

Current
Liam
Core Drilling
Log 3

FIELD BOOK
361S

W 122

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.

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	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 TABLES SEE END OF BOOK.

1-25-566

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Barrett Dam
Test hole # 1

	Progress	Total
April	27	1'
"	28	4' 6" 5' 6"
"	29 Day	4' 6" 10'
"	" Night	4' 14'
"	30 Day	4' 18'
"	" Night	4' 22'
May	1 Day	3' 6" 25' 6"
"	" Night	2' 6" 28'
"	2 Day	4' 3" 32' 3"
"	" Night	3' 4" 35' 7"
"	3 Day	4' 5" 40'
"	" Night	3' 5" 43' 5"
"	4 Day	4' 4" 47' 9"
"	" Night	4' 6" 52' 3"
"	5 Day	4' 2" 56' 5"
"	" Night	2' 58' 5"
"	6 Day	4' 2" 62' 7"
"	" Night	3' 6" 66' 1"
"	7 Day	4' 6" 70' 7"
"	" Night	4' 2" 74' 9"
"	8 Day	5' 6" 80' 3"
"	" Night	4' 4" 84' 7"
"	9 Day	4' 7" 89' 2"
"	" Night	4' 1" 93' 3"

Barrett Dam
Test Hole # 1

①

Formation	
0 to 2' 6"	Solid Granite
2' 6" to 4' 6"	Soft " no core
4' 6" to 9'	Solid " "
9' to 9' 6"	Soft lost water, no core
9' 6" to 10'	Solid
10' to 11"	Soft no core
11' to 19'	Solid except small seam at 16'
19' to 20' 6"	Soft no core lost water
20' 6" to 46' 3"	Solid
46' 3" to 46' 9"	Soft no core
46' 9" to 48' 9"	Solid
48' 9" to 48' 11"	Soft no core
48' 11" to 93' 3"	Solid

Tie of Hole
Inst set up
over hole
Bearing of hole $51^{\circ} 15' W$
to Upstream East corner
of wier opening
 $45^{\circ} 52^{\circ} \frac{1}{4} W$

Test hole # 2

Progress

		Day	Night	Total
May	11	13'	2' 2"	15' 2"
"	12	4' 4"	4' 3"	23' 9"
"	13	5'	5'	33' 9"
"	14	4' 8"	4' 3"	42' 8"
"	15	2' 4"	3' 2"	48' 2"
"	16	4'	4' 9"	56' 11"
"	17	3' 7"		60' 6"

Casing 10'

Test hole # 2

Formation

(2)

0 to 10'

		Formation
10'	to 11' 8"	Granite
11' 8"	to 12' 2"	Crinoid
12' 2"	to 28'	Solid Granite
28'	to 28' 8"	Soft (no core)
28' 8"	to 30'	Solid
30'	to 30' 8"	Soft (no core)
30' 8"	to 60' 6"	Solid Granite

Test Hole # 3
Progress

	Day	Night	Total
May 19	16'6"	12'	28'6"
" 20	6'3"	5'	39'9"
" 21	6'3"	5'8"	51'8"
" 22	6'	5'6"	63'2"
" 23	5'2"	5'6"	73'10"
" 24	5'3"	4'6"	83'7"
" 25	20"		85'3"

Casing 9'

Test Hole # 3
Formation

(3)

0 to 8'6"	sand	
8'6" to 10'6"	solid	
10'6" to 12'6"	soft	no core
12'6" to 13'	solid	
13' to 27'6"	soft	no core
27'6" to 28'6"	Partly Decomposed	
28'6" to 32'	soft	no core
32' to 42'	solid	
42' to 44'	Partly Decomposed	
44' to 44'10"	soft	no core
44'10" to 51'	solid	
51' to 51'6"	soft	no core
51'6" to 53'	solid	
53' to 54'	soft	no core
54' to 85'3"	solid	

Hole # 4

Progress

	Day	Night	Total	
May	25	24'6"	6'6"	31'
"	26	7'3"	6'	44'3"
"	27	7'9"	9'6"	61'6"
"	28	6'4"	3'7"	71'5"

Casing 24'6"

Hole # 4
Formation

(4)

0 to 17'6"	Sand + silt
17'6" to 26'10"	Decomposed G.
26'10" to 30'	Partly Decomposed
30' to 52'	" " " "
	but considerable harder
52' to 55'	soft no core
55' to 58'	Hard Granite
58' to 59'	soft no core
59' to 61'	Hard Granite
61' to 62'6"	soft no core
62'6" to 71'5"	Solid Granite

Setup at
Hole No. 1

Transit Ties
Core

Dist

Remarks

Sight
Along Hole No. 1

S 1° 15' W

NE Cor
Wier Notch
Hole

45°

S 20° 15' W

4

74 6

S 42° 45' E

3

113 5

N 88° E

2

57 2

N 50° 30' E

Traverse sta

E

56 0

N 66° 30' E

Vertical.

Vertical.

Bears 55 6 1/4° E

On traverse ^{near} along Dam axis.

Levels

Top
Wall

57

26.9

21.2

Barrett Dam Datum

Hole

1

4.7

22.2

Rock surface High Point of hole

2

2.9

24.0

Top casing (3" casing taken off.)

2

5.4

21.5

Ground surface.

3

6.1

20.8

(1 ft taken off) top casing

~~3~~

6.5

20.4

Ground surface

4

5.9

21.0

(83' taken off) top casing

4

6.3

20.6

Ground surface

Hole # 5
Progress

Date	Day	Core	Night	Core	Total
5-31	10'7"		8'3"		13'10"
6-1	4'8"		5'		23'6"
6-2	5'		4'6"	4'6"	33'
6-3	7'6"	3'	7'9"	3'4"	48'3"
6-4	5'9"	5'9"	5'6"	5'5"	59'6"
6-5	6'	6'	5'2"	5'	70'8"
6-6	5'6"	2'9"	5'8"	4'10"	81'10"
6-7	7'5"	4'11"	4'	3'11"	93'3"

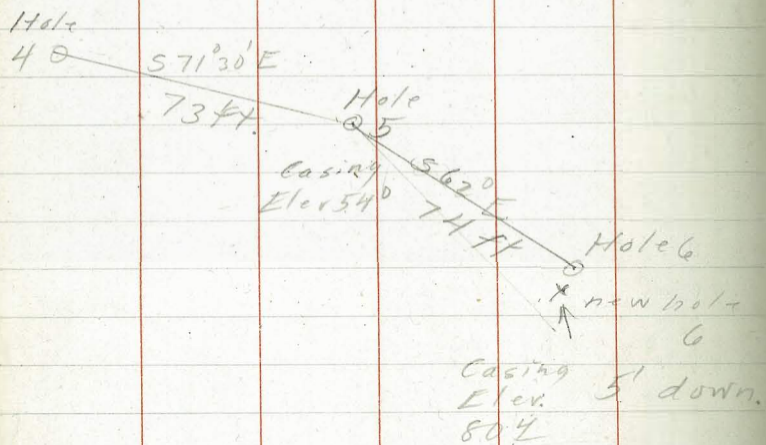
Casing 10'

Hole # 5
Formation

6

0 to 3'	Soil & loose rocks
3' to 8'	Decomposed Granite
8' to 9'	Granite boulder
9' to 10'	Decomposed Granite
10' to 22'	Hard gray granite except 1" brevice at 17'7" where water was lost
22' to 23'	Partially dec: granite
23' to 33'6"	Hard gray granite
33'6" to 48'9"	Medium Hard Granite
48'9" to 72'	Hard Granite
72' to 86'2"	Medium hard granite
86'2" to 88'6"	Decomposed "
88'6" to 93'3"	Hard Granite

Transit ties
Holes No 546



		Hole No 5 1/2			
Date	Day	Core	Night	Core	Total
6-9	16'6"	none	15'	2'4"	31'6"
6-10	2'6"	1'11"			34'
Hole No 6					
Progress					
6-11	25'	none	8'	7'2"	33'
6-12	6'3"	3'2"	6'6"	4'2"	45'9"
6-13	10'3"	1'	1'8"	4"	57'8"
6-14	—	—	3'10"	2'10"	61'6"
6-15	4'	4'	4'6"	2'10"	70'
6-16	4'8"	3'9"	4'3"	4'3"	78'11"
6-17	7'3"	2'	7'6"	4'2"	93'8"

Casing 25'

		Hole No 5 1/2		8.	
Formation					
0 to 27' Decomposed Granite					
27' to 29'6" Partly Dec "					
29'6" to 33' Medium Hard "					
33' to 34' Hard "					
Hole No 6					
Formation					
0 to 25' Decomposed Granite					
25' to 26'8" Medium Hard "					
26'8" to 27'8" Partly Dec "					
27'8" to 33' Hard "					
33' to 46'6" Medium Hard "					
46'6" to 59'6" Partly Dec "					
59'6" to 65'6" Hard "					
65'6" to 68' Medium Hard "					
68' to 71'3" Hard "					
71'3" to 72' Partly Dec "					
72' to 79'6" Hard "					
79'6" to 83'6" 1st black sand - stone, no core					
83'6" to 93'8" Partly Dec Granite					

Remarks

Lost water temporary at 65'6"

Hole No 7
Progress

	Day	Core	Night	Core	Total
6/20	26'6"	0	13'6"	0	40'
6/21	7'6"	1'9"	10'3"	10"	57'9"
6/22	8'6"	10"	11'	2'	77'3"
6/23	9'	1'	7'	11"	93'3"

Casing 28'6"

Hole No 7
Formation

9

0 to 45'	Decomposed Granite	
45' to 58'	Partly Dec	"
58' to 63'	Decomposed	"
63' to 78'	Partly Dec	"
78' to 79'	Hard	"
79' to 93'3"	Partly Dec	"

Did not lose water

Hole No 8

Progress

Date	Day	Core	Wight	Core	Total
6-25	18'6"	—	10'6"	1'	29'
6-26	6'	2'4"			35'
6-27	5'8"	2'1"			40'8"
6-28	14"	?			41'10"
6-29	3'7"	3'7"			45'5"
6-30	7'1"	2'4"			52'6"
7-1	6'	2'6"			58'6"
7-2	5'2"	2'3"			63'8"
7-3	5'	3'5"			68'8"
7-6			5'	2'10"	73'8"
7-7	5'	3'	7'	2'6"	85'8"

Casing 18'6"

Hole No 8

Formation

0 to 18'	Decomposed Granite
18' to 32'6"	Partly Dec
32'6" to 37'3"	Hard
37'3" to 41'6"	Partly Dec
41'6" to 47'	Hard
47' to 48'6"	Medium Hard
48'0" to 58'	Partly Dec
58' to 59'	Hard
59' to 66'	Partly Dec
66' to 70'	Hard
70' to 71'	Partly Dec
71' to 79'	Medium Hard
79' to 84'4"	Partly Dec
84'4" to 85'8"	Hard

Lost water at 37'3" in small crevice and at 41'6" in an 1 1/2" vertical crevice in which some core was lost also

Struck small crevice at 58' + lost water

June 28. 1919. Locate holes #6, 7 & 8.

Ins. at A I Johnson's Traverse Line.

H.I. = Top Stake I + 3.75' = 144.23

N69°W 63.2' level To top casing hole #7.

S. 25°W 58.9' ^{Slope} + 11' 17" To Top Casing + 3' hole #8

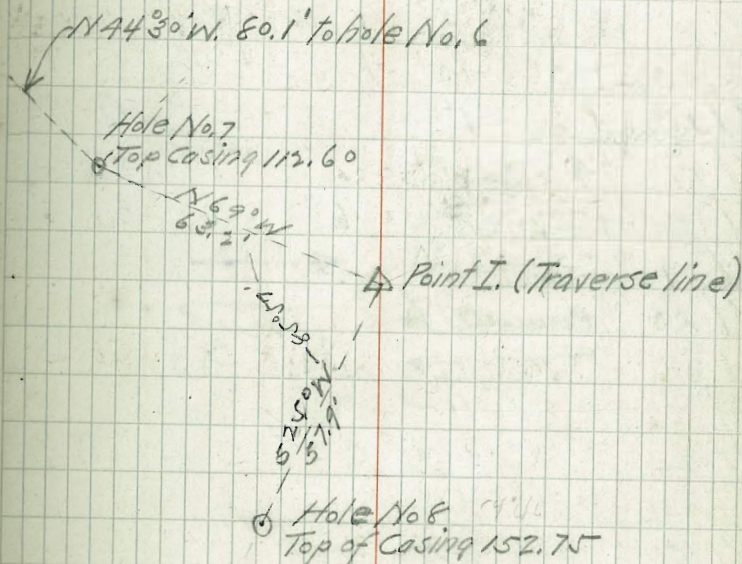
Ins. at Hole No. 7.

H.I. = Top of Casing + 3.95'

N44°30'W 87.8' ^{Slope} - 24' 20" To Top Casing hole #6.

Ins. at A E.

N57°E 95' ^{Level} To Well for Temp. W. Supply.



Hole No 9

Progress

Date	Day	one	Night	one	Total
7/10	20'	—	—	—	20'
7/11	7'6"	—	—	—	27'6"
7/12	2'	—	3'	—	32'6"
7/13	4'6"	—	3'6"	—	40'6"
7/14	3'6"	—	1'	4"	45'
7/15	1'3"	10"	1'6"	1'6"	47'9"
7/16	1'	1'	—	—	48'9"
7/17	6"	6"	2'	2'	51'3"
7/18	—	—	6"	6"	51'9"
7/19	1'6"	1'6"	←	←	53'3"
7/20	Completed hole				56'3"
7/21	4'2"	4"	4"	3'7"	64'5"
7/22	4'4"	4'3"	3'6"	3'5"	72'3"
7/23	4'9"	4'3"	5'	4'3"	82'
7/24	4'	3'9"	4'3"	4'	90'3"
7/25	6'3"	4'8"	4'	4'	100'6"
7/26	4'	4'	4'	4'	108'6"
7/27	4'	4'	4'3"	4'3"	116'9"
7/28	4'10"	4'10"	—	—	121'7"
7/29	—	—	—	—	—

Casing 31'

Hole No 9
Formation

12.

0 to 25'6"	Sand + silt
25'6" to 34'	Sand + boulders
34' to 39'	Partly Decomposed Granite
39' to 40'6"	Sand & boulders
40'6" to 44'	Partly Decomposed Granite
44' to 45'	Medium Hard "
45' to 90'9"	Hard Granite
90'9" to 92'6"	Partly Dec "
92'6" to 96'3"	Hard black sandstone
96'3" to 121'7"	Hard Granite

Remarks

Did not lose any water or shot below 44 ft which proves the absence of any crevices whatever

July 25-1919 Ties to hole No 9 Etc.

Ins at E.

24.7	3.50	20.7
	0.60	13.6
	3.25	11.0

Top casing No 3
 " " No 9
 " " " 4

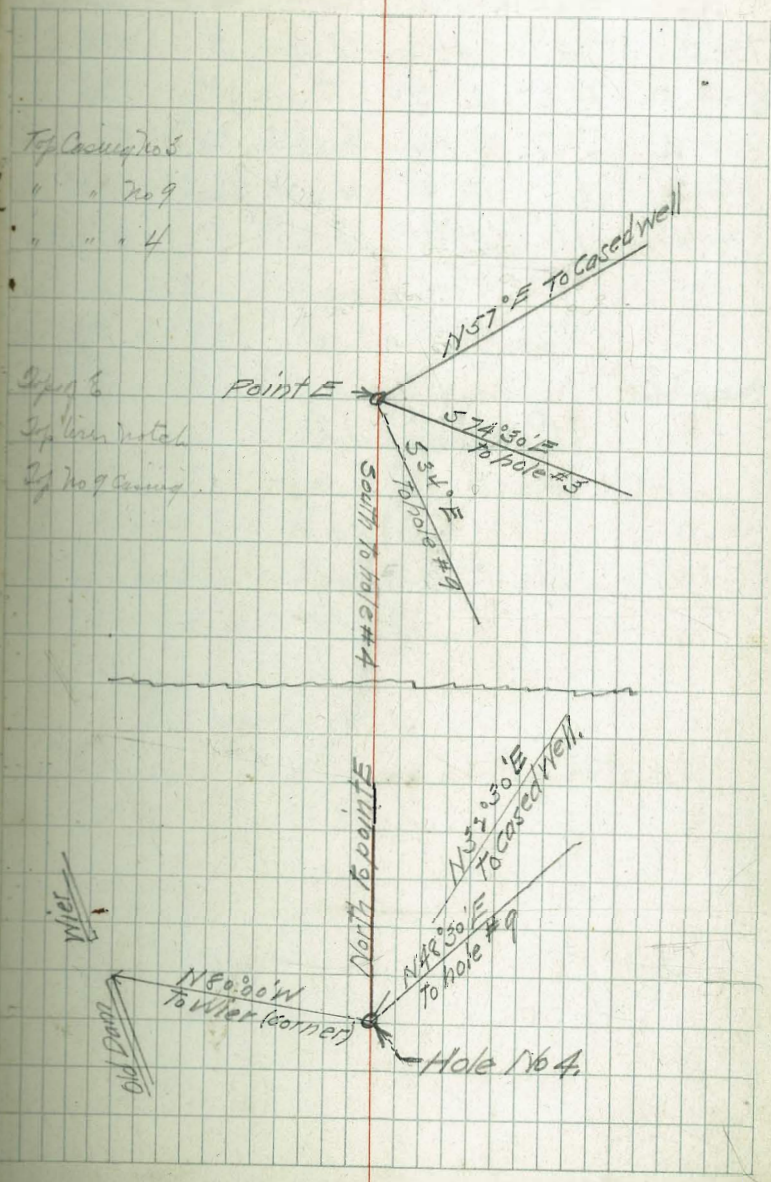
Ins at base #4 W.V

5.00	20.2
25.2	21.7
1.37	13.9

Top 6
 Splines notch
 2' No 9 casing

Drift of hole No. 9 N. 55° 30' W.

Slope of hole 12 horizontal to 17 vertical.



Date	Day	Progress Core	Night	Core	Total
7-31	12'	11"	11'6"	3"	23'6"
8-1	7'6"	2'8"	7'	4'	38'
8-2	5'7"	5'4"	7'10"	6"	51'6"
8-3	6'	3'4"	6'6"	6'6"	64'
8-4	11'	4'6"	9'6"	7'	84'6"

Casing 12'

Hole No 10
Formation

1st.

0 to 11'	Decomposed Granite	
11' to 30'6"	Partly Dec	"
30'6" to 37'6"	Medium Hard	"
37'6" to 43'6"	Hard	"
43'6" to 56'	Partly Dec	"
56' to 67'6"	Hard	"
67'6" to 70'	Partly Dec	"
70' to 74'	Decomposed Black sandstone	
74' to 75'	Partly Dec Granite	
75' to 80'6"	Hard	"
80'6" to 82'	Partly Dec	"
82' to 84'6"	Hard	"

Remarks
Did not lose water

Hole No 11
Progress

Date	Day	Core	Height	Core	Total
8-6	21'0"	0	28'	0	41'
8-7	25'	0	9'6"	0	75'6"
8-8	0	0	15'	0	90'6"
8-9	11'	0	5'	2'	106'6"
8-10	0	0	6"	3"	107'
8-11	4'6"	2'			111'6"

Water seepage from 12:30 A.M.
to 7:00 A.M.

8-7	Water was 32' below surface
8-8	Drill stuck
8-9	Water was 66' below surface
8-10	" " " " "
8-11	" " 74' " "
8-12	" " 77' " "

Casing 66'6"

Hole No 11
Formation

15.

0 to 100'6" Decomposed Granite
100'6" to 111'6" Medium Hard Granite

Remarks

Did not use water
except seepage between
shifts

Hole No 12.

Progress

Date	Day	Core	Night	Core	Total
8-12	10	-			10'
8-13	24'6"	-	25'6"	-	60'
8-14	5'6"	-	1'	3"	66'6"
8-15	11'3"	-			77'9"
8-16	6'3"	2'			84'

Hole No 12.

16.

Formation

0 to 67'	Decomposed Granite
67' to 82'	Partly Dec
82' to 84'	Hard

Remarks

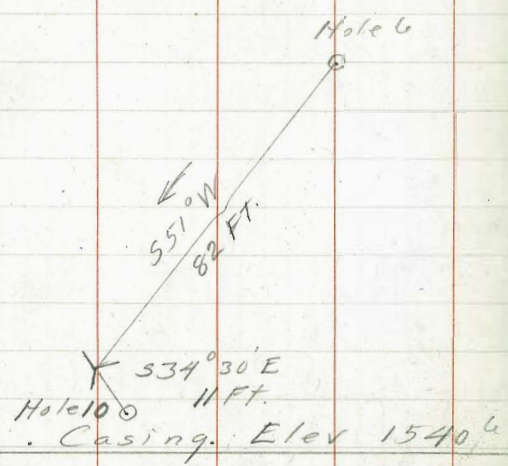
Did not lose water
except thru seepage
from 12:30 A. M. to 17:00 A. M.

8-14 No water in hole

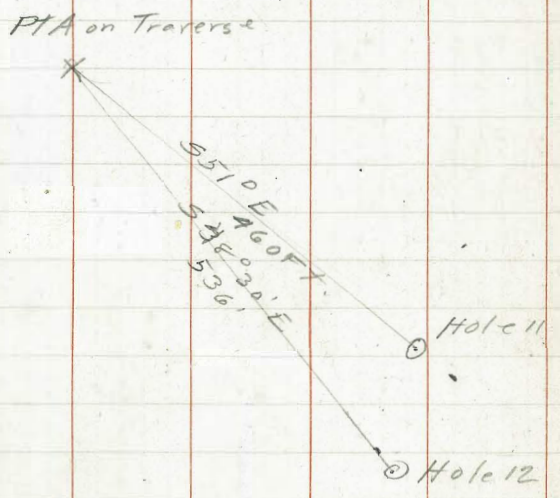
8-15 " " " "

8-16 18" " " "

Transit Ties
Holes 10 - 11 - 12.



1' above Ground Surface



Hole 11. Top casing measured from was Elev 1573.3; 2.1 FT has been removed = 1571.2

Hole 12 Top casing is elev 1616.9

Hole 13

A1	49	1641.0	4.7	1636.3
Hole	71			
13	73	523°45W	7.4	1633.6

18.

Top casing.

Date	Day	Core	Hole No. 13 Progress	Total
8-20	32'	0		32'
8-21	11'	0		43'
8-22	29'	0		72'
8-23	5'	0		77'
8-24	0	0		77'
8-25	5'6"	0		82'6"
8-26	6'2"	21"		88'8"

Casing 43'

Hole No. 13
Formation

0 to 86'6" Decomposed Granite
86'6" to 88'8" Hard "

Lost water at 71'

Hole No 14			
Date	Day	Core	Total
8-28	17'	0	17'
8-29	20'	17"	37'
8-30	5'6"	4'7"	42'6"
8-31	4'	4'	46'6"
9-1	7'6"	18"	54'
9-2	0	0	54'

Casing 34'9"

Hole No 14 Formation.

20.

0 to 34'6"	Decomposed Granite
34'6" to 39'	Medium Hard "
39' to 47'2"	Hard "
47'2" to 52'9"	Soft black sand-stone
52'9" to 54'	Hard Granite

Lost a little water at
52'9"

Hole No 15		Progress		Total
Date	Day	Core		
9-3	5	0		5'
9-4	12'6"	11"		17'6"
9-5	10'3"	2'9"		27'9"
9-6	6'6"	5'		34'3"
9-7	5'9"	5'9"		40'
9-8	5'8	5'8		45'8"
9-9	3'0"	3'0"		48'8"
9-10	4'10"	4'10"		53'6"
9-11	4'0"	4'0"		57'6"

Casing 13'4"

Hole No 15 Formation

21.

0 to 16'	Decomposed Granite	
16' to 24'	Medium Hard	"
24' to 27'	Decomposed	"
27' to 30'	Partly Dec	"
30' to 57'6"	Hard	"

^{some}
Lost core due to
defective bits

Hole No 16
Progress

Day	Core	Total
9-15	24' No	24'
9-16	0 -	24'
9-17	24 No	48'
9-18	24 No	72'
9-19	8' 8" 2' 4"	80' 8"
9-20	12' 4" 1' 10"	93'
9-21	12' 6" 4' 0"	98' 6"
9-22	6' 6" 1' 6"	105'

Hole No 16
Formation

27.

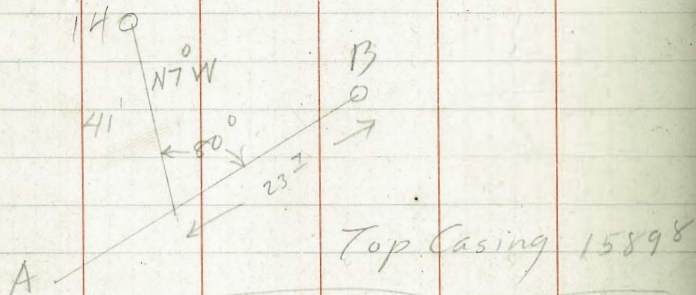
0 - 78	Decomposed Granite
78 - 82' 6"	Hard.
82' 6" - 94' 6"	Decomposed.
94' 6" - 100	Hard.
100 - 105	Medium Hard.

Lost Water at
'68' in broken ground.

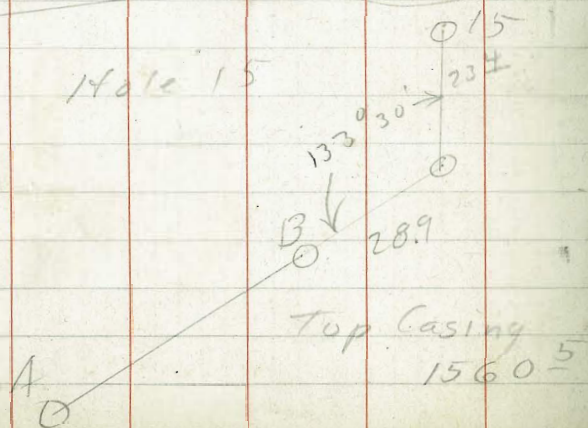
Hole 16 Time

Setup
 at 4.5 16653 16608
 J Top 45
 Casing 47 N41°45'E 68 16585
 Stadia
 Base 54130 E

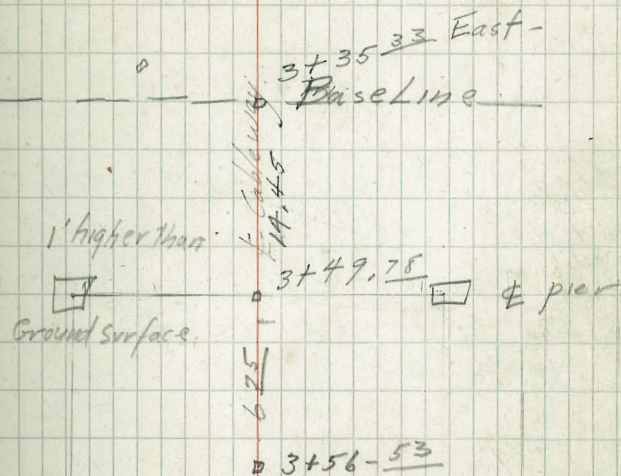
Hole 14



Hole 15



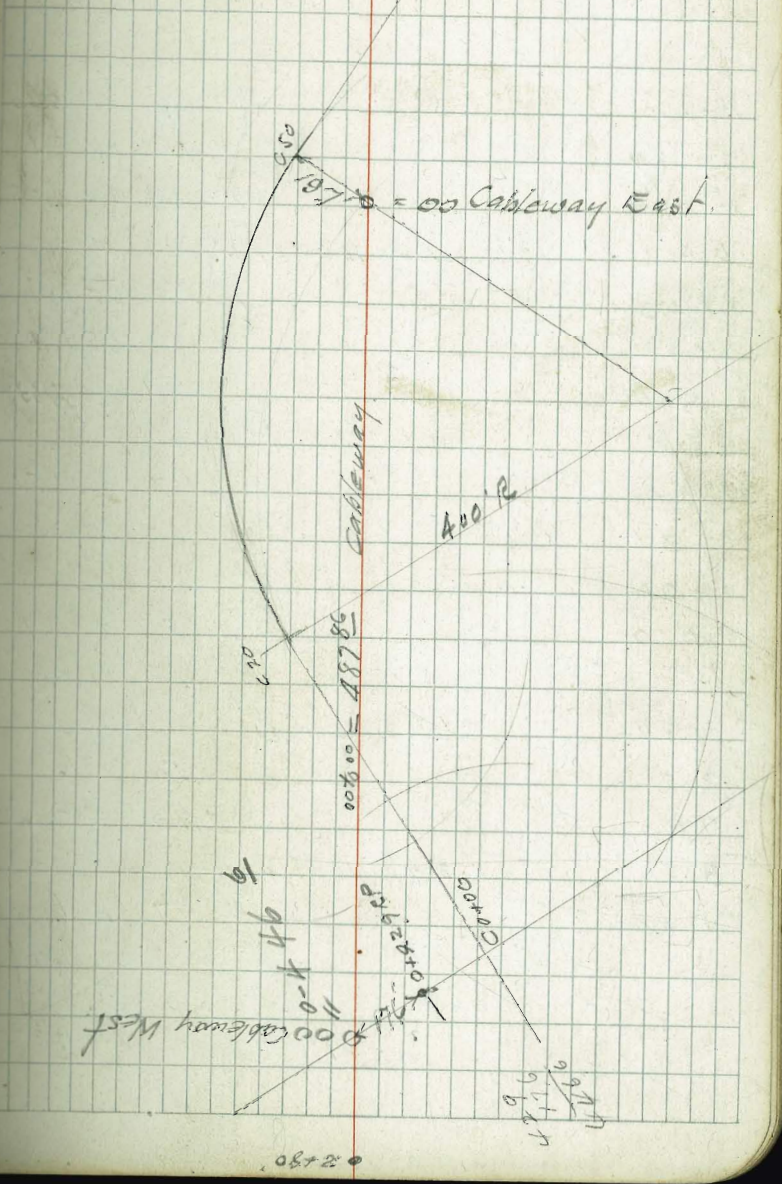
Tail Tower Cableway



Fraser
Bub
Ketchum Cableway levels West Nov 5

Pline	36		
TPBM	12.67	1764.03	1751.67
T.P.			10.05 1753.95
	13.84	1767.79	
Hvb.			
3+00		7.31	1760.48
2+90		11.2	1756.6
2+78	2+80 = Tower	15.65	1752.14
2+54	2+76 = Post West	0.61	1752.75
2+50		13.50	1739.25
4'L-2+47		14.44	1738.31
5' stump T.P.			
R.F. 38 23 R.F.			
B.S.	0.00	1738.31	
2+25		12.3	1726.40
Nail in stump		15.76	1722.55
4'L-2+15		0.26	1722.81
2+00		6.72	1715.89
1+85		12.6	1710.00
stake on line		15.76	1707.05
T.P. 1+75			
B.S.	0.35	1707.40	
1+54		8.7	1698.7
1+50		11.8	1696.6
1+40		12.3	1695.1
peg on line		15.65	1691.72
1+34			
	0.25	1691.97	

3+52 24.
TIE CLIFF DAM TO Cableway



Nov 5

Cableway levels

West -

7 T.P. peg on line 1+02		15.09	1674.81
	0.96	1677.84	
1+00		2.09	1675.60
0+84		9.7	1668.1
peg 2' left 0+73		15.29	1662.55
B.S.	0.79	1663.34	
0+63		5.8	1657.5
0+50		11.9	1651.4
peg on line 0+44 T.P.		15.81	1647.53
T.P.	0.95	1648.98	
0+40		1.67	1646.71
0+34		4.6	1643.9
0+31		12.0	1636.5
0+10		11.8	1636.7
T.P.		15.16	1633.2
0+00	1.89	1635.21	
0.0		3.50	31.71
T.P.		7.70	1627.51
B.S.	3.90	1651.41	
60 s-B.M. with 500 ft B.M. -		5.07	1626.34

Burb
Fisher

Nov 5

25.

Check on Cableway Levels

B.M.	14.77	41.10		1626.33
	15.36	56.23	0.23	40.87
	15.74	71.66	0.31	55.92
	0.23	62.76	9.13	62.53
	0.65	48.16	15.25	47.51
	11.13	44.43	14.86	33.30
0+00			12.75	31.68
T.P. on 500 ft	8.65	41.95		33.30
			14.47	27.48

Nov 6 Levels Cableway East.

East

Nail in Stump.

B.M.	3.86	1538.58	1534.72
0+0		14.07	1524.51
0+05		12.8	1525.8
0+19		12.7	1525.9
0+28		8.2	1530.4
0+47		4.0	34.6
3'R-0+55 TP		0.53	1538.05
B.S.	13.89	1551.94	
0+48		10.4	41.5
0+55		10.2	41.7
0+75		2.5	49.4
R-10'-R-0+75 TP		0.58	1551.36
B.S.	14.09	1565.45	
0+81		13.1	52.4
0+81		9.9	55.6
0+84		7.2	1558.3
0+89		9.2	1556.3
Hub 1+00		3.94	1561.51
peg on line 1+10		0.47	1564.91
B.S.	14.54	1579.52	
1+30		3.4	1576.1
TP peg on line 1+36		0.57	1578.95
	15.87	1594.82	
1+50		8.8	1586.0

+ 3.86	0.52
13.89	0.58
14.09	0.47
14.54	0.57
15.87	<u>2.14</u>
62.25	
<u>2.14</u>	
60.11	
1534.72	
1594.83	

Levels Coblaway East

East

1594.82

7	1+59		3.1	1591.7
	15' 4"-1+65 T.P.		0.42	1594.40
	B.S.	15.03		1609.43 15.03
	1+70		10.8	1598.6
	1+75		6.9	1602.5
	Peg 9' R 1+86 T.P.		0.25	1609.15
		15.60		1624.75
	2+00		5.97	1618.81
	13' 4"-2+05 T.P.		1.99	1622.79
		14.70		1637.49
	2+13		10.2	1627.3
	2+20		5.3	1632.2
	T.P.		0.98	1636.5
	B.S.	15.76		1652.27
	2+30		8.5	1643.8
	Peg 8' L 2+58.42 T.P.		3.27	1649.5
	B.S.	15.23		1664.23
	2+38.43		14.71	1649.52
	2+60		3.3	1660.9
	TP Peg 2'-1- 2+65		0.38	1663.85
	B.S.	15.64		1679.49
	2+75		9.9	1669.6
	Peg 5' L 2+90 T.P.		0.38	1679.11
	B.S.	15.60		1694.71

27

1594.83

7	1503	0.42
	1560	0.25
	1470	1.99
	15.76	0.98
		3.27
		0.38
		0.38
		<hr/> 7.67
	15.64	
	15.60	
	<hr/> 107.56	
	7.67	
	<hr/> 99.89	
	94.83	
	<hr/> 1694.72	

Levels Cabloway East

1694.71

1694.72

Hub 3+00		9.39	1685.42
Page 5' R-3115 T.P.		0.21	1699.50
B.S.	14.17	1708.67	
3+27		4.8	1703.9
Hub 3+29.72		4.15	1704.54
3+39		4.3	1704.4
Page 8' R-3115 3+45		0.00	1705.61
3+45	12.57	1721.24	0
3+50		9.9	1711.3
T.P.		1.64	1719.60
B.S.	15.01	1734.61	
T.P.		0.78	1733.83
B.S.	10.25	1744.08	
3+71		5.1	1739.0
Hub 3+76.33		4.26	1739.82
3+80		3.8	1740.3
3+85		7.0	1737.1
3+92		7.0	1737.1
3+95		5.7	1738.4
TP 3+76.33		4.26	1739.82
B.S.	14.84	1754.66	
4+00		4.7	1750.0
T.P. 4+05		1.99	1752.67
B.S.	13.78	1766.45	
4+25		0.02	1766.43

3+52.14 = Tower

+

14.17	0.21
12.57	0.00
15.01	1.64
10.25	0.78
14.84	4.26
13.78	1.99
8.052	0.02
	8.90

No 8

Check Levels - Cableway East

Hub				
4+25	0.02	1766.45	1766.43	
Stump on line				
4+04			14.12	1752.32
B.S.	2.70	1754.62		
^{TP}				
3+76.33			14.90	1739.72
B.S.	2.63	1742.45		
T.P.			15.75	1726.67
B.S.	2.25	1728.92		
T.P.			15.39	1713.51
B.S.	1.50	1715.01		
3+29.72			10.52	1704.49
Nov -7-				
B.S.	2.57	1707.06		
T.P.			15.21	1691.85
B.S.	1.23	1693.88		
T.P.			14.76	1678.32
B.S.	0.52	1678.84		
T.P.			15.87	1662.97
B.S.	1.64	1649.81		
TP B.M.			14.73	1649.85
B.S.	0.43	1650.31		
T.P.			15.03	1635.27
B.S.	0.11	1635.39		
R.P. East End			4.75	1630.64
T.P.			15.07	1620.32

Hub
Stump on line 4+04

Req -

Req -

- 0.07 = 1649.81 correct B.M. Elev 49.80

R.P. East End of Dart Hub.

Check levels East Cableway

			1620.32	
B.S.	0.52	1620.84	1620.32	
TP		15.48	1605.36	Peg
B.S.	1.15	1606.51		
TP		15.64	1590.87	Peg
B.S.	2.20	1593.07		
TP		15.58	1577.49	
B.S.	0.34	1577.83		
TP		12.79	1565.04	Peg in line 1+10
B.S.	0.31	1565.35		
TP		13.92	1551.43	Box 10-R-0+78
B.S.	0.34	1551.77		
TP		14.73	1537.04	Rock
B.S.	5.25	1542.29		
B.M.		7.50	1534.79	

error 0.07

Nov 7
Fisher
Dob.
Ketchikan

Tie P Line - Cableway - Quarry Road

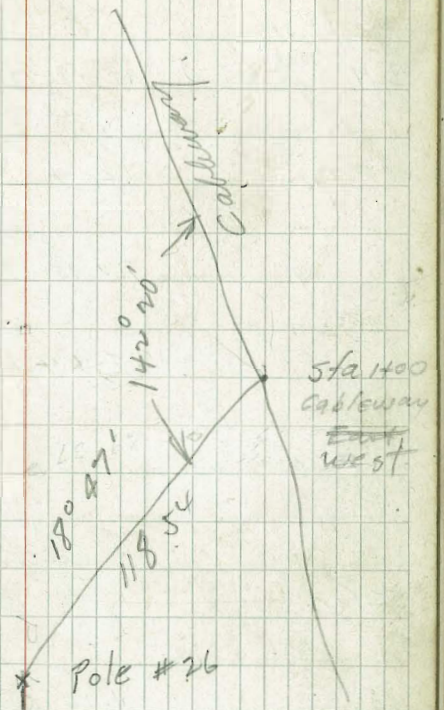
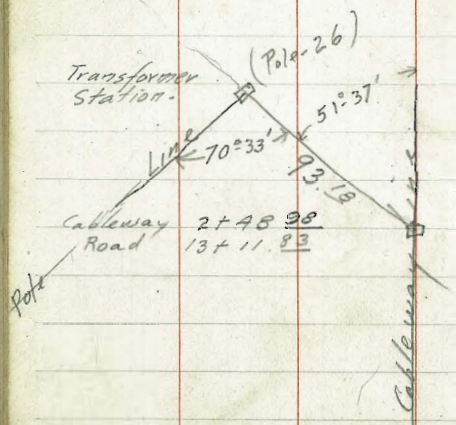


12+88 - Road
12+25 - 64 chain
P 3+26.7
Road 15+25.0

Slope dist 100
Vert L = -24.243'
Add Horiz dist. 27.7

Fisher
Bub
Ketchikan
63.89

Tie to Transformer Station



1-30-20
Burb
Fisher
Howard

Levels to Reservoir

30'-11-3100
Nail in Rock
BM

12.08 1776.41 1764.33

TP Peg. 12.14 88.18 0.37 76.04

TP peg 10.95 98.88 0.25 88.93

8.64 1806.83 0.69 98.19

SE Cor. 1.11 1805.72

Check

SE Cor. 1.11 1506.83 1805.72

1.10 85.42 12.51 84.32

0.53 73.75 12.20 73.22

1.22 64.80 10.17 63.58

10.46 64.34

180' Diff in
Reservoir + Mixer Bins

Nov 6 ¹⁹¹⁹ Topog East End Cableway

St. 42 Occupy Sta 4+75
Sight 0+00 for 00 Az. R.

Rod 104³
Cord 1760 4.0 70.43 1766³

Dist	Add Focal Dist
	As null
2.4	74° 10'
8.0	23° 50'
1.2	319° 10'
2.5	292° 10'

Plotted
Nov 7 1919

St. 44 Occupy Sta 4+05 Sight 00
for zero Az. R.

A+05
Rod 707
Cord 1750 4.4 57.07 5267

4.0	
2.4.5	262° 10'
1.3.7	254° 00'
1.5.2	255° 30'
8.0.	243° 45'
8.7	112° 20'
24.8	91.50

Plotted Nov. 7 1919

Boulder

"

"

Nov. 6

East End Cableway

Occuy Sta 3+76.33

Sight Zero Az Pt.

HI 4.9	4.9	44.72	39.82
Rod 472 Bis			
Cont 1740	39.0	121°50	
	27.5	135.15	
	20.5	145°10	
	18.3	198°40	
	35.0	240°00	
Rod 1472 Dis			
Cont. 1730	33.3	264°30	
	26.5	271°15	
	22.0	272°00	
R+Soil	19.0	279°45	
	17.0	287°00	
Rock	12.0	315°10	
Rock	15.0	318°40	
R+Soil	13.0	326°20	
	9.2	345°15	
	17.0	358°30	
	29.0	78°45	

Platted Nov 7 1919

34

A. 3+29 72

480

09.32

1704.52

R-930
Cont 1700

1700

" 28.6 78-30

" 11.9 52-30

" 12.0 311-30

" 28.0 278-00

AT 3+50

11.94 1716°46

1704.52

Cont 1710

Rod 696 252 267°45

1710⁴⁵
40 276°00

Boulder 3.0 21.45

Boulder 11.3 42-45

Boulder 16.5 61-40

Boulder 21.0 73°-0

R+Soil 20.5 80°45

28.0 81.45

AT 3+59.62

13.30 2681

1713.51

R-2681

Cont. 1720. 30 86°

" 15 82°

9 - 73°

Platted
11/7/19Platted
11/7/19

Nov 7 East End Cableway

At 345962

²⁴¹
172681

1740	40	78
"	40	330
"	120	27240
"	190	558°
s	340	257-15

Nov 7 Topog West End Cableway

Fisher
Bub
Ketchum

Occupy Sta 2+48.89

Rod 13.25
Cont 1730

4.0 1743.25 1739.25

71.0 220.30

15.5 168-30

R + Soil 24.0 134-40

40.0 130-10

Rod 325
1740

R + soil 22.0 79-40

4.0 323.40

(Error) 12.7 260.40

27.0 246-40

Occupy Sta 2+80

Rod Cont. 1750 5.6 1757.74 1752.14

28.7 311-0

15.2 302-30

7.8 227-15

R + Soil 15.2 177-0

R + Soil 22.0 171.30

2+78-1
T.P.

12.87 1765.01

1752.14
1727

B.M.

0.68 1764.33

Reg - 2+75

Nail in Rock 25' R of sta 3+00

00 is west end
of line.

Again measured to
right

Note

Nov 7

Topog West End Cableway

Occupy Sta 3+00

37

BM			
Ro + 5.01		12.87	176.501
			175214
Cont 17.60			
R + Soil	24.5	70-30	
	13.7	84-40	
ok	1.0	140-0	
	15.0	243.30	
	31.0	243.00	

peg at sta 2+78

Cableway-

Set 2+80 - West side
 Set 3+52 1/4 East side

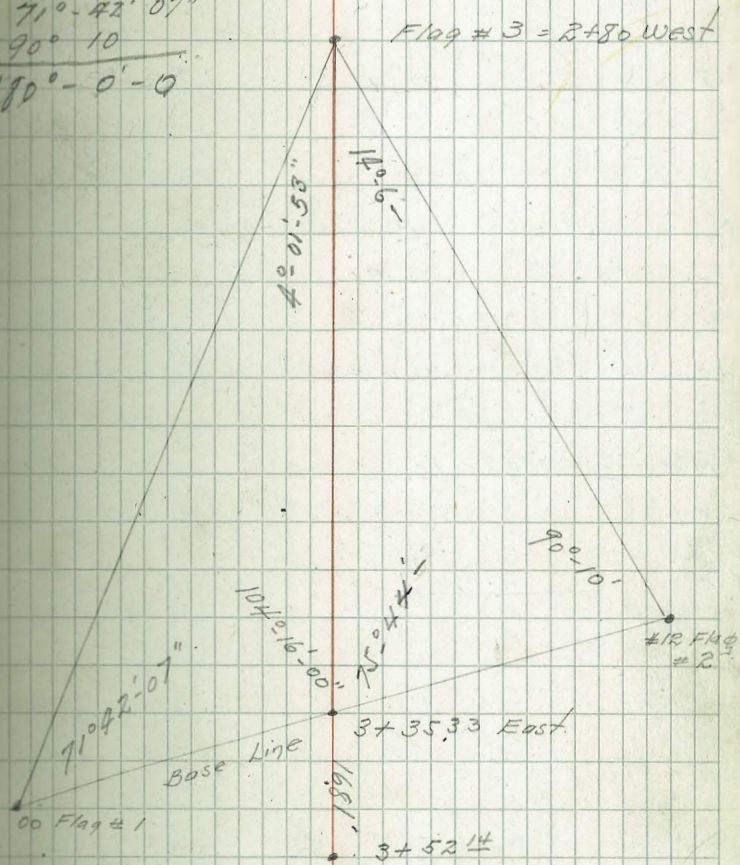
Total Dist. between stakes
 1120' by chaining

Bv6 1-31-20
 Fisher
 Howard.

Measurement for Base Line

Flag #1	
00 to 1	22.41
1 to 2	33.215
2 to 3	26.79
3 to 4	30.20
4 to 5	38.72
5 to 6	28.29
6 to 7	31.45

14°-6'-
 4°-1'-53"
 71°-42'-07"
 90°-10'
 180°-0'-0"



4°-01'-53"
 104°-16'-00"
 71°-42'-07"
 180°-0'-0"

14°-6'-
 90°-10'-
 75°-44'-
 180°-0'-0"

Cableway
Slope Measurement for Base Line

7 to 8 32.44

8 to 9 29.73

9 to 10 32.90

10 to 11 31.05

11 to 12 Flag #2 15.15

1/31/20 Levels Base Line

39

				Assumed
Δ0	0957	1700.987		1700.000
#1	2.316	96.928	6375	94.612
#2			3.703	93.225
#3 = Cableway			5.710	91.218
#4	1550	94.162	7.316	89.612
#5			6.223	84.939
#6			5.538	85.624
#7	0509	83.077	8.594	82.568
#8			4.429	78.648
#9			7.534	75.543
#10	2996	75.465	10.668	72.409
#11			5.482	69.923
#12 = Flag (2)			6.499	68.906

Check

#12	6765	75.671		68.906
#10	7898	80.307	3262	72.409
#8	7884	86.529	1.662	78.645
#6	6328	91.952	0.905	85.624
#4	6376	95.986	2.348	89.610
#2	7640	1700.866	2.760	93.226
			0.870	1699.996

✓

1/31/20

for dist between Cableway Towers

At Flag #1
 $\Delta \# 3$ $71^{\circ} 42'$
 to $4 \overline{) 286^{\circ} 48' - 30''}$
 $\Delta \# 2$ $71^{\circ} 42' - 7''$

At 3+35.33 East
 $\# \# 1$ $104^{\circ} - 16'$
 to $4 \overline{) 417^{\circ} - 4' +}$
 $\Delta \# 3$ $104^{\circ} - 16'$

At 3+35.33 East
 $\Delta \# 1$ $75^{\circ} - 44'$
 to $4 \overline{) 302^{\circ} - 56' - 30''}$
 $\Delta \# 2$ $75^{\circ} - 44'$

At Flag #2
 $\Delta \# 3$ $90^{\circ} - 10'$
 to $4 \overline{) 360^{\circ} - 40}$
 3+35.33 East $90^{\circ} - 10'$

40

At Flag #3

$\Delta \# 1$ $4^{\circ} - 02'$
 to $4 \overline{) 16^{\circ} - 07' - 30''}$
 3+35.33 East $4^{\circ} - 01' - 53''$

At Flag #3
 3+35.33 East $14^{\circ} - 6'$
 to $4 \overline{) 56^{\circ} - 24' +}$
 $\Delta \# 2$ $14^{\circ} - 6' - 47''$

Fisher
Howard
2/6/20
#12
24+87.6

Traverse for Location
of Buildings

41

#10 P.O.T.
23+68.6

#11
28+80.2

#10 ART
23+68.6 129° 30'

#9 ART 41° 30' RT
12+54.6

#8
11+00.40 49° 03' Lt

11+40.1

2/6/20

26+63.00

26+32.70

26+02.60

25+72.80

25+39.60

25+09.40

24+84.00

24+64.30

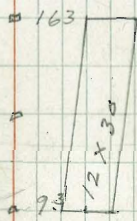
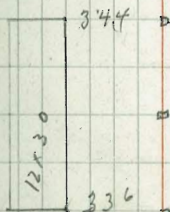
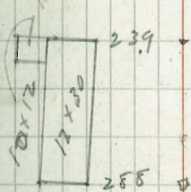
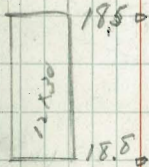
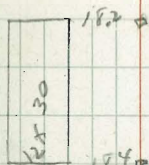
24+54.40

24+32.50

#10 ART.

23+68.6

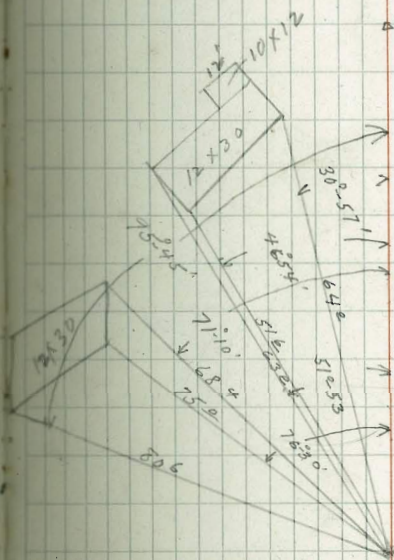
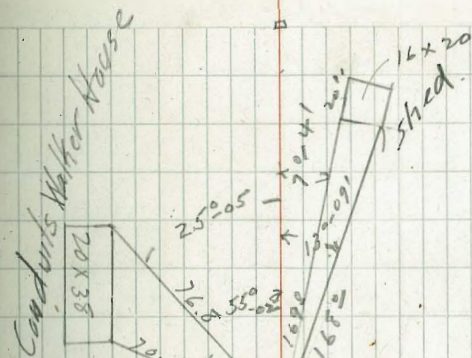
Traverse for Location of Buildings



2/6/20.

#12
24+876 Sight Power line for 0-0

#10
23+685 Sight # 11 for 0.0



2/6/20

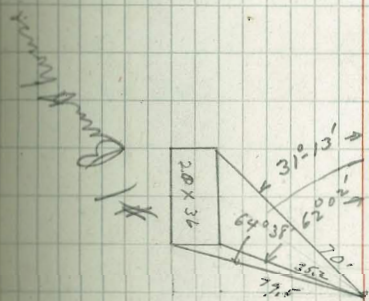
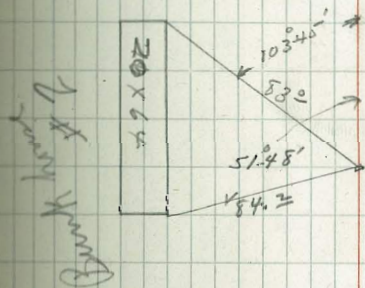
Traverse for Location of Buildings

5

Sight # 4 for 0.0

4 13°21' Rt.

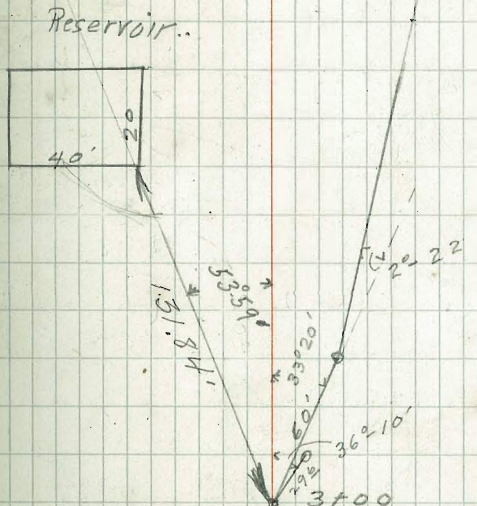
Sight # 5 for 0.0



2-11-20

Fisher
Howard

45



Slope $\Delta 18^{\circ} 29' =$

Dist 100'

+ 37'

37

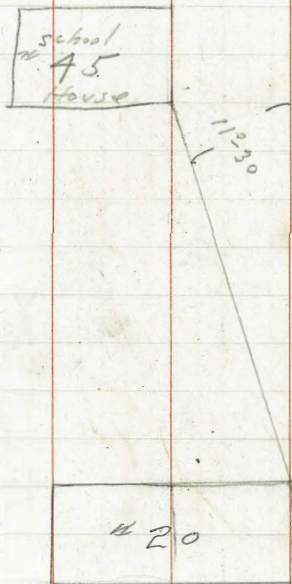
94.84

37 00

131.84

Cableway line.

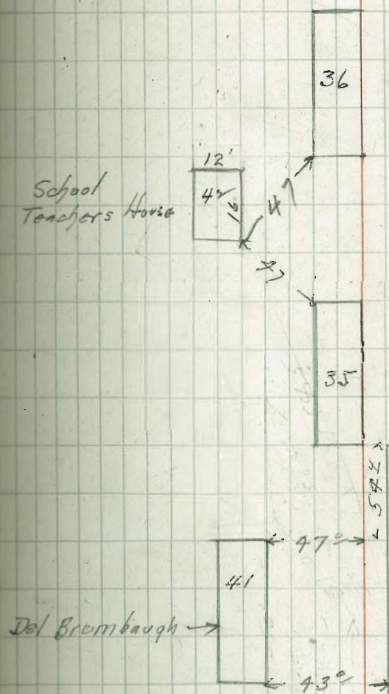
Location School House

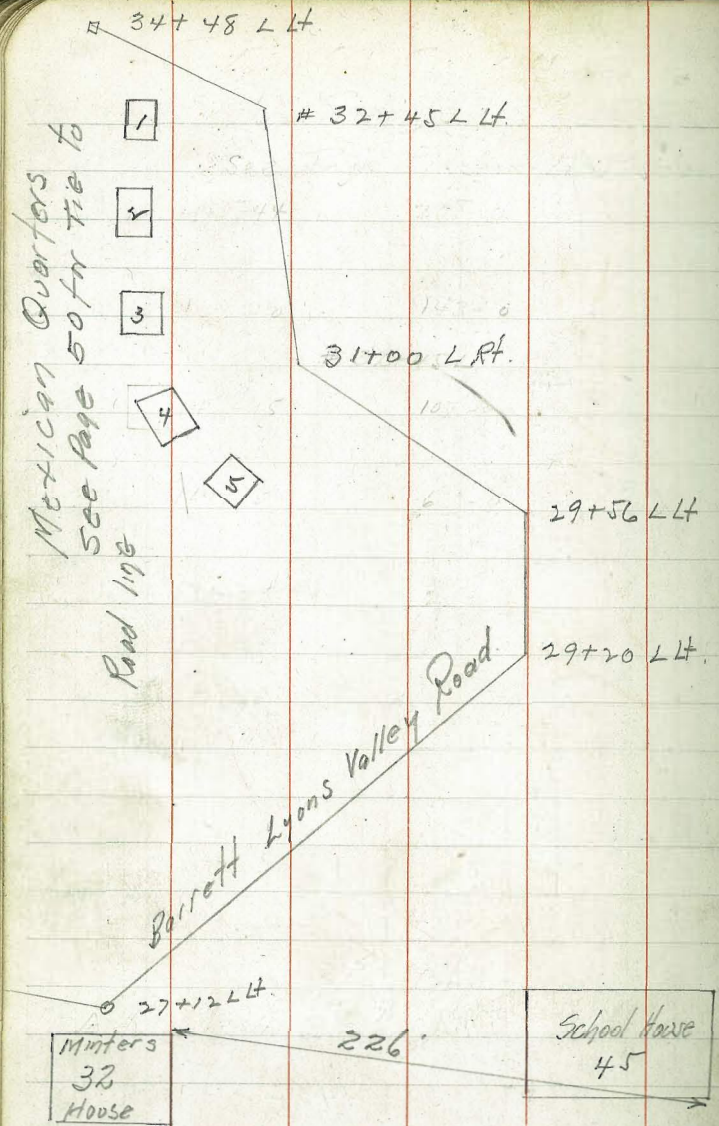


Occupy NE Cor House #20
HI 48 stadia Vert L
409 40°35' 4.8

46

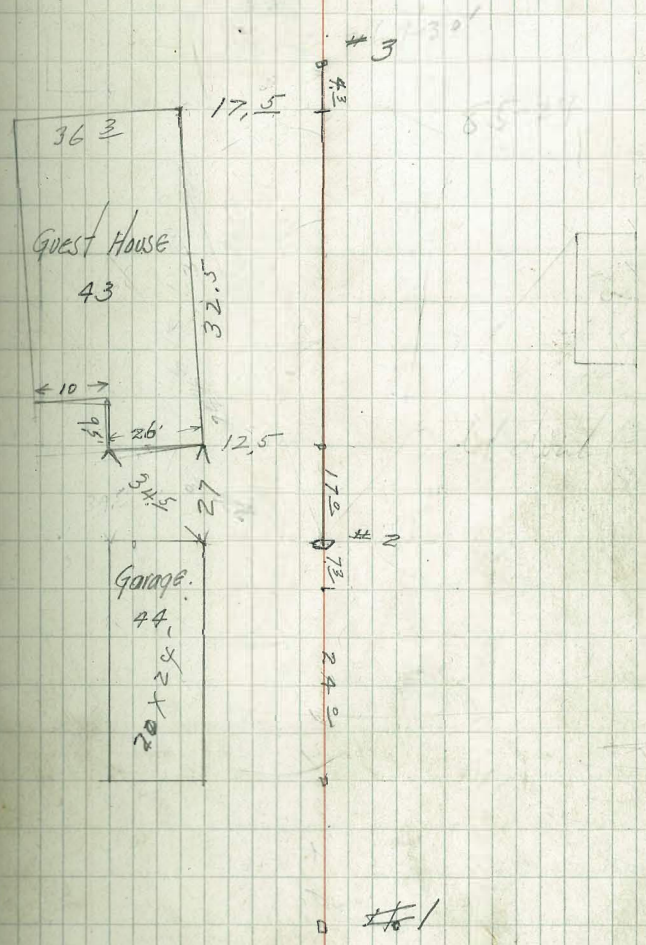
Location of Cottages #41 & 42
with Reference to #35 & 36





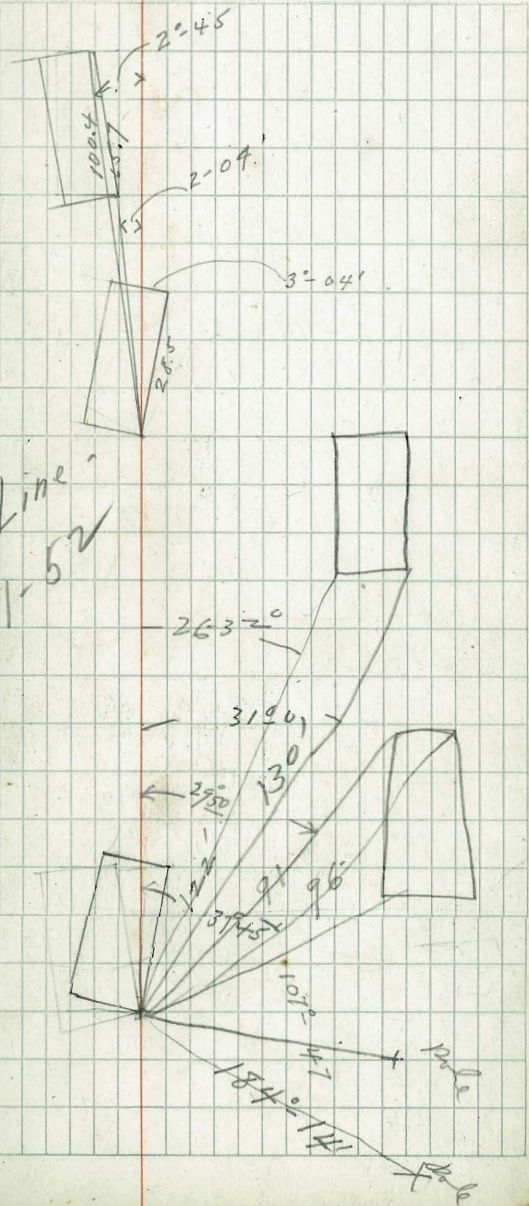
School House
SE Cor
set at NE Cor House 3^r Tracing 5/45
Stadia Dist = 242 Vert L 15°
Corrected Dist = 226 Diff in El below
Road Level = 64.5 ft.

Location of Guest House + Garage



See Page 51 + 52

Corrected Line
Page 51-52



2-17-20

Bub

Fisher

Location of Houses from #12

24 + 876

20-35 345'

14°-04' 312'

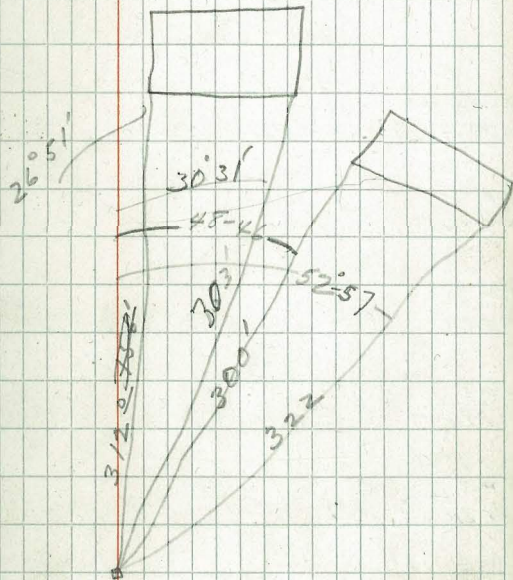
5°-44' 226'

#12

24 + 876

OK

49



#/4/20

See Page 47
Mexican Quarters

50

H.I. = 50

Occup. 32 + 45 LH Barrett Lyons Valley Park

Sight 34 + 48 LH for Zero Angles
to Left

Stadia Hor. Angle Rod. Vert. Ls

Corrected
Dist. Diff in
Elev.House #1
North E. Cor.

37° 89°-20 5.0 + 31'-45"

26.7 + 16.5

H #2
NE Cor.

73.2 123°-12 5.0 + 15'-35"

67.9 + 18.9

H #3
NE Cor.

116.0 133°-43 5.0 + 11'-05"

112.0 + 21.8

H #4
NE Cor.

151.0 145°-47 5.0 + 7°-21'

149.0 + 19.2

H #4
NE Cor.

192.0 153°-34 5.0 + 5°-22'

190.0 + 17.9

OK

Reb Fisher
2-23-20
Quarry Road
Traverse for Location of Buildings

Angles Left Angles Right Stadia Dist. Vert. Angle

HI = 5.0
Sta. At 2+80 W cable way. Sight East

Q Road. 56°-37' 79.0 10°-02'

HI = 5.02 60°-18' 80.0 9°-27'

A1 □ 1 - Sight 2+80

□ 2 84°-31' 133.6 00

HI = 4.95 At □ 2 - Sight □ 1

□ 3 17°-39' 53.5 00

HI = 5.12 At □ 3 - Sight □ 2

□ 4 62°-49' 34.4 00

HI = 5.05 At □ 4 Sight □ 3

West End Barn 72°-21'

East " Barn 80°-22'

□ 5 43°-37' 114.0

HI 4.83 At □ 5 Sight □ 4

□ 6 71°-53' 16.4

Red Reading Corrected Dist.

5.0 76.7
80.6

7.18

8.19

7.57

10.02

5.96

HI 5.0 At $\square 6$ Sight $\square 5$

Angles Left Angles Right Stadia Dist vert Angle

Road East $102^{\circ}-41'$ ✓

Trail #1 $71^{\circ}-24'$ 36.8 6.7

" #2 $51^{\circ}-46'$ 88.0 7.0

" #3 $41^{\circ}-00'$ 116.0 4.5

" #4 $25^{\circ}-50'$ 154.0 2.8

" #5 $13^{\circ}-46'$ 209.0 ✓ 3.8

SE Cor House $15^{\circ}-11'$ 228.0 $2^{\circ}-50'$

NE Cor House $10^{\circ}-36'$ 243.0 $3^{\circ}-0'$

Pole/line $17^{\circ}-19'$ ✓

$\square 7$ $6^{\circ}-19'$ ✓ 311.0 00 ✓ 1.90 ✓

HI 4.55

At $\square 7$ Sight $\square 6$

Pole/line $120^{\circ}-01'$

SE Cor House $3^{\circ}-12'$ 38.2 6.25

NE Cor House $0^{\circ}-46'$ 70.2 5.7

SE CV $35^{\circ}-05'$ 105.0 $9^{\circ}-20'$ 4.55 102.0

NE CV $25^{\circ}-10'$ 127.0 $5^{\circ}-21'$ 10.55

Corrected
Dist

HI 4.55	AT	7	Sight	16		
	Angles Left	Angles Right	Stadia Dist	vert Angle		
NW Car House	36-18	37 68.5	70	14-27	4.55	65.5
SW " "	53-30	55-00	46 43.0	17-30	7.55	39.2
West End Barn	83 "	82-42				
East End Barn	90-39					
Pole line	170-0					

2-25-20

Bub
Fisher.

Section in Bottom
For Runoff of Feb 22, 1920

Nail in Stump
High water
Mark.

1477.84
5.18 (05.18) Assumed (1600.00)

1474.66

Height of
Diversion Dam.

1471.2

6.83

1471.01
(98.25)

0 + 00

Section in Bottom
For Runoff of March 21 1920

Assumed.

1600.00

See Barrett
Waste Page 10-11

54

77.84

70.89	68.99	68.39	66.89	65.14	64.94	65.29	65.39
72.64	98.25	96.35	95.75	94.75	92.5	92.3	92.65
5.18	6.95	8.85	9.45	10.95	12.7	12.9	12.55
0	1.35	2.0	2.9	1.2	3.8	3.85	4.6
6.24	6.24	6.74	6.74	6.99	7.19	7.26	7.26
93.5	93.6	94.55	95.0	92.95	94.55	95.0	95.0
11.6	11.6	10.65	10.2	8.25	6.65	5.15	
54.2	59.0	63.5	61.0	85	94.0	95.5	

1471.2 0 = El. Diversion Dam.

6.83

1478.03

5.18

72.85 El. High Water

C Line Elev.

		38	1470 ⁴¹
		40	1478 ¹⁹
8	1581 ⁰⁵	42	1490 ¹³
10	1574 ³⁰	44	1497 ⁶⁹
12	1565 ¹²	46	1505 ⁵⁹
14	1552 ⁹⁰	48	1516 ⁷⁵
16	1546 ¹⁴	50	1522 ⁷⁰
18	1514 ⁶¹	52	1526 ¹⁶
19	1536 ¹¹	54	1534 ²⁴
20	1529 ³⁷	56	1544 ⁹⁷
21	1522 ⁶⁷	58	1553 ⁹⁷
22	1515 ⁸⁶	60	1564 ⁰⁵
23	1507 ¹⁶	62	1573 ¹⁸
24	1502 ⁰²	64	1581 ⁷⁶
25	1496 ³⁹	66	1591 ⁷⁶
26	1493 ⁰⁸	68	1602 ³⁹
27	1486 ¹³	70	1613 ⁵³
28	1479 ⁶⁹	72	1624 ⁶³
29	1471 ⁴⁶	74	1630 ⁵⁹
		74	1635 ²⁰
		46mpt	
		7+60	1649 ⁸⁴
36	1466 ⁵⁶		

B Line Elev.

		46	1502 ⁶⁸
		48	1512 ¹⁸
		50	1522 ⁶⁷
		52	1532 ⁸⁹
		54	1545 ²⁰
		56	1550 ³⁴
14	1578 ⁶²	58	1559 ⁵³
16	1568 ⁷⁶	60	1568 ⁴¹
18	1557 ⁸¹	62	1579 ⁴³
20	1545 ¹¹	64	1588 ⁶⁴
22	1534 ⁷³	66	1603 ⁵⁶
24	1525 ²⁰	68	1617 ⁴⁵
26	1503 ⁸⁵	70	1624 ⁰³
28	1488 ⁴⁵	72	
30	1472 ³⁵	74	1652 ⁴⁴
32			
34	1466 ¹⁰		
36	1466 ⁹⁴		
38	1470 ³⁰		
40	1473 ⁸⁵		
42	1480 ⁶⁴		
44	1490 ⁴¹		
46			

R-250 Elev.

R-275 Elev.

Radius 300 Elev.

R-325 Elev.

34

36 1467 3038 1474 6640 1480 3042 1488 2944 1496 8446 1507 3248 1516 3750 1524 46

52

54

56

58

60

Miss-

00-300 1626 16 34-274¹⁴ 1467⁰⁵
 0-429 1630 56
 4-350 1603 23
 4-455 1615 92
 6-480 1615 35
 8-450 1601 85
 10-315 1573 77
 10-442 1596 58
 12-315 1561 72
 12-437 1588 34
 14-319 1551 84
 14-350 ⁴² 1556 70
 14-417 ²² 1574 98
 16-309 1539 58
 16-446 ¹⁷ 1567 78
 18-303 1529 40
 20-312 1515 52
 22-321 ³⁹ 1511 09
 24-321 ²² 1502 77
 28-366 1491 72
 27-357 1479 60
 Top of Wall 1467 41

P Line Elev.

0+10 -
 00-301 1618 65
 0+32 1627 85
 0+89 ⁰⁵ 1650 0
 2+0 1686 21
 2+60 1713 72
 3+0 1731 26
 3+26.7 = 1742 24

15+25 Road

BM. 1751 67

Cableway
line Elevations

57

West

0+ 0+00 = 1631 70
~~00+10~~
⁺⁶⁰⁵
 1+75 1707 05
 2+10 1715 89
 2+50 1739 25
 3+00 1760 48

East-

0+00
 50-380⁰² 1524 51
 1+0 1561 51
 2+0 1618 81
 2+38 ⁴⁰ 1649 52
 3+00 1685 42
 3+29 ⁷² 1704 52
 3+76 ³³ 1739 82
 4+25 1766 43

Levels to Reservoir from End of Cableway 32
 Tie "P" Line - Cableway - Quarry 31
 Tie to Transformer Sta pole #26 31
 Topog East End Cableway 33-35
 Topog West End Cableway 36-37
 Base line & Triangulation for Cableway length 38-40
Cont from Barrett Road surveys - Page 58 -
 Traverse for Location of Building 41-44
 Traverse for Location of Quarry Road + Buildings 51-53
 Section for Est. Runoff 2-22-20 - 54

Flume Gauge March 21

3/21

8 AM

3/21

00	1	2	3	4	5	6	6.8
----	---	---	---	---	---	---	-----

1 P.M.

0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3
-----	-----	-----	-----	-----	-----	-----	-----

00	1	2	3	4	5	6	6.8
----	---	---	---	---	---	---	-----

3/21

6 P.M.

0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7
-----	-----	-----	-----	-----	-----	-----	-----

Copied
 Barrett Waste
 Page 15—

60

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

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HOW TO USE KEITH'S TABLES.

EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = $23^{\circ} 20'$ to the R. at Station 542+72.

Ext. in Tab. IV opposite $23^{\circ} 20' = 120.87$
 $120.87 \div 12 = 10.07$. Say a 10° Curve.

Tan. in Tab. IV opp. $23^{\circ} 20' = 1183.1$
 $1183.1 \div 10 = 118.31$.

Tab. V correction for A. $23^{\circ} 20'$ for a 10° Cur. = 0.16
 $118.31 + 0.16 = 118.47 =$ corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. $23^{\circ} 20' = 23.33^{\circ} \div 10 = 2.3333 =$ L. C.

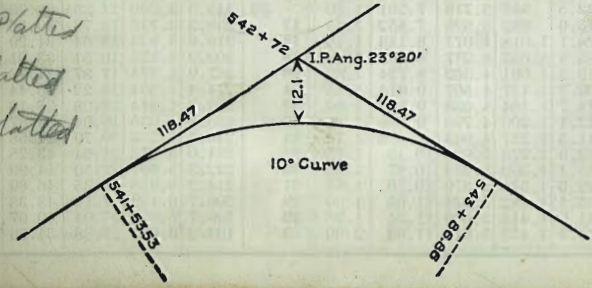
2° 19½' = def. for sta.	542	I. P. = sta.	542+72
4° 49½' = " " "	+50	Tan. =	1.18.47
7° 19½' = " " "	543	B. C. = sta.	541+53.53
9° 49½' = " " "	+50	L. C. =	2.33.33
11° 40' = " " "	543+	E. C. = Sta.	543+86.86
	86.86		

$100 - 53.53 = 46.47 \times 3' (\text{def. for 1 ft. of } 10^{\circ} \text{ Cur.}) = 139.41' =$
 $2^{\circ} 19\frac{1}{2}' = \text{def. for sta. 542.}$

Def. for 50 ft. = $2^{\circ} 30'$ for a 10° Curve.

Def. for 36.86 ft. = $1^{\circ} 50\frac{1}{2}'$ for a 10° Curve.

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



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3/24/20
Bub
Fisher

B-38-	5.80	1476.10	1470.30		
- 3.5	15.0		7.5	68.6	
- 7.2	11.3		7.0	69.1	
- 12.5	6.0		5.3	70.8	
- 18.5	0.0		4.7	71.4	
- 24.5	6.0		3.4	72.7	
Bottom Gauge			9.06	67.04	
73.0	54.5 -18.6=35.9		8.4	67.7	
76.5	48.0		6.6	69.5	
84.3	65.8		4.9	71.2	
89.0	70.5		2.4	73.7	
Reading 3 P.M.			8.67	67.43	
5 P.M.			(1.3)	68.34	
6 P.M.			2.5	69.84	
7 P.M.			3.4	70.44	
9 P.M.			2.4	69.44	
7 A.M.			2.6	69.64	
9 A.M.			3.6	70.64	
11 A.M.			3.4	70.44	
1 P.M.			2.8	69.84	

See Run of Barrett Waste.

Copied in Gauge

2480
26
2454.00
3823
15.77

1
320
226
9.5

1626.33 B13

10° 31

36
34

13 + 11.83
76.19
58.19
12 + 25.64
F61
28
2480
41.77
2382.3

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.
ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ 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.

2480
26
254