104
GRADES

6104

DIETZGEN

ENGINEERS'

FIELD BOOK

No. 404

EUGENE DIETZGEN CO.

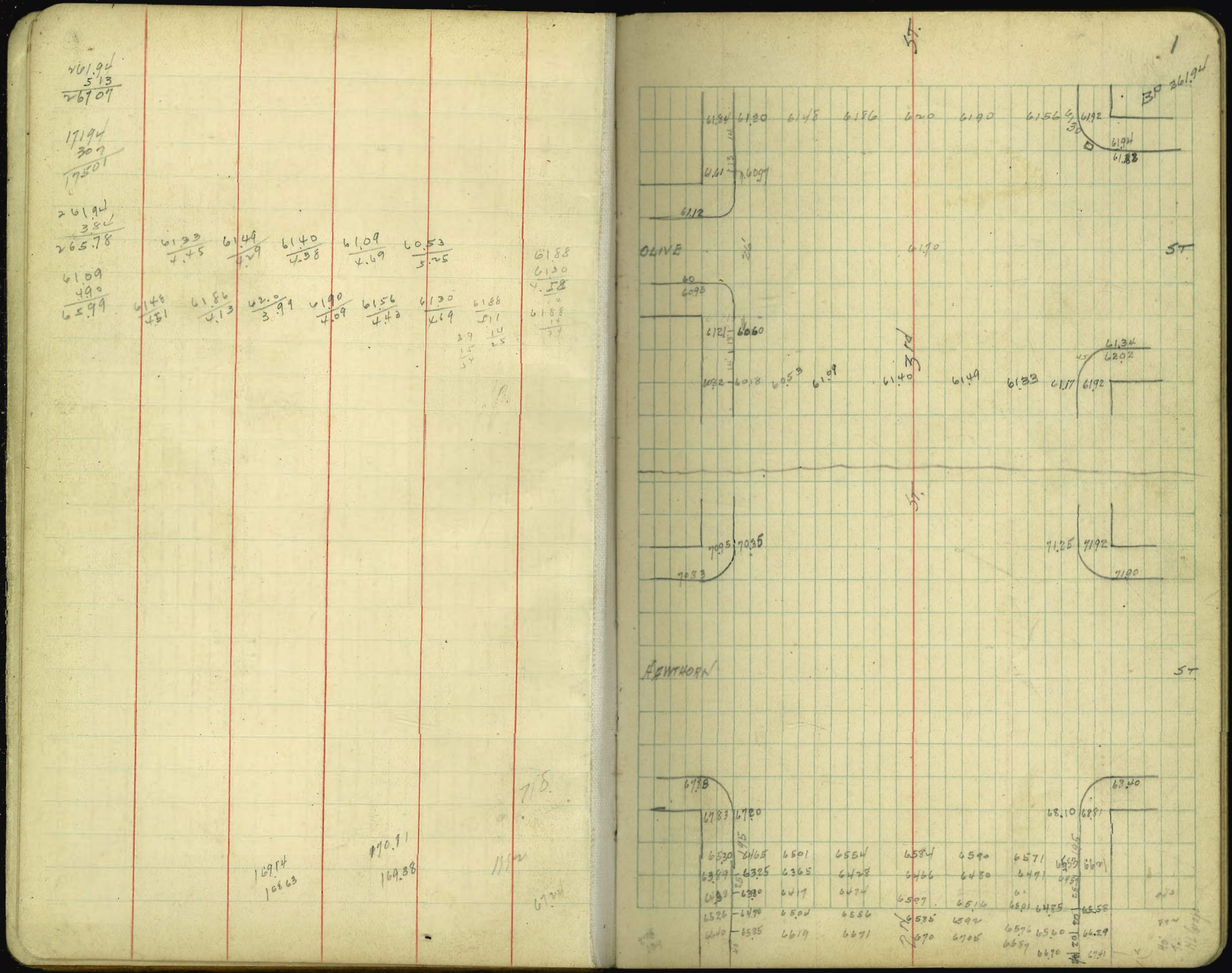
DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

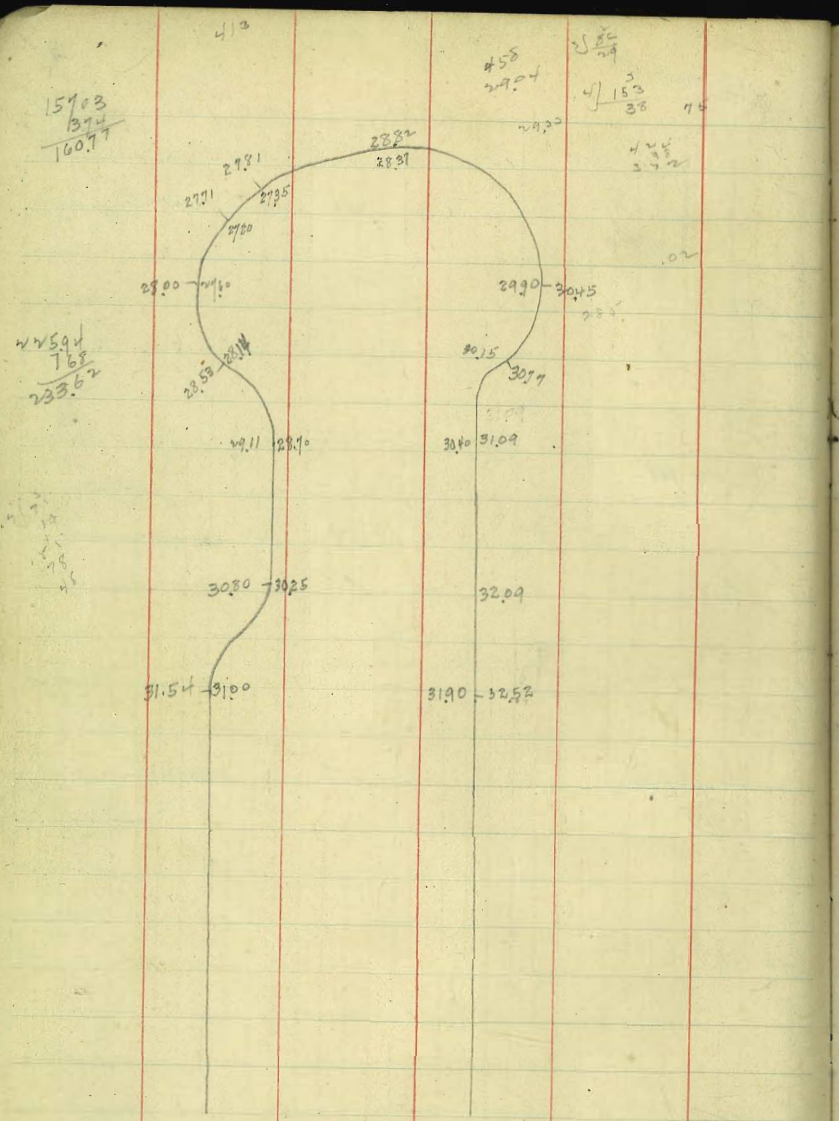
Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)+2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.


OLIVE
3rd
ST.
ST.
ST.
AGNITHORN


28.82
28.37
27.81
27.71
27.35
27.20
28.00
27.10
29.90
30.45
28.53
28.14
30.15
30.47
29.11
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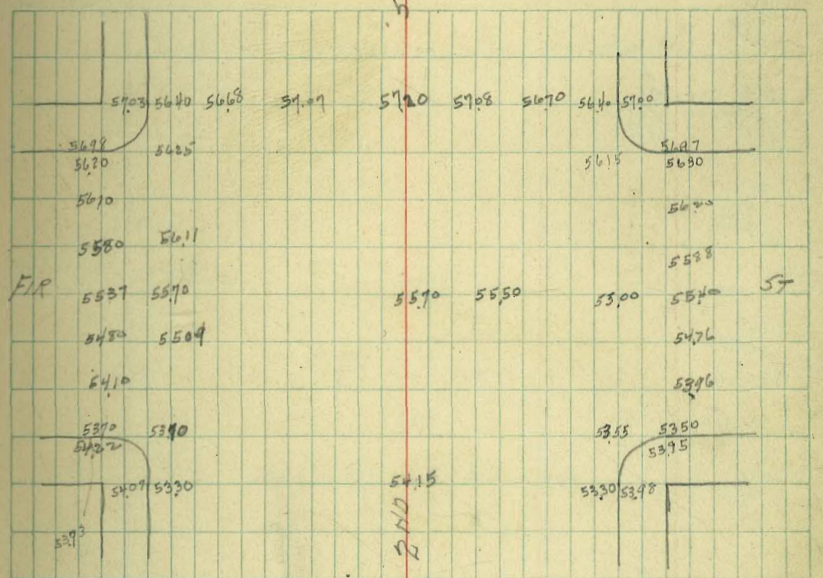
30.40
31.09
30.80
30.25
32.09
31.54
31.00
31.90
32.52


57.03
56.40
56.68
57.07
57.20
57.08
56.70
56.40
57.00
56.99
56.20
56.25
56.15
56.87
56.80
56.70
56.11
55.80
55.88
55.37
55.70
55.70
55.50
53.00
55.40
55.09
54.76
54.10
53.96
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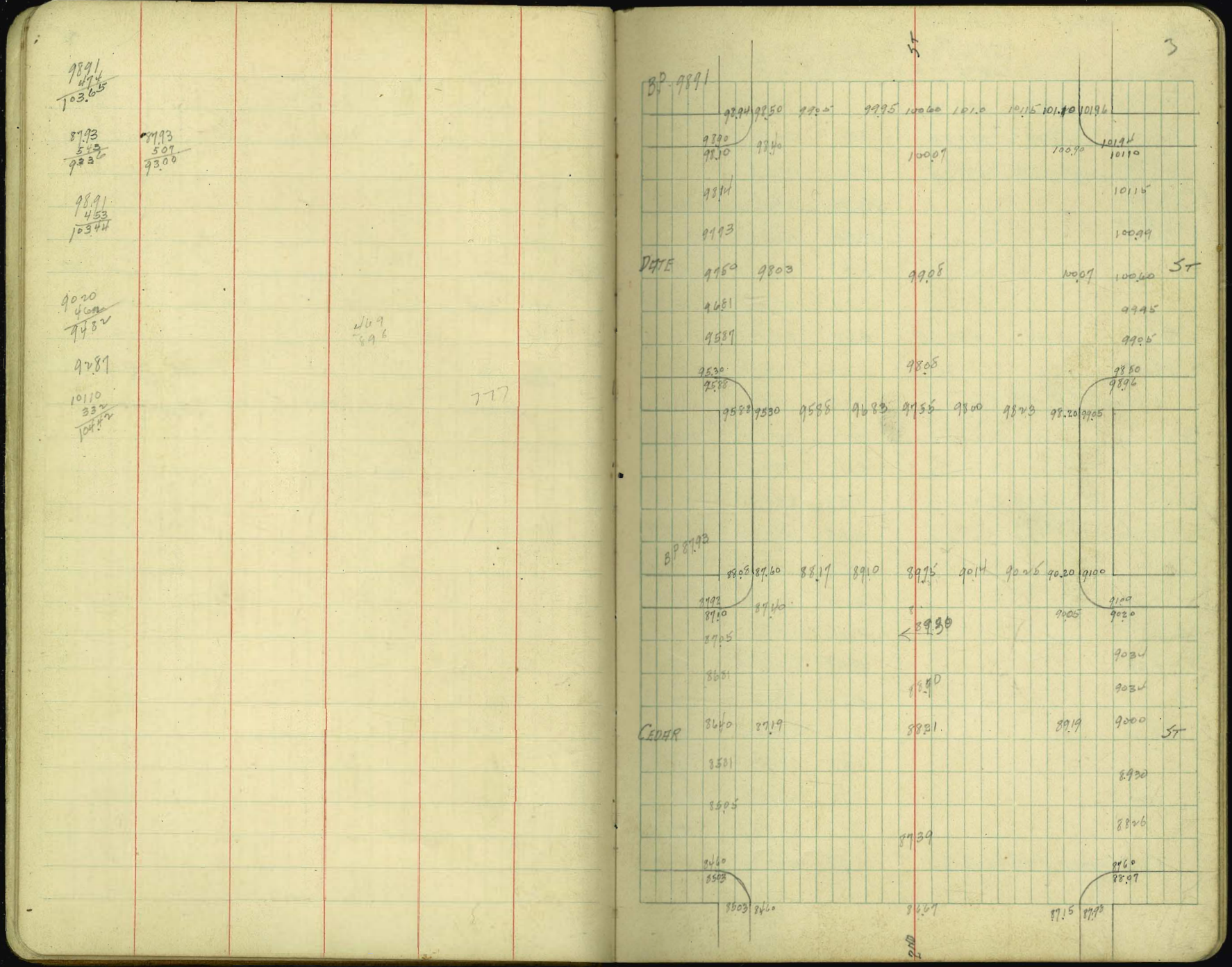
53.40
53.55
53.50
53.75
54.07
53.30
53.98
53.93
54.15


3
BP 9891
DATE
5T
BP 8793
CEDER
5T

1/31/24 Gregory

Sewer Construction

from 72 S ox ck. Penn. x/l. in alley bet 7th & 8th to ℄ ox Penn. thence on ℄ of Penn to ℄ ox 7th N ox ℄ ox 7th to.

	1.23	288.09		286.86	BP N W 6th & Penn
	1.27	279.85	9.51	278.58	
℄ ox Alley bet 7th & 8th = 686		277.10	9.61	270.24	
− 0+72			13.10	264.00	264.00
M.H & Penn = 0+00			11.90	265.20	265.20
+50			5.38	271.72	265 70
1			3.32	273.78	266 20
T.P	5.40	282.48	0.02	277.08	
+50			5.22	277.26	266.70
+82 = M.H ℄ 7th			4.08	278.40	267.02
2			4.22	278.26	267.20
+50			3.57	278.91	267.70
3			4.58	277.90	268.20
+50			4.65	277.83	268.70
4			4.81	277.67	269.20
+50			5.00	277.48	269.70
5			5.23	277.25	270.20
+50			5.68	276.80	270.70
6			5.84	276.64	271.20
+50			6.09	276.39	271.70
7			6.25	276.23	272.20
+50			6.75	275.73	272.70
8			6.75	275.73	273.20
+43 = present M.H & Robin.			8.77	273.71	273.63

= grade @ end of present pipe

= ∨ ox bottom of ditch

6.0 N

7.58

10.86

11.38

11.06

11.21

9.10

9.13

8.87

9.13

9.03

8.10

8.11

8.69

8.03

8.03

8.53

10.05 5-27-37 Miller

BM N.W. 6th & Robinson = 285.51

	0.91
	284.42
	9.50
284.42	276.92
12.76	4.31
273.66 FL. BM BP NW	281.23
Ex M.H. ctr 7th. 7th & Robinson	3.24
+ Robinson Flow N to S.	277.95
Dry.	5.42
281.23	283.37
10.85	
270.38 F.L.	

Ex M.H. 280.5
5 of M.H. ctr 7th & Robinson Flow N to S.

283.37
16.37
267.00 F.L.
Ex M.H. ℄ 7th & Pennsylvania

Flow N. to E.

Inverts to W & S but no flow when M.H. was open

1/31/24 Gregory. GRADES IN ALLEY
BLOCK 8
Hillcrest

289.94 NW 5th + Manv.

	W.L.	E.L.
NL. Vair	288.83	288.96
50	288.97	289.07
100	289.10	289.20
150	289.24	289.32
200	289.37	289.45
250	289.50	289.57
300	289.64	289.70
350	289.78	289.82
400	289.91	289.95
450	290.05	290.07
500	290.20	290.20
520	289.80	289.80
560 N-St Wash.	289.37	287.20

289.94
302
29296
366
28930
469
28499

5

W	288.83	288.97	289.10	289.24	289.37
	+13	397	386	372	562
		+37	+29	+23	+67
		-038	-043	-021	+100
E	288.96	289.07	289.20	289.32	289.45
	+01	389	376	364	351
		289	+37	+04	-251
		+100	0.61	+1.0	+1.0
W	289.50	289.64	289.78	289.91	290.05
	549	535	521	508	494
	449	+36	507	504	394
	+100	+100	+015	+004	+1.0
E	289.57	289.70	289.82	289.95	290.07
	542	529	517	504	492
	442	515	417	370	462
	+100	+013	+100	+1.35	+030
W	290.20	289.80	287.37		
	479	519			
	481	489			
	-002	+030			
E	290.20	289.80	287.20		
	479	520			
	479	420			
	00	+100			

2/1/24

GRADES ON BANCROFT ST. W/ to Kolmia

	Wcb	Ecb
SL Kolmia	294.0	292.0
50	294.17	292.25
100	294.33	292.50
150	294.5	292.75
200	294.67	293.0
250	294.83	293.25
NL Juniper	295.0	293.5
	294.5	
SL	295.0	293.5
50	294.75	293.25
100 break	293.5	293.0
	291.25	
150	292.25	292.0
	290.0	
200 break	291.0	291.0
	288.75	
250	288.75	289.0
NL Ivy	286.5	287.0

156
29687 on step on house NW Juniper

076
29762

132.00
1.47
156

6

29387 BP SE Juniper 28694 BP NE Ivy

25.6
29243

11.47
29841

W

294.75	294.42	294.58	294.75	294.92	295.08	295.25
-4.2	4.0	3.9	3.7	3.5	3.4	3.2
3.7	1.2	1.5	1.2	1.2	2.3	2.7
+1.0	+2.8	+2.4	+2.5	+2.1	+1.3	+0.5

E

29225	29250	29275	29300	293.25	293.50	293.75
6.2	5.9	5.7	5.4	5.2	4.93	4.68
7.2	6.0	5.8	5.5	4.7	4.1	4.2
-1.0	-0.2	-0.1	-0.1	+0.5	+0.8	+0.5

W

293.75	293.40	293.75	293.60	294.25	288.01	286.75
3.16	3.97	4.66	5.91	7.76	9.41	11.66
3.8	4.8	6.1	7.6	8.80	11.8	14.65
-0.6	-0.9	-1.4	-1.1	-1.6	-2.4	-3.0
-0.1	-0.1	-0.4	-0.1	-0.6	-1.9	

E

293.5	293.21	293.0	292.0	291.0	289.0	287.0
4.91	5.16	5.41	6.41	7.41	9.41	11.41
4.90	4.92	5.30	6.30	7.33	9.04	10.9
+0.1	+0.1	+0.1	+0.1	+0.1	+0.4	+0.5

293.87
3.75
297.62

W

W 294.1	S 294.0	294.17	294.33	294.5	294.67	294.83
3.62	3.62	3.45	3.29	3.12	2.95	2.79
3.65	4.45	4.45	3.76	3.79	3.36	3.36
-0.03	-0.83	-1.0	-0.47	-0.67	-0.41	-0.57

E

292.0	292.0	292.25	292.50	292.75	293.0	293.25
5.62	5.62	5.37	5.12	4.87	4.62	4.37
5.85	5.83	5.40	4.70	4.58	4.17	3.85
-0.23	-0.21	+0.17	+0.42	+0.29	+0.45	+0.49

W

N 295.0	W 295.0	W 294.5	S 294.5	293.5	292.5	291.25
2.62	2.62	3.12	3.12	4.12	5.12	6.37
3.67	4.05	2.60	3.42	4.49	5.19	6.22
-1.05	-1.43	+0.52	-0.30	-0.37	-0.07	+0.15

E

293.5	293.5	E 293.5	S 293.5	293.25	293	292.75
4.12	4.12	4.12	4.12	4.37	4.62	4.62
3.92	3.73	4.25	4.38	4.08	4.62	4.92
+0.20	+0.39	-0.13	-0.26	+0.29	0.0	-0.30

W

290	288.75	286.5
7.62	9.37	11.12
7.68	9.82	10.84
-0.06	-0.45	+0.28

E

291	289.0	287
6.62	8.62	10.62
6.92	8.35	10.34
-0.30	+0.27	+0.28

2/1/24.

NEW CUTS for Sewer on BANCROFT.

29843

M.H. & Kalmia=0+00	5.79	293.14	286.52
0+50	6.85	291.58	286.19
1	5.17	293.76	285.85
+50	4.43	294.0	285.52
2	4.83	293.60	285.19
+50	4.04	294.39	284.86
3	4.53	293.90	284.53
+40	5.00	293.43	284.26
+60	5.00	293.43	284.13
+80	4.72	293.71	284.0

Port

7

293.87 B.P. SE Scraper

+6.62
+5.39
+7.41
+8.48
+8.41
+9.53
+9.37
+9.17
+9.30
+9.71

2/4/24 Gregory

GRADES ON NEALE ST

W. of Pringle

		Scb	N.b	
200' W.	-3.44	239.0	240.0	+0.91
150' "	-0.39	244.0	245.0	+1.91
100' "	+0.28	248.25	249.25	+2.53
50' "	00	252.5	253.5	+1.25
W.L. Pringle St	+2.12	253.0	254.0	+2.12

Portola NE BP in wall 26018
Boone SE. Spk 26610
Torrence NE Mon 241.71

8

24171
1278
25449
286
25213
575
25788
1522
24716
980
25696

S	253.25	252.75	248.50	244.25	239.25
	463	513	938	321	821
	451	513	910	360	1167
	+0.12	00	+0.28	-0.39	-3.44
N	254.25	253.75	249.50	245.25	240.25
	363	321	746	1263	721
	1.51	196	492	1072	630
	+2.12	+1.25	253	+1.91	+0.91

NW Robin + 6th BP 285.51

" " " " 8th BP 274.95
5.67
280.62

278.40 M.H. Stake.

274.95 / 5.44 / 280.39

76.00 / 3.39

75.85 / 4.54

39 / 4.09

48 / 4.73

98 / 4.47

67 / 5.12

85 / 5.54

75.02 / 5.37

75.90 / 4.89 / 80.79

76.06 / 3.73

75.96 / 4.83

75.62 / 5.17

75.85 / 4.26 / 80.11

75.63 / 4.48

409 / 7653

368 / 7694

375 / 7687

412 / 7650

8TH ST.

7495 74.27 74.52 74.49 74.15 73.52 73.94

7585 7611 7604 7563 7490 75.54

7649 / 76.00

75.93

7547 / 75.02

7561

7606

7608 7632 7550

7TH ST.

7630 / 7647

7627 7630 7662 7669 7647 7600 7650

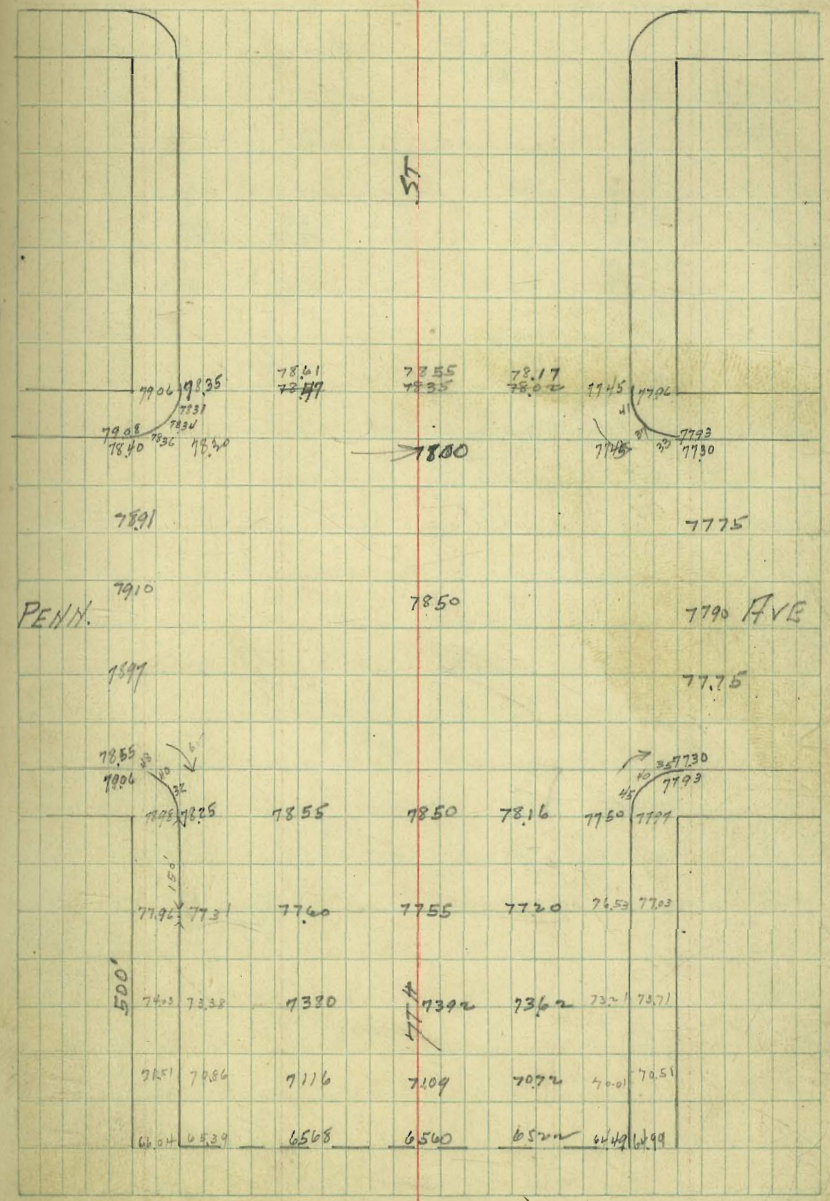
7580 / 7587 7590 / 7637

ROBIN

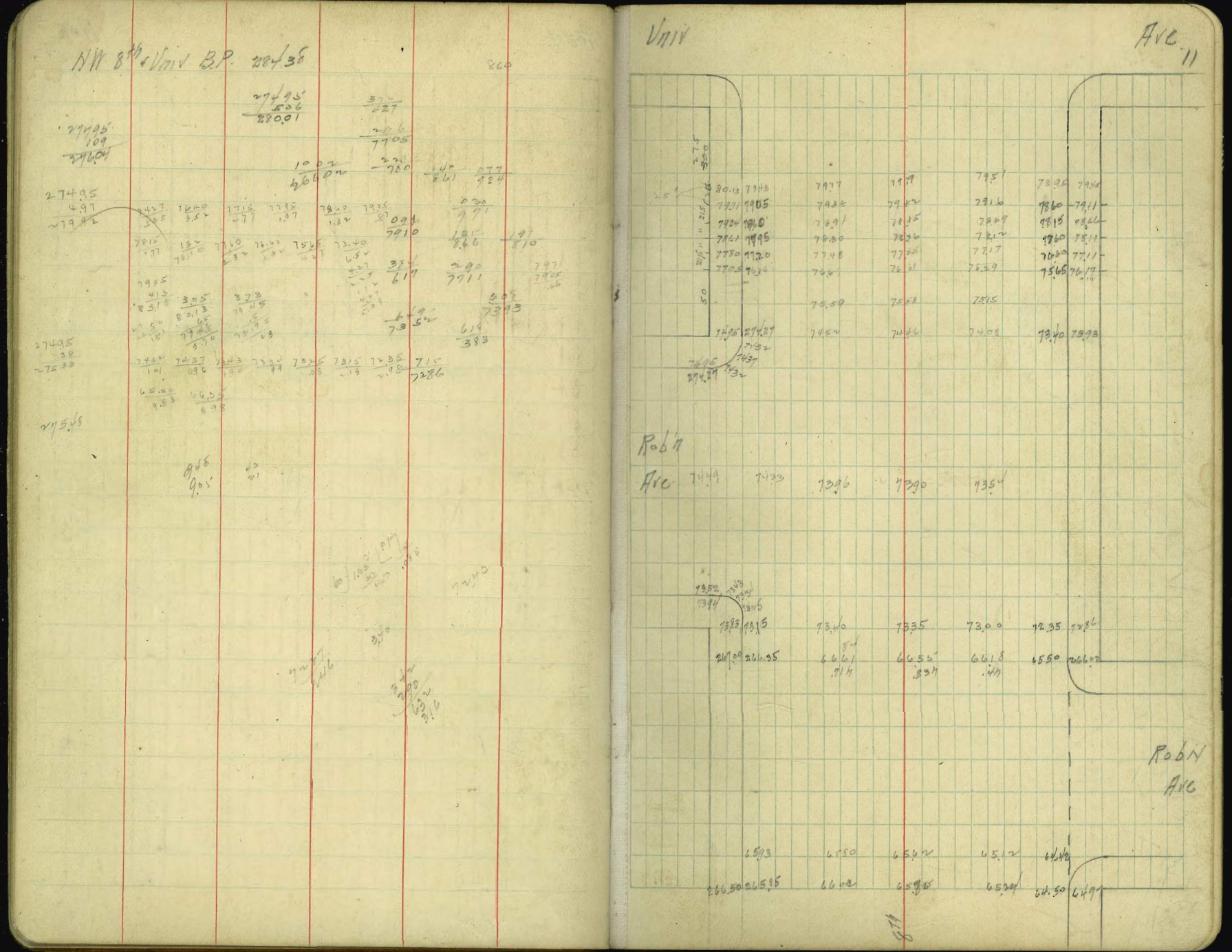
6TH ST

NW Penn + 6th B.P. 28686

7980 Manhole Stake



NW 8th & Univ BP 284.36



27604

684 / 6920 — 544 / 27060 — 430 / 174 — 254 / 250 — 330 / 274 — 310 / 294 — 518 / 7086

1102 / 6497 — 707 / 6897 — 434 / 970 — 524 / 830 — 473 / 131 — 446 / 158 — 416 / 188 — 563 / 641

7.33
68.00

-75.33 W 65.85 / 9.48

E 64.50 / 10.83 — 6840 / 793 — 6915 — 7020

27604 / 053 / 27651

27496 / 053 / 27548

Robin AVE 12

26690 26535

6450 6497

6920 68.55 — 6873 — 6860 — 6816 — 6740 6797

7060 6990 — 7019 — 7014 — 6979 — 6915 6970

7174 7105 — 7131 — 7126 — 7088 — 7020 7080

7250 7180 — 7208 — 7200 — 7156 — 7086 7131

7274 7205 — 7229 — 7220 — 7179 — 7105 7158

7294 7225 — 7245 — 7246 — 7206 — 7135 7188

8TH

6990 7041

7075 — 7065 — 7020 7020

2/9/24 Lovegrove.

Sewer Construction
℄ Arizona from 390' N of ℄ of Myrtle W of ℄ Arizona, to 5' S. of NL of Balboa Park; thence East to M.H in Alley bet Ariz & Arnold

						BP 3E Ariz & Myrtle
of Alley bet Ariz & Arnold	1.72	275.10			27338	
0+00 = M.H. 17.5' E of WL ∧						254.0
+50			12.59	262.51	25695	+ 5.53
1			9.37	265.73	259.96	+ 5.77
+38.87			4.93	270.17	261.98	+ 8.19
+67.75 = M.H. 6 Ariz. △			5.48	269.62	264.0	+ 5.62
2			5.48	269.62	2645	+ 5.12
+50			4.84	270.26	26528	+ 4.98
3			4.13	270.97	26605	+ 4.92
+50			3.50	271.60	26683	+ 4.77
4			2.80	272.30	26760	+ 4.70
+50			2.13	272.97	26838	+ 4.59
+90 17/24 = M.H. 647 Myrtle		28000	1.57	27353	269.0	+ 4.53
5+30			6.14	27386	26941	+ 4.45
5+80			5.52	27448	26992	+ 4.56
6+30			5.02	27498	27043	+ 4.55
+80			4.40	275.60	27095	+ 4.65
7+30			3.70	276.30	27146	+ 4.84
+80			3.17	27683	27197	+ 4.86
8+30			2.80	277.20	27248	+ 4.72
+80 17/24 DE			2.18	277.82	273.0	+ 4.82

3/5/24 breezy

Sewer Grades & Henry St & Guy St

St. Peterborough & Henry.

2945

10+00			11.78	219.72	213.0
+50			11.32	218.13	213.67
1			10.17	219.28	214.33
+50			9.01	220.44	215.00
2			8.37	221.08	215.67
+45 M.H. & Guy St			8.79	220.96	216.0
+50			7.67	221.78	217.89
3	1113	237.13	345	226.0	3.45
			1196	225.17	221.67
+50			7.78	229.35	225.45
4+10 break			3.05	234.05	230.0
4+50			1.56	235.55	230.60
5+00			4.90	234.23	231.35

	+4.72
	+4.46
	+4.95
	+5.44
	+5.41
	+4.96
	+3.89
	+3.50
	+3.90
	+4.05
	+4.91
	+2.88

2/8/24 Gregory Sewer GRADES
1.5' N of & Dickenson

329.8' W of Cen. of Front St	4.63	294.39		289.76	T.p Hyd Front & Dick
= 0+00 = Existing present Sewer =					287.0
+ 38.85			5.78	288.61	287.15
+ 77.7 = M.H. 13 on & of St.			6.06	288.33	287.3
1			6.60	287.79	287.39
+ 50			6.33	288.06	287.59
2			5.55	288.84	287.79
+ 50			4.18	290.21	288.00
3+00.2			1.77	292.62	288.2
+ 30.2 = DE			0.64	293.75	288.27

~~+7.46~~	+1.30
+0.83	
~~+0.40~~	+0.63
~~+0.47~~	+1.00
+1.05	~~+2.45~~ +2.45
~~+2.21~~	+3.66
~~+4.42~~	+6.60
~~+5.48~~	+6.05

3/21/44 Gregory. Sewer Grades &
SUTTER ST
Jackdaw West.

40'E. of WL
Bellevieu = 0+00

	C 4.57	269.5
+50	C 4.62	267.07
1	C 4.44	264.64
+50	C 3.98	262.21
2	C 3.65	259.78
+49 M.H.A	C 3.89	257.5
3+10 = MH. End of Existing Sewer		257.0

HI

274.16
17.16

262.00	269.50	267.07	264.64	262.21	259.78
BM	4.66	7.99	1.57	11.95	14.38
Sutter	.09	2.47	5.08	7.97	10.73
Jackdaw	C 4.57	C 4.62	C 4.44	C 3.98	C 3.65

257.50	257.00
16.66	17.16
12.77	
C 3.89	

3/24/24 Gregory

GRADES ON NAUTILUS ST

Wb La Jolla Blvd.		77.5		77.0	
50		76.29		75.79	
100		75.08		74.58	
150		73.86		73.36	
200	7401	72.64		72.14	
250		71.42		70.92	
300		70.20		69.70	
350		68.98		68.48	
400		67.76		67.26	
450		66.54		66.04	
500		65.32		64.82	
550		64.10		63.60	
600		62.88		62.38	
650		61.66		61.16	
700		60.44		59.94	
750		59.22		58.72	
800	break	58.0		57.5	
850		57.12		56.62	
900		56.25		55.75	
950		55.37		54.87	
1000	break	54.5		54.0	
1020		54.03		53.53	
1040		53.31		52.81	
1060		52.35		51.86	
1080		51.14		50.64	

7901 BP SE Westbourne

17

La Jolla Blvd.

Nautilus St.

Neptune

Tie Hub BM 34.61

Tie Hub

Tie Hub BM 34.61

1100		49.69		49.19							12.81	
1120		47.98		47.48				5.63		6.17	34.61	
1140		46.04		46.54								
1160		43.84		43.34								
1202.5		38.92		38.42								
1245 W of EL Wb Jun		c. 34.0		33.5								

2/7/22 Gregory

GRADES ON HERSCHEL PAVING

110.32
2.84
107.48
932
116.80

437
5.93

441
5.91

3.98

486
5.46

496
36

454
8

457
5.75

937
009 5
845
137

980
005 2
784
198

453
379

388
644

385
647

2.84
107.48

332

471
1.21

471
1.20

80 | 70

537
1.48

784
3.93
3.80
3.30

1009.8
6.21
1007.16

468

W. FELL ST.

SILVERADO

9897 S.E Herschell & Prospect.

1.36
11.32

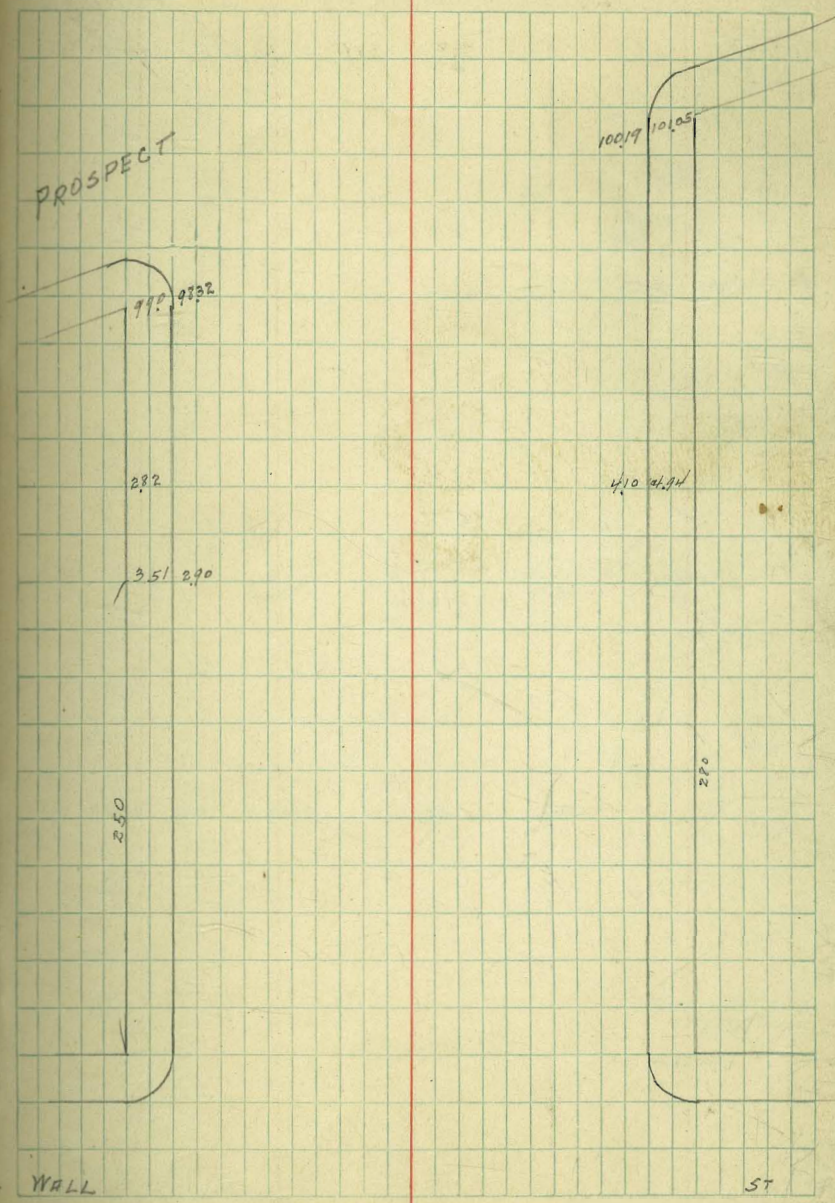
538
1044

750
028 2

481
351

290
9.42

ST. 19



2/11/24

HAWTHORN ST PAVING GRADES

171.60 6.95 6.96 3.87 3.87 3.82 3.02 3.07

629
177.89

5.90 6.15

1709.4
404
1773.8
6.94

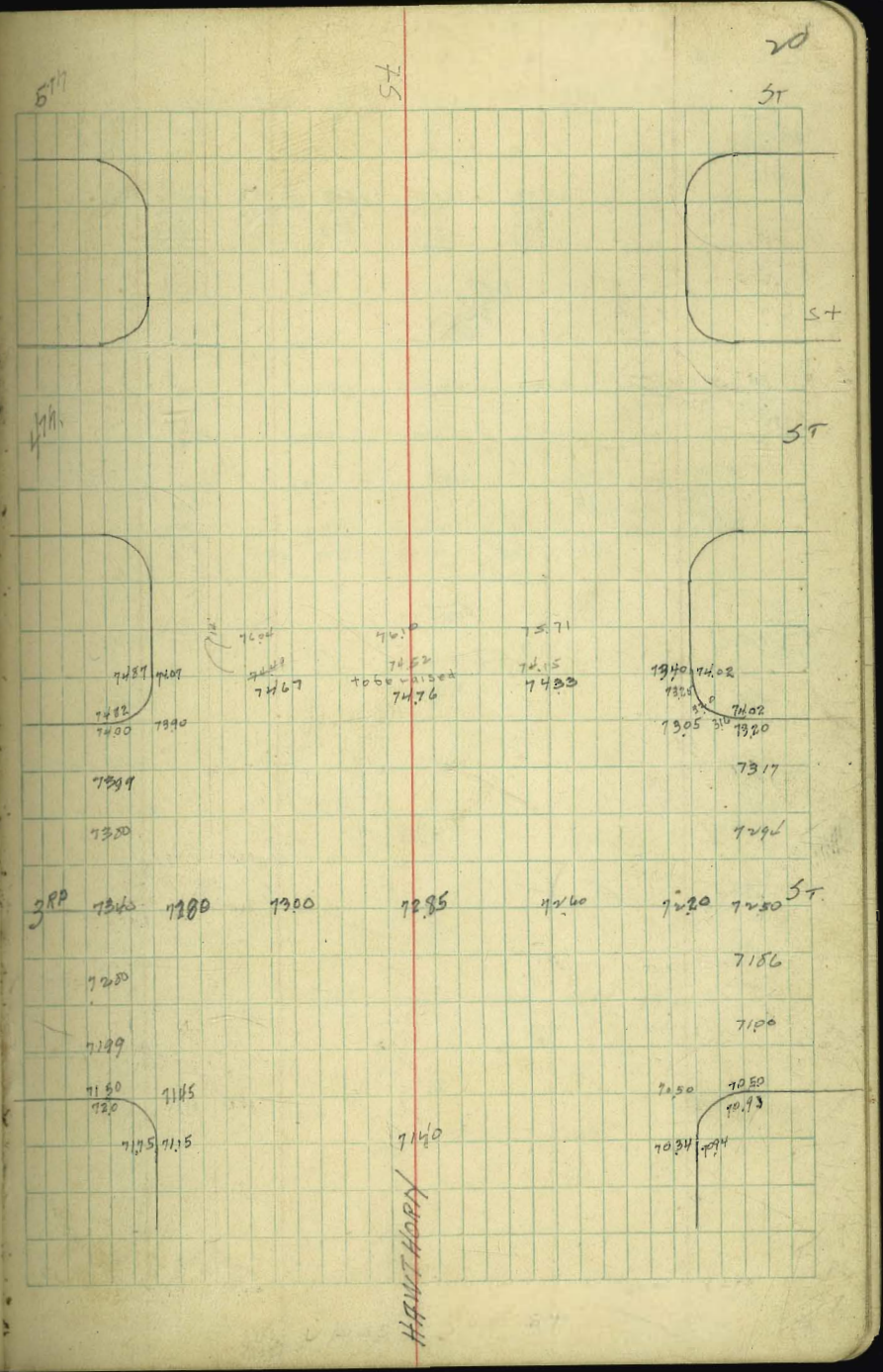
692
07

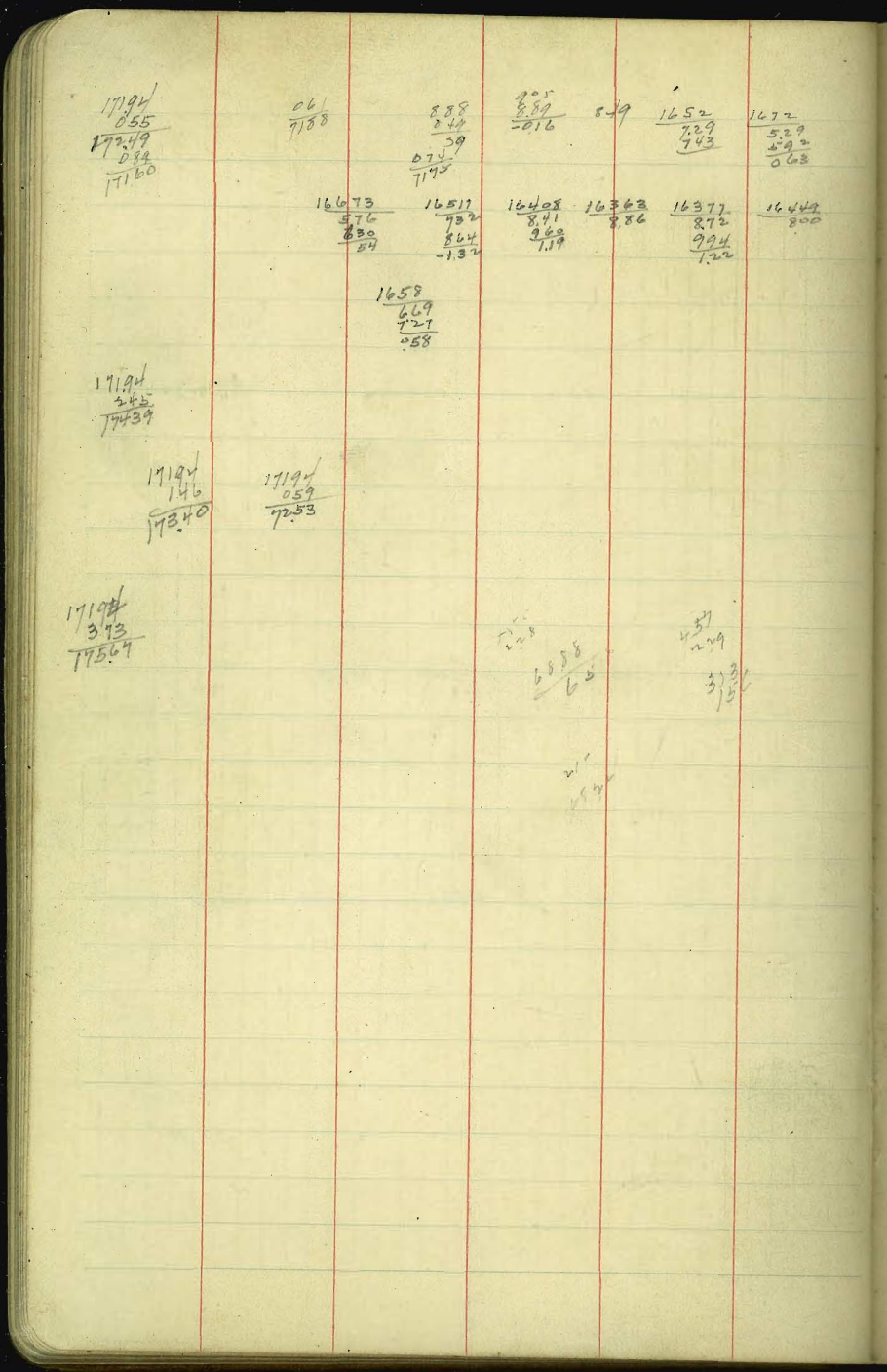
1716.0
6.97

~~177.89~~ 177.97

1716.0
6.87
177.87

7567



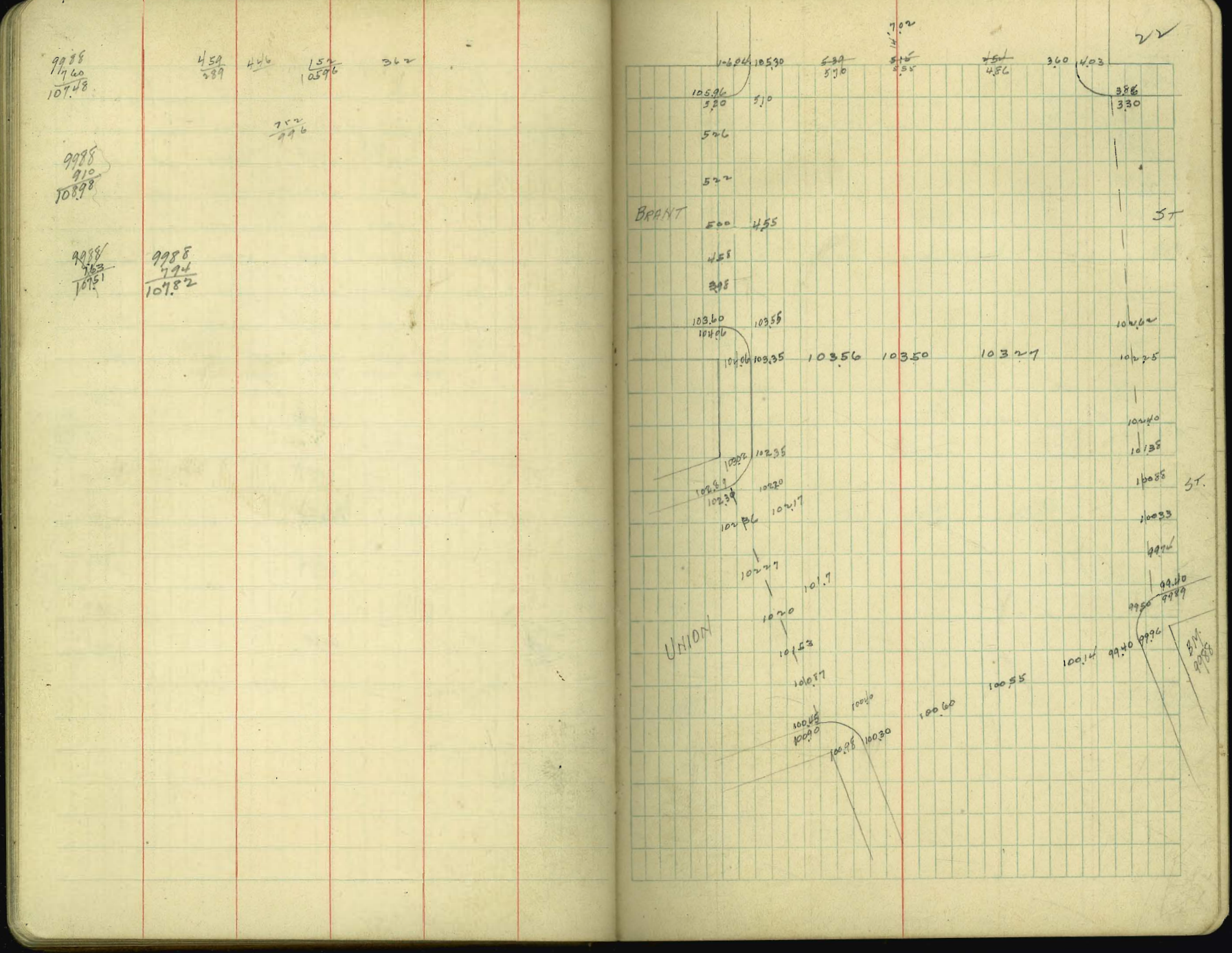


3rd

21 ST

2ND

ST


BRANT
ST
UNION
ST.

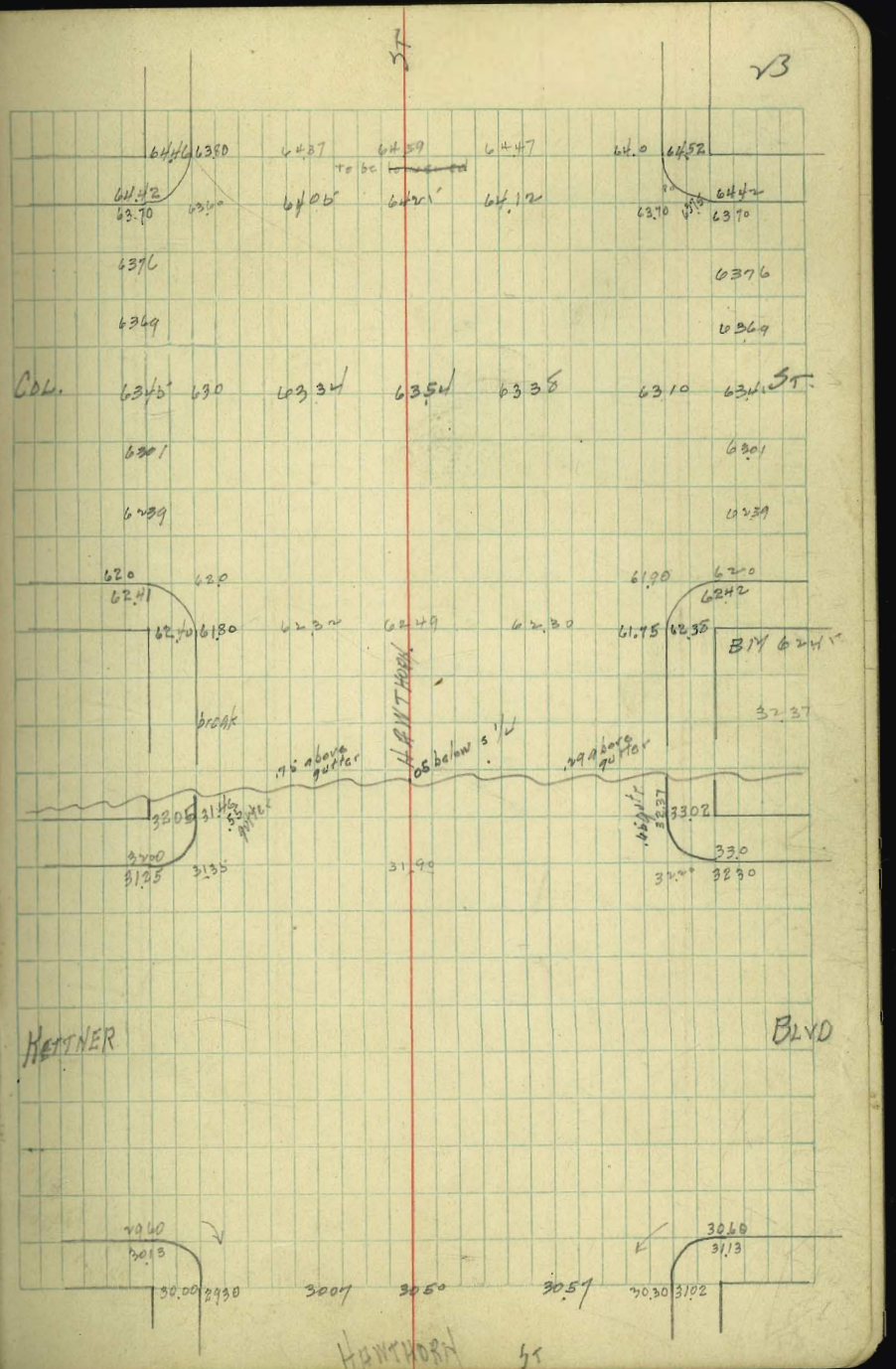
6244
330
6580

6346
563
6808

3344

1740
1056
2826
697
2729
908
3637

191
106



1740
523
2263

1740
678
2418

1686
4.27

2140

1804 1795 1795 1815 1798 1795 1804
1824 1790 1785 1780 1810 1805 1794 1800
1795

CTL

1660
1702
1703 1630 1686 1705 1704 1703 1700

1007 0938 979 985 959 893 957
161

11/30/64

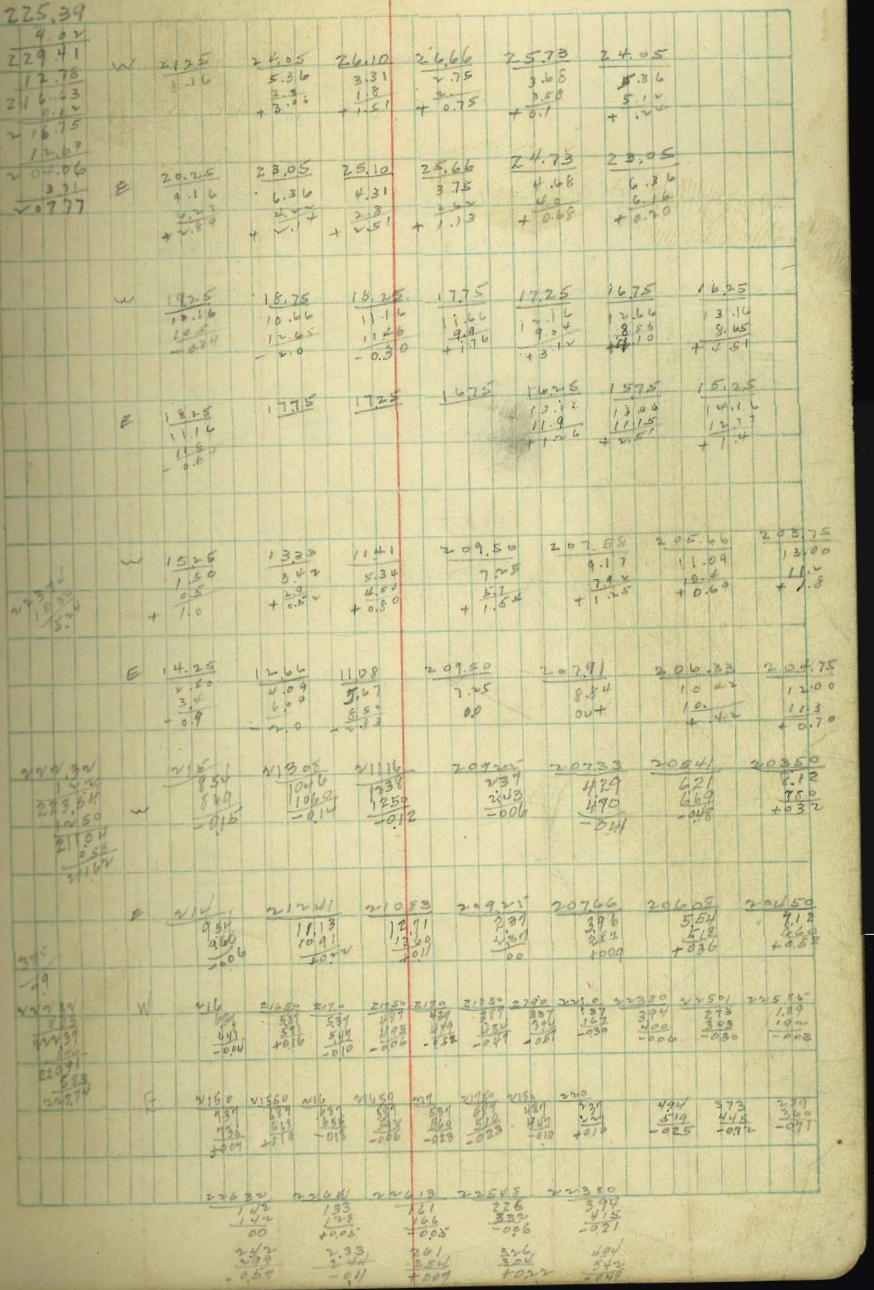
Grades on Felton Cedar S. T. P.L.

	W cb	E cb
200' N Cedar	223.80	222.80
160' N	225.48	224.48
140'	226.13	225.13
120'	226.41	225.41
100'	226.32	225.32
80'	225.85	224.85
60'	225.01	224.01
40' N	223.80	222.80
NL Cedar	221.0	220.0
SL	219.0	218.0
50	218.50	217.50
100	218.0	217.0
150	217.50	216.50
200	217.0	216.0
250	216.50	215.50
NL Beech	216.0	215.0
SL	215.0	214.0
50	213.08	212.41
100	211.16	210.83
150	209.25	209.25
200	207.33	207.66
250	205.41	206.08
NL Ash	203.50	204.50

NW Felton + Cedar

25

225.39



Grades on Felton
Cedar to P.L.

	W ch	E ch
SL Flat	203.0	204.0
50	200.66	202.0
100	198.33	200.0
150 B.k	196.0	198.0
200	192.92	194.53
250	189.84	191.05
W. 695.5		
E 293.8 PL	187.0	188.0

616
470
308
2.78 W

207.77
12.57

195.20	203.25	200.41	9858	962.5	931.7	90.09	87.25
3.96	4.52	6.86	9.19	11.5 W	5.99	9.07	11.91
199.16	4.9 -	7.3	10.0	12.58	6.6 E	8.90	13.42
W	-0.4	-0.34	-0.80	-1.06	-0.7	+0.17	-1.49

E	204.25	202.25	200.25	98.25	94.78	91.30	88.25
	3.52	5.52	7.52	9.52	4.38	7.86	10.91
	0.6	2.6	3.8	3.8 W	2.60	6.2	7.6
	+2.91	+1.9	+3.7	+1.70	+1.78	+1.66	+3.3

W 11.4W	W	203	200.66	198.33	196.0	192.92	189.84	187
200.18		8.4W	10.96	13.29	4.64	7.69	10.77	13.61
+3		5.96	10.58	13.21	3.59	7.33	10.84	13.71
200.61		-0.34	+0.38	+0.28	+0.04	+0.36	-0.07	+0.10

E	204	202	200	198	194.53	191.05	188	
	7.6W	8.6W	11.4W	2.41	6.08	9.56	12.61	
	3.52 E	3.52	11.4	3.03	5.98	9.34	12.25	
	-0.8	+0.95	+0.18	-0.42	+0.10	+0.22	0.36	

.57

1 S & C of Upas From W. Cb of Pershing Ave West

BM.	0.97	329.77 ✓		328.8	S.E 28" ⊥ Up
		W. Cb of Pershing Ave. 14' E of W Line			
N			5.79	5.79 3×3.98 ✓	on curb
N			6.18	3×3.59 ✓	on paving
15 S			6.91	3×3.46 ✓	" "
20'S = N Cb of Upas			6.1	3×3.6 ✓	
25 E of 20'S			6.24	3×3.53 ✓	on paving
40'S			6.3	3×3.4 ✓	
8' E of 40's			5.90	3×3.8 ✓	on paving
60's			6.3	3×3.4 ✓	
8' E of 60's			6.05	3×3.7 ✓ ✓	on paving
4' E of W line Pershing Ave		21' S. of N Line Upas = Out Let 12" Pipe W. Line of Pershing Ave	8.12	3×1.65 ✓	on flow line
60's			6.9	3×4.8 ✓	
40'S			6.7	3×3.0 ✓	
20' Cb			6.6	3×3.1 ✓	
N			6.0	3×3.7 ✓	
		25' W			
N.			7.4	3×4.3 ✓	
Cb 20's			8.0	3×1.7 ✓	
40's			7.8	3×1.9 ✓	
60's			8.3	3×1.4 ✓	
		55' W			
60's			9.5	3×0.4 ✓	✓
40'S			9.9	3×9.8 ✓	
Cb 20's			9.5	3×0.4 ✓	✓
N			9.0	3×0.7	✓

329.77 ✓

80' W

			5×9.77	
N			11.6	318.1 ✓
Cb 20's			11.8	317.9 ✓
40's			11.8	317.9 ✓
60's			12.0	317.7 ✓
		100' W		
60's			13.2	316.5 ✓
40's			13.2	316.5 ✓
Cb 20's			13.4	316.3 ✓
N			12.9	316.8 ✓
T.P.	0.17	317.03 ✓	12.91	316.86 ✓
		145' W	317.03	
N			2.9	314.1 ✓
Cb 20's			4.3	312.7 ✓
40's			4.5	312.5 ✓
60's			4.4	312.6 ✓
		175' W		
60's			8.2	308.8 ✓
40's			7.9	309.1 ✓
Cb 20's			7.8	309.2 ✓ ✓
N			6.7	310.3 ✓
		200' W		
N			10.3	306.7 ✓
Cb 20's			13.7	303.3 ✓
25'S			13.9	303.1 ✓
40'S			13.5	304.5 ✓ ✓
60'S			11.9	305.1 ✓

		317.03 ✓		UP 93	
T.P.	0.10	304.32 ✓	12.81	304.22 ✓	✓
		225 W			
			304.3 ✓		
40's			5.0	√99.3	✓
40's			5.8	√98.5	✓
30's			6.5	√97.8	✓
25's			8.2	√96.1	✓
eb 20's			7.1	√97.√	✓
9's			3.6	300.7	✓
N			2.3	30√.0	✓
		250. W			
N			7.5	√96.8	✓
10 S			8.8	√95.5	✓
eb 20's			11.3	√93.0	✓
30's			14.4	√89.9	✓
36's			13.8	√90.5	✓
38's			11.3	√93.0	✓
45's			9.6	√94.7	✓
60's			10.2	√94.1	
T.P.	1.66	293.17 ✓	12.81	291.51 ✓	

272.5 = E Lime Villa Terrace 50' wide 10' eb 7.5 1/4

			293.1		
60's			4.5	√88.6	✓
50's			4.6	√88.5	✓
40's			8.0	√85.1	✓
35's			8.1	√85.0	✓
25's			3.7	√89.4	✓
eb 20's			2.7	√90.4	✓
N			0.0	√93.1	✓

293.17 ✓

2ℓ

E. eb

293.1 7

N	0.8	√9 √3	✓
10 S	2.0	√91.1	✓
eb 20's	4.7	√88.4	✓
30's	6.9	√86.	✓
42's	10.2	√82.9	✓
44's	12.0	√81.1	✓
46's	9.6	√83.5	✓
52's	7.9	√85.√	✓
60's	7.5	√85.6	✓
	E 1/4		
40's	10.6	√8√.5	✓
49's	11.3	√81.8	✓
45's	13.8	√79.3	✓
42's	16.7	√8√.4	✓
35's	9.6	√83.5	✓
eb 20's	4.8	√88.3	✓
12 S	2.3	√90.8	✓
N	0.8	√9√.3	✓
	E		
N	0.9	√9√.	✓
13's	2.4	√90.7	✓
eb 20's	4.8	√88.3	✓
40's	12.1	√81.0	✓
47's	15.0	√78.1	✓
51's	13.3	√79.8	✓
60's	13.1	√80.0	✓

293.17 ✓ Upas

W ¼ 293.17

60's		15.7	√77.1
52.5		15.6	√77.5
46's		16.8	√76.3
43's		15.0	√78.1
eb 20's		5.3	√87.8
13.5		3.0	√90.1
N		1.6	√91.5
	W. eb		
N		2.6	√90.5
10's		4.6	√88.5
eb 20's		7.4	√85.7
42's		15.9	√77.4
48's		17.7	√75.6
60's		17.6	√75.5
75's		17.3	√75.8
	W. Line Villa Terrace		
75's		19.8	√73.3
60's		20.3	√72.8
45's		18.5	√74.6
30.3		13.3	√79.8
eb 20's		8.7	√84.2
5's		2.7	√90.2
N		1.8	√91.3
	15' W		
- 15		17.8	√81.3
N		12.2	√86.5

293.17 ✓

eb 20's			14.9 √78.4 ✓
T.P.	0.21	280.86 ✓	12.5.2 280.65 ✓
40's			7.3 √73.5 ✓
60's			10.6 √70.2 ✓
80's			9.6 √71.2 ✓
		25' W.	
80's			11.0 √69.8 ✓
60's			11.6 √69.2 ✓
40's			10.0 √70.8 ✓
eb 20			8.2 √72.6 ✓
N			5.7 √75.1 ✓
+ 15			4.8 √76.0 ✓
		35' W	
- 15			5.7 √75.1 ✓
N			7.4 √73.4 ✓
eb 20's			9.3 √71.5 ✓
40's			11.3 √69.5 ✓
60's			12.2 √68.6 ✓
80's			12.3 √68.5 ✓
		70' W	
80.5			15.2 √65.6 ✓
60.5			14.8 √66.0 ✓
40.5			14.7 √66.1 ✓
eb 20's			13.1 √67.7 ✓
N			11.1 √69.7 ✓
+ 15			9.4 √71.4 ✓

280.86

100' W

-15			11.5	269.3
N			12.7	268.1
T.P.	0.0.6	267.99	12.93	267.93
		267.99	1.7	
eb 20's				266.2
40's			3.2	264.7
60's			3.8	264.1
80's			5.3	262.6

150 W

80's			6.2	261.7
60's			5.1	262.8
40's			3.6	264.3
eb 20's			2.3	265.6
N			1.5	266.4
+15			1.1	266.8

190' W

-15			3.7	264.2
N			4.2	263.7
eb +20's			4.6	263.3
40's			5.2	262.7
60's			4.1	261.8
80's			7.3	260.6

235' W

80's			9.8	258.1
60's			9.2	258.7
40's			8.4	259.5
eb 20's			7.1	260.8
N			6.6	261.3
+15			6.3	261.6

267.99

30

260 N 267.9

-15	8.6	259.3
N	9.1	258.8
eb 20's	9.2	258.7
40's	10.7	257.2
60's	11.5	256.4
80's	11.8	256.1

265 W

80's	13.3	254.6
60's	12.8	255.1
40's	12.4	255.5
eb 20's	11.7	256.2
N	10.2	257.7
+15	9.9	258.0

271.5 = E Line Arnold St.

-15			8.7	259.2
N			9.2	258.7
eb 20's			9.3	258.6
40's			10.0	257.9
60's			10.8	257.1
80's			12.0	255.9
T.P.	12.28	277.17	3.10	264.89
T.P			3.83	273.34 BM. Myrtle & Ar 13
				= 273.38

2/20/24

GRADES IN ALLEY
BLK 13 CLEVELAND HGHTS

	W. L.	E. L.
S.L. Brookes	259.51	260.00
30' S break	262.70	263.0
50' S "	263 20	263 40
70' " "	263.10	263.30
105' "	262.55	262.75
140' " break	262.0	262 20
190' "		
200' "	261.88	262.08
240' "	261.80	262.00
290' "	261.90	261.90
340' " break	261.60	261.80
383.33	261.34	261.60
426.67	261.07	261.40
470.005 break.	260.80	261.20
513.33	260.58	261.17
556.66	260.36	261.14
600 S=NL No. Int.	260.13	261.10

31

263.70

W	25951	26270	26370	26310	26255	2627
	444	1.50	1.00	1.10	1.25	522
	488	2.27	0.00	0.10	1.35	535
	445	+0.58	+1.0	+1.0	+0.32	-0.13
	+0.43					
E	26040	2630	26340	26330	26275	26270
	420	1.20	080	0.90	145	502
	436	1.12	050	0.60	045	422
	354	+0.08	+0.30	+0.30	+1.0	+1.0
	+0.91					
W	26188	26130	26170	26160	26134	26107
	534	542	552	596	527	554
	504	442	452	640	427	454
	+0.30	+1.00	+1.00	-0.50	+1.0	+1.0
E	26208	26200	26190	26180	26160	26140
	514		532	542	501	521
	395		432	342	301	421
	+1.19	+0.64	+1.00	+2.0	+2.0	+3.0
W	26020	26058	26036	648		
	581	603	625	6013		
	637	545	577			
	-0.56	+0.38	+0.48			
E	26120	26117	26114	551		
	541	544	547	6110		
	541	544	547			
	0.0	00	00			

262.33
5.23
267.56

2/21/08 Gregory. Levels on Curb of 10th St S. of Univ.

	206	28408	28202	
		West Curb on cement Curb not sidewalk		
S.L. Univ			2.10	
50' S.			4.44	
65' ✓			5.13	
68' ✓				
To 78' ✓				I.S broken
80' ✓			5.85	
100' ✓			7.19	
109.8 = Angle in curb			7.82	
116.3 =			8.56	gutter is 1' lower
145.3			8.59	gutter is 1' lower.
145.8			7.21	
173.2 S = Angle in curb			6.13	
		East Curb on Cement Curb, not sidewalk		
S.L. Univ.			1.21	
23.5 S			2.32	
35' ✓			3.00	
50' ✓			3.64	
74.5 ✓			4.73	
90' ✓			5.75	
100' ✓			6.00	
110' ✓ = N. end C.B.			6.10	gutter is 1.25 lower
116' ✓ = S " "			6.19	
140' ✓			5.74	

Stakes set 5' W. of ℄ ox pipe

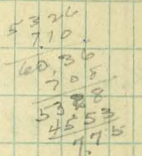
STAKES FOR 25TH ST DRAIN

				GRADE
				91.44
0+00 = S. End ox pipe	J St	2.17	89.27	89.27
0+50		3.08	88.36	87.51
+95.09 = PC.		4.00	87.44	85.92
1+18.85		4.44	87.00	85.08
1+42.61		4.85	86.59	84.24
1+66.36 = EC. = Cleanout #1		4.80	86.64	83.40
1+69.64 = PC.		4.73	86.71	82.64
1+93.40	stake 5' S. of ℄	5.21	86.23	81.87
2+17.16	" 5' " "	2.16	85.05	81.10
Fence 3.7 W of ℄. 2+40.91 = EC.		088	8633	80.33
Fence 3.3 W of ℄ 2+79.57		2.45	84.76	78.76
3+18.14 = PC. = Cleanout #2		3.82	8339	77.2
3+43.01		354	79.36	76.45
3+67.88		5.02	77.88	75.7
+92.75		5.33	7757	74.99
4+17.62		6.57	7633	74.06
+42.49		6.37	76.53	73.53
+67.37 PRC. C.B #1		6.18 ~~7.12~~	76.12 76.05	72.8
88.97	Chisel Mark 5' SE of ℄	11.31	75.90	72.08
5+10.57	Stake 5' SE.	11.77	7594	71.37
+32.17 = chisel 5' SE of ℄		11.91	75.30	70.65
+45.00 = Junction with Cole #2		12.07	75.14	70.24
+53.76 = EC. 5' SE of ℄	74.58	12.29	74.82	69.94
6+24.91 = C.B #2		1.28	73.30	67.6
6+90 = 7' N. of NL Alley		3.42	71.16	65.50

7693
597
8290

+0.85
+1.52
+1.92
+2.35
+3.24
+4.07
+4.36
+3.95
+6.00
+6.00
+6.19
+2.91
+2.16
+2.58
+2.07
+3.00
+3.25 +3.32
+3.82
+4.57
+4.65
+4.90
+4.88
+5.70
+5.66

		74.58	10.90			
7+50			5.28	69.30	63.57	+5.73
8+00			6.86	67.72	61.96	5.76
+57.11 = NL St.			8.63	65.95	60.13	+5.82
9+37.1 = SL ✓ ✓			9.62	64.96	57.55	+7.41
+53.9 = ℄ CB#3			9.93	64.65	57.0	+7.65
	9.73	64.05		54.32		
10+00			0.37	63.68	56.30	+7.38
+50			1.39	62.66	55.54	+7.12
11			2.35	61.70	54.76	+6.92
+50			3.81	60.24	54.02	+6.22
12			4.83	59.22	53.26	+5.96
+37.4 = NL Imperial			5.12	58.93	57.7	+6.23
13+17.4 = SL ✓			6.06	57.99	51.45	+6.54
+50			6.55	57.50	50.93	+6.57
14			7.10	56.95	50.15	+6.80
+50			7.77	56.28	49.37	+6.91
15			8.30	55.75	48.59	+7.16
+50			8.95	55.10	47.81	+7.29
+75.83 = PC.			9.75	54.80	47.4	+7.40
		55.81				
+96.25			1.12	54.69	46.77	+7.92
16+16.67			1.30	54.51	46.15	+8.36
16+37.09			1.44	54.37	45.53	+8.84 +7.76
+57.51			2.55	53.26	44.91	+8.35
+77.93 = EC.			2.35	53.46	44.29	+9.17
44.3 End of 30" CP						
17+26.23 = End of Box Culv.			3.21	52.60	42.8	+9.80



GRADES ON
25TH ST Box Culv.
Stakes set 10' S of ℄

	1.49	55.81		54.32	
16+36 = End of 25th St Contract		2.30	53.51	43.29	+10.22 x 10.16
+64.74 = △ 5°32' L.		2.70	53.11	43.11	+10.00
5137 17+15.91 = Junction of 30" RCP		3.21	52.60	42.8	+9.80
+50.0		3.82	51.99	42.55	+9.44
18		4.26	51.55	42.18	+9.37
+49.74 ℄ Junction of Culv. # 4		7.13	48.68	41.96	+6.72
+50		9.09	46.72	41.89	+4.83
19		10.36	45.45	41.74	+3.71
+50		11.20	44.61	41.59	+3.02
+83.53 = End of Box		10.75	45.06	41.50	+3.56

53.11
40.3
43.74
1707
1169
1016

3/6/24 Gregory GRADES ON Roslyn Lane. 1.69

	NL	SL
EL Ivanhoe	106.91	107.11
+30	109.0 ~~108.80~~	+0880 109.20
+60	109.20	109.40
1	109.40	109.61
+50	109.65	109.87
"	109.88	110.13
+50	110.12	110.39
3	110.36	110.65
+50	110.60	110.91
"	110.84	111.17
+50	111.08	111.43
+847 on N	111.24	
+943 on S		111.66

7+6 / 106.96 7+4 / 106.38 36

1050 N SW Prospect & Ivanhoe

S	107.11	109.80	109.40	109.61	109.87	110.13
	6.91	5.02	4.62	4.41	4.91	4.65
	5.40	4.53	4.11	3.41	4.65	4.62
	+1.71	+0.51	-0.51	+1.0	+0.26	+0.03
N	106.91	109.80	109.20	109.40	109.65	109.88
	7.11	5.02	4.82	5.38	5.13	4.90
	5.77	4.77	4.60	5.20	4.13	5.10
	+1.34	+0.25	+0.22	+0.18	+1.0	-0.20

S	110.39	110.65	110.91	111.17	111.43	111.66
	4.39	5.18	4.97	4.66	4.40	4.17
	4.35	4.83	4.21	3.48	3.17	4.18
	+0.04	+0.35	+0.71	+1.18	+1.23	-0.01
N	110.12	110.36	110.60	110.84	111.08	111.24
	4.66	4.42	5.23	4.99	4.75	4.59
	5.05	4.68	5.07	4.27	3.80	
	-0.39	-0.26	+0.16	+0.72	+0.95	

2/6/24 Gregory.

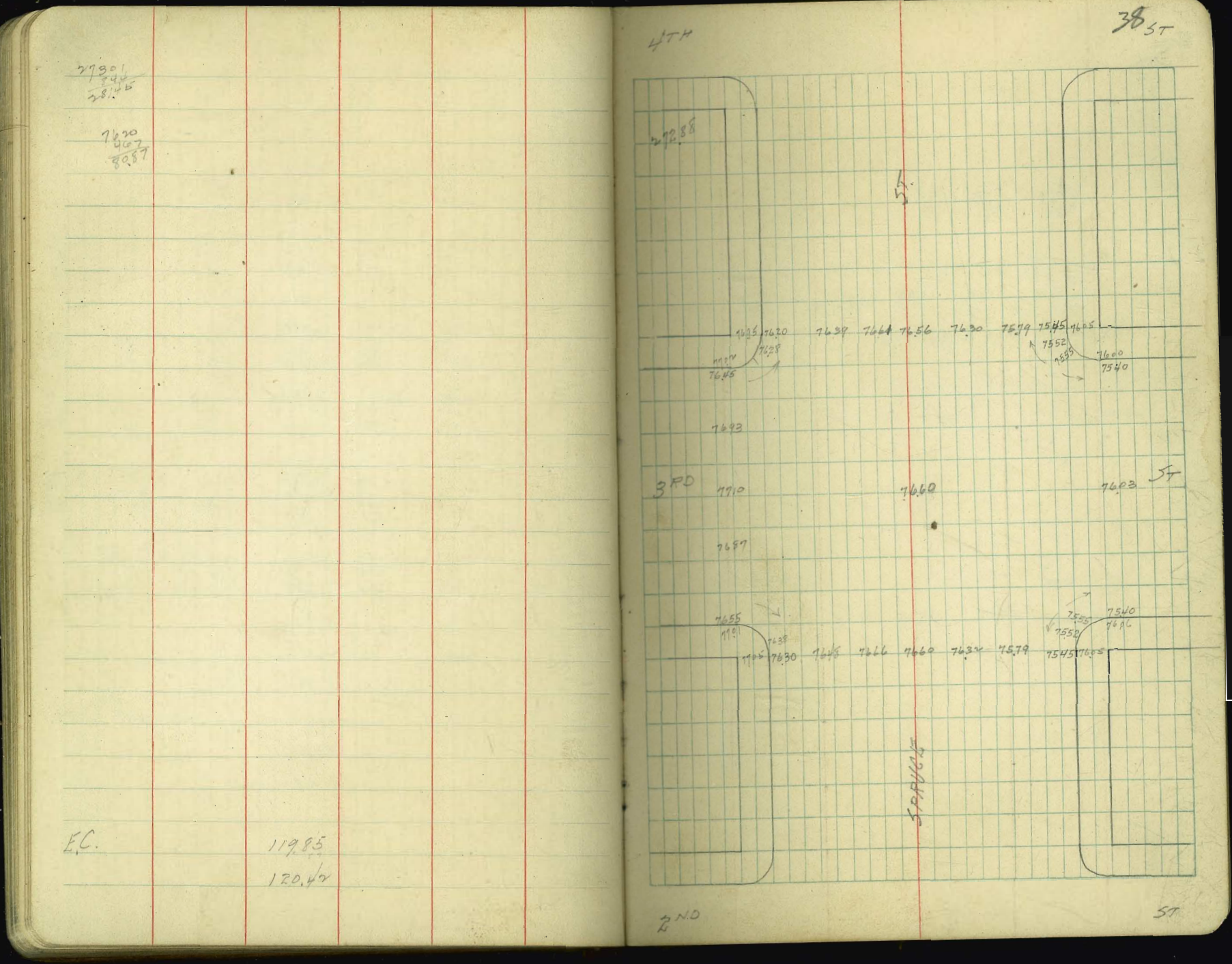
GRADES ON IRVING PLACE

See book 1104-23 for curve data 9/2 Tie

	N.CB	S.CB
= PCC.	changed to 121.5 / 121.0	124.0
	~~121.44~~	124.22
	121.89	~~124.44~~
	~~122.33~~	~~124.66~~
	~~122.77~~	~~124.89~~
	~~123.22~~	125.11
	~~123.66~~	125.33
	~~124.11~~	125.55
	~~124.55~~	126.77
= PRC.	125.0	126.0
	124.76	125.91
	124.52	125.82
	124.28	125.73
	124.04	125.64
	123.80	125.55
	123.57	125.46
	123.34	125.37
	123.10	125.28
	122.87	125.19
PC = Sec Con Grade profile	122.63	125.1
" B " "	122.40	125.0
" A	No State	122.0

125.
6.77
131.77
4.92
126.85
4.04
130.89

N	122.40 / 6.67 / 3.57 / -0.90	122.63 / 0.14 / 9.84 / -0.70	122.87 / 8.99 / 10.2 / -1.3	123.10 / 8.67 / 9.89 / -1.22	123.34 / 8.43 / 9.63 / -1.20	123.57 / 8.20 / 9.80 / -1.6
S	125.0 / 6.77 / 3.43 / +3.34	125.10 / 6.67 / 2.80 / +3.77	125.19 / 6.58 / 2.40 / +4.13	125.28 / 6.49 / 3.0 / +3.49	125.37 / 6.40 / 1.40 / +4.80	125.46 / 6.31 / 1.85 / +4.46
N	123.80 / 7.97 / 9.5 / -1.53	124.04 / 7.73 / 8.73 / -1.0	124.28 / 7.49 / 8.70 / -1.21	124.52 / 7.25 / 8.4 / -1.15	124.76 / 7.01 / 8.01 / -1.0	125.0 / 6.77 / 7.6 / -0.83
S	125.55 / 6.22 / 1.02 / +5.20	125.64 / 6.13 / 0.8 / +5.63	125.73 / 6.04 / 2.0 / +4.04	125.82 / 5.95 / 2.65 / +3.30	125.91 / 5.86 / 2.46 / +3.60	126.0 / 5.77 / 1.2 / +4.57
N	124.55 / 6.34 / 6.5 / 0.16	124.11 / 6.78 / 6.50 / +0.28	123.66 / 7.23 / 6.5 / +0.73	123.22 / 7.67 / 7.3 / +0.37	122.77 / 8.12 / 7.5 / +0.62	122.33 / 8.56 / 8.04 / +0.52
S	125.77 / 5.11 / +5.91	125.55 / 5.34 / 0.64 / +4.70	125.33 / 5.56 / 1.37 / +4.24	125.11 / 5.78 / 1.0 / +3.78	124.89 / 6.00 / 2.8 / +3.2	124.66 / 6.23 / 3.54 / +2.69
N	121.89 / 9.00 / 7.80 / +1.20	121.44 / 9.45 / 8.5 / +0.95	121.0 / 9.89 / 9.3 / +0.59	120.42 / 10.47 / 9.50 / +0.97	119.85 / 11.04 / 10.5 / +0.54	
S	124.44 / 6.45 / 4.6 / +1.85	124.22 / 6.67 / 5.42 / +1.25	124.0 / 6.89			



7730
7745
7815

7620
7607
8087

E.C.

11985

120.47

3396
1240
4636
006
4630
995
5625

5140
541
5681

5261
4.20
3.62
.56

5256
4.25
3.57
.68

5216
4.65
4.00
.65

5220
4.44
5664

5100 5064
5179 5.35
5176 4.98
5208 4.56
5224 4.40
5224 4.38
5210 4.52
5090 5.12

5098 5.06
5093 5.1
5053 6.11
4995 6.49
5030 4.34
5078 5.86
5110 5.54

5130 5.34
5176 5.25
5120 5.40
5080 5.34
5170 4.94

2ND ST 39

.08L .05H .10L

2730'

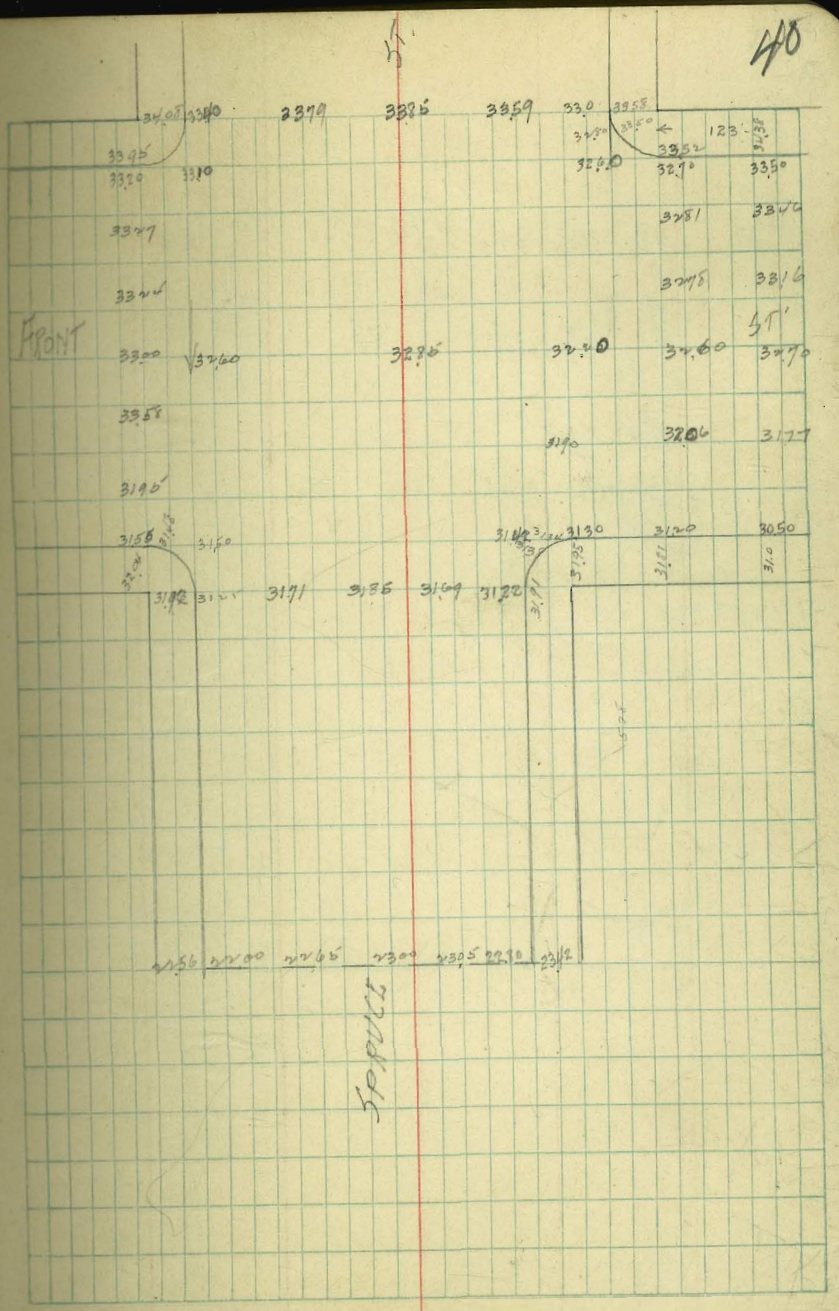
5.6

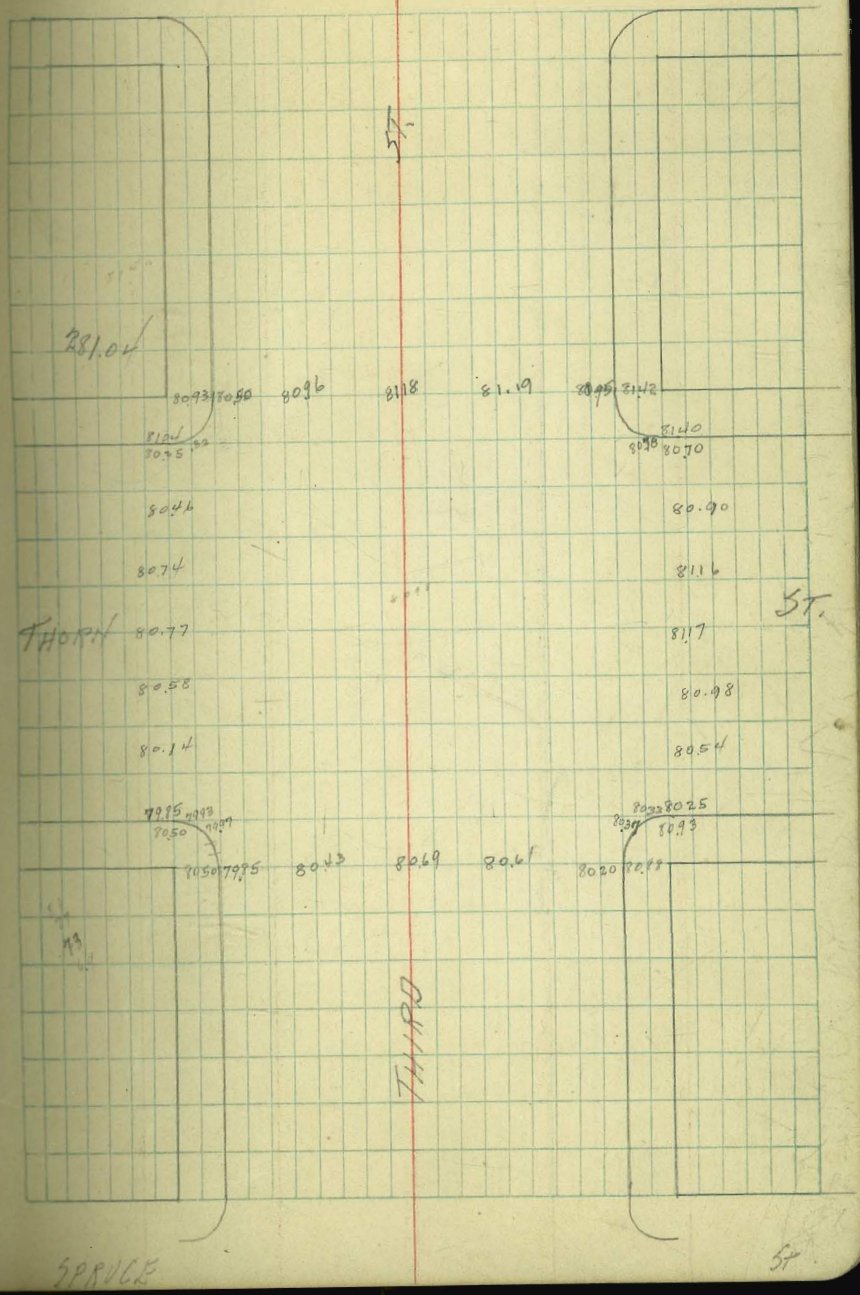
5309 5230 5261 5256 5216 5140 5206
5205 5220 5210 5140 5170 5120
5276 5126
5224 5130
5208 5170 5080 5110 ST
5174
5179 5078
5100 5090 5080 5000
5151 5048
5140 5070 5098 5093 5053 4930 5016

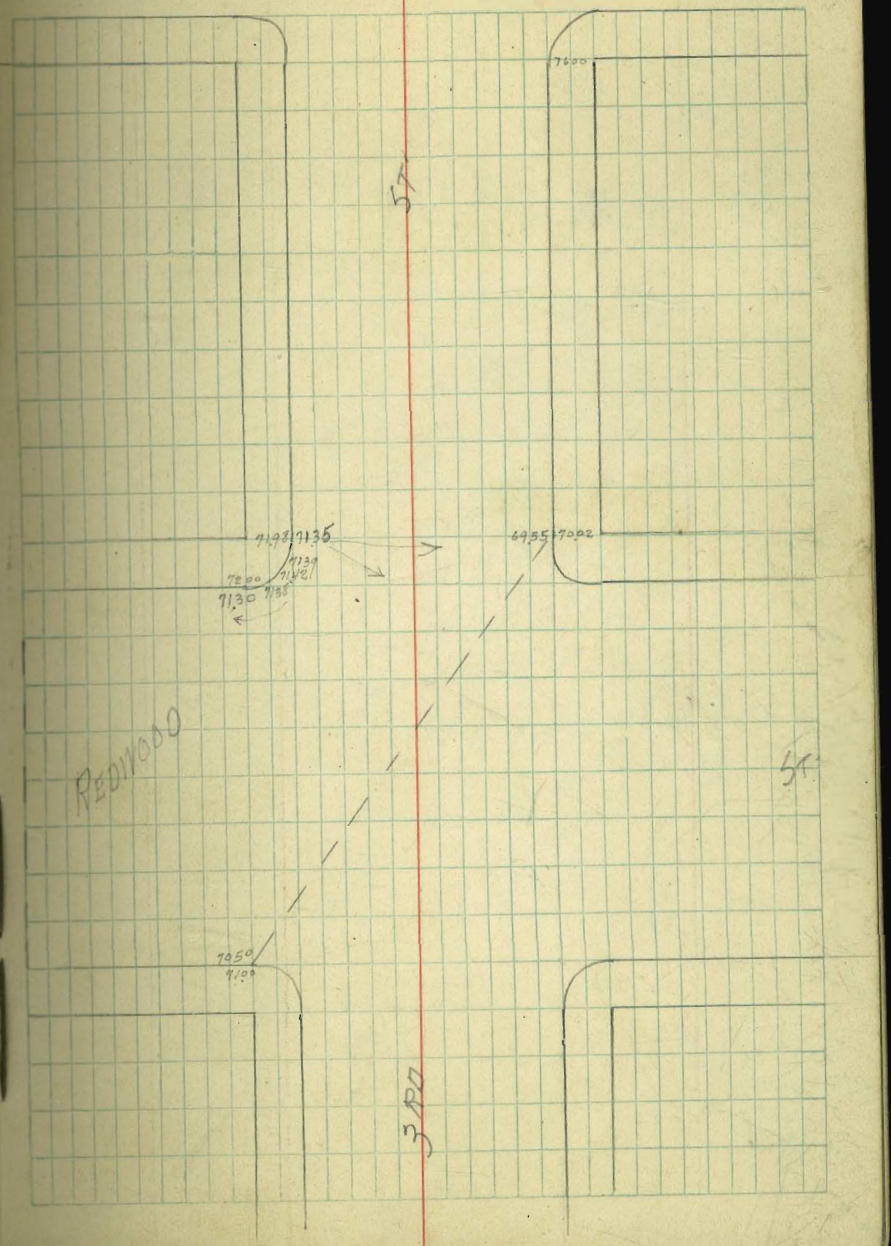
233.96

STABLE

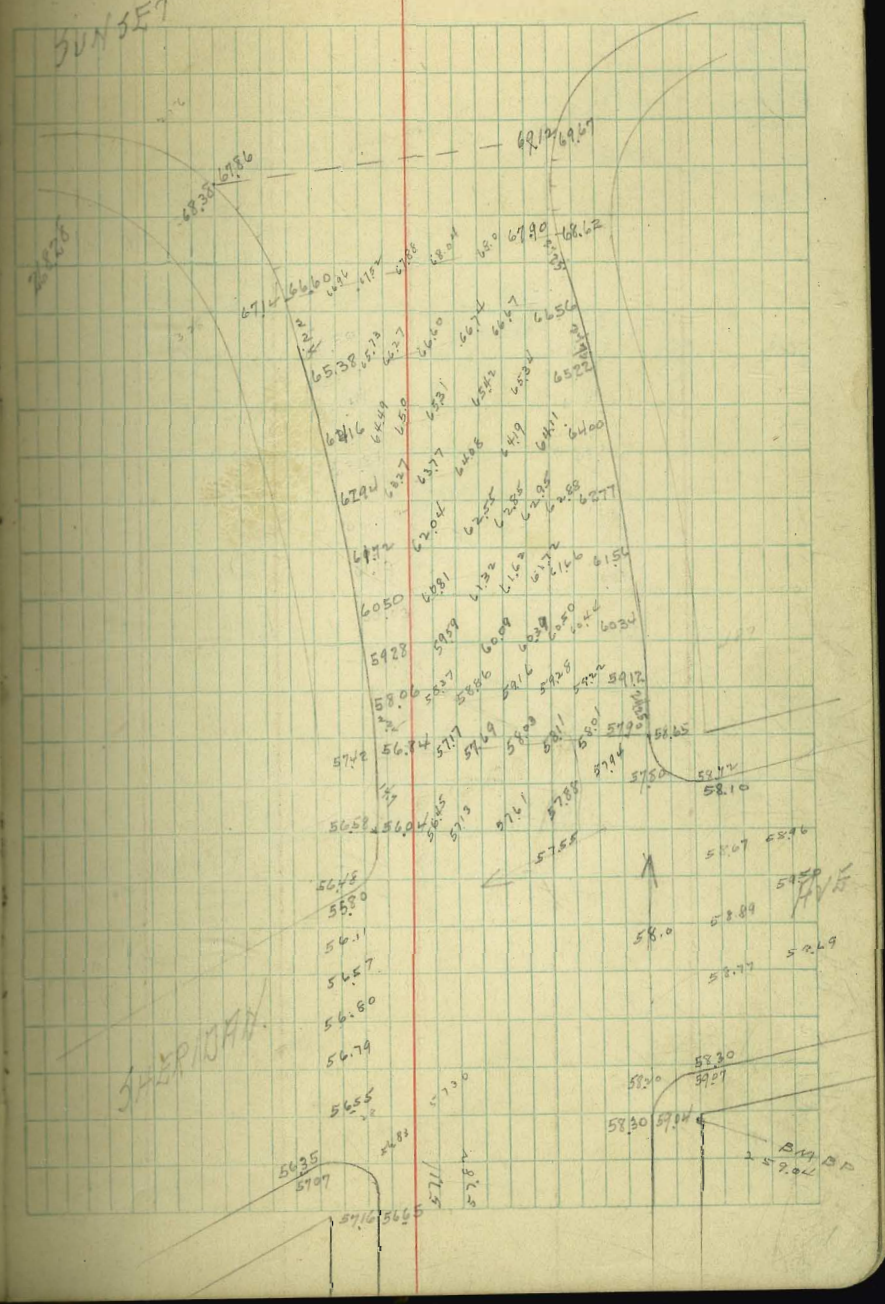
FRONT ST.


FRONT
STREET

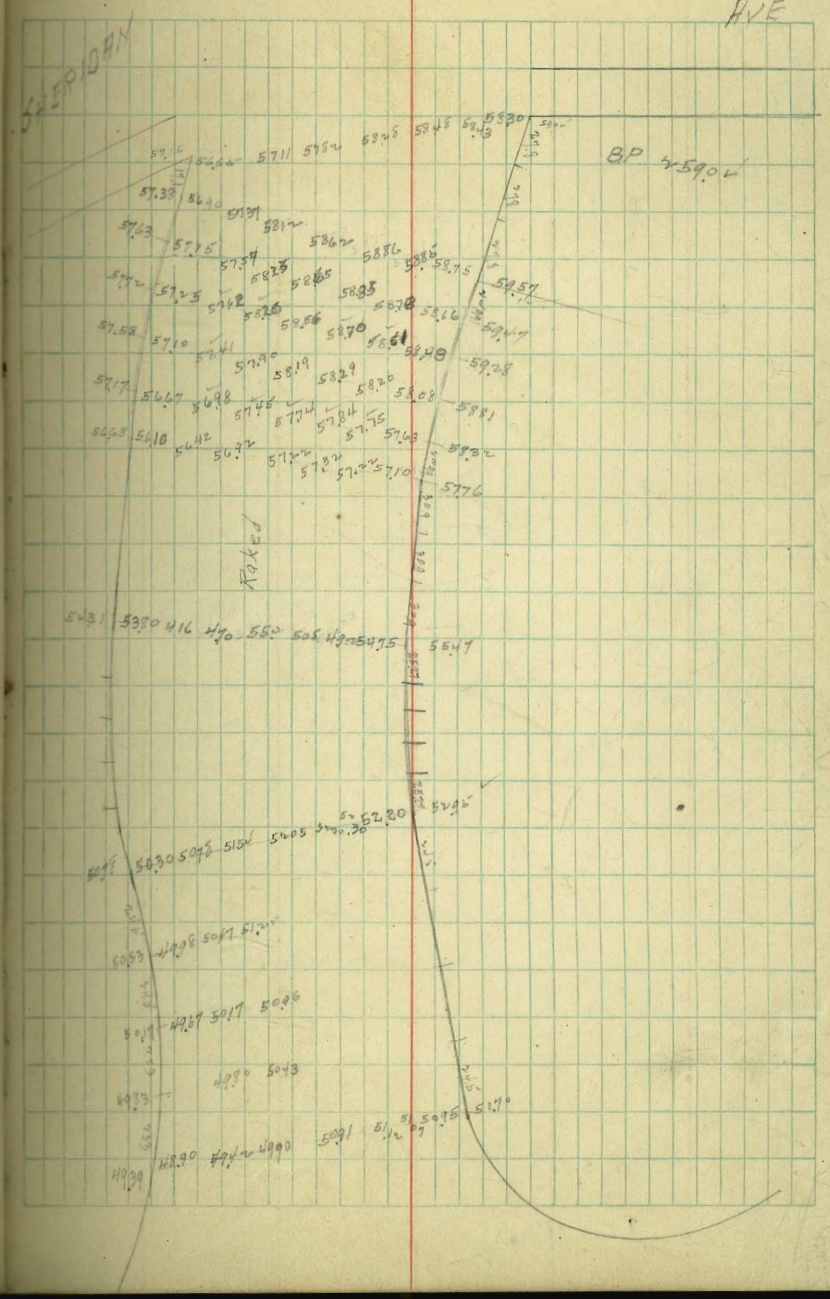

VPAS
ST.
281.04
80.93
80.50
80.96
81.18
81.19
81.40
80.70
80.90
81.16
ST.
THORN
80.77
80.58
80.54
80.98
81.17
80.74
80.44
80.25
80.93
80.20
80.69
80.43
79.85
80.50
THIRD
SPRUCE
ST.


SPRUCE
5T.
42
7000
5T
7198
7135
6955
7002
7200
7130
7137
7142
7135
REDWOOD
5T
7050
7100
3RD

Alameda Paving
Titus to Sunset.

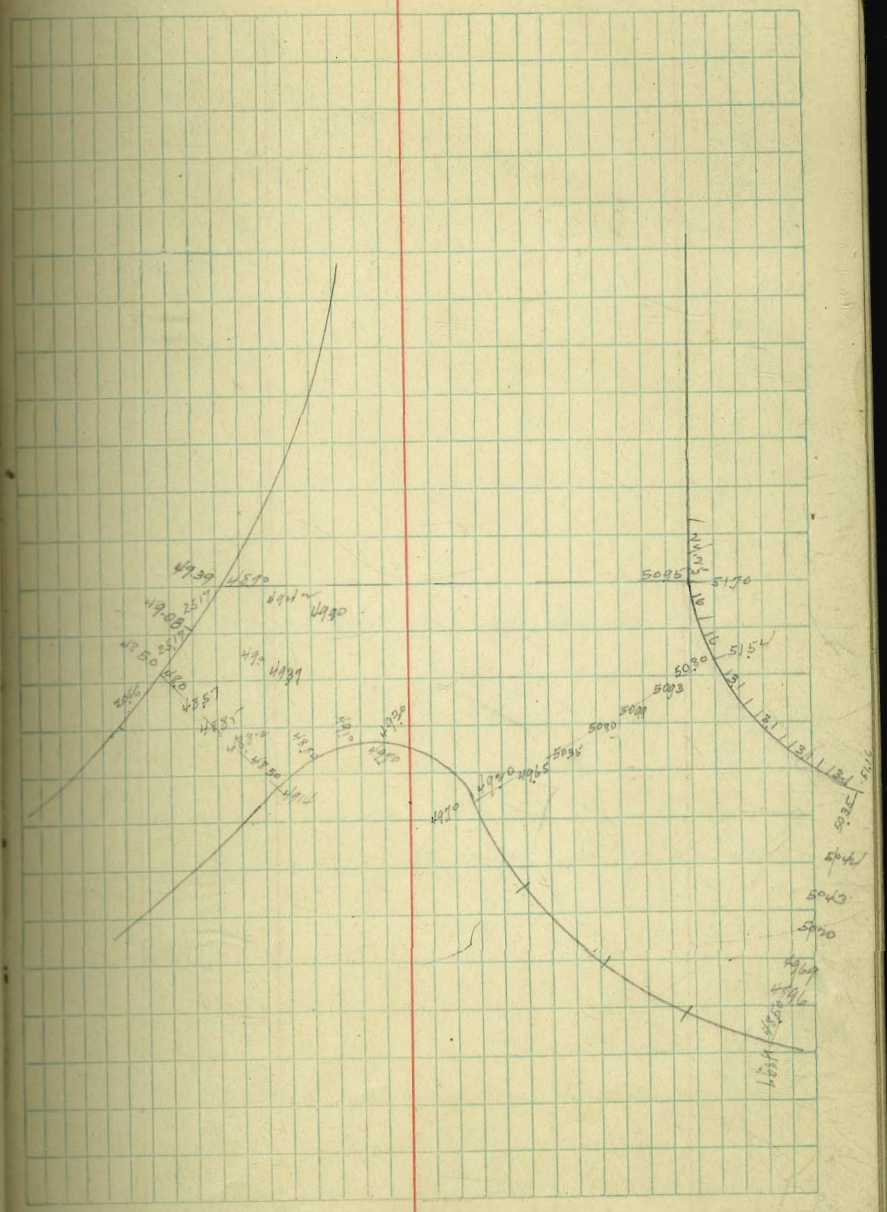


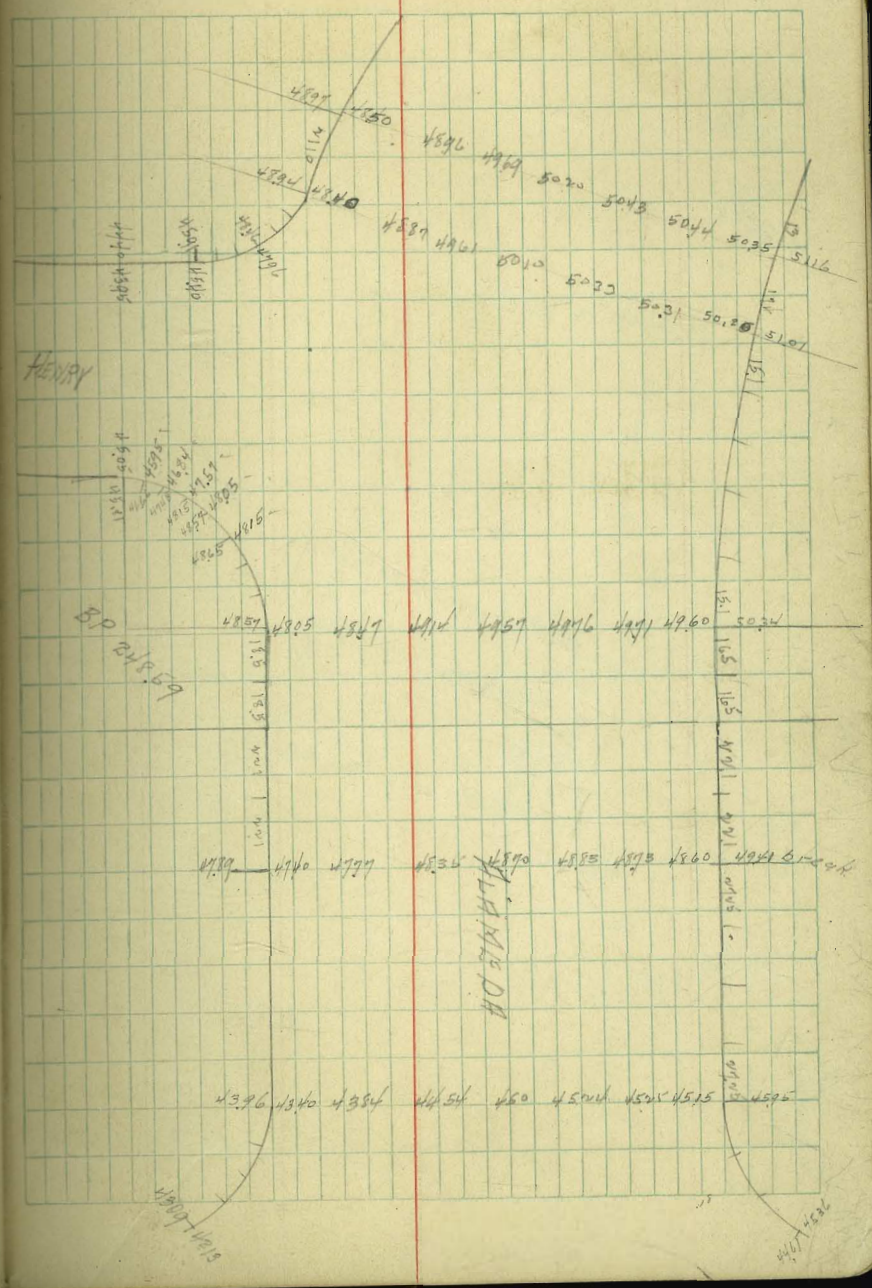
Alameda

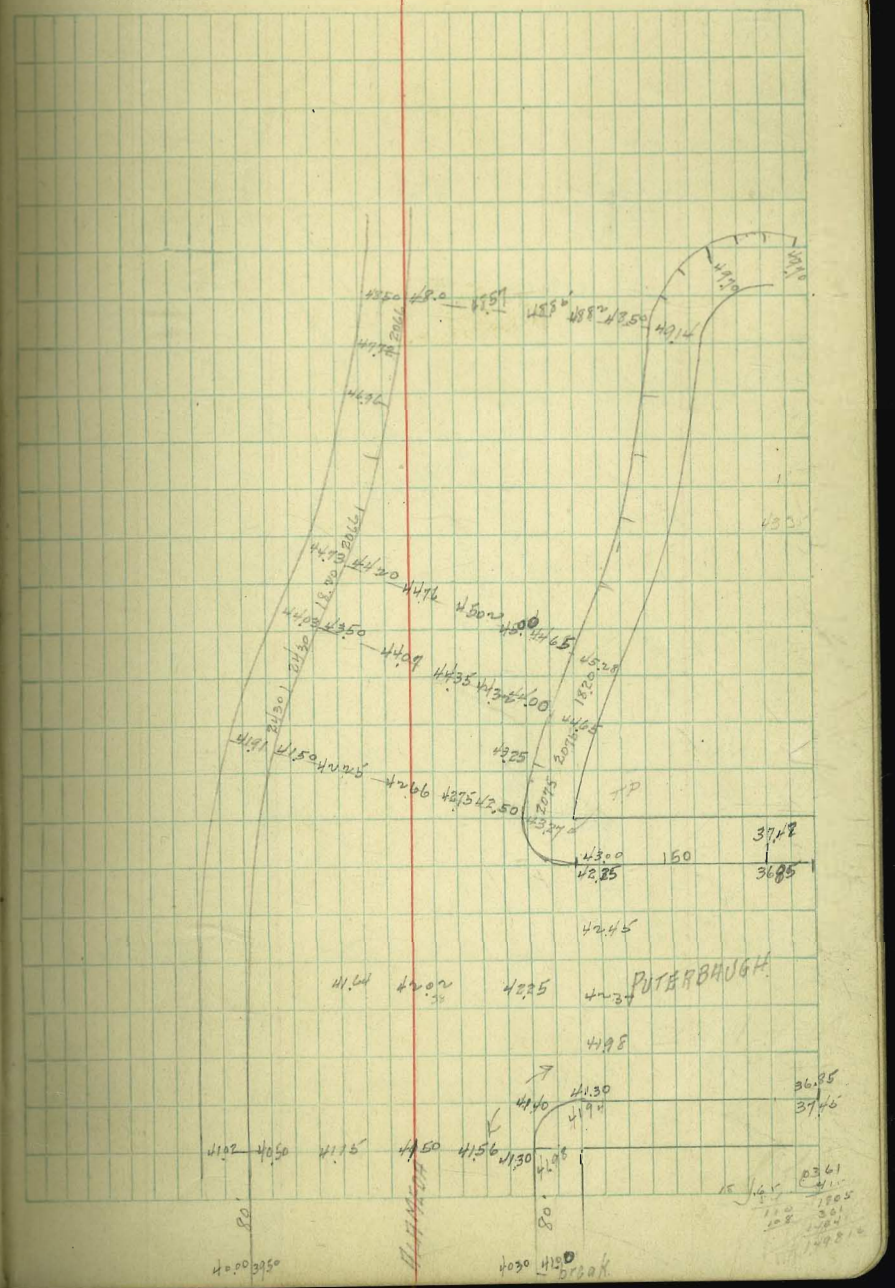


Alameda

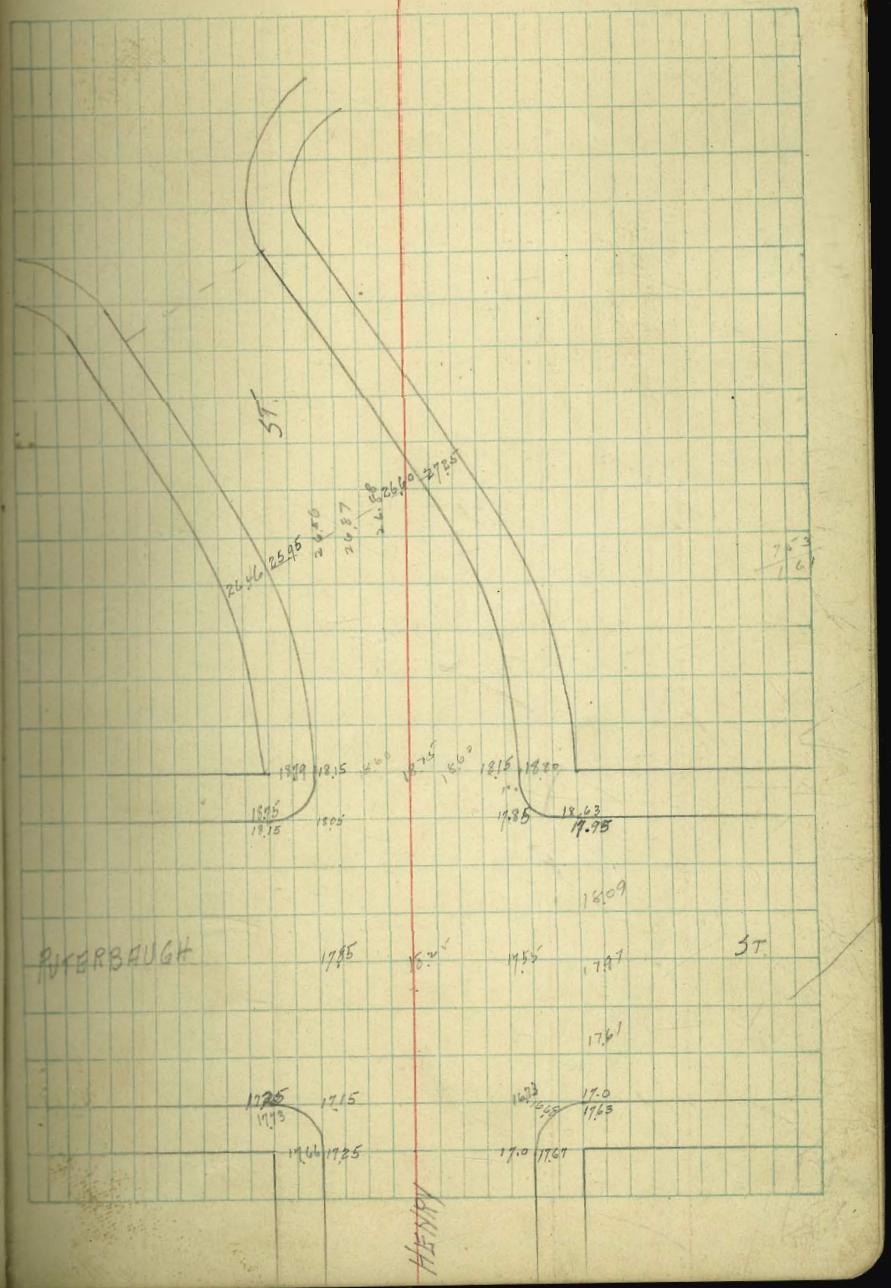
45

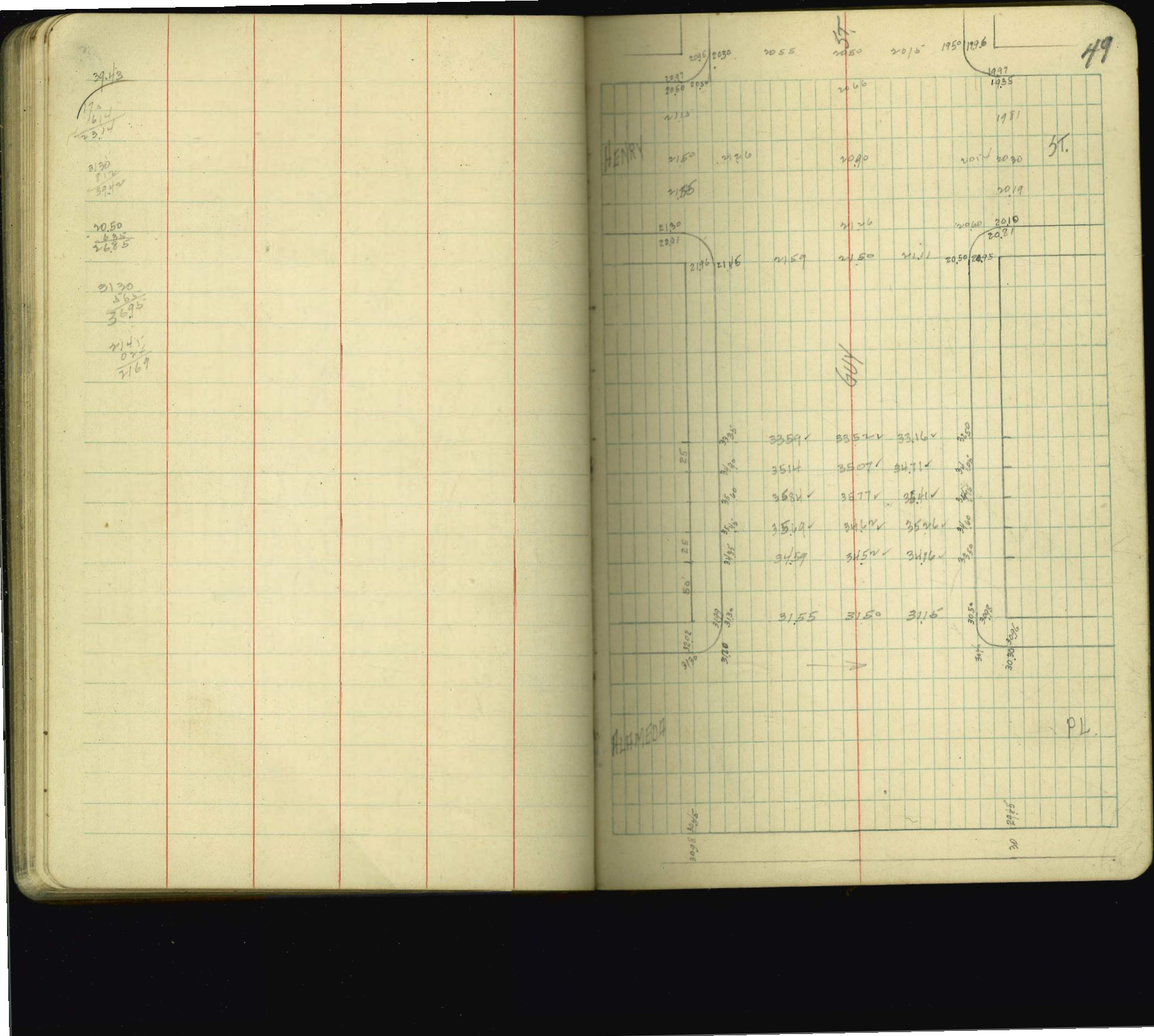


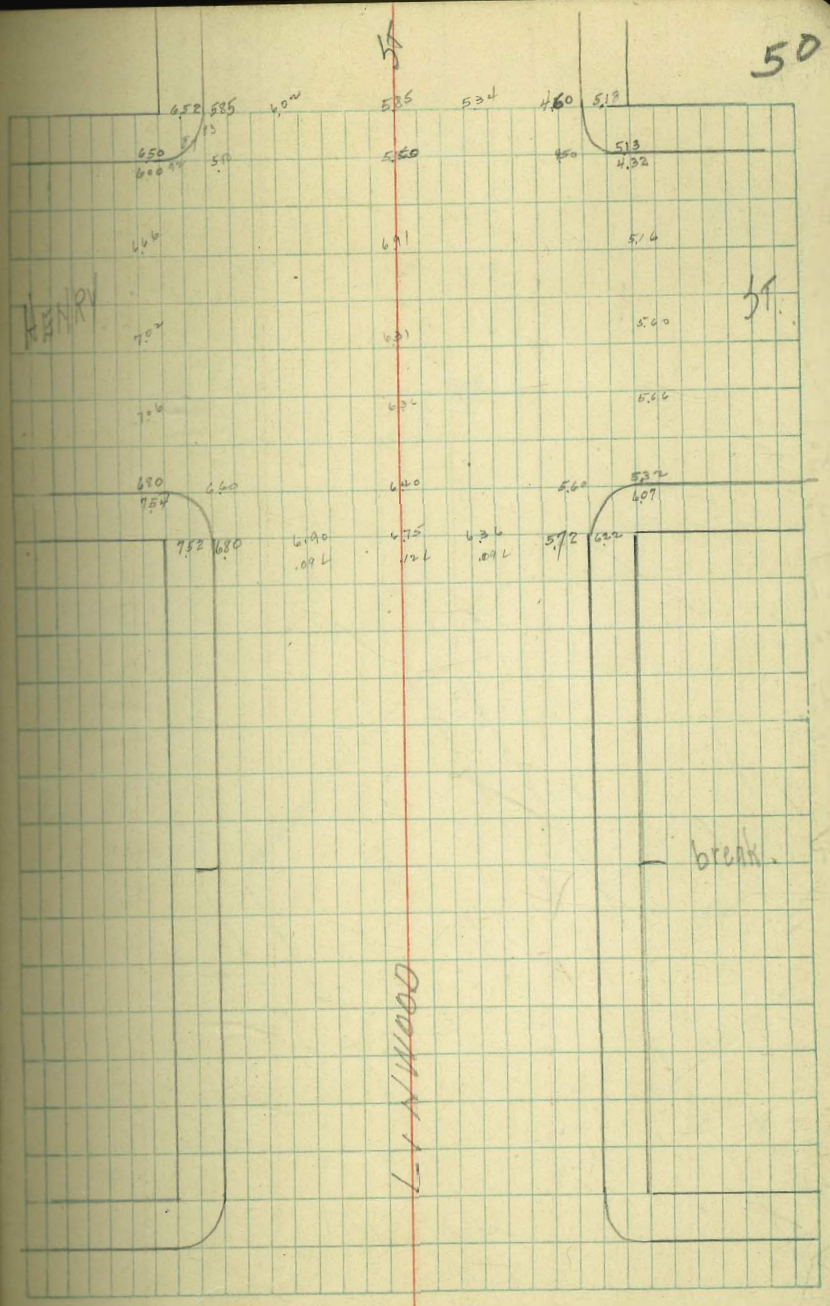

HENRY
HOPKINS


PUTERBAUGH
BURBANK

Henry St
Titus to Alameda Pl.

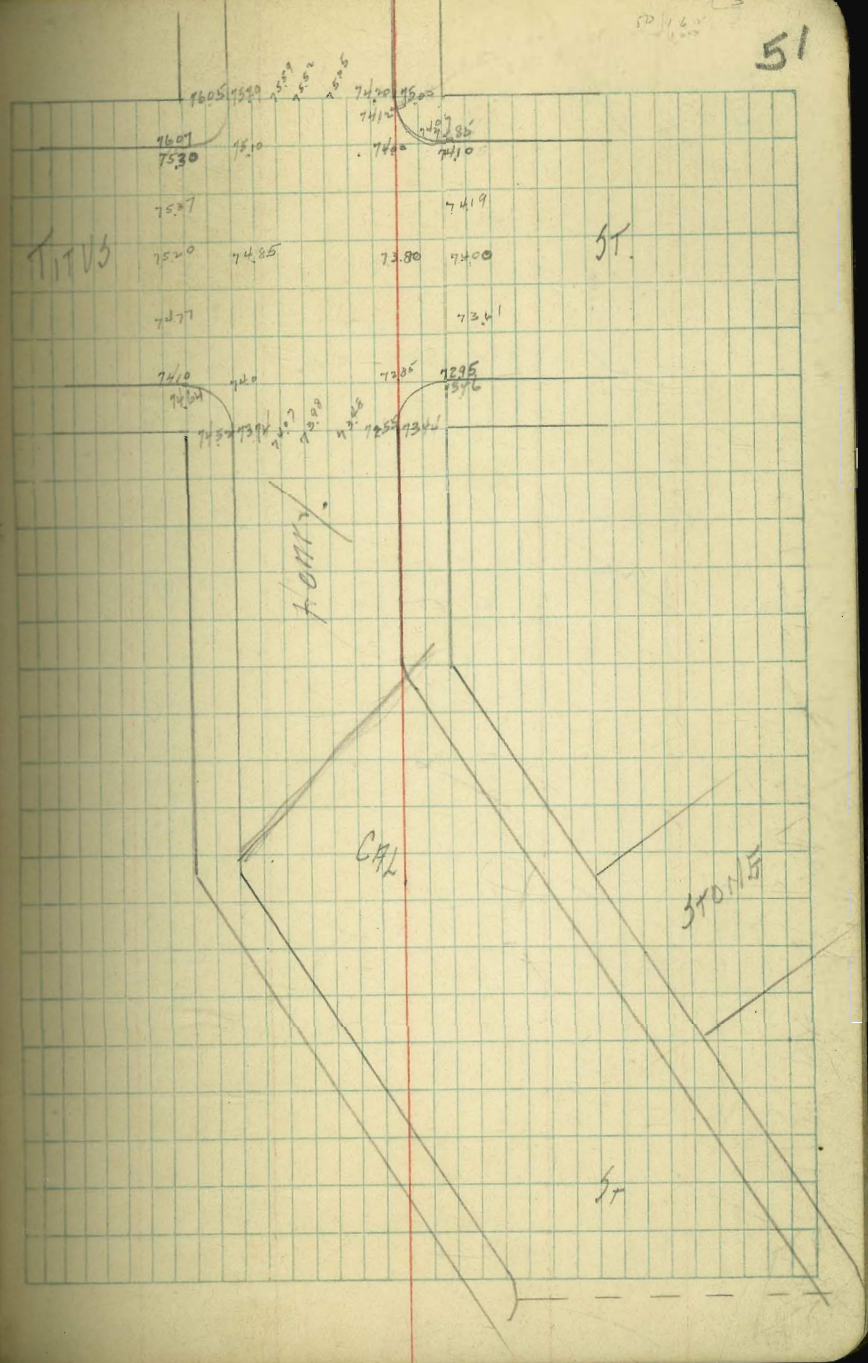



49
HENRY
ST.
GUY
ST.
PL.
2055
2050
2015
1950
1996
1997
1935
2066
1981
2030
2019
2010
2081
2075
2050
2130
2201
2196
2146
2159
2150
2141
2050
2030
2006
3135
3130
3128
3139
3140
3150
3160
3165
3170
3350
3352
3316
3511
3507
3471
3683
3677
3641
3519
3476
3526
3459
3445
3416
3155
3150
3116
3050
3098
3096
3095
3096
2946

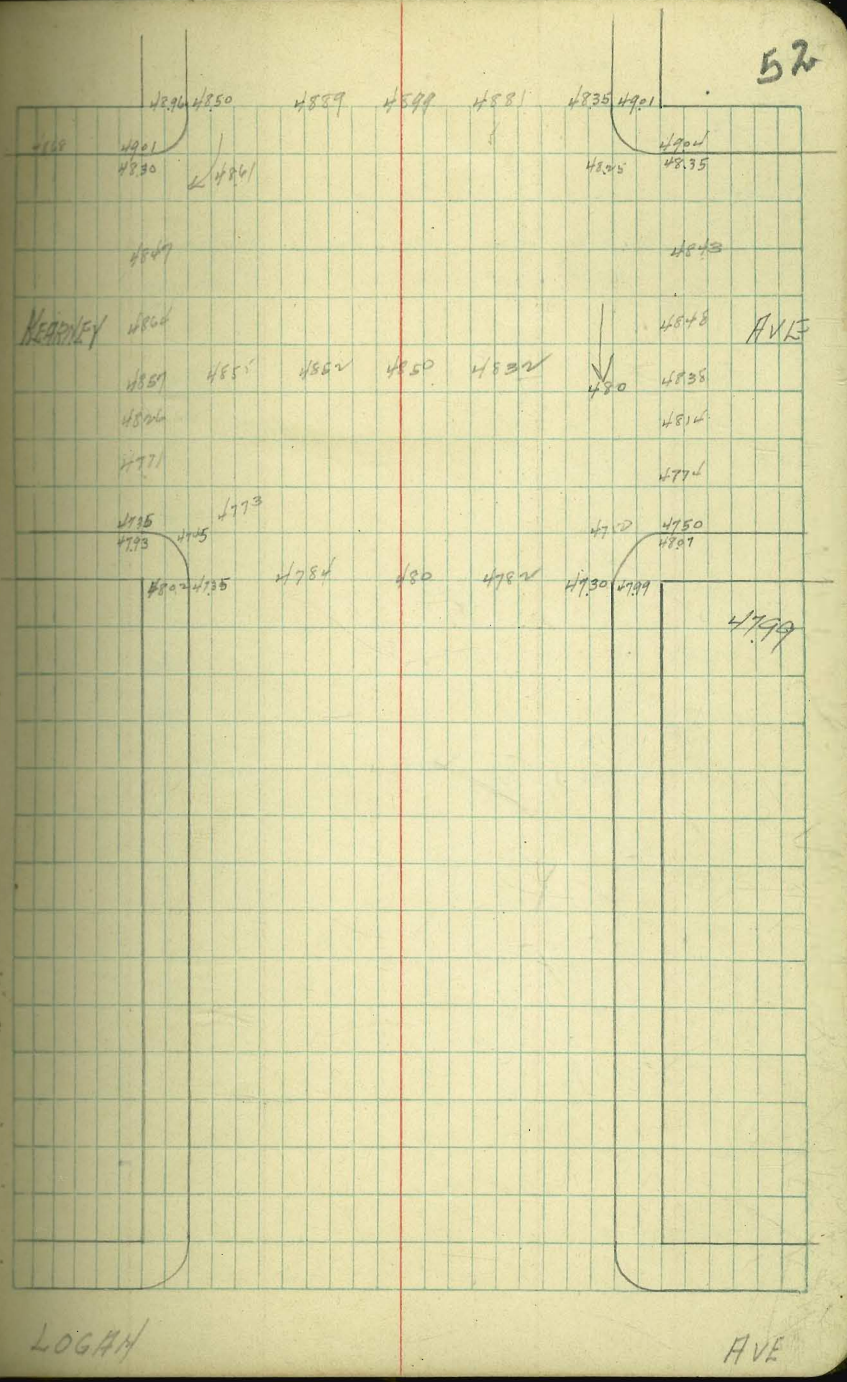

HENRY
31.
break.
GOODWIN

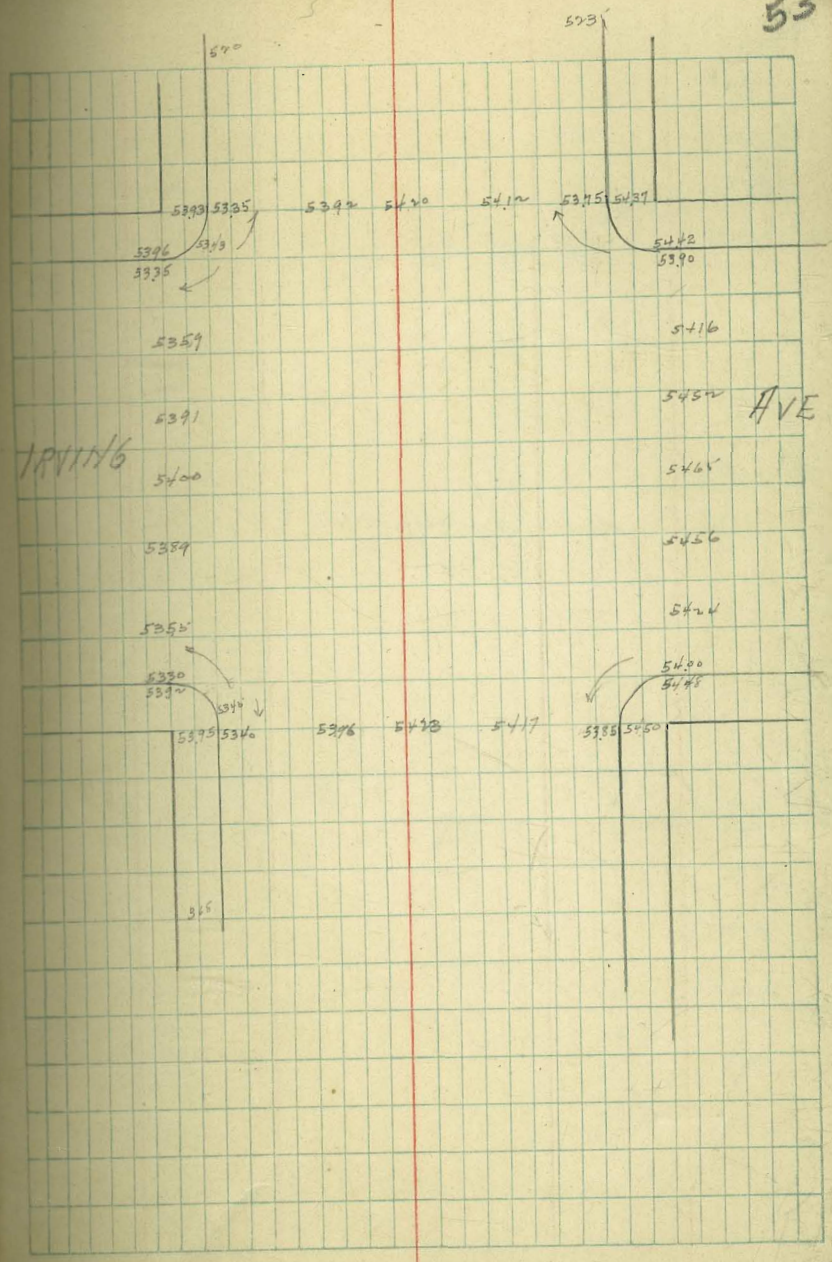
17899

75.30
5.09
80.39



4799
4411
5863



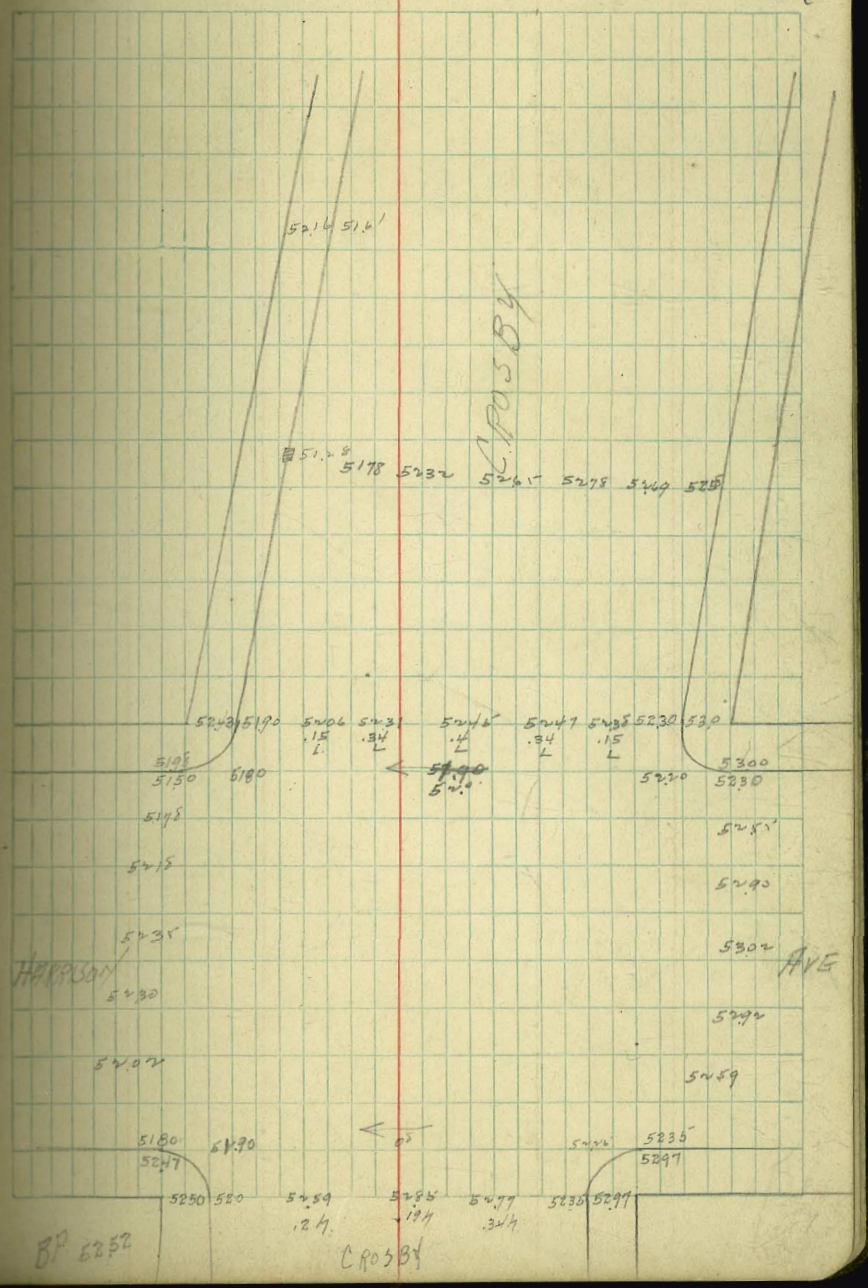

IRVINE
AVE

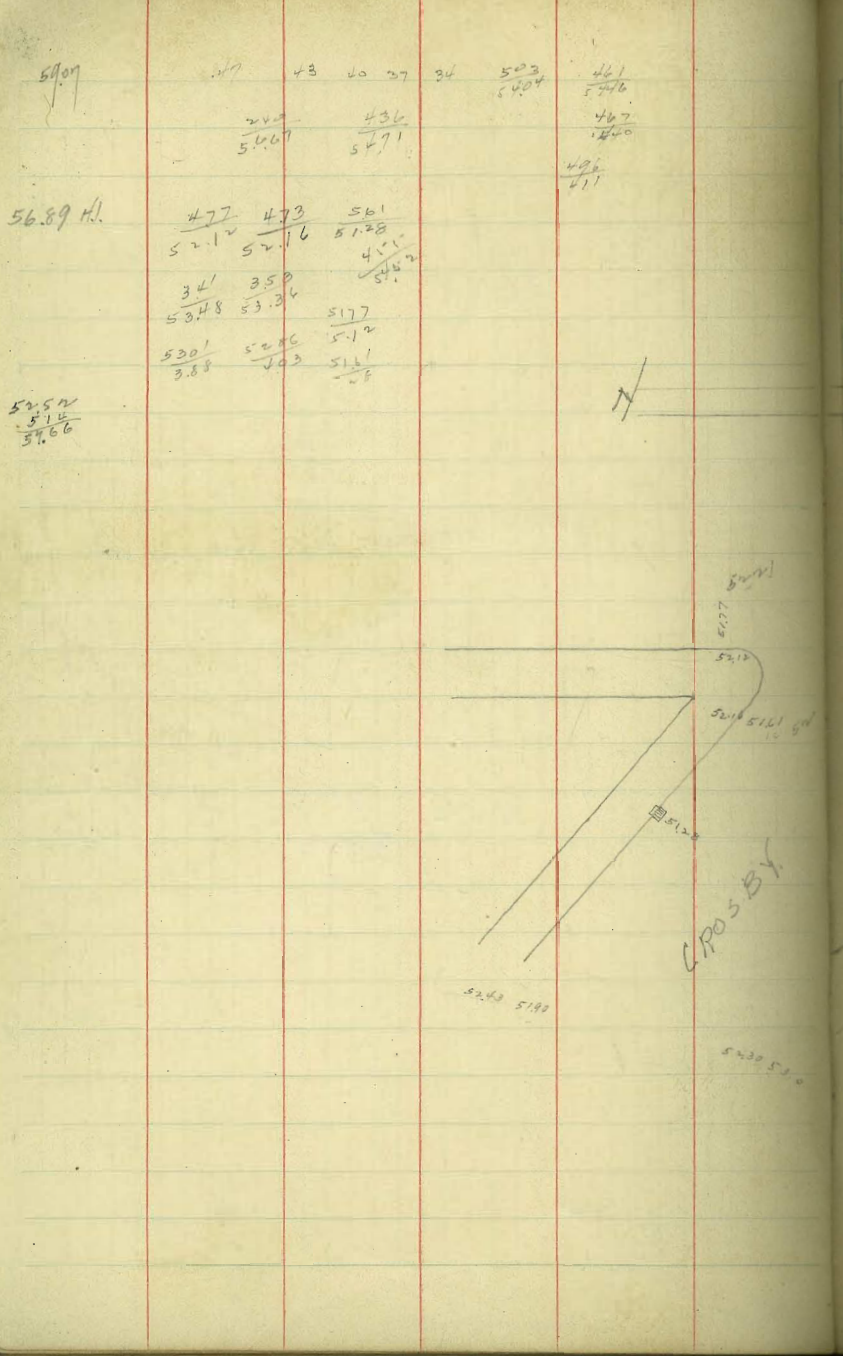
5252
4.37
56.89

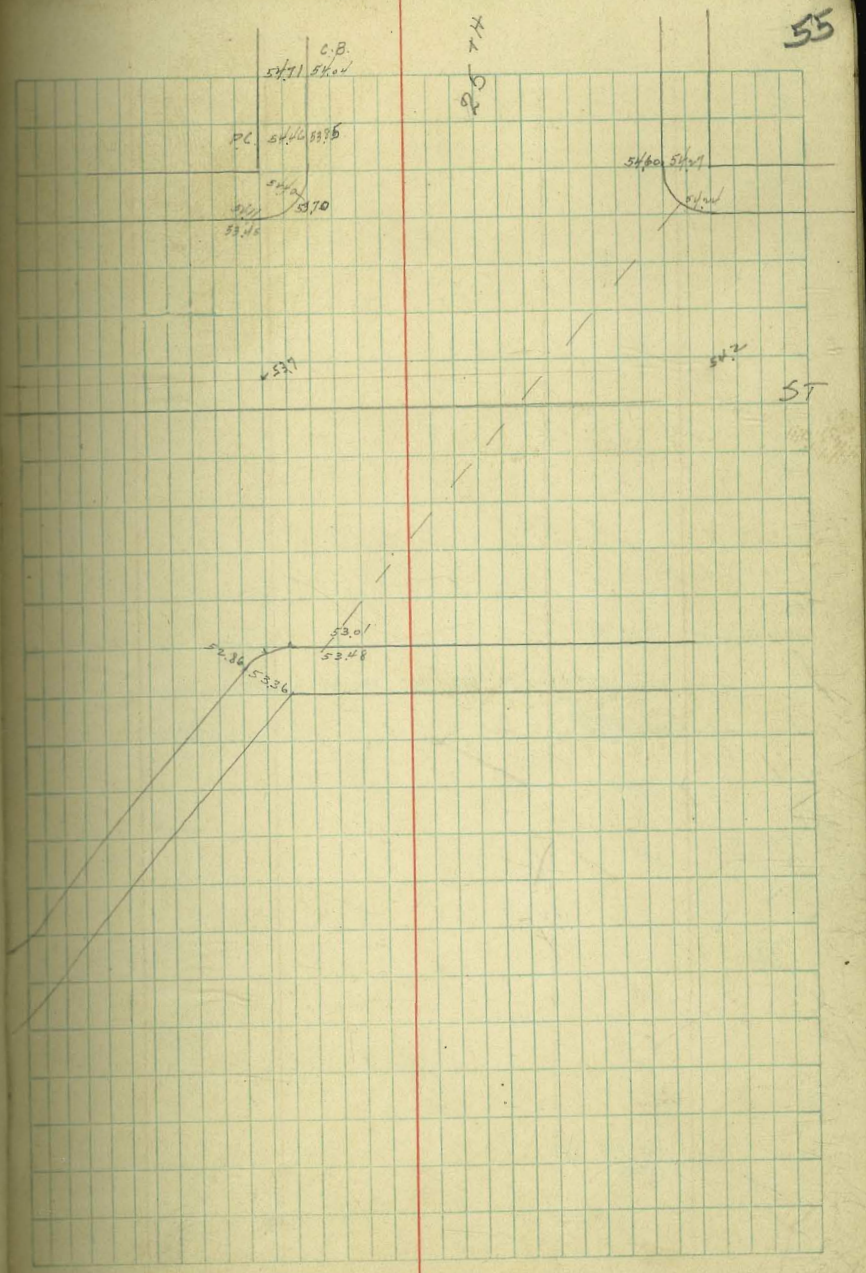
5150
5.39

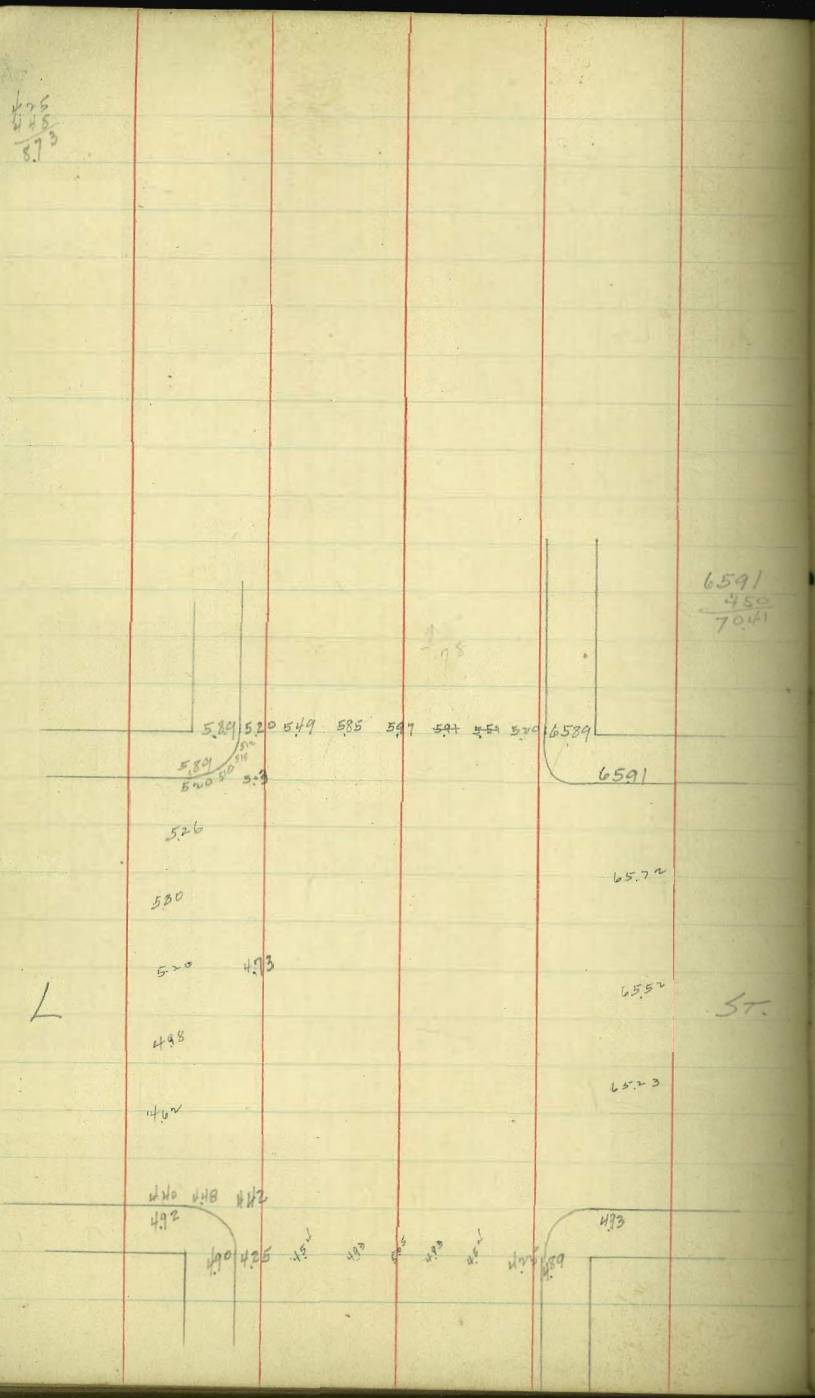
5766

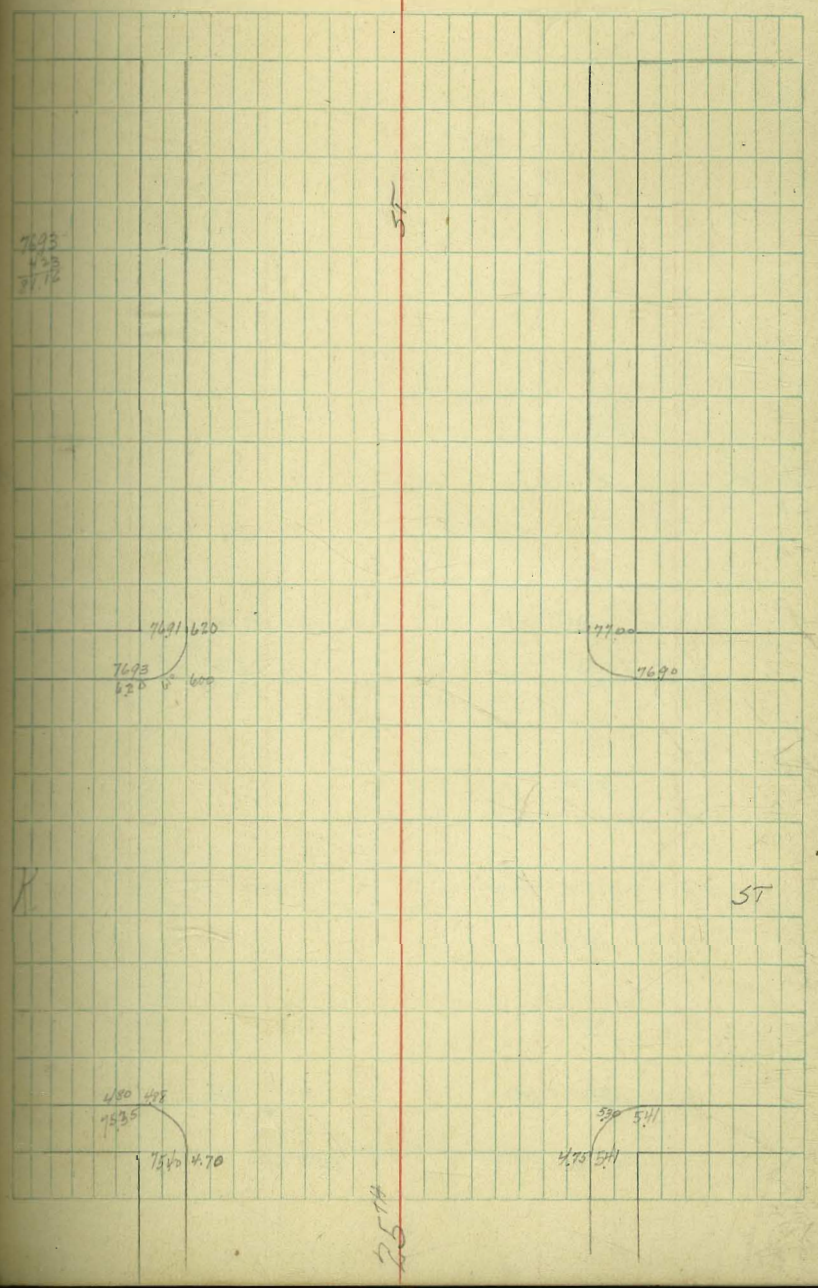
5178 5232 5265 5278 5269
588 534 501 471 497

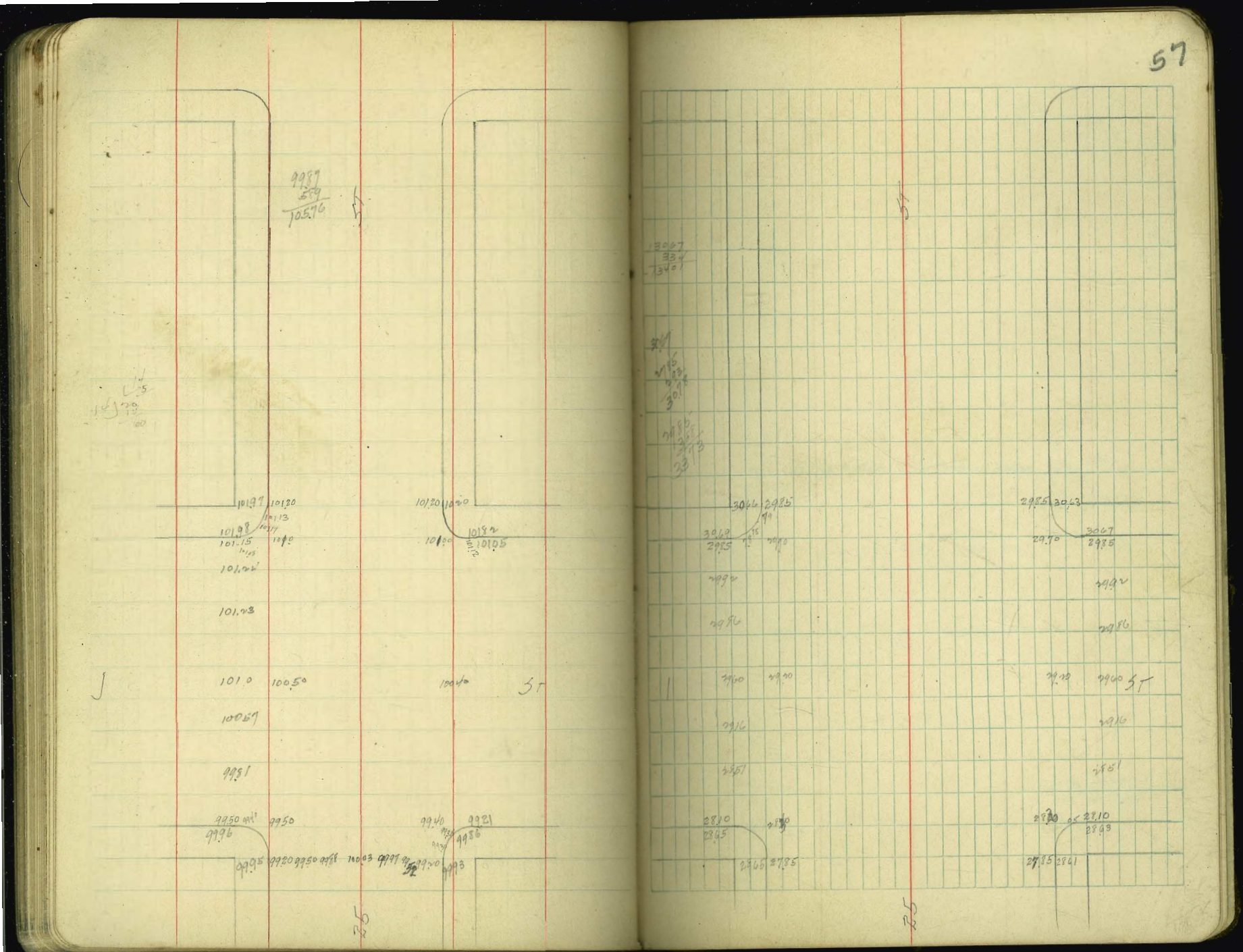


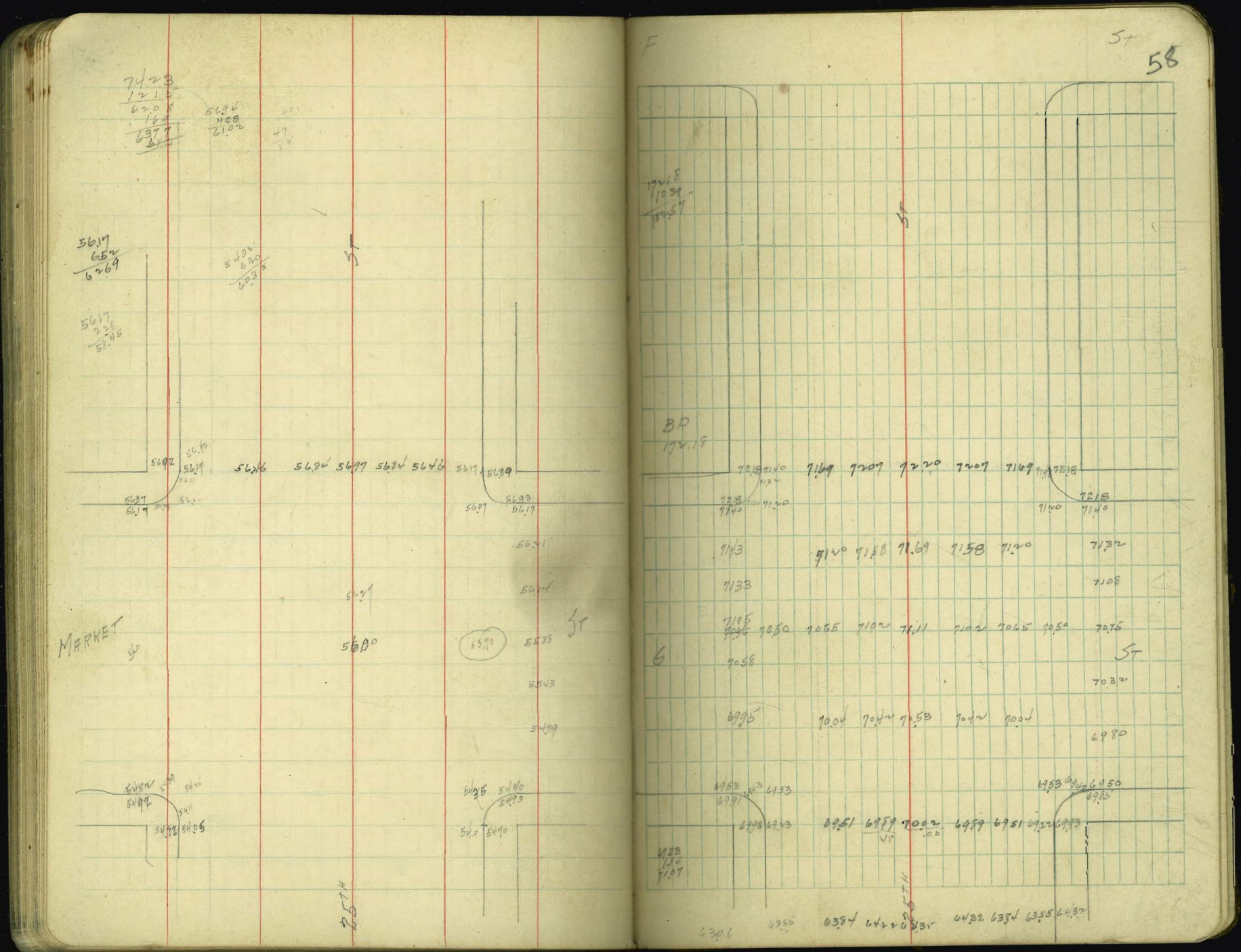

56.89 HI.
CROSS BY


C.B.
PC
ST


6591
450
7041
5.84
5.20
5.49
585
597
591
5.70
6589
6591
5.26
5.80
5.20
4.93
4.98
4.67
6572
6552
6523
L
ST.
4.92
4.90
4.73


7693
433
8176
ST
7691
620
7698
620
6.05
7690
K
ST
4.80
4.98
7535
7540
4.70
4.73
5.41
5.30
2514




MARKET
5TH
5T
F
58
BD
6

E

5T

F

5T

BROADWAY

E

5T

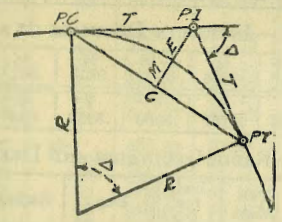
	6.67	21.13		14.46	SW @ P Col. & E St
M.H. Rim			1750 / 642 / 2392	- 2.79	
T.P.	3.35	23.01	1.47	19.66	
T.P.	0.07	12.17	10.91	12.10	
Swimming Pool Sump			17.22	-5.05	
	6.57	21.03		14.46	SW B.P Col. & E
Flow Line M.H. W.L. State at E			2.20 / 19.12 / 21.32	- 0.29	
" " " " Col. & E			6.31 / 17.50 / 23.81	- 2.79	
" " Sewer & Col. at E			rate = .00909 per ft.	- 2.45	
T.P.	7.73	22.19	6.57	14.46	
	5.39	22.70	4.88	17.31	
	2.75	15.15	10.30	12.40	
Elev Flow Line E.L. YMCA Bldg =			1490	-1.75	
" " " & Tank			16.47	-1.32	

321-37 44 Brown

I

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

175 / 133 / 18.53



1750 / 642 / 2392 / 113 / -279

CURVE FORMULAS

Radius=R=$\frac{50}{\sin. D/2}$ (1) Degree of Curve=D and sin. $\frac{D}{2}=\frac{50}{R}$ (2)

Tangent=T=R tan $\frac{\Delta}{2}$ (3) Length of Curve=L=100$\frac{\Delta}{D}$ (4)

Middle ordinate=M= R(1—cos. $\frac{\Delta}{2}$) (5) =R vers $\frac{\Delta}{2}$ (6)

External=E=T tan $\frac{\Delta}{4}$ (7) =R÷cos. $\frac{\Delta}{2}$—R (8)=R exsec $\frac{\Delta}{2}$ (9)

Long Chord=C=2 R sin. $\frac{\Delta}{2}$ (10) Δ=Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161 +60.35 to find Sta. of P. C. and P. T. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157 +45.50. Also from (4) L=746.00 and P. T.=Sta. P. C. +L=164 +91.50.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 (54.50÷100)²=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus (54.50)²÷(2 x 688.26)=2.16 ft.

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′ +8° 20′ ÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6÷8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30′.

00909

275) 2500 (9
2475
25

00909
37.1
4545
6363
2727
33408 75

-2.5
7
-1.75

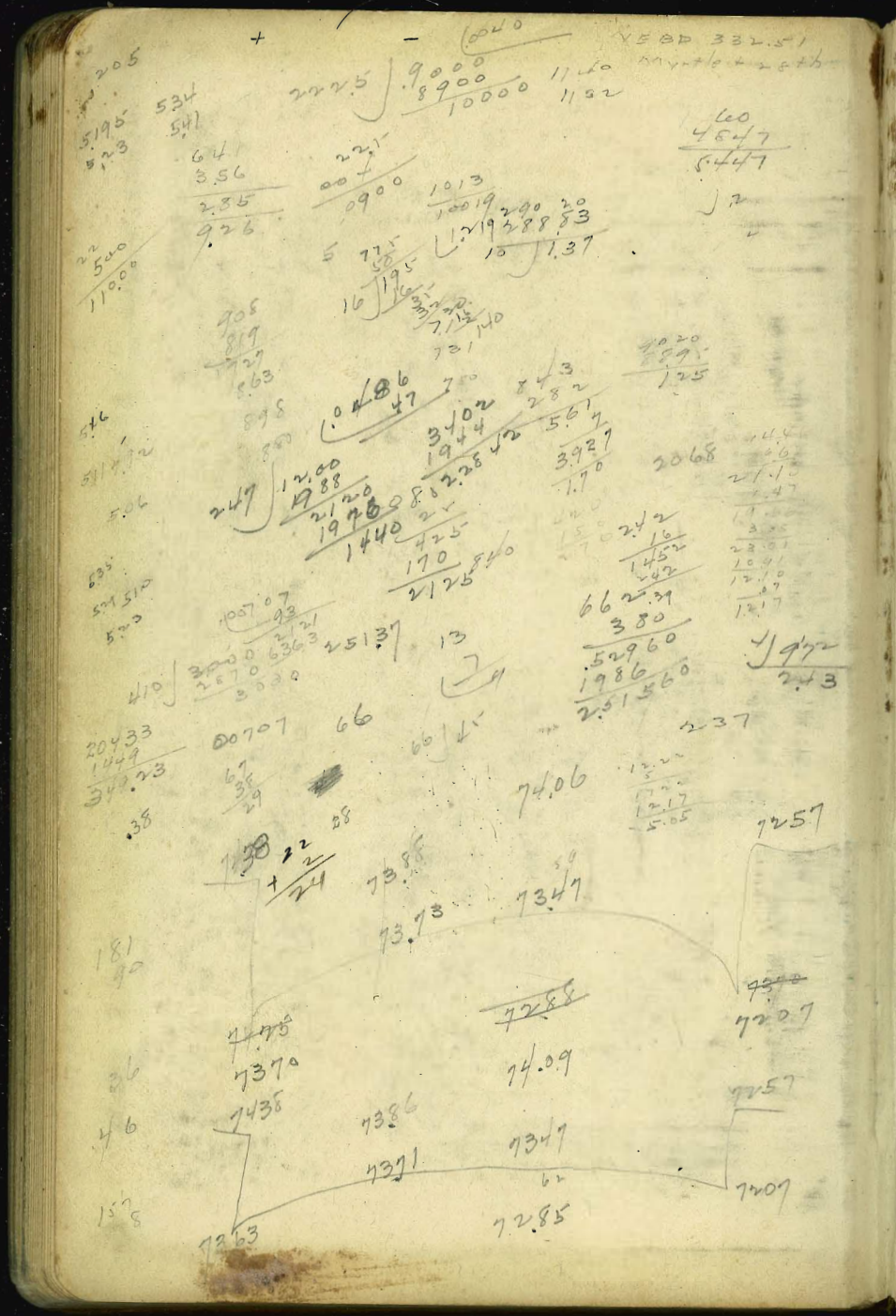
4.82
10.50
1.05
16.37

1.25
9.60
10.85

10.05
271
12.76

8442
1202
74.16

273.6
267.
2) 540.6
270.3



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	25.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9+(20—16)÷2 or 2 ft. added to 41.9 =43.9. For slopes of 1 on 1 see inside of front cover.

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