

1848

# EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and  
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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.

Copyright, 1914, by Eugene Dietzgen Co.

# 1848

INDEXED  
to page # 33  
except page 29 & 30

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

Made in U. S. A.

Wabash Freeway & Nile St Connection 2-23

Wabash Freeway Poplar Ave. Topog 24-28

Barcroft P Line Extension 31-33

Cross Sec Wabash Ave Right Lane 34-38

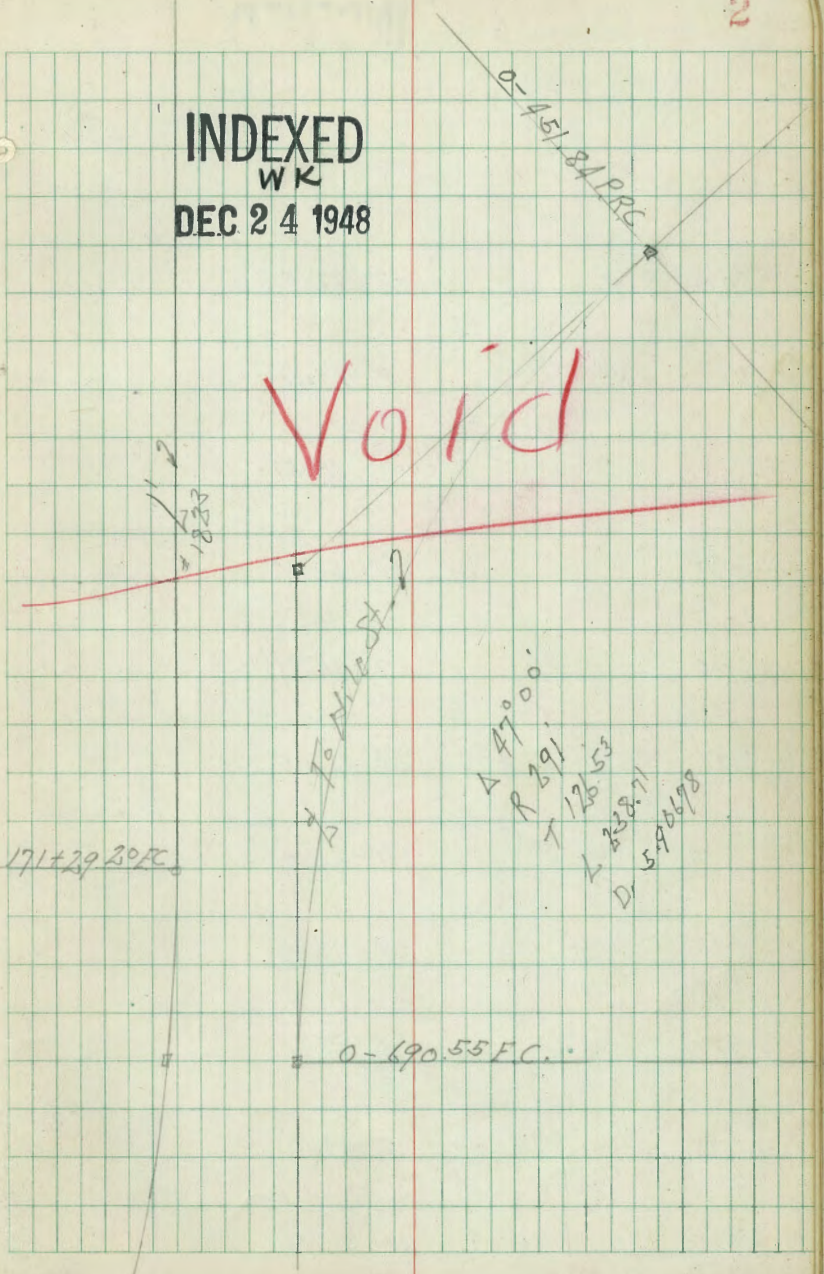
Cross-Section Nile St-WABASH to QUINCE 39  
See pg 4-6 For sketch & Alignment

NILE ST CONNECTION TO WABASH Blvd. 53

Alignment Hobash Freeway  
And Nile St. Connection

0-375	14° 06.77'
0-400	17° 18.61'
0-425	20° 30.44'
0-451.81 PRC	23° 56.41'
0-475	2° 16.80'
0-500	4° 44.47'
0-525 P.O.C.	7° 12.14'
0-550	9° 39.81'
0-575	12° 07.48'
0-600	14° 35.15'
0-625	17° 02.82'
0-650	19° 30.49'
0-675	21° 58.16'
0-690.55 EC	23° 30'

INDEXED  
WK  
DEC 24 1948



INDEXED

0+00 = 175+79.18 L

1st St. 2

0-90.40 BCRT

0-100 P.C.

2° 22.15'

0-125

8° 32.34'

0-150

14° 42.53'

0-175

20° 52.72'

0-200

27° 02.91'

-225

33° 13.10'

-250

39° 23.29'

0-264.65 P.C.

43° 00.25'

0-300

4° 31.26'

-325

7° 43.10'

-350

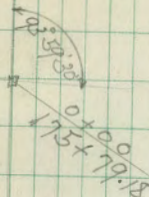
10° 54.23'

Dec. 20-48

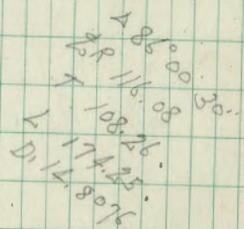
S. J. Jones  
S. J. Jones  
Becker  
Garber

3

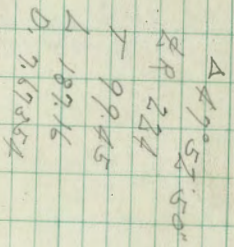
H.O. 22008



0-90.40 BCRT



0-264.65 P.C.



0-451.81 P.C.

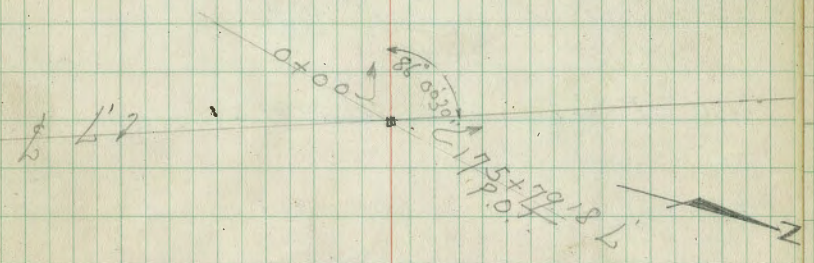
INDEXED

	RT	
7+0	9° 06.14'	
+50	7° 40.20'	
6+0	6° 14.25'	$\Delta 89^{\circ} 53' 45''$
		R 1000
+50	4° 48.31'	T 998.18
		L 1568.98
5+0	3° 22.37'	D. 1.71887
+50	1° 56.42'	
4+0	0° 30.48'	

3+82.27 B.C. RT = Chisel X on Man Hole Cover  
(Set 4 ch's on Rim)

3+82.37 B.C. RT  
Set 4 ch's on Rim - T.C.  
10-17-55

0+00 = 175+79.18 P.O.T. L



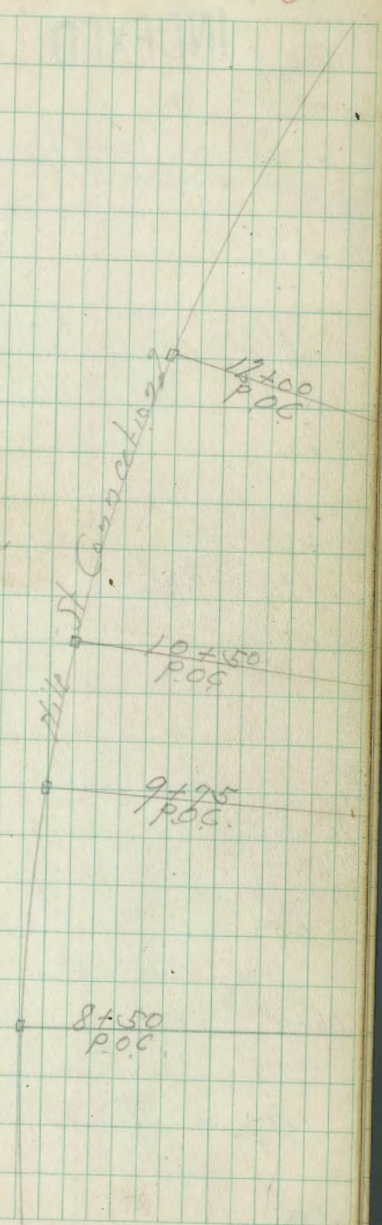
Note: For X-SECTS: this AREA see Pg 39

1710 St.

		PL
+50		27° 43.46'
13+0		26° 17.46'
+50		24° 57.52'
12+0	P.O.C.	23° 25.57'
+50		21° 59.63'
11+0		20° 33.69'
+50	P.O.C.	19° 07.74'
10+0		17° 41.80'
+75	P.O.C.	16° 58.83'
+50		16° 15.86'
9+0		14° 49.91'
+50	P.O.C.	13° 23.97'
8+0		11° 58.03'
7+50		10° 32.08'

14775

5



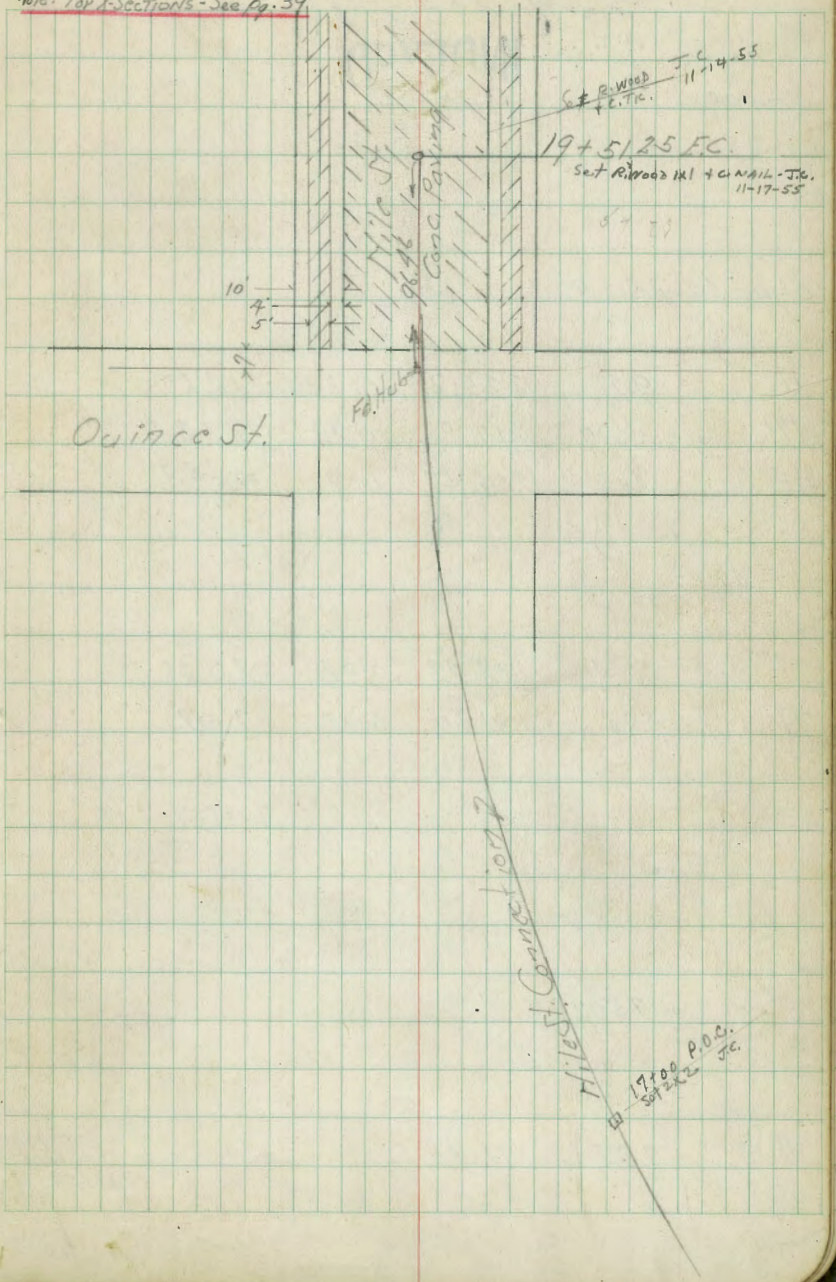
Hilo St.

# INDEXED

PL:

+51.25 E.C.	41° 56.875'
19+0	43° 28.78'
+50	42° 02.84'
18+0	40° 36.90'
+50	39° 10.95'
+25 P.O.C.	38° 27.98'
17+0	37° 45.01'
+50	36° 19.07'
16+0	34° 53.12'
+50	33° 27.18'
15+0	32° 01.24'
+75 P.O.C.	31° 18.29'
+50	30° 35.29'
14+0	29° 09.35'

Note: For X-SECTIONS - See Pg. 39





Levels Nabash Freeway and 110 St.  
 Connection  
 Alignment Page 2+3

**INDEXED**

0-100

0-90.40 BC Rt

TP	9.21	225.88	0.33	216.67
TP	12.77	217.00	0.28	204.23
TP	13.18	204.51	1.09	191.33

0-42

TP	12.14	192.42	0.92	180.28
TP	9.81	181.20	0.02	171.39

0-17

0+0 = 175+79.18 1/2"

B.M. 7.85 171.41

163.56

Chisel x 0.7  
 Run Survey 114  
 10. RT 10.420 P.  
 #1233-9

Dec. 21-48  
 S. Iron  
 5 m x 3  
 Becker  
 Gardner

7

222.1  
 0.8

216.36

176.00

9.52  
 0.746  
 225.88

186.72  
 5.5

192.42

168.3  
 0.71

168.55

286  
 0.7 Hub

171.41

0-250

TP 12.81 225.93 0.43 212.12

0-225

TP 12.50 213.55 0.79 201.05

0-200

0-184

TP 1.02 201.84 13.28 200.82

0-150

TP 0.56 214.10 12.34 213.54

0-125

225.88

2

8

217.3

88

225.93

206.8

5.7

213.53

196.5

5.5

188.4

13.4

201.84

203.7

10.4

214.10

214.7

11.2

225.88

0-400

0-375

0-350

0-325

0-300

0-26465 P.C.C.

225.93

8

9

218.9  
70

218.6  
70

221.4  
70

221.7  
70

221.0  
70

222.26  
567

225.93

TP 0.47 178.42 12.74 177.95

0-550

TP 0.82 190.69 12.34 189.87

0-525 POC

0-500

TP 0.85 202.21 12.11 201.36

0-475

TP 1.16 214.47 12.62 213.31

0-451.84 P.R.C.

0-425

22593

2

10

83.8

69

190.69

93.91

85.30

0.7545

199.4

2.8

202.21

209.2

5.3

214.47

214.51

11.42

0.7545

216.9

9.0

22593

BM 11.57 163.56  
 TP 1.12 175.13 11.99 174.01  
 0-690.55 EC

Check of Riv  
 N.H. 10' R.P.  
 10-4-20  
 163.56

0-675

TP 9.22 186.00 1.64 176.78 ✓

0-650

0-625

0-600

0-575

178.42

181.92  
 4.08  
 007546

80.6  
 54

186.00

174.5  
 6.9

170.1  
 8.3

172.4  
 6.0

175.6  
 2.8

178.42

Levels Niles St. Connection  
Nabarb Freeway to Niles St + Quince St  
Alignment Page 4 tab

+50

# INDEXED

+37

1715 -

1405 = Server Man Hole 3.36 169.82 Top of MH

+95

+50

010 = 175 + 79.18 P.O.T. 1

B.M. 962 173.18

182.56  
Circuit 27  
Rim N.H.  
10' At 10 + 20'

Dec. 22 - 48  
Sirois  
Smith  
Becker  
Singer

12

2

169.1

71

168.5

77

165.8

74

74.3000  
74.3000  
74.3000

168.4

78

169.2

70

168.56

4.62

on Hub

173.18

470

+82.27 BCRT

+50

340

TP 10.52 182.43 7.27 171.91

+50

210

173.18

176.7

53

176.36

6.07

on Top Sower  
Manhole

174.7

77

173.5

89

182.43

170.7

25

168.7

75

173.18

6+11

+95

TP 990 191.23 110 181.33

+50

+30

5+0

4+50

182.43

181.8

9.4  
= Bottom  
of No. 9

183.4

78

191.33

180.8

14

179.1

3.3  
= Bottom  
of No. 14

180.53

1.9

178.3

41

182.43



TP 11.94 247.60 0.45 235.66

+60

TP 12.64 236.11 1.78 223.47

TP 11.48 225.25 0.15 213.77

+30

TP 11.15 213.92 0.30 202.77

+0

+75

TP 12.37 203.07 0.53 190.70

+50

6-25

191.23

3

226.7

9.4

236.11

213.8

0.1

213.92

202.0

1.1

193.1

100

203.07

186.5

47

182.1

71

191.23

TP 3.25 261.41 0.66 258.19

+75

+50

9+0

TP 11.37 258.85 0.12 247.48

+50 P.O.C

+25

8+0

247.60

8

258.0  
0.9

257.8  
10

251.4  
74

258.85

245.31  
2.29  
6+40

241.2  
2.4

237.2  
10.4

247.60

TP 10.92 251.11 0.01 240.19

+35

+15

TP 1.86 240.20 1.84 238.34

1140

TP 3.40 240.18 12.35 236.78

+75

TP 0.00 247.13 12.31 242.13

+50 Hub out

1040

261.44

229.0  
1.2

223.1  
171.20  
200.0  
240.20

231.8  
8.4

240.18

245.8  
5.2

249.13

255.0  
5.4

258.4  
6.0

261.44

+25

1370

+75

TP 1.00 239.00 13.11 238.00

+50

1270 P.O.C.

11760

2511

2

223.0  
160

224.4  
17.6

228.7  
10.3

239.00

236.0  
15.1

239.76  
11.35  
07/15

244.7  
6.7

2511

+75 P.O.C.

+50

TP 9.02 246.84 1.18 237.82

+25

14.40

+ 75

13.50

239.00

392.92  
392  
392.92

241.3  
5.5

246.84

236.2  
5.0

229.5  
9.5

223.9  
15.1

223.6  
15.1

239.00

TP 12.61 263.42 1.51 250.81

+25

16+0

+75

TP 1272 252.32 7.24 239.60

+40

+15

15+0

246.84

8

247.0  
53

243.7  
86

238.4  
109

252.32

239.6  
72

228.8  
180

236.44  
104

246.84

1870

+50

+25 P.O.C.

TP 8.48 283.80 0.24 275.32

1740

TP 12.15 275.56 0.01 263.41

+75

16450

263.42

28

277.3  
6.5

276.0  
7.8

275.64  
8.16  
0.7406

273.7  
1.9

275.56

262.3  
1.1

255.8  
7.6

263.42

TP 7.34 290.78 0.36 283.44

+50

2040

+50

1940

BM

4.10

279.70

NERP  
Quincy Mile  
279.69  
1823-15

+61 = sty improvement

18450

283.80

283.15

0.65

0.75 Rev

281.99

1.81

0.25 Rev

280.89

2.91 Rev

279.75

4.05

0.75 Rev

278.96

4.84

1.54 Cont  
Rev

278.8

5.0

283.80



23+0

+50

22+0

+50

21+0

290.78

288.31  
2.17

287.41  
3.27  
07 PM

286.47  
4.31  
07 PM

285.49  
5.39  
07 PM

284.29  
6.49  
07 PM

290.78

Alignment of Wabash Freeway Poplar St.  
Topog.

672858 P.O.T. - P.R.C.

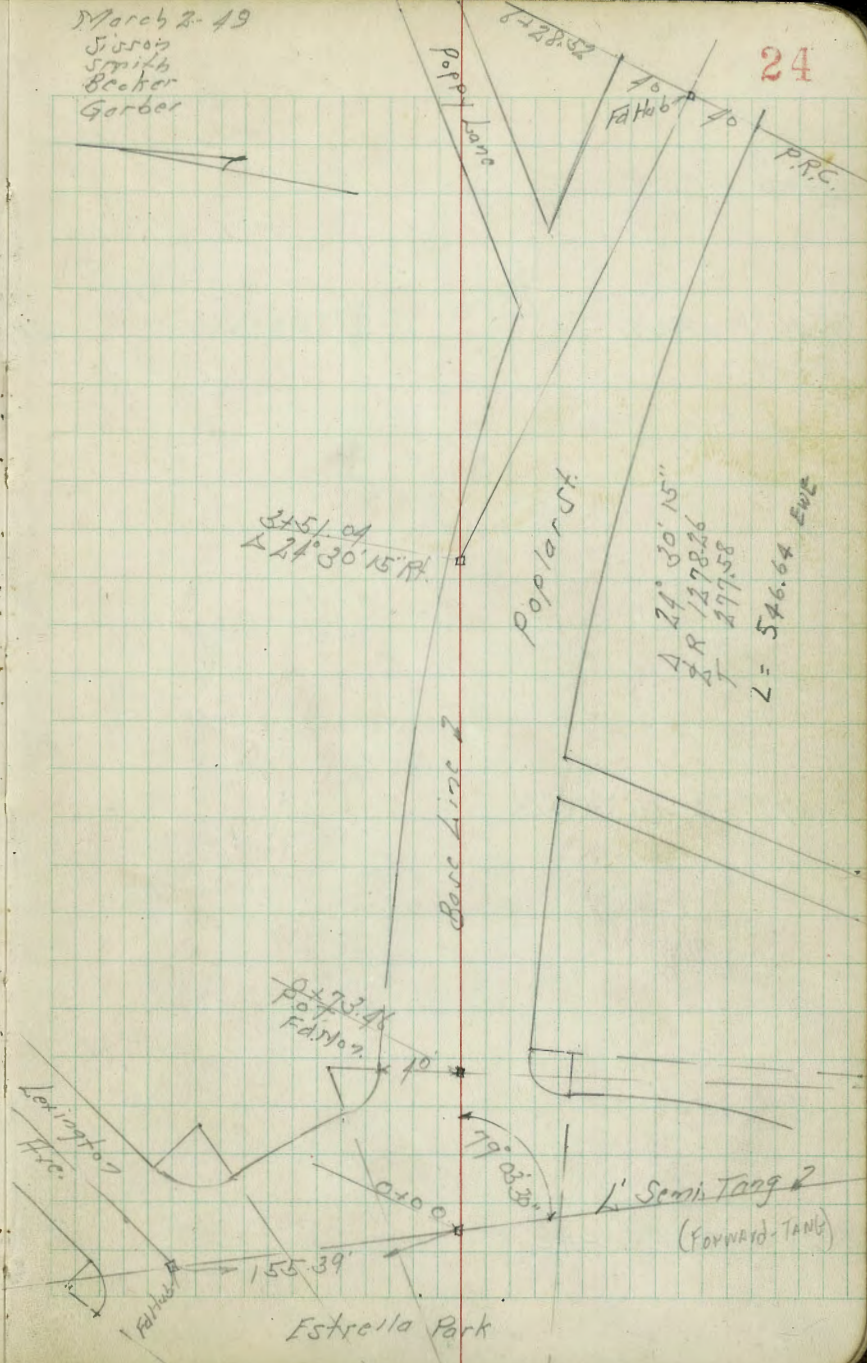
INDEXED  
WK  
MAR 15 1949

3751.04  $\Delta 24^{\circ} 30' 15''$  PL

0+73.46 P.O.T.

0+0 = Pl. Wabash Freeway  $\Delta$  Semi Tang

March 2-49  
Sutton  
Smith  
Becker  
Garber



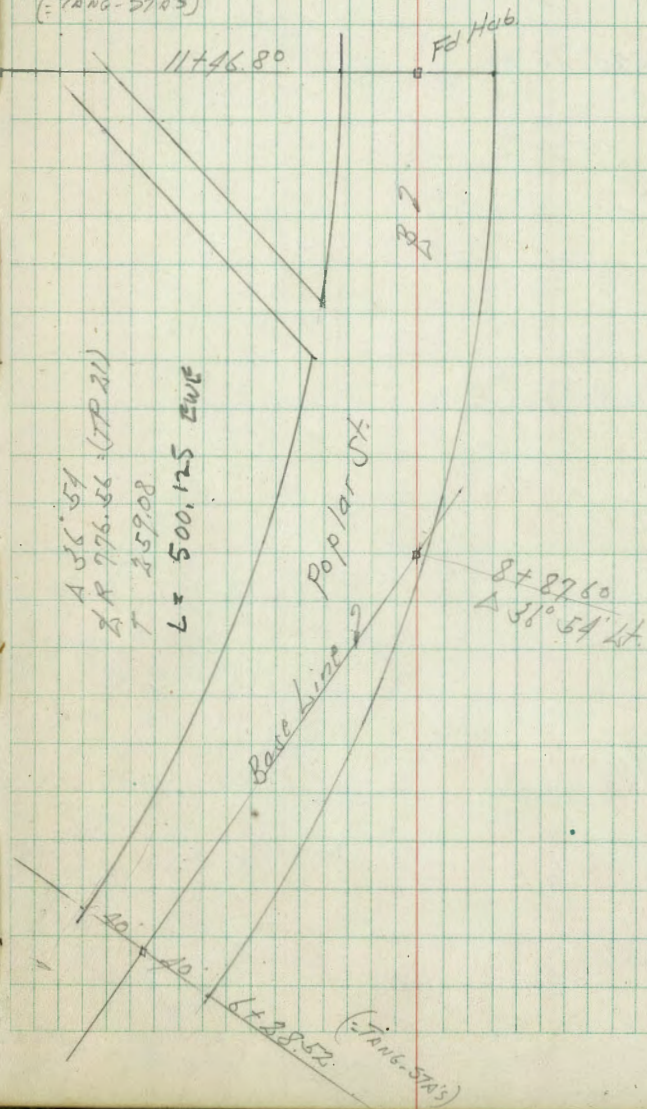
12+00 P.O.T

11+46.80 P.O.T =

8+87.60  $\Delta$  36° 54' Lt.

6+28.52 P.O.T - P.R.C.

(TANG-STRA'S)

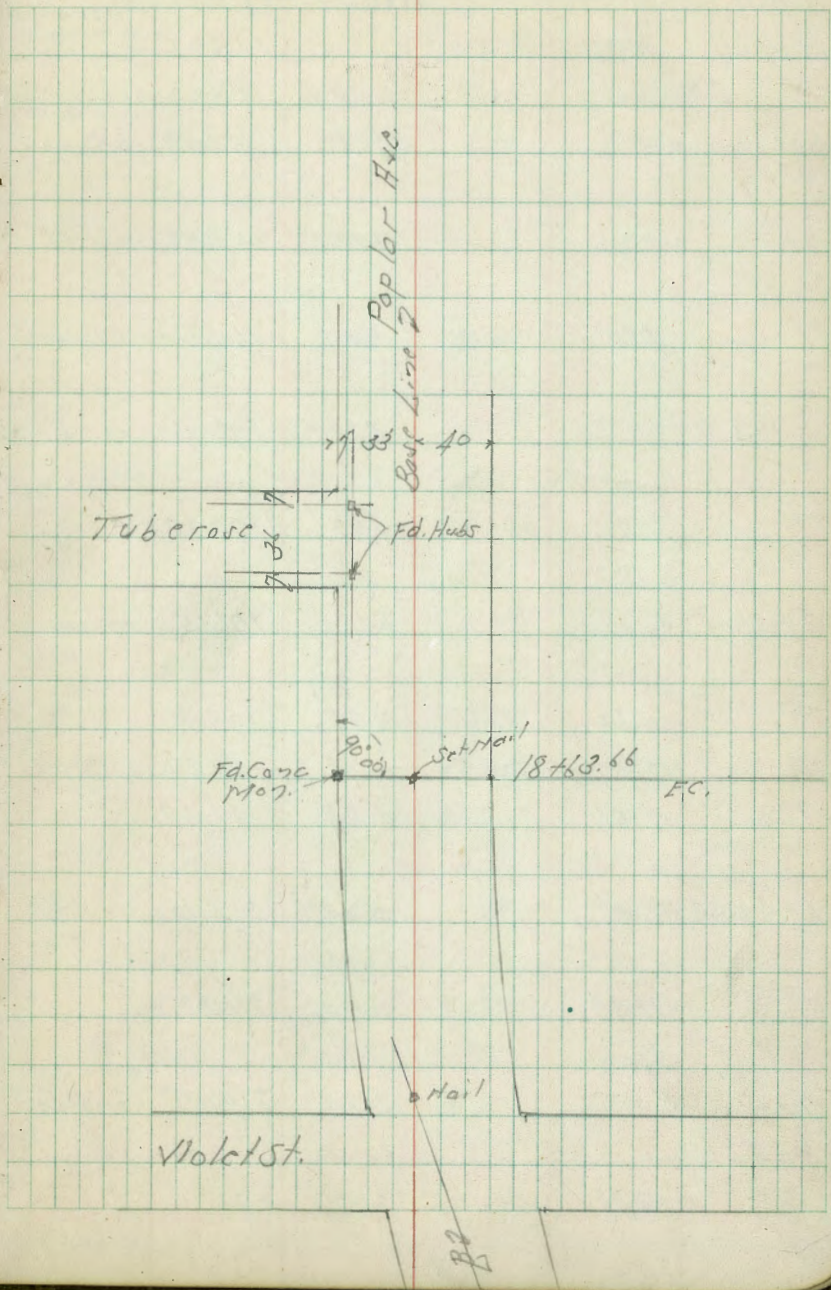




INDEXED

18+63.66

16+90.10 A 20°00' Rt.



INDEXED

BM	11.92	115.87		153.95	Cross 07MH Rim 45'46 2+60 P Line
			11.89	153.98	02 by T. Smoot M.H.R. 10
2+0	Δ P		10.40	155.47	07 Hub
0+0			5.95	159.92	07 Hub
TP	9.88	175.20	0.55	165.32	
0+73.46			4.29	170.91	07 Cor. Man
TP	11.23	181.76	4.97	170.23	
3+51.04	Δ		5.61	176.15	07 Hub
TP	10.20	188.61	5.35	178.41	
TP	12.57	200.44	0.74	187.87	
TP	12.51	212.10	0.85	199.59	
6+28.52	P.O.T		0.00	212.10	07 Hub
TP	11.37	222.68	0.79	211.31	
7+40	P.O.T		3.54	219.14	07 Hub
8+87.60	Δ		10.59	212.09	" "
TP	12.86	234.77	0.77	231.91	

		234.77			
TP	13.09	247.47	0.39	234.38	
TP	12.14	258.64	0.97	246.50	
11+46.80	P.O.T		4.60	254.09	07 Hub
TP	12.63	270.59	0.68	257.96	
13+31.96	Δ		12.53	257.06	
TP	11.77	281.76	0.60	269.99	
14+82.80			4.80	276.96	
15+17			6.41	275.35	
TP	12.72	294.06	0.42	281.34	
16+90.10	Δ		10.07	283.99	07 Hub
18+63.66	EC		4.60	289.46	07 Hub Poplar
TP	5.42	294.76	4.72	289.33	Top of Hill
	1.90	292.84	6.82	287.94	
	9.93	302.18	0.59	292.25	
	5.58	305.80	1.96	300.22	
BM			8.57	297.23	SE BP Quince & Fairmount 297.19



INDEX  
DEC 1 1898



SURVEY - "P" LINE =

BANCROFT EXTENSION  
 From F. ST. - W.D. 20607  
 - To ASH ST.

Walker  
 F. Gregory  
 G. Pope  
 Revision  
 12-5-49

**INDEXED**  
 W.K.  
**DEC 8 1949**

Set Hub & Disc  
 Fd. Hub  
 No replace with  
 New Hub & Disc.

Set Hub & Disc

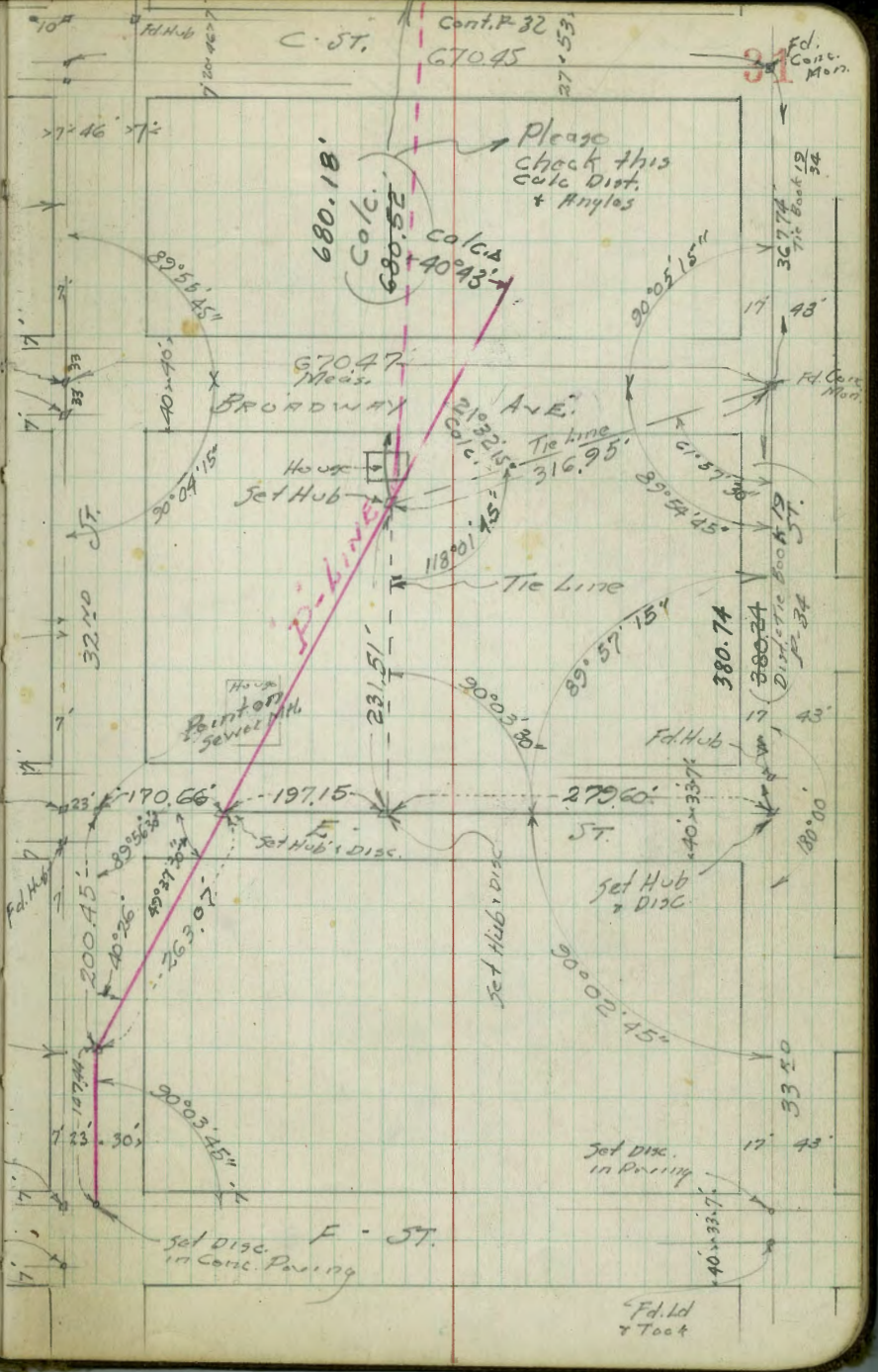
Set Hub  
 & Disc

Fd. Pipe & Hub & Disc

C. ST.

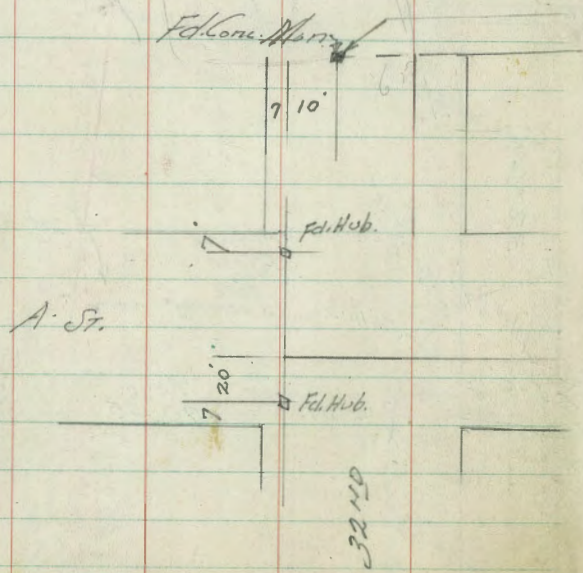
Cont. P 32  
 670.45

31  
 Fd. Cont. Mon.



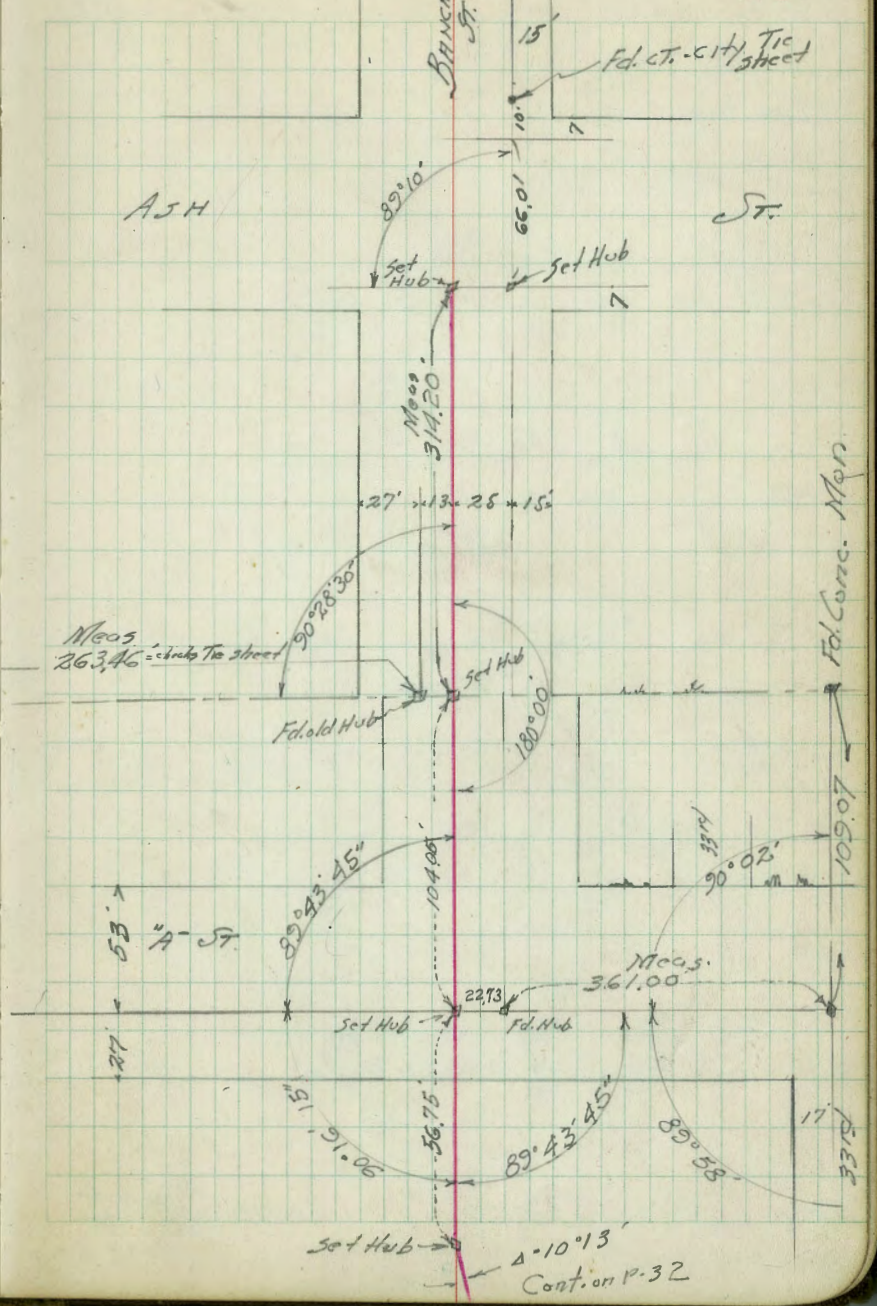


BANCROFT EXTENSION



32110

103  
185



4-10-13  
Cont. on p. 32

Wabash Blvd Section of Wabash Ave  
 Interchange Cross Section Wabash Ave  
 Right Lane Sta. 11+0 to 22+0 C-Line

13+0

+76.26 FC

+50

12+0

+50

11+0 = End of Grading This Job

BM 627 208.27 201.90  
 S.M. Hill  
 C. Hill  
 18850 Phone  
 2072 29

Lit - West  
 Jan 28-51 Slope Stake  
 F.S. Young  
 Garber  
 Parot  
 W 2073

Rt. = Feet 34

207.7 205.3 205 \* 2080  
 06 3.9 2.9 0.5  
 10 31 49  
 37.40 ft

207.1 204.8 205A 199.9  
 12 3.5 2.9 8.1  
 10 34 53

206.3 204.0 204.8 198.0  
 20 4.3 5.5 10.3  
 39 20 34 45.7 ft

194.4 201.6 202.6 204.0 198.0  
 13.9 6.7 5.7 4.5 10.3  
 9.1 10 38 45.7 ft  
 11.90

194.0 200.3 201.0 201.5 202.4 199.9  
 14.3 8.0 7.3 6.8 5.9 8.1  
 9.0 1 20 37 40 = Top of Fill

193.5 200.1 201.2 202.7  
 14.8 8.2 7.1 5.6  
 9.0 = Top of Fill 35 50

208.27

15+0

+50

14+0

+75

+50

TP 5.80 206.20 7.87 200.40  
4+0 M.H.  
Set Moberg  
Ave + Moberg  
Blvd

13+25

208.27

2030 2010 2000 199.6 196.7  
3.2 5.2 6.2 8.5 9.5  
12-19 7-cvt 33 30-19

199.8 198.6 198.0 196.3  
6.4 7.6 8.2 9.9  
17-Natural Ground 30-Natural Ground

197.3 198.8 199.2 197.7 202.2  
8.9 7.4 6.9 8.5 10  
10 12 21 34 on 35 ft

196.2 202.4 202.1 202.4 205.8  
10.0 5.8 7.1 6.8 6.4  
12-70 3 38 on 35 ft

195.7 207.7 205.7 204.0 204.2 208.2  
9.5 7.5 9.5 2.2 7.0 7.0  
34-70 15 10 34 on 35 ft

206.30 201.5 204.6 204.8 204.3  
0.8 3.7 3.5 4.0  
12 19 40 on 35 ft

208.27

TP 6.89 221.32 1.35 214.43

18+0

+50

17+0

+50

16+0

984 215.78 0.26 205.94

15+50

206.20

208.3 211.8 212.3 213.2 212.0 214.3 214.6 216.0  
 7.5 4.0 3.5 2.6 3.8 1.5 1.3 9.8  
 54.5 45 45 11 15 33 57-Top  
 Fill

207.7 211.4 211.6 211.8 212.3 212.7 216.4  
 8.1 4.3 4.3 4 5.5 5.1 9.3  
 54 44 46 40 40 38 50-Top

209.4 211.2 211.7 211.8 212.3 213.4 215.1  
 6.1 4.6 4.1 4.0 3.4 2.3 15.7  
 50-Top 44 40 40 38 38 50-Top

209.2 210.2 211.3 212.1 205.0  
 6.6 5.6 4.5 3.7 10.8  
 40 35 37 49-Top

204.4 208.5 209.3 209.6 200.5  
 11.4 7.6 6.5 6.2 15.3  
 56-Top 45 30 47-Top  
 215.78 115-Top

202.4 203.7 204.9 208.6 199.4  
 3.8 2.5 1.3 2.6 6.8  
 15-Top 13 44 33  
 Fill 206.20 119-Top  
 Fill

21+0

+50

20+0

+50

19+0

18+50

214.3	212.7	213.3	213.2	212.6
7.0	8.6	8.0	8.1	8.7
4.2	1.7		1.8	4.1-1.6

215.3	213.3	212.9	212.5	210.6
7.0	8.0	8.4	8.8	10.8
4.5-1.6	1.8		1.8	3.8-1.6 8.0-1.0-1.3

212.6	213.8	213.7	210.9	210.7
8.7	7.5	7.6	10.4	10.6
3.8-1.6	1.8	1.6		6.0-1.6-1.1

211.7	213.9	215.8	210.2	209.1
9.6	7.1	5.5	11.1	12.2
5.0	3.7	1.6		5.0-1.6-1.1 1.0-1.0-1.0 1.0-1.0-1.0

210.9	213.2	214.6	219.4	220.1	217.5	209.0
10.4	8.1	6.7	1.9	1.3	3.8	12.3
4.5	1.0	3.5	1.7	1.4		1.7-1.0 1.4-1.5-1.1

211.3	212.6	212.7	214.1	217.9	218.0	207.0
10.0	8.7	8.6	7.2	3.4	2.3	14.3
4.5-1.0	4.1	3.7	1.2		1.2	1.3-1.0 1.0-1.0-1.0 1.0-1.0-1.0

BM

3.48 318.09

2072-11  
07 RPP/66  
75 dt.  
2271020  
21805

TP

7.88 221.52 7.18 214.14

2270

21750

22132

dt.

z

pt.

38

214.4

214.3

215.5

215.3

215.7

6.9

7.0

5.8

6.0

5.6

50-119

20

119

20-119

50-119

214.9

213.1

213.7

214.4

213.2

6.7

8.2

7.6

6.9

7.6

18

20

20

119

221.32





2+00

1+96.05 = 90° Tie to 1 1/2" City Eng. Pipe 30' RT.

1+92 = B.M.

1+20 = Approx. E. EXIST. WASH (Under. Banks here.)

1+05 0.35' LT E.M.H.

1+00

0+75 = W'ly Line - toe, Fill - Wash

0+50 = W'ly Shoulder Fill - RT.

0+45 = W'ly Shoulder Fill - LT.

0+40.5 = W'ly Line Bridge - cuts along Line Bridge

0+34.6 { 20.6 RT = Sety " "  
3.5 LT = NE'ly Corn. Bent

LT

E

RT

40

11.5 10.5 10.4 9.8 8.8 8.7 7.8  
100 60 30 30 60 100

12.1 11.4 11.0 10.2 11.3 10.4 10.0 9.7 9.1  
180 60 30 15 20 30 60 100

13.1 12.5 11.5 11.1 9.5  
100 60 60 100

8.77  
0.35  
RTM } 169.82  
(F.B. 1848-12

165.6 166.0 168.4 166.7 168.0 169.3 170.4  
12.9 12.5 12.1 11.8 10.5 9.2 8.1  
100 60 30 30 60 100

10.8 9.8 9.5 7.8 7.5 7.9 9.4  
100 60 30 30 60 100

+3.6 4.9 5.3 4.6 +10.6 +4.0  
30 3 toe 17 toe 44 TP 100

+9.6 +10.0 4.8 5.0 4.6  
100 30 TP 3 toe 19 TP

188.3 189.78 190.62 186.44 174.0 188.62 173.7 199.01 187 189.06 192.14 191.28 200.4  
+9.8 +11.32 +12.16 +9.98 4.5 +10.16 4.8 +10.55 4.8 +10.60 +13.68 +12.82 +11.9  
28 26.6 26.6 35 2 26.6 8.55 18 20.6 43.5 49.5 44  
9th 5th 5th 5th 2nd E 9th 5th 5th 5th 5th 5th 5th  
Tp. 5th 5th 5th 2nd E 9th 5th 5th 5th 5th 5th 5th 5th  
edge edge edge edge edge edge edge edge edge edge edge edge edge  
Bridge Bridge Bridge Bridge Bridge Bridge Bridge Bridge Bridge Bridge Bridge Bridge

178.46

4450

4400  
SECTION'S RADIAL

T.P.#4 8.38 185.04 2.01 176.66

T.P.#3 4.38 178.67 7.17 174.29

3+90.87 = 90° Tie to 1/2" Pipe (R.F. 2718) 30' R.T.

3+88.88 = PT. INT. N'ly Line 110'

3+82.27 = B.C. = 44° 56.875 RT  
E.R. = 1000'

3+81.64 = E.M.H.

3+50

3+00

2+50

L.T.

S

R.T.

41

+26.6	+19.6	6.7	6.0	6.6	10.5	10.1	6.2	6.9	5.9	4.0	+4.6	+5.1	+18.6	+18.7	+11.2
145	130	76	62	55	34	26	15	23	32	50	90	122	137	197	
		Toe										Rim	Ridge	Blk	

9.9	9.2	7.9	11.4	11.6	10.8	7.2	8.4	7.3	8.1	7.9	7.9	7.2	4.5	3.5
100	60	35	30	25	15	13		7	24	30	60	90	135	150
Toe				E wash								Toe		

185.04

3.4	5.1	3.2	3.1	5.7	4.8	3.0	3.4	1.7	2.3	3.2	3.6	4.6	4.5
110	60	52	41	34	30	27	44	7	20	30	60	100	112
Toe		Brk	Brk	E wash									Toe slope

$= 176.16$   
 Rim (F.B. 1848-13) ← set 19.61

4.3	3.2	6.6	4.9	3.8	2.5	4.1	4.9	5.7	5.1	2.4
100	60	45	30		5	30	60	100	150	2.50
		E wash								Toe w/ly Ridge

7.5	6.6	7.7	4.8	5.3	5.6	6.1	6.1
100	60	51	30		30	60	100
		E wash					

10.5	8.7	7.5	8.5	7.4	7.4	7.3
100	60	30		30	60	100

178.46

6+50

T.P.#6

12.79 198.21

4.24

185.42 = Common 7' ± LT.  
STA. 6+53

6+22

29.3 ± LT = G.M.H.

6+00

5+65 = MOUTH OF NLY CANYON 56' RT.

5+50

T.P.#5

7.91 189.66

3.29

181.75

5+00

LT

C

RT

42

+68.4	+27.2	+9.2	11.1	13.8	12.0	13.7	11.8	8.1	+26.2	+34.2	+39.4	36.5	+32.2	+47.4	+59.7
30.5	219	147	109	91	77	25		22	87	133	167	194	204	233	295
Rim			Toe	Toe											

198.21  
/4.89  
29.3  
Rim

+63.6	+47.9	3.8	3.6	5.2	5.6	8.9	8.7	8.4	7.7	8.9	2.1	+20.2	+22.3	+18.6	+29.0	+47.1	+57.1
221	176	93	61	38	13	12	6		4	18	42	88	107	142	168	216	284
Rim			Toe		Brk		G. Wash										Rim

+81.8	0.0	6.2	9.0	11.0	16.7	10.8	8.7	8.8	10.0	9.5	6.2	+8.8	+32.2
235	76	51	12	8	4		3	19	21	45	56	100	145
Rim	Toe				G. Wash							Brk	Brk

+83.5	+45.4	2.1	9.0	10.7	10.1	7.1	9.8	+4.1	+29.9	+38.4	+33.4	
230	162	63	10	6			55	36	87	131	243	290
		Toe		G. Wash				Toe				

189.66  
/

+64.4	+32.5	2.3	5.4	7.1	8.3	6.3	5.9	6.2	4.7	3.8	+18.6	+32.3	+36.5	+31.5
195	128	65	37	35	15	10		8	10	34	80	156	219	279
		Toe	Brk							Toe	Brk		Rim	

185.04  
/

B+50

11.9	35.9	511	52.7	53.5	53.6	53.4	18.7	2.9	+11.1	+18.3	+21.7	+10.5	+10.5	+22.9
298	235	210	135	125	118	90	30		64	101	130	141	159	178
RIM		Toe		E	Toe									
			WASH											

B+30

12.7# RT = E.M.H.

3.0  
12.7  
RIM

B+00

7.5	293	38.7	52.1	55	55.3	58.1	58	46.4	18.7	11.1	3.1	+6.3	+20.4	+16.3	+9.2	+17.9
315	254	232	247	199	163	113	95	74	26		34	94	147	169	185	207
RIM			Toe		E	WASH	Toe									

T.P.#11 12.61 248.07 0.48 235.46

248.07  
+

T.P.#10 12.71 235.94 12.02 223.23

7+50

+21.7	34.6	44.3	45	45.6	39.7	24.4	12.1	+0.2	+1.3	+9.4	+24.4	+24.8	+9.4	+9.4	+25.4
318	208	159	120	115	90	44		51	113	154	177	207	248	260	277
RIM			Toe	E	WASH	Toe					BK				

T.P.#9 13.09 235.25 0.18 222.16

235.25  
+

T.P.#8 12.70 222.34 0.05 209.64

7+00

+61.6	4.1	21.8	22.2	21.5	7.9	+20.8	+35.3	+43.5	+37.5	+45.8
310	199	140	136	99		71	130	21.5	235	258
RIM	BK	Toe	WASH							

201.8  
220.5  
245.0  
250.2  
247.2  
255.5

T.P.#7 12.76 209.69 1.28 196.93

209.69  
+198.21  
+



12+50

12+00

4+67 = Brk E

11+50

T.P.#16      12.46      248.38      0.67      235.92

11+10 = Approx. E N.W. V.S.W. Canyon (Bottom)  
(around N.W.)

T.P.#15      1.02      236.59      11.00      235.57

T.P.#14      5.53      246.57      11.86      241.04

T.P.#13      0.94      252.90      8.89      251.96

LT

E

RT

45

11.6	35.3	41.6	37.6	33.8	19.8	12.8	21.7	+17.2	+17.2	+30.5	+34.7
175	142	89	56	11	10	10	64	77	84	103	149
	Toe			Toe	Brk						

15.2	36	48.2	46.2	34.5	21.2	8.8	0.6	+1.02	+21	44.6	44.6	20.1	0.1
211	158	117	83	64	23		16	49	67	75	89	93	187
on sky slope	Toe	E	Toe										Approx. E N.W. V.S.W. Canyon
		Toe	Wash										

37.3	23.8	4.2	+2.2	+4.4	3.8	+2.9	4.5
84	46		17	31	55	79	151
	Toe						

5.4	24.2	42.9	45.2	45.2	33	24.8	14.0	7.4	+22.6	11.2	+1.5	+10.6
270	223	118	104	91	83	69	38		44	82	150	168
sky slope		Toe	Wash	Toe					W.H.	E	N.S.	Canyon
									Blow	N.S.		
									N.W. V.S.W.			Canyon

248.38

15.2	18.7	31.1	35.1	31.1	23.8	19.7	14.0	10.6	6.4	+11.4	+23.3	+4.5	+25.3
227	176	142	131	126	63	36		19	25	55	75	100	126
on sky slope	Toe		E	Toe									
			Wash										

N.W. Canyon

236.59

DEC 1 1955

14+90 = B.K.

14+50

14+15

14+00

13+87

13+77

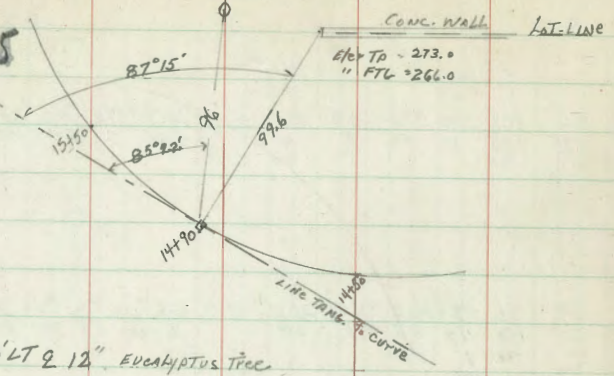
13+77

13+75 - Local (B-B.K.)

13+50

13+00

P. Pile # A-2941

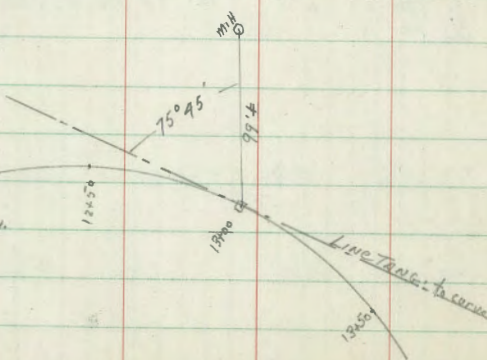


82' LT & 12" EUCALYPTUS TREE

82' LT & 12" " Tree

74' LT & 12" EUCALYPTUS TREE

73' LT & 12" " Tree



Loc. EX-157 M.H.

14.4	28	31.1	21.2	7.6	2.2	77.9	+26.5
168	130	109	38		22	93	138
	OK		OK				

286	319	288	23.6	7.4	13.2	20.4	48.1	50	24.4
226	136	82	42		42.5	66	77	84	118
	OK		OK						

20.1	31.8	35.6	33.4	28.3	19.3	9.8	11.6	19.2	19.2	24.7	30.5
145	82	75	67	26		18	46	77	85	99	124
ON	TOO	OK		OK							

29.0

7.8	21.3	36.8	24.0	11.4	14.5	16.5	11	27.4	32.7
175	147	40		27	70	74	85	110	130
	OK	TOE							

32.5  
99.4  
2.11

24	33.6	38.2	23.7	7.0	16.9	16.9	+28.3
155	113	34		35	79	90	105
ON	OK	TOE					

248.38  
K



T.P. #19 9.50 281.71 0.32 272.21

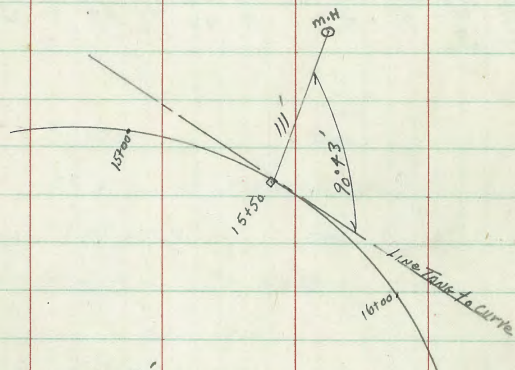
T.P. #18 12.31 272.53 0.38 260.22

16+50

T.P. #17 13.01 260.60 0.79 247.59

16+00

15+50



15+25 = TP Ridge 31' LT  
Extends N45°W

15+40 Brk

15+27 102' LT @ 12" EVC - Tree

15+15 = E Gully

15+08 107' LT @ 15" EVC - Tree

LT. E RT 47

219.1	224.2	225.9	228.1	235.5	213.0	212.0	213.0	214.1
21.5	33.4	34.7	29.9	5.1	12.4	11.4	12.4	13.6
186	143	100	56		25	50	75	125
on slope	Toe	Wash	Toe					

260.60

230.5	225.3	223.8	218.3	215.5	212.5	211.1	206.8	203.5	202.8	200.8	197.5	195.8	191.5	277.5
4.9	23.1	24.9	20.1	13.9	1.9	2.7	13.4	11.1	4.4	2.4	0.9	2.4	29.1	
185	123	93	19	13		15	26	41	54	67	81	106	156	Level
on slope	Toe	Wash	Toe	Brk		TP					Brk			

24.0	26.1	21.7	9.8	6.8	12.7
11	28	24		7	4.9
RIM	Toe	Brk		TP	Brk
mid				Ridge	Gully

36.8	25.7	26.4	27.5	19
64	31		15	38
Toe	TP		Brk	on slope
Ridge	Ridge		Gully	

6.3	20.5	25.7	28.1	25.3	14.2	10	8.9	11.4	13.5	6.9	42.7	28.2
202	140	81	44	81	20.7			15	16	6.3	125	150
	Toe		Wash	Toe	Brk				Brk	Brk	Brk	

15.4	28.1	29.8	24.7	19.6	5.7	4.6	24.4	26.4
166	185	83	56		35	85	102	132
Toe	Toe	Wash	Toe		Brk	Brk		

248.38

(8" STD. CRS - 10' PKG - SWAITS, 4' BK CB - See pg 4-6)  
 of CONC. MAT.

18+60.6 of S/E edge of Imp's Nile ST. - (sect. along edge Mat.)

All Readings from + including 18+60.6 to end top are ACTUAL elev's: Not Rods

Note: CONTINUE SECTIONS WITH D.M. Elev Rod:  
 OFF B.M. SHOWN IN CHK: 4 USING Elev. 279.56

CHK: 2.15 279.56  
 = 279.70 =  
 N.E. 13. P  
 Nile + QUINCE

18+50

18+32 2.6 RT E.M.H

18+15 32.6 LT E Pole #P-3499

18+03 19' RT end Fill-yd

276.9	278.26	278.23	278.28	277.73	278.12	278.84	278.86	279.49	279.57	279.66	280.8
36 Shoulder	33 B.M.	281 FW	342 28	272 2	278 12	278 84	16.05 C	16.05 CS	26 FW	25 BK W.	85 P

281.7	281.4	281.5	282	277.8	281	279.5	281.8
44	36.3	22.2	9.5	3.9	3.2	3.0	2.2
130 B.M.	103	73	32	22		30	50
							0.9 75

3.34  
2.6  
R.M.  
M.H

1/4  
28  
1/3  
37  
19  
N.W. 1/4  
CANYON FILL (760)  
44

285.1	283.6	279.5	286.1	286.2	276.4	277.3	277.4	278.0	281.6	278.4	278.7	280.0
46.6	78.1	51.9	25.6	16.5	3.1	4.4	1.3	3.7	0.1	3.2	3.0	1.7
204 W. 1/4 Toc	164	157 Toc	91	56 B.M.	33 Brown Canyon	28 B.M.		16 B.M. Toc	19 B.M. Toc	30 B.M. Toc	30 B.M. Toc	100

284.6	281.8	280.6	280.3	276.8	276.0	276.0	276.6	276.3	276.6	277.5	277.0
47.1	48.9	53.1	21.4	4.9	5.7	5.7	3.1	3.4	4.1	4.2	4.7
197 W. 1/4 Toc	145	133 Toc	64 B.M.	39 B.M. Canyon	8	11	70	69	76	76	96

281.1	277.5	279	278.3	274.5	274.5	275.1	275.1	274.7	274.7
51.6	54.4	49.8	7.4	7.2	7.2	6.0	6.0	7.6	7.7
153 Toc	122 W. 1/4 Toc	73 Toc	7 B.M. Canyon	10	10	27	62	65 B.M.	84

16+93 - BRON FILL - E -  
 Nile Canyon  
 (N.W. 1/4 slope)

281.71



21+57.5 30' RT end CON. WALL

21+50

21+22 29.7 RT Bay 4' CON. WALL-8" wide

21+14.5 29' RT E 6.5' CON. DR.

21+00

20+50

20+23.5 29' RT E 3' CON. WALK

20+13.5 29' RT E (8' overall) Ribbon (2' wide) Drive

20+00

285.2  
40  
285.1  
30  
285.13  
29 BK  
285.10  
29 W  
285.05  
20 CB  
284.97  
20 G  
285.31  
20 G  
285.58  
20 G  
286.06  
20 CB  
285.97  
29 W  
286.05  
29 BK  
285.7  
30 FTG  
286.14  
30  
289.40  
30  
289.6  
31  
9th  
Level

285.2  
29.7  
FTG

283.3  
50  
284.  
30  
284.0  
29 BK  
283.93  
29 W  
283.12  
20 CB  
283.23  
20 G  
284.12  
20 G  
284.22  
20 G  
284.86  
20 CB  
284.90  
29 W  
284.94  
29 W  
285.2  
30  
288.4  
40  
288.7  
50  
285.33  
29  
289.06  
48  
289.66  
80  
F1.994

281.5  
50  
282.4  
30  
282.60  
29 BK  
282.60  
29 W  
282.71  
20 CB  
282.10  
20 G  
282.99  
20 G  
283.10  
20 G  
283.70  
20 CB  
283.79  
29 W  
283.80  
29 BK  
284  
30  
287.4  
50

283.26  
29  
286.64  
45  
287.43  
55

282.37  
29  
N/4  
282.27  
29  
S/4  
286.50  
45  
N/4  
286.48  
45  
S/4  
287.31  
60  
M.  
9th

276.8  
50  
281  
35  
281.3  
30  
281.95  
29 BK  
281.29  
29 W  
281.40  
20 CB  
280.80  
20 G  
281.82  
20 G  
281.58  
20 G  
282.52  
20 CB  
282.66  
29 W  
282.68  
29 W  
283.  
30  
286.5  
50

CHK

279.56 - 279.56

= 279.70 =

N.E.B.P.  
NILEY QUINCE

Note: See pp. 52. For ties to bldg's - etc.

22+00

21+63

29' RT E 10' com. Dr.

286.1

30

286.16

29

CHK

286.09

24

24

286.05

20

CB

285.85

25

G

286.29

286.37

26

G

286.99

20

CB

287.10

24

24

287.15

29

29

287

30

30

286.42

27

289.92

48

290.11

54

54

54

54

54

54

54

54

54

54

54

54

54

54

54

54

54

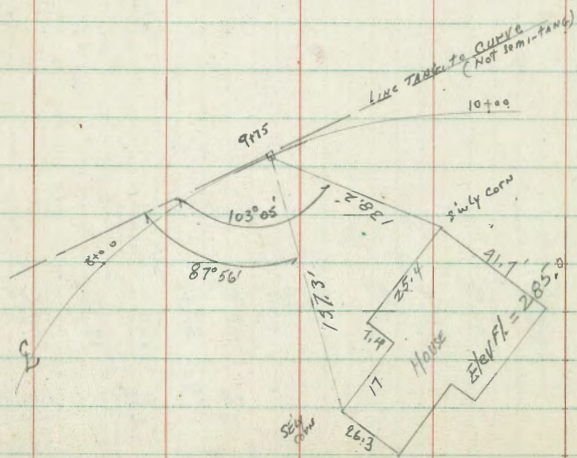
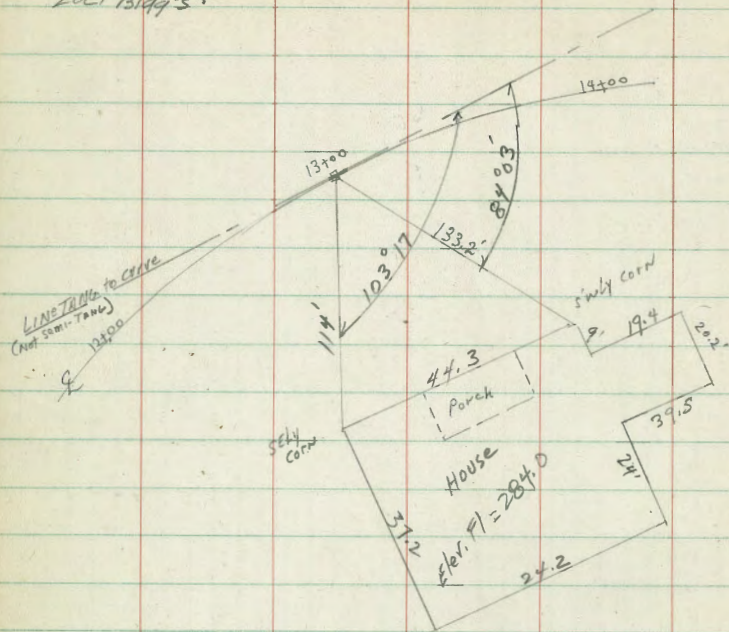
54

54

54

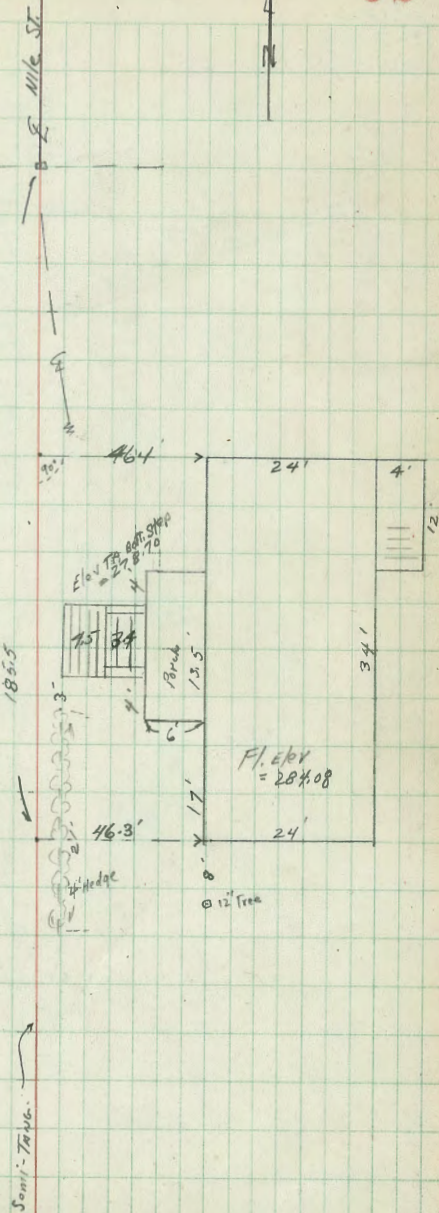
54

Loc. Bldg's



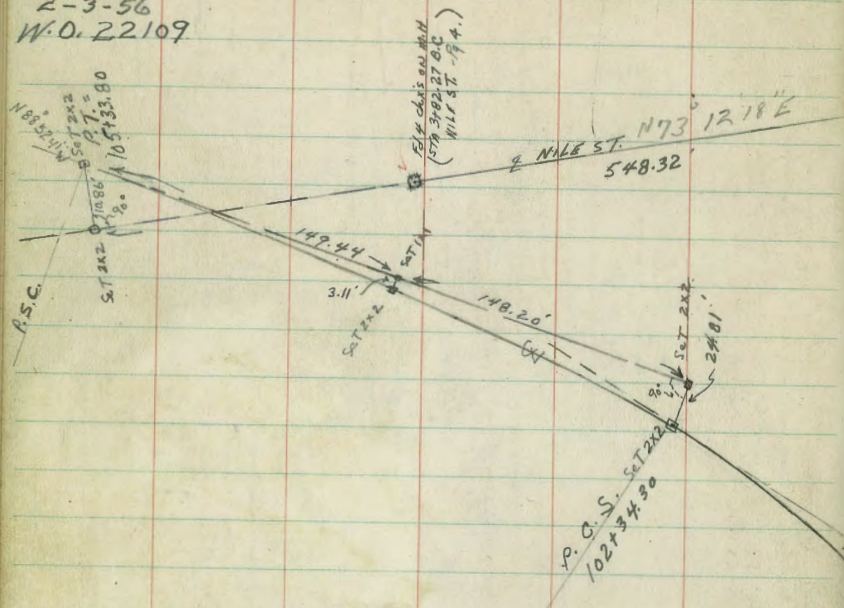
52

19+51.25 = E.C.



CLARK  
GARBER  
ENGINEERS  
2-3-56  
W.O. 22109

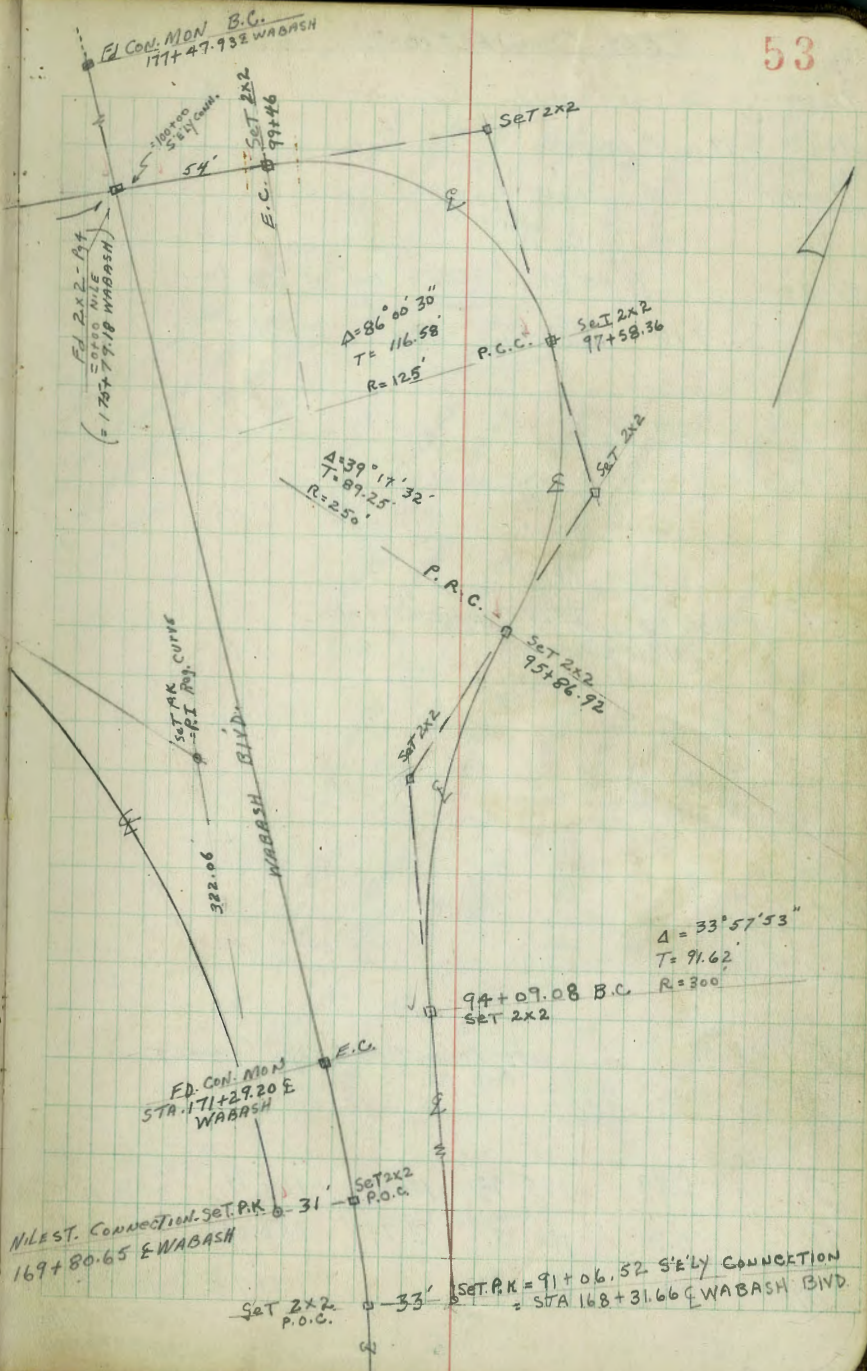
NILE ST. CONNECTION TO WABASH  
BLVD.



$\Delta = 14^{\circ}18'$   
 $L = 299.50'$   
 $R = 3188'$   
 $\Delta = 6^{\circ}22'$   
 $L = 149.44'$

$\Delta = 56^{\circ}27'04''$   
 $L = 600'$   
 $R = 591.15'$

P.C.C. =  $96+43.15$   
= STA



$\Delta = 86^{\circ}00'30''$   
 $T = 116.58'$   
 $R = 125'$

$\Delta = 39^{\circ}17'32''$   
 $T = 89.25'$   
 $R = 250'$

$\Delta = 33^{\circ}57'53''$   
 $T = 91.62'$   
 $R = 300'$

NILE ST. CONNECTION SET.P.K. = 31  
 $169+80.65$  E WABASH

Set P.K. =  $91+06.52$  S'E'LY CONNECTION  
= STA  $168+31.66$  WABASH BVD





95+00

94+75 - Toe Slope to RT

94+72 B.G.L.T. to Fe. Coy 8' BERM (see plans)  
(inside)

94+50 (Spot's Road) on curve

94+09.08 = B.C. - RT

93+50

93+35 = E Edge AC - E. Lane

93+00

92+50

180.89. LT. 2.98 3.42 2.53 2.9 2.6 2.5 +2.5 +1.5 +2.33 +2.72 +30.0  
57.5 3.03 2.71 2.2 2.0 2.0 2.0 55 68 100  
E Lane cut BERM shoulder 5' cut 2' cut 2' cut 2' cut 2' cut 2' cut 2' cut 2' cut 2' cut

179.59. 4.22 3.62 5.3 1.8 +1.6.1  
7.9 7.7 8 8 38 77  
cut BERM ditch toe slope

178.90. 4.99 4.98 4.7 5.7 5.7 1.60 2.40 +28.5  
33.3 2.3 3 1.4 2.2 75 100  
E Lane shoulder toe cut BERM

176.94. 6.99 6.95 6.49 5.95 7.0 9.7 +1.3 +2.3 +24.6  
40.7 2.6 3.7 E.A.C. 3 5 2.8 4.4 75 100  
W.A.C. E. Lane E.A.C. shoulder ditch toe cut BERM

175.09. 8.78 8.25 7.72 7.8 7.5 8.8 8.8 +10.5 +1.6 +21.1  
34 2.1 1.2 E.A.C. 2.8 2.8 4.4 80 100  
W.A.C. E. Lane E.A.C. shoulder ditch toe cut TRUST BANK

8.14  
A.C.

173.45. 10.42 7.82 9.19 9.8 8.8 9.8 9.7 +7.7 +16.7 +16.0  
32.4 1.7 2 10.6 13 2.6 4.2 57 100  
W. Edge AC E. Lane E.A.C. shoulder toe cut BERM

171.86. 12.01 11.38 10.82 10.68 10.1 11.1 10.7 +7.0 +10.3  
20 W. Edge AC 15 E. Lane 2.6 13.7 16.0 25.5 47 70 100  
AC E. Lane E.A.C. shoulder ditch toe cut BERM

183.87



Note: For Sections Ahead see pg. 39

CHKs

11.71 191.71 = 191.73 = ST6 B.M. (P. 39)

99+46 = E.C

99+25

89+RT & m.H. (SOWER) Flush with grad

99+20 = Toe CUT-BANKS

99+00 = Wly Rim CUT-BANK

98+90 = Rim CANYON AT E

98+75

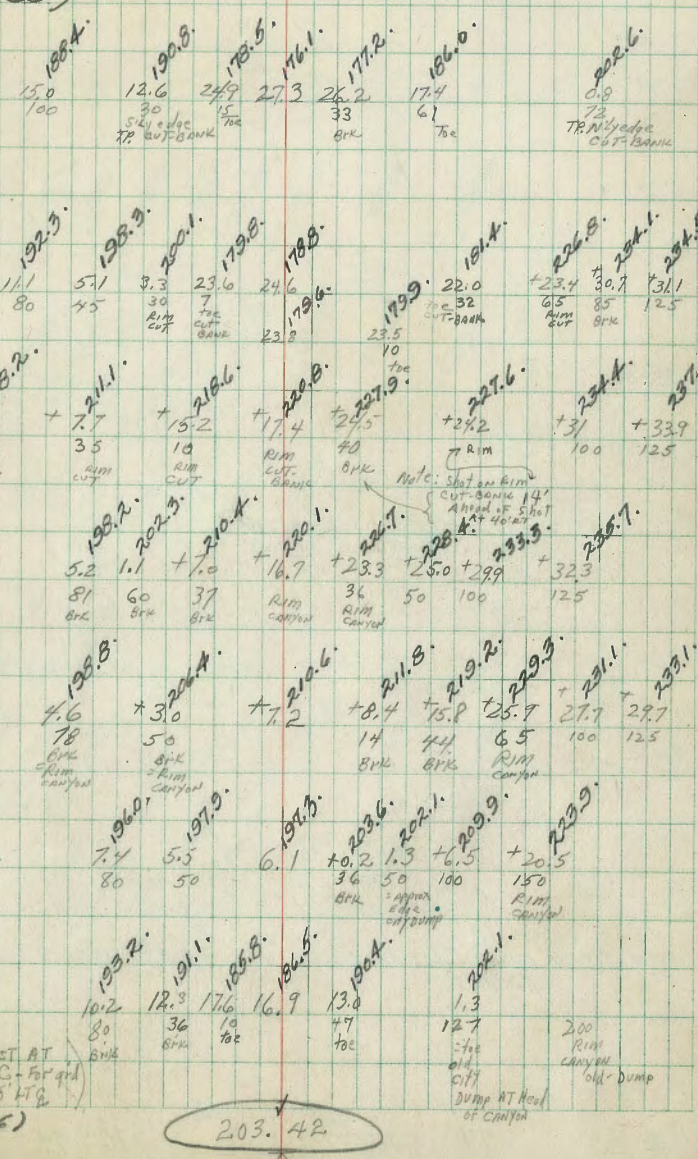
98+59 82 RT & 12" Pepper Tree

98+50

4' RT = E 48" Palm Tree  
98+30 = Batt. Ely + Wly Canyon

T.P 11.02 203.42 0.59 192.40

Note:  
See Sect AT  
97+5836-Pi.C.C. - 5' grad  
12.5' HT  
(1576)





- S'WY Connect.

101+00

100+97 78' RT E Pole # 2780

100+53 = TP W4 BANK

100+51 = toe W4y BANK-CHANNEL

100+50

100+48.5 E 24" CULVERT 93# RT. (Radial) = [STA 174+18 E WABASA]

T.P. 7.51 180.99 11.88 173.48

100+00

99+50

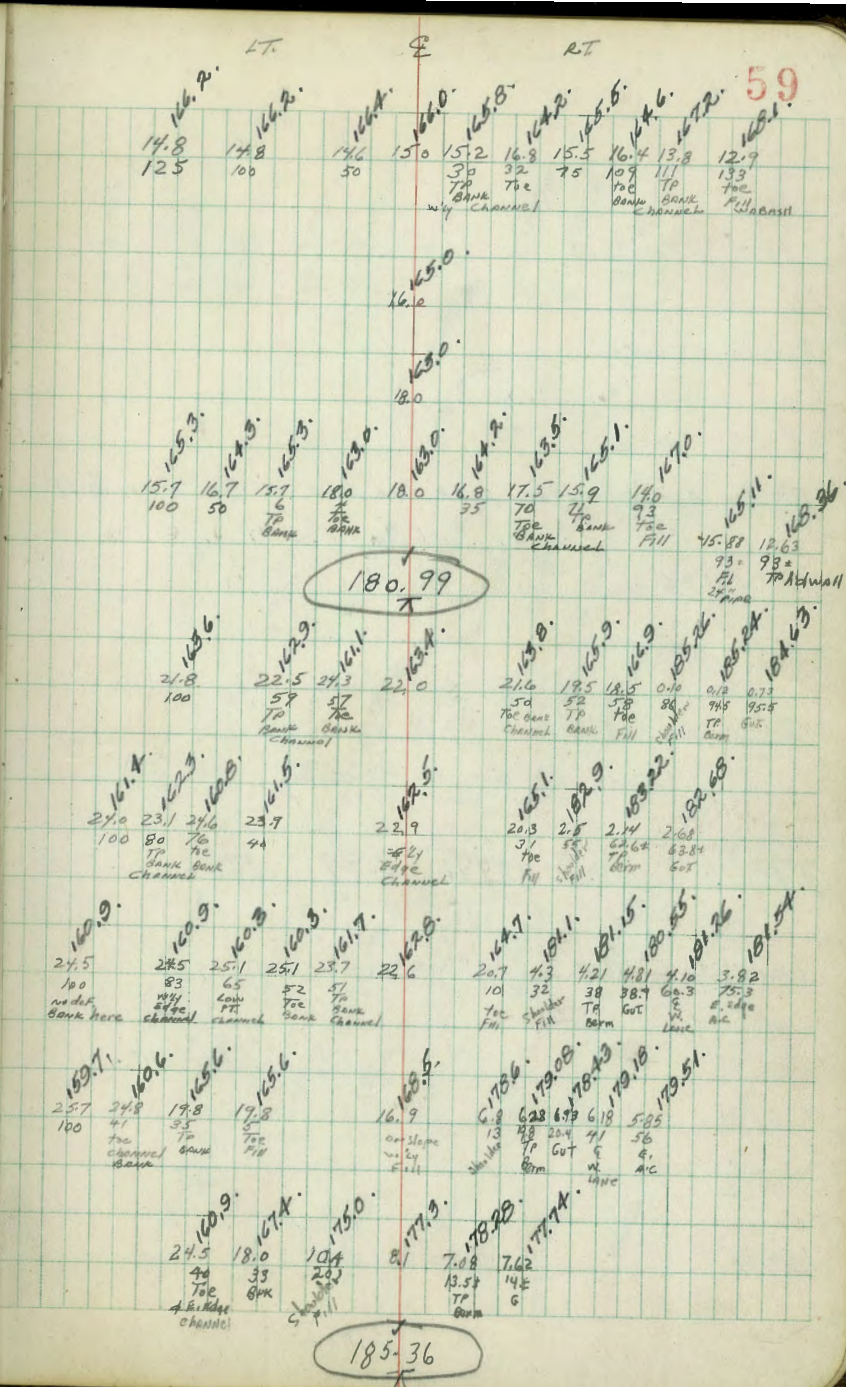
99+00

98+96 39.4 LT = E Deadman #

98+60 50.5 LT = E Pole 2706

98+50

98+30 = N4y Edge Fill





Note: For extended sections this area see pg 39 etc

chk. 4.53 191.71 = 191.73 = B.W. W.4 in let STA. 176+35 (E. W. BASH Blvd) STATION

T.P 4.89 196.24 5.11 184.35

chk. 13.32 176.14 = Rim m.H  
3+82.27 B.C. NILE ST  
see pt 41

105+33.80 = P.S.C.

104+73.90 = #2 spiral

187.6  
1.9  
77  
82%

181.8  
7.7  
44  
54%

179.7  
9.8

181.4  
8.1  
57  
7%

194.7  
45.2  
80  
on slope

183.0  
6.5  
50  
on slope

179.5  
10.0  
35  
%c  
slope

179.9  
9.6  
26  
82%

177.7  
11.8  
24  
81%

176.4  
13.1  
7  
81%

177.7  
11.8

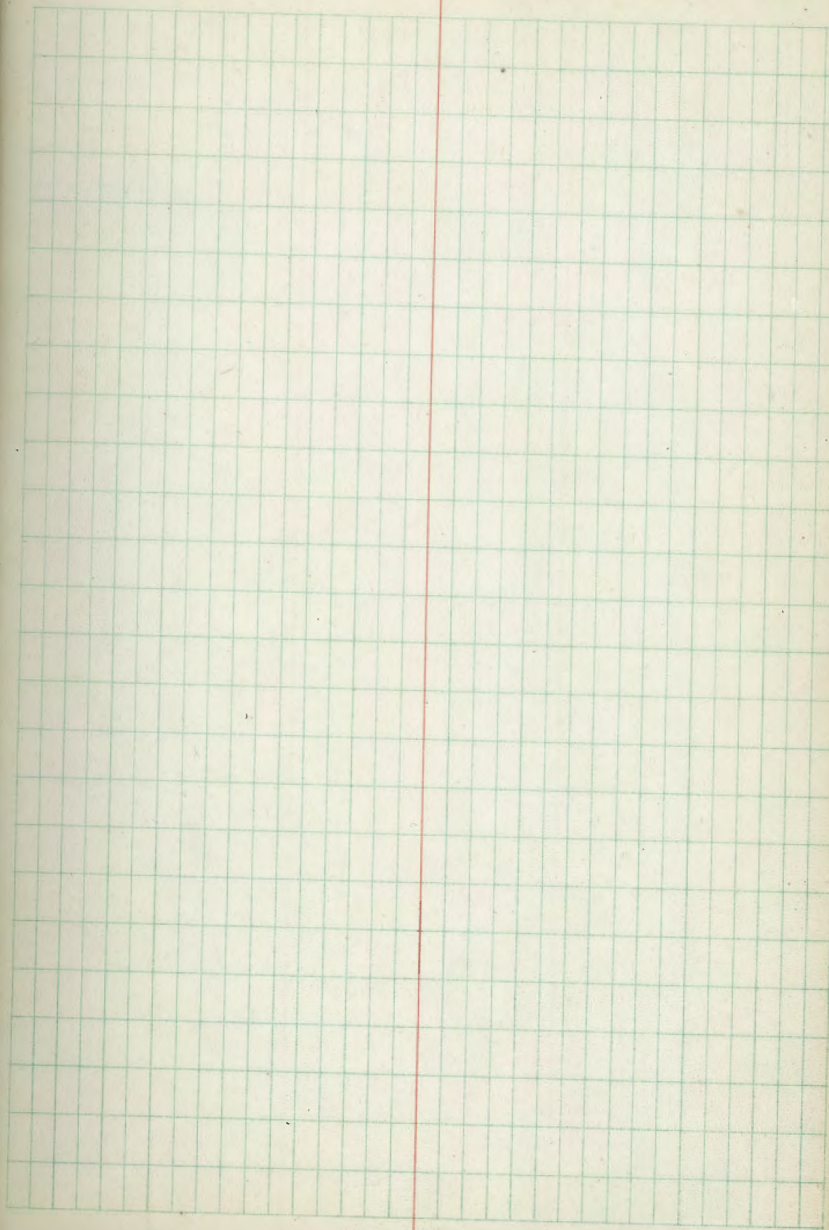
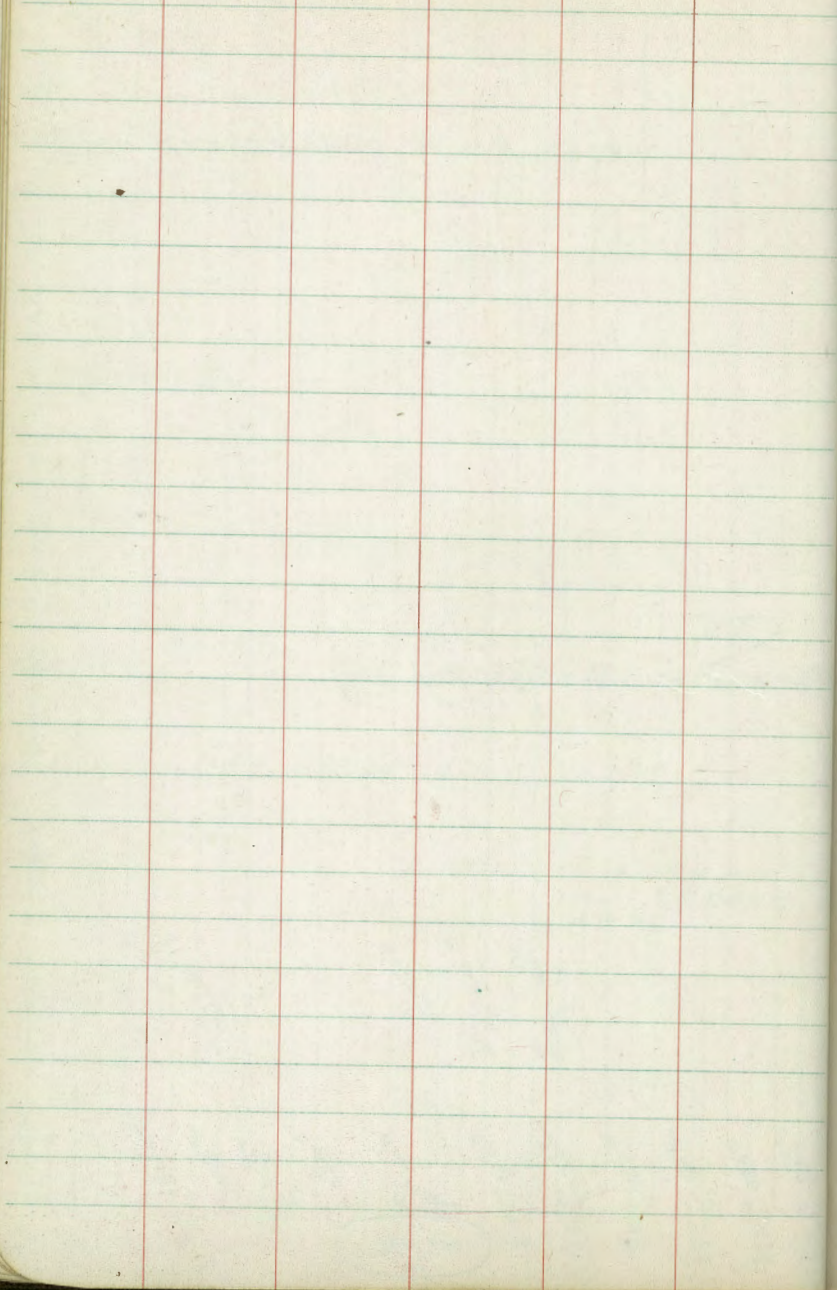
179.2  
10.3  
2

179.1  
10.4  
20

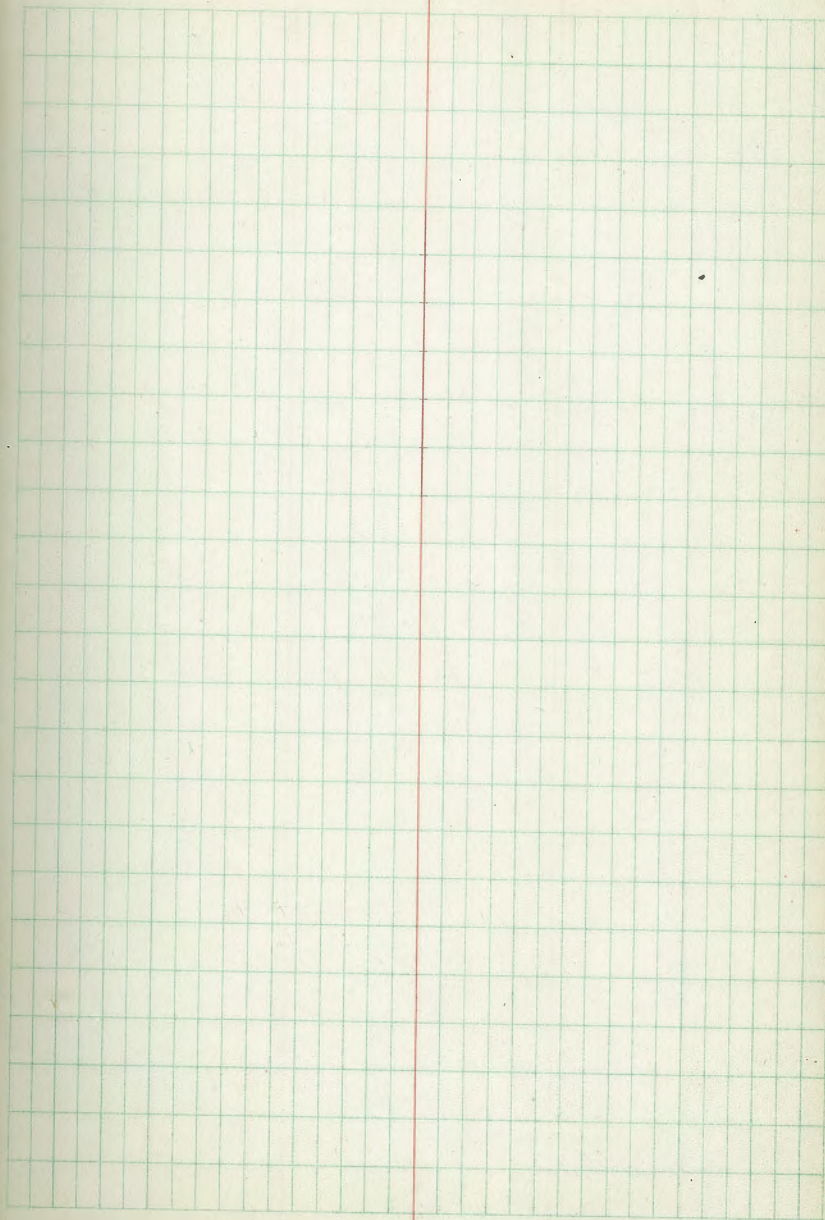
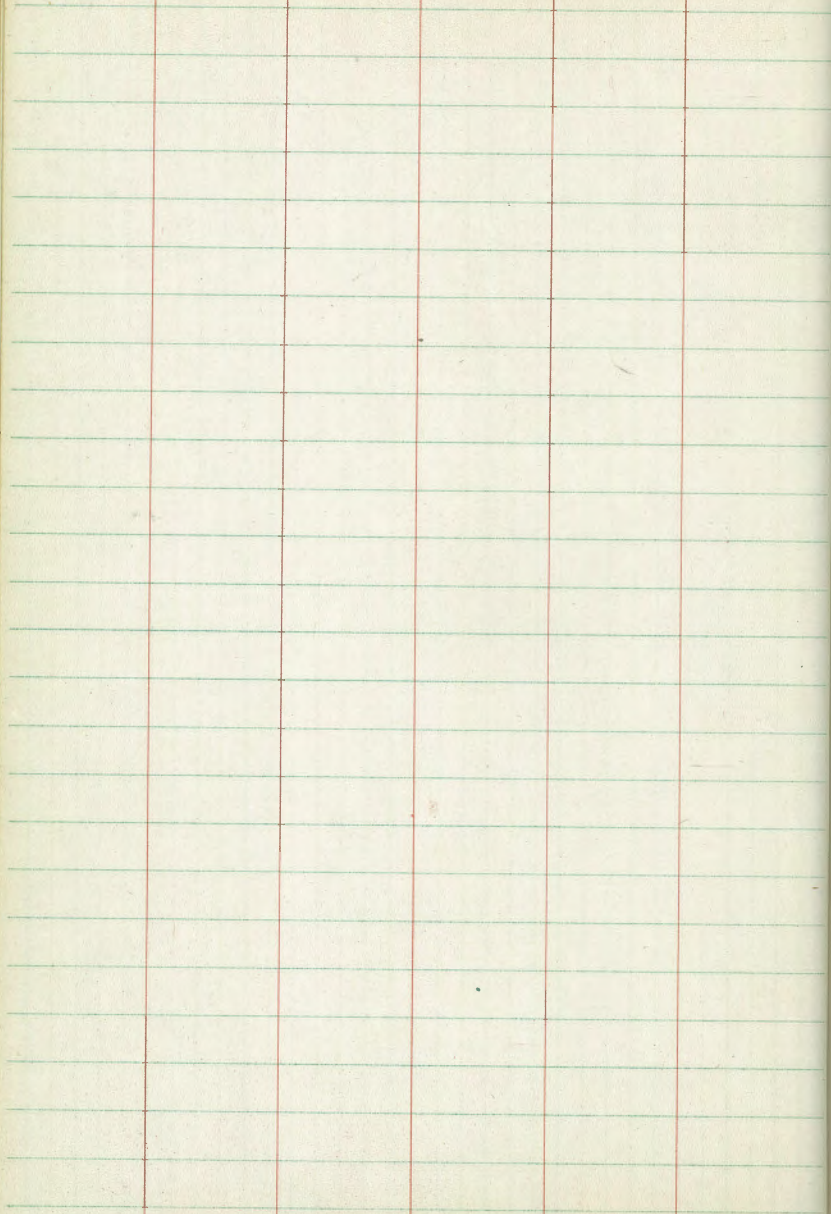
180.2  
7.3  
40

181.4  
8.1  
53  
7%

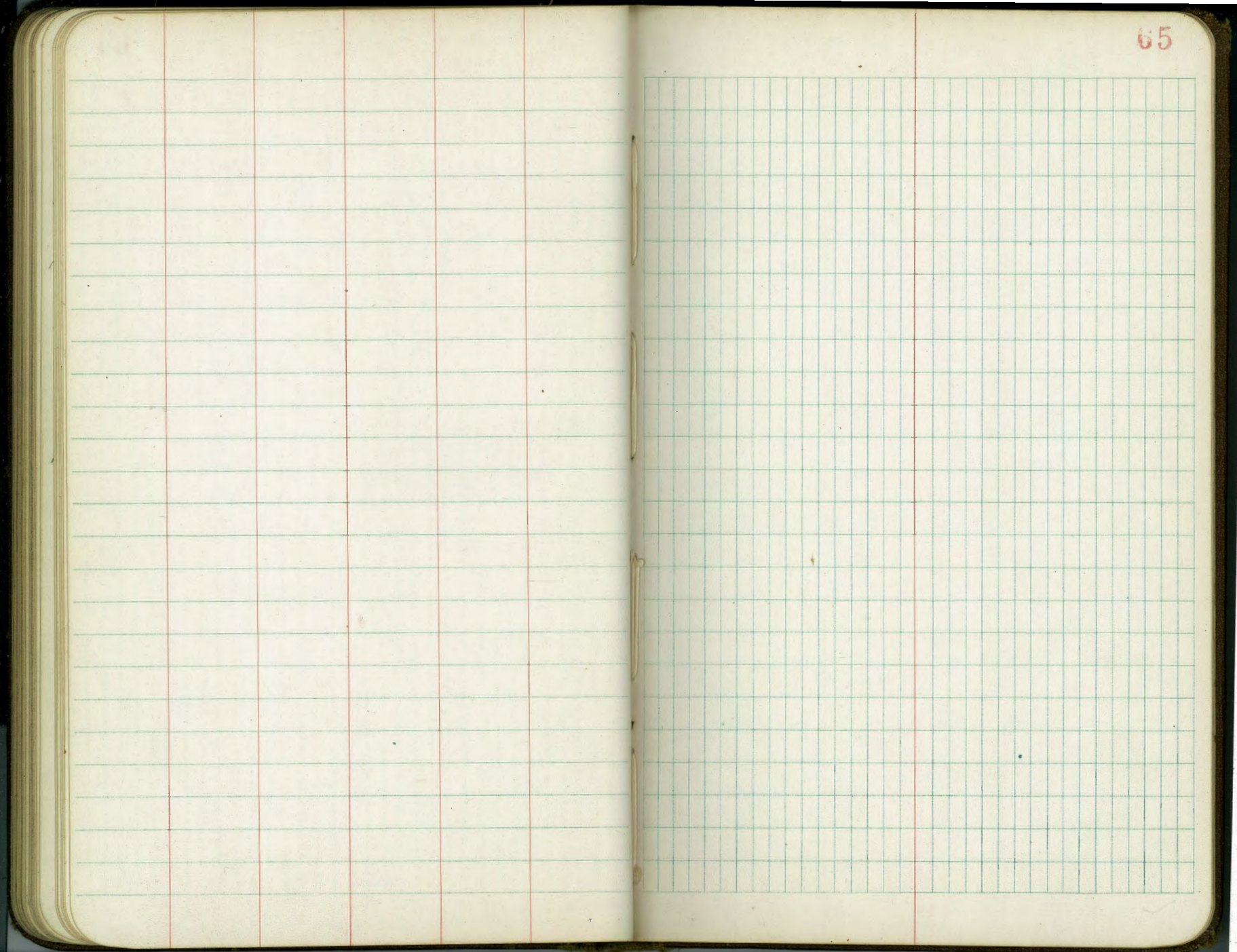
189.46

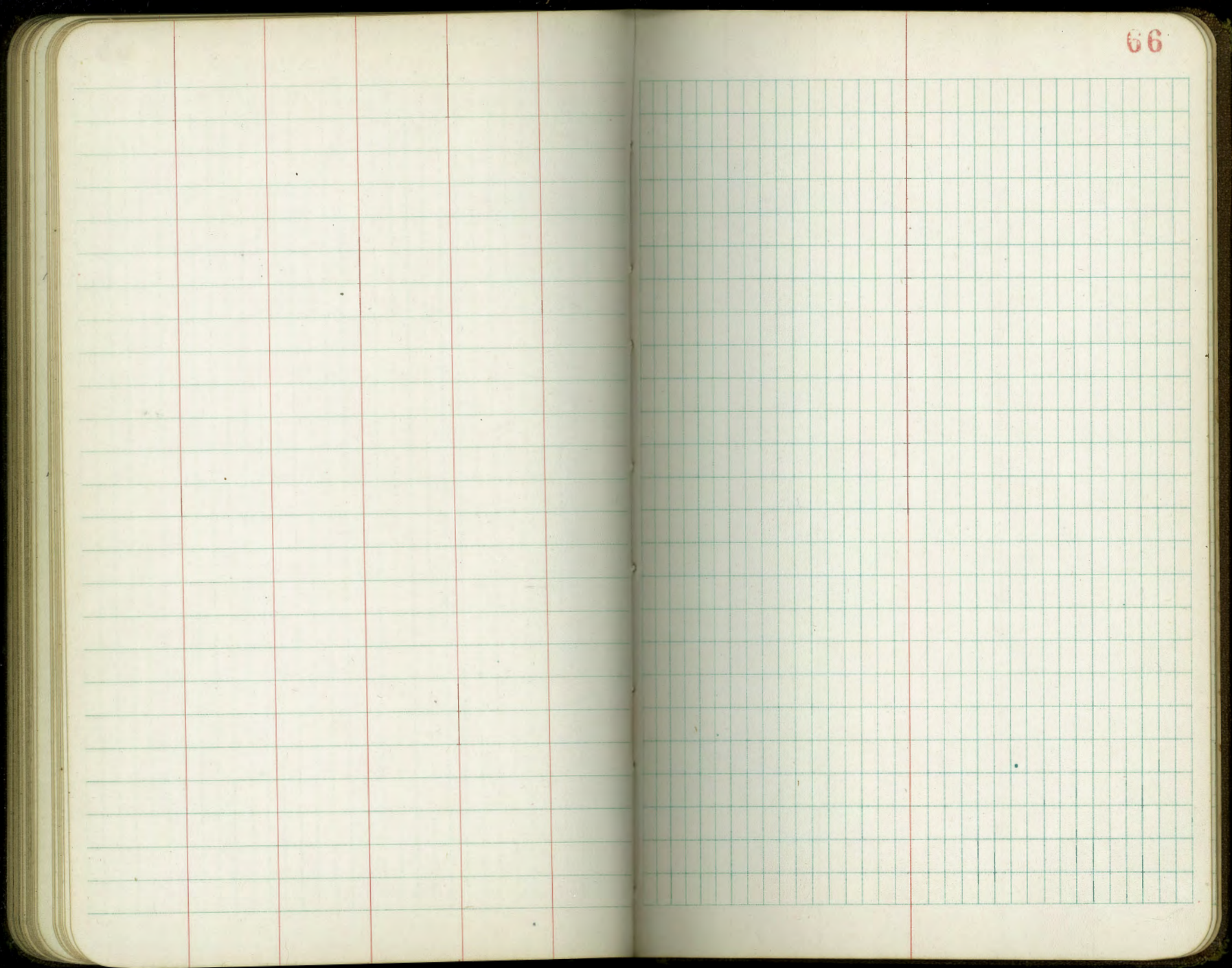


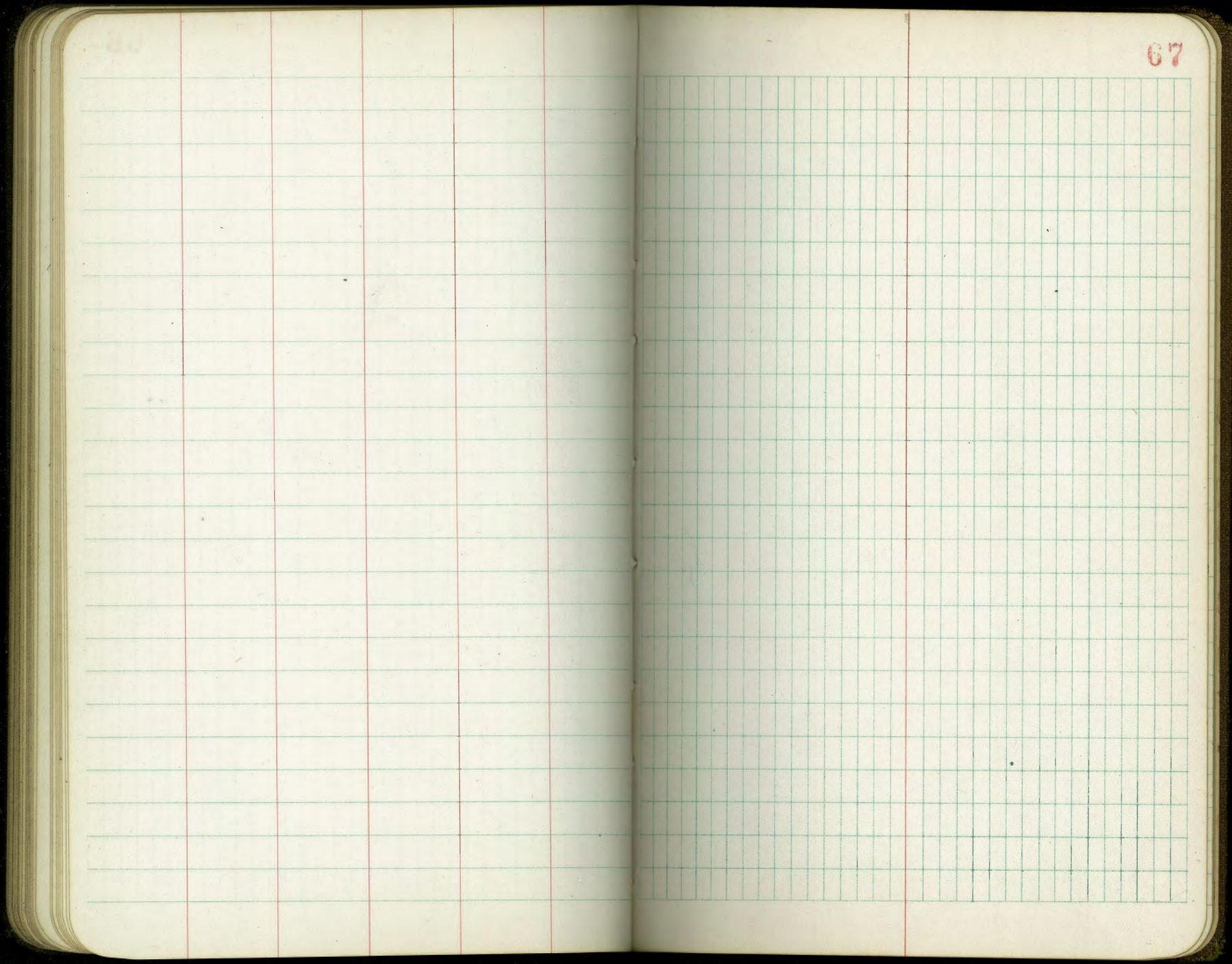


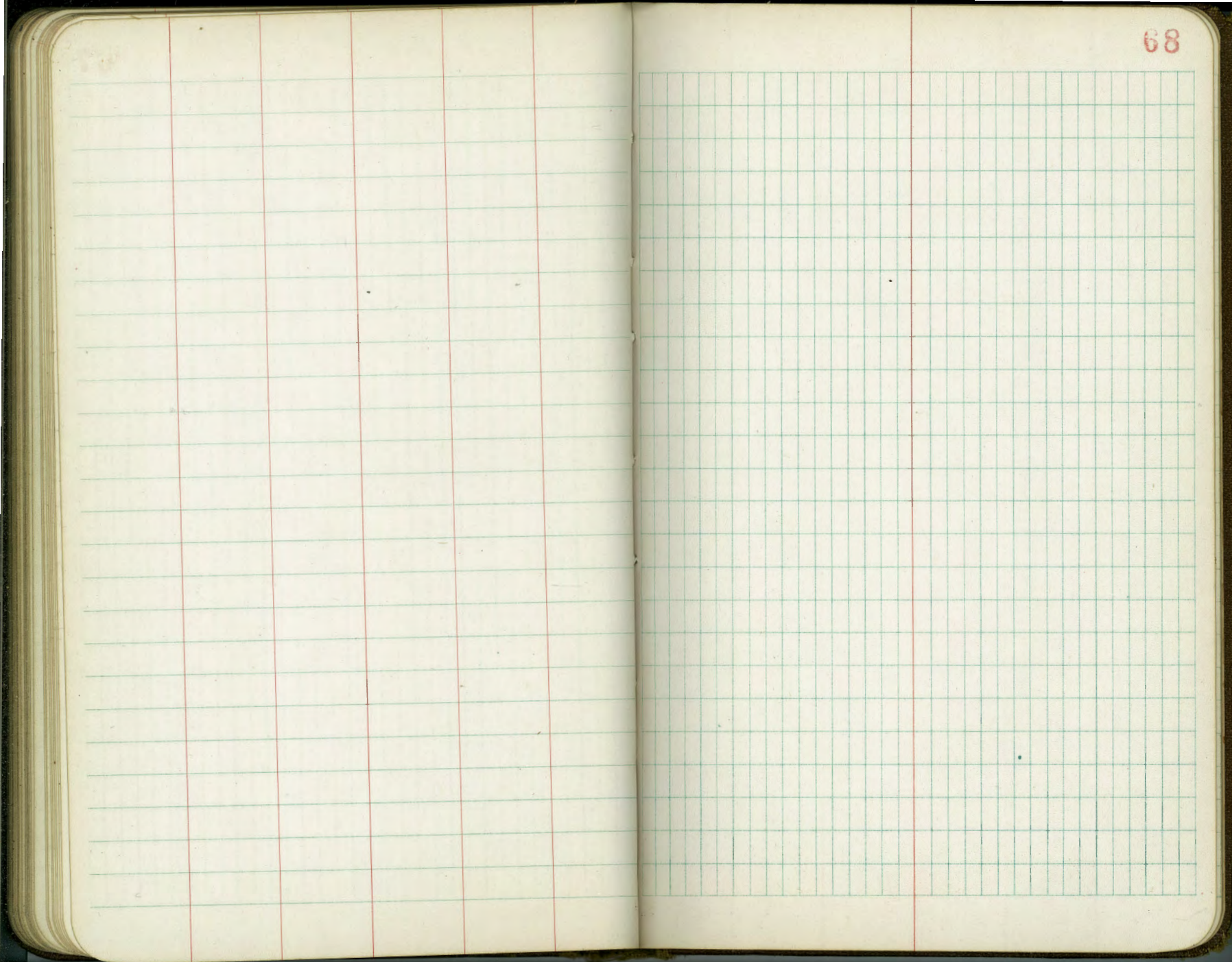


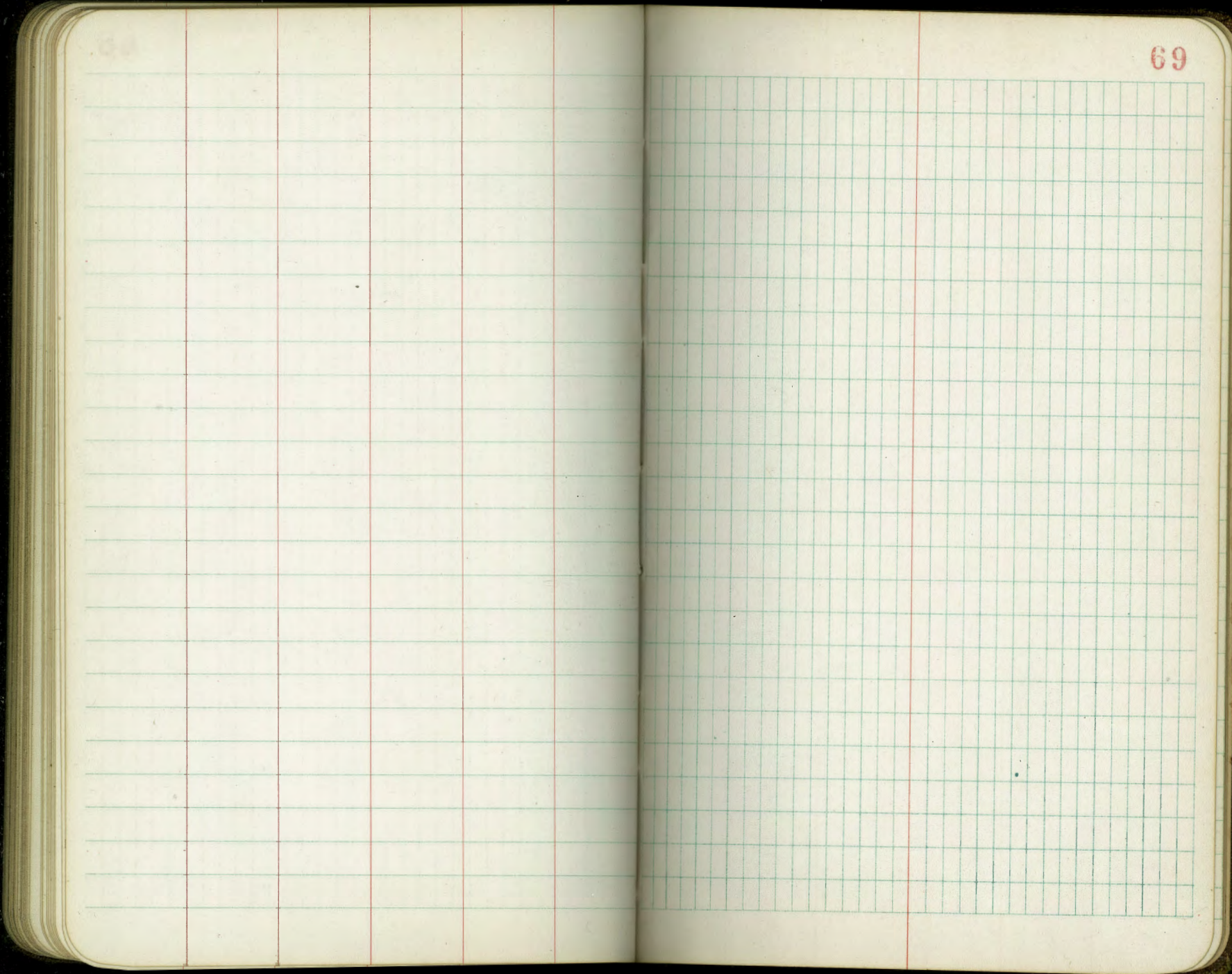








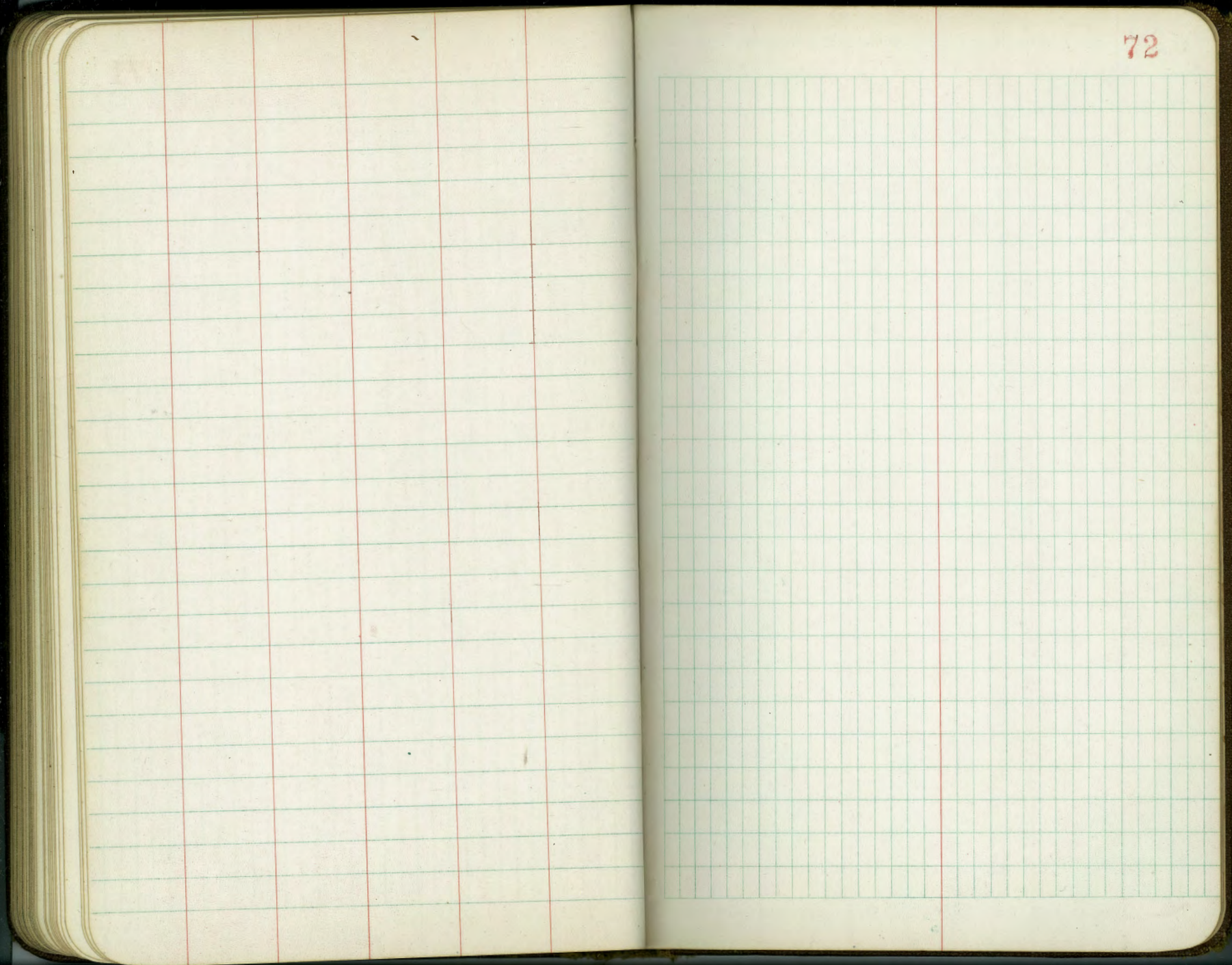






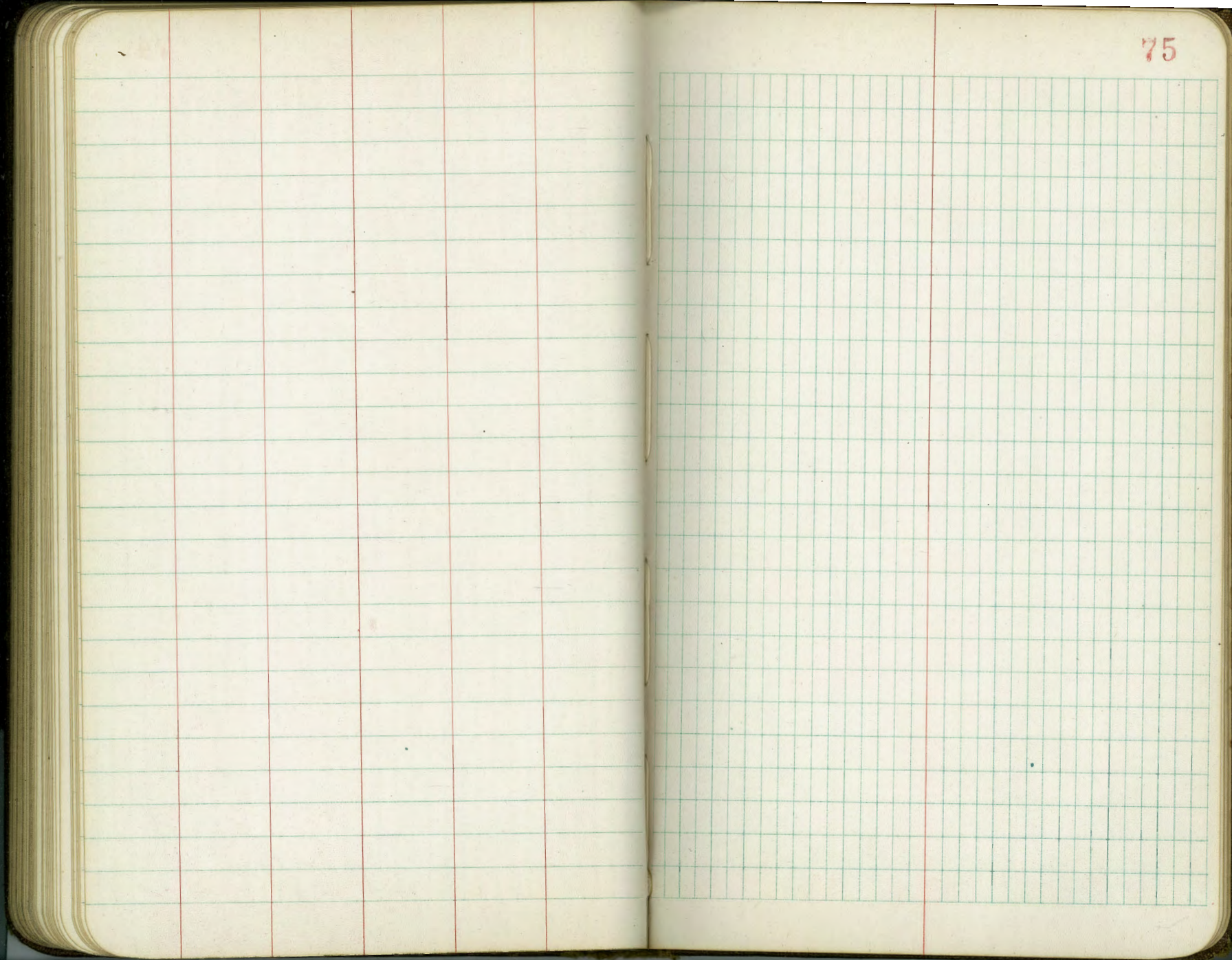
















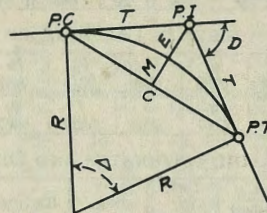




The image shows an open notebook with two pages. The left page is ruled with horizontal green lines and has four vertical red margin lines. The right page is ruled with a green grid pattern and has one vertical red margin line. The number '79' is printed in red in the top right corner of the right page.

# DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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



## CURVE FORMULAS

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

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

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

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

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

## EXPLANATION AND USE OF TABLES

**Stations.**—Given P. I. = Sta. 161 + 60.35 to find Sta. of P. C. and P. T.  $\Delta = 62^\circ 10'$   $D = 8^\circ 20'$ . From Table IV for  $1^\circ$  curve  $T = 3454.1$  and  $+8\frac{1}{3} = 414.49$  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 =  $7.27 \frac{54.50}{100} = 2.16$  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 =  $.3 \times 54.5 \times 8\frac{1}{3} = 136.2'$  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 115.37. For from Table IV for  $1^\circ$  curve  $E = 960.6$  for  $8^\circ 20' = 960.6 \div 8\frac{1}{3} = 115.27$  and from Table V correction = .10 or  $E = 115.37$  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  $+42 = 5.5$  or  $D = 5^\circ 30'$ .

DISTANCES FROM CENTER OF ROADWAY FOR  
CROSS-SECTIONING.

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

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

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For some 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.

MADE IN U.S.A.

56.99  
 1.9675  
 2.9675  
 5008.671  
 2584  
 2052.171