

G-207

WETZ

DEVELOP

No. 177

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100 00	0 44	100.00	0 87	99.99	1.31	89
1	99.98	1 75	99 98	2 18	99 97	2 62	99 95	3 05	88
2	99.94	3 49	99 92	3 93	99 91	4 36	99 88	4 80	87
3	99.86	5 23	99 84	5 67	99 81	6 10	99 79	6 54	86
4	99 76	6 98	99 73	7 41	99 69	7 85	99 66	8 28	85
5	99 62	8 72	99 58	9 15	99 54	9 58	99 50	10 02	84
6	99 45	10 45	99 41	10 89	99 36	11 32	99 31	11 75	83
7	99 25	12 19	99 20	12 62	99 14	13 05	99 09	13 49	82
8	99 03	13 92	98 97	14 35	98 90	14 78	98 84	15 21	81
9	98 77	15 64	98 70	16 07	98 63	16 50	98 56	16 93	80
10	98 48	17 36	98 40	17 79	98 33	18 22	98 25	18 65	79
11	98 16	19 08	98 08	19 51	97 99	19 94	97 90	20 36	78
12	97 81	20 79	97 72	21 22	97 63	21 64	97 53	22 07	77
13	97 44	22 50	97 34	22 92	97 24	23 34	97 13	23 77	76
14	97 03	24 19	96 92	24 62	96 81	25 04	96 70	25 46	75
15	96 59	25 88	96 48	26 30	96 36	26 72	96 25	27 14	74
16	96 13	27 56	96 00	27 98	95 88	28 40	95 76	28 82	73
17	95 63	29 24	95 50	29 65	95 37	30 07	95 24	30 49	72
18	95 11	30 90	94 97	31 32	94 83	31 73	94 69	32 14	71
19	94 55	32 56	94 41	32 97	94 26	33 38	94 12	33 79	70
20	93 97	34 20	93 82	34 61	93 67	35 02	93 51	35 43	69
21	93 36	35 84	93 20	36 24	93 04	36 65	92 88	37 06	68
22	92 72	37 46	92 55	37 86	92 39	38 27	92 22	38 67	67
23	92 05	39 07	91 88	39 47	91 71	39 87	91 53	40 27	66
24	91 35	40 67	91 18	41 07	91 00	41 47	90 81	41 87	65
25	90 63	42 26	90 45	42 66	90 26	43 05	90 07	43 44	64
26	89 88	43 84	89 69	44 23	89 49	44 62	89 30	45 01	63
27	89 10	45 40	88 90	45 79	88 70	46 17	88 50	46 56	62
28	88 29	46 95	88 09	47 33	87 88	47 72	87 67	48 10	61
29	87 46	48 48	87 25	48 86	87 04	49 24	86 82	49 62	60
30	86 60	50 00	86 38	50 38	86 16	50 75	85 94	51 13	59
31	85 72	51 50	85 49	51 88	85 26	52 25	85 04	52 62	58
32	84 80	52 99	84 57	53 36	84 34	53 73	84 10	54 10	57
33	83 87	54 46	83 63	54 83	83 39	55 19	83 15	55 56	56
34	82 90	55 92	82 66	56 28	82 41	56 64	82 16	57 00	55
35	81 92	57 36	81 66	57 71	81 41	58 07	81 16	58 42	54
36	80 90	58 78	80 64	59 13	80 39	59 48	80 13	59 83	53
37	79 86	60 18	79 60	60 53	79 34	60 88	79 07	61 22	52
38	78 80	61 57	78 53	61 91	78 26	62 25	77 99	62 59	51
39	77 71	62 93	77 44	63 27	77 16	63 61	76 88	63 94	50
40	76 60	64 28	76 32	64 61	76 04	64 94	75 76	65 28	49
41	75 47	65 61	75 18	65 93	74 90	66 26	74 61	66 59	48
42	74 31	66 91	74 02	67 24	73 73	67 56	73 43	67 88	47
43	73 14	68 20	72 84	68 52	72 54	68 84	72 24	69 15	46
44	71 93	69 47	71 63	69 78	71 33	70 09	71 02	70 40	45
45	70 71	70 71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		

Published by the A. LIETZ Co., San Francisco, Cal.

MADE IN
U. S. A.



Quality
Evidenced
Since
1882.

Standard
Tripod
Connection

LIETZ STANDARD ENGINEERS' TRANSIT
With U Shaped Standards

No. 5E with 6¼" limb. No. 11E with 5" limb.

Furnished with either Internal or External
Focusing Telescope.

MICROFILMED

APR 12 1965

G-207

CITY ENGINEER

TABLE OF STADIA REDUCTIONS
For a Constant of 100.

ROD VERTICAL.

°	0°		1°		2°		3°		4°		5°		7°	
	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.		
1	100.00	.00	99.97	1.74	99.85	3.40	99.73	5.05	99.51	6.68	99.24	8.33	98.51	12.10
2	100.00	.00	99.97	1.86	99.83	3.55	99.71	5.23	99.51	7.07	99.24	8.74	98.50	12.15
4	100.00	.17	99.96	1.92	99.87	3.66	99.71	5.40	99.50	7.27	99.22	8.90	98.47	12.24
6	100.00	.33	99.96	2.04	99.96	3.78	99.79	5.62	99.48	7.49	99.20	9.19	98.44	12.32
10	100.00	.52	99.96	2.19	99.96	4.07	99.69	6.08	99.47	7.75	99.19	9.37	98.44	12.38
12	100.00	.61	99.96	2.29	99.95	4.18	99.66	6.27	99.45	7.96	99.18	9.63	98.43	12.43
15	100.00	.80	99.95	2.41	99.93	4.30	99.63	6.47	99.45	8.11	99.16	9.88	98.41	12.49
18	100.00	1.00	99.95	2.52	99.92	4.43	99.61	6.68	99.44	8.36	99.15	10.11	98.40	12.55
20	100.00	1.20	99.95	2.63	99.91	4.56	99.59	6.90	99.43	8.61	99.14	10.33	98.37	12.60
22	100.00	1.41	99.94	2.74	99.90	4.70	99.57	7.13	99.42	8.87	99.13	10.55	98.37	12.72
24	100.00	1.61	99.94	2.85	99.89	4.84	99.55	7.37	99.41	9.14	99.11	10.76	98.34	12.77
26	100.00	1.81	99.93	2.97	99.88	4.99	99.54	7.62	99.39	9.42	99.10	10.96	98.33	12.85
28	100.00	2.01	99.93	3.09	99.87	5.14	99.53	7.88	99.38	9.71	99.08	11.15	98.29	12.94
30	100.00	2.21	99.92	3.22	99.86	5.30	99.52	8.15	99.37	10.01	99.07	11.33	98.28	13.05
32	100.00	2.41	99.91	3.35	99.85	5.46	99.51	8.41	99.36	10.28	99.06	11.51	98.27	13.11
34	100.00	2.61	99.90	3.49	99.84	5.63	99.50	8.68	99.35	10.56	99.05	11.68	98.25	13.17
36	100.00	2.81	99.89	3.63	99.83	5.80	99.49	8.96	99.34	10.85	99.04	11.85	98.23	13.22
38	100.00	3.01	99.88	3.78	99.82	5.98	99.48	9.25	99.33	11.14	99.03	12.02	98.21	13.27
40	100.00	3.21	99.87	3.93	99.81	6.17	99.47	9.55	99.32	11.44	99.02	12.19	98.19	13.32
42	100.00	3.41	99.86	4.09	99.80	6.37	99.46	9.86	99.31	11.74	99.01	12.36	98.17	13.37
44	100.00	3.61	99.85	4.25	99.79	6.57	99.45	10.18	99.30	12.05	99.00	12.53	98.15	13.42
46	100.00	3.81	99.84	4.41	99.78	6.78	99.44	10.51	99.29	12.36	98.99	12.70	98.14	13.47
48	100.00	4.01	99.83	4.58	99.77	6.99	99.43	10.85	99.28	12.68	98.98	12.87	98.12	13.52
50	100.00	4.21	99.82	4.75	99.76	7.21	99.42	11.20	99.27	13.01	98.97	13.04	98.11	13.57
52	100.00	4.41	99.81	4.93	99.75	7.43	99.41	11.56	99.26	13.35	98.96	13.21	98.09	13.62
54	100.00	4.61	99.80	5.11	99.74	7.66	99.40	11.93	99.25	13.70	98.95	13.38	98.08	13.67
56	100.00	4.81	99.79	5.30	99.73	7.90	99.39	12.31	99.24	14.06	98.94	13.55	98.06	13.72
58	100.00	5.01	99.78	5.49	99.72	8.15	99.38	12.71	99.23	14.43	98.93	13.72	98.05	13.77
60	100.00	5.21	99.77	5.69	99.71	8.41	99.37	13.12	99.22	14.81	98.92	13.89	98.04	13.82
c= .75	.75	.01	.75	.00	.75	.03	.75	.06	.75	.07	.75	.07	.74	.10
c= 1.15	1.15	.01	1.15	.03	1.15	.05	1.15	.10	1.15	.11	1.15	.13	1.14	.15
c= 1.90	1.90	.02	1.90	.06	1.90	.08	1.90	.15	1.90	.16	1.89	.21	1.88	.26

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TABLE OF STADIA REDUCTIONS.—Continued.

Min.	24°		25°		26°		27°		28°		29°		30°	
	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.
0	83.46	37.16	82.14	38.30	80.78	39.40	79.39	40.45	77.95	41.45	76.50	42.40	75.00	43.30
2	83.41	37.23	82.08	38.34	80.74	39.44	79.34	40.49	77.91	41.49	76.45	42.43	74.95	43.33
4	83.37	37.29	82.05	38.38	80.69	39.47	79.29	40.52	77.88	41.52	76.40	42.46	74.90	43.36
6	83.33	37.35	82.01	38.41	80.65	39.51	79.25	40.55	77.84	41.55	76.35	42.49	74.85	43.39
8	83.29	37.41	81.97	38.45	80.61	39.54	79.21	40.58	77.80	41.58	76.30	42.52	74.80	43.42
10	83.24	37.47	81.92	38.49	80.56	39.58	79.16	40.62	77.75	41.61	76.25	42.55	74.75	43.45
12	83.19	37.53	81.87	38.53	80.51	39.61	79.11	40.65	77.70	41.65	76.20	42.58	74.70	43.47
14	83.15	37.59	81.83	38.56	80.46	39.65	79.06	40.69	77.65	41.68	76.15	42.61	74.65	43.50
16	83.11	37.65	81.78	38.60	80.41	39.69	79.01	40.72	77.60	41.71	76.10	42.64	74.60	43.53
18	83.07	37.71	81.74	38.64	80.37	39.72	78.96	40.75	77.55	41.74	76.05	42.67	74.55	43.56
20	83.02	37.77	81.69	38.67	80.32	39.75	78.91	40.79	77.50	41.77	76.00	42.70	74.50	43.59
22	82.98	37.83	81.65	38.71	80.28	39.79	78.87	40.82	77.45	41.81	75.95	42.73	74.44	43.62
24	82.93	37.89	81.60	38.75	80.23	39.82	78.82	40.85	77.40	41.84	75.90	42.76	74.39	43.65
26	82.89	37.95	81.56	38.78	80.19	39.85	78.77	40.88	77.35	41.87	75.85	42.79	74.34	43.67
28	82.85	38.01	81.51	38.81	80.14	39.88	78.73	40.92	77.30	41.90	75.80	42.82	74.29	43.70
30	82.80	38.07	81.47	38.85	80.09	39.91	78.68	40.95	77.25	41.93	75.75	42.85	74.24	43.73
32	82.76	38.13	81.42	38.89	80.04	39.94	78.63	40.99	77.20	41.97	75.70	42.88	74.19	43.76
34	82.72	38.19	81.38	38.92	80.00	39.97	78.58	41.02	77.15	42.00	75.65	42.91	74.14	43.79
36	82.67	38.25	81.33	38.95	79.95	39.99	78.54	41.06	77.10	42.03	75.60	42.94	74.09	43.82
38	82.63	38.31	81.29	38.98	79.90	40.02	78.49	41.09	77.05	42.06	75.55	42.97	74.04	43.84
40	82.58	38.37	81.24	39.01	79.86	40.04	78.44	41.12	77.00	42.09	75.50	43.01	73.99	43.87
42	82.54	38.43	81.19	39.04	79.81	40.07	78.39	41.15	76.94	42.12	75.45	43.04	73.93	43.90
44	82.49	38.49	81.15	39.07	79.77	40.10	78.34	41.19	76.89	42.15	75.40	43.07	73.88	43.93
46	82.45	38.55	81.10	39.10	79.72	40.12	78.30	41.22	76.84	42.18	75.35	43.10	73.83	43.95
48	82.41	38.61	81.06	39.13	79.67	40.15	78.25	41.25	76.79	42.21	75.30	43.13	73.78	43.98
50	82.36	38.67	81.01	39.16	79.62	40.18	78.20	41.28	76.74	42.24	75.25	43.16	73.73	44.01
52	82.32	38.73	80.97	39.19	79.57	40.21	78.15	41.32	76.69	42.27	75.20	43.19	73.68	44.04
54	82.27	38.79	80.92	39.22	79.52	40.24	78.10	41.35	76.64	42.30	75.15	43.21	73.63	44.07
56	82.23	38.85	80.88	39.25	79.47	40.27	78.05	41.39	76.59	42.33	75.10	43.24	73.58	44.10
58	82.19	38.91	80.83	39.28	79.42	40.30	78.00	41.42	76.54	42.36	75.05	43.27	73.53	44.12
60	82.14	38.97	80.78	39.31	79.37	40.33	77.95	41.45	76.49	42.39	75.00	43.30	73.47	44.15
c=75	68	31	68	32	67	33	66	35	66	36	65	37	65	38
c=115	1.05	48	1.04	50	1.03	51	1.02	53	1.01	55	1.00	57	0.99	58
c=190	1.73	79	1.72	82	1.70	85	1.69	88	1.67	91	1.65	94	1.64	95

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"Index"

Northwest

P-1-3. Grades Witherby St Pump House to Kurtz P.C.
0 to 9 56 to 26 + 27 25 M.H. 58

4-5 Loc. New Sewer - Park Riding stables
Page 8 - Grades from 26 + 27 25 M.H. 58 to 4 + 23 Connect. Phua Sewer

Page 12 Grades Harasthy Sotherland West to Witherby St Pump House

Page 14 " Harasthy East along Pac. to Sta 87 + 02 29 M.H. 51

Page 16 " Vine to Dean St

74-76 Loc. tele. New Sewer - Boy Scout camp

Page 70 Grades Mission Valley Center to 000 - Phua Center
to 5 + 36 E of Games

Bliss
Sommer
Berg
3/25/48

Sewer Grades

CUTS

INDEXED

W.K.
OCT 25 1948

1

Point Loma Sewer. Withaby

Pump House to Kortz + Pac.

6.035 8.09 2.455

0+04	6.6	RT to Pump House	5.985		-20.00		
T.P.	3.99	6.71	5.77	2.72			
0+25					-19.98		
0+50					-19.96		
0+75			4.25	2.46	-19.935	+22.40	
1+00	15' RT		4.65	2.66	-19.91	+21.97	
1+25			4.81	1.90	-19.89	+21.79	
1+50			5.91	0.80	-19.87	+20.67	
1+71	33 BC		5.54	1.17	-19.85	+21.02	
2+00			5.45	1.26	-19.82	+21.08	
2+25			6.10	0.61	-19.80	+20.41	
T.P.	5.39	6.00	6.10	0.61		+	
2+50			5.01	0.99	-19.78	+20.77	
2+75			5.03	0.98	-19.75	+20.73	
3+00			4.98	1.0	-19.73	+20.75	
3+25			4.78	1.22	-19.71	+20.93	
3+50			4.84	1.16	-19.69	+20.85	
T.P.							
3+69.90	20' EC	E C. 4.95	6.17	4.78	1.22	-19.67	+20.89
4+00			4.76	1.41	-19.64	+21.05	
+50			4.58	1.59	-19.60	+21.19	
5+00	12' RT		4.45	1.72	-19.556	+21.28	
+50			1.06	5.11	-19.512	+24.62	

7
6.17

INDEXED

Cots

1925
286
271

7P	4.04	7.14	3.07	3.10	-	
6+00	3.00	3.34	0.80	6.34	-19.47	25.81
+25			2.61	6.73	-19.45	26.18
+50			2.14	7.20	-19.42	26.42
+75			1.73	7.61	-19.40	27.01
7+00			1.40	7.94	-19.38	27.32
+25			1.28	8.06	-19.36	27.42
+50			1.18	8.16	-19.34	27.50
+75					-19.32	27.49
+77.52 EC. 203			1.22	8.12		
8+00			1.26	8.08	-19.29	27.37
+50			1.48	7.86	-19.25	27.11
9+00			1.94	7.40	-19.21	26.61
+50	1.73	8.70	2.37	6.97	-19.16	26.13
10+00			2.23	6.47	-19.12	25.59
+50			2.66	6.04	-19.08	25.12
11+00			3.09	5.61	-19.03	24.64
+50			3.55	5.15	-18.99	24.14
12+00			4.01	4.69	-18.94	23.63
+50			4.76	3.94	-18.90	22.84
13+00			5.25	3.43	-18.86	22.31
+50			5.08	3.62	-18.81	22.43
14+00			5.01	3.69	-18.77	22.46
+50	4.74	8.10	5.34	3.36	-18.72	22.08
15+00			5.34	2.76	-18.68	21.44
+50			1.32	6.78	-18.64	25.42

1800
346
2284

π
810

π
743

3

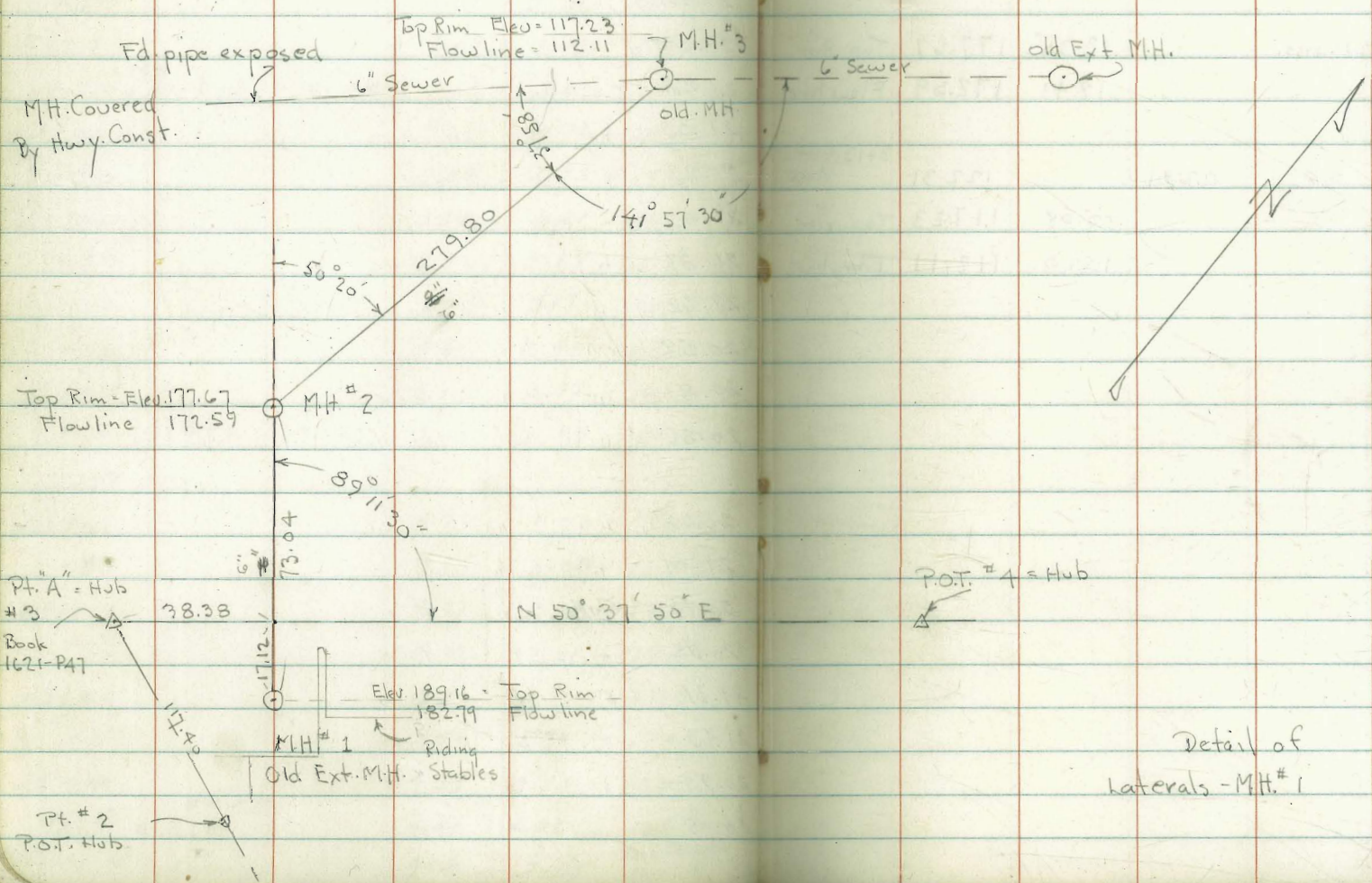
16+00			2.53	5.57	-1859	24.16	TP 4.13	7.09	4.47	2.96	
+50			5.29	2.81	-18548	21.36			4.76	2.33	check BM sec page 8
check #2	BM	2.64	5.29	4.74	3.36						
					<u>3.31</u>						
					0.0111						
17+00			3.04	2.95	-1850	21.45	Stake	20'	RT	d	
+50			3.03	2.96	-1846	21.42	"	"	"	"	
18+00			2.87	3.12	-1842	21.54	"	"	"	"	
+50	MH	57.904	6.89	3.14	2.85	-1837	21.22	"	"	"	
19+00			4.13	2.76	-1833	21.09	"	"	"	"	
+50			3.34	2.95	-1828	21.23	"	"	"	"	
20+00			3.68	3.21	-1824	21.45	"	"	"	"	
+50			3.72	3.17	-1820	21.37	"	"	"	"	
21+00			3.72	3.17	-1815	21.32	"	"	"	"	
+50			4.46	2.43	-1811	20.59	"	"	"	"	
22+00			4.12	2.77	-1806	20.83	"	"	"	"	
+50	4.59	7.43	4.05	2.84	-1802	20.86	"	"	"	"	
+73°	acc.										
23+00			4.73	2.70	-1798	20.68	"	"	"	"	
+50			4.35	3.08	-1793	21.01	"	"	"	"	
24+00			4.61	2.82	-1789	20.71	Stake	"	"	"	
+50			4.32	3.11	-1784	20.95	"	"	"	"	
25+00			3.92	3.51	-1780	21.31	"	18'	"	"	
+50			3.70	3.73	-1776	21.49	"	20	"	"	
26+00			4.19	3.24	-1771	20.95	"	"	"	"	
+27	75	MH #38	4.47	2.96	-1769	20.65	"	"	"	"	
check L Nail			4.78	2.65							Continued page 8

INDEXED
WK
OCT 25 1948

indexed
C.C.K.

4

Location + Elev. of New Sewer - from Balboa
Riding Stables - For Prop. ties - See Book 1621-P47
Const. grades - G 226-P3
P4 for levels
1218
W.O. 21001 - See Page 74

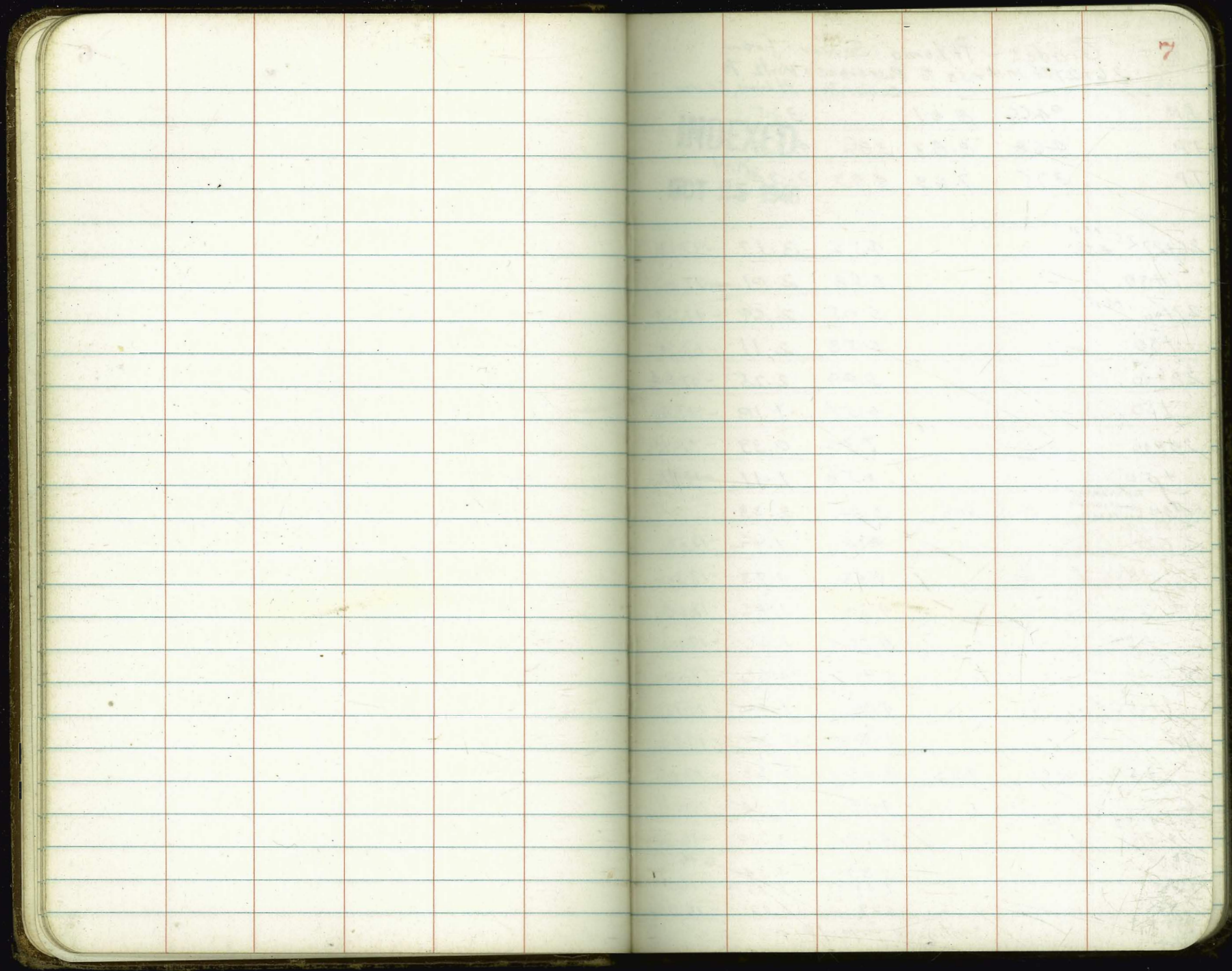


Levels on M.H.^s - Page 4

INDEXED
OCT 28 1946

5

Point	Reading	Height	Height	Description
B.M.	7.72	191.02	183.30	Pt #3 B1621-P46
M.H. #1 - old		1.86	189.16	Top Rim
		8.23	182.79	Flow line
M.H. #2 - New Const.		13.35	177.67	Top Rim
		18.43	172.59	Flow line
B.M.	0.0	122.31	122.31	3+13 Conc stake
		5.08	117.23	Top rim
		10.20	112.11	Flowline



7

Grades - Pt homo Sewer from
 26+27²⁵ MH #58 to Rosecrans + Kertz to
 Connection Pt homo Sewer

BM	04.66	8 01		3.25	
TP	468	8.83	386	4.23	
TP	375	7.69	4.89	3.24	

26+27 ²⁵ MH #58			4.52	3.17	-17.69	20.86
+50			5.68	2.01	-17.67	19.68
27+00 Nail			5.05	2.64	-17.63	20.27
+50			5.58	2.11	-17.58	19.69
28+00			5.44	2.25	-17.54	19.79
+50			6.51	1.18	-17.49	18.67
29+00			7.30	0.39	-17.45	17.83
+50			6.58	1.11	-17.41	18.52
Top of headrail Set BM 100 ft from Kertz Sept 24, 1948	6.16		5.36	2.33		
30+00			4.74	1.42	-17.37	18.79
+50			4.43	1.73	-17.32	19.05
31			4.30	1.86	-17.28	19.14
+50			4.50	1.66	-17.23	18.89
32			5.50	0.66	-17.19	17.85
+50			4.94	1.22	-17.15	18.37
33			2.91	3.25	-17.10	20.35
+50	3.60	7.23	2.53	3.63	-17.06	20.69
34			4.09	3.14	-17.01	20.95
M.H. # 59 +38			4.19	3.04	-16.98	20.02
35+50			3.99	3.24	-16.97	20.21
35+00			4.44	2.79	-16.92	19.71
+50			3.94	3.29	-16.88	20.17

Continued Page 18

INDEXED
 W.K.
 OCT 25 1948

29
 offset
 -7.15
 23.4
 100 ft
 31+72.54
 31+42.00
 113.8M
 503
 616
 35.4
 34+3.8
 10.2
 Man Smith
 Moo. Taylor
 8

25' Rt
 18' Rt
 25' "
 30' Rt
 35' "
 30' Rt
 30' Rt
 30' "
 30' Rt
 30' Rt
 30' Rt
 23' "
 30' Rt
 40' "

Check Levels from 26+27²⁵ to
29+50 Kurtz + Pacific

BM S. Hwy	2.77	6.12		3.35
TP	4.06	8.65	2.33	3.79
TP	3.95	7.40	5.20	3.45
26+27 ²⁵			4.22	3.18
+50			5.39	2.01
27+00			4.76	2.64
+50			5.28	2.10
28+00			5.15	2.25
+50			6.22	1.18
29+00			7.03	0.37
+50			6.30	1.10
BM			5.05	2.35

Summermajor Check Pacific Sewer Levels
Begg
Foy

23+50 to 26+00

7/6/42
11

B.M.	top Head wall. see page 8			2.33	
	53.2	7.65			
T.P.	3.87	7.61	3.91	3.74	
23+50			4.60	3.01	3.08
24+00			5.00	2.61	2.82
+50	gone				3.11
25+00	gone				3.51
T.P. +50			3.87	3.74	3.73
	4.19	7.93			
26+00			4.67	3.16	3.24
Check B.M. Head wall			5.60	2.33	OK

Bliss
Walter on
Hudson Rod.
Beggs

PAC. N'WAY 8-11-42

Grades Pac Ave Sewer

Harasthy to Sutherland

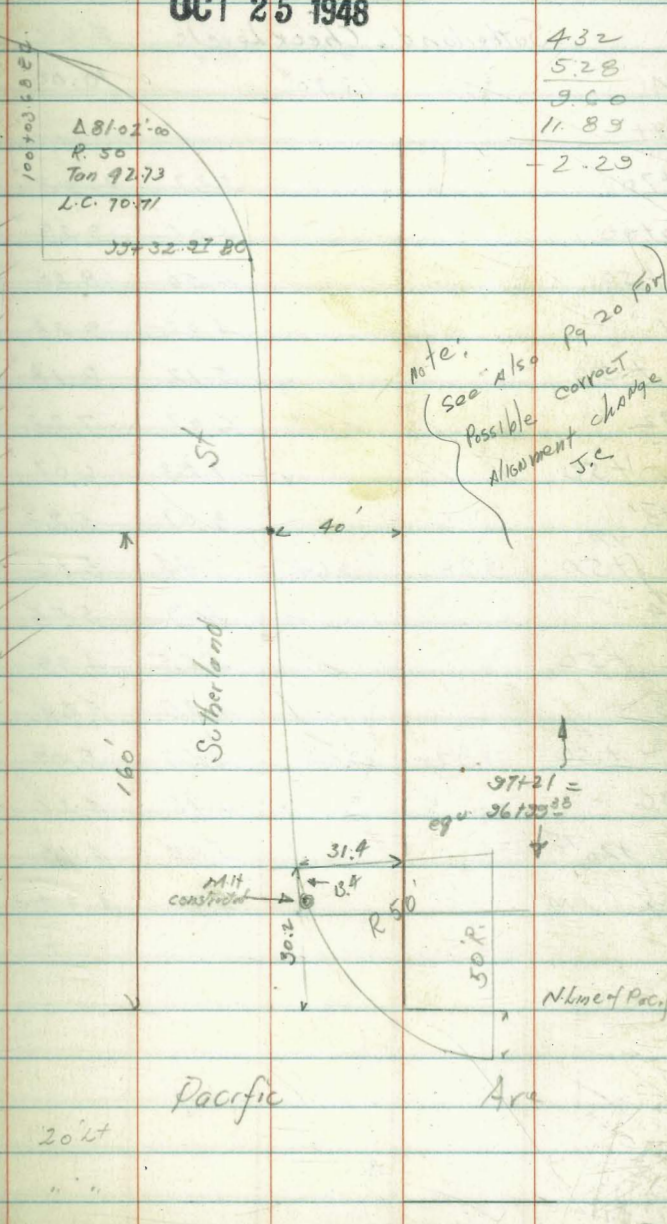
B.M.	3.39	13.39	Elev Grade	Elev Grade		
			10.00	N.E. BP Harasthy Pl		
equation						
- 89+03.4						
89+01.8	M.H.			- 3.08		
+70		3.36	10.03	- 3.02	13.05 ✓	
90+00		4.09	9.30	- 3.00	12.30 ✓	
+50		4.59	8.80	- 2.35	11.75 ✓	
91	Roof 100'	4.11	9.28	- 2.90	12.18 ✓	
+50		5.21	8.18	- 2.85	11.03 ✓	
92		6.15	7.24	- 2.80	10.09 ✓	
+60		7.31	6.08	- 2.74	8.82 ✓	
93		8.16	5.23	- 2.70	7.93 ✓	
+50	3.85	9.71	7.53	5.86	- 2.65	8.51 ✓
94		4.15	5.56	- 2.60	8.16 ✓	
+50		4.72	4.99	- 2.55	7.64 ✓	
95		4.42	5.29	- 2.50	7.79 ✓	
+50		4.64	5.07	- 2.45	7.52 ✓	
96		5.45	4.26	- 2.40	6.66 ✓	
+20	75 BCMA M.H. 52.	5.53	4.18	- 2.38	6.56 ✓	
Check B.M.	N.V. Sutherland Pac	5.40	4.31			
BM	9/29/42	5.93	9.75	4.82		
eqn						
96+39	38 = check flow pipe in place	11.97	-2.22	-2.22		
97+21	31.4 = check flow pipe in place					
97+50		4.94	4.81	- 2.19	+7.06 20' L	
98+00		3.98	16.37	3.36	6.39 - 2.15	+8.54

Continued on Page 20

Kurtz St

INDEXED
WK
OCT 25 1948

12



INDEXED

Bliss - 7
Walker - 1000
Hurdin - 100

check Grades Pac Ave Sewer Horasthy to

Sutherland Check Levels Elev.

BM	Red.	7.1.	Red.	Elev.
	3.30	13.30		10.00

89+

+70

3.27 10.03 ✓

90+00

4.01 9.29 ✓

+50

4.50 8.80 ✓

91

4.02 9.28 ✓

+50

5.12 8.18 ✓

92

6.07 7.23 ✓

+50

7.23 6.07 ✓

93

8.07 5.23 ✓

7.7

+50

3.78 3.64

7.44 5.86 ✓

94

4.09 5.55 ✓

+50

4.65 4.99 ✓

95

4.35 5.29 ✓

7.7

+50

3.97 3.04

4.57 5.07 ✓

96

4.78 4.26 ✓

+20 75

4.85 4.19 ✓

check BM

4.72 4.32 ✓

Bliss Notes
Beagx
check Rod
8/24/42

Sewer Grades Harasthy East

	4.76	13.87		9.11		
82+10 L					-3.73	
+50			5.13	8.74	-3.73	+12.47
83			4.89	8.98	-3.68	+12.66
+50			4.68	9.19	-3.63	+12.82
84			4.49	9.38	-3.58	+12.96
+50	5.79	15.36	4.30	9.57	-3.53	+13.10
85			5.57	9.79	-3.49	+13.27
+50	Stake		5.95	9.41	-3.43	+12.84
86			5.24	10.12	-3.38	+13.50
+50			4.98	10.38	-3.33	+13.71
87			5.18	10.18	-3.28	+13.46
+50			5.09	10.27	-3.23	+13.50
88	5.28	16.09	4.55	10.81	-3.18	+13.99
+50			5.25	10.84	-3.13	+13.97
89+03 ⁰⁰ MH			4.79	11.30	-3.08	+14.38

= 89+01.3 4.51 18 East of E Harasthy

BM
CHECK NW 3/4 Sect Harasthy
10.00 Record

Bliss & Wain
check-rod

15

check Sewer Grades M.H. #51, Horasthy St

East to 82+50

45.12 19.23

9.11

<sup>This BM is
10.02 higher
than record
9.03</sup>

82+50

5.49

8.74 ✓

83

5.25

8.98

+50

5.04

9.19 ✓

84+00

4.85

9.38

+50

4.66

9.57 ✓

85

4.44

9.79 ✓

+50

116.649

15.90

4.82

9.41 ✓

86

5.77

10.13 ✓

+50

5.52

10.38 ✓

87

5.72

10.18 ✓

+50

5.64

10.26 ✓

88

5.09

10.81 ✓

+50

5.06

10.84 ✓

89+03.22

= 89+01.2

#51

M.H. 18 East

of 9, Horasthy

4.60

11.30 ✓

NYN

check BM Pac + Horasthy

5.90

10.60 ✓

Bliss Notes
 Begg. T.
 W Moore Rod
 31.14

Grades Pac Ave Sewer
 Vine St to Bear St

All Grade pts
 11' Lt. of R

BM.	73149.27 Reoling box	4.92	15.08	10.16		
74+43 ⁸¹	equation M.H. #49		5.14	9.94	-4.54	14.48 ✓
75+00			4.84	10.24	-4.48	14.72 ✓
+50			4.91	10.17	-4.47	14.60 ✓
76			5.07	10.01	-4.38	14.33 ✓
+50	4.42	14.38	5.12	9.96	-4.33	14.23 ✓
77			4.64	9.74	-4.28	14.02 ✓
+50			4.76	9.62	-4.23	13.85 ✓
78			4.85	9.53	-4.18	13.71 ✓
+50			5.00	9.38	-4.13	13.57 ✓
79			5.22	9.16	-4.08	13.24 ✓
+50	4.74	13.72	⁴⁰ 5.33	⁸ 8.92	-4.03	13.01 ✓
80			4.87	8.85	-3.99	12.84 ✓
+50			4.94	8.78	-3.94	12.72 ✓
81	15		5.05	8.67	-3.90	12.57 ✓
+23 ⁹¹	M.H. #50		4.96	8.76	-3.88	12.64 ✓
+08 ¹⁰	equation		5.14	8.58	-3.79	12.37 ✓
-81+10			4.60	9.13		
Check BM ↓ N						

9/1/42
Buss. Notes
W. Moore &
Pegg. P. d

Check Levels over Grade Points
Vine to Bear. St.

15.13
5.25
9.88

	4.97	15.13		10.16 ✓
74+43 ⁸¹	M.H. #49		5.19	9.96 ✓
75+00			4.89	10.24 ✓
+50			4.96	10.17 ✓
76+00			5.12	10.01 ✓
+50	4.31	14.27	5.17	9.96 ✓
77			4.53	9.74 ✓
+50			4.65	9.62 ✓
78			4.73	9.54 ✓
+50			4.87	9.40 ✓
79			5.10	9.17 ✓
+50			5.26	9.01 ✓
80			5.39	8.88 ✓
+50			5.46	8.81 ✓
81			5.59	8.68 ✓
+26 ⁵⁵			5.49	8.78 ✓
TP ^{on B.M.}	4.24	12.38	5.13	9.14 ✓
82+			4.77	8.61 ✓

x
7.23
Continued from Page 8

					cut		offsets	
36	700		474	2.49	-16.84	+19.33	30' Rt	7.14T 5.45- 1.69 M09 4 Taylor
	750		903	3.20	-16.79	+19.99	30' Rt	7.14T 5.45- 2.08 RPHob 2.58T at 200 4 Taylor 1 Kutz
37			513	2.10	-16.75	+18.85	25' "	
	750		538	1.85	-16.70	+18.55	25' "	
38		4.95	509	2.19	-16.66	+18.85	24' "	7.14T 3.90- 3.24 BM
	750		546	1.68	-16.62	+18.30	24' "	1A Mission 1000
39			510	2.04	-16.57	+18.61	24' "	
	750		510	2.04	-16.53	+18.57	24' Rt	
40			478	2.36	-16.48	+18.84	24' "	
	750		486	2.28	-16.44	+18.72	25' "	
41			513	2.01	-16.40	+18.91	25' "	
	750		490	2.24	-16.35	+18.59	25' "	
42			447	2.67	-16.31	+18.38	25' Rt	
	Consolidation sewer 723		484	2.30	-16.29	+18.53	" "	

Check Grades Pac. Arc Serran
Kurtz St Pacific to Passerans

	516	6.29		1.13
30+00			4.87	1.42
+50	No!			
31			4.43	1.86
+50			4.63	1.66
32			5.64	0.65
+50			5.08	1.21
33			3.05	3.24
+50	4.10	7.73	2.66	3.63
34			4.60	3.13
34+138 +50			4.69	3.09
+50			4.98	3.25
35			4.94	2.72
+50			4.45	3.28
36	4.06	6.54	5.25	2.48
+50			3.36	3.18
37			4.95	2.09
+50			4.70	1.84
38			4.36	2.18
+50			4.87	1.67
39			4.50	2.09
+50			4.51	2.03
40	4.81	7.15	4.20	2.34
+50			4.89	2.26
41			5.15	2.00

T
7.15

19

6.571
4.46
2.08.8M

295
RP
10/10
+K.6

4150

4.92

2.23

4.100

4.50

2.55

+23

4.87

2.28

Continued from Page 12

T
16.37

75
38
37

20

98+50			650	9.87	-2.10	+11.97	20' Lt	
99			5.37	11.00	-2.06	+13.05	" "	
90.67 +32.97			4.37	12.00	-2.01	+14.01	" "	
+68.33			3.64	12.73	-1.98	+14.71	" "	
68.50			2.85	13.52	-1.95	+15.47	" "	
100+53			2.34	14.03	-1.92	+15.95	" "	
750							" "	
101	5.25	13.60	2.02	14.35	-1.88	+16.23	" "	
750							" "	
102			4.21	15.39	-1.79	+17.18	15' Lt	
750			4.62	14.98	-1.74	+16.72	18 "	
TP	3.47	13.81	3.26	16.34				
2.4 5.11.00 +31.85			4.80	15.01	-1.70	+16.71	19' x 19'	
Check BM M.H.#53 103+34 89	2.80	18.63	3.98	15.83				
104			3.91	14.72	-1.66	+16.38	20' Lt	
750			4.29	14.34	-1.60	+15.94	18.2 Lt Nail in fence	
105			5.13	13.50	-1.55	+15.05	18.4 Lt " " "	
750			4.87	13.76	-1.50	+15.26	18.5 " " " "	
106			4.23	14.40	-1.45	+15.85	18.0 Lt " " "	
750			3.92	14.71	-1.40	+16.11	18.4 " " " "	
107			14.23	6.59	12.04	-1.35	+13.39	18.7 " " " "
750			3.42	10.81	-1.30	+12.11	20' Lt	
108			4.59	9.64	-1.25	+10.89	20.9 Lt Original	
750			5.09	9.14	-1.20	+10.34	" "	
109			4.81	9.42	-1.15	+10.57	" "	
750			6.51	7.72	-1.10	+8.82	" "	

18.53 T
6.80
11.83 Set BM
2.40 S.E. of
14.23 1st Kutz
E. of pipe

814 15.94 Cap
333
21.275 Grade Rod
Note 10420 to 106450
Reset Grade on RR Trk
D. J. 1005

S to Sewer
Set line of Kutz
18

Noell
M.H.#58
103+34 85 S1
& Noell

102+34 86
E Line Noell
102+34 85
Lt 5.11.00

S to Sewer

Continued Page 22

Hardin T
Bliss Notes
Bepp. Kocl

T
14.72

21

Check Grades. Sutherland + Pac West

	215	13.47		4.32		+50	5.29	9.43	5.83 BM
97			866	4.81	109		7.00	7.72	2.53 +
			7.09	6.38		+50	6.77	7.95	18.36
	+50		3.60	9.87	110		6.75	7.97	6.52 -
99			2.47	11.00		+50	5.92	8.80	11.84 BM
	+32.97		1.48	12.00					2.88 +
	+68.33	7.34	20.07	0.74	12.73				14.72 T
100			6.59	13.53					4.92
	+50		6.09	14.03					9.80
101			5.70	14.87					
TP	3.27	13.62	3.72	16.35					
	+50								
102			4.21	15.41					
	+50		4.63	14.99					
L 14			18.36	4.60	15.02				
M.H. 453	+31.85			3.64	14.72	-1.66			
103	+34			4.01	14.35	-1.60			
	+50			4.86	13.50	-1.55			
105			4.59	13.77	-1.50				
	+50		3.94	14.42	-1.45				
106			3.64	14.72	-1.40				
	+50	14.72	6.32	12.04	-1.35				
107			3.90	10.82	-1.30				
	+50		5.08	9.64	-1.25				
108			5.56	9.16					

T
14.23
Continued from P-20

offsets
10'lt unless
otherwise noted

343
310
183

22

774.23

109+50 6.35 14.29 6.29 7.94 -1.05 +8.99

432

9.91

110+00 6.33 7.96 -1.00 +8.96

+50 5.50 8.79 -0.95 +9.74

15.18
13.38
9.74 ✓
15.07
5.56
9.54

M.H. LPT 37
#54+85 -0.90 ✓

Set JM 4.50 9.79 SWPP
Receipt Rule

444

409

8.52

438

415

RM 4.38 14.17 9.79

3.03 12.02 9.79

111+25 DVC 4.02 8.80 -0.97 +9.77

111+50 3.81 9.01 -1.12 +10.13

111+75 4.33 8.43 -1.61 +10.04

112+00 EVC 5.20 7.62 -2.10 +9.72

112+50 6.59 6.23 -3.93 +9.66

113 3.29 7.73 8.38 4.44 -4.76 +9.20

+10 PVC 3.52 4.21 -5.04 +9.19

+35 3.78 3.95 -5.66 +9.61

+60 4.33 3.90 -6.22 +9.62

+85 4.87 2.86 -6.70 +9.56

114+10 5.28 2.45 -7.08 +9.53

+35 5.48 2.25 -7.41 +9.56

+60 5.56 2.17 -7.65 +9.82

+85 5.66 2.07 -7.81 +9.88

115+10 EVC 5.60 2.13 -7.9 +10.03

+60 5.69 2.04 -8.0 +10.04

116+10 5.97 1.76 -8.1 +9.86

7
773

offset

23

116+60	4.90	6.34	5.78	1.95	-8.2	+10.15
117+10	4.99	7.02	5.70	2.03	-8.3	+10.33
+60			4.78	2.24	-8.4	+10.64
118+10			4.56	2.46	-8.5	+10.96
+60			4.95	2.07	-8.6	+10.67
119+10			4.40	2.62	-8.7	+11.32
+60	21/1/43 8.78		5.11	1.91	-8.8	+10.71
120+10 ⁰⁵	7.13		5.91	2.87	-9.08	+11.35
+60			4.72	2.41	-9.78	+12.19
121+10			4.50	2.63	-10.85	+13.48
+60			4.84	2.29	-12.30	+14.59
122+00	7.28		4.71	2.42	-13.60	+16.08
+50			4.31	2.97	-15.31	+18.28
123						
+25						

7
7.02
4.67
set
BM SE → 2.35
727K
0005+10.12

20' LT

BM
2.35
4.62
6.99
4.56
7.03

2.35 BM
6.43+

8.78
6.88
1.90

8.78 x
5.61 -
3.17
3.96 +
7.13 x

12270 2.42
7.86 +
7.28 x

8.57
6.25
2.82Check Grades Kurtz St Wright to
Pump House

BM				SPK P.P. Kurtz St
	1.58	11.47	9.99	
111+25			2.67	8.80
+50			2.45	9.02
+75			3.04	8.43
112			3.85	7.62
+50			5.24	6.23
113			7.05	4.42
+10 ETC			7.32	4.15
+35			7.53	3.94
+60			8.08	3.39
+85			8.60	2.87
114+10			9.01	2.96
+35			9.22	2.25
+60	6.40	8.57	9.30	2.17
+85			6.50	2.07
115+10 ETC			6.45	2.12
+60			6.56	2.01
116+10			6.84	1.73
+60			6.65	1.92
117+10			6.59	1.98
+60			6.36	2.21
118+10			6.13	2.44
+60			6.53	2.04

7
8.57

112710		538	2.53
+60		667	1.30
	9331		
120405		646	2.89
+60		692	2.41
121410	7447	480	2.64
+60		515	2.29
122410		502	2.42

26

235811
698
9331
692
2.41
5.03
7.747

INDEXED

Rough Grade Stakes - Napier st.
Frankfort to Galveston - sketch B-1590 P.3

	X	Rad.	EL. Grade	stakes	S' out
E.L. Frankfort	66.08		N. Side		
0+00 =		7.6 58.5	57.25	C 1.3	
30' Rad.					
0+16 = PC		6.4 59.7	59.00	C 0.7	
0+58		3.1 63.0	63.45	F 0.5	
	75.98				
1+00		8.7 67.3	67.90	F 0.6	
			7.3		
40		5.6 70.4	72.37	F 2.0	
	84.98		70.4		
80		9.0 76.0	77.29	F 1.3	
			6.0		
2+20		4.3 80.7	82.66	F 2.0	
	95.60		80.7		
+53.35					
30' Rad. Ret. - NW Cor.					
+61.7 = PC.		9.5 86.1	88.50	F 2.4	
			86.1		
30' Rad. Ret.					
+86.7 = PC. on S.					
3+09.7 = W.L. Galveston to S.					

INDEXED
WK
OCT 25 1948

Osborne
Grauencamp
Harden
+2-46

B.M. Pipe - W.L. Frankfort
E Napier

27

	Grade	S' out.	
Grade			
S. Side			54.75
Rad.			11.33
4.9	57.35	C 3.9	66.08
61.2	61.2		1.15
			64.93
	62.2		11.05
3.9	59.00	C 3.2	75.98
62.2			0.94
			75.04
	5.7		9.94
10.3	63.45	C 2.3	84.98
65.7	2.3		0.44
			84.54
	90.2		11.06
5.8	67.90	C 2.3	95.60
70.2	2.3		2.41
			98.44
	3.9		Pipe 93.19
2.1	72.37	C 1.5	8.44
73.9	1.5		Pipe - NW Cor.
7.8	77.29	F 0.1	stakes on line
77.2	7.2		from here
3.7	82.66	F 1.4	
81.3	81.3		
10.6	87.33	F 2.3	
85.0	85.0		
6.3	92.00	F 2.7	
89.3	89.3		
2.4	94.8	F 1.6	
93.2	3.2		

Galveston - Napier to Milton
 slope stakes
 W. Side Grade

0-106.8 = P.R.C. of prop. curve for 10' Closing

0-80 = S.L. Napier prod.

0-40 = ϕ " "

0+00 N.L. " "

Ret.
 0+10 = P.C. 30' Rad

0+30

+70

1+10 = P.V.C.

+50

+90

2+30 E.V.C.

+70

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WK
OCT 25 1948

90.89

92.80 F 5.8 8.7 out

92.55 F 5.9 8.8 out
 86.2

91.65 F 5.6 8.4 out
 86.1
 5.6

91.32

90.75 F 6.0 9.0 out
 0.5

89.50 F 6.1 9.1 out
 1.8

87.54 F 3.7 5.5 out
 3.8

84.87 F 2.8 5' out
 6.4
 9.2

81.74 F 3.0 5' out
 9.6
 12.6

π

105.73

E. Side

Grade

95.68
 10.0

95.56

10.1
 7.3

94.87

10.8
 5.0

93.98

0+00

+26.8 = P.R.C.

0+40

0+80

111.18

1+10 P.V.C.

102.80

4.0 C 5.8 5' out

95.68 C 6.0 5' out

95.56 C 6.8 5' out

10.1 C 7.5 7.5 out

94.87 C 5.7 5' out

10.8 C 5.8 5.8 out

93.98 C 4.2 5' out

93.39 C 6.6 6.6 out

93.08 C 5.3 5' out

12.6 C 5.6 5' out

12.6 C 8.5 8.5 out

13.5 C 11.6 11.6 out

19.7 C 17.5 17.5 out

21.0 C 16.5 16.5 out

23.1 C 14.8 14.8 out

23.1 C 11.5 11.5 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

17.4 C 9.6 9.6 out

54
 38
 16

28

Pipe p.27 93.19

12.54

105.73

0.71

105.02

6.16

111.18

12.21

98.97

3.83

102.80

12.74

90.06

1.26

91.32

3.42

87.90

2.99

90.89

3.73

87.16

check

8.6

5 out.

C 13.3

5 out

C 13.7

5 out

C 10.8

5 out

C 9.4

5 out

C 9.4

5 out

C 8.0

5 out

C 8.0

5 out

C 8.0

5 out

T

W. Side

Grade

E. Side

Grade

Toe slope

91.32

91.32

3+10

78.61
12.7
14.1

F 1.4

5' out

79.15
12.1
6.5

C 7.3

7.3 out

c 6.5
5 out

Ret.
3+42 = PC. 30' Rad

3+42

76.10
15.2

F 0.1

5' out

76.63
14.7
7.0

C 7.7

7.7 out

c 6.1
5 out

Milton - Frankfort to 100 E. of Galveston

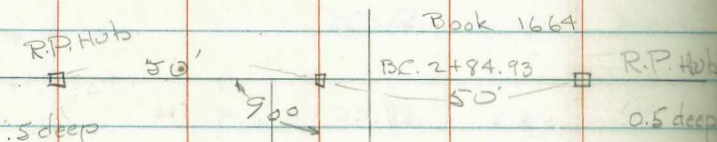
Mon. # Milton
+ Frankfort 30

	N. Side	Grade	stakes	5' out unles Noted.	S. side	Grade	
	π 61.77	55.5			π 61.89	3.2	53.67
Frankfort 0+00 = E.L.	6.3 55.5	54.0	C 1.5		8.1 53.8	53.70	8.10 π 61.77 2.82 58.95 2.94
INDEXED O+42.5 WK	5.6 56.2	55.17	C 1.0		5.9 56.0	54.97	π 61.89 0.77 π 61.12 9.61
OCT 25 1948							π 70.73 0.54 + P. 70.19 5.12
+8.5	5.1 56.7	56.35	C 0.3	4' out	6.2 55.7	56.25	F 0.6
1+25	3.4 58.4	57.90	C 0.5		5.8 56.1	58.00	F 1.9
+65	0.4 61.4	60.60	C 0.8		2.8 59.1	60.80	F 1.7
70.93					π 75.31		π 75.31 5.12 70.19 10.85
2+05	6.3 64.4	64.50	F 0.1		9.1 66.2	64.90	C 1.3
+37.5	4.2 66.5	68.0	F 1.5		3.9 71.4	68.45	C 3.0
Galveston 2+59.62 = W.L. (old) +40	11.9 69.1	71.50	F 2.4		43.8 70.91	70.91	C 2.9
Gal. +40	7.5 73.5	74.15	F 0.7		93.29		Nail in footing of shed-on line 83.37 8.37 75.00 ✓ 75.03
E.L. Gal. = 0+00	3.6 77.4	76.80	C 0.6		30 R. Ret. on S. 2+51.62 = P.C. 1.5 +96 73.8	78.59	C 5.8
0+50	93.29 84.3	84.88	F 0.6		30 Ret. on S.E. 0+08 = P.C. 8.9 84.4	85.38	C 3.5
1+00	2.9 90.4	92.96	F 2.6		4.4 98.9	93.46	C 4.7

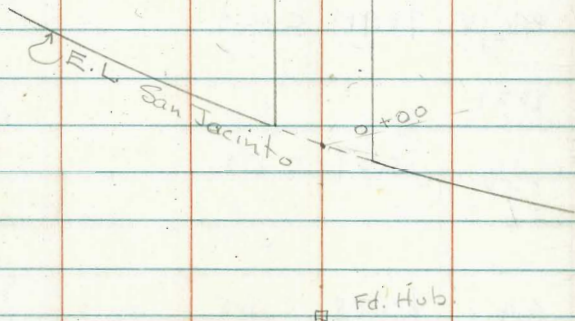
Grades in Alley Blk. 15 Las Alturas #4
 Staked up to P.C. of Curve about 300' E. of E.L.
 San Jacinto

R.P. - Tie hubs for B.C.

INDEXED
 W.K.
OCT 25 1948



1 — Z



F.O.
5-9-46

T

31

Sta	156.18	N.L. Grade	Sl. Grade	
	Rod		Rod.	Stakes 5' Back
0+00	7.04 49.2	147.44 C 1.8	89.2 47.3	148.32 47.3 F 1.0
0+50	4.70 51.5	148.34 C 3.2	7.42 48.8	148.34 C 0.5
1+00	4.06 52.1	148.55 C 3.6	5.70 50.5	148.55 C 2.0
1+50	5.29 50.9	148.76 C 2.1	5.71 50.5	148.76 C 1.7
2+00	6.12 50.1	148.97 C 1.1	6.09 50.1	148.97 C 1.1
2+50	6.58 49.6	149.18 C 0.4	6.36 49.8	149.18 C 0.6
2+84.95	7.18 49.0	149.4 F 0.4	7.34 48.9	149.4 48.9 F 0.5
B.M.	9.04	156.18		147.14
Hub Sta	5+85.90			
B.	1664-P. 45			

0.3 Back

7-12-46
Osborne
McCoy
Hardin
Waddel

Grades for 6" Water Main from
S.W. end Andrew Jackson Tract to
S.W. side of 54th + N. on 53rd to end
of Tract - Put in by City Crew

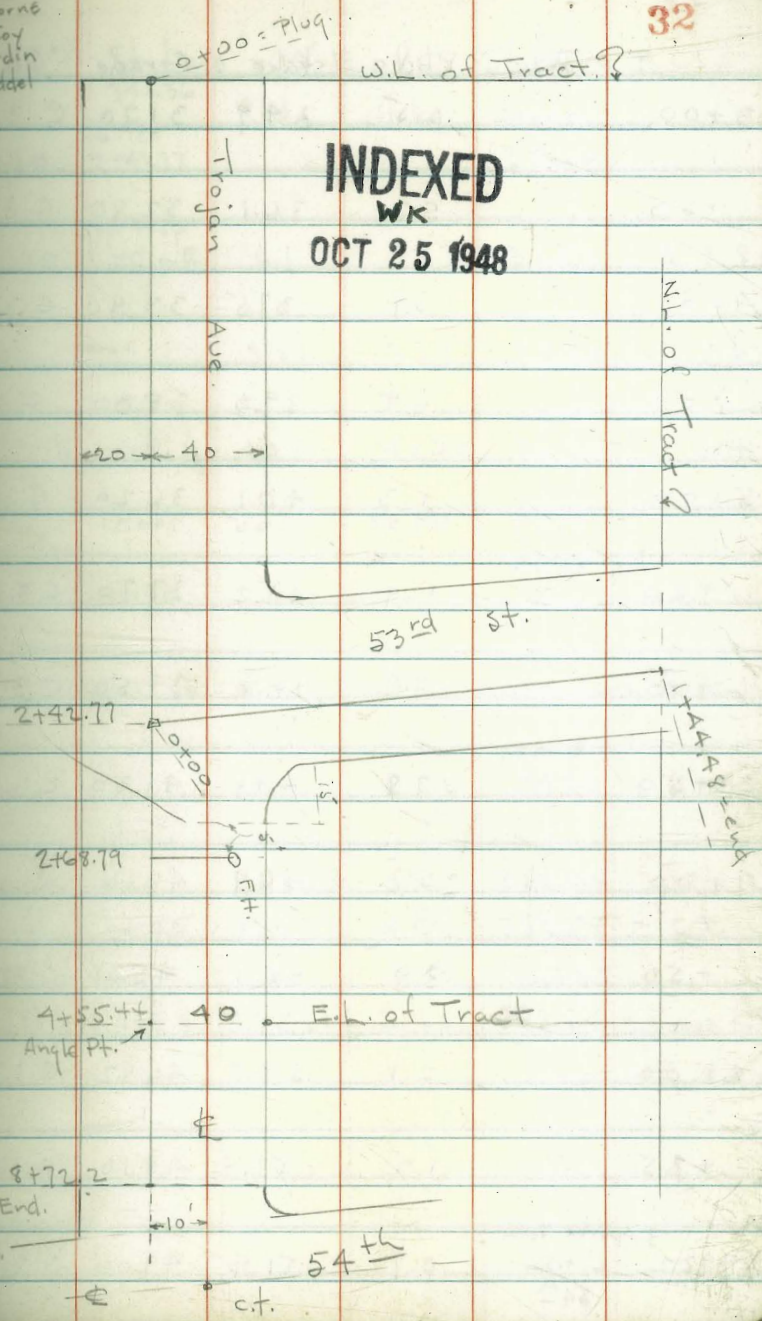
Drawing No - 6705

B.M.	4.77	398.65		393.88	S.W. C.P. El. Cajon + 53 rd
	0.13	385.94	12.84	385.81	
	0.45	373.42	12.97	372.97	
	0.32	361.12	12.62	360.80	
	0.08	348.25	12.95	348.17	
	5.73	341.36	12.62	335.63	

Trojan St. line 10' S. of Φ - stakes 4' N.

Sta.	M.I.	Rad	elev. stake	Grade	e-
0+00 = W. end Tract	341.36	12.8	38.6	325.30	C 3.3
0+50		12.0	29.4	26.40	C 3.0
1+00		10.6	30.8	27.50	C 3.3
1+50		9.3	32.1	28.60	C 3.5
2+00		8.2	33.2	29.70	C 3.5
2+42.77	6" Tee 0+00 to N.	7.6	33.8	30.60	C 3.2
2+69.79	6" Tee To E.H.	6.8	34.6	31.10	C 3.5

stake 5' S.



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4+55.44 Angle Pt.
End.
Join
Ext 6"

	T.	Rod	stake	Cgrade	
3+00		6.5	34.9	31.70	C 3.2
1					
+50		5.3	36.1	32.80	C 3.3
4+00		3.9	37.5	33.90	C 3.6
+50		2.4	39.0	35.00	C 4.0
5+00		1.3	40.1	36.20	C 3.9
T.P.	12.27	352.58	1.55	340.31	
+50	352.6	11.4	41.2	37.70	C 3.5
6+00		9.8	42.8	39.50	C 3.3
+50		7.8	44.8	41.30	C 3.5
7+00		5.7	46.9	43.16	C 3.7
+50		3.9	48.7	45.00	C 3.7
8+00		2.1	50.5	46.82	C 3.7
+35		1.2	51.4	48.10	C 3.3
8+72.2		0.7	51.9	49.00	C 2.9

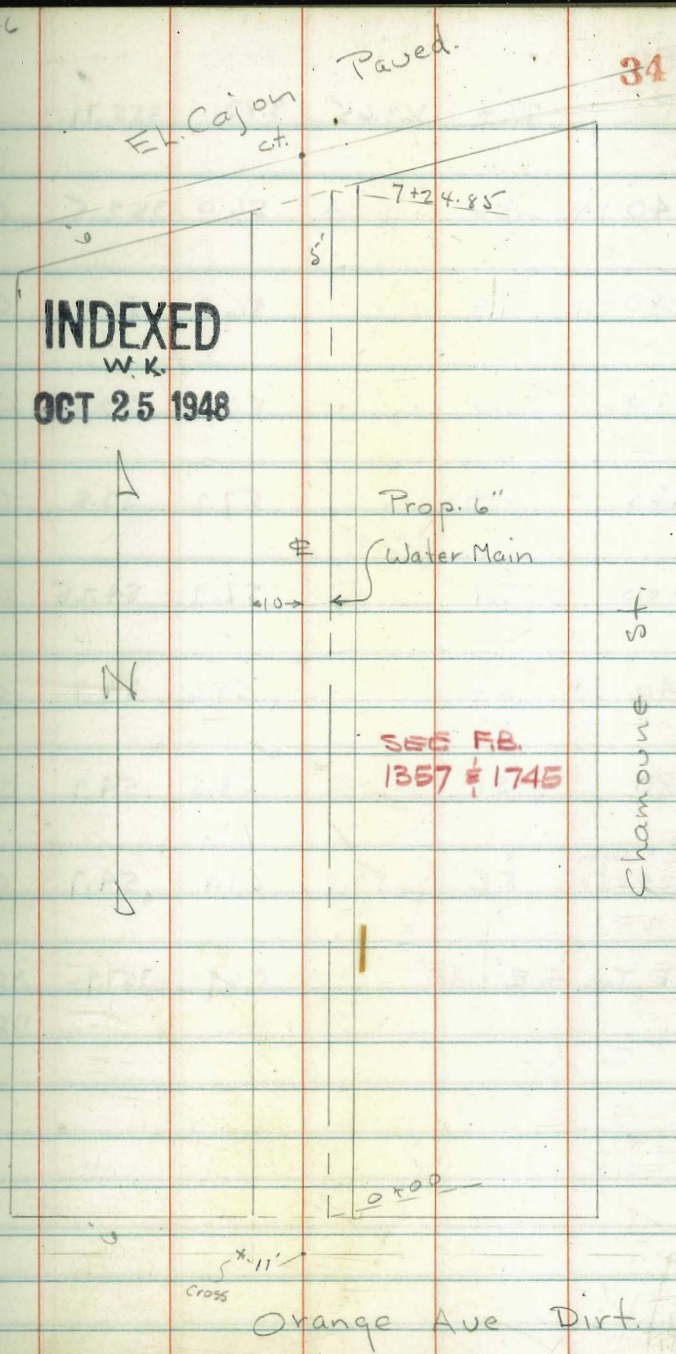
= Approx. Join
6' from
54th

53 rd	St. Line	- 10' E. of	Stakes	4' E.
	341.36	Rod	stake	Grade
0+00 =	6 th Tee 2+42.77			30.60
0+53.20 =	opp. Prop. P.C. on E.	6.1	35.3	31.50 C 3.8
1+00		3.51	37.9	34.30 C 3.6
1+44.48 = end.		1.06	40.30	^{40.30} 36.90 C 3.4
	Fire Hyd.			
	stake 5' N. of	cb. face	on line	Prod.
			cb grade	
		6.2	35.2	34.70 C 0.5
	From opp. page	352.58	0.36	352.22
	12.25	364.47	4.92	359.55 = ct.
	T.P.		0.80	363.67
	119.4	375.61	2.21	373.40 = Cross in R

Grades for 6" Water line in 20' Alley
 Blk. 3 - East Gate - Line 5' E. of Φ Alley
 stakes 4' E

	Rad.	π	El. stake	Grade	Cut
0+00 = N.L. Orange	8:34	359.54	52.1	34.8.5	C 3.6
0+40 = Brk	5.7		53.8	49.8	C 4.0
0+80 Brk	5.2		54.3	50.5	C 3.8
1+20	5.4		54.1	50.7	C 3.4
1+60	5.3		54.2	50.9	C 3.3
2+00	5.2		54.3	51.1	C 3.2
+40	4.4	55.14	55.1	51.35	C 3.7
+80	4.5		55.0	51.6	C 3.4
3+20	4.0		55.5	51.8	C 3.7
3+60	4.1		55.4	52.0	C 3.4
4+00 Brk	3.7		55.8	52.2	C 3.6

7-16-46
Osborne



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 W.K.
 OCT 25 1948

Prop. 6"
 Water Main

SSC FB.
 1357 Φ 1745

Chamoune St.

45 ft

34

T.P.	7.94	363.65	3.83	355.71	
4+40 Brk.	7.6		56.0	352.5	C 3.5
+80 Brk	7.3		56.3	52.9	C 3.4
5+20	7.0		56.6	53.35	C 3.3
+60	6.4		57.2	53.8	C 3.4
6+00	5.7		57.9	54.25	C 3.7
+40 Brk	5.4		58.2	54.7	C 3.5
+80	5.1		58.5	54.9	C 3.6
S.L. El Cajon. 7+24.85=	5.8	57.8	57.8	54.7	C 3.1
check Top. cb. E. side		5.69	357.96	357.95	
				1357-79	

Grade stakes for 6" Water Main in 20'
Alley in Blk. 5 - Teralta. - B. 1177-68

9.02 375.68 366.66 w. topcb.
B. 1177-71

stakes - 4' E.

Pl. Polk	Rod	T	El. Stake	Grade	Cut.
0+00 =	Meet	Connection	363.2		
0+40	6.9		68.8	64.4	C 4.4
+60	6.7		69.0	64.7	C 4.3
1+00	6.6		69.1	65.2	C 3.9
50	6.2		69.5	65.8	C 3.7
2-	5.2		70.5	66.4	C 4.1
50	4.6		71.1	67.1	C 4.0
3-	3.7		72.0	67.7	C 4.3
50	3.2		72.5	68.3	C 4.2
A-	2.5		73.2	68.9	C 4.3

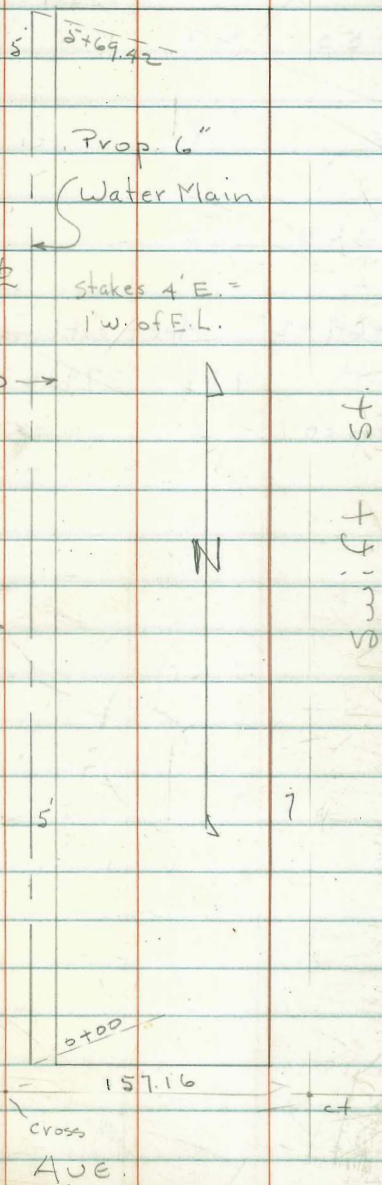
7-22-46
Deborne
McCoy
Hardin
Weddel

Orange Ave
et.

36

INDEXED
WK
OCT 25 1948

BLK 5



	Rod	T	stake	Grade	Cut
		375.7			
4+50	2.4		73.3	69.6	C 3.7
5-	1.8		73.9	70.2	C 3.7
+50	1.3		74.4	70.8	C 3.6
5+69.42	= Meet ext. line			71.0	
T.P.	4.77	379.16	1.29	374.39	
W. top. cb			4.91	374.25	374.27
					117-68

7-22-46
Osborne

EL Cajon Ave
Disk

38

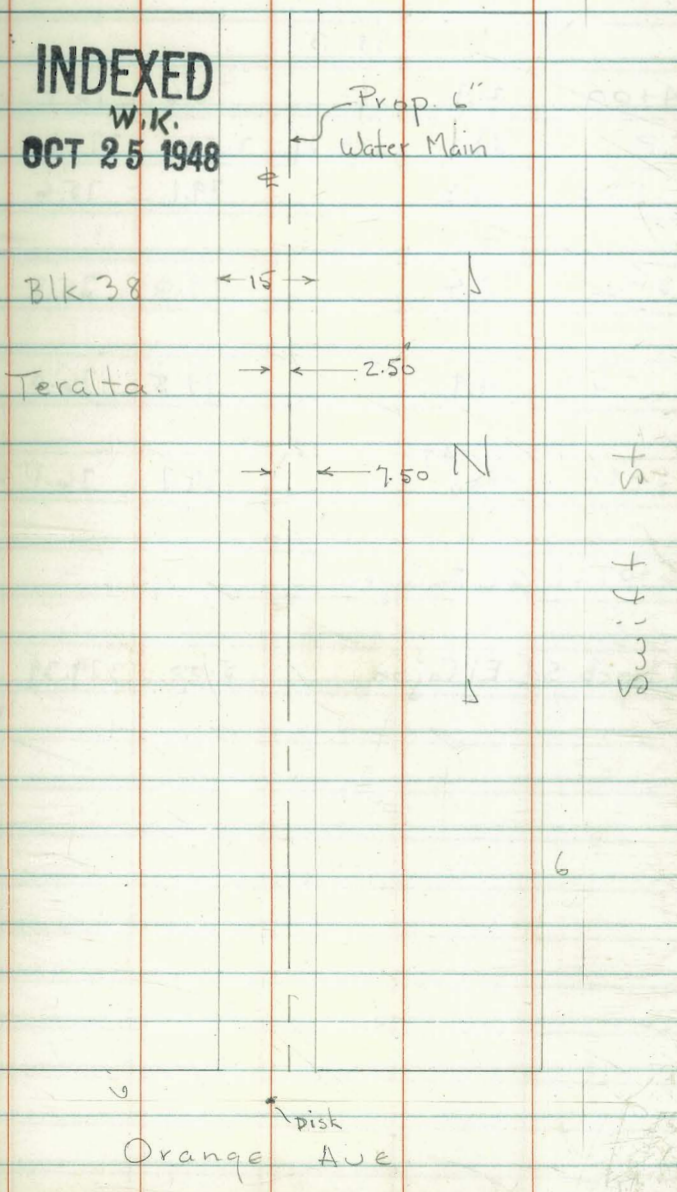
Grade Stakes for 15' Alley in Blk 38
Terralta - for 6" Water Main - B. 1068-74

Stakes 4' E. = 1' W. of E.L. Alley
B.M. 5.38 381.31 375.13 NW. Swift + Orange

	Rod.	T	Stake	Grade	Cut.
0+00 = N.H. Orange - Meet ext. Line					
0+20	Brk	4.6	76.7	372.7	C 4.0
+60	Brk	4.3	77.0	73.5	C 3.5
1+00	Brk	3.3	78.0	74.1	C 3.9
+40	Brk	3.2	78.1	74.4	C 3.7
2+00		3.0	78.3	74.6	C 3.7
+50		2.8	78.5	74.8	C 3.7
3+		2.5	78.8	75.0	C 3.9
+50		2.4	78.9	75.2	C 3.7

34+1 st

INDEXED
W.K.
OCT 25 1948



		381.3			
4+00	2.7		78.6	75.4	C 3.2
T.P.	5.59	384.39	2.51	378.80	
+50	5.3		79.1	75.6	C 3.5
5~	5.4		79.0	75.8	C 3.2
+50	4.9		79.5	76.0	C 3.5
5+80	Brk. 4.7		79.7	76.1	✓ - C 3.6
6+07.27 = S.L. El Cajon					
w. top cb. S.L. El Cajon					
			5.00	379.39	379.40
					B 1068-76

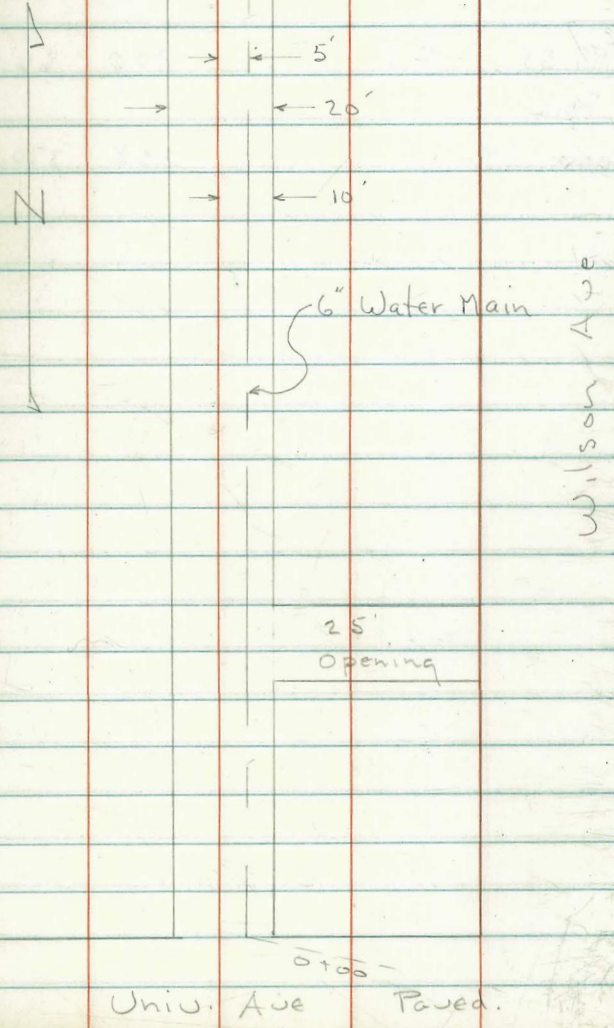
8-1-46
70.

Stake for 6" Water in 20' Alley Blk. 33
City Hts. Main S.E. of Φ Stakes 4' E.

Polk Paved.
5+99.58

B.M.	4.89	366.44		361.55		cut
						+Unio
Sta.	Rod	π	El Stake	Grade		Cut.
Unio. 0+00 = Nil	5.3		61.1	57.7		C 3.4
+50	4.7		61.7	58.1		C 3.6
1+00	4.1		62.3	58.6		C 3.7
+50 Brk.	3.2		63.2	59.0		C 4.2
2~	Brk. 2.4		64.0	60.2		C 3.8
+40 Brk.	1.8		64.6	61.2		C 3.4
3~	0.6		65.8	62.2		C 3.6
T.P.	7.2	373.53	0.63	365.81		
+50	6.9		66.6	63.0		C 3.6
4~	6.4		67.1	63.8		C 3.3
+50	5.5		68.0	64.6		C 3.4

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W.K.
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Unio. Ave Paved.

	Rod	T	stake	Grade	Cut.
		373.53			
5+00	4.7		68.8	65.4	C 3.4
+60	4.0		69.5	66.4	C 3.1
5+99.58 =	3.5		70.0	66.8	C 3.2
St. Polk					
check B.M.			33.8	370.15	370.16 ✓

Stakes for Water 6" in 20' Alley in
Blk 7 - Terralta - Main S'E of R Stakes
4' E.

	Rod	T	Stake	Grade	Cut
B.M.	8.48	378.64		370.16	
N.L. Polk 0+00 =	7.5		71.1	367.2	C 3.9
+50 - Brk	6.1		72.5	68.4	C 4.1
+90 - Brk	5.0		73.6	69.1	4.5
1+50	5.0		73.6	69.7	3.9
2~	4.6		74.0	70.31	3.7
+50	3.9		74.7	70.86	3.9
3- Brk	3.3		75.3	71.4	3.9
T.P.	6.06	380.84	3.86	374.78	
+50	5.5		75.3	71.8	3.5
4~	5.4		75.4	72.2	3.2
+50	4.7		76.1	72.6	3.5

Orange 304.1

INDEXED

W.K.

OCT 25 1948

A

N

Blk. 7
Terralta← 20'
← 10'
← 5'

6" Main

0+00

Polk

Wilson

Orange & Wilson
NW. 377.05 43

	Rod.	T	stake	grade	Cut.
		390.84			
5 + 00	40		76.8	73.0	3.8
+ 35	38		77.0	73.3	3.7
S.L. Orange 8 + 70.25	40		76.8	73.6	3.2
check on Top cb.			3.89	376.95	376.97
end Ret. E. side		1555-18			

Noell

7.5' Curbs

Estudillo

Wright

Hancock st.

N

set Hub.

44

Clayton

7.5' Curbs

Sutherland

Hancock st.

Noell

See P 46 for B.M.s

7.5' curbs

Stakes for Gutter Grade on Hancock - from Clayton to Wright. Stakes 2' back of curb for cold lay pave to be done by City
 $\Sigma = 33.82$ 30.13.5 33.82

	Grade E Side	Grade W. side
N.L. Clayton Sta. 0+00	3.2 30.6 c 1.9	5.2 28.6 c 0.7
+50	3.3 30.5 c 2.0	5.3 28.5 c 0.8
1~	4.0 29.8 c 1.5	5.0 28.8 c 1.3
+50	4.1 29.7 c 1.6	5.3 28.5 c 1.2
2~	4.4 29.4 c 1.4	6.2 27.6 c 0.4
+50	4.7 29.1 c 1.3	6.1 27.7 c 0.7
S.L. Sutherland 3~	5.1 28.7 c 1.1	6.6 27.2 c 0.4
N.L. 0+00	5.1 28.7 c 1.4	7.4 26.4 c 0.2
+50	5.4 28.4 c 1.4	7.2 26.6 c 0.3

INDEXED

W.K. 33.82

Grade E side

31.60

45

W. side

OCT 25 1948

1+00	5.6 28.2 31.60	8.2 26.80 c 1.4	5.2 26.4	6.4 26.1 c 0.3
+50	3.1 28.5	8.5 26.55 c 2.0	5.1 26.5	6.5 25.85 c 0.7
2~	3.5 28.1	8.1 26.30 c 1.8	4.5 27.1	7.1 25.6 c 1.5
+50	3.6 28.0	8.0 26.05 c 2.0	5.1 26.5	6.5 25.35 c 1.2
S.L. Noell 3~	3.5 28.1	8.1 25.8 c 2.3	5.1 26.5	6.5 25.1 c 1.4
		29.94	29.94	
N.L. 0+00	1.9 28.0	8.0 25.6 c 2.4	4.3 25.6	5.6 24.80 c 0.8
+50	2.1 27.9	7.8 25.5 c 2.3	4.5 25.4	5.4 24.6 c 0.8
1~	2.3 27.6	7.6 25.3 c 2.3	4.3 25.6	5.6 24.5 c 1.1
+50	3.0 26.9	6.9 25.2 c 1.7	4.7 25.2	5.2 24.3 c 0.9
2~	2.9 27.0	7.0 25.1 c 1.9	4.9 25.0	5.0 24.1 c 0.9
+50	3.5 26.4	6.4 24.9 c 1.5	5.0 24.9	4.9 24.0 c 0.9

E side

2994

S.L. Est.
3+

3.7
26.2
24.8
C1.4

14

5.7
24.2
4.2
23.80
C0.4

N.L.
0+00

3.6
26.3
6.3
24.60
C1.7

14

5.6
24.3
4.3
23.60
C0.7

+50

4.1
26.8
25.8
24.5
C1.3

14

5.8
24.1
4.1
23.5
C0.6

1~

3.5
26.4
26.4
24.3
C2.1

16

6.0
23.9
3.9
23.3
C0.6

+50

4.1
25.8
5.8
24.2
C1.6

16

5.9
24.0
4.0
23.2
C0.8

2~

4.2
25.7
25.7
24.1
C1.6

12

6.3
23.6
3.6
23.1
C0.8

+50

4.2
25.7
5.7
23.9
C1.8

12

6.5
23.4
3.4
22.9
C0.5

S.L. Wright
3-

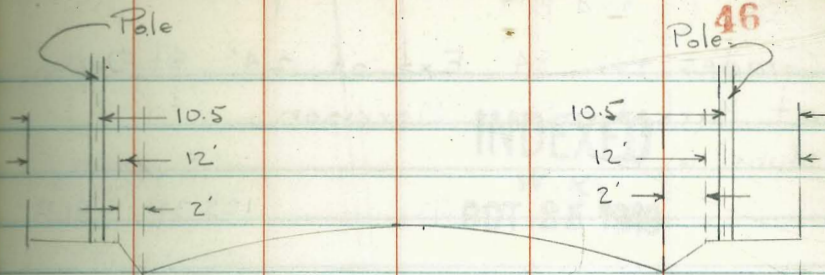
3.9
26.0
26.0
23.8
C2.2

14

6.4
23.5
3.5
22.8
C0.7

W. side

2994



Prop
line

Typical Cross
Section of Existing
Improvements

Prop
line

B.M.

3.79

53.56

49.77

T.P.

0.44

41.34

12.66

40.90

32.5

33.82

10.77

30.57

4.23

31.60

6.45

27.37

4.24

29.94

5.90

25.70

5.96

32.20

3.70

26.24

12.90

43.47

1.63

30.57

10.82

53.81

0.48

42.99

Check B.M.

4.06

49.75

Pole 46

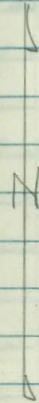
B.P. in Walk to
Hospital
Moore & Clayton
Cor. box N.L.
Clayton

B.1701 - P-7 Drawing 6602-L

Grades for 84' Ext. of 24" St. Drain
at Market - (S.) + Morrison,
Stubs 6' E.

	2.33	125.72	125.39	N.W. Market + 41.25	8-5-46
Ext. F.L.					7.0
0+00	12.96	12.76	112.78		
B.C.					
0+05.72	9.72	16.00	112.71	C 3.29	
0+31.81	11.51	14.21	112.40	C 1.81	
0+58.90	11.56	14.16	112.08	C 2.08	
0+84	12.50	13.22	111.77	C 1.45	
End.					

Market



119.9 to N.E. ct.
N. 7' line 47

INDEXED

W.K.
OCT 25 1948

0+05.72 E.C.

$$\begin{aligned} D &= 8000' \\ R &= 10000' \\ T &= 43.66 \\ L &= 8727 \end{aligned}$$

Morrison

0+84
End.

0+92.99 = E.C.

Grade Stakes for 104' of 42" RC

St. Drain - Market + Denby.

B 1701 - P. 9 - 6602-L

stubs 6' W. 8-5-46
7'0"

0.81 128.35 127.54 F. 2.43
Top box 21.77

0+00 11.44 F.L. = ext. 24" pipe 116.91

F.L. 42" 6.58 21.77 116.00 C 5.77

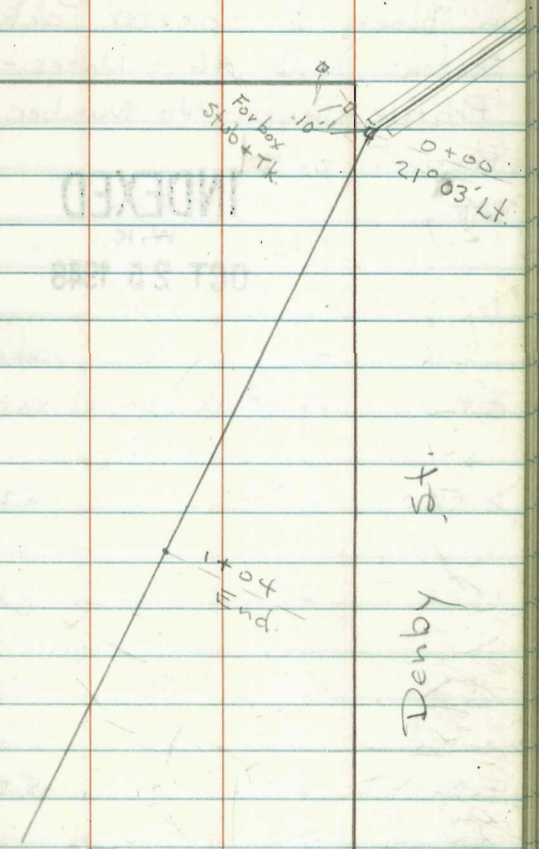
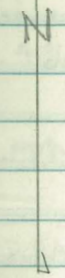
0+35 8.10 20.25 15.65 C 4.60

0+70 9.15 19.20 15.30 C 3.90

1+04 = end 8.95 19.40 14.96 C 4.44

Market st.

INDEXED
W.K.
OCT 25 1948



Denby St.

Grades for 6" Water Line in 20' Alley
in Block I - Chester Park Add.

Sketch - 1705-46 - Notes - 1691-49

Profile sheet - No Number - used Grade of
Prop. Imp.

B.M.

INDEXED

W.I.C.

OCT 25 1948

353.94

NW 46th
Orange

Rod T stake Grade Cut
0+00 = N.L. Polk - meet ext stub.

58.8

0+50 6.8 52.0 48.6 3.4

1+00 5.7 53.1 49.8 3.3

+5 5.4 53.4 49.7 3.7

2~ 6.3 52.5 49.3 3.2

+50 6.7 52.1 48.4 3.7

3~ 8.4 50.4 47.7 2.1

+50 9.3 49.5 47.6 1.9

8-21-46
7.0

49

559

4- 6.5 49.4 47.5 1.9

+50 6.0 47.4 47.4 2.5

5- 5.5 50.4 47.3 3.1

+35
+40 4.9 51.0 47.2 3.8

5 L Orange
577.12 = 4.8 51.1 47.1 4.0

11.06 58.79 47.73 = w. end cb.

6.03 55.92 8.90 49.89 N.L. Polk

check B.M. 2.00 53.92 NW. 46th
Orange

+ = Fills above curb top
 - = Cuts below " "

7.0.
 10-18-46

50

Grades for Replacing walk on W. side
 of Pacific Hwy. - Hazard Tore out wall

Est. Grade gives sufficient curb face

B.M.	5.43	13.11	7.68	15+20 B-26	6+34.56 = 0+00 ahead	4.72	9.71	10.00 + .29
------	------	-------	------	---------------	----------------------	------	------	-------------

INDEXED

Elev. Curb
 Est. Grade
 Curb Fill

0+00 = B.C.

A.C. Walk in to **OCT 25 1948**
 W.K.

1+72 = end Ext. walk							4.79	9.64	9.85 + .21
----------------------	--	--	--	--	--	--	------	------	------------

2+00		4.59	8.52	8.60 + .08	+50		4.96	9.47	9.55 + .09
------	--	------	------	------------	-----	--	------	------	------------

+50		4.36	8.75	8.76 + .01	2~		5.08	9.35	9.40 + .05
-----	--	------	------	------------	----	--	------	------	------------

3+00		4.32	8.79	8.92 + .13	T.P.	5.30	14.67	5.06	[9.37]
------	--	------	------	------------	------	------	-------	------	--------

3+50		4.20	8.91	9.08 + .17	2+50		5.48	9.19	9.25 + .06
------	--	------	------	------------	------	--	------	------	------------

T.P.	4.83	14.43	3.51	[9.60]					
------	------	-------	------	--------	--	--	--	--	--

4+00		5.41	9.02	9.25 + .23	3~		5.59	9.08	9.10 + .02
------	--	------	------	------------	----	--	------	------	------------

+50		5.26	9.17	9.41 + .24	+50		5.83	8.84	8.95 + .11
-----	--	------	------	------------	-----	--	------	------	------------

5~		5.10	9.33	9.57 + .24	4~		6.01	8.66	8.80 + .14
----	--	------	------	------------	----	--	------	------	------------

+50		4.89	9.54	9.73 + .19	+50		6.14	8.53	8.64 + .11
-----	--	------	------	------------	-----	--	------	------	------------

		14.67										
5+00			6.19	8.48	8.49 +01	+50		4.44	9.92	9.90 -02		
+50			6.34	8.33	8.34 +01	1-		4.22	10.14	10.10 -04		
5+97.2 = S.L. Bean 80.			6.48	8.19	8.20 +01	+50		4.07	10.29	10.30 +01		
0+00 = N.L. Bean			6.45	8.22	8.20 -02	2~ - Brk.		3.91	10.45	10.50 +05		
+50			6.28	8.39	8.40 +01	+50		4.03	10.33	10.25 -08		
1~			6.08	8.59	8.61 +02	2+90		4.32	10.04	10.05 +01		
+50			5.86	8.81	8.81 ✓	T.P.		2.03	12.33	Checked to Starting P.M. .02		
T.P.	5.25	14.36	5.56	(9.11)		3+00 = S.L. Haresthy				1.000		
2~			5.32	9.04	9.02 -02							
2+19.7 = E.C.			5.25	9.11	9.10 -01							
S.L. Emery 80			4.94	9.42	9.40 -02							
N.L. " = 0+00			4.64	9.72	9.70 -02							

Grades - Curb for Roselawn Ave
Euclid to Landis

690

W.O. 230

INDEXED

W.K.
OCT 25 1948

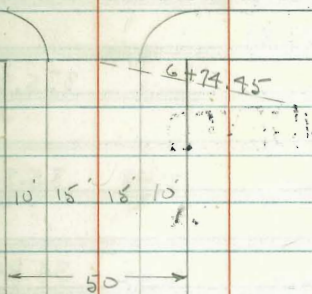
Osborne 12-23-46
Hardin
Worrell
Smith

Curve Data.

1+65.02 = P.C.	1+70	2° 23'
24.82 = chord.		
1+90 = Pt on Vert. Curve		11° 56'
19.91 = ch.		
2+10		21° 29'
2+30		31° 02'
2+50		40° 35'
9.19 = ch.		
2+59.22 = E.C.		44° 58' 30"

stakes set opp. & sta. on Rad. Lines

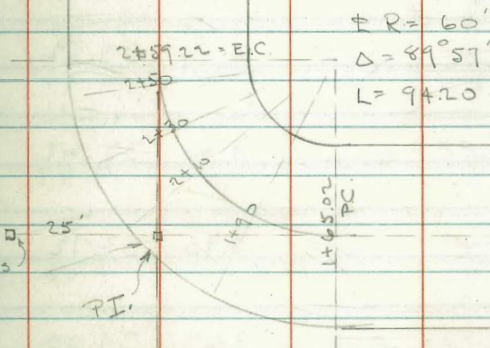
BM	6.17	338.98		332.81	N.W. Dwight & Euclid
1-2-47	2.30	337.98	3.30	335.68	
	6.40	339.21		332.81	
	22.8	337.89	3.60	335.61	
	7.36	343.68	1.57	336.32	



Roselawn Ave

N

Euclid Ave



1-2-47 - Grade Changed
Restaked.

E.
changed.
Grade New Grade

Stakes - 2' back of cb. face

W.

53

Sta.

7.0.

Roselawn

Sta.	7.0.		E. changed. Grade	New Grade			W.	
0+00 = W. Euclid		337.89	335.85	335.85	33.49 7.50		335.35	335.35
0+40		2.48	35.35 2.63	35.41 2.48		2.98	34.85 3.13	334.91 2.98
0+80		2.92	34.84 3.14	34.09 2.92		3.42	34.36 3.62	34.47 3.42
1+20		3.36	34.34 3.64	34.53 3.36		3.86	33.87 4.11	34.03 3.86
1+65.02 = P.C.		3.86	33.77 4.21	34.03 3.86	33.29 1.68	4.36	33.32 4.66	33.53 4.36
1+70 B.V.C.		3.92		33.97 3.92		4.42		33.47 4.42
1+90		4.10	33.54 4.44	33.79 4.10		4.60	33.04 4.94	33.29 4.60
2+10		4.19	33.43 4.55	33.70 4.19		4.69	32.93 5.05	33.20 4.69
2+30		4.18	33.43 4.55	33.71 4.18		4.68	32.93 5.05	33.21 4.68
2+50		4.09	33.52 4.46	33.80 4.09		4.59	33.02 4.96	33.30 4.59
2+59.22 = E.C. stakes on Rad. Line from E Sta.		4.00	33.61 4.37	33.89 4.00		4.50	33.11 4.87	33.39 4.50
2+70		3.90	33.72 4.26	33.99 3.90		4.40	33.22 4.76	33.49 4.40
2+90 = E.V.C.		3.63	34.00 3.98	34.26 3.63		4.13	33.50 4.48	33.96 4.13

337.89

Rod

E.

E

New Grade

stakes 2' back of cb. face

Rose lawn

W.

54

W.

2+90

3.63

34.00

34.26
3.63

4.13

33.50

33.76
4.13

3+40

2.83

34.94
3.14

35.06
2.83

3.34

34.33
3.65

34.55
3.34

3+90

2.52

35.67
2.31

35.77
2.02

F 0.50

F 0.50

3.04

35.16
2.82

35.35
2.54

4+40

1.72

36.51
1.47

36.67
1.22

F 0.50

F 0.50

2.25

35.99
1.99

36.14
1.75

4+90

1.11

37.34
0.64
1.14

37.44
0.41

F 0.70

0.95

36.82
1.16

36.94
0.95

TP

343.68

343.68

5+40

5.90

38.18
4.82

38.28
5.40

F 0.50

5.95

37.65
5.35

37.73
5.95

5+90

5.29

39.02
3.98

39.09
4.59

F 0.70

5.15

38.48
4.52

38.53
5.15

6+40

3.79

39.85
3.15

39.89
3.79

4.36

39.31
3.69

39.32
4.36

6+74.45

on cb.

3.23

40.43

40.43
3.25

on cb.

3.80

39.87

39.87
3.81

Landis + Rose lawn

S.W. 7' ct.

339.94

33.76

7.31

35.35
5.72

36.94
4.13

Grades on E. Side of 15' Alley in Block

1-2-47

21 - Resub. Blks K + L Teralta from N.L. Orange
to 75' N. - See 'B. 947 - P 73 - for sketch + Notes

Osborne
Hardin
Warrell
Smith

B.M. 3.41 364.42 361.01

stakes set 1' W. of E.L. of Alley
all set to Grade

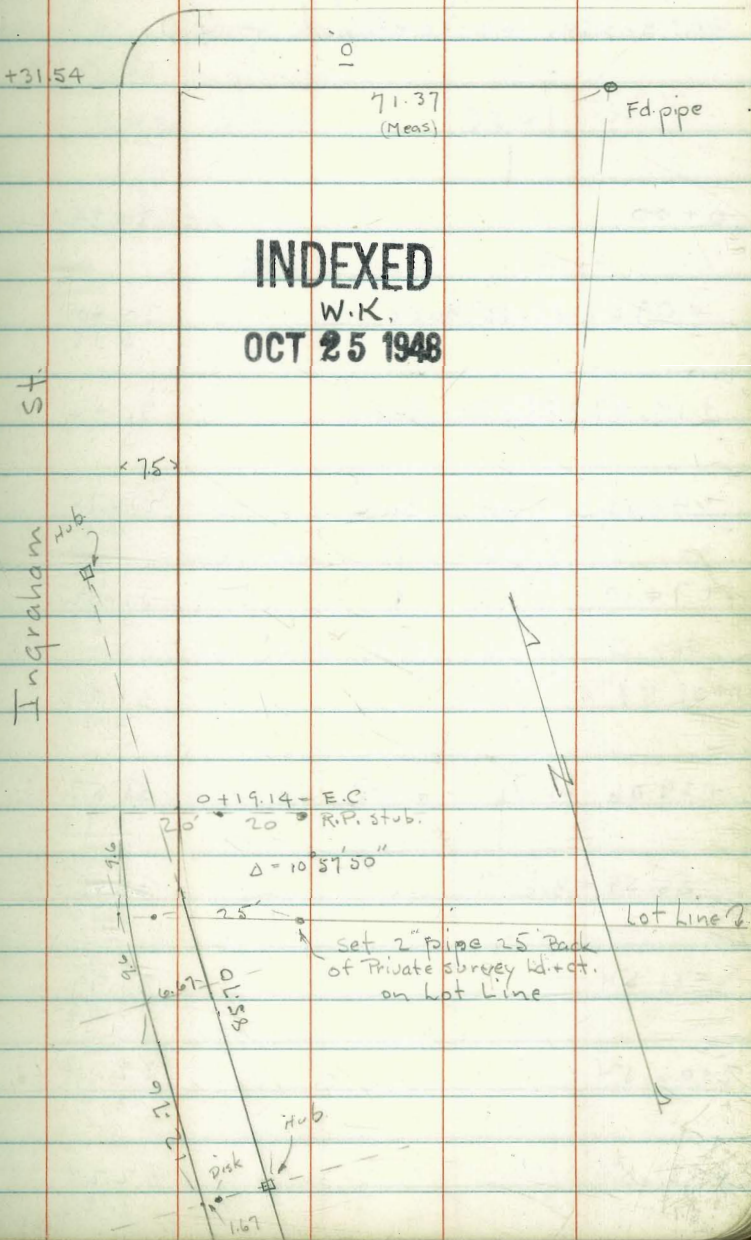
704
W.O. 210

	Red.	Grade
0+00 = N.L. orange <small>PUC.</small>	4.65	359.77 + .65
0+20	4.14	60.28 4.14
0+40	3.99	60.43 3.99
0+60 = E.U.C.	4.20	60.22 4.20
0+75 = Limit of Prop. Improvements	4.49	59.93 4.49

Stake New cb. on Ingraham 1-3-47
 # 708 Osborne
 W.O. 23 Hardin
 Worrell
 Smith

La Cima St.

B.M.	3.88	36.49	32.61	2+31.54
		stakes 3' Back	Grade	
0+00 = Meet Ext. Curb		on cb. 6.14	30.34	
		Restake 1-8-47	6.15	
0+09.57 (ext. = 0.40)	30.40	6.09	30.40	6' Back
			6.09	
0+19.14 = EC	30.46	6.03	30.46	5' Back
			6.03	
0+46.62	30.64	4.85	30.64	C 1.00
			5.85	
0+74.10	30.81	4.18	30.81	C 1.50
			5.68	
1+01.58	30.99	4.00	30.99	C 1.50
			5.50	
1+29.06	31.16	3.83	31.16	C 1.50
			5.33	
1+56.54 = Brk.	31.34	4.15	31.34	C 1.00
			5.15	
1+81.54	31.65	4.34	31.65	C 0.50
			4.84	
2+06.54	31.97	4.02	31.97	C 0.50
			4.52	
2+31.54 = S.L. LaCima	32.28		32.28	
on cb. around Ret.	4.24		4.21	
			32.25 - Grade = 32.22	



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 W.K.
 OCT 25 1948

Grade changed By A. Brems - 1-8-47
 as shown - Restaked. - 7.0.

0+00		30.34
+09.57 - 12' Back		30.40 5.15
+19.47 = EC, 12' Back		30.46 5.09
+46.62 all 3' Back		30.74 4.81
+74.10		31.02 4.53
1+01.58		31.29 4.26
+29.06		31.57 3.98
56.54 = Brk.		31.85 3.70
+81.54		31.99 3.56
2+06.54		32.14 3.41
2+31.54		32.28 3.27

1-29-47 - 7.0.

57

stakes for change in Dr. near Sta. 0+20
 on E. Side Ingraham

BM. 3.42 36.03 32.61

Back of Extwalk

± Dr. 5.36 30.67

N 30.58

S 30.58

Brk at Setback Line

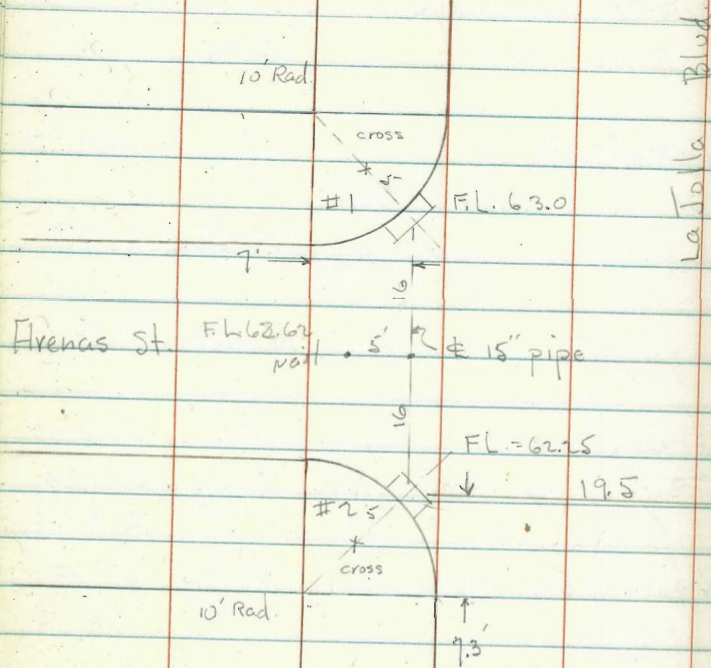
N - 3' Back of edge 4.32 31.71 30.71 C 1.00
5.32

S - 3' Back of edge 4.32 31.71 30.71 C 1.00
5.32

± Dr. at Joint 3.82 32.21 32.26

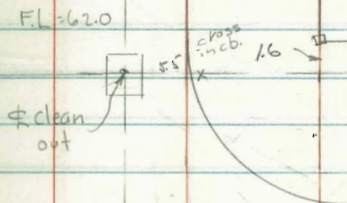
32.28
2.30

1-21-47
7.0.



FL=62.62
Nail

18" Pipe
39"



BM.	5.13	72.73	67.60	Top cb. Nail NW. Ret. 585-71
#1 - F.L. Back - inlet		5.02 67.71	67.71 63.00 4.71	
#6 S = Nail 5' W.		5.51 67.22	7.22 62.62 4.60	
#2 - F.L. Back - Inlet		5.01 67.72	7.72 62.75 5.47	
19.5 E - N. 5' N.		4.81 67.92	7.92 62.12 5.80	
Clean out F.L.			62.55	
Cross in cb. 5.5 E.		4.18 68.55	0.55	

Drawing No. 3053-B
W.O. 226

Arenas St.

Stake 15' Alley for Paving in
Block E. Park Villas

733

W.O. 10 10

Osborne - 1-21-47
Hardin
Worrell
Smith

INDEXED
WK
OCT 25 1948

Landis

st

59

Nail

27.00

75 76

N

St.

Tierman

st.

32nd

6700.35

Nail

Dwight St.

1681-63
NW Landis
+ 32

60

£

BM.	8.61	346.83		338.22	
T.P.	4.55	347.18	4.20	342.63	
				E.	
0+00 = S.L. Landis			6.19	340.66	5.02
				6.19	
+20 = cross G Back	4.55		4.55	41.29	C 0.99
	2.28			0.99	
+40 " 5' "	4.64		4.64	41.77	C 0.42
	2.19			0.42	
+60 " 2' "	4.65		4.65	42.08	C 0.10
	2.18			0.10	
+80 Nail 1.6 Back	4.59		4.59	42.24	0.0 "
	2.24				
1+00 5' Back	5.28	347.18	5.28	42.24	F 0.34
	1.90			1.90	
				0.34	
+20 = cross Euc 5' "	5.36		5.36	42.08	F 0.26
35	1.82			1.82	
				26	
+55 5' Back	5.27		5.27	41.66	C 0.25
35	1.91			1.91	
				25	
+90 5' "	5.64		5.64	41.24	C 0.30
	1.54			1.54	
				30	
1+25 5' "	6.06		6.06	40.82	C 0.30
	1.12			1.12	
				30	
2+60 = Brk 5' "	6.64		6.64	40.40	C 0.14
	0.54			0.54	
	0.84			0.14	
T.P.	4.29	345.10	6.37	340.81	

					346.83			
						W.		
	5.91	340.95	4.73	40.57				
		5.98		5.11				
	4.13	41.42	C 1.28	41.10				
3' Back	2.70	1.28		4.58				
	3.85	41.83	C 1.15	41.55				
3' "	4.29	1.15		4.13				
				4.30				
Nail 0.16 Back	3.56	42.03	C 1.24	41.80				
	3.27	1.24		3.88				
				4.30				
5' Back	4.16	42.11	C 0.56	41.92				
	2.67	0.56		3.76				
				4.18				
				4.18				
5' "	4.51	42.06	C 0.61	41.90				
	2.67	0.61		3.78				
				4.20				
Nail 1.10 Back	3.30	41.88	C 2.00	41.73				
	3.88	2.00		3.75				
				4.37				
5' Back	5.09	41.46	C 0.63	41.31				
	2.09	0.63		4.37				
				4.79				
5' "	5.60	41.04	C 0.54	40.89				
	1.58	0.54		4.79				
				5.21				
5' "	6.39	40.62	C 0.17	40.47				
	0.79	0.17		5.21				
				5.63				
3' "	6.43	40.20	C 0.55	40.05				
	0.75	0.55		5.63				
				4.20				
				6.05				

		345.10	F.			<u>45.10</u>	W		
3+03.33	5' Back	5.23 39.87	9.87 39.67 0.20	C 0.20	5' Back	5.23 9.87	9.87 39.47 40	C 0.40	39.32 6.35 6.78
+46.66	5' "	6.00 39.10	39.10 38.95 15	C 0.15	5' "	5.39 39.71	9.71 38.75 0.96	C 0.96	38.60 9.08 7.50
+90	5' "	6.70 8.40	8.40 39.23 17	C 0.17	5' "	6.87 38.23	8.23 39.03 20	C 0.20	37.88 3.61 4.03
T.P.		<u>42.06</u>				<u>42.06</u>			
4+33.33	5' "	4.24 37.82	7.82 37.51 31	C 0.31	5' "	4.46 37.60	7.60 37.31 29	C 0.29	37.16 4.30 7.75
+76.66	5' "	4.92 37.14	7.14 36.79 35	C 0.35	5' "	5.02 37.04	7.04 36.59 45	C 0.45	36.44 5.05 5.47
5+20 = PUC.	5' "	5.19 6.87	6.87 36.07 80	C 0.80	5' "	5.45 36.61	6.61 35.87 74	C 0.74	35.72 5.77 6.19
+40	5' "	5.62 36.44	6.44 35.70 74	C 0.74	Nail 0.6 Back	4.53 37.53	7.53 35.53 260	C 2.00	35.37 6.12 6.54
+60	Nail 2.15 Back	4.79 37.27	7.27 35.27 206	C 2.00	Nail 0.55 Back	4.88 37.18	7.18 35.18 200	C 2.00	34.98 6.48 6.90
+80	2' Back	5.89 36.17	6.17 34.79 1.38	C 1.38	2' Back	5.71 36.35	6.35 34.83 1.52	C 1.52	34.56 6.90 7.32
6+00.35 = N.L. Dwight		7.83 34.23	34.23	= quit. Bar		7.63 34.43	34.46		34.10 7.26
T.P.	3.42	342.06	6.46	338.64					

Stakes for 6" Water Line on Wilcox -
E. of Silvergate

62

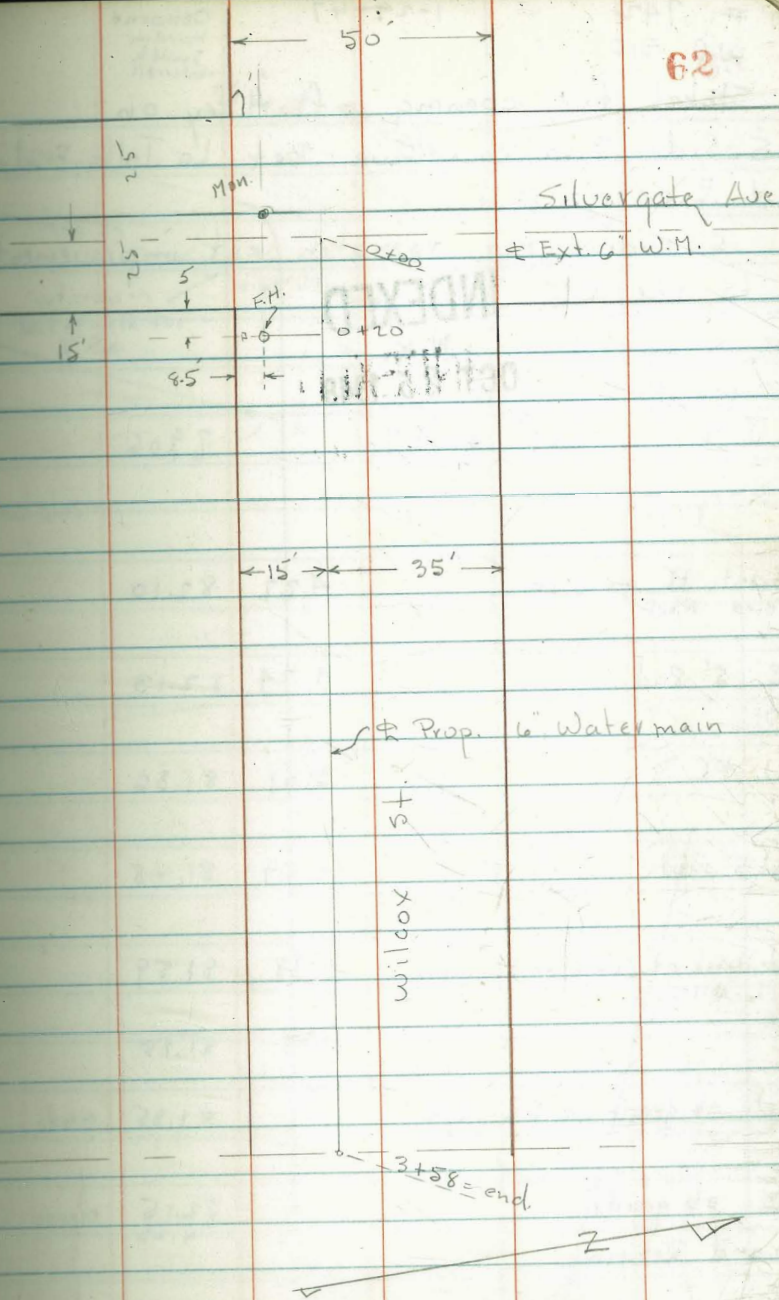
1-24-47
741 - Drawing W.D.D. - C 77 7.0
W.O. 210 T.P. Sheet 837
B.M. 124 293.94 292.70
0.58 284.05 10.47 283.47

INDEXED

OCT 25^{WK} 1948

0+00 - Ext. pipe
Stakes 5' N.
0+20 = F.H. Stab.
on line of stab.
F.H. - Ch. Grade - 5' S. of †
0+70
1+20
+70
2+20
T.P. • 4.38 275.65
+70
3+20
3+58 - end.

81.88	278.4	C 34
2.20 81.85	282.05	C 31
1.69 82.36	82.36	
9.48	75.8	C 37
4.57 79.48	3.7	
6.6	73.2	C 34
7.49 76.56	3.4	
3.9	70.6	C 33
10.17 73.88	3.3	
1.3	68.0	C 33
12.78 71.27	3.3	
6.48	65.4	C 3.8
69.17	3.8	
6.6	62.8	C 3.8
9.01 66.64	3.8	
6.0	60.8	C 52
9.64 66.04	5.2	



742
W.O. 210

1-29-47

Osborne
Hardin
Smith
Warrell

Stakes for opening of Alley on
S. Side Bird Rock Ave - Bet. La Jolla Blvd.
& Electric Ave
5' Radius Ret. to match ext. improvements
to the E.

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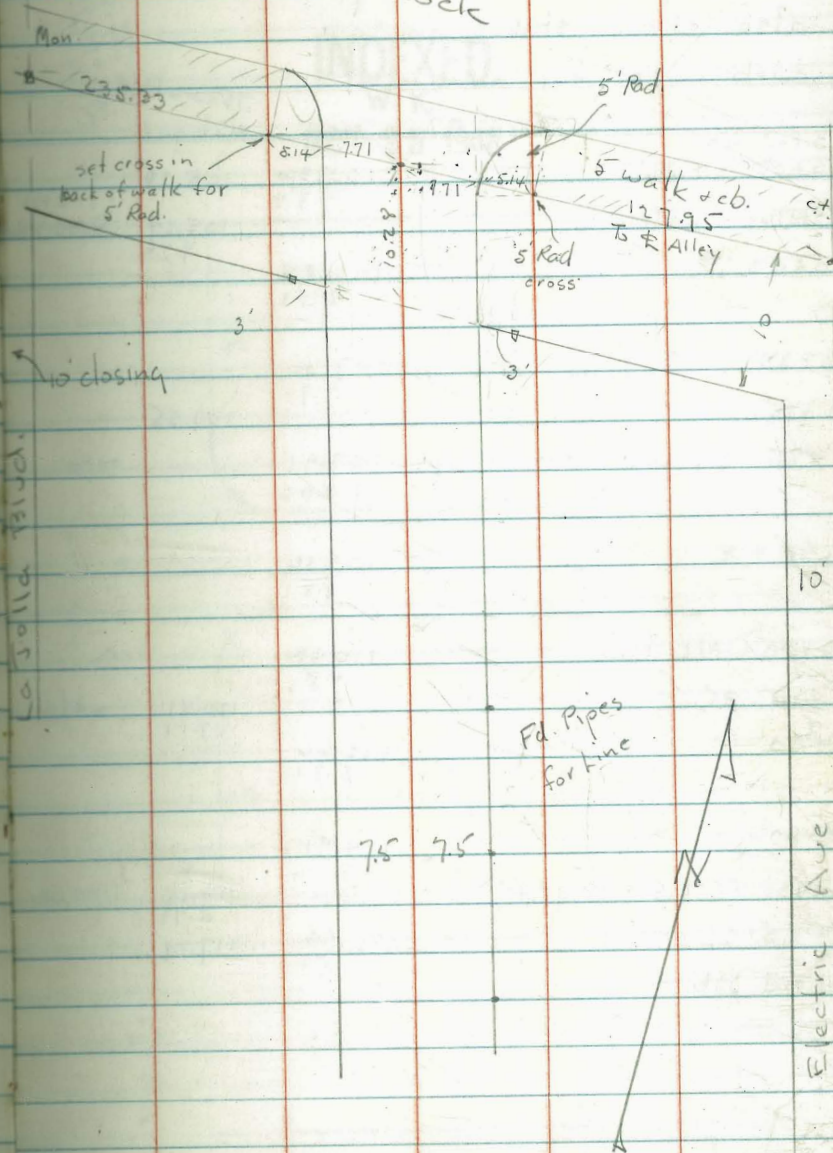
W.K.

OCT 25 1948

B.M.	7.31	86.37	79.06	
East P.C. on S.cb. Bird Rock	4.27	82.10		
E. 5' Rad. "	4.24	82.13		
W. P.C.	5.01	81.36		
W 5' Rad.	4.89	81.48		
W. back of Walk on W.L. Alley	4.78	81.59		
	4.39	81.98		
W. cb. grade at S.L. B.R.		81.85	Grade	
		4.52		
E. cb grade " "		82.15	Grade	
		4.22		
= end Return.				

63

Bird Rock



Paving Stakes on Ingraham - at Law.
 also check stakes on Law.
 curb cuts for pave.

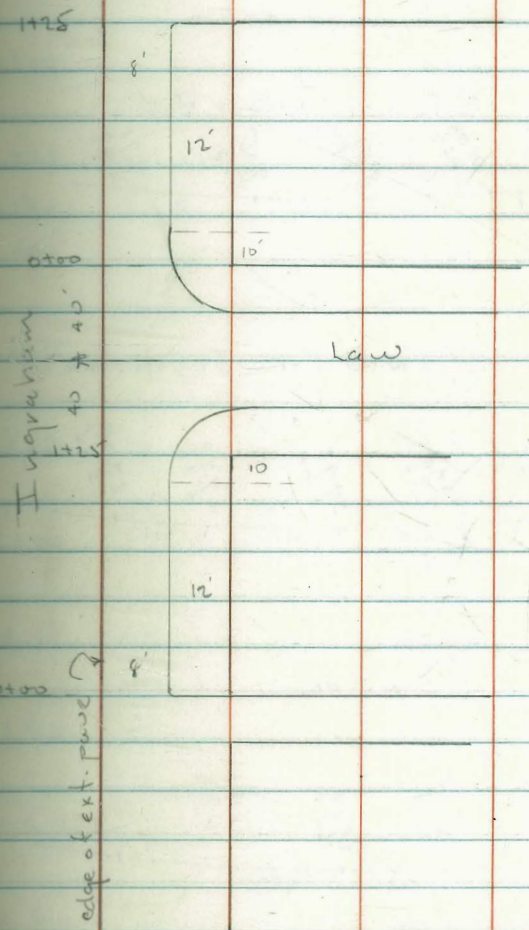
	75 curb face	Grot. grade	
S. end Job.			
0+00 = N.L. Alley	117.97		
Stakes 8' out from cb.	114.70	105.36	105.20
		9.34	
0+40		105.24	9.46
		106.18	
		8.52	
0+80		107.00	
		7.79	
1+15 = P.C.			107.55
1+25 = S.L. Law		107.91	
		10.06	
40 = #		109.16	
		8.81	
0+00 = N.L. Law		110.41	
		7.56	
+10 = P.C.			110.81
			7.18
+40		112.66	
		5.31	
+80		114.91	
		3.06	
1+23 = P.C. 2' Rad. Alley Ret.			117.18
			0.79
1+25 = S.L. Alley		117.44	117.29
		.53	
N. end Job.			

11471 = TD
 336
 117.97
 400
 113.97
 126.51
 2.44
 124.07
 11.07
 135.14

Beryl

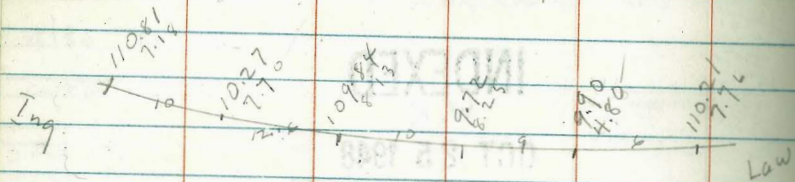
2-10-47
 Osborne
 Hardin
 Smith
 Worrell
 64

INDEXED
 W. K.
 OCT 25 1948



Chalcedony

Ret. N.E. Cor. Ing. & Law.



0+00 = E. Ing.

N-side

S.

\$ 65
09.60
8.19

0+12

117.97

09.98
4.72

0+18 = PC.

10.21
7.76

109.71
8.26

0+59

12.83
5.14

12.33
5.64

126.51

1+00

15.45
11.06

14.95
17.56

15.60
10.91

+20

16.69
9.82

16.19
10.32

16.84
9.67

+40

17.84
8.67

17.34
9.17

17.98
8.53

+60

18.92
7.59

18.42
8.09

19.07
7.44

+80

19.91
6.60

19.41
7.10

20.06
6.45

2+00

20.82
5.69

20.32
6.19

20.97
5.54

+20

21.66
4.85

21.16
5.35

21.81
4.70

+40

22.41
4.10

21.91
4.60

22.56
3.95

+60

23.07
3.44

22.57
3.94

23.22
3.29

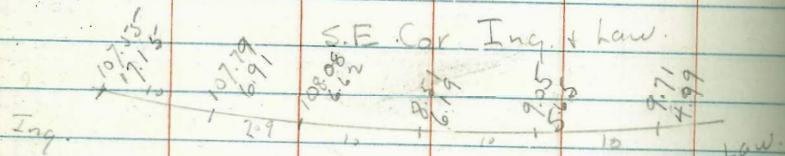
+80

23.67
2.84

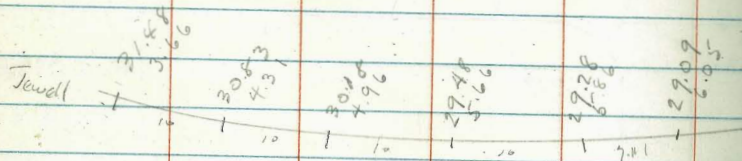
23.17
3.34

23.82
2.69

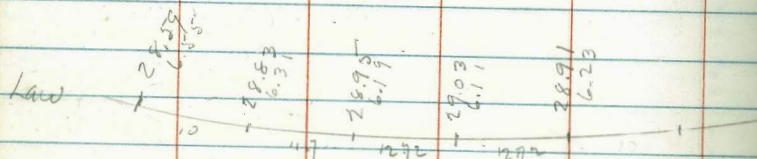
S.E. Cor. Ing. & Law.



N.W. Cor. Jewell & Law



Sw. Cor.



	N 135.14	N	S	E
3+00 = P.U.C.		24.17	23.67	24.32
		2.34	2.84	2.19

+40

+80

Raked

4+20

+60

T 135.14

P.C.

129.09 28.59

5+19.23 = W.L. Jewell

29.48
5.6

Gutter: on cb. line of Jewell

S.L.

Φ

N.L.

129.33 = Towlow
5.8130.08
5.06130.83
4.31used. 6.03
129.11

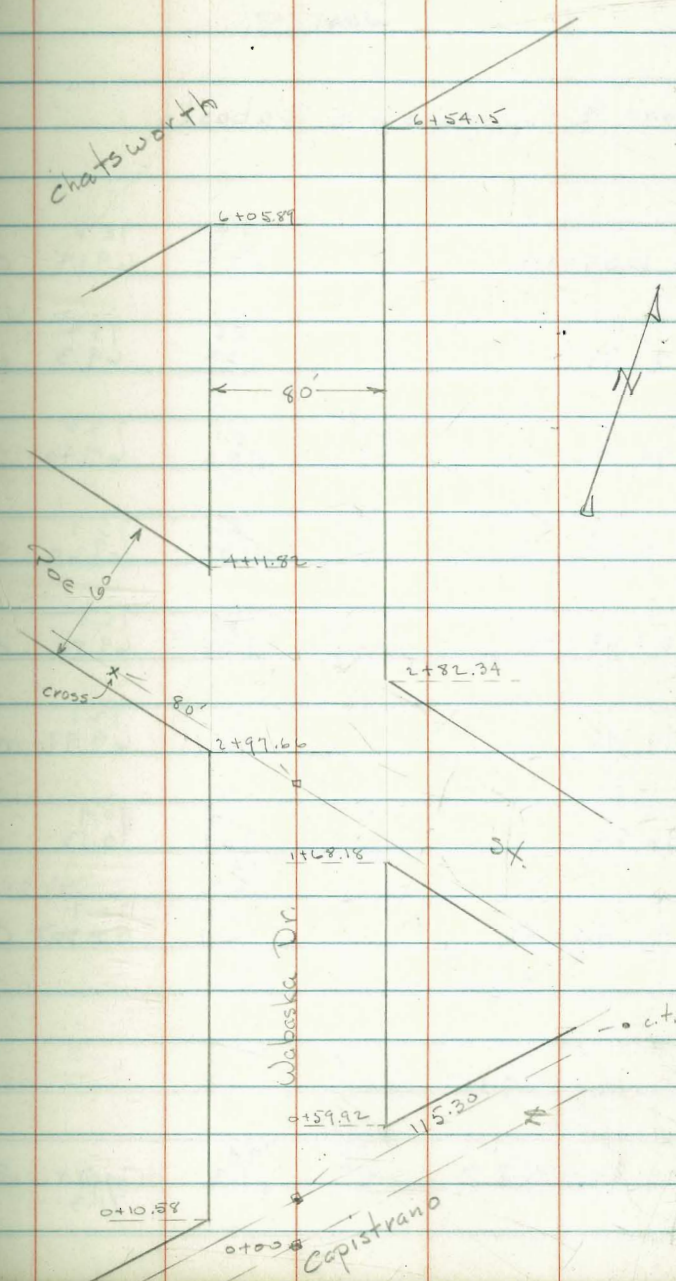
INDEXED

OCT 25 1958

Rough Grades for Wabaska Dr.
 Capistrano to Chatsworth stakes & Back of
 Prop. Line

B.M.	7.51	78.69	71.18
N. cb.		3.40	
Poe.		75.29	
		8.70	
		83.99	

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 W.K.
 OCT 25 1948



West.

E

68

0+00 = † Capistrano + † Wabaska

0+10.58 = NL.	^{6.4} 72.3	^{72.3} 69.19	C 3.1
---------------	------------------------	--------------------------	-------

0+42.75	^{5.5} 73.2	^{73.2} 69.3	C 3.9
---------	------------------------	-------------------------	-------

0+74.92	^{5.1} 73.6	^{73.6} 69.40	C 4.2
---------	------------------------	--------------------------	-------

1+14.05	^{5.6} 73.1	^{73.1} 69.60	C 3.5
---------	------------------------	--------------------------	-------

1+53.18 = PC.	^{5.9} 72.8	^{72.8} 69.80	C 3.0
---------------	------------------------	--------------------------	-------

1+99.92	^{6.6} 72.1	^{72.1} 69.97	C 2.1
---------	------------------------	--------------------------	-------

2+46.66	^{7.8} 70.9	^{70.9} 70.13	C 0.8
---------	------------------------	--------------------------	-------

2+93.40 = PC.	^{8.0} 70.7	^{70.7} 70.30	C 0.4
---------------	------------------------	--------------------------	-------

st.

4+29.42 = PC.	^{7.4} 71.3	^{71.3} 71.70 71.3	F 0.4
---------------	------------------------	----------------------------------	-------

2+86.60 = PC	^{4.0} 74.7	^{74.7} 71.20	C 3.5
--------------	------------------------	--------------------------	-------

3+34.20	^{3.5} 80.5	^{80.5} 71.63	C 8.9
---------	------------------------	--------------------------	-------

3+81.80	^{1.8} 82.2	^{82.2} 72.06	C 10.1
---------	------------------------	--------------------------	--------

4+29.42 = DPP PC.	^{2.8} 81.2	^{81.2} 72.50	C 8.7
-------------------	------------------------	--------------------------	-------

street.

W.

π 78.7

4+68.22

π 84.0

4.6 74.1
74.1 72.65 C 1.5

5+07.02

9.1 74.9
74.9 73.60 C 1.3

5+45.82

7.9 76.1
76.1 74.55 C 1.6

5+84.64 = PC end

7.2 76.8
76.8 75.50 C 1.3

E

2.0 82.0
82.0 73.45 C 8.6

3.8 80.2
80.2 74.40 C 5.8

3.7 80.3
80.3 75.35 C 5.0

2.6 81.4
81.4 76.30 C 5.1

2.2 81.8
6+15.16 81.8 76.65 C 5.2

3.9 80.1
6+45.69 = PC 80.1 77.00 C 3.1

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OCT 28 1948

Grade Stakes Mission Valley Sewer cuts

from 3+50 East of Gaines to 5+36

across State Highway R.O.W

Note: Since Staking all these Grades
have been raised 1" with a 1" Drop atM.H. 5 West of the E. line of Posegrans & Yurtz
W.E.B. Co. 1/4 mi

BM #2

3.08

6.58

3.50

3+50

4.91

1.67

-15.57

+17.24

4

INDEXED

5.46

1.12

-15.47

+16.59

+50

W.K.

4.51

2.07

-15.37

+17.44

5

OCT 25 1948

4.55

2.03

-15.27

+17.30

+36

4.33

2.25

-15.20

+17.45

+50

Subst. set

-15.17

25' H

Check BM ^{1a} on Mission Valley line

3.36

3.22

Grades from 0+00 to 3+50. Set later date

9/25/48

2.71

5.94

3.23

0+00

-16.29

+18.59

Front Pt
1400 SO W.C.
200 P. 18.

25' H

0+60

3.26

2.68

-16.17

+18.85

25' H

1

3.53

2.41

-16.08

+18.49

24' H

+50

3.34

2.58

-15.38

+18.56

25' "

2

M.H. #1

3.08

2.86

-15.88

+18.74

25' "

+45

3.32

2.62

-15.78

+18.40

25' "

25' H. RP

3

4.52

1.42

-15.67

+17.03

25' "

+50

4.26

1.68

-15.57

+17.24

25' H

Check Grades - Mission Valley Serran

0+00 to 536 West on Kultz

32.8 6.51 3.23

checked
on pt
of 000 line

0+60 3.82 2.69

1+00 4.10 2.91

1+50 3.93 2.58

2+00 3.65 2.86

M441

1+45 3.90 2.61

3+00 5.10 1.91

+50 4.84 1.67

4+00 5.39 1.12

+50 4.45 2.06

5+00 4.50 2.01

+36 End 0 4.27 2.24

Kurtz St. Jaxer Grader
5 W of E-L Rosecrans to 550 West

Apr 1-1943
51000
81155
8099

St.

Rt

72

Stakes 20 1/2 ft. N. Rt. 0 1/2

TP	6.71	8.70x	492	1.99	21.30 5.33 4.72 c18.98	-14.89	21.30 5.33 4.72 c18.98
+50							
2+0		21.40 5.53 c15.87			21.40 5.53 c15.87	-14.69	21.40 5.53 c15.87
+50		21.50 5.09 c18.41			21.50 5.09 c18.41	-14.79	21.50 5.09 c18.41
2+45 =	M.H.#1 P alley					-14.80	
2+0		21.60 4.76 c16.84			21.60 4.76 c16.84	-14.89	21.60 4.76 c16.84
+50		21.70 4.93 c16.77			21.70 4.93 c16.77	-14.99	21.70 4.93 c16.77
1+0		21.80 4.93 c17.37			21.80 4.93 c17.37	-15.09	21.80 4.93 c17.37
+50		21.90 4.99 c17.77			21.90 4.99 c17.77	-15.19	21.90 4.99 c17.77
0+0	F.L.R. H 5 W of F.L.R. Rosecrans					-15.29	
RM	4.12	6.71	2.58		Chisell Cross 25.87 of 12.50 10.90		

INDEXED
W K
OCT 25 1948

+50		22.80 6.87 c16.02			22.80 6.87 c16.02	-14.19	22.80 6.87 c16.18
+50		22.90 6.51 c16.78			22.90 6.51 c16.78	-14.29	22.90 6.51 c16.67
+50		23.00 4.84 c18.45			23.00 4.84 c18.45	-14.39	23.00 4.84 c18.35
4+0		23.10 4.53 c18.56			23.10 4.53 c18.56	-14.40	23.10 4.53 c18.11
				8.701			

Sewer CUTS on Ku

2+54 on header $\begin{array}{r} 22.14 \\ 6.14 \\ \hline C 16.0 \end{array}$ FK -14.78

2+50 OUT

2+45 = M.H. $\begin{array}{r} 22.10 \\ 4.96 \\ \hline C 17.18 \end{array}$ -14.80

2+44 = ^{half} on header $\begin{array}{r} 22.10 \\ 6.16 \\ \hline C 16.0 \end{array}$ -14.80

2+10 $\begin{array}{r} 22.23 \\ 4.35 \\ \hline C 17.88 \end{array}$ -14.87

1+74 $\begin{array}{r} 22.30 \\ 4.44 \\ \hline C 17.86 \end{array}$ -14.94

1+50 $\begin{array}{r} 22.35 \\ 4.67 \\ \hline C 17.73 \end{array}$ -14.99

0+99 $\begin{array}{r} 27.1 = \text{Elev. } 0+50 \text{ STUB} \\ 4.64 \\ 7.36 \times \\ 4.98 \\ \hline 1.38 \text{ T.P.} \\ 3.44 \\ \hline 5.84 \times \end{array}$ $\begin{array}{r} P.72 \\ -15.09 \end{array}$ (C 17.16) 21.8

0+50 $\begin{array}{r} 5.84 \times \\ \hline \end{array}$ -15.19

3+23 on header $\begin{array}{r} 20.46 \\ 14.46 \\ \hline C 16.0 \end{array}$ -14.64

3+04 on header $\begin{array}{r} 20.50 \\ 14.50 \\ \hline C 16.0 \end{array}$ -14.68

2+84 ^{half} on header $\begin{array}{r} 20.54 \\ 14.54 \\ \hline C 16.0 \end{array}$ -14.74

5.84
x

Check Levels Point Home Sewer 171007 26127¹¹

17100	3.78	7.12	3.35	4.16	2.95
+50				4.16	2.95
18100 M.H. #57				4.01	3.10
+50				4.27	2.84
19				4.36	2.75
+50	3.95	6.90		4.16	2.95
20				3.69	3.21
+50				3.72	3.18
21100				3.72	3.18
+50				4.48	2.42
22				4.14	2.76
+50				4.06	2.84
23				4.19	2.71
+50	4.11	7.20		3.81	3.09
24				4.37	2.83
+50				4.08	3.12
25				3.68	3.52
+50				3.47	3.73
26				3.95	3.25
+				4.23	2.97

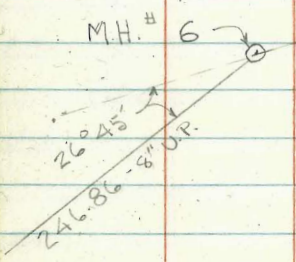
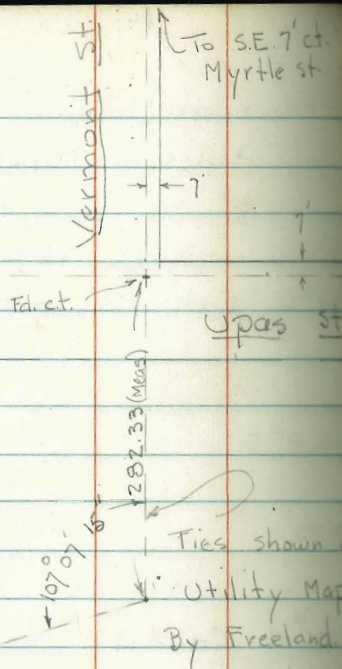
INDEXED

WK

OCT 25 1948

Elev of Flowline of Ext. Sewer
Man Holes - Park Sewer

BM.	3.61	284.04	280.43	Top Hyd. NE Vermont Upper
M.H. #6 = End - in Camp Boy Scout	5.34	278.70	273.26	Top rim F.L.
	10.78			
M.H. #5	11.24	272.80	268.47	Top rim F.L.
	15.57			
T.P.	4.80	277.24		
M.H. #4 Conc. Lid	7.87	269.60		Top - Conc.

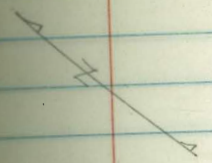


1362.8

Location of Sewers in Boy Scout Camp
 - Balboa Park - To Conn. with Trunk Sewer
 in 11th St. Canyon - and Tie to E of
 R.O.W. of New State Hwy. under Const.
 Levels P. 74
 # 1218
 W.O. 21001 (See P. 4)
 7-1-47
 Osborne
 Hardin
 Smith
 Worrell

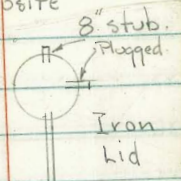
indexed
 c.s.R.

Top Elev. = 278.70
 Flow line = 273.26



M.H. # 6

Details of M.H. opposite



φ 9" U.P. Sewer

246.86

0°10'

Top Elev. = 272.80
 Flow line = 268.47

M.H. # 5



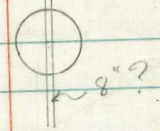
07°34'

194.58

Top Elev. = 269.60

M.H. # 4

Conc Lid Cemented on.



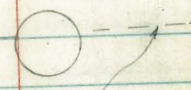
152.41

96°06'55"

Top Elev. = 267.45

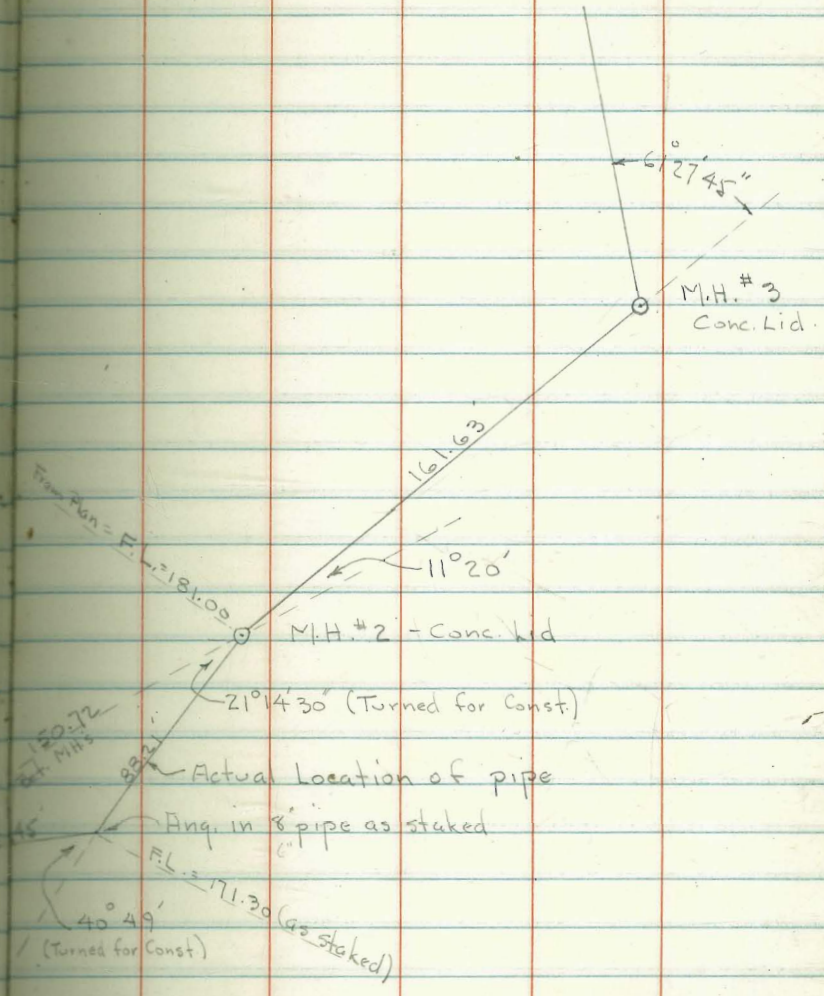
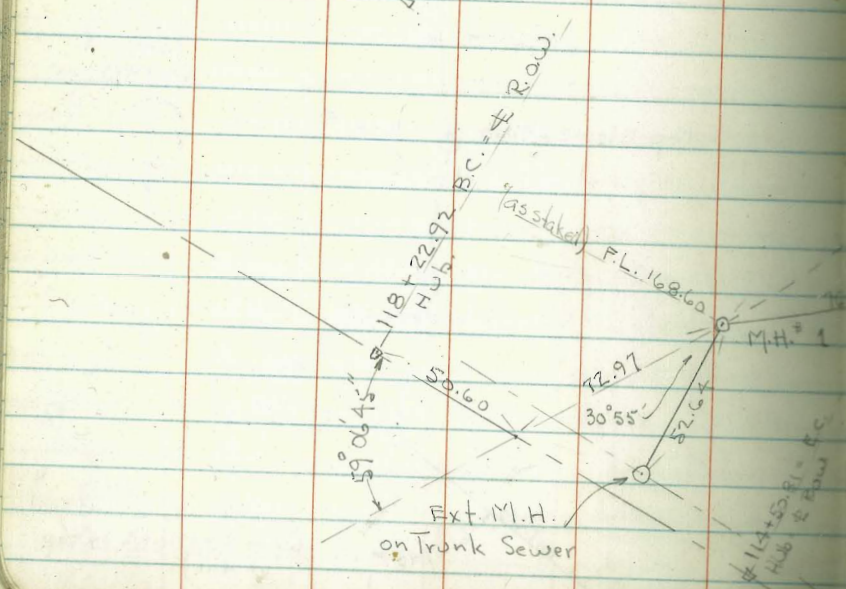
M.H. # 3

Conc Lid



161.63
 61°27'45"

Line of 6" lateral
 (from E of Ditch on top
 of Hill)



77

INDEXED
OCT 5 1988

Grades Alley Block 160

Univ. Afts

BM

INDEXED

W.K.
OCT 25 1948

prc.
0+00

0+20

0+40

0+60

0+80

1+00

+20

1+70

2+20

347.18

W Side
343.50

343.83

346.01

346.87

347.42

347.66

347.74

347.74

348.14

N.E. 72
T.K. Lincoln
+82.20

E Side
343.49

343.72

345.81

346.62

347.13

347.36

347.94

347.64

347.84

W

0+00

0+20

352.33

347.69

343.83

348.86

0+60

352.33

347.26

346.97

+0.39

1+00

352.33

377

348.56

347.65

+0.90

1+70

352.33

3.97

348.36

347.94

+0.42

0+40

352.33

347.22

346.01

1.21

0+80

352.33

347.64

347.42

+0.22

1+20

352.33

383

348.50

347.74

+0.76

1+70

352.33

9.02

348.21

348.14

+0.17

E

0+00

0+20

352.33

347.07

343.83

348.35

0+60

352.33

348.82

346.62

+1.74

1+00

352.33

386

348.97

347.66

+0.81

1+70

352.33

9.76

347.57

347.61

-0.07

78

347.18

8.15

352.33

352.33

0+40

352.33

5.17

347.14

345.81

+1.33

0+80

352.33

9.83

347.44

347.13

+0.31

1+20

352.33

4.45

347.88

347.49

+0.44

2+20

352.33

3.65

348.68

347.61

+0.84

Nov. 10, 42.

Grades for Floor + Foundation

Walls Fire Sta 32nd + Lincoln Ave

BM 7.00 351.18 344.18

Set Control Stake Elev. Foundation Wall 368 347.50

T Used to Set Grades on Batter Boards

4.075 351.575 347.50

INDEXED

W.K.

4.075

Nov. 18

OCT 25 1948

4.58 348.76 344.18

Stake at Sub. Grade 2' below Top Foundation 2.76 346.00

3+05

6" Deep. A.C.

6+02

6" Deep A.C.

11+10

6" Deep A.C.

16+95

5" Deep Base - Rock + Oil

3" A.C. Top

Levels to Establish Ebers
of M.H. East of Cons Bridge on Pacific Blvd

BM Top s. fe underpass wall	3.53	5.98		2.95
B TP	5.68	7.38	4.28	1.70
S TP	4.75	6.81	5.32	2.06
Sta & BM check N.V.V. Band Pacific			5.19	1.62

INDEXED
W.K.
OCT 25 1948

BM.	3.68	6.13		2.95
			4.43	
S check flow M.H. East of Bridge on Pacific			9.38	-3.25

Note one in Marine Base is 0.15
Lower than Record

9.7/
5.40
1.21

IMPROVED TABLES AND INFORMATION

539
897
938
443
170
6.13
2.45
368

HORIZONTAL STADIA CORRECTIONS

2°-00' — 0.1	21°-00' — 12.8	33°-00' — 29.7
3°-00' — 0.3	21°-30' — 13.4	33°-15' — 30.1
4°-00' — 0.5	22°-00' — 14.0	33°-30' — 30.5
5°-00' — 0.8	22°-30' — 14.7	33°-45' — 30.9
6°-00' — 1.1	23°-00' — 15.3	34°-00' — 31.3
7°-00' — 1.5	23°-30' — 15.9	34°-15' — 31.7
8°-00' — 1.9	24°-00' — 16.5	34°-30' — 32.1
9°-00' — 2.5	24°-30' — 17.2	34°-45' — 32.5
10°-00' — 3.0	25°-00' — 17.9	35°-00' — 32.9
10°-30' — 3.3	25°-30' — 18.6	35°-15' — 33.3
11°-00' — 3.6	26°-00' — 19.2	35°-30' — 33.7
11°-30' — 4.0	26°-30' — 19.9	35°-45' — 34.1
12°-00' — 4.3	27°-00' — 20.6	36°-00' — 34.6
12°-30' — 4.7	27°-30' — 21.3	36°-15' — 35.0
13°-00' — 5.1	28°-00' — 22.0	36°-30' — 35.4
13°-30' — 5.5	28°-30' — 22.8	36°-45' — 35.8
14°-00' — 5.9	29°-00' — 23.5	37°-00' — 36.2
14°-30' — 6.3	29°-30' — 24.3	37°-15' — 36.6
15°-00' — 6.7	30°-00' — 25.0	37°-30' — 37.1
15°-30' — 7.2	30°-15' — 25.4	37°-45' — 37.5
16°-00' — 7.6	30°-30' — 25.8	38°-00' — 37.9
16°-30' — 8.1	30°-45' — 26.2	38°-15' — 38.3
17°-00' — 8.5	31°-00' — 26.5	38°-30' — 38.7
17°-30' — 9.0	31°-15' — 26.9	38°-45' — 39.1
18°-00' — 9.5	31°-30' — 27.3	39°-00' — 39.6
18°-30' — 10.1	31°-45' — 27.7	39°-15' — 40.0
19°-00' — 10.6	32°-00' — 28.1	39°-30' — 40.5
19°-30' — 11.2	32°-15' — 28.5	
20°-00' — 11.7	32°-30' — 28.9	
20°-30' — 12.3	32°-45' — 29.3	

938
613
325
133
13
100
2.10
1.40
350
5.00
2.10
2.94

10/294

Chains to Feet

1	66
2	132
3	198
4	264
5	330
6	396
7	462
8	528
9	594
10	660

9712

Feet to Chains

100	1.515
200	3.030
300	4.545
400	6.060
500	7.575
600	9.090
700	10.606
800	12.121
900	13.636
1,000	15.151

1.33
1.33
2.66
1.33
2.66
4.89

10313080
27.21
613.84

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

Given a, b, C; to find c, B, A.

Use Law of Lines.

Given A, B, c; to find a, b, C.

Use Law of Lines.

Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)(s-b)(s-c)}{s}} = r$$

$$\cos \frac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \frac{1}{2} A = \frac{r}{s-a}$$

$$\tan \frac{1}{2} B = \frac{r}{s-b}$$

$$\tan \frac{1}{2} C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

PRISMOIDAL FORMULA.

$$\text{Vol.} = \frac{h}{6} (B+b+4M)$$

h = altitude; b, B = bases; M = midsection

TABLE III
INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219
$\frac{1}{8}$	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271
$\frac{3}{16}$	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323
$\frac{1}{4}$	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375
$\frac{5}{16}$	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427
$\frac{3}{8}$	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479
$\frac{7}{16}$	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531
$\frac{1}{2}$	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583
$\frac{9}{16}$	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635
$\frac{5}{8}$	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688
$\frac{11}{16}$	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740
$\frac{3}{4}$	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792
$\frac{7}{8}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844
$\frac{15}{16}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896
$\frac{1}{1}$	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948
	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.0000
	0	1	2	3	4	5	6	7	8	9	10	11

TABLE IV
USEFUL RELATIONS.

Lineal feet	×.00019	= miles
Lineal yards	×.0006	= miles
Square inches	×.007	= square feet
Square feet	×.111	= square yards
Square yards	×.0002067	= acres
Acres	×4840	= square yards
Cubic inches	×.00058	= cubic feet
Cubic feet	×.03704	= cubic yards
Links	×.22	= yards
Links	×.66	= feet
Feet	×1.5	= links
360°	= 21600'	= 1296000"
Radius	= arc of 57.2957790°	
Arc of 1° (radius = 1)	= .017453292	
Arc of 1' (radius = 1)	= .000290888	
Arc of 1" (radius = 1)	= .000004848	

$$\pi = 3.141592654 \quad \sqrt{\frac{1}{\pi}} = 0.564190$$

$$\frac{\pi}{4} = 0.785398163 \quad \sqrt[3]{\frac{6}{\pi}} = 1.240700982$$

$$\frac{\pi}{6} = 0.523598776 \quad \pi^2 = 9.869604401$$

$$\sqrt{\frac{4}{\pi}} = 1.128379167 \quad \frac{1}{\pi^2} = 0.101321184$$

$$\frac{\pi}{6} = 0.523598776 \quad \sqrt{\pi} = 1.772453851$$

$$\frac{4\pi}{3} = 4.188790205 \quad \frac{1}{\pi} = 0.3183099$$

Curvature of Earth's surface = about 0.7 feet in 1 mile
Curvature in feet = 0.667 (Dist. in miles)²
Difference between arc and chord length, 0.05 feet in 11½ miles

$$\text{Probable error of a single observation} = 0.6754 \sqrt{\frac{Mv^2}{n-1}}$$

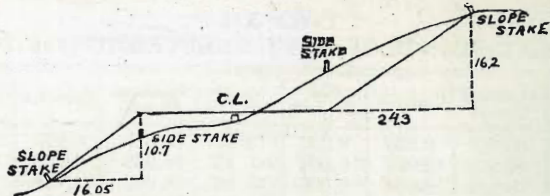
Error in chaining of 0.01 feet in 100 feet:

- Due to—
1. Length of tape error of 0.01 feet
 2. Alignment. One end 1.4 feet out of line
 3. Sag of tape at centre of 0.61 feet.
 4. Temperature difference of 15°
 5. Difference of pull of 15 lbs.

STADIA REDUCTION FORMULAE.

Horizontal Distance = R - R sin² a + C cos a
Vertical Distance = R ½ sin 2 a + C sin a
R = Reading × $\frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$
C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.
a = angle of elevation for mid Reading

0913
CIA 15600
5526
7400



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0 30	0 45	0 60	0 75	0 90	1 05	1 20	1 35	0
1	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70	2 85	1
2	3 00	3 15	3 30	3 45	3 60	3 75	3 90	4 05	4 20	4 35	2
3	4 50	4 65	4 80	4 95	5 10	5 25	5 40	5 55	5 70	5 85	3
4	6 00	6 15	6 30	6 45	6 60	6 75	6 90	7 05	7 20	7 35	4
5	7 50	7 65	7 80	7 95	8 10	8 25	8 40	8 55	8 70	8 85	5
6	9 00	9 15	9 30	9 45	9 60	9 75	9 90	10 05	10 20	10 35	6
7	10 50	10 65	10 80	10 95	11 10	11 25	11 40	11 55	11 70	11 85	7
8	12 00	12 15	12 30	12 45	12 60	12 75	12 90	13 05	13 20	13 35	8
9	13 50	13 65	13 80	13 95	14 10	14 25	14 40	14 55	14 70	14 85	9
10	15 00	15 15	15 30	15 45	15 60	15 75	15 90	16 05	16 20	16 35	10
11	16 50	16 65	16 80	16 95	17 10	17 25	17 40	17 55	17 70	17 85	11
12	18 00	18 15	18 30	18 45	18 60	18 75	18 90	19 05	19 20	19 35	12
13	19 50	19 65	19 80	19 95	20 10	20 25	20 40	20 55	20 70	20 85	13
14	21 00	21 15	21 30	21 45	21 60	21 75	21 90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23 10	23 25	23 40	23 55	23 70	23 85	15
16	24 00	24 15	24 30	24 45	24 60	24 75	24 90	25 05	25 20	25 35	16
17	25 50	25 65	25 80	25 95	26 10	26 25	26 40	26 55	26 70	26 85	17
18	27 00	27 15	27 30	27 45	27 60	27 75	27 90	28 05	28 20	28 35	18
19	28 50	28 65	28 80	28 95	29 10	29 25	29 40	29 55	29 70	29 85	19
20	30 00	30 15	30 30	30 45	30 60	30 75	30 90	31 05	31 20	31 35	20
21	31 50	31 65	31 80	31 95	32 10	32 25	32 40	32 55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33 60	33 75	33 90	34 05	34 20	34 35	22
23	34 50	34 65	34 80	34 95	35 10	35 25	35 40	35 55	35 70	35 85	23
24	36 00	36 15	36 30	36 45	36 60	36 75	36 90	37 05	37 20	37 35	24
25	37 50	37 65	37 80	37 95	38 10	38 25	38 40	38 55	38 70	38 85	25
26	39 00	39 15	39 30	39 45	39 60	39 75	39 90	40 05	40 20	40 35	26
27	40 50	40 65	40 80	40 95	41 10	41 25	41 40	41 55	41 70	41 85	27
28	42 00	42 15	42 30	42 45	42 60	42 75	42 90	43 05	43 20	43 35	28
29	43 50	43 65	43 80	43 95	44 10	44 25	44 40	44 55	44 70	44 85	29
30	45 00	45 15	45 30	45 45	45 60	45 75	45 90	46 05	46 20	46 35	30
31	46 50	46 65	46 80	46 95	47 10	47 25	47 40	47 55	47 70	47 85	31
32	48 00	48 15	48 30	48 45	48 60	48 75	48 90	49 05	49 20	49 35	32
33	49 50	49 65	49 80	49 95	50 10	50 25	50 40	50 55	50 70	50 85	33
34	51 00	51 15	51 30	51 45	51 60	51 75	51 90	52 05	52 20	52 35	34
35	52 50	52 65	52 80	52 95	53 10	53 25	53 40	53 55	53 70	53 85	35
36	54 00	54 15	54 30	54 45	54 60	54 75	54 90	55 05	55 20	55 35	36
37	55 50	55 65	55 80	55 95	56 10	56 25	56 40	56 55	56 70	56 85	37
38	57 00	57 15	57 30	57 45	57 60	57 75	57 90	58 05	58 20	58 35	38
39	58 50	58 65	58 80	58 95	59 10	59 25	59 40	59 55	59 70	59 85	39
40	60 00	60 15	60 30	60 45	60 60	60 75	60 90	61 05	61 20	61 35	40
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.

53
+4
97

5 5
5-11-00
6-22-00

1863 250
250 179
1673 0.71
166
17.79
179
16
222
0.2
-2.17
0.25
-2.15
0.25
2.00
0.25
2.00

M.H. 76.7.

2015

810

473

337

335

810

632

231

865

193

6.72

3534

Mon. 2. Wallace 100' at PP
60.01

10279986

.40

10273986