#9

W 1000

DIETZGEN

ENGINEERS'
FIELD BOOK
No. 404

#1000

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

7000

Eugene Schaub
Logan Utah

No Smithfield note
in this book

	BS	FS	HI	
145+91		7.40	41.37	
145+00		4.50	44.27	
144+73		2.75	46.02	
144+00		3.80	44.97	
143+80		3.60	45.17	
142+00		4.10	44.67	
140+14		4.60	44.17	
		4.18	44.59	
140		7.70	41.07	
139		5.10	43.67	
138		4.50	44.27	
137		4.60	44.17	
	1.76	12.40		
			47.01	48.77
136		12.85	46.56	
135		12.50	46.91	
134		13.00	46.41	
133		11.85	47.56	
132		11.90	47.51	
131		10.50	48.91	
130				
129	0.19		59.22	

BM at Sta 0, College Ave.

59.41 HI

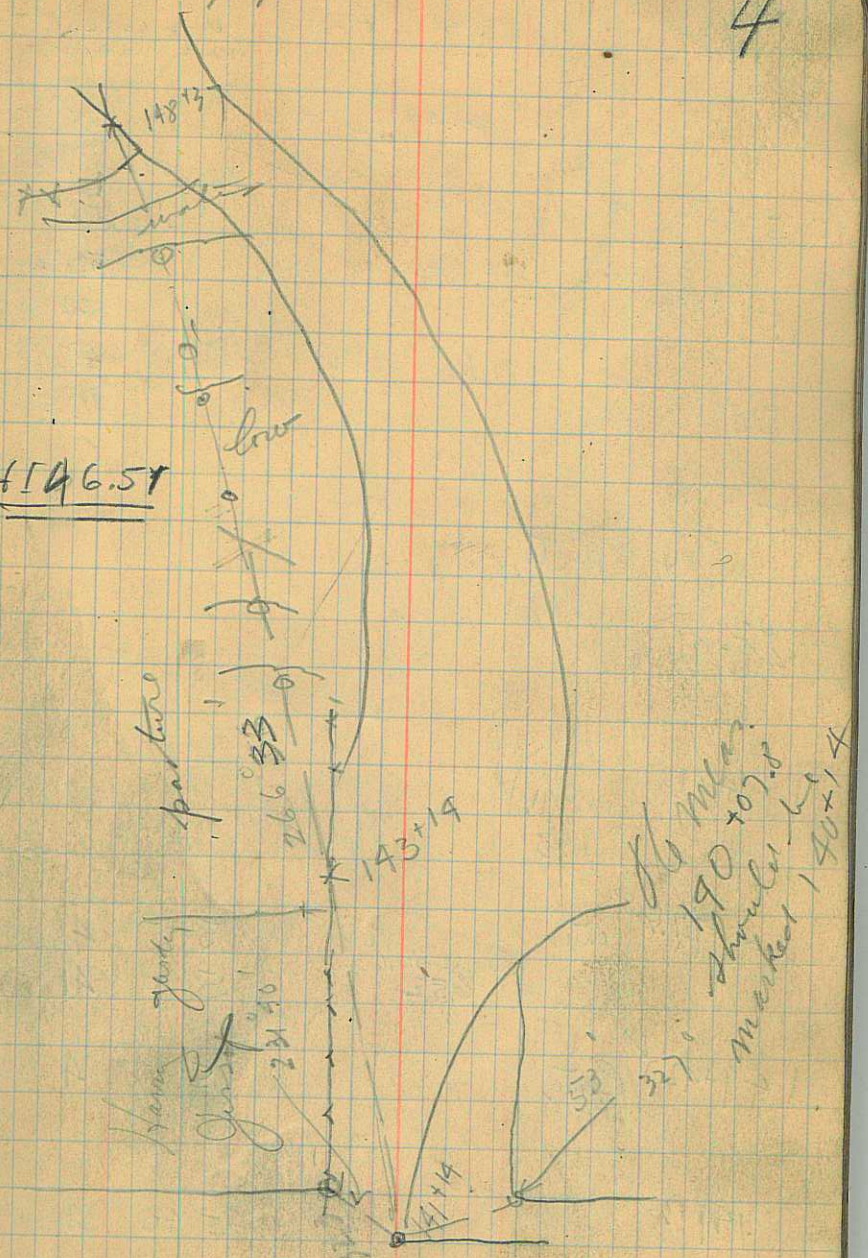
2

4/7/16

Millcreek H₂O Works Line.

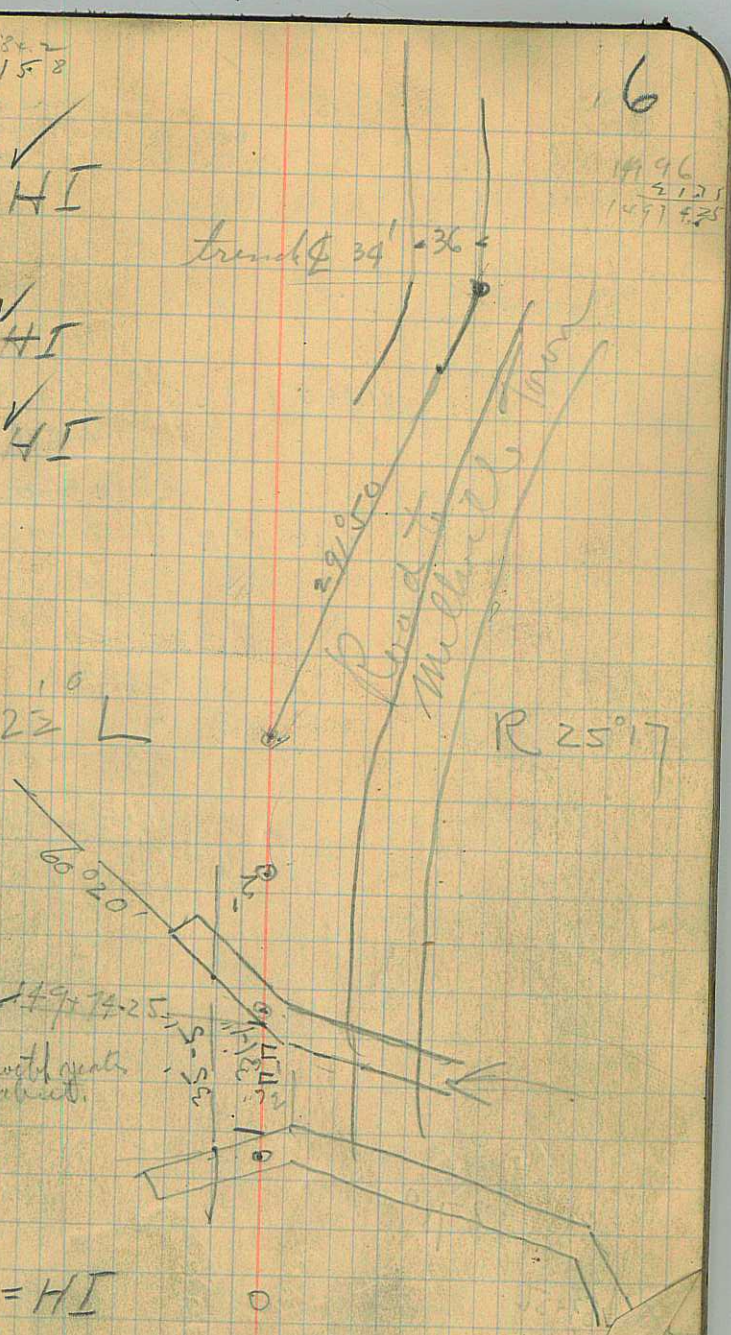
Sta	B.S. ag	F.S. dw	
148+73			
147+88		6.60	39.91
147+00		5.70	40.81
146+76			
146+07	7.00	9.26 10.00	39.51 38.77
145+91		7.40	41.37
144+73			
143+14			
141+14			

HI 46.51



	BS	FS			
			4.56 162 ac 10.3 160 actual		148 84.2 15.8 77.80 72.031
	@ 12.48	1.15	11.00	℄ O.L + I 69.85	El =71.33 82.33 HI
PT 153+50			4.10 (158 ac) 8.50	66.90 at ac. 156 62.50	
	12.740	0.06	at 54 actual	58.26	71.00 HI
153+00			3.90	54.42	
	11.15	0.86		47.17	58.32 HI Ct
152+00			1.50	4/10/16 46.53	
151+00			#		
104 291°50'					
PT Δ149+96					
149+91 {should be 148+91} 266°33					Ole meas 148+84.2
149+74.6 center	Began 4/10/16 6.52		5.17	41.34	48.03 149+74.25
			5.00	41.51	BM when with grade end of SW abut.
149+42.7 Center			5.12	41.39	
149+30			5.40	41.11	46.51 = HI

149 96
21.75
149 74.25



BS	FS	HI
	same ⊕ con. page 21 0.7	117.29
		6.30 167+59.9 111.70
10.90	0.19	107.10
		9.0 166 ac 98.29
13.47	0.35	93.82
		4.50 166 ac 89.67
		1.360 92.81
12.10	⊕ 6.26	

Ole 167 +59.9

→ 38.75

168+66

118.00

167+67

107.29 HI

⊗ Ole 166

on top & post by Chuck

94.17 HI

161+05.7

160+37.5

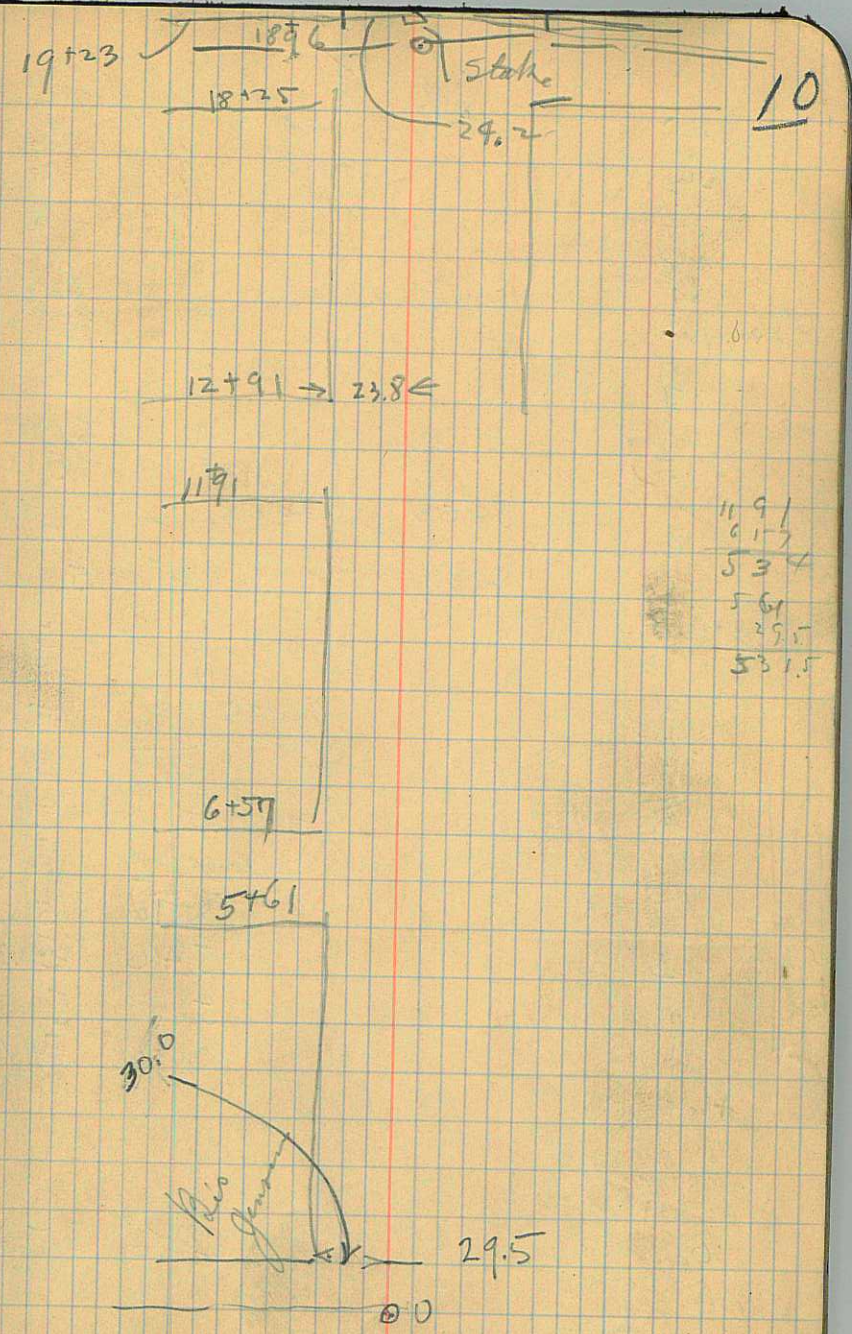
160+07

150

153+56

271°

Acott for R 2 pins, 3/4⊕ R


19+23
18+76
18+25
Stah.
29.2
10
12+91 → 23.8 ←
11+91
6+57
5+61
30.0
Rio Grande
29.5
0 0
11 9 1
6 1 7
5 3 4
5 6 1
2 9.5
5 3 1.5

B.S.	F.S.	Elev.	
5.40	5.8 top	6.50	5 2.08
	7.28	6.80	5 1.42
		6.50	5 1.12
		6.40	5 1.42
		6.10	5 1.52
		6.50	5 1.82
		5.70	5 1.92
		7.20	5 2.22
		4.60	5 0.72
		3.90	5 3.32
		3.30	5 4.02
		3.20	5 4.62
		4.00	5 4.72
		4.70	5 3.92
			5 3.22
4.50	9.30	top (4)	3.42
		9.85	5 2.87
		9.25	5 3.47
		9.10	5 3.62
		11.00	5 1.72
		9.05	mark at 14+12
		9.10	5 3.62
		4.80	5 7.92
		6.70	5 6.02
		4.70	5 8.02
		6.30	5 6.42
		6.25	5 6.47
		6.70	5 6.02
		5.40	5 7.32
		5.00	5 7.72
		3.60	5 9.12
		4.20	5 8.52

Ole chicken

gravel pit

Drainage ditch

HI = 57.48

37

35 +00

34

30'

Road Surface

Fence 22.71 S. 6

HI 57.92

14+46

1 1/2"

14+35

14+12.5

14+12.5

with batter 7+8

91.33'

2'

330

66

HI 62.72

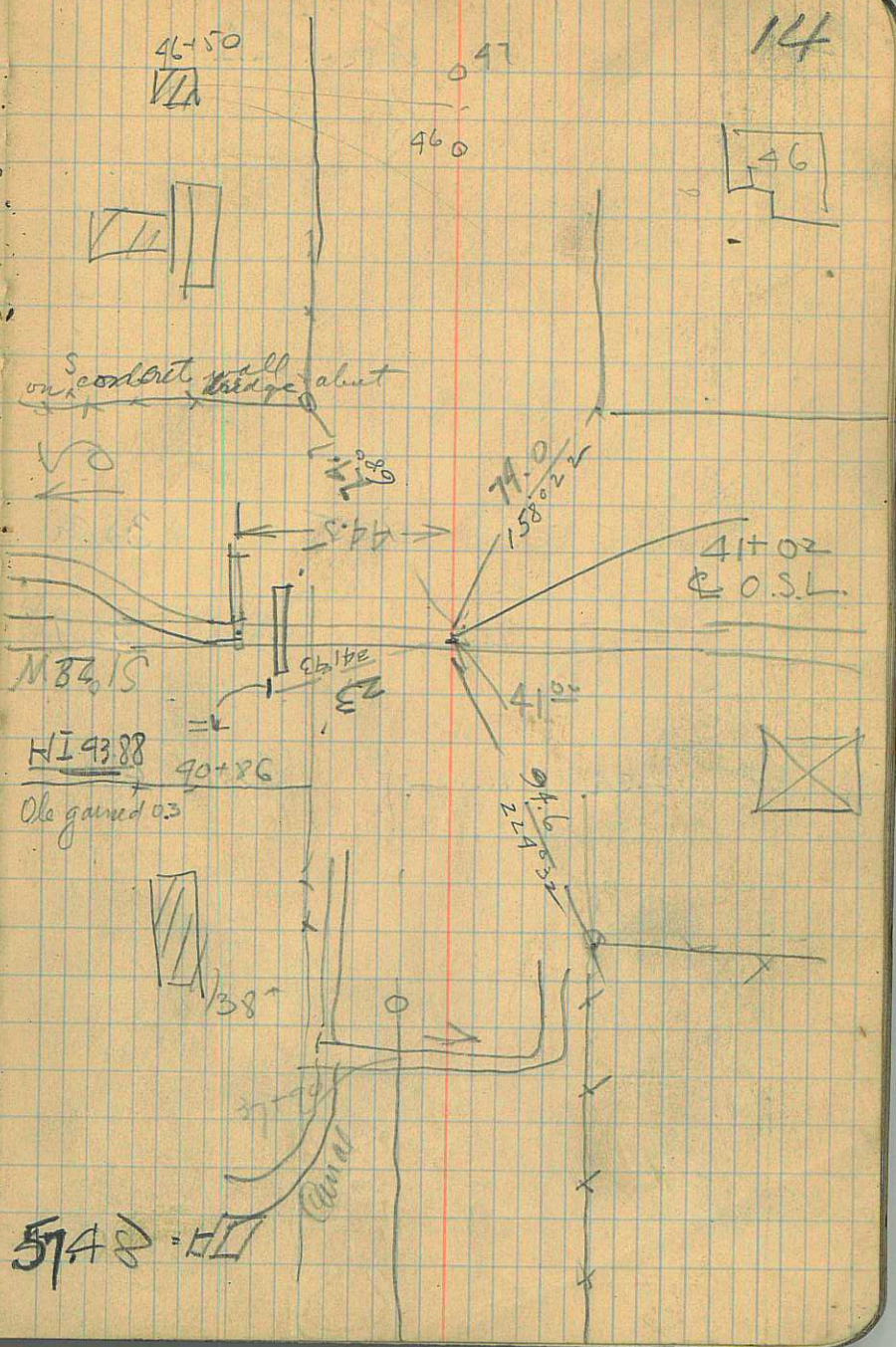
P.I. 12+16 (should be 12+10)

+66

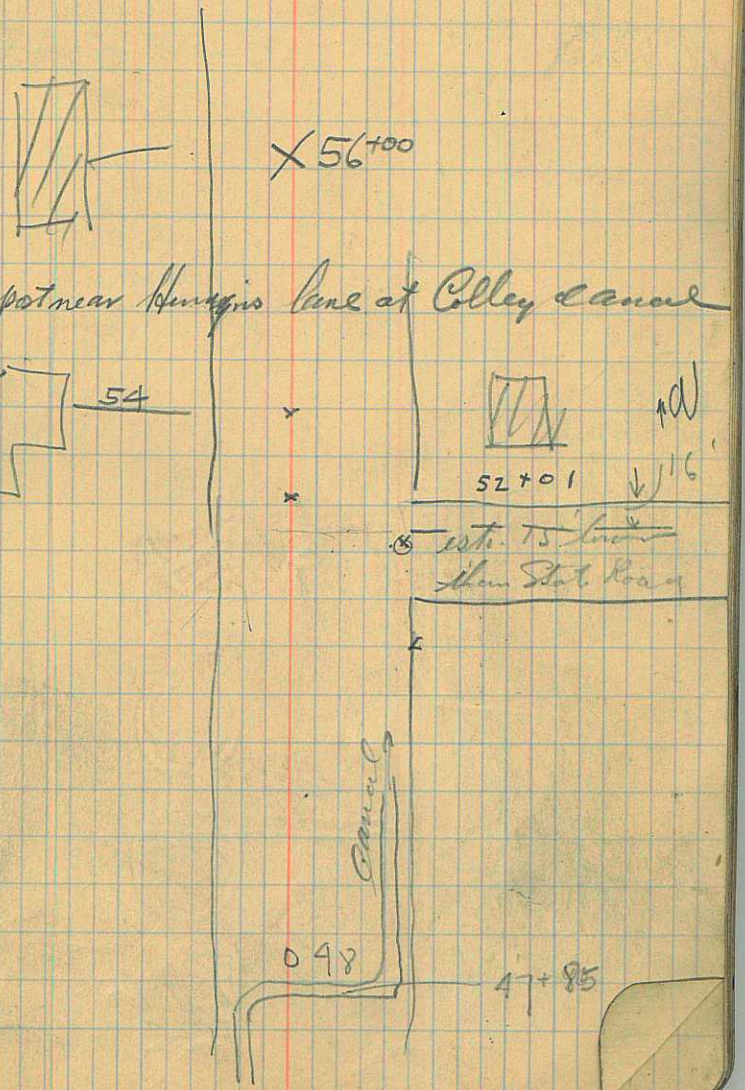
0

BS FS Inv

49	9.4	44.98
48	7.1	46.78
BM.	5.25	48.63
47	8.3	45.58
46	6.70	47.18
45	5.00	48.88
44 not in		
43	4.00	49.88
42	4.00	49.88
40+89 (Base tower) 0.35	3.95 on Gravel	3.53
	4.00	3.48
40	6.10	1.38
39	5.70	1.78
38	4.90	2.58
37	4.90	2.58
36	5.50	1.98
35	6.70	0.78
34	7.70	49.78
33	8.10	49.38
32	8.10	49.38
31	7.70	49.78
30	6.70	51.08
29	6	51.28



Sta	BS	FS	HI	Elev	HT.
		0.05		38.90	BM. cedar post near Hennepin Lane at Colley Canal
	1.78	9.00		37.17	38.95
51+85 ~~SF~~	3.01	10.7		43.16	46.17

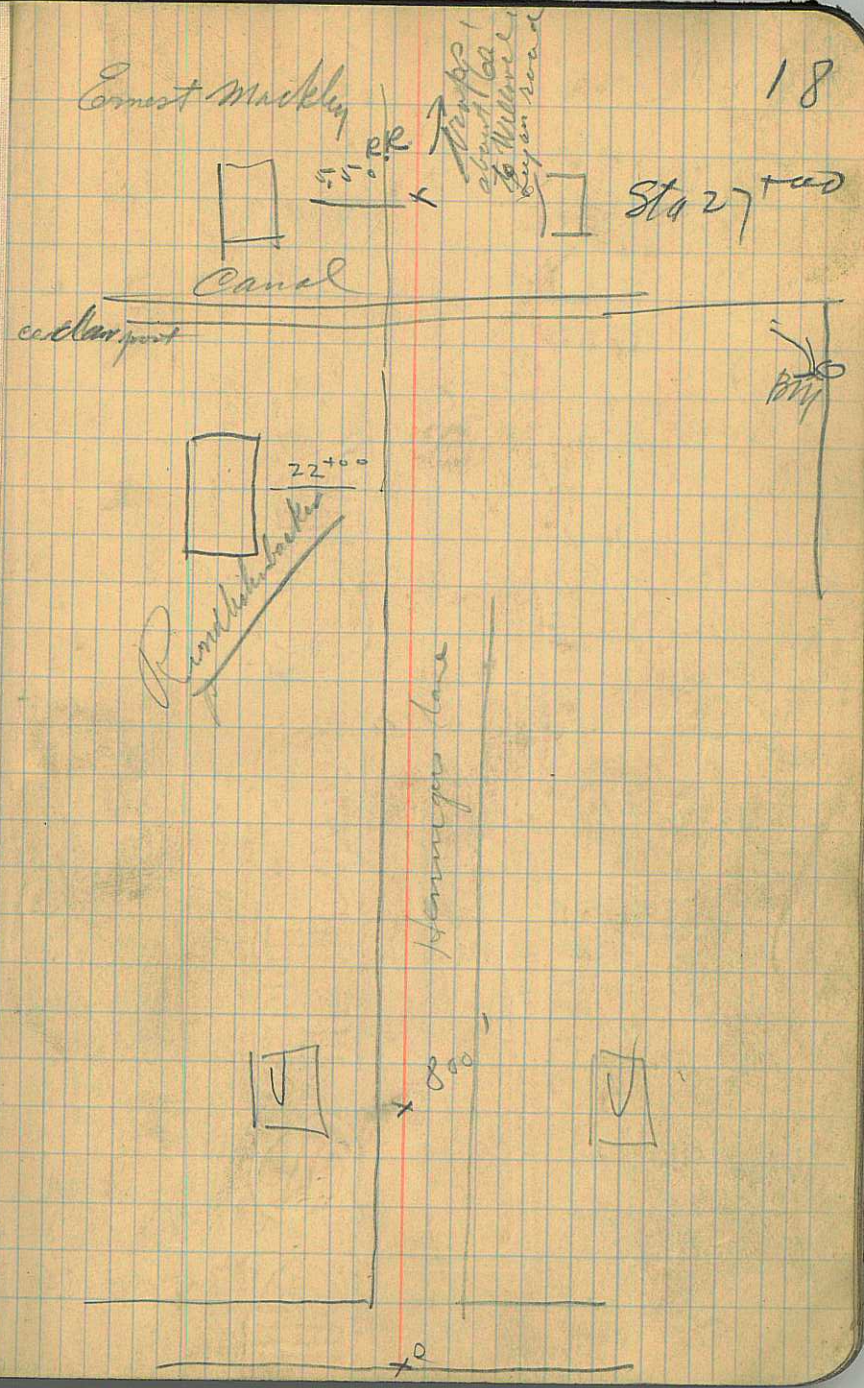


FS

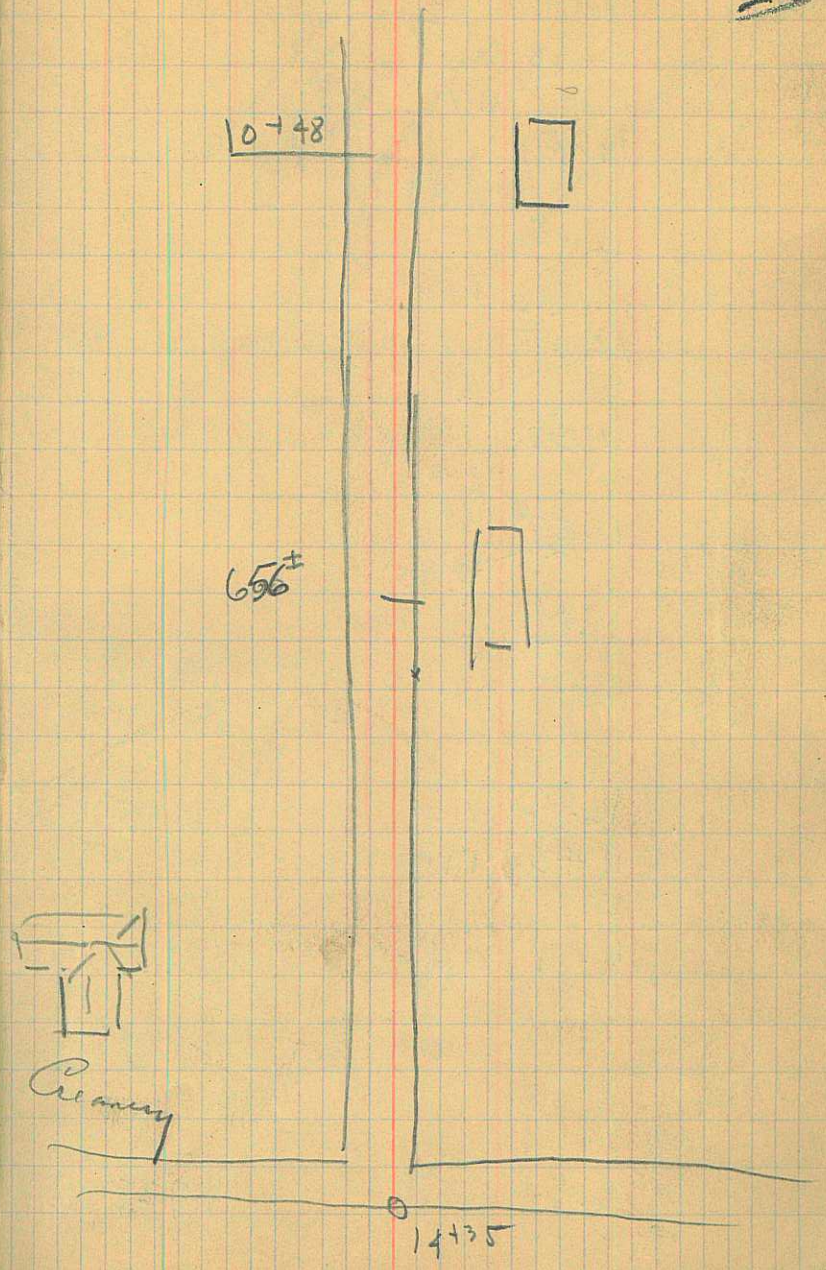
RRR on college canal

0.05

Ernest Mackey

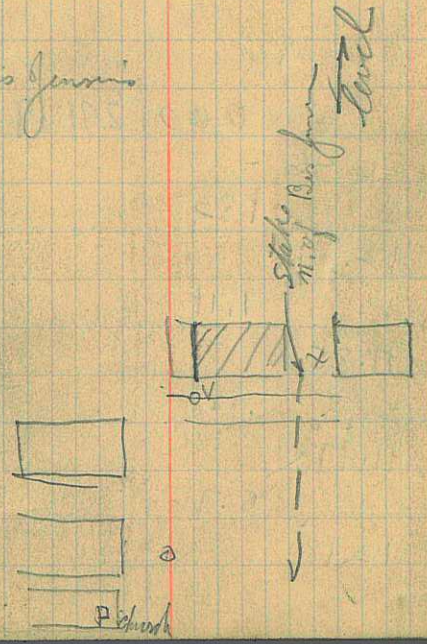


college



BS	FS		HI	
	0.59			
12.33				
	0.11			
13.40				
	0.08			
12.19				
	1.02			
12.65			200.9	HI about 4' above ℄ Rw. stake
	1.11			
11.98				HI about 8' below ℄ of Rwy. stake
	1.21			
12.54				
	0.93			
11.76				
	1.23		155.2	
		4.64	150.83	on stake N of Bis Gemini
12.92	1.31		143.55	156.47
11.43	1.19		133.43	144.86
10.89	0.16		123.73	134.62
		4.7	119.19	at 6V Sw
6.60	0.71		117.29	123.89

at Bis Gemini
Cor: 131.80



BS FS HI

collr

2.53

291.60 ?c ✓

0.03 291.19

10.46°

1.83

12.69+

1.11

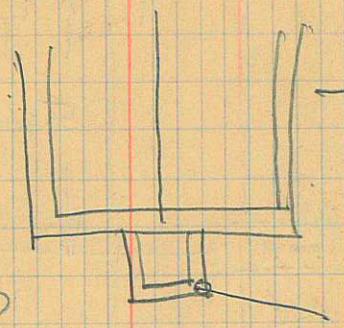
11.85°

0.96

11.97+°

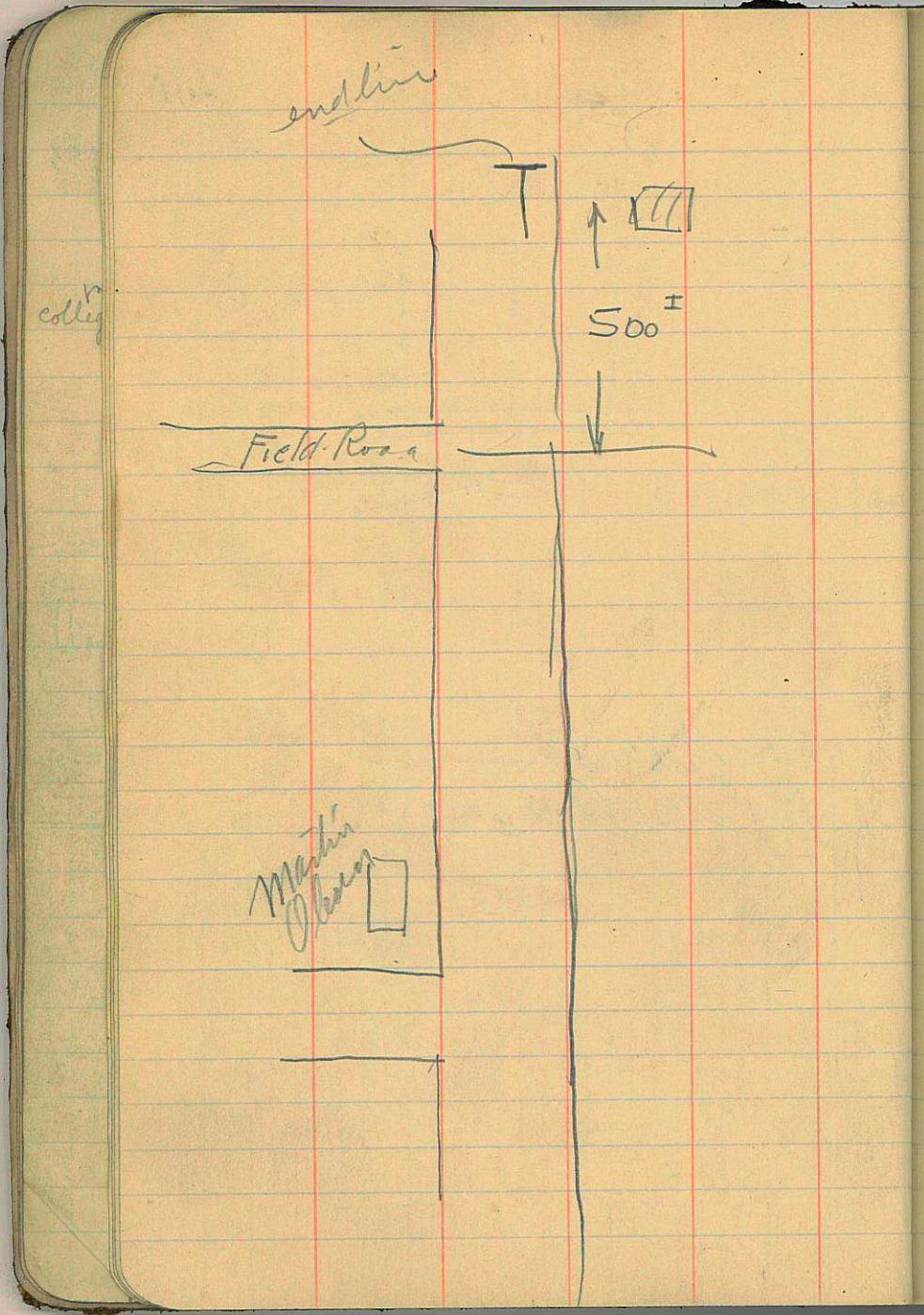
0.76

12.18+



same HI as (c)

(c) on door sill of old Rumsey
this 1' above bottom spill


endline
T
500 I
Field Road
Mathis Dorm

Check levels from Geales Spr. 4/10 4/16

BS	FS		Ele.	H.I.
1.56			205.16	206.72
		9.57		
0.67	13.56			
1.13	12.57			
1.53	13.45			
0.94	8.55			
		8.1	159.01	
1.64	12.20			
		1.20	151.05	
0.80	11.35			
1.90	9.24			
		6.60	127.76	
11.30	1.19			
	0.52			
11.83	0.03			
	0.36			
12.05				
		4.30		
12.49	0.95			
13.03	1.96			
12.68	1.20			
		7.90		
83.50				
94.90	7.88			193.67 mean
	2.90			

colly

10+12 top 15

Top 28+27

on top PI

on BM top post by Keuls

134.3

46+38 to Reservoir

on end concrete flume for permanent descrip.

(B) (A) first levels 193.57 second lev 193.77 mean 193.67

(A) & Rev.

21

	94.90
	3
	41.90
	83.50
	8.40
	3
	11.90
	94.90
	83.50
	11.40
	205.16
	11.40
	193.76

on Boulder stump
on rock in Boulder stream

BS	FS
7.22	12.59
0.94	12.28
.51	13.36
2.45	10.02
0.93	10.50
2.93	12.42
1.15	11.48
2.45	~~11.48~~
6.40	0.96
11.02	6.24
11.97	1.22
10.20	2.77
10.53	0.57
12.39	.35
13.35	1.48
94.24	97.75
	94.24
	3.51

collr

97.14
3.51
193.64

BS FS HI.

10.30

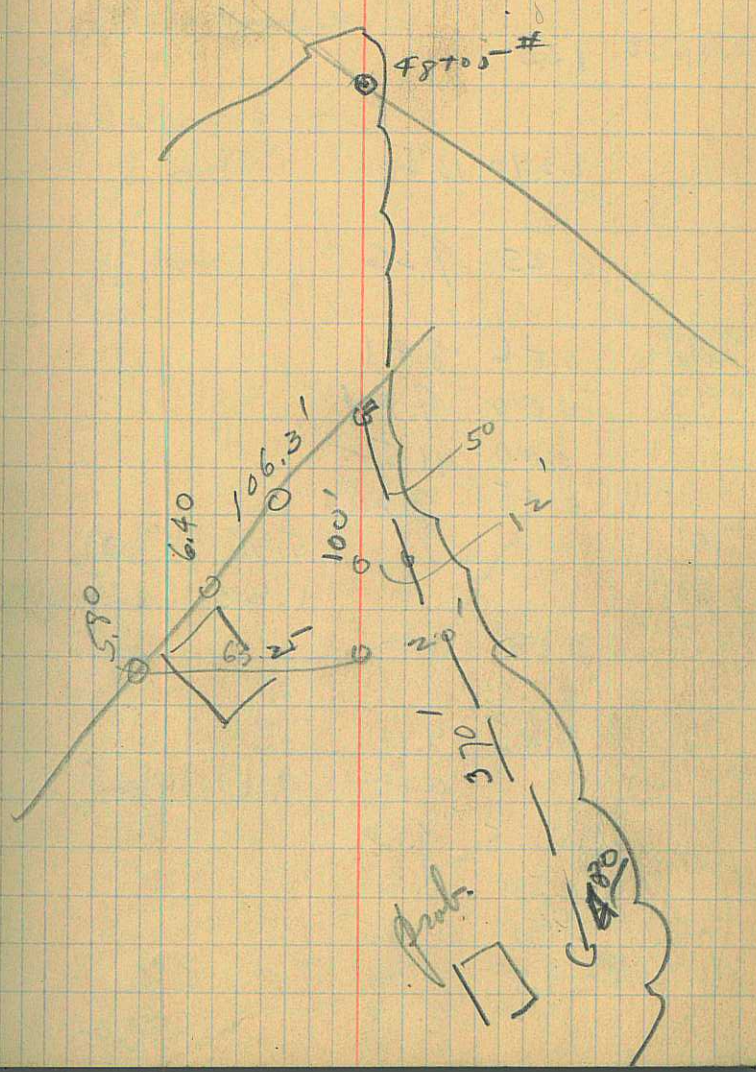
6.40

coll

5.00

92

& Rec.



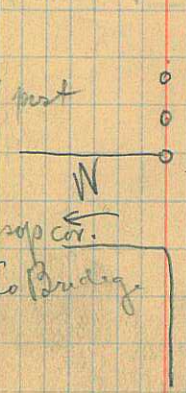
	BS	FS		
top 40+38	3.57			
		9.51		
~~top #50~~	~~0.500~~			
			~~6.22~~	
on top 50	1.53			
			7.19	116.16 ✓
	1.370	13.200		
	0.25	9.26		
top 79 should be 78 top 92	0.56	8.41		
	0.00	9.84		
	0.00	11.52		
	0.45	9.36		
			5.36	59.03
sta 121			1.23	63.16
top 128	0.19	10.76		
	5.85	9.11		
		~~9.11~~	9.11	41.45
	12.05	9.23		
	9.50	0.49		
	10.11	0.55		
	9.19	0.63		
	13.38	0.89		
	3	0.21		92.80 ✓

on post by O.L + I

" " " " " "

first west of ditch

Cooley's cor

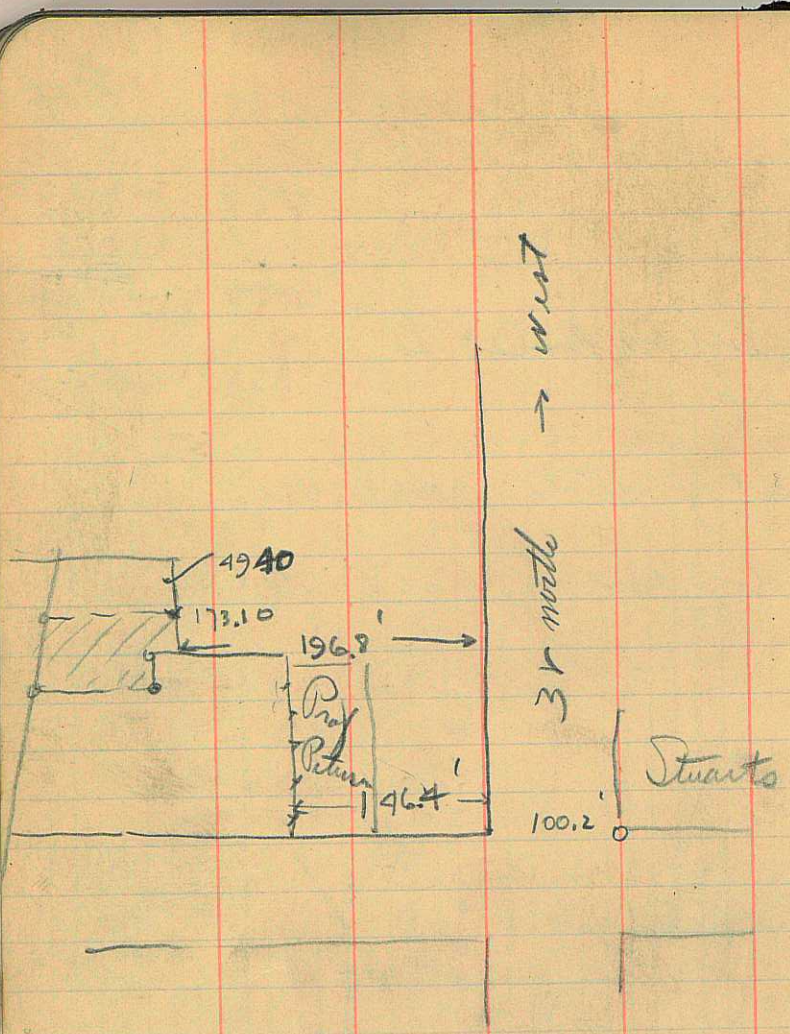


Roache Stone

on W rail O.L + I

mean 92.80

on top E. post by Church in Millville



16.5
35
825
495
5775

13.5
165
675
810
135
2227.5

16.5
825
2475

16.5
57.75
2227.5
200
36
1476.4

4/20/16

Survey for Godfrey & Furlman

Providence

π - Pt 9 Klist.

(1) 181°30 4.00 Δ

9.78

9.29

(#7) 9.24

4.58

4.20

3.40 270°

3.32

1.68 270° 2

#6 π

6 0° 4ch

5 π

5 270° 6ch

4 π -

4 180° 4.00ch N

161°0'

179°11

179°32

#SW cor 2

April 21 16

9.29

.51

38

Lane

9.29

7.07ch

S

3.10 E 0.1 N

4

5 E cor Gallup

9.58

4.20

4.03

Brick

Stake

Stake

3.32

#5

#6

S

4ch

6.00

6ch

5

4ch

#5

To Stone NW cor of SE¼ NE¼ 3

To Main Spire R.C.

To SW cor. Providence

Set. 205°30' FSt #3

Old Gallup survey

Stone

Cemetery

Set on this Stone which is in question

23°30'

15.13

270°26'

T - Pt. Cy West Beach

297°45 562°15E

227°40 0.68

~~227°40 0.68~~

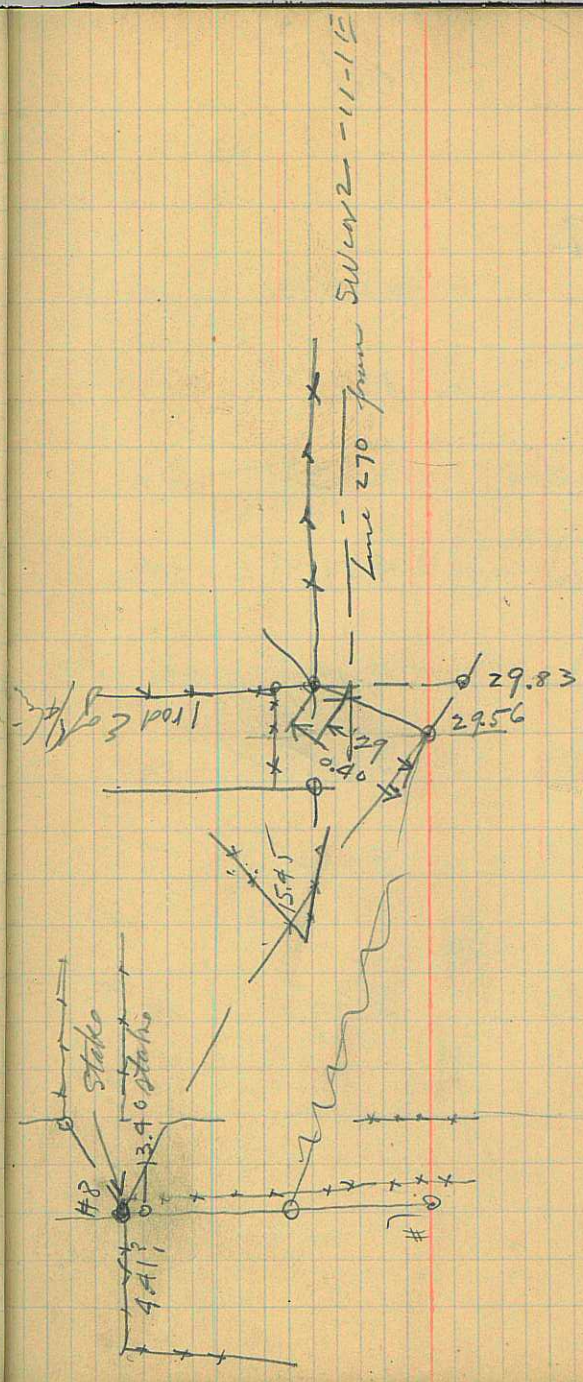
13.47

#8 —

#8

(1)

→ to Salem SW cor of 10a C



		HI
	3.473	103.473
	10.973	
#1	11.71 ✓	
#2	11.63 ✓	
#4	4.57 ✓	
#3	4.64 ✓	
#5	3.885 ✓	
#6	4.06 ✓	
#7	3.90 ✓	

3.473
7.5
10.973

42

Bottom finished floor in Base

9" below, bottom finished floor. SE cor

8" below SW cor on bottom on cement foot.

NW cor to Sidewalk (not finished) 1'-1 1/4" below plate 5.7 − 3.47 = 1.10

SW cor on pavement (marked) = 1'-2 1/8"

on pav. near water pipe 4 7/8"

on pav. extreme N. end 7 11/16"

11.71 − 10.97 = .74

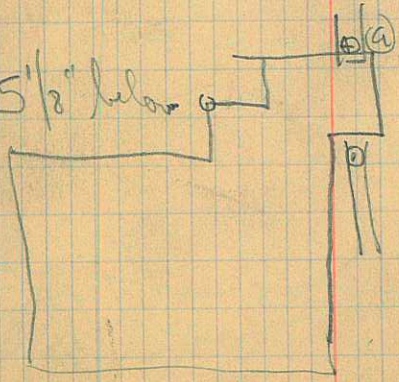
11.63 − 10.97 = .66

4.64 − 3.47 = 1.17

3.88 − 3.47 = .41

4.06 − 3.47 = .59

5.5 − 5.0 = .5



3.90 − 3.47 = .43

4.5 − 4.0 = .5

Logan & Benson Canal

4/24/16

Observations as to capacity. Depth on upper side of struct bridge on Conl. str. = 2.15 @

Both passages running normal

6.875
5.810
3.820
~~5.600~~
5.600
5.530

@ Head on weir about 1 foot.

6.875 $\sqrt{}$ 6.87 $\sqrt{}$ 5600 1.277

$Q = 3.3.70 \; 1.277^{\frac{3}{2}}$ 44

101 | 30 | 3.37
90
10
300

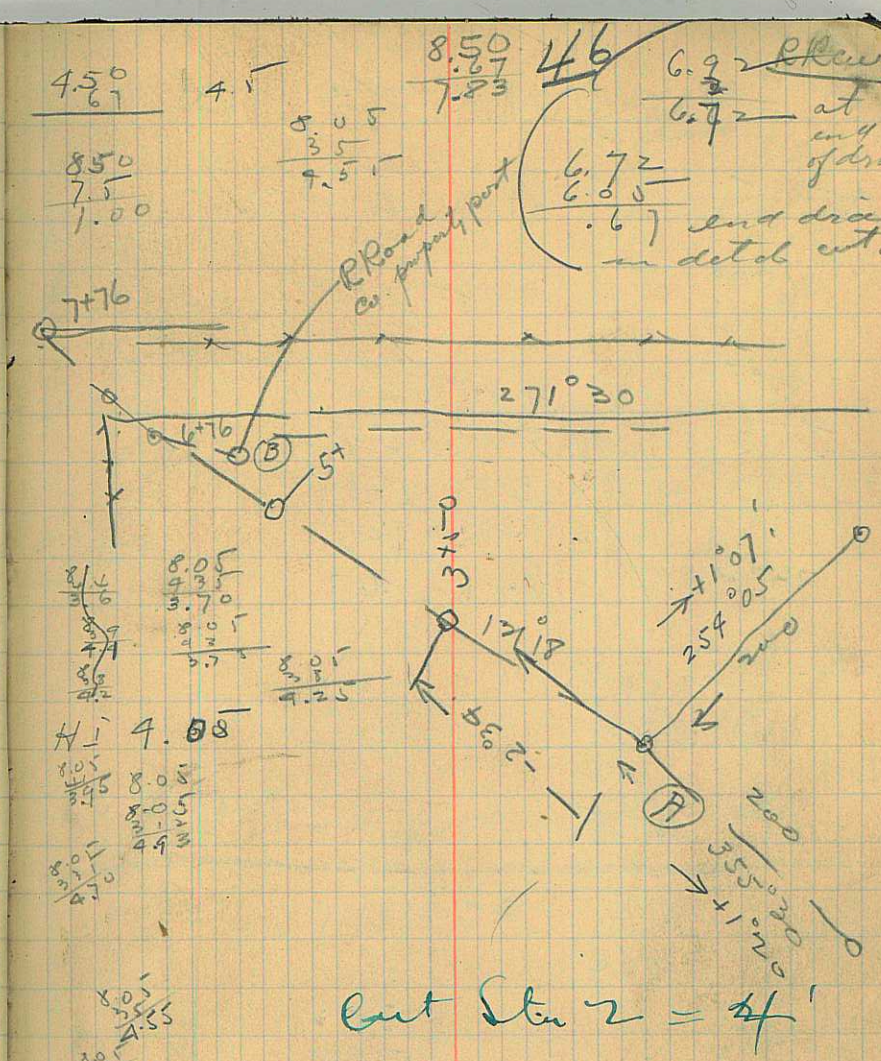
on crest Nixon Benson weir
on H_2O surface
on bolt in N wall near stop log slot
more water turned in (or H_2O)
10 minutes later 6.875 $\sqrt{}$ 581 1.065

log 1.277 = 0.106191
$\times 3$
(0.3185) 3
0.159286

log 33.70 1.527630
1.686916
48.6

Mr Job Roland, Louse Bodero and M. Heber Talbot expressed themselves that this is as much as they had ever taken and was as much as they could take

Sta	az.	RR.	Cut	Vert ∠	total Rod
0	256°30'	4.55	3-6"	+1°07'	8.05
+0+50		4.35	3'-8½"		
1+00		4.30	3'-9"		
		3.80	4'-3"		
~~+0+07~~		5.0	3'	+4°20'	8.05
+50 ft		4.1	3'-11"		
+100 ft		3.1	4'-11"		8.05
1+50 ft		3.35	4'-8½"		
3+50	138°18'	4.05	4.00		8.05
3+66		3.50	~~4-6½~~		
2+50		3.8	4'-3"	-2°34	
3+50		4.50	4-		8.50
4+00		5.36	3'-2"	3-3½"	8.50
4+50		5.35	3'-2"		
5+00		5.60	2'-11"		
5+50		5.80	2-8½"		
5+82.5		5.50	3.00	-2°	8.50

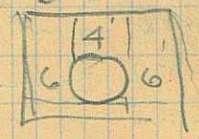


Sta	RR	Cut	RR tgt.	Vert ∠
℄ 5+82.5	7.28	3.00	7.28	
6+00	9.65	2.38"		
6+50	4.85	2'-5"		
℄ 6+76	4.73	2-6½		
7+00	6.20	1-1"		
7+50	5.75	1'-6½		
7+76	6.61	.67	7.28	-47½

℄ 6+76 - (B) 292°21'
23.3
- (B)
16°35

	BS	FS	HI
0	9.29		
0+50			5.07
1+00			5.97
1+50			6.45
PI 2			7.71
1+50 (A)			5.84
1+00 (A)			4.42
0+50			4.30
0 (A)			4.00

7.28 − 6.61 = .67
7.28 − 6.2 = 1.08
7.28 − 3.83 = 3.45
5+82.5 − 1+75 = 48
9.21 − .67 = 9.92
8.92 − 7.85 = 1.07
7.28 − 4.65 = 2.63
7.28 − 4.85 = 2.43
7.28 − 4.73 = 2.55
7.28 − 6.20 = 1.08
7.28 − 5.75 = 1.53



3
.09
1.00

7.28 − 6.3 = .98

to Rail Road post on Curve

Computation for change from 3+50 to 5+82.5

	Old	New	
~~4~~	3-2"	3-3½	✓
4+50	3-2"	3-4½	✓
5+00	2-11"	3-3½	+.322
5+50	2-8½	3-1½	✓
5+82.5	3	3-6"	✓

7+50	1-6½	1-7½	✓
7	1-1	1-3½	✓
6+76	2-6½	2-9½	✓
6+50	2-5	2-9	✓
6	2-8	3-1	

5.825
3.50
2325
.5

0.5
232.5

100215
50
+1.07.50

5
.5000 | 232.5
6500 00215
3500
2321
1179
11625

0.215
107
.322

100.215
20
.43000

7+76
5 82 5
193.5

.5000 | 193
386 .0026
1140
1158

.0026
26
156
52
.0676

776 776
6.50
126

26
76 .0026 50
156
182
.1976 .1300

26
.107
33
13
.46

44

50

Check levels con

Sta	BS	FS	HI	Ele	H I
2+50			9.71		
3+00	1.060	11.47		100.00	106.06
3+50			3.80	97.26	
4+00			6.45		
4+50			8.15		
5+00			10.10		
5+50	2.52	12.00		89.06	91.58
5+82.5			3.34	88.24	
6+00			4.95	8663	
6+50			4.80	8678	
6+76			5.02	8656	
7+00			6.78	8480	
7+50			6.96	8462	
7+76			8.25	8333	
5+50	2.69				
5+82.5			3.52		
6+00			4.13		

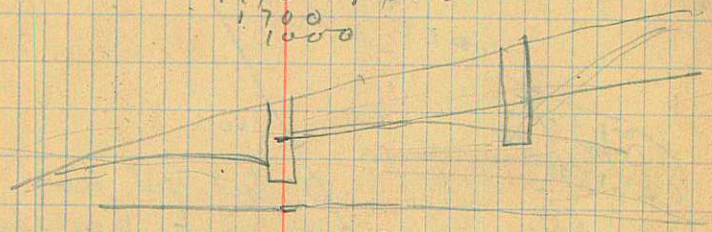
93-degree

4.00 (DA)
3
7.00

7.71
4
1171
7
4.71 | 200
710.02 3.55
1100
1000

4.2
3.5
7.74

1171
774
3.970 | 200
1970.0 19.85
1700
1000



0.0235
1.177

5.177

4.00
1177
5.177

7.00
1177
8.177
43
3.877

8.177
1177
9.354

9354
442
9.796

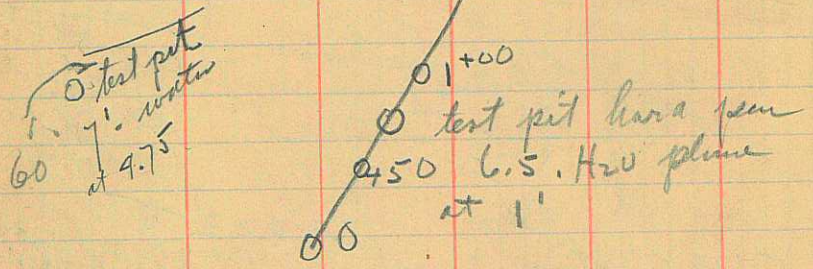
3.52
2.69
.83

3.34
61
3.95

2.52
3.34
2.28
0.82

9.13
3.52
.61

(OA)


200±
0 test pit
1. 7'. water
60 at 9.7'
1+00
0 test pit have seen
450 6.5. H2O plane
at 1'
0 0

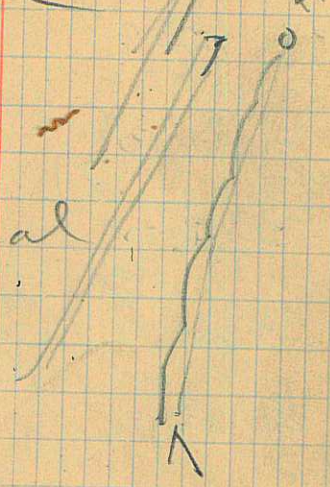
Topography 4/27/16
for T. M. & E. Co.
East lawn for Sprinkler

Sta 1

Pt	Az	L	C	J	Vert
1	14°54	12		13.02	-4°
2	10°50	12		12.70	-5°52
3	349°50	12		12.53	-7°30
4	260°58	11		12.38	-2°39
5	257°18	10		11.72	-2°20
6	257°18	8		10.05	-2°20
7	259°14	8		10.61	-1°45
	232°35	4			
8	249°43	2		4.95	" "
9	243°55	2.5		4.70	" "
10	239°50	2.70		4.30	" "
11	236°36	3.10		4.89	" "
12	228°16	3.35		4.06	" "
13	168°50	3.55		3.78	
14	25°52	12		13.05	-1°30

S-6

PC
C
C
T. near culvert
West temple spire
S. rear Canal end wall
and W. all at canal
key post



Mendon City
Hor. Work Survey

	Pt Ag.	Bearings	Vert ∠	L C U
		309°30' ± true line west. G-1		
1				
	S spur Largest	328°20'	-1°23	9.00 — 10.25
	Middle S spur	323°30'	-1°28	8.00 — 8.75
	N spur.	278°10	-8°12	5.0 — 5.8
#1				
	#5	249°46' ✓		
1				
	#1	167°29' ✓	169.7 ✓	-1°37
2				
	#2	60°13' ✓	106.4 S / 105.6	+8°30
3				
	-3	46°0' ✓	175.7 S ✓	+9°30'
#4				
	#4	344°00 ✓	S16°E ✓ 80.5	+1°43
#5				
	#5	299°46	248.7 S ✓	-6°12'
#1				

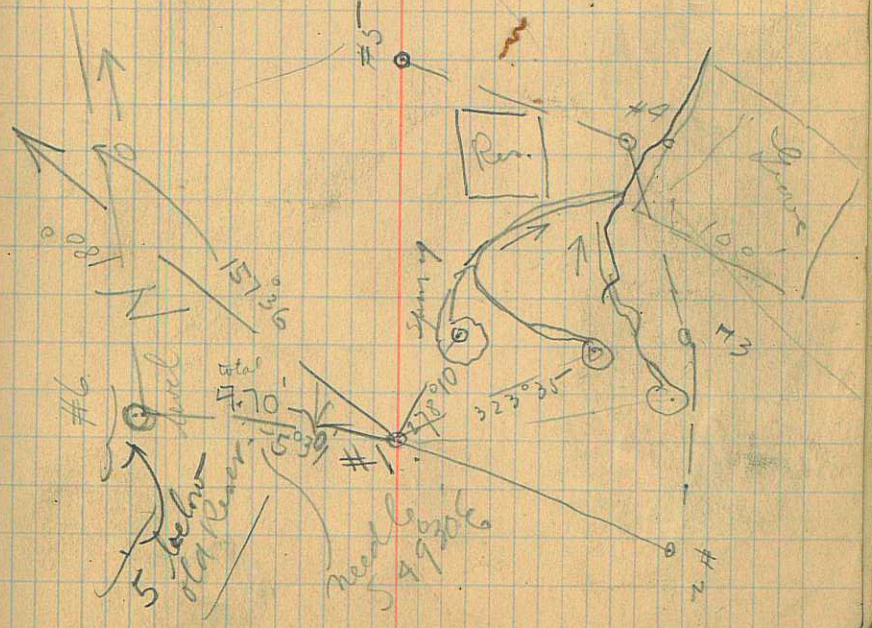
2.02 B S

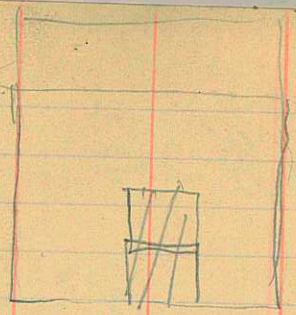
N 2° W
12° W

West line ... Dec 8

Old ...

run line with S side of S town a.c.





30

150
300
4500

995
995
4975
895
895
.9900 25

470
99
4230
4230
465.30

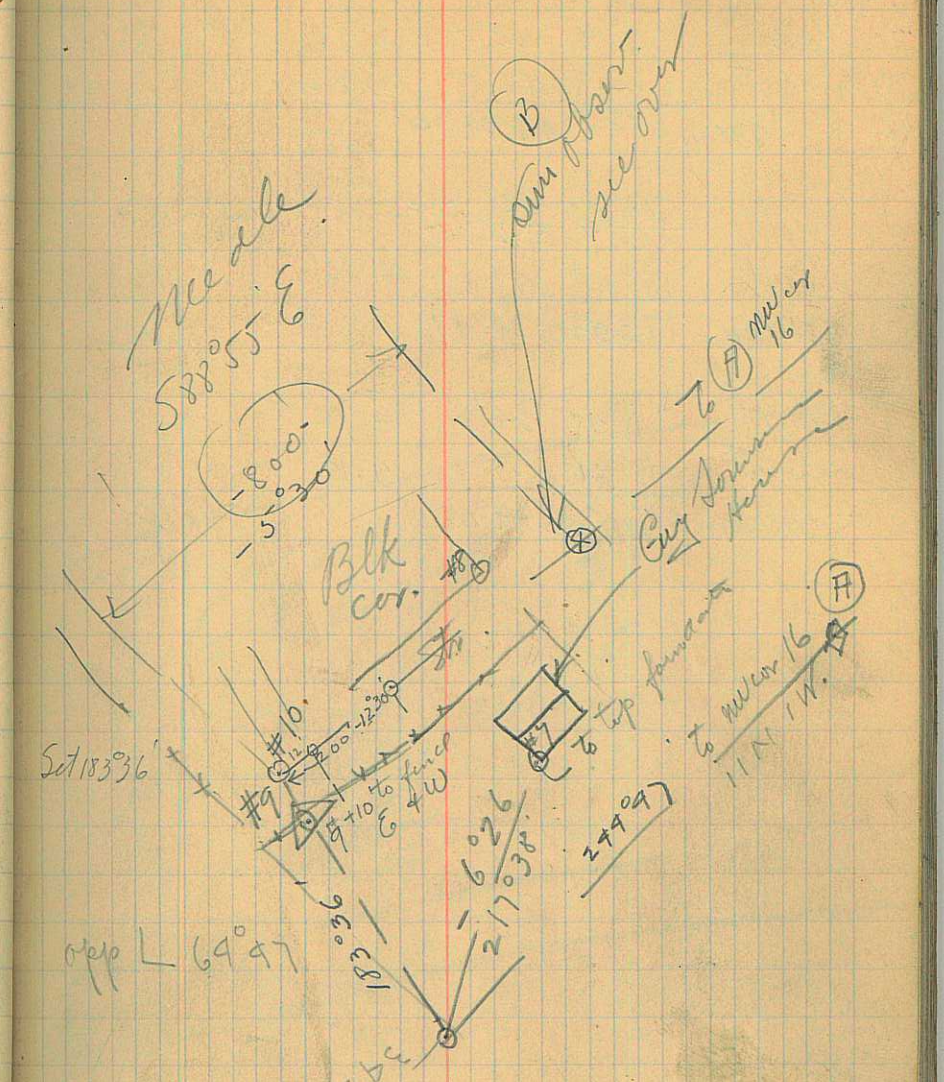
470
.096
470
6720
384
45.120

60

Mendon Camp

april 29 - 1916

	to nw cor 17	270°09'	214.7'	
10				
	10	183°36	47'	
	ne cor 17	268°52		
	8	260°45'		
	7	272°31		-6°20'
9 -				
	9	183°36	1000.0	-3°30'
	#8	216°00'		
	#7	217°38		-6°26
	ne cor 17	244°47'	N64°47'E	
#5 -				



April 29-1916

	Az	Vert ∠	time		
Direct	65°08	44°56	3:20	+	(1)
Invert	66°18	44°07	3:22	+	(1)
mean	65°45	44°31'30"			
Direct	77°00	35°14'	4°15P	+	(2)
Invert	78°01	34°20	4°16		(2)
mean	77°30'30"	34°47			(2)
Direct	77°45	39°30	4:18		
Invert	78°36	33°46	4:19		
mean	78°10'30"	34°08'			

Det (1)

64

Good

Add 31 to all Az

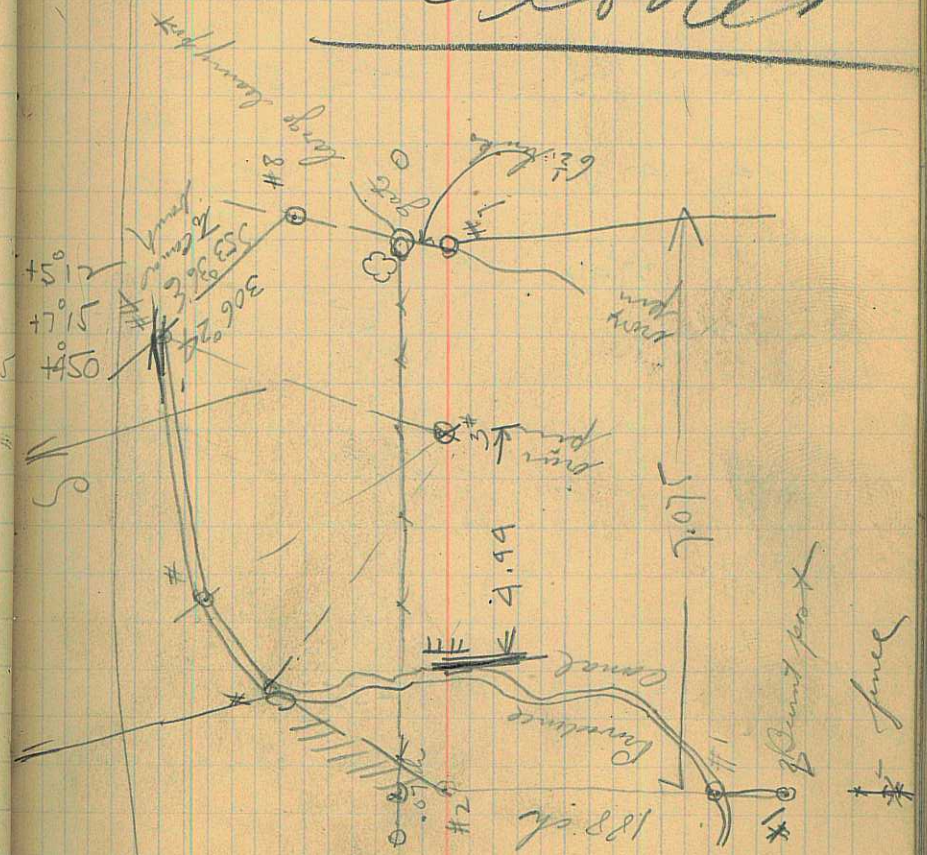
4/27/16

Survey for Fred Kloepfer in the 3rd Ward.

⊼	Pt	Az	Bear	Dist	L	C	Vert
1							
		306°24'					
8–							
	8	24°41'		2.44 ch			
7–							
	7			1.915			
	6	292°38'			2	5.16	+5°12'
	5	339°21'			4.00	6.09	+7°15'
	4	5°40'			1.00	3.65	+4°50'
#3							
	3			5.16			
#2–		92°51'	N87°09'W				
	#2	~~[illegible]~~ 00°		1.88 ch			
1–							

5.16
1.915
7.075

Plotted



5/1/16

Survey for Fred Campbell
from Borrow Spot to Grave-yard
Shaw

To	Pt	Az	Horiz	Vert	L	L	C
	6	198°30'		+57'		4.48	10.0
5							
	5	166°13		+52'	5	—	6.92
4							
	4	197°18		-1°10'	10	—	6.1
3							
	3	137°40	24'	-20			
2			983	-55'		5.09	10.0
		137°40		-55'			
#1							

10/3 90° — 20 24'

.0166
5500
8300
8300.0
913.0

10.
5.09
4912
982

.0166
5500
8300
8300.0
913.0

68

.0166
9800
12 8 0
144
156 8 0
5.09
20.77

107.00
20.8
86.2

HI

HI 9.50
E = 86.2 HI 91.2

BP 1 0±3
160 0±2

1

N

−	+
— 16	3.00
1.	913
17½	1213
— 1 5	
8	
— 23	
12	
— 11	

102

HI 1 = 107

#1 Spr. outlet

Grades for N = Hall
Lava Hot Spr. 5/2/16

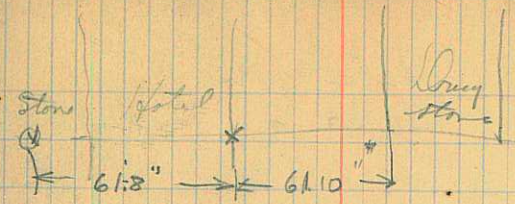
BS HS

too 61.66 1.905

2.820

0.98

9°° Grubs Springs



70

61.8
3
185.4
1.905
3.759
2.82
0.939

2.82
1.90
0.92

0.62
1.90
2.52

Hall Mesa NW cor. in grade 1.900
.92
0.98

096
70
6.720

	dent L	L	C	J
2	-6°47	8	8.4	8.8

#1 -

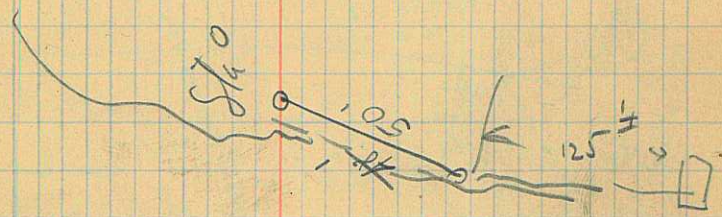
#3	+5°30	4	488	575

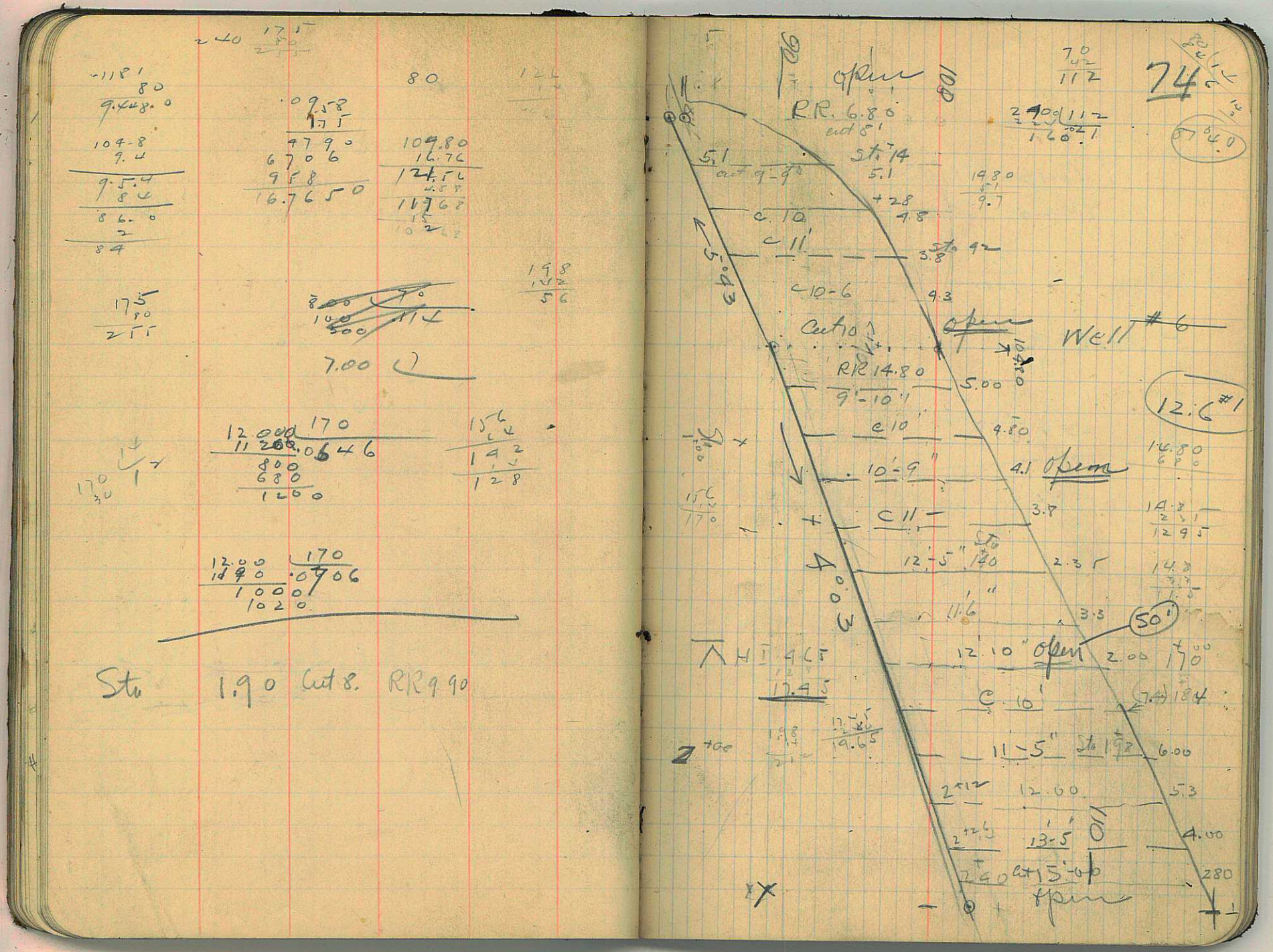
72

12.2
9 9
2.3

02

01




RR. 6.80
cut 8'
open
RR 14.80
9'-10"
cut 10'
Well #6
12.6 #1
50'
12'-10" open
11'-5"
13'-5"
cut 15'-0"
open
Sta 1.90 cut 8. RR 9.90

Computation Campbell Bros. train No. 1

$$S = \frac{7.}{100} = 0.07$$

$$\frac{.5}{4} = .125 = R$$

$$C = \frac{23 + \frac{1}{.01} + \frac{.00155}{.07}}{0.552 + \left(23 + \frac{.00155}{.07}\right)\frac{.01}{.35}}$$

$$\frac{123}{1.24}$$

76.

$$\frac{a}{p} \quad a = r^2\pi \quad r^2 \qquad p = 2r\pi$$

$$r = \frac{d}{2} \quad \frac{1}{4} \qquad \frac{\frac{d^2}{4}}{d} = \frac{d}{4} = r$$

$$C = 99.2$$

$$v = c\sqrt{rs}$$

8.0

1 1/2 cf. s

0.88 or .9 cf s

$23 + \dfrac{1}{.017} + \dfrac{.0015}{.07}$

$.552 + \left(23 + 0.022\right)^{-1} .03$

1.000 | .017
85 | 58.8
150
136
140

58.8
25
81.8

82.0 | 1.66
830 | 50
9
4.56

.196
4.50
980
784
.8820

1.5521 | 2.3.02 | .01
230
225

4 | 43.
10

$V = c\sqrt{rs}$

80

.067

.0170 | 0.31
140 | .048
300
280

23.02
.048
184176
92088
1.10501 6
55 52
1.65 7

65
33
32

115
32
83

7.1
800 | 30
600 | 60
200
3

4.00 | 60.0
36 | .066
40

.066
60
3.960

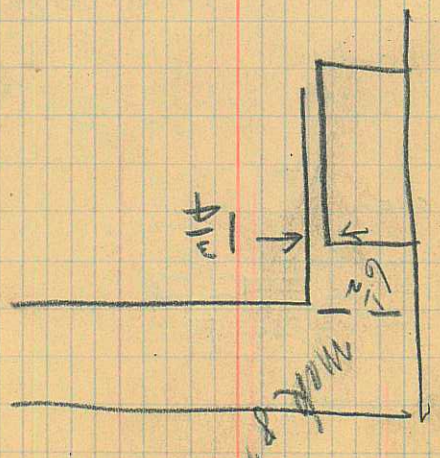
.069 = 5

.009 .01
1.00 | .0015
100 | 6

23
140

123

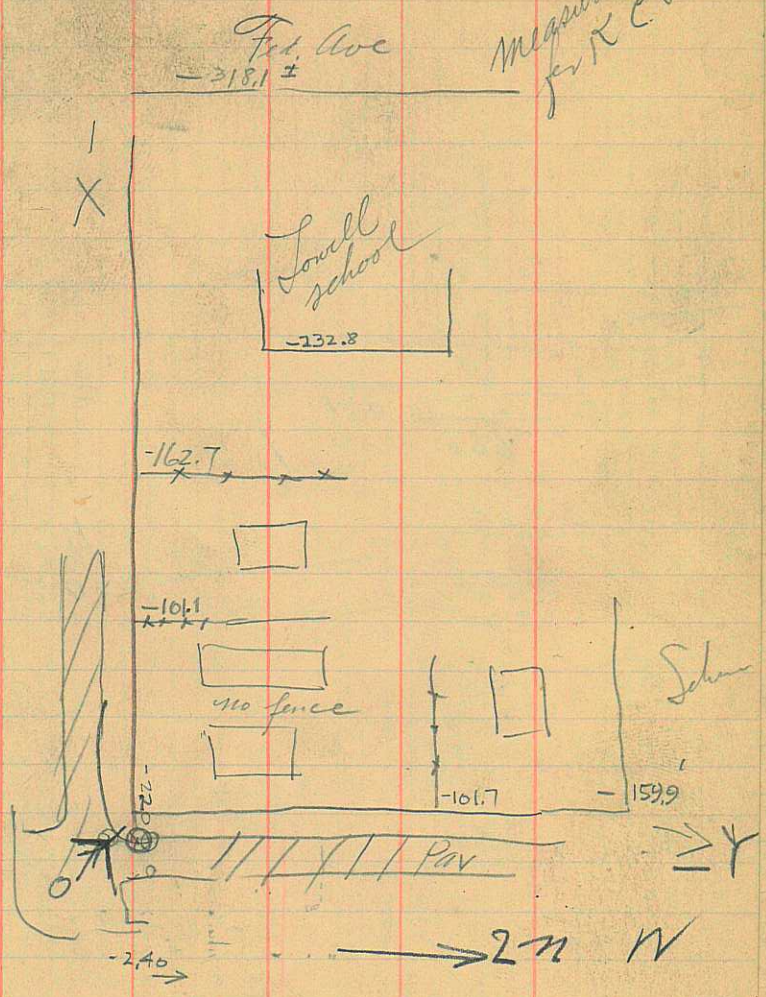
.0015 | .067
134 | .02

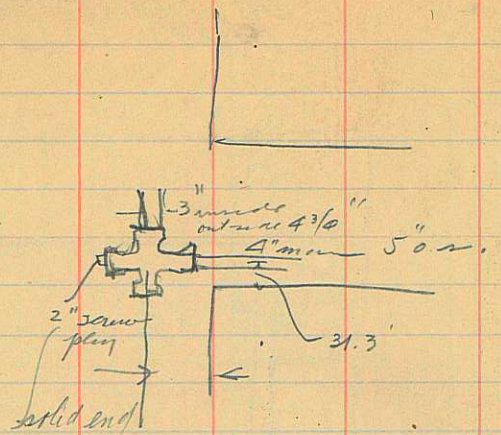


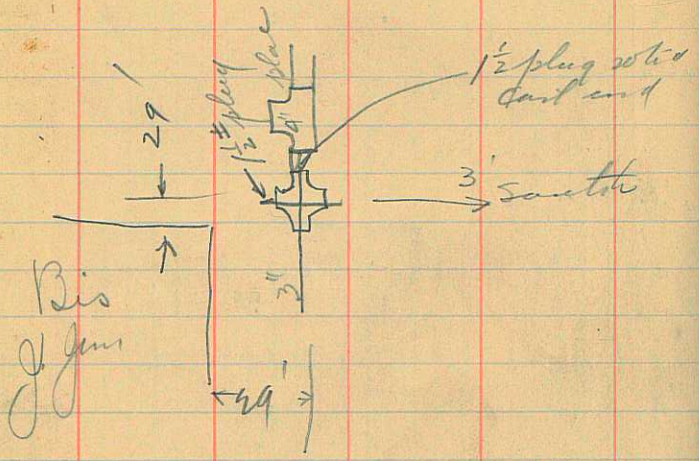
08 3 B 1 W 6

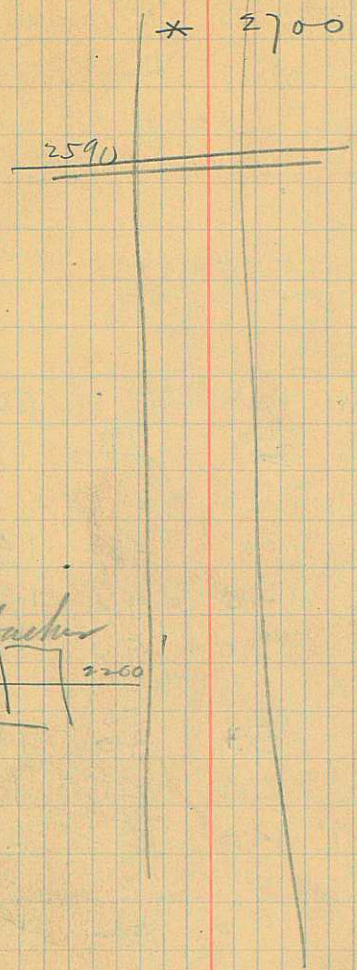
May 9-1916

Measurements for K C School




3" nuts on nut 4 3/0"
4" nuts
5" o.s.
2" screw plug
31.3'
solid end


1½ plug
4"
1½ plug solid end
3' sawtooth
2'
3"
Bis
49'


* 2700
2590
Rundlichbacher
2260

(42)

Logan & N. Canal
Outlet at Bergesens

Dist	Depth	Depth/10	Rev.	Time	Velocity	Mean
0.16	.56	0.336	~~20~~ 30	~~44½~~ 45½	1.00	1.00
1.0	.7	.42	30	45½	1.48	1.47
			~~30~~	46	1.46	
1.5	.75	.450	30	40	1.66	1.66
2	.70	.42	40 ~~53~~	~~40~~ 53	1.68	1.65
			30	41¼	1.64	
~~2½~~	7	.42	40	52	1.71	1.71
3	0.65	0.40	40	46	1.93	1.93
3.25	0.70					1.80

5/15/16

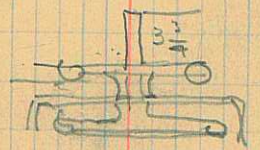
84

97 / 30 / 27 / 24.05

(43)

35 / 2.77

When gat is down screw above upper hand wheel measures 3 3/4



Canal 97
Stream 30
this would make 2.77 cfs for each stream

Dist	Depth	Depth/10	Rev	time	Velocity	Mean
1.235	0.53	.63	.8	0.65		
1.57	.362	0.725	.5	0.59		
1.655	0.362	.725	.5	0.60		
1.68	.35	.70	.5	0.59		
1.82	0.337	.675	.5	.62		
1.86	0.17	.675	.25	.32		

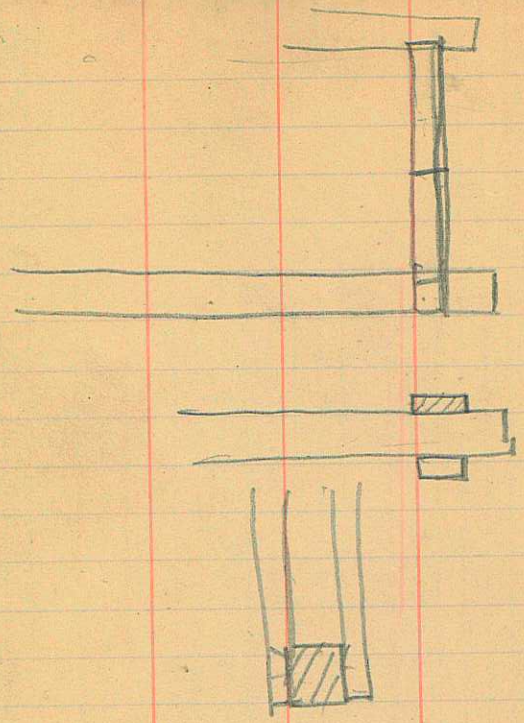
in sec. mean	Area	Mean D	mean/cent	Q
				2.77

3.35

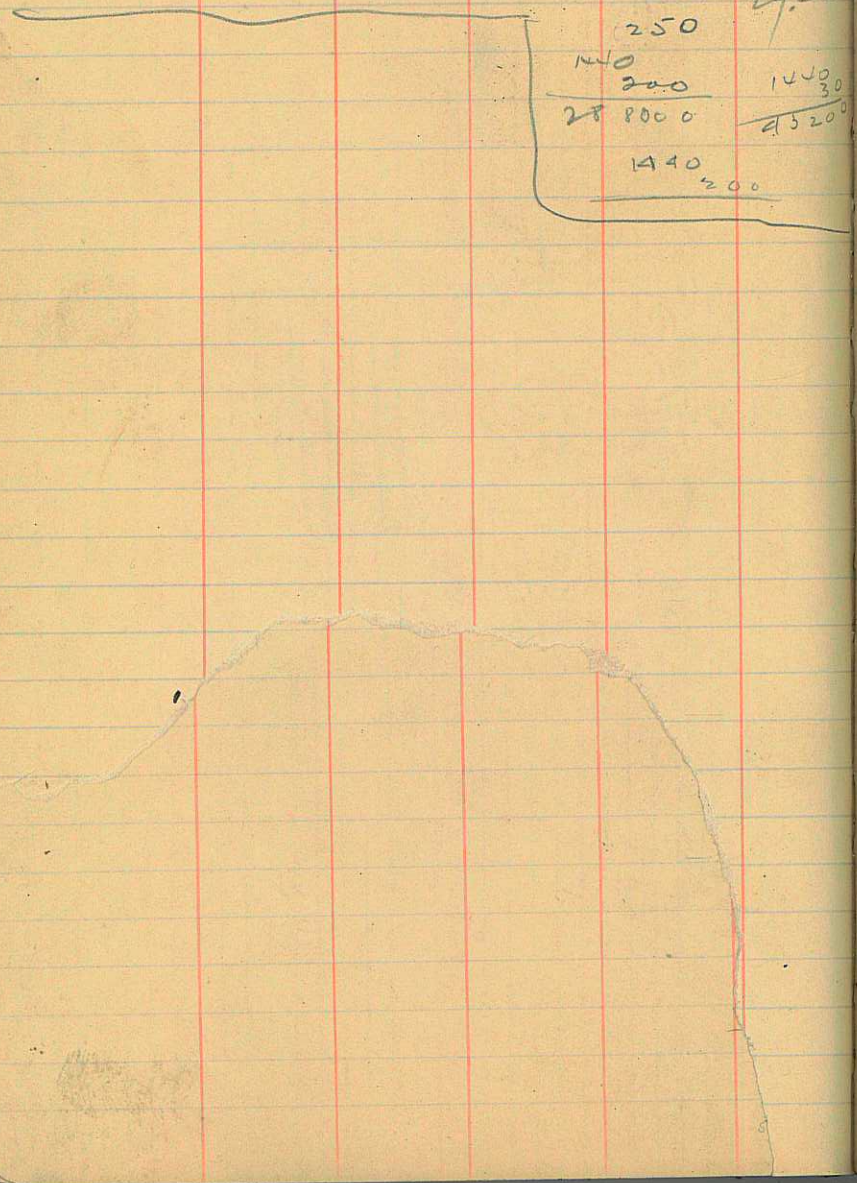
Checked by ED 7/17/16

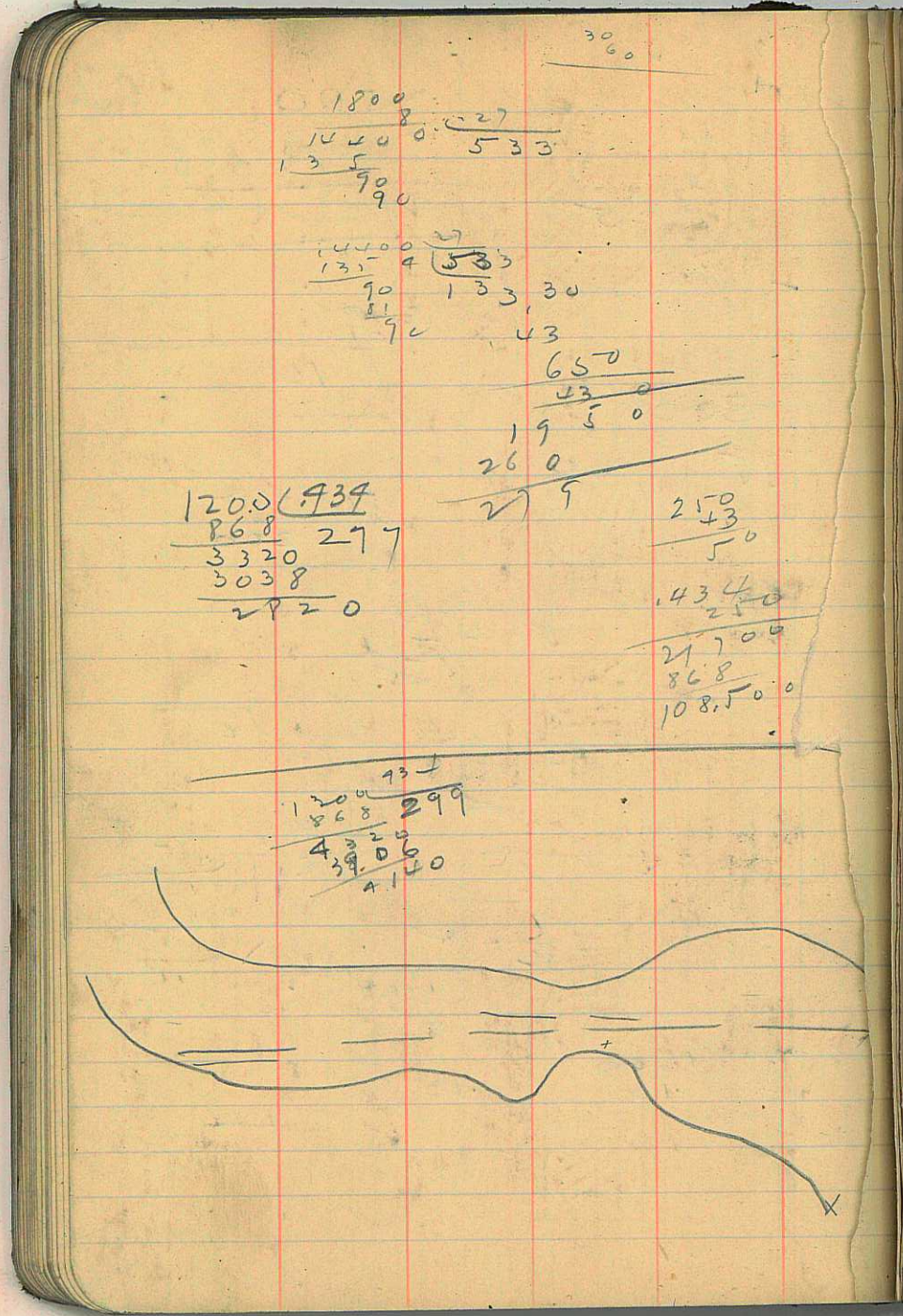
Screw projects 8 7/8 above gate in down position

hence opening is about 5 1/8". water dropped 1/2" = .74

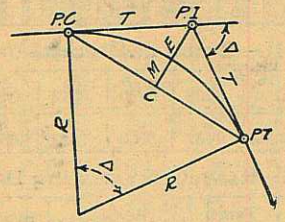


$$v = \sqrt{\frac{h}{f\frac{L}{dL} + m}}$$





DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



CURVE FORMULAS

Radius=R=$\frac{50}{\text{sin. D/2}}$ (1) Degree of Curve=D and sin. $\frac{D}{2}=\frac{50}{R}$ (2)

Tangent=T=Rtan$\frac{\Delta}{2}$ (3) Length of Curve=L=100$\frac{\Delta}{D}$ (4)

Middle ordinate=M= R(1—cos. $\frac{\Delta}{2}$) (5) =Rvers $\frac{\Delta}{2}$ (6)

External=E=Ttan$\frac{\Delta}{4}$- (7) =Rcos$\frac{\Delta}{2}$(1-cos.$\frac{\Delta}{2}$) (8)=Rexsec$\frac{\Delta}{2}$ (9)

Long Chord=C=2 R sin.$\frac{\Delta}{2}$ (10) Δ=Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161 +60.35 to find Sta. of P. C. and P. T. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157 +45.50. Also from (4) L=746.00 and P. T.=Sta. P. C. +L=164 +91.50.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26)$=2.16 ft.

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflec-angle=2° 16.2′ +8° 20′ ÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus curve above is 91.37. For from Table IV for 1° curve E=960.6 20′=960.6 ÷8⅓=91.27 and from Table V correction=.10 or .37 ft. Or suppose Δ=32° and E is measured and found to be What is D? From Table IV E=230.9 and ÷42=5.5 or D=

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	25.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9 + (20—16) ÷ 2 or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.