

J. W. Williams

FIELD BOOK

1311

W 86

Return to  
W. C. Earle  
c/o City Engineers Office  
San Diego  
California

**MICROFILMED**  
JAN 7 1965

THE attention of Engineers' is called to the following important features of this improved note book.

1. The Pages are not machine ruled as is commonly the case but are printed from accurately ruled plates:

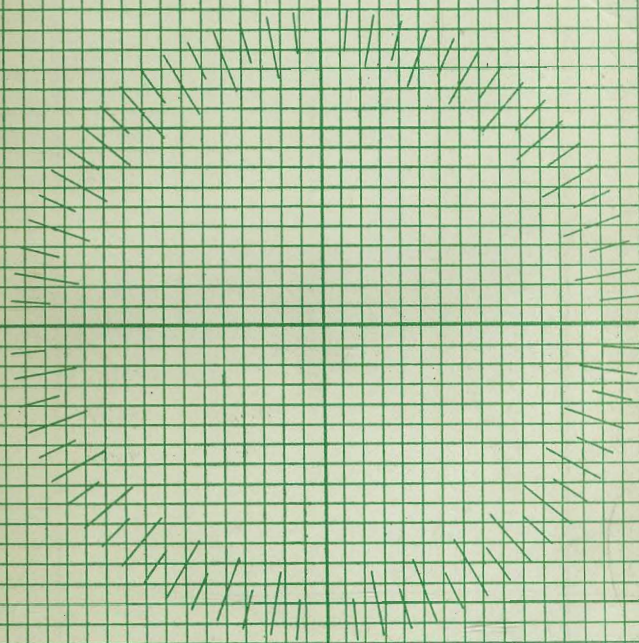
2. The right hand or sketch page is ruled in squares, enabling the note taker to easily and accurately construct a sketch to scale.

3. The faintly ruled protractor, divided to five degrees, while not so conspicuous as to interfere with the sketch, is a valuable aid in laying off angles with sufficient accuracy and with a minimum of trouble.

Place the edge of a small triangle or ruler on the desired degree mark and on the center of the circle, slide it along a ruler or by sight to the desired position. The usefulness in laying out traverses is at once apparent.

4. The newly compiled tables will be found to be superior to any in the market.

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1st Cross Sec. Oulgyra Cr. Sta 0+00

Harvey Div Dam

Sta	+	$\pi$	-	Elev.	
0+00	2.16	102.16	2.16	100.0	H. Water
0+10			4.1	98.1	
0+42			6.5	95.7	
0+45			8.6	93.6	
0+68			10.0	92.2	✓
0+79			9.6	92.6	
0+93			7.6	94.6	
1+00			7.6	94.6	
1+14			7.7	94.5	
1+17			8.4	93.8	
1+56			6.2	96.0	
1+68			6.7	95.5	
1+83			5.1	97.1	
2+00			6.9	95.3	
2+12			7.3	94.9	
2+16			8.5	93.7	
2+30			9.8	92.4	
2+50			8.4	93.8	
2+60			8.6	93.6	
2+85			6.2	96.0	
2+87			4.2	98.0	
3+00			2.2	100.0	H. Water

Mar. 14-1916

Earle

Bates

S. Bank Elev. assumed = 100.0 Plug for B.M.

N. Bank

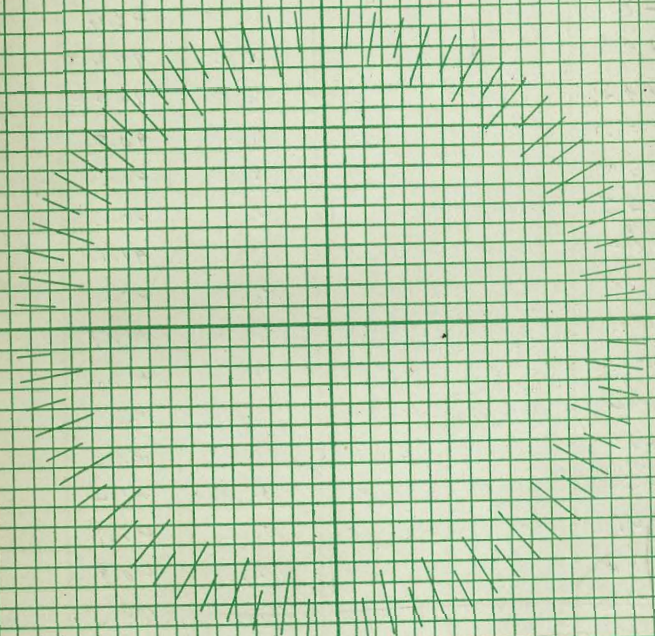
2<sup>nd</sup> Cross Section - Sulphur Creek Sta 1+65

3

Sta.	+	π	-	Elev.	
0+00		102.16	3.8	98.4	H. Water
0+31			6.1	96.1	
0+46			7.9	94.3	
0+51			8.3	93.9	
0+59			7.3	94.9	
0+71			10.1	92.1	
0+81			11.8	90.4	
0+91			12.8	89.4	✓
0+96			12.3	89.9	
1+03			11.3	90.9	
1+07			10.0	92.2	
1+46			9.7	92.5	
1+56			11.1	91.1	
1+61			9.6	92.6	
1+91			9.7	92.5	
2+01			8.9	93.3	
2+02			7.1	95.1	
2+11			8.9	93.3	
2+16			10.8	91.4	
2+26			11.4	90.8	
2+36			11.3	90.9	
2+87			7.9	94.3	
2+92			3.8	98.4	H. Water
T.P.	1.02	99.92	3.26	98.90	

S. Bank

N. Bank



3<sup>d</sup> Cross Section Dulzura Creek Sta 2+65

4

Sta	+	⌈	-	Elev	
0+00		99.92	2.3	97.6	H. Water
0+18			2.7	97.2	
0+38			3.6	96.3	
0+60			3.8	96.1	
0+68			4.3	95.6	
0+70			7.0	92.9	
0+83			8.0	91.9	
1+03			8.2	91.7	
1+06			7.7	92.2	
1+23			9.2	90.7	
1+24			9.6	90.3	
1+47			9.6	90.3	
1+54			8.5	91.4	
1+79			9.4	90.5	
2+12			8.2	91.7	
2+21			8.6	91.3	
2+34			9.1	90.8	
2+36			7.4	92.5	
2+50			6.5	93.4	
2+61			7.1	92.8	
2+62			10.1	89.8	
2+73			11.6	88.3	✓
2+81			10.2	89.7	
2+82			8.6	91.3	
3+18			4.6	95.3	
3+35			2.3	97.6	H. Water

S. Bank

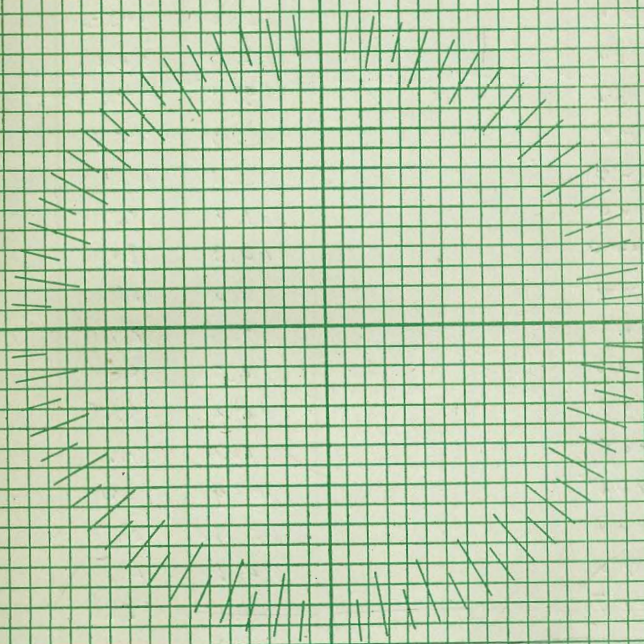
N. Bank

4th Cross Section, Dulgum Creek Sta 3+65

Sta	+	π	-	Elev
0+00		99.92	3.1	96.8
0+05			4.2	95.7
0+17			4.8	95.1
0+47			4.9	95.0
0+52			4.9	95.0
0+69			5.0	94.9
0+76			7.7	92.2
0+81			8.1	91.8
0+85			8.9	91.0
1+00			9.3	90.6
1+20			8.7	91.2
1+25			9.9	90.0
1+42			10.3	89.6
1+64			10.3	89.6
1+85			9.5	90.4
1+92			9.5	90.4
1+97			11.0	88.9
2+05			10.0	89.9
2+18			10.9	89.0
2+22			10.3	89.6
2+53			10.0	89.9
2+75			11.1	88.8
2+82			13.3	86.6
2+94			13.3	86.6
2+97			8.1	91.8
3+22			4.6	95.3
3+37			3.1	96.8
T.P.	1.14	98.89	2.17	97.75

H. Water

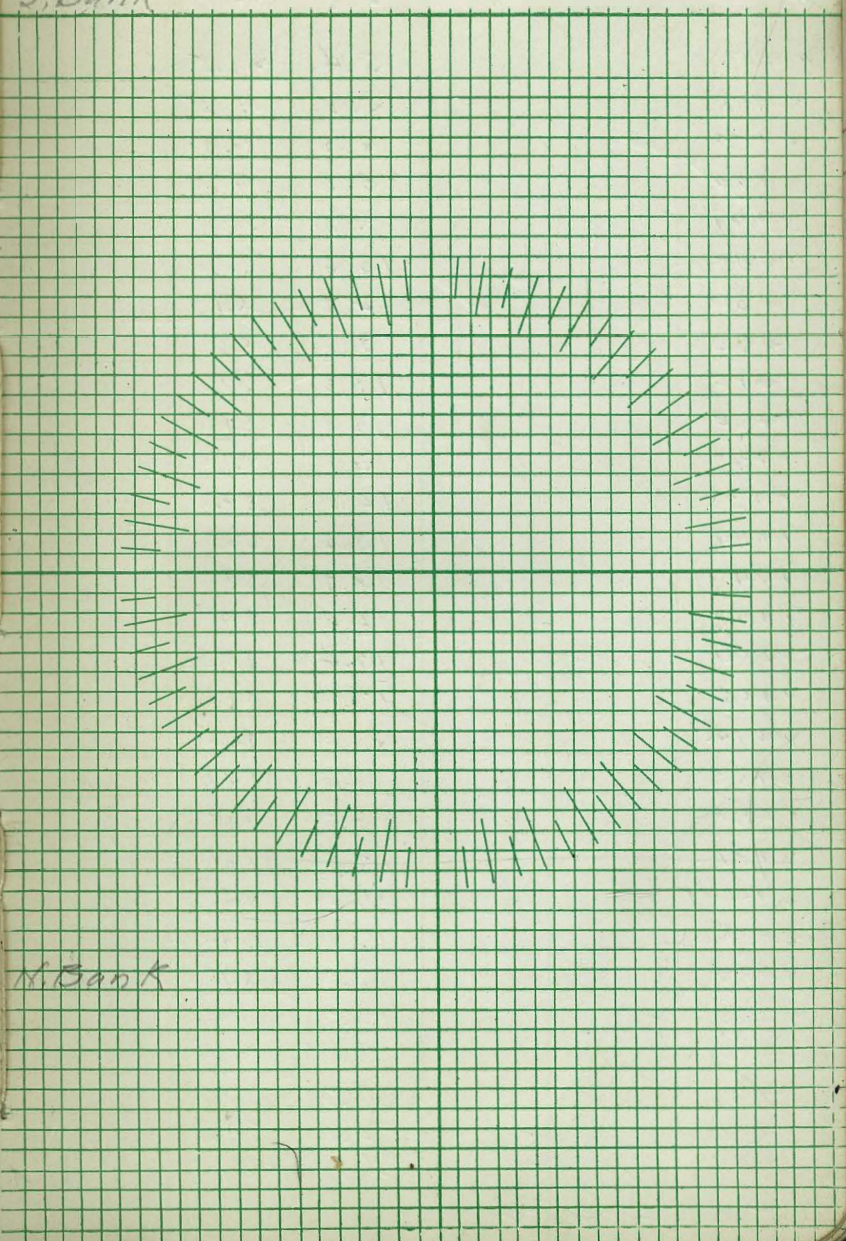
South Bank



N. Bank

5th Cross Section Dalgona Creek Sta 5+65

Sta	+	$\pi$	-	Elev	
0+00		98.89	3.8	95.1	H.Water S. Bank
0+60			5.4	93.5	
0+81			5.1	93.8	
0+90			6.0	92.9	
1+00			9.1	89.8	
1+21			10.6	88.3	
1+22			13.6	85.3	
1+32			12.8	86.1	
1+37			9.3	89.6	
1+41			13.2	85.7	
1+59			13.1	85.8	
1+60			11.1	87.8	
2+40			10.9	88.0	
2+41			13.0	85.9	
2+47			12.8	86.1	
2+55			10.2	88.7	
2+60			10.4	88.5	
2+64			11.3	87.6	
2+75			10.9	88.0	
2+87			13.4	85.5	
2+92			14.1	84.8	✓
3+07			13.3	85.6	
3+16			9.3	89.6	
3+40			6.1	92.8	
3+63			3.8	95.1	H.Water N. Bank

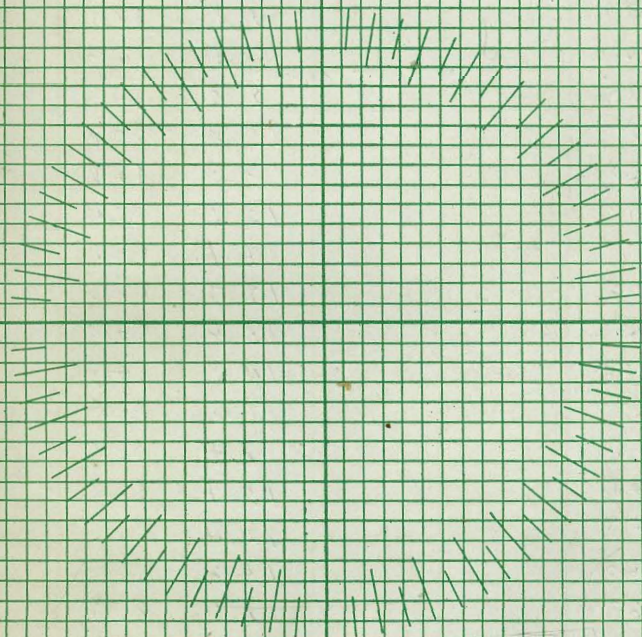




## 6th Cross Section Dulgura creek Sta 6+65

7

Sta	+	$\pi$	-	slw	
0+00		98.89	4.6	94.3	H.Water S. Bank
0+13			5.4	93.5	
0+38			5.4	93.5	
0+59			6.0	92.9	
0+77			6.0	92.9	
0+91			8.8	90.1	
0+97			13.5	85.4	
1+04			14.2	84.7	
1+14			13.5	85.4	
1+16			11.9	87.0	
1+24			11.1	87.8	
1+27			13.5	85.4	
1+38			14.4	84.5	
1+39			15.4	83.5	✓
1+43			15.2	83.7	
1+45			14.5	84.4	
1+54			15.4	83.5	
1+88			12.4	86.5	
1+99			13.4	85.5	
2+22			14.4	84.5	
2+28			13.2	85.7	
2+31			12.2	86.7	
2+40			13.4	85.5	
2+51			12.4	86.5	
2+59			15.2	83.7	
2+66			14.2	84.7	
3+02			8.5	90.4	
3+18			6.2	92.7	
3+30			4.6	94.3	H.W. N. Bank
			4.23	94.66	
T.P.	0.23	94.89			

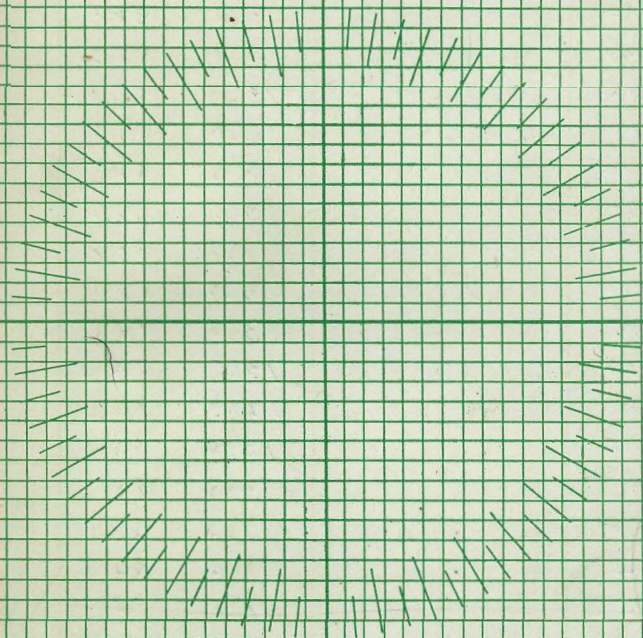


7th Cross Section Duluna creek Sta 7+65

8

Sta	+	$\pi$	-	Elev	
0+00		94.89	1.5	93.4	H.Water
0+20			3.7	91.2	
0+45			3.1	91.8	
0+77			3.1	91.8	
1+05			5.5	89.4	
1+14			11.1	83.8	
1+28			11.1	83.8	
1+34			7.9	87.0	
1+40			8.0	86.9	
1+41			11.2	83.7	
1+45			12.3	82.6	
1+47			13.1	81.8	
1+57			11.7	83.2	
1+65			12.7	82.2	✓
1+75			10.9	84.0	
2+07			10.1	84.8	
2+13			10.1	84.8	
2+25			11.9	83.0	
2+45			11.2	83.7	
2+52			11.4	83.5	
2+60			11.6	83.3	
2+67			11.1	83.8	
2+70			10.1	84.8	
2+95			8.6	86.3	
3+05			5.9	89.0	
3+25			2.7	92.2	
3+35			1.5	93.4	H.Water

S. Bank

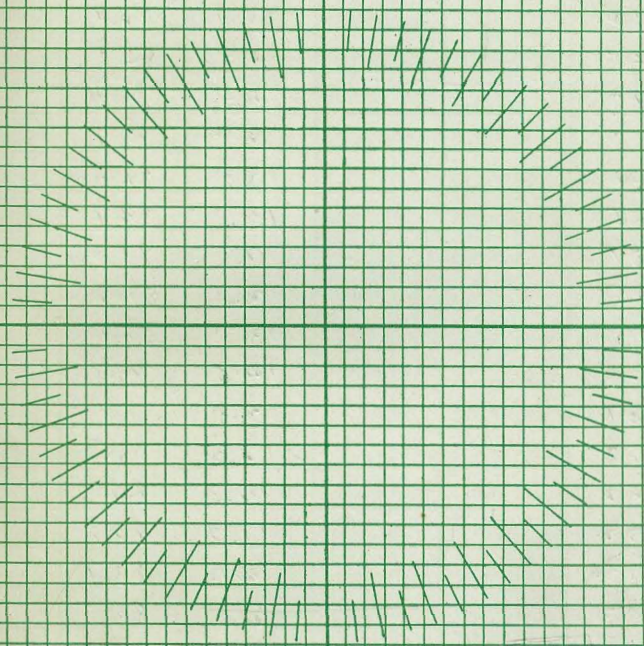


N. Bank

## 8th Cross Section Delzuna Creek Sta. 8+65

9

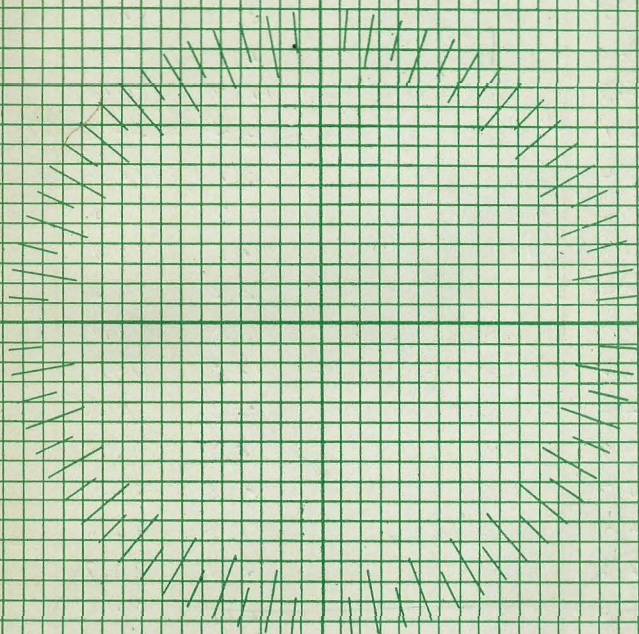
Sta	+	$\pi$	-	Elev	
0+00		94.89	2.4	92.5	H. Water S. Bank
0+38			5.3	89.6	
0+43			4.1	90.8	
0+53			6.1	88.8	
0+70			7.8	87.1	
0+73			12.0	82.9	
0+90			12.0	82.9	
0+91			8.8	86.1	
0+98			9.1	85.8	
1+01			13.8	81.1	
1+19			13.6	81.3	
1+31			12.3	82.6	
1+57			11.8	83.1	
1+62			12.8	82.1	
1+80			13.1	81.8	
1+89			12.5	82.4	
2+08			12.3	82.6	
2+18			12.2	82.7	
2+28			12.8	82.1	
2+38			11.8	83.1	
2+43			10.4	84.5	
2+53			10.8	84.1	
2+58			6.6	88.3	
2+78			3.4	91.5	
2+93			2.4	92.5	H. Water N. Bank
T.P.	1.12	93.84	2.17	92.72	



## 9th cross section Dulyma creek Sta 9+65

10

Sta	+	$\pi$	-	Elev	
0+00		93.84	2.1	91.7	H. Water S. Bank
0+07			3.3	90.5	
0+17			4.2	89.6	
0+32			4.6	89.2	
0+62			4.2	89.6	
1+23			3.6	90.2	
1+32			7.7	86.1	
1+45			7.9	85.9	
1+47			11.9	81.9	
1+57			11.9	81.9	
1+60			12.0	81.8	
1+65			13.1	80.7	
1+81			12.6	81.2	
2+15			12.6	81.2	
2+18			13.7	80.1	✓
2+21			14.3	79.5	
2+37			12.8	81.0	
2+57			12.3	81.5	
2+62			12.3	81.5	
2+72			11.2	82.6	
2+82			10.1	83.7	
3+02			8.3	85.5	
3+07			6.5	87.3	
3+47			3.2	90.6	
3+52			2.1	91.7	H. Water N. Bank



## 10th Cross Section Dilyana Creek Sta 10+85

Sta	+	$\pi$	-	Elev.	
0+00		93.84	3.1	90.7	H. Water
0+11			5.2	88.6	
0+23			5.1	88.7	
0+30			7.2	86.6	
0+40			8.8	85.0	
0+44			10.5	83.3	
0+57			13.3	80.5	
0+68			14.1	79.7	
0+75			14.7	79.1	
0+81			14.4	79.4	
0+84			13.7	80.6	
0+94			13.2	80.6	
1+00			14.7	79.1	
1+04			15.4	78.4	
1+10			15.8	78.0	✓
1+12			14.7	79.1	
1+46			14.3	79.5	
1+49			10.8	83.0	
1+57			9.5	84.3	
1+60			7.3	86.5	
1+68			5.1	88.7	
1+73			4.1	89.7	
1+80			3.1	90.7	H. Water

11

S. Bank

The channel is straight, of uniform cross section and slope, no vegetative rifts, nor pools, no cross currents, channel is in solid rock, or cemented gravel and stones, with small boulders.

Use 0.30 for value of  $\pi$

N. Bank

100

20

0+

0+

0+

0+

0-

0-

0+

0-

0-

0-

0-

0-

1-

1-

1-

1-

1-

1-

1-

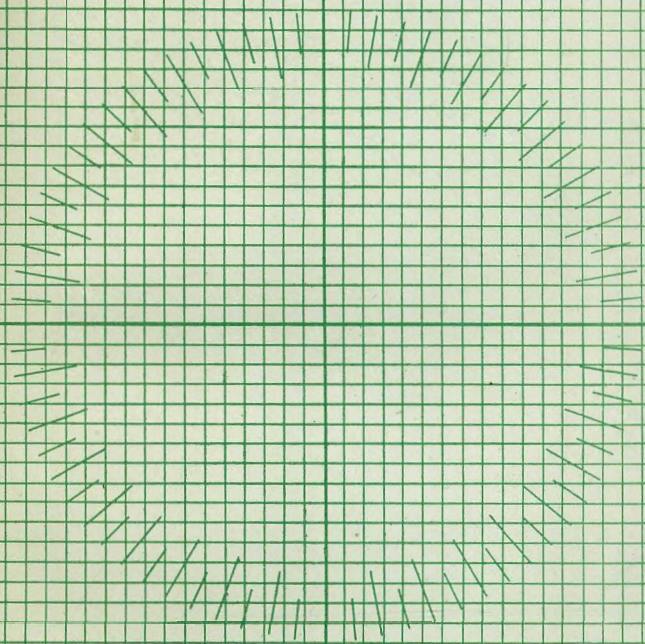
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1-

1-

1-

12



Levels at Lower Otay Dam site

Check Levels Lower Otay Working Elevation

Bench marks (Lower Otay Dam Datum)

Sta	+	π	-	Elev.
B.M.	12.17	159.88		147.71
T.P.	11.83	171.25	0.46	159.42
"	12.46	183.38	0.33	170.92
"	12.07	195.25	0.20	183.18
"	11.76	206.82	0.19	195.06
"	12.81	218.85	0.78	206.04
"	10.13	228.71	0.27	218.58
B.M.			3.93	224.78
T.P.	1.12	217.77	12.06	216.65
"	0.32	206.26	11.83	205.94
"	0.27	194.36	12.17	194.09
"	0.30	183.26	11.40	182.96
"	0.82	171.76	12.32	170.94
B.M.			8.26	163.50

Mar. 15-1916

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Bates

13

B.M. on N.W. corner of concrete structure wall near West end of dam marked Elev. 147.71

B.M. on spike in the rock which water tank stand marked Elev. 224.80

B.M. on spike at N.E. corner of Basin. Elev. marked 163.52

Levels at Lower Otay Dam site				
Top of Dam, Corewall, Spillway	Sta	+	-	Elev
B.M.	2.12	149.83		147.71
T.P.	1.62	141.72	9.73	140.10
Top of Dam West side			6.20	135.52
Top of Corewall " "			9.26	132.46
T.P.	0.79	131.43	11.08	130.64
"	0.32	121.33	10.42	121.01
"	1.02	110.75	11.62	109.71
"	0.62	100.14	11.23	99.52
"	0.27	89.65	10.76	89.38
T.P. and B.M.	1.21	79.16	11.70	77.95
T.P.	0.42	68.22	11.36	67.80
"	0.71	58.04	10.89	57.33
"	0.23	46.51	11.76	46.28
"	0.36	35.60	11.27	35.24
"	0.28	25.62	10.26	25.34
River Bed			7.50	18.12
T.P.	12.22	37.56	0.28	25.34
"	11.91	49.26	0.21	37.35
"	10.87	59.77	0.36	48.90
"	12.43	72.02	0.18	59.59
"	11.56	83.12	0.46	71.56
"	12.17	95.08	0.21	82.91
"	11.26	105.70	0.64	94.44
"	12.39	117.83	0.26	105.44
"	11.16	128.69	0.30	117.53
"	10.12	138.57	0.24	128.45
Top of Dam East side			3.08	135.49
Top of Core Wall E. "			6.07	132.50
T.P.	1.12	129.57	10.12	128.45
		over		

On N.W. corner of Concrete Cistern.

Center line of Roadway - Width = 16 feet plus 4' near

Temp B.M. on driven stake

Width of curb 16' 4" measurements



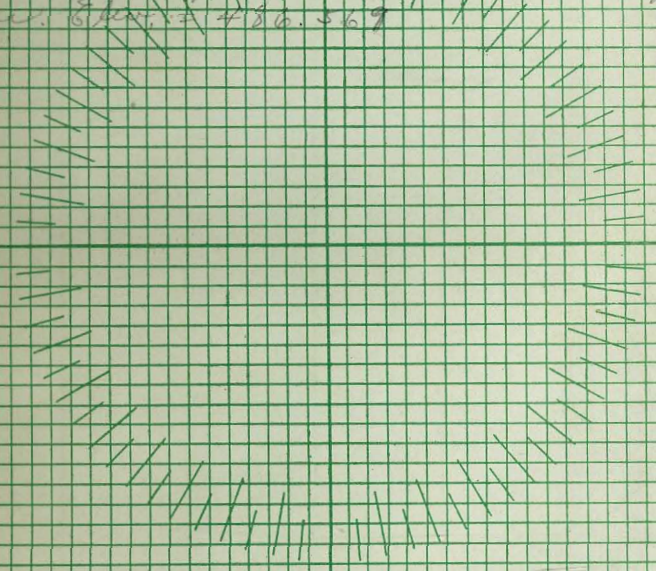
Sta	+	∓	-	Elev.
		129.57		
0			5.07	124.50
1			5.43	124.14
2			+ 0.20	124.77
			5.80	123.77
3			6.17	123.40
3+61.5			6.39	123.15
T. P.	12.36	140.66	8.39	129.57
			1.27	128.30
W. S. & S. B. M.			0.82	129.94

Elev 100.00 I. Otago marking Elev equals  
 Elev 416.73 U. S. Geol. Survey

Spillway Measurements

Length	361.5 feet
Width, at Base	37.9 "
" , top of lower side	41.5 "
Height of concrete sides	8.0 " (Optical)
Slope to top of concrete sides (ground)	approx: 1

Lip of Spillway  
 100 ft. from lip of spillway on spill floor  
 W. S. & S. B. M. mark on spillway at Sta 2+00  
 200 " " " " " " " "  
 300 " " " " " " " "  
 361.5 " " " " " " " "  
 W. S. & S. B. M. mark - end of spillway  
 U. S. Geol. Survey B. M. mark East end of  
 Denver Elev. = 486.567



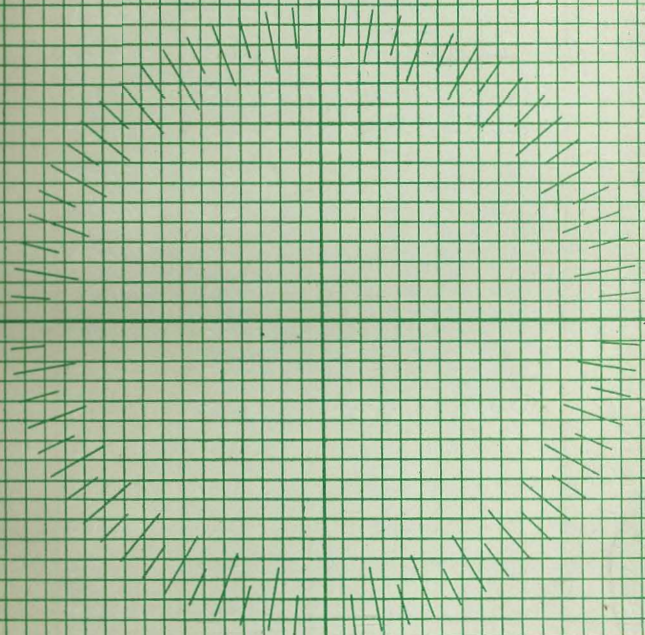
Levels at lower stage Dam site  
Gauge and Outlet Elevations

Sta	+	$\pi$	-	Elev
B.M.	1.16	79.11		77.95
	4.12	73.82	7.41	71.70
Gauge			2.82	71.00
Top of concrete			3.87	69.95
T.P.	3.60	65.26	12.16	61.66
			12.76	53.00

Temporary B.M. established p 14

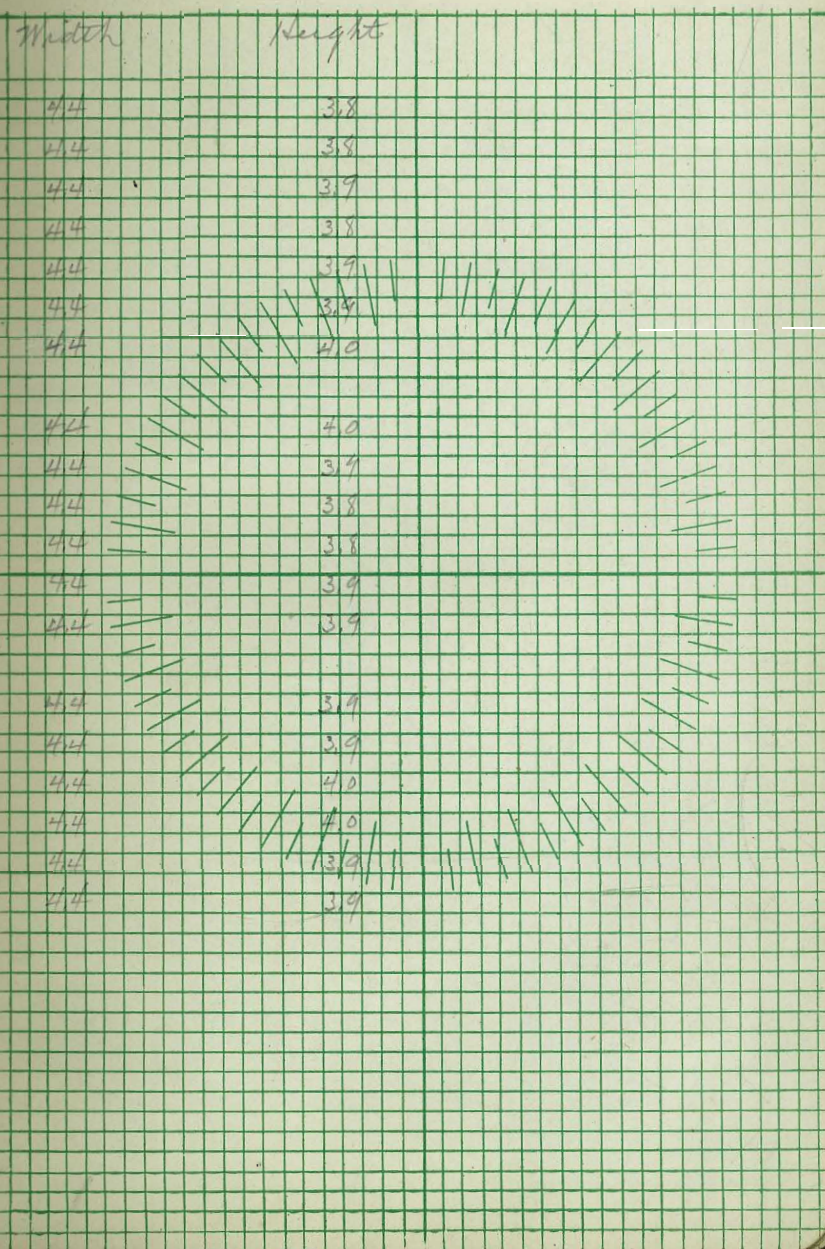
= 70 feet mark on Gauge-Gauge pit 1' high  
= at base of tower Tower = 36" pipe and = 10' x 17'

Top of inside of 48" outlet pipe



Dulzura Conduit  
Levels of Floor and Flume Box  
Meas.

Sta	+	π	-	Elev.	
0	3.12	103.12	3.12	100.00	Sta 0+00 Elevation
1			3.20	99.92	100.00 observed
2			3.28	99.84	
3			3.36	99.76	
4			3.44	99.68	
5			3.52	99.60	
6			3.60	99.52	
T.P	3.26	102.78	3.60	99.52	
7			3.34	99.44	
8			3.42	99.36	
9			3.50	99.28	
10			3.58	99.20	
11			3.66	99.12	
12			3.74	99.04	
T.P	3.11	102.15	3.74	99.04	
13			3.19	98.96	Gauge Sta
14			3.27	98.88	
15			3.35	98.80	
16			3.43	98.72	
17			3.51	98.64	
18			3.59	98.56	



Slope = 0.08' in 100'

m = .015  
Width = 4.4  
Height = 3.8

Upper Otay Dam - near 12, 1916

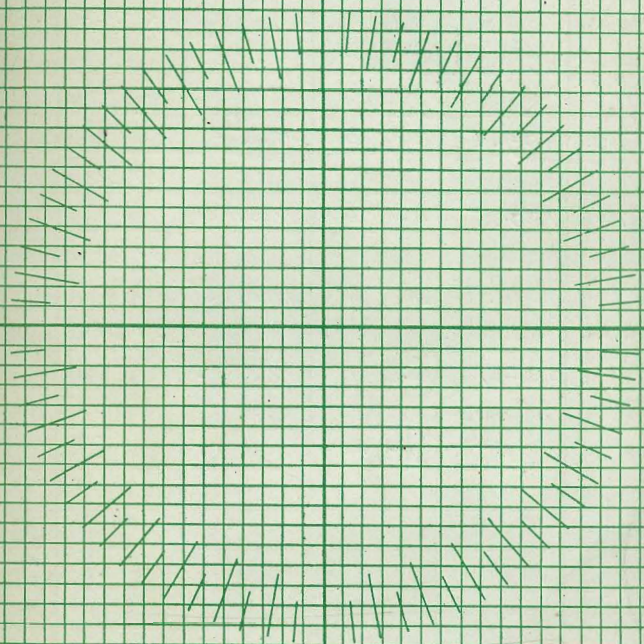
Chain Meas.

Length of Dam Crest 350 ft.  
 Width of Spillway 24 "  
 Sta. 0+00 = Spillway crest  
 " 1+25 = Axis of Dam produced  
 " 1+31 = Break in grade floor Etw  
 " 2+67 = End of Spillway

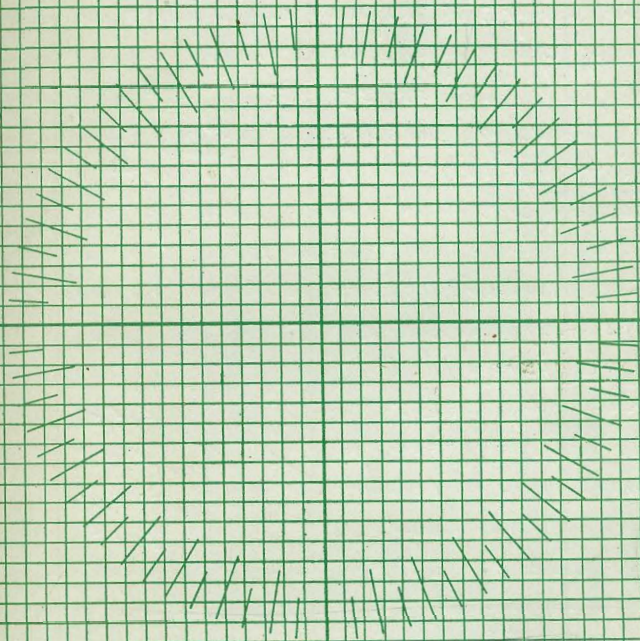
Levels

Sta	+	π	-	Etw
Ⓐ	3.12	103.12		100.00
Top of dam East side			3.12	100.00
N. N. E. side			1.62	101.50 (b)
N. N. E. side			1.62	101.50 (c)
N. N. W. side			1.62	101.50 (d)
0+00			8.12	95.00
1+25	} Spillway		8.62	94.50
1+31		} floor	8.67	94.45
2+00			10.47	92.65
2+67		12.47	90.65	

- Ⓐ assumed Etw top of dam N. side 100.00  
 (b) Between dam and Spillway  
 (c) East side of Spillway  
 (d) N. Bank of River, axis of dam







Nov. 25, 1916

F. C. Junka  
J. F. Covert  
W. C. Egan

## Morena Spillway Measurements

Spillway Crest Length 118.5 ft.

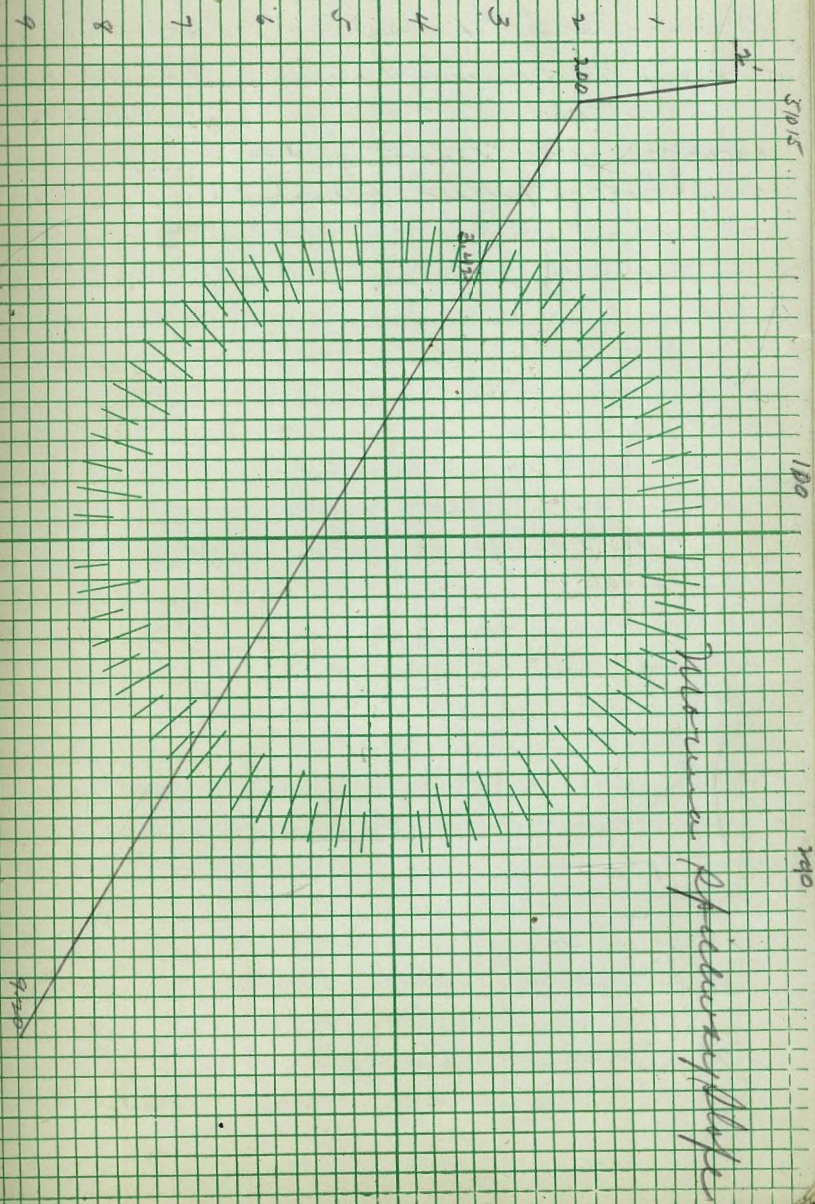
Height of Crest above Channel { Upstream 1.75'  
Downstream 2.0'

Spillway Crest 7 ft. in width

Two concrete piers in spillway each 1 ft square by 7.5' high - one is 7' from S.W. end of spillway and they are 8' apart. Channel width 67' at right angles from S.W. end of pier and 50' from this point up center line of crest (spillway) Spillway 740' long along center line from weir crest to where it breaks steeply into canyon. Width at lower end 58' average spillway width 60'

## Level Rod

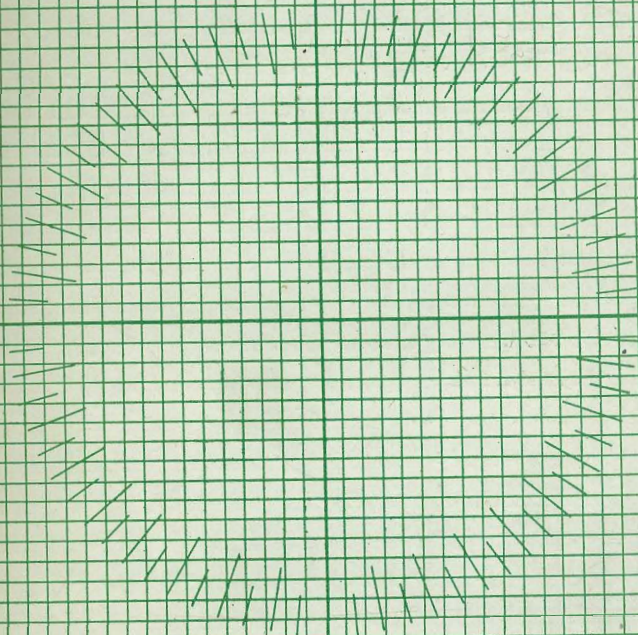
Spillway crest	0.06
Channel at base sp. crest	7.00
Channel 50' below "	3.42
End of channel	9.20
Use $n = 0.035$ Kutter formula	
Rod on upper wall near end	7.50
" " lower " " "	5.20
True setting of level	
Spillway crest Rod	9.15
Concrete parapet of dam S.W. end	3.45
Parapet middle of dam	3.77
" South end "	3.36
Top of dam 1.4' below top of parapet	





Sat July 10 - 1921

Myself and Edwards at diverting  
down of South Fork San Diego River  
Nelson and gang putting in concrete  
walls for diverting water, walls  
in places 7 feet below stream bed.



Aug 1 - 1922 Trip of Inspection of Canyon  
Water Co's Claimed Holdings on S.D.

River and Vicinity

11:45 - Aug 1, 1922  
Arrived at Boulder Creek diverting near  
water gauge read 0.40 on staff on no side  
of small plume, read gauge again at  
12:15 - recorded 0.40. took two photos  
of reservoirs were at or near  
bank of S.D. River estimated about  
40 inches in S.D. branch.  
no work being done or no evidence of  
work having been done since July  
1921

12-35 P.M. Aug 1-1922 stopped at Cur.  
W. Co. dam. When took old photo of  
main diverting dam from up stream  
side no work being done or intakes  
or flume or dam

1-15 P.M. Aug 1-1922 Pumping plant  
1 1/2 miles below James Brown's house  
very much delapidated no attempt to  
repair since flood 1916

1-25 P.M. Aug 1-1922 small concrete  
dam contains 11,000 cu yds  
concrete + rocks and goes down 6 or  
7 feet from stream bed and between 5  
and 6 ft in places above partly formed  
by large natural boulders in place divert  
into plume from south fork. water  
is passing below down south fork.  
Aug 1-1922 took photo of old diamond  
Chocolate Creek pumping plant no  
attempts has been or is being made  
to repair or reassemble this plant  
or recover well in S.D. River

9-10 P.M. Aug 1-1922

Flitchers El Capitan dam site photo  
took photo below dam site looking  
up stream. found evidence of old core  
holes and test tunnels still remaining  
but no signs of any activities for  
several years.

9-30 P.M. Aug 1-1922 El Capitan  
dam site photo. took three photos  
one of north side abutment,  
pooling and one below dam  
site looking up stream. core  
borings have now been completed  
both up and down stream and  
on both north and south side  
core samples are now being ready  
for inspection and report to  
follow. at this site about 200  
miners inches of water is passing to  
the ocean at this point.

3-11 P.M. Aug 1-1922 Monte Pumping  
plant closed at this site no pumping  
being done and no repairs or other  
work being done. car leaves home  
unoccupied is locked no one on premises  
Aug 1-1922 Flitchers' Grossmont Pumping  
Plant not operating not being repaired  
or any additional work made  
any machinery practically full with  
very small pressure to spillway left.

Aug 21-22 - 11:40 A.M.

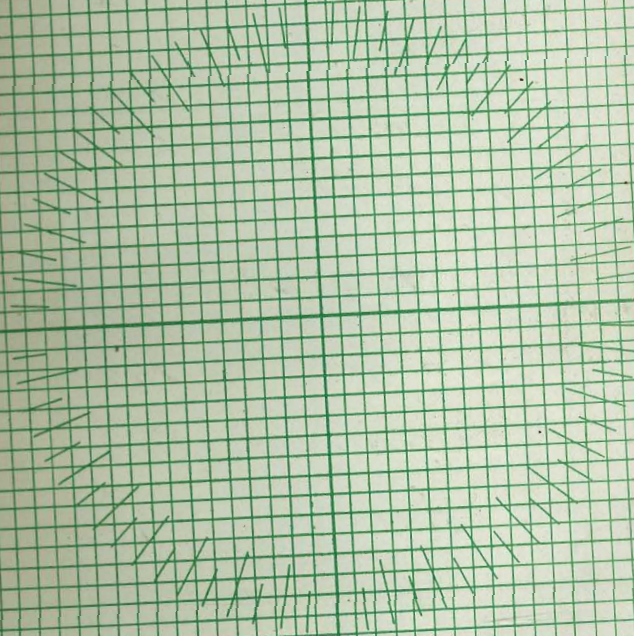
Sullivan Tract 1 photo of main  
pumping station building about  
70' x 70' not operating no new  
improvements no visible signs  
of any work being done at present

Aug 10-22 10-00 a.m.

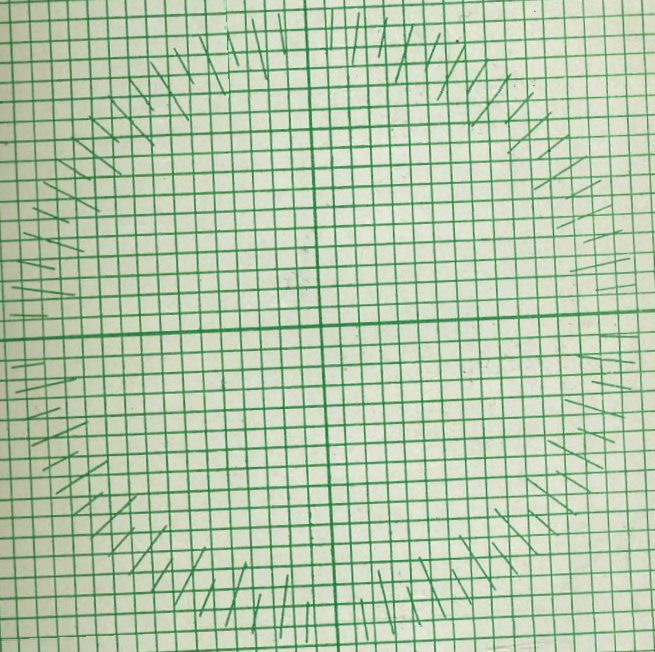
Mission Gorge #3 Fletcher same  
site one picture of north side ridge  
from south bank, one picture down  
stream from about 700' up stream  
on south bank. Still evidenced of  
old test pits & core recovery  
drill holes no work being done  
or signs of any recent activity

Aug 10-22 - 10-28 am.

At this place site #2 main at  
works on test pits and core  
Recovery drill foundation  
took one picture from up stream  
about 700 feet above down pits



482.971



P Levels from Green Valley Bench  
to P line Proposed Flume from Roden Canyon

Dam site

Sta	+ H.L.	-	Elev
BM } <del>11.29</del>	11.86	495.93	484.00
TP	11.93		
	11.85	507.78	0.00 495.93
TP			
	12.87	520.24	0.41 507.37
TP			
	12.57	532.48	0.33 519.91
TP			
	13.07	545.22	0.33 532.15
TP			
	12.40	550.99	0.63 544.59
TP			
	11.66	561.85	6.80 550.19
TP			
	11.53	573.12	0.26 561.59
TP			
	12.88	581.65	4.35 568.77
TP			
	11.05	591.61	1.09 590.56
TP			
	9.55	600.41	0.75 590.86
TP			
	5.93	593.34	13.00 587.11
B.M.			
	9.47	602.09	0.72 592.62
TP			
	11.98	613.19	0.88 601.21
TP			
	12.66	625.78	0.07 613.12

7-28-24  
T Brackett  
notes Van Horn  
Fred Thompson  
Mansfield  
Stacy Stout

27

End of Boulder County 514 N 257  
Drill Hole Elev. = 483.999

Reg in Road

Reg in Rd

Reg in Rd

Reg in Rd 400' W of House

on Back 100 E of Road to Camp (walk)

Reg in Road 200 W Yellow House

Reg in Rd

Reg in Road

100's of Road intersect to rd (small road) W of rd

Reg in Road (Rt side)

on Eucalyptus tree RT of Road 200 W of Mill

(James Parich next to road)

Reg in Road

" " "

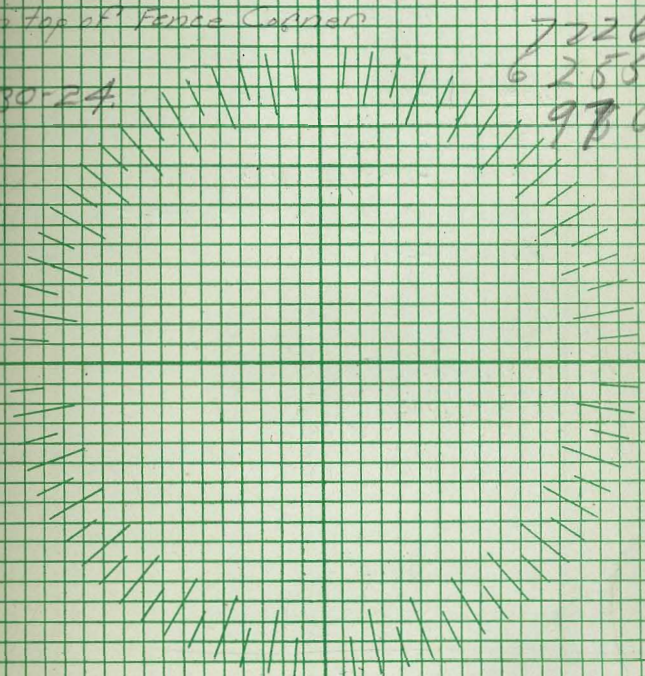
		625.78		
TP	+12.87	638.65	-0.26	625.52
TP	+7.78	646.43	-0.35	638.04
B.M.	613	650.00	-1.95	648.05
TP	12.82	662.25	-0.57	649.43
TP	12.45	674.27	0.43	661.82
TP	12.63	685.65	1.25	673.02
TP	12.30	696.13	1.82	683.83
TP	13.28	706.78	2.63	693.50
TP	12.32	717.29	1.81	704.97
TP	10.83	727.26	0.86	716.43
			4.65	722.61

Right Road

small track left Road

Belt  
Belt in top of Fence Corner

1-30-24



722.61  
 625.52  
 97.09

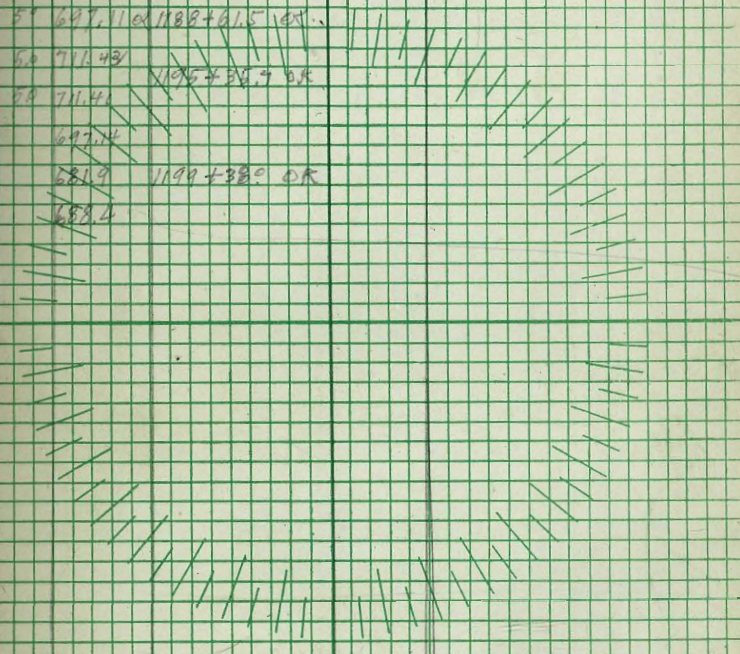
179+95.6 15A at Tunnel End El. 683.58 Gr.

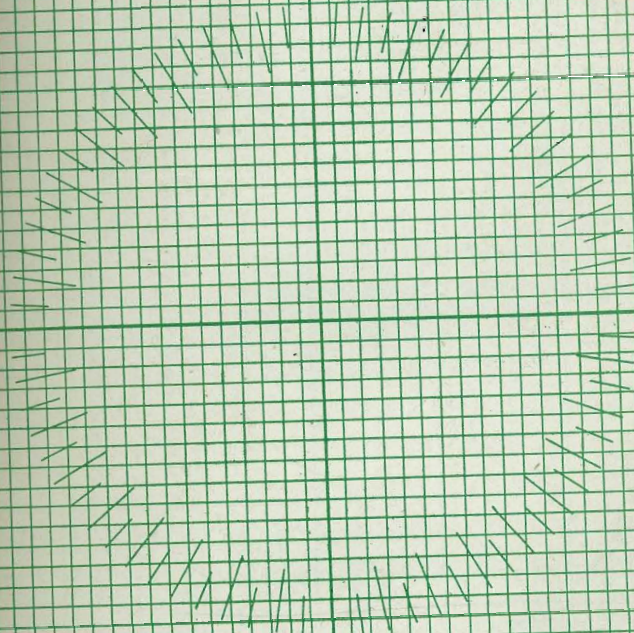
Williams Ch. Feb 6, 1924  
 Bracket Inst.  
 Stout Rod  
 Mansfield "

29

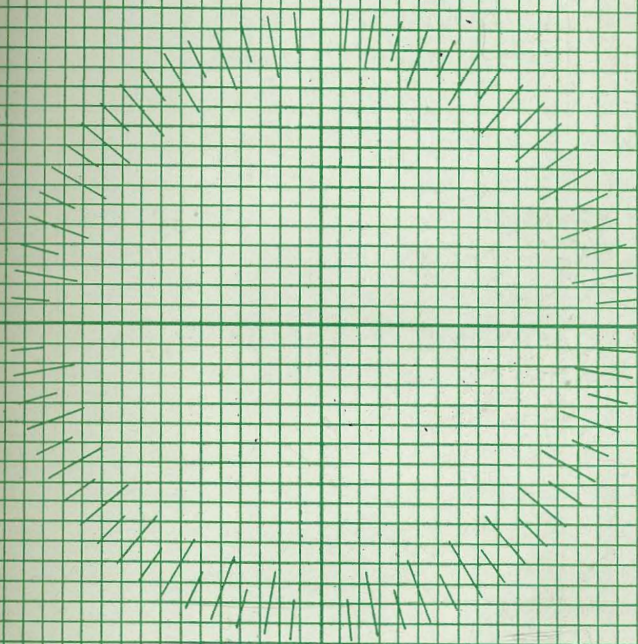
Start at	Intercept	Vert Ang.	Horiz Dist.	Vert Dist.	To
179+95.6 #21 3/4	1.65	-3°23			#22 A
"	5.00	+1°17	500.7		#23
#23	4.97	-0°56	497.9		#21 3/4
"	1.20	0°00	121.0	13.7	#24
"	3.67	+0°48	368.0	5.14	#25
#25	3.67	-0°51	368.0	5.43	#23
"	6.74	+1°13	674.7	14.32	#26
#26	6.73	-1°13	673.7	14.30	#25
"	3.62	-2°25	362.35	14.28	#27
"			402.35	29.5	#28
" 90°Rt	2.92	-4°31			#26 A

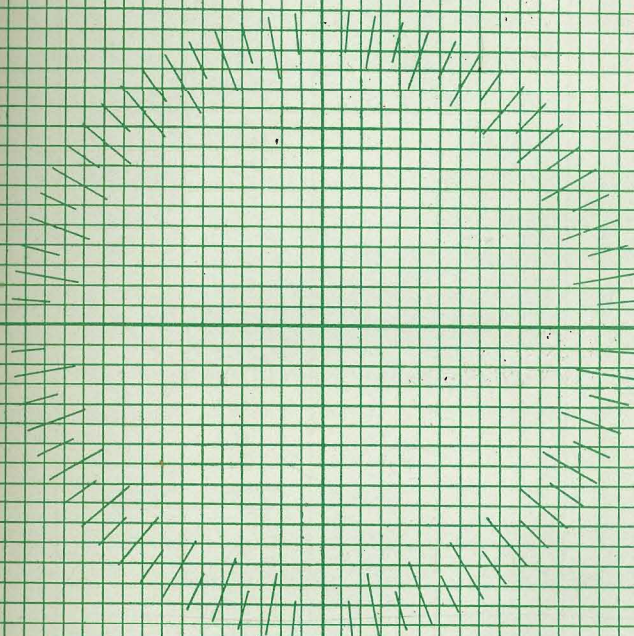
Station	H.I.	F.I.	Station	Grade
End 109	5.0			
10	5.0	696.26	1184+96.3	
5	5.0	696.68	1184+93.5	OK
13.7	5.0	678.00		Bottom of Gully 50' wide
5.0	5.0	696.82		
5.0	5.0	697.11	1188+61.5	OK
5.0	5.0	711.42		
5.0	5.0	711.42	1195+30.0	OK
		697.14		
		681.9	1199+38.0	OK
		688.4		



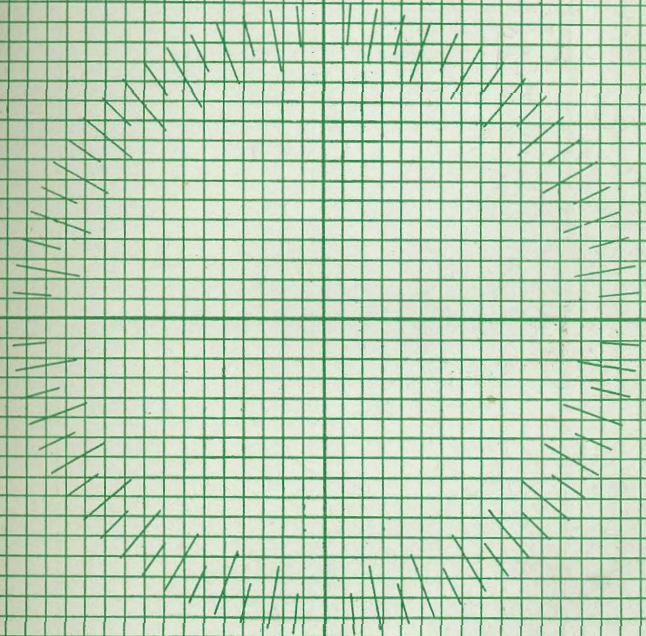


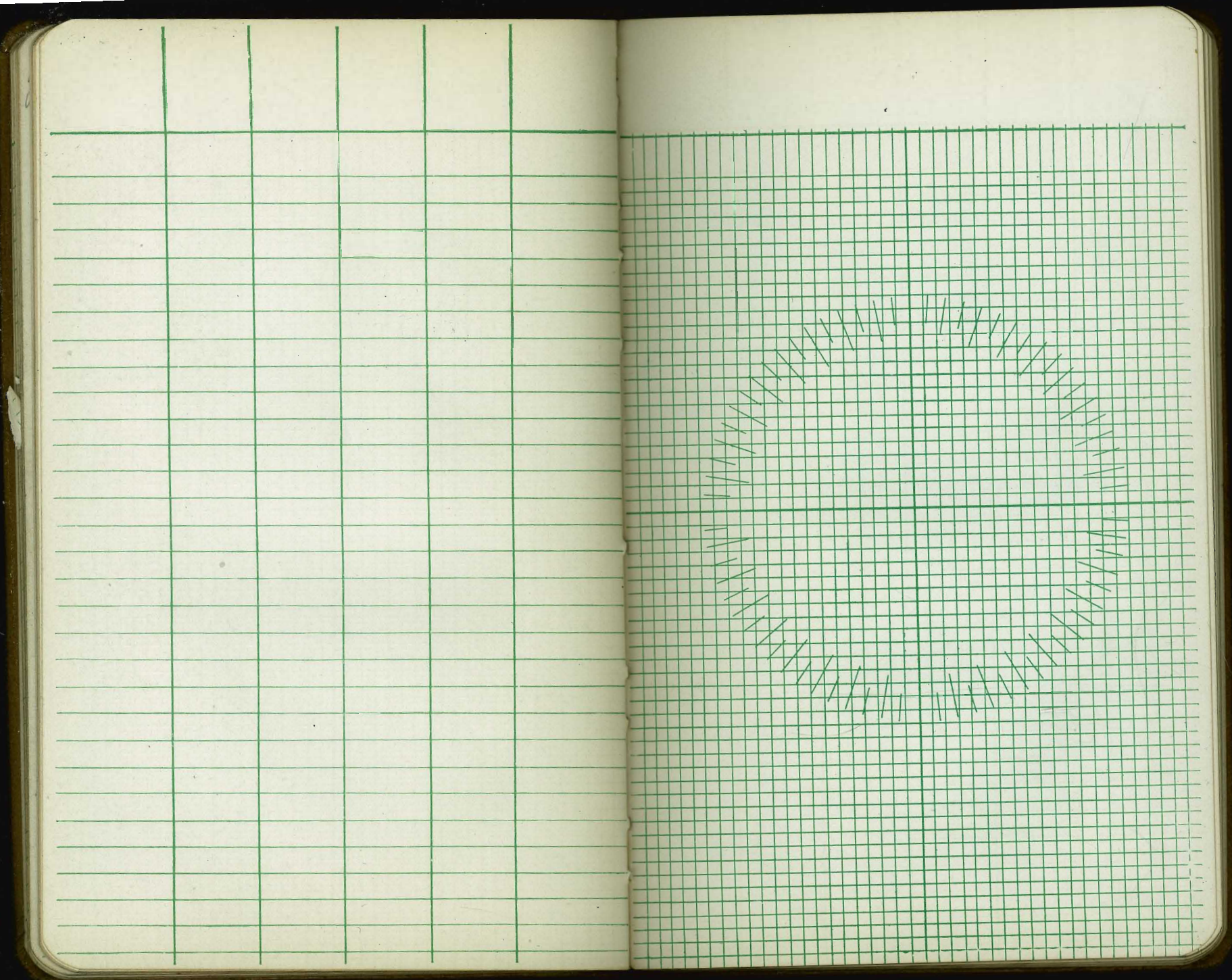














Man of Track  
8' below bottom  
of TIC

☉ Palm

Arctic 314.35

Vackson's Map of Middle town  
7390

37.5 x 37.5

390

40

x Dive

277.97

40  
@ K in pole

Street

Tacks in Comb 40

40  
@ TIC in 74.0%

Section Map of Middle town 2690

500

353.56

1000 5%

8

675

37.5

37.5

160%

Street

Tacks in  
Comb 40

81052

278.00

253

317.36

ALBATROSS

314.50

314.66

89° 58'

90°

66.03

214.20

254

90°

214.77

66.03

90°

214.62

214.48

255

214.54

ST

89° 58'

A

100.279  
L 66.03  
100.279

100.274

314.24

314.79

314.46

FIRST

250

612

90°

90°

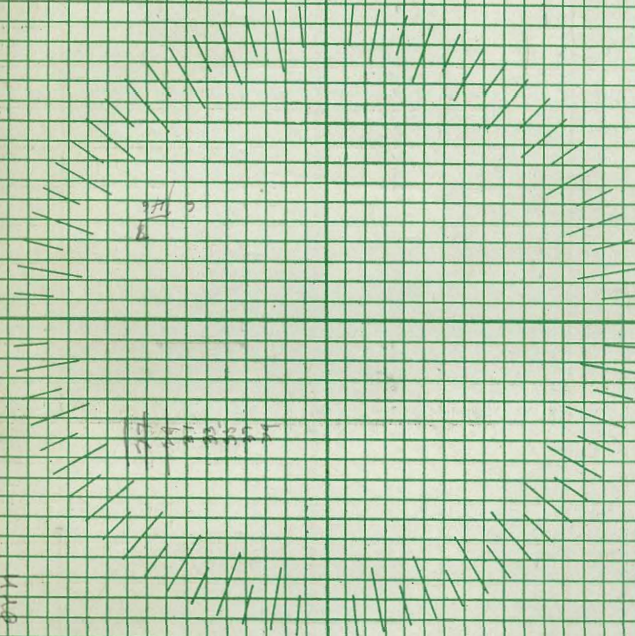
90° F

ST  
HIGHWAY

HIGHWAY

180.30

214.78



ALBATROSS

4  
2.21  
1.24

24  
1.74  
1.4





Aug. 1922

Aug 1. 1922 Trip of inspection up S.W. River

and to Murray dam. 83 miles.

Aug 2. 1922 Trip of inspection to Sullivan

Traffic and pumping plant system  
22 miles

## DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder  
stake for any width roadway, slope 1% 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

of table in same row and column gives distance

level estimate the difference in elevation between

the side stake and slope stake lower table by this

amount if cut, elevate if fill. Add this amount

to cut or fill and distance in table set up  
rod at cut

If it does not make the slight adjustment

necessary.

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 correction.

Degree of curve with a given  $L$  may be found

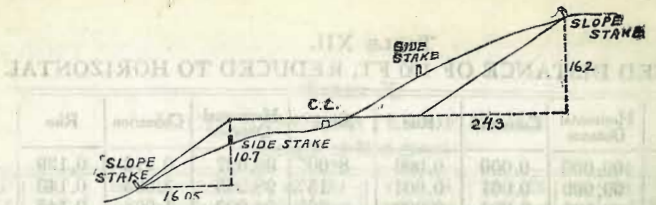
by dividing tangent (or external), opposite  $L$  by

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.



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.  
SLOPE 1 1/2 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.

Mr J. B. Lippincott  
 Mr E. A. Row  
 Mr Stewart  
 Fred Heilfrou  
 J. W. W.  
 H. D. Lucks

H.M.

4 blocks north of dist. St. Louis

State Harbor Commission

W. B. Gross

F. H. Richardson Fletcher Prdg.

Ed Willoby

18100  
3300  

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21400  

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16000  
1000

W. S. Lebach C. S. Smith R.H.M.

M. 6140