1929-1C

FIELD BOOK

360

KEUFFEL & ESSER CO.

DRAWING MATERIALS
AND
SURVEYING INSTRUMENTS.
NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

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

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

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

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

Cache County

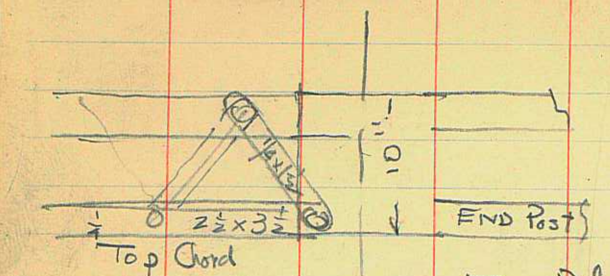
1929-1C

July 2-1929

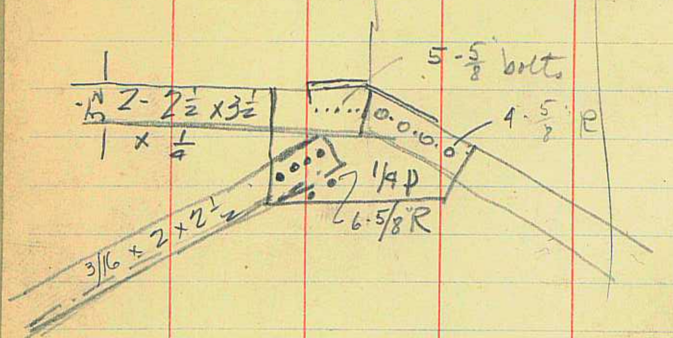
Eugene Schaub
Co. Engr.

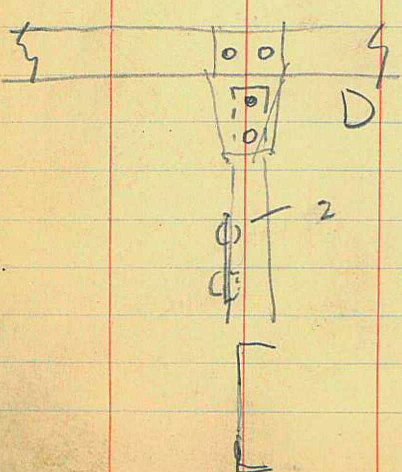
Eugene Schaub,
Logan,
EAG
941778

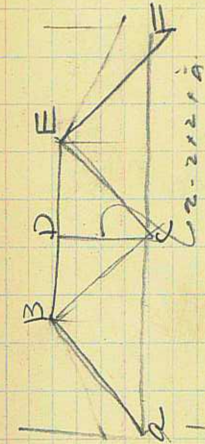
Steel Bridge over
Blacksmith Fork Logan-Melloil

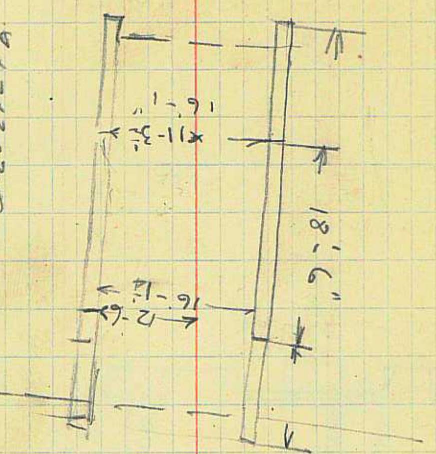


E Plan





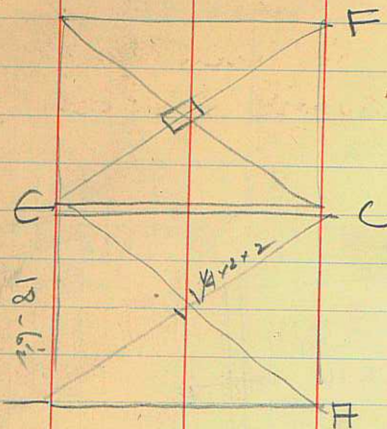


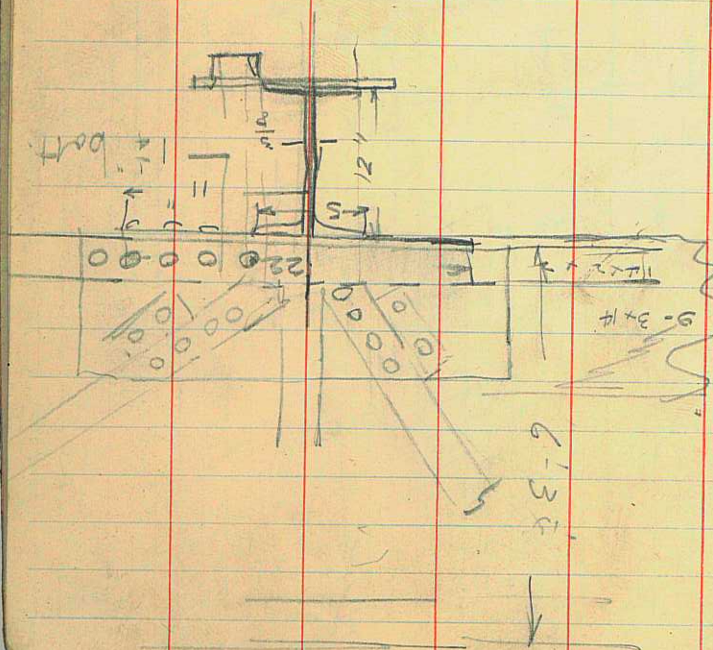


39' 10" x 39' - 10

3 9 - 10
  5 - 8
  2

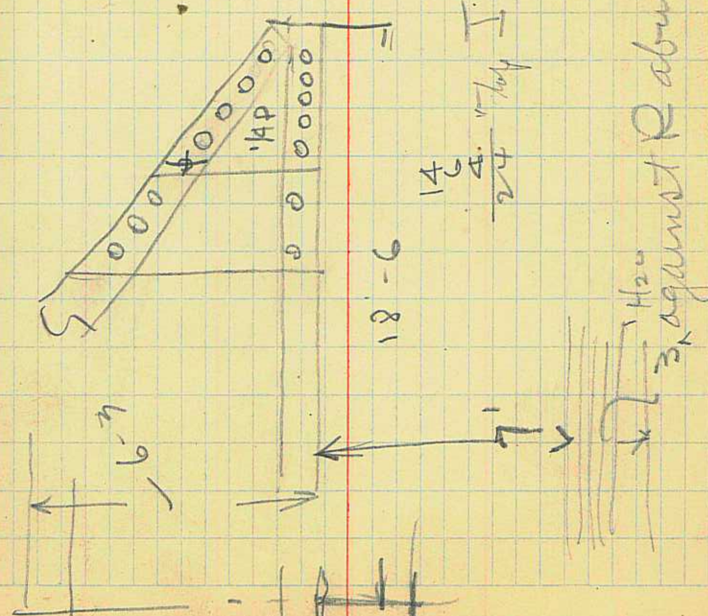
35 - 8
2 79 - 8
3 9 10
4 3 1 2





2- layer 3" plank on floor

33'-6" between rubble
line
masonry rock abutments



7-11-1929

Study of Borings in Blacksmith-Fork River bed under Steel Bridge West of Millville on the the main Road to Hyrum -
by CE Schaub

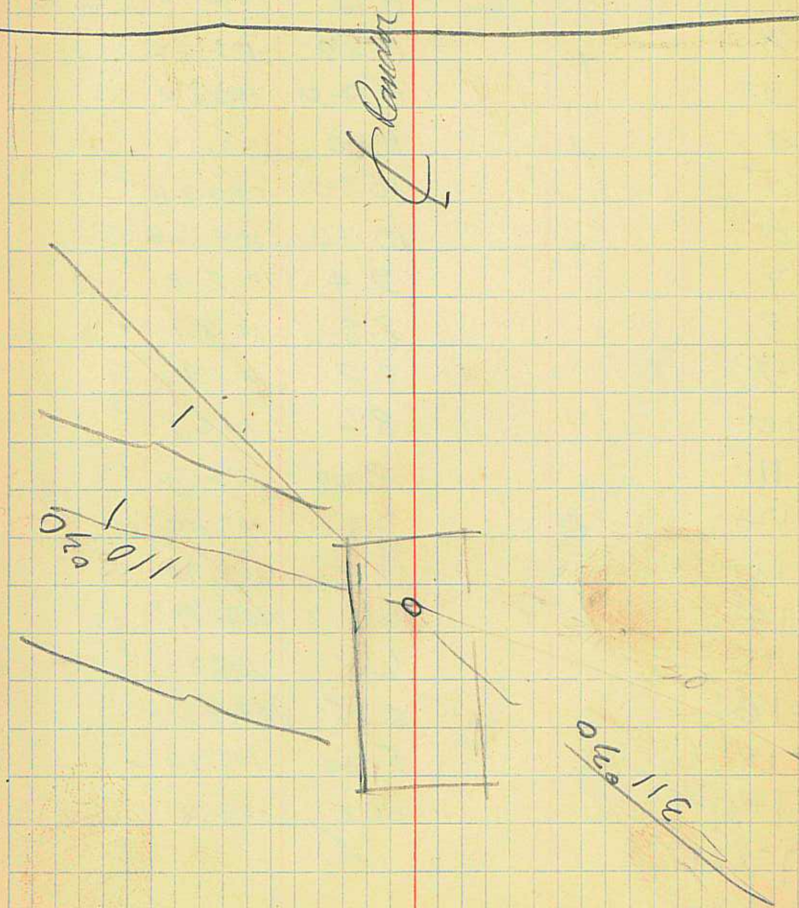
Depth	Type of Soil	Compact.	
5'	Sand Grav.	Yes	East side under bridge
4½	Sandy Loam	Quite	Practically same place

Depth is referred from Water Surface which on this 11 day of July is 7'8" below lower edge of lower chord.

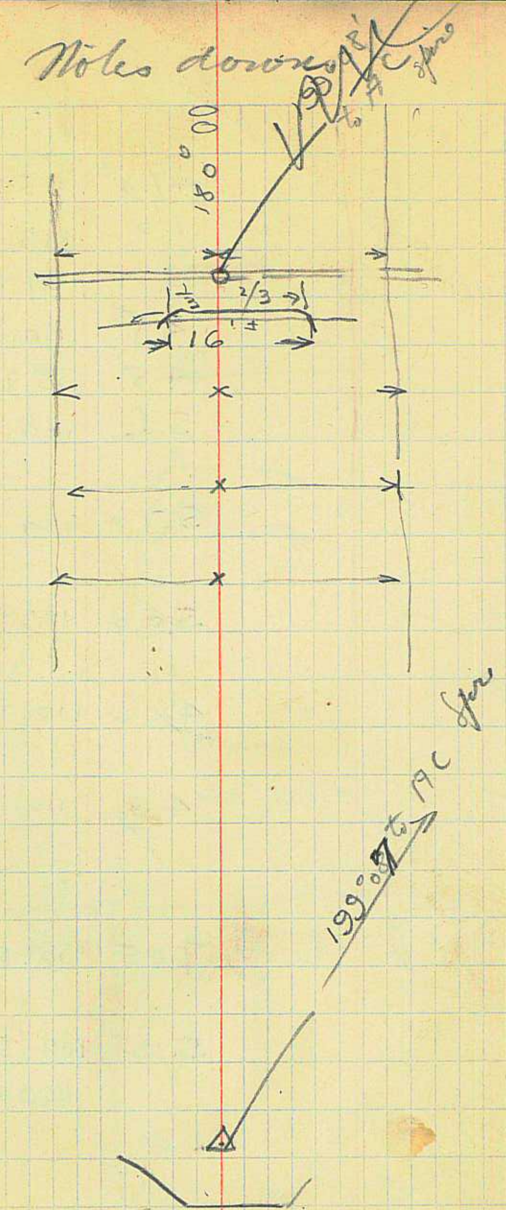
7-12-27

Paving data

H. C. Means in office
Utah Rock asphalt Corp.
$8 per ton, a ton will
cover 15 sq. yds 1½" thick

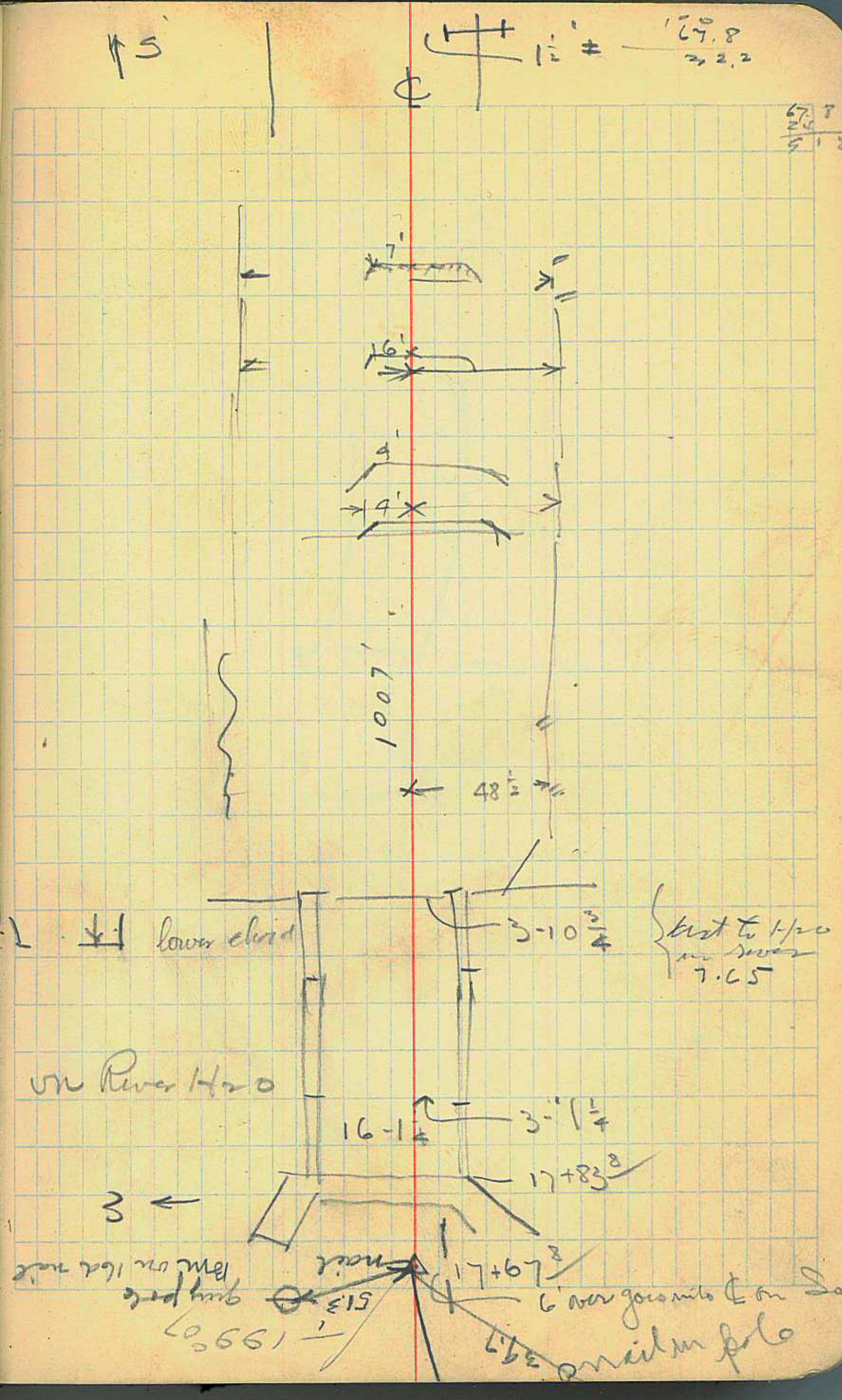


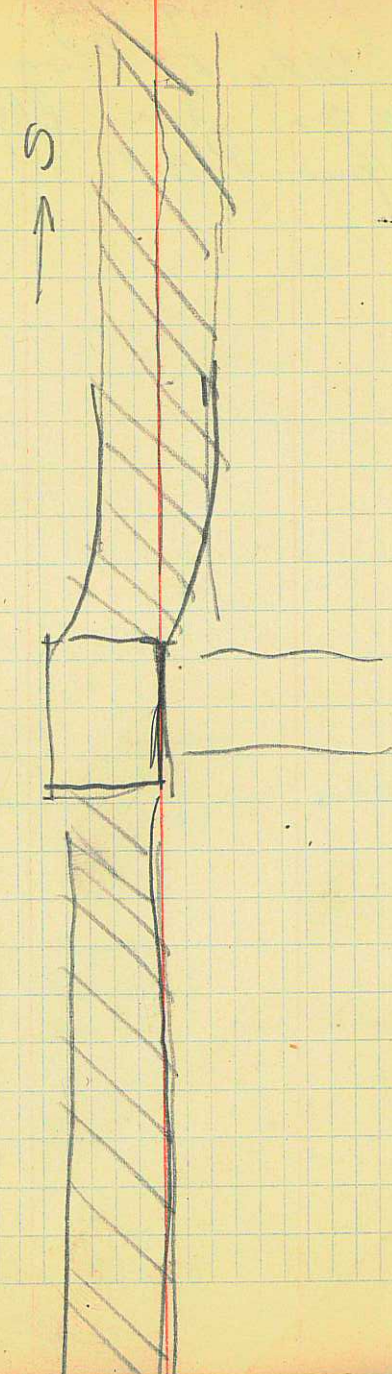
	BS	FS	Int	Elev	HI
0	11.00			103.70	
1			11.00	103.70	114.70
2			11.50	103.20	
3			11.20	103.50	
4			11.00	103.70	
5			10.80	103.90	
6			10.10	104.60	
7			9.4	105.3	
8			8.8	105.9	
9			8.8	105.9	
10			8.6	106.1	
11			8.00	106.70	
12			7.7	107.00	
13			7.0	107.70	
14			6.8	107.9	
15			6.0	108.70	
16			5.85	108.85	
17			5.60	109.10	
△ 17+67 8			5.12	109.58	
17+83 8					



28	−1.0±	115.70	
27	1.0	113.70	
26	3.1	111.6	
25	4.5	110.2	
24	4.8	109.9	
23+00	5.6	109.1	
22+00	5.70	109.00	
21 00	5.00	109.70	
20+00	4.00	110.70	
19+00	4.3	110.4	
18+17			
	7.05	107.65	114.70
18+10			
18.00	5.12	109.58	
		100.00	
17+91.8			
24			
17+83.8			
Mm on nail	6.06	108.64	

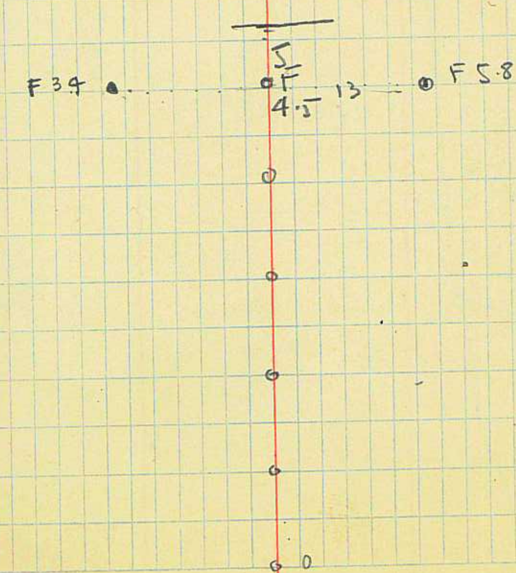
notes. [illegible]

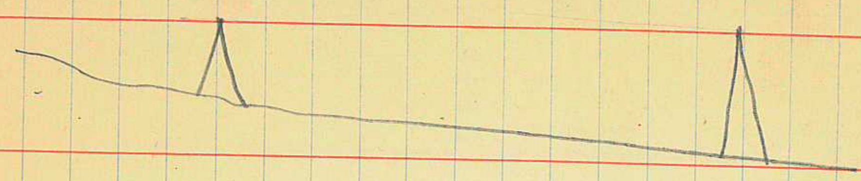


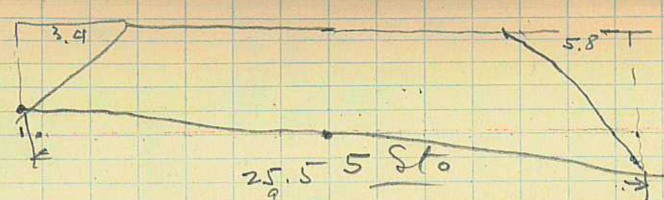

S

8-9-29

Study of Road
Changes in Bl. Fork
Hyman Plant







25.5 5 Sto
9
16.5

5.8
3.4
8 4

aug 19 - 1929

Study and Location
Bridge over Blacksmith Fork
Logan Hyrum Road

Pt.	BS	FS	int	Ele	HI	Ay	
			9.00				bottom grillage under rubble wall
	3.68	4.45	4.45	101.65	104.72		on hub B
			8.30				bottom N ℄ foot 2:10 PM
			5.50				on outflow H_2O near ℄ bridge
	0.92	9.80		104.57	105.49		
			6.75	107.62			on rubble wall L side
			4.35	110.07			on nail L side ℄ RP
			6.74	10.7.63			on top rubble wall R
			5.00				on Road R side → old Road
	5.73					1°03	on tan ℄ B 83°00'
						199°07	6 FC gir 17+67.8 0+A 91°±
A-							2.75 To ℄ Bridge
			from blue print	110.11			rough rear L side
				110.25			finish L side
				109.96			rough grade R side
				110.10			finished grade R side
				96.00			bottom (on print)
				100.00			on River H_2O
				107.65			old lower chord
BM 5.73				108.64	114.37		on nail in pole

110
109.37
6.83
109.96
97.63
2.33
.50

78
12
90

108.64
5.73
114.37

114.37
6.74
97.63

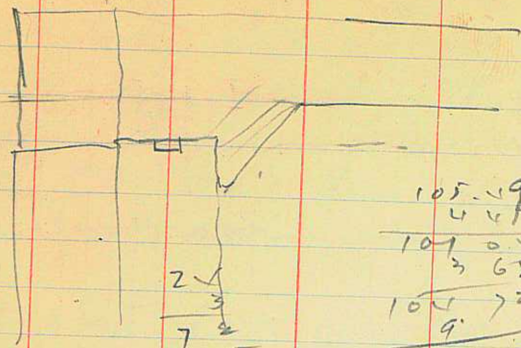
46
3

1.15 12/12

110.25
110.63

89.60
7.25
82.31

114.37
9.8
104.57
.92
105.49
8.3
97.19



105.49
4 45
101 04
3 68
104 72
9
107
96
1.1
95.72

24
3
7 5

14.6
13 9

13 18
13 9

1.83

26
300
7800
15
39000
7800
117000
75800
192800

22
110
1100
22
3300
26
19800
6600
75800

14
9
23

~~20000~~ ~~(2000~~
100
120

13.9
12 21 14 "
12 07

14.6
13 1.8
1.4
13.2

12 14
12 7

.16 .12 .11

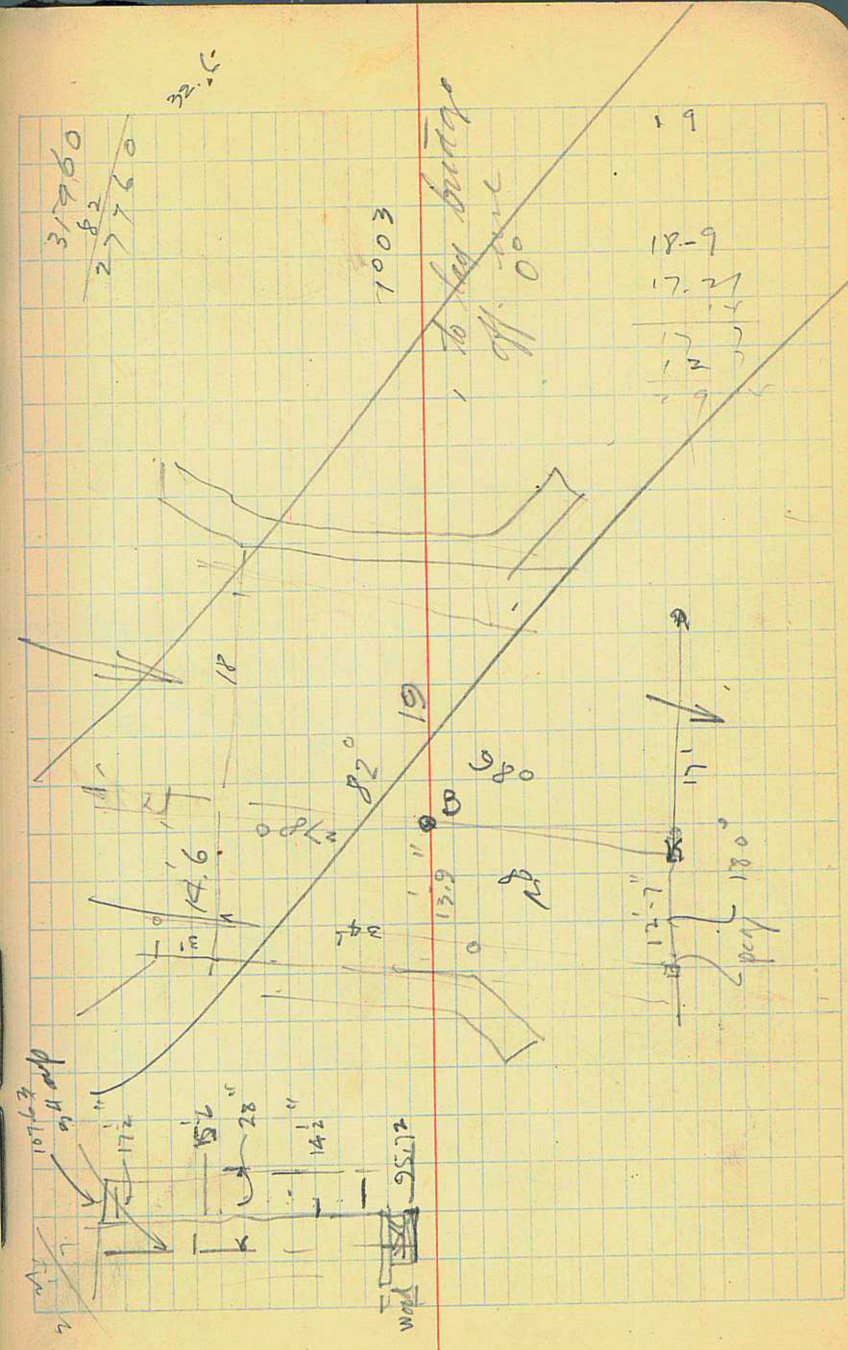
.12

2.2

26

9 -

26



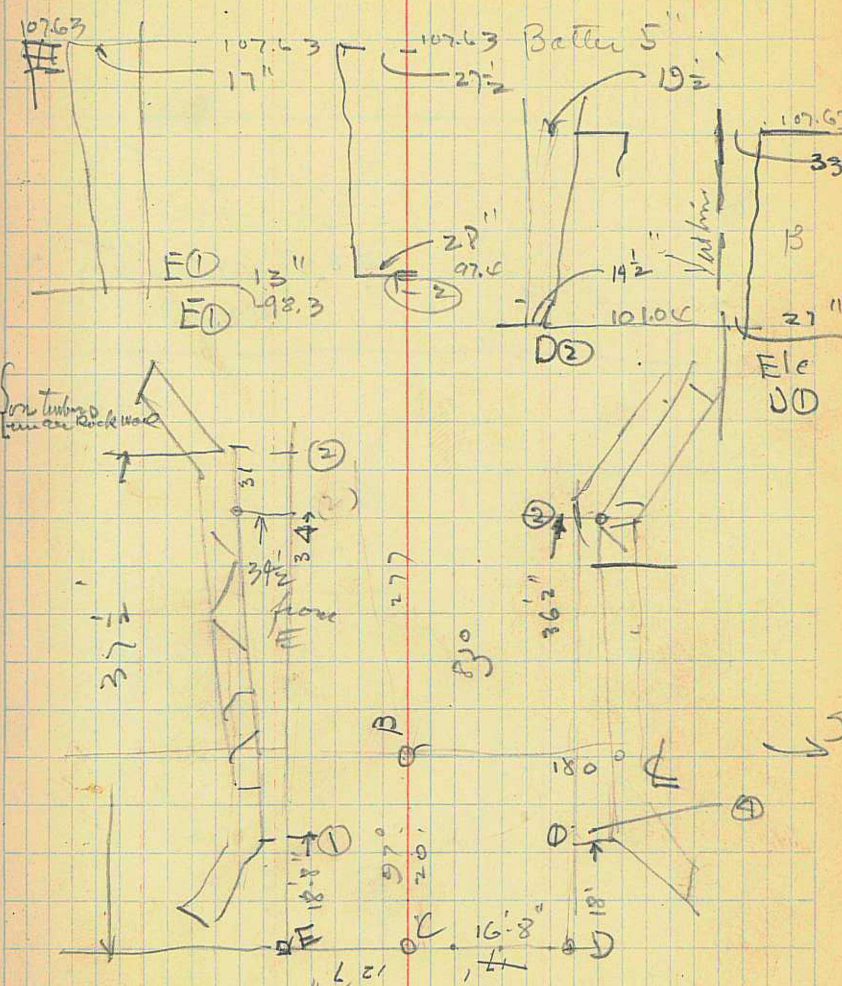
104.74
7.3
97.44

Ele

E { E	3.70	7.75 8.4 interval E1	101.04	104.74
D { ④	5.75	6.79	101.04	106.79

101.04
5.75
106.79

12.7
17
29.7



	BS				
BM			5.76	108.65	
			4.83	109.57	
	9.88			104.57	
			7.9		
	2.90			101.04	103.94
E 1	4.16			101.04	105.20

25.5

93°30

108.65
5.76
114.40
9.88
104.52

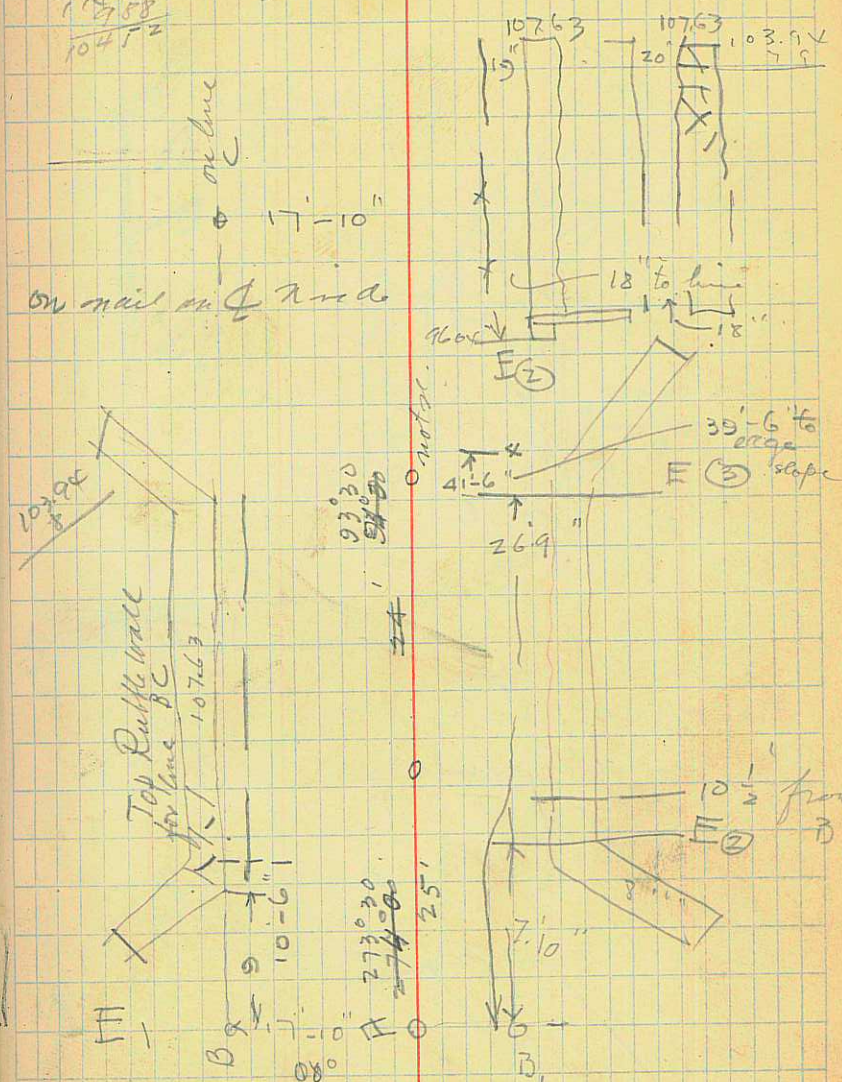
108 114.40
4.83
109.57

17.10
25

25
14.5
10.5

101.04
4.16
105.20

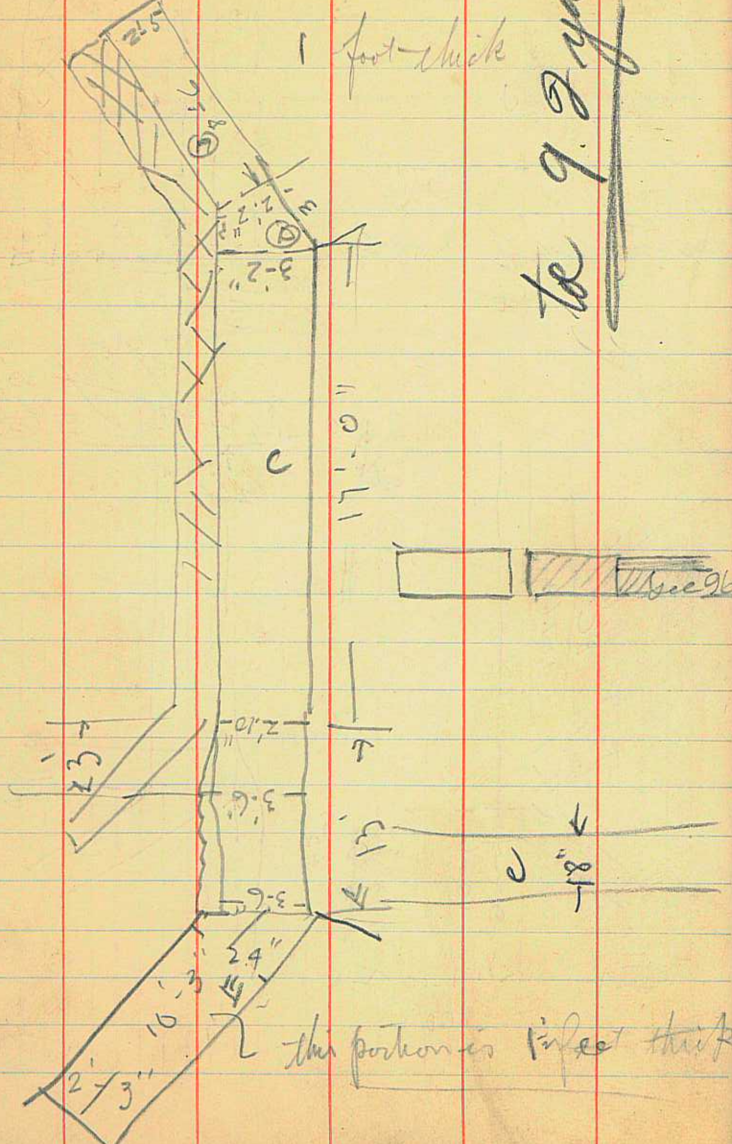
101.04
2.9



Cement poured
Aug 20 - 1929

1 foot thick

to 9.7 yds



this portion is 1½ feet thick

2.3
2.2

2.3
8.5
115
104
1.155

33.66

2.6
2.5
130
52
6.5

2.80
32
600

17
3
51
12
102
51
612

3.6
13
108
36
46.8
1.2
936
468
56.16

17

c ft

Ⓐ 11.50
Ⓑ 6.50
61.20
56.16
135.36

23 sacks req
135

23.6
135 | 16.6
131
900
816

16.6 = 1-6

1250
900
1,296,000   1250000

1250000 | 3000

400
3000
12000000

Weir on 3 E 2 S
aug 20-1929

1.000 c.f.
.015
360
320
.02
0.1302

$2x + 2.10 = 2.25$

$2.10x + 2.10 = 2.25$

2.10
1.07

2.20 CFS.

V of app. 1 per head = .02

$= (H \; 1.47)^{\frac{3}{2}}$

Total Discharge = 2.37 ±

Smithfield Irri. Co
Weir on 1 West
and 4 N - aug 20-29

V of H = 1.30 ft

Q without this = 1.25

total Q =
.075
1.25
1.325

or 1.35
2.3
3.65

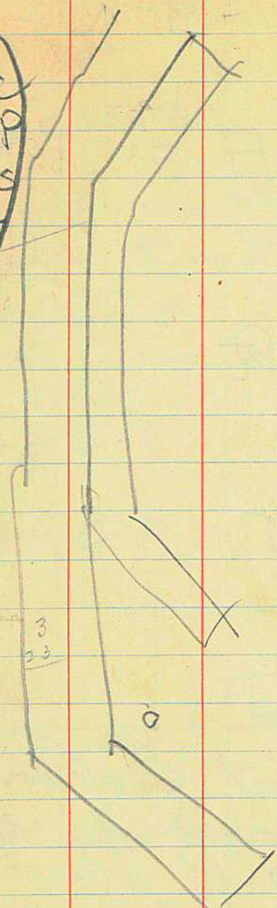
Weir at Exchange
ditch read $4\frac{1}{2}$ CFS
at 1.10 ft about
1/4 CFS leaking thru
Vel. of approach $\frac{1}{2}$ foot per sec

near ft. ~~down~~
3 foot crest Cipp.

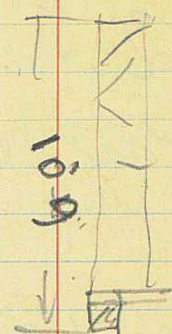
30	26	C
17	14	P
23	70	S
	60	

30 G
17 PC
16 S

101.6
105
97.1



1076



7.34
30
22.0.20
62.9
69
70) 352.1 (5.03

47 40 30 G 5
23 20 17 PG 3
23 4
70 12

33 6/5 2

Slup $5\frac{3}{4}$

F Modli.

$\frac{3}{8}$ 16

Sand

%	#
1.0	3/8
5.0	4
22.0	8
33.0	14
53.0	28
89.0	48
98.0	100
3.01	

Gravel	Course Sand	
0.0	0	$1\frac{1}{2}$
53	0	$\frac{3}{4}$
82	4.0	$\frac{3}{8}$
99	15.0	#4
100	33.0	8
100	55	14
100	75	28
100	89	48
100	99	100
7.34	3.70	

33
4

600 7
6

28

28

6

1 cu ft. 10 shovels

6 6.

7.5

600 7.5
.8 3.2

6

27
15 22

3.2

27

Moisture Content
8-22-27

Lloyd Sand

Wt. of pan 145.9 grams

Wt of damp sand - 800 grams

Wt of sand when
dried - - - - - - 743.75 grams

142
17
135
.35
675

100.00
43.75
56.25

800.00
56.25
743.75

Pouring S. abut
begun 1 PM aug 22 · 1929

Mix	29	gravel
absorption	12	pea sand
assumed	17	sand
10%	58	

1 sack cement
28 qt H_2O test sample #5

mix 2:30 P.

absorption assumed 1% OK	29	gravel
	11	pea Gravel
	18	sand
	58	

Slump ½
3:15 P

1:2-4 28 qt H_2O test sample taken #6

8-22-29 used 32 sacks in S abut

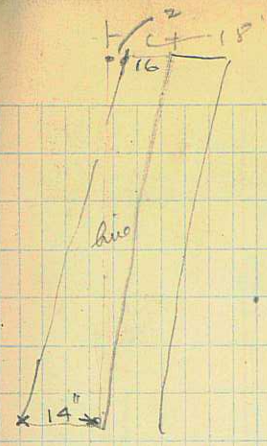
aug 24 N abut dry 12:30 P

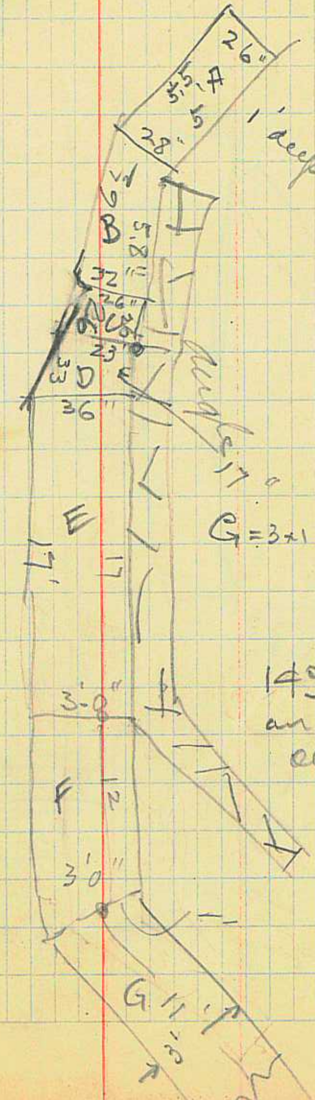
qts 24½ Hro	29	Gravel	
	13	Pea Sand	dry
	16	sand	200 lb thrown
	58		

29
17
16
56

120 P

So abut finished
8-22-29 3:45 P.
test #6.





A =	13.65
B	15.20
C	2.30
D	5.00
E	51.00
F	36.00
G = 3×11×.8	26.40
	149.55

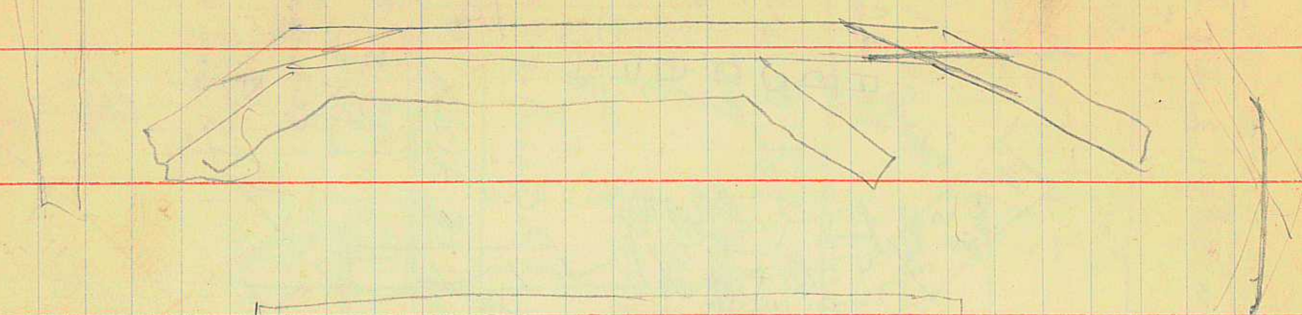
149.5 cu ft
and 32 bags
cement

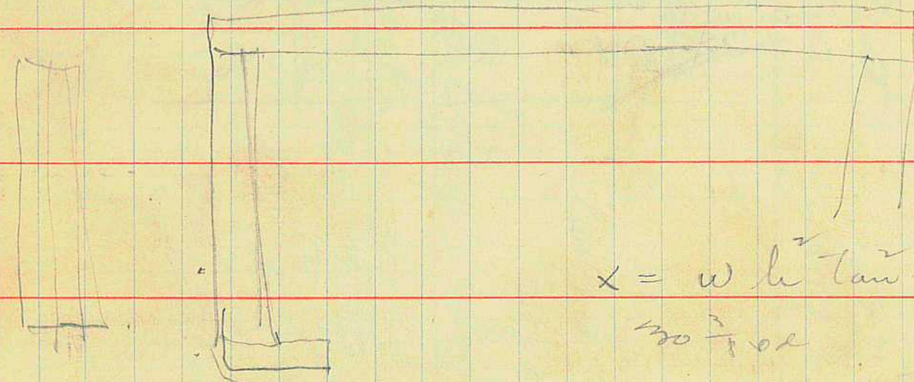
4.77 cu ft
per bag

26
12
25²
26

300²

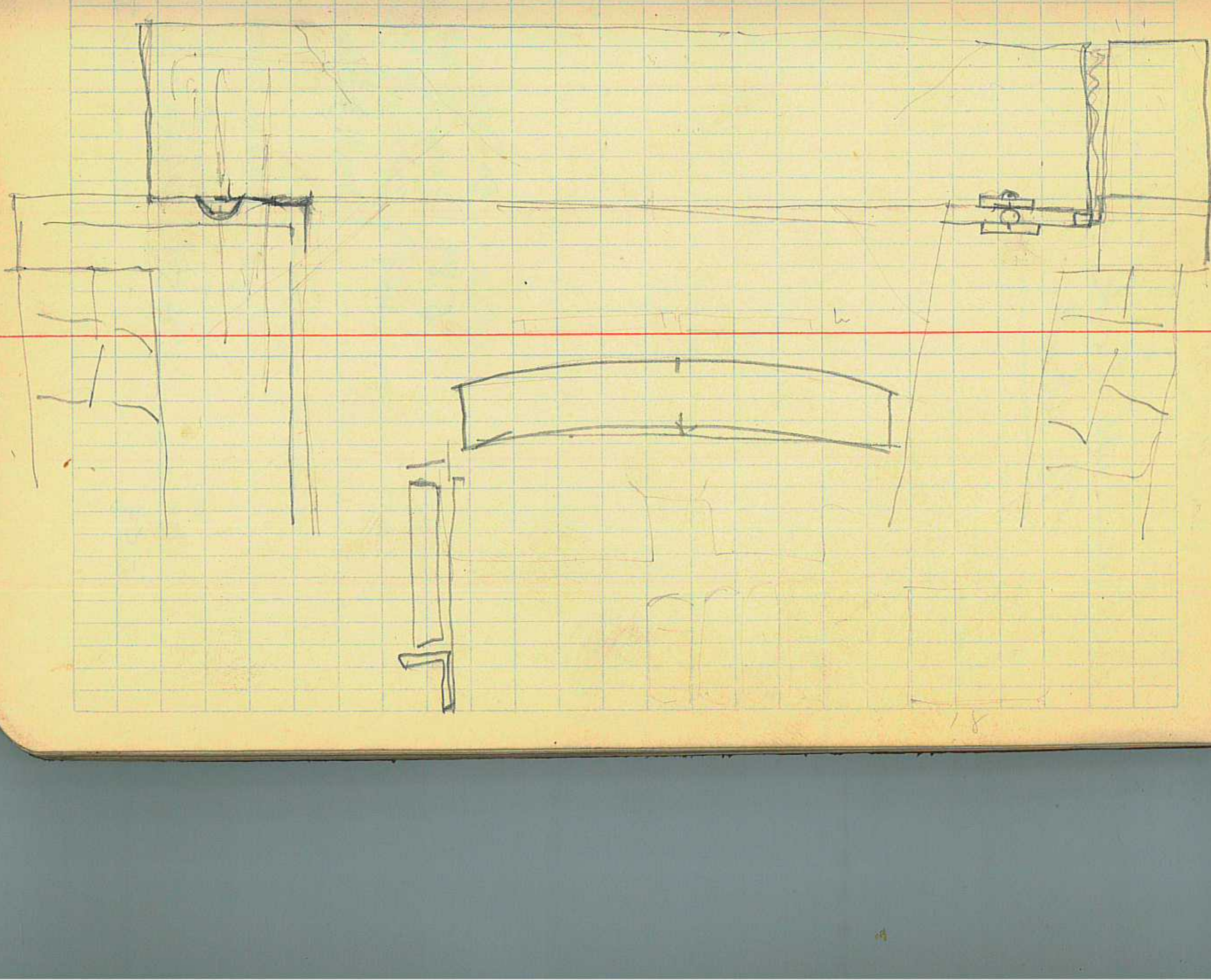
1200300#
36000





$x = w h^2 \tan^2\left(45 - \frac{\phi}{2}\right)$

30^3 1 oz



Levels at Co. Bridge
Aug 24 - 1929 - Logan - Hyrum
Blacksmith Fork —
N abut.

		17.09	97.13	
		5.89		
		4.09		
			110.13	
			110.05	
		4.57	109.65 ~~109.57~~	
5.58			108.64	114.22

110.1
109.65
0.45

K. C.'s Rod 11.2 5.89
17.09 108.64
5.58
114.22
4.57
109.65
1

114.22
110.13
4.09

4.22
4.09
.13

21.5 | 12
9.5 1.8

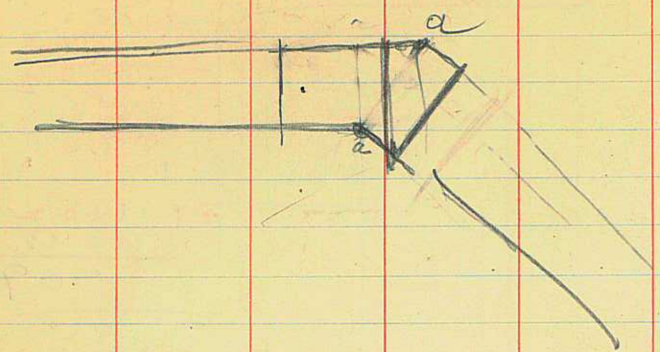
4.09
1.8
5.89

114.22
17.09
97.13

on footing
on top N wall
on finished floor
finished floor

So. side rail

N side rail had been raised

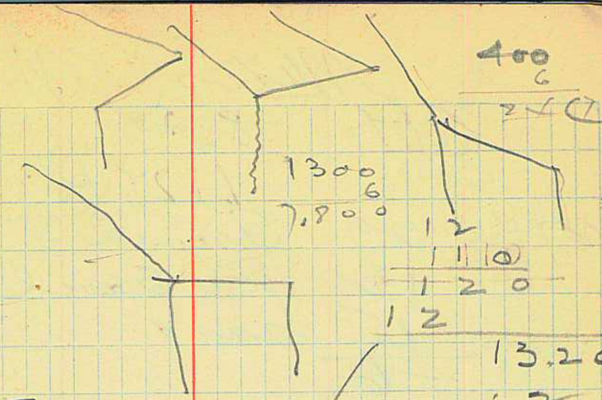


8-29-29

Wet sand

540
387.5
578.75 lbs wt paper

540.
38.75 lbs
= 6½ % moist.



400
6
2400

1300
6
7.800

56

12
110
120
12
13.20

25

6 12
7.75
13.75
1.75
12.00

10.00
3
13

√56
14

7

-1300

250
12 75
1

2

2-4
1 2

10
3
13

13.00 .35
105 3.8
250
280

13.35

Mixes M

abt. 8.24 - 29

1.25 P

1.25 P same

2.35 P same

27 H_2O 29 Gravel

12 pea Gravel

15 sand

56

4 PM

29

12

13

54

4.40

32

12

13

57

5.00

5.20

64 Gravel

24

24

112

56

18
18

32
12
12
56

28
36
64

8
16
20

8
16

16
26
42
1.1
210
42
63.0
5
315

32
12
13

11

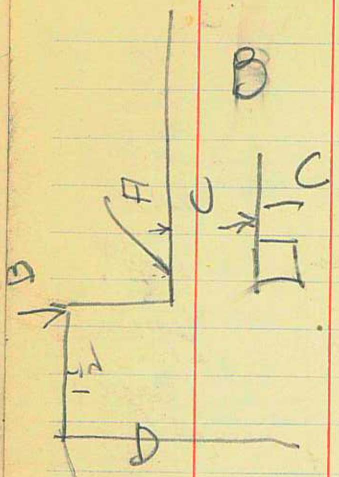
3 | 13 yds
4

Started 2 bag mix

Sample 10 5:30 P

B 4.07 4.07

C 6.67 4.07 B



3.33

E 4.77

E * 6.57 13.0 F

G 7.67 11.9

4.07

6.67
7.67
407
3.6000 16.83
3.366 .21
2340

3.33
.21
333
666
.6993

8.5
33
11.8
.21
118
236
2.478

4.07
36

4.07
25

6.67
210
917

7.33

6.67
360

7.67
6.67

4.07
210
617

4.07
360
7.67

N abut. cor
8-24-29

64
26
22
2)114
56

56 ft H_2O

5, 457

Levels for Grade determination of Cut off wall

5.30			100.84	
		8.00	98.14	
		1.57	104.57	106.14
		6.20	100.00	
		6.80		
			110.09	

135
135
(27
5

23 (5
30 4.6

106.14
6.83
99
106.14
3.91
110.09

104.57
1.57
106.14
8

106.14
5.3
100.84

110.10
99
11.10

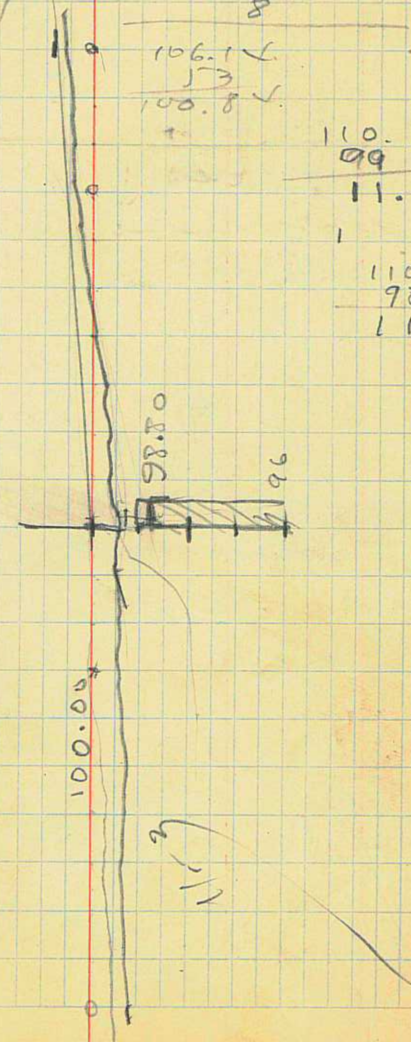
110.09
98.8
11.29

5 Foot. east end

H_2O Surface opp. lower cor

H_2O 100 below bridge

Grade Top of N wall



Co 8-29-1929

Started to pour
South abut 10 am

Moisture in fine Sand 6 1/2 %

14 gal water
2 bags cement

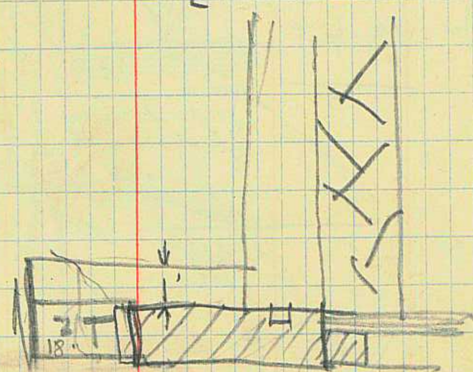
18
176
400

\# 11 } toe
11:10 test block # 12 } N wing

1-2-4

80 shovels gravel = 2 barrows
36 sands = 1 "
116

tests 13-14-15-16
So. abut.

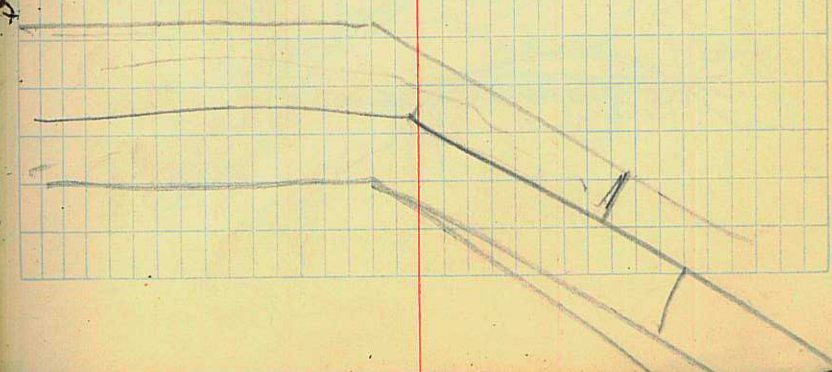


1806 27/17

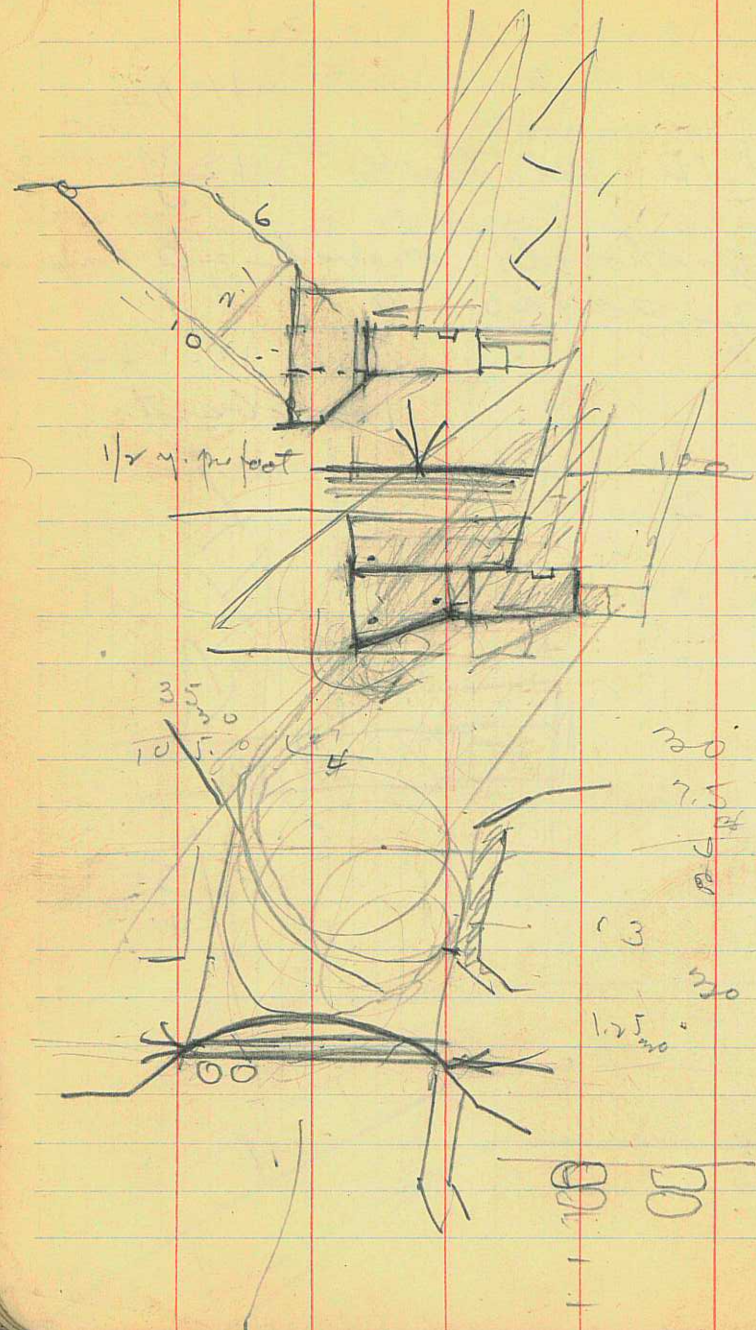
3
1.5
1.7
6.2

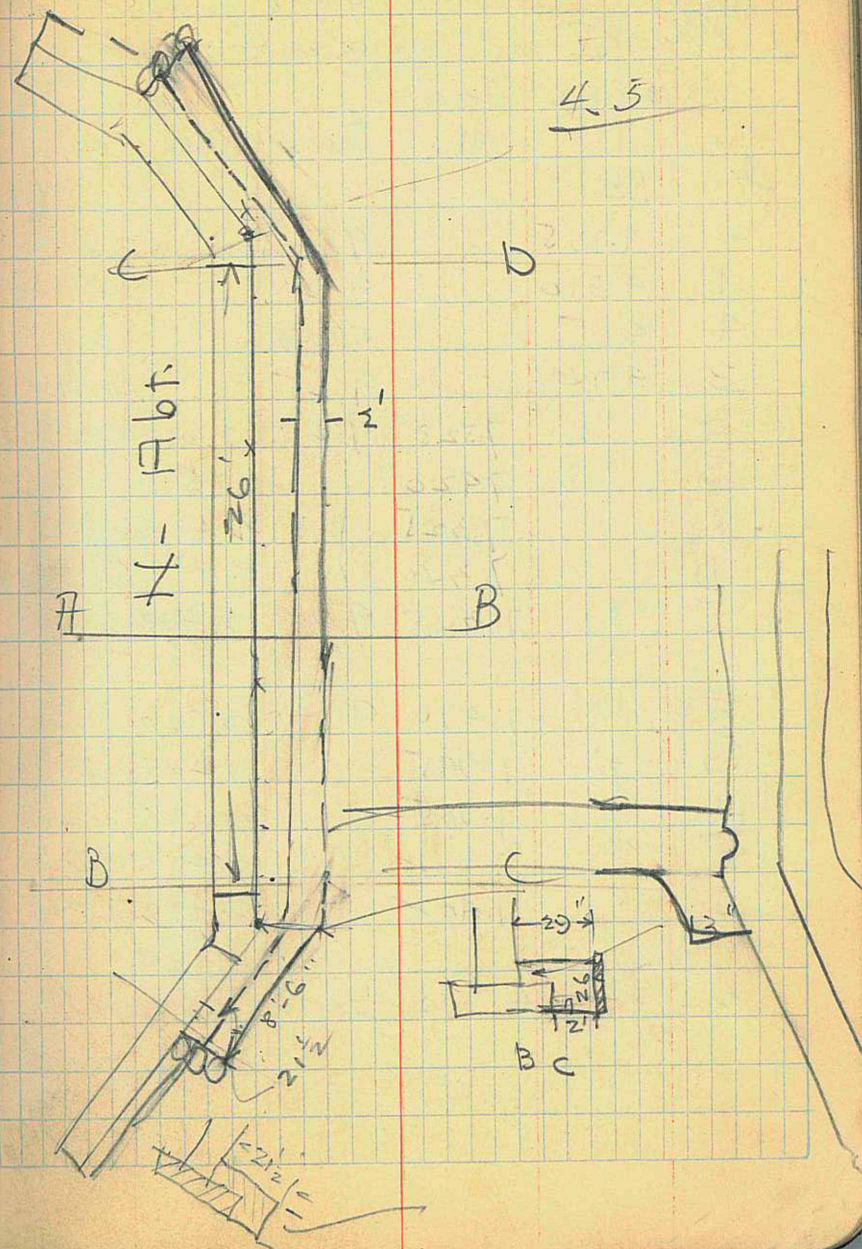
1.5

1.7 3.0
5 1.0



13000 8000
2


6
10
1/2 in. per foot
100
35
30
30
7.5
3
30
1.25

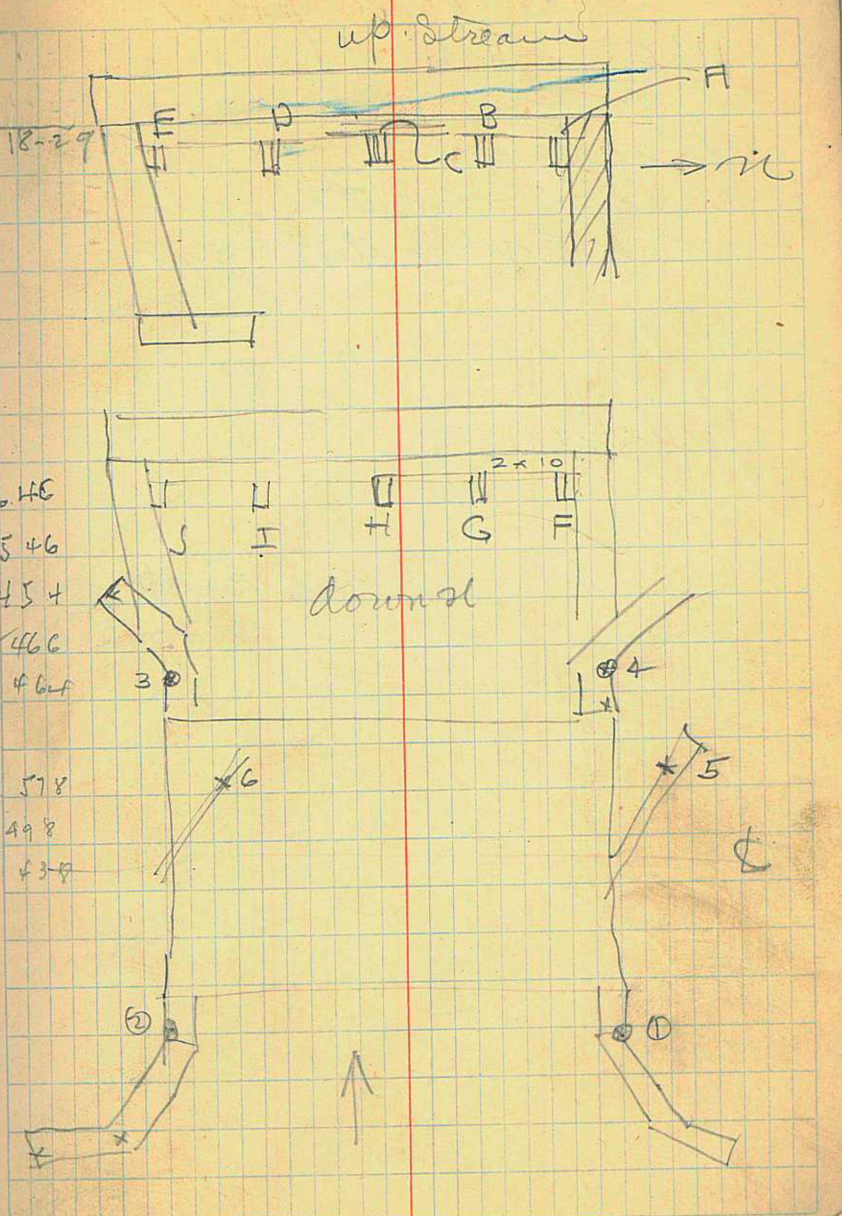

4.5
C
D
2'
26'
A
B
B
C
29"
3'
2'
B C
8'-6
2 1/2'

Sept 12 - 1929

Concrete Pouring main Slab. Co. Bridge over Blacksmith fork - Logan - Hyrum Road

Pt.	BS	in.	time	Diff		
n	4.735		9:20 am		4.270	
1	4.910		9:21		4.444	
4	4.85		9.23		4.395	
3	4.744		9:25		4.285	
A		7.528	9:27	2.618	7.09	2.646
B		7.420		2.510	6.99	2.546
C		7.325		2.415	6.898	2.454
D		7.340		2.430	6.91	2.466
E		7.348	9.29	2.438	6.908	464
F		7.470	9:30	2.560	7.022	578
G		7.395		2.485	6.942	498
H		7.305		2.395	6.882	438
I		7.342		2.432	6.927	
J		7.402		2.492	6.96	
n		4.700	6:00 P	⊼ been destroy		

Sept 18-29



Sept 12 – 1929

Started to pour

11:05 AM
8 gravel
4 sand
2 sacks cement
6.75 gal water

Started

3.00 P
3:30 P

58

$1\frac{1}{4}$

4/56

7

8 gravel
4

12

120.0
7.5
450

7.5
1.6

6.00
1.50
4.50
2
6.50

1.5

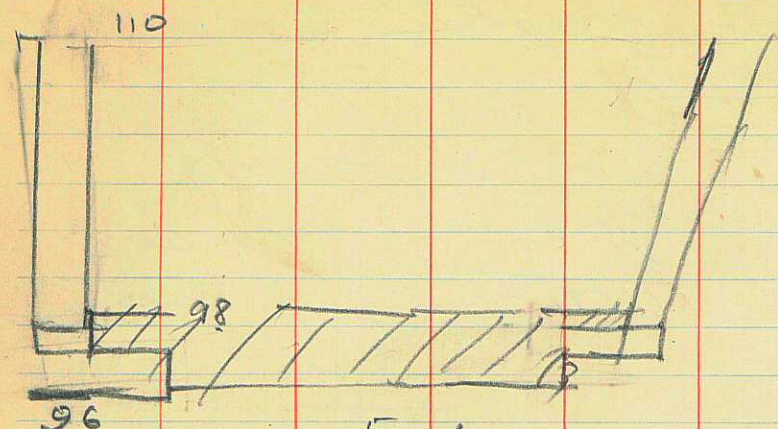
400
5
200

6
8

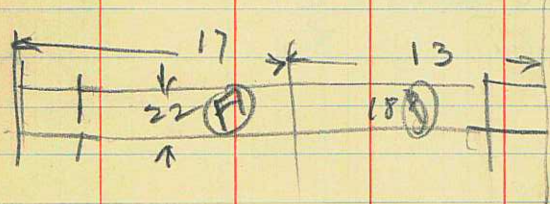
120

upper center settled $\frac{1}{4}$"
Lower center " $\frac{3}{32}$"

N

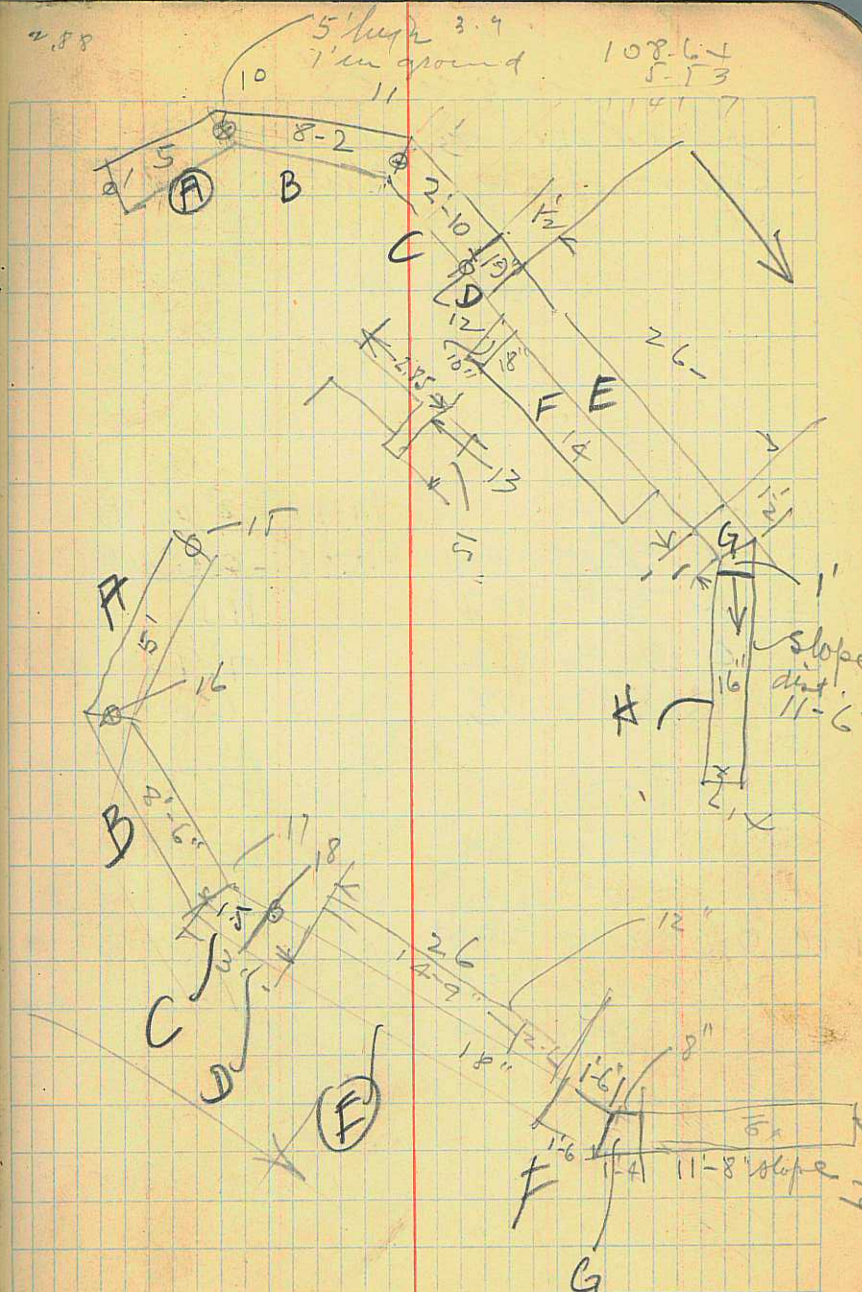


5 yds arr.



17.10 5
12
30

	Bs	FS	un	
	5.53			108.64 114.17
①			7.62	
10			6.60	
11			4.80	109.37
12			4.14	110.03
13			1.26	112.91
14			10.46	103.71
15			6.92	107.25
16			6.08	108.09
17			4.26	109.91
18			3.93	110.24
19			10.36	103.81



Survey of
Bridge and grade
Crossing New Haven
etc

+ reading

El.

83.8	f.	91°40		11.25 / r.l.=10.13	-2°10' 13.5
85.5	e	94°05		11.75	-5.5 [illegible] 13.5
93.2	d	91°	107		11.5
96.8	c	86°46'	63		7.9
98.7	b	81 13	33		6.0
					4.7 HI 104.70
		65°30'			
		259°40	39'		-5.0
	Sta	278°	110		-3.8
101.6	O-C	286°38	240±		-3.1
	O-R	284°12	240'		-1.2
		178°43	RP		

(1)

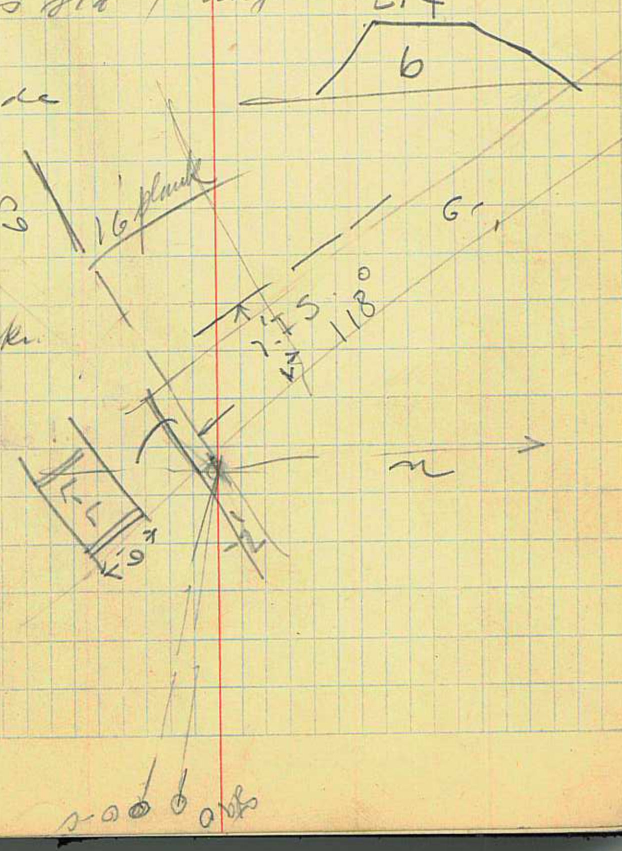
Top bridge 100.00

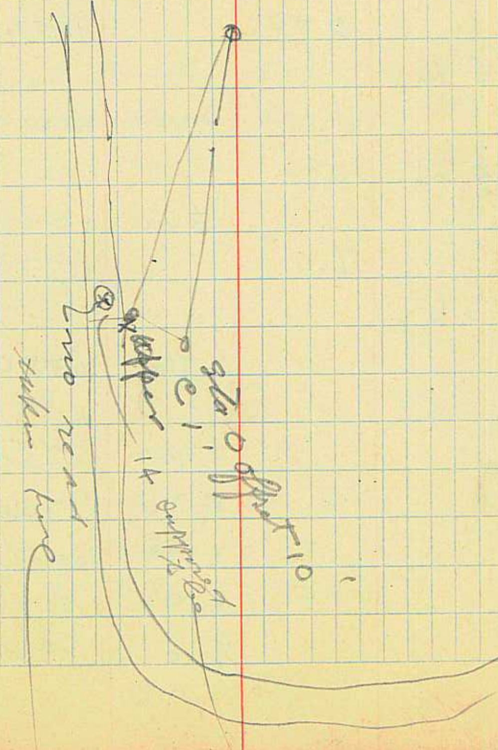
4+50 Andr C 6.6
at Anders sta + angle on ℄ .4

℄ grade

Sou bridge plank

℄ of work
Center
upper C 9'

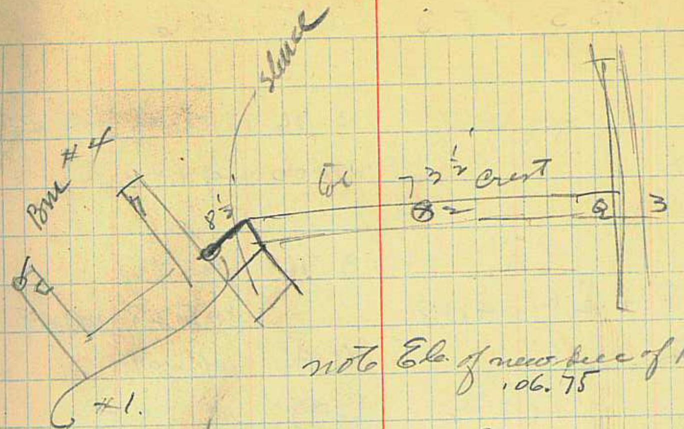



Sta 0 offset 10
Two road

3-28-1930

Survey above New Hyman City Plant & Dam -

	BS	F.S.	Int	Ele	HI
1	6.690				
2			6.76		
+H2O			9.20	97.55	
3			6.75	100.00	106.75
4		0.78		105.97	
4	5.96				111.93
		4.60		107.33	
	4.57				111.90
14+00±			5.00	106.9	
18+00		6.11		105.79	
	3.67				109.46
19 00			3.96	105.50	
20			3.96	105.50	
			11.70	97.76	
21			3.96	105.50	
BM			0.71	108.75	
22			9.6	99.86	
22			3.96	105.50	



106.75
9.2
97.55

note Ele. of new base of Road
106.75

106.75
.78
105.97
5.96
111.93
4.6
107.33
4.57
111.90
6.11
105.79
3.67

on ℄ dam on Crest
at 10:55 am on H2O
on S. end Crest.

⊼ at about 500' above dam
about 1000' above dam on Road

109.46

109.46
105.5
3.96

109.46
11.7
97.76

109.46
.71
108.75

on River H2O opp 21

on rock Sta 21+30±
on Road

Sta	BS	FS	am	El	HI
23			3.96	105.50	109.46
23			10.00	99.46	
24			3.96	105.50	
	2.21	4.18		105.28	107.49
24R			6.4	101.09	
25			1.99	105.50	
25R			7.5	99.99	
26			2.00	105.49	
26R			5.5	101.99	
27			2.00	105.49	
27R			6.3	101.19	
28+42			2.00	105.49	
	2.04	2.26		105.23	107.27
R 28+42			5.90	101.37	
29			1.77	105.50	
29R			5.20	102.07	
5			4.39	102.88	
6			9.15	98.12	
30			1.77	105.50	
30R			3.85	103.42	

107.49
63

old Road

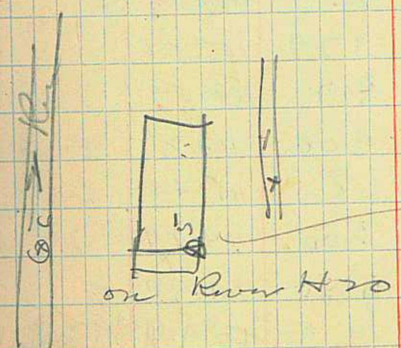
109.46
4.18
105.28
2.21
107.49
2.26
105.23
2.04
107.27

107.49
105.5
1.99

107.27
105.5
1.77

107.27
4.39
2.88

107.27
9.15
98.12
97.55
.57



Sta 9
on porch near House

	BS	FS	int	Ele	HI
31			1.77	105.50	107.27
31			1.77	105.50	
T.P	11.42	1.75		105.52	116.94
32R			9.60	107.34	
33R			8.65	108.29	
34R			8.20	108.74	
35R			10.2	106.72	
R35+45			11.80	105.14	
36R			9.25	107.69	
36+88R			12.85	104.09	
37R			12.4	104.54	
R37+46			11.44	105.50	
38			12.75	104.19	
TP	2.50	12.15		104.79	107.29
39			1.79	105.50	
39R			4.7	102.59	
40R			4.00	103.29	
40			1.8	105.49	
41R			3.00	104.29	
40			5.50	101.79	
Bm	3.80	2.33		104.96	108.76

4.7 / 1.8 / 2.9 1.475 / 1.244 / 1.2 4.00 / 1.8 / 2.2 116.94 / 105.5 / 11.44 12.85 / 11.44 / 1.21

3.00 / 1.8 / 1.2

Grade runs into old road here

107.27 / 1.77 / 105.52 / 11.42 / 116.94 / 12.15 / 104.79 / 2.50 / 107.29 / 2.33 / 104.96 / 3.8 / 108.76

107.29 / 105.5 / 1.79

107.29 / 5.5 / 101.79

108.76 / 105.5 / 3.26

105.5 / 104.1 / 1.4

F 5' not staked on short curve

F 1' 3"

F 1'

Grade on old Road

F 1'-4"

top peg Sta 38

F 2' 11"

F 2'-2"

Grade

F 1' 3"

Reading of on meadow of Sta 40' 100 out on flat Cobble stone at Rocky turn on road

	BS	FS	[illegible]	Ele	H I
42			3.26	105.50	108.76
42R			4.80	103.96	
43			3.26	105.50	
43			4.40	104.36	
44R			2.9	105.86	
T.P	2.93	1.09		107.67	110.60
45			1.4	109.20	
46			2.5	108.10	
47			5.6	105.00	
			5.1	105.5	
			2.8	107.80	
			4.7	105.90	

4.80
3.26
1.54

4.40
3.26
1.14

108.76
105.5
.26

F 1' (should be 1'-3")

110.60
105.5
5.1

108.76
1.09
107.67
2.93
110.60

F 1'-2"

F. O

F 6"
on grade

about 1000' up road from 47

400' up from 47

Check levels
(7) back from (7)

	BS	F/S	IM		
(7)	0.95			107.67	
BM. Rocky Pt		3.70			
	4.94				
		1.68			
	5.36				
		9.74			
	2.15				
		5.33			
	7.44				
			8.10		
		1.83			
	3.86				
BM	33	1.44		mea 108.75	
		32			
BM	7.95			108.75	116.70
		8.37		108.33	
	5.20				111.53
		5.56 should read			
Does read		5.56 ✓			

F
4.60
6.11
4.18
226
1.75
1215
233
1.09
23
34.47

BS
5 96
4 57
3 67
2 21
2 04
11 42
2 50
43 80
362 17

36.17
34.47
1.70
105 97
107 67

108.75
1 44
110.19
3 86
106.33
1 83
108 16

24.70
23.72
0.98
107 67
108.65

108.75
7 95
116 70
8 37
108.33
3 2
111 53
105 97
5.56

23.72

109.46
71
108.75

{ on mark ("top Dam") by some-one
~~near~~ bet. Sta 21-22

ft rock ~~near~~ bet 21-22

Crossectioning
9 partial alignment

Sta	BS	FS		L/R	C/R	R/R	L/F or C	C/F or C	R/F or C
26			12.2 2.7 8.9				C 6.3"/14 C 6'/13		F3'4"/12
25								C9"/6	F3'9"/11
24+40							C1'9"/9	F8"/0	F3'8"/11
24	6.50		7.70 2.00 7.15				5-2"/12	G	F4'5"/12
23+27			1.5 5.6 9.9				C3'4"/11	F1'	F6-2/13
22+89			~~8.9~~ 10.2				C3'/11	F1'4"	F5-2"/13
24 22+51	8.25	9.3	8.7				C4'-10"/11	C1'4"/6	F4'-3"/11
22			1.0				C6'/12	G	F4'3"/12
21+85			5.3 11.1				C4'-9/12	F1'2/8.0	F4'-0/12
PI 21+37			10.7 11.6c				F9"/9'	F1'8"	F2'-9/11
20+85			10.8 8.8 9.8				C1'-2/9.5	C3"	F10"/9'
20								G	F1'/9
20			9				C9/9'	F0	
			10						
	6.70								

C/R = center read

10.98 / 1.8

10.875 / 10.67 / 11.545 / 10.55 / 9.75

39.10

39.16) 40 / 98
360
316

Ele, H.I.

115.45

9.00 G read by stake

112.65 G 7.15

on CC 8.9 G

106.15 114.40 top peg

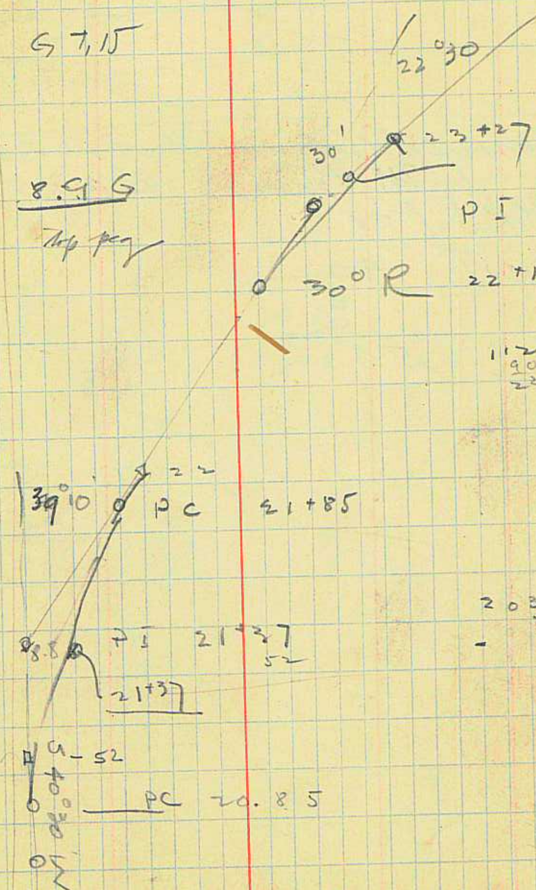
~~106.15~~

P I 22+89 / 27

22+17

112 / 90 / 22

30 / 3.7



2038.) 40 / 380 / 50.9

21

108.78 115.45

11.6
7.6

4
8

7.2
3.2

7.3
3.2
4.1

5.4
3.2
2.2

Computation probable
over Mt Power Dam in
Blk 5 For
effect Crest 40
6
4
50

10.9

10.8

10
8.7
1.3

10
8.8
1.2
8

10.6

.6
8

8.9
5.6
3.3
3

2.6
8

10
5.3
4.7
8

11
115.45
9.3
10 6.15
8.25
11.40
10.51
8.9

12.7

4
6

.02
8.9
1.3

5
8

14.2

10
5.2
4.8
8

1 2.9
8

106.15
6.5
11.26.5
10.5.5
7.15

10
14.2
5.8

4

14
8.9
5.1

14.2
8.9
5.3

7
2.5
4.6

13.5
1.1
15.00
8.9
6.1

11.5
7.1
4.4

7.1
5.4
1.7
8

8.9
3.5
5.4

11.50
4.1
2.9

8.9
2.7
6.2

14.8
8

12.2
8.9
3.3
8

11.45
10.5
.9

Sta	BS	FS	lm	L/R	C/R	R/R	L	C (F or C)	R
27							C2'9"/11	0	0
30				2.8	3.2	3.9	C5"/9	F0 ~~3.2~~	F9"/9
29									
~~28+42~~					4.2	4.4	~~G~~/8	F1'/0	F1'3"/9
28				.2	4.2 ~~4.~~	7.3	C3'/11	F1"	F4'2"/12
28+42		TP 3.2		-.3		5A	C3'2	0	F2'3
27			7.6	0.3			C7'/13	0	F4'/13

Ele 145

4.4
3.2
0.1
2.7
8

grade cut on here

Apr 1 - 1930

Topo Survey on Hyrum Hydro Plant

new Fore-bay

#	ang	BS	FS	um	Ele	HI	Stadia L	C	
a	217° 32°20			9.00 4.0	105 105		Dist 6' 11	13.45	~~Line~~
	32°20			10.6	98.41		11	13.15	R H2O E
4X									
4	338°05	5.86	8.82		103.15	109.01	= 220' 3	5.23	
	43°			13.7	98.27			84'	L edge H2O
	93°			9.0	103			35'	
	58°			7.5	104.47			10'	
①	0			4.8	107.17				
	47°45			13.7	98.27		10	13.1	R H2O
	47°50			9.0	103		8	11.3	
	47°45			7.8	105		5	8.4	
	142°30			5.1	106.87		3	5.7	Road edge.
	84			13.7	H2O		9	13.4	
	83°			6.97	10.5		4	8.5	R
	136°10			6.97	105		4	8.8	
	136°20			5.1	106.87		2	7	ER
	126°10			6.97	105		2	8	
	126°30			4.3	107.67		1	8	
	118°20			4	108		1	9.7	edge of Road
	97°30			13.5	98.47		7	13.[illegible]	H2O edge
3R	96°10			6.00			2	8.7	
2	107°05	6.00			105.97	111.97	1	10.5	Cor intake

1-

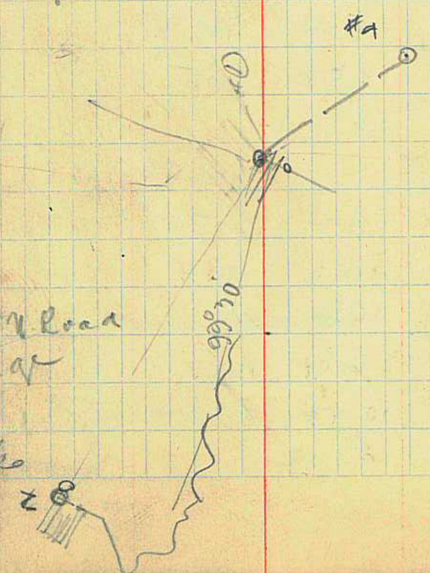
112 / 105 112 / 103 105.97

109.22 / 98.27 / 10.73

111.97 / 13.5 / 98.47

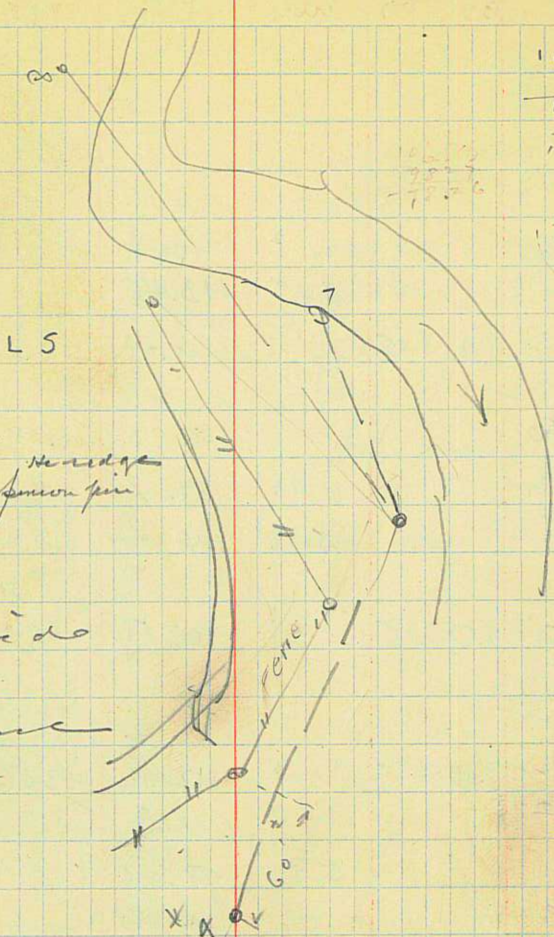
111.97 / 13.7 / 98.27

111.97 / 8.82 / 103.15 / 5.86 / 109.01



#	Ang	BS	FS	m	Ele	HI	Stadia L	C	U	
9	33°			5.70	98.36		4		53	H2O River L S
8r										
8	265°31'	4.55	7.02		99.51	104.06	0	530	53	
	128°01									to lone fence pin
	247°30			1.8	104.73		= 161' 4		56	post
7	265°			8.22	98.31		4		57	
	323°45			8.22	98.31			27'		H2O R Side do
	168°15			3.50	103.			18'		
	"			1.50	105.03			33'		on fence
	321°10			8.22	98.31			105'		R H2O E
	322°			1.50	105			130		RS
6^										
6	291°48	5.47	7.95		101.06	106.53	2		5.12	
	327°10			4.0	105		3		63	R Side
	326°20			10.6	98.4		10		133	H2O R S
	326°50			10.6	98.4		12		13.6	H2O L S L H2O 6 deep
	328			6.00	103.			22'		
5	28°			10.73	98.22	109.01	13		13.73	H2O E L Side — a 65
4^										

109.01
7.95
101.06
5.47
106.53
7.02
99.51
4.55
104.06



	ay	BS	FS	in	Ele	Ht	L C U Sta
14	82°40				100.4		5.75 −2°48 3.0
13 F				4.8	113.48		4°21'
13	336°03	9.80	1.45		108.48	118.28	1 5.20 about 210 to Sta 31
	345°42						−3°02'
12	64°30						5. 6.07
	43°30'			6.93	103.00		75'
Sta 29	20°			5.18	104.75		6'
11 —							2°41'
11	281°50'	4.52	7.55		105.41	109.93	11. 13.4
10 F							
10	242°22	9.40	0.50		112.96	103.56	3. 5.92 +36'
	337°						1 3.5
	334°			5.8	98.26		5.67 8
	29°			0	104.06		2°50'
	46°50'				104.30		2 +47 4.6
	213°						5 +2°22' 7
	214			4.0	100.06		4 5.80
	214°			2.0	102.06	104.06	190'
9							
8 —							

104.06
50
103.56
9.40
112.96
7.55
105.41
4.52
109.93
1.45
108.48
9.80
118.28

109.93
5.18
104.85

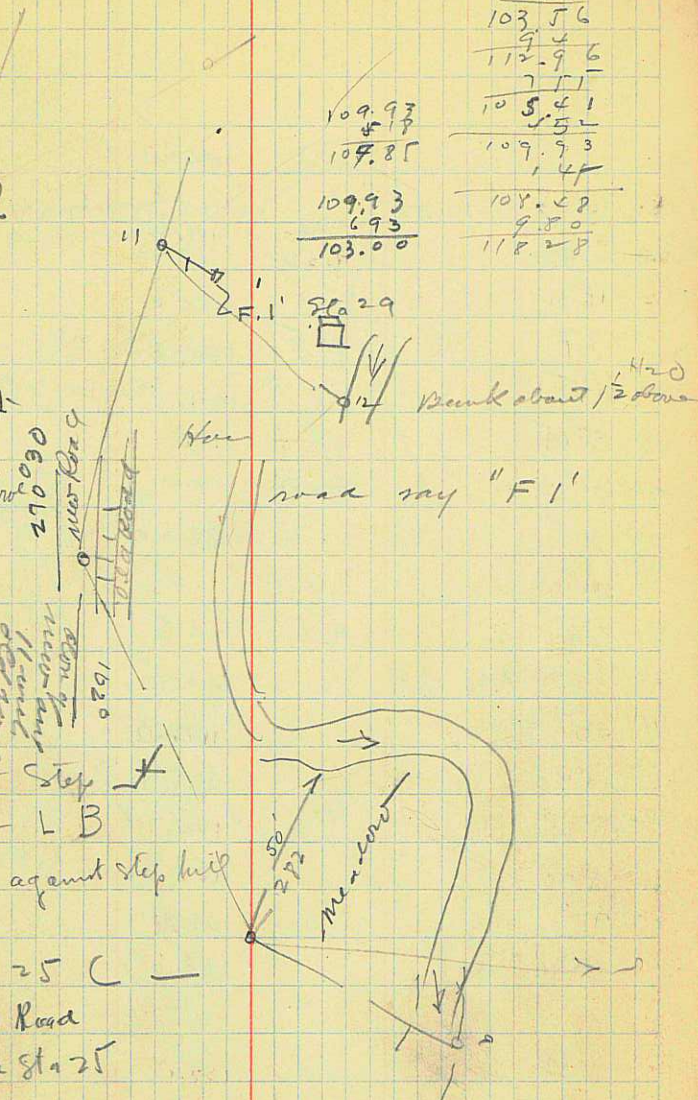
109.93
6.93
103.00

L BK R

on H2O RD
cor prde
Sta 29 ℄ curve

against Step
on 1/2 L B
L Side against step hill

℄ Sta 25 C
on Old Road
lower Slope Sta 25

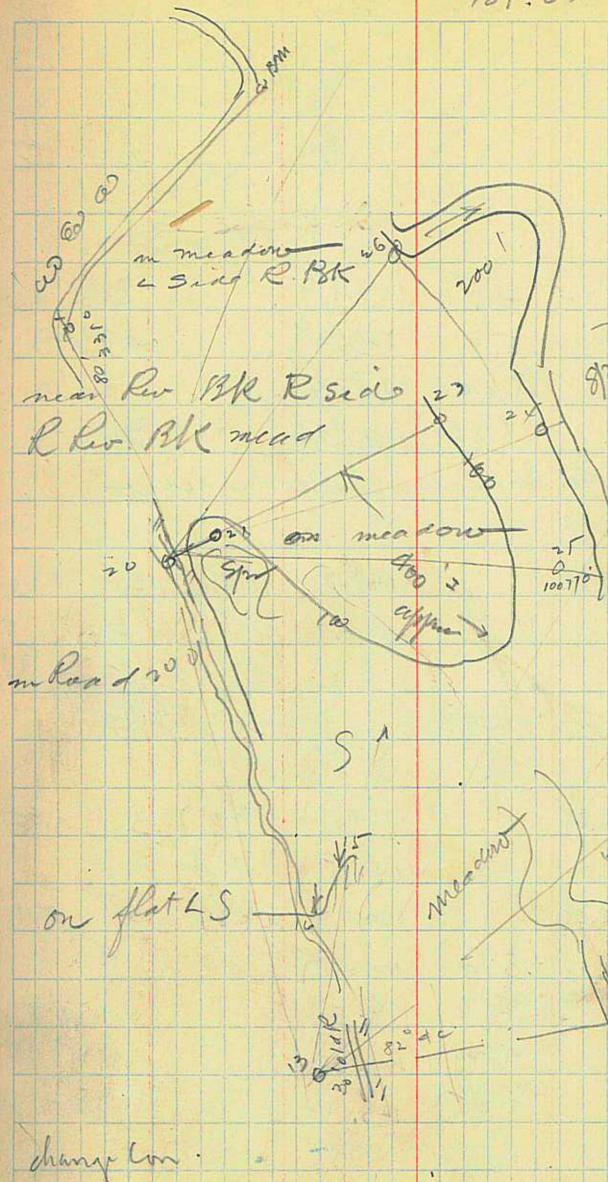


Pt	ay	BS	FS	un	Elev	H.I	Stadia L	C	O.
27 —				4.9	102.47				
27	10°23 / 52°30	4.62	6.52		102.75	107.37	9.00		13.35
				7.4	101.9		4.9		10.0
BM	6°40			4.20	105.07		2.0		5.85
26	16°30			7.2	102.1		6.0		9.0
25	77°			8.5	100.8		11.		13.7
24	66°15			7.8	101.5		5.8		9
23	59°45			9.27	100.		11.		13.23
22	69			9.27	100		6.0'		
21	51°			9.27	100.00		40'		
Sta 37	314°10						25 ±		
20 —				4.8	105.5				
20	330°47	4.47	13.48		104.80	109.27	2		5.5
19	30°				102.3		5	−30'	13.05
18.	44°30				101.2		7	−37'	13.5
17	48°20				100.7		9	−48'	13.6
16	74°20				102.3		10	−40'	13.7
15	75°			11.00	107.28		10		13.9
	37°10				101.0		12	−1°30	13.7
	38°20				100.7		12	−2°25	13.18
	40°15			12.6	105.68	118.28	85'		
13 —									

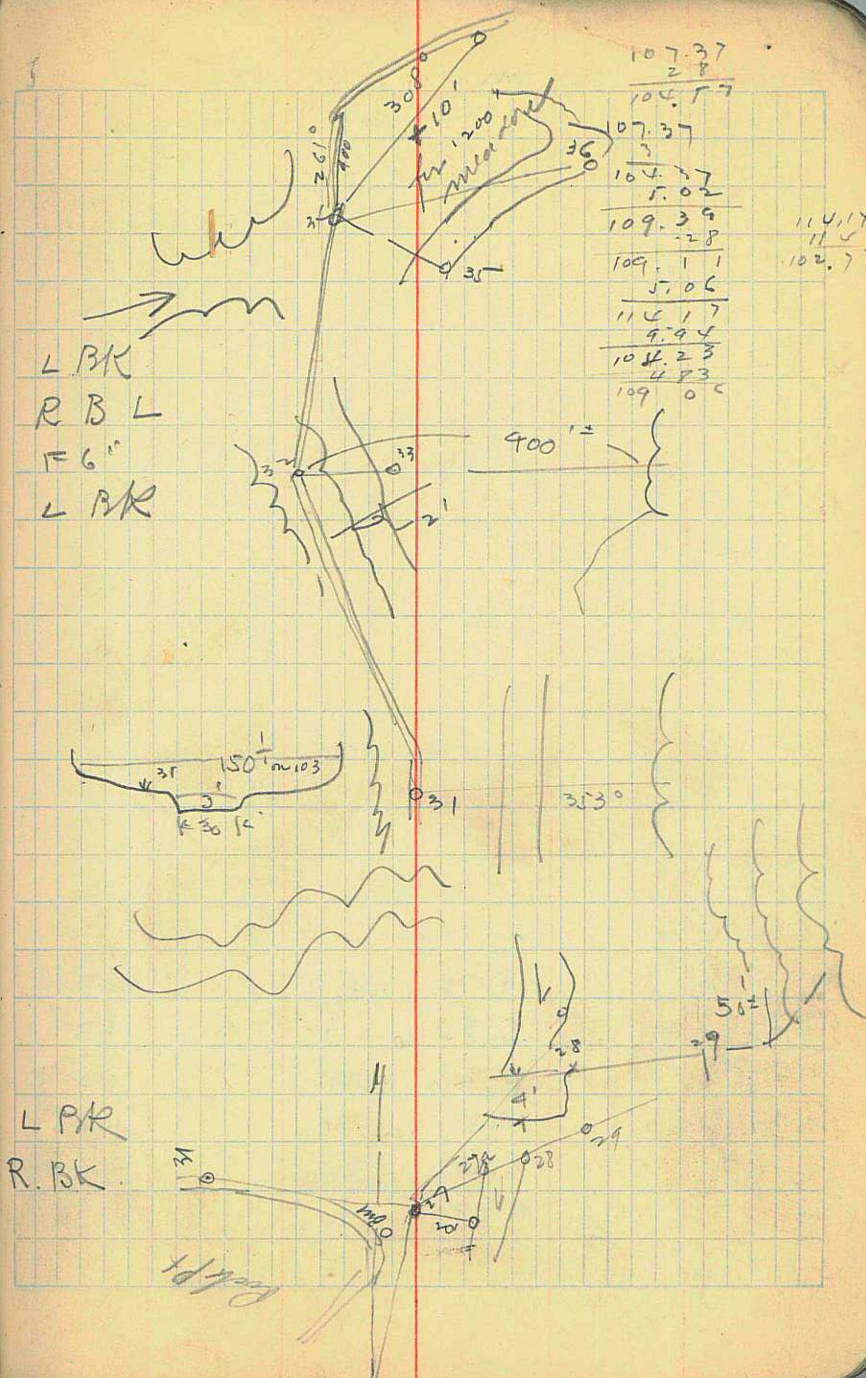
105.96
104
0.11

109.27
4.2
105.07

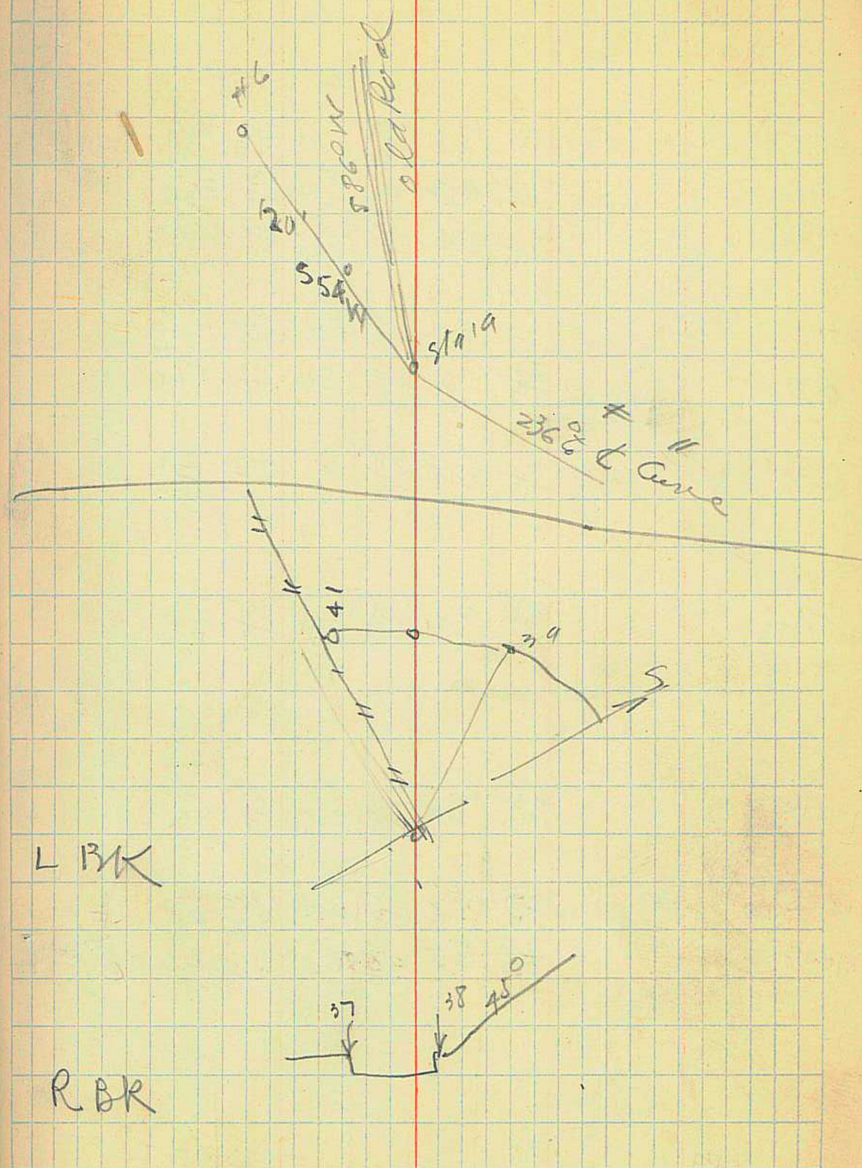
118.28
13.48
104.80
4.47
109.27
6.52
102.75
4.62
107.37



27	Az	BS	FS	m	Elev	HI	Stadia L C U
36	28°20'			4.5	104.56		300,
	56			5.8	103.26		92
Sta 47	150°	'		4.00	105.06		20'
35	56°			6.80	102.26		130'
·	146°40	lone large ... pine on the ridge					
34⊼							
34	273°56'	4.83	9.94		104.23	109.06	3. 5.22
33	14°45			11.4	102.77		90
				~~11.4~~			~~90'~~
32⊼							
32	258°10	5.06	0.28		109.11	114.17	3. 4.95
31⊼				4.8	104.59		
31	271°35	5.02	3.00		104.37	109.39	3 212' 5.11
30	305°20			5.0	102.77		158
29	341°10			2.8	104.57		150'
28	341°10			4.2	103.17		117'
27a	341°10			4.25	103.12		75'
27⊼						107.37	



Pt	Az	BS	FS mm	Ele	HS	Station L C
42	348°30'		4.3	104.76		270
41	271°		5.30	103 76		82
40	295		5.06	104		82
39	336°20		4.8	104. 62		125,
38	5°		6.00	103.06		310
37	3°		4.25	104.81		190
34A					109.06	



LBK

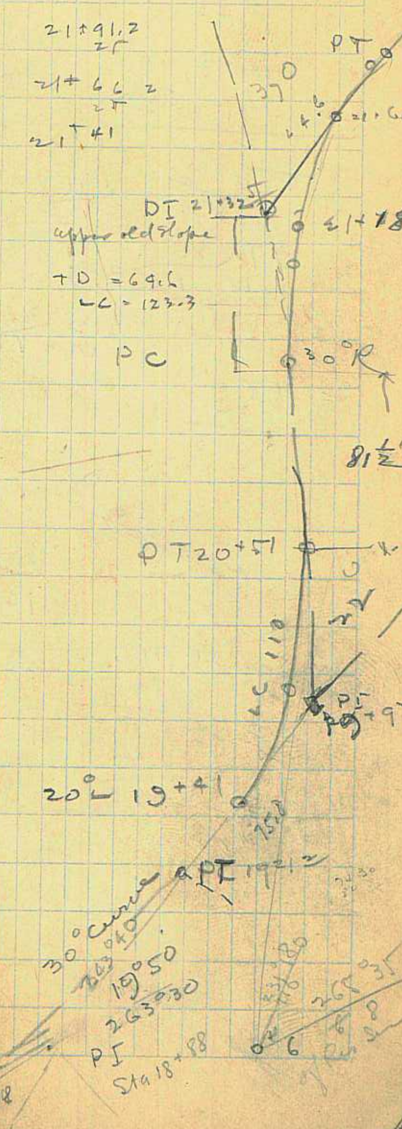
RBR

Sta	BS	FS	L RR		C RR	C conf	R RR		Conf	Grade	Elev	HI
21+91.2			0.4/11	C 5.8	4.9/0	C 1.1	9.9/11.5	F 3.9		6.00	S	
21+41			7.2/9	F 1.2	8.45/0	F 2.43	9.3/11	F 3.28		6.02		
21+66			3.6/11	C 2.4	7.5/0	F 1.5	10.18/12	F 4.16		6.02		
21+18			6.6/9	F .56	7.7/0	F 1.66	8.6/10	F 2.56		6.06		
20+93			5.2/9	C .84	6.2/0	F .16	7.1/9	F 1.06		6.04		
20+67.9			4.6/10	C 1.46	5.95/0	C .1	7.00/9	F .1		6.06		
20+51 PT			4.75/10	C 1.31	5.95/0	C 0.11	6.95/9	F .89		6.06	105.86	
19+96			4.5/10	C 1.6	5.6/0	C .1	6.18/8	G				
19+41			2.9/11	C 3.2	4.2/0	C 1.9	5.4/9	C 0.4		6.12		
19+21.2			3.6/10	C 2.5	4.8/0	C 1.3	6.3/11	F .2	F .2 2.5 C 1.3	6.12	105.80	
	3.49										108.75	111.97

110.47
110

108.75
1.72
110.47

111.92
105.8
6.12



110.47
105.8
4.67

54+33

25+30
242

213 90
243 40
1050

21+32.5

1917 30
63.9
64.6

$\frac{1917}{3}$ = 63.7 +.7 = 64.6 = T.

L C = 123.3

E 10.4

37 30
70 12 3.3
100

312 30
120 104

21.32.5
64.6
20+67.9
25
20 92.9
21
21 17

180
37
143
71 30

10 8°30

20.67.9
1.23.3
21+91.2

21 91.2
93.8
22+85.0
-4
22+81

PI

108.75
3.17
111.92

22+81 Δ 22 40

comp

Curve 30° R

T = ~~57.7~~

E = ~~5.7~~

1148.4 20
148 57.4
84 3

114 20
5.7

T = 38.7

E = 3.8

LC = 75.3
37.65
42.3

11484 30
90 38.3
248 4
84

114 25
140 4

114 30
90 3.8
240

3.8

22.66 30
21.0 75.3
160

PI 25

325

10° CR

T = 32.50

LC = 65

E 1'

21
32.5
24 67.5

PI 25

42.7
32.5
10.2

Δ 8°30

T = 42.60
42.70

25
42.7
23

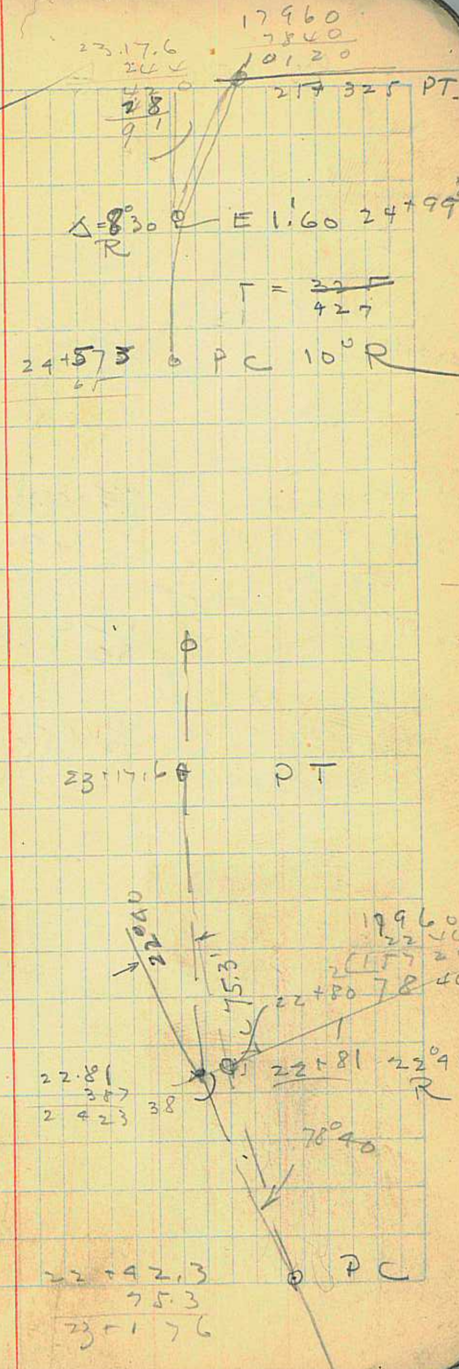
CF

85
42.5
24 57.3

25 42.7
24+57.3
85
25+42.3

25 62.7
42.3
26+05.0

Sta	BS	FS	L	C	R	F Cor	Grade RR	Elev	HI
			RR	RR	RR				
~~25+43.3~~ 25+42.3	11.27	10.30						103.31	114.58
			1.2/13 C6.4	7.35 C.25	12.5/13 F4.9		7.61		
25 PT 24+99.8			2.25/11 Rock C5.35 Rock	7.0/0 C0.61	13.25/14 C5.64		7.61	106.00	
	13.15	13.30						100.46	113.61
24+57.30									
24+50			6.56/10 C4.24	9.9 F2.16	13.4/14 F5.64		7.76		
24+30			2.3/12 C5.44	7.5/0 C.26	11.4/12 F3.64		7.76		
23+90			1.3/14 C8.5	5.6/0 C2.16	12/13.0 F4.24		7.76		
28									
23+42			2.8/12 C4.96	8.1/0 F.34	14.1/14 F6.34		7.76	106.00	
24									
23+17.6			3.65/11 C3.65	8.8/8 F.4	13.8/13 F6.		7.80	105.96	
	5.32	3.48						108.44	113.76
			3.9/11 C2.1						
22+81 PT 22+80 C				6 m PT F1½	11.6/14 F5.6		5.98		
22+42.3			0/12 C6	5.1/0 C.9	10.5/12 F4.12		6.00		



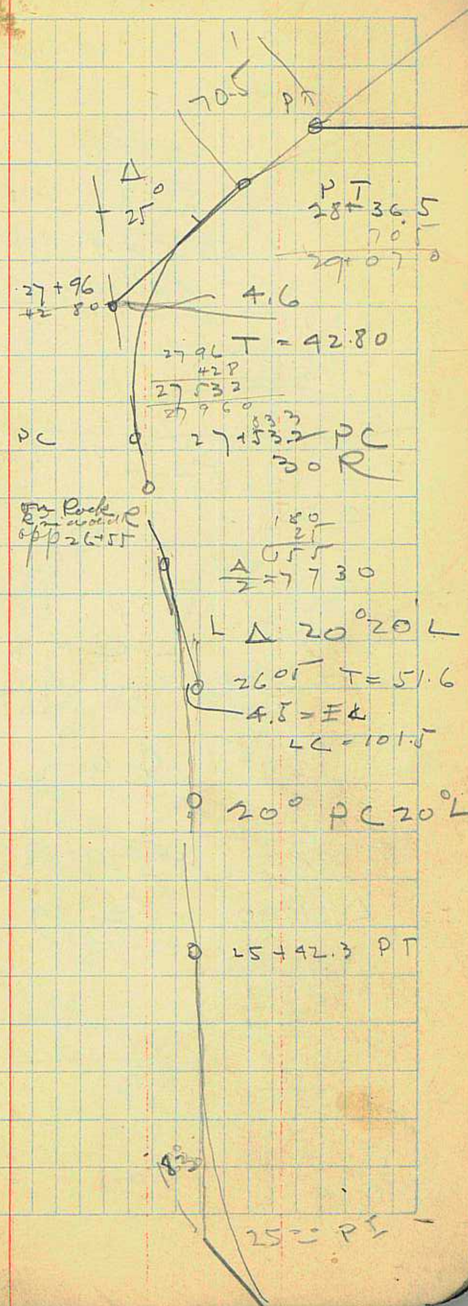
RM

Sta	BS	FS	L RSR		C RR		R RR		C or F	G	Elev	HI
2 28+36½			2.8/12	C 4.9	7.2	C .49	10.15/11	F 2.45		7.69	106.24	
	12.22	13.10									101.71	113.93
1 27+94.8			4.4/13	C 9.2	9.55	F 0.95	13.2/13	F 4.6				
27+53⅓			0.3/14	C 8.33	8.55/0	C 1" .08	13.1/13	F 4.5		~~8.62~~		
27+00			1.1/13	7.53	8.1	C .53	13.08/14	F 4.45		8.63	106.12	
	41 4-7-30 12.78	12.55									102.03	114.81
26+55			1.9/B-0	C 6.6	7.3/0	C 1.2	13/13.0	F 4.1		8.50	[illegible]	[illegible]
26+05 PI 26+04 C			12.9/13	C 5.6	8.2	C .34	12.4/13	F 3.9				
25+53⅓ PC										8.50	106.08	114.58

G

25 30°
2 2 30

20.3 20/101.5
020



PI 2605 Δ 20°20

1027.5 ⟌20
27 75 51.37
110 51.63

91.4 20
114 4.6

2605
5 16
25+53 4
1015
26+54.9

PC
PT

calc 26+55

17960
2020
2⟌15940
7950

2⟌101.1
50.75
25 53 34
26+04 09

PI 27+96

Δ 25°

250 ⟌30
240 83.33
140

1270.2 ⟌30
70 42.34
90 5
120 42.80 = T

LC = 83.3

2⟌83.3
41.6

139 ⟌30
190 4.6 = E

27 52 2
27+94 8 ℄ curv

PI 29+07

Δ 56°40

3089

2820
60
1680
20
1700 ⟌131
131 13
390 25
393 68
22
328 ⟌60
5

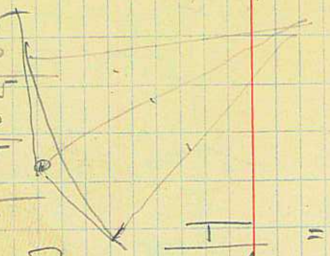
45
4⟌2230

530 25

2836.5
131 2
2967.7

$T = \tan\frac{\Delta}{2} R$

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



28+50 6 25
5 30
28+75 9 55
5 30
29+ 15 25
5 30
29+25 20 55
5 30
29+50 26 25

1287
1365
2965 2

$R = \frac{T}{\tan\frac{\Delta}{2}} = \frac{70.5}{.54}$

70.5 ⟌.54
54 130.55
165
162
300
270
300

R = 130.55

R = 50000 ⟌130.55
3

50.000 ⟌130.5
3915 .383
10850
10440
4100
3915

.383 = $\sin\frac{1}{2}$ = 22°30

℄ = 45° R

2830
60
1680
30
171

5.25
5

56.66 ⟌45
45 125.9
116 .70
90
264 126 126
225 63
390
405

12615
2625

729 ⟌45
45 18
529

5⟌2820
540

200

56.66 ⟌360
360 .157
2060
1800
2600
2520
.157
8200
1884
20

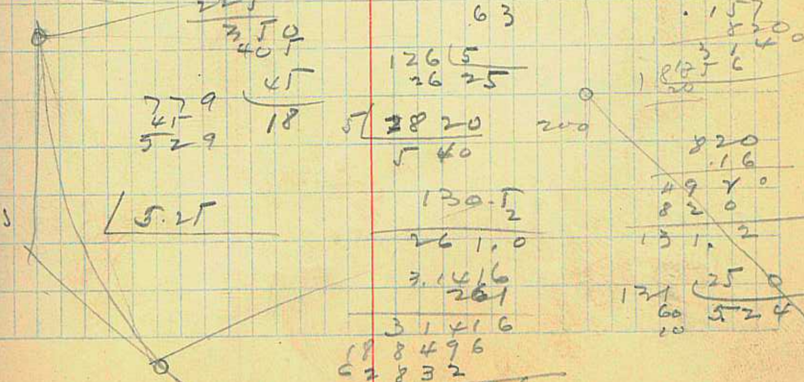
820
.16
4920
820
131.2

21

⟌5.25

130.5
2
261.0
3.1416
261
31416
188496
62832
819.9576

131 ⟌25
60 5.24
20

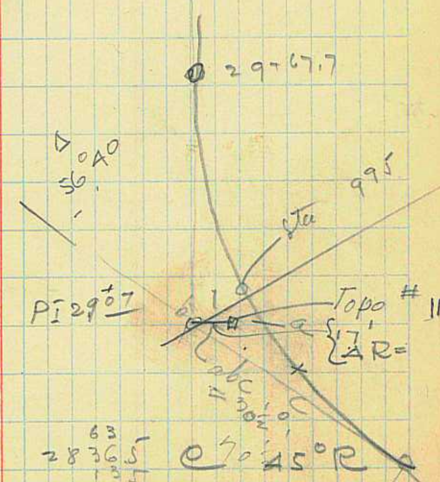


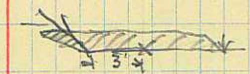
Sta	Def Δ	BS	FS	L cor RR	F	C RR	cor F	R RR		Gr El	Elev	HI	
		1.46	2.74	6.52							111.19	112.65	on BM sharp rock by large large opp sta 29+80
31+00				5.6/10	C 2.21	7.85	F .2	7.00/9	C 0.65	7.65	106.28	LS 3' 3'	meets old road
30+50				6.7/9	C 1.0	7.35	C .35	9.3/9	F 1.6	7.70			
30+00				6.75/9	C .95	7.35	C .35	8.05/8.5	F .35				
29+[illegible]													
29+50	26°21'			8.4/9	F 0.7	8.82	F 1.12	9.1/10	F 1.4	7.70			
29+25	20°55'												
29+00	15°25'		BM Cabin porch	11.07 / 9.05/10	F 1.35	9.4/0	F 1.7	9.5/10	F 1.8	"	should be 102.98 / 102.91		
28+75	9°55'			5.7/10	C 2'	8.1	F .4	9.5/10	F 1.8	7.70		113.93	
28+50	4°25'												
28+36.5	13°5'												

29.10
1.28
29.628

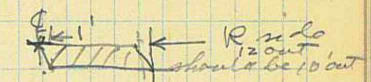
13.5
1.3
3.0.5
13.5
26.5
24.0

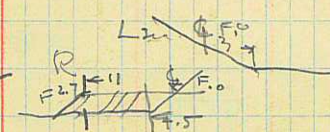
40
4

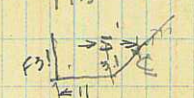


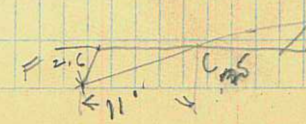
Sta	Def Δ	B J	F J	L RR	L	I M S C RR	C	R RR	R	G RR	Elev	HI	RR CL Hand Le	
39^{+50}				/11	C4	|	F0	~~3.3~~/4.5	F 3.?/2.16	0.54			4.00	
39^{+00}				/13	C 5½'	~~0.56~~/0	F0	3.?/11	F3	0.56			5½'	
38^{+50}				/12	C 4.2	0.6	F0	2.7/10	F2.1	0.58			4.2	
													~~4~~	
38^{+00}			8.05							0.60	106.56	107.16	Top	R slope Sta 38
38^{00}				/10	C2.4	6.05 1	F0	8.5/10	F 2.4				2.4	
37^{+50}				/11	C 3.3	6.9	F.8	7./9	F .9	6.10			4.0	
37^{+00}				/10	4.7	8.1	F 2'	8.2/10	F 2.1				3.7	
36^{+50}				4.1/10	C 2.0	7.5	F 4.45	7.7/9	F 1.6	6.15				
36^{+28}						6.15	F0							
35^{+73}						6.15	F0							
35^{+35}				5.9/8.5	F.3	7.15	F1	8.0/9	F 1.8	6.15				
35^{+00}				~~5.9/8.5~~	~~F.3~~	6.15	F0			6.15	106.50	112.65		Sta 36

Sta	Def Δ	BS	F.S 2.35	L RR 4.89	C RR	R RR	RR Grade	Elev 108.46 10592	HI	RR	
B											
47				5.0/10 F1.1	6.1 F2.1	6.9/11 F3.0	3.89				
46+50				5.5/10 F1.6	5.82 F1.91	6.7/10 F2.8	3.91				
46							3.93	106.88			
								106.88			
		2.85	0.86					107.96	110.81		
44				9 5.6			2.0				work runs out
43+50				T4 C8.3	2.04 F0	3.9/12 F1.8	2.04			8.3	
43				T3 C7.1	2.06 F0	4.3/12 F2.2	2.06			7.1	
42+50				13 C6	2.08 F.0	4.6/10 F2.5	2.08			6	
						4.6/10 F2.50					
42				14 C6.5	2.10 F0		2.10			6.5	
						4.8/11 F2.7	2.10				
41+50				13 C5.3	2.12 F0	5.2/11 F3.1	2.12	106.70		5.3	
		3.86						104.96	108.82		
41+00				0.77							Bm on cobble stone 7' of upper L slope 41
41+00				2.3/11 3.4	5.70 F0	7.7/12 F2.0	5.70	106.66			Rocky pt
Bm		7.39	2.19					104.97	112.36		
40+50				T2 C4.9	0.50 F0	4/11 F3.50	0.50			4.7	
40+00				11 C4.2	.25 C.25	3.1 F2.5	0.52	106.64	107.16		





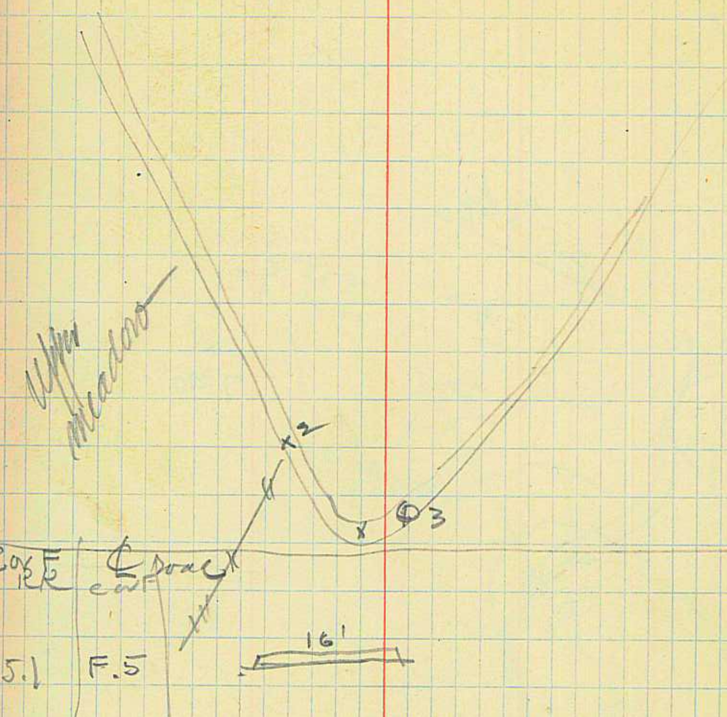




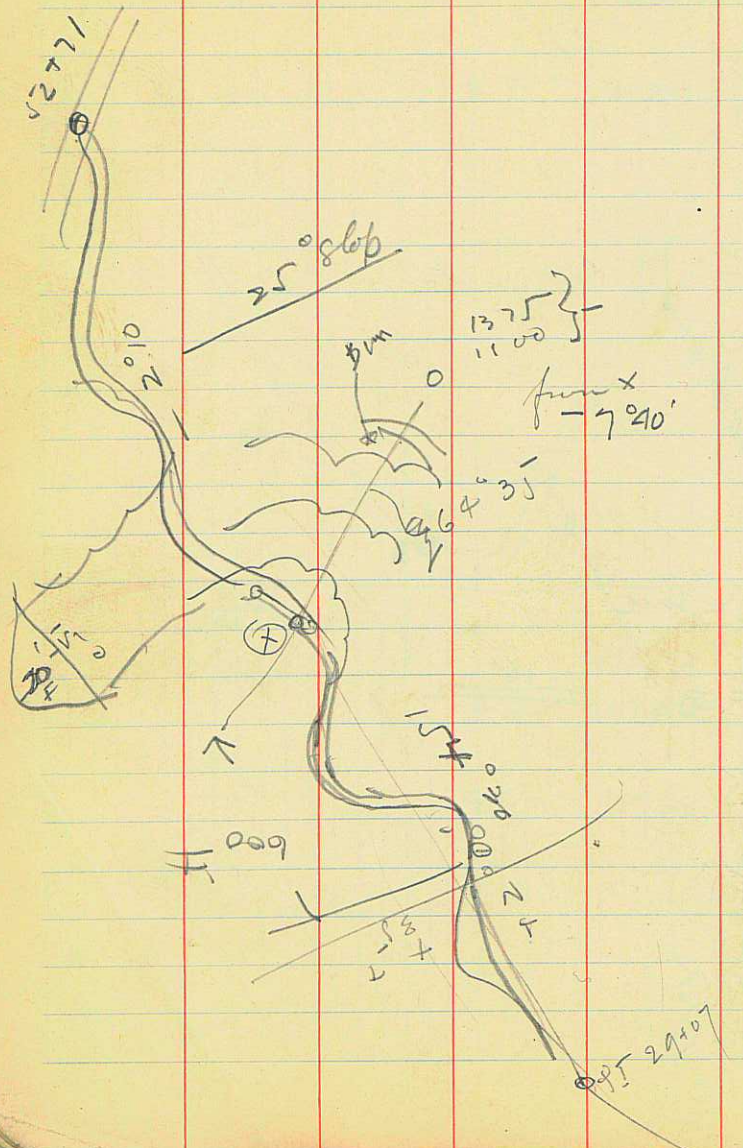
	Bs	Fs	lll	Ele'	H.I.
	4.30			108.46	112.76
2			2.8	110+	
3			2.8	110−	
B					
Sta ~~B~~	~~5.70~~				
B	5.70		G	105.92	111.62
48			4.62	107.00	
49			4.62	107.00	
5.0+00					
51					
52					
52+71					

Cor.

about 1000' above new mill road



5.1	F.5
5.1	F.5
5.6	F1'
5.15	F.55
5.30	F.7
4.62	F0


52+71
25° slop
1375
1100
from x
- 7°40'
64° 35'
29+07

See next page

E = earth

Computations

Sta	Area Fill	Area Cut	Dist'	Sq. ft. mean A	cu. ft.	cu y cut	Class	Fill cu yd	Cut	
18+88	0	0								
			33'	14	460	17	E			
19+21	0	28								
			20	33½	670	25	E			
.19 41	0	39								
			55	26.7	1468	54	E			
19+96		14.5								
			55	9.7	535	20	E			
20+51		5								
			17	6	102	3.8	E			
20+68		7								
			25	5.25	131	5.0	E			
20+93		3.5								
			25	14 Fill	350		E	13		
21+18	28.0									
			23	35.7	822		E	30.5		
21+41	43.7									
			25	35.6	865=771		E	28.5		Deduct $\frac{7\frac{1}{2}}{2} \times 25 = 94$
21+66	27.50									
			25	20	410		R		16.8	same fill
21+91										
			51	30.5	1530		R		57.0	
22+42										
			38							
22+80										

Sta	Area sq ft F	Area sq ft C	Mean	Dist	cu ft cut	cu ft Fill	Class	fill sq ft	Mean	fill cu ft.
18+88	0	0								
			14	33	460		E			
1921		28								
			33.5	20	670		E			
1941		39								
			26.7	55	1468		E			
19+96		14.5								
			9.7	55	531		E			
20+51		5						2		
			6	17	102		E		2	34
20+68		7						2		
			5.25	25	131		E		3.5	88
2093		3.5						5		
			1.8	25	50		E		16.5	413
21+18		0						28		
			0	23	0		E		36	830
21+41		0						43.7		
			3.75	25	94		E		36	900
21+66		7 ½						27.5		
			19	25	475		R		19	360
21+91		31						10		
			30.5	51	1550		R		11.25	572
22+42		30						12.5		
			16.5	38	312 312		R E L R		24.2	920
22+80		3						36		
					6159					4117

Sta	Area cu ft	Mean	Dist	Cu. ft	Class	Fill ft	Mean	Fill cu. ft.
22+80	3					36		
		6.5	37	240	LR		31.1	1160
23+17 21	10					26.2		
		14	25	350			27.1	680
23+42 28	18					28		
		34	28	950			18.5	518
23+70	50					9		
		39	30	1170			10.5	315
24	28					12		
		14.5	50	725			26	1300
24+50	1					40		
		11.8	50	590			30.5	1530
25	22.7					21		
		26.3	42	1110			19.5	820
25+42 58	30					18		
		28.1	62	1740			15	930
26+04	26.2					12		
		30.1	51	1530			17½	586
26+55	34					11		
		32	45	1440			14.5	653
27	30					18		
		31	53	1650			15.5	822
27+53	32					13		
		25	42	1050			17.7	742
27+95	12					22.5		
		17.2	41	705			14.7	600
28+36	22.5			19409		9		

Sta	area cu	mean	Dist	cu ft	Clears
28+36	22.5				
		13.50	39	526	
28 75	4.5				
		2.2	25	55	
29	0				
		0	50	0	
29+50	0				
		3	50	150	
30	6				
		6	50	300	
30+50	6				
		9	50	450	
31	12				
				20899	
			cy =	775 cy	

100 yds Solid Rock @ 250 250.00
675 " L Rock @ 75 506.25
$ 756.25

About 600 yds LR
Sta 38 and up @ 75
450

Plus

1206.25
120
1326.

fill sq ft	mean	fill cu ft
7		
	6	234
5		
	15.5	390
26		
	21.5	1080
17		
	9	450
1		
	3±	150
4½		
	2	100
0		
		17177

150

1175 Loose Rock @ 75¢ 881.25
200 Solid Rock @ 250 500
$ 1381.25

approx total cost

and it may cost $ 1500
after checking up quantities —

Survey at Geo. Q. Rich -
Irrigation system 2-26-31
Hor

		8.26		
		8.00	33.68	
		10.00	31.68	
1.23			5240.45	5241.68

278°54	S81°06	4.6		
	S81°06	86.4	-16°	90

#1 HE52

421 8
25 53

91
864
4.6

96
90
86.40

note length of 18" culvert
24'
Govt - Bridge at Forks 50'

5240.45
1.23
5241.68

top 18" pipe lower end
top 18" pipe upper end
on H2O Geo. Q.'s Dam

T

25
1

2400 (.998
1998 2 4.03
14020
3992
2800

62.5 (7.5
125 7.5
700

127
3
3.7
8

10

110
2
20

1140 (30
900 38
240

9
3.3
5.7

2.75
26
1650
550
71.50

70
350

26
300
7800
16
46800
7800
124800

15
11
165

~~Slab~~ 124800
76
~~200800~~ (2000
100

OK
$1\frac{1}{2}$ tons
per foot

17
15
85
17
255
26
1530
510
7630

10.71
10.53
.18

105.97
18
101.79

40
8.8

352
32
3

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

HOW TO USE KEITH'S TABLES.

EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P.=23° 20′ to the R. at Station 542+72.

Ext. in Tab. IV opposite 23° 20′=120.87
120.87÷12=10.07. Say a 10° Curve.

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

Tab. V. correction for A. 23° 20′ for a 10° Cur.=0.16
118.31+0.16=118.47=corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′=23.33°÷10=2.3333=L. C.

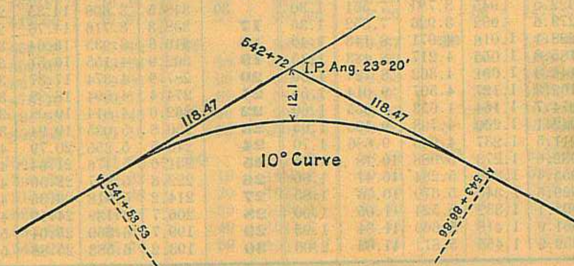
2° 19½′=def. for sta.	542	I. P.=sta.	542+72
4° 49½′= " " "	+50	Tan.=	1.18.47
7° 19½′= " " "	543	B. C.=sta.	541+53.53
9° 49½′= " " "	+50	L. C.=	2.33.33
11° 40′= " " "	543+ 86.86	E. C.=sta.	543+86.86

100—53.53=46.47×3′(def. for 1 ft. of 10° Cur.)=139.41′=
2° 19½″=def. for sta. 542.

Def. for 50 ft.=2° 30′ for a 10° Curve.

Def. for 36.86 ft.=1° 50½′ for a 10° Curve

(These tables are published in Field Books of KEUFFEL & ESSER Co., New York, N. Y.)



20

1.5
.05
.75

330/25 =

530

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

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

FOR SINGLE TRACK EMBANKMENT.

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

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

MADE IN GERMANY.
R.