

4

#4

1009



ENGINEERS

FIELD BOOK

No. 434

1007

# EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and  
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

**Example**—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be  $30.6 + (20 - 16) \div 2$  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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1009

*Eugene Schaub*  
*Logan Utah*

*No Smithfield notes in  
this book*

*Indexed & checked*

*8/3/33*

*E. Schaub*

35.23  
3.33  
38.56

9.57  
7.57  
2.00

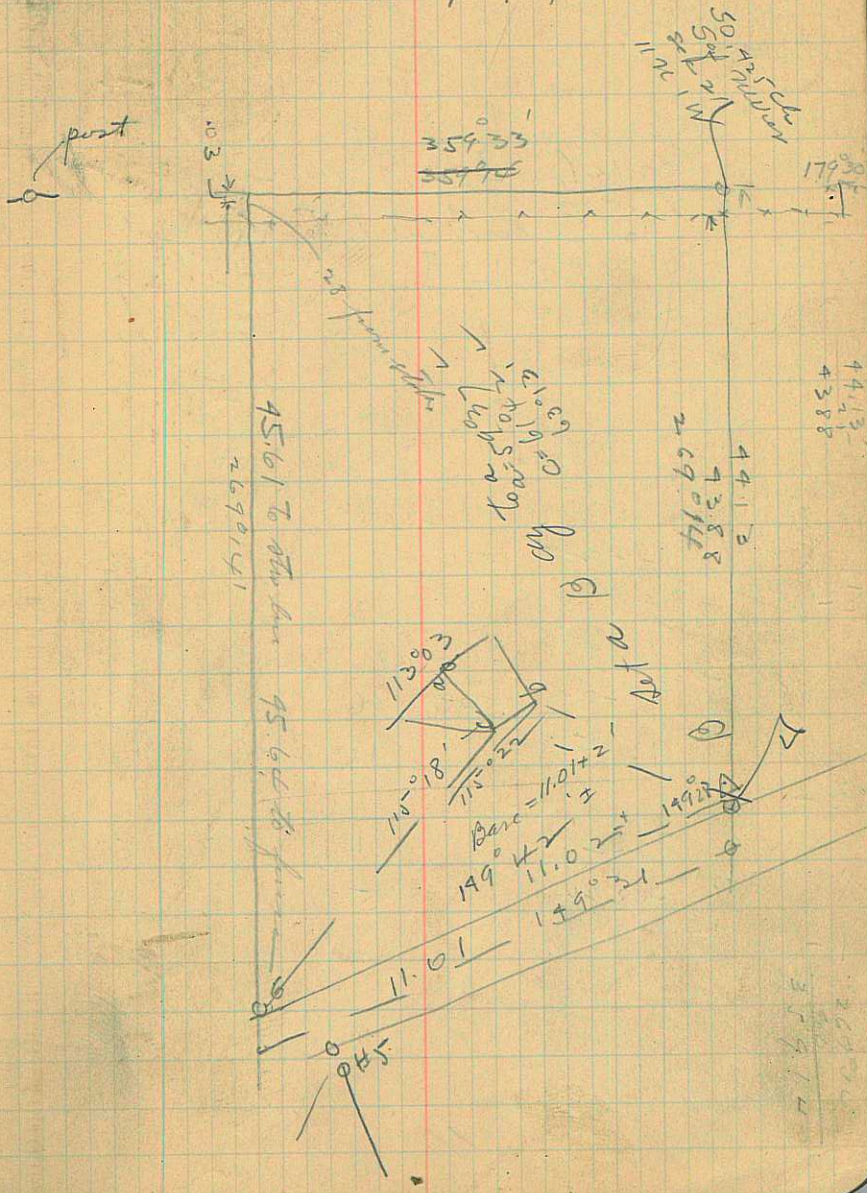
17960  
14942  
3018

log 9.575 0.981139  
log 3018 - 7.936210  
1.044929  
1.044929

47.28  
180  
3.29.28

Mr W. H. Warley  
Survey 2/1/18

100  
5.75  
4.25  
0.00  
0.00  
①



44.13  
43.88

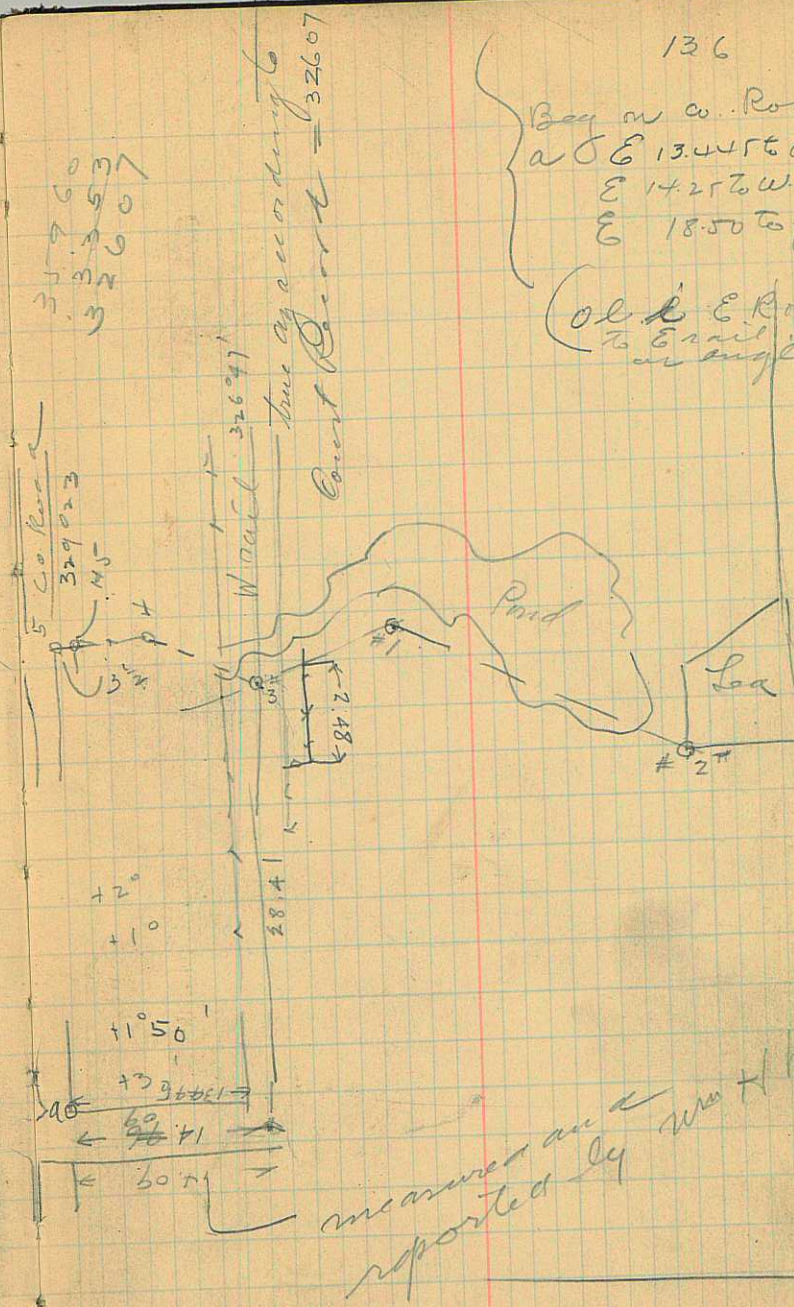
44.13  
7.285  
2.6914

35.914

Plan Dist. L C D

Note 4.28 from  
SE cor 21 to E rail  
of O L I

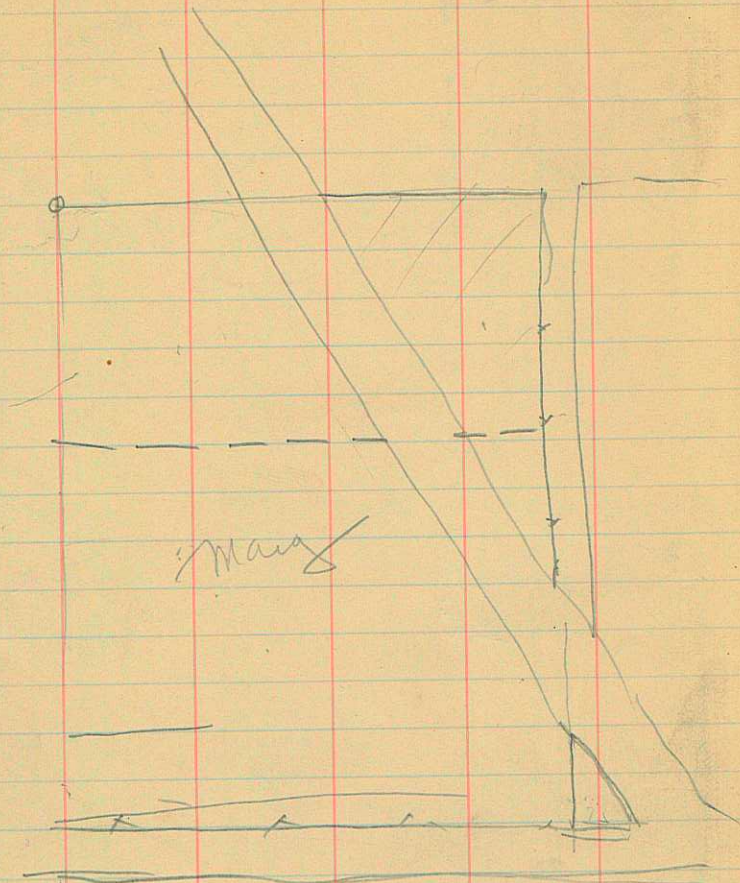
6	392	1.71	
5-			
	32697	OL E Rail	
5	78°20'	meas	6
		11.5906	
4	93°25'		10
3-			
3	79°52'		1
			5.90
2	308°20'		5
			13.20
1-			



Bay on Co. Road at  
a/c E 13.44 to O L I Rail  
E 14.25 to W rail  
E 18.50 to post  
Old E Rail to E rail 1535  
as angle

measured and reported by W. H. Darley

SE cor 21

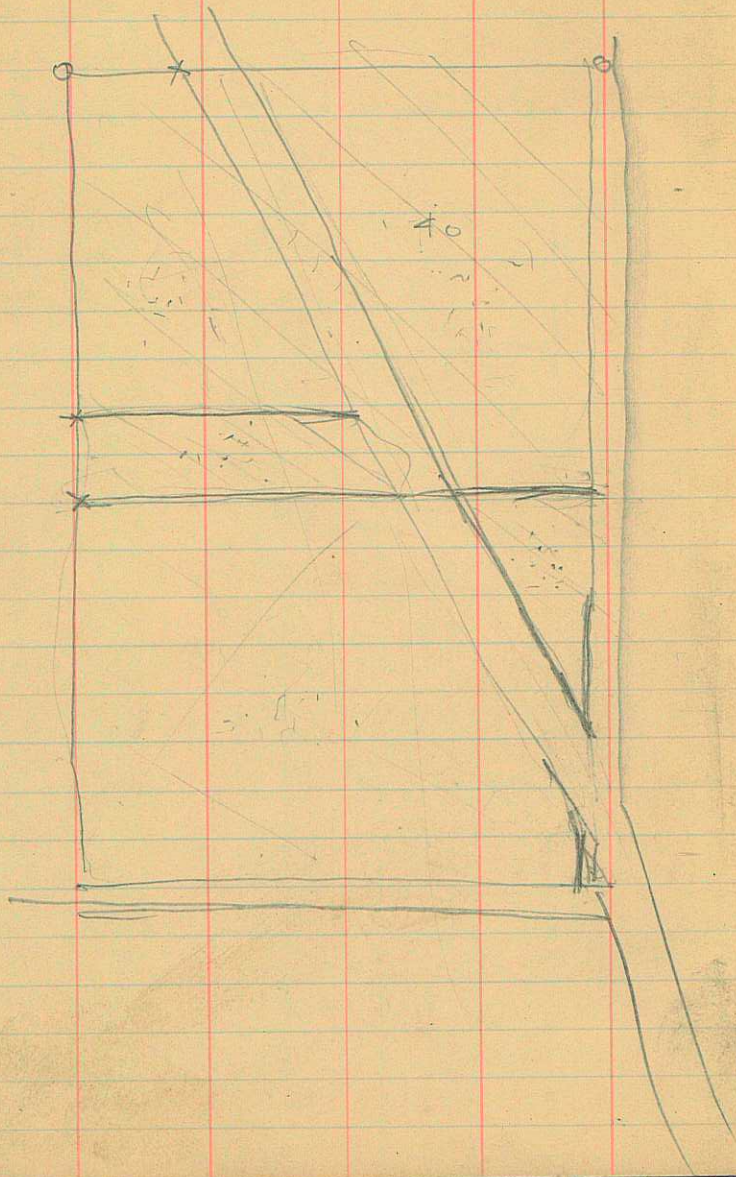


18.75  
~~14.30~~  
 4.46

14.25  
 14.29

276	66
264	478
178	
540	
128	

Porkman



2/4/18  
 Obon or near W<sup>a</sup> ...

271°47'

68  
 1.58  
 11.60

91

any

20°53 29°53 2:00P 10

21°57 29°13

21°25 29°33

21°42 29°40

22°42 29°03

22°12 29°230"

21°4330" 29°2715"

15410  
 180  
 3341

Z = 60°34 20 *inadeq*

Q = 41 39 20

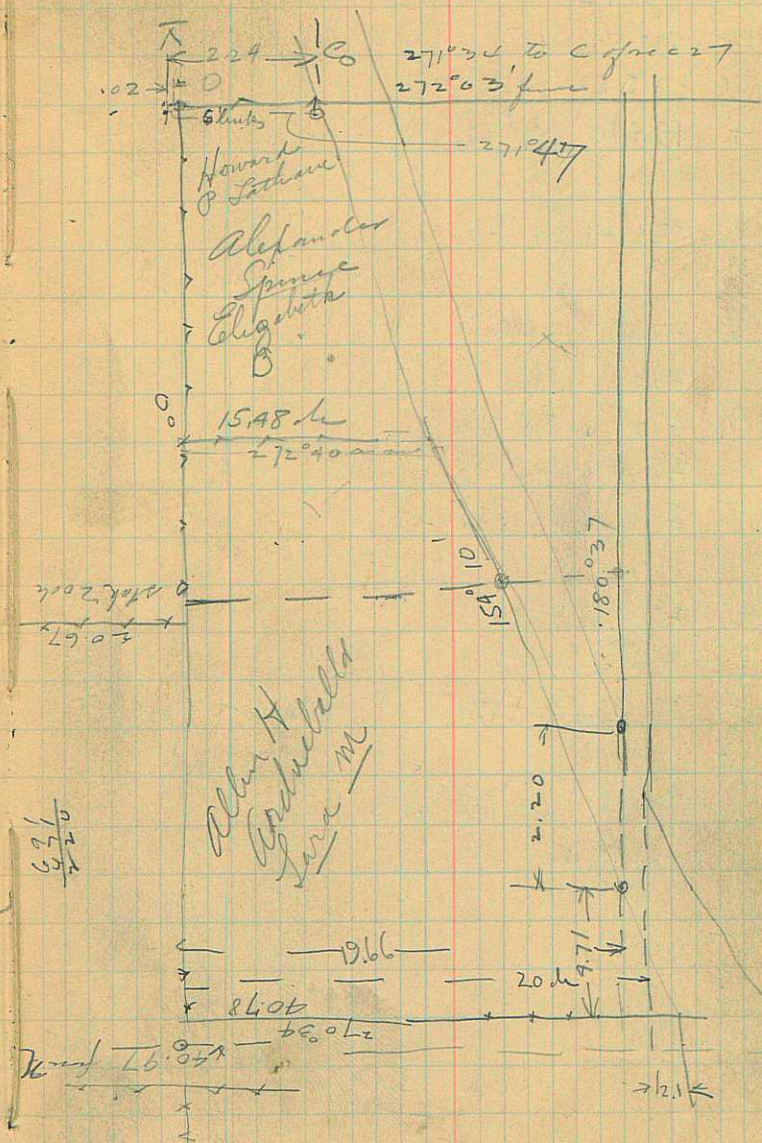
L = 16 17 20

Feb = reported by AH diameter 1622.345  
 hour = 20052

2 1 1 1 1  
 40 8 4  
 9 20 1  
 10 7  
 5 20 10

9 1  
 7 28 7  
 9 20 7  
 9 20 10

16  
 81  
 610 229  
 0 6 5  
 0 6 5  
 6 81  
 99 0 3 21

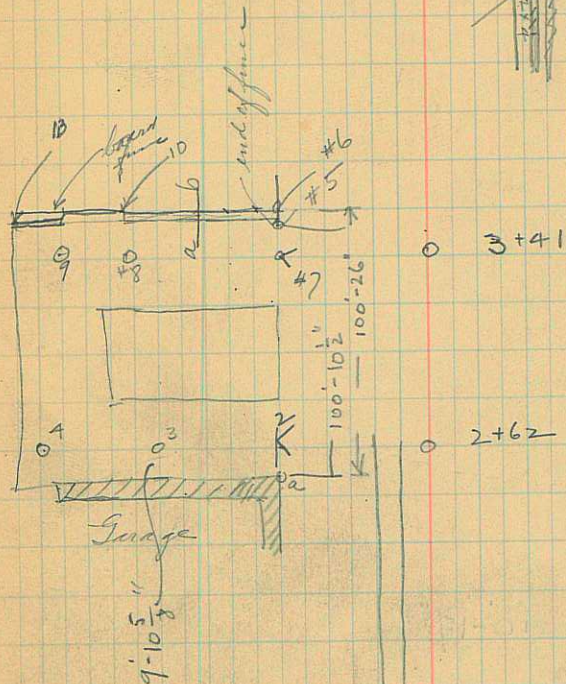
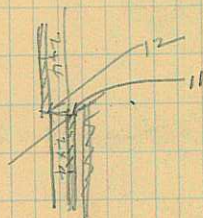


621  
 220

966  
 20 4971  
 270°42  
 150.97  
 124

R	Point	Angle	Dist	feet
	13	$297^{\circ}13'$	25.25	
	12	$325^{\circ}57'$	15	
	11	$325^{\circ}57'$	14.1'	
	4	$89^{\circ}10'$	$81^{\frac{1}{2}}$	$62''$
9-	10	$357^{\circ}21'$	13'-00	
8-	9	270	266	
	8	270	166	
	7	$270^{\circ}$	$58^{\circ}8\frac{3}{16}''$	
	6	$281^{\circ}48'$	$63-8\frac{1}{8}''$	
	5	$280^{\circ}38'$	$63-6\frac{5}{8}''$	✓
3+41-	4	270	286	
	3	$270^{\circ}$	200	
	2	270	$62-8\frac{5}{16}''$	edge of pipe
	w	$260^{\circ}48'$	$63-5\frac{7}{8}''$	$+1^{\circ}30'$
2+62				
2+62	00			
1-				

Feb. 8-1918  
 Survey for Victor Ammissionen  
 1507 Walker Bank Bldg  
 July Lake City



3+41

2+62

1 min. + main center



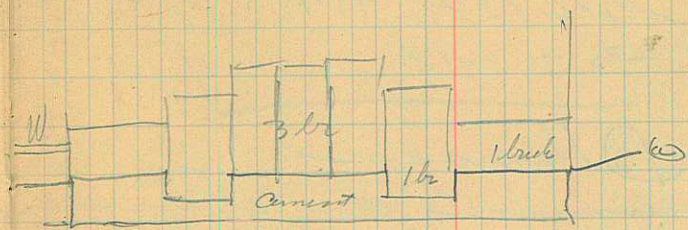
2 - 179°37' 10'-15/8"

16 198°12' 10.15

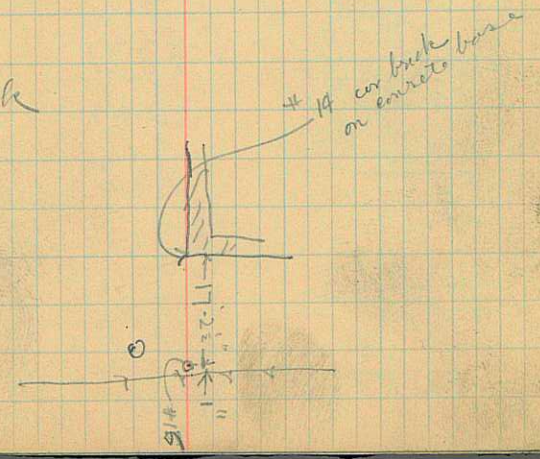
15 270° 3'-3"

19 124°33' 17.06

4 -



To brick



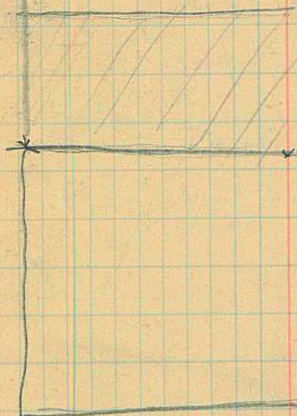


15

16



117



17

22 - 8" board for  
E side

17 - 2 3/4" S E or garage to  
nail in for

104 - 2 1/2" to W side at S rail

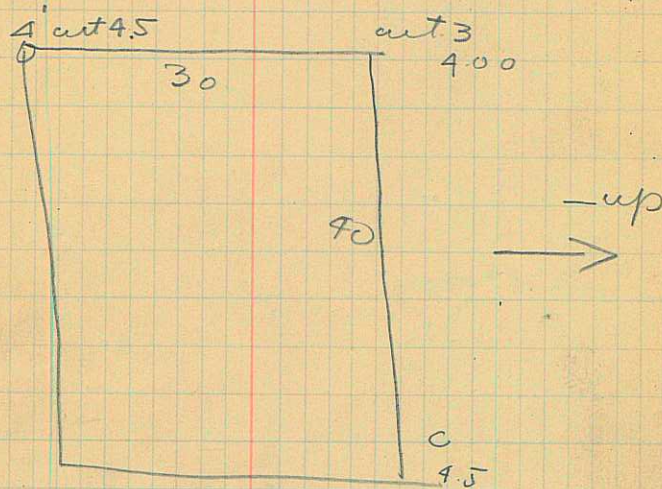
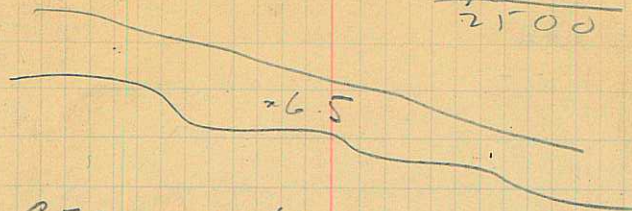
104 - 3 1/2" to west edge pocket

104 - 4 1/4" to tie part

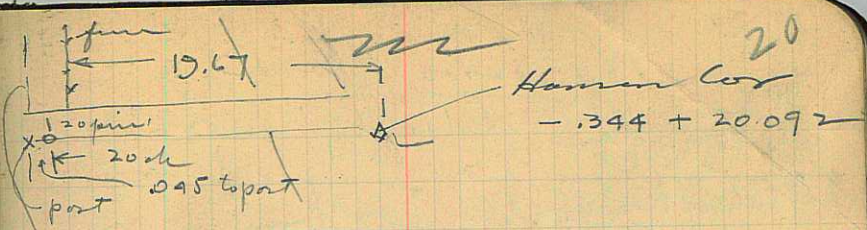
1 1/2" further in

900  
1600  
2500

18



19



old fence ed have been here

NS 9021 E  
NW Cor 34

Wagon H<sub>2</sub>O  
 Estimate Study up  
 Blacksmith Fork

11	19	<sup>Small</sup> 68° E	+28° 20	L	C	U	9	11.2
	10						249° 30'	
	9	9	259° 51'	+55'	3			11.5
	8	8	302° 16'	-16'		5		11.1
	6-							
	7	6	136° 30' E	+13° 04'	1.0			5.7
		6	228° 34'	+2°		1.4		17.00
	5-							
			159° 55'					
			241° 45'					
	5							
		5	201° 45'					
	4							

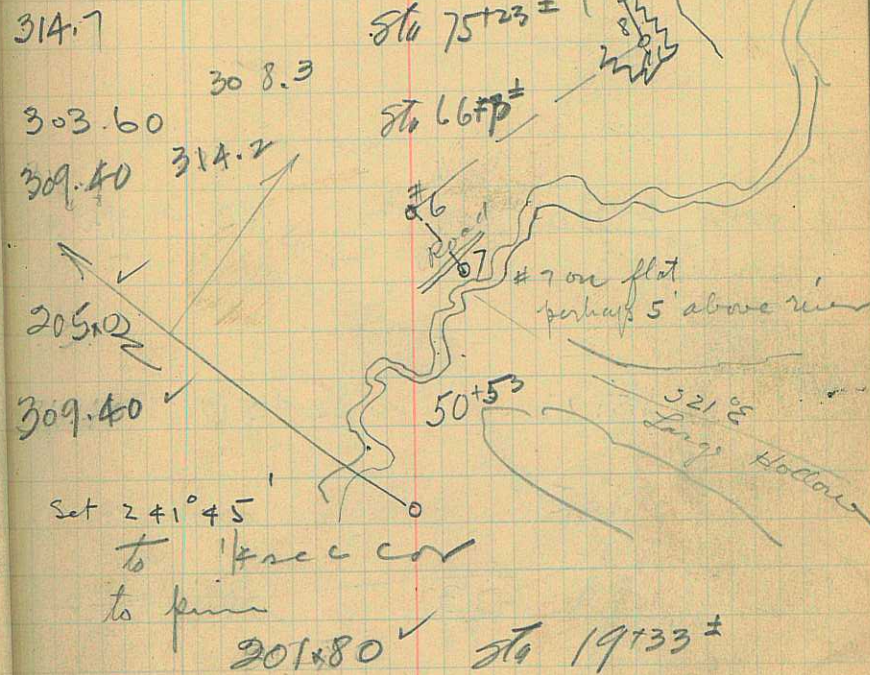
1/29-1919

22

from #5  
 241° 45' to pin  
 159° 55' to 1/4 in

met at 11 by road

{ 6" to left of upper signboard  
 at Forked - 2° 46' to foot of bank



23

10 24930 -237

3.0 11.3

35727 to house 450 near river

8705

1237

3

11.3

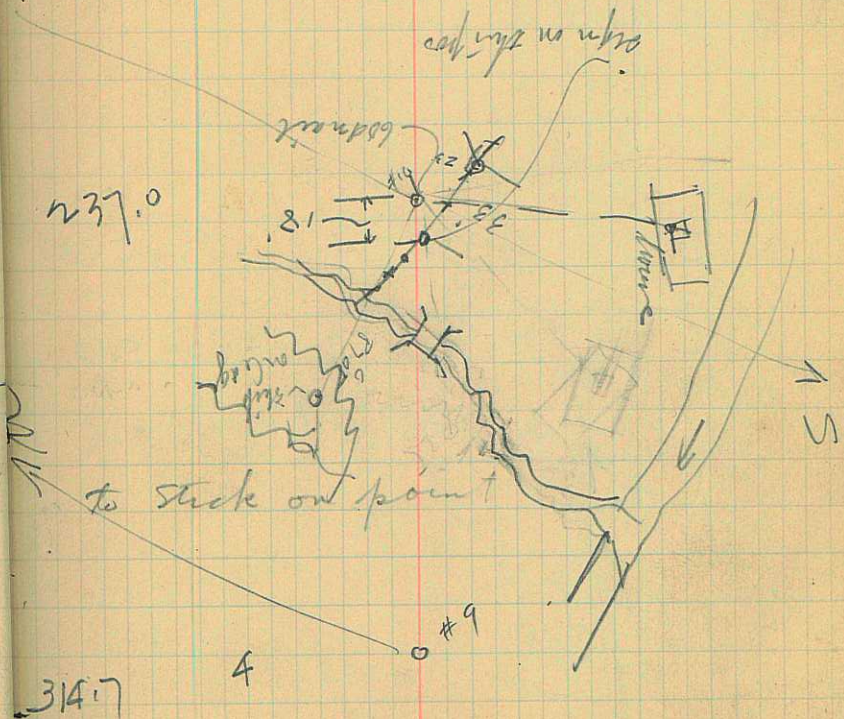
9-

24 #

Sta A above L. Hand Fork = 134<sup>00</sup>

Spr = about 180<sup>10</sup>

#10 = 85+23 = figured from 2000<sup>low extension</sup>







27

277°23

sect

11°0 281°30

Blade

288°09

0 -18°01 5.6

Flag near

281°41

Grad = 0.188  
= 7 minutes

Flag 281°30

Incline 577°30 E  
est 6000'

12

|| 71°30

2 5 -11

10'-

10000.188  
9600 5#

28

405 feet

281°30

11

HI at 12:05 below top flag near A

Red

281°30

237-241.8

set 87°05

#10

910

101

29

Spec for  
bridge Ext  
Hyman  
upper end  
pines  
68  
270

---

10(252°52)

12 10906

11-

30

---

net 277°23 BS to corner

33 Survey for  
 Carlton Co. in Ros Hansens  
 in Millville 2/21/19

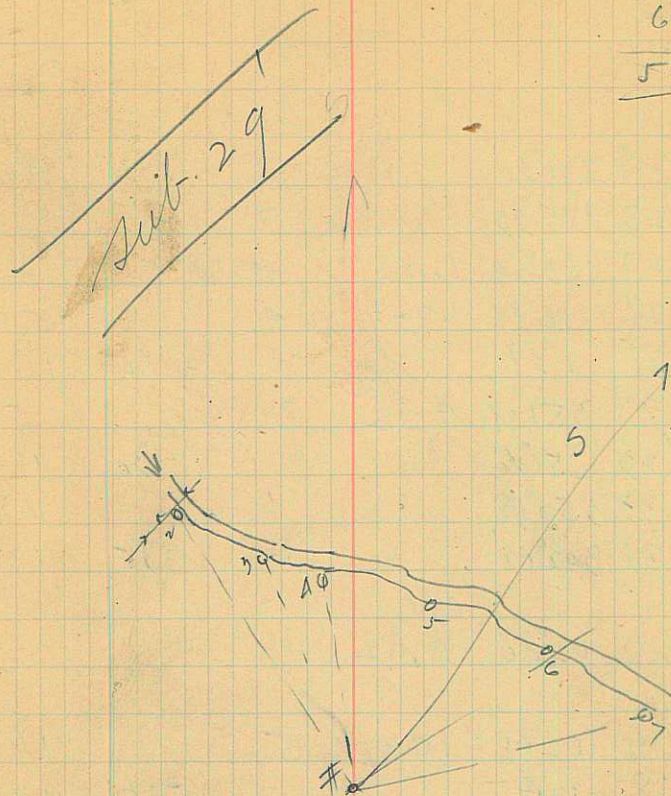
13-

15	186°03'				
C14	298°28'	8	+30'	11.75	
" 13	285°	8		11.0	
" 12	269°07'	3	-30'	5.95	
" 11	254°	3		5.00	
" 10	195°40'	9	+10'	11.9	
" 9	192°20'	7	-15'	11.0	
" 8	96°14'	6	+1°13'	11.0	
" 7	95°24'	7	+1°20'	11.5	
6	86°47'	3	+17'	5.50	
	317°06'	3		5.53	
5	23°15'	4	+1°	5.53	
4	336°38'	3	+1°	5.88	
3	321°52'	7	+1°48'	11.50	
⊗	✓ 317°04'	8.004	6	+1°22'	11.31
	184°53'				

1-

C = Canal bank

34  
 66  
 8  
 528



E. side of Mill. Res

11.5

E. Tower Logun Temple

25

C 29	201°30'		8		11.35
final 28	175°30'		7		11.35
cor 27	163°04'	1.86	7		5.20
cor 26	180°19'	1.78	4		5.17
final 25	2°31'		8	+1°20'	11.1
final 24	357°09'	4.72	2		5.1
cor 23	358°16'		6	+1°30'	11.20
22	350°38'		6		11.38
C 21	342°02'		6	+1°35'	11.23

20 -

20 102°40' 0.92

19 -

19	102°40'	10.00	5		11.66
18	124		7	-10'	11.22
17	133°43'		8	-10'	11.12
16	162°21'		10	-40'	11

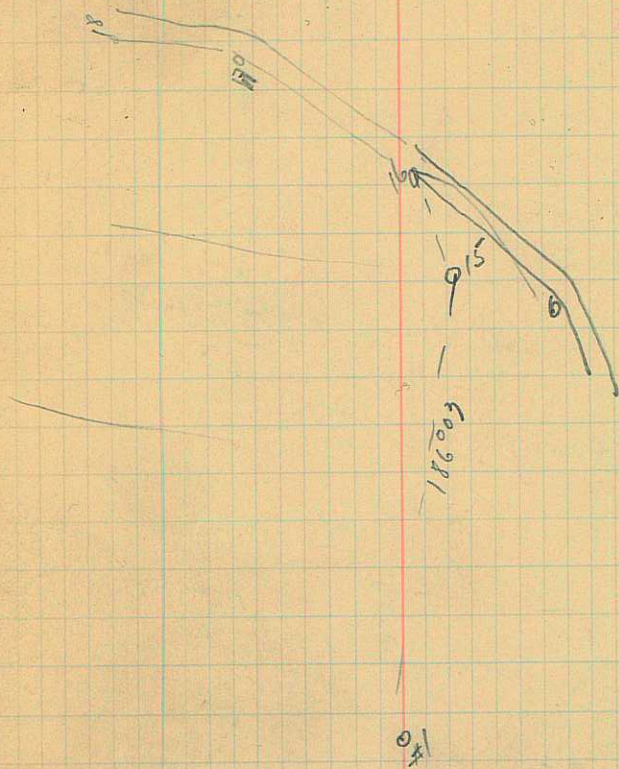
15 -

15 186°03' 6.000 2 -45' 5.99

1 -

36  $\frac{66}{396}$

400



11  
666

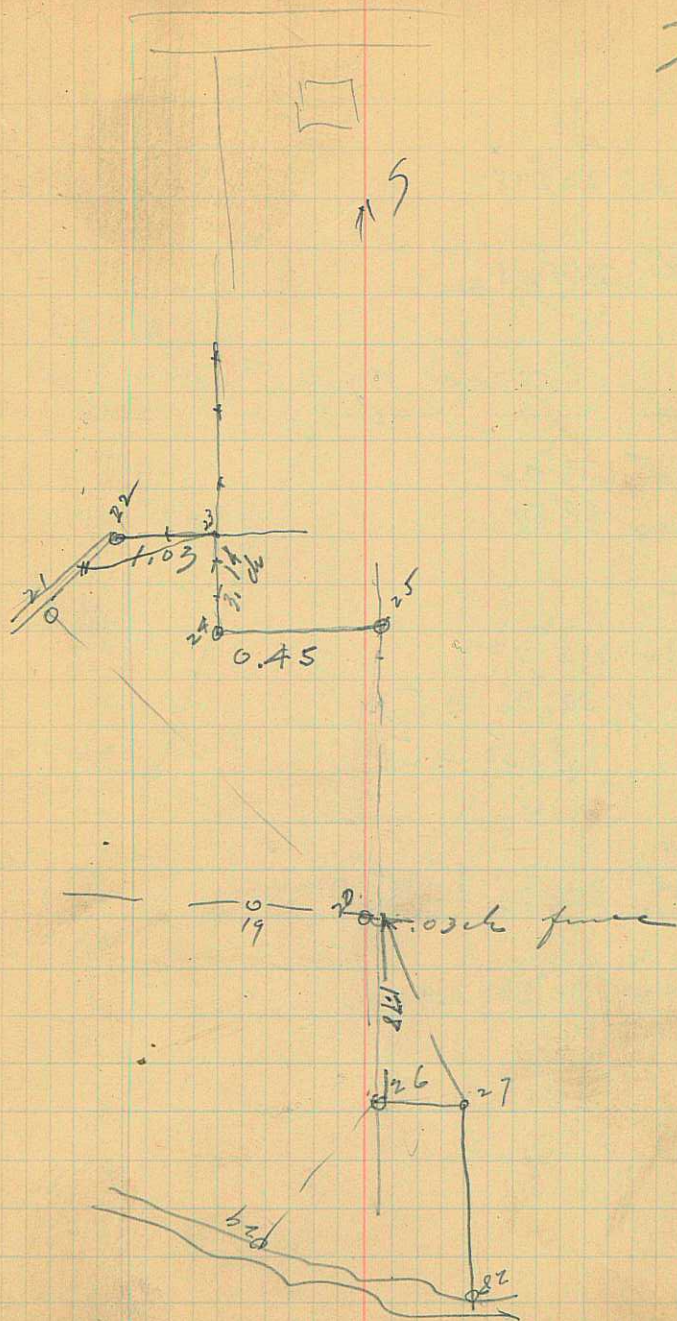
37

C 31 259°05  
 C 30 246°49

2 5.70  
 2 -42 5.07

20-

38



39

37 -

37 202<sup>o</sup>18'

36

36 269<sup>o</sup>21'

34

Correct az on  $\frac{1}{6}$  den 34

35 156<sup>o</sup>42'

89<sup>o</sup>50'

34 -

34 316<sup>o</sup>32'

33 207<sup>o</sup>06' 3.53

1.8125 2.51

2 -

$\frac{1}{4}$  cov 306<sup>o</sup>20' 3.515

32

32 316<sup>o</sup>52' 2.407

2 -

Sub 29'

N 95<sup>o</sup>21'E 40

Set 269 21

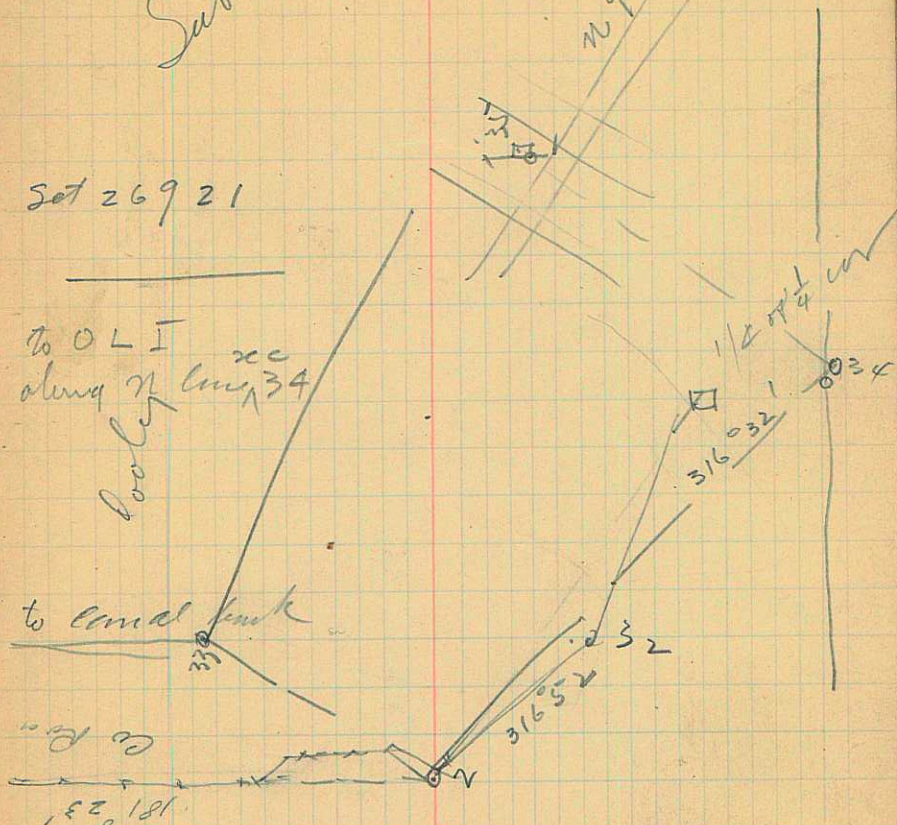
to OLI xc  
along  $\frac{1}{6}$  den 34

pooly

to canal bank

Co. R.

181<sup>o</sup>23'



41

38 178°20 0.995

37-

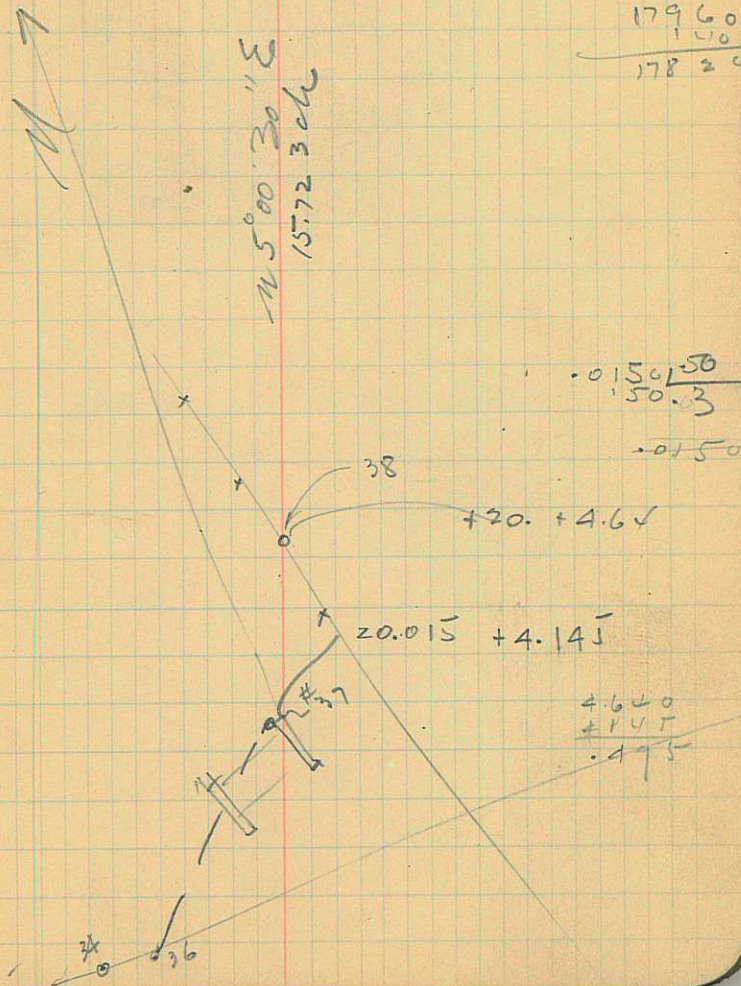
42

21.373  
19.854  
1.4994.95  
1.467  
1.02817960  
17820.0150.50  
150.3

.0150

+20. +4.64

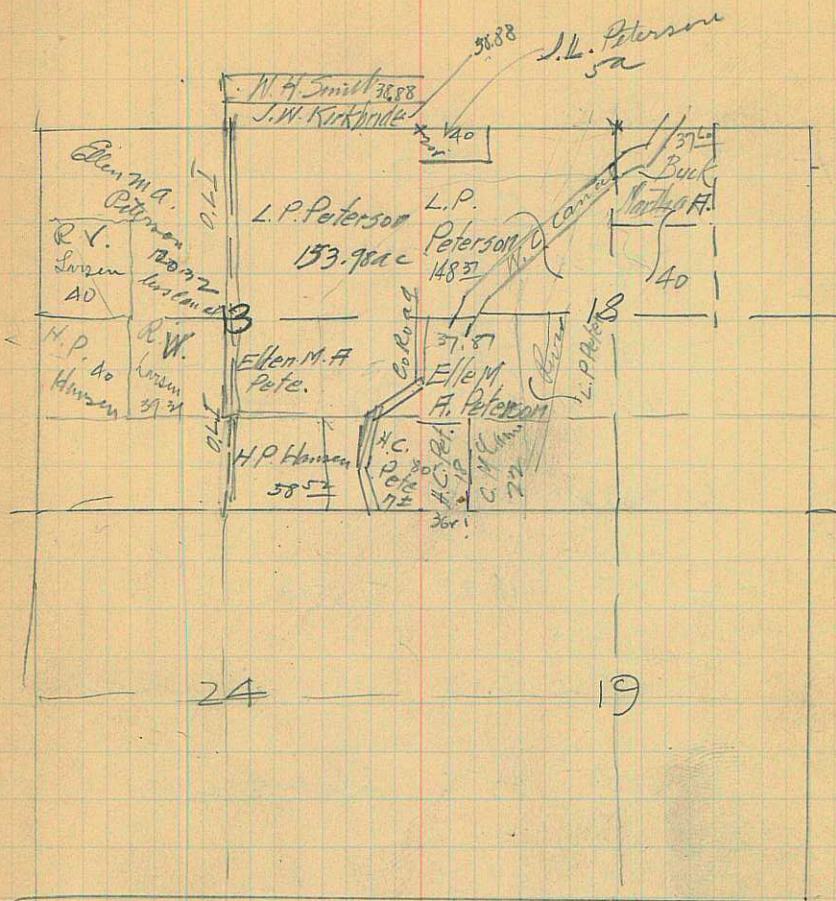
20.015 +4.145

4.640  
+1.475  
4.145

43

200  
160  
40

Lars Peter Peterson 44





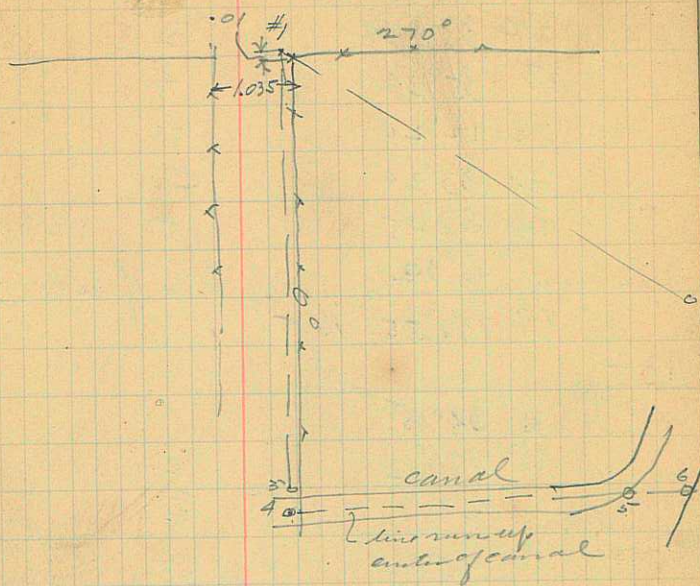
45

	10	110°	0.04	to post
9-	9	24° 51'	$\frac{13.5355}{13.55}$	
	8	309° 30'	0.015	post
7-	7	44° 27'	$\frac{7.3385}{7.345}$	
		269° 20'	0.0.5	to fence
6-	6	269° 20'	$\frac{27.49}{27.515}$	
	5		18.00	to stake
		269° 20'	0.13	to E side concrete also
4-	4	0°	23.76	to Center of Canal
	3	0	23.56	to stakes on W bank W Canal
	2	0°	7.51	Stake on W edge
		314° 51'		
		270°	0.04	east side Str

1-

meridian 46

 $\Phi$  or meridian supposed  
to be in center

 $\frac{274}{108}$   
110


east side Str.

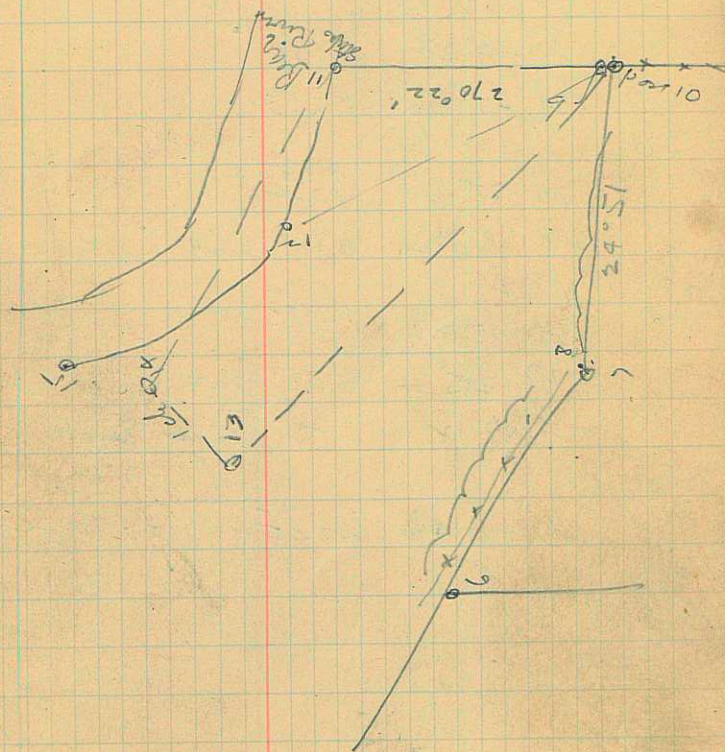
 to smoke stack Smith. Condensers  
along fence to E

47

			L	C	U
	25	232°55'	0.04	to fine net 5	
	24	352°34'	3		11.4
	23	359°36'	4		11.03
	22	12°20'	6		11.25
	21	33°24'	3		6
	20	52°45'	5	+2°15'	5.60
19-		6°32'			
	19	232°55'	16.60		
			16.51		
13-					
	11	34°15'			
	18	293°12'	2		11.3
	17	290°	6		11.8
	16	275°46'	3		6.00
	15	269°	5		5.75
14-					
	14	318°25'	1.00		
13-					
	13	248°13'	10.00		
	12	257°45'	5		11.70
	11	270°22'	6	-15'	11.20

9-

48



49

6 44°27' 5.351<sup>h</sup>  
5.36

31 237°30' 0.19

30 - 20 88°16' ✓ 4.6465  
6.64

29 162°30' 0.10 port

28 -

28 82°48' 1.585  
1.57

27 215° 0.03 port

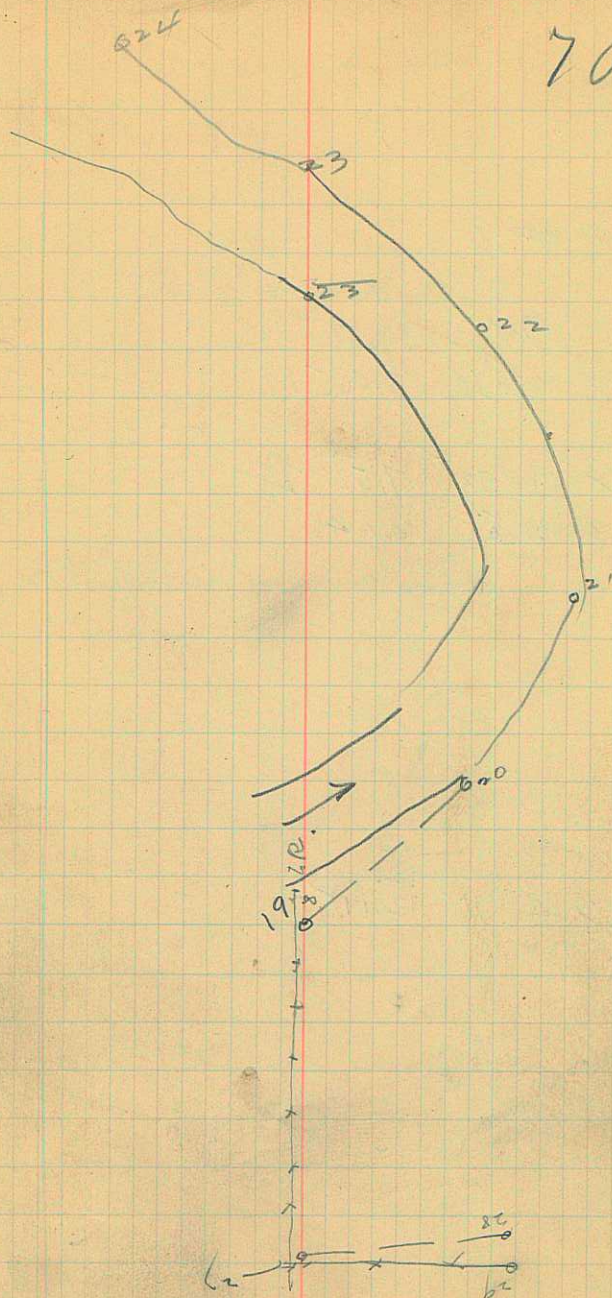
6°12' to Sugar Smoke stack

26 -

26 181°46' 8.042<sup>h</sup>  
8.045 prob desc.

19 -

70



71

~~39363~~4 ~~1~~ 0°

1-

1	90°	39.498's
35	294°30	39.51
		0.065

34

34	179°53	7.5265	+
33	265°	7.527	
		0.04	

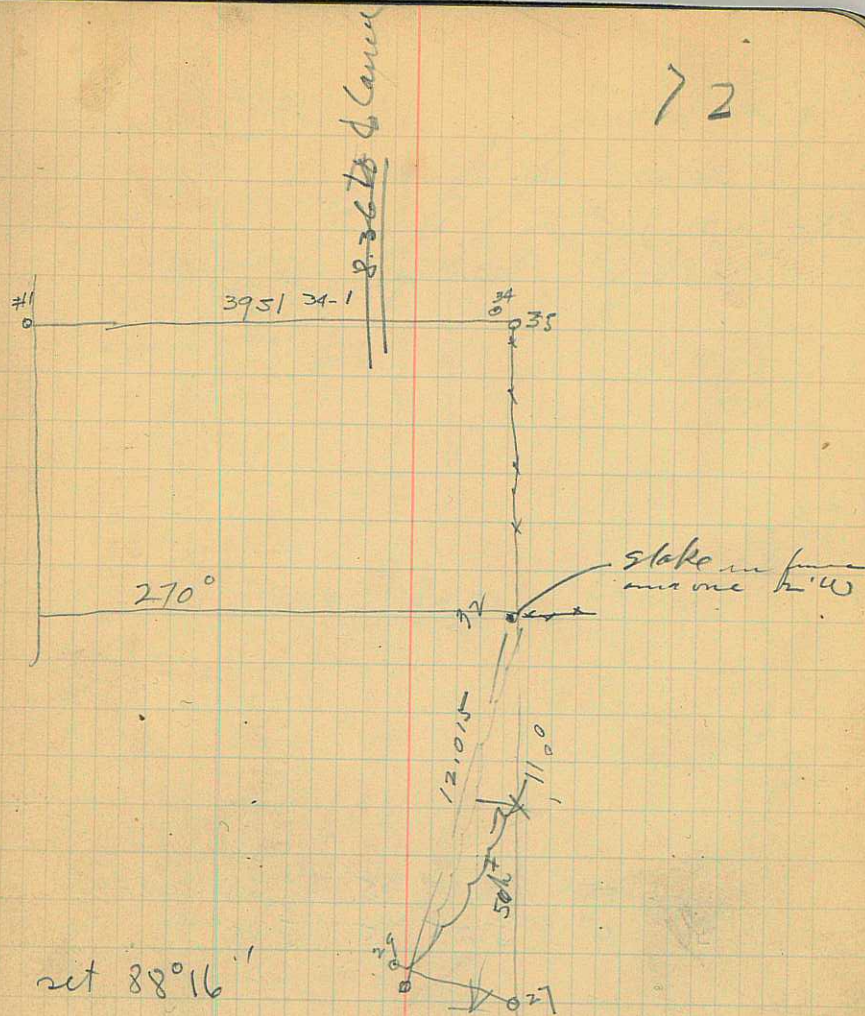
32-

32	187°36	12.0105
		12.015

28-

2-

72



73

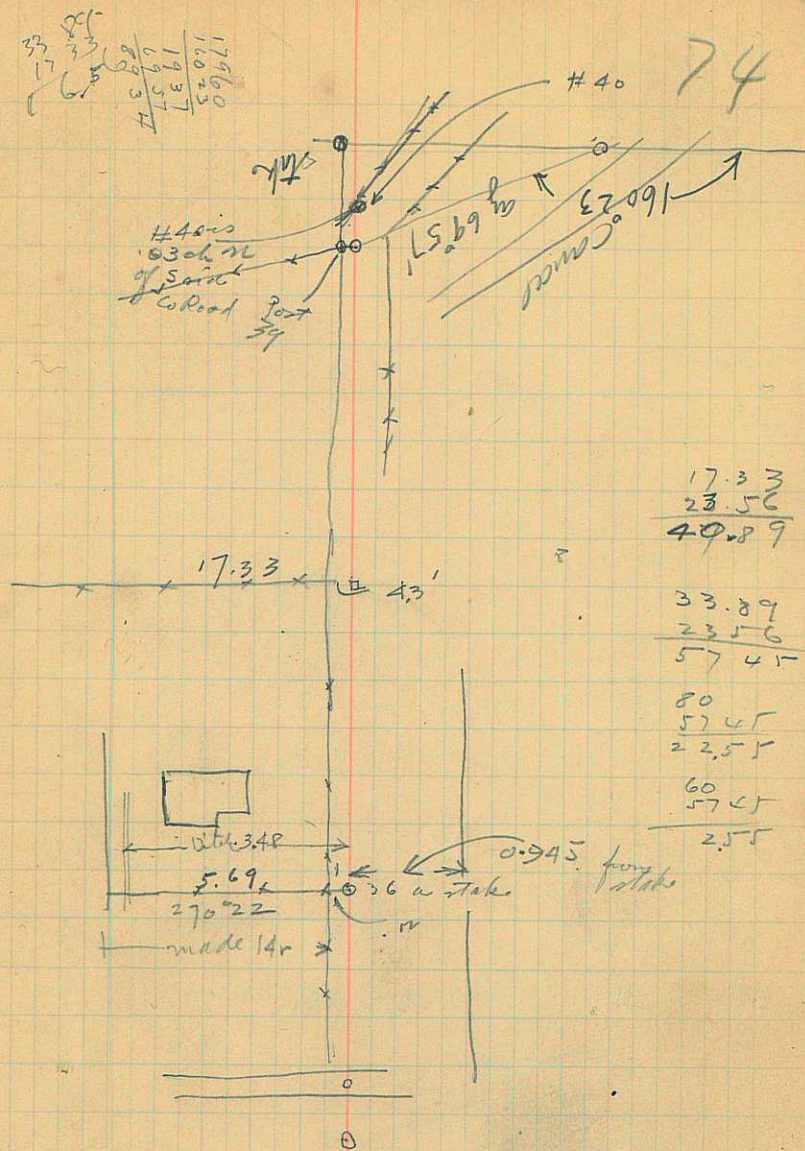
38- #40 0.70  
38 0 33.89

37 0° 17.33

36 0° 5.69 5.69 to fence E+W  
5.675 5.675

3-

17960  
16023  
1937  
1937  
16357  
H



75

42 3.08  
41 2.39

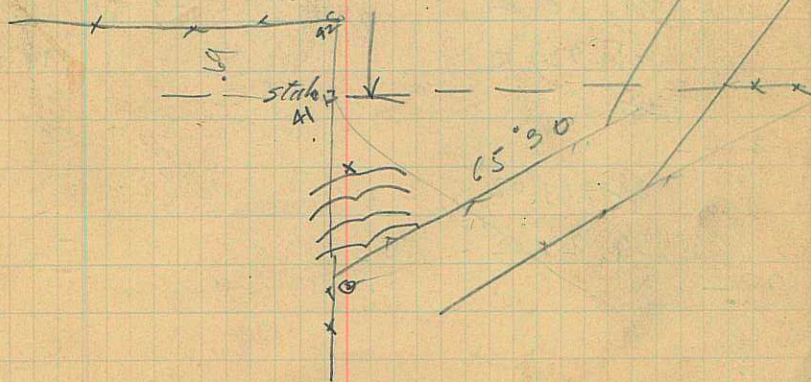
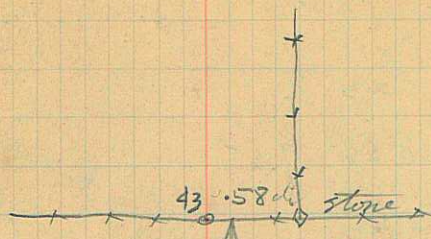
40-

76

317  
248  
—  
69

33.89  
23.50  
70  
2.39  
—  
60.54

48  
100  
91  
—  
2.39  
69  
—  
308



77

50 9 210°26' 17.65

54 <sup>104°04'</sup> 210°26' 0x85

53-

51' 52 119°30' 0.17

50 51 200°30' 1.05

50 50 261°02' ✓ 4x41

49 283°42'

48 272°30'

47 279°30'

46 307°48'

45 323°10'

45

44-

44 261°02' 3.43

39 261°02' 0.03

38-

1

11.9

5

-2° 11.3

7

-2°50' 11.7

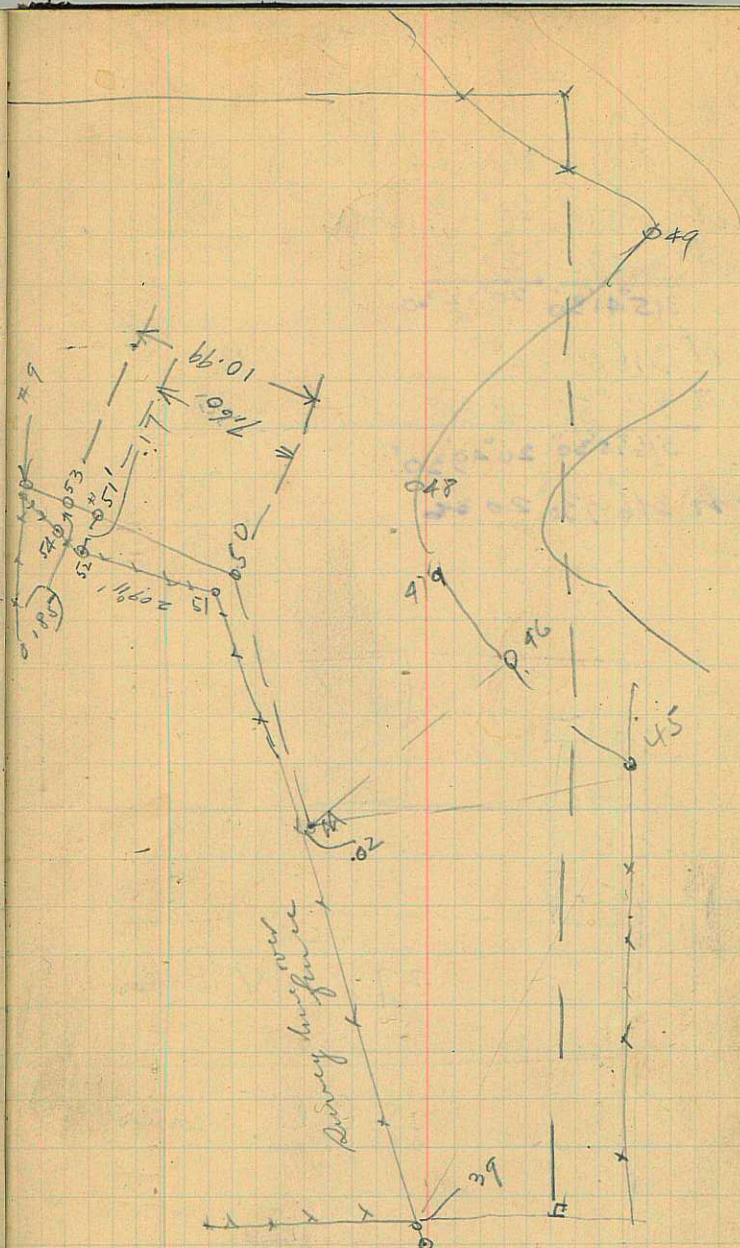
8

-3°50' 11.24

8

11.4

78



Feb ~~Jan~~ 8 - 1919

19. Ob on #1

Time Condition

Day Vert L

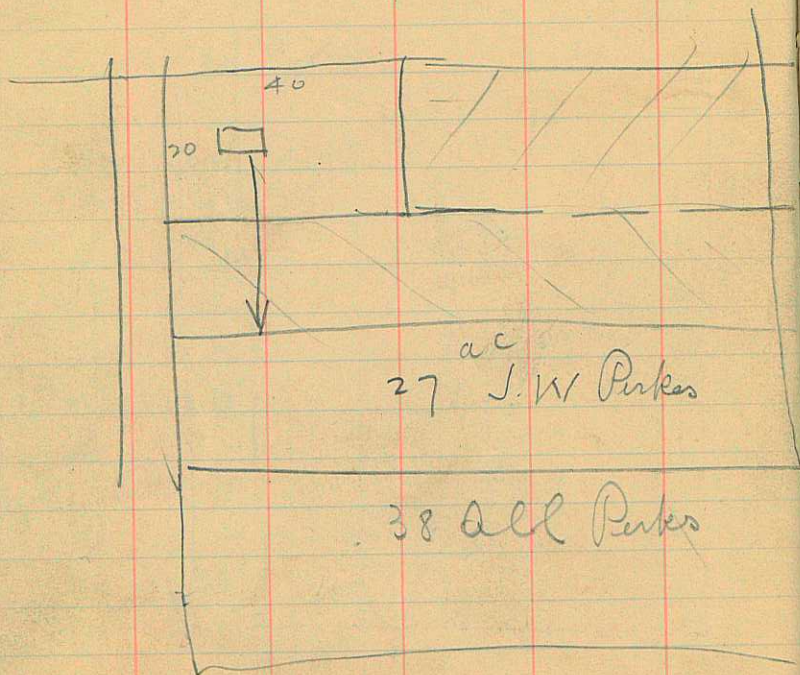
direct 31511' 20°29' 9.45<sup>a</sup> 17

direct 31612' 20°16' F  
31541'30" 20°22'30"

direct 31601' 21° B

direct 316°50' 2039 C  
31625'30" 20°49'30"

~~direct~~ 31613'30" 2036  
dir



80

$$Z = 69^{\circ}26'30''$$

$$\rho = -15^{\circ}9'40''$$

$$\phi = 41^{\circ}52'30''$$

clouds

65  
37  
38

Sub-93



81

7

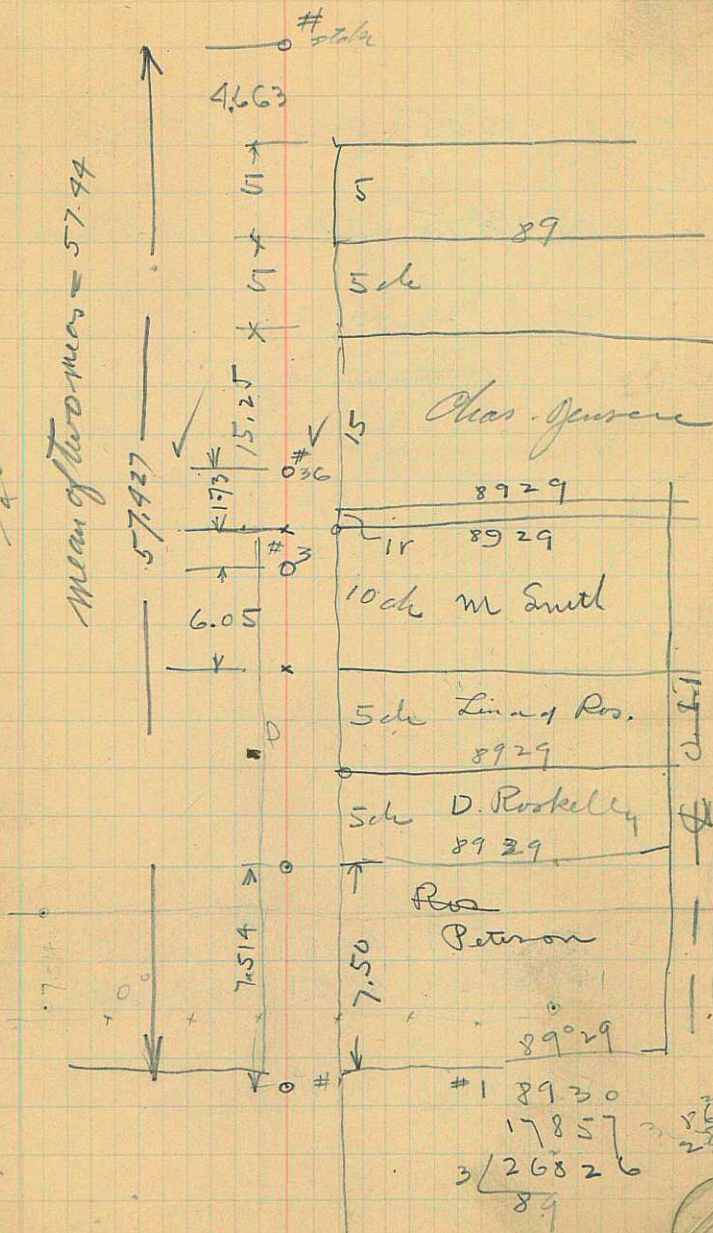
7.514

1-

$$\begin{array}{r} 130 \\ 188 \\ \hline 1.014 \end{array}$$

$$\begin{array}{r} 27.75 \\ 15.75 \\ \hline 42.5 \end{array}$$

Mean of two means = 57.94



82

$$\begin{array}{r} 80 \quad 66 \\ 66 \quad .12 \\ \hline 140 \\ 132 \\ \hline 8 \end{array}$$

83

00°05 (see sketch)

58a 58

58a 180°05 0.12

57

57

40.87

57 89°29 40.87

56 89°29 40.21

55

55 0 0.134

# 1-

$$\begin{array}{r} 269\ 29 \\ 90\ 26 \\ \hline 6005 \end{array} \quad 359$$

$$\begin{array}{r} 359\ 60 \\ 269\ 29 \\ \hline 3108 \end{array} \quad 36$$

84

$$\begin{array}{r} 2.4166 \\ 155.039 \\ \hline 420 \end{array}$$

40.87

40.71

40.50

40.87

40.21

40.21

39.21

156.84

# 04

90 41

181 17

269 29

181 17

35 960

26 929

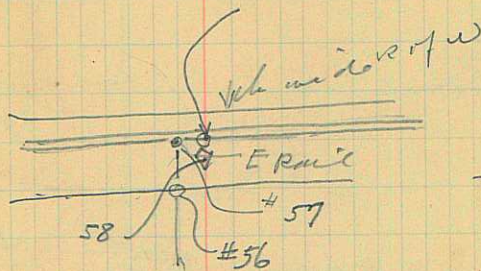
90 31

181 17

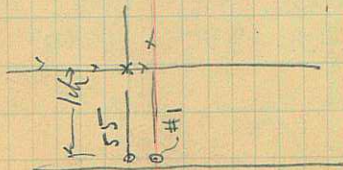
3 | 271 48

90 36

along E rail O.L. 1 to sec. line



89°29

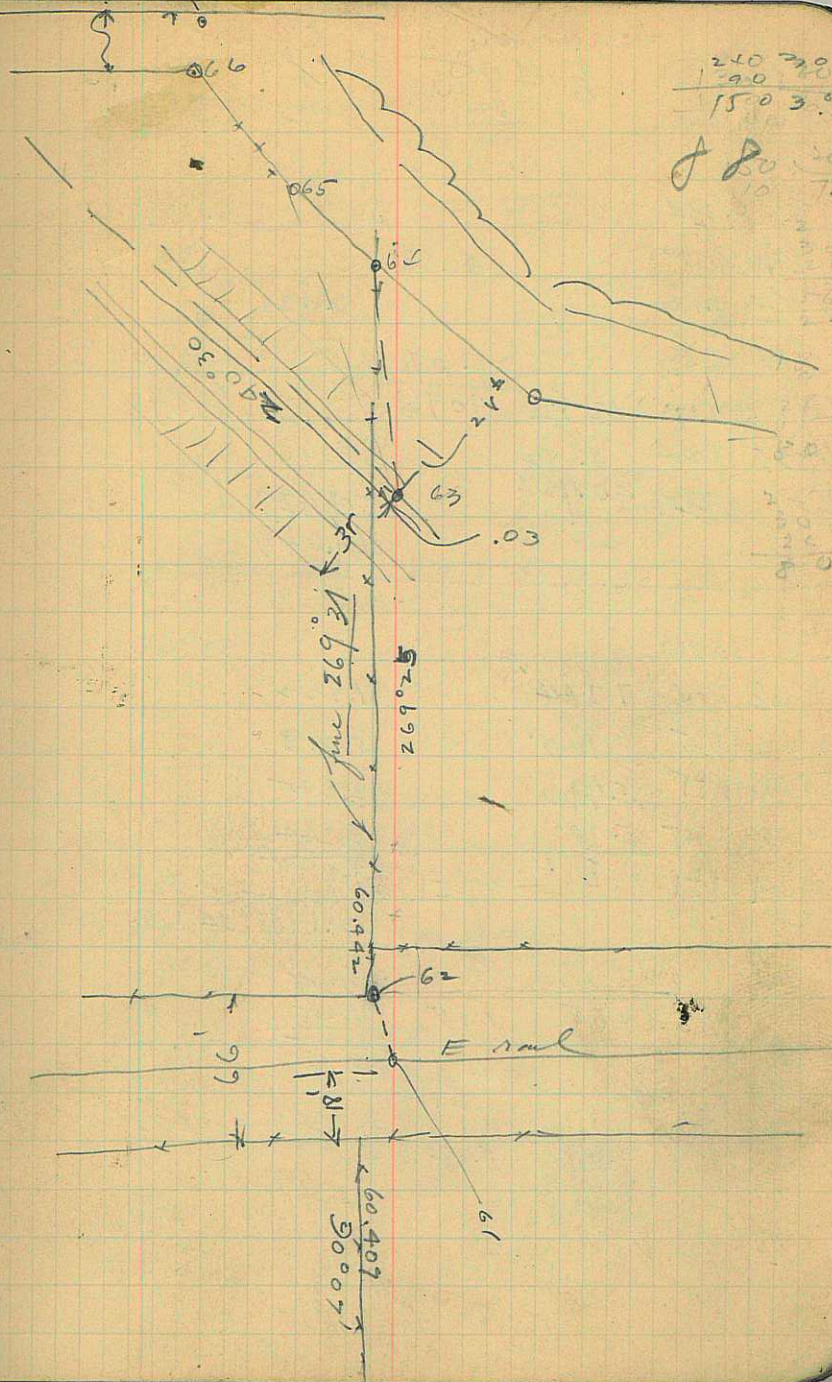
to E range of E rail  
E side O.L. I Right of Way



87

38 - 66 73°10' 1.025  
 38 249°53' 9.204  
 65 255°30' 2.18  
 65 268° 1.66  
 63 - 63 269°26' 32.325

61 - 62 262° .665



240 240  
 90  
 150 30

JP 30  
 10 7.5

30  
 20  
 16  
 14  
 12  
 10  
 8  
 6  
 4  
 2

84  
Camm blut

temporary  
& illeg w  
jul  
Lut  
N 5

J	0.134			0.134
589° 29' W	40.87		40.870	369
11.5' E	0.12		0.120	
5.5' N	60.53		0.090	60.530
1189° 25' E	32.325	32.320	40.960	0.330
1169° 53' E	9.204	8.642		61.043
N	57.425	40.962		57.429
				61.043

J	33.867			33.867
1181° 22' E	7.84	7.744		1.222
1130° 26' E	17.65	8.940		15.218
1124° 51' E	13.55	5.693		12.295
1144° 27' E	7.345	5.141		5.244
589° 20' W	27.51	27.518	27.51	39.979
N	.20			20
				34.179
				34.187

7.345  
7  
5.1415

713.9  
7.345  
356.95  
285.56  
214.17  
499.73  
5.2435955

10.416  
27.5  
80  
81.2  
23.2  
31.900

57.427  
23.76  
33.667

40.87  
100902  
8174

36783  
3686.474

0.0145  
12  
290  
45  
10001740

60.53  
0.00145  
30265  
24212  
6053  
0.0877685

920  
0.939  
282836  
82836  
8.042556  
9.20556  
345

32.32  
0.102  
6464  
3232  
329660

36816  
36816  
27612  
3.166176

57.427  
23.56  
33.867

33.89  
23.56  
57.45

0.9878  
7.84  
39512  
49024  
69146  
7.744352

1559  
7.84  
6236  
12472  
10913  
1.222256

343  
441  
784

7.514  
10.000  
10.250  
15  
10  
4663  
57.427  
48  
877  
438

0.4202  
1355  
21010  
21010  
12606  
4202  
5.6930  
7074  
1355  
45370  
45370  
27232  
7074  
12.295270

8622  
17.65  
43110  
51732  
60354  
7622  
15.217830

5065  
17.65  
25325  
30396  
35455  
5065

8.939725  
8.939725

91

$$\begin{array}{r} 160 \\ 15 \\ \hline 900 \\ \$160 \\ 2500.00 \end{array}$$

$$\begin{array}{r} 75 \\ 375 \\ \hline 1125 \end{array} \quad \begin{array}{r} 2500 \\ 10000 \end{array}$$

Trus	200.00
Crop help	1125.00
Water tax	320.00
Harbor	2000
4 hrs	400
plow	4075.00

$$\$20000.00$$

32000

15000

10000

$$\begin{array}{r} 15000 \\ 8 \\ \hline 120000 \end{array} \quad 160$$

100

$$\begin{array}{r} 27.42 \\ 50 \\ \hline 27.92 \\ 27.92 \end{array} \quad 46.3$$

$$\begin{array}{r} 5584 \\ 25128 \end{array}$$

$$\begin{array}{r} 19544 \\ 5584 \end{array}$$

$$\begin{array}{r} 779526 \\ 463 \end{array}$$

$$\begin{array}{r} 733.23 \\ 27.08 \end{array}$$

$$\begin{array}{r} 47 \\ 7 \\ \hline 540 \end{array}$$

$$\begin{array}{r} 333 \\ 329 \end{array}$$

$$\begin{array}{r} 042300 \end{array}$$

$$\begin{array}{r} 5416 \\ 765 \\ \hline 766 \end{array} \quad \begin{array}{r} 93 \\ 5817 \end{array}$$

$$\begin{array}{r} 150 \\ 93 \\ \hline 679 \end{array}$$

92

Jan

Sat

$$\begin{array}{r} 524 \\ 32 \\ \hline 492 \end{array}$$

$$\begin{array}{r} +27.510 \\ 10834 \\ \hline +16.676 \end{array}$$

+ 0 x 32

$$\begin{array}{r} -4.924 \\ 12291 \\ \hline -17.219 \end{array}$$

$$\begin{array}{r} 27.51 \\ 10834 \\ \hline +16.676 \end{array}$$

$$x \quad y \\ +16.676 \quad -17.219$$

$$y - y_1 = m(x - x_1)$$

$$y + 17.22 = -0.006(x - 16.676)$$

$$y + 17.22 = -0.006x + .11$$

$$y = -0.006x - 17.11$$

$$x = 0, y = -17.11$$

$$\begin{array}{r} 463 \\ 926 \\ \hline -27.92 \end{array}$$

$$\begin{array}{r} 5817 \\ 5184 \\ \hline 233 \end{array}$$

$$\begin{array}{r} 27.38 \\ 2.33 \\ \hline 88244 \\ 5476 \end{array}$$

$$\begin{array}{r} 2992 \\ 108 \\ \hline 2684 \end{array}$$

$$\begin{array}{r} 5476 \\ 2738 \end{array}$$

$$\begin{array}{r} 17.539 \\ 2219 \\ \hline 17 \end{array}$$

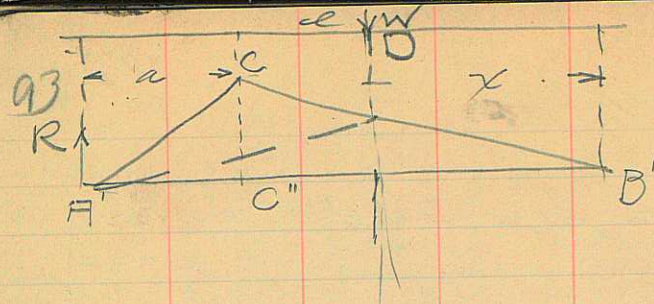
$$-10064 = m$$

$$\begin{array}{r} 16.676 \\ 10064 \\ \hline 66704 \\ 100046 \\ \hline 106716 \end{array}$$

$$\begin{array}{r} 17.22 \\ 11 \\ \hline -17.11 \end{array}$$

$$\begin{array}{r} 17.33 \\ 20 \\ \hline 19.13 \end{array}$$

$$\begin{array}{r} 463 \\ 233 \\ \hline 1389 \\ 1389 \\ \hline 2929 \\ 108179 \end{array}$$



$$\frac{W_{02}}{2}$$

9.46 94

95

L. P. Peterson

2/10/19

Tract Survey cont.

#70 20.00

16.00

10.75

20°29 3.75

68-

68 180 182.29 .03

69 141° .03 Stone

67

67 89°21 40.112

#57

Head man Harrison  
Rear man Smith

96  
89-2

0.80 40 17892  
80.602

.32 8929  
.002  
.00068

8925

.50 8916  
.002

.080 8921

17837

8921

8916

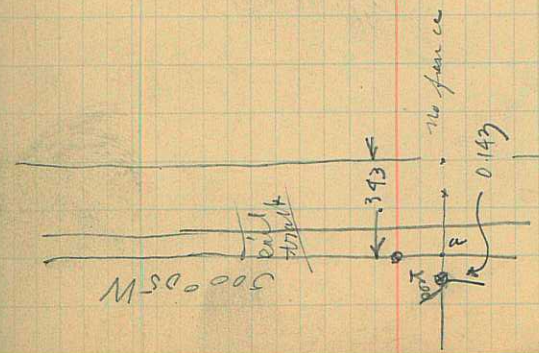
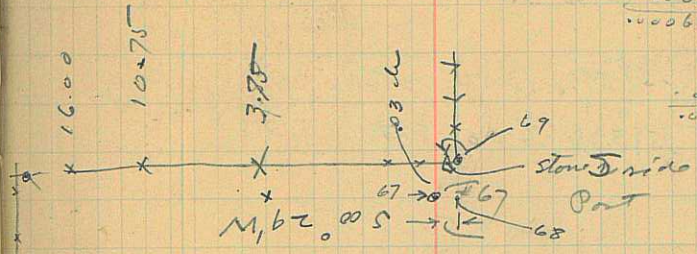
32

90 40 8921

100 22 8916

37

40.1125





9 97

76 269°47' 19.95

75 144°10' .118 to cor

75

75 359°59'30" 20.00

6

359°59'30" 13.50 stake

1

74 359°59'30" 6.00 stake

73 0.35

72 -

72 269°13'30" 20.25

71

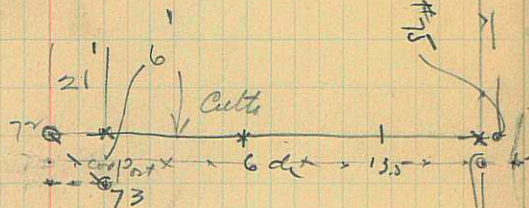
.127

70 -

$\frac{66}{18}$

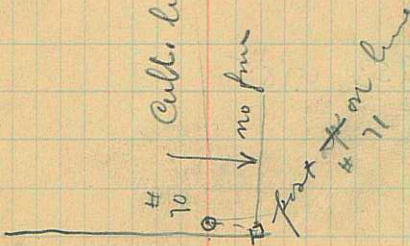
Angles Closed

by 30"  
read 4°4'30"



all have checked  
them from W.  
269 13'30"

Cult. line 269 13'30"



98

14.6 76

.343

269°47'

#75

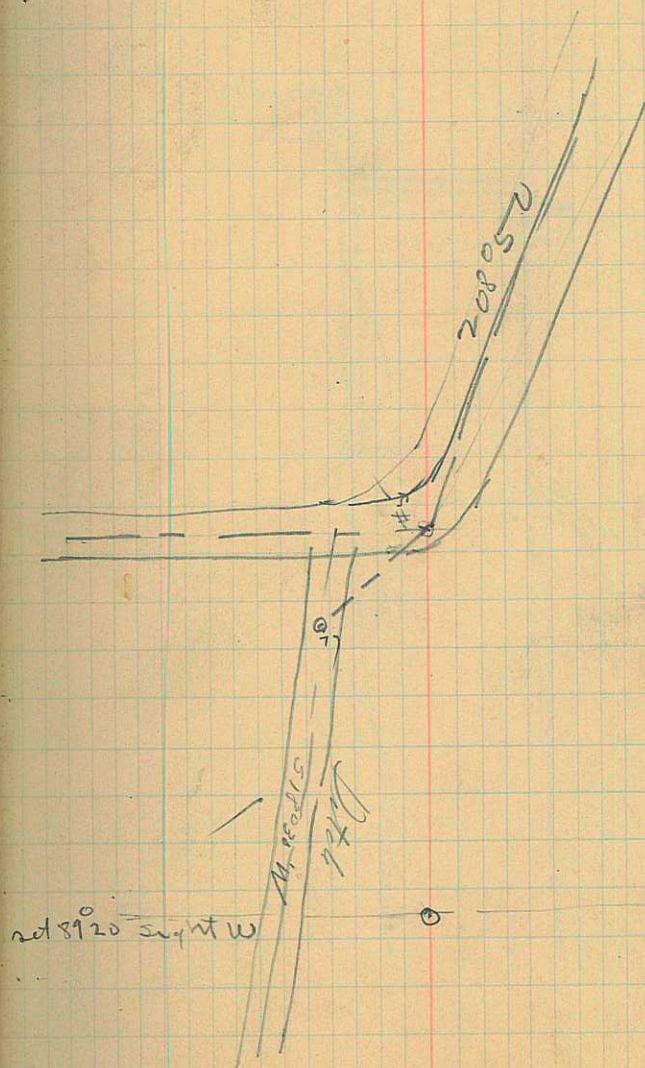
stone mark  
14.00

99

77 059°53' 07.85

5 -

100

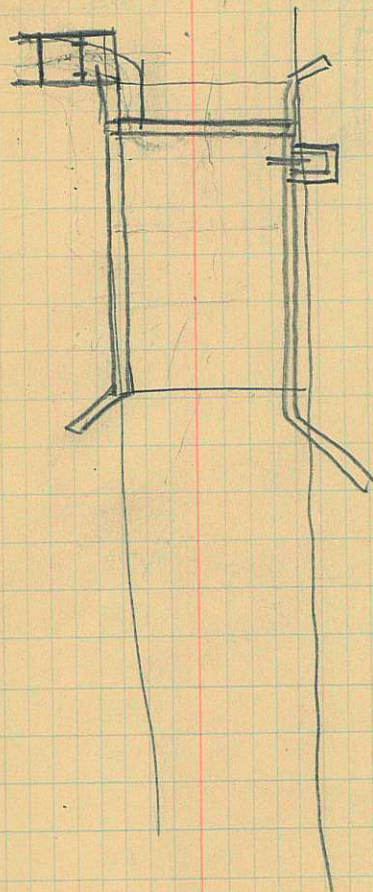
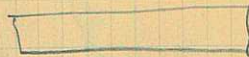


101



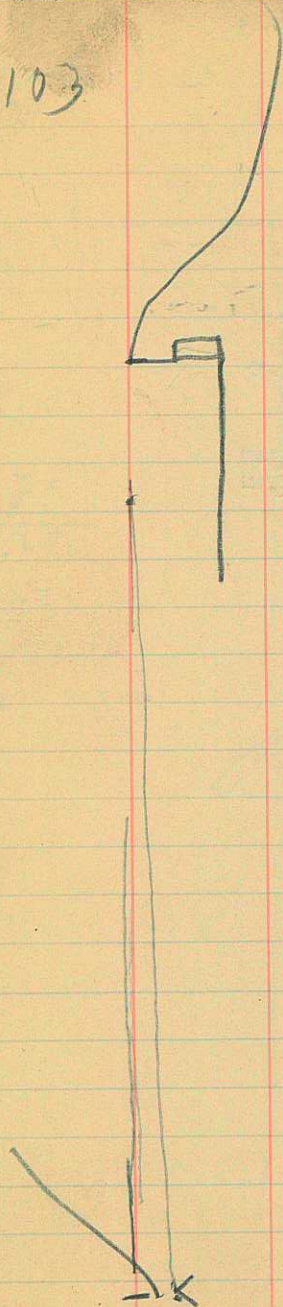
3.33  
 $Q = C L H^{\frac{3}{2}}$   
 102

2 - 5  
 4 - 7  
 6 - 10

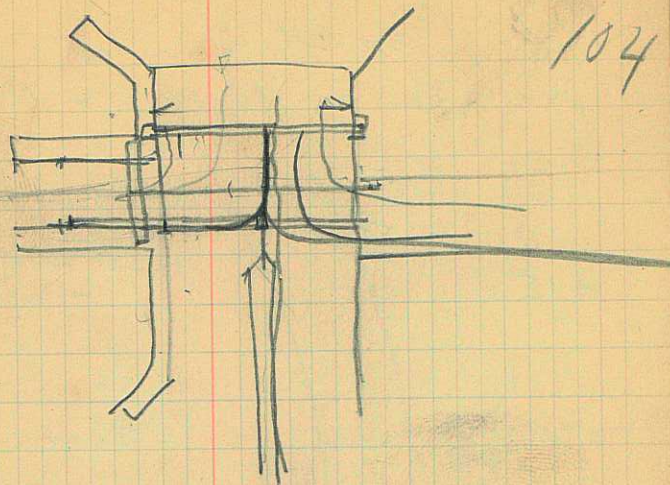


2.5  
 30  
 ---  
 75.0  
 150.00  
 210  
 ---  
 14 30 360.  
 4 20 180.00  
 2 10  
 10

103



104



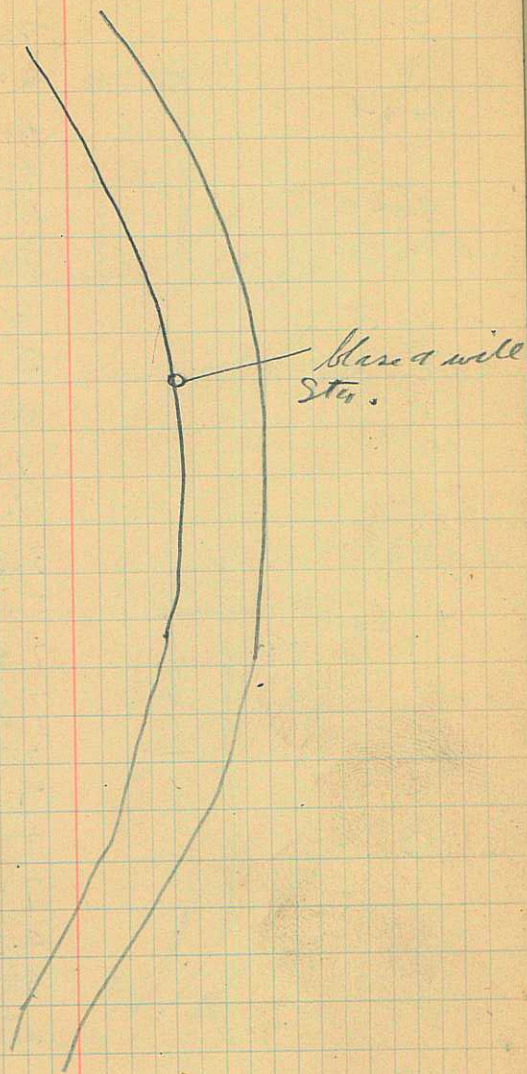
Apr 1 - 1919

105 Canal Levels  
on Para. Inv. & Res Co

Sta	BS	FS	WM
0	12.55		12.25 H <sub>2</sub> O
+15			
1			12.90 cr 12.5000
2			13.30 12.85
3			13.33 12.50
	1.090	1.70	
4			13.1 12.00
5			12.60 11.9
6			12.9 11.9
7			11.9 H <sub>2</sub> O
	3.60	8.75	
8			7.2 6.7

106

willow



107

9

7.30  
6.74

9+34

6.17  
6.55

9600

6.35

9+64

4.43  
6.90

5.35

10+00

6.75  
7.40  
7.11

10<sup>00</sup>

3.36  
5.00

11<sup>00</sup>

7.4  
7.20

12

7.70  
7.20

13

7.6  
7.36

12+67

4.5  
6.70  
6.75

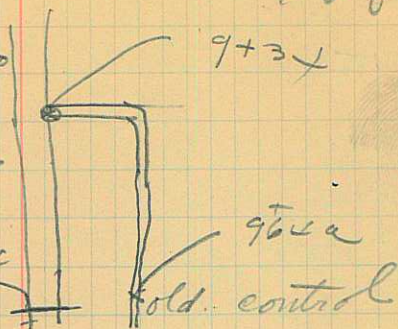
14

7.80  
7.50

(make <sup>6</sup>14' wide)  
25' long

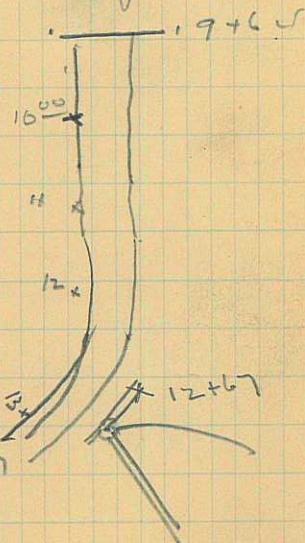
108

on 2" plank entrance  
 on 2" 6' below  
 bot. ditch 9+64  
 on top 2x6 9+64  
 on 6x6 pile  
 on H<sub>2</sub>O H<sub>2</sub>O above old entrance  
 on H<sub>2</sub>O above " "



on H<sub>2</sub>O  
 Post on 60 d nail 20 N of canal in cedar  
 on n. bank

16<sup>00</sup>  
 H<sub>2</sub>O  
 H<sub>2</sub>O  
 on bank  
 on bottom small ditch  
 on land SW of ditch 12+67



109

15

7.90

7.50

16

8.00

7.60

17

8.00

7.70

18

8.00

8.00

19

8.40

8.1

6x8<sup>5</sup>

110

on H<sub>2</sub>O

on land S. of 9+64

Level Survey Las Carlon

11/6/9/19 SFS

Sketch

Elev H<sub>2</sub>O

0	5.70	H <sub>2</sub> O	105.70
0		4.70	
X	5.40	6.40 on grade	
X	4.12	5.12	
		5.42	
a		4.80	
b		5.52	c 1'-2"
		5.82	
		6	
	4.92	5.00	6.00
X	4.92		
		5.9	

check back

X		4.92	
X <sub>11</sub>	5.45		
X <sub>9</sub>		5.30	
X <sub>1</sub>		4.4	
X	4.75		

$$\begin{array}{r} 5.42 \\ 4.8 \\ \hline 0.82 \end{array}$$

$$\begin{array}{r} 5.12 \\ 4.70 \\ \hline .42 \end{array}$$

5.70 4.90

$$\begin{array}{r} 5.70 \\ 5.30 \\ \hline .40 \\ 4.75 \\ 5.4 \\ \hline 3.75 \end{array}$$

grade

on hub bottom ditto  
on H<sub>2</sub>O surface  
on ground but 1'

5.42

ground 300'

cut 1'

5.92

bottom old ditch

5.4

$$\begin{array}{r} 6.12 \\ 4.9 \\ \hline 1.22 \\ 5.4 \\ 4.40 \\ \hline 1.05 \end{array}$$

$$\begin{array}{r} 5.4 \\ 3.75 \\ \hline 1.65 \end{array}$$

$$\begin{array}{r} 5.4 \\ 4.75 \\ \hline 0.65 \end{array}$$

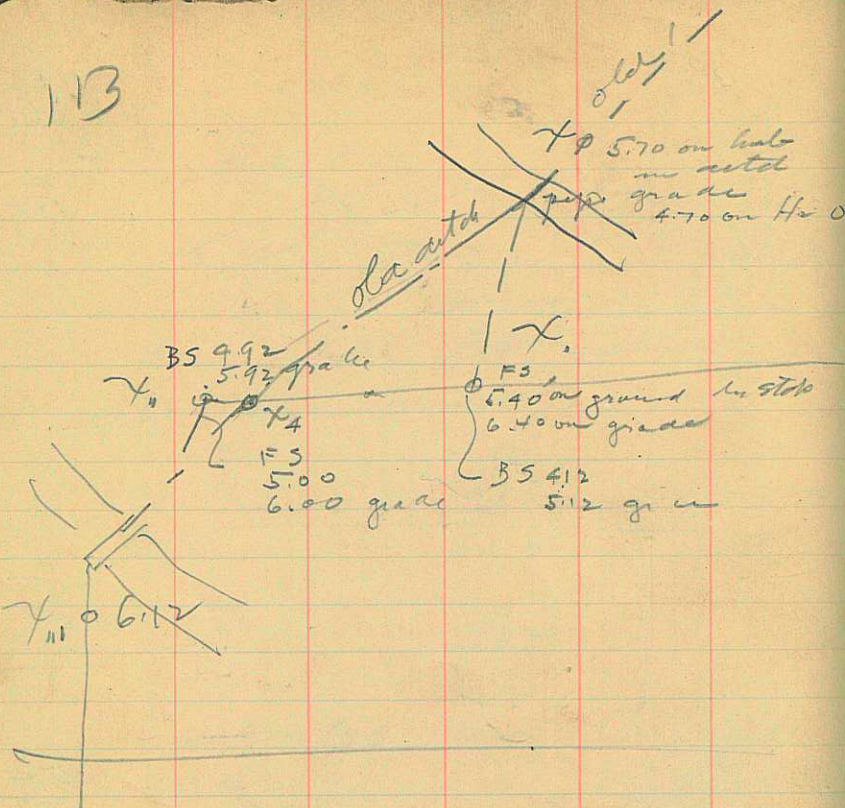
$$\begin{array}{r} 5.4 \\ 4.70 \\ \hline 0.65 \end{array}$$

$$\begin{array}{r} 4.4 \\ 5.4 \\ \hline 4.75 \end{array}$$

$$\begin{array}{r} 5.4 \\ 5.35 \\ \hline 1.00 \end{array}$$



113



5.52 on hole

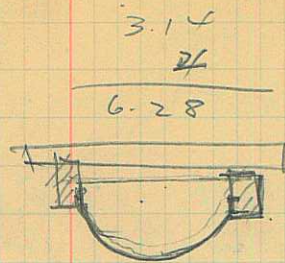
5.70 on hole  
in auto  
grade  
4.70 on Hz 0

F3  
5.40 on ground in side  
6.40 on grade  
BS 4.12  
5.12 grade

5.92

44  
54

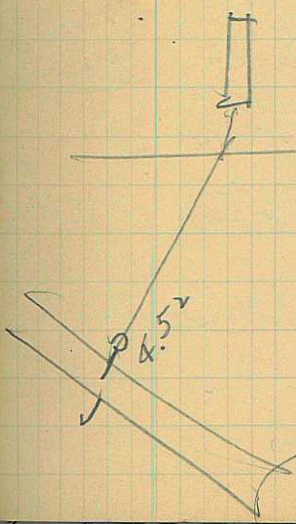
114



78.5  
3.12

4.80  
5  
4.30  
4.52  
4.3

4.30 on max Hz 0



115

173°35' along Ervail

12-

12 91°41' to Ervail

11 261°47' 4 5.80

10-

10 158°15' -22' 2.0 11.1

139°35' S. fact flag route

158°04' Rksec. pole #22

9 129° West about 100' older diversion

8 57°30'

7 97°43'

6 144°

5 10

5-

5 146°02' -22' 4 11x85

junction 122°20' 3 10.8

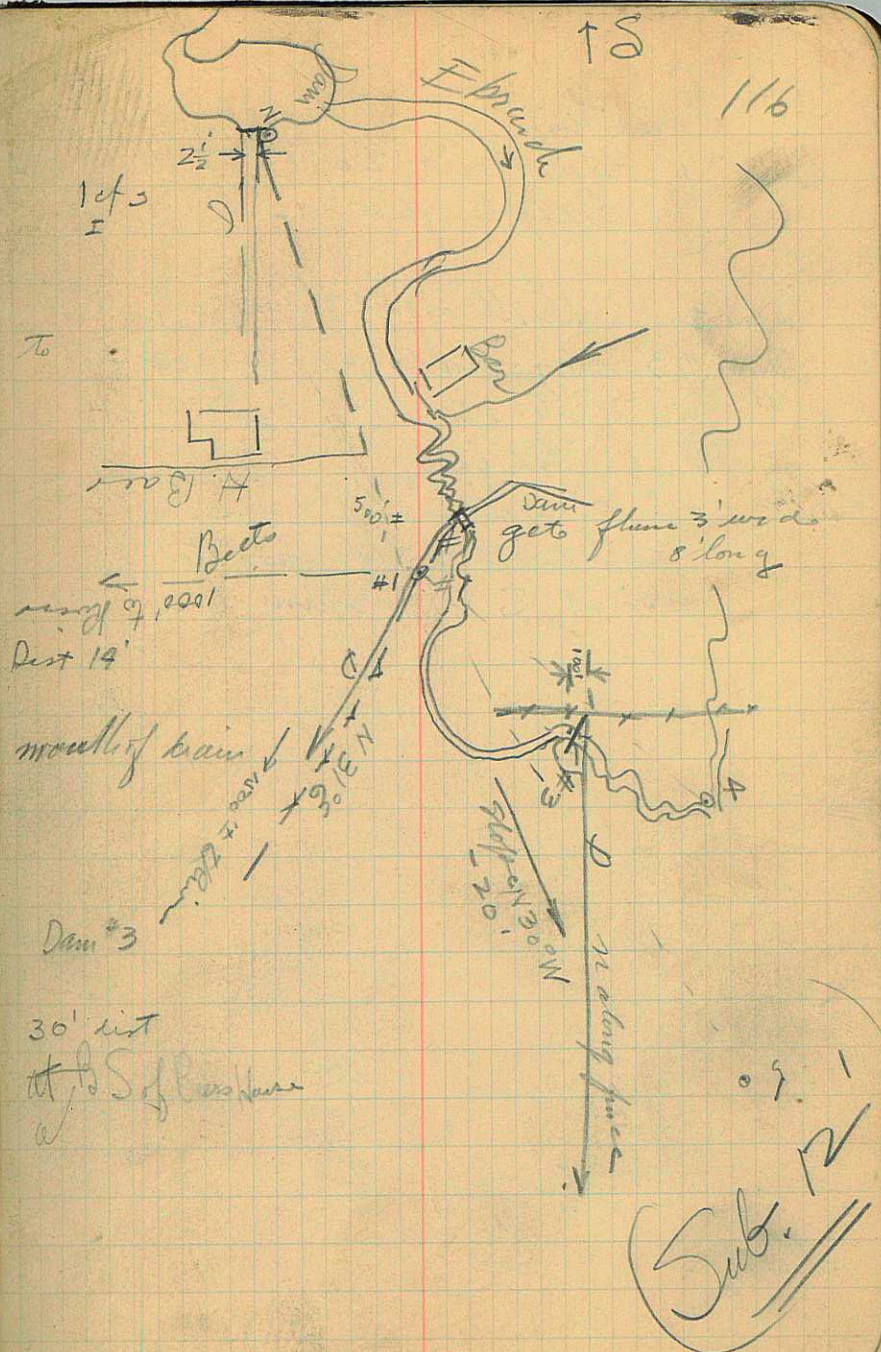
Dam #3 151°17' 7 11.8

130°45' to flag

Dam #2 13° 5 11.8

Headgate 327°22' → 5 11.8  
141°24' flag route S. factory

1-



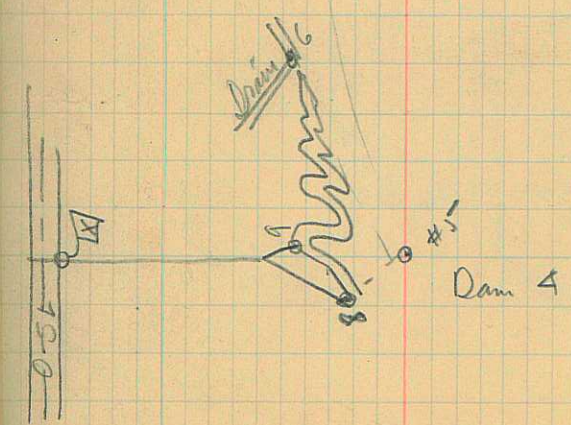
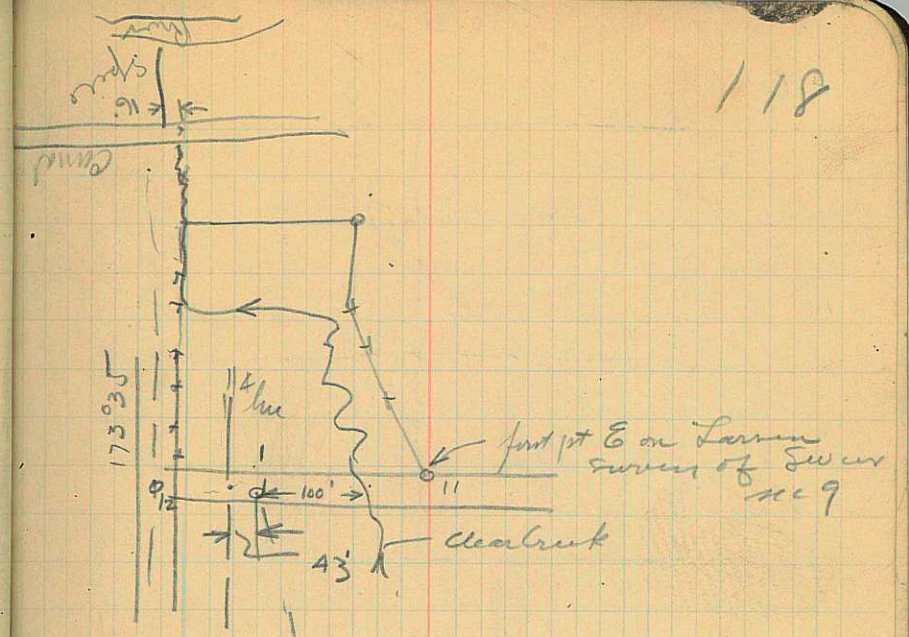
117 Remarks

Dam #1 ditch about 2 1/2' wide leads S. headgate flume 12' long

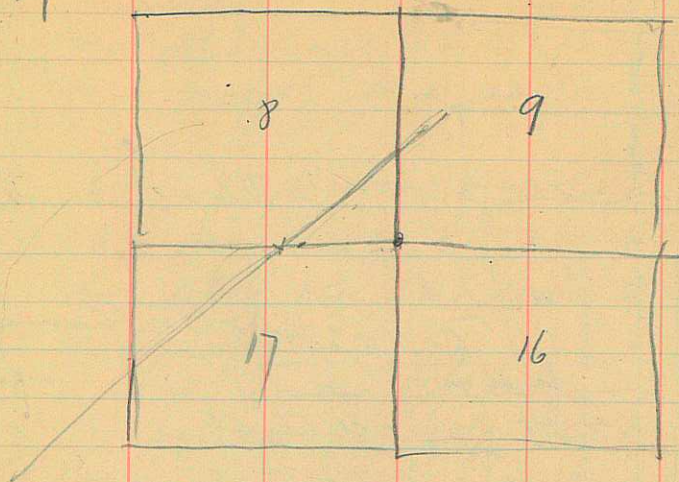
Dam #2 ditch about 2' wide

Dam #3 very crude no headgate for ditch 1 1/4' wide leads N along fence

Dam #4 is 4' wide old in appearance delapidated about S of sum here



119



17 103°30 120' dist  
 16 247° 6  
 15 272°35 2

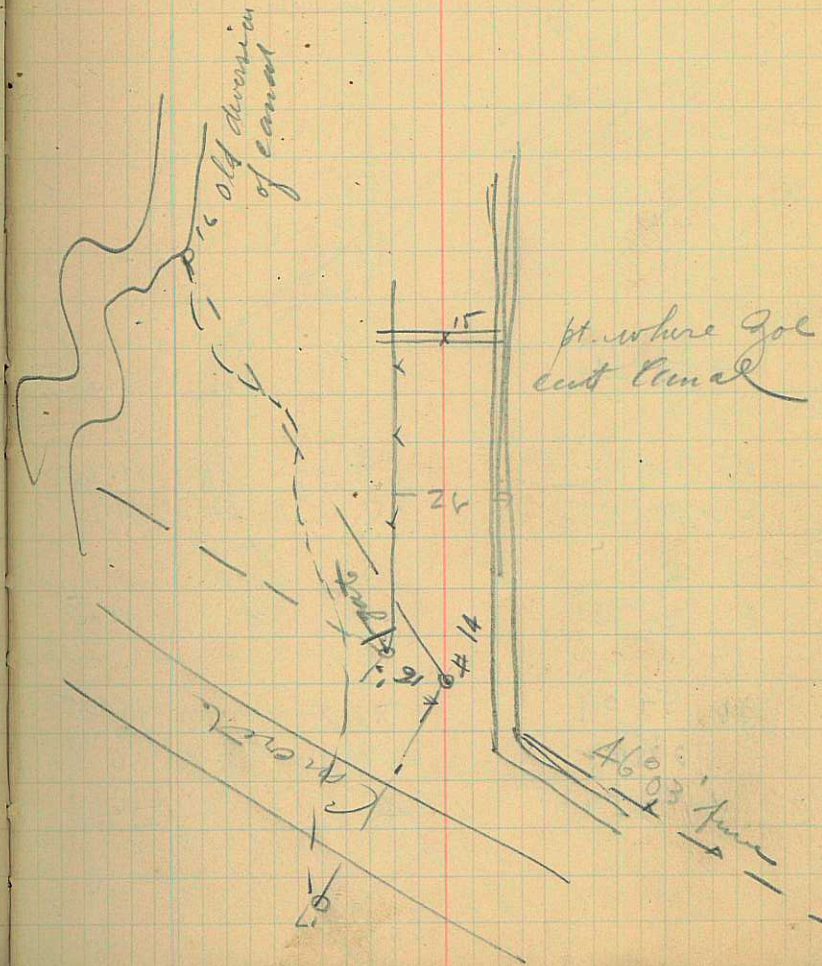
11.1  
 5.60

14-

new as base

6. 5 4 3 2 1  
 7 8 9 10 11 12  
 17 16 15 14 13

120



121

24-

24 59°26'

3

11.85

23-

23 129°02'

6

11.60

22 142°55'

7

11.28

21-

21 133°28'

+10'

7

11.5

20-

20 54°39'

7

11.45

3 19°02'

along O.S.L. trail

19 44°51'

4

5.75

18-

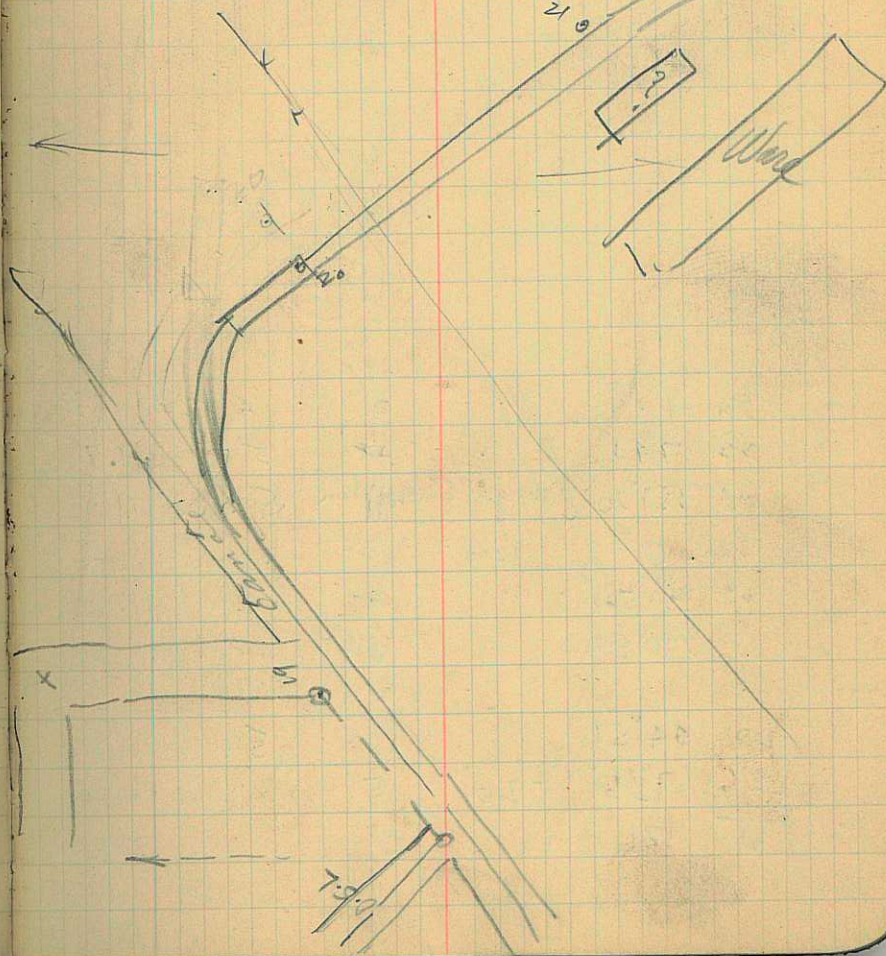
24

122

23

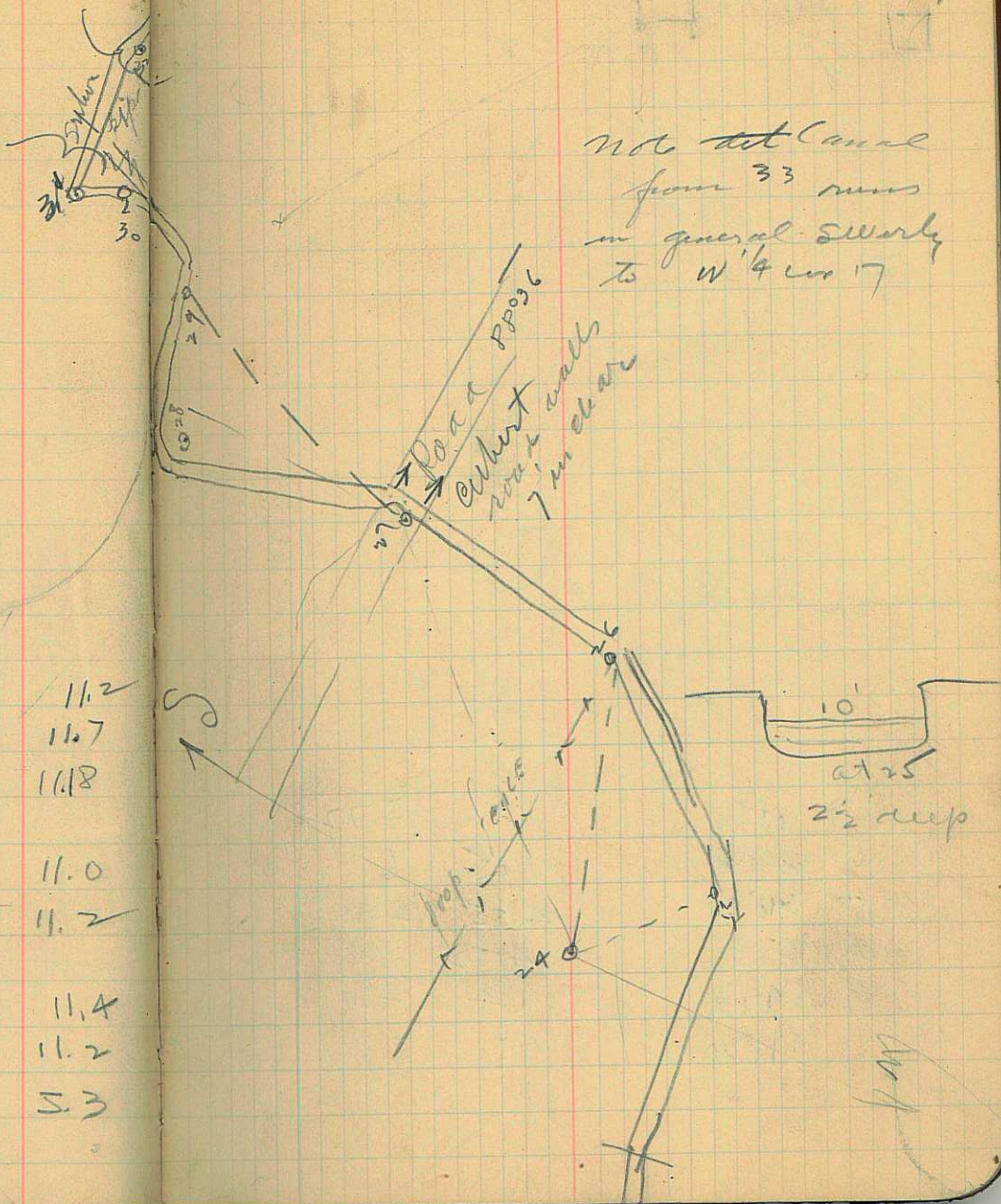
210

Wind



33	21°38'	0°	4	11.2
32	7°45'	14'	5	11.7
31	357°30'	beg of siphon	5	11.8
30	0°	1200'±		
29	4°51'		2	11.0
28	340°50'		6	11.2
27				
27	44°51'		5	11.4
26	67°36'	+20'	5	11.2
25	126°10'		3	11.3

24-



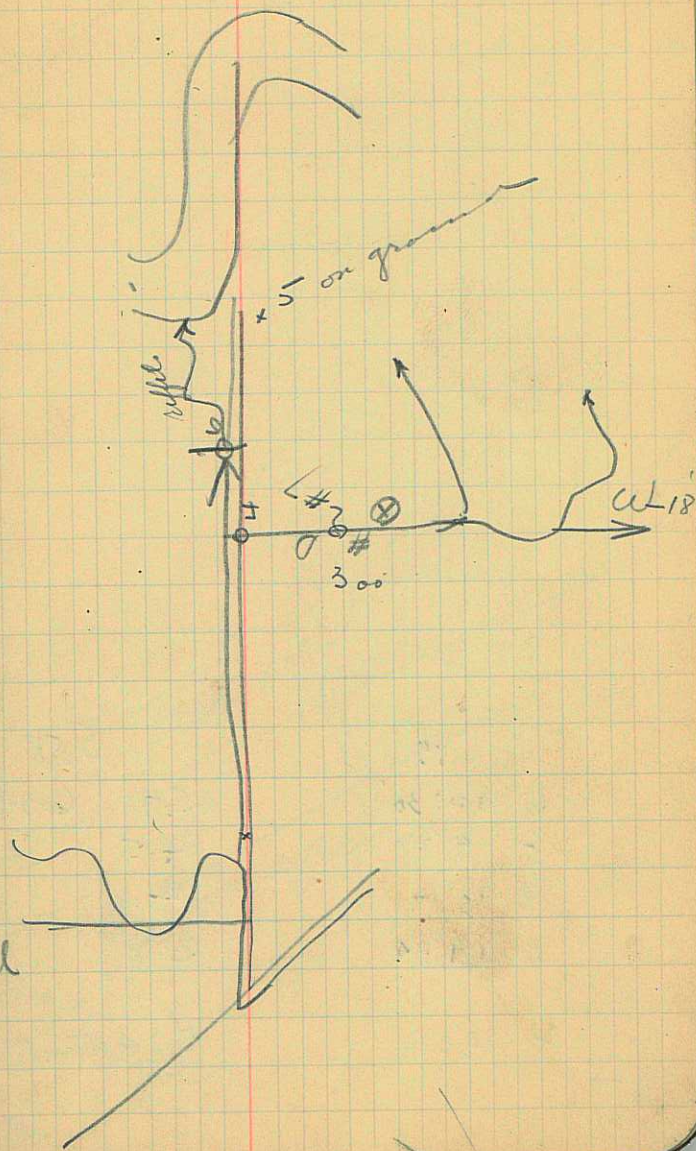
125

Spr Creek Arri  
Stubby at Baller a  
Spr - Bullock land

L C U

7	250		5.72	
6	336°30'	8.05	6.	0°
5	343°30'	4.85	2.40	0°
4	269°	4.82	5.60	0°
	197°30'	1.4	4.1	
	197°30'	0°	5.60	

126



30

top Com Wall  
on the

127

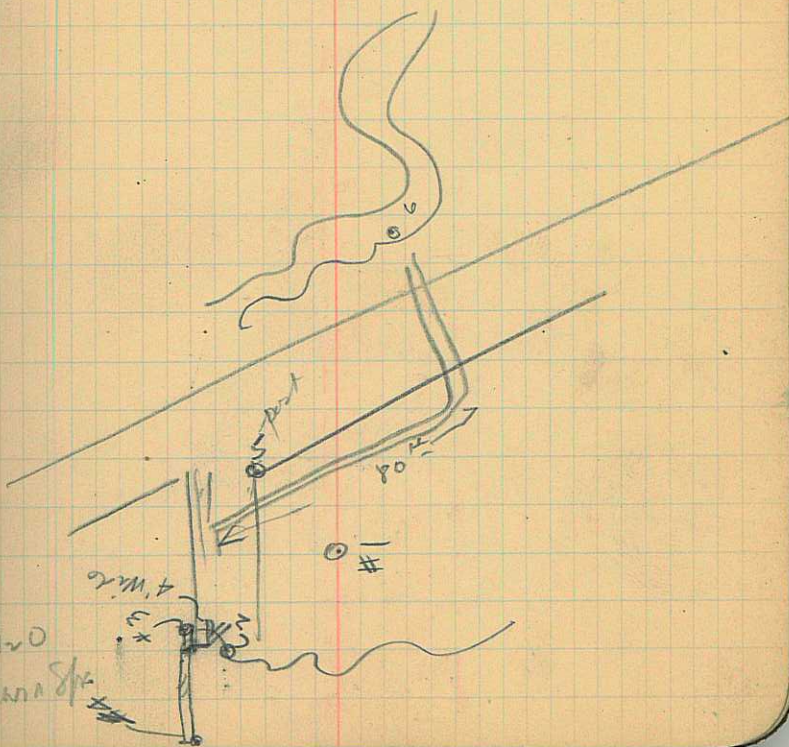
3

L C U

	99°	5.88	
6	207°30'	5.7	6.34
5	91°27'	4.5	4.87
4	13°17'	2	4.62
3	19°34'	3	4.67
2	14°30'	0°	5.42 6.25

1-

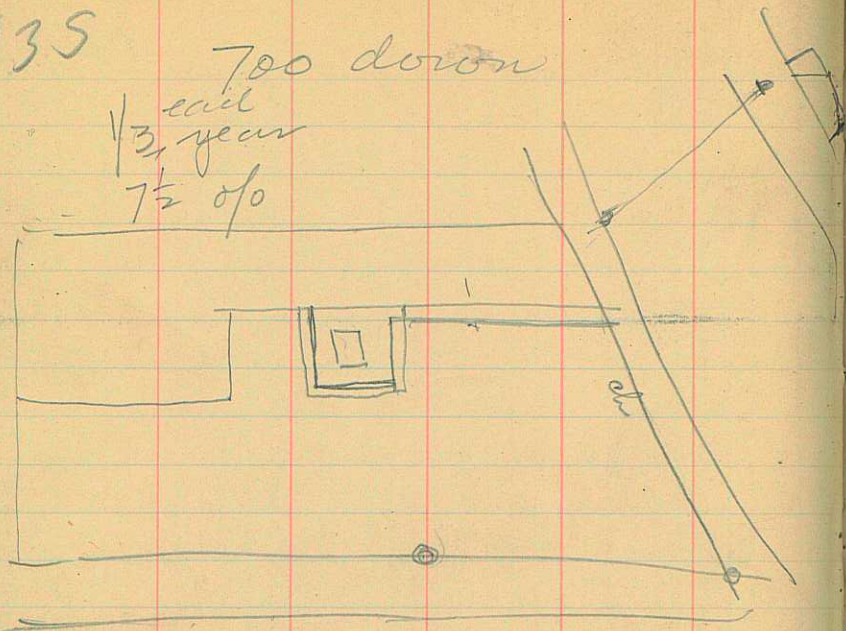
128





135

700 down  
 1/3 mile  
 year  
 7 1/2 o/o



\$

700 down

136

Dec 1<sup>st</sup> 1918 1/3 mile  
 Dec 1<sup>st</sup> 1919  
 Dec 1<sup>st</sup> 1920 was it  
 full left 7 1/2 o/o

$$s = R = \frac{50}{\sin. D/2} \quad (1) \text{ Degree of Curvature}$$

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

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

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

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

### EXPLANATION AND USE OF TABLES

Example.—Given P. I.—Sta. 161+60.35 to find Sta. of P. C.  
 $\Delta = 62^\circ 10'$   $D = 8^\circ 20'$ . From Table IV for  $1^\circ$  curve  $T = 81\frac{1}{3} = 414.49$  ft. From Table V correction = .36 or  $T = 414.85$  ft.  
 P. C. = Sta. P. I. -  $T = 161 + 45.50$ . Also from (4)  $L = 100$  ft.  
 P. T. = Sta. P. C. +  $L = 164 + 91.50$ .

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

—Deflection angle =  $\frac{1}{2} D$  for 100 ft.,  $\frac{1}{4} D$  for 50 ft., (in minutes)  $.3 \times C \times D^\circ$  or = defl. for 1 ft. from Table III. Sta. 158 of above curve =  $.3 \times 54.5 \times 81\frac{1}{3} = 136.2'$  or  $(54.5 \div 100) \times 54.5 = 136.2'$  from Table III. For Sta. 159 deflection =  $8^\circ 20' \div 2 = 6^\circ 26.2'$ , etc.

May be found in similar manner to tangents. Thus Sta. 158 of above curve is 91.37. For from Table IV for  $1^\circ$  curve  $E = 960.6 \div 81\frac{1}{3} = 91.27$  and from Table V correction = .10 or suppose  $\Delta = 32^\circ$  and  $E$  is measured and found to be 91.37. From Table IV  $E = 230.9$  and  $\div 42 = 5.5$  or  $D = 8^\circ 20'$ .

15  
 28  
 19  
 28 —  
 15  
 13  
 ———  
 108

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.  
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

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