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WATER

306

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Morena Dam & Reservoir.

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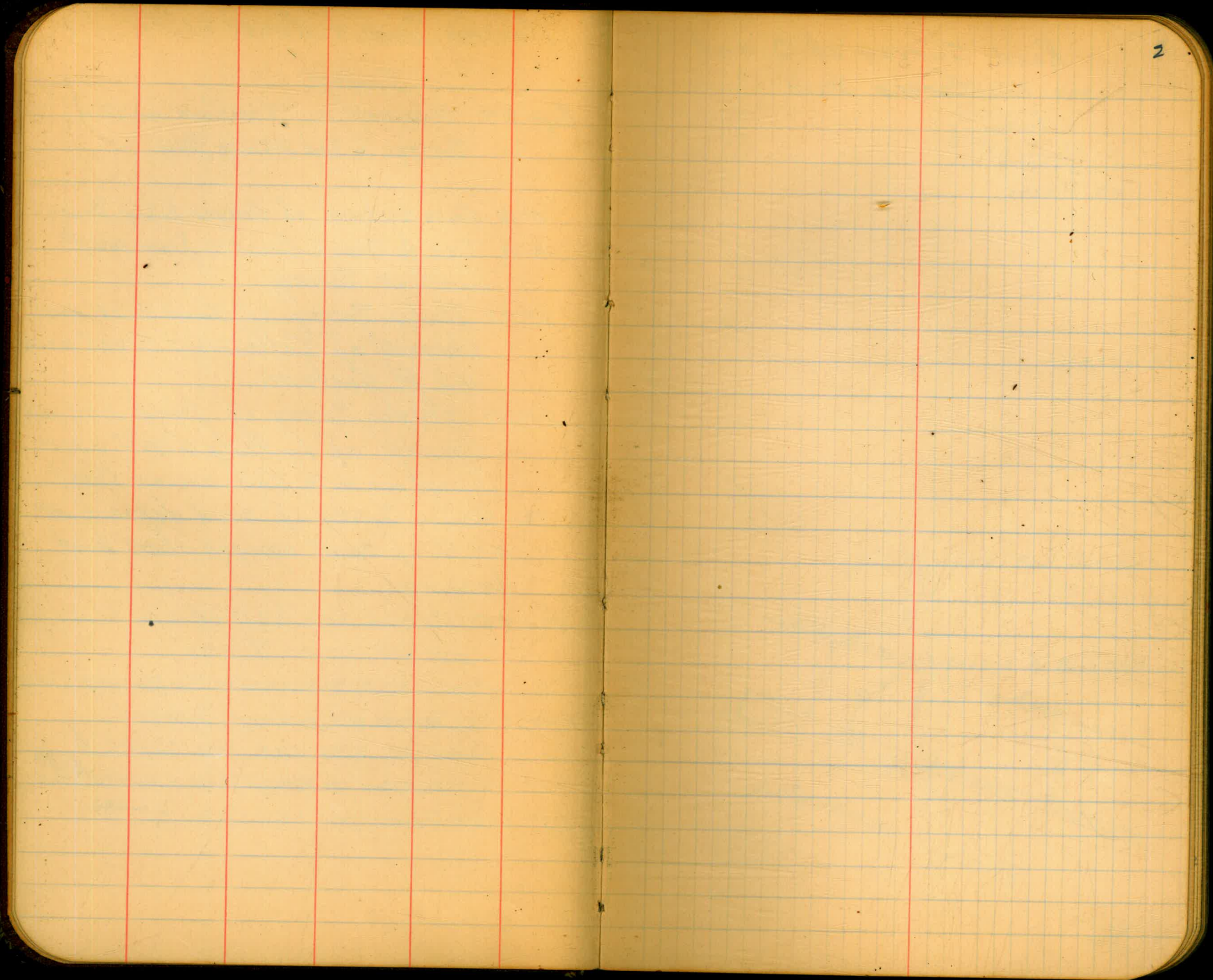
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2

Road Survey at So. End
Morena Dam

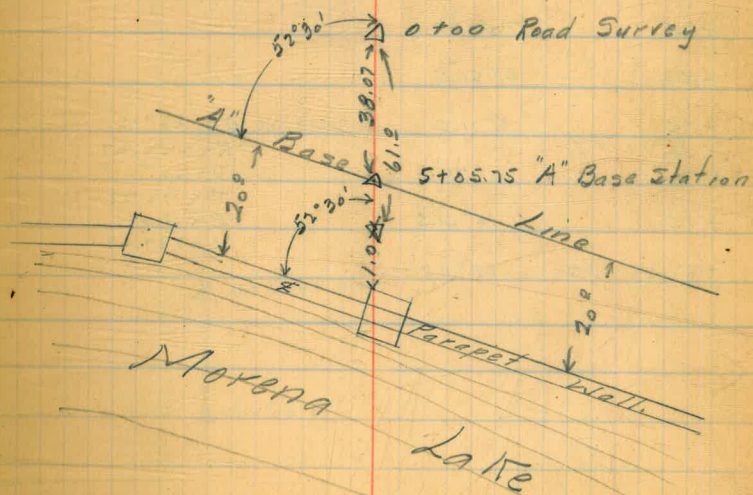
30.75
4 + 75
5 + 05.75

3

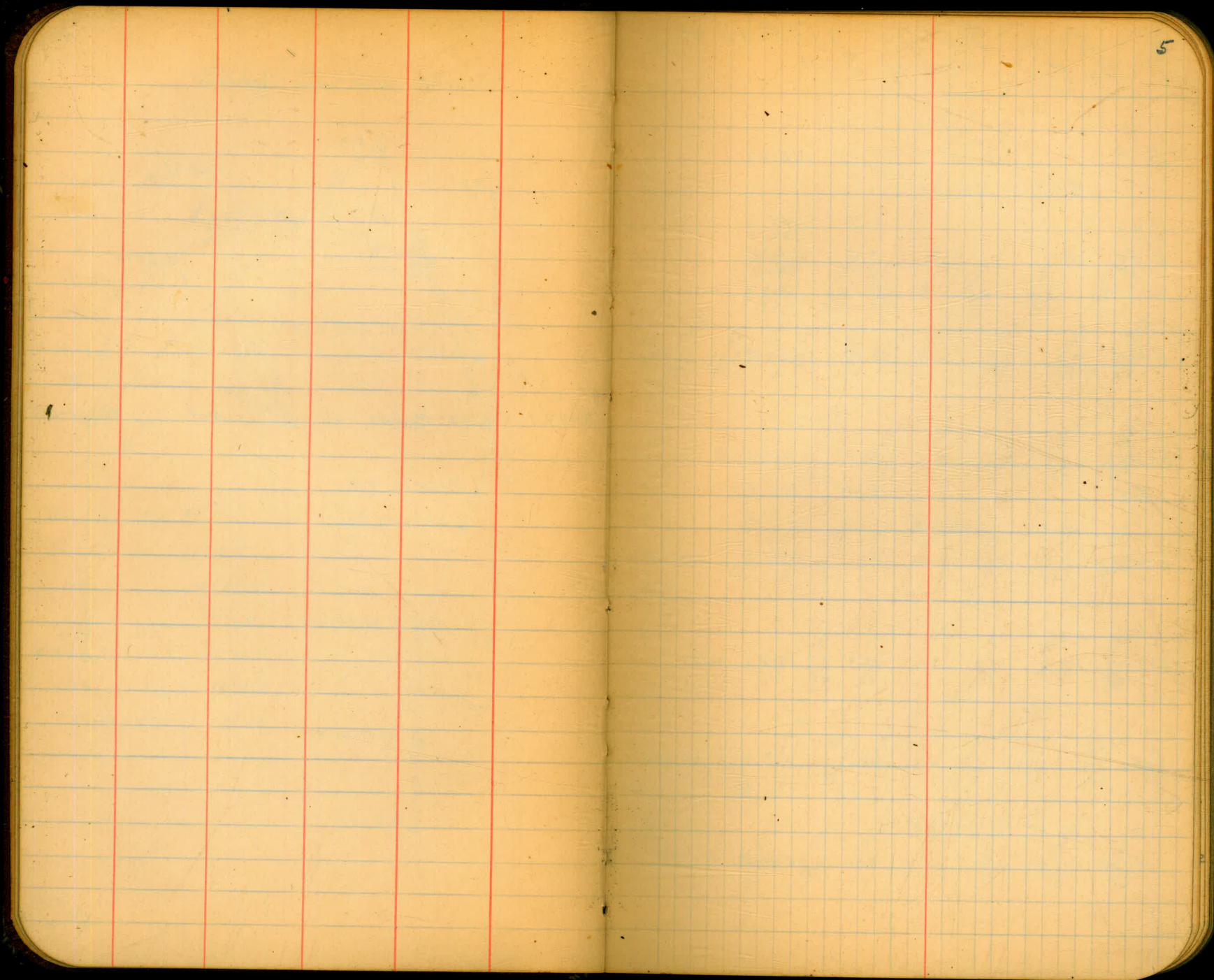
Nov. 6-9, 1929.
Conrse.
Elliott.
Simpson
Walton

1468⁰⁰ P.C.

1497.70 P.O.T.



Settled
m.



Cross Sections of Road at
So. End Morena Dam.

Nov. 7, 1929.
Conierse
Elliott
Simpson
Walton.

6

B.M. 158.62

5.68 164.30

0-62 0.7 163.6
0-49 1.6 162.7
0-42 3.5 160.8
0-39 8.4 155.9
0-22 8.1 156.2

0-05 7.4 156.9

0+00 2.8 161.5

T.P. 0.37 163.93

12.41 176.34

0+08 13.1 163.3

0+11 4.3 172.0

0+50 2.5 173.8

T.P. 1.08 175.96

12.67 187.93

+75 13.1 174.8

Rock 163.6
163.6
163.1
157.3
156.4
152.7
159.8
159.5

Ledge +05 0.7 163.6
57.5 26.0 25.0 8.1 7.6 4.5 4.8
54.0 37.0 27.0 17.0 15.0 11.0 7.4 7.5 5.2 5.5
70.0 22.0 34.0

Rock Ledge 161.5
161.5
161.4
158.3
158.8

+2.1 161.5
9 2.8 2.9 6.0 5.5
12.0 20 35

Rock Ledge 170.8
170.8
171.0
174.6
172.6
163.3
163.7
159.0
159.1

5.5 5.3 4.7 3.7 13.1 12.6 17.3 17.2
49 31 76 8 15 24 36

Rock 171.1
171.1
170.6
174.3
172.0
168.1
159.4
159.5

5.2 5.7 2.0 4.3 8.2 16.9 16.8
48 32 16 16 27 38

Edge Rd. 211.0
211.0
202.3
185.8
176.3
173.8
173.3
170.1
169.6
163.3

+24.7 26.0 29.5 2.0 2.5 3.1 6.2 6.7 13.0
67 57 30 9 7 15 25 32

Edge Rd. 208.1
208.1
189.9
177.9
174.8
172.7
166.7
165.2

+20.2 2.0 10.0 13.1 15.2 21.2 22.7
60 30 10 7 18 35

	12.58	272.46	209.88
+50		3.9	218.6
+75		+7.9	230.4
+93.66		+36	276.1
3+09.66 P.T.		+1.6	224.1
+25		2.7	219.8
+50		11.2	211.3
+75		10.3	212.2
A + 00		14.5	210.0
P.R.		11.40	211.06
	7.91	218.97	

Lt.	£	Rt.	8
$\frac{196.1}{40}$	$\frac{15.0 \times 16.6}{218.6}$	$\frac{20.0 \times 11.6}{223.5}$	$\frac{21.0 \times 11.6}{231.5}$
$\frac{19.1}{40}$	$\frac{2.9}{230.4}$	$\frac{9.0}{16}$	$\frac{15.2 \times 11.6}{237.7}$
$\frac{196.1}{40}$	$\frac{2.6}{226.1}$	$\frac{21.5}{20}$	$\frac{5.0 \times 11.6}{222.5}$
$\frac{196.1}{40}$	$\frac{26.4}{40}$	$\frac{16.1}{29}$	$\frac{7.7}{12}$
	$\frac{202.1}{33}$	$\frac{202.8}{21}$	$\frac{211.7}{6}$
	$\frac{199.3}{31}$	$\frac{206}{24}$	$\frac{205.5}{10}$
	$\frac{201.3}{21}$	$\frac{207.5}{13}$	$\frac{207.7}{7}$
	$\frac{24.7}{23}$	$\frac{20.4}{76}$	$\frac{11.8}{5.5}$
Top rock	5' L	A+10	

Top Large Rocks

1:1 Slope above

218.97

+25

6.6 212.4

+51.50

3.6 215.4

+75

3.2 215.8

+90

5.1 213.9

12.5 206.5

Lt.

F

Rt.

9

201.2
 $\frac{12.8}{10}$

210.2
 $\frac{8.8}{4.5}$

212.4
 $\frac{6.6}{1.5}$

213.4
6.6

213.2
 $\frac{5.8}{6}$

214.7
 $\frac{2.3}{14}$

245.0
 $\frac{+26.0}{27}$

Above +11

209.4
 $\frac{9.6}{18}$

215.2
 $\frac{3.8}{5}$

215.4
3.6

216.0
 $\frac{3.0}{5}$

218.3
 $\frac{0.7}{11}$

245.0
 $\frac{+26.0}{20}$

214.8
 $\frac{4.2}{11}$

216.0
 $\frac{3.0}{4}$

215.8
3.2

215.8
 $\frac{3.2}{2}$

221.8
 $\frac{+2.8}{10}$

231.3
 $\frac{+12.3}{15}$

245.0
 $\frac{+26.0}{27.0}$

214.3
 $\frac{4.7}{7}$

213.9
5.1

215.6
 $\frac{3.4}{8}$

221.5
 $\frac{+2.5}{9}$

230.0
 $\frac{+11.0}{13.5}$

245.5
 $\frac{+15.5}{19}$

239.0
 $\frac{+20.0}{26}$

Location of Cross Sections
 "A" and "B" across Canyon below
 Morena Dam.

-7+62.0

-8.72 -59.4

-7+10.18 R. 33° 54' 51.82 -9° 48'

-50.7

-6+20.30

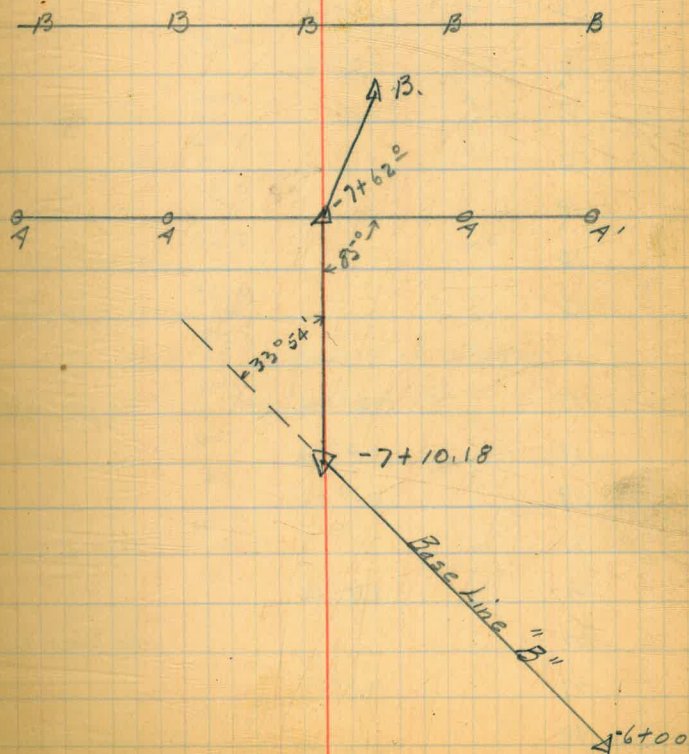
Nov. 8, 1929.
 Parker Elliott (11)
 Converse Simpson

T.P. 05.15 10' R. 5+25

6+00 El. -27.2

106.0 + 10° 47' 4' Linder 6+00

52.0 -9° 48'



Cross Section "A"

Sta.	Hor. Δ	Vert. Δ	Dist.	Dif. Elev.	Elev.
-7462°					-59.4
A'	95° 0' R.	+24° 53'	1.45		
2	"	+18° 34'	0.90		
3	"	+12° 01'	0.65		
4	"	+13° 17'	0.45		
5	"	0.0	0.18	-5.5	
6	"	0.0	0.12	+0.5	
7	85° 0' L.	0.0	0.08	-1.5	
8	"		0.18		-79.4
9	"	-13° 10'	0.30		
10	"	-7° 15'	0.41		
11	"		0.46		
12	"		0.54		
13	"		0.61		
14	"		0.68		
15	"		0.78		
16	"		0.78		
17		-2° 30'	1.00		
18		-4° 33'	1.20		
19		+1° 06'	1.35		
20			1.36		
21		+4° 10'	1.60		
22			1.68		
23		+10° 17'	1.82		
24			1.94		
25		+14° 23'	2.30		
26			2.30		

20' Vertical Drop 6' Downstream from Inst. Pt.
= bottom of Canyon.
7' Lower to Normal Slope - bottom of Canyon

10.5 Lower. Vertical Drop = bottom of Canyon

5' Higher than 10.

8.5 Lower than 11

3.0 Higher than 12

5.0 Lower than 13

4.0 Higher than 14

12.0 Lower than 15 = ground of canyon

Large Boulder 12 Higher. at 17

8' Lower than 19

4' Higher than 21

7' Higher than 23

13' Higher than 25

Cross Section "B"

13

Sta.	Hor. Δ	Vert. Δ	Dist.	Dif. Elev.	Elev.
-7+62°					
B	22°03'R	-9°22'	1.41		
-7+62°					
B ₁	235°45'	+6°48'	0.70		
2	196°10'	-30°0'	0.26		
3	121-10				
4	121-10	-44-45	0.43		
5	96-50	-27-50	0.57		
6			0.62		
7			0.69		
8	88-40	-24-48	0.89		
9	87-50	-18-46	1.00		
10	84-0	-13-57	1.50		
11	81-0	-10-43	1.71		
12	80-0	-5-15	1.87		
13	80-0	-1-25	2.03		
14	79-50	+4°40'	2.30		

Note - This section across Canyon below run of larger boulders shot from mountain side

Note - All Hor. Angles at "B" turned to Right from Back Tangent.

4' Lower than 4

7' Lower than 5
7' Higher than 6

Ties to 166 ft. Contour Survey on
Line from Gov. Cor. on S.E. Cor. Tract 55 to
Gov. Cor. on S.W. Cor. Tract 59.

Sec. 23-24, T. 17, S. R. 4 E.

2.00 - 1.22	2.26	1.78
1.54 - 1.36	7.20	<u>32</u>
3.87 - 1.80	9.11	1.81
		<u>2.61</u>
		1.81
	12.18	10.86
		<u>362</u>
2.94 - 5.00	13.11	<u>47241</u>

98	261
94	4.7
<u>392</u>	<u>256.3</u>
882	154
<u>9212</u>	<u>.08</u>
	<u>1232</u>
	2
	<u>31220</u>

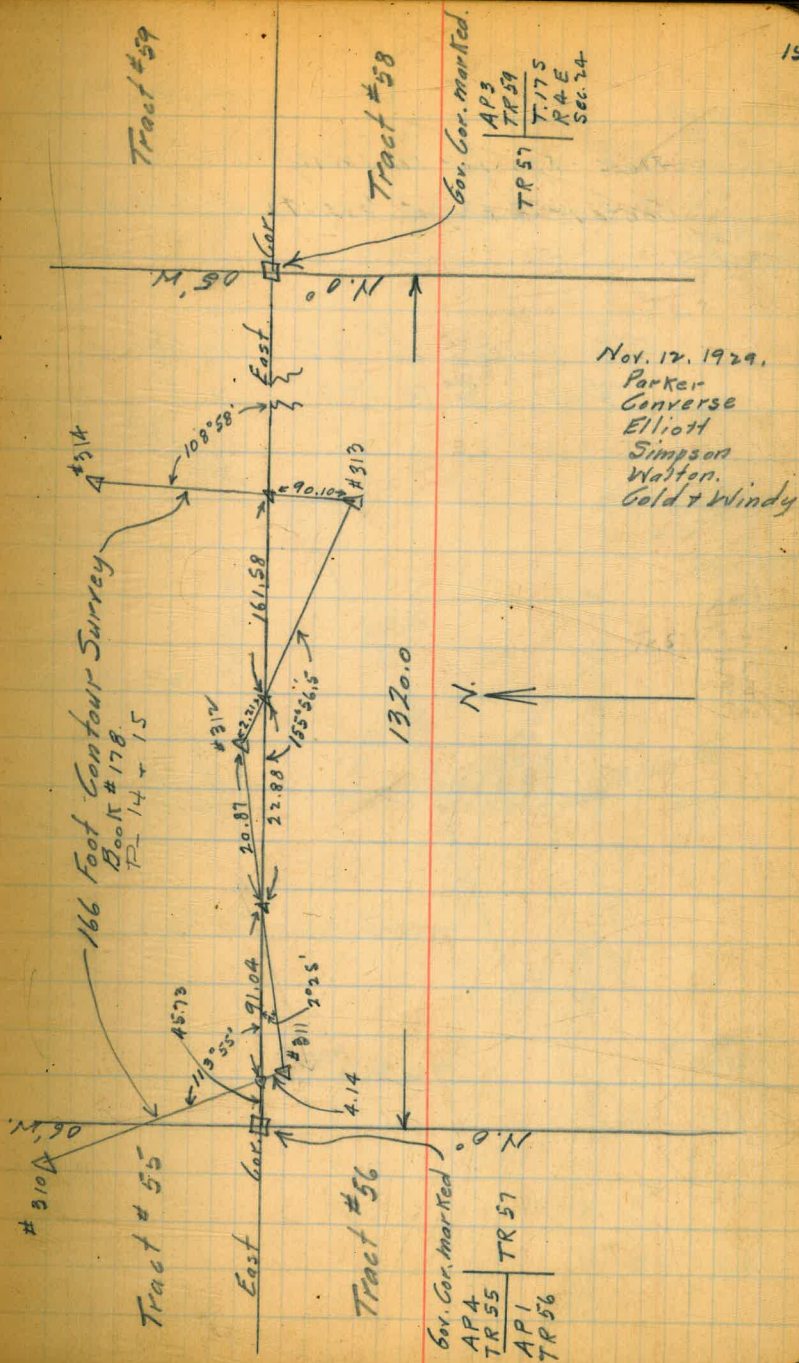
$\tan A = \frac{4.10}{1320.0}$

$321951'' = 0^{\circ} 10.7'$

$.003106 = 0.106$

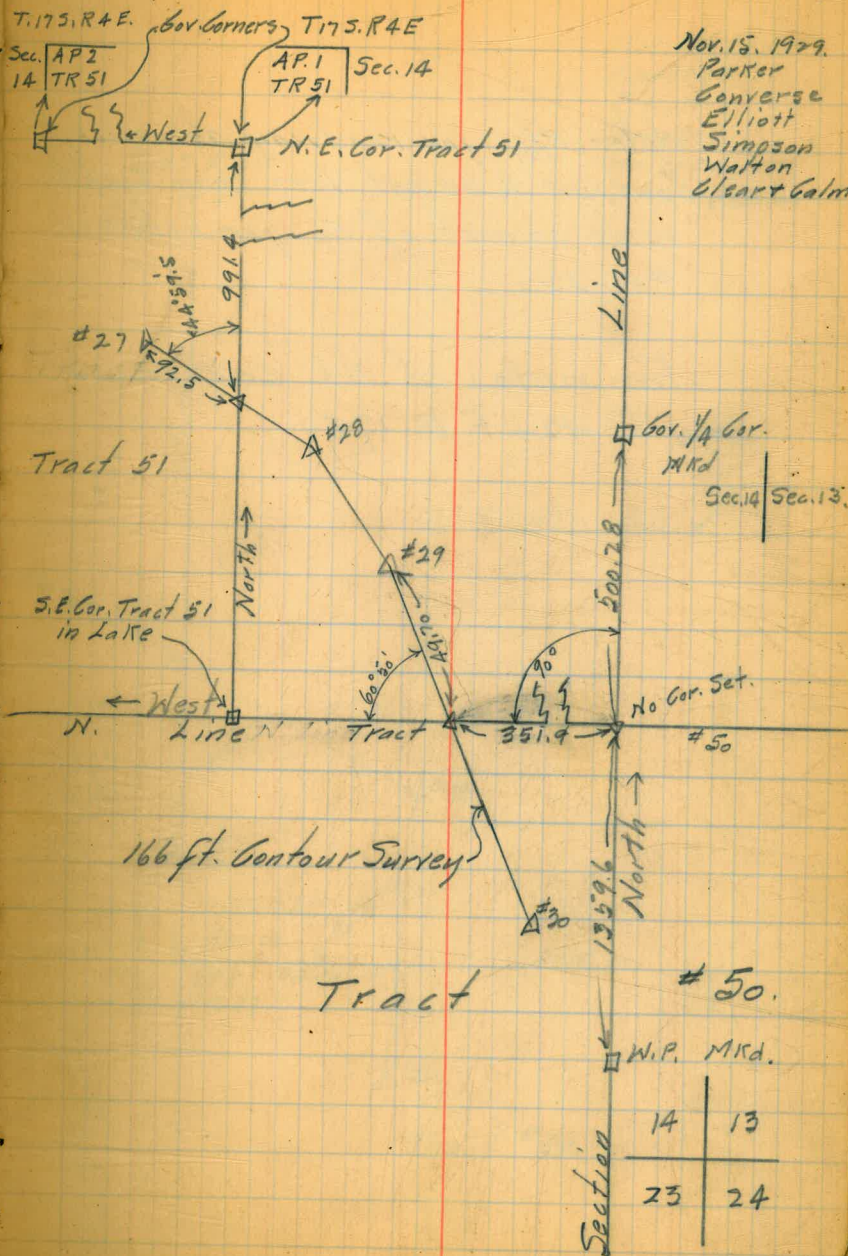
$1320 \overline{) 41000}$
 $\underline{3960}$
 1400
 $\underline{1320}$
 8000

$1320 \overline{) 41000}$
 $\underline{1230}$
 90
 $\underline{82}$
 80
 $\underline{41}$
 390
 $\underline{369}$
 210
 $\underline{20}$
 10
 $\underline{10}$
 0



Note - R/W for roadway above 166 ft.
Contour to be not less than 150 ft wide.

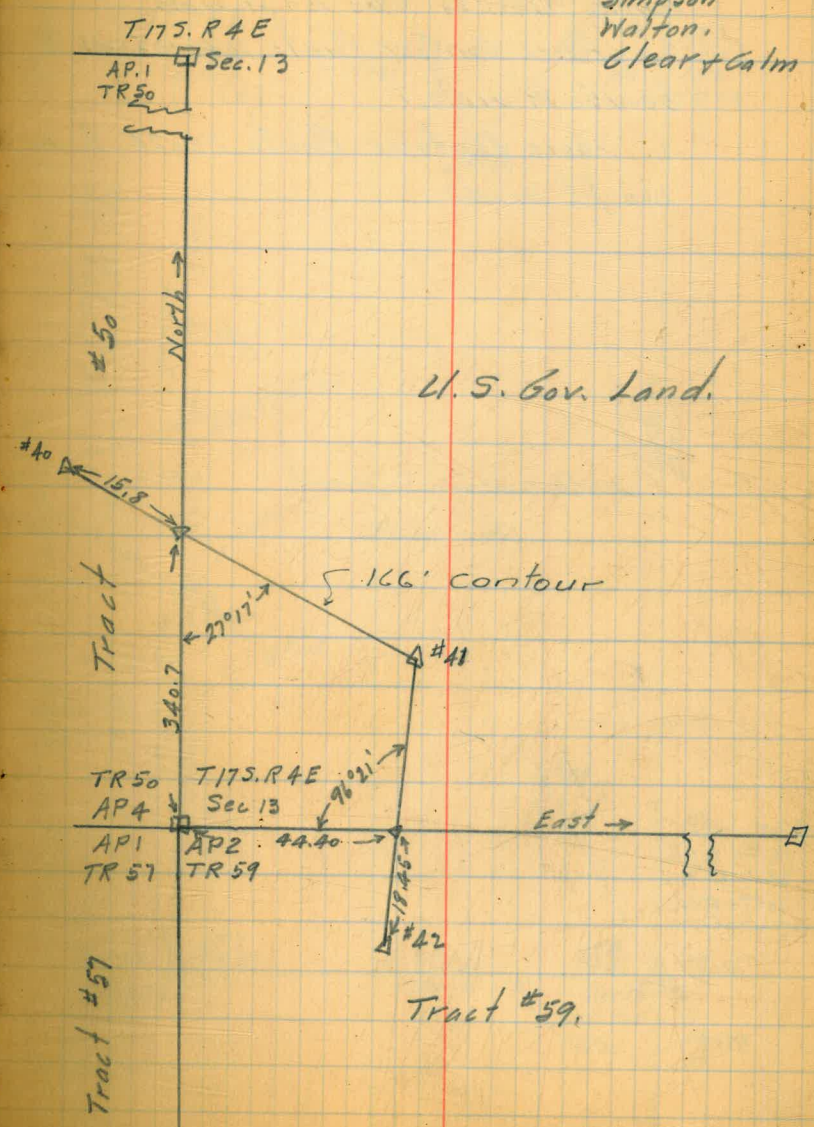
For notes of 166 contour
see P. 43 - F.B. 178



Nov. 19, 1979.
Conyers
Elliott
Simpson
Walton.
Clear & Calm

Note - R/W for roadway above 166 ft.
Contour to be not less than 200 ft.
wide on acct. of Canyon between
#41-42.

For notes of 166' contour
see P 42 - F.B. 178

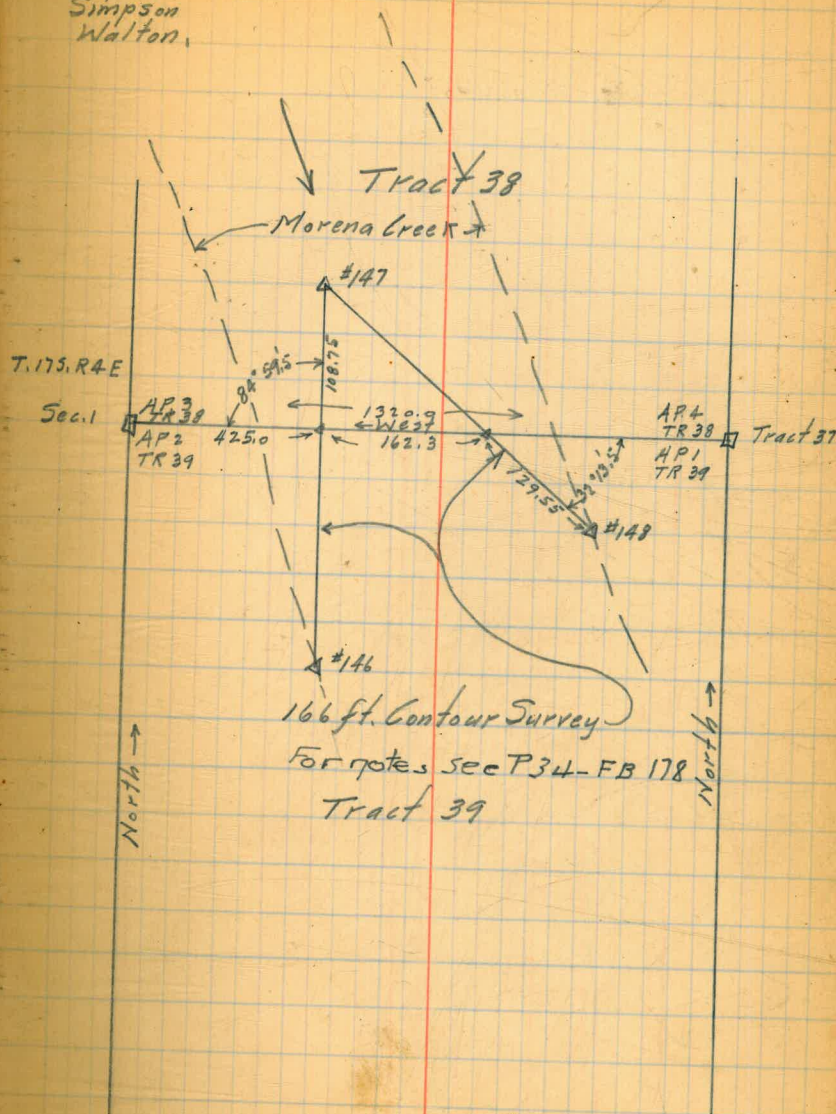


Note - Points 146 + 148 are on opposite
Banks of Morena Creek. Point 147 is in
Main Channel.

R/W width for roadway 100 ft.
Channel of sand and gravel.

Nov. 22, 1929.
Clear + Windy
Converse
Elliott
Simpson
Walton.

19



Stadia Survey of Sand Line
and Channel of Cottonwood Creek
above 166 ft. Contour Survey.

Sta.	Hor. A	Vert. A	Red (Dist.)	Dif. Elev.	Elev.
230 H.I. 4.8					
229	0° 0'	—	469.50	- 3.3	166.0
229	0° 0'	—	—	- 1.9	167.4
1	62° 50'	—	2.06	- 0.7	168.6
2	273° 45'	—	3.38	+ 0.3	169.6
3	66° 45'	+ 2° 04'	3.69	+ 13.3	182.6
4	274° 0'	+ 1° 45'	4.19	+ 12.8	182.1
5	120° 45'	—	2.12	+ 0.2	169.5
6	230° 40'	—	4.33	+ 2.7	172.0
7	232° 50'	+ 1° 20'	5.08	+ 11.8	181.1
8	103° 10'	+ 2° 47'	3.67	+ 17.8	187.1
9	227° 30'	+ 0° 59'	4.43	+ 7.6	176.9
Transit Point A	207° 57'	—	4.73	+ 3.0	172.3
10	155° 0'	—	3.72	+ 1.8	171.1
11	155° 0'	+ 1° 09'	3.72	+ 7.5	176.8
12	142° 05'	+ 0° 53'	4.83	+ 7.5	176.8
H.I. 9.8 Tr. Point A					
A - 230	27° 57'	—			
A-1	106° 40'	—	3.64	- 0.6	172.9
2	279° 10'	—	1.99	+ 1.0	173.3
3	273° 20'	—	2.90	+ 1.7	174.0
4	112° 35'	—	5.05	+ 2.1	174.4
5	227° 30'	—	0.84	+ 0.2	172.5

Note - This point on average sand elevation - 11/13/29. showing a fill of 3.3 ft. of sand since 166 ft. Contour Survey was made, Oct. 17, 1923 to Aug. 1924.
See Book # 178.

169.3 ← Points 229 and 230 on 166 ft. Contour Survey.
Top Old Hub ← 1.4 below sand elev. 11/13/29.

Top Gro. 11/13/29.
Edge channel
" "
" "
Edge Channel
" "
to South end of Bridge
Top of sand
to North end of Bridge
172.3
Edge channel + fence (N & S)
Fence (N & S)
Road
Angle in fence

Note - All Hor. Angles turned to Right from back tangent.
Nov. 13, 1929.
Parker
Converse
Elliott
Simpson
Walton
Clear + Very Windy
Bearing - Pt. 230 to Pt. 229 = S. 25° 11' W.
See Book # 178, Page 27.

0 - Azimuth

177.3

Sta	Hor L N 33-19 W	Vert L	Rod (Dist)	Diff. El.	Elev.	
A-6	111° 30' N 52-31 E	+0° 55'	5.44	+8.7	181.0	
7	207° 20' N 50-11 E	—	2.50	+0.3	172.6	Edge channel of La Posta
8	205° 0' N 16-29 W	+0° 32'	5.27	+4.9	177.2	
9	138° 20' N 10-41 E	+0° 06'	5.34	+0.9	173.2	" " of La Posta
10	165° 30' N 21-33 W	—	2.33	+0.4	172.7	" " of Cottonwood Cr.
11	133° 15' N 21-19 W	—	7.00	+4.2	176.5	Road
12	133° 30' N 8-44 E	+0° 35'	7.43	+7.6	179.9	
Transit Pt B.	158° 31'	—	6.79	+2.4	174.7	
B - A	338° 31' 238° 31'					
B-1	273° 15' N 27-29 W	SW-SE N 75-31 E	5.32	-1.0	173.7	(174.7) Elev. "B" confence
2	230° 20' N 27-29 W	—	1.61	+0.6	175.3	Edge channel
3	127° 20' S 85-29 E	—	1.28	+1.0	175.7	" " + fence
4	244° 0' N 27-19 W	+1° 47'	3.00	+8.9	183.6	
5	127° 30' N 28-24 W	+1° 35'	1.76	+4.9	179.6	Road
6	126° 25' N 61-01 E	+2° 03'	2.32	+8.3	183.0	
7	215° 50' N 61-11 E	—	4.04	+2.3	177.0	Edge channel
8	215° 60' N 72-11 E	+1° 21'	4.27	+10.0	184.7	
9	167° 0' N 46-11 E	—	3.38	+2.5	177.2	Edge channel + fence
10	201° 0' N 4-11 E	—	7.47	+4.2	178.9	Edge channel
11	158° 50' N 48-11 E	+0° 53'	3.59	+5.5	180.2	Road
12	203° 0' N 2-49 W	+1° 08'	7.34	+14.6	189.3	Top bank.
13	152° 0' N 39-21 E	+1° 31'	3.77	+10.0	184.7	Above Rd.
14	194° 10' N 28-41 E	+0° 24'	12.20	+8.5	183.2	Edge channel
15	183° 30' N 32-49 E	+0° 23'	6.73	+4.5	179.2	Edge channel
16	187° 50'	+0° 22'	13.16	+8.4	183.1	Middle channel

Cold - Windy

Nov 14 - 1929

25

Parker
Converse
Elliott
Simpson
Walton

Sta	Hor L	Vert L	Rod (Dist.)	Diff. El.	Elev
B - 16	N23-01E 177°50'	+0'49'	7.27	+10.2	184.9
17	N35-11E 190°0'	—	5.10	+3.2	177.9
18	N16-36E 171°25'	+1'10'	6.30	+12.8	187.5
H.I. 4.9 Transit Pt C	N35-54E 190°43'	—	6.27	+4.1	178.8
C - B	10°43' N1-14W	—	—	—	—
6-1	150°30' N65-31E	—	2.39	+0.9	179.7
2	220°20' N5-44W	—	4.46	+1.8	180.6
3	149°0' N66-11E	+1°53'	2.40	+7.8	186.6
4	221°0' N48-31E	+0°42'	5.01	+6.1	184.9
5	203°40' N19-26E	+0°42'	6.00	+7.3	186.1
6	174°15' N31-24E	—	6.83	+3.6	182.4
7	186°10' N16-41E	—	3.57	+1.9	180.7
8	171°30' N3-31E	+1°26'	6.78	+11.0	195.8
9	158°20' N28-41E	+2°17'	6.32	+25.2	204.0
H.I. 4.7 Transit Pt D	183°30'	—	6.29	+3.9	182.7
D - C	3°30' S48-09E	—	—	—	—
D-1	286°0' S73-39E	+1°05'	4.32	+8.2	190.9
2	261°10' N17-34W	+1°16'	4.60	+10.2	192.9
3	141°25' N71-11E	—	2.54	+0.6	183.3
4	226°0' N15-49W	+1°15'	4.72	+10.3	193.0
5	139°0' N69-11E	+2°38'	2.72	+12.5	195.2
6	224°0' N19-56E	—	4.62	+2.5	185.2
7	170°45' N15-36E	—	3.53	+1.3	184.0
8	170°25'	+0°57'	3.63	+6.0	188.7

(174.7)

Fence
Center of channel
Road

(178.8)

Edge channel
" "
End of fence
Bank
"
Edge channel
Center channel
Bank
Road

(Magnetic C to D N 29°30' E)

(182.7)

Top of low ridge between Cottonwood & La Posta
" " " " " "
Edge channel
Top of bank
" " "
Edge channel
" "
Top bank

Sta	Hor. L	Vert L	Rocl	Diff. El.	Elev.
D-9	N42-41E 197-30	—	4.43	+2.3	185.0
10	N42-26E 197-15	+0°46'	4.48	+6.0	188.7
11	N42-11E 197-0	+0°57'	5.05	+8.4	191.1
H.I. 49 Transit Point E	N62-14E 223-03	+0°24'	6.79	+4.7	187.4
E - D	43-03				
E-1	S11-16W 346-05	—	2.62	+0.5	187.9
2	N16-09W 138-40	—	0.12	+2.2	189.6
3	S9-57W 344-40	+1°-31'	2.70	+7.3	194.7
4	N14-44W 140-0	+1°38'	3.56	+10.2	197.6
5	N23-41E 178-30	—	2.30	+1.9	189.3
6	N21-21E 176-10	+1°08'	2.36	+4.7	192.1
7	S53-29E 281-20	—	4.58	+4.0	191.4
8	S53-19E 281-30	+0°56'	4.68	+7.6	195.0
9	S47-19E 287-30	+0°59'	6.00	+10.3	197.7
10	N1-21E 156-10	+0°42'	4.20	+5.1	192.5
11	S79-39E 255-10	+0°35'	6.97	+6.6	194.0
12	S79-11E 255-30	+1°13'	6.58	+14.0	201.4
13	N37-56E 192-45	—	5.46	+4.1	191.5
14	N36-21E 191-10	+0°41'	5.50	+6.6	194.0
15	S76-39E 258-10	+1°17'	7.90	+17.7	205.1
16	N16-01E 170-50	+0°54'	5.95	+9.4	196.8
H.I. 47 Transit Point F	N68-18E 223-07	+0°26'	7.19	+5.4	192.8
F - E	43-07				
F-1	S71-59E 262-50	—	1.47	+1.3	194.1

(182.7)

Sand Line

Top Bank

" "

Sand Line N. side channel

(187.4)

Sand Line

Top bank

" "

Sand Line

Top bank

Sand Line

Top bank

Sand Line

Top bank

Sand Line

Top Bank

(Mag E to F, N 69-30E)

(192.8)

Sand line

Sta.	Hor. L	Vert. L	Rod	D.F. E.I.	Elev.
F-2	573-29E 262-20	+2° 04'	1.56	+5.6	192.4
3	N45-41W 109-0	—	3.58	0.00	192.8
4	N71-19E 263-30	+2-34'	2.90	+13.0	205.8
5	N46-09W 108-40	—	3.82	+2.7	195.5
6	N44-49W 109-50	+0° 35'	5.12	+5.2	198.0
7	N40-41E 195-30	+0° 23'	5.83	+3.9	196.7
8	N41-11E 196-0	+0° 53'	5.91	+9.1	201.9
9	N45-31E 200-20	+2° 34'	6.04	+27.0	219.8
10	N1-41E 157-30	—	4.93	+3.2	196.0
11	N1-09W 153-40	+0° 56'	5.13	+8.4	201.2
12	N11-24W 143-25	+0° 58'	6.15	+10.4	203.2
HI. 4.9 Transit Pit G	N22-41E 177-30	+0° 25'	7.06	+5.1	197.9
G - F	357-30				
6-1	N52-49W 102-0	—	2.56	+1.1	199.0
2	N63-26E 218-15	—	2.22	+0.1	198.0
3	N64-51E 219-40	+1° 26'	2.31	+6.4	204.3
4	N60-59W 93-50	+1° 40'	3.51	+10.2	208.1
5	N73-11E 228-0	+4° 43'	2.51	+20.6	218.5
6	N62-44N 92-35	+1° 41'	3.85	+11.3	209.2
7	N35-51E 190-40	+0° 22'	6.38	+4.0	201.9
8	N18-39W 136-10	+0° 26'	4.40	+3.3	201.2
9	N29-21E 194-10	+1° 35'	6.41	+17.7	215.6
10	N21-04W 133-45	+1° 0'	4.63	+8.2	206.1
11	N35-09W 119-40	+0° 53'	5.93	+9.3	207.2
HI. 5.0 Transit Pit H	N19-07S 173-56	+0° 27'	6.98	+5.50	203.4
H - G	353-56				

(192.8)

Top bank

Sand line

Start of rocky hill

Top bank

Sand line

Top bank

Rocky hillside

Sand line (No defined bank)

Bank

(Mag. F to G

N23-50E)

(197.9)

Sand line & fence

Valley Bottom grown up with
grass and low willows above
cross fence.

" " "

Top bank

Bank + fence

Rocky hillside

Fence Cor.

Sand line

" "

Rocky hillside

Top bank

fence

(Mag. G to H - N20-30E)

Sta.	Hor. L	Vert L	Trod	Diff. El	Elev	
H - 1	S82-31W 63-20	—	3.30	+ 0.3	203.7	(203.4) Sand Line. No Bank
2	N89-01E 243-50	—	1.17	- 0.31	203.1	" "
3	S84-39E 250-10	+3-36	1.79	+11.7	214.6	
4	N83-19W 71-30	+0-27	5.40	+4.7	207.6	Fc. Line
5	N34-21E 179-10	+0-20	3.15	+1.8	205.2	Sand Line
6	N38-51E 193-40	+2-42	3.00	+14.0	217.4	
7	N44-39W 110-10	+0-28	5.34	+4.4	207.8	Sand Line No Bank
8	N50-19W 104-30	+0-43	6.35	+7.9	211.3	Fc. Line
9	N20-41E 175-30	+0-21	5.51	+3.4	206.8	Sand Line
10	N21-51E 176-40	+1-57	5.64	+19.1	222.5	Top High Bank
11	N31-19W 123-30	+0-26	7.03	+5.3	208.7	Sand Line
12	N31-29W 123-20	+0-40	7.15	+8.3	211.7	
13	N6-51E 161-40	+0-23	7.12	+4.8	208.2	Sand Line
14	N8-21E 163-20	+1-15	7.35	+16.0	219.4	
15	N34-29W 120-30	+1-16	8.18	+18.1	221.5	Fc. Line
H.I. 4.9 Transit Pt I	N12-55W 141-54	+0-33	6.26	+6.00	209.4	(Mag. H to I N11-40 W)
I - H	321-54					(209.4)
I-1	N31-09W 123-45	—	5.00	+2.3	211.7	Sand line
2	N31-49W 123-0	+0°55'	5.08	+8.1	217.5	Top bank
3	N32-11E 187-0	—	3.07	+0.1	209.5	Sand line
4	N34-59W 119-50	+0°57'	5.32	+8.8	218.2	Fence
5	N32-41E 187-30	—	3.32	+4.1	213.5	Bank
6	N17-59W 136-50	+0°22'	10.10	+6.5	215.9	Cross Fence & Sand line
7	N18-59W 135-30	+0°46'	10.10	+13.5	222.9	Top of bank
8	N19-41W 135-0	+0°48'	10.20	+14.4	223.8	Fence Cor. (Appr. E&W fence across channel)

End of Cottonwood Creek Survey.

Stadia Survey of Sand Line and Channel of La Posta Creek above Junction with Cottonwood Creek.

Converse
Elliott - Notes
Simpson } Rod.
Walton }
Nov. 14, 1929.
Strong Wind.

29

Sta	Hor L	Vert L	Rod	Diff	Elev.
A					172.3
230	27° 57'				
HL. 4.7	574-15 E				
Transit Pt B	259-34	—	7.23	+3.8	176.1
B' - A	79-34				
	N 20-29 N				
B'-1	134-20	—	0.97	-0.5	175.6
	S 81-31 W				
2	56-20	—	3.70	-1.2	174.9
	S 77-36 W				
3	52-25	—	4.27	-0.3	175.8
	N 15-19 W				
4	139-30	—	3.60	-0.5	175.6
	S 74-41 W				
5	49-30	+ 0° 40'	4.88	+5.3	181.9
	N 14-39 W				
6	140-10	+ 1° 03'	4.13	+7.6	183.7
	S 53-31 W				
7	28-20	—	3.23	-0.6	175.5
	S 51-21 W				
8	26-10	—	4.08	+0.4	176.5
	N 20-31 E				
9	175-20	—	4.72	+2.1	178.2
	S 52-11 W				
10	27-0	+ 1° 12'	4.56	+9.5	185.6
	N 17-21 E				
11	172-20	+ 0° 57'	5.88	+9.7	185.8
	S 10-41 W				
12	345-30	—	2.56	+1.8	177.9
	S 12-41 W				
13	346-50	—	2.60	+3.4	179.5
	N 29-59 E				
14	184-40	—	6.67	+2.9	179.0
	S 12-31 W				
15	347-20	+ 1° 30'	3.42	+9.0	185.1
	N 28-51 E				
16	183-40	+ 0° 30'	9.50	+8.3	184.4
	S 14-59 E				
17	319-50	—	3.03	+1.6	175.7
	S 8-09 E				
18	326-40	+ 1° 45'	3.23	+9.9	186.0

For Transit Point "A" see Page 23

(Mag A - 230 = 554-0W)

(Mag A to B' = 574-30E)

(176.1)

Sand line

Fence

Sand line + edge of Road

Toe of Slope

Side hill

" "

Fence Cor. & Sand line

Road

Toe of slope

Side hill

" "

Sand line

Top bank

Toe slope

Side hill

Sand line + fence

Side hill

Note - All Hor. Angles turned to right from back tangent.

00 Azimuth = Bearing S. 25° W. Pt. 230 to Pt. 230 on 166 Contour. See Page 23.

74-30
54
368
128-30
231-30
259-36
27-57
31-27

Sta	Hor L	Vert L	Rod	Diff. El.	Elev.	
B-19	N40-41E 195-30	+0°25'	13.10	+9.5	185.6	(176.1) Toe of slope
20	S4-49E 293-0	—	2.70	+2.0	178.1	Sand Line ?
21	N64-11E 209-0	+0°27'	11.62	+9.1	185.2	Toe of slope
22	N85-11E 240-20	—	3.73	+2.2	178.3	Valley floor
23	N71-31E 226-20	+0°20'	8.75	+5.1	181.2	Toe of rocky point
24	S77-59E 256-50	—	6.08	+4.2	180.3	Valley floor
25	S68-19E 266-30	+0°25'	7.86	+5.7	181.8	" "
26	S51-34E 283-15	—	6.05	+4.2	180.3	Sand Line ?
Tr. Point C	S65-46E 269-03	+0°28'	7.80	+6.3	182.4	(Mag B to C' N65-0W)
27	S35-49E 299-0	—	6.69	+3.7	179.8	Sand Line
28	S33-59E 300-50	—	6.71	+4.2	180.3	Fence
29	S16-34E 318-15	+0°30'	6.96	+6.1	182.2	Road
30	S29-19E 305-30	+0°57'	7.40	+12.2	188.3	Side Hill
41	N7-52 89-03					(182.4)
B'	S53-19E 281-30	—	2.96	+0.6	183.0	Sand line ?
C-1	N22-01E 176-50	—	5.22	-0.4	182.0	Toe slope rocky island
2	S29-29E 305-20	—	2.97	+0.5	182.9	Sand line ?
3	N21-41E 176-30	+0°37'	5.50	+5.9	188.3	Toe Rocky island
4	N20-31E 181-20	+0°07'	7.10	+1.4	183.8	Toe
5	S4-51N 339-40	—	5.14	+1.8	184.2	Fence Cor.
6	N51-41E 206-30	—	7.29	+1.9	184.3	Toe slope
7	S10-52W 345-45	+1°02'	6.28	+11.3	193.7	Hillside
8	N54-11E 209-0	+0°35'	8.33	+8.5	190.9	"

Sta	Hor L	Vert L	Rod (Dist)	Diff. El.	Elev
-C'-10	^{N82-11E} 240-0	+0° 32'	8.00	+7.4	189.8
11	^{N82-22E} 237-15	+0° 55'	^{8.80} 7.80	+15.6	198.0
12	^{N82-11E} 237-0	+1° 20'	^{13.20} 11.15	+26.0	208.4
13	^{S50-49E} 284-0	+0° 28'	7.06	+5.7	188.1
14	^{S50-29E} 284-20	+0° 19'	7.01	+3.9	186.3
15	^{S88-59E} 245-50	—	3.82	+1.9	184.3
16	^{S43-09E} 291-40	—	7.00	+3.7	186.1
17	^{S42-44E} 292-05	+0° 31'	7.00	+6.3	188.7
18	^{S65-39E} 269-10	—	5.04	+3.9	186.3
19	^{S50-39E} 284-10	+0° 33'	7.83	+7.5	189.9
Transit Pt + D'	^{S35-35E} 299-14	+0° 33'	7.53	+7.2	189.6
D' - C'	119-14				
D'-1	^{S40-11W} 15-0	—	0.72	0.0	189.6
2	^{S4-09E} 330-40	—	2.22	+1.2	190.8
3	^{N62-46E} 217-35	—	0.78	0.0	189.6
4	^{N62-11E} 217-0	—	0.84	-2.7	186.9
5	^{S79-51W} 54-40	—	4.51	-1.0	188.6
6	^{N57-01E} 211-50	—	1.85	-2.4	187.2
7	^{N57-01E} 211-50	—	1.90	+0.6	190.2
8	^{S80-31W} 55-20	—	4.62	-1.8	187.8
9	^{N64-41E} 209-30	—	4.50	+0.7	190.3
10	^{S72-01W} 47-50	+1° 07'	5.68	+11.0	200.6
11	^{N60-01E} 214-50	+0° 45'	5.57	+7.3	196.9
12	^{S37-31W} 12-20	—	4.83	+6.1	190.7

Nov 18-1929
O.K. Parker Res. Eng
Converse T
Elliott Notes
Simpson Rod
Walton Rod

182.4

Fence Cor.

Foot rocky slope

Rocky slope

Low bank

Sand line

Fence Cor.

Sand line

Top bank

Angle in fence

Fence Cor.

(Mag C'-D'-539-45E*)

189.6

Fence Cor.

" "

Top of channel bank

Fence + sand line

Fence

Sand line

Fence Cor + Top bank

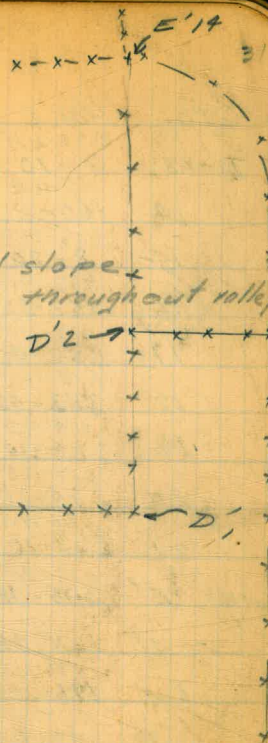
Road

Fence Cor.

Side hill

" "

Fence + edge Rd.



Sta	Hor. L	Vert L	Rod	Diff. E.	Elev.	
D-13	533-21W 8-10 N5-11E	—	4.95	+1.5	191.1	189.6 Road
14	160-0 533-31W	+1°11'	5.64	+11.6	201.2	Hillside
15	8-20 572-14E	+0°51'	5.30	+7.8	196.4	"
16	262-35 517-51W	+0°45'	6.20	+8.1	197.7	Fence
17	352-40 518-56W	+0°23'	7.97	+5.0	194.6	"
18	353-45 550-39E	+0°24'	7.52	+5.3	194.9	Road
19	284-10 550-19E	+0°25'	7.35	+5.3	194.9	Top bank
20	284-30 523-21W	+0°06'	7.35	+1.3	190.9	Sand line
21	358-10 H. 51 529-01E	+1°04'	8.33	+15.5	205.1	Hillside
Transit Pt E'	305-48	+0°23'	7.62	+5.1 +4.1	194.7 193.7	(Mag Dip E' 528-10E)
E' - D'	125-48 N30-31E	—	—	—	—	194.7
E-1	191-20 N37-11E	—	1.97	-0.5	194.2	Bank
2	192-0 543-01W	—	2.04	-3.7	191.0	Sand Line
3	17-50 N56-31E	—	2.37	-0.0	194.7	Fence
4	211-20	—	3.63	-0.0	194.7	"
5	544-51W 19-40	—	5.00	+2.5	197.2	"
6	N62-46E 217-35	+1-23'	4.36	+10.5	205.2	Hillside
7	544-51W 19-40	—	5.30	+4.8	199.5	Road
8	544-51W 19-40	+1°18'	5.82	+13.2	207.9	Hillside
9	568-49E 266-0	+2°27'	3.95	+16.9	211.6	"
10	525-11W 0-0	+1°22'	5.95	+14.2	208.9	On near cor. of schoolhouse 15' x 50'
11	567-39E 267-10	+1°13'	3.74	+8.0	202.7	Fence
12	561-09E 273-40	—	3.56	+2.0	196.7	Top bank
13	559-39E 275-10	—	3.57	-1.2	193.5	Sand line
14	53-01W 337-50	—	5.77	+3.3	198.0	Fence Cor.

Sta	Hor L	Vert L	Rod	Diff.	Elev.
E-15	289-40 545-09E	—	3.41	-0.8	193.9
16	290-50 543-59E	—	3.41	+3.2	197.9
17	341-30 66° 41W	—	6.05	+3.5	198.7
18	348-30 613-41W	+1° 0'	6.66	+11.6	206.3
H.I. ST	321-04E		5.60		198.8
Transit Pat F'	313-45	+0° 25'	5.60	+4.1	197.8
F' - E	133-45				
F'-1	175-40 N20-51E	—	1.46	-1.1	197.7
2	179-40 N24-51E	—	1.54	-4.0	194.8
3	194-0 N39-11E	—	1.83	-4.5	194.3
4	198-20 N43-31E	—	1.93	-0.6	198.7
5	289-0 545-49E	—	0.12	-3.4	195.4
6	210-20 N55-31E	+1° 43'	2.67	+8.0	206.8
7	55-45 S80-56W	—	1.40	-0.8	198.0
8	229-10 N74-21E	+1° 30'	3.37	+8.8	207.6
9	48-40 573-51W	—	2.35	-1.7	197.1
10	26-0 551-11W	—	1.70	-0.9	197.9
11	268-20 566-29E	+1° 45'	4.35	+13.3	212.1
12	269-30 565-19E	+0° 32'	4.00	+3.7	202.5
13	27-0 552-41W	—	2.51	-0.8	198.0
14	286-40 548-09W	—	3.10	+2.0	200.8
15	289-20 545-29E	—	3.10	-1.0	197.8
16	27-0 952-11W	—	2.87	0.0	198.8
17	27-0 532-11W	+1° 16'	3.63	+8.0	206.8
18	324-10 510-39E	—	4.05	0.0	198.8

(194.7)

Sand line

Top bank

Road

Hillside

(Mag. E-F 320-20E) Top of bank

(198.8)

Top bank + fence

Sand line

" "

Top bank + fence Cor.

Sand line

Fence Cor.

Top of 2' bank

Side hill

Fence Cor.

Top of 2' bank

Side hill

Fence line

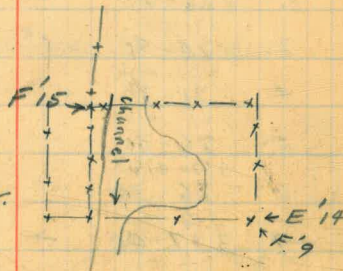
" "

Fence Cor. + Top bank

Sand line + fence

Road

Sand Line + fence Cor.



Sta	Hor L	Vert L	Rod (Dist)	DIFF	Elev.
F' - 19	343-50 S 9-01W	—	2.70	+0.3	199.1
20	343-50 S 9-01W	—	4.21	+0.8	199.6
Tr. Point G'	308-41 S 26-08E	+0°12'	6.88	+2.4	201.2 200.2
-6' - F'	128-41 N 71-51E	—	—	—	—
6'-1	226-40 N 71-51E	—	0.98	-0.3	200.9
2	226-40 N 71-51E	—	1.12	+1.7	202.9
3	226-40 N 71-51E	+1°20'	2.03	+4.7	205.9
4	36-30 S 61-41W	—	1.32	+0.8	202.0
5	36-30 S 61-41W	—	1.58	+0.8	202.0
6	36-30 S 61-41W	—	2.00	+5.1	206.3
7	322-40 S 12-09E	—	1.34	+1.3	202.5 203.2
Tr. Point H'	323-29 S 11-20E	—	2.44	+2.0	202.2 208.6
Tr. Point I'	36-20 S 61-31W	+1°32'	2.78	+7.4	207.6
I' - H'	216-20 N 59-19W	—	—	—	—
1	95-30 S 17-11W	—	0.30	0.0	208.6
2	352-0 N 8-19W	—	0.63	+2.3	210.9
3	146-30 S 65-41W	—	0.80	-1.2	207.4
4	40-30 N 27-29W	—	0.93	+3.0	211.6
5	127-20 S 68-51W	—	1.90	—	—
6	43-40 S 68-51W	+2°34'	1.45	+6.5	215.1
7	43-30 S 68-51W	+3°26'	2.20	+12.8	221.4
Tr. Point H'	143-29 N 34-11E	—	—	—	—
H'-1	189-0	—	1.58	-2.0	201.2

(198.8)

Top of bank - sand line 1' lower

(525-20E)

(201.2)

Sand line

Top bank

Side hill, fence 32' farther 1' higher

fence

Sand line

Top bank

fence (E+W)

(Mag. 510-40E)

(Mag. 362-15W)

(208.6)

On near cor. barn 45 x 40

" " " cow shed 28 x 28

" " " shed 13 x 20

fence

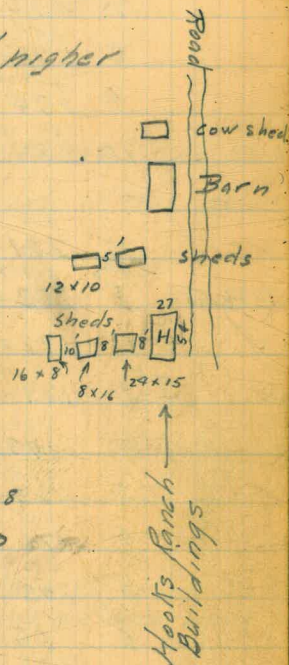
On near cor. house

Road

Hillside

(203.2)

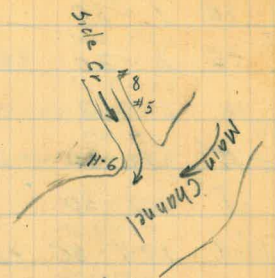
Sand line



Sta	Hor L	Vert L	Rad (Dist)		
H-2	N341E 193-0	00	1.67	+2.8	206.0
3	N62-01E 216-50	+9°01'	2.10	+14.7	217.9
4	N66-18W 88-30	-	1.25	+2.5	205.7
5	S79-11W 54-40	-	0.90	+0.5	203.7
6	S18-10E 316-40	-	1.07	+1.1	204.3
7	S21-19E 313-30	-	1.10	+4.2	207.4
8	S58-29E 276-20	+2°-13'	2.32	+9.0	212.7
9	S50-49E 284-0	+2°09'	3.08	+11.8	215.0
10	284-0		4.38		
Tr. Point J	S73-19E 261-30	+3°04'	2.18	+11.6	214.8
J' - H'	H.I. 49, S17-28W 352-17	-	3.42	+3.8	207.0
J'-1	N25-09W 129-90	-	2.00	-1.9	205.1
2	N24-59E 179-40	-	1.67	-1.5	205.5
3	N25-49W 129-0	+1°52'	3.00	+9.8	216.8
4	N28-39W 126-10	-	2.26	-0.9	206.6
5	N51-01E 205-50	-	2.00	+2.4	209.4
6	S80-31W 55-20	-	1.13	0.0	207.0
7	S77-51W 52-40	-	1.69	+1.1	208.1
8	N77-11E 232-10	+1°25'	3.18	+7.9	214.9
9	S78-11W 53-0	-	2.17	+4.7	211.7
10	S64-19E 270-30	-	0.82	+0.3	207.3
11	S78-31W 53-20	+1°49'	2.62	+8.3	215.3
12	S76-49E 258-0	+1°16'	3.00	+6.6	213.6

203.2

Top bank + fence (120' E. to fence Cor.)
 Side hill
 Fence cor.
 Sand line (1' bank)
 " "
 Top bank
 Toe slope
 Top bank (Sand line 8' lower)
 0.5' higher than #9, Top bank (Sand line 6' lower, start of rock in creek, Creek 10' wide at this point)
 Side hill
 Mag. S18-15W



207.0

Sand line
 " "
 Top of knoll
 Toe " "
 bank of side Creek (19' farther 35' lower to sand line of side creek)
 sand line
 fence
 bank (20' farther 9' lower to sand line of side Creek)
 Road
 Sand line
 Side hill

Sta	Hor L	Vert L	Pod (Dist.)	Diff El.	Elev.
J-13	526-31W 1-20	—	2.15	+1.1	208.1
14	526-41W 1-30	—	2.55	+1.5	208.5
15	527-31W 2-20	+0°58'	3.33	+5.6	212.6
16	527-31W 2-20	—	3.83		
H.F. 51 Tr. Point K'	552-19E 282-30	+0°40'	5.40	+6.3	213.3
K' - J'	102-30				
K'-1	K 30-41E 195-50	+2°31'	1.36	+6.0	219.3
2	K 30-41E 195-50	+4°20'	1.80	+13.6	226.9
3	563-41W 38-30	—	1.68	-1.5	211.8
4	565-59E 268-50	+4°46'	1.73	+14.3	227.6
5	557-09E 277-10	—	1.68	+0.9	214.2
6	59-09E 325-40	—	2.57	+1.7	215.0
H.F. 50 Tr. Point L	559-17E 275-32	—	1.55	+0.9	214.2
L' - K	95-32				
H.F. 49 Tr. Point M	540-09E 294-42	+1°42'	1.67	+5.0	219.2
M' - L'	114-42				
M'-1	52-59E 331-50	—	0.24	-2.5	216.7
2	564-09E 270-0	+16°25'	0.40	+10.8	230.0
3	582-51W 357-40	-1°20'	0.85	-2.0	217.7
Tr. Point N	526-11W 1-0	-0°37'	1.37	-1.5	217.7
N' - M'	181-0				
H.F. 48 Tr. Point O'	533-55E 300-54	—	2.67	+3.9	221.6
O' - N'	120-54				
O'-1	513-31W 348-20	—	1.84	+1.5	223.1
2	556-51E 211-40	—	0.51	-0.4	221.2

(207.0)

Sand line

fence

Road

6' higher than # 15 - side hill

(Mag. 551-30 E) Sand line

(213.3)

Toe slope

Side hill

Mid-channel

Side hill

Sand line

Mid-channel

(Mag. 558-30 E)

(214.2)

(Mag. 539-45 E)

(219.2)

Sand line

Side hill

Mid-channel

526-35W Mag.

(217.7)

(533-20 E)

(221.6)

Sand line

Sta	Hor. L	Vert. L	Red (Dist.)	D.H.E.	E.I.
0-3	N44-41E 199-30	+5°0'	0.83	+7.2	228.8
Tr. Point P	N.I. 53 S24-16E 310-33	+0°30'	2.75	+2.4	224.0
P' - 0	133-33				
P'-1	S84-28E 249-20	—	0.67	+0.7	224.7
2	N75-31E 234-20	+3°47'	1.18	+7.8	231.8
Tr. Point Q	S39-26E 295-13	—	3.32	+3.8	227.8
3	S31-51W 6-40	—	0.74	-0.2	223.9
Tr. Point Q'					
Q' - P'	115-13				
Q'-1	N61-51E 215-40	—	1.00	+0.6	228.4
2	N60-11E 205-0	—	1.50	+7.0	234.8
Tr. Point R	+9 S20-20W 355-09	—	2.00	-0.6	227.2
R' - Q'	175-09				
R'-1	S141W 336-30	—	3.57	+0.1	227.3
2	S70-59E 263-50	—	3.70	+4.3	231.5
3	S70-59E 263-50	—	4.00	+14.3	241.5
4	S48-31W 23-20	—	1.40	-1.0	226.2
5	S48-31W 23-20	+0°36'	3.25	+3.4	230.6
6	S58-11W 63-0	—	4.43	-2.7	224.5
Tr. Point S'	S88-22W 63-11	—	4.58	-2.7	224.5
Tr. Point T	N84-49E 239-38	+0°45'	5.92	+7.8	235.0
T' - R	N.I. 5.0 59-38				
T'-1	N8-41E 163-30	—	0.72	-1.0	234.0

(221.6)

Hillside
(Mag S 23-30E)

(224.0)

Sand line
Side Hill
S38-50E

(227.8)

Sand line
Bank

(S 21-25W)

(227.2)

Sand line & fence
Sand line
Sidehill
Sand line
Fence 5' higher 100' farther
Sand line
(Mag S89-0W)

Mag (N 85-50E)

(235.0)

Sand line

Sta	Hor. L	Vert. L	Red (Dist.)	Diff. El.	Elev
T-2	N8-41E 163-30	+ 4°0'	1.22	+8.5	243.5
3	S31-49E 303-0	—	1.41	+0.5	235.5
4	N54-51E 209-90	—	2.30	+1.5	236.5
Tr. Point U'	S86-00E 248-99	—	1.49	+2.1	237.1
U' - T'	68-49	—			
U'-1	S8-59E 325-50	—	0.75	-0.6	236.5
Tr. Point V'	N76-27E 231-16	—	2.28	+2.5	239.6
V' - U'	51-16	—			
V'-1	S24-29E 313-20	—	0.63	+0.2	239.8
2	N15-41E 170-90	—	2.10	-0.9	238.7
W'	S74-19E 260-31	—	2.36	+2.2	241.8

235.0

Side hill
 Sand line 15' farther 20' higher, hillside
 Sand line 30' " 10' " "
 Mag 385-0E

237.1

Sand line 20' " 20' " "
 Mag. N 78-0E

239.6

Sand line 20' " 10' " "
 Sand line 80' " 10' " "
 Mag 573-30E

Note - Stream 4' wide and 2 to 4 inches deep above T'. carrying much sand. Also sand line continues up stream for more than 1500 ft from W' but not surveyed on acct. of press of time to complete Moreno work

224.5

Sta	Hor. L	Vert. L	Red (Dist.)	Diff. El.	Elev
Tr. Point S'					
S' - R'	243-11				
S'-1	N7-49W 145-0	-1°15'	2.20	-4.8	219.7
2	S3-31W 338-20	+3°13'	0.54	+3.0	227.5
3	S27-11W 2-0	+2°13'	1.29	+5.0	229.5
4	N64-44W 90-0	-0°43'	2.96	-3.7	220.8
5	N75-29W 79-20	+0°20'	3.60	+2.1	226.6
Tr. Point X'	N57-29W 97-20	-0°25'	4.20	-3.1	221.4
X' 5'	277-20				
X'-1	N66-11E 221-0	-3°50'	0.40	-2.7	218.7
2	N53-09W 101-40	—	0.66	+2.3	223.7
3	N29-19W 125-30	-0°56'	3.13	-5.1	216.3

221.4

Sand line
 Fence
 10' ft 1' lower to sand line

	Hor L	Vert L	Red (Dist.)	DIFFER.	
X' 4	N 31-39W 123-10	-0°42'	3.19	-3.9	217.5
5	S 83 SW 58-90	+3°49'	0.89	+5.9	227.3
6	N 70-44 W 114-0	+0°05'	2.80	+0.4	221.8
To Point Y'	N 29-53W 124-56	-0°47'	3.30	-4.5	216.9

221.4

Fence

Troad

"

N 29-0W

Forced to quit on acct. darkness.

12/12/41

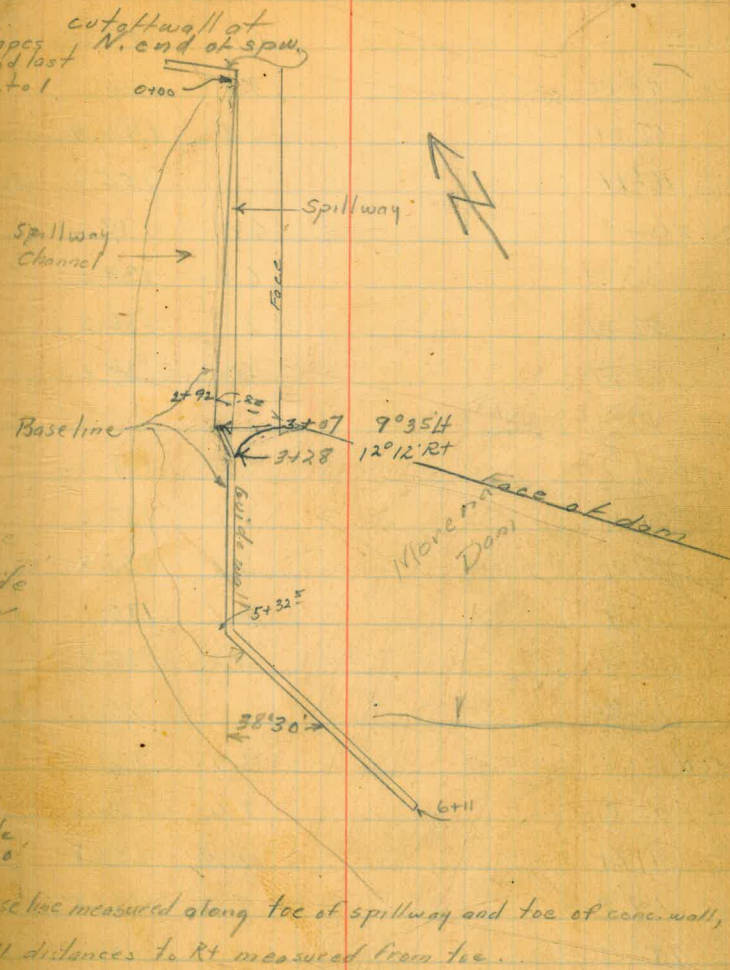
Hill
Super
Brooks
Hodgeson

40

X-section of spillway channel at Morena Dam

	0.85	157.85	151.0	
0+00			151.9	
78' Lt			155.0	top conc. spw.
0+13		3.0	148.9	14' higher 4' further out
155' Rt		4.1	147.8	
83' Lt			155.0	top conc. spw.
0+50		4.6	147.3	
11' Rt		5.1	146.8	14' higher 4' further out
27' Rt		5.3	146.6	
98' Lt			155.0	top conc. spw.
1+00		7.1	144.8	Toe of loose rock slide 1 1/2 to 1 slope for 30'
40' Rt (s.r. face 10' further)		7.5	144.4	
118' Lt			155.0	top conc. spw.
TP 1	0.87	145.24	7.48	144.37
1+50		2.7	142.5	Toe of loose rock slide 1 1/2 to 1 slope for 40'
35' Rt (s.r. face 10' further)		2.5	142.7	
138' Lt			155.0	top conc. spw.
2+00		4.4	140.8	
43' Rt		4.7	140.5	
62' Rt		3.1	142.1	(20' higher, 3' further out)
158' Lt			155.0	top conc. spw.

Note where side slopes
are not shown beyond last
section assume 1/2 to 1



Baseline measured along toe of spillway and toe of conc. wall,
all distances to Rt measured from toe.

145.24

2+22		4.7	140.5	
" 43'RT		5.1	140.1	
" 66'RT		2.8	142.4	
" 167'LT			155.0	top concersp

20' higher 4' further out

2+50		6.0	139.2	
" 33'RT		6.2	139.0	
" 52'RT		8.7	136.5	
" 65'RT		6.1	139.1	
" 178'LT			155.0	top concersp

14' higher 6' further out

2+75		7.0	138.2	
" 29'RT		8.0	137.2	
" 33'RT		9.8	135.4	
" 54'RT		10.1	135.1	
" 65'RT		7.8	137.4	
" 182'LT			155.0	top concersp

16' higher - 4' further out

3+00		7.7	137.5	
" 22'RT		8.6	136.6	
" 41'RT		10.4	134.8	
" 64'RT		9.4	135.8	
" 198'LT			155.0	top concersp

16' higher - 5' further out

See add. pages bet. 3+00 & 3+50 P. 41

" 2	0.41		136.90	
			136.08	
		8.75	136.49	

3+50		0.6	136.3	
" 20'RT		1.9	135.0	
" 61'RT		4.1	132.8	
" 67'RT		2.1	134.8	

Top of vert. wall to ht - elev. 143.5

15' higher - 5' further out

136.90
136.08

4400		1.3	135.6 134.8
10' RT		3.6	133.3
35' RT		5.0	131.9
66' RT		4.7	132.2

4450		1.6	135.3 134.5
12' RT		5.7	131.2
39' RT		5.9	131.0
66' RT		6.2	130.7

5400		6.2	130.7 129.9
16' RT		8.4	128.5
30' RT		8.0	128.9
50' RT		8.9	128.0
62' RT		6.7	130.2

5432 ⁵ (at RT to back fence)		8.5	128.4 127.6
20' RT		10.5	126.4
26' RT		14.4	122.5
38' RT		10.3	126.6
58' RT		9.0	127.9

TP	1.15	125.52 123.70	12.53	124.37 123.55
----	------	-----------------------------	-------	-----------------------------

42
142²
Loose D.G. above Conc. Top vert wall to Lt - elev 141⁴
On Conc.

22' higher - 4' further out.

140⁶
Loose D.G. above Conc. Top vert wall to Lt, elev 139.8
On Conc.

Vert. 25'

139⁵
On Conc. Top vert wall to Lt, elev 138.3

Ver 15' then vertical slope

On Conc.

138⁰
Top vert wall to Lt elev. 137²
(end of road wall)

Vert. 22'

125.52
123.70

5+32 E (at Rt 6 to tangent ahead)			128.4
			127.6
6' RT		6.8	118.7
30' RT		8.6	116.9
36' RT		3.5	122.0
55' RT		4.3	121.2

TP	0.23	112.69		112.46
		110.87	13.06	110.64
TP	0.92	100.73		99.81
		98.91	12.88	97.99

5+82 E			0.5	100.2
				98.4
11' RT			6.1	94.6
48' RT			6.0	94.7
57' RT			1.1	99.6

TP	4.72	92.68		87.96
		90.86	12.77	86.14

6+11 End of concrete guide wall			8.0	84.7
				82.9
8' RT			8.7	84.0
85' RT			6.7	86.0
48' RT			6.3	86.4
55' RT			0.5	92.2

43

1 to 1 slope loose rock + large boulders for 50'

vert 6' - 1 1/2 to 1 slope for 50'

15' higher + further out than 1/2 to 1 - 50'

Additional x-sections

π #	5.3	141.8	136.49
3-107 (bisect. of L)			4.3 137.5
19' RT			5.0 136.8
27' RT			7.0 134.8
56' RT			7.2 134.6
59' RT			5.5 136.3
66' RT			5.4 136.4
20' RT			155.0
3-128 (bisect. of L)			5.1 136.7
23' RT			6.1 135.7
43' RT			7.4 134.4
61' RT			8.5 133.3
74' RT			4.1 137.7

20' higher, 6' further out.

Top of vert. wall El. 144.9

vert. - 15' 1 1/2 to 1 slope 50'

12/15/41

A. H.

Saper

Brooks

Hodgson

44

Profile, top of guide wall - Distances to Lt

	5.08	172.08		167.0
3+28-6° Lt			6.76	165.32
+50-58 "			8.17	163.91
4+00-55 "			12.77	159.31
TP	0.21	159.24	13.05	159.03
4+50-45 Lt			4.40	154.84
5+00-37 "			8.79	150.45
5+32.5-35 Lt			11.71	147.53
TP	0.18	146.89	12.53	146.71
	0.20	134.11	12.98	133.91
	0.10	121.26	12.95	121.16
5+82.5-54 Lt			1.0	120.26
TP	1.0	110.86	11.40	109.86
	3.30	102.31	11.85	99.01
6+11-42 Lt			0.0	102.31

from base loc (see page 40)
Top bridge floor.

sketch of guide wall
sta. 3+28 to 5+32.5

see sketch p. 40



sketch of guide
wall sta. 5+32.5 to 6+11



MAR. 1, 1949

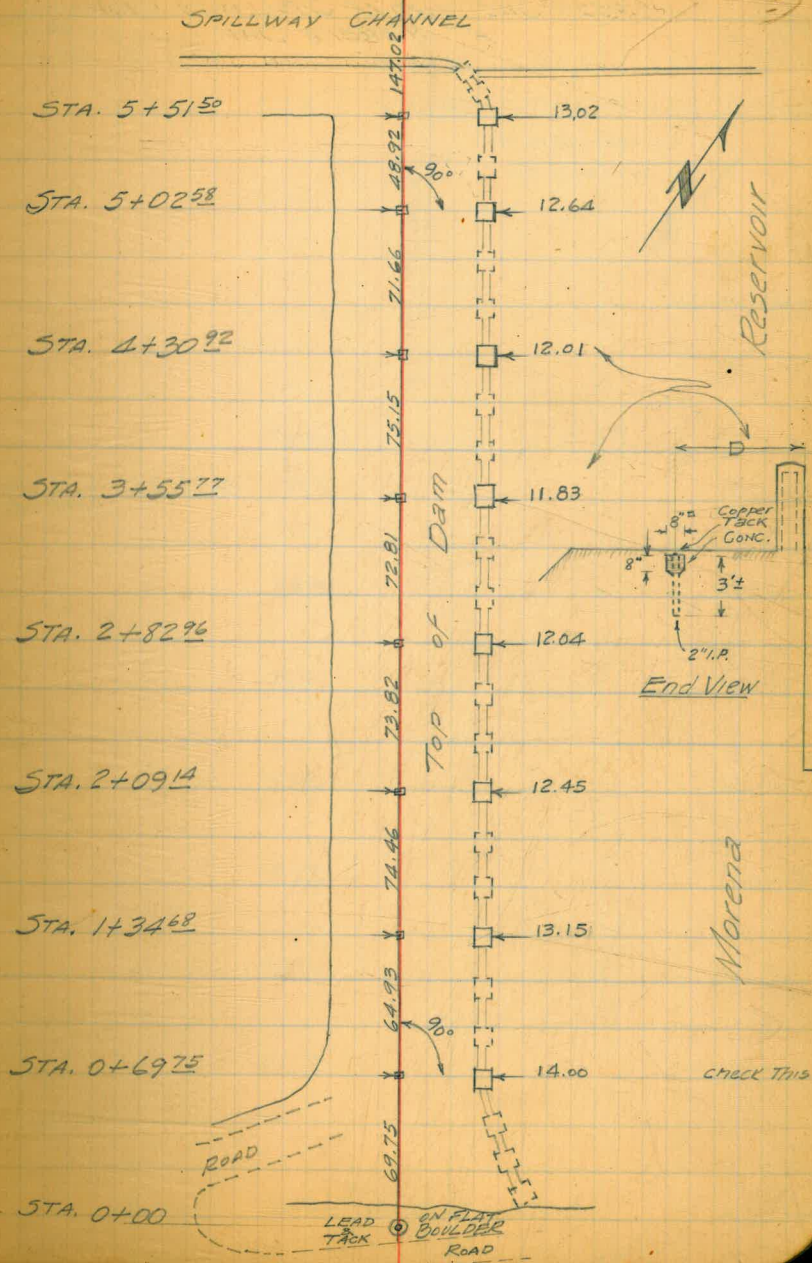
Beatty
Baker
Rogers

BASE LINE ESTABLISHED ON TOP
OF MORENA DAM FOR
MEASUREMENT OF MOVEMENT.

STA. 6+9852

LEAD & TACK
IN GRANITE
BOULDER @ of
Target

46

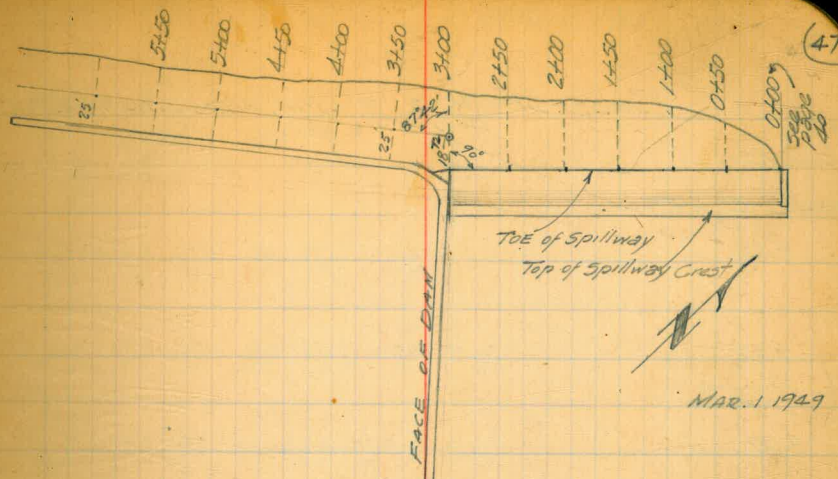


CROSS-SECTIONS OF SPILLWAY CHANNEL
AT MORENA DAM

B.M	3.69	3056.51	3052.82	USC 2.65 1937-6 575
H	0.37	3044.61	12.27	3044.24

Shots on Spillway Crest

0+00		5.79	3078.82	= 157.00 (Staff Gauge)
+50		5.88		
1+00		5.83		
+50		5.79		
2+00		5.83		
+50		5.78		
3+00		5.84		
H	0.27	3032.03	12.85	3031.76



May 26 1949

49

Cross-Sections of Spillway Channel Cont'd

5+25

3016.01

5.3 5.8 7.9 6.4 7.2 9.0 6.5 4.6 +34 +7.4 +14.5
25 18.5 12.5 7 2 105 125 35 38 35 35

5+325

RT. C^s TO BACK Tang.

38° 00' ±
See page 40

+3.5 +3.5 5.6 6.3 8.6 8.8 7.2 10.3 11.3 11.7 8.7 9.4 7.4 6.3 0.0 +13.6 *
26.8 25 25 20 18 14 4.5 4.5 2 88 105 15 30.5 32 34

5+325

RT. C^s TO Forward Tang.

9.7 7.6 7.8 6.1 2.0 +15 +6.5 +10.0
175 213 29 29.5 35 35 38 40 *

TP 13.03 3028.51 0.53 3015.48

TP 12.89 3040.85 0.55 3027.96

TP 12.90 3053.67 0.68 3040.77

CK BM, 0.83 3052.84 = 3052.82
pg. 27

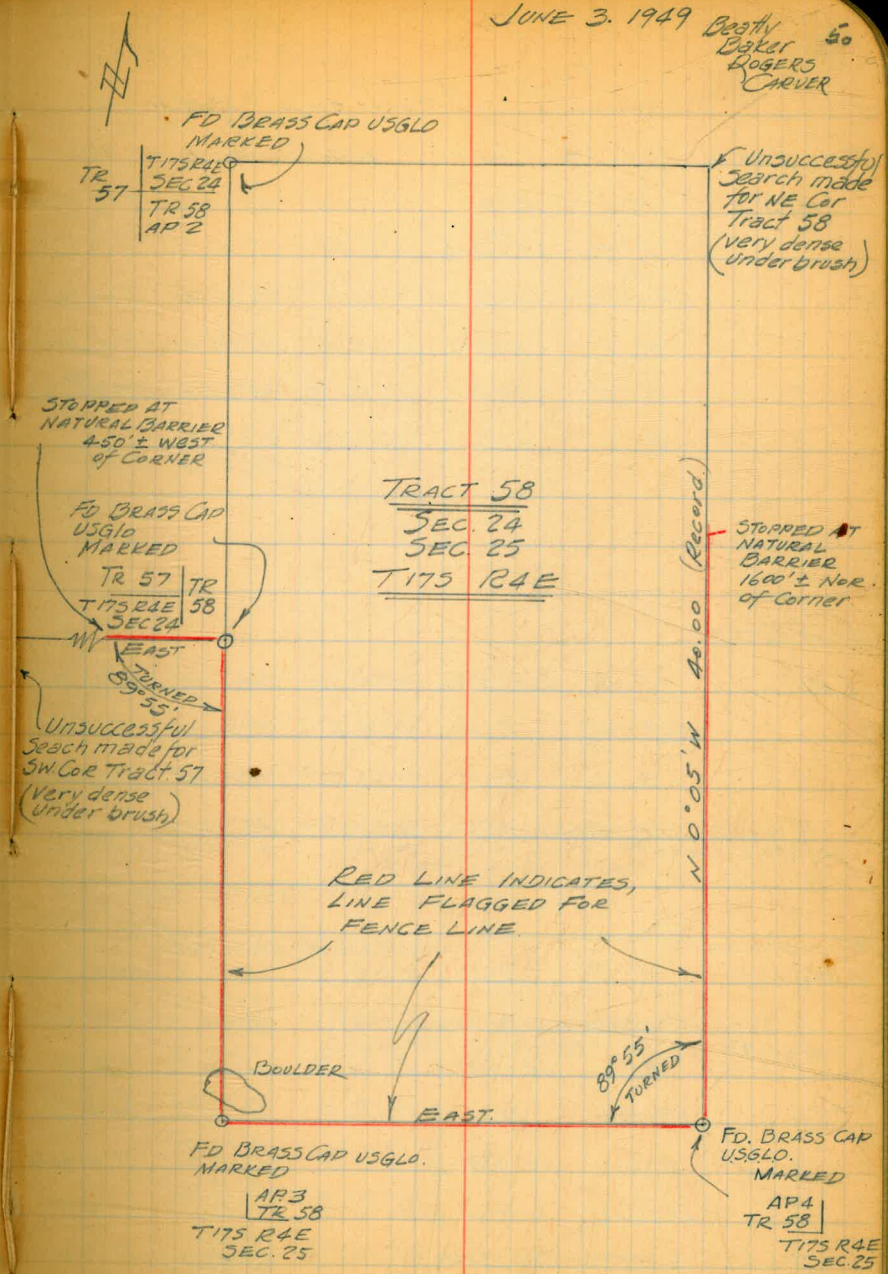
* = old paint mark
visible on rock
face.

WATER GAUGE PAINTED ON ROCK

0+50	9' high	} Foot marks & 5' marks painted on NW Rock Face. 0.0 Elev = Toe of spillway slope See sketch pg. 47
1+85	20' "	
3+00	17' "	
3+63	13' "	} Foot marks & 5' marks painted on NW Rock Face. 0.0 Elev. = Toe of Rock Face.
4+15	15' "	
4+80	15' "	
5+32	15' "	

TRACT 58 T175 R4E SEC. 24-25
 Property Line Flagged for Fence.

JUNE 3, 1949
 Beatty
 Baker
 ROGERS
 CARVER



NOTE: SEE ALSO BK 703 pg. 6

OCTOBER 18 1949
BEATTY, T.
COLD & Windy

LIETZ T N° 10278
(20" VERNIER) A=0°00'00"
D=17759'40"

51

(-SILT SURVEY-)
TRIANGULATION OF RANGE ENDS - MORENA LAKE

T AT STATION	STA. TO	STA.	1 °	6 °	MEAN °
R-5	R-2	R-9	11°17'30"	67°44'10"	11°17'21.7"
"	R-9	6F-548	6°13'40"	37°22'40"	6°13'46.7"
"	Δ 6F-548	R-6	7°58'40"	47°52'00"	7°58'40"
"	R-6	R-12	17°18'10"	102°48'40"	17°18'06.6"
"	R-12	R-3	22°29'20"	132°55'10"	22°29'11.6"
"	R-3	R-2	294°43'30"	328°18'30" 1768°18'30"	294°43'05"
					360°00'11.6"

NOTE: ANGLES TURNED TO RIGHT
3-NORMAL
3-INVERTED

(R-3 waving in wind)

T AT STATION	STA. TO	STA.	1 °	6 °	MEAN °
R-1	R-4	Δ6F-548	44°08'20"	264°51'10"	44°08'31.6"
"	Δ6F-548	R-6	14°14'40"	85°26'50"	14°14'28.3"
"	R-6	R-12	17°47'20"	106°43'00"	17°47'10"
"	R-12	R-4	283°49'40"	262°58'40" 1702°58'40"	283°49'26.6"

NOTE: - VIOLENT WIND DURING THE NIGHT
PLAYED H--- WITH FLAGGED LATH IN
PIPE AT RANGE ENDS.

OCTOBER 19 1949 - Very Windy & Cold!

NOTE: Both A & B Verniers Used.

T AT STATION	STA. TO	STA.	1 °	6 °	MEAN °
Δ BM (EGG) DAM	R-2	R-12	20-23-40 220°23'30"	242°22'20" 62°22'10"	40°23'43.6"
"	Nor. BASE	R-2	(A) 59°10'50" (B) 239°10'30"	355°04'50" 175°04'30"	57°10'48.3"
"	R-2	6F-548	(A) 8°37'30" (B) 188°37'10"	51°42'50" 221°42'30"	5°37'18.6"
"	6F-548	R-12	(A) 31°46'20" (B) 211°46'00"	190°38'20" 10°38'10"	31°46'25"
"	R-12	6F-553	(A) 19°10'30" (B) 199°10'10"	113°03'40" 295°03'20"	19°10'26.6"
"	6F-553	So. BASE	(A) 58°34'40" (B) 238°34'20"	351°28'20" 171°28'10"	58°34'45"
"	So. BASE	Nor. BASE	(A) 183°40'20" (B) 2°40'00"	16°03'10" 1096°03'10" 196°02'50"	182°40'31.6"
					360°00'28.1"

NOTE: Nor. BASE REFERS TO POINT
CALLED G+9852, Pg. 46 THIS BOOK

40°23'43.6"

NOTE: SOUTH BASE REFERS TO POINT
CALLED O+00, Pg. 46 THIS BOOK

OCT. 19 1949
Very Windy & Cold

52

TRIANGULATION OF RANGE ENDS - MORENA LAKE

TAT STATION	STA. TO	STA.	I. Z	L. Z	MEAN Z
R-2	6F-553	R-15	19°19'00" 199°18'40"	115°54'30" 295°54'10"	19°19'05"
"	R-15	R-3	18°41'20" 198°41'00"	112°08'40" 292°08'30"	18°41'26"
"	R-3	R-1	35°19'30" 215°19'10"	211°57'50" 31°57'30"	35°19'38"
"	R-1	A BM (ECC) DAM	43°11'20" 223°11'00"	259°09'00" 79°08'50"	43°11'30"
"	A BM DAM	6F-553	243°28'20" 63°28'00"	20°50'30" 146°50'20" 200°50'00"	243°28'23"
					360°00'03"

TAT R-4	R-6	R-12	26°29'20" 206°29'00"	158°57'10" 38°57'00"	26°29'31.6"
"	R-12	R-15	32°10'10" 212°09'50"	193°01'20" 13°01'10"	32°10'13.3"
"	R-15	R-11	17°41'40" 197°41'20"	106°10'20" 286°10'20"	17°41'46.7"
"	R-11	R-3	23°02'40" 203°02'20"	138°15'20" 318°15'00"	23°02'33.3"
"	R-3	R-8	13°27'10" 193°26'40"	82°41'50" 262°41'30"	13°46'58.3"
"	R-8	R-5	9°45'50" 189°45'30"	58°52'10" 238°51'50"	9°45'41.6"
"	R-5	R-6	237°00'40" 57°00'20"	342°02'20" 142°03'20" 162°03'00"	237°00'33.3"
					360°00'18.1"

⊠ R-8 waving in wind

TAT R-10	R-9	R-6	37°19'50" 217°19'30"	223°59'50" 43°59'30"	37°19'58.3"
"	R-6	R-9	322°40'00" 142°39'40"	136°00'40" 192°00'40" 316°00'20"	322°40'06.3"
					360°00'06.6"

OCT. 19, 1949
Cold -

53

TRIANGULATION OF RANGE ENDS STA. TO STA.		- MORENA LAKE M X			
		1 X	2 X		
T AT R-9	R-3	R-8	4° 02' 40"	21° 14' 50"	4° 02' 29.3"
"	R-8	R-5	184° 02' 20"	204° 14' 30"	
"	R-5	R-10	6° 56' 10"	41° 36' 30"	6° 56' 05"
"	R-10	R-3	186° 55' 50"	221° 36' 10"	
			39° 18' 50"	235° 53' 30"	39° 18' 55"
			219° 18' 20"	55° 53' 10"	
			309° 23' 00"	58° 17' 20"	
			129° 42' 40"	1838° 17' 20"	309° 22' 53.3"
				238° 17' 00"	
			360° 00' 21.6"		

F R-8 is leaning to left

F R-5 is leaning to right.

T AT R-6	R-3	R-8	1° 32' 20"	9° 13' 20"	1° 32' 13.3"
"	R-8	R-5	181° 32' 00"	9° 13' 00"	
"	R-5	R-2	9° 38' 00"	37° 48' 30"	9° 38' 05"
"	R-2	R-4	199° 37' 00"	237° 48' 20"	
"	R-4	R-10	14° 58' 20"	89° 50'	14° 58' 20"
"	R-10	R-3	174° 58' 10"	269° 49' 20"	
			16° 32' 30"	99° 16' 10"	16° 32' 41.6"
			176° 32' 10"	279° 15' 50"	
			30° 55' 10"	185° 29' 40"	30° 54' 56.5"
			210° 54' 50"	05° 29' 20"	
			286° 24' 20"	278° 24' 20"	286° 24' 02.3"
			106° 24' 00"	1718° 24' 20"	
				98° 24' 00"	
			360° 00' 19.8"		

OCTOBER 20, 1949. Clear, Bright & Cool

(R-5 & R-8 are leaning.)

T AT R-12	R-15	R-13	20° 12' 40"	121° 15' 20"	20° 12' 36.6"
"	R-13	R-11	200° 12' 20"	301° 15' 30"	
"	R-11	R-3	29° 02' 30"	174° 14' 20"	29° 02' 23.9"
"	R-3	R-5	209° 02' 10"	354° 14' 00"	
"	R-5	ΔONECO DAM	33° 13' 30"	199° 18' 40"	33° 13' 06.6"
"	R-5	ΔONECO DAM	213° 13' 10"	19° 18' 30"	
"	R-5	ΔONECO DAM	7° 33' 40"	45° 21' 00"	7° 33' 30.6"
"	R-5	ΔONECO DAM	187° 33' 20"	225° 20' 40"	
"	R-5	ΔONECO DAM	22° 52' 30"	187° 15' 00"	22° 52' 30"
"	R-5	ΔONECO DAM	202° 52' 10"	317° 14' 40"	
"	R-4	R-10	17° 50' 30"	107° 02' 00"	17° 50' 20"
"	R-4	R-10	177° 50' 00"	287° 01' 40"	
"	R-4	R-10	2° 21' 40"	122° 09' 50"	2° 21' 38.6"
"	R-4	R-10	200° 21' 20"	302° 09' 30"	
"	R-10	R-15	208° 54' 20"	173° 26' 20"	208° 54' 23.6"
"	R-10	R-15	28° 54' 10"	125° 26' 20"	
				353° 26' 00"	
			360° 00' 28.6"		

(Can't see R-2)

OCTOBER 20 1941

54

TRIANGULATION OF RANGE ENDS (CONT'D) MARIANA LAKE

STA. Occupied	BS. STA	FS STA.	1	6	Mean
T AT R-14	R-15	R-18	4°44'20" 184°42'10"	28°28'10" 206°27'50"	4°44'21.8"
"	R-18	R-16	3°56'40" 189°56'00"	23°38'20" 203°24'00"	3°56'23.3"
"	R-16	R-13	20°34'30" 200°32'00"	123°26'30" 303°26'10"	20°34'25"
"	R-13	R-11	33°52'50" 239°59'20"	203°20'00" 23°19'50"	33°53'20"
"	R-11	R-15	296°52'00" 116°51'00"	341°09'30" 178°09'20" 161°00'10"	296°51'35"
					360°00'29.7"
T AT R-20	R-21	R-19	68°03'50" 248°03'20"	48°23'10" 208°23'10" 224°22'50"	68°03'51.3"
"	R-19	R-18	27°50'00" 207°49'40"	167°00'20" 347°00'20"	27°50'06.8"
"	R-18	R-16	4°58'10" 184°57'50"	29°47'20" 209°47'20"	4°57'56.8"
"	R-16	R-13	26°44'30" 206°44'00"	160°26'30" 340°26'10"	26°44'25"
"	R-13	R-11	32°05'20" 212°05'20"	192°32'30" 12°34'10"	32°05'45"
"	R-11	R-22	200°18'10" 20°17'50"	121°29'50" 1201°49'50" 301°49'20"	200°18'18.2"
					360°00'22.3"
T AT R-22	R-21	GF-553	0°28'40" 180°48'20"	4°50'20" 184°50'20"	0°28'26.6"
"	GF-553	R-19	59°13'20" 239°12'00"	355°19'50" 175°19'30"	59°13'18.3"
"	R-19	R-21	299°58'40" 119°58'20"	359°50'50" 179°50'50" 179°50'30"	299°58'28.3"
					360°00'13.2"

(R-16 ?? Flag gone of last) This point is not R-16 !!

24°30'48.3"

(?? R-16) This point is not R-16 !!

OCTOBER 20 1949
BEATTY T.

55

TRIANGULATION OF RANGE ENDS — MIREND LAKE

T AT	R-14	R-20	67 M	67 M	67 M
"	R-20	R-15	5-17-20 185-17-00	31-43-50 211-43-20	9-55-15 5-17-18.3
"	R-15	R-22	(Can't see for trees)		
"	R-15	R-17	7-45-30 250-25-30	22-23-30 244-36-10	7-46-05
"	R-17	R-14	274-01-10 24-05-30	204-03-50 144-05-50 24-05-20	274-00-58
					360° 00' 06.6"

T AT R-15	R-18	R-16	53-03 238-05	348-23 168-23-20	58-02-55
"	R-16	R-2	56-58 237-00	321-49-30 161-51	56-58-22.5
"	R-2	R-4	7-35 187-37	25-35 225-39	7-36-25
"	R-4	R-14	37-24 217-24	224-02 44-24-30	37-24-02.5
"	R-14	R-18	199-56-30 19-37	119-41 1199-41 299-42	199-56-55
					359° 59' 40"

OCTOBER 20 1949
PM
RAINEY T.
T K&E +
1- Vernier
A = 0° 00'
B = 180° 01' 00"

NOTE: Mean \bar{x} derived from mean of A & B Vernier readings of 6th \bar{x} .

NOTE R-21 NOT OCCUPIED. ONLY R-22 CAN BE SEEN WITHOUT EXTENSIVE BRUSHING.

T AT R-19	BM (EGG) DAM	R-2	50-53 230-52	305-17-30 125-19	50-53-02.5
"	R-2	R-22	18-08 198-09	108-47 265-47	18-07-50
"	R-22	BM (EGG) DAM	291-00 111-00	305-55-30 1745-56-45 125-57	290-59-27
					360° 00' 19.5"

T AT R-16	R-14	R-20	15-30-20 193-30-20	81-04-20 261-04-20	13-30-46.6
"	R-20	R-15	5-23-20 252-23-00	314-21-40 134-21-20	52-23-36.6
"	R-15	R-17	50-47-20 230-47-00	304-21-00 124-43-40	50-47-20
"	R-17	R-14	243-18-20 63-17-50	19-50-00 1459-50-00 199-49-40	243-18-20
					360° 00' 03.2"

OCTOBER 21, 1949
BRIGHT & MILD
LIGHT to MED. WIND
Beatty T. (Lietz)

OCTOBER 21, 1949

56

TRIANGULATION OF RANGE ENDS - MOAENA LAKE

STA Occupied	B.S. STA	F.S. STA	1 \times	6 \times	Mean \times
T AT R-13	R-2	R-4	(A) 10°45'50" (B) 190°45'30"	62°35'30" 244°35'10"	10°45'55"
"	R-2	R-10	(A) 5°26'40" (B) 185°26'10"	32°37'50" 212°37'30"	5°26'18"
"	R-10	R-12	(A) 22°08'50" (B) 202°08'30"	132°53'20" 312°53'00"	22°08'53"
"	R-12	R-14	29°20'30" 209°20'10"	176°04'50" 356°04'30"	29°20'48"
"	R-14	R-20	17°07'40" 197°07'20"	102°45'50" 282°45'30"	17°07'36"
"	R-20	R-15	65°58'10" 245°57'50"	35°29'20" 215°49'00"	65°58'13"
"	R-15	R-2	209°12'30" 29°12'10"	175°16'00" 1255°16'00" 355°15'40"	209°12'40"
					360°00'36"
T AT R-17	R-18	R-16	38°05'40" 218°05'20"	228°33'20" 47°33'00"	38°05'33"
"	R-16	R-18	321°54'20" 191°54'00"	131°24'50" 1931°26'50" 311°26'30"	321°54'28"
					360°00'06"
T AT R-8	R-4	R-9	14°07' 194°09'	84°50' 264°51'	14°08'25"
"	R-9	R-6	11°30'30" 191°31'	69°01' 249°02'	11°30'15"
"	R-6	R-7	47°15' 227°16'	283°32' 103°33'	47°15'25"
"	R-7	R-4	287°06' (A) 107°06' (B)	282°24' 172°24' 102°32'	287°05'40"
					359°59'45"

OCTOBER 21, 1949
RAINY T.

2876
1722

282
1440
1722

NOTE: R-7 NOT OCCUPIED ONLY R-8 CAN BE SEEN, WITHOUT EXTENSIVE BRUSHING, (WITH AXE)

OCTOBER 21, 1929
RAINEY - T.

57

TRIANGULATION OF RANGE ENDS - MORENA LAKE

STA. Occupied	BS. STA.	FS STA.	1 ♯	6 ♯	Meaning
R-3	R-5	R-2	61°28'30" 241°30'	08°55' 188°56'	61°29'15"
"	R-2	R-4	29°39' 209°40'	177°56' 357°56'	29°39'20"
"	R-4	R-9	23°53' 223°55'	143°26' 323°27'	23°54'25"
"	R-9	R-6	14°00' 194°01'	84°02' 264°03'	14°00'25"
"	R-6	R-5	230°57' 50°57'	(A) 305°40' (B) 1385°40' (C) 125°41'	230°56'45"
					360°00'10"
R-11	R-4	R-12	(A) 48°38' (B) 228°39'	291°52' 111°54'	48°38'25"
"	R-12	R-14	34°12' 214°13'	205°12' 25°12'	34°12'00"
"	R-14	R-4	277°09' 97°09'	(A) 222°55' (B) 1662°55' (C) 42°55'	277°09'10"
					357°59'55"

272°
00'
138°

NOTE: FOR ELEVATIONS ESTABLISHED
FOR TOPS OF THESE 1/2" PIPES
(EACH STAMPED WITH ITS
CORRESPONDING NUMBER)
SEE BOOK 727, PAGES 35-39

MORENA RES.

CHECK TRAVERSE for 2950 CONTOUR

April 7 1950

Beatty
Papers
Payne

58

SEE BK
727 FOR
LEVELS

T AT A B.S F.S X DIST STADIA
R-22 B 81°11'30" LT 1176
" R-13 100°46' LT

13.00
1.25 (S 53°30' W)

2950 Elev.
A

T AT B A C 177°15' LT 1020
" R-11 187°29'30" LT
" Y 147°22' LT
(2950) 29°53' RT C
(90° RT 175')

13.00
2.81 (S 55°30' W)

2950 2945 2940 2945 2950
25 B 45 W 145 175

60° LT from BK TANG

T AT C B. R-4 120°28' LT
" R-11 170°47' LT
" R-13 251°19' LT
" D 290°33' LT (45° 75'
25 W/E) 753.
" R-15 294°13'30" LT
" B 360°00' LT
" E 158°18'30" LT 814.

13.00
1.45 (S 54°30' E)

2945 2940 2945 2950
E 43° 507 554
45° RT from FWD TANG

2950 2945 2941 2945 2950
1190 E 295 586 639
(90° RT from FWD TANG)

T AT E C B. 12°02'30" LT
R-12 79°28' LT
R-2 145°47' LT
F 153°44' LT Camp 2474.58 2520.
R-11 223°42' LT
F R 2°50'20"
4 1°21'00"
N 2°50'15"

14.00
1.60
1.70 (N 76°00' W)

2950 2945 2940 2940 2945 2950
36 E 80 290 337 363
90° RT from BK TAN.

WATER 2940 E

87°04'40 170°10'

CHECK TRAVERSE FOR 2950 CONTOUR

T AT F E G 223°59' LT 651.52
 " R-2 133°59' LT
 " R 270° LT 122.64
 T A G F R-2 40°26' LT
 " ΔBM Ecc Dam 100°10' LT 128.70
 6F-548 25°24'30"

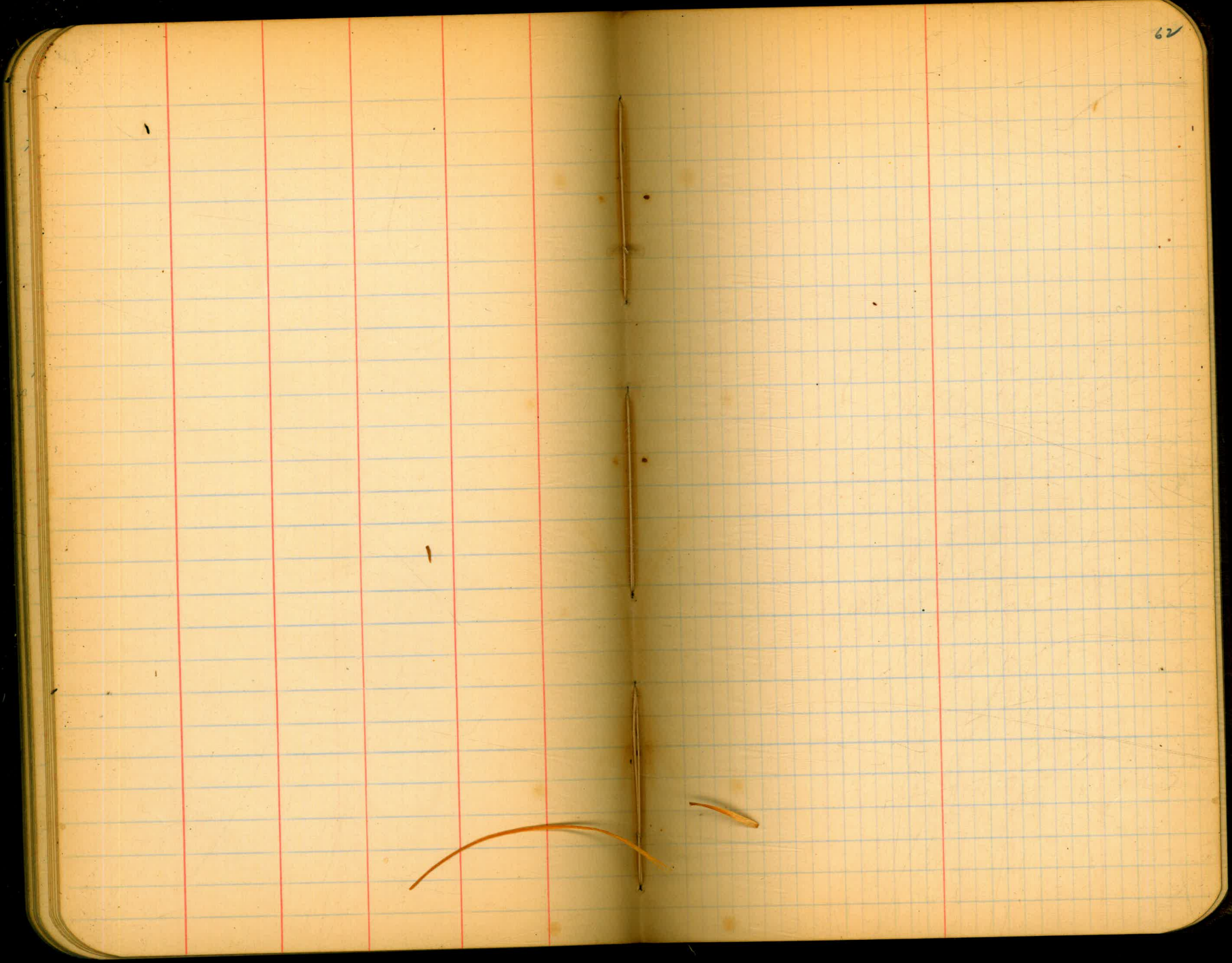
ΔBM(Ecc) Dam G 6F-548 103°39'30" LT 128.70

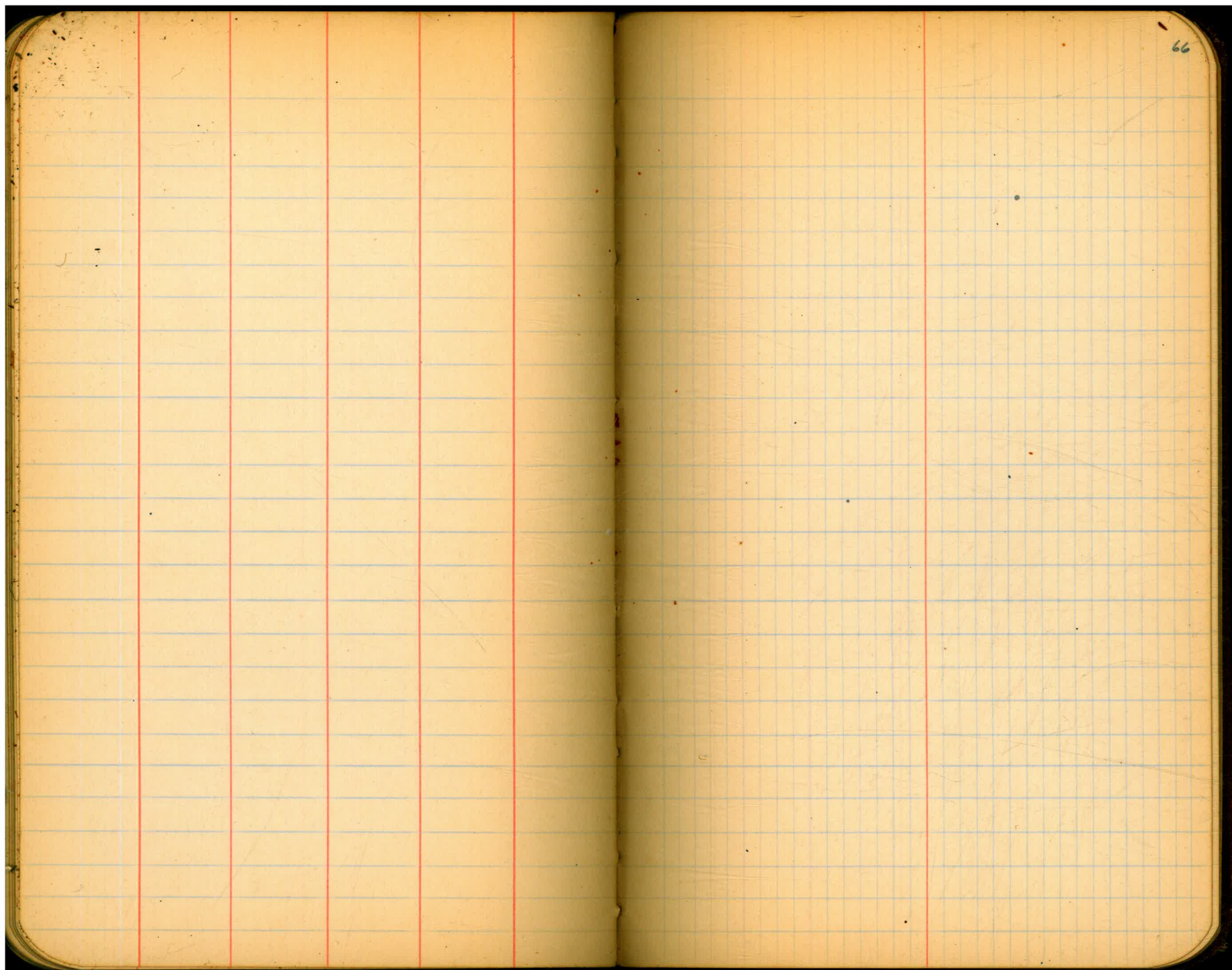
T AT A R-22 P 90° RT 100.00
 Comp. Dist. A To R-22 = 748.78

T AT R-22 R-19 A 29°28'30" LT
 A P 1) 7°36'30" LT
 2) 15-13-10 LT

4/10/50
 Mild
 Beatty
 Rogers
 Payne

(S 60°30'W) 50 45 2940 2937⁶ 2937⁶ 2940 2945 2950
 45 20 5 190 204 222 227
 100 @ 15'30" 96.20
 Horiz 354.08
 215.08 @ 23'10" 197.72
 648.00
 2.52
 125 @ 11.07 651.52
 = 122.64
 90° LT. from BK. Tang)





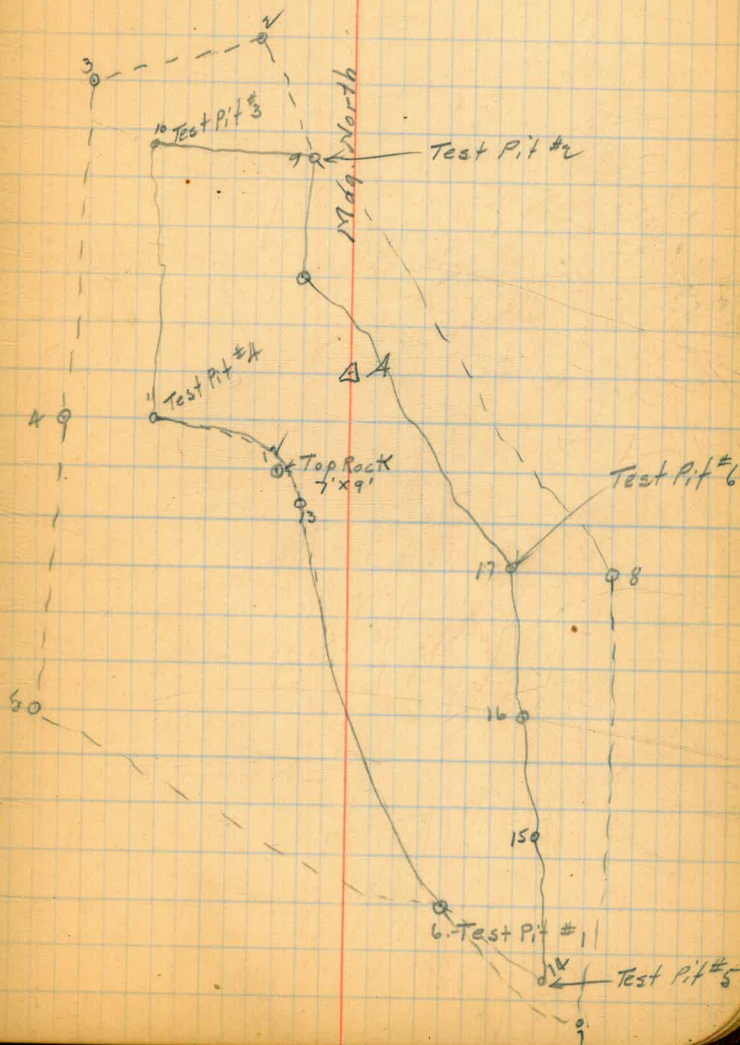
$$\begin{array}{r} 7 \\ 2.75 \\ \hline 4.25 \end{array}$$

Survey of Sand Deposit at Mouth of
Small Canyon above Boat Landing. - Morena.

Sta.	Hor. Δ	Vert. Δ	Red.	Dif. Elev	Elev.
A					155.8
1	—	-10°13'	0.25 82.0	-14.8	141.0
2	350-16	-7-37	0.49 48.0	-6.5	149.3
3	306-10	-13-23	0.49 46.5	-11.0	144.8
4	243-10	-12-20	0.27 25.8	-5.7	150.1
5	199-50	-2-37	0.48 48	-2.2	153.6
6	156-55	—	0.27 0.53	+0.8	156.6
7	140-30	—	0.36 0.36	-0.7	155.1
8	123-40	—	0.36 0.35	-1.3	154.5
9	356-50	—	0.27 0.27	-3.2	152.6
10	318-40	—	0.06 0.27	-3.3	152.5
11	230-40	—	0.12 0.06	-0.4	155.4
12	180-15	—	0.12 0.12	+2.7	158.5
13	160-10	—	0.48 0.12	+1.0	156.8
14	142-35	—	0.37 0.48	+0.7	156.5
15	135-50	—	0.26 0.37	+1.1	156.9
16	138-05	—	0.11 0.26	+1.0	156.8
17	105-40	—	0.08 0.11	+0.9	156.7
18	330-05	—	0.08 0.08	-0.7	155.1

Water Surface 11/2/29

Nov. 12, 1929.
Parker
Converse
Elliott
Simpson
Cold & Windy



$$\begin{array}{r} 12.00 \\ 5.10 \\ \hline 7.90 \end{array}$$

3+07
18
2+92
DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

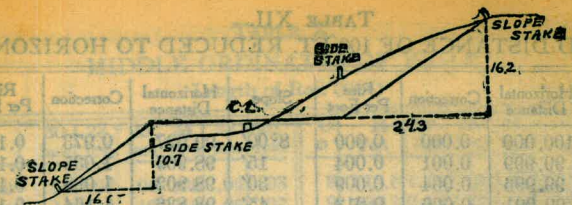
Distance of slope stake from side or shoulder stake for any width roadway, slope $\frac{1}{2}$ to 1. If ground is nearly level the cut or fill at side stake is located by the double entry method in left column and top row. The number in body

**IMPROVED TABLES
AND
INFORMATION**

TABLE No. 2.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections. Degree of curve with a given T may be found by dividing tangent (or external) opposite T by given tangent (or external). The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

TABLE XVII
 DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING
 SLOPE 1 1/4 TO 1. ROADWAY OF ANY WIDTH.



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING
 SLOPE 1 1/4 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.25	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

1205
7

7.00
1.93
5.07

T ST 25
 2-9 11-17-20 67-22-10 41
 9-Δ 6-13-40 37-22-60 6-13-40
 Δ-6 7-58-40 47-52-00 7-58-40
 6-12 17-18-10 103-05-00 17-18-10
 12-3 22-29-20 132-55-10 22-29-20
 Horiz 294-03-20 328-18-30 294-43-05
 1768-18-30
 360 00 10"
 T ST 41
 2-Δ = 44-08-20 264-51-10 - 42-06-31.7
 Δ-6 12-14-20 85-26-50 = 12-14-20
 6-12 17-07-20 106-43-00 = 17-07-20
 Horiz 283-04-40 282-58-20
 1702-58-20 283-04-46.6
 359 57 56.6
 284
 1704

LATIO



6-48
4-90
3+85
3+20
2+00
0+70

0-42 3/4" BEINF BAR
0+00 HWY

0+63.67 L&T +

1+92.67 L&T +

3+09.96 L&T +

4+05.66 L&T +

5+26.77 L&T +

5+31.88 = 5+00 old HWY

192.67
212.99
405.66

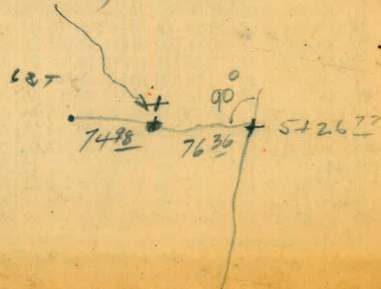
70.7
23
27.21
14.4

305
707
2135
21350
215635

707
28
56
47.8
20.79.6

(376 NOR) RUN ON +

L&T L&T
B 8' + 15'
OAC



13.00
6.48
6.85
2
13.10

Meat 27-57
Bread
Milk S 54° W
Bacon 28
News Papers S 26° W
Cookies
Sweet Pickles
Fresh Fruit O = S 26. W

S = 234°
N = 54°

305.48
234
571.48 W

7.00
2.82
4.18

179.60
127.29
52.30

176.30
167.00
9.30

360
26
234

15
4
060

705

A-230 = 27° 57' = O-S 26 W
A-230 = S 54° W
27-57
26 03

3.36
1
2.86
4.72

259-34 = S 74-30 E
74 30
334-04 = S

305-48
28-10
333-58 = S

R.O.4 1D 48°38' 228°39'
R.O.11 . 3D 145°51' 325°51'
R.O.12 6R 291°52' 111°54'

R.O.12 1D 34°12' 214°13'
R.O.11 3D 102°35' 282°36'
R.O.14 6R 205°12' 25°12'

R.O.14 1D 277°49' 97°09'
R.O.11 3D 111°27' 291°28'
R.O. R.O.4 6R 222°55' 42°55'

$$\textcircled{1} \quad 371.29 @ 27^\circ 45' = 328.59$$

$$371.22 @ 27^\circ 47' = 328.42$$

328.50

$$\textcircled{2} \quad 68.27 @ 50^\circ 35' =$$

$$68.55 @ 50^\circ 47' = 43.39$$

$$\textcircled{3} \quad 35.00 @ 32^\circ 16' = 29.61$$

$$\textcircled{4} \quad 258.45 @ 23^\circ 15' = 237.46$$

$$258.77 @ 23^\circ 21' = 237.58$$

$$\textcircled{5} \quad 184.38 @ 11^\circ 09' = 180.90$$

$$184.36 @ 11^\circ 18' = 180.79$$

$$\textcircled{6} \quad 289.00 @ 1^\circ 23' = 288.92$$

$$289.32 @ 1^\circ 30' = 289.22$$

$$\textcircled{7} \quad 249.00 @ 5^\circ 39' = 247.79$$

$$249.09 @ 5^\circ 50' = 247.80$$

A 00°00' B 180°01'00

DAM 1D 50°53' 230°54'

R.O.19 3D 152°39' 332°59'30"

R.O.20 6R 305°17'30" 125°19'
50°52'56" 20°53'10"
50°53'03"

R.O.20 1D 18°08' 198°09'

R.O.19 3D 54°23' 234°24'

R.O.22 6R 108°47' 288°47'

~~543~~
720
183

R.O.22 1D 291°00' 111°00'

R.O.19 3D 152°58' 332°58'

DAM 6R 355°55'30" 125°57'
59°59'15" 20°59'30"

50°52'33"
18°07'50"
290°59'30"

9°59'53"

291
4
1746
1440
305 56 45

1795 56-45
1440
305

1745
290

A B

018 ID 58°23' 238°05'

3D 174°10' 354°10'

0.15 6R 348°23' 168°23'30"

016

015 016 ID 56°58' 237°00'

3D 170°55' 350°56'

0.2 6R 341°41'30" 161°51'

015 02 ID 7°35' 187°37'

3D 22°48'30" 202°50'

04 6R 45°38' 225°39'

015 04 ID 37°24' 217°24'

3D 112°12' 292°13'

014 6R 224°24' 44°24'30"

015 014 ID 199°56'30" 19°57'

3D 239°50' 59°51'

018 6R 119°41' 299°42'

49-30
45
50-15

R04 ID 14°07' 194°09'
3D 42°24' 222°25'
R.O.8 6R 64°50' 264°51'

R09

R0.9 ID 11°30'30" 191°31'
R08 3D 34°31' 214°31'30"
R.O.6 6R 69°01' 249°02'

R.O.6 ID 47°15' 227°16'
3D 141°46' 321°46'30"
R.O.8
R.O.7 6R 283°32' 103°33'

R.O.7 ID 287°06' 107°06'
3D 141°17' 321°17'
R08 R.O.4 6R 282°34' 102°34'

R.O.5 1D 61°28'30" 241°30'
3D 184°27' 04°27"
R.O.3 6R 08°55' 188°56'
R.O.2

R.O.2 1D 29°39' 209°40'
3D 88°57'31" 268°58'
R.O.3 R.O.4 6R 177°56' 257°56'

R.O.4 1D 23°53' 203°55'
3D 71°42' 251°44'
R.O.3 R.O.9 6R 143°26' 323°27'

R.O.9 1D 14°00' 194°01'
3D 42°01' 222°02'
R.O.3 R.O.6 6R 84°02' 264°03'

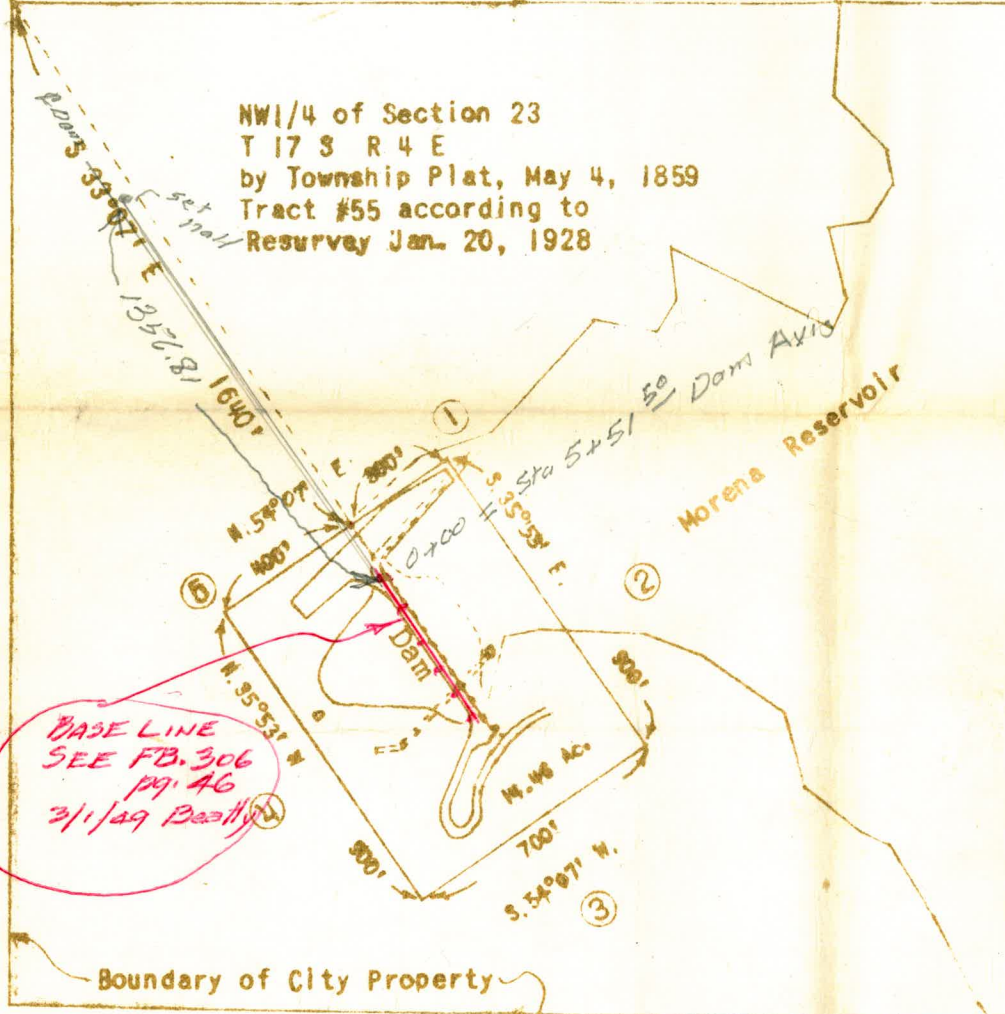
R.O.6 1D 230°57' 50°57'
3D 332°58' 152°51'
R.O.3 R.O.5 6R 305°40' 125°41'

N.W. Cor. of Sec. 23 by U.S. Gov't.
 Plat of May 4, 1859
 N.W. Cor. of Tract #55 of Resurvey, Jan. 20, 1928

NW1/4 of Section 23
 T 17 S R 4 E
 by Township Plat, May 4, 1859
 Tract #55 according to
 Resurvey Jan. 20, 1928

New Section Cor.
 according to U.S.
 Gov't. Resurvey
 Jan. 20, 1928

14	13
23	24



197

CITY OF SAN DIEGO CALIFORNIA WATER DEPARTMENT	
COTTONWOOD-OTAY SYSTEM MORENA DAM	
PROPOSED ANNEXATION TO CITY OF SAN DIEGO	
<i>W.C. Brown</i> Engineer	<i>A. Beermann</i> Director
Scale: 1" = 500'	Date: Nov. 18, 1955

Drawn: Halbeck Checked: C.O.M.

378.50
43.34

371.84
29.60

401.44

UNION PACIFIC
ST. LOUIS, MO.
MAY 19 1918

By Order of the Board of Directors
Secretary

James M. City Secretary



RECEIVED
MAY 19 1918
ST. LOUIS, MO.

PAID
MAY 19 1918
ST. LOUIS, MO.