#30

30

DIETZGEN

ENGINEERS'
FIELD BOOK
No. 404

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

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

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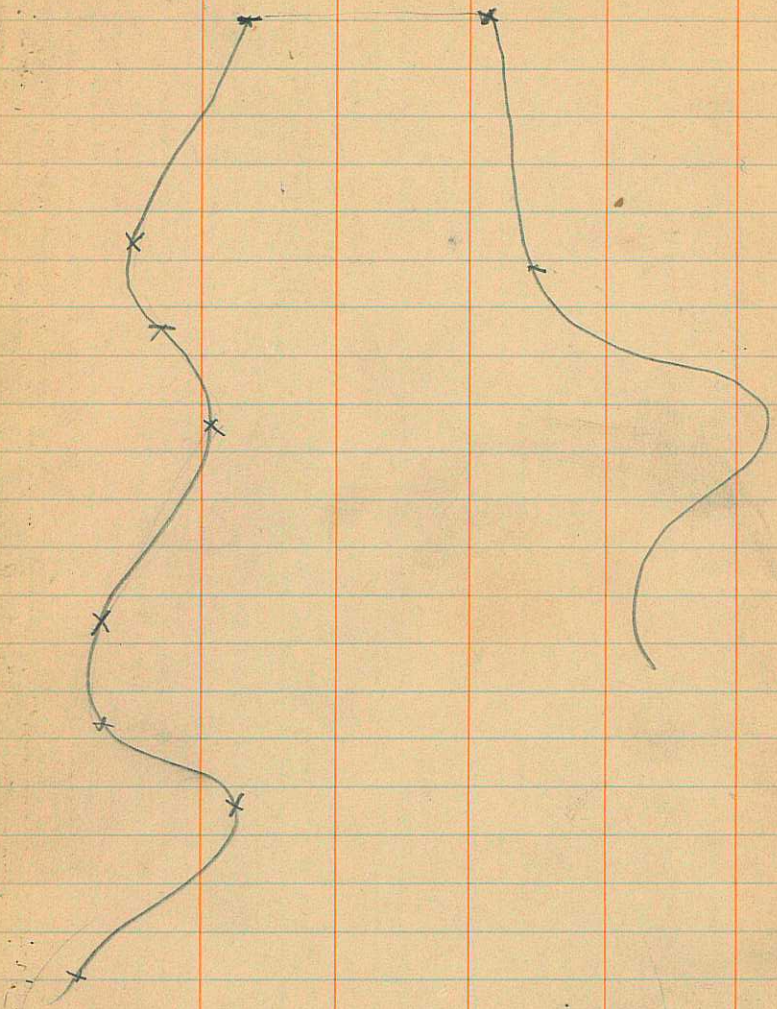
Eugene Schaub
Fogum Mat

Checked for Index
LBS. 8/3/33

#1020

No Smithfield & City
notes in ~~this~~ this book



4 Aug 5 1919 Tuesday

Survey of Paradise Irri
+ Res. Co. Res.
up. Paradise Creek

3s - South side

Contour 200 5
100' above creek
at Dam approx

	Az	Vert L	L	Stadia C	U	BS	FS	Ele	HI
20	137°30'		5		5.17				
19s	348°05'			6	13				
18s	353°50'			4	11.4				
17s	359°22			4	11.3				
16s	3°12'			4	11.3			200	
15	163°50'		3		5.80				
14	158°13		4		8.03				
13s	9°24'			4	11.4				
12	148°38'		2		5.5				
11s	13°09'			5	12.5			200	
10	115°24		2		5.3				
9s	18°52			4	11.5				
8	105°51		4		8.2				
7	82°30'		2		6.03			200	
6s	25°37			4	11.5			200	
5	65°51		5		11.4			200	
4s	36°52	-10	4	12				200	
3s	46°35			3	11.5			200	
2	61°20	0°		5.5	12.95	5.5			205.50
	49°16								

against ledge. formstr up
Dam site

to large pine S side
Dam site

1 — AI 96

6

	Az	Vert L	L	Stadia C	J	BS	FS	Ele	HI	
41 s	284°		6		11.35					
40 s	289°20'		6		11.3					
39 s	302°45'		6	~~6~~	11.38					
38 s	320°12'		6		11.9					R. side pork.
37 s	333°07'			4	5.9					
36	253°			3	10			200		
35	243°39'			5	11.4					
34	229°45'			5	11.15					
33	224°47'		1		13.2					
32	207°41'			6	11.6					
31	196°21'		1		11.2					
30	186°25'		2		11.35					probable earth Dam
29	182°20'		2		11.5					
28	164°			6	11.4					
27	151°22'			5	11.6					
26	150°			4	11.3					
25	148°			4	11.4			200.		
24 s - HI 5									203.7	HI 5
T.P 24 s	326°35'			4	11.7		6.80	198.7		
23 s	332°15'			4	10.5					
22 s	334°35'			5	11.6					
21 s	338°50'			5	11.7					

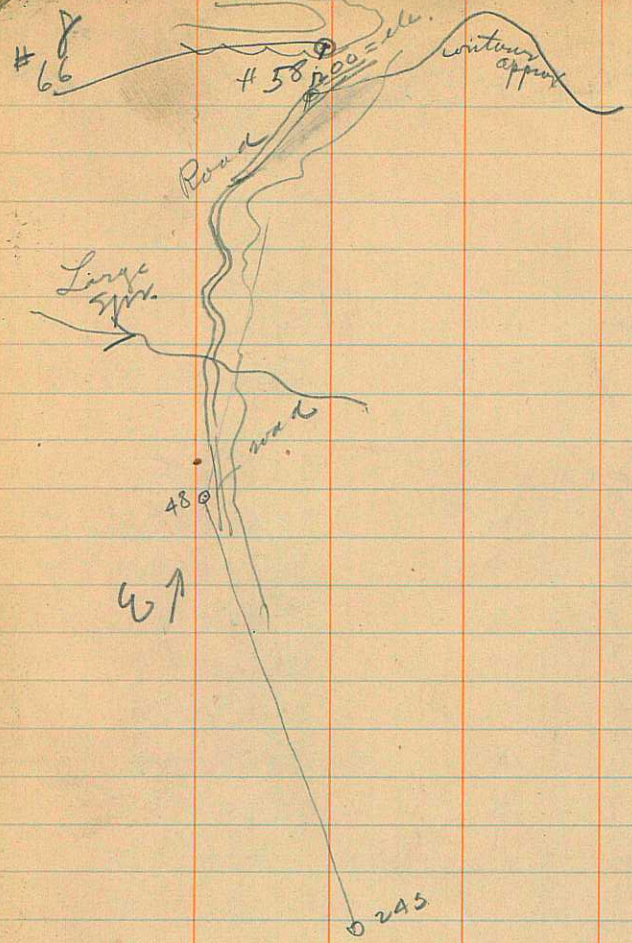
7

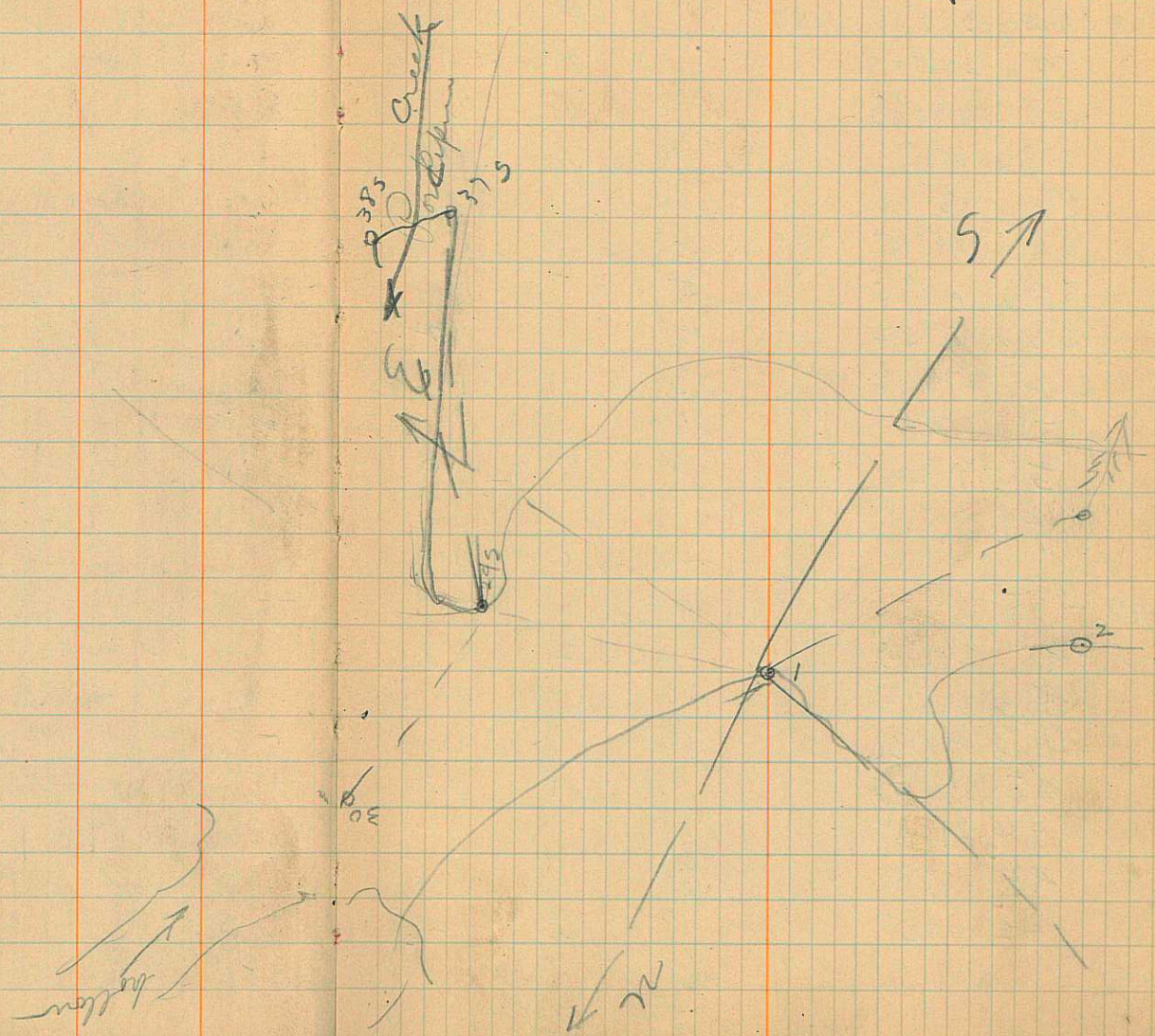
32635
180
14635

5
4.6

5

205.5
6.8
198.7
5
203.7


#8
#66
#58
contour approx
Road
Large spr.
road
48
245
W


Creek
385
375
295
30
1
2
S
N

51 - n side

Sta	Az	Vert L	L	Stadia C	Stadia U	BS	FS	Ele	HI	
63s	307°10'	+1°17'		6	11.5					Slope down 30° from this pt.
62s	311°	+1°	3		12.4					Slope down 30°
61s	317°20'	+57' ~~+51'~~	3		11.45					Slopes down 30°
60s	325°35'	+51'		8	11.8					slopes down 30°
59s	340°40'			8	13.3					
58	282°03'			7	13.90					
57s	356°		6		11.2					
56s	15°40'		6		11.2					
55s	28°15'		6		11.6					
54s	46°05'		5		11.45					203.7 ↓ 1
53s	62°52		4		12					202.3 5
52	279°56		3		11.25					
51	279°33		6		11.6					
50s	71°20'		1		10					
49s	79°10'									
				6	11.6					
48 - HI 5									207.3	
48	266°23'			2	13.6		1.40	202.30		
47s	273°15		1		13.2			200		on ledge
46s	273°30'		1		12.80					
45	260°55'			1	11.8			200		
44s	276°35'		2		12					
43s	278°40'		3		12.5					
42	253°			5	14					
24s - HI 5									203.7	Began Here 8/6/19 set 146°35 FS to #1

Pt	az	vert ∠	Stadia		
very pine on ridge	34°19	+24°30'			
68s	355°46	+3°50	8		11.25
67	357°22		12		13.7
58	102°03		11		11.70
66–					
65s	300°36'	+1°10		5	11.7
64s	304°23	+1°	1		12.9
48–					

282 03
180
102 03

5.00

200
11.4

200

206.4 211.4

{ slope down 45° from pt.

← 30° ⊙ → S

slope down 30° from this pt.

14 Survey of 8/6/19

175 foot contour

Paradise Cr & Res

	BS	FS	Ele	HI
1	.25		201.	201.25
		12.1	189.15	
	.25			189.40
		14.4	175.00	

		Vert L	L	Stadia C	U
82s	18°20		H	5	11.6
81	120°30'		5.55		7.00
80s	31°20'			5	11.9
79s	35°05'			4	11
78s	39°41'			4	11.3
77	121°45'		8		11.9
76	114°51'		2		5.8
75	110°		7		11.4
74s	46°			4	11.5
73	99°55'		1		5.4
72s	50°05			4	11.9
71	76°14		5		11.6
70s	53°48			5	13.5
69 – 4.8 = HI					
69	333°30'	-8°46'	4		5.70
	49°16				
1 – HI 4.75					

15

201.25
12.1
189.15
.25
189.40
175
14.40

Auto 15371 U 19

contour

not 1 – 69 on 200' con

BS	FS	Ele	HI
		175	
		175	
		175	179.8
		175	
	to pump		

175.8
179.8

S. side Dam

Stadia

Pt	Az	Vert L	L	U	U	BS	FS	Ele	HI
TP 106	288°16'			3	12.4		5.9		
105	284°30'			5	12.9				
104s	322°10'			7	11.7				
103s	330°30'			8	12.6				
102	283°30'			5	11.5				
101s	340°			8	11.75				
100	276°30'			6	11.15			175	
99	274°		4		11.9				
98	263°20'		5		11.55				
97s	337°08'		5		11.70				
96	259°50'		7		11.15				
95s	357°20'		6		11.03				
94	264°10'		3		5.52				
93s	12°12'		2		6.9				
92	119°10'		4		6.2				
89- HI 4.9	~~113~~								179.9
91s	330°54'			6	11.45				
90s	339°30'			6	11.6				
TP 89	299°52'		3		12.15		4.80	175	
88s	347°30'		1		12.5				
87s	356°15'			4	10				
86	288°15'		7		11.1				
85s	7°30'			4	10.2				
84	287°20'		4		6.2				
83s	13°			5	11.3			175	

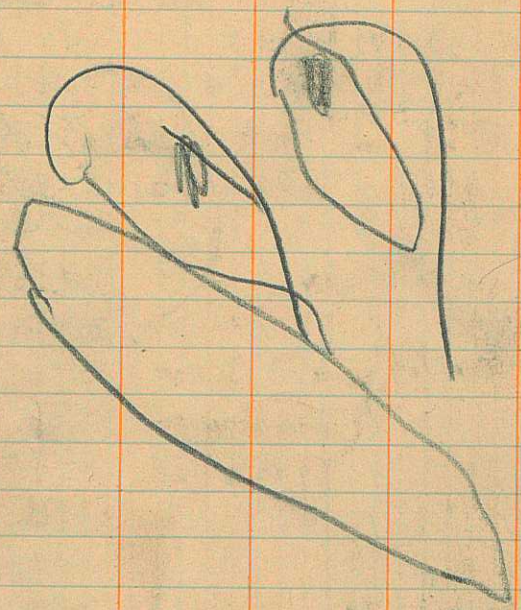
Pork hollow

near Pork. creek

note from #89
212+ 1000' to
sec cor

175.9
179.9

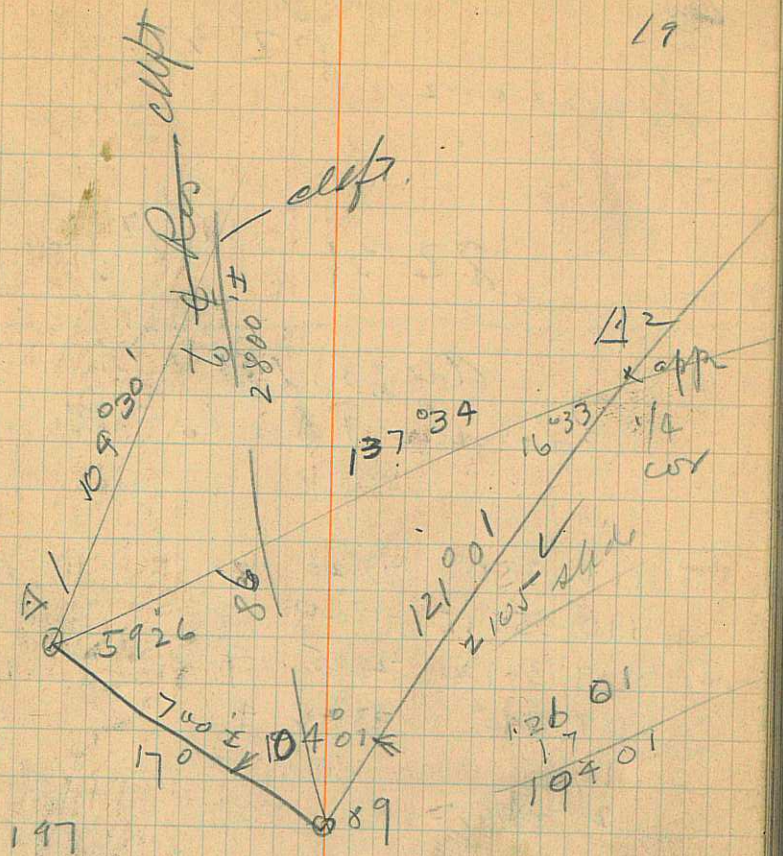
121°20'
3000'± to
opp cor



Δ^2 12°01'

Δ^1 17° +3°40' 1 8

89—



197
19660
13734
5926

137,34
12,01
1633
10466
5926
180 00

$\frac{\text{sin } 16°33}{700} = \frac{5926}{x}$

Hymn 8232

8231 Para

Aug 8, 1919
Para. Irr. & Res Co notes

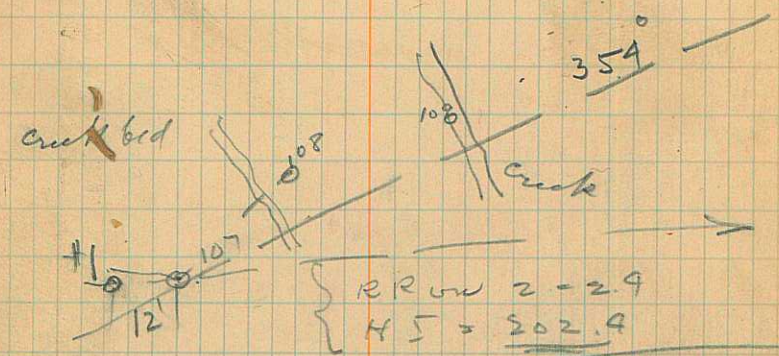
111	350°	-13°20'	8	11.78
110	350°15	-19°20	9	11.9
109	349°30	-27°25	9	11.4
108	340°	-43°42	4	5.95
1				
2	186°30			
107-				

cor	117°56	+ 6°	1	13.5
1-				
1		-6°	1	13.5

89 5¼ cor Sec 8
set m an 2 E

1225
5
6.3
2
126

C25



RR on 2 - 2.4
HS = 202.4

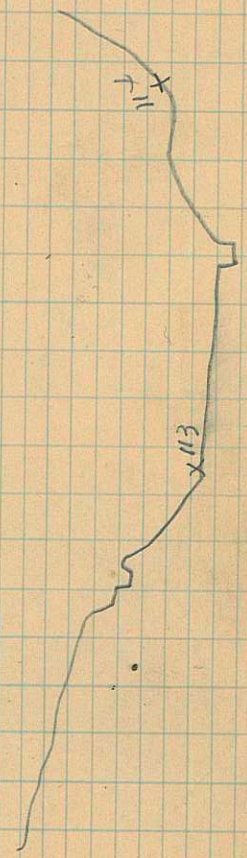
Merider thru #1
says N 3° 20' W

Hor. dist 1225'

set 49° 16 F to prime
needle S 62° 30' E

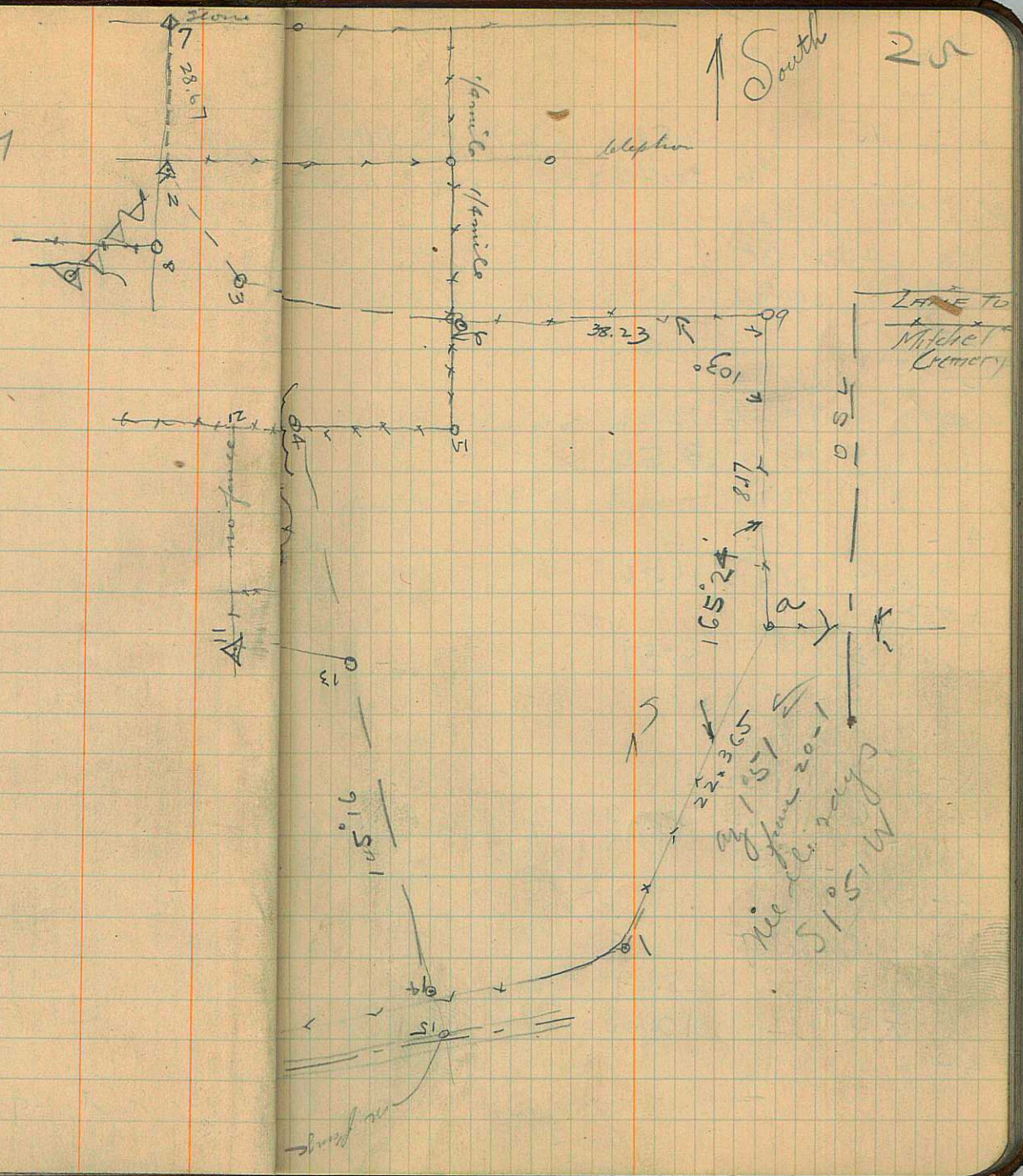
	119	5°	-3°51'	9		11.3
	113	14°	-17°24	11		11.52
112 -						
89	112	~~112~~ 6°20'	-4°20'	9		11.15
89 -						

25
800
20000



set 299°52

24 Survey for
Ruton & Rigby
Fri. 8/22, 1919
Pto Cy Hist.
Ch.


South
25
Stone
Fence
Telephone
Lane to
Mitchell
Cemetery
38.23
28.67
165°24'
91°15'
15°
Fence
Fence
Fence

		251°47	
15 –			
	15		31.80
	14	145°16	30.64
	semi for 1	199°28	
	△11	214°35	
		214°21	
13 –			
~~13~~	Semi For 1	186°33	
	13	145°16'	13.00
	12	269°15	3.50
	post △11	188°07	
4 –			
	△4	269°15	16.76
~~10~~ 5 –			
	5 ~~10~~	180°28	6.37
	9	90°30'	
6 –			
~~4~~	Semi for 1	171°52'	
	6	119°32'	37.29
	cor post 8	237°57	
3 –			
	8	180°05	
	Stone 7	0°	28.67
	⊼ 3	132°	10.00
89 2 –			

16.76

to ~~north~~ S ~~axial~~

O.S.L. S line of R + W

to pt about 10' N of △11

line of sight east edge O.S.L. smoke stack of pump

post near bank Bear River

to ⊼

to post & 37.32 to ⊼

flag staff on grain elevator

28

Aug 22 1919

Ob on 20

	Az	V. Ande	Un
Direct	63°38	43°07	4:15 new
Invert	64°41	42°28	
	64°09'30"	42 4730	
Direct	65°08'30"	42°06	
Invert	66 02'	41°31	
	65 35		
		41 4830	
	64 52°15		
Σ mean		42°18	cor = 42 17

$\varphi = 41°50'$

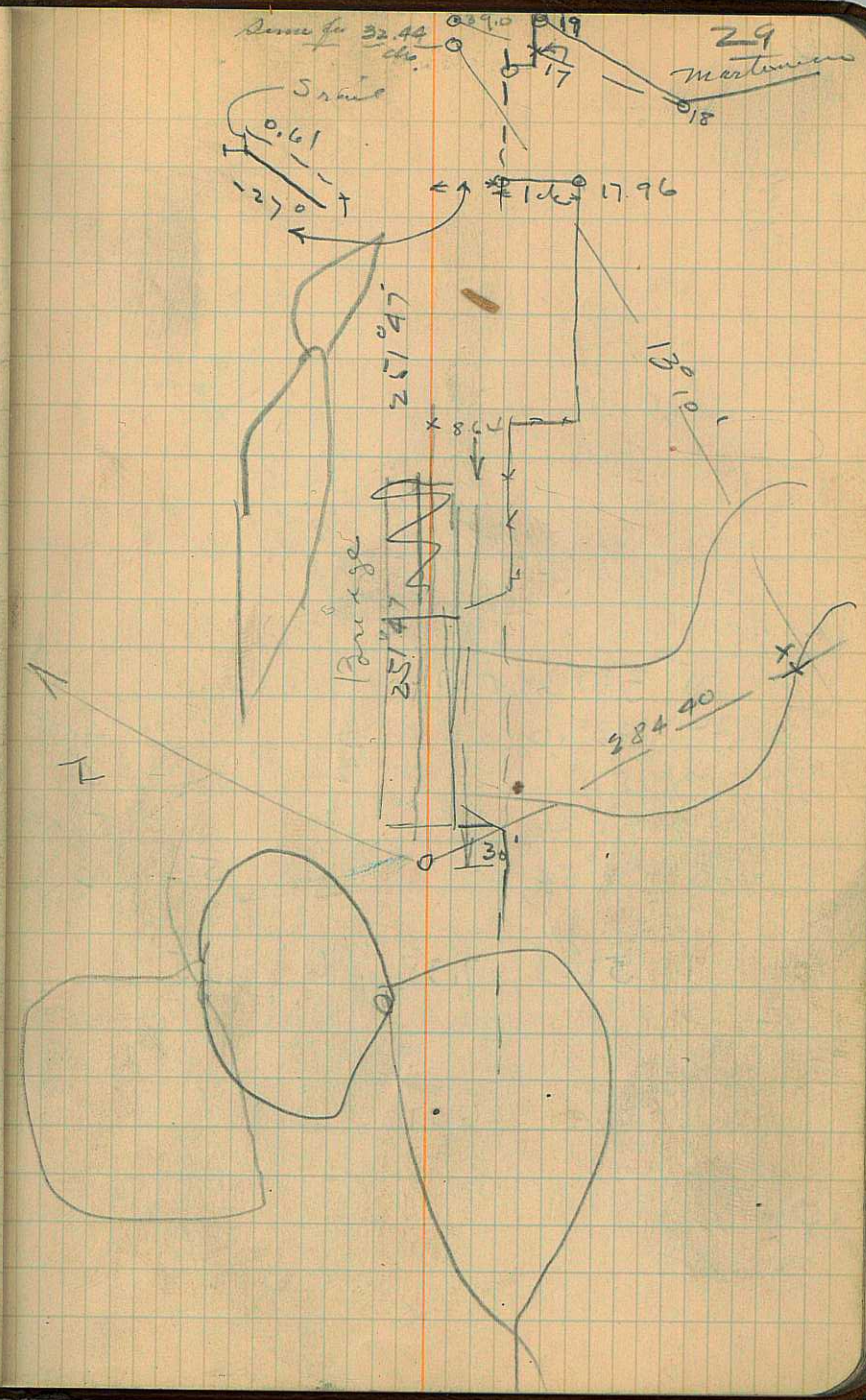
$Z = 47°43$

$\alpha = +11°54'10"$

Sub 54' from all

19	278°37	1.59
18	0°19	3.035
17	0°19	.766
16 -		
16	251°47	39.00
×	284°40	
89 15 -		

29



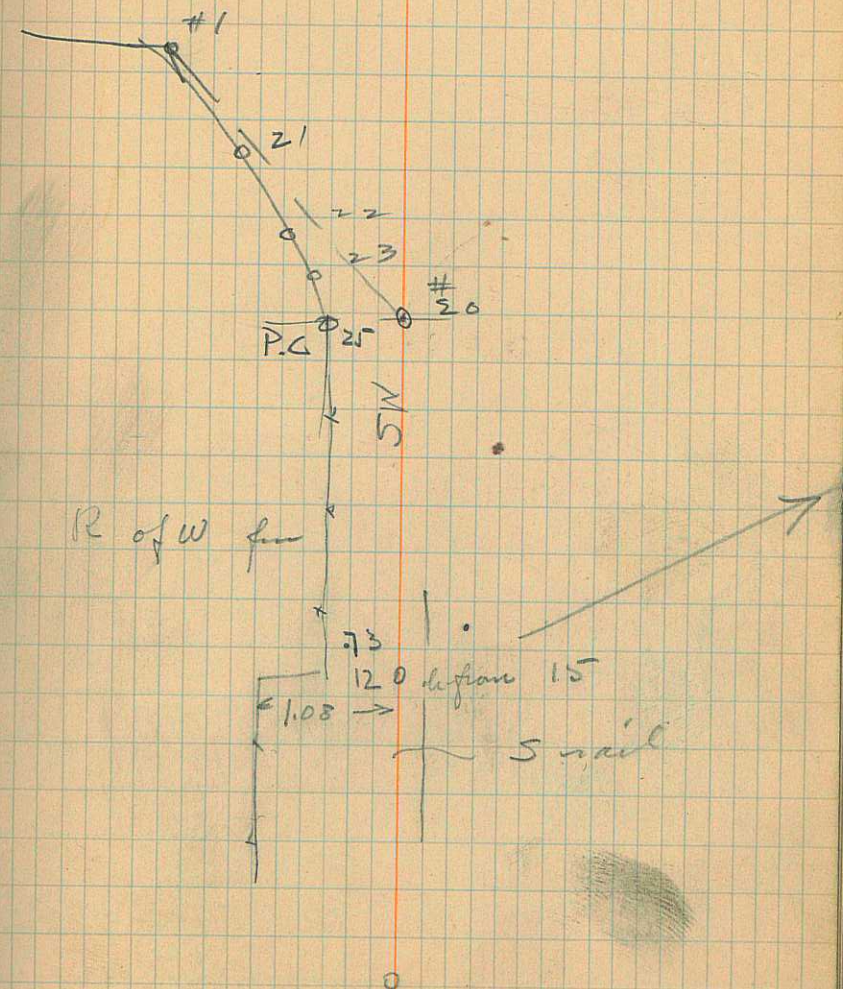
30

			∪	c	⌣
1 -					
25	342°30	0.71			
24	43°10		3		4.08
23	52°		2		4
22	53°26		2		5.02
21	52°54			5	3
1	51°08 (51°08)	7.38	6	3.5	
20 -					
20	71°47	26.07			
15 -					

8

232 5 31
1 80

25 47
18



32

~~3.381~~

3.81

6.17

6.17
3.81
2.36

4.88
2.36
2.52

Survey for Silas Wright et all Res #1

	BS	FS	L	C	J	Ele	H.I.
282°50				2	4.25	110	
320				9	11.23	100	
280°50			~~3.~~	2	3.95	110	
291°45			4	5.28		106	
316 20			10	12.6		100	
284°25			1.19	2		110	
300°10			5	6		106	
317°15			10.8	12		100	
233°07			1.7	2		110	
19°35			10		11.38	100	
73°			5.72		6	106	
51°15			11	11.98	12.1	100	
			~~11~~		~~12.1~~	100	
			~~11~~		~~12.1~~	106	
18°07							
	11.4						111.98
		11.9				110.58	
1–						110	
						107.40	top peg
		1				106	
PM	~~65°50~~	8.70			9.6		
#2	~~61~~			12.48	13.3	100	112.48
	~~17°36~~					NW cor garge	
1–							

111.98
4.58
107.40

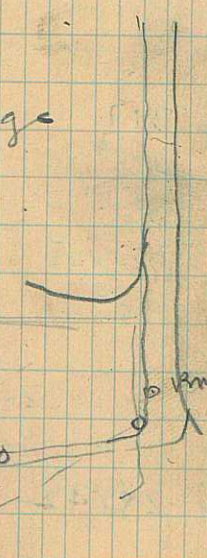
112.48
11.9
100.58
11.4
111.98

ove gulch

1
1.98
RR 5.98
cor garge

PM on iron

old High H2O



Pt	Az	BS	FS	L	C	U	Eb	HI
25	349°09			7		11.3	100	
24	15°12			9.08	level 6.2	~~9.08~~		
23	359°25			1		6.9	110	
22	14°22			6		11.7	106	
21	335°10			7		11.23	100	
20	328			7		11.72	100	
19	318°30			9	11.7		100	
18	314°40			9	11.58		100	
#1 [illegible]	67°30	8.39			8.39	9.24		
	62°25			11		12.60	100	
1 -								112.15
	317°			9		11.35	106	
	308°			4		6.2	110	
	331°			5		6.36	110	
	330°25			9		11.32	106	
	40°						110	
13 -		4.75						115.62
		~~4.75~~						
13	282°42		1.11		1.11	3.72	110.87	

116 / 7 / 4.6

112 / 2 / 9.2

100 / 400 — 600 / 1.6

110 / 103.7 / 6.3

112.15 / 84 / 103.75

6

Sand dam proper

near Sand dam 112.15 / 6

115.62 / 106

same ele. top dam 111.98
also n end 111
and where like goes 110.87
n E 4.75
115.62
9.62
5.62

HI 4.75

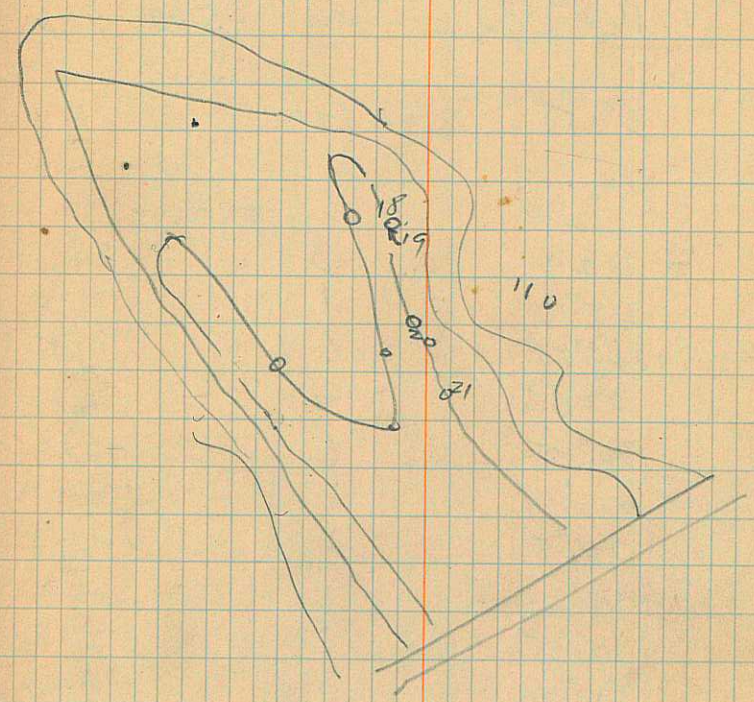
107.4 / 4.75 / 112.15

6'

#1

117
50
6.7

24



40

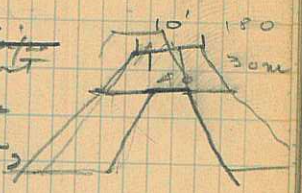
Sta Pt	Az	BS	FS	L	C	O	Ele	H I
	177°30'			5.09	7.6	level		
	176°50			level	6.50	7.62		
	168°			2	-5°08'	4.3		
	3°25			2.		11.2		
60-								110.20
#60	14°29		6.70	3		8.88		
	315°10			1		7.12	110	
	314°50'			6		11.9	106	
	321°15			2		7.7	110	
	321°45'			6		11.42	106	
	327°44			1		6.22	110	
	326°51			1		6.07	106	
	14°21			6		11.3	100	
	336°35			1		5.9	110	
	334°30			7		11.60	106	
	344°43			1		6.75	110	
	344°42			1		5.72	106	
	355°15			1		6.8	110	
	358 05			6		11.34	106	
	358°12			7		11.98	100	

1-

4

4/3
2.5
6
ac
18

{ on dam ~~over~~ over ~~pipe~~ ~~culvert~~ ~~ewed~~ culvert



{ near outlet lowers end of dam and about ℄ N + 3

{ NW¼ sec 10 T12S-
44E

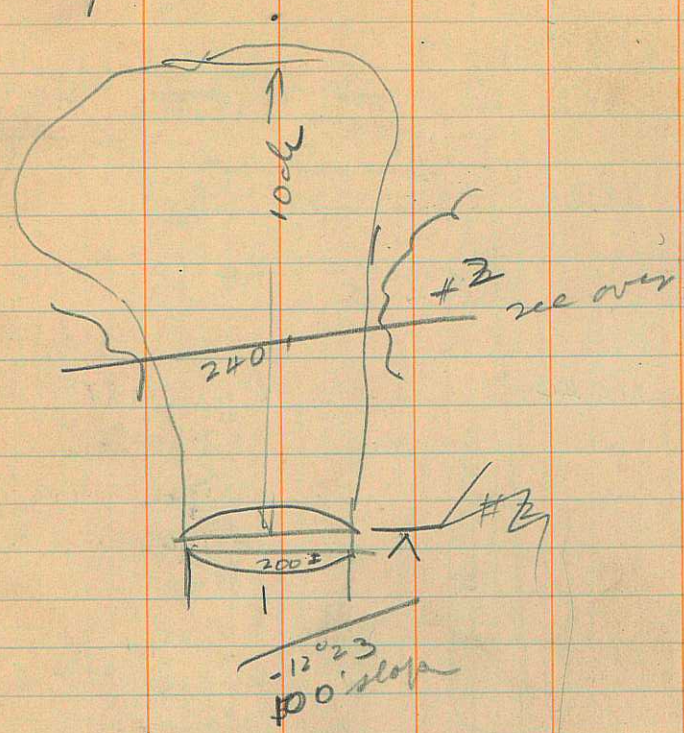
H I 4.75

110.20
7.6
102.6

110.20
6.5
103.7

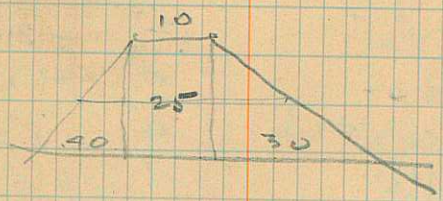
112.15
6.70
105.45
4.75
110.20

Bennington
Spr Creek Hollo



Dam 25' feet

3



12
200
2400
60
13400

13400 | 27
5000

5000 yds
cost 1000.00

Storage 30 ac
2 ac irri unit
$65.00 per ac

1000 | 35
70

65

44 #3

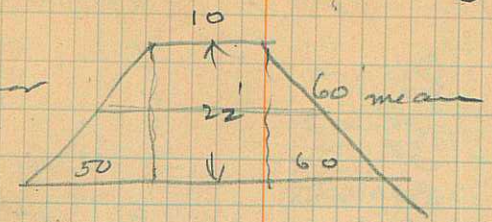
19	287°44	4	-2°44	5.80
18	270°25	2	-8'	5.37
17	243	4	-1°20	5.83
16	342°45	4	-8°05	5.1
15	166°	1		1.45
14	205°30	1		1.52
13	221°50'	1		2.1
12	342°38	3		5.4
11	230°	2		4.05
10	323°20	3		5.62
9	312°45	3		5.17
8	238°30'	1		4.4
7	286°20	3		5.4
6	243°	1		4.95
5	276°10'	3		5.8
1	254°25	0°	1	3.6
4	249°20	0°	1.0	3.6
3	270°	0°	1.6	3.8

1-

#2 45

$ 5500 yds
1000 00

250
600
150000 27
162000 6



lower

110
10
1.20

99
99
891
891
.97

105
97
7.35
945
101

14
14
3
21
22

260
2
520

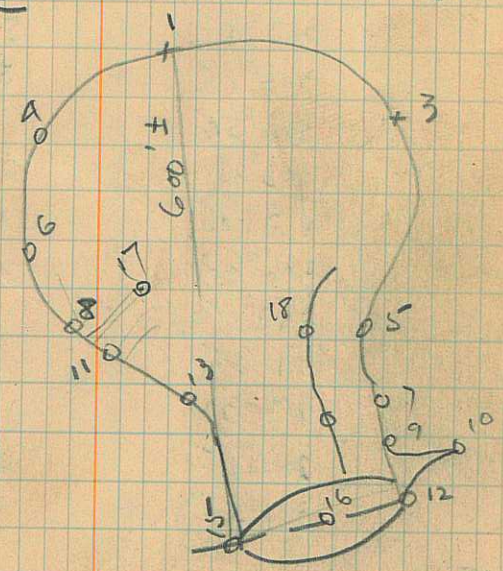
bottom

85
4
3.20

30

30 ac est. cap.

$ 40.00 per ac



HI 101

46 Res site #3

Fish Pond Bennington

Pt	Az	BS	FS	L	C	U	Ele	HI
	329°05			5		13	100	
	332°08'			4		11.25	100	
	335°40'			6		13.05		
	318°50'			6		12.4	100	
	322°40'			7	0°	12.95	100	
	325°45			7.6	0°	~~13.00~~ 13.07		
	317°17			4° level	4. 7.2	8.2	106.1	
	328°52			6.03	10.5	0°		
	331°20'			+	6×4	12	110.0	
	333°53			4.5	9.3 level	0°		
	335°47			10.28	13.15	0°		
	357°50			7	-1°22'	11.7		
	303°15			5		11.7	110	
	304°14			5		11.2	110	
	350°54'				6	11.45	110	
	303°33'			6		11.50	110	
	357°15			1		11.7	110	
	306°30'			2		6.8	110	
	287°47							
	7°35			1		12.1	110	
	306°30			7		11.7	110	
	302°35			4		6.6	110	
	330°40'	13.3		8		13.02	100	113.3

1 —

Est flow 1 cfs 47

113.3
9.2
106.1

113.3
11.5
101.8
9
92.8

S pond 1000

S. side pond 113
92
21

pond

pond 2.44
47
1708
976
11,468

12 4 11.20
6
5 6 2

important in grove

over pond near grove
on old low dam
in hollow ℄ dam

SW cor chem house
S end Dam

		L	C	d
5	251°21'	5		7.85
4	251°21'	1	+20'	4.37
3	251°21	2	~~+2~~ +1°37'	8.10
Δ2 –				
Δ2	337°29	4	–30'	10.35
	339°41'	5	–1°02	10.89
	318°52	3		10.5
	227°10	1	8	+5°42
	321°50'	6		13.5
	326°11	5		13.1

1–

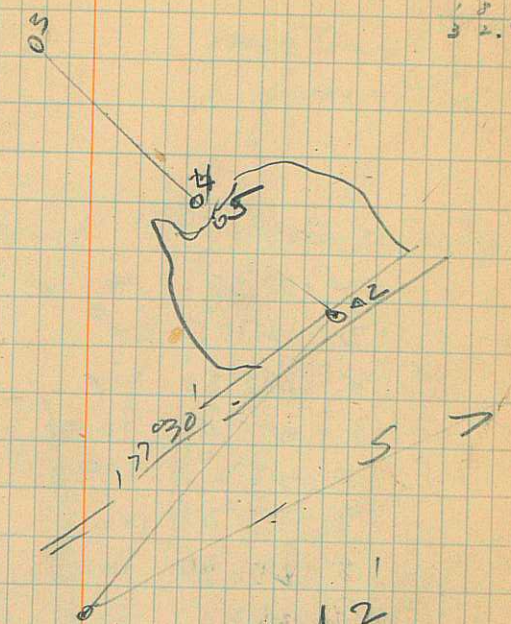
100

100

3000 250/1

1000 16

18
18
140
18
32.4



HI 105.00

add 2' to minus angles

Pond

NE corner 10 . 12S44E

Small Pond

SO -

	20		~~10~~	C	U
		20			
	304°15				
14	198°48'	x	4	-13°45	5.33
13	270°50'	x	3	-4°46'	5.26
12	282°50'	100	4		9
11	277°40	100		3	5.7
10	283°	100	3		8
9	271°30	100	6	+	11.3
8	287°30	100	4.15		9
7	262	100	7	+	11.3
6	290°30'	100	5		8.80
5	243°45	100	5		8.25
4	290		6	+	7.45
3	230°17		4		7.18
	175°10				
2	191°		3		5.47
2			0°	6.8	

1 -

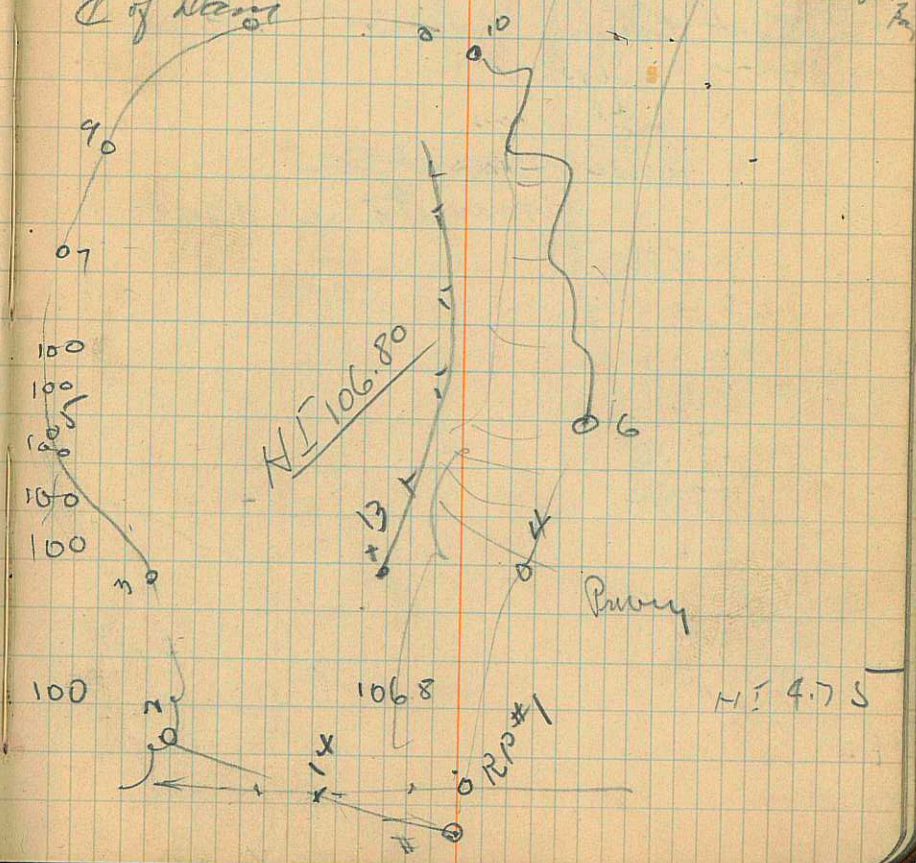
#4 on Chas Astle

S1

material favorable

9' to post mark RP#1

℄ of Dam



S2

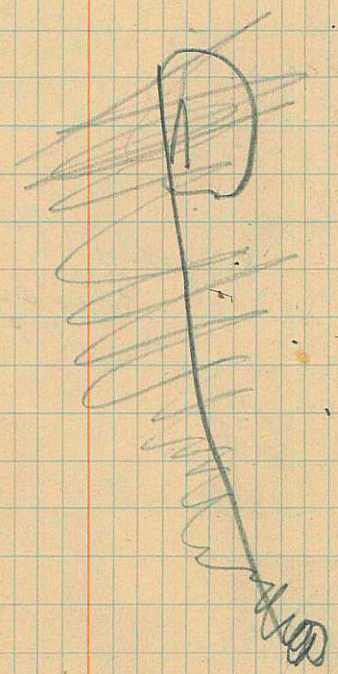
1250
1250
15
1250
5250

5500

Sprink Creek By Epsen #1
Sprink Creek #2
Fish Pond #3
Chock Cherry Hollow 1 & 2
#2 upper

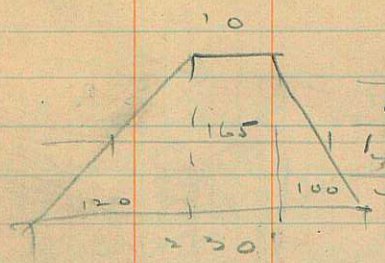
Victor ~~mauritzen~~
mauritzen land
N.G.

S3



54 J. Dunn 9/26/19

4 miles N Bennington Ida.
on Big 9 mile Creek
or Dunn Canyon



165
20
3300
150
16600
3300
49600

3300
200
660000
120
23000
690000
27
20000

$6000.

15 6 130 ac

8000 | 120
720 | 66
800 | 70

6	S61°E	3	0°	5.06
5	S69°E	10	-16°52	11.55
4				
3	S38°E	4	-11°15	5.14
2				
2	241°	1	+1°33	11

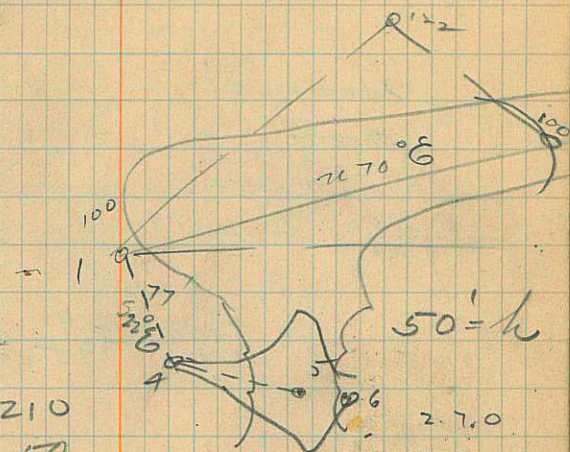
Ele H I

18 S 5
3

150

27.8
155
1390
1390
278
43.090

100
43
57
6
51



Report
Top 210
Mesh 50
Set 9000 +

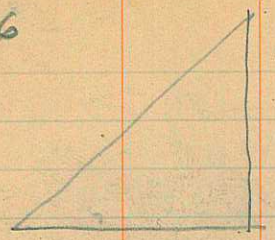
45' clay
Top 225

2.7.0
127.00
5
19.13
1.15
9565
1913
1913
21.99 95

127
22
105

122 127.00
100.00

100.00



Dam

45
120
~~40~~
900
45
2 | 5400
2700
150
135000
2700
405000 | 27
27 | 15
135

20000 yds.

$18000 yds
$7000 –
800 valves
900 rip
500
$9200 spill

9000 | 120
840 | 75.00
600

120 ac ft.

1000

10000 | 7500
75
250
225
250

13 | 13

16

12 60
8 30
4 50

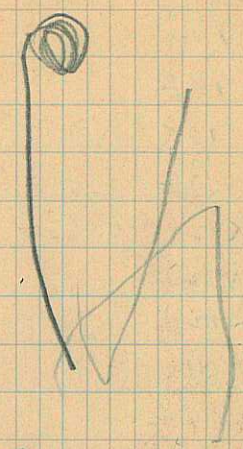
Thomas Stevens
Martin Winters
Thomas Mumford

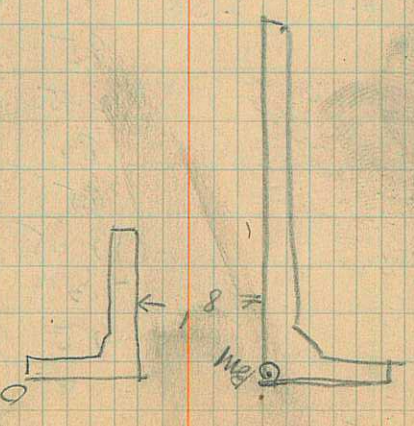
S8 Profile Survey 1/17/20
of the Spring Creek Irri
Canal

cb = Canal bed
cbk = " bank

S9

Sta	BS	FS	m	Ele	HI	
7			6.4	97.35	✓	cbk
7			9.35	94.40	✓	H2O
7			10.7	93.05	✓	cb
6			6.9	96.65	✓	cbk
6			9.35	94.40	✓	H2O
6			10.9	92.65	✓	cb
5			6	97.75	✓	cbk
5			9.32	94.43	✓	H2O
5			10.61	93.14	✓	cb
4			5.4	98.35	✓	cbk
4			9.16	94.59	✓	H2O
4			10.3	93.45	✓	cb
3			4.9	98.85	✓	cbk
3			9.1	94.65	✓	
3			10.	93.75	✓	cb
2			8.88	94.87	✓	H2O
2			9.5	94.25	✓	cb
1			5.40	98.35	✓	cbk
1			8.35	94.40	✓	
1			9.3	94.45	✓	
0			9.55	94.20	✓	cb
0			8.30	95.45	✓	H2O
Bm	3.75			103.75	103.75	
				100		





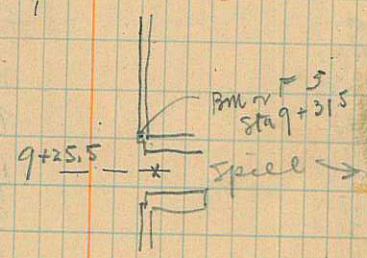
b = bed
K = bank
W = Water

61

60 Sta	B S	F S	m	Ele	H I
15K			5.6	95.62	
15W			7.15	94.07	
15b			9.5	91.72	
14K			5.6	95.62	
14W			7.06	94.16	
14b			9.7	91.52	
13K			5.6	95.62	
13W			7.0	94.22	
13b			9.5	91.72	
K12			5.5	95.72	
W12			6.9	94.32	
b12			9.1	92.12	
K11			5.8	95.42	
W11			7	94.22	
b11			9	92.22	
K10			5.7	95.52	
W10			6.8	94.42	
b10			8.8	92.42	
℄ W rail 9+91.0			2.85	98.37	
9+31.5	6.05	8.58		95.17	101.22
9+25.5			9.5	94.25	
9+25.5			12.95	90.60	
K9			8	95.75	
W9			9.5	94.25	
9			13.25	90.50	
8			7.3	96.45	
8			9.5	94.25	
8			11.5	92.25	103.75

Cancel width 10'

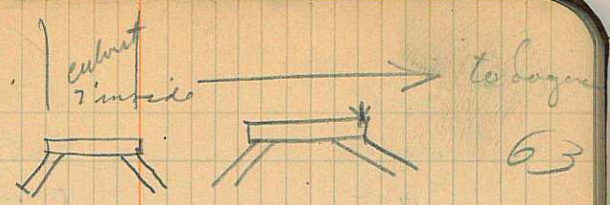
on top West rail



b
C bK
H 20
c b

62

Sta	BS	FS	IH	Ele	Rl
23+57.5 BM	4.20	3.81		97.41	101.61
23+57.5 W			7.25	93.97	
23+57.5 b			8.8	92.42	
23 b			4.0	97.22	
23 W			7.2	94.02	
23 b			8.5	92.72	
22 K			4.6	96.62	
22 W			7.35	93.87	
22 b			9.3	91.92	
21 K			4.8	96.82	
21 W			7.21	94.01	
21 b			9.3	91.92	
20 K			5.5	95.72	
20 W			7.2	94.02	
20 b			9.5	91.72	
19+19			4.56	96.66	
19 K			5.6	95.62	
19 W			7.24	93.98	
19 b			9.6	91.62	
18 K			6	95.32	
18 W			7.16	94.06	
18 b			9.9	91.32	
17 K			5.8	95.42	
17 W			7.15	94.07	
17 b			9.6	91.62	
16 K			5.3	95.92	
16 W			7.15	94.07	
16 b			9.4	91.82	101.22



63

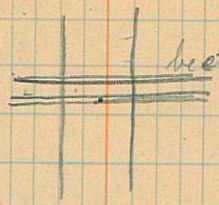
S. end bridge over Co. Road

width 11'

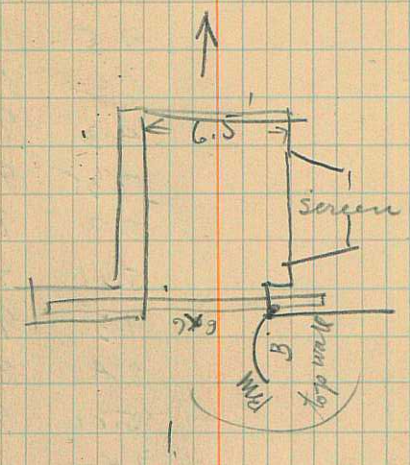
to S rail, on right look toward Hygrove (RR on rail)

30K	5.1	96.57	✓
30W	7.65	93.97	✓
30 b	10.2	91.41	✓
29+54 b	9.5	92.11	✓
29+54 bottom concrete flume	6.56	95.05	✓
29+54	4.12	97.49	✓
29K	5.00	96.61	✓
29W	7.68	93.98	✓
29 b	10.1	91.51	✓
28K	5.6	96.01	✓
28W	7.55	94.06	✓
28 b	10.	91.61	✓
27K	54	96.21	✓
27W	7.65	93.97	✓
27 b	10.0	91.61	✓
26K	5.6	96.01	✓
26W	7.6	94.01	✓
26 b	9.6	92.01	✓
25K	4.8	96.81	✓
25W	7.75	93.86	✓
25 b	9.7	91.91	✓
24K	5.1	96.57	✓
24W	7.7	93.91	✓
24 b	9.7	91.91	101.61

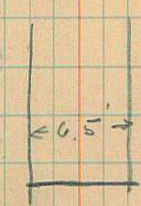
Top



Sta	BS	FS	[illegible]		
37 K			3.6	94.71	✓
37 W			6.95	91.36	✓
37 b			8.4	89.91	✓
36 K			3.7	94.61	✓
36 W			7.05	91.26	✓
36 b			7.9	90.41	✓
	3.58	6.88		94.73	98.31
35 K			6.2	95.41	✓
35 W			10.2	91.41	✓
35 b			11.3	90.31	✓
34 K			6.4	95.21	✓
34 W			10.1	91.57	✓
34 b			11.2	90.41	✓
33 K			6.7	94.91	✓
33 W			10.2	91.41	✓
33 b			11.35	90.26	✓
32 K			6.9	94.71	✓
32 W			9.95	91.66	✓
32 b			11	90.61	✓
			9.92	91.69	✓
BMb			6.58	95.03	✓
W			7.78	93.83	✓
31+10 b			10.55	91.06	✓
31					101.61



on H_2O below gate



above gate

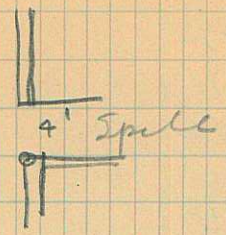
concrete bottom

gate Sugar pump

68 Sta	BS	FS	HI	Ele	HI
45+20 Bm			6.30	92.01	✓
45+20			8.58	89.43	✓
45K			6	92.31	✓
45W			7.45	90.86	✓
45+0 b			8.7	89.61	✓
44K			5.5	92.81	✓
44W			7.4	90.91	✓
44b			8.8	89.51	✓
43K			4.7	93.61	✓
43W			7.5	90.81	✓
43b			8.8	89.51	✓
42K			4.3	94.01	✓
42W			7.35	90.96	✓
42b			8.8	89.51	✓
41K			5.00	93.31	✓
41W			7.3	91.01	✓
41b			8.4	89.91	✓
40K			5.00	93.31	✓
40W			7.22	91.09	✓
40b			8.2	90.11	✓
39			5.7	93.61	✓
39W			7.22	91.09	✓
39b			8.3	90.01	✓
38K			5.0	93.31	✓
38W			7.1	91.21	✓
38b			8.1	90.21	98.31

on top concrete wall
Spill, on crest

Width 12'



70 Sta, BS FS cm

I = ice 71

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

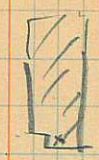
55 K		4.7	92.21	✓	
55 b		6.8	90.11	✓	1' ice
54+10					
54		5.4	91.57	✓	
54		7.1	89.81	✓	8" I
53 K		4.8	92.11	✓	
53 b		6.8	90.11	✓	I 1'
52 K		4.6	92.31	✓	
52 b		6.3	90.61	✓	I 1'
51 K		4.3	92.61	✓	
51 b		6.2	90.71	✓	I 1'
50 K		4.3	92.61	✓	
50 b		6.0	90.91	✓	I 1'
49 K		4.4	92.51	✓	
49 b		6.3	90.61	✓	I 1'
48 K		4.4	92.51	✓	
48 b		5.8	91.11	✓	on I
47 K		3.5	93.41	✓	
47 b		6.00	90.91	✓	Ice 1' deep
	3.26	4.66	93.65	96.91 ✓	
46 K		5.8	92.51	✓	left bank
46 b		7.35	90.96	✓	ice 1' deep
				98.31	

{ to ℄ sec 8 N + S fence between Zallman etc

72

Sta	BS	FS	m	Ele	
66K			4.5	93.18	
66b			9.9	87.78	
65+32			7.27	90.41	
65K			5.1	92.58	
65b			9.7	87.98	
64K			6.6	91.08	
64b			8.3	89.38	
	5.05	4.28		92.63	97.68
63K			4.2	92.71	
63b			8.2	88.71	
62K			4.2	92.71	
62b			8.3	88.61	
61K			4.3	92.61	
61b			8.4	88.51	
60K			5.0	91.91	
60b			8.2	88.71	
59K			4.8	92.11	
59b			8.00	88.91	
58K			5.1	91.81	
58b			7.4	89.51	
57K			4.3	92.61	
57b			7.2	89.71	
56K			4.1	92.81	
56b			6.5	90.91	96.91

73



on top upper end wall con. ...

Ditch

6" Snow

1' I

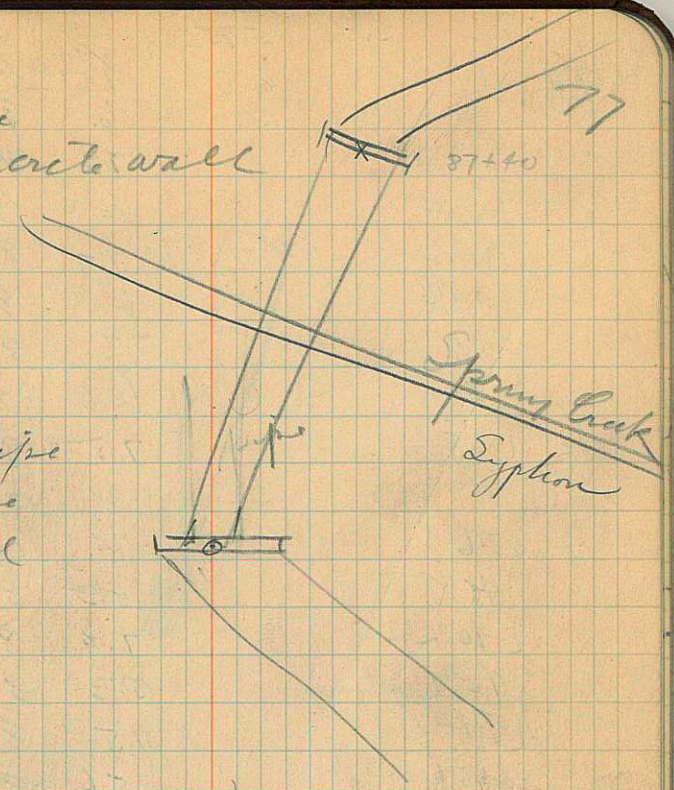
1' I

Sta	BS	FS	m	Ele	
77 K			7.1	90.58 ✓	
77 b			10.7	86.98 ✓	
76 K			7.5	90.18 ✓	
76 b			9.8	87.88 ✓	
75 K			6.7	90.98 ✓	
75 b			10.0	87.68 ✓	
74 K			7.	90.68 ✓	
74 b			9.8	87.88 ✓	
73 K			7.	90.68 ✓	
73 b			10.	87.68 ✓	
72 K			7.2	90.48 ✓	
72 b			9.8	87.88 ✓	
			10.10	87.58 ✓	canal bed
			~~10.10~~ 7.9	89.78 ✓	top wall mtch outlet S side Str to S side E & W 4th Str. Co Road
71+72					
71					
70 K			6	91.68 ✓	
70 b			10.1	87.58 ✓	on earth
69+29			3.22	94.46 ✓	RR on top pipe flow well RR on coupling
69 K			4.6	93.08 ✓	
69 b			9.5	88.18	
68					
67 K			4.8	92.88 ✓	
67 b			9.4	88.28 ✓	97.68 Snow

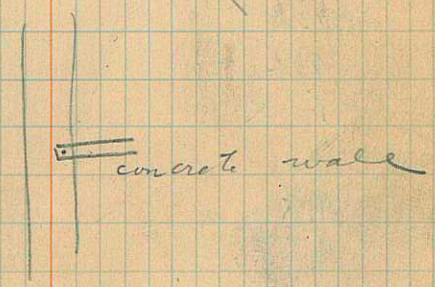
Snow & ice from stock yards to flow well

Sta	BS	F.S			
	4.65	7.37			95.16
			8.8	90.57	
				89.08	
87+40			7.60	90.28	
~~87 140~~					
			11.83	86.05	
			9.15	88.73	
85+15			8.04	89.84	
85					
84 K			6.2	91.68	
84 b			11.3	86.58	
83 K			6.	91.88	
83 b			11.0	86.88	
82 K			5.5	92.38	
82 b			11.0	86.88	
81+69			8.53	89.35	
81 K			6.7	91.18	
81 b			11.1	86.78	
80 K			6.7	91.18	
80 b			11.1	86.78	
79 K			6.6	91.28	
79 b			11.2	86.68	
	6.60	6.40		91.28	97.88
78 K			6.6	91.08	
78 b			10.5	87.18	

top pipe
on concrete wall



bottom pipe
top pipe
top wall



Cancel 9' wide

	3.50	5.75			
102			6.00	89.41	92.41
102			7.5	87.66	
101 K			6.	89.16	
101 b			7.7	87.46	I 1'
100 K			6.0	89.16	
100 b			7.7	87.46	
99 K			6.	89.16	
99 b			7.7	87.46	I 1'
98 K			6.3	88.86	
98 b			7.5	87.66	1' I
97					
96					
95 K			5.3	89.86	
95 b			7.9	87.26	
94 K			5.3	89.86	perhaps a foot of snow (below spine)
94 b			7.5	87.66	
93 K			5.6	89.56	
93 b			7.7	87.46	
92 K			4.2	90.96	
92 b			7.6	87.56	
91 K			4.0	91.16	
91 b			7.8	87.36	
90 K			5.3	89.86	
90 b			8.	87.16	
89 K			4.1	91.06	
89 b			8.1	87.06	
88 K			4.2	90.96	
88 b			8.1	87.06	95.16

113 K			3.2	89.47 ✓	
113 b			5.80	86.87 ✓	
112 K			3.0	89.67 ✓	
112 b			6.9	85.77 ✓	
~~112~~			~~6.4~~		
111			6.8	85.87 ✓	
BM 110+20	4.07	4.31		88.60	92.67 ✓
b			6.7	86.21 ✓	
109 K			4.	88.91 ✓	
109 b			6.5	86.41 ✓	
108 K			4.1	88.81 ✓	
108 b			5.3	87.61 ✓	
(C)			4.12	88.79 ✓	
107+40					
107			4.0	88.91 ✓	
107			5.3	87.61 ✓	
106			3.6	89.31 ✓	
106			5.4	87.51 ✓	
105			3.3	89.61 ✓	
105			5.3	87.61 ✓	
105					
104			5.3	87.61 ✓	
			7.0	85.91 ✓	
103			3.70	89.21 ✓	
103			5.4	87.51	92.91

on I 1' bank earth

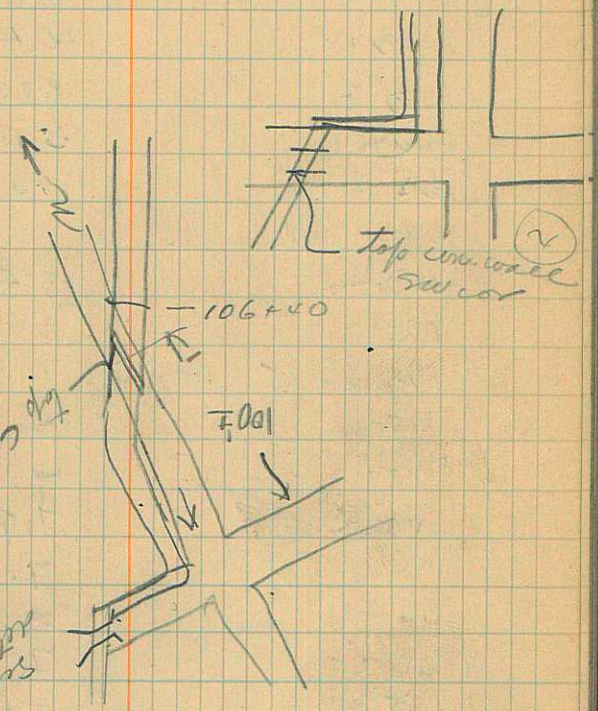
Co Road S 37°06' W

503 R1

81

on earth

snow



about 2 rds W of Canal

82

127 K			3.00	91.16	
127			9.3	earth ~~84~~.86	84.86
126 K			3.8	90.36	
126 b			8.0	86.16	
125 K			3.8	90.26	
125 b			9.00	85.16	
124 K			4.2	89.96	
124 b			8.0	86.16	
123 K			4.4	89.76	
123 b			8.80	85.36	
122 K			5.0	89.16	
122 b			9.0	85.16	
120 K			3.5	90.66	
119					
	6.15	4.66		88.01	94.16
118			2	90.67	
118			4.3	85.37	
117 K			1.7	90.57	
117 b			7.	85.67	
116 K			4.1	88.57	
116 b			7.	85.67	
115 K			3.6	89.07	
115			5.5	87.17	
114 K			3.5	89.17	
114 b		5.	5.3	87.37	92.67

K = bank
b = bed
83

I 1'

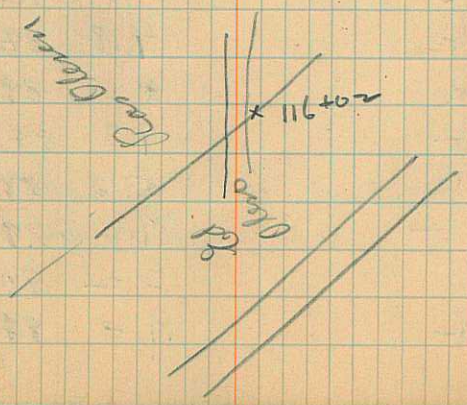
train comes in from east between 126 – 127
1/4 c.f.s

I 1' 10.0' wide

earth

I 1'

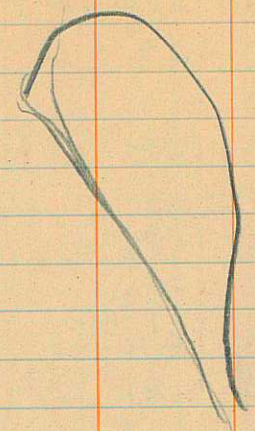
I



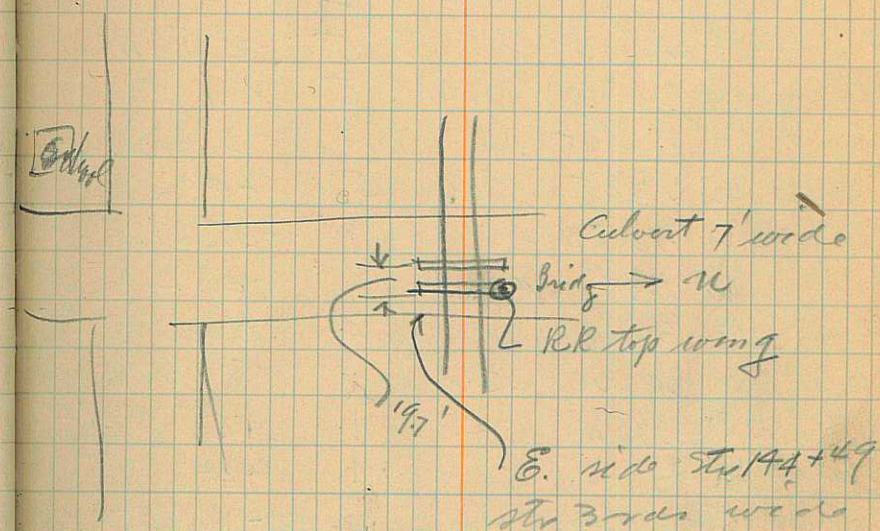
Sta	BS	FS	~		
140			4.3	89.54 ✓	
140			10.8	83.04 ✓	
139 K			5.3	88.54 ✓	
139 b			10.4	83.44 ✓	
138 K			5.6	88.24 ✓	
138 b			10.4	83.44 ✓	
137 K			5.	88.84 ✓	
137 b			10.4	83.44 ✓	
136 K			4.4	89.44 ✓	
136 b			10.1	83.74 ✓	
135 K			4	89.84	
135 b			10.	83.84 ✓	
	4.48	4.80		89.36	93.84
134 b			10.3	83.86 ✓	
133 K			4.6	89.56 ✓	
133 b			10.2	83.96 ✓	
132 K			5.2	88.96 ✓	
132 b			10.4	83.76 ✓	
131 K			4.	90.16 ✓	
131 b			9.8	84.36 ✓	
130 K			4.8	89.36 ✓	
130 b			9.7	84.46 ✓	
129 K			5.0	89.16 ✓	
129 b			9.6	ear. 84.56 ✓	
128 K			3.2	90.96 ✓	
128 b			9.5	84.66	94.16

Ditch about 8' wide here

Sta. Comes + N + S line between Olson + Anderson



4.11		89.73
14+66	11.0	82.84
14 K	5.2	88.64
14 L	10.9	82.94
143 K	5.0	88.84
143 L	10.9	82.94
142 K	5.2	88.64
142 L	11.	82.84
141	10.7	83.14 93.84

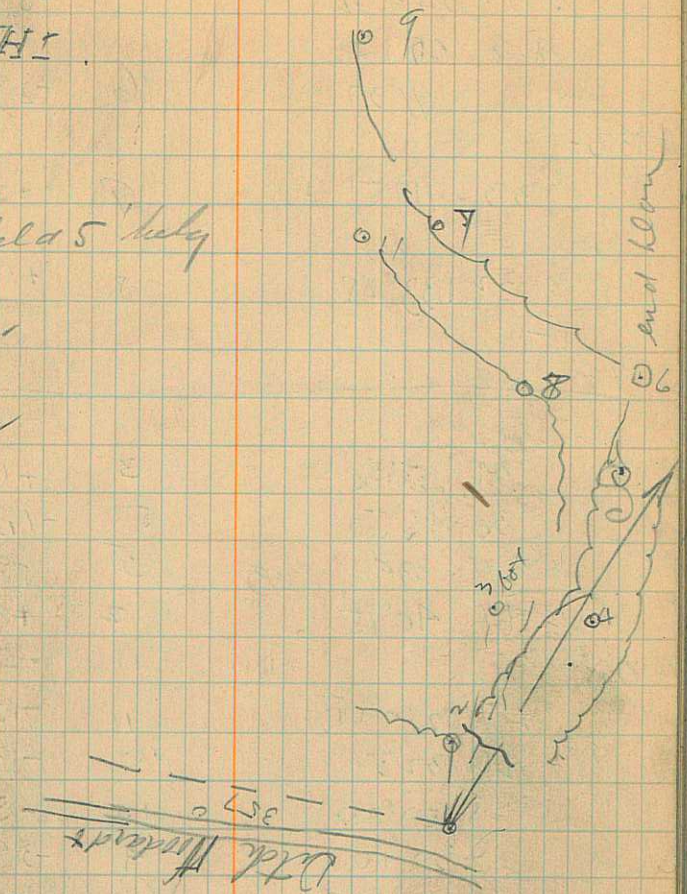


88 Res Survey for Franklin C. R. Orri

Ele ✓ Feb - 7, 1920 89

22	348°35	BSFS	3	-10°38	5.15	62 bot N side
21	286°30		10	-2°20'	11.3	88
19	275°50	125	6	+40'	12.4	105 - HI
20		1.25				
19	269°20	1.00	2		12	105
18	272°		+22	7	11.8	105
17	282°15		-1°05'	10	13.6	bot (75) held 5' hely
16	287°	920	2	+24	11.2	105 ✓
15	291°12'	660	5	-2°15	11.6	bot 71 ✓
14	298°48	750	5	+31	12.5	105 ✓
13	306°45	6	3	-3°8	9	bot 66 ✓
12	313°45	750	5	+40	12.50	105 ✓
b 11	321°50	490	7	-3°50	11.9	64 ✓
10	335°	420	7	-4°22	11.25	63 ✓
9	322°20		3	+30	9.5	105 ✓
8	347°30	350	8	-5°43	11.5	61
7	328°07	520	7	+50'	12.2	105 ±
6	357°30	503	1	+47'	6.03	108 ✓
5	358°42	370	2	-1°44	5.7	91 ✓
4	5°8'	201	8	-6°30'	10.2	73 ✓
3	343°50	180	10	-11°06	11.82	61 ✓
2	327°50	148	10	-14°35	11.52	57 ✓
	314°26					

1 -

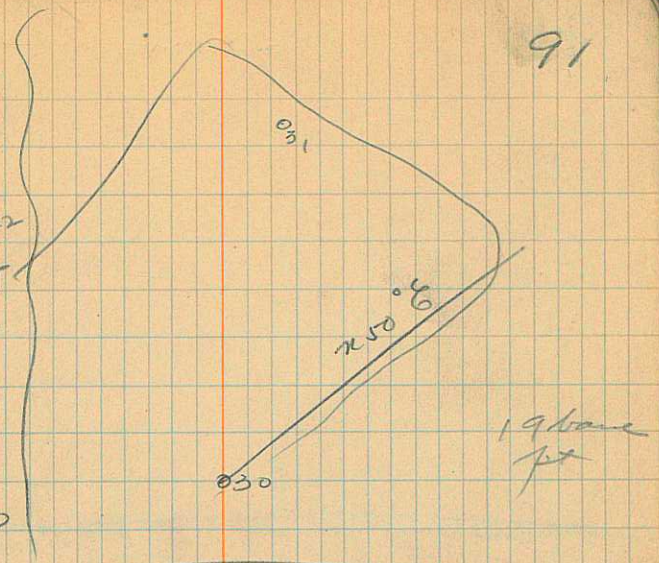


to E end Kirks Bark

H.I 105.00 possible H2O level

 Ties to corner

△ 34	344°32'		1	-3°30'	14.0	
△ a	300°12					
	91°37		6	-2°30'	11.83	to ar post n E cor 22 to E cor 15 of SW 15
33-						
33	117°51		9	+2°08	5.45	
32						
32	133°28		8	+19°30	5.6	
1-						set 314°26



31	184°30'		3	+19'	5.6	107 end of 105 contour I
30	186°50'		5	-1°13'	5.80	
29	334	23	5	8°10'	5.23	105
19	40°15'		2	+27'	5.6	105
28						HI 105
27	284°45		11	-12°32'	11.83	95
26	323		10	-13°05'	11.05	90 n bot
25	57°20		10	-5°10'	11.1	104
24	37°10		4	-3°28	6.1	106
19	343°45		6	-1°15	11.2	~~124 = HI~~
23						124 = HI
	251°		4	+1°14	5.9	105 n side
20-						

Δa 268°57
37 150°27

Δ34

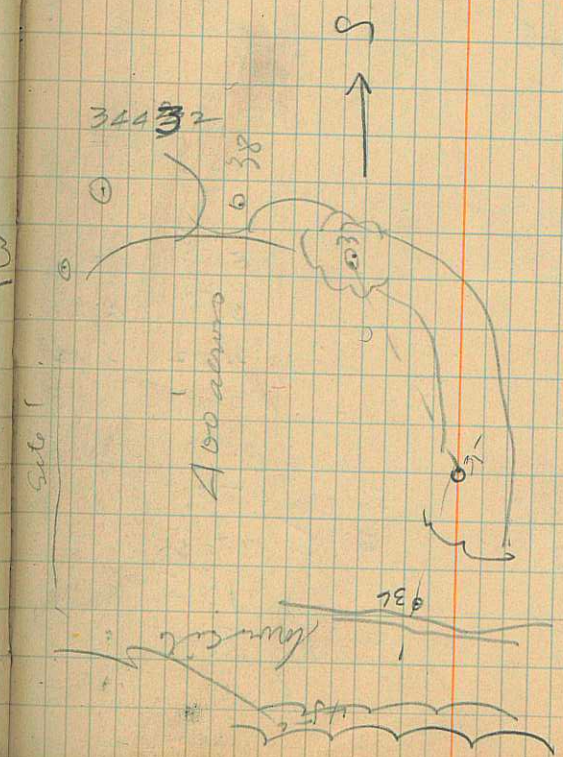
39	312°50	3	+2°	S.
38	322°	11	-57'	12.03
Δ 34	328°50	6	+2°10'	10.45
1	211°50'	5	+52'	11.4

37 —

37	320°38	4	+7°30	5.65
36	187°47	11	-30°	11.82

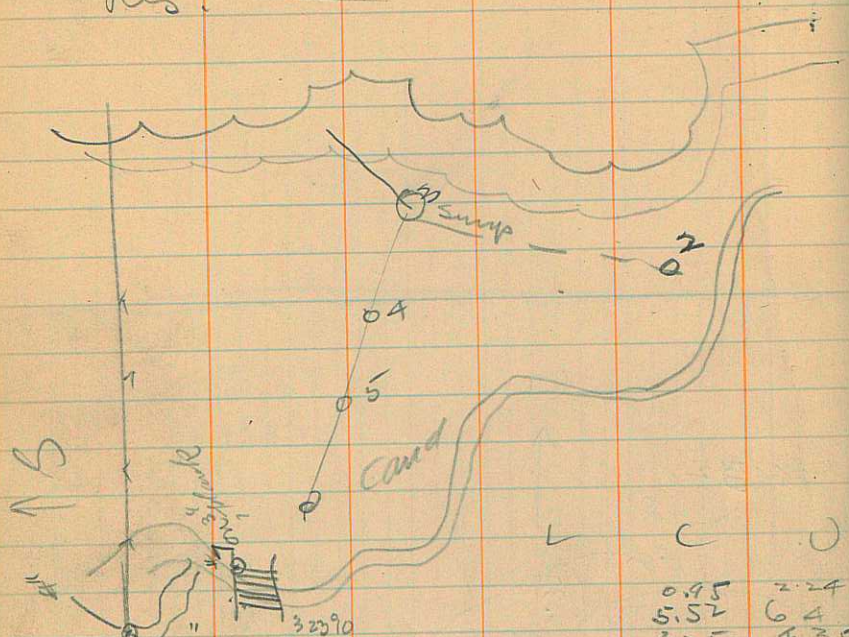
35 —

New a



94 2/19/20

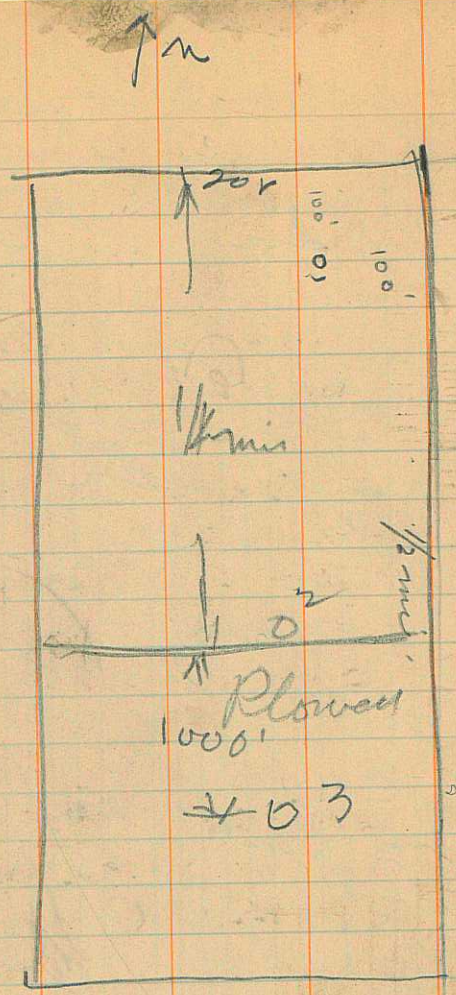
Survey or levels for E J Hyde, near Millville Blacksmith Fork Res.



		L	C	O	
			0.95	2.24	SE cor post az 304° on H2O
			5.52	6.4	
10	75°		3.25	4.35	
9	46°47		3.17	4.20	
8	3°30'		3.22	3.93	
Bm #7	339°30'		3.60	3.95	
6	312°		0.9	1.85	
5	118°10	5.26	5.57		
4	119°30'	5.35	6	0°	
3	118°30	0°	7.85	8.9	
2	143°15	~~8~~ 0°	8.4	9.85	

h 95

$\frac{P}{h.2} = Q\,h^{10}.2 = \underline{3}\ 1\frac{1}{2}$



1- Water at 1'
soft. strata 0°-2½
2½-3 hard med.
3-6 shell
6-10½ muck
10½ sandy
Hard at 10.75 impervious

2- Hard dark clay
from 0-4
4-5 soft. porous
5-8½ medium soft
8½ hard

3- Hard clay 0-3
3-6 med. Hard
clay

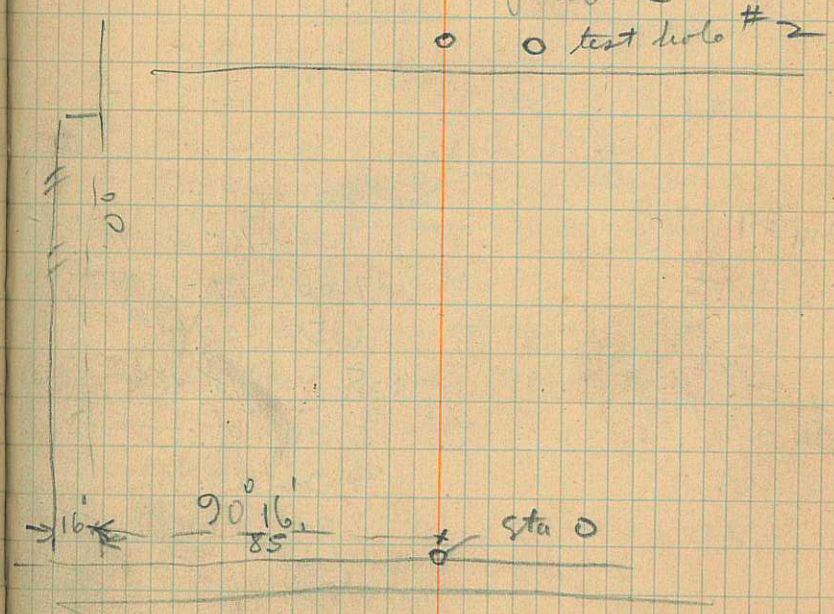
2312
Levels down

	BS	FS			
22					
21					
20			3.80	100.05	103.85
19			3.40	100.45	
18			2.92	100.93	
17	8.70	2.11		101.94	110.44
16			8.02	102.42	
15			8.05	102.39	
14			7.77	102.67	
13			6.66	103.78	
12			5.78	104.66	
11			5.39	105.05	
10+00			4.61	105.83	
9			3.73	106.71	
8	✓		3.55	106.89	
7	7.40	3.25		107.19	114.59
6			6.70	107.89	
5			6.48	108.11	
4			5.53	109.06	
3			4.37	110.22	
2			3.59	111.00	
1			3.05	111.54	
0			2.74	111.85	✓

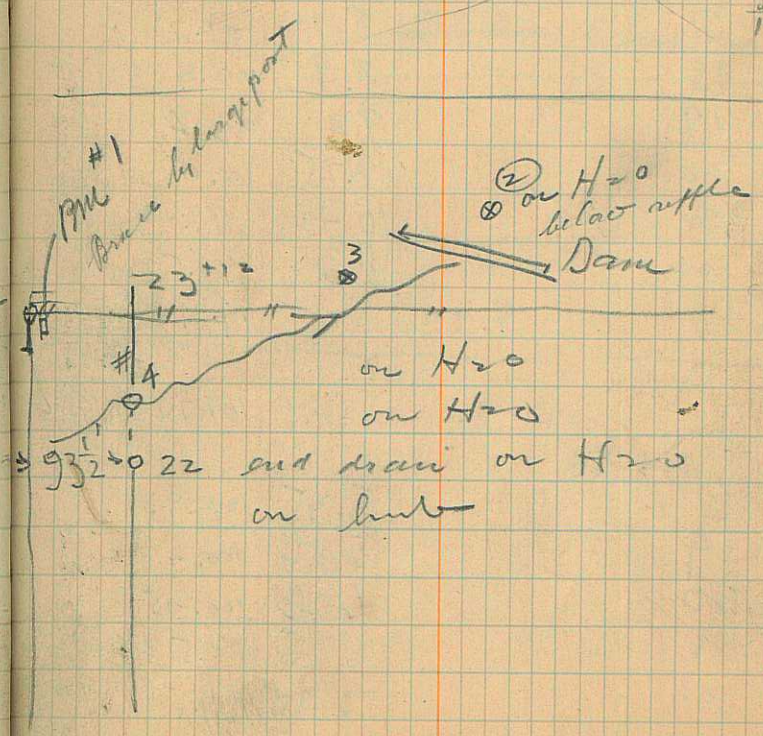
Geo Chambers Drain 99

E&W fence 23+12 Smithfield 4-14-23

end drain



	BS	FS		
			100.00	103.85
Levels down				
BM #1	3.85			
2		7.00	96.85	
3		6.50	97.35	
4		5.50	98.35	
Sta 22		5.30	98.55	
21		4.36	99.49	
20		3.80	100.05	



102

Check levels down from 7 to 22 & BM

7	2.64			107.19	109.83
8			3.00	106.83	
9			3.12	106.71	
10			4.01	105.82	
11			4.80	105.03	
12			5.18	104.65	
13			6.07	103.76	
14			7.20	102.63	
15			7.45	102.38	
16			7.40	102.43	
17			8.1	101.73	
18			8.9	100.93	
19			9.4	100.43	
20			9.75	100.08	
21			10.40	99.43	
22			11.3	98.53	
BM #1		9.90		99.93	

17		8.1		101.74	109.84
17	4.54				106.28
18			5.35	100.93	
19			5.86	100.42	
20			6.23	100.05	
21			6.75	99.53	
22			7.70	98.58	
BM		6.30		99.98	

2

fort

103

3.85	BS
8.70	2.11
7.40	3.25
19.95	2.74
8.10	8.10
11.85	

2.74	7.40
2.64	8.10
5.38	6.30
4.54	21.80
9.92	9.92
	11.88
	10.85
	0.03

differ checks

7.70
6.3
1.4
11.85
13.25

Elevations all checked

Study of Piezometer

Tube gate 4-14-23

0.175	open	h	$11\frac{1}{8}$
0.2			$8\frac{5}{8}$
.35		0.3	$2\frac{1}{8}$

Head abs

Survey for Rigby's.

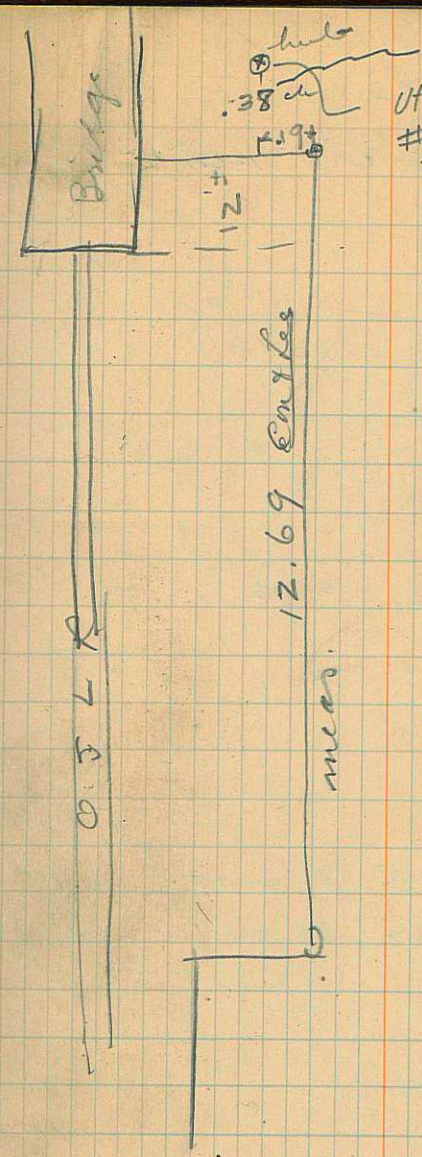
9-3-24

Beg with chain at

~~N~~

N 21~~4~~5 to appearance of sec line on west no cor found. also N edge plowed land, beg. of wheat stubble

29.29 to fence bears SE on brow of hill



Ut-Power
#131
234 + 33.9
Elev. 4406.30

61
+2
19

108 Final Survey of Rigby Estate Sept 11 - 1924

9.628
422
5408

38.28 as meas.

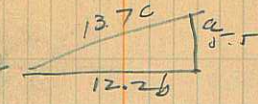
38.194
33.606 33.546
29.05 29.000
24.471 24.426
19.707 19.672
14745
Start 9.628 9.613
N89°21E 4.222

13.00 set stake

109

100 / 454 / 54.6
100 / 387 / 61.3
100 / 328 / 67.2
100 / 574 / 142.6
100 / 378 / 37.2

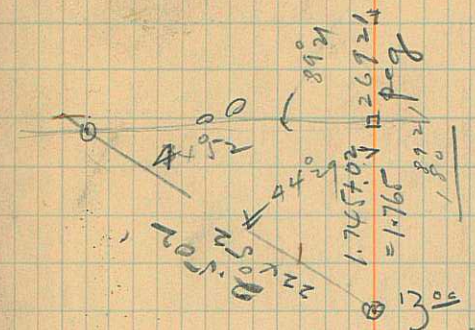
13.7



13.7
13.7
9.5
187.69
5.5
5.5
27.5
27.5
30.2.5

$a^2+b^2=c^2$

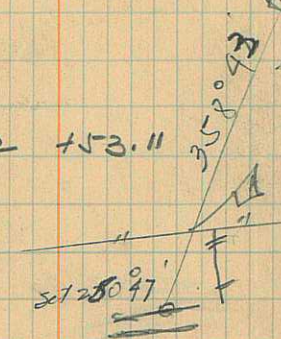
$b = \sqrt{c^2-a^2}$



268 81
224 52
4429
9039
13508
4452
4429
9039
18000

$\frac{S89°21 \times 1.765}{44°52} = \frac{4}{89°21}$

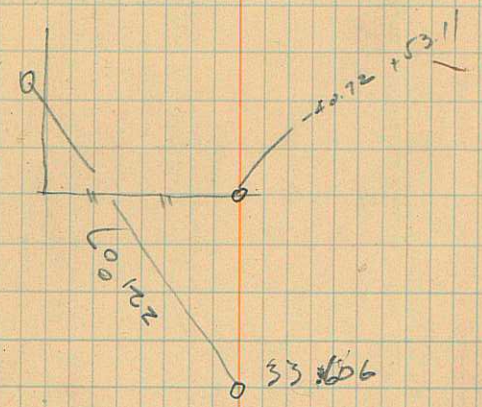
176
1.4
704
176
246



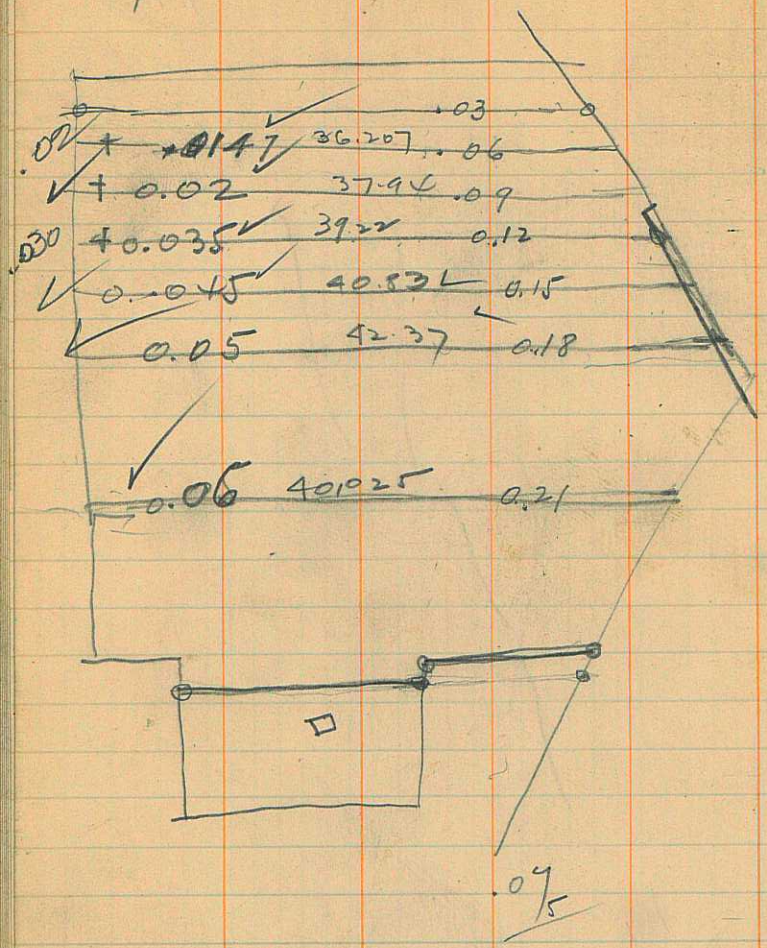
log 1.765 = 0.246645
7.999972
log 89°21 = 0.246717
T.848472
0.398245
2502

Cor pos - 40.72 +53.11

Beg at SW cor of tract -


+0.72 +53.11
60.122
33.606

684R3



187.69
30.25
157.44
12.6

22
2
246

12
57
44
1344
1476

38.27
38.194
.076

88.58
8006
8.52

88.58
5311
35.44
.07
8.08

.30
2
60

.03
8
.24

8/.24
.027

300.40
320.008
.008

034856
.12
69712
34856
.0418272

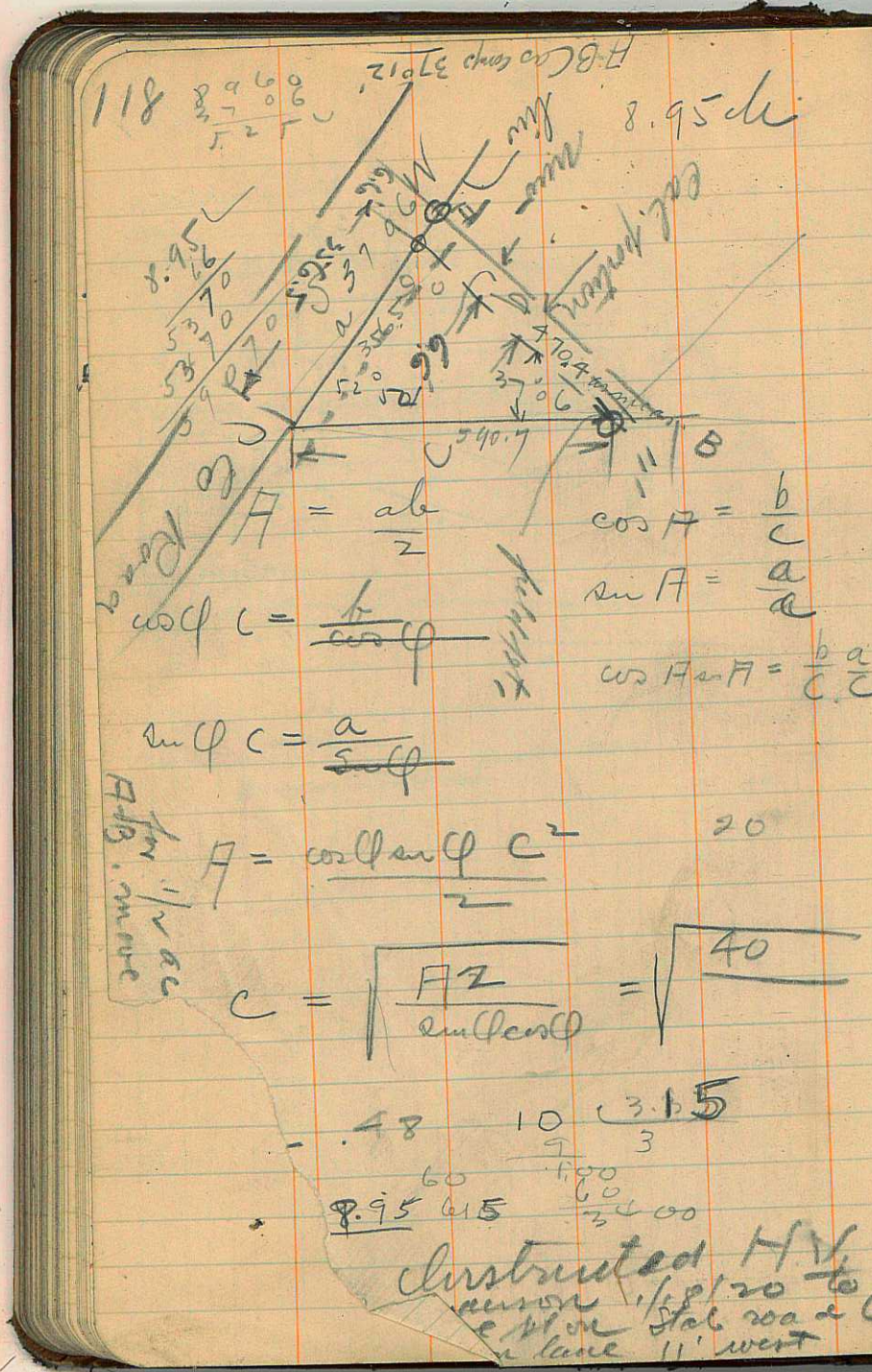
36.21

34.43
34.39

...e
...om

50 ft.,
...n Table
...6.2′ or
...9 deflec-

...nts. Thus
...ve E=960.6
...tion=.10 or
...found to be
...=5.5 or D=



ETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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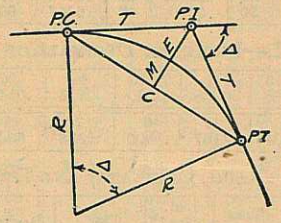


CURVE FORMULAS

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

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

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

xternal=E=T tan$\frac{\Delta}{4}$ (7) =R ÷ cos$\frac{\Delta}{2}$ −R (8)=R x sec$\frac{\Delta}{2}$ (9)

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

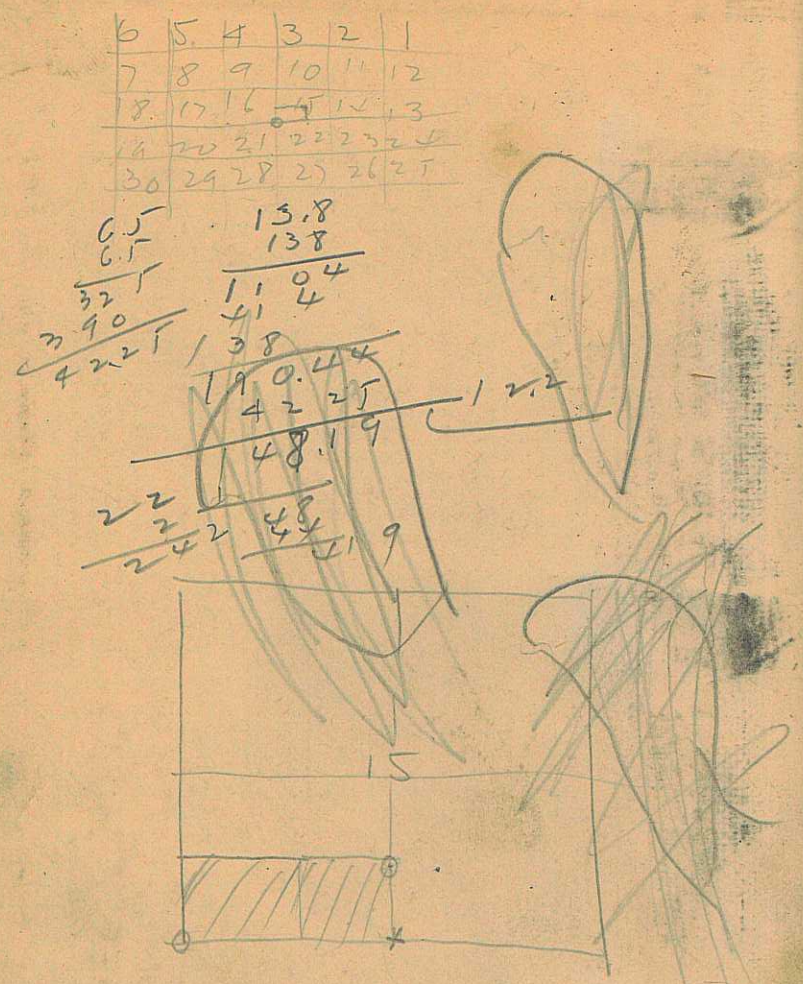
EXPLANATION AND USE OF TABLES

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

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

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

ternals.—May be found in similar manner to tangents. Thus rve above is 115.37 For from Table IV for 1° curve E=960.6 0′=960.6 ÷ 8⅓=115.27 and from Table V correction=.10 or 37 Or suppose Δ=32° and E is measured and found to be What is D? From Table IV E=230.9 and ÷42=5.5 or D=



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	25.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59 6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

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

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