

W146

FIELD BOOK

361

CITY OF
SAN DIEGO-CALIFORNIA
ADDITIONAL WATER SUPPLY
- CONDUIT -
EL CAPITAN - UNIVERSITY HEIGHTS

6

KEUFFEL & ESSER CO.

DRAWING MATERIALS

AND

SURVEYING INSTRUMENTS.

NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

Tables for Excavations and Embankments.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.

FOR SINGLE TRACK EXCAVATION.

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

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	0
1	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	1
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	2
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	3
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	4
5	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	5
6	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	6
7	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	7
8	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	8
9	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	9
10	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	10
11	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	11
12	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	12
13	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	13
14	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	14
15	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	15
16	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	16
17	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	17
18	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	18
19	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	19
20	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	20
21	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	21
22	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	22
23	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	23
24	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	24
25	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	25
26	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	26
27	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	27
28	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	28
29	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	29
30	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	30
31	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	31
32	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	32
33	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	33
34	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	34
35	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	35
36	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

FOR KEITH'S RAILROAD CURVE TABLES SEE END OF BOOK.

City of San Diego

Water Comm Office

320 McNece Bldg

5th + F St

H. N. Savage Hydraulic Eng

Book # 6

Additional Water Supply
1921

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B.S. H.1 E.S.
 Bostonia Tunnel Line T-3

Sta	Az	Rod	H. Dist	Vert L	
π-3					393.646
π@0+00			5.37	399.02	393.646
	80-10				
0+00 to 5+82	178-15	5.81		-0°-38'	387.19
		4.72	391.01		"
π@5+82					
5+82 to 13+83	179-02	8.00		+0°-36'	395.60
π@13+83		4.37	399.97		"
to 20+63	178-48	6.79		+1-0	407.41
π@20+63		4.33	411.77		"
to 27+50	182-01	6.86		+1°-38'	427.02
π@27+50		4.56	431.58		427.02
B.M.				7.71	423.87
to 33+45	178-57	5.94		+1°-29'	442.43
π@33+45		4.50	446.93		"
	277-20	0.126		0	
to 40+02	177-08	6.56		+2°-53'	475.40

Hayler Loc
 Franklin π
 Williams, EO

297
 94

Oct 24/21

Co Highway	B.M. #19 1/2	see back of Book
0-360 Az	set from N.M. @ 14° 30' E	5+82
0+00 = S Line of Santee-Lakeside Road and	Center Line of Bostonia-Lakeside Road	8 01
Fence line to E S side Co Highway		13+83
		6+80
		20+63
		6+87
		27+50
		5+75
		33+45
		6 57
		40+02

E side Co Road
 13+83 to 5+82 8.50
 W side Co Road
 20+63 to 13+83 6.80
 W side Co Road
 27+50 to 20+63 6.88
 33+45 to 27+50 5.93
 425.97 (W.M. BM maybe) Tel pole E side Road 2.10
 W side Co Road S.W. of windmill 200' ±
 Hub W side Co Road Property line of ranch lot

Plotted
 Nov 5 1921
 J.P.B.

Sta	Az	Rod H	Dist	Vert	L	DA	EI
$\pi @ 40+02$		460	48000				47540
$\pi @ 47+59$	217-53	7.56		+1°-24		418.48	493.88
$\pi @ 47+59$		448	49836				
$\pi @ 53+81$	194-00	6.21		+0-26		671	497.65
		(6.19)					
$\pi @ 53+81$		481	50246				
	91-14	0.50					
$\pi @ 59+24$	186-43	5.42		+1°-30		+1423	511.88
$\pi @ 59+24$		453	51641				
$\pi @ 64+63$	184-24	5.38		+1-33		+1456	52644
$\pi @ 64+63$		440	53084				
$\pi @ 69+84$	180-26	5.20		+2-32		+15107	54946
$\pi @ 69+84$		448	55394				
BM						775	546.19
	33-08	3.85		-3-10		2521	5282
	47-46	2.36		-3-30		-144	535.0

40+02 to 33+45
E side Co Road @ L to R+

W side Co R @ L Lt
47+59 to 40+02 R
7.54

old Hub painted white
Hub on West side of Road (Gas Pipe 6" E)

Old white stake stencilled 122 on N and 123 on South
on E side of road.

W side Co Road R.
59+24 to 53+81 540

W side Co R. R.
64+63 to 59+24 538

69+84 to 64+63 R
520

547.23 BM on tel pole E side Co Road 104
In Φ Drainage E of Co Road
" " " " " "

Plotted 1921
Nov 5
1923

40+02
7 57
47+59
6+22
53+81
5+43
59+24
5+39
64+63
5+21
69+84

Sta	Az	Rod H	Dist	Vert L	D.H	El.
$\pi @ 69+84$		4.18	553.94			549.46
68-41	1.25			-4°-12'	-91	540.36
118-0	1.14				82	545.7
136-33	1.78				47	549.2
152-42	2.80			+1°-20'	+70	556.46
155-48	4.25			+2°-0'	+148	564.76
155-37	5.90			+2-05	+214	570.86
$\pi @ 77+87$		4.38	589.53			585.15
161-21	8.02			+2-33	+356.9	585.15

$\pi @ 77+87$		4.38	589.53			585.15
3-20	0.80			-6-0	-84	576.75
129-22	1.00				76	581.95
166-17	2.09			+0-54	+33	588.45
157-48	3.18			+1-31	+84	593.55
160-38	3.92			+1-54	+130	598.15
159-31	4.81			+2-18	+194	604.55

$\pi @ 85+64$ 170-01 7.76 +3-31 +47.55 632.70

$\pi @ 85+64$		5.12	637.82			632.70
39-36	1.53			-6-48	-18	614.7
116-54	0.96			-4-24	-73	625.4
154-25	1.78				4.8	633.0
172-0	3.75			+1-46	+115	644.2

Q drainage E of Co road

" " " "

" " " "

" " " "

" " " "

" " " "

77+87 to 69+84 E of R

E side Co Road

Q drainage E of Co Road

" " " "

" " " "

" " " "

" " " "

" " " "

E side Co R

Q Drainage E Co Road

" " " "

" " " "

" " " "

69+84

8-03

77+87

7 77

✓ 85+64

7.78

Plotted
1-10-51
J.R.R.

Sta	Az	Rod H	Dist	Vert L	D.H	EI
K@85+64	511					632.70
to 91+96	178-38	6.31	+ 1-56	+21.29		653.93
K@91+96		4.33				658.32
to 97+05	190-15	5.08	+ 0-24	0.95		657.37
K@97+05		5.11				662.48
BM						615 656.33
to 100+07	180-23	3.01	- 0-28	7.84		654.64
K@100+07		4.83				659.47
41-35	3.33		- 3-04	-178		636.8
66-0	2.45		- 5-52	-230		631.6
113-30	2.60		- 6-30	-294		625.4
162-28	3.29		- 7-22	-417		612.9
168-49	4.36		- 6-26	-486.9		606.00
to 106+23	167-18	6.15	- 5-04	-542.2		600.42
K@106+23		4.83				605.25
305-18	4.70		+ 2-11	+178		618.2
105-50	0.79			7.2		598.0
155-57	2.72		- 1-35	-75		598.9

	85+64	
	6	32
E Side Co. Road	91+96	
	5	07
91+96 to 85+64	6.29	
	97+05	
	3	02
	100+07	
	6	16
	✓ 106+23	
W side Co Road		
97+05 to 91+96	5.08	
656.94 BM on tel pole E of Co Road		
100+07 to 97+05	3.01	
On SE low knoll SE of pavs 150 E Co Road		
Q drainage E of Co Road		
" " " " "		
" " " " "		
" " " " "		
" " " " "		
In field 500' E Co Road		
106+23 to 100+07	6.15	
to L in Co Road thence it goes S 180 azim		
Q drainage E of Co Road		
" " " " "		
" " " " "		
" " " " "		

Plotted
Nov 5 1928

Sta	Az	Rod	H. Dist	Vert	L. Dist	E.L.
π @106+23	^{4.83}					600.42
to 112+37	176-41	6.13	-1-33	-16.58	583.84	
π @112+37		5.03			588.87	
	7-05	0.60		5.0	583.9	
	177-22	2.08		8.4	580.5	
to 118+73	186-18	6.35	-0-57	-10.54	578.30	
π @118+73		5.05			578.35	
to 123+20	177-26	4.46	-1-18	-11.25	562.05	
π @123+20		4.91			566.96	
	202-0	1.65		8.9	558.0	
	196-40	3.25	-1-22	-7.7	554.4	
to 131+47	202-40	8.26	-0-33	-7.94	554.11	
π @131+47		4.83			558.94	
	22-20	3.25		8.5	550.4	
	41-10	1.48		10.6	548.3	
	126-05	0.88	-5-04	-7.7	546.4	
	138-50	1.85	-2-42	-8.7	545.4	

						106+23
						614
						120' N of 112+37
						6+36
						118+73
						4 47
						123+20
						8 27
						$\sqrt{131+47}$
						In Orange grove
						118+73 to 112+37
						6.35
						Drainage E. of Co Road
						" " " " " " In Orange grove
						118+73 to 112+37
						6.35
						No side of road in Orange groves
						123+20 to 118+73
						4.76
						to edge Orange grove
						Drainage 400' E of road
						" " " " " " So of ranch road
						131+47 to 123+20
						630' (small road too far)
						P.I. Co Road No. + E 4' x 1'
						Drainage E. of Co Road
						" " " " " "

Plotted
Nov 5 1901
H.R.B.

B.S. H.I. FS

Sta	Az	Red H.	Dist	Vert L	D.H	EI
$\pi @ 131+47$	⁴⁸³		558.94			554.11
	150-51	3.03		-1-57	-10.3	543.8
	157-28	3.75		-1-42	-11.17	542.94
	269-10	3.22			.07	558.2

$\pi @ 138+43 \odot$ 269-18 6.95 + 0-55 +11.13 565.24

$\pi @ 138+43$ 5.18 570.42 "

$\pi @ 143+35 \odot$ 269-18 4.91 + 2-02 +17.47 582.71

$\pi @ 143+35$ 5.12 587.83

$\pi @ 147+52 \blacktriangle$ 269-18 4.16 + 0-38 +4.63 587.34

$\pi @ 147+52$ 5.10 592.44 "

302-39 3.09 -10-10 -6.3 581.0

291-05 4.95 -1-04 -9.4 578.1

285-57 6.57 -1-30 -17.7 570.1

End

T-3
Bostonia Tunnel Line

7

C drainage

" "

Intersect Co Road E/W + S.W. Second + Grand

Intersect with Road to Bostonia produced North P.O.T.

138+43 to 131+47 6.97

143+35 to 128+43 4.92

P.O.T. in Grand St

131+47

6.96

138+43

4.92

143+35

4.92

143-35

4.17

147+52

Platted

Nov 5 1991

D.R.B.

B.S. H.I. F.S.

Sta Az Rod H. Dist Vert L Diff El

$\pi @ 76.434^\circ$
 $0^\circ = 00'$

500 562.11 557.11

Axis $1^\circ 28' (P)$

	233-54	0.93			285	559.26
"	181-28	0.50			580	556.3
"	"	0.65	63	+10-19	+114	568.5
"	"	0.71	69	+9-24	+114	568.5
BM #20	224-29	1.57	152	+5-17	+114	571.61
Axis	181-28	1.61	159	+5-57	+116	573.7
-0+67.50	182-34	0.675	158	+9-48	+112	568.4
"	"	1.95	190	+8-37	+129	586.1
"	"	3.62	388	+17-28	+103	660.1
"	"	4.19	374	+19-49	+134	691.1
	182-34	4.77	440	+20-27	+156	713.1
	182-48	5.67	490	+21-39	+192	750.1
	182-34	6.15	525	+22-30	+217	774.1
-2+	0	2.055	200	+9-19	+32.7	589.8

Hayler Loc
 Franklin X

El Capitan Dam #2

8

Stadia Profile

Oct 25/21

Williams B. Rod

Francis #3

Var 14-30 E @ 0-360 Az Compass - 0.75 E

B.S. to 86+55 I up S.D.R. 588-11 E = N Az 91-49

So side stakes line out Axis = $2^\circ - 34'$

559.26

S.D.R. So edge foot of bank

Top of bank

Core Hole No. I

571.46 U.S.G.S #20

Top of mountain

Hub top of bank So side

On mountain slope " "

" " " "

" " " "

Hub " " "

Hub @ flume So side

On Mt slope above flume

Hub on Axis

Plotted
 Nov 2 1921
 JRB.

BS H.I. P.S.

EL CAPITAN DAM #2 9

Sta	Az	Rod	H	Dist	Vert	L	Off	Elev
0+00 76+34.4 (Williams A)			500	562.11				557.4
181-28		0.71	70'	+9-24	+11.61			568.7
10-36		1.48	149'	-0-37	6.7			555.4
Next Axis	20-46							
to 0+50	"	0.49	50'		8.6			553.5
to 1+64	"	1.63	164'		8.6			"
2+18	"	2.17	218'		4.3			557.8
2+39	"	2.38	239'	+1-26	+6.0			563.1
3+19	"	3.26	319.4	+8-47	+49.3			606.4
4+02	"	4.25	401.6	+13-52	+99.1			656.2
0-31		3.63	337.3	+15-43	+94.9			652.0
1-28		3.61	335.5	+15-43	+94.2			651.3
5+48	20-46	5.86	548.2	+14-54	+148.9			703.0
6+69	"	7.16	669.3	+14-57	+178.7			735.8
7+44	"	7.96	744.4	+14-54	+198.1			755.2
8+03	"	8.65	803.0	+15-39	+228.0			782.1
8+38	"	9.04	837.8	+15-49	+237.3			794.4
to 9+62.3	20-46	10.56	962.3	+17-25	301.89			859.0
to 5+31.6	20-46	5.68	531.6	+14-52	141.11			698.22

Aborn from BS on 86+55.7 up S.D. River 8-88-11 E
Az 91° 49'

Compass Var 4.30
reads 0-360
@ 0°-75 E

Core Hole No 1

" " " 13

New ϕ Axis of damS.D. R bed ϕ

Profile North

" " " No side channel

Toe of Mt No "

On Mt " "

" " " "

" " " "

Core Hole No 2

" " " 3

On Mt slope

" " " "

" " " "

" " " "

" " " "

Hub on trail (See next page = 9+54.7 Elev 856.15)

Hub on ridge on Mt

Plotted
by J.P.R.

Sta	Az	Rod	H. Dist	Vert. L	Diff	EI
T@5+316		4.47	902.69			698.22
	316-45	0.35	285	+27-20	+14.74	712.96
	46-44	2.50	247.6	+6-42	+29.09	727.31
T@9+547	20-46	4.81	423.11	+20-28	157.93	856.15
		4.84	860.99			"
	219-40	2.86	267.3	-15-12	-72.6	783.6
	216-44	5.08	488.9	-11-28	-99.2	757.0
	216-58	5.11	492	-11-25	-99.4	756.8
10+75.5	20-46	1.64	120.8	+31-12	+73.2	929.4
T@11+07.00	"	2.02	152.31	+30-01	+88.00	944.15
T@11+07	84-08	3.33	324	-0-26	75	941.7
T@11+66.25		0.64	59.20	+17-26	+18.59	962.74
T@11+66.2		4.48	967.22			"
to 12+24	20-46	0.57	58.0		08	966.4
to 12+99	"	1.37	133.4	+10-35	+14.9	987.6
T@13+32.30		1.74	166.10	+13-03	+38.5	1001.24
			800.77			

(Should be 713.17)	5+316
Hub on 760 Contour 0+00	4 23.11
Core Hole No 12	9+54.71
	1 52.36
	11+07.07
Hub on trail on New Axis	
Core Hole No 11	11+07.0
Core " " A	59.2
" " " 5' apart	11+66.2
On Mt Slope	
" " " Original Hub to determine Axis	
Core Hole No 10	
	Oct 26/21
On Mt Slope Axis	11+66.4
" " " "	1 66.1
	13+32.3
	5 00.77
	5 31.53

Plotted in
ms 1918

Sta	Az	Rod	H. Dist	Vert	C	Diff	E1
π @13+32 ³			4.88	1006.12			1001.24
	230-04	1.80	177'	-7°-23'		228	978.4
			End North				
π @9+54.7			4.92	861.07			856.15
to A	72-08	0.93 ₉₄	94'	+7-42		112 ³	8685 8645
to B	250-02	1.63 ₆₂	160	-7-19		20 ⁶	835.6
π @A			4.40				8685
	47-22	0.59	59	+2-19		1.95	870.9 864.9
π @B			4.40				835.6
	327-08	0.24 _(Level)	24	+7-40		1.05	838 ⁸
	346-48	2.06	198	+11-33		140 ³	875 ⁹
π @5+31.50			4.50	702.72			698.22
to -1+32.3	200-46	6.89	664.9	-11-0		129.5	568.97
to -1+87.6	"	7.37	719.2	-9-11		116.28	581.24
to -3+32.4	"	8.65	864.0	-2-46		41.73	656.49
to -5+46.6	"	10.80	1078.2	+2-54		154.58	752.8

B.S. to 11+63² R
175
Core Hole No 9

On Axis Hub 0

△ point A

" " B on trail } Side as for Core Locations

B.S. 9+54.7 of Axis R
0.44
Core Hole No 8.

B.S. on 9+54.7 of Axis R
1.62
" " No 6

" " No 7 Core { Same Elev as shot at 206
is 10° feet farther 346-48

Set up to place hubs on So. Slope So of R

0 on Axis 35 ft NE of City Hut @ Dam #2

" " 20" SE of " " " "

" " So side

" " " " ft No of frame East Trestle

*Plotted
mvt 2/19/21*

Sta	Az	Rod	H	Dist	Vert.	Diff	Elev
			4.71				801.54
⊙ 200-46		1.33	127	+12-23	+212	829.2	
		0.24	128	-9-37	-112	797.5	
		1.88	178	+13-23	+112	843.5	
		3.05	174	+18-34	+112	893.5	
-12+18.1		6.73	599.3	+19-27	+211.65	1013.19	

see page 9 91-49

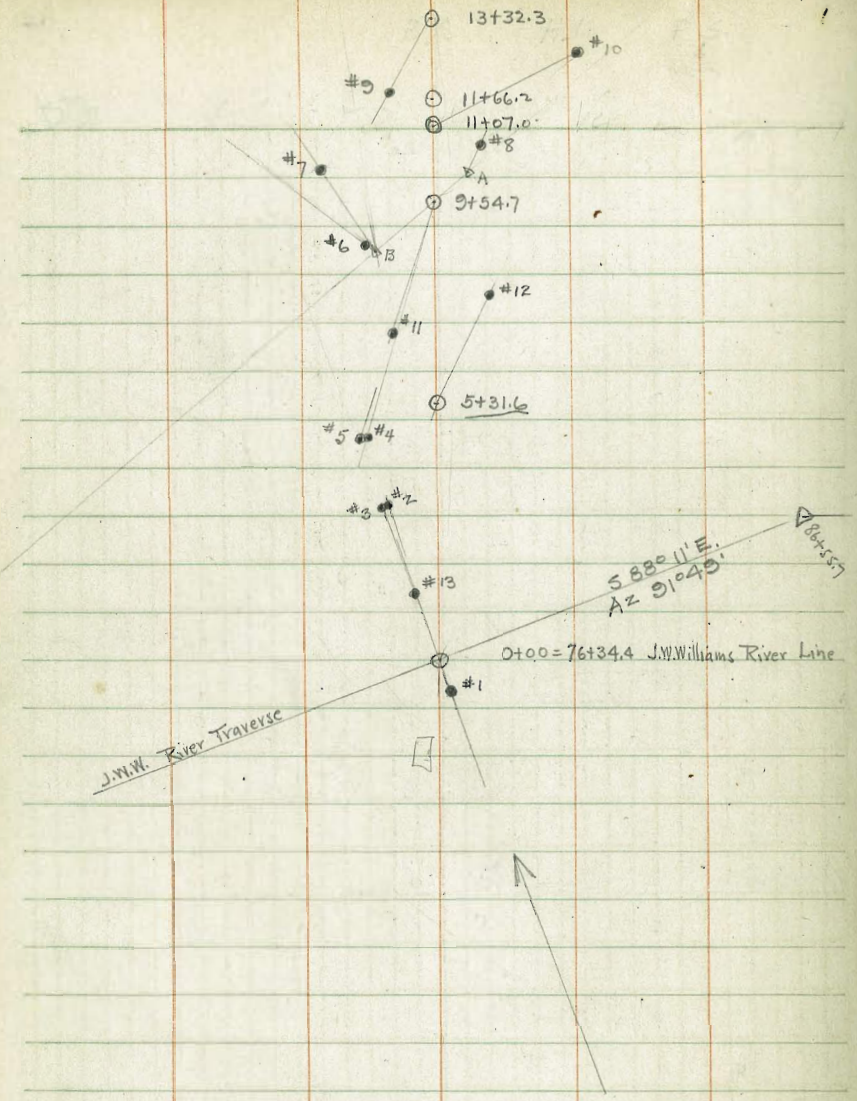
⊙ 76+98 ² 455	5.60	562.71	557.11
Very Core #15347-20	0.615	8.04	554.7
#16 282-58	1.95	-1-38	10.28 552.6

⊙ on large Rock Cliff 6+028
 last hub set on S. side
 on Mt Slope
 " " "
 " " "
 " " "

Plotted Nov 18/2

FS on Williams 86 +557 S-86-1/E Nov 18/2
 Williams Δ on Darns site #2
 Just being drilled Hole #15
 $76+84.4 = 557.11$ E1
 $+5.60$
 562.71 T

Core Hole #16 - Casing in.



Conduit Line - El Capitan to Univ. Hts. Res.

Sta Az Rod H. Dist Vert L Off E)

0+00 = AXIS 20-46 5.09 587.63 582.51
 1.91 -7-35

299-0 0.51 6.9 580.7

" 0.75 2.7 584.9

to 1+65 299-0 1.64 +0-0^{5.04} 582.59

π@1+65 5.03 587.62
 2+46 278-40 0.61 11.4 576.2

to 3+05 278-40 1.39 -3-07^{7.61} 574.98

π on 3+05 4.94 579.92 "

to 4+43 263-58 1.37^{Level} -1-56^{9.63} 570.29

π@4+43 5.05 575.34 "

5+34 268-10 0.91 4.3 571.0

5+88 " 1.45 2.2 573.1

to 7+01 268-10 2.57^{5.51} -0-3 569.83

π@7+01 5.05 574.88 "

to 10+24 261-03 3.22 -0-3^{5.61} 569.27

Start @ 14-30 E
 0-860 @ N 015' W

BS on 0+00 @ New Axis Dat

On forward line

" "

1+65 to 0+00 Rod 1.64

On forward line So side road

No side road

3+05 to 1+65 R 1.39

No side Road

4+43 to 3+05 R 1.37

No side Road

7+01 to 4+43 R 2.57

So side road

1+65
 1 40
 3+05
 1 38
 4+43
 2 58
 7+01
 3 23
 10+24

Dist. 14-30 E
 0-860 @ N 015' W

El Cap Conduit

Sta	Az	Rod	H. Dist	Vert L	Diff	Elev
K@10+24			4.89	574.16		569.27
to 12+82	280-22	2.57		10-29 ^{3.13}		571.03
K@12+82			5.08	576.11		"
to 14+24	291-32	Level 1.41		-1-59 ^{9.96}		566.15
K@14+24			5.04	571.19		"
15+28	260-04	1.04		4.5		566.7
16+63	"	2.39		8.1		563.1
to 18+50	260-04	4.25		-0-12 ^{6.89}		564.30
K@18+50			4.99	569.29		"
18+83	263-14	0.33		10.3		559.0
19+48	"	0.98		1.7		567.6
to 20+26	263-14	1.75		+1-27 ^{0.70}		568.59
K@20+26			5.12	573.71		"
21+94	255-15	1.68		8.1		565.6
to 22+36	255-15	2.09		7-50 ^{2.14}		571.57
K@22+36						

S Line

16

10+24 to 7+01	R	3.22	10+24	
			2.58	
No side road			12+82	
			1+42	
12+82 to 10+24	R	2.57	14+24	
			4.26	
			18+50	
			1.76	
No side road			20+26	
14+24 to 12+82	R	1.41	2.10	
			22+36	
forward line				
"				
No side road				
18+50 to 14+24	R	4.26		
forward line				
"				
No side road				
20+26 to 18+50	R	1.75		
forward line				
No side road				

Plotted 1971
H. J. R.

Sta	Az	Rod	H. Dist	Vert L	Diff	E1
π@22+36		5.17	576.74			571.57
23+61	279-36	1.25		+3-30	+76	579.2
24+71	"	2.35		+3-08	+128	584.4
to 25+54	279-36	3.17		+3-24	+188.2	590.39
π@25+54		4.89	595.28			"
25+07	99-36	0.47			13.8	581.5
to 27+80	278-42	2.25		-4-21	-172.2	573.17
π@27+80		5.07	578.24			"
29+47	259-12	1.67		-3-42	-107	562.5
to 30+50	259-12	2.69		-1-32	-72.1	565.96
π@30+50		5.07	571.03			"
to 32+23	278-43	1.72		+2-06	+6.34	572.30
π@32+23		4.91	577.21			"
32+91		0.68			1.4	575.8
to 34+22	277-44	1.98		+1-04	+37.1	576.01

22+36 to 20+26 Rod 2.08

forward line

No side road

25+54 to 22+36. R 3.18

Back shot on line in gully

No side road

27+60 to 25+54 R 2.23

On forward line in road

50ft So of road

30+50 to 27+60 R 2.68

50' So of road

32+23 to 30+50 R 1.72

forward line

80' So of Road

22+36

3 18

25+54

2 26

27+80

2 70

30+50

1 73

32 23

1 99

34+22

Checked
11/27/92
MFB

Sta	Az	Rod	H. Dist	Vert L	Diff	El
K@34+22			5.08	581.00		576.01
to 36+23	294-44	2.01	199.8	-5-58	-20.79	555.22
K@36+23			5.10	560.32		
to 37+33	290-52	1.08		+4-18	+8.16	563.38
K@37+33			5.05	568.43		
38+15	296-28	0.85	84	-10-23	-15°	548.4
to 39+73	296-28	2.39		-3-41	-15.38	548.00
K@39+73			5.11	553.11		
40+45	308-31	0.72			11.2	541.9
41+63	"	1.90			9.7	543.4
to 43+23	308-31	3.49		-1-33	-9.45	538.55
K@43+23			5.12	543.67		
43+81	282-49	0.58			5.0	538.7
to 44+45	282-49	1.21		+1-50	12.1	542.46
K@44+45			5.16	547.62		

Sta	Rod	El
34+22 to 32+23	1.98	
34+22		2.02
36+24		1.07
37+33		2.40
30' S of road	2.01	
39+73		3.50
50' S of road		1.22
37+33 to 36+23	1.085	
1/4 S edge road forward line		
No edge road		
39+73 to 37+33	2.38	
On forward line		
No Side Road		
43+23 to 39+73	3.48	
S edge road last of road for a while		
30' S of road toe of ridge		
44+45 to 43+23	1.21	

filled 7.19.01
platted Nov 1895

Sta	Ar	Rod	H. Dist	Vert	∠ Diff	EI
K@44+45		5.16	547.62			542.46
to 46+53	265-38	2.10	207.8	+7-02	+25.65	568.11
K@46+53		4.97	573.08			
to 48+39	264-01	1.85		+4-35	+4.82	582.93
K@48+39		1.85	471	587.64		
47+42	84-01	0.97	95	-7-0	-11	570.2
49+03	275-04	0.64		104		577.2
to 50+01	275-04	Level 1.61		-1-28	8.95	578.69
K@50+01		5.13	583.82			
49+49	95-04	0.72		20.2		563.6
49+63	"	0.38		6.2		577.6
50+73	281-11	0.73	94	-7-40	-9.6	569.1
50+89	"	0.91	86	-9-40	-15.1	563.6
51+16	"	1.15		11.0		572.8
to 53+14	281-11	3.12		0	5.11	578.71
K@53+14		4.94	583.65			
53+87	294.0	0.73		7.9		575.7

44+45		
2.68		
46+53		
1.86		
48+39		
1.62		
50+01		

100' ± So of road on ridge
46+53 to 48+45 R 210

On ridge 150' So of road
48+39 to 46+53 R 1.85

Back shot on line
forward line
50+01 to 48+39 R 1.61

Oct 28/21

50+01	
3.13	
53+14	

to gulch back line
top " " "
forward " "
" " in gulch
" " "

plotted
Nov 7, 1921
H.P.B.

53+14 to 50+01 R 3.11
from line

Sta	Az	Rod	H.Dist	Vert	L Dist	El
K@53+14			4.74	583.65		578.71
54+74	294-0	160	160	-2-38	-7.4	571.3
55+16	"	2.02			6.2	577.4

to 56+28	294-0	3.13		0.41		583.24
----------	-------	------	--	------	--	--------

K@56+28		5.08	588.32			"
55+75	114-0	0.63	53	-23-40	-33.7	5600
56+60	318-07	0.32			2.7	585.6

to 57+67	318-07	1.38		5.63		582.63
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K@57+67		5.02	587.71			
to 58+31	310-46	0.63		5.72		581.99

K@58+31		5.10	587.09			
58+67	313-55	0.38	36	-13-40	-8.7	573.3
59+21	"	1.02	90	-19-42	-31.3	549.7
59+71	"	1.45	140	-5-10	-130	569.0
60+24	"	1.95	194	-4-30	-15.3	566.7
60+57	"	2.30	226	-5-37	-22.4	559.6
60+87	"	2.57	256	-3-0	-13.4	568.6
to 61+43	313-55	3.11		6.19		580.90

forward line						53+14
"	"					3 14
						56+28
						1 37
						57+67
						64
						58+31
						3 12
						61+43 ✓

56+28 to 53+14 R 3.12

Back shot on line in gulch
forward line

57+67 to 56+28 R 1.38

58+31 to 57+67 R 0.625

forward line
" " in gulch
" " " " " "

Checked
Nov 7 1924
H.P.B.

RD Rock Surface ground 6' lower

El Cap Conduit
B.S. H.I. F.S.

Sta	Az	Rod	H	Dist	Vert	L	D.H	El
π@61+43				4.97	585.87			580.90
to 62+64	304-26	Level ✓ 1.70		-1-31	8.16			577.71
π@62+64				4.93	582.64			"
62+99	297-57	0.35			69			575.7
64+10	"	1.48	146	-7-02	-19			559.8
64+71	"	2.08	107	-3-58	-14			563.3
65+33	"	2.70	168	-3-33	-16			561.1
65+61	"	2.98	197	-3-47	-19			558.1
to 66+98	297-57	4.33		-0-42	10.15			572.49
π@66+98				4.98	577.47			"
to 67+87	286-39	Level 0.87		-1-56	7.95			569.52
π@67+87				5.02	574.54			"
68+26	286-39	0.50	39	-27-35	-13			556.3
68+57	"	0.76	70	-15-58	-10			549.5
68+82	"	0.95			11.8			562.7
to 69+76	286-39	Level 1.89		-1-44	10.46			564.08
π@69+76				4.79	568.87			"

no rod on B.S. flag only

61+43
1 21
62+64
4 34
66+98
0+88
67+86
1 90
69+76

Forward line

Flag for B.S. no rod

P.O.T.

67+87 to 66+98

R
0.87

forward line in gulch

Platted 1921
T10x7
HRB

Sta	Az	Rod	H Dist	Vert	L	Off	EL
K@69+76			4 79	568 87			564.08
70+42	281-13	0.46			84		566.5
71+08	"	1.33	13.4	-4-52	-11.7		552.9
71+94	"	2.19	11.8	-3-46	-14.4		549.7
74+09	281-13	4.34	433.4	-3-26	-26.01		538.07
+73+98	281-13	4.21		-3-22	-24.73		539.35
K@73+98		5.18	544.53				"
+77+49	281-13	3.50		-2-08	-13.06		526.29
On Williams Line Closure							
(No. 5DR	168-0	4.35	4.76	-8-51	-16.7		529.6
K@429+100	90 0	3.11		0			529.6
	168-02						
Hayler "S"	167-03-30	5.94		+0-57	+9.8		539.4
K@73+98							
+77-49	281-07	3.50					
X							
K@77+49		5.15	531.44				526.29
+79+76	293-46	2.26		-0-13	6.00		525.44

69+76							
4 22							
73+98							
8 51							
77 49							
2 27							
79+76							

Spike 3/4' No of Monte E gate No post of

P.O.T. No. of road
73+98 to 69+76 R 4.22

So edge road

@ El Monte E gate

from cor post @ fence to stake 429 to El Monte gate
Williams Stake 3+10.75 No of SDR
Spike 3/4' No of No. post E gate El Monte Ranch
to Hayler "S" 73+98

77+49 to 73+98 3.50

So edge road

Platted
710+719
H.I.

Sta	Az	Rod	H	DIST	Vert	L	Diff	Elev
π@79+76				5.08	530.52			525.44
81+29	279-54	1.53				3.2		527.3
to 82+92	279-54	3.15				7.12		523.40
π@82+92				5.11	528.51			"
83+75	299-58	0.83				5.8		522.7
to 86+01	299-58	3.08				8.10		520.41
						0-32		528.41
								By Check Lvs (520.11)
π@86+01				5.18	533.59			517.8
87+20	296-32	1.19				7.8		525.8
89+21	"	3.20				+1-13		+6.8 526.9
to 90+20	296-32	4.18				1-0		527.71
								+7.30 535.71
								By Chk Lvs. 526.88
π@90+20				4.82	540.53			532.53
	18-22	0.075						527.69
								4.84 535.69
								By Chk Lvs 526.89
to 92+21	289-52	2.00				4-27		543.26
								+15.55 551.26
								By G.L. 542.34
π@92+21				5.15	548.41			548.41
92+91	313-14	0.70				+5-23		+6.5 548.8
to 93+72	313-14	1.50				2-58		551.06
								+1.80 559.86
								G.L. 550.2

79+76 to 77+49 Rod 227

forward line

(523.10) No edge road (Level 1/1) Error 0.3

524.62
+4.215

forward line

No edge road

Sec Book #7 page 7

forward line

" "

No edge road

Bronze told in granite boulder No side R.
USGS B.M. 529.85 Guadalupe Sta SDR

No edge road

forward line

No edge road

79+76
3.12

82+92

3.09

86+01

4+19

90+20

2.01

92+21

1.51

93+72

@ 82+92

Trin Oak

524.62 BM

+4.215

R

3.08

526.84

-5.74

523.10

Oct 29/2

Plat 107
107
HRB

El Cap Conduit
B.S. H.I. F.S.

Sta	Az	Rod	H. Dist	Vert L	Diff (EI)
$\pi @ 93+72$			518	556.24	559.06
				525.77	
to 96+28	308-57	2.55	-5-42	-25.29 530.77	C.L. 524.5
				530.87	
$\pi @ 96+28$			5.10	532.87	
				519.67	
to 97+68	307-31	1.39	-2-30	-6.10 527.67	C.L. 518.24
				524.70	
$\pi @ 97+68$			5.03	532.70	
98+45	283-46	0.77	47	520.0	528.0
99+30	"	1.62	30	521.7	529.7
				529.98	
to 100+45	283-46	2.76	+2-08	+10.31 537.98	C.L. 528.88
				533.60	
$\pi @ 100+45$			5.22	543.20	
101+55	283-46	1.10	90	524.6	
102+00	"	1.55	73	526.3	
102+47	"	2.02	108	522.8	
				525.15	
to 103+17	283-46	2.71	-10-01	-4.23 523.15	C.L. 523.34
				528.40	
$\pi @ 103+17$			5.06	538.21	
103+84	292-31	0.65	64	522.0	
106+16	"	2.35	234	-2-04 -85	514.8
107+57	"	4.40	440	-1-06 -84	514.9

Rad 2.54
No edge road
No edge road
R 1.39
forward line
" "
POT No edge road R 2.76
forward line
" "
" "
Hedge Road
Corrected to Check Levels R 2.71
forward line
" "
" "

93+72
2 56
96+28
1 40
97+68
2 77
100+45
2 72
103+17 ✓

Plotted 7/19/21
Hoy J.R.P.

Sta	Az	Rod H.	Dist	Vert	Cor	EL
to 103+17		5.06	528.40			533.15 523.24
108+95	292-31	5.78	-0-50	-84		514.9
to 110+07	"	6.20	-0-04	-80		515.3
110+62	"	7.45	+0-54	+108		524.1
to 112+48	292-31	9.30	+4-24	+7123		594.57 604.38
to 112+48		5.07	599.64	602.45		591.5
112+91	235-10	0.43		81		601.3
113+40	"	0.93	94	-6-35	-106	584.0
113+96	"	1.49	148	-6-24	-164	578.7
114+98	"	2.47	245	-5-06	-220	572.6
to 116+07	235-10 1/2	3.58	-4-35	-2859		565.98 575.77
to 116+07		4.87	570.85	580.66		
115+86	55-10	0.21		134		557.5
116+21	263-18	0.14		68		564.1
116+48	"	0.46	41	-19-48	-147	551.3
116+71	"	0.65	64	-7-30	-84	552.6
to 117+74	263-18	1.67	-7-12	-20.89		546.09 554.76
to 117+74		50	550.09	559.96		
117+11	83-18	0.63		54		544.7

forward line in road (leave it for awhile. on Mt)

103+17
9 31
112+48
3 57
116+07
1 67
117+74

Top of ridge (Cape Horn) E end EL Mont Oak Grove
No rod back site flagged

forward line

No rod BS flagged

B shot on line in gulch

forward line

R
1.67

Plotted
10/17/1971
OTR/BS

on back line

Sta	Az	Rod	H. Dist	Vert L	Diff	EL
K@117+74		50		550.09		554.70
118+58	271-08	0.90	84	555.90	-22.4	522.7
K@119+22	271-08	1.47		520.27		520.27
				530.06		530.06
K@119+22		4.79		534.87		519.7
119+59	272-09	0.37		54		529.5
120+03	"	0.82	81		-7-38	509.5
K@120+28	272-09	1.05		509.28		519.19
				By G.L. Levels 508.7		
K@120+28		5.10		514.48		524.29
K@122+13	253-51/2	1.84		507.26		517.09
				By G.L. 506.48		
K@122+13		5.07		512.33		522.14
123+35	249-47	1.22		508.1		517.9
K@124+63	249-49 1/2	2.49		707		505.26
				By G.L. 504.55		515.07
K@124+63		5.11		510.37		520.18
K@127-19	240-08	2.55		651		503.86
				By G.L. 503.15		513.67

forward line	R	117+74
		1 48
	1.45	119+22
		1 06
On Cape Horn		120+28
		1 85
		122
		2 50
on forward line		124
		2 63
		127 19
Off mt on bottom	R	1.05
at end El Monte Oaks		
weathered Cape Horn thence Pacific Waters		
		18
In El Monte Oaks	R	1.84
forward line		
In El Monte Oaks	R	2.50
In El Monte Oaks		2.55

Plotted
1/10/8
2/2/8

El Cap Conduit
BS. H.T. F.S.
I

27

Sta	Az	Req	H.	Dist	Vert	L	Off	El
TR@127+19			5.09	508.95	518.76			503.86
to 129+61	241-02	2.41			-0-10		6.02	502.93
							By G.L.	502.18

127+19
2 42
129+61

Continued Book 7 Page 3

"S" Line

BS. H.L. 175

Sta	Az	Rad	H. Dist	Vert L	Diff	El
TP@1073+57A						479.94
to 1078+530	261-03	4.95		-1° 53'	-16.29	463.65
TP@1078+53		5.05	468.70			
to 1083+940	261-03	5.40		-3°-28'	-32.68	430.97
TP 1083+94		4.98	435.95			"
1085+50	261-03	1.56			9.2	426.8
1087+89		3.95		-0-58	-6.7	424.3
1089+39		5.45		-0-49	-7.8	423.2
to 1091+330	261-03	7.38		-0-48	-10.34	420.63
TP 1091+33		4.96	425.59			"
1094+36	261-03	2.15			9.8	415.8 "
1095+88		4.55		-1-34	-12.4	408.2
1097+73		6.40		-1-48	-12.8	400.4
to 1098+820	261-03	7.48		-1-34	-20.45	400.18
TP 1098+82		5.05	405.23			"
1101+14	"	2.32			4.0	401.2
1103+52	"	4.70			4.4	395.8
to 1103+520	261-03	4.69			-3.75	401.98
TP 1103+52		5.15	406.11			"
1105+30	260-23	1.78		-2-27	-7.6	393.4
to 1108+080	260-25	4.55		-2-37	-20.79	380.17

Conduit Line from El Capitan #2 to University Hts Reservoir
Continued from Book #7 P. 54

28

forward line	4.95	+1°-54'				
"	5.38	+3-29				
"						1083+94
"						7 33
"						1091+33
"						7 49
"	7.36	+0-49				1098+82
"						4 70
"						1103 52
"						4 56
"						1108+08
to road So RADIO ROAD						
from line						
to side Hwy	7.48	+1-34				
forward line						
"						
El @ 400.96 to So						
to side parking	4.69					

Notes copied from Bk 7 p. 54 G.R.H.

Nov 17/21

to road So RADIO ROAD

from line

to side Hwy

to side of road TP on water plug gate No Vent 2 load lumber in ditch on line

Platted Nov 28 1921 H.R.B.

Sta	A2	Rad	H. Dist	Vert	L	DAI	E1
1108+08		5.00	385.17				380.17
1110+24	260-25	2.16			56		379.6
1112+73	"	4.65		+1-28		119	392.1
to 1115+10	260-25	7.01		+1'-11"		145.7	394.68
1115+10		4.93	399.61				
to FS	261-05						
1118+00	"	2.90			67		392.9
to 1121+46	261-05	6.35		-0-46		85.2	386.16
1121+46		4.97	391.13				
1123+16	"	1.70		-2-05		6.2	380.0
1126+56	"	5.10		-2-35		23.0	363.2
to 1128+45	261-05	6.98		-2-09		26.2	359.34
1128+45		4.87	365.21				
1129+85	"	1.40			7.3		357.9
1133+38	"	4.93			86		356.6
to 1135+46	261-05	7.00		-0-29		58.9	353.45
1135+46		4.80	358.25				
1136+73	261-05	1.27			58		352.5
1140+11	"	4.65			50		353.3
to 1141+85	261-05	6.38		+0-06		3.79	354.46

4.54	-2-38						
forward line							1108+08 7 02
So side Hwy	7.00	-1-11					1115+10 6 36
							1121+46 6 29
							1128+45 7 01
							1135+46 6 39
forward line							1141+85
So side Hwy @ E + Street (17 New Addition) to So							
forward line @ N+S Street	6.34	+0-47					
" " " " (CERROS AVE)							
So side Hwy							
forward line @ N+S Street	6.96	+2.13					
" " " "							
So side Hwy paved fence Earth road E/Cajon Ave							
@ of Paving turning So	7.02	+0-30					
@ of Street South							
So Side E/Cajon Ave							

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+ H1 -

Sta	Az	Rod	Vort	L	E1
1141+85		5.03	359.49		354.46
1143+50	261-05	1.65		3.4	356.1
1146+97	"	5.12		0.5	359.0
to 1148+110	261-05	6.25	+0-34	+6.20	360.66
1148+11		4.98	365.64		"
1150+33	261-05	2.22		2.8	362.8
1151+66	"	3.55		1.8	363.8
to 1153+770	261-05	5.65	+0-21	1.77	363.87
1153+77		5.05	368.92		
1157+17		3.40		5.7	363.2
to 1158+77	261-05	4.99	-0-09	6.73	362.10
1158+77		5.17	367.36		
1160+57		1.80		6.5	360.9
1162+10		3.33		8.6	358.8
1163+92		5.15		9.3	358.1
to FS	270-55			8.75	
to 1165+680	270-55	6.90	-0-16		358.61
1165+68		5.05	363.66		
BM				5.81	357.85
1167+26		1.58		0.4	363.3
1170+58		4.90	+1-29	+13.6	372.2

6.37	1141+85	6.26
from line & Menlo Ave	1148+11	5.66
" & Montone Ave S.	1153+77	5
On & Monte Vista North	1158+77	6.91
	1165+68	
from line	app & Chamaine St So	6.28
		-0-34
from line	app & St No Orchard Ave	
	On & Cabrillo Ave South	
		5.65
& Highland Ave to So	from line	
On & Street North (Highland Ave)		
		4.79
& Colonial Ave South	"	
& Street North	"	
& Fairmont Ave St	"	
So side El Cajon Ave		
358.12 Brass Plug Curb	S. Y. Cox El Cajon	Fairmont Ave
& Pauly Ave St So		
& Van Dyke Ave		

Platted
Nov 28 1921
H.R.B.

Sta	Az	Rad	Vert L	E1
K 1165+68		5.05	363.66	358.61
to 1171+10	270-55	5.41	+1-22	12.91 371.52
K 1171+10		5.03	376.55	"
1173+87	"	2.77		5.5 371.1
to 1177+21	270-55	6.10	+0-01	5.55 371.00
K 1177+21		5.02	376.02	"
1180+56	"	3.35		4.5 371.5
to 1184+19	270-55	6.97	-0-01	5.17 370.85
K 1184+19		5.05	375.90	"
1187+16	"	2.97		4.5 371.4
to 1190+98	270-55	6.78	+0-16	3.16 372.74
K 1190+98		5.04	377.78	"
1193+76	"	2.78		4.4 373.4
to 1197+56	270+55	6.57	+0-19	1.52 376.26
K 1197+56		5.12	381.38	"
1198+75	"	1.19		4.15 377.23
1203+96	"	6.40		0.9 380.5
to 1204+94	270-55	7.37	-0-23	0.40 380.98
		5.03	386.01	
			385.01	

to side El Cajon Ave	5.41	-1-22	1165+68	5.42
			1171+10	6.11
			1177+21	6.95
@ Copeland Ave So.			1184+19	6.70
On E Street North to Kensington Park			1190+98	6.58
			1197+56	7.38
@ Stockton	6.08		1204+94	
@ Cankler by prop line				
@ Central Ave				
On W. Line of Sisson Ave				
				6.80
@ Street South				
On W. Line Thomas Ave North				
				6.57
@ Thomas Ave So				
" Reed " " + No				

Plotted
Nov 28 1901
H.P.B.

Sta	Az	Rod	Vert. L	El
K1241+31		5 08	387.81 366.81	382.73 364.73
	343-50			
to FS	270-36			
1244+19		2.88	98 378.0	
to 1247+70	270-36	6.38	-10-17 -15.60	367.13 366.73
			372.08	
K1247+70		4 95	372.36	
1251+94		1.24	49 367.2	
to 1255+36	270-36	7.65	+0-07	355 368.53 365.81
			373.55	
K@1255+36		5 02	373.53	
1255+85		0.49	53 368.3	
1259+73		4.37	1.1 372.5	
to 1260+68	270-36	5.31	+0-35	4543 373.96 373.73
			378.98	
		5 02	379.14	
1263+59		2.91	29 376.1	
to 1266+32	270-36	5.63	+0-32	4524 379.20 377.34
			384.24	
K1266+32		5 04	384.43	
			4.04 380.20	
			5.01 379.23	
			379.42	

Notes	Sta	Az	Rod	Vert. L	El
Not on City Boundary on fence line					8.25
to Iowa St	1241+31				6 39
On E. Line of Illinois St.	1247+70				7 65
	1255 36				5 32
	-1-17				5 32
to Ohio St	+1-24				1260+68
					5 64
					1266 32
					30th St
to Kansas St					368.81
					+10.33
					379 14
					5.30 -0-34
to Utah St					374.12
					+10.31
					384 43
					5.63 -0-32
Take 17 curb N.W. Cor El Cajon & Idaho					plug
Copper plug in curb					Oregon
					El Cajon Av

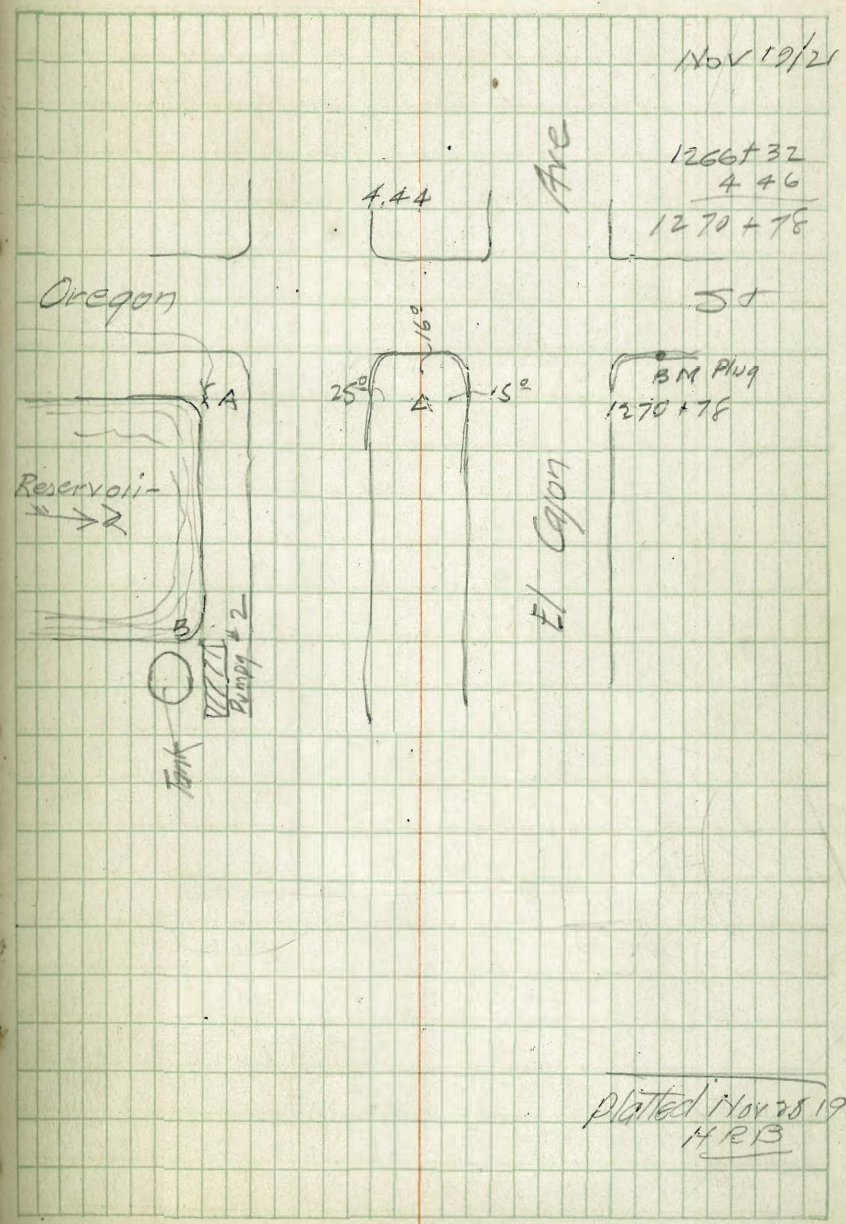
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HRB

Sta	Az	Rod	Vert L	EI
K @ 1266+32		4.98	384.18 384.34	379.20 379.36
T @ 270+78	270-36	4.45	+0-06 4.21	379.97 380.13
K		4.81	384.78 384.94	379.15 379.31
1st Cor of Small Reservoir	182-20	0.97	"A"	
NE Cor "	126-10	1.62	"B"	

Elevations

BM Plug NE Cor Oregon St + El Cajon	11.46	392.63	381.17
Top Conc. wall N.W. Cor Small Reservoir	3.10	389.53	
Top Conc. wall N.W. Cor large Reservoir to South	0.52	392.11	
Top wall S.W. Cor Small Reservoir	3.07	389.51	

From City Engineer's Office
 Elev of BM (Plug NE Cor Oregon St + El Cajon) 375.05
 6.12
 From U.S.G.S. Datum 381.17



Plotted Nov 28 1921
 H.R.B.

This page features three vertical red margin lines that divide the page into four columns. The first column is the narrowest, followed by a wider second column, a narrow third column, and a wide fourth column. Horizontal blue lines are spaced evenly across the page, creating a series of rows for writing.

This page is a grid of graph paper with green lines forming a square pattern. A single vertical red margin line is positioned on the left side of the grid. The grid is approximately 20 squares wide and 25 squares high.

#3 size Lietz transit #5223 Van @ 14-30 E	HI.	—	—	—	—
Sta	Az	Rod	Vert L	EI	
* 13 to #14		1.455		0	
π @ #14 Δ		4.85	718.02 164.85		713.17
to Core Hole #21	244-40	1.15	97.0	+23-56	+43.34 756.51
" " #22	248-01	1.26	108.4	+22-31	$\frac{+45}{42}$ 755.2
" " #20	87-30	0.07			798 710.04
" " #19	47-33	1.00	97.4	-10-59	-18.9 694.3
to #15	0-09	0.74		-0-12	5.15 712.87 159.70
to "L"	319-21	0.82	71.1	+19-10	(19-07-30) Average 725.72 738.89
π @ "L"		4.76	743.69		
to "M"	315-04	1.16	109.5	+14-42	-30 +28.73 767.62
π @ M		4.90	772.52		
to Core Hole #24	215-51	2.80	237.1	+23-18	+102.1 869.7
to " " #25	220-51-30	3.78	313.5	+24-35	+143.4 911.0

Hayden Ln
Franklin X
Williams Rd

El Capitan Dam site #1
Location Core Holes

36

Nov 18/21

Δ 13 to Δ 14 Mag = 8-49 E

Plate set 0-360 on Δ #13
BS on #13 Δ Williams 160' Contour Traverse No side
#14 is ground Hub 13 + 15 on 12" latas

Vert L taken ^{IN B} 3 ft higher or @ 7.85 ^E { 4.85 not visible

Hub for Core Hole Location

0.82 -19-05

BS on Williams #14 160 Contour

1.22 - -14-41

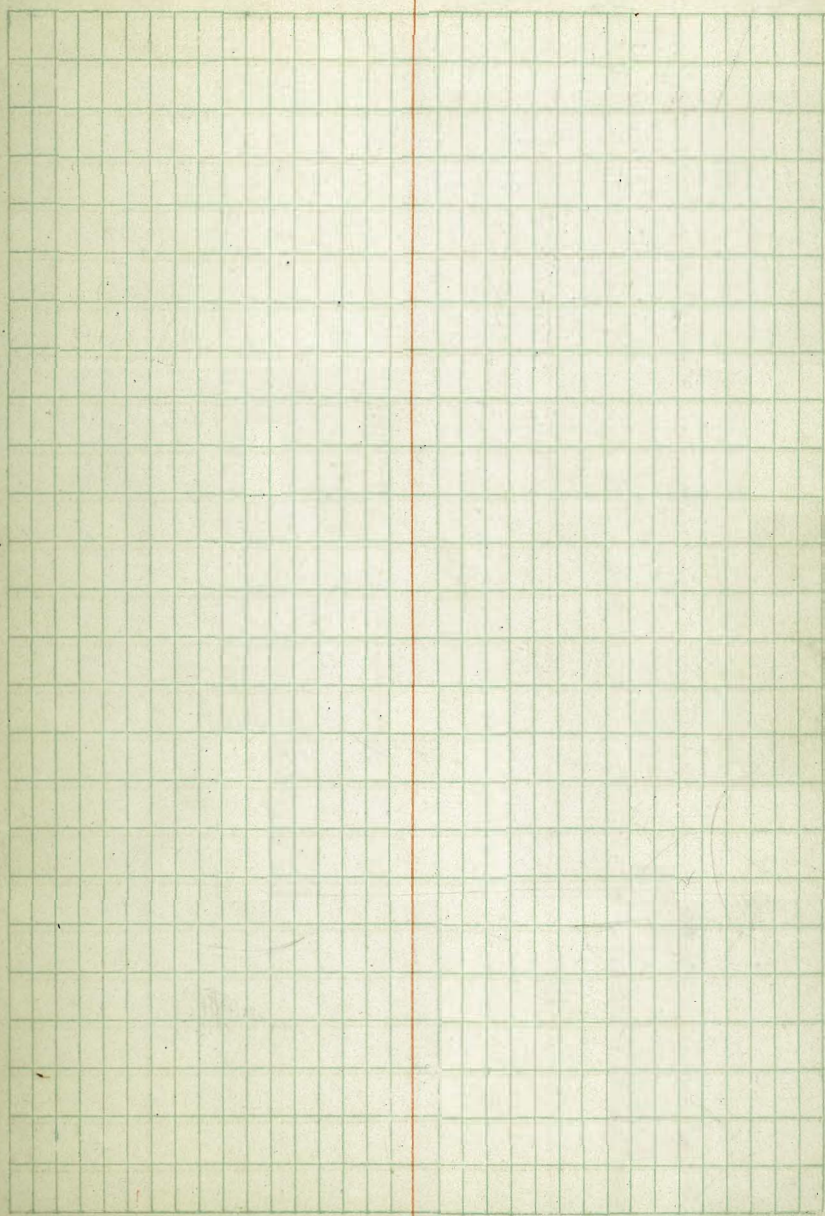
BS on "L"

+ H.1 -

Sta	Az	Pod	Vert	El
to Core Hole 23	67-26	1.78	149.9	-23 -49 -66.65 701.5
	* 18 94-08	3.30	298.2	-18-06-97.45 670.2
	* 17 84-55	3.24	360.0	-17-19-112.26 655.4

T@M

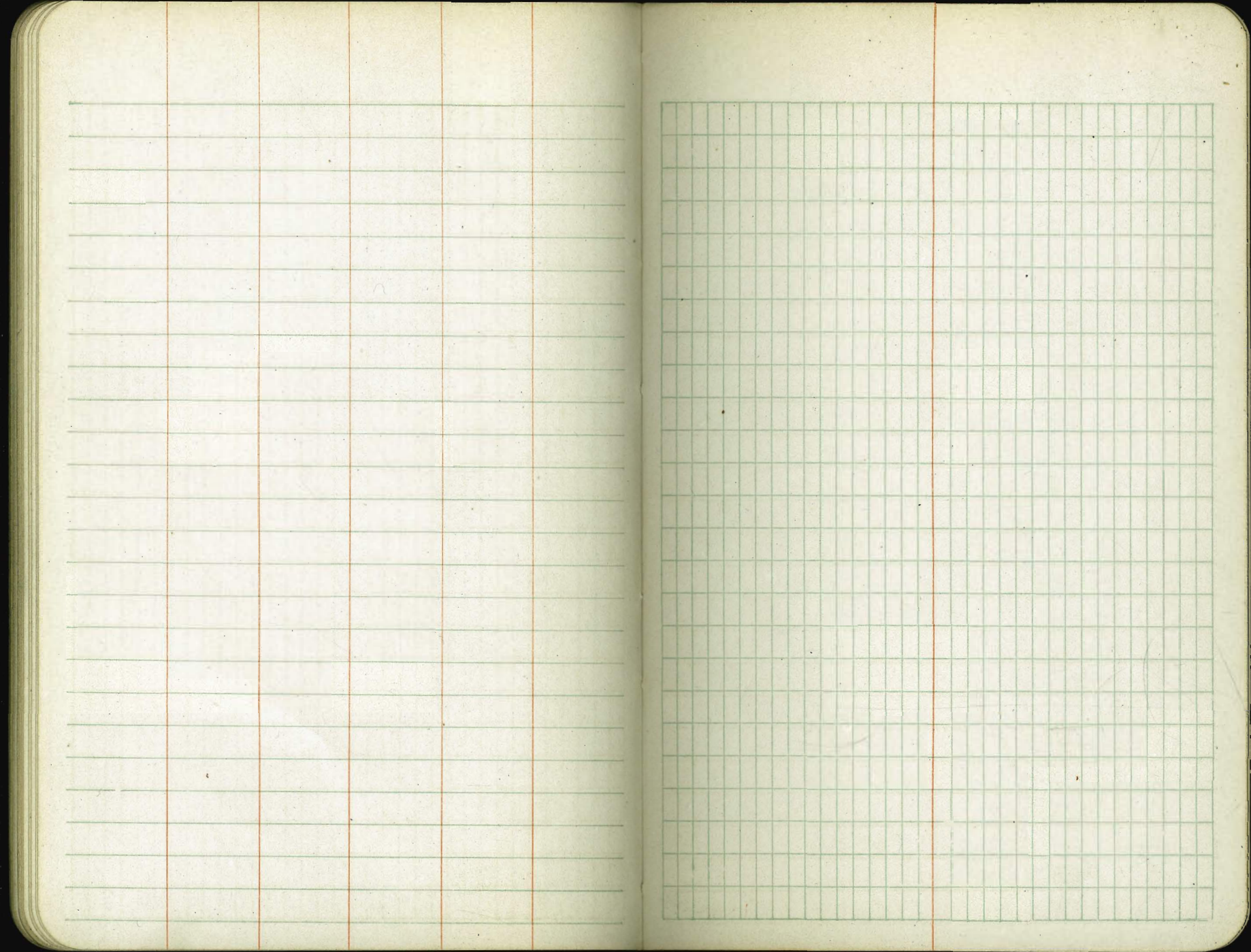
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|                |            |      |         |               |
|----------------|------------|------|---------|---------------|
| $\pi$ 1052+79A |            | 4.94 | 471.58  | 466.64        |
| B.M.           | 94-19      | 0.19 |         | 5.07 466.51   |
|                | Nerr H. J. | 5.07 | 472.93  |               |
| +o 1058+98     | 240-42     | 6.18 | +0°-22' | 1.07 471.86   |
| $\pi$ 1058+98  |            | 5.11 | 476.97  |               |
| +o 1064+26     | 240-42     | 5.27 | +0°-03' | 4.50 472.47   |
| $\pi$ 1064+26  |            | 4.88 | 477.35  |               |
| +o 1070+38     | 240-42     | 6.11 | +0° 33' | +5.87 478.34  |
| $\pi$ 1070+38  |            | 5.08 | 483.42  |               |
| +o 1073+57     | 240-42     | 3.18 | +0°-11' | 3.48 479.94   |
| $\pi$ 1073+57  |            | 5.08 | 485.02  |               |
| +o 1078+53     | 261-03     | 4.95 | -1°53'  | -16.29 463.65 |

Closure Error = 1.35

467.86 Cons. Mon. E.S.D. Limits

6.15

6.11 -0.33'



Information from JW Williams 10-22-21

76+34.4 Hub on Center Line of S.D. River + probable axis  
of Dam site #2

588° 11' E to 86+55.7

On line with holes #1 + 3

Bearing of probable axis N. 1° 28' E.

0+00 to 3+10.75 East

= 429' S. 12° E. from 3x4 post 6' high

in rock mound Marked Cor #1 which is

1016' from spike of Monte Ranch gate which  
spike is 3.14' N of N Gate Post.



Information from J.W. Williams 10-22-21

|                                                                                                                                              |                       |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| B.M. #20 (Bolt in oak tree Dam site #2)<br><small>50' W of Drill Hole + S Side of road</small>                                               | U.S.G.S. ✓<br>571.46' |
| Elev. of 160' contour                                                                                                                        | 713.17'               |
| Flow line at Dam site #2                                                                                                                     | 553.17                |
| Intersection of probable axis Damsite #2<br>with flame 16d nail in sill (200' contour)                                                       | 753.17'               |
| B.M. in crotch of twin oaks about 700' West<br>of East Monte Ranch line on N. side of road<br>South side of river #10 1/2 (spike)            | 524.62                |
| B.M. #10 100' S.E. of pump in oak tree Monte Park                                                                                            | 511.09                |
| B.M. #9 In root of oak tree 8' S. + 7' above road<br>150' E of where power pole line leaves<br>road + turns N. to river                      | 500.91                |
| B.M. #7 in large 10' cor fence post N side of road<br>on Fosters W fence line just West of old<br>Monte Ranch House.                         | 467.56                |
| B.M. #6 Largest sycamore nearest road in cluster<br>of 11 sycamores 3 miles from town                                                        | 455.94                |
| County Highway B.M. #19 1/2 railway spike in T.P.<br>25' NW of Intersection of fence W<br>side Bostonia Road with Santee to<br>Lakeside Road | 393.646               |
| B.M. #5 in S.D. Con. G. & E. Pole #72749 S. Side of<br>Road 1/4 mile E of Monte Pump Plant                                                   | 446.20                |

# KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

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## HOW TO USE KEITH'S TABLES.

### EXAMPLE.

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

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

Tan. in Tab. IV opp. 23° 20' = 1183.1  
1183.1 ÷ 10 = 118.31.

Tab. V 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.

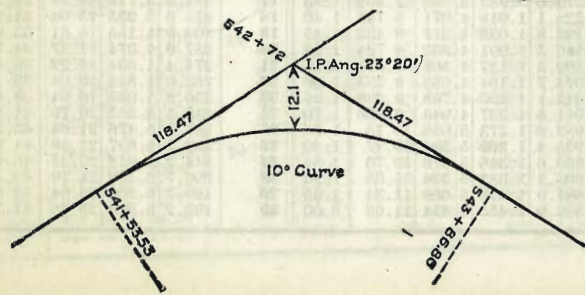
|                                |                        |
|--------------------------------|------------------------|
| 2° 19 1/2' = def. for sta. 542 | I. P. = sta. 542+72    |
| 4° 49 1/2' = " " " +50         | Tan. = 1.18.47         |
| 7° 19 1/2' = " " " 543         | B. C. = sta. 541+53.53 |
| 9° 49 1/2' = " " " +50         | L. C. = 2.33.33        |
| 11° 40' = " " " 543+           | E. C. = Sta. 543+86.86 |

100 - 53.53 = 46.47 × 3' (def. for 1 ft. of 10° Cur.) = 139.41' =  
2° 19 1/2' = def. for sta. 542.

Def. for 50 ft. = 2° 30' for a 10° Curve.

Def. for 36.86 ft. = 1° 50 1/2' for a 10° Curve.

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



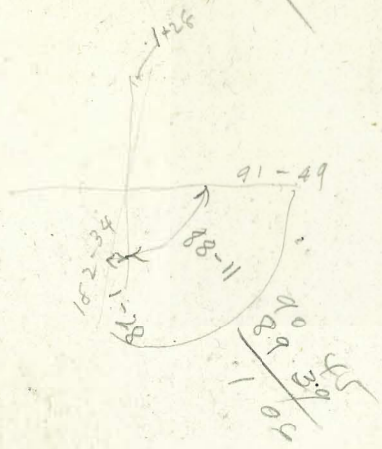


182-34  
91-49  
90-45

~~91-49~~  
~~1-28~~  
90-21

88-11  
1-28  
69-39

162



18.8

90  
88-11  
1-49

963  
570.29  
599.27

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.  
ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.  
FOR SINGLE TRACK EMBANKMENT.

|    | 0    | .1   | .2   | .3   | .4   | .5   | .6   | .7   | .8   | .9   |    |
|----|------|------|------|------|------|------|------|------|------|------|----|
| 0  | 7.0  | 7.2  | 7.3  | 7.5  | 7.6  | 7.8  | 7.9  | 8.1  | 8.2  | 8.4  | 0  |
| 1  | 8.5  | 8.7  | 8.8  | 9.0  | 9.1  | 9.3  | 9.4  | 9.6  | 9.7  | 9.9  | 1  |
| 2  | 10.0 | 10.2 | 10.3 | 10.5 | 10.6 | 10.8 | 10.9 | 11.1 | 11.2 | 11.4 | 2  |
| 3  | 11.5 | 11.7 | 11.8 | 12.0 | 12.1 | 12.3 | 12.4 | 12.6 | 12.7 | 12.9 | 3  |
| 4  | 13.0 | 13.2 | 13.3 | 13.5 | 13.6 | 13.8 | 13.9 | 14.1 | 14.2 | 14.4 | 4  |
| 5  | 14.5 | 14.7 | 14.8 | 15.0 | 15.1 | 15.3 | 15.4 | 15.6 | 15.7 | 15.9 | 5  |
| 6  | 16.0 | 16.2 | 16.3 | 16.5 | 16.6 | 16.8 | 16.9 | 17.1 | 17.2 | 17.4 | 6  |
| 7  | 17.5 | 17.7 | 17.8 | 18.0 | 18.1 | 18.3 | 18.4 | 18.6 | 18.7 | 18.9 | 7  |
| 8  | 19.0 | 19.2 | 19.3 | 19.5 | 19.6 | 19.8 | 19.9 | 20.1 | 20.2 | 20.4 | 8  |
| 9  | 20.5 | 20.7 | 20.8 | 21.0 | 21.1 | 21.3 | 21.4 | 21.6 | 21.7 | 21.9 | 9  |
| 10 | 22.0 | 22.2 | 22.3 | 22.5 | 22.6 | 22.8 | 22.9 | 23.1 | 23.2 | 23.4 | 10 |
| 11 | 23.5 | 23.7 | 23.8 | 24.0 | 24.1 | 24.3 | 24.4 | 24.6 | 24.7 | 24.9 | 11 |
| 12 | 25.0 | 25.2 | 25.3 | 25.5 | 25.6 | 25.8 | 25.9 | 26.1 | 26.2 | 26.4 | 12 |
| 13 | 26.5 | 26.7 | 26.8 | 27.0 | 27.1 | 27.3 | 27.4 | 27.6 | 27.7 | 27.9 | 13 |
| 14 | 28.0 | 28.2 | 28.3 | 28.5 | 28.6 | 28.8 | 28.9 | 29.1 | 29.2 | 29.4 | 14 |
| 15 | 29.5 | 29.7 | 29.8 | 30.0 | 30.1 | 30.3 | 30.4 | 30.6 | 30.7 | 30.9 | 15 |
| 16 | 31.0 | 31.2 | 31.3 | 31.5 | 31.6 | 31.8 | 31.9 | 32.1 | 32.2 | 32.4 | 16 |
| 17 | 32.5 | 32.7 | 32.8 | 33.0 | 33.1 | 33.3 | 33.4 | 33.6 | 33.7 | 33.9 | 17 |
| 18 | 34.0 | 34.2 | 34.3 | 34.5 | 34.6 | 34.8 | 34.9 | 35.1 | 35.2 | 35.4 | 18 |
| 19 | 35.5 | 35.7 | 35.8 | 36.0 | 36.1 | 36.3 | 36.4 | 36.6 | 36.7 | 36.9 | 19 |
| 20 | 37.0 | 37.2 | 37.3 | 37.5 | 37.6 | 37.8 | 37.9 | 38.1 | 38.2 | 38.4 | 20 |
| 21 | 38.5 | 38.7 | 38.8 | 39.0 | 39.1 | 39.3 | 39.4 | 39.6 | 39.7 | 39.9 | 21 |
| 22 | 40.0 | 40.2 | 40.3 | 40.5 | 40.6 | 40.8 | 40.9 | 41.1 | 41.2 | 41.4 | 22 |
| 23 | 41.5 | 41.7 | 41.8 | 42.0 | 42.1 | 42.3 | 42.4 | 42.6 | 42.7 | 42.9 | 23 |
| 24 | 43.0 | 43.2 | 43.3 | 43.5 | 43.6 | 43.8 | 43.9 | 44.1 | 44.2 | 44.4 | 24 |
| 25 | 44.5 | 44.7 | 44.8 | 45.0 | 45.1 | 45.3 | 45.4 | 45.6 | 45.7 | 45.9 | 25 |
| 26 | 46.0 | 46.2 | 46.3 | 46.5 | 46.6 | 46.8 | 46.9 | 47.1 | 47.2 | 47.4 | 26 |
| 27 | 47.5 | 47.7 | 47.8 | 48.0 | 48.1 | 48.3 | 48.4 | 48.6 | 48.7 | 48.9 | 27 |
| 28 | 49.0 | 49.2 | 49.3 | 49.5 | 49.6 | 49.8 | 49.9 | 50.1 | 50.2 | 50.4 | 28 |
| 29 | 50.5 | 50.7 | 50.8 | 51.0 | 51.1 | 51.3 | 51.4 | 51.6 | 51.7 | 51.9 | 29 |
| 30 | 52.0 | 52.2 | 52.3 | 52.5 | 52.6 | 52.8 | 52.9 | 53.1 | 53.2 | 53.4 | 30 |
| 31 | 53.5 | 53.7 | 53.8 | 54.0 | 54.1 | 54.3 | 54.4 | 54.6 | 54.7 | 54.9 | 31 |
| 32 | 55.0 | 55.2 | 55.3 | 55.5 | 55.6 | 55.8 | 55.9 | 56.1 | 56.2 | 56.4 | 32 |
| 33 | 56.5 | 56.7 | 56.8 | 57.0 | 57.1 | 57.3 | 57.4 | 57.6 | 57.7 | 57.9 | 33 |
| 34 | 58.0 | 58.2 | 58.3 | 58.5 | 58.6 | 58.8 | 58.9 | 59.1 | 59.2 | 59.4 | 34 |
| 35 | 59.5 | 59.7 | 59.8 | 60.0 | 60.1 | 60.3 | 60.4 | 60.6 | 60.7 | 60.9 | 35 |
| 36 | 61.0 | 61.2 | 61.3 | 61.5 | 61.6 | 61.8 | 61.9 | 62.1 | 62.2 | 62.4 | 36 |

Calculated by Julien A. Hall, M. Am. Soc. C. E.