5

#5

FIELD BOOK

360

1001

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

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

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

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

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

Eugene Schaub
Logan Utah

Survey for Hyde Park Corporation Water Works Extension up Birch Creek

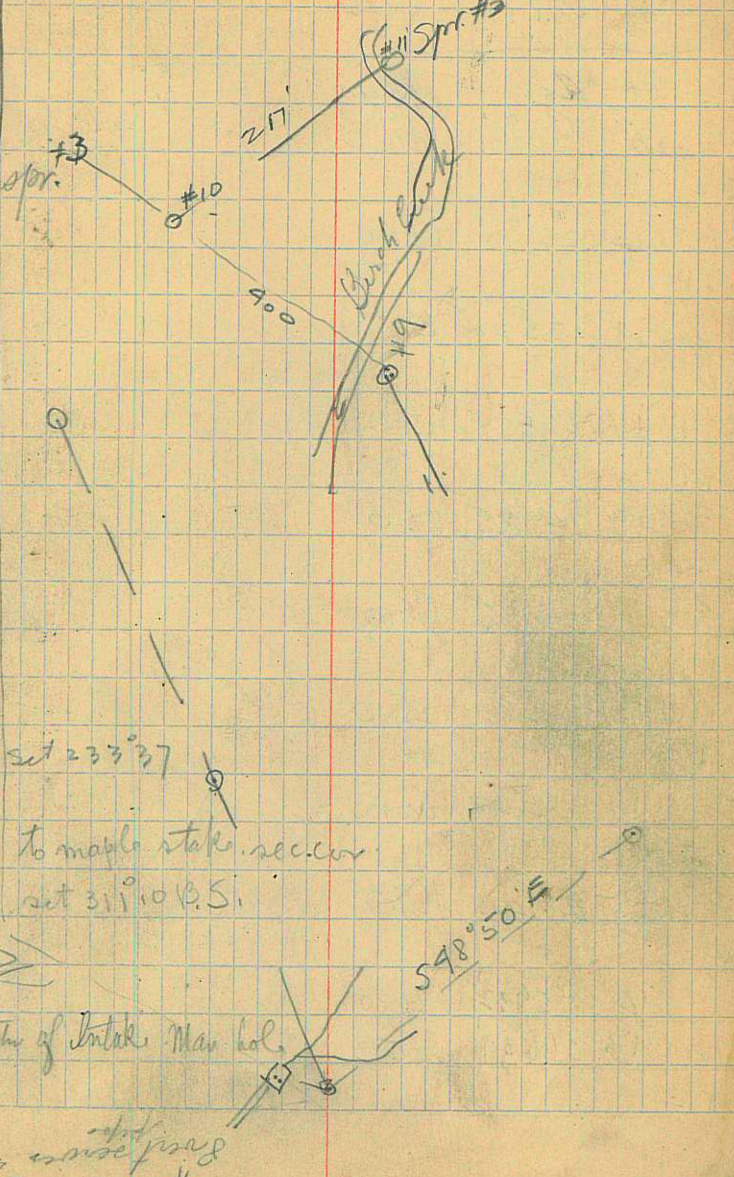
⊼ -	Pt	Az.	feet Dist	∠	Stadia C	∠
	12	217°23	140.0'			
10 -						
	11	276°43	217'			
10 -						
	10	~~10~~ 217°23	400.0			
9 -						
	9	233°28	242'			
8 -						
	5	60°55?				
	8	252°19'	2150.0			
7 -						
	7	233°37	3700.0'			
3 - ~~4~~						
	5	148°32'				
6 -						
	6	233°37'	800'			
	5	201°48				
3 -						
	4	124°16				
	3	311°08		2.00		9.90
	2	168°50'	19'			
1 -						

6/26/16

Assistants Rosco Hyde

Mr. Kerby

Vert ∠
+3°35'
+1°19' spr.
+2°55
-1°17'
+2°35
+2°16
~~+2°16'~~
+10°10'
-1°45 to Centre of Intake Man hol.



set 233°37

to maple stake sec. cor

set 311°10 B.S.

.25

.37
.3
.111

⊼	Pt	Az.	Dist
	23	267°01'	106.0
22			
	22	261°10'	116.00
21-			
	21	253°22'	140.00
20			
	20	276°55'	115.00
19			
	19	249°25'	82.0
18-			
	18	297°15'	60.0'
17-			
	17	253°54'	125.0
16-			
	16	280°48	110.0
15			
	-15	287°40'	169.7
19-			
	14	259°32'	326.0'
	13	266°39'	125.3
12-			

Spr. #1 = 16 gal per min.

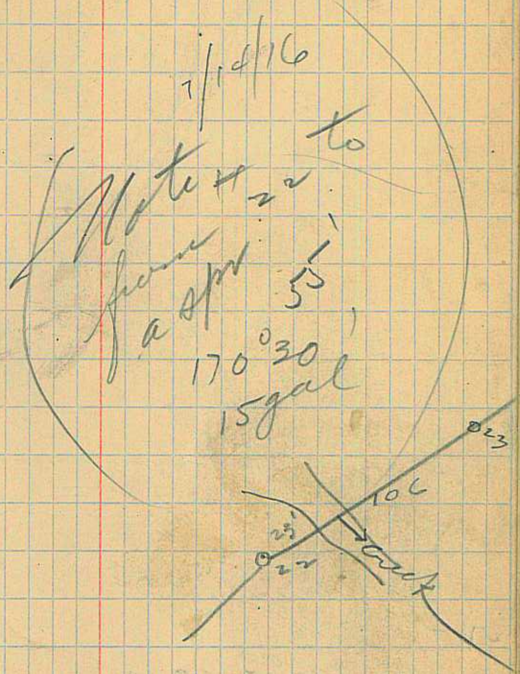
-6-

23
78
101

Spr #2 =

-5'	
+43	gr
+58'	gr
+30'	gr
+1°40	gr
	#1 5
0.0 0	
-10'	gr
+1°10'	gr
+1°	[illegible] angle to gr at 15
+3°05'	

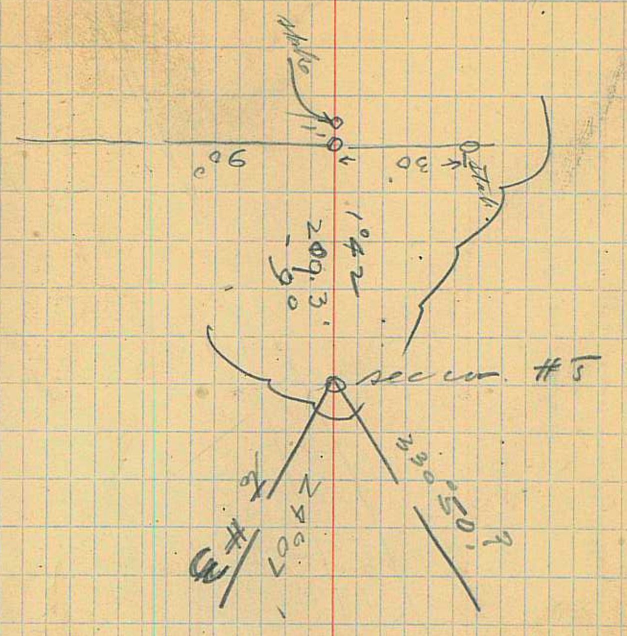
to Forest Res. Mon. #88



7/14/16

Note # 22 to
from
a spr 1'
5'
170°30'
15gal

x - Pt	Az	Dist
28	176°20'	128.0
27° –		
27	242°25'	80.00
26	353°20'	30.0
25.		
25	257°11'	60.0
24 –		
24	235°17'	122.0'
23 –		

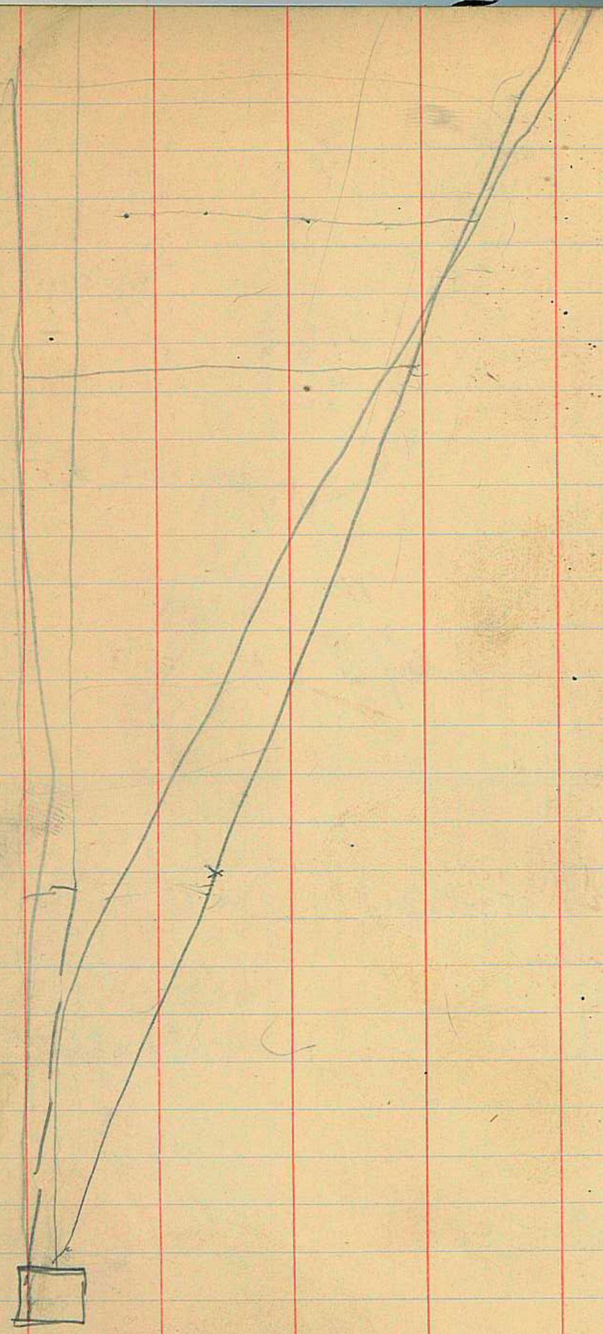


+1° ⑪ par. sight.
spr #2 45 gal (best) needle N 4° W

+56' gr

-5°20 || spr. #1 (about 10 gal)

-1°12' gr
N I 5.0
+1°25' gr
Needle N 55° 50 E



Hyde Park Survey
Water Works

set on #1

	Hor.	Vert	time
Direct	104°59	18°13	6:15
Invert	105°46	17°23	6:16
mean	105°22 30"	17 48	
Direct	105°34	17°30'	
Invr	106°16	16°48'	
mean	105°55'	17°09'	
Dir.	106°00'	17°00'	
	106°43	16°16	
mean	106°21'30"	16 38	

Z = .

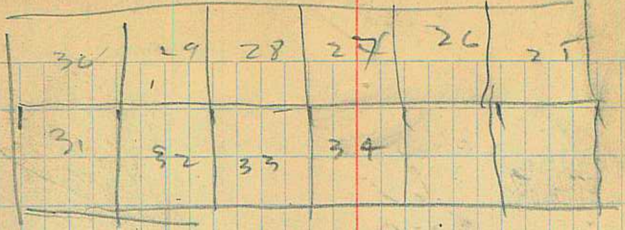
add ½ to all ay

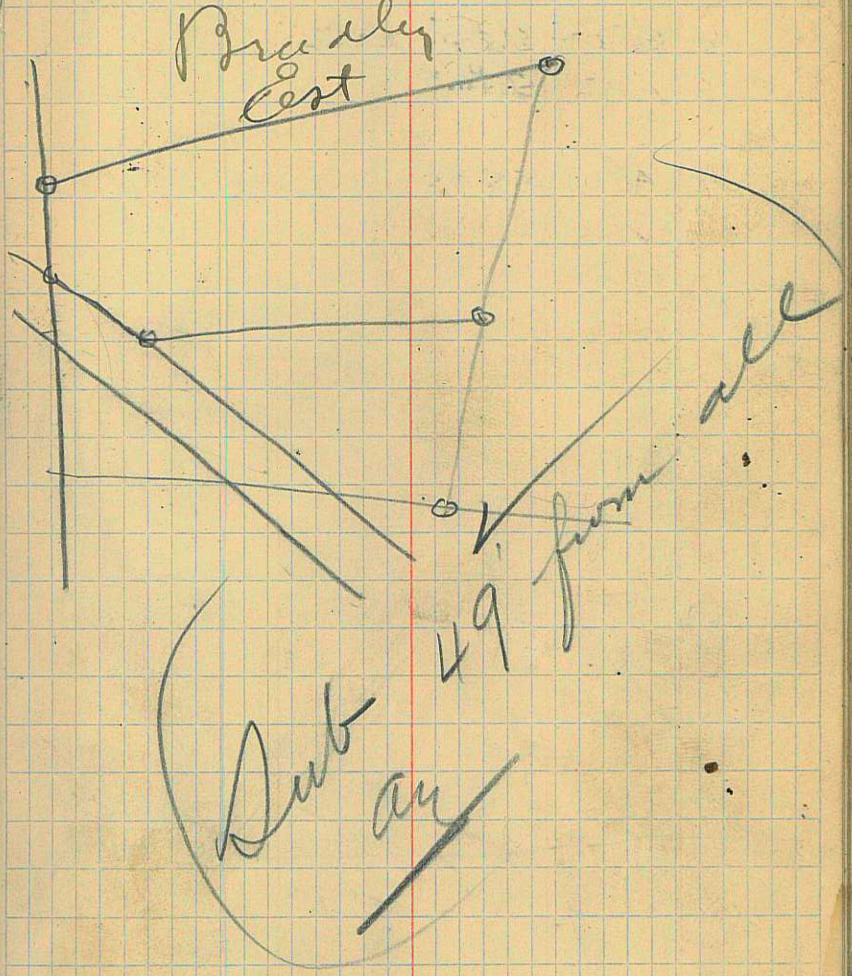
6/30/16
Ob on #1

Jensen Survey

	angle Hor	Vert Angle	
Direct	68°22	56°10'	2:55
Invert	69°47	55°17	
	69°04'30"	55°43'30"	
Direct	69°17	55°34	
Invert.	70°31	54°48	3:00
	6954	5511	✓
Mean	69°29'15"	55°27'15"	

40°08' along O L & F
R.R. track





9.82½

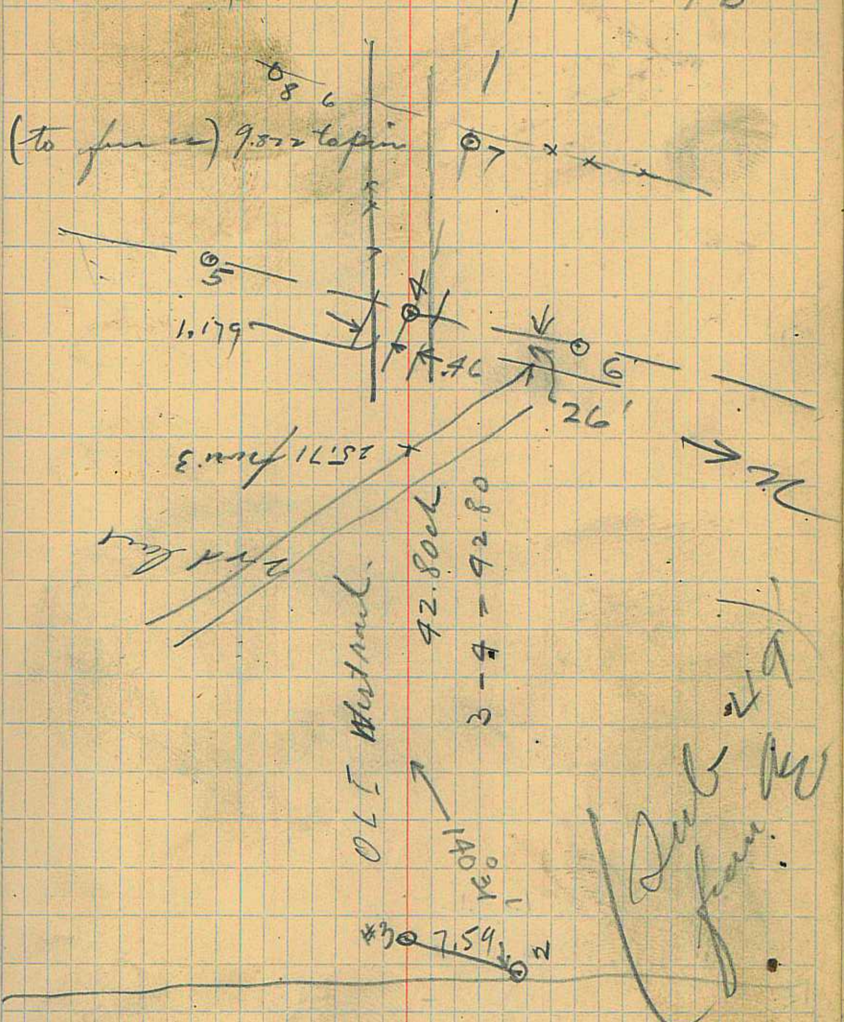
Survey for Jensen of Hyrum

100
82½
17½

7.59

100
54
46

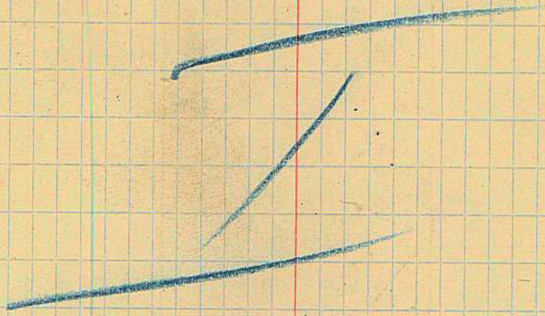
Π -	Pt	Az	chains West
	9	182°06	3.67
	8	2.33	6.62
7	7	89°22	9.854
	6	183°03'	3.105
	5	2°43	7.142
4.			
	.4	40°08'	42.80
3 -			
	3		7.59
2 -	~~4~~		
		40°08	
1 -			

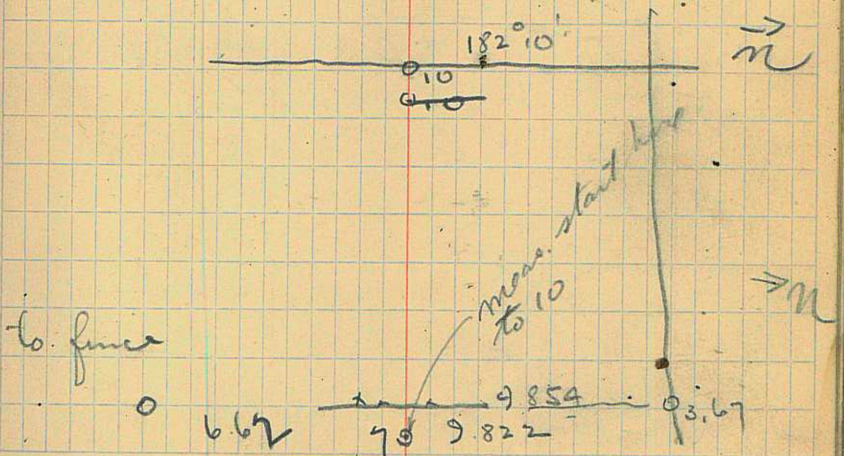


along west rail OLI RR

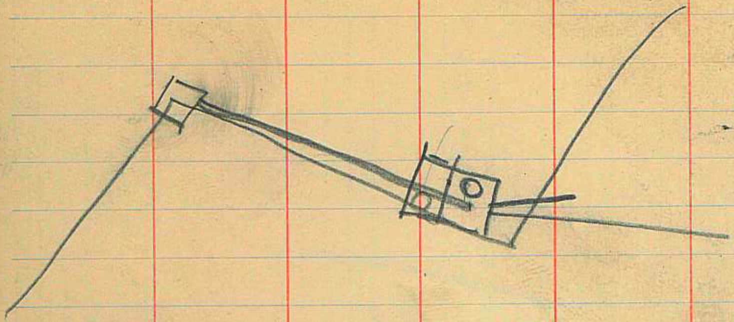
12	2°	6350
11	182°10	4.138
10.		
10	89°22'	10.124

6.35
4.138
10.488





Engr. Data -20-



141.7
4590
97317

$$\frac{100}{120} = \frac{6.7}{x}$$

6.7
120
13 40
67
8.0 40

Elevation Stake ⑰ east of Res. in small hollow 193.67

204.83
4.92
199.91
186.3
13.6

204.83
4.64
200.19
186.3
~~1649~~
13 89

204.83
480
200 03
186.3
13.73

204.83
5 04
199.79
186 3
13.49

I

= indepe a

Riseren Location

Millville H2O Works

⊼- Pt	Ay	Dist	BS	FS	in	HI	Elev
Bm A			11.16			204.83	193.67
Ⓐ					4.92		
Ⓑ					4.64		
c					4.80		
D					5.04		
a					5.40		
		200					
1+70		170					
1+60-		1+60 S					
1+40		1+40 S					
1+00		100					
0+72		72					
0+52		52					
+44		44					
47+24.							
	139°37'	141.7					
45+90—							

7/1/16

193.67
11.16
20483

C

Elev. ~~186.3~~ bottom of exc. or 185.8

13'8" 13'-8" cut –

13'-11" cut -

13'-7"

13'-4"

[illegible]

+14°25 (15°50 HI) gr pipe distance 204 on west bank small canal

+12°12' on Canal bank (13°38 for Elev)

+8°30 (arr 10°90" for Elev) (RR on Canal 5.10 dist 200)

+3°93' west bank +1°47'

to Canal bank +4°06' ⊙ 47+30.7

– 5' ⊙ 47+24 on curve 40 ⊙"

HI 4.98

to. PI

from E. side west walk of cm. flume to 2 – 345

204
3
207
57
258

280
258
22

20

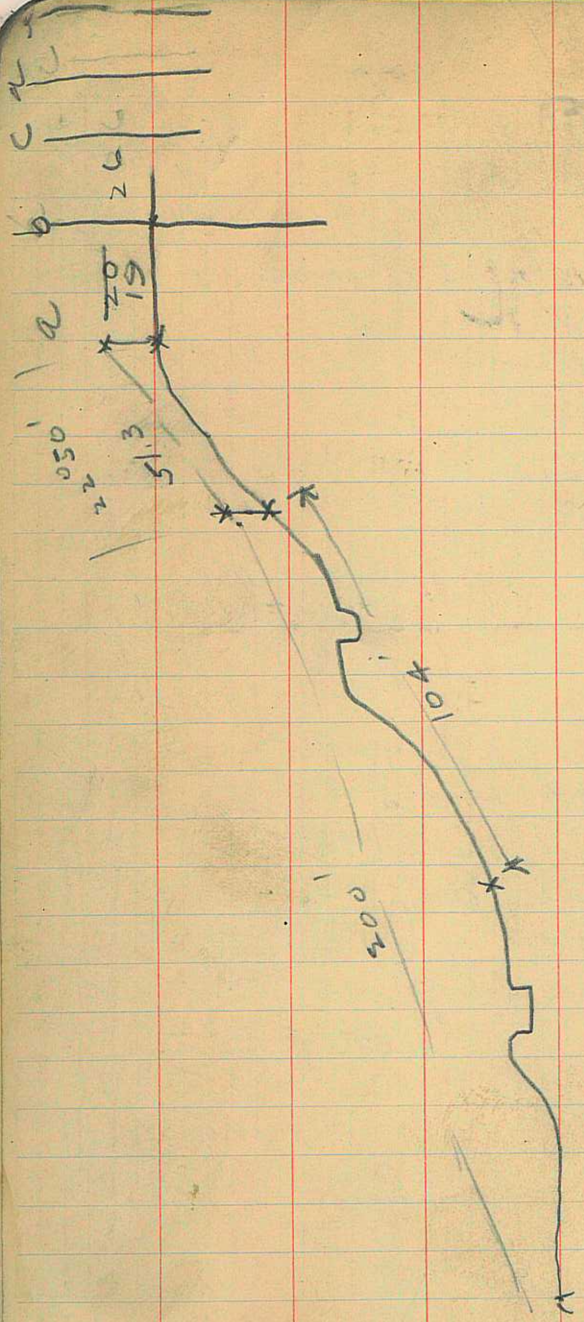
17
26
15

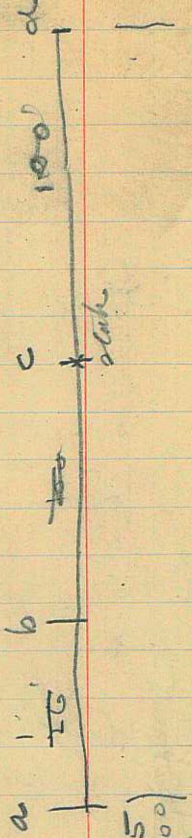
226
17

26
3

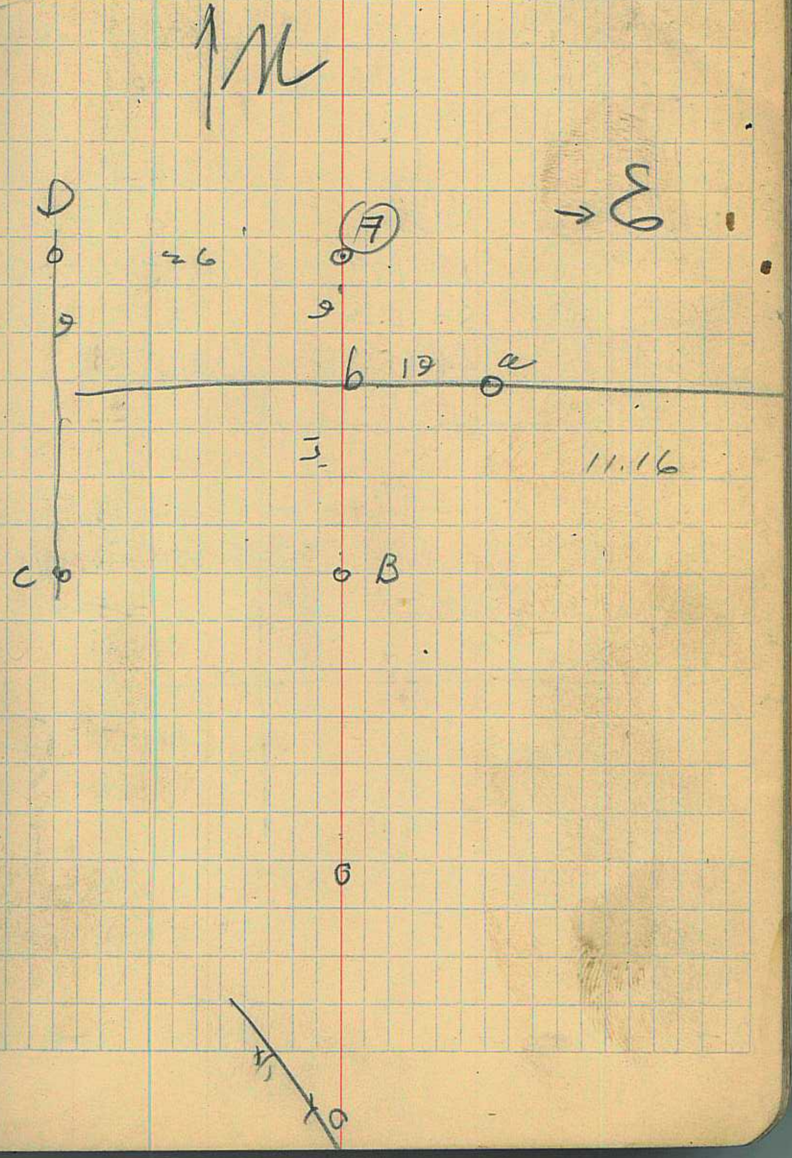
17
26
43

24





ab = 19
ac = +0045
ad = ~~100~~ 100
ae = 200.



87

Millville H₂O Works at Springs

π

	Cut		BS	FS	un	HI	Ele
	"	'					
			5.65			202.81	197.16
					5.56		197.25
			2.86			200.11	
							193.57
					6.54		
A	3'11½	3.96			2.58		
B	1'9½	1.79			4.75		
C	5'3"	5.24			1.3		
D	4'4½	4.39			2.15		
			7.81			212.97	205.16
					0		
					250	~~210.97~~	210.47
						~~205~~	205.00

0 –

Elevation floor of Intake. 26

194. under floor. 193.57

on nail in tree
on top Sta 0

(top spill in bridge dam
197.5)

bottom exc. intake chamber

6.54
2.58
3.96

6.54
4.75
1.99

6.54
1.3
5.24

6.54
2.15
4.39

Stake line

205.16
7.81
on nail in tree 212.97 by spr #1
on top Hurdle stake at #1
on floor
spill 207.5

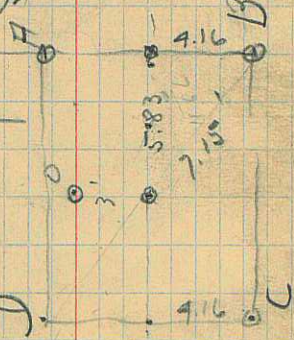
202.81
5.56
197.25
2.86
200.11
193.57
6.54

197.16
5.65
202.81
193.57
9.24
6.66
– 2.58

202.81
194
8.81
6.66
2.15

4.00
2.15
1.85

202.81
198.5
4.31



HI 405

212.97
2.50
~~210.47~~ on
20.5
5.47

J. P. Anderson
J. W. Grow

	Un	BS	FS	HI	Elv
+25	0.3				
+.50	5.80				
BM B	4.250				

July 7 - 1916 at upper spr.

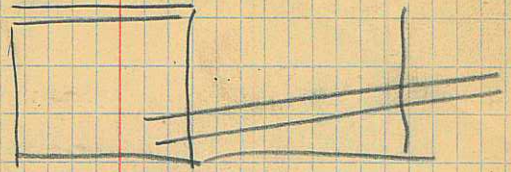
		2.260		215.23	212.97

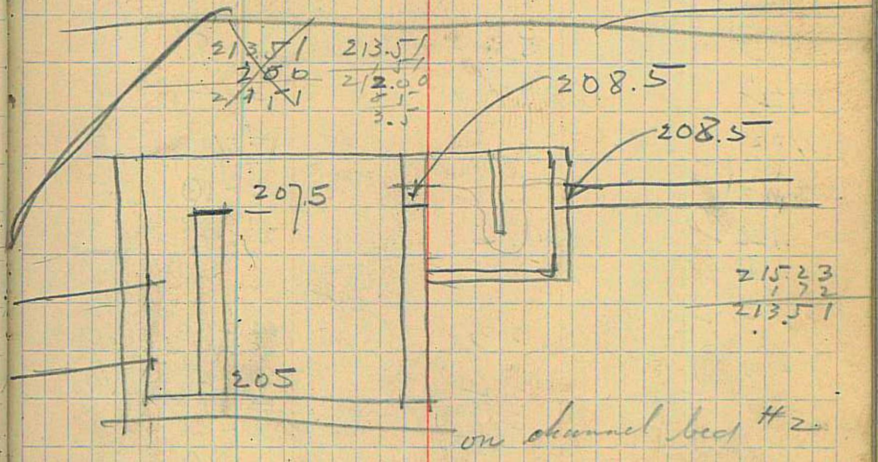
1.72

210 250

- 28 - 212.97
2.26
215.23

208
2.5
5
13
12





~~213.51~~
~~2.00~~
~~211.51~~

213.51
1.51
212.00
8.5
3.5

215.23
1.72
213.51

	~~BS~~	~~FS~~	~~HI~~	~~Ele~~	Cut
		RR	R Rorg	Cut	
15					400
14+14				5'-4"	
13+86		6.6		2'-6"	2.00
x13		5.4		3'-9"	
12		5.80		3'-4"	
11+27				4-6'	4'-6"
10+62		5.00		4.00"	
10+62				3-18"	
9+62		6.6		2'-4"	
9+12					
9+12		3.3		4'-00"	
8+63.7 PC				3'-8" at 8+63.18	
		3.2		4'-2"	3.6
		2.80		4'-8"	
		5.2		2'-6"	
688		3.9		3'-6"	
655		.4		7'	
624			6.83	3-8"	3.60
4+~~5+30~~		~~1.30~~		2'-9"	
5+00		1.30		5'-6"	
4+00		2.2			
3+00		2.60		4'.3"	
~~2+50~~					~~400~~
2+424			6.83		4
1				1.71.50	

14.95
11.46
4.9

9.13
6.6
2.53

7.2
3.9
3.3

6.83
3.6
3.23

HI 4.85 + 4 = 8.85

8.85
3.5
5.35

7.45
5.5
1.95

7.4
3.3
4.1

9.13
5.8
3.33

8.95
6.6
2.35

9.13
6.4
2.73

7.4
3.2
4.2

7.4
3.9
3.5

6.83
4.2
2.63

HI 463 + 4.5 = 9.13

7.45
5.2
2.25

6.83
2.6
4.23

HI
4.85 + 4.1 = 8.95
4.1

8.95
4.35
4.60

7.4
2.8
4.6

6.83
2.2
4.6

6.83
1.3
5.5

HI 3.85 + 3.60 = 7.45

cut 10 [illegible] trench

gr. sta. 1+00

Sta	~~B S~~	~~F S~~	~~H I~~	~~Ele~~	Cut
32^{+25}			RR	cut	4^{30}
32			4.1	4'-8"	
31+½			5.5	3'-6"	
31+½			4.5	4-6"	
30+½			4.7	4'-4"	
30.00			4.4	4'-7"	
29^{+00}					4^{00}
28^{+14}			5.3	3'-9"	
			4.9	4'-1"	
~~24^{+00}~~ 26			4.4	4'-7"	3.80
25			5.50	3-6"	
24			5.50	3'-6"	4.00
23+				4.00	
22			3.7	4'-5"	
21					4^{00}
20	grade 8.7		4.9	3'-10"	
			5.2	3'-7"	
			5.5	3'-3"	
			4.7	4.00	
			5-00	3-9"	
16					

8.7
5.1

∠

9
5.5
3.5

8.7
4.9
3.8

9
4.1
4.9

4.30
0

9.00
4.30
4.7

8.7
4.1

8.7
3.7

∠ { HI = 5.00 + 4 = 9
from sta followed
center line
for grading

9.00
4.4
4.6

9
4.7
4.3

9.00
4.9
4.1

9.00
4.4
4.6

9.00
5
4

9.00
5.3
3.7

∠

∠

℄ HI = 4.7 + 4 = 8.7

Sta	BS	FS	~~H I~~	~~Ele~~	~~Cut~~
~~44+30~~			RR	Cut	~~3.7'~~
PT 47+30.9?			4.95	4.75	
47+24			4.8	4' 11"	
46+30			4.4	5'-4"	
45+80			4.2	5'-6"	~~4.00~~
45			5.4	4'-4"	
43+50			6.3	3'-6"	
43			5.9	3'-8"	
42+38			5.4	3' 10"	
~~43~~ 41+28			6.5	2'-10"	
					~~3.75~~
40+38					~~4.00~~
40+38-80			5.2	3' 80"	
38+83			4.2	4' 5"	
			4.9	3-9"	
~~38+83~~			4.6	4.00	
38			5.7	3'-60	
37			5.2	3'-5"	
~~38~~ 36			6.1	2'-8"	
35			5.6	3-1"	
34			5.2	3.5"	
33			5.50		

34

9.70
4.3
5.40

200
11 8 7
8 1 3

~~4.75~~
4.95
9.70

80
75
155

40 38
1 55
38 83

120 + 4
96

4.75 + 4.95 = 9.70
6 1
2.7

9.7
4.2
5.5

9.7
4.8
4.9

9.70
4.4
5.

from 44 to 49+30.
Slope is 3

dropped

9.2
5.4
3.8

9.2
5.9
3.3

9.2
6.3
2.9
.5
3.4

H.I 5.2+4 = 9.2 looking West
HI = 4.9 + 3.75

9.2
4.3
4.9

4.9
3.75
8.65

8.65
1.2
13.95

8.65
4.2
4.45

8.65
5.2
3.45
3.

8.65
1.5

8.65
5.3
3.35

8.65
5.7
3.9
3.

8.65
6.1
2.55
2.

8.65
4.2
1.45
3.1

8.65
4.9
3.75
3.

8.65
4.6

7/7/16 Millville ~~G/2~~ O Works

Sta	B S	F S	Int	Ele	H.I.
				211.50 ~~212~~	215.23
0			.86 3.73		
+25		1.06	83 4.56		
+50		1.23	83 5.39		
+75		2.28	83 6.22		
90		4.34	6.73	208.5	
.0			5.00	205. floor	
0			9.73 gr	205.5	
+20	6 =		7.16	204.5	
55	1.67	10.21	15.98	205.04	206.71
			11.38	195.33	
			9.50		
	3.50	11.38		195.33	198.83
87.4			20.5	168.33	
39.4			6.00	183.2 grde	
16.4			8.03	190.3	

211.5
208.5
3.00

205.16
10.21

Dist 85. (pipe 90)

215.23
2.28
212.95

Cut

grade at spur #2. (fall to #1 3½'

fall = ~~4.1~~ % 3.33 %

2'-0" top stake
on grade:

3'-6"

4'-2"

3'-11"

2'-4" grde.

5-7 to floor ex. on small coll. chamber

3'-8"

12.8 %

5'-9" or grade top stake

1'-9" on hub (to bottom ex)

on rivet -

215.23
86
214.37
211.5
2.87

5.39
1.23
4.16

4.56
1.06
3.50

6.22
2.28
3.94

3.00
.90
3.33
.83

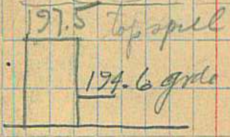
215.23
208.5
6.73
4.36
2.37

80
91.5
171.5

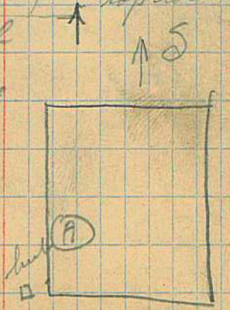
215.23
10.21
205.04
1.67
206.71

215.23
205
10.23

15.98
10.21
5.77



top weir 198.25



grade Sta 2.4 to 87.4 = 30.9 %

bottom trench grade:
cut 9
cut 7'-11"

$$\frac{45 + 90 \quad 41}{44 \quad 49}$$

$$\frac{42 \quad 40 \quad 38}{1.62}$$

$$R = \frac{50}{\sin D}$$

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

$$\frac{50}{\sin D} = \frac{RT}{\tan \frac{1}{2} I}$$

$$\frac{\tan \frac{1}{2} I \; 50}{\sin D} = T$$

7.86

2'

8.00

Olf instructions

14 or 16 plank {14 to 18' long
2 x 10

3 slips

trench plow

$$\frac{34^\circ 25 \quad 22 \quad 30}{12}$$

$$\frac{212.77 \quad 205}{7.77}$$

$$\frac{45\ 90 \quad 40\ 38}{5\ 52}$$

$$\frac{2\ 00}{3\ 52}$$

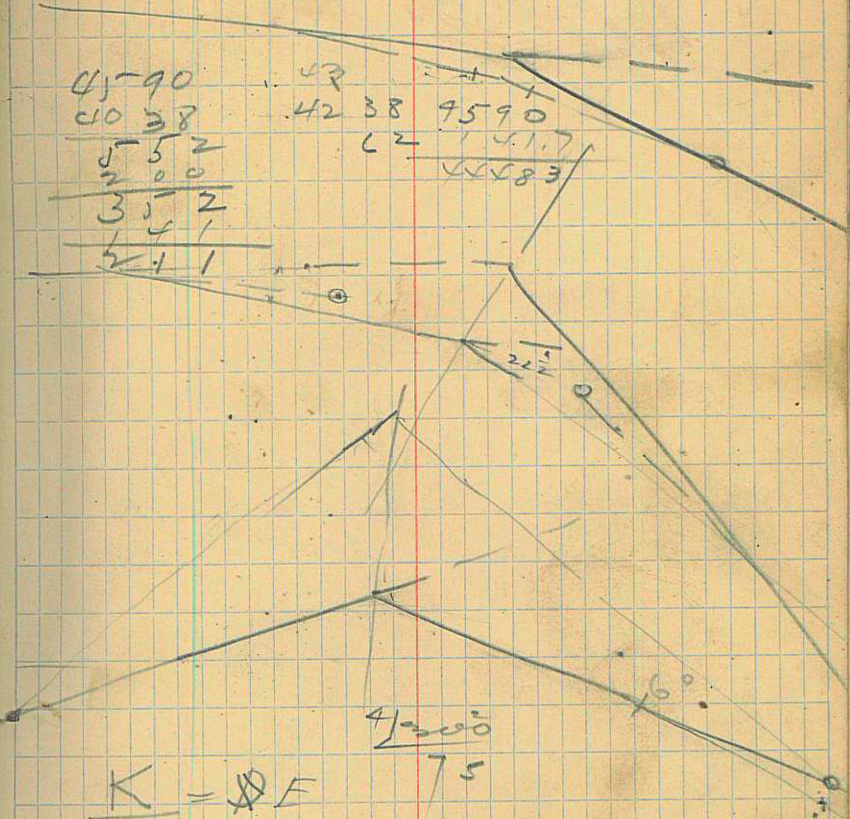
$$\frac{1\ 41}{2\ 11}$$

43

42 38

62

$$\frac{45\ 90 \quad 1\ 41.7}{44\ 48\ 3}$$



$$\frac{K}{D} = E$$

Drain Levels 7/12/16
for Smithfield City

Sta	BS	FS	im		Ele	HI
0	9.330		9.33	.12	100.00	109.33
+25	9.45		9.45	.2.0	99.88	✓
+50			9.65	.18	99.68	✓
+80			9.83	.25	99.50	✓
1+05			10.08	.10	99.25	✓
1+30			10.18	.16	99.15	✓
1+55			10.34	.19	98.99	✓
1+80			10.53	.08	98.80	✓
2+00			10.61	.13	98.72	✓
2+25			10.74	.14	98.59	✓
2+52			10.89	.10	98.44	✓
2+75			10.99	.12	98.34	✓
3+00			11.11	.17	98.22	✓
3+25			11.28	.14	98.05	✓
3+50			11.42	.15	97.91	✓
3+75			11.57	.14	97.76	✓
4+00			11.73	.13	97.60	✓
4+22			11.86	.12	97.47	✓
4+41			11.98	.21	97.35	✓
5+09			12.19	.06	97.14	
5+30			12.25	.22	97.08	✓
5+60			12.47	.08	96.86	✓
5+80			12.55	.22	96.78	✓
6+00	6.23	12.77			96.56	102.79

10.61
9.33
11.28
0.64

4⟌450
11

12.55
9.33
3.22

3.220⟌5.80
2900 .55
.3200
.20
.1100

11
2

.1696⟌450
1350 .38
3600

7.8/4
.25

4⟌.7/.4
.19

$\frac{Q}{a} = xv$

.38⟌.19
0.38 2

~~F~~ Second East.
between 1st & 2N

to turn
to Turn West

	B.S	F.S	m	Ele	H.I
				.17	102.79
6+25			6.40	.26 96.39	✓
6+50			6.66	.29 96.13	✓
6+75			6.95	.35 95.84	✓
7			7.30	.28 95.49	✓
7+25			7.58	.25 95.21	✓
7+50			7.83	.15 94.96	✓
7+75			7.98	27 94.81	✓
8+00			8.25	27 94.54	✓
8+26			8.52	94.27	
8+26	6.25				
8 26			6.97		
		RR	gr	cut	
0		8.1	8.36 2	3"	
+50		7.5	8.16 2	8"	
1+00		7.8	7.96 2	2"	
1+50 96		6.85	7.72 38	9"¼	
2+46 64		5.93	7.34 26	1'-5"	
3.10 31		6.90	7.08		
3.41			7.00		
2+00		6.8	7.52	8½"	

6.95
6.66
29

100.00
94.27
5.73

8.52
6.23
2.29

44

12.77
9.33
3.44
2.29
5.73

6.97

3.5
3
1.05

6.80

7.00
20
7.20
6.80
40

7.72
2
7.52

to pipe
bottom pipe

8.40
7

96
.384

7.75
6.98
.77

6¼
.256

7.34
5.93
1.41

7.08
6.9
.18

7.28 bottom outlet

8.40
8
9.2
4
2.20 0 | 3 41
2 20 46 .64
1540
1364
176

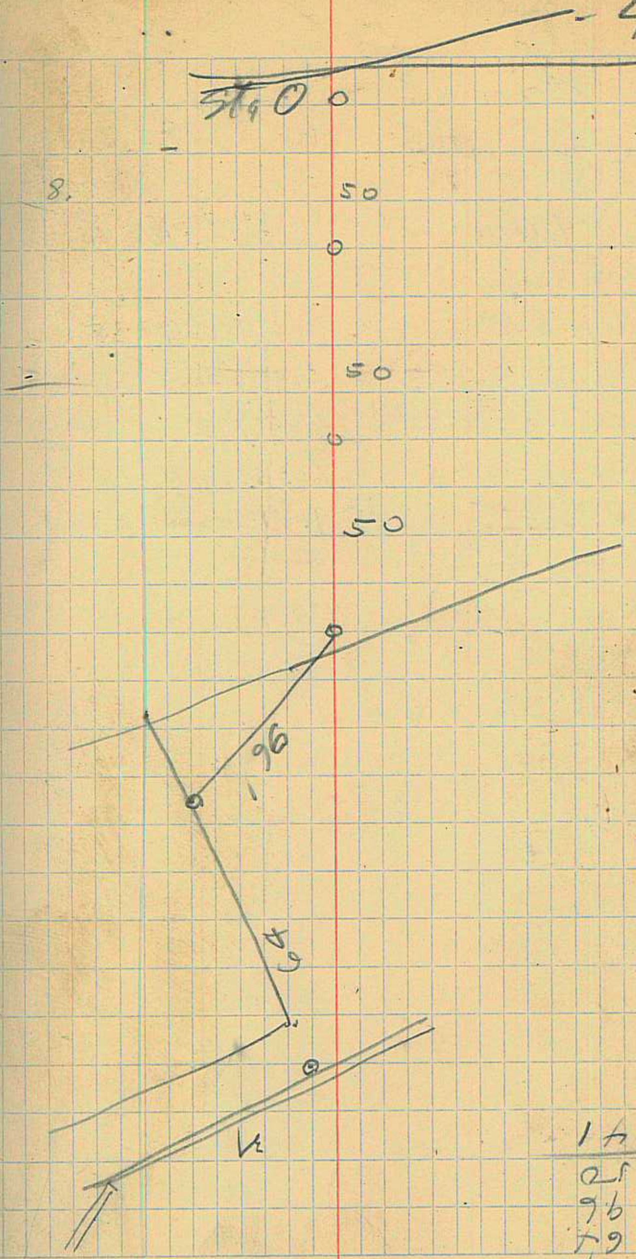
3.41
.4
1.364
2.20
1.32
.78

---

1 1
6.97
1.36
8.33
8
7.53

31
64
96
1.91
4
.764
7.
7.76
8
6.96

7.00
1.36
8.36
8
7.56



31
.64
96
1 50
3 41

Re levels on Smithfield drain

	BS	FS	gr	RR	Elev	H I
~~2+44~~						
0	9.100				100.00	109.100
4.41	11.82			11.820	97.28	
				.057		
4+50			5.27	11.877		
55				.316		
5+05			6.21	12.193		
25				.143		
5+30			6.03	12.336		
50				.287		
5+80			7.	12.623		
6+50						
6+50			1.78	13.02	96.08	

12.62
12.36
.26

11.98
9.33
265
91
1175
7

48

109.10
11.82
97.28

12.0

650
441
209

at turn

top turn

97.28
96.08
1.20 0) 209
1045 .574
1550
1463
870

11.877
.127
6.600
.12
.120
0

6'-7¼	6.60
5'-11¾	5.98
6'-3¾	6.31
5'-7½	5.623

0.574 %

.574
209
5166
1148
1.19966

12.336
6.03
6.306

12.19
6.21
5.98

.31
.12
62
31
372

0.574
.5
2870
2870
.3157

0.0574
4
.05766

4) 574
.143

0.574
2.87

12623

109.10
96.08
13.02

623
.12
124
62
7.44

13.078
7.74
5.

5'-3"

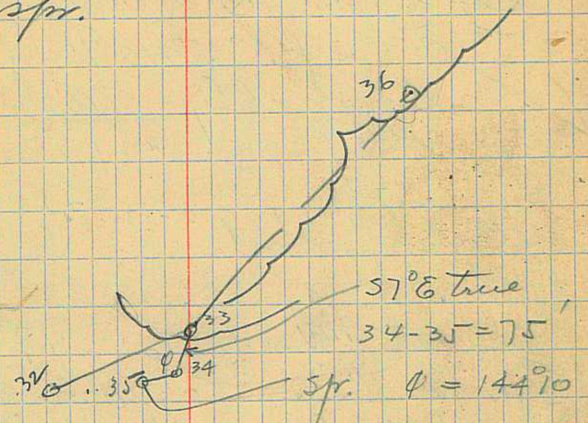
Hyde Park Water Works Extension. Survey cor. from #9, set 0 ~~217 48~~ 233°53, 135 to #8

80

				L	⌣	U
	38	216°30	30'			
37 –						
		62°09				
	37	314°12	−25°14	5.2		7.17
	~~37~~	~~335°32~~	~~−30°30'~~	~~3~~		~~4.59~~
36						
	36	235°55	+6°45		1.00	6.35
33 –						
~~32~~	35					
	33					
34 –			+18°50	3		4.11
	33	292°32'	+1°40'		1.00	6.25
32 –						
	32	250°47	4°00'		5.19	13.50
31 –						
	31	271°00'	+5°10	1		9.20
30						
	30	220°26				
29–						
	29	220°26'	+5°35	2	5.80	~~5.80~~
9–						

Head of spr. 60 gal per min

cable of barn 6 miles distance
−1°52' to ridge one mile S62°09'W
to spr.



Spr. 135 gal

S89°E a'

13.2' about 10' higher

City School Board

Beg. at a 212'-7" S of NW cor
of lot 5. Blk 3,
S166'-8" E178'-8" N
104' W25'. N90'-6"
Wly 81. S26' W68-6".
Record 3-7-34

Beg at pt 77' S of NW cor lot 4
E 174 ft. S110 5/6 ft.
diagonally SWly to pt due
S of beg. N172' to beg.

Joseph Ruedhart 3-7-34

Com at NW cor lot 6. S17r to
fence line E 20 ft. N17r
to N line W20' to beg

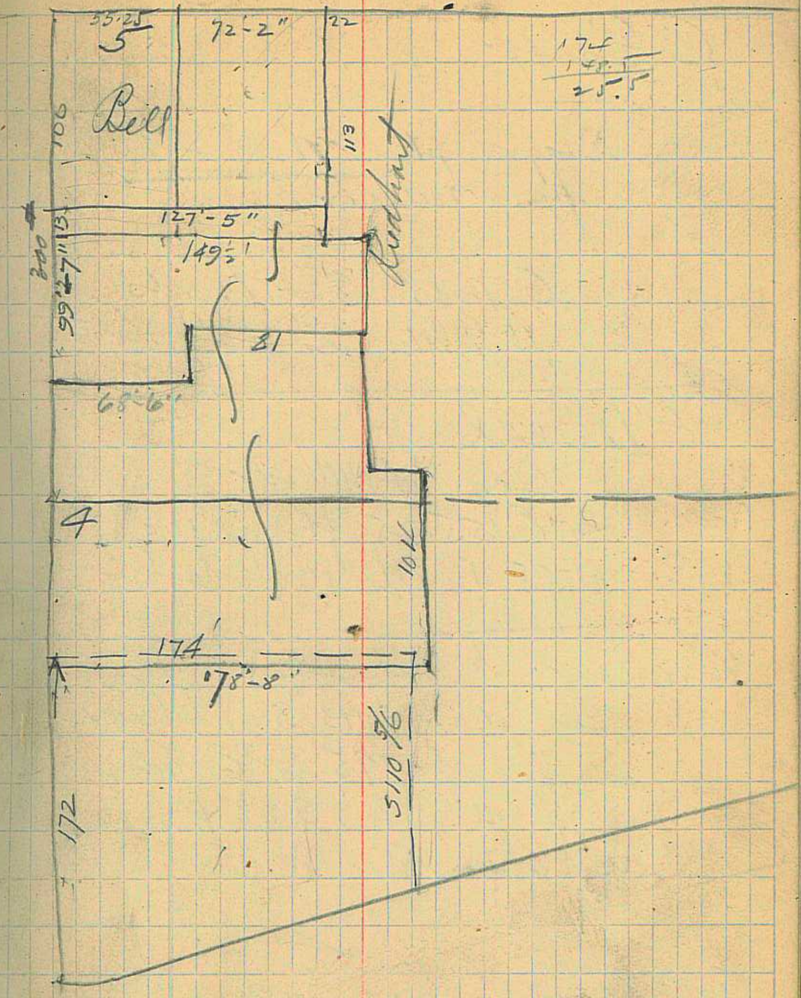
R of Way

Com. at pt 255 3/4' S of NE cor
lot 5 7/6 rds W to N6 rd
W129' to pt 20' E of W line
lot 6. N1 rd E129½'
to place of beg.

(over)

16.5
9
148.5

174
148.5
25.5



C Garff

Beg at pt 1 rd. 8½ ft
frm NW cor.

E 7 rds; S 4⅔ rds;
W 7 rd. N 4⅔ rds to.

A D Bell
Beg at NW cor of Blk
3 E 55.25 ft. S 100 ft
W 55.25' N 100' to beg

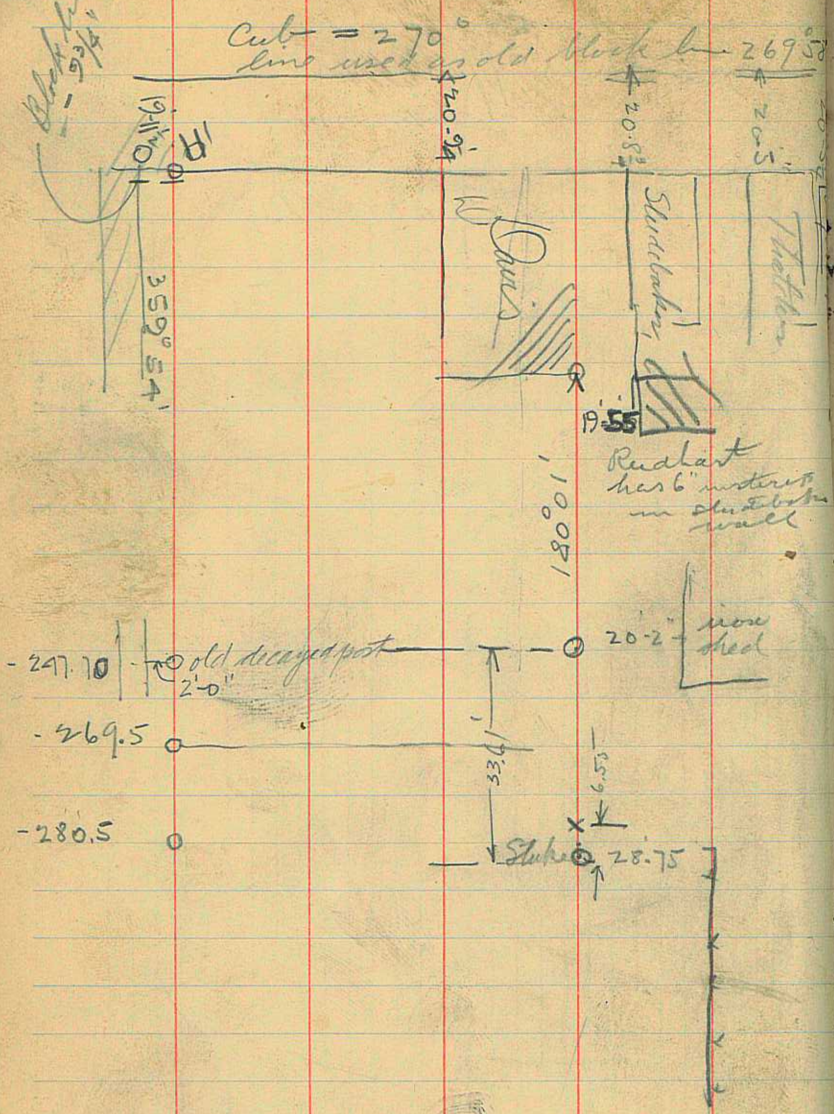
Amussen: to School
Beg at a pt 113' S of NW cor
lot 5, E 149.5' to E bdry sd lot
S 70' Wly 81'; S 26 ft, W 68'-6"
Washington Str; N along sd Str
99'-7" to beg

Martineau to School
Com at a pt 100' S frm NW cor
of Blk 3 E 127½' S 13'; W 127½'
N 13' to beg sub to R + W

16.5
8.5
25.0

Graff

68 6
81
149 6



-56-

148.5
151.5

20.9

200.4
180.4
19.6

21.66
47.7
69.36

9.25
8.75
5
5.25
4⟌28.25
7.06

9.75 .12
8.43 .81
1.35

9.75 .12
1.5 .81

9 3/4
12
2 1/4

19 19
19 11 1/2
7 1/2
0.62
.19

16.5
1.7
15.5
16.5
280.5
247.7
32.8
.81
33.61

2
20
247.7
33.61
281.31
281.12
.19

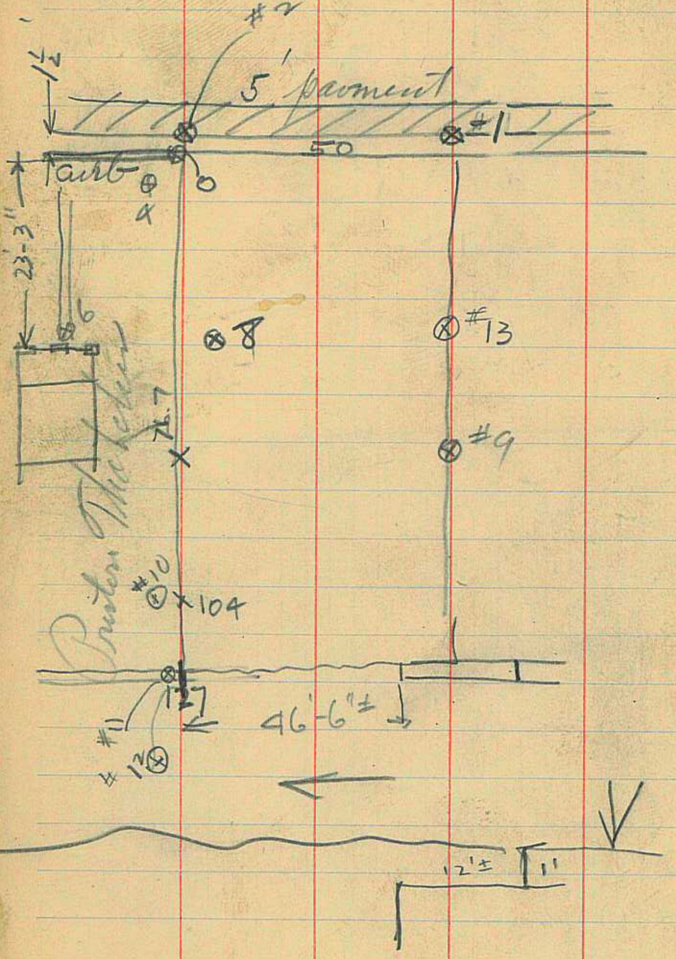
170. 9 3/8
1
169 16 3/8
167 6
2 10 3/8

280.5
113
167.5

5.5
1.9
3.7

47.65
2.87
50.52
62
112.52

Canon + Fetzer
Nisbit lot 7/8/16



12.40
42

58 - 12.80
2.05
1530

BS	FS	ins	Ele	HI	#
5.88			99.03		1.
		5.25	99.66 ✓		2.
		4.91	100.00	104.91	3 end curb
		4.20	100.71 ✓		4 on lawn
		3.60	101.31 ✓		6
		1.62	103.29 ✓		7 on Thatcher pord
		4.10	100.81 ✓		8
		9.00	95.91 ✓		-76.7
		9.40	95.51 ✓		#9
		14.85	90.06 ✓		top water wall
	~~12.80~~				
		10.20	94.71		-104
		12.90	92.01		#10 on lawn
		16.60	88.31 ✓		on top wall #11
		19.60	85.31 ✓		#12 bottom canal
		3.60	101.31 ✓		#13

Millville H2O Works

Sta	Dist	angle	RR	Cut
P.T. 64+81.5			4.80	4'-9"
64+00		5°18	495	4'-8"
	50			
63+50		4°18		4'-7"
	50			
63+00		3°18		4'-8"
	50			
62+5		2°18	4.9	4'-9"
	50			
62	65.2	1°18	4.2	5'-0"
PC 61+34.8			5.1	4'-6"
61			5.7	4.0
60			5.6	4'-0"
59			4.4	5'-0"
58				4.6"
57			4.5	5'.0"
56				8'-0"
55				
54				
53				
52				
51				

~~64.815~~

6309
6135
174

-60-

100
348
652

9.61
4.8
4.81

9.4
4.7
4.7

PI 63+09 to 70+60 = -30'

HI. 4.95 + 4.66 = 9.61

PI 63+0.9. cut 4.66
4.95
9.61

9.61
4.5
5.1

9.61
6.4
9.61
4.9
4.71

4° L

63+09 to 58+29

λ̄ . 5.00 + 4.5 = 9.5

58 to 56 + 1° ~~27~~ 13

Straight to this pt.
λ̄ . 4.90 + 4.5 = 9.4

Rod 4.7 at 47+24

Sta	Dist	Angle	RR	Cut
47+24			4.7	9'-9"
48			5.8	4'00
49			5.6	4.00
50			5.	4-6"
51			5	4.6"
52 ✓			4.00	5'-4"
53			3.4	5'-6"
54			9.9	9'-7"

P.I. 70+60			✓	6'
70			4.95	
69			5.3	4'-5"
68			5.3	4'-5"
67			5.9	3'-10"
66			4.2 ✓	5'-00
	118.5			

$\frac{9.50 \atop 5}{4.50}$ $\underline{9.50 \atop 5}$

$\frac{9.5 \atop 5.8}{3.7}$

9.50 4

$\frac{9.5 \atop 5.6}{3.9}$

$\frac{9.5 \atop 4.9}{4.6}$

$\underline{9.5 \atop 3.5}$

R R on grade 9.61

{ 55 to 47+24 ✓
{ + 43

$\frac{9.61 \atop 2}{7.8}$ $\frac{9.61 \atop 5.3}{4.30}$

$\frac{9.61 \atop 5.9}{3.71}$ $\frac{9.61 \atop 4.2}{5.41}$

College Irrigation
Canal 7/19/16.
at 2:30 pm
from nail to H_2O 0.535
fr top plank 0.96
at flume near intake
about 6 c.f.s

Cont of Blacksmith fork

Millville

H_2O Work 7/27/16

Sta	RR	cut
70+57.5 1,485		
72+00		
73	5.25	4'-8"
74	5.40	4-7"
75	4.85	5'-
76	4.85	5'
77	4.5	5'-
78	4.72	5'
79 ⊼		4.75
80	5.1	4'-9"
81	5.1	4'-9"
82 ✓	5.3	4'-7"
83	4.7	5'-1
84	5.0	5.00
5	4.8	5.0

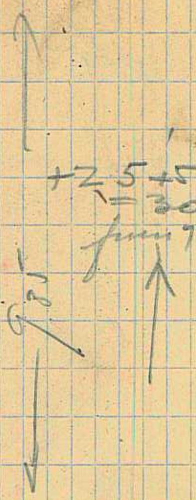
+25

34
7
27

49.5
27
22.5

70+60
85
7051 5

7.2
2.5
9.7



+2.5+5
= 30'
from 79

5.1
4.75
9.85

9.85
4.5
1.35

Ang Ag 181° +

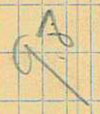
9.85
.25
9.60

9.85
5.4
4.45

add to [illegible]
[illegible] from
[illegible]

HI = 5.1 + 4.75 = 9.85

98



98
4.7
5.1

98
4.75
5.05

⊼ 4.8 + 5. = 98

Notes Millville
H_2O Work

Cross Road at Taylor
culvert scant
3" high

at 7+21 clean out
4"

6.88
33
721

Levels at Millville Intake 7/30/16

Sta	BS	FS	IM	Ele	HI
	2.30			205,16	207.46
		9.10	9.10	198.36	
			12.46	195.00	
			10.28		

207.46
9.10
198.36

205.16
2.30
207.46

207.46
12.46
195.00
193.57
1.43

on BM(6) in stump (Boxelder)

on Hub near SE cor of lower intake

on old " NE cor.

on rivet in tripe

207.46
10.28
19717

198.36
193.57
4.77 = 4'-9 1/4" to bottom ex

top weir in lower box 198.25
spill 197.5
difference 0.75

bottom lower intake box ex = 193.57

198

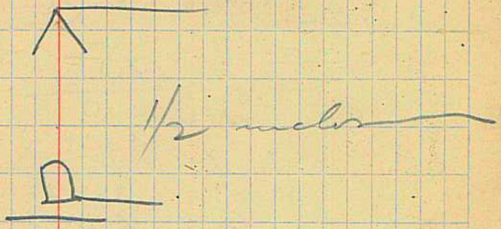
Randolph. Pre.

8/1/16

Sta	BS	FS		Ele	HI
0	4.00			200	204
	9.17	1.45		202.55	211.72

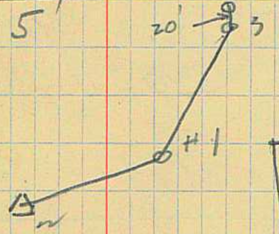
On culvert near head of spr.
Jacobson spr.
top church hips 209.00

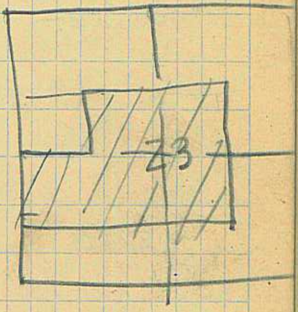
204
1.45
202.55
9.17
211.72



Tie Brough Spr
to 1/4 cor.

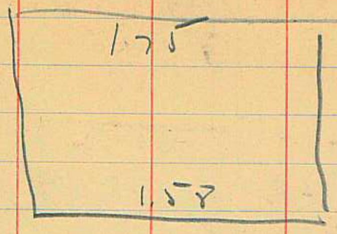
0.603 grad 5'





3	58°44'			5	10.00	to spr. Needle S59°45W nearer correct
2	245°17	+3°22		3,38	7.00	to 1/4 cor

Sta 1—



1.75
1.58
2)3.33
1.66

$$\frac{14.5}{14} = \frac{60}{x}$$

60
840
870

14.5
60
1440
60
66.4.000

Spr. Geo Brough

60 gal per min

55

60
65
5

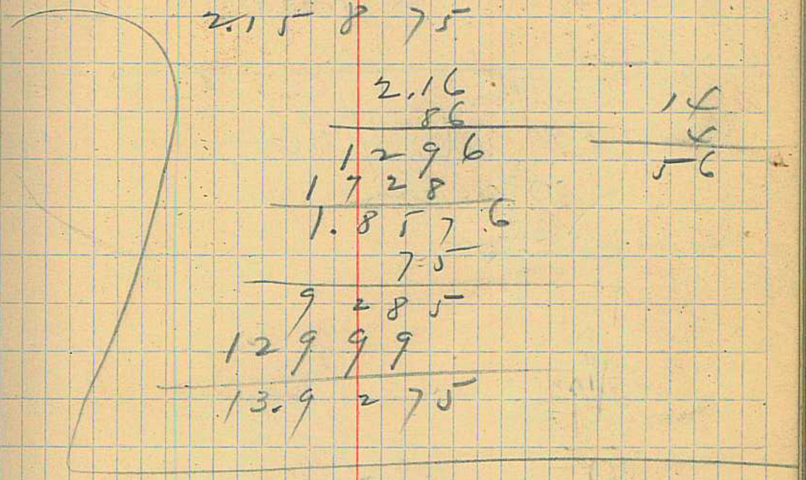
15000
70
0

15000

1.66
1.66
996
996
166
2.75.56
.785
1375
2200
1925
2.15875

2.16
86
1296
1728
1.8576
75
9285
12999
13.92 75

14
4
56



Approx. Estimate
from the Jackson Spr.

15000' pipe @ 10500 includes ex supply line

3600
600
14700
1600
16000

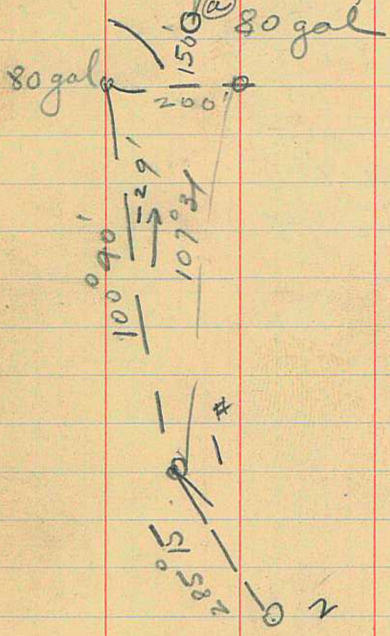
15
60

15000 .70
10500.00

X

9

Apen Creek at
Randolph Ut. 8/1/16 sprs. 1/4 mile further above @



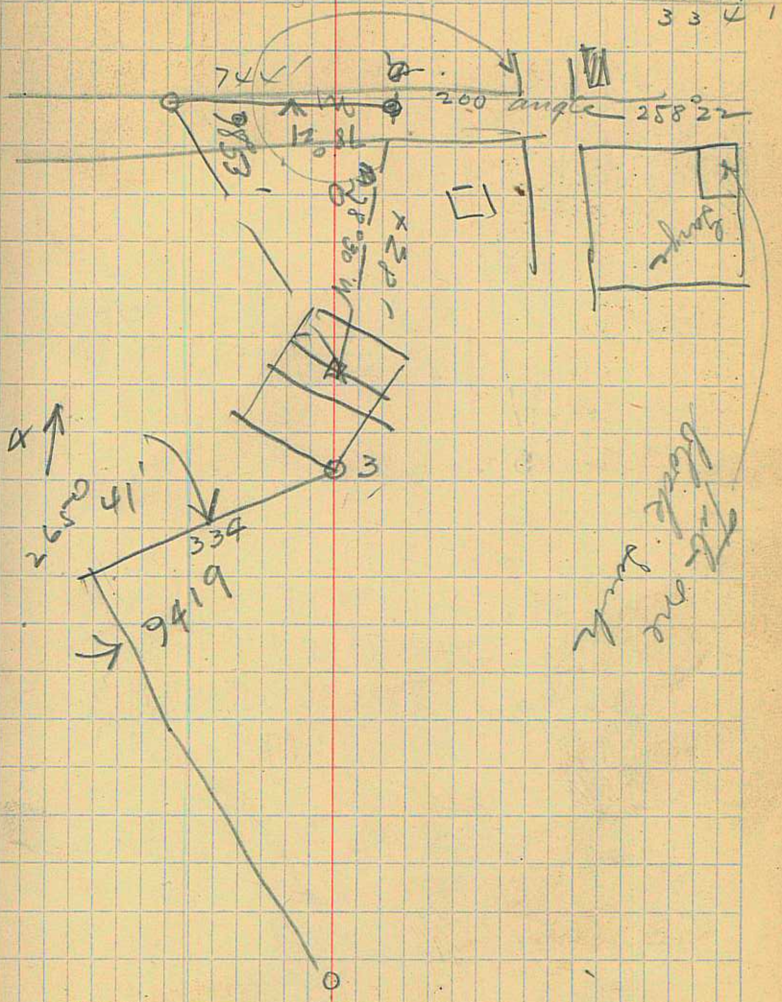
⊼-Sta	Az ∠	Vert ∠	∪	Stadia	
4	234°02'				
3	235°57'	-1°06'			
~~3~~					
2 -					
2	285°15	-1°02		1.5	—
1					

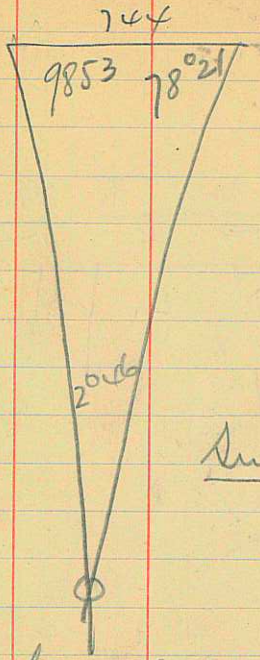
186
4
)44234.02

.02
6000
120.00

200
14
-186

200
51.9
148 1
186
334 1





179 60
98 13
81 07

78 21
9853
177 14

179 60
177 14
2 46
9853
7821
18 000

$$\frac{\sin 2°46}{744} = \frac{\overset{8107}{\cancel{7821}}}{x}$$

log 744 2.871573
log sin 81°07 = $\bar{1}$.994759
2.876814
log sin 2°46 $\bar{2}$.683635
4.293179

2.871573
$\bar{1}$ 994759
2866332
$\bar{2}$ 683665
4182667

19640

15220

0081) 20000
162.80000 0
160
43
980
640
688 0

81) 15000 00
10000
107)
81 10000
122.1
484
488
486
266
288 48
48
51.9

122
15
107

235 52
234 02
1 55

1°55
94 19
83 46
180 00

94°19
1 55
96 14

179 60
96 14
83 46

Sin

Dist. Brought up

15220
60 gal = .14 cfs
Static head 122'
effective head = 119'
120 = 51#

Cost 15200' 10" @ 50¢	7600
trench	1520
Res.	1500
Town dist. of	1500
mains & fittings	5000
	17520
	480
	17600

---

to go up to pt near head waters
13078 feet addition
total fall to town
from upper opr. = 314 feet
114 feet too much

600 | 450
450 .14
1500

.15
2
30

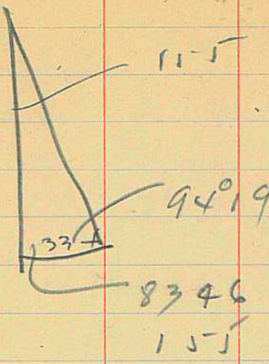
.432
120
8680
432
51.08

45
15
225
45

6500
4800
1700

17600
7980
10620

Rans.	2:35
Lakeland	3 56
left.	4:05
Garden	4:35
left "	4.45



179.60
94 19
85 41

$\frac{\sin 1°55}{344} = \frac{85°41}{x}$

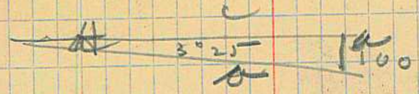
log 344 = 2.536558
log 85°41 $\bar{1}$ 998766
2.535324
log sin 1°55 2 524343
4.010981

10 250
828
2 000
13 078
15 240
28 298

2 - 2
2 2 2
1 9 2 4
4 1

2625 $\frac{12}{22}$
22

10 6 9 6
10 0 4 0
6 5 1
3 2 5



$\tan A = \frac{a}{b}$

100.00 (0595
591
4050
4165

1700
8

$\sin A = \frac{a}{c}$

80 43
86 2.00

13100

192
122
314

122

00844
1700
590800
844
13.3 48 00

1018 00
14.400

Fred R. Morgan Atty

.65
1

12 5
.145
7 5
60
.675
0.33

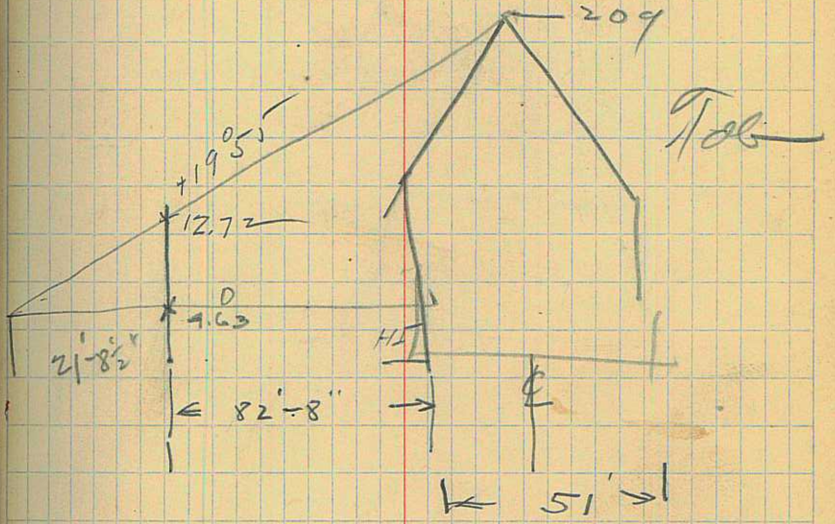
3/5 .60

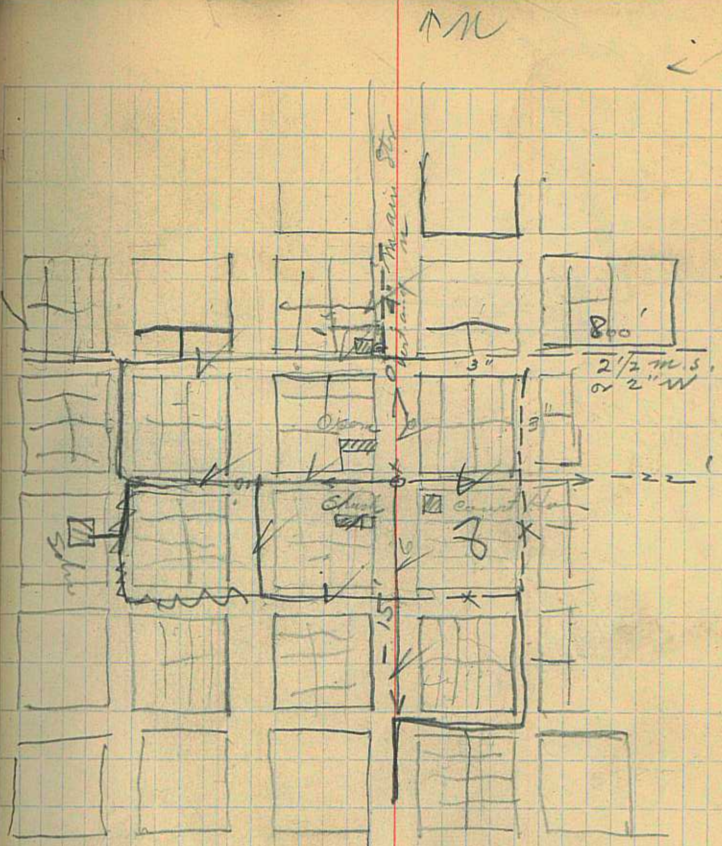
Nichols Spr.
0.4 c.f.s
Canyon level

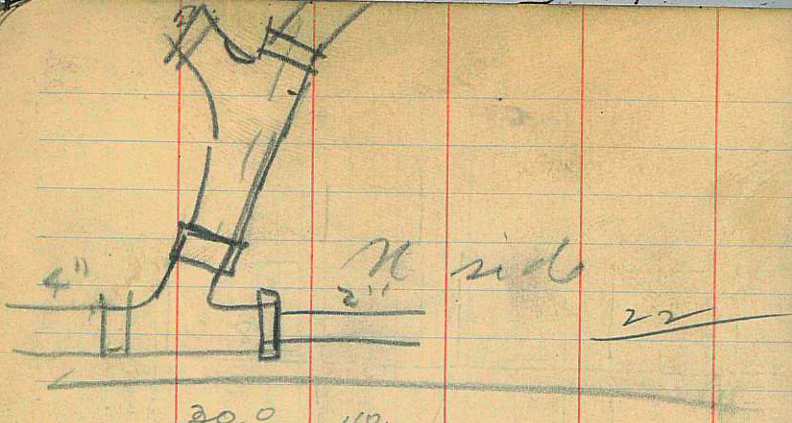
120' fall from Nickelson
to Judabson

120 feet fall .009
12000
18000
9
108000

12
35
60
36
420




↑N
Main St
Opera
Church
Court Ho
School
800'
2½ m.s.
or 2" W
3"
3"
22'
7
6
15



20.0
16.1
13.9

40.
18.13
21.87

9.25
4.98
0+14.23

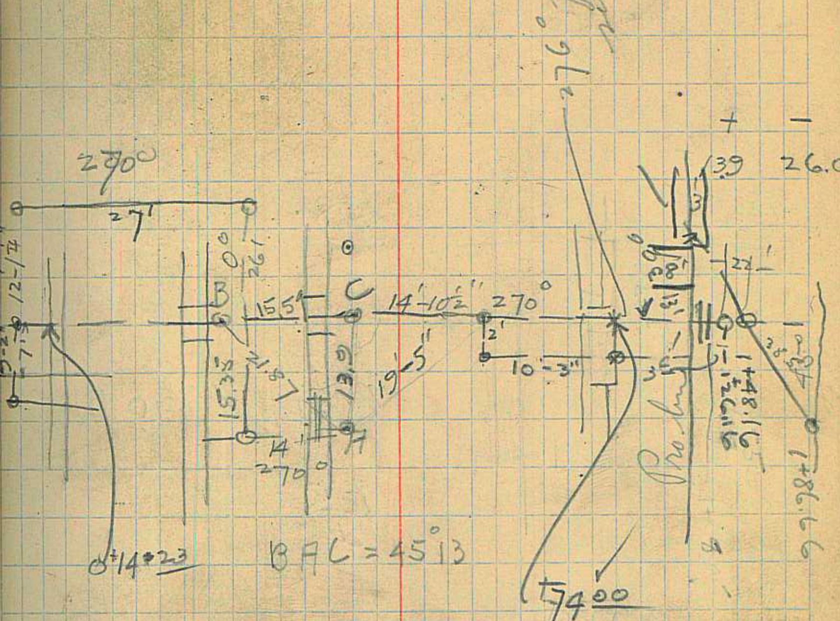
70.39
52.16
1+22.55
36
1+18.95

70.39
1.39
69.00
52.16
1+21+16

74
52.16
1+26+16
22
1+48.16
38.5
1+86.66

sin Θ =
2187

26.00
1.39
12.1



\+ −

15 1/2
3.12

10'-3"
14 10½
14
27
66.1½ = 66.12
6

66.12
−4.98
61.14
9.25
70+39

66.12
1.34
64.78
4.98
59.80
14.23
74+03

✓

Levels at Woodruff

8/7/16

Sta	BS	FS	In	Ele	HI	RR	Cut
	8.750			4526.06	4534.81		
0			5.700			on	grd
9+25			6.70	4528.11 ✓		4.4	2'-4"
+14.23			6.94	4527.87 ✓		2.06	4'-10½"
	7.15			45.26.06	4533.21		
74			8.71	4532.95 on H2O tabl 4525.10		R6	7'-~~9~~10½" on H2O table ground
74			2 39				
126+16			1050	22.71		3.33	
126+16			1101			5.26	5'-3"
						4.32 ✓	
148+16			11.55	4527.890 4521.7 ✓		4.90	6'-8"
1+86.66				4519.0		5.00	9'-2½"

4.~~76~~61 to

+14'23

148+16 on root

5.38
1.68

9.94
2.06
9.88

4526.06
871
4534.81
5.7
4529.11

92 - 4519
4529.11
9.89

989 | 187
935
54
.05
.45

5.34

4534.81
5.70
4529.11

5.2
.40
2080

453481
670
4528.11
4520.7
7.41

6.70
2.3

38.5

4533.21
26
4532.95

4519.5

~~7410 | 134
670
5~~

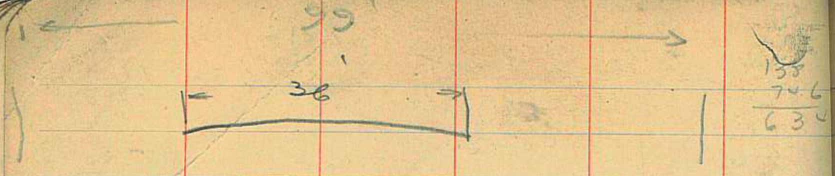
4528.11
4521.7
6.41

148.16
14.23
133.93

6.41 | 134
536 | 4.78
1050
938
1120
938
92

40
5
20

4.78
.05
.2390



138
74.6
63.4

2|6.3
3 1.5
5

Sta-	RR	Cut	feet-in
128+46.2	4.93	4.66	4'-8"
129	4.9	4.69	4-8'
130	6.00	3.59	3.' 7"
131	6.50	3.50	3'-6'
132	6.00	3-10	3'-10
133	5.7	3-10	3'10'
134	4.50	5.00	5.00
135	4.50	5.00	5'
136	5.7	3.89	3-10'
137	4.50	5-	5'-00'
138	4.26	5.33	5-4"
139	5.93	3.66	3'-8"
140			
P.I. 127+82.8	5.30	4.36	4'-4'
127+34.6	5.000	4.66	4'-8"
126+00	6.20	3.46	4.00
125+92	~~5.~~		
	3.9	4.76	4'-9

119
30
89

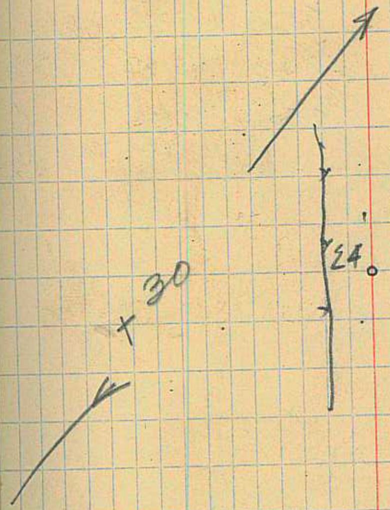
128 46.2
53.8

128 46.2
63.4
127 82.8
48.2
127 34.6
126
1 34.6

12846.2
12253.8
92.4
48.2
-94'

4.93
4.66
9.59
4.9
4.69

H I - 4.93 cut 4.66 RR on grade = 9.59
3.66
5.93



9.59
5.7
3.89

9.59
9.26
5.33

9.59
4.50

9.59
5.7
3.89

9.66
3.9
4.76

= 9.66

from PI to 125+42 +20'

from ditch bank

from PI to 128+46.2 -49'

Levels at Millville H_2O Works

to actual construction at intake

Sta	BS	FS	M	Ele	HI	
	3.37			197.16	200.53	on rivet
			1.900	198.63		on S Weir form
			5.820	194.71		on floor. low press. chamber
			5.950	194.58		

200.53
1963
4.23

200.53
5.95
194.58

197.16
3.37
200.53

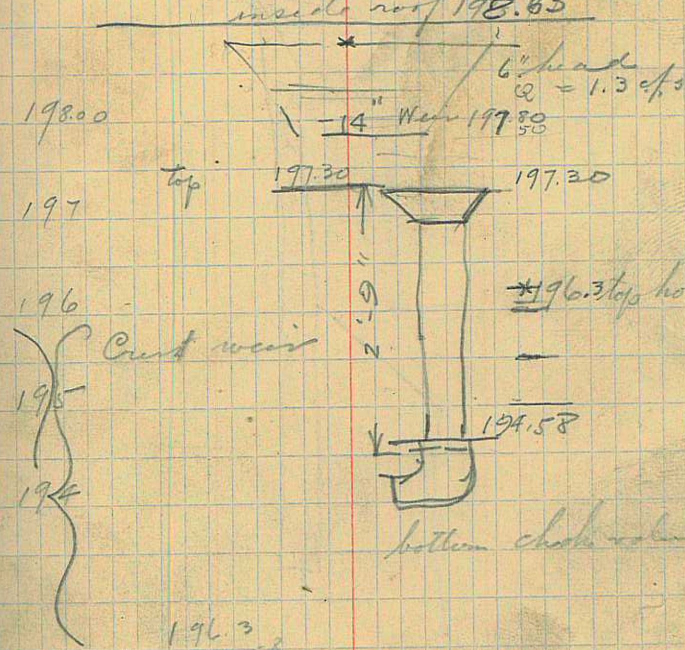
198.63

200.53
1.9
198.63

200.53
5.82
194.71

194.71

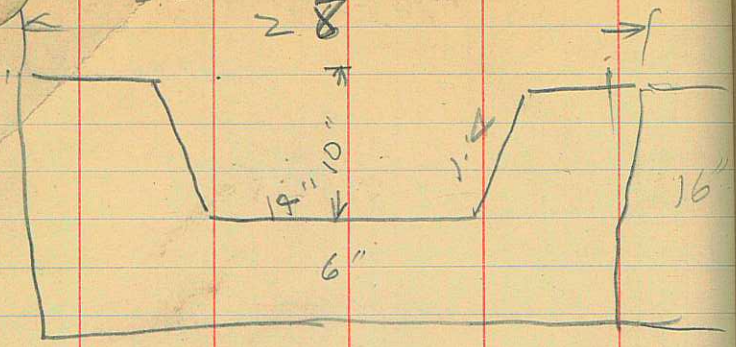
198.63
83
197.80

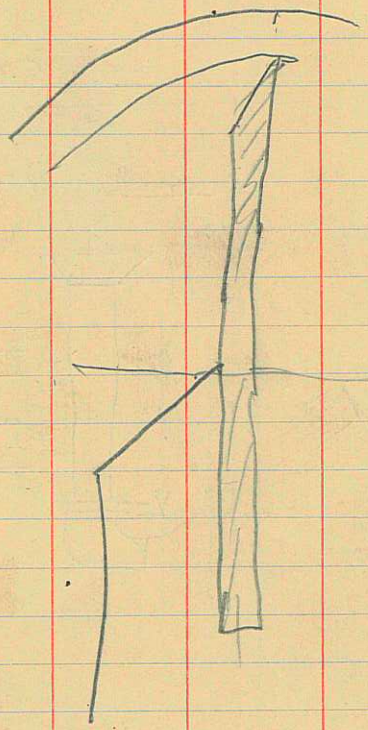


197.30
194.58
2.62

196.3
194.58
1.72

200 53
197 30
3.23





196.3
.5
195.8

197.30
195.8
1.50

Alignment Sur
Mulbell H2O W

Π- Pt	Ag. Δ	GradeRR R		Cut	
147+98.5	PC				
PT 26.					
147+72.5					
50					
147.22.5					
30					
146+92.5		B.S. 5.40 10.06		4'-88	
425					
146+50	7°				
30					
146+20	4°		π 5.15	4.66	
40					
PC 145+80			5.30	4'-8"	
PT 146+80			angle ∠ 38°20		
PC 145+80			~~14°34'L~~		20° L
145			5.90	4'-6"	
144		9.81	6.51	4-6"	
143			5.00	5'.60	
142			4.80	5.00	
141			5.2	4'-10"	
140+17			5.00	5.00	
139+60			5.60	4'-5"	
139+89			4.30	5'-8"	

11.50

147.72.5
145 80
1 92.5

17 9 60
38 20
141 40

157.5
200
1575
425

600/100 = 6/70

/100

420 60/7
87
28
17

9.81
5.9
3.91

10.00
3.66
6.34

5.15
4.66
9.81

14660
11
14660
1168
145532

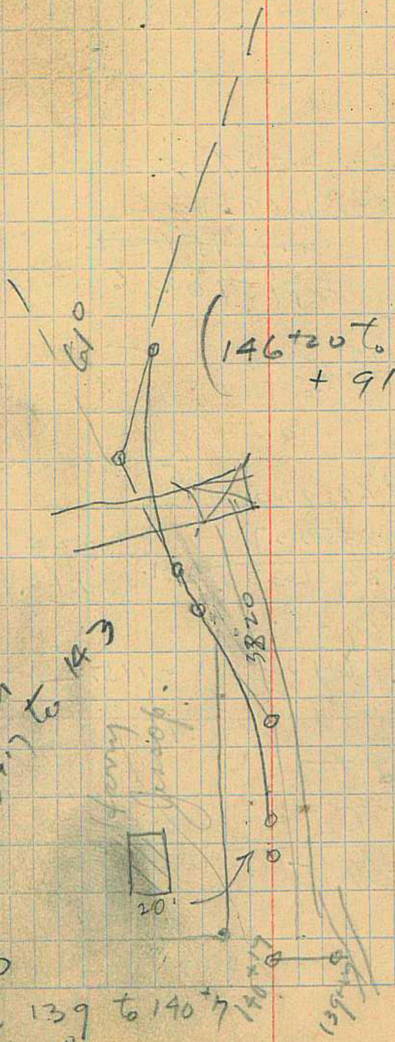
10
5.6
4.4

5.2
4.80

4.2
5.7

- 9.81

(146+20 to 146+92.5) + 91



X 10 from 140+17 to 143

from 146+20 to 142 (+35)

=1000

from 139 to 140+17
+ 1°

$R = \frac{50}{\sin D}$

20° curve
$P\bar{I} = 53$

log 50 = 1.698970
$\bar{1}$.239670
2.459300 = 288

tan tan ½ I R

log R = 2.459300
log tan 26°30 $\bar{1}$.697736
~~[illegible]~~
2.157036 = 143.5

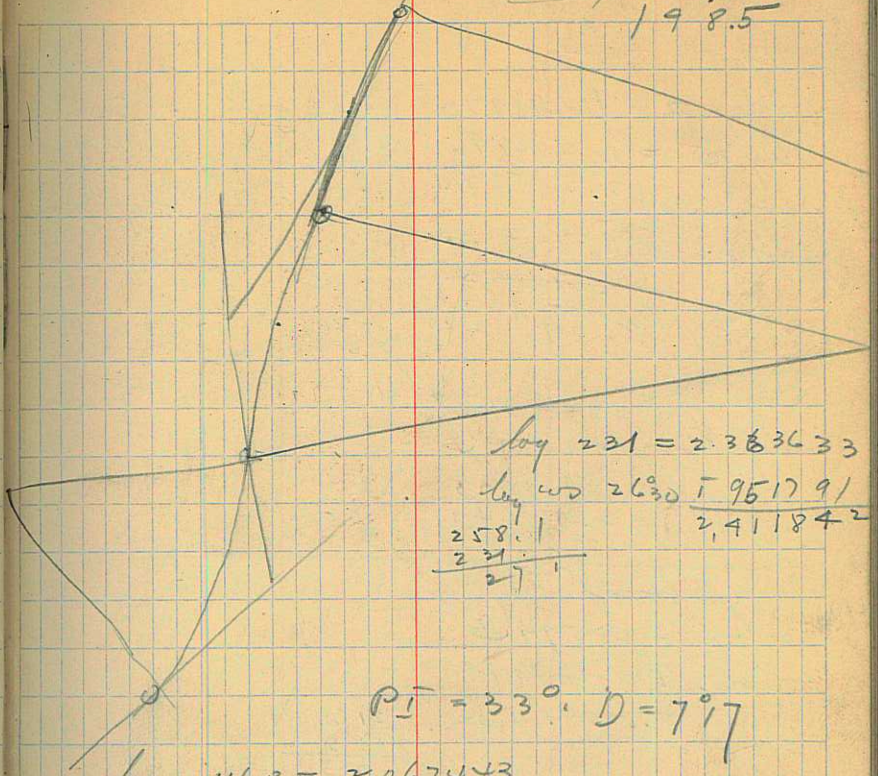
222
143.5
78.5

$\bar{I} = 53$
25° curve
log 50 = 1.698970
12°30 = $\bar{1}$.335337
2.363633 231.0
222
115.2
116.8
E 27
log tan 26°30 $\bar{1}$.697736
2.061369 = 115.2 = T

---

tan ½ I R = T
$R = \frac{T}{\tan \frac{1}{2} I}$

72
70.595
198.5



log 231 = 2.363633
log cos 26°30 $\bar{1}$.951791
2.411842
258.1
231
27.1

$P\bar{I}$ = 33°. D = 7°17

log 116.8 = 2.067443
log tan 16°30 = $\bar{1}$.471605
2.595838 = 392.5

$R = \frac{50}{\sin D}$
log 50 = 1.698970
2.595838
$\bar{1}$.103132

7°17 = D

2.595838
$\bar{1}$.981737
2.614101 = 411.3
392
19.3

62°45

T = tan 1/2

log 50 = 1.698970

log 15° = $\bar{1}$ 412996

2.285974 = R = 226

193.1

32.9

log 3°22 $\bar{1}$ 785048

~~2.500926~~

2.071022 = 117.8

log R = 2.285974

$\bar{1}$ 931833

2.354141 = 226

---

log 2.285974

cos 26°30 $\bar{1}$ 951791

2.334183 . 216

193

23

---

log 50 = 1.698970

log tan 20° = $\bar{1}$ 534052

2.164918 = log R for 40° = 146.2

log cos 30°30 $\bar{1}$ 935320

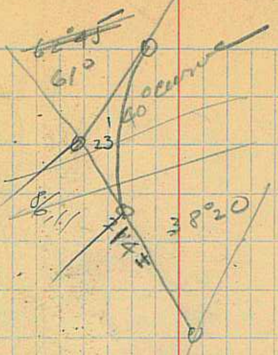
2.229598

169.6

146.2

23.4

-104- 40°12



38°20

214

86

128

log R for 30° curve = 2.285974

log cos 30°30 $\bar{1}$ 935320

2,350654 = 224.2

224.2

193

31

log R for 40° = 2.164918

tan / tan 30°30 $\bar{1}$ 770148

1.935066 86.11 T for 40°

E = 23′

2.285974 = R 30°

log cos $\bar{1}$ 951791

2.334183 = sec. = 215.8

193

22.8

T = tan 1/2 I R

R = $\frac{T}{\tan 1/2 I}$ = log 128 = 2.107210

tan 19 10 $\bar{1}$ 541061

359.9 = 2.566149

$\bar{1}$ 975233

2.590916

389.9

359.9

30.0

$E = \cancel{Rs}$

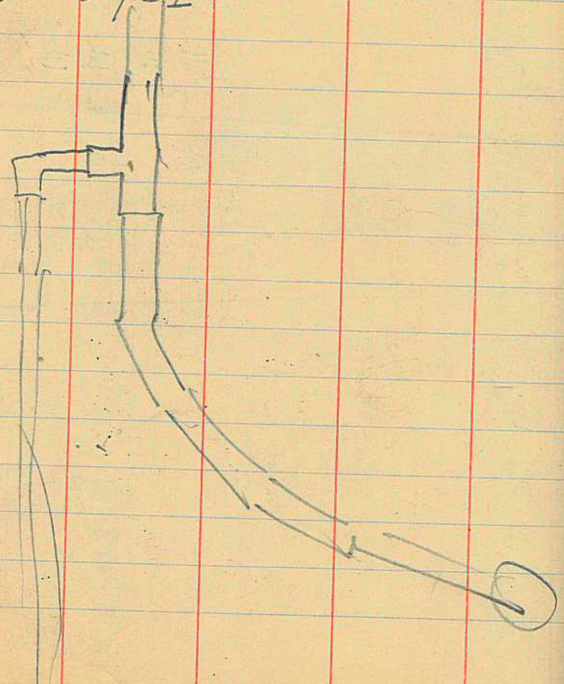
$E = \sin 50$

$E = \varphi - R$

$$E = \frac{\frac{\sin 50}{D}}{\cos \frac{1}{2} I} - \frac{\sin \cancel{50}}{D}$$

$$= \frac{\cancel{s}\, 50}{\sin D \cos \frac{1}{2} I} - \frac{\cancel{\sin}\, 50}{\sin D} = E$$

$$\frac{\sin D\, 50 - \sin D \cos \frac{1}{2} I\, 50}{\sin^2 D \cos \frac{1}{2} I} - E$$



$R = \frac{50}{\sin D}$

$15 = E$

exce 0.05899

$R =$

15.000) 0.059 (254. ft.
11 8
3 20
2 95
250
236

$\log 50 = 1.698970$

$\log 254 = 2.404834$

$\bar{1}.294136$

$11°20 = D$

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

$\log \tan 19°10$ $\bar{1}.541061$

2.404834

1.945895

88.3 = T. distan—

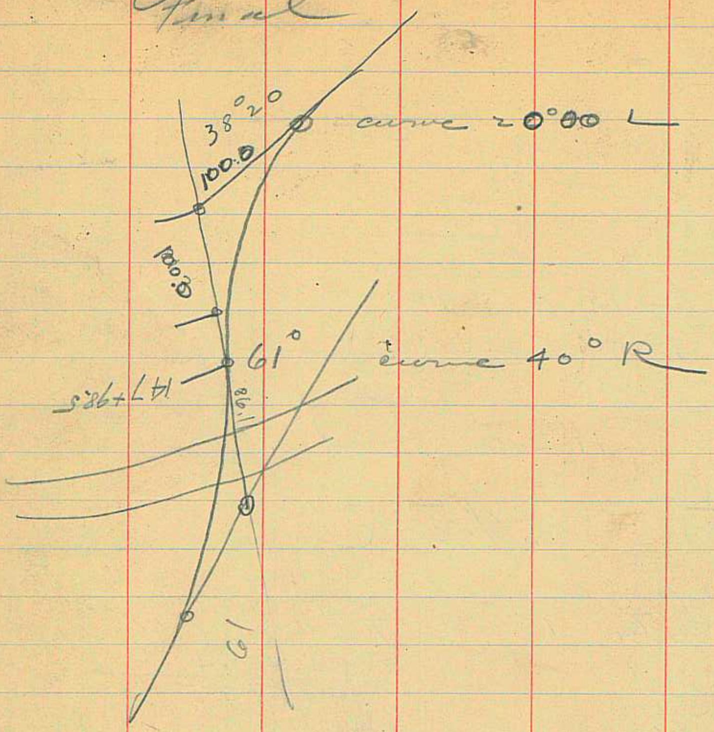
17.00) 0.059 (288
11 8
5 20
4 72
480

$\log 50 = 1.698970$

288 2.459392

$\bar{1}.239578$

Final



log 50 - 1.698970
10 $\bar{1}$.239670
2.459300

log tan 910 $\bar{1}$.541061
2.000361

146.60
1 209

14680

			R Rorgu RR		Cut
153+32	12 31				
32	2 14				
153+50	10 17				
	3 30				
	0				
152+50	6 47				
50	3 30				
152+000	3°17'				
47.4					
p.c. 151+52.6		14° L			
152+43.6					
151'		↓-1°45	18.00	3.50	4-6
150+00				4.2	3.8-3.1'
149+54		⊗			
24					
149+30	26°12				
149+05	5				
50	21°12				
	10				
148+55	11 12'	11.50			
~~148~~ +30.		13.50			
17					
148+25.0	5°12'				
26.5					
147+98.5					

146 925
150

20
1200/100 = 265
26.5 - 11 0-
26
1200
5200
26
31200 60/5

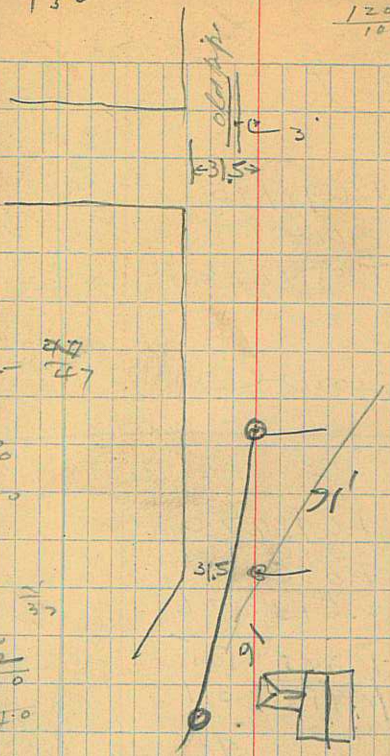
1200/100 = 2
30
1200
6000
30

26 12
5

60
7
420/100 = 47/47

47
420
940
187
19740
180
17

420/100 = 2/37
420
32
840
1260
13440



152+43.6
91
151.52 6

13.50
10.06
3.44

3.44 (150
440 2.3
450

from 146+92.1 to
148+42 - 2.3 o/o

Bottom River Black fork
on grade at 148+42

10000(.02428
9712
2880 412
2428
4520

log 50 1.698970
412 2.614897
1̄.084073

14° curve

---

log 50 = 1.698970
log sin 7° 1̄.085894
2.613076

log tan 12°30 1̄.345755
1.958831

90. 91

Grade mill. H_2O

Sta.	BS	FS	RRongd.	RR	cut
147+22.5			10.75	6.00	4'.9"
			1 15		
147+72.5			11.90	7.6	4'.3"
			1 15		
148+25			12.00	7.6	5' 4"
148+55			13.50	10.1	3' -4"
149+05			13.10	8.6	4'-6"
149+25			12.26	7.4	4'-6"
148+90					
149+54			11.35	6.85	4'-6"

13.10
8.60
4.50

148 90
149 54
148 90
64

2.33
.69
10.06
10.75

148.25
149 72
53

6.85
4 5
11 35

13.50
11.35
2.15 (64
1 92 3.36
230
192
380

13.05
7.6
6.45

12.00
7.6
5.4

12.26
7.4
4.66

3.36
.15
1680
336
9040

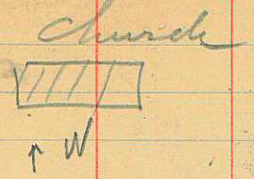
9(5.36
8 4

2,30/0 —

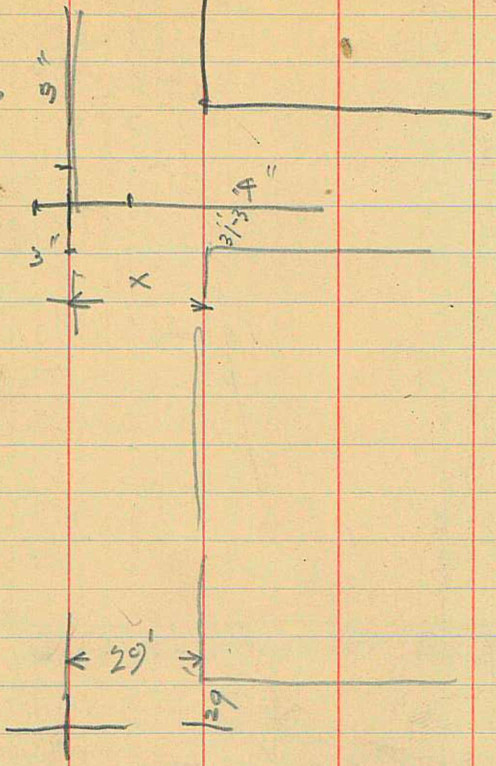
3.36 of + to E

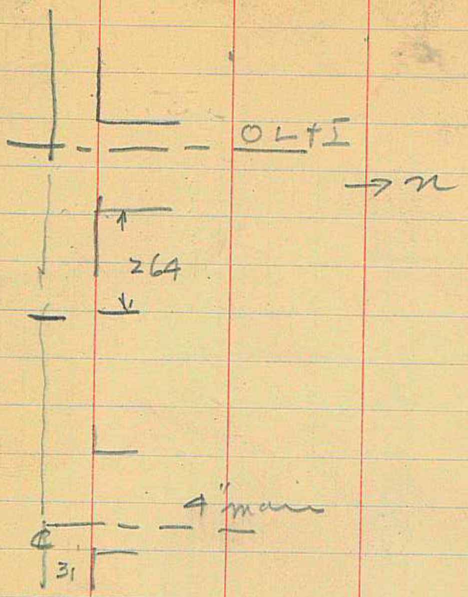
1300
500

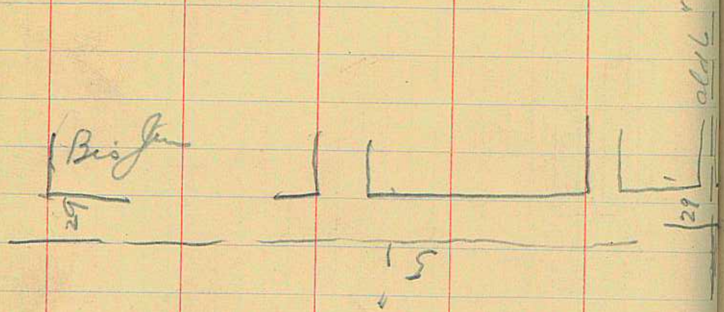
1300
550
1850



Millville H2O
work
old crosses







12
3

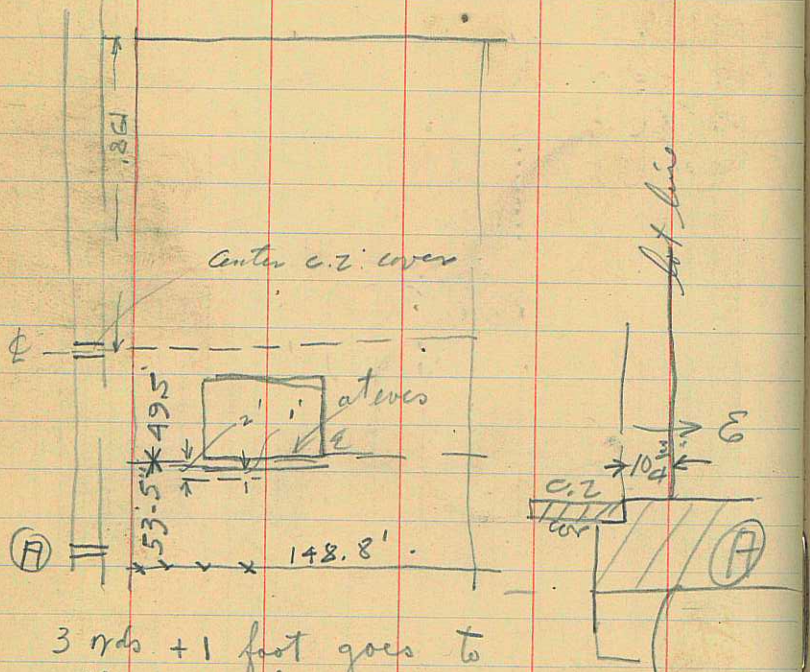
640

1300
550
1850
50
1350

Olaf Nelson

to Martin.

Beg 12 r E of SW cor
lot Blk 15
E 3 N 9 W 3 S 9 to beg



3 rds +1 foot goes to
Bob. Martin's east edge
pavement.

Blk 16-

P.A. Thatcher.

Beg at pt. 7rd 47½' S of NE
cor lot 8. S 60 ft W to LHP.
N along sd canal to pt
due W of be E to beg

John A Hendricks

Con 71' W of SE lot 1
N 72°40' E 22'
N 65°00' E 23'
N 55°50' E 21
N 42°50' E 18
N 4rd + 6'
W to LHPC
Swerly to pt S

E beg

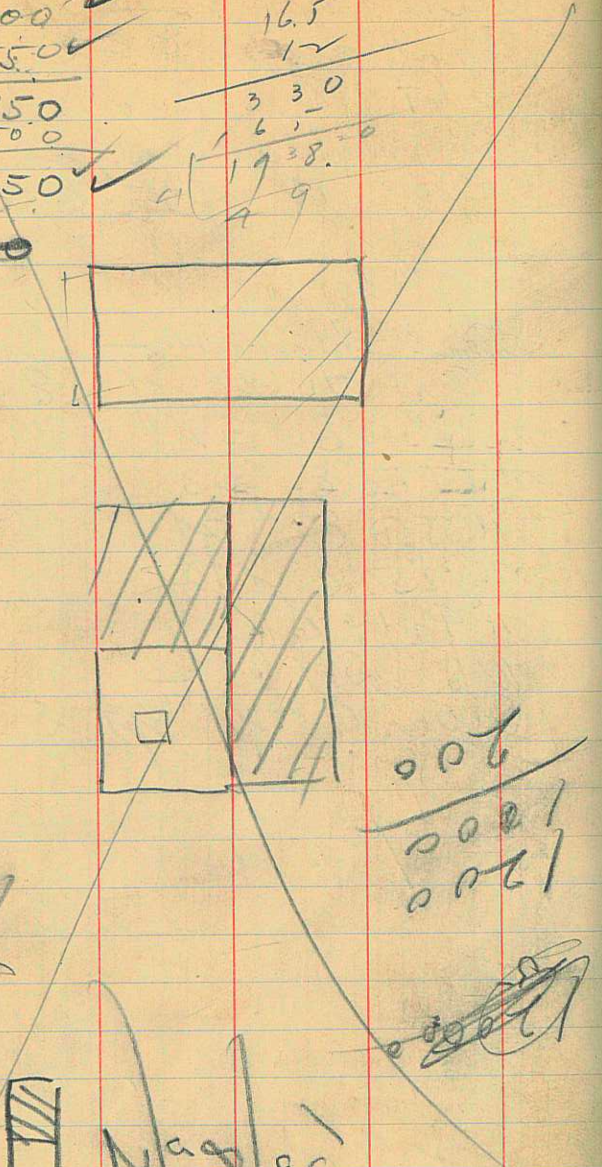
Pd

1300 ✓
55.0 ✓
1850
50.0
1350 ✓
~~1350~~

16.5
12
330
61
1938.
4 | 9

16.5
3
49.5

16.5
7
115.5
7.5
123.0

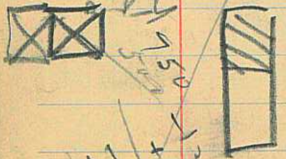


1200
1000
200

1100

500

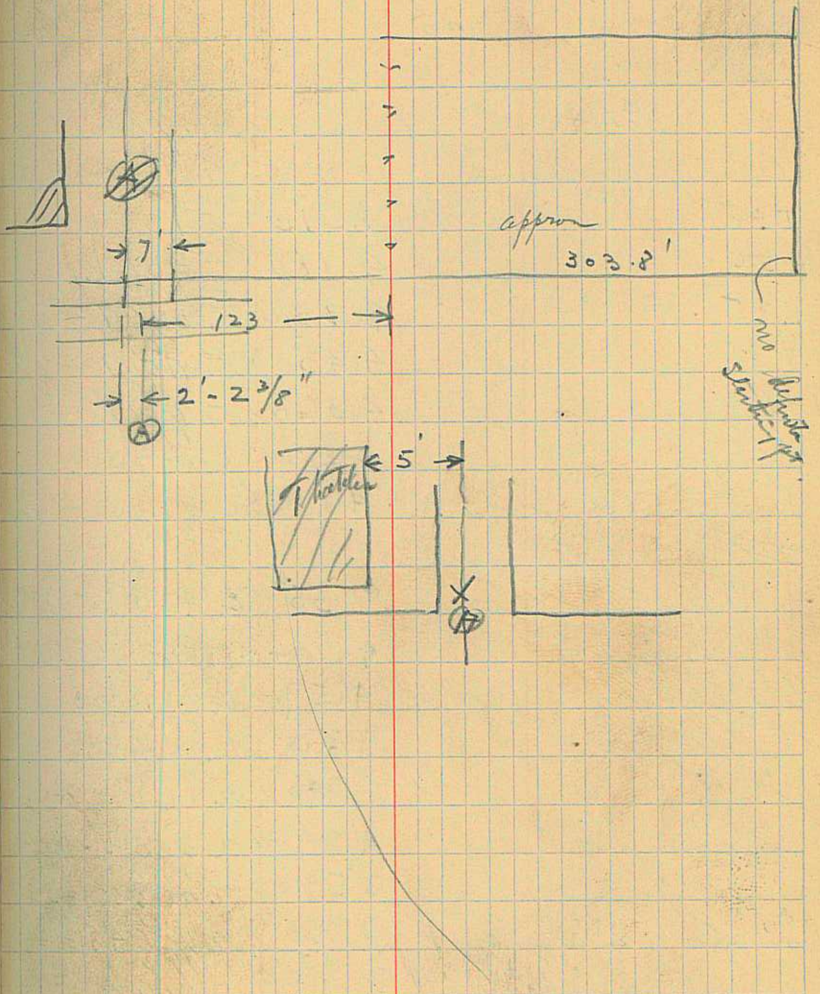
1300



16.5
18
1320
165
297.0
= 18'

297
6.8
303.8

-120



Bordin

	cB.S	F.S			
0	4.98				
		8.40			
	4.94			4.96	
0			3.74 ✓	4.96	1.22=1'2
+25			4.010 ✓	173 5.133	1.123=1-
+50			4.180	173 5.306	1.126=1
+75			4.320	5.173 5.479	1'- 5/8
+88			4.430 ✓	5.569 5.815	1'-4 5/8"
1+00			4.360 ✓	5.904	1'- 6½'
1+25			4.280 ✓	173 6.077	1'-9 5/8
1+50			4.120 ✓	173 6.250 .201	2'- 1½
~~1+0~~					
1+79.2 ✓			4.55	6.451	1.90=1'-10
2+00			4.92 ✓	6.598	1.69=1'-8
2+25			4.57 ✓	173 6.771	2.200=2'-2
2+50			4.30 ✓	173 6.944	2.64=2'-7¾
2+75			3.740 ✓	173 7.117	3'-4 5/8
3+00 ✓			4.09 ✓	173 7.290	3'- 2 3/8
3+25			3.570 ✓	173 7.463	3.89=3'-10
3+50 ✓			3.330 ✓	173 7.636	4.31=4'-3
3+75			2.980 ✓	173 7.809	4'-10"=4
4+00			2.780 ✓	173 7.986	5'-2 3/8
4+25			2.880 ✓	173 8.159	5'-3½"
4+50			2.430 ✓	173 8.332	5'-10"
4+75			2.500 ✓	173 8.505	6-00
4+88			2.350 ✓	8.595	6'-3"

9
.64

3.42
4.94
8.36

315
180
490

3.15

8.40
4.98
3.42

0

or grade

=

3420 | 2940
2940 | 0.6978
4800
2940
1860
3738 (?)
4700

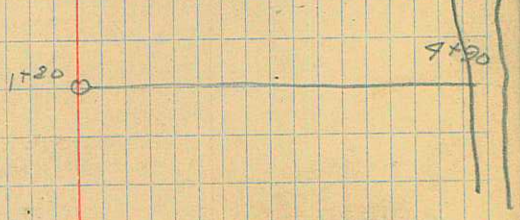
.00.6978

0.6940 (?)

(bottom tread 0.694 = 0'7"

Not 5.396 + .25 drop for

Large drainage



Borden Co.

2.91

10.31 7'-9 3/4

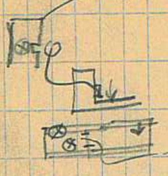
10.31
2.91
7.40

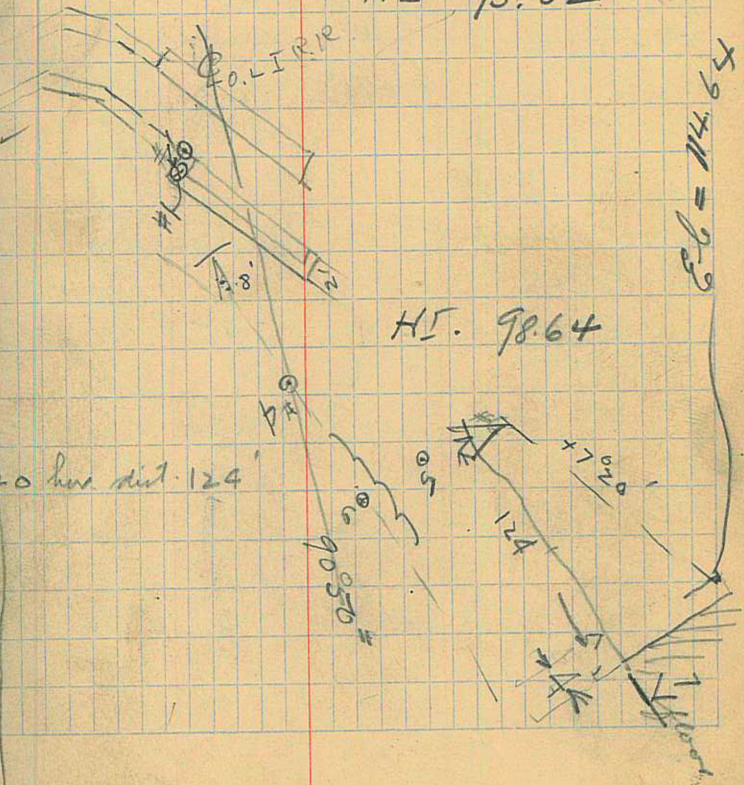
1'740
480

on coping of large old build. S wing

2.08
1.25
[illegible]

	BS	FS	un	Az.	Stadi	Ele	
Sta pt	2.700					99.87	old wall. SE cor. (Benson Parcel)
			7.46			95.11	
			7.46			95.11	weir ol a
			7.200			95.37	floor. old flume 200' down stream
			5.18			97.39	on H2O surface by gates
			4.54			98.03	
			10.570			92.00	nail in pole Anderson elev. 92.00 H.I. = 102.570
BM #1	{	12.26				90.31	3 ⊕ spr.
	{ 4.715						
0—							H.I. 95.02
2				270°50'	13.8' ad		
3			12.9	246°	L 12.65 - c 12.9	82.10	
4			2.79	82°22	2.48 c 2.79	92.23	
5			6.23	72°45	5.33 6.23	88.79	
6	4.87	1.25	~~1.26~~	82°22	2.08 1.25	93.77	H.I. 98.64
6—							
7			9.75	82°22		88 89	
8				82°22		+7°20 hor dist. 124'	





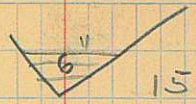
N¼ cor of sec 35 - 12 - 1 E is 8.35 S & 4.32 ch W of NE cor Crockett Ave

Ob. at 50± N of NE end Crockett Ave.

	Az	Vert ∠	time
Direct	79°33	27°52	4.40
Invert	80°23	27°08	4.42
Σ	79 58	27 30	
Direct	80°00	27°24	4.43
Invert	80°51	26°40	4.44
Σ 80°12 ✓		27 02	

⊼.	Pt	Az	Vert ∠	∠	Stadia c	∪
	6	120°26'	+19°	5.95		7
5 -						
	5	166°05'	+8°10'	4.26		6
4 -				~~5.920~~		13.000
	4	242°55	+3°55'	5.944		13.000
3 -						
	3	254°51	+40'		3.117	7.00
	2	2°38'		5		5.30
1 -						

73.45 .128. Aug 26, 1916

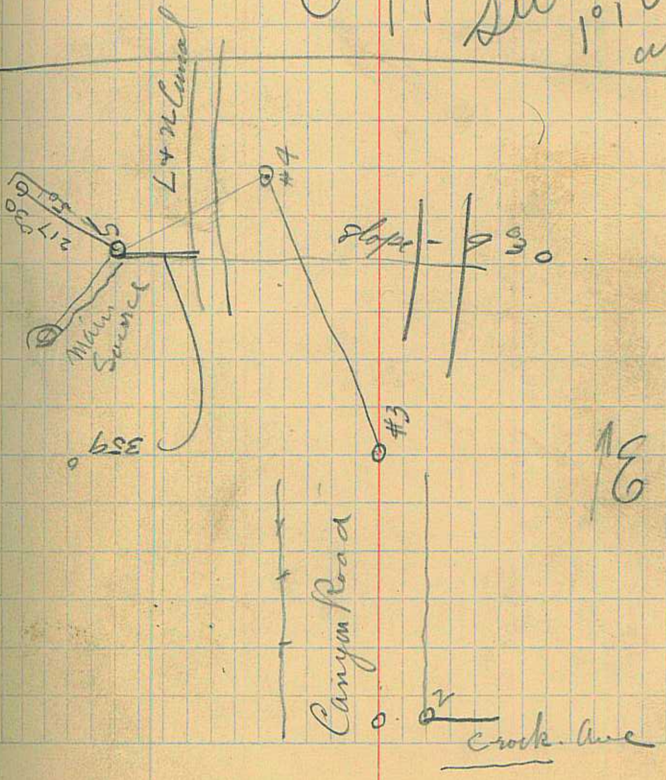
Wate  15' per sec

true az to Temple = 71°05

Az. 72°15 to west tower of Temple

~~true~~ S 79°02 W

sub. 1°10' fm alley



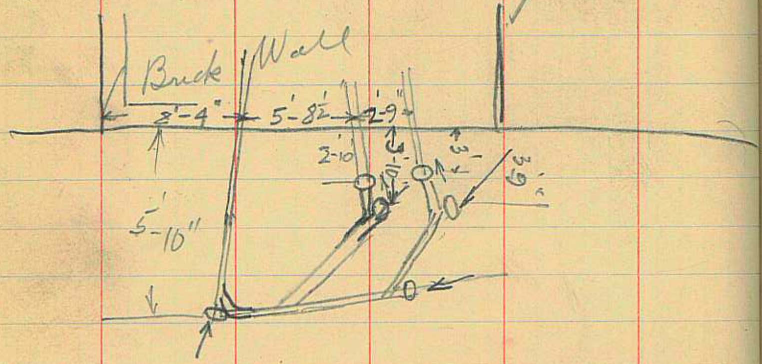
8/26/16

Logan & N Canal
at 6:00 P. outside gage 1.74

Woodruff School

Sewer

{sketch of actual construction
{on east building.

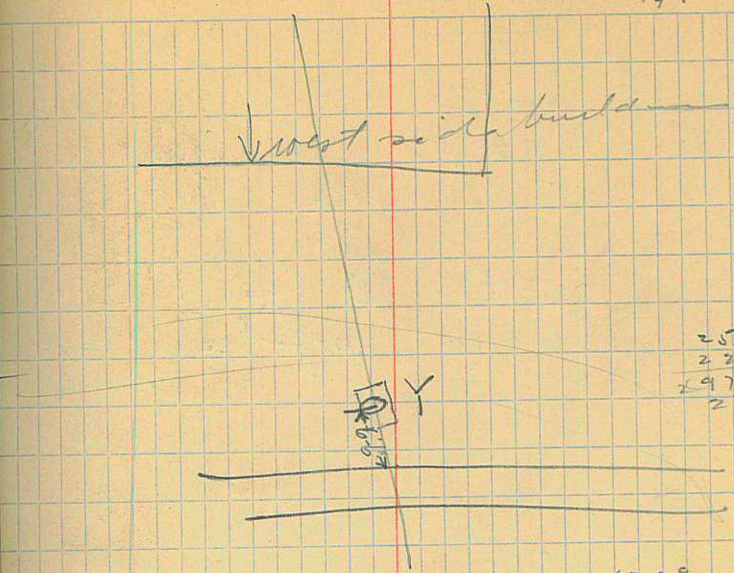


	BS	FS	m	Ele	H.I.
	4.44			27.890	32.33
H2G			9.96	22.37	
			10.66		
			12.2		
			8.55		
74			7.67		

12.2
10.66
1.54

132

.33
.03
.05
.41



25.10
22.71
2.97 8 1
23.90

27.89
4.44
32.33
9.96
22.37
4

32.33
7.67
24.66
.42
25.08

32.33
8.55
23.78
.42
24.20

32.33
10.66
21.67
.40
22.07

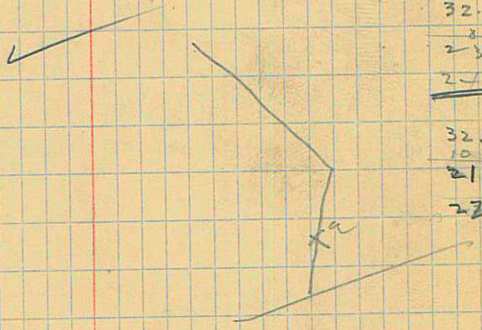
on tree root.

on pipe

on pipe

a

Sta. 97 ±



Hyde Park

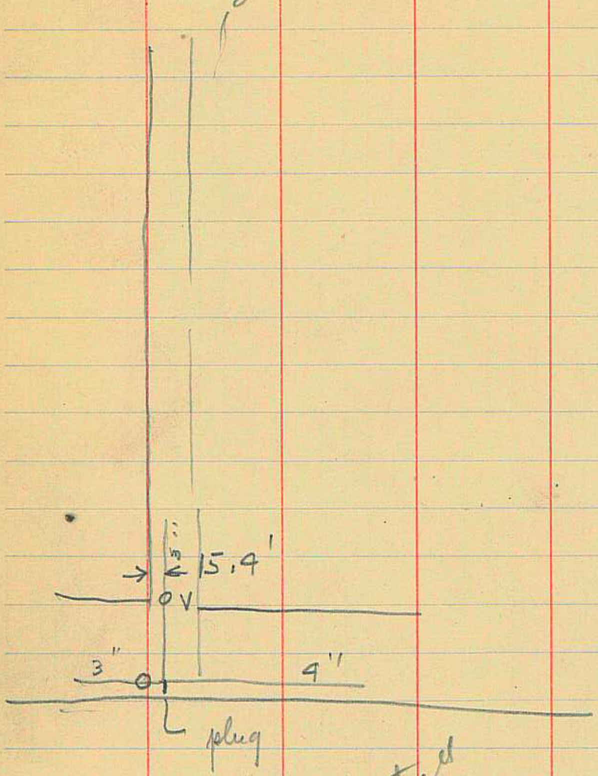
S. line Lee's pav.
253+93 also assumed
5 on profile

256+92 S line 1st N
Sta 8 on profile

1532·21
532
2789

9/5/16

Millville H_2O Works Line Now Henniger Lane



Platted

9

9.4

16
16
96
16
256
16
1536
256
4096
139
46
150

27
152

27
1500
135 00
27
405 00

Ex.

225 00
800
1025

16

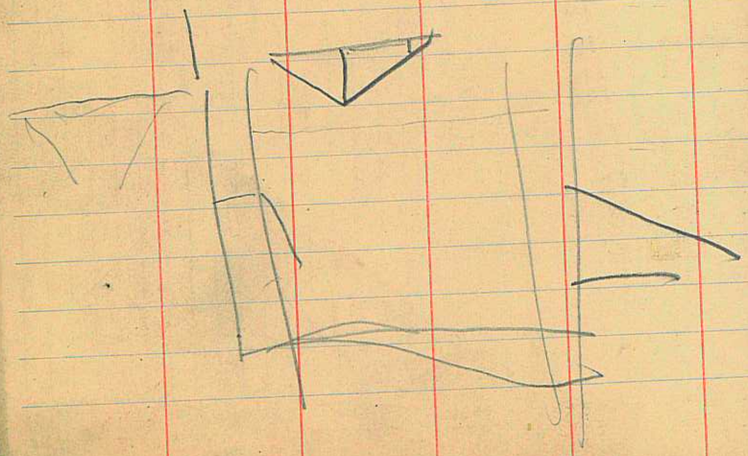
64
16
384
64
1024

140

v = 8.08

$\sqrt{\frac{h \quad 29}{\frac{k\, f \quad 7}{F\, d}}}$

6
.07
.1 .13
3 1.4
6 .16
.07
10



206.7
7.9
198.
198

205
192
1

21
1.
94
16.4
23.0
16.4
39.4

23
14
37

30.9
.37
2163
927
114.33

198.33
490
8.9

OAD CURVE TABLES.

EL & ESSER CO., New York.

Act of Congress in the year 1883,
in the office of the Librarian of Congress,
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902, by Keuffel & Esser Co.

SE KEITH'S TABLES.

EXAMPLE.

ve with an Ext. of about 12 ft. Angle
I. P.=23° 20′ to the R. at Station

. IV opposite 23° 20′=120.87
2=10.07. Say a 10° Curve.

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

n for A. 23° 20′ for a 10° Cur.=0.16
6=118.47=corrected Tangent.

xt. is required find in same way)
0′=23.33°÷10=2.3333=L. C.

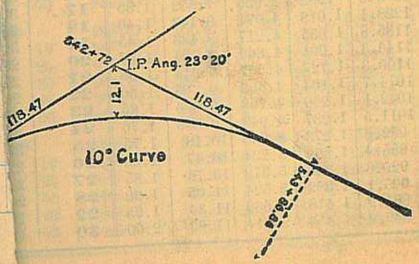
a.	542	I. P.=sta.	542+72
"	+50	Tan.=	1.18.47
.	543	B. C.=sta.	541+53.53
"	+50	L. C.=	2.33.33
"	543+ 86.86	E. C.=sta.	543+86.86

<3′(def. for 1 ft. of 10° Cur.)=139.41′=
19½″=def. for sta. 542.

50 ft.=2° 30′ for a 10° Curve.

86 ft.=1° 50½′ for a 10° Curve

are published in Field Books of
Esser Co., New York, N. Y.)



.0029
10

0.0050
29
2

.0005
2

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES $1^1/_2$ TO 1.

FOR SINGLE TRACK EMBANKMENT.

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

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

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