G-220

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.

G-220

CITY ENGINEER'S OFFICE

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

Made in U. S. A.

INDEX

Walker
Hardin
Huntley
1-7-46

~ Balboa Park ~ 36" Water Main from 30th And Thorn to (7th Ave) Balboa Drive And Laurel St
Plan 6444 - to 6451 - L

The following Portion of Above Main Staked (Ahead) to be in place at time of Improvement 11th Ave Freeway.

Cont'd Page 15-1

Station					BM on E Hub 7-15-46 FB 1678-42		
	1.81	147.45		145.64	Elev. Stakes	Elev. Bottom Trench	Cuts	offsets
72+68.8 = Brk.			DEC 7.12		140.33	133.15	+7.18	6' Lt.
T.P.	2.85	141.99	8.31		139.14			
73+00			3.96		138.03	131.59	+6.44	6' Lt.
+50			4.40		137.59	129.09	+8.50	6' Rt.
+66			4.84		137.15	128.45	+8.70	" "
+82			6.21		135.78	127.97	+7.81	" "
+98			5.07		136.92	127.65	+9.27	" "
74+14 = Brk			5.00		136.99	127.49	9.50	" "
+30			5.11		136.88	127.49	9.39	" "
+75 = Brk			2.63		139.36	131.53	11.87 7.83	6' Rt Mail
T.P.	11.38	151.91	1.46		140.53			

Field Chief Had Original Drawing With No change When Staked 1-7-46

Note. Grades from 74+14 to 75+62.5 are as per revised Plan 6456-L - Changed 11-16-45 Field change 1-29-46

Balboa Park – 36" Water Main
Cont. from P 2

Station				Elev. Stakes	Est. Bottom Trench		
		* P2 151.91					
75+12.5 ~~Brk~~			7.20	144.71	~~135.66~~ 134.39	+ 10.32	
					~~130.65~~ 140.65	+ ~~9.65~~ 7.31	6' Rt.
+46.5 ~~Brk~~			3.95	147.96	~~140.08~~	+ ~~7.88~~	"
+62.5			2.41	149.50	143.60	+ 5.90	"
75+35 PB 1678-7 chk. Floral Cobb Drain			5.96	145.95			
				145.96			
				0.01			
75+50 T.P.	12.11	164.02	0.00	151.91	Two Nails in Tree 11.5' Lt. ~~Rt~~		
T.P.	13.04	176.94	0.12	163.90	Nail in Tree on South		
76+00 Brk.			10.18	166.76	158.60	+ 8.16	6' Lt.
+20 "			3.35	173.59	166.20	+ 7.35	" "
T.P.	12.32	189.26	0.00	176.94	Nail in Tree		
76+40 Brk			7.47	181.79	173.40	+ 8.39	" "
+60 Brk			2.94	186.82	180.20	+ 6.62	" "
T.P.	13.18	201.28	1.16	188.10	on Pg.		
76+90			3.33	197.95	189.80	+ 8.15	" "
T.P.	12.45	213.34	0.39	200.89			
77+25 Brk			4.49	208.85	201.00	+ 7.85	" "
T.P.	12.69	225.80	0.23	213.11			
77+70			6.35	219.45	211.35	+ 8.10	" "
T.P.	10.75	236.17	0.38	225.42			
78+15			6.05	230.12	221.70	+ 8.42	" "
T.P.	10.75	245.92	1.00	235.17			
78+55 Brk			7.75	238.17	230.90	+ 7.27	" "
78+71			5.93	239.99	233.14	+ 6.85	" "

38+% ↑
23+% ↓

Cont. P-4

Balboa Park - 36" Water Main Cont.

245.92

Station				El. Stakes	El. of Bottom Trench		
79+07.1 = BC Brk.			4.20	241.72	234.94	+ 6.78	6'4"
T.P.	6.17	250.27	1.82	244.10			
chk 81+87.35 = EC.	FB 1678-12		4.92	245.35			
	4.35	249.63 π	Corrected	245.28			
				0.07			
79+21 = Brk	0°59.73'		7.26	242.37	235.64	6.73	"
+35	1°59.9'		6.56	243.07	236.20	6.87	"
79+50 = Brk	3°04.36'		5.94	243.69	236.80	6.89	"
+75	4°51.76'		5.55	244.08	237.30	6.78	"
80+00 = Brk	6°39.16'		5.05	244.58	237.80	6.78	"
+20	8°05.11'		4.94	244.69	238.00	6.69	"
+40	9°31.06'		4.66	244.97	238.20	6.77	"
+50 = Brk	10°14.53'		4.43	245.20	238.30	6.90	"
+60	10°57'		4.17	245.46	238.33	7.13	"
+82	12°31.6'						6'4"
+80	12°23'		4.67	247.96	238.38	9.58	on wall
81+00	13°48.9'		4.37	245.26	238.44	6.82	6'4"
+20	15°14.86'		4.47	245.16	238.49	6.67	"
+40	16°40.81'		4.50	245.13	238.55	6.58	"
+60	18°02.4' 59 18°06.76'		4.68	244.95	238.60	6.35	"
+80	19°32.62'		5.04	244.59	238.66	5.93	"
T.P.	20°06'						"
81+87.75 = E.C.	7.19	251.82	5.00	244.63	238.68	5.95	"
82+00					238.71		
82+32.81 = EC.			6.87	244.99	238.80	6.13	
+50	0°29.55'		6.59	245.23	238.85	6.38	

Cont. P-5

chk EC 81+87.75 — 251.82 π − 6.55 = 245.27; 245.28; 0.01

FB 1678 12

Balboa Park - 36" Water Main
Cont. from P-4

Station		π-P4 251.82		El. Stakes	Elev. Bottom French	
82+70	1°03.95		6.31	245.51	238.91	6.60
+90	1°38.35		6.11	245.71	238.96	6.75
83+10	2°12.75		5.87	245.95	239.02	6.93
+30	2°47.15		5.61	246.21	239.07	7.14
83+39.86	3°04. =E.C.		5.46	246.36	239.10	7.26
83+40.79	B.C.R.				239.10	
+60	0°33.04		5.21	246.61	239.15	7.46
+80	1°07.4		4.93	246.89	239.21	7.68
84+00	1°41.84		4.70	247.12	239.26	7.86
+20	2°16.2		4.48	247.34	239.32	8.02
+40	2°50.6		4.26	247.56	239.37	8.19
+47.34	3°04.12 =E.C.		4.16	247.66	239.40	8.26
84+62.41	End		4.10	247.72	239.43	8.29

Grades for 24" line (Louvre) from Here to Kettner, See Grade Book 215 P.50

Balboa Park 36" Water Main Construction

Levels on ℄ - from 42+08.29 to 49+85 → Purpose of Blasting.

Stations			Elev. Stakes	Elev. Bottom Trench	Cuts.	offsets.
	1.59	289.79	288.20	BM. on	E.C. = 44+41.00 FB 1678 P 39	
		1.80	287.99			
			287.97			
			0.02			
42+08.29	B.C.		12.99	276.80	26.36	7.54
+50			11.80	277.29	27.24	6.75
43+00	Blk.		10.28	279.51	27.74	6.77
+50			7.63	282.16	27.24	6.92
44+41	=E.C.		1.59	288.20	27.79	8.41
T.P. 45+00	Blk	11.06 300.58	0.27	289.52	28.74	6.78
+50			7.81	292.77	28.95	6.82
46+00			5.85	294.73	28.20	6.53
+50			4.29	296.29	28.45	6.84
+89.92			4.30	296.28	28.70	6.58
47+55			4.80	295.78	28.60	7.18
48+00			5.83	294.75	28.70	7.05
+50			7.15	293.43	28.70	6.73
+80			8.00	292.58	28.10	6.48
49+00			8.03	292.55	28.70	6.85
+50			9.29	291.29	28.12	7.17
+85			9.70	290.88	28.02	7.86
chk. on ℄ 48+95 FB 1678 39			7.27	293.31		
				293.29		
				0.02		

36" WATER MAIN - ACROSS BALBOA PARKE

Grades for L - Purpose of Blasting

from station 17+046.7

to " 23+75

Plan #6446-L

Station		279.36			Elev. Trench
17+046.7	=B.C. H		2.45	276.91	270.35
+50			4.03	275.33	268.88
18+00			5.37	273.99	267.26
+50			6.69	272.67	265.64
19+00			9.22	270.14	264.00
+50			11.48	267.88	261.50
19+90	Brk	268.10	2.50	265.60	259.50
20+06	"		4.12	263.98	257.26
20+22	"		7.57	260.53	253.58
20+37	"		13.36	254.74	248.78
20+42.10	=E.C.		15.4	252.7	247.59
+52.6	Brk		19.0	249.1	245.15
+68.6	"		21.1	247.0	244.22
+84.6	"		20.3	247.8	243.58
21+00.6	"		18.0	250.1	244.38
+16.6	"		14.8	253.3	246.62
+32.6	"		11.2	256.9	249.18
+55.27	"		7.6	260.5	253.26
+71.27	"		7.2	260.9	254.70
22+00			7.1	261.0	254.70
+50	Brk.		8.0	260.1	253.70

BM on old PI 19+50 = 268.71

FB 1674/22

10.65 +

279.36

12.35

T.P 267.01 -

1.09

268.10 π

2.50 -

T.P 265.60

7.47 +

273.07 π

4.37 -

268.70

chk starting BM 268.71

0.01

6.56	✓
6.45	✓
6.73	✓
7.03	✓
6.14	✓
6.38	✓
6.10	✓
6.72	✓
6.95	✓
5.96	✓
5.1	✓
3.9	✓
2.8	✓
4.2	✓
5.7	✓
6.7	✓
7.7	✓
7.2	✓
6.2	✓
6.3	✓
6.4	✓

Cont. from P-9

				Elev. Trench
	268.10			
23+00		9.0	259.1	252.20
23+25 - Bk.		9.5	258.6	251.45
+75		11.3	256.8	248.95

Cuts
6.9 -
7.1 -
7.8 -

Walker Harden Marshall 2-7-46

BALBOA PARK - 36" WATER MAIN

CONSTRUCTION # Drawings 6444-L to 6450-L

Station		Elev. Stakes	Elev. Bottom Trench	Cuts	offsets.
52+00			277.40		
+40			276.48		
+80			275.56		
53+20			274.64		
+50			273.95		
+66 Brk	281.69	1.21	280.48	273.68	6.90 6' Lt. - Stake
+82 "		1.15	280.54	272.94	7.60 6' " Nail in Post
+98 "		1.57	280.12	271.98	8.14 6' Lt. - Nail " "
54+14 Brk		1.36	280.33	270.70	9.63 14.7 Lt. Cross on Wall
+30 *		4.61	277.08	269.10 (267.23)	7.85 7.98 6' Rt. Nail in Post
+48 *		7.54	274.15	266.94 (267.58)	6.57 7.21 7.5' Lt. Cross on Wall
+80.25		11.95	269.74	262.55 (264.64)	5.13 7.19 15' Lt.
55+12.5 = Brk	270.04	4.23	265.81	258.15 (261.64)	4.17 7.66 8.4' Lt.
+37.5 *		6.72	263.32	255.15 (258.00)	5.32 8.17 14' Lt. Cross on Wall
+70.0 *		8.92	261.12	251.90 (253.27)	7.83 9.22 7.5 Rt. " " "
+88.15 = BC Lt.	260.43	1.28	259.15	250.08 (250.27)	8.88 +2.07 10.49 Rt.
56+00 Brk		1.04	259.39	248.90	10.49 13.2 " Cross on Wall
+12.5		2.51	257.92	247.65	10.27 14.3 " " "
+25 Brk		4.43	256.00	246.40	9.60 12 Rt. " " "

Cont. P-12

11

B.M. on Wall 54+06'
FB 1678 / 10

280.37
1.32 +
281.69 +
12.78 -
268.91 T.P.
1.13 +
270.04 +
10.91
259.13
259.15
Error = 0.02

chk 55+88.15 on offset

Note: Grade changed from Station 54+14 to 56+00 on account of existing storm drain. See P.29 for Elevations on Existing Drain

B.M. E Nail 55+88.25 — FB 1678 / 10
258.41
2.02 +
260.43 +

36" Water Main Const.

Cont. from P-11

Station	π P-11		El. Stakes	El. Bottom Trench
56+35.10 = E.C.		6.05	254.38	245.19
+59 = Brk.		9.80	250.63	242.32
+92	248.37	2.76	245.61	237.70
57+25 = Brk.		7.40	240.97	233.08
+62.32 = B.C. Rt.		12.97	235.40	228.20
+75	236.00	2.22	233.78	226.58
+90		3.77	232.23	224.63
58+00 Brk.		5.05	230.95	223.33
+15		6.69	229.31	221.68
+25		7.70	228.30	220.58
58+35.26 = E.C.		8.72	227.28	219.44
+65		11.90	224.10	216.19
59+00	222.99	2.93	220.06	212.34
+10		7.67	215.32	207.94
+77.0 = B.C. Rt.		12.06	210.93	203.86
+91.2 = ℄ Curve	211.03	1.53	209.50	202.30
60+05.41 = E.C.		2.93	208.10	200.74
+50 = Brk.		7.63	203.40	195.83
+75		10.31	200.72	192.83
61+00 Brk.	198.40	0.64	197.76	189.83
61+23.11 B.C. Rt.		3.51	194.89	186.83
+36.84 ℄ Curve		5.26	193.14	185.05
+58.57 = E.C.		7.15	191.25	183.27

Cont. P-13

Cuts.	Offsets.		
9.19	10.6' Rt.	Cross on Hill	
8.31	9' Rt.	" " "	
7.91	7' Rt.	" " "	
7.89	7.5' Rt.	" " "	
7.20	11.33 Rt.	" " "	
7.20	12.6' "	" " "	
7.60	13.4 "	" " "	
7.62	13.5 "	" " "	
7.63	13.5 "	" " "	
7.72	13' Rt.	" " "	
7.84	11.65' Rt.	" " "	
7.91	9' "	" " "	
7.72	7.5' Rt.	" " "	
7.38	7.4 Rt.	" " "	
7.07	8.16 "	" " "	
7.20	8.7 "	" " "	
7.36	8.04 "	" " "	
7.57	8' "	" " "	Chk. Stake 62+34.92 FB 1678 41
7.89	9' "	" " "	
7.93	9.5' "	" " "	
8.06	8.64 "	" " "	Above Stake
8.09	6.5' "	" " "	Corrected
7.98	4.17 "	" " "	

π = 260.43
− 12.46
247.97
0.40 +
248.37 π
12.97 −
235.40 T.P.
0.60 +
236.00
13.05 −
222.95 T.P.
0.04 +
222.99 π
12.84 −
210.15 T.P.
0.88 +
211.03 π
12.88 −
198.15 T.P.
0.25 +
198.40 π
12.10 −
T.P. 186.30
2.17
π 188.47
.482
183.65
183.73
Error = 0.08
18373
.462 +
188.35 π

36" Water Main Construction

Cont. from P-12

Station		Elev. Stakes	Elev. Bottom Trench
	188.55 T		
61+62.5 = Brk.		+1.42	189.97	181.75
+82.5 "		1.02	187.53	179.35
62+02.5 "		0.39	188.16	177.35
+22.5 "		3.90	184.65	175.75
+42.5 "		5.42	183.13	174.55
+62.5 "		6.21	182.34	173.75
63+00		7.59	180.96	173.00
+40		8.55	180.00	172.20
+80		9.47	179.08	171.40
64+00 = Brk.	179.96	1.43	178.53	171.00
+03.69 = B.C. 4.		1.55	178.41	170.85
+17.09 = ℄ Curve		1.92	178.04	170.32
64+30.50 = E.C.		2.25	177.71	169.78
+65		3.67	176.29	168.40
65+00 Brk.		5.19	174.77	167.00
+40 Brk.		7.94	172.02	164.60
+75 Brk.		10.30	169.66	161.80
66+02 "		12.40	167.56	159.10
66+17.12 = BC 4. 0°16'8	167.96 T	1.54	166.42	157.30
+18 = Brk.		~~2.75~~	~~165.21~~	157.18
+34 " 5°22'4		2.75	165.21	155.58
+50 " 10°28		3.95	164.01	154.30
66+66 15°33'6		6.63	161.33	153.34

Cont. P-14

P-12 = T = 188.55
9.87 -
178.68 T.P.
1.28 +
179.96 T
12.40 -
167.56 T.P.
0.40 +
167.96 T

Cuts	offsets	
8.22	4.8 Rt.	Cross on wall
8.18	7.95 Rt.	= Nail in Tree
10.81	31.4 Rt.	= Cross on wall
8.90	8.5	" " "
8.58	29.4 Lt.	" " "
8.59	25.5 Lt.	" " "
7.96	18.7	" " "
7.80	11.8	" " "
7.68	8	" " "
7.53	8.8 Lt.	" " "
7.56	8.9	" " "
7.72	9.4	" " "
7.93	9.29	" " "
7.89	9.1	" " "
7.77	8.9	" " "
7.42	8.7	" " "
7.86	8.7	" " "
8.46	8.9	" " "
9.12	8.96	" " "
~~8.09~~ Left out	~~7.7~~	" " "
9.63	7.7	" " "
~~10.74~~ 9.71	8.2	" " "
7.99	6 Rt.	Nail in Tree

36" Water Main Cont. from P-13

Station	✓ ℄ P-13 167.96	Elev. Stakes	Elev. Bd. Trench	Cuts	offsets.
66+82	20°39'	7.13	160.83	152.38	8.45'	5.1' Lt. Cross on Wall
+98	25°44'	7.53	160.43	151.42	9.01'	12.6' Rt. " " "
67+05 - Brk	27°58' 29°20'	7.92	160.04	151.00	9.04'	9.1 " " " "
67+09.27 - E.C.		8.10	159.86	150.83	9.03'	8.02 " " " "
67+21	Brk	8.67	159.29	150.36	8.93'	7.3' " " " "
+37	"	9.05	158.91	150.04	8.87'	7.3' " " " "
+68.5		9.67	158.29	149.82	8.47'	7.3' " " " "
+83.47 - B.C. Rt.		9.95	158.01	149.72	8.29'	7.48' " " " "
+98.24 = E.C.		10.36	157.60	149.62	7.98'	7.55 " " " "
68+00 = Brk.		10.39	157.57	149.60	7.97'	7.5 " " " "
+25		11.10	156.86	149.10	7.76'	7.3' " " " "
+50	" 156.85	0.63	156.22	148.60	7.62'	7.4 " " " "
+85		1.68	155.17	147.40	7.77'	7.4' " " " "
69+20		3.36	153.49	146.20	7.29'	7.4 " " " "
+44.28 = B.C. Rt.	4°19.3'	4.24	152.61	145.36	7.25'	7.27 " " " "
+57.86	Chords = 1356	4.58	152.27	144.89	7.38'	7.6 " " " "
8°38.7	Set in					
69+71.44	3 equal Parts	4.62	152.23	144.42	7.81'	15.1 " " "
12°58						
+85.02 = E.C.		5.79	151.06	143.95	7.11'	6' Rt. Nail in Pav.
+93 - Brk.		5.98	150.87	143.68	7.19'	6' Rt. Stake
70+09	"	7.03	149.82	143.04	6.78'	6' " "
+25	"	7.71	149.14	142.08	7.06'	" " "
+51		8.96	147.89	140.00	7.89'	" " "
+77 - Brk		10.36	146.49	137.92	8.57'	15' " "
+93	Brk.	10.98	145.87	136.96	8.21'	6' " "
71+09		11.34	145.51	136.32	9.19'	" " "

Cont. D-15

from P-13 167.96 ℄
11.41 -
Chk E.C. 67+98.2 X = 156.55 T.P.
FB 16/78 41 .30 +
156.85 ℄

36" Water Main Construction

Cont. from P-14

Station	℄ P-14 156.85'	Elev. Stakes	Elev Bottom Trench	Cuts	offsets	
71+22.98 = BC Lt. 0°38.6		11.95	144.90	8.86'	6' Rt	- Stake
+25 = Brk. 4°35'75		~~12.15~~	~~144.70~~	8.70	Left	cut.
+37.42 = Equation 9°11.5		12.15	144.70	8.70'	6' Rt	"
71+51.86 = E.C.		12.59	144.26	8.26'	"	"
+90	147.76	4.20	143.56	7.56'	"	"
72+30 = Brk.		6.06	141.70	5.70'	"	"
+60 Brk.		6.59	141.17	5.62'	"	"
+85		7.13	140.63	5.83'	"	"
73+11.04 = Equation = 72+39.79		8.18	139.58	5.56'	15'	"
72+68.8 chk Page 2		7.44	140.32 (140.33) Error = 0.01	See Page 2 for this cut.		

Cont. Page 2

156.85 ℄
12.28 -
144.57 TP
3.197
147.76 ℄

Walker
Hendricks
Harden
Hunter
3-12-46

36" WATER MAIN

Grades for Blasting.

from Station 8+41.98

to " 13+80.18

B.M. on ℄ Hub 8+41.98 FB 1674/48 = 251.40

0.45 +

251.85 T

0.12 −

251.73 T.P.

12.04 +

263.77 T

1.81 −

261.96 T.P.

10.06 +

272.02 T

Station					Trench Grade	
		251.85				
8+41.98=B.C. 4				251.4	244.66	6.8
+75	0°56.8'	Brk.	0.9	251.0	244.00	+7.0
9+10	1°57.0	Brk	1.6	250.3	244.00	+6.3
+40	2°48.6		4.4	247.5	238.60	8.9
+70	3°40.2	18%	8.7	243.2	233.20	10.0
+90	4°14.6	Brk	16.6	235.3	229.60	5.7
10+06	4°42.1	Brk	15.0	236.9	229.60	7.3
10+09.82=E.C.	4°48.5'				229.94	
+22=Brk			12.5	239.4	231.04	8.4
+38="			7.2	244.7	233.84	10.9
+54="			4.8	247.1	236.32	10.8
+70="			3.0	248.9	238.53	10.4
11+00		263.77	12.1	251.7	242.13	9.6
11+41.51 =11+39.66	Equation		8.8	255.0	247.13	7.9
11+85		Brk	1.8	262.0	253.00	9.0
12+01		" 272.02	8.1	263.9	254.92	9.0
12+05.65=B.C. Rt.			7.4	264.6	255.49	
+17	0°19.5'	Brk	7.4	264.6	256.52	9.1
+33	0°47.0'	Brk.	6.8	265.2	257.80	7.4
+49	1°14.5'	Brk	6.3	265.7	258.76	6.9
+65	1°42.0'	Brk	5.8	266.2	259.40	6.8

& Grades Cont. from P. 16

272°02'

Station					Elev. Trench	
13+00	2°42.2'	Brk	5.0	267.0	260.10	6.9
+25	3°25.2'		4.9	267.1	260.45	6.6
+50	4°08.2	Brk	4.5	267.5	260.80	6.7
13+80.18 = E.C.	5°		3.54	268.48	261.83	6.65
14+00		Brk.			262.50	
Chk & Hub	13+80.18		3.54	268.48		
				268.45		
				0.03		

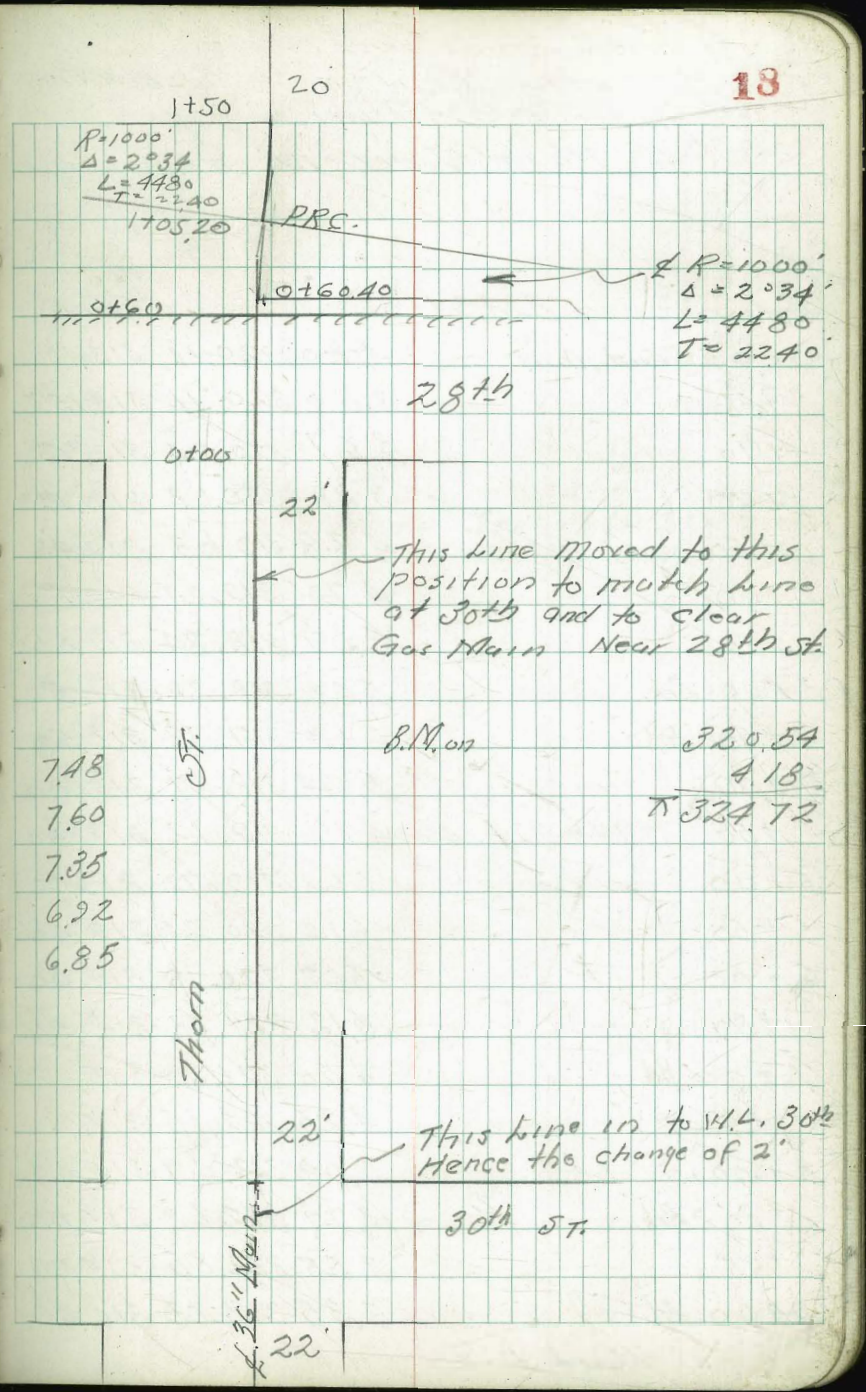
Walker
Hendricks
Hunley
4-12-46

Grades - Change in Alignment of 36" Water Main 28th & Thorn St.

Stations

0+00 = E. Line 28th St.

0+60.4 = B.C. Rt.	324.72	5.24	319.48	312.00
+82.8		5.12	319.60	312.00
1+05.20 = PRC		5.37	319.35	312.00
+27.6		5.80	318.92	312.00
1+50 = Bk - E.C.		5.87	318.85	312.00
Chk 2+00		6.73	317.99	



Construction Grades
36" Water Main - Across Balboa Park
from 30th & Thorn
to 7th And - Laurel St.

Station		Cuts	Elev. Trench
323.91			
0-05 = Exist. Main			3.80 320.41 313.40
+35		6.96	3.80 320.11 313.15
+70		7.31	3.67 320.24 312.93
1+00	-0.62%	7.29	3.88 320.03 312.74
+50		7.20	4.28 319.63 312.43
2+00		7.09	4.70 319.21 312.12
+50		7.03	5.07 318.84 311.81
3+00 Brk.		6.78	5.63 318.28 311.50
+50 Brk.		6.28	6.13 317.78 311.50
4+00		6.67	5.24 318.67 312.00
+50 T.P.	7.28 326.40	6.62	4.79 312.12 312.50
5+00		6.72	6.68 319.72 313.00
+50	1.0%	6.76	6.14 320.26 313.50
6+00		6.78	562 320.78 314.00
+50		6.78	5.12 321.28 314.50
7+00 Brk		6.90	4.50 321.90 315.00
+50	0.0%	7.15	4.25 322.15 315.00
8+00		7.47	3.93 322.47 315.40
+30 = Brk.		7.63	3.77 322.63 315.00
+65		7.15	3.55 322.85 315.70
9+00 Brk		6.65	3.35 323.05 316.40

Cont. P-20

B.M. NE. BP. Granada & Thorn
= 323.49
2.607
326.09
- 8.56
317.53 T.P.
6.38
323.91 π
4.79
319.12

Note: This line 22 of N Line South Thorn See P-18 for sketch

36" WATER MAIN

Cont. from P. 19

Station				Elev.	Elev. Trench
		326.40			
9+25 = Brk.			3.24	323.16	316.40
+60			3.16	323.24	316.18
10+00 T.P.	2.93	325.69	3.64	322.76	315.93
+32			3.31	322.38	315.73
+64 = Brk.			3.55	322.14	315.52
10+80 = "			3.64	322.05	315.20
+96 "			3.78	321.91	314.56
11+28 "			4.01	321.68	312.96
+44 "			4.10	321.59	312.82
+60 "			4.21	321.48	312.00
12+00			4.55	321.14	312.00
+50			4.89	320.80	312.00
12+93.45 = 0+00 = Elimo 28th St.	Equation 1.19	324.68	5.16 NEBP Thorn & Gray 2323.49	320.53	Const. 312.00
			4.14	320.54	
+50			4.85	319.83	312.00
1+00			5.16	319.52	312.00
+50 = Brk.			5.92	318.76	312.00
2+00			6.75	317.93	311.00
+48 Brk			8.14	316.54	310.04
+64 "			8.81	315.87	309.40
+80 "			10.03	314.65	308.44
+96 "			10.49	314.19	307.16
3+12 T.P. "	3.64	315.97	12.35	312.33	305.56
+28			5.03	310.94	302.52

Cut	Offsets
6.76	
7.06	
6.83	
6.65	
6.62	
6.85	
7.35	
~~7.25~~	
8.72	
9.27	
9.48	
9.14	
8.80	
8.53	
8.54	8 Lt.
7.83	"
7.52	"
6.76	"
6.93	"
6.50	"
6.47	"
6.21	"
7.03	"
6.77	"
8.42	"

March 26, 1946
Hendricks
Hunley
Carey

36" WATER MAIN
Cont. from P-20

Station	+	H.I. 315.97	−	Elev.	Elev. Trench	Cut
3+44	Bk.		11.18	304.79	299.16	5.63
+68			11.34	304.63	298.44	6.19
+92	Bk.		11.74	304.23	297.72	6.51
	TP		12.65	303.32		
4+08	" 0.37	303.69	1.96	301.73	295.80	5.93
+24	"		3.75	299.94	293.56	6.38
+49			7.61	296.08	289.56	6.52
+74	TP " 1.08	292.33	12.44	291.25	285.56	5.69
4+94	"		4.49	287.84	282.16	5.68
5+10	"		6.49	285.84	278.00	7.84
	TP		12.98	279.35		
+42	" 0.46	279.81	3.25	276.56	269.68	6.88
+58	"		3.94	275.87	268.40	7.47
+74	"		4.22	275.59	266.80	8.79
+90	"		8.38	271.43	264.88	6.55
	TP		12.51	267.30		
6+25	" 0.70	268.00	2.18	265.82	259.98	5.84
+50	"		5.22	262.78	256.98	5.80
7+00			8.77	259.23	251.98	7.25
+32	Bk.		10.70	257.30	248.78	8.52
+48	"		11.80	256.20	247.50	8.70
+64	TP " 2.24	257.21	13.03	254.97	246.54	8.43
+80			3.62	253.59	245.90	7.69
8+30			5.69	251.52	244.90	6.62
+41.98	-B.C. Lt.		5.95	251.26	244.66	6.60
+58.49			6.13	251.08	244.33	6.75
+75	Bk		6.15	251.06	244.00	7.06

Cont. P-22

36" WATER MAIN

Cont. from P 21

Station	+	H.I.	−	Elev.	Elev. Trench	Cut
8+92.5		257.21	6.32	250.89	244.00	6.89
9+10 = Brk.			7.07	250.14	244.00	6.14
+30			8.56	248.65	240.40	8.25
+50			10.81	246.40	236.80	9.60
+70 T.P.	8.06	252.90	12.37 / 9.92	244.84 / 242.98	233.20	9.78
+90 = Brk.			16.39	236.51	229.60	6.91
10+06 "			16.37	236.53	229.60	6.93
10+09.82 = E.C.			15.08	237.82	229.94	7.88
+22 = Brk.			14.48	238.42 / 238.52	231.04	7.38 / 7.48
+38 "			8.39	244.51	233.84	10.67
+54 "			5.82	247.08	236.32	10.76
+70 "			4.29	248.61	238.53	10.08
11+00 T.P.	12.51	261.39	1.02	251.88	242.13	9.75
11+41.51 = 11+39.66 } Equation			9.22	255.17 / 253.17	247.11	8.05 / 6.06 8.08
11+85 = Brk.			3.23	261.16	253.00	8.16
12+01 "			0.56	263.83	254.92	8.91
705.65 = B.C. Rt. T.P. Hub 8' Lt. 1237		276.74	0.02	264.37	255.38	8.99
+17 Brk.			11.73	265.01	256.52	8.49
+33 "			11.08	265.66	257.80	7.86
+49 "			10.70	266.04	258.76	7.28
+65 "			10.40	266.34	259.40	6.94
+82.5			10.25	266.49	259.75	6.74
13+00			9.31	267.43	260.10	7.43 7.33

Cont. P. 23

36" WATER MAIN

Cont. from P-22

Station		276.74			Elev. Trench	
13+20			9.10	267.64	260.38	7.26
+40			9.13	267.61	260.66	6.95
+50 = Brk			8.90	267.84	260.80	7.04
+60			8.73	268.01	261.14	6.87
13+86.18 = E.C.			7.71	269.03	261.82	7.21
14+00 = Brk			6.14	270.60	262.50	8.10
+50			4.58	272.16	265.20	6.96
+90			2.40	274.34	267.85	6.49
15+31 = Brk		279.49	1.68	277.81	270.56	7.25
+47 = Brk			1.34	278.15	271.36	6.79
+63 = "			0.71	278.78	271.84	6.94
+79 "			0.68	278.81	272.00	6.81
16+00			0.63	278.86	272.00	6.86
+50			1.06	278.43	271.50	6.93
17+00			2.31	277.18	270.50	6.68
17+04.69 = B.C.			2.45	277.04	270.35	6.69
+20	0°26.37'		2.77	276.72	269.85	6.87
+40	1°00.77'		3.48	276.01	269.20	6.81
+60	1°35.17'		4.02	275.47	268.55	6.92
+80	2°09.57'		4.66	274.83	267.90	6.93
18+00	2°43.97'		5.34	274.15	267.25	6.90
+20	3°17.37'		5.74	273.75	266.60	7.15
+40	3°52.77'		6.38	273.11	265.95	7.16
+60	4°27.17'		7.06	272.43	265.30	7.13

Cont. P-24

276.74
.032-
T.P. 276.42
3.07+
279.49 T

Δ = 19°20'
R = 1000'
L = 337.43'
T = 170.33'
Ext. = 14.40'
Def per ft = 1.71887
offsets 8' Lt = .008' short of ℄

36" WATER MAIN
Cont. from P-23

Station		27949			Elev Trench
18+80	5°01.57'		7.75	271.74	264.65
19+00 Bk	5°35.97'		8.82	270.67	264.00
+20	6°10.37'		9.68	269.81	263.00
+40	6°44.77'		10.53	268.96	262.00
+60	7°19.17'		11.72	267.77	261.00
+80	7°53.57'		12.67	266.82	260.00
19+90 = Bk	8°10.77'	266.80	0.76	266.04	259.50
20+06 "	8°38.29'		1.72	265.08	257.26
+22 "	9°05.81		5.38	261.42	253.58
+37 "	9°31.61		11.15	255.65	248.78
20+42.P = E.C.	9°40'	260.14	6.95	253.19	247.59
+52.6 Bk.			9.39	250.75	245.15
+68.6 "			13.56	246.58	244.22
+84.6 "			14.09	246.05	243.58
21+00.6 "			11.74	248.40	244.38
+16.6 "			8.49	251.65	246.62
+32.6 "			4.89	255.25	249.18
+55.27 T.P. "	2.38	262.06	0.46	259.68	253.26
+71.27"			1.78	260.28	254.70
22+00			1.01	261.05	254.70
+50 Bk.			1.98	260.08	253.70
23+00			2.81	259.25	252.20
+25 "			3.46	258.60	251.45
+75			5.02	257.04	248.95

Cont. P. 23

7.09	
6.67	
6.81	
6.96	
6.77	
6.82	
6.54	
7.82	
7.86	
6.87	
5.60	
5.60	
2.36	
2.47	
4.02	
5.03	
6.07	
6.42	
5.58	
6.35	
6.38	
7.05	
7.15	
8.09	

π 279.49
10.71
chk. BM. on PI Hob 268.78
19+50 F8 16/24/22 = 268.71
10.71
Corrected π = 279.42
13.01 -
266.41
0.39 +
266.80 π
12.85
253.95 T.P.
6.19 +
260.14 π
0.46 -
259.68
2.38 +
262.06 π
0.46 +
262.52 π

Cont. from p-24

36" WATER MAIN

Station		℄ 262.06			Elev. Trench
24+00	Bk.		6.81	255.25	248.20
+50			7.77	254.29	247.70
25+00	Bk.		7.82	254.24	247.20
+50	"		9.97	252.09	246.00
26+00	"		11.65	250.41	244.00
+50		251.64	4.14	247.50	241.00
27+00			7.26	244.38	238.00
+40			9.88	241.76	235.60
+75	Bk.		11.99	239.65	233.50
28+20		240.20	2.27	237.93	231.52
+65			3.65	236.55	229.54
29+00	"		5.40	234.80	228.00
+16			6.32	233.88	227.20
+32			7.85	232.35	226.08
+48			9.47	230.73	224.64
+80.2		227.84	2.30	225.54	218.85
+95.7			4.75	223.09	214.67
30+10.7			8.01	219.83	209.27
+49.6		202.36	1.68	200.68	191.77
+88.5	Bk.	189.86	8.92	180.94	174.26
31+04	"	178.76	2.91	175.85	170.08
+52	"		7.66	171.10	165.76
+96	"		4.88	173.88	165.76
32+28	"	℄ 186.66	13.14	173.52	162.88

Cont. P-26

7.05	
6.59	
7.04	
6.09	
6.41	
6.50	
6.38	
6.16	
6.15	
6.41	
7.01	
6.80	
6.68	
6.27	
6.09	
6.69	
8.42	
10.56	
8.91	
6.68	
5.77	
5.34	
8.12	
10.64	8 H.

262.06
12.68 -
TP 249.38
2.26
℄ 251.64
13.02 -
TP 238.62
1.58
℄ 240.20
12.39
TP 227.81
0.03 +
℄ 227.84
12.95 -
TP 214.89
0.46
℄ 215.35
12.94 -
202.41
Minus Rod → - 0.05
℄ 202.36
12.50
TP 189.86
0.00
189.86
12.89 -
TP 176.97
1.79 +
℄ 178.76
4.65 -
174.11
→ 174.15 -
0.04

Chk. 2 Nail
32+09.28 P.26

36" WATER MAIN
Cont. from P-25

Station					Elev. Trench
32+44	Bk.	186.66	18.42	168.24	160.00
+60	"		18.26	168.40	160.00
+80	"		8.09	178.57	163.60
33+10			7.02	179.64	168.40
+40			5.59	181.07	173.20
+75	T.P. 12.71	198.16	1.21	185.45	178.80
34+20			3.30	194.86	185.28
+65		209.46	10.73	198.73	191.76
35+10			5.17	204.29	198.24
+50	Bk.	220.50	2.16	211.34	204.00
+85	"		1.57	218.93	209.60
35+90.87	=P.C. Lt.		1.47	219.03	210.42
36+01	Bk. 0°23.22	231.76	12.23	219.53	211.84
+17	" 0°59.88		10.40	221.36	213.76
+33	" 1°36.55		6.11	265.65	215.36
+50	" 2°15.51		3.65	228.11	216.82
+70	3°01.35		0.90	230.86	218.54
+90	3°47.19		+0.89	232.65	220.26
37+10	4°33.02		+0.09	231.85	221.98
+30	5°18.86	243.01	11.04	231.97	223.70
+37.5	Bk. 5°36.05		7.14	235.87	224.35
+56.25	6°19.02		8.78	234.23	225.75
37+75	Bk. 7°02		8.35	234.66	227.16
37+93.75	7°44.96		7.44	235.57	228.28

Cont. P-27

E. Powder Canyon

BM. on E. Nail 32+04.28 FB 1678/56 = 174.15

8.24	✓	12.51 + 186.66 T
8.40	✓	1.2 183.45 TP
14.97	✓	12.71 + 198.16 T
11.24	✓	0.74 − 197.42 TP
7.87	✓	12.04 + 209.46 T
6.65	✓	0.43 − 209.03 TP
2.58	✓	11.47 + 220.50 T
6.97	✓	1.39 − 219.11 TP
6.05	✓	1.57 − 218.93
7.34	✓	12.83 + 231.76
9.33	✓	0.31 − 231.45 TP
8.61	✓	11.56 + 243.01 T
7.69	✓	
7.60	✓	
10.29	✓	
11.29	✓	
12.32	✓	
12.39	✓	
9.87	✓	
8.27	✓	
11.52	✓	
8.48	✓	
7.50	✓	
7.29	✓	

36" WATER MAIN

Cont. from P-26

Station		π 243.01			Elev. Trench	Cuts	offsets
38+12.5	Brk 8°27.93'		6.61	236.40	229.41	6.99	
+31.25	" 9°10.90'		5.05	237.96	230.91	7.05	
+50	Brk. 9°53.87'		3.57	239.44	232.41	7.03	
+66	10°30.54'		2.29	240.72	234.01	6.71	
+82	11°07.21'	255.04	11.97	243.07	235.61	7.46	
39+00	11°48.46'		10.82	244.22	237.41	6.81	
+16	12°25.13'		9.24	245.80	239.01	6.79	
+32	13°01.80'		7.79	247.25	240.61	6.64	
+48	13°38.47'		5.87	249.17	242.21	6.96	
+63.39	P.C. 14°13.75		4.32	250.72	243.75	6.97	
+86.93	Brk.		2.72	252.32	246.10	6.22	
40+02.93 = 40 52.73	Equation	267.79	0.28	254.76	248.02	6.74	
40+68.73			8.33	259.46	250.26	2.20	
41+00			5.33	262.46	255.26	7.20	
+44		282.09	13.35	268.74	262.30	6.44	8' Lt. 6.34 = New Cut Reset
+60			10.91	271.18	264.54	6.64	" 6.71 " " "
+76			8.92	273.17	266.47	6.70	" 6.83 " " "
+92.			6.93	275.16	268.06	7.10	" 7.14 " " "
42+08.29	Brk. = BC Lt.		5.16	276.43	269.36	7.07	" B.M. on Nail 44+39.25 F81674 25
+24	Brk 0°26.02'		4.79	277.30	270.30	7.00	"
+40	" 0°53.54'		4.46	277.63	270.94	6.69	" +677
+60	" 1°27.94'		3.84	278.25	271.54	6.71	" 6.87 - New Cut Reset
+80	" 2°02.34'		3.10	278.99	272.14	6.85	"
43+00	Brk 2°36.74'		2.54	279.55	272.74	6.81	"

Cont. P-28

243.01
0.21-
TP 242.80
12.24
π 255.04
0.28-
TP 254.76
13.03+
267.79π
0.04-
TP 267.75
12.18+
π = 279.93
3.44-
276.49
chk 42+08.79 276.43
0.06

288.06
0.39+
288.45π
12.76-
275.69
6.40
282.09π

Walker chief
Hendricks π 3-16-46
Hunter ch.
Cureton ch.

Walker
Hendricks
Hunter
Corey 3-46

36" WATER MAIN
Cont. from P-27

π P-28 282.09

Station					Elev. Trench	Cuts	offsets
43+20	3°11.14'		1.38	280.71	273.74	6.97	8' Lt
T.P. +40	3°45.54' 11.25	293.16	0.18	281.91	274.74	7.17	"
+60	4°19.94'		10.52	282.64	275.74	6.90	"
+80	4°54.48'		7.77	285.39	276.74	8.65	"
44+00	5°29.02'		5.69	287.47	277.74	9.73	"
+20	6°03.42'		5.04	288.12	278.74	9.38	"
44+41.00	=E.C. 6°26'		4.90	288.26	279.79	8.47	"
+70			5.10	288.06	281.24	6.82	"
45+00 B.K.			3.73	289.43	282.74	6.69	"
T.P. +50	7.68	300.32	0.52	292.64	285.95	6.69	"
+75			6.48	293.84	287.20	6.64	"
46+00			5.75	294.57	288.20	6.37	"
+25			5.05	295.27	288.95	6.32	"
+50			4.11	296.21	289.45	6.76	"
+75			4.18	296.14	289.70	6.44	"
47+00			4.12	296.20	289.70	6.50	"
+50			4.38	295.94	288.70	7.24	"
48+00			5.34	294.98	287.70	7.28	"
+50			6.86	293.46	286.70	6.76	"
49+00			7.67	292.65	285.70	6.95	"
+50			9.23	291.09	284.13	6.96	"
+90			9.78	290.54	282.87	7.67	"
50+18		293.20	3.26	289.94	282.00	7.94	"
+50			4.20	289.00	280.99	8.01	"

Cont. P-29

Note: Grade changed from 43+10 to 43+96
See P-30

π 300.32
− 10.08
TP 290.24
2.96
π 293.20

36" WATER MAIN

Cont. from P-28

Station		℄ 293.20			Elev. Trench
51+00	Bk		6.12	287.08	279.40 ✓
+50			8.17	285.03	278.40 ✓
52+00			8.97	284.23	277.40 ✓
+50			10.27	282.93	276.25 ✓
53+00			11.67	281.53	275.10 ✓
~~+20~~					~~274.64~~
+50			12.54	280.66	273.95
T.P		4.01 285.56	11.65	281.55	
Chk. Stake 6'Lt. 53+66 P-11			5.08	280.48 ✓	
				280.48	
				0.00	

Elevations on Existing Drain ℄ Hand Leveled

BM.	3.0	268.8		265.8	on Cut Mark 55+25 P-11
54+93	on Top Conc. Box		5.3 / 7	263.5	
	" Bottom "		7.0	261.8	
55+20	on Top Box		8.1	260.7	
"	" Bottom Box		9.8 / 1.7	259.0	

outside Diameter = Approx 1.7 Figure

for Grade change 36" Water Main over Aborn Drain – See P-11

Walker
Hendricks
Hunlock
Carey

3-18-46

Cuts	offsets
7.68 ✓	8'Lt
6.63 ✓	"
6.83 ✓	"
6.68 ✓	"
6.43 ✓	"
	"
6.71 ✓	"

Walker
Hendricks
Hunley
Carey
3-30-46

36" WATER MAIN - SALBOA PARK

Grade change - by Inspector Baker Water Dept

from station 43+00
to " 43+96
Purpose: to clear Existing Sewer in PARK BLVD

Station	B.M. on Nail F.C.			Elev. Stake	Elev. Trench
44+41.0 P-28	4.36	292.62		288.26	
43+10			19.93	272.69	272.7
+20			11.95	280.67	273.0
+40			10.72	281.90	273.6
+60			10.00	282.62	274.17
+80			7.26	285.36	274.76
44+00			5.18	287.44	275.35
+20			4.52	288.10	275.94
+29 = Brk			4.44	288.18	276.21
44+41.0 = F.C.			4.36	288.26	276.88
+63.3 = Brk			4.70	287.92	278.15
45+96			9.36	~~26~~	283.26
~~45+03 = Pipe Laid to Here~~					~~282.91~~

Cuts

Pipe Laid to Here

7.67	8' Lt.
8.30	"
8.45	"
10.60	"
12.09	"
12.16	"
11.97	"
11.38	"
9.77	"

This section - Grades by Inspector to fit 16' Pipe Joints.

Curb Grades - Parking Lot.

Police Station Kettner & Mkt. St.

Walker
Hendricks
Hunter
5-10-46
-9-46

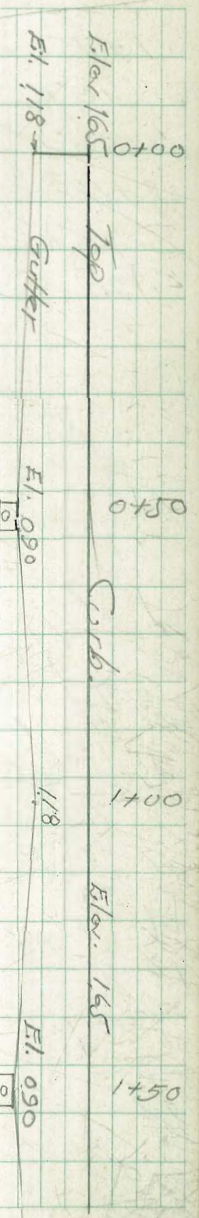
BM SE FB-8-26 2

1.10 6.08 4.98

		E. of Stake	Top Cb.
0+00 on stake	5.26	0.82	1.65
10' Rt.	4.61	1.47	
20' Rt	4.29	1.79	
0+25 on stake	4.84	1.24	1.65
10' Rt.	4.65	1.43	
20' "	4.34	1.74	
0+50 "	4.61	1.47	1.65
10' R	4.77	1.31	
20' "	4.35	1.73	
0+75	4.59	1.49	1.65
10' R	4.79	1.29	
20' "	4.42	1.66	
1+00	4.76	1.32	1.65
10' R	4.80	1.28	
20' R	4.44	1.64	
1+25	4.83	1.25	1.65
10' R	4.75	1.33	
20	4.44	1.64	
1+50	4.56	1.52	1.65
10' R	4.80	1.28	
20	4.48	1.60	

Top Fire Hydt. Market & Kettner

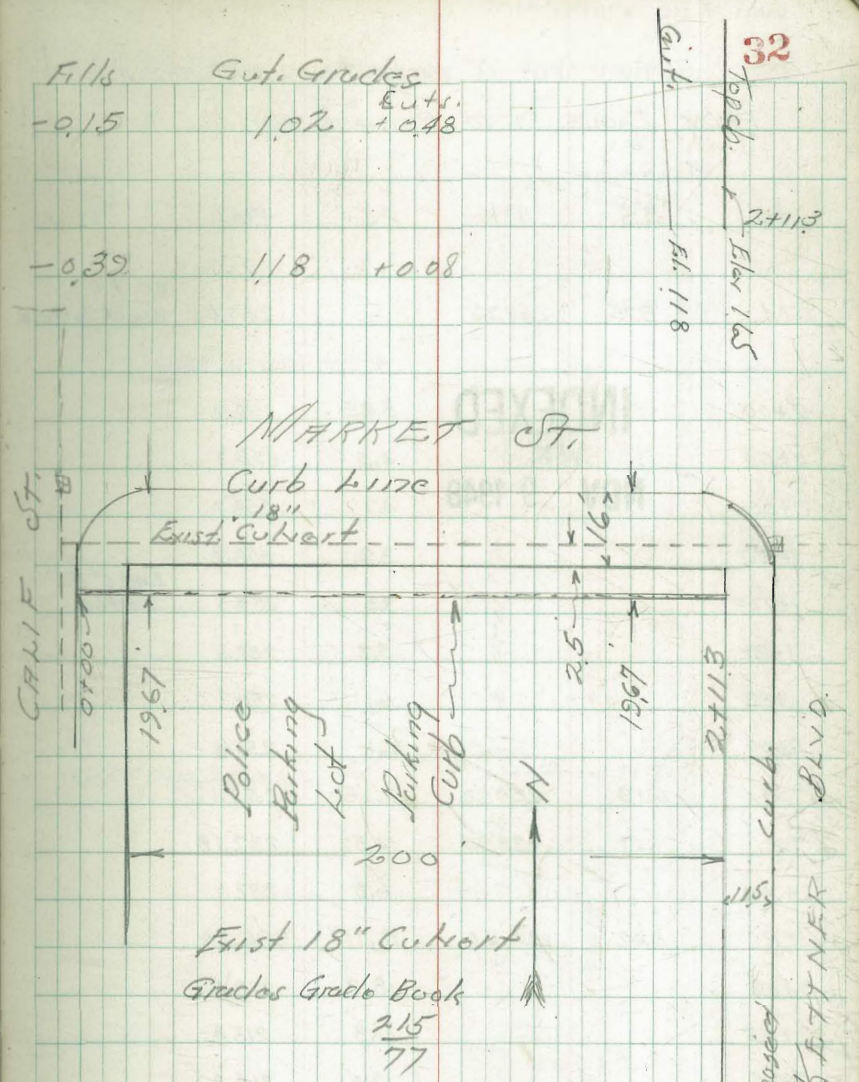
	Fills.	Elev. Gut.	
0+00	-0.83	1.18	-0.36
0+50	-0.18	0.90	+0.57 Inlet
0+75	-0.16	1.04	+0.45
1+00	-0.33	1.18	+0.14
1+25	-0.40	1.04	+0.21
1+50	-0.13	0.90	+0.62 Inlet



Cont. P-32

	6.08			Top Ch.
1+75	on stake	4.58	1.50	1.65
	10' R	4.76	1.32	
	20' R	4.55	1.53	
2+11.3		4.82	1.26	1.65
	10' R	4.89	1.19	
	20'	4.70	1.38	

Fills	Cut. Grades	
-0.15	1.02	Cut. +0.48
-0.39	1.18	+0.08

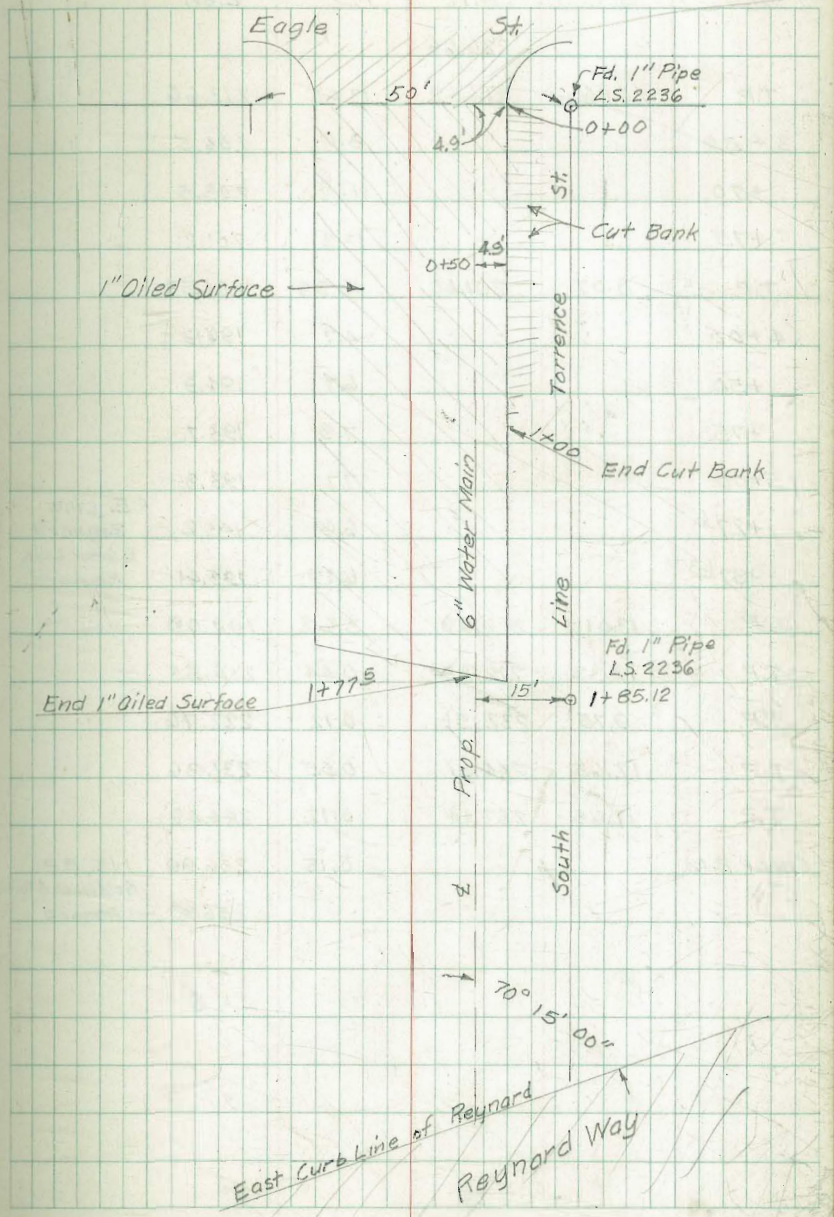


Transcribed by H. Hom

33

Survey for 6" Water Main on Torrence St. from Eagle St. to Reynard Way

Sta.	B.S.	H.I.	F.S.	Elev.	
B.M.	5.75	262.76		257.01	B.P. N.W. Eagle & Torrence
0+00			5.85	256.91	
0+50			4.5	258.3	
1+00			4.1	258.7	
1+50			3.9	258.9	
1+77.5			3.5	259.3	End 1" Oil Surface
1+81			5.2	257.6	
1+88			6.1	256.7	
2+00			11.0	251.8	
T.P.	0.19	250.30	12.65	250.111	
T.P.	1.17	238.95	12.52	237.78	
2+42			6.9	232.1	
T.P.	0.42	226.66	12.71	226.24	
2+49			8.3	218.4	
2+55			11.3	215.4	
2+75			12.5	214.2	
3+00			12.6	214.1	
3+00			12.6	214.1	4' Left Top Fill Bank
3+15			14.0	212.7	
3+15			13.3	213.4	4' Lt. Top Fill Bank



(Cont. from page 33)

Sta	B.S.	H.I.	F.S.	Elev.	
		226.66			
T.P.	0.86	214.52	13.00	213.66	
3+50			8.0	206.5	
+70			11.0	203.5	
+75			13.3	201.2	
T.P.	0.07	201.60	12.99	201.53	
4+00			4.7	196.9	
+50			6.7	194.9	
+75			7.9	193.7	
5+00			7.7	193.9	
+27.6			6.4	195.2	E. Line Reynard
+37.63			6.19	195.41	E. Gutter Line Reynard
T.P.	13.01	210.99	3.62	197.98	
T.P.	12.33	222.88	0.44	210.55	
T.P.	9.75	232.51	0.12	222.76	
T.P.	12.65	244.61	0.55	231.96	
T.P.	12.65	257.14	0.12	244.49	
Check B.M.			0.15	256.99	NE. B.P. Goldfinch & Sutter
				256.99	— Record

Walker
Hendricks
Hunley
Corey
3-27-46

WATER MAIN - GRADES

Encanto - 65th St., Imperial, And Woodman St. from Broadway to Skyline Dr.

Plan # 6475-L 6476-L, 6608-L 6609, 6610 L

6475-76-L
6608-09-10-L

B.M. B.P. on Conc. Paving. 0.6 S.S. Broadway.

1.14 313.38 312.24 El. Exterior Bottom of Pipe

Station				Cuts	offsets.
20' North of S.L. Broadway					
=0+00			0.11 313.27 309.81	3.46	6' Rt.
+50			2.28 311.10 306.98	4.12	
1+00			5.20 308.18 304.14	4.04	
+50			8.01 305.37 301.31	4.06	
2+00	5.67%		10.76 302.62 298.47	4.15	
+50		301.19	1.39 299.80 295.64	4.16	
3+00			4.14 297.05 292.80	4.25	
+50			6.93 294.26 289.97	4.29	
4+00			9.73 291.46 287.13	4.33	
+55.29	T.P.	0.60 289.13	12.66 288.53 284.00	4.53	
5+15.29	Blk. N.L. Wunderlin St.		3.21 285.92 281.40	4.52	
+60	" S.L. "		5.03 284.10 279.59	4.51	
6+00			6.68 282.45 277.97	4.48	
+50			8.74 280.39 275.94	4.45	
7+00	4.06%		10.81 278.32 273.90	4.42	
+50	T.P.	0.93 277.23	12.83 276.30 271.87	4.43	
8+00			2.97 274.26 269.84	4.42	
+50			5.01 272.22 267.81	4.41	
9+00			7.13 270.10 265.78	4.32	

Cont. P-36

31.338 T
12.51 -
300.87 T.P.
0.32 ↑
301.19
12.66 -
288.53 T.P.
0.60 ↑
289.13 ↑
12.83 -
T.P. 276.30
0.93 ↑
277.23

12" WATER MAIN - Encanto
Cont. from P-35

Station		℄ 277.23			Elev. of Bottom Exterior Water Main	Cuts	offsets
9+50			9.04	268.19	263.75	4.44	
10+00			10.48	266.75	261.72	5.03	
T.P. +50=Bk.	0.22	264.92	0.87	264.05	259.69	4.36	
11+00 "			4.00	260.92	256.69	4.23	
+50 "			7.42	257.50	252.94	4.56	
12+00 "			11.27	253.65	249.19	4.46	
+50=Bk.		℄ 252.16	2.40	249.76	245.44	4.32	
13+00 "			6.28	245.88	241.44	4.44	
+50 "			10.35	241.81	237.44	4.37	
14+00=Bk.		239.41	1.67	237.74	233.44	4.30	
+15=Bk.			2.89	236.52	231.79	4.73	
+30 "			4.16	235.25	229.69	5.56	
+45 "			5.47	233.94	227.14	6.80	
+60 "			6.83	232.58	224.14	8.44	
+85 "			9.04	230.37	224.14	6.23	
15+00 "			10.15	229.26	223.76	5.50	
+15 "			11.64	227.77	223.01	4.76	
+65		227.78	3.83	223.95	219.51	4.44	
16+10=Bk.			7.02	220.76	216.36	4.40	
+26 "			8.12	219.66	214.74	4.92	
+42 "			9.22	218.56	212.58	5.98	
16+50=Δ Lt 22°30'			9.87	217.91	211.24	6.67	
+58=Bk.			10.47	217.31	209.90	7.41	
16+76.13=Δ=Δ Rt 22°30'			11.71	216.07	206.27	9.80	

℄ 277.23
12.53
TP 264.70
0.22+
℄ 264.92
13.07
T.P. 251.85
0.31+
℄ 252.16
12.99-
TP 239.17
0.24
℄ 239.41
12.56-
TP 226.85
0.93+
℄ 227.78

Encanto 12" Water Main Const.

Cont. from P 36

Station	℄ 224.77		Elev. Exterior Bottom of Pipe
17+00 = Brk.	17.57	207.20	201.50
+25 = Brk	18.21	206.56	201.50
+37.5 = "	10.97	214.30	204.00
+53.5 = "	9.12	215.65	206.67
17+69.5 = "	9.01	215.76	208.80
+85.5 = "	8.90	215.87	210.40
17+87.85 = Δ Rt. 22°30	8.90	215.87	210.56
18+01.5 = Brk.	8.63	216.14	211.47
18+13.98 = Δ Lt. 22°30'	8.41	216.36	211.87
+17.5 = Brk	8.34	216.43	212.00
+60	7.54	217.23	212.00
19+00	6.57	218.20	212.00
19+27.63 Δ Lt 45° 0'	4.75	220.02	212.00
+42.62 Δ Lt 8°12' 225.29	5.21	220.08	212.00
+53.75 Δ Lt. 45°0'	4.92	220.37	212.00
19+75	4.91	220.38	212.00
20+25	4.96	220.33	212.75
+75	5.08	220.21	213.50
21+25	5.11	220.18	214.25
+75 Brk.	5.11	220.18	215.00
22+10	5.13	220.16	215.00
+50 Brk	4.99	220.30	215.00
23+00	4.94	220.35	215.30
+50	4.65	220.64	215.60

Cont. P-38

Cuts	offsets		
5.70	✓	6' Rt.	
5.06	✓	"	
10.30	✓	" on Pipe	
8.98	✓	" chk BM	
6.96	✓	"	
5.47	✓	"	
5.31	✓	"	
4.67	✓	"	
4.49	✓	"	
4.43	✓	"	
5.23	✓	"	
6.20	✓	"	
8.02	✓	6' Lt.	
8.08	✓	6' Lt	
8.37	✓	"	
8.38	✓	"	
7.58	✓	"	
6.71	✓	"	
5.93	✓	"	
5.18	✓	"	
5.16	✓	"	
5.30	✓	"	
5.05	✓	"	
5.04	✓	"	

SE Top. Hydt Imp. + 6.5th FB 1683 - P-6

Above BM. Top Fire Hydt. - 223.64

P-36 = ℄ 227.78
11.63
T.P. 216.15
8.62
℄ 224.77
1.10
223.67
223.64
Error = 0.03

1.65
℄ 225.29

ENCANTO WATER MAIN

Cont. from P-37

Station	℄ P. 37 22.529			Elev. Extrados Bottom Pipe
24+00		4.42	220.87	215.90
+50	231.27	9.82	221.45	216.20
25+00 =Bk		8.88	222.39	216.50
+50		8.05	223.22	217.62
26+00		7.14	224.13	218.73
+50		6.00	225.27	219.84
27+00		4.92	226.35	220.96
+50		3.86	227.41	222.08
28+00		3.05	228.22	223.20
+50		2.58	228.69	223.54
+98.91 = ARH 90°		2.33	228.94	223.85
29+03.48 = P.C. H.		2.29	228.98	223.88
+14.24 0°46.23'		2.21	229.06	223.94
+25 = Bk 1°32.46'		1.85	229.42	224.00
+37.45 2°25.96'		1.09	230.18	224.50
29+49.9 3°19.46' Equation = 29+46.91 = E.C.	241.73	10.53 10.52	231.20 231.21	225.00
30+00		5.55	236.18	227.85
+50	252.31	13.21	239.10	230.54
31+00		10.71	241.60	233.23
+50		8.49	243.82	235.92
32+00 = Bk		6.24	246.07	238.60
+50		3.77	248.54	241.45
33+00		1.05	251.26	244.31

Cont. P-39

Cuts	offsets
4.97 ✓	6' Lt.
5.25 ✓	✓
5.89 ✓	✓
5.60 ✓	✓
5.40 ✓	✓
5.43 ✓	✓
5.39 ✓	✓
5.33 ✓	✓
5.02 ✓	
5.15 ✓	✓
5.09 ✓	✓
5.10 ✓	✓
5.12 ✓	✓
5.42 ✓	✓
5.68 ✓	✓
6.20 ✓	6' Lt.
6.21 ✓	6' Rt
8.33 ✓	✓
8.56 ✓	✓
8.37 ✓	✓
7.90 ✓	✓
7.47 ✓	✓
7.09 ✓	✓
6.95 ✓	✓

℄ 225.29
4.45 −
T.P. 220.84
10.437
℄ 231.27
0.90 −
<Bk 8th SW Tack 230.37
Woodmen & Imp = 230.388 M.
11.35 ✓
℄ 241.73
0.64 −
T.P. 241.09
11.22 ✓
℄ 252.31

Δ = 6°39'
R = 400
L = 46.42'
T = 23.24'

Encanto - 12" Water Main — Construction Grades

Cont. from P-38

Station		℄ P. 38 252.31			Elev. Exterior of Bottom of Pipe
T.P.	12.75	264.78	028	252.03	
33+50			9.88	254.90	247.16
34+00			6.06	258.72	250.01
+33			4.04	260.74	251.90
+66.33	Brk. =EC-Rt.		2.49	262.29	253.80
+80.16	1°17.95'		1.95	262.83	254.55
+94.00	2°35.9'		1.49	263.29	255.30
35+07.82	3°53.85		1.12	263.66	256.05
+21.65	5°11.8'		0.78	264.00	256.80
+35.48	6°29.75'		0.46	264.32	257.55
+49.32	7°47.7'	275.57	10.96	264.61	258.30
+63.15	9°05.65'		10.75	264.82	259.05
+76.98	10°23.6'		10.37	265.20	259.80
+90.82	11°41.55'		9.89	265.68	260.55
36+04.65	=EC 12°59.5'		9.36	266.21	261.30
+50			7.74	267.83	263.80
36+60.45	= ℄ Modena St.				
37+00			5.31	270.26	266.53
+50			2.45	273.12	269.27
38+00	= Brk.	288.11	12.24	275.87	272.00
+50			9.69	278.42	274.74
39+00			6.86	281.25	277.49
+50			4.12	283.99	280.23
40+00			1.46	286.65	282.97
+50		300.94	11.61	289.33	285.71

Cuts	offsets
7.74	6' Rt.
8.71	"
8.84	"
8.49	"
8.28	"
7.99	"
7.61	"
7.20	"
6.77	"
6.31	"
5.77	"
5.40	"
5.13	"
4.91	"
4.03	"
3.73	"
3.85	"
3.87	"
3.68	"
3.76	"
3.76	"
3.68	"
3.62	"

Δ = 25°59'
R = 305.0
L = 138.32
T = 70.37
10 equal Parts

℄ 264.78
− 0.63
TP 264.15
11.42 +
℄ 275.57
− 0.44
T.P. 275.13
12.98 +
℄ 288.11
− 0.11
T.P. 288.00
12.94 +
℄ 300.94

Encanto - 12" Water Main

Cont. from P. 39

Station		℄ 300.94		Elev. Exterior Bottom of Pipe	Cuts	offsets
41+00			8.80	292.14	288.46	3.68	6' Rt.
+50			5.86	295.08	291.20	3.88	"
42+00			2.95	297.99	293.94	4.05	"
+50 T.P.	13.07	313.94	0.07	300.87	296.68	4.19	"
43+00			10.06	303.88	299.42	4.46	"
+42.93 = B.C. Rt.			7.71	306.23	301.78	4.45	"
+57.23	0°49.17'		6.97	306.97	302.56	4.41	"
+71.51	1°38.34'		6.19	307.75	303.35	4.40	"
+85.84 = E.C.	2°27.5'		5.42	308.52	304.13	4.39	"
44+00			4.71	309.23	304.91	4.32	"
+50			2.14	311.80	307.65	4.15	"
45+00 = Brk.		326.96	12.46	314.50	310.40	4.10	"
+50			9.62	317.34	313.20	4.14	"
46+00			6.79	320.17	316.00	4.17	"
+50			4.00	322.96	318.80	4.16	"
47+00			0.89	326.07	321.60	4.47	"
+50 = Brk.		339.77	10.29	329.48	324.40	5.08	"
+75 = Brk.			8.50	331.27	325.40	5.87	"
48+00 = Brk			6.61	333.16	326.00	7.16	"
+37.5 = Brk			3.83	335.94	326.00	9.94	"
48+62.5 = Brk			1.65	338.12	331.00	7.12	"
+71.65 = Δ	28°48' Lt.		0.59	339.18	332.37	6.81	"
+81.2 = Brk.		352.58	12.33	340.25	333.80	6.45	"
49+00 = Brk			10.78	341.80	335.80	6.00	"

Cont. P-41

Δ = 4°55'
R = 500'
L = 42.91'
T = 21.46'

313.94
0.12-
T.P. 313.82
13.14 +
℄ 326.96
0.09-
T.P. 326.87 T.P.
12.90 +
℄ 339.77
0.98-
338.79
338.94
0.15

48+71.65
339.18 = Elev. stake
0.15 = Correction
339.33
13.25 +
352.58

℄ 339.77
0.35
T.P. 339.42
12.95 +
℄ 352.37
1.14
T.P. 351.23
10.73 +
℄ 361.96
5.73
356.23
356.38
0.15

chk B.M. 3 in. Pipe

chk & Mon. 48+71.65 PB 1683-61

Encanto - 12" Water Main

Construction on 65th, Imp. Rc & Woodman St.

Cont from P-40

Station		Elev. Exterior Bottom of Pipe	Cuts	Offsets
	352.58			
49+50		6.97 345.61 340.80	4.81 ✓	6' Rt
50+00 = Brk.		2.50 350.08 345.80	4.28 ✓	"
+50	363.37	10.75 352.62 349.01	3.61 ✓	"
51+00		6.16 357.21 352.22	4.99 ✓	"
51+01.55 = S. Line Benson St.				
+50	363.34	1.08 362.26 357.09	5.17 ✓	"
52+00	376.18	8.19 367.99 361.96	6.03 ✓	"
+50		2.66 373.52 366.83	6.69 ✓	"
53+00	388.08	10.34 377.74 371.70	6.04 ✓	"
+40		9.87 378.21 375.60	2.61 ✓	"
+75 = Brk.		7.59 380.49 379.00	1.49 ✓	"
54+25 = Brk.	877 325.31	1.54 386.54 383.20	3.34 ✓	"
+75 = Brk.		6.51 388.80 385.60	3.20 ✓	"
55+32.08 = End = ℄ Existing 10" Water Main		5.65 389.66 386.30	3.36 ✓	"
= 10' South of ℄ Skyline Drive				

Chk BM B.P. Woodman & Skyline FB 1683 P 2

π 352.58
− 0.34
T.P. 352.24
11.13 ↑
π 363.37
6.96
356.41
= BM = 356.38
6.96
π 363.34
−0.13
363.21 T.P.
12.27 ↑
π 376.18
0.02
T.P 376.16
11.92 ↑
π 388.08
1.54
386.54 T.P.
8.77 ↑
π 395.31
5.40
389.91
−389.93
0.02
389.89 ✓
✓ True Elev.

Walker
Hendricks
Hunter
5-3-46

Grades - 12" Water Main - Encanto
from Skyline Drive
to Proposed Elevated Tank
in Lot 162 Encina De San Diego
Drawing #6518-L

Station		415.80		Trench Grade	Cuts	offsets
0+036			12.71	403.09	398.50	4.59
+36 = Bk			11.48	404.32	399.00	5.32
+43.6 = Δ Rt 29°19'30"			10.05	405.75	400.90	4.85
T.P.	12.60	428.41	+0.01	415.81		
0+91.3			6.57	421.84	412.82	9.02
T.P	12.83	441.09	0.15	428.26		
1+37.5 = Bk.			7.14	433.95	424.38	9.57
+63.8			0.76	440.33	432.27	8.06
T.P	12.42	453.47	0.04	441.05		
1+87.5 = Bk.			5.67	447.80	439.38	8.42
T.P	12.70	465.83	0.34	453.13		
2+21.3			8.62	457.21	451.21	6.00
T.P	10.63	476.21	0.25	465.58		
2+50 = Bk.			7.04	469.17	461.26	7.91
+66 "			4.93	471.28	466.06	5.22
T.P. +82	9.22	484.53	0.30	475.31	470.06	5.25
3+04.7			6.54	477.99	474.60	3.39
+08.72 = Valve Chamber			6.21	478.32	474.60	3.72
3+79.72 FB 1683-39 Chk. B.M. on Hub			4.31	480.22		
				480.20		
				0.02		

B.M. on Paving 0+20 FB $\frac{1683}{37}$ = 403.38
12.42
T 415.80

6519-L

Walker
Hendricks
Huntley
Carey
5-17-46

Grades - Proposed Playground in Encanto - Lots, 1, 2, 3, 8, 9 Blk. 14

Drawing No: 6617, 6618, 6632

F.B. 1708 17

	1.30	313.54		312.24	PPA B.P. on S.W. edge of MH = 165.24
T.P.	0.84	301.93	12.45	301.09	
	3.12	293.43	11.62	290.31	

Station			Elev. Grade	Cuts & Fills	
0+00 = N.L. Wunderlin St.					
0+13					
0 E	3.22	290.21	290.63	-0.42	
100 E	5.80	287.63	293.12	-5.5	-5.2 / 11.8. -7.0 2:1 Slope South
150 E	6.08	287.35	292.87	-5.52	14 " -8.1
200 E	6.29	287.14	292.62	-5.48	16.2 " -7.0
250 E	6.14	287.29	292.37	-5.08	14.0 " -6.3
300 E	5.75	287.68	292.12	-4.44	12.6 " -5.0
350 E	5.08	288.35	291.87	-3.52	10.0 " -5.3
395 E	5.93	287.50	291.65	-4.15	5 E
0+25					
395 E	6.26	287.17	291.53	-4.36	-4.4 5 E
350 E	4.58	288.85	291.75	-2.9	
300 E	5.27	288.16	292.00	-3.84	
250 E	5.47	287.96	292.25	-4.3	
200 E	5.76	287.67	292.50	-4.8	
150 E	5.67	287.76	292.75	-5.0	
100 E	5.41	288.02	293.00	-5.0	

∝ Cont. P-44

Cont. from P 43

293.43

0+48						
0 E.			2.24	291.19	290.82	+0.27
0+50						
100' E.			4.22	289.21	293.12	-3.9
150' E.			5.10	288.33	292.87	-4.54
200' E.			5.06	288.37	292.62	-4.25
250' E.			4.89	288.54	292.37	-3.83
300' E.			4.59	288.84	292.12	-3.28
350' E.			3.56	289.87	291.87	-2.00
395' E.			4.49	288.94	291.65	-2.7
1+00						
395' E.			2.45	290.98	291.90	-0.92
350 E.			2.39	291.04	292.12	-1.1
300 E.			3.35	290.08	292.37	-2.3
250' E.			3.70	289.73	292.62	-2.9
200' E.			3.96	289.47	292.87	-3.4
150' E.			3.13	290.30	293.12	-2.8
T.P. 100' E.	10.99	302.81	1.61	291.82	293.37	-1.55
0+75						
100' E.			11.95	291.86	293.25	-1.4
1+50						
32.5 E.			6.79	296.02	298.21 / ~~297.21~~	-2.2 / -1.2
92.5 E.			3.01	294.80	297.91 / ~~296.81~~	-3.0 / -2.0
100' E.			8.31	294.50	293.62	+0.88
150' E.			9.56	293.25	293.37	-0.12

Cont. P. 45

-2.7 / 5 E.

-0.8 / 5 E.

-2.1 / 39 -1.6 / 64 South. -3.1 / 12.4 South

-2.8 / 11.2 " -4.0 / 16.

Cont. from P-44

302.81

	1+50						
200'E			11.51	291.30	293.12	-1.8	
250'E			11.70	291.11	292.87	-1.76	
300'E			11.33	291.48	292.62	-1.14	
350'E			10.64	292.17	292.37	-0.20	
395'E			9.29	293.52	292.15	+1.37	+1.4 / 5 East
	2+00						
388'E			6.64	296.17	292.40	+3.77	+3.7 / 12.0 E.
350'E			9.27	293.54	292.62	+0.92	
300'E			9.75	293.06	292.87	+0.2	
250'E			9.26	293.55	293.12	+0.43	
200'E			8.06	294.75	293.37	+1.38	
150'E			7.69	295.12	293.62	+1.50	
108.5'E			6.25	296.56	293.83	+2.73	+4.1 / 8.0 Radial
92.5'E			5.50	297.31	298.06 / ~~297.06~~	-0.75 / ~~+0.25~~	
32.5'E			3.66	299.15	298.46 / ~~297.46~~	+0.7 / +1.7	+2.1 +0.7 / 8.4 W 2.8
	2+50						
32.5'E			0.06	302.75	298.71 / 297.71	+4.04 / ~~+5.04~~	+5.1 +5.0 / 20.4 North +5.7 +4.8 / 28.8 W 19.2
92.5'E			2.80	300.01	298.31 / ~~297.31~~	+1.7 / ~~+2.7~~	+3.2 +2.1 / 10.8 North +2.1 +1.4 / 8.4 E 5.6 E
	2+33.5						
125'E			4.77	298.04	293.92	4.12	+4.8 / 19.2 Radial
	2+60						
150'E			4.29	298.52	293.94	+4.58	+5.5 / 22 Radial
	2+50						
200'E			5.60	297.21	293.62	+3.59	

Cont. from P-45

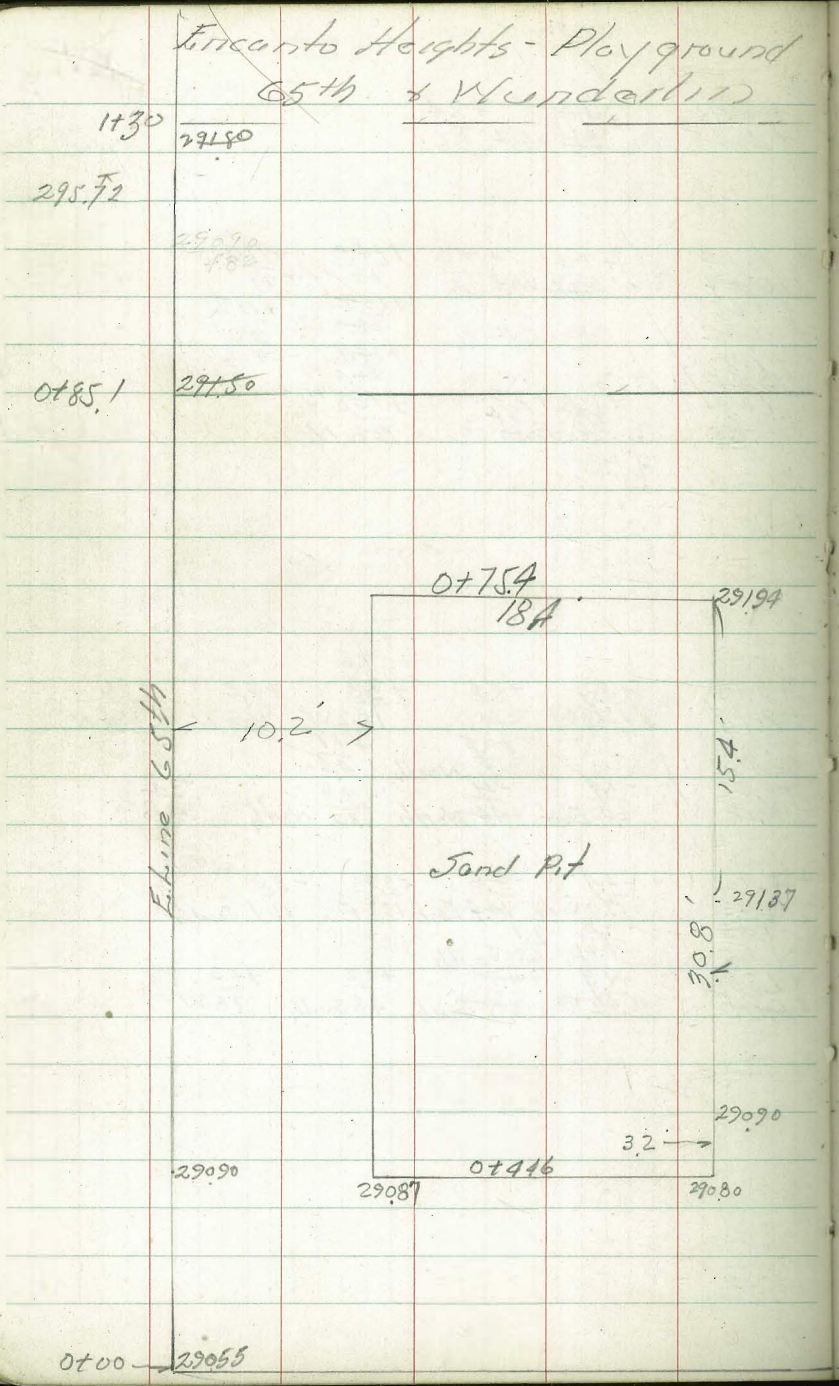
		302.81								
	2+50									
250'E			5.50	297.31	293.37	+3.94				
300'E			4.77	298.04	293.12	+4.92				
350'E			5.81	297.00	292.87	+4.13				
388'E			3.43	299.38	292.68	+6.7	+6.5 / 26.0 East.			
450'E			3.56	299.25	306.75 / 304.25	-7.5	-5.3			
500'E			3.22	299.59	307.00 / 304.50	-5.00	+1.2 N	6.8 / 25.2 South	-9.1 / 30 South	-7.6 / 20.4 W
550'E			2.27	300.54	307.25 / 304.75	-7.41	-8.8			
575'E			1.33	301.48	307.37 / 304.87	-4.91	19.2 South. → 30	-8.9		
T.P.	11.99	312.08	2.72	300.09		-6.7	-4.7			
	2+90					-4.21	15.0 South 30	-8.1		
200'E			12.41	299.67	293.83	-5.9	-4.0		-5.0 / 20 East.	
	3+00					-3.4	16.0 South. 27.2	-5.8		
250E			11.99	300.09	293.62	+5.84	+7.3 / 29.2 Radial			
300'E			10.88	301.20	293.37	+6.47	+8.9 / 35.6 Radial			
350'E			9.74	302.34	293.12	+7.83	+10.4 / 41.6 North			
388'E			8.80	303.28	292.93	+9.22	+13.6 / 54.4 North			
450'E			8.48	303.60	307.00 / 304.50	+10.35	+10.6 / 41.2 East	+17.1 / 68.4 N		
500'E			8.54	303.54	307.25 / 304.75	-3.4	-0.9	-3.4		
550'E			7.02	305.06	307.50 / 305.00	-3.90	3.6 W	13.2 W		
575'E			6.04	306.04	307.62 / 305.12	-3.7	-1.21			
	3+50					+24	+006			
575'E			0.93	311.15	307.87 / 305.37	-1.58	+1.2	-1.4		
550'E			1.54	310.54	307.75 / 305.25	+0.52	4.8 East	5.6		
500'E			2.33	309.75	307.50 / 305.00	+3.28	+7.1	+3.9		
						+5.78	24.0 East	15.6		
						+2.8				
						+5.2				
						+2.25				
						4.75				

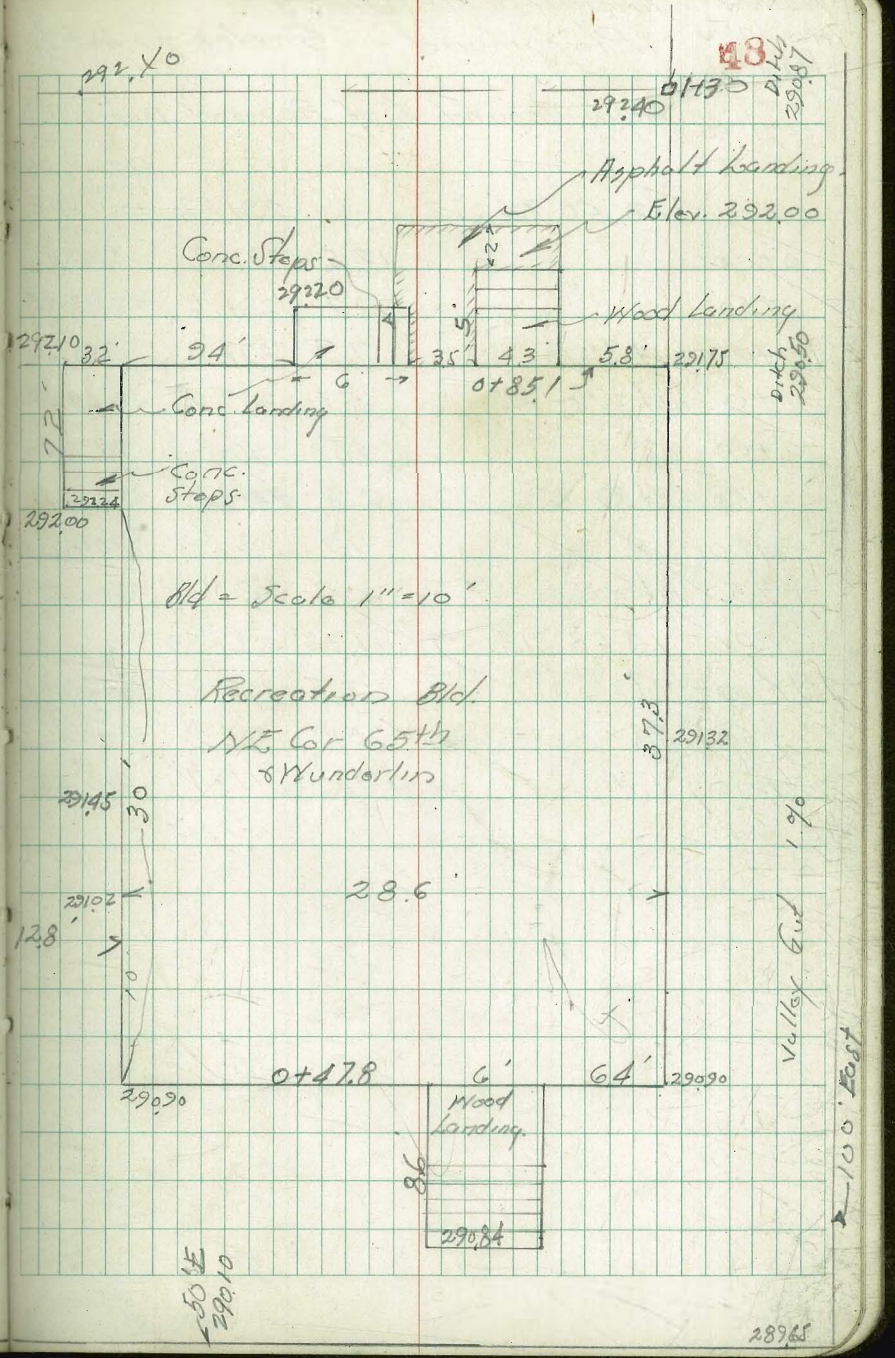
Cont. from P-46

		312.08			
	3+50				
450'E.			2.58	309.50	307.25 / 304.75
T.P.	12.07	321.57	2.58	309.50	
	4+00				
450'E			6.33	315.24	307.50 / 305.40
500'E.			6.36	315.21	307.75 / 305.25
550'E			5.65	315.92	308.00 / 305.50
575'E			5.15	316.42	308.12 / 305.62
T.P.	1.51	317.32	5.76	315.81	
chk. Starting B.M.			5.05	312.27	
	5.05	317.29		312.24	Corrected .003
	Bowling Court				
	3+55				
30'E.			7.54	309.75	306.50 / 307.00
75'E.			10.17	307.12	306.27 / 306.77
120'E.			12.14	305.15	306.06 / 306.55
	3+25				
120'E			13.97	303.32	306.05 / 306.55
75'E			12.05	305.24	306.27 / 306.77
30'E			9.44	307.85	306.50 / 307.00

+2.25 / +4.75	+4.6 / 18.4 West	+2.4 / 9.6		
+7.74 / +10.24	+9.4 / 37.6 West	+7.0 / 28	+11.5 / 29 N	
+7.46 / +9.96			+11.3 / 28 N	
+7.9 / +10.42			+12.2 / 30 N	
+8.3 / +10.80	+11.8 / 24 East	+9.3 / 27	+11.3 / 36	
			26 N-Toe 1½:1 F.N. Mkt. St.	
			+3.6 / 18.6	
+3.25 / +3.75	+3.2 / 12.8 W	+3.5 / 14 N	+4.2 / 16.2 W	+3.6 / 14.4 N
+0.85 / +0.35		+9.5 / 38 North	+1.1 / 4.4	
-0.9 / -1.40	-1.9 / 6.4 East	-11 / 44 North	-0.8 / 3.2 North	-1.2 / 4.8
-2.73 / -3.23	-4.9 / 17.0 South	-3.6 / 14.4 East	-3.3 / 13.2 E	-3.6 / 10.7 South
-1.03 / -1.53	-3.9 / 11.25	-1.7 / 6.8 South		
+1.35 / +0.85	+1.9 / 5.4 W	+0.7 / 2.8 South	+1.2 / 4.8 South	+1.9 / 7.6 W

Encanto Heights - Playground
65th & Wunderlin



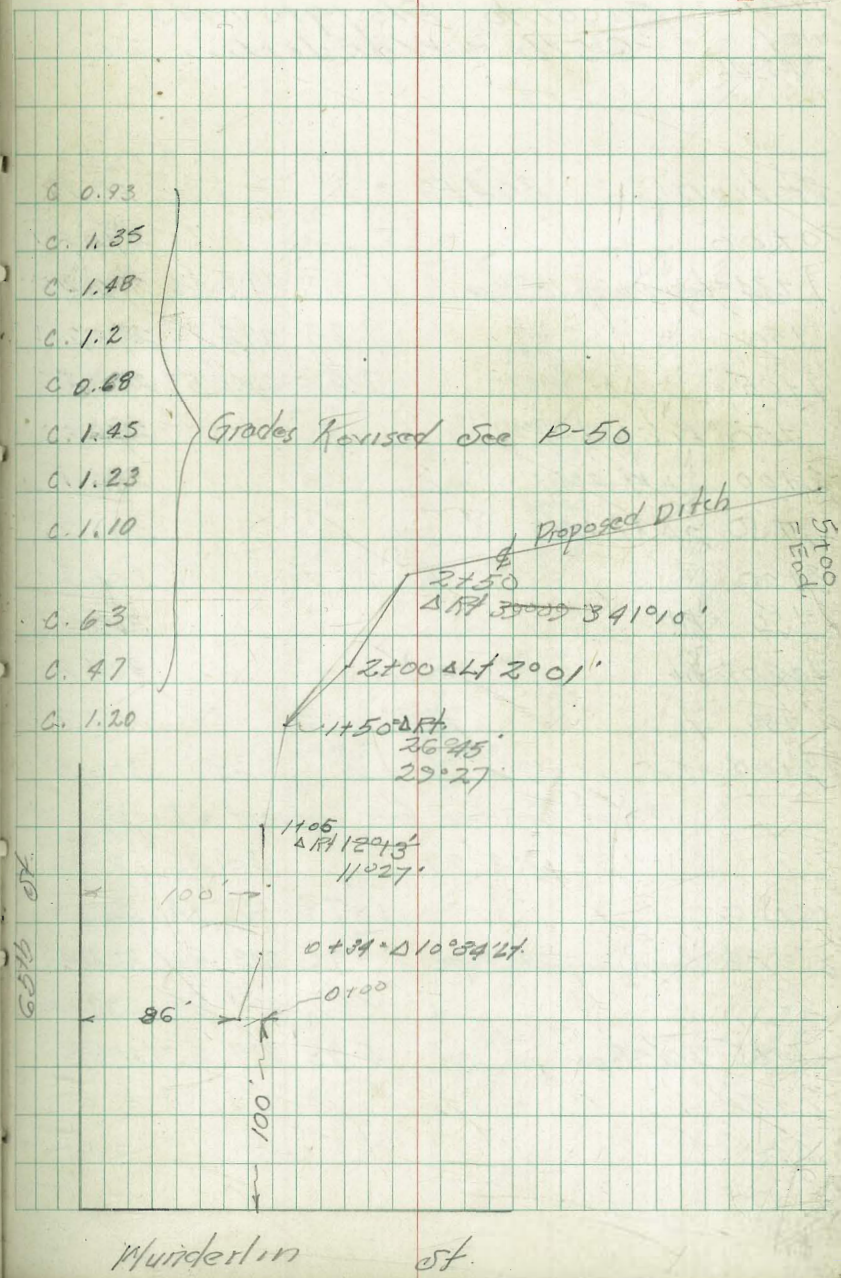


Walker
Hendricks
Hunley
Curry
5-2-46

ENCANTO HEIGHTS
Playground - Grades for Ditch

Profile Ground & of Proposed Ditch.

		12.50	304.32	291.82	PK on stake 1+00 100'E P-44
0+00		12.5	291.8	290.87	
+50		2.7	294.6	293.25	
1+00	△Rt 12°13'	7.3	297.0	295.62	
+50	△Rt 26°45' Brk	5.1	299.2	298.00	
2+00		4.5	299.8	299.12	
+50	△Rt 39°09'	2.6	301.7	300.25	
3+00		1.7	302.6	301.37	
+50	Brk	0.7	303.6	302.50	
T.P.	10.68	313.27	1.73	302.59	
4+00	Brk	7.5	305.8	304.8 305.17	
+50	Brk	5.0	308.3	307.3 307.83	
5+00	End	1.6	311.7	310.50	



Walker
Hendricks
Hurley
Curve
5-25-46

Grades - Proposed Ditch
And 18" Conc. Culvert.
Encanto Playgrounds
65th + Windsor Sts.

Station		304.59			Elev. Flow
0+00					290.87
+34 = beginning 18" Pipe		10.83	293.76		292.48
+50		9.83	294.76		293.24
1+05	Δ Rt. 6°32' H=27'	7.06	297.53		295.84
+50 = Brk.	Δ Rt. 29°27' Rt. 7°31'				298.00
2+00	Δ Lt 2°01				298.82
+50	Δ Rt 34°34' H=10				300.25
3+00					301.37
+50 = Brk					302.50
4+00 Brk					304.8
+50					307.3
5+00 = End					310.5

Reset Grades for Culvert & Ditch

	1.21	303.27		301.36	BM. Spike P-59
0+00			10.73	292.54	290.87
+34 = Beginning 18" Pipe			9.76	293.51	292.48
+50			8.69	294.58	293.24
1+05 = End Pipe			5.98	297.29	295.84
+50					
2+00					
+50					

BM on Stake 1+00 100' E = 291.82
12.777
304.59 ft

Cuts: offsets +1.2 (4.8 Lt) +1.0 (4.0 Rt.)

		Lt	Rt.
1.28	3' Lt.		
1.52	"		
1.69	" = End of Pipe		
	+1.7	+1.7	1.0
	6.8 Lt.	6.8 Lt	4.0 Rt
	+1.7	1.6	+0.9
	6.8 Lt.	6.4	3.6
	2.2	+1.8	+1.1
	8.8	7.2	4.4
	+1.7	+1.5	0.9
	6.8	6.0	3.6
	+1.7	1.5	0.8
	6.8	6.0	3.2
	+1.3	+1.4	+0.7
	5.2	5.6	2.8
	+1.5	1.5	0.8
	6.0	6.0	3.2
	+2.2 +2.3		
	8.8 8.8		

+1.67

BM Spike in Tree = 301.36
1005 ft
311.41
− 3.42
Ditch Slope Rt 4+50 TP = 307.99 TP
12.98 ft
320.97

Encanto Playgrounds.

					BM on stake 1+00 100' E P-44
	0.24	292.76		291.82	
T.P	5.29	295.72	2.33	290.43	
	0+44.6				
O E.			4.59	291.13	290.90 +0.23
	0+13				
O E			5.51	290.21	290.63 -0.4
	0+00				
O E.			6.24	289.48	290.55 -1.1
50' E			7.56	288.16	290.10 -1.9

Ditch Cont from P-50

Hendricks
Hunter
Carey
5-27-46

Construction Grades
16" Water Main on
Bancroft St Upas to Juniper
Plan # 6426-L, 6427L, 6428L, 6429L

0.61 323.08

Station	% Grade	H.I.	–	Elev.	Elev. Trench	Cuts	Offsets
		Upas & Bancroft B.M. N.W. Corner		322.47			
16+23.8	Brk		1.02	322.06	317.20	4.86	6' Lt
+50	0.0%		1.34	321.74	317.20	4.54	"
+87.5	Brk		1.12	321.96	317.20	4.76	"
17+00	-1.0%		1.38	321.70	317.07	4.63	"
+25	Brk		1.88	321.20	316.82	4.38	"
+62.5	Brk -2%		2.77	320.31	316.08	4.23	"
18+00	Brk -3%		3.65	319.43	314.95	4.48	"
+50			5.63	317.45	312.95	4.50	"
19+00	-4.0%		7.56	315.52	310.95	4.57	"
+50			9.57	313.51	308.95	4.56	"
20+00			11.69	311.39	306.95	4.44	"
TP		1.86 312.17	12.77	310.31			
+50	Brk		2.60	309.57	304.95	4.62	"
21+00	-2.35%		4.01	308.16	303.77	4.39	"
+50	Brk		5.03	307.14	302.60	4.54	"
22+00	-1.0%		5.53	306.64	302.10	4.54	"
+40	Brk		6.03	306.14	301.70	4.44	"
+70	0.0%		5.76	306.41	301.70	4.71	"
23+00	Brk		5.80	306.37	301.70	4.67	"

Contd on Page 53

Grades 16" Water Main Bancroft St
Upas to Juniper Cont'd from P. 52

Station		+	312.17 H.I. −	Elev.	Elev. Trench	Cuts.	Offsets
23+50			5.06	307.11	302.35	4.76	6' Lt.
24+00	+1.3%		4.62	307.55	303.00	4.55	"
TP +50		+9.69	317.69 ↑ 4.17	308.00	303.65	4.35	"
25+00	Brk		8.60	309.09	304.30	4.79	"
+50			7.25	310.44	305.65	4.79	"
26+00	+1.4%		6.08	311.61	307.00	4.61	"
+50			5.34	312.65	307.70	4.95	"
27+00			4.71	312.98	308.40	4.58	"
+50	Brk		3.93	313.76	309.10	4.66	"
28+00	+0.73%		3.63	314.06	309.47	4.59	"
+50			3.25	314.44	309.83	4.61	"
29+00	Brk		2.90	314.79	310.20	4.59	"
TP (5-28-46)		3.95	318.75 2.89	314.80			
BM		7.19	318.80 7.17	311.58	311.61	BM N.W. B.P. 33rd & Redwood	
29+50			4.27	314.53	309.74	4.79	"
30+00			4.86	313.94	309.27	4.67	"
+50	Brk		5.36	313.44	308.80	4.64	"
31+00			6.41	312.39	307.70	4.69	"
+50			7.61	311.19	306.60	4.59	"
TP 32+00		0.19	310.26 8.73	310.07	305.50	4.57	"
+50			1.30	308.96	304.40	4.56	"
33+00	Brk		2.40	307.86	303.30	4.56	"
+50			3.10	307.16	302.73	4.43	"

Cont'd P. 54

Grades 16" Water Main Bancroft St.
Upas to Juniper
Contd from P-53

Station	+	HI	−	Elev	Elev Trench	Cuts	Offsets
		310.26					
34+00			3.65	306.61	302.15	4.46	6'
+50			4.22	306.04	301.58	4.46	"
35+00			4.69	305.57	301.00	4.57	"
+50			5.34	304.92	300.43	4.49	"
36+00	Brk		5.74	304.52	299.85	4.67	"
+50			6.10	304.16	299.49	4.67	"
37+00 T.P.	0.19	303.96	6.49	303.77	299.13	4.64	"
+50			0.55	303.41	298.77	4.64	"
38+00	Brk		0.97	302.99	298.40	4.59	"
+50	Brk		1.80	302.16	297.50	4.66	"
39+00			3.36	300.60	296.00	4.60	"
+50			4.93	299.03	294.50	4.53	"
40+00	Brk.		6.36	297.60	293.00	4.60	"
+50			7.29	~~295.67~~ 296.67	292.00	4.67	"
41+00			8.24	295.72	291.00	4.72	"
+50			9.21	294.75	290.00	4.75	"
42+00			10.30	293.66	289.00	4.66	"
+46.74	Δ Rt		10.54	293.42	288.07	5.35	"
+99.37	Brk Δ Lt.		11.73	292.23	287.00	5.23	"
BM. NEBP Nutmeg & Bancroft			9.92	294.04	(294.08)		
+50	4.34	298.42	6.28	292.14	287.00	5.14	"
44+00	Brk		5.85	292.57	287.00	5.57	"

Contd P-55

Grades 16" Water Main - Bancroft St.
Upas to Juniper Contd P-54

Station	+	H.I. 298.42	-	Elev	Elev Trench	Cuts	offsets
44+50			5.45	292.97	287.75	5.22	6'Lt
45+00	Brk		5.06	293.36	288.50	4.86	"
+50			4.68	293.74	288.50	5.24	"
46+00	Brk		4.30	294.12	288.50	5.62	"
+50			4.00	294.42	289.40	5.02	"
47+00 TP.	7.39	302.37	3.44	294.98	290.31	4.67	"
+50			6.17	296.20	291.21	4.99	"
48+00			4.74	297.63	292.12	5.51	"
+20	Brk		4.21	298.16	292.48	5.68	"
+60			3.86	298.51	292.48	6.03	"
49+00	Brk		3.62	298.75	292.48	6.27	"
+50			4.21	298.16	292.05	6.11	"
50+00			5.13	297.24	291.61	5.63	"
+50			6.23	296.14	291.18	4.96	"
51+00			6.85	295.52	290.74	4.78	"
+50			7.34	295.03	290.31	4.72	"
52+00 TP.	2.27	296.94	7.70	294.67	289.87	4.80	"
+50			2.72	294.22	289.44	4.78	"
53+00			3.20	293.74	289.00	4.74	"
+50	Brk		3.41	293.53	288.56	4.97	"

Contd P. 56

Grades 16" Water Main Bancroft St.
Upas to Juniper
Contd from P- 55

Station	+	H.I.	-	Elev.	Elev Trench
		296.94			
54+00	Brk		3.69	293.25	287.40
+25	Brk		4.21	292.73	287.40
+75	Brk		4.03	292.91	288.51
55+00			3.76	293.18	288.60
+50			3.46	293.48	288.78
56+00			3.21	293.73	288.96
+50			3.07	293.87	289.14
57+00			2.95	293.99	289.32
+50	Brk		2.76	294.18	289.50
58+00			2.44	294.50	289.87
+04.50	End		2.43	294.51	289.90
T.P.	4.49	299.48	1.95	294.99	
B.M.			5.82	293.66	293.58
					293.66
					+0.08

Cuts	Offset
5.85 ?	6' Lt
5.33 -	"
4.40 -	"
4.58 -	"
4.70 -	"
4.77 -	"
4.73 -	"
4.67 -	"
4.68 -	"
4.63	"
4.61	"

SEBP Juniper & Bancroft

Walker
Hendricks
Hunley
Cyro

ENCANTO - PLAYGROUNDS
65TH And WUNDERLIN ST.
6-12-46 Reset Lost Grade Stakes.

					BM. BP. S.W. 65th + MKT. P-35
	0.55	312.79		312.24	
T.P.	1.15	301.56	12.38	300.41	
	0+50 North				
150'E.			8.37	293.19	292.87	+0.32
200'E.			8.33	293.23	292.62	+0.6
250'E.			8.31	293.25	292.37	+0.9
300'E.			8.76	292.80	292.12	+0.7
350'E.			9.92	291.64	291.87	-0.2
	1+00 N				
350'E.			9.22	292.34	292.12	+0.2
300'E.			8.73	292.83	292.37	+0.5
250'E.			9.03	292.53	292.62	-0.1
200'E.			8.72	292.84	292.87	0.0
150'E.			9.02	292.54	293.12	-0.6
	1+50'N				
150'E.			9.14	292.42	293.37	-0.95
200'E.			9.40	292.16	293.12	-1.0
250E			8.75	292.81	292.87	-0.1
300'E.			10.11	291.45	292.62	-1.3
350'E			9.43	292.13	292.37	-0.2
	2+00'N				
350'E			9.26	292.30	292.62	-0.3
300'E.			8.53	293.03	292.87	+0.1

		301.56			
	2+00 N				
250' E			8.78	292.78	293.12	-0.3
200' E			8.70	292.86	293.37	-0.5
150' E			9.14	292.42	293.62	-1.2
108.5 E			6.93	294.63	293.83	+0.8
	2+33.5 N				
125' E			7.40	294.16	293.92	+0.2
	2+60 N				
150' E			7.63	293.93	293.94	00	+15.7 / 23 Radial
	2+50 N				
150' E			8.03	293.53	293.87	-0.3
200' E			8.85	292.71	293.62	-0.9
250' E			8.90	292.66	293.37	-0.7
300' E			7.75	293.81	293.12	+0.7
350' E			6.74	294.82	292.87	+2.0
	3+00				
388' E			+1.75	303.31	292.93	+10.4
350' E			+0.76	302.32	293.12	+9.2
300' E			0.30	301.26	293.37	+7.9
250' E			6.88	294.68	293.62	+1.1
	2+90				
200' E			7.39	294.23	293.83	+0.4	+7.2 / 28.8 Radial 20" Euc. Tree
TP	7.99	309.35	0.20	301.36		Spike in Tree 3+25 150' E.

Walker
Hendricks
Hunley
Corey
6-26-46

ENCANTO - PLAYGROUNDS
65th & Hunderlin

Finish Grades

297.71

			Elev. Grade	
0+25				
100'E		4.71	293.00	293.00
200'E		4.52	293.19	292.50
300'E		5.08	292.63	292.00
395'E		6.18	291.53	291.53
1+00				
395'E		5.81	291.90	291.90
300'E		5.34	292.37	292.37
200'E		4.84	292.87	292.87
100'E		5.16	292.55	293.37
2+00				
108.5'E		3.08	294.63	293.83
200'E		4.34	293.37	293.37
300'E		4.84	292.87	292.87

Cont. P. 60

B.M. Spike in P.58 = 301.36
+ 2.35
303.71 ℄
- 9.54
T.P. 294.17
- 3.54
297.71 ℄

100'E	
200'E	+0.69
300'E	+0.63
395'E	✓
395'E	✓
300'E	✓
200'E	✓
100'E	-0.82
108.5'E	+0.80
200'E	
300'E	✓

ENCANTO PLAYGROUND

Cont. from P-59

					Elev. Grade	
	2+00	297.71				
3.50'E			5.09	292.62	292.62	
	3+00					
2.50'E			3.15	294.56	293.62	+0.94
3.50'E			3.06	294.65	293.12	+1.53
3.88'E					292.93	
	HAND BALL COURT					
	1+50	303.71 ⊼ from P-59				
32.5'E			5.50	298.21	298.21	
92.5'E			6.68	297.03	297.81	-0.78
	2+00					
32.5'E					298.46	
92.5'E					298.06	
	2+50					
32.5'E			3.85	299.86	298.71	+1.15
92.5'E			3.71	300.00	298.31	+1.7
		297.71				
	2+50					
150'E			3.84	293.87	293.87	
200'E			4.09	293.62	293.62	
300'E			4.59	293.12	293.12	
388'E			4.25	293.46	292.68	+0.78

ENCANTO PLAYGROUNDS

Cont. from P 60

BOWLING COURT

3+25 307.96

30'E		1.46	306.50	306.50
75'E		1.69	306.27	306.27
120'E		0.76	307.20	306.05
	3+55			
30'E				306.50
75'E		0.37	307.59	306.27
120'E		2.82	305.14	306.05

+1.15

+1.32

-.091

B.M. Spike in Tree P-59

= 301.36

6.60 +

307.96

B.M. 301.36

10.191

311.55 +

Walker
Hendricks
Hunley
Carey
6-26-46

ENCANTO PLAYGROUND
TENNIS COURT.
Re-Stake

				Elev. Grade	
	2+50	312.57			
450'E				306.75	
500'E				307.00	
550'E				307.25	
575'E				307.37	
	3+00				
450'E				307.00	
500'E				307.25	
550'E				307.50	
575'E				307.62	
	3+50				
450'E				307.25	
500'E				307.50	
550'E				307.75	
575'E				307.87	
	4+00				
450'E		2.88	309.69	307.50	+2.19
500'E				307.75	
550'E				308.00	
575'E		2.80	309.77	308.12	+1.65

HI P-50 = 320.37
1.98 -
307.99
2.44 ↑
310.43 ↑

BM. Spike in Tree P-58 = 301.36
11.21 ↑
312.57 ↑

-34
13.4 W

+26
24.0 N

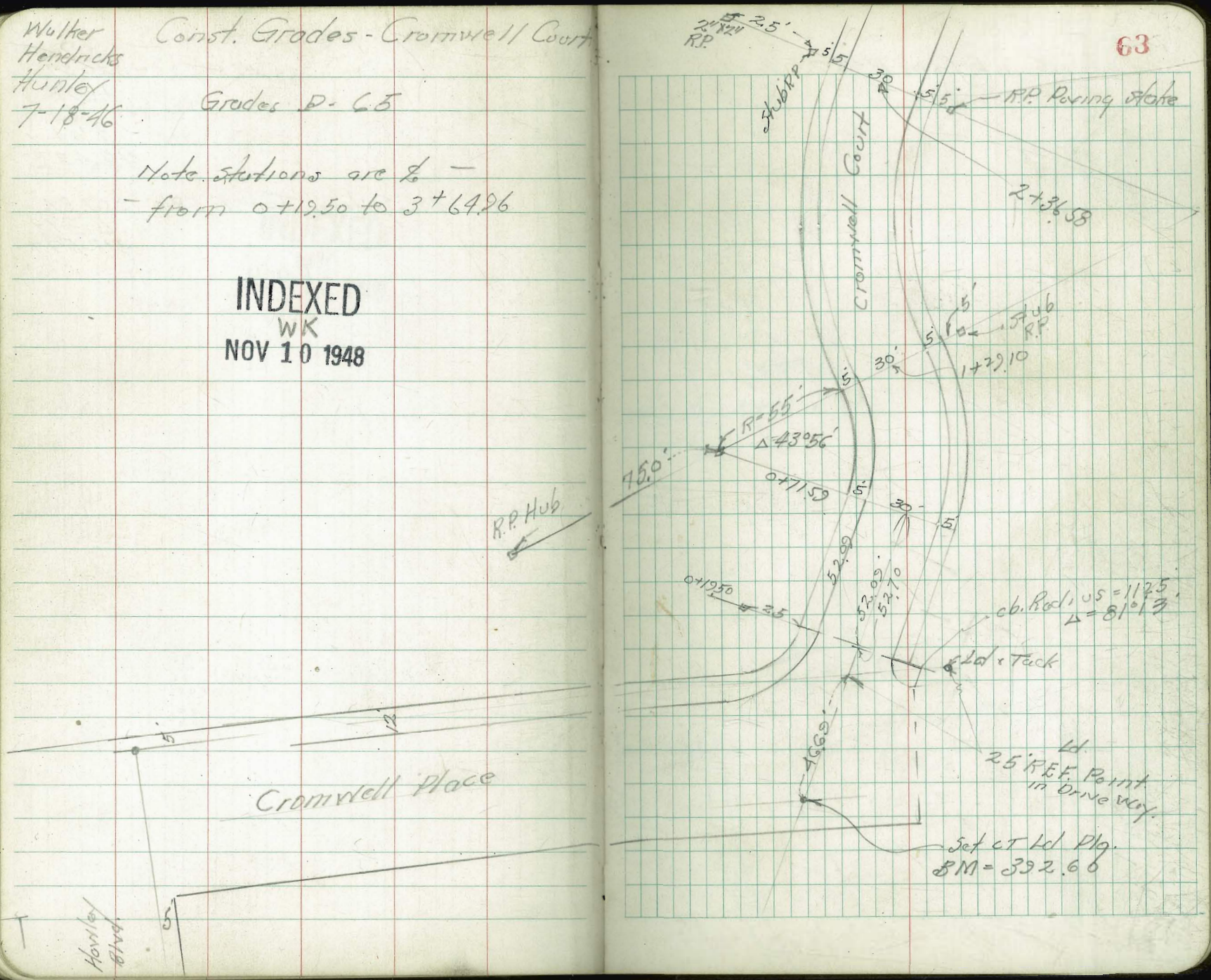
+2.5
0.0
+0.8
0.0
+1.2
0.0

Walter Hendricks Hunter 7-18-46

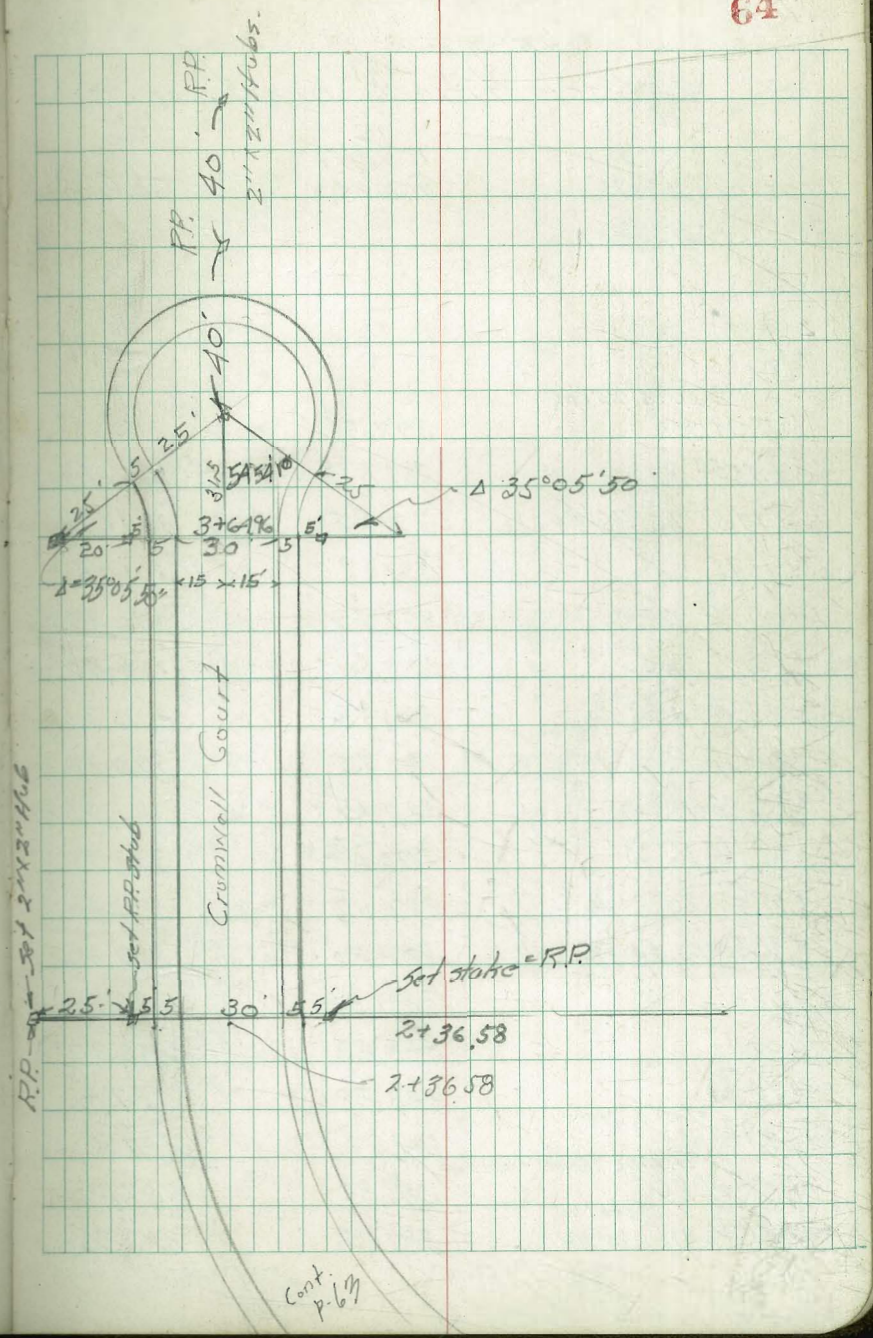
Const. Grades - Cromwell Court

Grades D-C5

Note. Stations are ℄ — from 0+19.50 to 3+64.96



Cont. from P-63



Grades - Cromwell Court

Cont. from P-63

Note: Stations are ℄ of ℄

℄ Stations	Lt Curb Grades	Sub Grade	Rt Cb. Grades
B.C. Ret. 41.22' cb R			
①			
②			
③			
④ = 0+19.50 = EC. 41.22' cb R	392.31'	92.23 4.08	392.65'
0+45.54	391.83'	91.75 4.57	392.16'
+71.89 - BC - 75° R	391.35'	91.27 5.05	391.67'
+90.76	391.07'	90.95 5.37	391.28'
1+09.93	390.79'	90.63 5.69	390.89'
1+29.10 PRC.	390.50'	90.30 6.02	390.50'
+47.02 9°57'20" 4°06'20"	390.38'	90.14 6.18	390.30'
+64.24 8°12'40"	390.27'	89.98 6.34	390.10'
+82.85 12°19'	390.15'	89.82 6.50	389.90'
2+00.76 16°25'	390.04'	89.66 6.66	389.70'
+18.67 20°31'10"	389.92'	89.50 6.82	389.50'
+36.58 = EC. 24°38'	389.80'	89.33 6.99	389.30'
2+68.67 32.09	389.33'	88.85 7.47	388.83'
3+00.77	388.85'	88.37 7.95	388.35'
+32.86	388.38'	87.89 8.43	387.88'
+64.96 = BC Lt. = last ℄ Station	387.90'	87.40 8.92	387.40'
+80.27 = PRC Lt. Line station from Hole	387.80'		387.30'
3+98.64 = Brk Total Δ 34°58'	387.72'		387.35'

Cont'd. P-66

87.35 5.33 Bang.

392.39 = B.M. = Elev. Top Cb = BC. 41.22' cb R Drawing "6611-L"

5.26

Rough Grade Stakes

T 397.65	Lt. 392.31	391.83	391.35	391.07	390.79	390.50
	5.34	5.82	6.30	6.58	6.86	7.15
	4.48	4.76	5.13	5.19	5.26	5.18
	+0.86	+1.06	+1.17	+1.39	+1.6	+1.97
	Rt. 392.65	392.16	391.67	391.28	390.89	390.50
	5.00	5.49	5.98	6.37	6.76	7.15
	1.66	0.69	1.22	6.27	8.57	8.95
	+3.1 on wall	+4.8 on wall	4.76 on wall	+0.10	-1.81	-1.8 e
	Lt. 390.38	390.27	390.15	390.04	389.92	389.80
	7.27	7.38	7.50	7.61	7.73	7.85
	5.07	4.92	4.93	4.75	5.00	5.23
	+2.2	+2.46	+2.57	+2.86	-2.73	+2.6
	Rt. 390.30	390.10	389.90	389.70	389.50	389.30
	7.35	7.55	7.75	7.95	8.15	8.35
	8.17	8.16	8.73	8.04	8.60	9.40
		-0.6	-1.0		-0.45	-1.0
	Lt. 389.33	388.85	388.38	387.90	387.80	387.70
	8.32	8.80	9.27	9.75	9.85	9.95
	5.84	6.05	6.88	6.91	6.80	7.03
	+2.48	+2.75	+2.39	+2.84	+3.05	+2.92
				3+64.76		
	Rt. 388.83	388.35	387.88	387.40	387.30	387.35
	8.87	9.30	9.77	10.25	10.35	10.30
	11.44	13.62	14.00	12.45	12.27	12.53
	-2.62	-4.32	-4.23	-2.20	-1.92	2.23

B.M. = 392.60

3.72

396.32 T

2.00

394.32

3.96

392.81 T

Cromwell Court - Grades

Cont. from P-65

Note: Stations Beginning Turnaround are on Property lines

Prop. Stations	Total Δ	Lt. cb. Grade		Rt. cb. Grade
4+10.44	57°30'	387.67		387.39
+22.24	80°02'	387.61		387.43
+34.04	102°34'	387.56		387.47
+45.84	125°06'	387.50	← Same Point →	387.50

397.65 ft
5.05
392.60

C.T. Ld Plg. South cb. & Cromwell CT Sketch P-63

66

Lt.	387.67	387.61	387.56	387.50	Same Point.
	9.98	10.04	10.09	10.15	
	8.44	8.77	8.30		
	+1.54	+1.27	+1.79		
Rt	387.39	387.43	387.47	387.50	
	10.26	10.22	10.18	10.15	
	11.14	9.07	8.18	7.89	
	-0.88	+1.15	+2.0	+2.26	

Walker Hendricks Corey Allen
7-25-46

Cromwell Court
6" Water Main Grades
Water Main 10' East of ℄ St.

Stations ℄ St.

				Elev. Bottom Trench	Cuts
BM. cut Ld South cb. P-66	2.85	395.45	392.60		
0+19.5		3.03	392.42	388.95	3.47
+45.94		3.20	392.25	388.46	3.8
+71.59 = BC H.		4.06	391.39	387.97	3.4
+90.76		4.51	390.94	387.58	3.36
1+09.93		4.83	390.62	387.19	3.43
+29.10	PRC	4.82	390.63	386.8	3.8
+47.02		4.99	390.46	386.6	3.86
+64.24		5.09	390.36	386.4	4.0
+82.85		5.34	390.11	386.2	3.9
2+00.76		5.34	390.11	386.0	4.1
+18.67		5.55	389.90	385.8	4.1
+36.58 = E.C.		5.82	389.63	385.6	4.0
+68.67		6.38	389.07	385.2	3.87
3+00.77		7.08	388.37	384.75	3.62
+32.86		7.45	388.00	384.28	3.72
+64.96		7.47	387.98	383.8	4.2
+75 End		7.57	387.88	383.65	4.2

Walker Heindricks Carey

Cromwell Court

~ Sewer Construction ~

Line Change - New Grades P-69

	4.83	397.45	
chk. Top 6" Sewer		7.88	389.57
Flow MH. No 1			389.00 - Flow
0+00			389.00
+35		5.57	391.88	389.14
+70		4.58	392.87	389.28
1+05		4.73	392.7	389
+40		5.12	392.33	389.56
1+75		4.91	392.5	389
2+10		5.32	392.13	389.84
+56.12 = MH No 2		4.89	392.5	390.02
+88.12		5.58	391.87	390.15
3+20.57		5.59	391.8	390.28

P-69 392.60

P.C.T. P-63

MH #2

Line Changed To this Position → New Grades P-69 →

Cromwell Court

35°

90°14'

224.47'

248.3'

Existing MH

Howard Street

Dist. ?

0+00

0+26.63

40.

LISTED GWE

63

INDEXED
WK
NOV 10 1948

MH #2 ∠ 25° Rt.

Cuts 2.74

2.20

3.38

2.77

2.84

2.29

2.54

1.72

1.58

65.18

Cromwell Court

Cromwell Court Station & Street Drawing #66 11-L

2+36.58

P.C.

Ties - P-63

Grades P-69

Note: MH #2 = 26.89' South of E.C.

Cromwell Court

Const. Grades Sewer Line

As per Location Red Line P-68

Station	4.60	397.20		392.60	B.M. CT. P-63	
0+00 = ℄ MH#1		Exist. Chk. Flow	8.20	389.00	389.00	
+35	↑		5.13	392.07	389.14	2.93
+70			4.38	392.82	389.28	3.54
1+05			4.49	392.71	389.42	3.29
+40	0.40%		4.70	392.50	389.56	2.94
+75			4.47	392.73	389.70	3.03
2+10			4.34	392.86	389.84	3.02
	Δ Rt 27°10'					
+36.82 = MH#2			4.72	392.48	389.94	2.54
+56.82			4.62	392.58	390.02	2.56
+90.15			5.31	391.89	390.15	1.74
3+22.6 = End	↓		5.33	391.87	390.28	1.59

Chk Flow

397.20 π
8.20
389.00

Walker Hendricks Becker 9-6-46

Cromwell Court

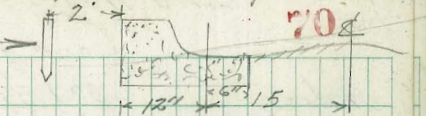
Construction Grades for Curb

4.58 397.18 — 392.60 B.M. CT Id P-63

Stations		Lt El. Stakes	Left Curb Grades
B.C. 4122	℄ Radius	4.79	392.39	392.39
①		4.62	392.56	392.37
②		4.58	392.60	392.35
③		4.58	392.60	392.33
④ 0+195 = E.C.		4.90	392.28	392.31
+14.54		5.07	392.11	391.89
0+71.59 = S.C.H.		5.91	391.27	391.35
+90.76		6.13	391.05	391.07
1+09.93		6.31	390.87	390.79
+29.10 = P.R.C.		6.77	390.41	390.50
1+47.02		5.64	391.54	390.38
+64.94		6.11	391.07	390.27
+82.85		6.66	390.52	390.15
2+00.76		6.67	390.51	390.04
+18.67		6.71	390.47	389.92
2+36.58 = E.C.		7.08	390.10	389.80
+68.67		7.89	389.29	389.33
3+00.77		8.32	388.86	388.85
+32.86		9.04	388.14	388.38
+64.96 = B.C.	= Last ℄ Station	9.48	387.70	387.90
3+80.27 = P.R.C.	Drop line station from here 392.57	5.01	387.56	387.80
+98.64 = End	Total Δ = 34°58'	4.85	387.72	387.72

Cont. P-71

Note: Stakes set 2' from back edge of curb



397.18

Fill & Curb meet curb	Stake Rt. El.	Rt. Curb Grade	Cuts & Fills
+0.19			
+0.25	4.82	392.36	392.70 = B.C.	- 0.34
+0.27	4.50	392.68	392.67	+ 0.01
-0.03	4.36	392.82	392.65 = E.C.	+ 0.17
+0.28	4.67	392.51	392.16	+ 0.35
-0.08	5.46	391.72	391.67	+ 0.05
-0.02	6.13	391.05	391.28	- 0.23
+0.08	6.45	390.73	390.89	- 0.16
-0.09	6.67	390.51	390.50	+ 0.01
+1.16	6.61	390.57	390.30	+ 0.27
+0.80	6.76	390.42	390.10	+ 0.32
+0.37	6.80	390.38	389.90	+ 0.48
+0.47	6.98	390.20	389.70	+ 0.50
+0.55	7.51	389.67	389.50	+ 0.17
+0.30	7.47	389.71	389.30	+ 0.41
-0.04	8.17	389.01	388.83	+ 0.18
+0.01	9.06	388.12	388.35	- 0.23
-0.24	9.30	387.88	387.88	0.00
-0.20	9.32	387.86	387.40	+ 0.46
-0.24	392.57 5.04	387.53	387.30	+ 0.23
00	5.11	387.46	387.35	+ 0.11

Curb Grades - Cromwell Court

Cont. from P-70

Station		392.57 = P-70			Lt Cb.
4+10.44	Total Δ 57°30'		4.75	387.82	387.67
+22.24	80°02'		5.14	387.43	387.61
+34.04	102°34'		5.17	387.40	387.56
+45.84	125°06'		4.87	387.70	387.50

C.B. Walker 9-10-46

49-12" Corrugated Culvert Grades

					Flow Line
0+00 = 0.67 Back of Back	T.P.	392.57 Back of Back Cb.	5.02	387.55	383.50
0+24.5	0.14	380.06	12.65	379.92	371.75
0+49 = End 12" Pipe		373.88 π	11.52	362.36	359.80

	5.01	397.61		392.60	B.M. R63
T.P.	4.87	392.57	9.91	387.70	= chk on
T.P.	0.14	380.06	12.65	379.92	
T.P.	5.44	373.88	11.62	368.44	
T.P.	10.48	383.64	0.72	373.16	
T.P.	9.40	392.30	0.74	382.90	
chk Above Stake 3+64.96 on Lt			4.59	387.71	

392.57 = π opp. Pope Rt. Cb

+ Fills Cuts				Cuts
+0.15	4.98	387.59	387.39	+0.20
-0.18	5.16	387.42	387.42	0.00
-0.16	5.10	387.47	387.47	0.00
+0.20	4.87	387.70	387.50	+0.20

Same point

+4.05	Grades Were changed from those shown on Plans to these to fit exist. Ground
+8.17	
12.56	

Noted on Plan 6611-L MRQ. 12-18-46

Lt Stake 3+64.96 P-70

Walker
Hendricks
Becker
8-26-46

Construction Grades - 6" Water Main
in Alley Blk 56 - Fairmount add.
Between Fairmount & 14th
from Orange Ave to Polk Ave

Green Profile # 2075

386 362.34

358.48 BM. Cut on E.cb. Alley

Elev. Bottom Trench

Stations			Cuts	offsets
℄ Line Orange Ave				
=0+00	424	358.10	354.54	3.56 4' Lt
+50	429	358.05	354.43	3.6 "
1+00	453	357.81	354.31	3.5 "
+50	469	357.65	354.20	3.45 "
2+00	484	357.50	354.08	3.4 "
+50	507	357.27	353.97	3.30 "
3+00	520	357.14	353.85	3.3 "
+50	506	357.28	353.74	3.54 "
4+00	538	356.96	353.62	3.34 "
+50	535	356.99	353.51	3.48 "
5+00	542	356.92	353.39	3.53 "
160 = Brk	566	356.68	353.25	3.43 "
5+77.2 = ℄ Line Polk Ave	579	356.55	353.08	3.47 "
	~~623~~	~~356.11~~		
chk E cb 5+77.2	577	356.57		
FB 566-54		356.53		
		0.04		

FB 566 - Page 51

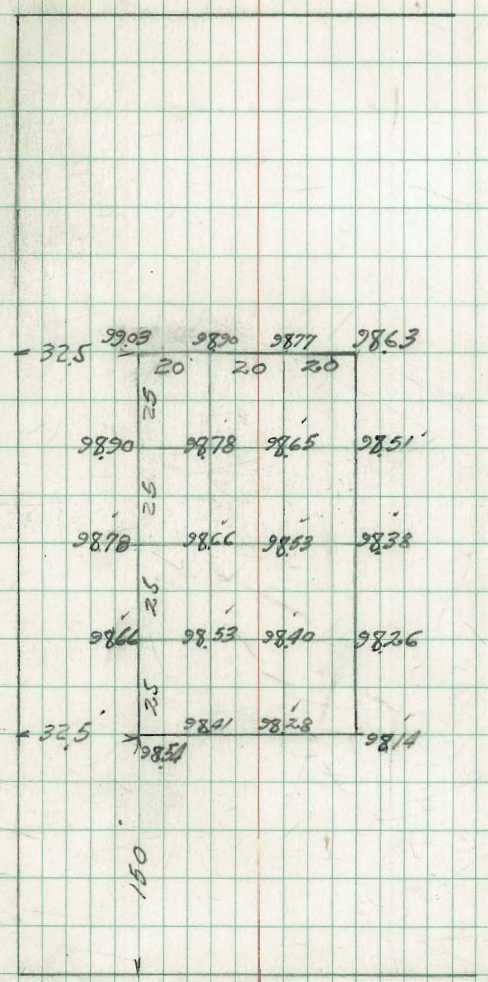
Walker
Hendricks
Becker
Williams
2-25-48

ENCANTO PLAYGROUND
BASKETBALL COURT
Finish Grades for Paving

Basket Ball Court = 50'x90'
Area to Be Paved = 60'X100'
Elevations Finish Paving as
Shown on Sketch are 1.33 ~~1.83~~ Above
Elevations of Finish Grades of Ground
as Shown on Plans #6618-L
Note: original Grades of this Court Were
raised 1.0' to better Fit Conditions

1,4 303.30 301.36

BROADWAY AVE.



WUNDERLIN

BM-Spike in Tree 34'N 150'E P-58

Walker
Hendricks
Hunter
4-18-46

Const. Grades Proposed 24" Culvert
= Extension of Existing Culvert
at State and Spruce Sts.

Drawing No 6607 L
Prelim. Notes FB 1707

Stations				Elev. Flow Line
	100.90			
0+10 = ℄ Cleanout Box		3.42	97.48	93.93
+55		6.66	94.24	91.88
1+00		2.29	91.61	89.83
+50 T.R	1.47	12.72	88.18	87.55
2+00		4.27	85.38	85.27
+50		6.30	83.35	83.00
3+00		2.12	80.53	80.72
3+51.75 } Equation		10.87	78.78	78.36
= 3+50.07 } = BC. Rt				

Δ = 17°55
℄ R = 96
T = 14.16

3+78.16 = E.C.

4+65.71 = Beg. Exist. 12" Conc. Pipe

INDEXED
WK
NOV 10 1948

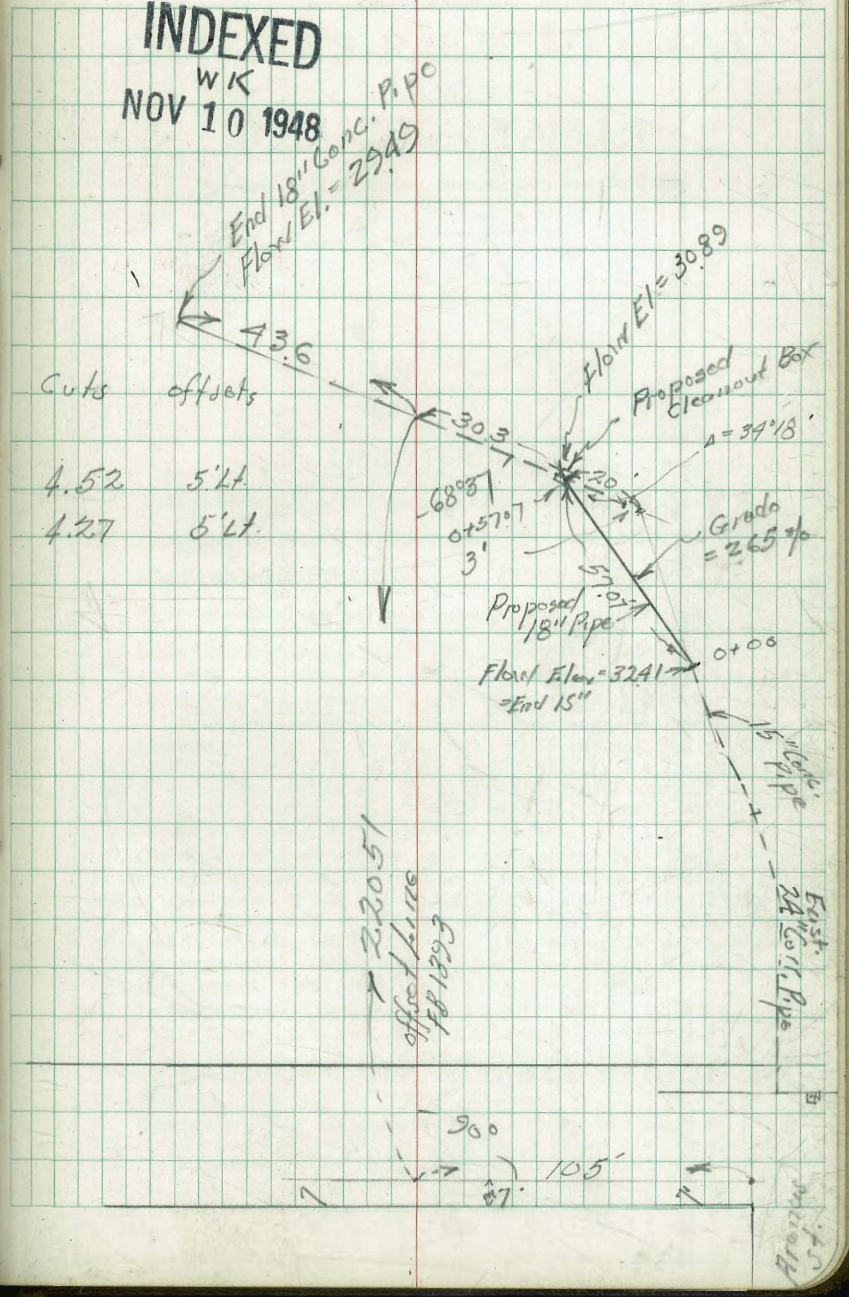
BM on Hd Wall
FB 1707 P-4 = 97.83
3.07 +
100.90
+1.30
89.60

Cuts	Offsets		
3.55			100.90 A
2.36			12.72 -
1.78			88.18 TP
0.63			1.47 +
0.11			89.65
0.35			11.30
-0.19			78.35
+0.42		Chk ℄ 3+50.07 = FB 1707 4	78.32
			0.03

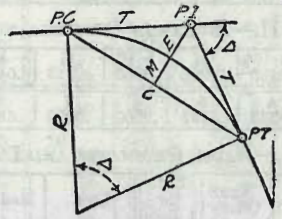
Walker
Hardin
Hunter
1-16-46

Grades for Proposed Culvert
W'ly End Arenas St.
South Lapolla

				BM Temp. BM on Pin FB 1393
	0 54	39.41	38.87	
chk Flow outlet 18" pipe		9.95	29.46	
			29.49	
			0.03	
chk. Flow inlet 18" pipe		8.11	31.30	
			31.29	
			0.01	
				Elev. Flow
	0+00			
chk. Flow outlet 15" pipe		6.99	32.42	32.41 TE
0+28.5		3.24	36.17	31.65
0+57.10		4.25	35.16	30.89



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

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

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

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

EXPLANATION AND USE OF TABLES

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

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$=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=.19 or E=115.37 ft. Or suppose Δ=82° 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 IV.—Tangents and Externals to a 1° Curve.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
31°	1589.0	216.3	**41°**	2142.2	387.4	**51°**	2732.9	618.4
10′	1598.0	218.7	10′	2151.7	390.7	10′	2743.1	622.8
20	1606.9	221.1	20	2161.2	394.1	20	2753.4	627.2
30	1615.9	223.5	30	2170.8	397.4	30	2763.7	631.7
40	1624.9	226.0	40	2180.3	400.8	40	2773.9	636.2
50	1633.9	228.4	50	2189.9	404.2	50	2784.2	640.7
32	1643.0	230.9	**42**	2199.4	407.6	**52**	2794.5	645.2
10	1652.0	233.4	10	2209.0	411.1	10	2804.9	649.7
20	1661.0	235.9	20	2218.6	414.5	20	2815.2	654.3
30	1670.0	238.4	30	2228.1	418.0	30	2825.6	658.8
40	1679.1	241.0	40	2237.7	421.4	40	2835.9	663.4
50	1688.1	243.5	50	2247.3	425.0	50	2846.3	668.0
33	1697.2	246.1	**43**	2257.0	428.5	**53**	2856.7	672.7
10	1706.3	248.7	10	2266.6	432.0	10	2867.1	677.3
20	1715.3	251.3	20	2276.2	435.6	20	2877.5	682.0
30	1724.4	253.9	30	2285.9	439.2	30	2888.0	686.7
40	1733.5	256.5	40	2295.6	442.8	40	2898.4	691.4
50	1742.6	259.1	50	2305.2	446.4	50	2908.9	696.1
34	1751.7	261.8	**44**	2314.9	450.0	**54**	2919.4	700.9
10	1760.8	264.5	10	2324.6	453.6	10	2929.9	705.7
20	1770.0	267.2	20	2334.3	457.3	20	2940.4	710.5
30	1779.1	269.9	30	2344.1	461.0	30	2951.0	715.3
40	1788.2	272.6	40	2353.8	464.6	40	2961.5	720.1
50	1797.4	275.3	50	2363.5	468.4	50	2972.1	725.0
35	1806.6	278.1	**45**	2373.3	472.1	**55**	2982.7	729.9
10	1815.7	280.8	10	2383.1	475.8	10	2993.3	734.8
20	1821.9	283.6	20	2392.8	479.6	20	3003.9	739.7
30	1834.1	286.4	30	2402.6	483.8	30	3014.5	744.6
40	1843.3	289.2	40	2412.4	487.2	40	3025.2	749.6
50	1852.5	292.0	50	2422.3	491.0	50	3035.8	754.6
36	1861.7	294.9	**46**	2432.1	494.8	**56**	3046.5	759.6
10	1870.9	297.7	10	2441.9	498.7	10	3057.2	764.6
20	1880.1	300.6	20	2451.8	502.5	20	3067.9	769.7
30	1889.4	303.5	30	2461.7	506.4	30	3078.7	774.7
40	1898.6	306.4	40	2471.5	510.3	40	3089.4	779.8
50	1907.9	309.3	50	2481.4	514.3	50	3100.2	784.9
37	1917.1	312.2	**47**	2491.3	518.2	**57**	3110.9	790.1
10	1926.4	315.2	10	2501.2	522.2	10	3121.7	795.2
20	1935.7	318.1	20	2511.2	526.1	20	3132.6	800.4
30	1945.0	321.1	30	2521.1	530.1	30	3143.4	805.6
40	1954.3	324.1	40	2531.1	534.2	40	3154.2	810.9
50	1963.6	327.1	50	2541.0	538.2	50	3165.1	816.1
38	1972.9	330.2	**48**	2551.0	542.2	**58**	3176.0	821.4
10	1982.2	333.2	10	2561.0	546.3	10	3186.9	826.7
20	1991.5	336.3	20	2571.0	550.4	20	3197.8	832.0
30	2000.9	339.3	30	2581.0	554.5	30	3208.8	837.3
40	2010.2	342.4	40	2591.0	558.6	40	3219.7	842.7
50	2019.6	345.5	50	2601.1	562.8	50	3230.7	848.1
39	2029.0	348.6	**49**	2611.2	566.9	**59**	3241.7	853.5
10	2038.4	351.8	10	2621.2	571.1	10	3252.7	858.9
20	2047.8	354.9	20	2631.3	575.3	20	3263.7	864.3
30	2057.2	358.1	30	2641.4	579.5	30	3274.8	869.8
40	2066.6	361.3	40	2651.5	583.8	40	3285.8	875.3
50	2076.0	364.5	50	2661.6	588.0	50	3296.9	880.8
40	2085.4	367.7	**50**	2671.8	592.3	**60**	3308.0	886.4
10	2094.9	371.0	10	2681.9	596.6	10	3319.1	892.0
20	2104.3	374.2	20	2692.1	600.9	20	3330.3	897.5
30	2113.8	377.5	30	2702.3	605.3	30	3341.4	903.2
40	2123.3	380.8	40	2712.5	609.6	40	3352.6	908.8
50	2132.7	384.1	50	2722.7	614.0	50	3363.8	914.5

Table IV.—Tangents and Externals to a 1° Curve.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
61°	3375.0	920.2	**71°**	4086.9	1308.2	**81°**	4893.6	1805.3
10′	3386.3	925.9	10′	4099.5	1315.6	10′	4908.0	1814.7
20	3397.5	931.6	20	4112.1	1322.9	20	4922.5	1824.1
30	3408.8	937.3	30	4124.8	1330.3	30	4937.0	1833.6
40	3420.1	943.1	40	4137.4	1337.7	40	4951.5	1843.1
50	3431.4	948.9	50	4150.1	1345.1	50	4966.1	1852.6
62	3442.7	954.8	**72**	4162.8	1352.6	**82**	4980.7	1862.2
10	3454.1	960.6	10	4175.6	1360.1	10	4995.4	1871.8
20	3465.4	966.5	20	4188.5	1367.6	20	5010.0	1881.5
30	3476.8	972.4	30	4201.2	1375.2	30	5024.8	1891.2
40	3488.3	978.3	40	4214.0	1382.8	40	5039.5	1900.9
50	3499.7	984.3	50	4226.8	1390.4	50	5054.3	1910.7
63	3511.1	990.2	**73**	4239.7	1398.0	**83**	5069.2	1920.5
10	3522.6	996.2	10	4252.6	1405.7	10	5084.0	1930.4
20	3534.1	1002.3	20	4265.6	1413.5	20	5099.0	1940.3
30	3545.6	1008.3	30	4278.5	1421.2	30	5113.9	1950.3
40	3557.2	1014.4	40	4291.5	1429.0	40	5128.9	1960.2
50	3568.7	1020.5	50	4304.6	1436.8	50	5143.9	1970.3
64	3580.3	1026.6	**74**	4317.6	1444.6	**84**	5159.0	1980.4
10	3591.9	1032.8	10	4330.7	1452.5	10	5174.1	1990.5
20	3603.5	1039.0	20	4343.8	1460.4	20	5189.3	2000.6
30	3615.1	1045.2	30	4356.9	1468.4	30	5204.4	2010.8
40	3626.8	1051.4	40	4370.1	1476.4	40	5219.7	2021.1
50	3638.5	1057.7	50	4383.3	1484.4	50	5234.9	2031.4
65	3650.2	1062.9	**75**	4396.5	1492.4	**85**	5250.3	2041.7
10	3661.9	1070.2	10	4409.8	1500.5	10	5265.6	2052.1
20	3673.7	1076.6	20	4423.1	1508.6	20	5281.0	2062.5
30	3685.4	1082.9	30	4436.4	1516.7	30	5296.4	2073.0
40	3697.2	1089.3	40	4449.7	1524.9	40	5311.9	2083.5
50	3709.0	1095.7	50	4463.1	1533.1	50	5327.4	2094.1
66	3720.9	1102.2	**76**	4476.5	1541.4	**86**	5343.0	2104.7
10	3732.7	1108.6	10	4489.9	1549.7	10	5358.6	2115.3
20	3744.6	1115.1	20	4503.4	1558.0	20	5374.2	2126.0
30	3756.5	1121.7	30	4516.9	1566.3	30	5389.9	2136.7
40	3768.5	1128.2	40	4530.4	1574.7	40	5405.6	2147.5
50	3780.4	1134.8	50	4544.0	1583.1	50	5421.4	2158.4
67	3792.4	1141.4	**77**	4557.6	1591.6	**87**	5437.2	2169.2
10	3804.4	1148.0	10	4571.2	1600.1	10	5453.1	2180.2
20	3816.4	1154.7	20	4584.8	1608.6	20	5469.0	2191.1
30	3828.4	1161.3	30	4598.5	1617.1	30	5484.9	2202.2
40	3840.5	1168.1	40	4612.2	1625.7	40	5500.9	2213.2
50	3852.6	1174.8	50	4626.0	1634.4	50	5517.0	2224.3
68	3864.7	1181.6	**78**	4639.8	1643.0	**88**	5533.1	2235.5
10	3876.8	1188.4	10	4653.6	1651.7	10	5549.2	2246.7
20	3889.0	1195.2	20	4667.4	1660.5	20	5565.4	2258.0
30	3901.2	1202.0	30	4681.3	1669.2	30	5581.6	2269.3
40	3913.4	1208.9	40	4695.2	1678.1	40	5597.8	2280.6
50	3925.6	1215.8	50	4709.2	1686.9	50	5614.2	2292.0
69	3937.9	1222.7	**79**	4723.2	1695.8	**89**	5630.5	2303.5
10	3950.2	1229.7	10	4737.2	1704.7	10	5646.9	2315.0
20	3962.5	1236.7	20	4751.2	1713.7	20	5663.4	2326.6
30	3974.8	1243.7	30	4765.3	1722.7	30	5679.9	2338.2
40	3987.2	1250.8	40	4779.4	1731.7	40	5696.4	2349.8
50	3999.5	1257.9	50	4793.6	1740.8	50	5713.0	2361.5
70	4011.9	1265.0	**80**	4807.7	1749.9	**90**	5729.7	2373.3
10	4024.4	1272.1	10	4822.0	1759.0	10	5746.3	2385.1
20	4036.8	1279.3	20	4836.2	1768.2	20	5763.1	2397.0
30	4049.3	1286.5	30	4850.5	1777.4	30	5779.9	2408.9
40	4061.8	1293.6	40	4864.8	1786.7	40	5796.7	2420.9
50	4074.4	1300.9	50	4879.2	1796.0	50	5813.6	2432.9

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
′						′					
0	0	0	∞	1	90	8	.1392	.1405	7.115	.99027	82
10	.0029	.0029	343.8	1	50	10	.1421	.1435	6.968	.98986	50
20	.0058	.0058	171.9	.99998	40	20	.1449	.1465	6.827	.98944	40
30	.0087	.0087	114.6	.99996	30	30	.1478	.1495	6.691	.98902	30
40	.0116	.0116	85.94	.99993	20	40	.1507	.1524	6.561	.98858	20
50	.0145	.0145	68.75	.99989	10	50	.1536	.1554	6.435	.98814	10
1	.0175	.0175	57.29	.99985	89	9	.1564	.1584	6.314	.98769	81
10	.0204	.0204	49.10	.99979	50	10	.1593	.1614	6.197	.98723	50
20	.0233	.0233	42.96	.99973	40	20	.1622	.1644	6.084	.98676	40
30	.0262	.0262	38.19	.99966	30	30	.1650	.1673	5.976	.98629	30
40	.0291	.0291	34.37	.99958	20	40	.1679	.1703	5.871	.98580	20
50	.0320	.0320	31.24	.99949	10	50	.1708	.1733	5.769	.98531	10
2	.0349	.0349	28.64	.99939	88	10	.1736	.1763	5.671	.98481	80
10	.0378	.0378	26.43	.99929	50	10	.1765	.1793	5.576	.98430	50
20	.0407	.0407	24.54	.99917	40	20	.1794	.1823	5.485	.98378	40
30	.0436	.0437	22.90	.99905	30	30	.1822	.1853	5.396	.98325	30
40	.0465	.0466	21.47	.99892	20	40	.1851	.1883	5.309	.98272	20
50	.0494	.0495	20.21	.99878	10	50	.1880	.1914	5.226	.98218	10
3	.0523	.0524	19.08	.99863	87	11	.1908	.1944	5.145	.98163	79
10	.0552	.0553	18.07	.99847	50	10	.1937	.1974	5.066	.98107	50
20	.0581	.0582	17.17	.99831	40	20	.1965	.2004	4.989	.98050	40
30	.0610	.0612	16.35	.99813	30	30	.1994	.2035	4.915	.97992	30
40	.0640	.0641	15.60	.99795	20	40	.2022	.2065	4.843	.97934	20
50	.0669	.0670	14.92	.99776	10	50	.2051	.2095	4.773	.97875	10
4	.0698	.0699	14.30	.99756	86	12	.2079	.2126	4.705	.97815	78
10	.0727	.0729	13.73	.99736	50	10	.2108	.2156	4.638	.97754	50
20	.0756	.0758	13.20	.99714	40	20	.2136	.2186	4.574	.97692	40
30	.0785	.0787	12.71	.99692	30	30	.2164	.2217	4.511	.97630	30
40	.0814	.0816	12.25	.99668	20	40	.2193	.2247	4.449	.97566	20
50	.0843	.0846	11.83	.99644	10	50	.2221	.2278	4.390	.97502	10
5	.0872	.0875	11.43	.99619	85	13	.2250	.2309	4.331	.97437	77
10	.0901	.0904	11.06	.99594	50	10	.2278	.2339	4.275	.97371	50
20	.0929	.0934	10.71	.99567	40	20	.2306	.2370	4.219	.97304	40
30	.0958	.0963	10.39	.99540	30	30	.2334	.2401	4.165	.97237	30
40	.0987	.0992	10.08	.99511	20	40	.2363	.2432	4.113	.97169	20
50	.1016	.1022	9.788	.99482	10	50	.2391	.2462	4.061	.97100	10
6	.1045	.1051	9.514	.99452	84	14	.2419	.2493	4.011	.97030	76
10	.1074	.1080	9.255	.99421	50	10	.2447	.2524	3.962	.96959	50
20	.1103	.1110	9.010	.99390	40	20	.2476	.2555	3.914	.96887	40
30	.1132	.1139	8.777	.99357	30	30	.2504	.2586	3.867	.96815	30
40	.1161	.1169	8.556	.99324	20	40	.2532	.2617	3.821	.96742	20
50	.1190	.1198	8.345	.99290	10	50	.2560	.2648	3.776	.96667	10
7	.1219	.1228	8.144	.99255	83	15	.2588	.2679	3.732	.96593	75
10	.1248	.1257	7.953	.99219	50	10	.2616	.2711	3.689	.96517	50
20	.1276	.1287	7.770	.99182	40	20	.2644	.2742	3.647	.96440	40
30	.1305	.1317	7.596	.99144	30	30	.2672	.2773	3.606	.96363	30
40	.1334	.1346	7.429	.99106	20	40	.2700	.2805	3.566	.96285	20
50	.1363	.1376	7.269	.99067	10	50	.2728	.2836	3.526	.96206	10
					82						74
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
′						′					
16	.2756	.2867	3.487	.96126	74	24	.4067	.4452	2.246	.91355	66
10	.2784	.2899	3.450	.96046	50	10	.4094	.4487	2.229	.91236	50
20	.2812	.2931	3.412	.95964	40	20	.4120	.4522	2.211	.91116	40
30	.2840	.2962	3.376	.95882	30	30	.4147	.4557	2.194	.90996	30
40	.2868	.2994	3.340	.95799	20	40	.4173	.4592	2.177	.90875	20
50	.2896	.3026	3.305	.95715	10	50	.4200	.4628	2.161	.90753	10
17	.2924	.3057	3.271	.95615	73	25	.4226	.4663	2.145	.90631	65
10	.2952	.3089	3.237	.95545	50	10	.4253	.4699	2.128	.90507	50
20	.2979	.3121	3.204	.95459	40	20	.4279	.4734	2.112	.90383	40
30	.3007	.3153	3.172	.95372	30	30	.4305	.4770	2.097	.90259	30
40	.3035	.3185	3.140	.95284	20	40	.4331	.4806	2.081	.90133	20
50	.3062	.3217	3.108	.95195	10	50	.4358	.4841	2.066	.90007	10
18	.3090	.3249	3.078	.95106	72	26	.4384	.4877	2.050	.89879	64
10	.3118	.3281	3.048	.95015	50	10	.4410	.4913	2.035	.89752	50
20	.3145	.3314	3.018	.94924	40	20	.4436	.4950	2.020	.89623	40
30	.3173	.3346	2.989	.94832	30	30	.4462	.4986	2.006	.89493	30
40	.3201	.3378	2.960	.94740	20	40	.4488	.5022	1.991	.89363	20
50	.3228	.3411	2.932	.94646	10	50	.4514	.5059	1.977	.89232	10
19	.3256	.3443	2.904	.94552	71	27	.4540	.5095	1.963	.89101	63
10	.3283	.3476	2.877	.94457	50	10	.4566	.5132	1.949	.88968	50
20	.3311	.3508	2.850	.94361	40	20	.4592	.5169	1.935	.88835	40
30	.3338	.3541	2.824	.94264	30	30	.4617	.5206	1.921	.88701	30
40	.3365	.3574	2.798	.94167	20	40	.4643	.5243	1.907	.88566	20
50	.3393	.3607	2.773	.94068	10	50	.4669	.5280	1.894	.88431	10
20	.3420	.3640	2.747	.93969	70	28	.4695	.5317	1.881	.88295	62
10	.3448	.3673	2.723	.93869	50	10	.4720	.5354	1.868	.88158	50
20	.3475	.3706	2.699	.93769	40	20	.4746	.5392	1.855	.88020	40
30	.3502	.3739	2.675	.93667	30	30	.4772	.5430	1.842	.87882	30
40	.3529	.3772	2.651	.93565	20	40	.4797	.5467	1.829	.87743	20
50	.3557	.3805	2.628	.93462	10	50	.4823	.5505	1.816	.87603	10
21	.3584	.3839	2.605	.93358	69	29	.4848	.5543	1.804	.87462	61
10	.3611	.3872	2.583	.93253	50	10	.4874	.5581	1.792	.87321	50
20	.3638	.3906	2.560	.93148	40	20	.4899	.5619	1.780	.87178	40
30	.3665	.3939	2.539	.93042	30	30	.4924	.5658	1.767	.87036	30
40	.3692	.3973	2.517	.92935	20	40	.4950	.5696	1.756	.86892	20
50	.3719	.4006	2.496	.92827	10	50	.4975	.5735	1.744	.86748	10
22	.3746	.4040	2.475	.92718	68	30	.5000	.5774	1.732	.86603	60
10	.3773	.4074	2.455	.92609	50	10	.5025	.5812	1.720	.86457	50
20	.3800	.4108	2.434	.92499	40	20	.5050	.5851	1.709	.86310	40
30	.3827	.4142	2.414	.92388	30	30	.5075	.5890	1.698	.86163	30
40	.3854	.4176	2.394	.92276	20	40	.5100	.5930	1.686	.86015	20
50	.3881	.4210	2.375	.92164	10	50	.5125	.5969	1.675	.85866	10
23	.3907	.4245	2.356	.92050	67	31	.5150	.6009	1.664	.85717	59
10	.3934	.4279	2.337	.91936	50	10	.5175	.6048	1.653	.85567	50
20	.3961	.4314	2.318	.91822	40	20	.5200	.6088	1.643	.85416	40
30	.3987	.4348	2.300	.91706	30	30	.5225	.6128	1.632	.85264	30
40	.4014	.4383	2.282	.91590	20	40	.5250	.6168	1.621	.85112	20
50	.4041	.4417	2.264	.91472	10	50	.5275	.6208	1.611	.84959	10
					66						58
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

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.