

#2

2

1007



DODGEGEN
ENGINEERS'
FIELD BOOK

No. 404

1007

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburgh 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 $30.6 + (20 - 16) \div 2$ or 2 ft. added to 30.6 = 32.6. For slopes of 1 on $1\frac{1}{2}$ see inside of back cover.

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1007

Eugene Schaefer
Logan Utah

Please return

$$n = 0.225$$

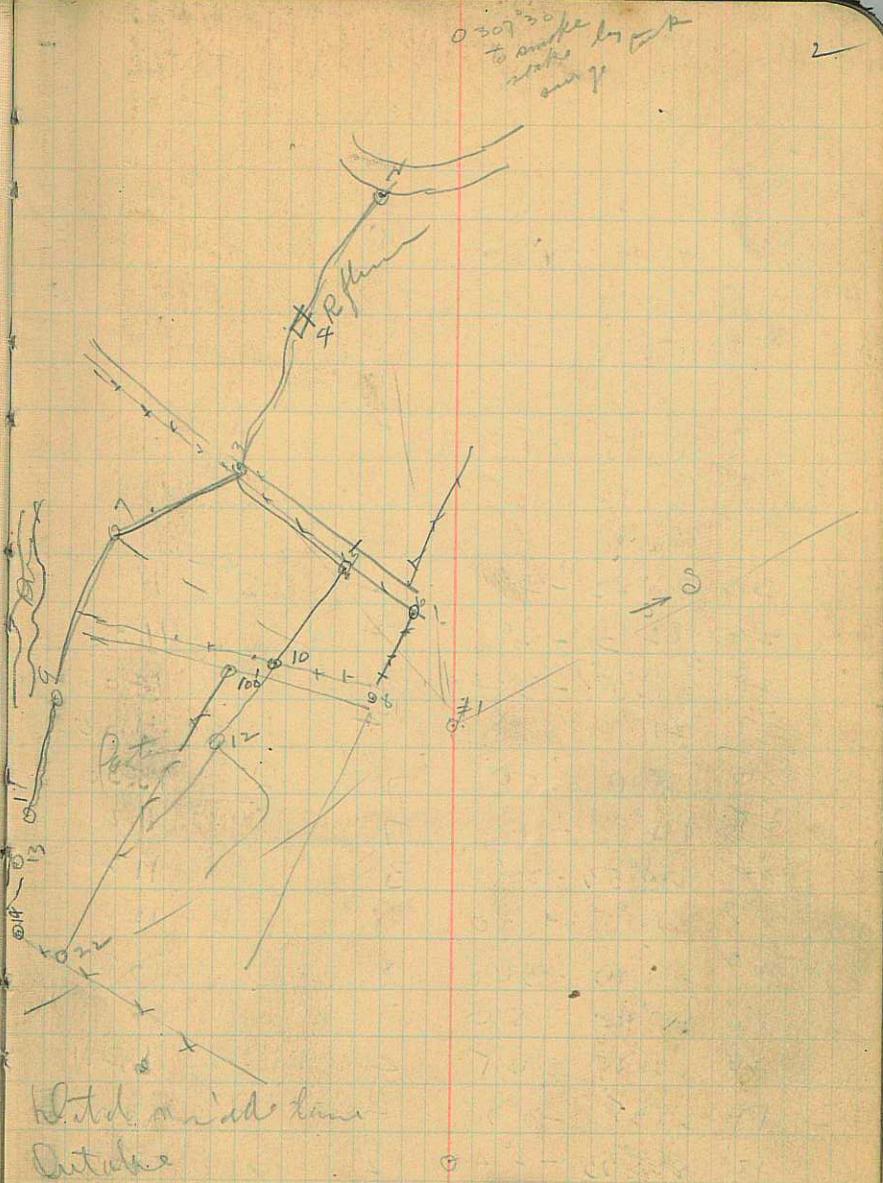
$$C = 23 + \frac{1}{n} + \frac{0.0155}{5}$$

$$= 23 + \left[\frac{0.0155}{\frac{1}{n} + \frac{1}{5}} \right] \frac{n}{f}$$

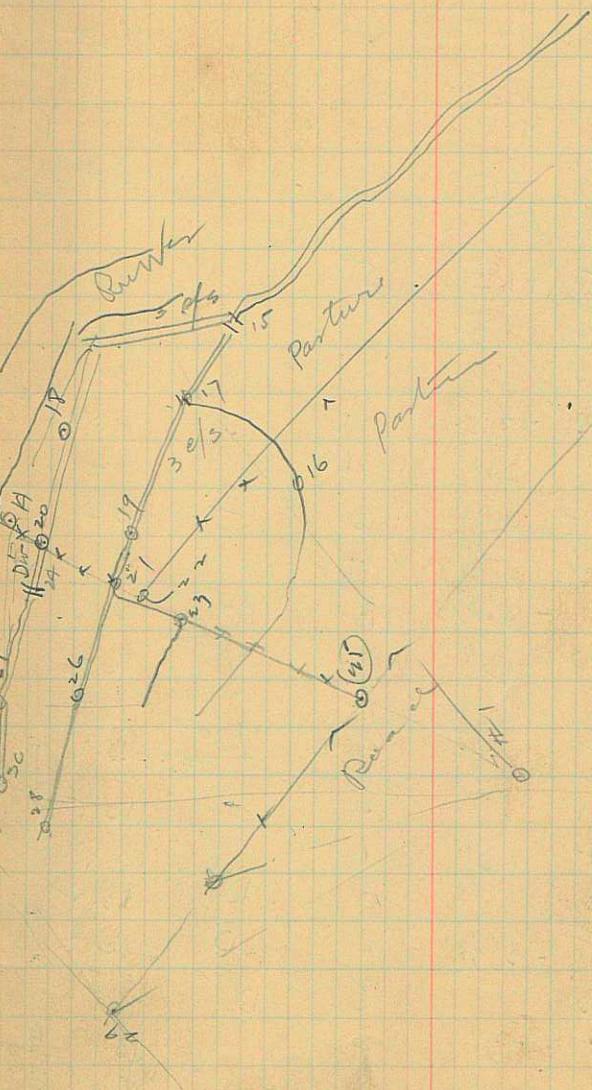
No Smithfield notes
in this book

Mooran + Gomes
Topo - Survey Nov 3 - 1917

16	$235^{\circ}26'$	- $4^{\circ}20'$	9	D.	13.80
15	$237^{\circ}07'$		4	main Wdn.	11.40
14	$223^{\circ}24'$	- $3^{\circ}30'$	3	= P Property	11.70
13	$244^{\circ}35'$	- 3°	4		11.55
12	$265^{\circ}20'$	$4^{\circ}15'$	9		13.40
11	250°	- $2^{\circ}50'$	4		11.63
10	$277^{\circ}25'$	- $3^{\circ}10'$	8		13.4
9	$261^{\circ}53'$	- $2^{\circ}25'$	3		11.4
8	$249^{\circ}30'$	- $5^{\circ}30'$	10		13.4
7	$271^{\circ}52'$	- $1^{\circ}40'$	1		11.4
6	$305^{\circ}14'$	- $4^{\circ}40'$	8		12.1
5	$288^{\circ}12'$	- $2^{\circ}15'$	10		13.60
4	$290^{\circ}24'$	- $1^{\circ}25'$	8		13.70
3	$282^{\circ}44'$	- $1^{\circ}40'$	6		11.30
2	$295^{\circ}47'$	- A7	6		13.45



30	$200^{\circ} 23'$	-3°	2	D^{hav}	11.70
29	$162^{\circ} 13'$	-3°	2		11.30
28	$173^{\circ} 08'$	$-3^{\circ} 40'$	6		14.00
27	211°		2		11.10
26	$188^{\circ} 10'$	$350'$	7	D	13.30
25	176°	-6°	7		11.20
24	$219^{\circ} 53'$	$-240'$	3		11.20
23	200°	$-4^{\circ} 20'$	8		13.25
22	$207^{\circ} 00'$	$-3^{\circ} 40'$	8		13.85
21	$207^{\circ} 40'$	$3^{\circ} 50'$	7		12.95
20	$221^{\circ} 15'$	$2^{\circ} 45'$	4		12.1
19	$218^{\circ} 25'$	$-3^{\circ} 30'$	7		13.2
18	$225^{\circ} 33'$	$-2^{\circ} 40'$	4		12.1
17	$233^{\circ} 40'$	-3°	7		14.00



6

L C U

49-

~~48~~ 50 28° 12' -12° 2 5.28
 49 144° 44' -1° 22' 3 5.700

48-

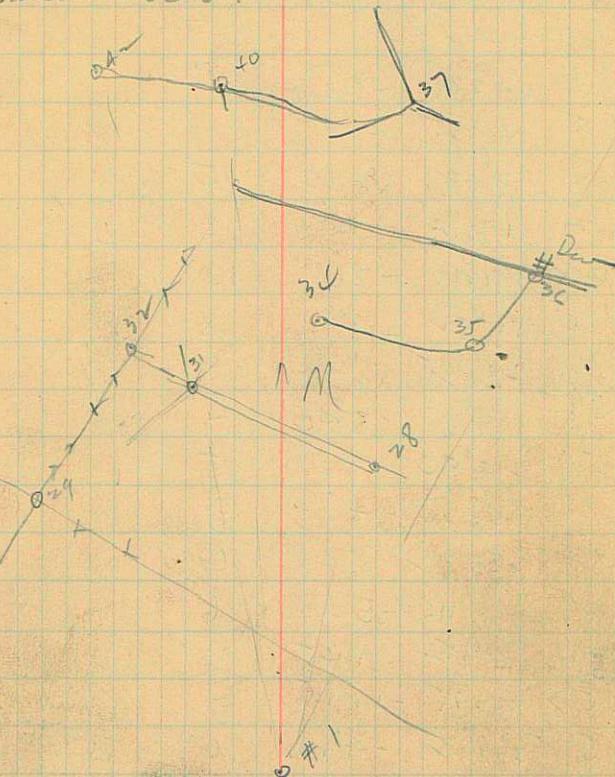
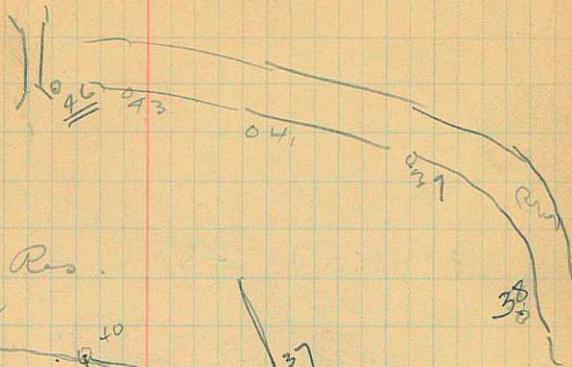
48 151° 08' -17' 3 5.45

47-

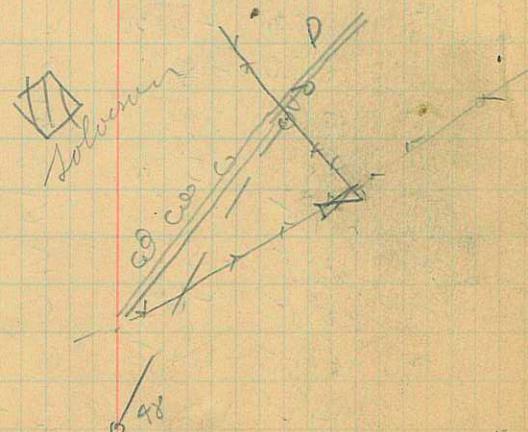
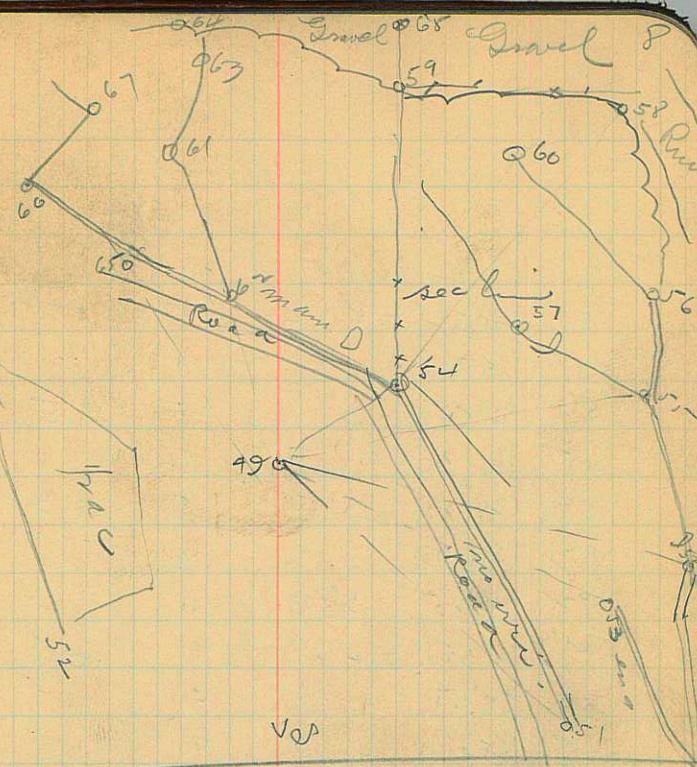
47	151° 15'	+1° 20'	5		13.70
46	183° 32'		6	13.1	
45	193° 56'		8	13.9	
44	173° 25'	-2° 20'	5	11.50	
43	199°		1	14	
42	174° 22'		D	5	11.4
41	206° 26'		1		13.2
40	177°	-2° 30'	6	11.70	D
39	212° 50'	-3°	6	13.00	
38	218° 30'		1		13.80
37	181° 15'		6.00	11.70	D
36	210° 51'		4	D	13.15
35	201° 30'	-3°	6		13.8
34	189° 40'		5	D	13
33	198° 05'	-2° 30'	1	D	12.3
32	166° 03'		2	D	11.5
31	169° 44'	-3°	4		13.1

1-

to E of Millville Res.



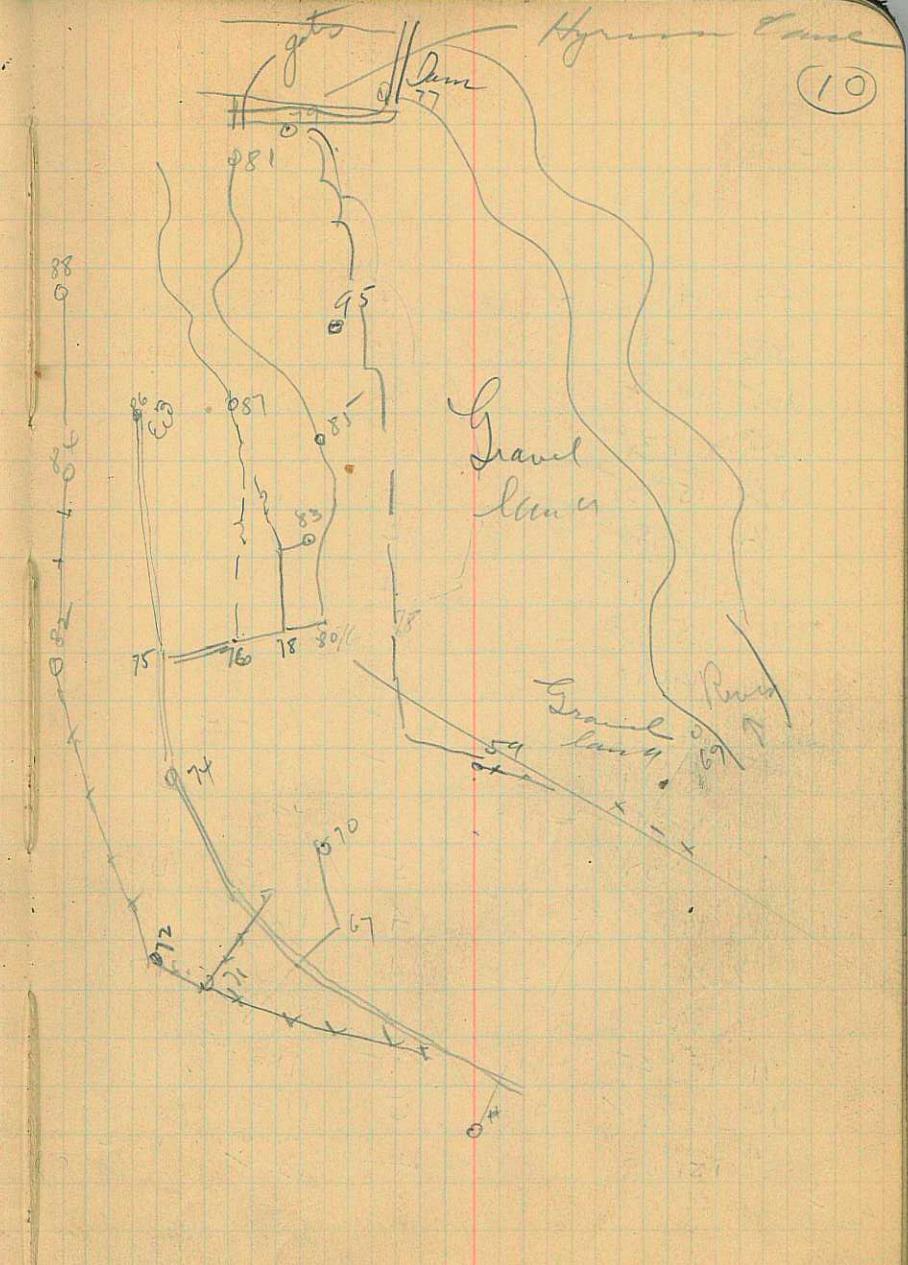
68	$185^{\circ} 27'$	$-3^{\circ} 50'$	4	Wise cov	13.8
67	148°	-7°	7	-	11.6
66	$134^{\circ} 20'$	-8°	7	-	11.4
65	$140^{\circ} 25'$	$\sim 12^{\circ}$	9	-	11.6
64	$167^{\circ} 44'$	$-4^{\circ} 20'$	5	-	11
63	$172^{\circ} 41'$	-6°	6	out	11.50
62	$190^{\circ} 40'$	-20°	10	-	11.65
61	$171^{\circ} 52'$	-11°	8	out	10.95
60	$206^{\circ} 25'$	-	7	out	11.8
59	$189^{\circ} 37'$	$-5^{\circ} 40'$	7	-	13
58	$215^{\circ} 40'$	$-5^{\circ} 20'$	5	-	11.18
57	$220^{\circ} 28'$	-10°	9	-	12
56	$250^{\circ} 32'$	$-5^{\circ} 40'$	6	-	11.1
55	$264^{\circ} 16'$	$-5^{\circ} 20'$	6	-	11.3
54	$239^{\circ} 02'$	$-21^{\circ} 45'$	12	-	13.4
53	$282^{\circ} 15'$	$-10^{\circ} 15'$	9	-	11.80
52	$279^{\circ} 12'$	$-4^{\circ} 10'$	11	-	9.20
51	$310^{\circ} 12'$	-	5	-	11.50



88	140°52'	-2°30'	5	12
87	147°		1	11.5
86	142°54'	-3°	5	11.5
85	160°36'		1.0	11.5
84	139°33'	-2°45'	5	11.3
83	155°30'		3	11.6
82	133°05'	-3°50'	1	11
81	160°35'	-2°20'	6	13.8
80	158°37'		4	11.85
79	165°18'	-2°30'	6	13.5
78	146°13'		5	12.1
77	171°43'	-2°30'	6	13.4
76	142°10'	-5°	5	11.9
75	136°		5	11.5
74	135°	-5°30'	6	12
73	157°05'	-5°	5	11.75
72	127°35'	-5°40'	5	11.32
71	128°35'	-6°	6	11.7
70	151°55'	-6°15'	6	11.9
69	194°21'		3	13.7

49-

L C J



181°40' S + to -

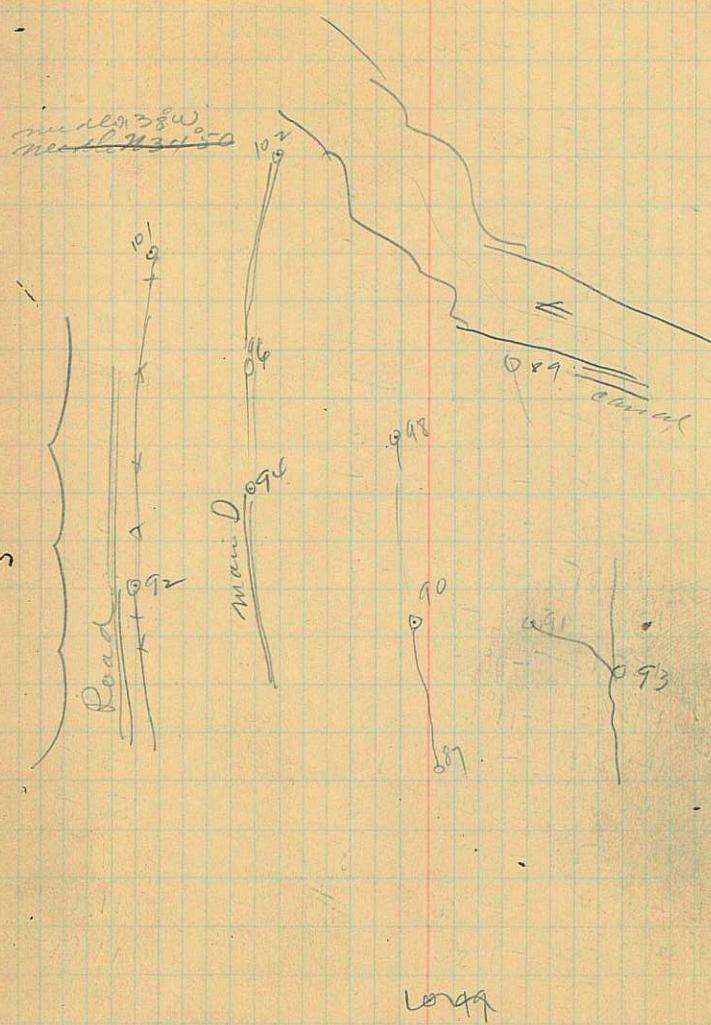
b L C O

49-

242°12' to SE over post

107-

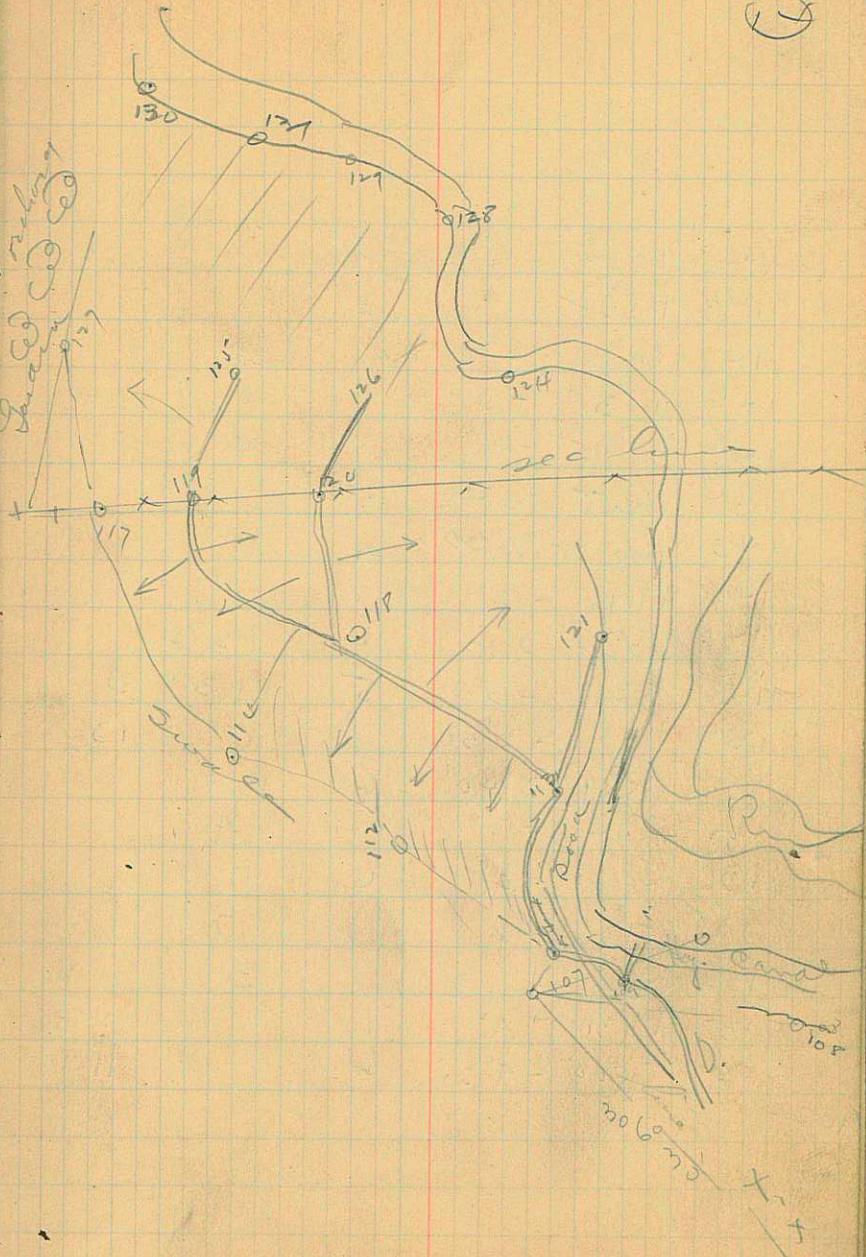
107	141°35'	+ 0° 05'	3	13.60	
106	165°39'		4	11.2	egg land
105	149°30'		3	11.3	
104	163°		✓	11.6	D
103	156°35'		4	12	D
102	147°35'		3	13	D
101	141°12'		4	11.2	
100	151°38'		4	11.8	
99	146°18'	- 1° 50'	3	13.5	
98	148°35'		5	11.7	D
97	157°19'		5	11.8	D
96	145°15'	- 3°	✓	9	
95	164°37'	- 3° ±	5	11.4	D
94	145°15'	- 2° 30'	4	11.2	
93	161°		1	11.70	
92	192°04'		4	11.5	cut
91	155°45'		5	11.3	
90	147°52'		5	11.4	
89	151°08'		4	13.2	



49-

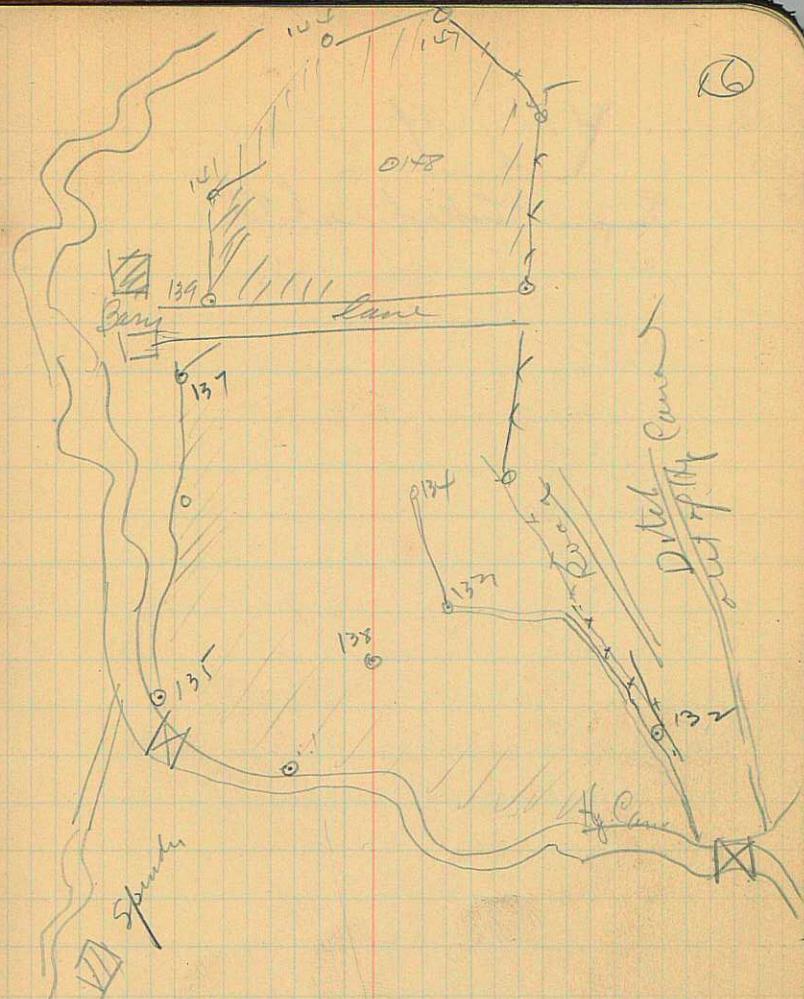
Hor	131	157°30'	-4°	6	11.5
Wind	130	151°44'	-4°	2	13.7
	129	162°	-4°30'	1	11.4
	940	128	168°05'	2	11.9
	10.16	127	145°30'	3	13.2
	875	126	164°45'	3	11.80
	921	125	153°25'	4	13.35
	835	124	170°	3	11.4
	710	123	179°25'	2	5.6
	700	122	179°25'	4	11.1
	597	121	182°10'	2	8
	742	120	159°56'	4	11.5
	825	119	148°35'	5	13.3
	590	118	161°46'	4	10
	865	117	143°02'	5	13.70
	426	116	190°35'	1	5.40
	368	115	193°30' 10' 50'	8	11.80
	515	114	155°12'	8	13.25
	326	113	193°08'	8	11.4
	380	112	161°52'	10	13.9
	180	111	202°37'	3	5.15
	350	110	267°17'	8	11.6
	109	261°34'	-14°30'	9	11.6
	108	271°52'	-7°50'	7	11.65

107-



149	160°22'	-2°30'	on west side of R. 9	3	13.6
148	165°22'	3	11.1		
147	164°04'	-2°50'	4	13.7	
146	166°35'	-3	4	11.9	
145	170°45'	-3°	4	11.8	
144	162°55'	-2°40'	5	13.6	
143	166	-3°20'	4	11	
142	171°18'	-3°15'	4, 0	10.9	lani, perhaps
141	160°04'	-3°10'	6	13.6	
140	163°11'	-3°30'	5	11.3	D
139	161	-3°30'	6	13	
138	165°19'	-3°40'	6	11.7	
137	158°14'	-3°	7	14	
136	158°21'	-4°	6	11.6	
135	151°36'	-4°	7	13.2	
134	170°44'		3	6.7	
133	171°30'	-4°	1	12.1	
132	178°20'	-4°30'	2	11.8	

107 -



1' 4" 1' 7" 2'
Swan Lake Creek

(18)

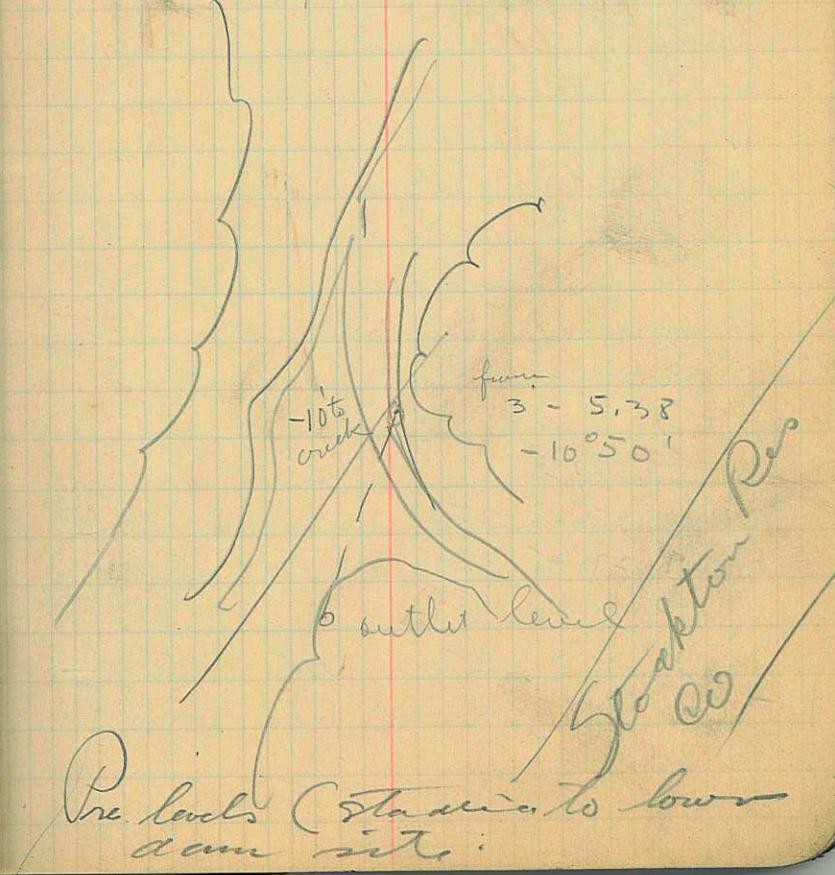
1

~~15° 50°~~

5 feet drop
from earth to fork
of dam below

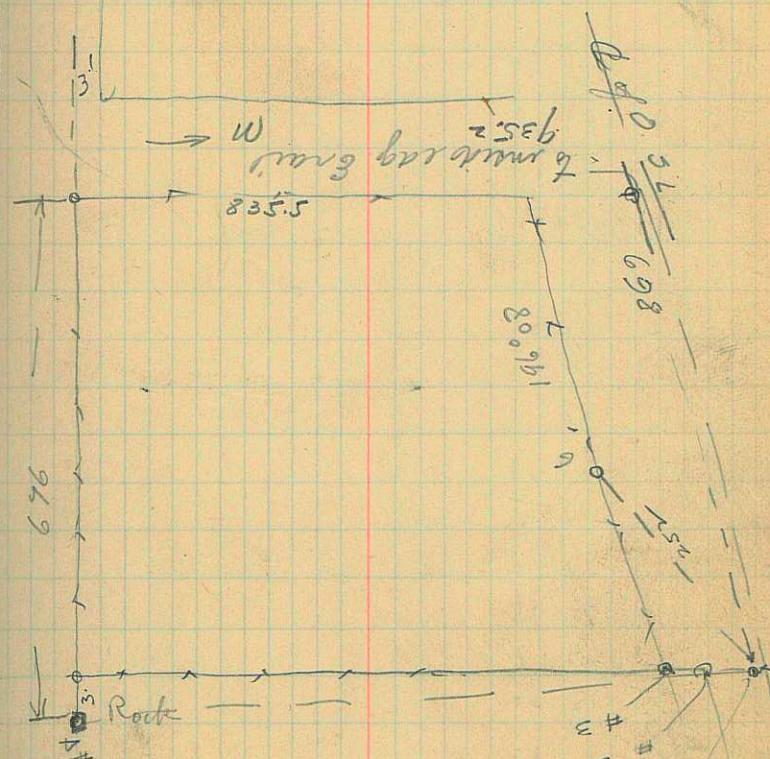
$$\begin{array}{r} 18.5 \\ 2.38 \\ \hline 14.80 \\ 555. \\ \hline 370 \\ \hline 403^{\circ} \end{array}$$

(20)



(22)

Albert Fisher Survey
Richmond Hall



3 259.7
6 -
5 $355^{\circ} 28'$
6 $355^{\circ} 28'$ 252
4 $270^{\circ} 45'$ 751 ftm
3 " " 1013
2 " " 34 east mill O.S.

set 196.08 FS along east rail

1# 2m3

Survey for Hamona
Block Pl E.L. Farm

22	$65^{\circ}34'$	7	12.64	-40'
31	$69^{\circ}50'$	7	11.75	-1°
20	$67^{\circ}26'$	7	11.30	
19	$71^{\circ}51'$	7	11.05	
18	$69^{\circ}25'$	7	10.82	
17	$71^{\circ}35'$	8	10.38	-1020
16	$58^{\circ}45'$	9	11.14	-1°30'
15	61°	9	10.91	
14	$10^{\circ}08'$	9	10.97	
14	$9^{\circ}13'$	9	10.16	

12

13 $263^{\circ}36'$ 0.293
 π12 $66^{\circ}27'$ 9.00h

11	$58^{\circ}10'$	6.5	13.15	
10	$44^{\circ}32'$	7	12.1	
9	$42^{\circ}15'$	7	11.35	
8	$47^{\circ}53'$	7	11.05	
7	$44^{\circ}46'$	9	12.20	
6	$39^{\circ}17'$	9.	11.30	
5	$15^{\circ}30'$	10	11.85	
4	$6^{\circ}11'$	10	11.79	

flag pole
sugar fetus $338^{\circ}33'$

Hecc 27-1917

gap. (26)

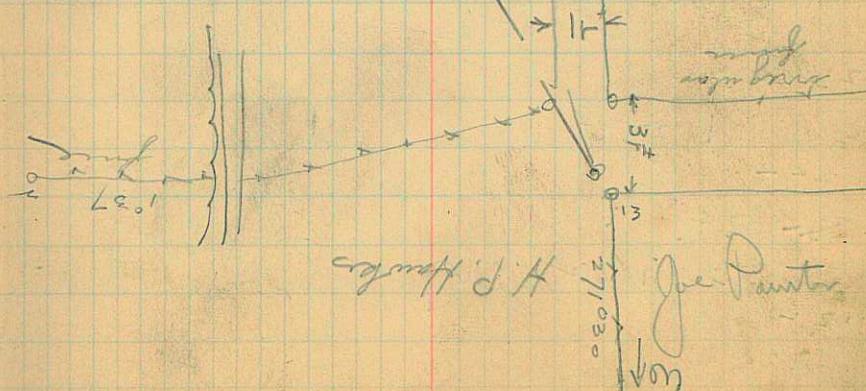
~~1°37'~~ ~~part on line~~
 1°37' ~~part on line~~
 1°37' ~~part on line~~
 1°37' ~~part on line~~

size $24 \frac{1}{2}'$

$18^{\circ}00'$

Creek - $2^{\circ}30'$

set $66^{\circ}27'$



12/27/15

(28)

Train Line from
Hyde Park to Logan

31 33 P
5 33 P

Move with needle N $62^{\circ}30'W$ v.v N $15^{\circ}E$

1 15.9 -

23 -

1 271°37'

24 -

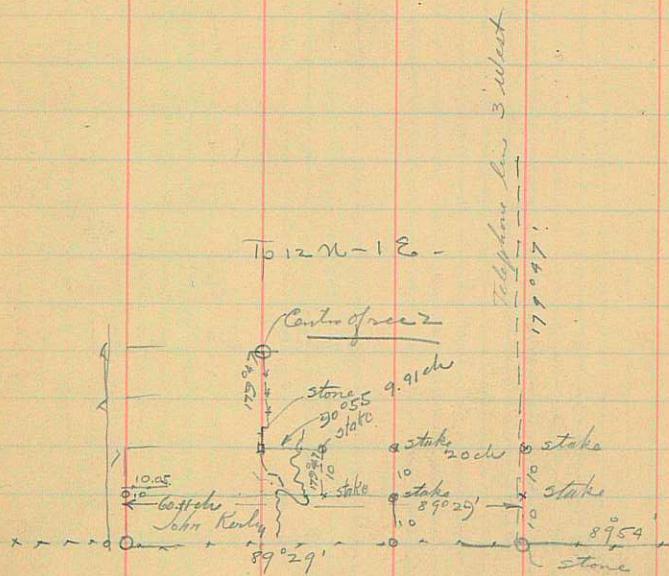
23 24

23 118°02' 8.67

12 -

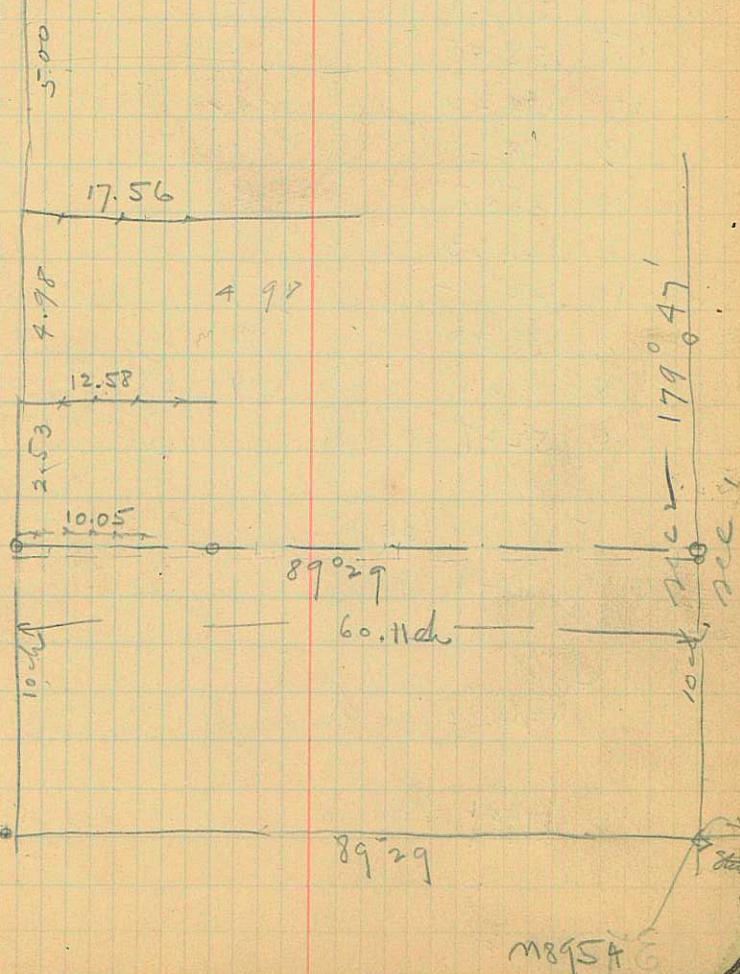
(part) Needle N $62^{\circ}30'W$ v.v N $15^{\circ}E$

89 54
 269 54
 95 16
179 40



General outline of Survey

12/27/17 Land Survey
 Survey for
 Frank Barnes
 John Kirby, L. Jorgenson
 Harry Johnson
2256



Danes et al.

(2)

20 -

20	179°47'	10 ch	3	9.98	
19	161°15'		3	9.5	
18	159°40'		4	9.8	-1°50'
17	159°40'		4	9.3	-2°
16	157°27'		5	9.62	-2°15'
15	152°45'		5	9.11	-2°30'
14	141°20'		6	9.7	
13	128°		6	9.4	
12	125°05'		8	11	
11	121°33'		7	9.34	-2°30'
10	123°02'		8	9.60	
9	118°47'		9	9.82	east via TH P + S C
8	89°29'				
6	52°29'	2.77			

5 -

5	89°29'	30
+	89°29'	20

3 -

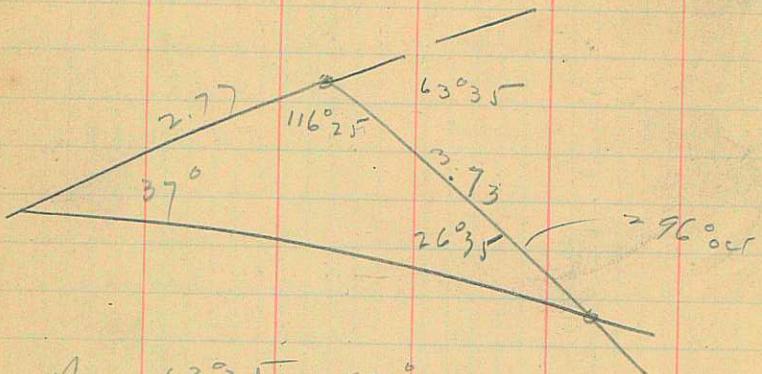
3	134°44'	10.00
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2	179°47'	20.00
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To Smith Condenser chem.

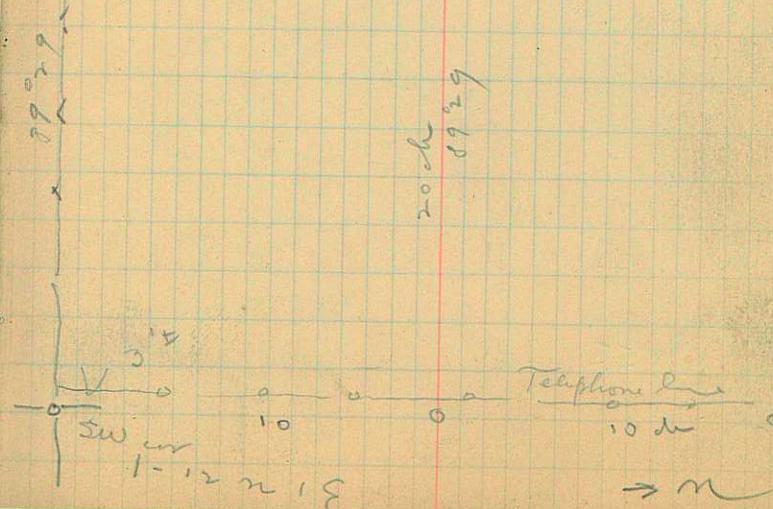
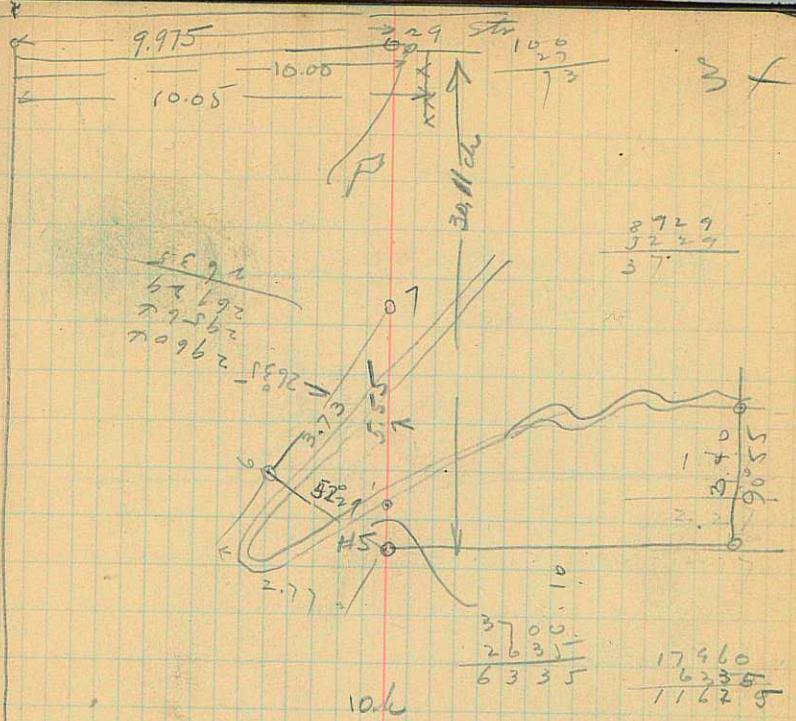
set. Ola Jorgenson nE of S 8^{1/2} of S 8^{1/2} sec 12 N 18
SW corr sec 1-12 N 18

Daines et al

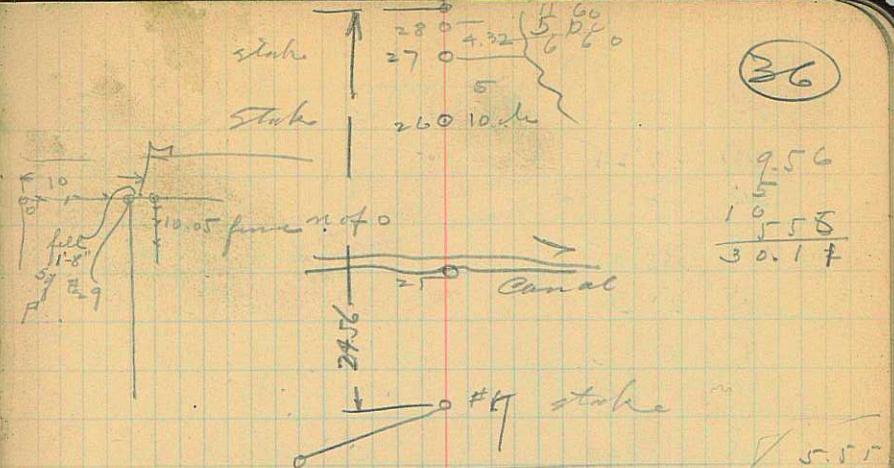


$$\frac{\sin 63^{\circ}35'}{x} = \frac{\sin 37^{\circ}}{3.73}$$

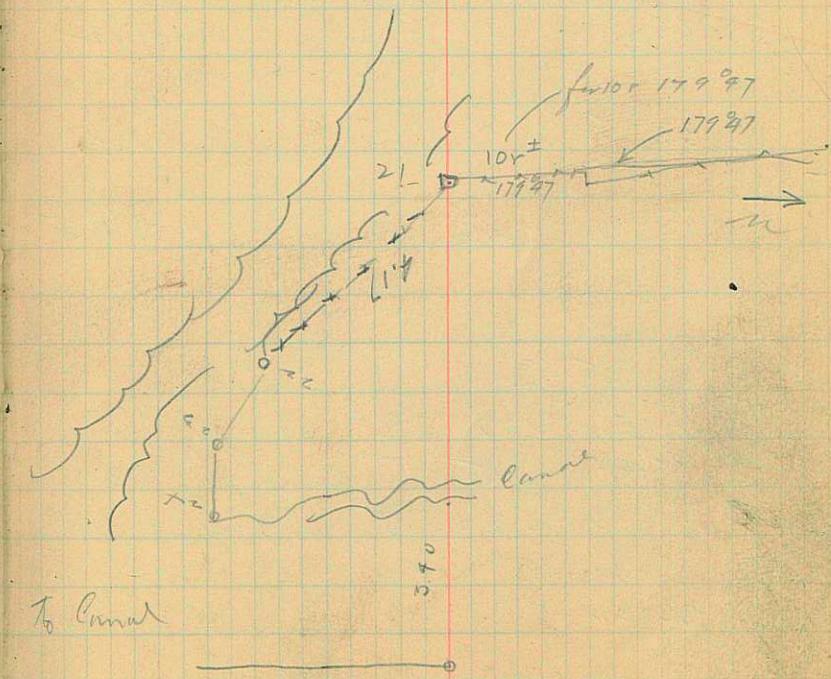
$$\begin{aligned}
 & 0.571769 \\
 & 1.6935 \cdot 1.952106 \\
 & 6.1523.815 \\
 & 1.64470 \quad 1.779463 \\
 & 0.749352 = 5.55
 \end{aligned}$$



29	956	
28	4.32	
27 -	27 89°29	5.00 ✓
26 -	26	10.00 ✓
25	$\frac{89^{\circ}29}{6}$	1.76
6	296°04	
7 -	<hr/>	
24	302°11	1.84
23	348°41	<u>2.875</u>
22 -	316°13	4.17 ✓
21 -		
18	Stn 90°55	9.91
3	90°55	3.40
20 -		



Darnes et al.



Gas. Softmuns

22	135°20'	6	10.1
21	316°25'	7	11.35
20	150°35'	3	9.25
19	345°05'	6	11.2
18	28°30'	2	5.56
17	0°13'	2	5.25
16	1°22'	7	11.9
15	182°40'	5	11.15
14	25°10'	6	11.1
13	266°08'	3	8
12	18°	6	11.5
11	233	8	9.02
10	4°30'	6	11.4
9	356°25'	5	11.3
8-			
8	156°06'	-2°15'	1.0
			10.00
			10.05

6	120°25'	-5°10'	8	11.2
5	34°05'	-1°33'	8	11.38
4	95°40'	-6°45'	7	8.27
3	199°23'	-3°30'	9	10.18
	156°06'		9	
	-244°42'	+3°30'	3	11.80

DEC 28 1917

(38)

Avon

junct on

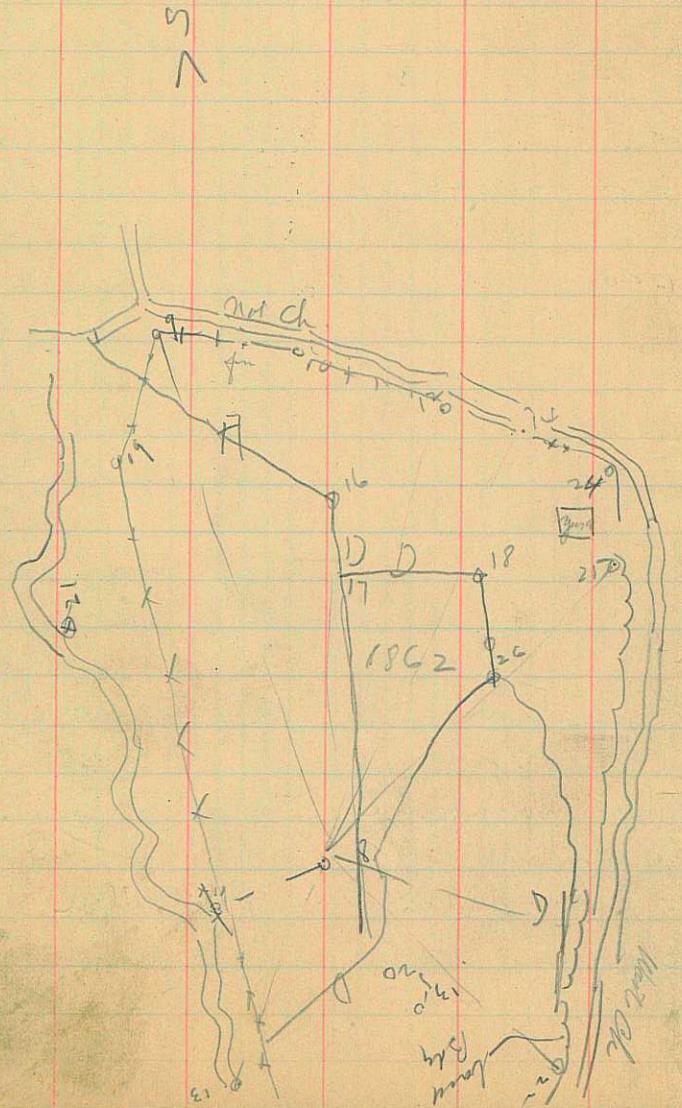
Spr. no name

Wellesport Spr.

in yellow house Frank Allen

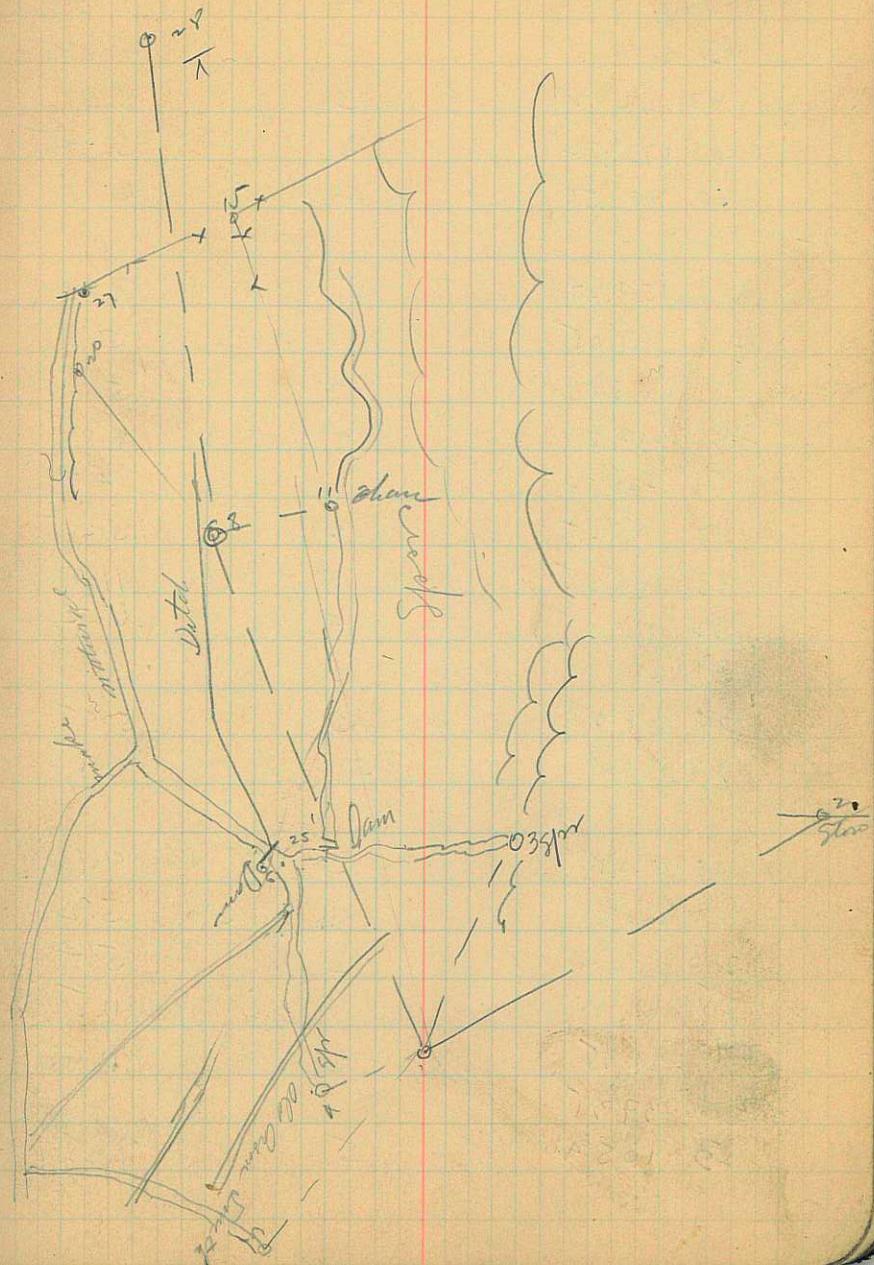
sec. cov.

five straight 19 to 15



DEC 28 1917

(40)



~~18~~ 18 = Land Plan

(42)

DEC 28 1917

46 $140^{\circ}30'$
 45 $143^{\circ}45'$
 44 $147^{\circ}10'$
 43 $149^{\circ}0'$
 42 $166^{\circ}12'$
 41 $173^{\circ}2'$
 40 $182^{\circ}50'$

5
 3
 4
 2
 3
 3
 4

0.4
 7.8
 8.3
 5.62
 ear
 5.85
 5.45
 6.

P

39 -

39 $159^{\circ}28'$
 38 $167^{\circ}05'$
 37 $215^{\circ}40'$
 36 $212^{\circ}30'$
 35 $228^{\circ}50'$
 34 $98^{\circ}25'$
 33 $108^{\circ}25'$
 32 $269^{\circ}15'$
 31 268°
 30 $69^{\circ}27'$
 29 282°

5
 3
 4
 6
 1
 2
 8
 4
 2
 3
 5

9.78
 5.30
 5.25
 8.81
 4.7
 5.35
 11.8
 6.2
 6.0
 5.95
 6.52

-15 needle says n 25-30°W
 head gate

slough

28 -

28 $172^{\circ}16'$
 ~7 $148^{\circ}53'$
 26 $52^{\circ}44'$
 25 $61^{\circ}18'$
 24 $31^{\circ}35'$
 24 $37^{\circ}35'$
 23 $105^{\circ}40'$

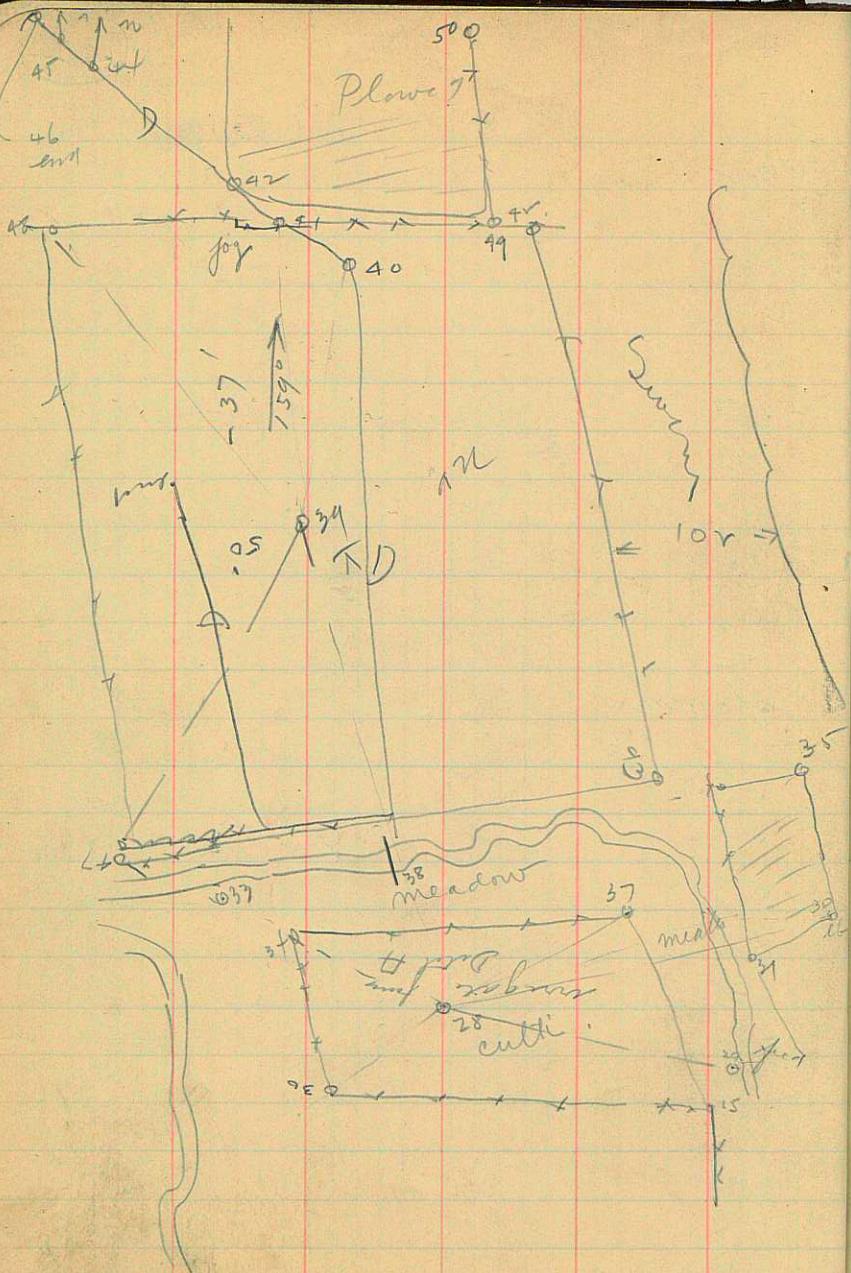
3
 3
 3
 8
 6
 5

9.60
 5.20
 5.4
 11.5
 11.40
 7.25

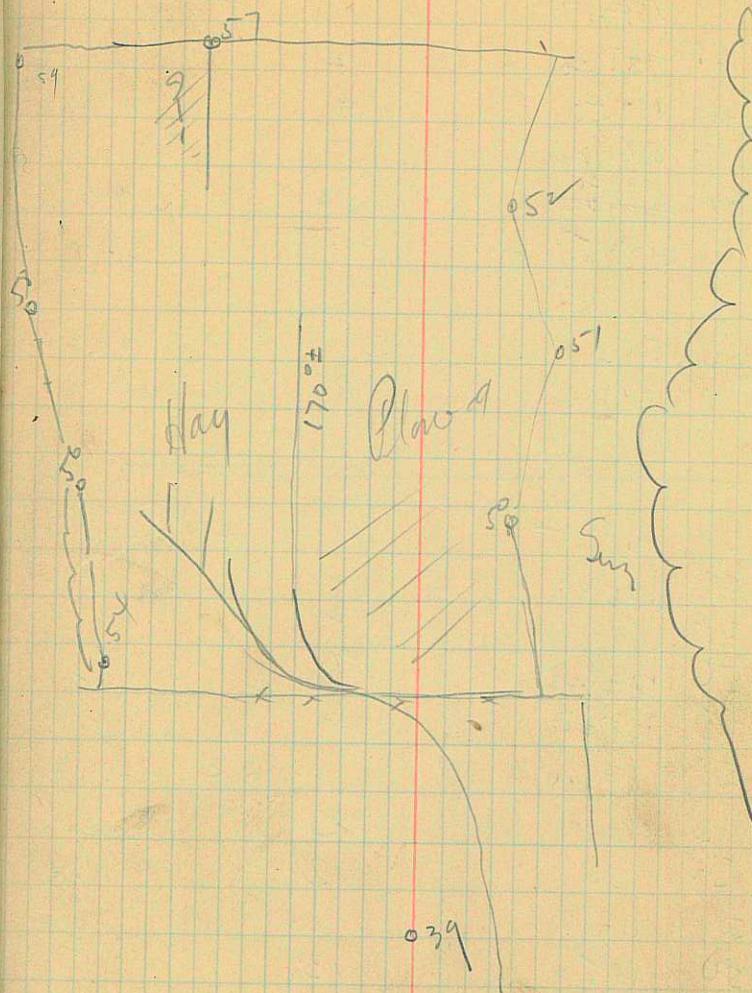
-28'
ll-

D

8 -



DEC 28 1917



~~68~~ 280°25'

67 166°45'

66 164°47'

65 151°30'

64 147°50'

D 63 56°20'

62 ~~123°30'~~
~~26°30'~~

61 110°35'

60 -

60 51°30' S

156°06'

3

5.00

3

11.5

5

11.5

2

11.2

4

11.35

5

6.22

3

8.5

1

5.2

DEC 28 1917

46

-1°50'

to Home Obs.

1 -

59 135°25'

58 139°47'

57 150°20'

56 122°40'

55 168°20'

54 114°10'

53 180°

52 184°

51 187

50 185

49 148°

48 117°30'

47 35°50'

4 10

-37'

2 11.2

-30'

2 12.3

6 12

2 10.85

3 5.3

3 10.35

3 9.60

10 12.7

3 7.5

3 5.78

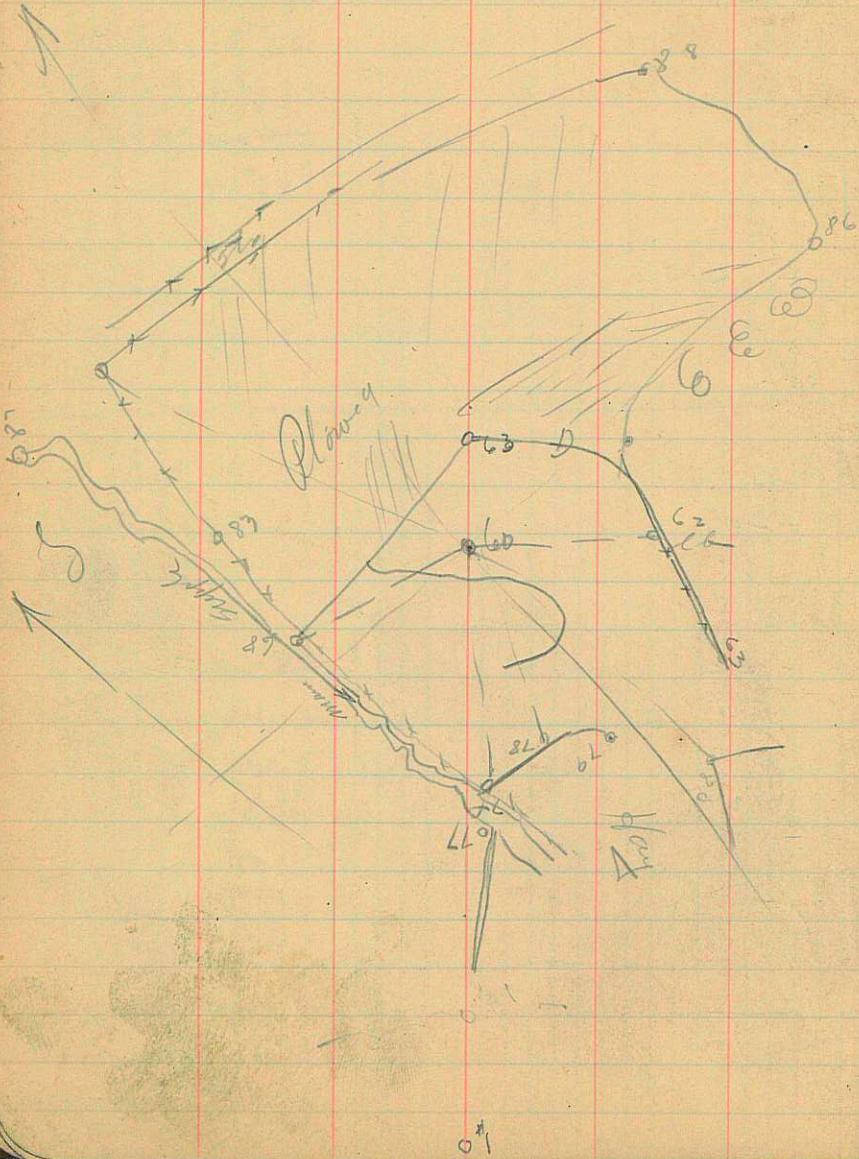
2 5.8

2 5.02

39 -

47

DEC 23 1917



DB 190°
 Spr 92
 east 305
 91 306 45'
 Mar 90 208°40'

89 -

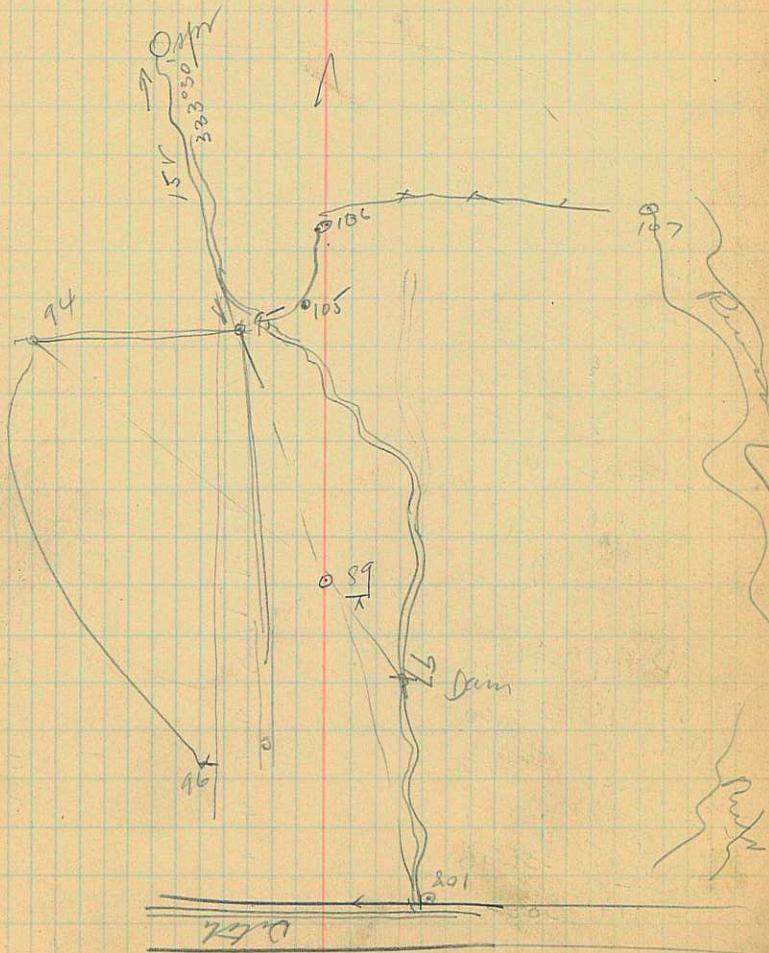
	4	5	5.95
89 0°05'	5	11.75	+ 47'
16 88 45°30'	6	11.1	(grass slope + 35')
Spr 87 329	5	9.68	+ 1°10'
16 86 5330	6	11.32	
16 85 340°25'	3	7.25	
16 84 70°	3	5.10	
16 83 309°15'	4	6.35	
D 82 162°	3	7.85	
D 81 165°	2	7.1	- 27'
D 80 172°17'	3	7.05	
D 79 182°45'	6	9.25	
D 78 205	6	8.65	
16 77 21721	6	9.55	
76 1960	6	11.5	
16 75 197	5	11.3	
216 74 21820	3	6.17	
16 73 190°15'	5	11.9	
16 72 180°25'	5	11.9	
Spr. 71 26504	3	6.06	+ 1°30'
16 70 175°40'	4.0	11.70	
Spr. 69 280°04'	1.1	4.00	+ 1°53'

60 -

12
DEC 28 1917

DEC 28 1917

52



P.M. - 1917

5-4

DEC 28 1917

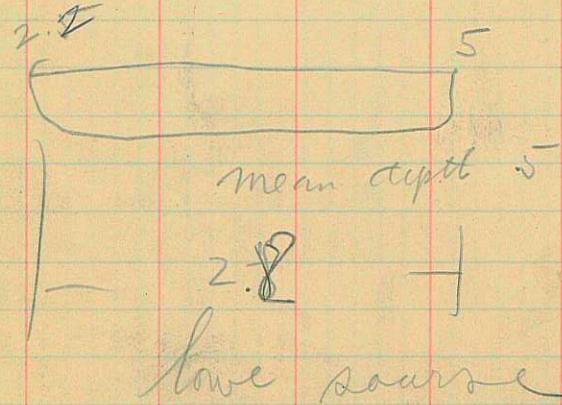
D 4 fence			
108	161°50'	3	5.5
107	47°20'	5	11.2
106	10°	3	6.85
105	359°	3	5.70
104	68°20'	3	8.1
103	80°50'	5	11.3
102	89°	5	11.8
101	91°	5	9.3
100	79°20'	4	8.3
M	112°	5	12.3
V 99	46°10'	3	5.95
D 98	24°30'	3	6.20
Dam 97	129°30'	4	5.33
fence			
96	230°17'	4	5.14
V 95	336°10'	4	6.85
D 94	303°37'	5	8.75
			+ 1°05'

True Rev Dept No

Dec 28, 1917

5	51	40	.5
	51	40	.5
3	51	40	.5

2 1/2 40 15 .5



West soil

56

East of House

DEC 28 1917

1 foot Black humus
2 sandy loam
3 clayey " "

gravel 4 1/2 water
rocky soil.

2.8
.5
1.4

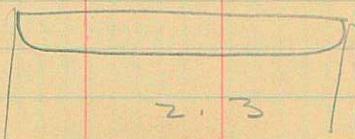
1.7
.4
6.8
1.7
2.3 8

2.30 cfs

Loftman & McCarthy

58

DEC 28 1917 water was on S side
St. to Loftman home



mean height
0.25

time Rev

46 1/2	40	1.89
48 1/2	50	2.24
49	50	2.22
		<u>31635</u> 2.11

DEC 28 1917

$$\begin{aligned}
 & + \left(\frac{2.3}{.5} \right) 7 \\
 & 2.11 = 5 \\
 & .57 = a \\
 & \cancel{1+77} \\
 & \cancel{1+55} \\
 & \cancel{1.05} \\
 & \cancel{1.20} \\
 & 1.30 \text{ cfs}
 \end{aligned}$$

OB on #1

Dec 29-17

dy VL th

Wanted
Chart

$330^{\circ} 12' + 19^{\circ} 37' = 10:35\text{A.M.}$

$331^{\circ} 18' + 19^{\circ} 17' = 10:37$

$\frac{330^{\circ} 45'}{19^{\circ} 27'}$

$331^{\circ} 02' 19^{\circ} 56' = 10:38$

$331^{\circ} 50' 19^{\circ} 30' = 10:39$

$\frac{-331^{\circ} 26'}{19^{\circ} 43'}$

$331^{\circ} 05' 19^{\circ} 35'$

#1

$\frac{54^{\circ} 6' \quad 50^{\circ} 8' \quad 1}{75^{\circ} \quad 13^{\circ} 1'}$

$n 85^{\circ} 50' E$

$\frac{app. \quad 81^{\circ} 0'}{59^{\circ} 14' 9.1'}$

Sta. 1

$\leftarrow 153.4$

\rightarrow

Survey for Franklin
Handy & Woodward

am 5^o 10'

+ 07 27 0

7 27 0

$\frac{58^{\circ} 16'}{78.887^{\circ}}$

$\frac{245}{546}$

$\frac{14^{\circ} 70'}{98^{\circ} 0}$

$\frac{1225}{133.77^{\circ}}$

$\frac{133.77^{\circ}}{133.77^{\circ}}$

$\frac{54^{\circ} 2}{96}$

$\frac{3276}{4914}$

$\frac{524.16}{810}$

$\frac{133.77^{\circ}}{133.77^{\circ}}$

$13^{\circ} 1$

$\frac{17}{17^{\circ} 3}$

$\varphi = 42^{\circ} 0' L^{\pm}$

True bearing
 $S 28^{\circ} 08' E$

- 47' for ad
az

Levels near Maple Creek for
Woodward to Handy

34°

390

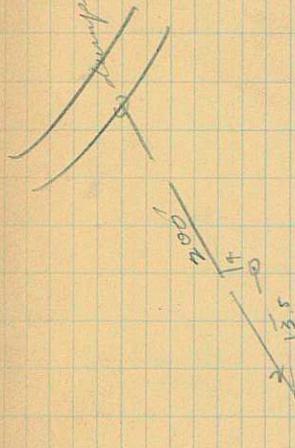
4.00 at T

4.05

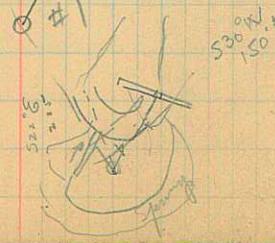
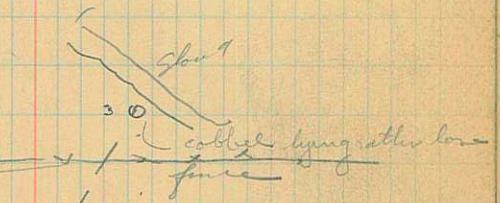
60

62

Cut
Limestone



(Tp 16 S 40 E)



Sprgs	$139^{\circ} 41'$		
line of cuesta	$138^{\circ} 41'$	+35'	
stone 200 ft	$28^{\circ} 14'$		
v	318°		
	6		
	4		
		8	
			11.80
			7.5
			7.35

1-

65

Grd FS BS

cut Grd

4.10 3.10

 5.25
 $.15$ $1 - 5.90$ $2 - 5.55$ $2 - 5.70$ $3 - 5.85$

60°

6.15

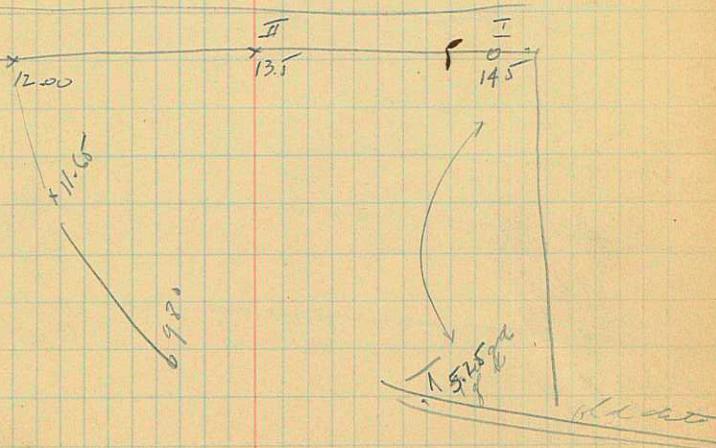
1.00

1.00

70°

7.20

8.1



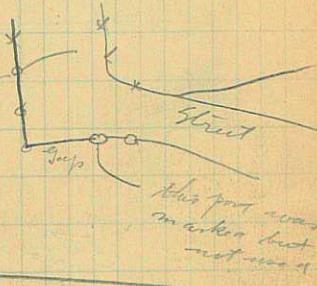
66

	Grid R.R.	Surface R.R.	Cut	RR	F.S. BS.
0 0 0	5.78	4.78			
1	5.93	4.93	2.00	3.9	
2 +00	6.08		7"	5.5	
3	6.23		0.33 = 10"	5.4	5.4 668
					<u>5.4</u>
3	7.510				<u>7.51</u>
+	7.66		7"	7.05	<u>7.66</u>
5	7.81		1-2"	6.65	<u>7.81</u>
5 +10	7.96		1-	6.92	<u>7.96</u>
					5.61
					<u>5.61</u>

Lateral goes SW from here ~~XW~~

on BM see sketch

BM on
not in this post
3' 9" above ground



Rumbold 230 R 4

Bonita Rd
Pebble

$\frac{1}{2}$ time distance 13'
9.00 area of cross sec

$$\begin{array}{r} 13 \text{ d } 8.5 \\ 8.5 \\ \hline 4.50 \\ 4.25 \\ \hline 2.0 \end{array}$$

$$\begin{array}{r} 12 \\ 9 \\ \hline 10.8 \end{array}$$

$$\begin{array}{r} 23 \\ 44 \\ 31 \\ 98 \\ \hline 7 \end{array} \quad \begin{array}{r} 23 \\ 44 \\ 31 \\ 60.1 \\ \hline 1.07 \end{array} \quad 15521$$

$$\begin{array}{r} 60.1 \text{ } 1.07 \\ 535 \text{ } 56.1 \\ \hline 660 \text{ } 1.07 \end{array}$$

$$56 = c$$

$$\begin{array}{r} 1.12 \\ .622 \\ 224 \\ 224 \\ \hline .02464 \end{array}$$

$$\text{When } S = 0.0002$$

$$\begin{array}{r} 23 \\ 7.75 \\ \hline 30.75 \\ .02 \\ \hline .6150 \\ .521 \\ \hline 1.167 \end{array} \quad \begin{array}{r} 0002 \\ 1 \\ \hline 100 \\ 96 \\ \hline .0166 \end{array} \quad V = 0.896 \quad \begin{array}{r} 846 \\ 896 \end{array}$$

~~$$\begin{array}{r} 528 \\ 505 \\ \hline 2640 \end{array}$$~~

$$\begin{array}{r} 5280 \\ 505 \\ \hline 2640 \end{array}$$

$$\begin{array}{r} 4 \\ 2 \\ 1 \\ 3 \\ + \\ \hline 12.0 \end{array}$$

~~$$\begin{array}{r} 1.42 \\ 2.62 \\ 2.2 \\ 5.6 \\ 1.6 \\ \hline 12.0 \end{array}$$~~

$$\begin{array}{r} 12.0 \\ 96 \\ 12.00 \\ 96 \\ 240 \\ 192 \\ \hline 48.0 \\ 48.0 \end{array}$$

$$\begin{array}{r} 1.25 = \sqrt{ } \\ 1.12 - \sqrt{ } \\ \hline \end{array}$$

$$\begin{array}{r} 1.25 \\ 1.12 \\ \hline 2.37 \\ 400 \end{array}$$

$$\begin{array}{r} 1000 \text{ } 1.0225 \\ 900 \text{ } 44 \\ \hline 100 \end{array}$$

$$\begin{array}{r} 100150 \text{ } 1.0005 \\ 15 \text{ } 31 \\ \hline 05 \text{ } 0.0005 \\ 5 \text{ } 0.00155 \\ \hline 0.00155 \end{array}$$

$$\begin{array}{r} 110225 \text{ } 1.12 \\ 112 \text{ } .02 \\ \hline 1.25 \end{array}$$

$$\begin{array}{r} 26 \\ .02 \\ .52 \\ 55 \\ \hline 1.07 \end{array} \quad \begin{array}{r} 0005 \text{ } 1.022 \\ 4 \\ \hline 100 \end{array}$$

$$\text{When } S = 0.0002 \quad \begin{array}{r} 23 \\ 44 \\ 7.75 \\ \hline 94.75 \end{array}$$

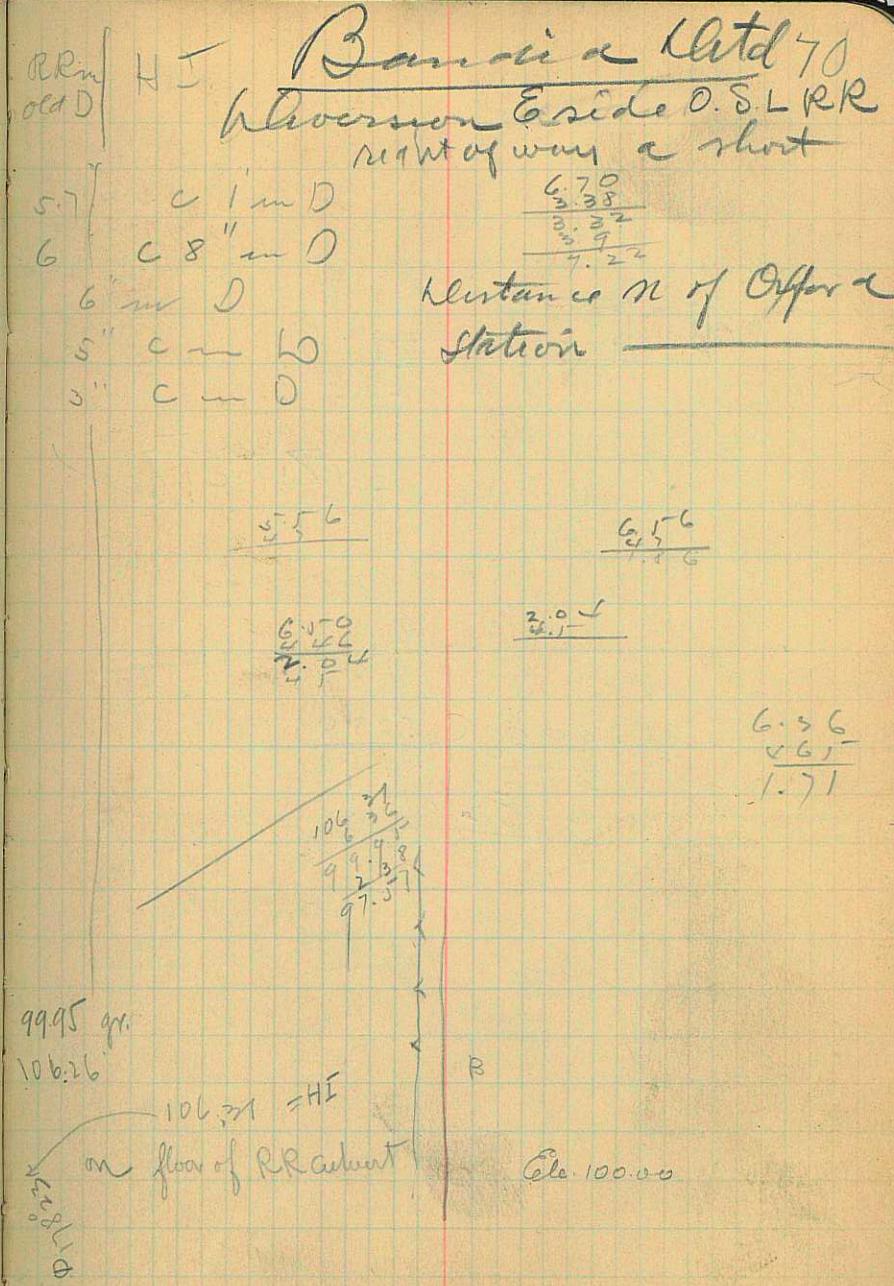
$$\begin{array}{r} 100150 \text{ } 0.0002 \\ 15 \text{ } 7.75 \\ \hline 10 \end{array}$$

$$117$$

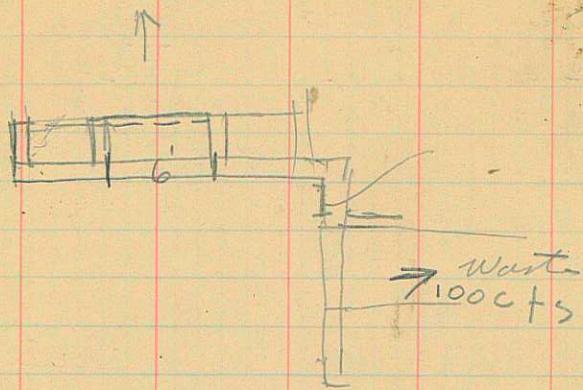
$$\begin{array}{r} 7475 \text{ } 1.17 \\ 702 \text{ } 64 \\ \hline 455 \\ 268 \end{array} \quad C = 64$$

Ho	BS	FS	MN	measured from grn	Cut	
π 15					7.22	
15	3.90	3.38	4	6.70	2'-9"	
14			5	6.68	1'-8"	
13			5	6.66	1'-8"	
✓			5.1	6.65	1'-6"	
11			5.3	6.62	1'-3"	
10			6.3	6.60	c 3"	
9			6.0	6.58	c 7"	
8			4.7	6.56	c 11"	
7				6.54	✓	
	4.50	4.96		6.50	2.04	
2			5.2	6.50	1'-4"	
6			9.1	6.48	2'-6"	
5			5	6.46	1'-5"	
4			5.7	6.44	10"	
3			5.6	6.42	c 8"	
✓			4.7	6.40	1'-9"	
1			5.30	6.38	c 1.1	
0			4.65	6.36	c 1.7	
	0.05				on prop on Wall	
			5.10		1 of culvert	

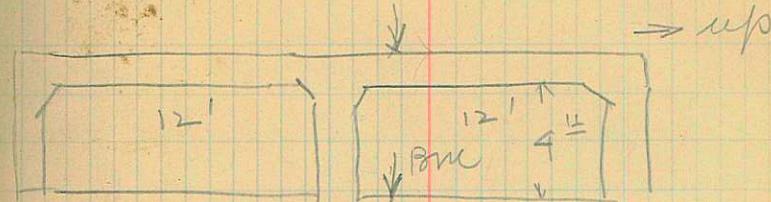
6.31



72

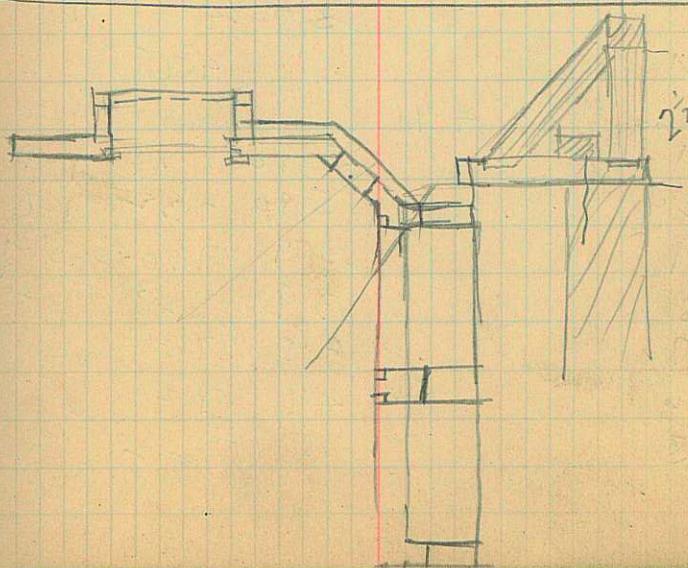


$$\begin{array}{r}
 1.000.000 \\
 - 528.0 \\
 \hline
 994.200 \\
 - 475.2 \\
 \hline
 528.0
 \end{array}$$



B.S	F.S	
631	446	
450	338	
390	491	
1491	1275	26.90
1275		27
101.96		.02
232		
104.28		
		99.95
		99.41

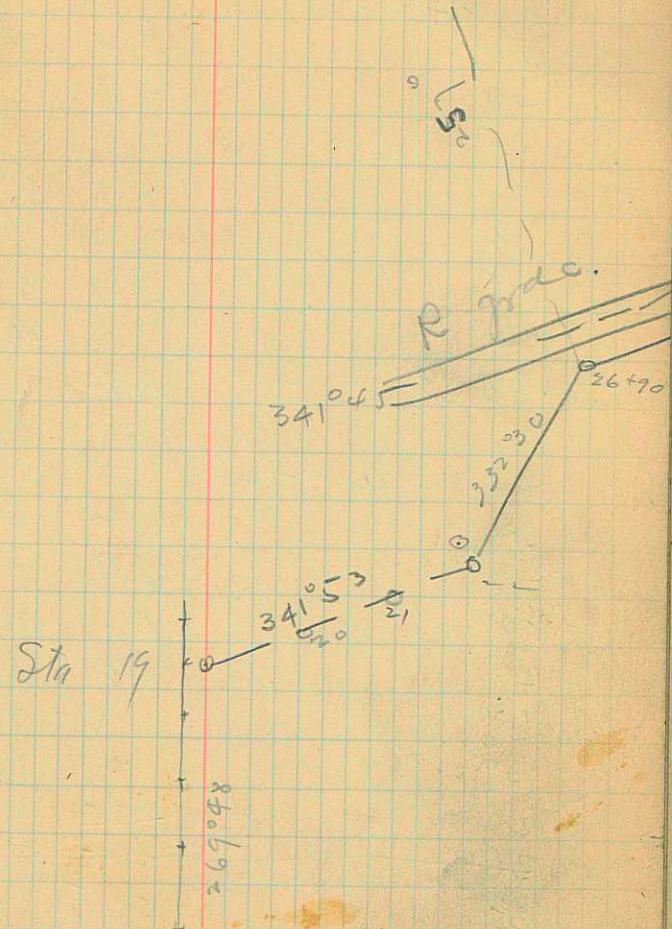
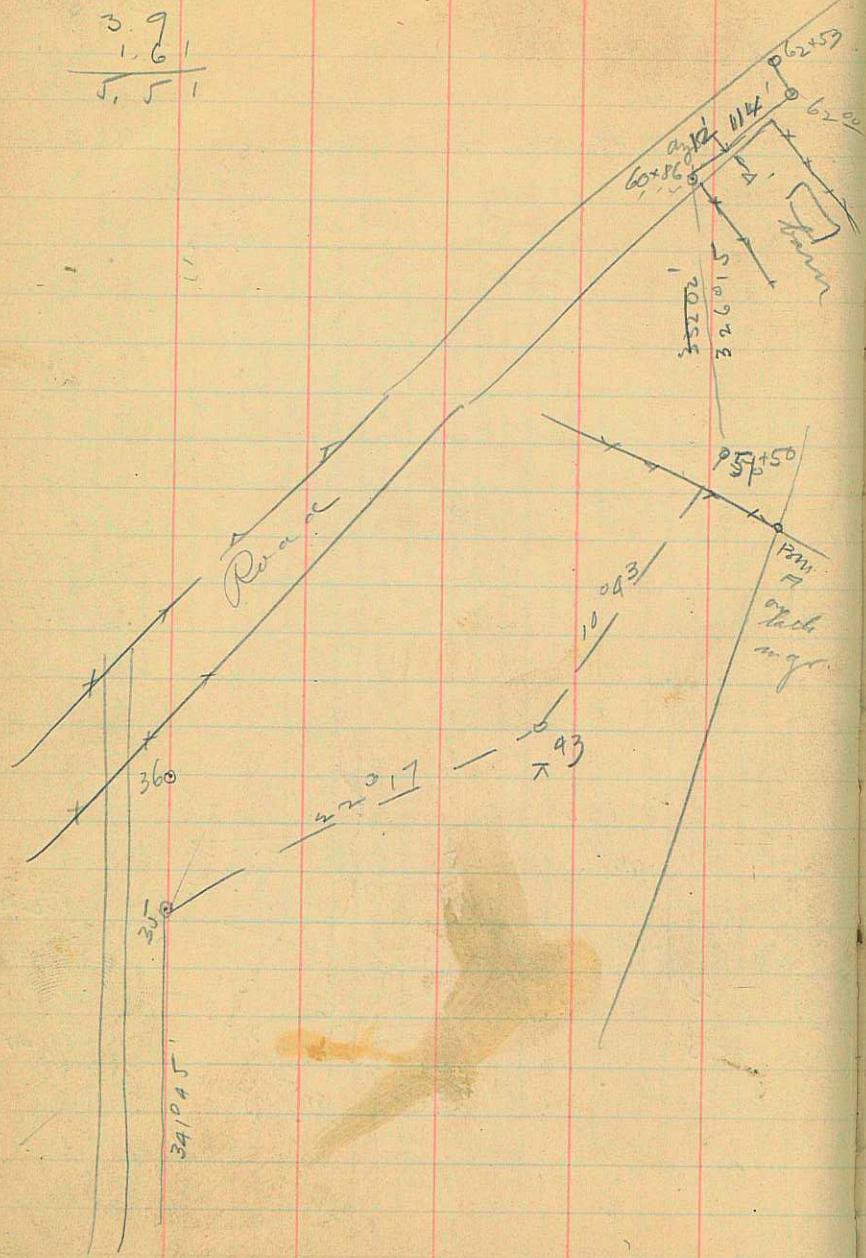
4.28
9.941
4.87



B.S.	F.S.	W.W.	R.R. or grd	cut by stake	W. D. R.R.	C. D. Ele	H.I.	7.3 5.2 2.1	7.3 3.4 1
32			7.01						
32	5.84	Top H. 3.80	4.97	1.17 C.80					
32			4.93	0.0.67					
31			4.4	4.95 7"					
30			4.9	4.93 grade					
29			5.1	4.91 ~"					
28			3.9	4.89 C.099					
T5	26+90		4.90	4.87 ✓	99.41	104.28 ✓			
26			5.1	4.85 F.4"					
25			4.50	4.83 C.4"					
24			3.75	4.81 C.8"					
23			4.25	4.79 0.5+					
22			3.7	4.77 1.1					
21				4.75					
	2.3 ✓ 4.91								
21			5.70	7.34 1.8					
20			5.80	7.32 1.6"					
19			3.9	7.30 3.7"	6.1	2.2"			
18			3.9	7.28 3.4	5.	2.3"			
17			4.4	7.26 2.8	5.8	1.46			
16			4.6	7.24 2.8	6.6	8"			
15				7.22					

180 12
90

(76)



(78)

	135	FS	mm	RR or grade	C" by stake	Ele	H I	
50				5.80				
	4.62	5.25			1.18 1'-3"	100.13	104.75	<u>4.62</u> 5.80
50			5.2	6.43	1.23			<u>5.43</u> 5.21
+9			4.9	6.41	1.51 1'-6"			<u>4.9</u> 6.1
48			5.2	6.39	1.19 1.2"			<u>6.2</u>
47			4.9	6.37	1.47 1'-6"			<u>6.1</u>
46			4.9	6.35	1.45 1'-5"			<u>5.1</u>
45			4.9	6.33	1.43 1'-1"			<u>5.1</u>
44			5.2	6.31	1.41 1.09			<u>1.7</u>
transit 043			5.2	6.29	1.48			
42				6.27				
42	4.66	top stn	5.60		1.61	100.72	105.38	<u>7.26</u> 7.61
42					0.79 C 10"			<u>6.86</u> 6.27
41			6.4	7.19	1.17			
40			6.	7.17	1.2"			
39			6.25	7.15	C 1			
38			6.1	7.13	C 1			
37			6.00	7.11	C 1-1" C 1.11			
36			4.75	7.09	C 2 1.99 2-4"			
36			4.75	7.09	C 2.32	7.09 F.99		<u>7.09</u> 7.34
35			5.25	7.07	C 1-10 C 1.82			
34			5.65	7.05	1.84 1.5"			
33			6.2	7.03	C 0.83 1.0"			
32				7.01				

(80)

BS FO

62 ⁺⁵³	4.6	5.72	1'-1"
62	4.9	5.70	1'-1"
60 ⁺⁶	4.3	5.67	1'-4"
		5.660	1'-3"
60		5.32	
61	<u>3.86</u>	<u>3.52</u>	4.20
60	4.3	6.00	1'-8"
59	4.5	5.98	1'-6"
58	4.80	5.96	1'-2"
57	4.65	5.94	1'-3"
56	4.8	5.92	1'-1"
55	5.18	5.90	1'-0"
54	5	5.88	1'-0"
53	4.92	5.86	1'-1"
52 ⁺⁰⁰	4.8	5.84	1'
A 51 ⁺⁵⁰	4.80	5.83	1'-0"
51	4.9	5.82	1'-1"
56	4.4	5.91	
55	4.62	5.89	1'-3"
54	4.75	5.87	1'-1"
53	4.2	5.86	1'-6"
52	4.1	5.84	1'-7"
51	4.2	5.82	1'-1"
50		5.80	

$$\frac{3.86}{5.66} \quad \frac{6.00}{5.32}$$

$$\frac{6.00}{5.32}$$

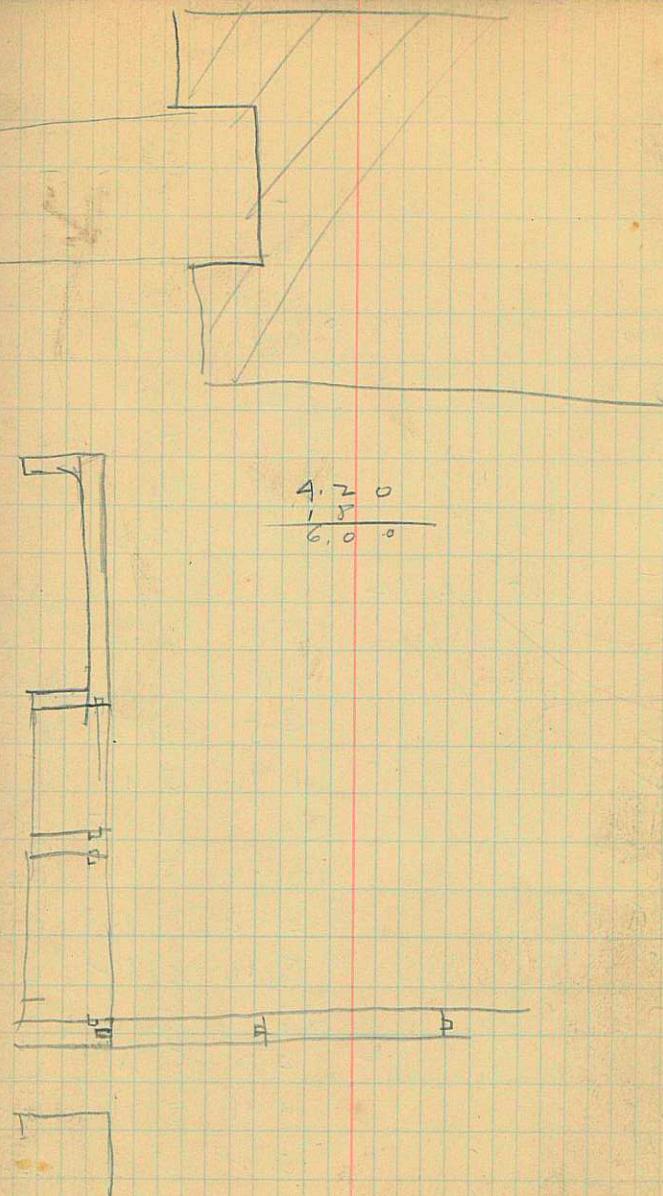
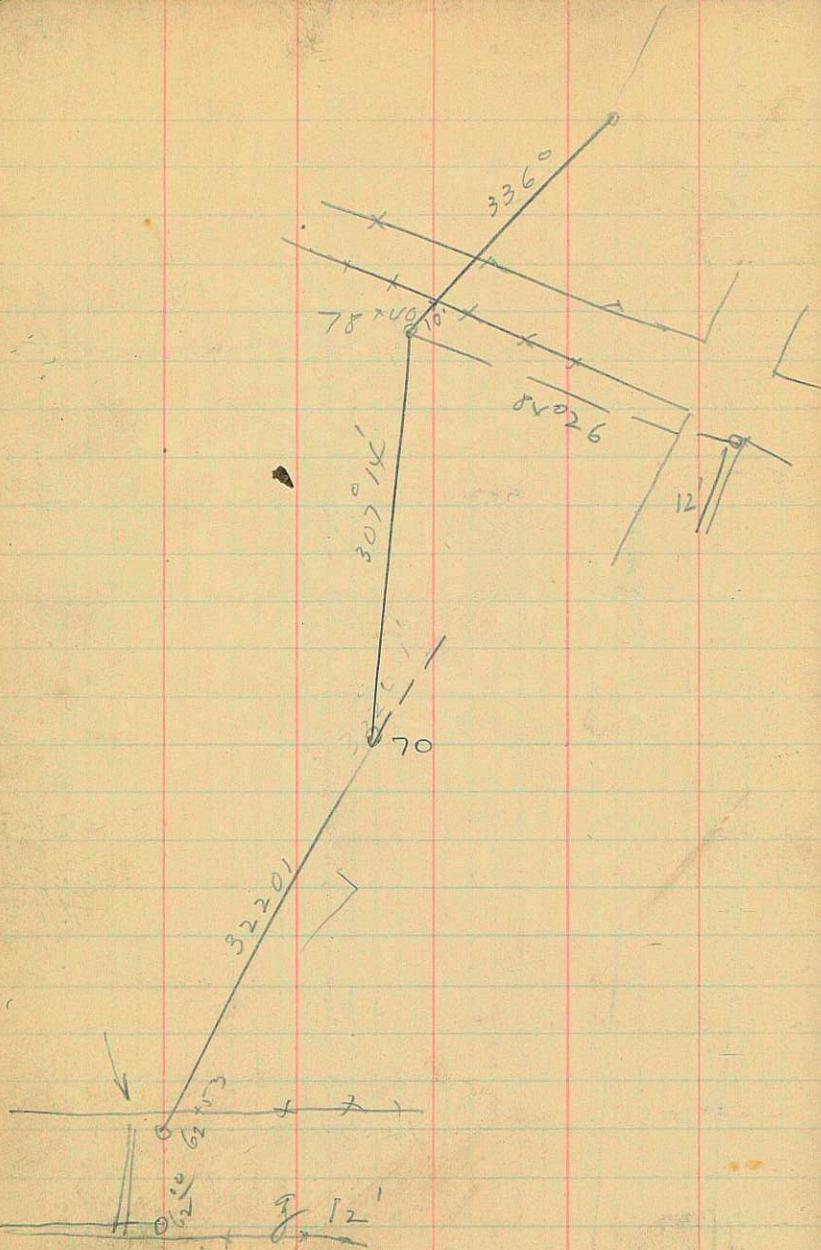
$$\frac{5.32}{4.31}$$

$$\frac{5.84}{4.27}$$

$$\frac{5.87}{4.27}$$

$$\frac{5.89}{4.27}$$

82



84

Ele 145

BS = 5			
82	4.4	5.86	1.46 1'-5"
81	4.4	5.84	1.44 1'-2"
80	4.6	5.82	1.3" 1'-3"
79	on road 3	9.80 0.00 4.80	16' 0.48 5.79
78+40			0.66 0.66 0.66
78	5.3	5.78	0.48 0.66 0.66
77	5.1	5.76	0.88
76	4.9	5.74	0.84
75		5.72	
75	4.68	4.92	
75	5.30	5.96	1.04 0.66 0.88
74	4.60	5.94	1.3" 1.4" 1.42
73	4.5	5.92	1.5" 1.5"
72	4.9	5.90	C 1' 0.88
71	5.00	5.88	0.11
A T 70	4.60	5.86	1.26 1.3" 1.14
69	4.70	5.84	0.12" 0.72
68	5.10	5.82	0.9" 0.80
67	5.00	5.80	0.10 1.08
66	4.7	5.78	C 1' 1" C 1' 6"
65	4.9	5.76	0.86 0.7" 0.54"
64	5.2	5.74	C 6"
63	5.3	5.72	0.82
62-53			

104.17 { 50' E of line mean 78+40
notch cut in spot 4' above ground

99.49 104.17

5.96
4.60
4.60
5.72

(86)

BS FS

101	4.7	6.17	1'-6"
100	4.6	6.15	1'-7"
99	4.8	6.13	1'-4"
98	5.25	6.11	c 11"
97	6.09		✓

3.97 3.16

97	3.9	5.28	1'-4"
96	4.3	5.26	c 1'
95	4.4	5.24	c 10"
94	4.1	5.22	1.-3"
93	4.2	5.20	c 1'
92	4.5	5.18	c 8"
91	4.7	5.16	c 6"
90	4.8	5.14	c 4"
89	4.9	5.12	c 3"
88	4.3	5.10	c 10"
87	3.60	5.08	1.-6"
86	3.60	5.06	1.-6"
85		5.04	

3.07 3.95

85	4.4	5.92	1'-6"
84	4.5	5.90	1.-4"
83	4.7	5.88	1.-18"
82		5.86	

Ele HI

100.13 104.10

$$\begin{array}{r} 5.28 \\ \hline 3.12 \\ 2.12 \\ \hline 3.97 \\ \hline 6.09 \end{array}$$

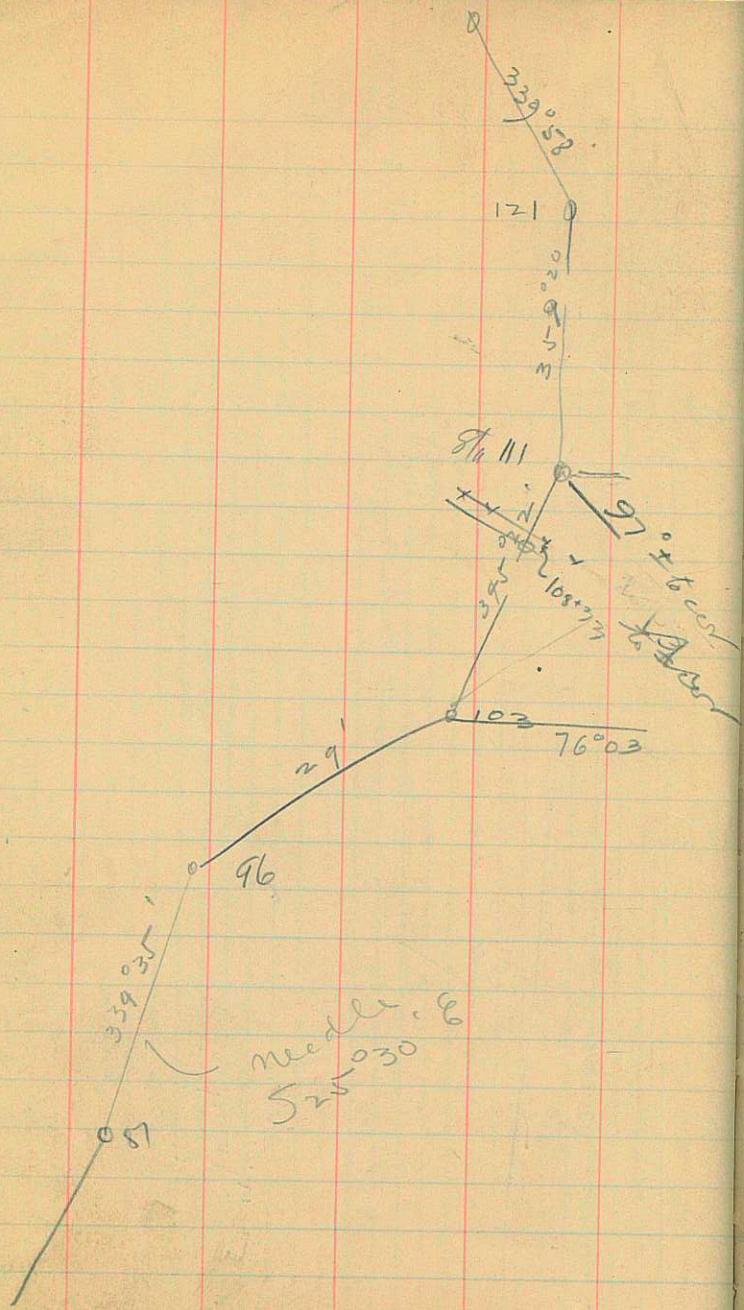
$$\begin{array}{r} 4.1 \\ 2.12 \\ 6.22 \\ \hline 6.09 \end{array}$$

$$\begin{array}{r} 5.96 \\ \hline 3.14 \end{array}$$

$$\begin{array}{r} 4.3 \\ \hline 6.21 \end{array}$$

$$\begin{array}{r} 5.92 \\ \hline 3.91 \\ 1.67 \\ \hline 5.0 \end{array}$$

6.1



88

BS	FS	
2 32 ✓	3 80	<u>100 7 2</u> ✓
5 84 ✓	5 60 ✓	<u>105 3 8</u> ✓
4 66 ✓	5 25 ✓	<u>5 2 5</u> ✓
4 62 ✓	4 30 ✓	<u>100 1 3</u> ✓
3 86 ✓	4 92 ✓	<u>104 7 5</u> ✓
4 68 ✓	3 95 ✓	<u>4 2 0</u> ✓
3 07 ✓	3 16 ✓	<u>100 5 5</u> ✓
3 97 ✓	4 74 ✓	<u>3 0 6</u> ✓
<u>4 91 ✓</u>	<u>4 97 ✓</u>	<u>104 4 1</u> ✓
<u>3 718</u>	<u>4 0 5 4</u> ✓	<u>99 4 9</u> ✓
<u>3 797</u>	<u>3 7 9 7</u>	<u>4 6 8</u> ✓
		<u>100 1 7</u> ✓
		<u>3 9 5</u> ✓
		<u>100 2 2</u> ✓
		<u>3 0 7</u> ✓
		<u>103 2 9</u> ✓
		<u>3 1 6</u> ✓
		<u>100 3 1 3</u> ✓
		<u>3 7 7</u> ✓
		<u>104 1 0</u> ✓
		<u>4 7 5</u> ✓
		<u>99 3 6</u> ✓
		<u>4 9 1</u> ✓
		<u>104 3 1</u> ✓
		<u>4 9 2</u> ✓
		<u>99 3 9</u> ✓
		<u>3 7 8</u> ✓
		<u>103 1 7</u> ✓

B S ✓ FS
3.78 ✓ 4.92

119			
118	5.5	6.74	1'-3"
117	5.6	6.72	1'-1"
116	5.4	6.70	1'-4"
115	5.25	6.68	1'-5"
114	5.15	6.66	1'-6"
113	5.50	6.64	1'-2"
	5.3	6.62	1'-4"
HL ⁺⁸⁰			
112 ⁺⁸⁰	4		2'-8"
112	5	6.60	1'-7"
111	5.3	6.58	1'-3"
110	5.4	6.56	1'-2"
109		6.540	

4.95 - 4.74

109	5.30	6.33	C1.00
108	5.2	6.31	C1'11"
107	5.7	6.29	C8"
106	5.6	6.27	C11"
105	5.3	6.25	C1'
104	5.1	6.23	C1'-1"
103	5.	6.21	1'-2"
102	4.6	6.19	1'-7"
101		6.17	

Eee | 165 |
9939 | 103.17 |

6.74
4.92
1.82
3.78
560

This H-T corner
even with roof
of Edgarton road
intersection

668
F. 243
G. G.G
F. F.F

on old R.R. grade

1.28
4 P
6.0 P
6.20
6.7

9936 104.31

6.33
4.74
1.59
4.81
6.54

	BS 4.88	FS 4.87	ML	
139			5.5	6.33 1.460"
138			5.5	6.31 10"
137			5.6	6.29 C9"
136			4.8	6.27 1'-6"
135			5.1	6.25 1-2"
134			5.1	6.23 1-1"
133			5.1	6.21 1-1"
132			4.9	6.19 1-3"
131			4.7	6.17 1-6"
Pmc			4.75	
△ 130			5.	6.15 1-2
129			5.2	6.13 C1
128				6.11
	4.31	3.98		1.800
128			4.80	5.78 C1'
127			4.85	5.76 "
126			4.8	5.74 C1"
125			4.60	5.72 1-1"
124			4.70	5.70 C1'
123			4.5	5.68 1.18 1-2"
122			4.75	5.66 C11"
△ 121			4.70	5.64 C1'
120			4.70	5.62 C1'
119				5.60

Ele HI
98.63 103.51
6.27
6.37

6.23
4.88
1.46
4.88
6.37

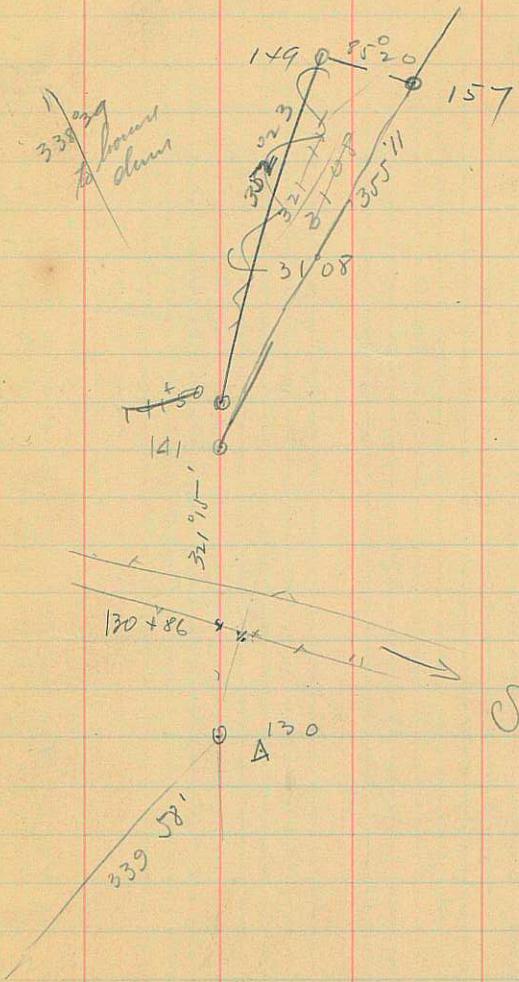
92
 $\frac{4.66}{5.50}$ 103.17
 $\frac{4.66}{5.50}$ 5.60
 97.57
 119
 $\frac{2.38}{9.75}$
 97.57
 99.95
 $\frac{4.15}{5.75}$
 6.1
 $\frac{103.50}{9.75}$
 98.75

about 30' ML of 130 + 86 by post

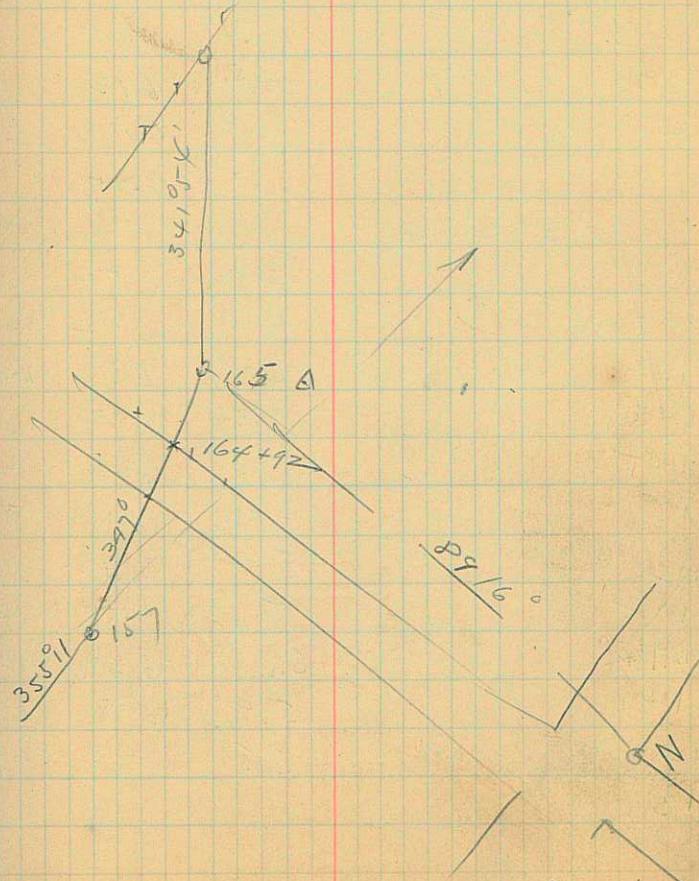
99.19 103.50 1.800
~~99.19 103.50 1.800~~
~~6.11~~

5.66
~~5.66~~

HI comes on top
of RR bedrock



S



96

6.30

Ele HF

BS FS in

150

4.8 6.29 1'-6"

149

5.3 6.27 1' C

148

5.2 6.25 C 1'

147

5.3 6.23 C 1'

146

5.2 6.21 C 1'

145

5.3 6.19 C 11"

6.39
0.89

144

4.6 6.17 1'-6"

6.27
0.76
6.116.39
5.79

143

5.1 6.15 C 1'

5.9

142

~~5.1~~ 6.13 C 1'

141

6.11 C 1'

149

6.27

6.54
4.10
2.47
3.83
6.27

3.83 4.10

2.45 99.41 103.24

149

4.8 6.54 1'-9"

148

4.9 6.52 1'-7

147

4.7 6.50 1'-9"

146

4.80 6.48 1'-8"

145

5 6.46 1'-6"

144

4.9 6.44 1'-6"

A3

5.2 6.42 1'-3"

A2

5 6.40 1'-4"

D 144~~50~~

5.1 6.39 1'-3"

6.30
0.6

141

5.4 6.38 C 1'

140

5.5 6.36 C 11"

139

6.34

98)

	B.S	F.S	W.W.
170		4.8	5.89 1'-1"
169		4.6	5.87 1'-3"
168		4.6	5.85 1'3"
167		4.8	5.83 C1'C
166		4.6	5.81 1'2"
165		4.8	5.79 C1'
164		4.4	5.77 1'-4"
163		4.4	5.75 1'-4"
162		4.6	5.73 1.1"
161		4.80	5.71 11"
160		5.00	5.69 9"
159		5.00	5.67 9"
158		4.7	5.65 C1'
157			5.63

3.90 A.70

157		5.3	6.43 1-1"
156		5.2	6.41 1-2"
155		5.00	6.39 1-4"
154		5.00	6.37 1-4"
153		4.8	6.35 1-6"
152		4.7	6.33 1-7"
151		5.0	6.31 1-4"
150			6.29

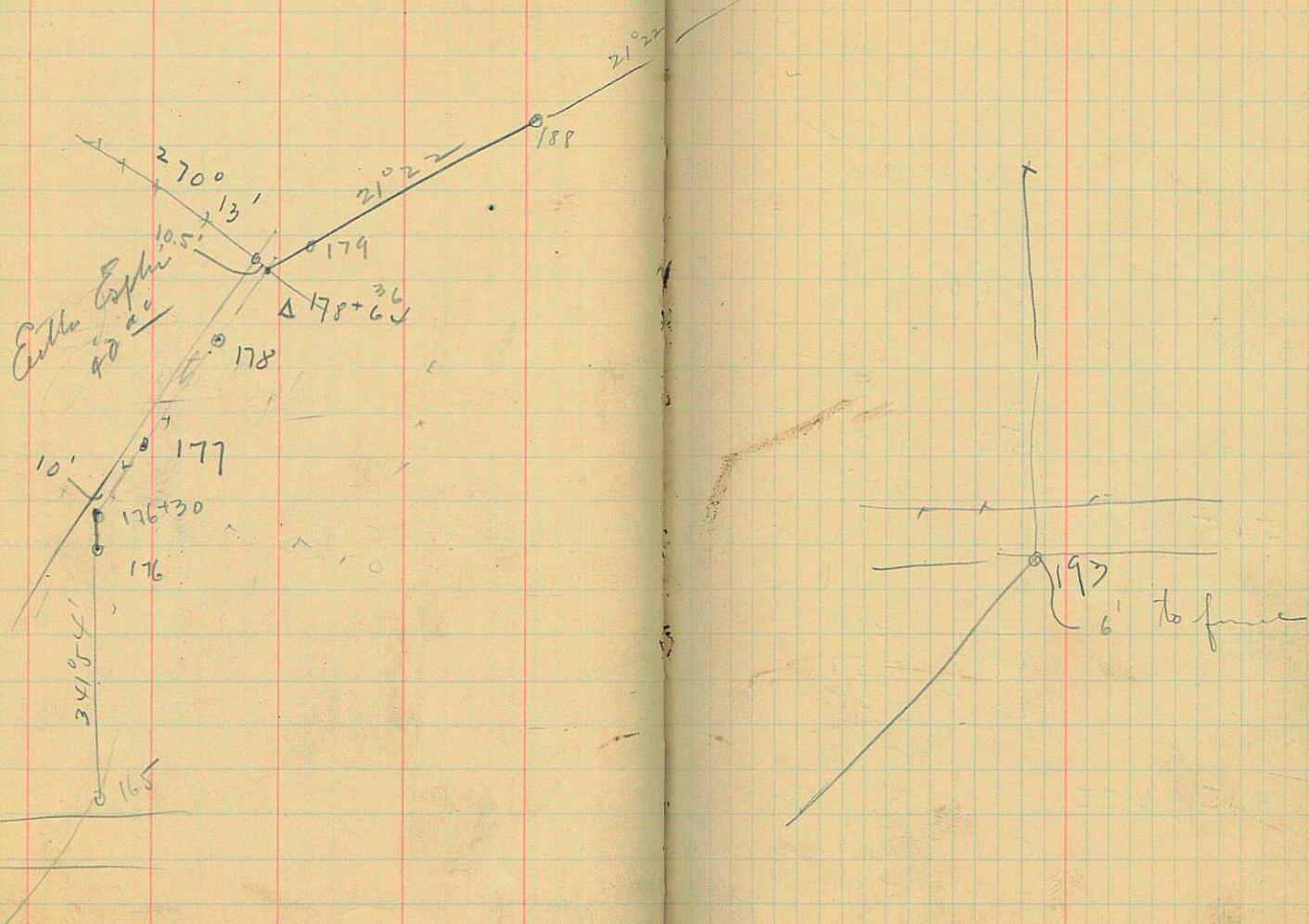
9854 ~~1.73 2.90 2.64 2.45 3.00~~~~1.73~~

5.50

$$\begin{array}{r} 6.00 \\ 4.8 \\ \hline 1.2 \end{array}$$

100

4.41



	BS	FS				
186			4.30	5.99	1-7"	
185				5.97		
			3.61	4.40		
185			5.30	6.76		
184			5.30	6.74	1-5"	
					1-4"	
183			5.31	6.72	1.37	
182			5.35	6.70	1.4"	
181			5.30	6.68	1-4	
180			5.30	6.66	1-4"	
179			5.3	6.64	1-4"	
178 ^{b4}			5.40	6.64	C 1-3"	
178			5.35	6.62	1..27	
177 ¹⁰⁰			5.50	6.60	C 1-1"	
176 ¹³⁰			5.58	6.58	C 1-1"	
176			6.58			
B.M.D.	5.05	4.08				
176			4.6	5.61	C 1	
175			4.6	5.59	C 1 C	
174			4.75	5.57	C 11"	
173			4.75	5.55	C 10"	
172				5.53		
	4.15	4.55				
172			5.1	5.93	C 10"	
171			4.80	5.91	1-1"	
170			4.80	5.89	1.1"	

2.360 9861 102.22

103.01
96.37

6.76
2.36
3.61
J.97

102

G 1
G P

E 1
E 2

BS	FS
5.61	5.41
5.05	5.53
4.53	5.98
5.05	6.78

BS	FS
5.10	3.78
9.31	3.98
4.15	4.87
4.05	4.10
3.83	4.70
3.90	4.55
3.45	4.08
2.485	2.628
2.485	2.80

1.43

BS	FS
17.2	19.39
3.52	1.43
3.52	9.96
4.08	4.08
10.2	10.204
5.67	5.67
9.95	10.204
3.12	9.643
3.12	9.552
9.6.61	10.00
9.5.61	0.0

135 FS

206
205

3.10 3.30

4. 6.86 2-10
6.84

3.74

9859 10269

205

3.7 7.04 3'-4"

204

4.3 7.02 2-8"

203

4.4 7.00 2-7"

202

4.5 6.98 2-6
2.26

201

4.7 6.96 2-3"

200

5.0 6.94

199

5.1 6.92 1.82
1.4

198

5.5 6.90 1-5"

197

5.3 6.88 1'-7"

196

5.0 6.86 1.86

195

4.4 6.84 2.5"

194

4.8 6.82 2

193

6.80

PNG Export 4.62 3.95

193

4.5 6.13 1-7

192

4.1 6.11 2

191

4.5 6.09 1-54

190

4.3 6.07 1-9"

189

4.6 6.05 1-5"

188

4.2 6.03 1-10

187

4.6 6.01 1-5"

186

5.99

193
188 50
2193
2600
1050
8100
2490
1.0
9600
2400

6.8

6.5
5.2

193
3.86

9995
386

9600

102
6.13

7.04
2.72
2.72
3.7
3.30

7.04
3.7
3.7
6.04

193
3.86

9995
386

9600

9827 10289

96.09 ✓ 6.13
2.118 - 2.62
6.00

7.3
6.48

BS FS

W.M.

Ran
last
Bar

cut

Etc 445

102.69
102.69
98.69

2 - 8.5

(106)

$$\begin{array}{r} 5.60 \\ 2.40 \\ 4.27 \\ \hline 6.67 \\ 5 \end{array}$$

2

3

2

#2 4.27 5.60
PMF pieg 3.90

550

800' 7.63
went
1050 1086.20677.49
77.49 101.76
X

99.19 103.09

$$\begin{array}{r} 8.0 \\ 5.60 \\ 2.4 \\ \hline 101.76 \\ 77.49 \\ \hline 24.27 \\ 101.76 \end{array}$$

99.19

103.09

74.27

101.76

#1

PMF 3.35

7.08 3.730

~~PMF~~ 3.60 3.75

215	4.7	7.04	2-4"
214	4.5	7.02	
213	4.5	7.00	2-6
212	4.60	6.98	2-4"
211	4.65	6.96	2-4
210	4.5	6.94	2-5
209	4.4	6.92	2.5~
208	4.6	6.90	2-3
207	4.2	6.88	2-8"
206		6.86	

(99.19)
 On Reg Bay last 400' S of 215

98.14 102.54

$$\begin{array}{r} 7.02 \\ 3.33 \\ 2.73 \\ \hline 102.54 \\ 99.19 \\ 3.55 \\ \hline 9.14 \end{array}$$

102.54

3.55

9.14

B.S. F.S. m Ele 14

C 9.28 2.40
b 6.38 1.500
a 5.15 3.22

MMF 485

3.20

114.53

108.45 117.73
104.47 110.85
100.82 105.97
100.82

99.19 104.04

place at Det. 955
place at here 955
400 or 500 feet N. of 215
levels from MMF to Mendota

↑ W
Melior's about
106
Reller's
Stone
d
8" → cement
point

2566 (OP)
103 2
15.3 4

250.0
125.0 99.95
220
15.0 99.75
10

114.53
124.53
124.78
25.72 22.0
10.4

366
3.35
99.95
97.55

99.19
485
104.04
3.22
100.82
5.15
105.97
1.5
106.47
5.38
110.85
108.45
9.22
117.73
104.04
105.97
100.82
99.19
104.04
400 or 500 feet N. of 215
levels from MMF to Mendota

Note room

BH

BS FS
4.10

Ele H-5
99.19 103.29

4.40 5.97*

97.32 101.72

4.30 4.09*

97.65 101.95

3.75

98.20

3.00 4.70

97.25 100.25

3.57* 4.97

95.28 98.85

4.38* 5.54°

93.31 97.69

7.27* 4.54

93.15 100.42

BSMC 8.40 1.69*

98.73 107.13

7.90 1.37*

105.76 113.66

14.5±

7.88 0.55

113.11 120.99

6.39 0.36*

120.63 127.02

0.02 12.85

114.17 114.19

61.67 466.1

98.27

101.95
3.68

110 91.20
103.25

QD peg 400' N.W. Alvarado str
219±

{ H-I comes on top H-H Allen
North & Environs water table

on peg by post B.M.C. near St. G. 193

99.19
410

103.22
5.97

97.32
4.60

101.72
4.07

93.31
4.38

97.65
4.30

100.32
98.75

1.67

97.69
4.50

97.25
4.70

97.27
4.42

100.42
99.50

101.95
4.97

97.25
4.30

97.27
4.70

100.42
99.50

101.95
4.97

97.25
4.70

97.27
4.70

H-I at fog of MTS Road

120.39
3.6

120.63
6.39

120.85
12.85

114.17
114.19

{ H-I 400 S + 200 W of
lower feet

127.02
12.85

114.19
114.19

B → F → m m Ele H ↓
61.61 46.61
5.02 12.74

m m b

4.80 6.47 100.00 104.80

6.000 0.800 104.00 110.00

1.73 1.06 108.94 110.67

6.41 7.68 102.99 109.40

x y 3.03 106.37
 4.02 6.90 102.50 106.52

4.97	5.66	100.86	105.83
94.56	87.92		
87.92	6.64		
106.25	7.50		
6.64	6.50		
99.61	6.30		
	0.00	106.52	
	2.2		
0.00	5.10		
0.00	0.00	top Culvert	

99.61 4.13 104.80
 106.31 4.25 104.80
 9.18 5.25

m. port

106.26 106.52
 6.64 5.62
 99.62 100.86
 9.18 9.91
 4.3 105.83

106.26 106.26
 6.00 5.62

109.60 102.99
 9.63 7.41
 106.37 109.40
 6.9 6.9
 102.50 106.52

(12) 106.47
 104.17
 2.36

114.19
 112.75
 101.45
 5.02

106.47
 6.47
 100.00
 4.80

106.25

105.83

99.62
 6.64

105.83

{ on stake east of field and N of borrow pit
 and between 3rd & 4th post in fence

{ bottom H. creek culvert
 about 50' S.E.
 on Water surface D. H. creek field
 Culvert floor
 on wall
 culvert roof

{ on peg by N fence near water
 for refuse to construction

BS 1Fs in Ele HI
my 9.92

106.37 116.29

106.37
9.92
116.29

(114)

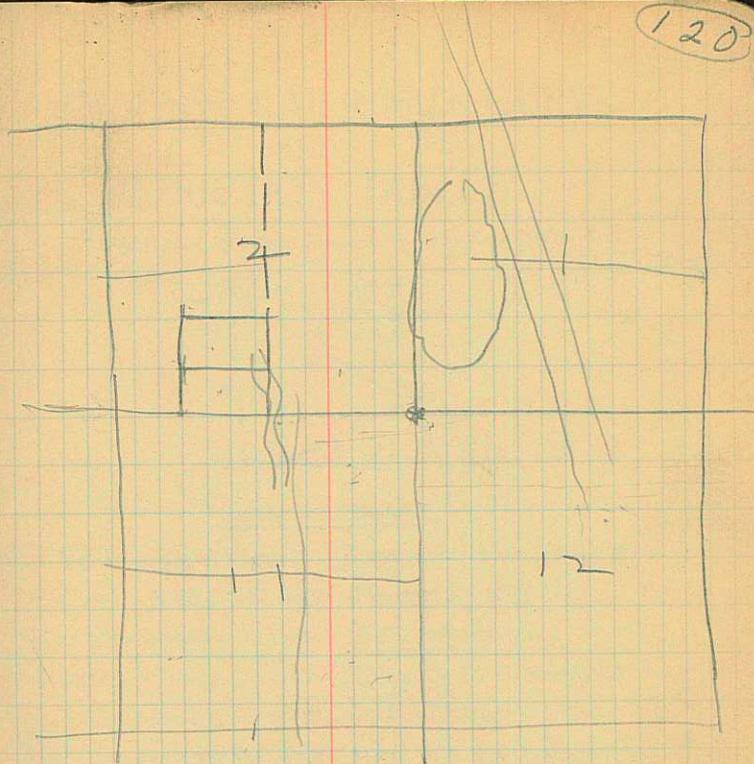
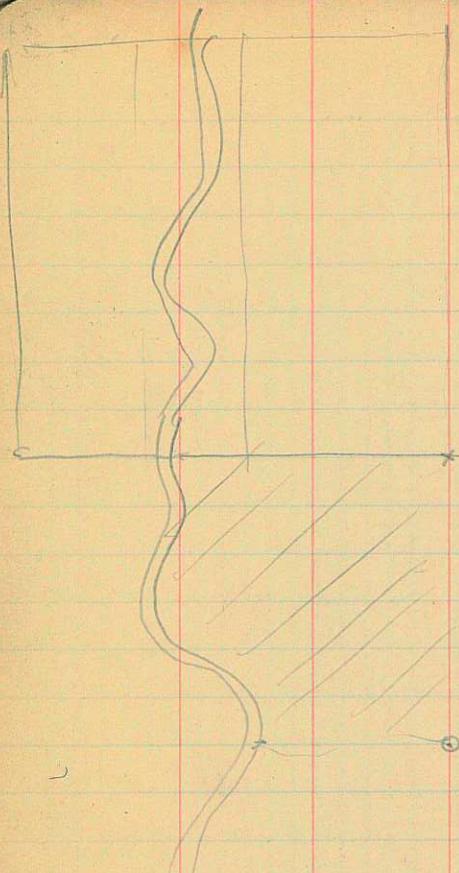
60' out of Cotton
40' overcut

106.26
6.65
99.62

09.19

106.26

120

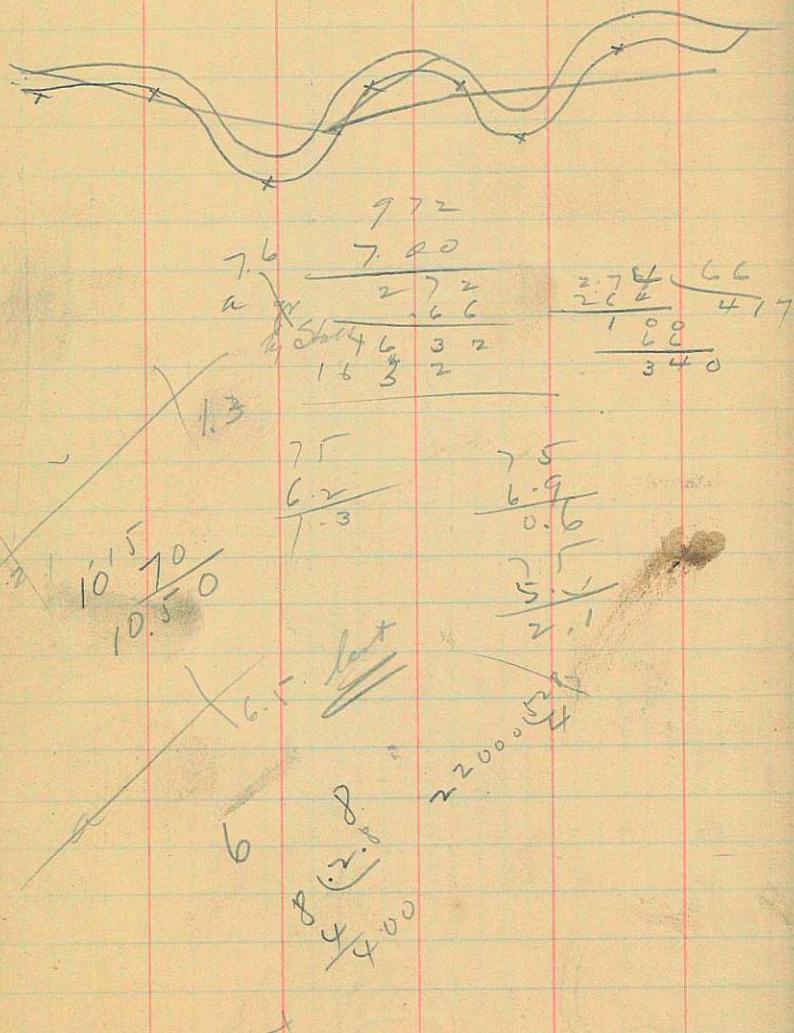


12

13

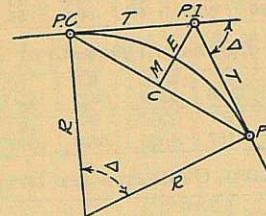
121

52° 20' N
1.0360



DIEZGEN'S RAILROAD CURVE AND REDUCTION TABLES

Copyright, 1914, by Eugene Dietzgen Co., New York City



CURVE FORMULAS

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

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

$$\text{Middle ordinate} = M = R(1 - \cos \frac{\Delta}{2}) \quad (5) = R \text{vers} \frac{\Delta}{2} \quad (6)$$

$$\text{External} = E = T \tan \frac{\Delta}{4} \quad (7) = R \cos \frac{\Delta}{2}(1 - \cos \frac{\Delta}{2}) \quad (8) = R \text{exsec} \frac{\Delta}{2} \quad (9)$$

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

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.—Sta. 161 + 60.35 to find Sta. of P. C. P. T. $\Delta=62^\circ 10'$ $D=8^\circ 20'$. From Table IV for 1° curve $T=1$ and $\frac{1}{2}8\frac{1}{3}=414.49$ ft. From Table V correction=.36 or $T=5$ ft. P. C.—Sta. P. I.—T=157 + 45.50. Also from (4) L=0 and P. T.—Sta. P. C. + L=164 + 91.50.

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

Deflections.—Deflection angle= $\frac{1}{2} D$ for 100 ft., $\frac{1}{4} D$ for 50 ft., For c ft.—(in minutes) $.3 \times C \times D^\circ$ or—defl. for 1 ft. from Table III. For Sta. 158 of above curve— $.3 \times 54.5 \times 8\frac{1}{3} = 136.2'$ or 2', or $=2.50 \times 54.5 = 136.2'$ from Table III. For Sta. 159 deflection= $2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$, etc.

Externals.—May be found in similar manner to tangents. Thus curve above is 91.37. For from Table IV for 1° curve $E=960.6$ $20'=960.6 \div 8\frac{1}{3}=91.27$ and from Table V correction=.10 or .37 ft. Or suppose $\Delta=32^\circ$ and E is measured and found to be What is D? From Table IV E=230.9 and $\div 42=5.5$ or D=