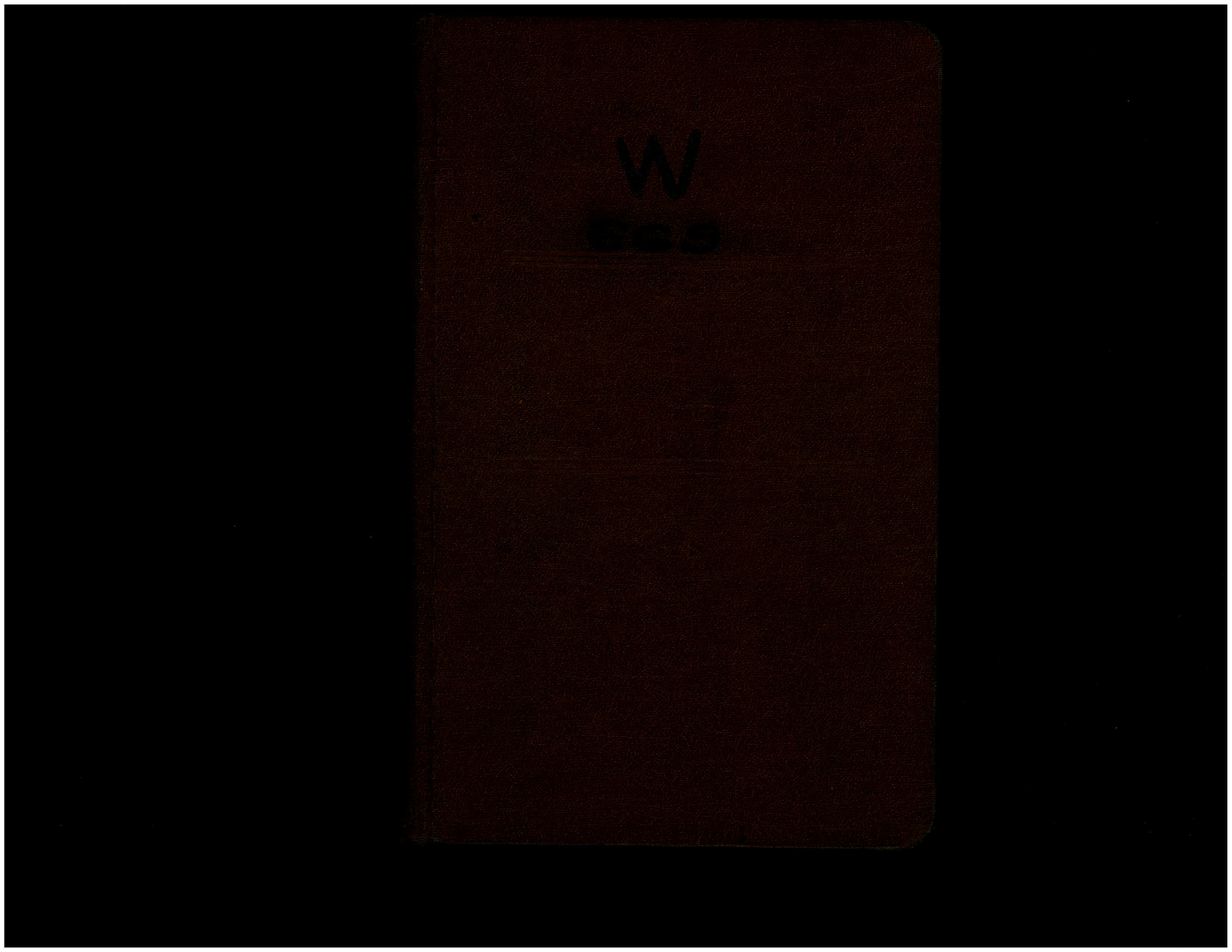
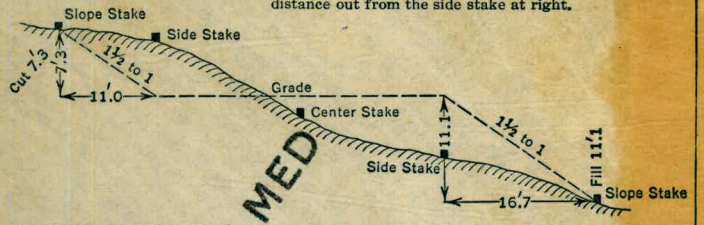

W
663

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

KEUFFEL & ESSER CO., N. Y.

For Curve Tables see end of book.

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The paper in this book **No. F363A** is made of **50%** high grade rag stock with a **WATER RESISTING** surface sizing.

11,112. ks, x, yc. kM.

In t
fro

Cut or Fill

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

INDEX

INDEX

H. H. King
Otten
3-29-43

Levels over Tower Pk. Murray

BM. 1+78.09 on Murray Pk.	4.61	445.23		440.62	USGS
0+00			3.5	41.7	
0+12			12.0	33.0 ~~34.2~~	
0+42			13.4	31.8	
0+62			5.1	40.1	
T.P	12.31	457.13	0.41	444.82	
0+80			6.1	51.0	
0+85			4.9	52.7	
0+96			5.9	51.2	
0+88			2.9	54.2	
T.P	12.82	469.14	0.81	456.32	
1+00			10.9	58.7	
T.P	12.94	480.94	0.64	468.50	
1+26			10.7	70.2	
1+35			10.2	70.7	
1+46			6.5	74.4	
1+72.3			4.0	76.9	
1+85			2.9	78.0	
1+94			5.8	75.1	
2+02.3			3.9	77.0	
2+32.3			0.8	80.1	
"A" 1+72.3 = 0+00			4.0	76.9	
0+60			0.6	80.3	
T.P	3.15	482.59	1.50	479.44	
0+89			6.3	76.3	

Res. L ℄ R

Nail in S. face of buttress

Top 16" Wood stave Pipe

$\frac{-2.0}{14}$ $\frac{+2.1}{14}$

$\frac{-4.7}{14.6}$ $\frac{+3.7}{14.5}$

		482.59			
A 1+20			11.4	71.2	
A 1+61			18.3	64.3	
1+83			23.1	59.5	
T.P.	6.59	488.05	1.13	481.46	
2+02 ℄ =					
0+00 B			11.0	77.1	
0+30			6.8	71.3	
0+80			3.1	85.0	
0+91			1.2	86.9	
1+22			3.1	85.0	
1+47			4.8	83.3	
~~1+63~~			~~9.9~~	~~78.2~~	
1+81			18.3	69.8	
T.P.	11.82	493.32 ~~503.32~~	6.55	481.50	
2+32.31 =				8.04	
0+00 ℄			12.9	~~50~~ 0.4	
				490	
0+71			3.3	~~500.0~~	
				91.5	
0+94			1.8	~~501.5~~	
				91.4	
1+19			1.9	~~501.4~~	
				91.6	
1+48			1.7	~~501.6~~	
1+60			7.4	85.9	cutoff wall
B.M.			2.46	~~500.86~~	ok Dam
				490.86	
B.M.	0.88	491.74		490.86	
1+98.31					
0+00 B²			16.0	73.7	
0+30 B²			10.7	81.0	
0+80 B²			7.1	84.6	
0+91 B²			6.7	85.0	
1+22 B²			8.6	83.1	

3-29-95

2

	-4.5/14	-4.7/7	+4.5/7	+5.3/14
1+61	-5.1/13	-4.3/5		+4.2/14.5

Top Rock - Rod Reading 0+89.31 N.L.W.

0+80	-3.0/14	+1.9/14
0+91	-4.9/14	+1.7/14
1+22	-4.0/13.5	+2.3/14.5
1+47	-5.5/13.5	+1.0/14.5
0+71	-2.4/14	+1.5/14
0+94	-1.7/14	+2.1/14
1+19	-2.4/13.7	+2.1/14.3
1+48	-2.1/15.5	0.0/14.5

N. 1' Lt. 0+70 C Line + Rock.

491.74

1+97	B^2	10.8	80.9
1+52	B^2	12.4	79.3
1+65	B^2	12.9	78.8
1+71	B^2	12.4	79.3
1+72	B^2	15.9	75.8

Stadia survey from Murray Res. to Eucalyptus Res.

4-19-93 Hill King Polak Otten 4.

Point	Dist.	Hor. ∠	Vert. ∠	H.I.	Rod
*3 to 4	(637')	11°31'R	-0°26'	5.0	5.0
*2 to 3	(486')	31°09'L	+0°45'	5.1	5.1
2					
*1 to 2	674 Ch.	P.O.T.	+5°54'	5.1	5.1
*0 to 1	428.5 (437')	9°19'L	+8°00'	4.7	4.7
Pt. 0					

Elev.

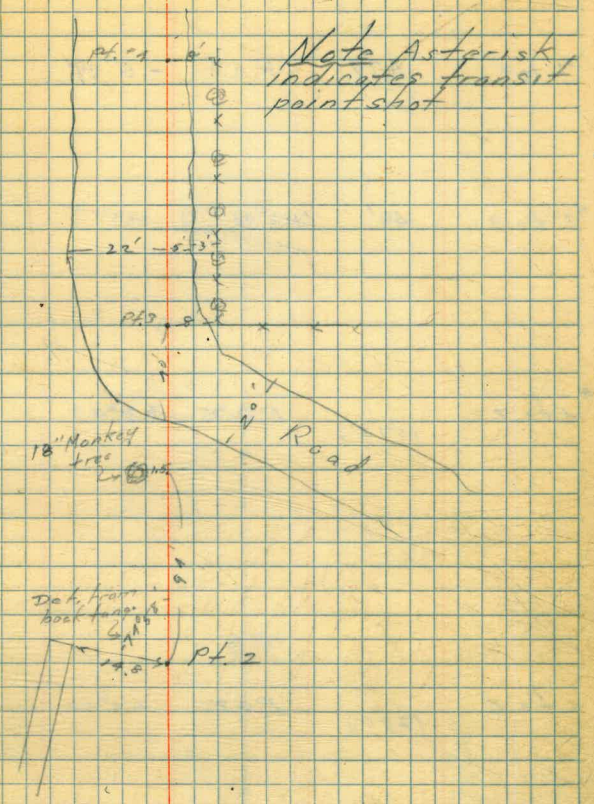
5431 ✓

5480 ✓

5411.6 ?

5367 ✓

4757 Pt. 0 = 0+00 of B² line to tower



Point	Dist.	Horz.	Verts.	H.I.	Rod
7 to 9	479	P.O.T	- 5° 19'	4.8	4.8
7 to 8	49'	∠ 14° 42'			
* 4 to 7	(5-13')	P.O.T	+ 3° 13'	4.9	4.9
4 to 6	(281')	P.O.T	+ 0° 20'	4.9	4.8
4 to 5	(1103')	P.O.T			
Pt. 1					

Elev.

℄

Pt. 8

49'

(536.3)

536.7

Pt. 7 — 13' —

Pt. 6

Pt. 5 — 8.6 — Pole

Road

22' — 6' — 3'

Pt. 1 — 8' —

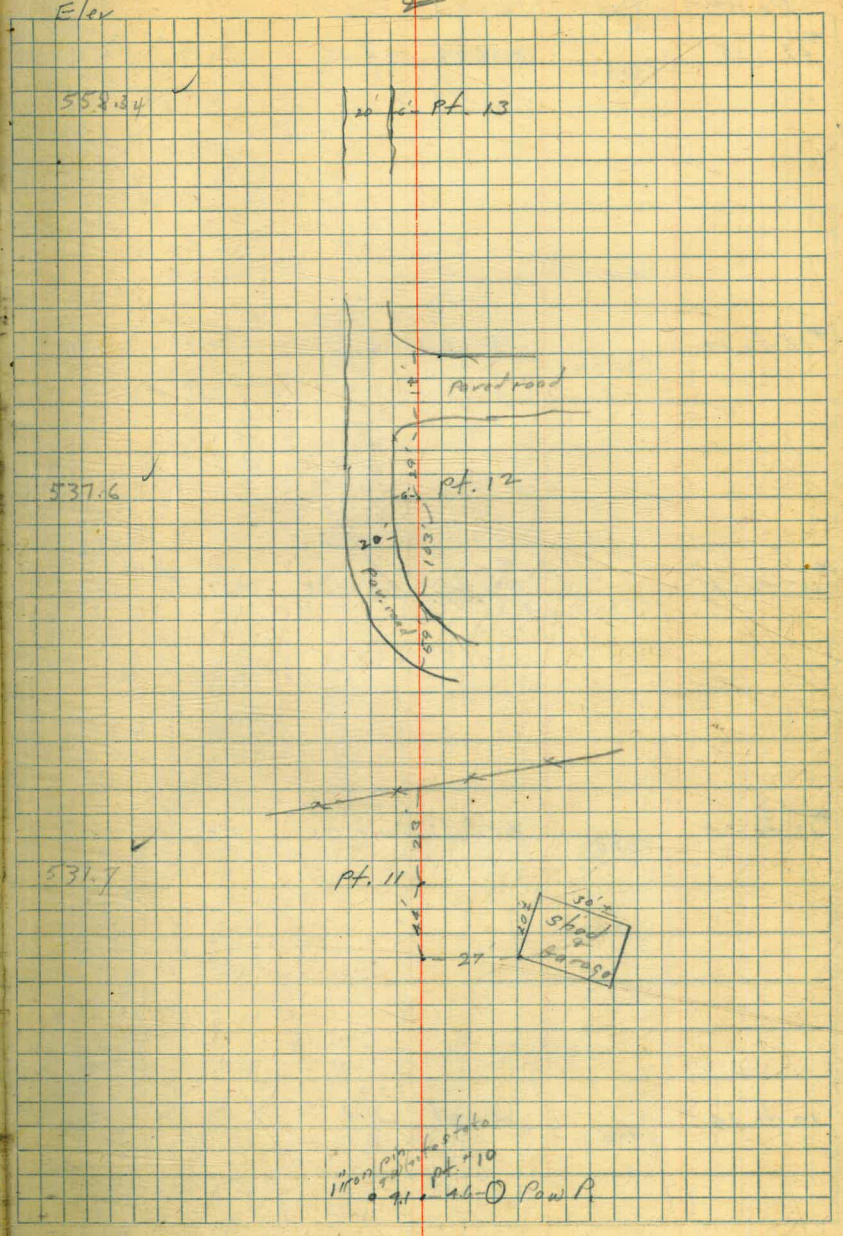
Point	Dis	Hor ∠	Vert ∠	H.I	Rod
*12 to 13	(557)	Rt. 8° 30′	+2° 8′	4.8	4.8
*11 to 12	(661′)	P.O.T.	+0° 31	4.8	4.8
*7 - 11	(1220′)	P.O.T.	- 2° 06′	4.8	4.8
7 - 10	(962′)	P.O.T	-3° 14′	4.8	4.8

Elev

558.34 ✓

537.6 ✓

531.7 ✓



Point	Dist.	Hor.∠	Vert.∠	H.I.	Rod
*17 – 18	(163')	Lt. 10° 24'	+0° 43'	5.0	5.0
*16 to 17	(330')	9° 32' L	+ 2° 12'	1.9	1.9
*15 to 16	(311')	9° 17' L	+ 2° 13'	1.9	1.9
*13 to 15	(686')	0° 43' R	+ 0° 33'	5.0	5.0
13 to 14	(390')	0° 43' R	– 1° 18'	5.0	5.0

Elev

594.4 ✓

592.3 ✓

579.7 ✓

544.9 ✓

N. line Swarner prop.

Pt. 18

P.C.C. road curve

Pt. 17

Pt. 15

B.C. road curve

Pt. 14

Point	Dist.	Horz.	Vert.	H.I.	Rod
*19 to 23	(1025')	P.O.T.	+1°05'	5.0	5.0
19 to 22	(470')	P.O.T.	+1°10'	5.0	5.0
19 to 21	(292')	P.O.T.	+0°14'	5.0	5.0
19 to 20	(139'~~M.M.~~) (147')	P.O.T.	-13°28'	5.0	5.0
*18 to 19	(169.9~~M.M.~~) (171')	34°05'R	-4°40'	4.9	4.9

Elev. ℄

601.0 ✓

Pt. 23

Pt. 20

Pt. 19

K.S. 5 ✓

Pt.	Dis	Hor ∆	Ver ∆	H.I.	Rod
*Pt 32-34	(866')		+0° 2'	5.0	5.0
*29-32	(533')	P.O.T.	+2° 09'	5.0	5.0
Pt 29-31	(371')	P.O.T.	+2° 06'	5.0	5.0
29-30	(153)	P.O.T.	-9° 20'	5.0	5.0
*Pt 28-29	(239)	P.O.T	-4° 0'	5.0	5.0
P.T. *27-28	(327')	P.O.T	-1° 5'	4.8	4.8
*P.T. 26-27	(405)	P.O.T.	+5° 12'	5.0	5.0
*Pt 25-26	(296)	Rt. 24° 46'	+7° 25'	5.0	5.0
Pt *24-25	(361')	Lt. 24° 31'	-6° 13'	5.0	5.0
*Pt 23-24	(539)	P.O.T	-2° 55'	4.9	4.9

Elev.			℄		
606.9 ✓					
606.40 ✓	-0° 24' / 110'		P 32		-2° 25' / 116'
	+2° 10' / 132'		P. 31		-4° 19' / 125'
	+3° 0' / 120		Pt 30	-50.03' – cor 164 / 187 | 162 / 168	-1° 0' / 105
561.9 ✓	-2° 40' / 124		P 29		-0° 30' / 127
586.4 ✓		-3° 8' / 116'	P. 28		+0° 34' / 118'
603.0 ✓	-5° 39' / 129-		P. 27		+11° 54' / 116'
609.2 ✓	+4° 30' / 112'		P. 25 26	-13° 57' / 36'	+11° / 70'
572.7 ✓	+1° 20' / 132'		Pt 25	-50' cor # 173 (77) Rt on line ahead	-1° 38' / 109'
574.8 ✓	+3° / 121'	-7° 16 / 58'	Pt 24		+4° 20' / 116'
577.6 ✓	+7° 53' / 114		Pt 23		-7° 11' / 102'

Pt.	Dis	Hor ∠	Vert. ∠	H.I.	Rod
Top N. P.T40 - End syphon	(172')	107° 11' L ~~117° 12' L~~	+7° 59'	4.7	4.7
* Pt 36-40	(641')	P.O.T.	-0° 24'	5.0	5.0
Pt 36-39	(416')	P.O.T	-1° 02'	5.0	5.0
Pt. 36-38	(281')	P.O.T.	-5° 48'	5.0	11.0
P.T. 36-37	(169')	Lt 17° 14'	-3° 52'	5.0	5.0
*Pt. 35-36	(402')	P.O.T.	-1° 47'	5.0	5.0
*Pt. 34-35	(248')	P.O.T	+4° 15'	5.0	5.0
(back) P.T. 34-33	(439')	P.O.T	-10° 32'	5.0	5.0

Elev (Rd. ht. Calc.)

(631.95)

F.l. 10.6' lower

608.3 ✓

Pt. 40 = ground over syphon - flow line about 9.0 lower.

Elev			
	6° 32' / 117'	Pt 39	-6° 52' / 116'
	+9° 15' / (131')	Pt 38	-0° 8' / 115
	+7° 11' / 122'	Pt. 37	-9° 20' / 123'
	+ 6° / 130'	Pt 36	-8° 55' / 127'
612.8 ✓	+3° / 121'	Pt 35	-2° 30' / 124'
625.7 ✓			
	+ 3° 15' / 123'	Pt 34	-2° 17' / 120'
	+1° / 120'	Pt 33	-0 30' / 110'

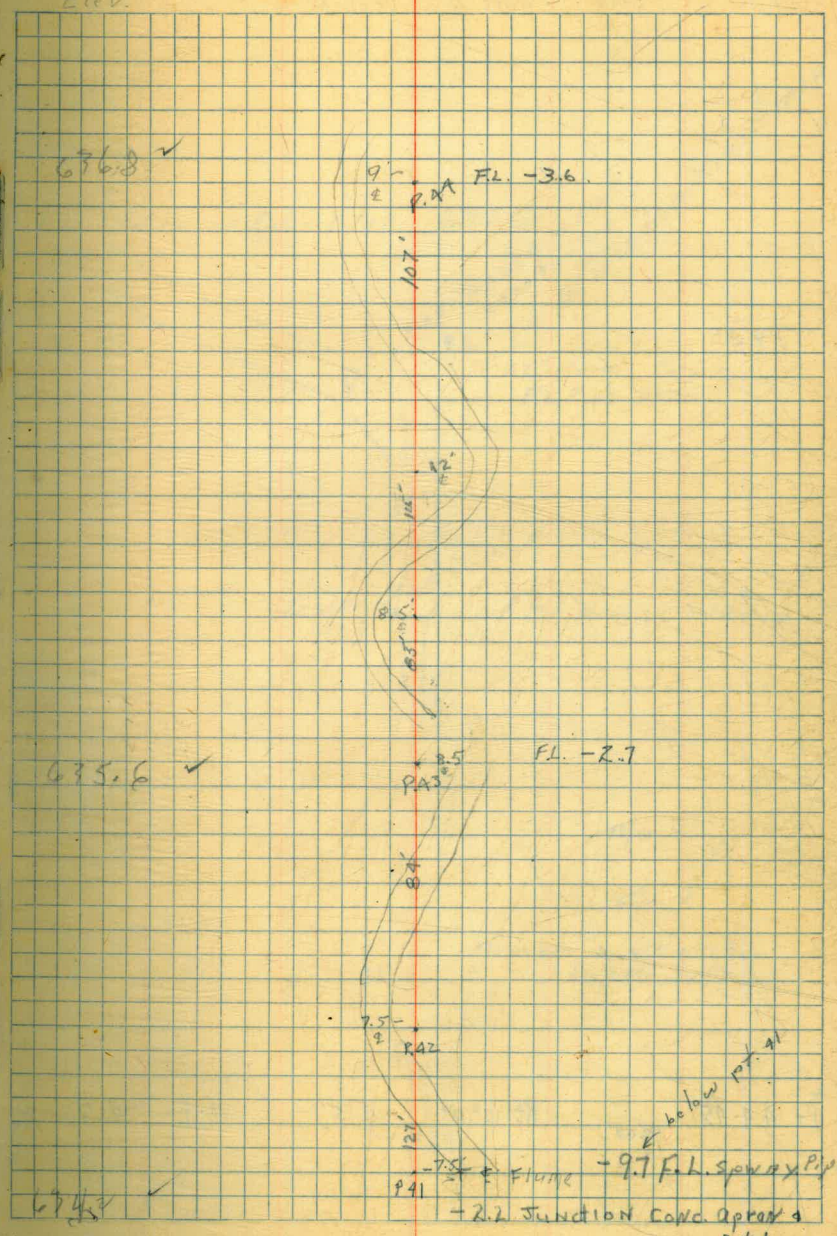
Pt.	Dis.	Hor. ∠	Vert ∠	H.I	Rod
P.T. 43–44	(307)	Pt. 31°51'	+0°14'	5.0	5.0
Pt 41–43	(211)	P.O.T.	+0°23'	5.1	5.1
Pt 41–42	(127')	78°04'L		5.1	5.1
Pt 40–41	(N.M. 1048.4) (1049')	72°49' ~~62°48'~~ R	+1°25'	5.1	5.1

Elev.

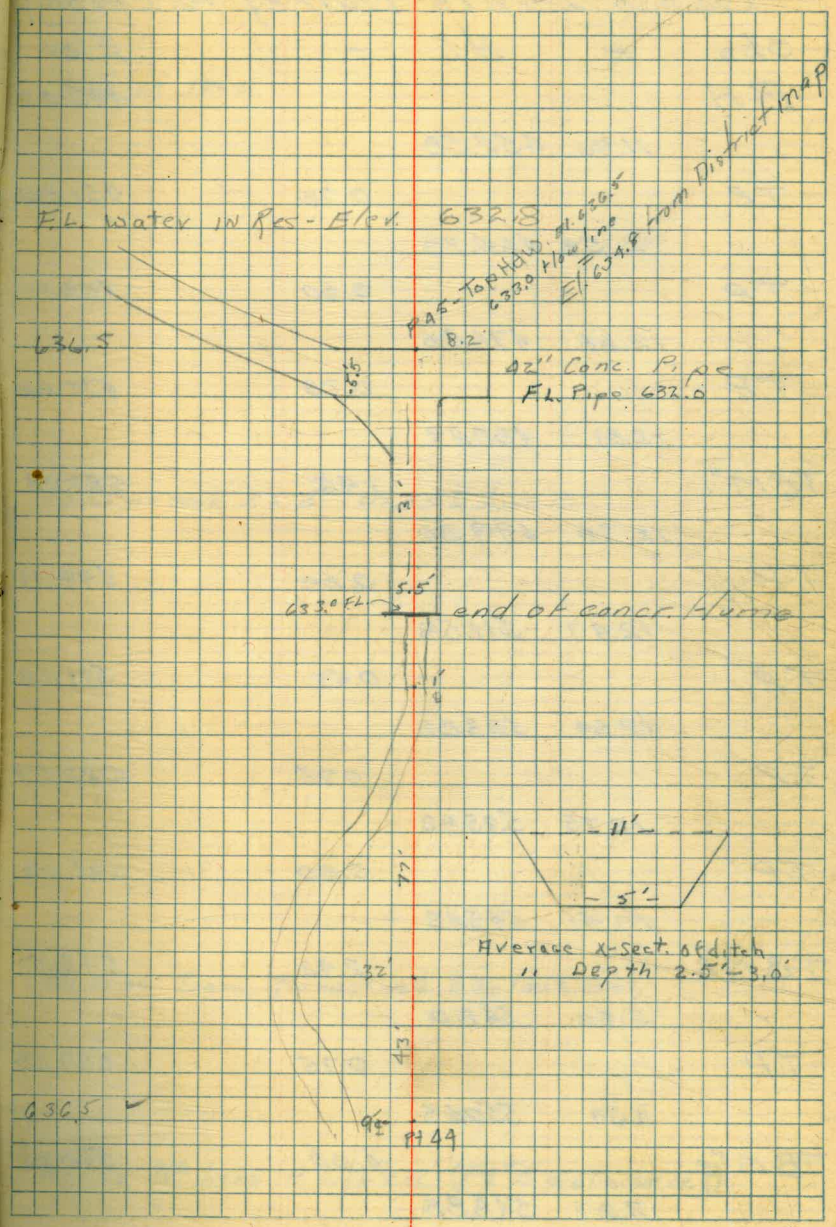
676.8 ✓

675.6 ✓

694 ✓



Pt.	Dis.	Hors ∠	Vert ∠	H.I.	Rod
Pt. 45					
A Pt 44-45	(203')	Rt 17° 10'	-0° 5'	4.4	4.4



Polak
Otten

Bench Levels Murrey to Eucalyptus Res

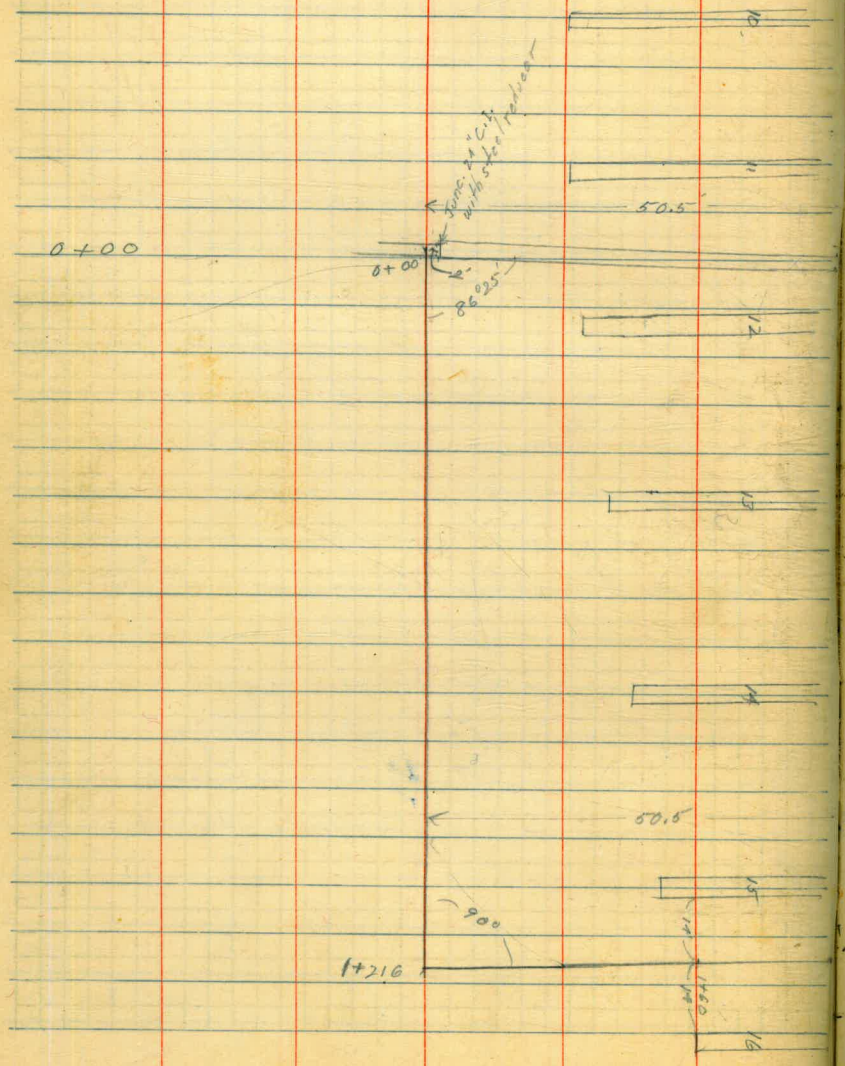
Sta	+	H.I.	−	Elev.	
B.M.				440.62	Side of Dam.
	11.96	452.58			
T.P.			0.78	451.80	
	12.58	464.38			
T.P.			0.60	463.78	
	12.68	476.46			
T.P.			0.78	475.68	
	12.81	488.49			
TBM #1			1.45	487.04	Point on rock 27' E of 35+ Line "C"
	12.76	499.80			
T.P.			0.69	499.11	
	12.97	511.58			
T.P.			0.45	511.13	
	12.69	523.82			
T.P.			0.75	523.07	
	12.75	535.82			
T.P.			0.80	535.02	
	10.41	545.43			
TBM #2			2.92	542.51	Point on Dam. No. edge walk. 8'So first arch
	5.50	548.01			
T.P.			0.75	547.26	
	3.39	550.65			
TBM #3			4.04	546.61	Nail in 11th tree W. from cor. (Pt #5 prelim. survey)
	2.27	548.88			

Sta	+	H.I.	-	Elev	
		548.88			
T.P.			0.31	548.57	
	11.51	560.08			
T.P.			1.48	558.60	
	12.54	571.14			
T.P.			12.61	558.53	
	0.52	559.05			
T.P.			12.90	546.15	
	0.39	546.54			
TBM #4			11.82	534.72	Nail in P.Pole Second pole E of Pt. B
	0.63	535.35			
T.P.			10.50	524.85	
	11.37	536.22			
T.P.			0.63	535.59	
	10.14	545.73			
TBM #5			2.01	543.72	Head wall Left of Hiway Intersection near Pt. 12
	12.56	556.28			
T.P.			0.60	535.68	
	12.99	568.67			
T.P.			0.96	567.71 ~~567.73~~	
	12.64	580.35 ~~580.37~~			
T.P.			0.97	579.82 ~~579.90~~	
	11.93	591.83			
T.P.			0.56	591.27	
	9.50	600.77			

Sta	+	HI	−	Elev
		600.77		599.93
TBM #6			0.77	600.00

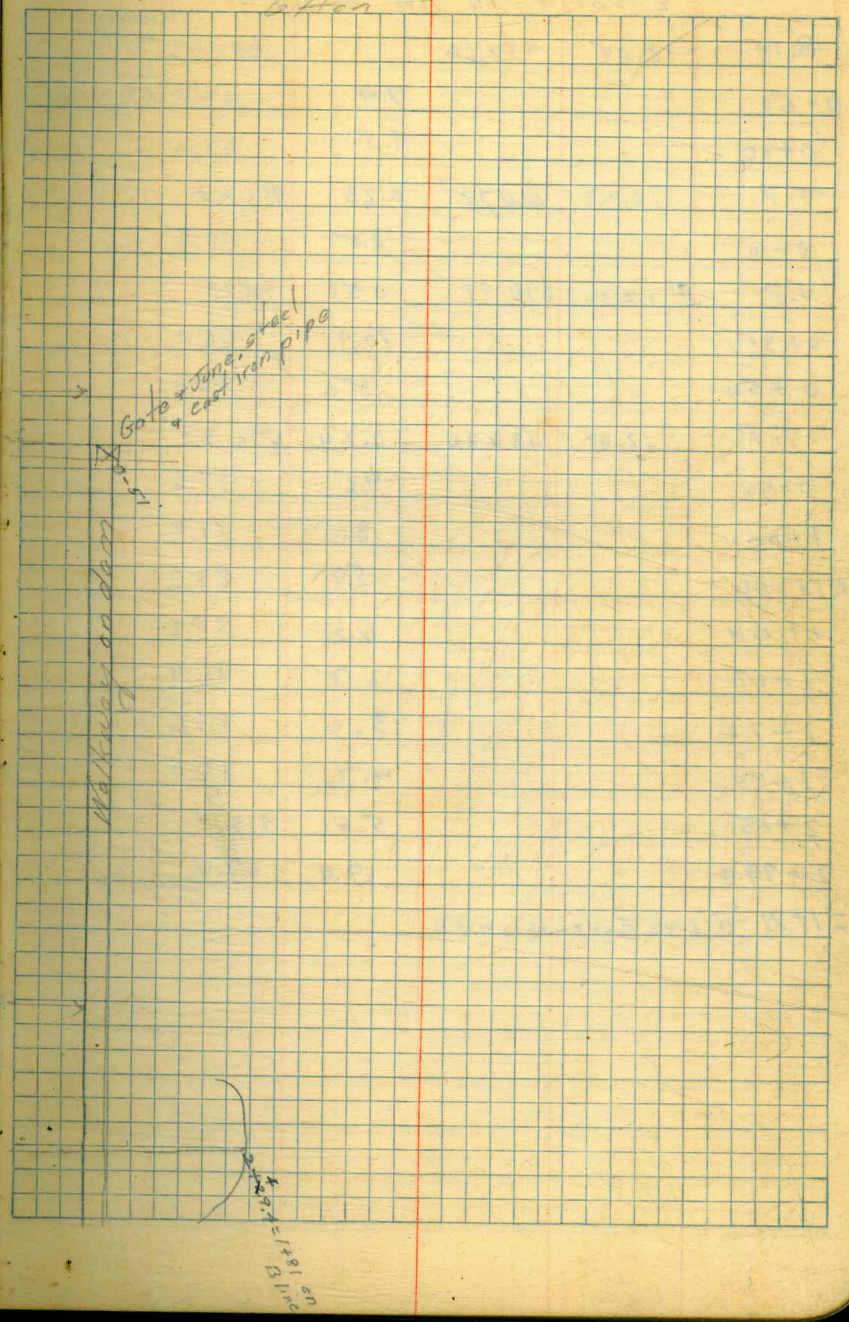
Nail in T. Pole 1a ft of road. 1st pole W Pt 18

Survey for 24" line of Murray Dam



6/26/43 Hill King Point Location

15



6/26/47
Hill
Minc
Polak
Otten

& Profile - 24" line Murray Dam

B.M	12.04	452.66 ✓		440.62	USGS abut. # 11
0-50			7.9	44.8	
0+00			4.5	48.2	
T.P.	12.29	464.72 ✓	0.23	452.43 ✓	
0+10			8.5	56.2	
T.P.	12.82	476.97 ✓	0.57	464.15 ✓	
0+31			10.9	66.1	
0+50			5.0	72.0	
T.P.	12.47	489.20 ✓	0.24	476.73 ✓	
0+84			9.6	79.6	
1+00			8.0	81.2	
A 1+21.6			5.9	83.3	
1+48			4.2	85.0	
1+60			2.3	86.9	
1+72			3.6	85.6	
1+90			4.2	85.0	
2+15			5.8	83.4 ✓	
2+49.4			19.4	69.8 ✓	

= 1+81 - "B" Line Page 2 - this book

Top C.I. Pipe

1. 1. 11

End of arch

Eucalyptus

Check Levels

7-23-42
Mine Otton

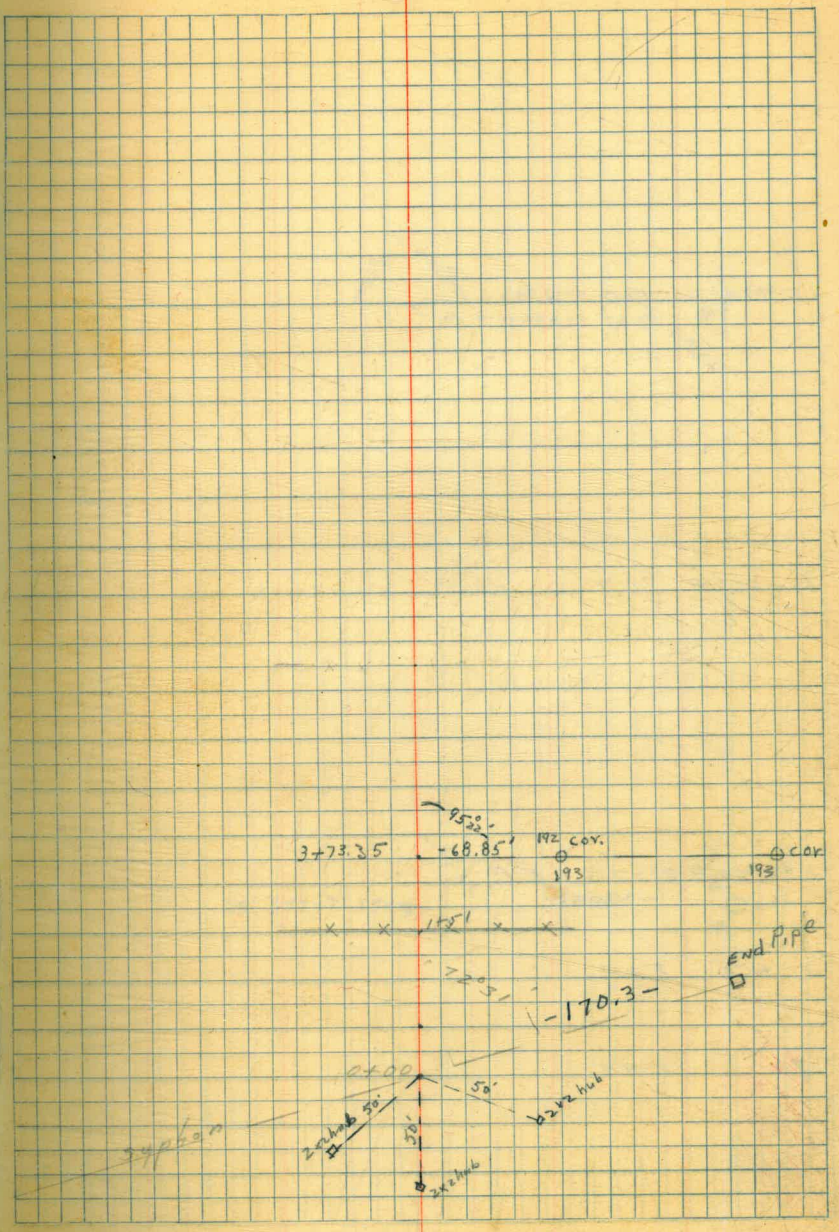
B.M. #2	8.63	51.14			542.51
T.P.	10.54	54.21	6.87	44.27	
T.P.	13.02	67.10	0.73	54.68	
T.P.	2.43	69.09	0.44	66.66	
T.P.	0.05	56.20	12.94	56.15	
T.P.	0.25	43.94	12.51	43.69	
T.P.	0.29	32.24	11.99	31.95	
T.P.	12.37	41.19	3.42	28.82	
T.P.	12.49	52.82	0.86	40.33	
B.M. #5			9.10	543.72	543.72
T.P.	12.66	64.82	0.66	52.16	
T.P.	12.79	76.89	0.72	64.10	
	14.58	87.66	0.81	76.08	
	12.95	~~600.37~~ 600.47	0.24	87.42	
B.M. #6	7.30	607.28	0.44	~~599.93~~ 600.03	599.98
	12.04	613.79	5.53	01.75	
B.M. #9	12.04	14.25	11.68	602.11	602.21
B.M. #10	9.36	19.21	4.40	09.85	09.88
B.M. #11	8.67	22.16	5.71	13.50	13.55
B.M. #12	10.79	627.65	5.38	616.78	616.86
	17.76	639.19	12.2	626.43	
	9.29	647.14	1.34	637.85	
B.M. #13	Top Hdwll-Syphon		4.30	642.84	42.85
	6.15	49.02	4.27	42.87	
B.M.	Top Conc Wall on Flume		6.41	42.61	42.62

Hill
Ming
Otten
8-X-43

Eucalyptus - Murray Dam Pl. Loc.

5+50	1°13'	Pl. 6+51.68 Δ 16°55' R R 1000. T 148.71 L. 295.25 D. per ft. 1.719
℄	2°47'	
5+50	1°21'	
5+02.97	B.C.	
3+73.35		
0+01.4	Enter Pipe Syphon	
0+00		

18.



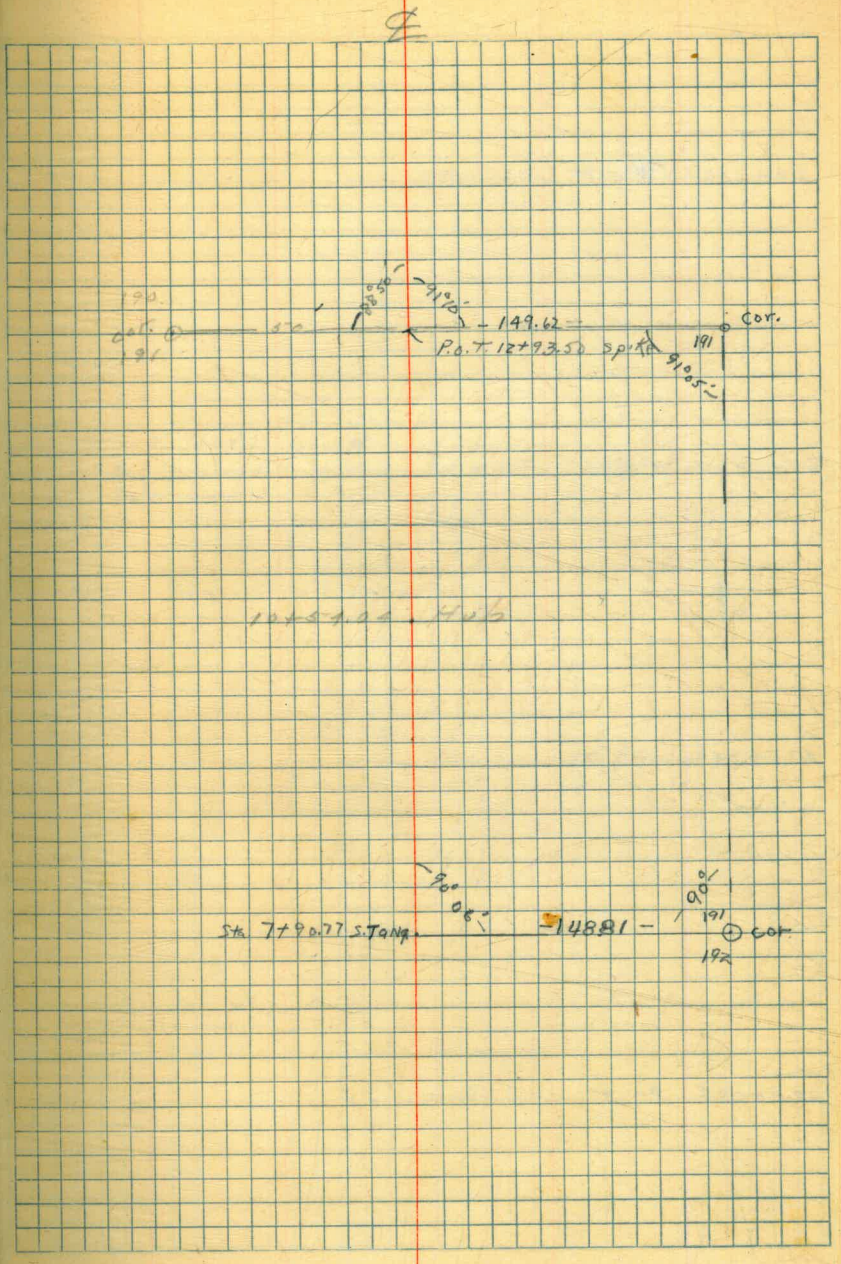
12+93.50 P.O.T.

10+51.04 P.O.T.

7+28.22 8°27½' E.C.

+50 7°05'

7 6°39'



29+21.61 P.O.T.

25+21.17 P.O.T.

23+97.68 P.O.T.

22+56.88 P.O.T

℄

29+21.61 spike

168 183
cor ⊙ 50 90°
162 164

25+21.17 spike

point

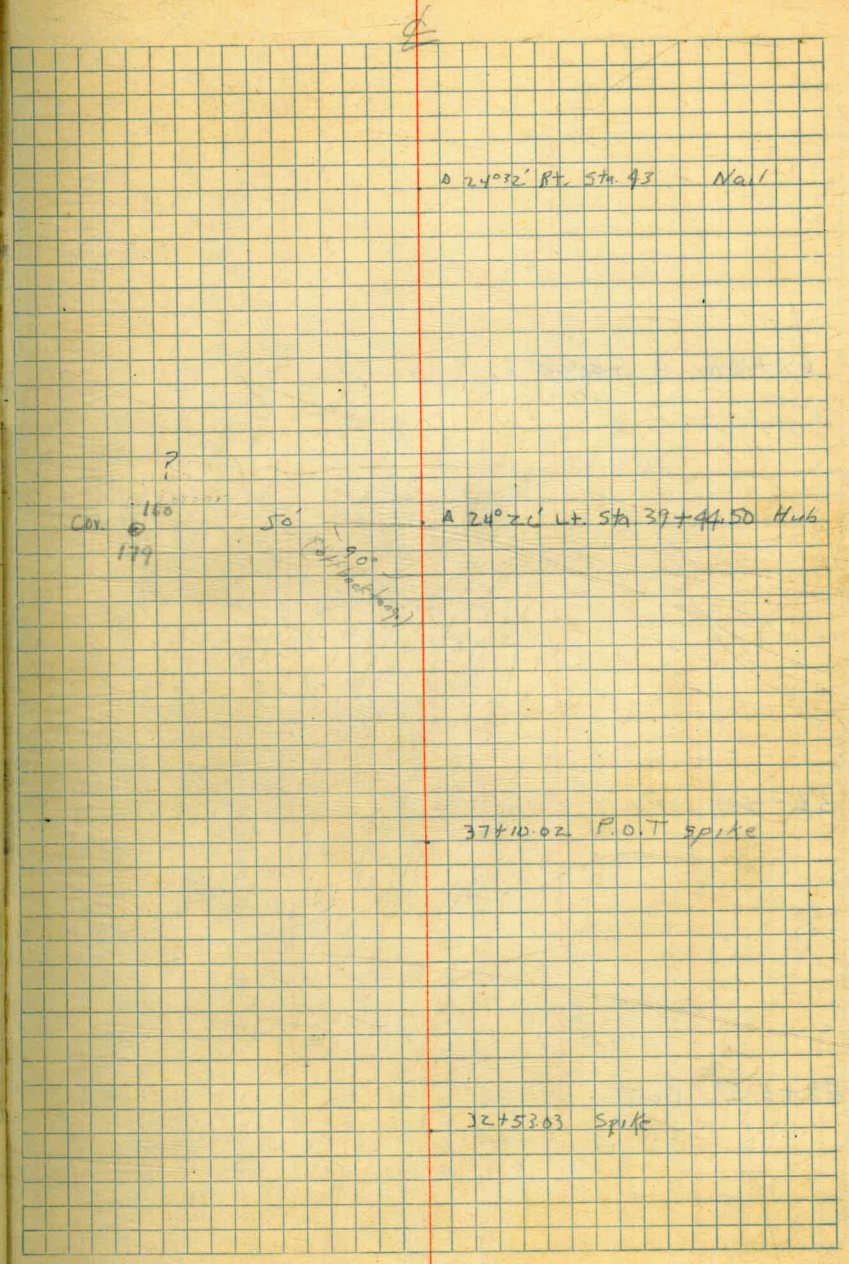
hub

43+0.38 Δ Rt 24°32'

39+49.50 Δ Lt 24°4'

37+10.02 P.O.T

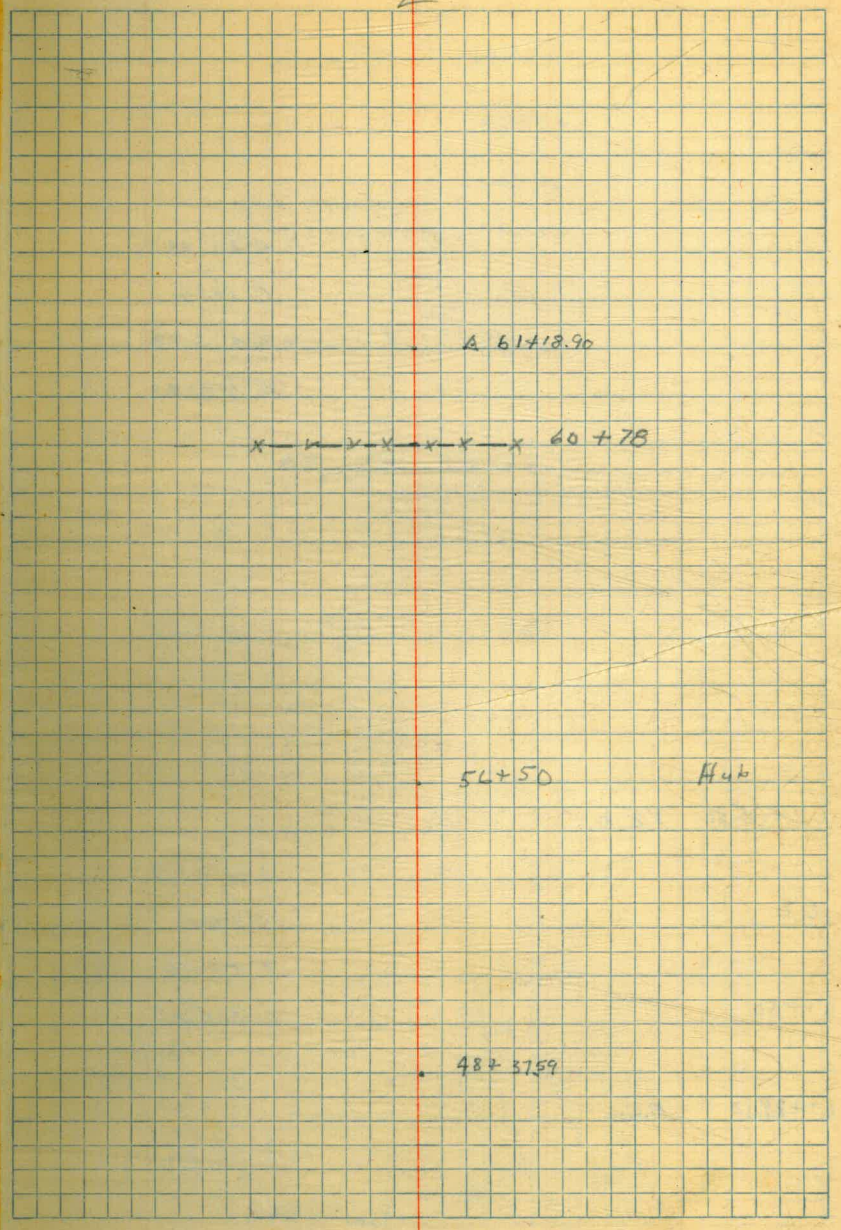
32+53.03 P.O.T



61+18.90 Δ Lt 40°35'

56+50 P.O.T

48+37.59 P.O.T

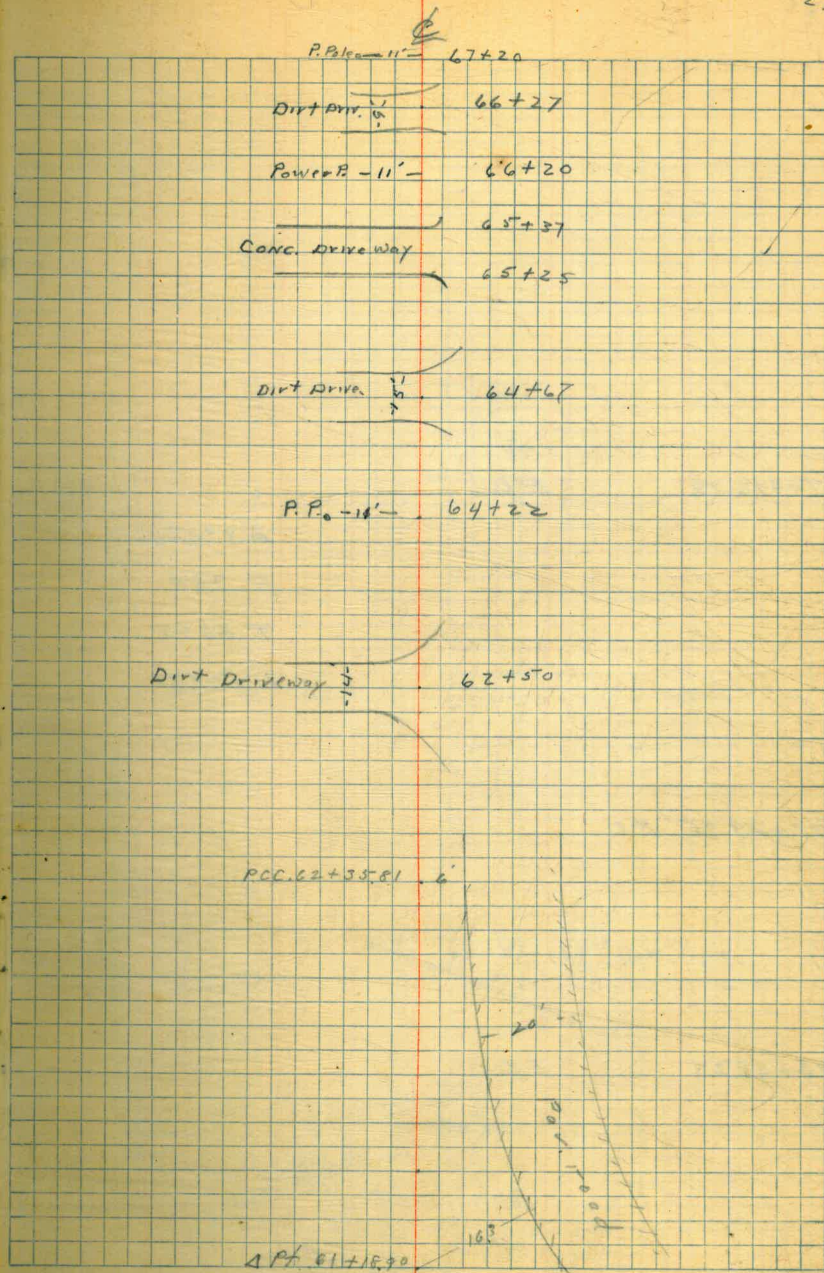


Δ 29°40' Rt
R 1936.
T 512.72
L 1002.42

62+35.81 P.C.C.

Δ 10°31' R
62
R 582.
T 53.56
61+50
L 106.81

61+29.00 B.C.

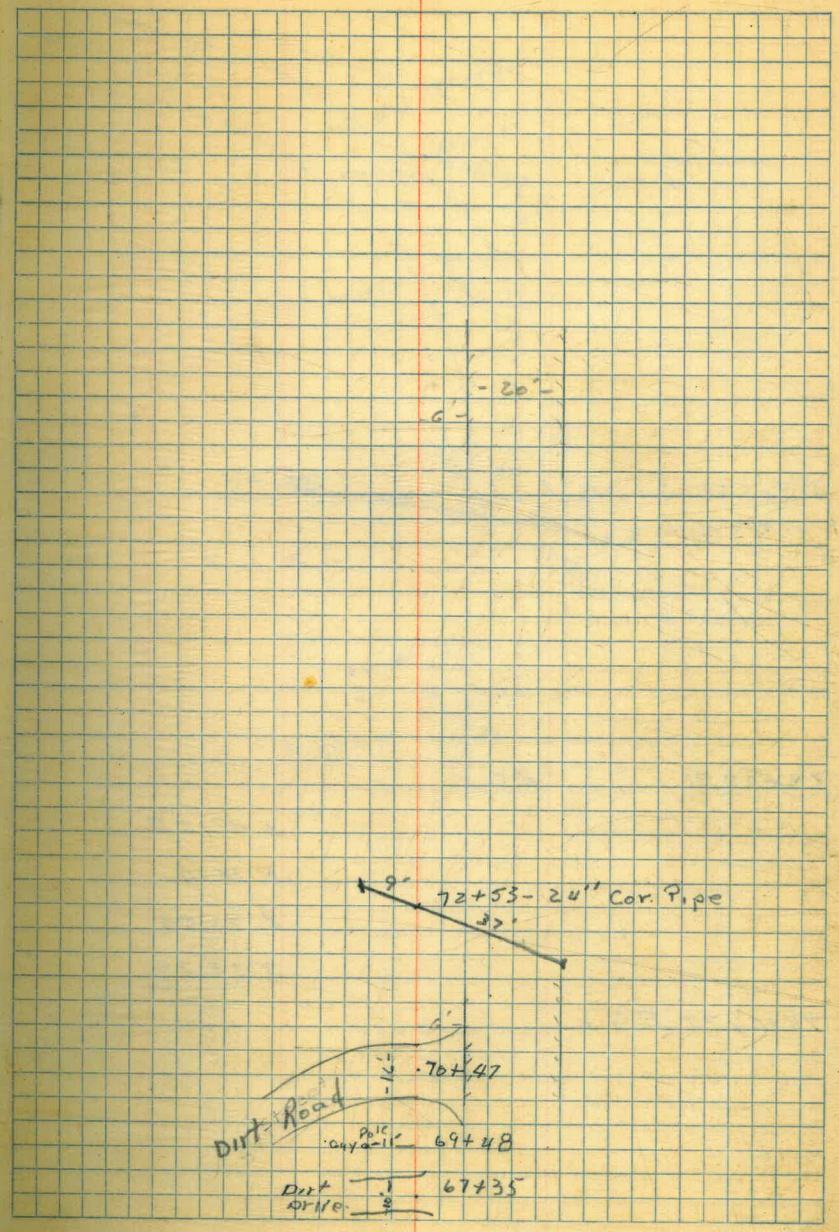


74+56.72 EC.

Δ 7°25' L
R 981.
T 63.77
L 127.37

73+29.35 BC.

72+38.23 EC.



81+65.31 Δ 10°17'30" L

79+03.31 EC.

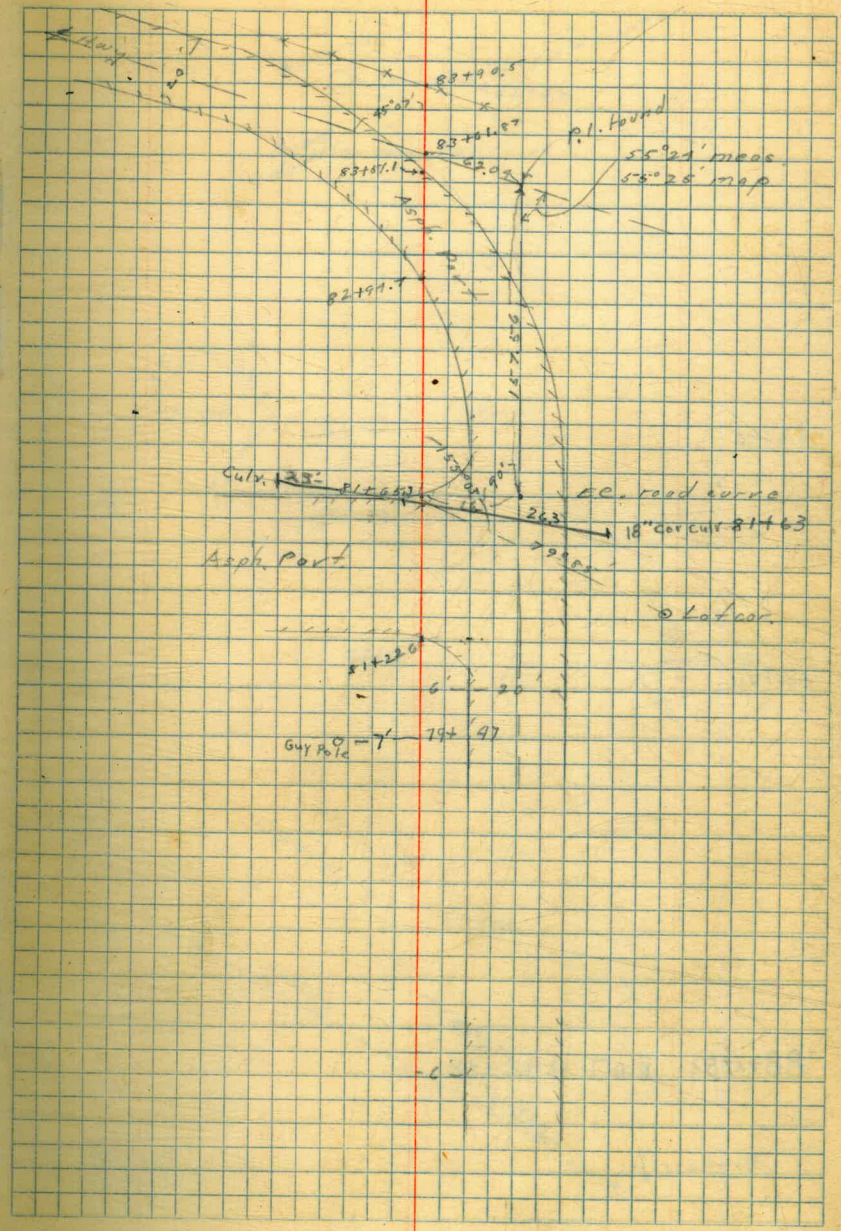
Δ 40.19 R

R 1016

L 76.54

T 38.29

78+26.77 BC.

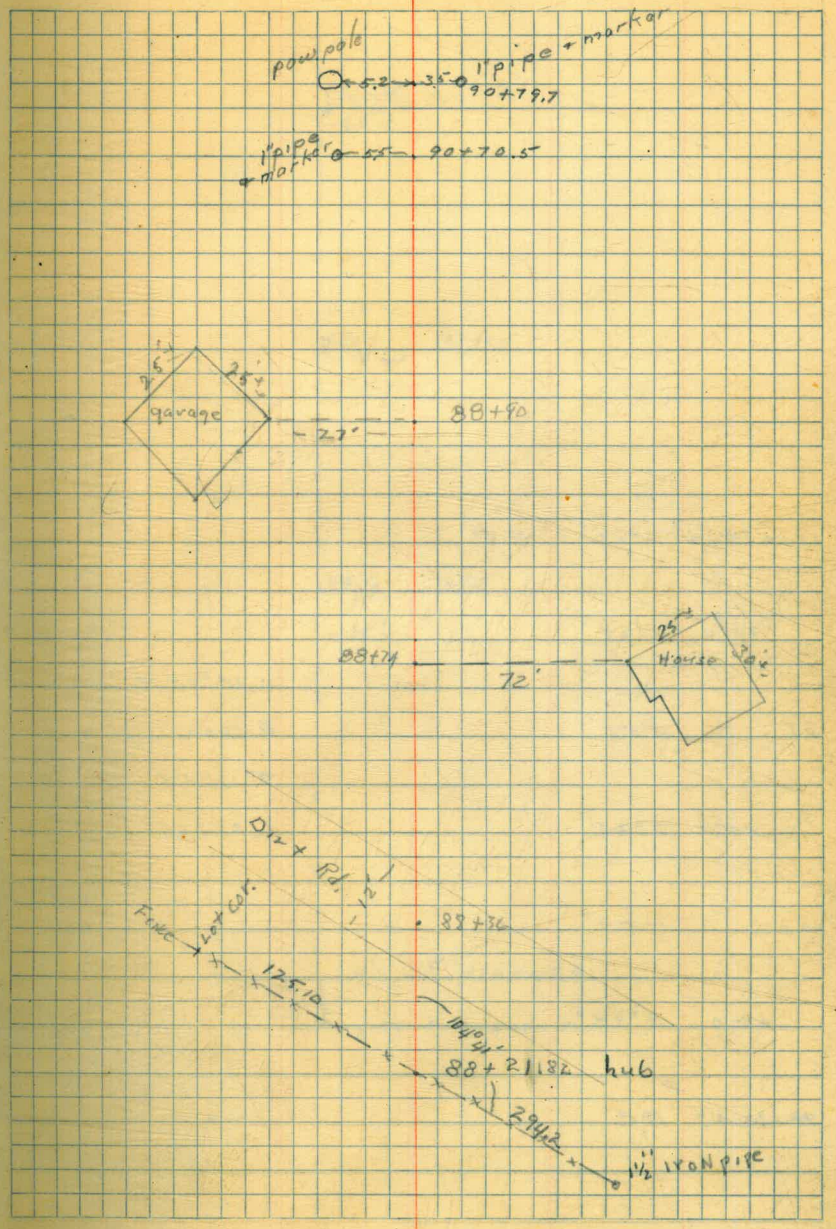


℄

88+90

88+74

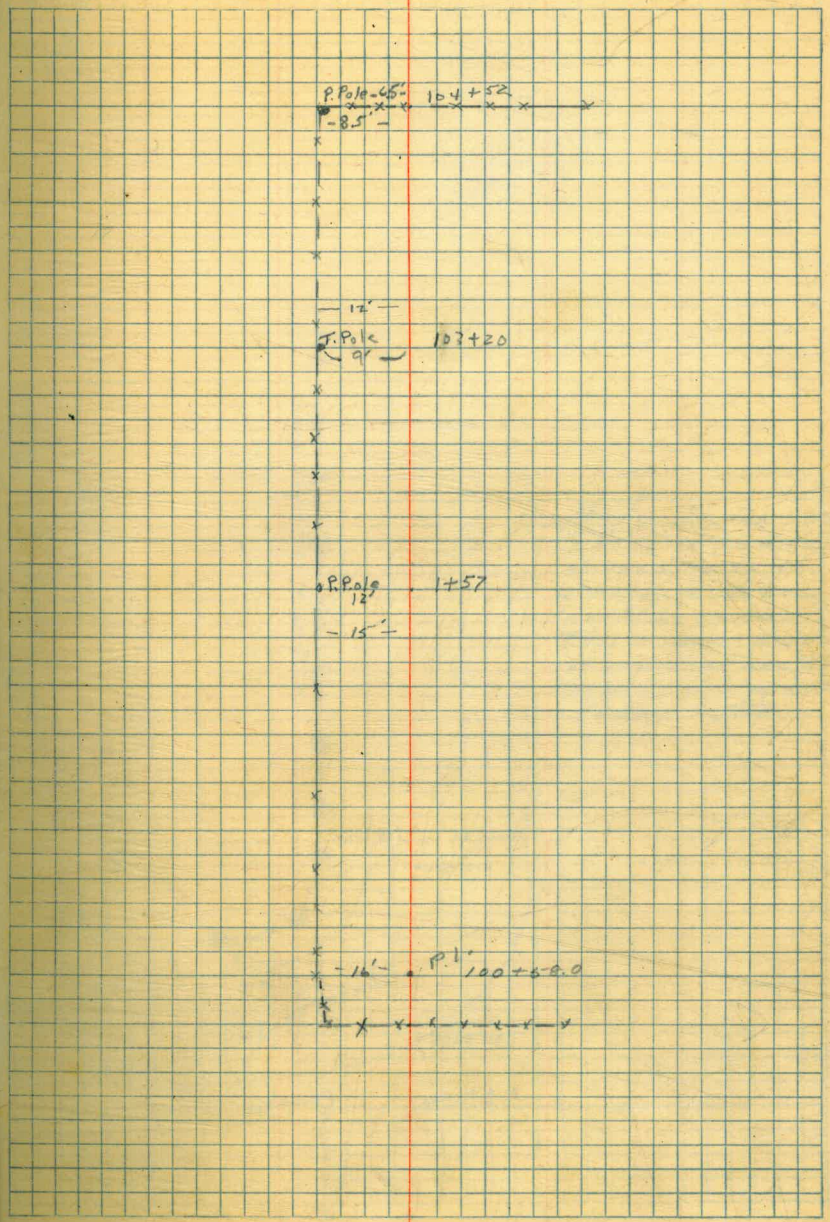
88+21.82 P.O.T

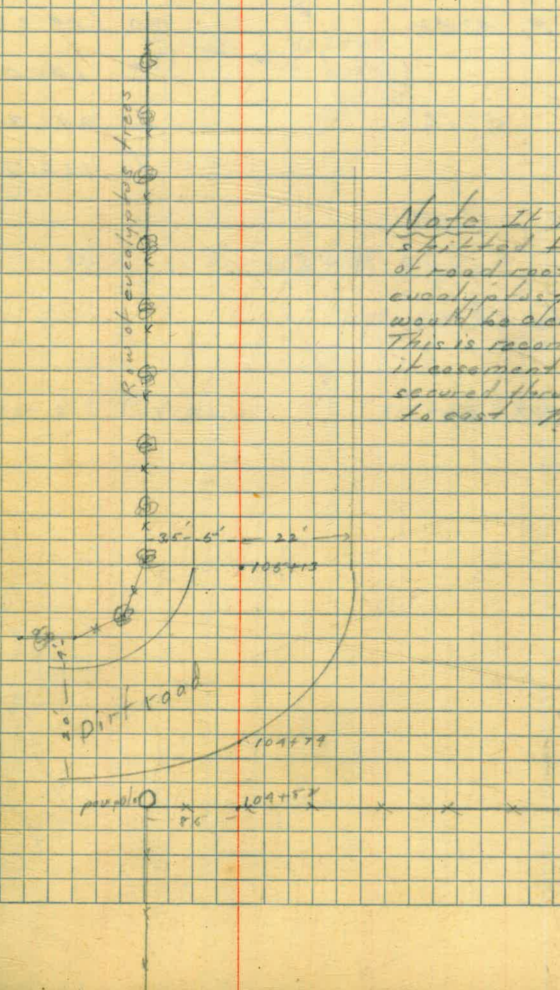


℄

101+84.14	7°16'	EC
+50	6°17'	
101	4°51'	
+50	3°25'	
100	1°59'	
+50	0°34'	
99+30.49	RC	

Δ 14°32' R
R 1000.
T 127.51
L 253.65

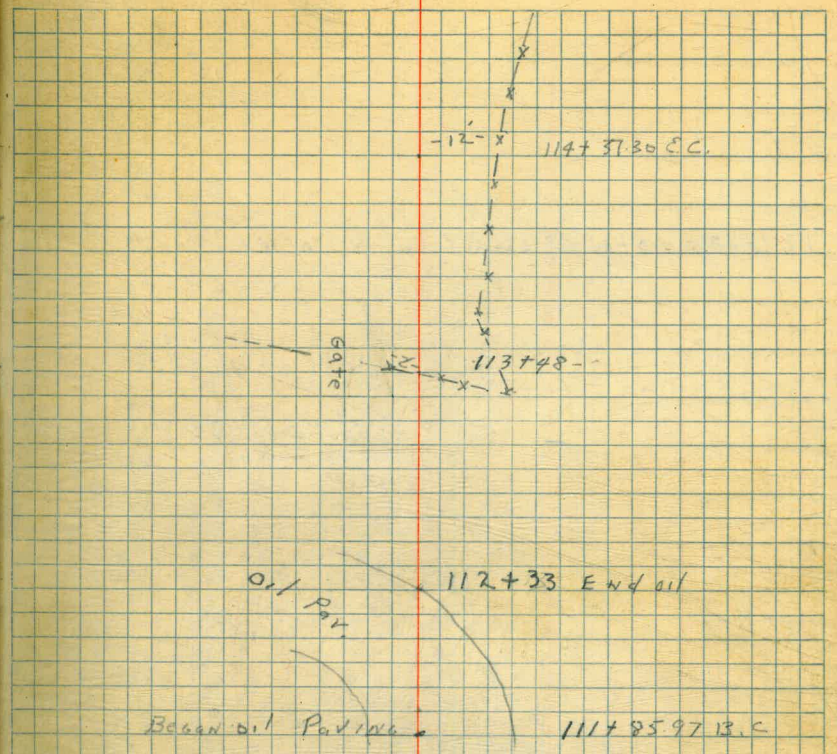




Note It loc. was
shifted to N. side
of road roots of
eucalyptus trees
would be cleared.
This is recommended
it easement can be
secured thru property
to east. [initials]

+37.30	7°12'	EC.
114	6°08'	
+50	4°12'	
113	3°16'	
+50	1°06'	
112	0°24'	
111+85.97	BC.	

P.I. 113+12.30
Δ 14°24' L.
R 1000.
L 251.33
T 126.33



121+68.90 = 0+00 Bk Line to Tower Δ 16°06' Rt

116+82.09 Δ 36°52' Rt

121+68.90 Δ 16°06 Rt.

117+15

Δ 116+82.09 36°52' Rt

(116+69) ? 115+40 -9.3'- End of Dam Walk

18" Maple Tree -6.5'- 115+82

8-8-43
K+VC
0+70+

B.M. #12	5.78	622.64 ✓			616.186
0+00			6.1	616.5 ✓	
0+01.4			10.24	612.40 ✓	
0+50			6.3	616.3 ✓	
1+00			6.2	616.4 ✓	
1+50			6.7	615.9 ✓	
2+00			7.8	614.8 ✓	
2+50			10.6	612.0 ✓	
T.P.	2.00	612.04 ✓	12.60	610.04 ✓	
3+00			5.0	607.0 ✓	
3+50			12.8	599.2 ✓	
3+70			20.1	591.9 ✓	
3+83			15.8	596.2 ✓	
4+00			12.0	600.0 ✓	

Very Hot

Q Profile

Hub B.t.c. sta 1+50

6.1

Elev. Top Pipe syphon

6.3

6.2

6.7

7.8

10.6

5.0

12.8

20.1

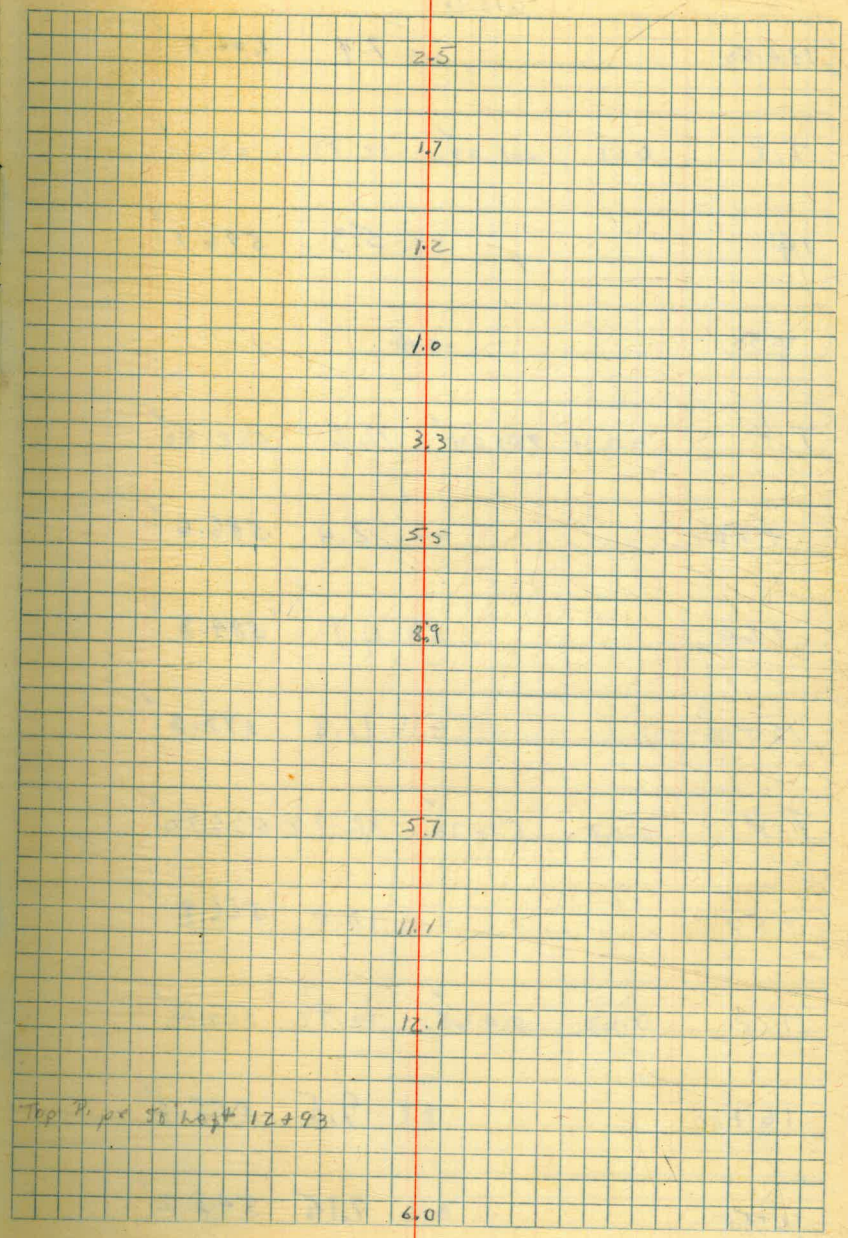
15.8

12.0

		612.04 ✓		
4+50			5.7	606.3 ✓
5+00			0.5	611.5 ✓
B.C. 5+02.97			0.2	611.8 ✓
T.P.	12.98	624.48 ✓	0.54	611.50 ✓
5+50			7.9	616.6 ✓
6+00			4.9	619.6 ✓
6+50			1.7	622.8 ✓
7+00			0.3	624.2 ✓
T.P.	10.90	634.52 ✓	0.86	623.62 ✓
7+50			8.3	626.2 ✓
E.S. 8+98.22			7.1	627.4 ✓
8+00			7.0	627.5 ✓
8+50			4.7	629.8 ✓

5.7
0.5
0.2
7.9
4.9
1.7
0.3
8.3
7.1
7.0
4.7

		634.52 ✓			
9+00			2.5	632.0 ✓	
9+50			1.7	632.8 ✓	
10+00			1.2	633.3 ✓	
POT. 10+54.40			1.0	633.5 ✓	
11+00			3.3	631.2 ✓	
11+50			5.5	629.0 ✓	
12+00			8.9	625.6 ✓	
T.P.	0.57	626.19 ✓	8.90	625.62 ✓	
12+50			5.7	620.5 ✓	
POT. 12+93.56			11.1	615.1 ✓	
13+00			12.1	614.1 ✓	
B.M.	0.40	613.93 ✓	12.66	613.53 ✓	613.55
13+35			6.0	607.9 ✓	



Top Pipe at Sta 12+93

		613.93		
13+50			7.4	606.5
T.P.	0.27	601.37	12.83	601.10
14			5.3	596.1
~~+50~~				
T.P.	0.24	589.04	12.57	588.80
+50			2.4	586.6
+60			4.7	584.3
15+00			11.8	577.2
T.P.	0.08	576.78	12.34	576.70
+50			10.0	566.8
T.P.	0.62	564.68	12.74	564.06
16+00			9.5	555.2
16+50			21.5	543.2

7.4

5.3

~~10.7~~

2.4

4.7

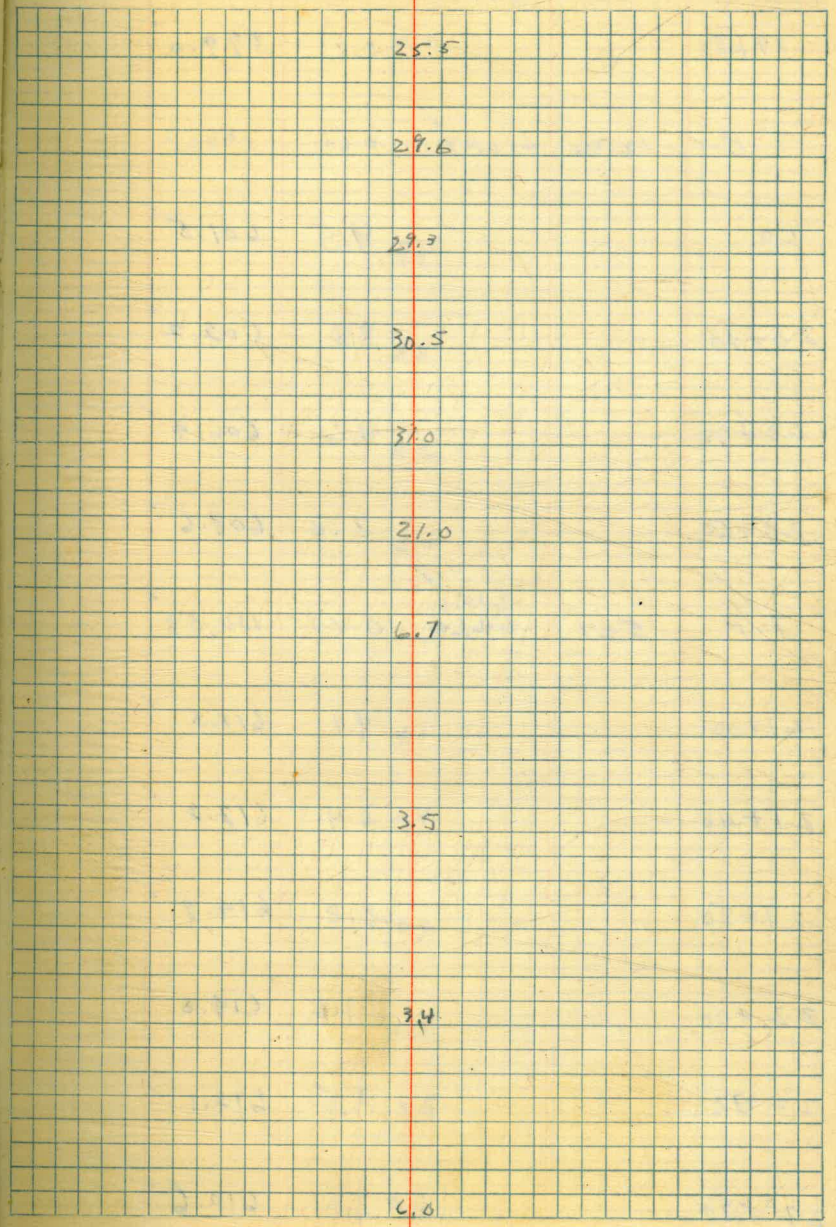
11.8

10.0

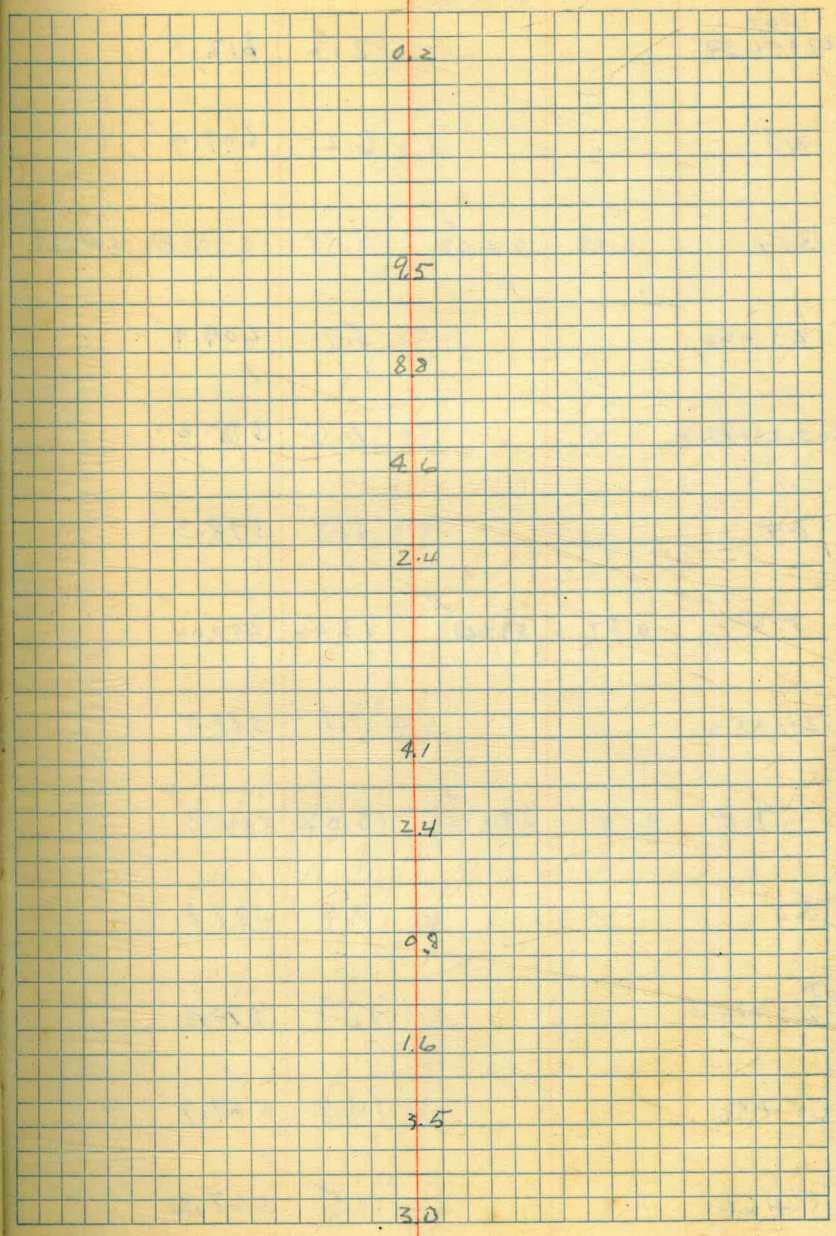
9.5

21.5

		564.68 ✓		
16+68			25.5	539.2 ✓
16+78			29.6	535.1 ✓
17+00			29.3	535.4 ✓
17+50			30.5	534.2 ✓
17+55			31.0	533.7 ✓
17+64			21.0	543.7 ✓
18+00			6.7	558.0 ✓
T.P	12.56	57.598 ✓	1.26	563.42 ✓
18+50			3.5	572.5 ✓
T.P	11.70	587.28 ✓	0.40	575.58 ✓
19			3.4	583.9 ✓
T.P	12.21	599.23 ✓	0.26	587.02 ✓
19+50			6.0	593.2 ✓



		599.23 ✓		
19+88			0.2	599.0 ✓
T.P.	12.34	610.97 ✓	0.60	598.63 ✓
20			9.5	601.5 ✓
20+10			8.8	602.2 ✓
20+50			4.6	606.4 ✓
20+62			2.4	608.6 ✓
T.P	5.07	615.60 ~~616.60~~ ✓	0.44	610.53 ✓
21+00			4.1	611.5 ✓
21+40			2.4	613.2 ✓
21+50			0.8	614.8 ✓
22+00			1.6	614.0 ✓
22+32			3.5	612.1 ✓
22+50			3.0	612.6 ✓



		615.60 ✓ ~~616.60~~			
P.O.T. 22+56.58			2.9	612.7 ✓	
23			6.2	609.4 ✓	
B.M.	0.19	610.07 ✓	5.79	609.81 ✓	corrected 609.88
23+50			5.7	604.4 ✓	
P.O.T. 23+97.68			11.5	598.6 ✓	
24			11.8	598.3 ✓	
T.P.	0.57	597.61 ✓	13.03	597.04 ✓	
24+50			9.1	588.5 ✓	
T.P.	0.18	584.71 ✓	13.08	584.53 ✓	
25			7.4	577.3 ✓	
P.O.T. 25+24.17			12.3	572.4 ✓	
25+50			14.8	569.9 ✓	
25+62			17.5	567.2 ✓	

52'Z+ 23+30

2.90 #46

6.2

5.7

11.5

11.8

9.1

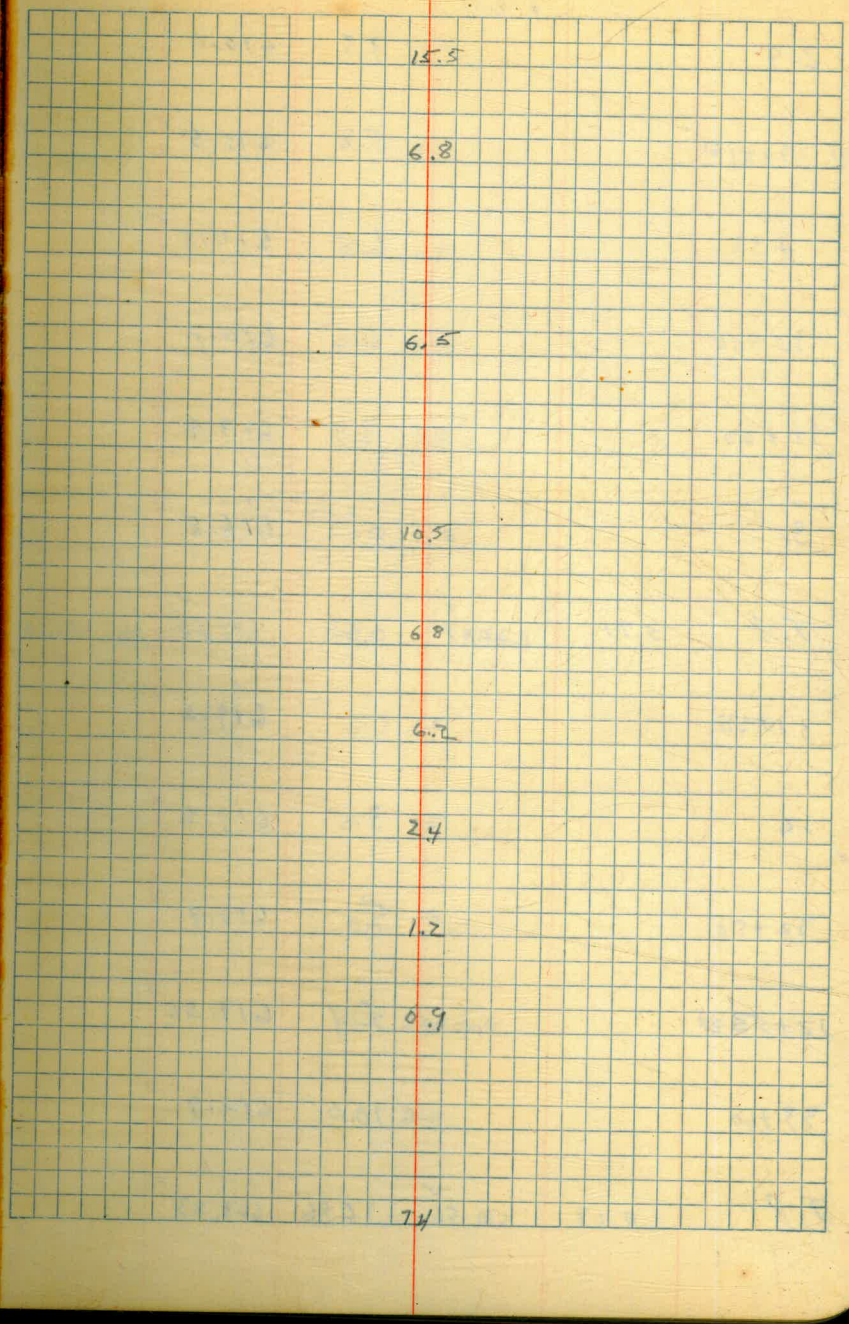
7.4

12.3

14.8

17.5

		584.71		
+71			15.5	569.2
26			6.8	577.9
T.P.	12.49	596.83	0.37	584.34
26+50			6.5	590.3
T.P.	11.68	607.94	0.57	596.26
27			10.5	597.4
27+33			6.8	601.1
27+50			6.2	601.7
27+90			2.4	605.5
28			1.2	606.7
28+50	...		0.9	607.0
T.P.	10.00	617.31	0.63	607.31
28+85			7.4	609.9



		617.31 ✓			
29			7.3	610.0 ✓	
POT 29+21			5.8	611.5 ✓	
+50			6.8	610.5 ✓	
30+00			6.6	610.7 ✓	
30+50			3.9	613.4 ✓	
31			0.5	616.8 ✓	
T.P.	5.71	622.69 ✓	0.33	616.98 ✓	No. 1 24 30+90
31+50			3.5	619.2 ✓	
32			3.5	619.2 ✓	
32+58			5.0	617.7 ✓	
32+58.03			5.14	617.55 ✓	
33+00			10.0	612.7 ✓	
T.P	0.47	610.50 ✓	12.86	609.83 ✓	

7.3
5.8
6.8
6.6
3.9
0.5
3.5
3.5
5.0
5.14 Spike
10.0

		610.50 ✓			
33+50			2.6	607.9 ✓	
34			9.2	601.3 ✓	
B.M. 36 L+Sta 34			8.25	602.25 ✓	602.21
34+50			13.0	597.5	
T.P.	0.20	597.61 ✓	13.09	597.41 ✓	
34+75			1.8	595.8 ✓	
35			5.1	592.5 ✓	
35+50			7.9	589.7 ✓	
36			12.3	585.3 ✓	
T.P.	0.66	585.31 ✓	12.96	584.65 ✓	
36+50			4.0	581.3 ✓	
37			10.7	574.6 ✓	
P.O. T.37+10.02			11.7	573.6 ✓	

2.6

9.2

13.0

1.8

5.1

7.9

12.3

4.0

10.7

11.68

Spike

58531

T.P	0.46	572.91	12.86	572.45
37+50			4.8	568.1
38			11.0	561.9
38+12			13.0	559.9
T.P.	0.10	560.35	12.66	560.25
38+50			8.5	551.9
+80			13.4	547.0
T.P.	2.90	552.34	10.91	549.44
39			7.3	545.0
39+05			7.6	544.7
39+09			10.3	542.0
39+25			10.0	542.3
39+33			8.5	543.8

4.8

11.0

13.0

8.5

13.4

7.3

7.6

10.3 stream bed

10.0

8.5

		552.34 ✓		
Δ39+44.50			9.0	543.3 ✓
39+50			9.1	543.2 ✓
39+80			8.2	544.1 ✓
40			5.0	547.3 ✓
T.P.	12.20	564.29 ✓	0.25	552.09 ✓
40+50			9.7	554.6 ✓
40+65			7.9	556.4 ✓
41			6.0	558.3 ✓
41+50			4.0	560.3 ✓
41+60			3.3	561.0 ✓
T.P.	12.44	576.48 ✓	0.25	564.04 ✓
42			8.4	568.1 ✓
42+35			2.3	574.2 569.2

8.0 44.2

9.1

8.2

5.0

9.7

7.9

6.0

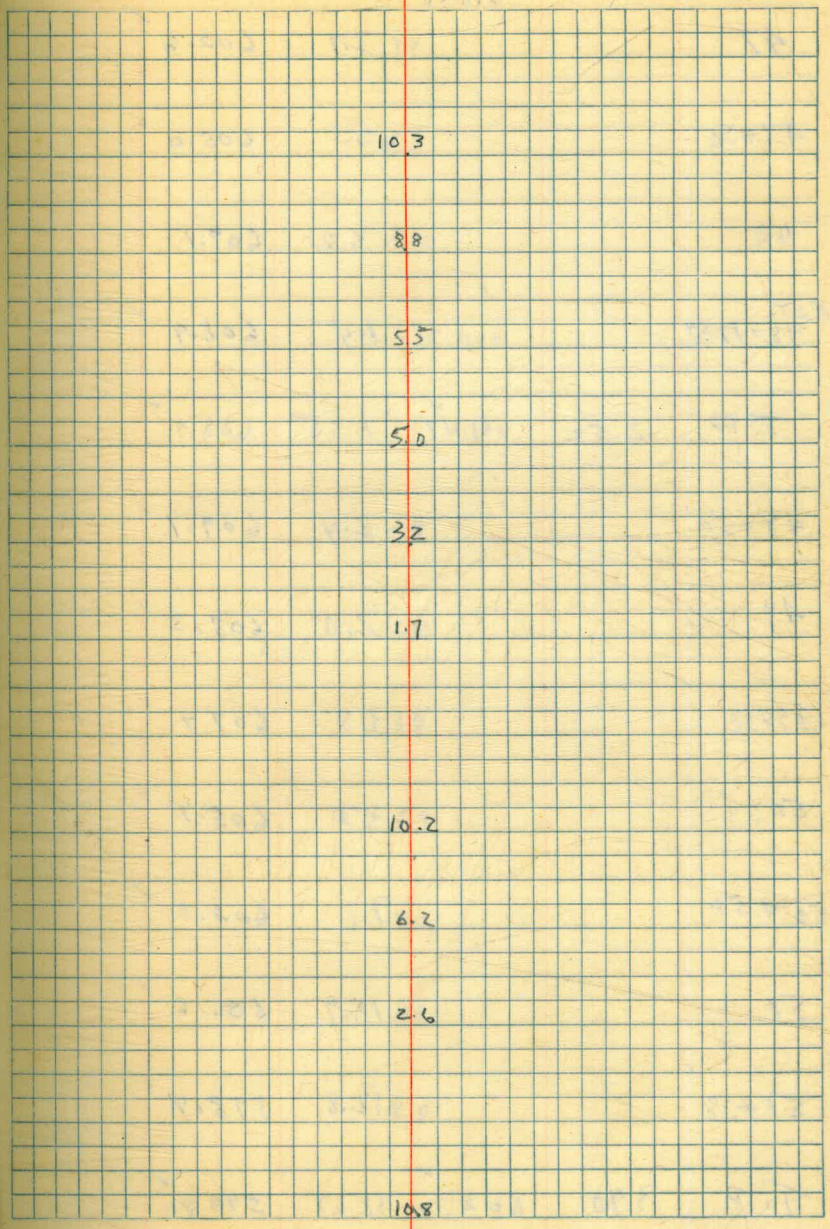
4.0

3.3

8.4

2.3

		576.98		
T.P.	11.19	587.06	0.61	575.87
42+50			10.3	576.8
42+78			8.8	578.3
43+0.38			5.5	581.6
43+50			5.0	582.1
44			3.2	583.9
44+50			1.7	585.4
T.P.	11.46	597.59	0.93	586.13
45			10.2	587.4
45+50			6.2	591.4
46			2.6	595.0
T.P.	12.91	610.30	0.20	597.39
46+50			10.8	599.5



		610.30		
47			7.7	602.6
47+50			5.3	605.0
48			3.2	607.1
P.O.T. 48+37.59			1.4	608.9
T.P	2.52	611.47	1.35	608.95
48+50			2.4	609.1
49			2.0	609.5
49+50			3.8	607.7
50			5.8	605.7
50+50			9.0	602.5
51			10.9	600.6
51+18			12.8	598.7
T.P	3.90	602.70	12.67	598.80

7.7

5.3

3.2

1.35 h46

2.4

2.0

3.8

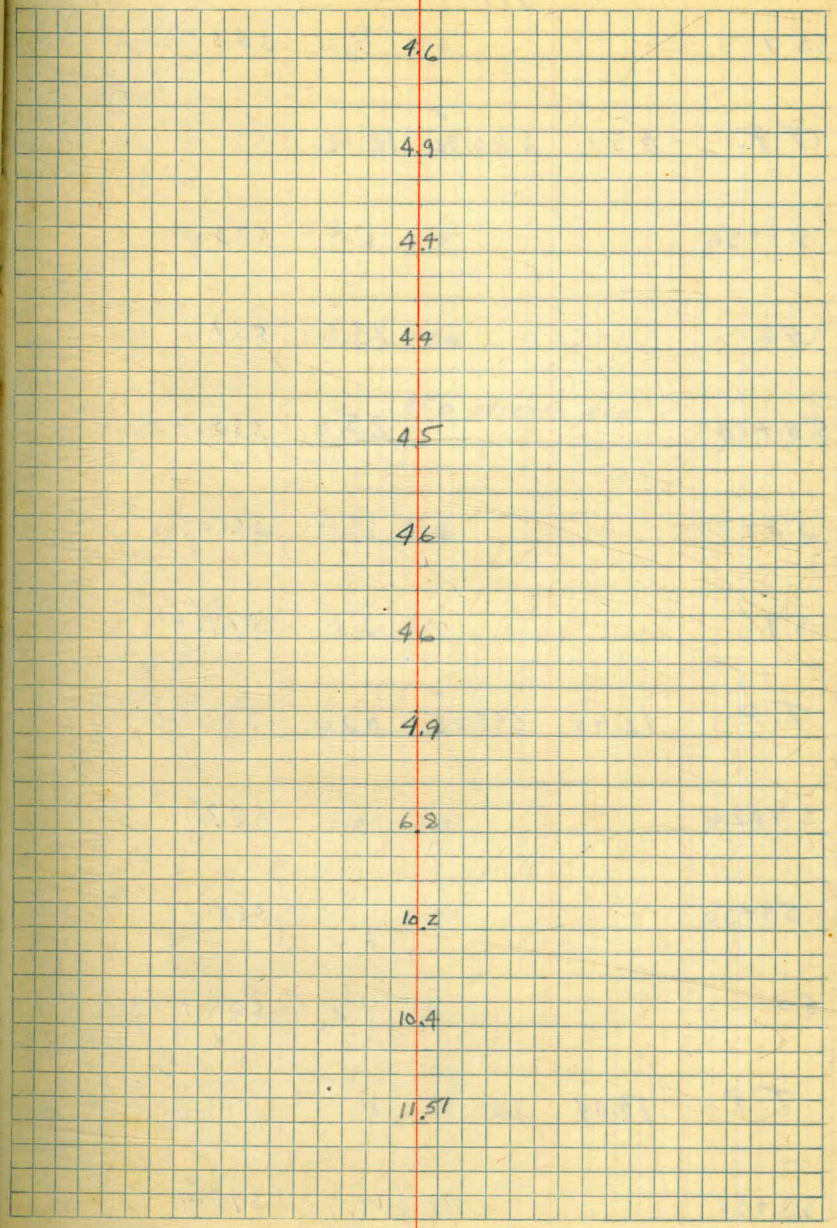
5.8

9.0

10.9

12.8

		602.70		
51+50			4.6	598.1
52			4.9	597.8
+50			4.4	598.3
53			4.4	598.3
+50			4.5	598.2
54			4.6	598.1
+50			4.6	598.1
55			4.9	597.8
+50			6.8	595.9
56			10.2	592.5
56+20			10.4	592.3
P.O.T 56+50			11.5	591.2
T.P	0.80	591.99	11.51	591.19



		591.99 ✓		
57			8.3	583.7 ✓
T.P.	0.93	580.74 ✓	12.18	579.81 ✓
57+50			6.9	573.8 ✓
58			21.6	559.1 ✓
58+10			25.0	555.7 ✓
58+50			13.9	566.8 ✓
59			1.1	579.6 ✓
T.P.	12.75	593.25 ✓	0.24	580.50 ✓
59+24			10.2	583.1 ✓
59+50			4.5	588.8 ✓
60			1.2	592.1 ✓
T.P	13.04	605.97 ✓	0.32	592.93 ✓
60+50			10.6	595.4 ✓

8.3

6.9

21.6

25.0 stream bed

13.9

1.1

10.2

4.5

1.2

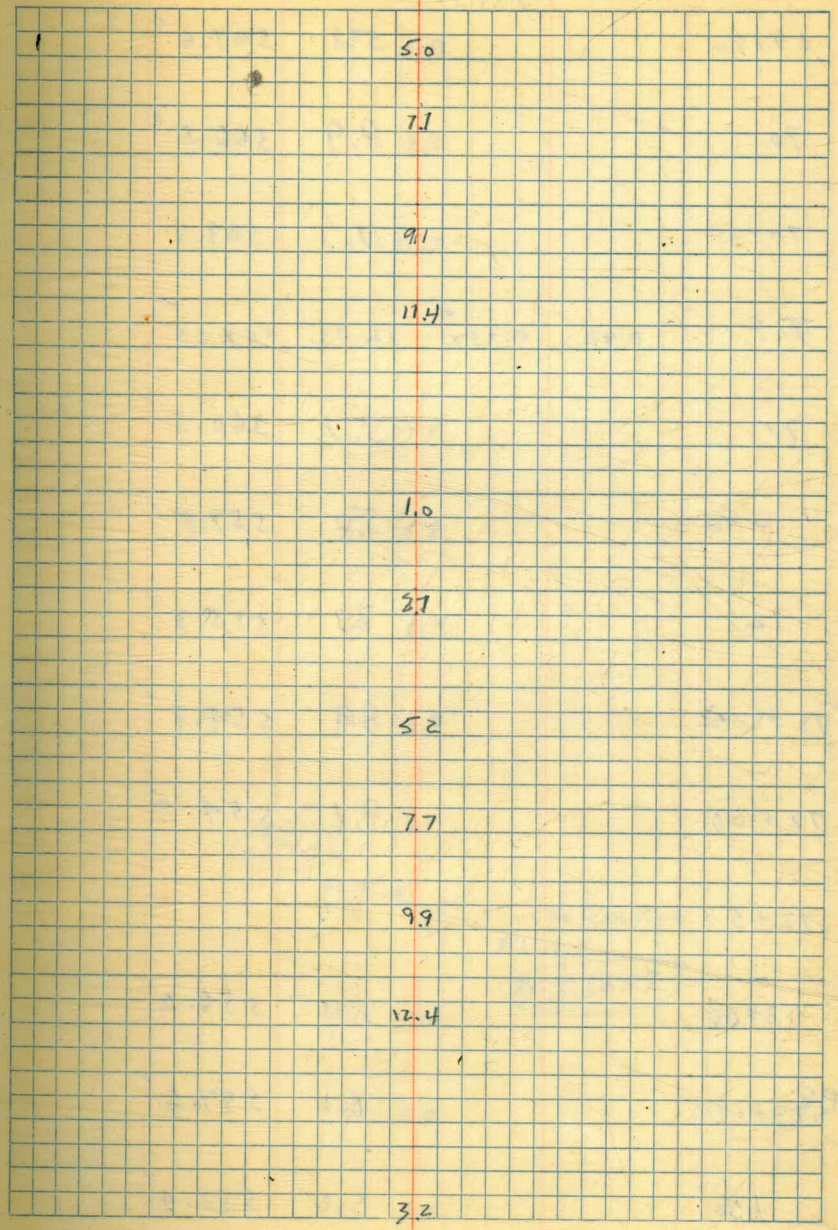
10.6

		605.97 ✓		
60+78		8.3	597.7 ✓	
60+92		4.2	601.8 ✓	
61		4.1	601.9 ✓	
△ 61+18.90		3.5	602.5 ✓	
B.C 61+29.0		3.4	602.6 ✓	
61+50		2.8	603.2 ✓	
62		3.6	602.4 ✓	
P 62+35.81		4.8	601.2 ✓	
+50		5.2	600.8 ✓	
63		6.6	599.4 ✓	
B.M.P.P.	R+5 to 63 - 50'	5.93	600.04 ✓	Correct - 599.98
	0.06	600.04 ✓	599.98	
63+50		2.7	597.3 ✓	

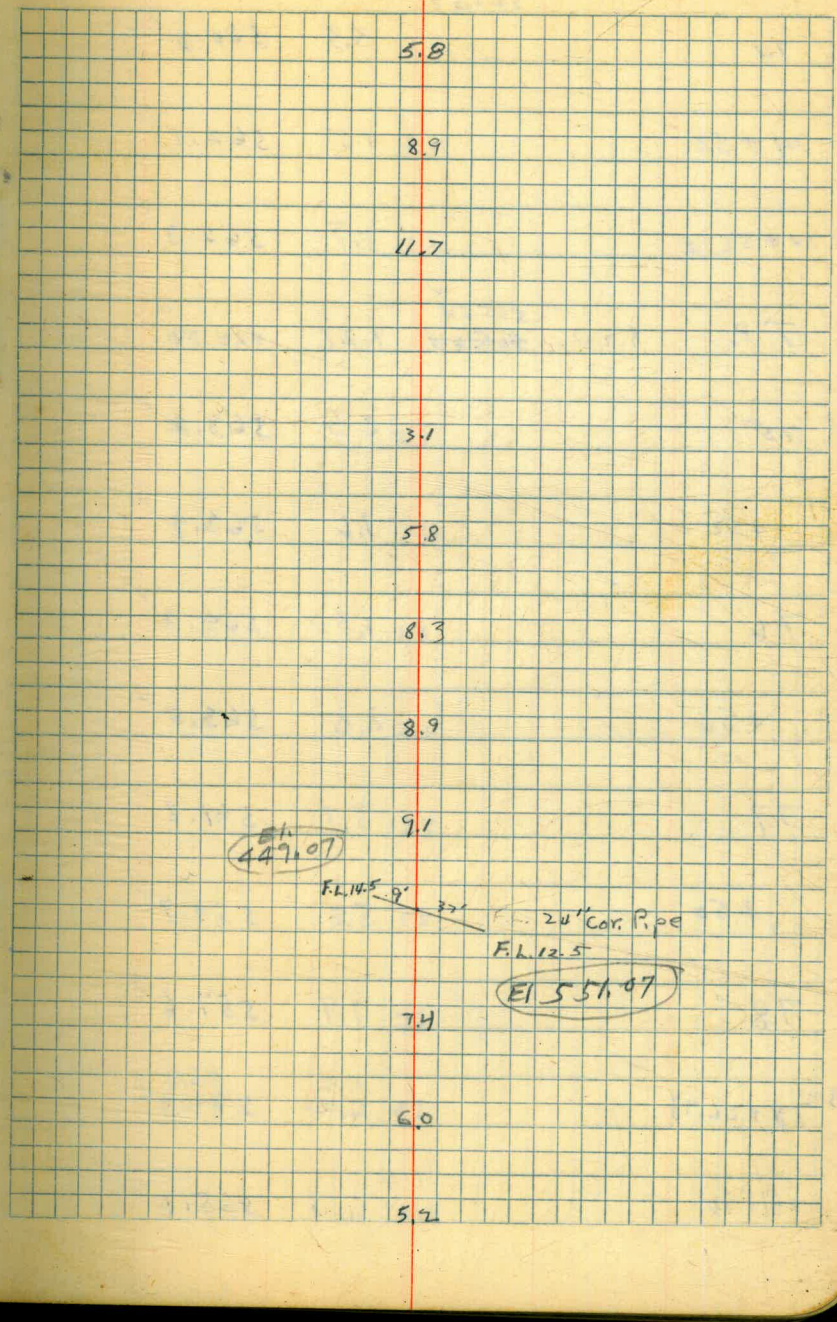
Fence

8.3
4.2
4.1
3.5
3.4
2.8
3.6
4.8
5.2
6.6
2.1

		600.04		
64			5.0	595.0
64+50			7.1	592.9
65			9.1	590.9
65+50			11.4	588.6
T.P.	0.29	587.32	13.01	587.03
66			1.0	586.3
66+50			2.7	584.6
67+00			5.2	582.1
+50			7.7	579.6
68			9.9	577.4
68+50			12.4	574.9
T.P.	0.42	575.31	12.87	574.45
69			3.2	572.2



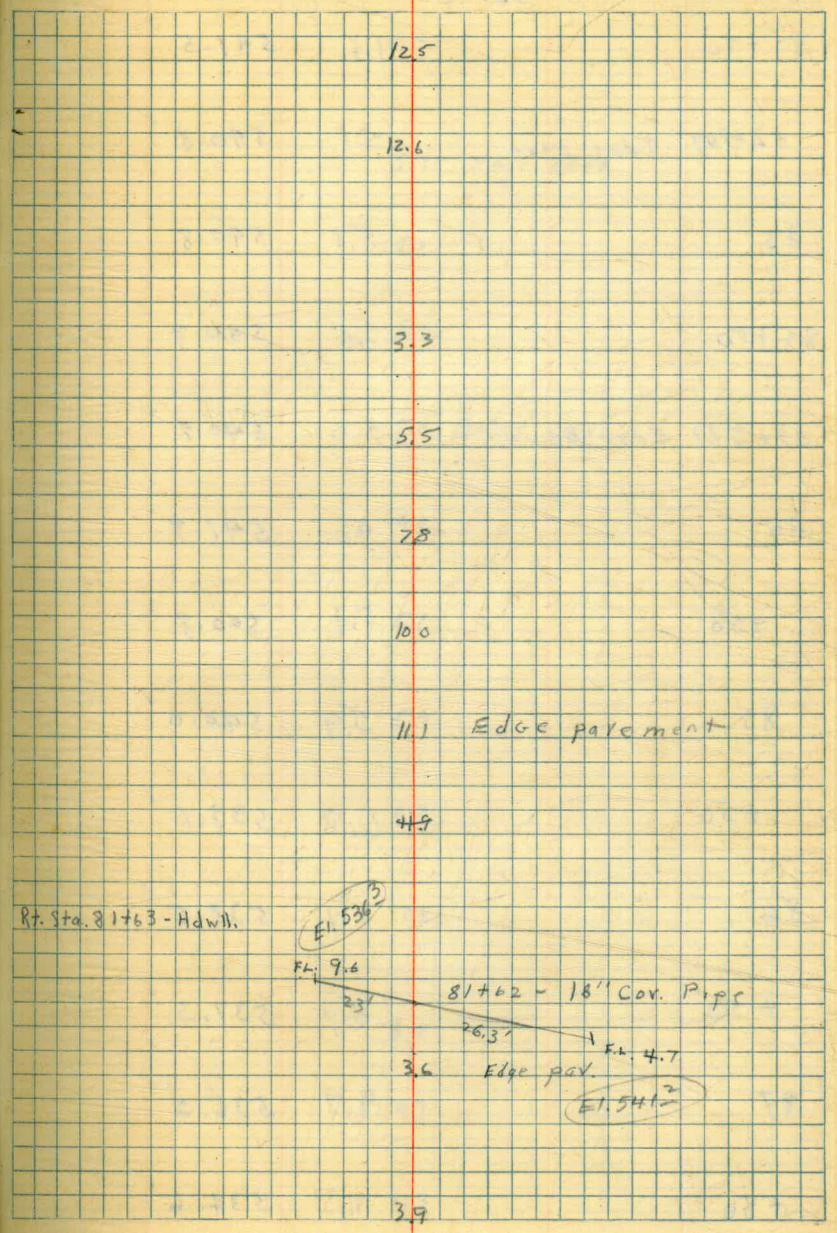
		575.37		
69+50			5.8	569.6
70			8.9	566.5
70+50			11.7	563.7
T.P.	0.92	563.57	12.72	562.65
71			3.1	560.5
+50			5.8	557.8
72			8.3	555.3
E.C. 72+38.23			8.9	554.7
72+50			9.1	554.5
72+53			7.4	
73+00			7.4	556.2
B.C. 73+29.35			6.0	557.6
+50			5.2	558.4



		563.57 ✓		
74			3.3	560.3 ✓
74 + 50			1.5	562.1 ✓
E.C 74 + 56.72			1.3	562.3 ✓
T. P.	3.24	565.54 ✓ ~~565.64~~	1.27	562.30 ✓
75			2.3	563.2 ✓
+ 50			1.6	563.9 ✓
76			1.3	564.2 ✓
+ 50			2.0	563.5 ✓
77			3.7	561.8 ✓
+ 50			5.8	559.7 ✓
78			7.9	557.6 ✓
B.C. 78 + 26.77			9.2 ~~4.2~~	56.3 ~~561.3~~ ✓
78 + 50			10.4	555.1 ✓

3.3
1.5
1.2
2.3
1.6
1.3
2.0
3.7
5.8
7.9
9.2
10.4

		565.54 ~~565.64~~			
79			12.5	553.0	
EC. 794+33.1			12.6	552.9	
	1.32	554.27 ~~554.37~~	12.59	552.95 ~~553.05~~	
79+50			3.3	551.0	
80			5.5	548.8	
+50			7.8	546.5	
81			10.0	544.3	
81+22.6	Edge pav.		11.1	543.2	
~~△ 81+65.3~~					
B.M #5	2.21	545.94	10.54	543.73 ~~543.83~~	543.72
△ 81+65.31	Edge pav.		3.6	542.3	
82			3.9	542.0	



	545.94		
82+50		4.4	541.5
82+94.7	Edge pave	5.1	540.8
83		5.1	540.8
83+50		5.0	540.9
83+51.1	Edge pave	5.0	540.9
84		4.2	541.7
+50		5.1	540.8
85		5.9	540.0
+50		6.8	539.1
86		7.4	538.5
+50		8.4	537.5
87		9.7	536.2
+50		11.3	534.6

4.4

5.1 Edge pave.

5.1

5.0

5.0 Edge pave.

4.2

5.1

5.9

6.8

7.4

8.4

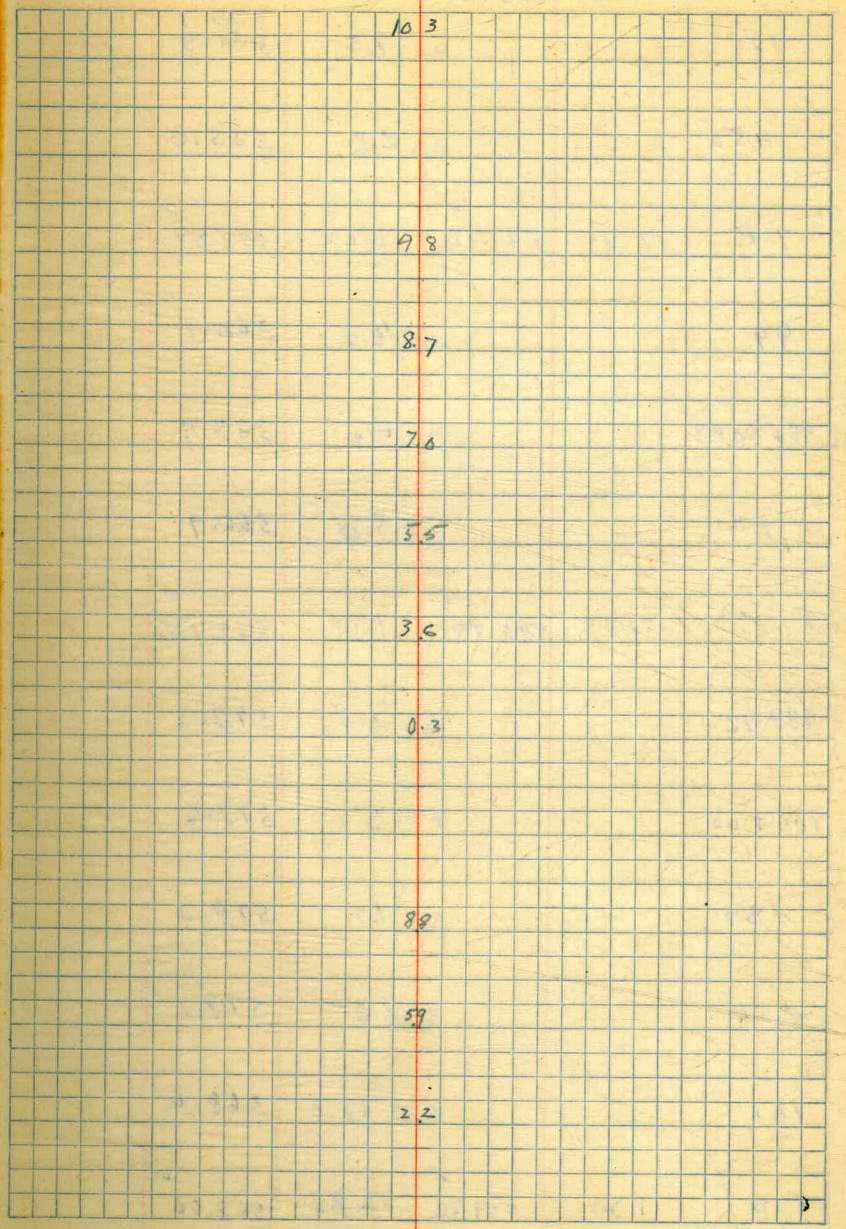
9.7

11.3

		545.94 ✓		
88			12.6	533.3 ✓
	2.46	543.76 ✓	12.64	533.30 ✓
P.O.T. 88+21.82			2.5	533.3 ✓
88+43			2.6	533.2 ✓
88+50			3.7	532.1 ✓
89			5.9	529.9 ✓
+50			8.5	527.3 ✓
90			10.6	525.2 ✓
+50			13.1	522.7 ✓
91			13.1	522.7 ✓
+50			12.5	523.3 ✓
92			11.5	524.3 ✓
+50			10.9	524.9 ✓

12.6
2.5
2.6
3.7
5.9
8.5
10.6
13.1
13.1
12.5
11.5
10.9

		535.76 ✓			
93			10.3	525.5 ✓	
T.P	10.95	536.42 ✓	10.29	525.47 ✓	
+50			9.8	526.6 ✓	
94			8.7	527.7 ✓	
+50			7.0	529.4 ✓	
95			5.5	530.9 ✓	
+50			3.6	532.8 ✓	
96			0.3	536.1 ✓	
B.M.#4	11.86	546.58 ✓	1.70	534.72 ✓	534.72
+50			3.8	537.8 ✓	
97			5.9	540.7 ✓	
+50			2.2	544.4 ✓	
T.P	11.69	557.59 ✓	0.68	545.90 ✓	



		557.59 ✓		
98			7.5	550.1 551.9
+50			2.6	555.0 ✓
T.P.	12.89	570.26 ✓	0.22	557.37 ✓
99			10.2	560.1 ✓
BC. 99+30.49			6.4	563.9 ✓
+50			3.4	566.9 ✓
T.P.	11.75	580.90 ✓	1.11	569.15 ✓
99+92			7.4	573.5 ✓
100+00			5.3	575.6 ✓
+30			1.7	579.3 ✓
+50			2.8	578.1 ✓
101			12.3	568.6 ✓
T.P.	1.30	569.36 ✓	12.84	568.06 ✓

7.5

2.6

10.2

6.4

3.4

7.4

5.3

1.7

2.8

12.3

		569.36		
101+50			10.3	559.1
T.P.	0.27	556.92	12.71	556.65
E.C. 101+84.14			3.5	553.4
102			5.6	551.3
+50			10.1	546.8
103			12.8	544.1
T.P.	4.69	548.84	12.77	544.15
+50			6.2	542.6
104			7.0	541.8
+50			7.2	541.6
105			6.5	542.3
+50			5.3	543.5
106			5.0	543.8

10.9

3.50 Hub

5.6

10.1

12.8

6.2

7.0

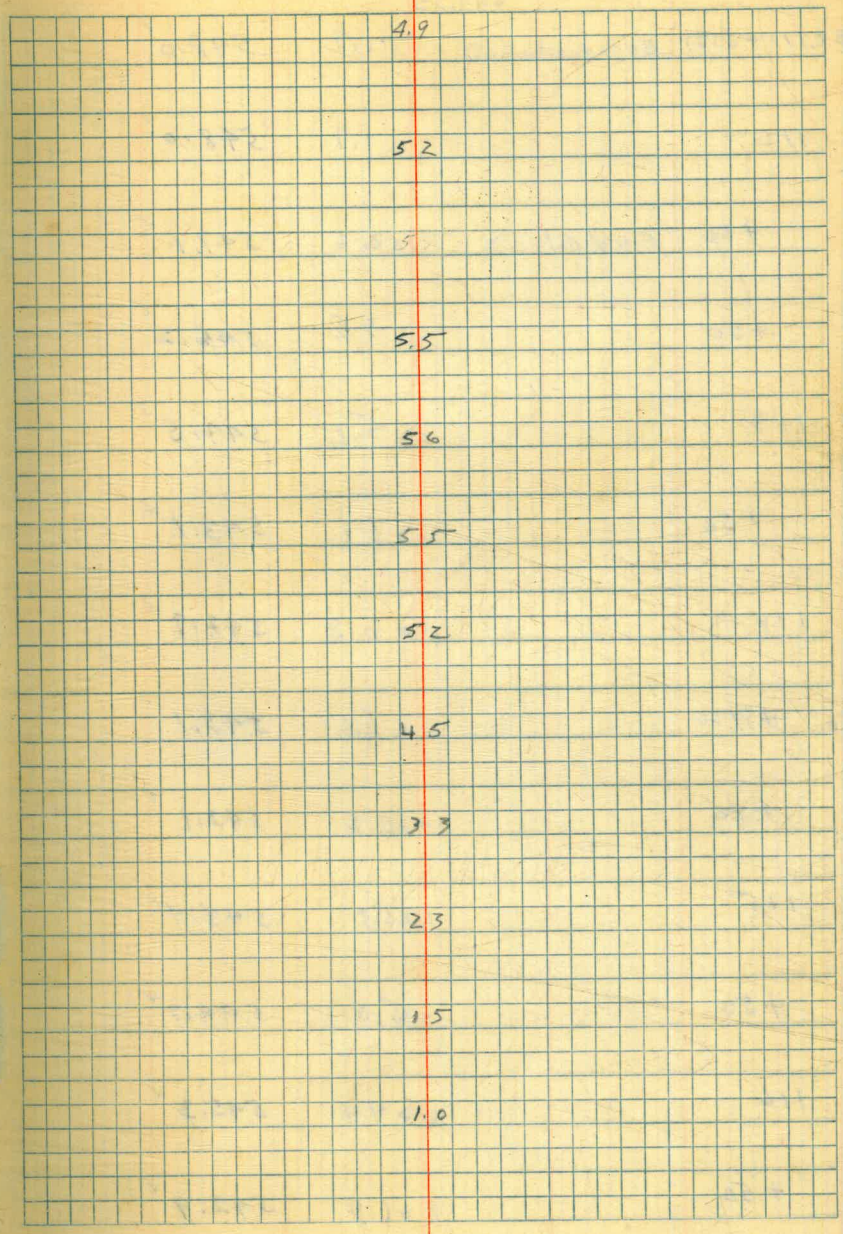
7.2

6.5

5.3

5.0

		548.84 ✓		
106+50			4.9	543.9 ✓
107			5.2	543.6 ✓
B.M #3	6' Lt Sta 107		2.23	546.61 ✓
+50			5.5	543.3 ✓
108			5.6	543.2 ✓
+50			5.5	543.3 ✓
109			5.2	543.6 ✓
+50			4.5	544.3 ✓
110			3.3	545.5 ✓
+50			2.3	546.5 ✓
111			1.5	547.3 ✓
+50			1.0	547.8 ✓
T.P.	1.79	549.71 ~~549.73~~	0.92	547.92 ✓ .02 Error ~~547.94~~ X



549.71
549.73

B.C. 111+85.97	Began cl	1.7	548.0 ✓
112		1.7	548.0 ✓
+33	End cl	2.6	547.1 ✓
+50		3.5	546.2 ✓
113		5.2	544.5 ✓
+50		6.6	543.1 ✓
114		6.8	542.9 ✓
E.C. +37.30		6.6	543.1 ✓
+50		6.6	543.1 ✓
115		5.3	544.4 ✓
+50		5.0	544.7 ✓
116		4.4	545.3 ✓
+50		6.8	542.9 ✓

1.7	Began cl
1.7	
2.6	End cl
3.5	
5.2	
6.6	
6.8	
6.6	
6.6	
5.3	
5.0	
4.4	
6.8	

		.71 549.73		
Δ 116 +82.09			8.3	541.4 ✓
T.P.	1.14	.67 542.69	8.18	.53 541.55 ✓ Elev. Dam Walk
117			2.7	540.0 ✓
+50			8.3	534.4 ✓
T.P.	1.00 ~~0.10~~	.89 530.91 ~~530.01~~	12.78	529.89 ~~529.91~~
118			4.2	526.7 ✓
+50			11.3	519.6 ✓
T.P.	+0.2	.03 519.05 ~~518.15~~	12.88	.01 518.05 ~~517.13~~
+59			2.8	516.3 ✓
119			8.3	510.8 ✓
+25			11.1	507.9 508.0
T.P.	0.19	.61 506.63 ~~505.73~~	12.61	.42 506.04 ~~505.54~~
+50			2.7	503.9 ✓

8.3

2.7

8.3

4.2

11.3

2.8

8.3

11.1

2.7

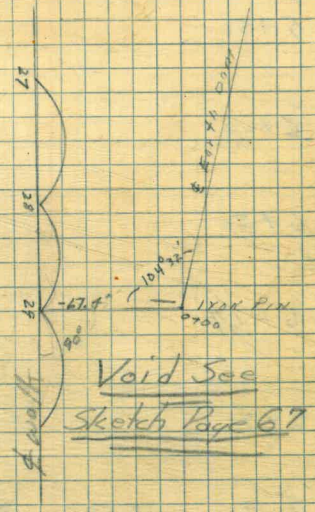
Hill
King
Otter
9-11-43

℄	Profile	Earth Dam - Murray Lake		
B.M.	1.64	544.15 ✓		542.51
0+00			10.4	533.8 ✓
T.P.	0.80	532.57 ✓	12.38	31.77 ✓
T.P.	0.74	520.25 ✓	13.06	519.51 ✓
1+00			1.6	18.7
1+60			10.9	09.4
			12.7	08.1
1+62			15.2	05.1
1+79			17.8	02.5
1+86			17.8	02.5
1+96			12.2	08.1
2+50			12.2	08.1
3+00			12.2	08.1
3+50			12.2	08.1

X on sidewalk of dam, 8'50 1st Abut. U.S.G.S. datum

67.4 from ℄ of walk at Abutm. #29 Iron Pin.

℄ Point on Rock. (1)



Void See Sketch Page 67

edge spw.
Water surface

Bottom Splwy.

Bottom Splwy.

edge spw.

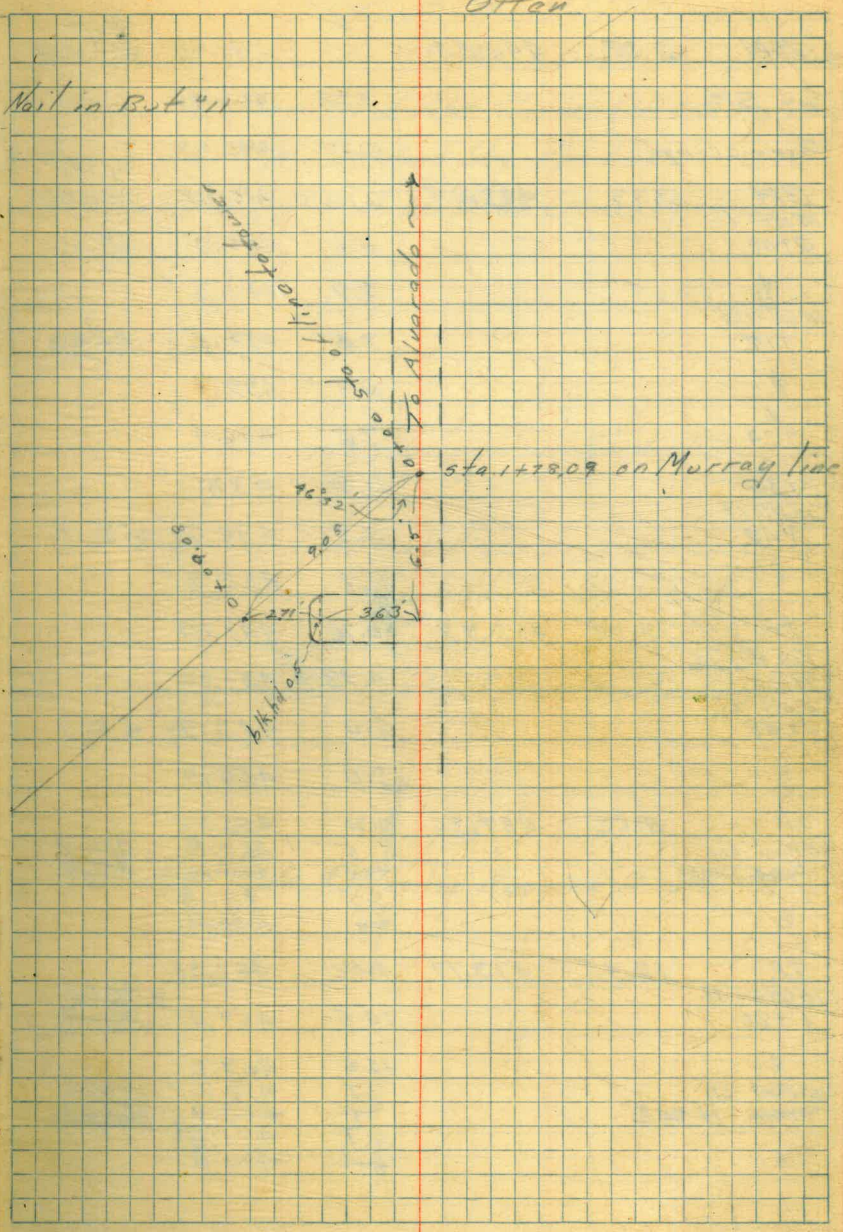
		520.25 ✓			
4+00			12.7	07.6	
4+50			13.2	07.1	
5+00			13.2	07.1	
5+50			12.5	07.8	
6+00			12.8	07.5	
6+50			12.6	07.7	
6+67			12.4	07.9	
6+90			3.6	16.7	
T.P.	13.09	32.89 ✓	0.45	19.80 ✓	
T.P.	11,93	44.23 ✓	0.59	32.30 ✓	
T.P			1.73	42.50 ✓	42.51 ✓

Top of dam 541.5 elev
23.6
Top 24" syphon 517.9
Top of dam 541.5
9.0
Top of former 24" syphon 532.5

check on starting pt

Loc of Tee on Murray P.L. with line to tower.

B.M.	4.07	441.69 ✓		440.62
Top of pipe on ℄			5.29	439.40 ✓
End of Tee at b/kbd.			6.12	438.57 ✓



48" Tower Outlet of Murry Dam.

BM	5.92	446.54 ✓		440.62	Data U.S.C.&G.S.
Set BM.			3.08	443.46	
Pressure Gauge			0.17	446.37	
BM	3.33	443.95 ✓		440.62	Data U.S.C.&G.S.
10' off - Lt. 0+00			3.1	440.9 ✓	435.9
℄			2.7	441.3 ✓	
10' off - Lt. +12			3.8	439.2 ✓	428.0
℄			4.3	439.7 ✓	
℄ +24			7.6	436.4 ✓	
℄ +30			11.9	432.1 ✓	
10' off - Lt +42			9.3	434.7 ✓	426.8
℄			11.1	432.9 ✓	
T.P.	12.74	455.93 ✓	0.76	443.19 ✓	
Top of Meter 0+85			4.73	451.20 ✓	
10' off - Lt. 0+85			6.0	449.9 ✓	445.7
℄			5.0	450.9 ✓	
T.P.	11.62	467.34 ✓	0.21	455.72 ✓	
10' offset - Lt. ~~+04~~ 1+05			6.5 ~~7.9~~	460.8 ✓ ~~460.0~~	454.7 ~~455.2~~
℄			5.5 ~~5.6~~	461.8 ✓ ~~461.7~~	
T.P.	12.45	479.77 ✓	0.02	467.32 ✓	
10' offset - Lt. 1+20			10.4	469.4 ✓	461.1 ~~461.7~~
℄			10.6	469.2 ✓	
10' offset - Lt. ~~+36~~ 1+38			7.1 ~~7+~~	472.7 ✓ ~~472.7~~	466.1 ~~466.7~~
℄			8.7 ~~8.4~~	471.1 ~~471.4~~	

9-29-13

Hill - Darby - King - Otton

64

BM - Nail in abutment 4' RH. Sta 0+68 (Murry Pipe Line)

BM - Chisel Pt. on S-E Cor of Valve Chamber (Sta 0+26 Murry Pipe Line)

℄ Pressure Gauge (3/4") on Wood Stay Pipe Line.

BM. Nail in abutment 4' RH of Sta 0+68 (Murry Pipe Line)

C - 5.0

C - 11.2

C - 7.9

Top of Sparling Meter - ℄ and top of Wood Stay Pipe Line

C - 9.2.

ok.

C - 6.1
~~C - 5.8~~ Sta. ℄ Grades Revised 9-30-13

C - 8.3
~~C - 7.7~~

C - 6.6
~~C - 6.0~~

		479.77			
10' offset -Lt			4.4	475.4 ✓	469.7
~~1+52~~ 1+50			~~4.8~~	~~475.5~~	~~470.2~~
℄			4.9	474.9 ✓	
			~~4.7~~	~~473.1~~	
10' offset -Lt.			2.8	477.0 ✓	471.9
~~1+68~~ 1+65			~~2.4~~	~~477.4~~	~~472.3~~
℄			3.2	476.6 ✓	
			~~3.1~~	~~476.7~~	
T.P.	7.19	486.21 ✓	0.75	479.02 ✓	
10' offset -Lt					
~~1+84~~ 1+77			~~7.8~~	~~478.4~~	473.0
℄			~~8.4~~	~~477.8~~	
Set B.M.	0.47	485.22 ✓	1.46	484.75 ✓	
10' offset West					
1+95 △			10.0	475.2 ✓	473.0
10' offset South					
1+95 △			8.3	476.9 ✓	473.0
℄					
1+95 △			10.1	475.1 ✓	
B.M. Ck.	6.89	491.64 ✓	0.47	484.75 ✓	
10' offset So.					
2+25			10.5	481.1 ✓	475.1
℄			11.2	480.4 ✓	
10' offset So.					
2+50			8.0	483.6 ✓	477.5
℄			9.1	482.5 ✓	
10' offset So.					
2+67			7.0	484.6 ✓	479.1
℄			8.3	483.3 ✓	
10' offset So.					
2+75			6.4	485.2 ✓	479.7
℄			7.8	483.8 ✓	
10' offset So.					
3+00			4.3	487.3 ✓	481.1
℄			8.1	483.5 ✓	
10' offset So.					
3+25			5.9	485.7 ✓	482.1
℄			9.9	481.7 ✓	
BM	6.97	491.72 ✓		484.75 ✓	
3+47.65 △ ℄			12.3	479.2 ✓	
Center of Pipe →			12.15	479.57 ✓	
3+60.59			6.4	485.3 ✓	

℄ - 5.7
~~℄ - 5.3~~

℄ - 5.1
~~℄ - 5.1~~

~~℄ - 5.4~~

B.M. Painted on Rock 15' Rt. of Sta 2+50 of 48" Tower outlet.

℄ - 2.2

℄ - 3.9

BM Painted on Rock 15' Rt. of Sta 2+50 of 48" Tower outlet.

℄ - 6.0

℄ - 6.1

℄ - 5.5

Note:
Top of Cut off
Wall Elev 477.8
Sta 3+67.5

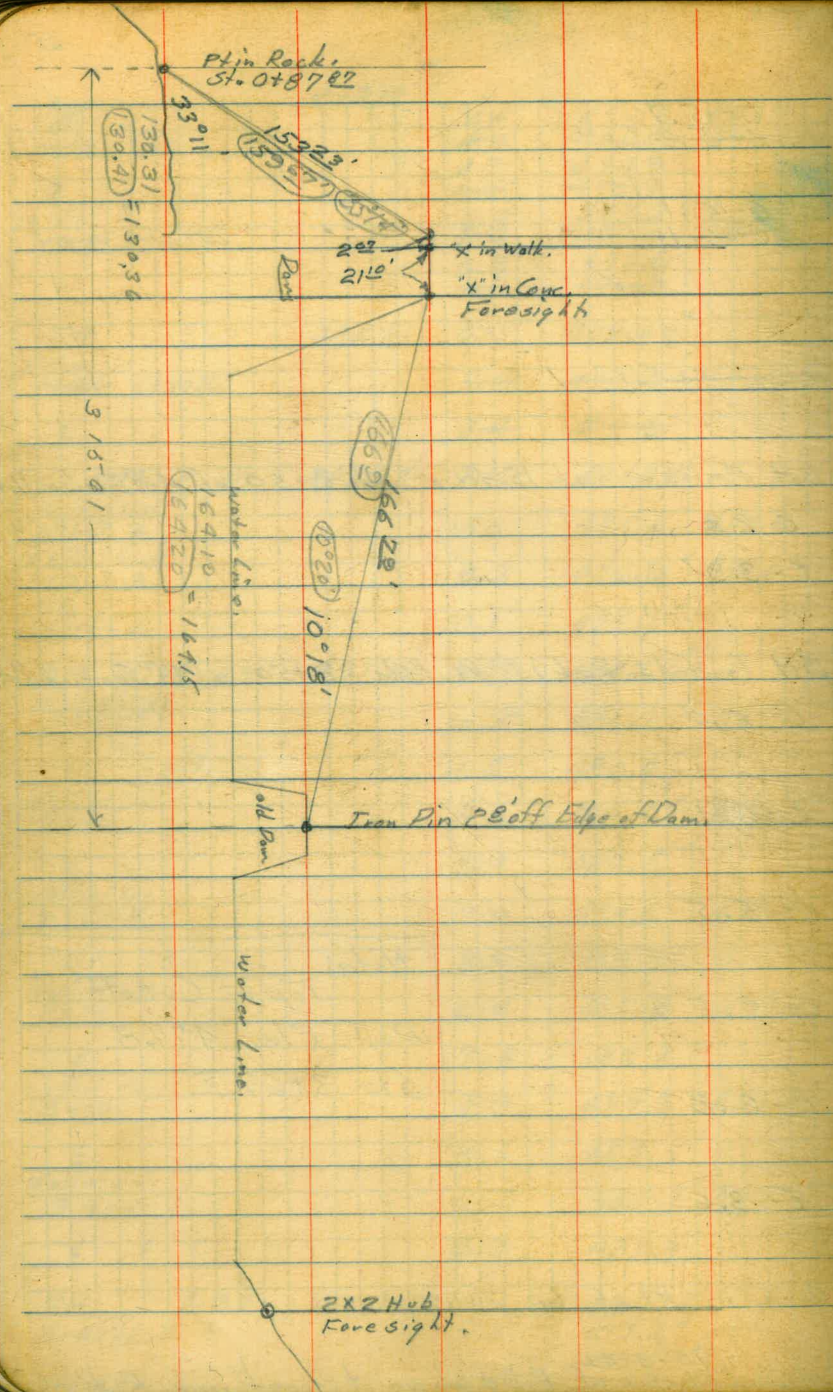
℄ - 5.5

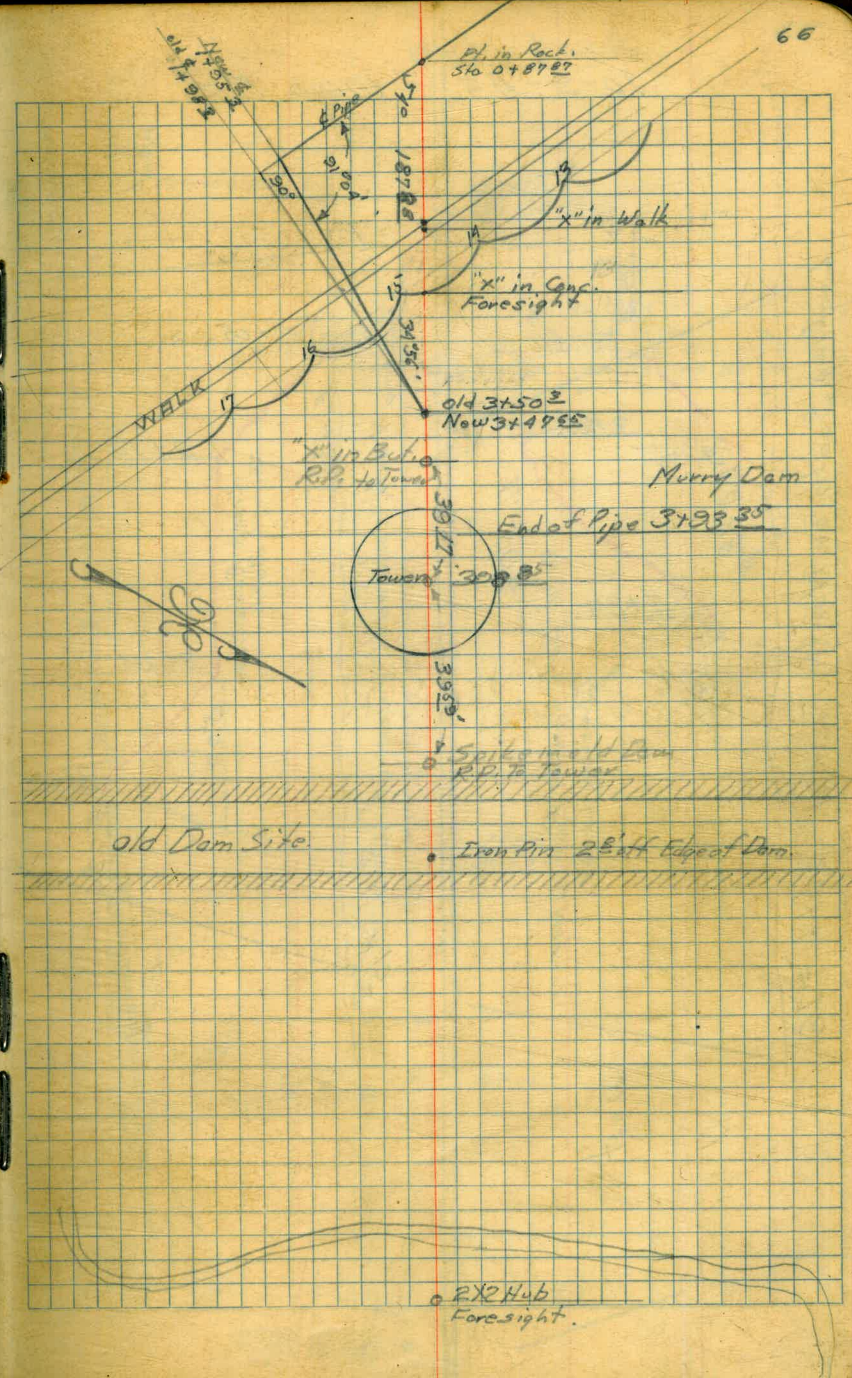
℄ - 6.2

℄ - 3.6

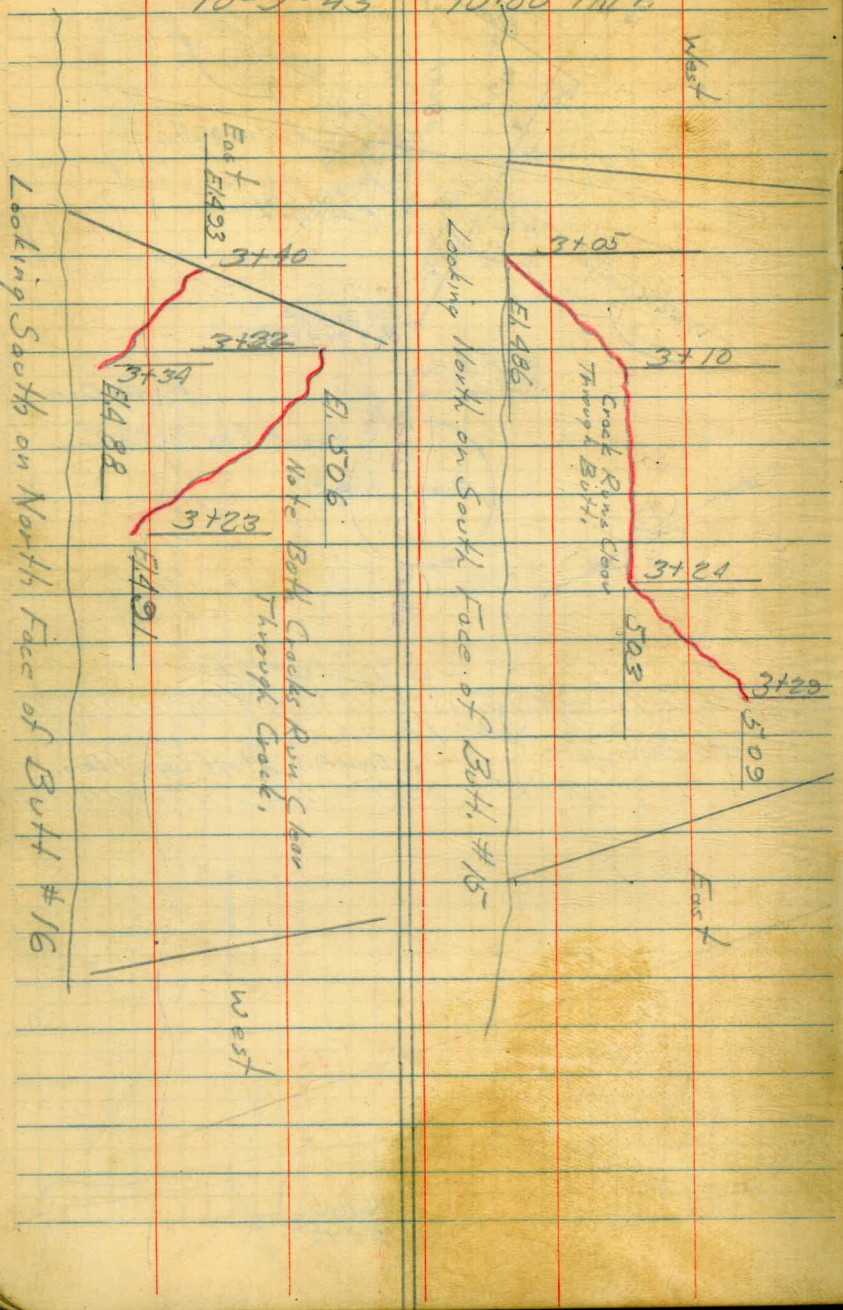
Rock 15' Rt. of Sta 2+50

10-8-43
Marked Center of Pipe where it Goes through Butt.

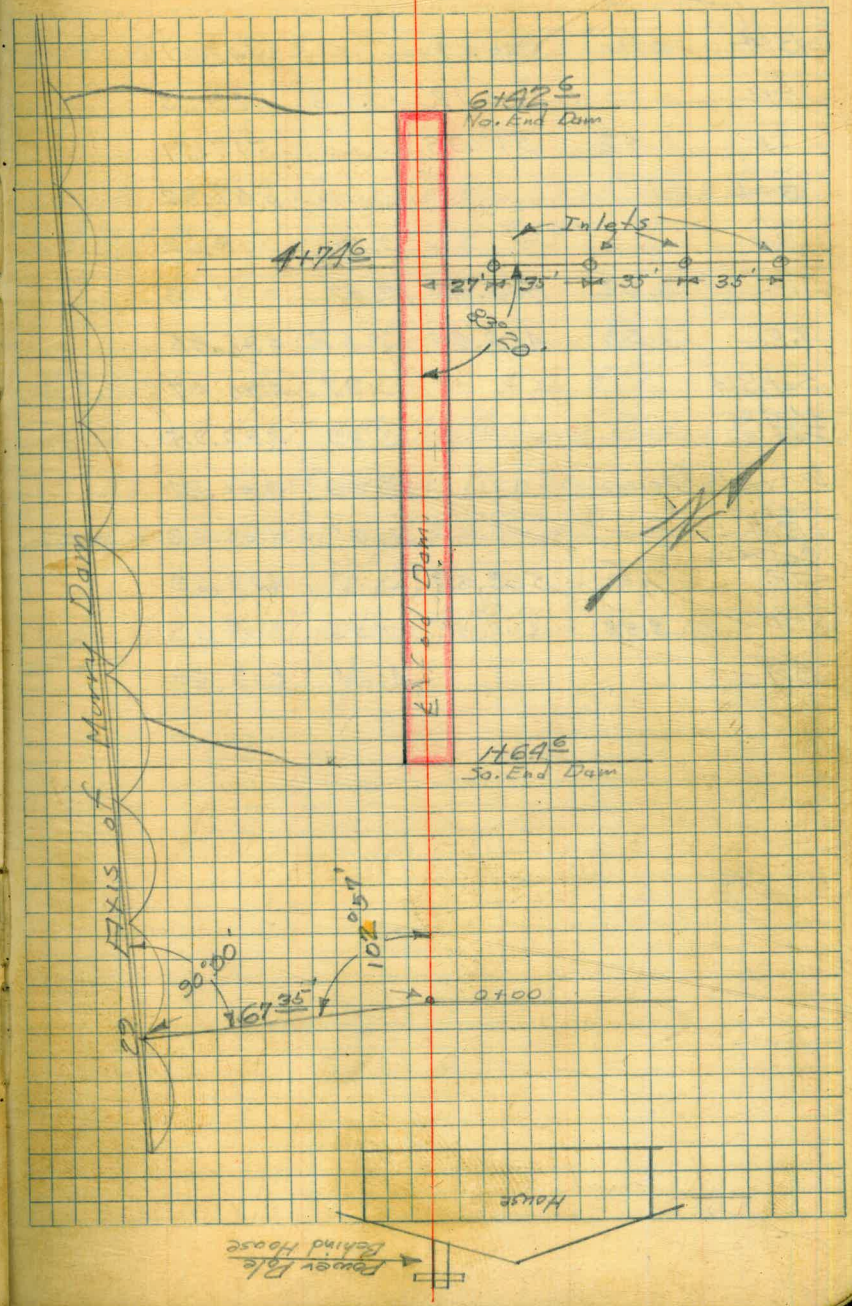

Pt in Rock.
St. 0+87 87
33°11'
152.23'
130.31
130.41
= 130.36
2 02
"X" in Walk.
21 10'
"X" in Conc.
Foresight
316.91
166.28'
10°18'
164.10
164.20
= 164.15
Water Line.
Iron Pin 2.8' off Edge of Dam.
old Dam
Water Line.
2x2 Hub
Foresight.


Pt. in Rock.
Sta 0+87 87
Pipe
90°
"X" in Walk
"X" in Conc.
Foresight
34°56'
old 3+50 3
New 3+47 65
WALK
"X" in But.
R.P. to Tower
Murry Dam
End of Pipe 3+93 35
Tower
Iron Pin 2.8' off Edge of Dam.
old Dam Site.
2X2 Hub
Foresight.

10-9-43 10:00 A.M.



Set Foresight on Rock.



Murry Dam (New Tower)

BM	0.10	542.61		542.51	
T.P.	0.49	530.12	12.98	529.63	
T.P.	0.42	517.93	12.61	517.51	
Set BM			10.11	507.82	
Set BM			9.31	508.62	
T.P.	0.32	505.38	12.87	505.06	
T.P.	0.99	493.84	12.53	492.85	
Set BM			3.37	490.47	
Water Table			12.89	480.95	
Depth Guage.			12.60	481.24	
Set BM			11.01	482.83	Knot Hole.
Return, T.P.	10.00	503.69	0.15	493.69	
T.P.	8.88	512.51	0.06	503.63	
BM			4.64	507.87	

10-6-43 Hill - Darby - King - Otton.

BM "X" on Curb of Side walk at So End Dam.

Iron Pin 2' off edge of old Dam (℄ of Pipe & Tower)

Set BM Footing of Arch #22 & 23

Set BM on Arch Between #16 & 17

10-6-43 - 11:00 AM. (Depth Guage Reading 21'-3½")

= 21' on Depth Gauge. Numbering Down.

Board sticking out by Center of Tower.

Iron Pin 2' off edge of old Dam (℄ of Pipe & Tower)

Cross-Sections of Area Around Tower Outlet of Murray Dam.

"X" in Conc. Butt.				
BM.	1.88	492.35		490.47
R.P. "X" in But.			7.3	485.1
3+66 67				
3+70 71				
3+74 75				
3+78 79				
3+82 83				
3+86 87				
3+90 91				
3+94 95				
3+98 85 99 35	Center of Tower			
4+02 03				
4+06 07				

10-8-13

Hill - Darby - King - Otten

Right ℄ Left

482.7
10.2
℄

482.2
10.2
℄

491.1 488.9 486.2 483.7 481.8 477.1 475.8
1.3 3.5 6.2 8.7 10.6 15.3 16.6
25.0 18.0 6.9 5.0 ℄ 9.3 16.0

491.7 489.3 487.9 484.9 482.6 481.0 479.5 477.1 475.8
0.7 3.1 4.5 7.5 9.8 11.4 12.9 15.3 16.6
25.0 18.6 11.0 7.7 ℄ 3.7 12 14.0 16.0

492.0 488.8 487.2 485.3 483.8 482.2 479.2 476.8
0.9 3.6 5.2 7.1 8.6 10.2 13.2 15.6
25.0 14.0 10.0 5.0 ℄ 5.0 18.6 25.0

493.5 489.6 488.5 486.1 485.7 486.0 480.5 480.3
-1.5 2.8 3.9 6.3 6.7 6.4 14.9 18.1
25.0 17.1 11.0 10.5 ℄ 4.0 15.0 25

494.8 489.6 489.3 489.0 480.9 478.7
-2.9 2.8 3.1 3.9 11.5 13.7
25.0 16.8 3.5 ℄ 15.5 25.0

495.9 494.2 491.2 490.6 488.2 481.8 480.7
-3.5 -4.8 1.2 1.8 4.2 10.6 11.7
25.0 19.5 12.0 7.0 ℄ 16.0 25.0

496.6 489.3 487.9 487.0 480.1 478.6
-4.2 3.1 4.5 5.4 12.3 13.8
25.0 7.0 ℄ 4.0 16.0 25.0

495.9 493.1 488.6 487.4 480.0 478.6
-3.5 -0.7 3.8 5.0 12.4 13.8
25.0 18.0 7.5 ℄ 15.1 25.0

495.5 491.8 487.3 485.7 485.3 482.0 480.1 479.5 480.5
-3.1 0.6 5.1 6.7 7.1 10.4 12.3 12.9 14.9
25.0 15.7 7.8 3.0 ℄ 11.4 15.2 23.0 25.0

4+10 11

4+14 15

4+18 19

4+22 23

Right ℄ Left

	495.8	490.7	486.4	485.5		481.1		482.3
	-1.8	1.7	6.0	6.9		11.3		10.1
	25.0	11.0	9.0	℄		27.0		25.0
493.2		489.8		486.5		483.4		485.2
-0.8		2.6		5.9		9.0		7.2
25.0		9.8		℄		16.0		25.0
494.5		491.5		488.2	487.3	484.8		487.4
-2.1		0.9		4.2	5.1	7.6		5.0
25.0		10.5		℄	7.8	13.0		25.0
495.8	490.7	490.2		489.4	487.6	490.9		
-3.4	1.7	2.2		3.0	4.8	1.5		
25.0	8.0	7.0		℄	7.8	25.0		

Levels of Grades for 48" outlet from Tower.

10-16-43

BM	3.83	488.58 ✓		484.75 ✓	
Set BM			6.61	481.97 ✓	
BM*I	1.85	488.85 ✓	1.58	487.00 ✓	487.04
1+95 I △			15.85	473.0 ✓	
2+00 3			14.85	474.0 ✓	

Hill-Dooley-King-Otten

BM Painted on Rock 15' Rt of Sta 2+50 (48" Tower Outlet)

BM Center of Conc. Pier (Outlet for Pipe)

BM*I Painted on Rock.

Hill - Darby - King - O Han.

10-27-43

Elev. Dilcl of 48" outlet of Muny Dam Tower.

BM	0.6	486.3		485.7	
3+25			5.6	480.7	
3+00			5.3	481.0	
2+75			4.9	481.4	
T.P.	1.5	482.8	5.0	481.3	
2+67½			1.6	481.2	
2+50			5.1	477.7	
2+25			7.7	475.1	
T.P. 1+95½ △	9.5	482.3	10.0	472.8	
BM			5.0	477.3	477.0

For Oct. Est.

Re-Cross Section of Area
around Murry Tower

BM	0.72	491.19		490.47	
TP.	4.05	486.50	9.64	481.55	
3+84	℄		8.4	478.1	
3+86					
3+90					
3+94					
3+98 85					
4+02					78.2 / 11.9 76.9 / 8.1
4+06					
4+10					

Taken after cleanup

Hill - Darby - King - Otton

"X" in Conc. Bott.

Lt. Rt.

476.4 10.1/7.3 — 478.0 8.5/℄ — 476.6 9.9/3.5 — 477.2 9.3/5.5 — 486.0 0.5/13.8 — 488.5 +2.0/17.8 — 477.2 9.5/8.4 — 480.4 6.1/9.4 — 484.8 [illegible]/11.0 — 485.1 1.4/12.9

476.7 9.8/10.4 — 476.7 9.8/2.8 — 477.4 9.1/℄ — 476.6 9.9/5.9 — 477.4 9.1/6.6 — 477.2 9.3/10.9 — 481.8 4.7/12.7 — 486.6 +0.1/14.8 — 488.6 +2.1/16.8

76.0/11.9 — 75.7/7.7 — 477.5 9.6/11.4 — 478.3 8.2/6.8 — 476.5 10.0/3.3 — 477.1 9.4/℄ — 476.4 10.1/6.6 — 477.2 9.3/7.0 — 476.9 9.6/12.9 — 482.3 4.2/15.0 — 489.6 +3.1/17.8

77.1/12.4 — 76.3/8.4 — 477.9 8.6/14.3 — 478.6 8.9/4.2 — 476.6 9.9/3.6 — 476.8 9.7/1.0 — 477.5 9.0/℄ — 476.7 9.8/11.9 — 481.1 5.4/15.5 — 490.9 +4.4/19.0

78.5/6.8 — 76.3/2.8 — 480.3 [struck out] — 480.3 [struck out] — 476.8 [struck out] — 478.1 8.4/℄ — 476.5 10.0/3.8 — 477.2 9.3/9.0 — 476.9 9.6/13.2 — 490.7 14.2/16.0

79.9/9.6 — 480.5 [struck out]/11.5 — 476.5 10.0/4.0 — 476.5 10.0/2.0 — 478.0 8.5/℄ — 476.3 10.2/3.1 — 476.3 10.2/9.9 — 491.0 +4.5/13.0

477.9 8.6/4.3 — 478.0 8.5/℄ — 476.9 9.6/1.0 — 476.9 9.6/5.0 — 490.9 +4.4/10.0

KING
OTTEN
1-13-49

X-sects of cut thru old Murray Dam

Stations same as Profile Dam - See Page-61

B.M.	0.35	513.35		513.0
3+~~75~~ 71			5.3	08.1
4+20			5.4	08.0
4+26			5.4	08.0
4+~~71~~ 72			6.3	07.1

Note cross sections = vert. dist. below ℄

Top Footing - 3rd Inlet.

508.0 − 0.1 = 507.9 / 8.5'

507.9 − 0.2 = 507.7 / 8.6

507.6 − 0.4 = 507.2 / 8.4'

507.8 − 0.2 = 507.6 / 8.1

485.0 − 23.0 = 462.0 ; 485.0 − 28.4 = 456.6 / 43.4

485.0 − 28.4 = 456.6 ; 485.0 − 23.0 = 462.0 / 43.5

485.0 − 23.0 = 462.0 ; 485.0 − 28.4 = 456.6 / 43.4

507.6 − 0.4 = 507.2 / 8.5'

508.0 − 00 = 508.0 / 8.1

485.0 − 28.4 = 456.6 ; 485.0 − 23.0 = 462.0 / 43.5

507.1 − 00 = 507.1 / 8.0'

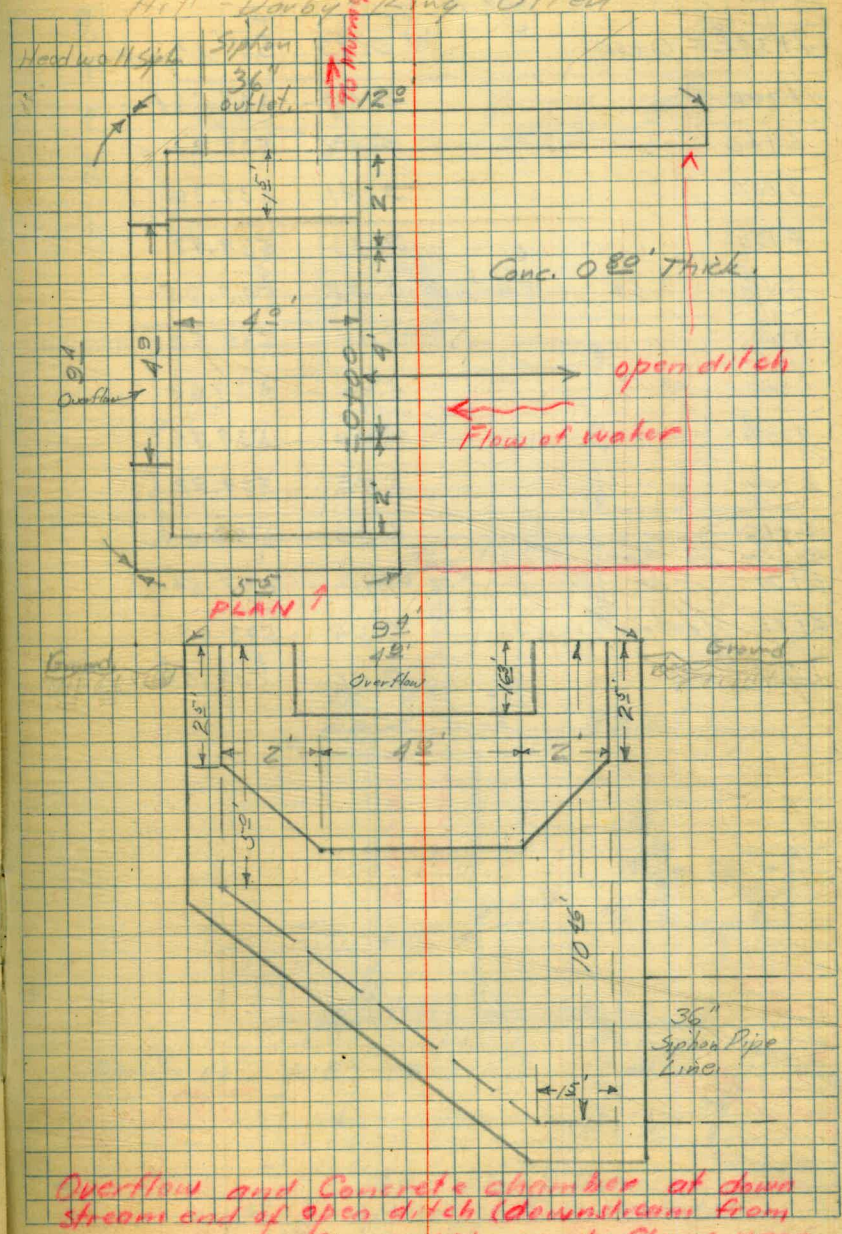
507.3 + 0.2 = 507.5 / 8.6'

Open Ditch Running from Euc. to Murray.

11-17-43

B.M.	4.16	5 4.701	6 542.85 ~~542.85~~	S.P. Conc.
Bottom of Flowline Siphon		14.62	6 532.39	
Flow-Inlet. 0+00		8.55	538.46	
Top-Head Wall		4.16	542.85	
+50		8.3	538.7	
1+00		8.3	538.7	
~~Bottom~~ +50	-12' wide	8.3	538.7	
Top +50	-10' wide (Natural Gr.)	4.9	542.1	
2+00		8.2	538.8	
+50		8.2	538.8	
3+00		8.2	538.8	
+50		8.2	538.8	
4+00		8.1	538.9	
+50		8.1	538.9	
5+00		8.0	539.0	
T.P.	5.41	5 48.77	3.65 6 543.36	
+50		9.8	539.0	
6+00		9.8	539.0	
+50		9.8	539.0	
7+00		9.6	539.2	
7+10.4		9.7	~~539.0~~ 539.1	
7+38		9.7 (3)	539.04	
40" outlet to Euc.		10.7	538.1	
B.M. Ck.		6.16	542.61	

Hill - Darby - King - Otten

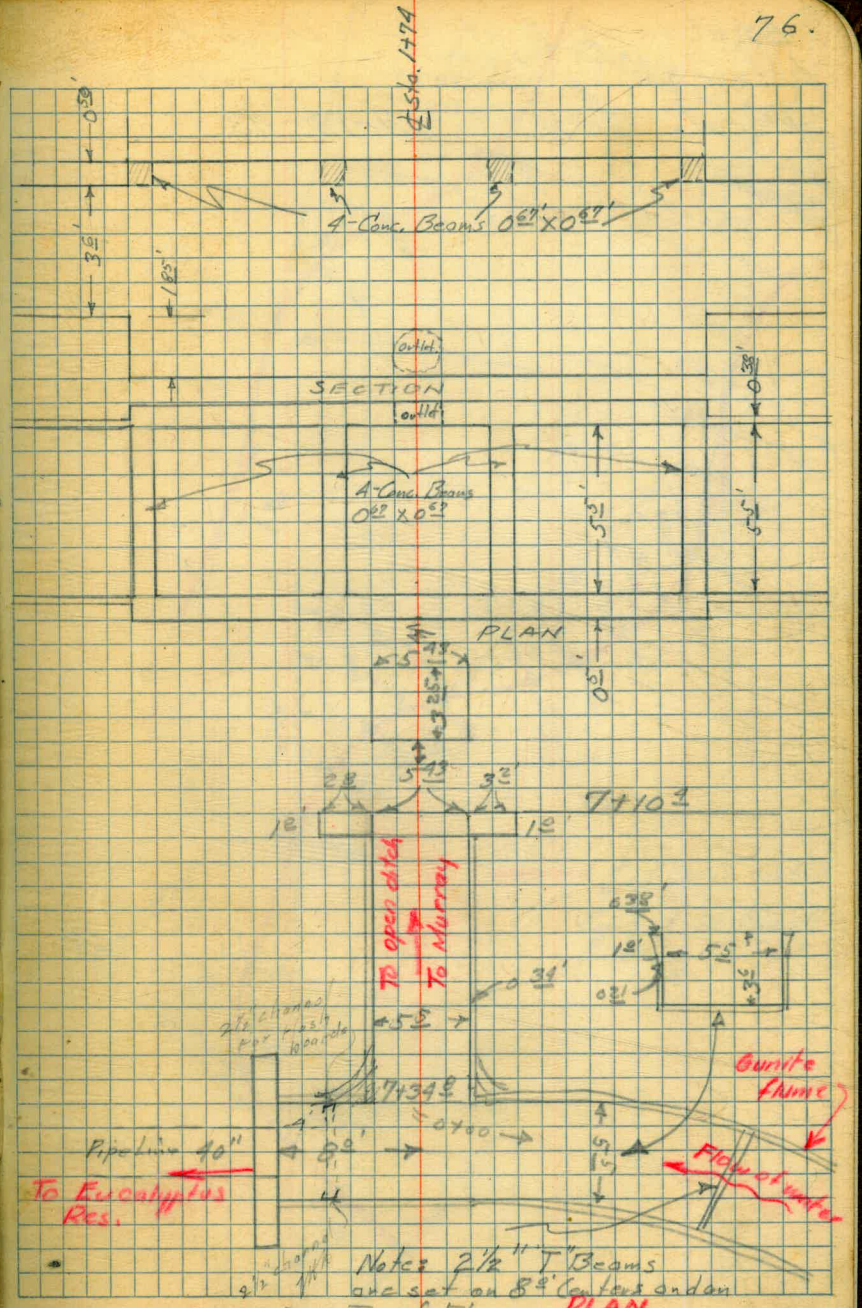


Overflow and Concrete chamber at down stream end of open ditch (downstream from La Mesa Lemon Gr. #5 # 10's gunite flume near Eucalyptus Rd.

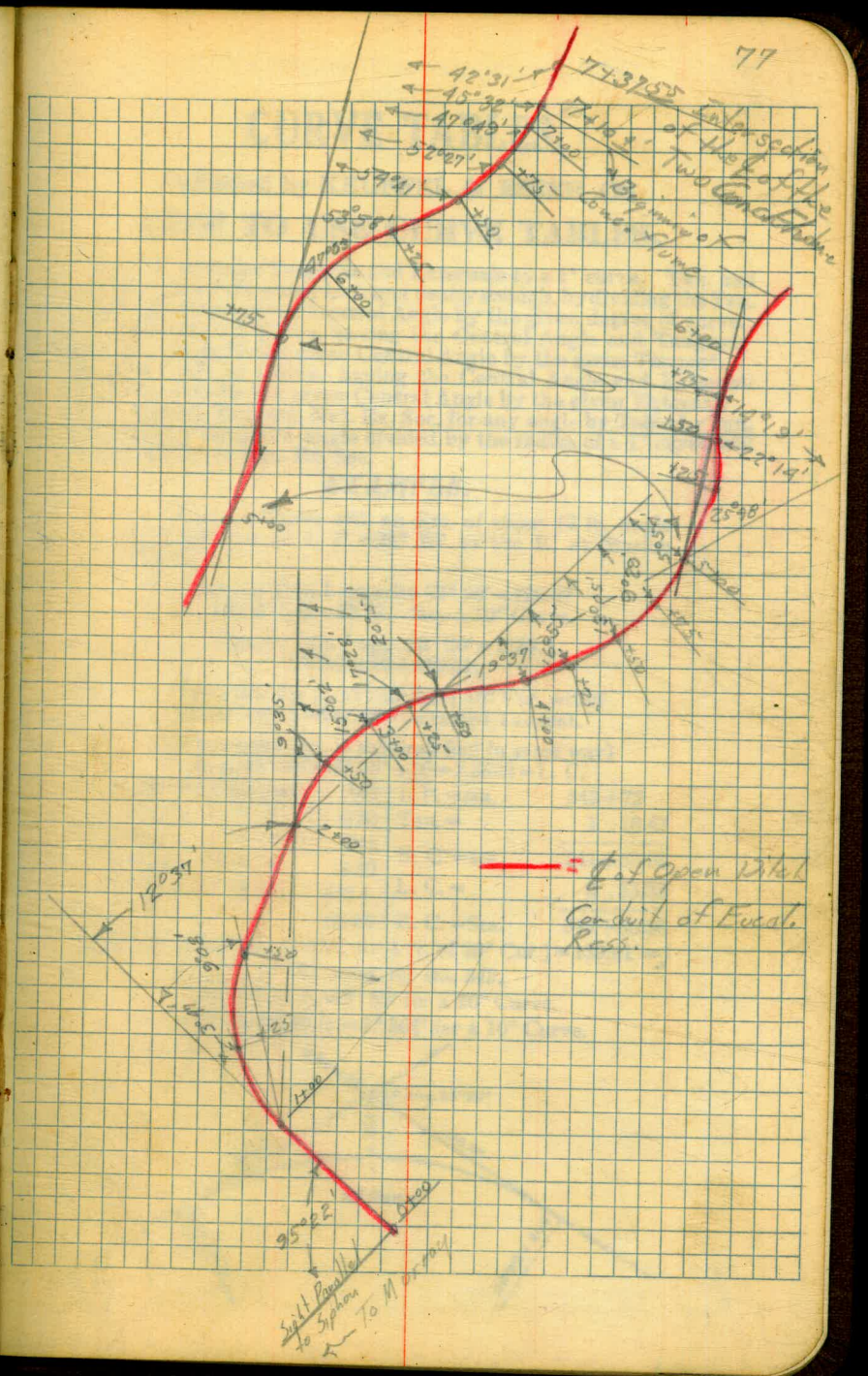
℄ Profile of Conc. Conduit Running from Pipe Line to Pipe line spilling into Eucal. Res.

			$548.77	
			6	
7+31 ℄ = 0+00			9.73	539.04
1+00			9.61	539.16
2+00			9.56	539.21
3+00			9.41	539.36
4+00			9.35	539.42
		6		6
I.P.	2.69	545.64	5.82	542.95
5+00			6.12	539.52
6+00			6.00	539.64
7+00			5.89	539.75
8+00			5.82	539.82
8+13			5.80	539.84
Bottom 36" Pipe 8+21			7.10	538.54
8+21 Headwall			2.55	543.09
			6	
TBM (set)			2.56	543.08

5-½" Con Headwall



Location of ℄ of Open Ditch Running between Siphon and Conc. Conduit at Fucal Ress. 11-19-43



CURVE TABLES.

Published by KEUFFEL & ESSER CO.

HOW TO USE CURVE TABLES.

Table I. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table I.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

EXAMPLE.

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

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

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

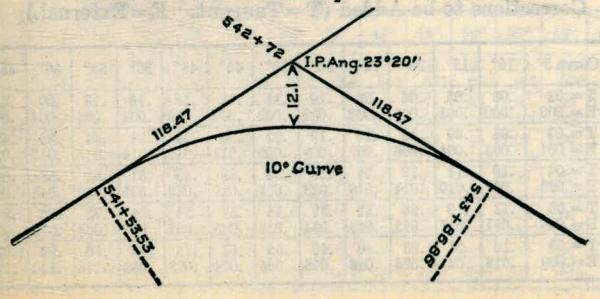
Correction for A. 23° 20′ for a 10° Cur. = 0.16
118.31 + 0.16 = 118.47 = corrected Tangent.

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

2° 19½′ = def. for sta.	542	I. P. = sta.	542+72
4° 49½′ = " " "	+50	Tan. =	1 .18.47
7° 19½′ = " " "	543	B. C. = sta.	541+53.53
9° 49½′ = " " "	+50	L. C. =	2 .33.33
11° 40′ = " " "	543+	E. C. = Sta.	543+86.86
	86.86		

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

Def. for 50 ft. = 2° 30′ for a 10° Curve.
Def. for 36.86 ft. = 1° 50½′ for a 10° Curve.



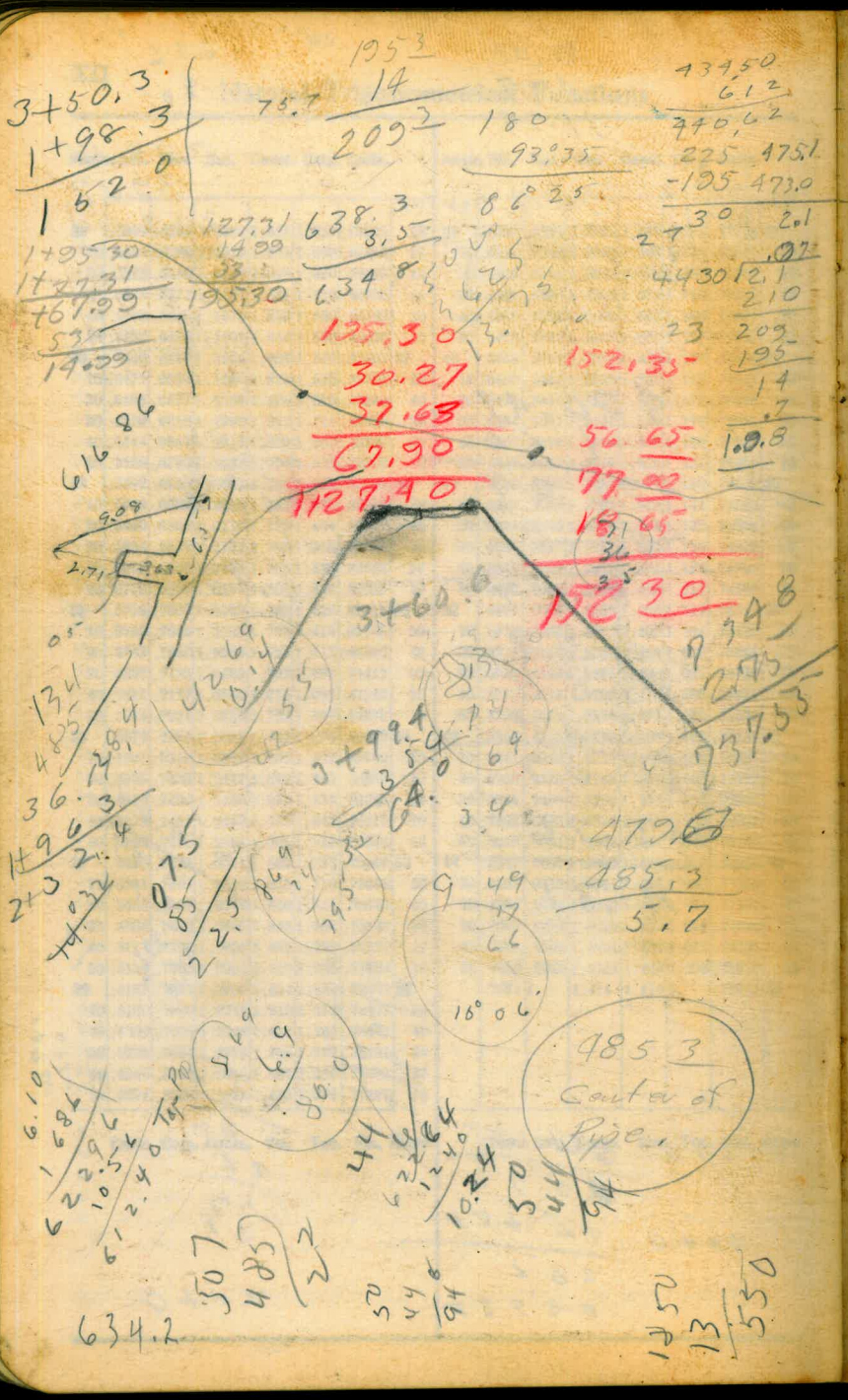
Natural Trigonometrical Functions

Angle.	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′							° ′
32	.5299	.6249	1.1792	1.887	1.600	.84805	58
10	.5324	.6289	1.1813	1.878	1.590	.84650	50
20	.5348	.6330	1.1835	1.870	1.580	.84495	40
30	.5373	.6371	1.1857	1.861	1.570	.84339	30
40	.5398	.6412	1.1879	1.853	1.560	.84182	20
50	.5422	.6453	1.1901	1.844	1.550	.84025	10
33	.5446	.6494	1.1924	1.836	1.540	.83867	57
10	.5471	.6536	1.1946	1.828	1.530	.83708	50
20	.5495	.6577	1.1969	1.820	1.520	.83549	40
30	.5519	.6619	1.1992	1.812	1.511	.83389	30
40	.5544	.6661	1.2015	1.804	1.501	.83228	20
50	.5568	.6703	1.2039	1.796	1.492	.83066	10
34	.5592	.6745	1.2062	1.788	1.483	.82904	56
10	.5616	.6787	1.2086	1.781	1.473	.82741	50
20	.5640	.6830	1.2110	1.773	1.464	.82577	40
30	.5664	.6873	1.2134	1.766	1.455	.82413	30
40	.5688	.6916	1.2158	1.758	1.446	.82248	20
50	.5712	.6959	1.2183	1.751	1.437	.82082	10
35	.5736	.7002	1.2208	1.743	1.428	.81915	55
10	.5760	.7046	1.2233	1.736	1.419	.81748	50
20	.5783	.7089	1.2258	1.729	1.411	.81580	40
30	.5807	.7133	1.2283	1.722	1.402	.81412	30
40	.5831	.7177	1.2309	1.715	1.393	.81242	20
50	.5854	.7221	1.2335	1.708	1.385	.81072	10
36	.5878	.7265	1.2361	1.701	1.376	.80902	54
10	.5901	.7310	1.2387	1.695	1.368	.80730	50
20	.5925	.7355	1.2413	1.688	1.360	.80558	40
30	.5948	.7400	1.2440	1.681	1.351	.80386	30
40	.5972	.7445	1.2466	1.675	1.343	.80212	20
50	.5995	.7490	1.2494	1.668	1.335	.80038	10
37	.6018	.7536	1.2521	1.662	1.327	.79864	53
10	.6041	.7581	1.2549	1.655	1.319	.79688	50
20	.6065	.7627	1.2577	1.649	1.311	.79512	40
30	.6088	.7673	1.2605	1.643	1.303	.79335	30
40	.6111	.7720	1.2633	1.636	1.295	.79158	20
50	.6134	.7766	1.2661	1.630	1.288	.78980	10
38	.6157	.7813	1.2690	1.624	1.280	.78801	52
10	.6180	.7860	1.2719	1.618	1.272	.78622	50
20	.6202	.7907	1.2748	1.612	1.265	.78442	40
30	.6225	.7954	1.2778	1.606	1.257	.78261	30
40	.6248	.8002	1.2808	1.601	1.250	.78079	20
50	.6271	.8050	1.2838	1.595	1.242	77897	10

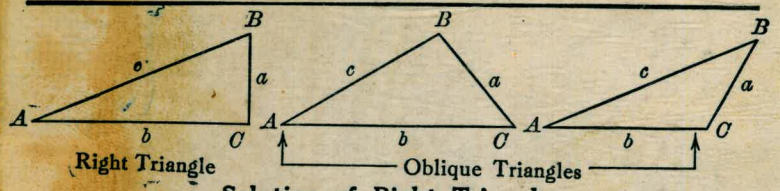
Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sin.	Angle

Angle.	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′							° ′
39	.6293	.8098	1.2868	1.589	1.235	.77715	51
10	.6316	.8146	1.2898	1.583	1.228	.77531	50
20	.6338	.8195	1.2929	1.578	1.220	.77347	40
30	.6361	.8243	1.2959	1.572	1.213	.77162	30
40	.6383	.8292	1.2991	1.567	1.206	.76977	20
50	.6406	.8342	1.3022	1.561	1.199	.76791	10
40	.6428	.8391	1.3054	1.556	1.192	.76604	50
10	.6450	.8441	1.3086	1.550	1.185	.76417	50
20	.6472	.8491	1.3118	1.545	1.178	.76229	40
30	.6494	.8541	1.3151	1.540	1.171	.76041	30
40	.6517	.8591	1.3184	1.535	1.164	.75851	20
50	.6539	.8642	1.3217	1.529	1.157	.75661	10
41	.6561	.8693	1.3251	1.524	1.150	.75471	49
10	.6583	.8744	1.3284	1.519	1.144	.75280	50
20	.6604	.8796	1.3318	1.514	1.137	.75088	40
30	.6626	.8847	1.3352	1.509	1.130	.74896	30
40	.6648	.8899	1.3386	1.504	1.124	.74703	20
50	.6670	.8952	1.3421	1.499	1.117	.74509	10
42	.6691	.9004	1.3456	1.494	1.111	.74314	48
10	.6713	.9057	1.3492	1.490	1.104	.74120	50
20	.6734	.9110	1.3527	1.485	1.098	.73924	40
30	.6756	.9163	1.3563	1.480	1.091	.73728	30
40	.6777	.9217	1.3600	1.476	1.085	.73531	20
50	.6799	.9271	1.3636	1.471	1.079	.73333	10
43	.6820	.9325	1.3673	1.466	1.072	.73135	47
10	.6841	.9380	1.3711	1.462	1.066	.72937	50
20	.6862	.9435	1.3748	1.457	1.060	.72737	40
30	.6884	.9490	1.3786	1.453	1.054	.72537	30
40	.6905	.9545	1.3824	1.448	1.048	.72337	20
50	.6926	.9601	1.3863	1.444	1.042	.72136	10
44	.6947	.9657	1.3902	1.440	1.036	.71934	46
10	.6967	.9713	1.3941	1.435	1.030	.71732	50
20	.6988	.9770	1.3980	1.431	1.024	.71529	40
30	.7009	.9827	1.4020	1.427	1.018	.71325	30
40	.7030	.9884	1.4061	1.422	1.012	.71121	20
50	.7050	.9942	1.4101	1.418	1.006	.70916	10
	.7071	1.	1.414	1.414	1.	.70711	45

Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sin.	Angle



TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\operatorname{cosec} = \frac{c}{a}$

Given	Required	
a, b	A, B, c	$\tan A = \frac{a}{b} = \cot B$, $c = \sqrt{a^2 + b^2} = a\sqrt{1 + \frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B$, $b = \sqrt{(c+a)(c-a)} = c\sqrt{1 - \frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90° - A$, $b = a \cot A$, $c = \frac{a}{\sin A}$.
A, b	B, a, c	$B = 90° - A$, $a = b \tan A$, $c = \frac{b}{\cos A}$.
A, c	B, a, b	$B = 90° - A$, $a = c \sin A$, $b = c \cos A$,

Solution of Oblique Triangles

Given	Required	
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A}$, $C = 180° - (A + B)$, $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$, $C = 180° - (A + B)$, $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180° - C$, $\tan \frac{1}{2}(A - B) = \frac{(a-b)\tan \frac{1}{2}(A+B)}{a+b}$, $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a+b+c}{2}$, $\sin \frac{1}{2}A = \sqrt{\frac{(s-b)(s-c)}{bc}}$, $\sin \frac{1}{2}B = \sqrt{\frac{(s-a)(s-c)}{ac}}$, $C = 180° - (A+B)$
a, b, c	Area	$s = \frac{a+b+c}{2}$, area $= \sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	area $= \frac{bc \sin A}{2}$
A, B, C, a	Area	area $= \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL

Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10′. From Table, Page IX. cos 5° 10′ = .9959. Horizontal distance = 319.4 × .9959 = 318.09 ft. Horizontal distance also = Slope distance minus slope distance times (1 — cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. Cosine 5° 10′ = .9959. 1 — .9959 = .0041. 319.4 × .0041 = 1.31. 319.4 — 1.31 = 318.09 ft.

When the rise is known, the horizontal distance is approximately:—the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance $= 302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.