

G-209

LETZ

LEVEL BOOK

No. 772

# TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100 00	0 44	100.00	0 87	99.99	1.31	89
1	99.98	1 75	99 88	2 18	99 97	2.62	99 95	3.05	88
2	99.94	3.49	99 92	3.93	99 91	4 36	99 88	4.80	87
3	99.86	5.23	99 84	5 67	99 81	6.10	99 79	6.54	86
4	99 76	6.98	99 73	7.41	99.69	7.85	99.66	8.28	85
5	99 62	8.72	99.58	9.15	99 54	9.58	99.50	10 02	84
6	99.45	10.45	99.41	10 89	99.36	11.32	99.31	11.75	83
7	99 25	12.19	99 20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.80	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98 48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98 16	19.08	98 08	19 51	97.99	19 04	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21 64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24 62	96.81	25 04	96 70	25.46	75
15	96.59	25 88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96 00	27 98	95.88	28 40	95 76	28.82	73
17	95.63	29.24	95.50	29 65	95.37	30 07	95.24	30.49	72
18	95.11	30 90	94.97	31 32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32 97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35 43	69
21	93.36	35.84	93.20	36.24	93 04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38 67	67
23	92.05	39.07	91.88	39 47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89 69	44.23	89.40	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.09	47.33	87.86	47.72	87 67	48.10	61
29	87.46	48.48	87.25	48 86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.86	85.26	52.25	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.68	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60 53	79.34	60.88	79.07	61.22	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	45
45	70.71	70.71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
DEGREES.	¼ DEGREE.		½ DEGREE.		¾ DEGREE.				

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

MADE IN  
U. S. A.



Quality  
Evidenced  
Since  
1882.

MICROFILMED

APR 12 1965

Standard  
Tripod  
Connection

LIETZ STANDARD ENGINEERS' TRANSIT  
With U Shaped Standards

No. 5E with 6¼" limb.

No. 11E with 5" limb.

Furnished with either Internal or External  
Focusing Telescope.

# G-209

## CITY ENGINEER'S OFFICE

TABLE OF STADIA REDUCTIONS  
For a Constant of 100.  
ROD VERTICAL.

Min.	0°		1°		2°		3°		4°		5°		6°		7°	
	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.	Hor. Dist.	Dif. Elev.
0	100.00	.00	99.97	1.74	99.88	3.40	99.73	5.23	99.51	6.96	99.24	8.64	98.91	10.26	98.48	11.90
1	100.00	.06	99.97	1.80	99.87	3.55	99.72	5.29	99.50	7.07	99.23	8.80	98.90	10.51	98.47	12.15
2	100.00	.12	99.96	1.86	99.86	3.70	99.71	5.38	99.49	7.13	99.22	8.95	98.89	10.77	98.46	12.41
3	100.00	.18	99.95	1.92	99.85	3.85	99.70	5.46	99.48	7.25	99.21	9.10	98.88	11.04	98.45	12.68
4	100.00	.23	99.94	1.98	99.84	4.00	99.69	5.55	99.47	7.37	99.20	9.25	98.87	11.32	98.44	12.96
5	100.00	.29	99.93	2.04	99.83	4.15	99.68	5.63	99.46	7.48	99.19	9.40	98.86	11.61	98.43	13.25
6	100.00	.35	99.92	2.10	99.82	4.30	99.67	5.72	99.45	7.59	99.18	9.55	98.85	11.90	98.42	13.55
7	100.00	.41	99.91	2.15	99.81	4.45	99.66	5.81	99.44	7.70	99.17	9.70	98.84	12.20	98.41	13.86
8	100.00	.47	99.90	2.21	99.80	4.60	99.65	5.90	99.43	7.81	99.16	9.85	98.83	12.50	98.40	14.18
9	100.00	.53	99.89	2.27	99.79	4.75	99.64	5.99	99.42	7.92	99.15	10.00	98.82	12.81	98.39	14.51
10	100.00	.59	99.88	2.33	99.78	4.90	99.63	6.09	99.41	8.03	99.14	10.15	98.81	13.12	98.38	14.85
11	100.00	.65	99.87	2.39	99.77	5.05	99.62	6.19	99.40	8.14	99.13	10.30	98.80	13.44	98.37	15.20
12	100.00	.71	99.86	2.45	99.76	5.20	99.61	6.29	99.39	8.25	99.12	10.45	98.79	13.76	98.36	15.56
13	100.00	.77	99.85	2.51	99.75	5.35	99.60	6.45	99.38	8.36	99.11	10.60	98.78	14.09	98.35	15.93
14	100.00	.83	99.84	2.57	99.74	5.50	99.59	6.60	99.37	8.47	99.10	10.75	98.77	14.42	98.34	16.31
15	100.00	.89	99.83	2.63	99.73	5.65	99.58	6.76	99.36	8.58	99.09	10.90	98.76	14.76	98.33	16.70
16	100.00	.95	99.82	2.69	99.72	5.80	99.57	6.92	99.35	8.69	99.08	11.05	98.75	15.10	98.32	17.10
17	100.00	1.01	99.81	2.75	99.71	5.95	99.56	7.08	99.34	8.80	99.07	11.20	98.74	15.45	98.31	17.51
18	100.00	1.07	99.80	2.81	99.70	6.10	99.55	7.24	99.33	8.91	99.06	11.35	98.73	15.80	98.30	17.93
19	100.00	1.13	99.79	2.87	99.69	6.25	99.54	7.40	99.32	9.02	99.05	11.50	98.72	16.15	98.29	18.36
20	100.00	1.19	99.78	2.93	99.68	6.40	99.53	7.56	99.31	9.13	99.04	11.65	98.71	16.51	98.28	18.80
21	100.00	1.25	99.77	2.99	99.67	6.55	99.52	7.72	99.30	9.24	99.03	11.80	98.70	16.87	98.27	19.25
22	100.00	1.31	99.76	3.05	99.66	6.70	99.51	7.88	99.29	9.35	99.02	11.95	98.69	17.24	98.26	19.71
23	100.00	1.37	99.75	3.11	99.65	6.85	99.50	8.04	99.28	9.46	99.01	12.10	98.68	17.61	98.25	20.18
24	100.00	1.43	99.74	3.17	99.64	7.00	99.49	8.20	99.27	9.57	99.00	12.25	98.67	18.00	98.24	20.66
25	100.00	1.49	99.73	3.23	99.63	7.15	99.48	8.36	99.26	9.68	98.99	12.40	98.66	18.39	98.23	21.14
26	100.00	1.55	99.72	3.29	99.62	7.30	99.47	8.51	99.25	9.79	98.98	12.55	98.65	18.79	98.22	21.63
27	100.00	1.61	99.71	3.35	99.61	7.45	99.46	8.67	99.24	9.90	98.97	12.70	98.64	19.19	98.21	22.13
28	100.00	1.67	99.70	3.41	99.60	7.60	99.45	8.83	99.23	10.01	98.96	12.85	98.63	19.60	98.20	22.64
29	100.00	1.73	99.69	3.47	99.59	7.75	99.44	8.99	99.22	10.12	98.95	13.00	98.62	20.01	98.19	23.16
30	100.00	1.79	99.68	3.53	99.58	7.90	99.43	9.15	99.21	10.23	98.94	13.15	98.61	20.43	98.18	23.69
31	100.00	1.85	99.67	3.59	99.57	8.05	99.42	9.31	99.20	10.34	98.93	13.30	98.60	20.85	98.17	24.23
32	100.00	1.91	99.66	3.65	99.56	8.20	99.41	9.47	99.19	10.45	98.92	13.45	98.59	21.28	98.16	24.78
33	100.00	1.97	99.65	3.71	99.55	8.35	99.40	9.63	99.18	10.56	98.91	13.60	98.58	21.71	98.15	25.34
34	100.00	2.03	99.64	3.77	99.54	8.50	99.39	9.79	99.17	10.67	98.90	13.75	98.57	22.15	98.14	25.91
35	100.00	2.09	99.63	3.83	99.53	8.65	99.38	9.94	99.16	10.78	98.89	13.90	98.56	22.60	98.13	26.49
36	100.00	2.15	99.62	3.89	99.52	8.80	99.37	10.09	99.15	10.89	98.88	14.05	98.55	23.05	98.12	27.08
37	100.00	2.21	99.61	3.95	99.51	8.95	99.36	10.24	99.14	11.00	98.87	14.20	98.54	23.51	98.11	27.68
38	100.00	2.27	99.60	4.01	99.50	9.10	99.35	10.39	99.13	11.11	98.86	14.35	98.53	23.97	98.10	28.29
39	100.00	2.33	99.59	4.07	99.49	9.25	99.34	10.54	99.12	11.22	98.85	14.50	98.52	24.44	98.09	28.91
40	100.00	2.39	99.58	4.13	99.48	9.40	99.33	10.69	99.11	11.33	98.84	14.65	98.51	24.91	98.08	29.54
41	100.00	2.45	99.57	4.19	99.47	9.55	99.32	10.84	99.10	11.44	98.83	14.80	98.50	25.39	98.07	30.18
42	100.00	2.51	99.56	4.25	99.46	9.70	99.31	10.99	99.09	11.55	98.82	14.95	98.49	25.87	98.06	30.83
43	100.00	2.57	99.55	4.31	99.45	9.85	99.30	11.14	99.08	11.66	98.81	15.10	98.48	26.36	98.05	31.49
44	100.00	2.63	99.54	4.37	99.44	10.00	99.29	11.29	99.07	11.77	98.80	15.25	98.47	26.85	98.04	32.16
45	100.00	2.69	99.53	4.43	99.43	10.15	99.28	11.44	99.06	11.88	98.79	15.40	98.46	27.34	98.03	32.84
46	100.00	2.75	99.52	4.49	99.42	10.30	99.27	11.59	99.05	11.99	98.78	15.55	98.45	27.84	98.02	33.53
47	100.00	2.81	99.51	4.55	99.41	10.45	99.26	11.74	99.04	12.10	98.77	15.70	98.44	28.34	98.01	34.23
48	100.00	2.87	99.50	4.61	99.40	10.60	99.25	11.89	99.03	12.21	98.76	15.85	98.43	28.84	98.00	34.94
49	100.00	2.93	99.49	4.67	99.39	10.75	99.24	12.04	99.02	12.32	98.75	16.00	98.42	29.35	97.99	35.66
50	100.00	2.99	99.48	4.73	99.38	10.90	99.23	12.19	99.01	12.43	98.74	16.15	98.41	29.86	97.98	36.39
51	100.00	3.05	99.47	4.79	99.37	11.05	99.22	12.34	99.00	12.54	98.73	16.30	98.40	30.37	97.97	37.13
52	100.00	3.11	99.46	4.85	99.36	11.20	99.21	12.49	98.99	12.65	98.72	16.45	98.39	30.88	97.96	37.88
53	100.00	3.17	99.45	4.91	99.35	11.35	99.20	12.64	98.98	12.76	98.71	16.60	98.38	31.40	97.95	38.64
54	100.00	3.23	99.44	4.97	99.34	11.50	99.19	12.79	98.97	12.87	98.70	16.75	98.37	31.92	97.94	39.41
55	100.00	3.29	99.43	5.03	99.33	11.65	99.18	12.94	98.96	12.98	98.69	16.90	98.36	32.44	97.93	40.19
56	100.00	3.35	99.42	5.09	99.32	11.80	99.17	13.09	98.95	13.09	98.68	17.05	98.35	32.96	97.92	40.98
57	100.00	3.41	99.41	5.15	99.31	11.95	99.16	13.24	98.94	13.20	98.67	17.20	98.34	33.49	97.91	41.78
58	100.00	3.47	99.40	5.21	99.30	12.10	99.15	13.39	98.93	13.31	98.66	17.35	98.33	34.01	97.90	42.59
59	100.00	3.53	99.39	5.27	99.29	12.25	99.14	13.54	98.92	13.42	98.65	17.50	98.32	34.54	97.89	43.41
60	100.00	3.59	99.38	5.33	99.28	12.40	99.13	13.69	98.91	13.53	98.64	17.65	98.31	35.07	97.88	44.24
c=75...									.75	.08	.75	.07				.10
c=1.15...									1.15	.09	1.15	.11				.15
c=1.90...									1.90	.15	1.90	.21				.25

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



CONSTRUCTION GRADES

TRUNK SEWER

Walker  
Hardin  
Wirt

2-31-42 From Beardslay And Colton

on Colton Ave, Sigsbee St, Logan Ave, 17th St,  
Commercial St, 16th St, K. St., 11th Ave,  
11th Ave Extension, Canada Way, 10th Ave.  
To University And 10th Ave.

for Plan And Profiles See Drawings <sup>Inclusive</sup> # 987-D-9974

Original Notes: location etc. F.B. 1611, 1614

Stations Backed in from Beardslay & Colton

Cont. Man 17' EEL Beardslay = BM #2 = 13.27  
8 20' N sid N.L. Colton F.B. 1614 4

6.13 +  
19.40 +  
9.34 -  
10.06 TP  
4.56 +  
14.62 +

INDEXED

W K  
OCT 27 1948

Station	X	Elev. Stakes	Elev. Flv. Line	Cuts	Offsets
208+13.27 = Interceptor NH #22	19.40	6.68	12.72	0.63	+12.09 ✓ 17' Lt. 34' Lt. = 200' RP. Rd. a to Forward Turn.
207+96.82 = A.H. 9°13'30"		6.23	13.17	1.16	+12.01 ✓ 17' Lt. 34' Lt. = "RP" " " To Back "
+50		6.34	13.06	1.20	+11.86 ✓ 17' Lt.
207+00		5.96	13.44	1.25	+12.19 ✓ " "
+50		5.18	14.22	1.30	+12.92 ✓ " "
206+00		5.35	14.05	1.35	+12.70 ✓ " "
+50		6.21	13.19	1.40	+11.79 ✓ " "
205+00		6.25	12.45	1.45	+11.00 ✓ " "
+50		7.10	12.30	1.50	+10.80 ✓ " "
204+00		7.94	11.46	1.55	+9.91 ✓ " "
+50		9.34	10.06	1.60	+8.46 ✓ " "
203+00	14.62	5.57	9.05	1.65	+7.40 ✓ " "
+50		6.07	8.55	1.70	+6.85 ✓ " "
202+00		6.69	7.93	1.75	+6.18 ✓ " "
201+35 = A.H. 88°50'30"		7.17	7.45	1.82	+5.63 ✓ 25.65 25.65 H.P. Lt. on diag. split a

Notes from station 201+35  
To 186+49.94 line changed  
to Miss Water Main on Sigsbee  
New Grades see P. 33-34

Cont. P. 3

Station	1462	Elev. Stakes	Elev. Flow Line	Cuts	Offsets	chk 8 M # 2	1462T 772 6.90 ✓
201+00		6.90	7.72	1.85	+5.92	17' 4" Stake	14.62T
200+50		5.25	9.37	1.90	+7.47	17' 4" "	1.79 -
200+00		5.35	9.27	1.95	+7.32 ✓	17' 3/4" "	12.83 TP
199+62.23	1206 117' 0.35'	3.96	10.66	1.99	+8.67 ✓	17' 4" Stake 34' 1/2" Stake P.L.A. to Forward Turn	9.97 -
199+50		2.83	11.79	2.00		17' 4" Stake	22.80 T
199+00		2.83	11.79	2.05	+9.74 ✓	" " "	
+50		1.77	12.85	2.10	+10.75 ✓	" " "	
198+12.22	1/2 line Main St. 117' 0.35'	2.50	12.12	2.14	+9.98	17' 1/2" Stake 34' 1/2" Stake P.L. to Back Turn	
198+00				2.15			
+50		2.94	11.68	2.20	+9.48 ✓	15' 5" R. = Cross in Box	Note: Line Changed to 165' West of East Line Signed between Logan & Cotton New Grades P. 33-34
197+00		2.36	12.26	2.25	+10.01 ✓	" "	
+50		1.79	12.83	2.30	+10.53 ✓	" "	
196+00	22.80	2.43	13.37	2.35	+11.02 ✓	" "	
+50		8.90	13.90	2.40	+11.50 ✓	" "	
195+00		8.40	14.40	2.45	+11.95 ✓	" "	
+50		7.88	14.92	2.50	+12.42 ✓	" "	
194+00		7.30	15.50	2.55	+12.95 ✓	" "	
193+91.78	Pct. MA E Newton Ave = MH # 39	7.17	15.63	2.56	+13.07 ✓	7' 1/2" Stake 17' 1/2" Cross in Box 34' 1/2" 2nd Cross in Box	
+50		6.49	16.31	2.60	+13.71 ✓	15' 5" R. Cross in Box	
193+00		5.54	17.26	2.65	+14.61 ✓	15' 5" R. 17' 1/2" "	
+50		4.50	18.30	2.70	+15.60 ✓	" "	
192+00		3.59	19.27	2.75	+16.46 ✓	" "	
+50		2.54	20.26	2.80	+17.46 ✓	" "	
191+00		1.50	21.30	2.85	+18.45 ✓	" "	

Cont. from P-3

Station	22.80	Elev. Stakes	Elev. Flow line	Cuts
190+50		0.35	22.45	2.90
190+00	31.08 31.10	8.10	23.00	2.95
+50		7.43	23.67	3.00
189+00		6.48	24.62	3.05
+50		5.57	25.59	3.10
188+00		4.70	26.40	3.15
+50		3.76	27.34	3.20
187+00		2.88	28.22	3.25
186+00		1.80	29.30	3.30
+25		2.07	28.57	3.325
186+00	30.64	2.96	27.68	3.35
+79		4.00	26.64	3.37
+50		5.35	25.29	3.40
+17		6.90	23.72	3.43
185+00		7.74	22.90	3.45
+75		8.87	21.77	3.475
+50		10.06	20.58	3.50
+25		11.20	19.44	3.525
184+00		12.40	18.24	3.55
183+75	19.87π	2.81	17.06	3.575 (13.18)
183+50		4.26	15.61	3.61
183+49		4.05	15.82	3.62
183+00		4.82	15.05	3.64
+75		3.95	13.92	3.66
+50		2.71	13.16	3.68
+25		6.85	13.02	3.71
182+00		7.05	12.82	3.74
+75		6.54	13.32	3.76
+50		8.60	11.27	3.79
181+50	24.38	5.00	13.38	3.81
+22		4.55	13.83	3.84
181+00		3.23	21.15	3.86
+75		3.64	20.74	3.89
+50		3.51	20.87	3.91
+25		7.30	17.08	3.94
180+00		5.77	18.61	3.96
179+72.82		5.98	18.40	3.99

Cont. on P-5

Note: Line changed to 16.50' West of East Line of Sigbee St  
Both Logan Ave & Colton  
New Grades see P. 33-34

Offsets	22.80x 0.35 22.45 TP 8.63+ 31.08x 7.17 23.91 23.935 2.025 (incl)
15' RT 15' RT Cross in Pav.	
" " " "	chk BM #6-B
" " " "	BM = 22.935 7.17 31.10x
" " " "	Corrected π
" " " "	
7' 7' Lt. - Nail 34' Lt. - Nail on Production Buck Tar.	
7.5' RT Cross in cb.	BM #7.8 NW 8P Logan + Sigbee = 28.34 2.30 30.64x 1.36 29.28 2.02 (incl)
" " " "	chk MH #38
" " " "	30.64x 12.40 18.24 TP 1.63 19.87x 1.41 18.46 TP 5.92+ 24.38x
7.5' RT cross in cb 15' RT - Cross in walk	
10' Lt. stake nailed to Pole	
18' Lt. - stake	
10' Lt.	Extra Stake For Newer MH 18.49 18.49x 14.69 Rod, for Grade Floor 652 Reading 8.07 = cut
" "	
" "	
" "	
10' Lt. stake 20' Lt. stake on Production Buck Tar.	

Line changed from 176+00 to 183+53.12  
New cuts P-23-24

39" Sewer Construction.

Levels  
176+00  
to 186+00  
Run  
Walbel

Cont. from p-4

2438

Station		Elev Stakes	Elev Flow line	Cuts	Offsets
179 +50		6.52	17.86	4.01	+13.85 Lt stake
179 +00		6.45	17.93	4.06	+13.85
+50		7.51	16.87	4.11	+12.76
178 +00	1761	0.49	17.12	4.16	12.96
+50		3.55	14.06	4.21	+9.85
177 +00		4.97	12.64	4.26	+8.38
176 +73	1719A	5.53	11.66	4.29	+7.37
176 +44.09	214 89°56'45" NW 25'	6.72	10.47	4.32	+6.15
176 +00		6.31	10.88	4.36	+6.52
+50		5.71	11.48	4.41	+7.07
175 +00		5.15	12.04	4.46	+7.58
+50		4.57	12.62	4.51	+8.11
174 +00		3.96	13.23	4.56	+8.67
+50		3.60	13.59	4.61	+8.98
173 +00		3.74	14.45	4.66	+9.79
+50		2.64	14.55	4.71	+9.84
172 +00	ob/s	1.71	15.48	4.76	+10.72
+50		0.75	16.44	4.81	+11.63
171 +00	22.857	5.55	17.30	4.86	+12.44
+50		4.66	18.19	4.91	+13.28
170 +00		3.67	19.18	4.96	+14.22
+50		2.88	19.97	5.01	+14.96
169 +15.90	NW 34 ROT - L - st.	1.81	21.04	5.05	+15.99
168 +84.12	- POT.	0.83	22.02	5.08	+16.94
168 +50		0.52	22.33	5.11	+17.22

Cont. p 6

↑  
 New Cut  
 from 176+44.09  
 to 183+53.12  
 P-23-2

16th  
U.S. Survey Comm.  
CH. 811#2-B

Above BM = 12.48

2438  
7.51  
16.87 T.P.  
9.74  
17.61 T  
5.15  
12.96  
15.48  
0.02 Error

B.M. #12-B  
NE. B.P. E. 1640

22.33 T.P.  
6.07  
28.40 T  
4.15  
23.95  
23.96  
0.01 Error  
23.96  
1.45  
22.41 T



Station	Cont. from P. 5	Elev. Stakes	Elev. Floor Line	Cuts	Offsets	from P. 5 - 2841 $\pi$
168+00	2841	5.50	22.91	5.16	+17.75	3.5' R <sup>d</sup> Cross in sb.
+50		4.71	23.70	5.21	+13.49	" " " "
167+00		4.10	24.31	5.26	+19.05	" " " "
+50		3.42	24.99	5.31	+12.68	" " " " BM #14-B =
166+00		2.79	25.62	5.36	+20.26	" " " "
+50		2.21	26.20	5.41	+20.79	" " Nail
25.5' N of R-51 22' E of W. 16th = 165+20.29 = $\Delta$ R <sup>d</sup> 89°55'45"	MH #33		26.87	5.41	+21.29 = Reset 1-8-43	Parallel to 16th
		1.76	26.65	5.44	+21.21	11.2' W. 22.4' W. or line from South
165+00	28.55	2.38	26.17	5.46	+20.71	5' R <sup>d</sup> = Nail in Pav.
+50		4.41	24.14	5.51	+18.63	"
164+00		6.47	22.08	5.56	+16.52	"
+50		8.50	20.05	5.61	+14.44	"
163+00		10.57	17.98	5.66	+12.32	"
Function Powder Company Line #MH. 32		11.06	17.49	5.68	+11.81	"
162+75.49 = $\Delta$ 1007' 10" 14"		11.54	17.01	5.71	+11.30	"
162+50	19.23 $\pi$	3.09	16.14	5.77	+13.37	"
+50		3.75	15.48	5.83	+9.65	"
161+00		4.39	14.84	5.89	+8.95	"
+50		4.84	14.39	5.95	+8.44	"
160+00		4.95	14.28	6.01	+8.27	"
159+8.5 = $\Delta$ R <sup>d</sup> 1°20'30"		4.98	14.25	6.03	+8.22	"
159+50		5.16	14.07	6.07	+8.00	"
159+00		5.36	13.87	6.13	+7.74	"
+50		5.47	13.76	6.19	+7.57	"
158+00		5.68	13.55	6.25	+7.30	"
157+50	17.06	3.43	13.63	6.31	+7.32	"

Restaked see P-56

Station	$\Delta$ 17.06	Elev Stakes	Elev Flow line	Cuts	offsets	
						1706.7
						0.60
						16.46 TP
157+00		3.56	13.50	6.37	+7.13 ✓	7.15+
+50		3.89	13.17	6.43	+6.74 ✓	23.61 T
156+00	0.12%	4.17	12.89	6.49	+6.40 ✓	2.19
155+50	0.12%	4.44	12.62	6.55	+6.07 ✓	21.22
155+16.86	0.12%			6.59		21.40
154+98.32	0.12%	4.61	12.45	6.66	+5.79 ✓	21.41 - BTN
+50		4.23	12.83	6.86	+5.97 ✓	2.19 +
154+00		2.43	14.63	7.06	+7.57 ✓	23.60 T
+50		0.60	16.46	7.26	+9.20 ✓	1.99
153+00	23.61 T	5.40	18.31	7.46	+10.75 ✓	21.61 TP
+50		3.67	19.94	7.66	+12.28 ✓	8.14 - 17.5
152+00	23.60	2.84	20.76	7.86	+12.90 ✓	21.40
+50		2.54	21.06	8.06	+13.00 ✓	To Place over existing Service
151+00		2.42	21.18	8.26	+12.92 ✓	5' R# 10' 54" on E. Existing Service
150+50		2.28	21.32	8.46	+12.86 ✓	
150+00		2.16	21.44	8.66	+12.78 ✓	
+50		2.01	21.53	8.86	+12.73 ✓	
149+22.32	23.61 T	1.99	21.61	8.97	+12.64 ✓	8.14 - 18 - B
149+00	23.70	7.82	21.95	9.45	+12.16 ✓	15.7' back K-114
+50		6.84	22.93	11.43	+11.50 ✓	22.03
148+00		5.72	24.06	12.80	+11.26 ✓	7.67 +
+50		5.05	25.71	14.17	+10.54 ✓	29.70 T
147+00		4.02	25.68	15.54	+10.21 ✓	8.16 -
146+50		2.46	27.31	16.91	+10.40 ✓	21.54

Restaked see P-56, 57, 58.

Note: bet. stations 149+22.32 and " 141+00

Used Elev. as shown in check levels P-53 which were run the following day under more favorable circumstances.

V=8.1k  
14' front of E-132454

MH#31

MH#31

↑ corrected

Drop MH# 30 - 21' East of 1/2 - 1125 St.  
25' South of 1/2 - K - St.  
30° 03' Lt.

1.99

23.70

2.74%

7.2' R# = cross in cb.

Cont. from p-7

Station		Elev. Stakes	Elev. Flow Line	Cuts	Offsets	
	29.70	28.34				29.70
146+00		28.30	18.28	+10.06	7.2	140 -
	37.89	29.54				28.70 TP
+50		29.57	19.65	+9.89	"	349 +
		30.32				378.9 T
145+00		30.35	21.02	+9.30	"	410
		31.97				337.9 TP
+50		31.50	22.39	+9.08	"	831 +
		32.68				42.10 T
144+00		32.72	23.76	+8.92	"	173 -
		33.76				403.7 TP
+50		33.79	25.13	+8.63	"	864 +
	42.10	34.93				49.01 +
143+00		34.97	26.50	+8.43	"	484 -
		36.08				44.17
+50		36.13	27.87	+8.21	"	49.15
		36.87				002 Error
142+16.50 - MH # 29		36.90	28.79	+8.08	"	44.15
		36.81				484 +
142+00		36.84	29.04	+7.77	"	48.99
		37.86				
+50		37.90	29.79	+8.07	"	
		38.95				
141+00		38.96	30.54	+8.41	"	
	49.01					
+50		39.75	31.29	+8.46	"	
140+00		40.04	32.04	+8.00	"	
+50		41.25	32.79	+8.46	"	
139+00		41.53	33.54	+7.99	"	
+50		42.31	34.29	+8.02	"	
138+36.05 - MH # 28		43.03	34.50	+8.53	"	
138+00		43.99	35.00	+8.99	"	
+75		44.24	35.35	+8.89	"	
+50		43.61	35.70	+7.91	"	
	48.99 T					
137+00		44.45	36.40	+8.05	"	
+50		44.95	37.10	+7.85	"	
136+00		45.76	37.80	+7.46	"	
+50		46.05	38.50	+7.55	"	
135+00		46.71	39.20	+7.51	"	
5.60' South SL.G. St						
134+41.74 - Δ 0°00'30" RH		47.32				
134+50		47.32	39.90	+7.42	"	

chb  
S.M. # 21-B  
RP  
(7.2' = 10')

2.74%

Shimo Island Ave.

1.50%

52. Market St.

1.40%

Cont. from P-8

Station	48.99		Elev. Stake	Elev. Flow Line	Cuts	Offsets	
134+00		0.98	48.01	40.60	+7.41	7.2'	48.99 X 0.98 - 48.01 TP
+50	56.00	7.44	48.56	41.30	+7.26	"	7.99 + 56.00 +
133+00		6.53	49.47	42.00	+7.47	"	1.50 54.60
+50		5.36	50.64	42.70	+7.94	"	9.53 - 64.03
132+00		4.97	51.03	43.40	+7.63	7' Pt. = Nail in Box	chk 8M #23-B 55.48 8M
+50		3.52	52.48	44.10	+8.38	7.2' Pt. = cross in cb	NWBP F-111M
131+00		2.42	53.58	44.80	+8.78	"	64.03 X
Sl. line - F-st.	64.03	9.56	54.47	45.42	+9.05	7.5' Pt. = Ld Plg in cb	1.73 - 62.30 TP
= 130+55.78 - MH #27		9.06	54.97	45.78	+9.19	"	10.00 +
+30		8.82	55.21	46.19	+9.02	7.2'	72.30 X
130+00		7.97	56.06	46.88	+9.18	"	8.32
+50		6.71	57.32	47.57	+9.75	"	chk 8M #247 NWBP E-114 3.98 -
129+00		5.49	58.54	48.26	+10.28	"	72.30 X
+50		4.26	59.77	48.95	+10.82	"	
128+00		2.97	61.06	49.64	+11.42	"	
+50	72.30	10.05	62.25	50.33	+11.92	"	
127+00		9.01	63.29	51.02	+12.27	"	
+50		8.36	63.94	51.71	+12.23	"	
126+00		7.27	65.03	52.40	+12.63	"	
+50		6.11	66.19	53.09	+13.10	"	
125+00		4.94	67.36	53.78	+13.58	"	
+50		3.83	68.47	54.47	+14.00	"	
124+00		2.88	69.42	55.16	+14.26	"	
+50				55.85		"	
123+00		1.60	70.70	55.92	+14.78	"	
52. Broadway Ave		0.81	71.49	56.19	+15.30	"	
= 122+95.27 - MH #26						"	
+65						"	
122+50						"	

Cont. from P. 9

Stations	TP		Elev. Stake	Elev. Flange	Cuts	Offsets	
122+45	72.30	0.69	71.61	56.38	+15.23		72.30 TP
122+00	72.93	7.06	72.37	56.78	+15.59	7.2' MH - Cross in cb.	0.69 - 71.61 TP 7.32 +
+50		6.22	73.21	57.23	+15.98	"	72.93 TP
121+00		5.46	73.97	57.68	+16.29	"	0.44 -
+50		4.59	74.84	58.13	+16.71	"	78.99 TP
120+00		3.61	75.82	58.58	+17.24	"	8.45 +
+50		3.14	76.29	59.03	+17.26	"	87.44 TP
119+00		2.38	77.05	59.48	+17.57	"	3.24 -
+50		1.80	77.63	59.93	+17.70	"	84.20 TP
118+00		1.39	78.04	60.38	+17.66	"	
+50	TP 8.45	87.44	0.44	78.99	60.83	+18.16	
117+00 = MH #25		7.55	79.89	61.28	+18.61		
+50		6.60	80.84	61.73	+19.11	7.2' MH - Cross	
116+00		5.67	81.77	62.18	+19.59	7.2' MH - Cross in cb	
+50		4.78	82.66	62.63	+20.03	"	
115+05		4.20	83.24	63.03	+20.21	"	
115+00				63.08		"	
+85		4.11	83.33	63.21	+20.12	"	
+50		4.48	82.96	63.53	+19.43	"	
114+00		4.55	82.89	63.98	+18.91	"	
+50		3.90	83.64	64.43	+19.11	"	
113+00		3.77	83.67	64.88	+18.79	"	
+50		3.52	83.92	65.33	+18.59	"	
112+00	TP 3.90	88.10	3.24	84.20	65.78	+18.42	
+50		3.49	84.61	66.23	+18.38	"	
111+45 = MH #24		3.29	84.81	66.55	+18.26	"	

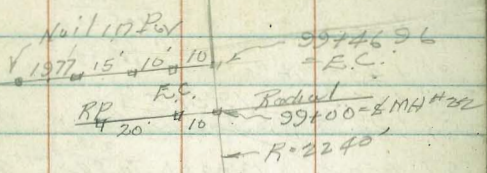
Cont. P-11

0.90%

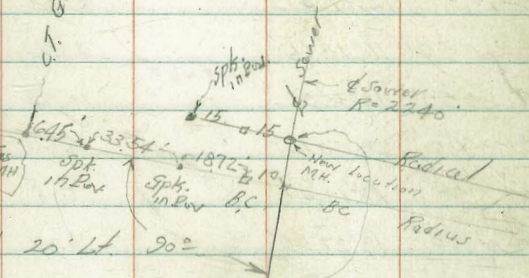
Station	88.10	Elev. Stakes	Elev. Flow line	Curb	offsets	88.10T	
111+00		3.50	84.60	66.68	+17.92		
+50		3.81	84.29	67.13	+17.16		
110+00		4.79	83.31	67.58	+15.73		
+50		5.58	82.52	68.03	+14.49		
109+36.35	S. Russ Blvd. -Δ 0°02' R	88.56T	5.94	82.62	68.15	14.47	10' Lt. = cross 17' Pav 20' Lt. = rail
109+00			6.34	82.22	68.48	13.74	"
+50			5.52	83.04	68.93	14.11	"
108+00			5.01	83.55	69.38	14.17	"
+50			4.48	84.08	69.83	14.25	"
107+00			3.84	84.72	70.28	14.44	"
+50			3.32	85.24	70.73	14.51	"
106+00			2.72	85.84	71.18	14.66	"
+50			2.14	86.42	71.64	14.78	"
105+38.97	2°43' F.B. 1611-31 -Δ 2°41' 20" R		1.94	86.62	71.74	14.88	10' Lt. = Nail 20' Lt. = Nail
105+00			1.62	86.94	72.09	14.85	"
+50			1.15	87.41	72.54	14.87	"
104+00			0.65	87.91	72.99	14.92	"
+37.72	Δ 2°51' 30" Lt	93.79	5.14	88.65	73.55	15.10	10' Lt. = Nail 20' Lt. = Nail
103+00			4.80	88.99	73.83	15.10	"
+50			4.42	89.37	74.34	15.03	"
102+00			3.75	90.04	74.79	15.25	10' Lt. = Stake (ok for POT)
+50			6.45	87.34	75.24	12.10	"
101+00			16.70	82.09	75.69	6.40	"
+60			14.77	79.02	76.05	2.97	"
+50							C. 9.97 7.9 RT. NAIL IN TEE
100+00			10.13	83.66	76.59	7.07	"

Cont from P-11  
 M.H. 4.00  
 93.79 x T.P. 10 Lt. 99+100  
 9.46  
 84.33  
 12.00

Station	Def.	Elev. Stakes	Elev. Flow line	Cuts	Offsets	
99+46.36	E.C. 7.2475 6°48.4	96.33 x 96.33 x	83.96	77.07	6.89 ✓ 10'lt	
99+100	M.H. #22 6°10.00	96.33 x 1.50	84.33	77.49	6.84 ✓ "	
750	6°10.00	94.83 5.66	1307	83.26	78.07	5.19 ✓ "
98+00	5°31.68	100.49 x	6.14	90.21	78.65	11.56 ✓ "
750	4°53.32		3.21	93.12	79.23	13.89 ✓ "
97+00	4°14.96		1.51	94.82	79.81	15.01 ✓ "
96+48	3°35.10		1.50	94.83	80.41	14.44 ✓ "
95+98		100.49				
95+00	2°56.71	5.79	6.13	94.36	80.99	13.37 ✓ "
95+48	2°18.38	94.70 T.P.	5.20	95.79	81.57	13.72 ✓ "
95+98	1°40'					
95+48	1°01.66'					
94+98	1°40		9.01	91.48	82.15	9.32 ✓ "
94+48	1°01.66		11.37	89.12	82.73	6.39 ✓ "
93+98	0°23.3		2.11	91.38	83.31	8.07 ✓ 10'lt
93+88.67	M.H. #10 16.3 Sewer E.C. = 2240	5.79 T.P.	94.70	83.42 = M.H.	11.28	15'lt (30'lt) = This to M.H.
93+67.37	86 ft 14°49' 30" Total State B.M. 43 "P" 66.11161		11.42	95.09	83.65	11.44 ✓ 10'lt
730 = 14°49' 30"			9.53	96.98	84.10	12.88 10'lt 20'lt 90°
93+00		99.08 7.43	10.44	96.07	84.46	11.61 10'lt
750		106.51 x	8.84	98.07	85.06	13.01 "
92+00			6.24	100.27	85.66	14.61 "
750			3.98	102.53	86.26	16.27 "
91+00			3.74	102.77	86.86	15.91 "
750			3.55	102.96	87.46	15.50 "
90+00			3.48	103.03	88.06	14.97 "
750			2.93	103.58	88.66	14.92 "
89+00			2.14	104.37	89.26	15.11 "



C.T. Guard Rail



Note: Revised M.H. to be over 8" Sewer at station 93+67.37

Note: Line changed from 88+48 to station 95+65  
 See Grades etc P-19  
 (changed by Elias White)  
 Walker on Vaccations  
 as per last office.  
 To miss existing sewer more.

Cont. from P-12							
Station			Elev. Stakes	Elev. Flow line	Cuts	Offsets	R.D. to E
88+45 = MH #20	106.51 1.28 105.23 = 7.0 10.15 115.38	1.28	105.23	89.92	15.31 ✓	10' Lt	Spt in Par 20' Lt = Spt in Par
88+00.30	19°51.5						on Radial line
87+99.78 = F.C. Equations	115.38 2.58	9.55	105.83	90.64	15.19 ✓	10' Lt	Spt 20' Lt = Spt 32.30 Lt = Stake
87+50	19°08.91	112.80	8.89	106.49	96.44	15.05 ✓	
87+00	18°26.16	5.63	8.25	107.13	92.24	14.89 ✓	
86+50	17°43.41		7.82	107.56	93.04	14.52 ✓	
86+00	17°00.66	118.43	7.57	107.81	93.84	13.97 ✓	
85+50	16°17.91		7.13	108.25	94.64	13.61 ✓	
85+00	15°35.16 = POC 19°43.14		6.82	108.56	95.44	13.14 ✓	
+45			5.57	109.81	96.32	13.49 ✓	10' Lt = Spt 20' Lt = Stake
84+00	14°09.66		4.61	110.77	97.04	13.73 ✓	10' Lt
83+45 = MH #19			3.90	111.48	97.92	13.56 ✓	10' Lt 20' Lt Spike
83+00	12°44.16 = POC		3.25	112.13	98.64	13.49 ✓	
+50	12°01.41		3.33	112.95	99.44	12.61 ✓	
82+00	11°18.66		3.76	111.62	100.34	11.38 ✓	
+50	10°35.91	118.43	10.98	107.45	101.04	6.41 ✓	
81+00	9°53.16		8.27	110.16	101.84	8.34 ✓	
+50	9°10.41		5.18	113.25	102.64	10.61 ✓	
80+00	8°27.66		3.27	115.16	103.44	11.72 ✓	
+50	7°44.91		5.45	112.98	104.24	8.74 ✓	
79+00	7°02.16		9.58	108.85	105.04	3.81 ✓	
78+45 = MH #18	6°15.19 3.26 115.17 = POC 9.16	3.26	115.17	105.92	9.25 ✓	10' Lt = Stake	20' Lt = Stake 31.6 Lt = Spt in Par
78+00	5°36.72	124.33	5.40	118.93	106.46	12.47 ✓	
+50	4°53.27		4.51	119.82	107.05	12.77 ✓	
77+00	4°11.22		4.72	119.41	107.65	11.96 ✓	
+50	3°28.47		3.89	120.44	108.24	12.20 ✓	
76+00	2°45.72		3.40	120.93	108.84	12.09 ✓	
75+50	2°02.97		3.03	121.30	109.43	11.87 ✓	

Cont. P-14

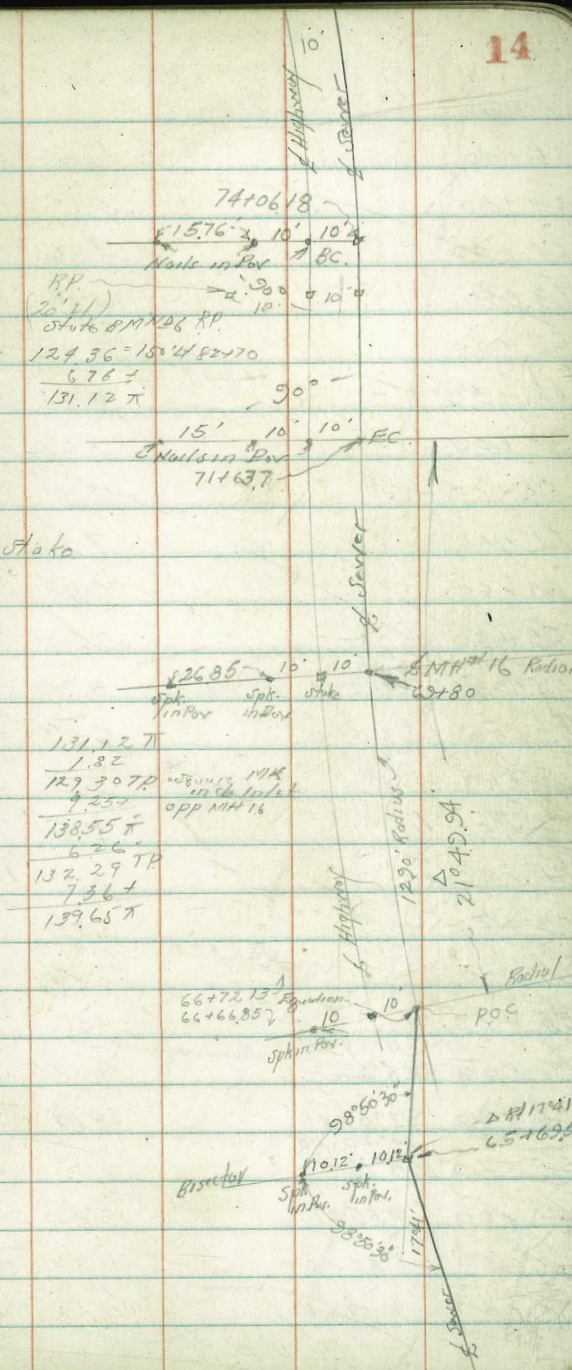


Cont. from P-13  
124.33 ✓

Station	Def.	Elev. Station	Elev. Floor Line	Cuts	Offsets
75+00	239°43' R=2080 L=1393.30	271	121.67	110.03	11.59 ✓
+50	0°37.97	2.37	121.96	110.62	11.34 ✓
74+06.18 = BC 1/4	1.57	1.99	122.34	111.14	11.20 ✓
73+75 = MH#17	122.76 131.12 π	1.57	122.76	111.51	11.25 ✓
+50		8.05	123.07	111.76	11.31 ✓
73+00		7.40	123.72	112.26	11.46 ✓
+50		6.82	124.30	112.76	11.54 ✓
72+00		6.18	124.99	113.26	11.73 ✓
71+63.70 = FC	25°36.5'	5.75	125.37	113.62	11.75 ✓
+50	25°18.25'	5.62	125.58	113.76	11.74 ✓
71+00	24°11.63'	5.10	126.02	114.26	11.76 ✓
+50	23°05.01'	4.51	126.61	114.76	11.85 ✓
70+00	21°59.39'	4.60	126.52	115.26	11.86 ✓
69+80 MH#16	21°31.74'	3.10	128.07	115.46	11.56 ✓
+50	20°51.77'	11.27	127.28	115.83	11.45 ✓
69+00	19°45.15'	8.59	129.96	116.45	11.51 ✓
+50	18°38.53'	5.78	132.77	117.06	11.71 ✓
68+00	17°31.91'	4.80	133.75	117.68	11.67 ✓
+50	16°25.29'	4.59	133.96	118.29	11.67 ✓
67+00	15°18.67'	4.69	133.86	118.91	11.75 ✓
66+72.13	14°41.54'	5.46	133.09	119.25	11.84 ✓
66+66.85	Equation.	5.94	132.51	119.46	11.15 ✓
66+50		6.61	131.94	120.07	11.87 ✓
65+69.57 = MH#15	Δ R 17°41'	6.26	132.29	120.44	11.85 ✓
66+50					
66+00					
65+50	139.65	6.84	132.81	120.63	11.18 ✓

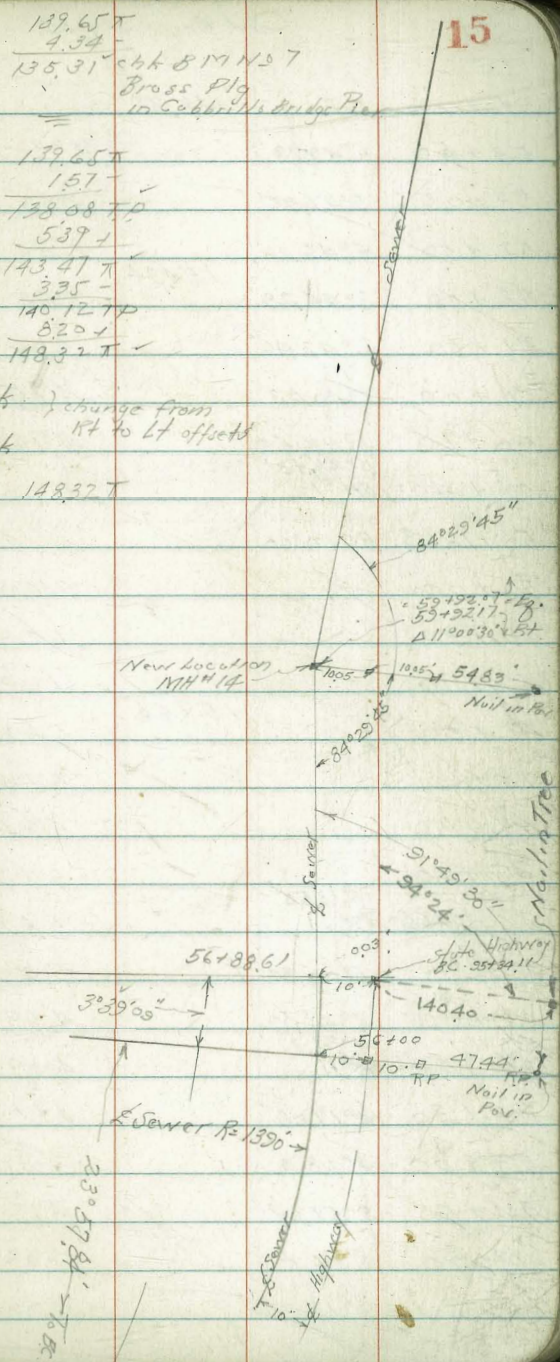
Cont P-15

See Note: p 16



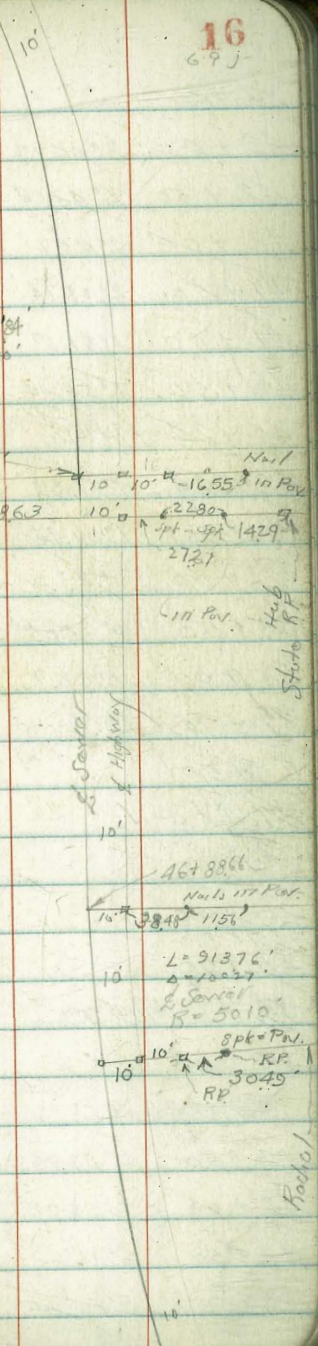
Station	139.65	Elev. Stubor	Elev. Flow line	Cuts	Offsets
65+00		5.83	133.82'	121.12'	+12.70 ✓ 10' Lt
64+50		5.31	134.34'	121.61'	+12.73 ✓ " "
64+00		4.86	134.79'	122.10'	+12.69 ✓ " "
63+50		4.19	135.46'	122.59'	+12.87 ✓ " "
63+00		3.66	135.99'	123.08'	+12.91 ✓ " "
62+50	143.47	6.44	137.03'	123.57'	+13.46 ✓ 10' Lt - Spk
62+00		5.83	137.64'	124.06'	+13.58 ✓ 10' Lt - Spk
61+50		7.91	136.16'	124.55'	+11.61 ✓ 10' Rt
61+10		7.38	136.09'	124.94'	+11.15 ✓ " "
60+60		7.92	135.55'	125.43'	+10.12 ✓ " "
60+30		9.00	134.47'	125.73'	+8.74 ✓ " "
59+50		8.20	135.27'	126.11'	+9.16 ✓ 10' Rt
59+00		6.97	136.50'	126.79'	+7.971 ✓ 10' Rt
59+00		5.22	138.25'	127.60'	+10.65 ✓ " "
58+50		5.06	138.41'	128.40'	+10.01 ✓ " "
58+00		5.31	138.16'	129.21'	+8.95 ✓ " "
57+50		3.35	140.12'	130.01'	+10.11 ✓ " "
57+00	143.32x	7.76	140.56'	130.81'	+9.75 ✓ " "
56+50		7.57	140.75'	131.61'	+9.14 ✓ " "
56+00	11°58.92'	6.85	141.47'	132.42'	+9.05 ✓ " "
55+60	11°09.46'	5.84	142.48'	133.05'	+9.42 ✓ " "
55+20	10°20.00'	4.83	143.49'	133.70'	+9.79 ✓ " "
55+00	9°55.27'	5.04	143.28'	134.07'	+9.26 ✓ " "
54+50	8°53.44'	4.73	143.59'	134.81'	+8.78 ✓ " "
54+00	7°51.61'	5.00	143.32'	135.60'	+7.72 ✓ " "

Cont. p. 16



Station	Def <sup>a</sup>	148.32	Elev. Stake	Elev. Flank	Cuts	Offsets
53+50	6°42'78"		4.33 143.29'	136.39'	+7.60 ✓	148.32 ✓ 2.43 ✓ 145.89 - TP
53+00	5°47'25"		3.19 145.13'	137.18'	+7.95 ✓	8.45 ✓ 154.34 ✓ 1.63 ✓
52+50	4°46'12"		2.43 145.89'	137.97'	+7.92 ✓	152.71 ✓ 6.95 ✓
52+00	3°44'29"	154.34	9.59 144.75'	138.76'	+5.99 ✓	159.66 ✓ - L Sewer
51+50	2°42'46"		5.94 148.40'	139.55'	+8.85 ✓	4.19 ✓ 155.47 TP 10.90 ✓ 166.37 ✓
51+00	1°40'63"		4.75 149.59'	140.34'	+9.25 ✓	
50+70	1°03'53"		4.76 142.58'	140.81'	+8.77 ✓	
50+40	0°26'43" MH #12		3.60 150.74'	141.28'	+9.46 ✓	Radial MH #12
50+18.63	B.C. 0°00'		2.74 151.60'	141.60'	+10.00 ✓	50+18.63 B.C. 10' 10' -16.55' 10' Pav. 22.80' 1429' 27.21'
50+00			2.60 151.74'	141.88'	+9.86 ✓	
49+50			1.29 153.05'	142.63'	+10.42 ✓	
49+00			1.63 152.71'	143.38'	+9.33 ✓	
48+50		159.66	6.08 153.58'	144.13'	+9.45 ✓	
48+00			5.54 154.12'	144.88'	+9.24 ✓	
47+50			4.84 154.82'	145.63'	+9.19 ✓	
47+30			5.32 154.34'	146.08'	+8.26 ✓	
46+88.66	5°13'50" F.C.		5.69 153.97'	146.55'	+7.42 ✓	46+88.66 Nails 117 Pav. 10' 28.45' 115'
46+50	5°00'24"		5.29 154.37'	147.13'	+7.24 ✓	10' L=91376' S=10027' L Sewer R=5010'
46+00	4°43'09"		4.63 155.03'	147.88'	+7.15 ✓	
45+60	4°29'37" MH #11		4.09 155.57'	148.48'	+7.09 ✓	10' 8pk Pav. RF RF 30.45'
45+30	4°19'08"		4.11 155.55'	148.99'	+6.56 ✓	
45+00	4°08'8"		3.80 155.86'	149.50'	+6.36 ✓	
44+50	3°51'64"		4.19 155.47'	150.35'	+5.12 ✓	
44+00	3°34'5"	166.37x	7.08 159.29'	151.20'	+8.09 ✓	
43+50	3°17'39"		4.22 162.15'	152.05'	+10.10 ✓	10' 8pk in Pav.

For New Curve  
And Revised Alignment  
Ret. Station 50+18.63  
And " 65+69.57  
Page 71-72

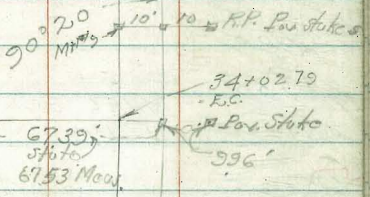
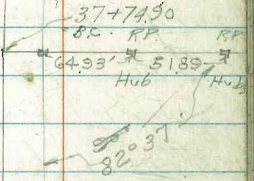


Sta	Angle	Dist	El. Stakes	El. Fl. chime	Cuts	Offsets
43+00	3°00.19	3.00	163.37	152.90	+10.47	10' R/L
42+50	2°43.04	2.37	164.00	153.75	+10.25	"
42+00	2°25.9	5.50	164.28	154.60	+9.68	"
41+50	2°08.74	6.82	162.96	155.45	+7.51	"
41+00	1°51.59	6.90	162.88	156.30	+6.58	"
40+50	1°34.44 1°25.52	5.95	163.83	157.15	+6.68	"
40+24 = MH#10		5.52	164.26	157.59	+6.67	"
40+00	1°17.29	4.79	164.99	157.93	+7.06	"
39+50	1°00.14	3.21	166.57	158.64	+7.93	"
39+00	0°43.0	1.65	168.13	159.36	+8.77	"
38+50	0°25.85	6.91	170.08	160.07	+10.01	"
38+00	0°08.7	8.84	168.15	160.79	+7.36	"
37+74.90 = BC	0°00	9.82	167.17	161.15	+6.02	"
37+50		12.30	164.69	161.51	+3.18	" in ditch
37+00		10.13	166.86	162.23	+4.63	"
36+50		6.59	170.40	162.94	+7.46	"
36+00		6.09	170.90	163.66	+7.24	"
35+50		4.68	172.31	164.37	+7.94	"
35+00		3.75	173.24	165.09	+8.15	"
34+88 = MH#9		3.60	173.39	165.25	+8.14	"
34+50		3.14	173.85	165.74	+8.11	"
34+02.79 = EC	7°23.50	2.51	174.48	166.36	+8.12	"
33+50	6°59.76	1.42	178.57	167.04	+8.53	"
33+00	6°38.22	7.86	178.10	167.69	+10.41	"
32+50	6°16.68	6.81	179.15	168.34	+10.81	"
32+00	5°55.14	5.85	180.11	168.99	+11.12	"

Cont. P-18

166.37 T  
2.37 -  
164.00 TP  
5.78 -  
169.78 T  
0.20 -  
169.58 TP  
7.11 +  
176.69 T  
1.42 -  
175.27 TP  
10.39 +  
185.66 T

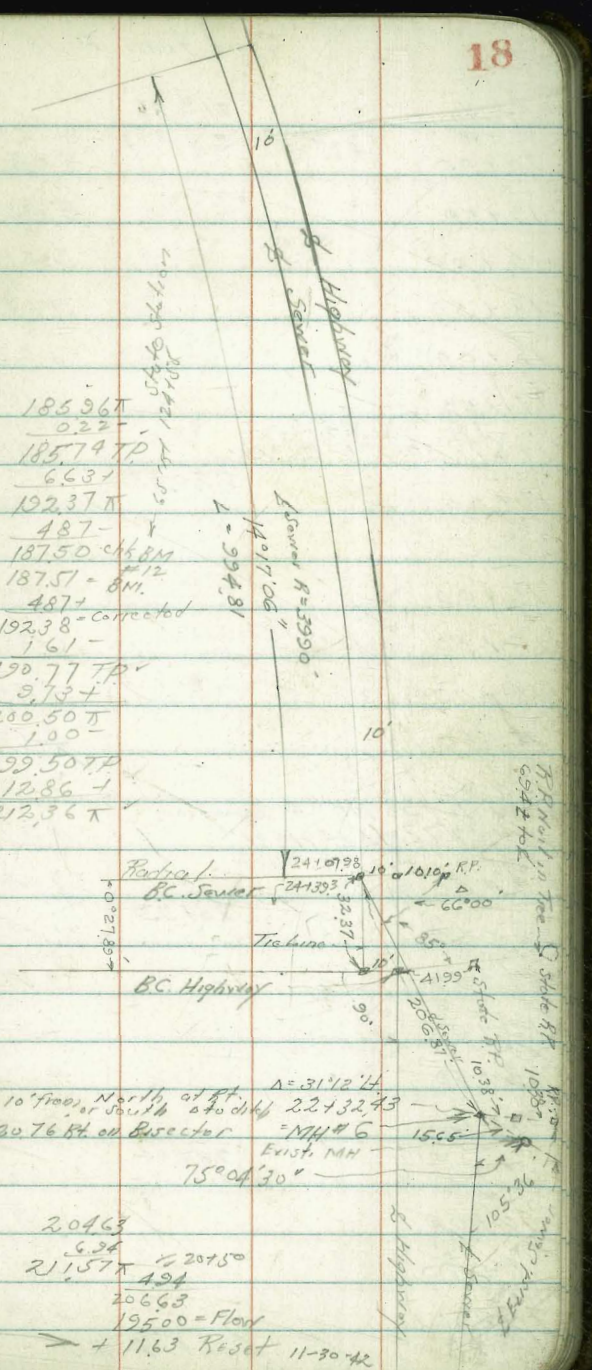
± MH#10 → 10' → RP  
10' → 20' → RP



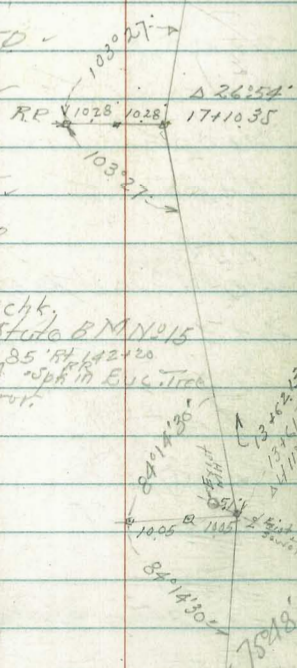
± Survey from EC  
R = 3990 to MH#7  
L = 394.84  
S = 11017.06"

± Survey  
10' ± Highway

Station	Defn	185.96T	Elev. Stakes	Elev. Flow hole	Cuts	offsets
31+50	5° 33.6'		4.75 181.21	169.54	+11.57	10' Rt.
31+00	5° 12.06'		6.20 172.76	170.29	+9.47	"
30+50	4° 50.52'		5.10 180.86	170.94	+9.92	"
30+00	4° 29'		3.52 182.44	171.59	+10.85	"
29+48 = MH#8	4° 06.58'		2.35 183.61	172.27	+11.34	"
29+00	3° 45.9'		0.22 185.74	173.47	+12.27	"
28+50	3° 24.36'	192.38T	6.65 185.73	174.72	+11.01	"
28+00	3° 02.82'		6.60 185.78	175.97	+9.81	"
27+50	2° 41.28'		5.27 186.11	177.22	+8.89	"
27+00	2° 19.74'		4.71 187.67	178.47	+9.20	"
26+50	1° 58.2'		3.38 189.00	179.72	+9.28	"
26+00	1° 36.66'		1.61 190.77	180.97	+9.80	"
25+50	1° 15.12'	200.50T	7.42 193.08	182.22	+10.86	"
25+00	0° 53.58'		5.95 194.55	183.47	+11.08	"
24+50	0° 32.04'		5.73 194.77	184.72	+10.05	"
24+00	0° 13.94'		5.35 195.15	185.77	+9.38	"
24+00			5.32 195.18	186.80	+8.38	"
23+50			5.05 195.45	187.97	+7.48	"
23+00			4.20 196.30	189.15	+7.15	"
22+50			2.93 197.57	190.22	+7.35	"
22+32.43	14 31° 12'		2.31 198.19	190.63	+7.56	"
22+00			1.00 199.50	191.40	+8.10	10' Rt.
21+50		212.36T	11.46 200.90	192.60	+8.30	"
21+00			7.73 204.63	193.90	+10.83	"
20+50			4.66 207.70	195.00	+12.70	"



Station		212.36		Elev.		Cuts	offsets	on bank	212.36
20+00	4.75	216.48	32.3	213.25	196.20	+17.05	10' R.L. Stake	on bank	212.36 -0.63
19+50			5.42	211.06	197.40	+13.66	"	on bank	211.73 TP +4.75
19+00			9.71	206.77	198.60	+8.17	"		216.48 -6.92
18+50			9.13	207.35	199.80	+7.55	"		209.56 TP -10.77
18+00			6.62	209.86	201.00	+8.86	"		220.33 TP -0.05
17+50			2.19	214.34	202.20	+12.14	"		220.28 TP -11.65
17+10.35	NH#5 ST 26°54'		6.92	209.56	203.17	+6.39	10.28' Lt on Bisector		231.93 TP -0.44
17+00		220.33	10.69	209.64	203.46	+6.18	10' Lt = Spk		211.49 TP -12.55
16+50			9.07	211.26	204.87	+6.39	"		244.04 TP -0.38
16+00			7.89	212.44	206.28	+6.16	"		243.66 TP -11.35
15+50			6.82	213.61	207.69	+5.92	"		255.01 TP -1.26
15+00			5.45	214.88	209.10	+5.78	"		253.75 = Stake BM N 215 85' ST 142+20
14+50			4.12	216.31	210.51	+5.70	"		253.78 = BM Spk in Elev. Time 0.03 = Error
14+00			3.03	217.30	211.92	+5.38	"		
13+62.13	NH#4 Equation		1.77	218.56	212.99	+5.57	"		
13+61.77	ST 11°31'		1.34	218.99	213.37	+5.62	"		
13+50			11.08	220.85	214.97	+5.88	"		
13+00		231.93	9.17	222.76	216.57	+6.19	"		
12+50			6.61	225.32	218.17	+7.15	"		
12+00			4.05	227.88	219.77	+8.11	"		
11+50			2.00	229.93	221.37	+8.56	"		237.63 = Elev. 9+50 7.00
11+00			11.68	232.36	222.97	+9.39	"		244.63 -5.22
10+50		244.04	9.17	234.87	224.57	+10.30	"		239.41 = chg 9+100
10+00			6.41	237.63	226.17	+11.46	"		
9+50			4.64	239.40	227.77	+11.63	"		



11th St Canyon Sewer  
Cont. from P-19

INDEXED

WIK

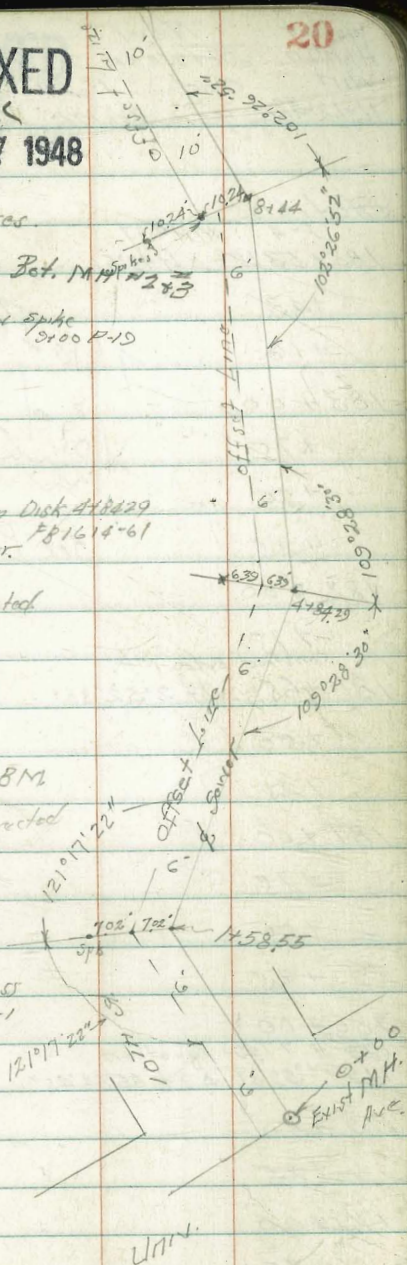
OCT 27 1948

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Station		Elev. Stakes	Elev. Flow Line	Cuts	Offsets
8+50 M.H. #3			229.37	left out	10' Lt - Cpt.
= 8+44.4	24°53'45" Lt	2.69 239.40	229.56	+9.84	7.024 - 2048 Lt. Spikes
8+90		2.49 239.60	230.57	+9.03	"
7+50		8.24 240.85	231.72	+9.13	"
7+00		6.95 242.14	232.87	+9.27	"
6+50		5.64 243.45	234.02	+9.43	"
6+00		4.26 244.83	235.17	+9.66	"
5+50		2.90 246.19	236.32	+9.87	"
5+00		0.80 248.29	237.47	+10.82	"
= 4+84.29	14.38' 57"	0.04 249.05	237.83	+11.22	6.37 Lt ending
4+50	261.11	10.05 251.06	240.91	+10.15	6' Lt
4+00		5.92 255.19	245.41	+9.78	"
3+50		0.99 260.12	249.91	+10.21	"
3+00	27395	8.82 265.13	254.41	+10.72	"
2+50		3.74 270.21	258.91	+11.30	"
2+00	283.47	8.32 275.15	263.41	+11.74	"
= 1+58.55		5.98 277.49	267.15	+10.34	7.02 ending
+50		5.92 277.55	267.58	+9.97	6' Lt
1+00		3.77 279.70	270.08	+9.62	"
0+50		1.32 282.15	272.58	+9.57	"
0+00		0.67 282.80	275.08	+7.72	"

Finished Stakeing Nov. 30 - 1948

Original Alignment F.B. 1611, 1614



Walker New Cuts for 39" Trunk Sewer  
 Hardin Between 17th & Logan  
 Wirt and 16th & Commercial  
 11-18-42 for line change

INDEXED

21

WIK  
 OCT 27 1948

Stations	Elev. Stakes	Elev. Flowline	Cuts	Offsets
P-4 MH#37 183+53.12 = Δ 449'51"		3.61		
+13				
+16				
183+00				
+75				
+50				
+25				
182+00				
+75				
Construct Extra M.H. 181+65 = Δ RT 2°52'30"		3.80		
+50				
+25				
181+00				
+75				
+50				
+25				
180+00				
= 179 + 77.49 Equation 179 + 59.87 Δ RT 85°34'45"				
179+50		3		
+25		3.93		
179+00		3.96		
+75		3.98		
+50		4.01		

Cont. P-22



39" Trunk Sewer  
Construction Grades  
Cont. from P. 21

Station	Elev. Stakes	Elev. Flow line	Cuts	offsets
179+25		4.03		
179+00		4.06		
+75		4.08		
179+50		4.11		
+25		4.13		
178+00		4.16		
+75		4.18		
176+50		4.21		
+25		4.23		
177+00		4.26		
176+73		4.29		
176+44.09 = Δ Lt 89°01'45"		4.32		

This Page  
Void

MH#85

Walker New Cuts for Line Change  
 Hardin in 39" Sewer Between 17th  
 Wirt & Logan Ave & 16th & Commercial  
 11-18-42 ~ for sketch of change see P-25 ~

Station	Blv. Stakes	Elev. Flowline	Cuts	Offsets	Cut Stake Elev. MH #37 = 1561
183+53.2 = 267+49°51'	1561	3.61		7.5' Fd. Cross in cb	1561
+43	3.56	15.82	3.62	+12.20	10' Lt. 3.77
+16	4.33	15.05	3.65	+11.40	" 19.38
183+00	4.44	14.94	3.66	+11.28	" 6.58
+75	6.13	13.25	3.68	+9.57	" 13.00
+50	6.55	12.83	3.71	+9.12	" 20.91
+25	6.64	12.74	3.74	+9.00	" 23.41
182+00	6.09	13.29	3.76	+9.53	" 6.39
+75	7.98	11.40	3.79	+7.61	" 17.02
Construct Retra MH 181+65 = Δ 87+2°52'30"	7.48	11.90	3.80	+8.10	" 3.27
+50	5.05	18.36	3.81	+14.55	" 20.26
+25	3.89	19.52	3.84	+15.68	"
181+00	3.10	20.31	3.86	+16.45	"
+75	2.99	20.42	3.89	+16.53	"
+50	3.06	20.35	3.91	+16.44	"
+25	6.65	16.76	3.94	+12.82	"
180+00	5.13	18.28	3.96	+14.32	"
= 179+77.95 MH #36 Equation 179+59.87 = Δ 85°34'45"	5.55	17.86	3.98	+13.88	10' Lt. 20' Lt. on projection Back Tam.
179+50	5.69	17.72	4.01	+13.71	Line Change
+25	6.39	17.02	4.04	+12.98	But Station 179+59.87 & 176+44.09
179+00	2.39	17.87	4.06	+13.81	See New Cuts P-27
178+75	3.86	17.20	4.09	+13.11	

Cont P-24

39" Sewer Construction  
Between 17th & Logan  
and 16th & Commercial Ave

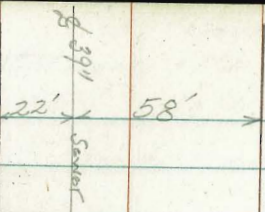
Cont. from P-23

Station		Elev. Stakes	Elev. Flow line	Cuts	Offsets
178+50	20.26	3.69	16.57	4.11	+12.46'
+25		3.53	16.73	4.14	+12.59'
178+00		3.44	16.82	4.16	+12.66'
+75		5.45	14.81	4.19	+10.62'
+50		6.23	14.03	4.21	+9.82'
+25		6.99	13.27	4.24	+9.03'
177+00		7.60	12.66	4.26	+8.40'
176+73		8.54	11.72	4.29	+7.43'
176+44.09	MH #35 L 89°01'45"	9.79	10.47	4.32	+6.15' ok same as P-5

Line change between stations  
179+59.87 + 176+44.09  
New Cut P-27  
" location sketch p.25

+8.39 = Near 177 see check levels

Walker  
Hurdin  
Wirt  
11-18-42



Cons.  
6' Ret. Wall

Corner  
Returning  
17th St  
Floor top = 2.45

17TH

80'

75 x 3.5 x 7

176+44.09  
= Δ 482° 01' 45"  
89° 26' 00"

New 39" Sewer

315.78

New Cuts  
P. 23, 24

179+53.71  
= Δ 127° 28' 25"  
ARR 85° 59'

FP = set on Production Back Turn

Commercial  
Ave

80'

17TH

75'

Logans

Existing MH

7'

11.2

Existing Sewer

181+65

= Δ 2° 52' 30" HT.

Street

Ave.

188+12'

53'

183+53.12  
Δ 49° 51'

39" Sewer

Sketch showing change  
 in location 39" Sewer  
 in order to give more clearance  
 in front of houses on East side 17th St  
 and also Retaining Wall at N.W. Cor.  
 of 17th & Commercial  
 Per Order Mr. H.W. Jorgensen - City Eng.  
 11-18-42

Walker  
Hardin-x  
Virt  
11-12-42

Check levels 39' Senior  
Bet. 17th & Logan  
and 16th & Commercial Ave.  
original Levels P- 23.29

183+53.12 3.73 19.34 15.61  
+43 3.52 15.825  
+16 4.30 15.04 01  
183+0.0 4.40 14.94 ✓  
+75 6.10 13.24 01  
+50 6.51 12.83 ✓  
+25 6.60 12.74 ✓  
182+00 6.05 13.29 ✓  
+75 7.95 11.39 01  
181+65 <sup>Extra</sup> MH 6.35  
T.P. 10.88 23.87 6.35 12.99  
181+65 = MH 11.97 11.90 ✓  
+50 5.51 18.36 ✓  
+25 4.35 19.52 ✓  
181+00 3.56 20.31 ✓  
+75 3.45 20.42 ✓  
+50 3.53 20.34 01  
+25 7.12 16.75 01  
180+00 5.59 18.28 ✓  
179+77.49 Equation = MH 85° 34' 45" 6.02 17.85 01  
179+52.87 MH# 36  
+50 6.15 17.72 ✓  
T.P. 179+25 3.20 20.21 6.86 17.01 01  
179+00 2.37 17.84 03

2021

178+75 3.03 17.18 02  
178+50 3.66 16.55 02  
+25 3.49 16.72 01  
178+00 3.41 16.80 02  
177+75 5.42 14.79 02  
+50 6.20 14.01 02  
+25 6.96 13.25 02  
177+00 7.56 12.65 01  
176+73 8.51 11.70 02  
176+41.09 = MH# 35 9.76 10.45 02

Walker  
 Hardin for change of Line  
 Wirt 572 North Side Commercial Ave.  
 11-21-42 Between 16th & 17th Sts.

In order To give more clearance  
 between Sewer & 12" High Pressure Gas line  
 Location see sketch P-25

Elev. Stake 180+00 P-23 = 18.28  
 0.67  
 18.95

Station	Equation	MH#	Elev. Stakes	Elev. Flow Line	Cuts	Offsets	RP
179+75.25	APL 85°59'	1895	0.90	18.05	3.98	+14.07	10' Lt. 20' Lt. on Production Back Turn
179+59.71			1.24	17.71	4.01	+13.70	8' Lt.
179+50			1.93	17.02	4.04	+12.98	"
+25			1.08	17.87	4.06	+13.81	"
179+00			1.75	17.20	4.09	+13.15	"
+75			2.38	16.57	4.11	+12.46	"
+50			2.22	16.73	4.14	+12.59	"
+25			2.17	16.82	4.16	+12.66	"
178+00			4.14	14.81	4.19	+10.62	"
+75			4.92	14.03	4.21	+9.82	"
+50			5.68	13.27	4.24	+9.03	"
+25			6.30	12.65	4.26	+8.39	"
177+00			7.23	11.72	4.29	+7.43	"
176+73	APL 89°26'		8.49	10.46	4.32	5.14	+6.15 = Page 24 - incl P-5
176+44.09	MH#35						
11-30-42	Restake 180+25 & 180+50						
	2318						
180+50			2.83	26.35	3.21	+16.44	10' Lt. Foundation
180+25			5.49	16.69	3.24	+12.75	10' Lt. skt 180+00

Elev. Stake MH#36 18.05  
 5.13  
 23.18  
 9.90  
 18.28







Walker

Levels on Existing Sewer  
And Existing 12" Water Main  
16th + Commercial Ave

at station approx 176+73 of 39" Sewer.

S.F. 16th  
+ Comm.

4.32 16.80

12.98 B.M. + 5.5  
P-5

chk. 177+00 P-24 4.15 12.65

12.66  
0.01

16.80

INDEXED

WK  
OCT 27 1948

7.53	9.27	Top	Sewer	
2.30	7.50	Bot	"	
7.68	9.12	Top	Pipe	"
9.23	7.57	Bottom	"	
8.33	8.47	Top	Water Main	
9.86	6.94	Bottom	12" "	
8.55	8.25	Top	12" "	
9.65	7.15	Bottom	12" "	
8.99	7.81	- Top 35" Sewer		176+73
7.60	9.20	- Top 4" Gas line		} 176+52
8.00	8.80	- Bottom " "		
8.10	8.70	- " Bell 4" "		
12.08		- Top 8" Sewer Pipe		} Temp Pipe
12.79	4.01	- Flow 8" "		
12.12	4.68	Top 6" Sewer		176+37
12.66	4.14	- Bottom " "		

Walker  
Hardin  
Wirt  
9-10-48

Highline Grades Trunk Sewer  
11th St. Canyon Sewer  
from Bouldley to West 4th St

31

INDEXED  
W K  
OCT 27 1948

441 17.68 13.27

	Rods	Elev. Barrel Bands	Elev. Hwt		
207+96.82A	3.52	14.16	116	112.00	
+78	3.50	14.18	118	112.00	
+53	3.48	14.20	120	112.00	
+26	3.46	14.22	122	112.00	
207+01	3.43	14.25	125	112.00	
206+50	3.51	14.17	130	112.87	8' RT = stake
206+00	4.03	13.65	135	112.30	8' RT = '
205+50	5.36	12.32	140	110.32	8' RT = '
chk stake 1741. 207+26.82 p.2	4.51	13.17			

Walker  
Hardin  
Wirt  
9-15-42

Sketch of New Location  
39" Trunk Sewer on Sigbee St.  
Between Logan & Cotton Ave.

This change made to avoid retying  
of Existing 12" Water Main

Station

Elev. Elev.  
Fikes

Note Grades on D-33

INDEXED

WK  
OCT 27 1948

32

MH #38  
186+59.94  
 $\Delta 82^{\circ}56'$   
= 186+49.94

186+49.94  
Page 4

This line Newhead -  $\leftarrow$   $\leftarrow$  of New Location

National Ave

Newport Ave

Main St

MH #39  
193+91.78

of New Location 18" Sewer

Equivalent

201+35.67  
201+45.67  
MH #50  
 $\Delta 88^{\circ}58'30''$

of Same as Plan  
Cotton Ave

Walker  
Hardin  
Wirt  
9-15-12

Grades 33" Jersey (New Location)  
on Sigbee St.  
bet. Cotton & Logan Ave.

as per Location P-32

Station	1694 Elevation Station	Elev. Stake	Elev. Flow	Cuts	offset.
-201+45.67	1694 Station	9.72	7.22	1.81	7' Lt.
201+35.67	1694 Station	8.83	8.11	1.85	"
200+91.5		7.64	9.30	1.90	"
200+41.5		7.57	9.37	1.95	"
199+91.5		5.54	11.40	2.00	"
199+41.5		4.81	12.13	2.05	"
198+91.5		3.86	13.08	2.10	"
198+41.5		4.88	12.06	2.15	"
197+91.5		4.95	11.99	2.20	"
+50		4.45	12.49	2.24	"
197+00		3.41	13.53	2.29	"
+50		2.83	14.11	2.34	"
196+00		2.34	14.60	2.39	"
+50		1.81	15.13	2.44	"
195+00		1.21	15.73	2.49	"
194+50		9.21	15.80	2.55	"
193+91.78		7.98	17.03	2.59	"
+50		7.00		2.54	"
193+08.5		6.02		2.58	"
+58.5		7.00	18.01	2.64	"
193+00		6.02	18.99	2.69	"
+50		5.66	19.35	2.74	"
192+00		4.02	20.99	2.79	"
191+50					

Cont. P-34

S.M. #2  
6.90  
10.84  
16.94  
1.21  
13.73  
9.28  
25.01

This Portion  
Restaked see P-37

Sept 16-42

39" line Bet. Cotton & Logan  
on Sigsbee St.  
Cont. from p. 33

Station		Elev. Stake	Elev. Flange	Cuts	Offsets		
191+00	25.01	2.98	22.03'	2.84	+19.12	7 1/2' Cross	25.01
+50		2.03	22.98'	2.89	+20.09	"	1.06
190+00	1.66	23.35	2.94	+20.41	"		23.95
+50	0.64	24.37	2.99	+21.38	"		23.94
189+00	32.58	7.33	25.25'	3.04	+22.21	"	001 Error
+50		6.42	26.16'	3.09	+23.07	"	23.94
188+00	5.49	27.09	3.14	+23.95	"		864
+50	4.57	28.01	3.19	+24.82	"		32.58
187+00	3.72	28.86	3.24	+25.62	"		
186+49.94	Equation.	3.29	29.29'	3.29	+26.00	"	
186+59.94	89°56' R					17' 2 1/2" Nail Production Back Ten.	

Walker  
Hurdin &  
Wirt  
9-16-42

Check Levels 39" Sewer  
Set, Colton & Logan

31.05

35

	10.72	17.62	Fods	Elev. Station	Station			
-201 + 45.17				6.90	chk 841	7.08	23.97	
201 + 35.17			10.41	7.21			23.935	
							.035	
200 + 9.5			9.51	8.11	189 + 50	6.66	24.39	24.37
200 + 4.15			8.31	9.31	189 + 00	5.76	25.29	25.25
199 + 9.15			8.24	9.38	150	4.85	26.20	26.16
199 + 4.15			6.20	11.42	188 + 00	3.93	27.12	27.09
198 + 9.15			5.48	12.14	150	3.01	28.04	28.01
198 + 4.15			4.53	13.09	187 + 00	2.15	28.90	28.86
197 + 9.15			5.55	12.07	186 + 4.294	1.72	29.33	29.29
					186 + 5.330			
+ 4.15			5.62	12.00				
197 + 0.05			5.12	12.50				
+ 5.05			4.08	13.54				
196 + 0.05			3.50	14.12				
TP								
+ 5.05	8.53	23.15	3.00	14.62				
195 + 0.05			8.01	15.14				
194 + 4.50			7.40	15.75				
193 + 9.178			7.92	15.83				
+ 5.0			6.09	17.06				
193 + 0.05			5.12	18.03				
+ 5.0			4.14	19.01				
192 + 0.05			3.78	19.37				
+ 5.0			2.15	21.00				
TP								
191 + 0.05	201	31.05	1.11	22.04				
190 + 4.50			8.05	23.00				
190 + 0.05			7.67	23.38				

Walker  
Hardin  
Wirt  
12-4-42  
New Grader & Cuts for 12" Sewer  
1125 St Canyon Line  
on Conyola Way Bet. Robinson & 10th An  
Pch. MH #2 & #3 Orig. Line P-21

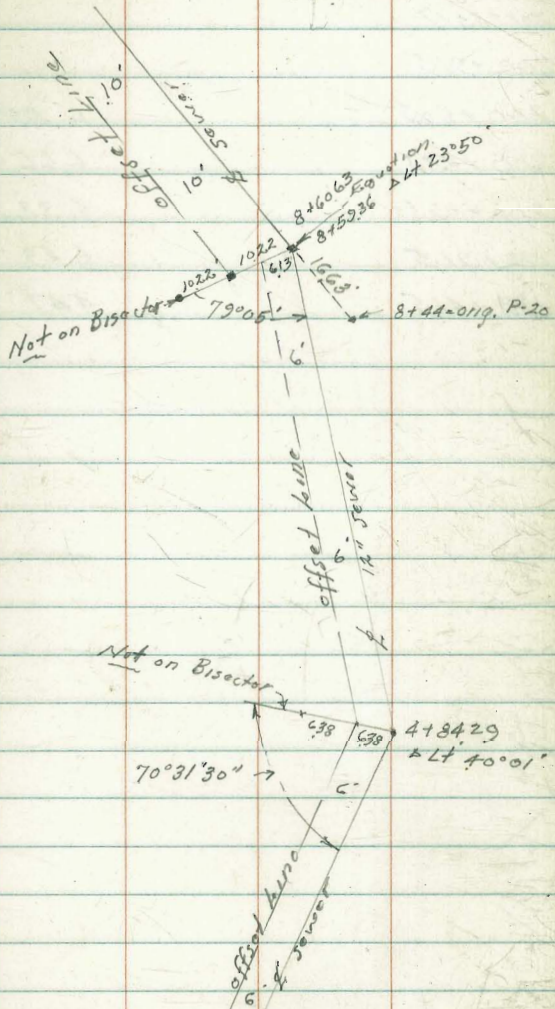
{ Line changed per Inst City Eng. H.P.V.  
in order To give more clearance from  
Toe of Fill of West Piers Robinson St Bridge }

INDEXED

WK  
OCT 27 1948

	↑ 249.52	Elev. Stakes	Elev. Flow Line	Cuts	Offsets
= 8+60.63 } ΔLT 23°50'		9.89	239.63	229.03	+10.60'
8+59.36 } Equation		10.41	239.11	229.60	+9.51'
+35		9.89	239.63	230.91	+9.22'
8+00		8.60	240.92	231.58	+9.34'
+50		7.30	242.22	232.75	+9.47'
7+00	2345 6/10	5.99	243.53	233.93	+9.60'
+50		4.66	244.84	235.10	+9.76'
6+00		3.90	246.22	236.28	+9.94'
+50		1.23	248.29	237.45	+10.84'
5+00	ΔLT 40°01'	0.47	249.05	237.83	+11.22'
4+84.29 = MH #2					

4+84.29 P-70  
Elev. Cut Muck = 249.05  
0.47 +  
249.52 -  
10.12  
239.40 -



Walker  
Hardin  
Wirt  
12-16-42

39" Interceptor Sewer  
Re stake Portion on Sigbee St  
Between Cotton & Main St.  
Across S.D. & A. R.R. Tracks

B19. # 2 1/2" Pipe = 69.7  
8.97  
158.7 -  
44.7 -  
Elev. Stake 199+41.5 P. 33 = 114.0

Station		Elev. Stakes	Elev. Flow line	Cuts	Offsets
201+45.17					
201+35.17			1.81		
200+91.5			1.85		
200+60.5	15.87	6.59	2.28	1.88	+ 7.40 - 7' 11" - stake
200+43.5		6.66	2.21	1.90	+ 7.31 - " "
200+09.5		6.32	2.55	1.93	+ 7.62 - " "
199+91.5		6.49	2.38	1.95	+ 7.43 - " "
199+44.5		4.47	11.40	2.00	+ 9.40 - " "



Walker  
Aspinne  
Harkin  
Hazel  
1-15-43

Levels on Existing Rails  
at Intersection

Brooklyn and California St.

To determine settlement if any  
over Newly Constructed Intercepting Sewer

Void See Grid Book 205-57

























Walker  
Hordman  
Witt  
8-31-42

Check Levels 39" Sewer Const.  
from Bourdley & Cotton  
To Urm & 10th Aves.

Station	Grade	Height	Time	Instrument	Reading	Height	Time	Instrument	Reading
	Graded P. 2-			T.D.	743	1386			
	6.02	19.29	13.27	192+12.22-A	19.54	175	12.11	12.12	
208+13.27		6.57	12.72	197+50		7.87	11.67	11.68	
207+96.82-A		6.12	13.17	197+00		7.29	12.25	12.25	
7.50		6.23	13.06	+50		6.70	12.84	12.83	
207+00		5.85	13.44	195+00		6.18	13.36	13.37	
7.50		5.07	14.22	+50		5.64	13.90		
206+00		5.24	14.05	195+00		5.16	14.38	14.40	
7.50		6.11	13.18	+50		4.63	14.91	14.92	
205+00		6.85	12.44	194+00		4.05	15.49	15.49	
7.50		6.29	12.30	193+91.78 = N.H. #39		3.91	15.63		
204+00		7.84	11.45	+50		3.24	16.30	16.31	
7.50		3.23	10.06	193+00		2.29	17.25	17.26	
7.P				+50		11.68	29.97	12.5	18.29
203+00	4.81	13.87	10.23	192+100		10.77	19.20	19.21	
7.50		5.30	8.57	+50		9.72	20.25	20.26	
202+100		5.23	7.94	191+00		8.67	21.30		
201+735-A		6.41	7.46	+50		7.52	22.45		
201+00		6.14	7.73	190+100		6.98	22.99	23.00	
chk. N.H. #4		6.96	6.91	+50		6.31	23.66	23.67	
6.96	7 corrected 13.86	6.90	8.41	189+100		5.37	24.60	24.62	
200+50		4.50	9.36	+50		4.46	25.51	25.53	
7.00		4.60	9.26	188+100		3.59	26.38	26.40	
199+62.23-A		3.20	10.66	+50		2.64	27.33	27.34	
199+00		2.07	11.79	187+100		1.76	28.21	28.22	
198+50		1.02	12.84	186+49.94 = N.H. #4		0.69	29.28	29.30	
				chk. N.H. #1 & P. Logon. & 89.500		1.63	28.34		
				B.M. #7-8			28.34	28.34	B.M. 0.005

Walker Hurdin X Wirt	check levels 39" Serran		23.34 2M 478	
	2.30	30.64		
186+49.94 = MH			136	29.28 ✓
+25			207	28.57 ✓
186+00			2.96	27.68 ✓
185+79			4.00	26.64 ✓
750			5.35	25.29 ✓
717			6.92	23.72 ✓
185+00			7.74	22.90 ✓
184+75			8.87	21.77 ✓
750			10.06	20.58 ✓
+25			11.20	19.44 ✓
184+00 TP	1.64	19.88	12.40	18.24
183+75			2.21	17.07 1706
+53.12 = MH #37			4.27	15.61 ✓
743			4.05	15.83 o1
+16			4.82	15.06 o1
183+00			3.95	15.93 o1
182+75			6.71	13.17 o1
750			6.85	13.03 o1
+25			7.05	12.83 o1
182+00			6.54	13.34 o1
181+75			8.60	11.28 o1
TP	5.92	24.39	1.41	18.47
181+50			6.00	18.39 o1
+22			4.55	19.84 o1
181+00			3.23	21.16 o1
180+75			3.64	20.75 o1

2439		check levels Cont		51
180+50		3.51	20.88	o1
+25		7.29	17.10	o2
180+00		5.77	18.62	o1
179+72.82 = MH #36		5.97	18.42	o1
750		6.51	17.88	o2
179+00		6.45	17.94	o1
TP				
178+50	074	17.61	7.52	16.87 ✓
178+00			0.49	17.12 ✓
177+50			3.55	14.06 ✓
177+00			4.97	12.64 ✓
chk. BM #58			5.15	12.46
Walker Hurdin Wirt			12.95	002 Error
	4.33	16.81		12.48 - New BM
176+75			5.13	11.68 o2
176+44.09 = MH			6.35	10.46 o1
176+00			5.93	10.88 ✓
175+50			5.34	11.47 o1
175+00			4.76	12.05 o1
174+50			4.19	12.62 ✓
174+00			3.58	13.23 ✓
173+50			3.23	13.58 o1
173+00			2.37	14.44 o1
TP				
172+50			2.26	14.55 ✓
TP				
172+00	6.51	21.99	1.33	15.48 ✓
171+50			5.54	16.45 o1
171+00			4.69	17.30 ✓

check levels Cont. p. 52

Mulher  
Hurdin  
Wirt  
10-18-42

Check Levels 39" Sewer  
Cont. from p- 51

			21.99-T		
170+50		3.80	18.19 -		
170+00		2.81	19.18		
169+50		2.02	19.97 -		
169+1590- <del>784</del>	2L-JF	0.95	21.04 ✓		
TP	770	28.74	0.95	21.04	
168+82.12		6.71	22.03 01		
750		6.40	22.34 01		
168+00		5.82	22.92 01		
750		5.04	23.70 ✓		
167+00		4.43	24.31 -		
750		3.75	24.99 ✓		
166+00		3.12	25.62 ✓		
TP	279	28.85	2.68	26.06	
165+50		3.64	26.21 01		
+20.29 = MH #33		2.19	26.66 01		
165+00		2.68	26.17 -		
164+50		4.71	24.14 ✓		
164+00		6.77	22.08 ✓		
163+50		8.80	20.05 ✓		
163+00		10.87	17.98 ✓		
162+75.99 - MH #32		11.36	17.49 ✓		
TP	2.19	19.20	11.84	17.01 ✓	
162+00		3.08	16.12 02		
750		3.73	15.47 01		
161+00		4.37	14.83 01		

Check Levels Cont.

	19.20				
		4.82	14.38	01	
		4.93	14.27	01	
		4.26	14.24	01	
		5.14	14.06	01	
		5.35	13.85	02	
		5.46	13.74	02	
		5.66	13.54	01	
	3.44	17.05	5.59	13.61	02
			3.58	13.47	03
			3.91	13.14	03
			4.19	12.86	03
			4.45	12.60	02
			4.63	12.42	03
			4.24	12.81	02
			2.45	14.60	03
	7.20	23.63	0.62	16.43	03
			5.46	18.17	04
			3.73	19.90	04
			2.90	20.73	03
			2.60	21.03	03
			2.48	21.15	03
			2.34	21.29	03
			2.22	21.41	03
			2.08	21.55	04
			2.06	21.57	04

Cont. p. 53

Check Levels Sewer  
Cont from P-52

32.86

	8.68	30.29	21.61	EL Nail MH #30 P.7	145+00		2.54	30.32		
149+00			8.35	21.94	TP	8.11	39.63	1.34	31.52	
	8.21	30.24	22.03	BM #18-B P-7	7.50			8.16	31.47	
149+00			8.35	21.89	0.1	144+00		6.95	32.68	
+50			7.38	22.86	✓	7.00		5.87	33.76	
148+00			6.25	23.99	0.1	143		4.70	34.93	
147+50			5.59	24.65	✓	+50		2.55	36.08	
147+00			4.55	27.69	0.1	142+16.9		2.76	36.87	
+50			2.99	27.25	0.1	142		2.82	36.89	
TP	8.80	37.12	1.92	28.32		+50		1.77	37.86	
146+00			8.85			chk BM #20-B	8.16	46.59	1.20	38.43
	8.67	37.19		28.52		141+00		7.64	38.95	
			7.65	29.54		+50		6.82	39.77	
						140+00		6.53	40.06	
	4.34	32.86		28.52	BM #19-B NW 8P T-11.75	+50		5.33	41.26	
149+22.32			11.23	21.63		139		5.04	41.55	
149+00			10.91	21.95		+50		4.28	42.31	
+50			9.93	22.93		138+36.05	NH #28	3.56	43.03	
148+00			8.80	29.06		138+00		2.59	44.00	
+50			8.15	29.71		137+7.5		2.35	44.24	
147			7.11	25.75		+50		2.98	43.61	
+50			5.55	27.31		chk BM #21-B		2.43	44.16	
chk BM #18-B			10.75	22.11		6.36	50.51	44.15	- BM	
146			7.52	28.34		137+00		6.05	44.46	
+50			3.32	29.54		+50		5.56	44.95	



		50.51		
136+00			5.25	45.26 ✓
135+50			4.46	46.05 ✓
135			3.80	46.71 ✓
134+50			3.20	47.21 ✓
134+00			2.51	48.00
TP	6.93	55.32	2.12	48.39 ✓ NW 8P G-11 <sup>th</sup> #23-8
133+50			6.76	48.56 ✓
133			5.85	49.47
+50			4.68	50.64
132			4.29	51.03
TP	9.04	62.61	1.75	53.57
131+50			10.14	52.47
131+00			9.04	53.57
130+55.78			8.15	54.46
+30			7.66	54.95
130+00			7.40	55.21
chk. BM #23-8			7.13	55.45 ✓ NW 8P F-11 <sup>th</sup>
129+50			6.55	56.06
129+00			5.29	57.32
+50			4.07	58.54
128+00			2.84	59.77
+50			1.56	61.05
127+00			0.95	62.26
TP	9.99	72.25		
126+50			8.97	63.28
126+00			8.32	63.93
<del>125+50</del>				

		72.25		
			chk. BM	8.28
				63.97
			8.28	72.26 T corrected
				63.98
			125+50	7.23
				65.03
			125+00	6.07
				66.19
			124+50	4.89
				67.37
			124+00	3.79
				68.47
			+50	2.85
				69.41
			122+95.7 MH #26	1.57
				70.69 °
			+65	0.78
				71.48 °
			TP	8.47
			+45	80.08
				0.65
			122	71.61
				77.2
				72.36 °
			+50	6.87
				73.21 ✓
			121	6.13
				73.95 °
			+50	5.25
				74.83 °
			120+00	4.27
				75.81 °
			+50	3.80
				76.28 °
			119	3.05
				77.03 °
			+50	2.46
				77.62 °
			chk. BM #26-8	2.67
				77.41 ° NW 8P C-4 11 <sup>th</sup>
			2.67	80.07
				77.40 = BM
			TP	8.58
				86.78
				1.87
				78.20
			118+00	8.75
				78.03 °
			117+50	7.81
				78.97 °
			117+00 MH #25	6.90
				79.88 °
			+50	5.95
				80.83 °
			116+00	5.02
				81.76 °

BR. BM #24-B  
NW  
E-11<sup>th</sup>

8678

115+50			4.13	82.65	01
115+05			3.55	83.23	01
114+85			3.46	83.32	01
+50			3.83	82.25	01
114+00			3.91	82.87	02
T.P.					
113+50	5.52	89.05	3.25	83.53	01
113+00			5.40	83.65	02
+50			5.14	83.91	01
112+00			4.86	84.19	01
+50			4.46	84.59	02
+14.35 = NH #2A			4.26	84.79	02
111+00			4.47	84.58	02
+50			4.77	84.28	01
T.P.	2.32	86.60	4.77	84.28	
110+00			3.29	83.31	✓
+50			4.09	82.51	01
chk.					
109 +36.39 = A & Russ Blvd.			4.01	82.59	
				82.62 = by Moore	
				5.03	

Walker  
Hurdin  
Hazard  
1-8-43

Re-stake Trunk Sewer  
on K. St.  
Between 16th and 11th Sts.

INDEXED  
W K  
OCT 27 1948

56

Elev. Nail 163+50 Page 6 = 20.05

5.867

25.917

8.37-

162+75.99 = 17.54-TP

1.737

19.27-T

Station	$\pi$	Elev. Stakes	Elev. Flow line	Cuts	Offsets
	25.91 $\pi$				
164+50		1.58' 24.33'	5.51	+18.82'	9' Rt.
+25		2.62' 23.29'	5.53	+17.76'	"
164+00		3.70' 22.21'	5.56	+16.65'	"
+75		4.72' 21.19'	5.59	+15.60'	"
+50		5.76' 20.15'	5.61	+14.54'	"
+25		6.76' 19.15'	5.64	+13.51'	"
163+00		7.79' 18.12'	5.66	+12.46'	"
162+75.99-A 1°07'10" H		8.37' 17.54'	5.68	+11.86'	"
+50	19.27 $\pi$	2.19' 17.08'	5.71	+11.37'	"
162+25		2.63' 16.64'	5.74	+10.90'	"
162+00		3.14' 16.13'	5.77	+10.36'	11' Rt.
+75		3.43' 15.84'	5.80	+10.04'	9' Rt.
+50		3.81' 15.46'	5.83	+9.63'	"
+25		4.06' 15.21'	5.86	+9.35'	"
161+00		4.43' 14.84'	5.89	+8.95'	"
+75		4.68' 14.59'	5.92	+8.67'	"
+50		4.86' 14.41'	5.95	+8.46'	"
+25		4.92' 14.35'	5.98	+8.37'	"
160+00		4.93' 14.34'	6.01	+8.33'	"
159+85-A 1°20'30" H		5.01' 14.26'	6.03	+8.23'	"

see 2/20 = 14  
= Elev for 24" X 10" pipe = Junction with Proposed Powder Canyon Line

Cont. P-57

Restake Trunk Sewer on K St  
Between 16th + 11th

Cont. from P-56

57

Station	1927	Elev. Stakes	Elev. Flow Line	Cuts	Offsets	
159+50		5.17	14.10	6.07	+8.03	3' Hl. = Nail in Box
+25		5.24	14.03	6.10	+7.93	"
159+00		5.46	13.81	6.13	+7.68	"
+75		5.45	13.82	6.16	+7.66	"
+50		5.54	13.73	6.19	+7.54	"
+25		5.54	13.73	6.22	+7.51	"
158+00		5.73	13.54	6.25	+7.29	"
+75	17.54	4.02	13.52	6.28	+7.24	"
+50		3.92	13.62	6.31	+7.31	"
+25		3.87	13.67	6.34	+7.33	"
157+00		4.00	13.54	6.37	+7.17	"
+75		4.16	13.38	6.40	+6.98	"
+50		4.31	13.23	6.43	+6.80	"
+25		4.49	13.05	6.46	+6.59	"
156+00		4.60	12.94	6.49	+6.45	"
+75		4.76	12.78	6.52	+6.26	"
155+50 = Bk		4.91	12.63	6.55	+6.08	" Elevations on 10" Water
+25		4.99	12.55	6.51	+5.94	" Main station 155+1168
155+01.68 = 11th + 31		5.21	12.33	6.66	+5.67	" Elev. 155+01.68 9' Hl. = 12.33
154+75		5.15	12.39	6.76	+5.63	" 17.63 = $\pi$ 5.30
+50		4.73	12.81	6.86	+5.95	" 17.63 = $\pi$ 17.63 = $\pi$
+25		3.85	13.69	6.96	+6.93	" 7.06 6.87 on Bell
154+00		2.93	14.61	7.06	+7.55	" 10.57 = Top Pipe 10.76 = 10" H. off

Cont. P-58

6.94  
10.69 = Bell shoulder  
= 0.6" H. off

Re-stake Trunk Sewer  
on K Street  
Between 16th + 11th St.

Station	Cont. from P. 57 17.54	Flag Stakes	Elev. Flow Line	Cuts	Offsets	
153+75	2.01	15.53	7.16	+8.37 ✓	9' Pt. - Nail in Pt.	
+50.	1.08	16.46	7.26	+9.20 ✓	"	
+25	0.12	17.42	7.36	+10.06 ✓	"	
153+00	26.97	7.83	18.24	7.46	+10.78 ✓	"
+75	6.89	19.18	7.56	+11.62 ✓	"	
+50	6.16	19.91	7.66	+12.25 ✓	"	
+25	5.69	20.38	7.76	+12.62 ✓	"	
152+00	5.28	20.79	7.86	+12.93 ✓	"	
+75	4.97	21.10	7.96	+13.14 ✓	"	
+50	4.91	21.16	8.06	+13.10 ✓	"	
+25	4.86	21.21	8.16	+13.05 ✓	"	
151+00	4.75	21.32	8.26	+13.06 ✓	"	
+75	4.74	21.33	8.36	+12.97 ✓	"	
+50	4.67	21.40	8.46	+12.94 ✓	"	
+25	4.65	21.42	8.56	+12.86 ✓	"	
150+00	4.56	21.51	8.66	+12.85 ✓	"	
+75	4.55	21.52	8.76	+12.76 ✓	"	
+50	4.55	21.52	8.86	+12.66 ✓	"	
149+22.78	4.51	21.56	8.97-W 9.45-N	+12.59-W ✓ +12.11-N ✓	"	
149+00						
+75						
+50						

17.54  
0.12 -  
T.P. = 17.42  
8.65 +  
26.07 ✓  
4.47 -  
21.60  
21.61  
0.01

11th + 15th St Drop  
149+22.78 = Drop MH  
11th + K St 90° 3' Rt  
149+22.78 = Drop MH



























3/25/42  
Bliss

Supplementary Grades 39' Series  
from 195+25 North on Sigsbee

Sta 125+00  
BM on Grade Pt

6.96 22.09

15.13

195+25

194+75

6.64 15.45 2.46 +12.93

+25

6.22 15.87 2.51 +13.36

193+75

6.03 16.00 2.56 +13.44

+25

4.61 17.48 2.61 +14.87

192+75

3.57 18.52 2.66 +15.86

+25

2.60 19.43 2.71 +16.78

191+75

1.59 20.50 2.76 +17.74

+25

6.99 28.45 0.63 21.46 2.81 +18.65

190+75

5.97 22.48 2.86 +19.62

+25

5.52 22.93 2.91 +20.02

189+75

4.51 23.94 2.96 +20.98

+25

4.29 24.21 3.01 +21.20

188+75

2.67 25.78 3.06 +22.72

+25

2.49 25.96 3.11 +22.85

187+75

6.10 33.67 0.88 27.57 3.16 +24.41

+25

5.23 28.44 3.21 +25.23

186+75

4.35 29.32 3.26 +26.06

INDEXED

W K

OCT 27 1948

70

15.13

6.96+

22.09

0.63

21.46 TP

6.99

28.45

0.88

27.57 TP

6.10 +

33.67

4.27

23.30 MH

Walker  
Hurdin  
Wirt  
11-5-42

New Grades & Cuts for Trunk Sewer  
in 11th St. Canyon for Line Change  
Between Stations - 50+18.63 & 65+69.57

Line changed by order City Eng. H.M. Tolgerson  
to avoid crossing of Existing 12" Sewer

INDEXED

WIK  
OCT 27 1948

in Cobbrillo Bridge Pier  
13531 = BM # 7-P-15  
405 +  
13936 +  
146  
13790  
515 +  
143,05 K  
424 -  
138.81 T.P.  
818 +  
146.99 -

Equation 7 66+72.13  
See P-14 66+66.85

Stations	Elev. Stakes	Elev. Flow line	Cuts	Offsets
65+69.57 - A.H. 18'38"30"	7.07	132.29	120.44	+11.85 10' Lt
65+50	6.47	132.89	120.63	+12.26 "
65+00	5.43	133.93	121.12	+12.81 "
64+50	5.09	134.27	121.61	+12.66 "
64+00	4.64	134.72	122.10	+12.62 "
63+50	4.09	135.27	122.59	+12.68 "
63+00	2.68	136.68	123.08	+13.60 " - Spk.
62+50	2.52	136.84	123.57	+13.27 10' Lt "
62+00	5.40	137.65	124.06	+13.59 " "
61+50	5.65	137.40	124.55	+12.85 " "
61+00	6.25	136.80	125.04	+11.76 " Stubs
60+50	7.29	135.76	125.53	+10.23 " "
60+04.34	6.73	136.32	126.02	+10.30 9' Rt on drag
59+50	6.24	136.81	126.89	+9.92 " "
59+00	5.22	137.83	127.69	+10.14 " "
58+50	5.22	137.83	128.50	+9.33 " "
58+00	4.24	138.81	129.30	+9.51 "
57+50	7.02	139.97	130.11	+9.86 "
57+00	7.29	139.70	130.91	+8.79 "
56+50	6.25	140.74	131.72	+9.02 "
56+00	5.21	141.78	132.52	+9.26 "

Cont. P-72

New Line change  
of Sewer

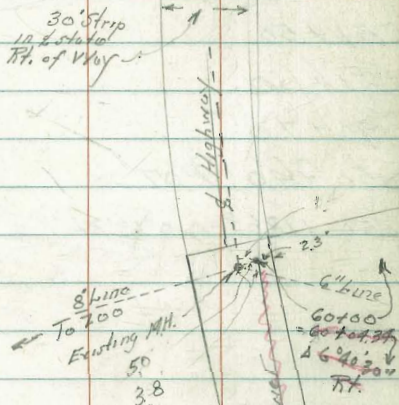
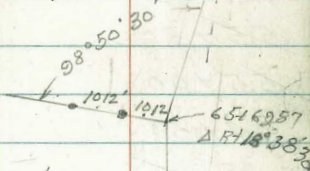
Existing 12" Sewer

30' Strip  
10' & 20' strip  
Rt. of Way

Line  
To 700  
Existing M.H.  
50  
3.8

Change of Lt. = New Line of Sewer

See P-73



Line change  
Between Stations

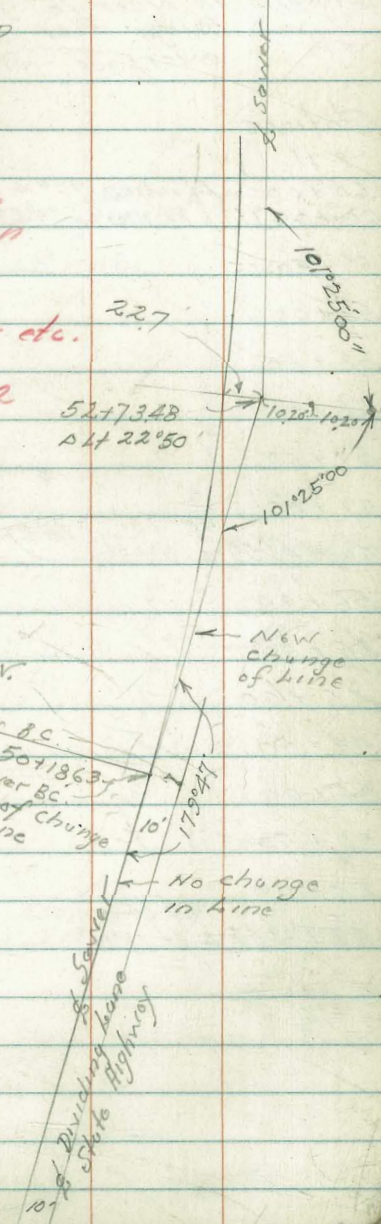
52+73.48  
+ 60+00  
See New Cuts P-73

Change of line  
11th St. Canyon Sewer  
Cont. from P-71

Station	146.99	El. Stakes	El. Flow line	Cuts	Offsets
55+50		4.68 142.31	133.33	+8.98	9' RT
55+00		3.39 143.60	134.13	+9.47	"
54+50		4.17 142.82	134.94	+7.88	"
54+00		3.94 143.05	135.74	+7.31	"
53+50		5.02 141.97	136.55	+5.42	"
53+00		4.75 142.24	137.35	+4.89	"
52+73.48		4.29 142.70	137.78	+4.92	"
52+50		4.40 142.59	138.12	+4.47	10.2' RT. on diag.
52+00	153.89	5.60 148.29	138.87	+9.42	10' RT
51+50		4.99 148.90	139.62	+9.28	"
51+00		4.30 149.59	140.38	+9.21	"
50+70		4.22 149.67	140.83	+8.84	"
50+40		3.17 150.72	141.28	+9.44	246' P 16
50+18.63			141.60		

146.99 π P-71  
4.08 -  
142.91 TP  
10.98 +  
153.89 π

Line change  
Between Station  
52+73.48  
to 60+00  
See New Cuts etc.  
P-73  
Nov. 10. 1942



Δ 22° 50' H

1.50 ft

POT

Δ 0° 13' RT

0.02 Error

Highway 80

50+18.63

old sewer BC

of change

in line

No change in line

Sewer

Dividing Lane State Highway

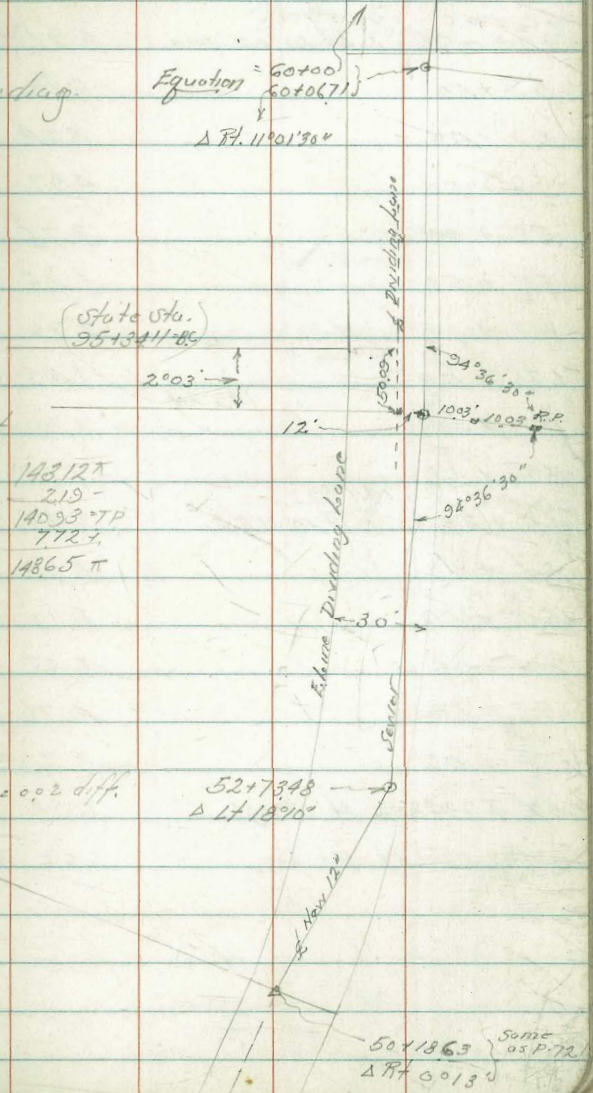
Wulker  
Hurdin  
Wid  
11-10-42

change of line 11th St Canyon <sup>12"</sup> Sewer  
Between Station 52+73.48  
And Station 60+00 Page 72  
in order to give more clearance for  
Bridge Pier To proposed Quince St  
overpass - State Highway.

136.32° Elev. Stake  
2.78' 60+00 P-71  
143.10 x  
140.14 = 8 M. # 8 - Stake  
2.28 -  
143.12 - T



Stations	Elev. Stakes	Elev. Flow line	Cuts	offsets
P-71 = 60+00 60+06.71	Equation $MH\#14 \times$ $\Delta Pt. 11'01'30''$ 143.12	12.692	2' Handing	Equation = 60+00 60+06.71 $\Delta Pt. 11'01'30''$
59+50	6.17 136.95	12.695	110.00	10' Ft
59+00	5.18 137.94	12.776	110.18	"
58+50	4.81 138.31	12.856	109.75	"
58+00	3.90 139.82	12.936	109.46	"
57+50	4.24 138.88	130.16	108.72	"
57+00	MH#13 148.65 7.14 141.51	130.96	109.37	"
56+50	6.51 142.14	132.56	109.58	10' Ft
55+50	6.22 142.43	133.36	109.07	148.12 x 219 - 140.93 TP 712.7 148.65 x
55+00	5.25 143.40	134.16	108.24	changed 50' P-71
54+50	4.96 143.69	134.96	107.73	"
54+00	4.69 143.96	135.76	107.20	"
53+50	3.85 144.80	136.56	106.24	"
53+00	MH.12 5.77 142.88	137.36	105.52	"
52+73.48	5.93 142.72	137.78	104.42	10' Ft P-72 = 0.02 diff.

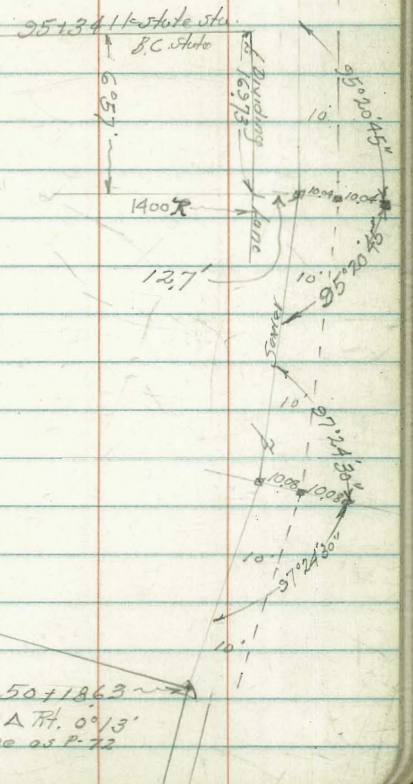
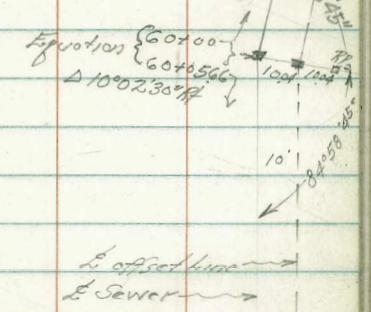


11-13-42 - Change of Line  
 Walker 11th St. Canyon Trunk Sewer  
 Hurdin from station 52+73.48  
 Wirt To station 60+00

140.14 = BM #2 state  
 3.06 +  
 143.20 T  
 1.95 -  
 141.25 TP  
 7.99 +  
 149.24 T

74  
 65+69.57  
 Δ 77 13° 38' 30"  
 Same as P-73

Station	Elev. Stakes	Elev. Flow line	Cuts	offsets
60+00	143.20	136.29	+10.27	10.04' RA
59+50	6.29	136.91	+10.00	10' RA
59+00	5.24	137.96	+10.25	"
58+50	4.97	138.23	+9.72	"
58+00	3.75	139.45	+10.14	"
57+50	3.25	139.95	+9.84	"
57+00	2.76	140.44	+9.53	"
56+50	1.45	141.75	+10.04	"
56+00	7.09	142.15	+9.64	"
55+50	7.11	142.13	+8.82	"
55+26.80	6.49	142.75	+9.06	"
55+00	5.98	143.26	+9.14	"
54+50	5.70	143.54	+8.61	"
54+00	5.37	143.87	+8.13	"
53+50	4.76	144.48	+7.24	"
53+00	5.29	143.95	+6.60	"
52+73.48	6.32	142.72	+4.94	
chk 52+50 P-72	6.62	142.62		



50+186.3  
 = Δ 77 0° 13'  
 = Same as P-72





Walker  
Hurdin  
Wirt  
10-29-42

Restake 11th of Canyon Sewer  
and check stakes Not lost  
Various stations as shown below

Felev Spt in Riv. 97+00 R12 = 94.87

77

0.934  
95.757

Stations	25.75	Flav. Stake	Flav. Flankline	Cuts	offsets
100+50	15.05	80.70'	76.14	+4.56	16' Lt
100+00	12.19	83.56'	76.59	+6.97	10' Lt
99+46.96 = F.G.	11.79	83.96'	77.07	+6.89	"
99+00 = MH #21	11.41	84.34'	77.49	+6.85	"
98+50	10.23	84.82'	78.07	+6.75	" Replaced
98+00	6.06	82.62'	78.65	+11.04	" "
97+50	2.64	93.11'	79.23	+13.88	"
97+00	0.93	94.82'	79.81	+15.01 Spt	" 10' Lt = Spt
96+50	1.28	94.47'	80.41	+14.06 + 14.08	
96+00	2.56	93.19'	80.97	+12.22 + 12.24	
95+65.00 95+65.480 Equation	1.67	94.08'	81.38	+12.70 + 12.74	
95+50	1.36	94.39'	81.55	+12.44 + 12.89	
95+00 T.P. 3.82 100.75	3.82	91.93'	82.13	+9.80 + 9.85	
94+50	10.16	90.59'	82.71	+7.85 + 7.86	
93+87.78 = MH #21	5.26	95.49'	83.43	+12.06 + 12.19	
93+50	3.28	97.47'	83.88	+13.59 + 13.64	
93+00 T.P. 8.41 108.30	0.86	99.89'	84.48	+15.41 + 15.43	
92+50	7.75	100.55'	85.08	+16.47 + 16.54	
92+00	6.86	101.44'	85.68	+16.76 + 16.81	
91+50	6.33	101.97'	86.28	+16.69 + 16.74	
91+00	6.20	102.10'	86.88	+16.22 + 16.26	
90+50	5.75	102.55'	87.48	+15.07	
90+00	5.27	103.03'	88.08	+14.95	
89+50	4.67	103.63'	88.68	+14.35	
89+00	3.94	104.36'	89.27	+15.07	
88+45 = MH #20	3.12	105.18'	89.92	+14.26	

Note: 0.07 discrepancy between Bliss and Moore's levels beginning 96+50 to 88+45  
This .07 projected between MH #20 and 96+50  
by Walker 10-29-42



Sommermyer K

Grade Stakes 11<sup>th</sup> Arc-Sewer <sup>or Stakes</sup> Destroyed

BM Grade pt	0.89	90.93	90.04				offsets
102+00							
93+46 96.50		6.98	83.95	77.07	+6.88	10' 1"	
100+00		7.38	83.55	76.53	+6.96	10' "	
+50		10.23	80.70	76.14	+4.56	16' 1"	
101		9.28	81.65	75.69	+3.96	16' 1"	
+50		7.93	83.00	75.24	+7.76	16' 1"	

T 90.93  
 6.60  
 Check 99+00 → 84.33 ✓

8997

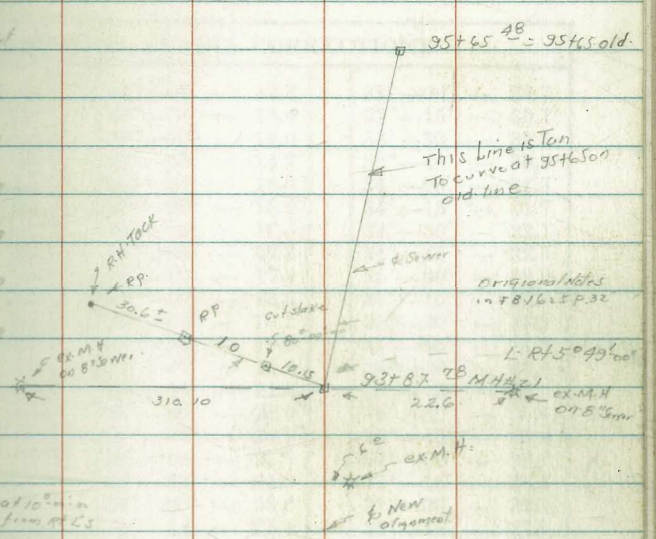
check Levels

	90.93					
93+46 96 EC		6.97	83.96			
700+00		7.38	83.55			
+50		10.23	80.70			
101+00		9.28	81.65			
+50		7.93	83.00			
102+00		6.83	90.04			

Grades for line Change 11<sup>th</sup> Ave Sewer

Note  
check levels were  
taken. But did not  
put down 17' Book  
offsets

BM. Grade ft	10' Int. MH #20	3.74	108.97	105.23	105.23		
89+00				104.91	89.27	+15.14	10' 4"
+50				103.67	88.48	+16.37	" "
90				103.07	88.08	+14.37	" "
+50				102.59	87.48	+15.11	" "
91				102.14	86.88	+15.26	" "
+50	3.16	105.18		102.02	86.28	+15.74	" "
92				101.49	85.68	+15.81	" "
+50				100.60	85.08	+15.52	" "
93				99.96	84.48	+15.48	" "
+50				97.64	83.88	+13.66	" "
MH #21	1.87	98.67		95.56	83.43	+12.13	at 10' in 10.15' from 95.56
34 - Not Set				90.66	82.71	+7.95	10' 2"
94+50				92.00	82.12	+7.87	" "
+50				94.97	81.55	+12.32	" "
+65.48				94.15	81.38	+11.77	" "
These two stakes had been destroyed 96 old line.				93.25	80.97	+12.28	" "
+50				94.54	80.37	+14.15	" "
7P	7.12	102.68		95.56			
check stake BM	3.59			99.09			
				95.68			
				6.01 error			



Line  
cannot be from  
here.

88+45 MH #20 L 14° 44' 00"

87+93.48 EC.

22 80  
27 21  
50 01  
12. 29

# IMPROVED TABLES AND INFORMATION

22 80  
27 21  
50 09  
64 30  
21

## HORIZONTAL STADIA CORRECTIONS

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

### Chains to Feet

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

### Feet to Chains

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

## DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

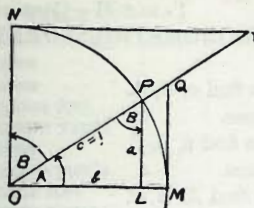
Distance of slope stake from side or shoulder stake for any width roadway, slope  $1\frac{1}{2}$  to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

TABLE No. 9.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections.

Degree of curve with a given  $l$  may be found by dividing tangent, (or external), opposite  $l$  by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.



2280  
 6430 2723  
 5003 5003  
 1427

TABLE II  
TRIGONOMETRIC FORMULÆ.

$$\angle A = \angle MOP \quad \angle B = \angle PON = \angle OPL \\ R = OB = c = 1$$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \frac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}} \quad \cos \frac{1}{2} A = \sqrt{\frac{1 + \cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos A \quad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Sines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + b^2 - 2 ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \frac{1}{2} (A+B)}{\tan \frac{1}{2} (A-B)}$$

74 67.39 ct  
 133.9 ± to L  
 67.39  
 66.51

18044 Rt

1011

7006.58  
 3041.50  
 28'

62<sup>2</sup>  
 X

807  
~~348~~  
 59

807  
~~348~~  
 59

607  
~~348~~  
 681

662  
 89  
 721  
 01  
 722

445

173 E 1849  
 772 W 722  
 649 1127  
 517  
 1166

Station	7	Rod	Rel. stake	El. Flord	cut
181+65	18.49	662	11.87	380	8.07

2251  
 274  
 21.7

335  
 645

3278-N  
 6090-S  
 3817-diff  
 8461  
 7273