

*Daniel Dan
Hart Surge*

2

FIELD BOOK

361 S

W107

KEUFFEL & ESSER C

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.

"Copyright", 1895, by Keuffel & Esser Co."

	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.

Freight Road Camp to
Barrett Dam - #2

Preliminary

Surveys Apr. 6-19

H. T. Johnson, inst.

Carl Myers, rod

additional
For road surveys around
Barrett Dam site see

Barrett Dam - Prelim. Surveys

See page 25 -

10
6341
31-50

5145

101
505

Get Mantua ^{from} Costa Nelson

Summit Elev

2977 2

Δ - 48 - 33

FREIGHT ROAD CAMPO to BARRETT

Preliminary Survey 1-

Measured by Machine Dist.

G line P23-P7-8-25

Profile from Barrett

Saddle to Culvert-

47

check:
Sewer Line Elev 9+06 to 11+93 48-

Traverse for Location of Buildings 49-58
continued core Log Book Page 46 -

Road Distances

①

measured with machine

Campo-Imperial road + Grigsby ranch
road to ^{where} ~~06~~ new line strikes

latter

523 - 546

Ry Est Warrens 03.2

All OK

Descanso + Morena

25.3

25 Grader repair

Summit.

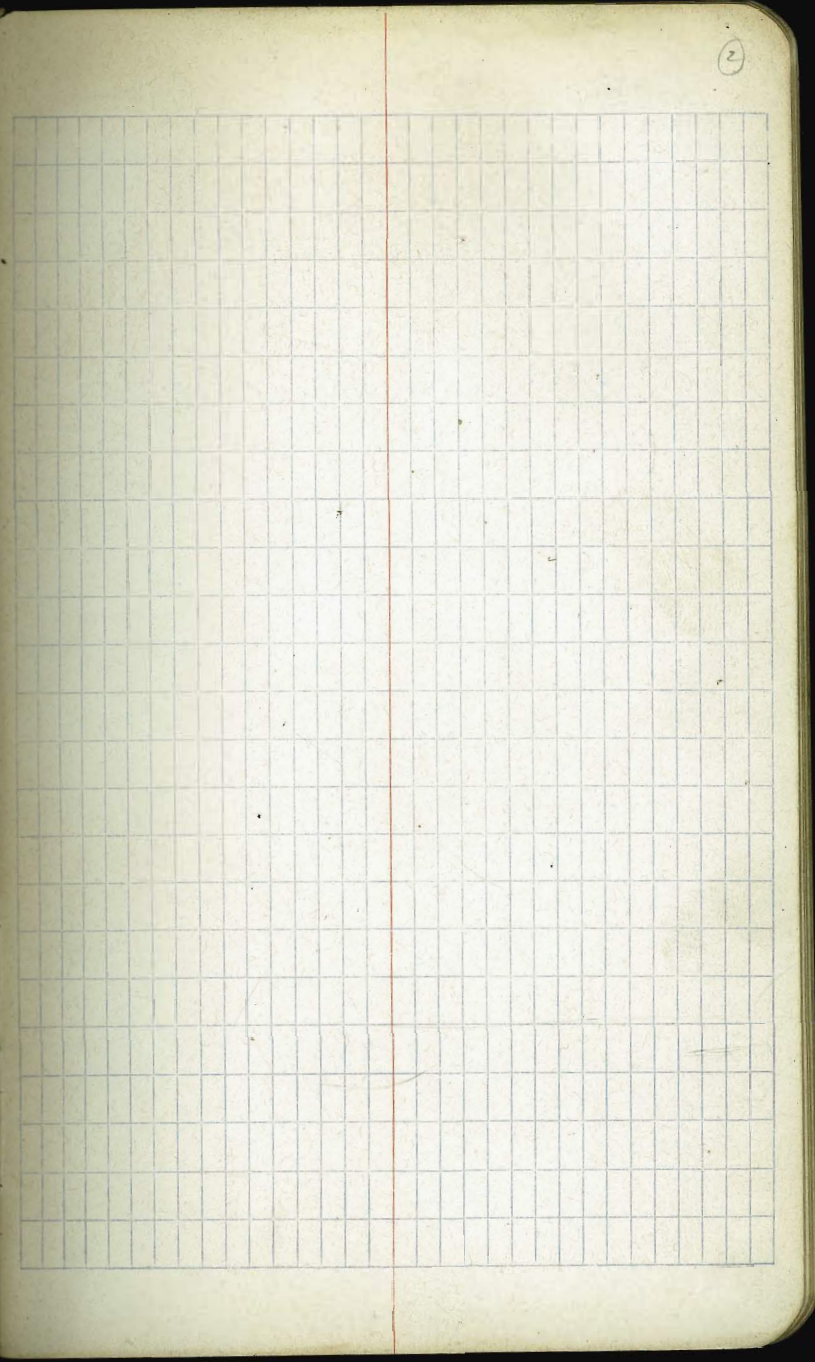
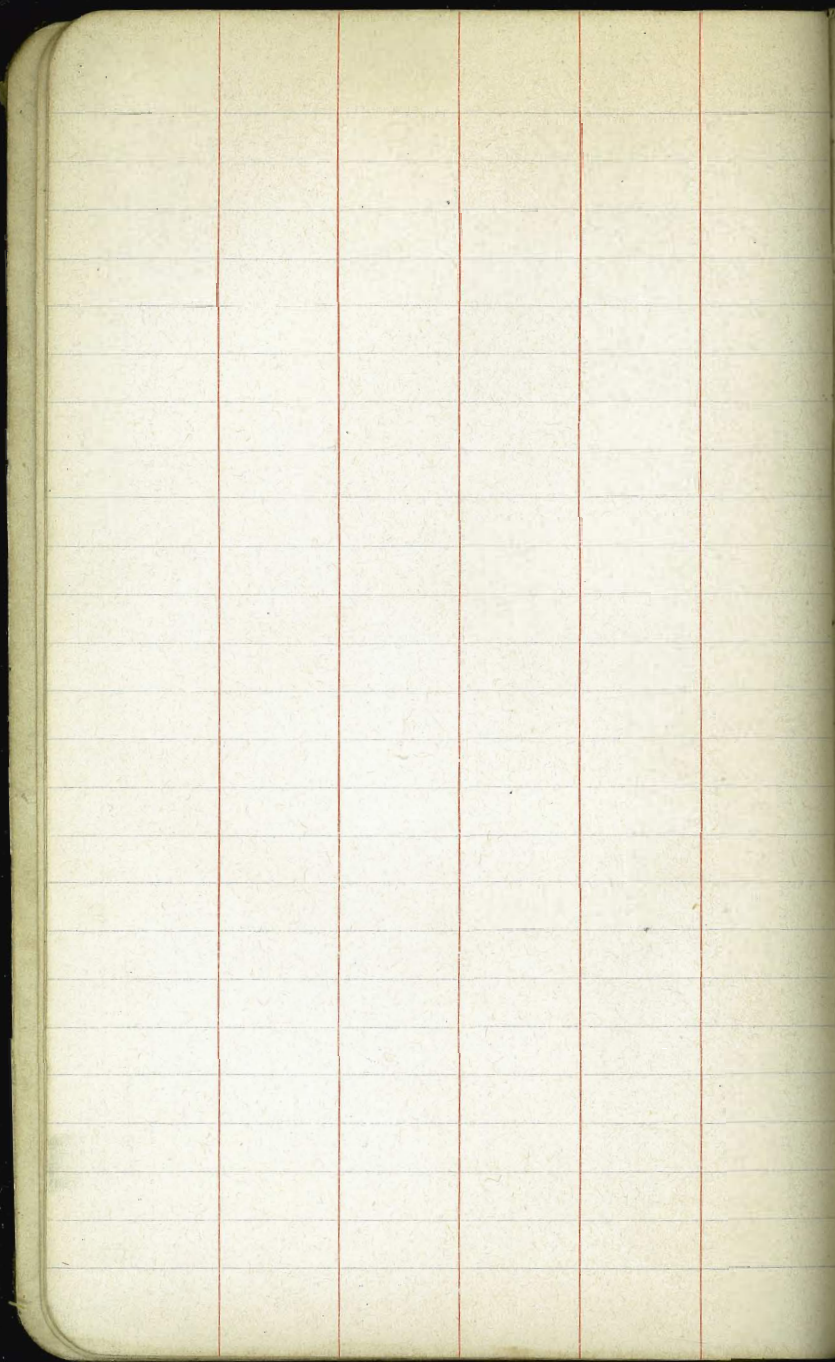
7.8

46 Total

3110 gives 3.8 mi.

Barrett to Sta 436 = 7.6 + 8.3 = 16.1 Total.

2



A1.

△
1

Magnetic decl.
set off on plate $14^{\circ} 20'$
H.I.

K					
1678150	150'	$589^{\circ} E$		2.7	
Top rail (Northward)	5'	$5^{\circ} E$		38	
(Line A) road survey	245	$N26^{\circ} 30' W$	14	0.8	2000 ²
2(7+75)					154
TP 10	7.75'	$521^{\circ} E$	1d 20204 127		204.
TP 11+10	335'	$N43.15 W$	30 41	+5.9	20263
△ 20382 3(1435)					
TP 11+10	325	$520\frac{1}{2}^{\circ} E$	2040.00 137		137
TP 16+65	2.28	$N46^{\circ} W$	50 19	+9.5	2049.5

TP
16+65
△ 4

Alternate Location
Line B,

TP. 0+00	415	$521^{\circ} 30' E$	2004.5	4.5	0.0
TP. 9+95	580	$N49^{\circ} 30' W$		+5.2	2009.7
△ B 5(12+75)					15.0
9+95 Gully	280	$544^{\circ} E$	2019.2	10.2	
	135	"		15.6	2004.3
15+10	235	$N9^{\circ} 30' E$		9.9 +5.2	29.8 25.1
△ B 6(17+95)	285				21.0
15+10	2.85'	$56^{\circ} 30' E$	59.4 46'		29.6 21.0
B = A 1738 16+63	57	$52^{\circ} 30' E$		9.6	49.8 35.3
0+00	55'	$28^{\circ} 30'$ $2^{\circ} 30'$			
A 11+10		$529^{\circ} E$			$-3^{\circ} 21'$
B 9 +95		$514^{\circ} 30' E$			$-3^{\circ} 50'$

28

85

125

171

244

235

1410

146

199

345

270

294

641

493

445

3

9+95
280
235
285
1795
57
17+38

6	A 17+20 A 14+63	57		59.2	96	Av El. 49.6
7	A 19+90 (27+60)	27.0	N10°20' W	4.1	+10.1	69.3
	A 19+90	77.0	S12° E	04.7	+35.4	
8	30+30 (36+45)	27.0	N13°45' W		+11.7	2116.4
	30+30	615	S16° W	2150.9	34.5	
9	39+ ^{looks like} section corner	335	N18° E		rod 10.4	2150.5
9	39+80	355	S28° W	638	rod 13.3	
	45+85 Grigsby Road	250	N13° E		+2.0	658
10	(51+95)					
	45+85	610	S47½° E	668	rod 1.0	
10	54+80 (56+80)	285	N39¼° W		rod 2.5	64.3
		200	S30° E	934	rod 19.1	
11	59+10 (62+40)	230	N18½° W		rod 9.3	92.7
		330	S52½° E	2208.2	rod 15.3	
12	68+15 (72+30)	575	N78½° W	21	rod 21.6	2229.8
	72+30 summit	415	N87° E	rod 852254.9	rod 25.1	
		40	S1° E		rod 10.3	2244.6
	77+80	550	S60° W		rod 29.5	2225.4

16-63

57

270

770

270

615

335

358

250

45.85 to G road

4.355

250

610

285

200

230

330

575

415

550

380.0

605

3195

12 (81450)

7740

370

N56°30'E

58

118 2207.5

-17.9

2225.4

by 84410

East

Gilguy 974

260

S80°W

52

18.2

2189.3

14

84410

500

S89°E

40

2175.5

-13.8

84480

485

N21°4'E

62

rod

0.3

2175.2

15 (95440)

89480

560

S14½°W

14

114 2192

rod

17.0

98470

330

N7°E

40

30

+9.6

2201.8

16 (107470)

900

S6°W

2218.6

16.8

108470

1100

N3°E

+14.5

2233.1

17 (132470)

1400

N1°10'W

29

1322749

rod

41.8

132470

27

S88°E

rod

4.7

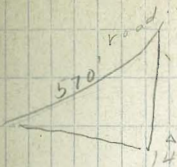
2270.3

27

108

297

5



road to go

370

260

570

560

330

2000

14

5490

3800

4585

13875

605

13270

Johnson
Myers

Apr 7-19

Δ

18 (44+30)

Corner
A (Fence Post)

132+70 860 S32°E 2d 120 229.4 29.2 2270.3

141+30 00 2294.6

148+40 750 N51¼W 30 105 +12.0 2311.4

Δ

19

880 551°E 2d 341.8 125 30.4

157+60 00 551°E 2332.0

163+15 555 N51°W 40 4.7 +13.5 2355.3

C Line

Δ

20

at H. Hauser
Summit

197+95 50 574°W 2487.6 6.5 248.1

235 56°W 8.7

189+05 890 535¼E 9.2 2478.1

Δ

21

189+05 415 N31¾W 24895 11.1 2478.2

184+90 00

181+55 325 546°E 140 2475.5

Δ

22

181+55 315 N7¼W 24766 1.1 2475.5

Corner

178+40 250 N8°W 33 2471.8

172+40 600 542°E 6d 157 51.2 2475.9

Δ

23

172+40 365 N26°W 60 24140 105 -11.4 2425.4

168+75 10 2409.2

160+75 800 554°E 61 6.2 54.2 2359.8

T175 R5E

TR	9	TR62
63	4	TR64

24

160475	740	N1 $\frac{1}{2}$ W	⁵⁰ ₈₂ 331.0	-	28.8	3598
153435	00					20.2
A						
148480	455	S50 $\frac{1}{2}$ W			19.6	23114

APR 8 - 19

D 110-

Δ

25 G E Ft. centro SD
+ Beckman Springs Road
+ Deacons

434830	+00	290'	S37°E		rod 19.6	2616.6
--------	-----	------	-------	--	-------------	--------

from p 23

46775	+90	00				2636.2
-------	-----	----	--	--	--	--------

494635	+80	290'	N27°W		+4.6	2642.8
--------	-----	------	-------	--	------	--------

Δ

26

49463	5+80	390	S18°E		rod 11.2	
-------	------	-----	-------	--	-------------	--

53453	9+70	00				2654.0
-------	------	----	--	--	--	--------

57483	14+00	430	N39°W		+9.3	2663.3
-------	-------	-----	-------	--	------	--------

Δ

27

57483	450	S40 $\frac{1}{2}$ E			rod 22.5	
-------	-----	---------------------	--	--	-------------	--

62433	18+50	00				2685.8
-------	-------	----	--	--	--	--------

66483	23+00	450	N43°W		+4.8	2690.6
-------	-------	-----	-------	--	------	--------

Δ

28

66483	510	S43°E	2709.5		rod 18.9	
-------	-----	-------	--------	--	-------------	--

71493	28+10	00				
-------	-------	----	--	--	--	--

77433	33+50	340	N39 $\frac{1}{2}$ W	¹⁰ ₂₅	+2.9	2712.4
-------	-------	-----	---------------------	-----------------------------	------	--------

Δ

29

77433	1360	S28°E	²⁴ ₁₁₀		rod 41.2	
-------	------	-------	------------------------------	--	-------------	--

90493	47+10	00				2752.6
-------	-------	----	--	--	--	--------

979.5
153.3.5

(7)

214.6

see p 8

G line		D Line				
29	90+93 47+10	00		20	27536	
	96+93			20		
Δ	53+10	600	N55 $\frac{3}{4}$ W	82	+3.8	27574
30	96+93			20		
	53+10	445	S41 $\frac{1}{4}$ E	107	rod 14	
	101+38	00			27588	
	57+25					
	108+88			3d	rod	
Δ	65+05	750	N40°W	02	22.7	2736.1
31	108+88			2d	rod	
	65+05	670	S 22 $\frac{1}{2}$ W	41	17.5	
	115+58				2752.6	
	71+75	00				
	Don't Measure Distance					
Δ	119+58	400	N8 $\frac{1}{2}$ °W	17	+2.3	2754.9
32	119+58			3d	rod	
	75+75	770	S73°E	46	27.7	
	127+28				2780.6	
	83+45	00				
	137+08			60	+	
Δ	93+25	980	N60 $\frac{1}{4}$ W	102	484	28250
33	137+08			6d	rod	
	93+25	505	S64 $\frac{1}{4}$ E	45	34.8	
	142+13				28598	
	98+30	00				
	146+63			40	+	
Δ	102+80	450	S88 $\frac{3}{4}$ W	58	12.2	28720
34	146+63				rod	
	102+80	550	S69 $\frac{3}{4}$ E		15.2	
	152+13				28672	
	108+30	00				
	159+63			10		
	115+80	750	N38°W	12	+6.3	28935

cont on P 19
340 S25°E 109

Abandoned

from P7

Washed
needs further work

see P25

Δ	35					
	A	163+15	N10.7°	S32 1/4° E	84 2453.3	
					124	98.0 2555.3
		E 179+45	850	S82° W	4d 168	50.8 2402.5
					5 1/2 2490.6	rod 881
		Summit	1380	S51 1/2° E	122	
		E 192+45	65	N8° E		6.5 2484

Section Tie
 at 163+15 to Corner
 530' N70 1/4° W

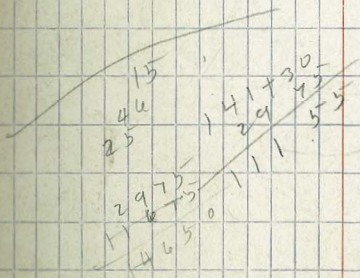
Δ	38					
	A	141+35	660	N53° W	30 2293.4	
					88	-110 2294.6
		134+76	00	N59° W		78
		131+90	280	S63 1/2° E		11.3 2272.3
	Δ	177+85			40	
		131+90	295	N62 1/2° W	108 71.3	+10
		104+90	128+95			
		99+70	123+75	S62 1/4° E		12.0 2259.3
	Δ	44+40				
		123+75	00	N53° W		10.5
		96+70			2269.8	
		120+75	00			2265.0
		94+80				
	Δ	118+85	190	S67 1/2° E		43 2265.5
	Δ	94+80			30	
		118+85	275	N66° W	10.7	25
		92+85	00		2208.0	rod
		116+70				
		87+50	455	S60 3/4° E		17.6 2230.4

197+95
 193+45
 4.50 ft
 saved.

7175 R5E
 531 | 532

141.30
 26
 115.30

runs to fence cor
 = sta 109+55
 = 132+70



Δ 41
 87+50
 111+55 370 N61½W ⁶⁰ 11.1 -110 2250.4
 83+80
 107+85 00 22093
 80+50
 104+55 330 549½ E 142 2225.1

Δ 42
 80+50
 104+55 175 N56°W 2230 ⁵ 5.4
 78+75
 102+80 00
 76+30
 100+35 240 535½ E 178 2217.7

Δ 44
 100+35 425 N52°W ^{50 2206.5} 11.5 -112
 75+80 00
 85+80 1000 554¼ E ³⁰ 1.4 31.4 2175.1

Δ 45
 85+80 860 N45°W ¹²⁰ 53 2167.5 -76
 72+20 00
 71+00 620 542°E 17.1 2150.4

Δ 46
 70+00 440 N40°W 21559 ⁰⁰⁰ 6.5
 60+60 00
 63+05 355 550°E ⁰⁰⁰ 8.0 2147.9

Δ 47
 63+05 415 N49°W 2154.1 6.2
 32+90
 58+90 00 2149.3
 29+06
 55+00 390 541°E 9.8 2144.3

from P 21

25
44
38
5265
111+53
52
58
68
see P 21

48	29400	55+00	710	N17 $\frac{1}{2}$ W	$\frac{20}{66}$ 2136.7	7.6	21443
	21490	47+90	00				2131.9
	19735	45+35	255	S14E		139	2122.8
Δ 49	19735	45+25	650	N14W	$\frac{60}{108}$ 2094.6	-282	2089.8
Y-12185	38+85	00					2089.8
Y ^W end of 0100 Y-26100	1285			S47E		154	2079.2
Compo Imperial road	350			N61E			
"	75			N58E			
"	15			S52E			
"	100			S14W	from here it		
"	runs S1E half a mile						
	Running up Grigsby Road.						
	17+85	500		S81 $\frac{1}{2}$ W	$\frac{50}{120}$	124	2107.0
Δ 50	17+85	1160		N74E	$\frac{50}{100}$	506	
	29+45	00			2157.6		2152.8
	32+40	295		S83 $\frac{1}{2}$ W	$\frac{20}{0.4}$	73.5	2163.1
Δ 51	32+40	650		N86E	$\frac{50}{103}$	29.8	
	38+90	00			2192.9		2188.1
	43+65	475		N52W		153	2177.6
Δ 52	43+65	275		S35 $\frac{3}{4}$ E		-06	
	46+40	00			2177.0		
	53+05	665		N47 $\frac{1}{2}$ W		19.2	2157.8

19345
2600
16745

24841
20792
4049

adverse
siding to
summit.

528
16745
1584
9850
528
3770
3690

1160
33
580
348

(11)

5305
1285
4020

21658

53

193+43	515	519½ E	30 106	-49	24841
198+60	00	OK	2479.3		24745
200+60	200	N37°W	205		24588
200+60	310	53¾ W	24640	5.2	
203+70	50				
205+60	190	N48°W	89 111	26.3	24377
205+60	470	575° E	120 93	43.3	
209+90	00		23944		
211+55	165	N64½ W	161 54		
193+45	445	54° W		153	24841
197+90			23994		24946
	335	N10¾ W		157	
200+60	280	517½ E	40 68	44	24588
202+60	125	550° E	24544	87	24457
205+85	00				24496
206+05	220	N62°W	57 131	241	24303
209+05	320	556° E	120 98	286	
209+25			24017		23970
210+95	170	N65°W	122 115	319	23698

193

12
17
8115
12
54250
250
258320
480
6473
64
13

384

⑦

210495	225	538 ^{1/2} E	¹⁰⁰ 101	124	236.98
213420	00		2357.4		2352.6
216400	280	N53 ^{1/4} W	⁵⁴ 92	25.2	2334.2
216400	375	539°E		84	
219475	00	00	2342.6		2337.8
221495	220	N43 ^{1/2} W		7.2	2335.4
221495	690	534°E	⁹⁰ 101	-520	
* E on old Moran road. 228485	60		2283.4		2278.6
on A line (229460)	435	N84 ^{3/4} E	⁸⁰ 100	+24.8	2308.2
229460	4.45	N84°W	⁶⁹ 99	36.6	
225415	00		2344.8		2340.0
220405	510	S72 ^{3/4} E	⁶⁰ 59	7 24.7	2369.5
220405	410	N75°W	⁴¹ 104	26.8	
215495	00		2396.3		2391.5
207465	830	S60 ^{1/2} E	⁶⁰ 76	42.2	2438.5
207465	690	N51 ^{1/2} W	⁴⁰ 131	40.7	
200475			2479.2		2474.4
197495	280	S14 ^{1/4} E	⁶⁰ 103	14.5	2485.7

4010
15335
~~193 45~~
~~175 80~~
44 65

228485
193 45
~~175 80~~
35 40

E 228485
= A 233495
197 97
30

168

24811

197793 1260 N54³⁰4W⁹⁴ -28.4 2481.1

185430 00 2452.7

181420 415 S²⁰N54¹⁰⁸4W¹⁰⁸ 191 2433.0

181420 720 N47⁶⁰3/4W⁹⁶ -33.6

174400 00 2400.0 2395.2

165430 870 548°E⁴⁹ 43 39.1 2360.9

161465 365 N42⁵⁰3/4W¹⁰² -5.0

00 2352.9

1340 542³⁰1/2W⁹⁵ 49.8 2303.1

260 N43³⁰1/2W¹²⁶ 20.1 4.8

380 2307.9

755 545°E³⁴ 130 35.6 2272.3

490 N43¹⁰1/2W²⁸ -2.1

00 2270.2

940 541°E¹²⁴ 10.7 24.8 2245.4

490 N13°W 118

60 2257.2

120 56°W⁸⁰ 88 +0.8 2258.0

432
90
398
336

29440

- see P. 20

2263.2

(18)

118+85	1000	540° E	8.7	22625
			2274.2	
	530		99	22808

Down Hauser Cañon

A			80		
233+95	335	N84° E	68	-20.0	22786
237+30	00		22586		22538
238+70	140	N77½ W	87	154	22432
242+90	360	N77½ W		311	22275
			06 29.10		
242+90	485	S85½ E	33	-258	
247+75	00		2201.7		97.0
252+25	450	N76½ W	69 170 62	rod +33.2	2168.5
252+25	205	S54¼ E		rod 5.5	
254+90	00		2174.0		21692
256+90	200	N53¼ W		8.7	21653
256+40	240	S81° E	50 120 45		7.5
258+20	60				
258+80	00		2157.8		
260+90	210	N61½ W		14.0	21438
260+90	290	S24¼ E	20 36	-22	
263+80	60		2141.6		

15

36.00 dump with down grader
@ 36 sta 2 rounds 36.2 .10 + 7.20

100 yds @ 40 40.00
200 yds @ 30 60.00
X network 3-3-40

grader 13.55 .10 10000 20° } 1.36

Washed 20' wide 150 yds @ 30° 45.00
1 culvert 3-3-40

ground with grader

grader 11.55 X .10 1155 } 1.15

Bank cut in 40 yds @ 40° 16.00 + 1.50 = 17.50

170.71

263+80	00		2141.6		2136.8
265+00	120	N56 ¹ / ₄ W		10.5	2130.1
267+55	375	N71 ¹ / ₂ W		15.0	2126.6
267+55	440	N85 ¹ / ₄ E	50 124	220	-8.6
271+95	00		2118.0		
274+75	280	N69 ¹ / ₂ W	20 106		162 2101.8
274+75	200	S66 ¹ / ₂ E	20 1.2	10	-28
276+75	00		2099.0		
282+45	570	N52 ³ / ₄ W	48 118	rod 228	+34.6 2064.4
282+45	455				-0.4
287+00	00	S63 ³ / ₄ E	2064.0		
289+95	295	S76 ⁰ W	3d 96	28	18.4 2045.6
289+95			100		
294+25	430	S21 ⁰ E	112	430	31.7
294+25	00		20139		20090
300+65	640	N186 ¹ / ₂ W	8d 75	512	587 1955.2
300+65	90	N26 ¹ / ₄ E	rod 25		
301+55	00		1957.7		
303+35	180	S76 ³ / ₄ W	4d 108	rod 22	180 1939.7
303+75	665	S78 ¹ / ₂ E	5 ⁰ 52 ¹ / ₂ 42	450	40.8 49.2
310+00	00		1898.9		

sub 2-222

Washcut 15' wide 40yds @ 25^c 100.00

Washcut 5' wide 10yds @ 25^c 2.50

1-2-20

grader 10.95 @ 20 220.

off station

rod 10'

letting down. Priming 2 rounds deep.

rod

grader 800¹/₂ 15 150yds @ 10 150.00

Washcut 30' wide 200yds @ 40^c 80.00

sub 23-30

grader 7.50 @ 20 150.

40 @ 25 100.00

Heavy work. cut 2' off hill every 200yds @ 100 200.00

sub 141-20

rod

100 @ 25^c widening 25.00

200 @ 23^c widening 50.00

150yds @ 25^c 37.50

433.70

310400	00		1898.9		
313770	370	N53 $\frac{3}{4}$ W		90	1889.9
313770	410	S82 $\frac{3}{4}$ E	80 228 12.4	20.4	
317480	00		1869.5		
318	30				
320785	305	N81 $\frac{3}{4}$ W	69 153 11.4	29.7	1839.8
320785	460	S77 $^{\circ}$ E	50 270 39	-19.1	
325745	00		1820.7		
328760	315	N69 $^{\circ}$ W		95	1811.2
328760	155	S65 $^{\circ}$ E	100 155 14.5	-4.0	
330715			1807.2		
333765	350	N31 $\frac{3}{4}$ W		rod 10.3	1796.9
333765	140	S68 $\frac{3}{4}$ E	180 2.4	rod 5.5	
335705	00				
337790	285	N38 $^{\circ}$ W		12.8	1789.6
337790	150	S59 $^{\circ}$ E	80 120 3.8	-8.2	
339740			1781.4		
341755	215	N19 $\frac{1}{4}$ E	54 107 11.2	22.9	1759.5
341755	150	S19 $\frac{1}{4}$ E	80 120 3.9	-8.1	
343705	60		1751.4		

(17)

1-2 tent 22 by	40 yds @ 25 ^d	10.00
Washout 5 W. d.	20 yds @ 50 ^c	10.00
widening	40 yds @ 25 ^d	10.00
cut 1-2-24		
Washout	200 yds @ 50 ^c	100.00
	400 @ 35 ^d	140.00
	100 @ 30 ^c	30.00
	widening 20 @ 25 ^d	5.00
	widening 50 @ 25 ^c	12.50
	widening 50 @ 25 ^c	12.50
	80 @ 25 ^d	20.00
	40 @ 25 ^d	10.00
		360.00

343+05	00					
345+45	240	N75°W	20 124	48	172	183.42
345+45	120	S78½E	50 12	60	-48	
346+65	00				1829.4	
349+10	245	N45¾W			12.9	181.65
349+10	370	S52°E	60 34	122	-	18.8
353+80	00				1797.7	
355+80	200	S87°W			13.7	178.40
355+80	290	S58°E	30 28	88	-59	
357+70	00				1778.1	
358+70	00		4d			
360+90	220	N56°W	119	88	207	175.74
360+90	175	S45¾E	40 0.8	70	6.2	
362+65	00				1751.2	
365+30	265	N66°W			121	1739.1
365+30	185	S77½E	50 39	92	-53	
367+15	00				1733.8	
370 80	375	N50¼W	2d 104	75	179	1715.9
370+80	220	S71¾E	60 5.6	120	7.6	
373+00	00				1708.3	
375+50	250	N64°W	2.9 138	50	18.8	1689.5

Wastout. ~~2000~~ 14 w

24

130 @ 40°
200 @ 40°

5200

8000

W
also

Wastout

70 @ 40°

2800

3600

garden

3x10

30 @ 20°

1000

120 @ 40°

4800

357+70
Wastout
26

60 wind
80 yds } 40°

5600

W
also
361+00
28

400 yds @ 40°

16000

W
also
363+60
28

60 @ 30°

1800

06

24
Wastout
367+50

25 x 27 x 20

70 yds @ 30°

2100

30 @ 35°

1050

50 + 15 @ 40°

2600

#

54550

cont. from P 8.

580	551°E	¹⁰ 9.3	rod 3.5	2893 ⁵
70 00		28970	9.4	
70	N59 ¹ / ₄ W		^{1.09} 9.4	
380	"		^{1.09} 1.2	28958
560	566 ³ / ₄ E	⁵⁹ 280 118	39.8	
00		29356		
385	N58 ¹ / ₂ W	⁶⁰ 54 ²³¹	17.7	2953.3
405	577 ¹ / ₄ E	⁵⁹ 202 11.7	31.9	
00		29852		
^{on} Morena road	730	N85°W	¹⁰ 28 73	745 2989.7
300	N45°E		-3.0	
00		2986.7		
650	562 ¹ / ₄ W		8.4	2978.3
110	N89 ¹ / ₂ E		6.0	
00		29843		
345	587 ³ / ₄ W		5.7	2978.6

cont.

(19)

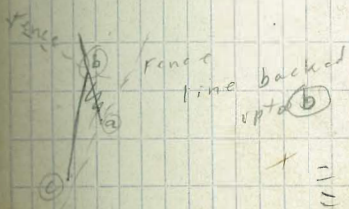
1030	
945	
1135	
950	
455	
4515	2.1
	8
	2.9
	9
	3.8

see p 14

(20)

177+100	00	2400'	49	2395.2
175+250 35 fence	125	N47 1/4 W	29	21
171+67	250	S9 3/4 E	89	7391.2
165+10	880	S32 3/4 E	127	215 7378.6
165+10	800'	N32 3/4 W	112	40.8
157+10	00		2337.8	2333.0
152+10	500	S32 3/4 E	68	26.8 2311.3
152+10	550	N42° W	50	-05
146+60	00		2310.8	
142+75	385 510	S32 3/4 E	44 64	24.8 2284.0
@	130'	N13 1/4 E		2.8
142+75 pt on fence	245	N15 1/4 W	228.68	65 2286.3
140+30 @	00			
135+10	520	S50° E	136	161 2270.7
135+10	535	N50 3/4 W	128	-86
129+75	00		2262.1	
124+45	530	N50° W		120
121+05 115+75	870	S49 1/4 E	40	2258.1

Start new line from here



22655' old E
118+85' 74 lower

76730			10	53	rod		
100735	530	N15 $\frac{1}{2}$ W	2.4		+21	22177	
71+00				198			
93705	00		22156		-48		
69+50				19		22080	
93755	150	S11 $\frac{1}{4}$ E			11.8	22238	22080
64730			120	96		21970	
88755	640	S45 $\frac{1}{4}$ E	132		27.8	21925	21970
64730			22025				
61740	290	N56 $\frac{1}{2}$ W	2799.3		3.5		2
85745	00					21980	680
59745						21921	485
83750	195	S78 $\frac{3}{4}$ E			10.4	21879	585
							650
59745	345	N60 $\frac{3}{4}$ W	04	142			
56700			37		10.5		
80705	00		21816			21726	
53760			2177.4			21705	
77765	240	S73 $\frac{3}{4}$ E			10.1	21673	
53760			40	142			
50705	355	N47 $\frac{1}{2}$ W	10.4		-3.6		
74710	00		21679				
47710			2163.7			21563	
71715	295	S36 $\frac{1}{2}$ E			11.6	21521	
47710							
69775	140	N39 $\frac{1}{2}$ W			8.5		
45770						21598	
69776	00		21606			55	
40780						21523	
64785	490	S42 $\frac{1}{2}$ E			12.5	21481	
40780	460	N62 $\frac{3}{4}$ W			3.7		
36720						21510	
60725	00		2151.8			21503	
32790						21461	
56795	330	S49 $\frac{3}{4}$ E			5.7		

see p 10.5

21

21493 = 58490

from P 100

Cor
Morena +
Descanso Rd

620' 57 3/4° E

32/33

590' 542° W

R175 SE

5T4

685' 550 1/2° W

R185 SE

Looking
West on
Sec line

770 N14° E

N89 3/4° W

Cor

X

150' 1190° W

T.R. 4 | 532
2 TR 65

Same
Cor

675 N1° E

= 31' 50"
Fence cor

00

Corner

↑

685' 52° W

64 | 65
secs

Same
cor

668 N1 1/4° E

00

pt on
fence

845' 50 0/4° W

+

h

488 N5° E

00

Fence
Cor

323 57° E

58+20 45+85	430	S21°E	4d 94 ¹⁷²	266	2162.8
62+50	80	N37°E	HI 2192.4	126	2179.8
66+60	360	N1¼°E	20 ¹² 45	427	2195.1
66+60	370	S1¼°E	4d 104 ¹¹⁵	252	
70+60	33	N36°E	HI 2220.3	163	22100
71+60	150	N8½°E		69	22134
75+90	575	N1½°W	40 ²² 120	4110	22313
75+40	235	S3½°W	rod 22400	87	
77+75	00				22750
84+15 77+75	640	N20¼°E		112	2228.8
84+15	410	S16¼°E	5d 205 127	222 12	
720			22620 22579		
91+55 220	390	N39¾°E	8d 120 ¹²	422	22188
93+55	565	N23°E	7d 395 65	460	22160

Total Length =

197+95	
115+75	8220
82	6065
118+85	4585
58+20	
6065	18870

445 S59°W 210 2.9 13.1 2089.8

00

~~310~~ N17½°E 7.25 2093.7

830 S5°E 2183.5 78

00

750 N15½°E 12 11.2 + 10 0 2113.5

680 S46¾°W 2122.4 121

G line don't at
Descenso
Cerro May Campo
Rd

43+85 192 N55°E 54 21202 2616.6

39+35 448 640 N55¾°E 58 21198 2616.2

39+35 415 S85½°W 2133.5 13.7

35+20 00

G
28+80 640 N89¾°E 9.9 2123.6 26200

24+80 340 S40°W 2122.7 -0.9

25+40 X line of
Pence &
old boundary. 125 N89¾°W 2614.318+30 By sign
Warren Hotel 710 S88¾°E 3.6 2119.1 26125

From here ¼ cor is 520' N88°E

18+30 1280 S89¾°W 3d 384 59 443

5+50 Intersect Redmond
SDA tang & S of
road 14 S39°E 2163.4 7.2 26526QSDA →
0+00 road. 550 S88°E 10.7 2649.1

336

in P7

4 Cor 520 N88°E
1040' N89°W

860 S89°E
Sec
Cor 320 "

ii 440 N86¾E
PT 57' S2½°W
495' N90°W

115 S68½°E
on
Tack point
on line 00
715 N89¾W

1760 S89¼E
48' N50°E
148 N89¾W

540 S89¼E
970 S89¾E
Sec
Cor 1070 N89¾E

Sec
Cor 920 S87¼W
Cor
PT by
dead w 690' N11°50'W
N51½W
S69E
? on N28½W

290
270
(2740)

300
270
165
760
523
3073
4213
970
5183

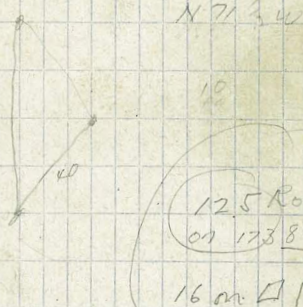
Revision		Kilbur		Trigs		
6	comp on Moreno Mead	600'	S 15 1/4 E	138	+14.8	28935
165+63	on Moreno Campbell	00		2910.3		29053
		40'	N 69 1/2 W			
169+13		350	N 88° W	725	-14.3	28960
		350				
		480				
169+13		470	N 80° E		+7.0	
173+83		00		2903.0		28992
		790	N 71 1/2 W	70 553 104	+44.7	29477
	A	415	S 60 3/4 E	44 166 113	not 27.9	2947.7
7175 R5E 522	corner TR62	365	N 25° E	2975.4		
	on old Mead rd	690	N 75 1/2 W	30 207 66	+ 14.1	2989
	AA	125	N 34 1/4 E	69		
181+33	center of old road	00	good profile	N 89° W		29491
						from here to Moreno rd
186+43		510	N 89° E	9.0		
	Pt on road 1/4 cor 5/8	3170'	S 6 1/2 W			
	1/4 cor 5/8	33'	N 90° W			
A 45+83		172'	S 44 1/2 E			
	Now 1/4 Cor	515'	S 52 3/4 W			

			Elev.
173+83			25
from 169+13	N 71 1/2 W	450'	(2923)
Sta 178+33	N 89° W	400'	X
182+33	"	510	29497
187+43	"	1225	29454
199+68	"	455	29783
204+23	"		29784

For New Right of Way
see B11 P. 1703

Note: can
go down
hill here
to improve
grade &
alignment

375
375
750 - N 86 W



At 173+83

Mag True N 86° W 750
N 71° 40 W

41 50

Tie to #4

80' N 78° W
True N 63 40 W

Rod.

27

Hauser Canon

375+50	70	S79°E		43	16893
376+20	00		14938		16890
377+80	160	N40½W		92	16846
377+80	230	S29°E	¹⁰⁰ 84 ²³⁰	-146	
380+10	00		1670.0		16650
381+55	145	N13¼W		146	16554
381+55	295	S53¼E	⁷⁰ 32 ²⁰⁶	-174	
384+50	100		1638.0		1633.0
389+70	320	N77½W	⁶⁹ 97 ²¹²	40.9	15971
389+70	590	S73¾E	⁶⁰ 82 ³⁵⁴	-272	
395+60	00		1569.9		
397+70	210	N62°W		13.1	15568
397+70	385	S51°E	⁷⁰ 67 ²⁷⁰	-203	
401+55	00		1536.5		
405+25	370	N80¼W	⁸⁹ 78 ²⁹⁶	37.4	15291
	490	S85½E	^{8½} 44 ⁴¹⁶	-372	
410+15			14919		
413+25	316	N60¼W	⁶⁴ 130 ¹⁸⁰	31.6	14603

413725	225	S69 ³ / ₄ E	¹⁰⁰ 225 57	-16.8	14603
415750	80		1443.5		
417750	200	S68 ¹ / ₂ W		15.0	1428.5
417750	155	N88 ¹ / ₂ E		58	
419705			1424.3		1429.5
421705	200	N68 ¹ / ₄ W		0.2	1434.1
421705	250	N69°W		10.1	14341
BM	00		1444.2		
28.	95	N89°E	⁴⁰ 0.6 38	0 + 3.2	14474
421705	163	N87 ¹ / ₂ E	⁴⁰ 4.8 65	-17	1434.1
422768	80		1432.4		
426785	417	S77 ³ / ₄ W	⁴⁰ 7.0 167	23.7	14087
	120	S83°E		61	
428705	60		1414.8		
over conduit					
430710	205	N45°W	⁶⁰ 101 12.3	+ 2.2	1417.0
	230	S67°E	⁷⁰ 44 161	-11.7	
432740	80		1405.3		
436700	360	S75°W		10.3	1395.0
438765	265	S N83 ³ / ₄ W	²⁴ 55 11.5	16.8	
441755	290	S67°W	1411.8	7.2	14046

441+55	540	570 ³ / ₄ E	²⁰ 29 ¹⁰⁵	-7.9	1404.6
446+95	00	570³/₄E	1396.7		1392.0
450+85	390	N34 ¹ / ₂ W	¹⁹ 127	16.6	1350.1
	175	525°W	²⁰ 08 ³²	-2.7	
452+60	00		1377.4		1372.6
453 +30	70	N54°E		10.3	1367.1
face diverting dam	120	N85 ¹ / ₂ E		10.1	
	90	S18°E		2.8	
454+20			1369.9		1365.0
456+30	210	N23 ³ / ₄ W		11.8	1358.1
	350	577°E		9.3	
459+80	00		1367.4		1362.6
464+50	470	N73 ¹ / ₂ W	⁴⁹ 54 ¹⁹⁸	24.2	1343.2
	670	S63 ¹ / ₂ E	⁵⁰ 48 ³³⁵	-28.7	
471+20	00		1314.5		1309.7
479. 10	790	585°W		12.2	1302.3
	645	584°E	75	16.5	
485+55	60		1303.8		1299
492+00	645	N83 ³ / ₄ W		7.0	1296.8

492+50	1070	585°E	$\frac{40}{49}$	-0.5	12968
502+70	00		1296.3		
508+90	620	N79 $\frac{1}{2}$ W		1.1	12952
	330	568 $\frac{3}{4}$ E	$\frac{40}{118}$	1.02	
512+20	00		1305.4		1300.6
518+40	620	N80°W		2.6	13028
	775	587 $\frac{1}{4}$ E		8.2	
526+15	00		1311.0		1306.0
529+15	300	589 $\frac{1}{2}$ W		14.8	1296.2
	770	N80 $\frac{1}{4}$ E	$\frac{10}{26}$ $\frac{77}{77}$	-5.1	
536+85			1291.1		1287.3
544+25	760	589 $\frac{3}{4}$ W		13.2	1277.9
	710	589°E	$\frac{40}{44}$ $\frac{36}{36}$	0.8	
551+35	00		1278.7		
558+25	690	N75 $\frac{1}{2}$ W		11.5	1267.2
	600	568 $\frac{3}{4}$ E	$\frac{20}{97}$ $\frac{120}{120}$	-2.3	
564+25			1264.9		1260.0
568+80	455	N77 $\frac{1}{4}$ W		13.4	1251.5
	620	577 $\frac{1}{4}$ E		2.4	
575+00	00		1253.9		
579+05	405	N83 $\frac{1}{2}$ W		9.1	1244.8

579+05	510	574 $\frac{1}{2}$ E	$\frac{1}{2}$ 57 ²⁶	3.1	1244.8
584+15	00		1247.9		
589+15	500	N7 $\frac{1}{4}$ W		2.8	1245.1
	475	N82 $\frac{3}{4}$ E	59 ²⁵⁸ 137	109 375	
593+90	00		1282.6		
596+05	215	N82 $\frac{1}{2}$ W	40. ⁸⁶ 53	+3.3	1285.9
	235	S83 $\frac{1}{2}$ E	60 ¹⁷¹ 58	-8.3	
598+40			1277.6		
602+60	420	N68 $\frac{3}{4}$ W	74 ²⁹⁴ 72	36.6	1241.0
	460	S81 $\frac{1}{2}$ E	50 ²³⁰ 55	-17.5	
607+20	00		1223.5		
612+35	515	N64 $\frac{1}{2}$ W		8.1	1215.4
	520	S66 $\frac{1}{2}$ E		10	
617+55			1216.4		
621+05	350	N56 $\frac{1}{4}$ W		43	1212.1
	360	S63 $^{\circ}$ E		36	
624+65			1215.7		
629+40	475	N84 $\frac{1}{2}$ W		9.8	1205.9
	1100	S85 $^{\circ}$ E	10 ⁵⁵ 0.7	-48	
640+40	00		1201.1		
642+90	250	N76 $\frac{1}{4}$ W		7.7	1193.4

642+90	240	S52 $\frac{1}{2}$ E	45	11934
645+30	00		1197.9	1193.0
650+30	500	N74 $\frac{1}{4}$ W	46	11933
	415	S71 $\frac{1}{4}$ E	3.7	
654+45	00		1197.0	1192.0
659+66	515	S87 $\frac{1}{2}$ W	9.2	11828
	770	N73 $\frac{1}{2}$ E	74 77	-03
667+30			1187.5	11827
672+70	540	N82 $\frac{3}{4}$ W	22	11853
672+70				
675+55	285	S82 $^{\circ}$ E	55	
675+55			1190.8	
681+35	580	S83 $\frac{1}{2}$ W	43 116	1174.9
				47
	730	S76 $^{\circ}$ E	33 37	-04
688+65	00		11745	
695+15	650	N37 $\frac{1}{2}$ W	38	1170.7
	450	S48 $^{\circ}$ E	23	
699+65	00		1173.0	
706+45	680	N62 $^{\circ}$ W	14.6	11584
	330	S73 $\frac{3}{4}$ E	30 99	00
709+75			1158.4	
714+45	470	N72 $\frac{3}{4}$ W	41	11543

~~3977~~
~~11749~~
~~15726~~

714+45	240	N75 $\frac{1}{4}$ E	1157.1	2.8	11543
716+85					
721+25	440	S55 $\frac{1}{2}$ W		9.1	77480
72	80	N85 $\frac{3}{4}$ E		5.3	
722+05	00		1153.3		
728+45	640	N54 $^{\circ}$ W		9.9	1143.4
	595	S38 $\frac{1}{2}$ E	11.1	-0.8	
734+40	00		1142.6		
737+80	340	N76 $^{\circ}$ W		9.7	1132.9

Levels to Determine elev
on Conduit. road

Bottom
Conduit
Dam site

10.05	10.05		0.0
		4.35	05.70
375	09.45		
		4.25	05.20
497	10.17		
		4.28	05.89
5.31	11.20		
		5.15	06.05
4.27	10.32		
		4.75	05.57
5.82	11.39		
		4.00	07.39
509	12.48		
		4.93	07.55

31.26
31.71

31.71

Levels along Conduit

	5.50	13.05		0.755
on bridge conduit			3.17	0.9.48
	4.82	14.70	(WS 8.25)	(6.35)
			4.80	9.90
	4.96	14.86		
			4.32	10.54
	5.48	16.02		
			4.87	11.15
	5.10	16.25		
			4.83	11.42
Ditto on E end flume	6.65	18.07		
	3.25	1	1030	7.77
			3229	
		1807		
		1807	4.87	13.20
Bygate	5.27	18.47		
565'			4.20	14.27
150'	5.20	"		
492'	10.40			
380'				
400'	5.25			
490'				
305'	2.38			
80'				

flume to dam site WS. 1.5 deep.
fall from probably abt 8.0 as there was
sand in bottom at dam site

$$\begin{array}{r} 143 \\ 1304.1 \\ 14.8 \\ \hline 1518.4 \end{array}$$

$$\begin{array}{r} 144.7 \\ 1120.7 \\ \hline 399.7 \end{array}$$

737+80	80	S76 $\frac{3}{4}$ E	3.6	1122.9
738+60	00			1136.5
741+68	308	N45 $\frac{1}{2}$ W	2.4	1134.1
	490	S54 $\frac{1}{4}$ E	2.1	
746+58	00			1136.2
750+58	400	N64 $\frac{1}{4}$ W	3.3	1130.9
	380	S82 $\frac{1}{2}$ E	4.1	
754+38	00			1135.0
759+30	492	S65 $\frac{3}{4}$ W	10.4	1124.6
	150	S81 $\frac{1}{2}$ E	4.8	
760+80	00			1129.4
766+45	565	N42 $\frac{1}{2}$ W	5.2	1124.2
766+45	75	S76 $^{\circ}$ E	4.0	1128.2
at road at gate	675	S74 $\frac{1}{2}$ E	7.5	1120.7
768+7 By tel pole	450	S76 $\frac{1}{2}$ E	14.7	1113.5
773+20	00			
776+15	295	N74 $\frac{1}{2}$ W	4.9	1123.3
	175	N69 $\frac{3}{4}$ E	5.1	1128.4
777+90				
780+73	285	S51 $\frac{1}{4}$ W	5.2	1122.2

1504.1
14.3
518.4
1124.2
394.2

add 392' to road
levels for true
sea level datum

By gate
= 14.27 above bottom Conduit at Dam

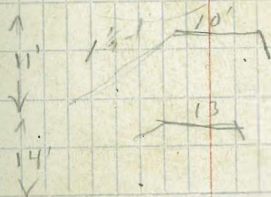
1124.2
14.2

1110.0 = outlet
bottom

= 1502 ft above
sea level

108 above

level grade



780+75	320	574°E	1128.1	4.9	11232
783+95	00		12d		
	45'	577°W	127		
	84	573°W	104 84 97	181	1110
	120	568¼W	104 120 97	217	
	190	561¼W	104 19 3.5	225	11056
	275	553½W	54 192 90	222	
787+00	305	551°W		6.0	11221
East flume		N49½W			
West flume		572½W			
787					
East flume		N30°E			
West flume		N17½W			
787+00	205	N21°W	1126.4	4.3	
789+5	00				
791+85	280	560°E		474	11217
	365	N28°W	79 425	4.2	
795+50	.		1125.9		
797+70	220	54¾W		505	1120.9
799+30	160	N25½W	1125.3	4.4	
799+30	400				
803+75	445	519¾W		54	1119.9

end of Bridge

at 150 yds @ 30°

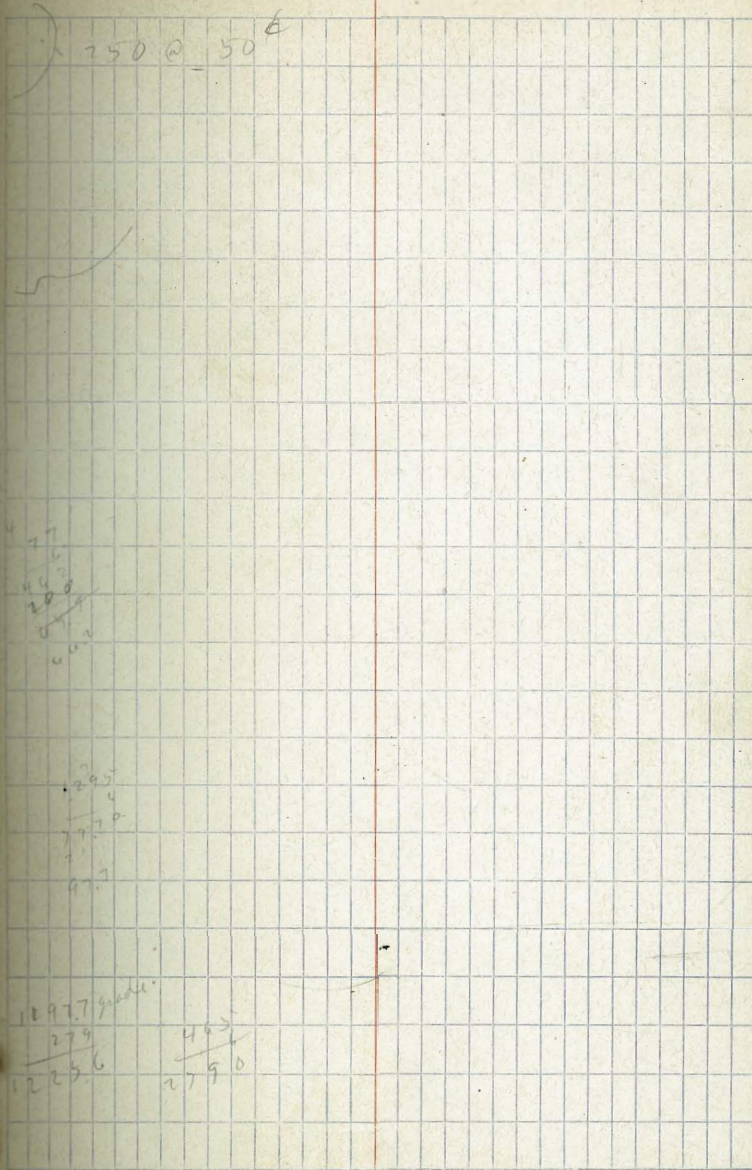
15: 10 material @ 60°

same 11
50 yds @ 50°

50 @ 1.00

200 yds @ 50

803+75	155	S73 $\frac{3}{4}$ E	1125.3	5.4	1119.9
805+30	00				
809+00	370	S16 $\frac{3}{4}$ W		5.5	1119.8
	265	N32 $\frac{1}{2}$ E	1123.5	37	
	210	"	129	1.5	
<i>awn</i>	1.35	"	129	11.9	
<i>type</i>	37	"	129	11.0	
811+65	00				1118.7
813+30	165	S15 $^{\circ}$ E	100 105 67	+9.8	1133.3
	460	N0 $^{\circ}$ W	4d 264 107	37.1	
817+90	00		11704		
819+35	145	S21 $\frac{1}{2}$ W	50 72 60	+1.2	1171.6
	125	S89 $\frac{3}{4}$ W	2d 25 138	16.3	
820+60	00		11879		
821+40	80	S45 $^{\circ}$ E		8.45	1179.4
	140	N15 $\frac{1}{2}$ E	2d 28 132	16.0	
822+80	00		1195.4		
824+60	180	S21 $^{\circ}$ W	60 108 33	47.5	12029
	465	S81 $\frac{3}{4}$ E	4d 186 71	25.7	
828+25	00		12286		
830+55	230	N70 $\frac{1}{2}$ W	60 138 28	+11.0	12396



830755	530	N38 ¹ / ₄ E	79 95	371	46.4	12396
835785	00					12860
838715	230	S21 ³ / ₄ E			27	12833
	560	N70 ¹ / ₄ W	20 61	112	-51	
843775						1278.2
850705	630	S78°E	1/2 117	32	14.9	12633
	550	N49 ¹ / ₄ W	1/2 68	27	41	
855755	00					1247.4
858748	313	S21 ¹ / ₂ E			5.4	12620
858748	158	S26 ¹ / ₂ W	1/2 38	22	18.3	
	00					
	100	N52 ¹ / ₂ W			14.8	
	165	S12°E	60 67			
	00					
	170	N39°W	64 47			
	125	S77 ¹ / ₂ E	60 115			
	00					
	165	N38 ¹ / ₄ W	64 87			

On Barrett road

at low

at 2' low

at 2' low

at 4.5 high

0.8 high

55	S14 $\frac{1}{2}$ E	60	23
00			
82	N33 $\frac{3}{4}$ W	67	33
45	S12 $\frac{1}{2}$ E	100	50
00			
240	N58 $^{\circ}$ W	69	37
340			

38

09 low
08 high

805735	¹¹² 115	S49°W		5.1	1103.1 1100.7
804720	00		1105.8		
801785	²²⁹ 225	N89°E		5.8	1102.4 1104.0
At Bridge	²⁰² 207	N67 $\frac{1}{4}$ W	²⁰ 45-41	0.4	
799778	00		1100.4		
796778	300	N21 $\frac{1}{2}$ E	³⁰ 46 9.0	4.4	1107.2 1104.8
	195	S46 $\frac{1}{2}$ W		13.1	
794783	00		1117.9		
791753	330	N16 $\frac{3}{4}$ E		12.2	1108.1 1105.7
	100	S12°W		4.1	
790753			1109.8		
788743	210	N13°W		4.4	1107.4 1105.4
	173	S3°E		4.2	
786778	00		1109.6		
783745	325	N27 $\frac{1}{2}$ W		4.6	1107.8 1105.4
	385	S26°W		7.8	
779760	00		1113.2		
776725	335	N50 $\frac{1}{2}$ E		3.6	1112.0 1109.6
	310	S83°W		15.2	
775715	00		1124.8		
771797	118	S88 $\frac{1}{2}$ E		2.8	1124.4 1122.0

500 yds @ 50' and up.

40



55 - 12.0 level 2' below grade.

across Tynes creek.

1124.4
= 11.4
773+21 120' long

Barrett Saddle
Cut off

681+35	296	N55°30' E	2.1	1.2.1	15691
2+89	00				15662
	15			9.1	
5490	301	N55°30' E		20	
	307	575° W		89	15623
5490	117		10.62		
	120	N66° E		5.0	
7407	00	1		15673	
10+58	351				
	360	565°30' W		4.7	15626
	261		2d 140		
	268	N82°15' E		19.2	
73	82		10d 10.9		
	84)		19.1	
13+19	00			1581.8	
	556		11.1		
18+75	570	580° W	20 57	+5.4	1587.2
	468				
	480	N80° E		15.7	
23+43	60	N80° E			1602.9
	267		Hv 104		
26+10	274	N80°30' W		+0.1	1603.0
	74				
	78	S65°45' E		3.0	
26+86	00				16060
	160			Hv 4.2	
28+46	164	570°30' W		+2.2	16082

3942
11749
1569.1

41

1572.6

river bottom

8+90 depression
9+30 2' deep

foot of slope

105

28+46	117 120	N59°30'E	5	86	16082
29+63	00 239	"		1616.8	
32+02	245	S65°W		0.1	1616.9 E. W. S. Res
35+68	166 170	N22°E		12.4	
33+68	00			1629.3	
36+13	245 251	S45°45'W	50 27	+9.5	16388
38+30	217 223	N61°30'E	64 54	18.4	
38+30	00			1657.2	
39+41	111 114	S69°W	60 34	+32 10.1	1660.4
40+71	130 133	N55°30'E	61 7.4	15.2	
40+71	00			1675.6	
41+58	87 89	S72°15'W		0.2	1675.4
	65 65	N26°45'E		8.7	
42+21	00			1684.1	
43+64	143 147	S70°W	60 56	+30	1687.1
	86 88	N70°E		6.5	
44+50				1693.6	
(45+27)	77 74	S61°W		4.1	1689.5
	185 190	S34°15'E	6d 10.3	21.4	
47+12				1710.9	
48+89	177 182	N0°45'E	80 05	+7.7	1718.6

Barnett Saddle 42
Cut off Road.

$$245 \sqrt{14500} \\ \underline{1470} \\ 80$$

$$\frac{217}{130}$$

$$\frac{524}{388} = 217 \\ \underline{136}$$

$$\frac{18754}{259} \\ \underline{17013}$$

$$\frac{41527}{4138} \\ \underline{369} \\ 2593$$

$$\frac{185}{110}$$

$$\frac{177}{1416}$$

$$\frac{142}{77}$$

48+89	119 122	533°15E	4d 12	175 4472.7	1716.0
50+08	00 140	\$	1736.1	45	
(51+48)	144 144	N62°15W	80 50	+6.2	17423
1244	144 148	N82°15E	2d 14.6	175	
52+92	00		1759.8	48	
54+70	175 183	N74°45W	90 35	+105	17703
	125 128	589°30E	2d 133	15.8	
55+95	00		1786.1		
57+66	171 175	N76°45W	80 1.7	+9.0	17951
	146 150	575°30E		129	
59+12	00	575°30E	180 8.0		
60+31	119 122	N89°45W	80 8.7	+08	1808.9
	322 330	N73°30E		141	
62+53			1823.7		

119
48

Barratt
Saddle
Cut off road.

43

54+28
55+06

59+31
61+02

62+48
63+07

66+89

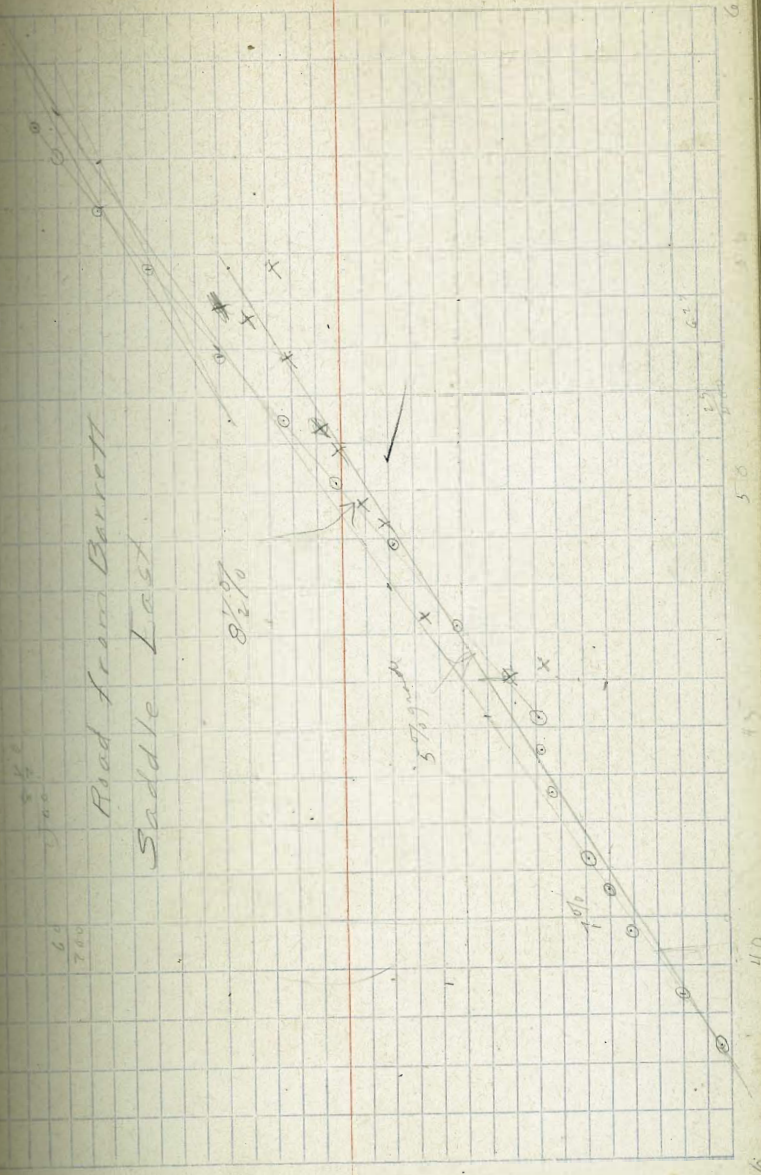
Barratt Saddle

205	
212	
28+81	68135
60 31	8972
89+12	77647

5280	77042	145
	5280	
	24242	
	21130	
	31320	
	3680	

147 Jan
B.S.

1730
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44
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 50
 60

F 45+27 =	74		20 127		
G 45+27	76	N62°45'E		11.3	1689.5
G 46+01	00		1700.8		
	33	N85°W		12.9	
	137		180 120	+	
G 47+38	140	N77°W		12.7	1713.5
	207		2d 128		
	212	S63°45'E		16.9	
abt 49+82					
G 49+45	00		1730.4		
. Bend	57	S1°W		8.6	1721.8
	107		120 125		
G 50+89	110	N46°30'E		7.5	1730.9
	44				
	45	S60°W		9.0	
G 51+33	00		1738.9		
	142		100 125	+	
G 52+75	146	N31°30'E		1.7	1740.0
	91				
	75	S22°E		13.1	
G 53+66			1753.7		
	118				
G 54+84	121	N50°30'W		10.5	1743.2

161
 74 45
 540 E
 510 210
 5100
 grade 1701.3
 1706.5
 Running a trial
 7% grade
 grade 157
 180
 1701
 148
 148
 1701.3
 all
 1703 grade line
 128
 Trial Line up East
 side Barrett Saddle
 Cutoff road
 to eliminate
 8 1/2% max
 to 7%
 F 51+48

Setup at A

11	460 472	308°55'	40 10.1	551°E	15716
12	536 550	311°20'	40 46	348°40'E	16169
	7	302°0'	-0°20'	33	15969
	7	296°40'	-4°44'	46.0	15541
		283°10'	-11°24'		15154
	10			35	15968

46	15966	1000.1	576
184	285	285	214
20	15681	107116	168
	35		
	15714		
	15747	15719	15150

Ties for Hole No 10411

14961
111528
15989

Hole 11 From PTA 460' 551°E Top casing now 15716
Casing as used in measuring 15733

1126
15587

Hole 12 From PTA 536' S 38°30'E Top casing 16169

Copied in
Core Drilling
Log Book

1/2/20

Bob Fisher Profile Barrett Hauling Road from Barrett Saddle East to Culvert.

Note Stations = 50'

23	01	170010	1700	1700
22			4.8	953'
21			8.7	914'
20			13.0	871'
Top Sta 20	00	8739	1271	168739
19			5.0	824'
18			9.7	777'
17				
	258	7731	1266	7473
17			3.7	736'
16			8.3	690'
15			13.1	642'
Top Sta 15	-44	6431	1256	6425
14			4.4	599'
13			8.8	555'
12			12.5	518'
Top Sta 12	-15	5245	1171	5260
11			5.3	472'
10			9.6	429'
TP	129	4087	1287	3958
9			2.7	382'

Sta	+	24	-	E/G
8		4087	7.7	33.2
7			12.4	28.5
TP	160	2984	12.63	28.24
6			5.8	24.0
5			9.1	20.7
4			12.5	17.3
Top 4	006	1812	11.78	18.06
3			5.3	12.8
2			11.1	07.0
TP Rock	320	0928	12.04	06.08
1			7.1	02.2
00			8.7	00.6
Top West End Culvert			8.8	00.5
			0+40 =	Culvert.



Fisher
Howard

Check Levels Sewer Line 9106 7/11/96

48

T.P. Rack	1.40	1553.97	1554.57
9+06.78		6.2	1547.77
9+20		6.2	
9+25		6.5	
9+32		7.	
9+40		9.	
9+60		8.	47.3
9+70		8.	47.7
9+80		11.	41.
9+85 X		11.	45.
9+92		10.	4.
10+00		10.5	45.
10+05		9.97	46.00
10+20		9.67	46.30
10+35		9.2	46.
10+38 ^{FOR}		8.1	47.9
10+60		9.47	46.49
10+69		9.8	46.
10+80		✓ 10.9	45.
10+88		10.33 ²	46.5
10+95		11.8	44.
11+00		11.74	44.23
+05		15.9	40.
Rack T.P.	1.07	43.42	13.62 42.35

43.42

11+20			7.8	35.6
T.P. Rock.	0.97	32.12	12.27	31.15
11+40			4.0	28.1
11+50			6.5	25.6
11+60			10.2	21.9
11+69			14.9	17.2
11+68			13.5	18.6
11+71			15.7	16.4
11+71.0			12.2	19.9
11+75			13.6	18.5
TP	1.74	19.99	13.87	18.25✓
11+79			5.0	15.0
11+83			4.6	15.4
Hub 11+85			5.27	14.72
11+88			6.2	13.5
11+93			13.8	06.2

Fisher
Howard

2/5/20

Traverse for Location of Building

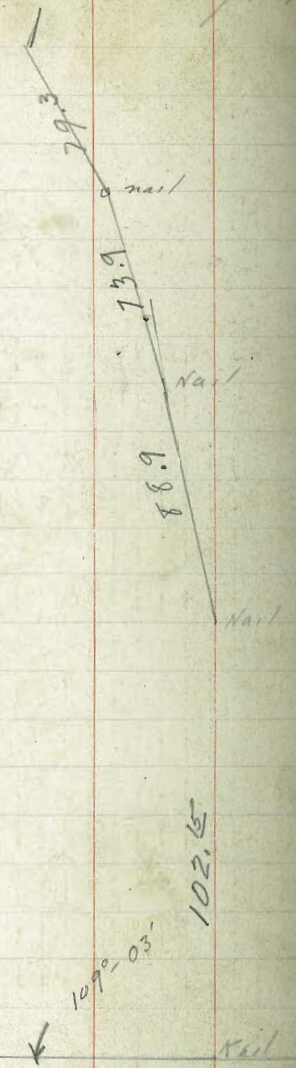
4 13°-21' Rt

2+64.95
3 28°-03' Lt

1+91.05
2 24°-35' Lt

1+02.15
1 35°-55' Lt

Cableway Line
Sta 0+21.14
0+00 109°-03'



Bob
Fisher

Location of Road along Traverse -

Lt Right

0+00	3.0	11.5
0+30	20.	0.0
1+02	20.5	0.0
1+37	11.0	8.0
1+76	11.0	7.0
1+91	12.0	0.0
2+65	19.0	0.0
3+44.3	24.0	0.0
3+64.3	38.0	0.0
3+98.0	25.0	0.0
4+46.0	16.0	3.0
5+16.6	19.0	3.0
5+79.9	10.0	6.0
6+10-	12.0	3.0
6+48	0.0	17.0
6+76		60-72.0
6+91.7	0.0	20.0
7+53.5	11.0	2.0
7+85	14.0	0.0
8+17.9	12.0	0.0
8+57.8	0.0	11.0
8+90.3	9.0	2.0
9+54.7	13.0	2.0

Traverse for Location of Buildings.

Intersection	Distance	Angle	Direction
#10 Power Line.	1542	41°30'	RT
#8	2425	49°03'	LT
#7	2478	46°46'	RT
#6	934	28°45'	LT
#5	1723	25°37'	LT
#4		13°21'	RT

But
Fisher

51

Location of Road along Traverse

	Lt.	RT
10+80	14.0	2.0
11+004	16.0	2.0
11+150	11.0	2.0
11+30	11.0	1.0
12+546	11.0	1.0

#2 L+D
1+91.05

1+70.8

A L+D
1+02.15

0+97.3

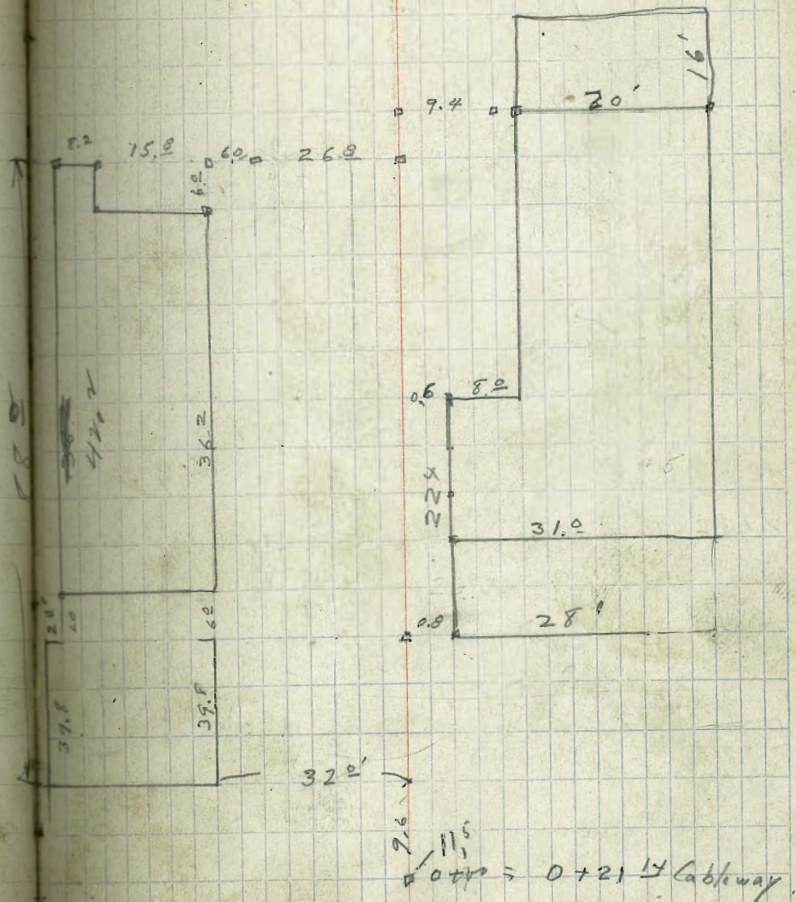
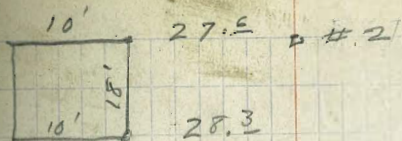
~~0+494~~ Compressor

0+42 Blahm

0+302 platform

0+09.6

52



#4 A Rt.
 3+44.25
 3+35.15
 3+33.5

38.6

2+94.95
 2+89.85

6.9

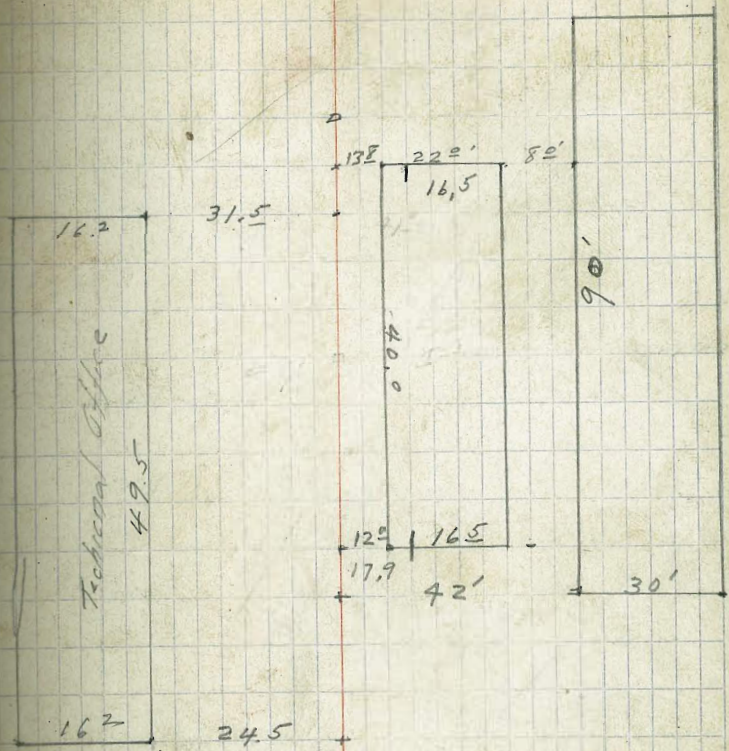
2+82.95

18.0

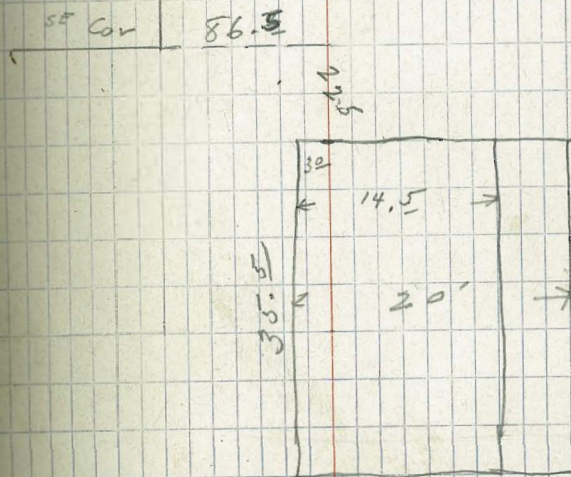
A Lt.
 2+64.95

A Lt.
 1+91.05

79.3



Cook House



* Δ R1
3144.25

#5A Lt.
5+16.55 172.3

5+06.6 162.3

4+82.6 135.3

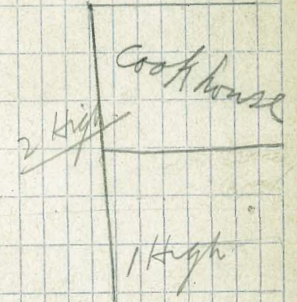
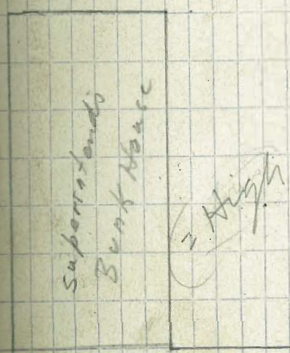
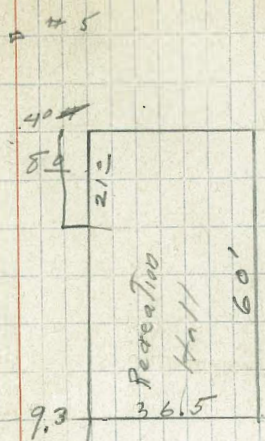
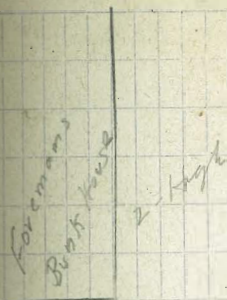
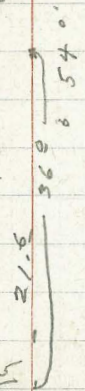
4+46.3 102

3+98.3 54

3+80.25

3+65.85

#4A Rt
3+44.25



#4

#6 A 24
6+10 2

5+79.9

5+55.7

5+55.7

A 24
5
5+16 6

64.4
3.295

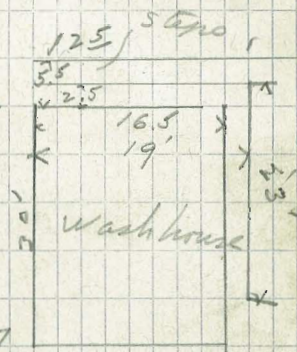
61.7

67.0

14.7

9.4

6.7



375

415+50

419+05

430+10

438+65

From Cooks

1 mi \$1.00

2 " 1.50

3 " 3.00

4 " 1.50

5 " 2.00

6 " 6.00

53⁷ 1.4

@ 1000 mi ROT
 Δ RT
 8757.80 \$ 200

@ 1000

8717.88

culvert

7453.45
~~7115~~

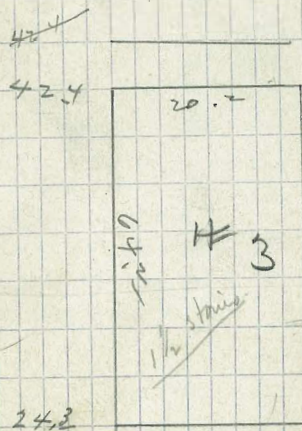
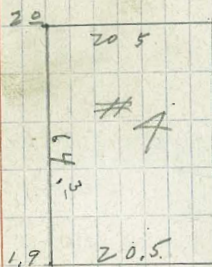
6191.9

6124.7

6110.0

#6

57



58

Continued Page 41 Core Drilling Log -

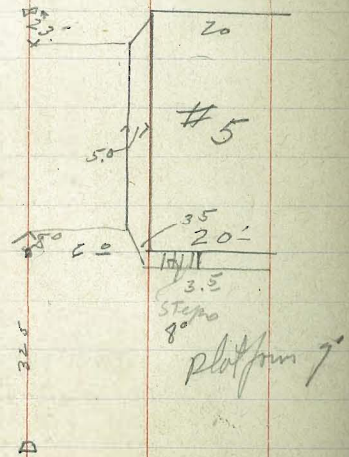
row # 9
1254.60

1100.40
8

1542

145.7

V 96.9



7
8457.5

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
 $120.87+12=10.07$. Say a 10° Curve.

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

Tab. V. correction for A. $23^{\circ} 20'$ for a 10° Cur.=0.16
 $1183.1+0.16=118.47$ =corrected Tangent.

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

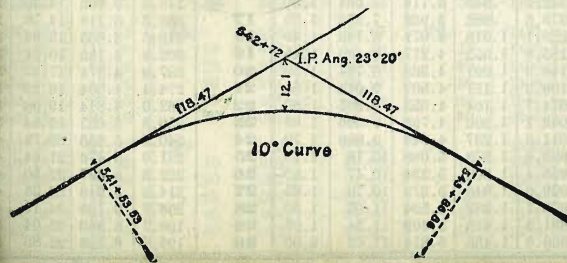
$2^{\circ} 19\frac{1}{2}'$ =def. for sta. 542	I. P.=sta. 542+72
$4^{\circ} 49\frac{1}{2}'$ = " " " +50	Tan.= 1.18.47
$7^{\circ} 19\frac{1}{2}'$ = " " " 543	B. C.=sta. 541+53.53
$9^{\circ} 49\frac{1}{2}'$ = " " " +50	L. C.= 2.33.33
$11^{\circ} 40'$ = " " " 543+	E. C.=sta. 543+86.86
86.86	

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



Natural Tangents

deg.	0'	10'	20'	30'	40'	50'	60'	70'	80'	90'
0	0000	0029	0058	0087	0116	0145	0174	0203	0232	0261
1	0175	0204	0233	0262	0291	0320	0349	0378	0407	0436
2	0349	0378	0407	0436	0465	0494	0523	0552	0581	0610
3	0524	0553	0582	0611	0640	0669	0698	0727	0756	0785
4	0699	0729	0758	0787	0816	0845	0874	0903	0932	0961
5	0875	0904	0933	0962	0991	1020	1049	1078	1107	1136
6	1051	1080	1109	1138	1167	1196	1225	1254	1283	1312
7	1228	1257	1286	1315	1344	1373	1402	1431	1460	1489
8	1405	1434	1463	1492	1521	1550	1579	1608	1637	1666
9	1584	1613	1642	1671	1700	1729	1758	1787	1816	1845
10	1763	1792	1821	1850	1879	1908	1937	1966	1995	2024
11	1944	1973	2002	2031	2060	2089	2118	2147	2176	2205
12	2126	2155	2184	2213	2242	2271	2300	2329	2358	2387
13	2309	2338	2367	2396	2425	2454	2483	2512	2541	2570
14	2493	2522	2551	2580	2609	2638	2667	2696	2725	2754
15	2679	2708	2737	2766	2795	2824	2853	2882	2911	2940
16	2867	2896	2925	2954	2983	3012	3041	3070	3099	3128
17	3057	3086	3115	3144	3173	3202	3231	3260	3289	3318
18	3249	3278	3307	3336	3365	3394	3423	3452	3481	3510
19	3443	3472	3501	3530	3559	3588	3617	3646	3675	3704
20	3640	3669	3698	3727	3756	3785	3814	3843	3872	3901
21	3839	3868	3897	3926	3955	3984	4013	4042	4071	4100
22	4040	4069	4098	4127	4156	4185	4214	4243	4272	4301
23	4245	4274	4303	4332	4361	4390	4419	4448	4477	4506
24	4452	4481	4510	4539	4568	4597	4626	4655	4684	4713
25	4663	4692	4721	4750	4779	4808	4837	4866	4895	4924
26	4877	4906	4935	4964	4993	5022	5051	5080	5109	5138
27	5095	5124	5153	5182	5211	5240	5269	5298	5327	5356
28	5317	5346	5375	5404	5433	5462	5491	5520	5549	5578
29	5543	5572	5601	5630	5659	5688	5717	5746	5775	5804
30	5774	5803	5832	5861	5890	5919	5948	5977	6006	6035
31	6009	6038	6067	6096	6125	6154	6183	6212	6241	6270
32	6249	6278	6307	6336	6365	6394	6423	6452	6481	6510
33	6494	6523	6552	6581	6610	6639	6668	6697	6726	6755
34	6745	6774	6803	6832	6861	6890	6919	6948	6977	7006
35	7002	7031	7060	7089	7118	7147	7176	7205	7234	7263
36	7265	7294	7323	7352	7381	7410	7439	7468	7497	7526
37	7536	7565	7594	7623	7652	7681	7710	7739	7768	7797
38	7813	7842	7871	7900	7929	7958	7987	8016	8045	8074
39	8098	8127	8156	8185	8214	8243	8272	8301	8330	8359
40	8388	8417	8446	8475	8504	8533	8562	8591	8620	8649

Ext. To

deg.	0'	10'	20'	30'	40'	50'	60'
80	5.6713	5.7694	5.8708	5.9758	6.0844	6.1970	6.3137
81	6.3138	6.4348	6.5606	6.6912	6.8266	6.9668	7.1117
82	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	8.1443
83	8.1443	8.3450	8.5555	8.7769	9.0098	9.2553	9.5136
84	9.5144	9.7882	10.078	10.385	10.7111	11.059	11.430
85	11.430	11.826	12.250	12.706	13.197	13.727	14.294
86	14.300	14.924	15.605	16.350	17.169	18.075	19.068
87	19.081	20.206	21.470	22.903	24.542	26.432	28.636
88	28.636	31.242	34.368	38.189	42.964	49.104	57.290
89	57.290	68.750	85.940	114.588	171.885	343.770	

RIGHT ANGLE

Natural Cotangents

Add quotient to base
 Given Base 100, A
 Given Hyp. 100, Alt.
 Error in
 To find Tons of Rail i.
 by 11, and divide by Z.

Order Stakos. 1-2-16

2000 stakes

665
 0677
 465
 0679
 3990
 4562

690
 69
 112
 881

grades

shad

10

24

20

1100
 1009
 50 20 10

2d = 10 1'

3d = 10 43.5'

4d = 20 18'

5d = 20 52 1/2'

6d = 30 27'

7d = 40 1 1/2'

8d = 4 36'

10 9 5 45'

12 6 54'

8 3'

9 12'

298
27
1077
304
178
1 pm Red wnt
333 10th St.

9811
9525
286.

286° Speedant

40 N
6 M

14 20 E

20597

63 - 36

48

22
22

252

08
60
521
009
630
210

good hand

CO

0005
0050
000000
12

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.

171887
20601
5148
5802

175