984

F.B. 984

FIELD BOOK

1930

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.

	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.

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Traverse of S.W. & N. Line of Arcadia Dr. And W.L. Hawk St. in Avalon Hts

Sta.	L	Dist	Bearing	N	S	E	W
Hub 64.97 W. of W.L. Hawk St. on S.L. Barr.							
00 to - Int W.L. Hawk produced South with S. Line Arcadia Dr.		113.30	N. 0°17' E.				
B.C.	89°21' L.	30.33 + Hub & 111.26 + Hub &	N. 89°34' W.				
	R=323.03.	141.59		2.31			141.57
E.C.	10°52' R.	121.80 &	N. 78°12' W.	24.91			119.23
B.C. Orig Hub	10°52' R.	25.79 &	N. 67°20' W.	9.75			23.33
P.C.C. " "	R=208.64 10°02' R	76.70 &	N. 57°18' W.	39.28			61.18
E.C. " "	R=109.93 27°05'30" R	64.30 &	N 30°12'30" W.	55.74			32.45
B.C. No Subtend.	17°03'30" R	25.30 &	N. 13°09' W.	24.64			5.76
* P.R.C. Orig Hub	7°03'30" R	56.43 (& 3rd)	N. 6°05'30" W.	56.11			5.99
E.C. " "	16°15' L.	81.47 &	N. 22°20'30" W.	75.36			30.97
B.C. "	23°18'30" L.	(6.32) & 40.24	N. 45°39' W.	28.13			28.77
E.C. Orig Hub.	3°50' R.	46.55 &	N. 41°49' W.	34.70			31.04
B.C. " "	3°30' R.	17.63 &	N. 37°59' W.	13.89			10.85
E.C. " "	4°41' R.	27.68 &	N 33°18' W.	23.13			15.20
E.C. " "	4°41' R	28.60 &	N. 28°37' W.	25.11			13.70
P.C.C. " "	24°45' R	31.70 &	N. 3°52' W.	31.58			3.49
E.C. "	50°10'30" R	68.50 &	N. 46°18'30" E.	47.32		49.53	
B.C. Orig Hub	25°25'30" R	40.10 &	N. 71°44' E.	12.57		38.08	
B.C.C. " "	4°32' R.	100.38 &	N. 76°16' E.	23.83		97.51	
E.C. " "	7°56'30" R	196.16 &	N. 84°12'30" E.	9.70		95.67	
B.C. " "	3°24'30" R	95.52 &	N 87°37' E.	3.97		95.44	
E.C. " "	1°31' R	74.82 &	N 89°08' E.	1.13		74.81	
P.T.	1°31' R.	75.47 (Sta 5)	S 89°21' E.		0.86	75.47	
Adj.	89°38' R.	562.67	S 0°17' W.		562.61		2.85
				563.16	563.46	526.51	526.38

Traverse from P.C. W line Hawk 46.34 ft N. of S.L. Arcadia, along on East- North & West line of Avalon Drive to P.R.C. on W.L Arcadia Drive.

Sta.	Angle	Dist	Bearing
oo = Int. S.L. Arcadia with W.L Hawk produced South.		46.34	
to P.C. W.L. Hawk & 367 W. of Pueblo line			N. 0°17' E.
R=950 to P.C.C.	R. 44°30'30"	13.32	S 44°47'30" W.
R=415 to P.C.C. Orig Hub	R. 69°10'	33.15	
E.C.	R. 40°09'	12.76	
P.C. Orig Hub	R. 15°29'30"	54.09	
E.C. " "	L. 11°22'	68.98	
B.C. " "	L. 11°22'	51.95	
E.C.	R. 8°46'	88.44	
B.C.	R. 8°46'	88.45	
E.C.	L 38°15'	80.51	
B.C.	L. 38°15'	112.15	18.21 P.C. / 16.98 / 18.05 P.C. / 58.91 P.C.
E.C.	L. 43°24'	56.83	
B.C.	L. 43°24'	72.29	
E.C.	R. 66°41'30"	21.92	
Same line produced = P.R.C. Page 1. *		106.37	

Traverse of ℄ Summit from NL. Avalon Drive to E line Avalon Drive.

to P.T. on NL Avalon E of Summit.		
to ℄ Summit Place		35.19
	Δ 86°55' L.	
to ℄ E line Avalon		= 1803 Hub.
to P.C. for E side Summit	"	34.52 "
to " " " W "	"	35.59 "
to P.C. for NL Summit.		171.51 "
to " " " EL "	"	176.44
to P.T. ℄ Summit	Δ 90°14' L.	194.01
	R = 1750.	
	ST = 1757.	
to P.T. Hub for NL Summit		1757
to P.C. Hub	Δ = 111°16' L.	93.28
	ST = 37.21	
PC "	R =	
	Lc =	100.32
to Int ℄ Summit	Δ 56°10'	152.30
with EL. Avalon.	ST = 30.91	
	R =	
	Lc =	
to P.C. E line Avalon		71.13

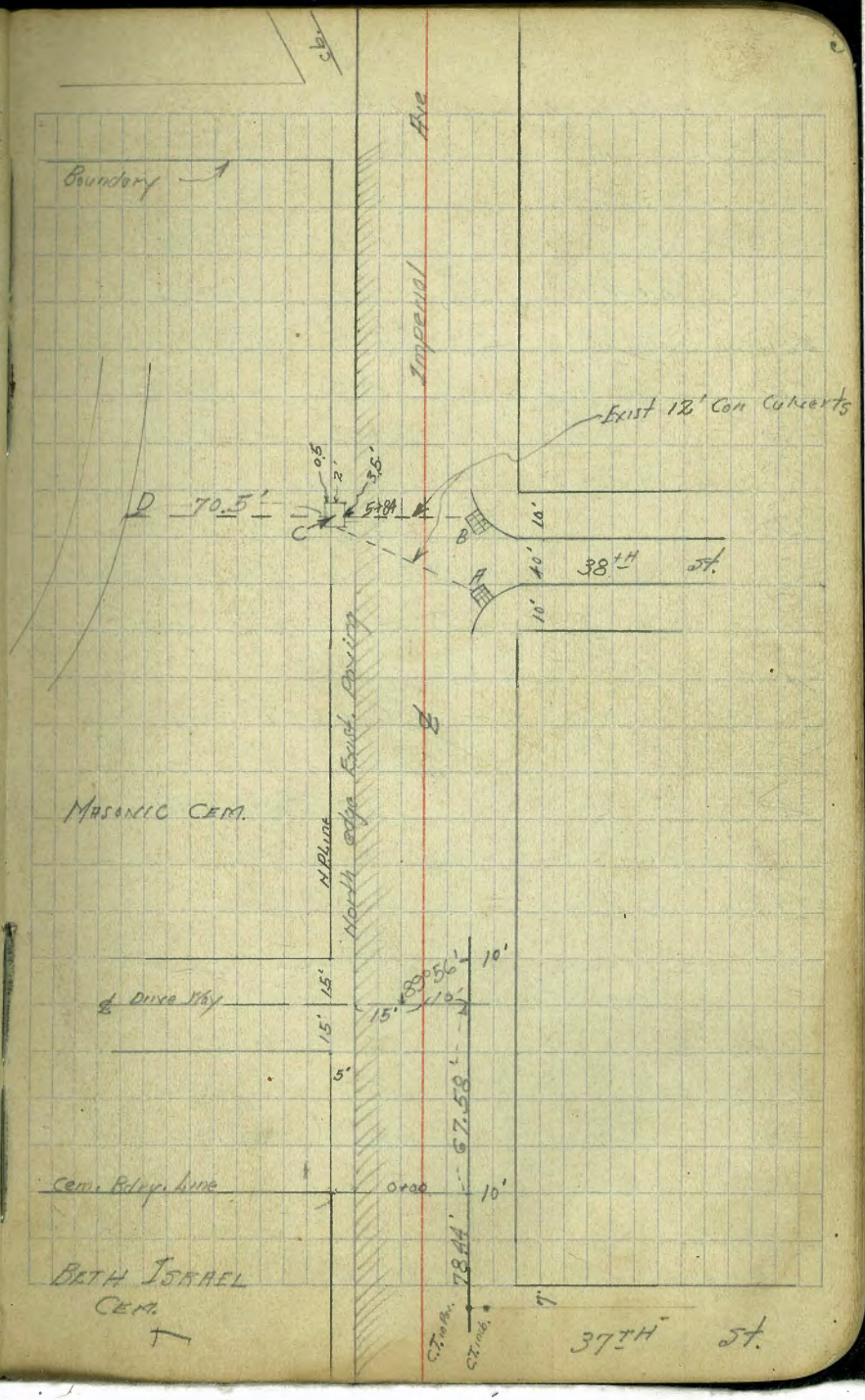
Chas. Walker
Wm Bliss
Drebert
8-18-30

LEVELS FOR CONCRETE WALL
MASONIC CEMETARY
Frontage on Imperial Ave.

B.M. SE B.P. Imp. & South Boot. Book 1341-75

	6.20	104.11	97.91
	0+00		
S. top cb.		5.26	98.85 ✓
Gut. on Paving		5.78	98.33
℄ " "		5.46	98.65 ✓
N edge "		5.59	98.52
N Line		5.6	98.51
- +5'		5.2	98.91 ✓
+5.8' on top Beth Israel Wall		5.01	99.10
	0+25		
N edge Paving		5.75	98.36
N		5.9	98.21
+1		5.9	98.21
+2		4.2	99.91
-+5		4.2	99.91 ✓
	0+50		
S. top. cb.		5.51	98.60 ✓
S. Gut. on Paving		6.05	98.06
℄ " "		5.67	98.44 ✓
N edge " "		5.87	98.24
N		5.9	98.21
+1		5.7	98.41
+2		4.2	99.91
+5		4.2	99.91 ✓

LEVELS For Drive Way on Nor. ℄



N.R Line Imperial = 0+00		
N	5.9	98.21
℄	5.9	98.21
E	6.0	98.11
0+12		
E	5.3	98.81
+2	5.3	98.81
+3	5.7	98.41
℄	5.5	98.61
+13'	4.9	98.21
+14	4.4	99.71
N	4.4	99.71
0+45		
N	6.7	97.41
+2	6.9	97.21
+5	7.7	96.41
℄	7.7	96.41
+13	7.9	96.21
E	7.3	96.81
0+75 on Imp.		
N edge Pav.	6.04	98.07
N	6.0	98.11
+5	5.7	98.41 ✓
0+84		
N edge Pav.	6.06	98.05
N	6.1	98.01
+1	5.2	98.91

N+5'	5.1	99.01 ✓
1+00		
S top Ch.	5.81	98.30 ✓
Gut. on Pav.	6.38	97.73
℄ "	6.03	98.08 ✓
N edge "	6.19	97.92
N	6.4	97.71
+2	5.4	98.71
+5	5.4	98.71 ✓
1+25		
N edge Pav.	6.29	97.82
N	6.5	97.61
+5	6.5	97.61 ✓
1+50		
S top Ch.	6.17	97.94 ✓
Gut. on Pav.	6.68	97.43
℄ "	6.40	97.71 ✓
N edge "	6.46	97.65
N	6.8	97.31
+1	6.0	98.11
+3	7.8	96.31
+5	7.8	96.31 ✓
+10	8.0	96.11
1+75		
N edge Paving	6.63	97.48
N	6.8	97.31

		104.11		
+1			6.3	97.81
+2.5			6.3	97.81
+2.7			9.0	95.11
+5.0			9.0	95.11 ✓
+10			9.1	95.01
T.P.	4.08	101.32	6.87	97.24
	2+00			
S cb.			3.65	97.67 ✓
Gut. on Pav.			4.14	97.18
℄ " "			3.81	97.51 ✓
N edge " "			4.01	97.31
N			4.1	97.22
+1			3.2	98.12
+2.5			4.1	97.22
+3			6.8	94.52
+5			7.0	94.32 ✓
+10			7.0	94.32
	2+25			
N edge Pav.			4.15	97.17
N			4.2	97.12
+1			3.4	97.92
+2.5			4.2	97.12
+3			6.9	94.42
+5'			6.9	94.42 ✓
+10'			6.9	94.42
	2+50			

~~104.11~~
101.32

S cb.		3.93	97.39 ✓
S Gut.		4.49	96.83
℄		4.09	97.23 ✓
N edge Pav.		4.31	97.01
N		4.2	97.12
+1		3.2	98.12
+2.5		4.2	97.12
+3		7.6	93.72
+5		7.1	94.22 ✓
10'		7.0	94.32
+1	2+75		
N edge Paving		4.45	96.87
N		4.3	97.02
+1		3.6	97.72
+2.5'		4.3	97.02
+3'		6.5	94.82
+5'		7.0	94.32 ✓
+10'		7.0	94.3
	3+00		
S top cb.		4.28	97.04 ✓
Gut.		4.80	96.52
℄ on Pav.		4.44	96.88 ✓
N edge Pav.		4.58	96.74
N		4.6	96.72
+1		4.0	97.32
+2.5		4.0	97.32

+3			5.6	95.72	
+5			6.6	94.72	✓
+10			6.8	94.52	
	3+25				
N edge	Paving		4.68	96.64	
N			4.9	96.42	
+1			4.0	97.32	
+2.5			4.4	96.92	
+3'			6.3	95.02	
+5'			7.0	94.32	✓
+10'			7.2	94.12	
	3+50				
S cb.			4.58	96.74	✓
Gut.			5.07	96.25	
℄			4.66	96.66	✓
N edge			4.84	96.48	
N			5.0	96.32	
+1			4.5	96.82	
+2			5.0	96.32	
+3			7.2	94.12	
+5			7.7	93.62	✓
+10'			7.6	93.72	
	3+75				
N edge	Paving		5.02	96.30	
+4			5.3	96.02	
N			4.4	96.92	
+15			5.3		

+2		7.0	94.3
+5		7.4	93.9 ✓
+10		7.4	93.9
	4+00		
S cb.		4.98	96.34 ✓
Gut.		5.41	95.91
℄		5.06	96.26 ✓
N edge Pav.		5.15	96.17
+4'		5.4	96.92
N		4.8	96.52
+15		5.4	95.92
+2'		6.5	94.82
+5		7.0	94.32 ✓
+10'		7.3	94.02
	4+25		
N edge Paving		5.35	95.97
+4		5.7	95.62
N		4.9	96.42
+2		6.9	94.42
+5		7.2	94.1 ✓
+10'		7.2	94.1
	4+50		
S top cb.		5.28	96.04 ✓
Gut.		5.81	95.51
℄ on Paving		5.35	95.97 ✓
N edge "		5.51	96.81

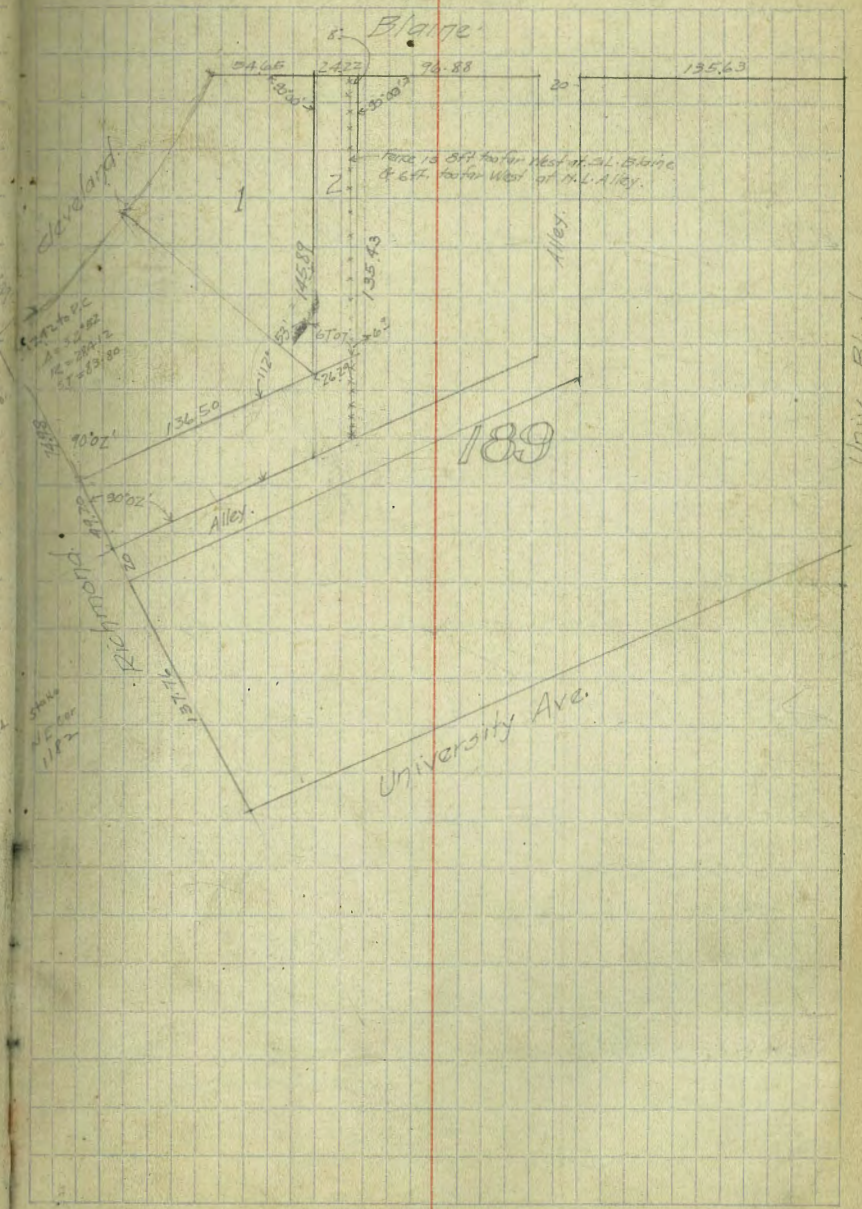
Cont. on Page 68

West
Otten 4/11/16
Moore

Survey lots 1 & 2. Bl. 189.
Univ Hts

Sta	Ang	Bearing	Mag Bearing
2+71.01		No Line 11.87	
1+73.07 EC			
1+32 PI	L 14°42'	N 2°45' E	
0+76.4 PC			
0+00		N 17°30 E	

93°26'
597.92
51°00'
35°30'
107°24'
767.28'
Δ 14°42'
T 51.60
R 400'
L 102.62'



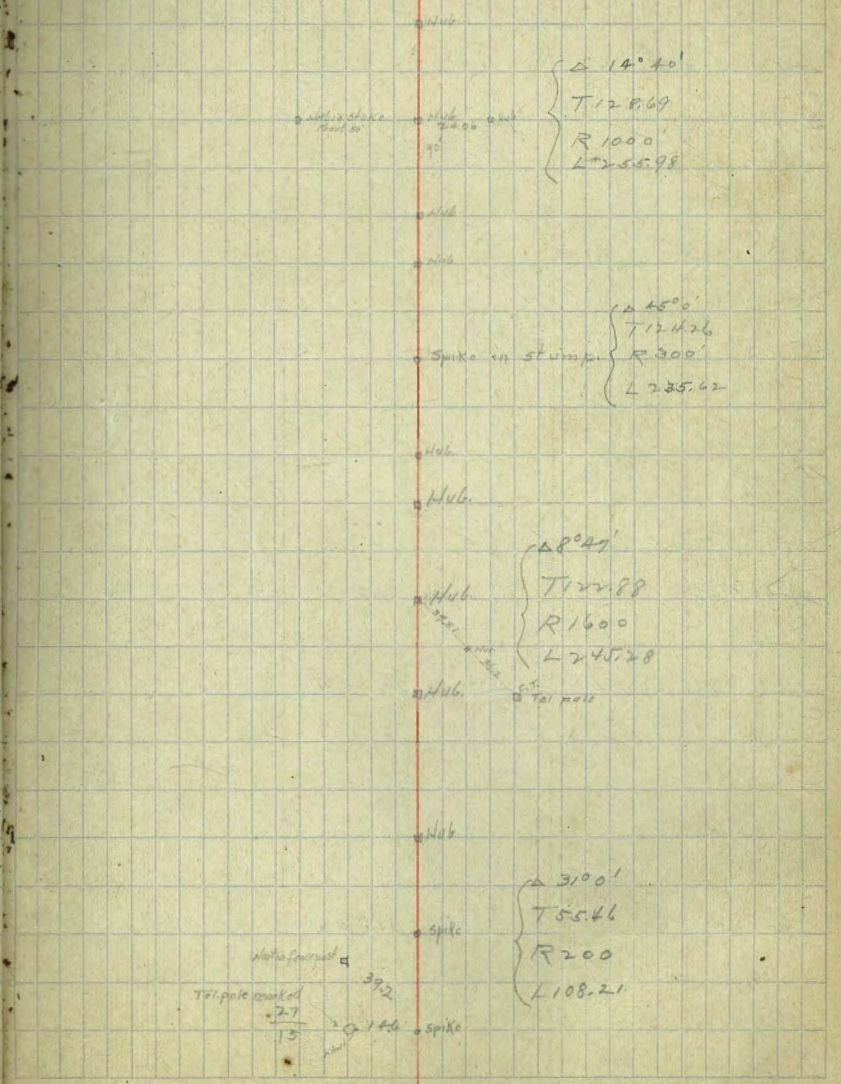
Survey of Murray Canon Road.

to W.L. PL 113.7

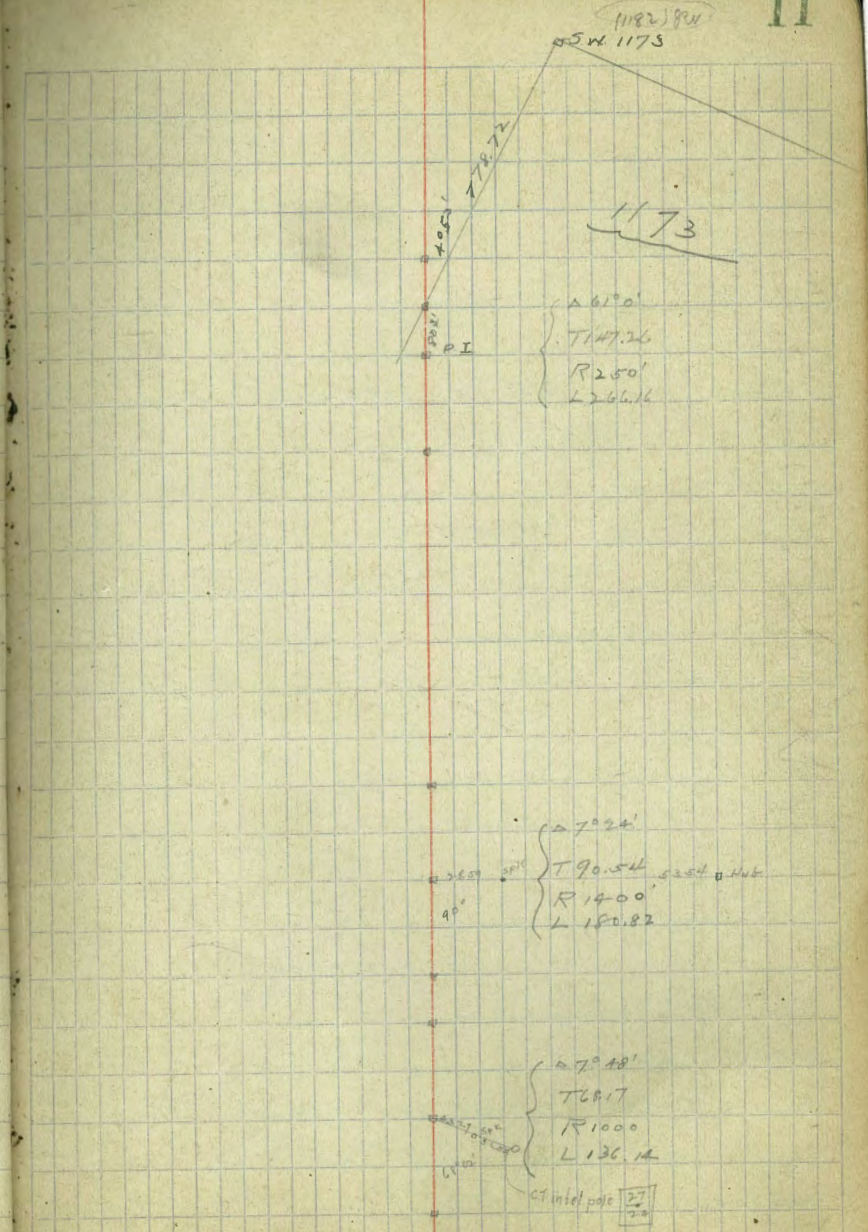
Sta	Ang	Bearing	Mag. Bearing
Plotted			
8+80 PI	L 14° 40'	S 23° 26' W	S 8° 10' W
7+51.21 PC			
7+21.99 EC			
6+10.61 PI	R 45° 0'	S 38° 06' W	S 22° 40' W
4+86.25 PC			
4+84.40 EC			
3+62 PI	L 8° 49'	S 6° 54' E	S 22° 10' E
2+29 PC			
1+08.21 EC			
0+55.46 PI	L 31° 01'	S 1° 53' W	S 13° 25' E
0+00 PC - Ctr old road			

6 Dec
16 Hanson
Harris

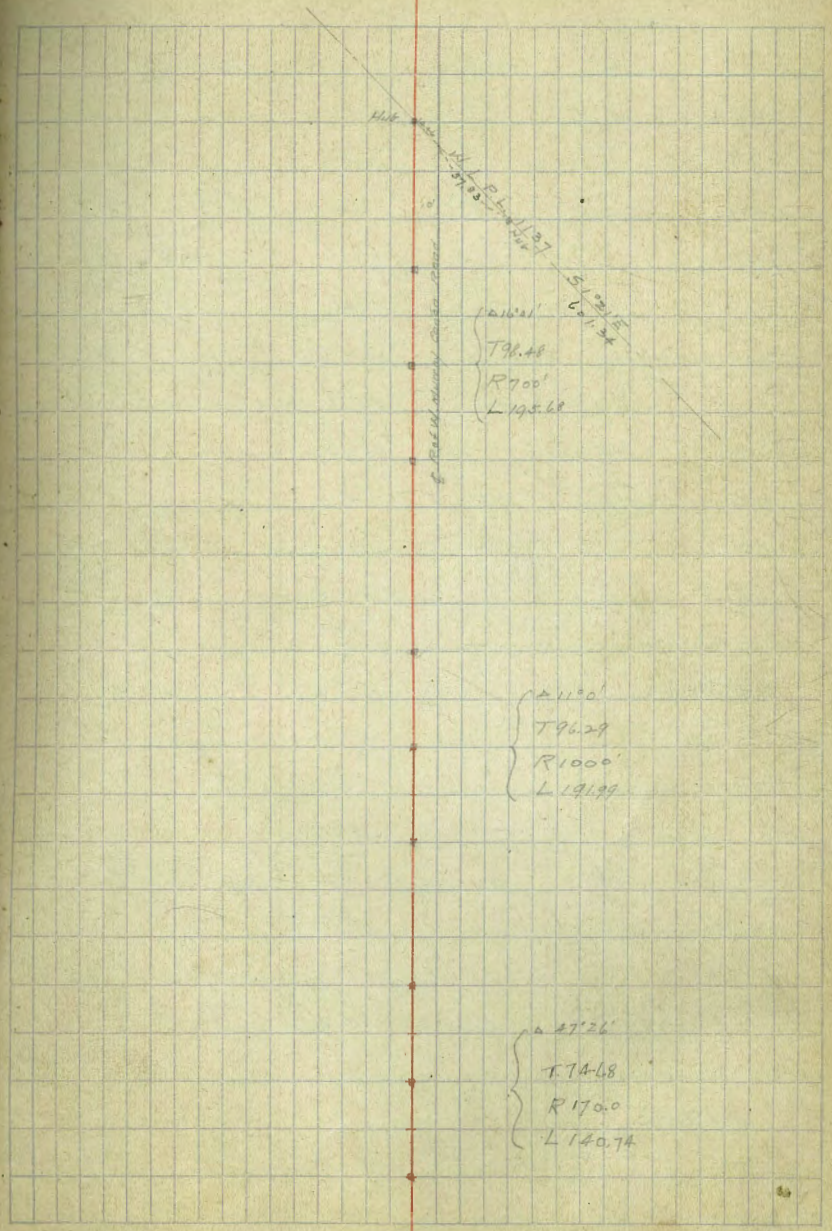
1+44.9
63.72
64.72



Sta	Ang	Bearing	Mag. Bearing
27+78.9 EC			
26+60 PT	R 61°0'	S 84°58 W	S 69°30 W
25+12.74 PC			
17+64.28 EC			
16+74 PI	L 7°24'	S 23°50 W	S 8°40 W
15+83.46 PC			
15+19.97 EC			
14+52 PT	R 7°48'	S 31°4 W	S 16°0 W
13+83.83 PC			



Sta	Ang.	Bearing	Mag. Bearing
38+14.71			
37+46.73 EC			
36+49.53 PI	R 11°01'	S 42°25'W	S27°15'W
35+51.05 PC			
34+34.7° EC			
33+39. PI	L 11°0'	S26°22'W	S11°15'W
32+42.71 PC			
31+03.06 EC			
30+37 PT	L 47°26'	S67°24'W	S22°15W
29+62.32 PC			



Levels Over Road Thru Old Town $\frac{1}{\frac{23}{16}}$ Davis / Hancock / Herrick

Sta	+	H.I.	−	Elev.	
	6.05	58.70		52.65	BM spk pole LaSalle & Trias
0+00 = W.L. Trias			1.8		
+04			1.9		
+06			4.8		
+18			6.4		
+23			2.2		
+50			2.0		
+60			3.8		
+61			2.2		
1+00			2.5		
+50			3.8		
2			4.9		
+50			6.8		
+67^35 E.C.			7.6		
3			8.1		
+50			9.7		
4			10.9		
T.P.	5.02	53.22	10.50	48.20	
+50			8.4		
5			10.3		
+25			9.9		
+50			12.0		
+54^15 P.C.			12.0		
6			11.2		
+50			11.1		

13

Sta	+	H.I.	−	Elev.
7			10.3	
+50			7.7	
8			4.8	
+50			4.1	
9			5.3	
+50			5.0	
T.P.	12.12	62.43	2.91	50.31
10			11.8	
+50			10.6	
11			10.4	
+50			9.5	
12			10.1	
+40 P.R.			11.1	
+50			11.4	
13			13.7	
+50			14.0	
14			12.1	
+47^65 E.C.			10.2	
+50			9.9	
T.P.	12.71	67.53	7.61	54.82
15			11.6	
+50			7.2	
16			3.7	
+50			0.3	
T.P.	3.40		0.20	

Sta	+	6753	−	Elev
16+92			18	
17			44	
T.P	1.96	43.12	6.37	61.16
+15 28	Ctr Juan St	Harney	0.4	
+50			13	
18			29	
+50			49	
19			70	
+50			92	
20			116	
T.P	0.23	60.40	12.95	50.17
+50			13	
21			35	
+50			63	
22			91	
+50			116	
+65 89			124	
T.P	0.22	38.18	12.44	37.96
+90			15	
+93			27	
23			31	
+50			47	
+89			55	
+97			96	
24			96	

Sta	+	3818	−	Elev
+25			95	
+28			80	
+45			74	
+75			58	
+84			66	
+50			88	
+60			84	
+68			88	
+86			110	
+88			117	
+97			125	
25			118	
+05			130	
+21			122	
T.P	1.23	26.36	13.05	25.13
+50			20	
26			39	
+17			50	
+50			28	
+60 97	Ctr Payne St		26	
27			76	
+27			104	
+50			108	
28			132	

Sta	+	HI	−	Elev.
		26.36		
2 P.T. 50			14.3	
29			16.6	
+35			15.8	
+50			16.1	
+75			13.0	
30			8.7	
+20.21 Rt			8.3	
T.P	4.21	27.31	8.26	18.10
+50			3.0	
31			3.3	
+37			3.5	
+50			3.9	
+91			5.1	
32			4.7	
+13.61			4.1	
+50			3.3	
33			4.0	
+50			4.6	
34			5.0	
+21.85 Rt			5.2	
+50			5.5	
35			5.9	
+50			7.1	
36			9.2	
+21.79 St Chestnut			9.8	

Sta	+	HI	−	Elev.
T.P	5.36	17.87	9.80	12.51
+50			4.0	
+91			7.0	
37			5.4	
+50			5.7	
38			4.9	
+50			3.6	
39			4.2	
+50			4.0	
+97			3.6	
40			4.2	
+23			7.6	
+44.01 Ctr Taylor St			7.1	
Ctr Bell Taylor & Hickory		Chestnut?	11.9	5.93
T.P	9.28	20.14	7.01	10.86
+50			9.3	
41			8.4	
+50			6.4	
42			5.6	
+50			5.8	
+99.96 Lt			5.7	
43			5.7	
+50			4.4	
44.00 96 Rt End Old Town Bridge			1.2	18.9

5+54.75 P.C.

685.25

4+32.75 = ℄ Ampudia

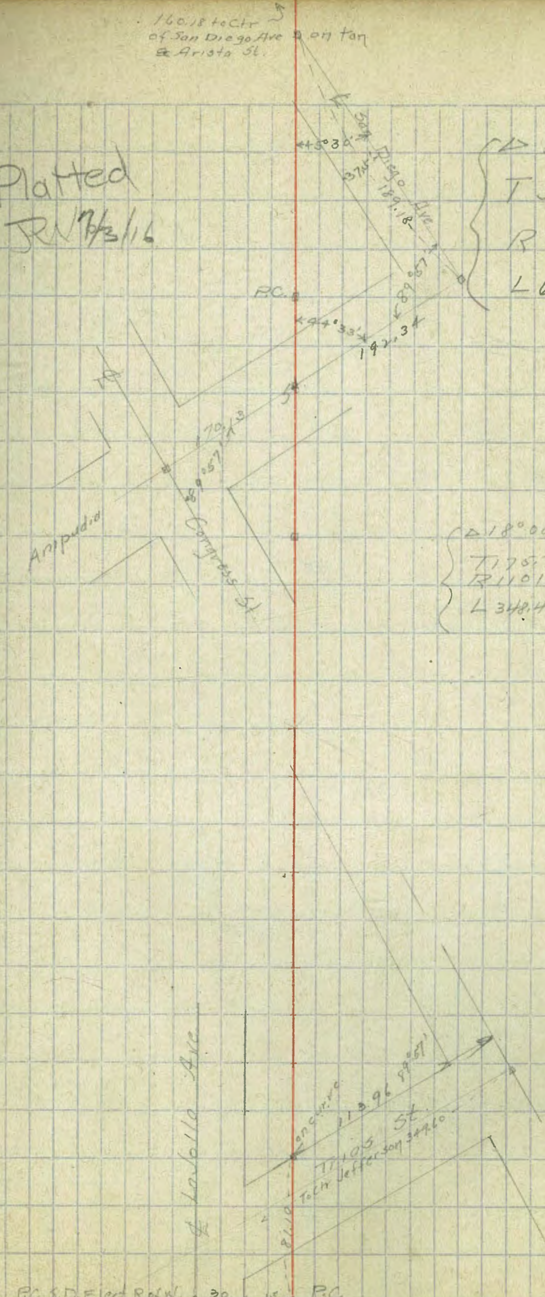
287.4

2+67.35 E.C.

267.35

0+00

Platted
JRN 7/3/16



Δ 32°58'
T 352.41
R 1191
L 685.25

Δ 18°08'
T 175.70
R 1101
L 348.45

16+60.87 ℄ Mason

22+65.79 RT 45°54' 35"

20+65.79 ℄ Juan Y Twiggs

17+15.28 L 44°17½'

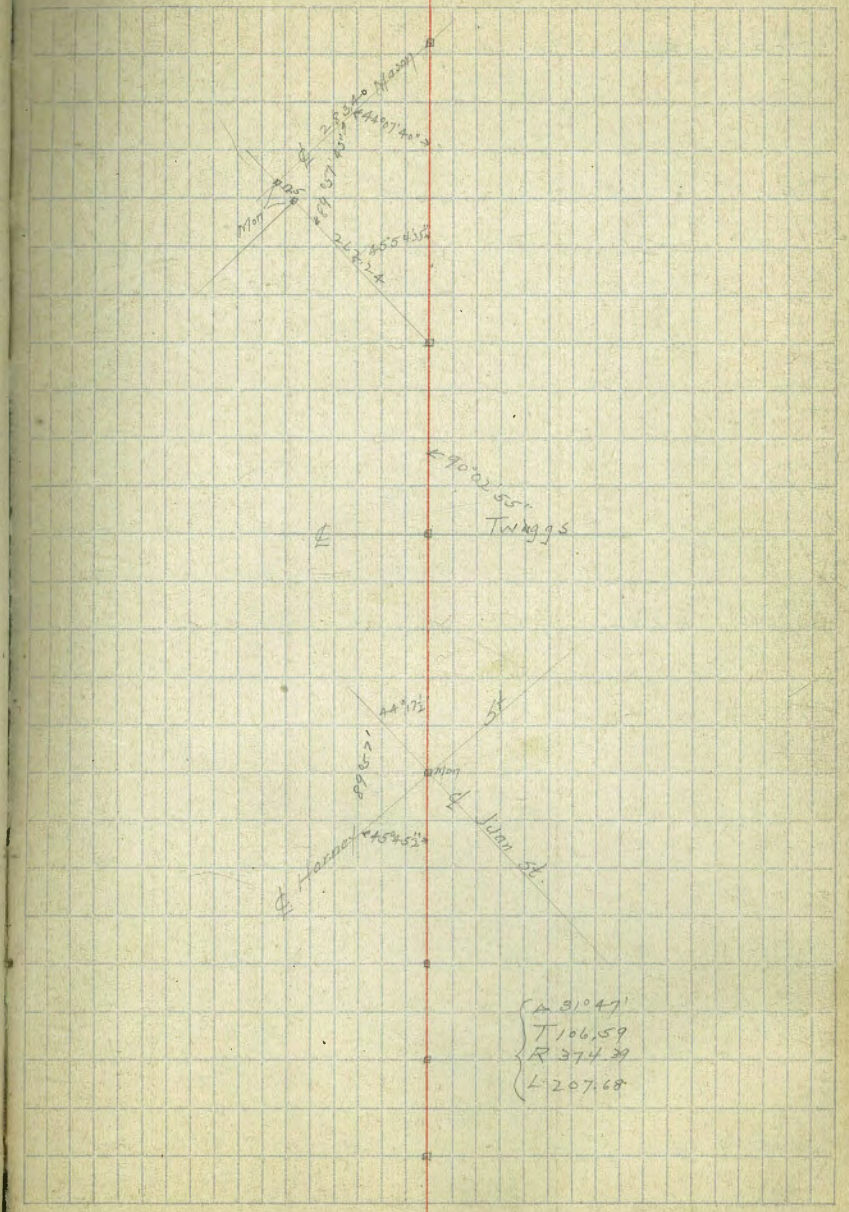
14+47.66 E.C.

13+46.59 PI R 31°47'

12+40 BR

207.68

605.26



36+21.79 Δ 27°55' = E Line Chestnut

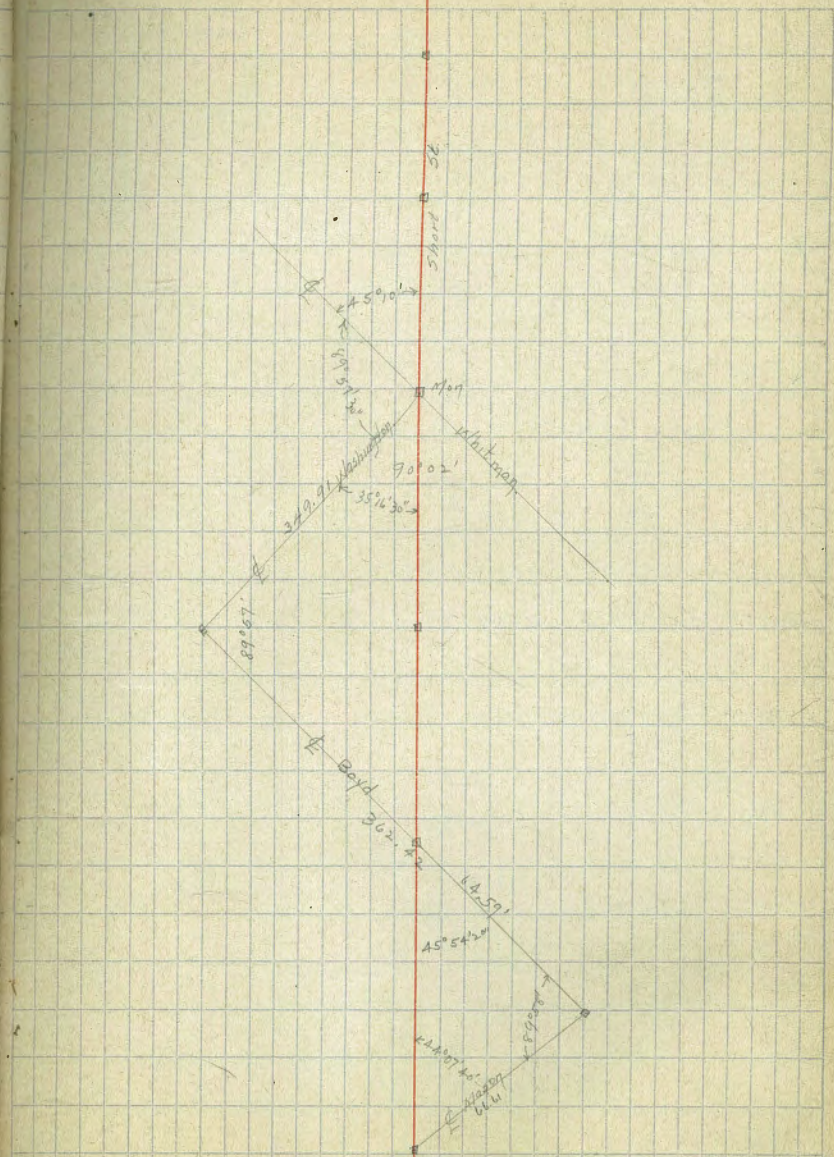
34+21.85 R 17°16'

32+13.64 Δ 9°36'20"

30+20.71 R 8°52'

27+52.21 = ℄ Boyd.

20+60.07 = ℄ Mason



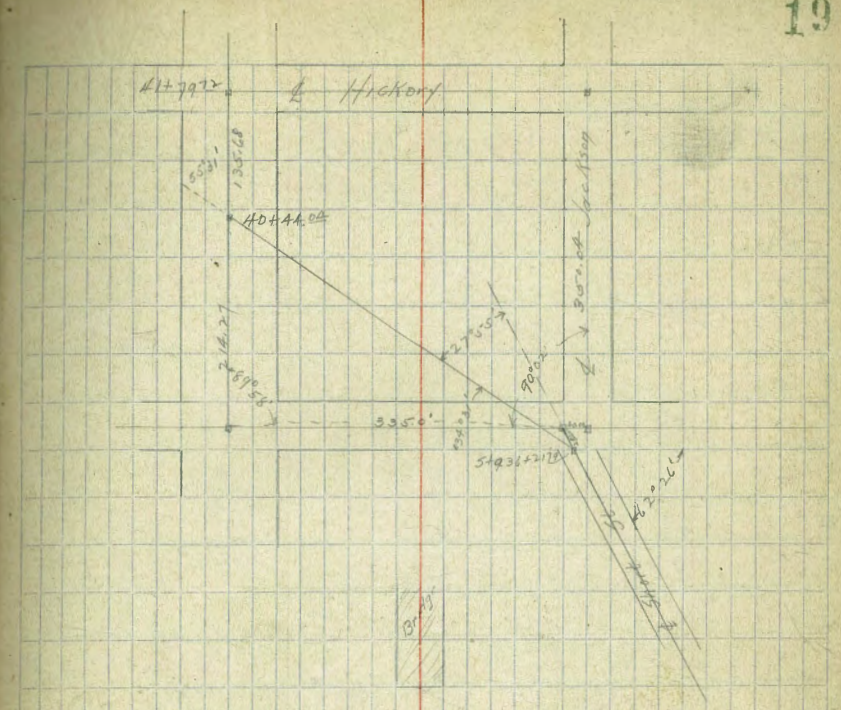
44+00 96 End Old Town Bridge

42+88 95 L 54°52½'

41+79 72 ℄ Hickory

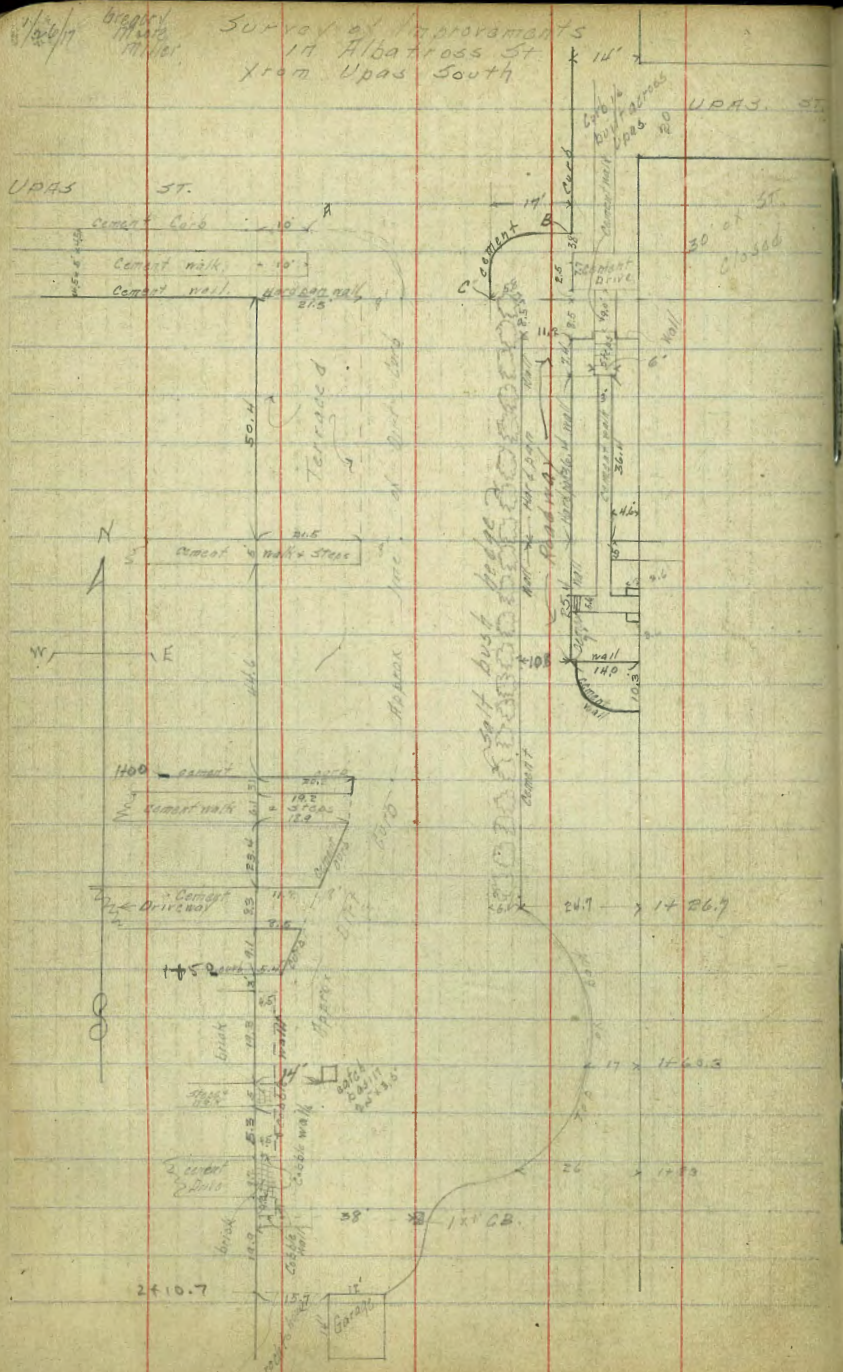
40+44 04 R 55°31'

36+21 79 L 27°55'



1/26/11 Gregory Moore Miller

Survey of Improvements in Albatross St. Xrom Upas South



1/26/11 Gregory Moore Miller

Levels on Albatross St 80' wide So. of Upas

21

B.M.	8.35	250.75		242.40 Mon'Mt. Upas+Sum.
		Elev on Curb So. Side Upas		
Shown on sketch as "A"			4.6	246.1
		S.L. Upas		
W			4.5	246.2
+21.5			5.1	245.6
+29.5			5.3	245.4
Point C			5.6	245.1
E Cb.			6.5	244.2
Point B			6.4	244.3
		1' So. of Upas		
W			1.5	249.2 Top of Step
		8.5 + -		
E			6.2	244.3 Top of Wall
Cb			6.3	244.4 + - Steps
+10			6.3	244.4 " - Walk
+17			5.7	245.0
+36.6			5.6	245.1 + dirt curb
+46.5			5.2	245.5
W			1.7	249.0
TP	4.38	246.93	7.20	242.55
		15.9 So.		
E			7.9	239.0
+4.6			7.9	239.0 = walk at bottom of steps
+13			7.6	239.3 bottom wall

246.93

+14	4.3	242.6	= roadway
+24	4.1	242.8	
+31	2.3	244.6	
	25' So. of Up as = break in roadway on East		
14E of EL.	6.6	240.3	
24E of EL.	6.8	240.1	
	50' So. of Up as		
E	8.3	238.6	
+6	8.3	238.6	on walk
eb	8.2	238.7	on wall
eb	9.0	237.9	roadway
+10	8.9	238.0	"
+10	8.1	238.8	on wall
+17	4.4	242.5	
+36.5	4.1	242.8	dirt curb
+44.5	3.6	243.3	= bottom of top
W	+0.3	247.2	on walk
	77.7' So.		
E	8.3	238.6	Top wall
eb	8.4	238.5	" "
eb	12.1	234.8	roadway
+10	12.0	234.9	" "
+10	8.4	238.5	Top wall
+17	5.7	241.2	

246.9

88' So.

E	14.5	235.4 Top wall
"	14.9	232.0 garage ent.
eb	14.0	232.9 roadway
+10	13.6	233.3 " "
+10	8.4	238.5 Top wall
	100' So.	
E	15.1	231.8 floor of garage
eb	14.7	232.2 roadway
+10	14.2	232.7 " "
+10	8.2	238.5 Top wall
+17	7.0	239.9
+36.5	6.9	240.0 dirt curb
+44.5	6.7	240.2
+44.5	6.0	240.9 Top curb
W	2.8	244.1
	103.1 = No. side cement walk	
W	3.7	243.2 on walk
+8.5	4.1	242.8 " "
+19.2	6.0	240.9 " "
+19.2	7.0	239.9
+27.2	7.1	239.8 dirt curb
	109.2 = So. side cement walk	
W	3.7	243.2 on walk
+8.5	4.1	242.8 " "
+18.9	6.0	240.9 " curb

	246.83		
+18.9	7.3	239.6	ground
+18.9	6.7	240.2	Top curb running So.
+26.9	7.3	239.6	dirt curb
	126.7 So.		
E			
cb	15.3	231.6	
+10	14.7	232.2	
+10	14.4	232.5	
+17	9.6	237.5	Top wall
	8.5	238.4	
	132.6 = No wall of Driveway		
W	8.8	242.1	Top wall
+11.2	7.4	239.5	~ curb
+11.2	8.0	238.9	ground
+11.2	8.5	238.4	grade of drive
+19.2	8.5	238.4	dirt curb
	140.9 = So wall of Driveway		
W	5.5	241.4	Top wall
+8.5	7.6	239.3	~ curb
+8.5	8.2	238.7	ground
+8.5	8.5	238.4	grade of Drive
+16.5	8.5	238.4	dirt curb
+61	9.1	237.8	Top of circle
+63	14.1	232.8	
E	15.4	231.5	= Top of bank

	246.9		
	150' So.		
E+17	9.2	237.7	= Top of circle
+66.6	8.8	238.1	= dirt curb
+74.6	8.5	238.4	
+74.6	7.8	239.1	Top curb
W	7.0	239.9	~ ~
W	7.8	239.1	on dirt top
	153' So		
W	7.8	239.1	on dirt
W	7.2	239.7	Top cobble wall
+4.5	7.4	239.5	~ ~ ~
+4.5	8.5	238.4	bot. ~ ~
	160.3 So		
E+24.7	9.9	237.0	Top of circle
	172.3 So = No side approach to house		
W	8.2	238.7	on brick
+4.5	8.2	238.7	~ wall
+4.5	9.0	237.9	~ dirt
+12.5	9.6	237.3	~ ~ curb
+12	10.7	236.2	Top cobble
+12	11.2	235.7	bottom ~
	182.6 So = No. side drive		
W	8.3	238.6	
W	9.2	237.7	grade of Drive
+4.5	8.4	238.5	Top cobble wall
+4.5	9.5	237.4	bot. ~ ~

		246.9			
+12.5			10.0	236.9	dirt curb
+54			10.5	236.4	Top of circle
		190.8 50 = 50 Side Driveway			
W			8.6	238.3	Top cobble wall
W			9.2	237.7	grade of drive & ground
+4.5			8.8	238.1	Top cobble wall
+4.5			9.9	237.0	on bricks
		200 50			
W			9.0	237.9	Top cobble wall
W			10.2	236.7	ground bot of cobble wall
+4.5			9.0	237.9	Top of cobble
+4.5			10.4	236.5	bot. "
+12.5			10.8	236.1	dirt curb
+38			12.8	234.1	on grating of C.B
+40			11.7	235.2	Top circle
	Center of garage				
			11.8	235.1	

Notes reduced 2/9/17 SWS

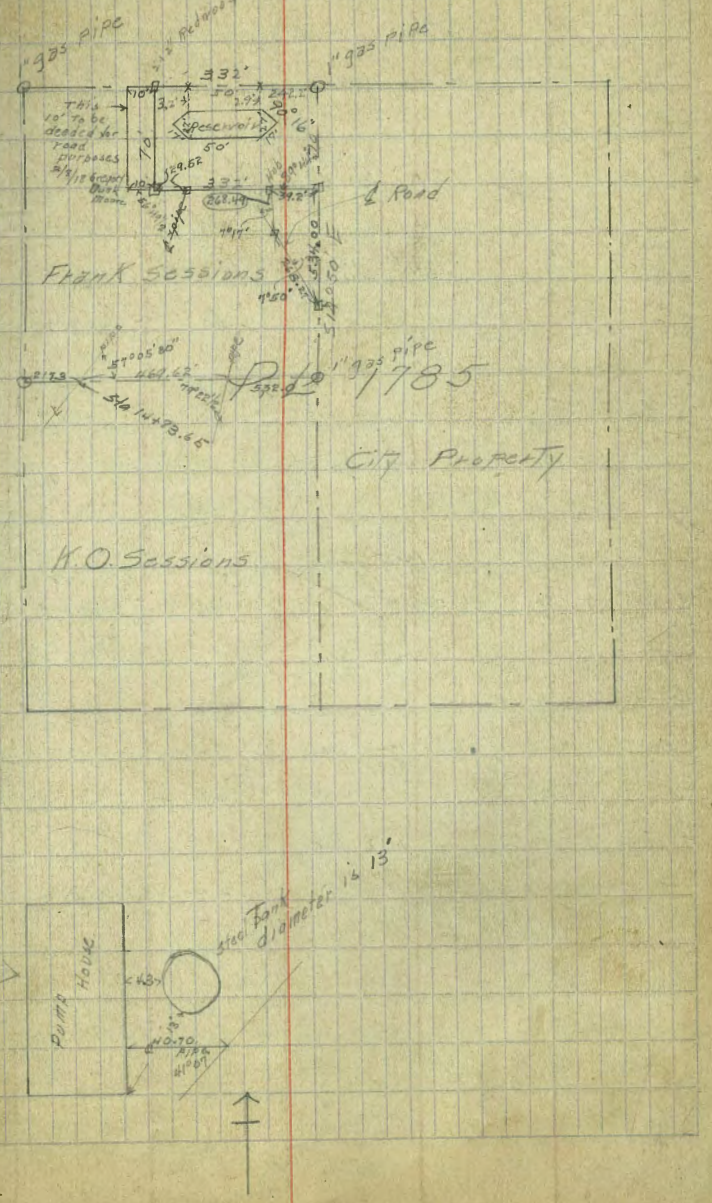
3/13 Gregory Duffle Moore

Traverse on ℄ ox 4" pipe from Deeded Reservoir Site to Pump House

00 = 29.52	East ox SW Cor Deeded reservoir Site	
00	56°49½'	angle Left from SW cor Res. Site see sketch
2+41.92	3°58½'	Left
3+18.57	4°05'	Left
3+81.49	6°42'	Left
4+39.55	7°01'	Left
4+90.73	4°31'	Left ✓
7+25.39 =	Branch Line see page 29 for Traverse	
7+27.24	1°23'	Right ; ctr ox Gate Handle
7+61.49	20°52'	Right ✓
8+16.59	9°51½'	Right ✓
8+83.99	6°01½'	Right ✓
9+89.01	3°00½'	Left ✓
11+06.43	3°03'	Left ✓
13+14.31	6°38'	Left ✓
14+83.65 =	INT. ox SL ox NW3¼ A. P.L. 1785	see sketch
15+21.76	12°25½'	Right ✓
15+83.41	3°35½'	Right
17+34.91	41°07'	Right
17+75.61	to East Side ox Pump House	see sketch

Survey of Lot and Location of Reservoir in P.L. 1785

7/21/17 Dunkle Shaw Bunker

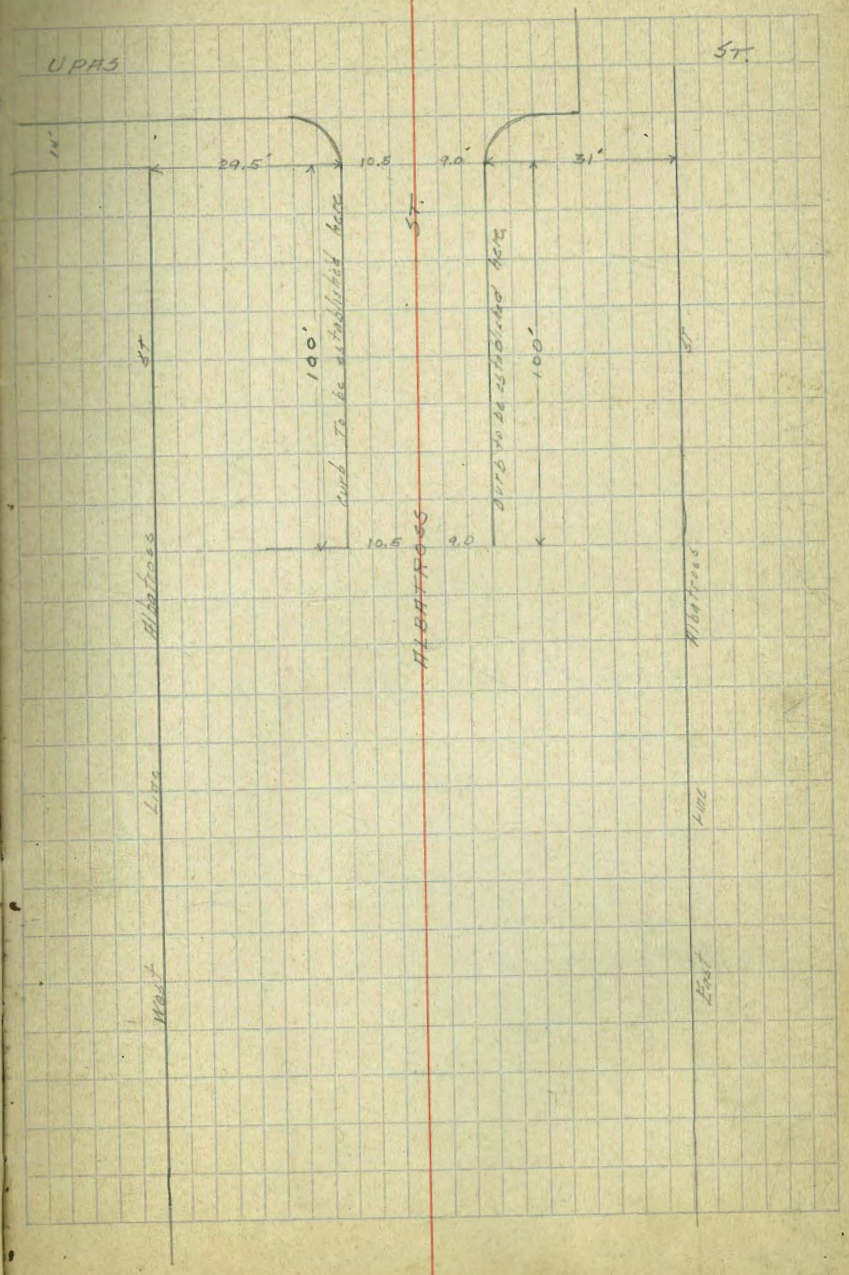


12/19/11 Gregory Macgo Miller

NOTES ON ALBATROSS ST
To Establish Curb Lines
and Grades

see page 21 for further information

on Curb	1.34	247.94	246.1	
page	Elevations on C of Roadway as shown on opposite			
	S.L. Upas			
C		2.4	246.5	on paving
	25' So			
C		3.9	244.0	
	50' So			
C		5.7	242.2	
	75' So			
C		7.2	240.7	
	100 So			
C		8.4	239.5	
	125' So			
C		9.6	238.3	
	150' So			
C		10.9	237.0	
	175' So			
C		12.0	235.9	
	192' So			
C		12.2	235.7	



3/9/17 Gregory Moore Dunfee Miller

Traverse on Branch 4" pipe from Sta 7+25.39 page 25 to So. End.

7+93.45 = End

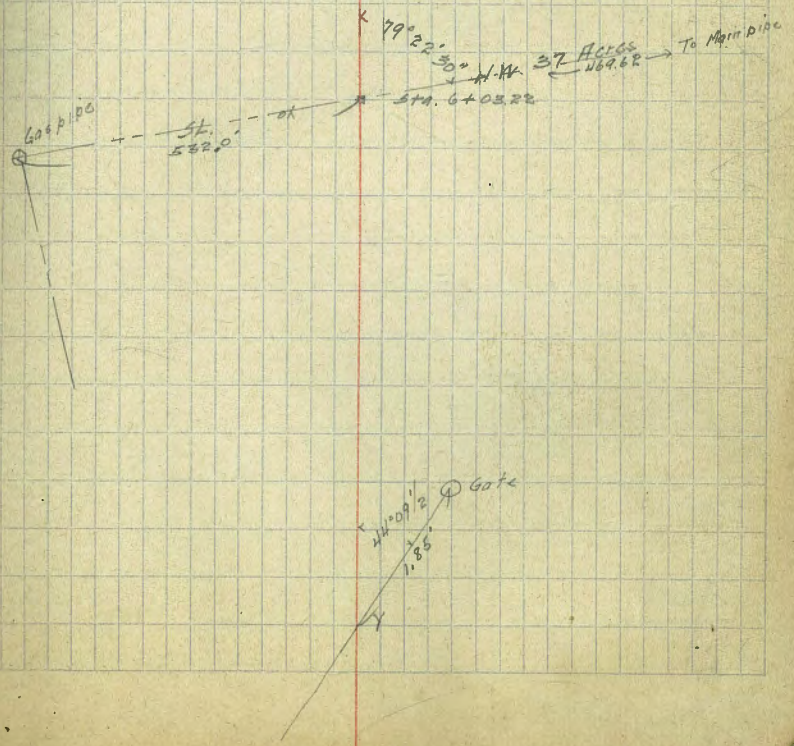
6+69.45	△	2°37'	Right
6+03.22			
5+93.73	△ = Gate	4°39'	Right
5+26.80	△	5°24 1/2'	Right
3+08.78	△	1°45'	Right
00+54.68	△	20°00	Right
00+7.85	△	15°41	Right

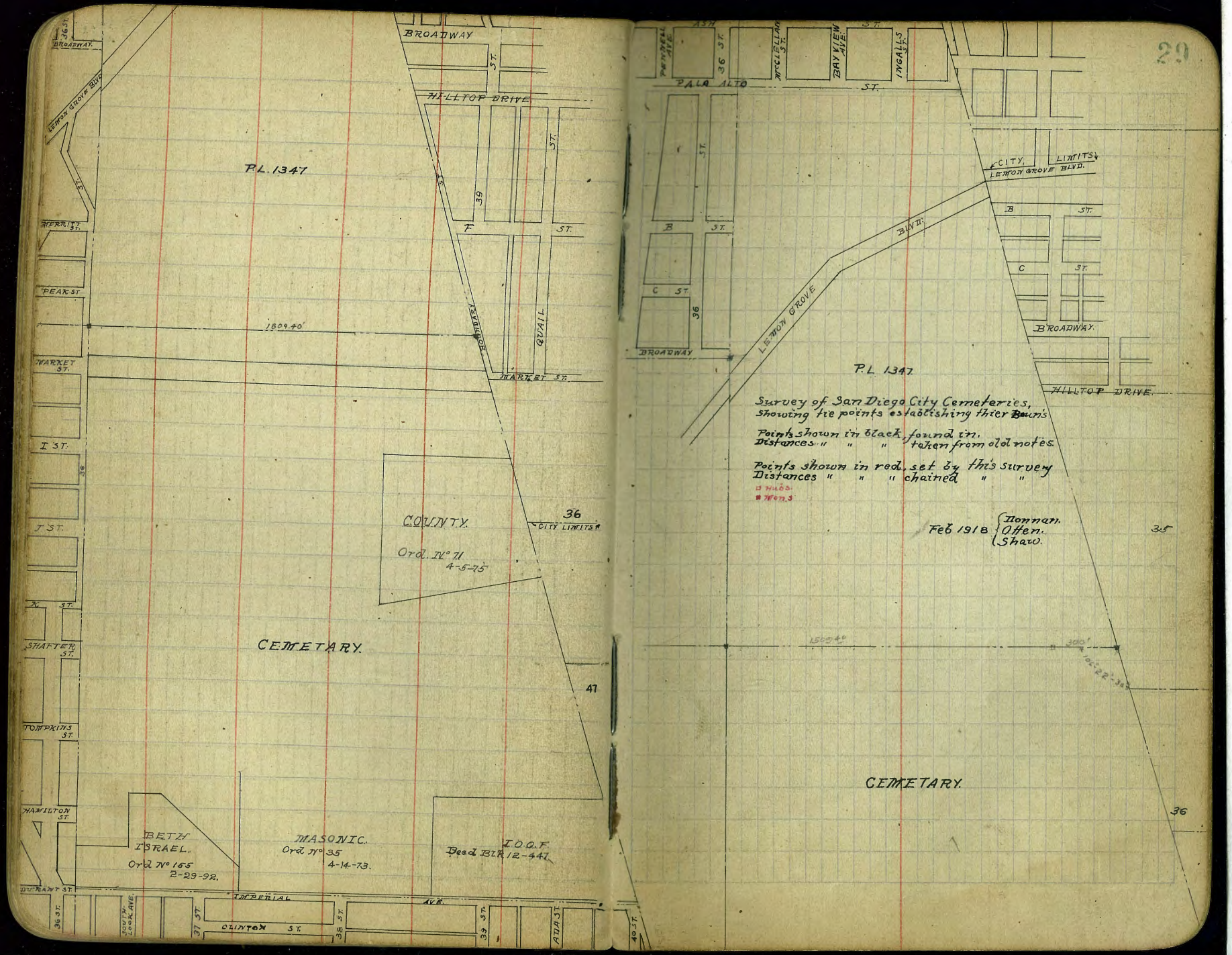
00 on Branch = 7+25.39 on Main 44°09 1/2' Left from Gate

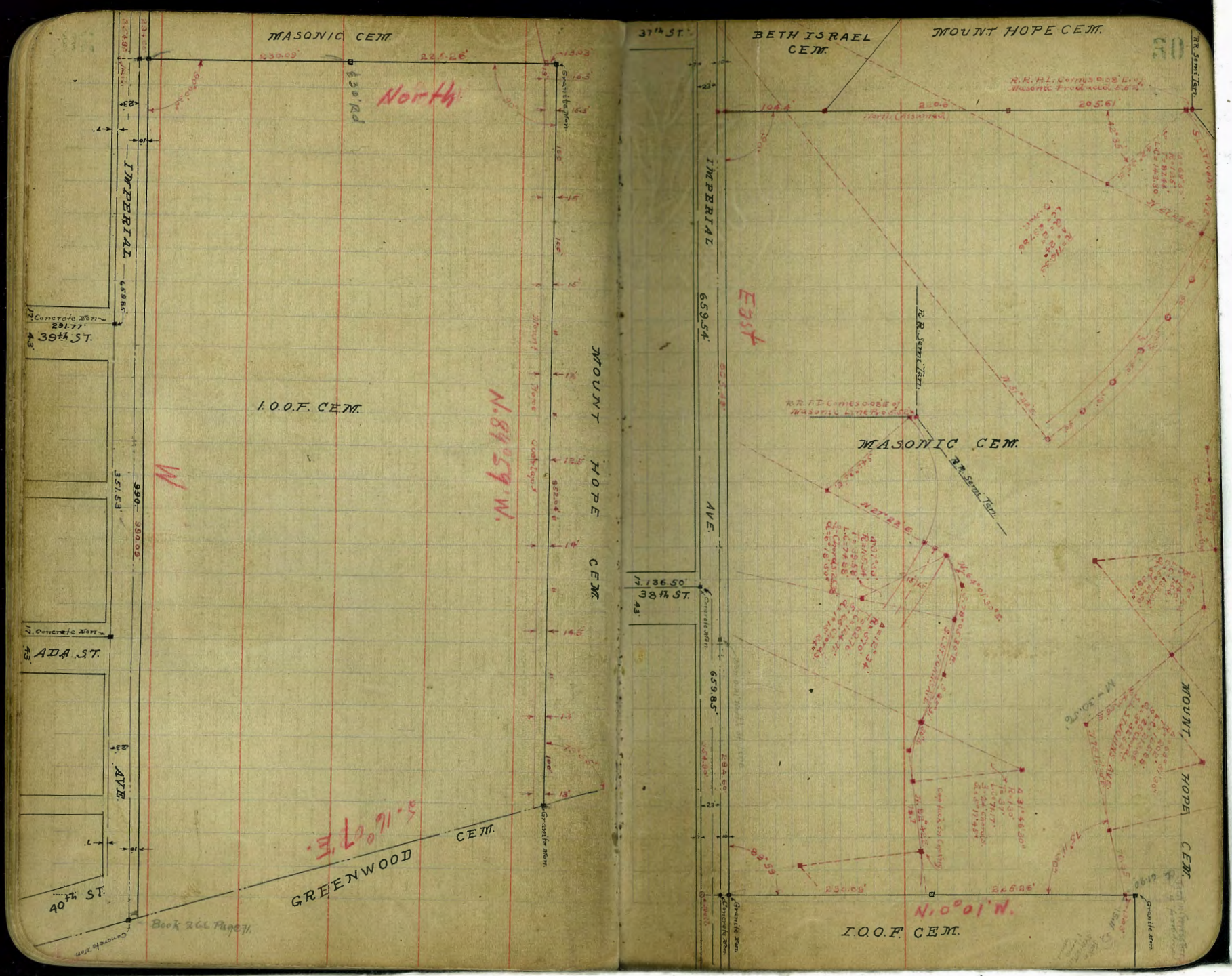
Extras

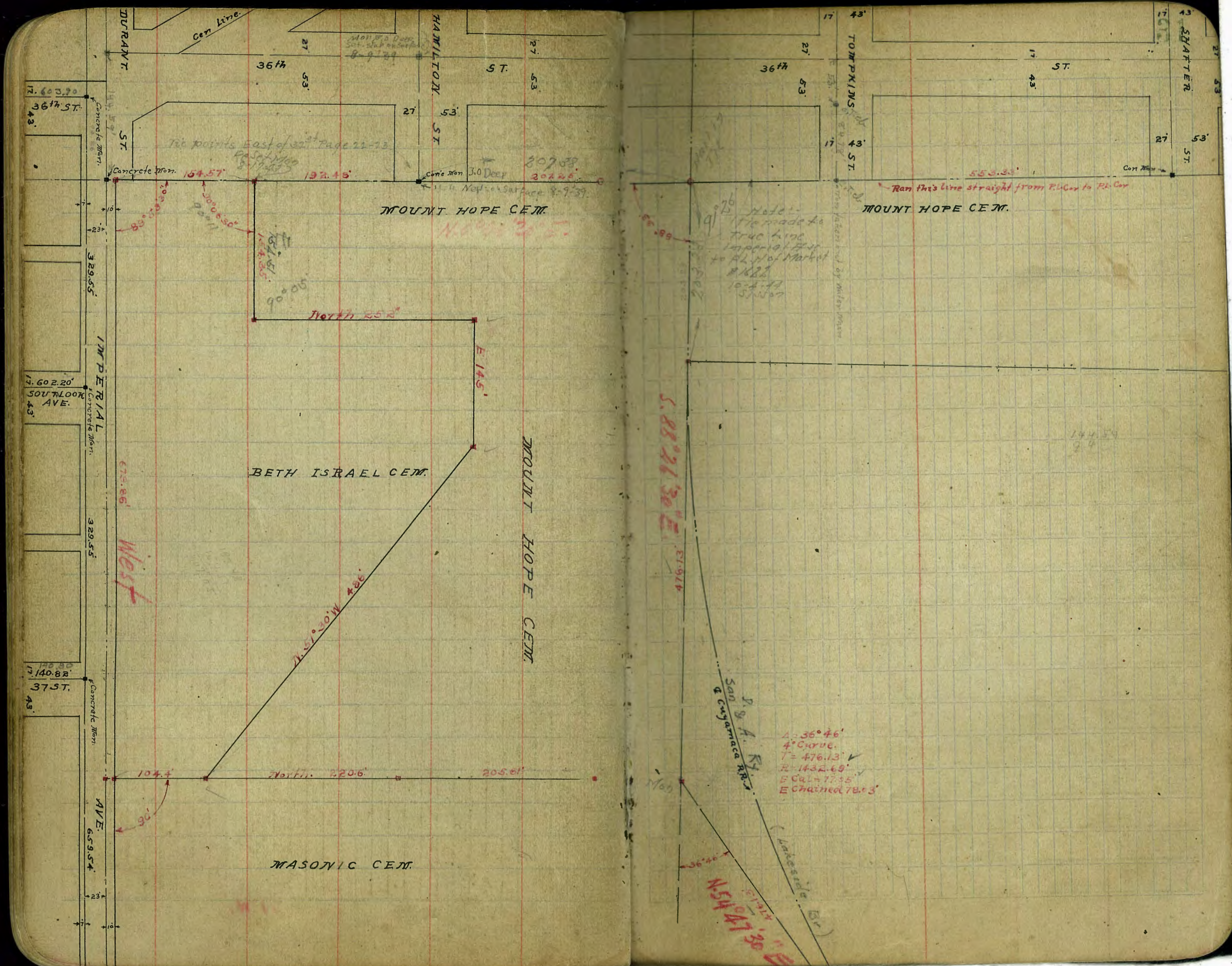
2 - 20' Lengths 4" screw pipe

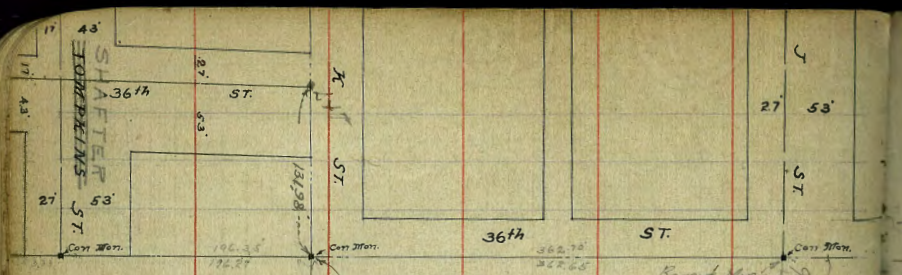
1 cast 8" + reducer to 2"

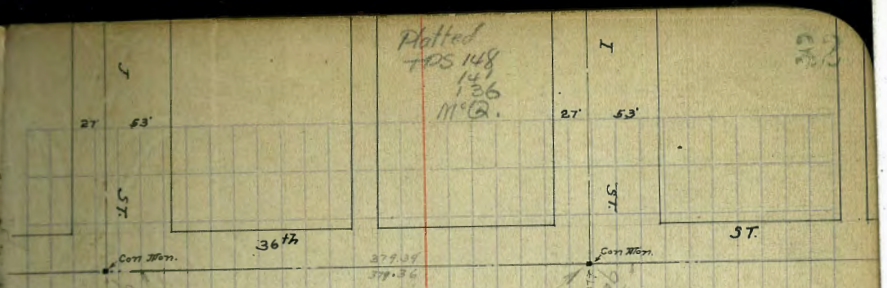


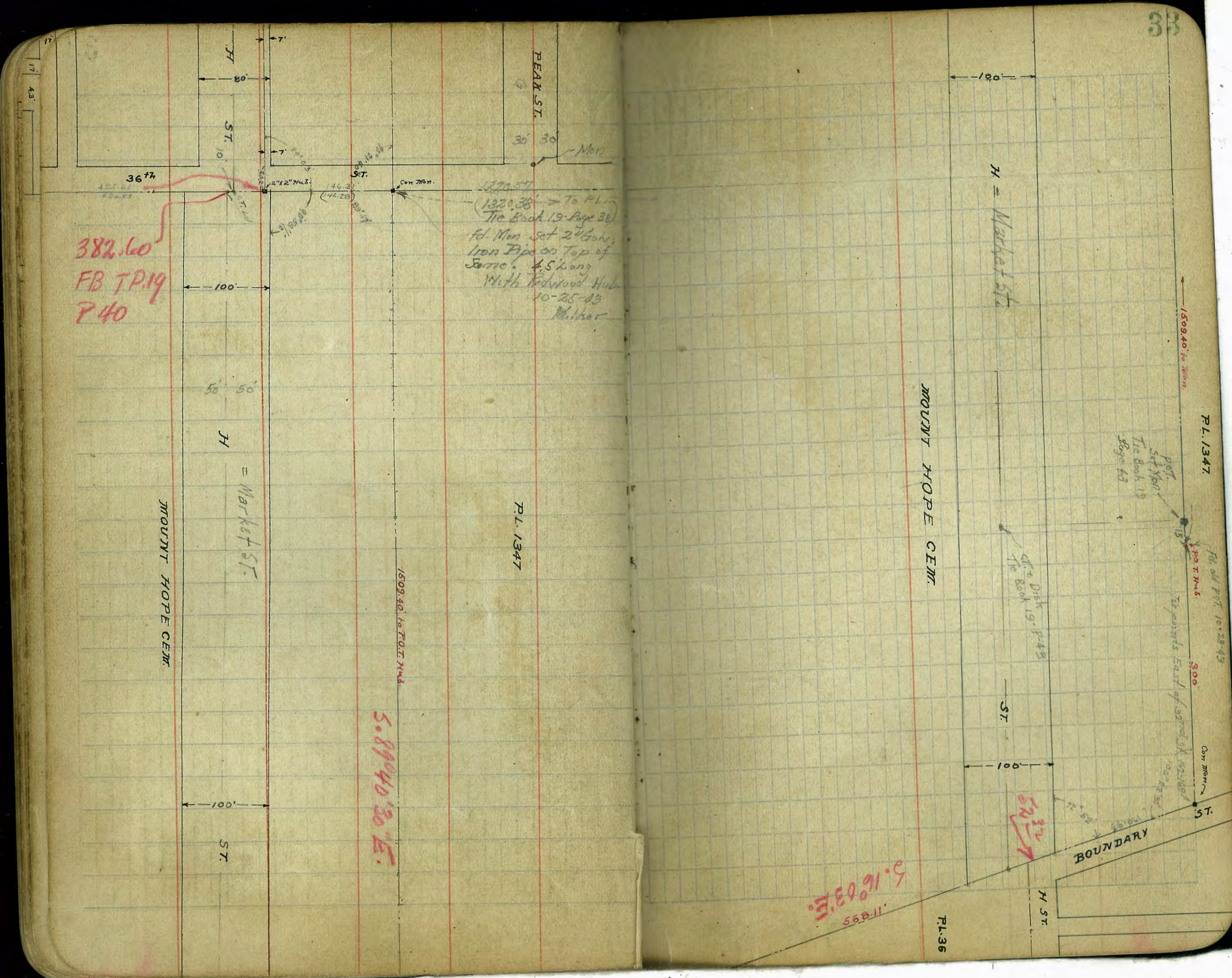

BROADWAY
HILLTOP DRIVE
LEMON GROVE BLVD
P.L. 1347
1809.40'
MARKET ST.
PEAK ST.
MERRITT ST.
I ST.
J ST.
K ST.
SHAFTER ST.
TOMPKINS ST.
HAMILTON ST.
DURANT ST.
IMPERIAL AVE.
CLINTON ST.
SOUTH LOWE AVE.
QUAIL
ROSEMARY
F ST.
39 ST.
36 ST.
37 ST.
38 ST.
40 ST.
ADA ST.
COUNTY.
Ord. N° 71
4-5-25
CITY LIMITS
CEMETARY.
BETH ISRAEL.
Ord N° 165
2-29-92.
MASONIC.
Ord N° 35
4-14-73.
I.O.O.F.
Deed Bk R 12-447
36
47
PERRY ST.
ASH
PALA ALTO
MCGILVRA ST.
BAY VIEW AVE.
INGALLS ST.
CITY LIMITS
LEMON GROVE BLVD.
B ST.
C ST.
BLVD.
LEMON GROVE
P.L. 1347
Survey of San Diego City Cemeteries,
showing the points establishing thier Bearings
Points shown in black, found in,
Distances " " " taken from old notes.
Points shown in red, set by this survey
Distances " " " chained " "
Feb 1918 Norman. Olfen. Shaw.
35
1560.40
300'
CEMETARY.
36

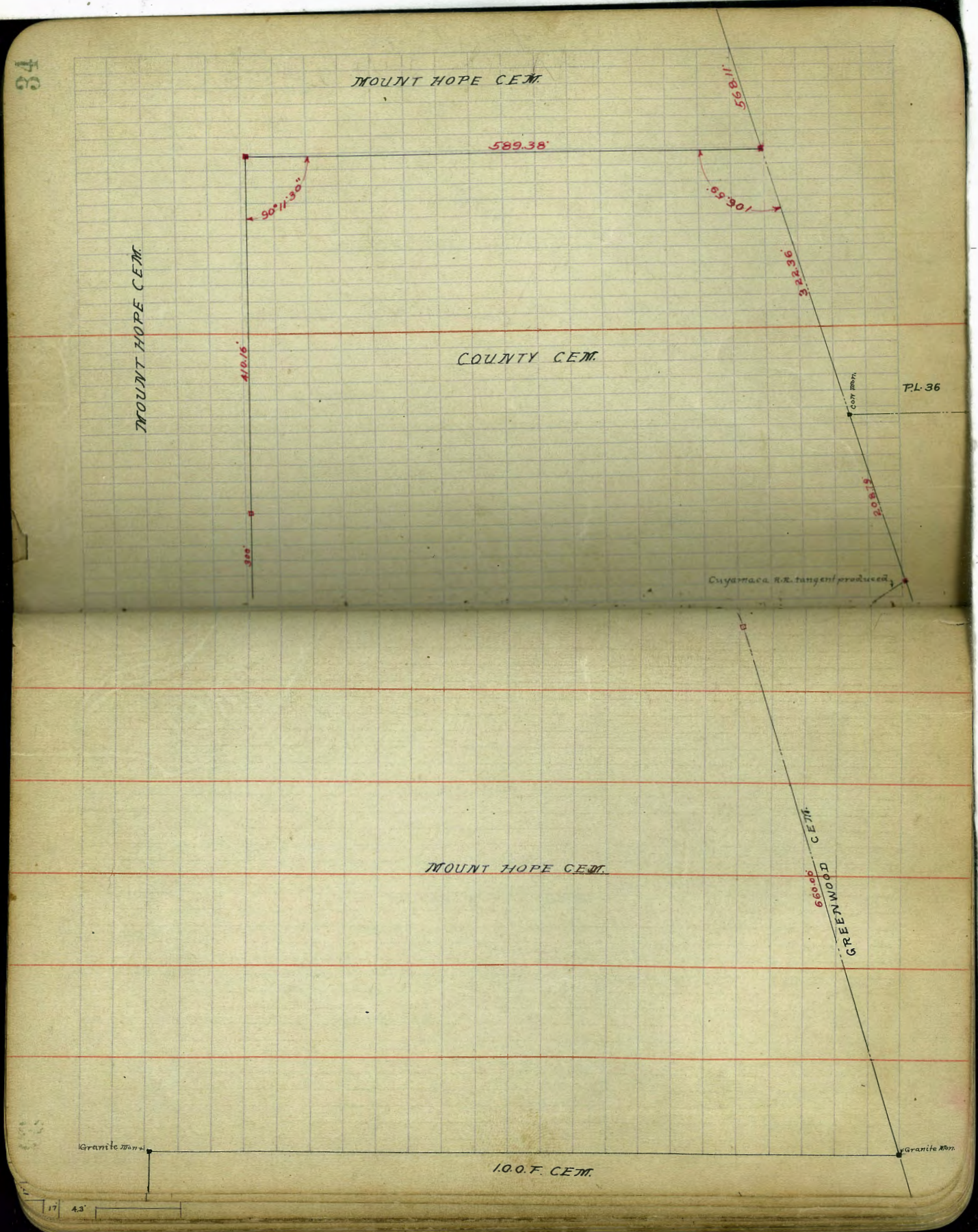

MASONIC CEM.
BETH ISRAEL CEM.
MOUNT HOPE CEM.
37th ST.
IMPERIAL
659.54'
AVE.
659.85'
38th ST.
39th ST.
40th ST.
43rd AVE.
ADA ST.
I.O.O.F. CEM.
MOUNT HOPE CEM.
GREENWOOD CEM.
East
North
N. 89° 59' W.
S. 11° 07' E.
N. 0° 01' W.
R.R. Semi. Tan.
R.R. Semi. Tan.
Concrete Mon.
Granite Mon.
Book 266 Page 71
30

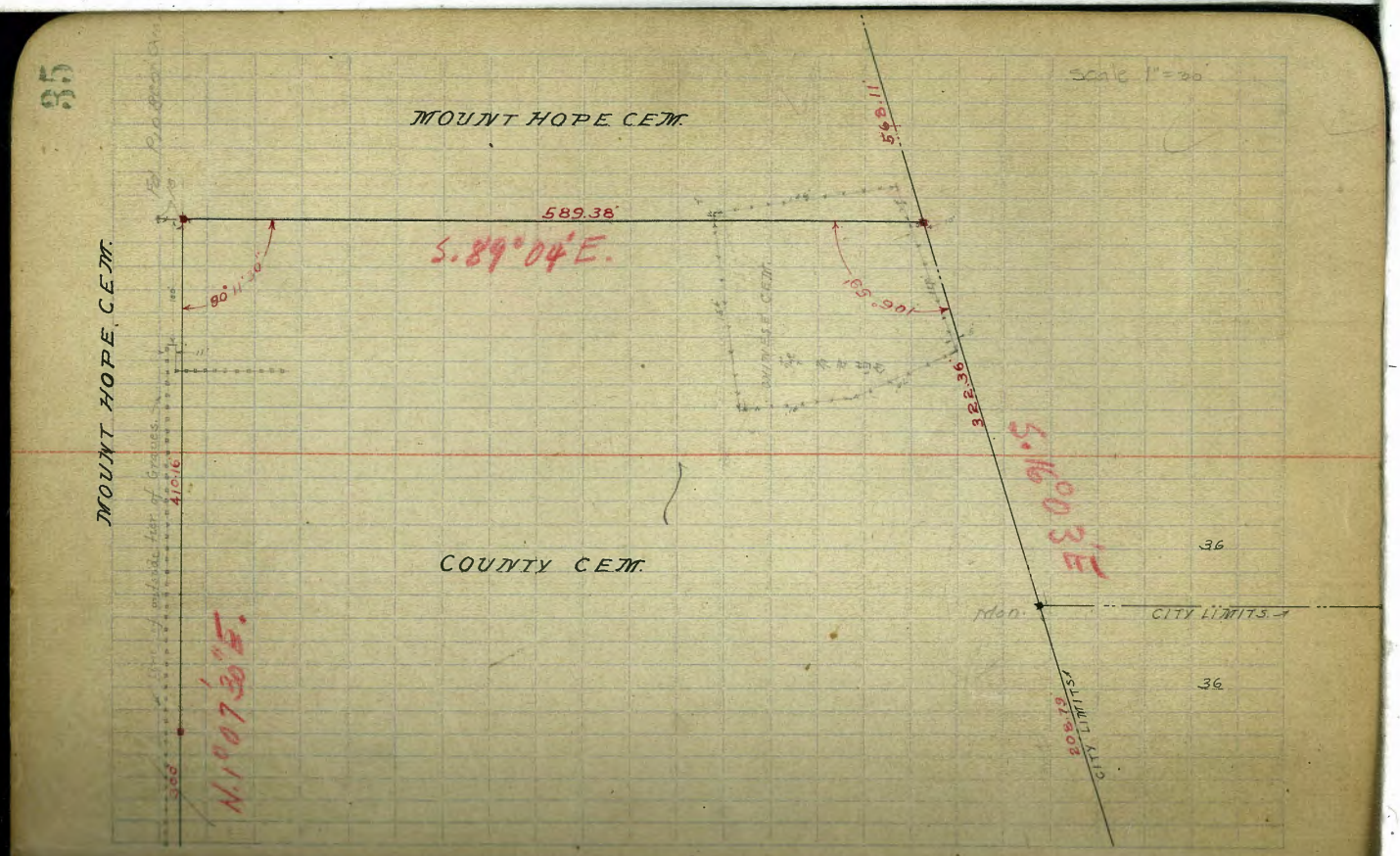

DURANT ST.
Cen Line
36th ST.
HAMILTON ST.
TOMPKINS ST.
SHAFTER ST.
IMPERIAL AVE.
36th ST.
SOUTHLOOK AVE.
37 ST.
Concrete Mon.
Concrete Mon.
154.57'
192.45'
Con'c Mon 3.0 Deep
553.33'
Con Mon
Ran this line straight from P.L. Cor to P.L. Cor
MOUNT HOPE CEM.
MOUNT HOPE CEM.
MOUNT HOPE CEM.
BETH ISRAEL CEM.
MASONIC CEM.
North 252'
E 145'
N. 51°30'W 486'
104.4
North 220.6'
205.61'
West
90°
329.55'
329.55'
659.54'
S. 88°26'30"E.
N.54°47'30"E.
S. D. & A. Ry.
San D. & Cuyamaca R.R.
Lakeside Br.
Δ = 36°46'
4° Curve.
T = 476.13'
R = 1432.69'
E Cal. = 77.55'
E Chained 78.03'
36°46'
Note –
Tie made to true line Imperial Ave. to P.L. N of Market

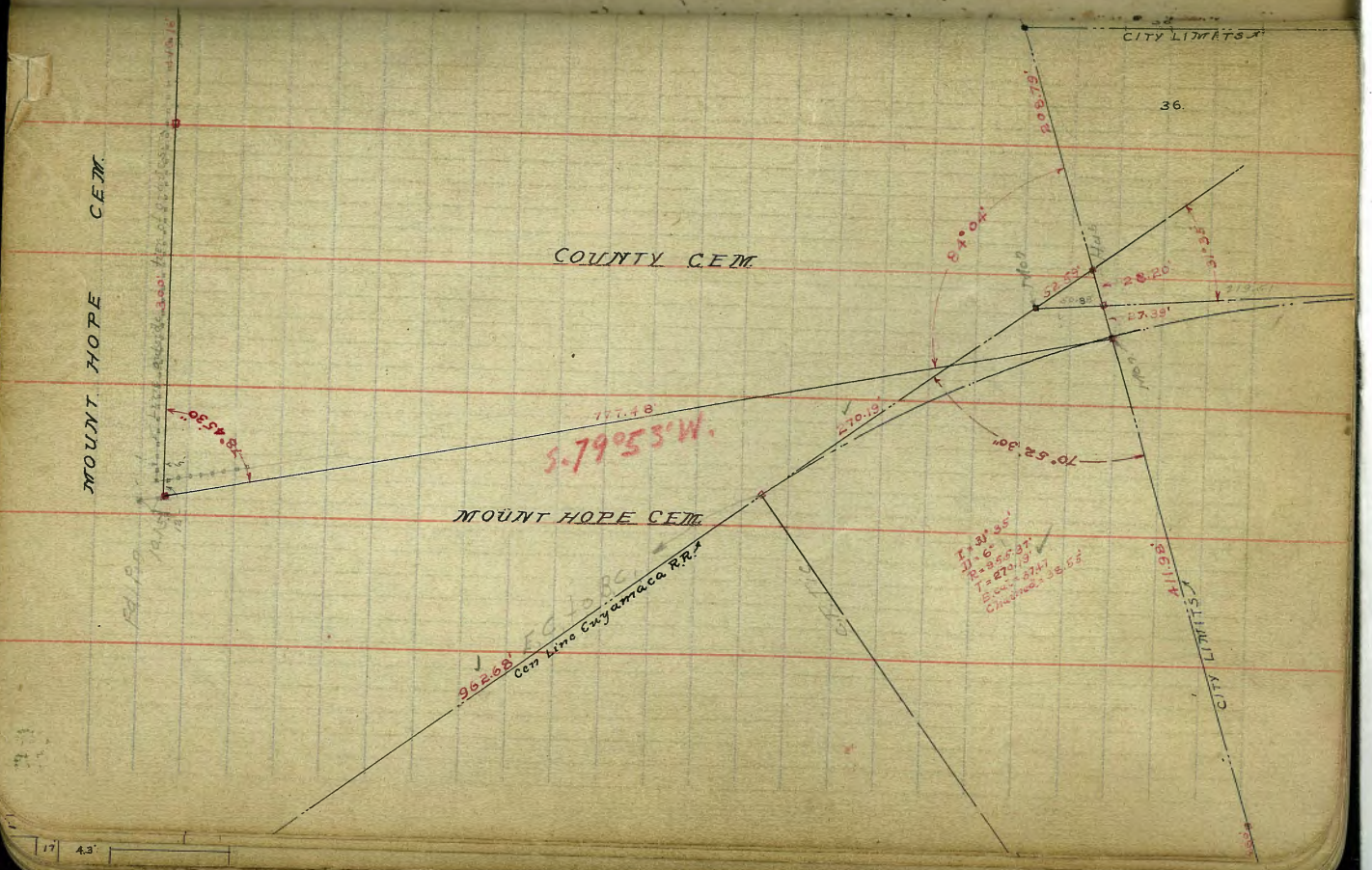

SHAFTER TOPPKINS
36th ST.
ST.
K
J
27'
53'
43'
17'
Corr Mon.
196.35
196.27
362.78
362.65
36th
ST.
Corr Mon.
Re-set Mon
10-28-43
MOUNT HOPE CEM.
Old Mon under Fill.
Set Nort Mon Near Surface
10-28-43
Walker
RP


Platted
PDS 148
141
136
M°Q.
J
I
27'
53'
ST.
36th
Corr Mon.
379.09
379.36
MOUNT HOPE CEM.
Mon Reset
10-27-43
RP
PP


MOUNT HOPE CEM.
H = Market ST.
PEAR ST.
36th ST.
80'
7'
100'
50' 50'
Con Mon.
Mon
1320.57
1320.38' → To P.L.
Tie Book 19 - Page 38
Fd. Mon. Set 2" Galv. Iron Pipe on Top of Same. 4.5' Long With Redwood Hub.
10-25-43
Walker
382.60
FB TP.19
P 40
P.L. 1347
1509.40 to P.O.T. Hub
S.89°40'30"E.
MOUNT HOPE CEM.
H = Market St.
100'
ST.
1509.40' to Mon.
P.L. 1347
P.O.T. Set Mon. Tie Book 19 Page 43
Tie Book 19 - P. 43
Con Mon.
ST.
BOUNDARY
H ST.
P.L. 36
568.11'
S.16°03'E.


MOUNT HOPE CEM.
568.11'
589.38'
90°11'30"
106°29'
322.36'
MOUNT HOPE CEM.
410.16'
COUNTY CEM.
P.L. 36
Con Mon.
208.72'
300'
Cuyamaca R.R. tangent produced
MOUNT HOPE CEM.
660.00'
GREENWOOD CEM.
Granite Mon.
Granite Mon.
I.O.O.F. CEM.


MOUNT HOPE CEM.
589.38'
S. 89° 04' E.
80° 41' 30"
165° 30'
546.11'
322.36'
S. 46° 03' E.
MOUNT HOPE CEM.
410.16'
N. 1° 07' 30" E.
COUNTY CEM.
36
CITY LIMITS
CITY LIMITS
36


CITY LIMITS
36.
COUNTY CEM.
MOUNT HOPE CEM.
MOUNT HOPE CEM.
S. 79° 53' W.
70° 52' 30"
962.68'
Cen Line Cuyamaca R.R.
CITY LIMITS

Spot pt 12

90°47'30"

1320.57

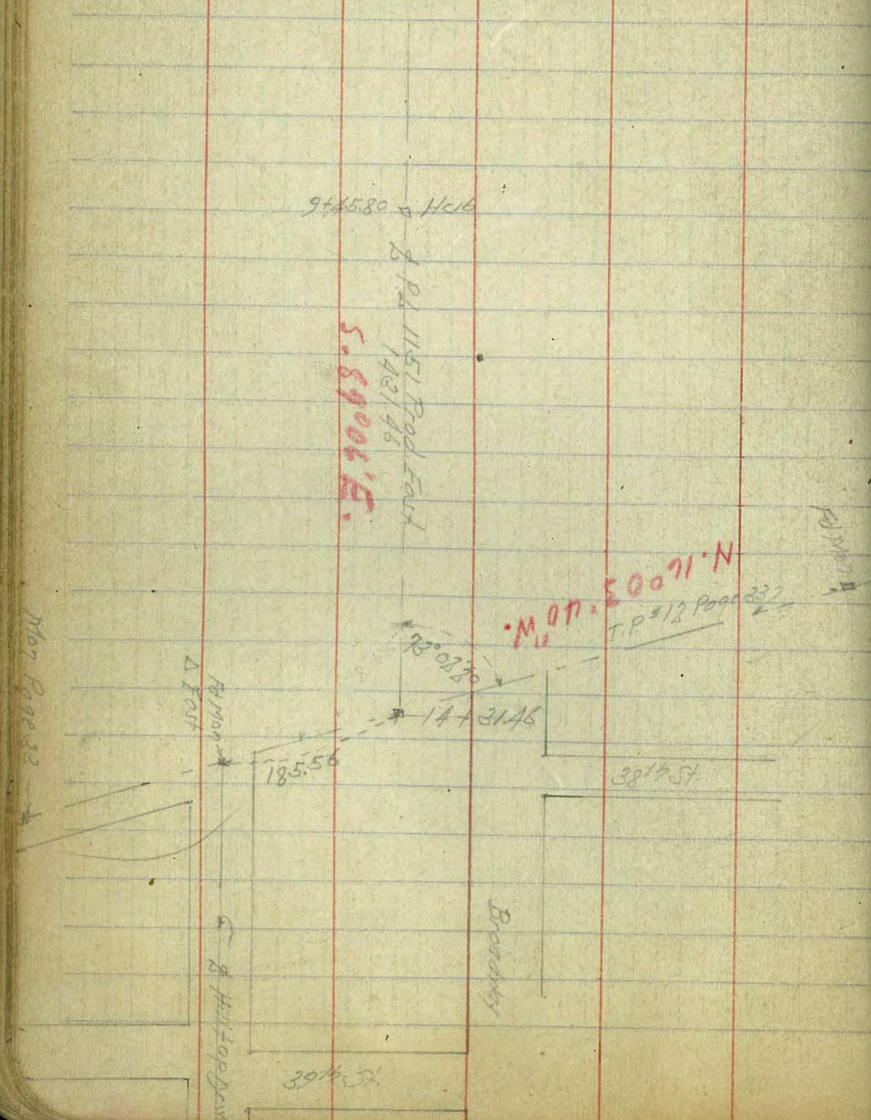
N. 0°06'30"E. (1320.38' To Pk. Cor South of C.St.
Tie Book 19-Page 38)

4+70.00 Hub

S. 89°02'E.

9+15.20 Hub

36th St.



30' Roadway.

X-Sections, prod of 39th St. 125.43

		H.I.	
B.M. +7.03		125.43 ✓	118.40
	35 N. of S.E. Imp.		N.L. Pave. = 0+00
N-10		7.75	117.68 ✓
N		7.68	117.75 ✓
℄		7.64	117.79 ✓
E		7.61	117.82 ✓
E+10		7.55	117.88 ✓
	0+3' N. of ℄		
E-10		6.91	118.52 ✓
E		6.79	118.64 ✓
℄		6.78	118.65 ✓
W		7.3	118.13 ✓
W-10		7.8	117.63 ✓
	0+6' N		
W-10		5.7	119.73 ✓
W		5.9	119.53 ✓
℄		5.4	120.03 ✓
E		5.3	120.13 ✓
E+10		5.2	120.23 ✓
	0+10 = Wall		
E-10		5.1	120.33 ✓
E		5.1	120.33 ✓
℄		5.3	120.13 ✓
W		5.6	119.83 ✓
W-10		5.3	119.93 ✓

	125.43 6+20	125.43		T=33.63 R=110 ℄ C=6.32
W-10			5.1	120.33 ✓
W			4.9	120.53 ✓
℄			4.8	120.63 ✓
E			4.8	120.63 ✓
E-10			4.8	120.63 ✓
	0+28			
W			4.6	120.83 ✓
℄			4.6	120.83 ✓
E			4.6	120.83 ✓
	0+40			
W			4.5	120.93 ✓
℄			4.2	121.23 ✓
E			4.2	121.23 ✓
	0+52		4.1	121.33 ✓
E			4.1	121.33 ✓
℄			4.2	121.23 ✓
W			4.4	121.03 ✓
	0+64			
W			4.3	121.13 ✓
℄			4.1	121.33 ✓
E			3.9	121.53 ✓
T.P.			12.6	113.83

125.43

0.56

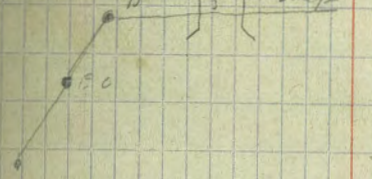
TD 0.56 113.39 12.60 112.83

TP 0.33 ✓ 101.12 ✓ 12.67 ✓ 100.72 ✓

T.P. 3.17 93.57 10.72 90.40

4.44 89.13 ✓

32' Rd. Gravel Crown



T. 33.63
R. = 110 ℄
C 6.32

89.13
3.51
92.64

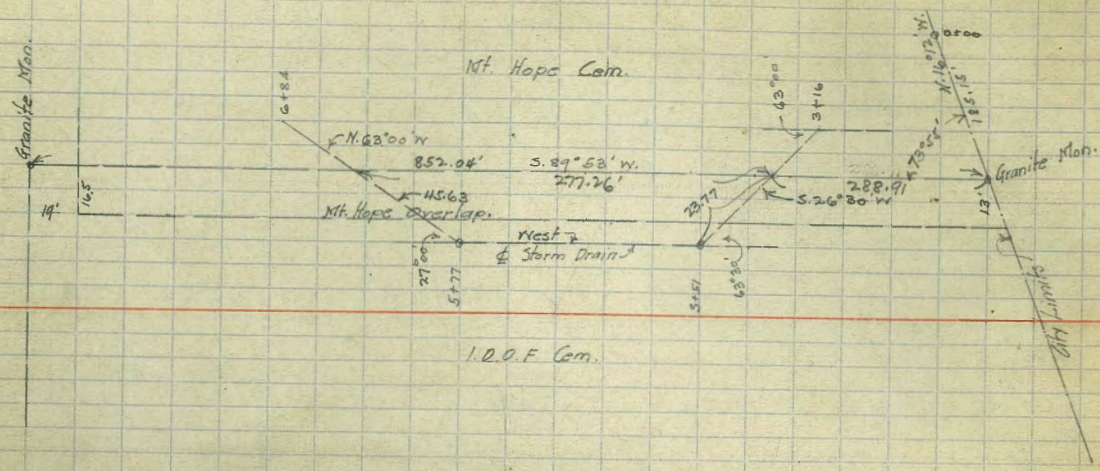
25' Rd. 6+00 = ℄ Road P.C. S.M. Fetter Graduate thesis '39

+5 3.51 H.I. 92.64 - S. 89.13

W			1.3	91.34 ✓
E			1.6	91.04 ✓
E			1.6	91.04 ✓
	PT	0+16.3		
E			3.4	89.24 ✓
℄			3.2	89.44 ✓
W			2.9	89.74 ✓
	PT	0+16.3		
W			4.4	88.24 ✓
℄			4.4	88.24 ✓
E			4.5	88.14 ✓
	PT	0+16.3		
E			5.3	87.34 ✓

see page 75

87.15
98.
185.15

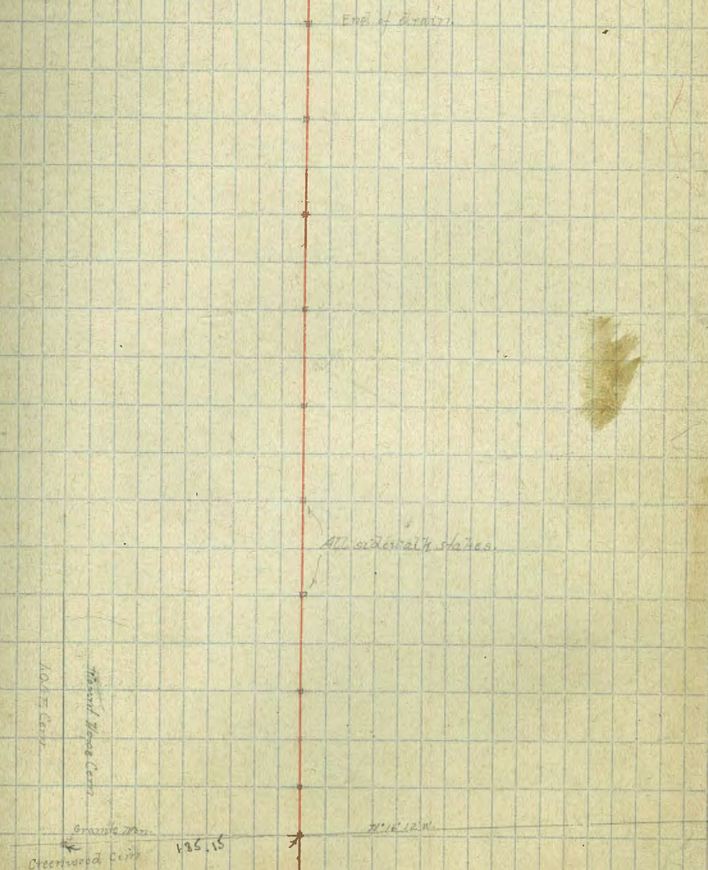


	Rt	Lt	Mag	Cal	
	109° 25'			S 16° 13' E.	City Bdry
	10° 36°			N 54° 22' E	
	59° 00'			N 43° 46' E.	
14+10	70° 30'			N 15° 14' W.	
10+92	40° 00'			N. 35° 44' W.	
6+84		12° 44'		N 75° 44' W.	
5+77	27° 00			N. 65° 00' W. ✓	
3+51	63° 30'			W ✓	
3+16		63° 00'		S. 26° 30' W. ✓	
2+44	63° 00'			S. 89° 30' W ✓	
1+33		22° 30'		S 26° 30' W. ✓	
0+43		27° 00'		S. 49° 00' W. ✓	
00		87° 48'		S 76° 00' W ✓	
East Line of City				N 16° 12' W.	

Alignment for Storm drain Mount Hope Cemetary. {Denman. O Hern Shaw}

May 21-18.

For level notes See next page.



Level notes for storm drain Mount Hope Cemetary. (Dorman / Olsen / Chaio) Mar 21-18

Assumed Ele on H.W. Wells Mon., 86' South of Sta 0+10 Highest Point of Mon. 99.00

Sta	+	H	−	Ele.	
				99.00	
0+0			2.0	98.5	
+48 ▷ Lt			2.8	97.7	
1			4.0	96.5	
+33 ▷ Lt			4.5	96.0	
+50			5.2	95.3	
2			6.3	94.2	
+34 ▷ Rt			7.3	93.2	
3			8.2	92.3	
3+16 ▷ Lt			8.7	91.8	
#	1.85	94.17	8.22	BM 92.32 Mon of Jasmes Washington	
3+51 ▷ Rt			3.1	91.1	
4			3.7	90.5	
+50			4.6	89.6	
5			5.3	88.9	
+50			5.4	88.8	
5+77 ▷ Rt			5.7	88.5	
6			5.9	88.3	
6+50			7.4	86.8	
#	0.48	87.83	6.82	87.35 on cable in Ma	
6+84 ▷ Lt			1.8	86.0	
7			2.6	85.2	
+50			3.3	84.5	
8			3.5	84.3	

for Alignment notes see page 41

Sta	+	H	−	Ele.	
9+55		87.83	3.4	84.4	
#			4.1	83.7	
10			5.7	82.1	
+50			6.5	81.3	
10+72 ▷ Rt			7.2	80.6	
#	2.18	82.64	7.2	80.6	
11+50			5.35	82.48	BM, St E Cor Granite Base of Johnson Mon, 10.3 of 10+72.
11+90 ▷ Rt			3.3	79.4	
12			4.6	78.1	
12+26			5.0	77.7	
12+80			6.2	76.5	
13			6.9	75.8	
+50			11.2	71.4	
+57			15.1	67.6	
+63			15.7	67.0	
+70			14.7	68.0	
14+10			13.4	69.3	
14+20			15.8	End Line 66.9	
#	9.73	91.89	16.6	Creek Bed 66.1	
	8.81	99.19	0.50	82.16	
			0.81	91.68	
			0.50	98.99 = Initial B.M.	

Survey for storm drain in Alley between 25th & 26th, E of drain & West of East line of Alley.

March 27-18. {Norman Olsen Shard}

for continuation of this line see page 19 this book.

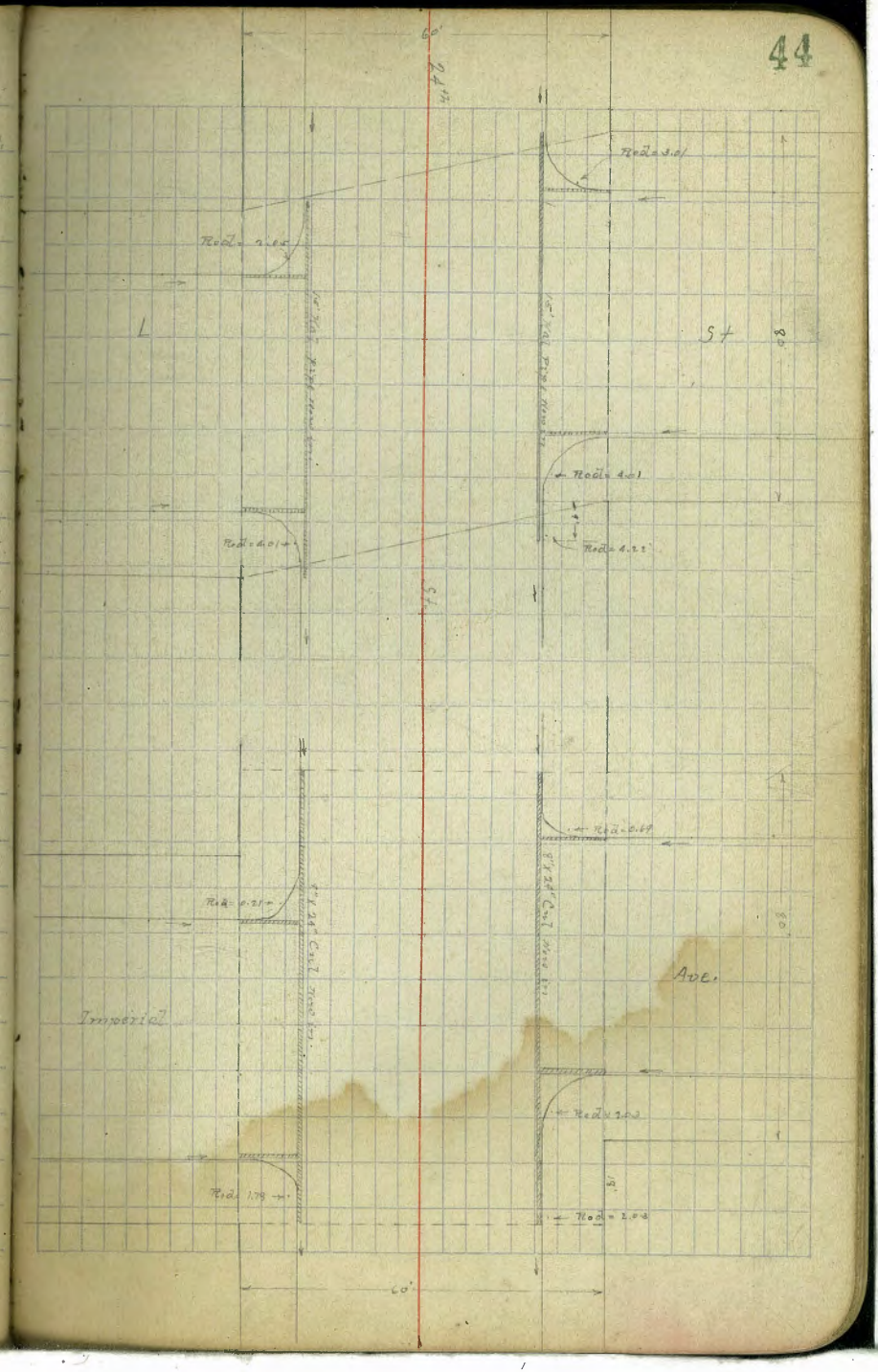
B.M. Brass Plug W.E.Cor. 25th & K 76.93

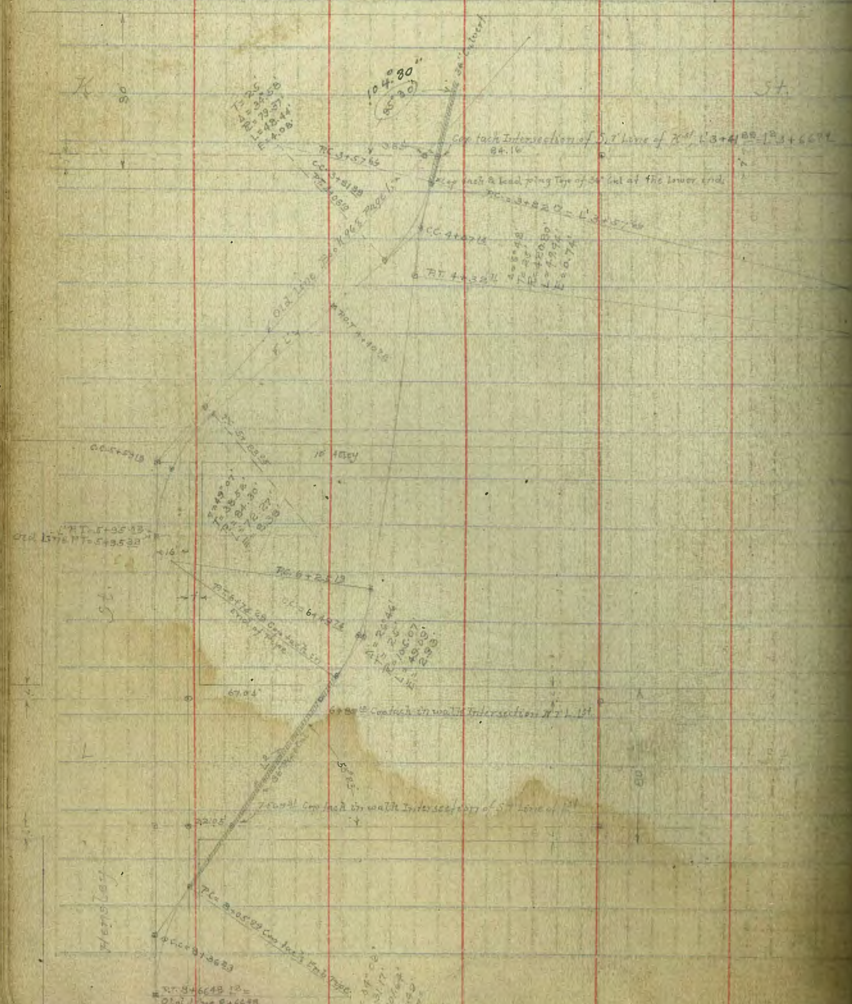
	+	H	−	
	3.63	85.56		76.93
	16.5	87.04	0.17	86.39
00 = N.E. Cor. of W.L. of K St. Centre of E & W Alley			0.2	86.18
Bottom of Sewer Manhole opposite Sta 00			5.50	81.54
+50			2.4	84.6
1			4.8	82.2
1+50			7.9	79.1
N. Cut of K St figure catch basin			9.2	77.8
S " " " " "			10.4	76.6
00 = S.L. K St			9.3	77.7
Bottom of Sewer Manhole opposite the curve			14.22	72.82
+50			9.4	77.6
1			10.1	76.9
+50			13.1	74.9
#	0.00	74.11	12.93	74.11
2			0.5	73.6
+50			2.6	71.5
3 = N.L. of L St			5.7	68.4
N. Gutter of L St figure Catch basin			6.5	67.6
S " " " " "			7.7	66.4
00 = S.L. of L St			6.6	67.5
+50			5.6	68.5
4			5.7	68.4

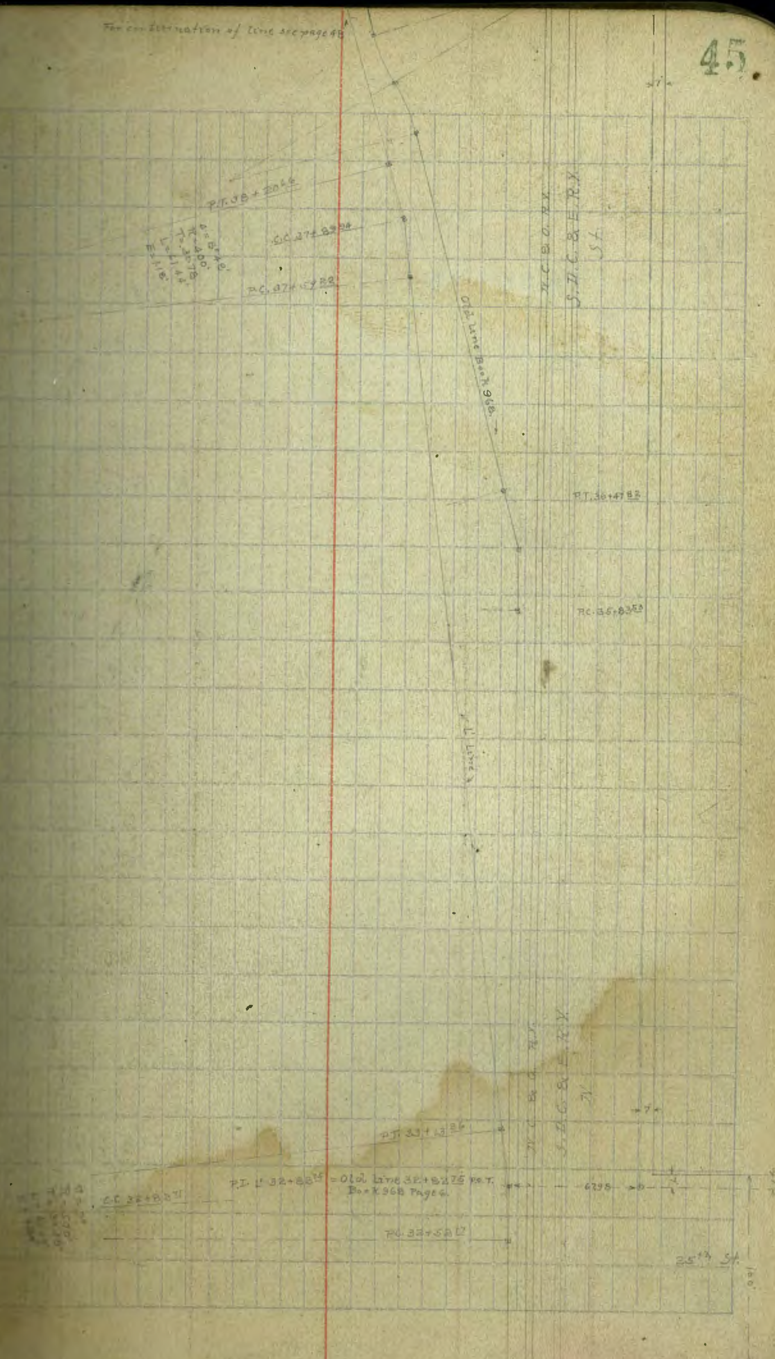
Sta	+	H	−	Elev
		74.11		
+50			6.3	67.8
Bottom of Sewer Manhole opposite Sta 4+50			11.05	62.06
5			7.2	66.9
+50			8.7	65.4
+93			11.9	62.3
#	3.82	66.39	11.59	62.52
2 = N.L. Imperial Ave.			6.0	60.4
N Gutter " " figure Catch basin			6.76	59.63
S " " " " " "			7.31	59.08
00 = S.L. " "			6.90	59.49
+15			4.7	61.7
Bottom of Sewer Manhole opposite Sta 2+28			9.12	57.27
+50			4.6	61.8
3			5.9	60.5
+50			7.1	59.3
4			9.2	57.2
+50			11.0	55.4
#			7.91	58.98 - 5994 B.M. Br. Pl. N.E. Cor. Imperial Ave & 25th St.
#1	3.54	57.67	12.26	59.13
Bottom of Sewer Manhole opposite 21.43 (End Sewer)			12.76	45.41
3 = N.L. of K St			3.8	53.9
21 Sewer of North Line of K St			3.8	53.9
27 " " " " " "			5.1	52.6
61 " " " " " " = C Euclid Ave. N.R.			5.6	52.1
65 " " " " " " = C N.C. & O " "			5.6	52.1
84 " " " " " " = C Wellman Ave Culvert			5.6	52.1

Survey for Storm Drain in the E. Gutter of 24th St from N.L. of 1st South.
March 22-18 (Norman Oder, Shero)

	+	H	−		
	10.94	65.92		53.98	N.W. Cor 24th & 1st St.
00 = S.L. of 1st					
0+9 = End of present pipe. Gutter.			5.7	60.2	
+50			6.0	59.9	
1			7.1	58.8	
+50			8.3	57.6	
2			9.5	56.4	
+50			10.8	55.1	
3 = N.L. of Imperial Ave. End of 8"x24" Cul.			12.1	53.8	
#	0.69	55.67	10.94	54.73	Initial B.M.
00 = S.L. of Imperial Ave					
0+18 = End of Culvert. Gutter			3.0	52.7	
+50			3.7	52.0	
1			3.8	51.9	
1+50			5.0	50.7	
2			5.8	49.9	
+50			6.8	48.9	
Curb			6.64	49.03	
Gutter = 00 N.L. of N. St. 16 Rad pipe mon in			8.2	47.5	
0+17 = Calc. Point & 31° Rt.			6.3	49.4	
0+53 = Appx & Cuyamaca P.H. on Rail			6.07	49.60	
0+72 = " " N.C.&Q. " " "			6.34	49.33	
+85			7.2	48.5	
+91 End of Line & present end of Culvert			8.1	47.6	
+91			12.5	43.2	
#			0.69	54.93	Initial B.M.




K St.
30
Cap tack Intersection of S. T. Line of K St. L 3+41.88 = 1st 3+66.71
84.16
Cap tack & lead plug Top of 36" Cul at the lower end.
CC 4+47.18
PT 4+33.71
Old Line Book 968 Page 15
PC 3+57.63
Old Line PT 5+95.33
10' Alley
PC 6+22.19
Cap tack in walk Intersection N. T. L. 1st
Cap tack in walk Intersection of S. T. Line of 1st
L
Hershey
PT 8+66.49 1st = Old Line 8+66.49


For continuation of line see page 48
P.T. 38+20.46
C.C. 37+89.94
P.C. 37+59.82
Old Line Book 968
N. C. & O. R.Y.
S. D. C. & E. R.Y.
St.
P.T. 36+47.82
P.C. 35+83.53
P.T. 33+13.26
P.I. L 32+88.15 = Old Line 32+82.75 per T. Book 968 Page 6
P.C. 32+58.13
C.C. 32+82.71
N. C. & O. R.Y.
S. D. C. & E. R.Y.
25th St.

Levels on N st Storm drain, see alinement this book & book 968

Dorman
Otten
Sharp

April 3-1918.

L^2

B.M. Brass Plug N.E. Cor 28th & K st 85.96

	+	HI	−	Elev.	
	0.22	86.18		85.96	
P.C. L^2 3+82[13] = P.C. L^1 3+57[66] Lower end of 36" Pipe Cul under K st			8.29	77.89	
Corr Curve 4+07[14]			7.9	78.3	
P.T. 4+32[2]			8.3	77.9	
4+43			8.5	77.7	
4+44			6.7	79.5	
+50.			6.9	79.3	
5			6.9	79.3	
+50			7.8	78.4	
6			8.4	77.8	
6+07			10.4	75.8	
P.C. 6+25[79]			9.9	76.3	
6+33			10.5	75.7	
C.C. 6+49[70]			10.7	75.5	
6+67			10.1	76.1	
P.T.=6+74[28] Upper end of 36" Cul under L st. Pipe.			12.49	73.69	
≠	1.13	77.75	10.08	76.10=76.07 B.M. S.E. Cor L st & [illegible]	
P.C. 8+05[26] Lower end of 36" Pipe Culvert under L st.			5.94	71.21	
C.C. 8+36[29]			5.8	71.4	
P.T. 8+66[49] L^2 = Old line 8+66[49] – For notes see book 969 Prof. Old Line. 92[8]			4.6	72.6	
9 See old notes			4.1	73.1	
+50			5.0	72.2	
10			4.4	72.8	

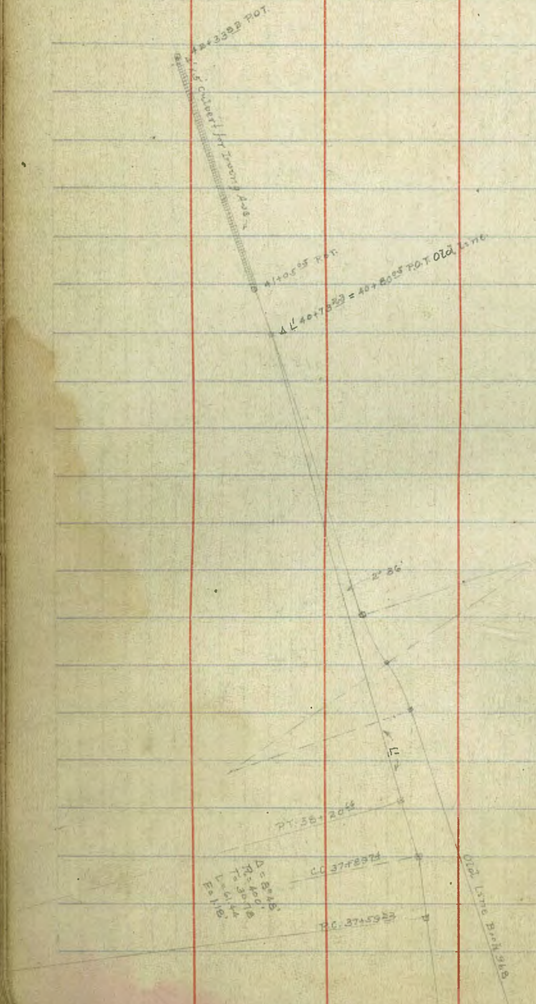
77.15

	+	HI	−	Elev.	
12+60			4.7	72.5	
12+86[59] = N.L. of Imperial Ave.			6.16	70.99	
N. Gutter			6.58	70.57	
N. Track of S.D.E. R.Y. on Rail.			6.07	71.08	
S " " " " " "			6.25	70.90	
S. Gutter			6.99	70.16	
12+66[57] S.L. of Imperial Ave. (Paved)			6.88	70.27	
≠	3.55	74.30	6.40	70.75 = B.M. N.W. Cor Hensley & Imperial.	
13+87			2.6	71.7	
13			2.9	71.4	
+50			3.5	70.8	
13			4.7	69.6	
+60			4.8	69.5	
14			5.7	68.6	
14+32[53] P.C. 100' Radius. – 6 Chords of 26.02'			6.0	68.3	
14+58[55] Chord			6.5	67.8	
14+84[70] " "			8.2	66.1	
14+90			9.6	64.7	
15+10[80] " "			8.7	65.6	
15+13[5] Base + to N. Rail of Cuyamaca R.R.			7.91	66.39	
15+20 Ground between Tracks.			9.0	65.3	
15+36[49] Chord.			8.3	66.0	
15+39[3] = Base + to N. Rail of Coronado Railway.			7.58	66.72	
15+62[90] Chord.			8.5	65.8	
15+88[73] = P.T.			8.9	65.4	
≠	3.87	70.16	8.01	66.29	N.W. R.R. Spk in switch stand of Cuyamaca R.R.

Sta.	+	−	Elev.
		70.16	
16		4.8	65.4
+50		5.0	65.2
17		5.55	64.7
+50		5.4	64.8
18		5.8	64.4
+50		6.8	63.4
P.C. 18+85.95 D=1°30'			
"	5.47	67.82	7.81 62.35 P.C. W.C.
19		5.7	62.1
+50		6.0	61.8
20		5.4	62.4
+50		4.7	63.1
21		5.2	62.6
P.T.C. 21+19.29		5.4	62.4
+50		5.1	62.7
22		5.9	61.9
+50		6.15	61.3
23		7.7	60.1
+07		8.7	59.1
Opposite Cul.			
+17		8.7	59.1
+30		7.5	60.3
P.T. 23+52.63		7.7	60.1
"	3.44	63.27	7.99 59.93
24		2.5	60.8
+50		2.6	60.5
25		3.4	59.9

Sta.	+	−	Elev.
		63.27	
25+50		3.9	59.4
26		4.0	59.3
+50		4.8	58.5
27		5.0	58.3
+50		5.4	57.9
28		6.1	57.2
+50		6.7	56.6
29		7.6	55.7
+50		9.0	54.3
"	3.24	59.56	6.96 56.31
30		6.3	53.3
+20		6.8	52.8
Opposite Culverts under S.C.&E. R.Y. N.C.&.R.Y.			
+33		6.9	52.7
+50		5.3	54.3
31		4.9	54.7
31+17 Approx. ℄ E Rail of Woolman Ave car line.		5.10	54.46
+50		5.6	54.0
32		6.2	53.4
32+52.7 P.C. U=32+52.7 Tot. Old Line.		6.2	53.4
P.T. 33+12.25		6.7	52.9
+50		7.4	52.2
34		7.5	52.1
+10		7.9	51.8
+50		13.4	46.3
+56 R. Horn of Arch & End of Pipe.		15.6	44.0

5.27 = 52.29 BM Brass Plug N.W. Cor 24th & 7th



For continuation of line see page 45

Continuation of storm drain line Page 43 this book.

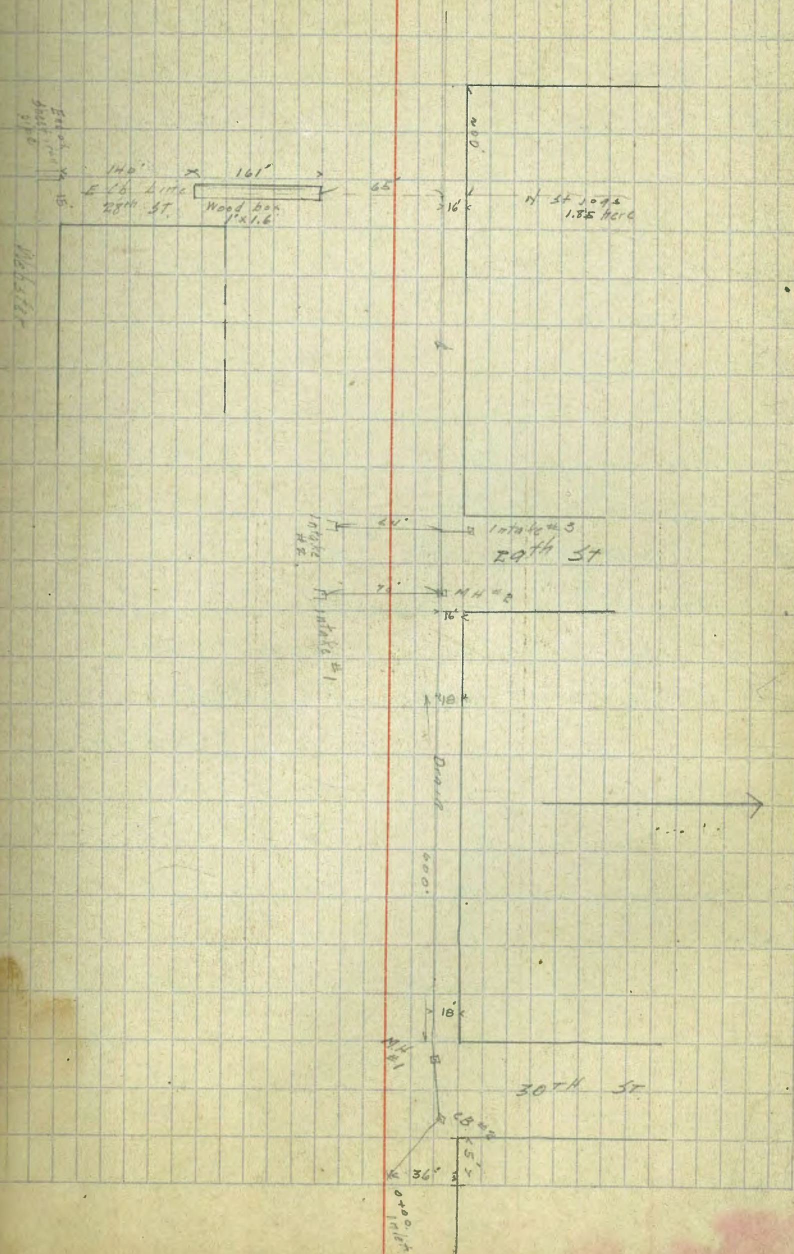
April 3-18 {Denman Otten Shaw

	+	X	—	
B.M. Brass Plug E. Cor 26th & Q Tst's. 99.87				
	2.39	107.25		99.87
East on South Gutter line of Tst.				
Intersection East Gutter 26th with South Gutter Tst.			0.1	99.7
00 = East line of 26th St.			2.3	100.0
+50			5.6	96.7
1			7.4	94.9
90° 1+55 = 5' East of ℄ of North & South alley.			9.5	92.8
South on line 5' East of Center of Alley.				
2+00			11.1	91.2
+50			13.6	89.3
#	2.82	91.65	13.07	89.23
3			4.0	87.7
90° 3+19 = CO of Storm drain line Page 43 this Book.			4.9	86.8 = 86.8 Page 43.
East on ℄ of East & West Alley.				
3+68 = Catch Basin.			5.6	86.1

5/11/18 Gregory / Moore / Miller

Levels over ℄ of Proposed Drain on N St.

B.M.	1.74	76.71		74.97	B.P. N.W. 30th + M.
0+00 = 5' E. of E.L. 30th + 36' S. of N.L. N.			5.4	71.3	
0+05			4.8	71.9	
0+25.6 = Catch Basin #2			5.0	71.9	
0+45			4.8	71.9	
0+65 = MH #1			5.2	71.5	
0+77 = W.L. 30th St.			5.3	71.4	
10' W. of 30th			4.6	72.1	
50' " " "			4.3	72.4	
70 " " "			4.4	72.3	
100 " " "			3.8	72.9	
150 " " "			3.9	72.8	
175 " " "			4.6	73.1	
200 " " "			4.9	72.8	
250 " " "			5.1	71.6	
270 " " "			5.2	71.5	
300 " " "			5.2	71.5	
T.P.	2.96	75.49	4.18	72.53	
350 W. of 30th			3.9	71.6	
400 " " "			3.8	71.7	
450 " " "			4.1	71.4	
500 " " "			4.2	71.3	
550 " " "			4.6	70.9	
570 " " "			4.3	71.2	
600 " " " Angle Pt.			4.7	70.8	



75.49

650' W of 29th			4.6	70.9
675 " " "			4.4	71.1
700' " " "			4.7	70.5
725 " " = EL 29th			5.7	69.8
T.P.	3.36	73.61	5.74	70.25
10' W of EL 29th = MH #2			4.2	69.4
22' So. of MH #2 = RR Track			2.9	70.7
37.5' " " " = " "			2.3	71.3
52.5' " " " = " "			2.4	71.2
60' " " " "			2.5	71.1
64' " " " = 3.4 N			3.0	70.6
70' " " " = Intake #1			4.2	69.2
30' W of EL 29th on ℄ of 24" pipe			3.8	69.8
48' " " 29th " " " =			4.4	69.2
16' No. of last = Intake #3			4.6	69.0
18' So of 24" Drain on Line 2' E of W CB Line			3.9	69.7
27.2' " " " " " " " = No rail 3.2				70.4
27.2' " " " " " " " = Sc. r 3.2				70.4
32' " " " " " " "			4.2	69.4
37.5' " " " " " " " = No rail 2.6				71.0
42.5' " " " " " " " So rail 2.5				71.1
52.5' " " " " " " " No rail 2.5				71.1
57.5' " " " " " " " 2.5				71.1
64' " " " " " " " = Intake #2			4.7	68.9
W.L. 29th St.			4.2	69.1
12' W of W.L. 29th St.			1.9	71.7
50' " " " "			2.2	71.4

Pipe on E of W CB Line 29th St.

24" pipe

Pipe on E.L. 29th St.

73.61

100' W of W.L. 29th			3.6	70.0
151' " " " "			4.7	68.9
168' " " " "			3.4	70.2
200' " " " "			4.3	69.3
223' " " " "			3.7	69.9
250' " " " "			4.4	69.2
300' " " " "			5.0	68.6
320' " " " "			5.6	68.0
350' " " " "			5.6	68.0
400' " " " "			4.6	69.0
428' " " " "			4.6	69.0
450' " " " "			5.4	68.2
494.3' " " " " Angle = Same as St			6.0	67.6
T.P.	3.79	72.20	5.20	68.41
50H.3 W of W.L. 29th = Intake pipe from St. N.			5.3	66.9
N.L. Webster + 15' W of EL 28 = No End Pipe			4.6	67.6
50' No. of "			5.0	67.2
100' " " "			5.6	66.6
140' " " " = So. End of Wood box + E 66.38th			6.1	66.1 = Flow line
141' " " "			4.4	67.8 = ground
150' " " "			3.9	68.3 = "
200' " " "			5.8	68.4 = "
250' " " "			4.5	67.7 = "
280' " " "			5.7	66.5 = "
300' " " "			5.8	66.4 = "

Pipe on E.L. 29th St. 24" pipe on E of W CB Line 29th St.

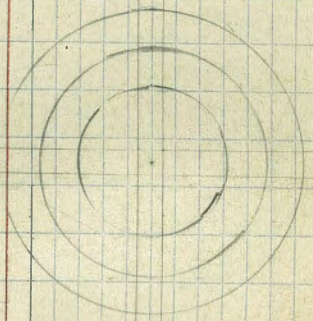
7.2.20

301' No. of Webster = No. End Wood box	7.02	65.18	= flow line
303' " " = S.L. N St.	7.0	65.2	
3' No. of S.L. N St.	6.7	65.5	
5' " "	5.6	66.6	
11' " "	6.0	66.2	
16' " "	5.1	67.1	
21.5' " " = So Rail	4.0	68.2	
26.5' " " " = No "	4.0	68.2	
32' " " "	5.3	66.9	
36.3' " " " = So rail	4.3	67.9	
41.3' " " " = No "	4.3	67.9	
45' " " "	5.1	67.1	
55' " " "	5.5	66.7	
57' " " " + So rail spur	4.3	67.9	
62' " " " = No " "	4.4	67.8	
64' " " " = ℄ 24" pipe	5.3	66.9	
512' W of X St. 29th	5.2	67.0	
514' " " "	2.9	69.3	
518' " " "	3.1	69.1	
523' " " "	5.0	67.2	
550' " " "	5.4	66.8	
580' " " "	4.7	67.5	
600' " " "	5.7	66.5	
610' " " "	6.2	66.0	
650' " " "	5.7	66.5	
700' " " "	5.8	66.4	

Levels on 28th St.

Levels on 29th St.

704.7 W of 29 = E.L. Hensley	5.9	66.3	
26.4 W of E.L. Hensley = 3" WH 85.20 on Main Drain Page 46 = Junction	6.2	66.0	
Ch.	5.91	66.29	3 of 17 Barker Store
	5.15	67.50	6" 35 PC 4/0 18 tons page 47
	6.40	61.10 = lowest point of ground = 40.50 of 5th 20+00 page 47 This book	



Initial Point is S69°46E 1145 from SW Cor of Marshalls Mausoleum

S70°18E	720°
S79°29W	78°
S87°59W	67°
S68°57W	131.8
N44°21W	61.5
N25°26W	27°
N8°44W	54°
N68°43E	137°
N35°04E	39°
N57°04E	119.5

Line "A"

Survey of ℄ of 25' Road Mount Hope Cemetry

4+74.17 E.C.

Δ=76°54' Rt
R=70.°
T=55.58
L=93.95
Ex=19.38

4+35.80 P.I

3+80.17 B.C.

3

2
+94.78 Int 12' Drive

1-

0+74.61 E.C.

Δ=51°09'00" Rt
℄ R=83.58
℄ T=40.°
Ex=9.075
L=74.61

0+40. P.I.

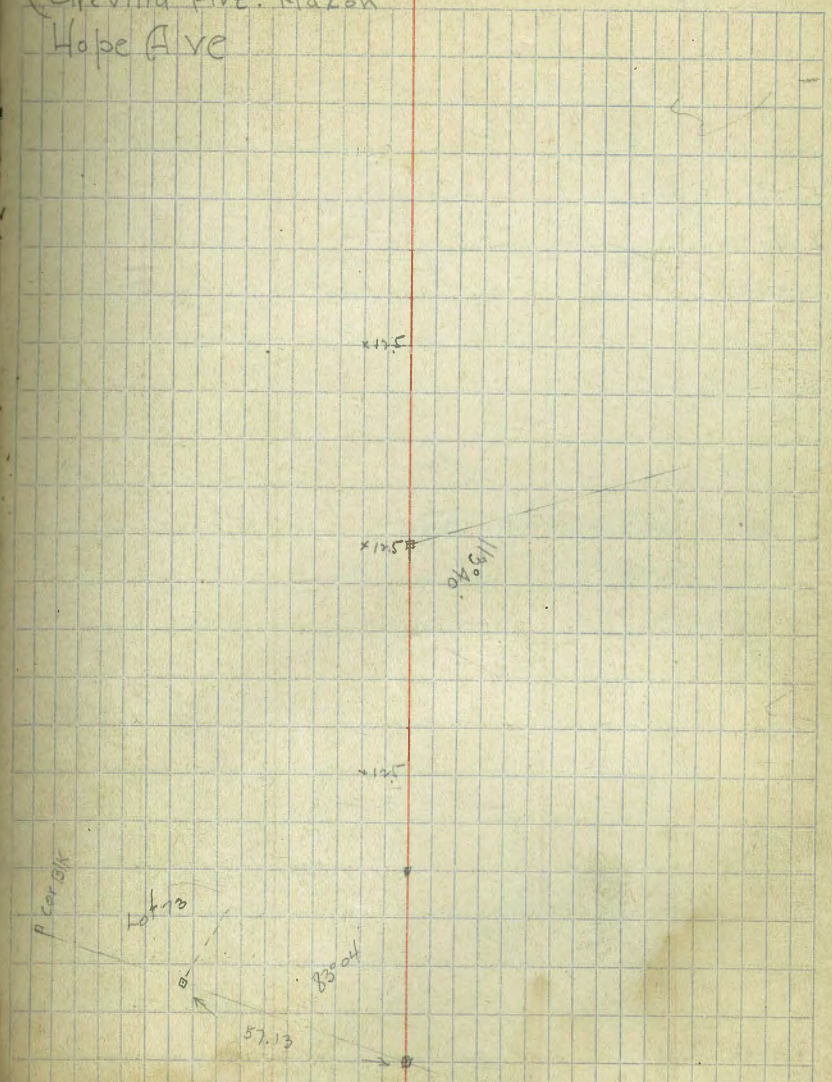
S51°09'W 40.10

40.° South

0+00 P.R.C.

Dec 18 - 1918 Williams Otten

(Grevilla Ave. Maxon Hope Ave



Line "A"

12+18.88 EC.

Δ = 62° 40' Rt.
R = 50°
T = 30.44
L = 54.69
Ex. = 8.54

P.I.
11+94.63

11+64.19 BC.

11+31.98 Int ℄ middle walk GaR.

10+75.43 EC.

Δ = 67°30 Rt.
R = 140°
T = 176.56
L = 273.79
Ex 38.24

P.I.
9+98.70

P.C.
8+57.14

7+05.83 Int ℄ "B" line & "A"

N 51°57'W 560.11

N 15°33'E 245.76

128.95
82.90
211.85

175.0
7.54
3.76

105°08'

1"x1"

211.85

Flag Pole GAR

+25.43	33	40' 00
+50	29°	50 10
+75	26°	06
10 +	22°	17 50
+25	18°	31 40
+50	14°	45 30
+75	10°	59 20
9 +	7°	13 10
+75	3°	27'

83°50'

2½" hub.

N 34°53 E

9.96

Line "A"

16+00.13 EC

P.I.
15+38.80

Δ=60°30' Lt
R=130'
T=75.56
L=136.89
Ex=20.36

14+63.24 BC.

160.91 N67°43'E

80.79 S81°15'E

14+04.64 EC.

Δ=50° Rt
R=100'
T=46.63
L=87.27
Ex:10.34

P.I.
13+64.00

13+17.37 BC.

75.56 N18°03'E

Line "A"

20+43.5 P.C.C.

Δ = 58°00 Rt
R = 93.54
T = 51.85
L = 94.69
Ex = 13.41

20+00.68 P.I.

19+48.83 P.C.C.

Δ = 25°30' Rt
R = 220.0
T = 49.44
L = 97.97
Ex 5.49

19+01. P.I.

18+51.56 P.C.

17+34.17 E.C.

Δ = 28°30' Rt
R = 200.0
T = 50.79
L = 99.48
Ex = 6.35

16+85.48 P.I.

16+34.69 P.C.

Line "A"

22+16.48 P.R.C. =
0+00 " " "

Δ = 44°28' Lt
R = 85.62
T = 35.90
L = 66.45
Ex = 6.88

350' South

21+85.03 P.I.

21+50.03 P.C.

111.40
S 44°28 W

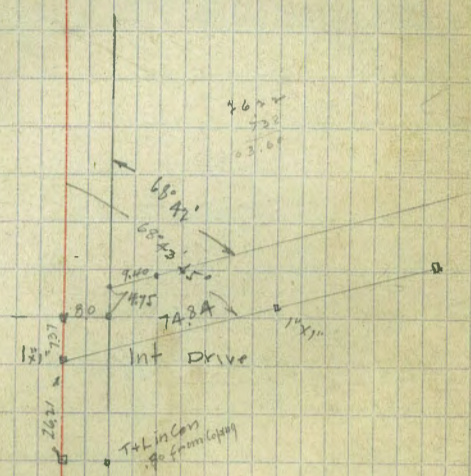
21+07.21 E.C.

Δ = 44°55' Rt
R = 81.24
T = 33.58
L = 63.64
Ex = 6.67

20+77.10 P.I.

85.43
S 0°27 E

89 59 60
22 27 30
67 32 30



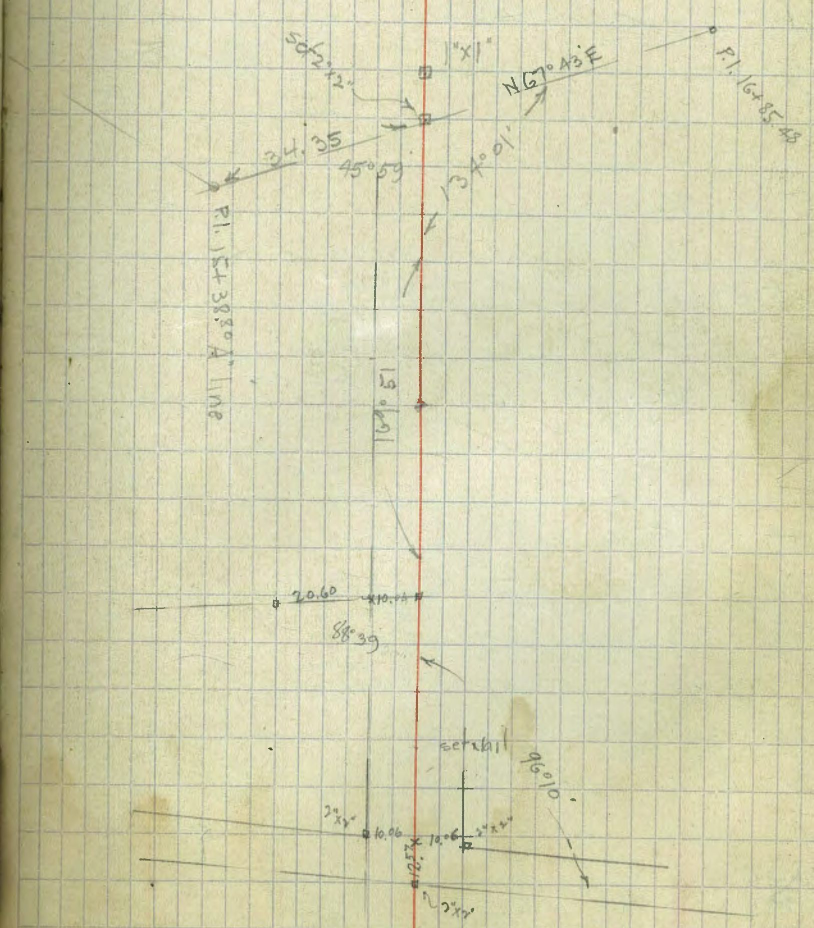
Survey "B" line ℄ 20 Road from ℄ Greville Ave to ℄ Hope Ave

4+00	set 1"x1"	
3+96.30	Int Semi tang "A" Line	
		83.19 Δ 21°44 E
3+13.11	Int "D" line	Δ=10°09 Lt
2+12.59	Int ℄ middlewalk Gar	
		N 31°53 E 313.11
1+41.20		
0+00 = "B" Line =		
7+05.83 "A" Line		
		N 31°57 W

370

179°60
134°01
46°59

179 60
169 51
10°09



Survey "C" line 12' Road

Cemt. Office to G.A.R. Plot

3+66.9± = "C" line Int with "B" line
2+03.17 = "B" line

3+11.34 EC.

2+75.37 P.I.

2+39.20 BC.

2+28.37 EC.

1+94.5 P.I.

1+60.13 BC.

1+04.73 = "A" line
0+00 "C" line

Δ=16°20 Lt
R=400.0
T=36.17
L=72.14
EX=1.63

Δ=17° Rt
R=230°
T=34.37
L=68.34
EX=2.56

91.75
36.17
55.58

3+11.34 2+03.17
55.58
3+66.9±

61

2°16 - 1.00078

0+00 "B" Line

3+66.9± = "C"
2+03.17 = "B"

"B" Line
S31°53'W

87.42

set 1"x1"

set 1"x1"

73.32 = 5°10'
60 = 4°13'45"
50 = 3°31'30"
40 = 2°49'15"
30 = 2°06'54"
20 = 1°24'36"
10 = 0°43'18"
0 = 0

set 1"x1" Rad 406'

set 1"x1"

70.03 = 8°30'
60. = 7°17'00"
50. = 6°04'10"
40. = 4°51'20"
30. = 3°38'30"
20. = 2°25'40"
10. = 1°12'50"

Δ=17° Rt
Rad. = 230
L = 70.03

set 1"x1"

66.46 = 8°30'
60 = 7°46'21"
50 = 6°23'46"
40 = 5°06'56"
30 = 3°50'17"
20 = 2°33'28"
10 = 1°16'46"

set 1"x1" Δ=17°
Rt Rad = 224.0'
L = 66.46

set 1"x1"

91.75' = N55°51'W

81.37' = N45°31'W

194.5' = N62°31'W

0+40

S51°09'W

"A"

"D" Line — Survey of Oakwood Ave from Hope Ave to Hope Ave

Station		Curve data	Course
4+11.90	Δ	Δ 8°53' Rt	
4+11.09	"D" line Int "B" line		
3+13.11	"B" line		
4			
3			174.19 N 75°50 W
2+71.78	EC.		
2+38.60	P.I.	Δ = 22°40' Lt, R = 170., T = 34.07, L = 67.25, Ex = 3.38	
2+04.53	BC.		
51.70			131.38 N 53°10 W
1+52.83	EC		
1+07.78	P.I.	Δ = 14°50 Rt, R = 350°, T = 45.56, L = 90.61, Ex = 2.95	
0+62.22	BC		107.78 N 68°00 W
0+10.27	"A" line.		
0+00.	"D" "		

7° 21'
3° 42' 30"

277°35'
107°44
169°51

171°50
18 10

N 75°50' W
17°44
97°34

107°44
169°51
277 35
82 25
360 00

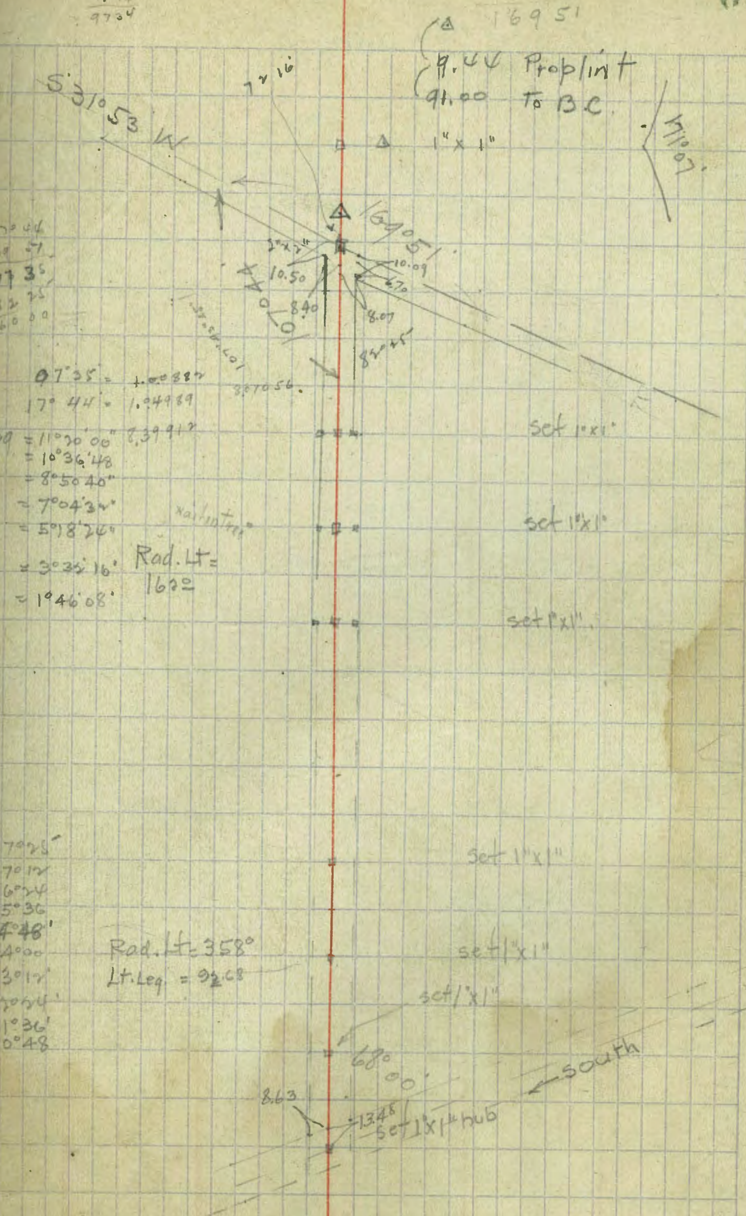
07°35' = +.00887
17° 44' = 1.04989

62.00 = 11°20'00" 2.39917
60. = 10°36'48
50 = 8°50'40"
40. = 7°04'32"
30. = 5°18'24"
20. = 3°35'16"
10. = 1°46'08"

Rad. Lt = 162°

93.68 = 7°28'
90 = 7°12'
80 = 6°24
70 = 5°36
60 = 4°48'
50 = 4°00
40 = 3°12'
30 = 2°24'
20 = 1°36'
10 = 0°48

Rad. Lt = 358°
Lt. Leg. = 93.68



"D" Line

157°21

Δ=157°21'30"
R=88°
T=
L=241.70
LC=177.50

LC=177.5°
S34°42'30"W

5+12.34 B.C. LC. 78°46'30" Lt

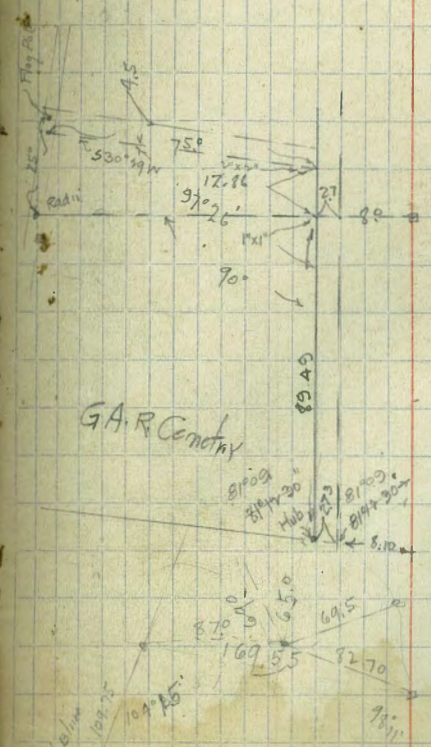
4+21.34 Int Prop Line

100.44
N 66°57' W

75° 45

81°49
75°30
157°19'

98° 11'
81 49



"D" Line

11+81.28 D" Line =
3+56.76 A' Line

9+50 set 1"x1"

Δ 8+97.6 ℞ Δ 4°16'30" Lt

"D" line
8+64.78 Int. B line
0+98.59 B" Line

8+00 set 1"x1"

7+54.04 EC. 78°40'30" Lt

+83.66 S48°34'E
37.84
S41°18'E 143.18
110.7 ℞

set 1"x1"
S51°09'W
Δ= 80°17'
R=16
T=13.44
Δ= 89°43'
R=
T=13.70
EC=PRC
N 31° 53' E
105°13'
75°
S30°29'W
90°

E Line

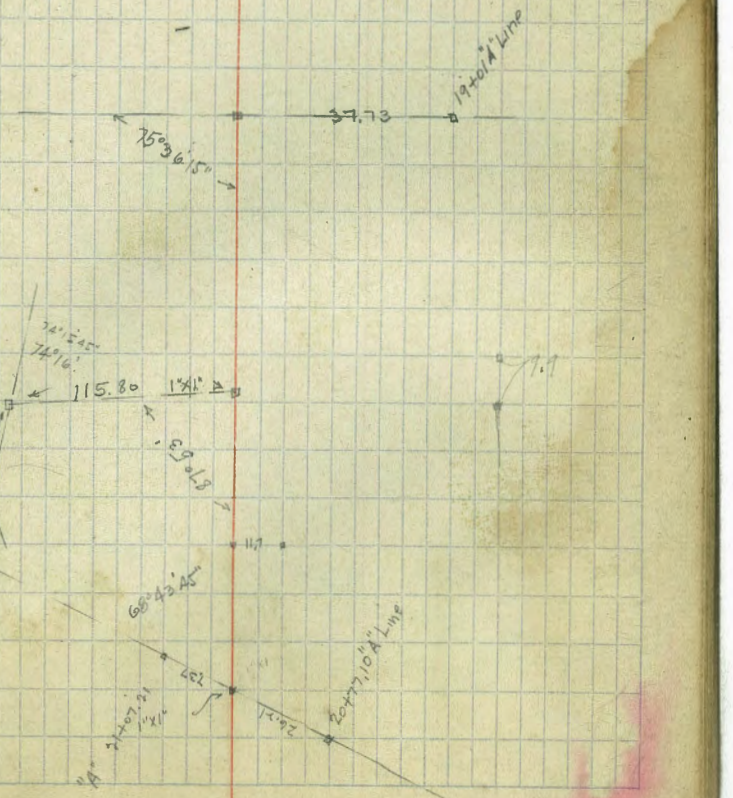
2+67.73	Int. with ℄ Line		
1+56.25	Int ℄ Drive	Δ 87°24' Rt	106.48
0+74.84	P.O.T.		
0+00			

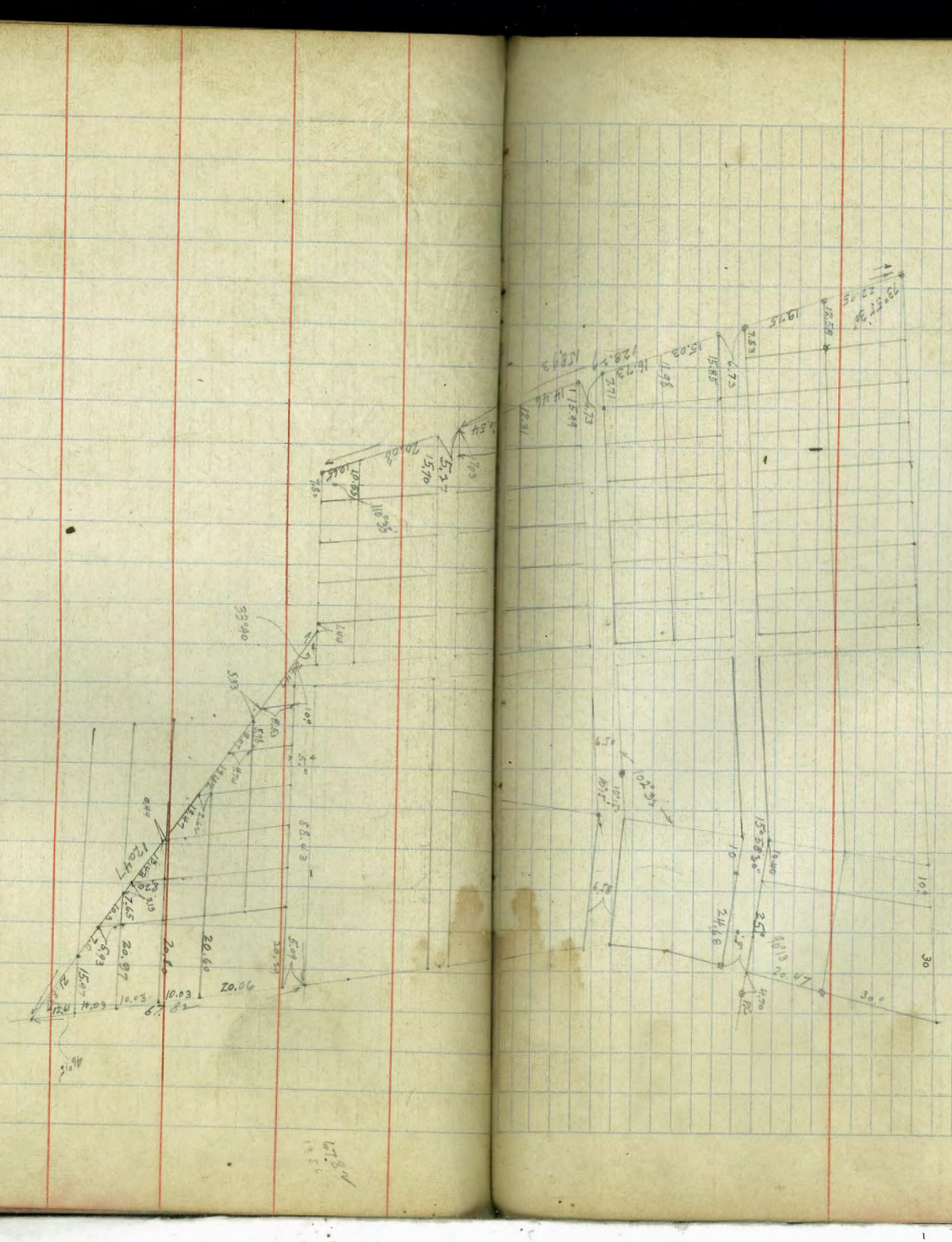
37.73

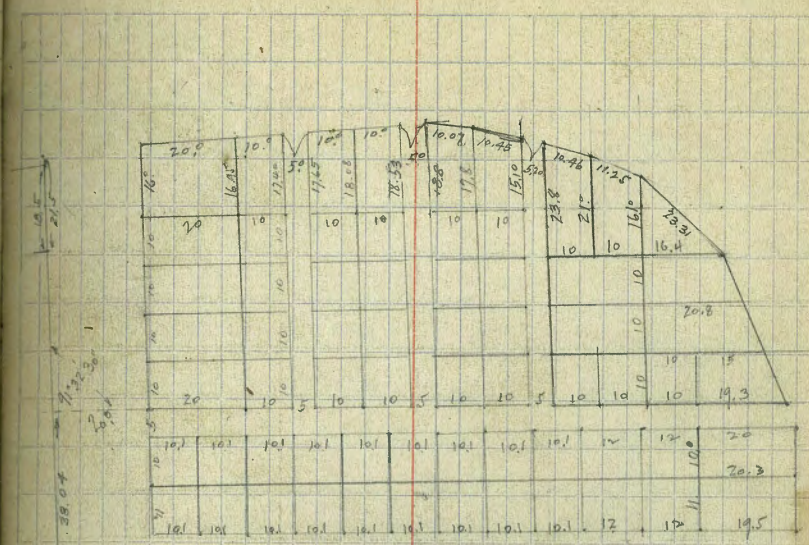
106.48
156.25
262.73

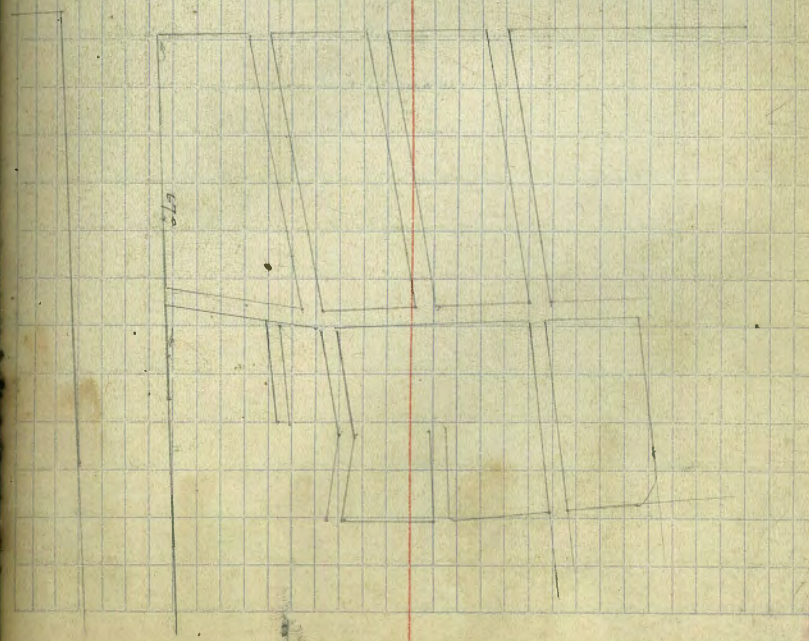
95°36'
87°24'

11.56
37.73
49.29









LEVELS Cont. From P. 8

101.32

+4'			5.6	95.72	
N			4.6	96.72	
+2			5.1	96.22	
+3			5.9	95.4	
+5'			6.9	94.4	✓
+10'			7.1	94.2	
	4+75				
N edge Pav.			5.60	95.72	
N			5.3	96.02	
+5'			6.1	95.22	✓
+10			6.9	94.42	
T.P.	5.95				38th + Imp. Bout 1341-80
(Incl) Check SE top Hydt.		103.88	3.89	97.93	
	5+00				
S. top cb.			8.12	95.76	✓
Gut			8.69	95.19	
L			8.15	95.73	✓
N edge Pav.			8.27	95.61	
+3			7.7	96.18	
N			7.7	96.18	
+2			7.8	96.08	
+5			8.9	94.98	✓
+10			9.7	94.18	
	5+28.44 = NL 38th St.				
S top cb.			8.20	95.68	✓
Gut on Pav.			8.79	95.09	
L " "			8.31	95.57	✓
N edge Pav.			8.50	95.38	

103.88

68

+3	8.5	95.38
N.	7.4	96.48
+1'	7.6	96.28
+3	9.1	94.78
+5	10.1	93.78 ✓
+10'	10.2	93.68
5+38.44 = N cb. Line 38th		
-10'	10.5	93.38
-5'	10.5	93.38 ✓
-1'	9.8	94.08
N-0.5'	7.5	96.38
N	7.5	96.38
+2	8.4	95.48
+5-N edge Pav.	8.50	95.38
L on "	8.39	95.49 ✓
cb. on Pav.	8.89	94.99
+2 " Gutting cb Inlet	9.02	94.86
SL on Gut. Pav.	8.80	95.08 ✓
SL. " cb.	8.26	95.62 ✓
5+58.44 = L 38th St.		
SL. on Pav.	8.57	95.31
cb. " "	8.44	95.44 ✓
L " "	8.41	95.47 ✓
N edge "	8.45	95.43
+2	8.3	95.58
N	7.4	96.48
+1'	7.4	96.48

+2	10.6	93.28	
+5	11.1	92.78	✓
+10	11.1	92.78	
5+78.44 = E. cb	38 ft		
-10'	11.4	92.48	
-5'	11.4	92.48	✓
-2'	11.1	92.78	
-1'	7.5	96.38	
N	7.5'	96.38	
+2	7.6	96.28	
+3	8.5	95.38	
+5' = N edge Pav.	8.56	95.32	
℄ on "	8.30	95.58	✓
+8 " "	8.45	95.43	
cb. " "	8.93	94.95	
+2' on Grating cb Inlet	9.17	94.71	
S.L. on Pav.	8.86	95.02	✓
" " " cb	8.27	95.61	✓
5+84			
Flow line Culvert Inlet A sketch D-5	11.37	92.51	
top of cb. of Inlet B	8.27	95.61	
on Grating Inlet B	9.30	94.58	
Flow line 12" Culvert at Inlet B	11.23	92.65	
S cb			
+4' on Pav.	8.51	95.37	
℄ " "	8.31	95.57	✓
N edge "	8.66	95.22	

N edge Pav. +3' = on top Concrete Inlet Box. C	8.41	95.47
4' " " Gut. " " "	9.18	94.70
Flow line Culverts at " " "	12.76	91.12
N+0.5' = N edge Pav. C	8.34	95.54
N+1' on Ground	11.3	92.58
+5	11.3	92.58 ✓
+10	11.3	92.58
+71' Flow Line Culvert at D	18.3	85.58
5+88.44 = E.L. 38 ft St.		
-10'	11.3	92.58
-5	11.3	92.58 ✓
-2	10.8	93.08
N	7.7	96.18
+3	8.3	95.58
+5' - N edge Pav	8.34	95.54
℄ on "	8.17	95.71 ✓
+8 " "	8.35	95.53
cb " "	9.17	94.71 ?
cb. on cb.	8.19	95.69 ✓
6+00		
S cb	7.84	96.04 ✓
Gut	8.55	95.33
+4	8.07	95.81
℄	7.87	96.01 ✓
N edge Pav.	8.05	95.83
N	8.3	95.58
+2	10.7	93.18

10.3.88

+5'		11.3	92.52	✓
+10		11.9	92.58	
	6+25			
N edge Pav.		7.26	96.62	
N		7.7	96.18	
+2		10.4	3.48	
+5		11.3	92.6	✓
+10'		10.9	92.98.	
	6+50			
S top cb.		6.24	97.64	✓
Gut.		6.78	97.10	
℄		6.31	97.57	✓
N edge Pav.		6.45	97.43	
N		6.9	96.98	
+2		10.0	93.88	
+5		10.6	93.3	✓
+10		10.5	93.4	
	6+75			
N edge Pav.		5.70	98.18	
N		6.0	97.88	
+2		9.5	94.38	
+3'		9.5	94.38	
5'		10.0	93.88	
+10		10.0	93.88	✓
	7+00			
-10		9.2	94.68	

10.3.88

70

-5'	8.9		94.98 ✓
-3'	8.5		95.38
N	5.2		98.68
+5' N edge Pav.	4.84		99.04
℄ on "	4.66		99.22 ✓
Gut. at cb.	5.14		98.74
cb.	4.61		99.27 ✓
7+25			
N edge Pav.	4.00		99.88
N	4.4		99.48
+2	7.4		96.48
+5	8.2		95.68 ✓
+10	8.0		95.88
7+50			
-10	6.8		97.08
-5	6.7		97.18 ✓
-2'	6.0		97.88
N	3.6		100.28
N edge Pav.	3.24		100.64
℄ "	2.98		100.90 ✓
Gut. in Drive Way.	3.58		100.30 ✓
7+75			
N edge Pav.	2.38		101.50
N	3.7		100.18
+2	5.0		98.88
+5	5.5		98.38 ✓
+10	5.0	98.9	98.88

103.88

	8+00			
-10			3.7	100.18
-5			4.3	99.58 ✓
-2			3.9	99.98
N			1.8	102.08
+5' = N edge Pav.			1.32	102.56
℄ on '			1.04	102.84 ✓
Gut. " "			1.60	102.28 ✓
cb.			1.05	102.83 ✓
T.P.	12.67	115.33	1.22	102.66
	8+25			
N edge Pav.			11.37	103.96
N			11.6	103.73
+1'			13.7	101.63
+5'			14.2	101.13 ✓
+10'			13.3	102.03
	8+50			
-10'			10.9	104.43
-5'			11.6	103.73 ✓
-1'			11.2	104.13
N			10.1	105.23
+5' N edge Pav.			9.97	105.36
℄ on '			9.82	105.51 ✓
Gut. in Drive Way			10.32	105.01 ✓
	8+75			
N edge Pav.			8.61	106.72
+5			8.5	106.83 ✓
+10'			8.5	106.83 ✓

115.33

Note: Mr Chas. Kane Says Please Stop Wall About 8+84

9+00 = East Boundary Masonic Cemetary

-10'			6.5	108.83
-5'			6.6	108.73 ✓
N			6.9	108.43
N edge Pav.			7.22	108.11
℄			7.06	108.27 ✓
5 Gut			7.53	107.80 ✓
cb.			6.96	108.37 ✓
	9+25			
5 cb.			5.53	109.80
Gut.			6.08	109.25
℄ on Pav.			5.61	109.72
N edge "			5.81	109.52
N			6.0	109.33
+2			4.1	111.23
+5			4.1	111.23 ✓
+6.50' = top cb.			4.20	111.13
T.P. 2.50		105.16	12.67	102.66
Cbk. top Hyd. P-68			7.23	97.93
				97.93 = BM
				0.00

Imperial Ave. Cross Section
North of Existing Paving
From Entrance to Mt Hope Cemetery North of Brookings, Mission

BM	0.85	11925	11925	118.40	S.E.B.P. Imperial Ave
		0+0 : East End of Conc Wall from Nly of Entrance to Mt Hope Cemetery			
N Edge Paving			12.03	107.22	
7' N			11.7	107.55	
10' N			12.1	107.15	
10' N - East End of Conc Wall		Top	11.70	107.55	
		0+34.0			
N Edge Paving			10.16	109.09	
5' N			10.1	109.15	
6.75' N - East Conc Wall			9.5	109.75	
Top			8.94	110.51	
10' N			8.4	110.85	
15' N - E Drive From NE			9.2	109.85	
		0+38.4			
N Edge Paving			9.88	109.37	
4' N			10.0	109.25	
7' N			8.4	110.85	
10' N - East Conc Wall		Top	8.32	110.93	
10' N	Ground		9.0	110.25	
15' N			9.0	110.25	
		0+60			
N Edge Paving			8.67	110.58	
4' N			9.1	110.15	
7' N			5.8	113.45	
10' N			5.8	113.47	
15' N			5.8	113.45	

11925

Nov. 6-8/25
Moore
Sisson
Northam

	0+80	11925	
N Edge Pav.		7.63	111.67
3' N		2.8	111.45
6' N		4.5	114.75
10' N		4.2	115.05
15' N		4.0	115.25
	1+0		
N Edge		6.59	112.66
3' N		7.1	112.15
6' N		5.4	113.85
10' N		5.1	116.15
11.6' N - Sly Edge Slope of 18" Conc		8.0	116.25
	1+10		
N Edge Paving		6.28	112.97
3' N		6.4	112.85
6' N		4.8	114.45
10' N		4.25	116.75
15' N		4.1	117.15
	1+20		
N Edge Paving		6.91	113.29
3' N		5.8	113.45
6' N		3.4	115.85
10' N		2.9	117.05
15' N		1.9	117.35

11925

119.25

1+40				
N Edge Pav.		543	113.82	✓
3' N		52	114.05	✓
6' N		42	117.05	✓
10' N		17	117.55	✓
15' N		15	117.75	✓
1+60				
N Edge Pav.		498	114.31	✓
3' N		42	115.05	✓
6' N		16	117.65	✓
10' N		13	117.95	✓
15' N		10	118.25	✓
1+80				
N Edge Pav.		398	115.27	✓
4' N		37	116.55	✓
7' N		0.8	118.45	✓
10' N		0.6	118.65	✓
15' N		0.4	118.85	✓
2+40				
N Edge Pav.		300	116.25	✓
3' N		22	117.05	✓
6' N		01	119.15	✓
10' N		0.0	119.25	✓
15' N		00	119.25	✓
TP	534	12422	027	118.98

12422

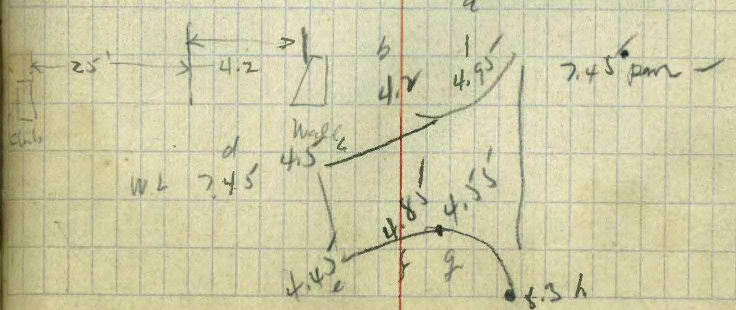
73

119.22

2+80			
N Edge Pav.	704	117.16	✓
3' N	62	118.02	✓
6' N	44	118.82	✓
10' N	15	116.72	✓
15' N	14	116.82	✓
= 3+042 = FL 39.15 N			✓
N Edge Pav.	651	117.71	✓
3' N	58	118.42	✓
6' N	45	119.72	✓
10' N	43	119.92	✓
15' N	43	120.02	✓
3+342 - FL 39.15 N			
N Edge Pav.	140	117.82	✓
3' N	55	118.72	✓
6' N	43	119.92	✓
10' N	40	120.22	✓
15' N	40	120.22	✓
3+642 - FL 39.15 N			
N Edge Pav.	622	118.00	✓
5' N	54	118.82	✓
6' N	41	120.12	✓
10' N	40	120.22	✓
15' N	38	120.42	✓

4+0	124.22		
H Edge Pav	5.55	118.67	✓
4 H	5.0	119.22	✓
6 H	3.8	120.42	✓
10 H	3.5	120.72	✓
15 H	3.5	120.72	✓
4+33.33			
H Edge	4.89	119.33	✓
5 H	4.4	119.82	✓ [illegible]
6 H	3.1	121.12	✓ [illegible]
10 H	2.7	121.52	✓ 9.3 [illegible] Edge Pav
15 H	2.9	121.32	✓ [illegible] 121.22
4+66.67			
H Edge Pav	4.18	120.04	✓
4 H	3.6	120.62	✓
6 H	2.2	122.02	✓
10 H	2.0	122.22	✓
15 H	2.0	122.22	✓
5+0			
H Edge	3.52	120.70	✓
3 H	3.1	121.12	✓
6 H	1.3	122.92	✓
10 H	1.4	122.82	✓
15 H	1.4	122.82	✓

5+33.33	124.22		
H Edge Pav	2.83	121.39	✓
4 H	2.4	121.82	✓
6 H	1.0	123.22	✓
10 H	0.8	123.42	✓
15 H	0.9	123.32	✓
5+66.67			
H Edge Pav	2.13	122.09	✓
4 H	2.1	122.12	✓
6 H	0.5	123.72	✓
10 H	0.5	123.72	✓
15 H	0.4	123.82	✓
5+88 = Wly End Conc Wall Barbough Mausoleum			
H Edge Strip Pav	1.75	122.47	✓
4.30' H Bot Conc Wall on Pav	1.90	122.32	✓
4.35' H : Top Conc Wall 8" Wide	0.47	123.75	✓
5 H	0.0	124.22	✓
10 H	0.1	124.12	✓
15 H	0.1	124.12	✓



6 — 2½

1.8 Surface

Culvert 5'

2

see page 39

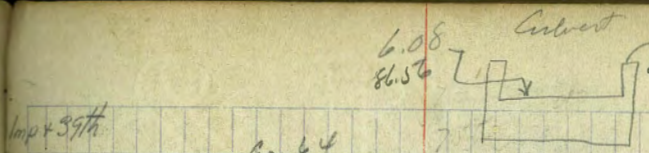
92.6 ✓

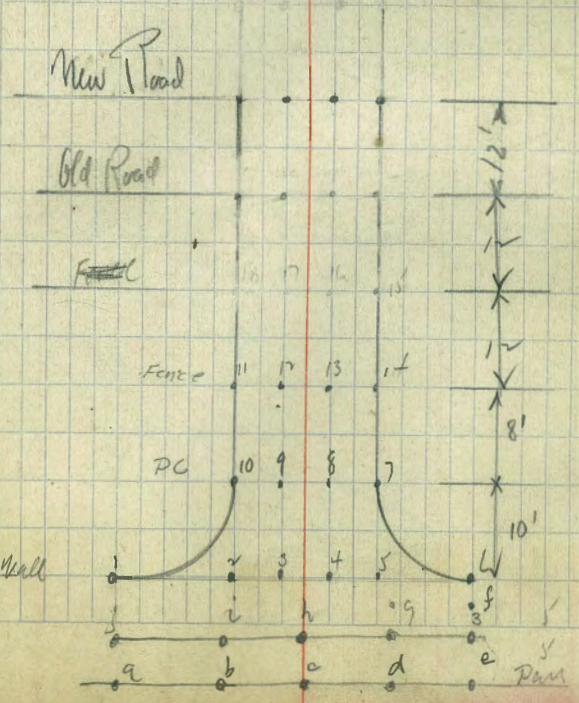
℄			8.2	87.44
W			5.2	87.44
	0+16.3 PT, EC		0+	0+00
W			6.2	86.44 ✓
℄			5.9	86.74 ✓
E			5.6	87.04 ✓
℄	0+ 19.8 ℄ Creek			
E			7.0	85.64 ✓
℄			7.4	85.24 ✓
W			7.9	84.74 ✓
	0+15.3			
W			5.5	87.14 ✓
℄			5.5	87.14 ✓
E			5.6	87.04 ✓
	0+10			
E			5.1	87.54 ✓
℄			4.8	87.84 ✓
W	℄ Road		4.7	87.94 ✓
	0+20			
W		Rd	4.8	87.84 ✓
℄	Rd		4.2	88.44 ✓
E			~~4.8~~ 4.5	88.14 ✓

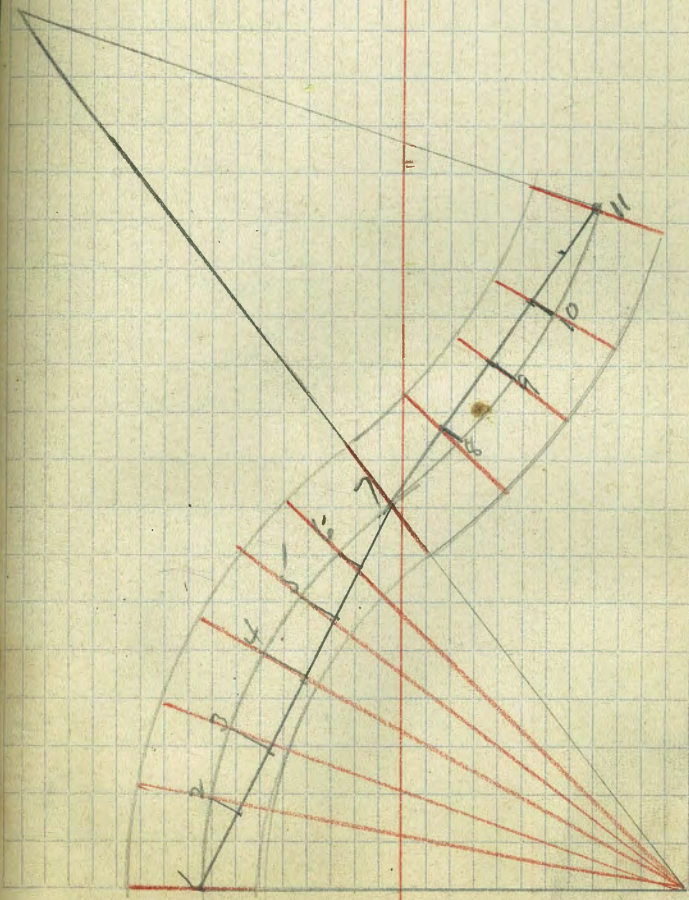
+S	B.M. ~~or T.P~~	H.I ~~S~~	S.E.	Sta	Remarks
7.03	~~46.40~~	123.43		92.64	B.M. B.P.S.E. Imp + 39th
E		0+30		3.5	89.14 ✓
℄				3.5	89.14 ✓
W				4.7	87.94 ✓
		0+40			
W				~~8~~	
℄				3.0	89.14 ✓
E				~~3.0~~	
		0+50			
E					
℄				2.3	90.34 ✓
W					

92.64
6.08
86.56

92.64
5.66
86.98






11
10
9
8
7
6
5
4
3
2
1

13° 38'

6° 49' - Tan .11954

239.08

Δ = 13° 38'
R = 200'
T = 23.91'
L = 47.59'

11.90
11.90
2380
7 1.90
3 5 7 0
1 1.9 0
4 7.6 0

C	d
11.90 =	1° 42' 15"
23.80 =	3° 24' 30"
35.70 =	5° 6' 45"
47.60 =	6° 49' 00"

1° 42' 15"
1° 42 15
3° 24 30
1 42 15
5° 6 45
1 42 15
6 49 00

.0174533
13.633
523599
523599
1047198
523599
174533
.237940 8389

.23.794
200
47.588

Curve for wall along ditch 12/29/20 Norman

R = 212 Chord 5' = d 0° 40' 30"

424) 5.00000 (1.01179
424
760
424
3360
2968
3920
3816

Δ = 7°30'
R = 178°

178) 5.00000 (.028089 1°36' 30"

1°36' 30"
3° 13' 00
4° 49' 30
6° 26 00
8° 02 30
9° 39 00
11° 15 30
12° 52 00

Δ = 12°50'
R = 342°

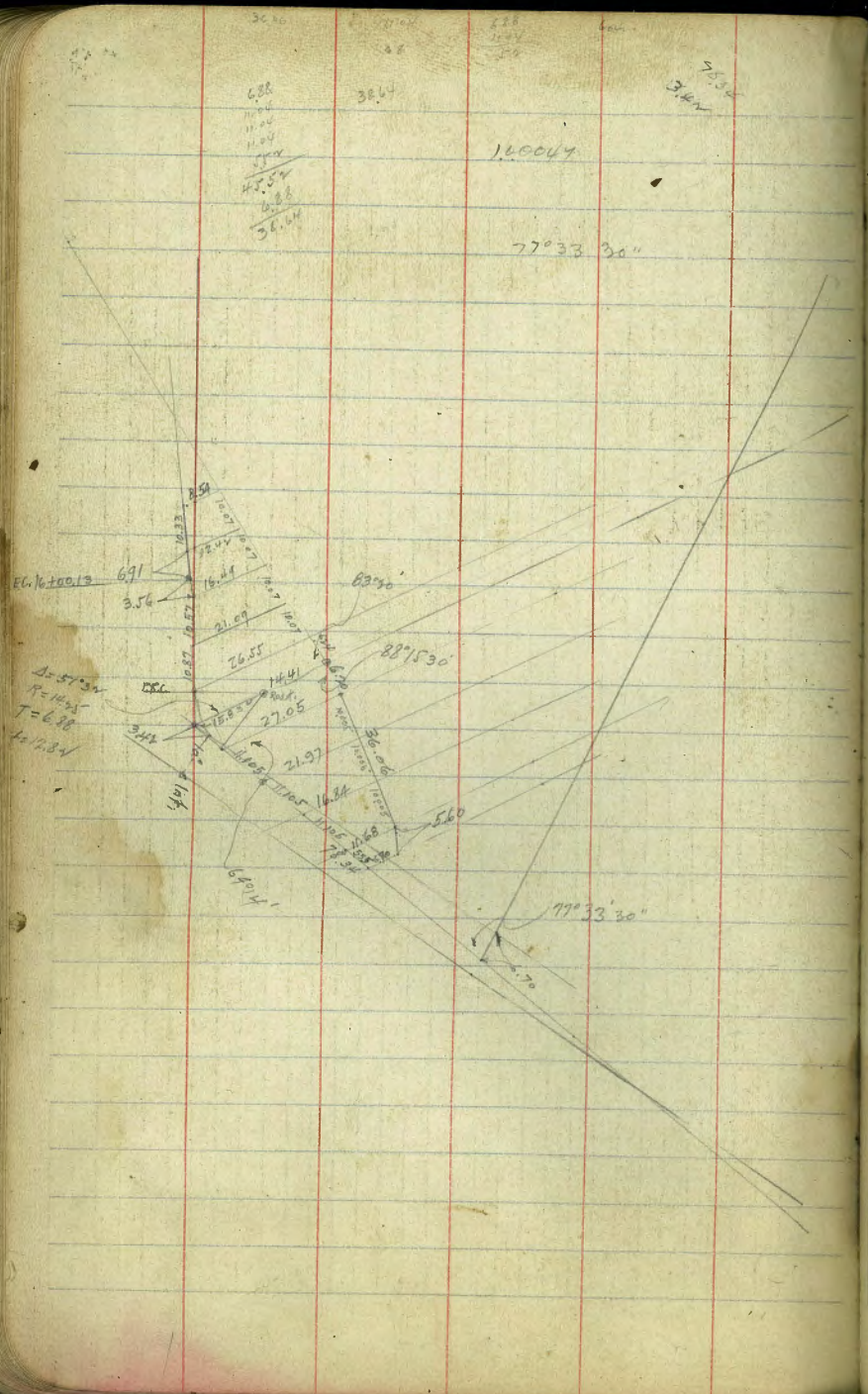
342) 5.00000 (.01462 0°50' 30

0°50' 30"
1° 41 00
2° 31 30
3° 22 00
4° 12 30

Δ = 44° 38'
R = 93.62

93.62) 5.0000 (.05340

3° 03 30



134 01
123°36 30"

134 01 00
10 22 30
123 38 30 61 49
56 22

9

16+00.13 Back

Δ = 66°20
R = 130.0

R = 138.0

40 09 30
6° 13 30
10 22 30
54 11' 15"

.03623
12.8 ⟌1.000000
414
860
828
370
276
440
414

2°04'30"
4° 09 00
6° 13 30
8° 18 00
10 22 30
5° 11 15

Δ = 56°27'
R = 18.84
T = 6.88

28° 16'
1.74623
6.88
12 23 04
149 304
111978
17,840144

128°28'
Δ = 51°37
R = 14.25
T = 6.88

6.4° 16'

25 46
2.07164
6.88
16.57336
16.57336
1 7 4 3 0 0 3
14,25308 96

25°46 1.11 04

1.11 04

.7006
6.88
7 2 0 4 8
7 2 0 4 8
T4 = 36
6.1 9 6 1 7 8

6.20

1.00681 6°40
6.4
4 0 1 3 6 7
6 0 4 0 8 6
6.4 4 2 2 2 2

.122173
500
67,086500

tan 3°30' = .06116
500
30,58000

.00187
500
.93500

36.74
13.26
50.00

32 + 82 75
30.58
32 + 52 17
61 09
33 + 13 26

PI 17 + 90 00
30 78
17 + 59 22

Δ 8.48

4° 24'

.139626 3
.0139626 6
.1535889
400
.61,435600

.07695
400
30,78000

2 | 61.44
30.72

37 + 59 22
30.72
37 + 89 94

1,00408
1,00370
2,00778
1.00379
3395

E = 4° 24' =

.00296
400
1,18400

.4115
3407
28805
16 4600
12345
14,019805

501895
703411
301137
301137
34.0786705

22.27

.4132
3345
20660
37188
12396
12396
14.008140

Δ = 7°
R = 500'
T = 30.58
L = 61.09'
E = 0.94'

32 + 82 75 P.O.T. old line =
32 + 82 75 L'H.I

P.C. 32 + 52 17 = P.O.T. old line.
P.T. 33 + 13 26
P.C. 37 + 59 22
P.T. 38 + 20 66
Δ = 40 + 73 23 = 40 + 80 05 old line.
Δ = 2° 35' 30"

Δ 8° 48'
R = 400'
T = 30.78
L = 61.44
E = 1.18'

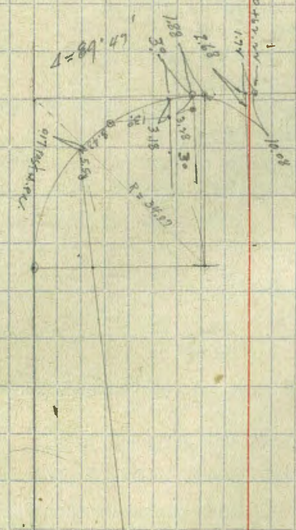
0.17 Past Mid. Point Curve

33.45
34.07

Δ = 89° 47'
R = 34.07
T = 33.95
L = 53.39
E =

44° 53' 30"

1.5533430
.0136717
1.5670147
3407
10969 1029
626805880
47010441
53.3881908209



10.08

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

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° 19½′=def. for sta.	542	I. P.=sta.	542+72
4° 49½′= " " "	+50	Tan.=	1.18.47
7° 19½′= " " "	543	B. C.=sta.	541+53.53
9° 49½′= " " "	+50	L. C.=	2.33.33
11° 40′= " " "	543+	E. C.=sta.	543+86.86
	86.86		

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

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

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

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

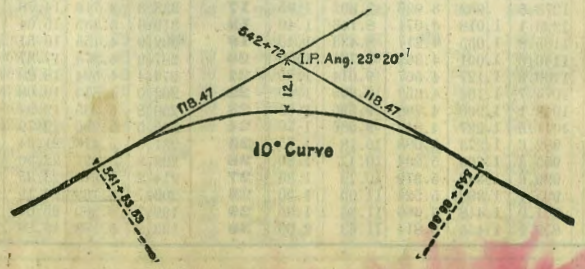


Table VI. Deflections for Sub Chords for Short Radius Curves.

Degree of Curve	Radius 50 / sin. def. ang.	½ sub chord / R = sin of def. angle 12.5 Ft.	15 Ft.	20 Ft	25 Ft.	Length of arc for 100 ft.
30°	193.18	1° 51′	2° 17′	2° 58′	3° 43′	101.15
32°	181.39	1° 59′	2° 25′	3° 10′	3° 58′	101.33
34°	171.01	2° 06′	2° 33′	3° 21′	4° 12′	101.48
36°	161.80	2° 13′	2° 41′	3° 33′	4° 26′	101.66
38°	153.58	2° 20′	2° 49′	3° 44′	4° 40′	101.85
40°	146.19	2° 27′	2° 57′	3° 55′	4° 54′	102.06
42°	139.52	2° 34′	3° 05′	4° 07′	5° 08′	102.29
44°	133.47	2° 41′	3° 13′	4° 18′	5° 22′	102.53
46°	127.97	2° 48′	3° 21′	4° 29′	5° 36′	102.76
48°	122.92	2° 55′	3° 29′	4° 40′	5° 50′	103.00
50°	118.31	3° 02′	3° 38′	4° 51′	6° 04′	103.24
52°	114.06	3° 09′	3° 46′	5° 02′	6° 19′	103.54
54°	110.11	3° 16′	3° 54′	5° 13′	6° 31′	103.84
56°	106.50	3° 22′	4° 02′	5° 23′	6° 44′	104.14
58°	103.14	3° 29′	4° 10′	5° 34′	6° 57′	104.43
60°	100.00	3° 35′	4° 18′	5° 44′	7° 11′	104.72

CURVE FORMULAS.

$$T = R \tan \tfrac{1}{2} I \qquad R = T \cot \tfrac{1}{2} I \qquad \text{Chord def.} = \frac{\text{chord}^2}{R}$$

$$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. D}} \qquad R = \frac{50}{\text{Sin. D}} \qquad \text{No. chords} = \frac{\frac{1}{2} I}{D}$$

$$\text{Sin. D} = \frac{50}{R} \qquad E = R \text{ ex. sec. } \tfrac{1}{2} I$$

$$\text{Sin. D} = \frac{50 \tan \frac{1}{2} I}{T} \qquad E = T \tan \tfrac{1}{4} I \qquad \text{Tan. def.} = \tfrac{1}{2} \text{ chord def.}$$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

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

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

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

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

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.), and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance: Multiply the angle by .01745, and the product by the distance.

Right Angle Triangles.—Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt 10. $10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given [illegible]00, Alt. 25. $25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875$ = Base.

[illegible]	32 error in first example, .002; in last, .045.
To find [illegible]	8262.8 ft. in one mile of track: multiply weight per yard and divi[illegible]

Natural Sines

Deg.	0′	10′	20′	30′	40′	50′	Deg.	Deg.	0′	10′	20′	30′	40′	50′	Deg.
0	0000	0029	0058	0087	0116	0145	89	40	6428	6450	6472	6494	6517	6539	49
1	0175	0204	0233	0262	0291	0320	88	41	6561	6583	6604	6626	6648	6670	48
2	0349	0378	0407	0436	0465	0494	87	42	6691	6713	6734	6756	6777	6799	47
3	0523	0552	0581	0610	0640	0669	86	43	6820	6841	6862	6884	6905	6926	46
4	0698	0727	0756	0785	0814	0843	85	44	6947	6967	6988	7009	7030	7050	45
5	0872	0901	0929	0958	0987	1016	84	45	7071	7092	7112	7133	7153	7173	44
6	1045	1074	1103	1132	1161	1190	83	46	7193	7214	7234	7254	7274	7294	43
7	1219	1248	1279	1305	1334	1363	82	47	7314	7333	7353	7373	7392	7412	42
8	1392	1421	1449	1478	1507	1536	81	48	7431	7451	7470	7490	7509	7528	41
9	1564	1593	1622	1650	1679	1708	80	49	7547	7566	7585	7604	7623	7642	40
10	1736	1765	1794	1822	1851	1880	79	50	7660	7679	7698	7716	7735	7753	39
11	1908	1937	1965	1994	2022	2051	78	51	7771	7790	7808	7826	7844	7862	38
12	2079	2108	2136	2164	2193	2221	77	52	7880	7898	7916	7934	7951	7969	37
13	2250	2278	2306	2334	2363	2391	76	53	7986	8004	8021	8039	8056	8073	36
14	2419	2447	2476	2504	2532	2560	75	54	8090	8107	8124	8141	8158	8175	35
15	2588	2616	2644	2672	2700	2728	74	55	8192	8208	8225	8241	8258	8274	34
16	2756	2784	2812	2840	2868	2896	73	56	8290	8307	8323	8339	8355	8371	33
17	2924	2952	2979	3007	3035	3062	72	57	8387	8403	8418	8434	8450	8465	32
18	3090	3118	3145	3173	3201	3228	71	58	8480	8496	8511	8526	8542	8557	31
19	3256	3283	3311	3338	3365	3393	70	59	8572	8587	8601	8616	8631	8646	30
20	3420	3448	3475	3502	3529	3557	69	60	8660	8675	8689	8704	8718	8732	29
21	3584	3611	3638	3665	3692	3719	68	61	8746	8760	8774	8788	8802	8816	28
22	3746	3773	3800	3827	3854	3881	67	62	8829	8843	8857	8870	8884	8897	27
23	3907	3934	3961	3987	4014	4041	66	63	8910	8923	8936	8949	8962	8975	26
24	4067	4094	4120	4147	4173	4200	65	64	8988	9001	9013	9026	9038	9051	25
25	4226	4253	4279	4305	4331	4358	64	65	9063	9075	9088	9100	9112	9124	24
26	4384	4410	4436	4462	4488	4514	63	66	9135	9147	9159	9171	9182	9194	23
27	4540	4566	4592	4617	4643	4669	62	67	9205	9216	9228	9239	9250	9261	22
28	4695	4720	4746	4772	4797	4823	61	68	9272	9283	9293	9304	9315	9325	21
29	4848	4874	4899	4924	4950	4975	60	69	9336	9346	9356	9367	9377	9387	20
30	5000	5025	5050	5075	5100	5125	59	70	9397	9407	9417	9426	9436	9446	19
31	5150	5175	5200	5225	5250	5275	58	71	9455	9465	9474	9483	9492	9502	18
32	5299	5324	5348	5373	5398	5422	57	72	9511	9520	9528	9537	9546	9555	17
33	5446	5471	5495	5519	5544	5568	56	73	9563	9572	9580	9588	9596	9605	16
34	5592	5616	5640	5664	5688	5712	55	74	9613	9621	9628	9636	9644	9652	15
35	5736	5760	5783	5807	5831	5854	54	75	9659	9667	9674	9681	9689	9696	14
36	5878	5901	5925	5948	5972	5995	53	76	9703	9710	9717	9724	9730	9737	13
37	6018	6041	6065	6088	6111	6134	52	77	9744	9750	9757	9763	9769	9775	12
38	6157	6180	6202	6225	6248	6271	51	78	9781	9787	9793	9799	9805	9811	11
39	6293	6316	6338	6361	6383	6406	50	79	9816	9822	9827	9833	9838	9843	10
Deg.	60′	50′	40′	30′	20′	10′	Deg.	Deg.	60′	50′	40′	30′	20′	10′	Deg.

Deg.	0′	10′	20′	30′	40′	50′	Deg.
80	9818	9853	9858	9863	9868	9872	9
81	9877	9881	9886	9890	9894	9899	8
82	9903	9907	9911	9914	9918	9922	7
83	9925	9929	9932	9936	9939	9942	6
84	9945	9948	9951	9954	9957	9959	5
85	9962	9964	9967	9969	9971	9974	4
86	9976	9978	9980	9981	9983	9985	3
87	9986	9988	9989	9990	9992	9993	2
88	9994	9995	9996	9997	9997	9998	1
89	9998	9999	9999	9999	1.0000	1.0000	0
Deg.	60′	50′	40′	30′	20′	10′	

Natural Cos

Natural Tangents

deg.	0′	10′	20′	30′	40′	50′	deg.	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	1.1100	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	1.3452	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	1.5597	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	2.9319	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.	deg.	60′	50′	40′	30′	20′	10′	deg.

deg.	0′	10′	20′	30′	40′	50′	deg.
80	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
82	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	7
83	8.1443	8.3450	8.5555	8.7769	9.0098	9.2553	6
84	9.5144	9.7882	10.078	10.385	10.711	11.059	5
85	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
87	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
89	57.290	68.750	85.940	114.588	171.885	343.77	0
deg.	60′	50′	40′	30′	20′	10′	deg.

Natural Cotangents

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.