

1621



UNIVERSITY OF MICHIGAN
FIELD BOOK
No. 404E

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

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

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1621

ENGINEERING DEPARTMENT,
CITY OF
SAN DIEGO,
CALIFORNIA.

The paper stock of this book is made of a high grade 50% rag paper having a water resisting surface. This book is sewed with Bing Special Enamel Waterproof Thread.

Made in U. S. A.

Index

Reynard Way Sewer 1-32
Location Water Main Pacific + Rky to Gaines +
Whitman Page 34
Ties for realignment Reynard Way Sewer Through
Ties for realignment Reynard Way Sewer Through
Halls Tract Page 37

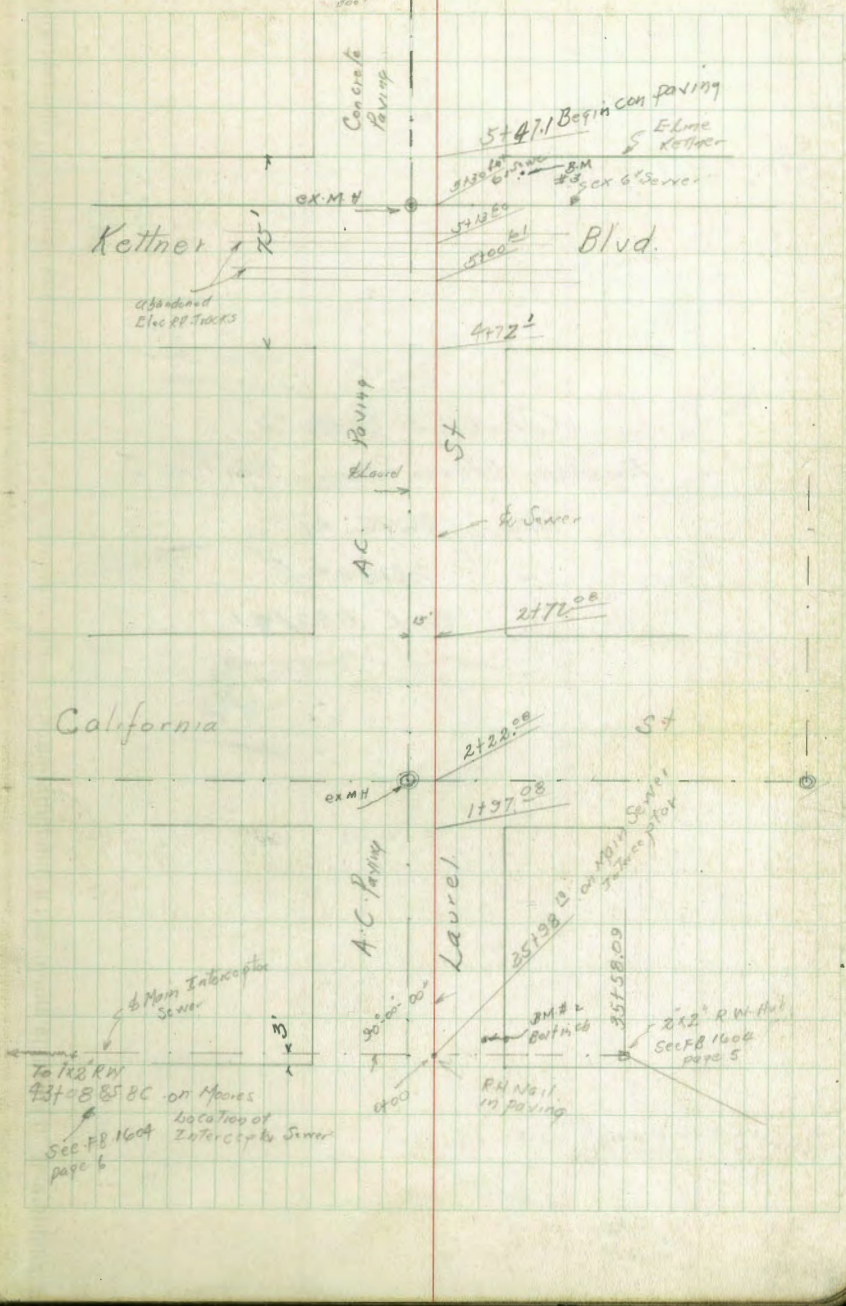
Bliss
Sommermyer
Boys

Reynard Way Sewer Pacific + Laurel - East

Indexed
C.S.K.

ex.M.H.
253
Foot

Jex Sewer



See FB 1604 page 5
 0+00. Main Interceptor Sewer of East line of Pacific
~~Changed~~

To 142' RW
 73+08.85 BC on Moors
 location of
 Interceptor Sewer
 See FB 1604
 page 6

212' R.W. Hwy
 See FB 1604
 page 5

13+48.64 Lt 90°-00'-00

Columbia to State St.

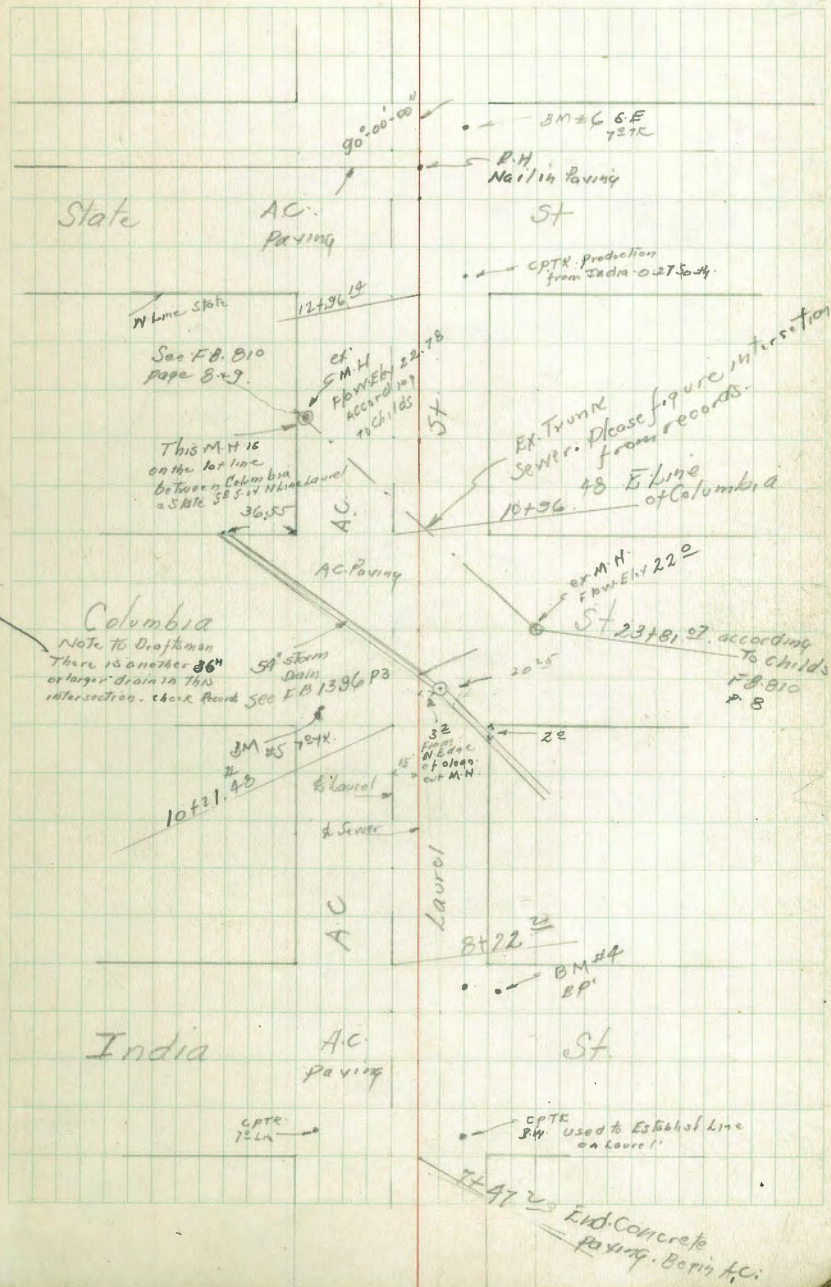
Existing Storm Drain - 36" Pipe -

See - 3696.L

" 2313.L

" Book 882/21

Be



54+01.04

L 4 17°-52'-00" X in paving

52+50.93

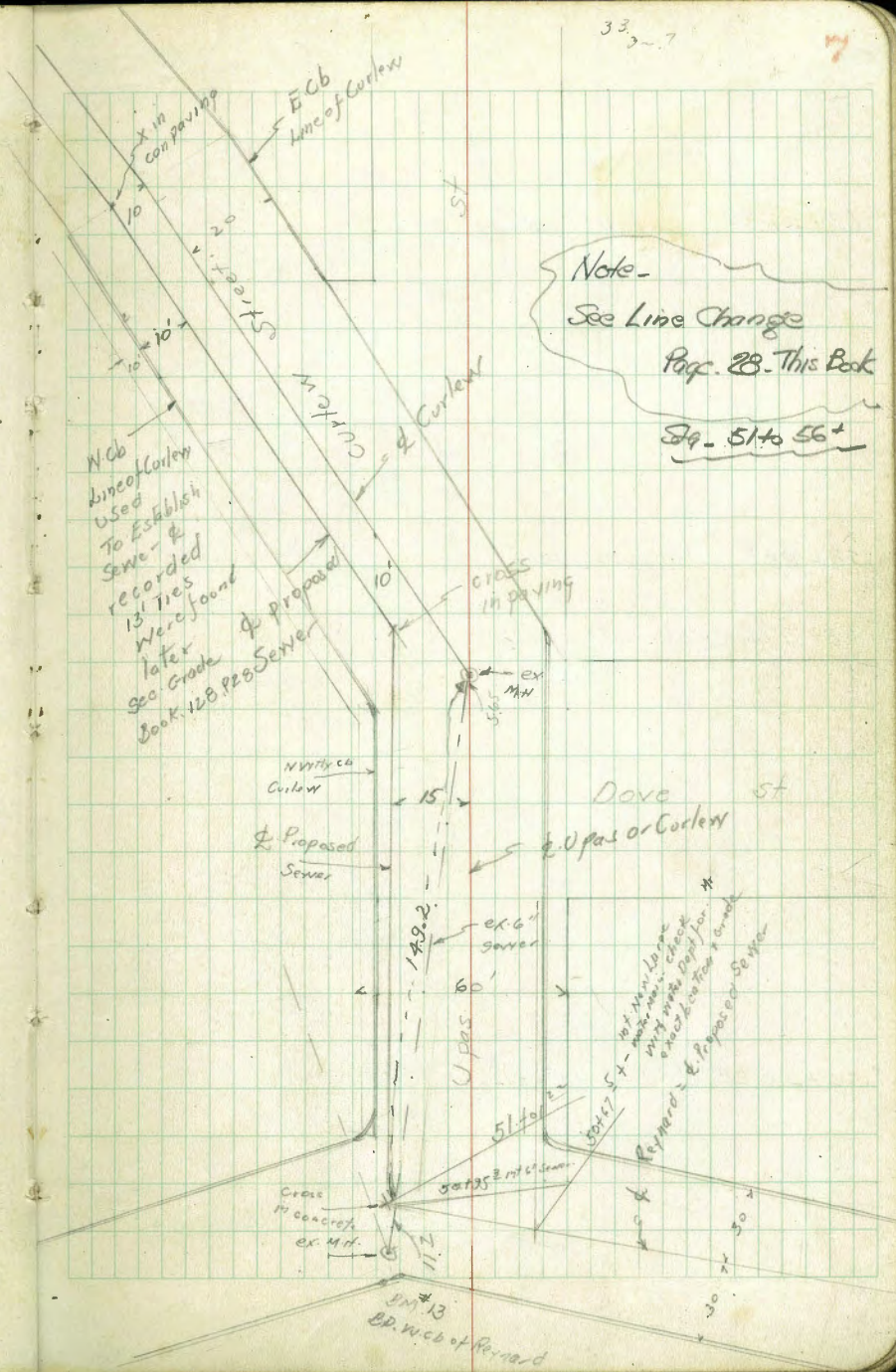
L 4 36°-37'-40" X in paving

51+01.22

327
50 67 52

51+01.22

L Rt 80°-01'-30" X in concrete



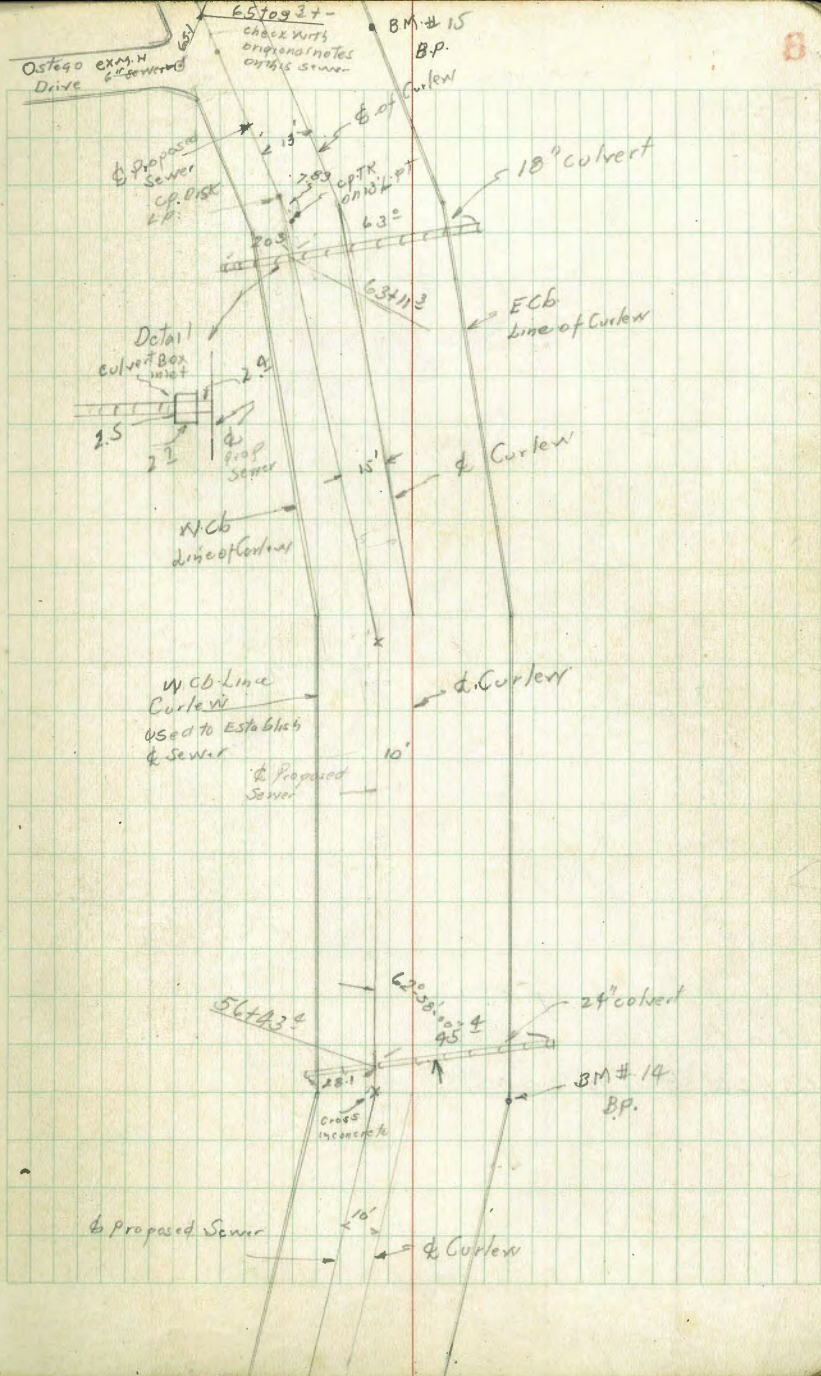
63+20.98

L 11°-14'-30" Lt

58+83.6 int. 1/2 Cas. Main

58+71.77 L Lt 25°-04'-30"

56+35.99 L Lt 10°-51'-00"

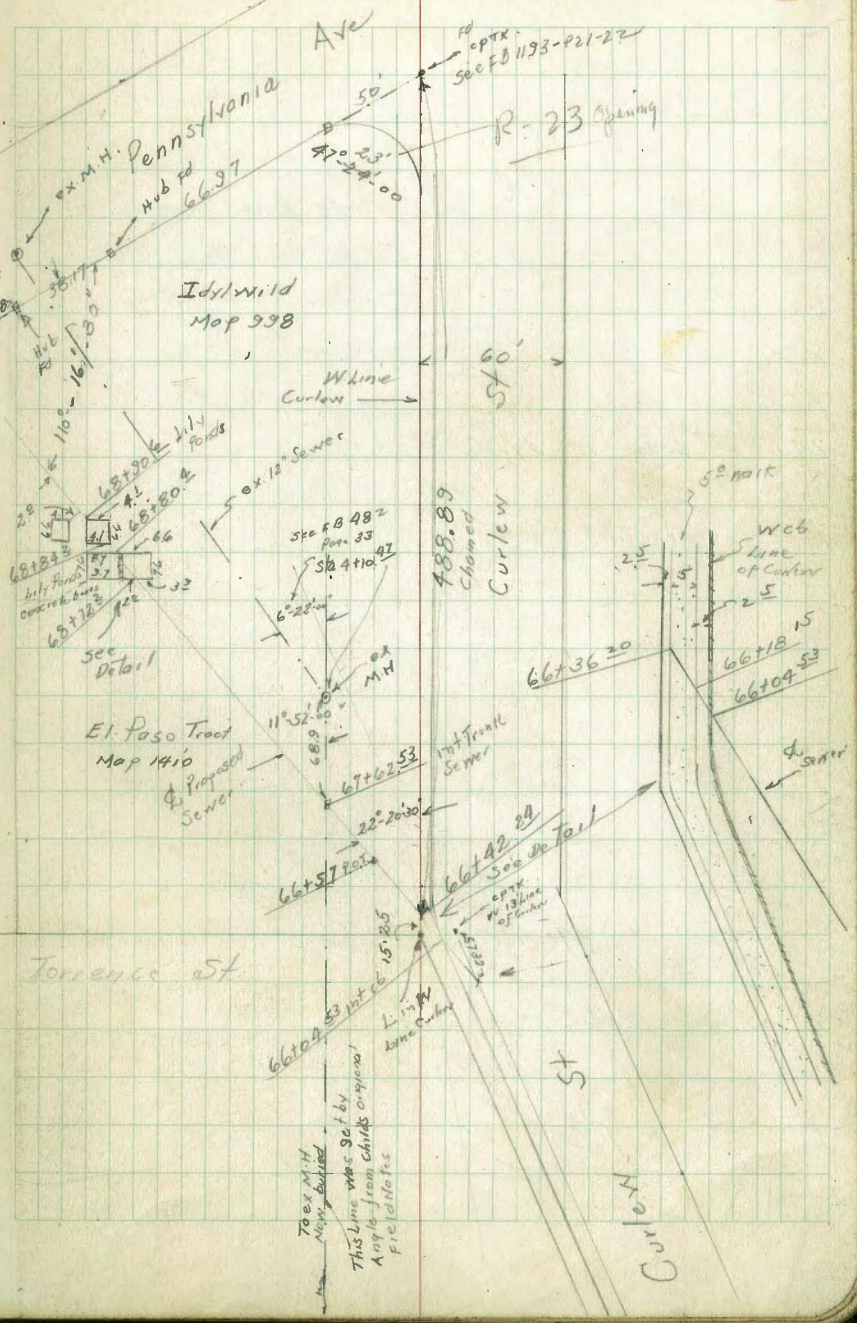
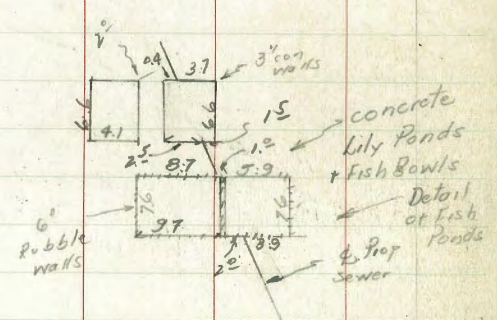
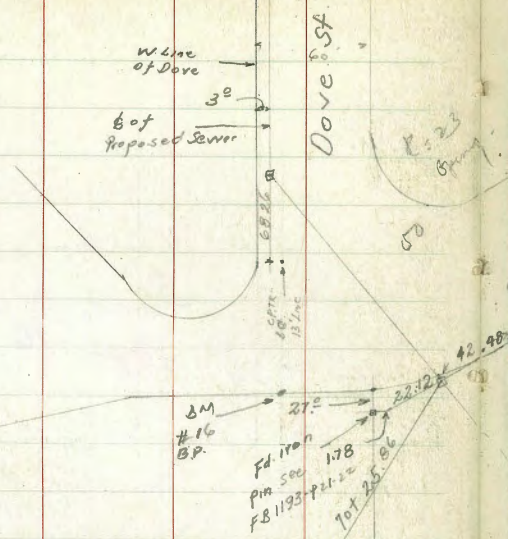


70+30.2 int W. Co. of Dove

70+69.2 int S. Co. Penn

65+66.6 L.Lt 10°-31'-00"

67.02
65.42
1.60

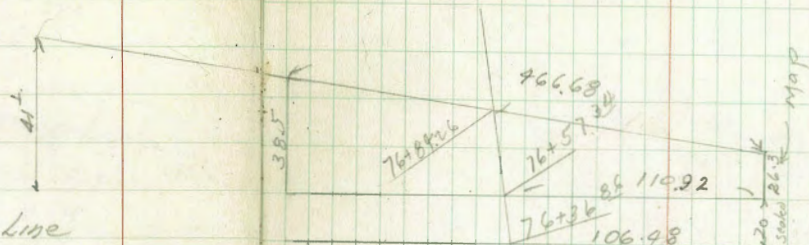


788.89
Chimed
Curlew

Curlew
St

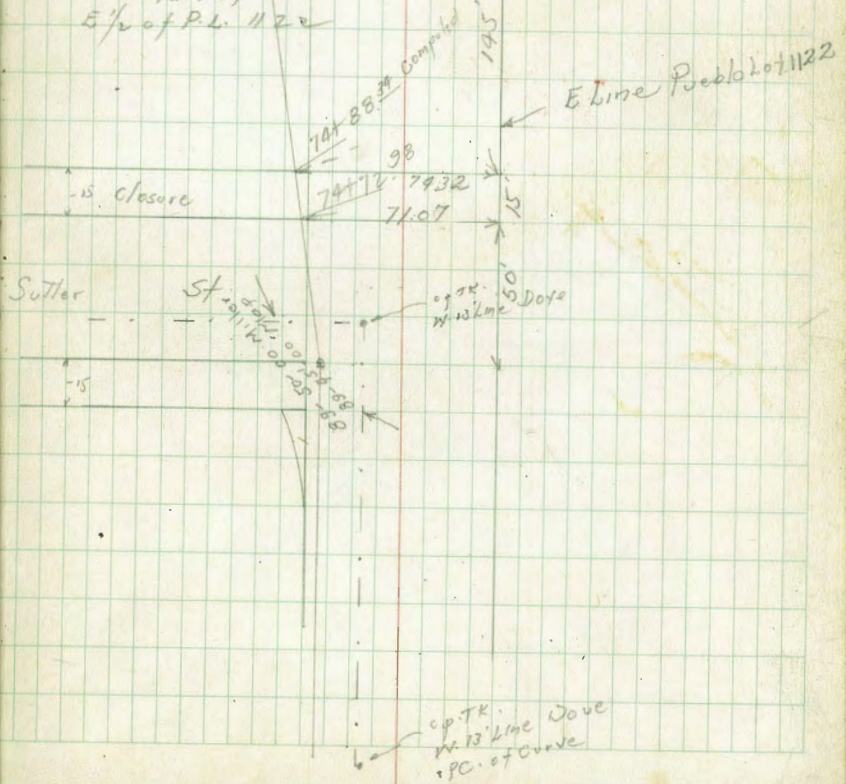
Figured Ties across Block
 475 'CC' Seaman's Sub. to South Line
 of Halls Tract. See Page 13 this book
 for actual ties. Ties were figured from
 Scaled distances from N line of Sutter to
 So. line Hall Tract

void



475
 "CC" Seaman's Sub
 Part of
 E 1/2 of P.L. 1120

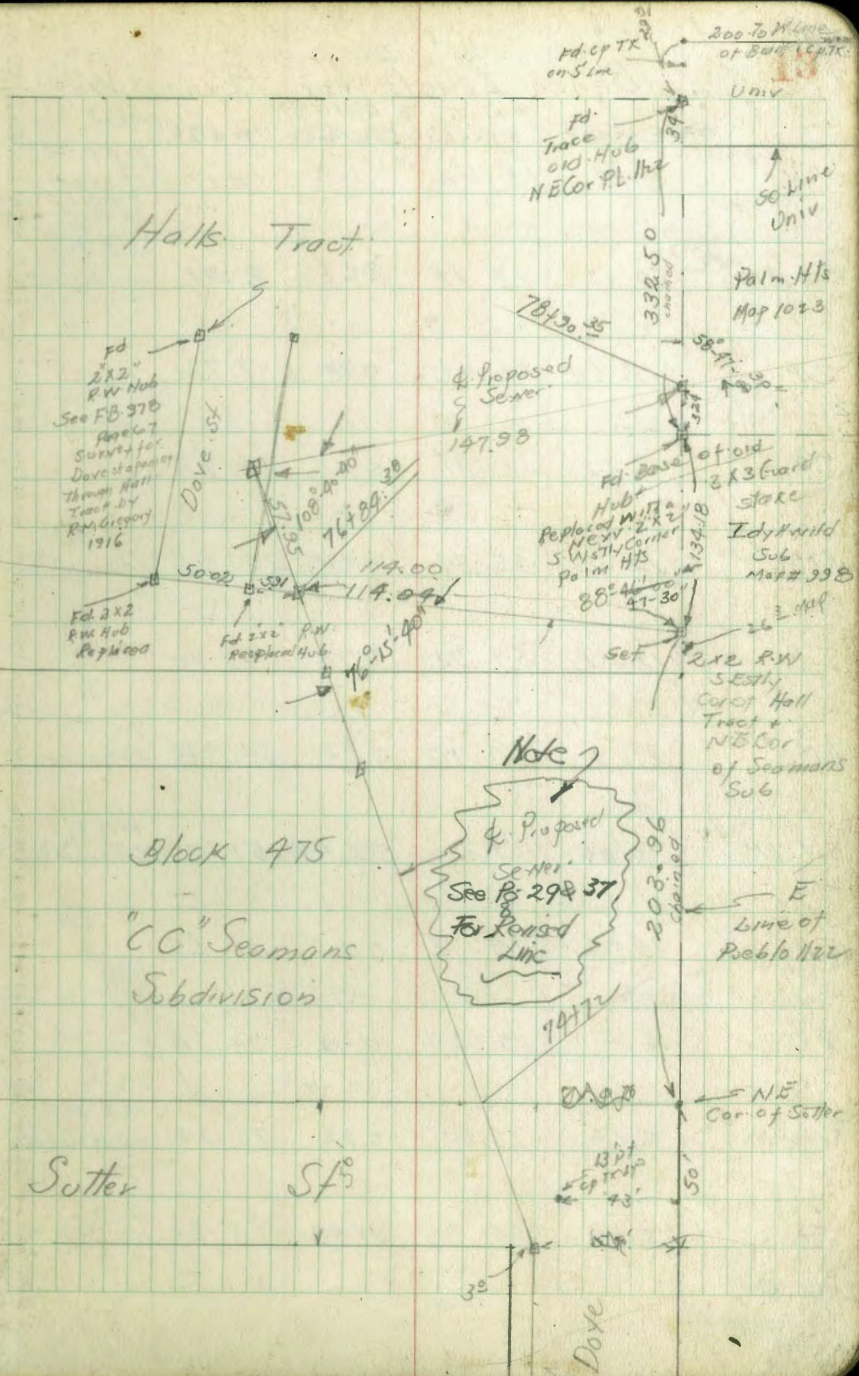
void



Ties for Proposed Sewer Through
 Block 475 "C.C." Seaman's Sub-Map 530
 and through Halls Tract Same Map
 and through Palm Hts. Map 1023.

So. line of
 Hall Tract
 according to Survey
 Made by R.M. Gregory
 for Dove St opening
 see F.B. 978
 page 67.

Eagle St.



Bench Levels for Reynard Way

Sexier #NOTE to Draftsman
* Construction Man. Use BM's page 25

BM #1	3.45	15.62		12.17	Top of Bolt 72 Rt 39100 Moors. F.B 1604 S.E. Bolt from p.m.
Set BM #2	10.13	18.14	7.61	8.01	S.E. Top 11000 Bolt from Ch Laurel Pacific
T.P.	12.64	30.40	0.38	17.76	
T.P.	7.22	36.96	0.66	29.74	
BM #3	12.99	45.84	4.11	32.85	S.E. BP Laurel Pacific
T.P.	12.02	57.72	0.14	45.70	
BM #4	2.22	56.70	3.24	54.48	S.E. BP Indiana (Laurel)
Set BM #5	10.84	61.90	5.64	51.06	NW 72TK Columbia Land
T.P.	13.06	74.71	0.25	61.65	
T.P.	3.34	77.86	0.19	74.52	
Set BM #6	0.16	77.10	0.92	76.94	S.E. 72TK Laurel State
T.P.	0.35	65.96	11.49	65.61	

T
6596

14

T.P.	3.17	59.16	9.97	55.99	
Set BM #7	9.90	61.84	7.22	51.94	B.P. in South End of 6196 ft by Set. Reynard 651 - North of Arroyo Drive
Sideshot Set BM #8			5.56	56.28	CPTK in C.B. 1st Amk H. Hot Arroyo Drive E Side Reynard
T.P.	8.67	69.94	0.57	61.27	
Set BM #9	9.99	76.98	2.95	66.99	CPTK in C.B. L. 5055266
Set BM #10	10.16	86.13	1.01	75.97	CPTK in West C.B. 505 505266
Set BM #11	8.76	92.76	2.13	84.00	NW BP Reynard Reynard
T.P.	7.33	98.35	1.74	91.02	
Set BM #12	10.91	105.75	3.51	94.84	B.P. S. Eastly Car. Eastly & Reynard 5055266

T
105.75

T.P. 10.43 115.87 0.31 105.44

Set BM #13 12.01 125.81 2.07 113.80

B.P. in Wch
of private near
L road approx. M.H.

T.P. 12.39 138.04 0.16 125.65

Set BM #14 8.77 146.17 0.64 137.40

B.P. in East
C600L

T.P. 9.14 155.03 0.28 145.39

Set BM #15 13.07 166.73 1.37 153.66

B.P. in East
Ch. of Curlew approx.
Ch. of Astego Drive

T.P. 12.59 179.11 0.21 166.52

T.P. 12.16 180.55 0.72 178.39

T.P. 9.47 199.46 0.56 189.99

Sid shot
check BM. 0.39 199.07

S.E. Top Hy
Penn. Curlew

199.25
0.18

diff did
Not Correct

T.P. 0.04 186.42 13.04 186.42

T.P. 1.98 175.87 12.57 173.89

Set BM #16 10.44 181.17 5.14 170.73

B.P. So Cl. line
at Penn. approx
4' W of Dove St
& Proved. South

T
181.17

15

Set BM #17 10.74 190.90 1.01 180.16

on 42" Culvert
Headwall N
Line South

Set BM #18 6.80 196.58 1.12 189.78

30 Penny Spike
at Top Edge of Gus Stamp
25' W 77' N 25'

T.P. 8.48 203.25 1.81 194.77

Set BM #19 4.65 198.60

chisel cross in
W rim of MH
125' W of Street
End of Tob

Profile Levels for Reynard Way Sewer

BM #1	3.36	15.53	12.17
check BM #2	12.54	20.55	7.52
0+00	Blk. paving	13.10	7.95
0+50		11.86	8.69
0+	W Rail	10.61	9.99
1+00	E "	10.47	10.08
1+50		8.78	11.77
1+97.08		6.91	19.19
2+00		6.28	19.27
+22.08	int Trunk Sewer	5.35	15.20
+44.72	W Rail Santa Fe RR.	4.91	15.69
+49.98	E "	4.92	15.63
+61.2	int Double 12" Drain	4.43	16.12
" "	38 ft. Flow	6.81	13.79
" "	42 1/2 ft Flow	6.37	19.18
3+00		2.57	17.98
T.P.	12.87	32.64	0.78
+45		12.67	19.97
+70		10.53	22.11
4+00		7.25	25.39
+25		9.82	27.82
+50		2.78	29.86
+73	W. Line K. B. Co.	1.32	31.32
+81	int Gas	1.24	31.90

S.E. Bell on iron plate. #1 33100
Sec. P.B. 1604
Pan.
S.W. Bell in ch. 2000 ft. profile

Notes Reduced. 2.9.22

T
32.64

435
16.77
16.77

16

4+85	+ W. Ch. R. 1	1.10	31.59
T.P.	13.07	45. 18 ¹⁸ 18	32.96
5+00		12.64	32.59
7+00	W. Rail. W. Trunk E. Ch. RR	12.62	32.56
+12.60	W. " E. " " "	12.46	32.72
+30.4	int 6" Sewer	12.49	32.69
" "	15 ft Rim ex. M.H.	12.42	32.76
" "	11 Flow Line	16.77	28.91
+39	E Gutter Kermer	12.56	32.62
+53	E Line K. B. Co. Begin San Paving	11.85	33.33
check B.M.	S.E. K. B. Co. Tunnel	17.39	32.90 32.84 32.84
1	12.34	45.20	32.84 ✓
6+00		5.74	39.96
+46	int 6" Sewer	0.42	44.78
" "	15 ft Flow Line	2.38	42.82
+50		0.06	45.19
T.P.	12.64	57. 56 ⁵⁶ 56	44.85
7+00		7.87	49.69
+46.79	W. Line India. End Cen. Paving	3.75	53.81
+59.3	" Gutter India	3.78	53.78
+84.2	E India	2.83	54.73
8+09.3	E Gutter India	3.18	54.38
+21.79	E Line "	2.92	54.69
check B.M.	S.E. B.P. India Laurel	3.07	54.40 54.49
+50		3.53	54.03
9+00		4.57	52.99

Notes Levels
Run 6 hrs
B.M. corrected
10.9.22
of B.M.

T
57.56

9750			5.64	51.92	
10100			6.65	50.91	
TR	2.87	60.87	6.65	50.90	91
+21 ⁸⁸ N			10.71	50.16	
+33 ⁸⁸ W gutter			11.04	49.83	
138			11.01	49.86	
"	6 R1 to M.H.	on 54" R.M. drain	10.29	49.88	
"	" " " "	Flow	31.24		29.23
+43 int 54" drain			10.90	10.35	49.97
d Columbia			10.76	50.11	
+84 ⁴⁸ E Gutter Columbia			11.11	49.76	
Note: Check int of ex sewer with records					
"	Rim of ex.M.H.	1845 So. of the stair land	9.61	51.26	
"	Flow		38.91	21.96	
+96 ⁴⁸ E Line			10.67	50.20	
	E Line Columbia		10.35	50.54	
Check B.M. #5	N.W. 7 th TX Col & Laurel		9.81	51.06	✓
+50			4.21	56.66	
TR	12.66	72.73	0.80	60.07	✓
12100			10.17	62.56	
+50			3.95	68.78	
TR	4.87	77.40	0.20	72.53	✓
+96 ¹⁴ W line S6 1/2			3.64	73.76	
13100			3.35	74.05	
+33 ⁶ S 56 1/2 int 6 ¹⁸ S		check grade with plan	2.17	75.23	
+98 ⁶ L. et.			1.89	75.51	
Check B.M. #6			0.46	76.94	SE 7 th TX S6 1/2 & Laurel

T
77.40 ✓

17

13190	N			3.44	73.96
14100				3.40	74.00
+50				5.91	76.49
15100				8.58	68.82
+50				11.36	66.09
TR	0.07	64.69		12.78	64.62 ✓
+88	int ex Trunk Sewer	Check grade with plan - int to depth to each bottom		0.68	64.01
16				1.28	63.91
+50				3.89	60.80
+94				6.22	58.97
17100				6.46	58.23
+13 ²	S 66 line Maple			6.25	57.72
+35	S 88 S 6 1/2	Rim ex M.H. p. sewer		7.47	57.24
"	M.H. S. Maple	Flow Line		30.0	34.69
+49 ²	N 66 Line Maple			7.34	57.35
+84 ⁸	Begin coin paving			7.57	57.12
18100				7.95	56.74
+48.95	L. & Reynard			8.62	56.07
19100				9.38	55.39
+50				10.06	54.63
20100				10.77	53.92
+50				11.35	53.34
TR	1.64	56.87		9.46	55.23
21100				4.23	52.64
check B.M.	#7. BR W. 66 Reynard	Stand 66 1/2 ft. 65 ft. 1/2 ft. 1/2 ft. 1/2 ft.		4.95	51.92 ✓
+59.5	d 30" collect			4.92	51.96
"	28 ² L. Flow			10.06	46.81
"	27 ² R. "			10.92	45.95

56.87 ✓

22+00			4.40	52.97
+50			3.85	53.02
23+00			3.19	53.68
+50			2.46	54.91
24+00			1.85	55.02
T.P.	8.36	63.48	1.75	55.12 ✓
+50			7.71	56.77
25+00			6.96	56.54
+36 ⁰⁶ L Lt			6.58	56.90
+50			6.36	57.12
26+00			5.65	57.83
+50			4.97	58.51
27+00			4.26	59.22
+50			3.51	59.97
28+00			2.56	60.92
+17 ¹² int Trunk Sewer			2.25	61.23
" " 80 ³ Ft. Rim ex M.H.			3.35	60.13
" " Flow Line			9.50	52.98
+17 ² 80 ¹ Lt Rim			0.90	62.58
" " " Flow Line			7.05	56.43
+50			1.69	61.79
29+00			0.82	62.66
T.P.	10.50	73.34	0.64	62.84 ✓
30+00			8.93	67.91

73.34 corrected

18

+51 ⁷⁵ int 6" Sewer	8.00	65.89
" " 17 ¹¹ Lt Rim ex M.H.	8.01	65.83
" " " Flow Line 6"	13.51	59.83
" " 27 ⁹⁵ Ft. Rim ex M.H.	7.41	65.93
" " " " Flow Line	12.29	61.05
31+00	6.94	66.80
+23 ²³ L Lt	6.47	66.87
check BM #9	6.37	66.97 ✓✓
31+50	5.78	67.56
32+00	4.45	68.89
+50	3.30	70.09
33+00	2.13	71.21
+50	1.06	72.28
34+00	0.03	73.31
T.P. 10.25	83.54	73.29
+50		73.27
35+00	8.02	75.52
+19 ⁰⁷ L Rt	7.71	75.83
+50	7.22	76.32
check BM #10	7.61	75.95 75.93 ✓
36+00	6.28	77.26
+50		
37+00	4.23	79.31
+10 ³ int 6" Sewer	3.34	79.60

T
83.54

37+10 ³	16' Lt	Rim	3.87	79.67	
" "	" "	Flow 5"	8.02	75.5V	
" "	" "	Flow Main	8.97	75.07	
41 "	80' Rt	Rim	0.96	83.08	
" "	" "	Flow	5.36	78.18	
N. to 42' pt	on paving a break	appears to be	3.91	80.13	
+37	int 6" water Main		3.48	80.06	
+50			3.29	80.25	
38+00			2.19	81.35	
+56			1.17	82.37	
39+00		Corrected	0.20	83.39	
T.P.	5.88	To flowline 8" 32' Rt	0.97	82.57	
+50		92.43	6.12	86.31	//
check B.M. #11	NW 1/4 Rejoard	Rejoard	8.49	83.48	83.94
				83.00	83.94
40+00			7.14	85.29	
+50			6.03	86.40	
41+00			4.98	87.45	
			3.97	88.46	
42+00			2.96	89.47	
+47' 8"	L. Rt.		2.00	90.43	
42+85			1.70	90.72	
" "	3.7 Rt to C.B. Top		1.36	91.07	
43+00			1.32	91.11	
" "	4.2 Rt to E.C.B. Gutter		1.59	90.89	
" "	" Top C.B.		1.02	91.41	
T.P.	11.00	101.92	14.9	90.92	
		102.00		91.00	

102.00
101.92

25.4
37
62.4

38

19

43+50					
44+00			8.00	93.94	
+28'	int 6" Sewer		7.05	94.89	
" "	24.2 Lt. Rim. ex M.H.		7.54	94.80	
" "	" " Flow		11.48	90.96	
" "	38' Rt. Rim		6.49	95.95	
" "	" " Flow line		10.57	91.37	
44+48	int ex. Sewer		6.50	95.49	
" "	" " 17' Lt. Rim ex M.H.		6.59	95.35	
" "	" " 17' " Flow line		10.64	91.30	
" "	" " 24' Rt. Rim ex M.H.		6.49	95.95	
" "	" " Flow line		10.57	91.37	//
check B.M. #11	B.P. Rejoard & Eagle		7.20	94.79 = 94.76	
	So. of Upper Center			94.80	
				94.80	a check error 0.2
9.94	104.70			94.86	
45+00			7.72	96.98	
+50					
45+5			5.23	99.47	
46+00			4.98	99.72	
+50			3.54	101.16	
+57' 5"			2.23	102.47	
47+00			2.14	102.56	
+50			0.60	104.10	
T.P. 963		27	0.06	104.72	64
		114.25			
48+00			8.77	105.50	
+50			7.39	106.88	
49+00			5.96	108.31	

49+50			4.57	109.70
50+00			3.29	110.98
+50			1.86	112.91
+67.5-	117	check with Water Dept Water Main	1.14	-113.13
+ 95.3	117	6" Sewer	0.40	113.87
"	"	11" Lt Rim ^{ex MH}	0.47	113.80
"	"	Flow	2.24	105.03
			113.17 ✓	
check #13	8.46	8.46	0.55	84 ✓
51+01	27	L Lt	8.14	119.16
+41			8.51	113.79
52+00			5.07	117.23
52+93	2	PL for M-H	1.65	120.65
"	"	15 Rt on Rim	1.62	120.68
"	"	" " on Flow	7.27	115.03
52+50	43	L Lt	1.24	121.06
T.P.	11.47	133.31	0.42	121.84
53+00			10.27	123.08
+50			8.26	125.09
54+01	04	L Lt	6.02	127.33
+50			4.28	129.07
55+00			2.30	131.05
+50			0.23	133.12
T.P.	70.31	143.27	0.09	133.27
56+00			8.64	139.92

56+35	09	L Lt	7.29	136.29
+43	117	24" collect		133
"	"	28" Lt Flow Line collect	13.46	130.10
"	"	45" Rt " "	9.92	133.69
check #14	14	check color app	6.24	137.32
+56			6.88	137.46 ✓
57+00			6.11	136.68
			5.31	137.95
58+00			4.52	138.25
+71	27	L Lt	3.35	139.09
+83	0	117 1/2" Gas Main	3.35	140.21
59+00			3.13	140.21
+50			2.44	140.93
J.P.	7.87	150.28	1.23	141.12
60+00			8.18	142.33 ✓
+50			7.38	142.77
61+00			6.59	142.82
+50			5.78	143.61
62+00			4.98	144.92
+50			3.18	145.22
63+00			3.38	147.02
+11	3	117 1/2" 18" collect	3.21	146.82
"	"	3.2 Lt Flow Line Pipe	6.32	146.99
"	"	63" Rt Flow Line Pipe	4.14	143.88
63+20	98	L Lt	2.75	146.06
				147.95

	T 70 150.25			
	87		45	
T.P.	3.4	156.94	2.75	147.53
+50			8.44	148.93
64+00			6.90	149.97
+50			5.10	151.77
65+00			3.58	153.29
+09 ³	Note: The limit of this service is 400 feet int ex 6" sewer		3.18	153.69
" "	22 8" H sees K&C 6	Rim	4.22	152.65
" "	" " Flow		3.88	146.99 ✓
Check BM #15	64+80 - 2 CB opp ch edge		3.30	153.57 used 153.64 as a turn
				153.66
				2 errors
		35	57	corrected
	12.78	166.44	153.66	100 above BM
+50			9.93	157.02
65+66 ⁶⁶	1" Lt		8.97	157.38
66+00			7.24	159.11
+04 ⁵³	Gutter		6.95	159.40
+04 ⁵³	Topcb		6.33	160.02
+18 ⁵³	1st E Edge Walk		5.48	160.87
+36 ²⁰	" W " "		4.24	162.06
+42 ²⁴	int W Line Curlew		3.4	163.0
T.P.	7.02	171.41 ³⁰	2.05	164.39 ³⁰
+60			6.2	165.1
" "	6' Lt Top Bank		6.8	164.5
+80			5.7	165.6
" "	13' Lt		13.8	157.5
" "	18 "		18.3	153.0

	T 32 171.41			
67+00			7.7	163.6
" "	5' Rt		4.3	167.0
" "	13 Lt		15.1	156.2
" "	14 "		17.3	159.0
T.P.	9.26	173.65 ⁵⁶	7.02	164.7 ³⁰
67+33			7.6	166.0
" "	5' Rt Top fill		4.3	149.3
" "	11 Lt Toe "		18.2	155.9
" "	15 " Bottom Wash		2.00	153.6
67+43			11.9	161.7
" "	8 Lt Toe fill		18.0	155.6
" "	12" Bottom Wash		2.05	153.1
67+43	15' Rt Top fill		3.3	170.3
T.P.	3.82	165.76 ⁶⁷	11.71	161.84 ⁸⁵
67+62 ⁵³	int ex Trunk Sewer Sec 5422		6.39	159.28
" "	68" Rt Rim		6.24	159.43
" "	Flow Line		10.71	159.96
" "	6' Rt		2.2	163.5
" "	2' Lt Toe fill		7.8	157.9
" "	7" Top Bank		9.6	156.1
" "	8" in ditch		11.2	159.5
+70	Toe fill on d		7.3	158.9
" "	6' Lt		9.2	156.5
" "	7 " Bottom Ditch		11.7	159.0
+92			9.1	156.6
+95			11.0	159.7

68+00		10.4	155.3
" "	2' Lt	10.4	155.3
" "	4" Top Bank	7.~	158.5
" "	3 Rt	10.4	155.3
" "	4 "	8.8	156.9
68+04		11.1	154.6
" "	3' Rt	11.1	154.6
" "	4 Lt	6.9	158.8
68+12	k	8.3	157.9
" "	2' Rt	11.7	154.0
" "	6 "	11.7	154.0
" "	5 Lt	6.5	159.2
68+25	£	7.0	158.7
" "	6' Rt	8.2	157.5
+36	Begin fill in yard	6.4	159.3
+4~		3.1	162.6
+47		2.8	162.9
+48		3.9	161.8
+72 ²	Begin fish bowls ^{sec} 5x2x4	3.3	152.9
" "	Top Fish Bowl Wall 6" ^{6" con}	2.58	163.09
" "	Bottom fish bowl bottom in bowl	4.66	161.01
+80 ⁴	Top fish Bowl Wall	2.60	163.07
" "	Bottom of fish bowl ^{6"} con	4.66	161.01
+84 ²		2.8	162.9
" "	Top 3" con wall	1.40	164.3
" "	Bottom fish bowl base	3.40	162.27

68+20 ⁶	Top 3" fish Bowl wall	1.42	164.25
" "	Bottom " "	3.90	162.27
" "	Ground	1.9	163.8
+98	3' Dia Eucalypto Tree 6.5 Lt		163.6
69+00		2.1	163.6
	171.98		28
TP	7.70	172.07	164.37
69+00	2' Rt	8.7	163.3
" "	4 "	10.8	161.2
+25		7.6	164.4
" "	3' Rt	7.9	164.1
" "	4 "	9.4	162.6
" "	5 Lt	7.2	164.8
+45		6.7	165.3
" "	4' Rt	7.5	164.5
" "	8 "	9.3	162.7
" "	2' Lt	6.5	165.5
" "	4 "	5.6	166.4
+75		5.8	166.2
" "	6' Rt	6.4	165.6
" "	7' "	7.7	164.3
" "	5 Lt	5.4	166.6
70+00		6.2	165.8
" "	6' Rt	6.8	165.2
" "	5 Lt	5.4	166.6
70+15		5.8	166.2
" "	5' Rt	6.1	165.9

T 17198
172.07

+30		2.5	169.5
4 " 30" Dia Eucalyptus 7' RT		3.7	168.3
+50		2.7	169.3
+63 Fire Hy 1.5 Lt			
+69 ⁷ S.C.B. Pennsylvania		2.63	169.35
" " Gutter		3.20	168.78
+71 ⁵ int 6" rwater Main		3.10	168.88
71+00		2.32	169.66
+51 ⁵ 4" Dove	178.93	1.32	170.66
T.P.	178.93	1.44	170.54
check BM #16		8.32	170.70
71+30 ⁷⁰ Wcb Dove Gutter		7.42	171.51
" " Top cb		6.97	171.96
72+00		6.4	172.5
+22 ²⁰ L.Rt on store		5.63	172.30
+50		5.0	173.9
73+00		4.2	174.7
+50		2.7	176.2
+69 ⁰⁵ int ex Trunk Sewer		2.05	176.88
" " 120 ft Rim ex MH		5.88	173.05
" " " Flowline		12.96	165.97
T.P.	11.23	188.23	2.05
74+00		10.3	177.8
+21 ²² L.Lt on store		2.83	178.88

corrected to BM
KHW02
BP 5.0 cb
line pens.
170.73
flowline
to head of 50

T 11
188.23

23

74+31 ²⁴ Bcb Sotter		9.00	179.11
" " Gutter		9.66	178.25
+36 ⁸ int parking		9.56	178.55
+50		9.1	179.0
" " 3' RT to Porvina		9.43	178.7
+72 ²⁵ Ncb Sotter Gutter		8.4	179.7
" " Top cb		8.12	179.99
" " 9' RT Top flowline	Flowline cut out & cut out	14.98	178.13
check BM #17 Ncb Sotter		8.07	180.04 ✓
+82		8.6	179.5
" " 3-7 RT Top Headwork		10.91	177.2
" " Flow Apron		13.15	174.96
+81 Top Bank		8.8	179.3
+88 Bottom "		13.2	174.9
75+00		12.2	175.9
" " 1.5 Lt Top Bank		8.7	179.4
" " 5' RT		12.0	176.1
+10 Top bank		9.0	179.1
" " 2' RT		11.5	176.6
+50		7.4	180.7
76+00		5.6	182.5
+10		5.6	182.5
+20		7.0	184.1
+50		1.4	186.7
+50+ Lt to Rim of ex M.H		2.58	185.53
" " Flow Line		8.24	179.87

Note This M.H is 281 Lt of Trunk Sewer int Sec 5000

T 11
188.23

TP	7.51	194.85	0.89	187.31
+85			6.5	188.2
77+00			6.8	187.9
+34	40" Eucalyptus	6.54		
+42 ³⁵	L. RT	6.99		187.74
Check BM #18		5.07		189.66
+72 ¹⁹	Int. ex. Trans. Source	5.6		189.67
"	4 1/2 Lt to ex. M.H. Rim	6.54		189.78
"	Flow Line	4.54		Spike 10 Eucalyptus Stump
"	109 ⁵ RT to ex. M.H. Rim	0.79		
"	" Flow Line	6.50		188.23
78+00		4.2		190.5
+21	12" Pine 2.0 Lt			
+25		4.0		190.7
+27	18" pine 2' Lt			
+29	14" " 3' RT			
+30	Bottom Wash	6.2		188.5
+34		6.8		187.9
+36	12" pine 3' Lt "dead"			
+37		4.5		190.2
+42	20" pine 2' RT			
+45		3.0		191.7
+50	22" Cypress 6' RT			
+60		2.3		192.4
+75		1.0		193.7

T 13
194.25

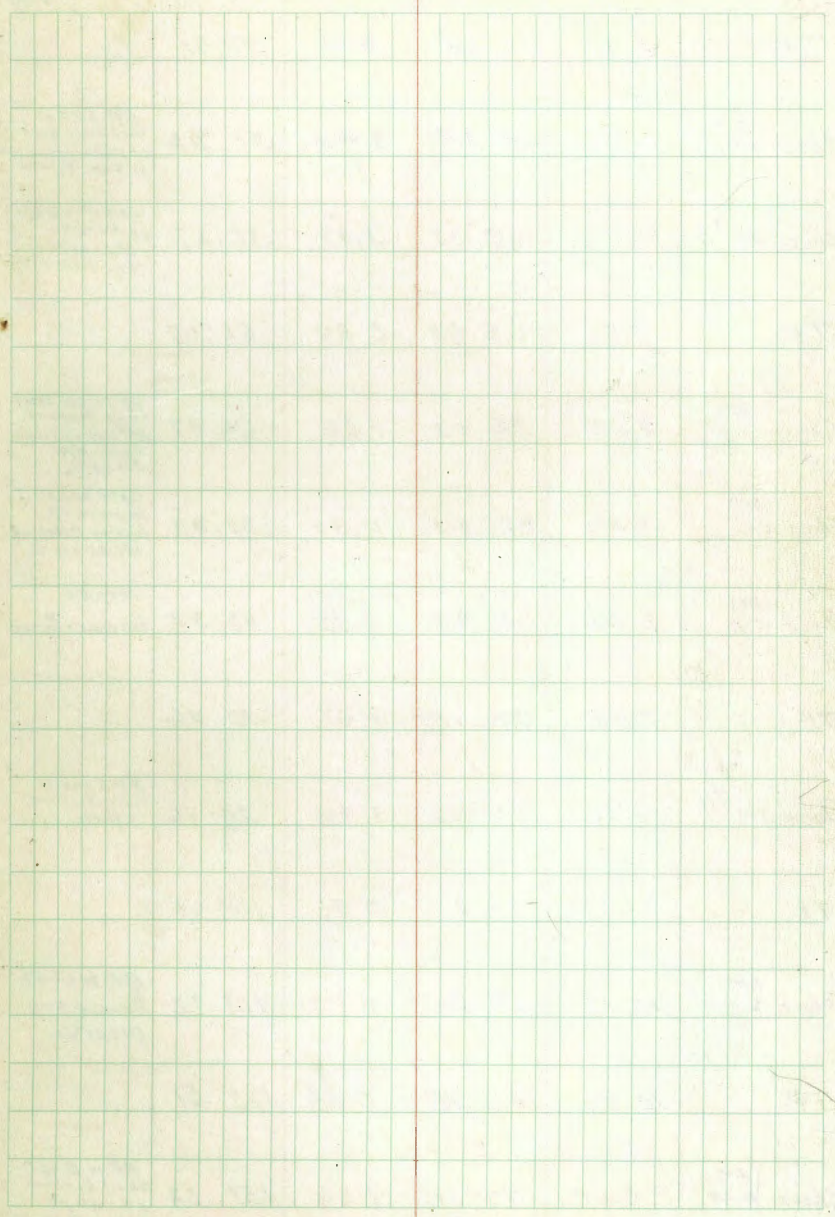
T.P. 85		202.77	0.79	193.94
79+00			7.4	194.06
" " 5' RT			7.9	195.2
" " 5' Lt			6.9	194.7
+25			5.6	195.7
+40			4.7	197.0
+60			4.7	197.9
+67			5.4	197.7
80+00			4.6	198.0
+15 ²⁷	end job		3.9	198.7
+ " "	Rim		7.12	198.28
Check BM ^{#18} across M.H. Rim			4.12	198.28
Flow Line M.H.			3.75	192.85

24

Check levels on BM's Reynard Way

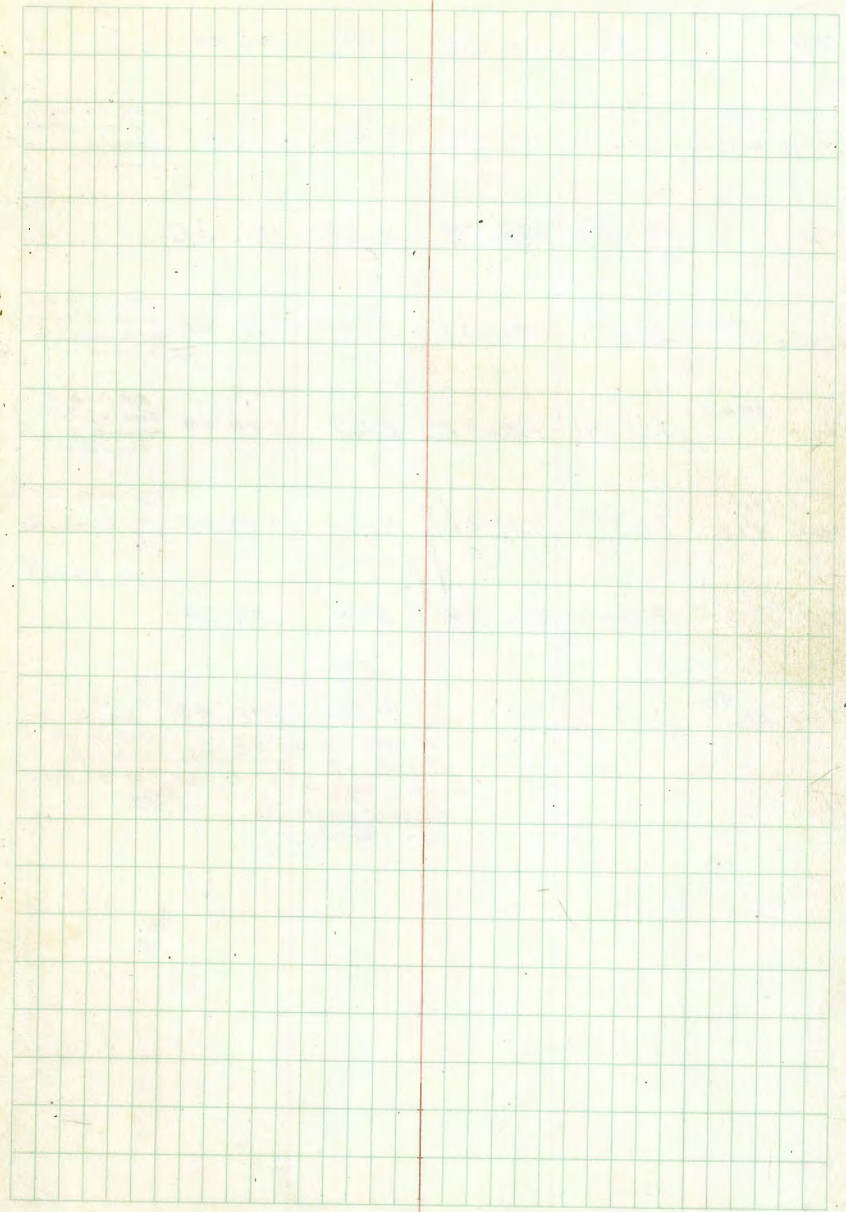
	Sewer.	✓	✓		
BM #1	2.50	14.67	12.17	12.17	Top 5 inch Bell in pipe. 72 ft 3900' Moore.
BM #2	11.39	19.41	6.65	8.02	
T.P.	12.93	31.45	0.89	18.52	
TP	6.66	36.75	1.36	30.09	
check BM #3	12.59	45.43	3.91	32.84	S.E. Q.P. Laurel/McIntee
TP	12.62	57.47	0.58	44.85	
BM check #24	2.31	56.80	2 2.98	54.49	S.E. Q.P. Indiana/
BM check #25	12.32	63.38	5.74	51.06	NW 7 th TK. Columbus/Laurel
T.P.	11.67	73.75	1.30	62.08	
T.P.	9.48	77.51	0.72	73.03	
BM check #26	0.36	77.30	0.57	76.94	S.E. 7 th TK. Laurel/In. State
T.P.	0.31	65.92	11.69	65.61	✓

108



T
65.92

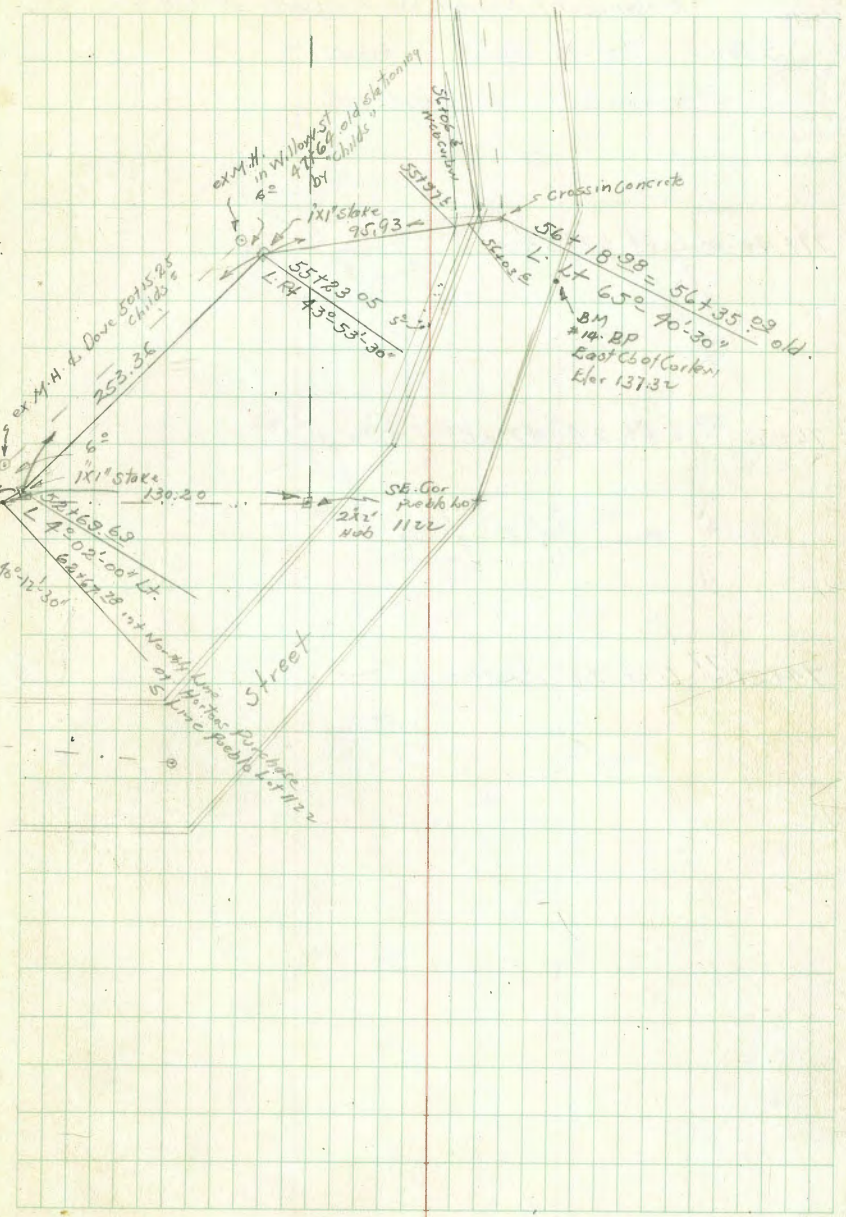
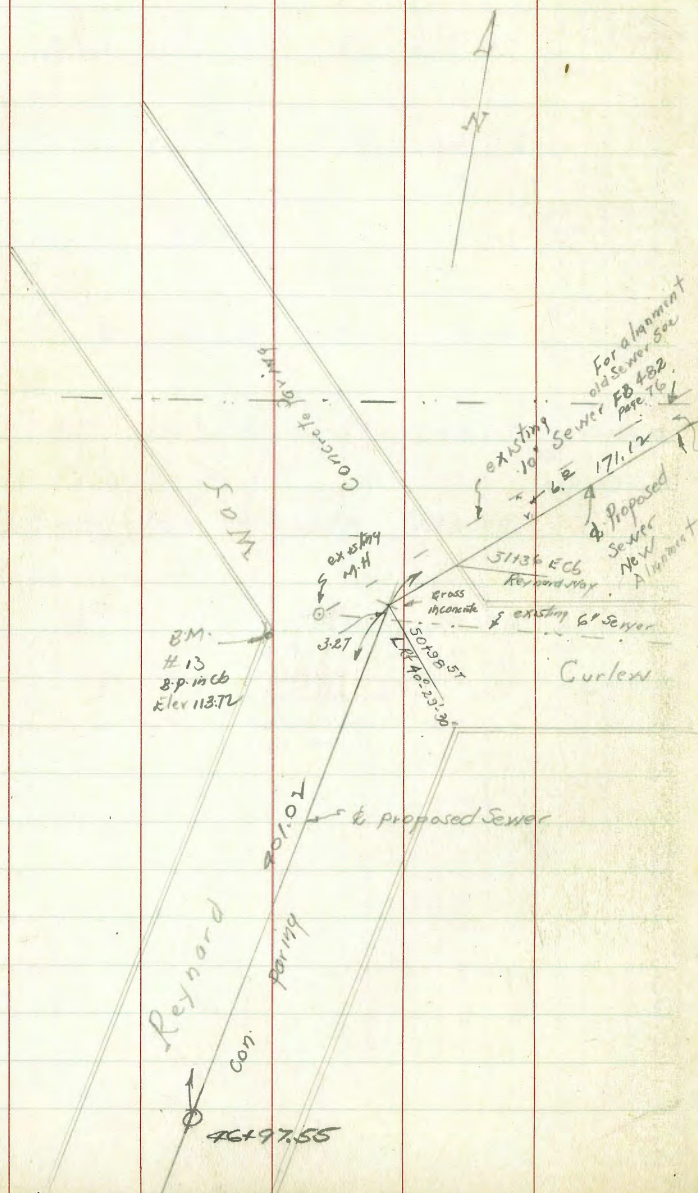
T.P.	2.51	60.32	8.11	57.81	
Check BM #7	6.32	58.24	8.40	51.92	B.P.S. End Cornerlet 65th N of Aurora Drive W side Reynard
Check BM #8	7.10	63.37	1.97	56.27	CPTX in East cb Reynard 1st Angle Pt N of Aurora Drive
T.P.	7.56	68.63	2.30	61.07	
Check BM #9	9.35	76.32	1.66	66.97	CPTX in East cb of Reynard 2nd LN of Aurora Drive opp 31+23.23
Check BM #10	9.36	85.29	0.39	75.93	CPTX W. cb Reynard. 1st L. In. of Redwood opp 35+19.22
Check BM #11	8.49	92.43	1.35	83.94	NW 8 P Redwood Reynard
T.P.	7.22	98.18	1.47	90.96	
Check BM #12	10.39	105.15	3.42	94.76	B.P.S. Eastly Corner Reynard & Eagle
T.P.	9.61	114.25	0.51	104.64	
Check BM #13	12.13	125.85	0.53	113.72	B.P.W. cb of Reynard opp 51+01.22
T.P.	12.87	138.38	0.34	125.51	
Check BM #14	8.28	145.60	1.06	137.32	B.P. in East cb of Curlew 3rd Angle Pt. NE of Reynard "Curlew opp 56+35.09



Bliss
8299
7/3/92

Line Change Reynard Way Sewer

Reynard + Curlew
See page 32 for profile levels



BM #17	7.98	188.02	180.04	BP Ncbine Sutter and Dove
74+21 77 L on stake		9.15	78.87	
+32 ² scb Sutter		8.85	79.17	
+50		8.5	79.5	
" " 7° Rt edge Paring		9.32	78.70	
+75 N. Cb Lime Sutter		8.06	79.96	
75		6.9	81.1	
" 11' Rt Top Bank		8.9	79.1	
+20		5.9	82.1	
" 5' Lt		5.1	82.9	
" 5 Rt		6.6	81.9	
+50		6.4	81.6	
76		5.1	82.9	
+40		4.2	83.8	
+52 ²⁹ L on stake		3.30	89.72	
TP on L	7.21	191.93	3.30	184.72
+60		6.6	85.3	
+75		6.3	85.6	
77 " 3' Rt Top Bank		6.9	85.0	
" 4 " Bottom Ditch		9.2	82.7	
+30 Top Bank on L		6.0	85.9	
+92		7.6	89.3	
77 Bottom + 4.3' ditch		6.9	85.0	
" 24' Eucalytus 9.5 ft in clear				
+10		7.6	89.3	
" 3' Lt		7.7	89.2	
" 4 "		5.8	86.1	

Notes Reduced. 8/6/42

77+10 1' Rt		5.8	186.1
+18		5.4	186.5
" " 16" Pine Tree 0.7 Rt in clear			
77+25 16" " " 2.5 Rt in clear			
+32		4.3	87.6
" 3' Lt		6.2	85.7
" 5 "		5.0	86.9
+41.36" Eucalytus 3.5 Rt in clear			
+48.39 L. Rt on stake		5.74	186.19
TP BM 8.17	197.82	2.28	189.65
77+50		10.3	87.5
+83		9.0	88.8
+89		8.0	89.8
78		7.4	90.4
+20		5.5	92.3
+50		4.8	93.0
+60		4.5	93.3
" " 4' Lt		5.1	92.7
" " 4' Rt		3.8	94.0
+70		5.1	92.7
" 4 5' Lt in clear 4' cypress			
" " " "		6.1	91.7
779 16" Pine on L			
780		4.1	93.7
" 5' Lt Bottom Ditch		7.7	90.1
+92 Bottom on L		7.7	190.1

Note this Tree is down 6.2. still here

19782

+92	2' Lt	7.8	190.0
"	5 "	6.2	191.6
"	3 Rt	3.6	194.2
+36 ⁶³	14 1122	202.53	251 191.31 ✓
79		12.4	90.1
"	2' Lt	12.4	90.1
"	3 Rt	9.0	93.5
+08	Bottom Ditch	12.3	90.2
+12		12.0	90.5
+14		10.1	92.4
+22	Top Bank	8.7	93.8
"	" 2' Rt	8.7	93.8
"	" 3 " Bottom Ditch	11.6	90.9
+36		8.0	99.5
"	3' Rt	8.0	99.5
"	4 " End Wash	10.2	92.3
+50		7.0	95.5
86		5.4	97.1
+36.20	Ground at M.H.	3.8	98.7
"	Rim	4.03	198.50 ✓

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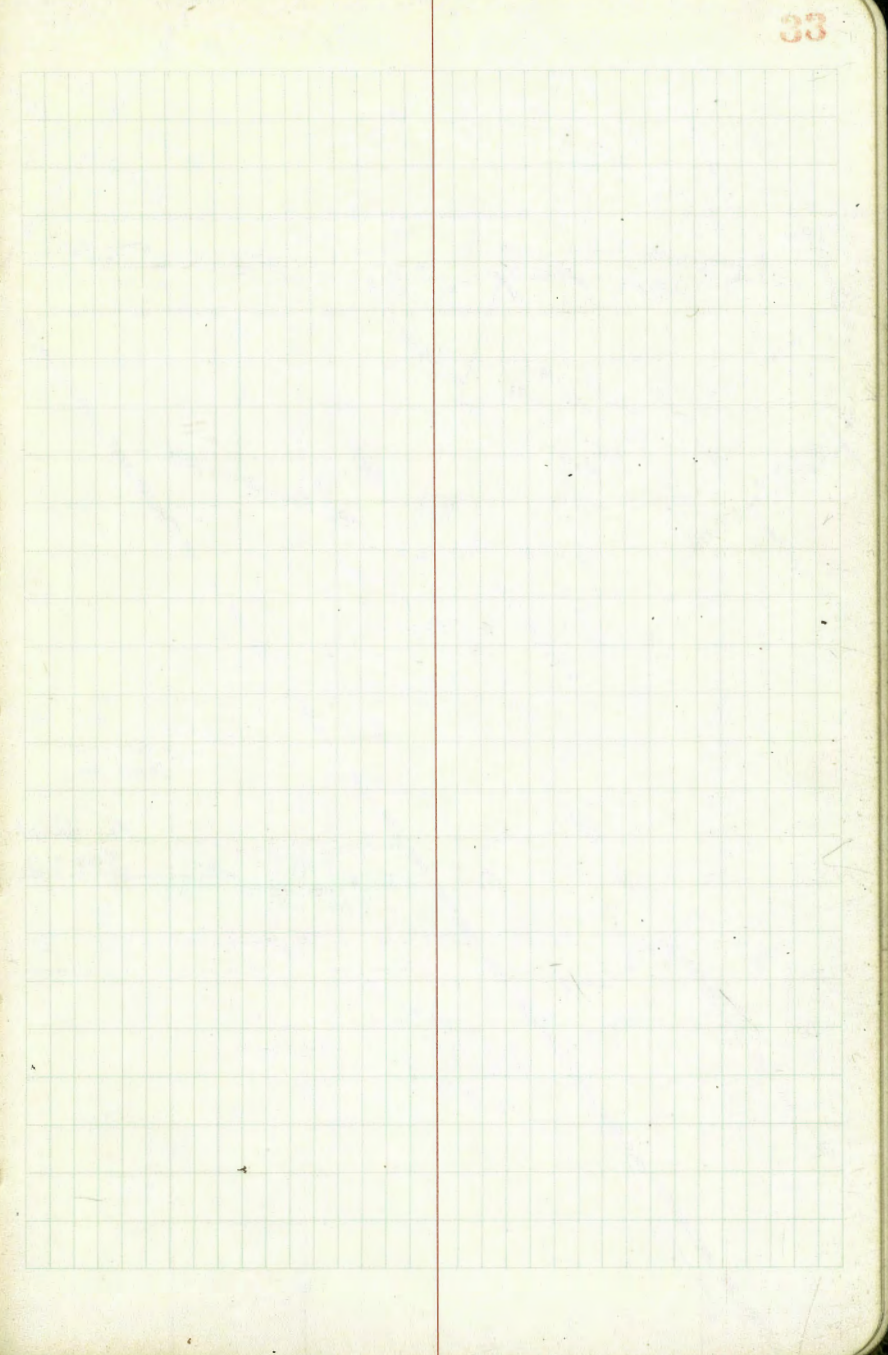
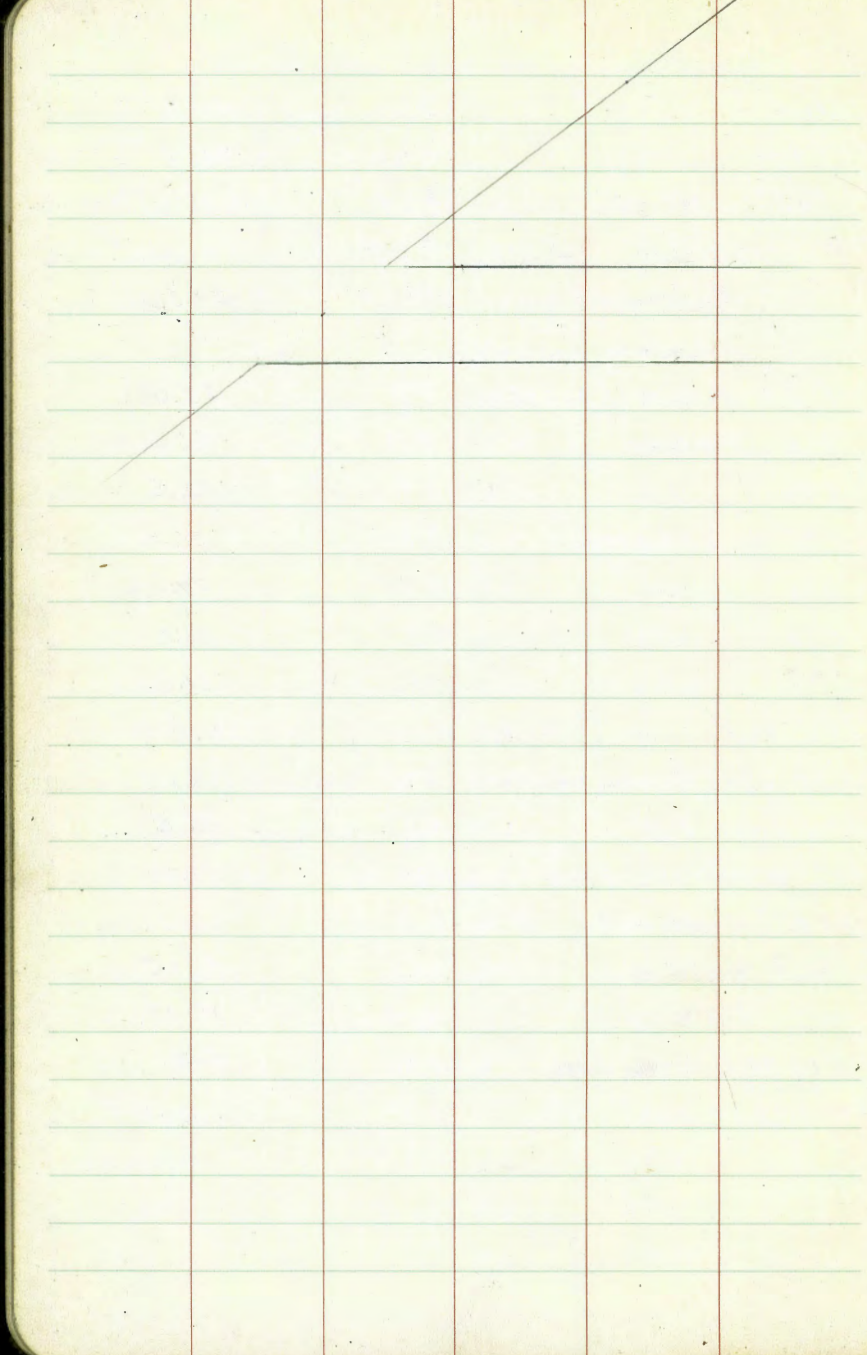
Profile Levels for Line change Reynard

BM #13	1118	124.90	113.72
50+98 ST		10.96	113.94
51+ 732		10.62	119.28
736	Gutter	10.78	119.12
"	Topcb	10.23	114.67
750		9.3	115.6
797		6.4	118.5
52		5.7	119.2
720		4.8	120.1
730		2.5	122.9
"	3' Pf	5.0	119.9
742		2.2	122.7
747		4.8	120.1
52+69.69	Lt on slope	4.45	120.95
"	" Rim of MH 6' Lt	4.19	120.71
TP	7.95	128.40	445 122.45 ✓
+92		8.4	120.0
53+00		7.6	120.8
+15		5.7	122.7
+35		5.1	123.3
+45		5.4	123.0
54+00		5.1	123.3
+50		4.3	124.1
+85		4.2	124.2

12890

32

55+00		3.6	129.8
+22		3.2	125.2
+23.95	L. Rt. on Hub ✓	4.24	124.16
TP	10.78 134.94	4.24	124.16 ✓
"	" Rim ex M.H. 6' Lt	10.64	124.30
"	" Lid sealed on. unavailable		
+28	Bottom + c/s. of Ditch	11.9	23.0
+31	Top Bank	9.3	25.6
+46		8.4	28.5
+47	Bottom Side road	9.9	25.0
+50		7.9	27.0
+75		4.9	30.0
+85		3.6	31.3
TP	7.29 140.11	2.12	132.82 ✓
+94	6.7 Lt flow line 24' culvert	10.01	130.10
+94	Ground d.	4.6	35.5
+97	W Edge walk 5' walk	4.33	35.78
56+03	E Edge walk	9.05	136.06
+06	W c/s Gutter	3.86	36.25
"	" Gutter	4.54	35.57
+18.98	L. Lt. on cross	3.80	36.31
-35.09 old	check BM #14	2.77	137.34 ✓



Walker
Harden
8-19-42

Levels for Proposed Water Main.
As Located Page 34
from Pacific Highway & Riley St.

to Juan & Gaines thence along Gaines
to Whitman & Gaines

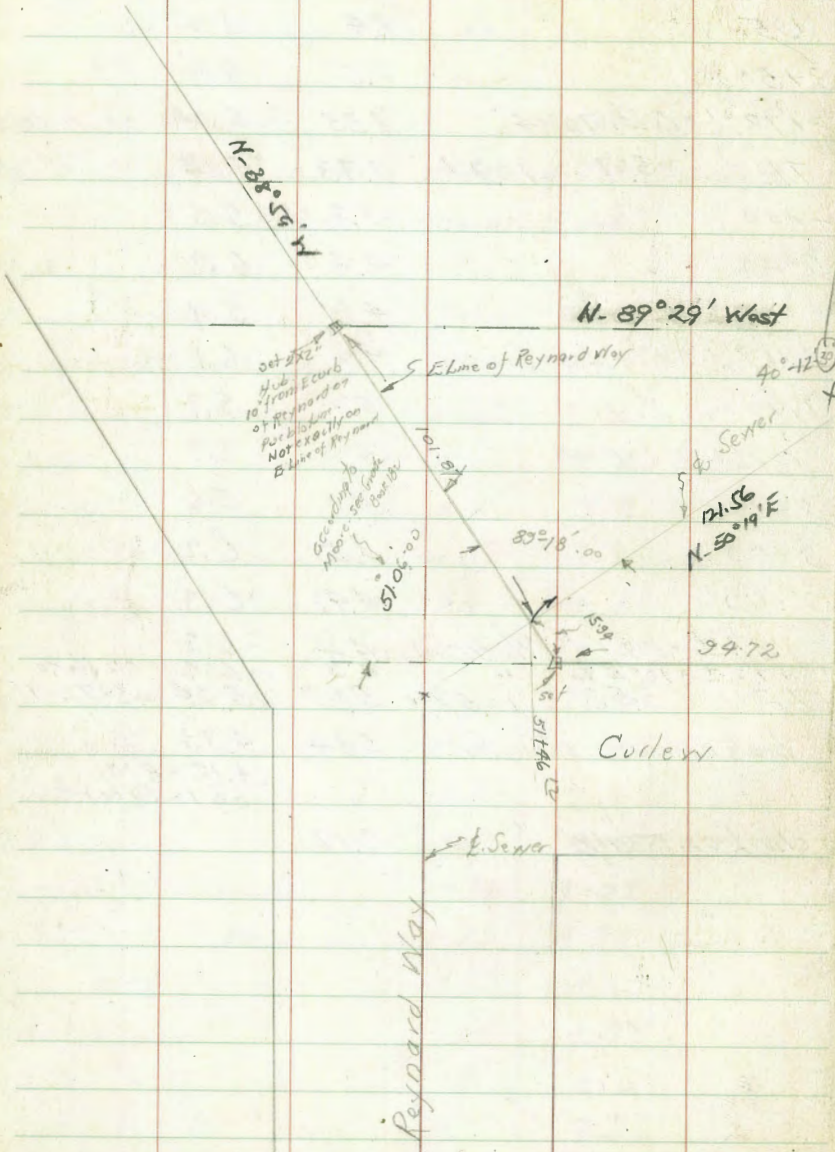
BM chk.	5.92	10.64	5.92	4.72
T.P.	7.33	12.37	5.60	5.04
E Pacific Rt. of Wagon Pav.				
E edge Pav.			5.30	7.07
- 30.10 = E Line Pacific			5.14	7.23
0+00 on stake			5.02	7.35
+50			5.0	7.4
1+00			5.1	7.3
+56 = Top Culvert Dyke			4.6	7.8
+64 = Top " "			1.8	10.6
+67.9 = E " "			1.9	10.5
42.1' Lt. on Top MH			1.09	11.28
1+76 = Top Culvert Dyke			2.0	10.4
+82 = Top " "			4.9	7.5
2+00			4.4	8.0
+37.3 = WLY Rail Siding			3.34	9.03
+57.1 = " " Main line			2.59	9.78
+60.10 = E " "			3.2	9.2
+63.2 = ELY " " "			2.60	9.77
+70			3.4	9.0
+78			4.7	7.7

SE Top Hght.
6.88 Juan & Taylor
SW B.P.
Juan & Taylor

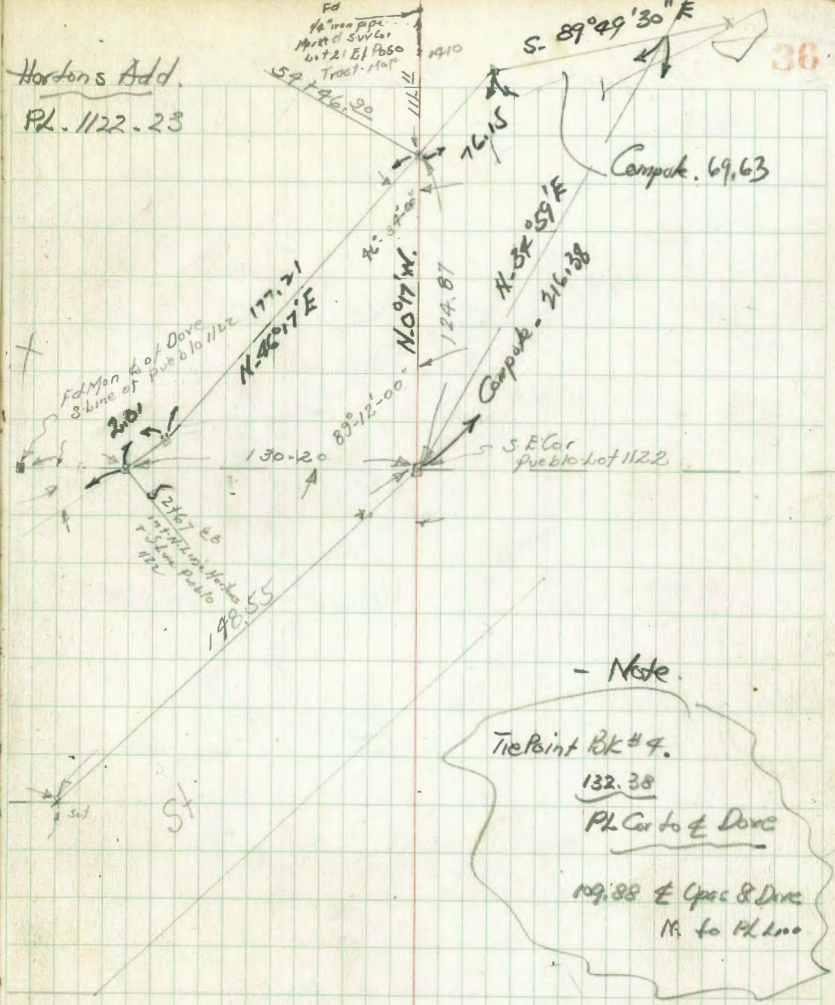
2+86			4.8	7.4
+95			8.4	4.0
3+50			7.5	4.9
3+72.9 = Δ Lt. 70°14'			7.33	5.04 on stake
T.P.	5.67	10.71	7.33	5.04 " "
4+00			5.2	5.5
5+00			4.4	6.3
6+00			4.8	5.9
6+87 ± = WLY Line Sunset			4.6	6.1
7+12 = E " "			5.0	5.7
+37 ± = ELY " "			5.0	5.7
8+00			5.1	5.6
9+00			4.5	6.2
10+00			4.4	6.3
+37 ± = WLY " Whitman			4.4	6.3
10+72 ± = 10° E E			2.3	6.4 on stake
T.P.	5.53	10.57	5.67	5.04 3+72.9
Check B.P. Juan & Taylor			5.84	4.73
				$\frac{4.72 - 8M}{0.01} = \text{Error}$
check SE Top Hght			5.17	

Bliss
899
W Moore
1/1/19

Ties for Sewer Realignment - Along N. Line
S. Line.



Hortons Add.
Pl. 1122-23



- Note
Tie Point BK # 4.
132.38
Pl. Cor to E Dove
199.88 E Opac & Dove
18 to Pl. line

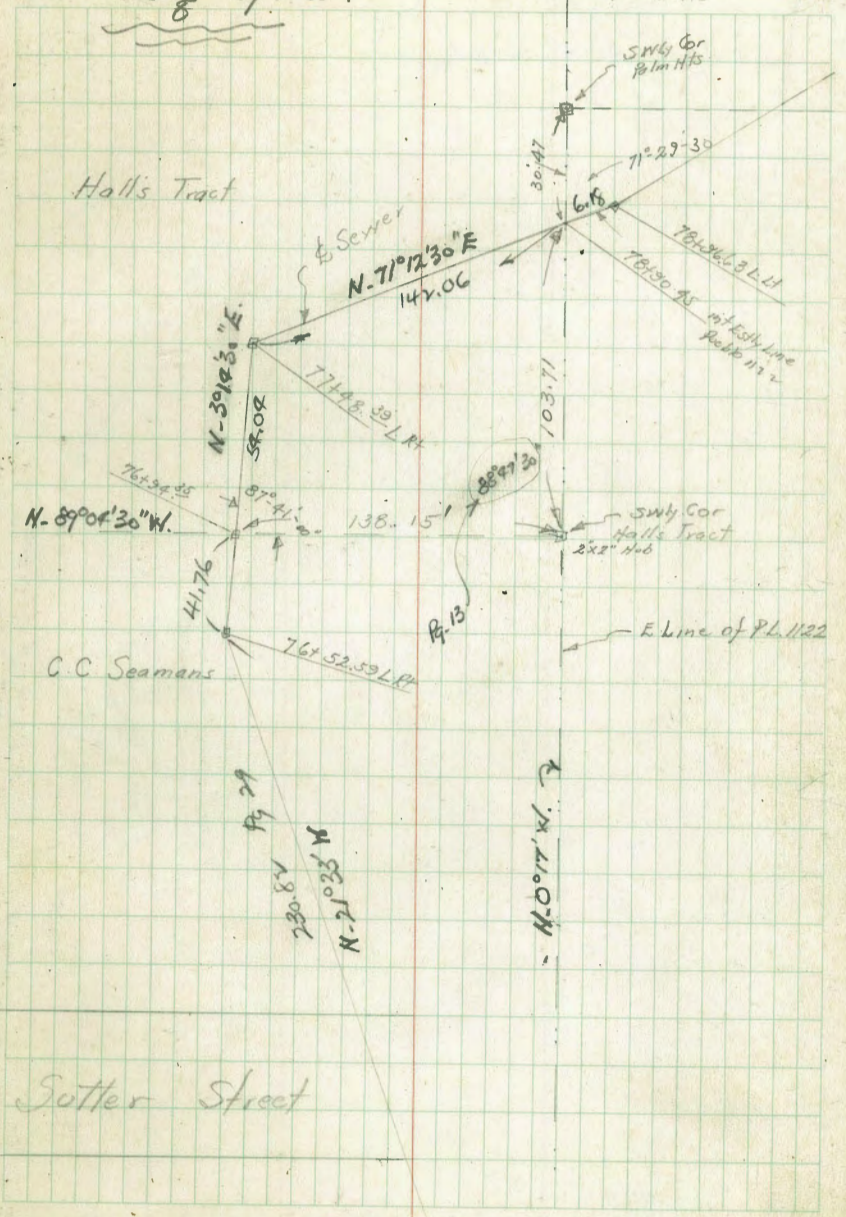
Original Line - Sec 18 - 7
Revised Line " " 28

Bliss
Seaman's
Begg
Street

Ties for Sewer Realignment through Halls Tract.

See Pg 29 Also

Palm Hts 37



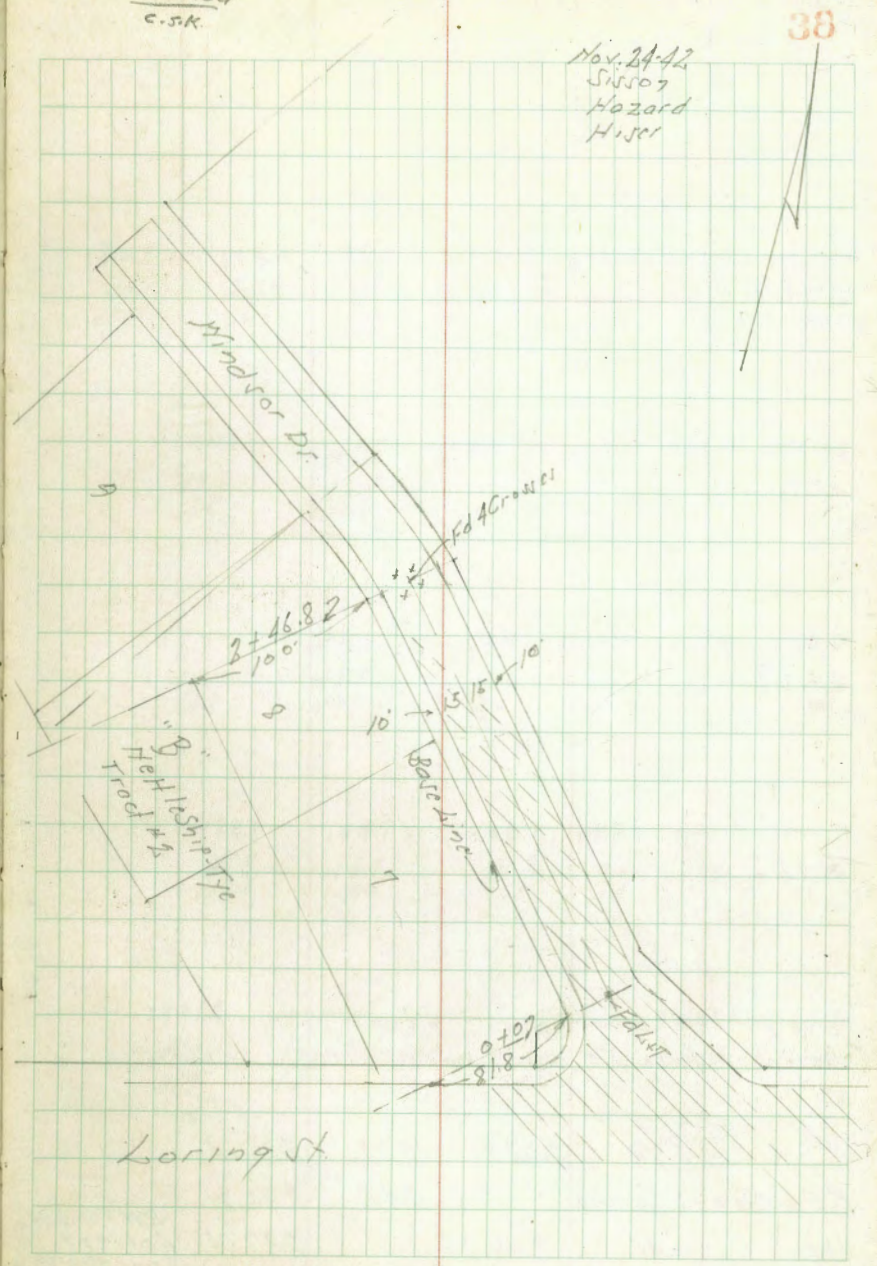
Proposed Car Bldg
Loring St + Windsor Drive

Levels Next Page

Indexed
c.s.k.

38

Nov. 24-42
Sisson
Hazard
Hiser



Loring St

Levels For Prop. Can Bin
Loring St & Windsor Dr.

1+50

1+0

0+50

0+25

0+0 = Prop EC on Windsor Dr.

TP 6.78 232.91 12.12 226.13

EE & CB on Loring 2.44 235.81

B.M. 0.41 238.25 237.84

5 ft Top the
Loring &
Ingraham
from foot

L-11

B - Pt. E
39

192.8	198.0	203.1	211.5	218.4	227.1	227.08
40.1	34.9	29.8	21.4	15	5.8	5.83
125	100	80	54	39		10-cb

192.6	195.5	206.2	218.7	226.7	226.58
42.3	37.4	26.7	18	6.2	6.28
125	100	80	49		10-cb

187.2	194.1	199.9	225.2	225.9	226.0
45.7	38.8	32.0	7.7	7.0	6.90
125	100	80	41		10-cb

186.1	194.7	206.1	223.6	225.0	225.11
46.8	38.2	26.8	9.2	7.9	7.80
125	100	61	34		10-cb

196.66	200.4	206.9	218.3	222.3	221.7	221.5
36.25	32.5	26.0	14.6	10.6	11.2	11.40
81.8	64	56	21	1		10-cb

11.6
Loring

232.91

27468 = BC Lt

270

23291

Lt.

~~2~~

R20

199.6	204.2	210.7	214.9	219.3	228.2	228.2
32.3	28.7	22.2	18.0	3.6	4.7	4.7
125	100	70	46	23		10-cl

196.9	201.5	207.1	214.2	228.3	227.8	227.62
36.0	31.4	25.8	18.7	4.1	5.1	5.23
125	100	75	52	28		10-cl

23291

Levels on paving and curbs
at Sewer Pump House Wetherby
and Kurtz St.

3+00, "Stair" Iron 8617 E. Pav. El. -0.95

2+96.6 angle in curb

Note! 4" Barrier on Curb face

2+57.1 = W.L. of Pump House + angle in curb
2+54.6 = 0.67 R of Island curb
2+53.4 2 3' door

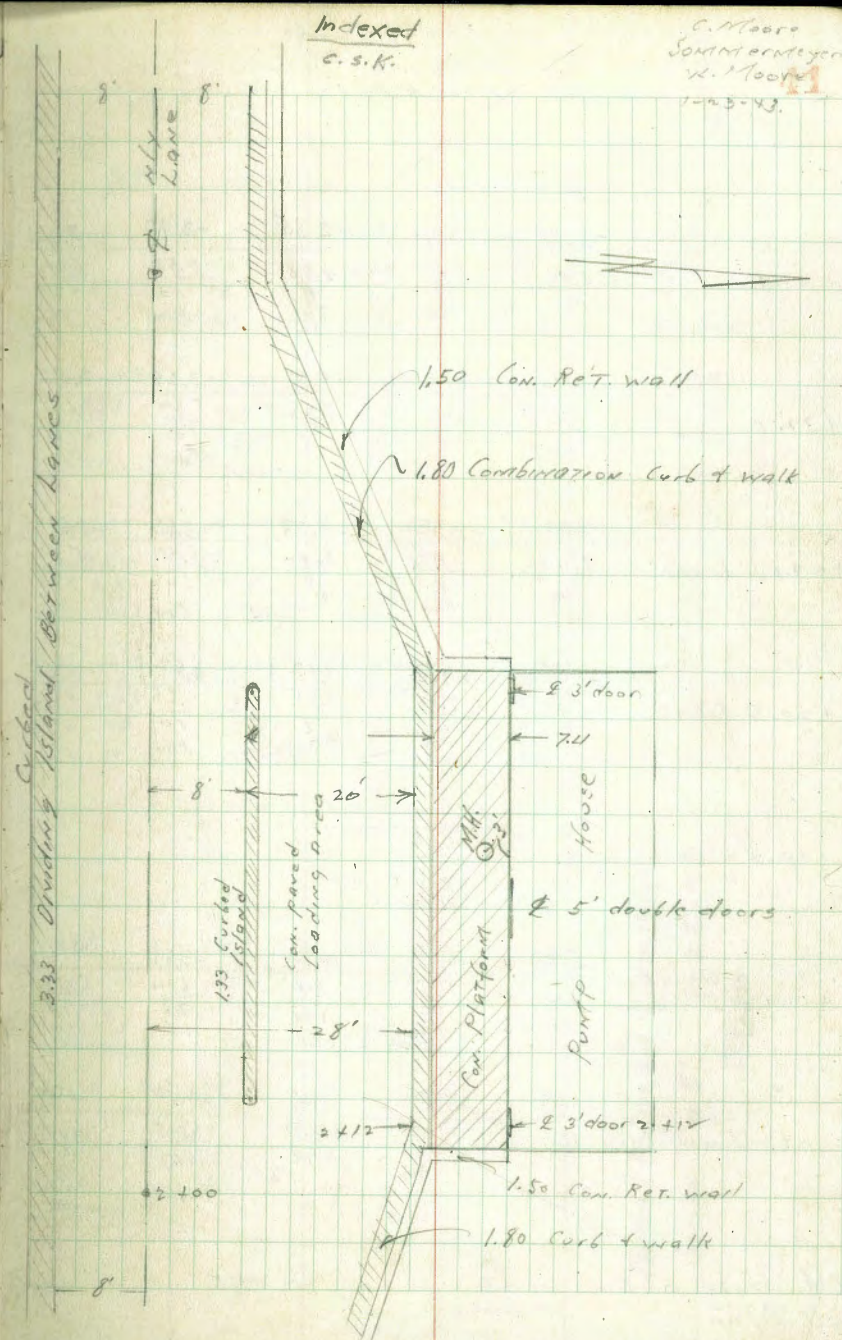
2+37.7 M.H. on Concrete Platform

2+32.7 2 5' door

2+14.4 = 0.67 R of Island Curb

2+12. angle in curb
2+08.4 E.L. Pump house

2+00



Levels on Pav. & Curbs
at Pump House
Witheyby & Kutz

£ = baseline

RT.

	-3.85	-3.91	-2.85	-3.40	-3.21
2 + 37.7	5.98	6.00	4.98	5.53	5.30
	Pav	Pav	Top cb	Pav	Pav

	-2.18	-2.16	-1.67	+0.28	-1.68
	4.31	4.29	3.80	1.85	3.81
	cb	Sdn	Pav	PI & MH	Platform

	-4.11	-4.13	-3.10	-3.69	-2.52
2 + 32.7	6.00	6.00	5.23	5.80	5.65
	Pav	Pav	Pav	Pav	Pav

	-2.45	-2.44	-1.67	-1.67	+0.79
	4.58	4.57	3.80	3.80	1.30
	cb	Sdn	PIAT	PI	Sill & S' door

	-4.31	-4.33	-3.29	-3.38	-3.69
2 + 29.1 Break	6.00	6.46	5.40	6.01	5.80
	Pav	Pav	2 Island	Pav	Pav

	-2.67	-2.64	-1.64	-1.67	
	4.80	4.77	3.77	3.80	
	cb	Sdn	PIAT	PI	

	-4.80	-4.88	-3.82	-4.52	-4.07
2 + 20.5 Break	6.93	7.01	5.95	6.65	6.40
	Pav	Pav	2 Island	Pav	Pav

	-3.26	3.24	-1.64	-1.69	
	5.39	5.37	3.77	3.80	
	cb	Sdn	TOP PIAT.	TOP PIAT.	

	-4.10
	6.29
	Top R = 0.67
	Island cb.

	5.30	5.36	4.93	3.84	5.36
2 + 12 = 3' door	7.43	7.49	7.04	6.00	5.99
	Pav	Pav	Pav	cb	Sdn

	-1.65	-1.67	+0.81	
	3.78	3.80	1.30	
	2.98	3.70	3.70	
	Loading Platform		Sill & door	

	-5.99	-5.82	-5.10	-4.12	-4.06
2 + 08.4 Pump house	7.00	7.65	7.33	6.25	6.19
	Pav	Pav	2c Pav	2c	Sdn angle Ret. wall

	+1.99	-4.05	-1.66	-1.45
	0.14	6.18	3.79	3.78
	2.8	2.98	2.98	2.72
	Top Ret. wall	Sdn	Top L. Platform	

BM. State 3.08
Bolt & Pav. 7.13
AT STA. 3 + 00 - 0.95

Notes - Reduced & Platted
Scale 1" = 5' 1-25-43
C.B.H.

2.14 Lane - Bookline

	-1.08	-1.18	-0.11	-0.11	+2.00
7 + 9 C.C.	321 Fav.	331 8 Fav.	224 83 Top cb	224 10 Sdw	073 10

	-2.84	-2.92	-2.73	-2.40	
W.L. 7 + 57.1 Pulp house	497 Fav.	505 8.5 Fav.	486 10 Fav.	453 27.6 Fav.	

	-2.77	-3.02	-2.00	-2.76	
2 + 54.6 End Island	510 Fav.	515 8 Fav.	413 9 P. Top Island	489 10 Fav.	

	-2.50				
4 + 53.4	463 27.6 Fav.				

	-3.25	-3.28	-2.26	-2.92	-2.65
2 + 49	538 Fav.	541 8 Fav.	439 9 2 Island cb	505 10 Fav.	478 27.6 Fav.

 2.13
H.I.

RT.

Top Ret. wall

	-1.40	-1.36	-1.62	+1.98	-1.62
	3.53 cb	349 29.8 Sdw	375 29.8 Top Platform	015 29.8 Top Ret wall	375 37.4 Loading Platform

	-1.49	-1.55	-1.64	-1.66	+0.82
	364 28 Fav.	368 29.8 Sdw.	377 29.8 Top Platform	379 37.4	1.31 37.4 Sill & 3' door

	-1.66	-1.63	-1.67		
	379 28 cb	376 29.8 Sdw and Platform is flush here.	380 37.4 Top Plat.		

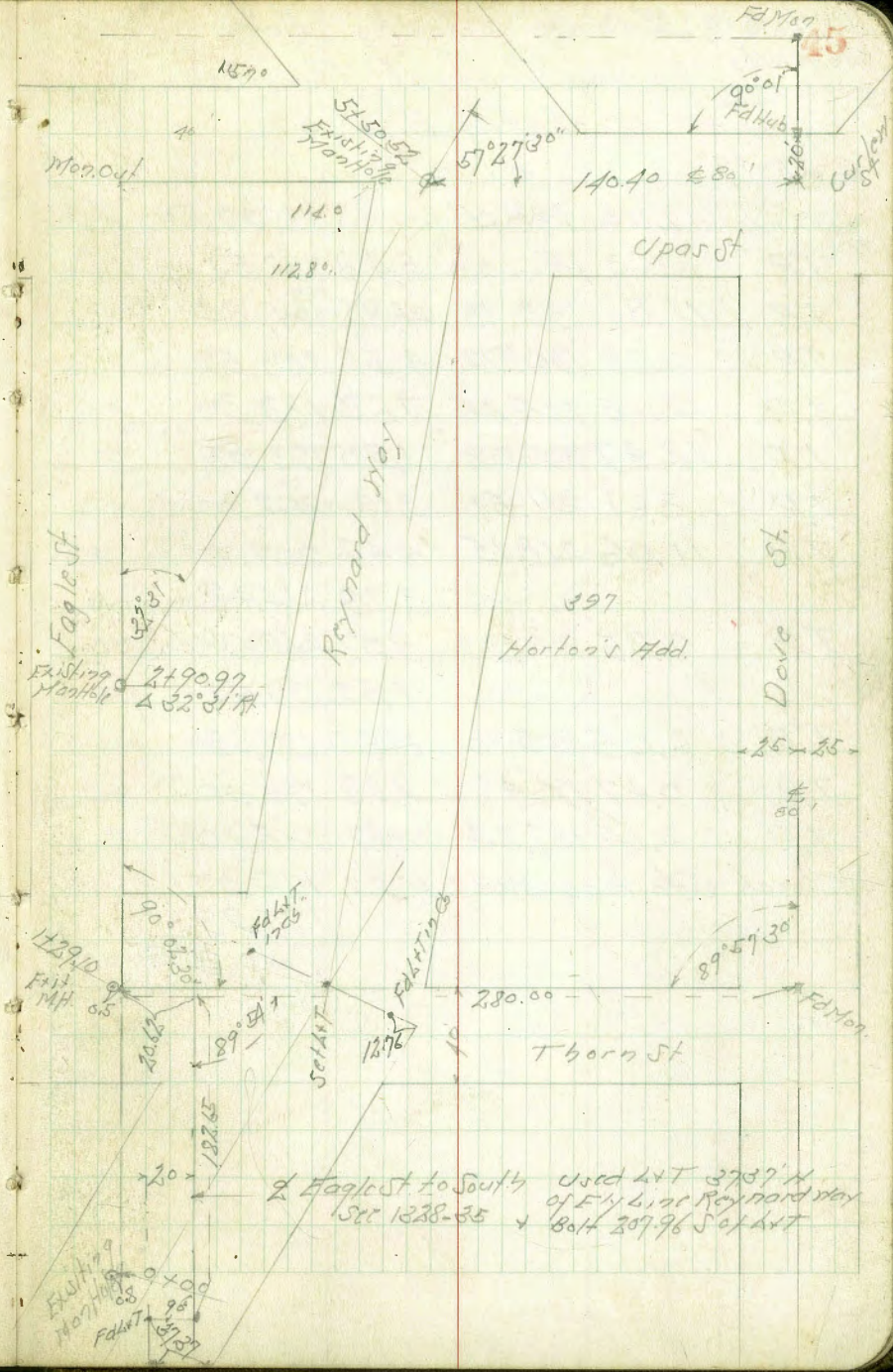
Location of Sewer Block 897
Hortons Addition

Indexed
C.S.K.

Jan 31-44
S. Cox
8/15
Osborne

Reynard Way RP #1328-29

Falcon St.



Walker
Hendricks
Becker Level
Johnson Rod

Bench Marks For
Topog. Control Points
Sketch Page 47

3-26-47

	12.06	188.05		175.99
TP	3.63	186.20	5.48	182.57
TP	11.81	193.15	4.86	181.34
TP	2.33	190.92	4.56	188.59
TP	12.15	195.45	7.62	183.30
TP	12.47	206.02	1.90	193.55
TP	8.61	211.51	3.12	202.90
TP	11.06	218.15	4.42	207.09
			3.73	214.42
TP	0.85	210.93	8.07	210.08
			11.52	199.41
TP	6.05	205.38	11.60	199.33
TP	0.47	196.47	9.38	196.00
TP	2.14	187.24	11.37	185.10
Check Starting BM			11.22	176.02
				175.99

0.03 Error

NO 21016

46

B.M. c.t. rd Ply & Bolboa Stadium ^{in Conc. Walk}
Rock ^{at end}
^{in front Ticket}
^{office}

B.M. Hub Control NO 1
" " " NO 2
" " " NO 3
~~Rock " " NO 4~~
on Hub Control NO 4
on Rock
on Hub " NO 5
on Conc. Mon " NO 6
on Hub " NO 7
on Hub " NO 8
on Rock
" "

Walker
Osborne
Hogard
2-11-43

SURVEY - PROPOSED SITE
EDUCATIONAL CENTER.
West of Park Blvd
And Approx Between Hote & Fir Sts.

See Page 48 for Tie Line
from Russ Blvd To Mon #1
(Topography
Control Points No 1 to No 8 Inc.)
Bench Marks P-46

Side	Dist.	Bearing.
AB	532.98	N60°46'56"W
BC	949.63	N12°07'50"E
CA	1004.33	N50°37'30"E

Set 2"x2" Redwood Hubs Iron Tacks -
- No Copper Tacks Available on account of War

Reference Books 1481, 1493, 925

INDEX OF
C.S.N.



Cross Section of Hwy Block 60 Normal Heights

From Monroe to Madison
Between Boundary & Iowa

B.M. 4.55 389.76 ✓ 385.21 SE BP
Monroe
Boundary

0-12.06.11 Cb line Monroe

W on Pav	5.40	384.36	✓
S " "	5.42	384.33	✓
E " "	5.51	384.25	✓

0+10.11.2 Monroe

E Top Cb - Sty Wire Fence ✓	4.80	384.96	✓
E on Pav	5.10	384.66	✓
S " "	5.21	384.45	✓
W " "	5.19	384.57	✓
W Top Cb	4.83	384.93	✓

0+12

-11.4 = S.E. 1/4 Car Garage Conc Floor	3.86	385.90	✓
W	4.7	385.1	
S	4.9	384.9	
E = Wire Fence ✓	3.6	386.2	

0+46

-5	3.6	386.2	✓
E = Board Fence ✓	3.7	386.1	
S	4.4	385.4	
W	4.0	385.8	

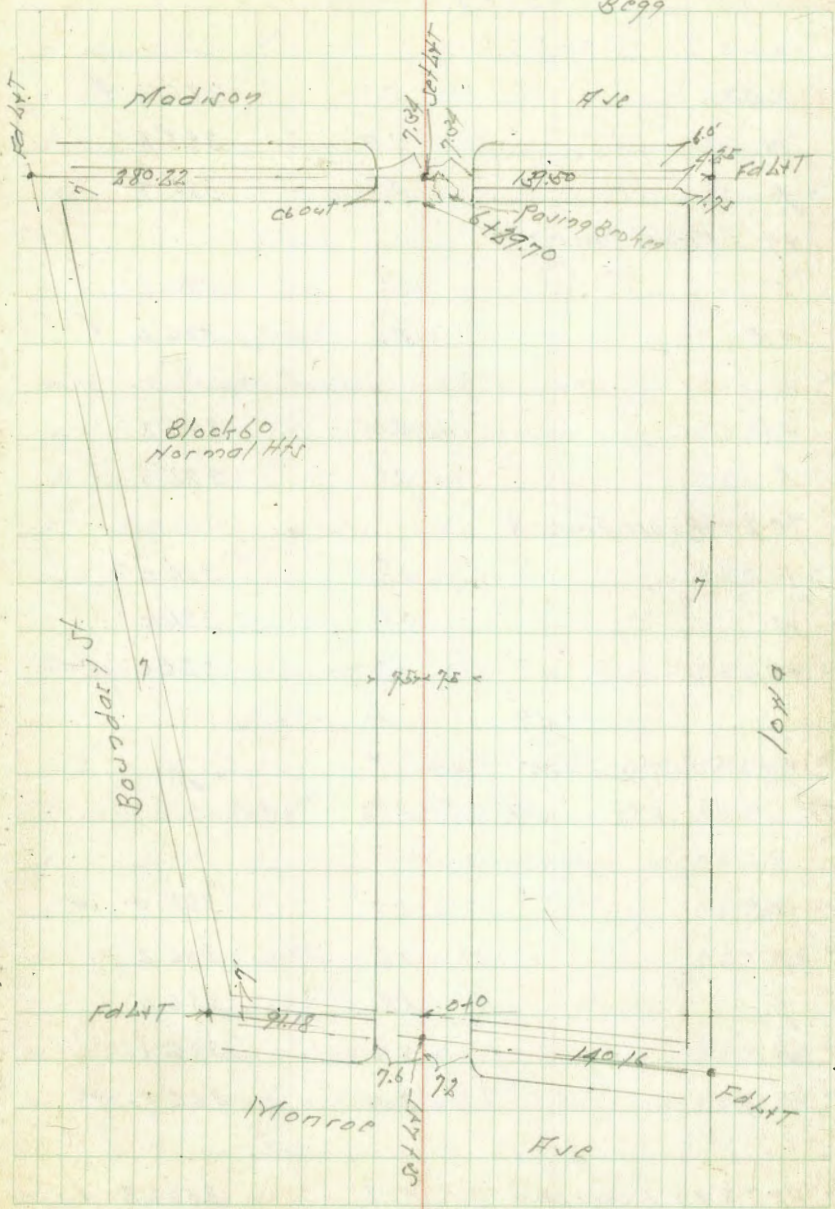
+11.4 = N.E. 1/4 Car Garage Conc Floor	3.87	385.89	✓
---	------	--------	---

W-0.3 = 1/4 Power Pole ✓

Reduced & Plotted 3-1-1943 CPM

Indexed
2.51k.

Feb. 27. 43
Jussor
81.55
8099



389.76

0+75

-5	3.0	3868	✓
H	3.9	3858	
L	4.1	3857	
+7 = Picket Fence ✓			
F	3.8	3860	
+5	3.6	3862	✓

1+0

-5	4.0	3858	
F	4.0	3858	
+0.2 = Board Fence ✓			
L	3.8	3860	
H	3.8	3860	
+5	3.8	3860	✓

1+30

H+0.5 = Hly Power Pole ✓			
TP	5.71	391.81	3.66
			386.10

1+50

-15	5.9	3859	✓
H	5.6	3862	
L	5.8	3860	
F	5.7	3861	
+15	5.5	3863	✓

2+0

-2.7 = Hly 8' Conc Walk	5.58	38623	✓
-------------------------	------	-------	---

50

391.81

F = Board Fence ✓	5.2	386.6	
L	5.4	386.4	
H	5.5	386.3	
+15	5.6	386.2	✓

2+31

H = Hly Power Pole ✓			
----------------------	--	--	--

2+39

H-10 = 8' Garage Conc Floor	5.07	386.74	✓
H	5.1	386.7	
L	5.1	386.7	
F = Board Fence ✓	5.1	386.7	
+15	5.4	386.4	✓

2+47

H-10 = 8' Garage Conc Floor	4.91	386.90	✓
-----------------------------	------	--------	---

2+76

-15	5.2	386.6	✓
F = Board Fence ✓	5.1	386.7	
L	5.0	386.8	
H	4.8	387.0	
+10 = 8' Garage Conc Floor	4.78	387.03	✓

2+89

H-5.7 = Fly Conc Apron	4.87	387.04	✓
H-9.7 = 8' Garage Conc Floor	4.57	387.24	✓

3+03

H-11 = Fly 8' Conc Walk	4.35	387.46	✓
-------------------------	------	--------	---

391.81

H	4.6	387.2
Z	4.6	387.2
F	4.7	387.1
+1.0 = Pocket Fence ✓		
+1.5	4.7	387.1 ✓
3+30		
H+1.0 = Wly Power Pole ✓		
3+31		
H = S Fly Conc Apron	4.33	387.48 ✓
H-4.0 = Sly 3 Car Garage Conc Floor	4.23	387.58 ✓
3+37		
F-1.8 = Wly 2' Conc Walk 3+50	4.32	387.49 ✓
-1.5	4.3	387.5 ✓
F	4.1	387.7
Z	4.1	387.7
H = Fly Conc Apron	4.10	387.71 ✓
+4.0 = Fly 3 Car Garage Floor	4.02	387.79 ✓
3+67		
F-1.3 = Wly Pocket Fence ✓		
3+71		
H+0.2 = H Fly Conc Apron	4.20	387.61 ✓
H-3.7 = Wly 3 Car Garage Conc Floor	4.10	387.71 ✓
3+78		
H+0.5 = Sly High Board Fence ✓		

391.81

51

	4+0		
-1.5	3.8	388.0 ✓	
H	3.9	387.9	
Z	4.1	387.7	
F	4.4	387.4	
+1.5	4.6	387.2 ✓	
4+03			
H-0.3 = Wly High Board Fence ✓			
4+09			
F = S Wly Conc Apron	4.15	387.66 ✓	
F+1.5 = Sly Do. Garage Conc Floor	3.87	387.94 ✓	
4+25			
F = Wly Conc Apron	4.02	387.79 ✓	
F-1.5 = Wly Do. Garage Conc Floor	4.01	387.80 ✓	
TP	5.06	392.95 ✓	387.89
4+26			
H-1.1 = S Fly Conc Apron	5.11	387.84 ✓	
H-5' = Sly Conc Walk	5.00	387.95 ✓	
4+30			
H+0.7 = Wly Power Pole ✓			
4+31			
H-1.0 = Fly Conc Apron	5.15	387.80 ✓	
H-5.0 = Sly 1.5' Car Garage Conc Floor	5.06	387.89 ✓	
4+50			
F-1.5	5.1	387.9 ✓	

392.95

E		5.1	387.9
L		5.1	387.9
H		5.1	387.9
+1.0	= Fly Conc Apron	5.20	387.75 ✓
+3.0	= Fly 5 Car Garage	5.00	387.95 ✓
	4+62		
E-0.5	= 5 Hly Conc Apron	5.09	387.91 ✓
E-6.5	= Fly Do. Garage Conc F1001	4.95	388.00 ✓
	4+78		
-5.0	= Hly 5 Car Garage	5.02	387.92 ✓
-1.0	= Fly Conc Apron	5.07	387.88 ✓
H		4.9	388.1
L		4.9	388.1
E		5.0	388.0
+0.5	= Hly Conc Apron	5.01	387.94 ✓
+6.5	= Hly Do. Garage Conc F1001	5.02	387.93 ✓
	4+87		
H-0.9	= 2 Hly Conc Drive to West	4.62	388.33 ✓
H-7.9	= 02 Conc Drive	4.55	388.40 ✓
	4+93		
H-0.9	= Fly Conc Apron	4.44	388.51 ✓
H-4.8	= Fly 4 Car Garage Conc F1001	4.30	388.65 ✓
	5+10		
-10		5.5	387.5 ✓
E		4.8	388.2

392.95

L		4.8	388.2
H		4.5	388.5
+0.9	= Fly Conc Apron	4.42	388.53
+4.8	= Fly 4 Car Garage	4.29	388.66
	5+28		
H-1.1	= Hly Conc Apron	4.62	388.33 ✓
H-5.0	= Hly 4 Car Gar.	4.49	388.46 ✓
	5+30		
H+2.5	= Hly Power Pole		✓
	5+40		
H-10.1	= 2 Do. Garage Dir F1001	4.8	388.2 ✓
	5+50		
-10		4.8	388.2 ✓
H		4.9	388.1
L		4.9	388.1
E		4.9	388.1
+0.8	= Lath Fence		✓
+15		5.3	387.7 ✓
	6+0		
-3.2	= Hly Houll	4.8	388.2 ✓
-1.0	= Hly 1.5 Conc Walk	4.69	388.26 ✓
E		4.8	388.2
+2		5.4	387.6
L		5.5	387.5
H		5.1	387.9
+0.4	= Fly Houll Conc Found.	5.0	388.0 ✓

52

392.95

6405

F-03 = 5' Conc Loading 345 389.50 ✓

6415

H 5.0 388.0

L 5.8 387.2

46 5.4 387.6

F 4.8 388.2

6429.70 = S L Modway

F Top Cb 6.21 386.74 ✓

F 07 Pav 6.31 386.64 ✓

L " " 6.23 386.72 ✓

H " " 6.23 386.72 ✓

6441.7 = S L Line Modway

H 07 Pav 6.51 386.44 ✓

L " " 6.58 386.37 ✓

E " " 6.62 386.33 ✓

TP 330 390.02 6.23 386.72

B M 4.79 385.23

SF8P
Mentoc
Boundary
385.21

53

B.M.

5.28

288.45

S.E. 1/4 Disc
Hutman's
Teresita

0+66 on North Cb Line = Fly Edge Paving
 0+68 on South Cb Line = Fly Edge Paving

0+61 = Cb Line From North

0+56 = Cb Line From South

0+46 = Teresita From North

292.73

287.62	287.69	287.12	287.24	287.76	286.72	286.90	287.48
6.07	6.64	6.54	6.49	6.97	6.96	6.83	6.75
48.0	48.3	40.7	20.35	3.7	1.5	1.5	1.5
Fly Edge				Fly Edge		Fly Edge	

288.26	287.20	287.45	287.39	286.81	282.33	287.93
5.47	6.03	6.28	6.34	6.92	6.40	5.80
6.0	6.0	40.7	20.35		6.0	6.0
Cb				Fly Edge		Cb

287.91	287.23	287.55	286.85	287.25	287.24	288.62	288.06	288.59
5.82	6.00	6.18	6.88	5.98	5.49	6.06	5.57	5.34
6.0	40.7	20.35		7.0	2.0	2.0	5.0	5.0
				Fly Edge		Cb	Cb	Cb

288.42	287.13	287.72	286.98	287.82	288.29	288.21	287.83
5.31	5.60	6.61	6.75	5.91	5.44	5.52	5.90
6.0	40.7	20.35		1.0	2.0	5.0	7.5
						Cb	Cb

292.73

Cross Section Maple St.
 Terarita St. to 34th St.
 Levels Page 57

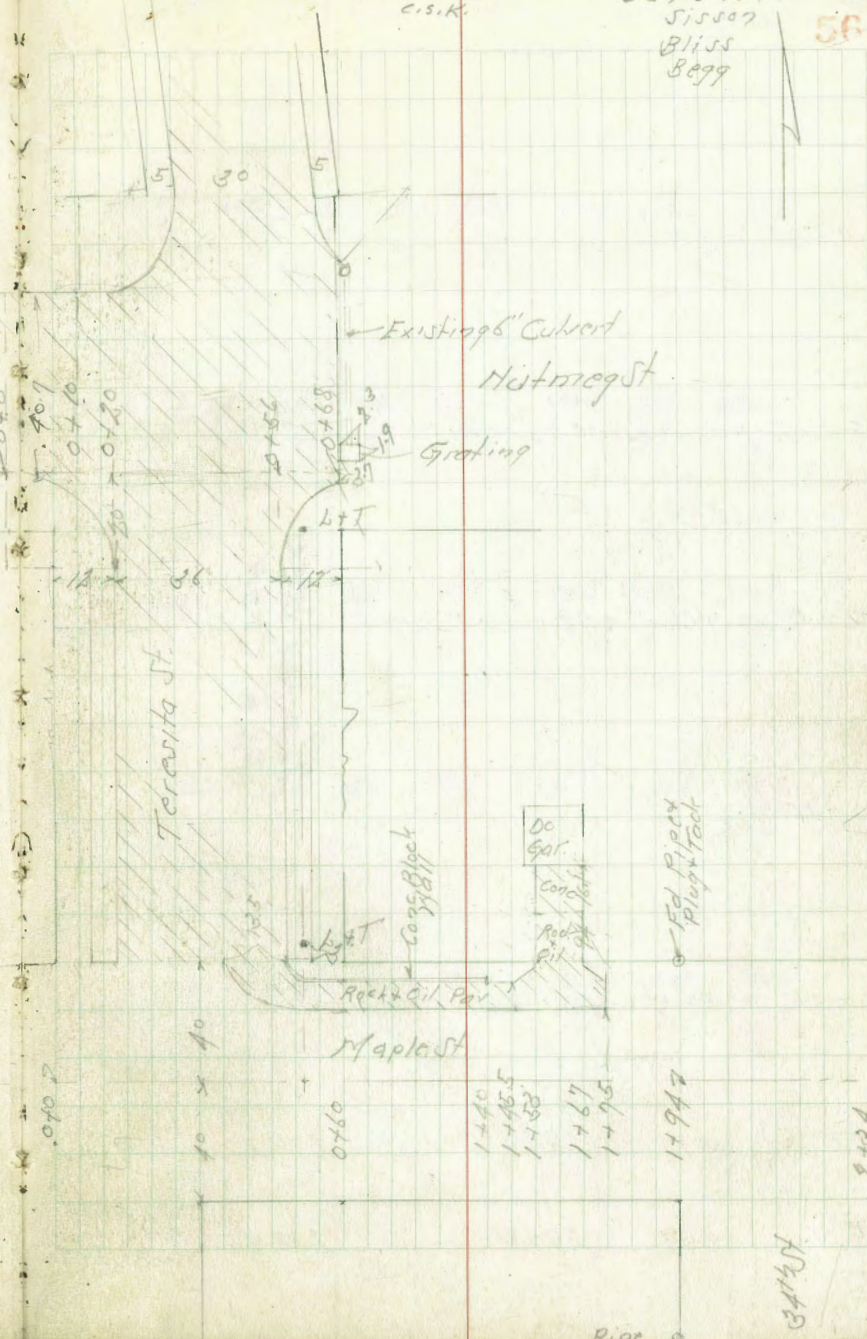
Index
 c.s.k.

Jan. 3-1944
 Sisson
 Bliss
 8299

56

$\frac{2x}{3}$

Baseline 2



0-50

040

10 x 40

Maple St

0710

1440
 1445.5
 1453

1767
 1795

11947

Pipe 0

2134

34th St

Cross Section Maple St.
Teresita to 34th St
Sketch Page 56

0+30 = 2

0+12 = WCB Line From N

0+0 = W.L. Teresita From N

0-15 = W.L. Teresita From N

0-50 = 50 M of W.L. Teresita From N

TP 5.17 284.40 11.61 279.23

BM 2.29 290.84 288.45
SE LINDSEY
Hutmeyer
Teresita

Reduced REB
Plot. CBM

47.7

47.5

57

280.53	279.12	278.2	278.4	278.00	277.4	276.5	275.5
3.87	5.28	5.2	5.0	6.10	7.0	7.9	8.9
80	40	30	20	20	20	40	80

280.17	279.83	278.50	278.17	278.4	277.1	276.3	275.1	274.1
4.23	4.57	5.90	5.33	6.0	7.3	8.1	9.3	10.3
80=CB	80=CB	40=CB	40=CB	20	20	20	40	80

279.0	278.4	278.3	276.8	275.7	273.9	272.9
5.7	6.0	7.1	7.5	9.0	10.5	11.5
50	40	20		20	40	80

278.0	278.6	272.0	274.8	273.8	272.3	276.0
5.4	5.8	7.4	9.6	10.6	12.1	13.4
50	40	20		20	40	80

275.4	274.5	272.3	270.4	268.2	265.3	262.0	265.3
8.9	12.1	14.0	15.2	15.1	17.4	19.1	19.1
50	40	20		20	40	80	

284.40

1767

TP 3.20 285.61 1.99 282.41

1750

1740 - Fly Conc Block Wall

1725

170

0766 - F.L.

0748 - FCB From N

28440

L7

L

RT

58

28368	28314	28281	28218	28162	28114	28111	28015	28011
1.93	2.77	2.80	3.77	3.9	4.2	4.5	5.1	5.5
65.5	77	70	70	70	70	70	70	70

50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY

28227	28211	28266	28168	28113	28018	28013
1.4	1.29	1.74	2.5	3.1	3.6	4.1
40	40	40	40	40	40	40

50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY
50' SHY

28327	28350	28283	28256	28227	28168	28116	28014	27918
0.5	0.30	1.45	1.84	2.2	2.5	3.2	4.0	4.8
40	31.9	31.9	23.5	15	20	20	40	60

2842	28363	28265	28220	28170	28111	28015	27918	27814
0.4	0.77	1.15	1.70	2.7	3.3	3.9	4.8	5.4
40	31.4	31.2	22.7	15	20	20	40	60

28112	28136	28113	28117	2804	2782	27815	27718	27712
3.2	3.04	3.77	3.73	4.0	4.7	5.5	6.5	7.3
40	40	40	40	40	40	40	40	40

28068	28023	27944	27926	28045	2802	2782	27718	2765
3.72	4.07	4.96	5.14	5.95	7.2	6.7	7.0	7.9
80	80	40	40	40	40	40	40	60

28440

BM			4.60	294.07	NEBP Nutmeg Bogert 294.08
TP	12.95	298.67	4.31	285.72	
BM	1.59	290.03	1.66	288.41	STATION Nutmeg Toroito
TP	9.70	290.10	5.21	280.40	

2434 = FL 34755

2424 = EC6

?
2409 = ?

1494 = W.L. 34755

1495

285.61

<u>2728</u>	<u>2788</u>	<u>2743</u>	<u>2749</u>	<u>2752</u>	<u>2756</u>	<u>2762</u>
28	18	113	107	107	100	94
60	40	20		20	40	60

<u>2768</u>	<u>2790</u>	<u>2721</u>	<u>2774</u>	<u>2772</u>	<u>2721</u>	<u>2722</u>
88	86	81	82	84	80	79
60	40	20		20	40	60

<u>2774</u>	<u>2803</u>	<u>2800</u>	<u>2789</u>	<u>2786</u>	<u>2784</u>	<u>2784</u>	<u>2786</u>
77	53	56	57	60	61	66	70
60	53	40	20		20	60	60

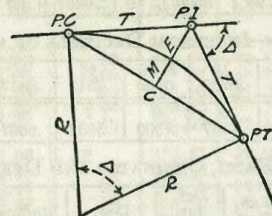
<u>2816</u>	<u>2812</u>	<u>2808</u>	<u>2803</u>	<u>2788</u>	<u>2781</u>	<u>2784</u>
40	44	48	54	58	61	62
60	40	20			40	60

<u>2822</u>	<u>28220</u>	<u>28200</u>	<u>2813</u>	<u>2813</u>	<u>2813</u>	<u>2813</u>	<u>2813</u>
34	34	34	43	43	53	54	57
60	35-1.5	2775-1.5	20	20	60	40	60

285.61

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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CURVE FORMULAS

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

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

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

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

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

EXPLANATION AND USE OF TABLES

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

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

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

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

TABLE I.—MINUTES IN DECIMALS OF A DEGREE.

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

TABLE II.—INCHES IN DECIMALS OF A FOOT.

1-16	3-32	3-16	1/4	5-16	3/8	1/2	5/8	3/4	7/8	
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

TABLE III.—RADI, ORDINATES AND DEFLECTIONS.

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot
0° 10'	34377.5	.036	.145	0.05	7°	819.02	1.528	6.105	2.10
20	17188.8	.073	.291	0.10	20'	781.84	1.600	6.395	2.20
30	11459.2	.109	.436	0.15	30	764.49	1.637	6.540	2.25
40	8594.42	.145	.582	0.20	40	747.89	1.673	6.685	2.30
50	6875.55	.182	.727	0.25	8	716.78	1.746	6.976	2.40
1	5729.65	.218	.873	0.30	20	688.16	1.819	7.266	2.50
10	4911.15	.255	1.018	0.35	30	674.69	1.855	7.411	2.55
20	4297.28	.291	1.164	0.40	40	661.74	1.892	7.556	2.60
30	3819.83	.327	1.309	0.45	9	637.28	1.965	7.846	2.70
40	3437.87	.364	1.454	0.50	20	614.56	2.037	8.136	2.80
50	3125.36	.400	1.600	0.55	30	603.80	2.074	8.281	2.85
2	2864.93	.436	1.745	0.60	40	593.42	2.110	8.426	2.90
10	2644.58	.473	1.891	0.65	10	573.69	2.183	8.716	3.00
20	2455.70	.509	2.036	0.70	30	546.44	2.292	9.150	3.15
30	2292.01	.545	2.181	0.75	40	521.67	2.402	9.585	3.30
40	2148.79	.582	2.327	0.80	11	499.06	2.511	10.02	3.45
50	2022.41	.618	2.472	0.85	12	478.34	2.620	10.45	3.60
3	1910.08	.655	2.618	0.90	13	459.28	2.730	10.89	3.75
10	1809.57	.691	2.763	0.95	14	441.63	2.839	11.32	3.90
20	1719.12	.727	2.908	1.00	15	425.40	2.949	11.75	4.05
30	1637.28	.764	3.054	1.05	16	410.28	3.058	12.18	4.20
40	1562.88	.800	3.199	1.10	17	396.20	3.168	12.62	4.35
50	1494.95	.836	3.345	1.15	18	383.07	3.277	13.05	4.50
4	1432.69	.873	3.490	1.20	19	370.78	3.387	13.49	4.65
10	1375.40	.909	3.635	1.25	20	359.27	3.496	13.92	4.80
20	1322.53	.945	3.718	1.30	21	348.45	3.600	14.35	4.95
30	1273.57	.982	3.926	1.35	22	338.27	3.716	14.78	5.10
40	1228.11	1.018	4.071	1.40	23	319.62	3.935	15.64	5.40
50	1185.78	1.055	4.217	1.45	24	302.94	4.155	16.51	5.70
5	1146.28	1.091	4.362	1.50	25	287.94	4.374	17.37	6.00
10	1109.33	1.127	4.507	1.55	26	274.37	4.594	18.22	6.30
20	1074.68	1.164	4.653	1.60	27	262.04	4.814	19.08	6.60
30	1042.14	1.200	4.798	1.65	28	250.79	5.035	19.94	6.90
40	1011.51	1.237	4.943	1.70	29	240.49	5.255	20.79	7.20
50	982.64	1.273	5.088	1.75	25	231.01	5.476	21.64	7.50
6	955.37	1.309	5.234	1.80	26	222.27	5.697	22.50	7.80
10	929.57	1.346	5.379	1.85	27	214.18	5.918	23.35	8.10
20	905.13	1.382	5.524	1.90	28	206.68	6.139	24.19	8.40
30	881.95	1.418	5.669	1.95	29	199.70	6.360	25.04	8.70
40	859.92	1.455	5.814	2.00	30	193.18	6.583	25.88	9.00

Note. Chord Deflection=2 times tangent deflection.

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

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
1°	50.00	.22	11°	551.70	26.50	21°	1061.9	97.57
10'	58.34	.30	10'	560.11	27.31	10'	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2	100.01	.87	12	602.21	31.56	22	1113.7	107.24
10	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
20	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
30	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
40	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
50	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
3	150.04	1.96	13	652.81	37.07	23	1165.7	117.38
10	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
20	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
30	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
40	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
50	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
4	200.08	3.49	14	703.51	43.03	24	1217.9	128.00
10	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
20	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
30	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
40	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
50	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
5	250.16	5.46	15	754.32	49.44	25	1270.2	139.11
10	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
20	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
30	275.21	6.61	30	779.77	52.89	30	1296.5	144.85
40	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
50	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
6	300.28	7.86	16	805.25	56.31	26	1322.8	150.71
10	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
20	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
30	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
40	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
50	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
7	350.44	10.71	17	856.30	63.63	27	1375.6	162.81
10	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
20	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
30	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
40	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
50	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
8	400.66	13.99	18	907.49	71.42	28	1428.6	175.41
10	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
20	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
30	425.79	15.80	30	933.13	75.49	30	1455.1	181.89
40	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
50	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
9	450.93	17.72	19	958.81	79.67	29	1481.8	188.51
10	459.32	18.38	10	967.38	81.09	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
10	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
20	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
30	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
40	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
50	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
50	543.29	25.70	50	1053.3	96.01	50	1580.0	213.86

TABLE VI.—CORRECTIONS FOR SUB-CHORDS AND LONG CHORDS.

FOR SUB-CHORDS ADD										Excess of arc per 100 ft.	LONG CHORDS				
D	10	20	30	40	50	60	70	80	90		D	200	300	400	500
4°	.00	.00	.01	.01	.01	.01	.01	.01	.00	.02	1	199.99	299.97	399.92	499.85
6°	.00	.01	.01	.02	.02	.02	.02	.01	.01	.05	2	199.97	299.88	399.70	499.39
8°	.01	.02	.02	.03	.03	.03	.03	.02	.01	.08	3	199.93	299.73	399.32	498.63
10°	.01	.02	.03	.04	.05	.05	.05	.04	.02	.13	4	199.88	299.51	398.78	497.57
12°	.02	.04	.05	.06	.07	.07	.07	.05	.03	.18	5	199.81	299.24	398.10	496.20
14°	.02	.05	.07	.08	.09	.10	.09	.07	.04	.25	6	199.73	298.90	397.26	494.53
16°	.03	.06	.09	.11	.12	.12	.12	.09	.05	.33	7	199.63	298.51	396.28	492.57
18°	.04	.08	.11	.14	.15	.16	.15	.12	.07	.41	8	199.51	298.05	395.14	490.31
20°	.05	.10	.14	.17	.19	.20	.18	.15	.09	.51	9	199.38	297.54	393.86	487.75
22°	.06	.12	.17	.21	.23	.24	.22	.18	.10	.62	10	199.24	296.96	392.42	484.90
24°	.07	.14	.20	.25	.28	.28	.26	.21	.12	.74	12	198.90	295.63	389.12	478.34
26°	.09	.17	.24	.29	.32	.33	.31	.25	.15	.86	14	198.51	294.06	385.22	470.65
28°	.10	.19	.27	.34	.37	.38	.36	.29	.17	1.00	16	198.05	292.25	380.76	461.86
30°	.11	.22	.31	.39	.43	.44	.41	.33	.19	1.15	18	197.54	290.21	375.74	452.02
32°	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31	20	196.96	287.94	370.17	441.15
34°	.15	.28	.40	.50	.55	.57	.53	.43	.25	1.48	22	196.32	285.44	364.06	429.30
36°	.17	.32	.45	.56	.62	.64	.59	.48	.28	1.66	24	195.63	282.71	357.43	416.53
38°	.18	.36	.51	.62	.70	.71	.66	.53	.31	1.83	26	194.87	279.76	350.30	402.89
40°	.21	.40	.56	.69	.77	.79	.73	.59	.35	2.06	28	194.06	276.59	342.69	388.43
42°	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28	30	193.18	273.20	334.61	373.20
44°	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50	32	192.25	269.61	326.08	357.28
46°	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74	34	191.26	265.81	317.12	340.73
48°	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99	36	190.21	261.80	307.77	323.61
50°	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24	38	189.10	257.60	298.03	305.99
52°	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52	40	187.94	253.21	287.94	287.94
54°	.38	.73	1.04	1.28	1.42	1.46	1.35	1.09	.64	3.80	42	186.72	248.63	277.51	269.54
56°	.41	.78	1.12	1.38	1.53	1.57	1.46	1.17	.69	4.09	44	185.44	243.87	266.78	250.85
58°	.44	.84	1.20	1.48	1.65	1.69	1.57	1.26	.74	4.40	46	184.10	239.93	255.78	231.95
60°	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72	48	182.71	233.83	244.51	212.92

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

TABLE VII.—MIDDLE ORDINATES FOR RAILS IN FEET.

Deg. of Curve	LENGTH OF RAILS						Deg. of Curve	LENGTH OF RAILS.							
	32	30	28	26	24	22		20	32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2°	.045	.038	.034	.029	.025	.021	.017	17°	.378	.333	.290	.252	.213	.180	.148
3°	.087	.068	.051	.044	.037	.031	.026	18°	.400	.351	.306	.265	.225	.190	.156
4°	.089	.079	.069	.060	.050	.042	.035	19°	.423	.371	.324	.280	.238	.201	.165
5°	.112	.099	.086	.074	.063	.053	.044	20°	.445	.392	.341	.296	.250	.212	.174
6°	.134	.117	.102	.088	.076	.064	.052	21°	.466	.410	.357	.309	.262	.222	.182
7°	.156	.137	.120	.104	.088	.074	.061	22°	.487	.430	.375	.325	.275	.233	.191
8°	.179	.158	.137	.119	.100	.085	.070	23°	.509	.450	.390	.338	.287	.243	.199
9°	.201	.175	.153	.133	.112	.095	.078	24°	.531	.469	.408	.354	.299	.253	.208
10°	.223	.196	.171	.148	.125	.106	.087	25°	.552	.486	.424	.367	.311	.263	.216
11°	.245	.216	.188	.163	.139	.117	.096	26°	.573	.506	.441	.382	.323	.274	.225
12°	.268	.236	.206	.179	.151	.128	.105	27°	.594	.524	.457	.396	.335	.284	.233
13°	.290	.254	.222	.192	.163	.138	.113	28°	.618	.545	.475	.411	.348	.294	.242
14°	.312	.275	.239	.207	.175	.148	.122	29°	.638	.564	.491	.424	.361	.303	.250
15°	.334	.295	.257	.223	.188	.159	.131	30°	.660	.583	.508	.438	.374	.313	.259

200.59
33.35
167.34

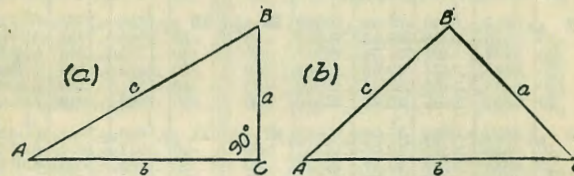
SLOPE REDUCTIONS.

When distances are measured on a slope they may be reduced to the equivalent horizontal distance by the following approximate rule:— subtract from the slope distance the square of the rise divided by twice the slope distance. Thus for a slope distance of 250.3 ft. and a rise of 15 ft. correction=15²÷2×250.3=.45 (by slide rule) or horizontal distance=250.3—.45=249.85. When vertical angle=V. A. is measured horizontal distance=slope distance—slope distance (1—Cos. V. A.). Thus for slope distance of 248.7 ft. and V. A. of 4° 20' from Table VIII Cos=.99714 and correction=1—.99714=.00286 per foot or total of .286×2½ (near enough)=.57 and horizontal distance=248.7—.57=248.13 ft.

See fig. (a).

TRIGONOMETRICAL FORMULAS.

sin. $A = \frac{a}{c}$
 cos. $A = \frac{b}{c}$
 tan. $A = \frac{a}{b}$
 cot. $A = \frac{b}{a}$
 sec. $A = \frac{c}{b}$
 cosec. $A = \frac{c}{a}$



FORMULA FOR SOLVING TRIANGLES.

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

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
°						°					
32	.5209	.6249	1.600	.84805	58	30	.6225	.7954	1.257	.78261	
10	.5324	.6289	1.590	.84650	50	40	.6248	.8002	1.250	.78079	
20	.5348	.6330	1.580	.84495	40	50	.6271	.8050	1.242	.77897	
30	.5373	.6371	1.570	.84339	30						
40	.5398	.6412	1.560	.84182	20	39	.6293	.8098	1.235	.77715	
50	.5422	.6453	1.550	.84025	10	10	.6316	.8146	1.228	.77531	
						20	.6338	.8195	1.220	.77347	
33	.5446	.6494	1.540	.83867	57	30	.6361	.8243	1.213	.77162	
10	.5471	.6536	1.530	.83708	50	40	.6383	.8292	1.206	.76977	
20	.5495	.6577	1.520	.83549	40	50	.6406	.8342	1.199	.76791	
30	.5519	.6619	1.511	.83389	30						
40	.5544	.6661	1.501	.83228	20	40	.6428	.8391	1.192	.76604	
50	.5568	.6703	1.492	.83066	10	10	.6450	.8441	1.185	.76417	
						20	.6472	.8491	1.178	.76229	
34	.5592	.6745	1.483	.82904	56	30	.6494	.8541	1.171	.76041	
10	.5616	.6787	1.473	.82741	50	40	.6517	.8591	1.164	.75851	
20	.5640	.6830	1.464	.82577	40	50	.6539	.8642	1.157	.75661	
30	.5664	.6873	1.455	.82413	30						
40	.5688	.6916	1.446	.82248	20	41	.6561	.8693	1.150	.75471	
50	.5712	.6959	1.437	.82082	10	10	.6583	.8744	1.144	.75280	
						20	.6604	.8796	1.137	.75088	
35	.5736	.7002	1.428	.81915	55	30	.6626	.8847	1.130	.74896	
10	.5760	.7046	1.419	.81748	50	40	.6648	.8899	1.124	.74703	
20	.5783	.7089	1.411	.81580	40	50	.6670	.8952	1.117	.74509	
30	.5807	.7133	1.402	.81412	30						
40	.5831	.7177	1.393	.81242	20	42	.6691	.9004	1.111	.74314	
50	.5854	.7221	1.385	.81072	10	10	.6713	.9057	1.104	.74120	
						20	.6734	.9110	1.098	.73924	
36	.5878	.7265	1.376	.80902	54	30	.6756	.9163	1.091	.73728	
10	.5901	.7310	1.368	.80730	50	40	.6777	.9217	1.085	.73531	
20	.5925	.7355	1.360	.80558	40	50	.6799	.9271	1.079	.73333	
30	.5948	.7400	1.351	.80386	30						
40	.5972	.7445	1.343	.80212	20	43	.6820	.9325	1.072	.73135	
50	.5995	.7490	1.335	.80038	10	10	.6841	.9380	1.066	.72937	
						20	.6862	.9435	1.060	.72737	
37	.6018	.7536	1.327	.79864	53	30	.6884	.9490	1.054	.72537	
10	.6041	.7581	1.319	.79688	50	40	.6905	.9545	1.048	.72337	
20	.6065	.7627	1.311	.79512	40	50	.6926	.9601	1.042	.72136	
30	.6088	.7673	1.303	.79335	30						
40	.6111	.7720	1.295	.79158	20	44	.6947	.9657	1.036	.71934	
50	.6134	.7766	1.288	.78980	10	10	.6967	.9713	1.030	.71732	
						20	.6988	.9770	1.024	.71529	
38	.6157	.7813	1.280	.78801	52	30	.7009	.9827	1.018	.71325	
10	.6180	.7860	1.272	.78622	50	40	.7030	.9884	1.012	.71121	
20	.6202	.7907	1.265	.78442	40	50	.7050	.9942	1.006	.70916	
							.7071	1.	1.	.70711	
										°	
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

TABLE IX.—CALCULATION OF EARTHWORK.

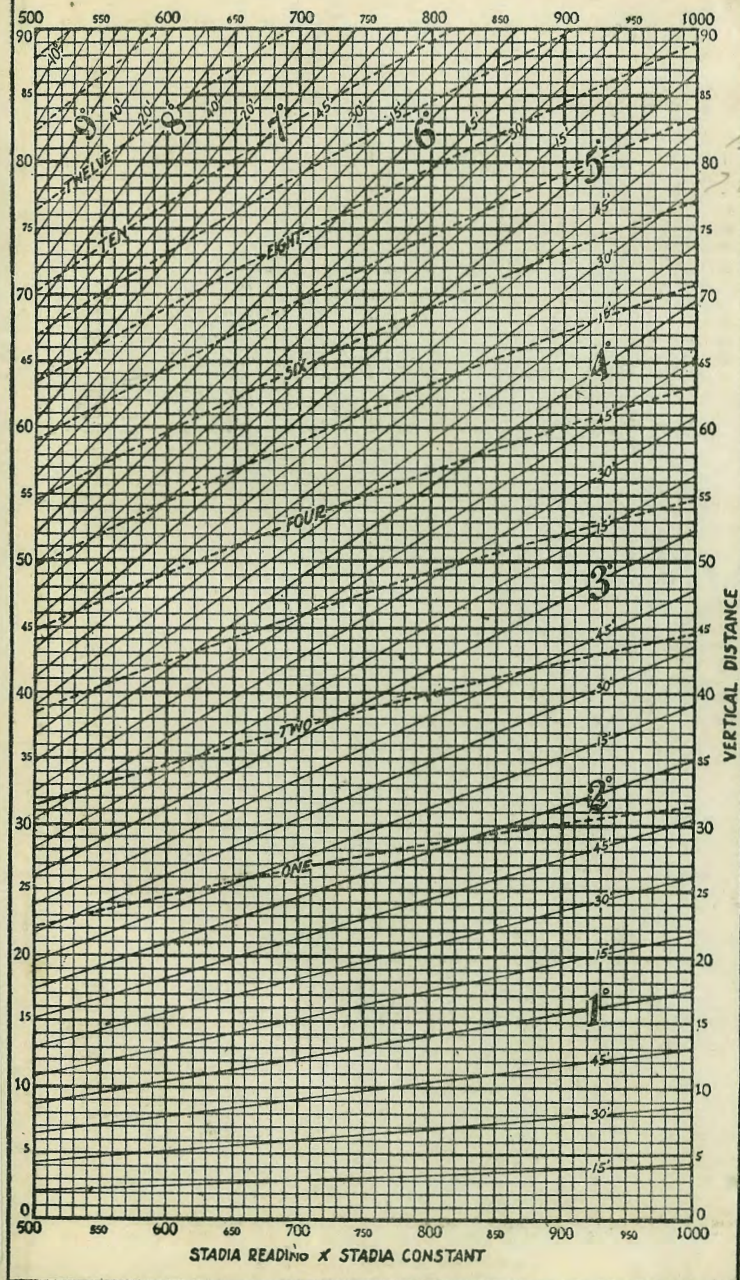
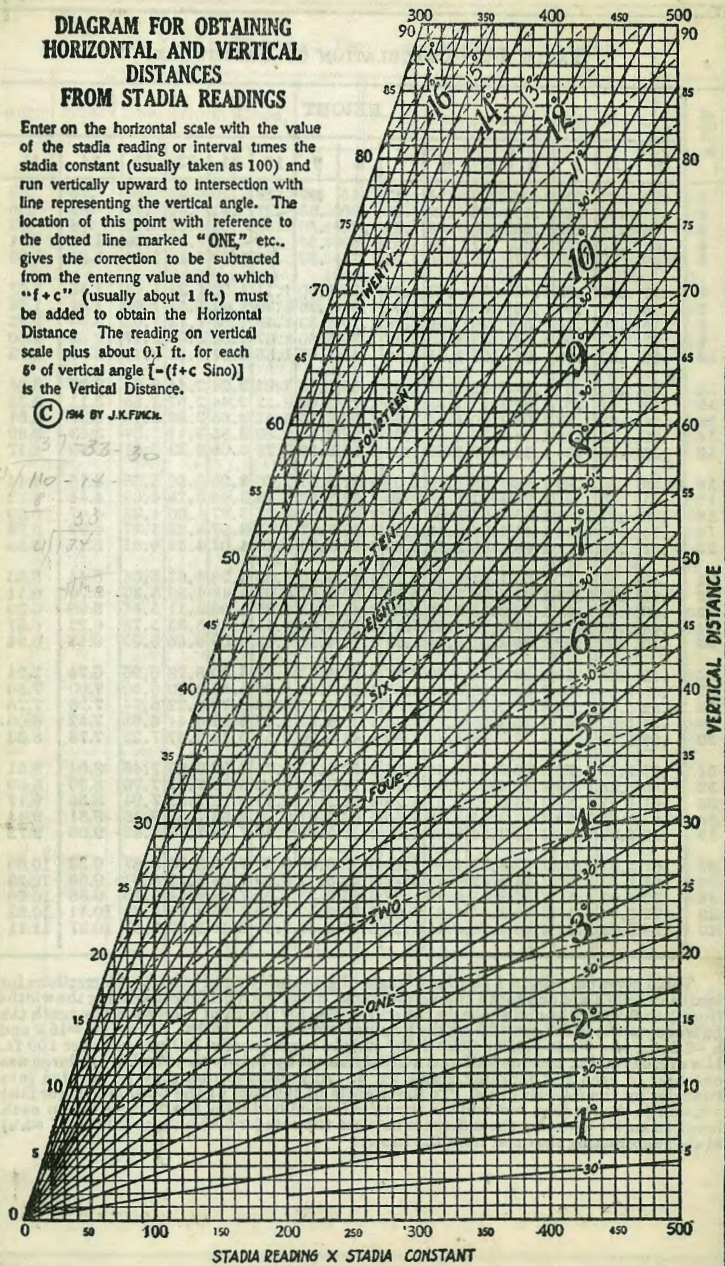
Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.91	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if w = 16.2 and h = 5.3, cu. yds. = 1.48 + .028 + .089 = 1.597 cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) = h, and 1/2 the roadbed = w, add the triangles formed by taking the distance out to each break in turn (= w's) by the difference between the cuts (or fills) on each side of it (= h's) always subtracting the outer from the inner.

**DIAGRAM FOR OBTAINING
HORIZONTAL AND VERTICAL
DISTANCES
FROM STADIA READINGS**

Enter on the horizontal scale with the value of the stadia reading or interval times the stadia constant (usually taken as 100) and run vertically upward to intersection with line representing the vertical angle. The location of this point with reference to the dotted line marked "ONE" etc., gives the correction to be subtracted from the entering value and to which " $f+c$ " (usually about 1 ft.) must be added to obtain the Horizontal Distance. The reading on vertical scale plus about 0.1 ft. for each 6° of vertical angle [$=(f+c \text{ Sino})$] is the Vertical Distance.

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4231-95³

Nield

Tal 5504

7.86

2.77

51+36.27

9.85

461.2

22-20-20

4f^o-41.00

0
0

13+00 17°33' 3.145
 89°45'00 35°06' 1.90
 719-30-00 336 3.645
 89-45 49°20'30
 8953-30 16.11 22-20
 37.5 16.03
 52.5 5.06
 45.5 2 179-47-30
 89-53 100 10.99 Below Cor'd
 2 26.40 71°19' SW Cor Calc & have 1
 56.72 142-38 14.78 Elev. M.H. &
 241 79 34 71°19' 1.24 37207
 36 72 47.24-30
 28 36 06 2 94°49-00
 25-30 179-59-60 22°20'30
 5108 69 43 30 47 23
 110-16-30 69 43 30
 W. Rail 0798 E 07213
 47-24-30
 22-20-30
 110 16
 0-01-00
 W. Rail W. Track 5700 E
 W " E " 5712 E
 47-23-00
 94°46-00
 47-23-30
 94-46 30
 374
 1.42

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½
For Single Track Embankment.

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

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

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