G-240

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

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

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.

INDEX

Walker
Hendricks
Wilhoite
1-16-48

GRADES - STORM DRAIN

From High Ave 100' South of Virginia Way Westerly to Eads Ave at closed Rovina St.

Plan 7129 L

WO 90036

Station					Fl. Flow Line	Cuts	offsets
2+21.39			4.94	104.23	101.17	3.76	
1+94.19			4.40	105.47	102.04	3.43	
TP	2.84	109.87	11.07	107.03			
1+67 = E.C.			11.07	107.03	102.91	4.12	
1+50 = Brk			9.52	108.58	103.45	5.13	
1+43.0			9.20	108.90	103.73	5.17	
1+35.7 = E.C.			8.83	109.27	104.06	5.21	
1+11.7 Ahead 1+11.57 = Back = B.C.			6.51	111.59	105.11	6.48	
0+87.75			5.89	112.21	106.16	6.05	
0+63.93			5.28	112.82	107.21	5.61	
0+40.12 = E.C.			4.98	113.12	108.26	4.86	
0+24.42 = B.C. Ki			3.53	114.57	108.95	5.62	
0+00					110.02		
	3.54	118.10		114.56			

B.M. East side sidewalk 0+01.1

FB 1769
45

Storm Drain Const.

Cont. from P-2

Station					El. Flow Line	Cuts	offsets
5+86.49			8.84	97.03	89.69	7.34	
5+50			4.65	101.82	90.77	11.05	
5+25			3.62	102.25	91.52	10.73	
5+00			3.10	102.77	92.27	10.50	
4+76.6 = ΔRt 90°			2.64	103.23	93.00	10.23	
4+72.2			3.30	102.57	93.15	9.42	
4+53			2.48	103.39	93.76	9.63	
4+29.76			2.78	103.09	94.50	8.59	
4+01.76			2.05	103.82	95.40	8.42	
3+71.76			1.61	104.26	96.36	7.90	
3+41.66			1.16	104.71	97.32	7.39	
	9.12	105.87		96.75		B.M. 6+1463 on Cross in Pav.	FB 1769-47
	FB1769-47						
chk & Hub 2+80.89			5.23	104.64	97.70	5.73	
3+29.66 Δ Lt 10°			6.44	103.43	~~97.43~~	4.00	
2+91.46 = E.C.			5.49	104.38	98.93	5.45	
2+75.76 = B.C.R.			4.43	105.44	99.43	6.01	
2+48.57			4.47	105.40	100.30	5.10	
		102.87					

Storm Drains - Cont. from p. 3

Station					El. Flow Line		
				0.03			
	8+57.75 FB 1769-54			92.92			
Chk. Cross in cb Brk.			7.12	92.95			
8+42 1=Δ Rt 2°23			8.16	91.91	82.00	9.91	
8+25			6.47	93.60	82.48	11.12	
7+95			5.96	94.11	83.08	11.03	
7+65							
7+62.5=Brk			5.23	94.84	83.73	11.11	
7+45			5.49	94.58	84.26	10.32	
7+25=Brk			5.27	94.80	84.86	9.94	
7+00			5.02	95.05	85.86	9.19	
6+77.96			4.23	95.14	86.74	8.40	
6+55.92 } Δ			4.24	95.13	87.62	7.51	10' Rt Rt Δ to Forward Tan
6+55.92 }			4.19	95.88	87.62	8.26	10' Rt " " " Back "
6+32.77			4.22	95.85	88.31	7.54	
T.P.	3.32	100.07	9.12	96.75			
6+09.63			9.12	96.75	89.00	7.75	
5+86.49			8.77	97.10	89.69	7.41	
		105.87					

Grades - Storm Drain in Alley

3+71 = Meas.					
3+20 = Plan End Work					107.79
	R81769-69			107.35	
chk 0+00 Page 69"			3.58	107.33	
2+88.32			2.11	108.80	100.20
2+75			3.45	107.46	99.85
2+50			4.23	106.68	99.21
2+25			4.56	106.35	98.58
2+00			4.80	106.11	97.95
1+75			5.54	105.37	97.33
1+50			5.30	105.61	96.70
T.P.	6.04	110.91	1.56	104.87	
1+25			1.96	104.47	96.07
1+00			2.61	103.82	95.45
0+80			2.39	104.04	94.95
0+55			2.85	103.58	94.33
0+30			3.53	102.90	93.70
0+05			4.63	101.80	93.08
0+00 = 4+76.61 P-8					93.00
			3.19	103.24	
	3.86	106.43		102.57	

Cuts	offsets (Lt)
8.60	5.5
7.61	9.0
7.47	7.0
7.77	7.0
8.16	9.0
8.04	7.0
8.91	4.8
8.40	10.0
8.37	10.0
9.09	4.73
9.25	4.73
9.20	4.63
8.72	3.62

B.M. on Hill 4+72.4 P-3

MORLEY FIELD DRIVE

Walker
Hendricks
Becker
Williams
4-19-48

Grades for Paving
From Arnold to Alabama

Stations				
2+55				
2+50				
2+00				
T.P.	10.23	272.41	1.23	262.18
1+36.2				
1+00				
0+94.8 = West edge Exist Pav.				
Chk Nail 0+50			7.81	256.60
0+00 = West Curb Line Arnold St. Produced				
	9.70	263.41		253.71

H		K		M
	- 0.13		- 1.07	+ 0.83
	7.79		8.16	6.23
	- 7.66		7.09	7.06
	264.75		263.32	265.35
	2.87			
	- 0.13		- 0.94	- 0.97
	264.55		263.09	265.15
	+ 1.08		- 1.11	+ 0.44
	8.83		10.68	8.77
	9.91		- 9.57	9.21
~~263.75~~	262.5		262.84	263.2
	13.7			
			272.41	
	- 0.2		- 1.37	
	260.5		260.9	261.54
	257.5		259.13	
	253.9			

B.M. Nail in Pav. 0+00 EB 181 1/8

Walke
Hendr
Becke
Withe
4-18-4

4+85
5+00

Q
Flat

2+

4+50

2+5

T.P 9.81 281.35 0.87 271.54

4+00 Bk

2+

T.

3+50

1+

3+10

1+0

0+

Ch

2+80

0+

272.41

4	2	4
+1.13	-0.31	-0.25
6.05	6.55	7.30
7.18	6.24	7.05
274.17	275.11	274.30
2		
+0.42	-0.80	+0.32
8.18	8.42	8.09
8.60	7.62	8.41
272.75	273.73	272.94
	281.35	
+0.17	-1.21	+0.54
1.54	1.87	0.87
1.71	0.66	1.41
270.70	271.75	271.00
00	-1.04	+0.49
3.83	3.86	2.92
3.81	2.82	3.36
268.60	269.59	269.05
	+0.81	-1.18
	5.40	5.74
	5.41	4.56
267.5	267.0	267.85
45	40	
	265.78	266.44
		266.33
	272.41	

Estation

	Lt.	℄	Rt.
6+40 = EVC	-0.40	-0.43	+0.03
	4.20	3.33	3.77
	3.80	2.90	3.80
	27.55	278.45	277.55
+20	-0.51	-0.57	-0.23
	4.26	3.42	3.98
	3.75	2.85	3.75
	27.60	278.50	277.60
6+00	-0.53	-0.53	-0.25
	4.38	3.48	4.10
	3.85	2.95	3.85
	27.50	278.40	277.50
+80	-0.44	-0.58	-0.26
	4.49	3.73	4.31
	4.05	3.15	4.05
	27.30	278.20	277.30
+60	0.00	-0.63	-0.35
	4.96	4.18	4.80
	4.45	3.55	4.45
	27.90	277.80	276.90
+40	+0.19	-0.45	-0.52
	4.86	4.60	5.52
	5.05	4.15	5.00
	276.30	277.20	276.35
5+20 = PVC	+0.48	-0.19	-0.71
	5.27	5.04	6.41
	5.75	4.85	5.70
	276.60	276.50	275.65

28135
5

Molley Field Drive

					4	E	RR
T.P.	1,74	276.53	·656	27479			
					-0.75	-018	-010
					6.56	5.03	5.79
					5.81	4.85	5.69
9+00					275.54	276.50	275.66
					-067	-030	-028
					6.09	4.78	5.63
					5.42	4.48	5.35
750					275.93	276.87	276.00
					-0.32	-047	-043
					5.35	4.58	5.42
					5.03	4.11	4.99
8+00					276.32	277.24	276.36
					-0.31	-039	-040
					4.95	4.13	5.03
					4.64	3.74	4.63
850					276.71	277.61	276.72
					-019	-007	+0.05
					4.44	3.44	4.19
					4.25	3.37	4.24
7+00					277.10	277.98	277.18
					-029	-015	+0.18
					4.31	3.28	3.84
					4.02	3.13	4.02
6+70					277.33	278.22	277.33
		28135				28135 / 2	

Morley Field Drive

		- 0.28	0.00
		3.11	3.62
		2.83	3.53
12+50	272.60	273.70	273.0
	+ 0.08	- 0.31	+ 0.52
	3.25	2.59	3.61
	3.33	2.28	3.03
12+00	273.20	274.25	273.50
	+ 0.20	- 0.13	+ 1.11
	2.74	2.04	1.96
	2.94	1.91	3.07
11+50	273.59	274.62	273.86
	+ 0.10	- 0.22	+ 0.76
	2.45	1.75	1.55
	2.55	1.53	2.31
11+00	273.98	275.00	274.22
	- 0.40	- 0.16	+ 0.41
	2.56	1.32	1.54
	2.16	1.16	1.95
10+50	274.37	275.37	274.58
	- 0.45	- 0.12	- 0.12
	2.22	0.90	1.71
	1.77	0.78	1.59
10+00	274.76	275.75	274.94
	- 0.45	- 0.04	+ 0.10
	1.83	0.45	1.13
	1.38	0.41	1.23
9+50	275.15	276.12	275.30
	276.53	276.53	

Morley Field Drive

15+90							
~~16+10~~					26.10	~~26.75~~ 26.63	
T.P.	1.62	26.563	12.52	26.401			
						12.52	
						12.53	
+50					26.220	26.400	26.370
						+0.10	
						10.03	
						10.13	
15+00					26.490	26.640	26.570
						+0.14	
						7.94	
						8.08	
14+50					26.720	26.845	26.770
						+0.10	
						6.23	
						6.33	
14+00					26.90	27.020	26.940
						-0.15	
						5.03	
						4.88	
13+50					27.060	27.165	27.090
						-0.30	
						3.93	
						3.63	
13+00					27.185	27.290	27.220
						27.653	

				.005				
	FB 1811-20			259.38				
Chk ob Top	Head Inlet		6.20	259.43				
16+98					12.65			
					17.65			
					252.98			
							-.016	
							7.03	
					+ 0.82		6.87	
16+71					8.61		258.76	
					9.43			
16+70					256.20			
16+52	Approx Edge Pav.							260.25
					+ 1.41		-.017	
					6.22		5.80	
					7.63		5.63	
16+50					258.00		260.00	
					+ .98			
					5.90			
					6.88			
16+30					258.75			
							-.003	
							4.41	
							4.38	
16+10					254.20		261.25	261.50
							265.63	

Hendricks
Becker
Williams
4-22-48
WO# 90036

Grades for Storm Drain
From West Cb. Girard Ave at Virginia
Way Westerly to Eads Ave
Plan 7129-L

Sta	+	H I	−	Elev. Stakes	Grade Elev.	Cuts	offset
10+25			6.12	92.73	78.73	14.00	10' R.
10+00			5.67	93.18	79.17	14.01	10' R
9+80.73	EC.		6.43	92.42	79.52	12.90	10' R.
9+57.17	BC		6.50	92.35	79.93	12.42	10' R
9+30			5.36	93.49	80.41	13.08	10' R
9+05			4.89	93.96	80.85	13.11	8' R.
8+80			4.81	94.04	81.29	12.75	10' R
8+54.1			5.95	92.90	81.75	11.15	10' R
B.T.	5.93	98.85	~~9.85~~	92.92		Cross in Cb	8+57.75 FB. 1769.54

Contd from P. 16

Sta.	+	HI	−	Elev. Stakes	Elev. Grade	Cuts	Offsets
12+50			5.45	85.36	74.77	10.59	10' Rt
12+25			4.57	86.24	75.21	11.03	10' Rt
12+00			5.06	85.75	75.65	10.10	10' Rt.
TP	3.90	90.81	8.14	86.91			
11+75			8.14	86.91	76.09	10.82	15' Lt
11+50			5.38	89.27	76.53	12.74	8' Rt.
11+25			5.46	89.59	76.97	12.62	10' Rt.
11+00			4.46	90.59	77.41	13.18	10' Rt
10+75			3.57	91.48	77.85	13.63	10' Rt.
10+50			4.91	90.14	78.29	11.85	22' Lt.
TP	2.32	95.05	6.12	92.73			
		98.85					

Contd from P. 17

Sta.	+	HI	-	Elev Stakes	Elev Grade	Cuts	offsets
TP.	2.75	85.19	8.27	82.44			
14+34	PEC		7.69	83.12	71.21	11.91	12' Rt.
14+19.19			8.69	82.12	71.57	10.61	14' Lt.
14+03.48	PBC		10.86	79.95	71.82	8.13	12' Lt.
13+75			7.90	82.91	72.38	10.53	12' Lt.
13+50			6.76	84.05	72.86	11.19	15' Lt.
13+25			6.26	84.55	73.35	11.20	16' Lt.
13+00			5.34	85.47	73.83	11.64	10' Lt.
12+78.82			4.77	86.04	74.24	11.80	10' Lt.
12+57.65	& Cleanout		5.02	85.79	74.65	11.14	10' Rt.
		90.81					

Contd. from P. 18

Sta	+	H.I	-	State Elev	Elev Grade	Cuts	Offset
Ck Top of M.Cb. at Inlet Eads Ave FB 1769 - P. 62			9.33	75.86	(75.85)		
15+63	End of Pipe		7.19	78.00	68.70	9.30	10' Lt.
15+35			6.57	78.62	69.27	9.35	10' Lt.
15+10			5.00	80.19	69.75	10.44	10 Lt.
14+85			4.44	80.75	70.24	10.51	10' Lt.
14+60			4.10	81.09	70.72	10.37	15' Lt.
		85.19					

Walker
Hendricks
Becker
Williams
5-4-48

Santa Clara Point.
Lighting Circuit
& Light Standard Grades

6+92.4 = Δ Rt 37°11' 30"		5.04	4.57	4.65	-0.08 on Forward Tan
					Top of Cb.
6+24		4.78	4.81	4.23	+0.58 Pav. Grade
= 5+70.04 Equation					
5+66.04 = PCC 3° Radius		5.58	4.01	4.97	-0.96 = Top curb
5+42.00					
5+17.97					
4+93.94 = PRC					
4+50 TP	5.39	2.59	4.03	4.20	
4+00			4.13		5.05
3+44 = Light Std.			4.78	3.45	4.57	-1.12 ' Cb Grade
3+00.82 = B.C.Lt.			4.71	3.52	4.15	-0.63 ' " "
2+50			5.17	3.06	3.65	-0.59 ' " "
2+00			5.68	2.55	3.15	-0.60 ' " "
1+58			5.93	2.30	2.71	-0.41 " "
0+86.2 = Δ Rt 7°15			6.71	1.52	1.86	-0.34 Cb. Grade
0+38.7			7.99	0.24	+0.30	-0.06 Pav. Grade
Chk: B.M. on Disk			9.19	-0.96		
	1.26	8.23		6.97		

℄ Santa Clara & Bayside Lane
B.M. Fire Hyd. Santa Clara Point.

Santa Clara Pkwy.
Lighting Circuit & Light Std.

10+23.9 =	Lt. Std. ~~Pull Box~~		5.72	3.87	4.19	-0.32 = Top cb. ✓
9+39.4						
8+55.4 =	Lt Std ~~Pull Box~~		5.80	3.79	3.53	+0.26 ✓
7+72.4						
		9.59				

offsets 5 Lt

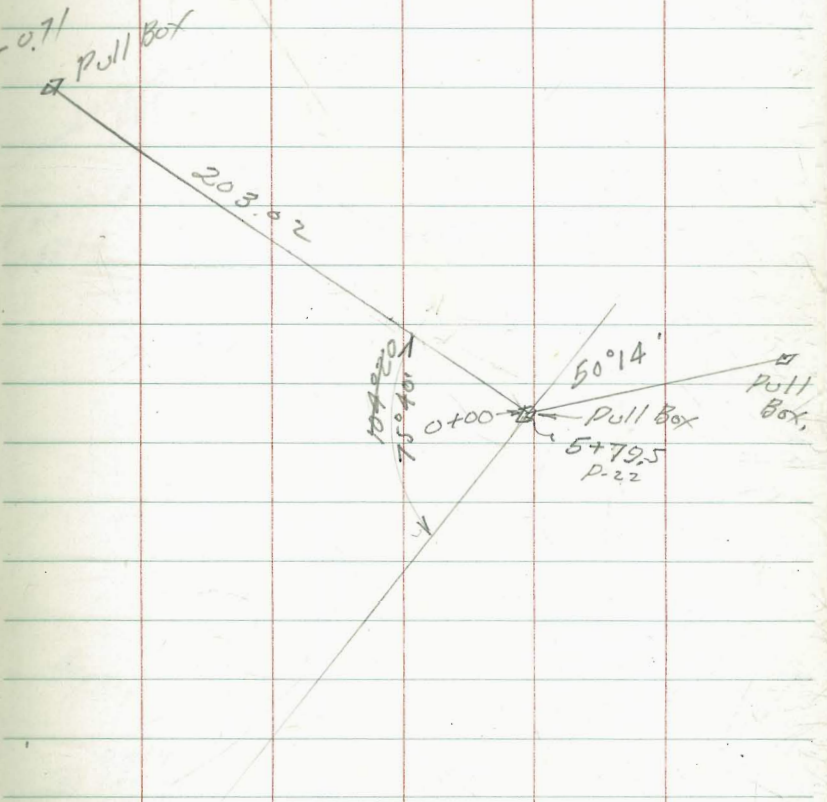
Power Circuit
& Pull Box

Santa Clara Point.

Station					
6+83 = New location as Const.		4.92	3.99 3.99	-0.00	= Top ~~Pv.~~ Curb Elev.
	194 891		6.27		
~~6+88.2 = Pull Box.~~		~~5.52~~	~~4.07 3.95~~	+0.42	= Top Cb.
107 ?					
5+79.5	Δ Rt. 50°14' Pull Box	5.18	4.41 4.41	0.00	Top of Cb. Grade
126 ✓					
4+53.1		6.35			
3+53.1	= Δ Rt. 22°18	5.97	3.62 3.80	-0.18	= Top Paving
2+60.09		6.21	2.68 ~~3.80~~ 3.13	-0.43 -1.7	Top Pav. ? ~~Check this~~
95.2 ✓	Pull Box				
1+64.85	Δ Rt. 0°34'	7.70	1.89 1.90	-0.01	
0+00 = ℄ Power Pole					
	959				

Santa Clara Burst

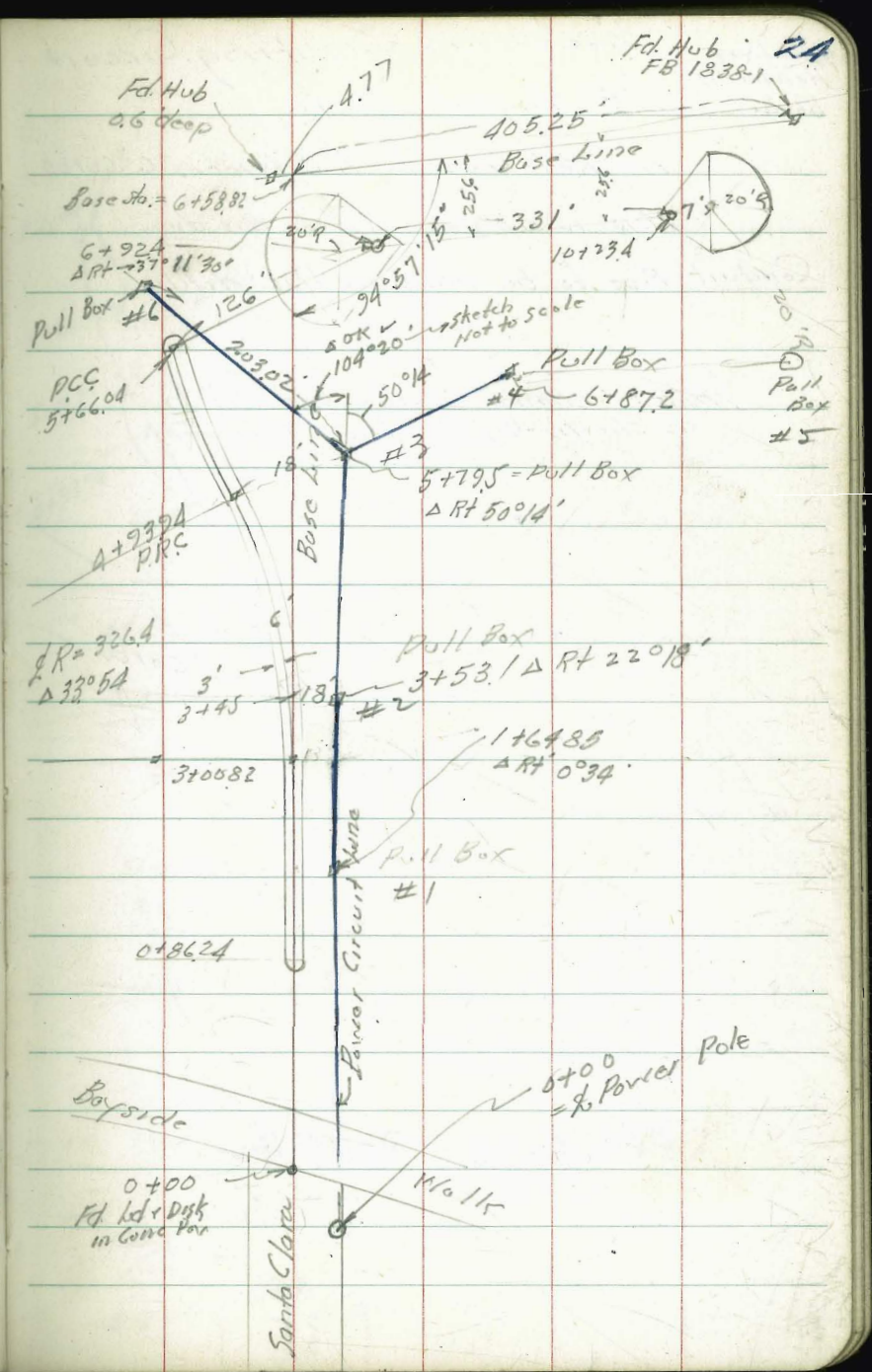
			00 / 6.97	
Chk BM Fire Hyd - P-20		261	6.98	
2+02.03		6.51	3.08	379
1+00				
				4.41 / 3.95
0+00				
	2.59 / F			



Santa Clara Point

Location Lighting Circuit • ditch R-25

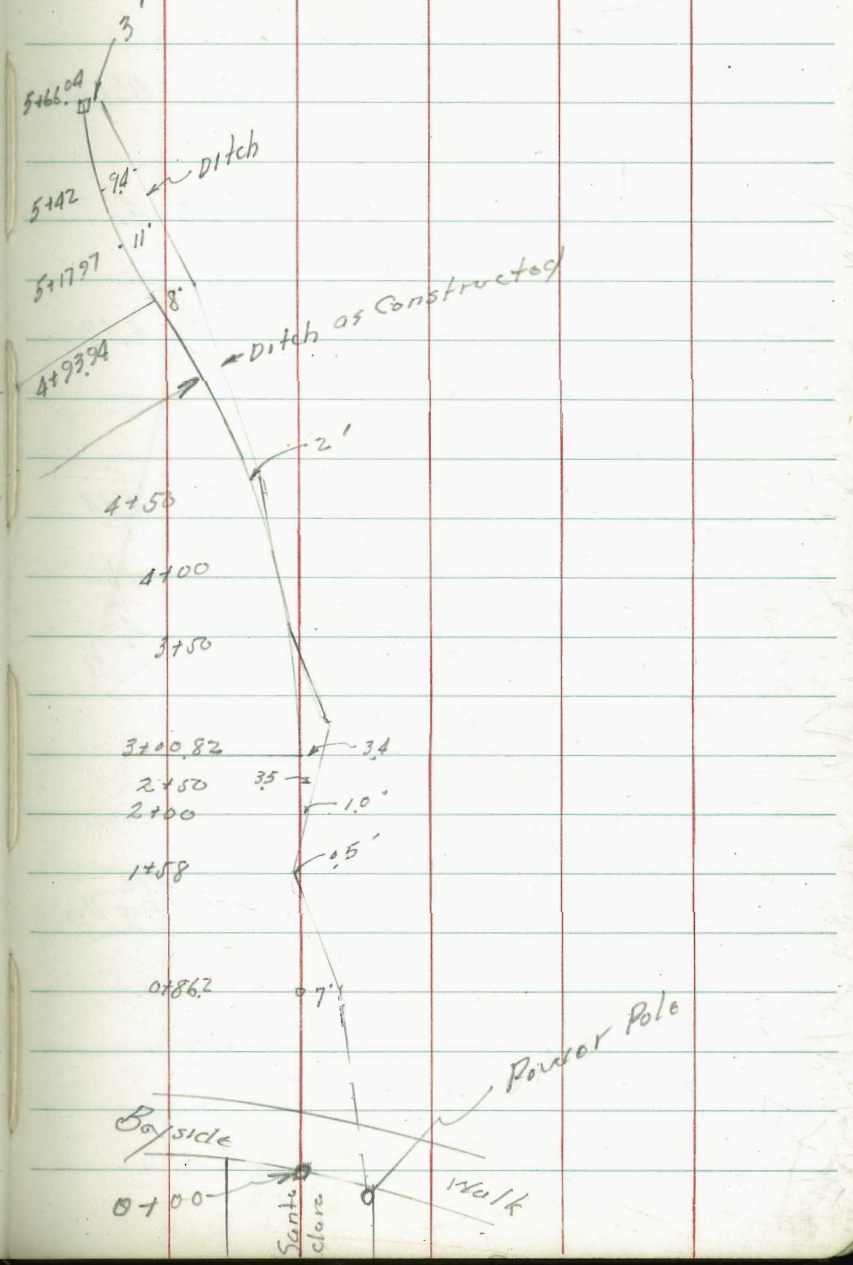
" " Power Line in Blue



Walker
Hendricks
Booker

Location Lighting Circuit
6 Light Stds.
in Relation to ℄ Between 6' Curbs
This is as per ditch was dug.
Conduit Pipe to be laid in this ditch.

(Note: Change made for ditch as shown by Electrical Foreman)

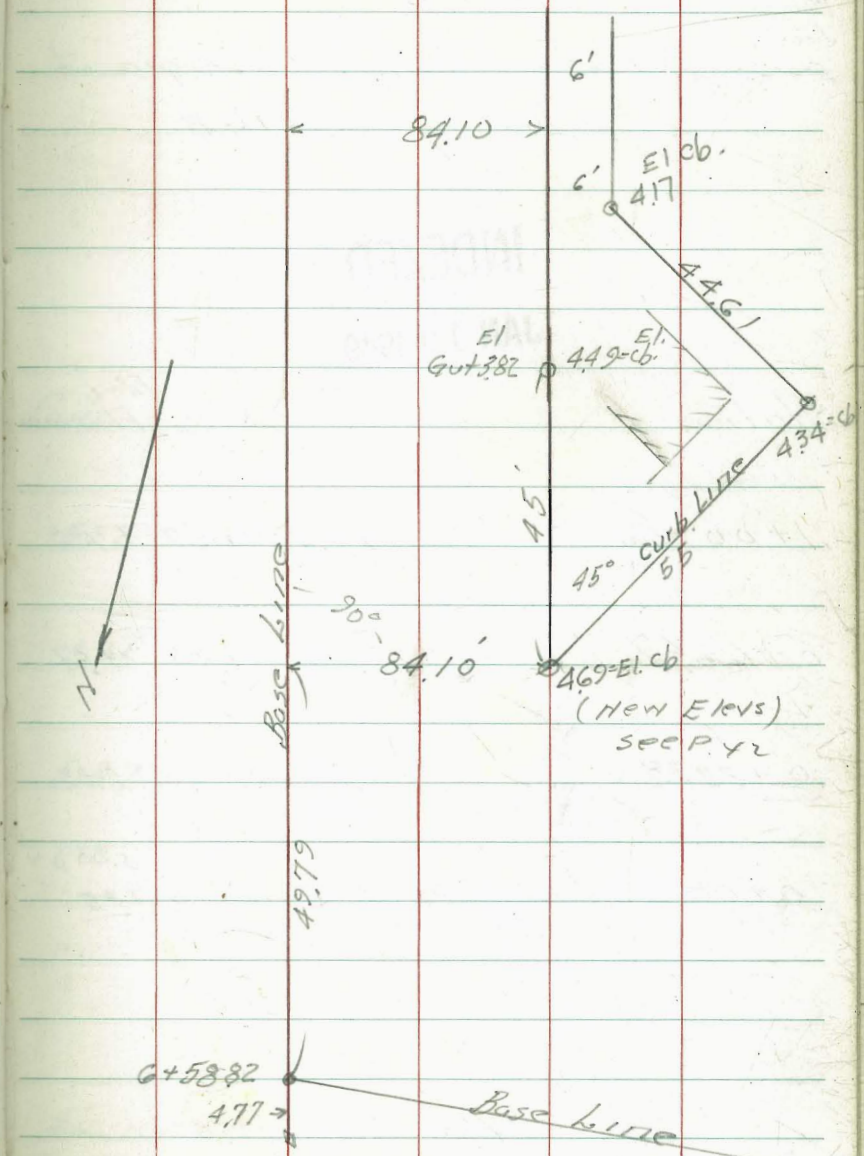


SEE ALSO PAGE 4

Location Proposed Concrete Slab for Transformer

Santa Clara Point.

			Rod	El. Curb	
			5.32	4.17	
4979 471 34.5 6			5.00	4.49	
			5.15	4.34	
			4.80	4.69	
	2.52	9.49	6.97		B.M. Fire Hyd. D-26
B.M.	3.34	10.81	6.97		



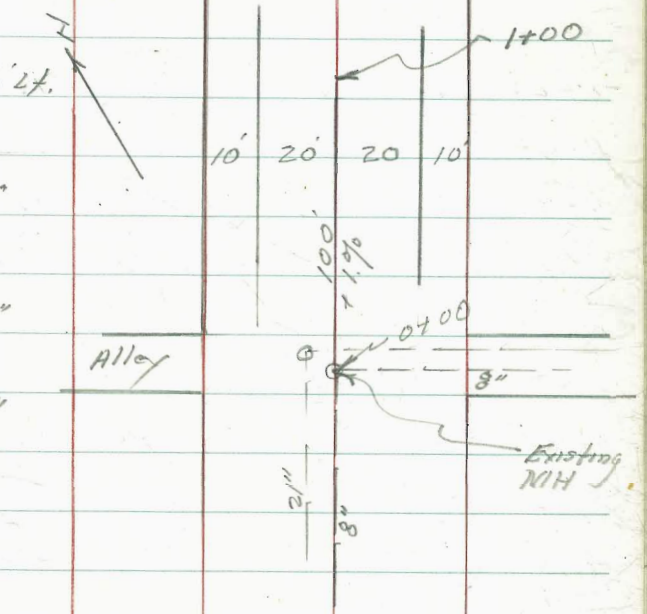
GRADES - SEWER EXTENSION

Walker
Becker
5-4-48

In Woden St.
Between Main And Dalbergia St.
Drawing No 3416-B

Station			Elev. Flow Line	Cuts	offsets.
1+00 = End	4.47	11.57	6.00	5.57	6' Lt.
0+66.67	4.66	11.38	5.67	5.71	"
0+3333 1.0%	4.84	11.20	5.33	5.87	"
0+00 = ℄ Existing MH.	4.92	11.12	5.00 1.35	+6.12	"
	5.50	16.04		10.54	BM. NW BR. Main & Woden

Dalbergia St.



10-20-48
Hendricks
Roberts
Greer
Rover
WO#31245

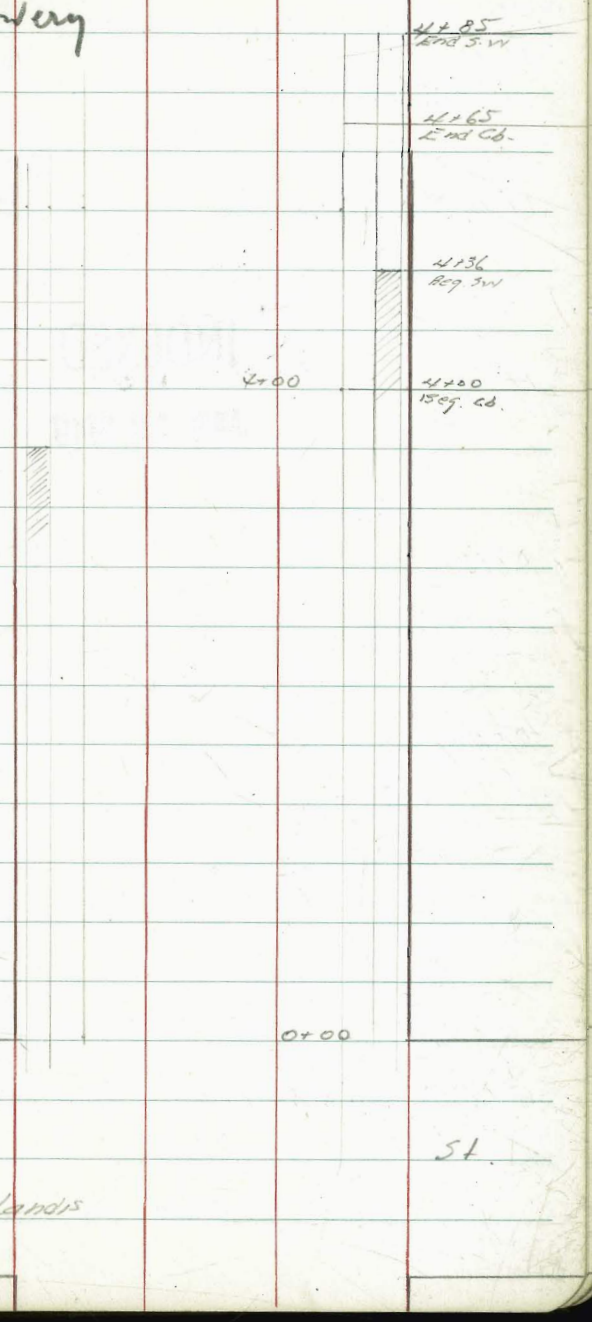
Stake Cbs. & Sidewalk to be Constructed by City Forces
plan 7007-L.

Sta.		H.I	–	Elev. Stakes	Elev. Cb Grade
4+85	Rt.		7.51	311.55	312.12
4+65	Rt		6.82	312.24	312.46
4+40	Rt		6.46	312.60	312.89
4+20	Rt		5.47	313.59	313.22
			5.49 Ex Cb. 313.57		
4+00	Rt		5.22	313.84	313.87
3+99	Lt.		4.54	314.52	314.40
3+90	Lt		3.87	315.19	314.69
			3.90 Ex Cb 315.16		
3+75	Lt.		3.80	315.26	315.17
TP	1.88	319.06	10.22	317.18	
TP	1.45	327.40	11.64	325.95	
BM	2.34	337.59			335.25

35th Street
Landis to Bonney

28

Cut or Fill	Offset
F0.57	
F0.22	
F0.29	
C0.36	
C0.27	
C0.12	
C0.50	
C.0.09	
	Landis
NWBB 3616 & Landis	



Walker
Becker
Williams
5-13-48

Check GRADE STAKES on DAVIES ST. Plan 7201-L
W.O. 80104

1+22.29 = B.C. Alley Rd.

1+14.29 = B.C. Alley Rd.

1+00

0+75

0+50

0+43

0+25

0+07

0+00 = St. Garnet St. 3.03 32.57 32.56

3.06 3.560 32.54

4 ft. cb. | 4 ft. cb.

C 0.38
29.05 = Grade
29.43
6.17

F 0.29
29.98
29.69
5.91

F 0.45
30.30
29.85
5.75

F 0.06
29.51 = Grade
29.45
6.15

F 0.52
30.87
30.35
5.25

C 0.00
30.03 = Grade
30.03
5.57

Correct 0.63
F 0.63
31.43
30.80
4.80

C 0.02
30.55 = Grade
30.57
5.03

C 0.13
30.70
30.83
4.77

Correct -0.51
F 0.48
32.00
31.52
Rod 4.08

C 0.18
31.07 = Grade
31.25
1.35

C 0.10 Corr. -0.12
31.48 = Grade
31.54
4.06

0.01+
32.56 = G
32.57
3.03
4.08

34.01
31.59 = Grade
4.01

3560

S.M. N.W. Brass Plg. Garnet & Davies
Drawing 7201-L

29

Denver St. Curb Grades

2.700

1475

1+54.29 E.C. 10' Alley Ret.

B.C. Alley Ret. in Alley 10'R

St. Cor Alley

N.E. Cor Alley
NYI

E.C. Alley Ret.

1+24.29

4 4 30

C 0.13 C 0.15 Cor at
28.05
28.18
7.42

C 0.01 C 0.02 "
28.61
29.62
6.98

F 0.05 F 0.04 "
29.08
29.03
6.57

C 0.17 "
29.34
29.51
6.89

F 0.16 F 0.15 Cor at
29.51
29.35
6.25

C 0.16
29.97
30.13
5.47

F 0.09
29.21 = Grade NYI Alley at Prop. Line
29.12
6.48

F 0.14
29.90
29.76
5.84

E 0.42
29.01
29.49
6.17

35.60

Dowres and Hornblend
Curb Grader

2+20			276	29.60	29.19	C 0.41 ✓
2+00			307	29.29	28.92	C 0.37 C 0.39 = Correct
1+75			357	28.79	28.58	C 0.21 C 0.22 "
1+50			427	28.09	28.24	F 0.15 F 0.13 "
1+25			461	27.75	27.90	F 0.15 F 0.14 "
1+00			486	27.50	27.56	F 0.06 F 0.05
0+75			530	27.06	27.22	F 0.16 ✓
0+50			567	26.69	26.88	F 0.19 ✓
TP	6.05	32.36	929	26.31		
0+30	E.C. on Hornblend		929	26.31	26.61	F 0.30 ✓
	~~E.C.~~		914	26.46	26.50	F 0.04 F 0.05 "
#4				26.58	26.43	C 0.15 = F 0.16 "
			895	26.70	26.40	C 0.30 ✓
			871	26.89	26.43	C 0.46 ✓
			853	27.07	26.50	C 0.57 C 0.57 "
2+58.59	30' R = B.C. N.E. Hornblend		820	27.40	26.68	C 0.72 C 0.73 "
2+50			817	27.43	26.90	C 0.53 C 0.56 "
2+25			795	27.75	27.48	C 0.27 C 0.21 ✓
		35.60 R				

Cont. from P. 30

Hornblend 135.5'

Dowres

~ Paving Grades ~

Walker
Becker
Williams
5-13-48

Alley Block 222 · Pacific Beach

Plan 7201-L WO 80104

1+65

1+29

Void = Restaked

1+00

P-35 1/2 6

50°

0+61

0+35

0+00 = Edna Davies.

147 34.01 32.54

4 2 11

Alley

C 0.86	C 0.20
31.44	31.24
32.30	31.44
1.71	2.57
C 0.93	F 0.17
31.03	30.83
31.96	30.66
2.85	3.35
C 0.34	F 0.12
30.70	30.50
31.04	30.38
2.97	3.63
C 0.51	F 0.31
30.25	30.05
30.76	29.74
3.25	4.27
C 0.76	F 0.31
29.95	29.75
30.71	29.44
3.30	4.57
C 0.60	C 0.01
29.55	29.35
30.15	29.36
3.86	4.65

BM. NYI B.P. GARNET AND DAVIES

34.01

Alley Block 22
Pacific Beach
Cont. from P-32

Void account
Restaked
See P-35.36

2+50

2+25

2+00

1+98

C 1.20
32.42
33.62
0.39

C 0.30
32.22
32.52
1.49

C 0.08
32.13
32.21
1.86

C 0.13
31.93
32.06
1.95

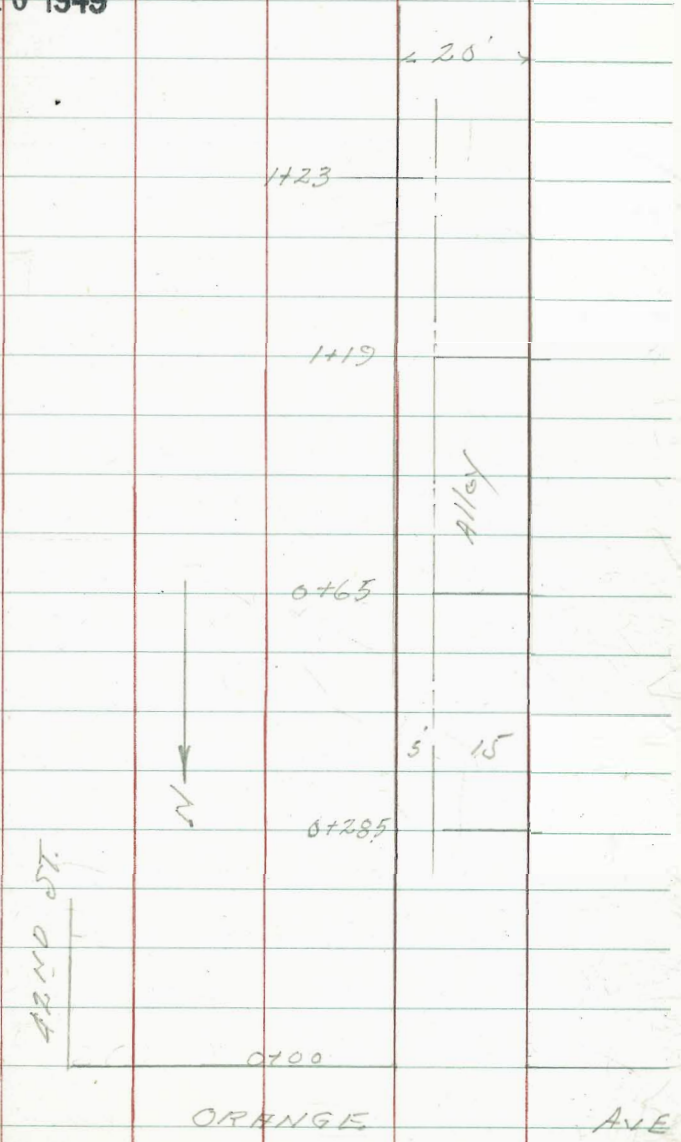
C 0.44
31.84
32.28
1.73

C 0.16
31.64
31.80
2.21

Walker
Hendricks
Backer
Williams
5-25-48

Alley Block 17 Teralta
Between 42nd & Marlborough.
ORANGE to Polk

	Grades - Water services			El. Top Pav.	Cuts.		
1+25		3.99	363.24				
		~~4.60~~	~~362.63~~	362.63	C0.61		
1+21	1.5 in Alley on Lt	3.99	363.24				
		~~4.65~~	~~362.58~~	362.58	C0.66	1+23	
1+21	on Lt.	3.95	363.28				
		~~4.58~~	~~362.65~~	362.65	C0.63		
1+21	on Rt.	4.32	362.91				
		~~4.88~~	~~362.35~~	362.35	C0.56		
1+17	on Rt. 1.5 in Alley	3.88	362.35				
		~~4.38~~	~~362.35~~	362.35	C1.00	1+19	
1+17	on Rt.	3.86	363.37				
		~~4.86~~	~~362.37~~	362.37	C1.00		
0+67	on Rt	4.54	362.69	362.69			
0+63	on Rt 1.5 in Alley	4.53	362.70	362.70		0+65	
0+63	on Rt.	4.51	362.72	362.72			
0+30.5	on Rt	4.41	362.82	362.82			
0+26.5	on Rt 1.5 in Alley	4.44	362.79	362.79		0+28.5	
0+26.5	on Rt.	4.40	362.83	362.83			
chk W. Gut 0+00	SL. Alley	4.55	362.68	362.68			
0+00 = SLine Orange Ave							
	533 36723			361.90	N.W. BP Orange & Copeland		



Hornblend

Walker
Hendricks
Becker
Williams
5-27-48

PAVING GRADES
DAVIES And HORNBLEND

T.P	4.38	33.46	2.08	29.08	
T.P	2.08	31.16	4.25	29.08	= ONE FOOT
	0.79	33.33		32.54	P.M. NW Garnet + Davies

GARNET

57

Walker
Hendrick
Becker
Williams
5-27-48

GRADES - ALLEY - Block 222 - Pacific Beach.

Re stake

Station.		Rods.	El. Stakes	El. Top Paving		
2+25	Lt	3.92	32.22	32.13	C0.09	2' Back
2+25	Rt	3.57	32.07	31.93	C0.14	3' Back
2+00	Rt.	3.84	31.80	31.64	C0.16	5' Back
1+98	Lt	3.46	32.18	31.83	C0.35	2' Back
1+65	Lt	3.33	32.31	31.44	C0.87	3' Back
1+68	Rt	4.35	31.29	31.24	C0.05	5' Back
1+29	Lt.	3.68	31.96	31.03	C0.93	0.2' Back
1+29	Rt	5.03	30.61	30.83	F0.22	5' Back.
1+00	Lt	4.57	31.07	30.70	C0.37	0.3 Rt.
1+0.0	Rt.	5.41	30.23	30.50	F0.27	5' Rt.
0+61	on Lt.	4.90	30.74	30.25	C0.49	0.7' Lt
0+61	on Rt	5.94	29.70	30.05	F0.35	5' Rt
0+35	on Lt	4.94	30.70	29.95	C0.75	0.3' Lt
0+35	on Rt	5.99	29.65	29.75	F0.10	2' Rt.
0+00	Lt.			29.55		
0+00	Rt.			29.35		
		6.56	35.64	29.08	BM - TP on CB P.C. P-35	

Alley Blk 22
Pacific Beach
Cont. from P-36

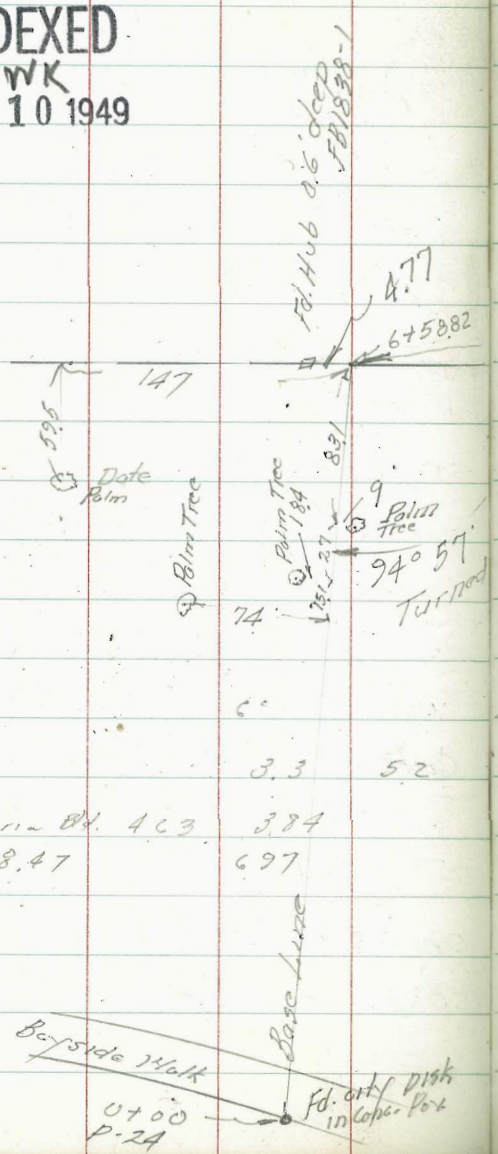
				El. Top Pavmt	Cut & Fills	Offsets
2+52	4	2.78	32.86	32.43	CO.43	2' Back
2+50	Rt	3.11	32.53	32.22	CO.31	5.05 Back

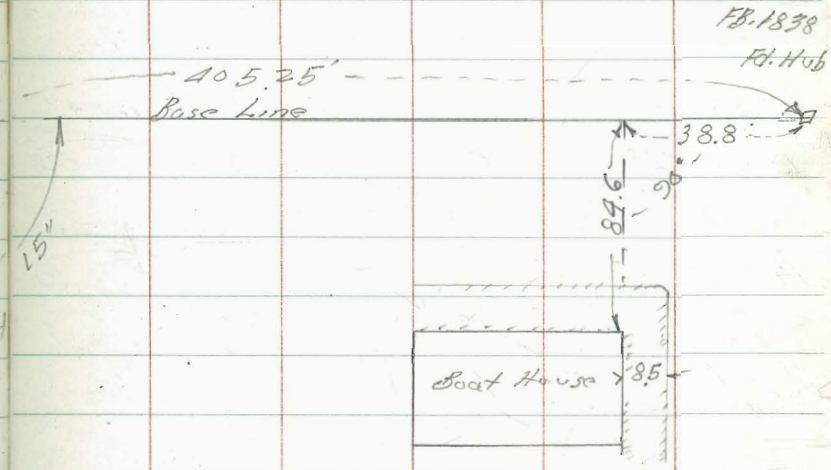
35.64

Walker
Hendricks
Booker
Williams
5-28-48

SANTA CLARA POINT.

Location Exist Palm Trees





		3.3	52
Chk Floor Cafeteria Bk. 4C3		384	
150	8.47	697	

Check Grades - Alley Blk 2
Center Add.

~~2+50 Rt.~~				~~110.95~~	
~~2+50 Lt.~~				~~111.25~~	
2+20 Rt.			2.61	111.78	110.55	C 1.23
2+20 Lt.			3.44	110.95	110.85	C 0.10
2+00 Rt			3.57	110.82	110.30	C 0.52
2+00 Lt.			3.16	111.23	110.60	C 0.63
1+80 Rt.			3.73	110.66	110.17	C 0.49
1+80 Lt			3.20	111.19	110.47	C 0.72
1+60 Rt.			4.70	109.69	110.02	F 0.33
1+60 Lt.			3.56	110.83	110.32	C 0.51
1+10 Rt.			3.58	110.81	109.87	C 0.94
1+10 Lt.			3.97	110.42	110.17	C 0.25
0+60 Rt.			4.92	109.47	109.72	F 0.25
0+60 Lt			3.47	110.92	110.02	C 0.90
0+10 Rt - Brk			4.46	109.93	109.66	C 0.27
0+10 Lt. Brk			2.16	112.23	109.96	C 2.27
0+00 Rt	Chk. Wt. Bar.		5.10	109.29	109.28	C 0.01
0+00 Lt	Chk Wt Bar.		4.21	110.18	110.19	F 0.01
				109.36		
	503	114.39		~~109.28~~		

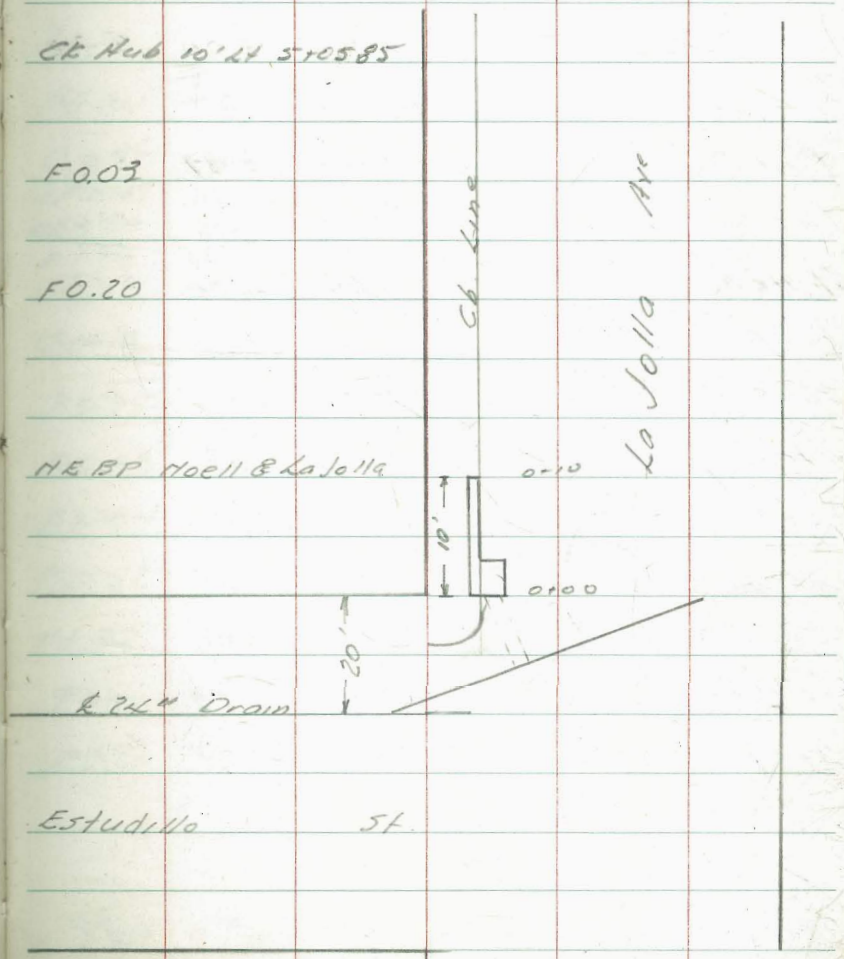
B.M. VI Top cb. SE. Virginia Way F.B. 528/34

			1.42	120.88		
	FB 598			121.59 -0.01		
Chk E Top cb 0+00			0.70	121.60		
IP	10.54	122.30	2.63	111.76		
2+50 Rt.			2.61	111.78	111.19	C 0.59
2+50 Lt.			2.38	112.01	111.49	C 0.52
2+40 Rt			3.05	111.34	110.95	C 0.39
2+40 Lt.			2.69	111.76	111.25	C 0.51
		114.39				

6-10-48
Hendricks
Roberts
Greer
Rohr

Stake Cb. Inlet
La Jolla Ave. & Estudillo

				Elev. Stakes	Elev. Grade (Cb)	
			6.13	74.90	74.88	Cb Hub 10' Lt. 3+05.85
0+10			5.06	75.97	76.00	F 0.03
0+00			5.20	75.83	76.03	F 0.20
TP	4.89	81.03	2.17	76.14		
B.M.	4.23	78.31			74.08	NE BP Hoell & La Jolla



6-10-48
Hendricks
Roberts
Greer
Cohr.

Restake Grades for Light Standards & Pull Boxes Santa Clara Point

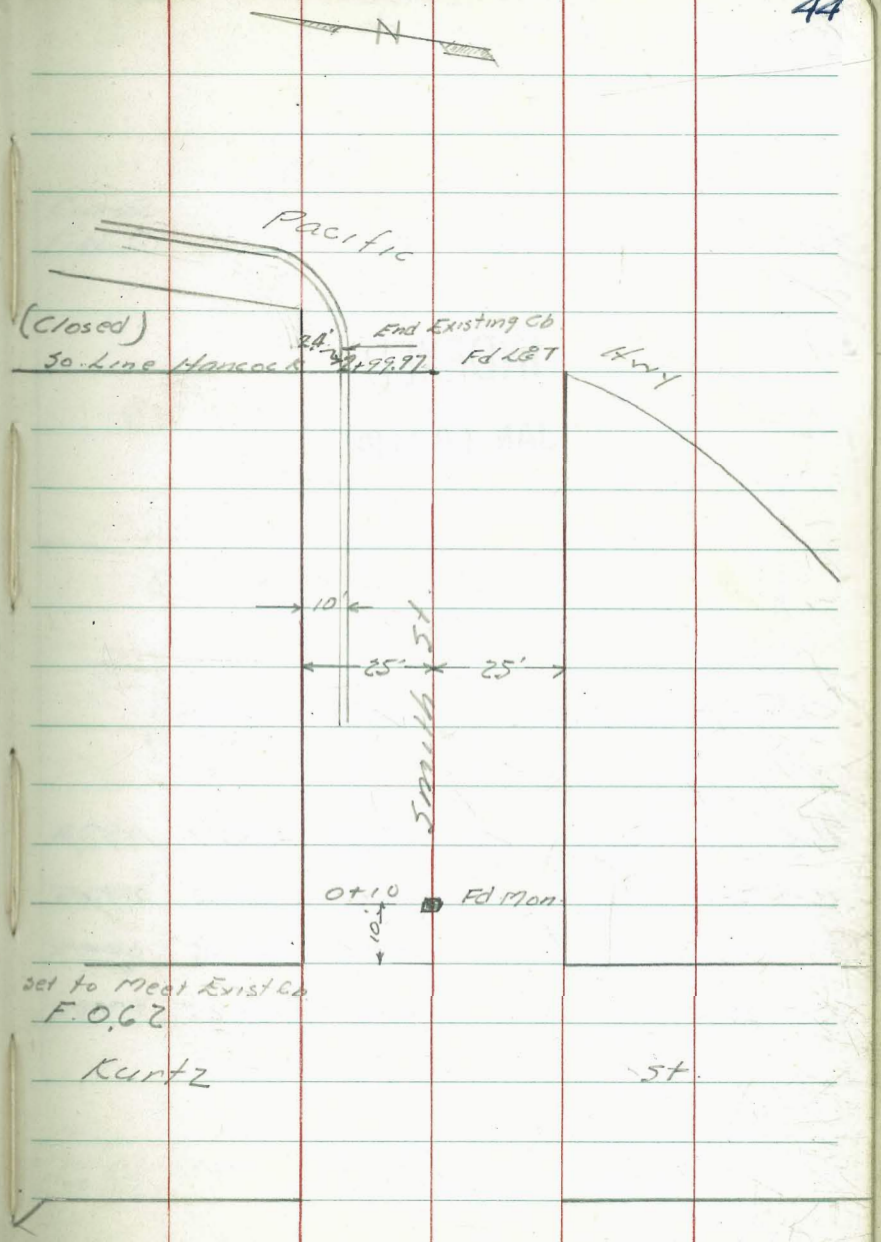
			Elev Grade		
Pull Box #3	5.40	4.00	5.28	F1.28	Top of Cb.
Pull Box #6	5.86	3.54	3.78	F0.24	Top of Pavement
Pull Box #5	6.03	3.37	3.01	C.0 3.6	Top of Pavement
	5.54	3.86	4.35 So	F0.49	
Pull Box #4	5.34	4.06	4.36 No	F0.30	Top of Pavement
	5.05	4.35	5.57	F1.22	Top of Cb.
Cb. Stk Pull Box #3	4.70	4.70	5.07	F0.37	Top of Cb (Seepage 26 for Detail)
Pull Box #2	5.80	3.60	3.47	C0.12	Top of Pavement
Pull Box #1	7.56	1.84	2.09	F0.25	Top of Pavement
10+01.8 Lt. Std	5.53	3.87	4.10	F0.23	Top of Cb.
8+33.3 Lt. Std	5.62	3.78	4.82	F1.04	Top of Cb.
6+70.8 Lt. Std	4.85	4.55	5.47	F0.92	Top of Cb.
5+66.04 Lt. Std.	5.39	4.01	5.33	F1.32	Top of Cb.
3+45 Lt. Std.	5.97	3.43	4.50	F1.07	Top of Cb.
1+59 Lt. Std	7.12	2.28	2.88	F0.60	Top of Cb
B.M. 2.43 940			6.97	Top of Fire Hyd.	

SEE ALSO PAGE 25

6-10-48
Hendricks
Roberts
Greer
Rohn

State Hwy Cb. Ref.
Smith & Pacific Hwy

3+40				3.95	
3+02.4	Beg. Exist. Cb	4.51	3.66	3.75	
2+99.97	So. Line Hancock St.			3.74	
2+89.97		5.19	2.98	360 ~~3.69~~	set to Meet Exist Cb
0+00				2.20	
T.P.	3.93	8.17	4.78	4.24	
B.M	4.71	9.02		4.21	

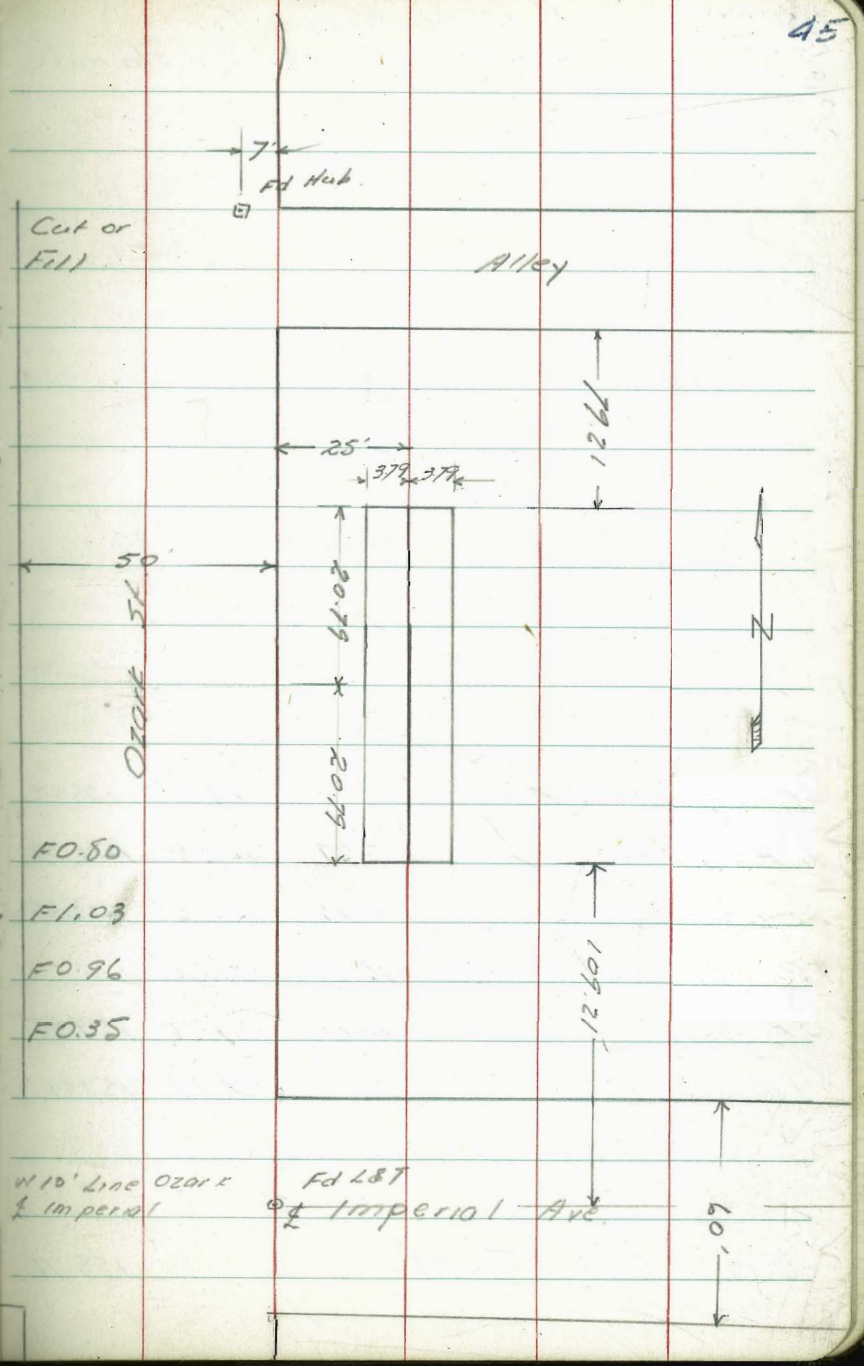


BP in Cb. 800± So. of Rosecrans Hwy in front of Sunset Trailer Court

7-16-48
Hendricks
Roberts
Greer
Korer

Stake Out Drafting Tank
Fire Sta No. 12
Imperial & Ozark
(Plan 70774)

Sta	+	H.I	−	Elev. Stakes	Elev. Grade	Cut or Fill
CE 25E 190 North			4.56	159.50		
N.E. Cor			5.67	158.39	159.19	F0.80
N.W. Cor			6.04	158.02	159.05	F1.03
S.W. Cor			5.21	158.85	159.81	F0.96
S.E. Cor			4.41	159.65	159.95	F0.35
	5.29	164.06			158.77	W 10' Line Ozark & Imperial



Hendricks
Roberts
Greer
Rorer
7-19-48

Restake Grades for Drafting Tank fire Sta. No. 2

CL N.W. Cor P.V.S			6.25	158.02	158.02	
So. End Elm Tank			7.29	142.38	142.26	C0.08
No. End Elm Tank			4.99	144.68	145.38	F0.60
TP	-1.33	149.67	12.27	151.00		
S.E. Cor.			4.66	159.61	159.95	F0.34
S.W. Cor			5.48	158.79	159.81	F1.02
B.M.	5.50	164.27			158.77	

7-19-48
Hendricks
Roberts
Rorer
Greer

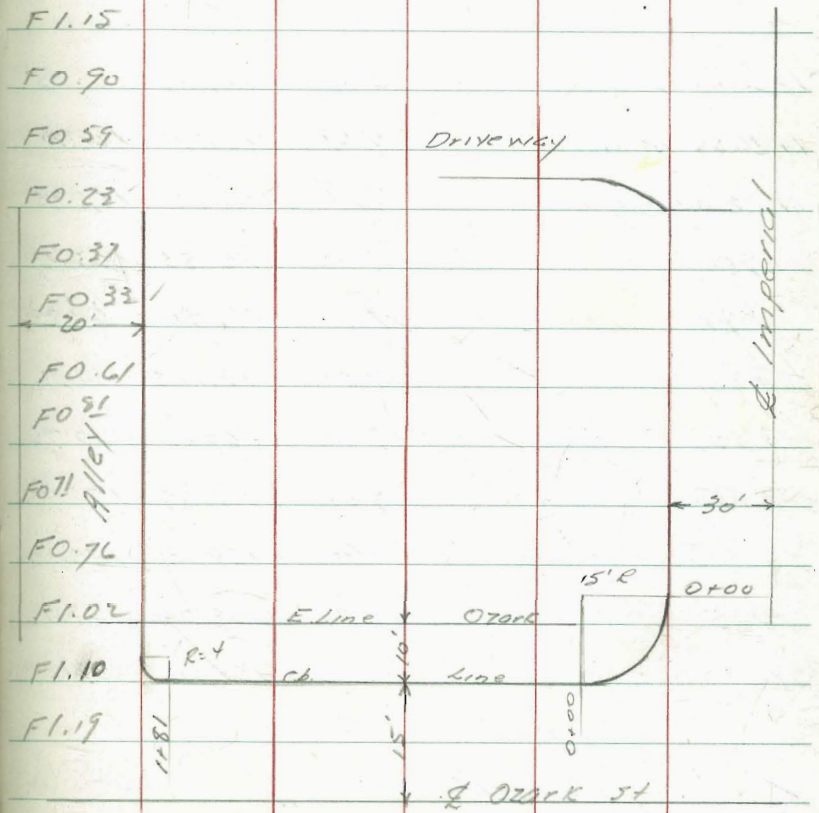
Stake Retaining Wall
Fire Station #12
Plan 7077L & 7123L

		+	H.I	−	Elev. Stakes	Elev. Grade	
2+30.53	EC 3' R					164.00	
2+25.82						164.27	
2+21.11	BC 3' R			2.56	164.17	164.16	C0.01
2+14.11				2.51	164.27	163.57	C0.65
2+06.11	EC.			2.94	163.79	162.78	C1.01
1+98.25				2.95	163.78	162.10	C1.68
1+90.40				3.25	163.48	161.86	C1.62
1+82.55				3.16	163.57	161.86	C1.71
1+74.70	B.C.			3.21	163.52	161.89	C1.63
1+51.48				3.28	163.45	162.17	C1.28
1+28.48				3.57	163.16	162.60	C0.56
1+05.48	End Steps			3.93	162.80	163.02	F0.22
1+00.48	Beg. Steps			3.80	162.93	163.11	F0.18
0+81.24				3.78	162.95	163.53	F0.58
0+62.00	on East			4.03	162.70	163.96	F1.26
0+62.00	on South			4.42	162.31	163.96	F1.65
0+43.83				5.22	161.51	163.11	F1.60
0+25.33				5.74	160.99	162.25	F1.26
0+00	E. Line Ozark St.			6.82	159.91	160.86	F0.95
B.M.	796	166.73				158.77	W. 10 Line Ozark & Imperial

7-20-48
Hendricks
Roberts
Greer
Lorer

State Cbs. Around Fire Station No 12

1+27			165.91	167.08	F1.17
0+96.50	Driveway	0.10	165.04	165.65	F0.61
0+75		1.61	163.53	164.74	F1.21
0+50		2.13	162.01	163.57	F1.56
0+25		3.89	161.25	162.40	F1.15
0+00	Cb BC Imperial	4.81	160.33	161.23	F0.90
℄ Cb Ret	Imperial & Ozark NEC or	4.93	160.21	160.80	F0.59
1+93.28	E Line Ozark (alley)	8.09	157.05	157.28	F0.23
1+87.28	Cb EC Alley	8.28	156.86	157.23	F0.37
1+81	Cb BC Alley	8.24	156.90	157.27	F0.33
1+65	Brk	8.25	156.89	157.50	F0.61
1+45	Brk	8.10	157.04	157.85	F0.81
1+16		7.46	157.68	158.39	F0.71
+87		6.97	158.17	158.93	F0.76
+58		6.70	158.44	159.46	F1.02
+29		6.25	158.89	159.99	F1.10
0+00	BC on Ozark	5.81	159.33	160.52	F1.19
	6.37	165.14		158.77	



7-27-48
Hendricks
Roberts
Greer
Lorer

Finish Grade Stakes So. Line Alley
Fire Station No. 12

1+30.42	End Cut		5.44	163.19	163.15	CO.04
1+26.54	℄ Cut		5.69	162.94	162.97	FO.03
1+22.66	Beg. Cut		5.96	162.67	163.15	FO.48
1+90	[illegible] Cut		7.10	161.53	162.69	F1.16
						FO.99
+80			7.33	161.30	162.29	~~F1.01~~
+70			7.58	161.05	161.36	FO.31
+65			7.82	160.81	160.76	CO.05
+55			8.34	160.29	159.75	CO.54
+45			8.70	159.93	159.10	CO.83
+25			9.79	158.84	158.16	CO.68
0+00	E Line Ozark		10.67	157.96	157.28	CO.68
B.M.	986	168.63			158.77	LT of 10' Line Ozark & Imperial

8-25-48 State finish Grades around Ret. Wall fine Sta. 7+12
Hendricks (Dwg. No. 70774)
Roberts
Greer

1+69.77	BC. 3' Rod		0.50	163.63
1+44.67			1.83	162.30
1+34.17			2.56	161.57
1+23.67			3.28	160.85
1+13.17	BC.		4.00	160.13
0+90			3.84	160.29
0+65			3.50	160.63
0+39			3.01	161.12
0+15			2.58	161.55
0+00	L. Wall going North.		2.30	161.83
0+62	L Wall		2.30	161.83
0+50			2.52	161.61
0+25			2.97	161.16
0+00	Beg Wall Ozark & Imperial		3.42	160.71
BM	536	164.12		158.77

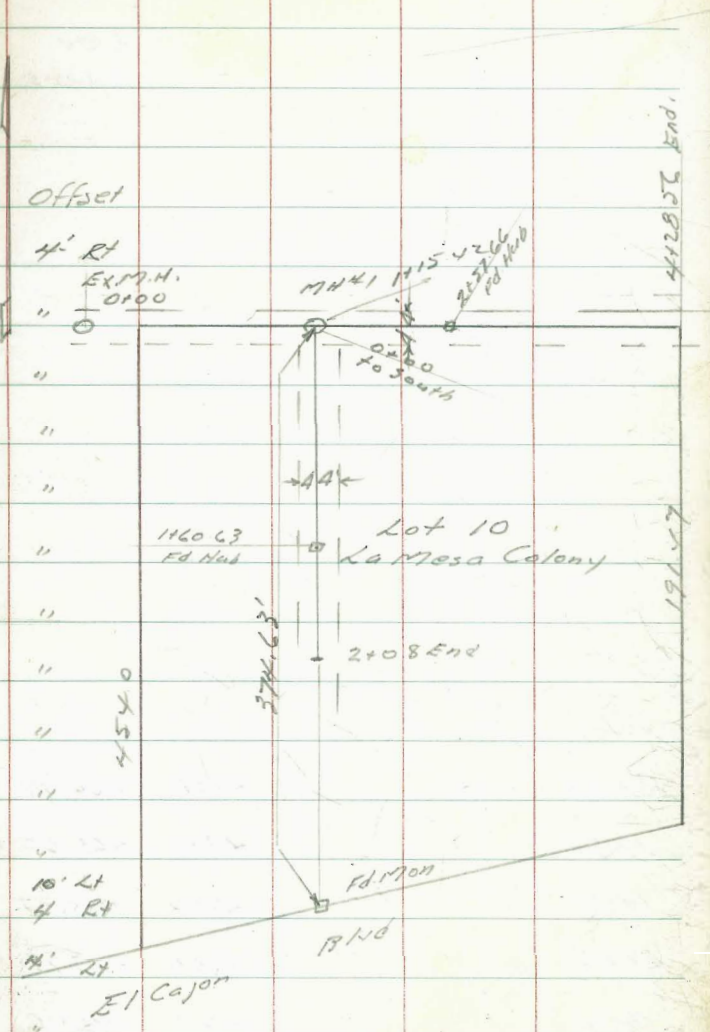
L&T & Imperial KY 10' Line Ozark

9-4-48
Hendricks
Roberts
Greer
Rorer

Stake Sewer Lot 10 La Mesa Colony Near El Cajon & 62nd St.
Dwg # 3560 B
(Comb. P. 50)

CK FL. Ex M.H.			12.26	456.23	456.23		
Stg.	+	H I	–	Elev. Stakes	Elev. Grade	Cuts	Offset
4+28.56	End		2.37	466.12	459.23	6.89	4' Rt
4+00			2.22	466.27	459.02	7.25	"
3+70			2.61	465.88	458.80	7.08	"
3+35			2.98	465.51	458.55	6.96	"
3+00			3.33	465.16	458.31	6.85	"
2+75			3.57	464.92	458.13	6.79	"
2+57.66			3.63	464.86	458.01	6.85	"
2+30			4.24	464.25	457.84	6.41	"
2+00			4.46	464.03	457.63	6.40	"
1+70			4.68	464.01	457.42	6.59	"
1+40			4.86	463.63	457.21	6.42	"
			4.87	463.62	457.04	6.58	10' Lt
1+15.42	M.H. #1		4.95	463.54	457.04	6.50	4' Rt
0+85.42			5.01	463.48	456.83	6.65	"
0+55.42			5.02	463.47	456.62	6.85	"
0+25.42			4.95	463.54	456.41	7.13	"
0+00	Ex M.H.		12.26	455.23	456.23		"
TP	4.27	468.49	6.16	464.22			"
TP	2.80	470.35	4.43	464.58			"
BM	3.74	469.01			465.27	NW BP	El Cajon & College Way

A3-A



(Cont'd from P-49 A)

Sta	+	H.I.	−	Elev. Stakes	Elev. Grade	Cuts	Offset
2+08	End		4.31	464.18	458.70	5.48	21 Lt
1+75			4.84	463.65	458.44	5.21	"
1+40			4.42	464.07	458.10	5.97	"
1+05			4.50	463.99	457.96	6.03	"
0+70			4.43	464.06	457.72	6.34	"
0+35			4.68	463.81	457.48	6.33	"
0+00	MH #1 going So.				457.24		"
		458.49					

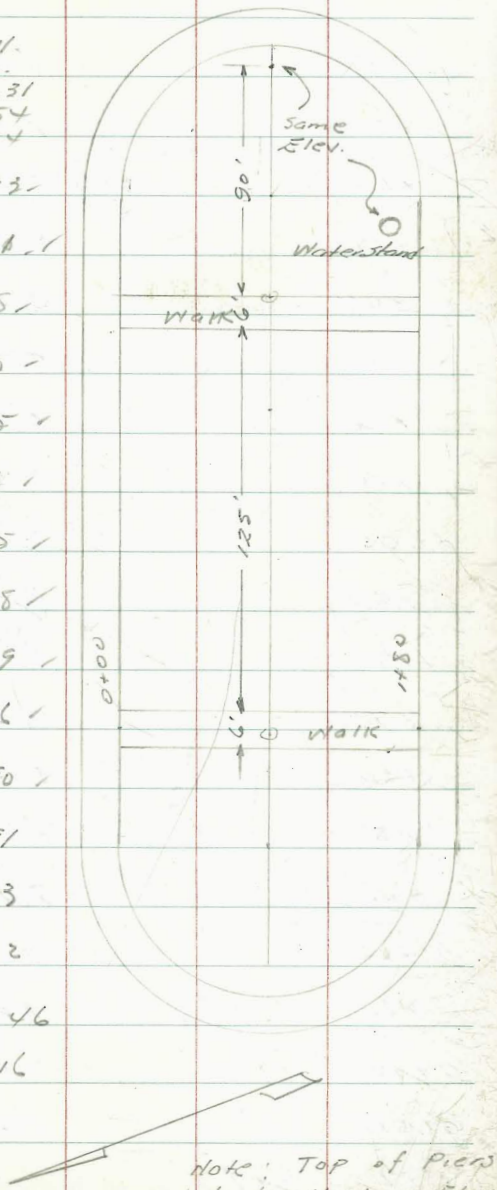
9-7-48
Hendricks
Roberts
Rorer

Stake Piers for Walks across Fly Casting Pool Morley Field Balboa Park

Sta	+	H I	- Lt	- Rod Grade 1' above	Fill Lt.
+80			3.51	3.51	0.00
+70			5.26	"	1.75
+60			5.69	"	2.18
+50			5.54	"	2.03
+40			5.51	"	2.00
+30			5.47	"	1.96
+20			5.49	"	1.98
+10			5.52	"	2.01
1+00			5.48	"	1.97
+90			5.50	"	1.99
+80			5.48	"	1.97
+70			5.51	"	2.00
+60			5.43	"	1.92
+50			5.46	"	1.95
+40			5.43	"	1.92
+30			5.45	"	1.94
20			5.39	"	1.88
0+10			5.05	"	1.54
0+00			3.51	3.51	0.00
BM	4.51				

Cont'd P-52

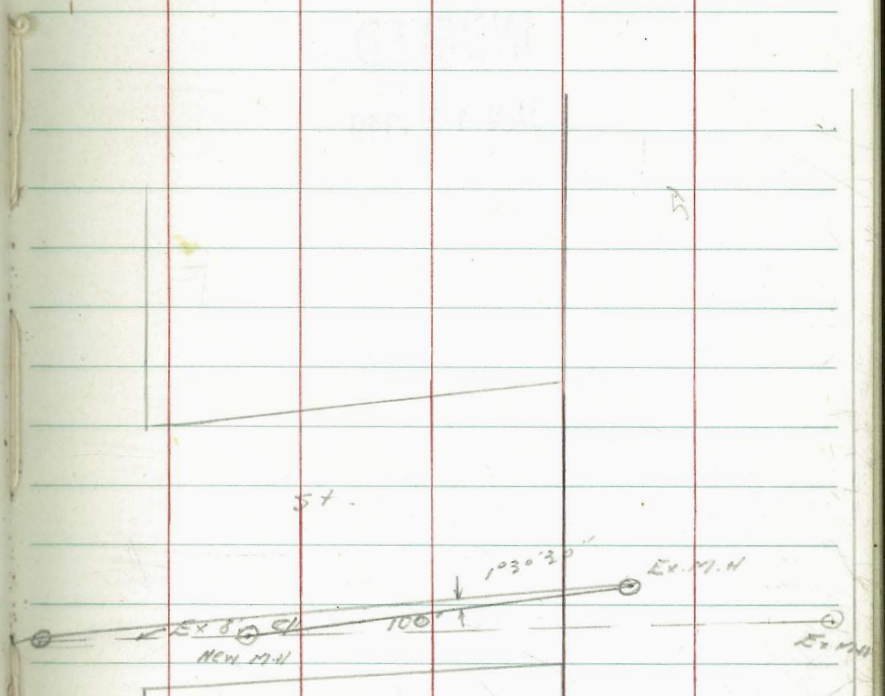
- Rt	- Rod Grade 1' above Stand Pipe	Fill Rt.
3.20	3.51	C0.31
505	3.51	1.54
5.55	"	2.04
5.44	"	1.93
5.42	"	1.91
5.39	"	1.88
5.41	"	1.90
5.46	"	1.95
5.47	"	1.96
5.46	"	1.95
5.49	"	1.98
5.50	"	1.99
5.37	"	1.86
5.41	"	1.90
5.42	"	1.91
5.34	"	1.83
5.33	"	1.82
4.97	"	F.1.46
3.35	"	C0.16
Stand Pipe		



Note: Top of Piers to be 1' above Elev. of Stand pipe

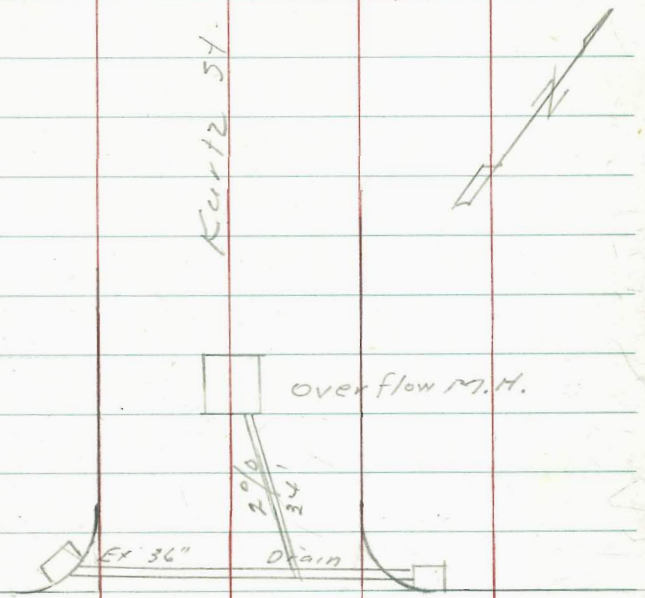
	+	H.I.	– Lt	– Rod Grade 1' above	Fill Lt.	– Rt.	– Rod Grade 1' above	Fill Rt.
1+80			5.71	5.79	C 0.08	5.81	5.79	0.02
1+70			7.53	"	F 1.74	7.68	"	1.89
1+60			8.62	"	2.83	8.51	"	2.72
1+50			8.56	"	2.75	8.49	"	2.70
1+40			8.51	"	2.72	8.42	"	2.63
1+30			8.40	"	2.61	8.33	"	2.54
1+20			8.38	"	2.59	8.35	"	2.56
1+10			8.34	"	2.55	8.36	"	2.57
1+00			8.29	"	2.50	8.28	"	2.49
0+90			8.15	"	2.36	8.17	"	2.38
0+80			8.16	"	2.37	8.17	"	2.38
0+70			8.23	"	2.44	8.22	"	2.43
0+60			8.15	"	2.36	8.20	"	2.41
0+50			8.00	"	2.21	8.05	"	2.26
0+40			7.96	"	2.17	8.02	"	2.23
0+30			7.88	"	2.09	7.91	"	2.12
0+20			7.69	"	1.90	7.81	"	2.02
0+10			7.12	"	1.33	7.26	"	1.47
0+00			5.79	"	0.00	5.97	"	0.18
B.M.	6.79					Stand Pipe		

12-13-48 Change Alignment Sewer
Hendricks Evergreen & Rosecrans
Roberts
Johnson
Rorer



CK FE MH		11.84	-5.56	-5.55	
1+00	Top of Pipe Connect to Ex. 8" Cl. 527		0.61	-0.20	CO.81
0+75		3.92	2.36	-1.28	3.64
0+50		3.70	2.58	-2.36	4.94
0+25		4.83	1.45	-3.43	4.88
0+00	Ex. M.H.	4.82	1.46	-4.50	5.96
BM		2.35	6.28	393	Top Ck. B.C. 12+63.76 P.33 FB 1155

Grades for Overflow M.H
Rosecrans & Kurtz

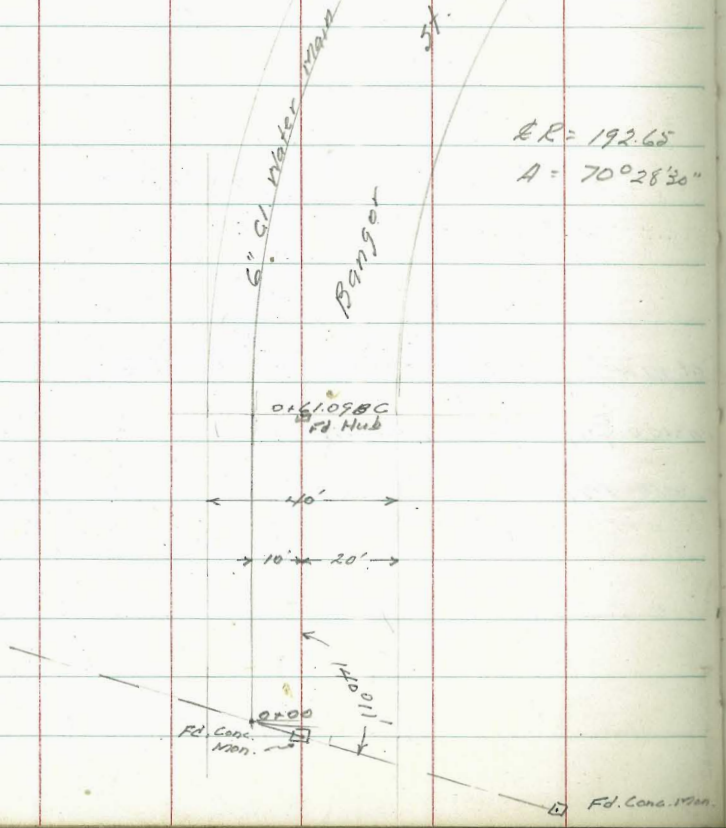


	10.60	Fl. pipe at M.H
	11.02	Top of Inside pipe Storm Drain
	6.77	Paving grade at M.H
E.C. Cb	6.08	South
E.C. Cb	6.07	North.

Rosecrans St

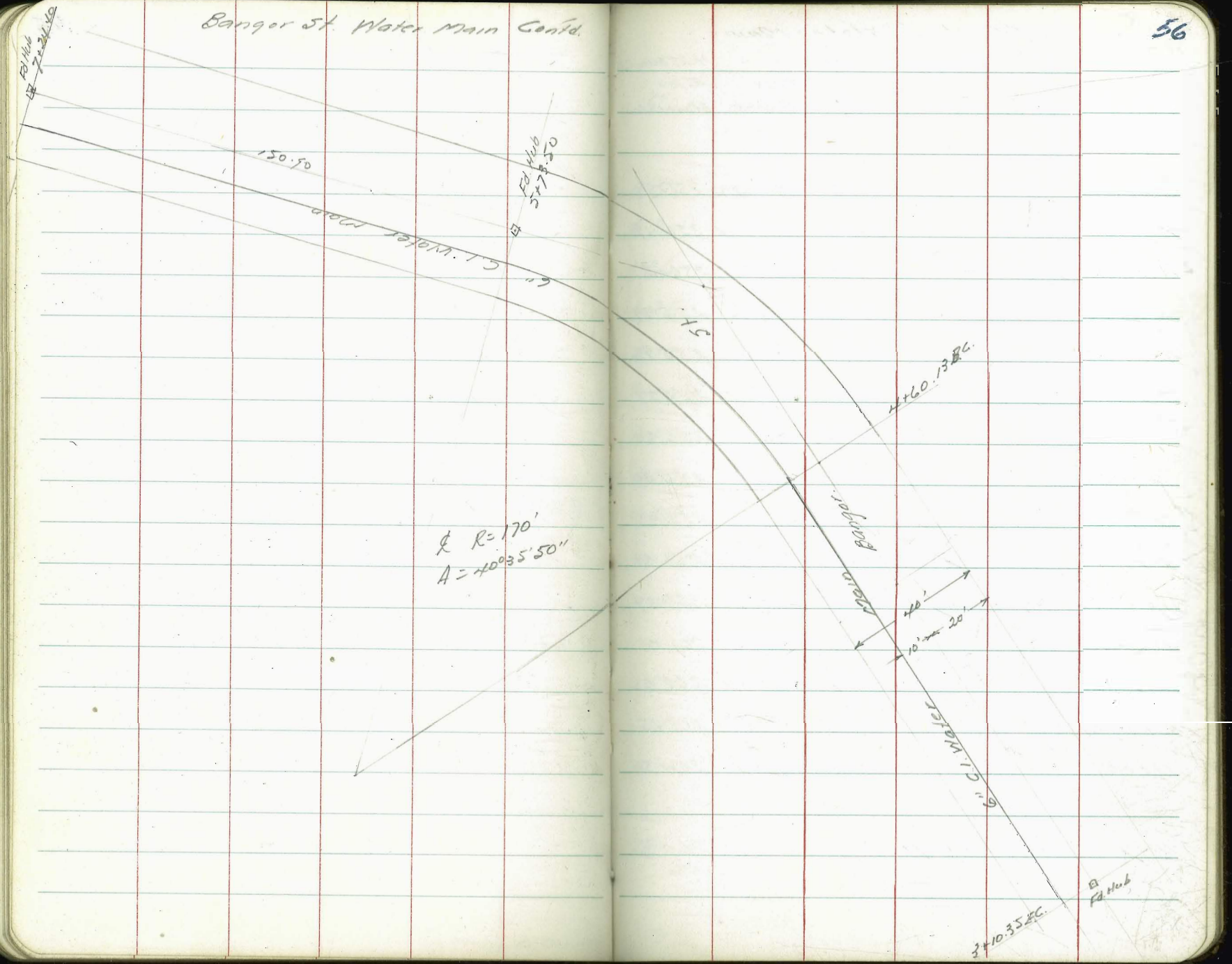
9-27-48
Hendricks
Greer
Rorer

Stake 6" Water Main
Bangor St. Jennings to S.L. PL 179
(Reference F.B. 1794)



Fd. Nail
3+10.35 E.C.

Bangor St. Water Main Contd.



℄ R=170'
Δ=40°35'50"

Levels 6" Water main
Bangor St.

Sta.	+	H.I.	—	Elev. Staces	4.25 Below Q Elev. Btm Ditch	Cut	Offset
3+36.50			6.75	260.43	256.88	3.55	4' Lt.
3+16.50			7.44	259.74	256.44	3.30	"
2+95.80			7.77	259.41	256.05	3.36	"
2+74.76			8.04	259.14	255.89	3.25	"
2+53.72			8.12	259.06	255.96	3.10	"
2+32.68			7.51	259.67	256.27	3.40	"
2+11.64			6.54	260.64	256.60	4.04	"
1+90.60			5.79	261.39	257.34	4.05	"
1+69.56			4.53	262.65	258.31	4.34	"
TP	6.80	267.18	10.69	260.38	260.38	on ℄ Hub 5+05.2 FB 1794 P. 7.	
1+48.52			7.24	263.82	259.39	4.44	"
1+16.96			5.58	265.49	261.01	4.48	"
0+85.40			3.13	267.94	262.63	5.31	"
0+61.09	BC		2.82	268.25	263.75	4.50	"
0+00			0.79	270.28	264.58	5.70	"
BM.	10.69	271.07			260.38	on ℄ Hub. FB 1794 P. 7 5+05.2	

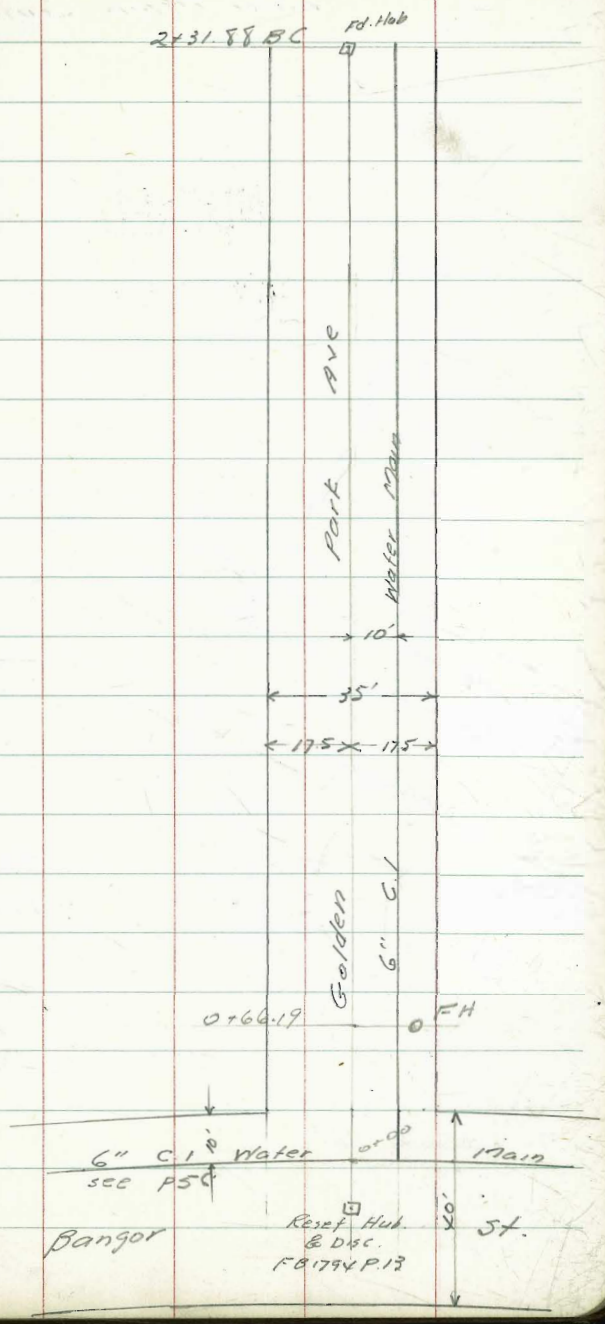
Levels 6" Water Main
Bangor St. Cont'd.

Sta.	+	H.I	−	Elev. Stakes	Elev. Ditch 4.25 below CB Gr.	Cut.	offset	
B.M			9.22	258.41	258.42	On Conc Mom 5'Lt 0+00 FB 1794 P-4 (SW Cor P.L 174		
7+24.40	End.		6.26	261.37	256.49	4.88	2' Lt.	
6+74.10			3.54	262.09	257.19	4.90	"	
6+23.80			4.22	263.41	257.90	5.51	"	
5+73.50	EC		4.37	263.26	258.61	4.65	"	
5+53.40			4.71	262.92	258.87	4.05	"	
5+33.30			4.77	262.86	259.14	3.72	"	
5+13.20			4.89	262.74	259.41	3.33	"	
4+94.37			4.63	263.00	259.62	3.38	"	
4+75.54			4.37	263.26	259.70	3.56	"	
T.P.	4.24	267.63	3.79	263.39		On Hub 4' Lt. 4+60.13		
4+60.13	BC.		3.79	263.39	259.67	3.72	"	
4+16.50			3.51	263.67	259.21	4.46	"	
3+76.50			4.36	262.82	258.26	4.56	"	
		267.18						

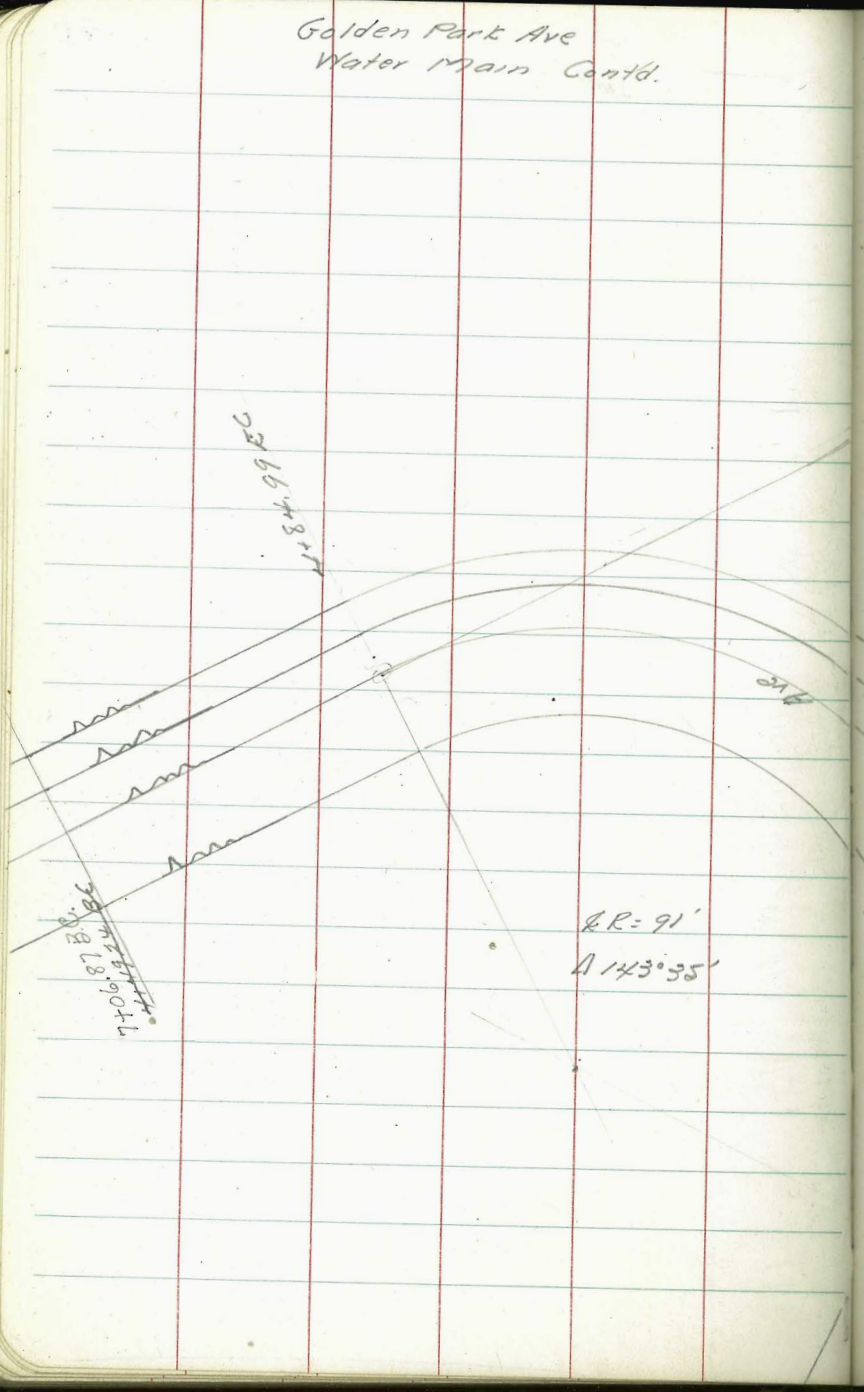
Hendricks
Roberts
Greer
Rorer

Stake 6" C.I. Water Main
Golden Park Ave. Lucinda to Bangor
(Reference F.B. 1794)

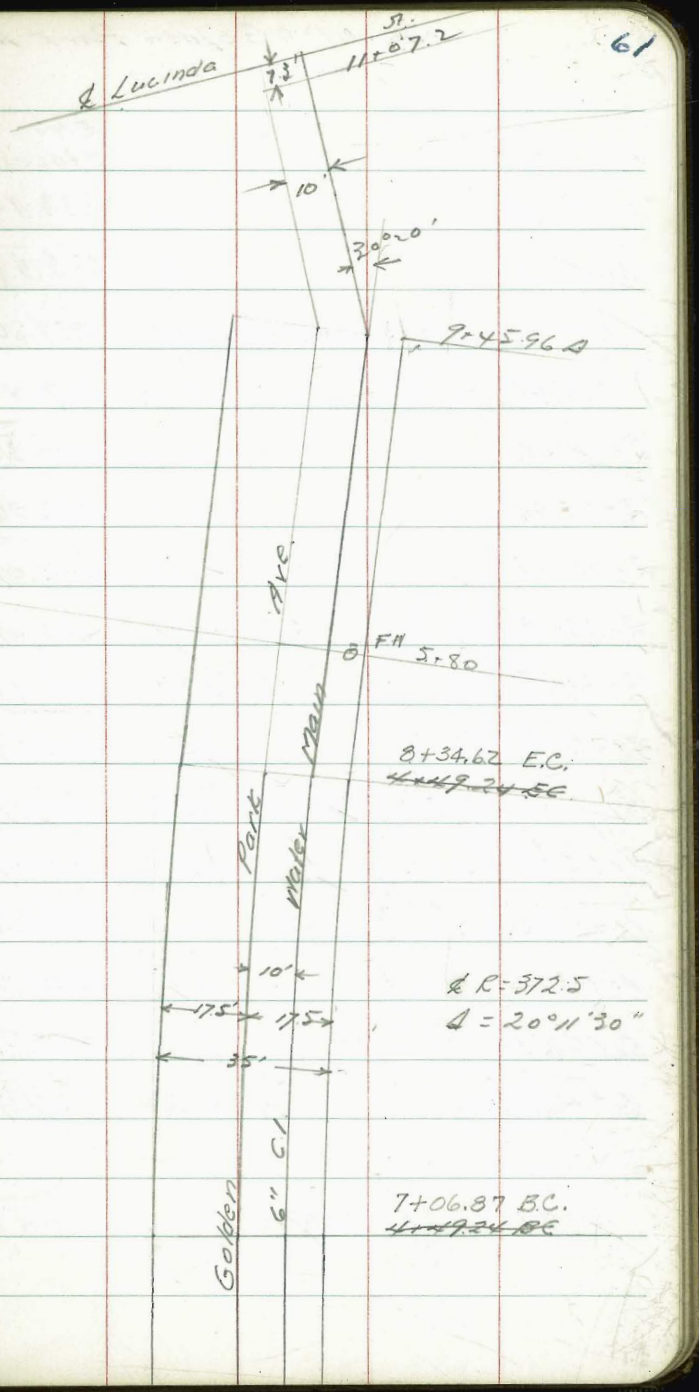
INDEXED
WK
JAN 10 1949



Golden Park Ave
Water Main Contd.



Golden Park Water Main
Contd.



Levels Golden Park Ave
Water Main

Sta.	+	H.I	−	Elev. States	4.25 Below C6. Grade	
					229.46	
3+80.95			6.05	233.44	233.71	C-3.98
					231.13	
3+58.75			3.93	235.56	235.38	C-4.43
T.P.	0.69	239.49	11.67	238.80		
					232.79	
3+37.61			12.66	237.81	237.04	C-5.02
					234.45	
3+16.46			10.11	240.36	238.70	C-5.91
					236.11	
2+95.32			8.11	242.36	240.36	C-6.25
					237.97	
2+74.17			6.38	242.09	242.02	C-4.12
					239.43	
2+53.03			4.98	245.49	243.68	C-6.06
					241.09	
2+31.88	B.C.		3.87	246.60	245.34	C-5.51
					241.51	
2+26.20			3.50	246.97	245.76	C-5.46
TP	0.57	250.47	12.95	249.90		
					244.32	
1+85.15			12.95	249.90	248.57	C-5.58
					247.13	
1+44.10			10.57	252.28	251.38	C-5.15
					249.94	
1+03.05			8.98	253.87	254.19	C-3.93
					252.75	
0+62.00			7.28	255.57	257.00	C-2.82
					254.25	
0+42.08			5.58	257.27	258.50	C-3.02
BM	2.21	262.85			260.64	on Hub 4' Lt 2+11.64 P.57

Cont'd P. 74												
7+88.92			4.65	217.66	212.74	4.92						
7+69.42			4.08	218.23	212.35	4.88						
7+48.57			3.72	218.59	213.97	4.62						
7+27.72			3.22	219.09	214.60	4.49						
B.M.	3.26	22231	9.65	219.06	219.05	on E Hub 2+44.39 FB1794. P.15						
7+06.87	BC.		9.11	219.60	215.23 219.48	C-3.37						
6+61.66			8.20	220.51	216.61 220.86	C-3.90						
6+16.46			7.23	221.38	217.98 222.23	C-3.40						
5+71.26			6.14	222.57	219.35 223.60	C-3.22						
5+51.26			5.66	223.05	220.01 224.26	C-3.04						
5+11.26			4.60	224.11	220.70 225.05	C-3.41						
4+91.26			3.72	224.99	221.71 225.96	C-3.28						
4+84.99			2.80	225.91	222.73 ~~226.98~~	C-3.18						
BM.	2.60	22871	13.50	225.99	226.11	on E Hub 4+66.27 FB1794 P.16						
4+84.99	EC.		13.32	226.16	223.11 227.36	C-3.05						
4+69.75			12.40	227.09	223.94 228.19	C-3.15						
4+47.55			11.77	227.72	225.15 ~~229.40~~	C-2.57						
4+25.35			10.06	229.43	226.47 230.72	C-2.96						
4+03.15			8.04	231.45	227.90 232.15	C-3.55						
		23949										

9-2948
Hendricks
Roberts
Greer
Rorer
WO#31282

State Rough Grade
Orange Ave Estrella - 48th.
(Drawing No 6774-6775-6776)

INDEXED
WK
JAN 10 1949

64

48th

54.

2+70.05

15

15

Ave

80'

2'R

2'R

1135.02

50'

2'R

2'R

Orange

0+00

Estrella

Ave

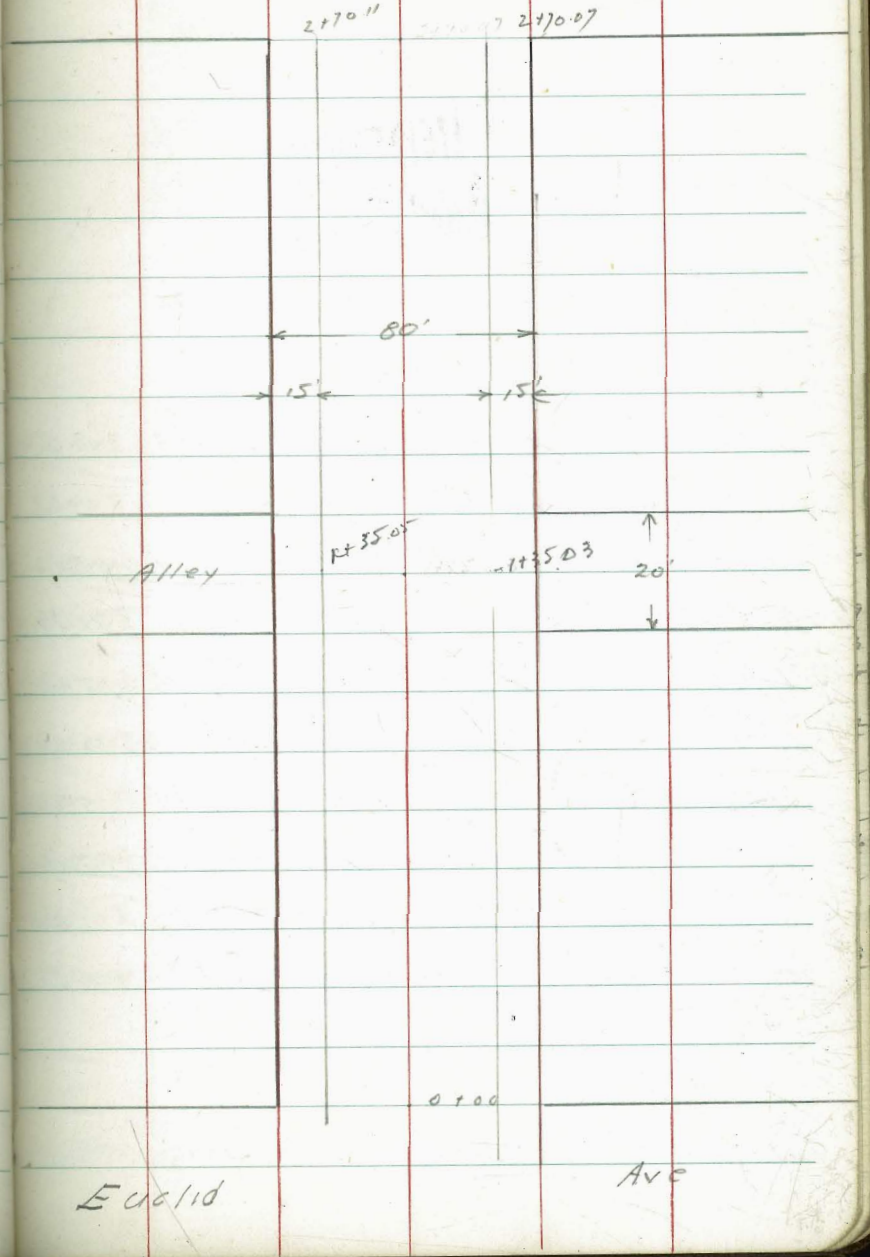
Grades Orange Ave
Estrella to 28th.

Sta.	+	H I	– Ft.	Elev. Stakes	Prop. Line Grade	Cut or Fill
2+70.05	E.L. 28th.				343.16	
2+40.05			5.96	343.44	343.50	FO.06
2+09.04			5.65	343.75	343.84	FO.09
1+78.03			5.44	343.96	344.18	FO.22
	PL. W Line Alley					
1+47.02	BC. 2' Alley Ref.		5.10	344.30	344.52	FO.22
	PL E. Line Alley					
1+23.02	BC. 2' Alley Ref.		4.38.	345.02	344.79	CO.23
0+90			4.00	345.40	345.16	CO.14
0+55			3.74	345.66	345.55	CO.11
0+20			3.06	346.34	345.94	CO.40
0+00	W Line Estrella		3.00	346.40	346.16	CO.24
T.P.	5.80	349.40	9.30	343.60		
B.M.	2.21	352.90			350.69	NW B.P. Euclid & Orange

– Ft.	Elev. Stakes	Cb. Gr. Rt.	Cut or Fill
5.87	343.53	343.50	CR+0.03
5.50	343.90	343.84	CO.06
5.21	344.19	344.18	CO.01
5.09	344.31	344.52	FO.21
3.15	346.25	345.05	C 1.20
4.66	344.74	344.86	FO.12
3.37	346.03	345.26	CO.77
4.18	345.22	345.13	CO.09
3.96	345.44	345.50	FO.06
3.37	346.03	345.89	CO.14
2.30	346.10	346.28	FO.18
		346.50	

9-29-48
Hendricks
Roberts
Greer
Rorer
WO # 31185

State Rough Grades Orange Ave
Euclid to 48th. St.



Grades Orange Ave
Euclid to 48th

Sta.	+	H I	− Lt.	Elev. Stakes Lt	Grade P.L. Lt	Cut or fill		− Rt.	Elev. Stakes Rt	Grade P.L. Rt	
(CL C&G. 48th & Euclid N.W.)			7.21	343.49	343.50						
2+70.07	W. Line 48th				343.66					343.16	
2+25			6.41	344.29	344.25	C 0.04				343.75	
1+85			5.89	344.81	344.79	C 0.02		6.11	344.59	344.29	C 0.30
1+45			5.27	345.43	345.33	C 0.10		6.04	344.66	344.83	F 0.17
1+25			4.78	345.92	345.66	C 0.26		5.87	344.83	345.16	F 0.33
1+20			4.71	345.99	345.82	C 0.17		5.55	345.15	345.32	F 0.17
0+80			3.56	347.14	347.10	C 0.04		4.22	346.48	346.77	F 0.29
0+40			2.14	348.56	348.38	C 0.18		2.60	348.10	348.22	F 0.12
0+00	East Line Euclid		0.87	349.83	349.66	C 0.17		0.98	349.72	349.66	C 0.06
B.M.	0.01	350.70			350.69	NWBP - Euclid & Orange					

7-30-48
Hendricks
Roberts
Greer
Rorer

Stake Cbs Lt. Side Orange Ave
Estrella to 48th

Sta	+	H I	— 21.	Elev. Stake	Elev. Cb.	
			Ex. Cb.			
2+70.05			7.46	343.02	343.00	
2+40.05			7.22	343.26	343.34	F 0.08 ✓
2+09.04			6.76	343.72	343.68	C 0.04 ✓
1+78.03			6.58	343.90	344.02	F 0.12 ✓
P.L. W Line Alley			6.12	344.36	344.54	F 0.18 ✓
1+47.02	EC 2'R Alley		6.25	344.23	344.36	F 0.13 ✓
P.L. E Line Alley			5.42	345.06	344.76	C 0.30 ✓
1+23.02	BC 2'R Alley		6.09	344.57	344.63	F 0.09 ✓
0+90			5.66	344.82	345.00	F 0.18 ✓
0+55			5.01	345.47	345.39	C 0.08 ✓
0+20			4.70	345.78	345.78	C 0.00 ✓
0+08	E. C. on Orange		4.31	346.17	345.91	C 0.26 ✓
#3			4.36	346.12	345.97 ~~346.00~~	C 0.15 ✓
#2			4.72	345.76	346.01 ~~346.09~~	F 0.25 ✓
#1			4.52	345.96	345.95 ~~346.00~~	C 0.01 ✓
B.C. SW Ref			4.70	El. Cb 345.78	345.78 ~~345.84~~	
BM	4.45	350.48			346.03	Stab 0+55 Rt. P. 65.

Stake Cb. Orange Ave
Euclid to 48th

Sta	+	H.I	-Ft	Elev. Stakes	Cb. Grade
2+70.11	W. Line 48th.		8.45	Ex. Cb. 343.46	343.50
2+38.84			7.95	343.96	343.91
2+07.58			7.75	344.16	344.33
1+76.31			7.51	344.40	344.75
PL E Line Alley			6.32	345.59	345.32
1+47.05	BC Alley Ret		6.85	345.06	345.14
PL. W Line Alley			5.06	346.85	345.65
1+25.05	W. Line Alley. Brk		6.60	345.31	345.50
1+20	Brk		6.31	345.60	345.66
0+90			5.58	346.33	246.62
0+60			4.41	347.50	347.58
0+30			3.36	348.55	348.52
0+00	E Line Euclid		2.93	Ex. Cb. 349.58	349.50
BM	1.22	351.91			350.69

INDEXED
WK
JAN 10 1949

Cuts	Sta	+	H.I	-Ft.	Elev. Stakes	Elev. Cb.	Cuts
	2+70.07	W Line 48th.				343.00	
C 0.05	2+38.81					343.41	
F 0.17	2+07.55	Ex Cb		8.10	343.81	143.83	
F 0.35	1+85.5 1+76.29	Beg. Ex. Cb.		7.75	344.16	344.12	
				7.44	344.47	344.25	C 0.22
C 0.27 ~~C 0.37~~	PL E Line Alley			7.07	344.84	344.82	C 0.02
F 0.08	1+47.03	EC. Alley Ret		736	344.55	344.64	F 0.09
C 1.20	PL W. Line Alley			6.88	345.03	345.00 ~~345.15~~	C 0.03 F 0.12
F 0.19	1+25.03	W Line Alley Brk.		7.23	344.68	344.85 ~~345.00~~	F 0.17 F 0.32
F 0.06	1+20	Brk.		6.92	344.99	345.16	F 0.17
F 0.29	0+90			5.82	346.09	346.25	F 0.16
F 0.08	0+60			4.45	347.46	347.33	C 0.13
C 0.01	0+31			3.40	348.51	348.38	C 0.13
	0+00 E Line Euclid		Ex. Cb.	2.40	349.51	349.50	

N.W. B.P. Euclid & Orange

SEE ALSO PAGE 76

10-1-48 Stake Alley Between Menlo Ave & 46th St. Pole to Orange

Hendricks
Roberts
Greer
Rorer
WO #31285

Sta.	+	H.I	− Lt.	Elev. Lt. Stakes	Elev. Grade Lt	Cut or fill	Offsets	− Rt.	Elev. Stakes Rt.	Elev Grade Rt	Cut or fill	Offset
2+10			4.58	353.86	352.64	C 1.22	3°	6.16	352.28	352.38	F 0.10	
+90			4.47	353.97	353.00	C 0.97	2°	6.10	352.34	352.71	F 0.37	
+70			4.45	353.99	353.16	C 0.83	2°	6.00	352.44	352.86	F 0.42	2°
+60			4.47	353.97	353.19	C 0.78		5.96	352.48	352.89	F 0.41	
+40			4.39	354.05	353.25	C 0.80	2°	5.27	353.17	352.95	C 0.22	2°
1+20			4.18	354.26	353.31	C 0.95		5.30	353.14	353.01	C 0.13	
1+10			4.25	354.19	353.34	C 0.85		5.20	353.24	353.04	C 0.20	
1+00			4.42	354.02	353.32	C 0.70	2°	5.62	352.82	353.02	F 0.20	2°
+90			4.78	353.66	353.22	C 0.44		5.65	352.79	352.92	F 0.13	
+80			4.88	353.56	353.02	C 0.54		5.61	352.83	352.72	C 0.11	
+70			6.07	352.37	352.73	F 0.36	2° Lt.	6.07	352.37	352.43	F 0.06	2°
+50			6.63	351.81	352.07	F 0.26		6.02	352.42	351.77	C 0.65	
+40			6.37	352.07	351.62	C 0.45	2°	6.46	351.98	351.32	C 0.66	1° 10 Sec
+30			6.77	351.67	350.97	C 0.70		7.02	351.42	350.67	C 0.75	
+20			7.21	351.23	350.10	C 1.13		7.10	351.34	349.80	C 1.54	
+10			7.77	350.67	349.00	C 1.67	2°	7.34	351.10	348.70	C 2.40	2°
T.P.	6.88	358.44	2.26	351.56				358.44				
0+00	No. Line	Pole	6.27	347.55	347.55	—		6.34	347.48	347.48	—	
T.P.	5.47	353.82	8.86	348.35				353.82				
B.M.	3.27	357.21			353.94							

BLOCK 1
CHESTER PARK

B.M. 46th & Orange

Sta.	+	H.I.	– Lt.	Elev. Stakes Lt.	Elev. Grade Lt.	Cut or Fill Lt.	Offsets Lt.	– Rt.	Elev. Stakes Rt.	Elev. Gr. Rt.	Cut or Fill Rt.	Offsets Rt.
												77
+77.12	2 Line Orange		3.78	351.77	350.95	C 0.82		4.43	351.12	350.35	C 0.77	
+70			3.58	351.97	350.96	C 1.01	0.50'	3.76	351.79	350.36	C 1.43	0.50
+60			4.41	351.14	350.89	0.25	2°	3.78	351.77	350.38	C 1.39	0.60
+40			4.32	351.23	350.65	0.58	4°	4.36	351.19	350.42	C 0.77	2.5
+30			4.43	351.12	350.57	0.55	2°	4.45	351.10	350.44	C 0.66	2°
5+20	B.K.		4.80	350.75	350.56	0.19	1°	5.09	350.46	350.46	C 0.00	2°
+85			4.93	350.62	350.63	F 0.01	1°	5.75	349.80	350.53	F 0.73	2°
+55			4.93	350.62	350.69	F 0.07	2°	5.48	350.07	350.59	F 0.52	2°
+25	B.K.		4.78	350.77	350.75	C 0.02	2°	5.77	349.78	350.65	F 0.87	2°
4+00			4.64	350.91	350.80	C 0.11	2°	5.90	349.65	350.70	F 1.05	2°
+70			4.56	350.99	350.86	C 0.13	2°	6.18	349.37	350.76	F 1.39	2°
+40			4.74	350.81	350.92	F 0.11	2°	6.30	349.25	350.82	F 1.57	2°
3+10	B.K.		4.51	351.04	350.98	C 0.06	2°	5.76	349.79	350.88	F 1.09	2°
3+00			4.06	351.49	351.01	C 0.48		5.45	350.10	350.91	F 0.81	
+90			3.50	352.05	351.08	C 0.97		5.09	350.46	350.97	F 0.51	
+80			3.65	351.90	351.19	C 0.71	0.60'	4.41	351.14	351.07	C 0.07	2°
+70			3.24	352.31	351.33	C 0.98		4.50	351.05	351.20	F 0.15	
+60			2.82	352.73	351.51	C 1.22		4.57	350.98	351.36	F 0.38	
T.P.	4.41	355.55	7.30	351.14								
+50			6.14	352.30	351.72	C 0.58	1°	7.16	351.28	351.55	F 0.27	2°
2+30			5.94	352.50	352.18	C 0.32		6.24	352.20	351.97	C 0.23	
		358.44										

BM			2.79	353.95	353.94	NW 13P Orange & 461h
TP	5.57	356.74	4.38	351.17		
		355.55				

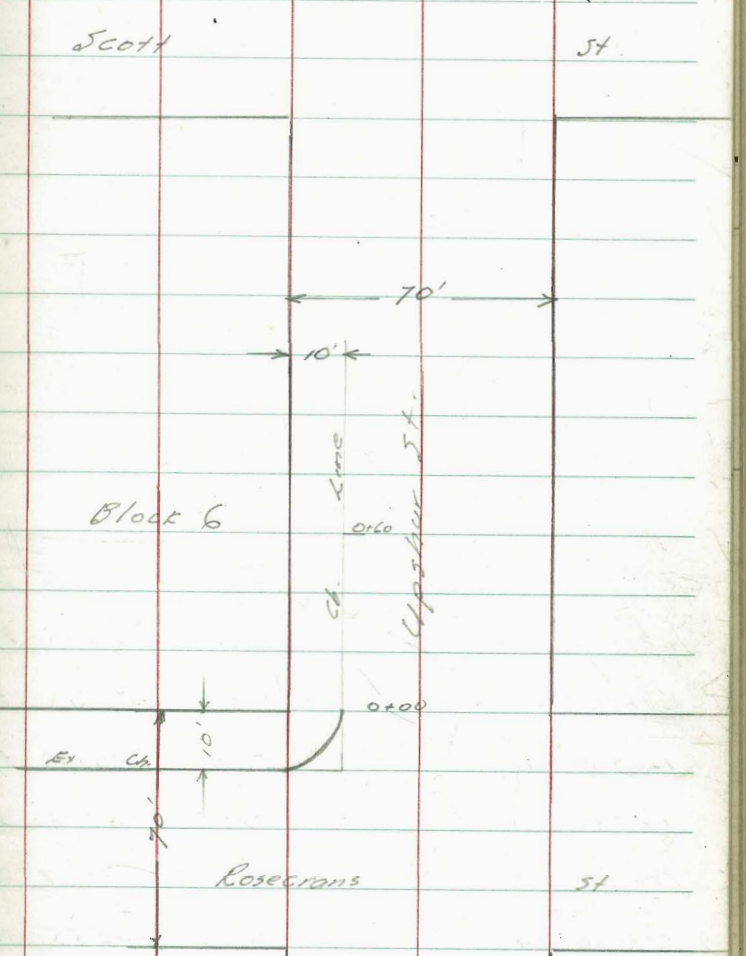
10-1-48 Gutter Grades Orange Ave
Hendricks Euclid to 47th
Roberts (Crows Feet on CB).
Greer
Rorer

Prop. Line W Line Alley						4.25	354.40	354.40
Prop Line E Line Alley						4.55	354.10	354.10
					355.10 CB			352.00 CB
2+70			4.21	354.44	354.44	4.33	354.32	354.32
2+50			4.25	354.37	354.37	4.39	354.26	354.26
2+20			4.37	354.28	354.28	4.51	354.14	354.14
1+95			4.45	354.20	354.20	4.60	354.05	354.05
1+60			4.55	354.10	354.10	4.73	353.92	353.92
1+47			4.64	354.01	354.01	4.83	353.82	353.82
1+23			5.04	353.61	353.61	5.20	353.45	353.45
1+10			5.38	353.27	353.27	5.52	353.13	353.13
1+00			5.69	352.96	352.96	5.82	352.82	352.82
0+75			6.45	352.20	352.20	6.52	352.13	352.13
0+50			7.21	351.44	351.44	7.22	351.43	351.43
0+20			8.11	350.54	350.54	8.06	350.59	350.59
0+00			8.50	350.15	350.15	8.34	350.31	350.31
B.M.	7.96	358.65			350.69	NW BP Orange & Euclid		

B.T.			11.36	209.99	209.96	On ℄ Hub 0+00 FB1794 P. 14
11+07.2	End.		1			
10+89.74			13.30	208.05	203.75	C 4.30
10+42.74			12.40	208.95	203.95	C 5.00
10+22.74			11.71	209.64	204.05	C 5.59
10+02.74			11.90	209.45	204.35	C 5.10
9+82.74			11.65	209.70	204.75	C 4.95
9+62.74			12.55	208.80	205.25	C 3.55
9+42.74			11.82	209.53	205.65	C 3.88
9+45.96	Δ 30°20' Lt.				—	
9+43.73			10.15	211.20	207.52	C 3.68
8+95.74			7.70	213.65	209.09	C 4.56
8+47.74			5.74	215.61	210.66	C 4.95
•	2.30	221.35	3.26	219.05	219.05	℄ Hub 2+44.39 FB1794 P. 15
8+34.62	EC.	6.06		216.25	211.15	C 5.10
8+27.92		5.75		216.56	211.41	5.15
8+08.42		5.17		217.14	212.10	5.04
		222.31				
		Cont'd. from P. 63				

10-7-48 Stake Sidewalk & Cb. Block 6 Lots 13-16 New Roseville ~ Upshur & Rosecrans
Hendricks
Roberts
Greer
Roner
WO #21018

Stg.	+	H.I.	-	Elev. Stake	Elev. Grade	
0+60			5.80	17.17	18.36	F1.19
0+40			5.83	17.14	18.41	F1.27
0+20			5.73	17.24	18.45	F1.21
0+00	Ex. Cb.		4.47	18.50	18.50	Meet
T.P.	4.47	22.97				
Ck 0+00	Ex. Cb.		4.47	18.34	18.50	
T.P.	0.24	22.81	6.80	22.57		
B.M.	1.55	29.37			27.82	NW BP Rosecrans & Bessemer

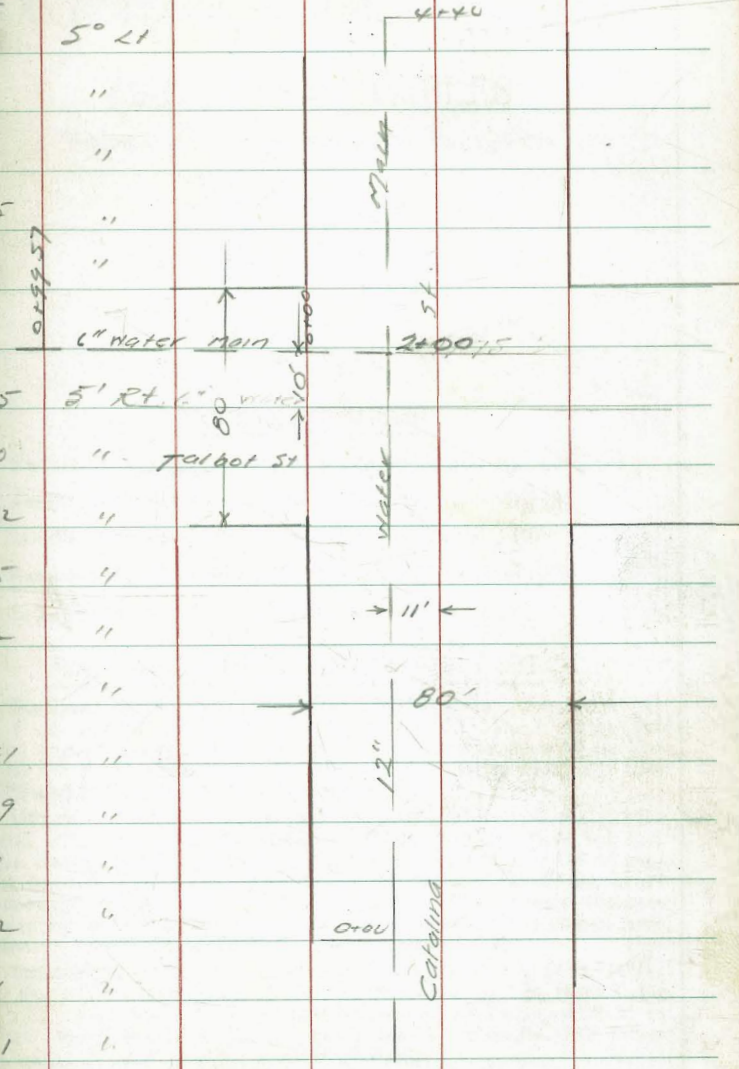


Restake Ck. Grades: Orange Ave Euclid to 48th.

CK P.L. W Line Alley		5.67	345.05	345.03	
1+23.03 Rt.		5.60	345.12	344.98	C0.14
CK 1+76.31		6.30	344.42	344.46	P.69
1+47.05 Lt.		5.80	344.92	345.14	F0.22
1+23.03 "		5.30	345.42	345.56	F0.14
1+20 "		5.11	345.61	345.61	F0.05
0+90 Lt.		4.37	346.35	346.62	F0.27
B.M.	0.03	350.72		350.69	NW BP. Orange & Euclid.

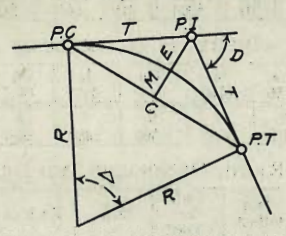
SEE ALSO PAGE 69

	Grades +	Water H.I.	Line −	Catalina & Talbot Elev. Stakes	Talbot Elev. Btm Ditch	Cuts Mon. & offsets	Catalina & Talbot F19176 / P. 46
			4.92	260.80	260.80	7.05	
0+99.57			7.89	257.83	250.77	7.45	5° 21
0+69.57			6.96	258.76	251.34	7.69	"
0+49.57			6.40	259.32	251.64	8.00	"
0+34.57			5.92	259.80	251.80	8.25	"
0+20			5.59	260.13	251.88	8.86	"
0+00 E Line Catalina			4.93	260.79	251.93		
4+40.			12.11	253.61	249.44	4.15	5' Rt.
4+04.44			10.90	254.82	250.02	4.80	"
3+70.17			9.63	256.09	250.57	5.52	"
3+50.17			8.89	256.83	250.88	5.95	"
3+30.17			8.14	257.58	251.16	6.42	"
3+10.17			7.41	258.31	251.41	6.90	"
2+90.17			6.69	259.03	251.62	7.41	"
2+70.17			6.04	259.68	251.79	7.89	"
2+19.53			5.04	260.68	252.00	8.68	"
1+68.89			5.48	260.24	252.22	8.02	"
1+18.25			6.87	258.85	252.44	6.41	"
0+74.25			7.89	257.83	252.62	5.21	"
0+30.25			8.19	257.53	252.81	4.72	"
0+00			8.26	257.46			
B.M.	5.07	265.72			260.65		



NW.B.P Santa Barbara & Catalina

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



CURVE FORMULAS

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

Tangent=T=Rtan$\frac{\triangle}{2}$ (3) Length of Curve=L=$100\frac{\triangle}{D}$ (4)

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

External=E=Ttan$\frac{\triangle}{4}$-(7)=R ÷ cos.$\frac{\triangle}{2}$—R(8)=Rexsec$\frac{\triangle}{2}$(9)

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

EXPLANATION AND USE OF TABLES

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

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$=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=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′ +8° 20′ ÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 115.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6 ÷8⅓=115.27 and from Table V correction=.10 or E=115.37 ft. Or suppose $\triangle$=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30′.

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	295.63	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	196.32	285.44	364.06	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	1.86	26	194.87	279.76	350.30	402.89
40	.21	.40	.56	.69	.77	.79	.73	.59	.35	2.06	28	194.06	276.59	342.69	388.42
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	3.80	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	1.20	.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	233.83	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	.095	.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 that 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=slope distance—slope distance (1—Cos. V. A.). Thus for slope distance of 248.7 ft. and V. A. of 4° 20′ from Table VIII Cos=.99714 and correction=1—.99714=.00286 per foot or total of .286 × 2½ (near enough)=.57 and horizontal distance=248.7—.57=248.13 ft.

TRIGONOMETRICAL FORMULAS.

See fig. (a).

sin. $A=\frac{a}{c}$

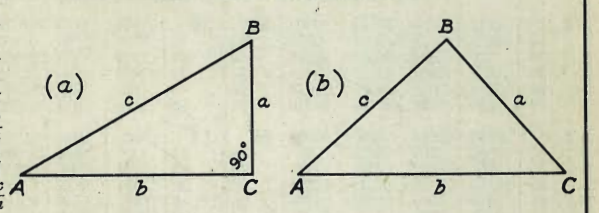
cos. $A=\frac{b}{c}$

tan. $A=\frac{a}{b}$

cot. $A=\frac{b}{a}$

sec. $A=\frac{c}{b}$

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	$B=90°-A$, $b=a$ cot. A, $c=\frac{a}{\text{sin. } A°}$
A, b	B, a, c	$B=90°-A$, $a=b$ tan. A, $c=\frac{b}{\text{cos. } A°}$
A, c	B, a, b	$B=90°-A$, $a=c$ sin. A, $b=c$ cos. A
Given	**Sought.**	**Oblique triangles. See fig. (b)**
A, B, a	b	$b=\frac{a \text{ sin. } B}{\text{sin. } A}$
A, a, b	B	sin. $B=\frac{b \text{ sin. } A}{a}$
a, b, C	$A - B$	tan. $\frac{1}{2}(A-B)=\frac{a-b \text{ tan. } \frac{1}{2}(A+B)}{a+b}$
c, b, c	A	If $s=\frac{1}{2}(a+b+c)$, sin. $\frac{1}{2}A=\sqrt{\frac{(s-b)\,(s-c)}{b\,c}}$; cos. $\frac{1}{2}A=\sqrt{\frac{s\,(s-a)}{b\,c}}$, tan. $\frac{1}{2}A=\sqrt{\frac{(s-b)\,(s-c)}{s\,(s-a)}}$; sin. $A=\frac{2\sqrt{(s-a)\,(s-b)\,(s-c)\,s}}{b\,c}$
A, B, C, a	area	area $=\frac{a^2 \text{ sin. } B \text{ sin. } C}{2 \text{ sin. } A}$
A, b, c	area	area $=\frac{1}{2}\,b\,c$ sin. A
a, b, c	area	$s=\frac{1}{2}(a+b+c)$, area $=\sqrt{s\,(s-a)(s-b)(s-c)}$

308
8
388

84.6

125.7
110.1
15.6

109.8
83.1
26.7

64
1.45
569

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	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.