

1

G-217

HEWLETT

LEVEL BOOK

NO. 112

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100 00	0 44	100.00	0 87	99.99	1.31	89
1	99.98	1 75	99 98	2 18	99 97	2.62	99 95	3.05	88
2	99.94	3.49	99 92	3.93	99 91	4 36	99 88	4.80	87
3	99.86	5.23	99 84	5 67	99 81	6.10	99 79	6.54	86
4	99 76	6.98	99 73	7.41	99 69	7.85	99 66	8.28	85
5	99 62	8.72	99 58	9.15	99 54	9.58	99 50	10 02	84
6	99 45	10.45	99 41	10 89	99 36	11.32	99 31	11.75	83
7	99 25	12.19	99 20	12.62	99 14	13.05	99 09	13.49	82
8	99 03	13.92	98 97	14.35	98 90	14.78	98 84	15.21	81
9	98 77	15.64	98 70	16 07	98 63	16 50	98 56	16 93	80
10	98 48	17.36	98 40	17 79	98 33	18 22	98 25	18 65	79
11	98 16	19 08	98 08	19 51	97 99	19 94	97 90	20 36	78
12	97 81	20 79	97 72	21 22	97 63	21 64	97 53	22 07	77
13	97 44	22 50	97 34	22 92	97 24	23 34	97 13	23 77	76
14	97 03	24 19	96 92	24 62	96 81	25 04	96 70	25 46	75
15	96 59	25 88	96 48	26 30	96 36	26 72	96 25	27 14	74
16	96 13	27 56	96 00	27 98	95 88	28 40	95 76	28 82	73
17	95 53	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	33 61	93 67	35 02	93 51	35 43	69
21	93 36	35 84	93 20	36 24	93 04	36 65	92 88	37 06	68
22	92 72	37 46	92 55	37 86	92 39	38 27	92 22	38 67	67
23	92 05	39 07	91 88	39 47	91 71	39 87	91 53	40 27	66
24	91 35	40 67	91 18	41 07	91 00	41 47	90 81	41 87	65
25	90 63	42 26	90 45	42 66	90 26	43 05	90 07	43 44	64
26	89 88	43 84	89 69	44 23	89 49	44 62	89 30	45 01	63
27	89 10	45 40	88 90	45 79	88 70	46 17	88 50	46 56	62
28	88 29	46 95	88 09	47 33	87 88	47 72	87 67	48 10	61
29	87 46	48 48	87 25	48 86	87 04	49 24	86 82	49 62	60
30	86 60	50 00	86 38	50 38	86 16	50 75	85 94	51 13	59
31	85 72	51 50	85 49	51 88	85 26	52 25	85 04	52 62	58
32	84 80	52 99	84 57	53 36	84 34	53 73	84 10	54 10	57
33	83 87	54 46	83 63	54 83	83 39	55 19	83 15	55 56	56
34	82 90	55 92	82 66	56 28	82 41	56 64	82 16	57 00	55
35	81 92	57 36	81 66	57 71	81 41	58 07	81 16	58 42	54
36	80 90	58 78	80 64	59 13	80 39	59 48	80 13	59 83	53
37	79 86	60 18	79 60	60 53	79 34	60 88	79 07	61 22	52
38	78 80	61 57	78 53	61 91	78 26	62 25	77 99	62 59	51
39	77 71	62 93	77 44	63 27	77 16	63 61	76 88	63 94	50
40	76 60	64 28	76 32	64 61	76 04	64 94	75 76	65 28	49
41	75 47	65 61	75 18	65 93	74 90	66 26	74 61	66 59	48
42	74 31	66 91	74 02	67 24	73 73	67 56	73 43	67 88	47
43	73 14	68 20	72 84	68 52	72 54	68 84	72 24	69 15	46
44	71 93	69 47	71 63	69 78	71 33	70 09	71 02	70 40	45
45	70 71	70 71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¾ DEGREE.		½ DEGREE.		¼ DEGREE.		

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

MADE IN
U. S. A.

Construction Notes of my mother's 4 3 8
Inter-System turned in 3 2 8 8
Apr 1943.
4221
2805
1416
1414
3350
84
3488

Quality Evidenced Since 1882.

Standard Tripod Connection

THE A. LIETZ CO.

50-0
2500
18
20000
175000
2719500
149

MICROFILMED 2500
APR 28 1965

2805
1320
29.58

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.

Inspection Notes
on Coast of
Intercepting Sewer
Inspector Walker
April 1943.

TABLE OF STADIA REDUCTIONS
 For a Constant of 100.

ROD VERTICAL.

0°		1°		2°		3°		4°		5°		6°		7°	
Min.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.
0	100.00	0.00	99.97	1.74	99.88	3.40	99.73	5.23	99.51	6.96	99.34	8.64	99.14	10.40	98.84
2	100.00	.06	99.97	1.80	99.87	3.55	99.72	5.39	99.24	7.07	99.22	8.68	98.97	10.45	98.54
4	100.00	.12	99.97	1.85	99.87	3.65	99.71	5.49	98.99	7.15	99.22	8.85	98.87	10.51	98.48
6	100.00	.18	99.96	1.90	99.86	3.74	99.70	5.58	98.88	7.22	99.20	9.01	98.81	10.57	98.44
8	100.00	.23	99.96	1.95	99.86	3.78	99.69	5.66	98.87	7.28	99.19	9.15	98.78	10.63	98.44
10	100.00	.29	99.95	2.00	99.85	3.84	99.69	5.73	98.86	7.30	99.18	9.28	98.74	10.74	98.43
12	100.00	.35	99.94	2.05	99.84	3.90	99.68	5.80	98.85	7.36	99.17	9.40	98.71	10.83	98.40
14	100.00	.41	99.93	2.11	99.83	3.95	99.68	5.87	98.84	7.42	99.16	9.52	98.68	10.92	98.40
16	100.00	.47	99.93	2.17	99.82	4.01	99.67	5.94	98.83	7.48	99.15	9.64	98.65	11.01	98.37
18	100.00	.52	99.92	2.23	99.83	4.07	99.66	6.01	98.82	7.53	99.14	9.75	98.62	11.10	98.37
20	100.00	.58	99.92	2.29	99.83	4.13	99.66	6.08	98.81	7.59	99.13	9.87	98.59	11.19	98.34
22	100.00	.64	99.94	2.35	99.83	4.19	99.65	6.15	98.80	7.65	99.12	9.99	98.56	11.27	98.34
24	100.00	.70	99.92	2.41	99.82	4.24	99.64	6.21	98.79	7.71	99.10	10.11	98.53	11.35	98.31
26	100.00	.75	99.92	2.47	99.82	4.29	99.63	6.27	98.78	7.77	99.09	10.23	98.50	11.43	98.28
28	100.00	.81	99.92	2.53	99.81	4.34	99.63	6.34	98.77	7.83	99.08	10.35	98.47	11.51	98.25
30	100.00	.87	99.92	2.60	99.81	4.38	99.63	6.39	98.76	7.89	99.07	10.47	98.44	11.59	98.22
32	100.00	.93	99.92	2.67	99.80	4.43	99.63	6.45	98.75	7.94	99.06	10.59	98.41	11.67	98.20
34	99.99	1.00	99.91	2.73	99.80	4.48	99.62	6.51	98.74	8.00	99.05	10.71	98.38	11.75	98.17
36	99.99	1.06	99.92	2.79	99.79	4.53	99.61	6.56	98.73	8.05	99.04	10.83	98.35	11.83	98.14
38	99.99	1.12	99.92	2.85	99.79	4.58	99.61	6.62	98.72	8.11	99.03	10.95	98.32	11.91	98.11
40	99.99	1.18	99.92	2.91	99.78	4.63	99.60	6.67	98.71	8.17	99.01	11.07	98.29	11.99	98.08
42	99.99	1.24	99.91	2.97	99.78	4.71	99.59	6.74	98.70	8.22	99.00	11.19	98.26	12.07	98.05
44	99.99	1.30	99.91	3.02	99.77	4.77	99.58	6.79	98.69	8.28	98.99	11.31	98.23	12.15	98.02
46	99.99	1.36	99.90	3.08	99.77	4.82	99.57	6.84	98.68	8.34	98.98	11.43	98.20	12.23	98.00
48	99.98	1.40	99.90	3.14	99.76	4.88	99.56	6.89	98.67	8.40	98.98	11.55	98.17	12.31	97.97
50	99.98	1.45	99.89	3.20	99.76	4.94	99.56	6.94	98.66	8.46	98.97	11.67	98.14	12.39	97.94
52	99.98	1.51	99.89	3.26	99.75	4.99	99.55	6.99	98.65	8.45	98.96	11.79	98.11	12.47	97.91
54	99.98	1.57	99.89	3.31	99.74	5.05	99.54	7.04	98.64	8.51	98.95	11.91	98.08	12.55	97.88
56	99.97	1.63	99.89	3.37	99.74	5.11	99.53	7.09	98.63	8.57	98.94	12.03	98.05	12.63	97.85
58	99.97	1.68	99.88	3.43	99.73	5.17	99.53	7.14	98.62	8.63	98.93	12.15	98.02	12.71	97.82
60	99.97	1.74	99.88	3.49	99.73	5.23	99.52	7.19	98.61	8.69	98.91	12.27	97.99	12.79	97.79
c= .75	.75	.01	.75	.02	.75	.03	.75	.05	.75	.06	.75	.07	.75	.09	.74
c= 1.15	1.15	.01	1.15	.03	1.15	.05	1.15	.08	1.15	.09	1.14	.11	1.14	.13	1.14
c= 1.80	1.80	.02	1.80	.06	1.80	.08	1.80	.15	1.80	.15	1.80	.18	1.80	.21	1.80

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Continued.

TABLE OF STADIA REDUCTIONS.—Continued.

Min.	24°		25°		26°		27°		28°		29°		30°	
	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.	Hor. Dist.	Diff. Elev.
0	83.46	37.16	83.14	38.30	82.78	39.40	82.39	40.45	81.96	41.45	81.50	42.40	81.00	43.30
2	83.41	37.20	82.09	38.34	80.74	39.44	79.34	40.49	78.91	41.49	78.40	42.44	77.80	43.33
4	83.37	37.23	82.05	38.38	80.69	39.47	79.30	40.52	78.88	41.52	78.40	42.48	77.85	43.36
6	83.33	37.27	82.01	38.41	80.65	39.51	79.25	40.55	78.81	41.55	78.35	42.49	77.85	43.39
8	83.29	37.31	81.96	38.45	80.60	39.54	79.20	40.58	78.77	41.58	78.30	42.50	77.80	43.42
10	83.24	37.35	81.92	38.48	80.55	39.58	79.15	40.62	78.72	41.62	78.25	42.51	77.75	43.45
12	83.20	37.39	81.87	38.53	80.51	39.61	79.11	40.65	78.68	41.65	78.20	42.52	77.70	43.47
14	83.15	37.43	81.83	38.56	80.46	39.65	79.06	40.69	78.63	41.69	78.15	42.53	77.65	43.50
16	83.11	37.47	81.78	38.60	80.41	39.69	79.01	40.72	78.58	41.72	78.10	42.54	77.60	43.53
18	83.07	37.51	81.74	38.64	80.37	39.72	78.97	40.75	78.54	41.75	78.05	42.55	77.55	43.56
20	83.02	37.54	81.69	38.67	80.32	39.76	78.92	40.79	78.49	41.79	78.00	42.56	77.50	43.59
22	82.98	37.58	81.65	38.71	80.28	39.79	78.87	40.82	78.44	41.81	77.95	42.57	77.44	43.62
24	82.93	37.62	81.60	38.75	80.23	39.83	78.82	40.86	78.39	41.84	77.90	42.57	77.39	43.65
26	82.89	37.66	81.56	38.78	80.18	39.86	78.77	40.89	78.34	41.87	77.85	42.58	77.34	43.68
28	82.84	37.70	81.51	38.82	80.14	39.89	78.72	40.92	78.29	41.90	77.80	42.59	77.29	43.71
30	82.80	37.74	81.47	38.85	80.09	39.93	78.68	40.95	78.24	41.93	77.75	42.60	77.24	43.73
32	82.76	37.77	81.42	38.89	80.04	39.97	78.63	40.99	78.19	41.97	77.70	42.60	77.19	43.76
34	82.72	37.81	81.38	38.93	80.00	40.00	78.59	41.02	78.14	42.00	77.65	42.61	77.14	43.79
36	82.67	37.85	81.33	38.97	79.95	40.03	78.54	41.05	78.09	42.03	77.60	42.62	77.09	43.82
38	82.63	37.89	81.29	39.00	79.90	40.07	78.49	41.09	78.04	42.06	77.55	42.63	77.04	43.84
40	82.58	37.93	81.24	39.04	79.86	40.11	78.44	41.12	77.99	42.09	77.50	42.64	76.99	43.87
42	82.54	37.96	81.19	39.08	79.81	40.14	78.39	41.16	77.94	42.12	77.45	42.65	76.94	43.90
44	82.49	38.00	81.15	39.11	79.76	40.18	78.34	41.19	77.89	42.15	77.40	42.66	76.89	43.93
46	82.45	38.04	81.10	39.15	79.71	40.21	78.29	41.23	77.84	42.18	77.35	42.67	76.84	43.96
48	82.41	38.08	81.06	39.18	79.67	40.24	78.24	41.26	77.79	42.21	77.30	42.68	76.79	43.99
50	82.36	38.11	81.01	39.22	79.62	40.28	78.20	41.29	77.74	42.25	77.25	42.69	76.74	44.01
52	82.32	38.15	80.97	39.26	79.58	40.31	78.15	41.32	77.69	42.28	77.20	42.70	76.69	44.04
54	82.27	38.19	80.92	39.29	79.53	40.35	78.10	41.35	77.64	42.31	77.15	42.71	76.64	44.07
56	82.23	38.23	80.88	39.33	79.49	40.38	78.05	41.38	77.59	42.34	77.10	42.72	76.59	44.10
58	82.18	38.26	80.83	39.36	79.44	40.42	78.01	41.41	77.54	42.37	77.05	42.73	76.54	44.12
60	82.14	38.30	80.78	39.40	79.39	40.45	77.96	41.45	77.49	42.40	77.00	42.74	76.49	44.15
c = 75.....	68	31	68	32	67	33	66	35	66	37	65	37	65	38
c = 1.15.....	1.05	48	1.04	50	1.03	51	1.02	53	1.01	55	1.00	57	0.99	58
c = 1.90.....	1.73	79	1.72	82	1.70	85	1.69	88	1.67	91	1.65	94	1.64	96

73960
7620

81400

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

42 3000⁰⁰

43

Jan 300
Feb
Mar 403
Apr 12975
May 25000
June 30886
July 44814
Aug 28811
Sept. 264
Oct. 274
Nov. 32850
Dec 30500

22300
26740
25320

City of San Diego
2597
Campbell con. Co.
Shelton C. E.
103

NEAR. Cust.

Pacific Blvd.

Pacific Blvd.

1

STA.	Point-Loma Sewer	Cut	Off.	STA	Out	Off.
PUMPHOUSE		2300		12+50	22.84	20'
0+75		2240	20'R	13+00	22.81	20'
1+00		2197	15'R	13+50	22.43	20'
1+50		2067	20-12	14+00	22.46	20'
1+71 ³³	B.C.	21.02	20'12	14+50	22.08	20'
2+50		2077	20-	15+00	21.44	20 ⁶
3+00		20.75	20'	15+50	25.42	8
3+69 ⁵⁰	C.C.	20.89	20-	16+00	24.16	9
4+00		21.05	20-	16+50	21.36 (22.07)	20'
5+50		24.62	20-	17+00	21.45	20'
6+00		25.81	15 ²	17+50	21.42	"
5+96 ³⁰	B.C.	25.81	15 ²	18+00	21.54	"
6+50		26.62	16 ¹⁵	18+50	21.22	"
7+00		27.32	18'	19+00	21.09	"
7+50		27.50	20'	19+50	21.23	"
7+77 ⁵²		27.44	20 ³	20+00	21.45	"
8+00		27.37	20 ²	20+50	21.37	"
8+50		27.11	20 ²	21+00	21.32	"
9+00		26.61	20 ²	21+50	20.54	"
9+50		26.13	20 ²	22+00	20.83	"
10+00		25.59	20 ²	22+50	20.86	"
11+00	M.H.	24.64	20 ²	22+79 ²	P.C.C.	"
11+50		24.14	20 ²	23+00	20.68	"
12+00		23.63	20 ²	23+50	21.01	"
				24+00	20.71	"

E. St. Concrete

INDEXED

WK

NOV 8 1948

STA.	Cut	off.
24+50	20.95	20.
25+00	21.31	18'
25+50	21.49	20.
26+00	20.95	'
26+50	M.H. 20+65	M.H. (58)
39+00	18.61	24' R+
39+50	18.57	24"
40+00	18.64	24"
40+50	18.72	24"
41+00	18.41	25"
41+50		
42+00	18.98	25
42+23	18.59	M.H. 25.36 G

2

- Sewer -		STA.	Cut	off.
Kursty ST.		26+27 ²⁵	M.H.	20.86 (20' off)
		26+50		19.68
		27+00		20.27
		27+50		19.69
		28+00		19.79
		28+50		18.67
		29+00		17.83
		29+50		18.52
		30+00		18.79
		31+00		19.14
		31+50		18.89
		32+00		17.85
		32+50		18.37
		33+00		20.35
		33+50		20.69
		34+00	59	20.15
		34+38	M.H.	20.02
		34+50		20.21
		35+00		19.71
		35+50		20.17
		36+00		19.33
		38+00		18.85
		38+50		18.30

0.880.

24' R (Wall) 22.12

24-R

24-R

24-R

24

24

24' (Souch ^{cop.})

24' TOP

24' Culvert 19.79

25' RT

25"

30"

35"

30'

30'

30'

30'

30"

30"

20"

40

30'

24'

24

Q @ live M.H. 14' Fr curb. 9641

Sta. 49+00 15" "

Sta 52+34 16" "

" 54+00 16" "

" 55+00 13" "

" 56+00 11" "

74 58+90 11" "

" 59+11 11" "

" 59+50 14" "

" 60+63 14" "

" 63+50 15" "

" 64+20 17" "

" 64+80 15" "

" 65+20 13" "

" 67+55 M.H. 13

" 70+50 14

M.H. Q Vine St. 15

{ M.H. Harasty St.

{ 6.5 From E. curb Pacific

{ 6 " S. curb Harasty St

Pacific Highway

Sta. 89+70- 6 N. side Harasty St

" 89+70- to Southland St 6

Market St M.H.

7' West of E. curb on India

30' S. of S. curb on Market

M.H.

E. St M.H. Sta. 87+40 } 7 1/2' curb-
(M.H. Bld. F. + 6 St. out.) curb

~~Same St M.H. to Q (14' + 14')~~

M.H. 52+34 Now 55+86

Noel St. M.H. = 103+53+

M.H. END Pressure line 111+12 (weight)

M.H. Office Bld 57+66

14' N. of N Rail

M.H. 90+85⁵³ = 90+73⁵³

M.H. 91+26²⁵ = 91+69

72' 60" But these M.H. &

M.H. 34+38 6' E. of Q

300' N. of M.H. Back on Q

(100' S. of M.H.)

✓ M.H. B. St opp. S. M.H. and
19' west.

{ PIPE Kurty and W. Kurby
9' East of High tel Pole No 2197

Mar. 1st + 2

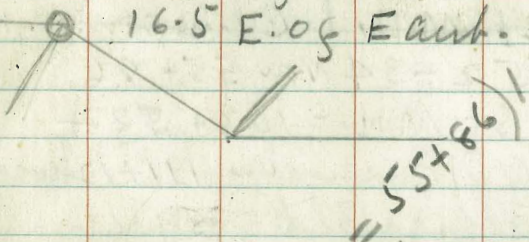
4

✓ Saurel St. change

M.H. #45-36+00⁶⁵

10 N. of S curb

16.5 E. of East.



Curbs + Sidewalks from
Brdy to Market.

curb	32'	X 8"	Black Pav
"	75'	" "	Bit. F. + Marked.
"	25'	" "	
"	6'		4388 sq. Ft.
"	75'		

↓ M.H. STA. 52+33(16) STA. 54+00(16)

F. ST. M.H. STA. 87+40 = E. ST. Now

Olive St. M.H. 14 (Sta. 5233(16) Sidewalk)

Olive to Saurel 14' Curb 202 sq. ft.

June St. M.H. 15 Fr. curb Pav. 173 375

STA. 81+23 (M.H.) 22' Fr. curb. N. Vincent 202 sq. Ft.

STA. 80+00 " " "

STA. 78+00 " " "

STA. 78+00 11' to 14' at Sime St. (12?)

NOEL - St. M.H. STA. 103+55

M.H. India + E. St. S. STA. 87+40

M.H. India + Brdy "

M.H. (91+26²⁵) now " =

M.H. (59+95) now " = 59 x 86

M.H. Noel St 103+55

was M.H. 52+34 = 55+86

" 59+95 =

apron. 65 sq ft

60

125'

N. and South.

5 in. St. Pav. con. + Black

50 x 30

Concrete Base 1500 sq. Ft.

Asphalt Slab 14 x 9.5

133 sq. Ft.

31.985

28.000

3.985

curb 17'

5' 22 LIN. FT.

Grade walls 35 x 5, 175

Concrete 25 x 5, 125

50 x 4, 200

50 x 4, 200

11 x 5, 55

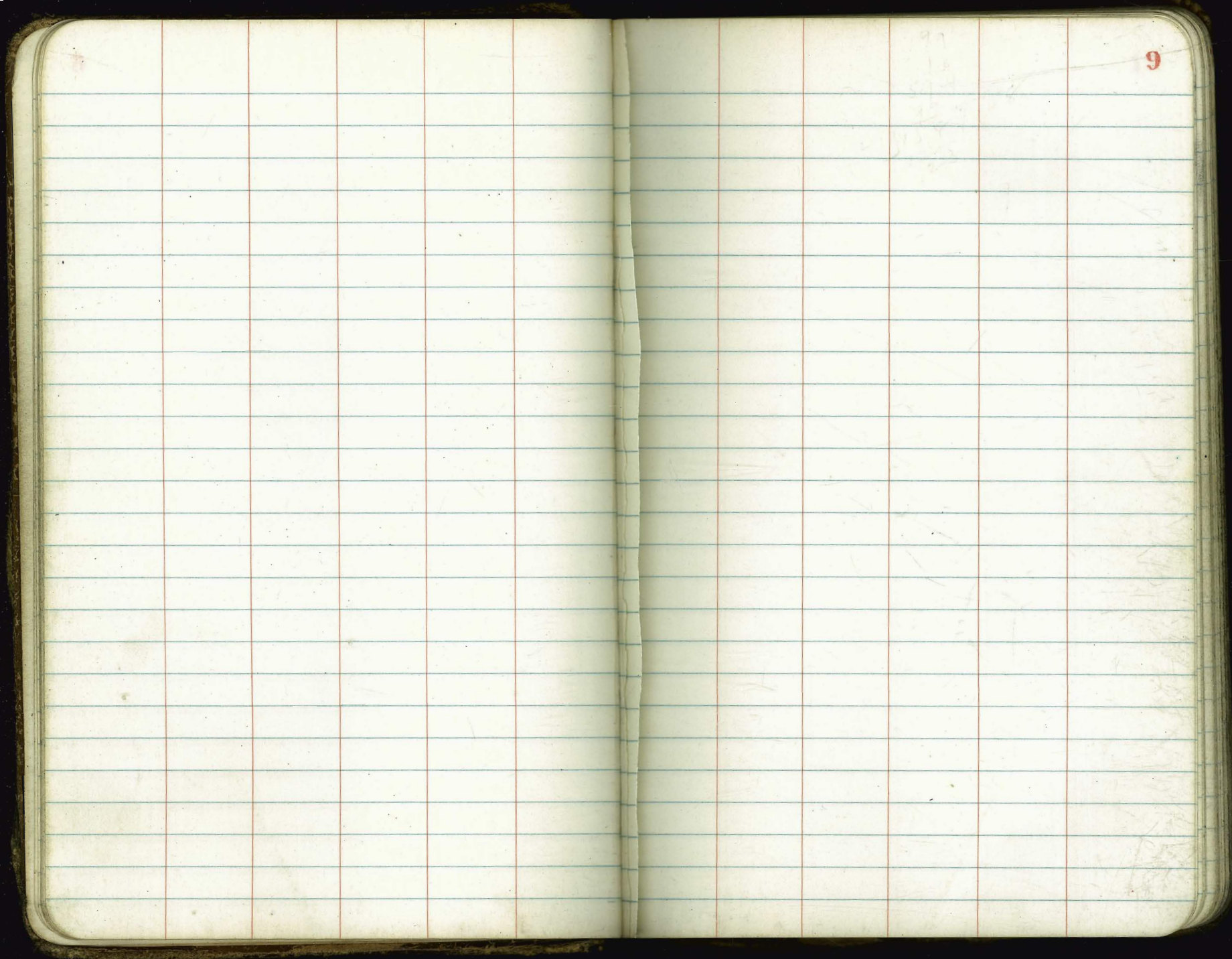
60 x 5, 300

48 x 5, 240

60 x 5, 300 1295

sq. Ft.

531	
2009	
3000	
015	
45	31985
25	2200
5995	3985



9

crust
Wed. 6671 }
Bate }

138
130
Week Ending Apr. 8¹⁴

Brady

PIPe 183 91+69+93+52

Exec. —

B.F. 53 shaft.

Hughes N. of Olive

PIPe 36' 58+77-59+13

Exec. 319

B.F. 555 (57+50)

Butler

PIPe 68' (64+65-65+33)

Exec. —

B.F. 304 —

Emie Kirby St.

B.F. 688

Concrete Pav. 273 +

Black " 3744 + sq. Ft

Side walk 70 " "
curb. 13' lin. Ft.

Week Ending Apr. 1.

Brady
(tunnel) PIPE 88' 90+55-91+47
(28 yd) Eye (58 yd. shaft.)
BF.

Hughes N. of Olive
(46+39-46+52) 13

tunnel PIPE 94 (56+94-57+75) 81
{ 7 yd Eye 659-
4' BF 507-57+80

Butler

PIPE -
Eye (26 yd tunnel)
BF -

Ernie Kurty St.

PIPE 57' 122+98
Eye 25
BF. 615 122+50

Black } 11480 sq. Ft.
Pav. }

Week Ending Mar. 25 ¹⁸

Brady

16' Eye (58 yd. shaft.)
97' Eye (55' tunnel)
BF 10-1/2 shaft.

Hughes N. of Olive

PIPE 81' 56+13-56+94
Eye 755 57+50
BF 554 56+80

Butler

S. Portal PIPE 45 (63+76-64+21)
14' Eye 35 yd (tunnel 10 yd)
N. Portal B.F. 426 yd.
5'

Ernie - Kurty St.

PIPE 48' 121+93-122+41
Eye 321 yd.
BF. -

Black }
Pav. } 7784 sq. ft.

Week Ending Mar. 18

Brdy
64 - Exec. 35 yd (tunnel)
B.F. 60 yd shaft.

Hughes N. of Olive
(64+14 - 64+34) 20

Pipe 122 (54+87 - 56+13) 12
Exec. 795 56+50 4' M.H.
B.F. 763 55+00

Butler S. of St.

Pipe 20 - 64+14 - 64+34
S. 10' Exec. 222 yd. (tunnel 6yd)
N-3' B.F. 305 yd.

Exmo Kurtz St.

Pipe 40' (121+53 - 121+93)
Exec. 561. 122+60
B.F. 375 121+50

Broadway + India

19

STA		Cut	Off.	
87+34	MH	229	(87+40)	72
87+50		2289		72
88+00		2330		72
88+50		2333		72
89+00		2375		72
89+50		2494		72
90+00		2594		72
90+50		2601		72
90+55.3	MH	2620		72
91+26.25	MH	2685		7
91+50		2669	(2689) ?	7
92+00		2615		7
92+50		2550		7
93+06		2473	New shaft.	7
93+50		2411		7
94+00		2357		7
94+50		2300		7
95+00		2231		7
95+50		2147		7
0+00	MH	1654	22.21	15-LT.
0+25	CE	1674	22.21	
0+50	CE	1665	22.21	

29
16
594
19
1158 4 5
135
23

STA		cut	off
0+75	Q	16.53	
1+15 ⁵⁰	M.H.	16.48	10
1+61 ⁴⁵			
1+69.45		16.93	10
2+00		16.85	10
2+50		16.53	10.75
3+00		16.36	10.55
3+50		16.28	10.25
4+00		16.16	11
4+50		16.08	10.7
5+00		16.01	10.5
5+50		15.96	10.2
6+00		16.09	9.95
6+50	A	16.27	10.70
7+00	M.H.	16.52	11.95
7+50	7+38	16.70	12.25
7+78 ⁶⁰	A	16.74	11
8+12	M.H.	16.72	10
8+50		16.64	10
9+00		16.29	10
9+50		16.00	10
10+12 ⁰¹		15.65	10
10+50		15.46	10
11+00		15.21	10
11+65 ⁴⁶	A.M.H.	14.86	10.2

Sewer

20

STA	cut	off	
111+00	14.32	19.72	46+16
111+50	14.58	19	23 46+39
112+00	14.81	19	
112+50	14.99	19	
113+00	15.15	19	
113+50	M.H. 15.37	19	
114+00	M.H. 14.93	20	
114+50	15.57	20	
115+00	15.58	20	
115+50	15.55	20	
116+00	15.18	20	
116+50	15.27	20	
117+00	15.76	20	
117+50	14.97	20	
117+80 ⁰⁹	M.H. 15.25	20	
118+50	15.88	20	
118+39 ²³			
4+39 ²	16.16	30	
5+00	15.94	20	
5+50	16.14	24	
6+00 ²	15.94	20 ⁵	
6+50	15.18	20 ⁵	
7+00	15.20	20 ⁵	

STA		Cut	off
7+57 ³¹	M.H.	15.54	20 ^s
8+00		15.27	20 ^s
8+50		14.57	20 ^s
9+00		14.93	20 ^s
9+50		14.69	20 ^s
10+00		14.46	20 ^s
10+50		14.72	20 ^s
11+00		14.11	20 ^s
11+50			24
13+00		13.94	24
13+50		14.22	24
14+00		14.55	24
15+00		15.00	20 ^s
15+50		15.23	20
16+00		15.03	20
16+50		15.71	20 ^s
16+73 ⁷⁴	M.H.	16.06	25
17+50		16.21	25
18+00		16.53	25
18+50		16.93	25
19+00		17.27	25
19+50		17.53	25
20+00		18.15	25

STA		Cut	off
20+50		18.74	25
21+00		18.86	25
21+50		18.74	25
22+00			
22+50		19.15	25
23+00		18.63	25
23+50		19.41	25
24+00		18.99	25
24+50		19.12	25
24+70	M.H.	19.17	25
25+00		19.38	25
25+50		19.38	25
26+00			25
26+50		19.04	25
27+00		19.22	25
27+50		19.17	25
28+00		18.98	25
28+50		18.26	25
29+00		18.92	25
29+50		18.09	25
30+00		18.12	25
30+50		17.89	25
31+00		17.57	25
31+50		17.25	25
32+00		16.90	25

the @ 1000 ft
 from 1000 ft
 to 5600.66
 STA. *revised.*

Pacific Blvd.

STA	cut.	off.	
32+50	16.72	25	RT.
33+00	16.48	25	RT.
34+00	15.49	20'	Lt.
34+50	15.59	20'	Lt.
35+00	15.87	20	Lt.
35+59.0	16.27	14.7	Lt.
36+00	15.87	14.7	Lt.
36+50	16.36	14.7	Lt.
37+00	17.26	14.7	Lt.
37+50	17.53	14.7	Lt.
38+00	18.30	14.7	Lt.
38+50	18.78	14.7	Lt.
39+00	18.66	14.7	Lt.
39+50	19.75	14.7	Lt.
39+97.32	20.24	14.7	Lt.
40+50	20.74	14.7	Lt.
41+00	21.19	14.7	Lt.
41+50	21.64	14.7	Lt.
42+00	22.11	14.7	Lt.
42+50	22.56	14.7	Lt.
43+00	22.96	14.7	Lt.
44+00	23.22		
44+50	23.35	10.5	
45+00	23.43	10.5	

Pacific

STA	cut	off.
45+50	23.55	10.5 Lt.
46+00 #45	23.38	10.5
46+15.75 MH.	23.28	10.5
46+50	23.03	10.5
47+00	22.10	10.5
47+50	22.22	10.5
48+00	21.87	10.5

46+16
39

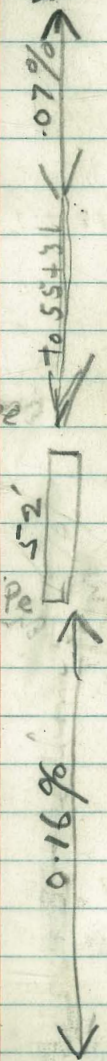
M.H.
 57+55
 59+95
 52+34

END PIPE

END PIPE

59+11

60+63



to 55+31

Pacific Highway

STA	cut
49+50	20.51
51+00	19.705
51+50	18.55
52+00	18.06
52+33	17.85
52+50	17.80
54+00	16.89
54+50	16.60
55+00	16.25
55+50	16.01
55+80	MH

59+95 MH

Pacific + Vine South

25

STA	cut	
73+48	14.41	77
73+00	14.10	12L
72+50	14.01	
72+00	14.11	
71+50	14.05	
71+00	13.96	
70+50	13.83	
70+26 ⁵⁵	13.79	BC
70+00	13.77	
69+50	13.01	
69+00	13.49	
68+45 ⁷⁴	13.34	C.C.
68+00	13.27	
67+50	12.92	MH 67+55
67+00	13.70	
66+50	14.06	
65+50	14.26	
63+00	14.79	
62+50		
61+50		

MH 67+55

16%



Pacific to Southland

Sta	Cut	off
74+43 ⁸¹ M.H.	14.48	Q vine 11.Lt
75+00	14.72	"
75+50	14.60	"
76+00	14.39	"
76+50	14.29	"
77+00	14.02	"
77+50	13.85	"
78+00	13.71	"
78+50	13.51	"
79+00	13.24	"
79+50	13.01	"
80+00	12.84	"
80+50	12.72	"
81+00	12.57	"
81+23 M.H.	12.64	11-Lt
81+10 Δ	12.37	8.3 Rt
82+50	12.46	8.3
83+00	12.66	"
83+50	12.82	"
84+00	12.96	"
84+50	13.10	8.3

Pacific to Southland

26

Sta	Cut	off
85+00	13.27	
85+50	12.84	
86+00	13.50	
86+50	12.71	
87+00	13.46	
87+50	13.50	8.3
88+00	13.99	8.3
88+50	13.96	8.3
89+03 = 89+01		
89+70	13.05	9.3
90+00	12.30	9.3
90+50	11.75	9.3
91+00	12.18	9.3
91+50	11.03	9.3
92+00	10.04	9.3
92+60	8.82	9.6
93+00	7.93	9.3
93+50	8.51	9.3
94+00	8.16	9.3
94+50	7.54	9.3
95+00	7.79	9.3
95+50	7.52	9.3
96+00	6.66	9.3
96+20 ⁷⁵ B.C.	6.56	25' Rad. 9.3

Rising
mountainto count
submerged
at

Kerry St

STA.	Cut.	off.
97+50	7.00	20'
98+00	8.54	20'
98+50	11.97	20' Lt
99+00	13.06	20' Lt.
99+32 B.C.	14.01	20 "
100+03 ⁶⁸ G.C.	15.47	20 "
100+50	15.95	20 "
101+00	16.23	20 "
103+00	16.71	20 "
103+34 ⁸⁶ = M.H.	16.38	20 "
103+55		
104+	17.17	19 RT
104+50	16.84	22 RT
105+00	16.55	25 RT
105+50	16.33	28 RT
106+00	16.00	29 RT
106+50	15.67	28 "
107+00	11.32	20 Lt.
107+50	10.89	20 "
108+00	10.34	20 "
108+50	10.57	20
109+00	8.82	20 "

Kerry St. 6

27

STA.	Cut	off.	6240
109+50	8.99	20 Lt	374
110+00	8.96	20 "	6.614
110+50	9.74	20 "	1.97
M.H. # (54=)	9.54	20 "	9.2
111+50 (111+12)	10.13	10 Lt	374
111+75	10.04	10 "	
112+00	9.72	10 "	1
112+50	9.66	10 "	9.50
113+00	9.20	10	
113+35	9.61	10	5.50
113+60	9.62	10	
113+85	9.56	10	
114+10	9.53	10	
114+35	9.66	10	
114+60	9.82	10	
114+85	9.88	10	
115+10	10.03	10	
115+60	10.04	10	
116+10	9.86	10	
116+60	10.15	10	
117+10	10.33	11	
117+60	10.64	10	
118+10	10.96	10	

EL 2.35 lead blue & truck.
Pitzero Cafe

118+60	10.67	Ex. Church	10.4
119+10	11.32	transport	7.5
119+60	10.71	Relax	2.5
		tax	1.20
		total 3000 ind.	80
Ex.		16.04	4.04
		<u>1396</u>	<u>1200</u>
			1604

1396 X 13% surtax
 1256.40 X 6% (less 10% X 13%)
 normal tax.

BKs Pav. 60 X 24 27 X 12

Conn Base

3 Conn. Reg. 3.5 X 3.5

Fill Sta. slip 36 X 24 =

29

4.35	
24.72	
<u>290.8</u>	26.60
26.00	5.46
<u>3.08</u>	<u>20.54</u>
65.00	
35	
<u>64.65</u>	

Week ending Mar. 11 -

Brady

P.F. Job.

43 Exc. 33 (tunnel) = 45 yd

India + Market

Exc. 5 yd. (tunnel)

Hughes N. of Olive St.

Pipe 81 (54+07-54+87)

Exc. 911 55+50

B.F. 802 53+90

10' Butler Vine St.

tunnel } Pipe 53-63+19-63+72)

5 yd. } Exc. 255 63+75

B.F. 1205 63+50

Wetherby + Kurty Sts.

Pipe 72 (120+81-121+53)

Exc. 577 122+00

B.F. 457 121+10

Blk Pav. 2564 sq Ft.

Week ending Mar. 4th 32

Brady

Pipe-122 93+50-94+72

(16') Exc. 10 yd. (tunnel)

India + Market

(72) Exc. 38 yd. (tunnel)

Hughes N. of Olive

Pipe 106 (53+01-54+07)

Exc. 977 54+50

B.F. 815 52+75

Butler Vine St.

tunnel N. Pipe 27-61+89-62+16) 27

12 yd Exc. 266 yd. 63+50-63+75

B.F. 682 (61+23-62+23)

1/2 complete

Wetherby + Kurty Sts.

Pipe 170 (119+16-120+86)

Exc. 560

B.F. 331-119+80

Rosecrans + Kurty

Fr. Brady to Market } B.F. 288 sqd.

St. Pav. 10501 sq Ft.

Curbs 213 LIN Ft.

Ride walk 375 sq. Ft.

apron 125 sq Ft.

Brdy. week ending Feb. 25th

PIPE 8' (94+72-94+80)

150 FIN. Exc. 50' (tunnel)

WE. NEW 10 India + market

49 Exc. 38 yd. (tunnel)

B.F.

Hughes N. of Olive

Pipe 102 (51+95-53+01) 4' out MH

564 Exc. 979 (53+40)

60 B.F. 679 (51+75)

124

Vine St. Butler

PIPE 126 (60+63-61+89)

Exc. 600 yd. (all but tunnel)

B.F. 604 (92+00-93+00)

Rose crans + Kurtz Sts.

B.F. 888 yd.

Kurtz and Witherby

Pipe 56' 118+60- 119+16)

Exc. 234 19+42

B.F. —

week ending Feb. 18th 35

Brdy

52.E.

78W. Exc. 30 yd. tunnel)

94+72

1 200

52

India & Market

26' Exc. 33 yd. tunnel)

B.F.

Hughes N. of Olive

PIPE 110' (50+85-51+95) (thru mound)

Exc. 711 52+24

B.F. 380 50+93

Vine St Butler

Pipe 106' 62+13-63+19

Exc. 1000 150' all but 90'

B.F. 440 65+10

Rose crans St.

Pipe 24 28+05-28+29

Exc. 124 all

B.F. 1185

Kurtz St. Exc. 257 (20' s. of Pipe)

23 49
26 315

Week Ending Feb. 11-

43 East Brady
(69 West Eye: 41 yd tunnel)

India + Market.

6" Pipe —
Eye: 10 yd tunnel) (220)
B.F. 733 90+20

Hughes N. of Olive St.

Pipe 53' 50+32-50+85
Eye: 755 51+50
B.F. 344 50+50

Vine St.

(65+36-65+65)
Pipe 61 64+36-64+68
Eye 533 (64+10) (63+00)
B.F. 908 65+00

Rosecrans + Kurty St.

Pipe 106' 28+40-29+46
Eye 741 28+30
B.F. 829 30+50

37

Week Ending Feb. 4-

Brady
(West 60 Eye: 43 yd tunnel)
East 27

India + Market Sts.

(83+34-84+00) 66
Tunnel Pipe 86- 90+33-90+53) 20
Eye 70 yd 90+75
West 60 B.F. 251" 89+80

Hughes N. of Olive St.

Tunnel Pipe 81 49+56-50+37
10 yd Eye: 538 50+75 12 inches
B.F. 777 50+00

Vine St.

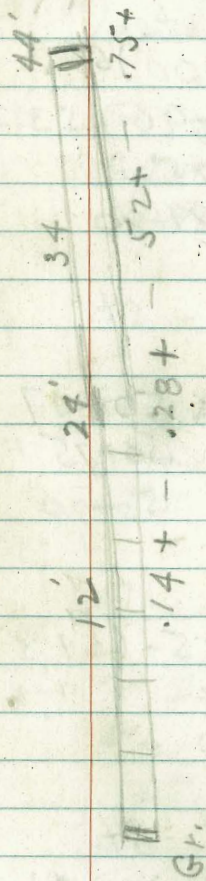
MA
MA
MA
Pipe 118 65+65-66+83
Eye 518 64+50
B.F. 422 67+50

Rosecrans + Kurty St.

Pipe 81- 29+40-30+21
Eye 1185 28+50
B.F. 455 31+20

S. End tunnel
 Pipe-Grade-Read

28	24'	2.04	.3 High
.75	44	2.55	.79"



40
 weekend ending Jan. 28

Bridge
 West 44 Ave. (tunnel 18 yd)
 Cast-17

India + market.

Pipe	28'	90+04-90+32
Cue	120 yd.	(90+70)
BF	250"	(89+50)

Hughes N. of Olive

Pipe	—	
Cue	355	(50+20)
BF	355	(49+00)

Vine St.

Pipe	52	66+63-67+15	140
Cue	175	(66+20)	
BF	474	68+50	

Rosecrans St. A

Pipe	62	30+12-30+74
Cue	444	29+50
BF	325	3150

Week ending Jan. 21

Brdy

West 44
EAST 6
Exc. (38 yd. tunnel) 16
Ex. (24 " shaft.) 3

India + Market.

104' STA 90+00
Tunnel Pipe 110' 88+94-90+04
27 yd. Exc. 355 yd. 90+70 (75' 8" High)
B.F. 781 " 89+50

tunnel

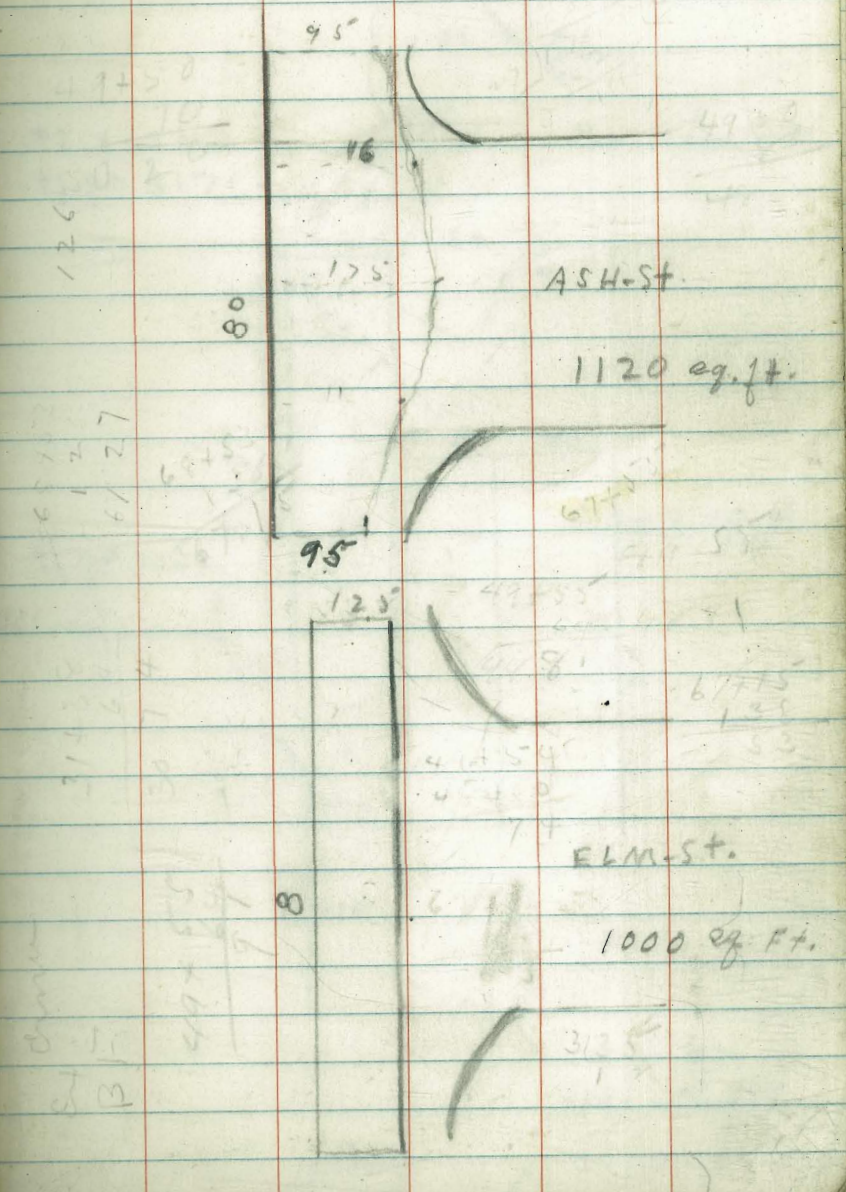
8 yd. Hughes N. of Olive
49' (47+03-47+08) 4'
Pipe 64" (48+94-49+54) 60
Exc. 598 49+80
B.F. 652 48+70

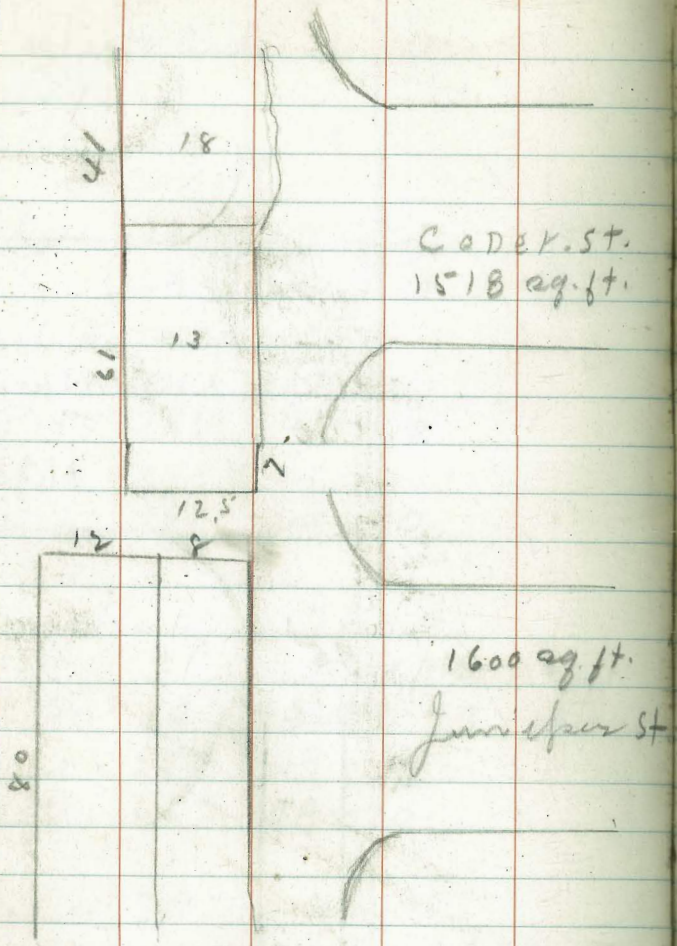
Vine St.

(74+45-74+57) 12
Pipe 138 67+15-68-53)
Exc. 675 (66+50)
B.F. 425 68+50

Rosecrans

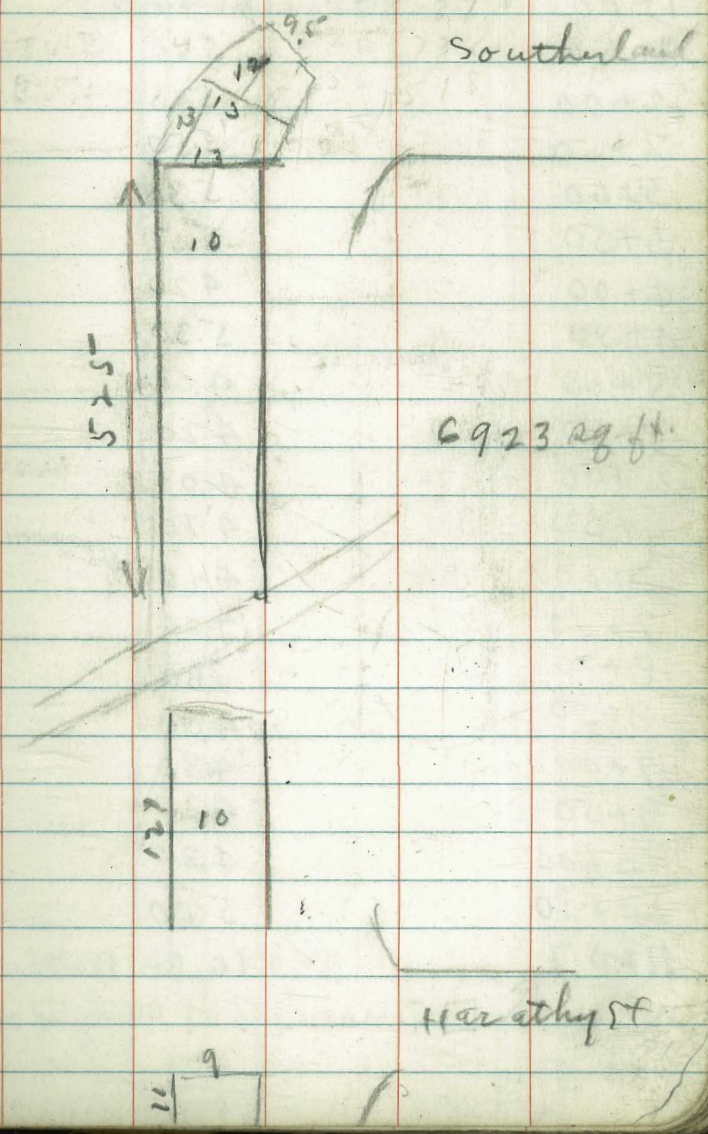
Pipe 64' 31+38-30+74)
Exc. 955-30+00
B.F. 1065-31+50





CADER ST.
1518 sq. ft.

1600 sq. ft.
Juniper St



Southernland

6923 sq. ft.

Harathy St

STA.		Rod.	
0+00	♀ Drain	9.55	Bottom Drain
0+33	Kurtz Pacific	6.10	ground
1+00		6.40	"
1+50		5.60	"
2+00		5.40	
2+50		5.50	
3+00		5.30	
3+50		5.50	
4+00		4.20	
4+50		5.30	
5+00		4.00	
5+50		4.20	
6+00		4.00	
6+50		4.70	
7+00		4.10	
7+50		4.00	
8+00		3.80	
8+50		4.00	
9+00		4.30	
9+50		4.20	
10+00		4.20	
10+50		5.20	
11+07	♂ Drain	10.88	Bottom Drain
	Boy curty Rod		

Rosierus

KURTZ

45

11+07

0+33

0+00

(6")
 Curbs 23
 " 18 (74)
 " 33

Side walk
 (4" THICK)

67 X 2.4	160.8	
73 X 5	365.	
51 X 4	204	
24 X 5	120	2046 + 22
44 X 4	176	2068 sq. ft.
34 X 5	170	
50 X 4	200	
14 X 5	70	90
46 X 4	184	
25 X 5	125	
22 X 11	242	

{Side-walk and return} 49+80

48

Week Ending Jan. 14 -
 Brady - (Shaft) (20) dup.
 tunnel
 28' Exc. (101 yds) (tunnel 25 yds)

India + Market Sts.

(74+89 - 76+21) 132 (60")
 (tunnel) P. Pe 236 (87+90 - 88+99) 29 (51")
 17' } Exc 285 (tunnel F. St. 28 yds) 89+90
 B.F. 907 88+28

Hughes N. of Olive

(49+50) P. Pe 48 (46+91 - 47+03) 12
 Exc 444 (48+45 - 48+81) 36
 B.F. 235 (tunnel 18 yds) 44'
 120 wide

Vine St.

(55b) Pipe 154 68+53 - 70+07
 Exc 622 67+55 (MH)
 B.F. 507 69+25

Rosecrans St.

Pipe 114 (31+38 - 32+52)
 31+00 Exc 888 31+00
 32+80 B.F. 643 32+80

Week ending Jan. 7-9

Brady

(6)

7-13 Pipe 84' (94+80-95+64)
Exc. 10 yd. tunnel

India + market. 4' out for N.H.

PIPE 78 (87+08-87+90)
Exc. 853 yd. +89+50
B.F. 307 yd. +86+70

Hughes N. of Olive

28-36 PIPE 48 (48+09-48+45) 36
(12 yd.) Exc. 235 yd (49+00)
tunnel) B.F. 88 yd (116') wide

Vine St.

PIPE 40- 70+06-70+46
Exc. 941 (68+75)
B.F. 1167 70+70-7

Rosecrans St.

PIPE 82' 32+52-33+84
Exc. 670 (32+00)
B.F. 373 33+78

87/42
43

332

Week ending Dec. 31-49

49

Brady

(tunnel) PIPE 40' 96+04-95+64
12 yd Exc. 16 yd. (FINE GRADE-) tunnel
7' B.F. —

India + market

PIPE 36' (86+72-87+08)
16 yd Exc. 370 (88+30) 87+08
FINE S B.F. 286 (86+25) 86

Hughes N. of Olive

tunnel) PIPE —
6 yd Exc. 240
(28') B.F. 355 (80' wide)

Vine St.

PIPE 76' (70+46-70+22)
Exc. 322 70+25
B.F. 325 72+60

Rosecrans St.

PIPE 60' 33+28-33+88
Exc. 412 33+15
B.F. 304 34+38 N.H.

712

210
20
Week Ending Dec 24

Brdy-

Tunnel Pipe 20' 96+04-96+24
2 12 yd. Exc. 55 shaft.
B.F. 106

India + Market.

Tunnel Pipe 84' (85+88 - 86+72)
{ 28 yd. Exc. 1100 - (87+85)
90-107 B.F. 816 - (85+85)
(17' Hughes N. of Olive
Pipe 28' (47+81 - 48+09)
Exc. 213 (Edge of Road -
B.F. 130 - (40' wide)

Vine St.

548
Pipe 114 (71+22 - 72+36)
Exc. 1050 70+50
B.F. 782 (73+00)

Rosecrans St.

Pipe 102 (33+88 - 34+90)
Exc. 626 33+08
B.F. 585 35+00

51
Week Ending Dec 17.

Brdy

Pipe 68+ 96+45 - 97+13
97-105 Exc. 24 (Tunnel 8 yd)
B.F.

India + Market.

Tunnel Pipe 114 84+88 - 86+0 ✓
33- Exc. 977 86+50
70-90 B.F. 527 84+15 - 84+75
20'

Hughes N. of Olive

Pipe 44' (24' Tunnel) 46+25 - 46+7
Exc. 49 (24 yd tunnel)

Vine St.

Pipe 150 73+98 - 75+48
Exc. 1227 71+85
B.F. 483 73+88 - 2/3 comp.

Rosecrans St.

Pipe 102 34+92 - 35+94
Exc. 600 34+20
B.F. 863 36+00

478

Week Ending Dec. 10

Brady

tunnel	PIPE	32'	97+13 - 97+45
77-97	Exc.	(22 yd)	tunnel 33 yd
(20)	B.F.	{trucks	

India + MARKET

tunnel	PIPE	78'	(84+10 - 84+88)
47-70	Exc.	94	tunnel (38) (85+00)
23'	B.F.	313	(83+10)

Hughes N. of Olive

Exc	174'
B.F.	159 (30' wide)

VINO ST.

PIPE	+60'	(73+99 - 74+58)
Exc.	1033	73+23 - 74+58
B.F.		

Rosecrans St

PIPE	102'	36+03 - 37+05
Exc.	586	(35+00)
B.F.	395	37+40

Week Ending Dec. 3

at 2.

Brady

tunnel	PIPE	-	286
55 yd.	Exc.	(35 trucks)	
62-77	B.F.	120 yds.	

India and Market

		(83+00 - 83+30)	30
tunnel	PIPE	30'	
20 yd	Exc.	741	(85+00)
35-47	B.F.	535	(82+50)

Hughes N. of Olive

PIPE	28-47+33 - 47+61
1220	Exc. 175 - shut line
B.F.	45' 46+10 complete

Southerland St. N. on Kusty

PIPE	288	(118+60)
6879	Exc.	513 (118+60)
B.F.	732	(118+60)

Rosecrans St

PIPE	84'	37+05 - 37+89
Exc.	614	35+75
B.F.	691	38+00

Week ending Nov. 26th

Progress

Brady

Tunnel Pipe 48' (97+45-97+93)
20 yd. Exc. 120 yd. (up to tunnel)
50-62 B.F. 270 (125' FR. M.H.)

India + market

tunnel) Pipe 132 (81+60-82+92)
20 yd. } Exc. 871 (8+32)(83+15)
23-35 } B.F. 863 (81+50)

Hughes - N. of Olive

Pipe 20' (47+13-47+33)
Exc. 225 (total 1045)
B.F. 450 (46+10) ①

Sutherland St. North

Pipe 232
Exc. 770 11.6+50
B.F. 240 (11.4+35)

Rosecrans St.

4' Pipe 80 37+69-38+69
Exc. 599 36+50+
B.F. 322 (39+00)

Week ending Nov. 19

53

Progress

Brady

Pipe 44' 97+89-98+33 } 50'
Exc. (100 yd truck) 25 yd (tunnel)
B.F. 151 yd. (75' FR. M.H.)

India + Market

Pipe 244 79+16-81⁶⁰ } tunnel
Exc. 1244 82+25 } -15 yd.
B.F. 707 79+75 } (-23 Ft. in

Hughes - ^{97 45}/₃₂

Pipe
Exc. 411 yd. north of Olive
B.F. (60' FR. tunnel)

Sutherland St. North 374

Exc. 77 yd-

Rosecrans + Gully St.

Pipe 86' (38+69-39+55)
Exc. 593 yd 37+50
B.F. 408 39+25

No. 1 Brdy.
 Pipe 32 (98+23-98+55)
 Exec. 377 shaft. (10 yd tunnel) 35'
 B.F. 303 (50' from M+H)

India + Market. (76+90-77+14)²⁴
 Pipe 204 77+56-79+76 yd | Ft.
 Exec. 770 yd (80+15) tunnel 10 | 14
 B.F. 647 77+10-78+40

No. 2 Hughes ^(13 rods to Olive)
 Pipe 36 46+00-46+36
 Exec. 220 (S. 056 Live) (409 Nos)
 B.F. 852 (45+70) #6 (Olive)

No. 7 Southland North.
 Pipe (113+27)
 Exec. 113+70
 B.F. 333 yd 113+00

Rascrans #8

Pipe 68' (39+55-40+23)
 Exec. 357-38+60
 B.F. 761-39+75

Pipe-340

Week ending Nov. 5th

No. 1 Brdy B.F. 20 yd.
 194 Pipe 28' (98+55-98+83)
 1589 Exec. (75 tunnel) 29' 80 shaft.

India + Market
 (60") Pipe 42 (77+14-77+56)
 Exec (576) tunnel 8 yd) 6 Ft.
 79+10

No. 2 Hughes
 = 6124 Pipe 76 (45+06-45+82)
 38854 Exec. 370 yd
 B.F. 1305 (45+00)

No. 7 Southland North
 1605 Pipe 453 (108+68-111+12) 244
 (36) 244 (111+14-113+23) 209
 5451 Exec. 1045 (113+70)
 B.F. 1125 (110+50)

No. 8 - Kurty St. Rascrans
 (42+09-42+23) 12

198 | Pipe 48 (40+23-40+59) 36
 2839 Exec. 359 yd. (39+35)
 731 B.F. 457 yd. (80' compld) 40' end turf

Progress

Week ending Oct. 29th

dup

No. 1. Brdy. { Ind. St. }
 TOTAL Ex. 704 yd (28+50)
 124 Pipe
 1434 Exc. (20 yd shaft) 85 yd tunnel
 B.F. (79-W.) (23 E)
 (total for week. 51 ft.)

No. 2 Hughes-

TOTAL
 4066 Pipe 88' (44+18-45 06)
 3848 Exc. 347 yds (130 ft)
 3484 B.F.

No. 7. Southerland St. North.
 (103+50-103+62)(102+35-102+51) 116

1152 Pipe 508 (103+93-108+73) 480
 4406 Exc. 1548 (109+50)
 2744 B.F. 535 (103+60-105+40)

No. 8. Kurty St.

TOTAL
 2706 Pipe 66' (40+59-41+25)
 13679 Exc. 385 36
 12785 B.F. 274

Progress

Week ending Oct. 22nd

60

No. 1. Brdy.
 124 Pipe —
 512 Exc. (133 yd Ditch) (43 yd tunnel)
 B.F. (W. side 46') E side 5'

No. 2. Clm. Sam. Grif.

4128 Pipe —
 38137 Exc. 1172 yd 44+00
 34841 B.F. 1168 (44+00)

Kurty St. (8)

2640 Pipe 84' (41+25-42+09)
 13794 Exc. 424 yd 39+35
 B.F.

Southerland St. North - (7)

(103+53-103+93) 40
 645 Pipe 224 (101+57-103+41)
 2858 Exc. 1264 yd (104+15) 184
 2209 B.F. 1205 (includes all at Baking)

Progress Oct. 8th
 Week ending Oct. 15th st.

No. 1 - Brady
 124 - Pipe 12'
 336 Exc (83 shaft) (33 yd. tunnel) 25 ft
 B.F. West end -

No. 2 - Elm St. Same Gr.

4128 Pipe 80' (43+38-44+18) Hughes
 3696.5 Exc 909 (44+90) Pipe
 33673 B.F. 521 (43+40) Exc
 B.F. - 459

No. 4 - Kerty St.

2556 Pipe #18
 13370 Exc 412 #18 (40+00) (12 deep)
 12511 B.F. 545 #18

No. 6 - Southernland North -

421 Pipe 2-10 99+28-101+38 (211)
 1582 Exc 735 (101+30) (847)
 1004 B.F. 1004 (100+50)

Progress
 Week ending Oct. 8th

No. 1 - Brady

Pipe 112 (0+08 + 1+20)
 Exc. (8' tunnel)
 B.F. 75+60
 74+60

No. 2 - Elm St.

4048 Pipe 28' (43+10 - 43+38)
 36056 Exc 1385 (45+90 - 46+50) to Sep
 33152 (2358) 2018 (43+00)

No. 3 - Southernland St.

(74+65 - 76+15) 1150
 (211) Pipe 361 (97+17 - 99+25) 211
 9499 Exc 1594 (99+75) (74+60) {Southernland
 2250 B.F. 1644 (75+15) {947

No. 4 - Kerty St.

2556 Pipe 12" (16+52 - 16+64)
 12958 Exc 694 (40+73) 9' deep.
 11866 B.F. 1544 all but 60'

Progress
Week ending Oct. 1st

No. 1. Brady.

Pipe shaft: 1654-
180 - Exec. 63 yd. (108 FT)
B.F. 75

No. 2 Elm St.

4020 Pipe 100' (42+10-43+10)
34971 Exec. 793- 44+00
31134 B.F. 1863- 42+20

No. 3 Southland St.

2225
2855 = Pipe 180 (75+11-76+91)
7905 Exec. 1365 yd. (75+50)
6606 B.F. 722' (77+00)

No. 4 Kury-

(16+64-17+00)
2544 Pipe 66 (16+28-16+52)
12264 Exec. 651 yd. (41+23-42+23)
10322 B.F. 359 17+50-18+50

Progress

Week ending Sept. 24

No. 1. Brady

Pipe — (0+50-1+10)
(0+06-0+16)
84 Exec. 66 yd. (60 W) (10 E) (10695 ft)
B.F. — B.F. 9680

No. 2 Elm St.

Pipe 142 (40+68-42+10)
34178 Exec. 1002 yd. (43+30)
30071 B.F. 2528 41+00

No. 3 Southland St.

Pipe 77 (76+91-77+68)
6540 Exec. 208 (77+25)
5884 B.F. 925 (78+40)

No. 4 W. of Pump house

2480 Pipe 142 (16+96-18+38)
11613 Exec. 555 yd.
9963 B.F. 206 (75 FT. to 80) 1/2 F.W.

Progress

Week Ending Sept. 17

No. 1 - Brady

1714 Pipe — 14 Ft.
 10695 Exec. 21' shaft & tunnel 18 yd.
 9680 B.F. —

No. 2 Elm St.

3778 Pipe 180 {38+88-40+68}
 33176 Exec. 870 (42+50)
 27543 B.F. 947 (39+37)

No. 3 - Southland St.

1798 Pipe 172 (77+68-79+40)
 6332 Exec. 677 (77+75)
 4959 B.F. 1421 (76+75)

No. 4 - W. of Pump House

2338 Pipe 40 (25+84-26+24)
 11058 Exec. 888 (15+50-18+50) 1/2 Comp.
 9759 B.F. 1991 yd. to M.H.

Progress

Week Ending Sept. 10-

69

No. 1 - Ard Brady

1714 Pipe —
 10674 Exec. 77 yd {Exc. 10521
 9680 B.F. 644 {B.F. 10521}

No. 2 Elm St.

3602 Pipe 32 (11+86-12+10) 24
 32298 Exec. 2142 (38+80-38x88) 8
 26596 B.F. 445 (41+00)

No. 3 - Southland St

16262 Pipe 320
 5655 Exec. 806 (79+50)
 3538 B.F. 1060 (83+10)

No. A - W. of Pump House

2298 Pipe 84 362 211
 10170 Exec. 375 358 210
 7768 B.F. 755 32 224
 508
 1153

Progress

Week ending Sept 3rd

No 1. A. St

1714 Pipe 24' (1+20 - 1+44)

10551 Eye 44 yd.

9036 B.F. 238

10597

9680

No 2. Chm St.

3570 Pipe 36 (11+51 - 11+87)

30156 Eye 504 yd. (39+50)

26151 B.F. 355 " (88+88 - 89+44)

No 3. Southerland (90+16 - 90+82) 68

1306 Pipe 656 (83+70 - 87+94) 424

4849 Eye 1917 (81+10)

5478 B.F. 1519 (90+30) 86+30 85+50

No 4. W. of Pump-house

2214 Pipe 128 (26+32 - 26+80) 42

9795 Eye 382 (15+50 - 16+30) 28

7013 B.F. —

Progress

Week ending Aug. 27th

70

No 1. A. St

1690 Pipe 32 (5+14 - 5+46)

10077 Eye 102

8798 B.F. 600

No 2. Chm St.

2534 Pipe 44 (11+07 - 11+51)

29652 Eye 133

25796 B.F. —

No 3. Southerland St. 85+15 = 90+25 100

650 376 (92-06 - 93+50) 144

2932 Eye 1999 (90-82 - 91+14) 32

959 B.F. 911 (96+20 - 96+60) 40

No 4. W. of Pump-house

2086 Pipe —

19407 Eye 774 (11+87)

17013 B.F. — (12+11)

Progress

Week ending Aug. 20th 42

No. 1 - A. ST.

Pipe 92' (5+46-6+38)
 9975 Exc. 252
 8198 B.F. 561

No. 2 - Elm St.

3490 Pipe 220' (8+87-11+07)
 29519 Exc. X888
 25796 B.F. 2333

No. 4 - W. of Pump House

2086 Pipe 84' (22+84-23+68)
 18633 Exc. 729 (23+56) (1600)
 17013 B.F. 408 (22+00)

No. 3 - Southland St.

(4 tunnel)
 274 Pipe 270' (93+50-96+20)
 924 Exc. 924 92+60-96+20
 42 B.F. 42

Progress

Week ending Aug. 13th 42

No. 1 - A. ST.

(6+38-7+66) 128
 1566 Pipe 160' (4+43-4+75) 32
 9723 Exc. 1275 yd. Tract Fint D
 7637 B.F. 255

No. 2 - Elm St.

3270 Pipe 400' (4+87-8+87) 585
 28631 Exc. 2128 yd. -110+50
 23463 B.F. 1582 (6+50)

No. 4 - W. of Pump House

2002 Pipe 188' 20+96-22+84
 17904 Exc. 1833 23+25
 16605 B.F. 1635 21+50

Progress

Week Ending Aug 6th 42

No. 1. A-St.

7+30 8+02 aug +72 N
 14 06 Pipe - 206 (3+09) (4+43) 134 S
 8 448 Exc 1098 (25-5+00) (7+00)
 7 382 B.F. 1066

No. 2. Clin. St.

(38+20-38+84) 64
 2870 Pipe 270 117+14-5+20) 268
 26503 Exc 1888 (6+67)
 21881 B.F. 1427 947+ (38+75)
 117+14-118+04

No. 4. W. of Pump House

18+14 Pipe 168 19+28-20+96
 16071 Exc 903 20+(21+00)
 14970 B.F. 822 yds (19+50)

Progress

Week Ending July 30th 42

No. 1. A-St. 8'-9' instead of MH

8+10-8+54) 44
 1216 Pipe 56 2+57-3+25) 52
 7352 Exc 892 2+93-4+25
 6316 B.F. 325 yd.

No. 2. Clin. St. (Less 4' For MH)

(34+50-36+30) 176
 2600 Pipe 334 36+62-38+20) 158
 24615 Exc 2085 (39+00)
 20460 B.F. 2558 yd (35+30) 37+70
 (Pipe 36+30)

No. 4. W. of Pump House

(15+06-15+46) 40'
 1646 Pipe 120 18+44-19+28) 80^{4 out}
 15168 Exc 777 (20+00) FORMH
 14148 B.F. 816 yd (15+50)

	168	24615
	270	1888
20460	206	26503
1427		
21881	644	

Progress

Week Ending July 23rd 42

701-A ST.

1160 Pipe 88 (1723-1471) 48
 6460 Exec. 252 yd (109+82-110+22) 40
 5991 B.F. 303 "

702 Elm ST.

2266 Pipe 221 (36+30-36+62) 32
 22530 Exec. 2015 yd (33+50-34+50+100)
 17902 B.F. 1517 (28+29-29+18) 89
 (34+00)

704 W. of Pump House

1526 Pipe 120 (13+86-15+06)
 14391 Exec. 796 yd (15+50)(18+95)
 13332 B.F. 1222 (14+50)

1500
 22
 2000
 2000
 2166
 2166
 400

Progress

Week Ending July 16th 42

701-A ST.

1072 Pipe (110+22-110+40) 24'
 6208 Exec. 318 (60' 1471-2407) 36'
 5688 B.F. 223

702 Elm ST.

2045 Pipe 194 (27+82-28-28+32)
 20515 Exec. 1691 (32+08-33+50) 142
 16399 B.F. 948 (34+70)
 (32+40)

704 W. of Pump House

1406 P.P. 170 (12+16-13+86)
 13595 Exec. 1112 yd (15+30)
 12100 B.F. 1481 (13+00)

3630
 3450
 180

Progress
Week Ending July 9th 42

No. 1. A.S.T.
1012 Pipe 24' (110+46-110+70)
5890 Exc. 356 yds. (1+77) 44
5465 B.F. 1029 "

No. 2 Elm St.

1851 Pipe 206' (30+02-32+08)
18824 Exc. 1896 yds. (34+50)
15451 B.F. 2875' (31+40)

No. 4 W. of Pump House

1236 Pipe 108' (11+08-12+16)
12847 Exc. 1333 yds. (13+80)
10619 B.F. 1608' (11+00)

No. 5 Kurty St.

242- Pipe 16' (23+70-23+86)
2288 Exc. —
2208 B.F. 1204

Progress
Week Ending July 2-42 ⁷⁶

No. 1 - A.S.T.
20' (10+76-11+50) 74
988 Pipe 126' (2+41-2+93) 52
5534 Exc. 447 —
4441 B.F. 622 10+00

No. 2 Elm St.

1645 Pipe 272' (29+30-30+02)
16928 Exc. 7158 (32+50)
12576 B.F. 804 (27+65) Beg. W. of St.

No. 4 W. of Pump House

1128 Pipe 220' (8+84-11+04) 08
11514 Exc. 1222 (12+00)
9011 B.F. 2237 (10+50)

No. 5 Kurty St.

236 Pipe 56' (23+86-24+42)
2288 Exc. 274-
1004 B.F. —

Progress

Week ending June 25-42

No 1 A. ST.

862' PIPE 232' $(113+62-113+74)$ 12
 5087 Exc 992 $(8+56-10+76)$ 220
 3819 B.F. 1200 $(9+80-11+60)$

No 2 Elm St.

1573 PIPE 154' $(29+18-29+30)$ 12
 15770 Exc 2546 $(26+40-27+82)$ 140
 11772 B.F. 2466 $(29+15-31+35)$ (27+62)
 $(27-25)$ (STREET)

No 4 W. Pump House

908 PIPE 68' $(8+16-8+84)$
 10292 Exc 1555 $(8+20-10+30)$
 6723 B.F. 1270 $(8+00)$

No 5 Kurty St.

180 PIPE 36' $(24+46-24+82)$
 2014 Exc 314 yd. $(23+50)$
 60 B.F. —

Progress

Week ending June 18-42 77

No 1 A. ST

630 PIPE 106' $(113+62-113+74)$ 12
 4095 Exc 917 yd. $(116+20-117+14)$ 94
 2619 B.F. 1017 yd. $(9+80)$ 200
 $(116+00)$

No 2 Elm St.

14190 PIPE 271' $(23+69-26+70)$
 13124 Exc 2630 $(27+70)$
 9306 B.F. 3229 yd. $(+1000)$ (25+00)

No 4 W. of Pump House

840 PIPE 152' $(6+64-8+16)$
 8737 Exc 744 $(8+20)$
 5453 B.F. 1170 $(7+00)$

No 5 Kurty St.

114 PIPE 16' $(24+84-25+00)$
 1700 Exc 391 yd. (544)
 1009 B.F. 60 yd.

Progress

Week ending June 11-42

TOTAL

No 1 A.S.T. (113+74-113+90)
 524 PIPE 204 (14+32) (116+20)
 3178 Cmc. 555 yds. (117+20)
 1602 B.F. 348 (114+75)

No 2 Elm St.

1148 PIPE 128 FT (22+58) (23+65)?
 10594 Cmc. 1118 yds. (25+00)
 6087 B.F. 1000 yds. (22+50)

No 4 West of Pump House

688' PIPE 84' (5+80-6+64)
 8013 Cmc. 505 yds. (7+75)
 4283 B.F. 829 " (5+50)

No 5 Kurly St.

128 PIPE None
 1319. Cmc. 120 yds. (163)
 944 B.F. None

Progress

Week ending June 4/42

6/4/42

78

TOTAL

No 1 A.S.T.
 320 PIPE None
 2623 Cmc. 833 yds. (46+00)
 1254 B.F. 555 (113+00)

No 2 Elm St

1020 PIPE 120' (21+18-22+38)
 9476 Cmc. 541 yds. (23+10)
 5087 B.F. 971 " (21+00)

Sasafress

152' PIPE 152' (55+31-56+83)=
 59+11-60+63+

No 4 West of Pump House

604 PIPE 140' (4+40-5+50) (5700)
 7508 Cmc. 353 yds. (6+25)
 3454 B.F. 1262 (4+10)

No 5 Kurly St.

128 PIPE None
 1319 Cmc. 43 yds.
 944 B.F. 324 80

TOTAL Exc. Pipe - B.F. 7 weeks
ending May 21 - A^v

no 1 - A ST.

Pipe 224 STA (110+70-112+94)
Exc. 1096 yd. (113+25)
B.F. 491 yd. STA (112+00)

no 2 - Elm st.

Pipe 700 FT. (12+10-19+10)
Exc. 7676 yd (20+50)
B.F. 3272 " (19+10)

no 3 - E.P.H.

Pipe 186 FT. (123+16-128+02)
Exc. 2207 (34' Box)
B.F. 2091

no 4 - W.P.H.

Pipe 256 FT. (0+12-268)+24
Exc. 5822 yd: (4+00)
B.F. 1430 " (1+50)

no 5 - Kinty st. (150 FT)

Pipe 76 FT. (27+59-28+05)
Exc. 1224
B.F.

IMPROVED TABLES AND INFORMATION

27/10/06
162
666-180

HORIZONTAL STADIA CORRECTIONS

2°-00'	— 0.1	21°-00'	— 12.3	38°-00'	— 29.7
3°-00'	— 0.3	21°-30'	— 13.4	38°-15'	— 30.1
4°-00'	— 0.5	22°-00'	— 14.0	38°-30'	— 30.5
5°-00'	— 0.8	22°-30'	— 14.7	38°-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

34 15
66 33

Handwritten calculations on the left page:

$$\begin{array}{r} 400 \\ 16 \\ \hline 2480 \\ 400 \\ \hline 2880 \end{array}$$

$$\begin{array}{r} 17 \\ 2 \\ \hline 34 \end{array}$$

$$\begin{array}{r} 17 \\ 11 \\ \hline 28 \end{array}$$

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 I may be found by dividing tangent, (or external), opposite I 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.

Handwritten calculations on the top of the right page:

$$\begin{array}{r} 16 \\ 17 \\ \hline 34 \end{array}$$

$$\begin{array}{r} 17 \\ 11 \\ \hline 28 \end{array}$$

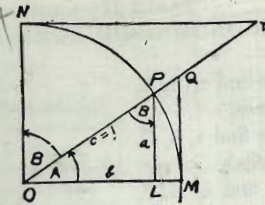


TABLE II
TRIGONOMETRIC FORMULÆ.

- $\angle A = \angle MOP$ $\angle B = \angle PON = \angle OPL$
- $R = OB = c = 1$
- $\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$
- $\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$
- $\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$
- $\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$
- $\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$
- $\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$
- $\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$
- $\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$
- $\text{exsec } A = PQ = \text{coexsec } B$
- $\text{coexsec } A = PT = \text{exsec } B$
- $\sin \frac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}}$ $\cos \frac{1}{2} A = \sqrt{\frac{1 + \cos A}{2}}$
- $\sin 2A = 2 \sin A \cos A$ $\cos 2A = \cos^2 A - \sin^2 A$
- Law of Lines $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
- Law of Cosines $c^2 = a^2 + b^2 - 2ab \cos C$
- Law of Tangents $\frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$

Handwritten calculations on the right page:

$$\begin{array}{r} 21 \\ 12 \\ \hline 33 \\ 42 \\ \hline 14 \\ 21 \\ \hline 35 \end{array}$$

$$\begin{array}{r} 13 \\ 9 \\ \hline 117 \\ 16 \\ \hline 702 \\ 117 \\ \hline 18720 \end{array}$$

$$\begin{array}{r} 1201 \\ 16 \\ \hline 3200 \\ 1200 \\ \hline 15200 \end{array}$$

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

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

Use Law of Lines.

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

Use Law of Lines.

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

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

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

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

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

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

Area of a triangle:

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

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

PRISMOIDAL FORMULA.

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

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

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

	0	1	2	3	4	5	6	7	8	9	10	11
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219
$\frac{1}{8}$	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271
$\frac{3}{16}$	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323
$\frac{1}{4}$	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375
$\frac{5}{16}$	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427
$\frac{3}{8}$	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479
$\frac{7}{16}$	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531
$\frac{1}{2}$	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583
$\frac{9}{16}$	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635
$\frac{5}{8}$	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688
$\frac{11}{16}$	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740
$\frac{3}{4}$	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792
$\frac{7}{8}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844
$\frac{15}{16}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896
1	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948
	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.000
	0	1	2	3	4	5	6	7	8	9	10	11

TABLE IV
USEFUL RELATIONS.

Lineal feet	×.00019	= miles
Lineal yards	×.0006	= miles
Square inches	×.007	= square feet
Square feet	×.111	= square yards
Square yards	×.0002067	= acres
Acres	×4840	= square yards
Cubic inches	×.00058	= cubic feet
Cubic feet	×.03704	= cubic yards
Links	×.22	= yards
Links	×.66	= feet
Feet	×1.5	= links

$$360^\circ = 21600' = 1296000''$$

$$\text{Radius} = \text{arc of } 57.2957790^\circ$$

$$\text{Arc of } 1^\circ (\text{radius} = 1) = .017453292$$

$$\text{Arc of } 1' (\text{radius} = 1) = .000290888$$

$$\text{Arc of } 1'' (\text{radius} = 1) = .00004848$$

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

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

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

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

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

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

Curvature of Earth's surface = about 0.7 feet in 1 mile

Curvature in feet = 0.667 (Dist. in miles)²

Difference between arc and chord length, 0.05 feet in 11½ miles

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

Error in chaining of 0.01 feet in 100 feet:

Due to—

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

STADIA REDUCTION FORMULAE.

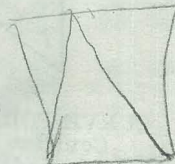
$$\text{Horizontal Distance} = R - R \sin^2 a + C \cos a$$

$$\text{Vertical Distance} = R \frac{1}{2} \sin 2a + C \sin a$$

$$R = \text{Reading} \times \frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$$

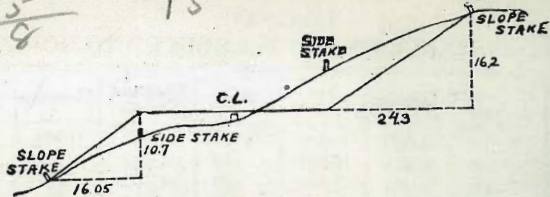
C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.

a = angle of elevation for mid Reading



23
15
38

3146
15



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

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

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.25	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

32.00
24
31+76
30.02
174

21+18
19+10
208

16
30
48000
27 96000 355
810
7290
150
133
150

27+29
52
2677

16000
27 32000 185
11620
11450
170
16
188

900
22
1800
1800
27 19800 733
189
90
81

57478 + cross of curb - 105

114 + 50
110 - 70

90
12
1080
15
52
36
88
150 x 10
5400
600
600
16200
16200
16200
1500
12
3500
1500
27 | 18000 | 6630
3162
180
604
20
3 | 77
18
98

1500
20000
1500
27 | 18000 | 6630
3162
180
604
20
3 | 77
18
98

11
7
18
20
93
180
1260
1500
27 | 30600 | 1133
27 | 32000 | 1185
1600
20
32000
51200
260
243
170
34
22
2
16400
27 | 64000 | 235
54
1800
190

1852
42.92
60.92
404
1022
22
81
16400
27 | 64000 | 235
54
1800
190

.0016

2402
1.67
26.29
08
637
48
48
05200
1000
1.28000
173000
11
74 x 51
3 | 40
13

120
21
240
2520
16
15120
2520
27 | 40320 | 186323
27
233
216
772
162
100
240
16
1440
40
3840
16
23040
3840
27 | 61440 | 2275
17
2
3 | 34
11
17
28

7445
20
7465
60
16
360
60
150
135
152
66
22
74
74
54
204
129
150
250
35730
27 | 2112
104
226
2160

97
64
33
22
25