

173

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	13.36 6 in.	101	16.50 0		
2	33.0	22	3.63 0	42	6.93 0	62	10.23 0	82	13.53 0	102	16.66 0		
3	49.6	23	3.79 6	43	3.79 6	63	10.39 6	83	13.69 6	103	16.82 0		
4	66.0	24	3.96 0	44	7.26 0	64	10.56 0	84	13.86 0	104	16.98 0		
5	82.6	25	4.12 6	45	7.42 6	65	10.72 6	85	14.02 6	105	17.14 0		
6	99.0	26	4.29 0	46	7.59 0	66	10.89 0	86	14.19 0	106	17.30 0		
7	1.15 6	27	4.45 6	47	7.75 6	67	11.05 6	87	14.35 6	107	17.46 0		
8	1.32 0	28	4.62 0	48	7.92 0	68	11.22 0	88	14.52 0	108	17.62 0		
9	1.48 6	29	4.78 6	49	8.08 6	69	11.38 6	89	14.68 6	109	17.78 0		
10	1.65 0	30	4.95 0	50	8.25 0	70	11.55 0	90	14.85 0	110	17.94 0		
11	1.81 6	31	5.11 6	51	8.41 6	71	11.71 6	91	15.01 6	111	18.10 0		
12	1.98 0	32	5.28 0	52	8.58 0	72	11.88 0	92	15.18 0	112	18.26 0		
13	2.14 6	33	5.44 6	53	8.74 6	73	12.04 6	93	15.34 6	113	18.42 0		
14	2.31 0	34	5.61 0	54	8.91 0	74	12.21 0	94	15.51 0	114	18.58 0		
15	2.47 6	35	5.77 6	55	9.07 6	75	12.37 6	95	15.67 6	115	18.74 0		
16	2.64 0	36	5.94 0	56	9.24 0	76	12.54 0	96	15.84 0	116	18.90 0		
17	2.80 6	37	6.10 6	57	9.40 6	77	12.70 6	97	16.00 6	117	19.06 0		
18	2.97 0	38	6.27 0	58	9.57 0	78	12.87 0	98	16.17 0	118	19.22 0		
19	3.13 6	39	6.43 6	59	9.73 6	79	13.03 6	99	16.33 6	119	19.38 0		
20	3.30 0	40	6.60 0	60	9.90 0	80	13.20 0	100	16.50 0	120	19.54 0		

COURT HOUSE
CHARDON, O.
PHONE 250-X

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

Field Book
173

RUSSELL CTR. TO CHAGRIN FALLS
DIAGONAL ROAD IMPROVEMENT
Russell Twp.
1923

Russell
Diagonal Road
County Hwy No 20
S.W. Russell Twp.

± Alignment pg 4 to 15
Topo pg 17 to 25
Bench marks pg 30
X see. pg 33 to —

Topo FAIRMOUNT RD 1/16-C&D
1950 pgs 59 to 63

Over ↓

Don Husted Farm
 Survey Pg 64 ✓
 73

CHAGRIN RIVER
 #16 & #306 66-72 ✓

1952 References
 Russell Rd CH #20 75-78 ✓

C.H. #16 1952 RELOCATION EAST OF
 Northwood Rd 79- ✓

HUSTED MEM. FOREST Elevations
 Nov '54 93-95 ✓

Fairmount Rd Levels Includ. E & W Willard Dvs.
 Caves East to E. Willard Dr. July '56
 Pg 25-29 ✓
 Pg 96

Flood water elev. Fairmount Rd. &
 Chagrin River #16 Pg. 92 ✓

← References = pg 73

$$\begin{array}{r} \text{Sin } 43^{\circ} 4' \\ 43.63 \\ .685 \\ \hline 21815 \\ 34904 \\ 26178 \\ \hline 29.98655 \end{array}$$

Fieder
Hanna
Grad
Thompson

Sta Angle Bearing

+50
11 4° 23 1/2
+50 2° 23 1/2
10 0° 23 1/2

+90 23 PC
9

8

7

+50° Tang.
6

5

NOTE:

4 See pgs. 75, 76 & 77
for 1952 references

3

2

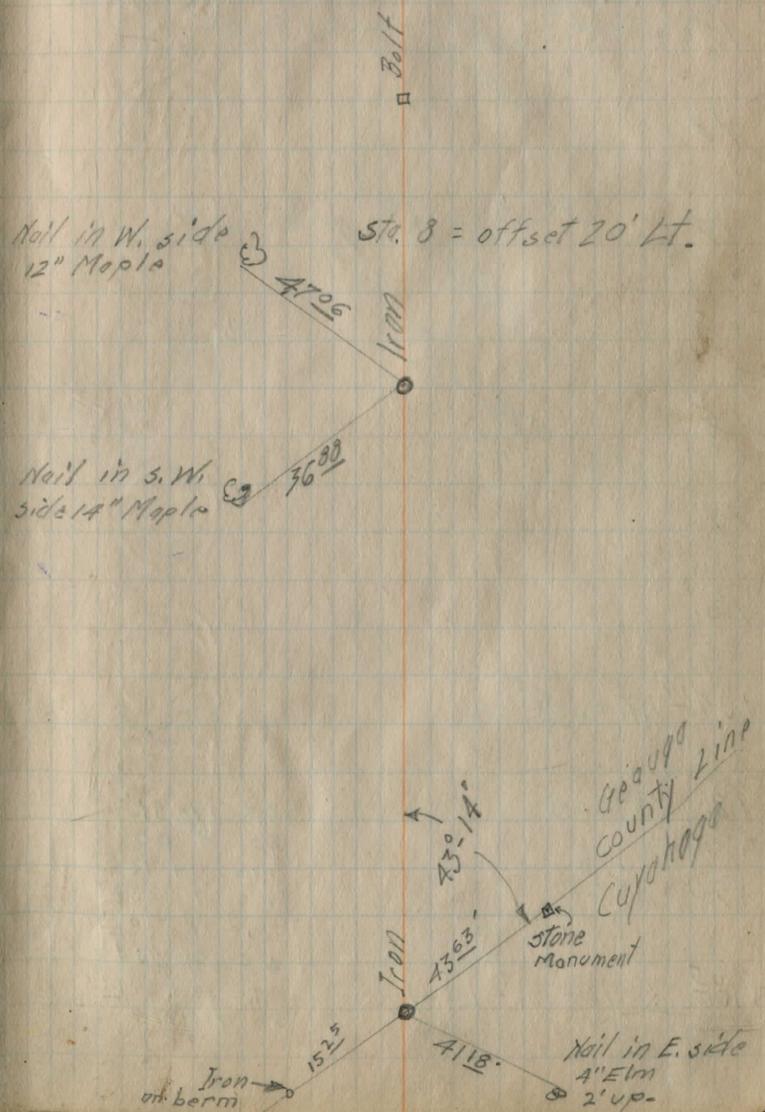
1

0

11-15-23
Fine.

5

Note: Offset stakes 20' Rt. of \oint
unless otherwise noted.



Sta Angle Bearing

20 $0^{\circ}2\frac{1}{2}'$
 +914³PC
 17

18

17

16

15

14

13
 65³

+341⁹PT. $9^{\circ}45\frac{1}{2}'$

12 $8^{\circ}23\frac{1}{2}'$

+50 $6^{\circ}23\frac{1}{2}'$

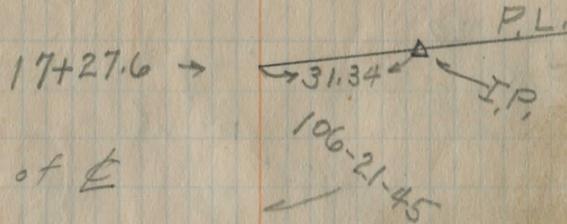
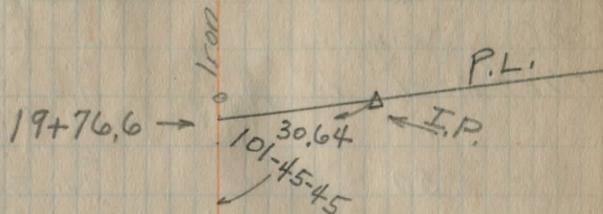
+13⁵ Δ $19^{\circ}31'$ Lt. ✓

1952 Ref
 See pg 75-78

$\Delta = 19-31'$
 $D = 8^{\circ}00'$
 $PI = 11 + 13 \frac{50}{100}$
 $T = 1 \quad 23 \frac{27}{100}$ ✓
 $PC = 9 \quad 9^{\circ}23'$
 $L = 2 \quad 43 \frac{20}{100}$
 $PT = 12 + 34 \frac{19}{100}$
 $R = 716.779$

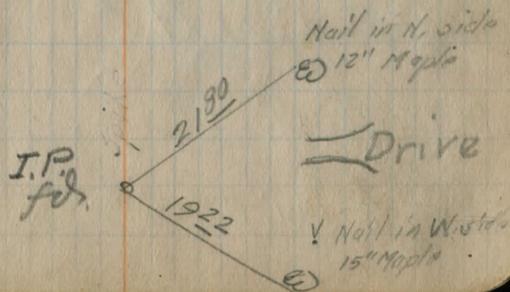
E

7



20' Lt of E

PT. →



Sta Angle Bearing

30 1°20'

+42⁵ P.I. (4-14-20 FRZ)
 Δ 4°-12' RT ✓
 RT ✓

29 0°50'

28 0°20'

+32⁴ PC

27

26

25

+14²⁵ PT 2°07'

24 2°02½'

23 1°32½'

+03² P.I. (4-13 FRZ)
 Δ 4°-14' Lt. ✓

22 1°02½'

21 0°32½'

Δ = 4°-12' RT.
 D = 10-00'
 P.I. = 27+42.5
 T = 2 10.1
 P.C. = 27+32.4
 L = 4 20.0
 P.T. = 31+52.4
 E = 38'
 R = 5729.578

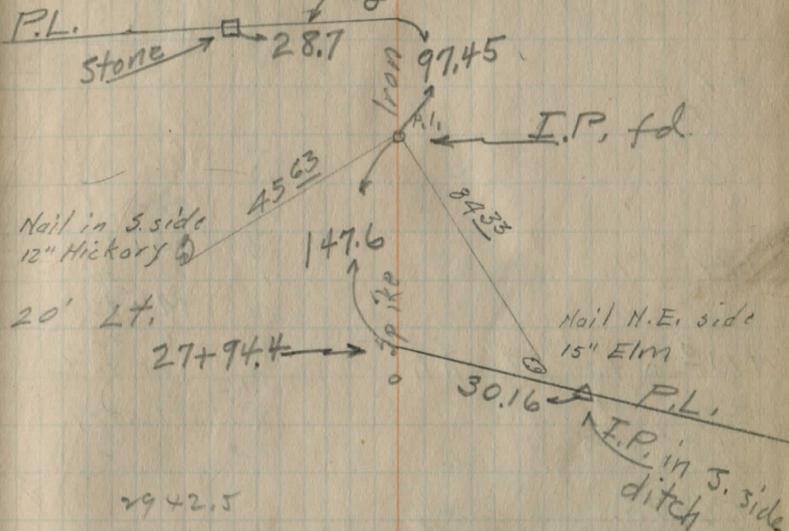
1952 Ref
 see pg 575-78

Δ = 4°-14' Lt.
 D = 10-00'
 P.I. = 22+0320
 T = 2 11.27
 P.C. = 19+9143
 L = 4 20.33
 P.T. = 24+1476
 E = 39'

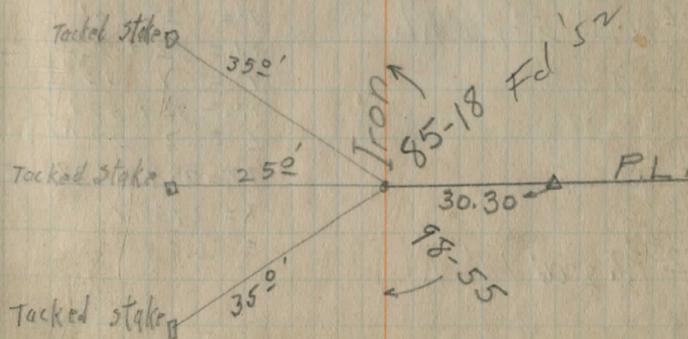
11-14-23

Hanna
 Grad
 Thompson
 71-38

9



2942.5
 2414.76
 527.74
 211.77
 739.51



Sta. Angle Bearing

37

36

35

+944 P.T. $6^{\circ}43\frac{1}{2}'$

+10⁸ Δ $13^{\circ}-27'$ Rt.

+50 $4^{\circ}57'$

35 $2^{\circ}57'$

+50 $0^{\circ}57'$

+26²⁸ P.C.

34

+862⁹ P.T. $2^{\circ}39'$

+50 $2^{\circ}14'$

33 $1^{\circ}39'$

+72⁸ P.L. $\Delta = 5^{\circ}-18'$ Rt.

+50 $1^{\circ}04'$

32 $0^{\circ}29'$

+59¹⁵ P.C.

47²

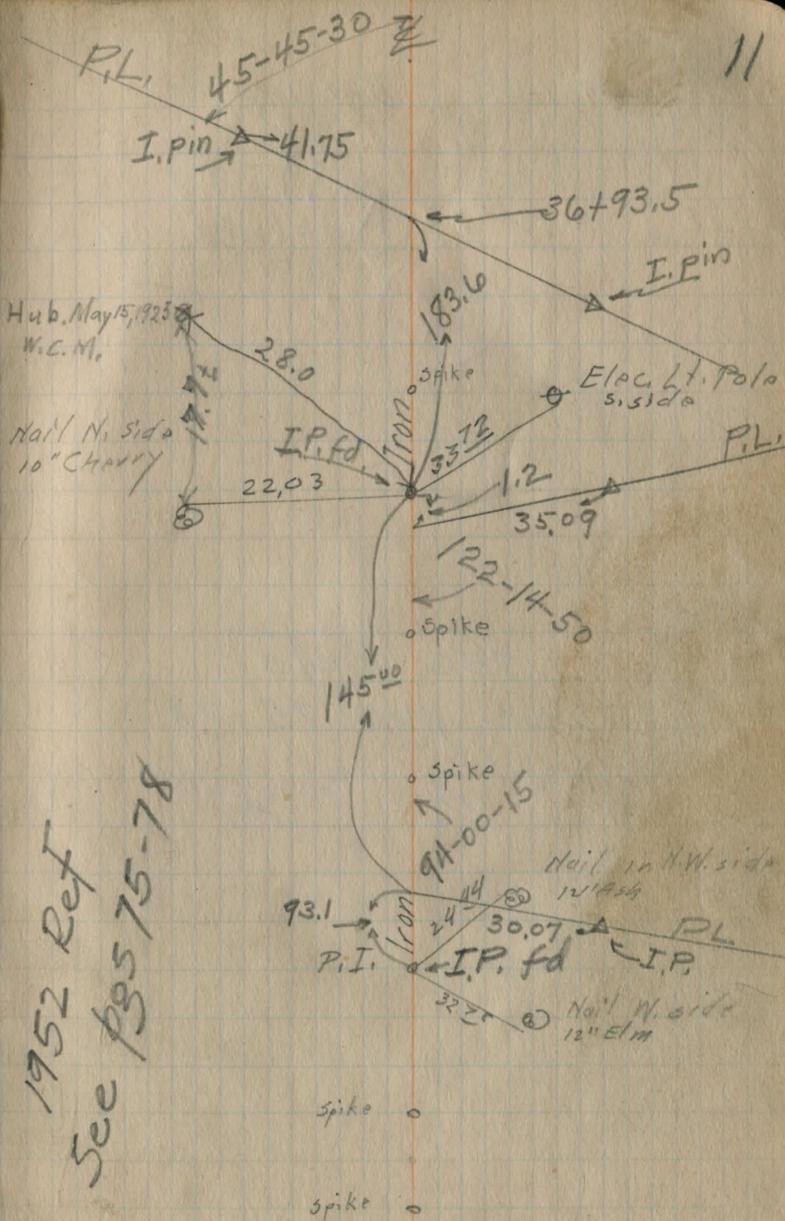
+52^A P.T. $2^{\circ}06'$

31 $1^{\circ}50'$

$\Delta = 13^{\circ}-27'$
 $D = 8^{\circ}-00'$
 P.I. = $35 + 108$
 $T = 845$
 P.C. = $34 + 26^{\frac{28}{7}}$
 $L = 168\frac{1}{2}$
 P.T. = $35 + 9440$
 $R = 716.779$
 $E =$

845
56

$\Delta = 5^{\circ}-18'$ Rt.
 $D = 2^{\circ}-20'$
 P.I. = $32 + 72^{\frac{80}{20}}$
 $T = 113^{\frac{65}{20}}$
 P.C. = $31 + 59\frac{15}{20}$
 $L = 227\frac{14}{20}$
 P.T. = $33 + 8629$
 $R = 2455.7$
 $E = 1.65$



1952 Ref
See pgs 75-78

Sta Angle Bearing
 49
 (955)
 $+54^{\circ} \Delta 0^{\circ} 26' Lt$ (R?)
 Sple thru tin. Fd
 5-52

USE
 RT
 1995

48

47

46

45

1952 Refs
 See pgs 75-78

44

43

42

41

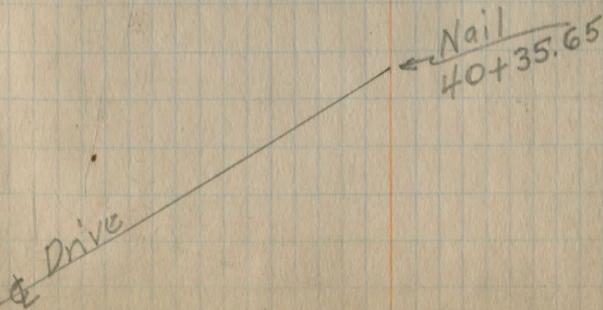
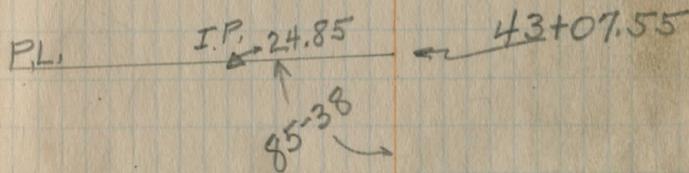
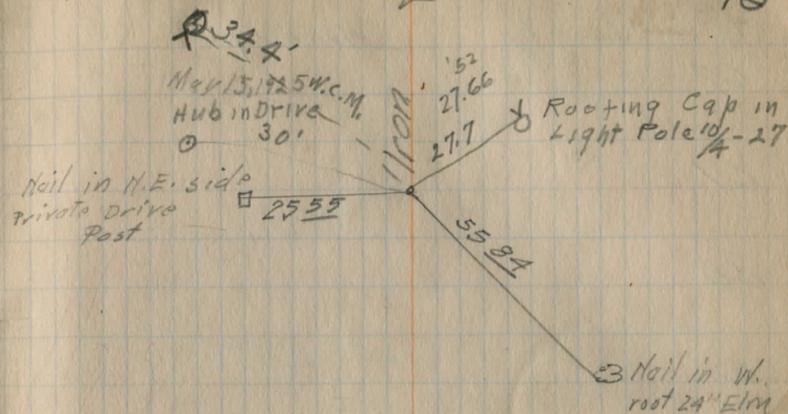
40

39

38

Nail, S. side 3" Maple

13



sta Angle Bearing

62

61

60

59

58

57

56

55

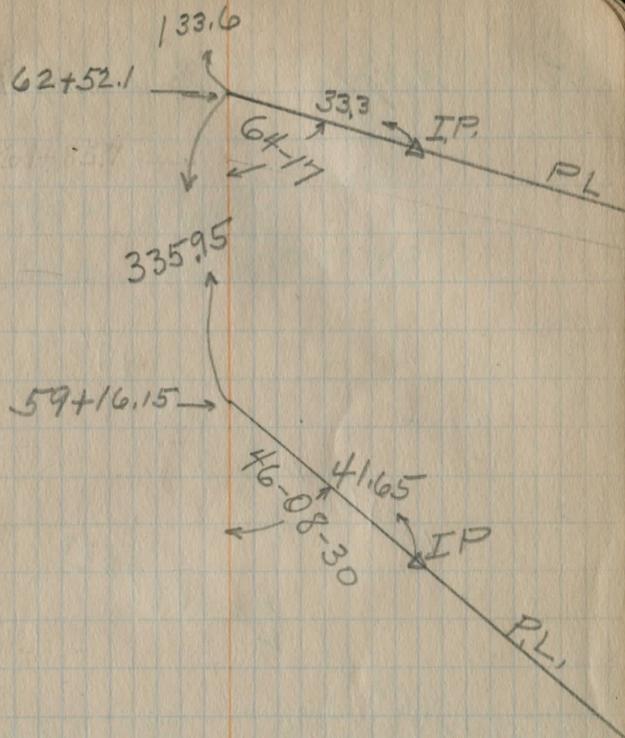
54

53

52

51

50



Sta. Angle Bearing

65+67 end job 1952

Total length of $\Delta = 66+7888$

+805 22°-32' Rt.

$\Delta = 22^{\circ}32'$
 $D = 10^{\circ}00'$
 $PI = 66+805$
 $T = 11428$
 $PS = 65+66.22$
 $\frac{L}{2} = 11266$
 $66+7888$

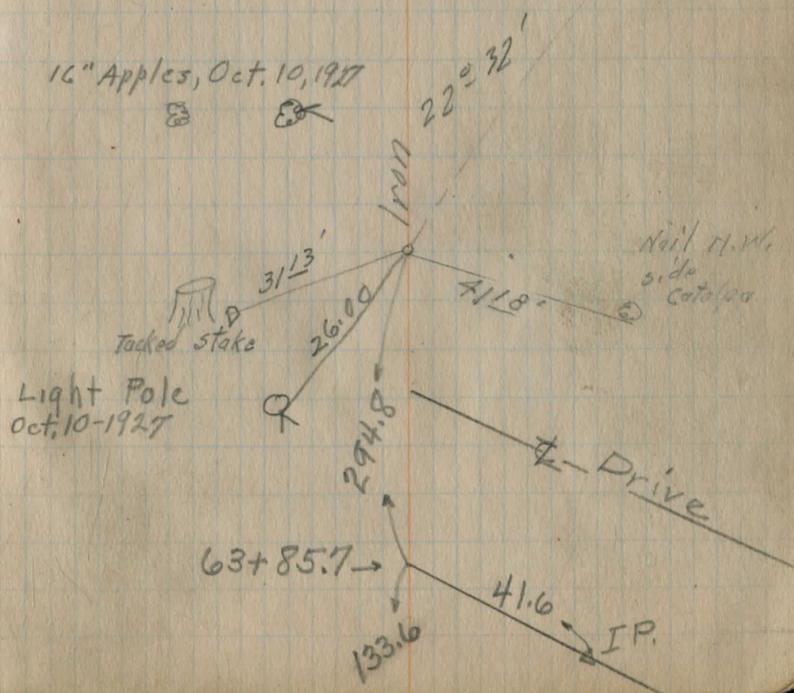
66

65

64

63

1952 Ref
 See pgs 75-78



Topography

27
 17
 PL 4 + 67
 27 27 27
 +90 27
 +77 22
 +62 21
 +47 21
 +30 24
 27 27
 +25
 06
 +80 17
 27 27
 +65
 +18 20
 25 25
 +05
 05
 +85
 +64
 04
 +95 20
 26 26
 +78
 +25 20
 25 25
 +15
 03
 +85 18
 +70 21
 25 25
 +50
 02 20
 25 25
 +85
 +60 21
 01
 +24 22
 26
 26
 46 ft
 46 ft
 county
 line

J. C. Barriball

J. C. Barriball

+80 25 ○
 ⊙ 24 +65
 +50 80' → [H]
 +30 23' ○
 †
 E 20' +18
 +02 23' ⊙
 010
 +57 26' ⊙
 ⊙ 28 +50
 +35 27' ⊙ PL.
 +32
 +15 28 ○
 09

† 13' +98
 +85 29' ⊙
 ⊙ 27' +80
 +70 16' †
 +70 29' ⊙
 +55 30 ⊙
 +40 31 ⊙
 08 () 200 [H]
 +90 32 ○
 † E 13' +72 31 ○ 266
 +60 29 ○ 266
 +40 25 ○
 +22 28 ○
 +05 26 ○
 07

Taylor

+75
 +52 16 † E
 +30 16 ○
 +10 17' ○
 016
 +95
 +57 18' ⊙
 +52 18' †
 +25 18' †
 † E 18' +30
 015
 +80 60
 +20 18' → 100 †
 +35
 † E 18' +05
 014
 +65 20' ⊙
 013
 † E 17' +83
 +65 ⊙
 +48
 +40 20 ○
 +15 20 ○
 012
 +94 20' → ⊙
 +45 25 ⊙
 +25 28 ⊙ PL.
 +12
 +11 24 ○

800

45' DM. (S)

21'

† E 13' 13'

Cleveland
#776
179

	26	027	22	→
		+80	15'	⊙
		+65	15	⊙
		+55	22	†
† _r	12½	+10		
×	21	026		
		+35	19½	†
		+20	21	→
PL	18'	025		
700		+10	19'	†
		024		
† _r	10'	+15		
		023		
		+80	20'	† _E
		022		
		+54	16	† _E
		021		
† _r	19'	+30	14½	† _E
		+20		
⊙	18'	+84		
⊙	21	+57		
	19	+10	15	† _E
	18	+52	16	† _E
† _r	19	+10		
		+10		
		017		

		+90	14½	⊙	21
⊙	25	+70			
		+45	14	⊙	
		+24	14	⊙	
		032			
	24				
† _r	14	+95	17	⊙	
		+62	23	† _E	
		+23	21'	⊙	
		031			
PL		+45			
		+25			
⊙	21				
⊙	19	+10	23'	† _E	
		030			
⊙	25'	+80			
⊙	28'	+35			
⊙	31	+15			
⊙	3½	+05			
		029			
		+95	20'	† _E	
⊙	33	+65	19½	⊙	
		+60			
		+90	20½	⊙	
⊙	28'	028			
		+82	25	†	
		+45	14½	⊙	
⊙	26	+30	18	⊙	
		+15			

+80 15 †_E

+60 =

038

+80

+65 17 †

037

+75

⊙ 25 +60

+55

17½ †_E

+30

18½ ⊙

⊙ 26'

+15

+05

25 ⊙

036

+40

+38

15 †

⊙ 22'

+10

†

19

+08

← 221 - 035

+65

⊙ 23

+15

23½ †

⊙ 23

+10

034

⊙ 24'

+75

+34

13 ⊙

+17

15 ⊙

033

⊙ 8 ⊙

+80

+60

+10

30' ⊙

048

← 80' → +60

047

+75

+22

← 29½ → +03

046

12 †_E

045

14½ †_E

044

+75

14 †_E

+28

† 18

TR

043

+40

14' †_E

042

+20

13½ †_E

041

+38

† 16

30

+25

040

14 †_E

+60

⊙ 20'

039

July 16, 1956

Cloudy - Cool 70°

Sta.	H.I.	Flor
B.M.	2.48 1076.41	1073.93
T.P.	5.18 1075.14	6.45 1069.96
0+00		4.00 1071.74
1+00		4.06 1071.08
2+00		5.25 1069.89
3+00		5.75 1069.39
4+50		5.58 1069.56
T.P.	9.73 1075.11	9.76 1065.38
1+00		10.05 1065.06
2+00		10.33 1064.78
3+00		10.55 1064.56
4+00		10.60 1064.51
T.P.	6.28 1076.88	4.71 1070.40
5+50		6.25 1070.43
7+15		5.85 1070.83

Patterson
CantfieldFairmount Rd Levels
Caves Rd E. to W. Willard Dr.

25

Start ± 40' E. of Intersections of Caves Rd & Fairmount

B.M. SPK. S. Root	Fairmount Road Ditch	Fairmount Road E	Ditch N.
27" Hickory N. Side Rd	$\frac{5.6}{15}$	<u>4.0</u>	$\frac{4.18}{15}$
	$\frac{5.95}{15}$	<u>4.06</u>	$\frac{4.15}{15}$
	$\frac{7.0}{15}$	<u>5.25</u>	$\frac{5.65}{15}$
	$\frac{7.54}{15}$	<u>5.75</u>	7.85
CULVERT	9.74	5.58	9.76
10' Ditch Running North			
0.6 to 6.8 - 15' ditch	$\frac{7.85}{25}$	$\frac{8.10}{10}$	$\frac{10.05}{10}$
	$\frac{9.35}{25}$	$\frac{9.0}{10}$	$\frac{8.1}{10}$
± 6.6 Evergreens	$\frac{9.9}{25}$	$\frac{9.7}{10}$	$\frac{10.55}{10}$
	$\frac{10.4}{25}$	$\frac{9.9}{10}$	$\frac{8.20}{10}$
0.6 to 6.8 - 15' ditch	$\frac{10.4}{25}$	$\frac{9.9}{10}$	$\frac{10.25}{10}$
			$\frac{9.55}{25}$

	Fairmount Road S.	Fairmount Road E	N.
15" x 16" concrete Drain	9.14	6.25	$\frac{7.85}{15}$
Prop. L.	$\frac{6.3}{11}$	7.9	
W. Willard Dr.	$\frac{5.7}{11}$	5.65	5.85
clear 15" concrete pipe	$\frac{5.7}{11}$	7.1	7.2
Prop. L.	$\frac{5.7}{11}$		

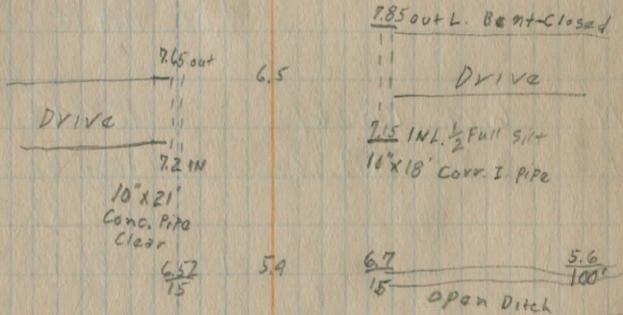
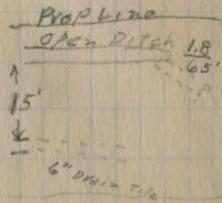
Good - Clay
Drain tile 15" x 14"

Sta.	+	HI	-	Elev.
		1076.68		
1+00			9.95	1066.73
2+00			3.43	1073.25
3+80			.65	1076.03
TP	9.30	1085.26	.72	1075.96
4+50			6.50	1078.76
5+50			5.40	1079.86
T.P.	1.62	1076.44	10.44	1074.82
8+50			3.3	1073.14
9+00			3.0	1073.44
T.P.	8.80	1084.43	.81	1075.63
10+00			2.9	1076.53

Cross Sec W. Willard Dr

W. E. E.

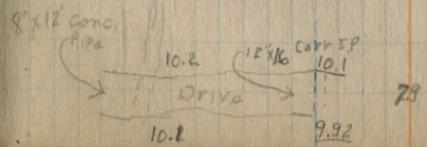
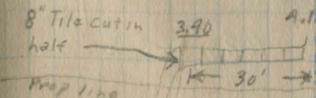
6.8	9.95	6.1
15'		15'
5.05	3.43	*5.0
15'		15'
3.1	.65	3.35
15'		15'
3.0		3.0
15'		15'



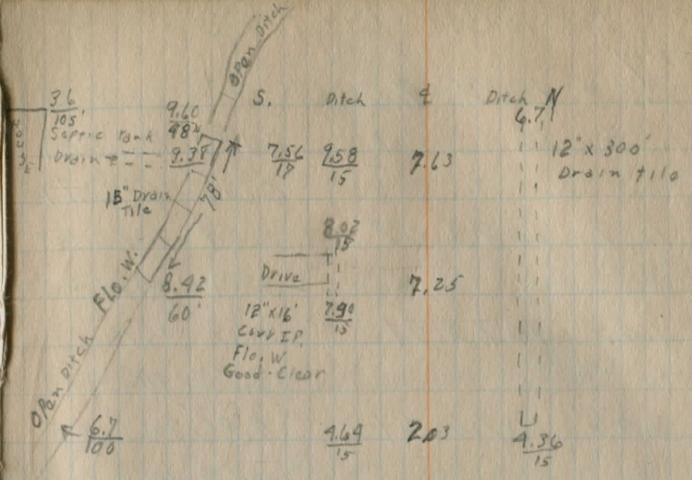
Cont. Cross Sec Fairmount (W. Willard-East)

S. E. N.

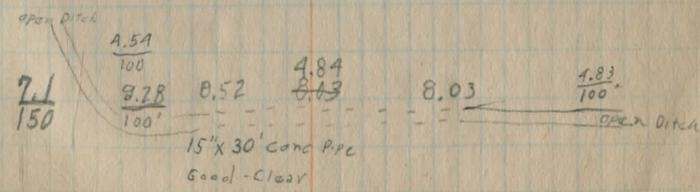
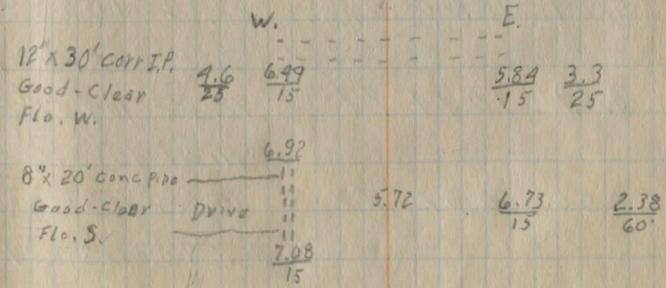
4.85	3.3	5.23
12" x 16" CORR. P.P.		15'
Clear Drive		
4.79	3.0	8.42
4.15		15'



	+	H _I	-	Elev
		1089.93		
10+70			2.13	1076.80
11+50			7.25	1077.18
12+50			2.03	1082.40
T.P.	3.49	1078.17	9.70	1079.73
B.M.			4.07	1079.10
				Stopped 7/16/52
B.M.	6.74	1080.67		1073.93
T.P.	9.30	1089.92	.05	1080.62
				1080.67
0+00			4.36	1085.56
1+00			5.72	1089.20
T.P.	6.60	1088.20	8.32	1081.60
2+00			4.84	1083.36



B.M. = SPK. S. Root
27" Hickory
E. Willard Dr
Intersection



11-15-23 BENCH MARKS

dark,
foggy, smokey

B.M.	0.28	1095	86	1095.58
T.P.	1.23	1086	24	1085.1085.01
B.M.				6.07 1080.17
T.P.	7.27	1083	67	9.84 1076.40
B.M.				3.81 1079.86
T.P.	1.49	1075	51	9.65 1074.02
B.M.				12.05 1063.43
T.P.	5.06	1070	61	9.96 1065.55
B.M.				4.64 1065.97
T.P.	8.25	1074	86	4.00 1066.61
B.M.				7.92 1066.94
T.P.	2.92	1070	81	6.97 1067.89
B.M.				1.71 1059.10
T.P.	1.30	1068	32	3.79 1067.02
T.P.	0.84	1056	07	13.09 1055.23
B.M.				2.00 1059.07
T.P.	0.59	1044	27	12.39 1043.68
B.M.				11.21 1033.06
T.P.	0.56	1031	77	13.06 1031.21
B.M.				7.40 1024.37

✓

✓

Spike in W. root 24" Maple 25' Rt 65+

X^m N.W. Cor. Lt. Parapet sta 57+07

Spike in N. root 30" Elm 30' Rt. 48+10

Spike in s. side 10" W. Cherry 75' Lt ²⁹⁺⁶⁰ ~~40+00~~

Spike in s. root 24" Elm 25' Lt ³³ Sta 32+75

Spike in s. Wroot 5" Maple 25' Lt. Sta 27+30

Bent spike 12" Maple N.W. root 12 Rt. Sta. 16+32

Bent spike in s. root 14" Maple 32' Lt 8+80

Spike in s. Root 18" Maple 30' Lt. 3+80

Spike in E. side 10" Maple Lt. 0 - 75

4-16-24 Hahn
Fair-Worm Douglas
Thompson

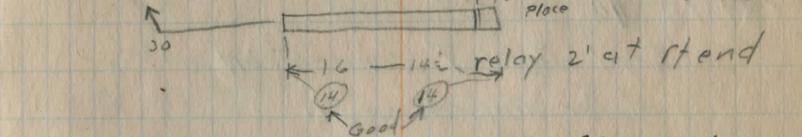
Sta.	B.S.	H. I.	F.S.	Elev.
B.M.	304	1027 41		1024.37
0-150			0.6	26.8
-100			2.5	24.9
0+00			4.5	22.9

+57 ± 18" Vit. Pipe
Regd Ext. 8 H.Ws.
open outlet 150' Lt.

1			4.2	23.2
2			2.3	25.1
T.P.	12.83	1039.43	0.81	1026.60
3			9.9	29.5
4			4.4	35.0
T.P.	12.14	1050.70	0.87	1038.56
5			9.0	41.7
T.P.	7.19	1057.01	0.85	1049.82
6			7.8	49.2

Sta 0-75 Lt.

-1.9	-2.3	-1.0	-0.4	0.0	0.0	-2.0	-1.5	
<u>64</u>	<u>68</u>	<u>61</u>	<u>49</u>	<u>45</u>	<u>45</u>	<u>65</u>	<u>6.0</u>	
25	19	16	11		12	16.5	25	
-6.0	-4.1	-3.4	-5.9	-4.4	-4.3	-0.4	0.0	-0.1
<u>10.4</u>	<u>85</u>	<u>7.8</u>	<u>10.3</u>	<u>8.8</u>	<u>8.7</u>	<u>4.8</u>	<u>4.4</u>	<u>4.5</u>
100	30	20	FL1	16	11	9		10



-3.7	-2.0	-1.7	-0.2	0.0	0.0	-2.2	-2.2	-0.6
<u>7.9</u>	<u>6.2</u>	<u>5.7</u>	<u>4.4</u>	<u>4.2</u>	<u>4.2</u>	<u>6.4</u>	<u>6.4</u>	<u>4.8</u>
25	18	14	10		9	15	20-21	25

-0.5	-1.2	-0.8	-0.1	-0.3	0.0	+0.1	+0.8	-0.4	+2.3	+4.8	+5.8
<u>2.8</u>	<u>3.5</u>	<u>3.1</u>	<u>2.4</u>	<u>2.6</u>	<u>2.3</u>	<u>2.2</u>	<u>1.5</u>	<u>2.7</u>	<u>0.0</u>	<u>-2.5</u>	<u>-3.5</u>
25-22	20	14	11.8	7		7	11	13	16.5	20	25

-0.2	-1.1	-1.4	-0.7	-0.8	-1.0	-0.5	0.0	+0.4	-0.2	+4.1	+4.4
<u>10.1</u>	<u>11.0</u>	<u>11.3</u>	<u>10.6</u>	<u>10.7</u>	<u>10.9</u>	<u>10.4</u>	<u>9.9</u>	<u>9.5</u>	<u>10.1</u>	<u>5.8</u>	<u>5.5</u>
29.22	20	15.5	14	11	9.5	15		12	13.4	20	25

-1.7	-1.1	-1.0	-1.8	-0.8	-0.7	-0.9	-1.0	-0.5	0.0	+0.2	0.0	+0.4	-0.5	+2.9	+3.7
<u>6.1</u>	<u>5.5</u>	<u>5.4</u>	<u>6.2</u>	<u>5.2</u>	<u>5.1</u>	<u>5.3</u>	<u>5.4</u>	<u>4.9</u>	<u>4.4</u>	<u>4.2</u>	<u>4.0</u>	<u>4.0</u>	<u>4.9</u>	<u>1.5</u>	<u>0.7</u>
25	23	16.5	16.5	12	10.5	10	7	3	4.4	2.0	4	11-14	15.1	19	23-25

36'-12" V.P.

+1.9	+1.0	-0.7	-1.5	-0.5	-0.9	-0.7	-0.2	0.0	+1.5	+0.8	-0.3	+4.0	+4.0
<u>4</u>	<u>3.0</u>	<u>2.7</u>	<u>10.3</u>	<u>9.5</u>	<u>9.9</u>	<u>9.7</u>	<u>9.2</u>	<u>9.0</u>	<u>8.5</u>	<u>8.2</u>	<u>9.3</u>	<u>5.0</u>	<u>5.0</u>
19	17.5	14-13	11-10	9	9	4	2		2	13	15	20	25

1057 01

6+50 5.5 51.5

7 4.7 52.3

8 4.9 52.1

B.M. 2.90 1154.11
1104.07

7+95 10" Vit. Pipe
Reqd New T connection
under Drive-on Rt.

9 4-19-24
windy!!! 2.7 54.3

B.M. 8.31 1062.38 1054.07

same
7+95 10" 52.2

10 3.0 59.4

T.P. 9.35 1070.41 1061.06

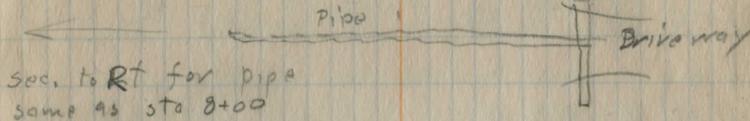
11 5.5 64.9

+50 38 66.6

D.W on Rt. 11+15 Req'd 8" D.W pipe.

+1.1	1.9	2.3	-1.2	-0.2	0.0	+0.1	+0.3	+0.1	-0.3	+4.3	+4.8
<u>4.4</u>	<u>3.6</u>	<u>3.2</u>	<u>6.7</u>	<u>5.7</u>	<u>5.5</u>	<u>5.4</u>	<u>5.2</u>	<u>5.4</u>	<u>5.8</u>	<u>1.2</u>	<u>0.7</u>
2.5	2.8	1.8	11-10	8		9	12	15	16-16.5	2.2	2.5
-2.9	-2.2	-1.1	-0.5	-1.8	-0.2	0.0	+0.1	0.0	-1.0	+2.7	+3.3
<u>7.6</u>	<u>6.9</u>	<u>5.8</u>	<u>5.2</u>	<u>6.5</u>	<u>4.9</u>	<u>4.7</u>	<u>4.6</u>	<u>4.7</u>	<u>5.7</u>	<u>2.0</u>	<u>1.4</u>
2.5	2.1	1.7	1.3	1.2-1.1	6		12	14	16.5-17.5	2.2	2.5
-4.9	-2.9	-0.4	0.0	+0.2	+0.4	+0.5					
<u>5.8</u>	<u>7.8</u>	<u>5.3</u>	<u>4.9</u>	<u>4.7</u>	<u>4.5</u>	<u>4.4</u>					
2.5	1.5	6		6	13	2.5					

Lt. Sta. 8+80



+2.1	+2.6	-0.9	0.0	0.0	+0.1	+0.5	-1.3	+0.8
<u>0.6</u>	<u>0.1</u>	<u>3.6</u>	<u>2.7</u>	<u>2.7</u>	<u>2.6</u>	<u>2.2</u>	<u>4.0</u>	<u>1.9</u>
2.5	1.8	1.3-1.2	6	6	8	12	16-18	2.5

Outlet
filled with
dirt

-5.2	-2.7
<u>15.4</u>	<u>12.9</u>
<u>13.2</u>	<u>13</u>
10.1	

← 13 1/2 →

+3.5	-0.7	-0.2	-0.6	+0.2	0.0	+0.3	+0.4	-0.6	+3.7	+4.3	+4.6
<u>-0.5</u>	<u>3.7</u>	<u>3.2</u>	<u>3.6</u>	<u>2.8</u>	<u>3.0</u>	<u>2.7</u>	<u>2.6</u>	<u>3.6</u>	<u>0.7</u>	<u>-1.3</u>	<u>-1.6</u>
2.5	2.1	1.7-1.6	1.1	1.0	1	8	9	14-12	1.9	2.0	2.5

+1.9	-0.7	-0.5	-0.2	0.0	+0.1	+1.9	+3.0
<u>3.6</u>	<u>6.2</u>	<u>6.0</u>	<u>5.7</u>	<u>5.5</u>	<u>5.4</u>	<u>3.6</u>	<u>2.5</u>
2.5-1.7	1.4-1.3	1.1	2		8-14	18	2.5

+1.2	+1.8	-0.5	0.0	0.0	0.0	+0.2	+0.5	+0.2	+2.5	+2.6
<u>2.6</u>	<u>2.0</u>	<u>4.3</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.6</u>	<u>3.3</u>	<u>3.6</u>	<u>1.3</u>	<u>1.2</u>
2.5	1.4	1.1-1.0	9-1		1	2	5-1.2	4-1.6	1.9	2.5

19' →

6.9 FL to 2" Vit Pipe
in Dr. Rt.
50 ft.

1070 41

12 2.9 67.5

12+92 Open old ditch 50' to Rt.

13 4.0 66.4

T.P. 406 1070 69 3.78 1066.63

14 4.2 66.5

14+70 5.9 64.8

15 4.3 66.4

15+45 E 10" V.P. 4.3 66.4

16 4.4 66.3

B.M. 1.56 1069.13

17 5.4 65.3

T.P. 6.53 1071 67 5.55 1065.14

+78 E old 10" V.P. 6.7 65.0

p = length
filled and not now serving

✓

-0.4 -0.6 -0.3 0.0 +0.1 -0.6 +0.5 +0.3
3.3 3.5 3.7 2.9 2.8 3.5 2.4 2.5
2.5 1.5 1 1.3 1.4 1.5 1.6 2.0 2.5

-1.2 -0.7 -1.4 -0.4 0.0 +0.1 -0.9 -0.1 -0.2 -0.8
5.2 4.7 5.4 4.4 4.0 3.9 4.7 4.1 4.7 4.8
2.5 1.8 1.3 1.4 1.0 1.2 1.4 1.5 1.6 2.0 2.5

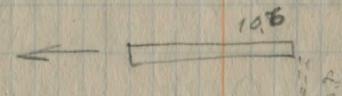
-2.1 -1.5 -1.1 -1.8 -0.3 0.0 +0.2 -1.1 +0.2 +0.9 +0.8
6.3 5.7 5.3 6.0 4.5 4.2 4.0 5.3 4.0 3.3 3.4
2.5 2.0 1.7 1.6 1.5 1.2 1.0 1.5 1.4 1.6 2.0 2.5

FL to 6" Point 1/2 12' Rt. of E.

-1.0 -1.7 -0.1 -0.3 0.0 +0.1 +0.4 +0.1 +0.9 +1.3
5.3 6.0 4.4 4.6 4.3 4.2 3.9 4.2 3.4 3.0
2.5 1.9 1.7 1.6 1.2 1.1 0.8 1.2 1.8 2.5

-3.2 -3.4 -2.5 -0.1 -0.3 +0.1 0.0 +0.2 +0.3 -2.2 +1.2 +1.8
7.5 7.7 6.8 4.4 4.6 4.2 4.3 4.1 4.0 6.5 3.1 2.5
2.5 1.9 1.8 1.3 1.0 1.5 1.4 1.3 1.2 1.0 1.2 2.0
FL

Open Outlet
50' Lt.



-1.1 -0.9 -1.5 0.0 -0.3 0.0 0.0 +0.5 +0.6 +0.8
5.5 5.3 5.9 4.4 4.7 4.4 4.4 3.9 3.8 3.6
2.5 2.0 1.7 1.6 1.3 1.0 1.5 1.8 2.0 2.5

-0.2 -0.9 -1.9 -0.2 0.0 +0.3 +0.1 -0.5 +1.6 +1.2
5.6 6.3 7.3 5.6 5.4 5.1 5.3 5.9 3.8 4.2
2.5 2.0 1.7 1.6 1.2 1.1 1.2 1.6 2.5

-4.8 -2.0 -1.8 -2.4 -1.7 -0.1 -0.4 0.0 -0.2 -1.3 -1.0 -1.1 -3.0
11.5 8.7 8.5 9.1 8.4 6.8 7.1 6.7 6.9 8.2 7.7 7.8 2.7
5.0 3.5 2.6 1.7 1.6 1.5 1.0 1.1 1.0 1.3 1.8 2.5 7.5



18 1071 67 67 65.0

19 59 65.8

20 41 67.6

+50 45 67.2

21 5.3 66.4

~~F.P.~~
22 6.1 65.6

T.P. 6.17 1071 41 6.43 1065.24

+25 '8" K.P. & O.C.P. 5.7 65.7

23 5.4 66.0

24 3.8 67.6

T.P. 3.20 1073 82 0.79 1070.92

25 4.2 69.6

+45 3.6 70.2

-1.7 -1.4 -1.5 -1.7 0.0 -0.2 0.0 +0.2 0.0 -1.2 -0.8 38
8.4 8.1 8.2 8.7 4.7 6.9 6.7 6.5 6.7 7.9 7.5
25 20 17 15-14 10.8 7 24 11 13 20-25

+0.8 +0.4 -1.6 0.0 -0.2 0.0 0.0 +0.3 -0.6 +2.1
5.1 5.5 7.5 5.9 6.1 5.7 5.9 5.6 6.5 3.8
25 21 15-14 10 5 6 11 12-13 16-25

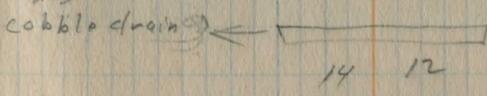
+3.2 +3.4 -0.8 +0.1 0.0 +0.1 -0.2 -0.1 +0.4 -0.2 13.4
0.9 0.7 4.9 4.0 4.1 4.0 4.3 4.2 3.7 4.3 0.7
25 19 13-12 11 3 4 7 9-11 12-14 18-25

+0.6 +0.9 -1.6 -0.2 0.0 0.0 +0.2 -0.3 +3.5 +3.7
3.9 3.6 6.1 4.7 4.5 4.5 4.3 4.8 1.0 0.8
25 20 15-13 10 6 11 12-13 20 25

-1.4 -3.2 -1.9 -2.2 -0.7 -0.2 0.0 +0.1 +0.3 -0.7 +0.4 +0.8 +0.7
9.7 8.5 7.2 7.5 6.0 5.5 5.3 5.7 5.0 6.0 4.9 4.5 4.4
25 21 18 17-15 12 9 7 11 13-14 17 20 25

-2.6 -2.1 -1.7 -2.2 -0.2 0.0 +0.2 +0.5 -0.4 +1.4 +2.7 +3.2
8.7 8.2 7.8 8.3 6.3 6.1 5.9 5.6 6.5 4.7 3.4 2.9
25 21 17 16-14 9 8 12 13-14 16 20 25

-2.3 -3.4 -3.1 -0.5 -0.1 -0.3 0.0 -0.2 +0.1 0.0 -2.0 -1.4 +3.2 +3.7
8.0 9.1 8.8 6.2 5.8 6.0 5.7 5.9 5.6 5.7 7.7 7.1 2.5 2.0
25 21 15 14 10 6 4 3 2 11 12 14 F.L.



-5.0 -2.5 -0.2 +0.1 -0.2 0.0 +0.2 +0.6 -0.4 +0.4 +0.7 +2.7 +2.7
10.4 7.9 5.6 5.3 5.6 5.4 5.7 4.8 5.8 5.0 4.7 3.0 3.7
25 15-13 7 5 5 7 10 12 14-15 17 19 23 25

-2.0 -1.1 -1.1 -1.7 -0.4 -0.2 -0.4 0.0 +0.4 +0.6 -0.2 +3.2 +3.7
5.8 4.9 4.9 5.5 4.2 4.0 4.2 3.8 3.4 3.2 4.0 2.0 0.6 0.1
25 21 14 11-11 8 5 4 7 12 13 15-16 20 25

+0.7 +1.2 +1.0 -1.0 -0.3 0.0 +0.3 0.0 +2.7 +2.5
3.5 3.0 3.2 5.2 4.5 4.2 3.9 4.2 1.5 1.7
25 20 16 12-11 9 12 13-14 17 25

+2.9 +2.6 -0.7 -0.2 -0.3 0.0 +0.1 -0.3 +0.9 -0.4
6.7 1.0 4.7 3.8 3.9 3.6 3.5 3.9 2.7 4.0
25 19 15-12 10.5 4 11.5 13-14 16 25

26			4.9	68.9
+30			6.2	67.6
27			9.1	64.7
T.P.	504	1069	59	9.27
				1066.96
B.M.				2.63
				1066.94
27+94	10	10	10	5.8
				63.8

28 5.9 63.7

29 3.6 66.0

T.P. 417 1073 38 0.38 1069.1
+80 4.0 69.4

30 4.1 69.3

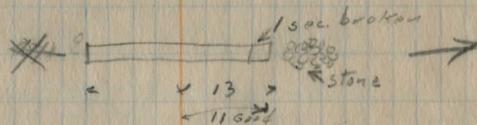
31 6.7 66.7

+4.5 +4.1 -0.7 -0.1 -0.4 0.0 0.0 -0.2 +0.3 -0.7 +2.1 +1.1
 $\frac{0.4}{2.5} \frac{0.8}{2.0} \frac{5.6}{12} \frac{5.9}{11.5} \frac{5.3}{10} \frac{4.9}{6} \frac{4.9}{6} \frac{5.1}{7.10} \frac{4.6}{12.10} \frac{5.8}{13.14} \frac{2.3}{17} \frac{3.3}{2.5}$

+5.2 +4.9 -0.8 -0.1 -0.4 0.0 0.0 0.0 -0.3 0.0 -0.1 -0.5 +3.5 +3.1
 $\frac{1.0}{2.5} \frac{1.3}{2.2} \frac{2.0}{14.2} \frac{6.2}{12.5} \frac{6.6}{10} \frac{6.2}{6} \frac{6.2}{4} \frac{6.2}{4.5} \frac{6.5}{7.5} \frac{6.3}{8} \frac{6.7}{11.5} \frac{2.7}{12.13} \frac{3.1}{19.23} \frac{3.1}{2.5}$

+1.2 -0.1 -0.7 -1.4 -1.1 0.0 0.0 +0.2 -0.1 -3.0 -4.4
 $\frac{7.9}{2.5} \frac{9.2}{2.0} \frac{10.0}{17.15} \frac{10.5}{14} \frac{10.2}{13} \frac{9.1}{11} \frac{9.1}{11} \frac{8.9}{3} \frac{9.2}{6.10} \frac{12.1}{16} \frac{13.5}{2.5}$

-2.0 -3.0 -2.3 -1.5 -1.2 -0.3 0.0 0.0 -0.4 -5.1 -8.2
 $\frac{7.7}{2.1} \frac{8.8}{17} \frac{7.8}{17} \frac{7.3}{16} \frac{7.0}{13} \frac{6.1}{10.4} \frac{5.8}{3} \frac{5.8}{3} \frac{6.2}{9.5} \frac{10.7}{13} \frac{14.0}{2.5}$
FL, FK



-1.5 -1.7 -2.2 -1.3 0.0 -0.3 0.0 -0.1 +0.1 -3.8 -5.3
 $\frac{2.4}{2.5} \frac{2.8}{19} \frac{8.1}{18} \frac{7.2}{13} \frac{5.9}{10} \frac{6.2}{7} \frac{5.9}{7} \frac{6.0}{5} \frac{5.8}{9} \frac{9.7}{18} \frac{11.7}{2.5}$

+3.9 +2.8 -0.8 0.0 -0.2 0.0 -0.1 0.0 -1.1 -2.3 -3.0
 $\frac{-0.3}{2.5} \frac{0.8}{19} \frac{4.4}{15} \frac{3.6}{12} \frac{3.8}{10} \frac{3.6}{7} \frac{3.7}{7} \frac{3.6}{11.5} \frac{4.7}{14.5} \frac{5.9}{2.0} \frac{6.6}{2.5}$

+6.4 +6.0 -0.4 +0.3 0.0 0.0 +0.2 +0.1 +0.2 -0.7 +3.5 +4.0
 $\frac{-2.4}{2.5} \frac{-2.0}{19} \frac{4.4}{11} \frac{3.7}{10} \frac{4.0}{6} \frac{4.0}{6} \frac{3.8}{4} \frac{3.9}{12} \frac{3.8}{13} \frac{4.7}{15} \frac{0.5}{16} \frac{0.0}{2.1} \frac{0.0}{2.5}$

+5.4 +4.9 -0.5 +0.3 -0.1 0.0 +0.1 +0.3 -0.6 +2.7 +3.4
 $\frac{-1.3}{2.5} \frac{-0.5}{19} \frac{4.6}{11} \frac{3.8}{10} \frac{4.2}{7} \frac{4.1}{4} \frac{4.0}{1.10} \frac{3.8}{13} \frac{4.7}{16} \frac{1.1}{17} \frac{0.7}{2.1} \frac{0.7}{2.5}$

+4.3 +3.6 -1.0 +2.1 -0.2 0.0 0.0 +0.1 -0.8 +0.9 +0.4
 $\frac{2.4}{2.5} \frac{3.1}{17} \frac{7.7}{11} \frac{6.6}{10} \frac{6.9}{7} \frac{6.7}{3} \frac{6.7}{3} \frac{6.6}{14} \frac{7.5}{16} \frac{5.8}{17} \frac{6.3}{2.1} \frac{6.3}{2.5}$

1073 38

32 9.0 64.4
 T.P. 5.40 1069 44 9.34 1064.04
 +75 ~~5~~ 8" V.Pipe 5.4 64.0

OK

33 5.5 63.9

+50 5.4 64.0

34 4.6 64.8

+50 3.4 66.0

B.M. 1065.91
 3.45 1065.97

35 2.8 66.6

+50 3.8 65.6

36 5.9 63.5

T.P. 6.20 1068 79 6.85 1062.59

370 6.8 62.0

37+05 6.8 62.0
 6" V.P. Pipe

✓

+1.8 +0.6 -0.6 -1.0 -0.2 0.0 -0.1 0.0 -3.5 -5.1 40
 $\frac{72}{25} \frac{84}{18} \frac{96}{15} \frac{100}{14} \frac{12}{12} \frac{92}{10} \frac{90}{7} \frac{91}{11} \frac{90}{11} \frac{125}{20} \frac{141}{25}$

+0.8 -1.1 -2.4 -0.3 0.0 -0.2 0.0 -0.8 -3.8 -4.3
 $\frac{46}{19} \frac{65}{17} \frac{78}{12} \frac{57}{10} \frac{54}{10} \frac{56}{5} \frac{54}{9} \frac{62}{11} \frac{97}{14} \frac{97}{25}$
 FL FL

$\leftarrow 125 \times 14 \rightarrow$
 +0.9 +0.2 -1.8 -0.3 -0.4 0.0 -0.1 -0.8 -3.8 -4.5 -5.5
 $\frac{46}{25} \frac{53}{18} \frac{73}{15} \frac{58}{14} \frac{59}{10} \frac{55}{8} \frac{56}{9} \frac{63}{11} \frac{93}{16} \frac{100}{20} \frac{110}{25}$
 +1.1 -1.2 -0.2 -0.3 0.0 0.0 +0.2 +0.1 -1.1 -0.7 -1.3 -2.4
 $\frac{43}{25} \frac{62}{18} \frac{56}{15} \frac{57}{14} \frac{54}{11} \frac{54}{10} \frac{52}{6} \frac{53}{10} \frac{45}{13} \frac{61}{14} \frac{67}{20} \frac{78}{25}$

+1.1 +1.6 -1.2 -0.2 0.0 +0.1 -0.4 -1.2 +0.8 0.0
 $\frac{35}{25} \frac{30}{18} \frac{58}{14} \frac{48}{11} \frac{46}{10} \frac{42}{7} \frac{50}{13} \frac{59}{14} \frac{38}{17} \frac{46}{25}$

+2.4 +2.2 -1.4 -0.3 0.0 0.0 -1.1 +1.2 +1.4 +0.9
 $\frac{10}{25} \frac{12}{17} \frac{48}{13} \frac{37}{10} \frac{34}{10} \frac{34}{12} \frac{45}{13} \frac{27}{14} \frac{29}{17} \frac{25}{25}$

+1.5 +1.7 -1.2 -0.5 0.0 +0.2 -1.0 +1.3 +0.5
 $\frac{13}{25} \frac{11}{19} \frac{40}{14} \frac{33}{12} \frac{28}{12} \frac{29}{10} \frac{38}{12} \frac{15}{16} \frac{23}{25}$

+1.4 +1.5 -0.6 -1.7 -0.3 0.0 0.0 -1.1 +0.6 +0.3 -0.7
 $\frac{24}{25} \frac{23}{20} \frac{44}{17} \frac{55}{15} \frac{41}{14} \frac{38}{11} \frac{38}{9} \frac{49}{11} \frac{32}{14} \frac{35}{20} \frac{45}{25}$

+1.4 +0.6 -0.9 -1.3 +0.1 +0.2 -0.3 0.0 -0.4 +0.1 -1.4 0.0 +0.8 +1.3 +1.2
 $\frac{15}{25} \frac{17}{22} \frac{45}{16} \frac{63}{14} \frac{72}{13} \frac{58}{12} \frac{57}{10} \frac{62}{7} \frac{59}{7} \frac{67}{9} \frac{52}{10} \frac{73}{12} \frac{57}{15} \frac{51}{20} \frac{46}{23} \frac{43}{24}$

+2.3 +1.8 -0.8 -1.4 +0.1 -0.1 0.0 +0.2 -0.1 -1.0 -2.0 -2.2
 $\frac{45}{25} \frac{50}{21} \frac{76}{17} \frac{82}{14} \frac{67}{13} \frac{69}{11} \frac{61}{7} \frac{61}{10} \frac{66}{4} \frac{69}{10} \frac{78}{12} \frac{83}{14} \frac{83}{14} \frac{90}{25}$

-1.2 -3.2 -0.3 -0.4 0.0 -0.1 -1.8 -4.6 -5.0 -2.4
 $\frac{30}{20} \frac{100}{14} \frac{71}{11} \frac{69}{6} \frac{69}{10} \frac{86}{14} \frac{114}{14} \frac{125}{16} \frac{142}{25}$
 FL FL ground

1 sec taken $\leftarrow 14 \rightarrow 16 \rightarrow$

106879

37 R. Thompson's last 69 61.9
B.M. 7/14 1070 57

pipe 50h.A.M. B.M. 7/14 1070 57
Rain & snow Hanna 4-21-24 Douglass

38 7.9 62.7

39 6.5 64.1

40 4.1 66.5

41 2.4 68.2

T.P. 8.65 1077.77 1.45 1069.12
42 8.4 69.4

43 6.1 71.7

44 4.4 73.4

45 3.8 74.0

T.P. 7.55 1081.23 4.09 1073.68

46 7.45

+0.2 -0.4 -1.8 -2.4 -0.1 0.0 -0.1 -0.9 -2.6 -3.4 -4.5
67 73 87 93 70 67 79 78 85 103 114
25 22 16 15 102 105 105 11 16 20 25

W. Cherry Lt.

+3.6 +3.2 -1.1 -0.8 0.0 -0.3 -0.1 0.0 0.0 -1.3 -1.0 -0.4 -0.2 +2.2
43 47 90 87 77 87 80 79 79 82 87 83 81 57
25 20 14 12 10 5 2 10 13 15 18 21 25

-1.5 -0.7 -1.1 +0.1 -0.1 0.0 0.0 -0.1 +0.1 -0.7 +1.2 +0.7
89 72 76 64 66 65 65 64 64 72 53 48
25 25 15 13 12 10 3 4 6 7 10 12 13 15 25

-2.3 -0.9 -1.0 -0.4 -0.5 0.0 0.0 0.0 -0.1 +0.3 -0.4 +2.2 +2.6
64 59 51 45 46 41 41 41 42 38 45 19 15
25 16 15 12 9 6 4 3 4 5 10 11 12 17 25

-1.3 -1.0 -1.7 -0.1 -0.2 -0.5 0.0 0.0 +0.2 0.0 +0.3 +0.5 -0.8 +1.4 +1.8
37 34 41 25 25 29 24 24 27 24 21 19 32 10 0.0
25 17 15 12 9 6 2 2 2 5 6 9 12 15 25

-1.8 -1.0 -1.5 -0.1 -0.5 -0.2 0.0 0.0 +0.2 0.0 +0.4 -0.5 +0.1 +0.5 +0.8
102 74 79 85 87 84 84 84 87 84 80 89 83 79 76
25 20 18 16 15 13 11 8 5 2 2 5 8 11 12 15 18 25

+1.5 -0.6 -2.4 -0.6 -0.4 -0.7 -0.3 -0.2 0.0 +0.2 +0.4 -1.0 +0.3 +0.2 4.5
46 67 85 67 45 68 64 63 61 59 57 71 58 19 66
25 20 18 17 15 14 11 10 9 7 2 2.5 9 12 13 14 15 20 25

-0.9 -0.8 -1.2 -2.1 -0.3 0.0 0.0 +0.1 0.0 -0.4 -1.5 +0.7 +1.0
53 52 54 65 47 44 44 43 43 44 48 58 37 34
25 24 19 17 14 3 2.4 6.9 10 12 10 17 25

-1.4 -1.2 -2.0 -0.3 -0.1 0.0 0.0 -0.1 0.0 +0.3 -1.4 -0.3 +0.1
56 54 62 45 43 42 42 43 42 39 56 45 41
25 19 17 12 2 2 4 6 9 11 13 15 25

-0.8 -1.0 -1.4 -0.6 -0.5 -0.3 -0.1 0.0 0.0 +0.1 -1.5 -0.2 +0.2
46 48 52 42 43 41 39 38 38 37 53 40 36
25 19 17 13 8 6 3 6 9 11 12 14 18 25

-0.2 -1.3 -0.1 -0.3 -0.1 0.0 0.0 +0.1 -1.0 +0.1 -0.2
69 69 69 16 66 67 67 66 77 66 69
25 20 16 13 12 11 11 13 10 12 14 15 25

108123

47 58 75.4
B.M. 120 1079.92

Snowed off, 11:15

J.F. 4.38 1084 24 1079.86

48 4-26 '29 Fine Hanna Douglas sperry 69 77.3

+60 48 79.4

49 55 78.7

+50 6.4 77.8

99+40 Pav. begins in str.

50 7.2 77.0

T.F. 4.31 1081 24 7.31 1176.93

51 4.8 76.4

52 4.7 76.5

53 4.5 76.7

+50 4 12" C.I.P. O.K. 4.5 76.7

3" D. Tile in Drive

+0.5 00 -1.0 +0.1 -0.4 0.0 0.0 +0.1 -1.2 -0.4 -1.3
5.3 5.8 6.3 5.7 6.2 5.8 5.8 5.7 7.0 6.2 7.1
2.0 1.7 1.2 8.4 2.5 2.9 1.2 1.6 2.5

Elev

42

+0.4 00 -0.8 -0.1 -0.4 0.0 -0.1 0.0 +0.1 -0.1 -0.6 +0.3 +1.2
6.5 6.9 7.7 7.0 7.2 6.9 7.0 6.9 6.8 7.0 7.5 6.9 5.7
2.5 2.1 1.8 1.4 1.0 2.2 1.1 1.1 9 11-12 13 17-25

-0.5 -0.3 -0.2 -0.3 -0.1 0.0 0.0 +0.3 -0.2 +0.2 +0.6
5.3 5.1 5.0 5.1 4.9 4.8 4.8 4.5 5.0 4.6 4.2
2.0 1.6 1.2 1.7 2.1 2.8 7.10 13 2.5

-0.3 -0.2 -0.7 -0.5 -0.3 0.0 +0.3 +0.5 +0.2 +1.0 +2.2
5.8 5.7 6.2 6.0 5.8 5.5 5.2 5.0 5.3 4.5 3.3
2.5 1.8 1.5 1.4 1.2 6.5 6.9 10 11-12 13 2.5

-1.7 -1.0 -1.1 0.0 -0.3 -0.1 0.0 0.0 +0.1 +0.3 -0.2 +0.9 +1.9
8.1 7.4 7.5 6.4 6.7 6.5 6.4 6.4 6.7 6.1 6.6 5.5 4.5
2.5 1.7 1.5-1.3 1.1 1.6 2.1 4 7 9 11-12 14 2.5

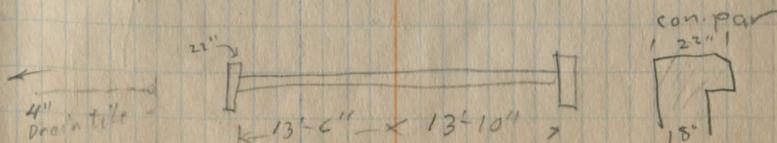
-3.4 -1.9 -1.7 +0.1 0.0 -0.1 0.0 0.0 +0.2 -0.7 +0.3 +0.9
10.6 9.1 8.9 7.1 7.2 7.3 7.2 7.2 7.0 7.9 6.9 6.3
2.5 1.6 1.5 1.8 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7

-2.7 -1.9 -1.7 -0.1 -0.4 0.0 -0.2 0.0 +0.1 -0.1 -0.9 -0.2 +1.1
7.5 6.7 6.5 4.9 5.2 4.8 5.0 4.8 4.7 4.9 5.7 5.0 3.7
2.5 2.0 1.4 1.0 1.4 1.5 1.7 3.4 9-11 13-14 17 2.5

-3.8 -2.9 -2.1 -0.7 -0.1 -0.2 0.0 -0.2 -0.7 -1.5 -0.4 +2.2
8.5 7.6 6.8 5.1 4.8 4.9 4.7 4.7 4.9 5.4 6.2 5.1 2.5
2.5 2.0 1.4 1.4 1.3 1.7 1.7 1.7 1.7 1.7 1.7 1.7

-3.9 -2.5 -1.8 -1.4 -0.3 -0.1 0.0 -0.1 0.0 -0.8 -1.8 -1.0 +2.1 +2.4
8.4 7.0 6.3 5.9 4.8 4.6 4.5 4.6 4.5 5.3 6.3 5.3 2.4 2.1
2.5 2.0 1.4 1.1 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4

94 84 466 45 406 7.5
FL1 FL1 Pav Pav FL1



1081 24

54 35 77.0

+60 24 78.8

T.P. 716 1086 30 2.10 1079.14

55 67 79.6

+50 58 80.5

56 59 80.4

#50 61 80.2

57 62 80.1

T.P. 5.22 1085 37 6.15 1080.15

57+07 @ 12" C.I.P. 5.4 80.0

58 49 80.5

✓

-3.4 -1.7 -0.1 -0.2 0.0 -0.2 0.0 -0.8 -1.0 +0.6
 $\frac{70}{25} \frac{53}{13} \frac{37}{9} \frac{38}{5} \frac{36}{5} \frac{38}{3} \frac{36}{9} \frac{44}{13} \frac{46}{15} \frac{3.0}{25}$ 43

-1.1 -0.4 -1.2 -1.6 -0.3 -0.4 -0.1 0.0 0.0 -0.2 -1.6 -1.1 -0.9 +2.4 +2.9
 $\frac{35}{25} \frac{23}{20} \frac{36}{14} \frac{40}{12} \frac{27}{10} \frac{28}{5} \frac{25}{2} \frac{24}{2} \frac{24}{4} \frac{26}{10} \frac{40}{13} \frac{35}{15} \frac{33}{17} \frac{00}{28} \frac{-0.5}{25}$

+1.9 +1.7 -0.7 -1.1 -0.5 -0.7 -0.1 0.0 -0.1 0.0 -1.1 -0.7 -0.3 +3.0 +4.5
 $\frac{48}{25} \frac{50}{20} \frac{74}{16} \frac{78}{14} \frac{72}{11} \frac{74}{9} \frac{68}{5} \frac{67}{5} \frac{68}{3} \frac{67}{10} \frac{73}{13} \frac{74}{14} \frac{70}{15} \frac{37}{16} \frac{22}{25}$

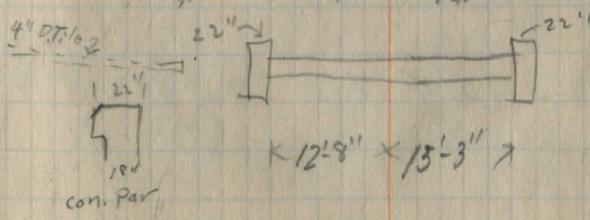
+4.1 +4.2 +4.8 -0.5 -0.8 -0.1 -0.2 0.0 0.0 0.0 -0.1 -0.6 -0.3 +2.8 +4.5
 $\frac{12}{30} \frac{16}{25} \frac{18}{22} \frac{63}{14} \frac{66}{11} \frac{59}{9} \frac{60}{5} \frac{58}{7} \frac{57}{3} \frac{59}{10} \frac{64}{13} \frac{61}{14} \frac{30}{15} \frac{13}{20} \frac{30}{25}$

+2.7 -0.5 -1.1 -0.2 -0.4 -0.1 0.0 -0.2 0.0 -0.1 -1.3 -0.8 +1.8 +2.5
 $\frac{32}{25} \frac{64}{19} \frac{70}{14} \frac{61}{13} \frac{63}{9} \frac{60}{2} \frac{59}{2} \frac{61}{3} \frac{59}{5} \frac{60}{10} \frac{67}{11} \frac{72}{12} \frac{67}{15} \frac{41}{20} \frac{34}{25}$

-0.6 -0.3 -0.5 -1.1 -1.5 -0.4 -0.3 0.0 0.0 +0.1 0.0 -0.1 -1.6 -1.2 -0.6 +0.1
 $\frac{67}{25} \frac{64}{20} \frac{66}{17} \frac{72}{14} \frac{76}{13} \frac{65}{9} \frac{64}{2} \frac{61}{2} \frac{61}{7} \frac{60}{5} \frac{61}{11} \frac{62}{14} \frac{77}{15} \frac{73}{16} \frac{67}{20} \frac{60}{25}$

-3.8 -3.1 -2.7 -1.6 -0.7 -0.6 0.0 0.0 +0.1 -0.2 -0.5 -2.3 -1.3 -1.5
 $\frac{100}{25} \frac{93}{23} \frac{89}{20} \frac{78}{14} \frac{69}{10} \frac{68}{6} \frac{62}{3} \frac{62}{3} \frac{61}{3} \frac{64}{9} \frac{67}{12} \frac{85}{16} \frac{75}{17} \frac{77}{25}$

$\frac{104}{FL}$ $\frac{98}{FL}$ $\frac{522}{PAR}$ $\frac{54}{PAR}$ $\frac{578}{PAR}$ $\frac{91}{FL}$



-1.7 -0.9 -0.2 -0.2 -0.1 0.0 -0.1 0.0 -0.2 -1.1 -1.6 -0.9 -1.3 -1.1
 $\frac{79}{25} \frac{68}{20} \frac{63}{15} \frac{66}{13} \frac{58}{11} \frac{51}{9} \frac{51}{5} \frac{50}{1} \frac{49}{1} \frac{50}{5} \frac{49}{8} \frac{51}{11} \frac{60}{13} \frac{65}{14} \frac{58}{17} \frac{67}{20} \frac{60}{25}$

108537

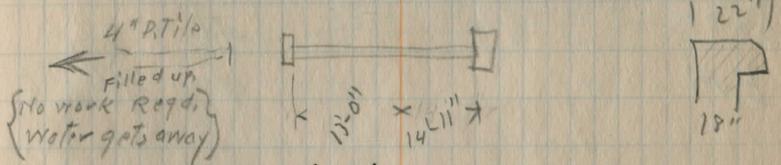
59 3.8 81.6
 T.P. 5.32 1087.43 3.26 1082.11
 60 5.0 82.4
 61 4.7 82.7
 +50 @ 12" C.I.P., 4.6 82.8
 O.K.

62 4.3 83.1
 +50 3.9 83.5
 63 3.5 83.9
 T.P. 10.02 1094.40 3.05 1084.38
 64 8.3 86.1
 65 6.1 88.3

✓

-0.8 -0.1 -0.3 -0.8 -1.6 -1.0 -0.2 0.0 0.0 +0.2 +0.4 -0.9 -0.2 0.0 +1.0 +3.4
 $\frac{46}{29} \frac{39}{24} \frac{41}{19} \frac{46}{14} \frac{54}{11} \frac{47}{11} \frac{40}{9.7} \frac{28}{5.3} \frac{3.8}{2.6} \frac{3.6}{1.6} \frac{3.4}{1.12} \frac{4.7}{11.2} \frac{4.0}{15} \frac{3.8}{18} \frac{2.9}{2.0} \frac{0.4}{2.5}$
 +0.4 +1.1 +1.5 0.0 -0.5 -1.2 -0.2 -0.3 0.0 0.0 +0.1 +0.4 -0.6 0.0 +0.7 +1.9 +4.4 1.0
 $\frac{46}{26} \frac{3.9}{25} \frac{3.5}{2.0} \frac{5.0}{1.7} \frac{5.5}{1.4} \frac{6.2}{1.3} \frac{5.7}{1.6} \frac{5.3}{5.2} \frac{5.0}{5.2} \frac{5.0}{3} \frac{4.9}{1.0} \frac{4.6}{12.13} \frac{5.6}{14.17} \frac{5.0}{14.17} \frac{4.3}{2.0} \frac{3.1}{2.0} \frac{0.4}{2.5} \frac{2.0}{3.0}$
 -4.0 -3.7 -2.9 -2.4 -2.0 -0.6 -0.2 0.0 +0.1 +0.2 -1.6 -1.0 -1.2 0.0 +1.7
 $\frac{8.7}{2.5} \frac{8.4}{2.2} \frac{7.6}{2.0} \frac{7.1}{1.8} \frac{6.7}{1.5} \frac{5.3}{1.0} \frac{4.9}{5.2} \frac{4.7}{3} \frac{4.6}{2.9} \frac{4.5}{12.13} \frac{6.3}{15} \frac{5.7}{19} \frac{5.9}{19} \frac{4.7}{2.0} \frac{3.0}{2.5}$

$\frac{10.6}{FL}$ $\frac{4.96}{Par}$ $\frac{4.6}{FL}$ $\frac{4.74}{Par}$ $\frac{9.6}{FL}$



-2.8 -2.2 -2.3 -0.4 -0.1 0.0 +0.1 -1.0 -2.1 -1.8 -1.1 -0.9
 $\frac{7.1}{2.5} \frac{6.5}{2.0} \frac{6.6}{1.3} \frac{4.7}{1.8} \frac{4.4}{3} \frac{4.3}{4.9} \frac{4.2}{1.2} \frac{5.3}{13.14} \frac{6.4}{16} \frac{6.1}{2.0} \frac{5.4}{2.0} \frac{5.2}{2.5}$
 +0.7 +0.9 -1.5 -1.2 -0.2 -0.1 0.0 0.0 +0.1 -1.7 -1.3 -1.4 +0.7 +1.8 +2.7
 $\frac{3.2}{2.5} \frac{3.0}{1.9} \frac{5.4}{16.15} \frac{5.1}{14.13} \frac{4.1}{10.5} \frac{4.0}{2} \frac{3.9}{3} \frac{3.9}{9} \frac{3.8}{11.2} \frac{5.6}{13} \frac{5.7}{15} \frac{5.3}{17} \frac{3.6}{2.0} \frac{2.1}{2.0} \frac{1.2}{2.5}$
 +0.5 +0.9 +0.7 -0.8 -1.2 +0.1 0.0 0.0 +0.1 +0.4 -1.2 0.0 +1.6 +2.2
 $\frac{3.0}{2.5} \frac{2.6}{2.3} \frac{2.8}{1.9} \frac{4.3}{1.6} \frac{4.3}{1.3} \frac{4.7}{1.2} \frac{3.4}{1.9} \frac{3.5}{3} \frac{3.5}{3} \frac{3.4}{3} \frac{3.1}{9} \frac{4.7}{12.15} \frac{3.5}{16} \frac{1.9}{2.0} \frac{1.3}{2.5}$
 -2.9 -1.8 -1.6 -1.2 -0.1 0.0 +0.1 +0.3 -1.3 -0.7 -0.2 +0.4
 $\frac{11.2}{2.5} \frac{10.1}{2.0} \frac{9.9}{2.0} \frac{9.5}{1.1} \frac{8.4}{1.9} \frac{2.3}{1.9} \frac{8.2}{3} \frac{8.0}{9} \frac{9.6}{12.13} \frac{9.0}{15} \frac{8.5}{2.0} \frac{7.9}{2.5}$
 -1.4 -1.0 -1.7 -0.3 -0.2 0.0 0.0 +0.1 +0.3 -0.5 -1.4 -0.9 -0.3 +0.3 +1.8
 $\frac{7.5}{2.5} \frac{7.1}{2.0} \frac{7.8}{18.12} \frac{6.4}{1.9} \frac{6.3}{1.6} \frac{6.1}{3} \frac{6.1}{3} \frac{6.0}{2.8} \frac{5.8}{9} \frac{6.6}{11.2} \frac{7.5}{12.13} \frac{7.0}{14} \frac{6.4}{19} \frac{5.1}{2.0} \frac{4.2}{2.5}$

109440

P.C. 41 90.3

97.0

T.P. 5.89 1096.99 3.30 1091.10

66 5.9 91.1

+50 48 92.2

D.M. Rt 18" x 8" C.I.P.
(Needs relaying)+78.87 4.1 92.9
B.M. 1.42 1095.57
1093.58

+0.5	+0.8	+1.2	-0.9	-1.4	-0.5	-0.3	0.0	0.0	-0.2	0.0	-1.1	-0.5	+3.1	+3.8
$\frac{36}{25}$	$\frac{33}{20}$	$\frac{29}{18}$	$\frac{50}{16}$	$\frac{55}{12}$	$\frac{46}{9}$	$\frac{44}{5}$	$\frac{41}{3}$	$\frac{41}{3}$	$\frac{43}{3.7}$	$\frac{41}{10}$	$\frac{52}{13.14}$	$\frac{46}{15}$	$\frac{10}{21}$	$\frac{0.3}{25}$
45														

-3.7	-0.5	-0.1	0.0	-0.3	+0.1	+0.2	-0.8	-0.3	+3.1	+3.9
$\frac{26}{25}$	$\frac{64}{75}$	$\frac{60}{3}$	$\frac{57}{3}$	$\frac{62}{2}$	$\frac{58}{5}$	$\frac{5.7}{9}$	$\frac{6.7}{12.13}$	$\frac{62}{14}$	$\frac{28}{18}$	$\frac{20}{25}$
(in Road)										

-1.9	-1.6	-0.8	-0.2	0.0	0.0	-0.1	0.0	-0.9	+0.4	+1.3	+2.2
$\frac{6.7}{25}$	$\frac{64}{20}$	$\frac{56}{12}$	$\frac{50}{2}$	$\frac{48}{5}$	$\frac{48}{5}$	$\frac{4.9}{4}$	$\frac{4.8}{9}$	$\frac{5.7}{11}$	$\frac{4.4}{14}$	$\frac{3.5}{20}$	$\frac{2.6}{25}$

-1.2	-0.5	+0.1	0.0	-0.2	-0.1	-0.7	-0.1	+0.5	+2.1
$\frac{55}{18}$	$\frac{46}{11}$	$\frac{40}{4}$	$\frac{41}{4}$	$\frac{43}{3}$	$\frac{42}{5}$	$\frac{48}{12}$	$\frac{42}{13}$	$\frac{36}{14}$	$\frac{20}{25}$

1924	Roller	Teams	Grader	Trucks	Men
Oct. 7	Roller	—	No work		
8	1	—	No work		
9	1	1			
10	No Work				
11	No Work				
23					
24	1	1			3
25	1	1			4
27	1	1			4
28	1	1		7	4
29	1	1		7	4
30	1	1		—	4
31	1		1	—	4
Nov. 1	Roller dragged Mark's Ford from where it was parked causing damages that necessitated repairs amounting to \$37.98				
Sunday	1				2
2	1	1			3

Hauling Slag.
 Placing Slag.
 Placing, screening + Rolling Slag.
 " " " "
 Hauled 1 car screenings 2 cars slag.
 Hauled 1 car slag.
 Spreading, Screening + Rolling
 " " "
 " " "
 from where it was parked causing
 repairs amounting to \$37.98
 Spreading, Screening + Rolling,
 do.

Initial	Number.	Weight.	Class	Released.
NYC,	407120	107 080*	Coarse	
NYC,	40606	108 800*	Coarse	
W+SE	5003	97 400*	Coarse,	
B+O.	225019	112 800*	Coarse	
W+SE,	55332	123 100	Scr.	22
W "	55419	105 300	Coarse,	Oct. 22
"	55319	106 100	Coarse	23
NYC,	421358	129 000	Scr.	14
W+SE,	55100	141 600	Coarse	23
"	55108	12 000	Scr.	24
N.Y.C.	411352	115 500	Scr.	" 28
		103 | 280		
less 2 half cars		117 150		
		914130		
7 Garforda @ 5tn		70 000		
1 Ford		4 000		
		988130#		

Not dumped 11 A.M. 10/22/24
last Car. Coarse.

1 Car.	61.55
1/2 Car.	26.27
1 Car.	58.05
1/2 Car.	32.25
1 Car.	55.8
	6.0
	<u>234.92</u>

Culverts.

			Grade
0+57	3.93	1028.30	1024.37
		6.8	1018.0
		7.8	1017.5

9+95			
B.M.	3.30	1057.37	1054.07
		9.57	1046.8

15+45			
B.M.	2.97	1072.07	1069.10
		3.07	1064.0
		7.67	1063.4

37+05			
B.M.	4.02	1067.45	1063.43
			1058.9
			1056.0

32+75			
B.M.	3.44	1069.41	1065.97
			1061.4
			1060.0

May 12, 1925 Marks, Grau, Reynolds.
Fair. 19

B.M. Maple, Left. of 0-75
^{10.30}
 Grade Rod, E-3.5 Inlet
 10.80 C-3.0 Outlet

Left. 8+80
 10.57 C-1.0 Outlet.

Rt. 16+32
 8.07 C-5.0 Inlet
 8.67 C-1.0 Outlet

Left 39+60
 8.55 Cut 4.0 Inlet
 11.45 ~~C~~+0.0 Outlet.

Left, 33+75
 8.01 Cut. 4.5' Inlet
 9.41 Cut. 0.5 Outlet

27+94

B.M. 3.65 1070.59 1066.94

1160.0

10.59

Cut 3.0'

Left, 27+30

Inlet

1158.0

12.59

Grade

Outlet

May 13, 1925, Fair. Marks & Gray.

22+25

2.52 1071.62 1069.10

1062.8

8.82

C-7.0

B.M. Right 16+32

Inlet

1062.0

9.62

C-1.0

Outlet

17+78 Why Build Outlet?

1.17 1070.27 1069.10

1062.5

7.77

Cut 2.0

Inlet

1062.0

8.27

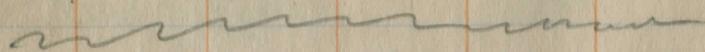
Cut 2.0

Outlet

May 13, 1925, Afternoon, Marks and Gray painted detour signs

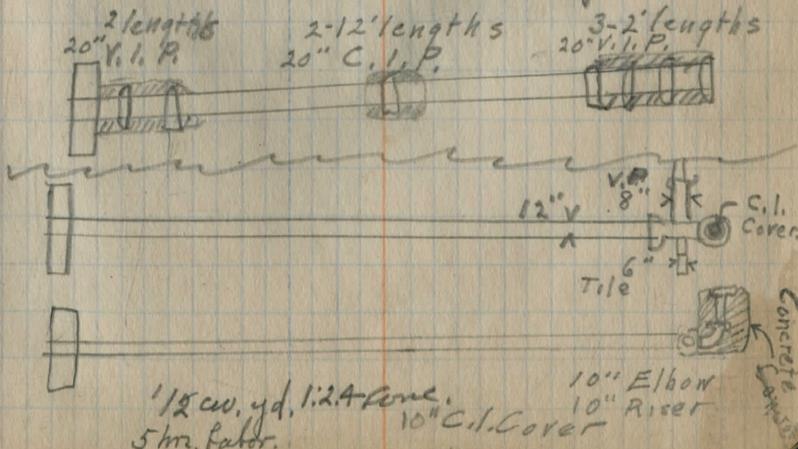
B.M. Right 16+32

0+57



PLAN

7+95



SECTION

1925	Men	Teams	Trucks	Roller	Grader
May 13	10		1		
14	10		1		
15	14		1		
16	15		1		
18	15		1		
19	15		1		
20	15		1		
21	12		1		
22	14	8	2	2	1
23	14	8	1	2	1

Extra Work on Culverts.

2	10" Elbows	@ 1.42
2	length 10" V.P.	a 0.90
1	6" X 10" Tee	a. 1.42
2	10" C.I. Covers	a. 0.95
1	cu. yd. 1:2:4 Concrete	a 18.00
18	length 6" V. Suss Pipe	a 0.30
Labor.	2 men, 9 hr. each	18 hr. a 0.45

Excavating Culverts

" "

Built Culvert Barrell, 37+05 & 32+75
 H.W.s, 37+05 & Barrells, 27+94 & 22+25
 H.W.s, 32+75 & 27+94, Barrell 17+78
 H.W.s, 22+25 & 17+78 Barrell-15+45
 H.W.s. 15+45 & 7+95 Barrell 7+95
 Barrell 0+57 H.W. 0+57
 Pulling Brush & Grading.
 " " "

Sta 7+95 + 15+45

2.84

1.80

1.42

1.90

18.00

5.40

8.10

\$39.46

1925 Men Trucks Rollers

June 10	12	3	1
" 11	12	3	1
" 12	12	4	1
" 13	12	4	1
" 15	12	4	1
" 16	12	4	1
" 17	12	4	1
" 18	12	4	1
" 19	12		1
" 20	12		1
" 22	12	4	1
" 23	12	4	1
" 24	12	4	1
" 25	3		1
" 25		4	
" 26	12	4	1
" 27	12	4	1
" 29	5		1
" 30	5	5	1
July 1.	5	5	1
" 2	7	6	-
" 3	7	6	-
" 6	7	5	1
" 7	7	5	1
" 8	7	5	-

Sta. 66+79 to 68+80 5" Base Course

63+80 - 59+50

59+50 - 53+00

53+00 - 46+80

46+80 - 40+00

40+00 - 37+00 John Faulk inspected

37+00 - 34+00

34+00 - 28+20

No Slag Hauled.

No Slag Hauled ^{Ref.} W.H. on Chardon Westland

28+20 - 23+00 " " " "

23+00 - 17+40

17+40 - 12+20 Out of Slag at Noon

Rolling + draining roadbed. Marks 1/2 day in P.M.

12+20 - 8+00 in P.M.

8+00 - 5+20

5+20 - 0+00 Last load at 2:30 P.M.

Spreading Screening + Rolling. Rain in Morning

Hauling #4

" #4 Marks 1/2 day. Est. + Pay Rolle

Top Course 66+79 - 48+00

" " 48+00 - 38+00

38+00 - 34+00

34+00 - 16+00

16+00 - 0+00

1925	Men	Trucks	Rollers
July 9	7		
July 13	16	1	1
14	6	1	1
15	6	1	1

July 16	6	1	1
---------	---	---	---

Grading Berms

III 4 Tanks.

III II I

7 Trucks Penetration

3 ea/Coat

Right 0+00 to 11+50
 Left 0+00 - 9+30
 Right 11+50 - 23+70
 Left 9+30 - 29+40
 Right 23+70 - 42+40
 Left 29+40 - 45+00
 Right 16+50 - 23+00
 Left 16+50 - 26+40

Initial	Number	Weight	Class
Eric	31925		1+2
Eric	25262		1+2
Eric	26958		1+2

Initial Number Weight

P.+L.E 52161 116400

P.+L.E. 52107 116000

N.Y.C. 5-417734 104600

N.Y.C. 5-420196 120,100

P.M.K+Y 560641

P.+L.E. 5-52175

P.+L.E. 5-51042

P.+L.E. 5-50842

P.M.K+Y 5-60266

P.+L.E. 5-50066

P.+L.E. 5-52811

P.+L.E. 5-51658

P.+L.E. 5-50321

P.+L.E. 5-52261

P.+L.E. 5-50705

P.+L.E. 5-50643

P.+L.E. 5-52270

~~P.+L.E. 5-51158~~ Sent to Newbury

From 5+9, to sta.

} 66+79 to 58+30

58+30 to 54+90

54+90 50+10

50+10 46+20

46+20 42+00

42+00 38+00

38+00 35+50 ^{3/12 of Carload on Diag Rd.}

} 35+50 27+70

27+70 23+60

23+60 19+60

} 19+60 - 11+40

11+40 - 7+25

7+25 - 3+60

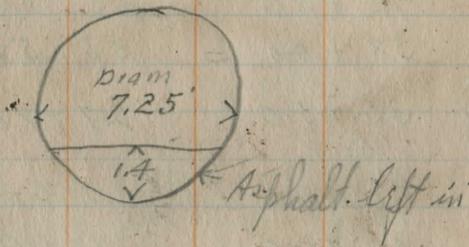
3+60 - 0+00

Asphalt

Car.	No.	Weight	Gallons	Sample No
U.T.L.X.	50430	78953	10 Trucks	1
U.T.L.X.	55245	50934		2
U.T.L.X.	52813	63034		3

Penetration	Seal Coat
sta. to sta. 0+00 - 23+70	sta. to sta. 0+00 16+50
{ 23+70 to 45+00 Left	16+50 to 26+40
{ 23+70 - 42+40 Right	16+50 to 23+00
{ 45+00 - 63+00 Left	26+40 - 37+90
{ 42+40 - 57+90 Right	23+00 37+00

lbs. per gal. 8.0001
U.T.L.X. 50430



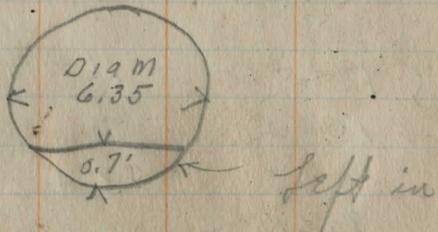
$$(41.3 - 5.7) \times 32.5 = 1157 \text{ sq. ft.}$$

Length 32.5' 1157

$$1157 \times 7.48 = 8654 \text{ gal. (Net)}$$

Car.

lbs. per gal. 7.9997
U.T.L.X. 55245

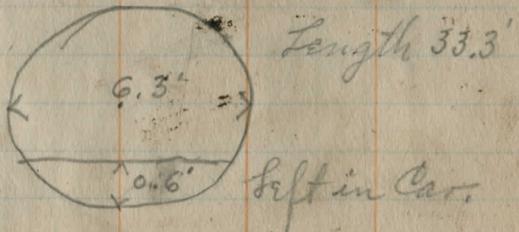


Length 27.2 ft.

$$(31.7 - 1.8) \times 27.2 \times 7.48 = 6081 \text{ gal.}$$

Car.

lbs. per gal. 8.0709
U.T.L.X. 52813



Penetration

4250 lin. ft.
4500 lin. ft.

2) 8750
4375 lin. ft. Average
14 ft. width

~~17500~~
4375
9) 61250 sq. ft.

6805 sq. yds.
2 gal.

13610 gal. Amt. Required on Penetration

0+00 to 43+75 Penetration	13610 gal.
0+00 to 24+70 Seal	2882 gal.
by first + 2nd Cars	<u>16492 gal.</u>
Amt. req. for surface covered	16035
Amount in two cars	16035
R.R. Weights, 8.1# per gal at 300°F	16035
Difference, (shortage)	457 gal.

Required	16492	16492
Used (Car. meas. by W.C.M.)		<u>14735</u>
Deficiency		1757

Seal Coat. 57

2300
2640

2) 4940
2470 lin. ft. average
14 ft. width.

9880
2470
9) 34580 sq. ft.

3842 sq. yds. $\times \frac{3}{4} = 2882$

78953	1st. car.
<u>56934</u>	2nd car.

# per gal. 8.1)	129887.0	(16035)
	<u>81</u>	
	488	
	<u>486</u>	

287
<u>243</u>
440

July 16, 1925

Truck loads of Asphalt
 1 Foreman, 6 Laborers, 1 Roller
 1 Asphalt Distributor Truck.

July 17 - 1925 Truckloads

1 Foreman, 6 Laborers, 1 Roller
 1 Asphalt Distributor Truck,

III Heavy Rain Storm at 10:45 A.M.
 Penetration, left side 55+00
 Right " 48+50

III 1

Penetration Left. 55+00 to 63+60
 Right 48+50 to 57+90
 Seal Coat Left. 26+40 to 37+90
 Right 23+00 to 37+00

Topo FAIRM T RD
CH #16 Sec C & D

8/21/50

E

+81	20' 15" M
+40	20' 30" M
+13	21.5 10" M
15+0	13' B 14'D
+83	20' @ 40" E
+60	21 @ 24" M
+44	22.5 @ 11" M
+21	20 @ 15" M
14+05	21.5 @ 72" E
14+0	14' B 15'D
+88	23 @ 15" M
+67	18.5 @ 24" M
+37	22.5 @ 18" M
13+14	22.5 @ 15" map
	15.5 @ 112" VSP

W.W. fence
rd side of trees

59 +54 20 24" M
+31 20' 24" M
+06 20' 18" M
19+0 ± 6' bank
18+0

T.P.	25.5'	+91	11'
rai fence	23'	+80	
		+71	12.5
		17+21	and ret
D 16' B 13'		17+0	10.5
		+77	17.5
		+66	15.5
		+50	grad up
		+34	DR
+23			14' 28" M
16+0			10' B 11.5 D

steel Ret. wall
steel Ret. wall
16" M Conc Ret. wall

£

+95 26' ≠
+76 29.5 I.P. P/L?

Tel pole 24' +73

23+28

25' 15" M^o 4' bank

5 SW NW 1/4 S100
25" MAPLE

79.55

← 27.52

31.12

N. SIDE
SPRUCE # 562397

SPRINKLY SIDE
4" Cherry

22+51±

I.P. SET 8/20/50

P.O.T.

D 12' B 10.5' 22+0

↓ 9' B 15' D

← UP

21+07 deep
D to culvert
16+68

20+85

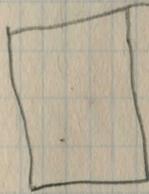
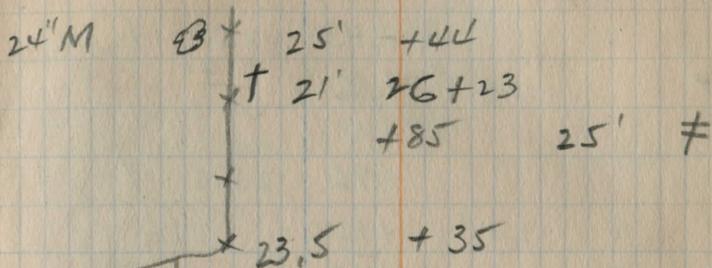
23.5

19+94

26.5 ≠ CE 1

± 7' bank

60



30' 25+0

+82 26' ≠

+80

+73

+ 22'
15' M 22.5

up ± 3' per 100

+58

± level

+50

4 pces
shrubbery

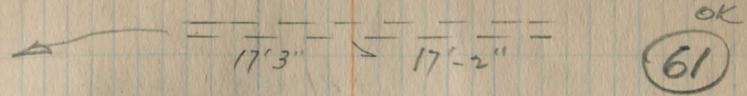
0
0
0
0

25'

+24

24+0

40+69 15" X 34.5 corr. pipe OK



(61)

No D P 13 40+0 14' P 19' D
 D 16' P 13' 38+0 12' P 18' D
 P = edge part metal
 No find culvt.
 should be ??
 SEE PAGE 64 FIG. # 104

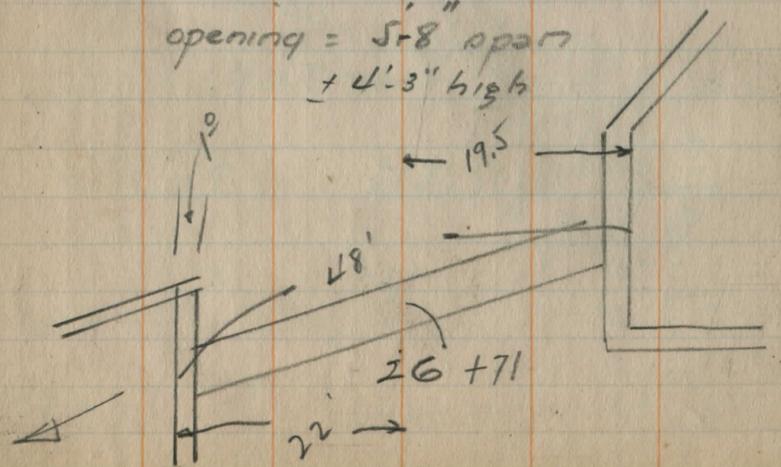
37+0
 36+0
 † 20 35+28 †

should have
 No pipe †
 ± level 35+06
 6" Catalpa 26' + 88
 6" Evergn 30' 34+18
 15' Mulberry? 25' + 87
 +65 25' †
 9" M 25' +64
 12" M 24.5' +44
 † 22' +35
 12" Map 25' +26.
 10' Map 24' 33+0
 10' AP 24' +70
 10' AP 23' +40
 6" Plum 22.5' +15
 † 21' 32+10

27'
 31+94 26' †
 + 21' + 59
 30+43 25' †
 + 24.5 +16
 29+0
 +96 25.5 †
 15" M ∅ 25' +86 †28'
 12" M ∅ +69
 14" M ∅ 25' +54
 28+37 23' 28" W.C. †
 +55 24' 14" M †
 27+44 26' † †

Conc. culvt OK

opening = 5'-8" apart
 + 4'-3" high



+56 29.8 Δ P/L
 +52 24.5 †
 +41 16.5 level
 12"E @ 20' 47+08
 10"E @ 21' +97
 18' +87 16.5 level
 level +72
 9" M @ 19' +60
 Mock orange
 Begin hedge 18' D 13.5' P 10' 46 14.5' P 16.5' D
 21' 45+18
 End osage hedge 18.5' 45+15
 12" M @ 17' +71
 +65 20' @ Evergn
 +39 20' Evergn
 +36 24' Evergn
 44+27 17' level
 18.5' 42+15
 D 14' P 11' 43+0 14- P 17.5' D

SPK + 2

+ †
 + End strubs
 54+ @ 6" M
 +99 32.5 @ 4" M
 +81
 Northwood Rd
 +77 32.5 @ 8" M
 27' → strubs
 +45 23'
 +55 24'
 +36 23' Blue spruce etc
 +26 16.5 level
 53+0
 +77 26' †
 D 13.5' P 10' 52+0 13' P 16.5' D
 13' +18
 1.5" PLV @ 16.5 ± 09
 51+09
 8"E @ 18' 50+05
 UP grad ← 13.5' +96
 49+0
 8"E @ 19' +82
 14"E @ 20' 48+04
 17' 48+0
 P 9' 48+0 15' P

See FB 104
Pg 66
for X Sect'ns

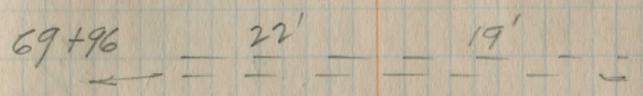
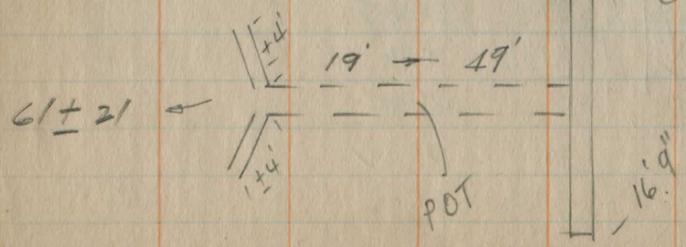
± 9' Ext. 67+?
ernal

67+10 → 4p ± 1.0 @ 40'

Cuyahoga Trail

65+32

4' x 4' x 68' Conc culvt
" floor
OK

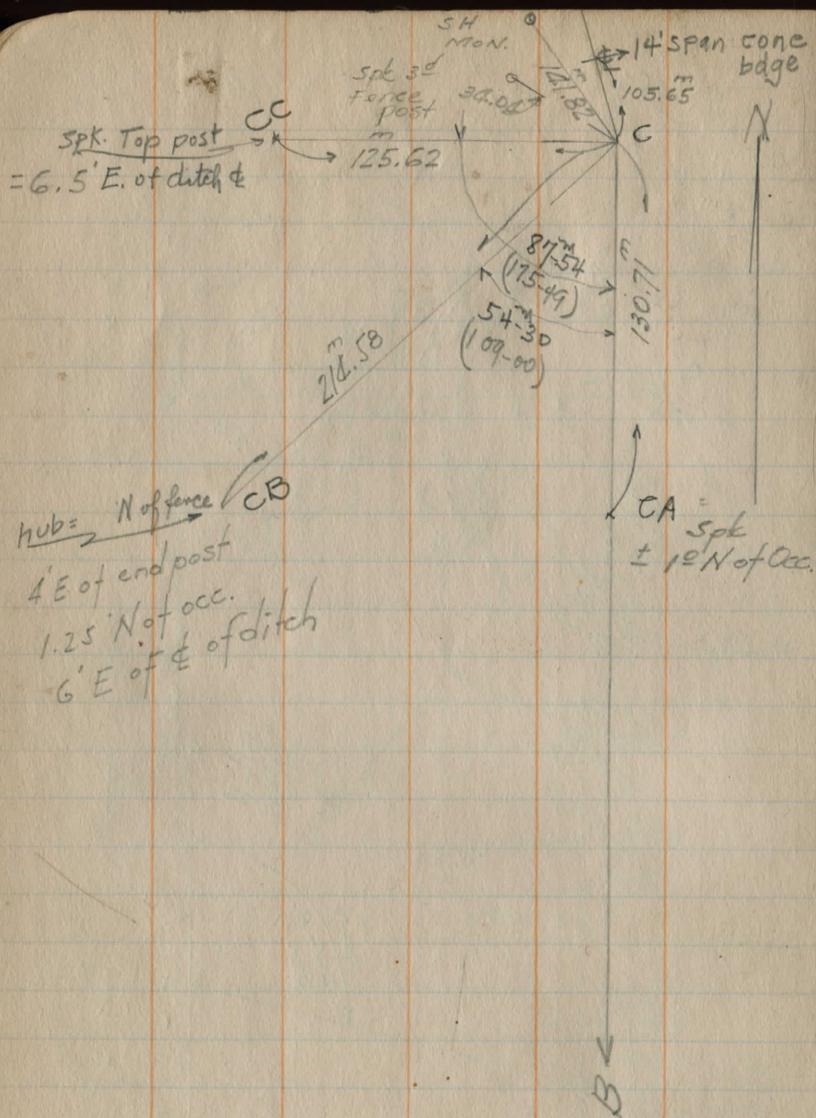


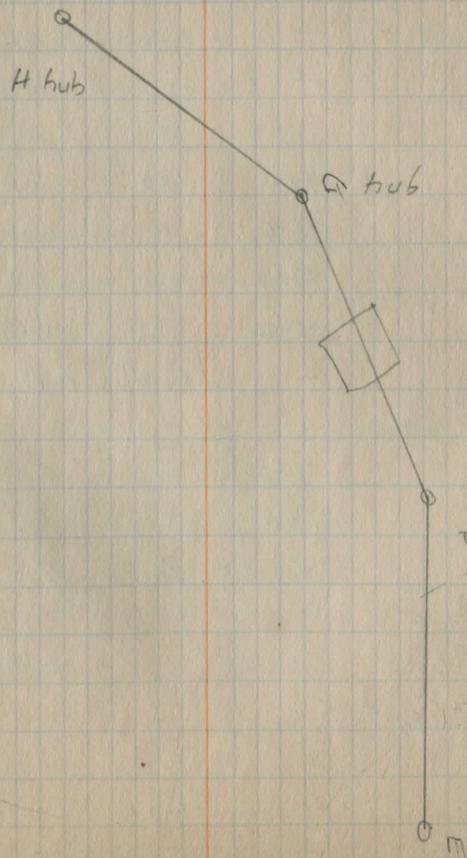
15" Corr. OK open ± 100'
outlet = (2 men 1 hr)

62+80 16' Ext

60+ 21' Ext

23' External 58+





4-18-51 C.H. #16 SEC C

BM.	1.48	1038.95		1037.47
BM.			7.23	1031.72
TP.	3.12	1033.38	8.69	1030.26

Set at	B Son	L fort	Stadia	Rod	
D	C	353-23	94	7.35	1076.03
		43-26	139.	8.65	1024.73
		" "	158.	9.0	1024.38
		" "	182	11.2	1022.2
		" "	130	5.4	1028.0
		99-0	190	6.0	1027.4
		93-0	"	11.35	1022.0
		93-0	400	6.50	1026.9
		112-30	295	5.3	1028.1
TP.			5.14	1028.24	✓

♀ to Pole 130°-27'

		125-47	160	5.7	1027.7
		180°	35'	5.0	1028.0
		353-23	100'	5.9	1027.5

BM. 2.83 1032.55 ✓ 1031.72 ✓

C B Seast

			5.25	1029.3
		04-08	115.	2.16 1034.4

NE 4 of E end conc hdwl S side Rd
± 16 + 67

VERT SPIRE S ROOT 36" MAPLE N Side CH. #16 W. BANK RIVER

TOP SEWER N Side Rd 4" tile plugged prob. goes
to old house (form.
Tom Hill)

H₂O LEV N Edge River

& RIVER - BENDS S. N

N. BANK

W. BANK

E RIVER BENDS SOUTH

85' N. W of & RIVER WHERE IT BENDS WEST

Edge Floodwater

Hub for going S

Hi H₂O has gone thru
toe high bank N of rd
ground 6' E of sewer

Spk 36' Map

Point "C"

S.E. & W Abutment bridge SAME AS UNDERSIDE OF BRIDGE

1034.55 ✓

Set	BS	Lon R-	STA	ROD
C	East			11.22 1023.3
				9.8 ?
				9.78 1024.77
✓		71-38	175'	11.9 1022.6
✓	" "	106		6.45 1028.1
✓		231-44	39'	4.25 1028.3
✓	" "	129'		5.30 1029.2
✓	" "	231		5.75 1028.8
✓		241-25	280	6.9 1027.6
✓		271-14	220	4.75 1029.8
✓		286-23	258	3.76 1030.8
✓	" "	200		7.30 1027.2
✓	" "	222		5.6
✓	" "	110		6.0 1028.5
✓		268-30	113	5.5 1029.0
TP.	5.25	1034.05 ✓	5.75	1028.80 ✓
B	C			
✓		0-0	148	5.6 1028.4
✓		08-30	145	3.3 1030.7
✓		48-0	90	2.0 1032.0
		345-10	130	10.3 1023.7
		328-42	120	3.9 1030.1
		310-50	130	5.5 1028.5
		294-0	170	3.2 1030.8

Chan'l S EDGE BRIDGE

H₂O level 2:12 PM

Chan'l River H₂O 2' deep River bends west NW BANK

SE HOUSE SEPTIC TANK 30' EAST OF HOUSE

Male behind house 0.9 H₂O 25' beyond to toe Slack Bank

No Sign Flood West of here

" " " " " "

Wly EDGE Flood H₂O stream

W BANK River

W H BANK " No Flood H₂O goes W. here

W. " " BANK UP Wly

Chan'l (H₂O 1.4') bends South H₂O = 25.1

E. BANK

SET BS

1034.05 ✓

Lon RT	574	R _{0.2}	
41-30	50'	11.1	1027.9
147-40	178'	9.7	1026.3
180-00	288'		

TP A 5.18 1035.52 ✓ 3.71 1030.34 ✓

A	C ✓	144-0	48'	10.0	1025.5
	A			5.15	1030.4
		301-0	56'	9.2	1031.3
	"	"	165	4.2	"
	"	"	260	5.35	1030.2
	"	"	290	6.2	1029.3
	"	"	350	7.1	1028.4
	✓	219-40	210		
		259-0	435	9.5	1026.0

A = ± 20' SW of twin 12'ers Syc.
± 10' SE of triple water birch

T.P. 4.00 1032.24 1028.24

5.0 27.2

SET E BS on D

16-0	130	3.8	28.4
359-0	100	5.2	27.0
326-15	75	2.5	29.7

70

H₂O = 1025.6

H₂O 2.7 & Chant = 8' West Bends S Ely

H₂O 1.8 & " 20' West " Sly

H₂O = 1026.1

H₂O 1027.05

& River H₂O 1.55 Bends S wly 18' Bank NW Vertical

S BANK

KNAPP MEADOW

Old mill race - carries same H₂O

& River 25' North

H₂O 2.05 15' Ely to & river, ± 30' below dam dam

H₂O = 1028.5

Point E

	L. R.	STA	R ₀₀	
SECTION E. BS and				
4.31	1032.55		1028.24	
	326-15	185'	3.7	1028.8
	346-0	180	5.4	27.1
	02-40	173'	4.0	28.5
	87-0	146	5.6	27.0
	" "	160	9.1	23.4
	169-0	170	6.6	26.0
	" "	176	11.5	21.0
	260-0	165	3.4	29.1
	242-25	190	6.8	25.7
	242-29	313'		
TP,	5.0	1032.29	5.26	1027.29

SECTION F BS ME

	54-30	30	6.8	25.5
	" "	40	11.6	20.7
	302-0	22	4.1	28.2
	" "	92	6.0	26.3
	188-30	50	5.85	26.44
BM,	4.89	1031.05	6.13	1026.16
	183-53	73'		
9-21-51 E	130-17	85'		
	158-14	137'		
	" "	287'		

H₀₀ for going SFlood H₂₀ course

N BANK RIVER at Conf. A Flood creek

Edge River at Conf.

N_W River - 2 days Nly then Nly thru BridgeRiver H₂₀ ± 18" = 22.5W₁ End Plateau

HUB F E of Bridge N Side River

(" ")

N BANK RIVER

N Edge River 18" H₂₀ = 22.2 H₂₀

E BANK E. ROAD DITCH (300)

Moss Sly & North ABUTMENT

" " " " "

NE & SOUTH ABUT

NW & " "

HUB G

SETA G 85 on F

3.91	1030.07	✓	1026.16	✓
	313-14	120'	8.1	22.0
	326-0	108'	8.75	21.4
	333-0	87'	8.0	22.1
	337-48	88'	4.6	25.5
	02-36	77'	4.6	25.5
	48-38	103'	4.3	25.8
	109-43	190'	3.5	26.6
	130-30	168'	6.2	23.9
	146-35	144'	3.9	26.2
	162-0	139'	9.8	20.3
	164-48	315'	8.7	21.4
	170-49	323'	8.6	21.5
	137-13	352'		

N. Edge

E RIVER at Shallow Creek from N.

S. Edge

S. BANK

S BANK

E RIVER

S Edge

A sand BAR

HUB H ± 150' S of former log jam

S of BROWN ACE CANY

TP.

4.62 1029.62 ✓ 5.07 1025.00 ✓

SET ON H, BS. ON G

		5.1	24.5
	95-25	100	7.0
	112-0	195	7.2
	"	215	-1.0
	113-35	195	8.6
	123-0	180	9.7
	123-0	215	8.7
	124-40	218	5.7
	146-53	245	5.9

AT H

Fluid Chan'l

E Bank River

E " " also H. bank 250' Wly

E Edge

E BENS SW.

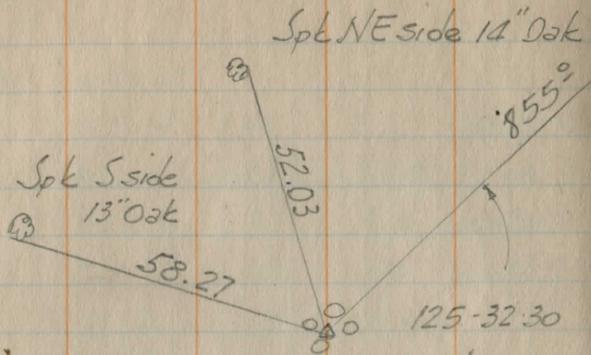
W Edge

W BANK ± level 150' W

HUB 25' NW 12" WALNUT

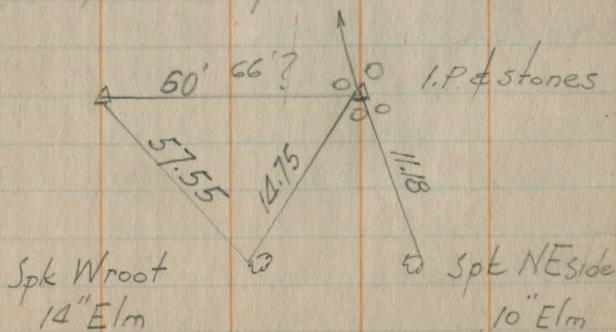
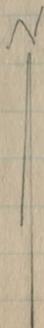
REFERENCES HUSTED

4-22-52
Dorn
Maynard
Lewis



1631.45

SE 4 60' Strip



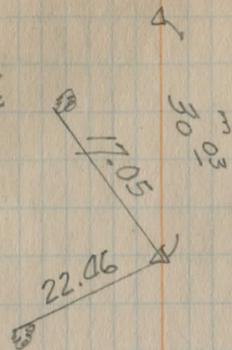
MEMORIAL

FOREST

Also Pg 93 this book

Spk SW side
12" Tulip

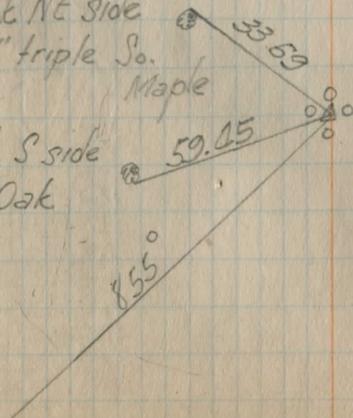
Spk NW side
12" Oak



786.85

Spk NE side
6" triple So.
Maple

Spk S side
14" Oak



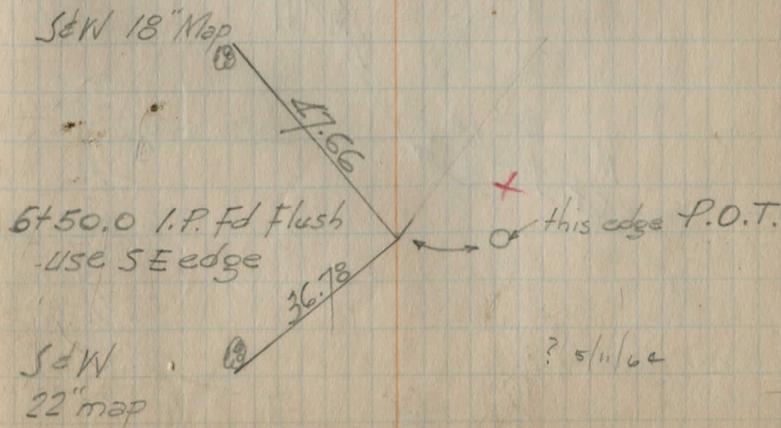
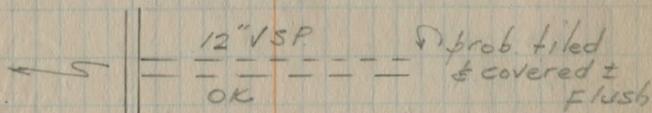
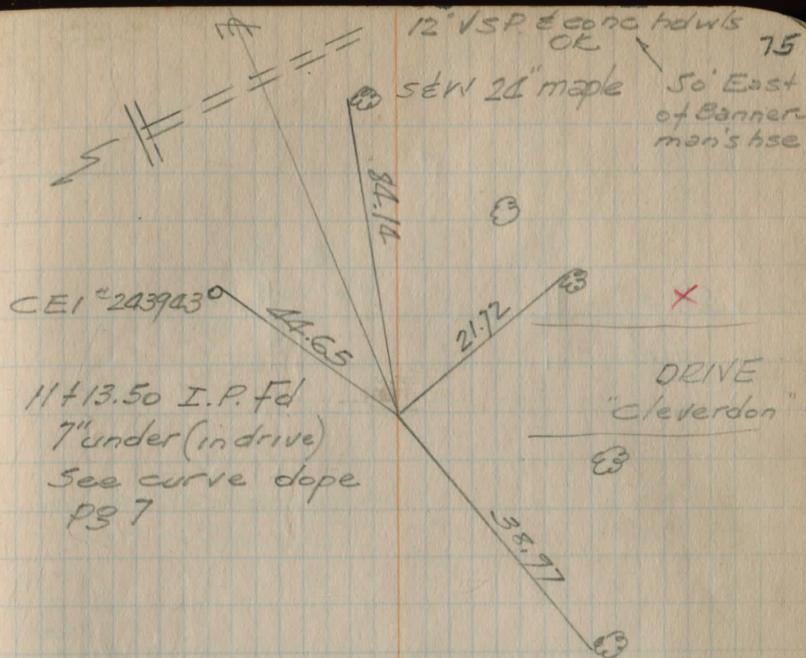
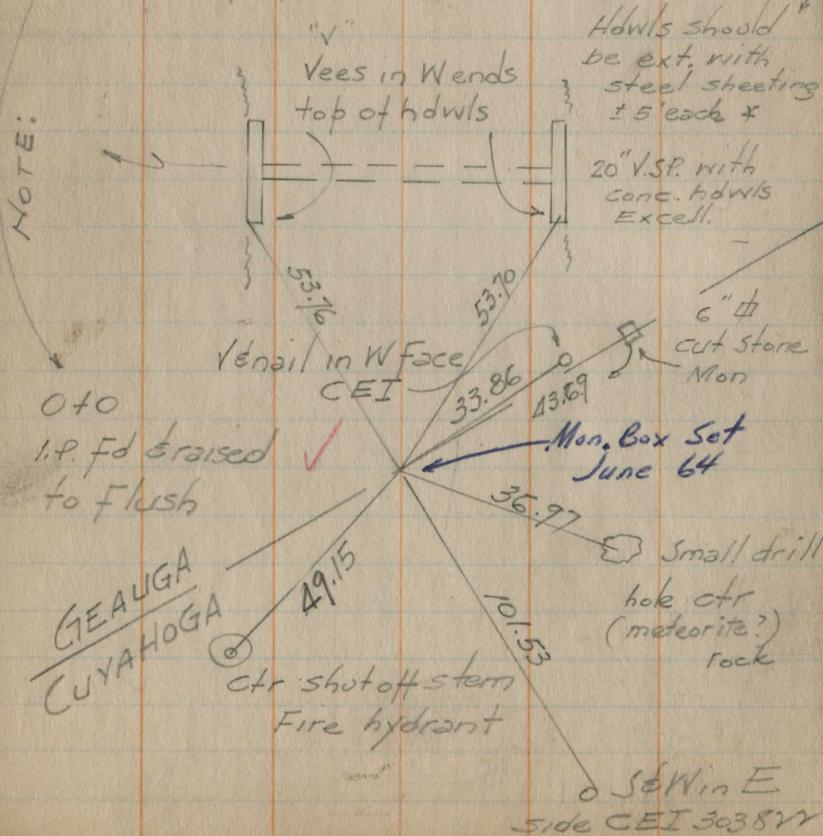
Russell Rd
CH # 20

& References

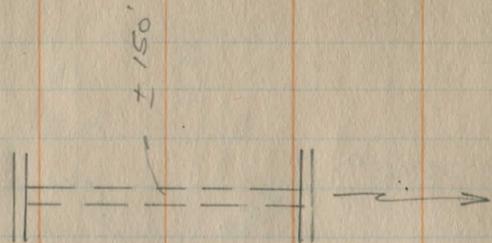
5-15-52

Pom Maynard Lewis

Peroyer deed says Co line is
0.19' NE of I.P.

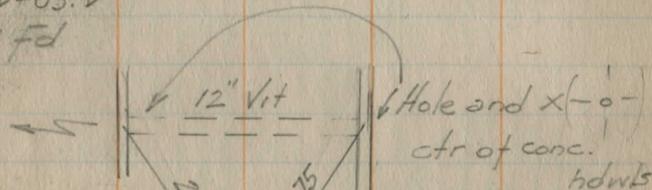


12" V.S.P. &
conc. hdwls
Exc.



See curve dope pg 8 & 9

22+03.2
I.P. Fd

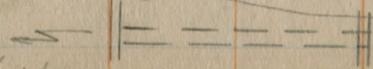


Mon. Box
Set June 64

30.30 I.P. Fd

Brick
&
stucco
Hse

12" V.S.P. & conc. hdwls
Exc. IF
± 20' of $\frac{1}{4}$ cleaned



PB 76

S&W Sly
Side 16" elm

S&W Sly side
28" ash

Mon. Box Set
June 64

32+72.80
I.P. Fd



See curve dope pg 10, 11

12" V.S.P. & conc
hdwls. Excell.

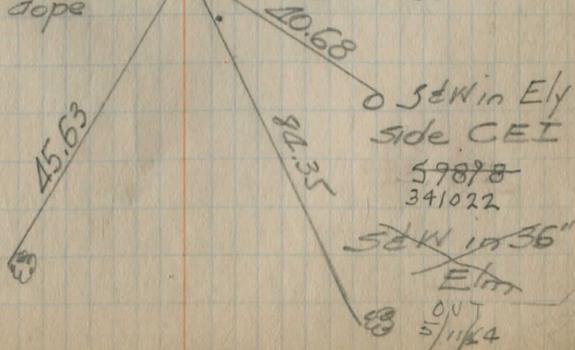
Large
Ranch
Hse

DRIVE

29+12.50 I.P. Fd
See curve dope
pg 7

Mon. Box Set
June 64

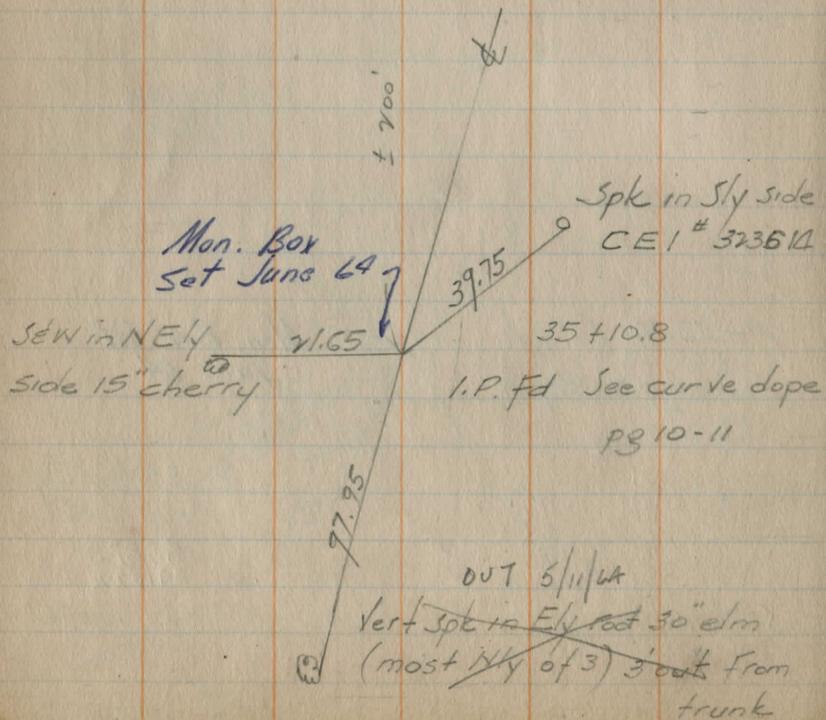
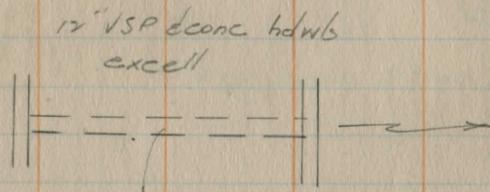
S&W in Nly
side 18" shag
Hick



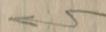
S&W in Ely
side CEI

59878
341022

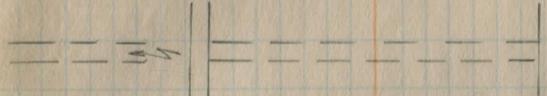
S&W in 36"
Elm
OUT
5/11/64



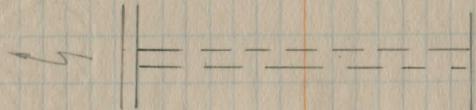
pg 77



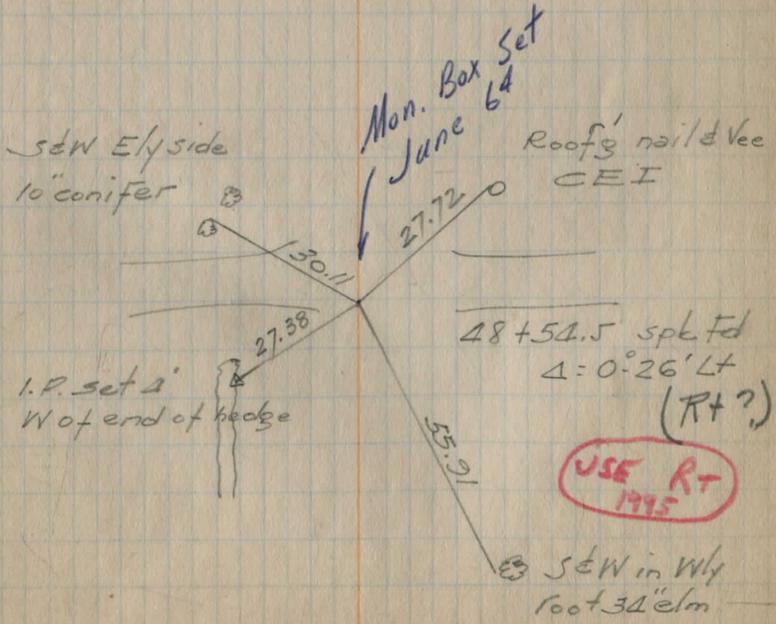
12" CIP Recently ext Nly

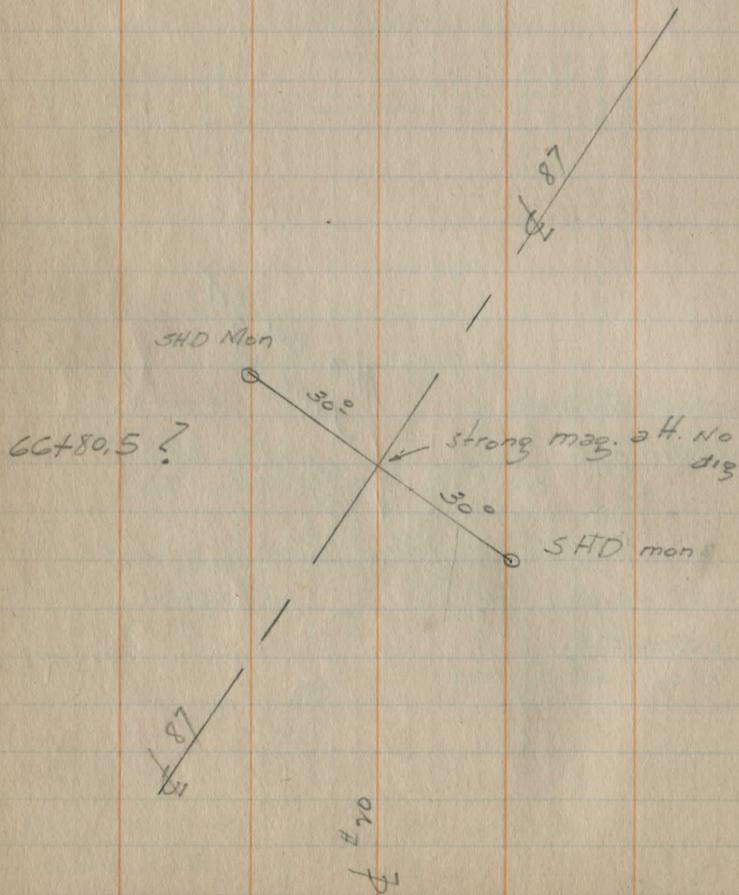


12" C.I.P. core hdwls Washout at both ends of N Hdwl



12" C.I.P. & conc. hdwls OK





BM

10-6-52 C.H. #16 relocation between Northwest & 1101.40

59+0

P.T. 59+37.61

62.39

60+0

61+0

PC^c
+20.74
+25.16^m

62+25.58^m

21.58^m P.I. to spk on razor back

 $21.58 + 62 + 24.70 = \text{Sta } 62 + 46.32$

53.7 = 63

154.70 = 64

PP 63+3.72

64+93.62 = Sec line

66 + 89.45

WATT Rds

N.

5 Hdwl 61+21 OLD STA.

S

(79)

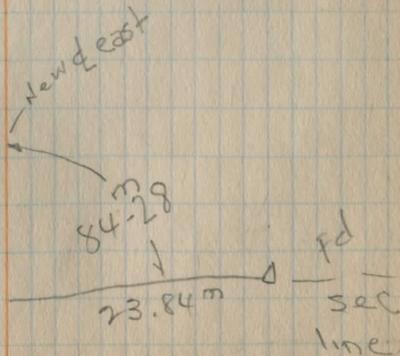
44'
Fence

57'
Fence

59'
hdwl

70.7
Fence

153
45



10-6-52

FAIRMT. RELOC.

BM 2.40 1103.80 1101.40

61+0

61+35

61+40

61+50

T.P. 11.53 1112.93 1101.40

60+0

750

T.P. 12.08 1124.48 0.53 1112.40

59+0

58+75

58+37.6

N

E

S

(80)

50. Hdwl PAGE 79

1095.0 97.1
8.8 6.7
FL bank
59' 50'1098.8
5.096.9
6.9
95.4
8.4 FL97.7
6.1

5 Hdwl

07.9 07.4
5.0 5.5
47 271106.8
6.106.1 02.3 02.4
6.8 10.6 10.5
15 37 571109.9
3.017.6 18.3
6.9 6.2
36 18
Round1118.6
5.91121.5
3.01122.3
2.215.0 08.7
9.5 15.8
32 44 2
Creek 18.3
1106.2 57

10-11-52

FAIRM'T RELOC cont'd

BM 12.78 1113.68 1101.40

G1+75

TP 13.05 1126.73 0.0 1113.68

G2+0

TP 11.68 1138.41 0.0 1126.73

TP 7.40 1145.81 0.0 1138.41

G2+46

G3+0

TP 7.61 1153.42 0.0 1145.81

G3+0

G4+0 TP 8.37 1159.19 2.60 1150.52

TP 8.37 1159.19 2.60 1150.52

N

S

(81)

cut of hdwl

1102.7

11.0

10.5

1118.4

rv.1

LEVEL

16.2
408.3 5.8
32 404.6
40

23.8

41.3

47.3

44.2

42.3

DOWN G1
0.07

± 22.0

4.5

3.5

1.6

3.5

± 35

12

30

50

20.8

23.8

37.0

UP CASE

± 25.0

25

8.8

6.7

40

25

62

57.8

48.6

49.1

49.6

4.8

4.3

3.8

20

45

65

41.8

42.8

48.3

48.7

DOWN
SHORT

11.6

10.6

5.1

4.7

2.60

50.2

51.0

± 47

32

10

62

57.8

27

50

1159.19

65

T.P. 8.38 1166.30 1.27 1157.92

66

+09

+35±

T.P. 3.67 1166.37 3.60 1162.70

B.M. 1.64 1161.73

SLOPE STKS 10-20-52
 set 3' out from dist. $\frac{1}{2}$ given hereon

65+0 □ 79' □ 59' *

64+0 □ 32' □ 30.5' □ 70' *

63+0 □ ± 51' □ ± 40.5' □ ± 80' *

61+0 □ 60' □ 59' □ 70.5' *

60+0 □ 48' □ 45.5' □ 58' *

59+0 □ 36.5' □ 44' *

N

S

82

55.3

55.3

56.1 56.2

3.9

3.9

1.35

3.1

3.0

25

60

57

25

50

707 + 154

59.2

58.8

61.8

61.8

61.7

60.7

7.1

7.5

4.5

4.5

2.2

4.6

5.6

21

11

3

62

57

30

45

← Micromark
20.25 →

61.0

5.3

4.4

40

Moulin DT

58

33.5

24.5

65

43.5

21.5

45

32

13

GRADE STKS

FAIRM'T RELOC

BM 12.98 1114.38 1101.40

59

60

61

62

T.P. 12.50 1126.75 0.13 1114.25
~~85~~

62

T.P. 13.29 1139.83 0.21 1126.54 ✓

63

T.P. 12.71 1151.96 0.58 1139.25 ✓

63

64

TP? 12.75 1164.39 0.32 1151.64

65

12-18-52

N
stk

E

S
stk

(83)

culvert hdwl

(11.1) ✓

3.3

(09.8)

(07.2)

4.6 stk

7.2 Grd

(03.4) ✓

11.0

(04.34) ✓

10.04

stk

(08.7)

(06.9)

6.2 stk dgrd S

7.5 grd N

(01.7) ✓

12.7

(10.3) ✓

4.1

(23.25)

(22.0)

3.5 stk

4.7 grd

(27.65) ✓

4.1

(24.5)

15.3

Grd 0.58 - (39.25)

(41.1) ✓

10.9 stk

3.0 grd

(50.8) 1.2 stk

(43.3)

8.7 stk

(42.4)

9.6 grd

(49.0)

3.0 stk

(46.9)

5.1 grd

0.74 grd

(52.89) ✓

+ 0.93 stk

(57.3)

7.15 stk

(55.5)

8.9 grd

(59.2) ✓

5.2 stk

(56.4)

8.0 grd

1164.39 ✓

66

TP	4.59	1166.81	2.17	1164.27
B.M.			4.93	1161.88 (1161.85)

7-21-53 Pelton Mountain

BM	7.0	1038.72		1031.72
TP	5.27	1038.24 ✓	5.76	1032.97 ✓
7+0		±	4.96	1033.28 ✓
TP	5.38	1041.85 ✓	1.77	1036.47 ✓
6+0			6.08	

5+0			31.77	
-----	--	--	-------	--

4+0

3+0

N

S

84

64.04

0.35 with
2.4 gal

63.7

1.2 with
2.9 gal

N

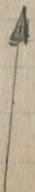
S

38.77 ✓		CS' 7"	
33.20			
5.57	3.08		8.92 ✓
	TOP STAKE		5.0'
39.35 ✓		CS' 10"	
33.55	2.6		8.83 ✓
5.80	7.5		15'
		39.18 ✓	
	2.67	33.10	
	TS	6.08	CS' 11"
			1032.4
36.65	5.2	9.5	
	TS	Fd (old)	
37.5 (1952)			

Fairmount Relocation

Grade

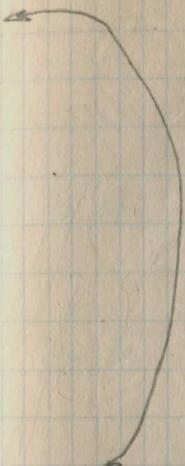
B.M.	10.07	111.47		1101.40	
60 dd			0.61	10.86	(11.1)
62 "			1.00	10.47	10.3
56+0					1142.0
+50					39.0
57+0					36.0
+50			9.24	1110.84	old stk
					33.0
58+0	0.51	1120.08	0.51	1119.57	
					30.0
					28.09
					1.91
+50					27.0
	8.52	1128.09	3.65	1119.57	
59+0					24.53
+50					23.13



1123.22

E to W

South (old) head in (So. side C.B.)
 E ground



7-27-53

7 side Goto

1.91
0.03 rod
 F 1.94

E stk

23.27 24.53
 5.0 rod 3.65 19.57
19.57 F 4.96

60+0

Grade

22.79

+50

23.51

61+0

25.30

T.P

0.39

1123.22

10.25

1122.83

+50

28.15

62+0

33.08

31.54

1.54

0.36

33.08

11.79

1132.72

+50

34.92

63

1.71

1144.01

10.53

1142.30

52.83

38.31

14.52

+50

41.69

1152.83

N

€ Ground

S

(86)

€ stk

23.22 22.8

5.05 18.2

18.2 F 4.6

6.5

€ stk

23.22

4.02 rod

19.20

25.30

19.20

6.1

5.2

€ stk

6.04

1.54

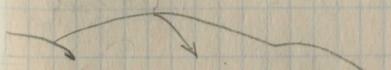
F 4.50

9.0

6.54 rod

1.54

F 5.0



44.01

6.20 rod

38.31

5.70

5.70 F 0.50

5.05

14.52

9.52

C 5.00

64+0 52.83
 45.08 ✓
 7.75
 T.P. +0.41 52.83 -11.22 1157.42 ✓
 +50 48.46

65+0 63.64
 51.85 ✓
 11.79
 +50 54.95

66+0 63.64 ✓
 57.49 ✓
 6.15
 T.P. 2.92 63.64 -6.43 1160.72 ✓ 67.15
 +50 59.66 ✓
 7.69
 67.15

67+05 60.87 ✓
 T.P. +3.86 1167.15 -3.31 1163.29 ✓ 6.28 ✓
 6.28 ✓

68+05 66.60
 67.0 ✓
 4.6
 BM +1.75 1166.60 1161.85

7.75 ✓
 5.75 r
 C 2.0 ✓
 3.80
 7.75 ✓
 1.75 r
 C 6.0 ✓

11.79 ✓
 8.29 r
 C 3.5 ✓
 11.79
 10.0
 C 1.79
 11.79 ✓
 5.29 r
 C 6.5 ✓

6.15 ✓
 3.15 r
 C 3.00 ✓
 6.15
 3.91
 2.24
 6.15
 0.65 r
 C 5.50 ✓

7.69 T.P. 7.39
 6.44 6.43
 C 1.25
 66+0
 7.69
 3.69
 C 4.0

6.28 ✓
 0.03 rod
 C 0.25 ✓
 6.3
 3.8
 C 2.5
 6.28 ✓
 0.03 rod
 C 6.25 ✓

4.6
 2.1 rod
 C 2.5 ✓
 4.6
 4.22
 C 0.3
 4.6
 2.1 rod
 C 2.5 ✓
 Spt S side Elm

N
5+K. Grd.

±Grd.

S 189
Grd. JK

53+3

53+50

54.73

45.54 ✓

9.19

9.19
4.6 1.92 rod
C 7.27
7'-3" ✓

T.P.

1.43

1154.73 ✓

0.00

1153.30

53.3

1123.5

9.8

9.80

6.51 rod 9.80

9.80

C 3.29

C 3'-3" ✓

53+0

53.30 ✓

1125.54

7.76

7.76

3.33 rod 6.70

7.76

C 4.43

4'-5" ✓

6.60

1.18

53+50

53.30

1126.66 ✓

6.64

6.64

1.93 rod 4.10

6.64

4.3 rod

2.40

6.64

0.00 rod

54+0

1153.30

C 4.71 ✓

4'-9" ✓

C 2.34

C 6.64 ✓

6'-8" ✓

Levels for ditch North berm

Stks set 16' N of E

BM	8.25	1045.72		1037.07
T.P.	5.65	1047.25	4.12	1041.60
3115 So. side		54'	stk	
3125			stk	

+50

4

+50

5

+50

6

+50

+80

44' stk/stk

#16 St 3 to 6 + 80

NE x E end conc. hdwl SE quad

ground	grade	stk	cut
4.5		9.22	G
5.76	38.53	8.72 ✓	5-0
		3.76	

5.73	38.70	8.55 ✓	4-0
		4.55 r	

.70%

5.28	39.05	8.20 ✓	4-0
		4.20 r	

-0.7%

4.99	39.40	7.85 ✓	4'6"
		3.35 r	

4.57	39.75	7.5 ✓	4-0 ✓
		3.5 r	

4.92	39.40	7.85	4.0
		3.85 r	

-0.7%

5.26	39.05	8.20	4-0
		4.70 r	

5.40	38.70	8.55	5-0
		3.55 r	

5.75		8.76	5-0
------	--	------	-----

10.14		9.16	1-6"
		7.66	

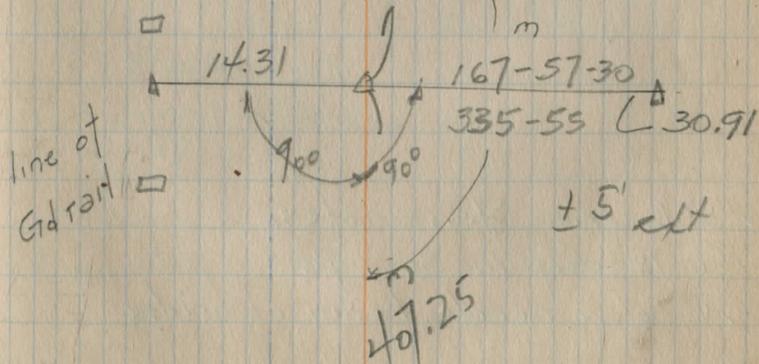
173-30
347-00
58+38.0
old

407.25

173-35
347-09

6' Eltuse
67+62.2 old

443.5



10-16-54 9:30 AM

FLOOD WATER ELEV.
FAIRMOUNT RD & CHAGRIN RIVER

Temple
POMEROY

+ HI -

6.25 31.44 ✓

6.30 31.39

7.33 30.36

7.50 30.19 ✓

T.P. 3.68 1037.69 3.40 1034.01

7.82 1037.41 ~~7.82~~ 1029.59

2.76 1034.65 (1034.68)

9.35 28.06

9.35 28.06

7.21 1030.48

6.79

4/3/56 from Sten's notes

1/2 19" deep in 30" pipe

24" below needle beam of bridge

192

RIVER

H₂O level N side #16 front Laasas

" " " " ± 300' E

" " S " " " "

" " " " Front Laasas

N.E. cor headwall N.E. guard 306, 16

N.E. cor N.E. curb Chagrin brdg 306

H₂O level E side Chagrin brdg

" " W " " "

H₂O = ± 2' below bottom of stringer 306

Culvert (pipe across rd ± 125' E of

Laasas shows plenty of discharge

" no intake

H₂O = 11 1/2" below needle beam bridge
on #16

H₂O S of 16 Bridge 20' ±

" N of " " " 30' ±

	+	HI	-	FLV
BM	2.62	102.62		100.00

0+30

"HUSTED FOREST"
ELEV. (S.E. Auburn)
11-16-54

2+0

See plan pg 95

3+0

3+±10' T.I.C. (APPROXIMATE TO S&B)

4+0

5+0

TP	3.20	103.37	2.45	100.17
----	------	--------	------	--------

6+0

7+0

8+0

5+06		7.65 r	95.92	Flow line
------	--	--------	-------	-----------

3+10		8.70 r	94.67	" "
------	--	--------	-------	-----

PM		3.89	99.48	
----	--	------	-------	--

9+0

Grade

Cut from
TOP
Stake

TOP
STK

DITCH FL.

REF Spk SW Side 120' TO ULD PER Pg 73

98.36
4.26 r

101.74	0.88
--------	------

98.34	4.28 r
-------	--------

100.73	1.89
--------	------

97.62	5.00 r
-------	--------

101.14	1.48
--------	------

95.37	7.25 r
-------	--------

101.55	1.07
--------	------

96.67	5.95 r
-------	--------

100.17	2.45
--------	------

98.52	6.10 r
-------	--------

96.4 (4'-6 1/4") 4.52
100.92 2.45

96.79	6.58 r
-------	--------

96.2 (4'-2") 4.16
Flowing Water 100.36 3.01

97.12	6.25 r
-------	--------

96.0 (4'-7 1/2") 4.63
100.63 2.74

97.24	6.13 r
-------	--------

4" F.I.C. TRENCHLY CARRYING H₂O

4" " " S&B

REF Spk TRIPLE SOFT MAPLE PER Pg 73

95.8 (5'-4 1/4") 5.35
101.15 2.22

97.19	6.18 r
-------	--------

	7	8	9	10	11
		103.37			03.87
12+0					
14+0					
TP	3.18	102.85	3.70	99.67	
12+0					
13+0					
14+0					
15+0					
16+0					
768			7.95	94.90	
17+0					
18+0					
720			10.30	92.65	
B.M.			5.61	97.24	

Grade	Cut from Top Stake	Top STA	DITCH
95.6 (4'-5")	4.42	100.02 3.35	97.07 6.30 r
95.4 (4'-3 1/4")	4.27	99.67 3.70	96.93 6.44 r
95.2 (5'-2 3/4")	5.22	100.42 2.43	96.83 6.02 r
95.0 (4'-5 3/4")	4.47	99.47 3.38	96.75 6.10 r
94.8 (4'-3 3/4")	4.39	99.19 3.66	96.67 6.18 r
94.6 (4'-7")	4.59	99.19 3.66	96.32 6.53 r
94.4 (3'-9 1/4")	3.77	98.17 4.68	95.71 7.14 r
94.2 (3'-10 1/2")	3.85	98.05 4.80	95.97 6.88 r
94.0 (2'-7")	2.58	96.58 6.27	93.92 8.93 r

F. Line CREEK 30' HO. DRIVE

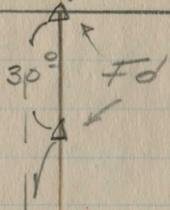
W. END N. HWY. CULVERT CARRYING FARMER MUSTER DRIVE
OVER ALMY DITCH

HUSTED MEM FORM.ly

11-16-54

H. SPARKS

Photo



County

N 2-34-30 E

786.85

prob. drain tile

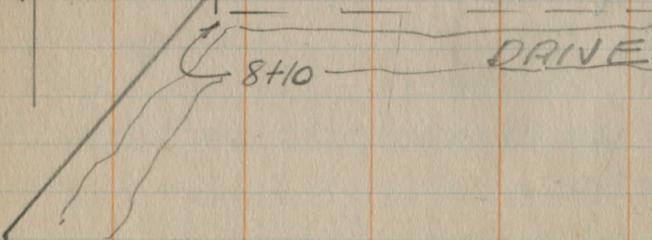
16768 14" well casing culvt
No out let

N



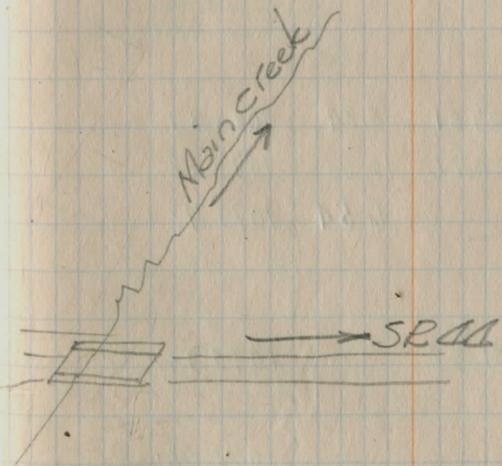
8+10

DRIVE



Main Creek

SRCA



	+	1081.52	-	Flav
TP	7.56	1087.92	1.16	1080.36

18+00
5700

				1085.02
--	--	--	--	---------

TP	1.51	1080.74	8.69	1079.23
BM			6.77	1073.97

9.6

2.9

9.4

104-467-jaite - Oct 1, 1927

~~544-634 Para Hollis, Baker Pole.~~

✓

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 connection found in column of constants.
Degree of curve with a given T may be found
by dividing tangent, (or external), opposite T 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.

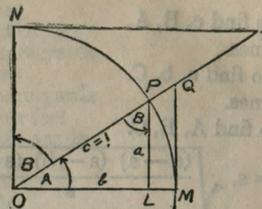


TABLE II

TRIGONOMETRIC FORMULÆ.

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

$$R = OB = c = 1$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

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

Use Law of Lines.

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

Use Law of Lines.

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

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

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

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

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

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

Area of a triangle:

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

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

PRISMOIDAL FORMULA.

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

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

TABLE III

INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219
$\frac{1}{8}$	.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
$\frac{7}{8}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844
$\frac{15}{16}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896
1	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948
	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.000
	0	1	2	3	4	5	6	7	8	9	10	11

TABLE IV
USEFUL RELATIONS.

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

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

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

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

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

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

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

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

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

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

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

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

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

Curvature in feet = $0.667 (\text{Dist. in miles})^2$

Difference between arc and chord length, 0.05 feet in $11\frac{1}{2}$ miles

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

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 = $R - R \sin^2 a + C \cos a$

Vertical Distance = $R \frac{1}{2} \sin 2a + C \sin a$

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

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

a = angle of elevation for mid Reading

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

deg	sin	tan	sin	tan	sin	tan	sin	tan	sin	tan	sin	tan	deg
0'	0'	10'	10'	20'	20'	30'	30'	40'	40'	50'	50'	0'	0'
46	7193	1.0355	7214	1.0416	7234	1.0477	7254	1.0533	7274	1.0599	7294	1.0661	43
47	314	.0724	333	.0786	353	.0850	373	.0913	392	.0977	412	.1041	42
48	431	.1106	451	.1171	470	.1237	490	.1303	509	.1369	528	.1436	41
49	547	.1504	566	.1571	585	.1640	604	.1708	623	.1778	642	.1847	40
50	660	1.1918	7679	1.1988	7698	1.2059	7716	1.2131	7735	1.2203	7753	1.2276	39
51	771	.2349	790	.2423	808	.2497	826	.2572	844	.2647	862	.2723	38
52	880	.2799	898	.2876	916	.2954	934	.3032	951	.3111	969	.3190	37
53	986	.3270	8004	.3351	8021	.3452	8039	.3514	8056	.3597	8073	.3680	36
54	8090	.3764	107	.3848	124	.3934	141	.4019	158	.4106	175	.4193	35
55	192	.4281	208	.4370	225	.4460	241	.4550	258	.4641	274	.4733	34
56	290	.4826	307	.4919	323	.5013	339	.5108	355	.5204	371	.5301	33
57	387	.5399	403	.5497	418	.5597	434	.5697	450	.5798	465	.5900	32
58	480	.6003	496	.6107	511	.6212	526	.6319	542	.6426	557	.6534	31
59	572	.6643	587	.6753	601	.6864	616	.6977	631	.7090	646	.7205	30
60	660	1.7321	8675	1.7437	8689	1.7556	8704	1.7675	8718	1.7797	8732	1.7917	29
61	746	.8040	760	.8165	774	.8291	788	.8418	802	.8546	816	.8676	28
62	829	.8807	843	.8940	857	.9074	870	.9210	884	.9347	897	.9486	27
63	910	.9626	923	.9768	936	.9912	949	2.0057	962	2.0204	975	2.0353	26
64	988	2.0503	9001	2.0655	9013	2.0809	9026	.0965	9038	.1123	9051	.1283	25
65	9063	.1445	075	.1609	088	.1775	100	.1943	112	.2113	124	.2286	24
66	135	.2460	147	.2637	159	.2817	171	.2998	182	.3183	194	.3369	23
67	205	.3559	216	.3750	228	.3945	239	.4142	250	.4342	261	.4545	22
68	272	.4751	283	.4960	293	.5172	304	.5386	315	.5605	325	.5826	21
69	336	.6051	346	.6279	356	.6511	367	.6746	377	.6985	387	.7228	20
70	397	2.7475	9407	2.7725	9417	2.7980	9426	2.8239	9436	2.8502	9446	2.8770	19
71	455	.9042	465	.9319	474	.9600	483	.9887	492	3.0178	502	3.0475	18
72	511	3.0777	520	3.1084	528	3.1397	537	3.1716	546	.2041	555	.2371	17
73	563	.2709	572	.3052	580	.3402	588	.3759	596	.4124	605	.4495	16
74	613	.4874	621	.5261	628	.5656	636	.6059	644	.6470	652	.6891	15
75	659	.7321	667	.7760	674	.8208	681	.8657	689	.9136	696	.9617	14
76	703	4.0108	710	4.0611	717	4.1126	724	4.1653	730	4.2193	737	4.2747	13
77	744	.3315	750	.3897	757	.4494	763	.5107	769	.5736	775	.6382	12
78	781	.7046	787	.7729	793	.8430	799	.9152	805	.9894	811	5.0658	11
79	816	.1446	822	5.2257	827	5.3093	833	5.3955	838	5.4845	843	.5764	10
80	9348	5.6713	9353	5.7694	9358	5.8708	9363	5.9758	9368	6.0844	9372	6.1970	9
81	877	6.3138	881	6.4348	886	6.5606	890	6.6912	894	.8269	899	.9682	8
82	903	7.1154	907	7.2687	911	7.4287	914	7.5958	918	7.7704	922	7.9530	7
83	925	8.1443	929	8.3450	932	8.5555	936	8.7769	939	9.0098	942	9.2553	6
84	945	9.5144	948	9.7882	951	10.078	954	10.385	957	10.711	959	11.059	5
85	962	11.430	964	11.826	967	12.250	969	12.706	971	13.187	974	13.727	4
86	976	14.300	978	14.924	980	15.605	981	16.350	983	17.169	985	18.075	3
87	986	19.081	988	20.206	989	21.470	990	22.903	992	24.542	993	26.432	2
88	994	28.636	995	31.242	996	34.368	997	38.189	997	42.964	998	49.104	1
89	998	57.290	999	68.750	999	85.940	999	114.58	1.000	171.88	1.000	343.77	0
60'	60'	50'	50'	40'	40'	30'	30'	20'	20'	30'	10'	10'	deg
cos	cot	cos	cot	cos	cot	cos	cot	cos	cot	cos	cot	cos	cot

TABLE VII
RODS IN FEET AND INCHES

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

TABLE VIII
LINKS IN FEET AND INCHES

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

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.9	97.577	+
10'	58.34	.297	5° C.	10'	560.11	27.313	5° C	10'	1070.6	99.155	5° C
20'	66.67	.388	T	20'	568.53	28.137	T	20'	1079.2	100.75	T
30'	75.01	.491	E	30'	578.95	28.974	E	30'	1087.8	102.35	E
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° C.	10'	610.64	32.447	10° C	10'	1122.4	108.90	10° C
20'	116.68	1.188	T	20'	619.07	33.347	T	20'	1131.0	110.57	T
30'	125.02	1.364	E	30'	627.50	34.259	E	30'	1139.7	112.25	E
40'	133.36	1.552	.03	40'	635.93	35.183	.06	40'	1148.4	113.95	.10
50'	141.70	1.752	E	50'	644.37	36.120	E	50'	1157.0	115.66	E
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	E	20'	669.70	39.006	E	20'	1183.1	120.87	E
30'	175.06	2.674	.06	30'	678.15	39.993	.13	30'	1191.8	122.63	.19
40'	183.40	2.934	.03	40'	686.60	40.992	.06	40'	1200.5	124.41	.06
50'	191.74	3.207	.003	50'	695.06	42.004	.011	50'	1209.2	126.20	.025
4°	200.08	3.492	15° C.	14°	703.51	43.029	15° C.	24°	1217.9	128.00	15° C.
10'	208.43	3.790	T	10'	711.97	44.066	T	10'	1226.6	129.82	T
20'	216.77	4.099	E	20'	720.44	45.116	E	20'	1235.3	131.65	E
30'	225.12	4.421	.06	30'	728.90	46.178	.13	30'	1244.0	133.50	.19
40'	233.47	4.755	.03	40'	737.37	47.253	.06	40'	1252.8	135.35	.06
50'	241.81	5.100	E	50'	745.85	48.341	.015	50'	1261.5	137.23	.025
5°	250.16	5.459	15° C.	15°	754.32	49.441	15° C.	25°	1270.2	139.11	15° C.
10'	258.51	5.829	T	10'	762.80	50.554	T	10'	1279.0	141.01	T
20'	266.86	6.211	E	20'	771.29	51.679	E	20'	1287.7	142.93	E
30'	275.21	6.606	.06	30'	779.77	52.818	.13	30'	1296.5	144.85	.19
40'	283.57	7.013	.03	40'	788.26	53.969	.06	40'	1305.3	146.79	.06
50'	291.92	7.432	E	50'	796.75	55.132	.015	50'	1314.0	148.75	.025
6°	300.28	7.863	15° C.	16°	805.25	56.309	15° C.	26°	1322.8	150.71	15° C.
10'	308.64	8.307	T	10'	813.75	57.498	T	10'	1331.6	152.69	T
20'	316.99	8.762	E	20'	822.25	58.699	E	20'	1340.4	154.69	E
30'	325.35	9.230	.06	30'	830.76	59.914	.13	30'	1349.2	156.70	.19
40'	333.71	9.710	.03	40'	839.27	61.141	.06	40'	1358.0	158.72	.06
50'	342.08	10.202	E	50'	847.78	62.381	.015	50'	1366.8	160.76	.025
7°	350.44	10.707	15° C.	17°	856.30	63.634	15° C.	27°	1375.6	162.81	15° C.
10'	358.81	11.224	T	10'	864.82	64.900	T	10'	1384.4	164.86	T
20'	367.17	11.753	E	20'	873.35	66.178	E	20'	1393.2	166.95	E
30'	375.54	12.294	.06	30'	881.88	67.470	.13	30'	1402.0	169.04	.19
40'	383.91	12.847	.03	40'	890.41	68.774	.06	40'	1410.9	171.15	.06
50'	392.28	13.413	E	50'	898.95	70.091	.015	50'	1419.7	173.27	.025
8°	400.66	13.991	15° C.	18°	907.49	71.421	15° C.	28°	1428.6	175.41	15° C.
10'	409.03	14.582	T	10'	916.03	72.764	T	10'	1437.4	177.55	T
20'	417.41	15.184	E	20'	924.58	74.119	E	20'	1446.3	179.72	E
30'	425.79	15.799	.06	30'	933.13	75.488	.13	30'	1455.1	181.89	.19
40'	434.17	16.426	.03	40'	941.69	76.869	.06	40'	1464.0	184.08	.06
50'	442.55	17.065	E	50'	950.25	78.264	.015	50'	1472.9	186.29	.025
9°	450.93	17.717	15° C.	19°	958.81	79.671	15° C.	29°	1481.8	188.51	15° C.
10'	459.32	18.381	T	10'	967.38	81.092	T	10'	1490.7	190.74	T
20'	467.71	19.058	E	20'	975.96	82.525	E	20'	1499.6	192.99	E
30'	476.10	19.748	.06	30'	984.53	83.972	.13	30'	1508.5	195.25	.19
40'	484.49	20.447	.03	40'	993.12	85.431	.06	40'	1517.4	197.53	.06
50'	492.88	21.161	E	50'	1001.7	86.904	.015	50'	1526.3	199.82	.025
10°	501.28	21.887	15° C.	20°	1010.3	88.389	15° C.	30°	1535.3	202.12	15° C.
10'	509.68	22.624	T	10'	1018.9	89.888	T	10'	1544.2	204.44	T
20'	518.08	23.375	E	20'	1027.5	91.399	E	20'	1553.1	206.77	E
30'	526.48	24.138	.06	30'	1036.1	92.924	.13	30'	1562.1	209.12	.19
40'	534.89	24.913	.03	40'	1044.7	94.462	.06	40'	1571.0	211.48	.06
50'	543.29	25.700	E	50'	1053.3	96.013	.015	50'	1580.0	213.86	.025

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	E	30'	2170.8	397.4	E	30'	2763.7	631.7	E
40'	1624.9	226.0	.13	40'	2180.3	400.8	.17	40'	2773.9	636.2	.21
50'	1633.9	228.4	.06	50'	2189.9	404.2	.07	50'	2784.2	640.7	.07
32°	1643.0	230.9	.023	42°	2199.4	407.6	.037	52°	2794.5	645.2	.056
10'	1652.0	233.4	10° C.	10'	2209.0	411.1	10° C.	10'	2804.9	649.7	10° C.
20'	1661.0	235.9	T	20'	2218.6	414.5	T	20'	2815.2	654.3	T
30'	1670.0	238.4	E	30'	2228.1	418.0	E	30'	2825.6	658.8	E
40'	1679.1	241.0	.06	40'	2237.7	421.4	.07	40'	2835.9	663.4	.07
50'	1688.1	243.5	.013	50'	2247.3	425.0	.013	50'	2846.3	668.0	.013
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	E	20'	2276.2	435.6	E	20'	2877.5	682.0	E
30'	1724.4	253.9	.26	30'	2285.9	439.2	.34	30'	2888.0	686.7	.42
40'	1733.5	256.5	.13	40'	2295.6	442.8	.16	40'	2898.4	691.4	.16
50'	1742.6	259.1	.046	50'	2305.2	446.4	.075	50'	2908.9	696.1	.112
34°	1751.7	261.8	15° C.	44°	2314.9	450.0	15° C.	54°	2919.4	700.9	15° C.
10'	1760.8	264.5	T	10'	2324.6	453.6	T	10'	2929.9	705.7	T
20'	1770.0	267.2	E	20'	2334.3	457.3	E	20'	2940.4	710.5	E
30'	1779.1	269.9	.26	30'	2344.1	461.0	.34	30'	2951.0	715.3	.42
40'	1788.2	272.6	.13	40'	2353.8	464.6	.16	40'	2961.5	720.1	.16
50'	1797.4	275.3	.046	50'	2363.5	468.4	.075	50'	2972.1	725.0	.075
35°	1806.6	278.1	15° C.	45°	2373.3	472.1	15° C.	55°	2982.7	729.9	15° C.
10'	1815.7	280.8	T	10'	2383.1	475.8	T	10'	2993.3	734.8	T
20'	1824.9	283.6	E	20'	2392.8	479.6	E	20'	3003.9	739.7	E
30'	1834.1	286.4	.26	30'	2402.6	483.4	.34	30'	3014.5	744.6	.42
40'	1843.3	289.2	.13	40'	2412.4	487.2	.16	40'	3025.2	749.6	.16
50'	1852.5	292.0	.046	50'	2422.3	491.0	.075	50'	3035.8	754.6	.075
36°	1861.7	294.9	15° C.	46°	2432.1	494.8	15° C.	56°	3046.5	759.6	15° C.
10'	1870.9	297.7	T	10'	2441.9	498.7	T	10'	3057.2	764.6	T
20'	1880.1	300.6	E	20'	2451.8	502.5	E	20'	3067.9	769.7	E
30'	1889.4	303.5	.26	30'	2461.7	506.4	.34	30'	3078.7	774.7	.42
40'	1898.6	306.4	.13	40'	2471.5	510.3	.16	40'	3089.4	779.8	.16
50'	1907.9	309.3	.046	50'	2481.4	514.3	.075	50'	3100.2	784.9	.075
37°	1917.1	312.2	15° C.	47°	2491.3	518.2	15° C.	57°	3110.9	790.1	15° C.
10'	1926.4	315.2	T	10'	2501.2	522.2	T	10'	3121.7	795.2	T
20'	1935.7	318.1	E	20'	2511.2	526.1	E	20'	3132.6	800.4	E
30'	1945.0	321.1	.26	30'	2521.1	530.1	.34	30'	3143.4	805.6	.42
40'	1954.3	324.1	.13	40'	2531.1	534.2	.16	40'	3154.2	810.9	.16
50'	1963.6	327.1	.046	50'	2541.0	538.2	.075	50'	3165.1	816.1	.075
38°	1972.9	330.2	15° C.	48°	2551.0	542.2	15° C.	58°	3176.0	821.4	15° C.
10'	1982.2	333.2	T	10'	2561.0	546.3	T	10'	3186.9	826.7	T
20'	1991.5	336.3	E	20'	2571.0	550.4	E	20'	3197.8	832.0	E

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2	+	71°	4086.9	1308.2	+	81°	4893.6	1805.3	+
10'	3386.3	925.9	5° C.	10'	4099.5	1315.6	5° C.	10'	4908.0	1814.7	5° C.
20'	3397.5	931.6	T	20'	4112.1	1322.9	T	20'	4922.5	1824.1	T
30'	3408.8	937.3	.25	30'	4124.8	1330.3	.30	30'	4937.0	1833.6	.36
40'	3420.1	943.1	E	40'	4137.4	1337.7	.36	40'	4951.5	1843.1	.36
50'	3431.4	948.9	.080	50'	4150.1	1345.1	.40	50'	4966.1	1852.6	.40
62°	3442.7	954.8	10° C.	72°	4162.8	1352.6	10° C.	82°	4980.7	1862.2	10° C.
10'	3454.1	960.6	T	10'	4175.6	1360.1	T	10'	4995.4	1871.8	T
20'	3465.4	966.5	.51	20'	4188.5	1367.6	.61	20'	5010.0	1881.5	.72
30'	3476.8	972.4	E	30'	4201.2	1375.2	E	30'	5024.8	1891.2	E
40'	3488.3	978.3	.159	40'	4214.0	1382.8	.220	40'	5039.5	1900.9	.299
50'	3499.7	984.3	T	50'	4226.8	1390.4	T	50'	5054.3	1910.7	T
63°	3511.1	990.2	15° C.	73°	4239.7	1398.0	15° C.	83°	5069.2	1920.5	15° C.
10'	3522.6	996.2	T	10'	4252.6	1405.7	T	10'	5084.0	1930.4	T
20'	3534.1	1002.3	.51	20'	4265.6	1413.5	.61	20'	5099.0	1940.3	.72
30'	3545.6	1008.3	E	30'	4278.5	1421.2	E	30'	5113.9	1950.3	E
40'	3557.2	1014.4	.159	40'	4291.5	1429.0	.220	40'	5128.9	1960.2	.299
50'	3568.7	1020.5	T	50'	4304.6	1436.8	T	50'	5143.9	1970.3	T
64°	3580.3	1026.6	20° C.	74°	4317.6	1444.6	20° C.	84°	5159.0	1980.4	20° C.
10'	3591.9	1032.8	T	10'	4330.7	1452.5	T	10'	5174.1	1990.5	T
20'	3603.5	1039.0	.51	20'	4343.8	1460.4	.61	20'	5189.3	2000.6	.72
30'	3615.1	1045.2	E	30'	4356.9	1468.4	E	30'	5204.4	2010.8	E
40'	3626.8	1051.4	.159	40'	4370.1	1476.4	.220	40'	5219.7	2021.1	.299
50'	3638.5	1057.7	T	50'	4383.3	1484.4	T	50'	5234.9	2031.4	T
65°	3650.2	1063.9	25° C.	75°	4396.5	1492.4	25° C.	85°	5250.3	2041.7	25° C.
10'	3661.9	1070.2	T	10'	4409.8	1500.5	T	10'	5265.6	2052.1	T
20'	3673.7	1076.6	.51	20'	4423.1	1508.6	.61	20'	5281.0	2062.5	.72
30'	3685.4	1082.9	E	30'	4436.4	1516.7	E	30'	5296.4	2073.0	E
40'	3697.2	1089.3	.159	40'	4449.7	1524.9	.220	40'	5311.9	2083.5	.299
50'	3709.0	1095.7	T	50'	4463.1	1533.1	T	50'	5327.4	2094.1	T
66°	3720.9	1102.2	30° C.	76°	4476.5	1541.4	30° C.	86°	5343.0	2104.7	30° C.
10'	3732.7	1108.6	T	10'	4489.9	1549.7	T	10'	5358.6	2115.3	T
20'	3744.6	1115.1	.51	20'	4503.4	1558.0	.61	20'	5374.2	2126.0	.72
30'	3756.5	1121.7	E	30'	4516.9	1566.3	E	30'	5389.9	2136.7	E
40'	3768.5	1128.2	.159	40'	4530.4	1574.7	.220	40'	5405.6	2147.5	.299
50'	3780.4	1134.8	T	50'	4544.0	1583.1	T	50'	5421.4	2158.4	T
67°	3792.4	1141.4	35° C.	77°	4557.6	1591.6	35° C.	87°	5437.2	2169.2	35° C.
10'	3804.4	1148.0	T	10'	4571.2	1600.1	T	10'	5453.1	2180.2	T
20'	3816.4	1154.7	.51	20'	4584.8	1608.6	.61	20'	5469.0	2191.1	.72
30'	3828.4	1161.3	E	30'	4598.5	1617.1	E	30'	5484.9	2202.2	E
40'	3840.5	1168.1	.159	40'	4612.2	1625.7	.220	40'	5500.9	2213.2	.299
50'	3852.6	1174.8	T	50'	4626.0	1634.4	T	50'	5517.0	2224.3	T
68°	3864.7	1181.6	40° C.	78°	4639.8	1643.0	40° C.	88°	5533.1	2235.5	40° C.
10'	3876.8	1188.4	T	10'	4653.6	1651.7	T	10'	5549.2	2246.7	T
20'	3889.0	1195.2	.51	20'	4667.4	1660.5	.61	20'	5565.4	2258.0	.72
30'	3901.2	1202.0	E	30'	4681.3	1669.2	E	30'	5581.6	2269.3	E
40'	3913.4	1208.9	.159	40'	4695.2	1678.1	.220	40'	5597.8	2280.6	.299
50'	3925.6	1215.8	T	50'	4709.2	1686.9	T	50'	5614.2	2292.0	T
69°	3937.9	1222.7	45° C.	79°	4723.2	1695.8	45° C.	89°	5630.5	2303.5	45° C.
10'	3950.2	1229.7	T	10'	4737.2	1704.7	T	10'	5646.9	2315.0	T
20'	3962.5	1236.7	.51	20'	4751.2	1713.7	.61	20'	5663.4	2326.6	.72
30'	3974.8	1243.7	E	30'	4765.3	1722.7	E	30'	5679.9	2338.2	E
40'	3987.2	1250.8	.159	40'	4779.4	1731.7	.220	40'	5696.4	2349.8	.299
50'	3999.5	1257.9	T	50'	4793.6	1740.8	T	50'	5713.0	2361.5	T
70°	4011.9	1265.0	50° C.	80°	4807.7	1749.9	50° C.	90°	5729.7	2373.3	50° C.
10'	4024.4	1272.1	T	10'	4822.0	1759.0	T	10'	5746.3	2385.1	T
20'	4036.8	1279.3	.51	20'	4836.2	1768.2	.61	20'	5763.1	2397.0	.72
30'	4049.3	1286.5	E	30'	4850.5	1777.4	E	30'	5779.9	2408.9	E
40'	4061.8	1293.6	.159	40'	4864.8	1786.7	.220	40'	5796.7	2420.9	.299
50'	4074.4	1300.9	T	50'	4879.2	1796.0	T	50'	5813.6	2432.9	T

T = R tan ½ I

E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5830.5	2444.9	+	101°	6950.6	3278.1	+	111°	8336.7	4386.1	+
10'	5847.5	2457.1	5° C.	10'	6971.3	3294.1	5° C.	10'	8362.7	4407.6	5° C.
20'	5864.6	2469.3	T	20'	6992.0	3310.1	T	20'	8388.9	4429.2	T
30'	5881.7	2481.5	.43	30'	7012.7	3326.1	.51	30'	8415.1	4450.9	.62
40'	5898.8	2493.8	E	40'	7033.6	3342.3	E	40'	8441.5	4472.7	E
50'	5916.0	2506.1	.200	50'	7054.5	3358.5	.268	50'	8468.0	4494.6	.360
92°	5933.2	2518.5	10° C.	102°	7075.5	3374.9	10° C.	112°	8494.6	4516.6	10° C.
10'	5950.5	2531.0	T	10'	7096.6	3391.2	T	10'	8521.3	4538.8	T
20'	5967.9	2543.5	.86	20'	7117.8	3407.7	.103	20'	8548.1	4561.1	.125
30'	5985.3	2556.0	E	30'	7139.0	3424.3	E	30'	8575.0	4583.4	E
40'	6002.7	2568.6	.401	40'	7160.3	3440.9	.536	40'	8602.1	4606.0	.721
50'	6020.2	2581.3	T	50'	7181.7	3457.6	T	50'	8629.3	4628.6	T
93°	6037.8	2594.0	15° C.	103°	7203.2	3474.4	15° C.	113°	8656.6	4651.3	15° C.
10'	6055.4	2606.8	T	10'	7224.7	3491.3	T	10'	8684.0	4674.2	T
20'	6073.1	2619.7	.86	20'	7246.3	3508.2	.103	20'	8711.5	4697.2	.125
30'	6090.8	2632.6	E	30'	7268.0	3525.2	E	30'	8739.2	4720.3	E
40'	6108.6	2645.5	.401	40'	7289.8	3542.4	.536	40'	8767.0	4743.6	.721
50'	6126.4	2658.5	T	50'	7311.7	3559.6	T	50'	8794.9	4766.9	T
94°	6144.3	2671.6	20° C.	104°	7333.6	3576.8	20° C.	114°	8822.9	4790.4	20° C.
10'	6162.2	2684.7	T	10'	7355.6	3594.2	T	10'	8851.0	4814.1	T
20'	6180.2	2697.9	.86	20'	7377.8	3611.7	.103	20'	8879.3	4837.8	.125
30'	6198.3	2711.2	E	30'	7399.9	3629.2	E	30'	8907.7	4861.7	E
40'	6216.4	2724.5	.401	40'	7422.2	3646.8	.536	40'	8936.3	4885.7	.721
50'	6234.6	2737.9	T	50'	7444.6	3664.5	T	50'	8965.0	4909.9	T
95°	6252.8	2751.3	25° C.	105°	7467.0	3682.3	25° C.	115°	8993.8	4934.1	25° C.
10'	6271.1	2764.8	T	10'	7489.6	3700.2	T	10'	9022.7	4958.6	T
20'	6289.4	2778.3	.86	20'	7512.2	3718.2	.103	20'	9051.7	4983.1	.125
30'	6307.9	2792.0	E	30'	7534.9	3736.2	E	30'	9080.9	5007.8	E
40'	6326.3	2805.6	.401	40'	7557.7	3754.4	.536	40'	9110.3	5032.6	.721
50'	6344.8	2819.4	T	50'	7580.5	3772.6	T	50'	9139.8	5057.6	T
96°	6363.4	2833.2	30° C.	106°	7603.5	3791.0	30° C.	116°	9169.4	5082.7	30° C.
10'	6382.1	2847.0	T	10'	7626.6	3809.4	T	10'	9199.1	5107.9	T
20'	6400.8	2861.0	.86	20'	7649.7	3827.9	.103	20'	9229.0	5133.3	.125
30'	6419.5	2875.0	E	30'	7672.9	3846.5	E	30'	9259.0	5158.8	E
40'	6438.4	2889.0	.401	40'	7696.3	3865.2	.536	40'	9289.2	5184.5	.721
50'	6457.3	2903.1	T	50'	7719.7	3884.0	T	50'	9319.5	5210.3	T
97°	6476.2	2917.3	35° C.	107°	7743.2	3902.9	35° C.	117°	9349.9	5236.2	35° C.
10'	6495.2	2931.6	T	10'	7766.8	3921.9	T	10'	9380.5	5262.3	T
20'	6514.3	2945.9	.86	20'	7790.5	3940.9	.103	20'	9411.3	5288.6	.125
30'	6533.4	2960.3	E	30'	7814.3	3960.1	E	30'	9442.2	5315.0	E
40'	6552.6	2974.7	.401	40'	7838.1	3979.4	.536	40'	9473.2	5341.5	.721
50'	6571.9	2989.2	T	50'	7862.1	3998.7	T	50'	9504.4	5368.2	T
98°	6591.2	3003.8	40° C.	108°	7886.2	4018.2	40° C.	118°	9535.7	5395.1	40° C.
10'	6610.6	3018.4	T	10'	7910.4	4037.8					

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

C o /	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch	C o	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch
0-20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0-40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
1-0	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
1-20	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
1-40	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.83	2.47	2.15	1.81	1.54	1.26
2-0	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
2-20	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.30	2.87	2.48	2.10	1.78	1.46
2-40	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
3-0	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
3-20	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
3-40	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
4-0	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
4-20	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
4-40	1223	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.

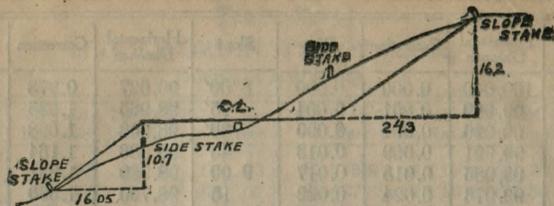
TABLE XII.
INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

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

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	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

28572.5 required
 22235. in 3 cars 8654 gal
 6081 gal
 7500 gal
 Balance 6337.5
 97.83
 to come from
 Cleveland, 103.37

103.37
 5.27
 98.10
 6680
 4854
 1826
 6.77
 4854.5
 3510.8
 1343.7
 1.67
 0.74
 93
 125-32-30
 3
 5280/1826
 60
 2158
 78.42
 76.28
 154.70
 3510.8
 5386.29
 124.51
 113.65
 238.16
 175 1.200
 1525
 88-5
 5445-30
 18
 60
 128
 60

