52

807

DIETZGEN

ENGINEERS' FIELD BOOK

No. 404

807

807

EUGENE DIETZGEN CO.

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.

807

Sta ~~Sta~~	BS	FS	HI	RR
	3.26 50			
		4.58		
0			3.760	
6+14				
0			3.7600 .1335	
1			3.8935 .1335	
1+18		3.91		
2+00			4.0270 0.1335	4.9 F10½"
3			4.1605 .1335	4.25 F1"
4			4.2940 .1335	Gr
5			4.4275 1335	Gr
6			4.5610	

Example...
to be a slope stake point? ...
of roadbed, correct above figures by ...
example above, for 20 ft. roadbed distan...
30.6 =32.6. For slopes of 1 on 1½ see insi...

5/31/16 Levels for Jno Q Adams
on his ranch

on pump run

end of flume N end Orchard

beg. of earthen ditch ←

4.58
3.26
1.32

to end later N Three Orchard

6.14
.133
1842
1842
614
.81662

4.9
4.03
.87

458
3.76
.826
614
2060
1842
2180
1842
3380

614
.1335

J. Q. Adams

	BS	FS	inr
1^{+18}			3.91
5^{+00}		4.70	

5 4.700
.158
4 4.542
158
3 4.384
158
2 4.226
.158
1 4068 452
158
0

4

470
391
.79

same as 0 for lateral east.

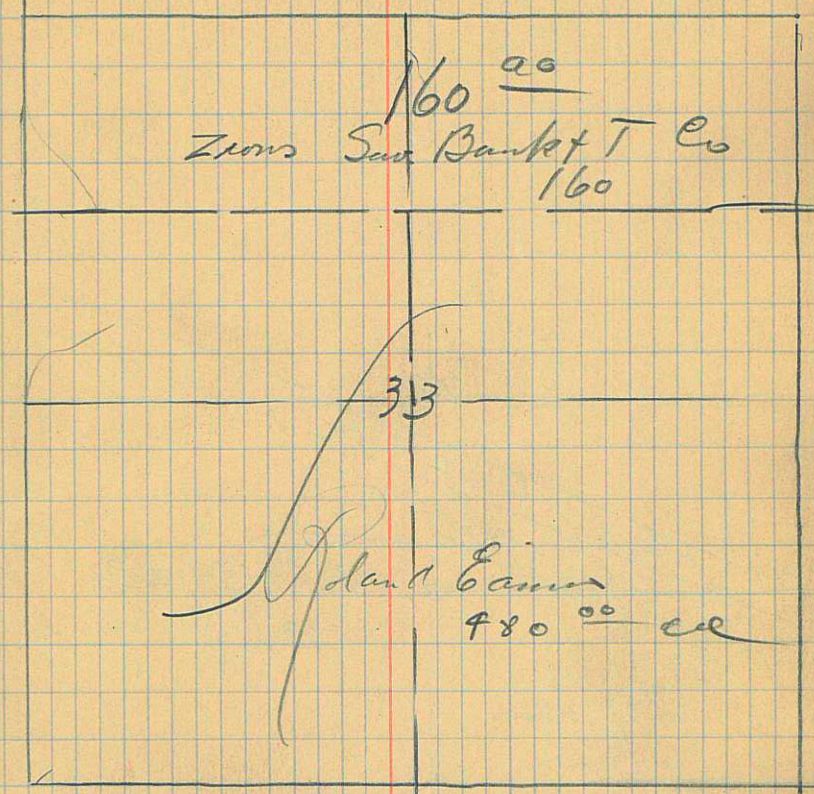
.790 (500
500 .158
2900
4000

452
406
46

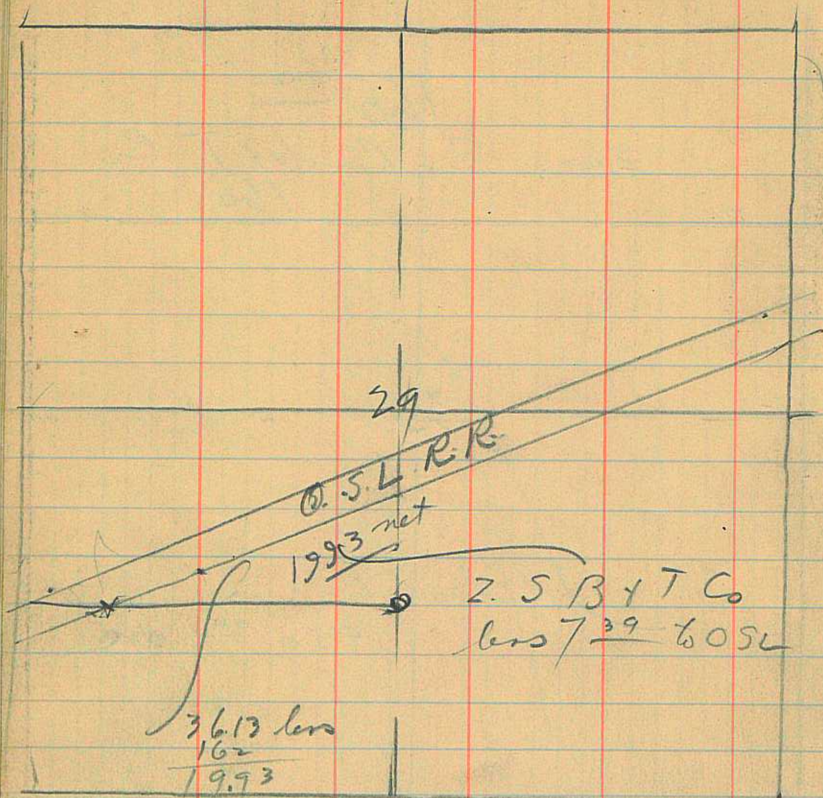
F

L.R. Mart.

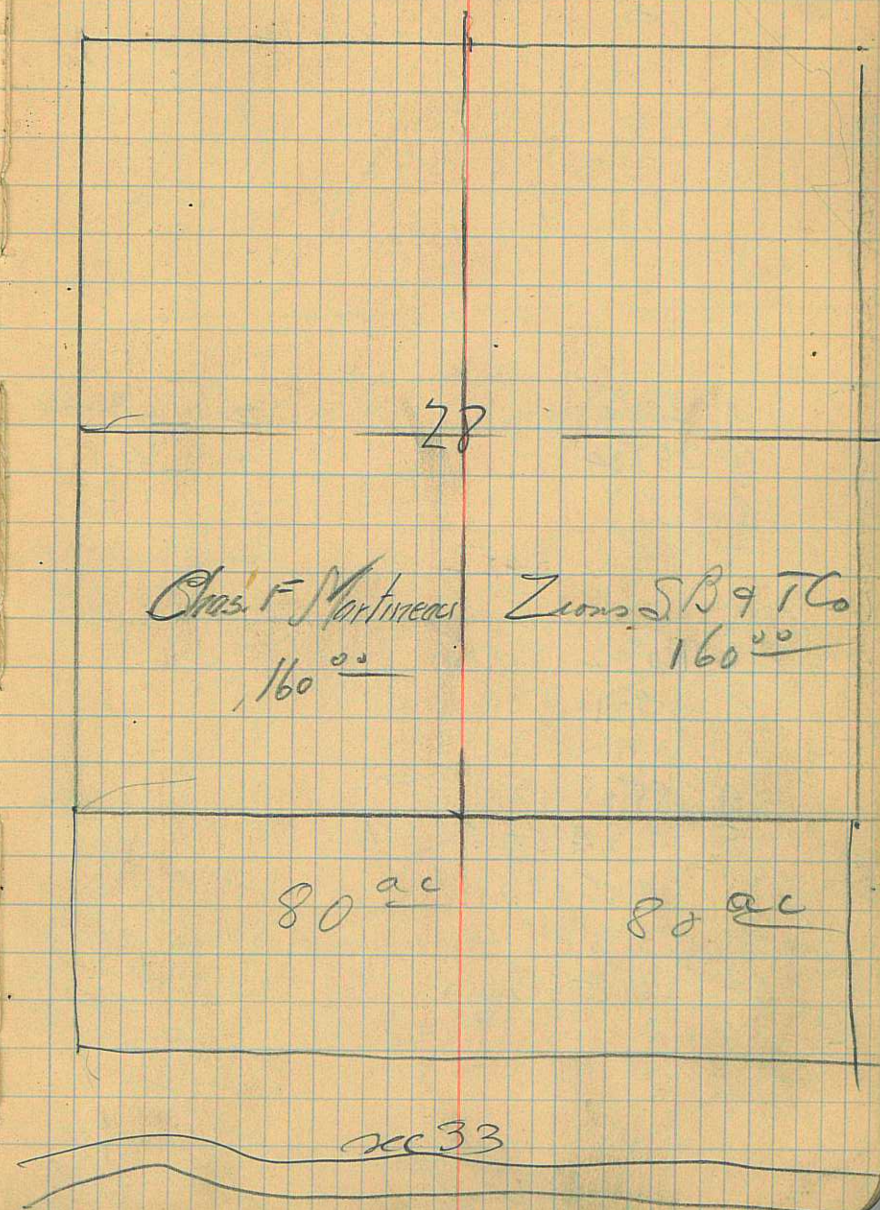
All that Por. of land
on N side Bear Rivr
sit. in W½ of NE¼ sd sec 32


160 ac
Zions Sav Bank & T Co
160
33
Roland Eams
480 00 ac

Roundly 3.18 from sec. line to W side of str



Sec 28 - 13 N - 1 W



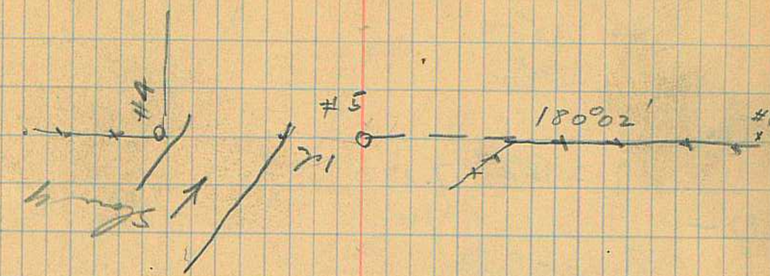
Survey for L.R. Martineau

⊼	Pt	Ang	Dist.	Bear.
	10	282°01		
	9	297°34		
	8	192°		
	7		7.47	
6-				
	6	180°02'	20.00	
	4	359°21		
5-				
	4	88°25		
	5	141°24	5.25	
	#3	89°25	3.313	
		7°10'30"		
	2	269°25	13.687	
1-				

2 _ 3.40
2 _ 4.17
3 _ 5.06

17
13.687
3.313

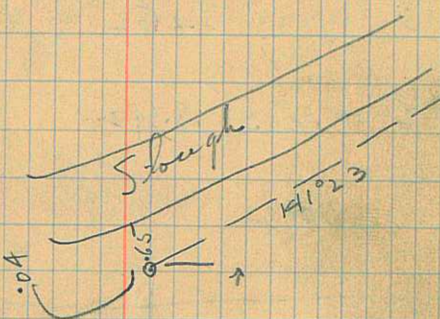
100
3.13
68.7



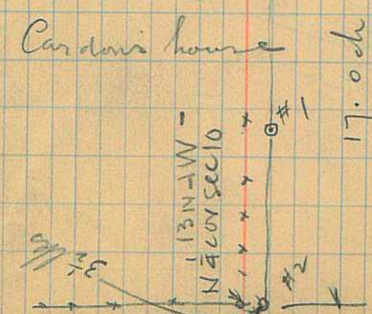
to pt in line with R.b west of #7

#4

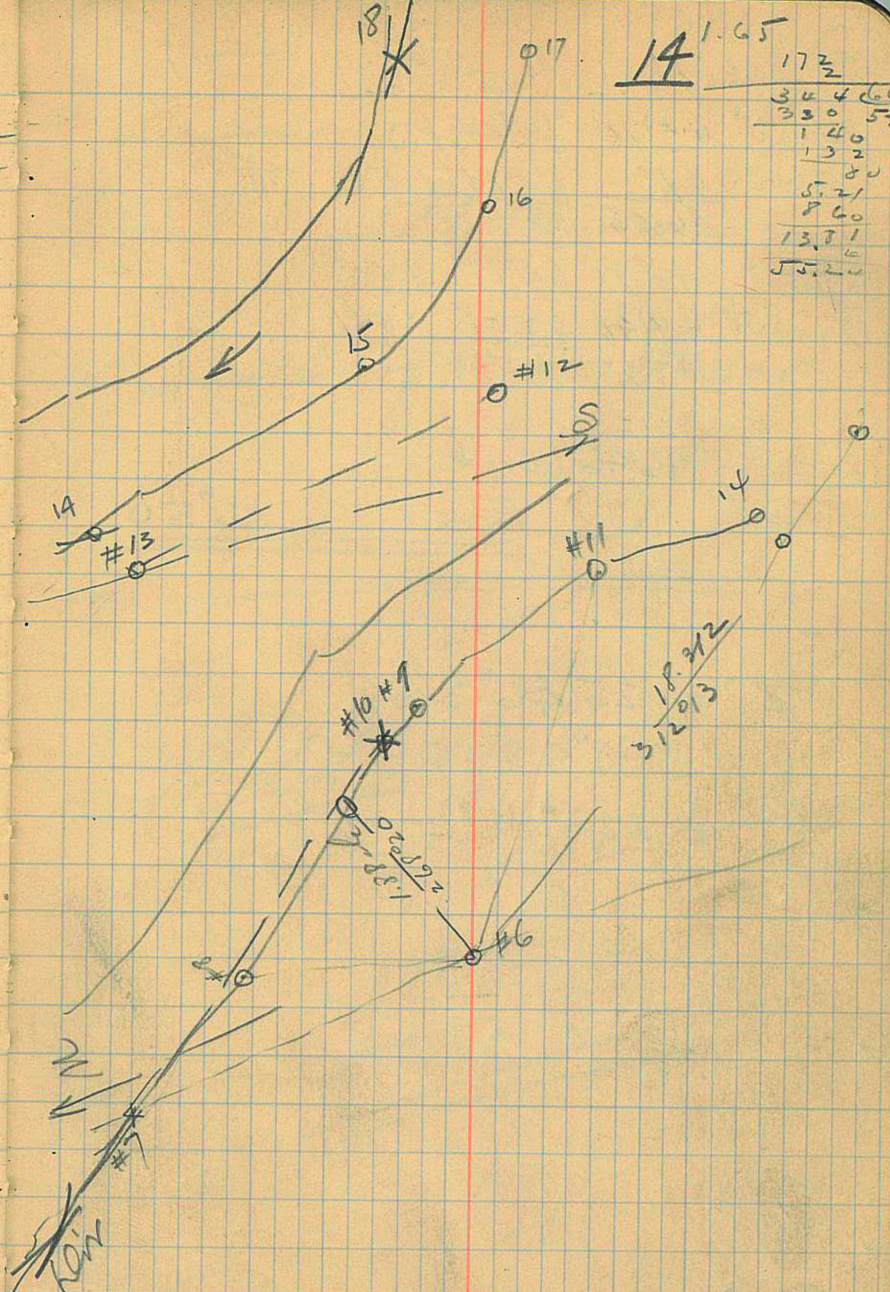
to Shark River



E. chimney Cardon's house



Π - Pt	Ag	Dist	Bear	∟	Sta C	d
2	359°10'	8.598				
21	179°09				2	3.72
20	172°59				1.	2.65
	359°09'					
19 —						
19	294°42'	7.283				
12 —						
18	251°00'					
17	263°37				1	5.20
16	275°43			1	_	5.52
15	281°40			2	_	4.48
14	227°	13'				
13 —						
13	132 13	3.262				
12 —						
12	312°13'	18.312				
11	309°10'				3	6.2
6 —						
Cardon's chu	17°12					
#1	89°25					
3	89°25					
2 —						



	Hor. L	Vert	Time
Direct	45°10'	64°44'	1.50
Invert	47°	64°10'	1.50
	46 05	64°27	
Direct	46°34'	64°18'	1.55
Invert	48°20'	63°44'	1.56
	47°27	64 01'	
Direct	46 46	64°14'	
Invert			

true az 46°50

Z = 25°46'30

ϕ = 41°48'10"

δ - 22°14

7° 10' 30

June 2 - 1916

on #1 Martineau Sur.

South of Bear River

Add

4' to all

az

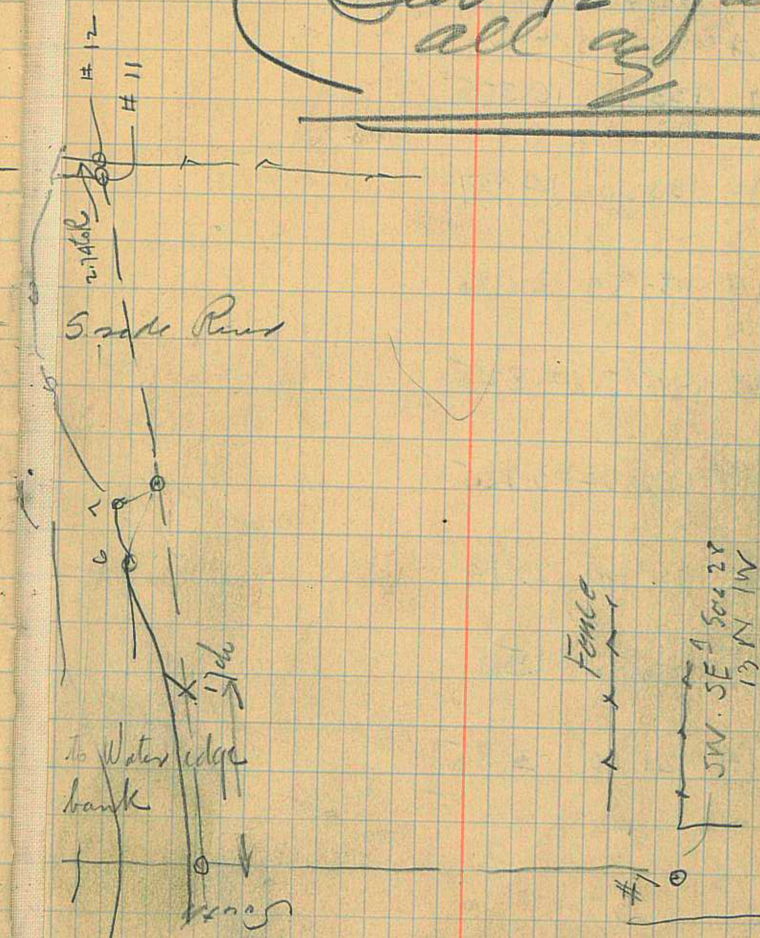
	△B	305°52'	
	13	180°03'	22.145
11–	~~13~~	~~180°03'~~	
	12	83°58'	40.28
	11	83°58	40.24
2–			
	10	71°56	
	9	64°57	
	8	49°52	
	△B	18°07	
	7	299°50	
	6	270°49	
5–			27.90ch
	5	83°58	
		83°58'	
2–			
	4	00°	1844
	3	00°	18.30
	2	00°00	18-215
1–			

2.30		6.55
	1	4.20
1		4.30
~~1~~		~~4.30~~
3	–	4.45
1	–	3.95

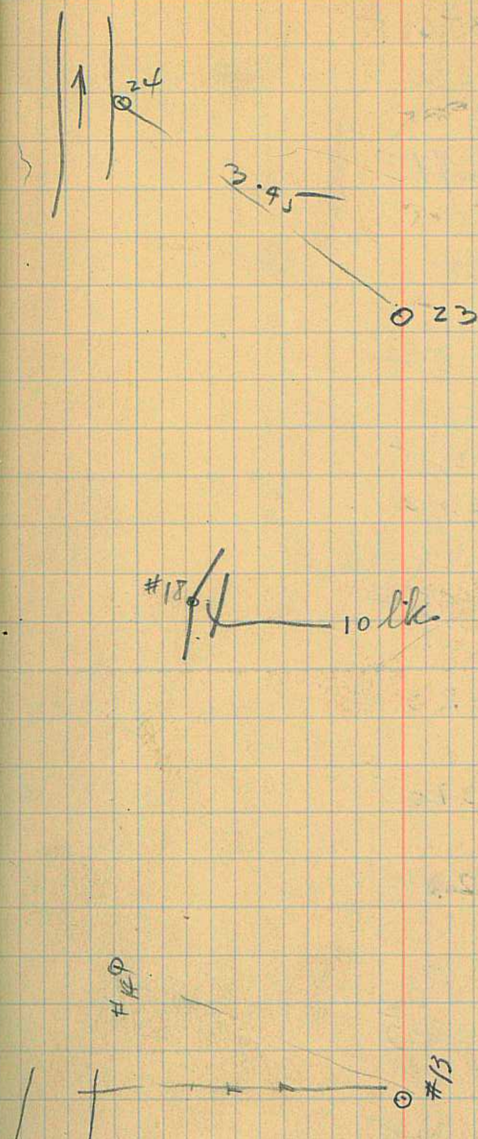
North of Bear River

~~[illegible]~~

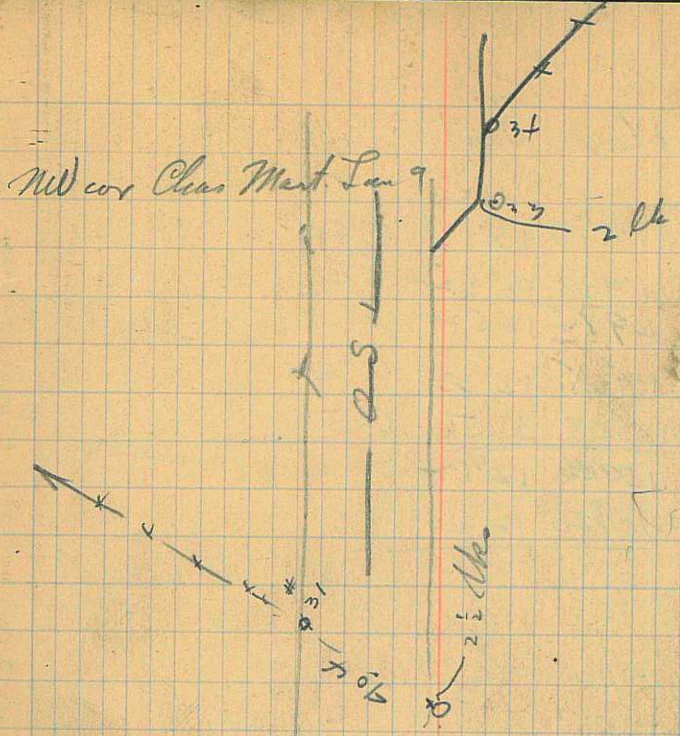
Sub 42' from all ag



	R	Pt	Az	Dist
		24	112°05	3.45
	23 -		~~112°05~~	
		-23	123°59	5.935
	22			
11 -		22	133°40	5.685
	21 -			
		21	133°43	10.555
2	20 -			
		-20	133°20'	14.97
	19			
		-19	132°29	2.00
	18 -			
		18	129°08'	4.825 21?
	17 -			
5		17	122°32	3.725
	16 -			
		16	111°20	2.814
	15 -			
		15	103°32	1.50
2	14 -			
		14	21°10'	2.85
	13 -			
1				



Pt	Az	Dist
36	0°07	35.625
	37°45	3 lks
35	269°51	16.715
34	252°03	1.87
33	265°54	1.52
32	251°31	22.15
31	180°50	4.04
30	251°31	6.452
29	251°22	3.80
28	209°51	3.205
27	169°02	2.80
29	354°18	
26	142°24	10.835
25	153°12	8.472



along O S L

to O.S.L

on
30

	Hor	Vert	
Direct	108°50	13°12	6:45P
Rev	109 38	12°32	6 46
mean	109 14	12 52	
Dir	109°25	12°33'	6:47
	110°08	11 56	6:50
	109 46	12° 14	
½ mean	109°30'	12 33	

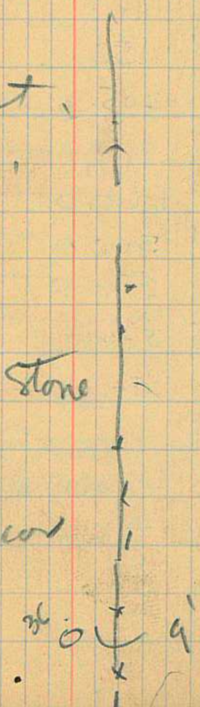
		Hor	Vert
		90°50	.14
1 –			
	#1	269°25'	17.33
37 –			
	37	269°35	22.77
#		165°20	.15
	11	000° 1#	
13 –			
		276°29	
	13	1°24	4.73
36 –			

to S E cor post.

(180 08)
Closing error 8'

to C. Mart. SW cor. Stone

near C. Mart. SE cor



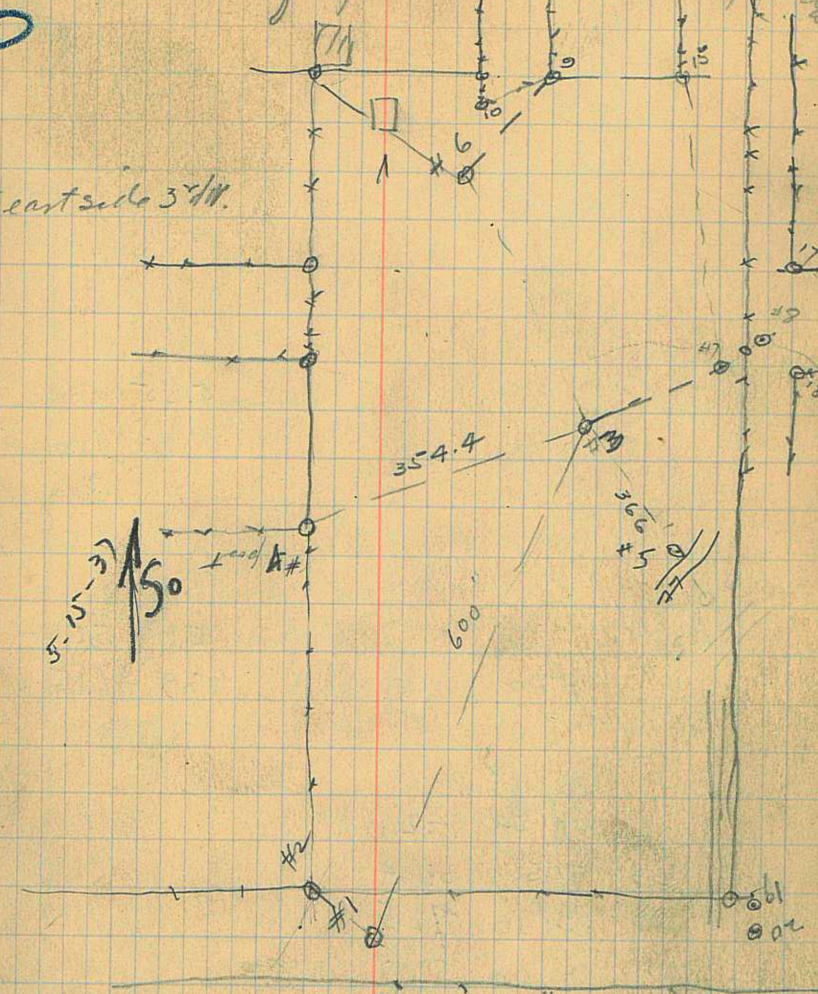
179.25
1.37
62.25

	Pt	Az	Dist
π–			
19–			~~668~~
	19	180°30'	668
	18	132°56	82.80
	17	80°41	62.25
	16	266°18	5'
8–			
	15	356°35	307.5
7–			
	14	204°55'	177.2'
	13	217°16'	117.6'
	12	337°58	181.6'
	11	19°04'	176.1'
	10	22°00'	153'
	+9	36°47'	205.3
6–			
	#8	80°18	660.0'
	#7	80°18'	500.0'
	π6	333°43'	256.0
	π5	135°00'	366
	4	212°12	354.4'
3–			
	3	19°10'	600'
	2	1°45'	4'
1–			

155

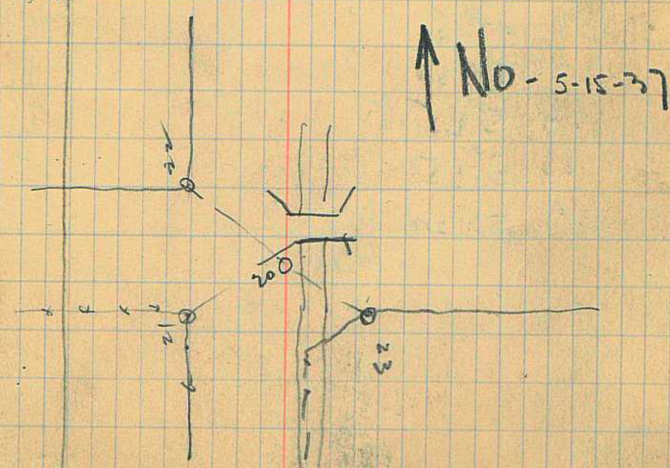
E

26 Sumory Hatch Survey
of ~~Porter~~ Thatcher portion

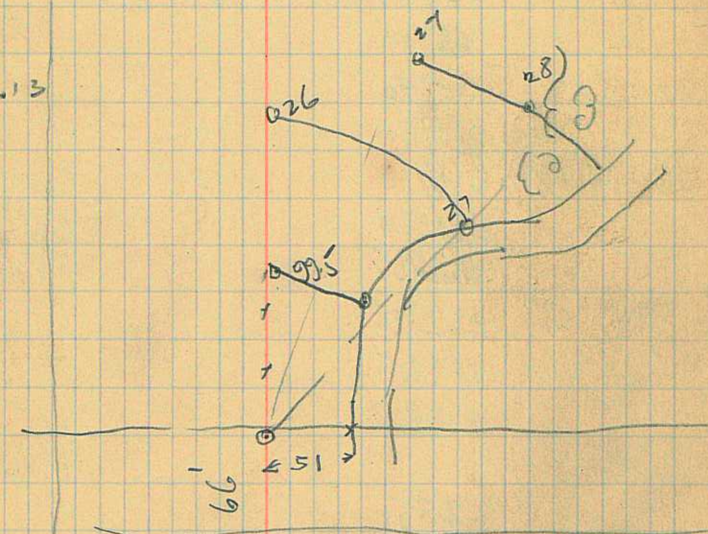


⊼	Pt	ang	Dist				Vert L	L I
				5.25	8.00			S side
					7.50	9.95		
					7.00	8.85		" " "
					6.50	7.85		" " "
				5.15	6.00			S side 3rd S
				5.0	5.52			S side 3rd S
		91°20		5.9	6.15		0	L back LL
1 –								104.98
	3	19°10						
L –	1	271°54	842.0'					
	23	305°	33.4					
	22	131°10	92.5					
	21	71°30'	57.8					
20 –								
	+	271°54						
	20	180°30'	17'					
19.								

4.98
1.50
6.48
.50
6.98
.50
7.48



	Az	BS	FS			Ele	
	180°00			4.13	6.15		
	183°45			4.13	6.00		
	187°35			4.13	6.00		
	190°40			4.13	5.09		
	189°14			4.13	5.50		
	192°06			4.13	5.27		
	193°30			4.13	5.01		
	186°40			4.13	4.09		
	170°00			4.13	4.58	98.00	
	198°40			4.13	4.50		
#3.-				~~4.13~~			
3-		9.90	7.75			97.23	102.13
30	2°			6.50	8.20		
29	28°20			6.50	7.60		
28	47°15			6.50	7.66		
27	50°35			6.00	6.9		
26	5°25			6.00	5.04		
25	5°35			5.50	6.05		
24	53°30			5.50	5.92		
1-							



Az	BS	FS	U	C	L	Ele	HI
106°50'				7 13 8.75			
111°20'				7 13 8.40			
120°12'				7 13 8.30			
119°06'				7 13 8.15			
122°45'				7 13 7.98			
138°50'				6 13 7.11			
148°30'			8.05	6 13 6.00			
172°45'				5 13 6.25			
166°20'				5 13 6.05			
143°06'				5 13 6.00			
134°00'				5 13 5.80			
68°.00'				5 13 5.40			
39°40'				5 13 5.46			
355°40				5 13 5.44			
310°30				5 13 5.50			
281°20'				5 13 5.65			
262°.35				4 13 4.46			
262°30'				4 13 4.57			
256°15'				4 13 4.60			
240°05'				4 13 4.58			
				4 13 4.67			
225°30				4 13 4.78			
227°00				4 13 5.00			

Swal

102.13

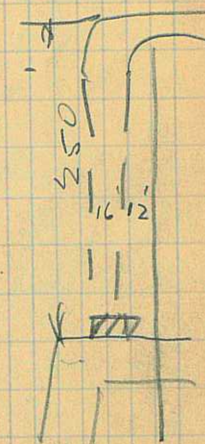
3-

	Az	BS	FS	U	C	L	Ele	HI	
7 3		0.65			4.73		93.15	97.88	HI 4.73
7—									
5—		4.85	4.75				97.38	102.23	
	117°30			11.65		8.00			
	102°30			13.15		9.05 ~~10.00~~	~~102.~~	102.13	L.B. L.L. ~~O.H. [illegible]~~
	101°40			10.30		7.00			Old Wash
	80°			10.75		7.00			~~LB LL~~
	39°30"			9.09		7.00			~~In Sl~~
	31°00"			9.35		7.00			Beg of Sl.
	15°30"			10.70		7.00			
	357°12"			9.50		7.00			
	323°50"			8.65		7.00			
	281°00"			7.76		6.66			NB. Sl
	272°08"				7.13	8.05	95.00		
	281°10"				7.13	8.00			
	322°00"				7.13	7.87			
	346°14"				7.13	8.06			
	15°40"				7.13	8.01			
	32°30"				7.13	8.02			
	41°50"				7.13	8.55			
	53°20"				7.13	8.75			
	65°00"				7.13	8.60			
	82°40"				7.13	8.60			
	97°00"				7.13	8.40			
3—									

102.13
4.75
97.38
10.223

97.23
97.8

⊼	Pt	Az	Bs	Fs	U	C	L	Ele	HI	
		106°00			6.20		5.00			LBLL
		144°50			6.12		5.00			LBLL + Jct with Anderson Race
		180°00			6.60		5.00			LBLL
		204°00			5.25		4.00			" "
		208°00			7.06		5.00			" "
		224°00			6.30		4.00			LBLL
		261°55			5.25		4.00			LB Se
		233°20"			5.08		5.00			"
		197°50			5.05		5.00			"
		70°37			4.08		4.00			[L.B Se]
	41	57°05			5.01		4.00			LBLL
	40	66°05			5.64		4.00			LBLL
7—										
		228°00"			8.15		5.00			"
		225°25			6.95		4.00			"
		221°26			6.40		4.00			"
		226°00			5.35	4.23				"
		220°40"			6.05		4.00			LBLL
		119°20"			5.04		4.00			LBLL = OH ~~Station~~
								98.00	102.23	
5—										



E

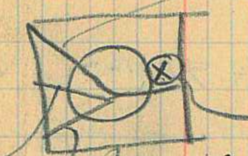
Levels at Lowell School 6-8-16.

Sta	BS	F.S.	im	Ele	HI
	11.390			93.08	
			11.370	93.10	
			4.470	100.00	104.47
			7.23	97.24	
			0.01	104.46	
			0.57	103.90	
		2.250		102.22	
	5.550				107.77
			4.640	103.13	
			4.06	103.71	

4 8 1
2 4 2
7 2 3

Bottom N. channel-way
" Center "

from boiler room



In use from higher level
can be used for

Sewing room floor 7.23 = 481 + 2.42
on first floor
N. landing

first fence S of NE cor of Blk

~~P~~ Checking
L & R Martineau Survey
N of Bear River

	Cor	Ag	Old meas	New Meas	New L
1	22	N47°05'W	5.685	5.650	47°11'
21		~~N47°05'W~~			4
	21	N47°02'W	10.555	10.967	47°09
20					
	20	N47°24'W	14.97	14.96	47°32 ✓
19					
	19	N48°15'W	2.00	2.00	48°21
18					
	18	N51°36'W	4.825	4.783	51°42'
17					
	17	N58°11'W	3.725	3.720	58°18
16					
	16	N69°23'W	2.814	2.800	69°31
15		✓			
	15	N77°11'W	1.50 ✓		
14		✓			
	14	S20°28'W	2.85	✓ 2.85	
11					
	11	S83°16'W	40.24	40.232	83°13'30"
2					
	2	S0°42'E	18.215	18.211	S45'E
1					

6/12/16

Closing
+15.937 to fence N & S

	13	S34'W	4.73	4.862	S31'W
36	36	S42'E	35.625	35.520	S46'E
35	35	N89°02'E	16.715	16.535	268°58
34	34	N71°15'E	1.87	1.86	251°10
33	33	N85°06'E	1.52	1.520	265°01
32	32	N70°43'E	22.150	$\left.\begin{matrix} \\ \end{matrix}\right\}$ 28.52	70°39
30	30	N70°43'E	6.452		
29	29	N70°35'E	3.800	3.785	70°31
28	28	N29°04'E	3.205	3.195	29°00'
		~~N29°04'E~~ 3			
27	27	N11°45'W	2.80	2.793	11°50
26	26	N38°22'W	10.835	10.810	38°28'
25	25	N27°34'W	8.472	8.440	27°40
23	23	N56°47'W	5.935	5.910	56°53
22					

35.52
4.72
40.24

28,602

355°25 to 2+

Ob on #1

	Hor.L	Vert	time
Direct	63°39'	58°40'	2.28
Invert	64°08'	58°01'	2.29.
	63°53'		
Direct	~~63°34'~~	57.58	2.30
Invert	65°15'	~~57.2~~	2.32
	64°34'	57°22'	
		57°40	
Direct	64°52'	57°25'	2.35
Invert.	66°11'	56°50'	2.36
	6531	570730	

13 N39W 22.145 ~~5~~ . 54°E

11

1 N88°35E 17.33 17.285 268°24 or 268°23

37

37 N88°45E 22.77 22.722 268°48E

13

44

17.285
22.722
40.007

10

final increase
of 11'
that is assume
1-2 - 5 45' E
make it 5 34' E

place small peg at 22.722 {44°57 to #11
{set 268 48

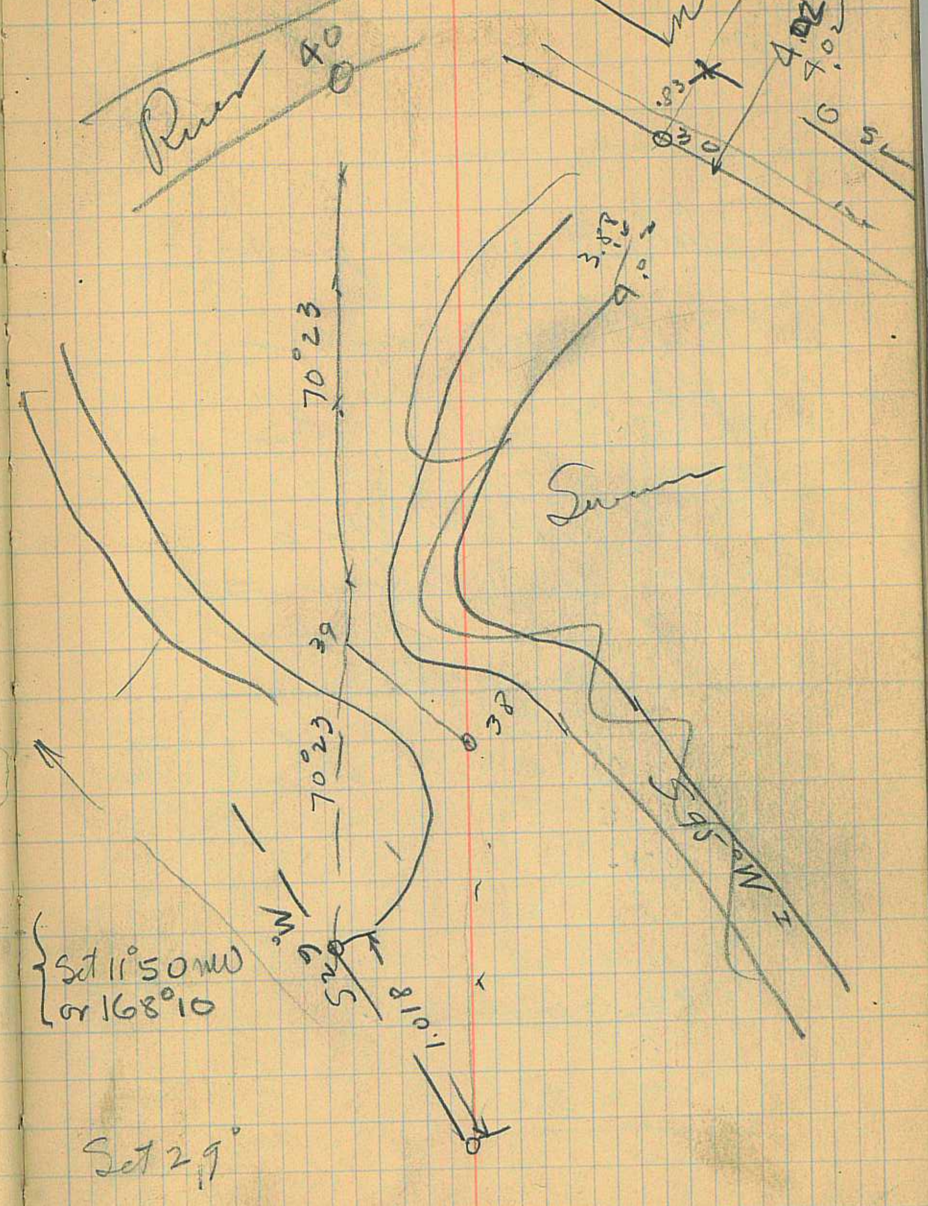
J R Martineau
Description

Beg at S E cor sec 29 - Tp 13
N 1 W. W 160 rods N 80 rds
W 2394 9.44' to O S L R of W
Northeasterly along the R of W
1084.49' to a pt on the W
line of N E ¼ ~~sec 29~~ of S W ¼
sec 29 - at a pt 346.8'
N from S. E cor of the
N E ¼ of the S W ¼ sec 29 -
N along sd W line &
973.23' to N E cor of N E
S W ¼ 29. E 160 rds
N E cor S E ¼ sec 29
160 rds to beg

6/14/16   L R Moniteau

⊼ - Pt	∠	Dist
30		6932
29-		
25	321°02'	
40	78°30'	
39	90°48'	
38	97°53	
26-		
39	67°45' ✓	
38	70°54' ✓	
28-		

48 a to C of 29 about 270 rejected



15.26
10.77
26.03

7.07
6.9
13.97

Study & Survey for
James Anderson
of College Ward

Apr. 19 - 1926

Present. James Anderson
John Benson
James Hanson
W. A. Cooley

beg

beg at o West 6.90

o

10.83
.303
3249
3249
3.28.147

10.77
6.9
7.07
24.74
25.14
24.74
.40

66
4
26.4

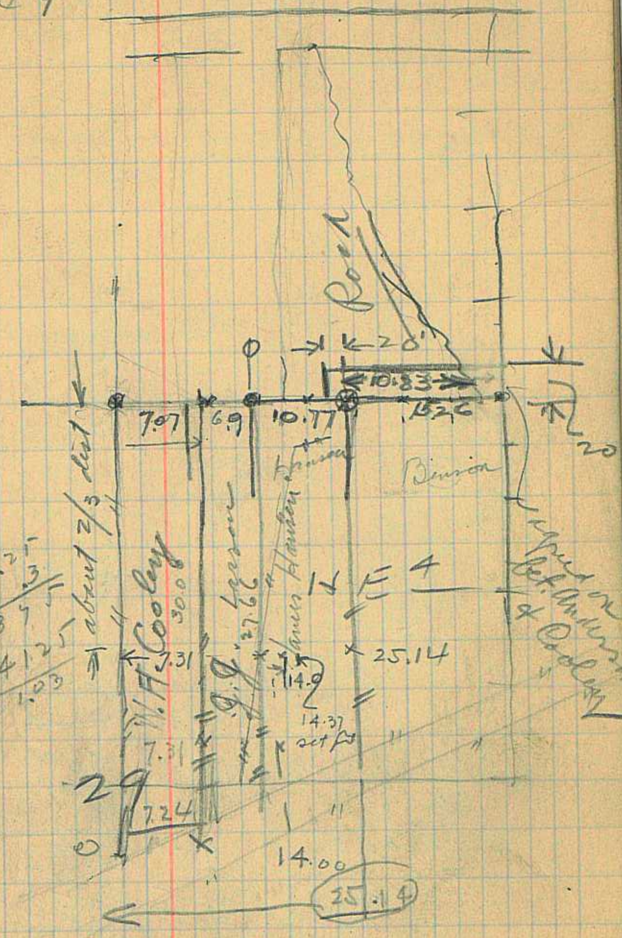
7.07
7.57
14.64
7.32

43.62
41.25
84.87
42.43
7.32
84.86
127.29
297.01
31.05876

4.125
3
12.375
4|41.25
1.03

200 66
198 .303
204.303

50



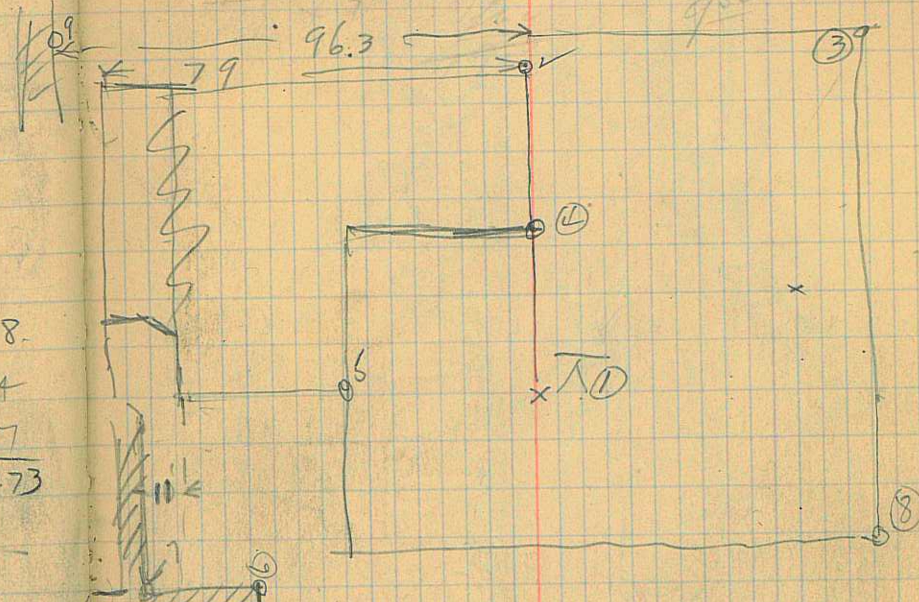
13n 1W

FS BS

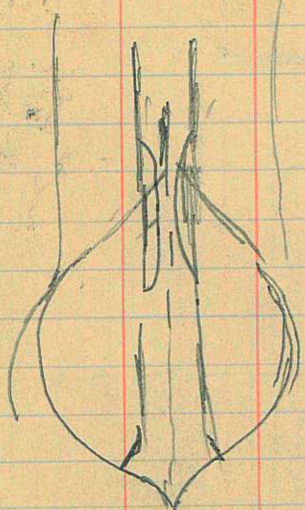
7.07

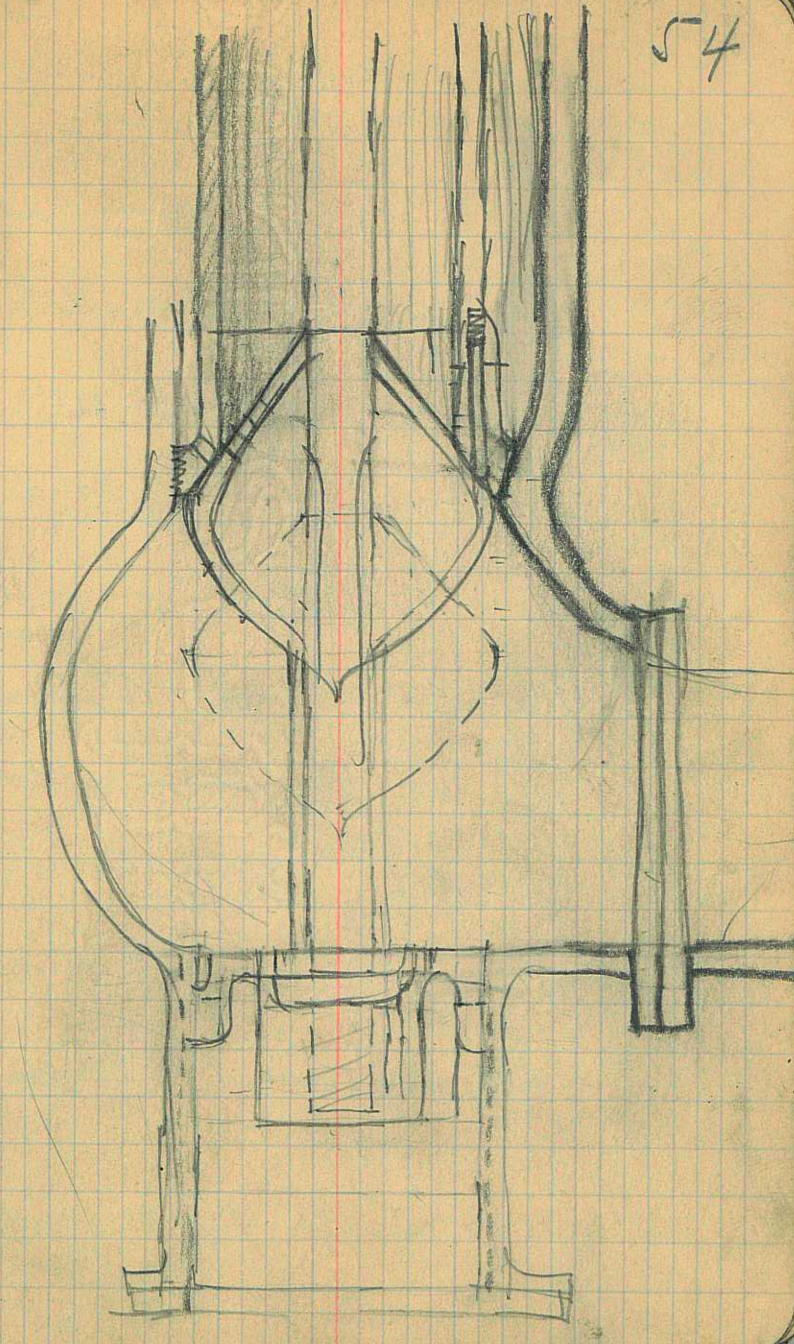
9				105.93	5.8
3				107.33	4.4
2				107 03	4.7
			.54 5.37	106.36	111.73
8	32°45'	66.4	5.4	101.5	
7	150°10'	75.3	7.05 ~~75.3~~		
6	141°30	60 1/2	6.9		106.9
5	180°	19	4.6		
4	269°15	69.8	1.8	0°	
3	~~246~~°18	126.5	4.5	+2°10	
2	269 15	109	0.0	0°	
1 –					

10th Ward –
~~Logan~~ Study
sprinkling system



99.85
100.00
102.3
105.1
102.4
106.9 E





12658
10615
2093

Amundsen Survey
meas. E side
Blk 14 - Pl Fl City

365 - .55 Caidon

346 -.39 Cunan Hardware

319 -.3 Hardware Mc

302. - 0.23 Mc Woolworth

262 -.47 Woolworth Leader & Hub
→ N

216 -.42 City Drug

191 - .49 City Drug National

National
166 - .6 Pederson

Hank Nappin
126 -.58

Nappin Sand stone
106.15 (7-.85+100) → N marked (2) 105.00

28-08 S edge foot C2 col.
{27.83 seems to line up with joint. F N Bank

0

600.1 Bldg line

599.96

C. col

Bridge

555 - .98

City Grocery

C.I. col.

514 - .17

Edwards

492 - .41

marble

Blue Bird

marble face N side

471 -.37

may be party wall

Murdock

414 - .43

Riter

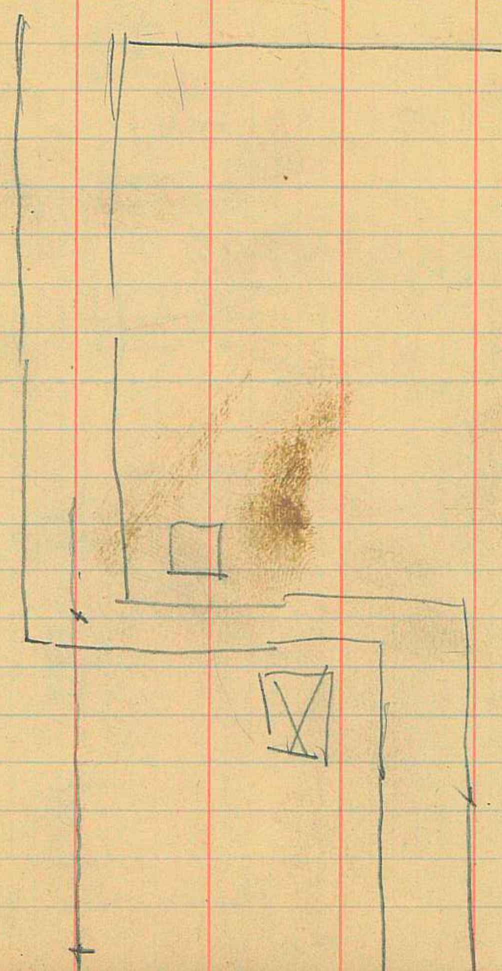
389 - .53

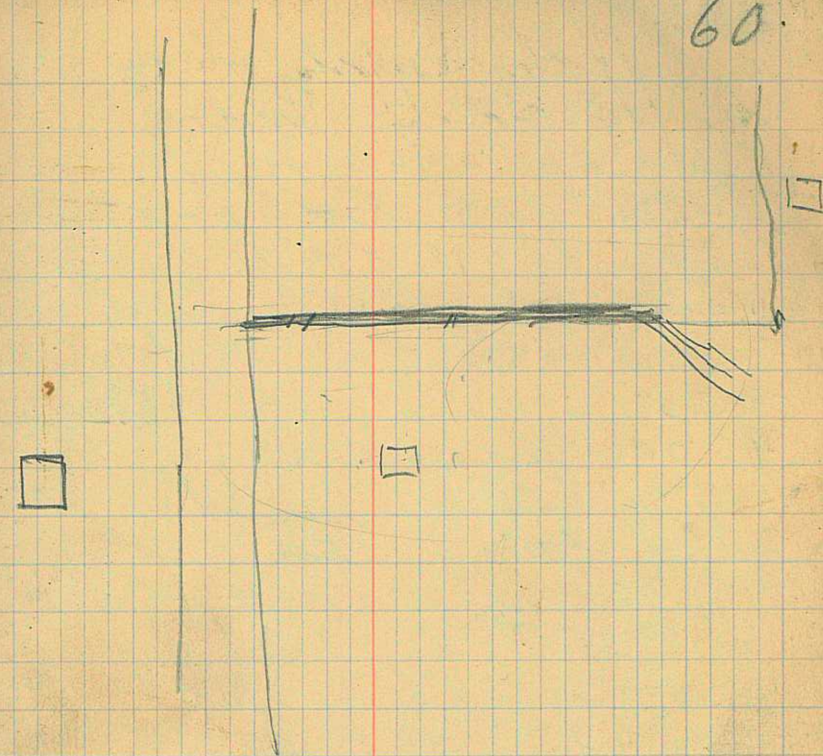
Her

365-55

Cardon

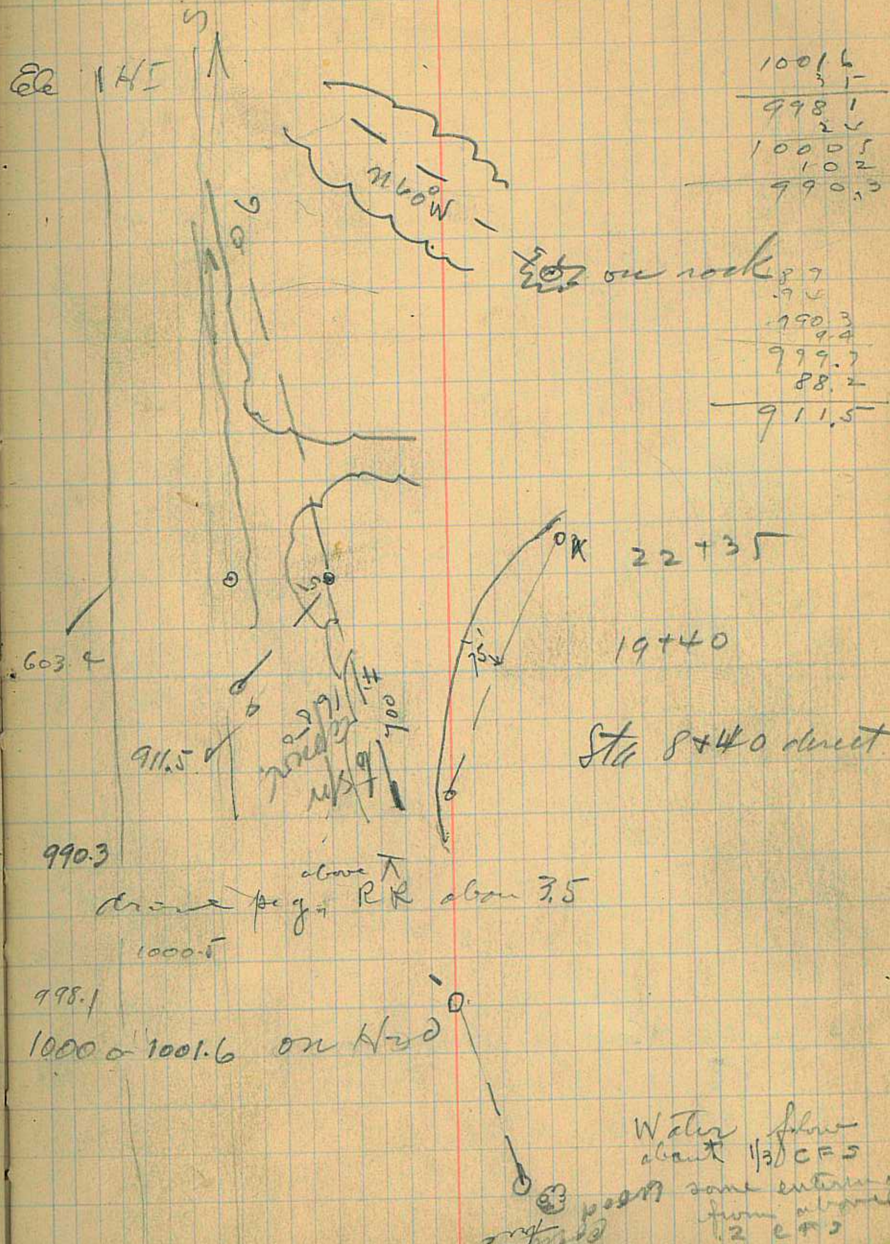
C. W. Anderson
Call 130 N 3rd





Water Supply Study for H E Hatch - Preston Valley
Apr 26 - 1926 -

12	185°50		BS	FS	M	8	-21°	11.2
11	209°	18'		2.6			0	
9	73°				1.95		-8°12	12.00
9	00							
8	98°40'	40.0		5.00			0°	
8	272°45					4	-1°10	11.3
6	123°37					9	+8°32	11.75
6	340°30					0	-16°30	11.2
4	218°					7	+10°29	11.9
4	311°	443		10.2		4		11.42
v	133°30'	100.0	2.4					
v	313°12	40'		3.5				
Spr	153°	50'	1.6					



1001.6
3.5
998.1
2.4
1000.5
10.2
990.3

990.3
9.4
999.7
88.2
911.5

		BS	FS		

A			5	+16°15	5.41
12		5.2			
15 –					
14 S65°W	45'	10.7			
12 N71°E	106	3.2			
S47°W	80'	To tank			
13.2					

1120
92
2240
10080
1.96
10320.

1120
92
2240

$\cos^2 h$
$\cosh$

1120
76
6720
10080
10752.0

96
76
576
864
.921 6
.296
5526
8289
1842
.2726 6

11.20
.27
7840
224
3024

1120
.27
7840
2240
3024.0

99
91.5
302.4
609

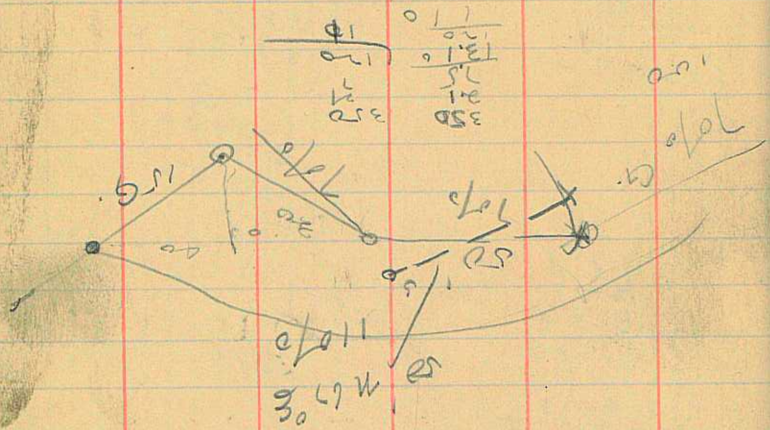
850
1120
1960
1271
2235
730
40
1005
4010

1840

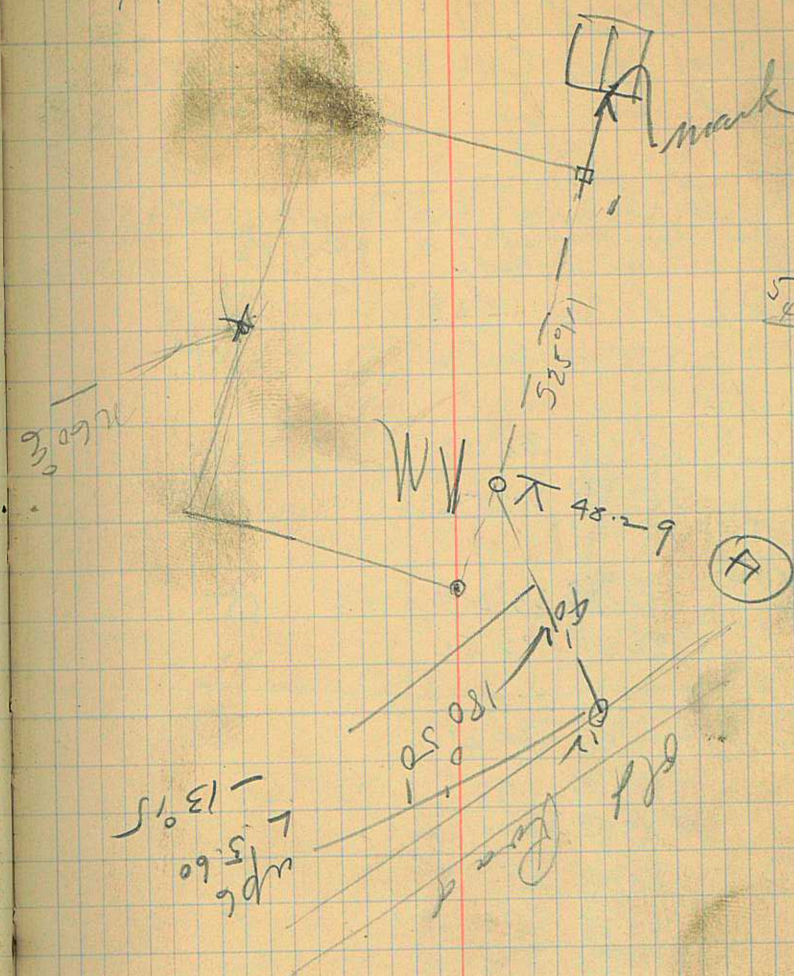
1200
195
1005

This HI is 3' below old tank
on forks. S side [illegible]

9.50
4.1
5.40



-4.1   9.50   41



54.00
48.29
5.71

Apr. 27 - 1926

Survey for C W Anderson's Road in sec 6 - 12 N. 1 E.

Ob. on #1

az to ℄ Anderson smoke stack on Smithfield = 226°06'

8:30 Am

	Az	Vert L	
D	281°02	32°29	
I	280°44	32°16	
D	281°45	32°40	
I	281°~~24~~	32°56	
D	282~~43~~	33°34	
I	282 19	33 50"	
D	282°47	34°45	
I	283°39	34°28	
	283°13	34°32' 30"	
D	283°29	35°23	
	284°25	35°10'	
	283°57'	35°16 30"	
	284°03	35°54	
	284 59	35 39'	
	284 31	35 46 30	
Σ mean	283°53'	35 11 50	(2)

Stop 8 50

68

Z for (2) = 54° 49' 30"

Θ = 41° 48' 40"

δ = +13° 44

$$\sin \tfrac{1}{2} a = \sqrt{\frac{\cos \tfrac{1}{2}(Z+\Theta+\delta)\ \sin\tfrac{1}{2}(Z+\Theta-\delta)}{\sin Z \ \cos \Theta}}$$

Z = 54° 49' 30"
41 48 40
96 38 10
13 44
2) 110 22 10
cos 55 11 05 = T. 7565849
sin 41 27 05 = T. 8208478
T. 5774327
log sin 54°49 30 T. 912 4327
T. 665 0000 6
log cos 41°48 40 T. 872 35 83
2) T. 792 64 1 7
T. 876 32 08

95 98 10
13 44
2) 82 54 20
41 27 05

51 57 50
2
102 114 10
103 55 40
18
283 55 40
283 53

Add 3' from all az

6 136°44 119.00

5 –

5 179°41 11. see oppo. page

4 –

4 89°28' 968

3 –

③ 152°14 19'

22606' FS to ℄ chim

1 –

(1a) 345°25'

3 –

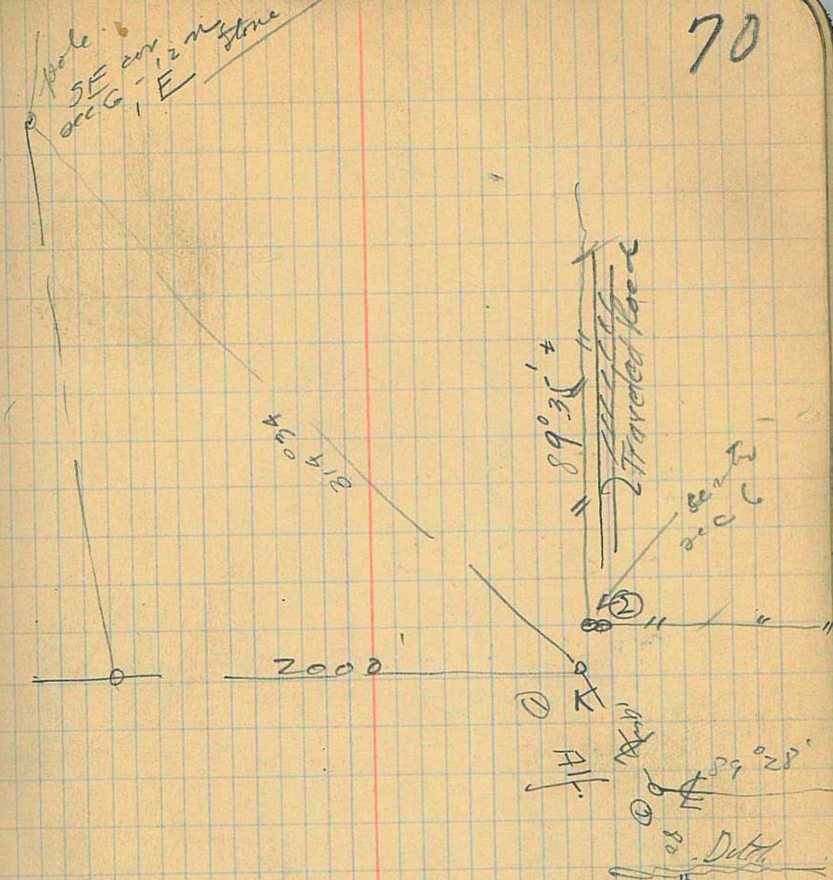
③ 269°54 2000 Base

② 359°30 23'

(1a) 314°34'

22606

1 –



SE cor sec 6 –

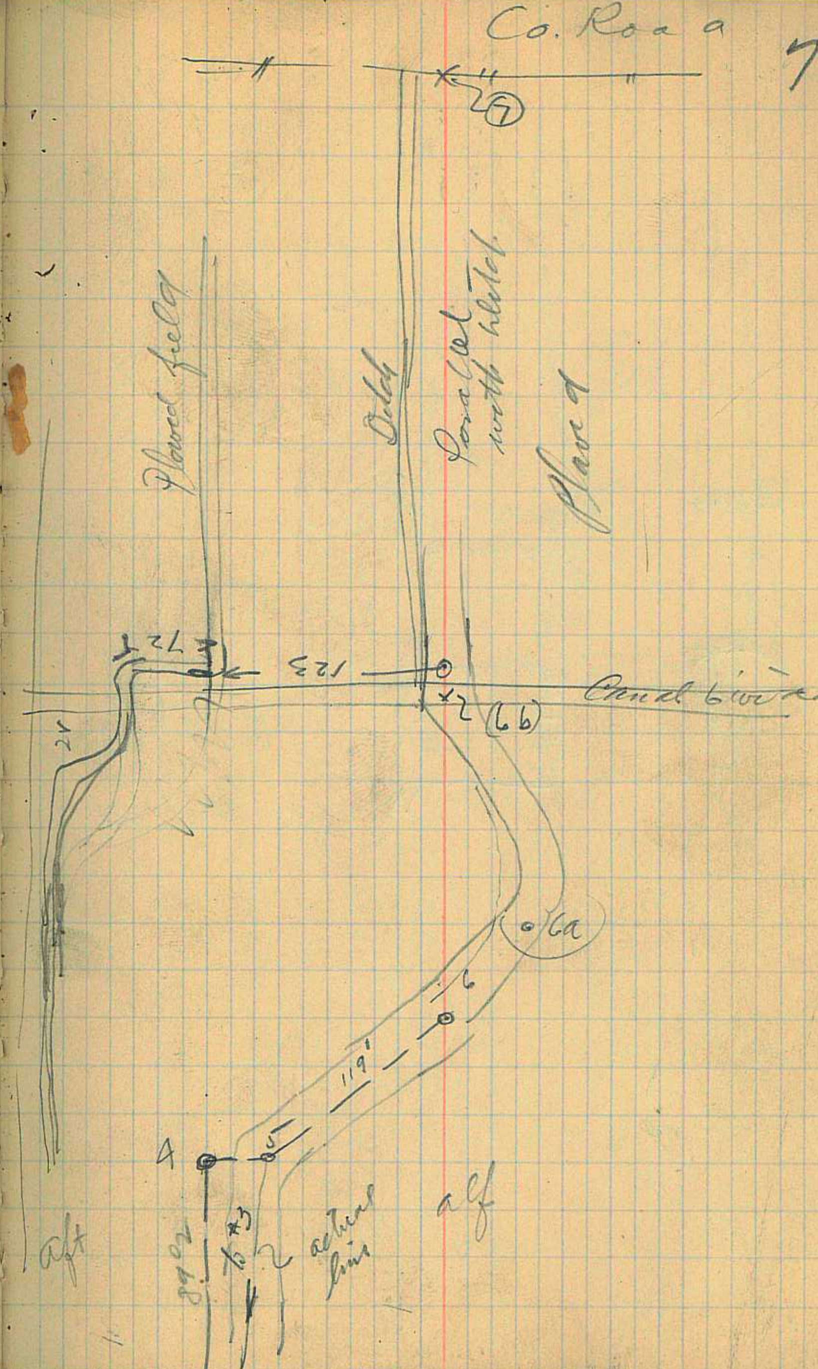
to SE cor Sec. 6

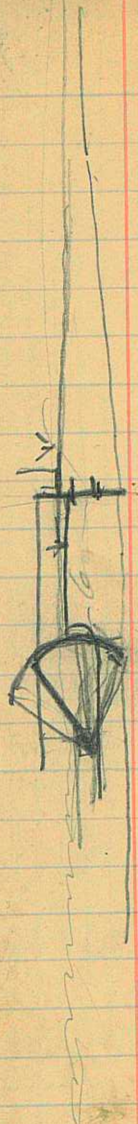
to ℄ Condenser Smoke Stack Smelter

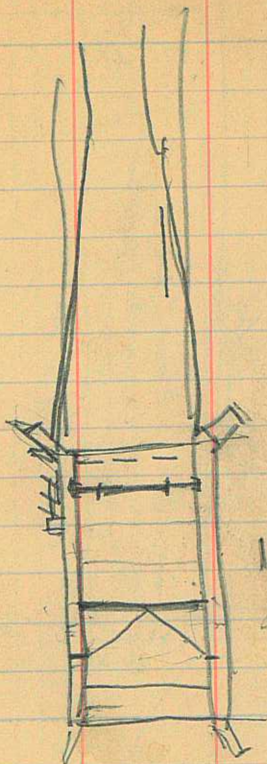
$$\begin{array}{r} 138 \\ 60 \\ \hline 78 \end{array}$$

(7)	89°56'	1200.0
℄ Ditch (6b)	89°56'	80
(6a)	107	36'

6 —







27
8
8 | 21 6
30

[

cwt

64
64
36
40
70 4
71.6 8

12

16
4
64

Gard 15
30
set for 15
25

85

.66
5
3.30 6

Q = .66 × 6 . 8.02
6 .7
3.96 5.61 4
4
66 22.×4

5

1.50
.49

5.6
3×3
1 6 8
1 1 8
1 3.× 8

.7

5.5

8.02
.66
48 12
48 1 2
5×2 9 3 2
33
×.66 8.02
17 8 7
158 7
175

.7

Layout of the H W Ballan Pump May 11 1926

			Elev	
	4.000		4406.02	4410.02
		5.66	4404.36	
A		4.06	4405.96	ground
B		6.50	4403.52	
C		9.10	4400.92	
		9.22	4400.80	
E		8.00		
		4.00	4406.02	

4410.02
9.22
4400.80 on hub by willow

5.66
4.46
1.20

10.02
4.6
5.42

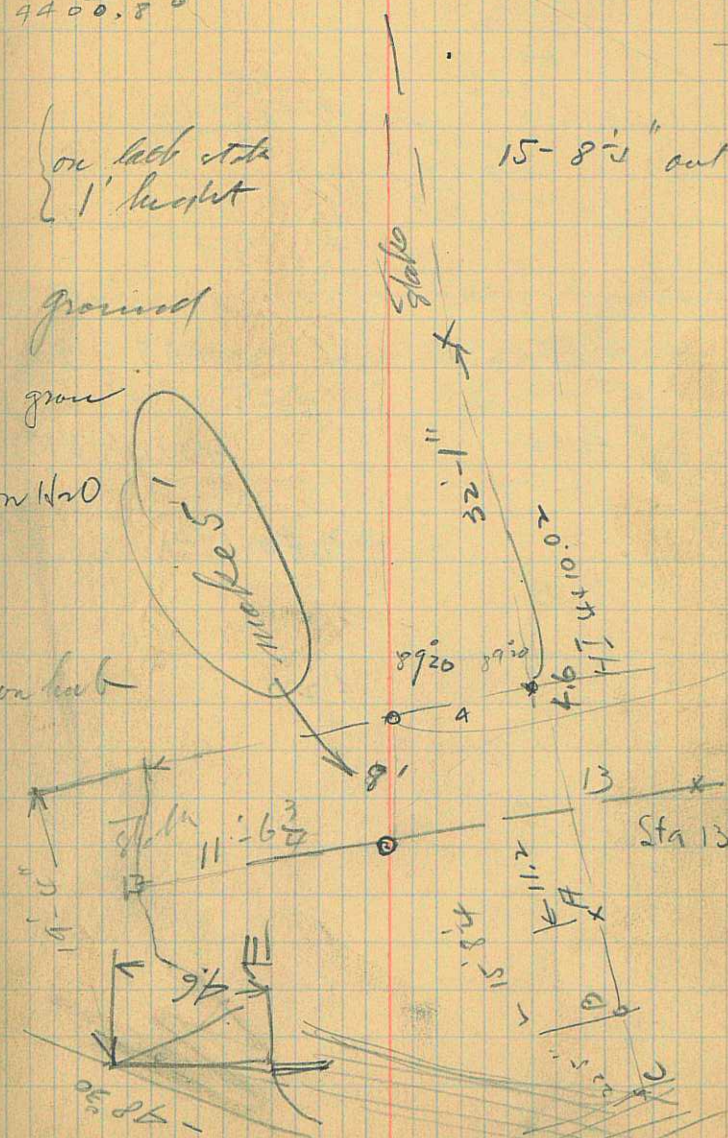
on lath stake 1' height

ground

grou

on H_2O

on hub



$13\frac{1}{2}$
8
71

284
21

260

2000 | 260
1720 | 6077
1800
40

8960

4408
4405.42
2.58
542
4.91
0.51

665
05.42
1.23

4435. 304.

4.00

4434.04 443804

3.80

4.20

3.80

3.84

3.8

Head water [illegible] 3.85 G[illegible]
[illegible] on [illegible]

[illegible] [illegible]

	BS	FS	cm		Ele	HI
				12.80	106.30	
				8.70	110.40	
				12.70	106.40	
5+88				12.50	106.60	
				4.35	114.75	
5+						
5+15				7.15	111.95	
5+15				12.3	106.80	
5+15				9.30	109.80	
5+00				10.79	108.31	
	5.13					119.10
		3.70			113.97	
3+90			9.35		108.32	
3+00			9.30		108.37	
2+00			9.10		108.57	
	4.13					117.67
	~~4.13~~	9.34			113.54	
0	12.88				110.00	122.88

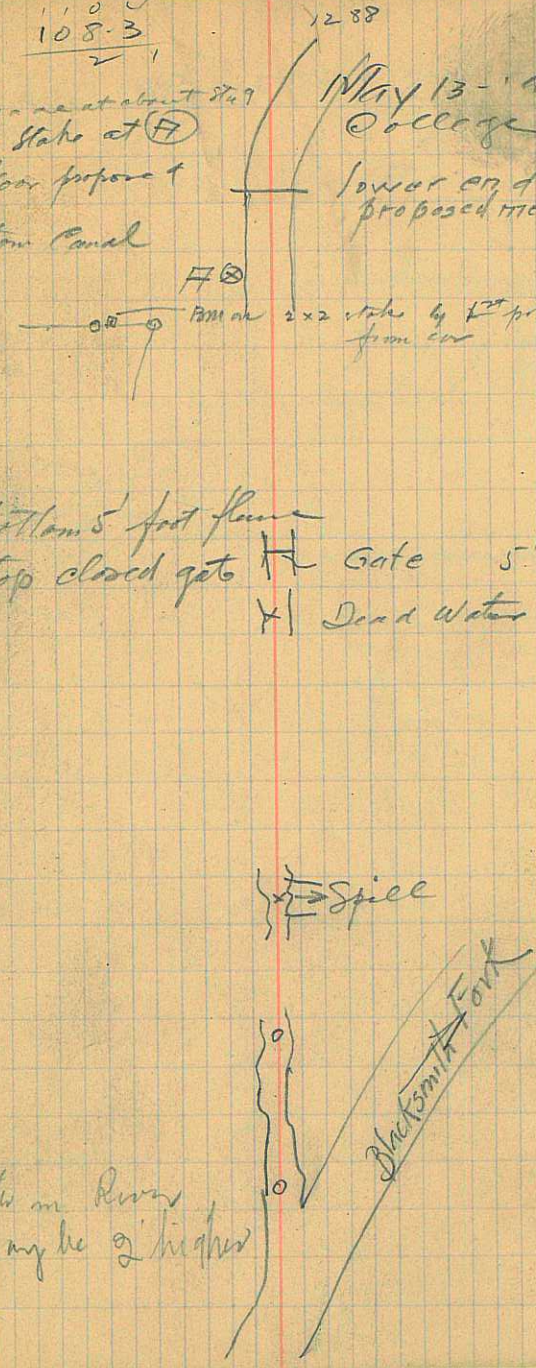
110
108.3
2 1

canal ... at about Sta 9
Erwe Stake at (F)
on floor propose t
bottom Canal

May 13 - 1926
College dive Co

lower end
proposed meas flume

122.88
9.34
113.54
4.13
117.67
3.70
113.97
5.13
119.10

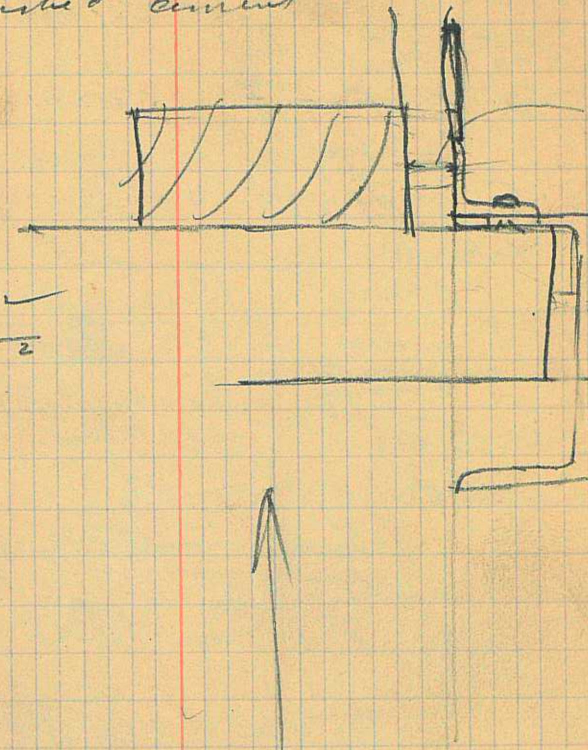


bottom 5' foot flume
on top closed gate

Water in River
may be 2' higher

BS	FS	cm
8.94		
		12.94

on finished cement



1/2

$$\begin{array}{r} 108.3 \\ 106 \\ \hline 1.92 \end{array}$$

Study of - Briggs Allred
pump

	U.S. Elec
25 - HP motor	1165 RPM
2 C-F-S ?	220 Volts

Disch. 10" pipe -
Length 441 ft - 6" Dis 8" Suc

Simons
Name. Byron Jackson
10" Suction 1850 G pr M
8" discharge Head 49
1800 RPM

Wat 10-24-17
15 ft suction
10 x 20" - 6' Taper
8" Crane Valve

5 - 2¼ x 10" best pur
flange each end
10" pur. pipe - 8" Crane Valve

Fairbanks Morse Motor
HP 30. 200V - 1800 RPM
3ph. - Cir. of 2-7⅛"
of Discharge pipe hnd ft
250' - 10" in dia.

Hill about 8' lower
left - Simons about
1' lower than Briggs

47
9
423
18
551

Ballard ~~24~~ 20

60
26
34
19

31
24
55

$$\left\{\begin{matrix} 53 - 20 \\ 54 - 20 \end{matrix}\right\}$$

24 x 3600 x 20
53 x 1000

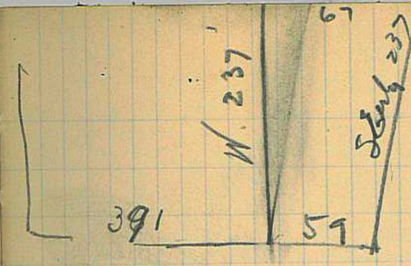
24
36
144
72
864 20
17280
1729
138

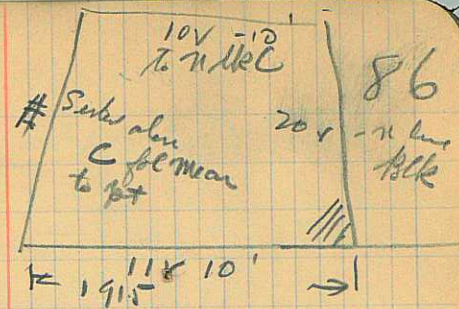
53
3

Ballard H W Gr.
Meter formula for compt
KW. motor output -
50 amp meter K = 12
75 amp " K = 18
N = number revolutions
T = time these " result

$$KW = \left(\frac{12 \times N \times 3600}{T \quad 1000}\right)$$

391
59
450





165
61
81.5
10
191.5

191.5
450
641.5
20.5
662.0

E/ Drainage levels for Hi. Cardon - 8-2-1926

	BS	FS	IM	Elev.	HI
0	7.83			100.00	107.83
0			~~7.31~~		
			9.05	98.78	
	4.74	4.94		102.89	107.63
2+20			9.79	97.84	
△ 3+50			9.60	98.03	
3+90			9.90	97.73	
4+40			10.22	97.41	
4+90			10.22	97.41	
5+00 at fence			10.19	97.44	
		~~13.00~~	13.00	94.63	
		14.09		93.54	

O.S. dia of 5" tile = 0.52 ft

grade new House

~~top of proposed 5" tile~~

on pipe Outside of new house (east)

top 5" tile

top 5" tile Angle pt. at Ramsey House

~~ab~~ { available 4.23 ft fall

bot. 5" tile at man-hole bell of 8"

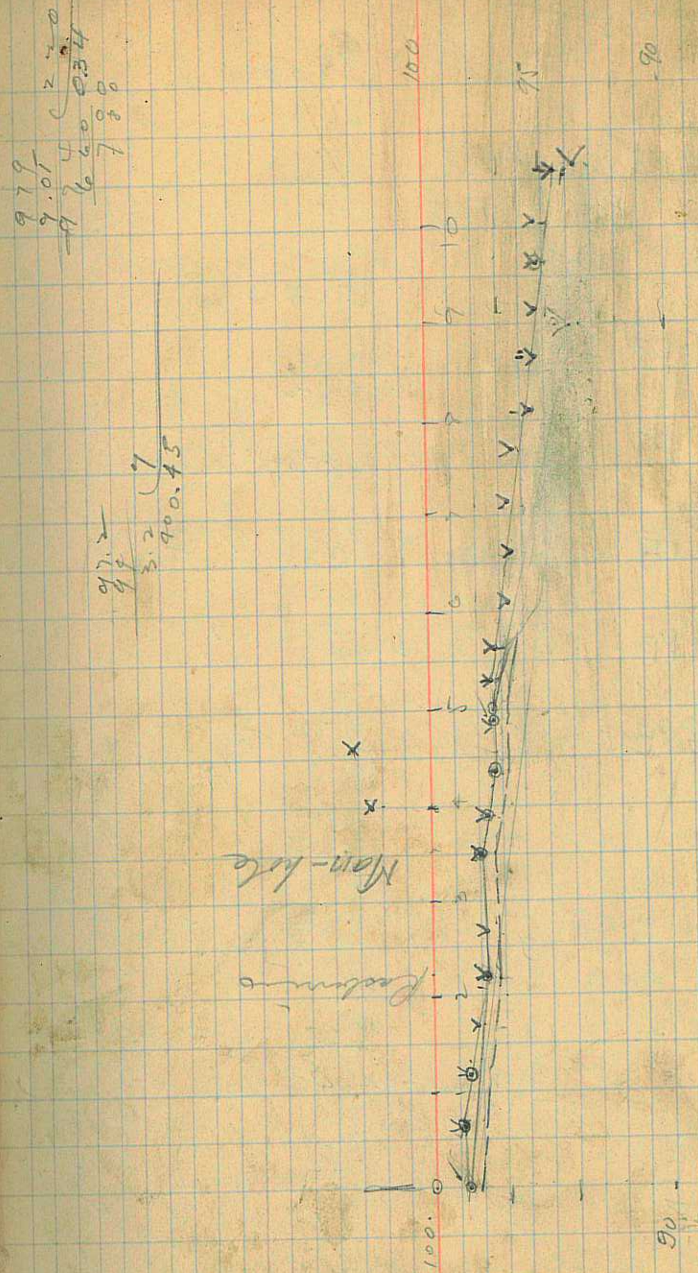
O.S. b.d. of 8" ~~tile~~ sewer pipe in manhole

3.29
10.8
14.09

107.63
14.09
93.54

107.83
4.94
102.89
4.74
107.63

14.05
9.57
4.48
.25
4.23



Final Grades for

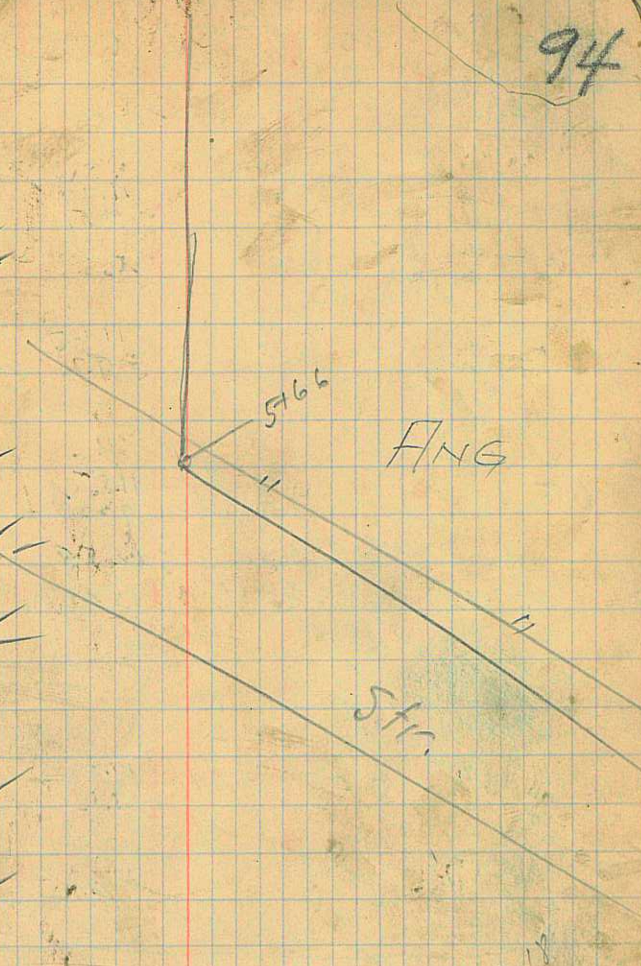
Hi Cardon

P.E = Pipe Exposed
OP = on pipe

	BS	FS		Grd. Elev	Ele	H.I	Grd RR	Cut
0	8.47 OP		5.29	101.96	98.78 / 101.96	107.25	9.250 / .157 / 9.409	3'-1½"
0+55 PE			8.31 / Hub 4.75	102.50	98.94 / 102.50		9.409 / .179	4'-8"
1+17 PE (48)			8.70 / Hub 4.85	98.55 / 102.40	98.55 / 102.40		9.588 / .139	4-8⅞
1+65 PE (48)		~~5.03~~	9.00 / 5.03	98.25 / 102.22	98.25 / 102.22		9.727 / .139	4'-8⅝"
2+13 PE (51)			9.40 / 4.78	97.85 / 102.47	97.85 / 102.47		9.866 / .147	5'-1⅛"
2+64 PE (36)	5.13	5.40	9.50 / 5.40	97.75 / 101.85	97.75 / 101.85	106.98	10.013 / 9.743 / .104	4'-7⅜" = 4.613 / 5.13 / 9.743
3+00			5.27	101.71	101.71		9.847 / .135	4'-7"
3+47 (38)			8.93 / 4.60	98.05 / 102.38	98.05 / 102.38		9.982 / 10.148 / .208	5'-4½" upper grade / 5'-6½" lower grade
3+85 P.E.			9.25	97.73	97.73 pipe dip			
4+00		hub	4.45	102.53	102.53		10.356 / .235	5'-11"
4+30 P.E			9.57	97.41	97.41			
4+60			3.84	103.14	103.14		10.591	6'-9"

98.78
-.52
98.26
.64
4-3"

Sta.	BS	FS	in	Elev.	H.I.	Grade	Cut
4+60						10.591 / 1.96	
4+87 PE			9.56	97.42	106.98		
5+10 / +16			4.17	102.81		10.787 / 22	6'-7½"
5+35 PE			9.55	97.43			
Sta 5+66 PE / 50			9.75 / 5.67	97.23 / 101.31		11.007 / 196	5'-4"
6+16 / 50			10.17 / 6.25	96.81 / 100.73		11.203 / 196	4'-11½"
6+66 / 50			10.47 / 6.76	96.51 / 100.22		11.399 / 196	4'-8¾
7+16 / 50			10.31 / 7.18	96.67 / 99.80		11.595 / 196	4'-4⅞"
7+66 / 50			10.65 / 7.42	96.33 / 99.56		11.791 / 11.791 / 196	4'-4½
8+16 / 50			11.35 / 7.45	95.63 / 99.53		11.987 / 196	4'-6½
8+66 / 50			11.60 / 8.36	95.38 / 98.62		12.183 / 196	3'-10"
9+16			11.64 / 8.67	95.34 / 98.31		12.379	3'-8½



	BS	FS		Elev	HI
9+16 / 50			8.67	98.31	106.98
9+66 / 50			11.70	95.28	
			9.51	97.47	
10+16 / 46			11.65	95.33	
			9.75	97.23	
10+62		top 5" pile on hub	11.85	95 1 3	
			9.32 on	97 66	
		top 8" pipe	12 59	94 39	
= 12.59+.83		grade of 8" til.	13.42	93.53	

check levels

hub 2+64 5.40

2+13 4.77

3.40
4.90
floor 8.30 — mrs Round

0 5.7 on hub
0 9.38 grade H. Carlson's beg

96

RR Gr.	Cut
	.42 / .5 / .47 / .85 / 1.32
12.379 / .196	3'-8 1/2
12.575 / .196	3'-3/4"
12.771	
12.771 / 18	3'-1/4"
12.951	3'-8"

12.59
.83
13.42

3 - 2 - 5 1/2
10

14.09
12.32
1.77

1.07

13.42
12.32
1.10

8.47
5.29
3.18
5.7
8.88
5
9.38
8.3

98.78

98.26
94.19
4.07

93.53
.66
94.19

4.07
3.186
.884
10.62
.383
8840
8496
344.0
3186
2540
.383

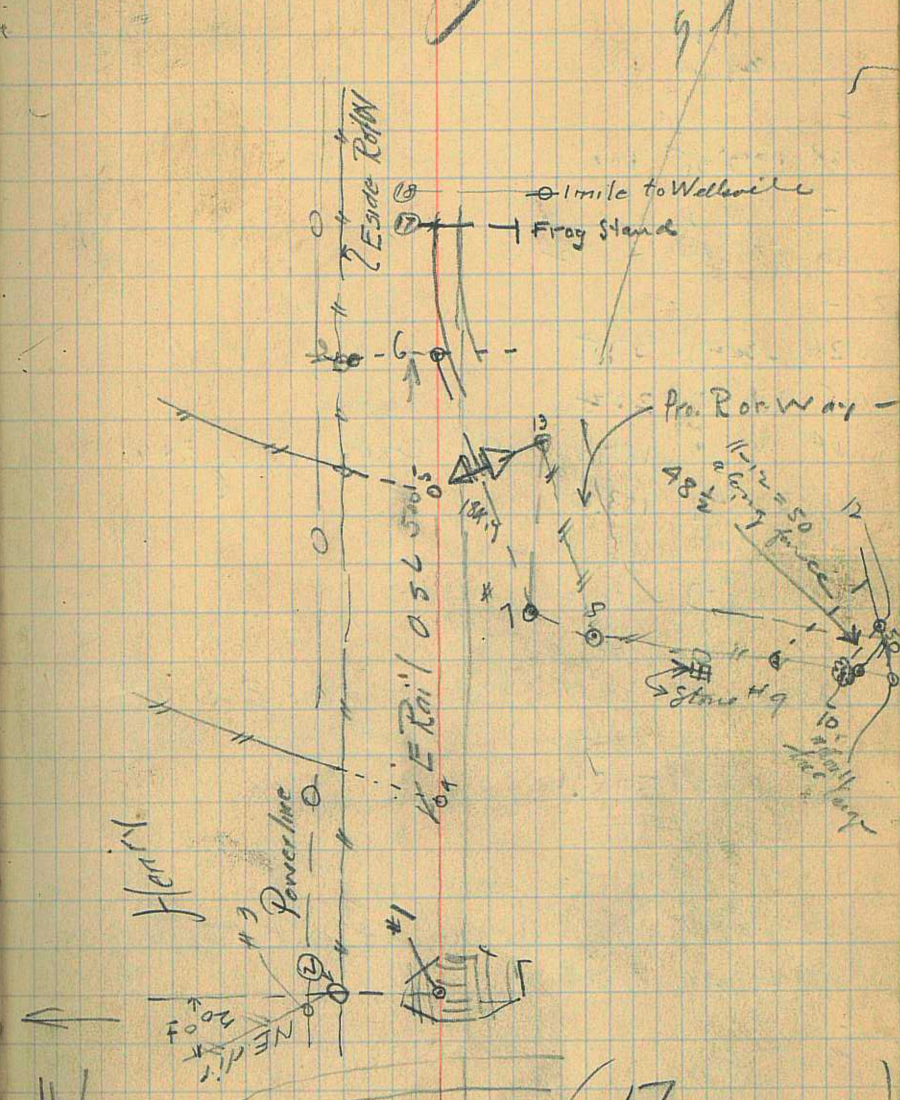
8.47
5.13
13.60

5.40
13.42
18.82
13.60
5.22

98.78
5.22
93.56

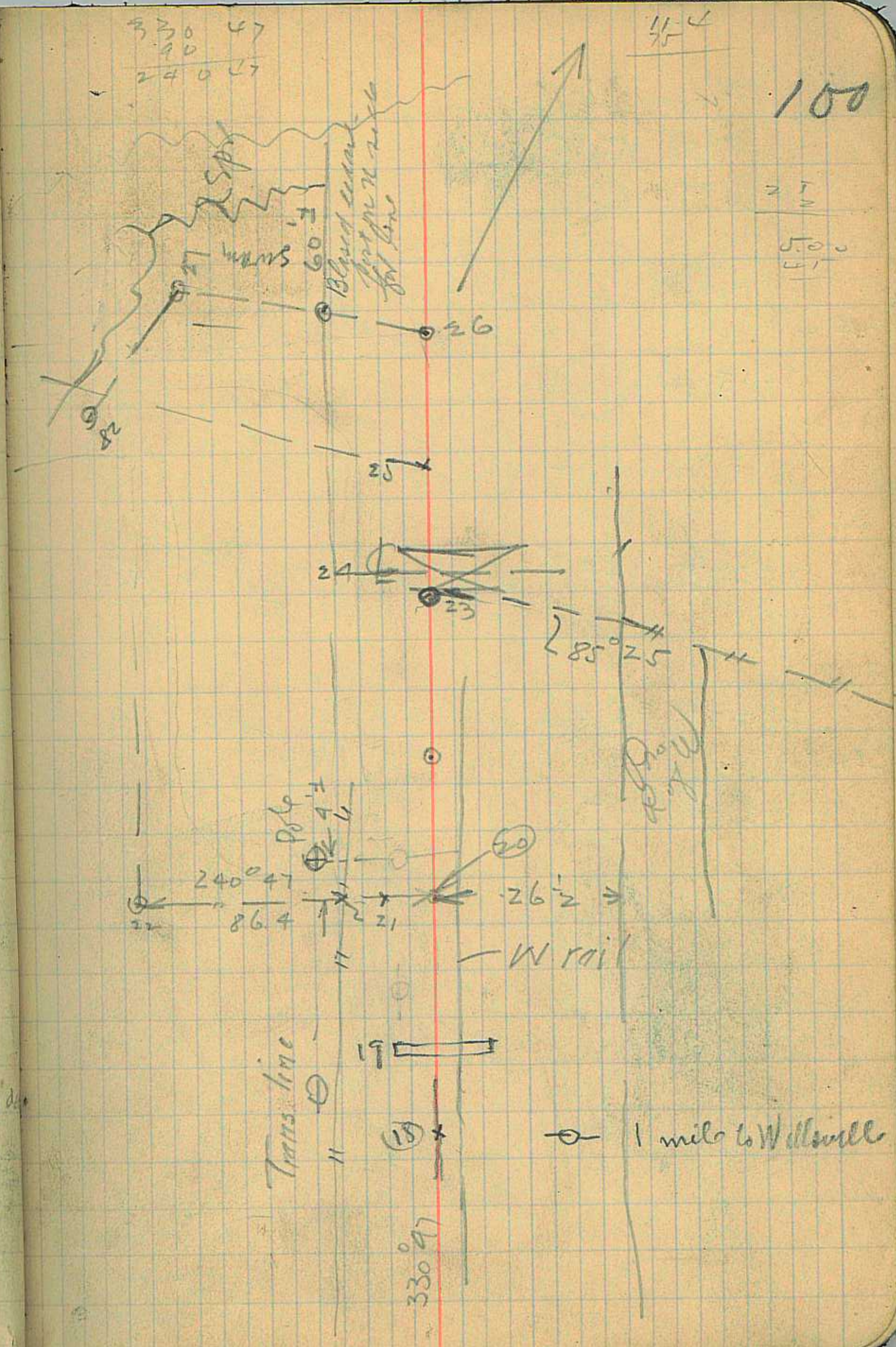
Survey for Franklin Co. Sugar Co. near Webeker On O.S.L. – No. of Wellsville

#	ang	ft.	
17	330°47'	83.	Frog stand
16	240	22.8	
15	59°15	27½'	
14	330°47		
6 –			
13	341°43	74.8'	
11	86°05	390.3	
10	86°05	337.0	
9	89°23	48.6	Sec. cor. SE cor 27-11N1W
8	89°24	19.8	
6	316°31	184.7	
	313°05		℄ of silo in Mt Sterling
7 –			
7		184.7	
6 –			
6		500	
5		422	to So line of Stewart's l
4		166	So line of Henry's Land
3		28.6	in line with Power line
2	1st of OSL	22.6	
1 –			



ADD 3°27 to ay to pt 27

	#	ay	Dist	
29-				
	29	229°32	100.00	
28-				
	28	199°31	100.0	
27-				
	27	258°40	120.2	
6 26-				
	26	330°47'	375.	
	25	330°47	222	
	24	" "	187	℄ crossing E+W
	23	330°47	183.0	
	22	240°47	86.4	
7-	21	240°47	22.8	stake in fence E side R of W
20-				
6	20		578.0	
	19	330°47	138	℄ culvert under track 18"W x 1[illegible]
	18	330°47	105.8	
6-				

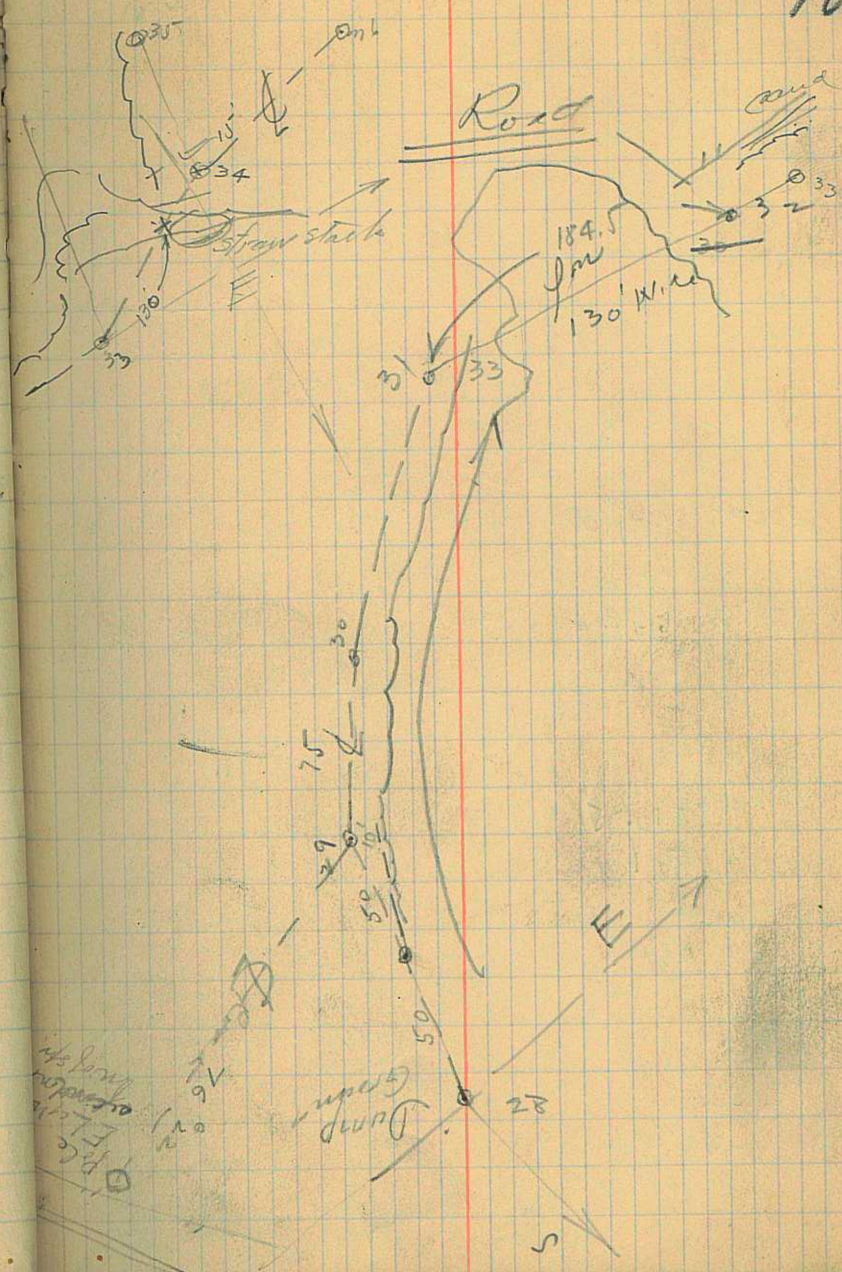


#	∠y	Dist	
36-			
36	263°33'	150.5	
35	179	138.00	
34-			
	$\boxed{330°37'}$		error of 10' fo... set 257°41 found at 29
~~34~~ -	89°20'		check back on E rail for ∠y
34	257°41	168.00	
33-			
33	279°37	34.5	
32-			
32	279°37 / 279°39	184.5	{not. correct 7 min from this & other succeeding ∠y} ADD 3°20'
31-			
31	263°37 / ~~49~~	169.0	
30-			
30	254°34' / 33' / 41	75.0	
29-			

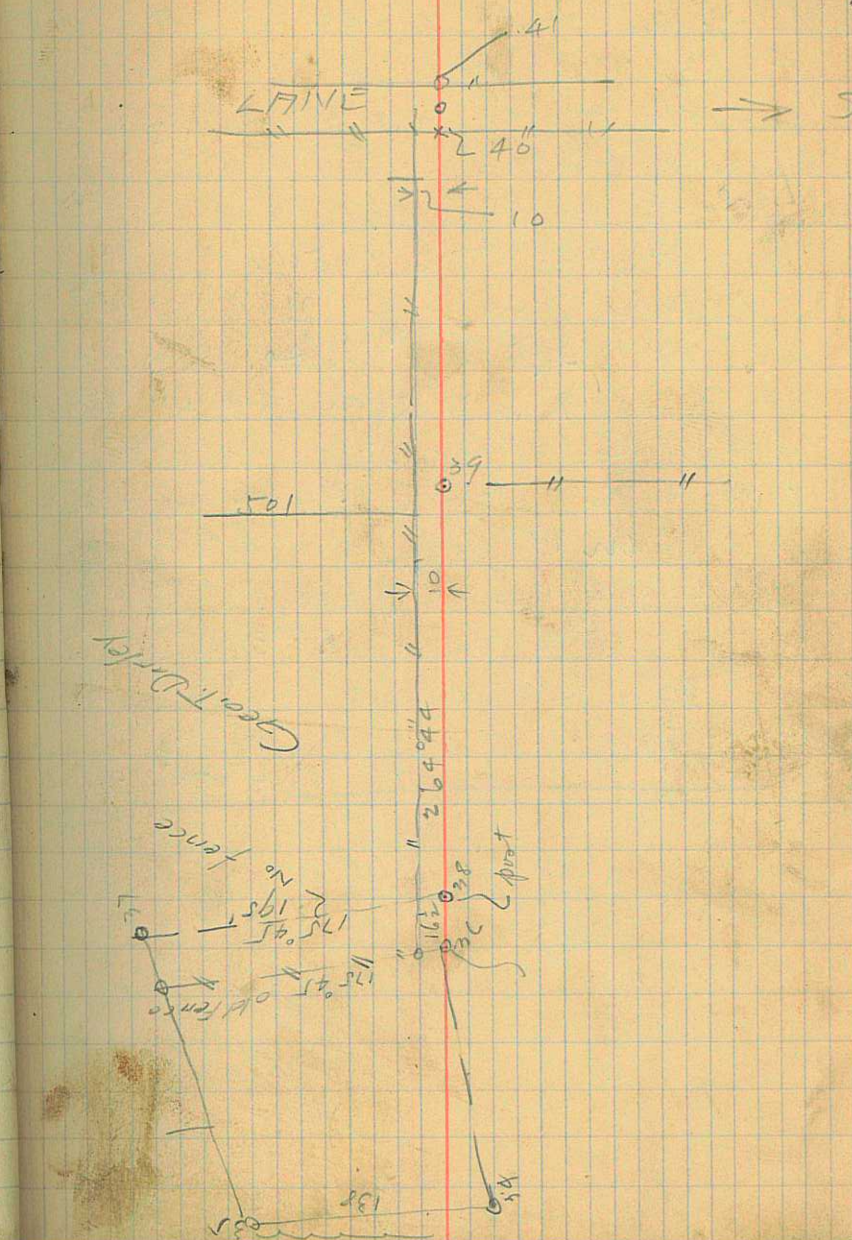
6

7

6



	#	ang	Dist
6			
	41	266°39	671.0
	40	266°39	644.0
7.	39		
	39	264°44	510.75
6			501
	38		16½'
	36 –		



11 N 1 W   O.S.L. RR bears N 25°27'W

Alma Sugar Co -

Beg in center of sec 27 - N 89°09'W
4 ch N 26°09'E 2.50 ch. N 88°30'E
2.27 ch m or l to a pt in W l of a
spur of the O S L Co's R of W ; S
25°46'E in W l of sd R of W 3.86 ch
to a pt S 89°57'E 1.05 ch of a pt
1.13 ch S of beg. N 89°57'W 1.05
ch. N 1.13 ch to beg 87/100 Also: Beg at a
pt N 26°09'E 2.50 ch of a pt N 89°09'W
4 ch of C of sec 27 - N 35°00'E
1.34 ch ; N 43°50'E 0.96 ch m or l
to a pt ~~in~~ W bdry of a spur in
O S L R R Co's R of way S 25°46'E
in sd bdry line 1.93 ch to pt
N 88°30'E 2.27 ch of beg S 88°30'W
2.27 to beg.

50-850

Oscar I Handley -
Thomas H Stuart -

$$\begin{array}{r} 174 \\ \underline{156} \\ 18 \end{array}$$

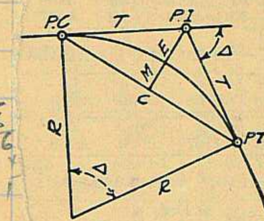
R cos h tan h

466
11.4
18 6.4
46
65 2.4
650
190
8 + 0

RAILROAD CURVE
AND
CTION TABLES

, by Eugene Dietzgen Co., New York City

472
466
6



CURVE FORMULAS

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

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

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

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

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

XPLANATION AND USE OF TABLES

ts.—Given P. I.=Sta. 161 +60.35 to find Sta. of P. C. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T= d ÷ 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= nd P. T.=Sta. P. C. +L=164 +91.50.

sets.—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 for 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 ed by twice the radius equals (approximately) the distance from ent to curve. Thus (54.50)² ÷ (2 x 688.26)=2.16 ft.

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

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6 ÷ 8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷ 42=5.5 or D= 5° 30′.

22
16
2
13
2 2
35.2

21.5
2 1.5
2
860
430
0
51.6

H
0
1
2
3
4
5

199.8
117
82.8

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on $1\frac{1}{2}$.

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.