

1609

THE
MUSEUM

OF THE
SMITHSONIAN INSTITUTION

WASHINGTON

1848

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.

DEC 28 1964

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

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

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1609

CITY ENGINEER

ENGINEERING DEPARTMENT,
CITY OF SAN DIEGO,
CALIFORNIA.

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Made in U. S. A.

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Bench levels from 47th & Ocean View

to Trinidad and Santa Maria 2-3

Profile E1 line City Boundary West 4-

BENCH LEVELS
OCEAN VIEW AND 47th to TRINIDAD AND
CITY BOUNDARY, for VALENCIA PARK SEWER

July-25-1941

Isbell
Easton/ly

Sta.	+	T	-	Elev.
B.M. #1	2.63	124.12 ✓		116.49 ✓
TP	7.97	122.58 ✓	2.51	121.61 ✓
B.M. #2	2.88	128.70 ✓	3.76	125.82 ✓
TP	3.11	124.37 ✓	7.44	121.26 ✓
B.M. #3	1.53	120.36 ✓	5.54	118.83 ✓
TP	0.02	107.69 ✓	12.62	107.67 ✓
TP	0.48	95.26 ✓	12.91	94.78 ✓
TP	5.30	95.01 ✓	5.55	89.71 ✓
B.M. #4	2.39	91.54 ✓	5.86	89.15 ✓
TP	5.37	90.12 ✓	6.72	84.75 ✓
B.M. #5	7.42	95.88 ✓	1.66	88.46 ✓
TP	9.37	104.52 ✓	0.73	95.15 ✓
TP	9.73	113.88 ✓	0.37	104.15 ✓
B.M. #6	12.90	124.22 ✓	2.56	111.32 ✓
TP	8.66	131.97 ✓	0.91	123.31 ✓
TP	8.52	138.64 ✓	1.85	130.12 ✓
TP	6.83	145.28 ✓	0.19	138.45 ✓
B.M. #7	10.45	149.79 ✓	5.94	139.34 ✓
	100.51		77.26	116.49
	77.26			22.85
	22.85			

118.77
2037/49

Indexed

L.M.

2

S.W. B.P. Ocean View Blvd. + 47th st.

S.W. B.P. 47th + T sts.

N.W. B.P. Logan + 47th sts.

Spt. in Pole # P-75259 opp. Knox Dairy S. side of Logan

B.P. in headwall of Culvert S. side Logan 1000' ± W. of Euclid

B.P. in headwall of Culvert N. side Logan 100' ± W. of Euclid

B.P. in curb W. E. Cabinet N. Side Olivera 800' ± E. of Euclid

Continued from Page 2

July 25-1941

Isbell

Eastern

Sta.	+	-	Elev.
	10.45	149.79 [✓]	
TP	6.00	155.57 [✓]	0.22 149.57 [✓]
B.M. #8	11.35	163.72 [✓]	3.80 151.77 [✓]
TP	12.88	175.55 [✓]	1.05 162.67 [✓]
TP	9.85	184.72 [✓]	0.68 174.87 [✓]
B.M. #9	0.61	184.01 [✓]	1.32 183.40 [✓]
TP	0.33	171.92 [✓]	12.42 171.59 [✓]
TP	0.19	160.00 [✓]	12.11 159.81 [✓]
TP	1.34	155.78 [✓]	5.56 154.44 [✓]
B.M. #10	1.58	153.35 [✓]	4.01 151.77 [✓]
TP	0.59	142.30 [✓]	11.64 141.71 [✓]
B.M. #11		5.87	136.43 [✓]

S.W.B.P. Olvera + Santa Isabel

N.W.B.P. San Jacinto + San Bernardo Ter.

S.E.
B.P. Ch. Ret. Trinidad + Santa Maria Ter.

on Ed. nail in 2° 32' R.W. Hub 55' N. of Sta. 1450 on E 1 line.

PROFILE E1 LINE
City Boundary West

July 25-1941
Isbell
Easterly

4

Sta	±	π	-	Elev.
B.M.	5.87	142.30		136.43
0+00			6.10	136.20
		5.54		136.76
EL. Existing M.H.		13.13		129.17
T.P.		6.10		136.20
(0+00) 16' ft.		6.6		135.7
" 25' ft. in ditch		12.0		130.3
B.M. #11	1.10	137.53		136.43
B.M. #11	1.10	137.53	4.6	132.9
18' ft. of 0+45 - bottom ditch			8.6	128.9
0+50 - bottom ditch			8.6	128.93
0+80 " "			9.8	127.7
0+85 on Bank			4.5	133.0
0+99 " "			4.2	132.7
1+04			8.3	129.2
1+41 - bottom of ditch			10.8	126.7
+46 on Bank			6.0	131.5
(1+46) 17' ft. - bottom ditch			12.9	125.1
1+25			9.1	128.4
20' ft. of 1+95			12.7	124.8
2+04 - Top Bank			9.5	128.0
2+09 - bottom ditch			13.0	124.5
+20 " "			13.8	123.7
+23 - Top Bank			9.5	128.0

on Rd. nail in 2"x2" B. W. Hub. 55' N. of Sta. 1+50 on E1 LINE
on Stub 151.09 S. of S. Line Trinidad Way on City Boundary
Existing M.H. 108.14' S. of S. Line Trinidad 43' E. of City Line
on 0+00 Stub
on B.M. #11
on 0+45
0+50
0+80
on 0+85
0+99
1+04
1+41
1+46
1+25
2+04
2+09
2+20
2+23

Sta	+	137.53	-	EL.	
2+50			9.8	127.7	✓
"	30' Rt.		14.4	123.7	✓
T.P.	2.81	129.68	10.66	126.87	✓
(2+74.96)	36' Rt. - creek		7.4	122.3	✓
3+00			3.3	126.4	✓
(3+00)	33' Rt. - creek		8.1	121.6	✓
3+50			5.4	124.3	✓
"	11' Rt. creek		8.8	120.9	✓
4+00			6.9	122.8	✓
	17' Rt. 4' - creek		9.5	120.2	✓
4+46	Top Bank		8.6	121.1	✓
4+52	Bottom Ditch		9.7	120.0	✓
4+65			8.9	120.8	✓
5+00			10.2	119.5	✓
(5+00)	29' Lt. - ditch		11.2	118.5	✓
5+60			11.8	117.9	✓
+76			12.0	117.7	✓
+79			14.4	115.3	✓
+95			14.6	115.1	✓
+96			12.9	116.8	✓
T.P.	1.64	119.44	11.91	117.77	✓
6+00			2.4	117.0	✓
+50			3.6	115.8	✓
(6+00)	28' Rt.		5.6	113.8	✓
7+00			5.9	113.5	✓
7+12.96	Angle Point		5.39	114.92	✓

2+50

2+74.96

3+00

3+50

4+00

4+46

4+52

4+65

5+00

5+60

5+76

5+79

5+95

5+96

6+00

6+50

7+00

7+12.96

Angle Point 15°26' Rt.

Ditch edge

Bottom of ditch

Ditch edge

Edge of ditch

Bottom of ditch

Angle point

Sta + T - ELEV.

119.41

7+50		6.4	113.0
(7+50) 52' 1/4" = ditch		7.0	112.4
8+00		6.2	113.2
(8+00) 85' 1/4" = ditch		7.2	111.8
8+50		8.6	110.8
9+00		9.5	109.9
9+14		9.8	109.6
9+20		10.8	108.6
9+23		10.0	109.4
9+50		9.8	109.6
on stake		9.73	109.68
POT = 9+89.99 = Top Fill		3.8	115.6
10+04 = E. edge Bank		3.84	115.57
10+09 = " " " " " " " "		3.66	115.75
719 = " " " " " " " "		3.60	115.81
10+32.68		3.65	115.76
= POT on stake		2.39	117.02
F.P.	1.44	118.37	2.48
10+37 = W edge Top Bank		1.6	116.8

Cont p. 7

7+50

8+00

8+50

9+00

9+14 Ditch edge

9+20 Bottom of ditch

9+23 Ditch edge

9+50

9+89.99 - POT.

10+04

10+09 E. edge of road

10+19 E. of rd

10+29 W. edge of rd.

10+32.68 - POT

Spike in Pole #414508

Walker
Wells - K
Easterly
Tertiary

"E-1" Line

8(12-4)

118.37

10+50		11.1	107.3	
11+00	Creek Bottom	12.1	106.3	
+50	" "	13.3	105.1	
12+00	" "	13.9	104.5	
T.P.	0.39	105.94	12.82	105.55
				12+35 50' Lt. on Bank.
12+50	Creek Bottom	2.0	103.9	
13+00	" "	2.5	103.4	
+38.96	= Δ 13°51' Rt	2.69	103.25	on Stake
14+00	Creek Bottom	2.5	102.4	
+50	" "	4.1	101.8	
15+00	" "	4.6	101.3	
+50	" "	4.6	101.3	
16+00	" "	5.5	100.4	
+50	" "	6.5	99.4	
17+00	Δ = 15°53' 30" Lt. on Stake	7.97	97.97	Above Δ
T.P.	0.66	28.63	7.97	97.97
	Beginning ditch.			
17' Rt	in ditch	2.5	96.1	
17+36	on Bank	1.1	97.5	
+44	in ditch	3.9	94.7	
+57	" "	4.5	94.1	

28.63

17+62		1.5	97.1	
18+00		2.2	96.4	
35' Lt	= Bottom Ditch.	5.7	91.9	
18+50		2.7	94.9	
19+00		5.0	93.6	
27' Lt.	in Bottom ditch.	8.0	90.6	
19+50	on Bank	6.4	92.2	
+59	in Bottom of ditch	8.4	90.2	
20+00		7.2	91.4	
2' Rt	Bottom ditch	8.4	90.2	
30+70	" "	8.9	89.7	
+75		5.2	93.4	
21+00		8.9	89.7	
+49	on Bank	9.9	88.7	
+55	in ditch	10.9	87.7	
21+70		11.0	87.6	
21+74.73	= Δ 26°46' 30" Lt.	2.87	88.76	on Stake
T.P.	3.22	21.98	2.87	88.76
	Bottom of Wash.			21+74.73
22+00		2.5	88.5	
+50	" "	2.9	88.1	
+63.74	= P.O.T.	4.04	87.94	on Stake

Mulhe Wells Easter Ferry		"E-1" line			83.81			8		
		21.98								
10+	23+00 = Bottom of Wash	4.1	87.9	✓	29+24	6.0	83.8	✓		
					29+45 on Bank	8.8	81.0	✓		
11+	+50 " " "	4.9	87.1	✓	+60 in Ditch	11.5	78.3	✓		
					+73 " "	11.8	78.0	✓		
	24+00 " " "	5.1	86.9	✓						
12+	+50 " " "	5.6	87.4	✓	+75 on Bank	9.9	79.9	✓		
T.P.	24+99.93 = P.O.T. Stake	5.96	86.02	✓	30+00	10.3	79.5	✓		
12+	25+50	6.8	87.2	✓	20' R/L	12.2	77.6	✓		
13+	26+00	7.6	83.7	✓	30+50	10.6	79.2	✓		
	T.P.	6.44	83.81	✓	Roadway					
			83.37	✓	+6.9 = Toe Fill	10.1	79.7	✓		
14+	26+25	6.0	83.8	✓	+80 = Top Bank	4.6	85.2	✓		
	+30 = Bottom ditch	8.8	81.0	✓	30+83.34 - A 27° 06' R/L	4.91	84.90	on stake		
15+	+35	6.8	83.0	✓	+86.8 on N. edge	4.71	85.10	Concrete Pav		
	+50	7.1	82.7	✓	31+05.58 on Copper Ditch	4.48	85.33	P.O.T.		
16+	27+00	6.7	83.1	✓	chk. B.M. #5	1.32	88.49			
							88.46 = B.M. #5 P-2			
							0.03 = Error			
	+3	7.0	82.8	✓						
	= Bottom Ditch									
17+	27+15.04 = A Lt 17° 09' 30"	8.80	81.0	✓	1.32	89.78	88.46	Above		
T.P.	15' R/L = 3' dia. Euc Tree				T.P.	2.75	88.05	4.48	85.30	Copper Ditch
17+	27+50 = Bottom Ditch	2.1	80.7	✓	31+22.6 = South edge Conc. Pav	2.68	85.37	✓		
17+	28+00	2.1	80.7	✓	Boundary					
					+33 = Top Bank	2.0	85.1	✓		
	+50	8.0	81.8	✓	31+45 = Toe Fill	9.0	79.1	✓		
	29+00	7.9	81.9	✓	+67	10.0	78.1	✓		
	19' Lt. = Bottom Ditch	11.7	78.1	✓						

88.05

31+80 = Bottom of Ditch	13.2	74.9	✓
31+87.34 Concrete Box Culvert	10.8	77.3	✓
27.4' Rn on Flow Culvert	13.20	74.85	✓
31+97 = Bottom Land	9.9	78.2	✓
32+40 " "	10.8	77.3	✓
33+00 " "	12.2	75.9	✓
TR 2.3.8 78.28	12.05	76.00	✓
33+50 Bottom Land	3.1	75.2	✓
34+00 " "	3.5	74.8	✓
+50 " "	3.7	74.6	✓
35+00 " "	4.6	73.7	✓
+50 " "	5.3	73.0	✓
36+00 " "	6.4	71.9	✓
+50 " "	7.2	71.1	✓
37+00 " "	8.2	70.1	✓
+13 = Top Bank	8.2	70.1	✓
+17 = Bottom ditch	9.5	68.8	✓
+26 = " "	9.4	68.9	✓
34 = Top of hill	2.0	71.3	✓
+50 " " "	6.0	72.3	✓

2-Culverts
'x6'

38+00	2.0	71.3	✓
38+38.54 = $\Delta 10^{\circ}02'$ Lt	6.82	71.46	on stake
TR 0.31	71.77	6.82	71.46 " "
38+70	0.9	70.9	✓
39+00 = Bottom Land	2.8	69.0	✓
+50 " "	3.6	68.2	✓
40+00 " "	4.3	67.5	✓
+50 " "	4.6	67.2	✓
41+00 " "	5.0	66.8	✓
+50 " "	5.4	66.4	✓
42+00 " "	5.8	66.0	✓
+50 " "	6.2	65.6	✓
43+00 " "	6.5	65.3	✓
+50 " "	7.6	64.2	✓
+66 = ^{Roadway} Top Fill	7.2	64.5	✓
+76 = Top Embankment	3.0	68.8	✓
43+82.86 = $\Delta 0^{\circ}54'00''$ Lt	2.48	69.29	on stake
TR 0.72	70.01	2.48	69.29 on stake
43+87 = ^{Conc.} Edge Paving	0.85	69.16	✓
44+07.56 = ^{P.O.T. on} Lot Line	0.84	69.17	✓
+16.6 = ^{Copper Disk} W edge Pav.	0.89	69.12	✓

70.01

44+26	Top Embankment.	1.5	68.5	'
+39	" "	6.1	63.9	'
45+00	Bottom land.	7.0	63.0	'
45+41.80	Intersection & cut-off	7.4	65.6	'
(45+41.80)			63.6	'
72'	1/2 on Flow cut-off	8.5	61.5	'
46+00	Bottom land.	8.0	62.0	'
+50	" "	8.5	61.5	'
47+00	" "	8.9	61.1	'
+50	" "	9.2	60.8	'
48+00	" "	9.7	60.3	'
T.P.	376 64.80	8.97	61.04	'
48+56	Bottom land.	5.00	59.80	'
49+20	" "	4.7	60.1	'
+50	" "	4.7	60.1	'
50+00	" "	5.3	59.5	'
+62.30	P.O.T. stub.	5.51	59.29	'
51+00	Bottom land.	5.7	59.1	'
+50	" "	6.2	58.6	'
51+73.85	End "E-1" line	6.47	58.33	'
T.P.		6.42	58.33	'
		58.28		'

577405
on stake= Elev. as run from Una & King road B.M.
see Page 19

The image shows an open notebook with two blank, lined pages. The pages are cream-colored with horizontal ruling. The left page is numbered '10' and the right page is numbered '11'. The notebook has a dark cover visible around the edges.

Walker
Wells
Fooderly
Farrow
8-14-41

Logan Ave Sewer Levels
Between Valencia Port.
And 47th St.

Indexed
LVI

Location E.B. #1610 P-12-16

	3.84	143.18	139.34	
0+00 on Rim MH	3.56		139.62	
" " Flow MH	12.88		130.30	
0+02.49 on W. edge paving	3.46		139.72	
18' Ht. on W. edge strip Pav.	3.32		139.85	
40' Rt.	4.7		138.5	
75' Rt. = Bottom Ditch	10.7		132.5	
85' Rt. Top Bank	5.7		137.5	
0+40 Nat. Grd.	2.9		140.3	
2' Ht. on Pav.	2.77		140.41	
0+60	2.8		140.4	
2.3' Ht. " "	2.71		140.47	
1+00	3.31		139.87	
2.4± Ht. on Pav.	3.25		139.93	
30 Rt. Nat. Grd.	2.5		140.7	
75' Rt. = Bottom Ditch	12.2		131.0	
85' " on Bank	8.0		135.2	
100' Rt.	7.0		136.2	

PM 47
P-12-2

143.18

12

1+50	4.3		138.9	
3' Ht. on Pav.	4.16		139.02	
2+00	5.2		138.0	
3' Ht. on Pav.	5.02		138.16	
2+52.90 = 4 Lt. 7°46'45"	6.02		137.16	
4.5' Ht. on Pav.	5.70		137.49	
10' Lt. on ST. in Pav.	5.75		137.43	
9' Rt. on Nat. Grd.	6.0		137.2	
21' Rt. " " "	10.0		133.2	
125' Rt. in Bottom Ditch	15.1		128.1	
165' Rt. Top Bank	9.1		134.1	
3+00 Nat. Ground	6.8		136.4	
3.2' Ht. on Pav.	6.59		136.59	
3+65.68 = 1 Lt. 8°03'15" L	8.00		135.2	
5' Ht. on Paving.	7.67		135.51	
10' Lt. on R.P.C.T. Lt. Dg.	7.66		135.52	
T.P. 0.46	135.98	7.66	135.52	
4+00 = Nat. Grd.	1.4		134.6	
3.4' Lt. on Pav.	1.10		134.88	
4' Rt. on Pav.	1.6		134.4	
15' Rt. on Nat. Grd.	5.4		130.6	
35' Rt. in channel	10.5		125.5	
50' Rt. " "	10.5		125.5	

beginning
Fill
section

135.98		Logan Ave Sewer Profile	
(4+00) 0.5' Rt	7.5	128.5	✓
4+50 in Fill section	2.2	133.8	✓
3' Lt on Pav	1.93	134.05	✓
8' Rt on Bank	3.0	133.0	✓
20' Rt in channel	10.8	125.2	✓
30' Rt on Nat. Grd.	8.8	127.2	✓
5+00 in Fill section	3.0	133.0	✓
3' Lt on Pav	2.88	123.10 133.10	✓
4' Rt on Bank (Fill)	3.0	133.0	✓
17' Rt Top Fill	10.4	125.6	✓
30' Rt Bottom channel	11.2	124.8	✓
40' Rt " "	11.2	124.8	✓
50' Rt on Nat. Ground	7.2	128.8	✓
5+50 in Fill section	3.8	132.2	✓
3' Lt on Pav	3.71	132.27	✓
6+00 in Fill section	5.0	131.0	✓
3' Lt on Paving	4.71	131.27	✓
5' Rt " Bank Fill	5.0	131.0	✓
17' Rt in channel	12.6	123.4	Top Fill ✓
37' Rt " "	12.6	123.4	✓
17' Rt Nat. Ground	3.6	126.4	✓

135.98		135.98		13
6+50 in Fill section	5.7	130.3	✓	
1.6' Lt on Pav	5.53	130.45	✓	
6' Rt = Top Bank Fill	6.3	129.7	✓	
18' Rt = Top Fill	12.9	123.1	✓	South edge channel
30' Rt in channel	14.0	122.0	✓	
100' Rt = North edge "	14.5	121.5	✓	
125' Rt	10.0	126.0	✓	
6+75 = end Fill section	6.1	129.9	✓	
6+97.34 = Lt 8'43"20"	6.38	129.60	✓	Not Grid
6.7' Lt on Pav	6.21	129.77	✓	
10' Lt on RR CT	6.22	129.76	✓	
7+50 Not. Grd	6.7	129.3	✓	
2.6' Lt on Pav	6.90	129.08	✓	
8+00 in Nat. Grd	7.7	128.3	✓	
2.4' Lt on Pav	7.80	128.18	✓	
8+54.46 = Lt 13'31"20" Lt	8.26	127.72	✓	
6.6' Lt on Pav	8.71	127.27	✓	
10' Lt on CE. Id. Pk.	8.72	127.26	✓	
TR 0.35 127.61	8.72	127.26	✓	Not Grid
9+00	1.8	126.3	✓	
3.2' Lt on Paving	1.19	126.42	✓	

Lagon Ave Sewer Profile

127.61

(2+00) 30' Rt = Nat Gnd	4.0	123.6	✓
95' Rt = South edge channel	14.2	113.4	✓
125' Rt = N. " "	14.0	113.6	✓
150' Rt Nat Gnd	10.0	117.6	✓
9+50 Nat Gnd	2.1	125.5	✓
3' Lt. on Box	2.07	125.54	✓
16+00 Nat Gnd	3.3	124.3	✓
3' Lt on Box	3.17	124.44	✓
10+34.8 on "	4.09	123.52	✓
10+63 " "	4.88	122.73	✓ F. Edge Excl'd Strip Produced
10+90.3 = on Box	5.58	122.03	✓
11+00 Nat Gnd	6.2	121.4	✓
3' Lt. on Box Nat Gnd	5.89	121.22	✓
11+53.87 = Δ Rt 10°59'20"	8.07	119.54	✓ on stake
3' Lt on Box	7.70	119.91	✓
10' Lt on R.R. CT. Id. Ply.	7.31	120.30	✓
12+00 on Nat Gnd	10.1	117.5	✓
7' Lt on Box	9.14	118.47	✓
12+48.23 Δ Rt 18°12'20"	11.13	116.48	✓
3' Lt on Box	10.62	116.99	✓
10' Lt on R.R. CT. Id. Ply.	10.10	117.51	✓

127.61

12+60 = Beginning fill section	11.3	116.3	✓
13' Rt on Bank Fill	10.1	117.5	✓
37' " in channel	21.1	106.5	✓ S. edge
100' " " "	18.1	109.5	✓ " "
13+00 in fill section	12.4	115.2	✓
6.6 Lt. on Box	12.16	115.45	✓
1' Rt in fill	12.4	115.2	✓
10' Rt in "	12.4	108.2	✓
13' Rt = " channel.	22.4	105.2	✓ S. edge
13+35.04 = Δ Rt 8°29'40"	12.5	114.1	✓
3.1 Lt on Paving.	12.87	114.74	✓
TP 056			
10' Lt on Box	11.51	12.36	115.05
664.81 M ² P. 2	3.82	111.29	✓
		111.32 = BM ¹	
		0.03 = Error	
	3.82	115.14	✓ K corrected.
13+41.29 = East inside edge cutbank	0.9	114.2	✓
15' Rt on Flow Line	11.47	103.67	✓ See p. 17 for flow top box
69' Lt " " "	12.10	103.04	✓
14+00 in fill section	1.9	113.2	✓
3' Lt on Box	1.73	113.41	✓
20' Rt in fill	2.5	112.6	✓
40' " " "	2.5	112.6	✓

14

14+50									
15+00		3.0	112.1	✓	(2+50) 30' Lt.	4.7	99.1		
3' Lt. on Paving		2.81	112.33	✓	37' Lt. = Bottom of Draw	12.5	91.3		
10' Rt. in Fill		4.6	110.5	✓	110. " " " "	12.0	91.8		
40' " " "		4.6	110.5	✓	20+00	6.1	97.7		
15+00 End Fill section		4.6	110.5	✓	7' Rt. = Top Fill	8.0	95.8		
31' Lt.		4.27	110.87	✓	3' Lt. on Pav.	5.82	97.95		
15+50 in Cut Section		5.7	109.4	✓	32' Lt. on Bank Fill	6.2	97.6		
3' Lt. on Pav.		5.34	109.80	✓	50' Lt. in Channel	15.6	88.2		
16+00 in Cut Section		7.0	108.1	✓	20' Lt. on Cut Grd.	9.2	94.6		
3' Lt. on Pav.		6.69	108.45	✓	20+50 in Fill section	7.2	96.6		
16+50 in Cut Section		8.2	106.9	✓	5' Rt. on Fill	6.7	97.1		
17+00		9.5	105.6	✓	10' Rt. = Top Fill	10.9	92.9		
3.2 Lt. on Pav.		9.30	105.84	✓	20+59.8 = ^{Corrugated} Cutvert	7.6	96.2	18" dia.	
17+50 in Cut Section		10.8	104.5	✓	6.6 Rt. in Floor Line	12.2	91.6	see P. 17	
18+00 " " "		11.9	103.2	✓	40.4 Lt. " " "	7.1	87.7	see P. 17	
3.2 Lt. on Pav.		11.86	103.28	✓	T.P. 0.32 95.24	8.22	95.55		
T.P. 0.32 103.77		11.89	103.45	✓	21+00 Nat. Ground	0.7	95.2		
18+50 in Cut Section		1.7	102.1	✓	3.4' Lt. on Pav.	0.59	95.35		
19+00		3.2	100.6	✓	21' Lt. on Top Fill	0.9	95.0		
3.3' Lt. on Pav.		2.05	100.72	✓	41' Lt. = Top Fill	7.0	88.9		
19+50		4.7	99.1	✓	55' Lt. in channel	8.7	87.2		
				beginning fill section No End here	60' Lt.	4.4	91.5		

Walker Wells Eastern part of	8-14-41	95.34	Logan Ave Sewer Profile	95.94			1-TP 88.45 88.46 = BM #5	16
21+50	17 cut section	1.9	94.0	TP	1.18	89.64	7.49	
22+00	" " "	3.2	92.7	24+50	10 fill section		2.5	87.1
3.5' Lt. on Pav.		3.13	92.81	25+00	" " "		3.5	86.1
23+50	10 cut section	4.4	91.5	3.5' Lt. on Pav.		3.56	86.08	
23+00		5.6	90.3	5' Rt. on Top Fill		3.3	86.3	
3.5' Lt. on Pav.		5.48	90.46	14' " " Toe "		7.9	81.7	
23+50	Beginning Fill section	6.7	89.2	25+50	10 fill "		4.1	85.5
23+75		7.5	88.4	26+00	" " "		4.7	84.9
5' Rt. on Top Fill		6.9	89.0	3.4 Lt. on Pav.		4.71	84.93	
12' Rt. on Top Fill		10.6	85.3	7' Rt. on Top Fill		4.7	84.9	
50 Rt. North Sid.		11.6	84.3	14' " " Toe "		8.2	81.4	
24+00		7.9	88.0	26+50	10 fill section		4.8	84.8
3.6' Lt. on Pav.		7.80	88.14	27+00	" " "		5.0	84.6
24+32.83	Box Culvert	8.53	87.41	3.2 Lt. on Pav.		4.90	84.7	
14' Rt. on		8.53	87.41	4' Rt. on Top Fill		5.2	84.4	
14' " " Hd. Wall		7.50	88.44	12' Rt. " Toe "		9.5	80.1	
2.1' Rt. on Flow line		15.61	80.33	27+55.13	Flow line		4.76	84.88
29.4 Lt. " " "		15.33	80.61					84.90 = P-8 0.02 30+83.34
chk. BM #5		7.49	88.45					
			88.46					
			0.01 Error					

Approx
2' Fill here

Top of Culvert
= Top Pav.

N. end,
South end

Walker
Bliss
Hazard
Bgg.
8-26-43

Logan Ave Sewer
Elevations of Existing Culverts
Between Valencia Park & 47th St

35 Lt.	4.93	136.20	12.78	131.27	Elev. Paving 3' H 6' 00 Page 13
51.97	on Floor 18" Corrig. Pipe		12.3	123.4	inlet.

Could not find out lot

Box Culvert - Station = 13+41.39

8 Ft. of Sewer on Top of Box	5.99	119.40		113.41	El. Pavt. 3' H 19' 00 P-14
		9.00		110.4	

Check Culvert Page 15

20+59.8 - E 18" Corrig. Culvert

6.14	101.49		95.35	Elev. Pavt. 3' H 2' 00 P-15
------	--------	--	-------	-----------------------------------

6.6 Ft on Floor 18" Pipe	9.93		91.56	
40.4 Ft. " " 66-65	14.6		86.9	

91.96
90.91 F.L. 18" Pipe at 47th St

Check Box Culvert 24+32.83

8195-P-2

4.02	92.48		88.46	
Conc. on Box Culvert	5.05		87.43	2.16 3.15 5.46 3.15 2.31 or 80.36
2.1 Ft. on Floor	12.14		80.34	
29.4 Lt. Floor	11.88		80.60	

Walker
Wells
D. Parry
9-12-41

BENCH MARKS
From UNA & KINGWOOD
To 17TH & LOGAN AVE.
for VALENCIA PARK SEWER
"E" LINE

Indexed
LM

Location EB 1610 P. 22-38

BM #12	5.57	13.81		8.24	
TR #1	0.52	8.56	5.77	8.04	
BM #13			4.68	3.88	
TR #2	4.73	11.11	2.18	6.38	
TR #3					
BM #14	2.94	11.20	2.15	8.96	
TR #4	5.99	14.18	3.71	8.19	
TR #5	3.80	12.62	5.36	8.82	
TR #6	2.82	9.33	6.11	6.51	
TR #7	2.12	7.47	10.98	-4.65	
TR #8	3.77	11.05	0.19	7.28	
TR #9	6.13	12.74	4.44	6.64	
TR #10	5.56	14.44	3.86	8.88	
TR #11	6.51	18.44	2.51	11.93	
TR #12	8.47	23.36	3.55	14.89	
TR #13	4.12	24.48	3.00	20.36	
TR #14	7.02	26.53	1.97	12.51	
TR #15	3.62	29.97	0.18	2.635	
TR #16	4.81	34.62	0.16	29.81	

BM 13 from
Una
& Kingwood

BM #13

13' Mon VESTA ^{Had} JUNEWOOD street

BM #14

SELY Top Hyd. VESTA & McCANULTY street

Nail in Asphalt Sidewalk 21' 1/2 32100 E. Line

BM #15

SELY CT. Wdg. VESTA & FLOART 6 on E. Line Vesta

BM #16

SELY CT. Wdg. Woden & " E. Line Woden

BM #17

13' Mon YAMA & Filbert

BM #18

Brass Plug

SELY Top Hd Wall by Culvert YAMA & Main St

13' Hd YAMA ^{Had} DELBERGIA

S.W. by

BM #19 7' Tack YAMA & Cottonwood = 18' Ht 60+61.2

BM #20 NW 7' Tack Cottonwood & Earl = 28' Ht 55+58.22

BM #21

Approx. 27' Ht. 51+87.74

Copper disk in walk PC. Prop Reducer NW Cor Cottonwood & 40th

BM #22

25' Ht 45+77.40 Set New BM on 13' Mon Sec

on sep disk Redwood Hd NW Cor Cottonwood & 41st St P-70

(Thus
been Moved
11-12-43)

BM #23

Fire
St. Top Hyd Nodine & 42nd St.

BENCH MARKS
Cont from p. 18

		34.62			
TP #17	4.17	35.51	3.28	31.34	✓
TP #18	4.12	39.06	0.57	34.94	✓
TP #19	6.99	42.23	3.82	35.24	✓
TP #20	6.07	45.02	3.28	38.95	✓
TP #21	2.32	45.73	1.61	43.41	✓
TP #22	7.69	50.31	3.11	42.62	✓
TP #23	5.07	53.18	2.20	43.11	✓
TP #24	9.12	60.61	1.62	51.42	✓
TP #25	2.32	60.60	2.33	58.28	✓
			58.33 = El. P-10		
			0.05 = d. clearance		
		4.37	56.23		

BM #24 1' West of East edge Paving 43rd.
Copper Stake 32+00.07 5' N " L Nordica
BM #25
Large Spike in Best Cypress Tree 20.51' Lot of estn. 27+53.75
on POT Stake 24+22.45

BM #26 S.E. Cor Bot. 43-47 De/19.
Brass Plug in Wing Wall Bridge 3087' Rt. Sta. 18+54.83
on Paving Stake 13+83.62 "A 1°45' Rt.

on Paving Stake 0+00 = 51+74.05 "B" - 1 line P-10

BM #27 on 1" Iron Pipe 200.7' West of (50+71.85) P-10
"B" - 1" line FB 18/10

Walker Wells	Profile Bench	"E" Line	Indexed	
D. Furrer	Location FB 1610-22-36		HM	
9-15-41				
	Bench Marks, see P-18-19		B.M. # 27	
	43.7	60.60	56.23	P-19
31+7385 Page 10				
= 0+00 on Lee Side	2.32	58.28	✓	
250	2.8	57.8	✓	
1+00	3.9	56.7	✓	
+50	5.6	55.0	✓	
2+00	6.5	54.1	✓	
1+0	7.5	53.1	✓	
+50	6.6	54.0	✓	
3+00 on Bank	8.2	52.4	✓	
+20 in channel	11.2	49.4	✓	
+31 " "	10.2	50.4	✓	
+35 on Bank	7.7	52.9	✓	
4+00	8.2	52.4	✓	
750	8.6	52.0	✓	
100 ft in channel	11.6	49.0	✓	
TP 147	54.01	8.06	52.54	✓
5+00	3.1	50.9	✓	
750	3.9	50.1	✓	
+85	4.6	49.4	✓	

		54.01	"E" Line	21
5+25 = Bottom Ditch			5.6	48.4 ✓
6+00			5.1	48.9 ✓
+14			4.3	49.7 ✓
6+50			5.1	48.9 ✓
7+00			5.3	48.7 ✓
750			6.1	47.9 ✓
8+00			6.3	47.7 ✓
750			6.3	47.7 ✓
9+00			6.6	47.4 ✓
750			6.7	47.3 ✓
TP 243	50.54		5.90	48.1 ✓
2+26	Bank Channel		3.7	47.4 ✓
10+00	in channel		1.3	46.2 ✓
+20	" "		4.1	46.4 ✓
+30	Bank "		3.1	47.4 ✓
+50			3.4	47.1 ✓
11+00			4.0	46.5 ✓
+50			4.6	45.9 ✓
12+00			5.0	45.5 ✓
750			5.2	45.3 ✓
13+00			5.9	44.6 ✓

Cont. P-22

	50.54 ✓	"E" line	
13+24 on Bank	6.8	43.7	✓
+30 in bottom Ditch	8.9	41.6	✓
+37 " " "	8.5	42.0	✓
+39 on Bank	7.0	43.5	✓
+50	7.2	43.3	✓
13+83.62 = A 1° 43' RT	7.91	42.63 on stake	
14+00	7.9	42.6	✓
+50	8.8	41.7	✓
+67 = Bottom Ditch	9.2	41.3	✓
15+00	8.8	41.7	✓
T.P. 559 46.87	9.26	41.38	✓
15+50	4.3	42.6	✓
16+00	4.1	42.8	✓
+50	4.3	42.6	✓
17+00	4.1	42.8	✓
+50	3.9	43.0	✓
+93	3.5	43.4	✓
18+03 in Roadway	1.9	45.0	✓
+22 " "	2.2	44.7	✓
Brass Plug in wing wall			
Chk. BM #26	3.25	43.42	✓
		43.41 - BM	
		0.01	

	46.87 ✓		22
+28	3.0	43.9	✓
+37	4.8	42.1	✓
18+72.11 POT Spike	6.79	40.08	✓
19+00	7.5	39.4	✓
+10 = edge channel	9.0	37.9	✓
19+10 in "	9.1	37.8	✓
+55 edge "	9.0	37.9	✓
+60 = bank "	8.4	38.5	✓
20+00	8.4	38.5	✓
+50	8.6	38.3	✓
21+00	8.7	38.2	✓
T.P. 22A 40.24	8.17	38.70	✓
21+50	3.6	37.3	✓
22+00	4.0	36.9	✓
72' Lt. on Bank Channel	5.1	35.8	✓
80' " in L "	7.9	33.0	✓
22+50	4.0	36.9	✓
23+00	3.3	37.6	✓
180	2.6	38.3	✓
115' Lt. in channel	6.8	34.1	✓
23+50	4.1	36.8	✓

	40.24	"E" Line	
24+00		5.4 35.5	✓
+22 = POT		5.67 35.27	on stake
24+50		6.3 34.6	✓
25+00		7.0 33.9	✓
+50		7.7 33.2	✓
26+00		8.4 32.5	✓
+22 = Toe Bank		8.9 32.0	✓
+35 on " N edge		7.0 33.9	✓
+45 in channel		9.3 31.6	✓
TP 4.36 40.22		5.08 35.86	✓
+60 d. edge channel		9.1 31.1	✓
+68		6.6 33.6	✓
27+00		6.5 33.7	✓
+50		6.7 33.5	✓
chk. BM #25		5.24 34.98	✓
		34.94 = BM 0.04 E/POT	✓
	π corrected.	34.94 = BM #25	✓
	0.84 35.78	34.94 = BM #25	✓
27+87.38 = A + 16'45" st.		2.85 32.93	✓
28+00		3.3 32.5	✓
+05		4.0 31.8	✓

	35.78	"E" Line	23
28+50		4.9 30.9	✓
29+00		5.0 30.8	✓
+50		4.9 30.9	✓
+65		4.4 31.4	✓
30+00		5.1 30.7	✓
+50		5.4 30.4	✓
31+00		6.4 29.4	✓
+50		7.3 28.5	✓
+58 = Bank channel		7.0 28.8	✓
+65 in ch. "		14.0 21.8	✓
+77 on Bank "		8.1 27.7	✓
+83		8.0 27.8	✓
+92		9.3 31.5	✓
TP 4.68 36.02		4.44 31.34	✓ BM #24
31+26.07 = A. R. 29°55' 30"		4.82 31.20	✓
31+99 = East edge Conc. Paving		4.69 31.33	✓
32+19 = West		4.62 31.40	✓
32+35		6.6 29.4	✓
+50		7.0 29.0	✓
33+00		7.6 28.4	✓
+50		7.2 28.8	✓

		3602			
33+96	1/2 Δ 17°49	6.89	29.13	on st. line	✓
34+00		6.7	29.3		✓
+50		4.6	31.4		✓
+93		3.5	32.5		✓
35+00		3.8	32.2		✓
+50		6.7	29.3		✓
36+00		8.5	27.5		✓
+50		10.4	25.6		✓
TP	3.25 28.24	11.03	24.99		✓
37+00		4.8	23.4		✓
+31		5.8	22.4		✓
+40		5.0	23.2		✓
+66		4.7	23.5		✓
14' ht = L channel		8.8	19.4	3' wide	✓
38+00		5.4	22.8		✓
6' ht = L "		8.9	19.3		✓
38+23		4.6	23.6		✓
2.8 ht on way edge	wooden	4.1	24.1		✓
38+29.6	Foot. bridge way edge	4.0	24.2		✓
38+40	N. end bridge	4.0	24.2		✓
4.5' ht = way edge	Bridge	4.0	24.2		✓
7.5' ht = way	" "	4.0	24.2		✓

		2824	"E" Line	24
38+41	in channel	9.0	19.2	✓
+52	" "	9.0	19.2	✓
+53	on Bank	6.5	21.7	✓
+68	" "	4.5	23.7	✓
39+00		6.1	22.1	✓
+05	in Roadway	2.0	21.2	✓
chk. BM #23		1.89	26.35	5.5 Top Hgt. 42MB Nordica
39+50		7.5	20.7	✓
40+00		7.5	20.7	✓
+50		7.9	20.3	✓
41+00		8.4	19.8	✓
+50		8.2	20.0	✓
+57		8.2	20.0	✓
48' ht = L MH. on Run.		7.69	20.55	✓
TP	3.83 23.12	8.95	19.29	✓
42+00		4.1	19.0	✓
+50		4.8	18.3	✓
43+00		5.1	18.0	✓
+50		5.2	17.9	✓
44+00		5.1	18.0	✓
+50		5.7	17.8	✓

	2312		"5' Line	
44+87	5' Lt. on Rem MH	5.41	17.71	✓
44+92	40-Δ 89°58' Lt	6.30	16.82	✓ on Stake
45+10		5.6	17.6	✓
+20		4.7	18.4	✓
+50		4.5	18.6	✓
+96.08	Δ 73°33' Rt	0.21	22.91	✓ on Stake
44.819	22 P-18	2.78	20.34	✓ NW. Cap. Disk Recovered Hub 11/14 + 1st Larwood
46+25		0.3	22.8	✓
46+50		2.5	20.6	✓
47+00		4.1	19.0	✓
+50		6.3	16.8	✓
48+00		7.1	16.0	✓
TP	3.62 20.47	6.34	16.78	✓
+50	on Bank Channel	4.2	16.3	✓
+58	in channel	8.6	11.9	✓
+73	" "	8.7	11.8	✓
+85	on Bank	3.4	17.1	✓
49+00		3.3	17.2	✓
+09		1.7	18.8	✓
+40		3.8	16.7	✓
50+00		4.9	15.6	✓

	20.47			25
50+50		4.9	15.6	✓
51+00		5.4	15.1	✓
+50		6.2	14.3	✓
51+84.7		5.6	14.9	✓
5' Lt. - Rem MH on Rem		5.90	14.57	✓
" " Flow Line		11.40	9.07	✓
51+87.74	Δ Lt 17°08' 15"	5.70	14.77	✓
(64.817 #2)		5.57	14.90	✓
52+00		5.7	14.8	✓
+50		6.0	14.5	✓
+89		6.0	14.5	✓
53+00		8.2	12.3	✓
+07	in channel	9.9	10.6	✓
+17	" "	2.6	10.9	✓
+26	" "	8.6	11.9	✓
+30	on Bank	7.0	13.5	✓
+55		7.0	13.5	✓
+64		5.2	15.3	✓
TP	0.87 16.04			✓
53+72.95	Δ Rt 34°54'	5.30	15.17	✓
on MH 5' Lt		3.35	12.69	✓
on Flow Line		8.30	7.74	✓

16.04

54+00 in channel	6.1	9.9	✓
+06 " "	6.0	10.0	✓
+17 on Bank	1.7	14.3	✓
+36	3.7	12.3	✓
55+00	4.6	11.4	✓
+07.12 = Blue Ear St	4.6	11.4	✓
21' Pt. on cb	3.69	12.35	✓
31' Lt. " "	3.63	12.41	✓
cbk. BM #20	4.12	11.22	✓ BM #11.33 5' E of Cottonwood
55+67.2	4.6	11.4	✓
21' Pt. on cb	4.18	11.86	✓
31' Lt. " "	4.13	11.91	✓
56+00	4.8	11.2	✓
+50	5.0	11.0	✓
T.P. 4.11 16.03	4.12	11.22	✓
56+99 5' Lt. on Rim MH	5.10	10.93	✓
" " " " Flow	10.80	5.23	✓
57+00	5.3	10.7	✓
+50	6.1	9.9	✓
58+00	6.4	9.6	✓
+31.26 = Elano Osborn	6.6	9.4	✓
21' Pt. on cb	5.95	10.08	✓
31' Lt. " "	5.89	10.14	✓

16.03

"E" Line

26

58+91.26 - W.L. Osborn	7.0	9.0	✓
21' Pt. on cb	6.31	9.72	✓
31' Lt.	6.34	9.69	✓
59+00	7.0	9.03	✓
+50	7.5	8.5	✓
T.P. 3.55 12.43	7.16	8.87	✓ BM #15 5' W. 7' fact. Yarn & Cottonwood
60+00	3.6	8.8	✓
+246	4.3	8.1	✓
51' Lt. on Rim MH	3.87	8.56	✓
" " " Flow	8.06	4.37	✓
60+61.20 - 51' 35'	4.45	7.98	✓ on stake
61+00	4.5	7.9	✓
+50	4.7	7.7	✓
62+00	4.9	7.5	✓
+50	4.8	7.6	✓
63+00	5.2	7.2	✓
+50	5.9	7.0	✓
64+00	5.0	7.4	✓
+18.45 = POT Stake	5.46	6.97	✓ Delbergia
+50	5.4	7.0	✓
65+00	6.0	6.4	✓

1243	"E" line		
65+50	6.1	6.3	✓
66+00	6.1	6.3	✓
11' Lt. in channel	10.8	1.6	✓
66+03	4.2	8.2	✓
108 in ditch	8.9	3.5	✓
+16 " "	8.3	4.1	✓
+18	5.2	7.2	✓
66+19 = MH 5' Lt. on Rim	5.63	6.80	✓
5' Lt. on Floor line	3.34	3.09	✓
66+50	5.8	6.6	✓
2' Lt.	5.8	6.6	✓
3' Lt.	8.0	4.4	✓
12' Lt. in channel	10.7	1.7	✓
67+00	6.6	5.8	✓
4' Lt.	6.4	6.0	✓
9' Lt. in channel	10.3	2.1	✓
12' Lt. " "	10.8	1.6	✓
67+08	9.6	2.8	✓
67+10	6.6	5.8	✓
+20	6.7	5.7	✓
+21	8.4	4.0	✓

1243	"E" line		27
67+30	8.2	4.2	✓
+35	6.4	6.0	✓
743	6.6	5.8	✓
+47	8.9	3.5	✓
67+57.6	8.5	3.9	✓
0.7' Lt. on Top King Wall	5.53	6.90	✓
opposite			
67+64.84 = NLY end Culvert	3.7	8.7	✓
74' Lt. on top	4.60	7.83	✓
8.31' Lt. " Floor Culvert.	11.31	1.12	✓
T.P. 1.25	11.82	1.79	10.64
chk BM #18	4.59	7.30	✓
	4.59	11.87	7.28 BM
			0.02 Error
67+68.47 = NLY line Main st.	3.15	8.72	✓
+80.97 = NLY cb	3.16	8.71	✓
68+00 on Box	3.10	8.77	✓
68+08.47 = NLY line	3.01	8.86	✓
+36.74 = NLY cb	3.69	8.18	✓
+48.47 = NLY line Main	3.57	8.30	✓
+52.74 = NLY end Box Culvert	3.85	8.02	✓
74' Lt. on Hdw. Wall	4.61	7.26	Temp BM
8.31' Lt. " Floor	11.32	0.55	✓

11.87

68+6274	2.8	2.1	✓
Box culvert			
8.31' Lt. on Floor of hip	11.40	0.47	✓
68+73	7.4	4.5	✓
+91	10.2	1.7	✓
69+00	10.0	1.9	✓
7' Lt. in channel	11.9	0.0	✓
69+07	8.0	3.9	✓
3' Lt. on Bank	8.0	3.9	✓
7' Lt. " "	12.0	-0.1	✓
69+50	2.2	2.7	✓
70+00	2.8	2.1	✓
5' Lt. on Bank	2.8	2.1	✓
8' Lt. in channel	11.9	0.0	✓
70+50	10.3	1.6	✓
71+00	10.6	1.3	✓
5' Lt. on Bank	10.6	1.3	✓
8' " in channel	12.2	-0.3	✓
71+50	10.9	1.0	✓
+60	11.2	0.7	✓
+62	12.0	-0.1	✓
8' Lt. in channel	12.3	-0.4	✓

11.87

28

71+8220 = A 90° 02' 40" RT	12.07	-0.20	✓ on stake
chk BM #1.7	13.50	-1.63	✓
T.P. 8.89 8.69*	12.07	-0.20	✓
72+00	8.2	0.5	✓
+50 Toe old RR Fill	9.8	-1.1	✓
+80 on Top " "	5.5	3.2	✓
73+00 " " "	5.0	3.7	✓
10' Lt. on Not Ground	8.7	0.0	✓
73+50 on RR Fill	5.7	3.0	✓
74+00 " " "	5.6	3.1	✓
7' Lt. Toe Fill	9.0	-0.3	✓
74+50 " " "	5.0	3.7	✓
75+00 on RR Fill	4.8	3.9	✓
3' Lt. " " "	4.8	3.9	✓
9' Lt. " Toe "	9.4	-0.7	✓
75+60 on RR Fill	4.2	4.5	✓
+62 " " "	7.7	1.0	✓
+75 Not Ground	10.4	-1.7	✓
+94 " " "	10.0	-1.3	✓
76+00 End st. Fill	2.2	6.5	✓
76+142 = cross cb on Elbert 277	5.92		✓
Gut.	2.6	6.1	✓

Note: New Profile levels 68+184 to 90+8363
see Page 52

8.69

76+20		2.1	6.6	✓	
128		4.3	4.4	✓	
+32		2.7	6.0	✓	
+50		2.3	6.4	✓	
77+00		2.3	6.4	✓	
+50		2.1	6.6	✓	
78+00		1.3	6.9	✓	
TP	6.24	12.75	2.18	6.51	8M #16 P-18 10'E E Line
78+0440	= BC. cb Returns	5.8	7.0	Woden St	
26' Lt. on BC. Ref.		6.58	6.17	✓	
26' Rt. " BC Ref.		5.38	7.17	✓	
78+444	= Δ 0°05'4"	5.8	7.0	✓	
+84.4	opp cb BC Ref.	5.7	7.1	✓	
26' Lt.		6.28	6.47	✓	
26' Rt.		5.32	7.43	✓	
79+00		5.7	7.1	✓	
+50		5.4	7.4	✓	
80+00		5.2	7.6	✓	
+50		5.1	7.7	✓	
81+00		5.0	7.8	✓	
+50		4.9	7.9	✓	

Note: See New Levels P-52
from 68+48.47 to 90+83.63

12.75

"E" Line

29

82+00		4.7	8.1	✓	
+50		4.4	8.4	✓	
83+00		4.1	8.7	✓	
+50		3.9	8.9	✓	
84+00		3.7	9.1	✓	
+50		3.5	9.3	✓	
+64.5	opp BC. cb Ref.	3.4	9.4	10'E E Line Yerkes St.	
"	26' Lt. on cb Ref.	4.01	8.74	✓	
"	26' Rt. " " "	3.02	9.73	✓	
TP	5.77	14.52	3.93	8.82	8M #15 P-18
85+09.50	83+57.4	5.7	8.9	✓	
+45		6.3	8.3	✓	
86+00		5.5	9.1	✓	
+50		5.2	9.4	✓	
87+00		4.9	9.7	✓	
+50		4.8	9.8	✓	
88+00		4.8	9.8	✓	
+50		4.8	9.8	✓	
89+00		4.8	9.8	✓	
+50		5.2	9.4	✓	
90+00		5.7	8.9	✓	

	14.59	"E" Line	
90+83.63 = Δ 8°31' Lt.	6.2	8.4	✓
+93.65 opp cb. MH cad	6.1	8.5	✓
23.50 Rt. on cb	6.08	8.51	✓
38.50 Lt. " "	6.16	8.43	✓
91+00 on oiled Road	6.20	8.39	✓
+50 " " "	6.37	8.22	✓
92+00 " " "	6.70	7.89	✓
+21.3 opp MH	6.75	7.84	✓
5.3 Rt. on Rim MH	6.64	7.95	✓
" " " Flow line	11.60	2.99	✓
TP 3.51 11.70	6.40	8.19	✓ Nul 7R#4 P-18.
92+24.33 = Δ 8°31' Lt.	3.89	7.81	✓
93+06 on oiled Road	4.21	7.49	✓
94+00 " " "	4.53	7.17	✓
95+00	4.77	6.93	✓
96+00	5.26	6.44	✓
96+18 on oiled Road	5.31	6.39	✓
" " cb. 18.5' Lt.	5.18	6.57	✓
" " 28.5' Rt.	5.10	6.60	✓
96+56.5 ^{opp.} MH	5.17	6.53	✓
5' Rt. on Rim MH	5.12	6.58	✓
" Flow "	12.36	-0.66	✓

	14.70	"E" Line	30
96+94.8 on oiled Road	5.50	6.20	✓
" 28.5' Rt. on cb.	5.11	6.59	✓
" 18.5' Lt. " "	5.09	6.61	✓
97+53.66 ^{Rt. of 1st of} Way Line SDVA	5.28	6.42	✓ on oiled Road.
18.5' Lt. on cb.	4.94	6.76	✓
28.5' Rt. " "	4.84	6.86	✓
TP 1.82 10.78 ^{x corrected.}	2.73	8.97	✓ B.M. #17 P-18
97+80	4.8	6.0	✓
+85	3.7	7.1	✓
+95.0 ^{R.R.} Drainage Ditch	8.0	2.8	✓
97+98 on Roadbed Shoulder ^{R.R.}	6.3	4.5	✓
98+01.3 = MH Rail SDVA	5.71	5.07	✓
98+06.02 = SKY " " "	5.74	5.04	✓
+08 Shoulder	6.3	4.5	✓
+12 ^{R.R.} Drainage Ditch	8.5	2.3	✓
+21	4.2	6.6	✓
+30	5.2	5.6	✓
+50	5.1	5.7	✓
+75	4.6	6.2	✓
+95	5.5	5.3	✓
99+00	3.8	7.0	✓

10.78 ✓

"E" line

29+05	4.6	6.2	✓
+25	4.5	6.3	✓
+32	3.3	7.5	✓
+37 = N edge ditch	5.9	4.9	✓
+41 = S " "	6.0	4.8	✓
+46 N Shoulder RR bed	4.5	6.3	✓
+47.86 = N Rail Santa Fe	3.87	6.91	✓
+52.58 = S " "	4.01	6.77	✓
+54.5 = South Shoulder ^{RR}	4.8	6.0	✓
+61 = ditch	6.5	4.3	✓
+70	3.9	6.9	✓
+75	4.9	5.9	✓
100+00	5.4	5.4	✓
100 + 34.47 = 90°00'40" RT	6.03	4.75	on Line stake
	4.64	6.14	✓
	2.29	3.88	BM P-18
CHK BM #13	6.88	3.90	✓
			2' Fill Ground
101+00	4.7	6.1	✓
			2' Fill Ground
+50	4.4	6.4	✓
+61.5 = E Rail Spur ^{To Kelp Plant}	4.73	6.05	✓
+68.5 W " "	4.81	5.97	✓
+90	4.3	6.5	✓
			2' Fill Ground

10.78 ✓

31

102+00	5.7	5.1	✓
+03 Not Ground	6.9	3.9	✓
102+13	4.6	6.2	✓
			Note: for original Ground see Contour Map this block
+50	3.2	7.6	✓
103+00	1.5	9.3	✓
+50	1.5	9.3	✓
104+00	1.8	9.0	✓
+50	1.2	9.6	✓
7D 3.86 12.71	0.93	2.85	✓
105+00	4.6	9.1	✓
+15	5.0	8.7	✓
+25	10.9	2.8	✓
+65	10.5	3.2	✓
+85	4.3	9.4	✓
106+00	4.2	9.5	✓
106+38.38 = Lt 83°22'	4.55	9.16	on Hub
107+00	4.8	8.9	✓
+51 on Ground	4.8	8.9	✓
+57.5 = NLY Rail Spur To Treatment 436		9.35	✓
+71.05 " "	4.46	9.25	✓
+76	5.0	8.7	✓

1371

"E" line

108+00

54

8.3 ✓

108+50 35° A 44° 05' Rt

4.65

9.06 ✓

+53.35 on East edge Box "A"

5.65

8.06 ✓

BM #12

chk. Mon

5.47

8.24 P. 18

Completed 9-17-41

Walker - notes.

Wells - T

Farrar - Ref.

8.52 ✓

Alternate "E" Line

28+64.45 - Opposite ch. & C. Pt.	3.4	4.9	✓		
26 ft. on C.	3.11	5.21	✓		
26 ft. " "	2.50	*8.2	✓		
29+00	3.4	4.9	✓		
+50	3.7	4.6	✓		
100+00	3.8	4.5	✓		
+50	4.2	4.1	✓		
101+00	4.5	3.8	✓		
+50	5.0	3.3	✓		
102+00	5.2	3.1	✓		
+50	5.6	2.7	✓		
103+00	5.9	2.4	✓		
+50	6.3	2.0	✓		
104+00	6.6	1.7	✓		
+55.24 = E. line Pica St.	6.8	1.5	✓		
+76.95 = Existing 26" sewer.	7.2	1.1	✓		
23.6' Lion Run MH	7.23	1.09	✓		
" " " Fluv	9.03	-7.94	✓		
TP	3.30	5.02	6.60	1.72	✓
TP	5.25	2.96	0.81	4.22	✓

MH full of water
check this Elev.
C.T. NE S.W. A
& Filbert
3/2 Elmo S.W. A
& Lion Filbert

9.96

Alternate "E" Line

34

F.B. 1597-27				
check, U.S. Govt. B.M.	2.59	7.37	50' E 32nd St. AT & S.F. 190. & A.R.B.	
		7.29	= 8 M.	
		0.08	5 ft. for	

Completed 2-17-41

Wells
D. Farwell
Wells

Walker
Wells
D. Farrow
9-25-41

VALENCIA PARK SEWER Unit #1
PROFILE LEVELS for "E-2" Line

153.60

36

Location F.B. 1610 - 42-42

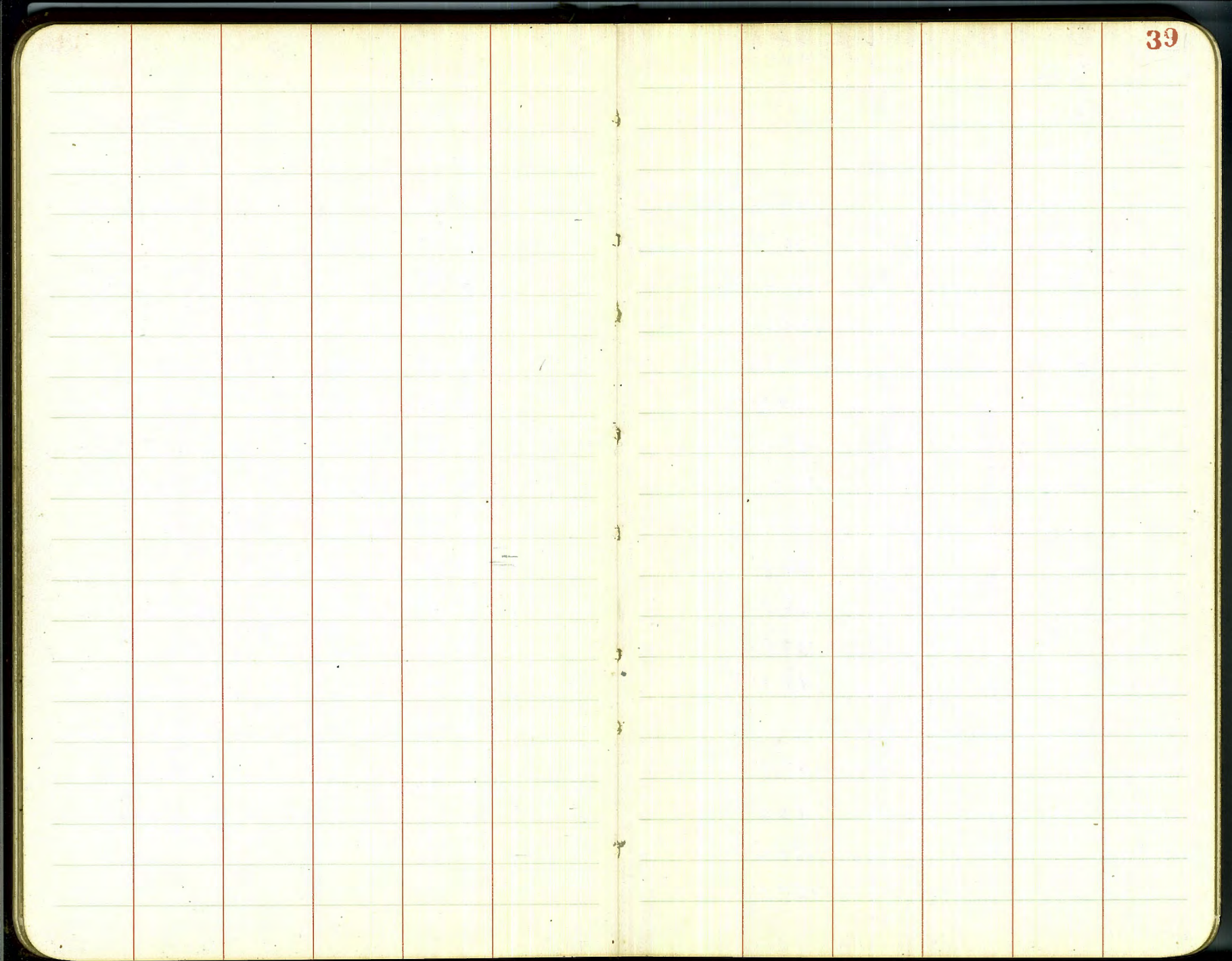
	130.8	164.85		151.77	BM #10 P-3 24' ch. Mt. Furnish Santa Maria Terr.
IP	12.73	177.58	0.00	164.85	
IP	12.34	189.70	0.22	177.36	
IP	10.62	192.80	0.52	189.18	
IP	2.47	195.14	7.13	192.67	
IP	0.83	186.67	2.30	185.84	Gene. Man N. 80' dry Line 51' Galbar Enmas way
IP	1.24	175.25	12.66	174.01	
IP	0.17	162.79	12.63	162.62	
IP	0.97	153.60	10.16	152.63	BR For. Stake 30.50' E of W.L. Valencia Park FB 1610 - 42
0+00 on Rim Mt.			3.76	149.96	1/2 wash
" " Floor "			10.06	143.54	
					2" x 4" Long Stake
0+03.20 on Stake			2.84	150.76	
0+03.30 on Ground			3.7	149.9	
0+4.50			4.5	149.1	1/2 wash
+70			5.0	148.6	1/2 "
1+00			5.6	148.0	wash 20' Mt.
1+39.22 = Δ H. 51' 42' 45"			7.46	146.14	
50' Mt. = 1/2 Wash			2.6	146.0	
1+85 = E. Bank Wash			2.3	144.3	

1+91 - 1/2 Wash	10.4	143.4
2+00 in "	10.7	142.9
+15 " "	11.1	142.5
+25	10.2	143.4
4' 1/2 in Wash	12.2	141.4
2+50	10.6	143.0
+88 = Sink of Wash	11.4	142.2
3+00 in Wash	13.3	140.3
+06 " " Wedge	14.0	139.6
+11 on Bank	11.2	142.4
+33 " "	11.7	141.9
138 in Wash	13.4	140.2
+50 " "	18.6	140.0
3+70	16.0	137.6
+85.46 on Top 30" Pipe 13" x 7.8	7.91	145.69
9.7 Mt. on Cons. Pier	14.14	139.46
5' Lt. on Top 1' x 1' Pier	12.58	141.02
3+28 in Wash	16.2	137.4
4+00 on Bank	15.0	138.6
+07 " " Top	13.2	140.4
IP	0.16	141.29
	12.47	141.13

	141.29	"E"-2" line	
4+35 = edge Wash	3.9	137.4	
12' Rt. in Wash	4.6	136.7	
4+48	4.1	137.2	
+55	3.1	138.2	
+80	4.5	136.8	
4+95	5.5	135.8	
5+00	5.0	136.3	
+06	5.0	136.3	
+12	6.7	134.6	
5+157 = Lt. 37° 45' 30"	6.7	134.58	on stake
30' Rt. on split Δ	7.1	134.2	in Wash
5+50 = L Wash	8.5	132.8	
6+00 = L "	9.5	131.8	
+50 = Bottom Wash W. edge	11.3	130.0	
+55 on Bank	9.6	131.7	
7+00	8.8	132.5	
2' Lt. on W. Bank	10.0	131.3	
15' Lt. in L Wash	12.6	128.7	
7+40.78 = Lt. 32° 20'	10.2	130.37	on stake
25' Lt. on split Δ = L Wash	14.3	127.0	
7+85	12.6	128.7	

	141.29	"E"-2" line	37
8+00 in E Wash	15.0	126.3	
+13 = Wash W. edge	14.5	126.8	
+15 = Top Bank	12.8	128.5	
+42	14.0	127.3	
13' Lt. in L Wash	15.5	125.8	
8+60 in L "	15.4	125.9	
+80	13.8	127.5	
9+00	13.6	127.7	
13' Rt. in Wash	17.5	123.8	
T.P. 0.69 131.41	10.57	130.22	
9+39.95 = Lt. 28° 12'	5.11	126.30	on stake
30' Rt. Plate Forward Turn	8.1	123.3	L Wash
9+85	7.2	124.2	
10+00	8.9	122.5	
6' Rt. in Wash	10.0	121.4	
10+18 " "	10.4	121.0	
+28 = W. Bank	8.9	122.5	
+50	8.9	122.5	
15' Lt. = L Wash	11.3	120.1	
11+00	10.2	121.2	
12' Lt. in L Wash	12.4	119.0	
11+50	10.9	120.5	
3' Lt. = L Wash	13.0	118.4	

	131.41		E-2" line	
11+68		10.9	120.5	
3' Lt = E Wash		13.0	118.4	
12+00		11.0	120.4	
19' Lt = E Wash		11.5	119.9	
12+50		12.4	119.0	
+67		12.0	119.4	
+78		10.7	120.7	
7' Lt = E Wash		15.0	116.4	
12+90		12.2	119.2	
13+00		13.2	118.2	
7' Lt " " "		16.0	115.4	
7P 187	131.02	12.26	112.15	
13+40		4.2	116.8	
25' Lt = E Wash		5.4	115.6	
13+60		5.1	115.9	
70' Lt = E Wash		6.7	114.3	
14+00		6.4	114.6	
20' Lt E Wash		7.5	113.5	
		7.00	114.02	Passing Gate
14+15.66 = intersection E-1" line			114.02	P-5
= 7+12.90 (P-5 "E-1" line)			114.02	P-5
			0.00	

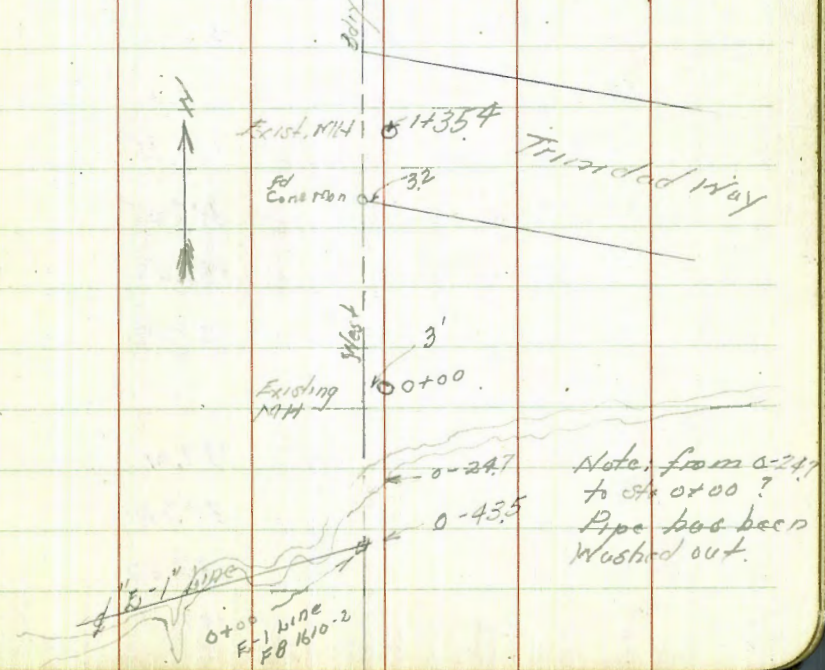


Walker
Wells
D. Farrott
9-26-41

Profile Levels for Sewer
Unit #2 VALENCIA PARK
3' East of West Boundary Unit #2

	8.66	144.86	136.20	B.M. Stake 0+00 P-4
0-43.5 opposite 0+00 P-4	8.4	136.5	136.5	on E. Existing Sewer
0-33	9.3	135.6	135.6	
0-25	10.7	134.2	134.2	
0-24.7 = first good joint				from end.
0-21.7 = End pipe from South	10.15	131.71	131.71	
0-19 = Bottom Wash	14.6	130.3	130.3	
0-11 in "	13.7	131.2	131.2	
0-2	9.8	135.1	135.1	
0+00 on P-10 M.H.	8.11	136.75	136.75	
0+02	8.6	136.3	136.3	
0+06	8.2	136.7	136.7	
0+08	7.1	137.8	137.8	
0+10	1.9	143.0	143.0	
TR 12.72	157.56	144.84	144.84	
0+65	8.9	148.7	148.7	
0+95	7.6	150.0	150.0	
1+00	6.4	151.2	151.2	
1+08	2.1	155.5	155.5	

1+11	1.7	155.9	155.9	
1+14	2.2	155.4	155.4	
1+22	2.0	155.4	155.4	
1+25	2.5	155.1	155.1	
1+28	1.8	155.8	155.8	
1+33	1.7	155.9	155.9	
1+35.4 = E. Existing M.H.	1.15	156.41	156.41	B.M.
" Flow M.H.	15.42	142.14	142.14	
TR 6.45	153.63	157.18	157.18	
64.812/10 = 3	14.88	151.25	151.25	
		151.77 = B.M.	151.77	
		0.02 = Error		



Note: from 0-24.7 to 0+00? Pipe has been washed out.

indexed
C.S.K.

Moore
Hazard
Hoopes
4-28-47.

148.01

Curb & gwt. levels on

1477.47

FANUCL ST 80' wide no curbs

W cb

6.19 144.8v

Locating to Toungvaise

GT

6.64 141.37

SW. 1/4 CT.

FANUCL +
Toungvaise

E cb

5.26 142.75

T.P. 1.13 159.68 158.85

GT

5.80 142.21

T.P. 0.57 148.01 12.24 147.44

1477.47

E cb

1.71 146.30

50' N of E boring = 0 + 0

GT

2.20 145.81

E cb 9.60 138.41

W cb

2.64 145.37

GT 10.28 137.73

GT

3.12 144.89

W cb 10.49 137.52

T.P.

10.9 W 158.36 0.57 147.44

GT 10.99 137.02

1487.47

SH OPAI ST = 20' wide

15' curbs
to

0 + 06.04 = E.C. RET. R 30'

W cb

10.72 147.60

W cb 10.26 137.75

GT

11.30 147.06

GT 10.76 137.25

E cb

9.71 148.65

E cb 9.28 138.63

GT

10.25 148.11

GT 9.92 138.09

SE RET. B.C.

5' S of SH OPAI

0 + 22.47

E.C. cb

9.85 148.51

E cb 8.80 139.21

GT

10.37 147.99

GT 9.39 138.62

#1

W cb 9.74 138.27

cb

9.65 148.71

GT 10.20 137.81

GT

10.20 148.16

Red. & Plotted 4-29-47 W.

15836

	#1		
cb		9.20	148.96
gt		9.95	148.41
	#3		
cb		9.15	149.21
gt		9.71	148.65
	#4 EC EL		
cb		8.91	149.45
gt		9.44	148.92
	SW Ret.		
	BC Ret		
cb		10.85	147.51
gt		11.22	146.94 =
	#1		
cb		10.69	147.67
gt		11.20	147.16
	#2		
cb		10.57	147.79
gt		11.02	147.34
	#3		
cb		10.48	147.88
gt		10.91	147.45

15836

42

	#4 = EC w.h.		
cb		10.38	147.98
gt		10.93	147.43
	NEW Ret on OPRI		
cb	B.C. w.h. Equival	9.37	148.99
gt		9.98	148.38
	#1		
cb		9.10	149.26
gt		9.74	148.62
	#2		
cb		8.86	149.50
gt		9.29	148.87
	#3		
cb		8.62	149.74
gt		9.25	149.11
	#4 = EC		
cb		8.37	149.99
gt		8.95	149.41
	NE Ret.		
cb	B.C. EL Equival	6.84	151.50
gt		7.50	150.86

	#1		
cb		7.13	151.23
gt		7.83	150.53
	#2		
cb		7.27	150.99
gt		8.11	150.25
	#3		
cb		7.21	150.95
gt		8.12	150.24
	#4 = EC		
cb		7.37	150.99
gt		7.94	150.42
	010 = N L O P d 1 ST.		
wc cb		8.52	149.84
gt		9.13	149.23
ECB		7.42	150.94
gt		8.08	150.28
	1+00		
ECB		4.44	153.92
gt		4.98	153.38
wc cb		5.29	152.97
gt		5.93	152.43

	2+00		
wc cb		2.26	156.10
gt		2.76	155.60
ECB		1.27	157.09
gt		1.76	156.60
T.P.	854	166.73	2.15 158.21
	2+24.70 SB TO		
ECB		7.27	159.06
gt		8.23	158.50
	SEC. FANOUT		
B.M. Top P.H.		5.25	161.28 161.28
wc cb		8.50	158.23
gt		9.12	157.61
cb		8.18	158.55 158.55
	check to orig. B.M.		
	SW PLOT TO		
	LINE + FANOUT		
AC CB	= 5' S of SB	8.69	158.04
gt		9.22	157.50
	#1		
cb		8.24	158.39
gt		9.02	157.76
	#2		
cb		8.11	158.62
gt		8.75	157.98

#3

cb 8.11 158.62

gr 8.77 158.01

#4 = EC wch Fanuel

cb 8.23 158.50

gr 8.78 157.95

S.E. Ret

cc cb 7.74 158.99

gr 8.33 158.40

#1

cb 7.01 159.12

gr 8.16 158.57

#2

cb 7.30 159.37

gr 7.92 158.81

#3

cb 7.07 159.67

gr 7.53 159.20

#4 EC EL Fanuel

cb 6.74 159.99

gr 7.36 159.37

N.E. Ret

cb EL Fanuel 5.67 161.07

gr 6.58 160.35

#1

cb 6.07 160.67

gr 6.68 160.05

#2

cb 6.32 160.41

gr 6.92 159.81

#3

cb 6.34 160.39

gr 6.90 159.83

#4 = EC = 5' N of N.L.

cb 6.27 160.46

gr 4.76 159.97

N.W. Ret

B.C. cb wch Fanuel 7.20 159.53

gr 7.90 158.83

#1

cb 7.23 159.50

gr 7.93 158.80

	#1		
cb		7.25	159.48
gt		7.90	158.83
	#2		
cb		7.22	159.51
gt		7.87	158.86
	#x = EC = 5' N. of N		
cb		7.17	159.56
gt		7.74	158.99
	0 to 10 = incl. Town Machine		
W cb		7.23	159.50
gt		7.83	158.90
E cb		6.32	160.41
gt		6.85	159.88
	1 to 10		
E cb		5.17	161.56
gt		5.74	161.01
W cb		6.17	160.56
gt		6.64	160.09
	1 to 10		
W cb		4.96	161.77

W gt		5.49	161.24
E cb		4.01	162.72
gt		4.55	162.18
	#1 4.93	5.49	161.24
E cb		3.02	163.67
gt		3.86	162.87
W cb		4.17	162.56
gt		4.80	161.93
I.P.	6.21	169.15	3.79
	SE Ret on Edge of 4		
cb	5' S of SL	5.69	163.46
gt		6.28	162.87
	#1		
cb		5.35	163.80
gt		6.19	162.96
	#2		
cb		4.91	164.24
gt		5.64	163.51
	#3		
cb		4.30	164.85
gt		4.99	164.16

Closed West School Ground

70' wide
15' cbs
20' R

16915

	44 = EC. Ek Fannell		
cb		3.68	165.47
qtz		4.35	164.80
	N. E. Ret.		
EC cb	Ek Fannell	3.72	165.43
qtz		4.35	164.80
	H1		
cb		4.16	164.99
qtz		4.80	164.35
	H2		
cb		4.64	164.51
qtz		5.29	163.76
	H3		
cb		4.95	164.19
qtz		5.81	163.34
	44 = EC = 5' N of N1 Sapphire		
cb		5.06	164.09
qtz		5.77	163.38
	0 to = N1 Sapphire St		
EC cb		5.05	164.10
qtz		5.85	163.30

16915

46

w cb		6.20	162.95	
qtz		6.76	162.39	
	100			
w cb		5.79	163.36	
qtz		6.29	162.86	
EC cb		4.78	164.37	
qtz		5.36	163.79	
	1488.75 = BC. cb. Ret on East			
EC cb		4.57	164.58	
qtz		5.00	164.15	
w cb		5.42	163.73	
qtz		5.98	163.17	
	2 + 44.94 = EC Ret on West			
w cb		5.17	163.98	
qtz		5.70	163.45	
	2 + 54.94 = S. L. Turquoise St			
w cb		5.15	164.00	
qtz		5.69	163.46	
	check to orig. DJT long shot and	10.41	158.54	158.55

Walker Hurdin Reed 7-22-42	Levels for Line Change			
	"E" - Line Valencia Port Sewer			
	Set. Vertu + Urea etc			PNT #13 P-18
	11.74	15.62	3.88	
101+1338		10.66	4.96	
+50		10.6	5.0	
+73.7 E. Rail Spur		8.88	6.74	
+80.2 W " "		8.94	6.68	
102+00		10.2	4.7	
+30		11.2	4.4	
+40		7.8	7.8	
+50		6.7	8.9	
103+00		4.3	11.3	
+50		4.7	10.9	
104+00		5.5	10.1	
+50		5.5	10.1	
105		5.6	10.0	
+50		6.0	9.6	
106+00		7.3	8.3	
+20		10.7	4.9	
+30		7.1	8.5	
107+1553 = E.C.		6.32	9.30	
+50		6.8	8.8	

108+25

6.4

9.2

108+8470 = ART 90°

6.5

9.1

Next Alignment for Line Change

See E.B. 1610 P. 56-57

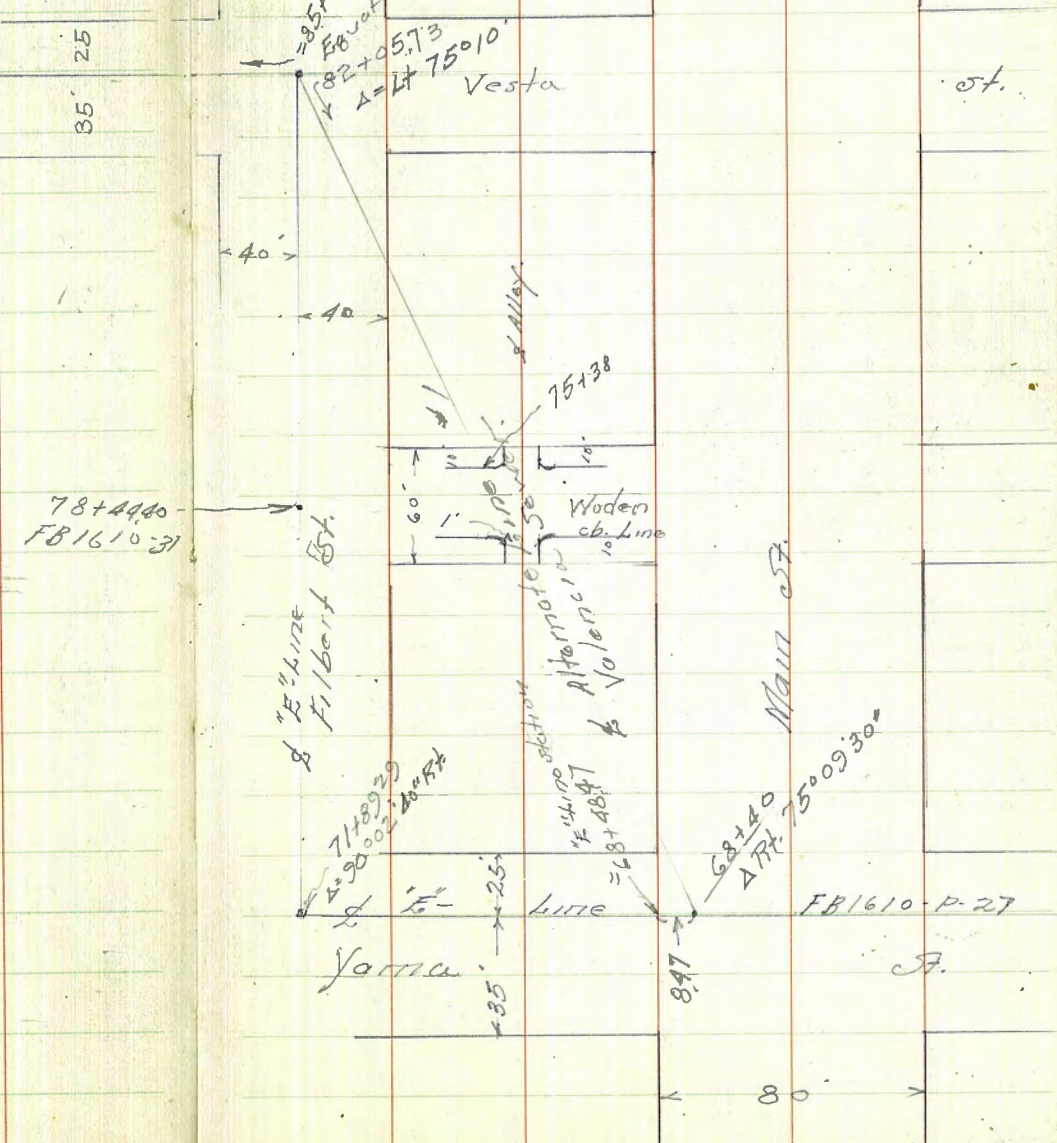
Notes for Elevations of Original ground

in this block Set. Vertu + Urea see

Contour Map made before this was filled in.

Walker
Osborne
Hazard
6-3-43

Location Proposed Change
in Alignment of Trunk Section of
Volareta Park E. Line



St.

FB1610-P-27

St.

Walker
Osborne
Hagerd
6-2-43

New Profile Levels for "E" Line
Valencia Park Sewer
from Yuma To Vista
Between Main & Filbert Sts.
As per Section Page 49

	3.02	(10.30)	72.8		
68+62	75	2.8	✓		
+73	68	3.5	✓		
+81	87	1.6	✓		
69+00	85	1.8	✓		
+07	63	4.0	✓		
+50	76	2.7	✓		
70+00	82	2.1	✓		
+50	8.2	2.1	✓		
71+00	71	3.2	✓		
+50	5.9	4.4	✓		
71+89.29 = Δ Rt 90°02'40"	5.14	(5.16)	✓		
72+00	5.7	4.6	✓		
+20	6.2	4.1	✓		
+50	6.2	4.1	✓		
73+00	6.0	4.3	✓		
+50	5.4	4.9	✓		
74+00	5.6	4.7	✓		

	(10.30)				50
74+50				5.2	5.1 ✓
75+00				4.6	5.7 ✓
+06 Edge Pav.				4.63	5.67 ✓
+18 Gut "				4.87	5.43 ✓
76+00 on Paving.				4.38	5.92 ✓
77+00 " "				3.95	6.35 ✓
78+00 " "				3.49	6.81 ✓
78+44.40 = Δ Lt 0°05'30"				3.44	(6.86) Irregular
79+00 on Paving				3.48	(6.82) ✓
T.P.	4.62	(13.88)		1.04	(9.26) ✓
80+00 on Paving				6.80	7.08 ✓
81+00 " "				6.62	7.26 ✓
82+00 " "				6.31	7.57 ✓
83+00 " "				5.98	7.90 ✓
84+00 " "				5.61	8.27 ✓
85+09.50 = Δ Lt 89°57'				5.06	8.82 ✓
+35.5 Gut on Pav				5.96	8.42 ✓
86+00 on Pav				4.90	8.98 ✓
T.P.	3.08	(14.30)		2.66	(11.22) ✓
+37.2 Rail Spur				5.13	9.17 ✓
+59.8 " "				5.15	9.15 ✓

Cont. P-51

1430

Cont. from P-50

87+00	on Loring	4.83	9.47	✓
88+00	" "	4.47	9.83	✓
89+00	" "	4.73	9.57	✓
90+00		5.10	9.20	✓
40	22	5.77	8.53	✓
chk	Top Elm Hyd.	3.08	11.22	✓ Filbert ✓ Vesta
			9.01	
			20.23	459.16
			20.24	by U.S.N.
			0.01	Marked.

Walker Osborne Hazard 6-3-43

Profile Levels "Alternoto Line"
 Valencia Park Sewer through Regraded & Paved Portion Navy Yard from Yanna & Moirs Sts. To Vestal & Filbert Sts.

Location D- 3.02 $\langle 10.30 \rangle$ $\langle 7.28 \rangle$ BM #18 P. 50 ft

68+40	2.1	8.2	✓
+56.5 Conc. Gut.	2.1	8.2	✓
+39.7 " " at cb.	2.1	8.2	✓
+59.7 Top cb.	1.6	8.7	✓
+81	1.1	9.2	✓
+84	4.5	10.8	✓
69+00	4.2	10.5	✓
+03	0.6	9.7	✓
10' Lt. - edge Bank	0.6	9.7	✓
17' " " " " " " " "	9.9	0.4	✓
25' " " " " " " " "	9.9	0.4	✓
26' " " " " " " " "	7.8	2.5	✓
69+35	1.1	9.2	✓
2' Lt. - Top	1.3	9.0	✓
11' Lt. " " " " " " " "	10.0	0.3	✓
22' Lt. " " " " " " " "	10.0	0.3	✓
23' Lt. Top	8.0	2.3	✓
69+44	2.5	8.8	✓
10' Lt.	5.3	5.0	✓

52

$\langle 10.30 \rangle$

69+61	4.4	5.9	✓
+65	6.9	3.4	✓
10' Lt.	6.9	3.4	✓
Lefts & Rts Same as E from here.			
69+99 = Base old section	7.1	3.2	✓ Well 75 thick
70+00 on Wall	6.04	4.26	✓
+01	7.8	2.5	✓
70+19 = Base Foundation	7.9	2.4	✓
70+19.5 on " "	5.98	4.32	✓
70+19.75 Base " "	7.9	2.4	✓
70+50	7.4	2.9	✓
+75	7.3	3.0	✓
+76	4.3	6.0	✓
71+00	3.2	7.1	✓
+50	3.2	7.1	✓
+75	2.8	7.5	✓
72+00	1.2	9.1	✓
+40	1.1	9.2	✓
+65	1.9	8.4	✓
73+00	2.2	8.1	✓
+50	2.1	8.2	✓

10.30

73+80		2.5	7.8	✓
+85		1.3	9.0	✓
74+00		1.5	8.8	✓
+50		1.5	8.8	✓
74+96		2.1	8.2	✓
1' Lt. on cb. Alley Rct.		2.08	8.22	✓
74+97 = E cb. Woden	Line	2.1	8.2	Not on cb. in Alley
75+00		1.1	9.2	✓
+38 Gant.		2.5	7.8	✓
+38 on Wcb. Woden		1.84	8.46	on top cb
+70		1.6	8.7	✓
76+00		1.1	9.2	✓
TP	4.62	1.04	9.26	SE. Top Hdt. Filbert & Woden.
76+40		1.6	9.3	✓
+70		4.5	9.4	✓
77+00		4.4	9.5	✓
+50		3.9	10.0	✓
78+00		3.9	10.0	✓
+50		4.7	9.2	✓
79+00		5.1	8.8	✓
+50		3.6	10.3	✓

13.88

80+00		4.3	9.6	✓
+50		4.3	9.6	✓
+67 = Nudge Wulff. Filbert St.		4.44	9.44	✓
81+03 = N cb. Filbert St		4.26	9.52	✓
" " Gant "		5.04	8.84	✓
82+0573	Alt. 75°10'			✓
=85+09.50		5.06	8.82	✓
Cont. P-50 = Line on Verdu St.				

Walker
Hazard
6-7-43

Equation $\begin{cases} F87610 = P.31 \\ 78+4440 \\ 75+83 \end{cases}$

40' x 40'

30' 30'

Location Proposed Alternative #2 line
Valencia Park Trunk Sewer
Levels P-55

Woods

Alternative #2 Proposed Sewer

80'

North

Yuma

68+41.47
= Δ 74° 52' 03"

35' → 25'

Walker
Hazard
6-7-48

Levels for Alternate Line #2
Valencia Park Sewer
Between Yuma & Modern St.
from Main To Filbert & Modern
Location P-54

4.11 11.39

BTA #18
P-50
(7.28)

68+41.97=A

68+60	3.1	8.3	✓
+68	2.7	8.7	✓
+75	0.3	11.1	✓
68+93	1.4	10.0	✓
69+08	1.1	00.3	✓
+25	11.1	0.3	✓
+30	9.2	2.2	✓
70+00	8.5	2.9	✓
+75	9.4	2.0	✓
71+00	7.3	4.1	✓
+50	5.9	5.5	✓
72+00	6.9	4.5	✓
+50	6.8	4.6	✓
73+00	6.2	5.2	✓
+50	4.8	6.6	✓
74+00	4.2	7.2	✓

(11.39)

55

74+50

4.2

7.2 ✓

75+00

4.3

7.1 ✓

+21 = edge Par.

4.29

7.10 ✓

+27 Ent

4.71

6.68 ✓

75+83 = RT 27⁰ 54' Cole.
= 78+44.40 P-29 } Elevation

4.53

6.86 ✓

chks.

Page 50

Wittke
Hogard
6-18-43

Levels for Sewer Profile
of Ground Line
Valencia Park

Trunk Sewer - Location
Page 56

Station	Level	Depth	Notes
	5.88	12.68	
66+13.49 = 2' Rt 90°	7.31	3.4	Fl. on Rim MH 66+19. P. 27
+22	8.3	4.4	
+24	4.7	8.0	
4' Rt = 2' Ditch	7.2	3.5	
67+00	6.2	6.5	
6' Rt " "	8.5	4.2	
67+87	8.0	4.7	
3' Rt " "	8.7	4.0	
67+90 = 2' "	8.7	4.0	
68+00 " "	8.9	3.8	
+10	7.6	5.1	
69+00	7.6	5.1	
3' Lt = 2' "	9.0	3.7	
69+39 End Ditch	8.1	4.6	
5' Lt on Rim MH	5.50	7.18	
Flow "			

(12.68)

57

70+00	8.6	4.1	
+60	8.1	4.6	
71+05	3.7	9.0	
+20	1.1	11.6	
72+00	0.8	11.9	
T.P. 39.0 (14.55)	2.03	(10.65)	
72+45 = E edge Walk in Alley	3.89	10.66	
E edge 72+48 Oil & Rock Pav.	4.10	10.45	
+68 " " "	3.20	11.35	
72+73.56 = 90° Lt.	3.16	11.39	
on Rim MH	3.22	11.32	
" Flow "			
73+00 on Oil & Rock Pav.	3.22	11.33	
74+00 " " "	4.11	10.44	
+28.73 = HL Main St.	4.30	10.25	Asphalt Pav. = End Oil & Rock Pav.
+26.8	4.30	10.25	
2.6' Rt. on Gas MH	4.25	10.30	
(74+56.7) 3.5' Rt. " "	4.28	10.27	
74+68.73 = 2' Main	4.19	10.36	
75+08.7 = 5.2' " = End Pav.	5.11	9.44	
Cont P. 58			

(14.55)

Cont. from 57

58

76+00 59 8.6 ✓

77+00 63 8.2 ✓

78+00 80 6.5 ✓

705 Hedge Row 7.35 6.70 ✓

78+49 → Equation
= 78+494 ✓ 7.70 6.85 ✓

chk 78+444 P-55 7.70 6.85 ✓

6.86
0.1 Error

Leads on proposed Service Rd.

Mid. Curve

T.P. 12.43 221.16 0.39 208.73

1749.56 B.C. 67

+ 50

T.P. 13.04 209.14 0.60 196.08

1700

0 + 4714 Nly. Foothill edge Pav.

2 + 0 Foothill Blvd.

Near BR 11.57 196.18

185.11 Foot hill of
Equation

Notes Red. T. plotted 5-18-42 C.B. Hough

LT.

61

2211.2

211.3
9.9
15
25
221.16
211.7
207.2
15.0
15
15.7
25

2050
6.5
15
206.5
2.0
11.0
15
207.1
203.1
6.0
15
201.8
7.3
10

1982
10.9
15
1986
10.5
1998
9.3
10
1988
10.3
15
1971
7.0
10

2091.2 ✓
193.9
1.8
15
191.5
5.2
12
191.8
2.0
10
1931
3.0
10
191.8
4.9
15
1914
5.3
20

1851
11.6
c6.
T.P.
B.C.
17 → 181.0
10.7
Mid.
Ret.
c6
17 → 187.2
9.5
c6.
end
17.2
186.6
10.1
17.2
97
186.8
10.2
185.8
10.9
13
97
186.3
10.6
13
c6
end

1840

1840

12.7

196.8 ✓

+ 50

5

T.P. 1w.90 ~ 46.43 0.33 ~ 33.53

+ 50

10007 ER

T.P. 12.79 ~ 23.86 0.09 ~ 221.07 = Rock TIP
fac break
on here

Mid Curve

3 + 05.75 B.C

~ 98.32 EC

222.16

LT 2447
2481 +1.7
15
2444
2.0
15

2424
10
2408
50
2368
7.5
15
2276
18.5
35
2252
21.2
55

2443
2389
+5.0
15
2347
+1.0
2295
4.4
15
2228
11.1
30

2911
2.8
15
2273
5.5
2209
12.0
15
2153
20.0
30

23380
2243
+3.1
15
2212
0.0
2157
5.5
15
2088
12.4
30

2188
2.4
15
2189
2.3
12
2141
71
2092
12.0
15
2047
16.5
30

2178
3.4
12
2144
6.8
4
2130
8.2
2091
12.1
15
2048
15.4
30

221.10
Σ

	LT	RT	63
	1270	294.74	284.04
check to BM	294.74	1270	284.09
T.P.	11.40 ✓	294.79	0.05 ✓
			283.39
			Rock
7 + 80			
7 + 50			
T.P.	11.56 ✓	283.44	0.35 ✓
			270.88
7			
6 + 50			
T.P.	12.70	271.23	0.14
T.P.	12.70	271.23	0.14
T.P.	8.72	271.52	0.04
			270.83
6 + 00			

246.43

LT	RT	63
284.8	284.8	271.3
+ 0.9	1.9	7.5
15		15
280.9	275.1	269.9
3.0	8.2	14.0
15		15
277.9	265.2	261.6
+ 0.5	5.0	7.6
15		15
262.5	257.0	254.5
5.7	14.2	19.7
15		15
256.8	249.4	243.7
+ 8.3	+ 3.0	2.7
15		15
248.5	246.4	235.1
		11.3
		35

± 50

10

T.P. 11.60 305.11 1.23 ± 93.51

9 ± 60.9 4.4 E ± W Rd. on S side. Res. Site

9 ± 30.9 4.4 of Rd. 4.51 190.23 ± 27 RT. B.M. R.P. HUG

8 ± 80.9

8 ± 50.90 Sly Lot 2

8

22474

2886	2883	2899	2904	2900	2890	2870	2826
16.5	16.5	16.1	14.7	15.1	14.1	18.1	22.5
135	115	25	30	15		15	25
2886	2868	2876	2898	2915	2919	2918	2826
18.5	18.3	17.5	15.3	13.0	13.2	13.3	22.5
	115	75	30	15		15	

305.11

2913

2982

2934

S.E. Cor. Res. SITE → 2.4 15

2907

2923

2919

4.0 15

2.4 15

2.8 15

4.51

26.7

22.7

R.P.

2887

2890

2875

6.0 15

5.7 15

7.2 15

284.7

10.0 25

2859

2852

2820

8.8 75

9.5 15

12.7 15

276.0

18.7 30

2849

2827

2786

9.8 15

12.0 15

11.1 15

2729

21.5 30

29474

14

+50

F.P. 10.57 311.89 3.79 301.32

13

+50

12

+50

11

305.11

2979

$\frac{14.0}{115}$

3002

$\frac{11.7}{115}$

2990

$\frac{12.9}{65}$

3013

$\frac{10.6}{65}$

3022

$\frac{9.7}{75}$

3024

$\frac{9.5}{15}$

3040

$\frac{7.9}{15}$

3034

$\frac{8.5}{15}$

3055

$\frac{6.2}{15}$

3045

$\frac{7.4}{15}$

65

2991

$\frac{6.0}{115}$

2999

$\frac{5.2}{100}$

2993

$\frac{5.8}{65}$

2993

$\frac{5.8}{45}$

31189

3002

$\frac{4.9}{15}$

3011

$\frac{4.0}{15}$

3030

$\frac{2.1}{15}$

2976

$\frac{7.5}{115}$

2967

$\frac{8.2}{65}$

2975

$\frac{7.0}{70}$

2995

$\frac{5.6}{75}$

3012

$\frac{3.9}{15}$

3022

$\frac{7.7}{15}$

2950

$\frac{10.1}{115}$

2946

$\frac{10.5}{65}$

2959

$\frac{9.2}{40}$

2978

$\frac{7.3}{15}$

3006

$\frac{4.5}{15}$

3005

$\frac{4.2}{15}$

2921

$\frac{13.0}{115}$

2927

$\frac{12.2}{65}$

2946

$\frac{10.5}{35}$

2960

$\frac{9.1}{15}$

2975

$\frac{7.0}{15}$

2969

$\frac{8.2}{15}$

2905

$\frac{14.6}{135}$

2904

$\frac{14.7}{115}$

2910

$\frac{14.1}{65}$

2922

$\frac{12.9}{30}$

2931

$\frac{12.0}{15}$

2935

$\frac{11.6}{15}$

2912

$\frac{13.9}{15}$

305.11

T.P.

11.7 300.74

14

+50

15

14+50

311.89

Lr

F

Rr

66

	304.2	307.9	309.7	311.7
R.M.	$\frac{7.7}{3}$	$\frac{4.0}{15}$	$\frac{2.2}{2}$	$\frac{0.1}{15}$

	297.5	306.2	307.7	310.6
R.M.	$\frac{14.4}{75}$	$\frac{5.7}{15}$	$\frac{4.2}{2}$	$\frac{13}{45}$

	292.0	299.5	304.4	305.2	306.0
	$\frac{12.9}{115}$	$\frac{12.4}{60}$	$\frac{7.5}{15}$	$\frac{6.7}{1}$	$\frac{5.9}{15}$
	290.4	296.4	300.4	302.3	303.5
Carbon	$\frac{21.5}{110}$	$\frac{15.5}{25}$	$\frac{11.5}{15}$	$\frac{9.0}{1}$	$\frac{2.4}{15}$

311.89

Levels on Sly. E + W 30' Rd

4 + 80 = W.L. of N + S Rd. on W. side Res Site

224 T.P. Hub 11.62 297.00 10.24 285.38 SW Cor Res. Site

2 + 50

1

7 + 50

1 + 00

0 + 50

0 + 0 = W.L. of Service Rd N + S on E side Res.

24.27 R.P. Hub 5.59 295.82 290.23

Reduced & Plotted 5-16-92 GBN

LT	279.1	279.8	279.8	279.7
	17.9	17.4	17.1	17.3
	30	15		15
		297.0		
	283.9	284.5	284.4	285.35
	11.7	11.2	11.4	10.24 = Hub
	30	15		15 SW Cor Res. Site
	284.4	284.5	285.3	286.0
	11.4	11.0	10.5	9.8
	30	15		15
	283.5	284.1	284.8	285.5
	12.3	11.7	11.0	10.3
	30	15		15
	282.7	283.5	283.7	284.3
	13.0	13.0	12.1	11.5
	30	15		15
	281.3	281.8	281.4	281.0
	10.5	10.0	9.4	8.8
	30	15		15
		295.2		

Levels on West N. 45 30' Rd.

750

17

T.P.

5.50 299.66 w. 84 294.16

750

11

750

10

9. + 6.9 = N.E. of E line to Rd. + St. Res. Site

297.00

LT 288.1

$\frac{11.6}{15}$

287.2

$\frac{12.5}{15}$

291.4

$\frac{5.2}{15}$

290.6

$\frac{5.4}{15}$

286.6

$\frac{10.4}{15}$

281.1

$\frac{15.9}{15}$

289.5

10.2

289.4

10.3

299.66

292.7

x 3

291.8

5.2

287.8

9.1

283.7

13.3

290.7

$\frac{9.0}{15}$

291.2

$\frac{8.5}{15}$

293.6

$\frac{3.4}{15}$

292.2

$\frac{5.8}{15}$

288.8

$\frac{8.4}{15}$

285.6

$\frac{11.4}{15}$

RT 293.7

$\frac{4.0}{55}$

294.6

$\frac{5.1}{55}$

294.7

$\frac{2.3}{55}$

292.2

$\frac{4.8}{65}$

290.1

$\frac{6.9}{50}$

287.1

$\frac{9.9}{55}$

295.8

68

$\frac{3.9}{90}$

295.9

$\frac{3.8}{85}$

294.3

$\frac{1.7}{85}$

292.2

$\frac{4.8}{90}$

289.1

$\frac{7.6}{85}$

287.1

$\frac{9.9}{95}$

= Wly Line
Res. Site

297.00

check to T.P. P.C. 3.50 300.80 300.87
0.07

T.P. 8.58 304.30 394 295.72

14

+50

13

299.66

LT

\$

RT

69

274.8

24.4
15

291.3

RIM
CANYON → 8.4
15

291.3

8.4
15

284.5

15.2

293.0

292.1

7.6

292.0
27
15
RIM
CANYON

294.0

5.7
15

292.7

7.0
15

295.1

4.6
5.5

293.6

4.1
5.5

294.3

5.4
5.5

296.2

3.5
5.5

297.0

4.7
8.5

296.9

2.8
8.5

296.1

3.5
8.5

299.66

Walker
Sisson
Bliss
Huguel
Beyr
8-28-43

Levels for New Location "E" Line
Volenciu Park Trunk Sewer
from 41st & Nordica to Yorra & Cottonwood.
Alignment FB 1610-25-28
Location 1610-P-25

	028	26.63	(26.35)	
TP	4.18	(23.33)	7.48	(19.15)
13' No. 41st & Nordica	7.05	16.28		
44+82.40 = Alt. 90°/30°	5.9	17.4		
45+700	6.0	17.3		
705	5.1	18.2		
750	3.9	19.4		
45+99.70 = Alt. 73°35'50"	7.2	23.5		
46+20	7.9	24.2		
750	0.7	23.6		
47+00	3.1	20.2		
740	4.8	18.5		
780	6.7	16.6		
TP	5.62	(23.94)	6.01	(17.32)
48+00	6.8	16.1		
750	6.8	16.1		
45' Rt. = 12' Channel	11.3	11.6		
48+85 E Bank "	7.7	15.2		

BM #13 P. 18
SE Top Hyatt
Nordica 442 ft.

(22.94)

70

48+90 = E Toe Channel	11.8	11.1	
49+00 "	11.4	11.5	
730 = W Toe "	10.5	12.4	
735 " Top Bank	6.3	16.6	
49+50	5.2	17.7	
770	6.8	16.1	
50+00	6.8	16.1	
45' Lt. = 6.5' Channel	12.6	10.3	narrow of this point
50+71.60 = Alt. 14°22'30"	7.28	(15.66)	on stub
51+00	7.6	15.3	
740 = E edge oil Pav.	7.85	15.09	
760 = W " " "	7.10	15.84	
NLY side 769.10 = Int. Bridge on Top	7.45	15.49	
784.60 " " W side	7.65	15.29	
" on Floor Channel	12.9	10.0	
52+00	15.0	7.9	
7.6' Lt. Toe Wing Wall	14.0	8.9	
13' Rt. =	14.0	8.9	
52+750	13.0	9.9	
4' Rt. = 11' Channel	14.0	8.9	
52+770	13.3	9.6	
3' Rt. = 13' wide "	13.8	9.1	Δ 115 Channel

22.94

52+86 on Bunk	8.8	14.1	
9' Rt. = L. Channel	14.4	8.5	
53+00	8.8	14.1	
(52+97.8) 5' Rt. on Warden Wing	8.4	14.5	
718	8.5	14.4	
53+61.68 = Δ Rt. 32° 58'	8.7	14.2	
55' Rt. in L. 14' channel	13.3	9.6	
I.P. 2.18 $\langle 15.81 \rangle$ Bridge = Δ 64' with 2 Proposed Sides	9.31	$\langle 13.63 \rangle$	165 x 118
64+25.85 = Lat. East edge Wood Bridge	1.6	14.2	
+32 = L. channel Floor	6.0	9.8	
40' Rt. on L. Bridge Produced	5.5	10.3	Δ in 10' wide L. channel
20' Lt. " " "	6.2	9.6	Δ in 7' wide
54+42 on Warden Wing Wall	1.8	14.0	
+43 on Ground	1.8	14.0	
+62 = L. Euc. Tree at Tree = 2.0	13.8		30' dia 6' Lt. Ridge
55+00	3.6	12.2	
+25 opp and Frisck on Lt.	4.0	11.8	
6' Lt. on " " "	3.36	12.45	
56+00	4.9	10.9	
57+00	5.6	10.2	

 $\langle 15.81 \rangle$

71

58+00	6.0	9.8	
150.7 ± = E.L. Osborn St	6.4	9.4	
6' Lt. on cb.	5.63	$\langle 10.18 \rangle$	
59+10.7 ± = W.L. Osborn St	6.7	9.1	
6' Lt. on cb.	6.05	9.76	
60+00	7.4	8.4	
+31 opp Pc. Alley Ret.	7.5	8.3	
6' Lt. on " " "	6.42	9.39	
60+53.5 = 1st cb W.L. Alley	6.44	9.37	
+61 ± " Side Walk sl. Cottonwood	6.54	9.27	
+72	7.0	8.8	
+80.89 = Δ Lt. 45° 07' Lt.	7.9	7.9	
61+00	8.0	7.8	
62+00	7.8	8.0	
62+19.38 } Δ Lt. 6° 27' 30"			
62+18.75 } = Equ. of 1077.	7.6	8.2	
ch. B.M. #12 Page 18	6.87	$\langle 8.94 \rangle$	SW 7' Tals Yarrow Cottonwood
		8.88	
		0.06	

Contour levels Lot & Pacific Beach

Left

Baseline = Ely
of Lot & Pacific Beach

4

7+50

RIM
Hill

286.7	291.6	297.4	291.5	289.8	289.6	291.8	291.5	288.8
15.7	10.3	9.7	10.4	12.1	12.3	10.1	10.4	13.1
384	300	450	200	750	700	50	25	RIM Hill

T.P.

12.74 301.89 3.55 289.15

301.89

7+00

286.7	288.8	288.6	288.0	288.1	289.9	289.5	287.5
RIM Hill	6.0	3.9	4.1	4.7	4.6	2.8	3.2
Hill	291	250	200	150	100	50	25

1+50

285.3	286.9	286.9	286.7	286.4	289.7	292.0	297.7
RIM Hill	7.4	5.8	5.8	6.5	6.3	3.0	0.7
Hill	285	250	200	150	100	50	25

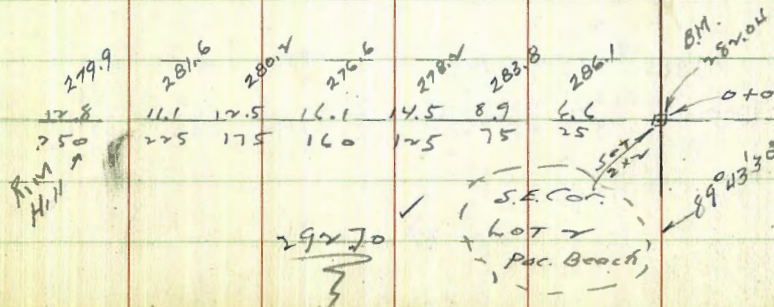
1+00

283.5	285.2	285.1	286.1	283.6	289.5	288.6	291.7	292.3
RIM Hill	9.2	7.3	7.6	8.6	9.1	8.2	4.1	1.0
Hill	292	250	200	175	150	100	50	25

0+50

286.9	283.7	285.0	281.3	280.6	283.5	286.9	289.0	287.7
RIM Hill	11.3	9.0	9.7	11.4	12.1	9.2	5.8	3.7
Hill	279	250	200	175	135	100	50	25

0+00 = Old N.L. of Agate St



B.M. 2+4 Hub 10.66 292.70

282.04 S.E. Corner Lot &

292.70

Levels front Foot Hill Blvd
 to Res. 5170 via Aqueduct Lane.
 195.61 Correction
 195.65 Evid. front P. 73

0+00 Pav. & Foot Hill Blvd	12.03	183.58
0+38.0 Pav. gutter	10.61	185.00
0+38.1 Top curb	10.00	185.61
0+50	9.5	186.1
0+80	8.1	187.5
0+84	7.0	188.6
1	5.1	190.5
T.P.	12.60	207.84 207.85 0.32 195.24 195.28
+50	10.5	197.3
2	4.8	203.0
T.P.	8.55	216.34 216.38 0.05 207.79 207.83
+50	11.4	209.9
+74	10.4	205.9
3	12.0	209.3
+50	15.0	201.3
4	11.7	209.6
+50	6.3	210.0

Level Notes Reduced 9-28-52

		216.38 216.34		214.69
T.P.	12.40	227.13 227.09	1.65	214.73
5			12.1	215.0
+50			7.8	219.3
6			1.7	225.8
T.P.	12.98	239.74 239.80	0.31	226.78 226.82
+50			3.3	236.5
T.P.	12.75	252.45 252.49 0.04	0.04	239.70 239.74
7			6.4	246.1
T.P.	13.01	265.40 265.44 0.04	0.04	252.39 252.43
+50			9.5	255.9
2+94.42 on front P. d.			7.83	262.57 B.M.
T.P.	11.44	276.53 276.57	0.31	265.09 265.13
8+34.42 on S.E. lot 3			9.7	267.3
T.P.	7.39	283.69 283.73 0.04	0.04	270.30 270.34
on axon Hub S.E. cor. Lot 7			1.65	282.04 282.08 B.M.
				158.55 804
				166.57 0.23
				166.74
283.73	232.68	197.33	164.42	172.33
12.13	0.11	12.18	0.95	12.33
271.60	233.77	185.15	165.38	178.57
0.01	12.78	185.15 = B.M.	6.79	0.80
271.61	221.01	0.81	158.59	177.77
12.42	0.07			8.09
259.19	221.10	185.96	158.55	185.86
0.09	12.04	12.21	0.04	0.75
259.48	209.06	173.75	0.04	185.11 =
13.06	0.07	1.24	error	0.04
246.47	209.13	174.99		185.11 =
0.09	12.11	10.56		185.15
246.57	197.04	164.43		0.04
12.83	0.31			
233.68	197.33			

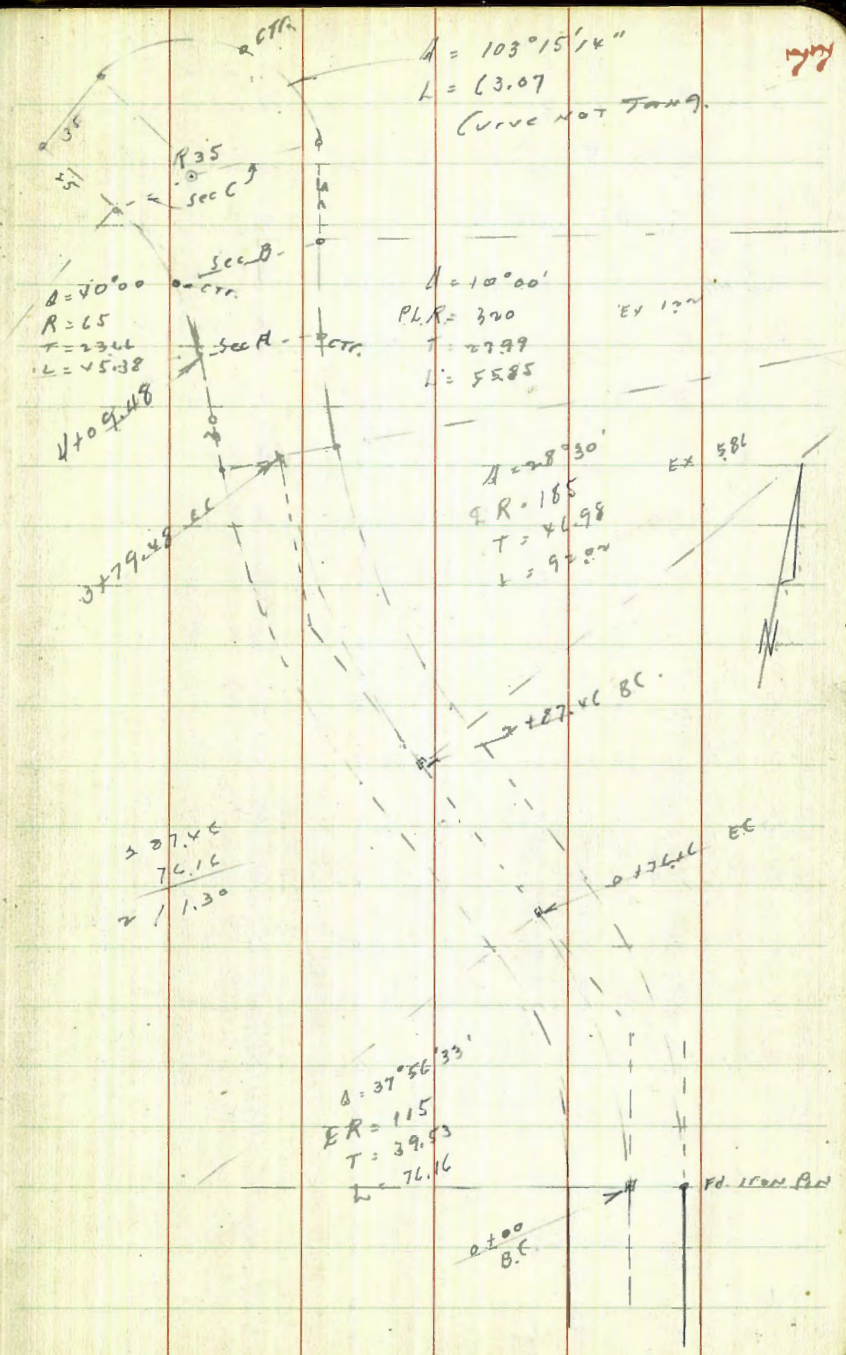
Correction

E Levels of Aqueduct Lane 30' wide

Rock I.P.	0.76	221.33	221.07	PLW
0+00 = B.C.	1+99.56	P.60		
0+38.08		10.0	211.3	
0+76.16	EC	6.6	214.7	
1		4.4	216.9	
I.P.	9.1	220.68	0.76	221.07
1+50		8.3	222.4	
2		5.8	224.9	
3		4.9	225.8	
+87.46	BC RT	4.7	226.0	
Curve Curve		5.7	225.0	
3+79.48	EC	7.2	223.5	
4+09.48		7.6	223.1	
on 35' Bangor R.		6.8	223.9	

REAR Plot, 5-18-42 G.M.H.

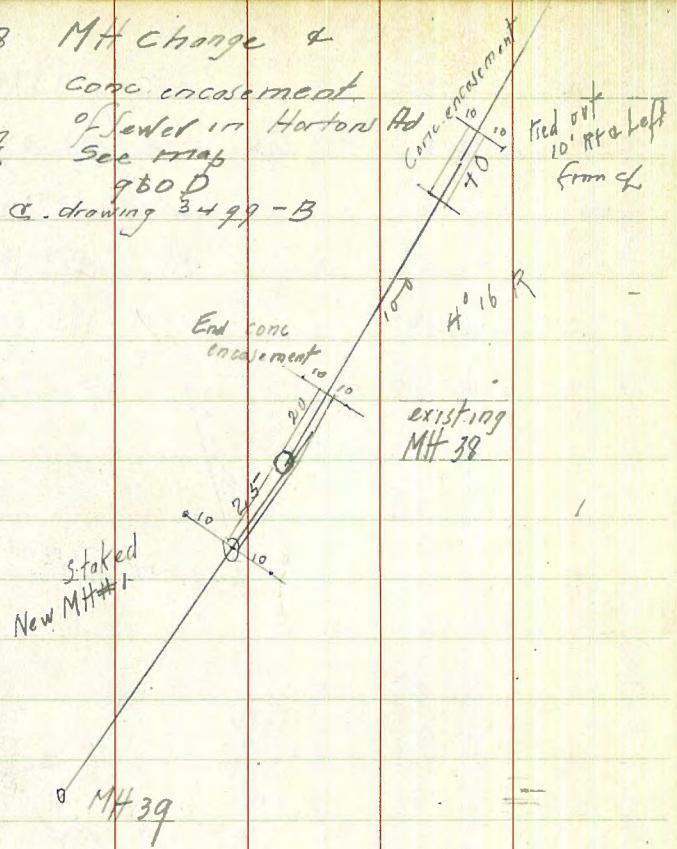
lot 5-C etc and this Aqueduct Vista Subd
 is to be taken over by a Eed housing project
 and Freedland has charge of Engrg, and
 says Aqueduct Lane align may be changed.
 The line of Service Rd to Res. Site
 is also subject to change.



1/27

7/9/48 MH change &

Begg Conc encasement
of Sewer in Horton Rd
Sherman See Map
Bunch 960 D
C. drawing 3499-B



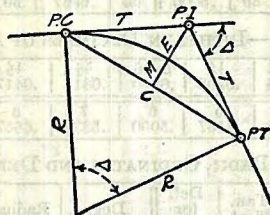
Fixed out
10' R to left
From C

see Map 960 D

ARJ

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

Copyright, 1914, by Eugene Dietzgen Co., New York City



72773.57
1.55 17
7428 73

98+0366
236
98+013

CURVE FORMULAS

- Radius= $R = \frac{50}{\sin \frac{D}{2}}$ (1) Degree of Curve= D and $\sin \frac{D}{2} = \frac{50}{R}$ (2)
 Tangent= $T = R \tan \frac{\Delta}{2}$ (3) Length of Curve= $L = 100 \frac{\Delta}{D}$ (4)
 Middle ordinate= $M = R(1 - \cos \frac{\Delta}{2})$ (5) $= R \text{vers} \frac{\Delta}{2}$ (6)
 External= $E = T \tan \frac{\Delta}{4}$ (7) $= R \div \cos \frac{\Delta}{2} - R$ (8) $= R \text{exsec} \frac{\Delta}{2}$ (9)
 Long Chord= $C = 2 R \sin \frac{\Delta}{2}$ (10) $\Delta = \text{Central Angle}$

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.—Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta = 62^\circ 10'$ $D = 8^\circ 20'$. From Table IV for 1° curve $T = 3454.1$ and $+8\frac{1}{2} = 414.49$ ft. From Table V correction $= .36$ or $T = 414.85$ ft. P. C.—Sta. P. I.— $T = 157 + 45.50$. Also from (4) $L = 746.00$ and P. T.—Sta. P. C. $+L = 164 + 91.50$.

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

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

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve $E = 960.6$ for $8^\circ 20' = 960.6 \div 8\frac{1}{2} = 91.27$ and from Table V correction $= .10$ or $E = 91.37$ ft. Or suppose $\Delta = 32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E = 230.9$ and $\div 42 = 5.5$ or $D = 5^\circ 30'$.

TABLE I.—MINUTES IN DECIMALS OF A DEGREE.

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

TABLE II.—INCHES IN DECIMALS OF A FOOT.

1-16	3-32	1/4	3-16	1/2	5-16	3/8	1/2	5/8	3/4	7/8
.0625	.0781	.1042	.1562	.2083	.2604	.3125	.3646	.4167	.4688	.5209
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

TABLE III.—RADI, ORDINATES AND DEFLECTIONS.

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot
0° 10'	34377.5	.036	.145	0.05'	7°	819.02	1.528	6.105	2.10'
20	17188.8	.073	.291	0.10	20'	781.84	1.600	6.395	2.20
30	11459.2	.109	.436	0.15	30	764.49	1.637	6.540	2.25
40	8594.42	.145	.582	0.20	40	747.89	1.673	6.685	2.30
50	6875.55	.182	.727	0.25	50	731.29	1.709	6.830	2.35
1 10	5729.65	.218	.873	0.30	60	716.78	1.746	6.976	2.40
20	4911.15	.255	1.018	0.35	70	703.27	1.783	7.121	2.45
30	4297.28	.291	1.164	0.40	80	690.76	1.820	7.266	2.50
40	3819.83	.327	1.309	0.45	90	679.25	1.857	7.411	2.55
50	3437.87	.364	1.454	0.50	100	668.74	1.894	7.556	2.60
2 10	3125.36	.400	1.600	0.55	110	659.23	1.931	7.701	2.65
20	2864.93	.436	1.745	0.60	120	650.72	1.968	7.846	2.70
30	2644.58	.473	1.891	0.65	130	643.21	2.005	7.991	2.75
40	2455.70	.509	2.036	0.70	140	636.70	2.042	8.136	2.80
50	2292.01	.545	2.181	0.75	150	631.19	2.079	8.281	2.85
3 10	2148.79	.582	2.327	0.80	160	626.68	2.116	8.426	2.90
20	2022.41	.618	2.472	0.85	170	623.17	2.153	8.571	2.95
30	1910.08	.655	2.618	0.90	180	620.66	2.190	8.716	3.00
40	1809.57	.691	2.763	0.95	190	619.15	2.227	8.861	3.05
50	1719.12	.727	2.908	1.00	200	618.64	2.264	9.006	3.10
4 10	1637.28	.764	3.054	1.05	210	619.13	2.301	9.151	3.15
20	1562.88	.800	3.199	1.10	220	620.62	2.338	9.296	3.20
30	1494.95	.836	3.345	1.15	230	623.11	2.375	9.441	3.25
40	1432.69	.873	3.490	1.20	240	626.60	2.412	9.586	3.30
50	1375.40	.909	3.635	1.25	250	631.09	2.449	9.731	3.35
5 10	1322.53	.945	3.718	1.30	260	636.58	2.486	9.876	3.40
20	1273.57	.982	3.826	1.35	270	643.07	2.523	10.021	3.45
30	1228.11	1.018	4.071	1.40	280	650.56	2.560	10.166	3.50
40	1185.78	1.055	4.217	1.45	290	659.05	2.597	10.311	3.55
50	1146.28	1.091	4.362	1.50	300	668.54	2.634	10.456	3.60
6 10	1109.33	1.127	4.507	1.55	310	679.03	2.671	10.601	3.65
20	1074.68	1.164	4.653	1.60	320	690.52	2.708	10.746	3.70
30	1042.14	1.200	4.798	1.65	330	703.01	2.745	10.891	3.75
40	1011.51	1.237	4.943	1.70	340	716.50	2.782	11.036	3.80
50	982.64	1.273	5.088	1.75	350	731.99	2.819	11.181	3.85
7 10	955.37	1.309	5.234	1.80	360	749.48	2.856	11.326	3.90
20	929.57	1.346	5.379	1.85	370	768.97	2.893	11.471	3.95
30	905.13	1.382	5.524	1.90	380	790.46	2.930	11.616	4.00
40	881.95	1.418	5.669	1.95	390	813.95	2.967	11.761	4.05
50	859.92	1.455	5.814	2.00	400	839.44	3.004	11.906	4.10
8 10	829.57	1.346	5.379	1.85	410	866.93	3.041	12.051	4.15
20	905.13	1.382	5.524	1.90	420	896.42	3.078	12.196	4.20
30	881.95	1.418	5.669	1.95	430	927.91	3.115	12.341	4.25
40	859.92	1.455	5.814	2.00	440	961.40	3.152	12.486	4.30
50	829.57	1.346	5.379	1.85	450	996.89	3.189	12.631	4.35
6 10	905.13	1.382	5.524	1.90	460	1034.38	3.226	12.776	4.40
20	881.95	1.418	5.669	1.95	470	1073.87	3.263	12.921	4.45
30	859.92	1.455	5.814	2.00	480	1115.36	3.300	13.066	4.50
40	829.57	1.346	5.379	1.85	490	1158.85	3.337	13.211	4.55
50	799.12	1.282	5.524	1.90	500	1204.34	3.374	13.356	4.60

Note. Chord Deflection=2 times tangent deflection.

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
1°	50.00	.22	11°	551.70	26.50	21°	1061.9	.97.57
10'	58.34	.30	10'	560.11	27.31	10'	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2 10	100.01	.87	12	602.21	31.56	22	1113.7	107.24
20	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
30	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
40	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
50	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
3 10	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
20	150.04	1.96	13	652.81	37.07	23	1165.7	117.38
30	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
40	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
50	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
4 10	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
20	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
30	200.08	3.49	14	703.51	43.03	24	1217.9	128.00
40	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
50	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
5 10	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
20	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
30	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
4 20	250.16	5.46	15	754.32	49.44	25	1270.2	139.11
30	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
40	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
50	275.21	6.61	30	779.77	52.83	30	1296.5	144.85
6 10	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
20	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
3 20	300.28	7.86	16	805.25	56.31	26	1322.8	150.71
30	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
40	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
50	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
7 10	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
20	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
3 30	350.44	10.71	17	856.30	63.63	27	1375.6	162.81
40	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
50	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
8 10	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
20	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
30	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
4 40	400.66	13.99	18	907.49	71.42	28	1428.6	175.41
50	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
9 10	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
20	425.79	15.80	30	933.13	75.40	30	1455.1	181.89
30	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
40	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
5 50	450.93	17.72	19	958.81	79.67	29	1481.8	188.51
6 10	459.32	18.38	10	967.38	81.00	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
6 20	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
30	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
40	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
50	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
7 10	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
20	543.29							

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
91°	5830.5	2444.9	101°	6950.6	3278.1	111°	8336.7	4386.1
10'	5847.5	2457.1	10'	6971.3	3294.1	10'	8362.7	4407.6
20	5864.6	2469.3	20	6992.0	3310.1	20	8388.9	4429.2
30	5881.7	2481.5	30	7012.7	3326.1	30	8415.1	4450.9
40	5898.8	2493.8	40	7033.6	3342.3	40	8441.5	4472.7
50	5916.0	2506.1	50	7054.5	3358.5	50	8468.0	4494.6
92	5933.2	2518.5	102	7075.5	3374.9	112	8494.6	4516.6
10	5950.5	2531.0	10	7096.6	3391.2	10	8521.3	4538.8
20	5967.9	2543.5	20	7117.8	3407.7	20	8548.1	4561.1
30	5985.3	2556.0	30	7139.0	3424.3	30	8575.0	4583.4
40	6002.7	2568.6	40	7160.3	3440.9	40	8602.1	4606.0
50	6020.2	2581.3	50	7181.7	3457.6	50	8629.3	4628.6
93	6037.8	2594.0	103	7203.2	3474.4	113	8656.6	4651.3
10	6055.4	2606.8	10	7224.7	3491.3	10	8684.0	4674.2
20	6073.1	2619.7	20	7246.3	3508.2	20	8711.5	4697.2
30	6090.8	2632.6	30	7268.0	3525.2	30	8739.2	4720.3
40	6108.6	2645.5	40	7289.8	3542.4	40	8767.0	4743.6
50	6126.4	2658.5	50	7311.7	3559.6	50	8794.9	4766.9
94	6144.3	2671.6	104	7333.6	3576.8	114	8822.9	4790.4
10	6162.6	2684.7	10	7355.6	3594.2	10	8851.0	4814.1
20	6180.2	2697.9	20	7377.8	3611.7	20	8879.3	4837.8
30	6198.3	2711.2	30	7399.9	3629.2	30	8907.7	4861.7
40	6216.4	2724.5	40	7422.2	3646.8	40	8936.3	4885.7
50	6234.6	2737.9	50	7444.6	3664.5	50	8965.0	4909.9
95	6252.8	2751.3	105	7467.0	3682.3	115	8993.8	4934.1
10	6271.1	2764.8	10	7489.6	3700.2	10	9022.7	4958.6
20	6289.4	2778.3	20	7512.2	3718.2	20	9051.7	4983.1
30	6307.9	2792.0	30	7534.9	3736.2	30	9080.9	5007.8
40	6326.3	2805.6	40	7557.7	3754.4	40	9110.3	5032.6
50	6344.8	2819.4	50	7580.5	3772.6	50	9139.8	5057.6
96	6363.4	2833.2	106	7603.5	3791.0	116	9169.4	5082.7
10	6382.1	2847.0	10	7626.6	3809.4	10	9199.1	5107.9
20	6400.8	2861.0	20	7649.7	3827.9	20	9229.0	5133.3
30	6419.5	2875.0	30	7672.9	3846.5	30	9259.0	5158.8
40	6438.4	2889.0	40	7696.3	3865.2	40	9289.2	5184.5
50	6457.3	2903.1	50	7719.7	3884.0	50	9319.5	5210.3
97	6476.2	2917.3	107	7743.2	3902.9	117	9349.9	5236.2
10	6495.2	2931.6	10	7766.8	3921.9	10	9380.5	5262.3
20	6514.3	2945.9	20	7790.5	3940.9	20	9411.3	5288.6
30	6533.4	2960.3	30	7814.3	3960.1	30	9442.2	5315.0
40	6552.6	2974.7	40	7838.1	3979.4	40	9473.2	5341.5
50	6571.9	2989.2	50	7862.1	3998.7	50	9504.4	5368.2
98	6591.2	3003.8	108	7886.2	4018.2	118	9535.7	5395.1
10	6610.6	3018.4	10	7910.4	4037.8	10	9567.2	5422.1
20	6630.1	3033.1	20	7934.6	4057.4	20	9598.9	5449.2
30	6649.6	3047.9	30	7959.0	4077.2	30	9630.7	5476.5
40	6669.2	3062.8	40	7983.5	4097.1	40	9662.6	5504.0
50	6688.8	3077.7	50	8008.0	4117.0	50	9694.7	5531.7
99	6708.6	3092.7	109	8032.7	4137.1	119	9727.0	5559.4
10	6728.4	3107.7	10	8057.4	4157.3	10	9759.4	5587.4
20	6748.2	3122.9	20	8082.3	4177.5	20	9792.0	5615.5
30	6768.1	3138.1	30	8107.3	4197.9	30	9824.8	5643.8
40	6788.1	3153.3	40	8132.3	4218.4	40	9857.7	5672.3
50	6808.2	3168.7	50	8157.5	4239.0	50	9890.8	5700.9
100	6828.3	3184.1	110	8182.8	4259.7	120	9924.0	5729.7
10	6848.5	3199.6	10	8208.2	4280.5	10	9957.5	5758.6
20	6868.8	3215.1	20	8233.7	4301.4	20	9991.0	5787.7
30	6889.2	3230.8	30	8259.3	4322.4	30	10025.0	5817.0
40	6909.6	3246.5	40	8285.0	4343.6	40	10059.0	5846.5
50	6930.1	3262.3	50	8310.8	4364.8	50	10093.0	5876.1

594037
53
597507

TABLE V.—CORRECTIONS FOR TANGENTS AND EXTERNALS.

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table IV) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD														
Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.79	.81	.92	1.04	1.29	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.85	5.38	5.83
100°	.43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22
FOR EXTERNALS ADD														
Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.032	.035	.039	.043	.047	.051	.053
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.137	.155
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.191	.218
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.771	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.266	.353	.440	.528	.618	.707	.797	.887	.977	1.07	1.18	1.29
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.76	

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	.02	.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	196.96	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	1.80	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	388.43
42	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28	30	193.18	273.20	334.61	373.20
44	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50	32	192.25	269.61	326.08	357.28
46	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74	34	191.26	265.81	317.12	340.73
48	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99	36	190.21	261.80	307.77	323.61
50	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24	38	189.10	257.60	298.03	305.99
52	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52	40	187.94	253.21	287.94	287.94
54	.38	.73	1.04	1.23	1.42	1.46	1.35	1.09	.64	3.83	42	186.72	248.63	277.51	269.54
56	.41	.78	1.12	1.33	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	1.43	1.65	1.69	1.57	1.26	.74	4.40	46	184.10	239.93	255.78	231.95
60	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72	48	182.71	235.83	244.51	212.92

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

TABLE VII.—MIDDLE ORDINATES FOR RAILS IN FEET.

Deg. of Curve	LENGTH OF RAILS						Deg. of Curve	LENGTH OF RAILS.							
	32	30	28	26	24	22		20	32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.067	.058	.051	.044	.037	.031	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.069	.060	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.099	.088	.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	.613	.545	.475	.411	.348	.294	.242
14	.312	.275	.239	.207	.175	.148	.122	29	.633	.564	.491	.424	.361	.308	.250
15	.334	.295	.257	.223	.188	.159	.131	30	.660	.583	.508	.438	.374	.313	.253

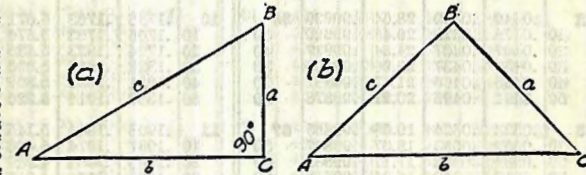
SLOPE REDUCTIONS.

When distances are measured on a slope they may be reduced to the equivalent horizontal distance by the following approximate rule:—subtract from the slope distance the square of the rise divided by twice the slope distance. Thus for a slope distance of 250.3 ft. and a rise of 15 ft. correction=15²÷2×250.3=.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.

See fig. (a).

TRIGONOMETRICAL FORMULAS.

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



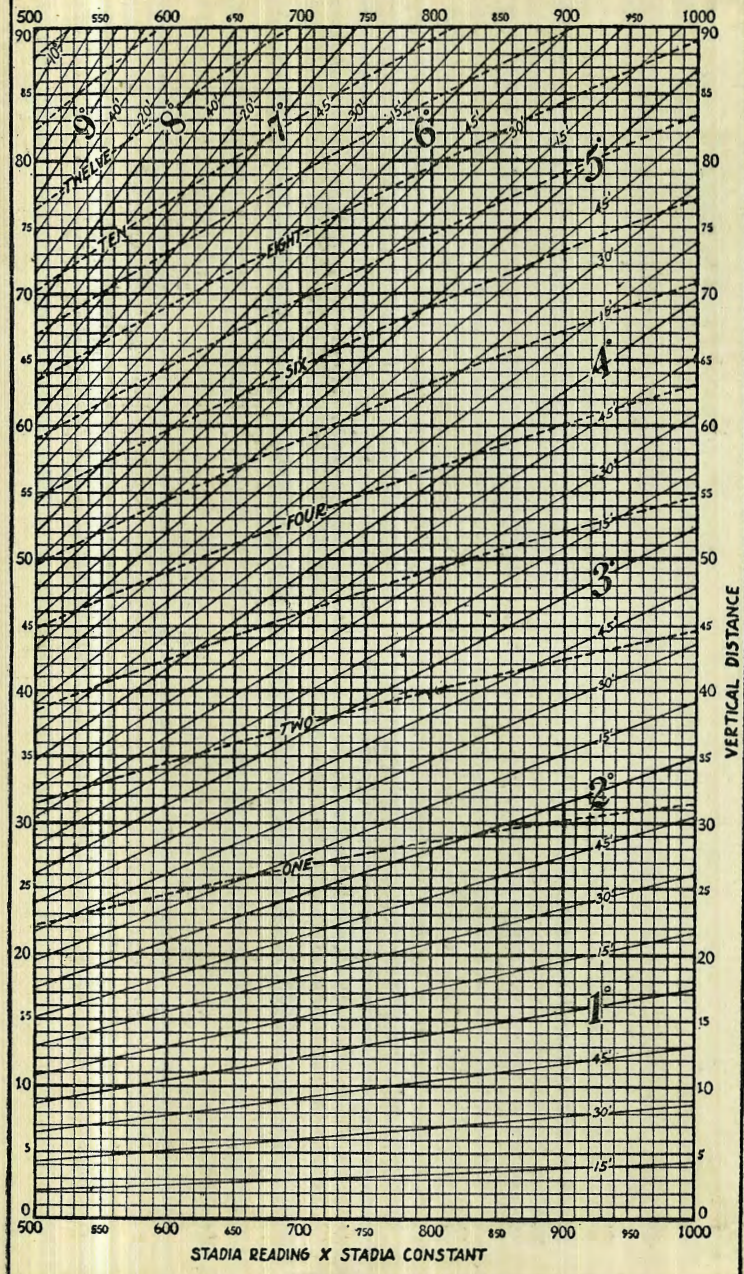
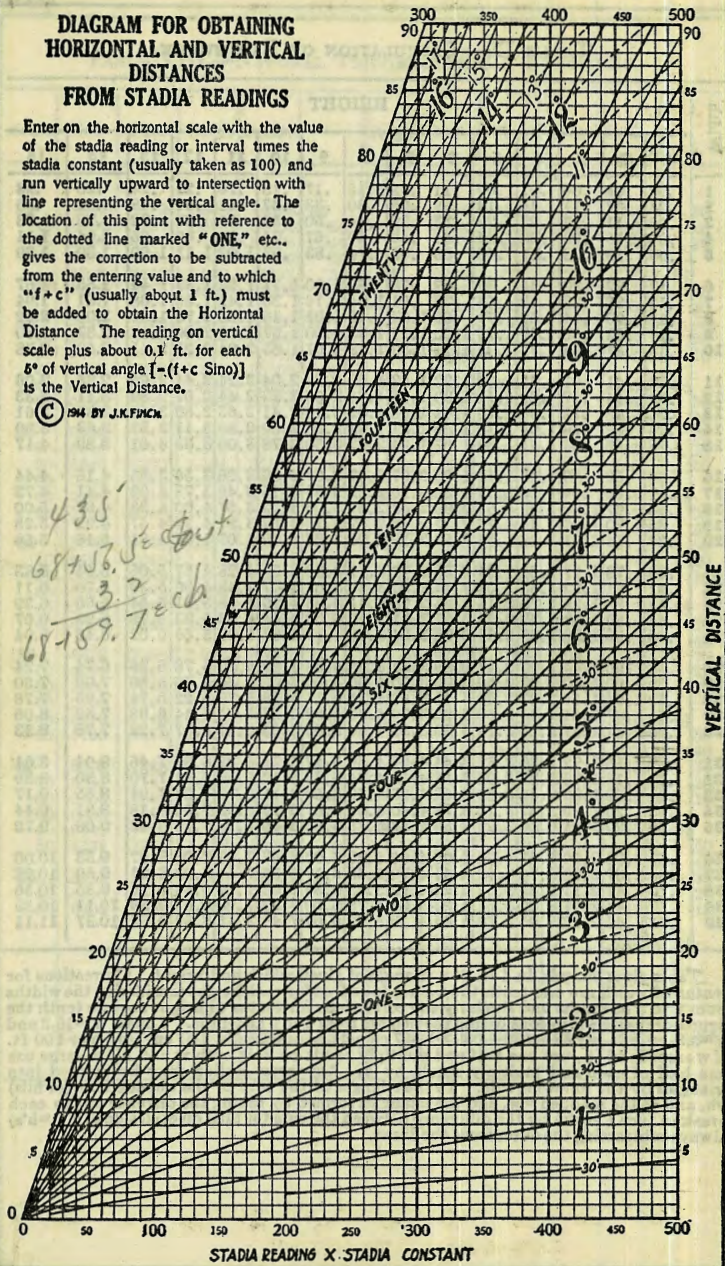
FORMULA FOR SOLVING TRIANGLES.

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

DIAGRAM FOR OBTAINING HORIZONTAL AND VERTICAL DISTANCES FROM STADIA READINGS

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

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50x
 289
 13
 24-29 78
 360
 315
 21
 29

34x20
 18216
 1620x

698
 450
 248
 297
 335
 490
 830

55-709 58
 35
 85-74.5 = EL.
 98-1022
 2.36
 82-1186
 172
 77-5288

27+87.38
 27+87.38
 31.028
 39.39
 22.62
 20.51
 BM spike
 in Root of Tree

861 = S
 862 N
 68+17
 75
 82
 69
 715
 32
 36
 70
 75
 71

98 2 1/2 40
 40
 97 1/2 40
 4.75
 26
 14.37 = Horz.

575
 51
 1036
 512

75+28 = edge Pav
 82 = cut
 75 = 190

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1 1/2
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

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