

1015

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FIELD BOOK

360

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# KEUFFEL & ESSER CO.

DRAWING MATERIALS

AND

SURVEYING INSTRUMENTS.

NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

## TABLES FOR EXCAVATIONS AND EMBANKMENTS.

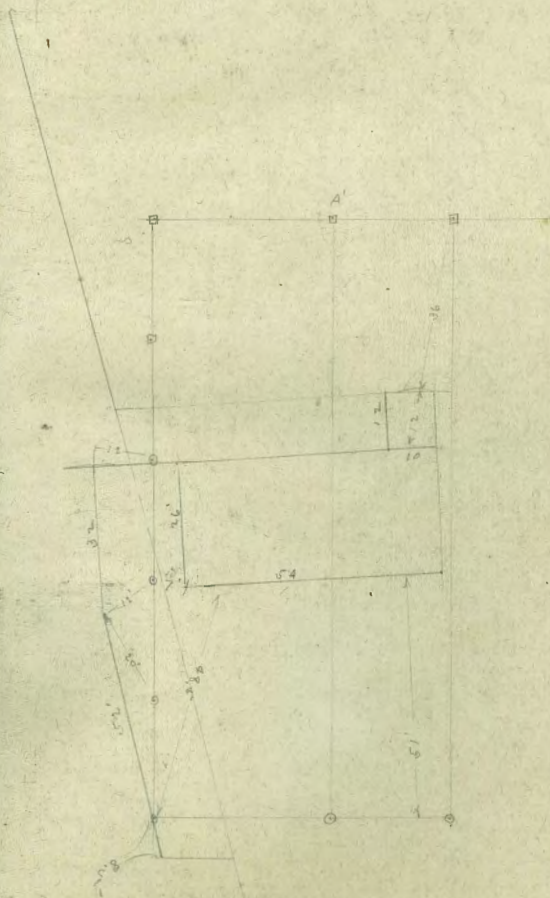
DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.  
ROADWAY, 18 FEET WIDE SIDE SLOPES 1 TO 1.  
FOR SINGLE TRACK EXCAVATION.

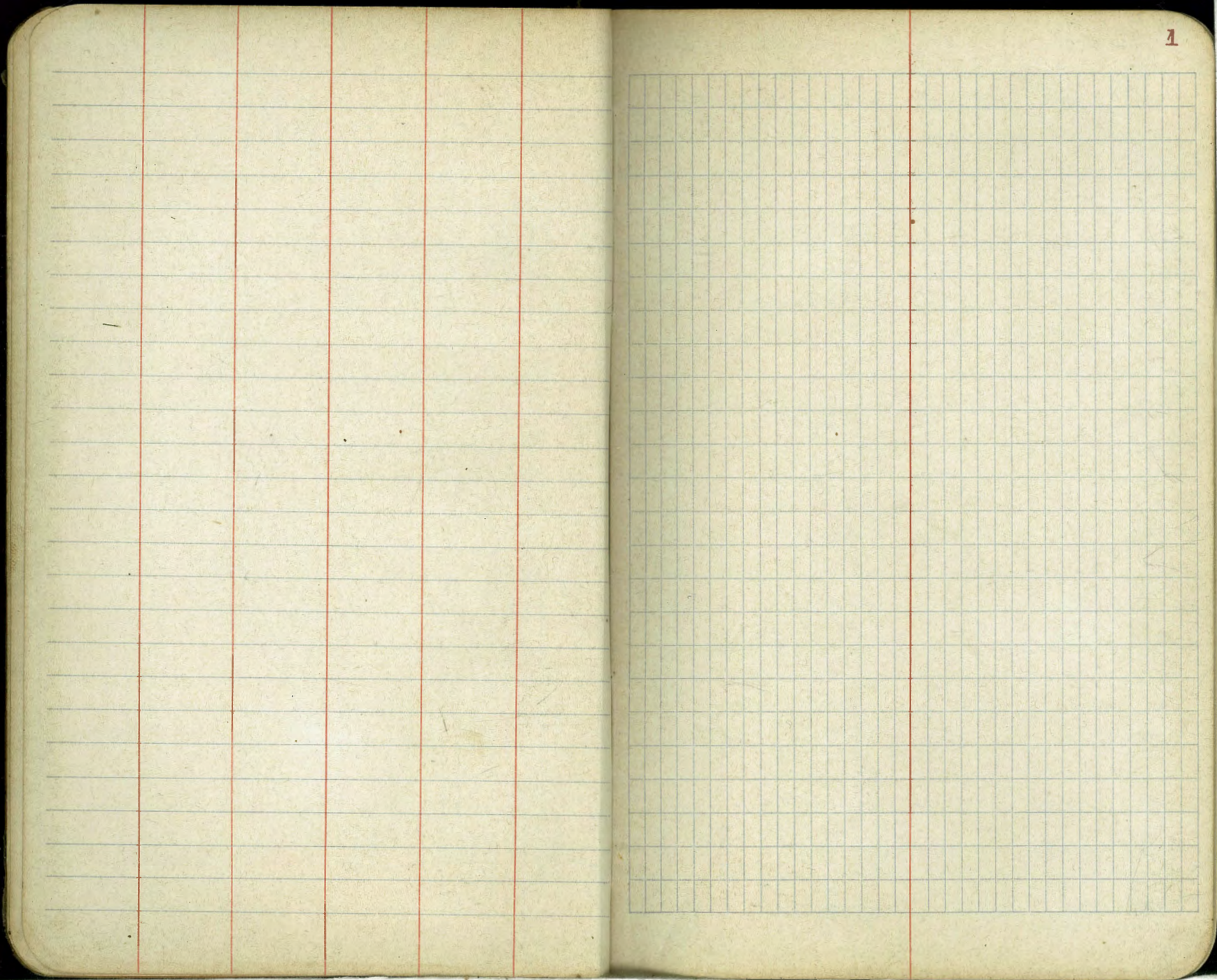
"Copyright, 1895, by Keuffel & Esser Co."

	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.





$$A^2 G = 6.4 - 3.14 =$$

5.592	14.5	3.26	11 2
+75	15.5	3.3	12 2
6	14.5		11 2
+25	15.0		11 7
+50	15.5		12 2
+75	15.5		12 2
7	16.0	3.3	12 7
+25	16.5	3.4	13 1
+50	16.5		13 1
+75	16.5		13 1
8	16.5		13 1
+25	16.5		13 1
+50	16.5		13 1
+75	16.5	3.4	13 1
9	17.0		13 6
+25	17.0		13 6
+50	18.0		14 6
+75	18.5		15 1
10	19.0		15 6
+25	19.5	3.4	16 1
+50	20.0	3.5	16 5
+75	21.5		18 0
11	21.0		18 5
+25	22.0		18 5
+75	23.5		20 0
12	20.0		21 5
	26.0		22 5
+29	26.5	G = 6.6	23 0

$$B^2 G = 6.7$$

22

600	16.5	3.56	12.9
+25	16.0	3.6	12.4
+50	16.5		12.9
+75	16.5		12.9
7	17.0		13.4
+25	17.0	3.6	13.4
+50	17.0	3.7	13.3
+75	17.0		13.3
8	17.0		13.3
+25	17.0		13.3
+50	17.0		13.3
+75	17.5		13.8
9	18.0	3.7	14.3
+25	18.0		14.3
+50	18.0		15.3
+75	19.5		15.8
10	20.0		16.3
+25	21.0	3.7	17.3
+50	22.5	3.8	18.7
+75	23.0		19.2
11	23.5		19.7
+25	24.5		20.7
+50	25.5		21.7
+75	26.5	G = 6.9	22.7

$C^2 G = 7.0$ 

6+40 <sup>2</sup>	17.0	3.86	13 1
+50	17.5	3.9	13 6
+70	18.0		14 1
7	17.5		13 6
+20	17.0		13 6
+50	17.5		13 6
+70	17.5		13 6
8	17.5		13 6
+20	17.5		13 6
+50	18.0	3.9	14 1
+70	18.0	4.0	14 0
9	18.5		14 5
+20	19.0		15 0
+50	20.0		16 0
+70	21.0		17 0
10	22.0		18 0
+20	24.5		20 5
+50	24.0		20 0
+70	25.0		21 0
11	25.5		21 5
11+10	26.0	$G=7.1$ 3.96	22 0

 $D^2 G = 7.2$ 

3

6+81 <sup>2</sup>	19.5	4.06	15 4
7	18.0	4.1	13 9
+20	18.0		13 9
+50	18.0		13 9
+70	18.0		13 9
8	18.0		13 9
+20	18.0		13 9
+50	18.5		14 4
+70	19.0		14 9
9	19.5		15 4
+20	20.0		15 9
+50	21.0		16 9
+70	22.0		17 9
10	23.0		18 9
+20	24.5	4.1	20 4
+50	25.0	$G=7.2$ 4.06	20 9

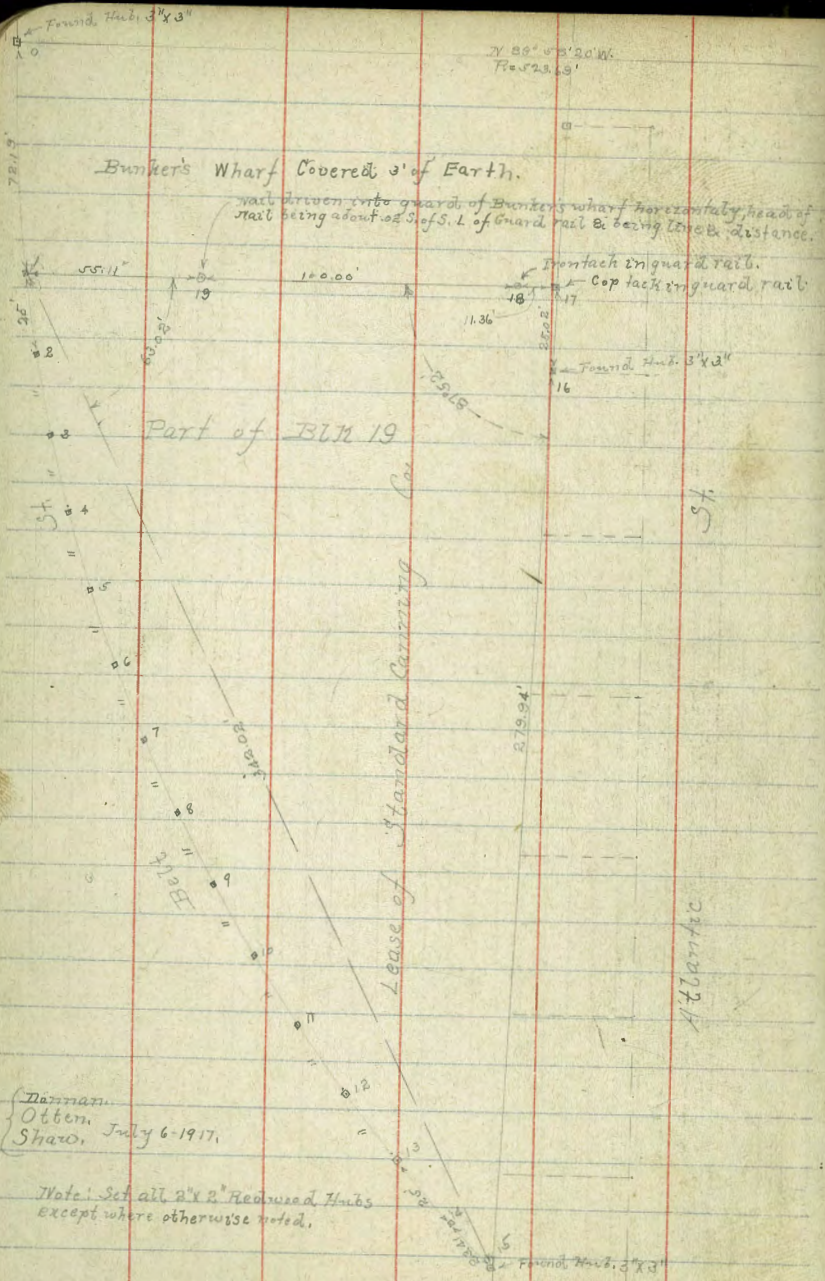
$E^2 G = 7.2$ 

7+22 <sup>5</sup>	19.0	4.06	14.9
+50	19.0		14.9
+75	18.5		14.4
8	18.5		14.4
+25	19.0		14.9
+50	19.5	4.1	15.4
+75	20.5	4.0	16.5
9	21.0		17.0
+25	21.5		17.5
+50	22.5		18.5
+75	24.0		20.0
10	25.0	G 7.1 3.96	21.0

 $F^2 G = 6.8$ 

4

8+20 <sup>5</sup>	21.0	3.66	17.8
+25	22.0		18.3
+50	23.0		18.3
+75	24.5		17.8
9	25.0		19.3
+25	24.0		20.3
9+39 <sup>2</sup>	25.0	G=6.9 3.66	21.3



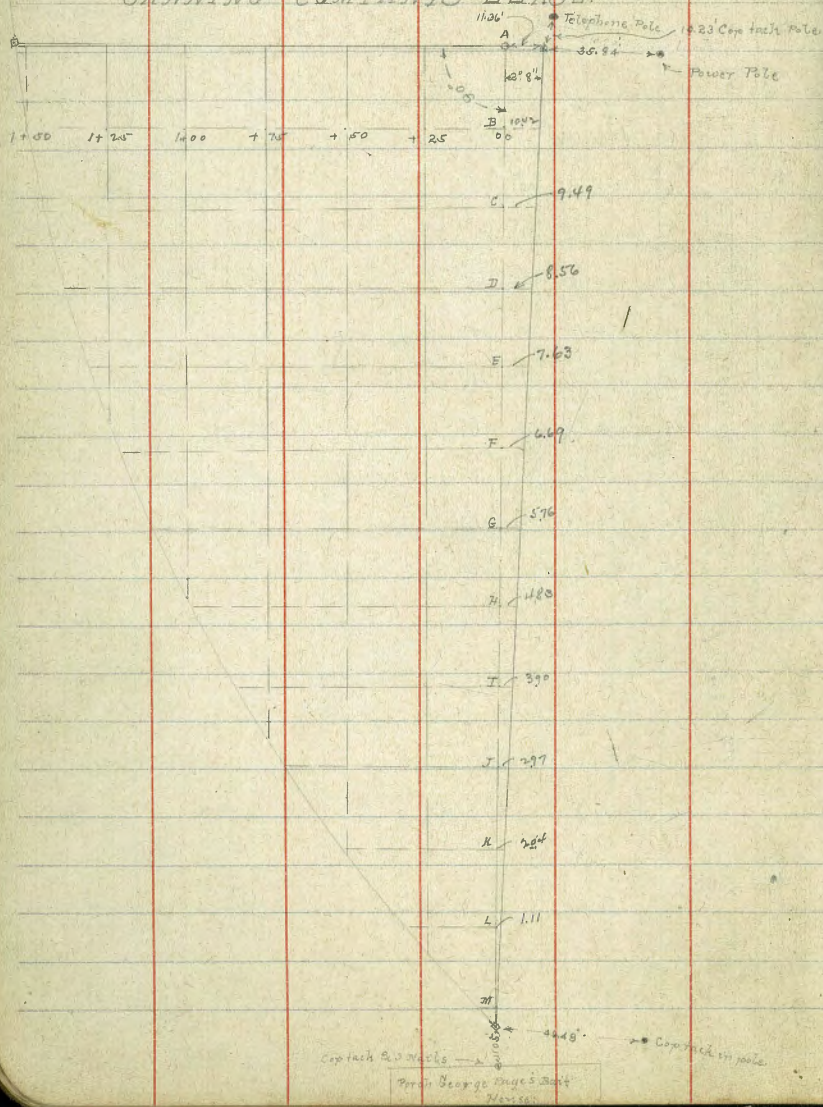
Sta 0	0° 0' 0"
" 1	3° 57' 8"
" 2	5° 19' 12"
" 3	6° 41' 16"
" 4	8° 03' 20"
" 5	9° 25' 24"
" 6	10° 47' 28"
" 7	12° 09' 32"
" 8	13° 31' 36"
" 9	14° 53' 40"
" 10	16° 15' 44"
" 11	17° 37' 48"
" 12	18° 59' 52"
" 13	20° 21' 56"
" 14	21° 44' 00"
" 15	23° 06' 04"

0	for 72.19 = 3° 57' 8"
"	25.00 = 1° 27' 4"
"	23.41 = 1° 16' 50"

Market St.

Dunnan,  
O'Brien, July 1917,  
Shaw.

PLAT SHOWING XSECTIONS OF STANDARD  
CANNING COMPANY'S LEASE.



Xsection of Standard Canning Co's Lease. See Plat.

66

Sta	+	75	-	Elev
370				Brass Plug S.E. Cor Market & Atlantic 3.20
		2.17	15.27	3.20
Sec A:				
ET <sub>0</sub>			1.8	0.6
0.0			4.7	0.7
+ 2.5			4.8	0.6
+ 5.0			4.6	0.8
+ 7.5			4.7	0.7
1+00			4.9	0.5
+ 1.5			4.7	0.7
+ 4.0			4.4	1.0
1+55 <sup>11</sup> WALL			4.4	1.0
Sec B:				
1+51 <sup>11</sup> WALL			4.3	1.1
+ 1.25			4.3	1.1
1+00			4.2	0.8
+ 7.5			4.7	0.7
+ 5.0			4.9	0.5
+ 1.5			4.9	0.5
0.0			5.0	0.4
E 2.1			5.0	0.4
Sec C:				
E 1.1			5.2	0.2
0.0			5.3	0.1
+ 2.5			5.1	0.3
+ 5.0			5.0	0.4
+ 7.5			4.8	0.6
1+00			4.5	0.9

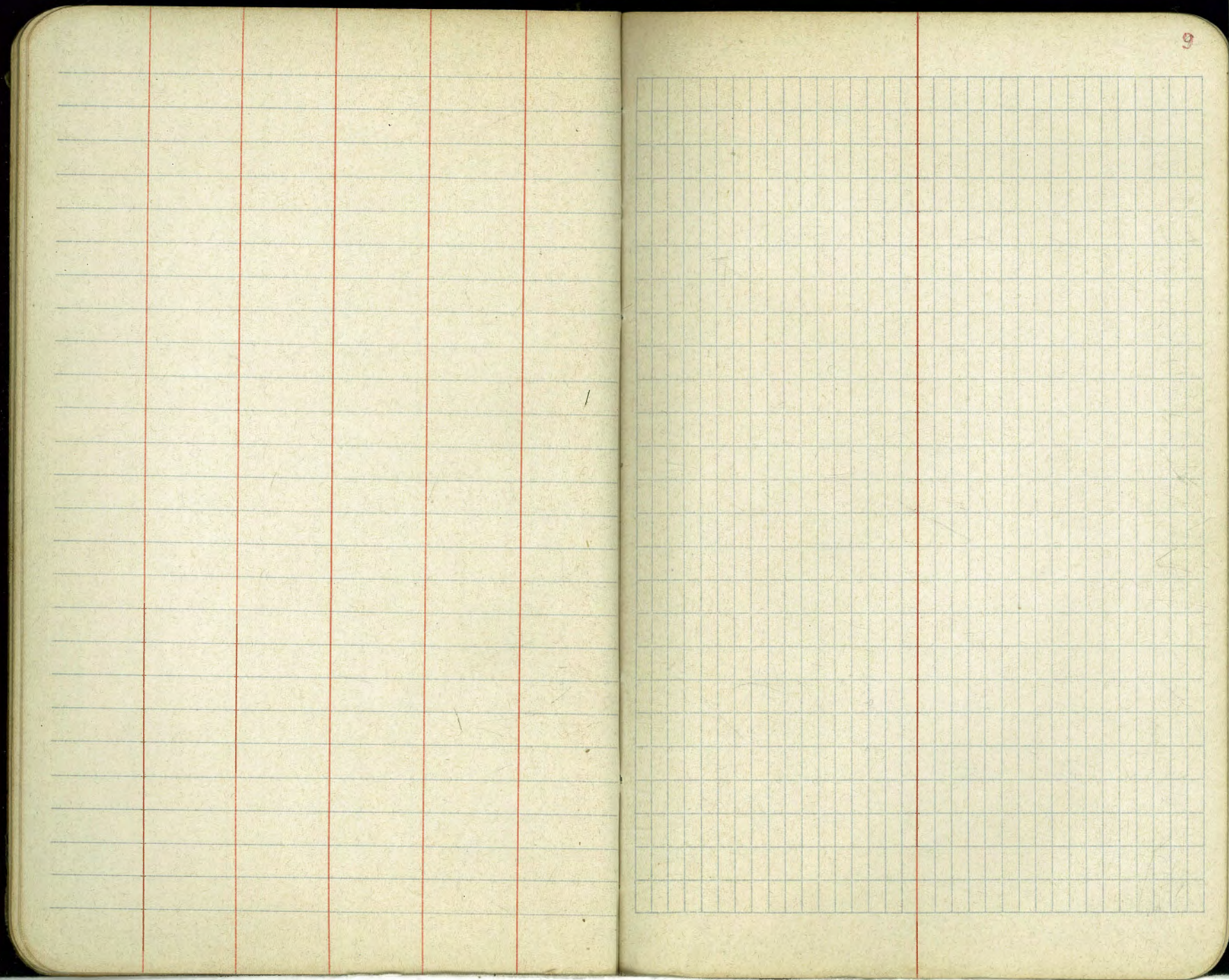


	H.I. 5.07	-	
Sec C			
1+25		4.2	1.2
1+45 Appx W.L.		4.2	1.2
Sec D			
1+39 Appx W.L.		4.4	1.0
1+25		4.5	0.9
1+00		4.6	0.8
+75		4.8	0.6
+50		5.1	0.3
+25		5.1	0.3
00		5.3	0.1
E.L.		5.7	-0.3
Sec E			
E.L.		6.0	-0.6
00		5.7	-0.3
+25		5.6	0.0
+50		5.4	0.0
+75		5.2	0.2
1+00		4.6	0.8
1+25		4.6	0.8
1+31 Appx W.L.		4.5	0.9
Sec F			
1+22 Appx W.L.		4.6	0.8
1+00		5.0	0.4
+75		5.2	0.2
+50		5.6	-0.2
+25		5.8	-0.4
00		6.0	-0.6
E.L.		6.2	-0.8
Sec G			
E.L.		6.2	-0.8

Sta.	H.I. 5.37	-	Elev.
00		6.5	-1.1
+25		5.8	-0.4
+50		5.7	-0.3
+75		5.5	-0.1
1+00		5.2	0.2
1+10 Appx W.L.		5.0	0.4
Sec H			
+39 Appx W.L.		5.2	0.2
+75		5.7	-0.3
+50		6.1	-0.7
+25		6.2	-0.8
00		5.8	-0.4
E.L.		5.7	-0.3
Sec I			
E.L.		5.5	-0.1
00		5.4	0.0
+25		6.3	-0.9
+50		6.5	-1.1
+75		6.0	-0.6
+34 Appx W.L.		5.9	-0.5
Sec J			
+62 Appx W.L.		6.3	-0.9
+50		6.6	-1.2
+25		6.6	-1.2
00		6.0	-0.6
E.L.		6.1	-0.7
Sec K			
E.L.		6.9	-1.5
00		7.0	-1.6

Sec No.	HT		
+25	5.97	7.0	-1.6
+50 = Appex W.L.		7.0	-1.6
Sec L		6.9	-1.5
+29 = Appex W.L.		6.9	-1.5
+15		6.6	-1.2
00		6.6	-1.2
E.L.		6.4	-1.0
Corner N. 15		2.17	3.20 vertical B.M.
H			

To bring to Street grade elev. (4.0') it  
 takes 4658.5 cu. yds fill  
 7/10 17



7/23/17 Gregory  
 11/20/12  
 Miller

Survey of Extension of  
 Lookout Drive B<sup>n</sup> Line  
 to  
 Sutter St.

24+79.34

21+68.53 O.P.O.T.

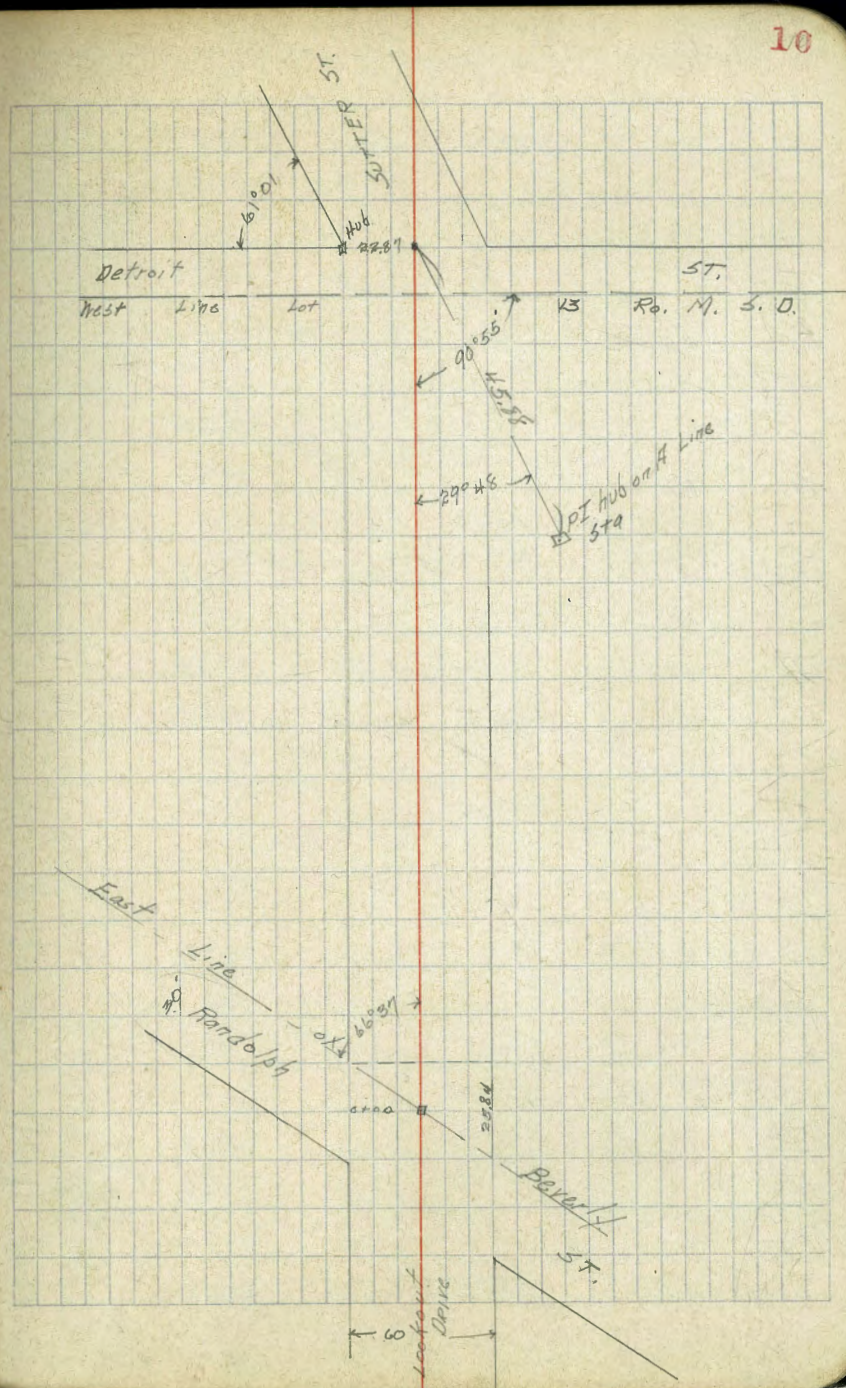
9+58.16 E.C.

9+17.35 Δ 23°44' R.

8+76.32 P.C.

R = 200.  
 ST = 48.03  
 CL = 82.54

0+00 = E.L. Beverly Tract



7/23/17 <sup>Gregory</sup> <sup>Miller</sup> Levels on B Line 60' wide  
 Extension of Lookout to Sutter see preced 149 p. 96

B.M.	12.87	271.64	258.77	Hub SW. Pardoloff's Lookout
		0+00 = E.L. Beverly Tract.		
N		9.3	262.3	
C		10.1	261.5	
S		9.9	261.7	
		0+12.97 (Measurements are all given as stations on center line)		
S		8.9	262.7	
C		9.5	262.1	
N		9.3	262.3	
		0+20		
C		8.8	262.8	1
		0+45		
N		7.8	263.8	
C		6.0	265.6	
S		7.5	264.1	
		0+60		
C		6.6	265.0	
		1+00		
S		4.4	267.2	
C		4.9	266.7	
N		4.7	266.9	
		1+50		
N		3.3	268.3	
C		2.7	268.9	
S		2.0	269.6	
T.P.	12.87	283.87	064	271.00

Lookout "B" Line

17

	2+00		
S		12.4	271.5
C		13.1	270.8
N		13.2	270.7
		2+30	
C		11.9	272.0
		2+50	
N		11.2	272.5
C		9.7	274.2
S		10.6	273.3
		2+75	
C		10.0	273.9
		3+00	
S		8.7	275.2
C		7.0	276.9
N		9.2	274.5
		3+10	
C		8.1	275.8
		3+30	
C		7.9	276.0
		3+50	
N		7.2	276.5
C		5.2	278.5
S		7.2	276.7
		3+75	
C		6.4	277.5

28387

		4+00	
S		5.9	278.0
C		5.9	278.0
N		5.7	278.2
		4+15	
S		4.4	279.4
		4+30	
S		5.2	278.7
		4+35	
C		4.5	279.4
		4+50	
N		3.8	280.1
C		2.6	281.3
S		4.5	279.4
		4+75	
C		2.9	281.0
N		1.8	282.1
		5+00	
S		2.7	281.2
C		2.4	281.5
N		2.4	281.5
TP.	12.97	296.53	0.31
		5+50	
N		12.9	283.6
C		13.2	283.3
S		14.0	282.5

Lookout B" Line

12

		5+65	
C		11.9	284.6
		5+80	
C		12.4	284.1
		6+00	
S		12.4	284.1
C		11.8	284.7
N		12.1	284.4
		6+50	
N		10.3	286.2
C		10.8	285.7
S		10.8	285.7
		6+60	
S		9.6	286.9
		6+75	
S		10.1	286.4
		7+00	
S		9.8	286.7
C		9.6	286.9
N		8.8	287.7
		7+50	
N		7.4	289.1
C		7.8	288.7
S		8.2	288.3

296.53

8+00

S		6.1	290.4
C		5.5	291.0
N		5.2	291.3

8+50

N		1.6	294.9
C		2.4	294.1
S		3.0	293.5

8+75.3R = P.C

S		1.9	294.6	
T.P.	4.71	300.64	0.60	295.93
C		4.5	296.1	
N		4.2	296.4	

9+16.74 = CC

N		2.7	297.9
C		4.4	296.2
S		5.9	294.7

9+58.16 = EC

S		7.4	293.2
C		4.9	295.7
N		4.2	296.4

10+00

N		6.4	294.2
C		8.2	292.4
S		9.8	290.8

Lookout B Line

13

11+00

S		13.2	287.4	
C		11.8	288.8	
N		10.9	289.7	
T.P.	0.84	288.70	12.78	287.86

12+00

N		1.7	287.0
C		3.4	285.3
S		5.7	283.0

13+00

S		7.0	281.7
C		4.0	284.7
N		1.3	287.4

13+50

N		1.5	287.2
C		4.7	284.0
S		7.3	281.4

14+00

S		7.2	281.5
C		4.9	283.8
N		2.8	285.9

15+00

N		6.8	281.9
C		8.1	280.6
S		9.0	279.7

		288.70		
		15+50		
S			10.1	278.6
C			9.8	278.9
N			9.3	279.4
		15+70		
N			10.3	278.4
C			10.5	278.2
S			10.6	278.1
		16+00		
S			11.5	277.2
C			12.1	276.3
T.P.	0.46	277.42	11.74	276.96
N			3.2	274.2
		16+35		
N			8.9	268.5
C			6.7	270.7
S			4.6	272.8
T.P.	0.89	265.41	12.90	264.52
		17+00		
S			3.6	261.8
C			7.4	258.0
N			10.1	255.3
		17+35		
N			15.1	250.0
C			13.3	252.1
S			9.1	256.3

				LOOKOUT "B" 104	
TP	0.59	253.49		12.51	252.90
				17+70	
S				3.6	249.9
C				7.1	246.4
N				7.2	246.3
				18+20	
N				13.2	240.3
TP	0.48	240.84		13.10	240.39
C				4.8	236.1
S				2.6	238.3
				18+60	
S				8.7	232.2
C				10.1	230.5
N				8.7	232.2
				18+70	
N				11.4	229.5
				18+75	
C				16.0	224.9
S				12.1	228.8
				18+85	
S				14.4	226.5
C				20.9	220.0
N				23.5	217.4



		240.87		
		18+98		
N			17.4	223.5
C			24.5	216.4
		19+15		
S			25.2	215.7
		19+25		
C			14.0	226.9
		19+50		
S			9.7	231.2
C			2.0	233.9
N			4.6	236.3
T.P.	12.74	253.24	0.37	240.50
		20+00		
N			7.8	245.4
C			10.0	243.2
S			12.2	241.0
T.P.	12.67	265.04	0.87	252.37
		20+50		
S			13.0	252.0
C			9.2	255.8
N			6.5	258.5
T.P.	12.73	277.05	0.72	264.32
		20+80		
C			13.0	264.1

				LOOKOUT B' Line	
				15	
				21+00	
N				7.7	269.4
C				10.2	266.9
S				13.1	264.0
				21+30	
S				8.5	268.6
C				4.3	272.8
N				0.0	277.1
T.P.	8.49	281.90		36.4	273.41
				21+55	
N				2.5	279.4
C				4.4	277.5
S				11.4	270.5
				21+85	
C				3.7	278.2
				22+00	
S				13.0	268.9
C				5.2	276.7
N				2.2	279.7
				22+15	
N				3.3	278.6
				22+50	
N				9.0	272.9
T.P.	0.10	269.15		12.85	269.05
C				3.0	266.2
S				10.3	258.9

269.15

23100

S			18.0	251.2
C			11.1	258.1
N			2.6	266.6

23125

C			14.8	254.3
---	--	--	------	-------

23150

N			8.2	261.0
T.P.	0.35	256.65	1285	256.30
C			4.1	252.6
S			10.8	245.9

24100

S			15.6	241.1
C			8.7	248.0
N			2.4	254.3

24439.34 = WL Detroit.

N			6.7	250.0
C			12.6	244.1
T.P.	2.39	246.01	1303	243.62
S			8.3	237.7

For E.L. Detroit see Sutter St Levels

on B.M.

7.60	238.41	P.I. hub
	= 233.40	WL Detroit

LOOKOUT B" Lide 16

9/7/7

Auxiliary Reservoir Survey  
and Cross Section

117

4+1530 EC.

10+39.17  $\Delta$  64°00' R

9+39.89 PC

R = 150  
ST = 99.28  
LC = 115.41

5+49.20 EC

4+22.55  $\Delta$  55°47 1/2' R

4+03.14 PC

R = 150  
ST = 79.41  
E = 19.72  
LC = 146.06

2+40.36 EC.

2+40  $\Delta$  29°30' 1/2' R

1+27.93 PC.

R = 200  
ST = 52.67  
E = 6.22  
LC = 103.03

0+76.52 EC.

90°00'  $\rightarrow$   
 $\square$  60'  $\Delta$  40' $\square$  60'  $\square$  40'  $\Delta$ 90°00'  $\rightarrow$ Tie  $\square$  60' Tie  $\square$  40'  $\Delta$   
117°33'45"  $\rightarrow$ Tie  $\square$  60' Tie  $\square$  40'  $\Delta$   
104°25' 1/4"  $\rightarrow$

25+51.0 E = 0+76.52

25+14.95 Δ 117°39' R

R = 90.00  
ST = 148.75  
LC = 184.80

23+66.20 PC

22+24.04

21+82.50 EC

21+26.59 Δ 32°58' L

R = 200  
ST = 59.19  
E = 8.58  
LC = 115.10

20+67.40 PC

19+82.10 EC

19+47.53 Δ 20°01' L

R = 200  
ST = 35.30  
E = 3.09  
LC = 69.87

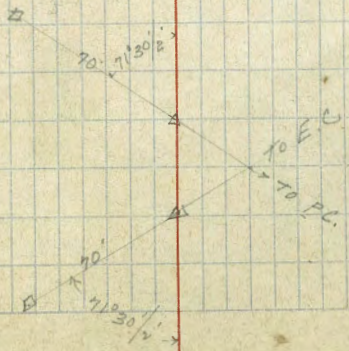
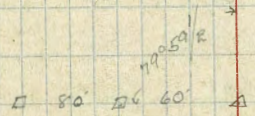
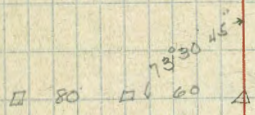
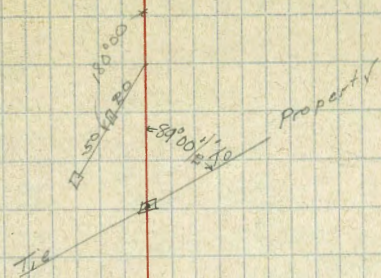
18+12.23 PC

16+93.57 EC

17+42.97 Δ 143°01' R

R = 100  
ST = 299.01  
LC = 349.61

14+43.96 PC



8/8/17 Gregory  
Mason  
Miller

CROSS SECTIONS OF RESERVOIR  
TOP 8' wide 1 to 1 1/2 slopes  
Elev. 422.4

BM	6.13	420.11	413.98	Elev. pump house floor
T.P.	6.47	420.1	4.57	41.554
	-6.1		-6.9	
0+76.52	13.2	-5.9	14.1	
1+00	-6.8	-6.9	-7.0	
	14.2		14.5	
1+25	-6.6	-6.9	-6.6	
	13.9		13.8	
1+50	-6.6	-6.7	-6.8	
	13.9		14.2	
1+87.33 PC	-5.9	-6.2	-6.5	
	12.9		13.8	
2+13.08	-5.8	-6.3	-6.3	
	12.7		13.5	
2+38.85	-5.7	-6.3	-6.2	
	12.6		13.2	
2+64.56	-6.1	-6.3	-6.6	
	13.2		13.9	
2+90.36 EC	-6.1	-5.9	-5.4	
	13.2		12.7	
3+25	-5.2	-5.9	-6.1	
	11.8		13.2	
3+50	-5.7	-5.9	-5.9	
	12.6		12.9	
3+75	-5.5	-5.3	-5.3	
	12.3		12.0	
4+03.14 PC	-5.1	-5.4	-4.9	
	11.7		11.4	
4+27.48	-5.3	-5.3	-5.1	
	12.0		11.7	
4+51.82	-4.0	-4.4	-5.4	
	10.9		12.7	
4+76.17	-4.8	-5.2	-5.3	
	11.2		12.0	
5+00.51	-4.8	-5.1	-5.2	
	11.2		11.8	
5+24.85	-4.9	-4.9	-4.6	
	11.4		10.9	
5+49.20 EC	-4.7	-5.0	-4.7	
	11.1		11.7	
5+75	-5.1	-5.3	-5.4	
	11.7		12.1	
6+00	-5.1	-4.9	-4.8	
	11.7		11.2	
6+25	-4.3	-4.1	-4.6	
	10.5		10.9	

Pipe Line Datum 0 = -8.46 City Datum 1.9  
= -2.34 U.S.G.S.

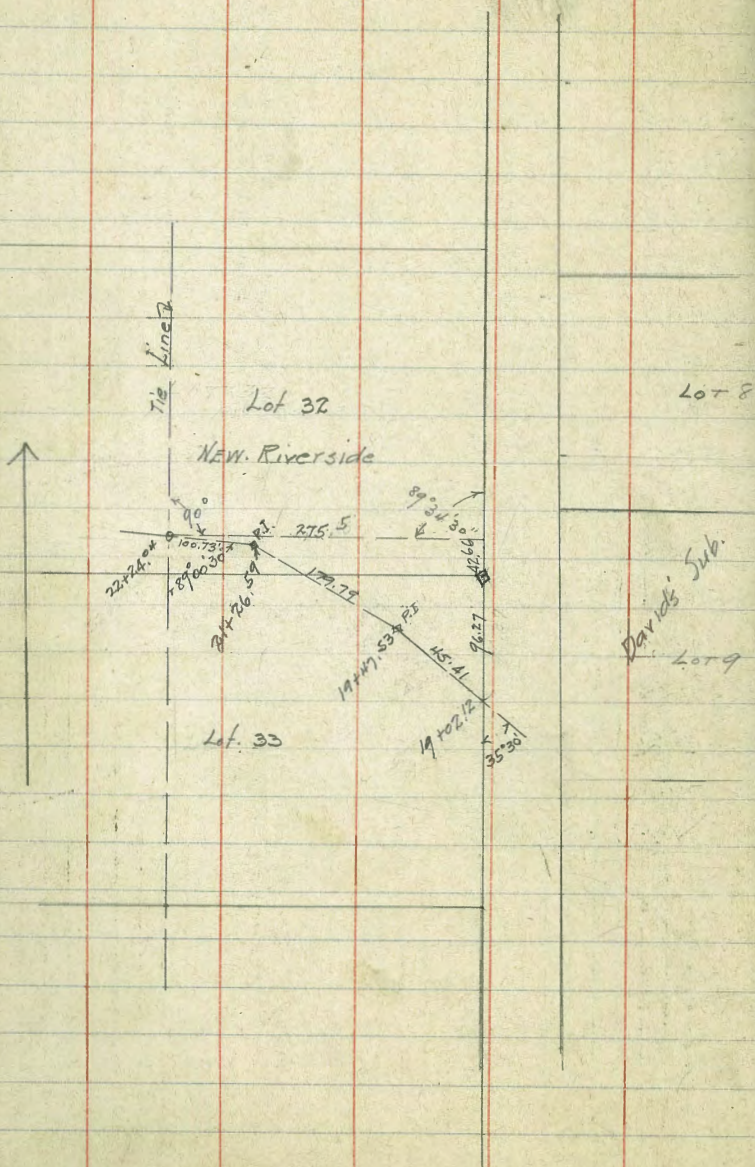
6+50	-5.2	-5.5	-5.8
	11.8		12.7
6+75	-4.9	-5.3	-5.7
	11.4		12.6
7+00	-5.5	-5.4	-5.3
	12.3		12.0
7+25	-5.6	-5.1	-4.8
	12.0		11.2
7+50	-5.4	-5.2	-5.2
	12.1		11.8
7+75	-5.9	-5.4	-5.3
	12.0		12.0
8+00	-5.4	-5.4	-5.4
	12.1		12.1
8+25	-6.2	-5.9	-5.6
	12.3		12.4
8+50	-5.8	-5.7	-5.4
	12.7		12.1
8+75	-5.6	-5.5	-5.3
	12.4		12.0
9+00	-5.6	-5.2	-4.9
	12.4		11.4
9+39.89 PC	-5.4	-5.1	-4.9
	12.1		11.4
9+64.95	-5.2	-5.2	-5.6
	11.8		12.3
9+90.01	-5.9	-4.0	-6.0
	12.9		13.0
10+15.07	-6.0	-5.7	-5.2
	13.0		11.8
10+40.12	-5.8	-5.8	-6.2
	12.4		13.3
10+65.19	-5.7	-5.0	-5.4
	12.6		12.1
10+90.25	-6.3	-5.5	-6.2
	12.5		13.3
11+15.30 EC	-5.7	-5.7	-5.6
	12.6		12.3
11+50	-3.9	-3.8	-5.4
	9.9		12.1
11+75	-4.4	-4.9	-5.7
	10.6		12.6
12+00	-5.4	-5.1	-5.2
	12.1		11.8
12+25	-4.8	-4.3	-4.4
	11.2		10.6
12+50	-5.1	-5.2	-5.2
	11.7		11.8
12+75	-4.8	-5.2	-5.5
	11.2		12.3

13+00	$\frac{-5.2}{11.8}$	-5.7	$\frac{-5.2}{12.6}$
13+25	$\frac{-5.1}{11.7}$	-5.3	$\frac{-5.5}{12.3}$
13+50	$\frac{-5.4}{12.3}$	-5.3	$\frac{-5.3}{12.0}$
13+75	$\frac{-5.6}{12.4}$	-6.0	$\frac{-6.2}{13.3}$
14+00	$\frac{-5.2}{11.8}$	-5.1	$\frac{-5.9}{12.9}$
14+43.96 PC	$\frac{-5.5}{12.3}$	-5.8	$\frac{-6.0}{13.0}$
14+68.92	$\frac{-5.0}{11.8}$	-4.9	$\frac{-5.3}{12.0}$
14+93.88	$\frac{-6.1}{13.2}$	-6.2	$\frac{-6.5}{13.5}$
15+18.84	$\frac{-6.5}{13.8}$	-5.1	$\frac{-4.7}{11.7}$
15+43.80	$\frac{-6.2}{13.3}$	-6.5	$\frac{-5.8}{12.7}$
15+68.76	$\frac{-6.7}{14.1}$	-6.7	$\frac{-6.4}{13.6}$
15+93.72	$\frac{-6.6}{13.9}$	-6.7	$\frac{-6.7}{14.1}$
16+18.68	$\frac{-6.6}{13.9}$	-6.3	$\frac{-5.7}{12.6}$
16+43.64	$\frac{-6.6}{13.9}$	-6.6	$\frac{-6.5}{13.5}$
16+68.60	$\frac{-6.6}{13.9}$	-6.3	$\frac{-5.7}{12.6}$
16+93.57 EC	$\frac{-7.0}{14.5}$	-6.9	$\frac{-6.9}{14.4}$
17+25	$\frac{-5.7}{12.6}$	-5.4	$\frac{-5.2}{12.1}$
17+50	$\frac{-5.8}{12.7}$	-6.1	$\frac{-6.5}{13.5}$
17+75	$\frac{-5.3}{12.0}$	-6.4	$\frac{-6.4}{13.6}$
18+00	$\frac{-5.6}{12.2}$	-6.4	$\frac{-6.4}{13.6}$
18+25	$\frac{-5.6}{12.2}$	-6.0	$\frac{-6.0}{13.0}$
18+50	$\frac{-5.8}{12.7}$	-5.6	$\frac{-5.7}{12.6}$
18+75	$\frac{-4.3}{10.5}$	-5.0	$\frac{-5.5}{12.3}$
19+12.23 PC	$\frac{-4.9}{11.4}$	-5.3	$\frac{-5.5}{12.3}$
19+47.17	$\frac{-4.3}{11.4}$	-4.6	$\frac{-4.2}{10.9}$
19+82.10 EC	$\frac{-5.4}{12.1}$	-5.4	$\frac{-5.3}{12.9}$

20+25	$\frac{-5.0}{11.5}$	-5.5	$\frac{-6.3}{13.5}$
20+67.40 PC	$\frac{-4.1}{10.2}$	-4.3	$\frac{-5.2}{11.5}$
20+96.17	$\frac{-3.8}{9.7}$	-5.8	$\frac{-4.3}{10.5}$
21+24.95	$\frac{-3.8}{9.0}$	-3.7	$\frac{-4.1}{10.2}$
21+53.72	$\frac{-2.7}{8.1}$	-3.0	$\frac{-3.5}{9.3}$
21+82.50 EC	$\frac{-3.6}{9.4}$	-3.6	$\frac{-3.7}{9.6}$
22+25	$\frac{-3.5}{9.7}$	-4.2	$\frac{-4.6}{10.9}$
22+50	$\frac{-4.4}{10.6}$	-4.8	$\frac{-5.3}{12.0}$
22+75	$\frac{-5.0}{11.5}$	-5.2	$\frac{-6.0}{13.0}$
23+00	$\frac{-4.7}{11.7}$	-5.6	$\frac{-6.1}{13.2}$
23+25	$\frac{-5.1}{11.7}$	-4.8	$\frac{-5.0}{11.5}$
23+66.20 PC	$\frac{-5.9}{12.9}$	-6.4	$\frac{-6.9}{14.4}$
23+92.6	$\frac{-6.5}{13.3}$	-6.7	$\frac{-6.9}{14.4}$
24+19.0	$\frac{-5.4}{12.1}$	-4.9	$\frac{-5.5}{12.3}$
24+45.4	$\frac{-7.0}{14.5}$	-6.7	$\frac{-7.0}{14.5}$
24+71.8	$\frac{-6.8}{14.2}$	-6.7	$\frac{-7.0}{14.5}$
24+98.2	$\frac{-6.9}{14.4}$	-6.8	$\frac{-7.0}{14.5}$
25+24.6	$\frac{-6.9}{14.4}$	-6.8	$\frac{-6.9}{14.4}$
25+51 EC = 0+76.52			

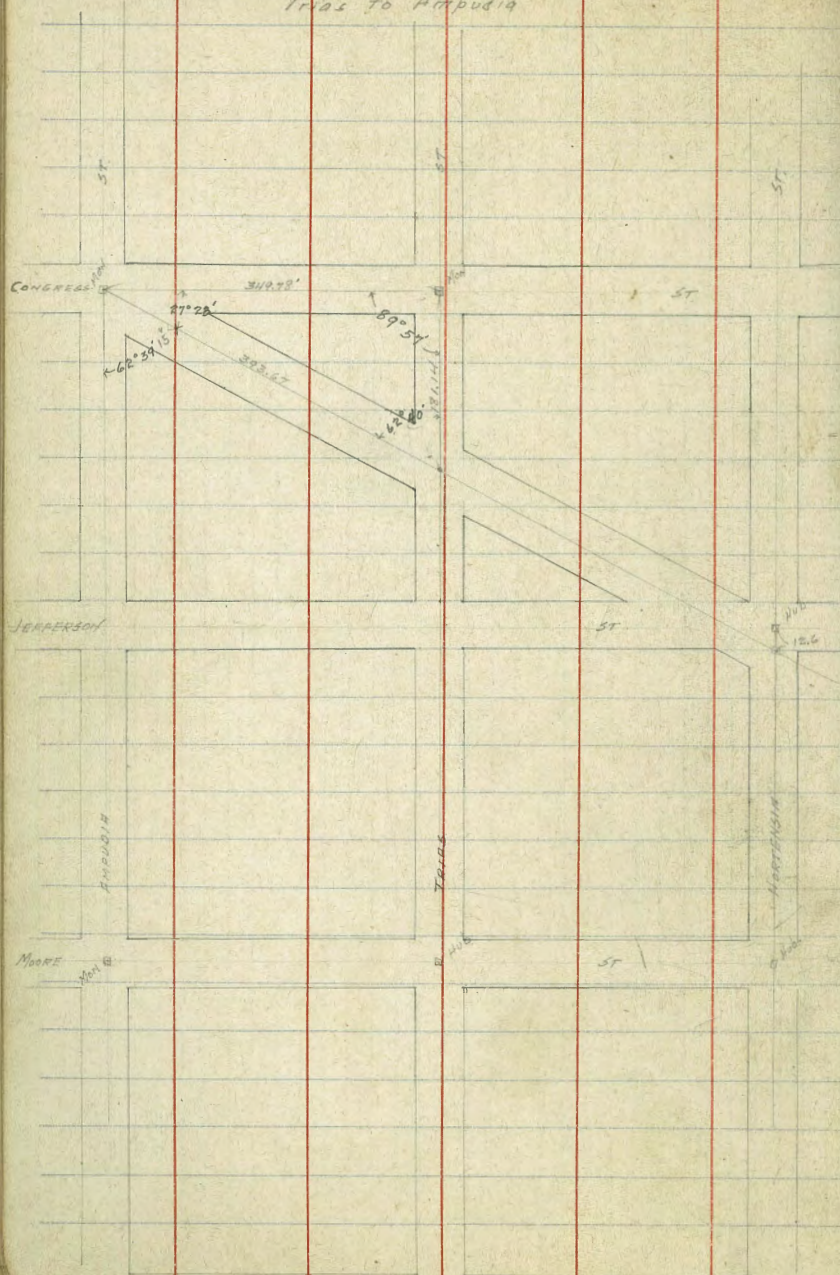
8/10/17  
Gregory  
Moore  
Miller

Survey of Tie to Property  
on Reservoir



9/4/17  
Gregory  
Maack  
Miller

SURVEY OF LA JOLLA  
BLVD from  
Trias to Ampudia





X sect. Cedar. west line 7<sup>th</sup> to  
 E line 6<sup>th</sup> 14' walks 13' quarters

J.P.	0.03	161.90	161.975
West line 7 <sup>th</sup>			
No. line		3.0	158.9
		2.9	159.0
Gutter		3.8	158.1
		4.0	157.9
C		4.0	157.9
		4.4	157.5
Gutter		4.6	157.3
		4.05	157.8
No. line		3.9	158.0
50' west			
No. line		10.9	151.0
		11.25	150.6
Gutter		11.4	150.5
		11.7	150.2
C		11.4	150.5
		11.5	150.4
Gutter		12.0	149.9
		11.2	150.7
No. line		10.9	151.0
J.P.	0.46	149.60	149.14

149.60 est 10/17  
 all curb readings are on top  
 cement

lehigh  
 Evan 123  
 more

100' west			
No. line		6.9	142.7
		6.74	142.9
Gutter		7.3	142.6
		7.1	142.5
C		7.0	142.6
		7.4	142.2
Gutter		6.9	142.7
		6.2	143.4
No. line		6.1	143.5
J.P.	0.72	137.75	137.03
150' west			
No. line		1.4	136.4
		1.56	136.2
Gutter		2.8	135.0
		3.8	134.0
C		3.9	133.9
		3.7	134.1
Gutter		3.2	134.6
		2.73	135.1
+10 edge cement walk		2.5	135.3
No. line		3.8	134.0

137.75

190' west

soil line		9.0	129.8
		9.13	128.7
grit line		10.0	127.8
		10.4	127.4
C		9.9	127.9
		9.2	128.6
grit line		8.3	129.5
		7.37	130.4
no. line		6.8	131.0
	200' west		
no. line		8.5	129.3
		8.84	129.0
grit line		11.4	126.4
		11.1	126.7
C		11.3	126.5
		12.0	125.8
grit line	pavement	13.15	124.6
		10.78	127.0
soil line		10.6	127.2

24

200' west (East line 6<sup>th</sup>)

soil line		12.4	125.4	
		12.72	125.1	
grit line	pavement	13.15	124.6	
		12.0	125.8	
C		11.3	126.5	
		11.1	126.7	
grit line		11.4	126.4	
		10.7	127.1	
no. line		10.2	127.6	
J.P.	0.44	125.48	12.71	125.04
J.P.	1.038	126.43	9.43	116.05

Xsect. Back from East line 6<sup>th</sup>  
100' East. 14' walks 13' quarter

126.43

East line 6<sup>th</sup>

no. line		10.16	116.2
		10.40	116.0
gutter		11.0	115.4
		10.6	115.8
C		10.8	115.6
		11.6	114.8
gutter		12.8	113.6
		12.40	114.0
no. line		12.15	114.2

25' East.

no. line		6.6	119.8
	200 cement curb	6.9	119.5
gutter		7.8	118.6
		7.1	119.3
C		6.3	120.1
		6.0	120.4
gutter		6.1	120.3
	no cement curb.	5.2	121.2
no. line		4.6	121.8

50' East

no. line		-0.2	126.6
		0.0	126.4
gutter		0.3	126.1
		1.0	125.4
C		1.3	125.1
		2.1	124.3
gutter		2.8	123.6
		1.9	124.5
no. line		1.9	124.5
J-P.	10.11	135.84	0.70

100' East

no. line		3.1	132.7
		3.2	132.6
gutter		4.0	131.8
		3.2	132.6
C		2.3	133.5
		2.0	133.8
gutter		2.0	133.8
		1.15	134.6
no. line		0.8	135.0

X sect. Ash street West line of  
7th to East line 6th (6th st. intersection)

J.P. <sup>H.F.</sup> 0.01 135.54 135.53

West line 7th

no. line 3.2 132.3

3.56 131.9

gutter 4.4 131.1

4.7 130.8

C 5.3 130.2

6.2 129.3

gutter 7.0 128.5

6.65 128.8

so. line 6.3 129.2

50' west

so. line 13.5 122.0

13.8 121.7

gutter 14.1 121.4

13.1 122.4

C 11.9 123.6

11.5 124.0

gutter 11.4 124.1

10.75 124.7

no. line 10.6 124.9

(repeated) 14' walks 13' quarters

J.P. <sup>H.F.</sup> 0.67 123.54 12.67 122.87

100' west

no. line <sup>+H</sup> 5.1 118.4

3.7 117.6

6.0 117.5

gutter 6.5 117.0

6.7 116.8

C 7.3 116.2

8.1 115.4

gutter 8.9 114.6

8.9 114.6

so. line 8.6 114.9

J.P. <sup>H.F.</sup> 0.13 110.74 12.93 110.61

150' west

so. line 3.2 107.5

3.40 107.3

gutter 3.9 106.8

2.9 107.8

C 2.0 108.7

1.5 109.2

gutter 1.1 109.6

0.38 110.3

0.25 110.4

<sup>+10</sup> no. line -0.5 111.2

110.74

175' west

no. line 74			5.5	105.2
	(no cement curb)		6.7	104.0
Gutter			6.9	103.8
			7.8	102.9
C			7.8	102.9
			8.1	102.6
			8.4	102.3
Gutter			9.6	101.1
	(no cement curb)		8.6	102.1
So. line			8.5	102.2
J.P.	2.34	H.I. 10 0.32	12.76	x97.98
	200 west (East line 6 <sup>th</sup> )			
So. line			3.0	97.3
			3.30	97.0
Gutter			3.8	96.5
			2.45	97.8
C			1.7	98.6
			1.65	98.6
Gutter			1.9	98.4
			1.32	99.0
no. line			1.1	99.2

27

West line 6<sup>th</sup> street

no. line		1.0	99.3
		1.30	99.0
Gutter		2.15	98.1
		2.35	97.9
C		2.7	97.6
		3.25	97.0
Gutter		3.9	96.4
		3.33	97.0
So. line		3.1	97.2
	5' west		
So. line		3.0	97.2
		3.40	96.9
Gutter		4.1	96.2
		3.6	96.7
C		3.0	97.3
		2.3	98.0
Gutter		2.1	98.2
		0.33	100.0
no. line		0.5	99.8

100,32

50' west

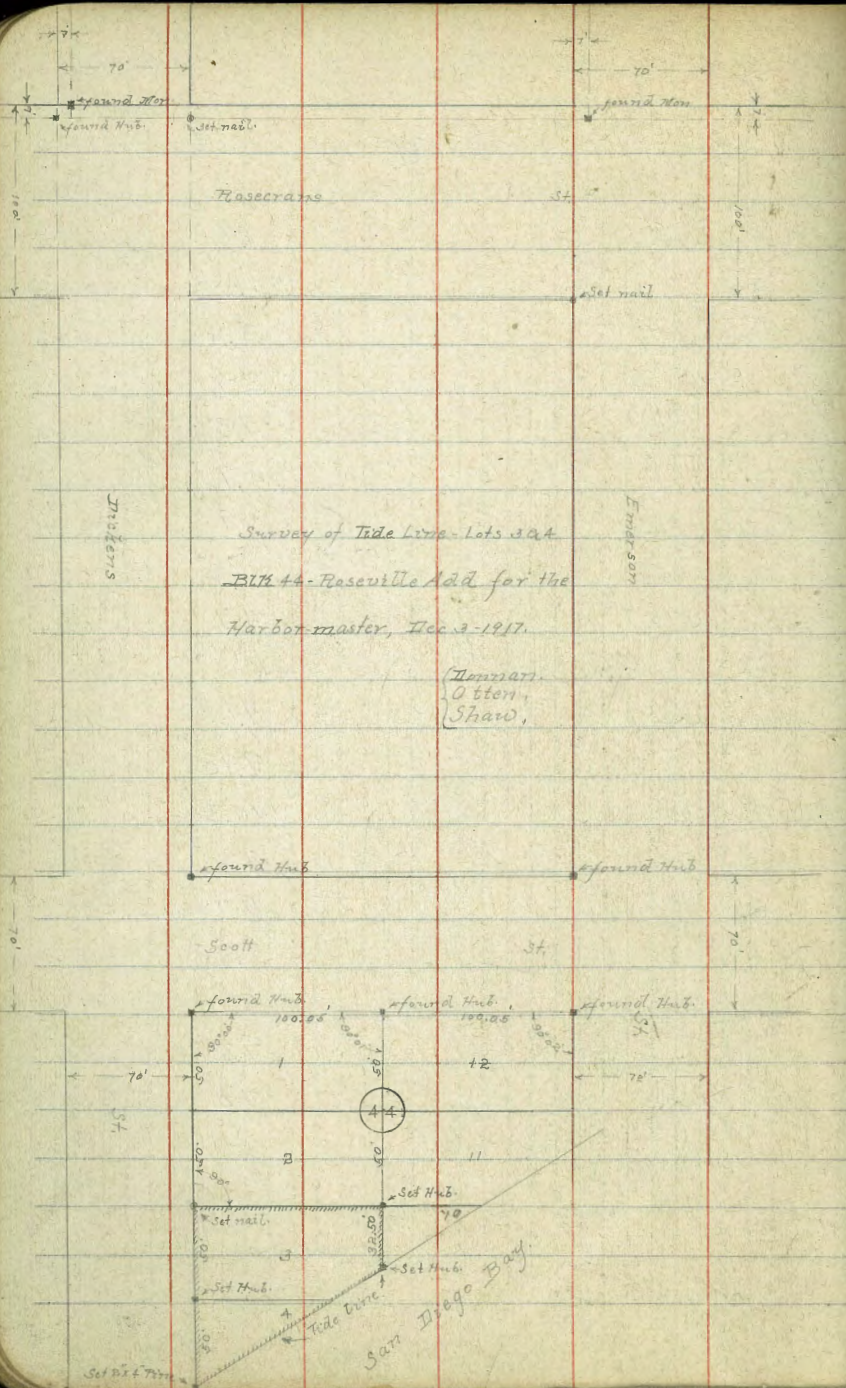
no. line	4.9	95.4
	4.95	95.3
gutter	6.0	94.3
	6.4	93.9
C	7.2	93.1
	7.9	92.4
gutter	8.4	91.9
	7.8	92.5
so. line	7.6	92.7

100' west

no. line	12.3	88.0
	12.6	87.7
gutter	13.6	86.7
	12.5	87.8
C	11.9	88.4
	11.3	89.0
gutter	11.0	89.3
	9.85	90.4
no. line	9.65	90.6

28

S.P.	0.49	H.I. 87.79	1302	87.30
		150' west		
no. line			1.94	85.9
			2.50	85.3
gutter			3.6	84.2
			3.8	84.0
C			4.3	83.5
			4.9	82.9
gutter			5.9	81.9
			6.05	82.7
so. line			4.7	83.1
		200' west (East line 5 <sup>th</sup> )		
so. line			9.6	78.2
			9.90	77.9
gutter			10.3	77.5
			9.35	78.4
C			8.7	79.1
			8.30	79.4
gutter			8.0	79.8
			7.35	80.4
no. line			7.0	80.8



Survey of Tide Line - Lots 3 & 4  
 Bldg 44 - Roseville Add for the  
 Harbor master, Dec 3 - 1917.

Thomson,  
 Otten,  
 Shaw.

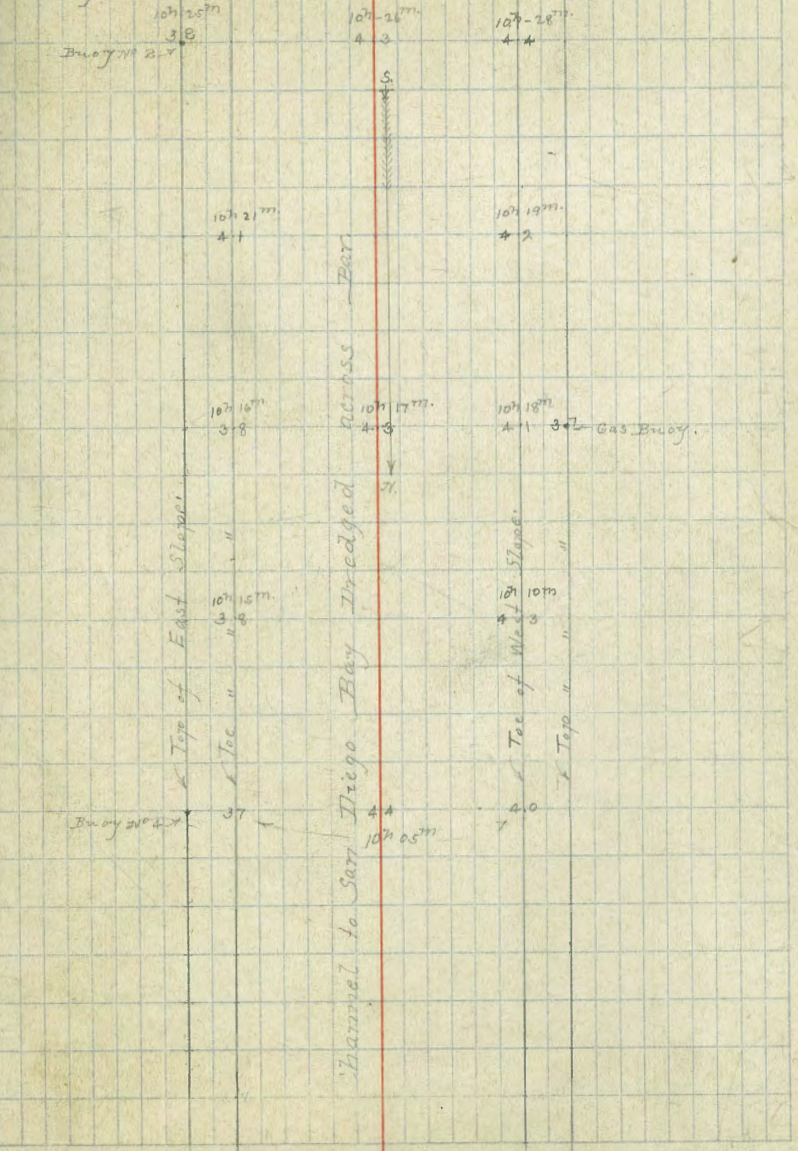
Levels for Tide Line Lots 3 & 4 Bldg 44, Roseville Add. Set plat. 29.  
 Plug #17 14.55 SW Cor Carleton & Rosecrans

1.94	15.37	14.55
0.87	3.93	12.35
Tide Line - City datum = 4.12		3.04 T.P.
6.65 read to set Hubs.		
1.26	4.10	3.04 T.P.
2.81	2.11	4.80
Tide Line - City datum = 4.12		- 0.70
6.23 read to set Hubs.		

Soundings on Bar for Harbor Master. Oct 28<sup>th</sup> 17

110mm.  
 0.75m  
 3.00  
 1.25m  
 Height.

Setting out Gauge at Buarentine Sta = 2.6. 9<sup>h</sup> 25<sup>m</sup> A.M.  
 The Gauge is set to Geodetic datum.  
 Corner for bar at 11.00m.





By Pilot Keith's rule divide time in which tide  
is running out or in, into 6 equal parts, also

rise or fall of tide into 16 equal parts  
then

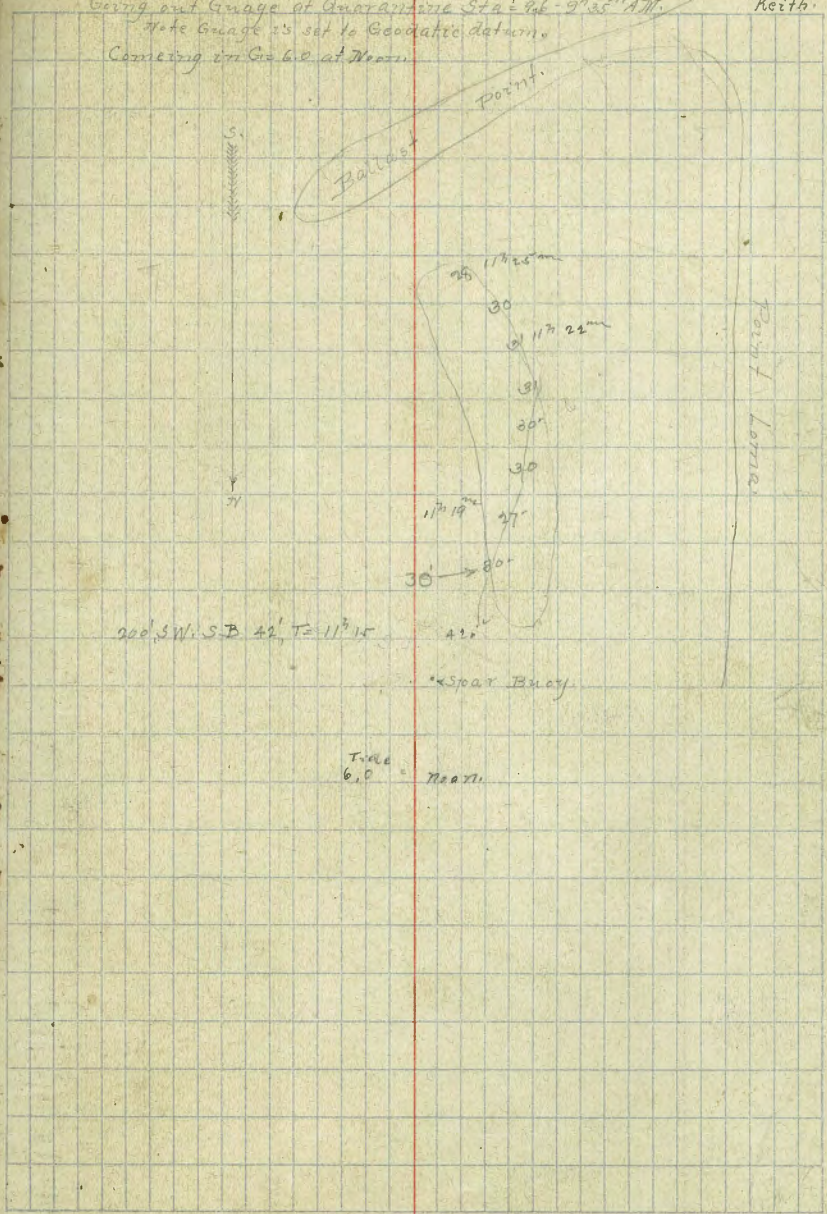
time of period	tide 1/16
2 <sup>nd</sup> .	2/16
3 <sup>rd</sup> .	3/16
4 <sup>th</sup> .	4/16
5 <sup>th</sup> .	5/16
6 <sup>th</sup> .	6/16

Soundings on Bay for Harbormaster

Nov 28 1917.

Harriet  
O. H. 31  
Sh...  
W. T. Aden.  
Keith. 31

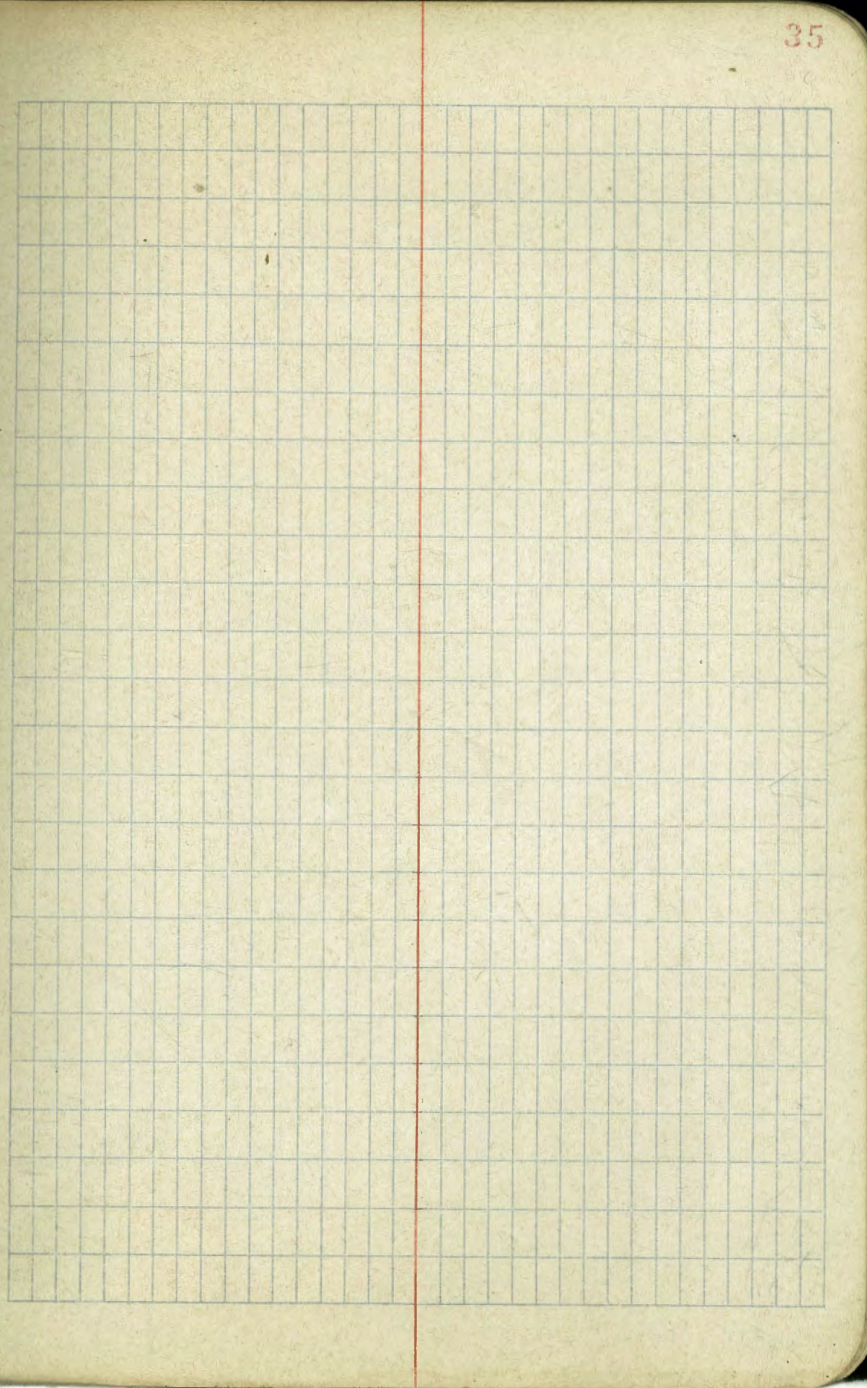
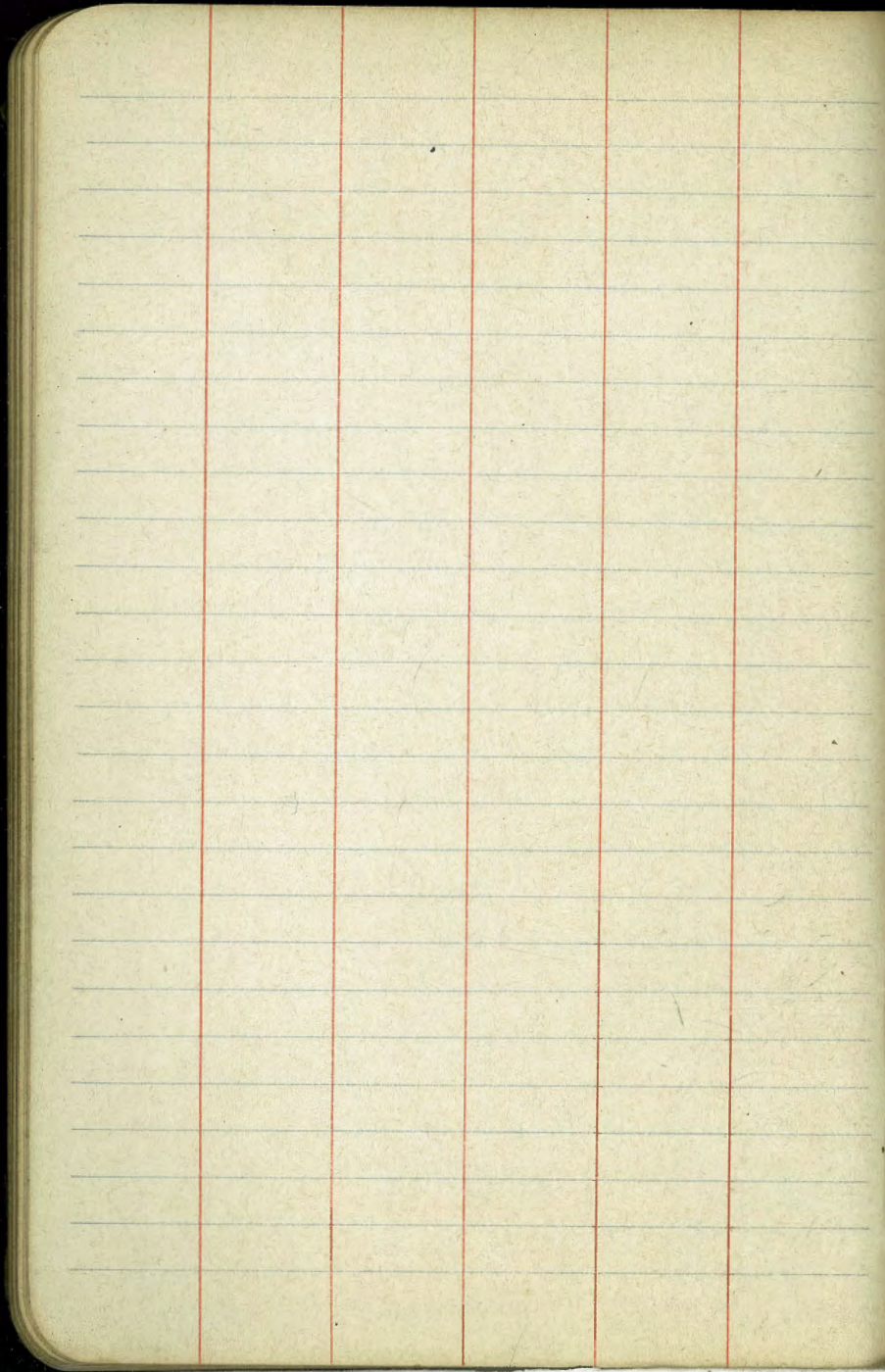
Setting out Gauge at Quarantine Sta. 26 - 9<sup>h</sup> 35<sup>m</sup> AM.  
The Gauge is set to Geodatic datum.  
Coming in or out at Noon.













3/23/8 Gregory  
1700 ft  
Miller

CROSS SECTION OF  
A ST 80' wide 14 obs 13 1/4  
from W.L. 22nd to EL B3 1/4

B.M.	3.94	149.36	145.42	SM 22nd & B
T.P.	7.05	144.94	114.7	137.89
25 W. of 22nd St for slope				
S		8.7	136.2	
cb		11.7		
1/4		15.0		
C		17.2	127.7	
1/4		20.4		
cb		23.4		
N		25.6	119.3	
W.L. of 22nd St 70' wide 14' obs				
-25		25.3		
N		21.2	123.7	
cb		18.8		
1/4		15.7		
C		13.0	131.9	
1/4		9.2		
cb		6.1		
S		3.3	141.6	
W. Cb				
S		2.9		
+10		2.2		
cb		2.9		
1/4		5.8		
C		10.6		

A ST 37

1/4	13.5
cb	16.6
N	19.1
+25	23.3
W. Quarter	
-25	21.1
N	16.8
cb	13.1
1/4	10.2
C	7.0
1/4	3.7
+5	2.4
cb	2.5
+8	2.0
S	2.6
Center 22nd St	
S	2.1
+6	1.5
cb	1.6
1/4	2.3
C	3.6
1/4	6.8
cb	10.9
N	14.2
+20	16.0

## East Quarter

-20			13.7
N			10.9
dt			7.0
1/4			3.7
C			2.6
1/2			1.7
dt			0.9
+8			0.6
S			1.3

T.P	12.59	157.06	9.47	144.47
-----	-------	--------	------	--------

## East Cb.

S			13.1
+6			10.2
dt			10.8
1/2			12.6
+7			14.2
C			14.3
1/4			14.7
dt			15.5
+8			16.2
N			18.7
+15			22.9
	+6		
-15			21.8
N			15.3

dt			14.9
1/4			14.6
C			14.0
+5			12.5
1/2			11.0
dt			10.1
+8			9.6
S			12.3

## E. Line 22

S			8.5
+5			6.6
dt			7.5
1/4			9.1
+9			11.2
C			12.9
+3			13.9
1/4			14.2
dt			14.5
N			15.0
		10°E	
N			14.2
dt			13.9
1/4			13.7
+9			13.5
C			12.5



157.06

+R	10.4
1/4	8.2
db	6.6
+9	5.4
S	3.5

25° E

S	2.4
db	4.6
1/4	6.2
+9	7.0
C	11.2
+R	12.1
1/4	12.8
db	12.7
N	12.6

50° E

N	9.9			
db	10.1			
1/4	9.7			
+9	7.9			
C	7.2			
+5	3.8			
1/4	3.0			
db	2.1			
TP	7.68	162.62	2.12	154.94
S			6.3	

AST 39

75° E

S	4.5
db	5.0
1/4	6.3
+10	7.0
C	10.1
+4	12.2
1/4	12.4
db	13.2
N	13.2

100° E

N	10.9
db	10.7
1/4	9.7
+7	9.3
C	6.9
+3	4.4
1/4	3.8
db	3.7
S	3.1

125° E

S	1.8
db	2.2
1/4	2.2
+9	2.6
C	5.2

shed 13  
east in st on  
So. side

16262

+5	7.3
1/4	8.0
cl	8.5
N	9.2
TP	3.93

159' E

N	7.3
cl	6.3
1/4	5.8
+12	4.3
c	3.6
+3	2.3
1/4	1.9
cl	1.6
S	0.9

168' E

S	0.5
cl	1.5
1/4	1.9
c	3.7
1/4	4.0
cl	5.7
N	12.5

175' E

N	15.5
cl	9.8

158.69

Top of Post  
No. 540 at  
577 150H 57  
40

1/4	4.4
+2	3.5
1/4	2.9
cl	1.8
S	0.8

TP	4.17	165.96	0.83	161.79
----	------	--------	------	--------

200' E = ML 23rd St 50' wide 10' obs

S	0.75	or 165.22 on sidewalk
cl	3.6	
1/4	4.3	
+6	4.8	
c	8.5	
1/4	17.6	
cl	22.3	
N	27.8	

West Corb

N	31.1
cl	24.7
1/4	19.1
c	11.0
1/4	4.0
cl	2.5
S	1.5

West Quarter

S	1.2
---	-----

dt	2.1
+5	2.6
1/4	5.9
C	13.5
1/4	21.0
dt	26.7
N	32.6
Center 23rd	
N	33.8
dt	28.5
1/4	23.0
C	15.7
1/4	8.7
dt	1.8
S	0.8
E. Quarter	
S	0.8
dt	2.3
1/4	9.0
C	16.4
1/4	24.0
dt	29.2
N	35.2
E. Curb	
N	36.0
dt	29.6

1/4	24.2	
C	16.8	
1/4	9.1	
dt	2.3	
S	0.3	
E L 23rd ST		
S	0.0	
+8	4.0	
dt	3.5	
1/4	10.0	
C	16.1	
1/4	23.8	
dt	30.1	
N	37.0	
25'E		
N	39.7	
dt	32.1	
1/4	24.5	
C	14.9	
1/4	7.4	
dt	1.7	
S	4.03	166.3
CHK TP	7.28	158.68 = 69

3/21/56  
Grand  
Tomb  
Miller

CROSS SECTION OF  
THE CENTER 50 FEET  
OF A ST<sup>nd</sup> ST  
FROM THE N.E. CORNER TO THE  
E.L. OF 23<sup>rd</sup> ST

50' wide  
10' curbs  
7.5' 1/4's

12' curbs  
26 Roadway

50' A ST. 42

B.M.	3.94	149.36	145.42	BR 3 W 22 <sup>nd</sup> ST
T.P.	7.46	145.35	11.47	137.89
		25' W of N.E. 22 <sup>nd</sup> for slope		
S		12.4		133.0
1/4				15.0
1/2				16.7
C				17.6
3/4				19.7
dt				21.8
N				23.1
				122.0
		N.E. 22 <sup>nd</sup> ST = 80' wide 14' curbs 13' quarters		
N				19.3
1/4				17.1
1/2				15.6
C				13.1
3/4				10.6
dt				8.7
S				6.7
				138.7
		W Curb		
S				3.5
1/4				5.4
1/2				8.2
C				10.9
3/4				12.9
dt				14.6
N				16.1
				129.0

W Quarter

N			13.2	132.2
1/4			10.8	
1/2			9.8	
C			7.6	137.8
3/4			4.9	
dt			3.1	
S			2.9	142.5
		CENTER 22 <sup>nd</sup> ST		
S			2.1	143.3
1/4			2.6	
1/2			3.0	
C			4.1	141.3
3/4			5.6	
dt			7.6	
N			10.8	134.6
		E Quarter		
N			6.8	138.6
1/4			4.1	
1/2			3.5	
C			2.8	142.6
3/4			2.3	
dt			1.9	
S			1.3	144.1
T.P.	11.90	156.57	0.68	144.67

156.57

E. Corb

S	10.4	146.2
cb	11.4	
1/4	12.7	
C	13.8	143.0
1/2	14.1	
cb	14.3	
N	15.0	141.6

E. Line 22<sup>nd</sup> St

N	14.0	142.6
cb	13.7	
1/4	13.6	
+5	13.4	
C	12.7	143.9
+3	10.8	
1/4	9.6	
cb	8.4	
S	7.2	149.4

25' E

S	4.4	152.2
cb	5.6	
1/4	5.9	
+3	6.2	
C	11.0	145.6
+1	11.7	
1/2	11.9	

50' A 43

cb		12.3	
N		12.2	144.4
	50' E		
N		10.2	146.4
cb		9.6	
1/4		8.8	
+3		8.6	
C		6.5	150.1
1/2		3.4	
1/4		3.1	
cb		2.6	
S		1.6	155.0
TP	7.23	142.60	1.20
		75' E	
S		5.1	157.5
cb		6.2	
1/4		6.3	
+5		6.9	
+6		8.7	
C		10.1	152.5
+3		12.1	
1/4		12.3	
cb		12.2	
N		13.1	149.5

162.60

100' E

N	10.6	152.0
ob	9.9	
1/4	9.3	
+2.5	8.9	
C	6.9	155.7
+3	4.4	
1/4	3.8	
ob	3.8	
S	3.7	158.9

125' E

S	2.1	160.5
ob	2.0	
1/4	2.3	
+4	2.6	
C	4.9	157.7
+5	7.1	
1/4	7.5	
ob	8.0	
N	8.6	154.0

159' E

N	6.3	156.3
ob	5.8	
1/4	5.4	
+5	4.3	
C	3.6	159.0

50' A 3T  
44

+3	2.3	
1/4	1.9	
ob	1.9	
S	1.6	161.0

168' E

S	1.5	161.1
ob	1.8	
1/4	2.0	
+2	2.2	
C	3.7	158.9
1/4	4.5	
ob	4.6	
N	5.7	156.9

175' E

N	8.5	154.1
ob	4.6	
+4	3.5	
1/4	3.6	
C	3.4	159.2
1/4	2.5	
ob	1.8	
S	1.2	161.4

TP 4.17 165.96 0.81 161.79

200' E = W.L. 23rd St 50' wide 10' dds

S	3.7	162.3
---	-----	-------

165.96

db	4.1	
1/4	4.8	
c	8.5	1575
1/4	13.3	
db	17.3	
N	21.9	1441

West Curb

N	24.3	
db	19.8	
1/4	15.3	
c	11.0	
1/4	6.2	
+55	4.0	
db	3.3	
s	2.8	

West Quarter

s	4.4	
+4	2.6	
db	5.3	
1/4	9.6	
c	13.5	
1/4	18.4	
db	21.9	
N	26.3	

50' A ST. 45

Center 23rd

N	28.2	1378
db	23.6	
1/4	19.8	
c	15.7	150.3
1/4	11.3	
db	8.1	
s	2.0	164.0

E. Quarter

s	2.5	
db	8.4	
1/4	12.7	
c	16.4	
1/4	19.8	
db	24.6	
N	29.0	

E. Curb

N	29.4	
db	24.6	
1/4	21.0	
c	16.8	
1/4	12.5	
db	8.7	
s	2.8	

16596

E.L. 23<sup>rd</sup> St

S	34	162.6	
cb	9.6		
1/4	12.9		
c	16.1	149.9	
1/4	20.7		
cb	24.2		
1/4	29.7	136.3	
25' E for Slope			
1/4	31.7		
cb	25.1		
1/4	20.2		
c	14.9		
1/4	11.6		
cb	7.1		
S	1.9		
chk T.P.	7.28	158.68 = 158.69 correct	

50 # 46



9/3/18 Gregory  
1700 ft  
Miller

Elevations on Flow line of  
B<sup>th</sup> St Flume

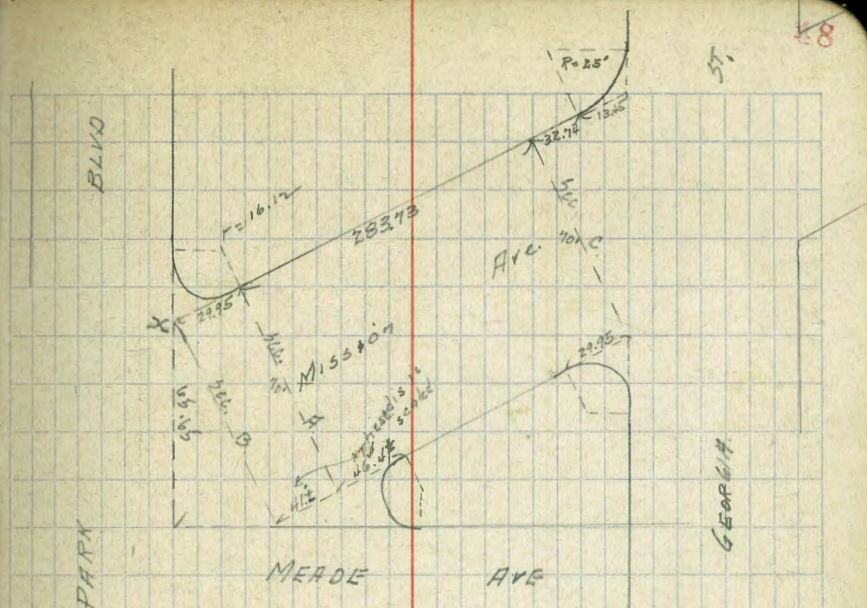
or B.M.	7.11	17.55 ✓		16.44	BP 511 or India + B
T.P.	1.81	10.74 ✓	868	893 ✓	
			14.13	-3.39 ✓	Flow line of B <sup>th</sup> St Flume at Manhole 227 N. 10th St B <sup>th</sup> St + 10th St at Manhole
T.P.	4.44	10.66 ✓	4.52	6.22 ✓	
Flow line of Manhole 3321 W. of Ctr. of Florida	14.75			-4.09 ✓	
Flow line of Outlet 722.5	-	-	14.24	-4.28 ✓	

9/10/07  
Gregory  
Miller  
Shaw

CROSS SECTION OF  
MISSION AVE  
from Park Blvd to Georgia

70' ST  
15' COB  
10' 1/4"

B.M.	6.92	348.93	347.01	NW Meade & Park
E.L. Park Blvd				
N.L. Meade		6.8	42.1	on parking
11.6 N = 3/4 Mission		6.7	42.2	✓ ✓
23.62 ✓ = R ✓		6.5	42.4	
35.65 ✓ = N 1/4 ✓		6.3	42.6	
47.68 ✓ = Ncb ✓		6.3	42.6	
65.65 ✓ = N.L. ✓ = Pt X		6.2	42.7	
Sec. B				
N.L. Mission		6.2	42.7	
N. Cb.		6.1	42.8	
✓ 1/4		6.3	42.6	
4		6.4	42.5	
5 1/4		6.6	42.3	
3 cb		5.9	43.0	
S.L.		5.6	43.3	
+ 9.0 ± = N.L. Meade		5.5	43.4	
Sec. A. = 0+00				
- 29 ± = N.L. Meade		5.1	43.8	
- 15		4.5	44.4	
S.L. Mission		4.6	44.3	
S. Cb		4.9	44.0	
5 1/4		6.3	42.6	
C		6.0	42.9	
N 1/4		6.0	42.9	



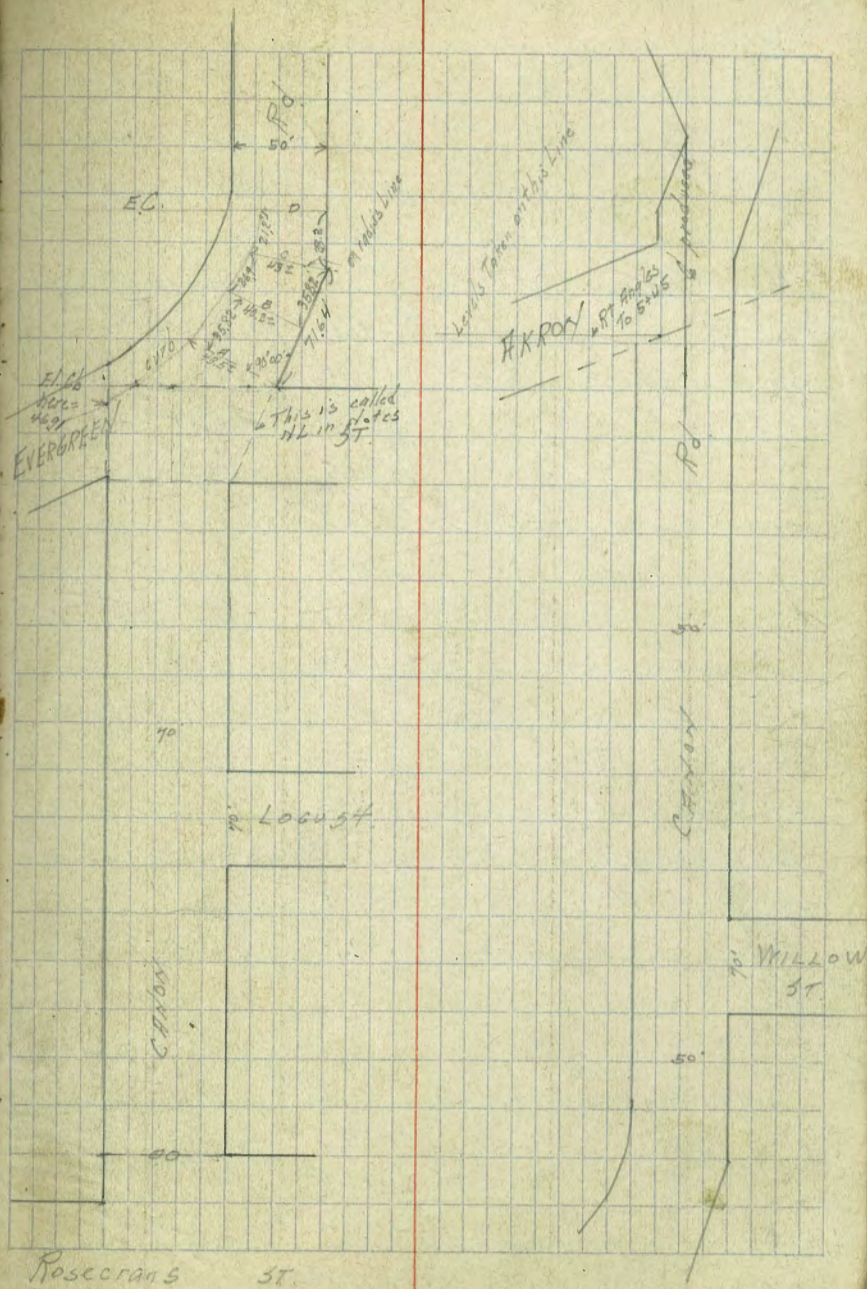
N. Cb	56	43.3
N.L.	57	43.2
0+46.40		
N.	46	44.3
cb	45	44.4
1/4	54	43.5
C	50	43.9
1/4	53	43.6
cb	40	44.9
S	39	45.0
1+00		
S	40	44.9
cb	42	44.7



C	39	45.0
$\frac{1}{2}$	41	44.8
cd	34	45.5
N.	33	45.6

5/16/24 Gregory. CROSS SECTION OF  
CANYON Rd 10' CBS  
from Rosecrans West.

	10.97	31.64 ✓	20.67	B.P. SW CANYON Rd
		0.0 = edge of curb on S.		
5		9.7	71.9	
+10.6 = cement curb		10.30	71.3	
+10.62 = gutter		11.0	70.6	
1/4" on paving		10.7	70.9	
C ✓		10.7	70.9	
1/4 ✓		11.0	70.6	
= gutter ✓		11.53	70.11	
cb on cement curb		11.13	70.51	
N		11.0	70.6	
	5' W			
N		11.0	70.6	
cb on cement		11.1	70.5	
gutter dirt		11.3	70.3	
+2 = edge of paving		11.5	70.1	
1/4		11.0	70.6	
C on paving		10.63	71.01	
1/4 ✓		10.65	70.99	
+8 = edge paving		10.80	70.84	
cb		9.8	71.8	
5		9.2	72.4	
	16' W			
5		9.2	72.4	
cb		9.2	72.4	



Rosecrans 5T.

31.64

+2		10.2	71.4
+9.5 = edge of paving		10.5	71.1
1/4		10.6	71.7
0		10.5	71.1
1/4		10.8	70.8
+4.3 = edge of paving gutter		11.0	70.6
cb on cement		10.80	70.8
+6		9.5	74.1
N		9.5	74.1
	+44.50 = end of paving		
N		9.1	74.5
+7		9.1	74.5
	Elev. of end of curb	(10.08)	71.56
cb		9.7	71.9
1/4		10.3	71.3
+2.5 = edge of paving		9.83	71.81
C = on paving		9.62	74.02
+10 = edge of v		9.57	74.07
1/4		9.6	74.0
cb		9.4	74.2
5		8.8	74.8
	1+00		
5		7.7	73.9
cb		7.6	74.0
+3		7.7	73.9

CAÑON 52

31.64

+6		8.2	73.4
1/4		7.9	73.7
C		7.9	73.7
1/10		8.7	74.9
1/4		8.3	73.3
+5		7.6	74.0
cb		7.6	74.0
N		7.4	74.2
	1+30		
N		5.9	75.7
cb		6.8	74.8
+8		7.1	74.5
1/4		7.7	73.9
C		7.0	74.6
1/4		7.1	74.5
+6		7.7	73.9
+10		6.7	74.9
cb		6.7	74.9
5		6.7	74.9
	1+65		
5		5.8	75.8
cb		5.9	75.7
+8		6.6	75.0
1/4		6.1	75.5
C		5.5	75.8

31.64

1/4		6.6	25.0
+4		6.1	25.5
cb		5.8	25.8
N		5.3	26.3
	200' W		
N		4.9	26.7
cb		5.2	26.4
+9		5.0	26.6
+11		6.2	25.4
1/4		6.2	25.4
+7		5.2	26.4
C		5.0	26.6
1/4		5.3	26.3
+6		5.5	25.8
+7		5.0	26.6
cb		4.9	26.7
S		5.0	26.6
	1/2 + 50		
S		3.7	27.9
cb		3.3	28.3
+5		3.3	28.3
+10		4.2	27.4
1/4		4.0	27.6
C		3.6	28.0
1/4		4.4	27.2
+3		3.6	28.0

31.64

CANYON

53

cb		3.7	27.9
N		3.4	28.2
	3400 = EL Locust 70' wide 15' cbs		
N		1.9	29.7
cb		1.8	29.8
+9		1.7	29.9
+11		3.4	28.2
1/4		3.4	28.2
+5		2.6	29.0
C		2.3	29.3
1/4		2.7	28.9
cb		2.2	29.4
S		2.7	28.9
	100' E curb.		
S		2.2	29.4
cb		1.9	29.7
48		1.5	30.1
+10		2.4	29.2
1/4		2.4	29.2
C		1.7	29.9
1/4		2.5	29.1
+3		1.5	30.1
cb		1.4	30.2
N		1.2	30.4

31.64

E 1/4

+20.5

N	1.0	30.6
cb	1.0	30.6
+8	0.8	30.8
1/4	1.8	29.8
C	1.4	30.7
1/4	2.0	29.6
+3	1.8	29.8
+4	1.3	30.3
cb	1.3	30.3
+3	1.8	29.8
S	1.8	29.8
+35 Center Locust		
S	1.5	30.1
cb	1.3	30.3
+8	1.0	30.6
+9	1.8	29.8
1/4	1.7	29.9
C	1.1	30.5
1/4	1.5	30.1
+5	0.4	31.4
cb	0.8	30.8
N	0.6	31.0
+25 W 1/4		
N	0.2	31.4
cb	0.6	31.0

31.64

CANYON

54

+7	0.4	31.4
+11	1.3	30.3
1/4	1.3	30.3
C	0.8	30.8
1/4	1.4	30.7
+2	1.4	30.7
+4	0.9	30.7
cb	1.0	30.6
S	1.1	30.5
+22 W ob		
S	0.5	31.1
cb	0.4	31.4
+8	0.1	31.5
+10	1.0	30.6
1/4	1.0	30.6
C	0.5	31.1
TP	11.93	43.05 ✓
1/4	(43.1)	0.52
+3	11.7	31.4
cb	11.8	31.3
N	11.7	31.4
+20 W L Locust		
N	11.3	31.8
cb	11.2	31.9
+10	11.4	31.7



43.05  
(43.1)

+11	17.3	30.8
1/4	17.3	30.8
+2	11.9	31.7
C	11.6	31.5
1/4	17.0	31.1
+2	17.0	31.1
+4	11.3	31.8
cb	11.1	34.0
5	11.3	31.8

50' West of W.L. Locust

5	10.0	33.1
cb	9.5	33.6
+9	9.5	33.6
+10	10.7	34.4
1/4	10.7	34.4
C	10.1	33.0
1/4	10.7	34.4
+2.5	10.7	34.4
+4	10.0	33.1
cb	10.1	33.0
N	10.2	34.9

100' W

N	8.6	34.5
cb	8.5	34.6
+9	8.6	34.5
1/4	9.4	33.7

CANYON 75

43.05  
(43.1)

C	8.7	34.4
1/4	9.3	33.8
+1.5	9.3	33.8
+2.5	8.2	34.9
cb	8.2	34.9
5	8.3	34.8
140' W		
5	6.7	36.4
+cb	6.5	36.6
+10	6.9	36.7
+11	7.9	35.7
1/4	7.9	35.7
+9	7.3	35.8
C	7.4	35.7
1/4	8.3	34.8
+1	8.3	34.8
+3	7.3	35.8
+7	6.5	36.6
cb	6.7	36.4
N	7.4	35.7
160' W		
N	6.6	36.5
cb	6.9	36.7
+5	7.1	36.0
+8	7.8	35.3

4305  
(43.1)

1/4	7.2	35.9
C	6.5	36.6
1/4	7.2	35.9
+3	7.2	35.9
+5	6.2	36.9
cb	6.2	36.9
5	5.4	37.7
200' W		
5	4.2	38.9
+7	4.4	38.7
+9	5.3	37.8
cb	5.3	37.8
+2	5.3	37.8
+5	4.6	38.5
+7	5.5	37.6
1/4	5.5	37.6
C	5.0	38.1
1/4	5.7	37.4
+5	5.8	37.3
+7	5.2	37.9
cb	5.2	37.9
N	5.3	37.8
230' W		
N	4.1	39.0
cb	4.2	38.9
+6	4.6	38.5

4305  
(43.1)

CANYON

56

1/4	4.2	38.9
+5	3.8	39.3
C	3.8	39.3
+7	4.4	38.7
1/4	4.4	38.7
+5	4.4	38.7
+9	3.2	39.9
+11	4.5	38.6
cb	4.5	38.6
+2	4.1	39.0
+3	2.7	40.4
5	2.6	40.5
243' W		
5	1.6	41.5
+6	2.2	40.9
cb	3.9	39.7
+4	2.2	40.9
+7	3.6	39.5
1/4	3.7	39.4
C	3.3	39.8
+3	3.2	39.9
1/4	3.4	39.7
+4	3.7	39.4
+7	4.8	38.3
cb	5.1	38.0

	43.05 (43.1)		
+1.5		5.1	38.0
+4		3.5	39.6
N		3.7	39.4
	270° W		
N		4.6	40.5
+4		4.4	40.7
+6		4.1	39.0
cb		4.1	39.0
+1		4.1	39.0
+5		4.5	40.6
1/4		4.2	40.9
+6		4.0	41.1
C		4.0	41.1
1/4		4.1	41.0
+3		1.8	41.3
+7		0.6	44.5
cb		4.8	40.3
+5		0.0	43.1
3		0.5	44.6
T.P.	11.88	53.74	1.19
			4186
			70' wide
			18' abs
			300° W = E.L. Evergreen
5		8.3	45.4
cb		9.0	44.7
+3		14.5	41.7
+5		10.5	43.7
1/4		10.8	44.9

	53.74		
C		11.0	44.7
1/4		11.3	44.4
cb		11.6	44.1
1/4		10.3	41.4
+6		14.4	39.3
+8		11.5	44.7
N		11.7	44.0
			4' W. x E.L. Evergreen
35.4 N. x E.L.		11.2	44.5
33 ✓ ✓ ✓		11.5	44.7
32 ✓ ✓ ✓		14.4	39.3
30 ✓ ✓ ✓		14.4	39.3
28 ✓ ✓ ✓		11.7	44.0
20 ✓ ✓ ✓		11.1	44.6
E		10.7	43.0
5 1/4		10.7	43.0
+10		10.3	43.4
cb		9.0	44.7
5		8.3	45.4
			E. cb
5		8.6	45.1
cb		9.0	44.7
1/4		9.5	44.7
C		9.5	44.7
15' W. x E.L.		10.1	43.6

53.74

30' N.O.L	10.4	43.3
34' " "	13.3	40.4
38.3' " " = N.L	12.2	41.5
40' " " "	11.0	44.7

E 1/4

46' N.O.L	10.1	43.6
39.7' " " = N.L	12.2	41.5
35' " " "	12.5	41.4
30' " " "	10.2	43.5
15' " " "	9.5	44.4
6	8.9	44.8
5 1/4	8.6	45.1
6b	8.3	45.4
5	7.9	45.8

Center Evergreen on N

5	7.6	46.1
6b	7.8	45.9
1/4	8.1	45.6
c	8.4	45.3
15' N.O.L	8.9	44.8
30' " " "	9.6	44.1
40.9' " " = N.L	9.4	44.3

W 1/4

42.1' N.O.L = N.L	8.9	44.8
20' " " "	8.5	45.4
10' " " "	8.1	45.6

53.74

CANYON 8

6	8.1	45.6
5 1/4	7.9	45.8
6b	7.7	46.0
5	7.4	46.3
W Curb		
5	7.0	46.7
6b	7.2	46.5
1/4	7.6	46.1
c	7.5	46.4
10' N.O.L	7.5	46.4
25' " " "	7.7	46.0
43.4' " " = N.L	8.4	45.3
4' W. of W.Cb		
3.4 = cement curb.	6.83	46.91
W.L. Evergreen produced		
46.1' N.O.L = N.L	7.9	45.8
30' " " "	7.0	46.7
15' " " "	6.7	47.0
6	6.8	46.9
7' 3" of 6	6.9	46.8
11.3' " " "	7.5	46.4
11.35' " " = cement of	6.8	46.9
Section A		
on cement curb = 135.5' of N.L	5.88	47.86
gutter	6.90	46.84

53.74

38.5' 5.0' N.L.	6.3	47.4
22' - - -	6.5	47.4
10' - - -	6.9	46.8
N.L.	7.8	45.9

35.82' W. of A. Section B

N.L.	5.8	47.9
20' 5.0' N.L.	4.7	49.0
37.9' - - - edge of gutter	4.75	48.99
gutter at curb line	5.03	48.71
40.25' on cement cb	4.03	49.71

Section C

43' 5.0' N.L. = cement curb	2.45	51.49
in gutter at curb line	3.45	50.79
40.5' 5.0' N.L. = edge cement gutter	3.16	50.58
25' - - -	3.1	50.6
10' - - -	4.1	49.6
N.L.	3.3	50.4

0+00 = Section D (regular 50.51' from base <sup>10' curb</sup> 7.5' N.L.)

N.L.	2.7	51.0
cb	2.4	51.3
1/4	1.9	51.8
c	1.7	54.0
1/4	1.9	51.8
+ 5' edge cement gutter	2.1	51.6
gutter at cb line	2.3	51.4
cement cb	1.30	54.44
chk B.M.	4.22	49.52

60.41

CANYON

59

T.P. 6.67	60.21	0.20	53.54
	0 + 30		
Sub on cement		6.11	54.10
gutter		7.14	53.07
+ 2.5' - edge cement gutter		6.96	53.45
1/4		6.9	53.3
c		6.7	53.5
1/4		6.7	53.5
cb		7.1	53.1
N		7.9	54.3
	0 + 80		
N		4.8	55.4
cb		4.8	55.4
1/4		4.6	55.6
c		4.6	55.6
1/4		4.8	55.4
+ 5' - edge cement gutter		4.62	55.59
gutter		4.90	55.31
Top Cement Cb		3.86	56.35
	1 + 24		
Top Cement Cb		2.07	58.14
gutter		3.07	57.14
edge		2.88	57.33
1/4		2.8	57.4
c		2.9	57.3

6021

1/4		3.1	57.1
cb		3.5	56.7
N		3.3	56.9
+1.0		15.9	44.3
+13		16.2	44.0
+16		8.5	51.7
	1+25		
-15		7.4	54.8
-12		16.0	44.2
N		16.2	44.0
+2		3.5	56.7
cb		3.5	56.7
1/4		3.1	57.1
c		2.9	57.3
1/4		2.8	57.4
+5		286	57.35
gutter		306	57.15
5 cement cb		206	58.15
	1+35		
5 cement cb		1.69	58.54
gutter		2.65	57.56
+2.5" edge gutter		2.47	57.74
1/4		2.5	57.7
c		2.5	57.7
1/4		2.8	57.4
cb		2.8	57.4

60.71

Canyon 50

1/4		2.6	57.6
N		7.5	54.7
+10		15.6	44.6
+13		2.6	57.6
	1+41		
N		2.6	57.6
cb		2.6	57.6
1/4		2.4	57.8
c		2.3	57.9
1/4		2.3	57.9
+5" edge cement gutter		2.22	57.99
gutter @ curb line		2.42	57.79
Cement curb		1.45	58.76
T.P.	11.61	71.76 ✓	0.06
			60.15
			2104.26 = E.L. Willow St 701100
cement cb		11.50	60.76
gutter		12.47	59.29
edges		12.17	59.59
1/4		12.0	59.8
c		11.8	60.0
1/4		12.1	59.7
cb		12.2	59.6
N		12.0	59.8
	E. Cb.		
N		11.7	60.1
(Top Cement Curb)	(12.10)		59.66

	71.76 (71.8)		
cb		12.0	59.8
1/4		11.5	60.3
c		11.4	60.4
1/4		11.5	60.3
gutter dirt		11.7	60.1
cement curb		11.00	60.8
	E 1/4		
cement curb		10.82	60.94
dirt gutter		11.5	60.3
1/4		11.3	60.5
c		11.2	60.6
1/4		11.4	60.4
cb		11.8	60.0
+5		11.9	59.9
N		11.8	60.0
	center W. flow		
N		11.3	60.5
+7		11.7	60.1
cb		11.6	60.4
1/4		11.3	60.5
c		11.0	60.8
1/4		11.1	60.7
gutter dirt		11.4	60.4
Top cement cb		10.60	61.16
	W 1/4		
✓ ✓ ✓		10.35	61.41

	71.76 (71.8)	Canon. 61
dirt gutter		60.6
1/4		60.9
c		61.1
1/4		60.7
cb		60.4
N		60.8
	W cb	
N = on Top cement curb		61.10
+7		60.3
cb		60.5
1/4		61.0
c		61.3
1/4		61.1
dirt gutter		60.9
Top cement curb		61.63
	W. L. W. flow	
Top ✓ ✓		61.11
- gutter @ curb line		61.11
edge ✓		61.46
1/4		61.5
c		61.7
1/4		61.4
cb		60.8
+7		60.5
N		61.3

71.76  
(71.8)  
50' W.

N	8.9	62.9
+3	10.0	61.8
cb	9.6	64.4
1/4	9.1	64.7
C	8.8	63.0
1/4	9.0	64.8
edge cement gutter	9.10	64.7
gutter	9.35	64.41
Top Cement curb	8.35	63.41

100' W

✓	7.25	64.51
gutter	8.25	63.51
outside edge gutter	7.92	63.84
1/4	7.5	64.3
C	7.5	64.5
1/4	8.4	63.4
cb	8.4	63.4
+7	9.1	64.7
N	7.6	64.4

150' W

N	7.5	64.3
cb	6.8	65.0
1/4	6.3	65.5
C	6.2	65.6
1/4	6.4	65.4

71.76  
(71.8)

CANYON

62

edge cement gutter	6.67	65.09
gutter	7.05	64.71
cement curb	6.03	65.73

200' W

cement curb	4.72	67.04
dirt gutter	5.5	66.3
1/4	5.0	66.8
C	4.8	67.0
1/4	5.1	66.7
cb	5.7	66.1
N	6.1	65.7

250' W

N	4.0	67.8
+8	4.3	67.5
cb	3.9	67.9
1/4	3.6	68.4
+2	3.2	68.6
C	3.2	68.6
1/4	3.5	68.3
dirt gutter	4.0	67.8
Top Cement Cb	3.20	68.56

300 W

✓	1.30	70.46
dirt gutter	2.0	69.8
1/4	1.6	70.4



		71.76 (71.8)		
C			1.5	70.3
1/4			1.7	70.1
cb			2.4	69.4
N		(84.1)	2.4	69.4
T.P.	1256	84.13	0.4	71.62
		3+40		
N			12.7	71.4
+2			13.5	70.6
cb			13.3	70.8
1/4			12.4	71.7
C			12.3	71.8
1/2			12.5	71.6
dirt gutter			12.9	71.4
Top Cement Cb.			12.17	71.96
		3+70		
			10.98	73.15
dirt gutter			11.8	74.3
1/4			11.4	74.7
C			11.1	73.0
1/4			11.2	74.9
cb			12.0	74.1
+6			12.8	71.3
+7			12.6	71.5
N			9.2	74.9
		4+00		
N			7.6	76.5

		84.13 (84.1)	CANYON 63
+4.5			11.3
+9			11.5
cb			11.1
1/4			10.2
C			10.0
1/4			10.2
dirt gutter			10.6
cb 13.45 at Cb line			9.80
		4+20	
cement cb 15.45 at Cb line			8.92
dirt gutter			9.7
1/4			9.3
C			9.2
1/4			9.4
cb			10.2
+2			10.6
N			10.0
+3			9.5
+6			7.5
		4+55	
-7			7.6
-3			9.6
N			9.6
cb +8			9.6
cb			9.1

	84.13 (84.1)		
1/4		8.4	75.7
+5		8.0	76.1
c		8.0	76.1
1/4		8.0	76.1
5 cb Lime		8.5	75.6
+0.9 = Top Cement Cb		7.6	76.5
ok 5 cb Lime	4+75		
1.35 Top Cement Cb		6.9	77.4
dirt gutter		7.9	76.4
1/4		7.6	76.5
c		7.5	76.6
+5		7.7	76.4
1/4		8.1	76.0
cb		8.8	75.3
N		8.0	76.1
+8		7.7	76.4
+11 = loose dirt		4.6	79.5 ✓
	5+00		
-16		3.5	80.6
-14		7.0	77.1
N		7.4	76.7
cb		7.4	76.7
1/4		7.0	77.1
+5		6.7	77.4
c		6.7	77.4
1/4		6.5	77.6

	84.13 (84.1)	CANTON	34
5 cb		7.0	77.1
+1.9 = dirt gutter		7.1	77.0
Top Cement curb		6.13	78.00
	5+45		
3.4 5.0 x 5.0 cb		3.60	80.5 on end of cb
5.0 cb Lime		3.8	80.3
1/4		4.5	79.6
c		5.0	79.1
1/4		5.6	78.5
cb		6.0	78.1
N		6.2	77.9
+11 = foot of bank		4.5	79.6
+13		0.0	84.1
	6+00	on d produced	
-6		1.8	82.3
-2		5.0	79.1
N		5.0	79.1
cb		4.7	79.4
1/4		4.2	79.9
c		3.8	80.3
1/4		3.2	80.9
cb		2.4	81.7
5		2.9	81.2
T.P. 6.74	87.95	2.92	81.21

87.95

(88.0)

6+50 on 2 produced

5	6.1	81.9
cb	5.9	82.1
1/4	5.5	84.5
C	6.2	81.8
1/4	6.7	81.3
cb	7.3	80.7
N	7.5	80.5
+10	6.2	81.8
+11	0.0	88.0

7400 on 2 produced

-17	4.0	86.0
-12	7.0	81.0
N	6.3	81.7
cb	6.0	84.0
1/6	5.8	84.2
C	5.3	84.7

7450 on 2 produced

32 N of N	3.0	85.0
27 - - -	6.1	81.9
20 - - -	5.1	84.9
6 - - -	5.2	84.8
N	5.3	84.7

T.P. 678 86.30 8.43 79.54

Levels at Pt Angles to Sta. 5+45 S.

S. ob Line 5.9 80.4

86.30

85

16 S. of S. ob Line	5.3	81.0
18 ✓ - - - ✓	11.4	74.9
29 ✓ ✓ ✓ ✓	13.0	73.3
32 ✓ - - - ✓	5.2	81.1
50 - - - ✓ -	4.9	81.4
75 - - - ✓ -	4.1	84.2
100 - ✓ - - -	2.2	84.1
117 ✓ ✓ ✓ ✓ -	0.0	86.3
125 ✓ - - - -	+1.9	88.2

5/16/41 Gregory

CROSS SECTION OF  
NORTON AVE  
from N.L. Laurel, N.

75' wide  
12' cbs

OT	5.97	152.04	146.07	BP SE. Lane
				N.L. of Laurel on paving line
E		47	147.3	
cb on cement		4.97	147.07	
gutter on paving		5.63	146.41	
1/4		5.50	146.44	
c		5.63	146.41	
1/4		6.03	146.01	
gutter		6.43	145.61	
cb on cement		6.02	146.02	
W		5.78	146.26	walk
	20' N on W			N.L. Laurel produced E
W		5.78	146.26	
cb		6.0	146.04	
1/4		6.00	146.04	
C		5.6	146.4	
1/4		5.3	146.74	
+5		4.7	147.34	
cb		4.7	147.34	
E		4.8	147.24	
				10' N
E		4.9	147.14	
cb		5.1	146.94	
+6		4.4	147.64	
1/4		4.7	147.34	

C	5.2	146.84	
1/4	5.6	146.44	
cb	5.9	146.14	
+7	5.9	146.14	
W	3.2	148.84	
			30' N
W	5.0	147.04	
+4	6.0	146.04	
cb	6.0	146.04	
1/4	5.4	146.64	
C	5.1	146.94	
1/4	4.8	147.24	
cb	4.8	147.24	
E	4.5	147.54	
			45' N
E	4.3	147.74	
cb	4.7	147.34	
1/4	4.7	147.34	
C	5.2	146.84	
1/4	5.1	146.94	
cb	5.5	146.54	
+7	5.7	146.34	
W	3.1	148.94	
			65' N
W	2.1	149.94	

15204

+2	2.1	149.94 <sup>✓</sup>
+6	4.1	147.94 <sup>✓</sup>
cb	4.8	147.24 <sup>✓</sup>
1/4	4.8	147.24 <sup>✓</sup>
c	4.9	147.14 <sup>✓</sup>
1/4	4.9	147.14 <sup>✓</sup>
cb	5.4	146.64 <sup>✓</sup>
E	4.6	147.44 <sup>✓</sup>
82' N		
E	5.5	146.54 <sup>✓</sup>
cb	6.0	146.04 <sup>✓</sup>
1/4	5.2	146.84 <sup>✓</sup>
c	4.9	147.14 <sup>✓</sup>
1/4	5.0	147.04 <sup>✓</sup>
cb	4.7	147.34 <sup>✓</sup>
+7	4.5	147.54 <sup>✓</sup>
+9	3.4	148.64 <sup>✓</sup>
W	3.5	148.54 <sup>✓</sup>
91' N		
W	4.8	147.24 <sup>✓</sup>
+5	6.2	145.84 <sup>✓</sup>
cb	5.5	146.54 <sup>✓</sup>
+7	5.4	146.64 <sup>✓</sup>
1/4	6.5	145.54 <sup>✓</sup>
+7	5.5	146.54 <sup>✓</sup>
c	5.2	146.84 <sup>✓</sup>

HORTON

67

1/4	53	146.74 <sup>✓</sup>
+6	63	145.74 <sup>✓</sup>
cb	58	146.24 <sup>✓</sup>
E	53	146.74 <sup>✓</sup>
96' N		
E	3.7	148.34 <sup>✓</sup>
+5	3.6	148.44 <sup>✓</sup>
cb	5.3	146.74 <sup>✓</sup>
+11	6.6	145.44 <sup>✓</sup>
1/4	5.7	146.34 <sup>✓</sup>
+4	4.9	147.14 <sup>✓</sup>
c	5.3	146.74 <sup>✓</sup>
+6	5.3	146.74 <sup>✓</sup>
+9	6.4	145.64 <sup>✓</sup>
1/4	6.9	145.14 <sup>✓</sup>
+5	7.0	145.04 <sup>✓</sup>
cb	6.0	146.04 <sup>✓</sup>
+7	6.8	145.24 <sup>✓</sup>
W	5.9	146.14 <sup>✓</sup>
100' N		
W	8.5	143.54 <sup>✓</sup>
cb	8.2	143.84 <sup>✓</sup>
1/4	7.0	145.04 <sup>✓</sup>
c	6.0	146.04 <sup>✓</sup>
+10	5.4	146.64 <sup>✓</sup>

15204

1/4	5.2	146.84	✓
+7	6.1	145.94	✓
cb	4.4	147.64	✓
E	4.4	147.64	✓
110' N			
E	7.1	144.2	✓
cb	6.9	145.1	✓
+8	5.8	146.2	✓
1/4	6.6	145.4	✓
C	7.8	144.2	✓
1/4	8.5	143.5	✓
cb	9.3	142.74	✓
W	9.8	142.2	✓ on cement walk to house
118' N			
W	10.2	141.84	✓ on land
cb	9.8	142.2	✓
1/4	9.3	142.74	✓
C	8.2	143.8	✓
1/4	8.4	143.6	✓
+5	7.0	145.0	✓
cb	7.7	144.3	✓
E	8.2	143.8	✓
127' N			
E	11.7	140.3	✓
cb	10.7	141.3	✓
1/4	10.9	141.1	✓

HORTON 68

+5	12.2	139.84	✓
C	12.5	139.54	✓
1/4	9.5	142.54	✓
cb	10.3	141.74	✓
W	10.8	141.24	✓ on cement
T.P.	0.19	141.48	10.75 141.29
Should not be improved 136' N beyond this			
W	3.0	138.48	✓ on cement
cb	2.1	139.38	✓
+8	2.0	139.48	✓
1/4	4.0	137.48	✓
C	6.2	135.28	✓
1/4	5.7	135.78	✓
cb	5.4	136.08	✓
E	6.6	134.88	✓
+10	7.5	133.98	✓
140' N			
-12	10.2	131.28	✓
E	8.6	132.88	✓
cb	7.3	134.18	✓
+9	7.5	133.98	✓
1/4	8.5	132.98	✓
C	8.0	133.48	✓
1/4	6.3	135.18	✓
cb	4.3	137.18	✓

W

5.2 136.28 ✓

+10

6.0 135.40 ✓

5/10/24 Gregory.

CROSS SECTION OF 60' wide  
287' 5" 10' c.d.s  
From K to SL Webster.

70

Subline K ST 1.10  
WL 2.13 8493  
FL 2.04 8500

87.06 85.96  
3' Dist SL of K ST produced East

F	2.2	84.9
+1	3.3	83.8
cb	3.8	83.3
1/4	3.9	83.2
c	3.2	83.9
1/4	2.5	84.6
cb	1.9	85.2
W	2.9	84.2
+4	1.7	85.4
B.L. of K ST produced East		
-4	1.9	85.2
W -	3.7	83.4
+5	3.5	83.6
+7	2.3	84.8
cb	2.2	84.9
1/4	3.6	83.5
c -	4.8	82.3
1/4	4.4	82.7
cb	4.2	82.9
+9	3.6	83.5
F. -	2.4	84.7
11' 5"		
F	4.0	83.1

+1	5.6	81.5
cb	5.9	81.2
1/4	5.5	81.6
c	5.7	81.4
1/4	5.9	81.2
+5	4.9	82.2
cb	5.0	82.1
W	5.4	81.7
+7	5.8	81.3
25' 5"		
-10	6.7	80.4
W	6.8	80.3
cb	6.8	80.3
1/4	6.8	80.3
c	6.5	80.6
1/4	6.8	80.3
cb	6.5	80.3
+9	6.1	80.9
F	5.4	81.7
+3	4.7	82.4
65' 5"		
-5	6.6	80.5
F	7.0	80.1
cb	7.4	79.7
1/4	7.7	79.4



87.6

C	78	79.3
1/4	79	79.2
cb	78	79.3
W	77	79.4
+10	80	79.1

100' 5

-10	8.5	78.6
W	8.0	79.1
cb	8.3	79.8
1/4	8.5	78.6
C	8.1	78.7
1/4	8.7	78.4
cb	8.1	78.7
E	7.7	79.4
+6	7.3	79.8

125' 5

-10	8.0	79.1
E	8.2	78.9
cb	8.3	78.8
1/4	8.6	78.5
C	8.5	78.6
1/4	8.3	78.8
cb	8.5	78.6
W	8.5	78.6
+10	9.2	77.9

28<sup>th</sup>

71

165' 5

-10	8.7	78.4
W	8.7	78.4
cb	8.6	78.5
1/4	8.6	78.5
C	8.6	78.5
1/4	8.6	78.5
cb	8.8	78.3
E	8.1	79.0
+5 - inside shed,	7.0	80.1

200' 5

-5	7.7	79.4
E	8.2	78.9
cb	9.0	78.1
1/4	8.8	78.3
C	9.0	78.1
1/4	9.0	78.1
cb	9.0	78.1
W	8.9	78.2
+10	8.9	78.2

245' 5

-10	9.3	77.8
W	9.1	77.7
cb	9.5	77.6
1/4	9.2	77.9
C	8.5	78.6

87.06

1/4		8.3	78.8
cb		8.6	78.5
E		8.0	79.1
+5		7.6	79.5
295' 5			
E		7.5	79.6
cb		8.0	79.1
1/4		8.8	78.3
C		8.8	78.3
1/4		8.8	78.3
cb		9.0	78.1
W		9.6	77.5
+5		10.0	77.1
300' 5 = N.L. L 5r produced W			
W		8.1	79.0
cb		8.1	79.0
1/4		8.1	79.0
C		8.3	78.8
1/4		8.4	78.7
cb		7.8	79.3
E		7.7	79.4
N. cb Line L 5r.			
E	on cement	8.20	78.9
W	✓	8.45	78.6
TP	3.10 8003	10.13	76.93

28<sup>th</sup> 5r.

72

5 cb Line L 5r

W	on cement	3.70	76.9
E		2.70	77.3
5. Line L 5r produced W			
E		2.4	77.6
cb		2.2	77.8
1/4		2.7	77.3
C		2.7	77.3
1/4		3.0	77.0
cb		2.9	77.1
W		2.9	77.1
10' 5			
W		3.0	77.0
cb		3.0	77.0
1/4		3.8	76.2
C		3.9	76.1
1/4		3.7	76.3
<del>cb</del> +7		3.3	76.7
cb		2.3	77.7
E		1.9	78.1
50' 5			
E		2.5	77.5
cb		2.8	77.2
+5		3.4	76.6
1/4		3.4	76.6
C		3.5	76.5

8003

1/4		3.2	76.8
cb		3.3	76.7
W		3.2	76.8
	100' S		
W		3.6	76.4
cb		3.4	76.6
3/4		3.7	76.5
C		4.0	76.0
1/4		3.9	76.1
cb		3.4	76.6
+4		2.8	77.2
E		2.8	77.2
	130' S		
E		3.8	76.2
cb		4.1	75.9
1/4		4.2	75.8
C		4.0	76.0
1/4		4.0	76.0
cb		3.8	76.2
W		3.8	76.2
	165' S		
W		4.1	75.9
cb + 1		3.7	76.3
cb		3.8	76.2
1/4		3.9	76.1
C		4.1	75.9

2874 ST 73

1/4		4.5	75.5
cb		4.7	75.3
E		4.9	75.1
	193' S		
E		5.0	75.0
cb		5.0	75.0
1/4		4.7	75.3
C		4.6	75.4
1/4		4.2	75.8
cb		3.8	76.2
W		4.2	75.8
	200' S		
W		4.2	75.8
cb		4.8	75.2
1/4		4.6	75.4
C		4.7	75.3
1/4		4.7	75.3
cb		4.8	75.2
E		5.1	74.9
	250' S		
E		5.6	74.4
cb		5.3	74.5
1/4		5.6	74.4
C		5.3	74.7
1/4		5.7	74.3

80.03

297

2874

74

cb		5.6	74.4
W		5.4	74.6
	285' 5		
W		5.9	74.1
cb		6.0	74.0
1/4		5.9	74.1
c		6.0	74.0
1/4		5.9	74.1
cb		5.8	74.2
E		5.7	74.3
	300' 5 = N.L. Imperial Ave prod. W		
E		6.0	74.0
cb		5.9	74.1
1/4		5.9	74.1
c		6.1	73.9
1/4		6.1	73.9
cb		6.1	73.9
W		6.0	74.0
	N cb Line Imperial		
W	on cement cb	6.63	73.4
E	- - -	5.97	74.1
	3 cb Line Imperial		
E	on cement cb	6.96	73.1
W	- - -	7.57	72.5

S.L. Imperial Ave produced W

W		7.4	72.6
cb		7.2	72.8
1/4		7.0	73.0
c		7.0	73.0
1/4		6.9	73.1
cb		6.7	73.3
+5		7.7	72.3
E		7.2	72.8
+1		6.6	73.4
T.P.	287 74.10	880	71.23
	6' 5		
-1		0.7	73.4
E		1.6	72.5
+2		2.4	71.7
cb		2.5	71.6
1/4		2.6	71.5
c		3.1	71.0
1/4		2.7	71.4
cb		2.4	71.7
W		2.4	71.7
+5		2.0	72.1
	11' 5		
-5		3.0	71.1
W		3.4	70.7
cb		4.0	70.1

7410

1/4		3.9	70.2
C		2.9	71.2
1/4		2.7	71.4
cb		3.1	71.0
+9		2.9	71.2
E		1.8	72.3
+1		1.2	72.9

65' S

E		2.3	71.8
cb		2.0	72.1
1/4		3.0	71.1
C		4.0	70.1
1/4		4.4	69.7
cb		4.4	69.7
W		4.3	69.8

100' S

W		4.6	69.5
cb		4.6	69.5
1/4		4.8	69.3
C		4.7	69.4
1/4		4.5	69.6
cb		4.4	69.7
+9		4.1	70.0
E		3.7	70.4

28th

75

135' S

E		4.8	69.3
cb		4.9	69.2
1/4		5.0	69.1
C		4.9	69.2
1/4		5.0	69.1
cb		5.4	68.7
W		5.5	68.6

170' S

W		5.1	69.0
cb		5.0	69.1
1/4		4.8	69.3
C		4.7	69.4
1/4		4.5	69.6
cb		4.4	69.7
E		4.2	69.9
+2		3.8	70.3

200' S

E		3.7	70.4
cb		4.1	70.0
1/4		4.6	69.5
C		4.9	69.2
1/4		5.2	68.9
cb		5.0	69.1
W		5.1	69.0

74.10

245' S

W	5.5	68.6
cb	5.2	68.9
1/4	5.1	69.0
c	5.0	69.1
1/4	4.9	69.2
cb	4.8	69.3
E	4.8	69.3

255' S

E	4.8	69.3
cb	5.2	68.9
1/4	5.1	69.0
c	5.7	68.4
1/4	6.3	67.8
cb	6.2	67.9
+5	6.0	68.1
W	5.1	69.0

295' S

W	5.6	68.5
cb	6.0	68.1
1/4	6.5	67.6
c	6.3	67.8
1/4	6.1	68.0
+6	5.0	69.1
cb	5.3	68.8
E	5.0	69.1

28+H

298.5 = N.L. N St prod. West

76

E	5.5	68.6
cb	5.1	69.0
1/4	5.3	68.8
c	5.5	68.6
1/4	5.6	68.5
cb	5.8	68.3
W	6.1	68.0

FOR INTERSECTION  
S.L. N ST.N + 28th 500' section mdy  
for N. St.

W	8.0	66.7
cb	7.8	66.3
1/4	7.7	66.4
c	7.6	66.5
1/4	7.4	66.7
cb	7.5	66.6
E	7.7	66.4

15' S

E	7.3	66.6
cb	7.5	66.6
1/4	7.6	66.5
c	8.1	66.0
1/4	8.1	66.0
cb	8.1	66.0
W	8.2	65.9

74.10

20' S

W	7.4	66.7
cb	7.1	67.0
1/4	7.3	66.8
c	7.5	66.6
1/4	7.2	66.9
cb	7.5	66.6
E	7.4	66.7

60' S

E	6.0	68.1
cb	6.1	68.0
1/4	6.5	67.6
c	6.7	67.4
1/4	7.0	67.1
cb	7.0	67.1
W	6.9	67.2

100' S

W	6.2	67.9
cb	6.2	67.9
1/4	6.1	68.0
c	6.1	68.0
1/4	5.8	68.3
cb	5.6	68.5
E	5.2	68.9
TR	6.91	74.82
	6.19	67.91

28<sup>TH</sup>

27

122.3 ± N.L. VALLEY PL. 40' wide

E	6.0	68.8
cb	6.3	68.5
1/4	6.5	68.3
c	6.6	68.2
1/4	6.4	68.4
cb	6.4	68.4
W	6.3	68.5

center Valley Place

W	6.3	68.5
cb	6.6	68.2
1/4	6.6	68.2
c	6.6	68.2
1/4	6.5	68.3
cb	6.5	68.3
E	6.4	68.4

S.L. Valley Pl.

E	5.3	69.5
cb	6.5	68.3
1/4	7.0	67.8
c	7.1	67.7
1/4	6.8	68.0
cb	6.6	68.2
W	6.3	68.5

2' S. of S.L. Valley Pl.

W	6.6	68.2
---	-----	------

74.82

cb		66	68.2
1/4		68	68.0
c		71	67.7
1/4		70	67.8
+5		69	67.9
cb		8.3	66.5
+2		6.2	68.6
E		5.5	69.3
	30.5		
E		5.0	69.8
+7		5.4	69.4
cb		6.4	68.4
+3		7.6	67.2
1/4		7.3	67.5
c		7.0	67.8
1/4		6.6	68.2
cb		6.2	68.6
W		6.3	68.5
	70.5		
W		4.8	70.0
cb		5.6	69.2
1/4		5.9	68.9
c		6.5	68.3
1/4		7.1	67.7
+8		6.9	67.9
cb		5.8	69.0

78

+2		5.1	69.7
E		4.8	70.0
	100.5		
E		4.5	70.3
+8		4.6	70.2
cb		5.5	69.3
+4		7.6	67.2
+7		6.5	68.3
1/4		6.6	68.2
c		6.1	68.7
1/4		5.5	69.3
cb		5.2	69.6
W		4.4	70.4
	130.5		
W		3.9	70.9
cb		4.7	70.1
1/4		5.4	69.4
c		6.1	68.7
1/4		6.1	68.7
+3		6.1	68.7
+6		7.3	67.5
cb		5.1	69.7
+2		4.5	70.3
E		4.2	70.6



7/52

140' 5" = N.L. Webster St <sup>80' 5"</sup> 14' cbs

E	5.5	69.3
cb	5.4	69.4
+3	7.2	67.6
+7	6.1	68.7
1/4	6.2	68.6
c	6.0	68.8
1/2	5.2	69.6
cb	4.5	70.3
W	3.8	71.0

7' 5.0 x N.L.

W	3.8	71.0
cb	4.5	70.3
1/4	5.2	69.6
c	6.1	68.7
1/2	6.5	68.3
cb	6.3	68.5
E	6.5	68.3

N. curb

E on cement	6.75	68.1
cb	6.5	68.3
1/4	6.3	68.5
c	5.9	68.9
1/2	5.1	69.7
cb	4.4	70.4
W	3.5	71.0

7/52

N. Quarter

73

W	3.7	71.1
cb	4.3	70.5
1/4	4.9	69.9
c	5.7	69.1
1/2	5.9	68.9
cb	6.2	68.6
E	6.5	68.3

Center Webster

E	6.3	68.5
cb	6.0	68.8
1/4	5.8	69.0
c	5.4	69.4
1/2	4.8	70.0
cb	4.2	70.6
W	3.5	71.3

S Quarter

W	3.3	71.5
cb	3.9	70.9
1/4	4.4	70.4
c	5.1	69.7
1/2	5.9	68.9
cb	6.2	68.6
E	6.3	68.5

7482

S. Carb

E on Cement Cb	6.21	68.6
cb	6.2	68.6
+5	5.1	69.7
1/4	5.2	69.6
c	4.4	70.4
1/4	3.8	71.0
cb	3.6	61.2
W	3.1	71.7

S. L. Webster

W	3.0	71.8
cb	3.2	71.6
1/4	3.1	71.7
c	3.3	71.5
1/4	3.6	71.2
cb	4.6	70.2
E	5.6	69.2
T.P. Top Hyd. S.E. Webster	00	74.82

## KEITH'S RAILROAD CURVE TABLES.

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### HOW TO USE KEITH'S TABLES.

#### EXAMPLE.

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

Ext. in Tab. IV opposite  $23^{\circ} 20'$ =120.87  
 $120.87+12=132.87$ . Say a  $10^{\circ}$  Curve.

Tan. in Tab. IV opp.  $23^{\circ} 20'$ =1183.1  
 $1183.1+10=1193.1$ .

Tab. V. correction for A.  $23^{\circ} 20'$  for a  $10^{\circ}$  Cur.=0.16  
 $1193.1+0.16=1193.26$ =corrected Tangent.

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

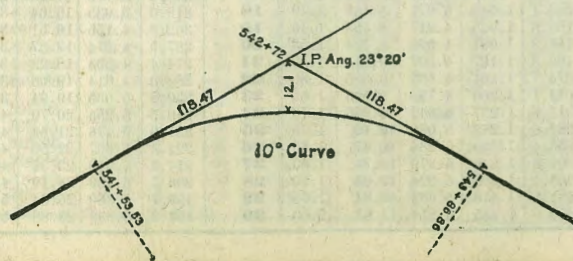
$2^{\circ} 19\frac{1}{2}'$ =def. for sta.	542	I. P.=sta.	542+72
$4^{\circ} 49\frac{1}{2}'$ = " " "	+50	Tan.=	1.18.47
$7^{\circ} 19\frac{1}{2}'$ = " " "	543	B. C.=sta.	541+53.53
$9^{\circ} 49\frac{1}{2}'$ = " " "	+50	L. C.=	2.33.33
$11^{\circ} 40'$ = " " "	543+	E. C.=sta.	543+86.86
	86.86		

$100-53.53=46.47 \times 3'$ (def. for 1 ft. of  $10^{\circ}$  Cur.)= $139.41'$ =  
 $2^{\circ} 19\frac{1}{2}'$ =def. for sta. 542.

Def. for 50 ft.= $2^{\circ} 30'$  for a  $10^{\circ}$  Curve.

Def. for 86.86 ft.= $1^{\circ} 50\frac{1}{2}'$  for a  $10^{\circ}$  Curve

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



Natural Tangents

deg.	0'	10'	20'	30'	40'	50'	deg.	0'	10'	20'	30'	40'	50'	deg.	
0	0000	0029	0058	0087	0116	0145	89	40	8391	8441	8491	8541	8591	8642	49
1	0175	0204	0233	0262	0291	0320	88	41	8693	8744	8796	8847	8899	8952	48
2	0349	0378	0407	0437	0466	0495	87	42	9004	9057	9110	9163	9217	9271	47
3	0524	0553	0582	0612	0641	0670	86	43	9325	9380	9435	9490	9545	9601	46
4	0699	0729	0758	0787	0816	0846	85	44	9657	9713	9770	9827	9884	9942	45
5	0875	0904	0934	0963	0992	1022	84	45	1.0000	1.0058	1.0117	1.0176	1.0235	1.0295	44
6	1051	1080	1110	1139	1169	1198	83	46	1.0355	1.0416	1.0477	1.0533	1.0599	1.0661	43
7	1228	1257	1287	1317	1346	1376	82	47	1.0724	1.0786	1.0850	1.0913	1.0977	1.1041	42
8	1405	1435	1465	1495	1524	1554	81	48	1.1106	1.1171	1.1237	1.1303	1.1369	1.1436	41
9	1584	1614	1644	1673	1703	1733	80	49	1.1504	1.1571	1.1640	1.1708	1.1778	1.1847	40
10	1763	1793	1823	1853	1883	1914	79	50	1.1918	1.1988	1.2059	1.2131	1.2203	1.2276	39
11	1944	1974	2004	2035	2065	2095	78	51	1.2349	1.2423	1.2497	1.2572	1.2647	1.2723	38
12	2126	2156	2186	2217	2247	2278	77	52	1.2799	1.2876	1.2954	1.3032	1.3111	1.3190	37
13	2309	2339	2370	2401	2432	2462	76	53	1.3270	1.3351	1.3432	1.3514	1.3597	1.3680	36
14	2493	2524	2555	2586	2617	2648	75	54	1.3764	1.3848	1.3934	1.4019	1.4106	1.4193	35
15	2679	2711	2742	2773	2805	2836	74	55	1.4281	1.4370	1.4460	1.4550	1.4641	1.4733	34
16	2867	2899	2931	2962	2994	3026	73	56	1.4826	1.4919	1.5013	1.5108	1.5204	1.5301	33
17	3057	3089	3121	3153	3185	3217	72	57	1.5399	1.5497	1.5595	1.5697	1.5798	1.5900	32
18	3249	3281	3314	3346	3378	3411	71	58	1.6003	1.6107	1.6212	1.6319	1.6426	1.6534	31
19	3443	3476	3508	3541	3574	3607	70	59	1.6643	1.6753	1.6864	1.6977	1.7090	1.7205	30
20	3640	3673	3706	3739	3772	3805	69	60	1.7321	1.7437	1.7556	1.7675	1.7797	1.7917	29
21	3839	3872	3906	3939	3973	4006	68	61	1.8040	1.8165	1.8291	1.8418	1.8546	1.8676	28
22	4040	4074	4108	4142	4176	4210	67	62	1.8807	1.8940	1.9074	1.9210	1.9347	1.9486	27
23	4245	4279	4314	4348	4383	4417	66	63	1.9626	1.9768	1.9912	2.0057	2.0204	2.0353	26
24	4452	4487	4522	4557	4592	4628	65	64	2.0503	2.0655	2.0809	2.0965	2.1123	2.1283	25
25	4663	4699	4734	4770	4806	4841	64	65	2.1445	2.1609	2.1775	2.1943	2.2113	2.2286	24
26	4877	4913	4950	4986	5022	5059	63	66	2.2460	2.2637	2.2817	2.2998	2.3183	2.3369	23
27	5095	5132	5169	5206	5243	5280	62	67	2.3559	2.3750	2.3945	2.4142	2.4342	2.4545	22
28	5317	5354	5392	5430	5467	5505	61	68	2.4751	2.4960	2.5172	2.5386	2.5605	2.5826	21
29	5543	5581	5619	5658	5696	5735	60	69	2.6051	2.6279	2.6511	2.6746	2.6985	2.7228	20
30	5774	5812	5851	5890	5930	5969	59	70	2.7475	2.7725	2.7980	2.8239	2.8502	2.8770	19
31	6009	6048	6088	6128	6168	6208	58	71	2.9042	2.9310	2.9600	2.9887	3.0178	3.0475	18
32	6249	6289	6330	6371	6412	6453	57	72	3.0777	3.1084	3.1397	3.1716	3.2041	3.2371	17
33	6494	6536	6577	6619	6661	6703	56	73	3.2709	3.3052	3.3402	3.3759	3.4124	3.4495	16
34	6745	6787	6830	6873	6916	6959	55	74	3.4874	3.5261	3.5656	3.6059	3.6470	3.6891	15
35	7002	7046	7089	7133	7177	7221	54	75	3.7321	3.7760	3.8208	3.8657	3.9136	3.9617	14
36	7265	7310	7355	7400	7445	7490	53	76	4.0108	4.0611	4.1126	4.1653	4.2193	4.2747	13
37	7536	7581	7627	7673	7720	7766	52	77	4.3315	4.3897	4.4494	4.5107	4.5736	4.6382	12
38	7813	7860	7907	7954	8002	8050	51	78	4.7046	4.7729	4.8430	4.9152	4.9894	5.0658	11
39	8098	8146	8195	8243	8292	8342	50	79	5.1446	5.2257	5.3093	5.3955	5.4845	5.5764	10

deg.	60'	50'	40'	30'	20'	10'	deg.	60'	50'	40'	30'	20'	10'	deg.
80	5.6713	5.7694	5.8708	5.9758	6.0844	6.1970	9	5.6713	5.7694	5.8708	5.9758	6.0844	6.1970	9
81	6.3138	6.4348	6.5606	6.6912	6.8269	6.9682	8	6.3138	6.4348	6.5606	6.6912	6.8269	6.9682	8
82	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	7	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	7
83	8.1443	8.3450	8.5555	8.7769	9.0098	9.2533	6	8.1443	8.3450	8.5555	8.7769	9.0098	9.2533	6
84	9.5144	9.7882	10.078	10.385	10.7111	11.0595	5	9.5144	9.7882	10.078	10.385	10.7111	11.0595	5
85	11.430	11.826	12.250	12.706	13.197	13.727	4	11.430	11.826	12.250	12.706	13.197	13.727	4
86	14.300	14.924	15.605	16.350	17.169	18.075	3	14.300	14.924	15.605	16.350	17.169	18.075	3
87	19.081	20.206	21.470	22.903	24.542	26.432	2	19.081	20.206	21.470	22.903	24.542	26.432	2
88	28.636	31.242	34.368	38.189	42.964	49.104	1	28.636	31.242	34.368	38.189	42.964	49.104	1
89	57.290	68.750	85.940	114.588	171.885	343.770	0	57.290	68.750	85.940	114.588	171.885	343.770	0

Natural Cotangents

475 N 18  
C 29  
565 2119  
580 2124

