	2.61	40'	9662.6	5504.0	3.16
50'	6688.8	3077.7	E	50'	8008.0	4117.0	E	50'	9694.7	5531.7	E
99°	6708.6	3092.7	1.02	109°	8032.7	4137.1	1.36	119°	9727.0	5559.4	1.83
10'	6728.4	3107.7		10'	805						

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

C	R	30	28	26	24	22	20	C	R	30	28	26	24	22	20
o /	Feet	Inch	Inch	Inch	Inch	Inch	Inch	o	Feet	Inch	Inch	Inch	Inch	Inch	Inch
0-20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0-40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
1-0	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
1-20	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
1-40	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.33	2.47	2.15	1.81	1.54	1.26
2-0	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
2-20	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.30	2.87	2.48	2.10	1.78	1.46
2-40	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
3-0	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
3-20	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
3-40	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
4-0	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
4-20	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
4-40	1228	1.10	.96	.83	.70	.59	.48	22	262.0	5.16	4.44	3.84	3.30	2.80	2.29
5	1146	1.18	1.03	.89	.75	.63	.52	24	240.5	5.64	4.92	4.20	3.59	3.04	2.50
6	955.3	1.41	1.23	1.06	.90	.76	.62	26	222.3	6.07	5.29	4.58	3.88	3.29	2.70
7	819.0	1.65	1.44	1.24	1.05	.89	.73								

TABLE XI.
SHORT RADIUS CURVES

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

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

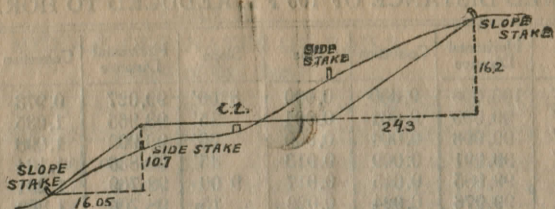
TABLE XII.
INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

Slope	Horizontal Distance	Correction	Rise	Slope	Horizontal Distance	Correction	Rise
0°00'	100.000	0.000	0.000	8°00'	99.027	0.973	0.139
15'	99.999	0.001	0.004	15'	98.965	1.035	0.143
30'	99.996	0.004	0.009	30'	98.902	1.098	0.148
45'	99.991	0.009	0.013	45'	98.836	1.164	0.152
1 00	99.985	0.015	0.017	9 00	98.769	1.231	0.156
15	99.976	0.024	0.023	15	98.700	1.300	0.161
30	99.966	0.034	0.026	30	98.629	1.371	0.165
45	99.953	0.047	0.031	45	98.556	1.444	0.169
2 00	99.939	0.061	0.035	10 00	98.481	1.519	0.174
15	99.923	0.077	0.039	15	98.404	1.596	0.178
30	99.905	0.095	0.044	30	98.325	1.675	0.182
45	99.885	0.115	0.048	45	98.245	1.755	0.187
3 00	99.863	0.137	0.052	11 00	98.163	1.837	0.191
15	99.839	0.161	0.057	15	98.079	1.921	0.195
30	99.813	0.187	0.061	30	97.992	2.008	0.199
45	99.786	0.214	0.065	45	97.905	2.095	0.204
4 00	99.756	0.244	0.070	12 00	97.815	2.185	0.208
15	99.725	0.275	0.074	15	97.723	2.277	0.212
30	99.692	0.308	0.078	30	97.630	2.370	0.216
45	99.657	0.343	0.083	45	97.534	2.466	0.221
5 00	99.619	0.381	0.087	13 00	97.437	2.563	0.225
15	99.580	0.420	0.092	15	97.338	2.662	0.229
30	99.540	0.460	0.096	30	97.237	2.763	0.233
45	99.497	0.503	0.100	45	97.134	2.866	0.238
6 00	99.453	0.548	0.105	14 00	97.030	2.970	0.242
15	99.406	0.594	0.109	15	96.923	3.077	0.246
30	99.357	0.643	0.113	30	96.815	3.185	0.250
45	99.307	0.693	0.118	45	96.705	3.295	0.255
7 00	99.255	0.745	0.122	15 00	96.593	3.407	0.259
15	99.200	0.800	0.126	15	96.479	3.521	0.263
30	99.144	0.856	0.131	30	96.363	3.637	0.267
45	99.087	0.913	0.135	45	96.246	3.754	0.271

For each foot take one one-hundredth of each reading.

TABLE XIII.
MINUTES IN DECIMALS OF A DEGREE.

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



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/4 TO 1. ROADWAY OF ANY WIDTH.

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

PLEASE RETURN TO
 GAUGA COUNTY ENGINEER

COURT HOUSE
 CHARDON, O.
 PHONE 250 X

TABLE OF INCHES REDUCED TO DECIMALS OF A FOOT.

Inches	Decimals	Inches	Decimals	Inches	Decimals	Inches	Decimals	Inches	Decimals
1	.0052	21	.2135	41	.4177	61	.6260	81	.8344
2	.0104	22	.2188	42	.4229	62	.6313	82	.8396
3	.0156	23	.2240	43	.4281	63	.6365	83	.8448
4	.0208	24	.2292	44	.4333	64	.6417	84	.8500
5	.0260	25	.2344	45	.4385	65	.6469	85	.8552
6	.0313	26	.2396	46	.4438	66	.6521	86	.8604
7	.0365	27	.2448	47	.4490	67	.6573	87	.8656
8	.0417	28	.2500	48	.4542	68	.6625	88	.8708
9	.0470	29	.2552	49	.4594	69	.6677	89	.8760
10	.0522	30	.2604	50	.4646	70	.6729	90	.8813
11	.0574	31	.2656	51	.4698	71	.6781	91	.8865
12	.0626	32	.2708	52	.4750	72	.6833	92	.8917
13	.0678	33	.2760	53	.4802	73	.6885	93	.8969
14	.0730	34	.2813	54	.4854	74	.6938	94	.9021
15	.0782	35	.2865	55	.4906	75	.6990	95	.9073
16	.0835	36	.2917	56	.4958	76	.7042	96	.9125
17	.0887	37	.2969	57	.5010	77	.7094	97	.9177
18	.0938	38	.3021	58	.5062	78	.7146	98	.9229
19	.0990	39	.3073	59	.5114	79	.7198	99	.9281
20	.1042	40	.3125	60	.5166	80	.7250	100	.9333

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

77.07 866.20

76.9

56-14

481.0
 7.81

473.19

12 - 24
 06
 15

1873.60

1472.1

398.53

+ + +

188.48

197.20

797.28

188.48

113.30

75.18

142

9.500

82

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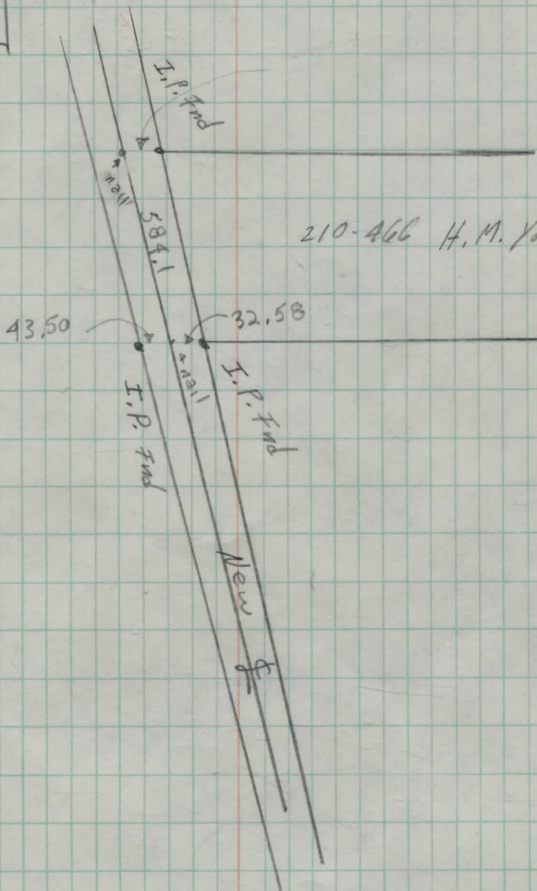
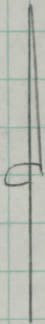
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859-50

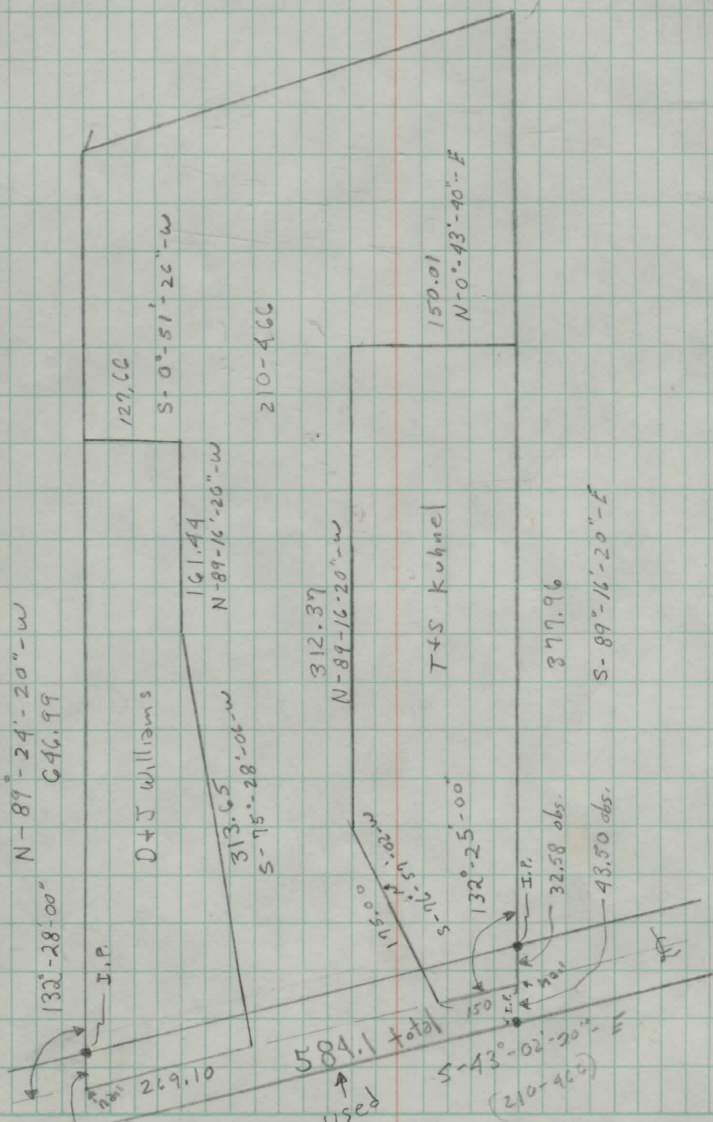
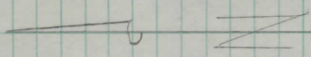
179-61

NOTES FOR ~~THE~~ LOCATIONS ON
CHAGRIN RD C.H. #9
THRU BIG VALLEY



210-466 H. M. Young

New f



N-89-24-20"-W
646.99

D+J Williams

313.65
S-75-28-06"-W

129.66
S-0-51-26"-W

161.44
N-89-16-20"-W

210-466

312.37
N-89-16-20"-W

T+S Kubnel

377.96

S-89-16-20"-E

132-28-00"
I.P.

195.00
S-75-25-00"

I.P.

32.58 obs.

43.50 obs.

584.1 total
Rec + Used

S-43-02-20"-E
(210-466)

