

FITCH'S  
FIELD BOOK  
16,403P

**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  $30.6 + (20 - 16) \div 2$  or 2 ft. added to  $30.6 = 32.6$ . For slopes of 1 on  $1\frac{1}{2}$  see inside of back cover.  
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CITY ENGINEER'S OFFICE

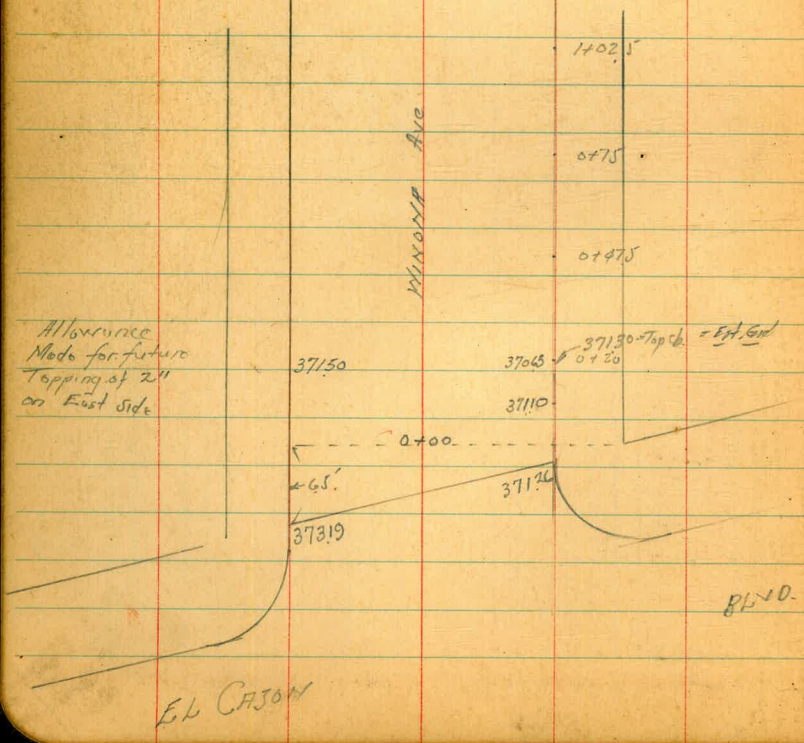
This Field Book is manufactured of a High Grade 50% Rag Paper having a WATER RESISTING SURFACE, and is sewed with Bing Special Enamel Waterproof thread.

Made in U. S. A.

Walker  
Trojan  
Mardin  
8-18-44

Gutter Grades  
WINONA AVE.  
from El Cajon Blvd. to Trojan Ave

36241	36175	2110
36276	36203	1790
36323	36255	1770
36402	36331	1450
36505	36431	1130 = Bk



N. Trojan

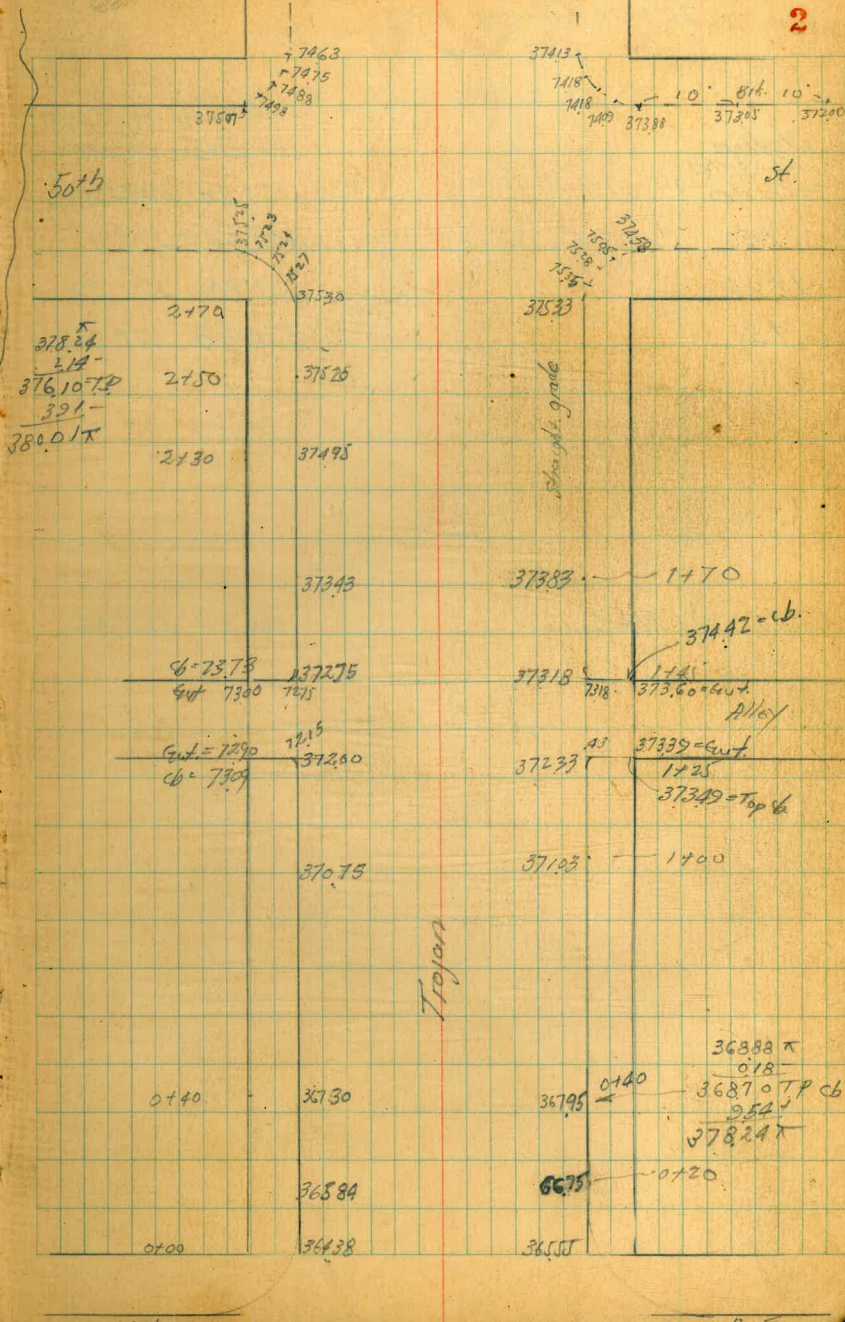
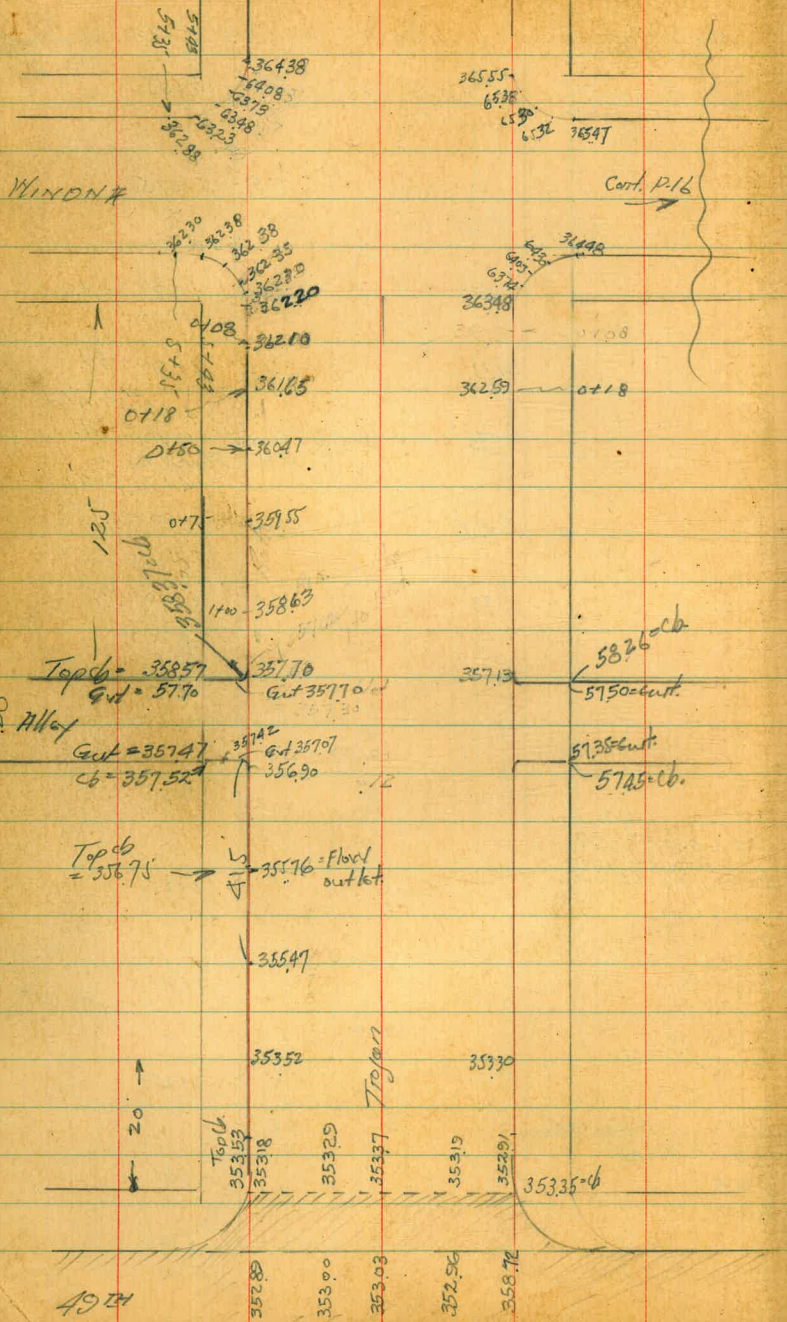
5143 1

36288	36230	5135
	36157	5107.5
36153	36085	4180 = E.V.C.
36143	36025	4160 = Bk
36093		4142 = Inlet
		4140 = Bk
		35860 = Flow line
36078	36016	4120 = Bk
36089	36039	4100 = P.V.C.

B.M.  
351.53 - NW. CP  
10.64 - El Cajon  
362.17 x 8.20 - Estrella  
021 - 12.56  
36196 TP  
13.13  
3750.9 x  
12.73  
36286 TP  
3727  
36408 x  
319 - Trojan & Winona  
6289 TP NW. CP  
599.1  
5888 x

WINONA AVE

3475
3150
3425
3400
2475
2450
2430



Rough Grades - Trojan Ave.  
 from E. line 50th  
 to 130' East of E. line 50th

Station  
 E. line 50th  
 = 0+00

750

1+00

1+30

Uniform Grades

2+70 - N.W. Alt. Section

Curb Grades Curb Grades  
 N.L. Grade S.H. Grade

375.30 374.80

373.34 373.15

371.98 371.50

370.98 370.51

366.31 365.85

374.63 = Est. E.C. Ref. Peg. Stake NE 50 & Trojan P-2  
 $\frac{0.25}{374.88 \times}$  Grades below are Prop. Line = 0.12 Above **36**.

<sup>+0+00</sup>  
 N.L. 375.42 373.46 372.10 371.10  
 1.42 2.78 3.8  
~~4.6~~ ~~5.6~~ ~~4.6~~  
 -3.2 -3.8 -0.8

S.H. 374.92 373.27 371.62 370.63  
 1.6 3.26 4.3  
~~12.6~~ ~~14.6~~ ~~6.2~~  
 -11.0 -11.3 -1.9

Walker  
Hazard  
Hazard 524-44

Grades for Culvert  
on Winona & Trojan

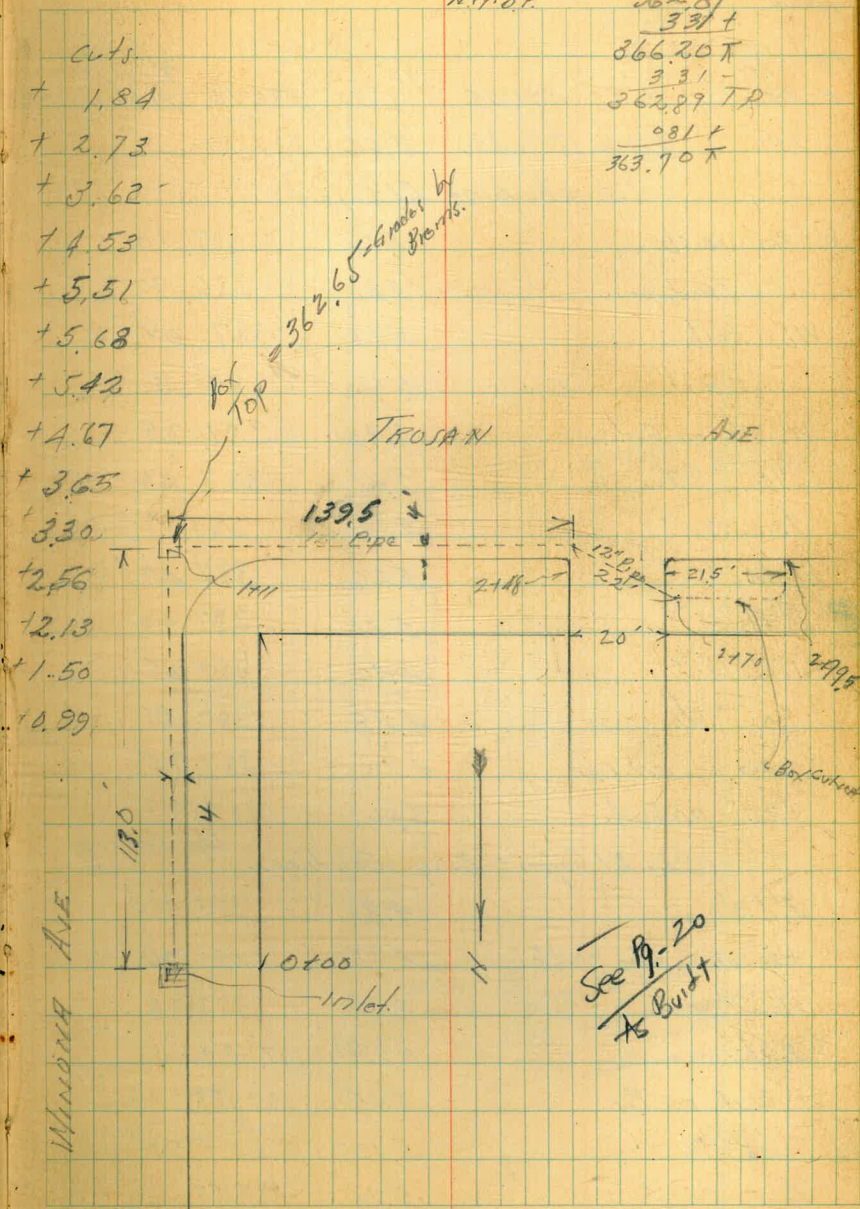
Station	$\pi$		Flow	to	File
	366.20				
0+00		576	360.44	358.60	
+25		511	361.09	358.36	
+50		445	361.75	358.13	
+75		378	362.42	357.89	
+100		304	363.16	357.65	
+125		299	363.21	357.53	
+150		435	361.85	357.18	
+175	363.70	310	360.60	356.95	
+200		369	360.01	356.71	
+225		466	359.04	356.48	
+250		535	358.35	356.22	
+275		619	357.51	356.01	
+299.5 = End.		695	356.75	355.76	

$\Delta 90^\circ$  Rt.  $\perp$   
Clearance

Trojans Winona Page 1  
NW. B.P.

4

362.89  
331 +  
366.20  $\pi$   
331 -  
362.89 TP  
981 +  
363.70  $\pi$



Walker  
Hazard  
Hordin

CROSS SECTION - ALTADENA AVE.  
from El-Cajon Blvd. - To Trojan Ave.

60' wide  
12' cbr.

Indexed  
e.s.r.

5

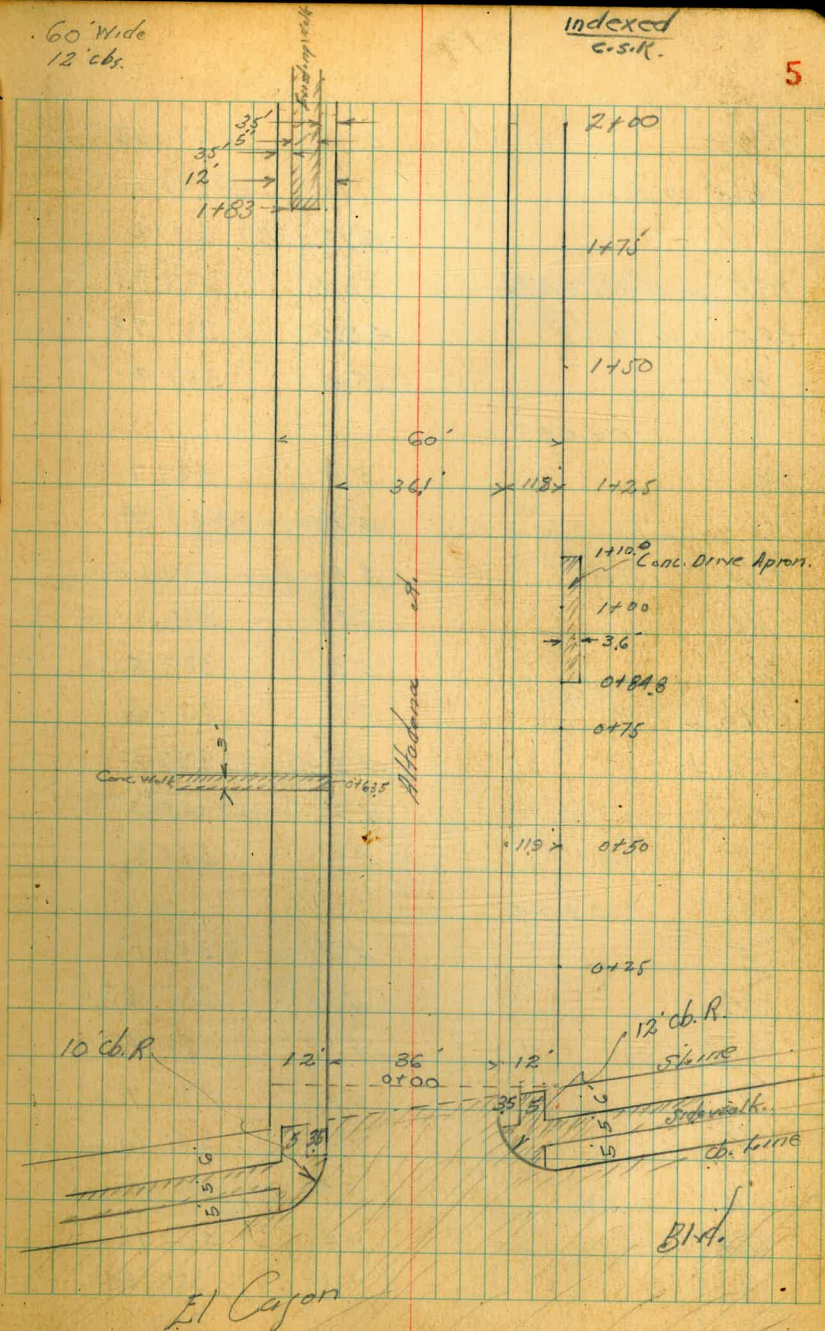
18.1286					S.M.S.F. Pop Hyd. El Cajon 50th
P-27	5.25	391.35		386.10	
TP	4.96	392.73	3.58	387.77	

S. cb. Line El Cajon

W-20' on cb.		5.19		387.14	
" " Gut. per.		5.83		386.90	
WL on cb.		5.73		387.00 ✓	
" " Gut.		5.12		387.61 ✓	
W. cb. on Gut.		5.48		387.25	
" 1/4 " Pav.		5.31		387.42	
L " "		5.22		387.51	
L 1/4 " "		5.26		387.47	
F. cb. " "		5.31		387.42	
F. h. " "		5.46		387.27	
" " cb.		4.88		387.85	
+20' on cb.		4.98		387.75	
+20' on Gut.		5.66		387.07	

Sta. El Cajon - Diag. Section: Edge Paving

E.L.		4.8		387.9	
+2' on E. edge Walk		4.77		387.96	
+7' " " " "		4.75		387.98	
F. cb.		4.93	387.80		
" Gut. on Pav.		5.45	387.28		
" 1/4 " "		5.19	387.54		
L " "		5.16	387.57		



392.73

W 1/4	5.31	387.42
" Gut on Pav.	5.70	387.03
" cb	5.12	387.61
+3.5 on E edge walk	5.01	387.72
+8.5 " W " "	4.95	387.78
W	5.0	387.7

0+00

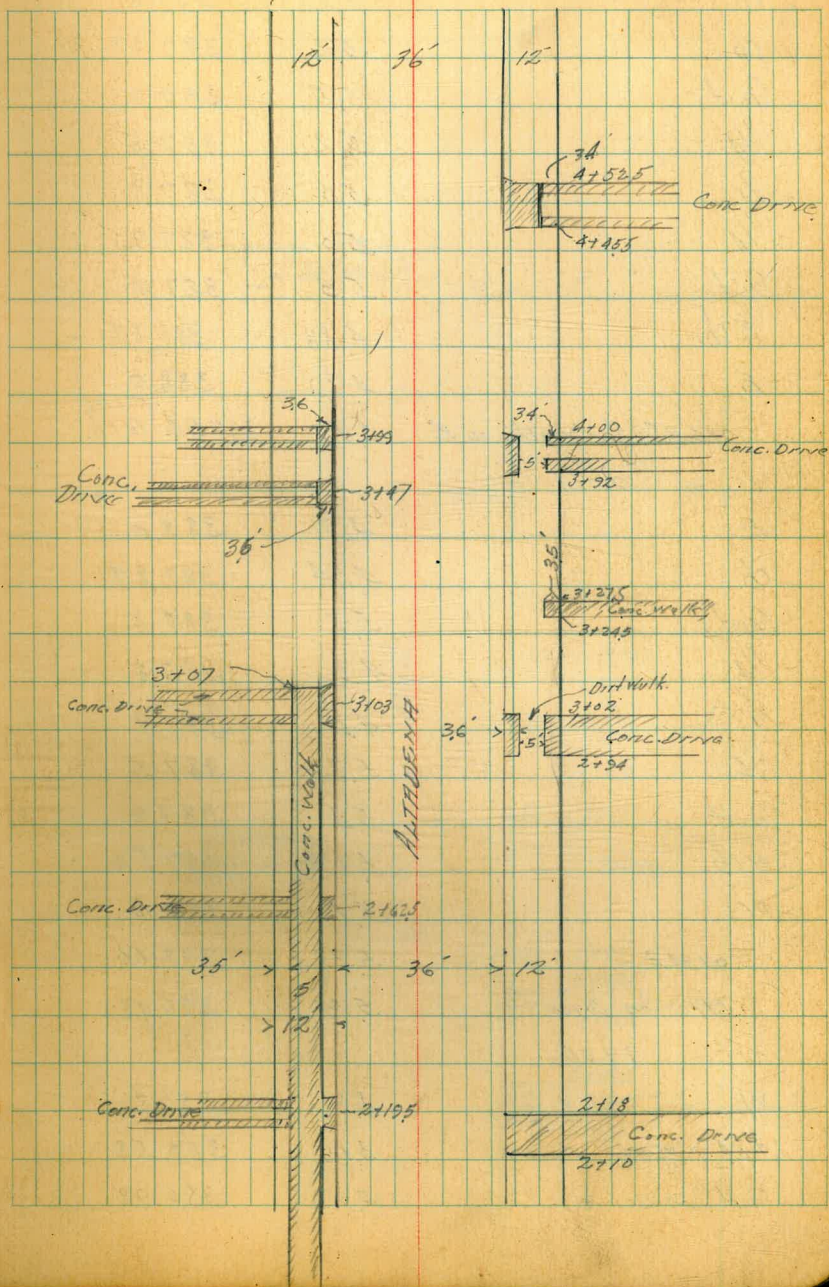
W	5.0	387.7
cb	5.14	387.59
Gut.	5.6	387.1
1/4	5.4	387.3
L	5.2	387.5
1/4	5.1	387.6
E Gut.	5.5	387.2
cb	4.92	387.81
E	4.9	387.8

0+25

E	4.7	388.0
cb	4.88	387.85
Gut.	5.31	387.42
1/4	5.0	387.7
L	5.1	387.6
1/4	5.3	387.4
Gut.	5.6	387.1
cb	5.19	387.54
W	5.2	387.5

Altadena X-Sections

6





0150 33273 Altadena X. Sections

W	5.2	387.5
cb.	5.21	387.52
Gut.	5.5	387.2
1/4	5.2	387.5
2	5.0	387.7
1/4	5.0	387.7
Gut.	5.3	387.4
E. cb.	4.88	387.85
E	4.7	388.0
01635 = 2' 3" Walk. on E	4.77	387.96

0175

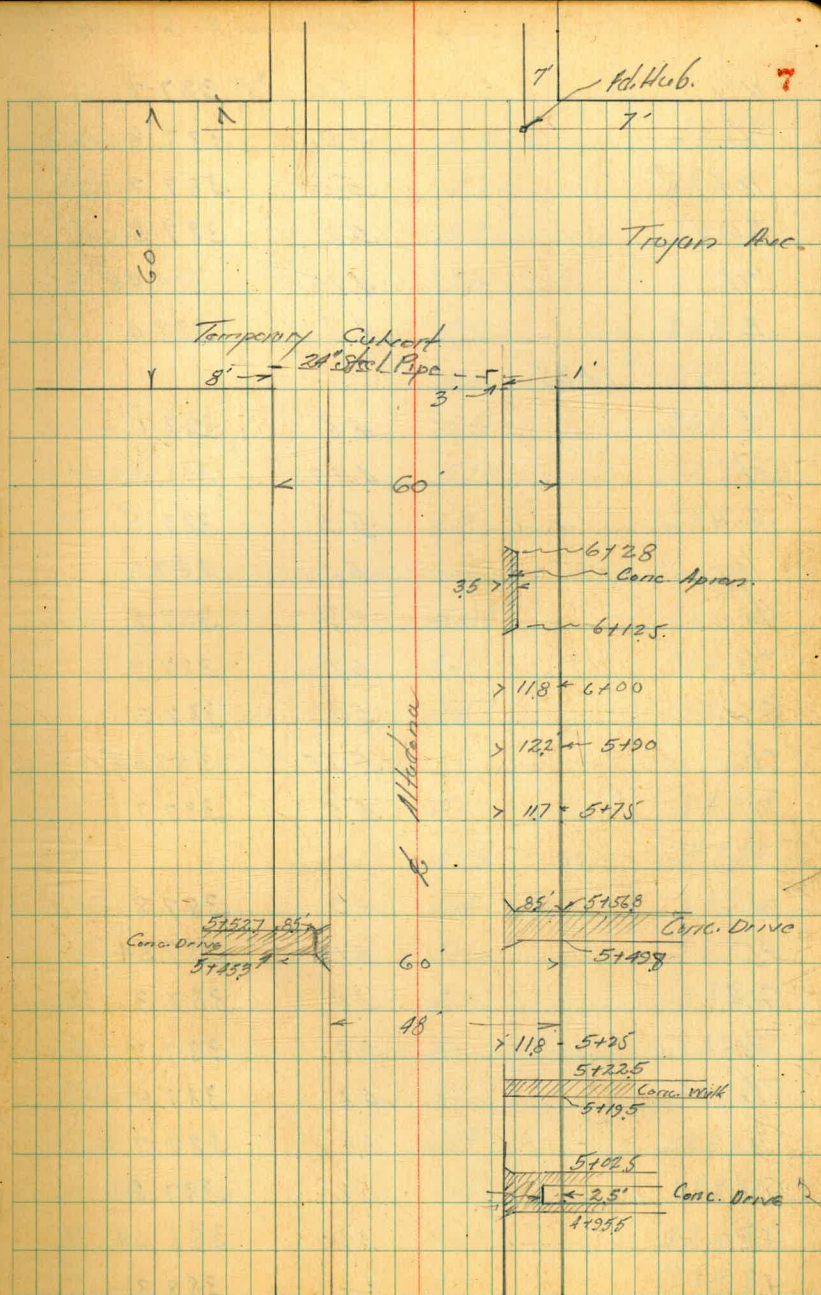
E	4.7	388.0
cb.	4.84	387.89
Gut.	5.2	387.5
1/4	4.9	387.8
E	4.8	387.9
1/4	5.2	387.5
Gut.	5.5	387.2
w. cb.	5.19	387.54
W	5.1	387.6

0184.8

1110 on Drive

1700

W	5.2	387.5
+8.4 = Wedge Apron.	5.15	387.58
Gut. on Drive	5.75	386.98



392.73

## Altadena X. Sections

W 1/4	5.0	387.7
L	4.9	387.8
1/4	5.0	387.7
E Cent.	5.2	387.5
"cb.	4.75	387.98
E	4.7	387.0

1425

E	4.6	388.1
cb.	4.73	388.00
Cent.	5.2	387.5
1/4	5.0	387.7
L	4.9	387.8
1/4	5.0	387.7
Cent.	5.4	387.3
cb.	5.15	387.58
W	5.0	387.7

1450

W	4.9	387.8
cb.	5.19	387.54
Cent.	5.4	387.3
1/4	5.0	387.7
L	4.8	387.9
1/4	5.0	387.7
Cent.	5.2	387.5
cb.	4.69	388.04
E	4.4	388.3

392.73

8

1475

E L.	4.8	387.9
E cb.	4.70	388.03
"Cent.	5.2	387.5
1/4	5.0	387.7
L	4.9	387.8
1/4	5.0	387.7
W Cent.	5.5	387.2
"Top cb.	5.10	387.63
W	4.7	388.0

1483 - beginning Conc. Walk on E 5' wide

E cb.	4.68	388.05
W edge <sup>7.35</sup>	4.55	388.18
E "	4.47	388.26

2400

W	5.0	387.7
cb.	5.19	387.54
Cent.	5.4	387.3
1/4	5.0	387.7
L	4.9	387.8
1/4	5.1	387.6
E Cent.	5.2	387.5
E cb.	4.68	388.05
W edge Walk.	4.62	388.11
E " "	4.52	388.21
E	4.4	388.3

392.73

## Attadena X Sections

2+14 = L 8' Drive on W Solid Drive

W cb	5.50	387.23
+3.6 = Bk. on Drive	5.05	387.68
+8.6 = W edge Walk in Drive	5.09	387.70
2+19.5 = L 8' Drive on E	5.30	387.43
2+25		
E	4.7	388.0
E Edge Walk	4.67	388.06
W " "	4.77	387.96
E Curb	4.88	387.85
Gutter	5.4	387.3
1/4	5.1	387.6
E	4.9	387.8
1/4	5.1	387.6
Gutter	5.4	387.3
W Curb	5.18	387.55
W	4.8	387.9
2+50		
W	4.9	387.8
W Curb	5.27	387.46
Gutter	5.6	387.1
1/4	5.2	387.5
E	5.1	387.6
1/4	5.2	387.5
Gutter	5.4	387.3
E Curb	5.05	387.68

392.73

2+50 cont.

9

W Edge Walk	4.89	387.84
E " "	4.79	387.94
E	4.8	387.9
2+62.5 = 9' Driveway on East. divided		
E Curb in Drive	5.52	387.21
2+75		
E	4.9	387.8
E Edge Walk	4.92	387.81
W " "	4.98	387.75
E cb.	5.05	387.68
Gut.	5.7	387.0
1/4	5.4	387.3
E	5.2	387.5
1/4	5.4	387.3
W Curb	5.8	386.9
W cb.	5.19	387.54
W	5.0	387.7
2+98 = L Drive on W		
Gut. in Drive	5.87	386.86
+3.6	5.15	387.58
+8.6 in Drive	5.11	387.62
3+00		
W on Drive	5.15	387.58
Gut.	5.87	386.86
1/4	5.5	387.2

392.73

Altodana X Section

	L	5.3	387.4
	E 1/4	5.5	387.2
	E Gut. in Drive	5.68	387.05
	W edge Walk	5.11	387.62
	E " "	5.03	387.70
	E in Drive	5.06	387.67
	3+03 = E Conc. Drive on E 8' Wide		
EA	3+07 = End Conc. Walk on E.		
W	E edge Walk	5.10	387.63
E	W " "	5.18	387.55
G	3+25		
	E	5.3	387.4
	cb	5.55	387.18
	Gut.	6.1	386.6
G	1/4	5.9	386.8
W	L	5.7	387.0
	1/4	5.8	386.9
	Gut.	6.1	386.6
	cb	5.61	387.12
W	785' = Eastern 3' Walk = (3+26)	5.36	387.37
G	W on "	5.4	387.3
	3+50		
	W	5.9	386.8
	cb	5.98	386.75
G	Gut.	6.6	386.1
E	1/4	6.3	386.4

392.73

10

	L	6.1	386.6
	1/4	6.3	386.4
	Gut. in Drive	6.46	386.27
	73.6 = Brk in Drive	5.88	386.85
	E in "	5.88	386.85
	3+47 = E Divided Drive on E		5.88
	3+75		
	E	6.1	386.6
	cb	6.34	386.39
	Gut.	6.9	385.8
	1/4	6.6	386.1
	L	6.4	386.3
	1/4	6.7	386.0
	Gut.	6.8	385.9
	Wcb	6.38	386.35
	W	6.2	386.5
	3+96 = E Divided Drive on W		
	Gut. in Drive	7.19	385.54
	73.6 = Brk "	6.67	386.06
	3+99 = E Divided Drive on East.		
	W in Drive	6.65	386.08
	73.4	6.67	386.06
	78.4	6.75	385.98
	Gut	7.25	385.48
	1/4	7.0	385.7
	L	6.8	385.9

392.73

Altadena X-Sections

E 1/4	7.0	385.7
Gut. in Drive	7.27	385.46
736 " "	6.61	386.12
E " "	6.52	386.21
4108 on E cb.	6.98	385.75
709 " " "	7.09	385.64
715 " " "	7.08	385.65
4113 to 4130 on W Top cb. Garage		
4125		
E	6.9	385.8
cb	7.14	385.59
Gut.	7.8	384.9
1/4	7.4	385.3
1/4	7.1	385.6
1/4	7.4	385.3
Gut.	7.9	384.8
cb.	7.29	385.44
W	7.3	385.4
4+49 = 1/2 7' Divided Drive on W		
W. Gut.	8.49	384.24
+3.6 Bk in Drive	7.73	385.00
+8.6 " " "	7.68	385.05
4150		
W	7.7	385.0
+3.4	7.68	385.05
+8.4	7.73	385.00
Gut.	8.50	384.23

392.73

W 1/4	7.9	384.8	11
1/4	7.6	385.1	
1/4	7.8	384.9	
Gut. in Drive	8.0	384.7	Not on Core.
E	7.5	385.2	
4175			
E	8.6	384.1	
E cb.	8.65	384.08	
Gut.	9.6	383.1	
1/4	8.9	383.8	
1/4	8.6	384.1	
1/4	8.8	383.9	
Gut.	9.1	383.6	
cb.	8.74	383.99	
W TP	8.4	384.3	1.88 384.09 10.52 382.21
4+99 = 1/2 Core Drive on W 7' wide			
W on Gut. in Drive	2.22	381.87	
+4.5 Bk " " "	1.35	382.74	
+9.5 " " "	1.22	382.87	
5100			
W	1.2	382.9	
Gut.	2.26	381.83	
1/4	1.7	382.4	
1/4	1.5	382.6	
1/4	1.8	382.3	
Gut.	2.4	381.7	
cb.	1.42	382.67	
E	1.2	382.9	

384.09

Altadena X-Sections

5125

E	2.8	381.3
cb.	3.17	380.92
cut	3.7	380.4
1/4 <sup>9</sup>	3.8	380.3
2 <sup>9</sup>	3.4	380.7
1/4 <sup>4</sup>	3.5	380.6
cut	4.1	380.0
6 <sup>9</sup>	3.62	380.47
+10	3.2	380.9
W	2.5	381.6

5119.5 = N edge 3' walk on W

on walk at cb.

	3.05	381.04
cb + 9	2.89	381.20
W	2.17	381.92

5+22.5 = S edge walk on W

W	2.48	381.61
+3	3.10	380.99
cb.	3.32	380.77
5+35 = Low Point cb on W	4.77	379.32

5+45.3 = N edge Solid Conc. Drive on E

cut.	5.55	378.54
+3.5 = Bk. in Drive	4.92	379.17
E	4.25	379.34

5+52.7 = S. edge Above Drive

E	5.02	379.07
+8.5 = Bk. in Drive	5.26	378.83
cut	6.24	377.85

384.09

5149.8 = N edge Conc. Drive on W

12

cut in Drive	5.87	378.22
+3.5 = Bk. in Drive	5.27	378.82
+11.7 = Bk. " "	5.18	378.91
5+56.8 = S. edge Above Drive		
W + 0.3'	5.52	378.57
+8.2	5.70	378.39
cut. in Drive	6.39	377.70
5+50		
+0.3' on Drive	5.18	378.91
+8.5 " "	5.27	378.82
cut " "	5.91	378.18
1/4	5.8	378.3
2	5.8	378.3
1/8	6.2	377.9
cut. in Drive	6.0	378.1
5+54 = Bk. in cb on East	5.78	378.31
+6.2 " " " "	7.08	377.01
5+59 " " " " West	6.09	378.00
+7.4 " " " " "	7.34	376.75
+8.0 " " " " "	8.47	375.62
+9.0 " " " " "	9.38	374.71
6+0.6 " " " " "	9.80	374.29

5+75

W	6.2	387.9
+4	7.2	386.9
cb.	7.52	376.57
cut.	8.7	375.4

38409 Altadena X-Sections

W <sup>1/2</sup>	8.3	375.8
L	8.4	375.7
1/4	8.6	375.5
Gut.	9.2	374.9
6	7.94	376.15
E	7.2	376.9
6+00		
E	9.5	374.6
cb	9.89	374.20
Gut.	11.3	372.8
1/4	10.7	373.4
L	10.4	373.7
1/4	10.5	373.6
Gut.	10.7	373.4
cb	9.61	374.48
+9'	9.40	374.7
W	8.5	373.6
6+12.5 = N edge Drive Apron on W		
Gut.	10.78	373.31
+3.5	10.16	373.93
6+28. = S Edge Above Drive		
Gut.	11.97	372.12
+3.5	11.41	372.68
6+25		
W	10.8	373.3
+8.5 on Conc. Apron	11.17	372.92
Gut.	11.7	372.32

38409

1/4	12.3	371.8 <b>13</b>		
L	12.1	372.0		
E 1/4	12.4	371.7		
Gut.	12.9	371.2		
E cb	11.99	372.10		
+10	11.9	372.2		
E	10.9	373.2		
TP	5.13	376.42		
5+87.5 = 8k. in cb on E	1.01	375.41		
6+50				
E	6.2	370.2		
cb	6.38	370.04		
Gut.	7.2	369.2		
1/4	6.6	369.8		
L	6.2	370.2		
1/4	6.0	370.4		
Gut.	6.2	370.2		
cb	5.31	371.11		
+10	5.0	371.4		
W	3.8	372.6		
6+57.96 = N.L. Trojan Ave				
W	5.8	370.6		
cb	5.89	370.53		
Gut.	7.4	369.0		
+3	Had 1' South on Top Pipe	7.75	368.67	Temp. Steel Pipe
"	on Hd Wall = Temp.	7.0	369.4	
+5		6.6	369.8	

376.42

Altadena X Sections

1 1/4	6.7	369.7
2	6.9	369.5
1/4	7.5	368.9
cut.	7.9	368.5
cb.	7.09	369.33
E	8.8	367.6
8' South on Top 24" Pipe	9.61	366.81
" Flow	11.61	364.81
N cb. Trojan		
E	11.6	364.8
cb.	9.9	366.5
1/4	8.7	367.7
2	8.0	368.4
1/4	7.8	368.6
cb.	7.4	369.0
W	7.2	369.2
N 1/4 Trojan		
W	6.9	369.5
cb.	7.7	368.7
1/4	8.6	367.8
2	9.1	367.3
1/4	9.5	366.9
cb.	10.3	366.1
E	11.3	365.1
2		
E	11.5	364.9

376.42

cb	10.8	365.6 <sup>14</sup>
1/4	10.3	366.1
2	10.1	366.3
1/4	9.5	366.9
cb.	8.5	367.9
W	7.5	368.9
S 1/4 Trojan		
W	7.6	368.8
cb.	9.9	366.5
1/4	10.8	365.6
2	11.4	365.0
1/4	11.4	365.0
+6	11.5	364.9
2	10.9	365.5
E	11.5	364.9
S cb. Trojan		
E	13.6	362.8
cb.	12.3	364.1
1/4	12.5	363.9
2	12.6	363.8
1/4	12.4	364.0
cb.	12.1	364.3
+2	11.2	365.2
+8	9.9	366.5
1/4	8.3	368.1



37642

SL. Trojan

W	10.9	365.5
+9	12.8	363.6
cb	14.0	362.4
+2	14.3	362.1
1/10	14.4	362.0
E	14.3	362.1
1/11	14.2	362.2
cb	14.3	362.1
+2	14.3	362.1
F.L.	16.9	359.5

Ch. E cb NE Trojan

7.09

369.33

369.30

0.03

FB. 1286

P-32

Trojans Alhadem End  
on Survey Disk NW cb  
Private

5.88

370.54

370.52 = 16. FB. 1286

0.02 of  
End of 16.

32

Additional Grades on WINONA AVE.  
for Surfacing  
from Sk. Trojan for 300' South

367.84	367.70	2.100
368.15	367.85	1.190
368.68	368.12	1.170
368.90	368.23	1.160
369.05	368.26	1.150
369.09	368.24	1.140
369.00	368.15	1.130
1.15 - 368.79	367.90	1.110
368.48	367.71	1.100
368.22	367.43	0.790
	365.52	0.730
	365.20	0.620
	364.85	0.410
	364.88	0.100

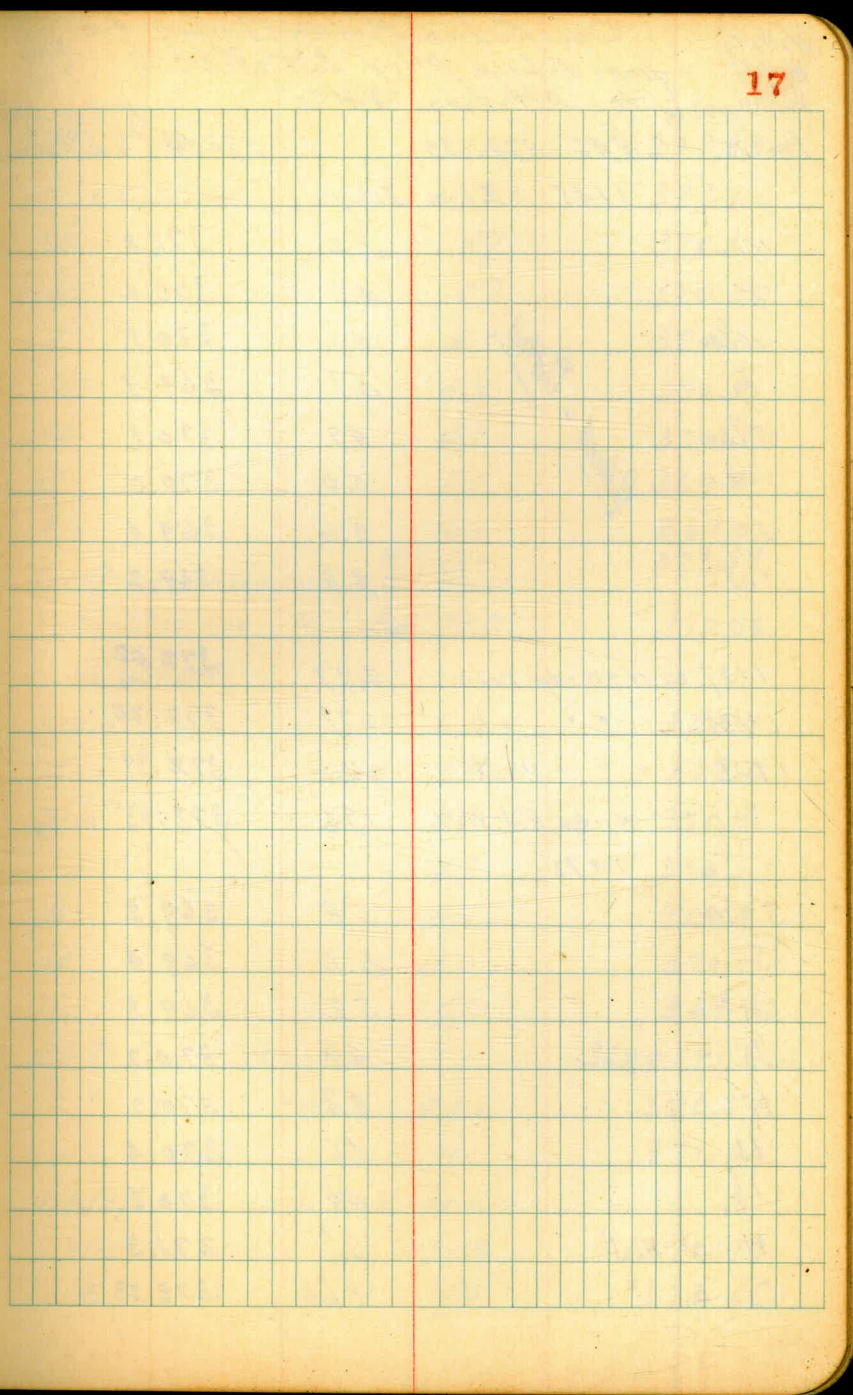
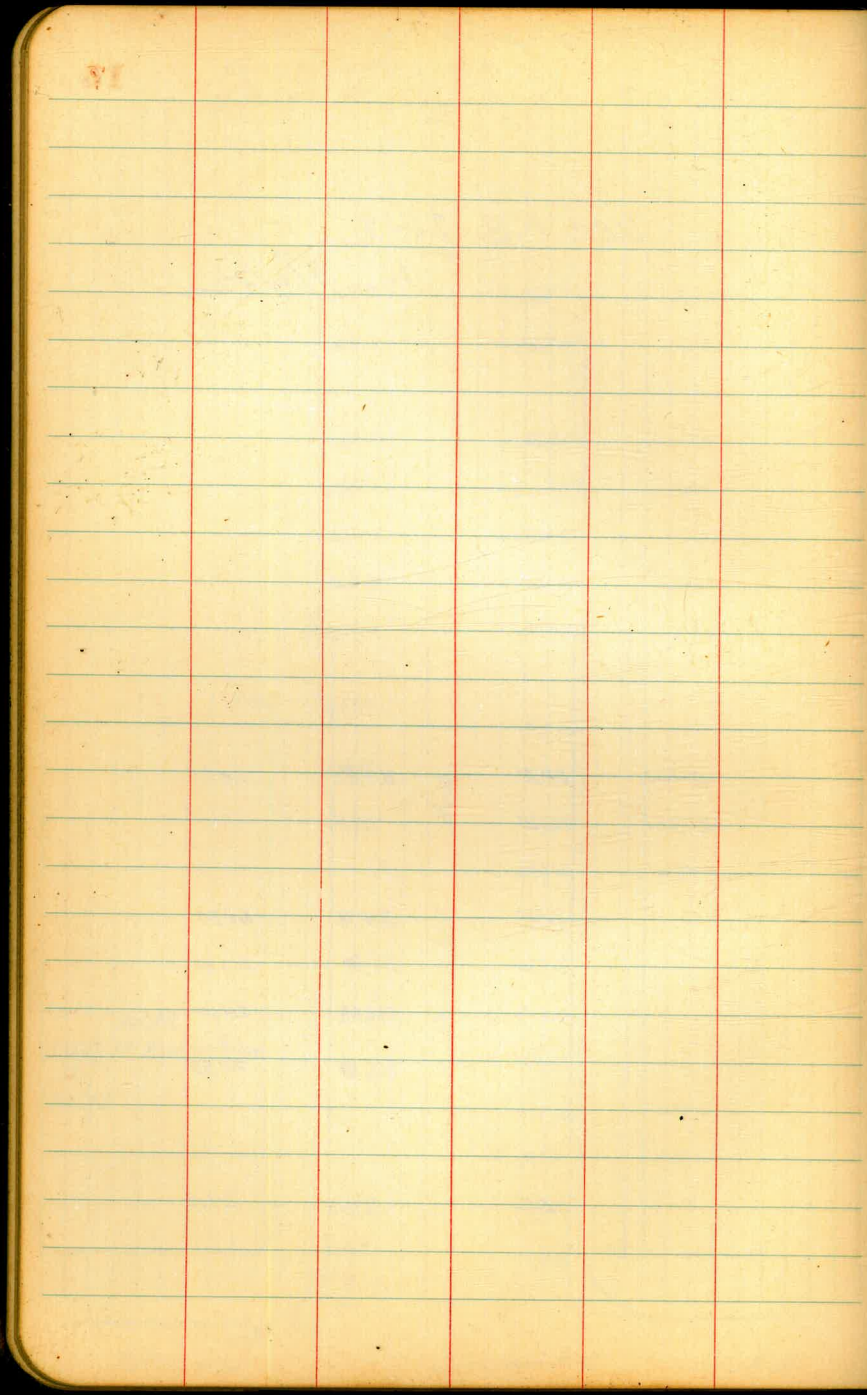
1118P  
362.89 871 Winona Trojan  
805  
370.94X

WINONA AVE



SEC F.B. 2218  
11 8/9/52

3.100	361.55	361.82	2.100
2.190	362.85		
1.80	363.92		
	364.84	364.98	2.170
	365.53	365.80	2.160
	366.08	366.38	2.150
	366.50	366.85	2.139
	367.50	367.50	2.110



Walker  
Hogart  
Kurdling  
Page 15

Cross Section Portion - Trojan Ave  
from Eskimo Alley East of 50th  
to Alameda Ave

12'cb  
9'1/4

B.M. on Disk  
NW. corner  
of Alameda

270°  
374.99

1+45 = Eskimo Alley		370.54
N.L.	3.2	371.8
cb.	4.6	370.4
1/4	4.9	370.1
cb.	5.1	369.9
5/4	4.9	370.1
cb.	5.0	370.0
5	5.6	369.4
1/10	5.8	369.2
1+47 on N = W edge Drive	2.97	372.02
1+553 " " " " " "	2.79	372.20
1+58 " " " " " Walk	2.60	372.39
" " " " " W edge Ret. Wall	1.96	373.03 on Top
1+75		
5-10	5.8	369.2
5	5.6	369.4
cb.	5.2	369.8
1/4	4.8	370.2
5	4.8	370.2
1/4	4.6	370.4
cb.	4.4	370.6
N at wall	3.5	371.5
on "	1.66	373.33

Revised - Noted

N on wall	1.16	373.83
" " Ground	3.98	371.1
cb.	4.9	370.1
1/4	4.7	370.3
5	4.9	370.1
1/4	4.9	370.1
cb.	4.9	370.1
5	5.2	369.8
1/10	6.0	369.0
2+09 on N = Step down in Ret. wall	W = 11.0	373.89
" " " " East	29.3	372.06
2+25		
-10	6.0	369.0
5	5.4	369.6
cb.	4.3	370.2
1/4	4.7	370.1
5	5.1	369.9
1/4	5.0	370.0
cb.	5.3	369.7
12.8 = Sand Walk on Ground	5.1	369.9 3.5' wide
" " " " " Walk	4.40	370.59
N.L. on walk	3.90	371.09
2+10.5 = Step up in wall on N		
West. on wall	3.02	371.97
East " "	1.34	373.65

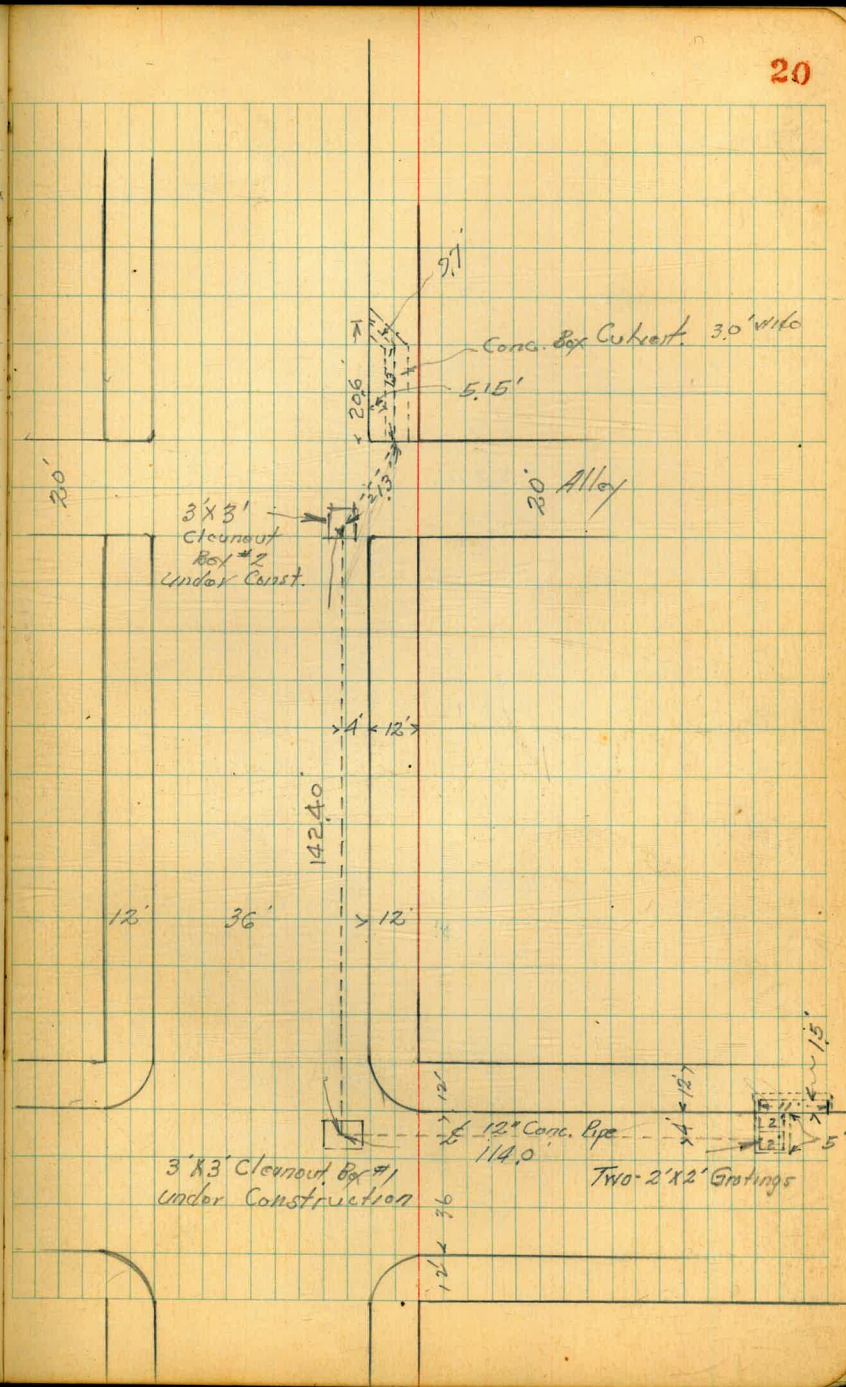
2+50

N	44	370.6
cb.	55	369.5
1/4	51	369.1
2	53	369.7
5 1/4	51	369.9
cb.	50	370.0
SL.	66	368.4
<u>110</u>	80	367.0
2+63 on N <sup>w</sup> Side in Wall	135	373.64
2+70 = " " End Wall Top	309	371.90
" " " Ground	45	370.5

Walker  
Hazard  
Hardin  
9-6-44

Location And Elevations  
on Culvert And Inlets  
on WINONA & TROJAN AVE.

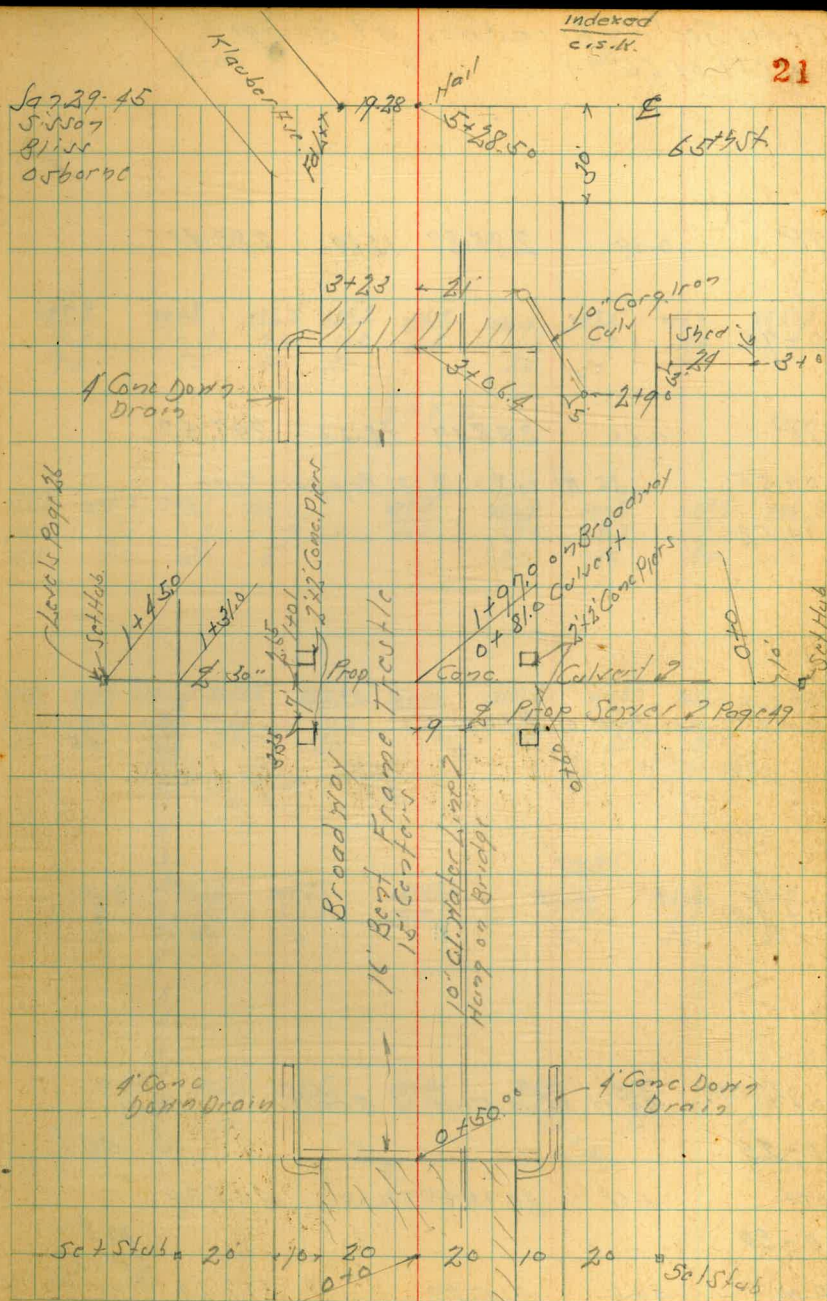
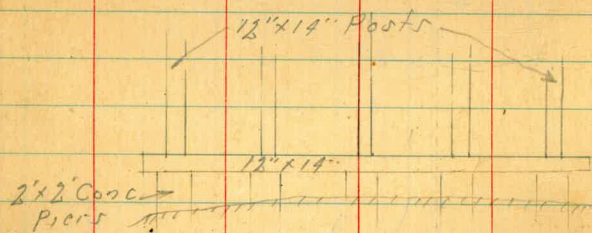
BM					Elev. B.M.
Page 1	4.91	357.80	✓	362.89	Top of Trojan & Winona
119.5' Box #1	2.11	inlet on cb.	6.74	361.06	
"	"	on Flow inlet	8.70	359.10	
114' N of Box #1	"	N end 12" Pipe	9.03	358.77	on Flow
"	"	" on Top Pipe	7.87	359.93	
N inside edge Box #1	"	"	8.90	358.90	Top Pipe
"	"	"	10.10	357.70	on Flow
E. Box #2	"	on Pipe	10.35	357.95	
"	"	" Flow	11.58	356.22	
W. Alley	"	beginning Box Culvert	12.01	355.79	on Flow
"	"	Top cb	10.33	357.47	
"	"	inside	10.33	356.87	
outlet Box	"	on cb.	11.07	356.73	
"	"	" Flow	12.08	355.72	
"	"	" inside Top Box	11.38	356.92	



Proposed Fill to Replace Frame Trestle  
Broadway West of 65th St.

For Slope Stakes & Culvert 9, 218

- Frame Trestle
- 16 Beams 15' Centers
- Caps 12" x 14"
- Posts 12" x 14"
- Braces 4" x 10"
- 16 Stringers 8" x 15"
- 2 " 4" x 15"
- 6 " 3" x 15"
- Abutment 12" x 25" Conc Cap on 5-15" x 15" Piers



Cross Section Broadway at Bridge  
West of 65th St.

TP 0.39 285.87 12.69 285.48

0+75

TP 0.60 298.17 12.23 297.57

0+55 25 ft of 2" = 2 1/2" Pepper Tree

0+52

0+50 = W. End of Bridge

15.0  
65

0+25

0+0 = 50' W of W End of Bridge

0-25

08'

TP 5.61 309.90 11.00 304.29

0-50

10'

B.M. 3.05 315.29 312.24  
B.P. 52.  
Broadway 12  
ft. Edge Per.  
on 65th St.  
1660-45

Lt=N

Rt=S

22

288.2	282.8	288.2	286.2	286.4	286.4	288.5	286.2	285.9
9.3	10.8	9.0	11.5	11.8	11.8	9.9	12.4	12.3
75	50	30	20	20	20	30	50	75

298.17

293.9	296.3	302.1	298.0	298.8	292.8	304.2	297.6	296.4
16.0	12.6	7.8	11.9	11.1	12.0	8.2	12.3	10.5
65	50	30	20	20	20	30	50	50

296.9	3033	303.53	304.68	304.32	304.44	304.18	304.67	303.63	302.9	297.9
12.0	6.6	6.27	5.22	5.58	5.46	5.72	5.23	6.27	7.0	12.0
60	30	26.5	26.5	20-HW Par	0.1 Par	20.5 Par	20.5 Par	20.5 Par	30	50

Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2  
Top Spr. 1/2

301.8	305.8	304.36	304.83	304.47	305.3	301.8
8.1	4.1	5.64	5.07	7.18	4.6	8.1
50	30	20	20	20	30	50

304.22	307.3	305.5	306.1	305.61	306.6	304.02
5.11	7.6	4.40	2.89	4.39	3.3	5.89
300.5 Par	30	20-HW Par	20-HW Par	20.5 Par	30	50

309.90



L+

S

R+

2725

+13

56.6 Rt of S = 11/1 Power Pole #76581

270

1795

1750

1725

170

28587

2796  
63  
852771  
87  
502763  
96  
302752  
1022747  
112  
302721  
124  
502719  
130  
1002787  
72  
852759  
100  
502749  
110  
302737  
1222729  
130  
302717  
142  
402687  
152  
502654  
165  
1002702  
57  
852728  
81  
502761  
98  
302743  
116  
252743  
1162735  
124  
302728  
131  
502718  
141  
902762  
67  
802725  
74  
502765  
94  
302759  
1002749  
110  
302739  
120  
502722  
132  
852800  
59  
802780  
79  
502786  
73  
302773  
862769  
90  
302768  
91  
502773  
80  
802825  
47  
852822  
37  
302817  
42  
302807  
572808  
51  
302814  
74  
502819  
70  
75

28587

3715

3706.4 = East End Bridge

62 12.8 4.5  
50 94 56

3705

308.35 A.F.B

296.17 A.F.B

TP 12.18 305.35 0.92 293.17

370

TP 12.45 297.09 1.23 284.64

2775

2760

285.87

67

7

RT

24

303.6 18 50	304.2 3.7 30	304.76 4.15 20-HY.Pov	304.26 7.09	304.02 4.83 20-HY.Pov	304.6 5.8 30	291.2 16.5 50	290.8 17.5 80
-------------------	--------------------	-----------------------------	----------------	-----------------------------	--------------------	---------------------	---------------------

303.7 5.2 30	303.5 4.9 28.5	304.68 3.67 21.5	304.34 4.01 20-HY.Pov	304.25 4.07 0.0	304.12 4.23 20-HY.Pov	302.9 5.5 26.5	34.50 3.85 26.5	203.5 4.9 30	291.4 17.0 50	289.9 19.0 80
--------------------	----------------------	------------------------	-----------------------------	-----------------------	-----------------------------	----------------------	-----------------------	--------------------	---------------------	---------------------

297.1 10.2 80	299.2 8.5 55	295.0 13.2 50	295.4 13.0 45	304.6 5.8 40	306 6.8 30	301.1 7.8 28.5	297.9 70.5 20	299.3 9.1 60	297.2 10.7 20	292.2 8.7 26	300.9 7.5 50	291.3 17.15 50
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308.35  
308.35 all

289.3  
19.1  
80

294.6 2.5 80	296.4 0.7 54	291.6 5.5 30	297.1 0.0 45	298.3 7.1 30	294.7 2.1 20	295.2 1.9 60	294.5 2.6 30	296.6 0.5 30	289.6 7.5 50	287.6 9.5 75
--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------

297.09

286.7 4.1 75	283.1 2.8 30	285.0 0.9 30	282.4 2.5	282.7 2.2 30	281.2 4.5 50	281.4 4.5 85
--------------------	--------------------	--------------------	--------------	--------------------	--------------------	--------------------

281.2 4.7 85	280.1 5.8 50	278.3 6.6 30	278.9 6.0	80.1 284.1 5.8 30	278.1 7.8 50	277.3 8.6 85
--------------------	--------------------	--------------------	--------------	----------------------------	--------------------	--------------------

285.87

5400 126  
 475 115  
 452 1/2 joint  
 450 0 1/4 310°  
 425 20 08 3/4  
 4- 35 06 1/2  
 475 52 05 3/4  
 450 59  
 425 60 310 29 304 29

BM 3.53 312.24  
B.P. 5/4  
 8:00 d. riv  
 1 F. of W. Edg  
 of P.M. 20 854  
 312.24

TP 10.69 315.77 327 305.08

3450

3425

305.35 308.35 H.F.B

St. Z Rt 25

304.8	305.2	304.32	304.47	304.17	304.5	298.3	292.2	292.1
16	3.2	4.03	3.88	4.18	3.9	10.1	1.12	1.10
30	30	20		20	30	4.3	50	60

304.1	304.5	304.25	304.29	303.80	304.4	293.1	293.1
4.3	3.9	4.10	4.06	4.45	4.0	15.2	15.3
50	35	20		20	30	50	60

20: slip on

305.35 308.35 H.F.B

Proposed 30" Conc. Pipe Culvert  
 Broadway West of 65th St.  
 Sketch Page 21

275.89 ~~8th~~ Back From Page 49

0-25		10.6	65.3	
0-10		9.78	66.1	on Hub
0+0		9.5	66.4	
+30		7.4	68.5	
+43		5.7	72.2	
+60	265 ft of 2' x 1' 1/2" x 2" Conc Pier	1.72	74.17	Top Pier
TP	12.18	285.94	2.13	273.76
+70		12.2	73.7	
+01	265 ft of 2' x 1' 1/2" x 2" Conc Pier	11.76	74.18	Top pier
78		11.7	74.2	
+10		10.4	75.5	
+31		7.2	76.7	
+45		9.55	76.39	on Hub
+60		7.9	78.0	

Sewer Notes Page 49

Sept 11. 15  
 515502  
 8155  
 8099

26

Topography Pueblo Lot 1785 East 1/2

88

March 9-15  
Sisson  
Blair  
Osborne  
Bopp

1784

1785

1791

1790

1181.51  
Sch. Hus.

1107.61  
Sch. Hus.

57.9205  
Pa. Bn.

1482.40  
Sch. Hus.

940  
Ed. Mon.

42° 05' 43"  
35° 01'

57° 25' 30"  
50° 36'

60° 09' 15"  
8° 32'

89° 56' 20"  
Rec.

Malden St.

Loring St.

P.L. 1785

1620.23  
H 27° 41' 10"E

787.83  
H 56° 16' 20"E

1008.28  
H 45° 49' 35"E

1409.50  
H 67° 14' 20"E

1418.95  
Loring St.

1443.73  
H 48° 05' 40"E

1510.10  
H 49° 20' 10"E

84.49  
H 49° 40' 40"E

1183.03  
H 33° 50' 50"E

1314.75  
H 79° 06' 30"E

579.47  
H 57° 49' 50"E

555.25  
H 75° 36' 40"E

156.20  
H 15° 15' 15"E

2633.69

Ed. Mon.

1789

27

1786

1789



Control Levels  
East 1/2 Pueblo Lot 1785

B.M.	11.58	276.84		265.28	105478+5788 N.W. Cor. Lower Conc. Stop 1324-50
1+82.40 W.L.			4.49	272.35	02 Hub
TP	12.28	288.03	1.19	275.65	
TP	12.25	297.94	2.34	285.69	
#3			7.60	290.84	02 Hub
TP	11.54	309.11	0.37	297.57	
#2			4.38	304.73	02 Hub
TP	0.75	297.14	12.72	296.39	
#1			7.17	289.97	

B.M.	12.09	284.44		272.35	02 Hub 1+82.40 W.L.
	11.92	296.02	0.34	284.10	
5+82.05 W.L.			5.15	290.87	02 P17 5+82.05
TP	13.12	308.21	0.93	295.09	
11+81.31 W.L. P.O.T.			10.25	297.96	02 Hub
TP	12.43	320.05	0.59	309.62	
TP	12.51	332.21	0.35	319.70	
#5			4.27	327.94	
TP	10.41	342.06	0.56	331.65	
19+32.40 W.L.			9.15	332.91	
TP	12.61	354.26	0.41	341.65	
TP	12.93	366.47	0.70	353.56	
TP	13.03	379.07	0.45	366.04	

March 14-45  
Susan  
Bliss T  
05 barnc  
Begg Rod

29

				379.07	
26+32.40 H.W. Cor. City P.L.	32.57	375.50			02 M07 11th 3441 Rec Survey 375.51 1324-57
TP	12.08	390.52	0.63	378.44	
TP	12.05	401.52	1.05	389.47	
TP	13.09	414.04	0.57	400.95	
S.E. Cor P.L. 1780			6.80	407.24	02 M07 over LIT
#7			11.48	402.56	02 Hub
TP	12.97	425.34	1.67	412.37	
	10.10	434.21	1.23	424.11	
#8			5.08	429.13	02 Hub
#4				327.0	
#6				367.0	

Walker - E levels - Proposed Pedestrian  
 Hazard Overpass on Titus and Andrews  
 Hardin - See Note p. 32 -  
 4-13-45 - Location P-31 -

9149

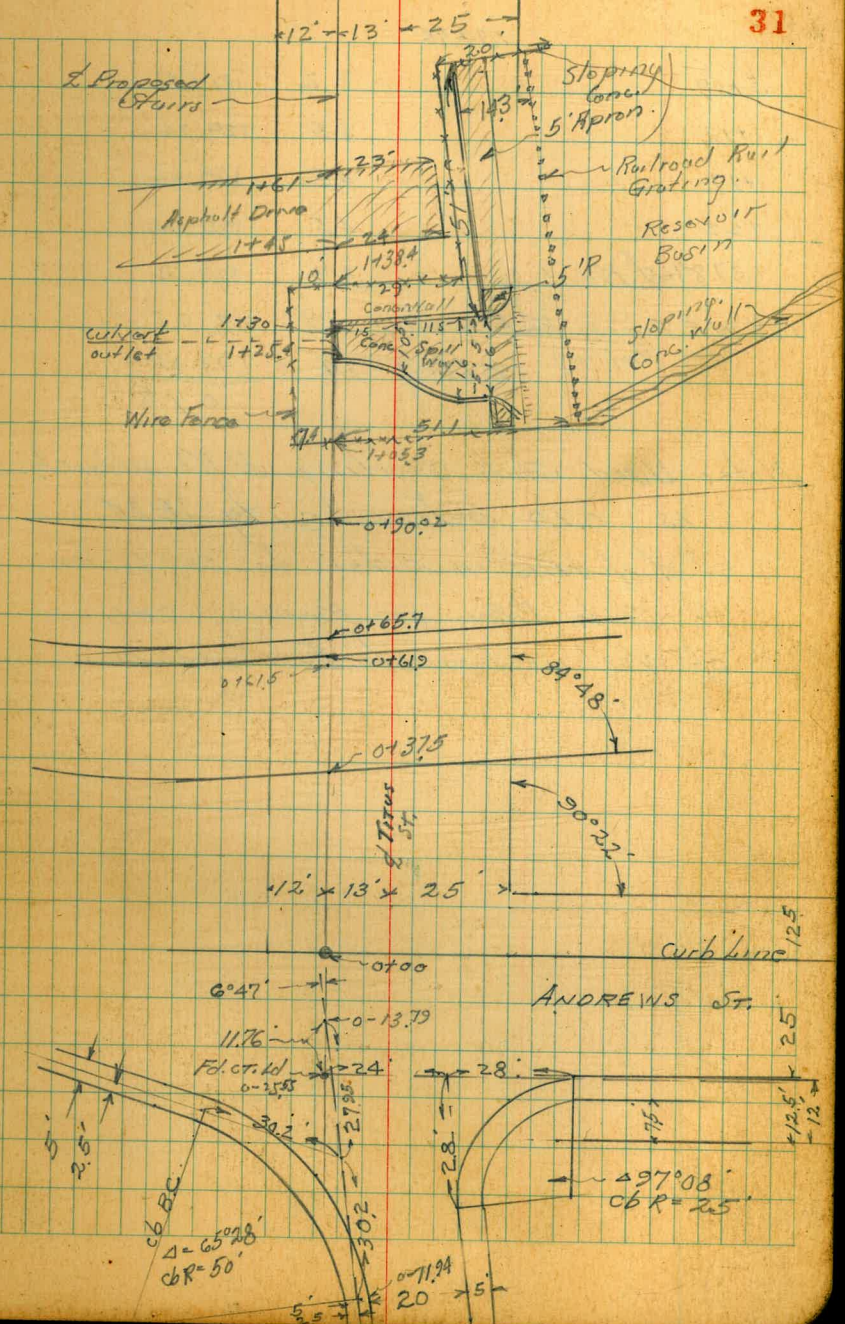
30

	7.58	85.37	77.79	State B.M. on Titus & Andrews
T.P.	12.57	97.46	0.98	84.89
T.P.	6.18	102.98	0.66	96.80
0-71.94	cb Ec. $\frac{1}{2}$ Walk		2.30	100.68
"	" " on cb.		2.36	100.62
0-56.94	Int cb on cb.		3.75	99.19
"	on Gutf.		4.62	98.36
0-13.79	$\Delta 6^{\circ} 47'$ Rt		7.02	
0-25.55	$\Delta 6^{\circ} 47'$ Rt. on ST. W. Fly H cb Andrews		6.18	
= 0+00	on Gutf *		8.01	94.97
"	on cb.		7.23	95.75
0+13			7.5	95.48
+17			8.5	94.48
(0-25.55)	W of $\frac{1}{2}$ on ST. W.		6.18	96.80
0-13.79	$\Delta 6^{\circ} 47'$ Rt.		7.02	95.96
T.P.	1.33	21.49	12.82	90.16
0+25	Toe Bank Asphalt Paved Shoulder		4.53	86.96
+26.8	$\frac{1}{2}$ Gutter - Asphalt		3.50	85.99
+30			4.86	86.63
0+37.5	on Conc. Paving		4.70	86.79
"	13' Rt " "		4.13	87.36 $\frac{1}{2}$ Titus
0+61.5	on " "		4.56	86.92
(0+61.5)	13' Rt. Gutf.		3.87	87.62
0+61.9	13' Rt on Park cb.		3.37	88.12
0+61.9			4.04	87.45

0+65.75	cb	4.07	87.42
166.15	Par	4.56	86.93
13' Rt.	on cb.	3.93	88.06
(0+66.15)	13' Rt. on Par.	3.91	87.58
0+90.02	N edge Conc Pav.	4.23	86.56
13' Rt.	on " "	4.22	87.27
0+97.6	Asphalt Gutf.	5.33	86.16
13' Rt.	" "	4.64	86.85
0+99	Top " Shoulder.	4.46	87.03
13' Rt.	" "	3.76	87.73
1+01.8	N edge "	4.52	86.97
13' Rt.	" " "	3.82	87.67
1+05.5		5.8	85.69
1+16.5		7.5	83.99
1+25.4	on Hd. Wall	10.61	80.88
"	" " "Wing "	12.06	79.43
"	" " "Floor "	14.61	76.88
1+30	on Hd. Wall	10.67	80.82
"	" " "Wing "	12.11	79.38
22' Rt	on " "	6.40	85.09
"	" " "Floor "	9.2	82.29
26.5	Rt. on Wing Wall	5.68	85.81
"	" " "Floor "	8.60	82.89
31.5	" " "Wing "	5.45	86.04
"	" " "Floor "	8.46	83.03
36.5	Rt.	8.49	83.00



	91.49			
1+38.4 of Fence	7.2		84.29	
1+45 on Asphalt Drive	7.07		84.42	
1+61 " "	7.20		84.29	
1+85 Fill Ground	7.1		84.39	
7' Lt. Nat. "	9.8		81.69	
1+95 Fill "	5.9		85.59	
6' Lt. Nat "	9.1		82.39	
T.P.	10.66	102.02	0.13	91.36
2+21 Nat. Ground	12.40		89.62	
T.P.	12.73	119.54	0.81	101.21
(2+39) 2.5' Lt. East edge Elec. Pole Rd = 13.9				
2+54	5.7		108.24	
+61	1.5		112.04	
+67	1.9		112.07	
T.P.	9.73	122.57	11.0	112.84
+68	8.2		114.37	
2+83 = Top Cobble Terrace	5.0		117.57	
T.P.	12.57	134.76	0.38	122.19
2+86	13.7		121.06	
+91 = Top Cobble Wall	13.4		121.36	
+92 Top " "	11.7		123.06	
+95 = Top " "	11.6		123.16	
+96 = Top " "	10.0		124.76	
3+05	8.0		126.76	



134.76

3+09	7.2	127.56
+12	5.5	129.26
+17	4.8	129.96
+22	4.5	130.26
+3789 = Keating.	3.9	130.86
chk N.E. Top cb Keating & Titus	1.83	132.93
(See Profile) FB 1307-14		<u>133.03</u>
		0.10

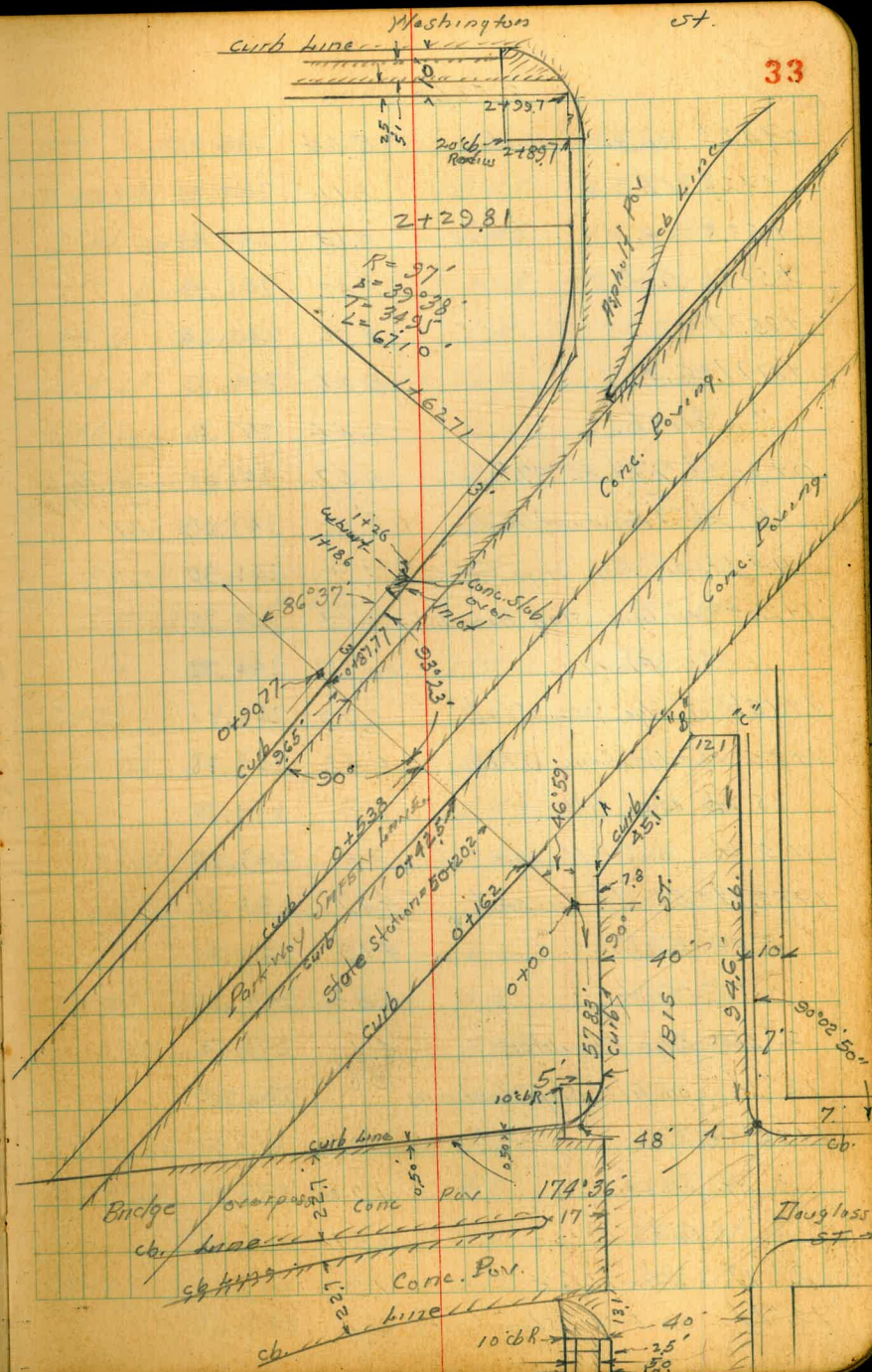
Note: Used state starting BM which  
is 0.10 below City BM.

I did this in order to conform  
to state Elev. on Pottery etc.  
of Washington St Extension

Walker  
Hazard  
Harden  
4-18-45

LEVELS - PROPOSED PEDESTRIAN  
OVERPASS  
WASHINGTON AND 1815 STS.

				N.E.P.P. Goldfinch & Washington
S.E. Cor. Hurika Washington	1.20	268.22		267.02
Chk. State B.M.	6.24			261.98
	6.24	268.06	* Corrected to State	
TR	2.24	261.94	8.36	259.70
TR	1.31	262.86	0.39	261.55
0-5783			1.27	261.59
0-564 Gut. of cb Return			1.27	261.59
" on cb "			0.65	262.22
0-377			2.5	260.36
5' Rt. on cb = Bk in cb.			2.99	259.87
" " Gut Black Pav.			3.70	259.16
on cb at "A"			6.57	258.29
" Gut. " "			7.22	255.64
" cb. at "B"			7.83	255.03
" Gut " "			8.50	254.36
" cb at "C"			7.79	255.07
" Gut " "			8.70	254.16
0+00			5.44	257.42
0+01.2 int. Wire Fence			5.7	257.16
0+05 Top Cut Bank			6.4	256.46
TR	3.27	255.60	11.23	251.63
0+12			8.0	247.60
+16.2 on cb.			8.36	247.24
+16.6 = Gut. Conc. Pav			8.99	246.61



255.60

0+42.1	Gut. Conc. Pav	8.64	246.96
+42.5	cb.	8.11	247.49
+53.8	cb.	8.13	247.47
+54.2	Gut.	8.62	246.98
+85.77		8.96	246.64
+87.77	=Gut.	9.07	246.53
"	on cb.	8.44	247.16 (in Fill)
0+90.77	= Δ Rt 86°37'	8.57	247.03 on stub.
1.5' Lt.	of Forward Turn	8.6	247.00 Shoulder of Fill
11.5' Lt.	on Fill (Slope Continues)	14.3	241.30
1+20.4	on Conc. Slab over Inlet	6.67	248.93
"	Florat	10.67	244.93
1+18.6	S edge Conc. Slab	6.79	248.81
1+26	N edge Conc. Slab	6.42	249.18
1.5' Lt.	edge Fill	6.3	249.30
11.5' Lt.	on Fill (Slope Continues)	12.4	243.20
1+62.71	B.C. Lt. on stub	4.09	251.51
3' Rt.	on cb.	4.19	251.41
"	" Gut	4.83	250.77
2' Lt.	Edge Shoulder	4.1	251.50
12' Lt.	on Fill (Slope Continues)	9.0	246.60
1+96		2.0	253.60
3' Rt.	on cb.	1.90	253.70
"	" Gut.	2.55	253.05
2' Lt.	Shoulder	1.9	253.70
12' Lt.	on Fill (Slope Cont.)	6.1	249.50

255.60

34

TP.	8.38	262.37	1.61	253.99
2+29.81	= E.C.		6.45	255.82
3' Rt. on cb.			6.48	255.89
"	" Gut		7.15	255.22
15' Lt.	Shoulder		6.5	255.87
11.5' Lt.	on Fill (Slope Cont.)	12.0		250.37
2+62			4.6	257.77
3' Rt. on cb.			4.53	257.84
"	" Gut		5.19	257.18
5.5' Lt.	Shoulder		4.8	257.57
11.5' Lt.	on Rubble Conc. Wall	10.9		251.47
"	Toe "	15.6		246.77
2+72			4.1	258.27
3' Rt. on cb.			3.91	258.46
"	" Gut		4.57	257.80
2' Lt.	Shoulder		4.3	258.07
6.8' Lt.	on Rubble wall	5.2		257.17
"	" Toe "	12.2		250.17
2+80.7	= End Rubble Wall	3.6		258.77
3' Rt. on cb.			3.37	259.00
"	" Gut		4.05	258.32
2' Lt.			3.8	258.57
7' Lt.	on Wall		4.2	258.17
"	Toe Wall		7.0	255.37
(2+81)	7' Lt.		4.2	258.17

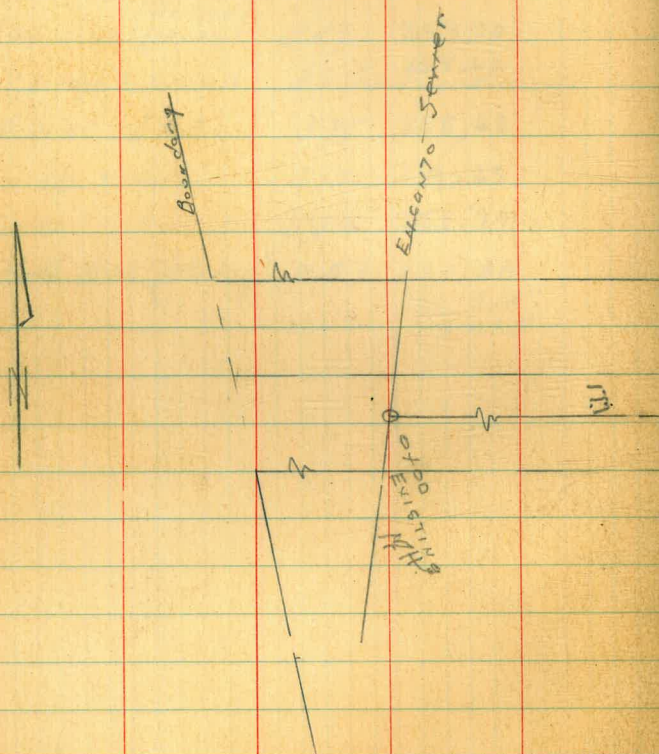
	262.37		
2+89.7		3.2	259.17
3' Rt. on Lb = P.C. 20' cb R		3.09	259.28
" " Gut		3.79	258.58
8' Lt.		3.4	258.97
on cb Return			
2+99.7 = Sk. Washington		3.05	259.32
" on Gut		3.57	258.80
9.6' Lt. on conc. (Garage)		3.47	258.90
Drivc			
3+02.2 = S edge Side Walk		3.65 = Ret on Landing	258.62
1.1' Lt. Gut at cb Ret.		3.75	258.62
" " on cb. = Walk.		3.12	259.25
9.6' " on "		3.38	258.99
chk. state B.M. (starting)		0.57	261.80
			261.815
			0.015

Survey proposed Sewer to serve area  
 Bet. 43rd and 45th So. of Logan Ave.

S. Moore  
 Senter Meyer  
 W. Moore  
 5-8-45.

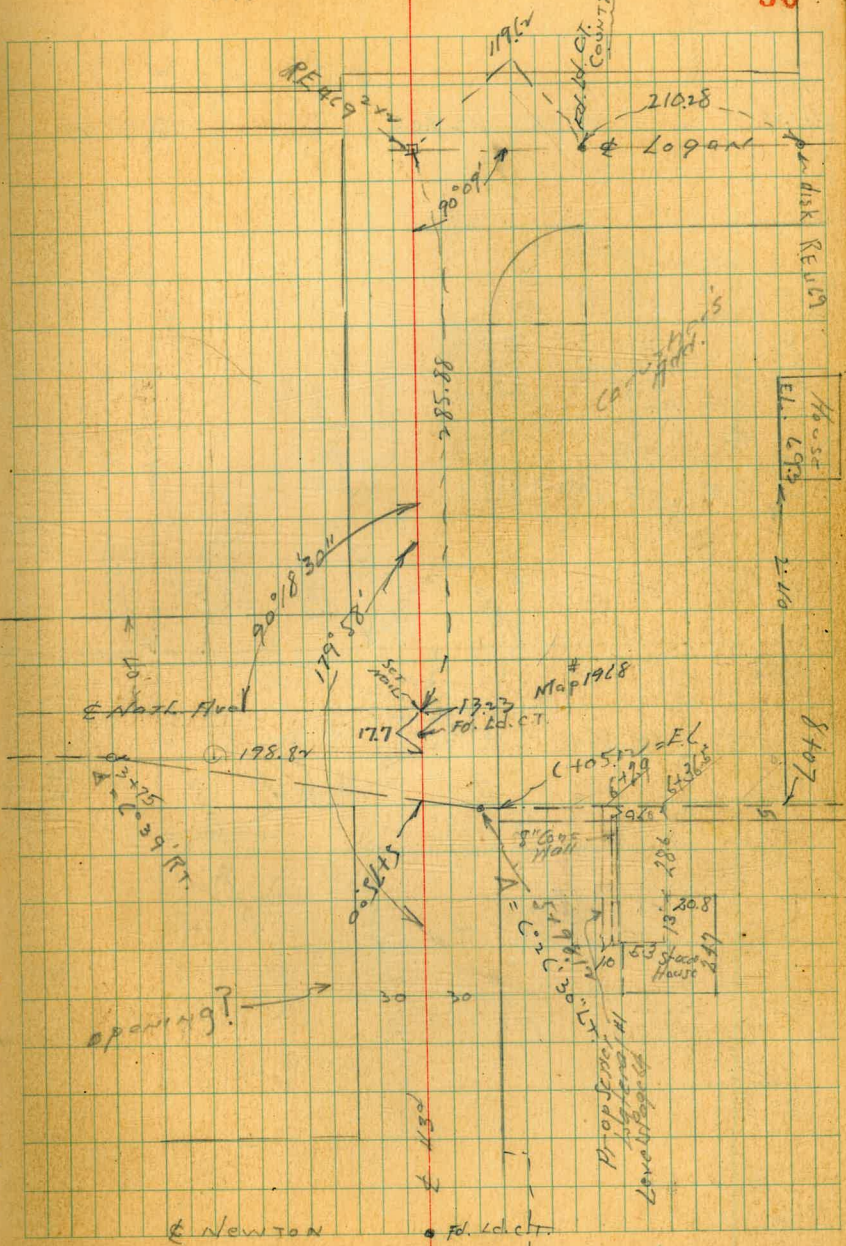
Caruthers Field.

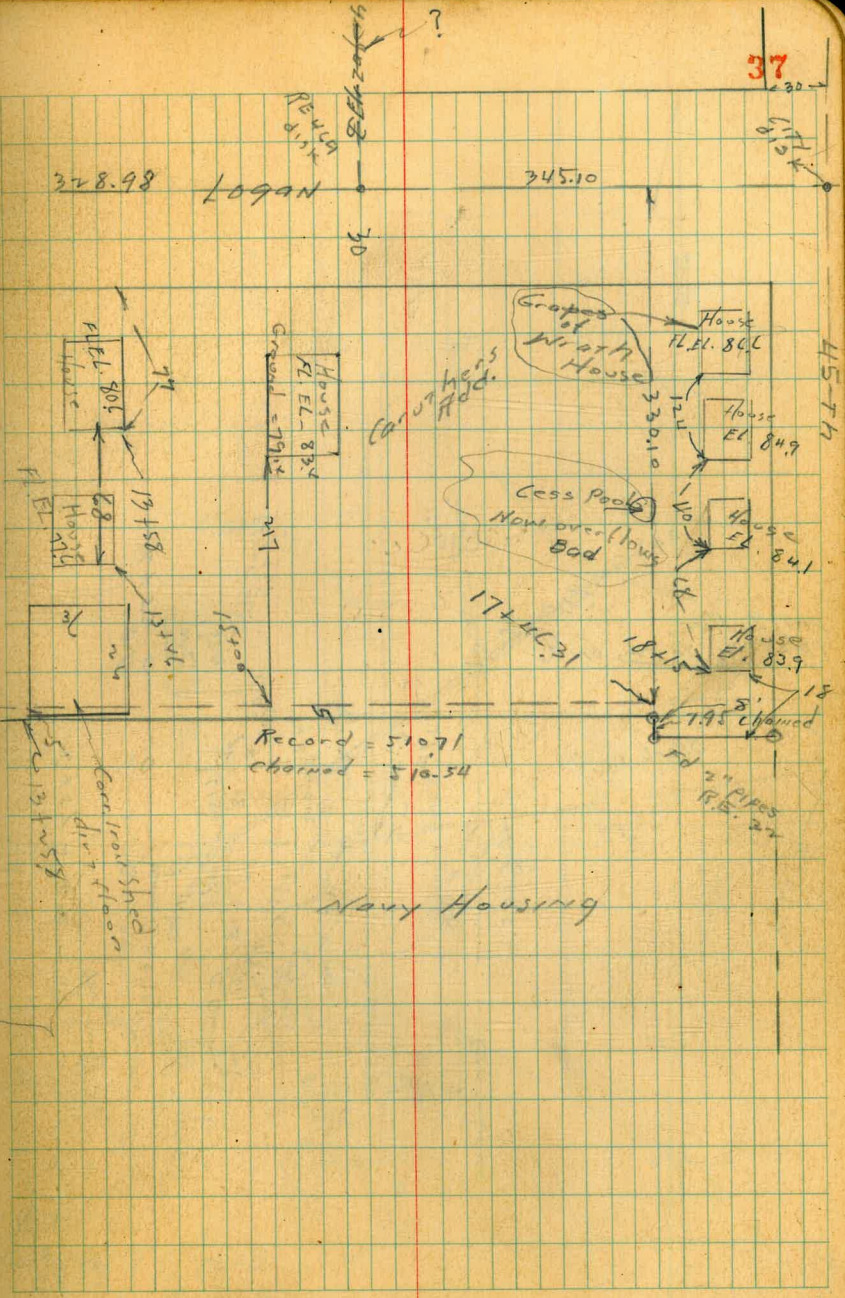
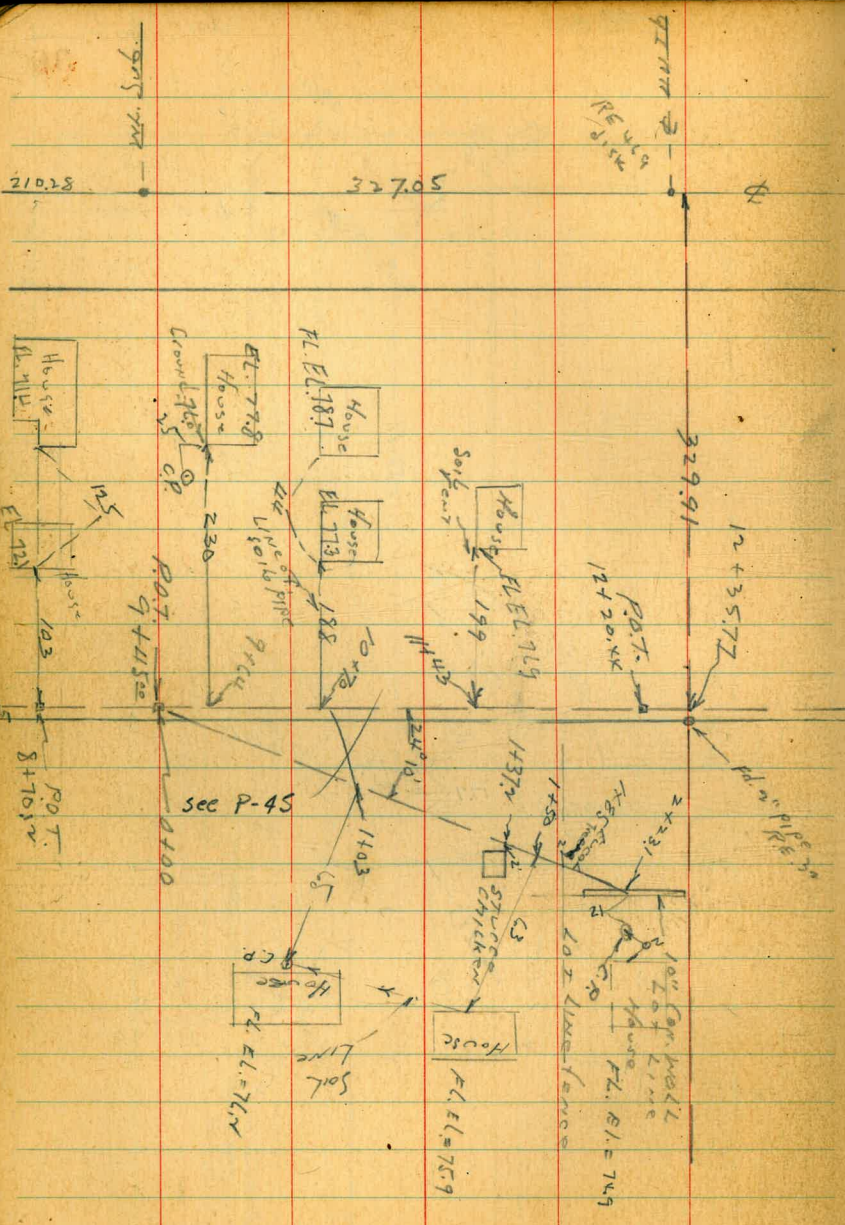
See also pp 60 and 70

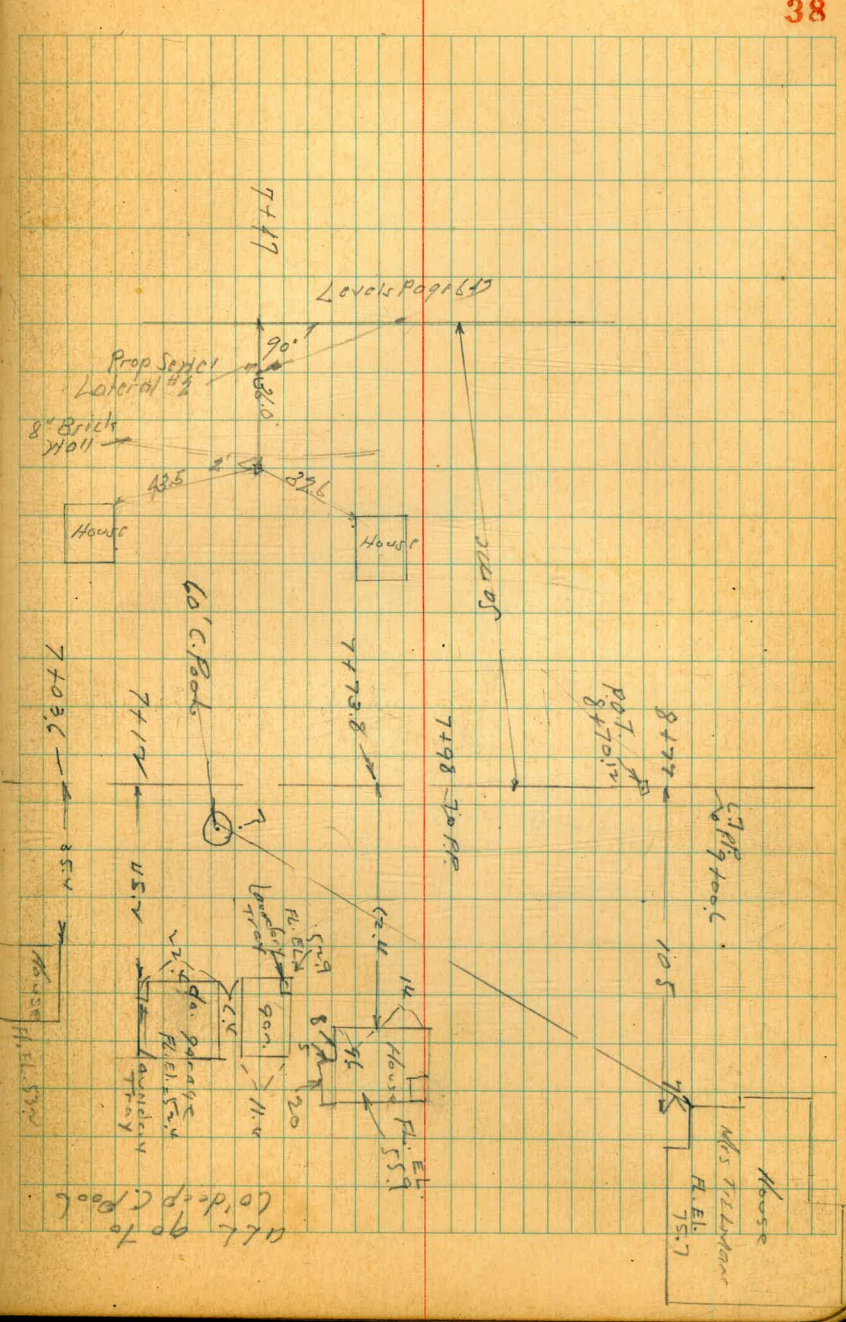
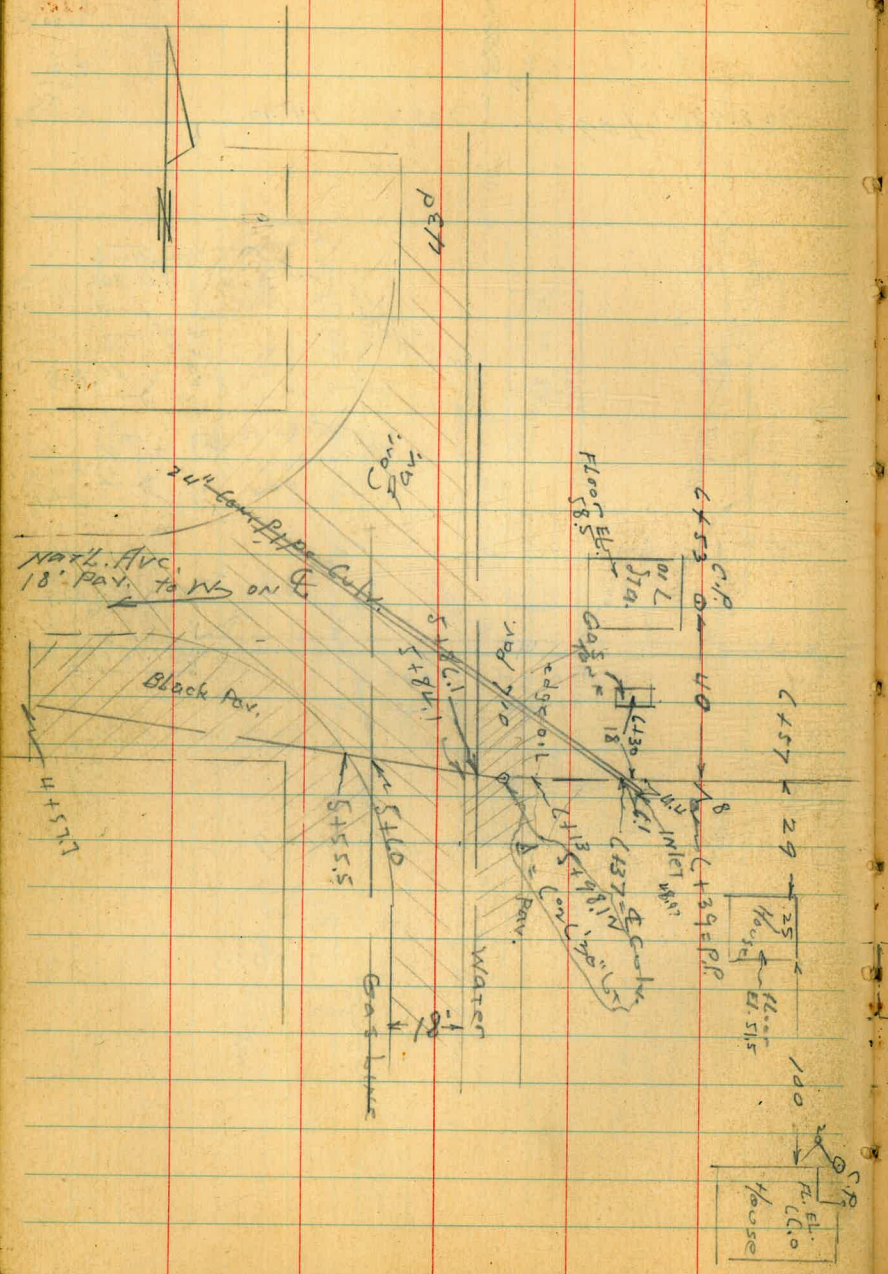


indicated  
 c.s.K

W.L. Sub. 36

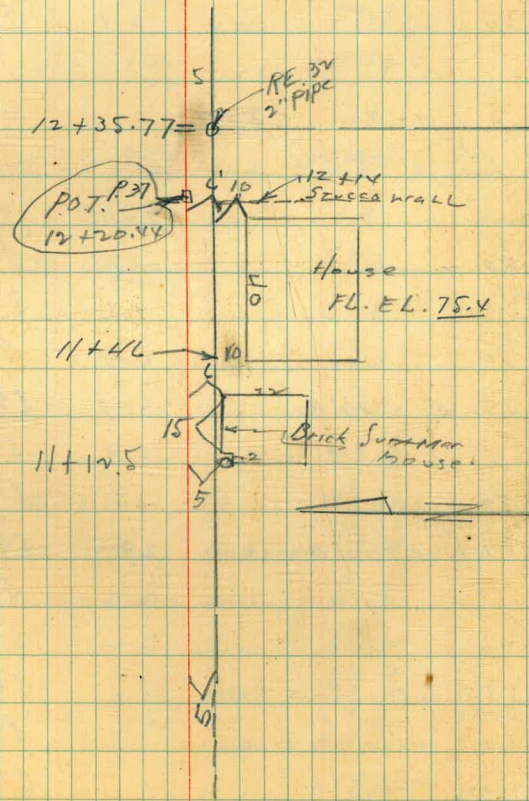








New Housing



Seven Levels

Sketch P35

chisel x pav.	11.31	45.60	34.29	68.212-1K Walker
0 to 0 chisel x			10.93	34.67
" F.L.			24.88	20.72
+50			8.1	37.5
1			5.0	40.6
+50			2.1	43.5
T.P.	12.80	58.26	0.14	45.46
2 to 0			12.1	46.2
+50			9.7	48.6
3			7.8	50.5
+50			6.5	51.8
3 + 75 = A 6039' RT			6.09	52.17
"			5.4	52.9
+50			3.0	54.7
+57.7 edge black pav.			2.8	55.5
5			2.2	56.1
+40			2.2	56.1
+55.5 edge cov. pav.			1.6	56.7
+60 over gas line			1.3	57.0
5 + 7500 F 43 d			1.0	57.1
+84.1 edge cov. pav.			1.0	57.3

5826

40

5 + 86.1 over water line	1.0	57.3	
5 + 98.17 A = C 2 L 30 LT	0.9	57.4	nail
T.P.	4.33	62.15	8.44
6 + 18		4.3	57.9
+30		10.1	52.1
" 5 S. edge flag stone	10.9	51.3	
" 7 N	4.4	57.8	
+37 Top 24" cov. drain	11.16	50.99	
+41.5		11.0	51.2
" 44 S = F.L. 24" inlet pipe	13.8	48.97	beg. of Cobble ditch which should be cleared after pipe is laid & back-filled
" 65 S top Cobble ditch	11.4	51.0	
" 9 S edge flag stone	10.9	51.3	
" 7 N	4.4	57.8	
+53		9.4	52.8
" 7 N		4.0	58.2
" 3 S	12.4	49.8	
" 8 S ditch	13.0	49.2	
" 10 S top Cobble ditch	11.0	51.2	
" 12 S flag stone	10.9	51.3	
+80		5.0	57.2
" 3 N	3.7	58.5	
" 14 N = s edge Mach. Shop	2.4	59.8	floor SL.
" 12 S ditch	12.7	49.5	
" 14 S	12.7	49.5	
" 17 Cobble ditch	11.3	50.9	
" 20 edge flag stone	11.3	50.9	

	10.73	1855 68.55	4.33	57.82
T.P.				
7+10			8.7	59.9
" 10 N			8.2	60.4
" 3 S			9.8	58.8
" 8 S			12.8	55.8
" 14 S			13.3	55.3
" 21 S ditch			18.5	50.1
" 28 " "			18.4	50.2
" 30 TOP WALL <sup>CON</sup> "			17.0	51.6
7+50			5.9	62.7
" 5 N			4.9	63.7
" 3 S			6.7	61.9
" 9 S			10.4	58.2
" 16 S			11.3	57.3
" 26 S ditch			16.9	51.7
" 32 S "			17.4	51.0
" 34 S ditch <sup>CON</sup> WALL			15.7	52.9
7+85			13.2	55.4
" 6 N			10.0	58.6
" 16 S ditch			14.0	52.6
" 18 S WALL			14.9	53.7
8+00			15.8	52.8
" 5 N			15.0	53.6
" 5 S TOP ditch and end of " as constructed			14.4	54.2

	8.03	1855 65.81	10.77	57.78	41
T.P.					
8+50			11.5	54.3	
+70			9.9	55.9	
9			9.4	56.4	
9+45 <sup>0</sup> 100 <sup>0</sup> SHORT CORON LINE			7.80	58.01	STUB
+75			4.9	60.9	
10			4.2	61.6	
+25			2.6	63.2	
T.P.	14.30	77.61	0.50	65.31	TOP PIPE 5'S of 10+30
+50			11.0	66.6	
+69			8.3	69.3	
+69.5			7.6	70.0	
11			6.4	71.2	
+21			4.2	73.4	
+50			3.0	74.6	
T.P.	4.33	79.74	2.20	75.51	
12+20.44 POT.			4.91	74.83	STUB
ON 2" PIPE 5'S of 12+35.77			4.8X	74.90	Marked 74.99
12+50			5.2	74.5	
+65			6.0	73.7	

79.74

13

4.8

74.9

T.P.

8.97

84.40

4.31

75.23

13 + 50

8.6

75.8

14

9.0

75.4

+ 20

8.5

75.9

+ 50

7.3

77.1

15

5.8

78.6

+ 50

4.7

79.7

16

3.6

80.8

+ 50

3.6

80.8

+ 70

3.2

81.2

17

3.6

80.8

17 + 46.31

3.2

81.0

18 + 00

3.2

81.2

on 2" pipe

13' S of 17 + 46.31

3.31

81.09

MKd.

81.12

0.03

## Short Canyon Line

42

STUB

9 + 45  
0 + 00

10.81

68.82

58.01

P. 41

0 + 50

9.4

59.4

+ 87

9.3

59.5

1 + 00

8.5

60.3

+ 37

5.0

63.8

+ 50

4.0

64.8

+ 60

5.6

63.2

2 + 00

4.1

64.7

2 + 20.1

3.2

65.6

ground at  
low  
conv.  
wall

Proposed Sewer Catchers Add B" Line  
Between 42nd St & 45th St South of Logan Ave

H" Line

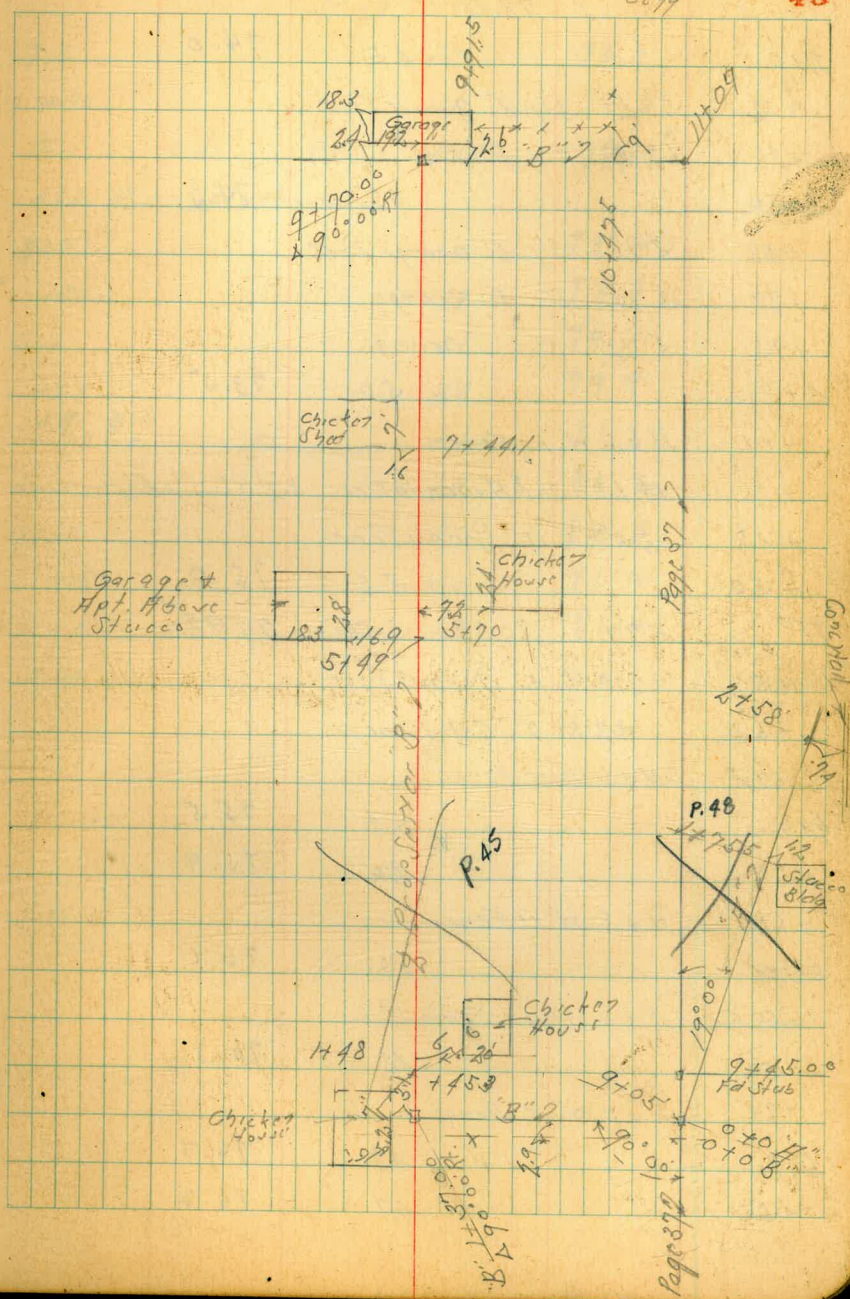
B.M	8.96	66.97	58.01	on stub 9745 Page 41
0+0		10.31	56.66	
+50		8.7	58.3	
+61	N+S Wire Fence			
1+0		8.3	58.7	
+50		5.3	61.7	
+75.5	1.2 ft of 1/2" N.E. Cor. Stucco Blk			
+90		1.8	65.2	
2+0		3.6	63.4	
+17	N+S Wire Fence			
+23	1/2" N+S Wire Fence			
+58		1.67	65.30	on stub

B" Line

	12.67	70.68	58.01	
0+0 = 9705				
+20		13.8	56.9	
+50		9.6	61.1	
TP	7.55	76.85	1.38	69.30
1+0		4.9	72.0	
+37		4.93	71.92	on stub
+50	Cont. Page 47			
+77	N+S Lat's Fence			
+93	1 ft: N+S 8" Olive Tree			
TR	4.49	78.48	2.86	72.99

July 17-45  
S. 1005  
Osborne  
8077

43



78.48

2+0		4.5	74.0
+12	5' Lt - Sly 3" Quince Tree		
+26	6 1/2' Rt - 1 1/4" Fig		
+50		4.2	74.3
+38	2' Lt - Sly 3" Orange Tree		
+79	3' Lt - Sly 4" Orange "		
+95	3' Lt - Sly Orange "		
3+0		5.0	73.5
+01	N+S Wire Fence		
+20	14' Lt - Sly 8" Avocado Tree 2 1/2' Rt - Sly 6" Avocado		
+38	2 1/2' Rt - 3" Peach Tree		
+50		3.5	75.0
TP	597	80.89	356 74.92
+52	2 1/2' Rt - 5" Walnut Tree		
+68	3 1/2' Rt - 7" Cot. Tree		
+93	N+S Wire Fence		
4+0		5.4	75.5
+50		5.0	75.9
+68	N+S Wire Fence		
5+0		4.8	76.1
+85.4	N+S Wire Fence		
+50		4.2	76.7
+94	N+S Wire Fence		
6+0		4.2	76.7
+50		4.7	76.2

80.89

7+0		4.2	76.7
+50		3.6	77.3
TP	741	84.71	359 77.30
+83	N+S Lot's Fence		
8+0		6.5	78.2
+50		5.9	78.8
9+0		5.6	79.1
+35		4.8	79.9
+81	Bk		
+70	A 90° 00' Rt	3.44	81.27
	50N	4.5	80.2
10+0		2.7	82.0
+50		3.5	81.2
11+0.5	8.3' F=Board Fence	3.0	81.4
BM		3.62	81.09

2" Pipe  
13' 5" of 1 1/2" dia  
8 1/2  
Page 42

44

Mulkar  
Hopper  
Hub  
Proposed Sewer Conruther's Add.  
"C"-Line  
821-45 Between 43rd and 45th - South of Logan Ave

6+16.55 = P.O.T. Set Hub

6+00

5+00

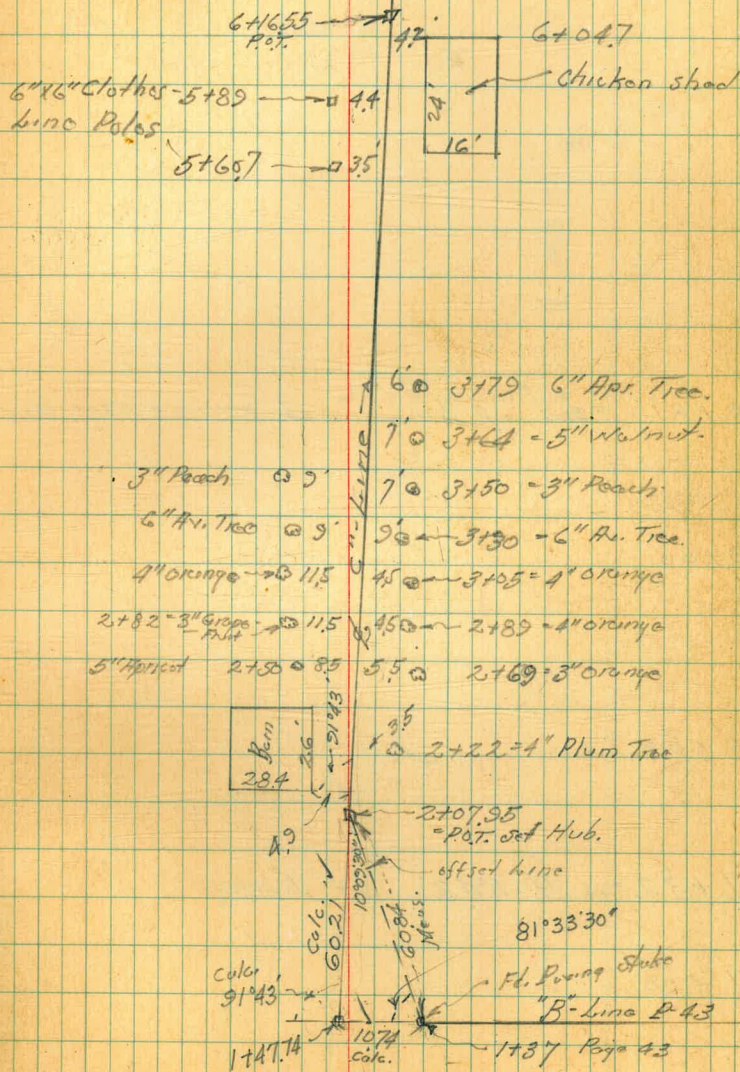
4+00

3+00

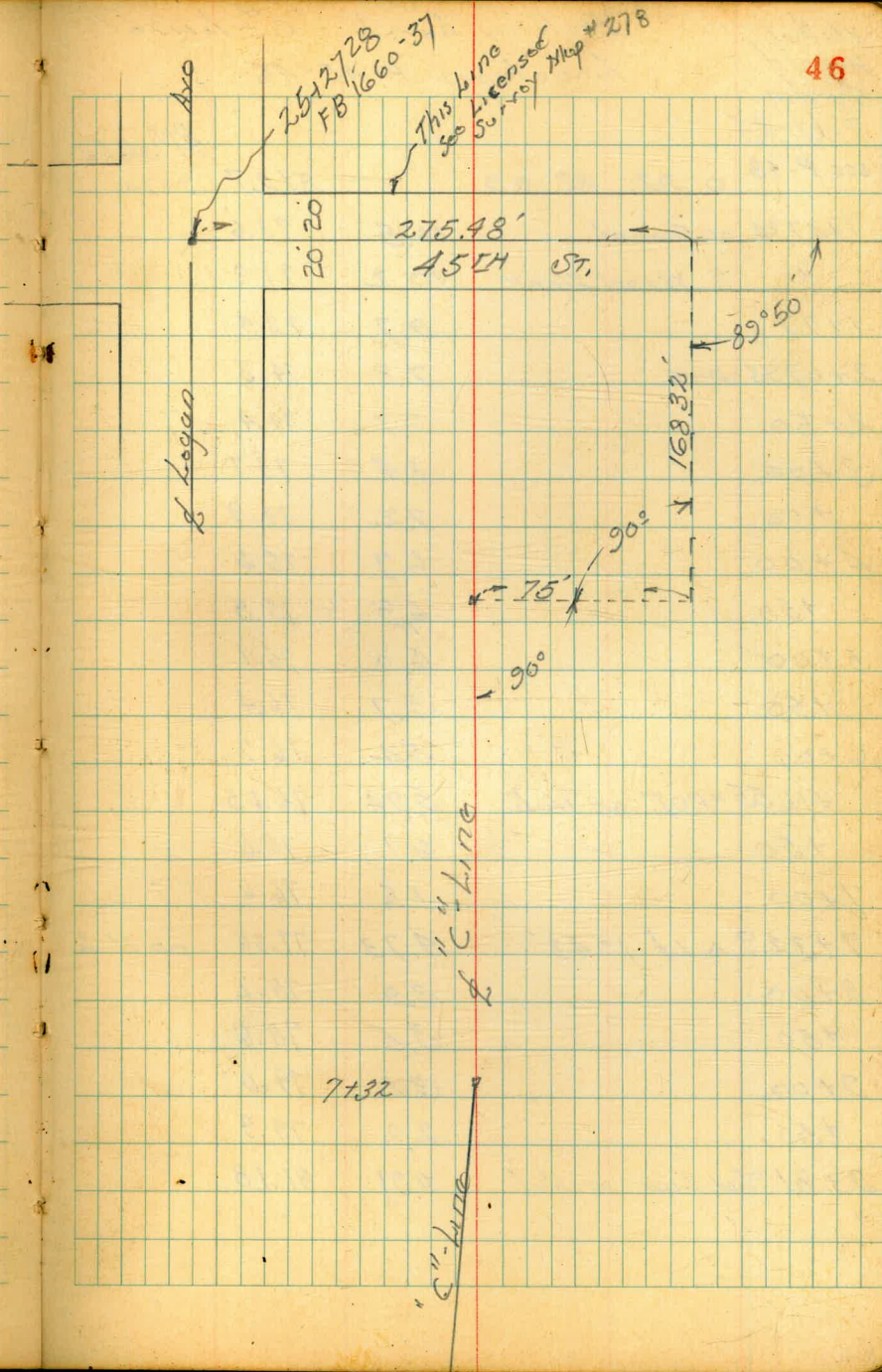
2+07.95 = P.O.T. Set 2"x2" Redwood Hub.

1+47.74 = Δ R. 91°43'  
= 1+37 "C"-line  
1+37 P-43 "B"-line

45



"C" Line Cont. from P-45



9+81 = End of line set 2" x 2" R.V. Hub.

9+00

8+00

7+32 = A H 1'43" set Hub.

7+00

7+32

"C" Line



Walker  
Hayward  
Harden

Prelim. Levels - "C" - Line

Location P-45-46

47

				BM off stake 9170
8-21-45				
see P-43	0.82	82.09	81.27	
1+47.74	on Ground	10.5	71.6	
"	" Wood Floor	10.2	71.9	
1+77		9.7	72.4	
2+07.95	P.O.T.	7.8	74.3	
2+50		7.7	74.4	
3+00		8.4	73.7	
+50		7.2	74.9	
4+00		6.7	75.4	
+50		6.3	75.8	
5+00		6.0	76.1	
+50		5.7	76.4	
6+00		5.4	76.7	
+16.55	P.O.T. on Hub.	5.94	76.15	
+50		6.1	76.0	
7+00		5.5	76.6	
7+32.9	Δ Lt 1° 43'	4.73	77.36	on Hub
8+00		3.9	78.2	
+50		3.5	78.6	
9+00		3.1	79.0	
+50		2.2	79.9	
9+81	End Line on Hub.	0.91	81.18	

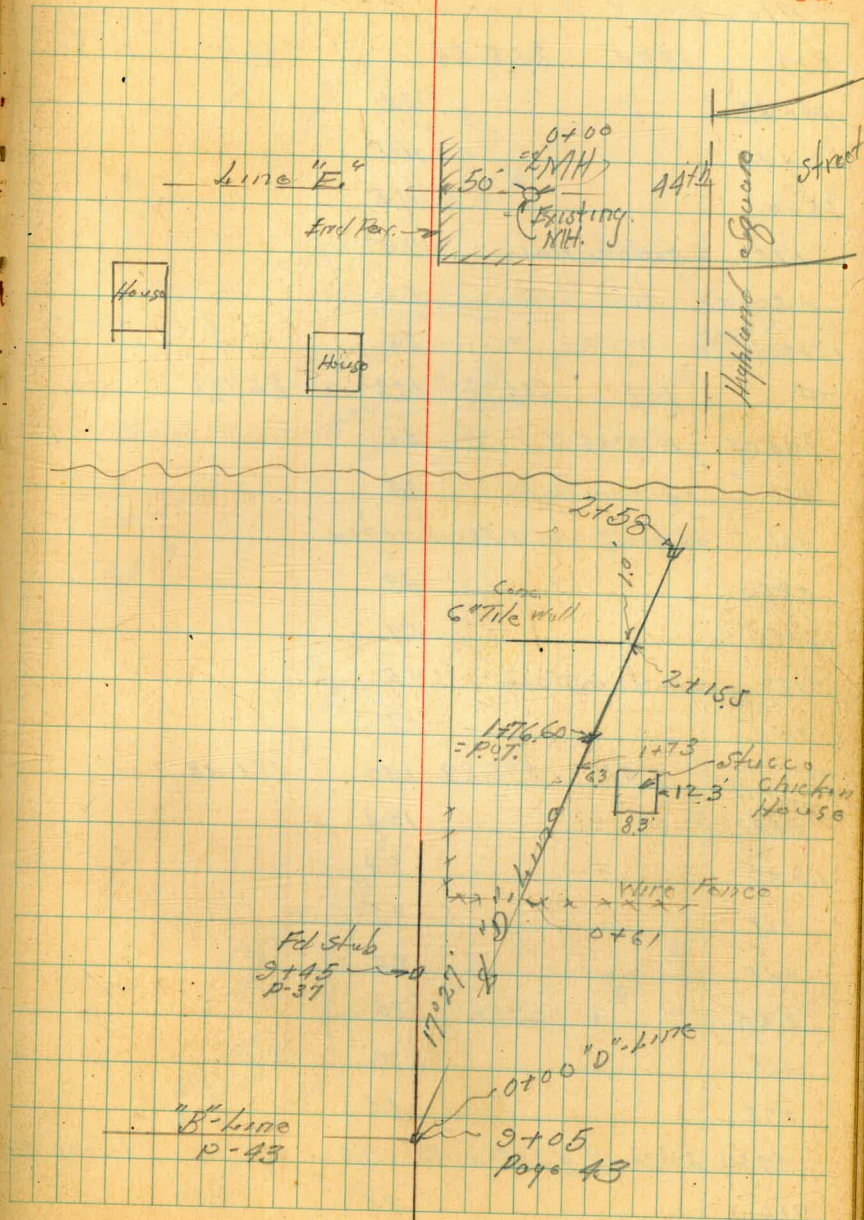
Walker  
Hazard  
Held  
5-23-45

Proposed Sewer "D" Line  
Caruthers Add. Blk 4

48

BM.	11.33	62.34	58.01	on stub 9+45-P-43
0+00		12.57	56.67	
+50		11.2	58.1	
1+00		10.1	59.2	
+50		8.5	60.8	
1+77		5.9	63.4	
2+00		6.8	62.5	
+58 on 2" x 2" Hub		4.51	64.83	
chk at 58" A" line P-43		4.00	65.34	
			65.30 P-43	
			0.04	
TP	9.67	77.52	149	67.85
	Levels Line "E"			

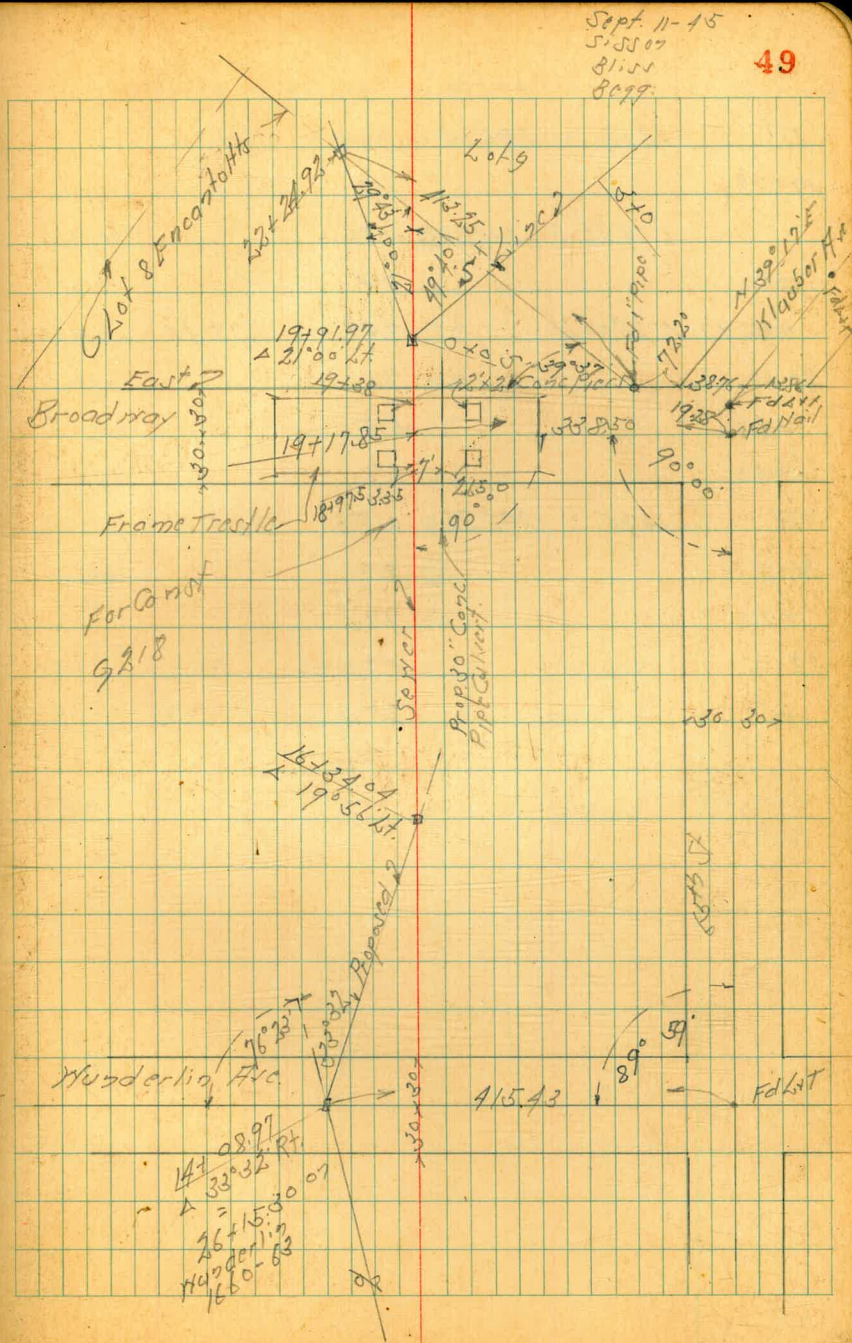
0+00	$\pi$ Above	2.06	75.46
= Rim M.H.	77.52		
Flow "	65.3		70.29
0+50 N end Parking	3.3		74.2
0+94 Basement of House	3.9		73.6
70' Lt. Conc. Floor Garage	9.9		67.6
- Laundry Room			
House Floor			
50' Lt. on Floor House	2.5		75.0
1+44	5.5		72.0
1+78	4.3		73.2
50' Lt on Drive	4.8		72.7
Floor House	2.1		75.6



Proposed Sewer Yonderling Ave to  
Broadway West of 65th St.  
Also Lot 8 Encanto Hts

Indexed  
C.S.K.  
26+15.30  
Yonderling  
1660-77

B.M.	12.94	258.54	245.60	
14+42			12.1	
+45			10.5	
15+0			7.5	
+15	= Bottom Wash		8.3	
+50	"		5.6	
16+0			2.5	
TP	7.52	264.78	1.28	257.26
+34.04	△ 19°56' H.		8.6	
+56	= Bottom Wash		8.4	
+61	35 ft of 1/2" Wx 18" Elderberry Tree			
+85			4.9	
17+0			5.7	
+27	= Bottom Wash		5.5	
+50			2.2	
TP	12.51	275.89	1.40	263.38
+58			10.3	
18+0			8.3	
+13			8.2	
+35			9.4	
+50			8.1	
+60			7.7	
+75			4.3	
+97.5	335 ft of 1/2" x 2x2 Conspire		1.75	at Top Pier
19+0			2.5	



		275.89		
TP	12.18	285.94	2.13	273.76
19+38			11.9	
" "	3.35 Lt Fly 2x2 Cond Pipe		11.76	Top Pic
+50			9.5	
+91.97	1 21'00" Lt		7.59	07# Hub
20+0			7.1	
+25			5.5	
+50			1.7	
TP	11.75	296.86	0.83	285.11
21+0			8.0	
+50			7.7	
22+0			5.7	
+50			2.1	

## Sketch Page 49

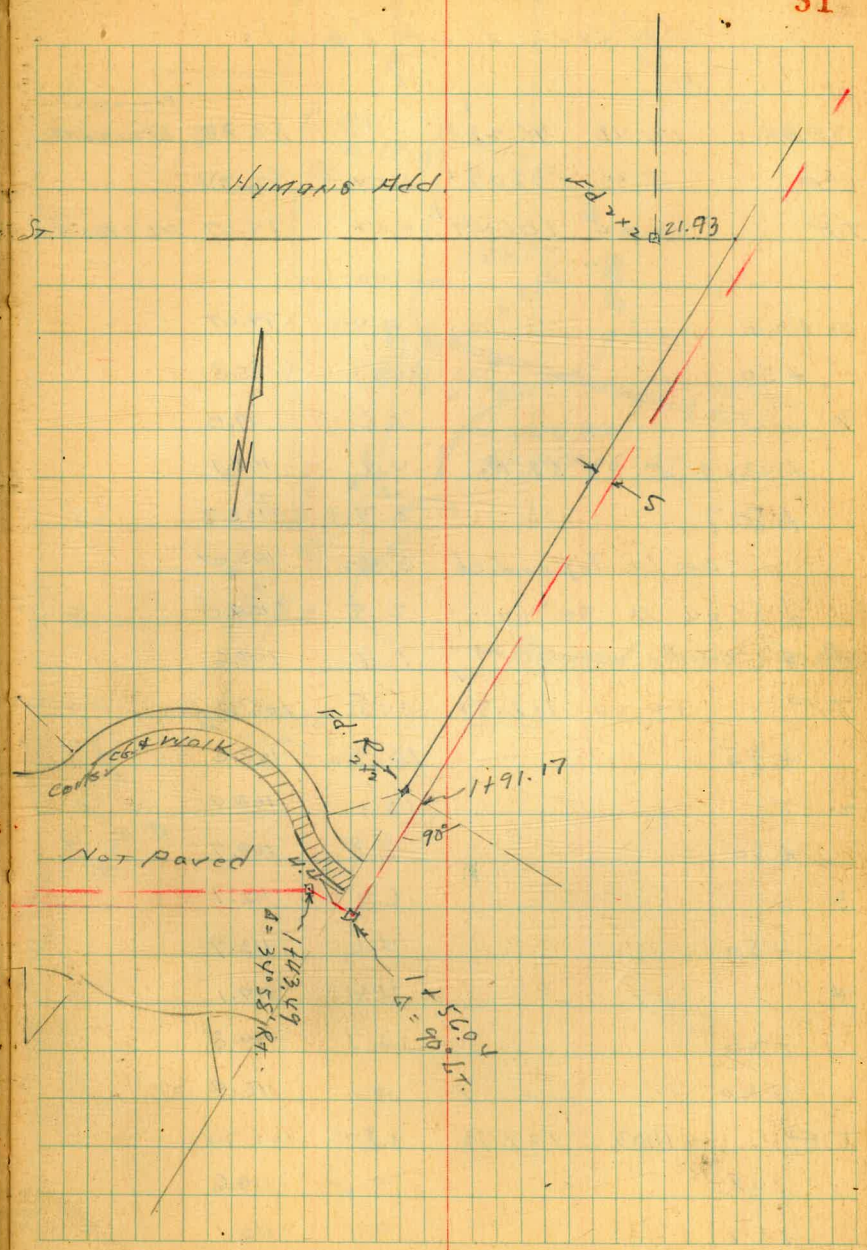
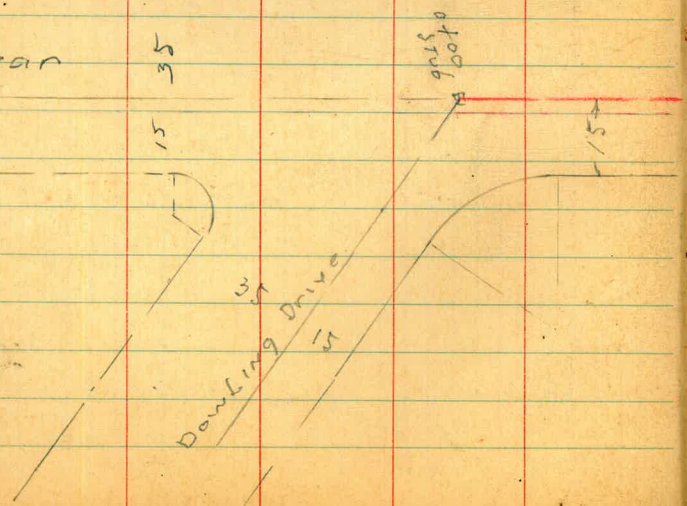
		296.86	Bt Ford Opp Page
0+0	= 19+91.97		
+20			18.5
+50			15.6
+0			12.7
+10			10.9
+20			9.6
+50			10.1
2+0			9.5
+50			7.2
3+0			4.6
TP	12.43	309.02	0.27 296.59
TP	8.77	316.65	1.19 307.88
BM		4.41	312.24

B.P. J.L. Broadway  
1' E of W. W. Perry  
07 65th St  
312.24

Proposed 8" Water Line  
 Via Draper St.  
 Palomar + Dowling to Jct. Gravelly St.  
See F.B. 16.50/56 for Levels  
on Draper, Gravelly St to Westboro St.

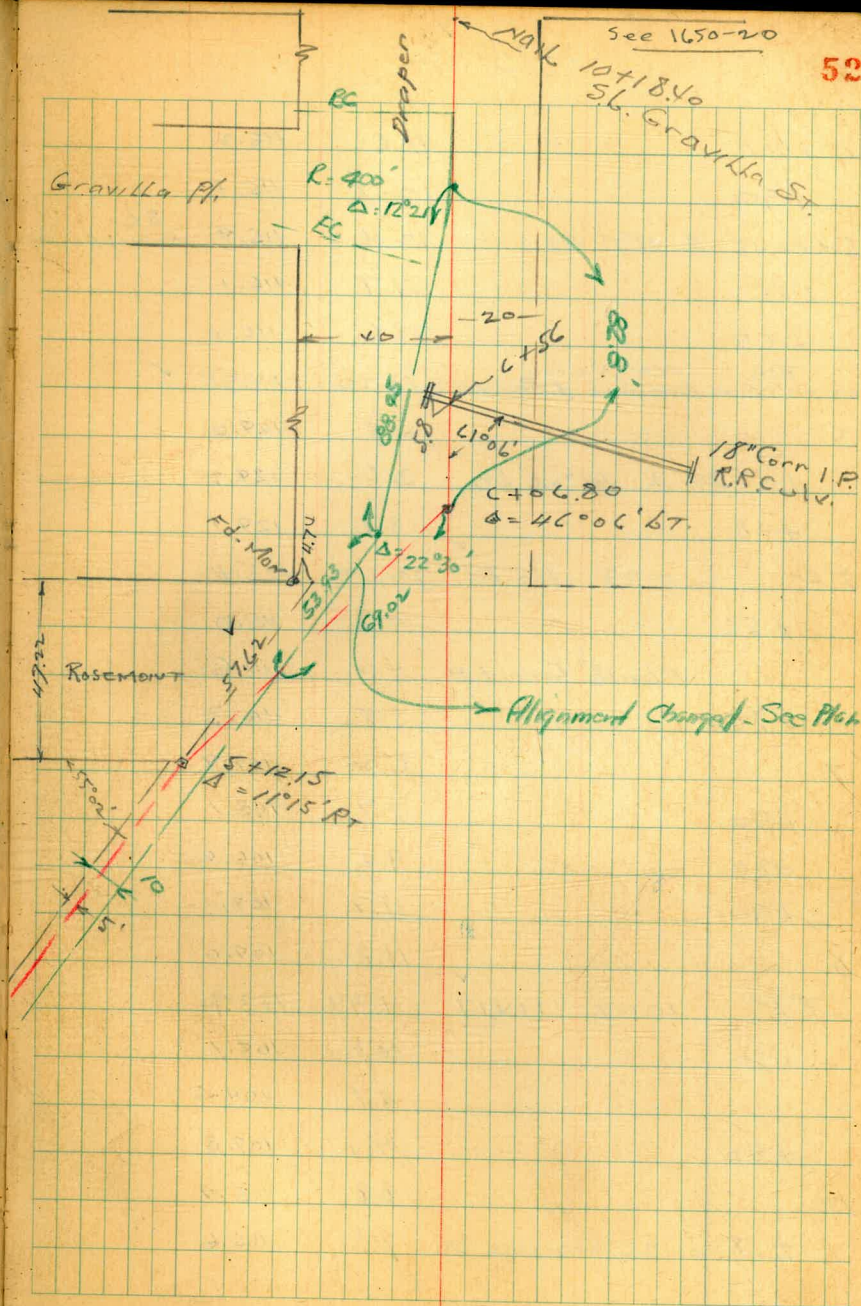
Moore  
 Jensen Meyer  
 W.E.M.  
 9-26-45.

Palomar



# Water Line Levels

SEBP	12.48	96.28		83.80	Rosemont Electric
T.P.	5.35	98.09	3.54	92.74	
T.P.	12.42	106.49	4.02	94.07	on 0+00 ft
0+00			12.42	99.07	
+50			10.7	95.8	
1			7.5	99.0	
+43.49	Δ 34°58' Rt.		4.4	102.1	
+50.7			3.3	103.2	
"	44 Lt. Top end		3.42	103.07	
+56.94	Δ 90° Lt.		2.5	109.0	
+67			1.9	109.6	
T.P.	12.20	118.54	0.15	106.34	
+85			10.9	107.6	
2			10.1	108.9	
+50			8.8	109.7	
3			6.4	112.1	
+50			4.6	113.9	
4			4.4	119.1	
+20			3.7	119.8	
+40			3.1	115.9	
T.P.	11.03	127.75	1.82	116.74	
+48			9.2	110.6	
+67			9.7	118.1	



127.75 ✓

4 + 71			11.6	116.2
+ 90			12.7	115.1
5 + 12.15	Δ 1195 RT.		12.4	115.4
+ 55			11.7	116.1
+ 65			11.6	116.2
BM.	N.W. Cor.			
Set on Mon.	Draped + ROSENORT	13.20	114.55	✓
6			3.8	129.0
+ 06.80	Δ 40° 06' LT.	3.6	129.2	
+ 18		3.7	129.1	
T.P.	0.73	115.84 ✓	12.64	115.11
+ 56		0.8	115.0	
"	F.L. 18" Cor. I.P.	4.2	111.6	
+ 80		5.5	110.3	
7		6.4	109.8	
+ 50		7.7	108.1	
+ 80		9.4	106.8	
+ 90		11.7	104.1	
8		11.8	109.0	
T.P.	10.27	114.17 ✓	11.94	103.90
+ 50		10.1	104.1	
9		9.7	104.5	
+ 50		9.4	108.8	
10		8.8	105.9	
+ 18	No S.L. Gravilla St.	8.6	105.6	

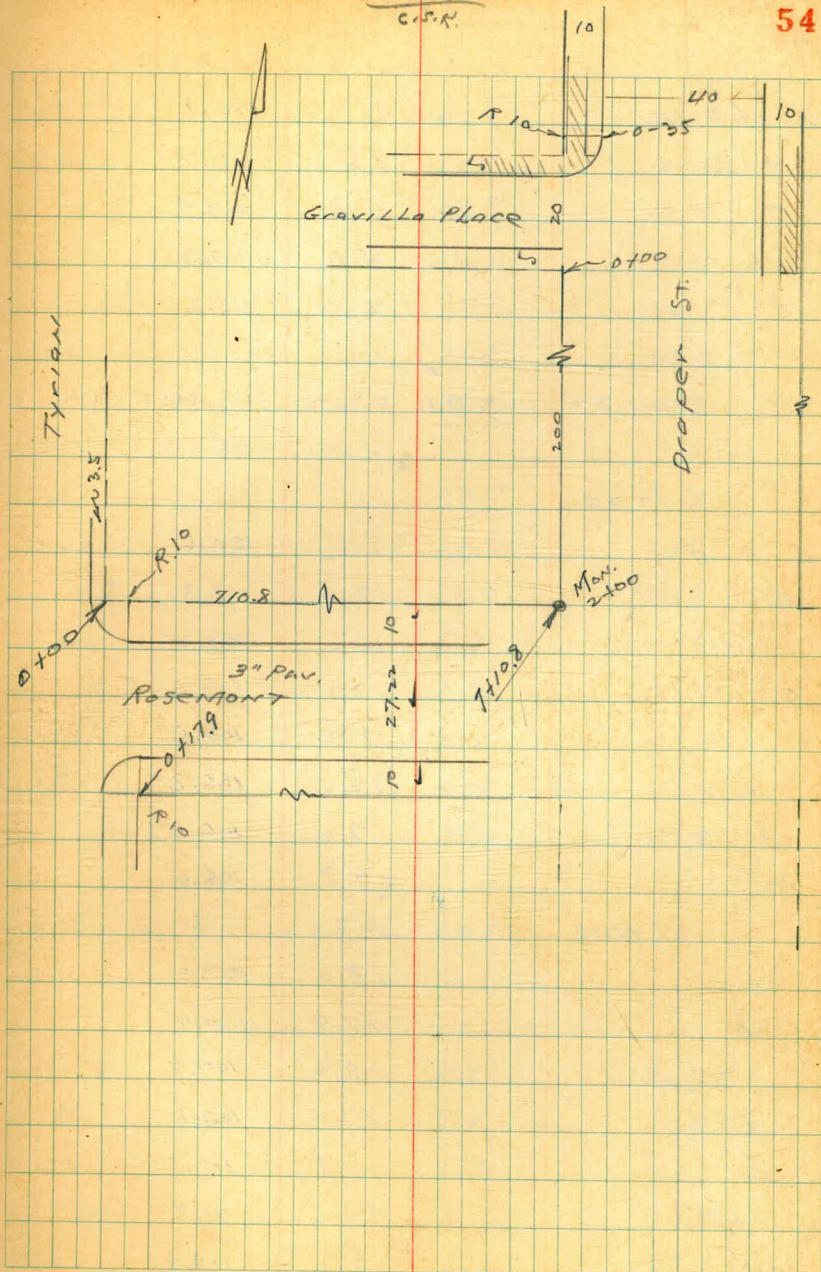
Levels on Draper  
Gravilla Place to Rosemont

11417

	0-35		
W	cb. Draper	10.58	103.59 B.C.
	0-25		
W.L.	Draper + N cb Place Gravilla	10.73	103.99 EC
	0-5		
W.L.	Draper + S cb Gravilla Pl.	10.64	103.53 curb end
	0+00		
W		10.8	103.9
cb		10.8	103.9
C		10.0	109.2
E	cb end top	9.61	109.56
F		9.4	109.8
	0+10		
E		3.6	110.6
cb		4.9	109.3
C		9.9	102.3
cb		10.3	103.9
W		10.6	103.6
	0+50		
W		9.7	109.5

Indexed  
C.S.N.

54





114.77 ✓

W	cb	9.1	105.1
	+15	8.5	105.7
	C	6.8	107.9
	cb	4.9	109.3
	E	2.0	112.2

T.P.	11.82	<u>125.77</u>	0.22	113.95
------	-------	---------------	------	--------

/100

E	5.2	120.6
cb	12.0	113.8
+13	16.6	109.2
C	17.3	108.5
+11	18.2	107.6
+13	19.5	106.3
cb	19.0	106.8
W	19.8	106.0

/125

W	18.0	107.8
cb	17.9	107.9
+3	18.2	107.6
+6	17.0	108.8
C	15.7	110.1
+8	14.6	111.2
cb	5.9	119.9
E	1.1	129.7

125.77 ✓

55

/147

E	0.4	125.9
cb	1.2	129.6
+10	13.5	112.3
C	14.1	111.7
18	15.1	110.7
cb	14.8	109.0
W	16.3	109.5

/180

W	14.7	111.1
cb	17.2	113.6
+8	12.0	113.8
C	5.9	119.9
+7	1.9	123.9
cb	0.4	125.9
E	2.4	123.9
+15	8.4	117.9

T.P.	4.19	<u>128.95</u>	1.01	124.76
------	------	---------------	------	--------

2100 N 6 Reservoir

-10	8.3	120.7
E	9.2	119.8
cb	5.7	123.3
+4	4.2	129.8
C	5.0	129.0

128.95 ✓

C + 5	6.5	122.5
C + 14	13.1	115.9
cb	13.7	115.3
W	14.5	119.5

## N CB Rosemont

W	14.1	119.9
cb	12.5	116.5
+14	5.3	123.7
C	4.2	129.8
+10	4.2	129.8
cb	7.6	121.9
E	8.1	120.9
+10	8.1	120.9

## E Rosemont

-10	5.0	129.0
E	6.4	122.6
cb	7.2	121.6
+3	7.5	121.5
+10	4.2	129.6
C	4.3	129.7
+6	4.3	129.7
+14	5.5	123.5
cb	8.4	120.6
+8	12.1	116.9
W	12.7	116.3

128.95 ✓

## SCB Rosemont

W	10.6	118.9
cb	5.9	123.1
+18	4.5	129.5
C	4.9	129.1
+10	6.9	122.1
+15	6.8	122.2
cb	5.8	123.2
E	4.5	129.5
+10	3.5	125.5

## SL Rosemont

-10	1.8	127.2
E	3.9	125.1
cb	5.3	123.7
+10	6.8	122.2
C	6.6	123.4
+7	4.8	129.2
W/cb	4.9	129.1
+5	5.6	123.9
W	7.6	121.9

Levels on Curbs + 3" Pav.  
on Rosemont  
Tyrion to Draper

SEBP 1273 96.53 ✓  
83.80 ✓ Rosemont  
ELECTRIC

0+00 EL Tyrion to H.

N cb Mid. Ret	5.12	91.91
" 9T	5.56	90.97
N cb Pav.	5.68	90.85
C	5.55	90.98
S cb on Pav	5.78	90.75

0+17.9 EL Tyrion to So.

S cb Top	5.58	90.95	BC Ret
9T	5.98	90.55	
C	5.33	91.20	
9T	5.53	91.00	
N cb Top	5.03	91.50	

0+50

N cb	4.84	91.69
9T	5.37	91.16
C	5.22	91.31
9T	5.78	90.75
S cb	5.40	91.13

0+95

S cb	5.10	91.93
------	------	-------

S 9T	5.42	91.11
C	4.99	91.52
9T	5.01	91.52
N cb	4.62	91.91

1+50

N cb	4.30	92.23
9T	4.82	91.71
C	4.65	91.88
9T	5.09	91.22
S cb	4.78	91.75

2+00

S cb	4.52	92.01
9T	4.96	91.57

C	4.33	92.20
9T	4.87	92.06
N cb	4.07	92.26

2+50

N cb	3.78	92.75
9T	4.25	92.28
C	4.09	92.22
9T	4.66	91.87
S cb	4.27	92.26

J.P. 11.81 104.09 ✓  
4.25 92.28

10409 ✓

2+95

S cb	11.61	92.98
qT	11.97	92.12
C	11.49	92.60
qT	11.56	92.53
N cb	11.11	92.98

3+50

N cb	10.55	93.52
qT	10.96	93.13
C	10.78	93.31
qT	11.29	92.80
S cb	10.96	93.13

4+00

S cb	9.69	94.90
qT	10.04	94.05
C	9.60	94.29
qT	10.03	94.06
N cb	9.59	94.50

4+50

N cb	8.02	96.07
qT	8.33	95.76
C	7.74	96.35
qT	8.29	95.80
S cb	7.84	96.25

5+00

S cb	5.17	98.92
------	------	-------

10409 ✓

58

qT	5.68	98.21
C	5.71	98.88
qT	5.75	98.39
N cb	5.35	98.74

5+50

N cb	2.00	102.09
qT	2.46	101.63
C	2.02	102.07
qT	2.23	101.76
S cb	1.90	102.19

T.P. 12.51 11.590 4.70 103.39

6+00

S cb	9.86	106.09
qT	10.32	105.58
C	10.19	105.71
qT	10.56	105.39
N cb	10.04	105.86

6+45

N cb	6.45	109.25
qT	6.82	109.08
C	6.27	109.63
qT	6.42	109.28
S cb	6.02	109.88

115.90 ✓

6+75 = end curbs + Pav.

S cb	2.60	113.30
QT	3.16	112.79
C	3.38	112.57
QT	4.33	111.57
N cb	4.08	111.82

9.28.55  
JL

7+00

N dirt	3.5	112.4
cb	1.4	119.5
C	0.8	115.1
cb	0.0	115.9
S	+1.2	117.1

Notes Reduced.

for 7+10.8 See p. 56)

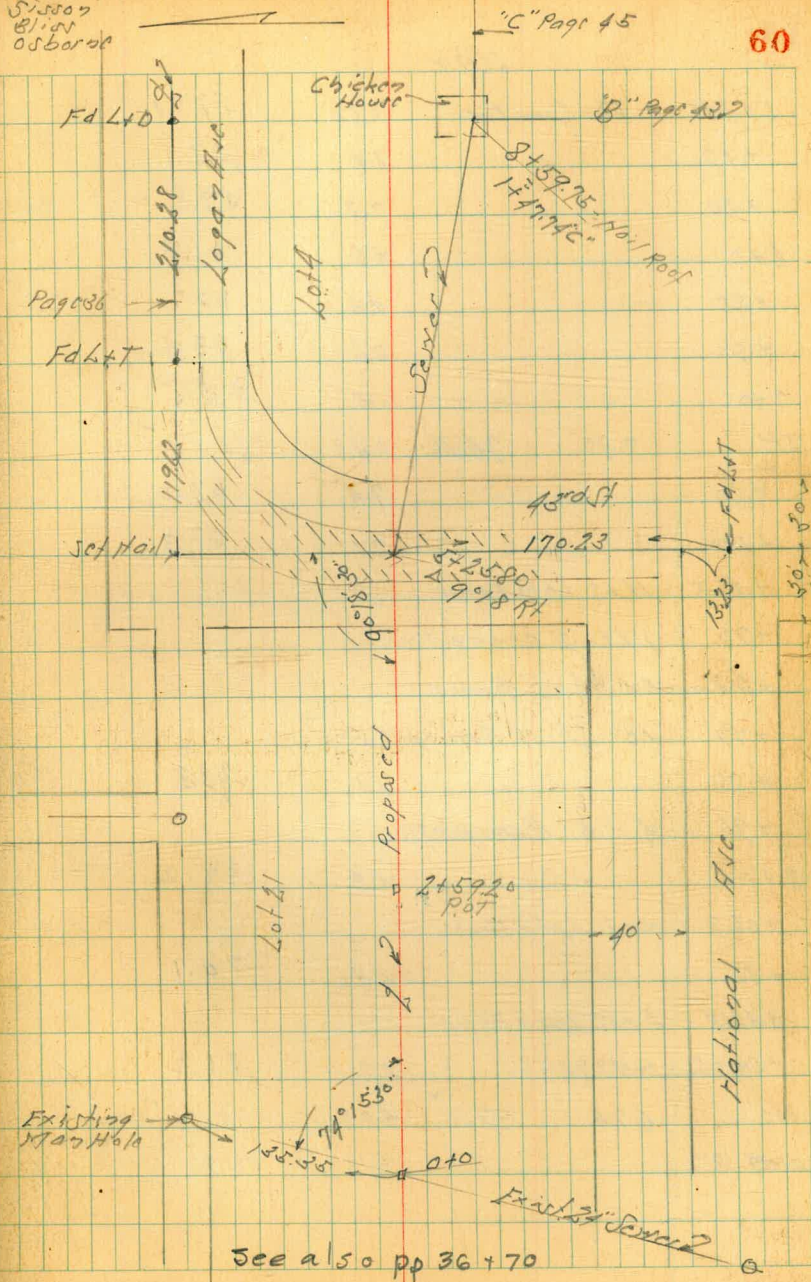
check to Man. Draper  
and ROSEMONT

N.W. cor. ✓  
1.34 114.56 114.55

Proposed Sewer North of National Ave  
West of 43rd St. South of Logan Ave East of 43rd St.  
Lots 21 & 4 Caruthers Add.

BM	70.5	41.72	34.67	Chisel X on Rim M.H. 17 National Page 40	
Exist. M.H.	138.35	NE 0+0	6.41	35.31 on Rim	
"	"	"	Flax Hill	19.36	22.36
0+0			9.21	32.41	on Stub
+50			10.9	30.8	
+66	Bot Wash		12.2	29.5	
+70			10.1	31.6	
+50			9.0	32.7	
+75			8.7	33.3	
+70			5.4	36.3	
+75			5.7	38.0	
IP	12.86	54.51	0.07	41.65	✓
+45			10.5	44.0	
+59.20	ROT		5.20	49.3	on Stub
+70			3.9	50.6	
+50			1.7	52.8	
IP	12.69	66.99	0.21	54.30	✓
+70			11.3	55.7	
"	80' ht of 2		10.3	56.7	
"	100' ht "		13.7	53.3	
+50			10.0	57.0	
+70			9.1	57.9	
+07	W/ly Oil Berm		8.5	58.5	
+16.8	W/ly Conc Pav.		8.66	58.33	
+25.8	on Pav		8.87	58.12	

Nov 28 45  
Sisson  
Elmer  
Osborne



6699			
5+346	Fly Corp Par.	9.28	57.71
+47		8.9	58.1
+50		7.2	59.8
6+0		5.6	61.4
+25		4.3	62.7
+50		3.6	63.4
7+0		1.5	65.5
TP	7.80	74.36	0.43
			66.56 ✓
+20		7.4	67.0
+50		7.1	67.3
451.5	14x5 Lath Fence		
+70	1' Lt. 2" Orange Tree		
+78	5' Lt. 2" Guava "		
+77	10' Lt. 7" Avocado Tree		
+88		6.1	68.3
+96	8' - 5" Avocado Tree		
8+0.5		5.2	69.2
+06.7	14x5 Lath Fence		
+32		4.3	70.1
+32.5	EXX Lath Fence		
+59.75	1+47.74 C"	3.2	71.2
TP	6.75	77.11 ✓	4.00
			70.36 ✓
1+37.8"		5.16	71.95 ✓

075 Feb  
Page 43  
7192

Proposed Sewer Bancroft SW of Ocean View  
 Flood Alley Block 344 Block 9 Central Homestead

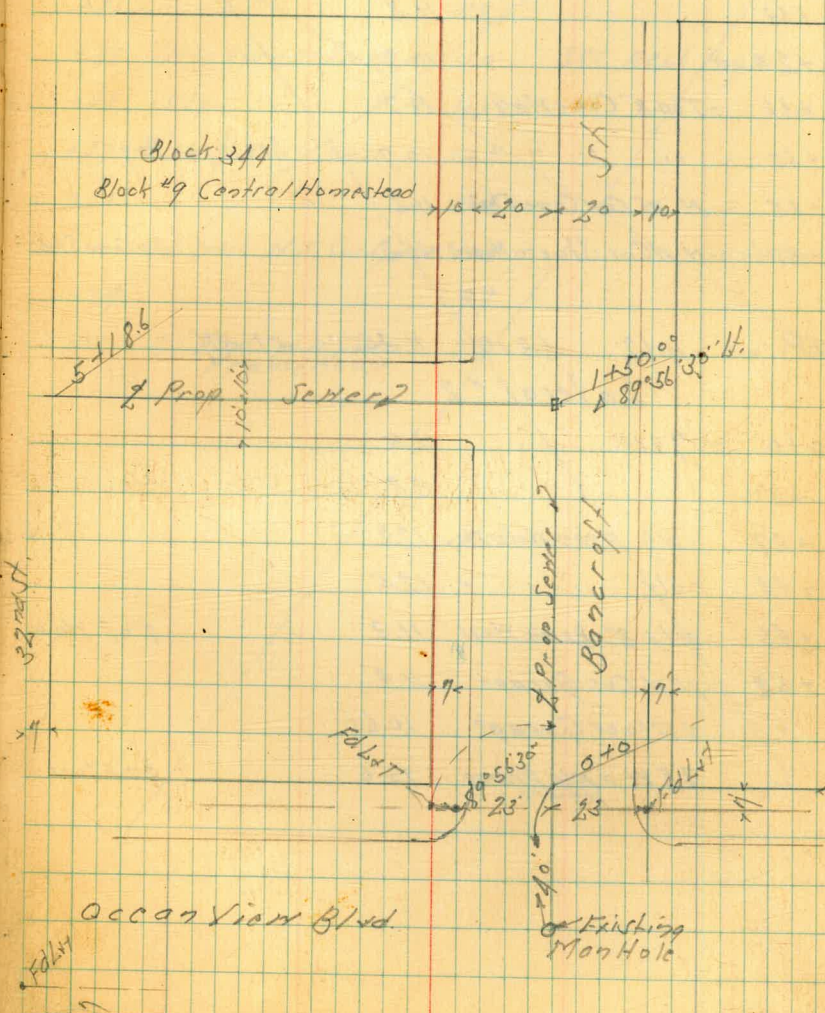
BM	9.16	45.39	36.23	SW Top of Hill Ocean View + Bancroft
0+40	- Exist MH	12.11	32.28	07 Run
" "	" "	20.34	25.05	Flux hole
0+0	- H.L. Ocean View Blvd	12.2	33.2	07 Pav
+50		9.3	36.1	
+70		6.3	39.1	
+50	- A 89°56'30" Lt	2.91	42.48	07 Stub
+70		2.9	42.5	
+80	- W.L. Bancroft	1.7	43.7	
TP	12.67	58.01	0.05	45.34
2+0		11.8		46.2
+25		6.4		51.6
+50		10		57.0
TP	12.91	70.82	0.10	57.91
+70		7.7		63.1
"	100% of old = 50' Grade	7.9		62.9
3+0		7.2		63.6
+50		6.3		64.5
4+0		5.3		65.5
+30		3.3		67.5
+60		2.1		68.7
5+0		0.5		70.3
+186	- Approx. Fl. 32nd St	14		69.4
BM		10.28	60.54	SW Top of Hill Ocean View + 32nd St 10+0

Jan. 8-46  
 Sisson  
 81150  
 67600  
 8099

Indexed  
 C.S.K.

Franklin Ave

Block 344  
 Block 9 Central Homestead





Levels Proposed Section Lateral  
 East of 43rd St Between Newton + Logan  
 Sketch Page 36

Lateral #1

BM	5.52	62.92	57.4	Nail 1980 519812A Page 40
0+0	= 6+28		5.0	
+13			10.8	
+25			10.7	
+30	= Top 8" Conc Wall		10.7	
+45	" " "		10.7	See next Page
+45	= N W Cor Conc Slab		11.2	
+51.6	= N W Cor Stucco House		11.2	on Conc Slab

TP 11.62 63.19 11.35 51.57

Lateral #2

0+0	= 7+10		2.5	
+20			3.8	
+37	= N W open Water Way		12.8	
+44	= Sly " " "		12.5	
+45	= N W 8" Brick Wall		11.3	Top Wall
+59	= N W Cor Garage		11.4	
"	= Floor Garage		10.60	
"	8-8 W = Fly Frame House		10.0	on Floor

Jan 8-16  
 S. J. J. J.  
 8111  
 Osborne  
 8099

63.17

Lateral #3

0+0	= 7+58		12.3	
+16			0.2	
+21			5.2	
+38	= N W open Water Way		11.0	See next Page
+45	= Sly " " "		11.1	
+47	= N W 8" Brick Wall		10.0	
+61			10.2	
"	8" West - N E Cor Garage		10.1	on Floor
+79			9.9	
"	5' East - N W Cor. Frame House		7.2	on Floor

Levels Proposed Sewer Laterals  
East of 43rd St. Between Newton + Logan

Lateral N°1 Sketch Page 36				
BM	2.55	59.95	57.4	Nail in Pav 5.9812 Page 40
0+0	= 6+29 Trunk	7.1	52.9	
+00.6	= 17 1/2" Conc Wall	7.90	52.1	
+39.6		8.0	52.0	
"	2' Fall 2" = 4" Cast Iron Pipe Clear Out	8.25	51.7	
TP	5.06	56.66	8.35	51.60

Lateral N°2 Sketch Page 38				
0+0	= 7+47 Trunk	+6.5	63.2	
+17		0.0	56.7	
+27	= 11 1/2" Open Water Way	5.2	51.5	
+32		5.2	51.5	
+34	= Top 8" Brick Wall	7.75	52.9	
+36		4.11	56.6	
"	32.6 S.E. = 18" W Cor Hourr	0.80	55.9	07 Flow
"	13.5 S.W. = 18" E Cor Hourr	3.5	53.2	" "

Jan 11-46  
S. S. Roy  
811  
Osborne  
8899

Cross Section 13th St  
 Market St to North Line Morrison Marsceon Park  
 Levels Next Page

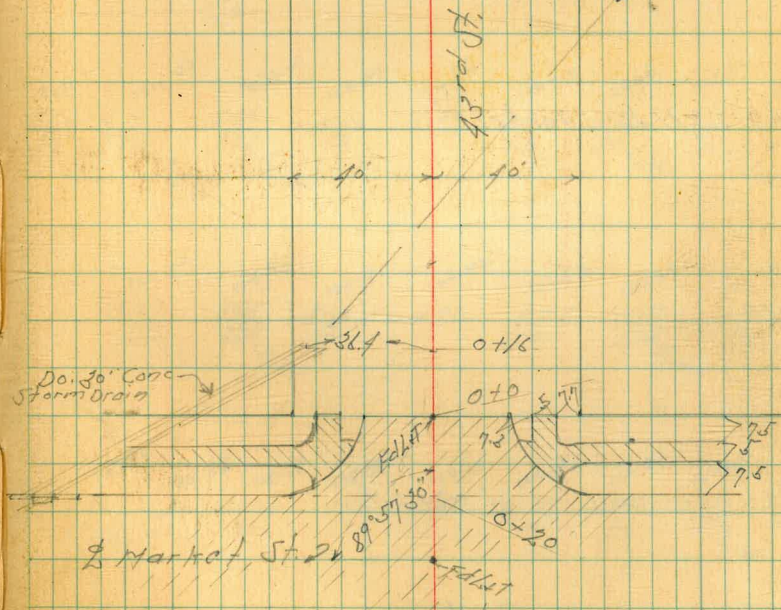
Indexed  
 C.S.K.

March 7-16  
 S. 8007  
 8099  
 Waddel

65

H.L. Morrison 2  
 Marsceon Park 38.8 x 56+21.68  
 3/4" Pipe

See Page 77



0+72

0+50

0+16 = opp. Da. 30" Conc. Storm Drain outlet

0+0 = N.L. Market St

0-10

0-20 = N. Cb. Line of Market

BM 394 131.48

127.54  
J.E.R.P.  
Market St  
Boulder

125.6	124.7	124.2	121.9	122.6	124.3	125.7	127.6	128.0
59 50	48 40	70 35	96 21	89	77 8	58 20	39 40	25 40

124.6	123.7	121.4	122.0	125.1	125.2	127.3	128.4
49 50	78 40	191 20	95 15	84 8	59	43 30	31 40

122.4	121.1	119.63	120.3	125.5	126.8	127.7	128.1
93 50	104 40	1185 36.4	117 29	60 21	4.7	4.8 20	34 40

126.4	126.47	125.94	126.28	126.56	126.64	126.68	127.30	127.9
51 40	501 20	556 20	570 10	492	486 19	480 20	48 20	5.6 40

126.41	125.83	126.19	126.44	126.53	126.66	127.28
507 20	565 23.5	539 10	506	495 10	482 20	470 20

125.81	125.28	125.78	125.98	126.24	126.36	126.57	127.09	127.63
549 40	120 40	570 20	550 10	518	512 10	491 20	439 40	356 10

131.48

370

275

755 126 lb of  $\frac{1}{2}$  - Wly Wire Fence

250

TP 10.35 127.80 4.03 127.45

740 366 lb of  $\frac{1}{2}$  - Wly Porter Pole

240

1750

1747 39 lb of  $\frac{1}{2}$  - Wly Picket Fence

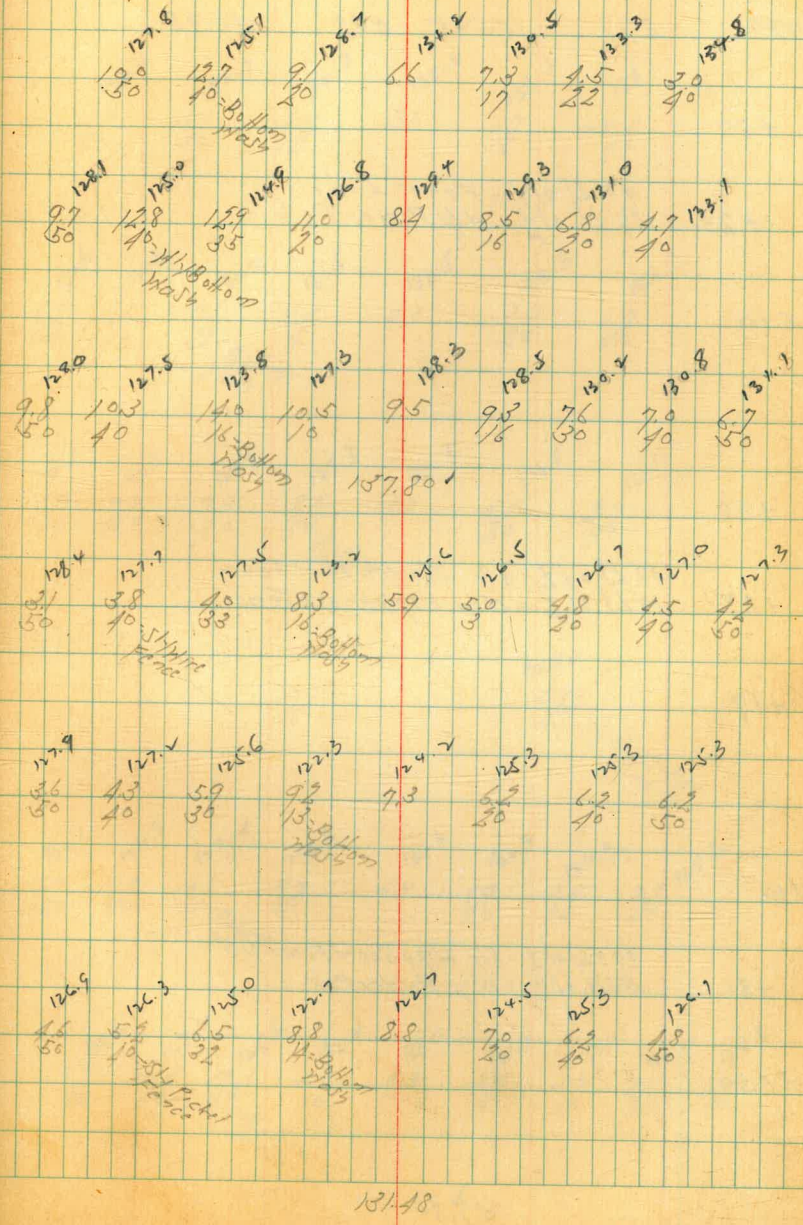
170 372 lb of  $\frac{1}{2}$  - Wly Porter Pole

0797  $\frac{1}{2}$  - Server Man Hole 6.03 125.45 09 Rion  
131.48

Lt

2

Rt



TP 8.97 145.95 0.82 136.98

+50

+23 40' Lt of  $\frac{1}{2}$  = Fence Line  
37' Lt of  $\frac{1}{2}$  = Wly Corner Pole

5+0

+50

+28 40' Lt of  $\frac{1}{2}$  = Sly Woodline Fence  
39' Lt of  $\frac{1}{2}$  = Sly High Board Fence

+19

4+0

+81 39.7' Lt of  $\frac{1}{2}$  = Sly High Board Fence  
36.5' Lt of  $\frac{1}{2}$  = Wly Corner Pole

3+50

137.80

Lt.

S

RT

132.0 132.7 134.3 135.7 136.1 136.1  
5.0/50 5.0/40 5.5/40 7.1/40 1.7/40 7.0/40

131.6 131.3 130.7 131.5 133.5 134.5 136.1  
6.9/50 5.5/40 7.6/40 6.0/40 4.3/40 5.0/40 1.7/40  
Ball on  
Nails

131.1 130.8 129.9 129.3 132.3 133.5 135.1  
6.7/50 7.0/40 7.9/40 8.5/40 5.5/40 4.3/40 3.7/40  
Ball on  
Nails

B284  
4.8  
RT = Sly High Board  
Fence

130.1 129.8 127.4 130.6 131.9 132.9 134.3 135.6  
7.7/50 8.0/40 1.6/40 7.7/40 5.7/40 4.9/40 3.5/40 3.3/40  
Ball on  
Nails

126.6 127.4 125.6 132.4 133.0 131.9 132.1 135.4 136.8  
8.7/50 1.0/40 1.9/40 5.1/40 7.2/40 5.7/40 5.7/40 3.6/40 1.0/40  
Ball on  
Nails

137.80

Lt-W

S

Pt-E

8:14

9.29

127.55

55.8P  
 171.54  
 127.54

TP

2.29

136.84

11.50

134.45

7:40

7:50

+21.68

= 1/2 mile from Marscevic Park to start

6:40

5:40

1/2 of 1/2 = 1/4 half race  
 145.95

55.8  
 139.8  
 171.54

57.8  
 140.2  
 171.54

58.8  
 141.2  
 171.54

59.8  
 142.6  
 171.54

60.8  
 143.4  
 171.54

61.8  
 145.0  
 171.54

62.8  
 137.2  
 171.54

63.8  
 137.8  
 171.54

64.8  
 138.6  
 171.54

65.8  
 140.6  
 171.54

66.8  
 141.4  
 171.54

67.8  
 142.4  
 171.54

68.8  
 135.6  
 171.54

69.8  
 136.6  
 171.54

70.8  
 137.2  
 171.54

71.8  
 139.0  
 171.54

72.8  
 140.0  
 171.54

73.8  
 140.8  
 171.54

74.8  
 142.0  
 171.54

75.8  
 135.0  
 171.54

76.8  
 135.0  
 171.54

77.8  
 135.2  
 171.54

78.8  
 138.2  
 171.54

79.8  
 139.6  
 171.54

80.8  
 140.6  
 171.54

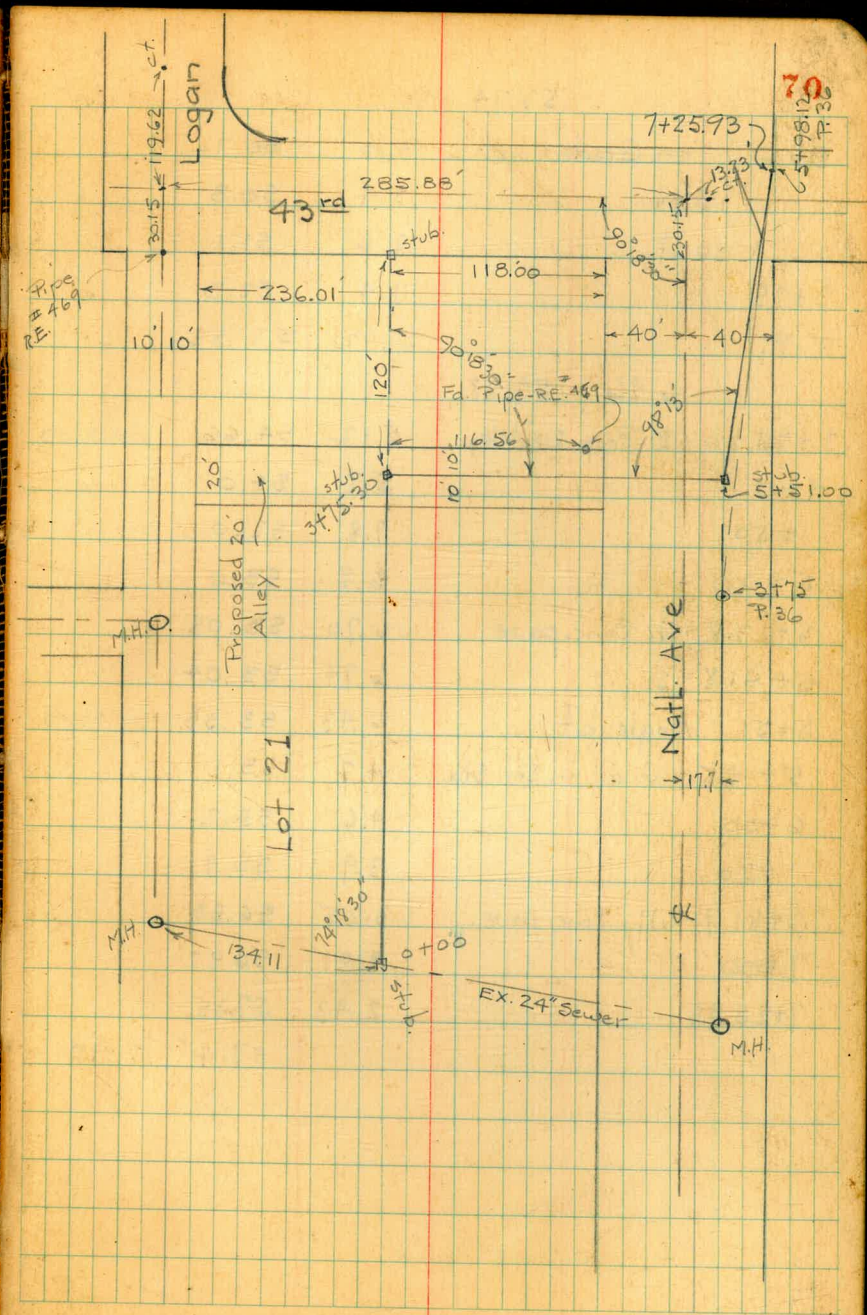
81.8  
 141.6  
 171.54

145.95 ↓

Osborne  
Crawshaw  
Harden  
3-18-46

# Proposed Sewer Change - Thru. & lot 21 Cruthers Add. See Page 36 + 60

B.M. stub. 0+00 page 60		32.41	
	10.66	43.07	
0+00	10.72	32.35	on stub.
+50	12.5	30.6	
15 Rt.	9.6	33.5	
15' Lt. = wash	13.9	29.2	
0+67 = & wash	13.3	29.8	
1+00	11.4	32.7	
18 Rt. = wash	12.5	30.6	
15' Lt.	10.9	32.2	
+50 &	10.1	33.0	
15 Rt. wash	10.2	32.9	
10 Lt.	10.2	32.9	
15 Lt.	8.1	35.0	
1+82	8.8	34.3	
2+00 &	6.7	36.4	
25 Rt. wash	7.7	35.4	
15 Lt.	4.5	38.6	
2+35 Toe of new fill	1.5	41.6	
T.P.	0.42	42.65	
	11.09	53.74	
2+54 = Top. of req. fill	4.4	49.3	
10 Rt	4.6	49.1	
10 Lt.			





53.74

3+0 = on Graded lot.	3.0	50.7	
10 Rt.	3.4	50.3	
10 Lt.	2.6	51.1	
3+35	1.4	52.3	
T.P.	0.92	52.82	
6.96	59.78		
3+75.30 = R Prop. 20' Alley	5.12	54.66	on stub.
4+0	5.8	54.0	
+50	7.8	52.0	
5+00	6.8	53.0	
5+23.8 = N. Conc. pave	6.70	53.08	
5+41.8 = S. " "	6.74	53.04	
5+51 = Angle pt.	6.43	53.35	on stub.
5+85 = W. oil in Ser. Sta.	4.7	55.1	
6+00	4.6	55.2	
+50	3.9	55.9	
6+81.7 = Wly. conc. pave.	3.25	56.53	
7+00	2.81	56.97	
7+25.93	2.43	57.35	
		57.4	P. 40

X sec on A.C. Pav. on Polk Ave = 675 1/4

Fairmont Wly to 43<sup>d</sup> St. ✓ ok. 43<sup>d</sup> and Orange

Fd. NW BR	3.85	364.86	361.01	
T.P.	4.69	365.04	4.51	360.35
T.P.	5.01	<u>364.68</u>	5.37	359.67

0-30 = Fairmont

N.L		5.43		359.25
C		5.42		359.26
SL		5.40		359.28

0-20

S		5.50		359.12
C		5.51		359.17
H		5.48		359.20

0-10 = W.C. Fairmont

N-8.5	c6 B.C.		5.52		359.16
"	9T		5.88		358.80
	c6 Pav		5.98		358.70
	1/4 "		5.59		359.09
	C "		5.51		359.17
	1/4 "		5.67		359.06
S	c6 "		5.74		358.94
	S.L. + 8.5 9T.		5.73		358.95
	SL + 8.5 c6 B.C.		5.31		359.37
	0-0.55				
SL	soln		5.4		359.54

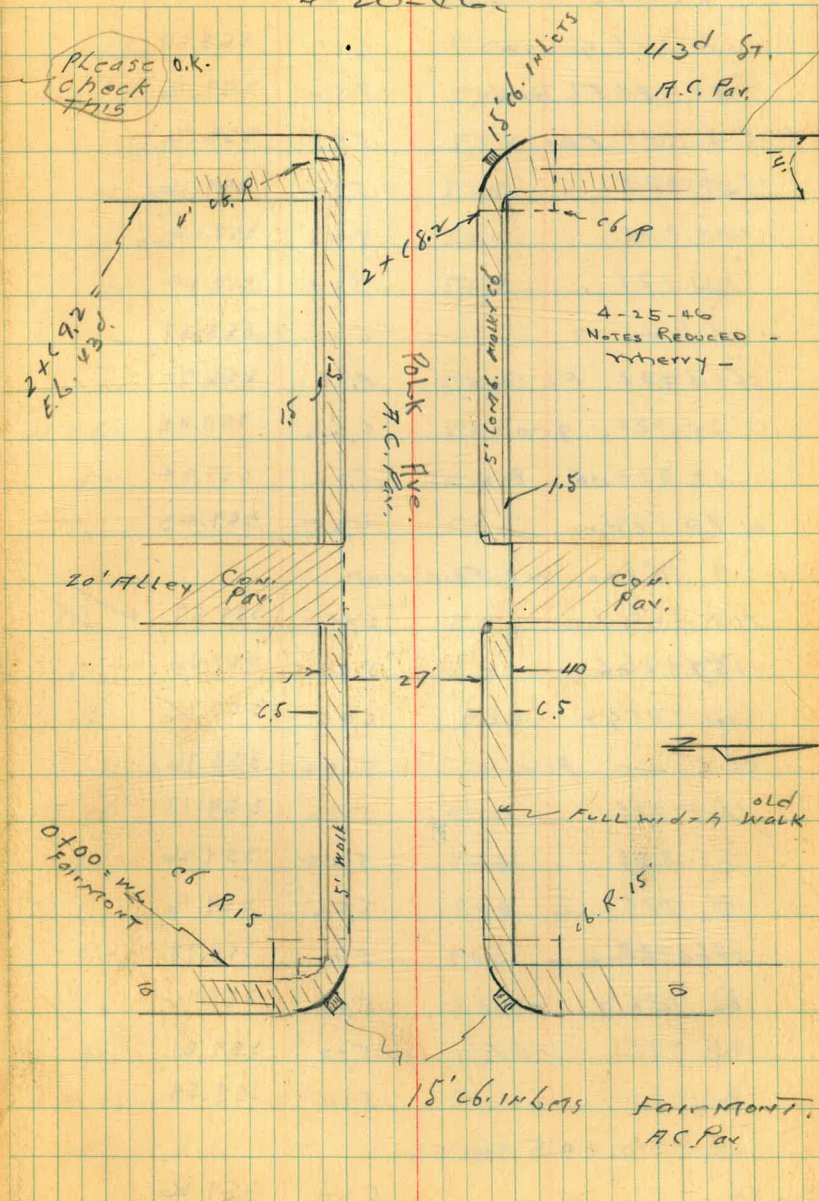
40' wide  
6.5' curbs  
= 675 1/4

C. Moore.  
Sommer Meyer.  
899.

Indexed  
C.S.K.

72

4-20-46



364.68

S.L. + 2.4	cb	inlet	5.16	359.52
"	"	grate	6.11	358.57
"	"	FL Box	7.52	357.16
S cb line	par.		5.98	358.70
1/4	"		5.52	359.16
c	"		5.48	359.20
1/4	"		5.42	359.24
N cb line	"		6.01	358.67
cb + 4.1	FL Box		8.97	355.71
"	grate		6.20	358.48
"	cb	inlet	5.24	359.44
N L	sdw		5.25	359.43
0 to 0 WL Fairment				
N	sdw		5.11	359.57 ✓
+5.8	cb		5.22	359.46
"	gr		6.02	358.66
cb line	par		5.92	358.76
1/4	"		5.50	359.18
c	"		5.42	359.26
1/4	"		5.52	359.16
S cb line	"		5.90	358.78
cb + 0.7	gr		5.96	358.72
"	"	cb	5.17	359.51
S.L.			5.10	359.58
0 to 5 cb EC				
scb			5.32	359.36

364.68

73

S	gr		5.69	358.99
1/4			5.50	359.18
c			5.46	359.22
1/4			5.54	359.16
N	gr		5.75	358.93
N	cb		5.33	359.35
N	sdw		5.07	359.61
0 to 2.5				
N	sdw		5.07	359.61
N	cb		5.23	359.25
gr			5.75	358.93
1/4			5.65	359.03
c			5.49	359.19
1/4			5.56	359.12
gr			5.73	358.95
S	cb		5.38	359.30
0 to 5.0				
S	cb		5.22	359.46
gr			5.69	358.99
1/4			5.49	359.19
c			5.46	359.22
1/4			5.55	359.13
gr			5.72	358.94
N	cb		5.41	359.27
N	sdw		5.08	359.60

344.68

0467.3 =	± 11.5	Church steps	Steps	
N	Top of	4.65	360.03	have 5" Rises
N	sdw	4.11	360.57	above Lower STEP
N cb		5.40	359.28	
9T		5.73	358.95	C - Risen overall
1/4		5.51	359.17	12" Treads and Stair
C		5.46	359.22	11.5 wide
1/4		5.56	359.12	
9T		5.72	358.96	
S cb		5.22	359.46	
	1400			
S cb		5.12	359.56	
9T		5.67	359.01	
1/4		5.51	359.17	
C		5.45	359.23	
1/4		5.48	359.20	
9T		5.68	359.00	
N cb		5.37	359.31	
N L	sdw	5.10	359.58	
	1424.6 Alley			
N	cb	5.08	359.60	
"	Par	5.25	359.43	
N cb	E n' P. Ret.	5.41	359.27	
N	9T	5.72	358.94	
1/4		5.64	359.04	
C		5.57	359.11	

364.68

74

S	4	5.62	359.06
	9T	5.62	359.06
S	cb	5.20	359.48
SL	Par.	5.13	359.55
SL	cb	4.83	359.85
	1434.6 Alley		
SL	Par	5.42	359.26
S	cb Line	5.62	359.06
1/4	"	5.68	359.00
C	"	5.70	358.98
1/4	"	5.67	359.01
N	cb Line	5.76	358.92
N	"	5.45	359.23
	1444.6 Alley		
N	cb	5.02	359.64
N	9T	5.20	359.48
"	cb	5.33	359.35
"	9T	5.72	358.96
1/4		5.71	358.97
C		5.62	359.06
1/4		5.62	359.04
9T		5.59	359.09
S	cb	5.07	359.61
SL	9T	5.24	359.44
SL	cb	4.90	359.78

364,68

1+75

S cb	5.00	359.68
9T	5.62	359.06
1/4	5.56	359.12
C	5.53	359.15
1/4	5.58	359.10
9T	5.69	358.99
N cb	5.28	359.40

2+00

N cb	5.14	359.54
9T	5.64	359.04
1/4	5.55	359.13
C	5.49	359.19
1/4	5.50	359.18
9T	5.62	359.04
S cb	4.92	359.74

2+25

S cb	4.88	359.80
9T	5.63	359.05
1/4	5.44	359.24
C	5.42	359.26
1/4	5.52	359.16
9T	5.62	359.06
N cb	5.15	359.53

2+50

N cb	5.16	359.54
------	------	--------

364,68

75

N 9T	5.43	359.05
1/4	5.48	359.10
C	5.42	359.26
1/4	5.42	359.26
9T	5.51	359.17
S cb	4.82	359.84

2+68.2 = 1' E of E.L. of #3 C

S cb	4.83	359.85
9T	5.49	359.19
1/4	5.38	359.30
C	5.37	359.31
1/4	5.45	359.23
9T	5.57	359.11
N cb	New B.C. Ret 15R 5.17	359.51

2+78.2 = E INLET ON NE Cor

N.L. side	5.14	359.54
2.6 Top cb	5.17	359.51
" grate	6.15	358.53
" K.L. Box	8.01	356.07

T.P.	3.13	364.87	292	361.74
T.P.	5.12	365.23	476	360.11
check to origin B.M.			421	361.02

361.01  
0.01

\*  
Facts on E.L. would  
be approx. 750 some

Curb grades NW Cor. Bega.  
 of Polk & Fairmont 5-9-46  
 Front of Church

C.M.  
 C.S.

W.L. Fairmont = 0.700

359.50  
 4.57

0.710

359.505  
 4.565

0.750

359.52  
 4.55

1.700

359.53  
 4.54

1.723 = 2' 6" R

chisel cross

359.54  
 4.53  
 4.70  
 0.17

1.723 grade at N.E.

359.61  
 4.46

indexed  
 C.S.K.

3 59.57 = 0.11  
 4.50  
 3 64.07 14.1.

P. 73

on s.d.w. Polk  
 NW Cor. Fairmont

76

Proposed Storm Drain North East  
Market + 43rd St.

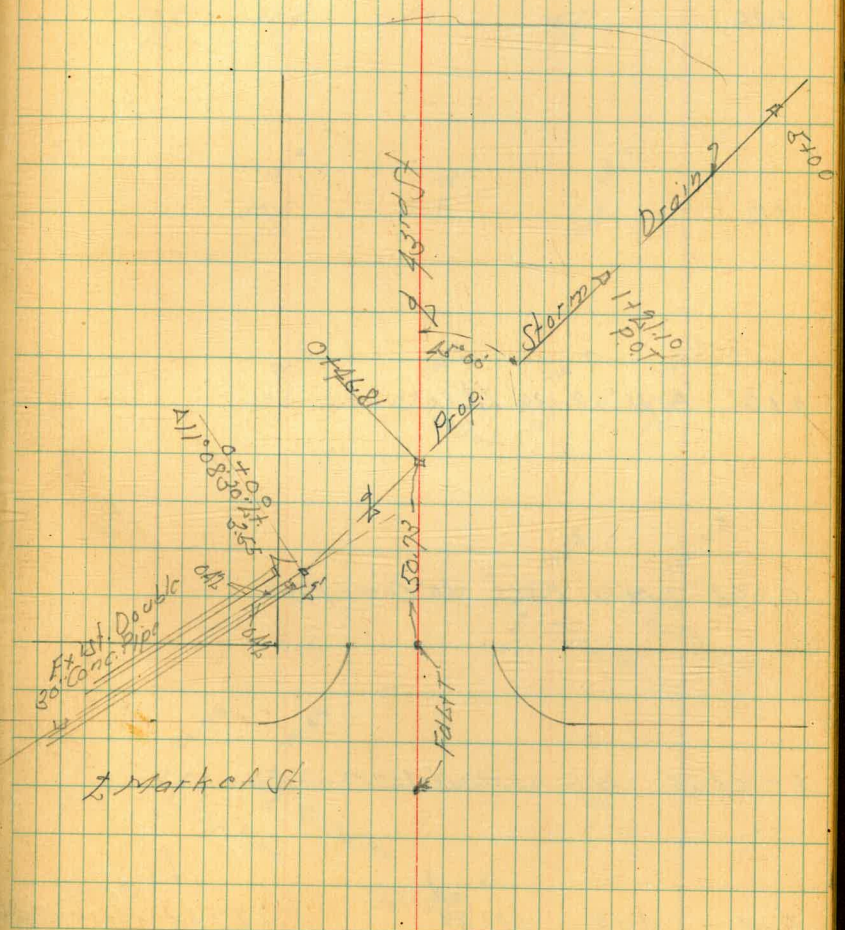
See Page 65

Ed. Hail

Sept. 4, 46  
Sisson  
McCoy  
Haddell  
Hiley

77

Work Order 109



Levels Proposed Storm Drain  
North East Market St. + 43rd St.

+50

+30

+12

0+0 A 11° 08' 36" Lt

0-08 = 1 1/4" East 30" Conc Pipe

0-08.55 = 1 1/4" of North 30" Conc Pipe

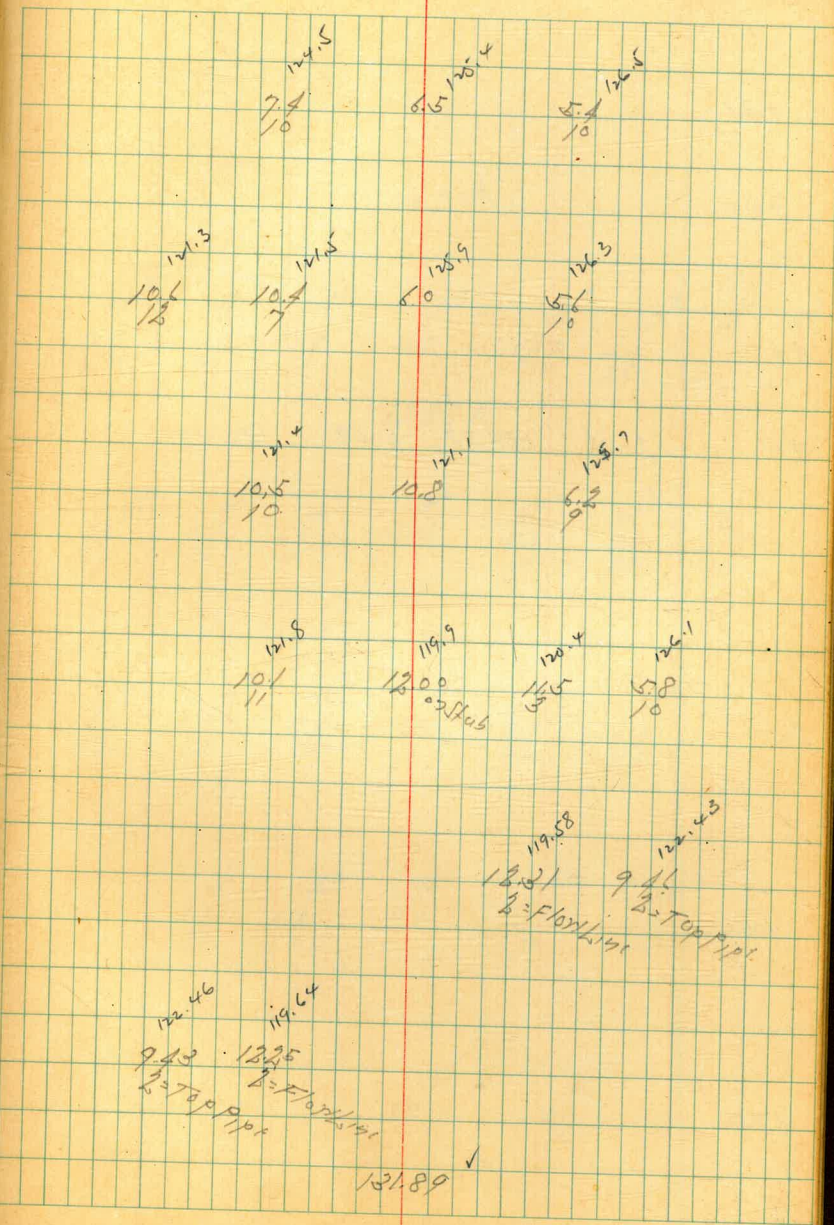
BM 4.35 131.89

127.54 SERP Market St

Lt. NN

2

Rt. SE 78





+35

+30

3+0

TP 12.58 138.88 5.59 126.00

+50

2+0

+50

1+0

131.89

LT

T

RT

79

12.57 126.6

10.8 128.1

8.4 130.5  
50

10.6 128.3  
50

10.9 128.0  
10

11.2 127.7

11.5 125.4  
10

11.6 127.4  
25

12.0 125.6  
50

12.8 134.1  
50

138.88 ✓

5.4 127.3  
50

5.7 126.5  
50

5.0 125.9  
10

5.4 126.5  
5

5.8 126.1  
10

5.8 126.3  
20

5.4 131.4  
50

5.5 125.7  
50

5.5 125.4  
25

5.1 125.8  
10

5.8 126.1  
5

5.8 127.1  
10

5.4 131.7  
50

5.8 125.1  
20

5.5 125.7  
50

4.8 127.1  
4

5.7 128.3  
10

5.4 130.7  
50

7.6 124.3  
10

8.9 125.0  
4

5.7 126.7  
10

131.89 ✓

Lt. Z Pt

570  
 52 88 72 95 93 73 67 97  
 50 25 10 3 25 5 10 70  
 129.7 130.1 131.7 129.4 129.57 131.6 132.5 138.4

+85  
 76 131.3

+50  
 94 85 10.6 8.5 8.0 7.3 5.3 9.5  
 15 30 10 5 10 25 50  
 129.5 130.4 128.3 130.4 130.9 131.6 133.6 135.4

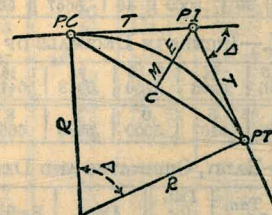
470  
 74 108 9.5 10.8 9.7 8.8 7.4 8.4  
 50 35 30 5 10 50 50  
 129.5 128.1 129.4 128.1 129.2 130.1 131.5 132.5

3750  
 68 91 11.0 11.0 9.9 12.4 47  
 50 50 10 20 35 50  
 129.8 127.9 127.5 129.0 126.5 134.4

128.88

# DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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### 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)  $= R \text{vers} \frac{\Delta}{2}$  (6)
- External— $E = T \tan \frac{\Delta}{4}$  (7)  $= R \div \cos \frac{\Delta}{2} - R$  (8)  $= R \text{exsec} \frac{\Delta}{2}$  (9)
- Long Chord— $C = 2 R \sin \frac{\Delta}{2}$  (10)  $\Delta$ —Central Angle

### EXPLANATION AND USE OF TABLES

**Stations.**—Given P. I.—Sta. 161+60.35 to find Sta. of P. C. and P. T.  $\Delta = 62^\circ 10'$   $D = 8^\circ 20'$ . From Table IV for  $1^\circ$  curve  $T = 3454.1$  and  $\div 8\frac{1}{3} = 414.49$  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— $158 - \text{Sta. P. C.} = 54.50$ , hence offset— $7.27 (54.50 \div 100)^2 = 2.16$  ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus  $(54.50)^2 \div (2 \times 688.26) = 2.16$  ft.

**Deflections.**—Deflection angle— $\frac{1}{2} D$  for 100 ft.,  $\frac{1}{4} D$  for 50 ft., etc. For  $c$  ft.—(in minutes)  $.3 \times C \times D^\circ$  or—defl. for 1 ft. from Table III  $\times C$ . For Sta. 158 of above curve— $.3 \times 54.5 \times 8\frac{1}{3} = 136.2'$  or  $2^\circ 16.2'$ , or— $2.50 \times 54.5 = 136.2'$  from Table III. For Sta. 159 deflection angle— $2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$ , etc.

**Externals.**—May be found in similar manner to tangents. Thus  $E$  for curve above is 115.37. For from Table IV for  $1^\circ$  curve  $E = 960.6$  for  $8^\circ 20' = 960.6 \div 8\frac{1}{3} = 115.27$  and from Table V correction—.10 or  $E = 115.37$  ft. Or suppose  $\Delta = 32^\circ$  and  $E$  is measured and found to be 42 ft. What is  $D$ ? From Table IV  $E = 230.9$  and  $\div 42 = 5.5$  or  $D = 5^\circ 30'$ .

TABLE VI.—CORRECTIONS FOR SUB-CHORDS AND LONG CHORDS.

FOR SUB-CHORDS ADD										Excess of arc per 100 ft.	LONG CHORDS				
D	10	20	30	40	50	60	70	80	90		D	200	300	400	500
4°	.00	.00	.01	.01	.01	.01	.01	.01	.00	.02	1	199.99	299.97	399.92	499.85
6	.00	.01	.01	.02	.02	.02	.02	.01	.01	.05	2	199.97	299.88	399.70	499.39
8	.01	.02	.02	.03	.03	.03	.03	.02	.01	.08	3	199.93	299.73	399.32	498.63
10	.01	.02	.03	.04	.05	.05	.05	.04	.02	.13	4	199.88	299.51	398.78	497.57
12	.02	.04	.05	.06	.07	.07	.07	.05	.03	.18	5	199.81	299.24	398.10	496.20
14	.02	.05	.07	.08	.09	.10	.09	.07	.04	.25	6	199.73	298.90	397.26	494.53
16	.03	.06	.09	.11	.12	.12	.12	.09	.05	.33	7	199.63	298.51	396.28	492.57
18	.04	.08	.11	.14	.15	.16	.15	.12	.07	.41	8	199.51	298.05	395.14	490.31
20	.05	.10	.14	.17	.19	.20	.18	.15	.09	.51	9	199.38	297.54	393.86	487.75
22	.06	.12	.17	.21	.23	.24	.22	.18	.10	.62	10	199.24	296.96	392.42	484.90
24	.07	.14	.20	.25	.28	.28	.26	.21	.12	.74	12	198.90	295.03	389.12	478.34
26	.09	.17	.24	.29	.32	.33	.31	.25	.15	.86	14	198.51	294.06	385.22	470.65
28	.10	.19	.27	.34	.37	.38	.36	.29	.17	1.00	16	198.05	292.25	380.76	461.86
30	.11	.22	.31	.39	.43	.44	.41	.33	.19	1.15	18	197.54	290.21	375.74	452.02
32	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31	20	196.90	287.94	370.17	441.15
34	.15	.28	.40	.50	.55	.57	.53	.43	.25	1.48	22	196.12	285.44	364.00	429.30
36	.17	.32	.45	.56	.62	.64	.59	.48	.28	1.66	24	195.63	282.71	357.43	416.53
38	.18	.36	.51	.62	.70	.71	.66	.53	.31	1.85	26	194.87	279.76	350.80	402.89
40	.21	.40	.56	.69	.77	.79	.73	.59	.35	2.06	28	194.00	276.59	342.69	388.43
42	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28	30	193.18	273.20	334.61	373.20
44	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50	32	192.25	269.61	326.08	357.28
46	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74	34	191.26	265.81	317.12	340.73
48	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99	36	190.21	261.80	307.77	323.61
50	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24	38	189.10	257.60	298.03	305.99
52	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52	40	187.94	253.21	287.94	287.94
54	.38	.73	1.04	1.28	1.42	1.46	1.35	1.09	.64	3.85	42	186.72	248.63	277.51	269.54
56	.41	.78	1.12	1.38	1.53	1.57	1.46	1.17	.69	4.09	44	185.44	243.87	266.78	250.85
58	.44	.84	1.20	1.48	1.65	1.69	1.57	1.26	.74	4.40	46	184.10	239.93	255.78	231.95
60	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72	48	182.71	235.83	244.51	212.92

Note.—When a chord of less than 100 ft. is used the corrections given in the above table should be added to the nominal length of chord to get the length which should be used in order that the 100 ft. points will check with those obtained by using the standard 100 ft. chord. Thus in locating a 14° curve by 25 ft. chords measure 25'.06 for each chord. Long chords are useful in passing obstacles.

TABLE VII.—MIDDLE ORDINATES FOR RAILS IN FEET.

Deg. of Curve	LENGTH OF RAILS						Deg. of Curve	LENGTH OF RAILS.							
	32	30	28	26	24	22		20	32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.067	.058	.051	.044	.037	.031	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.069	.060	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.099	.086	.074	.063	.053	.044	20	.445	.392	.341	.296	.250	.212	.174
6	.134	.117	.102	.088	.076	.064	.052	21	.466	.410	.357	.309	.262	.222	.182
7	.156	.137	.120	.104	.088	.074	.061	22	.487	.430	.375	.325	.275	.233	.191
8	.179	.158	.137	.119	.100	.085	.070	23	.509	.450	.390	.338	.287	.243	.199
9	.201	.175	.153	.133	.112	.096	.078	24	.531	.469	.408	.354	.299	.253	.208
10	.223	.196	.171	.148	.125	.106	.087	25	.552	.486	.424	.367	.311	.263	.216
11	.245	.216	.188	.163	.139	.117	.096	26	.573	.506	.441	.382	.323	.274	.225
12	.268	.236	.206	.179	.151	.128	.105	27	.594	.524	.457	.396	.335	.284	.233
13	.290	.254	.222	.192	.163	.138	.113	28	.618	.545	.475	.411	.348	.294	.242
14	.312	.275	.239	.207	.175	.148	.122	29	.638	.564	.491	.424	.361	.303	.250
15	.334	.295	.257	.223	.188	.159	.131	30	.660	.583	.508	.438	.374	.313	.259

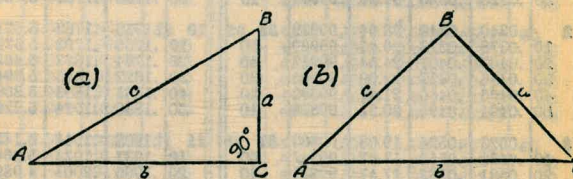
SLOPE REDUCTIONS.

When distances are measured on a slope they may be reduced to the equivalent horizontal distance by the following approximate rule:—subtract from the slope distance the square of the rise divided by twice the slope distance. Thus for a slope distance of 250.3 ft. and a rise of 15 ft. correction= $15^2 \div 2 \times 250.3 = .45$  (by slide rule) or horizontal distance= $250.3 - .45 = 249.85$ . When vertical angle= $V. A.$  is measured horizontal distance= $\text{slope distance} \times \cos V. A.$  Thus for slope distance of 248.7 ft. and  $V. A.$  of  $4^\circ 20'$  from Table VIII  $\cos = .99714$  and correction= $1 - .99714 = .00286$  per foot or total of  $.286 \times 2 \frac{1}{2}$  (near enough) = .57 and horizontal distance =  $248.7 - .57 = 248.13$  ft.

TRIGONOMETRICAL FORMULAS.

See fig. (a).

$\sin. A = \frac{a}{c}$   
 $\cos. A = \frac{b}{c}$   
 $\tan. A = \frac{a}{b}$   
 $\cot. A = \frac{b}{a}$   
 $\sec. A = \frac{c}{b}$   
 $\text{cosec. } A = \frac{c}{a}$



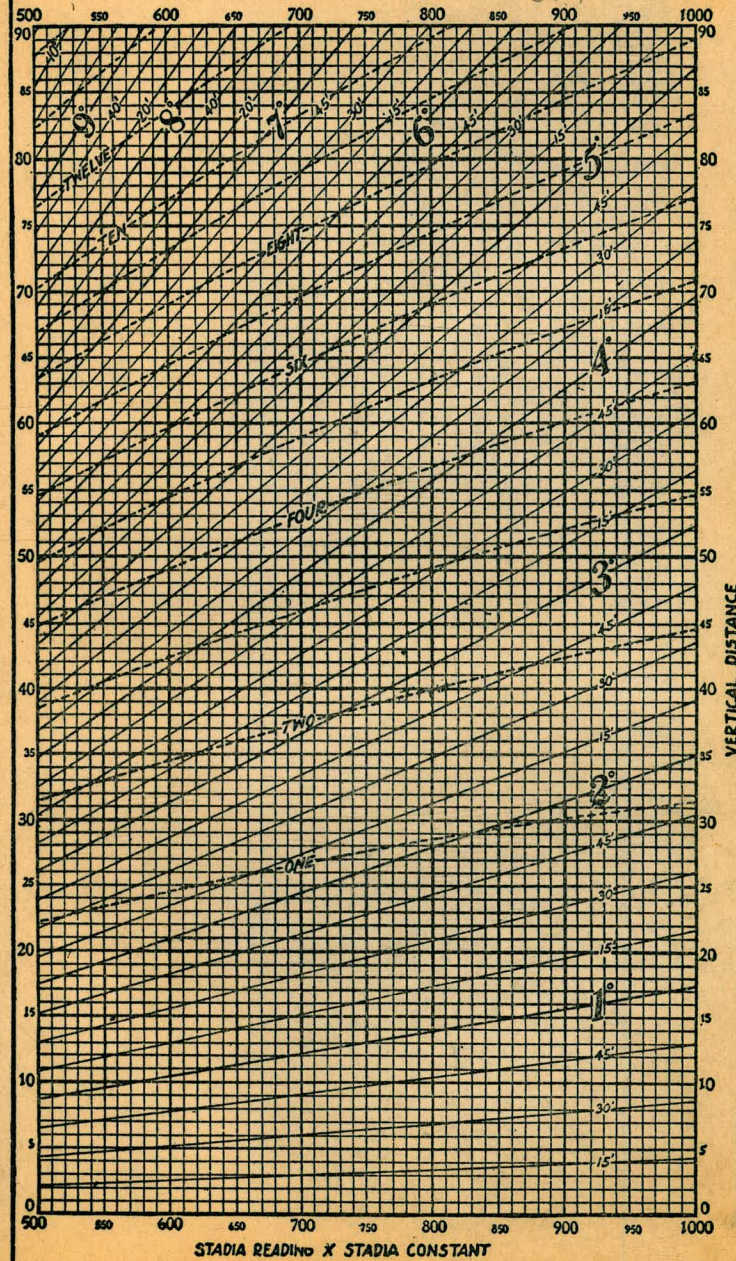
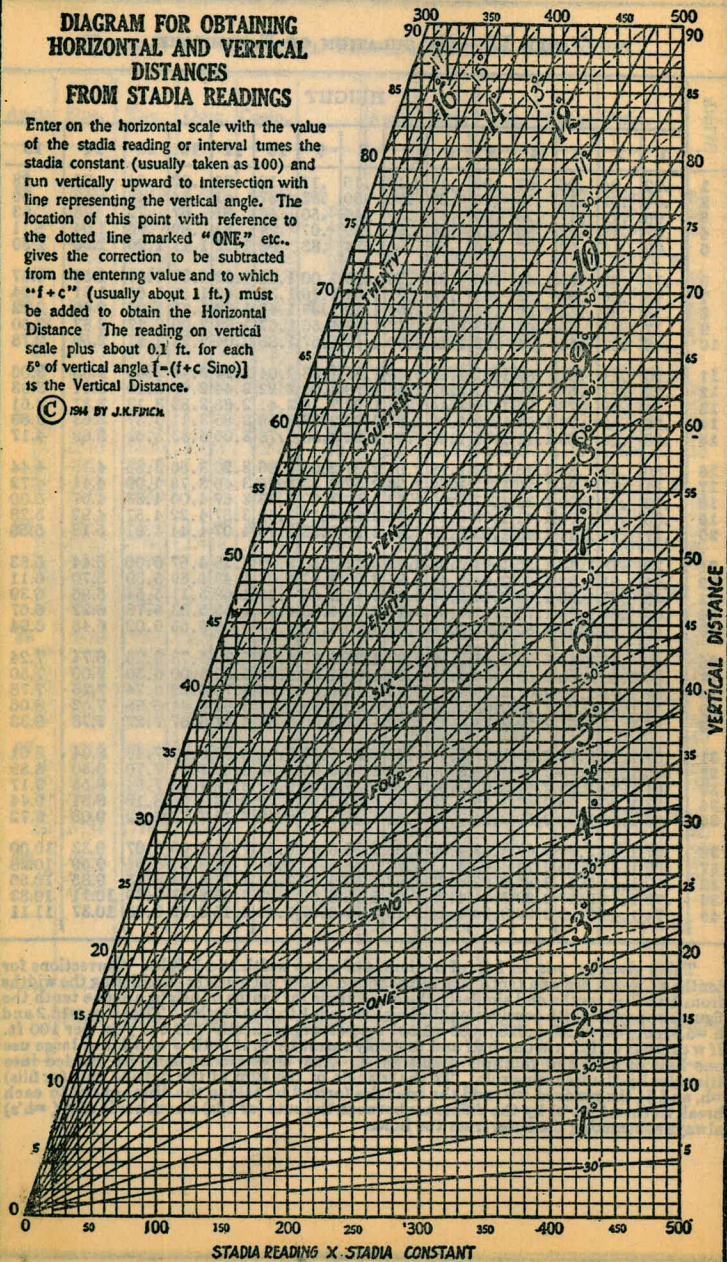
FORMULA FOR SOLVING TRIANGLES.

Given	Sought.	Right triangles. See fig. (a).
$a, c$	$A, B, b$	$\sin. A = \frac{a}{c}, \cos. B = \frac{a}{c}, b = \sqrt{(c+a)(c-a)}$
$a, b$	$A, B, c$	$\tan. A = \frac{a}{b}, \cot. B = \frac{a}{b}, c = \sqrt{a^2 + b^2}$
$A, a$	$B, b, c$	$B = 90^\circ - A, b = a \cot. A, c = \frac{a}{\sin. A}$
$A, b$	$B, a, c$	$B = 90^\circ - A, a = b \tan. A, c = \frac{b}{\cos. A}$
$A, c$	$B, a, b$	$B = 90^\circ - A, a = c \sin. A, b = c \cos. A$
Given	Sought.	Oblique triangles. See fig. (b).
$A, B, a$	$b$	$b = \frac{a \sin. B}{\sin. A}$
$A, a, b$	$B$	$\sin. B = \frac{b \sin. A}{a}$
$a, b, C$	$A - B$	$\tan. \frac{1}{2}(A - B) = \frac{(a-b) \tan. \frac{1}{2}(A+B)}{a+b}$
$a, b, c$	$A$	$\left\{ \begin{aligned} \text{If } s = \frac{1}{2}(a+b+c), \sin. \frac{1}{2} A &= \sqrt{\frac{(s-b)(s-c)}{bc}} \\ \cos. \frac{1}{2} A &= \sqrt{\frac{s(s-a)}{bc}}, \tan. \frac{1}{2} A = \sqrt{\frac{(s-b)(s-c)}{s(s-a)}} \\ \sin. A &= \frac{2\sqrt{s(s-a)(s-b)(s-c)}}{bc} \end{aligned} \right.$
$A, B, C, a$	area	$\text{area} = \frac{a^2 \sin. B \sin. C}{2 \sin. A}$
$A, b, c$	area	$\text{area} = \frac{1}{2} bc \sin. A$
$a, b, c$	area	$s = \frac{1}{2}(a+b+c), \text{area} = \sqrt{s(s-a)(s-b)(s-c)}$

**DIAGRAM FOR OBTAINING  
HORIZONTAL AND VERTICAL  
DISTANCES  
FROM STADIA READINGS**

Enter on the horizontal scale with the value of the stadia reading or interval times the stadia constant (usually taken as 100) and run vertically upward to intersection with line representing the vertical angle. The location of this point with reference to the dotted line marked "ONE," etc., gives the correction to be subtracted from the entering value and to which " $f+c$ " (usually about 1 ft.) must be added to obtain the Horizontal Distance. The reading on vertical scale plus about 0.1 ft. for each  $5^\circ$  of vertical angle [ $-(f+c \text{ Sino})$ ] is the Vertical Distance.

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5735  
 5707.5  
 4780 - 8rk.  
 460 "  
 440 "  
 420 "  
 4+00 EYE  
 475  
 3750  
 425  
 3700  
 475  
 450  
 430  
 2710  
 1790  
 470  
 450  
 430  
 14025  
 0775  
 4475  
 420  
 0+00  
 -2065

West

5722.6 }  
 5747.6 }  
 5759.6 } ok  
 6107.2 }

36217  
 680  
 35537 - SLBP El Cajon  
 P Estrella

East

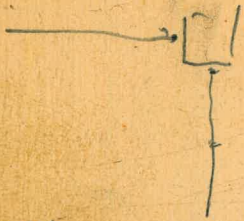
5151.0  
 5153.8

297 W. 1447 N  
 279 E 14557 N  
 260 = 1458 Edge Walk  
 196 - Top Wall

254467  
 142 + 54.98

2109 - Bik in Wall 110 W  
 293 E

170.23  
 53.23  
 127.00  
 254



1398  
 27.95  
 30.2  
 71.94

0-2555  
 1176  
 0-1377

235.88  
 117.94  
 40  
 157.94 = meas  
 141.30  
 299.24  
 53.23  
 286.01  
 118.00  
 53.23  
 171.23  
 128.00  
 299.23

285.88  
 40  
 245.88  
 34.80  
 211.08

53.23

118.00  
 57.7  
 175.7  
 71.23  
 4.47

236.01  
 235.88  
 .13

47.7

oo

DISTANCES FROM CENTER OF ROADWAY FOR  
 CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1 1/2  
 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	26.2	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.