

1611

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

DEC 28 1964

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

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be $30.6 + (20 - 16) \div 2$ or 2 ft. added to $30.6 = 32.6$. For slopes of 1 on 1½ see inside of back cover.
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1611

CITY ENGINEER
SAN DIEGO
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.

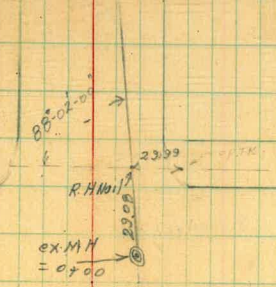
Bliss -
1/27/42

Profile Levels for Line Change 10th + Carrado Way. See Sketch Page 30

BM	8.58	<278.82>		<270.29>	State Hwy BM# 16 201-Lt 2160 @ P. 15.00 Carrado Way
+53 ⁹⁵	int 24" Armoconvert	1.52		277.30	
+58 ⁵⁰	L RT	1.58		277.24	
+73 ²	int Gas Main	2.21		276.61	
"	9' RT Gas Main	2.19		276.63	
+98 ⁴	Begin Con Paving	3.73		275.09	
2+00		3.87		274.95	
+50		8.77		270.05	
TP	0.00	<266.56>	12.26	<266.56>	
3+00		1.52		265.04	
+26 ³⁴	int ex Sewer	4.02		264.54	
+50		6.56		260.00	
4+00		11.39		255.17	
TP	2.92	<257.77>	11.71	<254.85>	
+50		6.62		251.15	
+68 ⁸⁵	int ex Sewer	7.74		250.03	
+84 ²⁹	M.W. = 4+87 @ 10' L.L. cp Disk L.P.	8.48		249.29	(1611 / 12)

Construction Notes: See Grid Book 209

See sketch page 30



9+29⁶⁰ p.o.t.

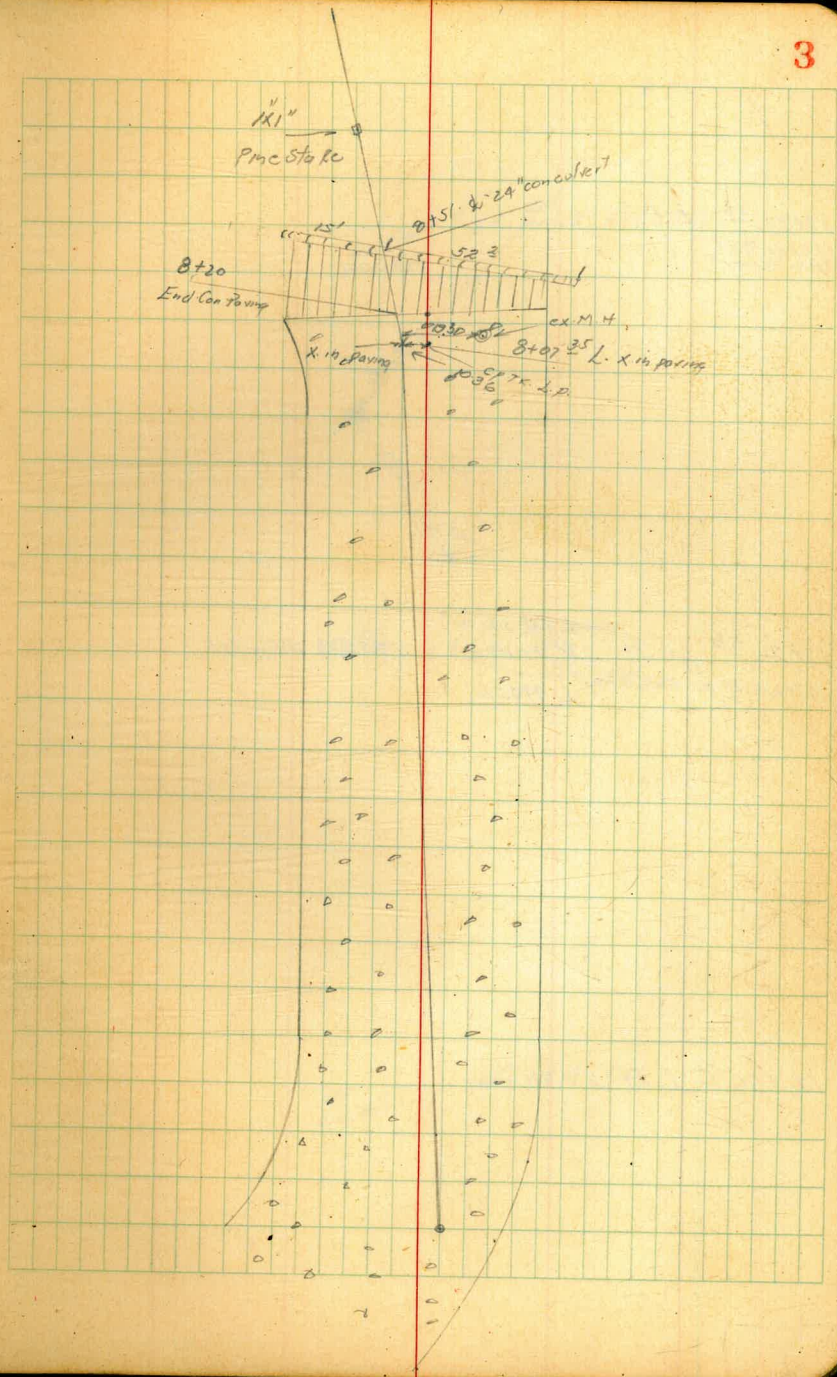
8+07³⁵ L Lt 25°-14'-00 Cross in paving

7+00 108' Lt - cb

6+00 122' Lt - cb

4+87⁶⁸ L Lt 41° 38' - 00 copper disk L.P. in paving on state Hwy. &

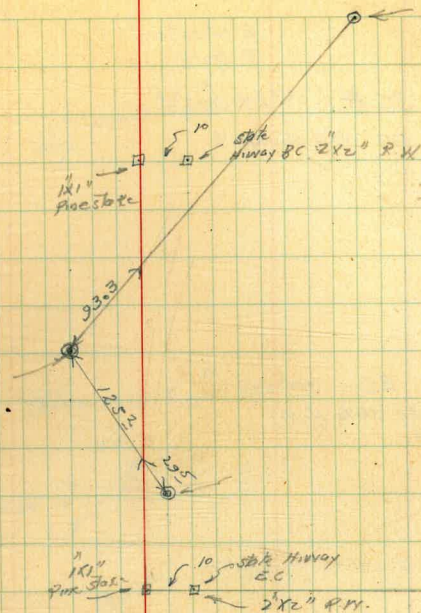
3



1977.08 E.C.
132+31.280
State Highway

15+20.56 P.C. Rt R 2010 .. 85513 Def. point
137+05.30 E.C. State Highway L 476.52
 $\Delta 130-35-00''$

12+50.51 L 2-50'-00



$\Delta 10^{\circ}27'00$
R. 5010

37+74 ³⁰ BC Pt. LC. 9137⁶

11450.01 EC State Hwy &

34+02 ²⁹ EC

118+22 ³² BC State Hwy
E

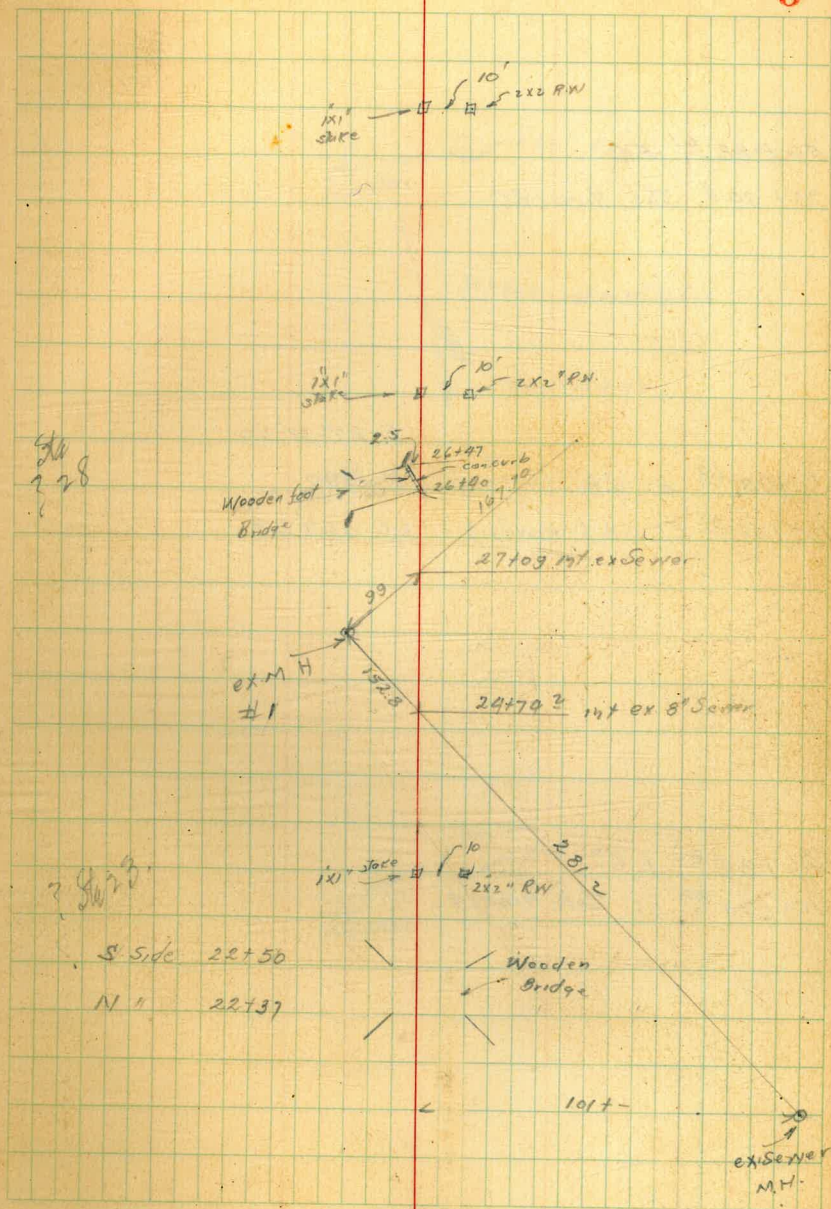
$\Delta 14^{\circ}45'00$
R. 3990

23+75 ⁶² BC Pt. LC. 1027.17

128+52.66 EC State Hwy

22+07+ EX M.H. 101 Pt. of d.

5



56+88.41 E.C.

35+39.41 State Hwy. BC

 $\Delta 27^{\circ}37'00$

50+18.63 B.C. Lt

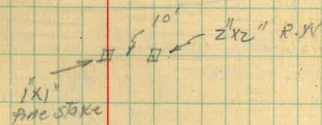
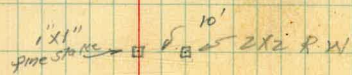
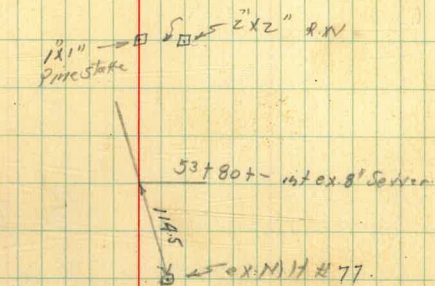
R. 1390

102+08.31 E.C. State Hwy. d.

LC 669.98

46+88.66 E.C.

105+38.88 B.C. State Hwy. d.



93767.7 B.C. Rt + L.

A 14°-45' 30"

R 22.90'

LC 579.59

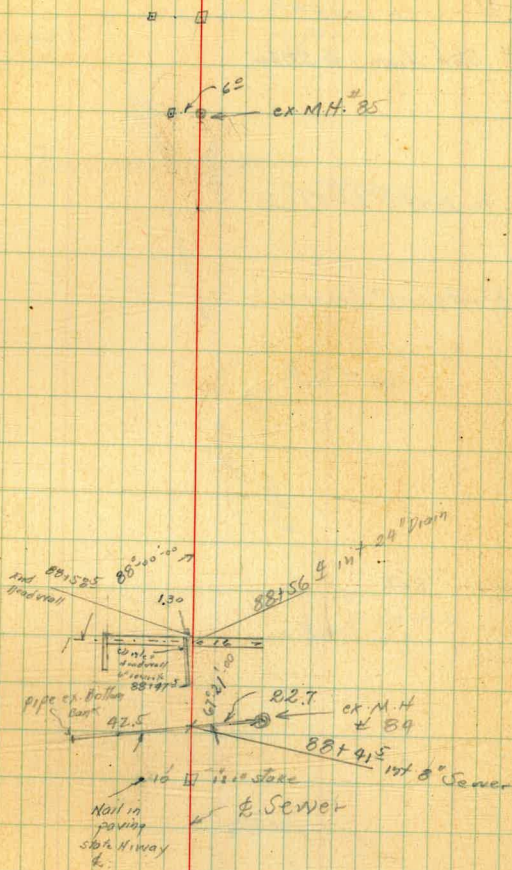
58+58.58 EG State Hwy

92+25.59 L Rt 33°-00'-30"

92+83.01 L Rt

87+29.78 B.C.

64+25.65 State Hwy B.C.



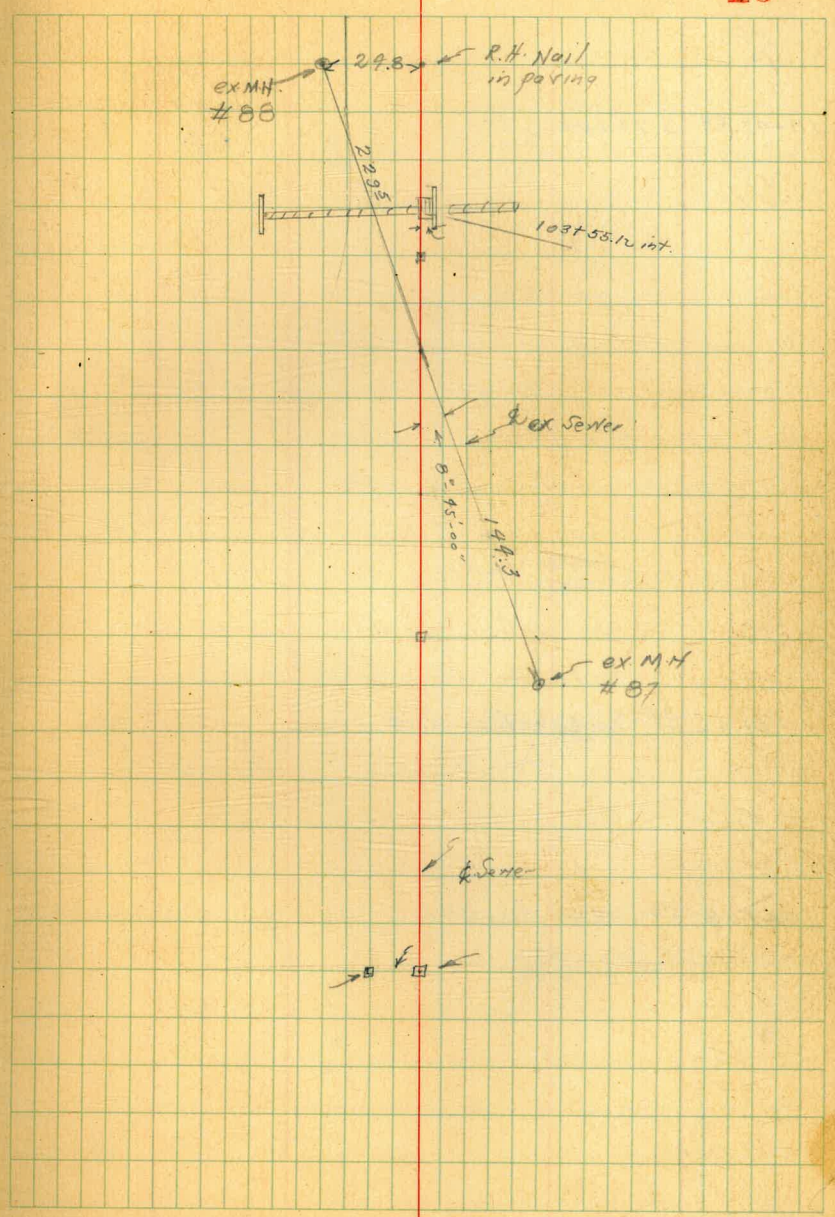
105738.97 2°51'30" RT
= 96+84.50 State Hwy & Station

103+37.72 L.H. 2°51'30"

103+11.25 inter 12" Sewer

102+06+ POT.

99+46.95 E.C.
52+76.40 State Hwy B.C.

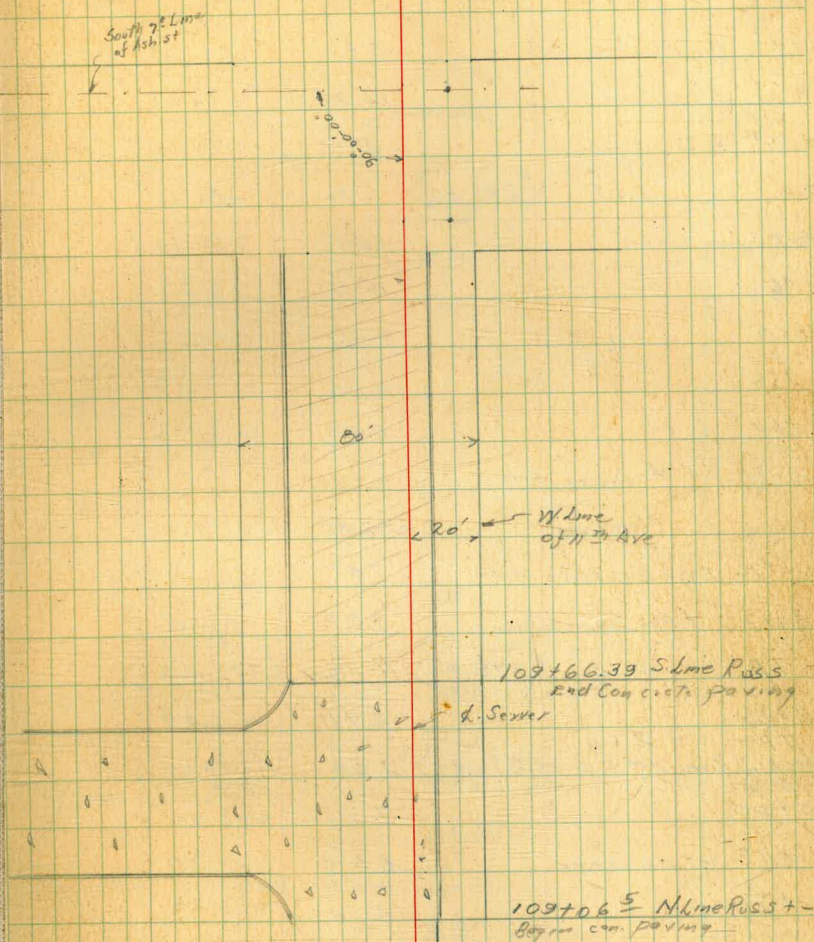


11147.28 57th Line A. St.

109466³⁹ So. Line Russ Blvd

109406 57th Line Russ Blvd

11



11TH AVE SEWER

9/23/14
 Sec B.M. Book.
 NW 8 P
 904 Univ.

T
 (260.93)

B.M.	426	(288.02)		(283.76)	
0+00	Rim existing M.H.	5.41		(282.61)	
"	" Flow Line	12.99		(275.08)	
129 ⁹⁰	S. 7 th Line Univ	5.72		282.30	
T.P.	1.65	(283.95)	5.72	282.30	
+37.5	Line Univ	1.85		282.10	
+46		1.96		281.99	
+100		4.95		279.50	
+58		6.82		277.13	
+64 ⁸⁵	L.P.T.	6.80		277.15	
" "	29' H Rim ex M.H.	6.23		(277.72)	
" "	" Flow Line	25.85		(258.10)	
+176	Edge Gas & Elec M.H.	7.41		(276.54)	
+202	Edge Concrete Paving	8.88		275.07	
T.P.	0.18	(272.81)	11.32	(272.63)	
2+50		2.41		270.40	
T.P.	2.68	(272.92)	2.68	(270.24)	
check S.H. Hwy	B.M. #16			(270.73)	
2014+175+				270.73	corrected 7/22/14
3+00		7.50		265.42	
+11 ²	int ex Sewer	8.62		264.30	
+50		12.52		260.39	
T.P.	0.24	(260.93)	12.23	(260.63)	
4+00		5.44		255.49	
ex M.H. 105th 4+25	Rim	7.29		(253.64)	
Flow Line		16.62		(244.31)	
+50		3.51		251.42	

4+73	4 th int ex Sewer	10.92		250.01	
4+87	6 th L. Lt 2. Pipe of 2.5k	11.61		249.32	
5+02	9 th int ex Sewer	12.46		248.47	
T.P.	0.78	(249.39)	12.32	(248.61)	
5+50		3.08		246.31	
6+00		4.39		245.00	
" "	12' Lt Topped	3.64		245.75	
+50		5.71		243.68	
7+00		7.06		242.33	
" "	11' Lt East curb Top	6.33		243.06	
7+50		8.30		241.09	
8+00		9.55		239.84	
		2.78		239.61	
8+10	13.3 R/L ex M.H.	2.83		239.56	
" "	" Flow Line	17.23		232.16	
8+20		10.03		239.36	
435		10.46		238.93	
+51	dr	10.04		239.35	
" "	15' at end culvert Flow Line	14.70		234.69	
" "	51.2 R/L " " " "	12.37		237.02	
+53	Edge of Paving	10.04		239.35	
9+00		10.4		239.0	
T.P.	0.12	(238.71)	10.80	(238.59)	
+32		7.17		240.4	
+33		1.5		237.2	

↑
238.71

+35	23.2 Rt ex MH-Rim	0.01	<238.70>
" "	" " " " Flowline	10.84	<227.87>
+37	N Side over side Drain con	1.50	237.21
+53	S " " " con	2.40	236.31
+70		3.6	235.1
"	5' Lt	6.3	232.4
"	3' Rt	1.1	237.6
10+00		6.0	232.7
"	5' Lt	7.1	231.6
"	8" Bottom Ditch	10.4	228.3
"	6' Lt Top Bank	2.2	236.5
"	8" Edge old Road	4.2	234.5
10+35		4.7	234.0
"	6' Rt	3.5	235.2
"	8" Edge Road	5.8	232.9
"	4' Lt	7.9	230.8
"	8" Bottom Ditch	14.0	224.7
10+37	4" Sewer lateral to spread ditch	12.44	<226.27>
+52	Top	6.1	232.6
+52	Bottom	13.1	225.6
+70	"	13.7	225.0
"	" 10' Lt	13.7	225.0
"	Top Bank	5.6	233.1
"	" 7' Rt	5.6	233.1
"	Top " 10" Edge Road	7.5	231.2

↑
238.71

13

11+00		7.9	230.8
"	3' Lt Bottom Ditch	14.6	224.1
"	13" " "	14.6	224.1
"	1' Lt	9.9	228.8
"	2' Rt	7.1	231.6
"	8" "	6.8	231.9
"	10" Edge old Road	8.7	230.0
7P	1.55	<231.35>	8.91
+06		2.0	<229.80>
+06	5' Lt Bottom Ditch	8.0	223.3
+30		4.9	226.4
"	4' Lt Bottom Ditch	9.7	221.6
"	5' Rt	3.2	228.1
"	9' Rt	0.6	230.7
"	14' Rt	2.9	228.4
+40	Bottom	9.5	221.8
+50	"	9.5	221.8
"	8' Lt	10.5	220.8
"	2' Rt	5.1	226.2
+52		5.1	226.2
+60		5.7	225.6
"	5' Rt	5.1	226.2
"	3' Lt Edge Bank	6.4	224.9
"	5' Bottom Ditch	10.6	220.7
+74		6.9	224.4

231.35

774	3' Lt Top Ridge	7.34	224.01	✓
"	3" Bottom Well	10.9	220.4	✓
"	8 "	10.9	220.4	✓
"	3' Rt	5.9	225.4	✓
12700		7.9	223.4	✓
" 11	2.5 Lt Top Wall	8.4	222.9	✓
" 11	3 " Bottom Well Ditch	11.5	219.8	✓
" 11	10 "	11.5	219.8	✓
"	5 Rt	6.2	225.1	✓
12722	L in cobbles	7.9	223.4	✓
" "	3' Lt Top Wall	9.5	221.8	✓
" "	4 " Bottom narrow Ditch	11.9	219.4	✓
" "	5 Rt	6.9	224.9	✓
12738	mt rubble Wall	9.6	221.7	✓
" "	1' Lt Bottom Ditch	12.0	219.3	✓
" "	5 Rt	7.2	224.1	✓
12741		11.9	219.4	✓
" "	6' Lt	12.3	219.0	✓
12750	5' L on 1x1" stake	12.30	219.0	✓
" "	1-7 Rt	12.3	219.0	✓
" "	3.5 " Top Wall	9.9	221.4	✓
" "	8 "	7.5	223.8	✓
" "	5 Lt	12.6	218.7	✓
12765		12.5	218.7	✓
" "	7 Rt	12.6	218.7	✓
" "	2 Lt	11.1	220.2	✓

231.35

12767		11.9	219.9	✓
12785	14" Dia Eucalyptus	2.5 Rt		
12790		8.5	222.8	✓
13700		8.0	223.3	✓
" "	11 Rt Edge Ditch	10.6	220.7	✓
13703	12" Eucal Tree	4.5 Rt		
13705	14" "	5 Lt		
13712	17" "	5 "		
13720	4" "	5 "		
13720		6.5	224.8	✓
" "	5' Rt	8.8	222.5	✓
" "	5 Lt	4.2	227.1	✓
13727	12" Eucal	5' Rt		
13728	16" "	2' Lt		
13730		6.1	225.2	✓
" "	5' Rt	7.6	223.7	✓
" "	5' Lt	4.6	226.7	✓
13738	4- pot	6.75	224.60	✓
TP on pot. 144		6.75	224.60	✓
758		2.5	223.5	✓
" "	5' Lt	1.3	224.7	✓
" "	5 Rt	3.7	222.3	✓
" "	14 " Edge Ditch	5.2	220.8	✓
758	46 Rt EX MH. Run	6.68	219.36	✓
" "	" " Flow Line	11.75	214.29	✓

226.09

+75		4.3	221.7	✓
" "	5' LT	3.3	222.7	✓
" "	5' RT	5.7	220.3	✓
19+00		7.8	218.2	✓
" "	5' LT	6.7	219.3	✓
" "	5' RT	8.3	217.7	✓
+20		9.7	216.3	✓
+50		10.1	215.9	✓
" "	5' RT Edge Ditch	10.3	215.7	✓
+65		10.0	216.0	✓
+70		11.9	214.1	✓
" "	4' RT Bottom Ditch	13.1	212.9	✓
+86	4' RT 6" ocacia			
+90	ctr. Bottom	13.3	212.7	✓
" "	4' RT Bottom Edge Retain wall	13.3	212.7	✓
+94.1'	RT 6" pepper Tree Top "			
T.P.	4.33	218.89	11.48	219.56
15+00		5.1	213.8	✓
" "	1.1'	6.2	212.7	✓
" "	5"	6.2	212.7	✓
" "	5' RT	5.1	213.8	✓
+13		5.5	213.4	✓
15+20 ⁵⁶	B.C. RT	4.27	214.62	✓
" "	5' LT Bottom Ditch	6.8	212.1	✓
" "	3' RT	3.4	215.5	✓
" "	6. "	3.4	215.5	✓

218.89

15

+35		3.9	215.0	✓
" "	5' LT	5.4	213.5	✓
" "	6" Bottom Ditch	6.8	212.1	✓
" "	5' RT	5.0	213.9	✓
15+50		4.2	214.7	✓
" "	3' LT	4.2	214.7	✓
" "	7" Top wall	5.6	213.3	✓
" "	8" Bottom Ditch	7.7	211.2	✓
Set BM Top Con. Min 30' Lt. 1st cut		3.55	215.34	✓
15+80-5.8' RT ex. M.H. Rim		5.74	213.15	✓
" "	" " Flow Line	10.67	208.22	✓
16+00		6.2	212.7	✓
+9.2	int. ex. Sewer	6.4	212.5	✓
+50		7.5	211.4	✓
17+00		9.5	209.4	✓
+28	= 31.2' RT. Radialy ex. M.H. Rim	10.11	208.78	✓
" "	" " Flow Line	14.61	204.28	✓
+50		16.1	208.8	✓
18+00		10.4	208.5	✓
" "	6' LT	10.3	208.6	✓
+10	Edge Bank	10.2	208.7	✓
+15		15.0	203.9	✓
+17	int. ex. Sewer	15.0	203.9	✓
T.P. 2.50	210.34	11.05	207.84	✓
18+44	ctr. Bottom of Ditch	7.4	202.9	✓

210.39

18750		T.O	203.3	✓
"	"	2' Lt to Edge Bank	6.2	204.1 ✓
"	"	9 RT " " "	7.5	202.8 ✓
18768			6.5	203.8 ✓
+75	Top Bank		1.2	209.1 ✓
"	2 RT Edge Bank		1.4	208.9 ✓
"	5 RT Bottom		7.3	203.0 ✓
19700			3.2	207.1 ✓
"	"	3' RT Edge Bank	3.7	206.6 ✓
"	"	8" Bottom Ditch	8.9	201.9 ✓
"	"	5 Lt	1.7	208.6 ✓
19724	9" Sycamore	15 Lt		
18724	£		2.9	207.4 ✓
"	"	5 RT Edge Bank	4.8	205.5 ✓
"	"	6 " Bottom "	9.1	200.9 ✓
"	"	5 Lt	3.0	207.3 ✓
19150			3.9	206.4 ✓
"	"	5 Lt	3.4	206.9 ✓
"	"	5 RT Edge Bank	5.6	204.7 ✓
"	"	9" Bottom Bank Ditch	10.3	200.0 ✓
19755	9" Oak Tree	2.5 Lt		
19782	9" " "	6 Lt		
19782			5.6	204.7 ✓
"	"	2 RT	5.9	204.4 ✓
"	"	7 " Bottom Ditch	11.0	199.3 ✓

210.39

4.6 1172
0.9 44
16.1

16

19197.08 EC on 1 1/2" stake	6.49	<203.85>
" " 7' RT	11.6	198.7 ✓
" " 2' "	6.8	203.5 ✓
" " 5 Lt	6.0	204.3 ✓
20709 8" Sycamore 2 RT		
+34	9.3	201.0 ✓
+60	12.9	197.4 ✓
+88 Edge Ditch	13.4	196.9 ✓
21700	10.2	200.1 ✓
" " 2 RT Bottom Ditch	19.0	196.3 ✓
" " 4 Lt Top Bank	6.6	203.7 ✓
+10 Top Bank Ken £	7.0	203.3 ✓
+35	6.5	203.8 ✓
+75	5.9	204.4 ✓
" 5 Lt	4.6	205.7 ✓
" 5 RT	6.9	203.4 ✓
22700	5.5	204.8 ✓
5 Lt	3.8	206.5 ✓
5 RT	6.8	203.5 ✓
22707 approx 10' RT ex M.H. R.M. floor line	11.72 16.12	<198.62> <197.22>
22710 'RT 6' Oak		
22710 9 RT 8" "		
+20	5.0	205.3 ✓
" 5 RT	7.0	203.3 ✓
" 10 "	8.9	201.4 ✓
" 5 Lt	3.9	206.9 ✓

<210.34>

+33	9" Oak 3' Lt			
+60		6.8	203.5	✓
"	10 Rt	11.0	199.3	✓
"	5 Lt	5.2	205.1	✓
+70		11.8	198.5	✓
"	5 Lt	9.0	201.3	✓
"	5 Rt	12.8	197.5	✓
T.P.	2.14	<200.63>	11.79	<198.55>
22+97 - Lombardy Poplar 12" Dia 4 Rt				
23+00		5.1	198.6	✓
+13		6.2	194.5	✓
+24	N Edge Ditch in Bottom	8.5	192.2	✓
Check Station	5.25			
Minor BM 5' Lt 23125	<200.59>	5.25	(195.44)	corrected
			195.34	0.10 diff
+38	entr	8.0	192.6	✓
"	on Deck Bridge	5.9	194.7	✓
"	5' Rt	5.6	195.0	✓
"	" Lt	8.0	192.6	✓
+50		8.2	192.4	✓
"	5' Lt	8.2	192.4	✓
"	5 Rt	5.6	195.0	✓
"	Deck Bridge	5.9	194.7	✓
+55		6.6	194.0	✓
+64	18" Eucalyptus 7" Rt			
23+75 ⁰¹	B.C. Lt. on stake	7.41	<193.18>	✓

<200.59>

23+25 ⁰¹	5' Lt Bank	8.0	192.6	✓
"	" 8' Bottom Ditch	9.9	190.7	✓
"	" 5' Rt	5.9	194.7	✓
24+00		8.2	192.4	✓
"	" 3' Lt Bottom Ditch	10.4	190.2	✓
"	" 5' Rt	6.3	194.3	✓
+04.5' Dia Eucal 3' Lt				
+15		10.1	190.5	✓
"	5' Rt	6.4	194.2	✓
+50		10.7	189.9	✓
"	5' Rt Edge of fence Road top Bank	5.5	195.1	✓
+60	Bottom Bank	10.8	189.8	✓
+60	Top Bank	8.8	193.8	✓
"	6' Rt Edge Road	5.5	195.1	✓
+77	on Edge Present Road & R.	5.3	195.3	✓
"	5' Lt Top Bank	8.5	192.1	✓
"	7' " Bottom Ditch	11.6	189.0	✓
24+74 ⁰²	int ex. 8" S. Mer.	5.7	194.9	✓
25+00		5.5	195.1	✓
+22.5' Lt 14" Oak				
+30		7.7	192.9	✓
+60		9.1	191.5	✓
26+00		10.2	190.4	✓
T.P.	0.31	<192.49>	8.41	<192.10>

192.49

191.16

26+22	ex.M.H. 4' Lt + Rim	3.35	<189.14>	✓
"	" " " Flowline	9.27	<183.22>	✓
26+31	14' Oak 6' Lt			
+50		3.9	188.6	✓
26+55	16' Sycamore 9' Lt			
+66	Top Bank	4.2	188.3	✓
+67	Bottom Ditch N Side	8.1	184.4	✓
+72	" " S "	8.2	184.3	✓
+80	Top Bank	9.9	187.6	✓
+83	12" Oak 6' Lt			
27+00		9.8	187.7	✓
27+09	int ex Sewer	9.8	187.7	✓
+50		5.8	186.7	✓
27+50	18" Dia Oak 10' Lt			
28+00		6.5	186.0	✓
+27		8.2	184.3	✓
+28		10.7	181.8	✓
Check Stake by #12" C Line		9.99	<187.50>	✓
+37	Bottom Bank	7.9	182.6	✓
+40	Top "	7.0	185.5	✓
+41	con curb	6.57	185.92	✓
T.P.	5.24 <191.16>	6.58	<185.92>	✓
+45	ex.M.H. 8.6' Lt + Rim	1.37	<189.79>	✓
"	" " " Flowline	11.07	<180.09>	✓
+50		5.6	185.6	✓

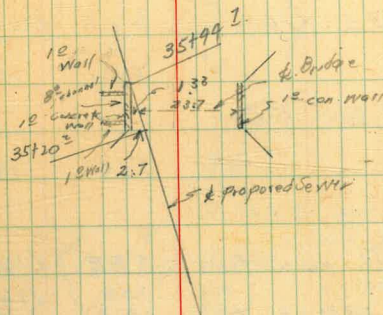
29+00		5.7	185.5	✓
+10	Top Bank	6.3	184.9	✓
+13	Bottom Bank N Side	9.9	181.3	✓
+25	6" R. 6.5' Well <small>on South Side Bottom</small>	11.7	179.5	✓
+26		7.8	183.4	✓
+35		7.7	183.5	✓
+50		8.1	183.1	✓
30+00		8.3	182.9	✓
+50		9.3	181.9	✓
31+00		10.5	180.7	✓
+50		11.9	179.3	✓
32+00		12.9	178.3	✓
T.P.	2.51 <182.33>	11.34	<179.83>	✓
+36	EX.M.H. 3.3' 4' Lt + Rim	2.94	<179.39>	✓
"	" " " Flowline	11.24	<171.09>	✓
+50		9.8	177.5	✓
33+00		5.9	176.9	✓
+50		6.6	175.7	✓
34+00		7.6	174.7	✓
+50		8.0	174.3	✓
35+00		8.6	173.7	✓
182.7	2' Culvert Bridge <small>see sketch page 19</small>	9.4	172.9	✓
T.P.	1.98 <176.75>	7.56	<174.77>	✓
W End Bridge on Flowline		8.2	168.5	✓
E " " " " "		8.3	168.4	✓

176.75

35+44.7	Top Bridge Wall	19.0	174.77 ✓
+ 95		3.9	173.3 ✓
+ 50		2.9	173.8 ✓
+ 65	8" Oak 5' Lt		
36+00		5.2	171.5 ✓
+ 03	9" Oak Tree 2' Lt		
+ 42	Top Bank	8.0	168.7 ✓
+ 44	Bottom "	10.5	166.2 ✓
+ 51	Bottom + ctr of Ditch	12.1	164.6 ✓
+ 75		11.3	165.4 ✓
+ 93	12" Oak 6' Lt		
37+00		12.2	164.5 ✓
" "	2' Lt. top Bank	9.1	167.6 ✓
+ 05	Top Bank on k	9.5	167.2 ✓
+ 27.5	20" Oak on k		
+ 43	ex M.H. 43' Lt +	7.62 13.62	169.13 ✓ 163.13 ✓
+ 48	6" Oak 6' Lt		
TP	9.33	8.67	168.08 ✓
+ 55		9.8	167.6 ✓
+ 74	16" Oak 8' Rt		
37+74.20	80' Rt on 1" Stake	8.05	169.36 ✓
+ 83	6" Oak 6' Lt		
38+00		6.6	170.8 ✓
" "	5' Rt	7.9	169.5 ✓
" "	5' Lt	5.5	171.9 ✓

177.91

19



38+10	2" Oak 5' Lt		
+ 25		5.2	172.2 ✓
+ 50		5.1	172.3 ✓
+ 75		6.5	170.9 ✓
+ 93	12" Oak on k		
39+00		8.0	169.4 ✓
+ 07	10" Oak 8' Lt		
+ 40		10.2	167.2 ✓
TP	2.07	9.53	167.88 ✓
+ 50		3.3	166.6 ✓
" "	10" Oak 6' Rt		
40+00		4.9	165.0 ✓
+ 11	6" Oak 9' Lt		
+ 50		6.0	163.9 ✓
+ 61	14" Oak 6' Lt		

169.95

+76	3' Lt 10' Oak		
+98	1' " 14' "		
4100		6.7	163.2 ✓
T.P.	5.93	6.26	163.69
+50		6.6	163.0 ✓
+64	20' Oak 4' Lt		
4200		5.0	164.6 ✓
"	12" Oak 8' Rt		
Set B.M.	Stake Hwy PT. N. 24 ft	5.89	163.73 ✓
+47	#75 EX M.H. 33' Rt + - Rim	7.06	162.56 ✓
+50	Flow Line	14.46	155.16 ✓
+54	14" Oak 3' Rt	5.2	164.4 ✓
4300		5.8	163.8 ✓
+17	N Edge Black Pavilion	5.93	164.19 ✓
+95	" " "	7.88	161.74 ✓
+84	12" Oak 2' Rt		
4400		10.5	159.1 ✓
+05	12" Oak 1' Rt		
+40	10' " on G.		
+50		11.6	158.0 ✓
+55	16" Oak 6' Lt		
+65	Top Bank Dry Kid Rubble wall	14.5	155.1 ✓
+66	Bottom + N Side Ditch	17.5	152.1 ✓
+77	" " " "	17.9	151.7 ✓
+78	Top Bank Dry Kid Rubble wall	14.4	155.2 ✓
+85	12" Sycamore 7' Rt + -		

State Hwy
PT. N. 24 ft
109+962.10

169.62

20

T.P.	0.14	6.43	163.19
+85	Begin Pomegranate Jungle		
4500		7.4	155.9 ✓
+27		7.6	155.7 ✓
+77		8.0	155.3 ✓
46+27		9.3	154.0 ✓
+77		9.6	153.7 ✓
+88	66 EC	9.7	153.6 ✓
T.P.	3.54	7.06	156.27
47+32		12.1	153.7 ✓
+36		14.4	151.4 ✓
+39	#76	12.1	153.7 ✓
+45	EX M.H. 30' Lt + - Rim	12.44	153.37 ✓
"	" " " Flow Line	18.54	147.27 ✓
+45	16" Sycamore 7' Rt + -		
+77		13.0	152.8 ✓
48+27		13.1	152.7 ✓
+82		13.3	152.5 ✓
+90		11.7	154.1 ✓
49+00		12.6	153.2 ✓
+27		13.0	152.8 ✓
+50		14.0	151.8 ✓
50+00		14.0	151.8 ✓
T.P.	7.17	12.77	153.04
Set B.M.	Stake Hwy P.E.C. 109+08.21 50+18.23 same 74.30 Rt of 50 W. G.	4.02	156.19

160.21

50+12 ²³ RC. cristata	8.29	151.92	✓
+50	10.2	150.0	✓
+55 Begin Pansyranate Shrub			
51+00	10.8	149.4	✓
+50	12.3	147.9	✓
+70 N. Top Bank	13.2	147.0	✓
+75 Bottom N Side of Ditch	15.3	144.9	✓
52+00 d. Ditch	15.6	144.6	✓
+15	14.3	145.9	✓
T.P. 4.99	10.63	154.57	149.58
+30 6" Acacia on ♀			
+45 6" " 3' Lt			
+60	9.2	145.4	✓
+60 16" Sycamore 7' Lt			
+60 ex M.H. 13.3 Rt + Rim	9.66	144.91	✓
" " " " Flowline	15.46	139.11	✓
53+00	9.5	145.1	✓
+25	10.0	144.6	✓
+27 16" Sycamore 1.2 Rt			
53+50	10.2	144.4	✓
+80 int. ex sewer	10.2	144.4	✓
+85 16" Sycamore 7' Lt			
T.P. 3.25	10.40	147.92	144.17
54+00	2.7	144.7	✓
+110 5' Rt	5.9	141.5	✓
+20	9.2	143.2	✓
+21	6.3	141.1	✓

147.42

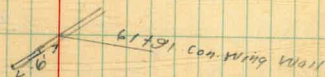
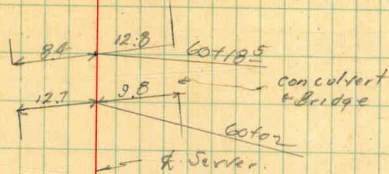
21

+50	5.8	141.6	✓
+95	6.1	141.3	✓
55+00	4.2	143.2	✓
" 1 2' Lt	9.7	142.7	✓
" " 3" "	6.1	141.3	✓
+50	5.0	142.4	✓
+70	5.7	141.7	✓
56+00	5.6	141.8	✓
+30	6.3	141.1	✓
+50	7.0	140.4	✓
+88 ⁶¹ on mistake	7.61	139.81	✓
57+00	7.6	139.8	✓
+30	7.4	140.0	✓
+78 ⁶⁶ int. ex. Sewer	7.8	139.6	✓
+90 18" Sycamore 4 Rt			
58+00	7.9	139.5	✓
T.P. 2.95	7.43	142.94	139.99
+50	3.9	139.0	✓
+99 Ex M.H. 10' Rt Rim	4.25	138.69	✓
" " " #78 Flowline	13.78	129.16	✓
59+00	4.6	138.3	✓
+50	5.7	137.2	✓
+81 28" Dia Sycamore 5' Lt			
+90	6.2	136.7	✓
+94 Ex M.H. 18.4 Rt Rim	4.46	138.48	✓
" " " Flowline	14.41	128.53	✓
" " " "	13.50	129.44	✓

↑
(142.94)

60+02	N End Bridge Culvert Base Top Shd	5.64	(137.30) ✓
60+06 ¹⁵	B.C Pt. on Stone Top Bridge	4.51	(138.43) ✓
+18.5	S End Culvert see SK76 opp pp	5.64	(137.30) ✓
+50		8.2	134.7 ✓
+55		6.7	136.2 ✓
"	2' Rt Bottom Wash	8.3	134.6 ✓
61+00		6.7	136.2 ✓
check BM #8 State Hwy	75' Lt 80' Goto 6 ¹⁵	2.77	(140.17) (140.14) 0.03 Diff
0.85	(140.99)	(140.14)	corrected To State BM
+37		5.2	135.8 ✓
"	2' Rt	7.0	134.0 ✓
+55		7.0	134.0 ✓
"	3' Lt	4.9	136.1 ✓
+85	14' Sycamore 6' Pt		
+91		7.1	133.9 ✓
+91	Top 12' con. wire wall	5.24	(135.75) ✓
62+00		4.9	136.1 ✓
+10 ²⁴	Acc. Lt on 12 1/2" steel	4.98	(136.01) ✓
+13	3' acacia 2' Lt		
+13	70" Eucalyptus 8' Pt		
+30		3.5	137.5 ✓
"	3' Rt	5.1	135.9 ✓
+40	18' Eucalyptus 5' Lt		
+50		4.2	136.8 ✓

22



↑
<140.99>

62+66.5 N Edge Present Parking	3.92	<137.07>	✓
T.P. 249	<139.75>	3.73	<137.26>
2	3.23	136.52	✓
63+36	4.92	134.83	✓
+50	3.7	136.0	✓
+57 6" Shrub 2' Lt			
+68 6" Acacia 2' "			
64+00	9.9	134.8	✓
+50	5.3	134.4	✓
" 3' Rt	5.5	134.2	✓
" 7" Edge Lily Pond	8.1	131.6	✓
+77	5.5	134.2	✓
" 4' Lt. Edge Lily Pond	8.6	131.1	✓
Stake #7 Check #7 35' Rt 69.155	4.42	<135.33>	✓
		135.31	0.02 error
65+00 edge Lily Pond	8.4	131.3	✓
" " 4' Lt	5.7	134.0	✓
+50	8.9	130.8	✓
" " 5' Lt	6.1	133.6	✓
66+00	9.2	130.5	✓
+27 Edge Lily Pond	8.1	131.6	✓
+27 1' Lt	6.5	133.2	✓
+50	6.3	133.4	✓
" " 2.5 Rt Edge Lily Pond	8.6	131.1	✓
67+73.13 on L (X) Stake	6.04	<133.71>	✓

↑
<139.75>

23

6' Rt	6.8	132.9	✓
8" Edge Lily Pond	8.8	130.9	✓
T.P. on L 5.23	<138.94>	6.04	<133.71>
67+00	5.1	133.8	✓
+95 Begonia & other shrubs			
+50	4.5	134.4	✓
+95 End patch shrubs			
68+00	4.8	134.1	✓
+50	5.6	133.3	✓
+53 10" pepper 1' Lt			
69+00	9.2	129.7	✓
+30	4.1	127.8	✓
+95 16" Fan Palm 8' Lt			
+50	11.5	127.4	✓
+50 16" Fan Palm 8' Lt			
+55 EXM H 69.5 Lt + Rim	10.02	<128.92>	✓
" " #80 Flory Lime	18.97	<119.97>	✓
+83 14" Acacia 5' Rt			
+85	12.2	126.7	✓
+93	14.6	124.3	✓
+96	14.6	124.3	✓
+98	12.2	126.7	✓
70+00	12.3	126.6	✓
T.P. 3.88	<130.37>	12.45	<126.49>
+13 26" Eucalypt 4' Lt			
+19 4" " 4' "			

π
(130.37)

+30		4.7	126.0	✓
+33	5' RT 5" Eucalypt			
"	6' L 6 "			
+35		5.6	124.8	✓
+50	18" Eucalypt 7' RT			
+55		6.8	123.6	✓
"	5' Lt Topsoil	3.3	127.1	✓
+65	5" 14" Eucalyptus			
+75		9.9	125.5	✓
"	3' Lt Edge Present Roadfill	3.2	127.2	✓
"	5' Rt Toe " " "	8.2	122.2	✓
71+00		5.0	125.4	✓
"	3' Lt	3.9	126.5	✓
"	8' Rt Toe fill	9.5	120.9	✓
+12	12" Cypress 3' RT			
+25	Top present fill 1/4 d	7.8	125.6	✓
"	5' Rt Toe fill	9.7	120.7	✓
+40	14" Cypress 1' RT			
+49	14" " 0.7' RT			
+52	+ 1st ex 8" Sawn	5.5	124.9	✓
+63	20" E.C. 00 1 1/2" Stake	4.97	125.40	✓
"	11' RT Toe fill	10.6	119.8	✓
+82	16" Cypress 3' RT			
+96	14" " 5 "			
72+00		5.3	125.1	✓
"	10' RT Toe fill	11.2	119.2	✓
"	9' Lt Present Paving	5.4	125.0	✓

π
(130.37)

24

+35	30" Eucalyptus 3' Lt			
+48	Stump 14" Eucalyptus 2' Lt			
+50		6.0	124.4	✓
"	8' RT Toe fill	11.4	119.0	✓
+75	30" Eucalyptus 6' RT			
+96	Stump 30" Eucalyptus 1' RT			
73+00		7.0	123.4	✓
"	8' Lt Present Paving	6.7	123.7	✓
"	8' RT Toe fill	12.1	118.3	✓
+2	Stump 9" Eucalyptus 2' RT			
+12	18" Eucalyptus 2' RT			
+22	9" " 2' RT			
+25	24" " 6 "			
+50		7.1	123.3	✓
+71.3	1st ex 8" Sawn	7.9	123.0	✓
+74	20" Eucalyptus 7' RT			
74+00		7.8	122.6	✓
"	7' Lt Present Paving	8.0	122.4	✓
"	10' RT Toe fill	12.0	118.4	✓
J.P. 1.01	(123.64)	7.74	(122.63)	07, B.C. 74+06 18 Stake
EX.M.H. #31	62.7 RT of 106 ¹⁸ Rim	4.27	(119.37)	
"	" " Flowline	13.47	(110.17)	
J.P. 3.94	(126.57)	1.01	(122.63)	
+28	8" Eucalyptus 5' RT			
+35	12 " 4 "			
+50		4.3	122.3	✓
"	2' RT	4.5	122.1	✓
"	5' Lt ex Paving	4.7	121.9	✓
"	9' RT Toe fill	8.6	118.0	✓

T
(126.57)

75+00		4.5	122.1	✓	
" "	4' RT	4.5	122.1	✓	
" "	5' Lt present paving	5.1	121.5	✓	
" "	14' RT Toe fill	10.4	116.2	✓	
+50		5.0	121.6	✓	
"	4' RT	5.0	121.6	✓	
"	14" Toe fill	9.8	116.8	✓	
+86	8" Eucalyptus	5' RT			
+94	" "	6 "			
76+00		4.8	121.8	✓	
" "	2' RT	4.8	121.8	✓	
" "	3 " 700 fill	9.3	117.3	✓	
" "	6 Lt. Present Paving	5.7	120.9	✓	
+15		5.1	121.5	✓	
"	7' RT Toe fill	9.1	117.5	✓	
+36	6" Eucalyptus	4' RT			
+52	int. Storm Drain	24" concrete	6.9	120.2	✓
"	10' RT flow line outlet	14.40	(112.17)	✓	
"	39' Lt inlet end	13.07	(113.50)	✓	
	Marked "p" Line BM #5 end curb				
	check BM 39' Lt of 76+50	6.95	(119.62)	✓	
			119.59		
			0.03 error		
	5.84	(125.43)	(119.59)	corrected	
77+00		7.4	118.0	✓	
" "	5' RT	9.0	116.4	✓	
" "	1' Lt Top present fill	5.3	120.1	✓	
+08	10" Sycamore	8' RT			

T
(125.43)

25

+28	4" Sycamore	8' RT		
+50		8.0	117.4	✓
"	2' RT Toe fill	9.2	116.2	✓
78+00		8.7	116.7	✓
"	10" Sycamore	2' RT		
TP	3:52	(120.88)	8.07	(117.36)
+22	14" Pipe	3' RT		
+43	int 8" Sewer from East	6.9	114.0	✓
+43 ³⁹	ex M.H. 18.75 AL Ring	8.30	(112.58)	✓
"	" " Flow Line	14.90	(105.98)	✓
"	" " Flower M.H. 75.1 AL	4.10	(116.78)	✓
+44	14" Pepper	5' Lt		
+66		8.7	112.2	✓
+86		10.7	110.2	✓
+88	Bottom Ditch	12.3	108.6	✓
79+00		9.6	111.3	✓
+12	18" Pepper	9.4		
+22		8.0	112.9	✓
+35	Top	6.1	114.8	✓
"	5' Lt	8.5	112.4	✓
"	5' RT	8.5	112.4	✓
+37	10" pipe	6.2 Lt		
+50		8.7	112.2	✓
"	2' RT	8.7	112.2	✓
"	3 " Bottom Ditch	15.5	105.4	✓
+53	Top Bank	8.7	112.2	✓
+54	Bottom Ditch	15.5	105.3	✓

12088

80+00		16.0	104.5	✓
+35		15.2	105.7	✓
+37		8.3	112.6	✓
+60		9.3	111.6	✓
" "	2' Rt	9.3	111.6	✓
" "	3 "	12.0	106.9	✓
" "	4 "	16.9	104.0	✓
" "	6' Lt	5.7	115.2	✓
81+00		8.5	112.4	✓
" "	5' Rt	10.9	110.0	✓
" "	6 "	15.8	105.1	✓
" "	4' Lt	7.5	113.4	✓
" "	8 "	10.9	110.0	✓
+08	12" pine 5' at			
+10		8.6	112.3	✓
+20		12.7	108.2	✓
" "	8' Rt Edge ditch	13.0	107.9	✓
+25	9" 12" pine			
+30		14.4	106.5	✓
+50		14.9	106.5	✓
+67	12" Eucalyptus 4'H			
+80		11.5	109.4	✓
82+00		11.0	109.9	✓
T.P.	3.66	112.46	8.08	112.80
+21	18" pepper 9' Rt			

116.46

26

+25		4.5	112.0	✓
+50		4.7	111.8	✓
+74	int 24' culvert	5.8	110.7	✓
"	21' Rt to outlet end flow	9.58	106.88	✓
"	4' Lt to entrance flow	8.28	108.18	✓
check "P" line B.M. #1	4' Lt 82+79 cb.	3.71	112.75	✓
			112.76	0.01 error
83+00		5.2	111.3	✓
+30	Edge present Berm.	4.5	112.0	✓
+60		4.5	112.0	✓
+69	int present black paving	5.29	111.22	✓
84+00	on paving	5.58	110.88	✓
+750		6.35	110.11	✓
85+00		7.42	109.04	✓
T.P.	0.07	111.44	5.09	111.37
+50		2.93	108.51	✓
" "	9' Lt to cut bank			
86+00		3.08	108.36	✓
+50		3.68	107.76	✓
87+00		4.39	107.05	✓
+50		5.23	106.21	✓
+73	edge present black paving	5.79	105.70	✓
87+93-48 E.C.	on 1x1 stakes	5.75	105.69	✓
+91.5	under 8" Sewer	5.9	105.5	✓
"	22.7 Rt #84 Rim	14.31	97.13	✓
"	" Flow Line	20.71	90.73	✓
	Pipe Not available on East Side	17.76		

↑
<111.44>

88+56 ⁴ pit 24" Drain			
" " 16' Rt out lot Flow	19.21	97.23 ✓	
2- Box	13.10	98.34 ✓	
1 " 33' Lt entrance Flow	11.12	100.32 ✓	
89+00	6.6	104.8 ✓	
" " 2 Rt	6.6	104.8 ✓	
" " 9 "	12.4	99.0 ✓	
" " 7" Lt. Present Paving	7.28	104.16 ✓	
+30 Begin Pomegranate to Shrubs			
750	8.1	103.3 ✓	
" 10 Rt	12.6	98.8 ✓	
90+00	9.3	102.1 ✓	
" " 2' Lt Top Berm	8.1	103.3 ✓	
" " 10 Rt	12.6	98.8 ✓	
+50	9.3	102.1 ✓	
" 4' Lt Top Bank	7.6	103.8 ✓	
" 10 R Toe Fill	15.6	95.8 ✓	
+61 end pomegranate shrubs			
T.P. 3.06 <105.47>	⁹³ 9.73	<102.41>	
91+00	3.4	102.1 ✓	
" " 2' Lt Top Berm	2.5	103.0 ✓	
" " 70 Rt Toe fill	10.0	95.5 ✓	
" " 14 " Bottom Ditch	14.0	91.5 ✓	
+50	5.9	99.6 ✓	
" 5' Lt Top Berm	3.2	102.3 ✓	
" 9 Rt Toe fill	10.1	95.4 ✓	

↑
<105.47>

92+00 Toe fill on 2	9.8	95.7 ✓	
+20	11.7	93.8 ✓	
+35-3' Rt 9' across			
+50	13.0	92.5 ✓	
+70 Bottom Ditch	14.9	90.6 ✓	
+76 8' across 4' Rt			
+82 8' Lt	14.8	90.7 ✓	
93+00	13.7	91.8 ✓	
+14	8.4	97.1 ✓	
+14 14' pine 4' Lt			
+25 53 4' Rt	8.5	97.0 ✓	
" " EXMH 6' Rt Rim	8.90	<96.57> ✓	
Flowline	20.17	<85.30> ✓	
+30 7' Lt 10" pine			
+33 2' Rt 10" "			
+44 4' Lt 12" "			
+50	9.0	96.5 ✓	
+55 5' Rt 10" pine			
+64 6' pine 10' Lt			
93167 27 30. 1x1 stake	10.31	<94.66> ✓	
check BM P Line #3	6.40	<99.07> ✓	
⁹³⁺⁸⁵ EXMH 15' Rt - 93+92 Lt Rim	14.1	93.08 ✓	
Flowline	20.88	<91.59> ✓	
" " " " Flowline	20.88	<84.59> ✓	
" " " " Flow from East	20.36	<85.11> ✓	
94+60	15.3	90.2 ✓	

105.47

94+22	8" Eucalyptus 1.5H		
94+25		15.5	90.0 ✓
+39	20" Eucalyptus on line		
+86		16.3	89.2 ✓
+88	Bottom Ditch	20.5	85.0 ✓
T.P.	3.82	102.90	6.40 <99.08> ✓
95+05	Bottom Ditch	17.2	85.7 ✓
95+10		13.7	89.2 ✓
+25		12.8	90.1 ✓
" "	Begin Hawthorne Shrubs		
+25	5' RT	15.0	87.9 ✓
" "	9" Bottom Ditch	17.1	85.8 ✓
+75		10.6	92.3 ✓
" "	5' LT	8.8	94.1 ✓
" "	5' RT	11.8	91.1 ✓
96+25		9.7	93.2 ✓
+40		8.2	94.7 ✓
+74	End Shrubs W of side road		
+75		7.8	95.1 ✓
+90	with Present Black paving on side road	7.84	<95.06> ✓
97+00		8.04	94.86 ✓
+07	S. Edge Present Paving on side road	8.06	94.84 ✓
+15		8.8	94.1 ✓
+16	Begin shrubs S. of side road		
+25		11.3	91.6 ✓
T.P.	236	<96.04>	9.22 <93.68> ✓
+75		4.5	91.5 ✓

96.04

93-9815

28

97+90		6.5	89.5 ✓
+98+24	10" maple on &		
98+25		9.3	86.7 ✓
98+46	24" Maple 2.5H &		
+50	N Bank Ditch	12.4	83.6 ✓
" "	55' RT ex N.H. edge of line	13.33	<82.71> ✓
+53	Bottom and N Edge Ditch	14.3	81.7 ✓
+65	" " " "	14.3	81.7 ✓
+66	S. Top Bank	13.0	83.0 ✓
+70		11.5	84.5 ✓
+86	16" Eucalyptus 1.3 RT		
+97	Stump 12" Eucalyptus 1.0H		
99+00		11.1	84.9 ✓
+13	18" Eucalyptus 1.5 RT		
+28	5" " 2.5 "		
+45	8" " on &		
T.P.	7.06	<96.66>	3.44 <92.60> ✓
99+46	26 on stake	11.10	<85.56> ✓
+55	14" Eucalyptus on &		
+62	12" Live Stump 2' LT		
+65	" Eucalyptus 2' RT		
+65	&	10.8	85.9 ✓
+80	12" Live Stump Eucalyptus 3' RT		
+94	24" Eucalyptus 1.2 LT		
100+00		11.8	84.9 ✓
+06	4" Eucalyptus on &		

96.66

+22	8" Eucalyptus	15 RT		
+30	10" Eucalyptus	3' Lt		
+42	10" "	on k		
+50			12.5	84.2 ✓
"	5' Lt		13.1	83.6 ✓
"	8" "	Bottom Ditch	18.4	78.3 ✓
+53	8" Eucalyptus	3' RT		
+60	10" "	2 "		
+62	4" "	0.5 RT		
+65			13	83.7 ✓
"	2' Lt	Edge Bank	13.3	83.4 ✓
"	3" "	Bottom Ditch	18.8	77.9 ✓
+74		Top Bank	13.3	83.4 ✓
+80		Bottom Ditch on k	19.5	77.2 ✓
T.P.	3.95	<90.52>	10.09	<86.57>
101+20	Bottom Ditch		13.1	77.4 ✓
+30	<small>note from 101+20 to 102 same as on edge of ditch</small>		10.2	80.3 ✓
+40			10.3	80.2 ✓
" "	1" RT	Bottom Ditch	13.1	77.4 ✓
" "	5' Lt		8.4	82.1 ✓
+50			8.8	81.7 ✓
" "	10' RT		13.3	77.2 ✓
+70				
+70	E.X. MH #87	Rin	9.54	<80.98> ✓
" "	"	Flow Line	19.54	<75.98> ✓
" "	2' RT		80	82.5 ✓
" "	5' RT		134	77.1 ✓

90.52

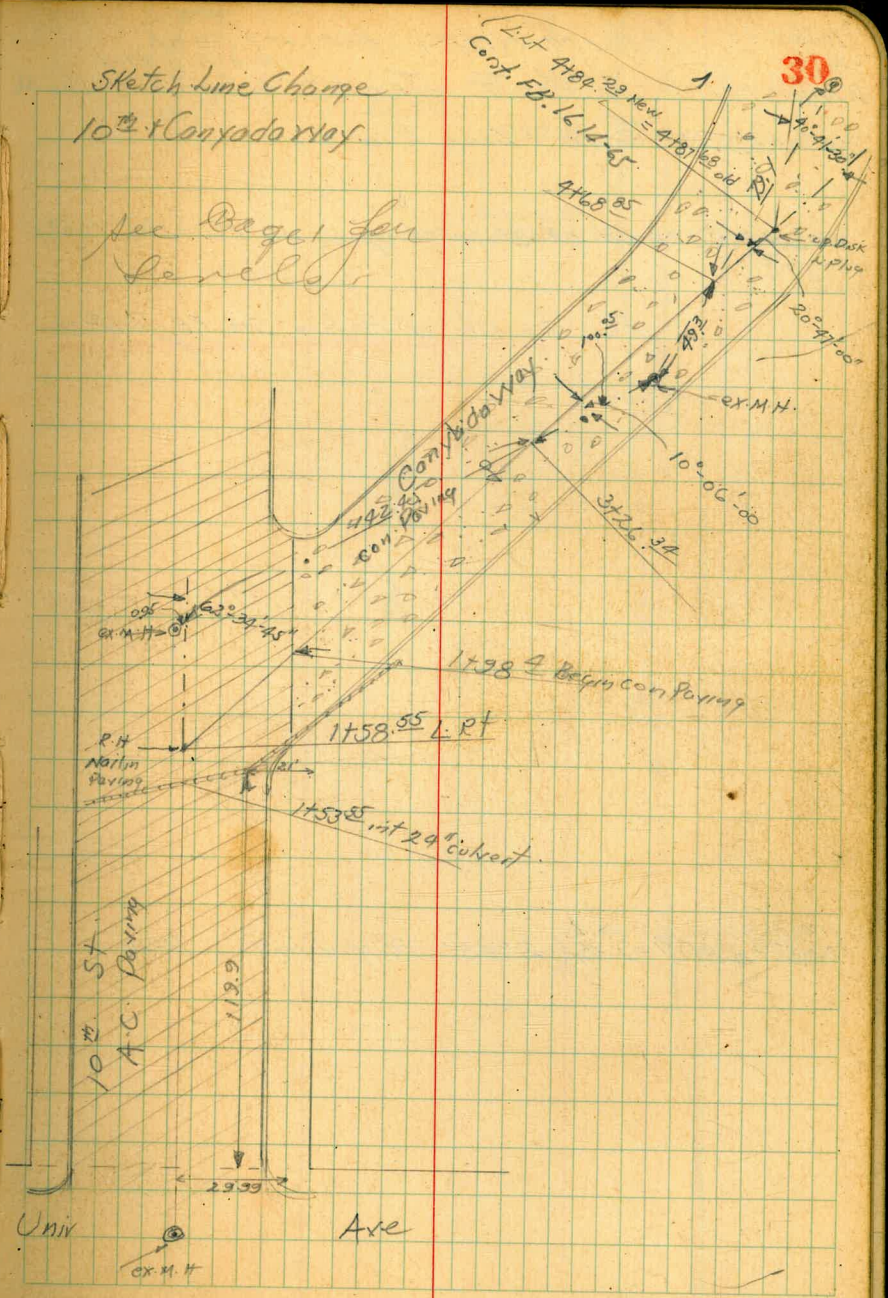
+94			4.9	85.6 ✓
5' Lt			2.9	87.6 ✓
" 2' RT			5.8	84.7 ✓
" 5' RT			13.2	77.3 ✓
102+00			4.6	85.9 ✓
" 11.5 RT	Edge Bank		6.3	84.2 ✓
" 11.6 "			13.3	77.2 ✓
5' Lt			2.8	87.7 ✓
102+25			2.0	88.5 ✓
" 3' Lt			0.6	89.9 ✓
" 5' RT			4.4	86.1 ✓
" 16' RT	Edge Bank		5.6	84.9 ✓
+70	on Edge Bank		1.1	89.4 ✓
" 10' RT	Top fill		5.5	85.0 ✓
103+00			1.3	89.2 ✓
" 3.7 Lt	Present Pavng		17.5	88.77 ✓
" 1.5 RT	Edge Bank		1.3	89.2 ✓
103+11 ²⁵	int Present Sewer		1.5	89.0 ✓
T.P.				
check BM #2			1.73	<88.73> 88.73 0.06 error
331		<92.04>		<88.73> <small>corrected</small>
103+37 ⁷⁰	1.4 on stake		3.45	88.59 ✓
+55 ¹²	int 24" culvert at pt of intersection		11.03	81.01 ✓
+65	int present Black Paving		3.84	88.20 ✓
104+00			4.28	87.76 ✓
+50			4.70	87.34 ✓
105+00			5.13	86.91 ✓

92.04

105+38.27	L.P. on state & 107	5.48	86.56	✓	
"	" 29.84 Flwy. EX. M.H. #88	17.94	74.10	✓	
106+00		6.17	85.87	✓	
+50		6.70	85.34	✓	
107+00		7.20	84.84	✓	
+50		7.97	84.07	✓	
108+00		8.54	83.50	✓	
+50		9.15	82.89	✓	
T.P.	5.00	87.62	9.92	82.62	✓
109+00		6.06	81.56	✓	
+065	N Line Russ. Div. ^{concrete} _{to 100 ft. paving}	6.32	81.30	✓	
+66.39	S " " " End Con. Paving	5.33	82.29	✓	
T.P.	5.24	84.92	7.94	79.68	✓
check 8M. State Hwy 41c	NW Line in Ash	1.20	83.72	✓	
"	Brass City 8M NW 10th Ash Plug	1.99	82.73	✓	
			82.96		
			0.03 error		

Sketch Line Change
10th + Conyada Way

see Bagel for
details



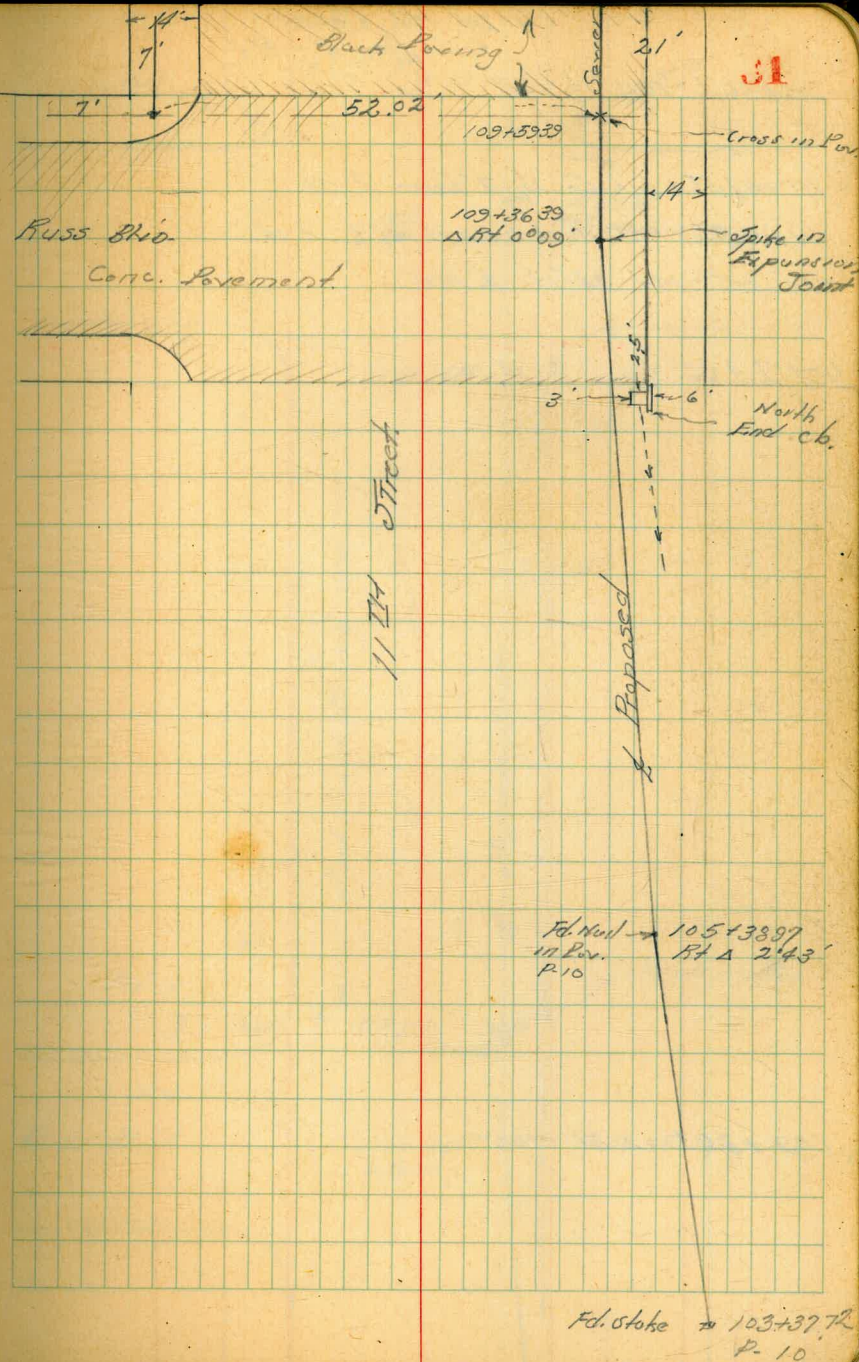
Walker.
Wells.
D. Farnox 10-1941
PRELIMINARY LOCATION
from Russ Blvd
11TH ST. JEWEL to Beardley & Colton sts.
109+59.89 = South 7' line Russ Blvd.

109+36.39 = $\Delta Rt. 0^{\circ}09'$ set spike in Pav.

For Levels of Profile see PB 1614-6

105+38.97 = $\Delta Rt. 2^{\circ}43'$ Fd. Nail in Pav. P-10

103+37.72 $\Delta Lt. 2^{\circ}51'30''$ P-10
(copied from P-10)



11th St. Sewer
Cont from P-31

111+56.7 = MH 19' Lt

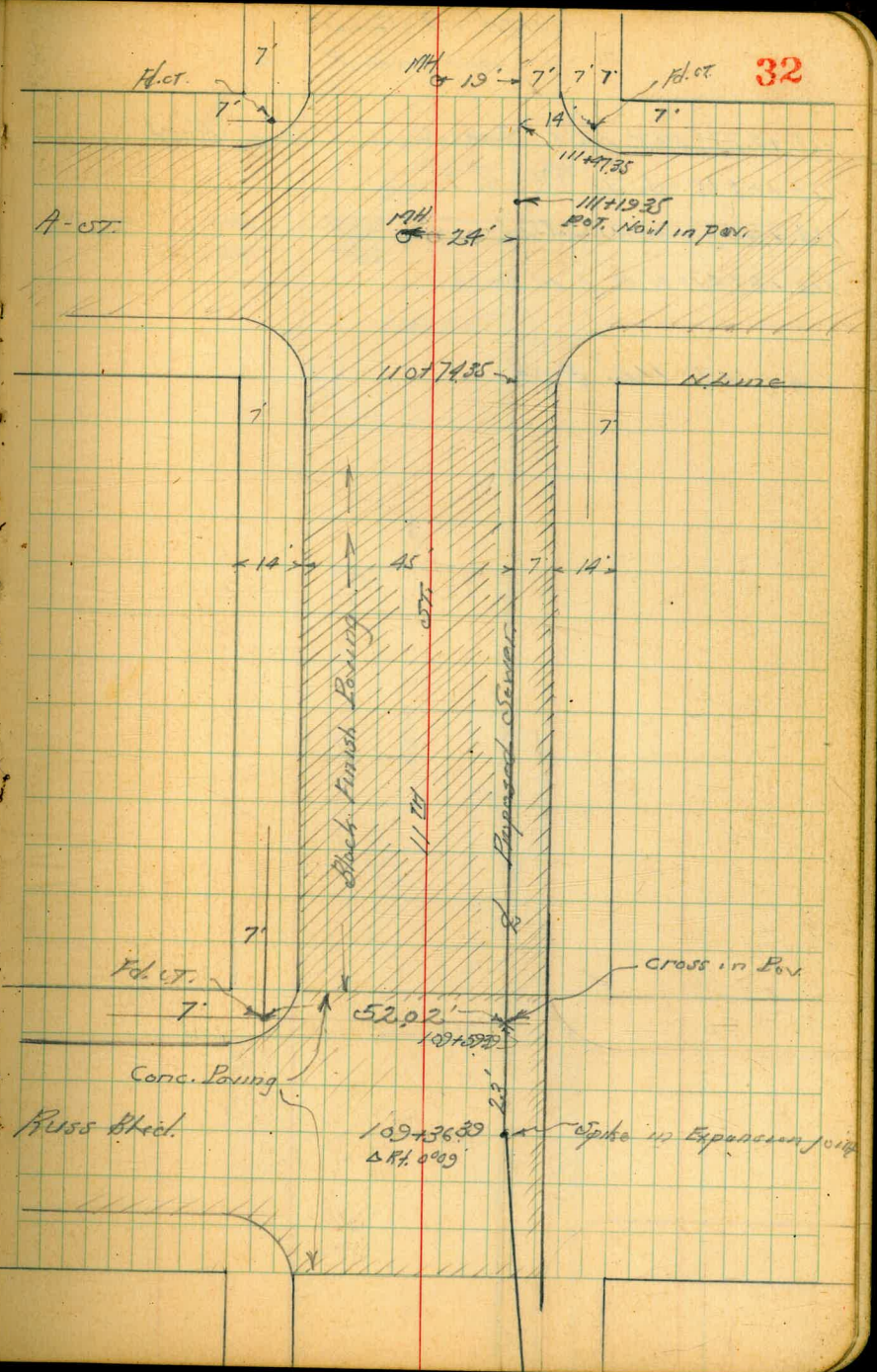
111+47.35 = Int. South 7' Line A-St.

111+19.35 = Pot. Nail 5' South of E A-St.

111+14.35 = MH 24' Lt. = 1/2 MH.

110+74.35 = N.L. A-St.

109+36.39 = Δ Bl. 0°09'



1174 St. Sewer
Cont. from P. 33

118+75 = MH 24.5' Lt.

118+42.06 = P.O.T. Nail Int. North 7' Line C-St.

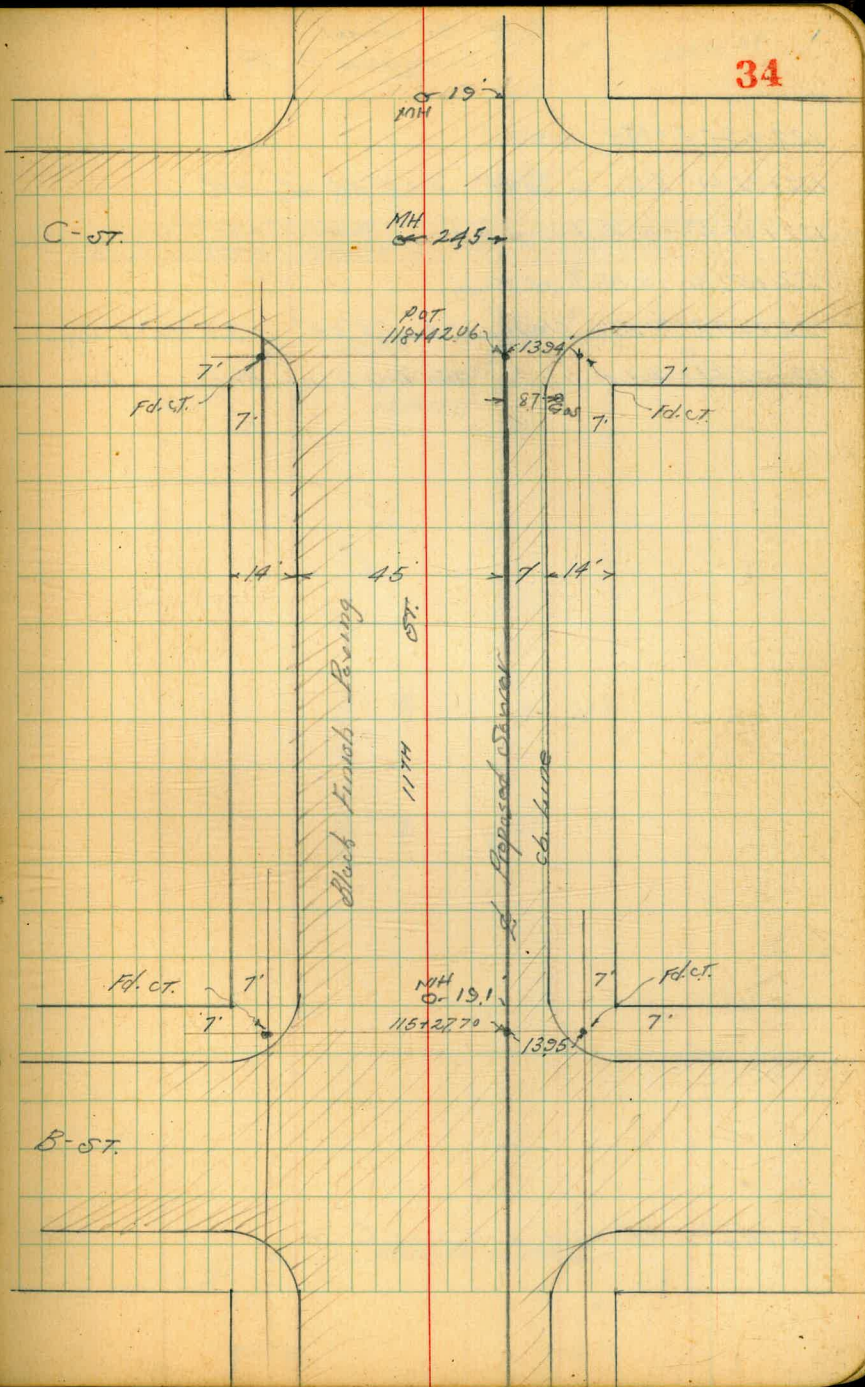
118+33.7 = Int. Gas Service Ditch Valve Cover 8.7' Rk.

115+36.4 = 6" Gas Cover 5.25' Lt.

115+35 MH 19.1' Lt.

115+27.7 = P.O.T. Nail Int South 7' Line B-St.

34



11TH ST Sewer
Cont. from P. 34

122+95.5 = MH 19' L.

122+72.60 = 1/2 Gas Co. MH 1.55' RT. = 1/2 MH.

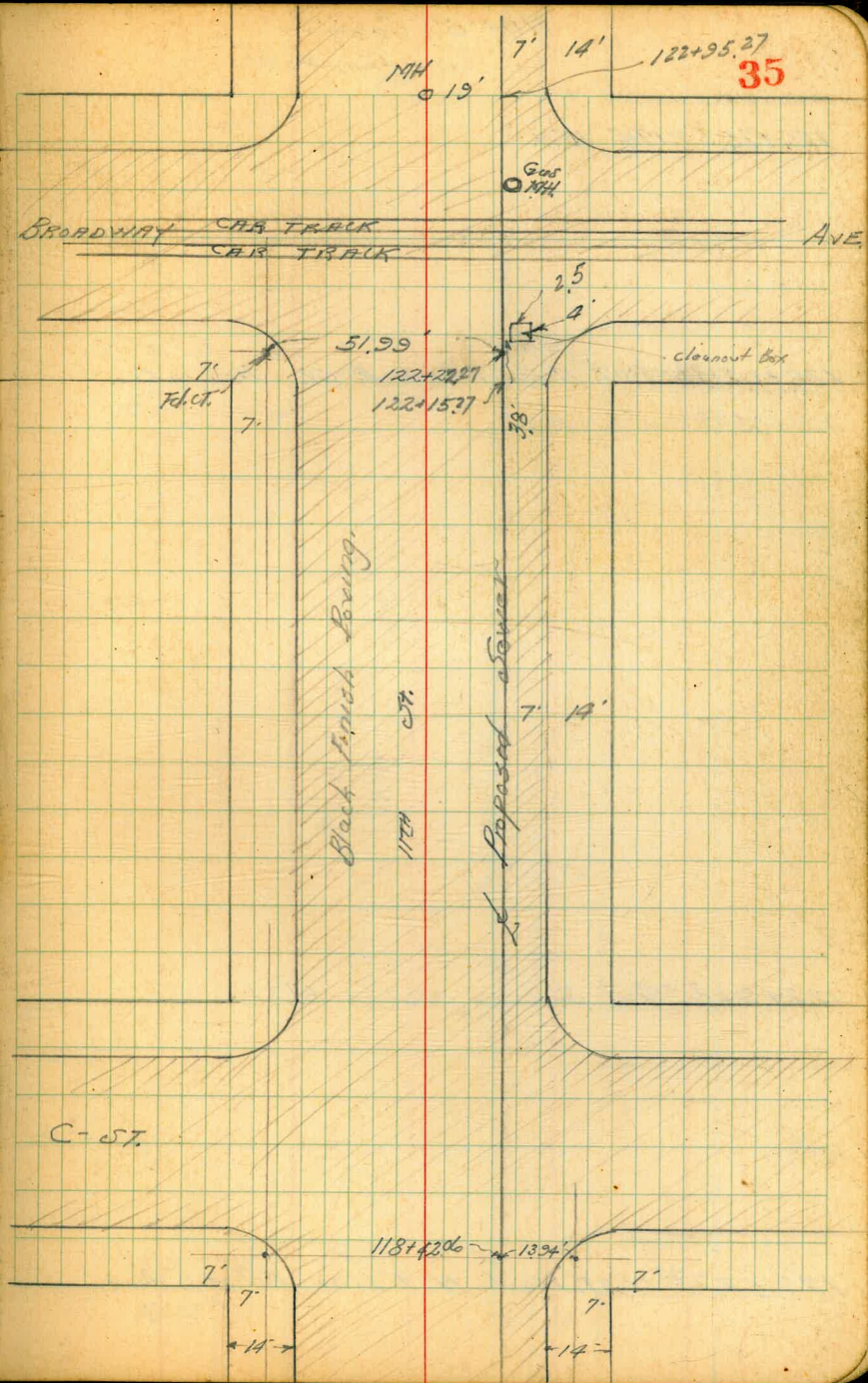
122+62.58 = S Rail S Track

122+47.80 = N Rail N Track

122+23.3 = N edge Cleanout Box 2.5' x 4' 3.8' RT. = E edge

122+22.27 = POT. New Int. North 7' Line Broadway Ave

118+42.06 = POT. int. of 7' Line C-st



11TH St. Sewer
Cont. from P-85

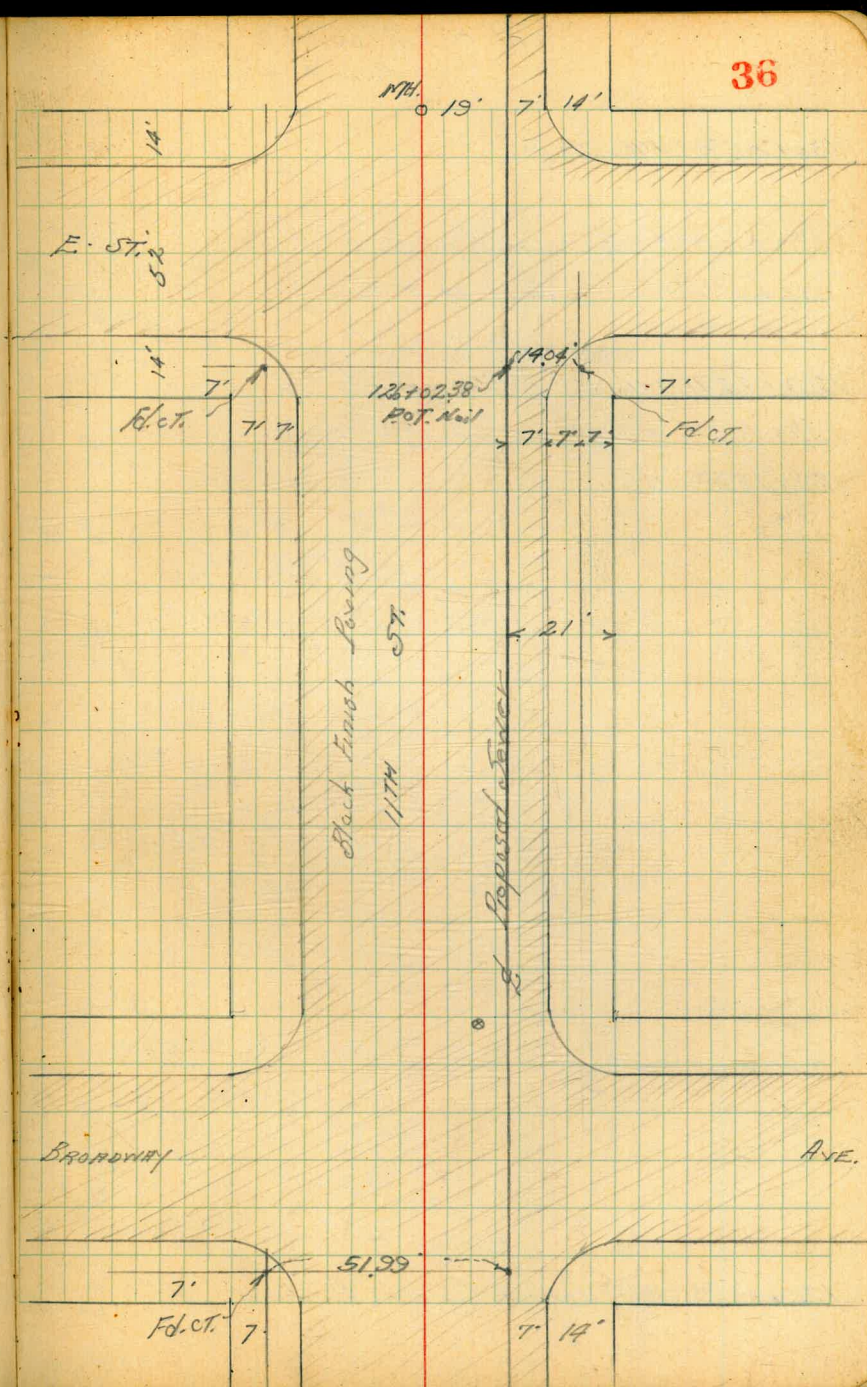
126+75.5 = MH 194.

126+02.38 = POT. North 7' Line E-St. Nail in Box.

125+95.38 = N.L. E-St.

122+96.2 = Gas Service Valve S.Lt.

122+22.27 = POT. Nail N 7' Line Broadway Ave.



11th St. Sewer
Cont. from P. 36

130+55.3 = M.H. 19 Lt.

130+23.68 = South Rail of South Truck

130+07.7 = North Rail of N. Truck

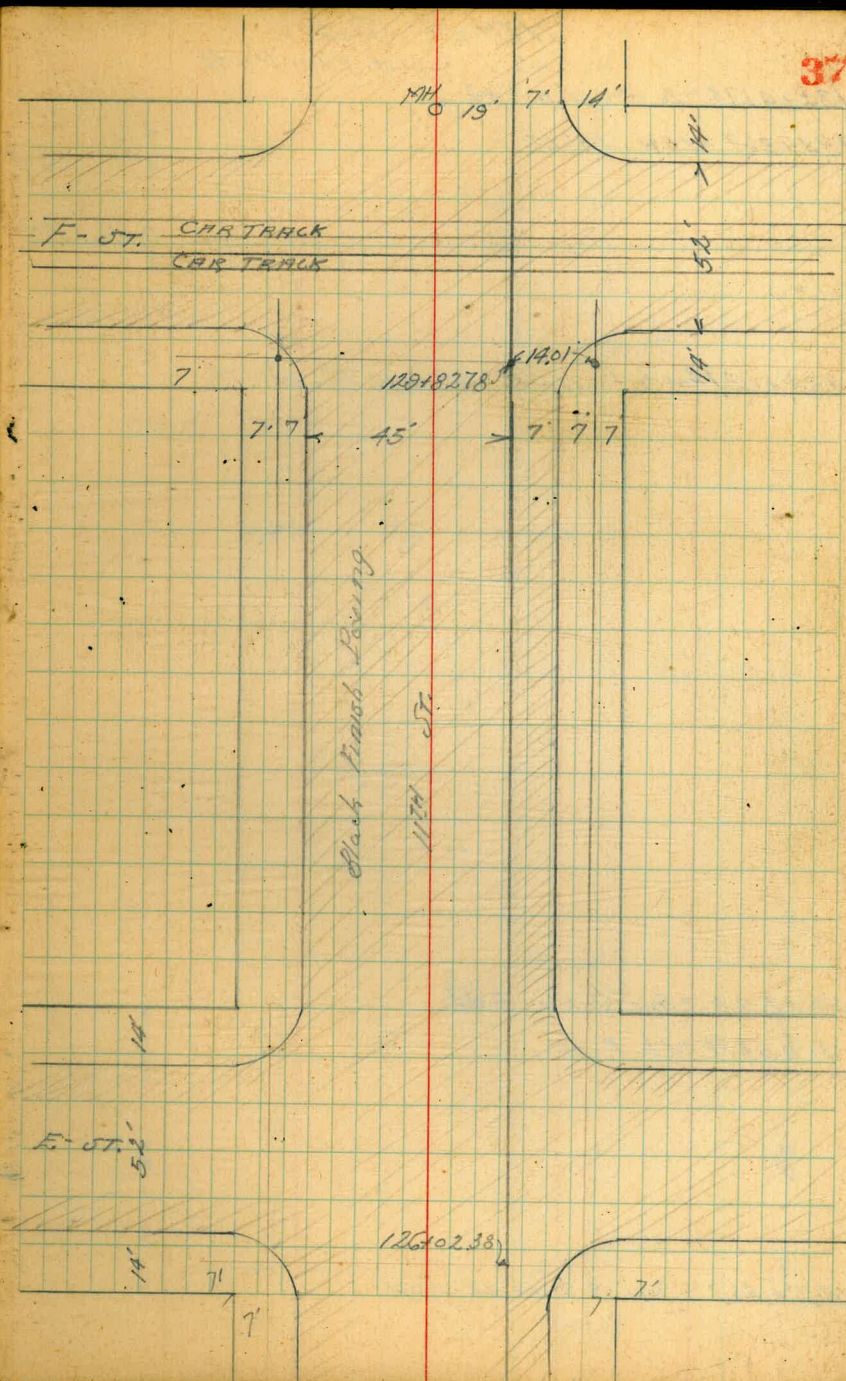
P.O.T. Nail in Porring

129+82.78 = North 7' Line E-St.

129+75.9 = Water Line Valve, 30' Lt.

129+75.78 = N.W. F-St.

126+02.38 = P.O.T. Int N. 7' Line E-St.



11th St. Survey, Cont. from P-38

138+36.05 = MH 19.2' Lt.

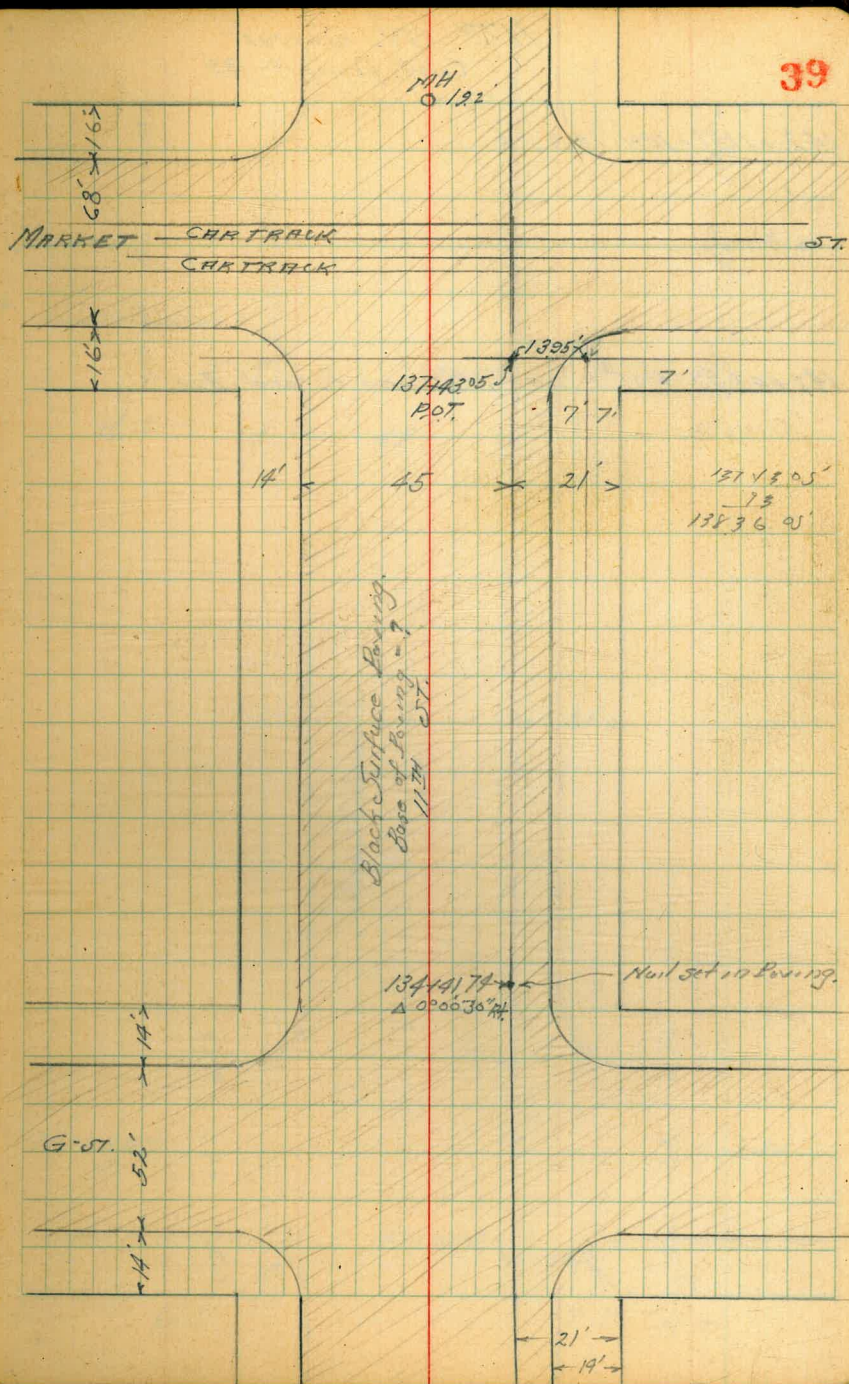
137+93.35 = S. Rail S. Track.

137+78.6 = N Rail N. Track.

137+43.05 = P.O.T. Nail. Int. North 7' Line Market.

14.75

134+41.74 = Δ 0°00'30" Rt.

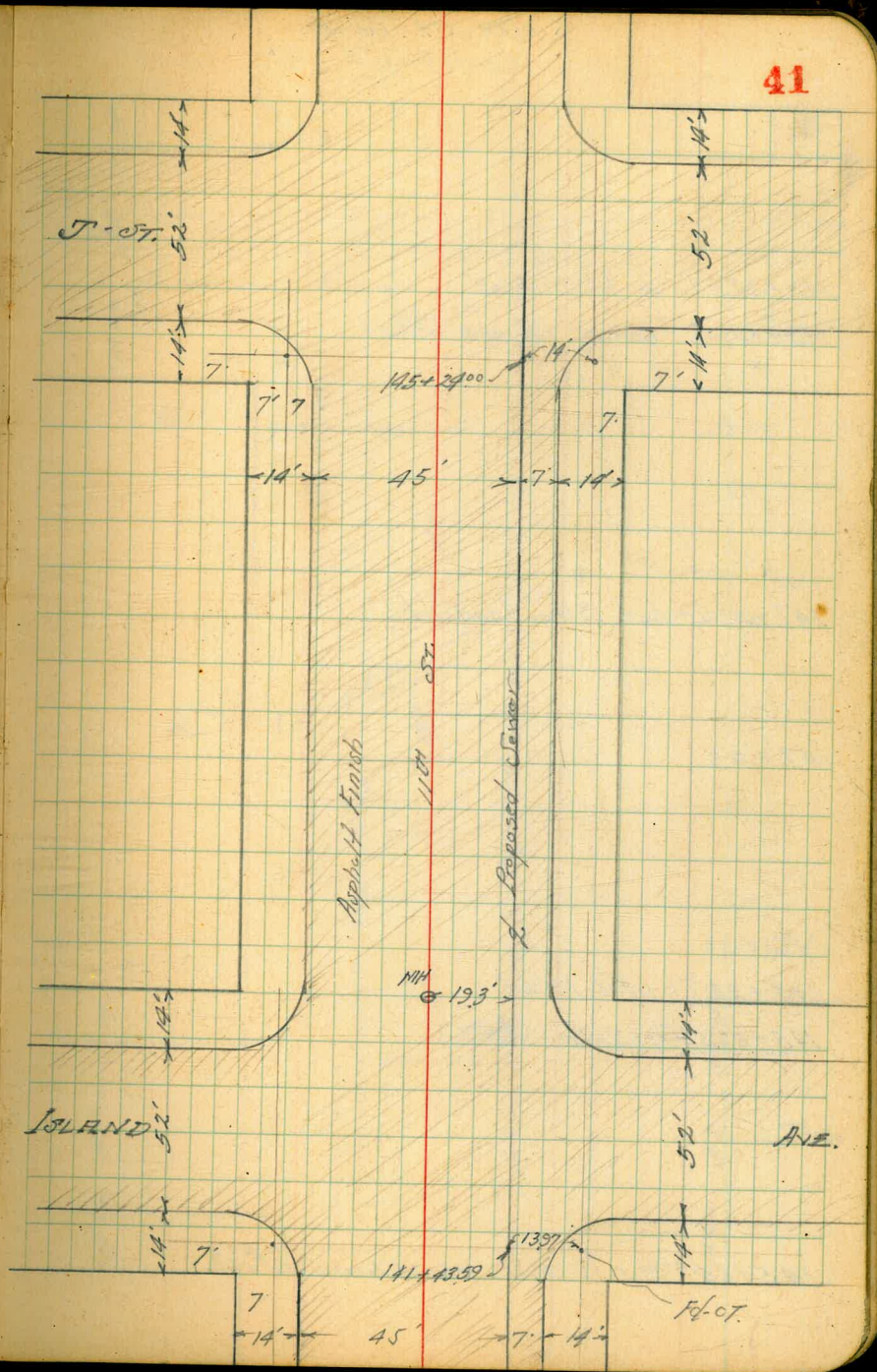


11TH ST. SEWER
 Cont. from P. 40

Int.
 145+24.00 = North 7' Line J-st. = POT. Nul. in por.

142+16.7 = MH 19.314

141+43.59 = POT. Nul. = Int. North 7' Line Island Ave



11TH St. Sewer
Cont. from P-41

149+22.32 = Δ Lt. 90°03'

149+04.22 = Int. N 7' line 5-st.

147+91.5 = Int. Elec. Conduit

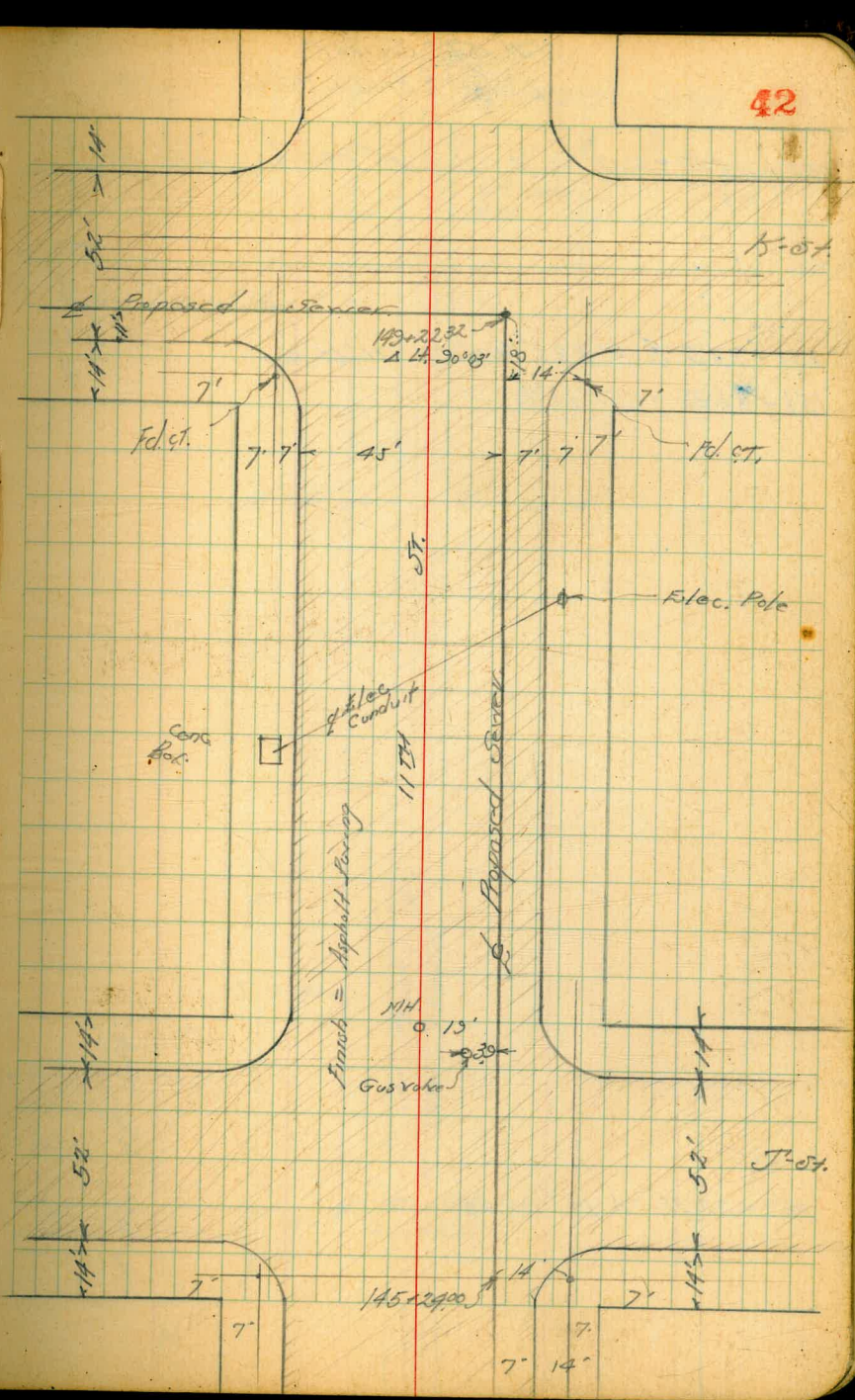
147+00

146+00

145+96.7 = MH 19' Lt.

145+89.5 = Gas Valve 39' Lt.

145+24.00 = p.o.t. Val = N 7' line J-st.

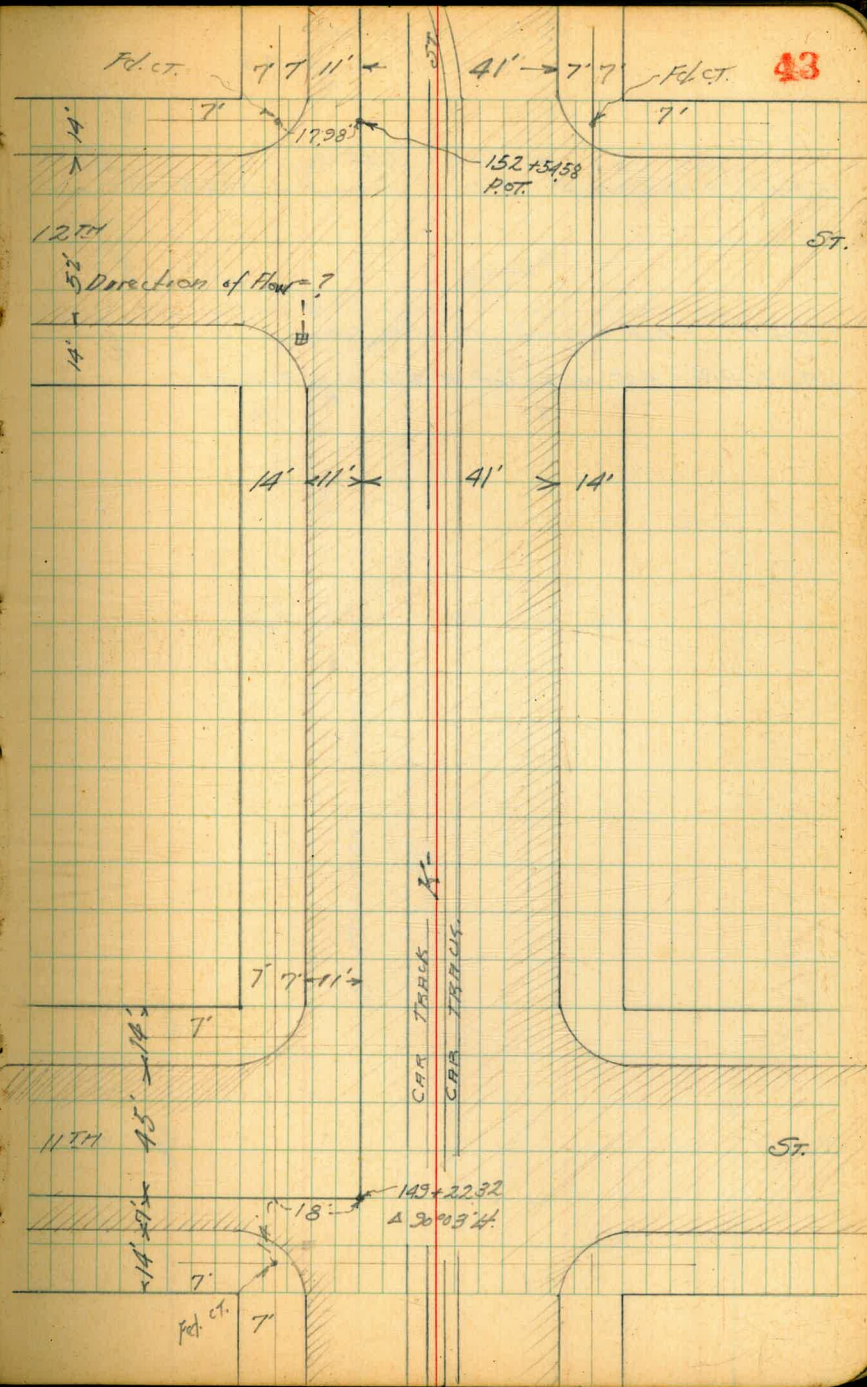


11th St. Sewer
Cont. from P-42

152+54.58 = P.O.T. Point = Int. E. 7' from 12th St.
79

151+93.5 = 2' x 25' Grating 11' Lt.
151+81.58 = W.L. 12th

149+22.32 = A Lt 90° 03'

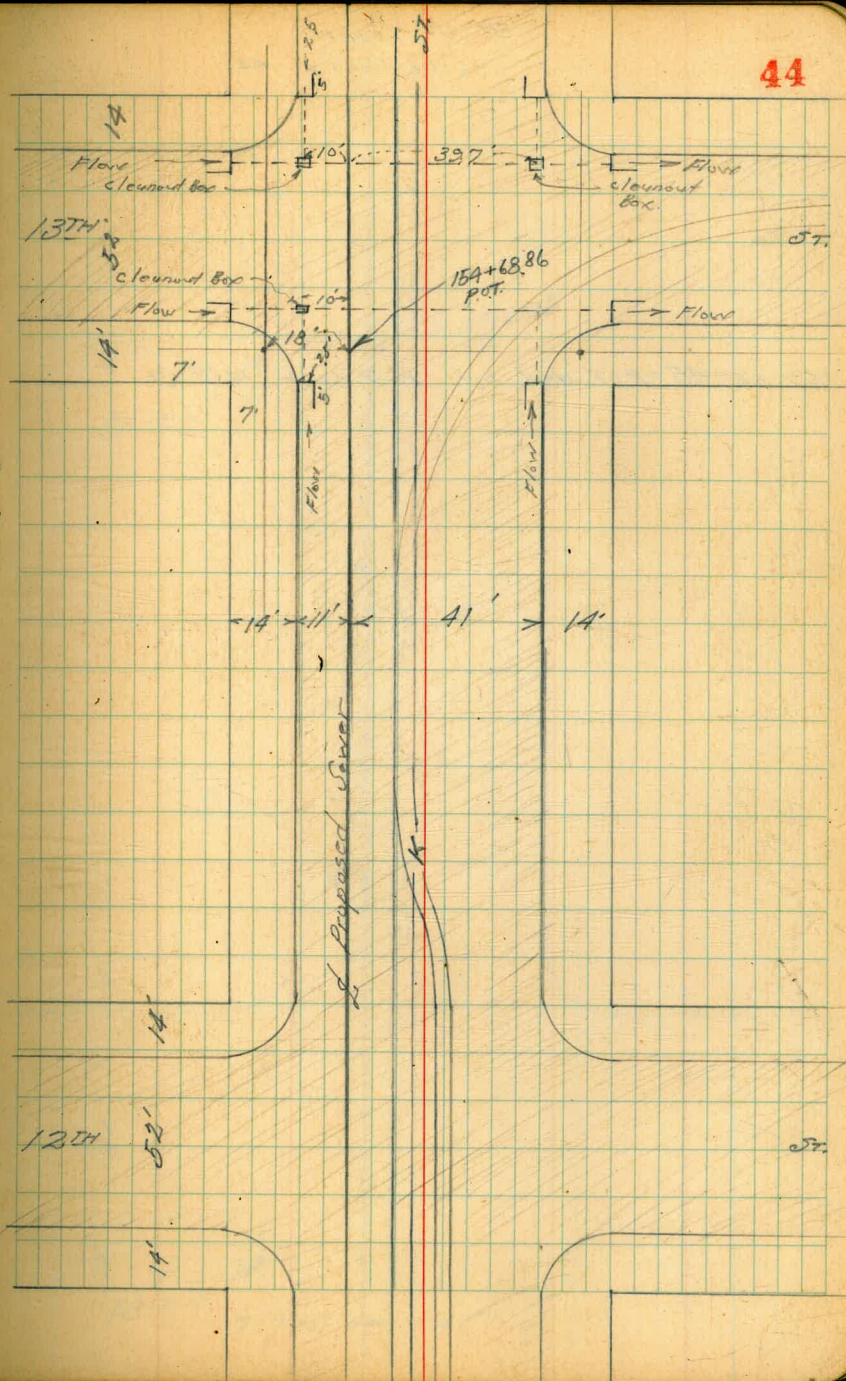


11TH St. Sewer
 Cont. from P 43

155+27.0 = 2'x2' curb. 10' ft. = 2'x2' cleanout 39.7' ft. = 2'x2' cleanout.

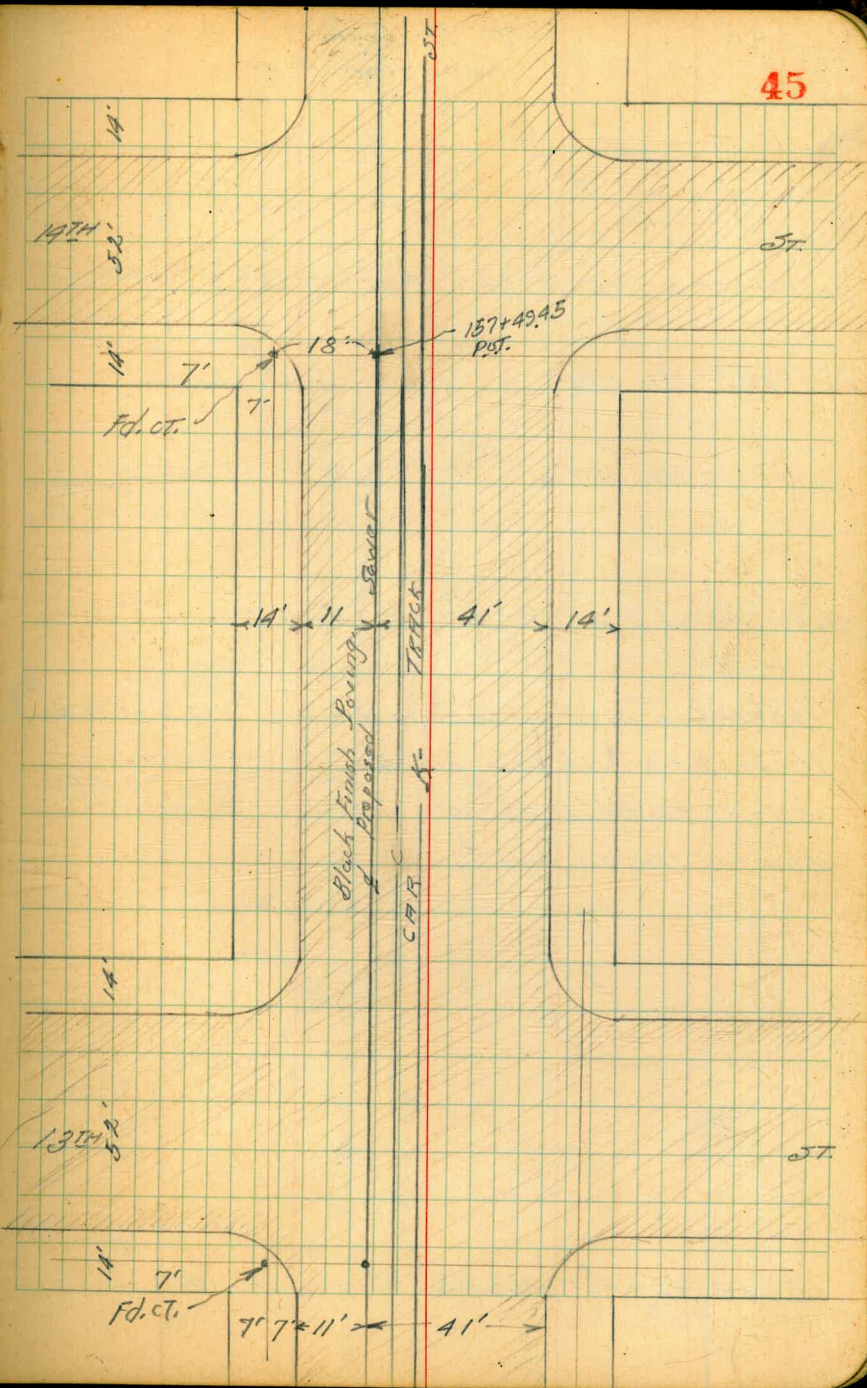
154+77 = 1st. Curb. 10' ft. = 2'x2' cleanout 2'x2'

154+68.86 = POT. No. 1 = Int. 14' 7" wide 13TH St.



11th St. Sewer
Cont. from p. 44

157+49.45 = P.O.T. Nail Int. W 7' Linc 14th St.



11th St. Sewer
Cont. from P-45.

162+41.49 = Δ 1°15'45" Lt.

23

162+18.49 = V.L. 15th

161+94 = M.H. 15th St.

160+77 = Car line F.C. 11.30' Rt = North Edge Track.

160+18.5 = Δ in cb on Lt. = 9.10 Lt. Face cb 7.60' Lt. = 1.2' dia. Pole.

Guy

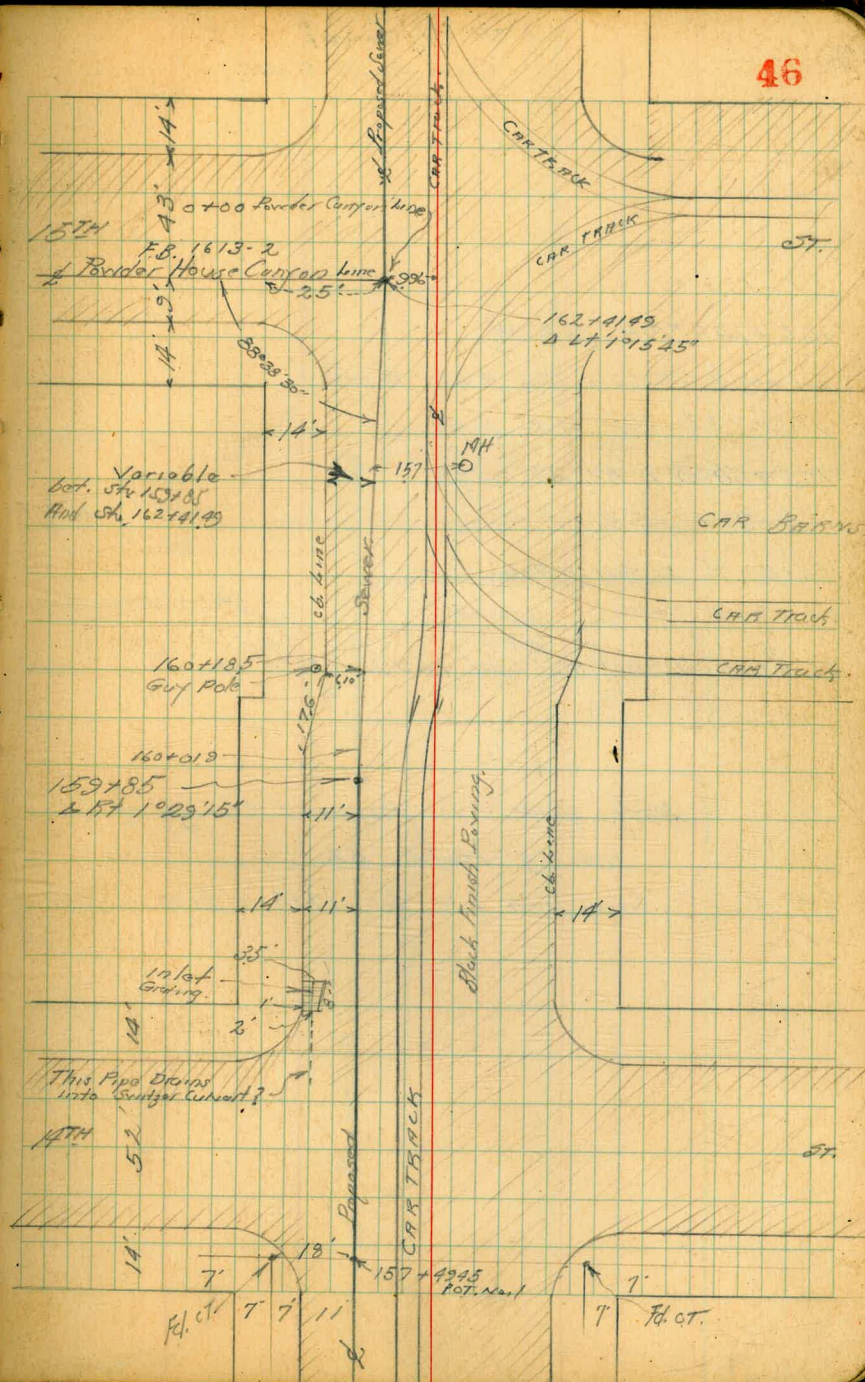
160+01.9 = Δ in cb line on Lt.

159+85 = Δ Rt 1°29'15"

159+54.5 = P.C. Car line

157+49.45 = P.O.T. Next = Lot W 7' line 14th St.

46



11TH St. Sewer
Cont. from P-46

166+146 = M.H. 20.3' Ht.

166+09.2 = N end outlet 4' Lt. = W. edge

165+73.8 = M.H. 4' Ht.

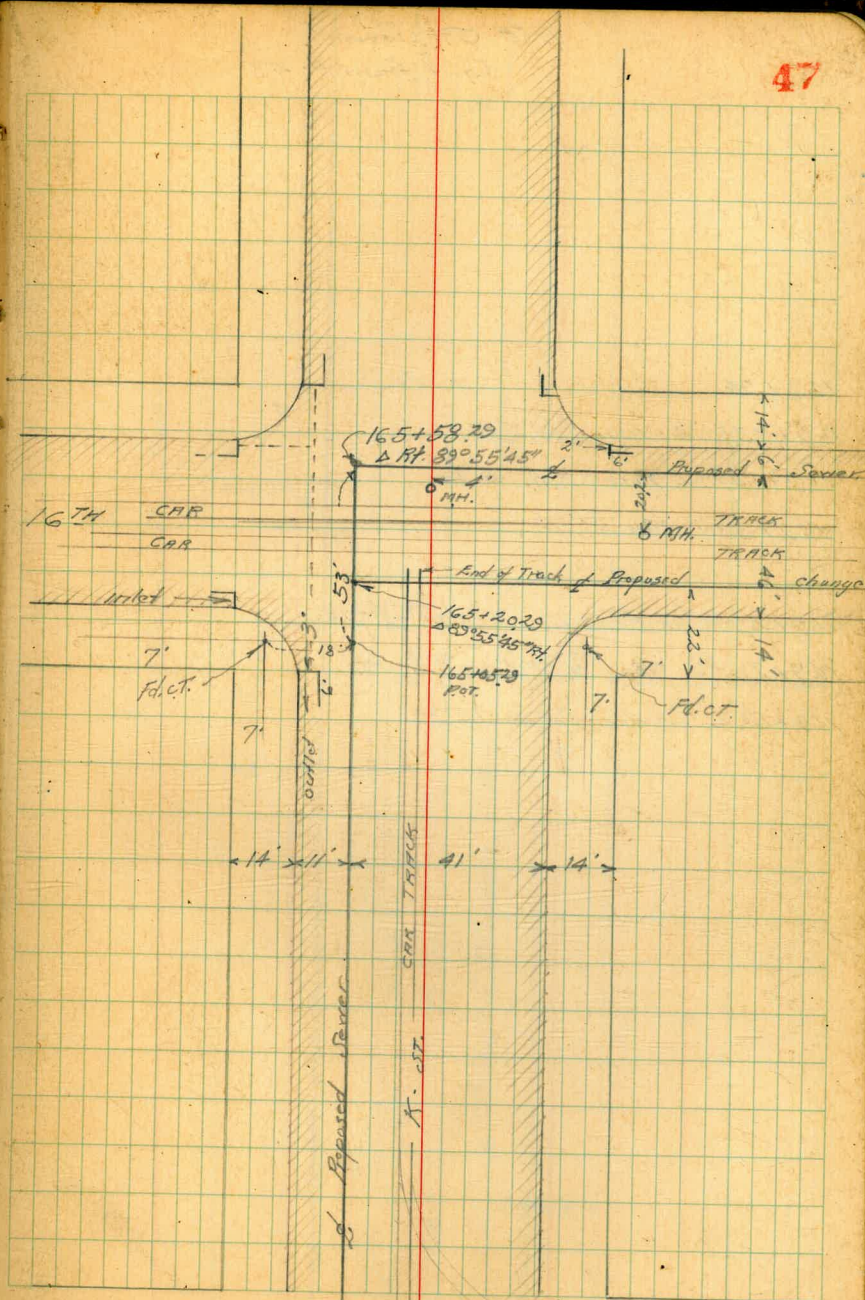
165+58.29 = Δ Pt. $89^{\circ}55'45''$

165+45.57 = E. Rail E. Track.

165+30.85 = W. Rail W. Track.

165+05.29 = P&T Nail = Int. W 7' line 16TH ST.

Note: Levels for Proposed Change of Line
in E.B. 1614-48
from 16th x K to 17th x Logan



15TH

ST.

11th St Sewer
 Cont. from P. 47

169+94

169+93.8 = W-Valve 10.2' R/L

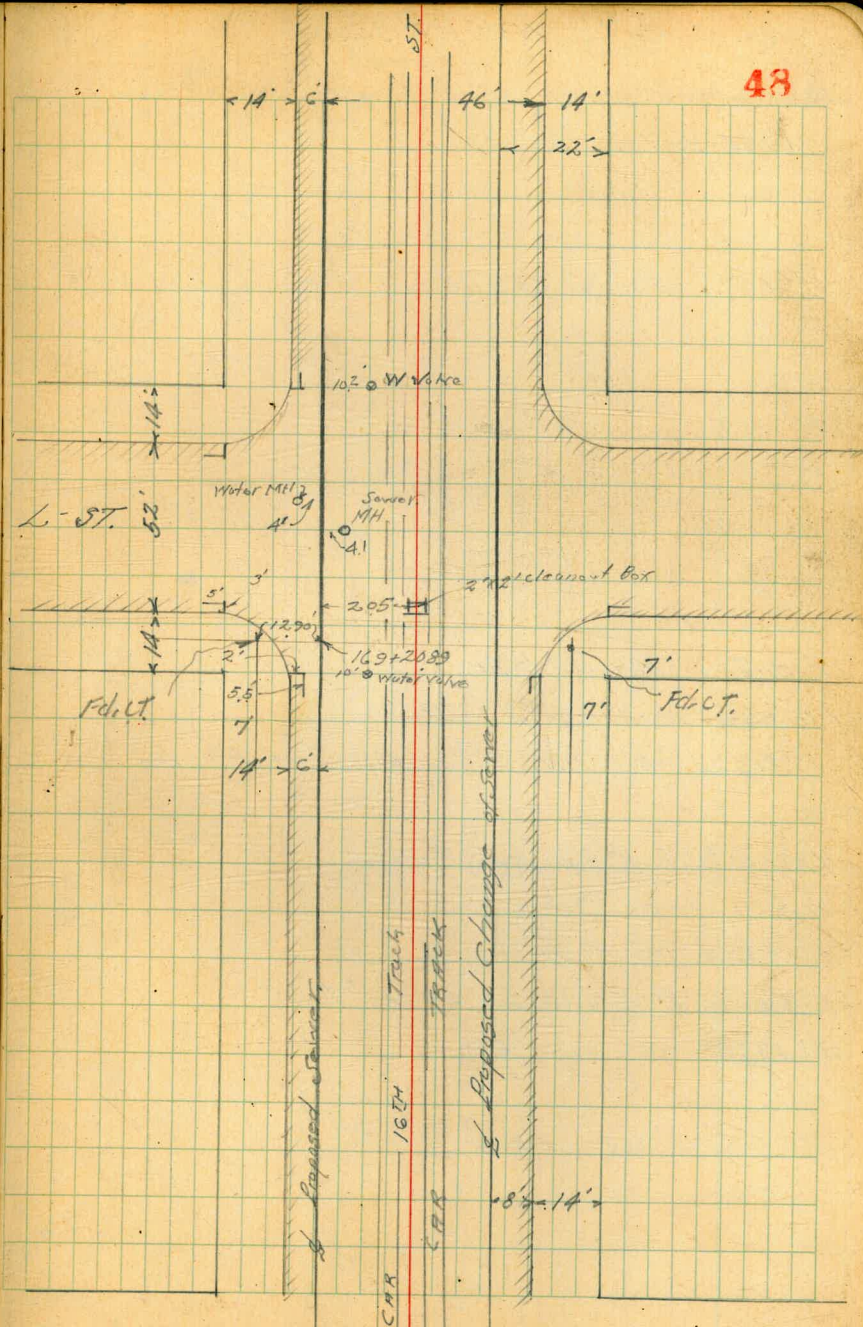
169+64.9 = L Water MH. 4' L/L

169+53.9 = MH 41' R/L

169+29 = Int. of Culvert 20.5' R/L - 1/2' clearance

169+20.89 = Int. of 7' pipe L-ST.

169+13.9 = Water Valve 10' R/L



K-

ST.

11th St Sewer
Cont. from P-48

176+81.00 = P.O.T. Int. North 7 line Commercial Ave.

176+74 = Δ 12°13'30" Lt.

176+89.7 = Δ drain 23.6' Rt. to Δ Cleanout Box.

173+78.8 = MH 24.1' Rt.

outlet 2' x 5.5'

173+69.1 = End outlet 4' Lt. = W edge

173+66.82 = P.O.T. Int. South 7 line Imperial Ave.

173+41.37 = South Rail Δ South Track.

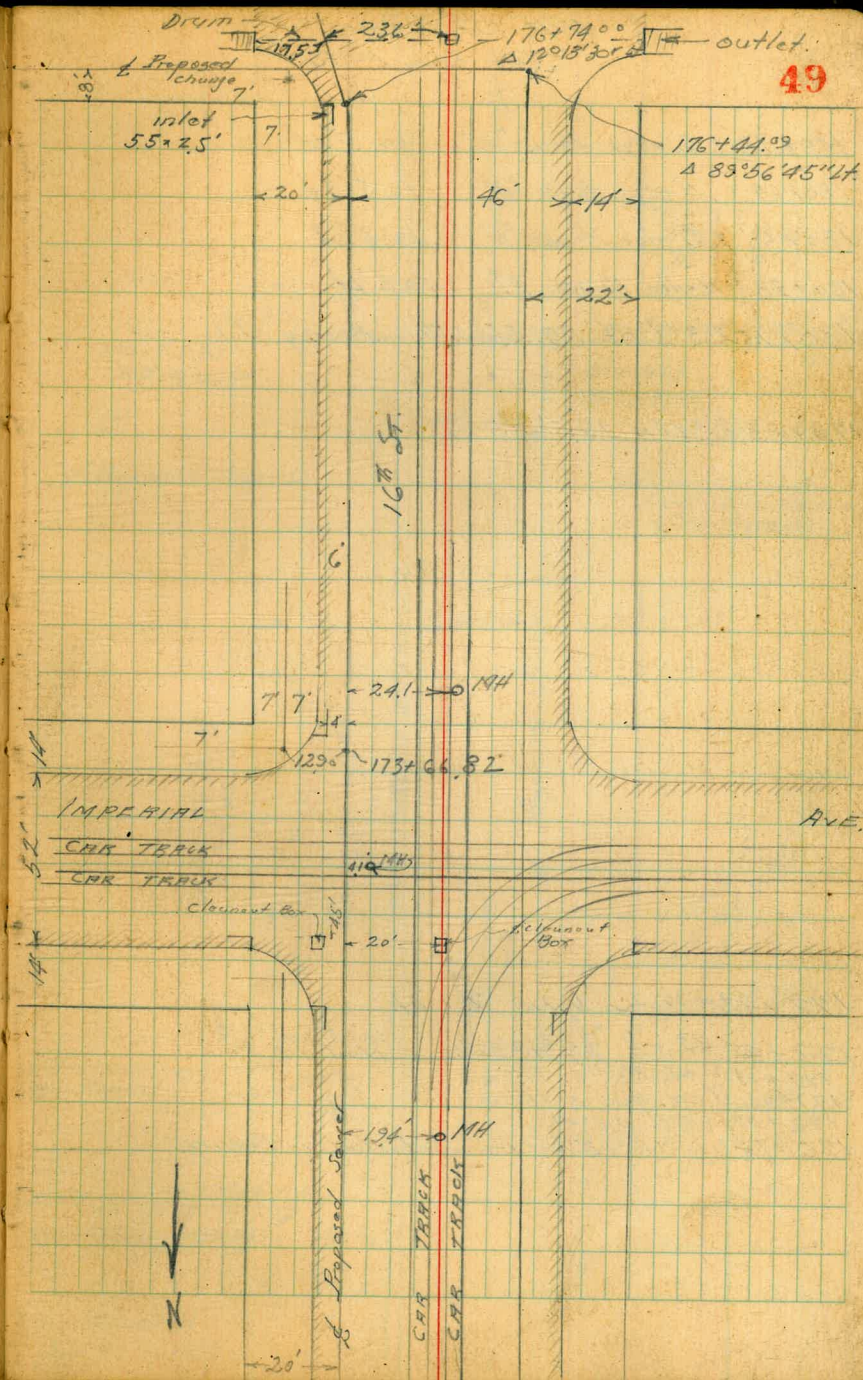
173+26.22 = " " " "

173+32.6 = MH 41' Rt.

173+08 = Δ Cleanout Box 45' Lt. And 20' Rt.

172+93.82 = MH Int. Imp. Ave.

172+56.5 = MH 124' Rt.

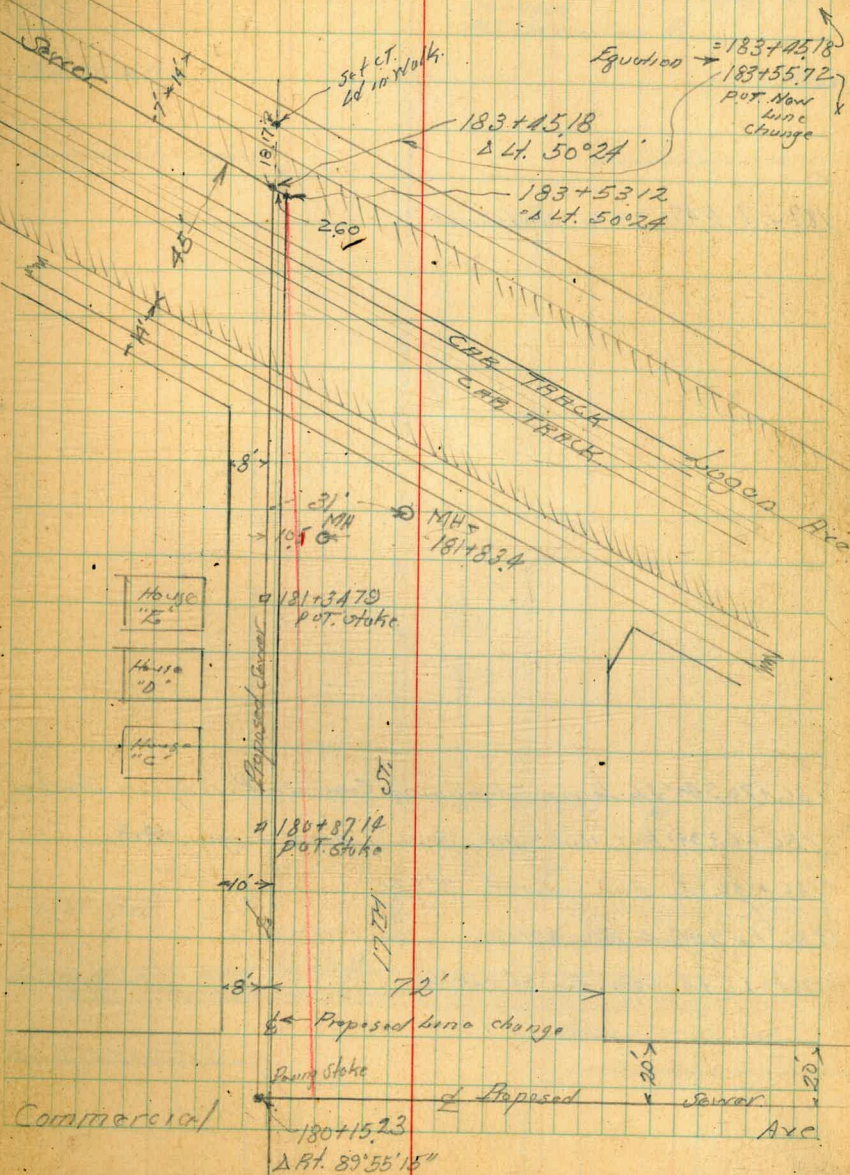


11th St. Sewer
Cont. from p-50

- 183+45.18 = Δ Lt. 50°24'
- 183+30.65 = S. Rail S. Track
- 183+11.45 = N. Rail N. Track
- 182+86.9 = Int. N. Ch. Logan Ave
- 182+74.7 = Int. N. edge Walk.
- 181+57.3 = MH 10.5' Rt.
- 181+43.5 = S. edge House "E" 10.5' Lt.
- 181+34.79 = POT. Stake
- 181+31 = N. edge House "E" 10.5' Lt.
- 181+27.5 = S. edge House "D" 10.5' Lt.
- 181+13.5 = N. edge House "D" 10.5' Lt.
- 181+07 = S. edge House "C" 10.5' Lt.
- 180+88 = N. edge House "C" 10.5' Lt.
- 180+87.14 = POT. Set. Pav. Stake

180+15.23 Δ Rt. 89°55'15"

51



11th St. Sewer

Cont. from P-51

190+44.47 = P.O.T. Cross in Paving - Int. South 7' line Nat'l. Ave.
73

189+71.47 = N.L. National

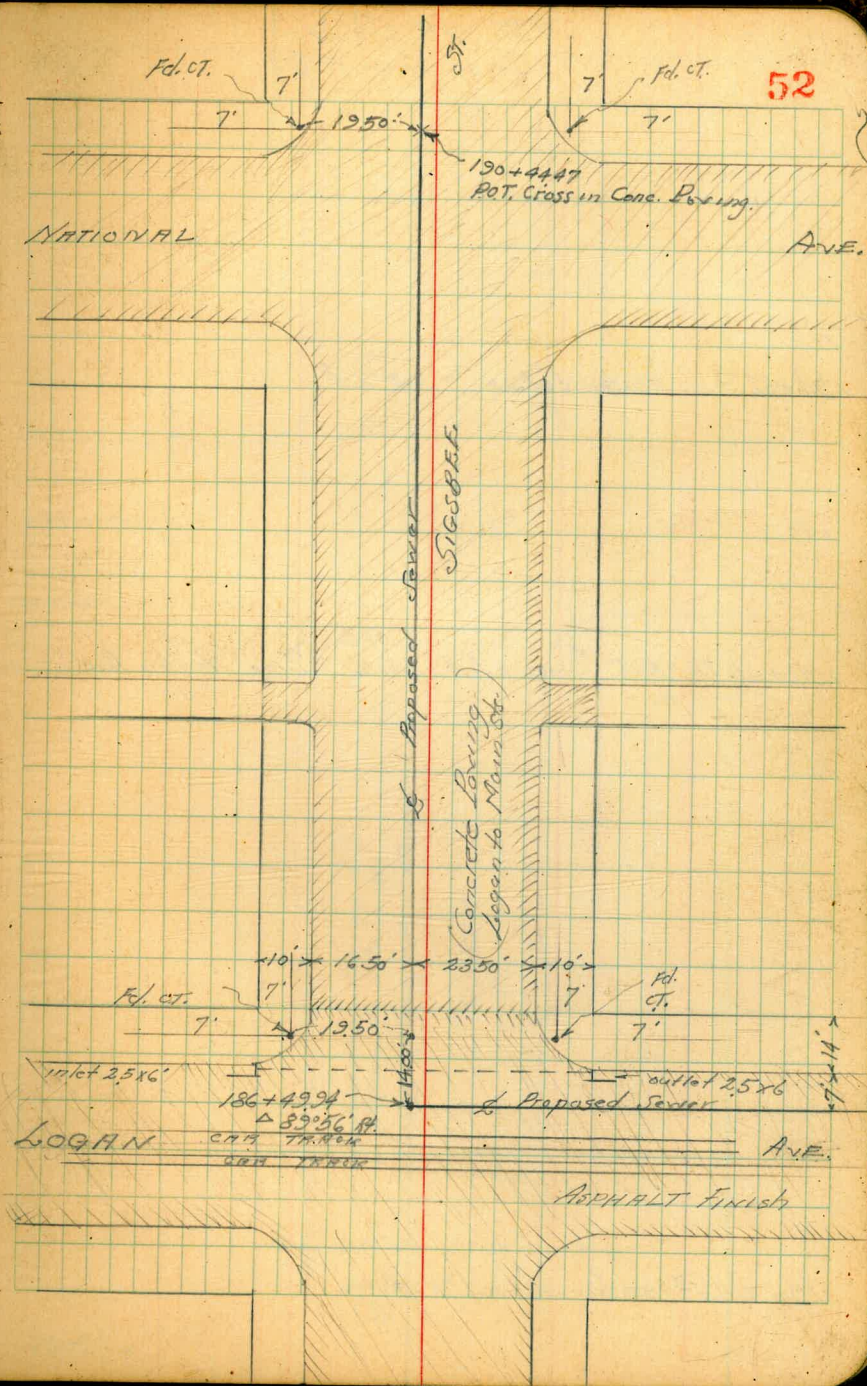
186+70.94 = S.L. Logan = Beginning Concrete Paving on Sigsbee St.

186+63.94 = P.O.T. Nail = Int. South 7' line Logan Ave.

186+56 = Box Culvert 9" x 21"

186+49.94 = Ft. 89° 56'

186+10.44 = opp. Toe of outlet

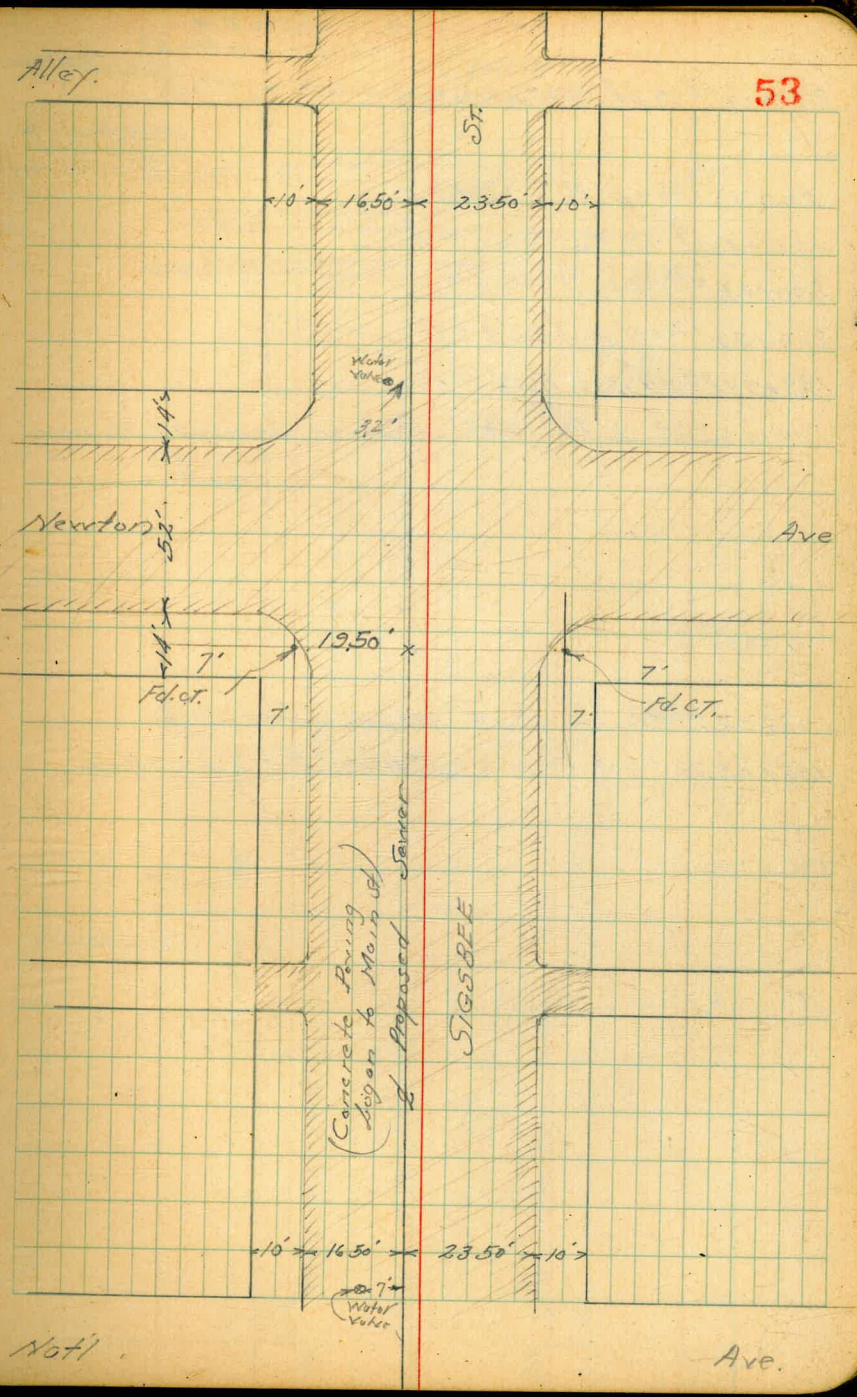


11th St. Sewer
Cont. from p 52

194+32.3 Water Valve = 3.2 Lt.

193+58.78 = POT. Cross = Int. North 7' Lane Newton Ave.

190+53.4 = Water Valve 7 Lt.



P.O.T.
201+16.08 = $\Delta Lt. 87^{\circ}20'20''$

200+53.06 = N Rail Track #5

200+40.07 = N Rail Track #4

200+27.27 = N Rail Track #3

200+20.12 = N Rail Track #2

199+93.27 = N Rail Track #1

199+62.23 $\Delta Pt. 0^{\circ}35'$ Spike in Gravel Oil Paving.

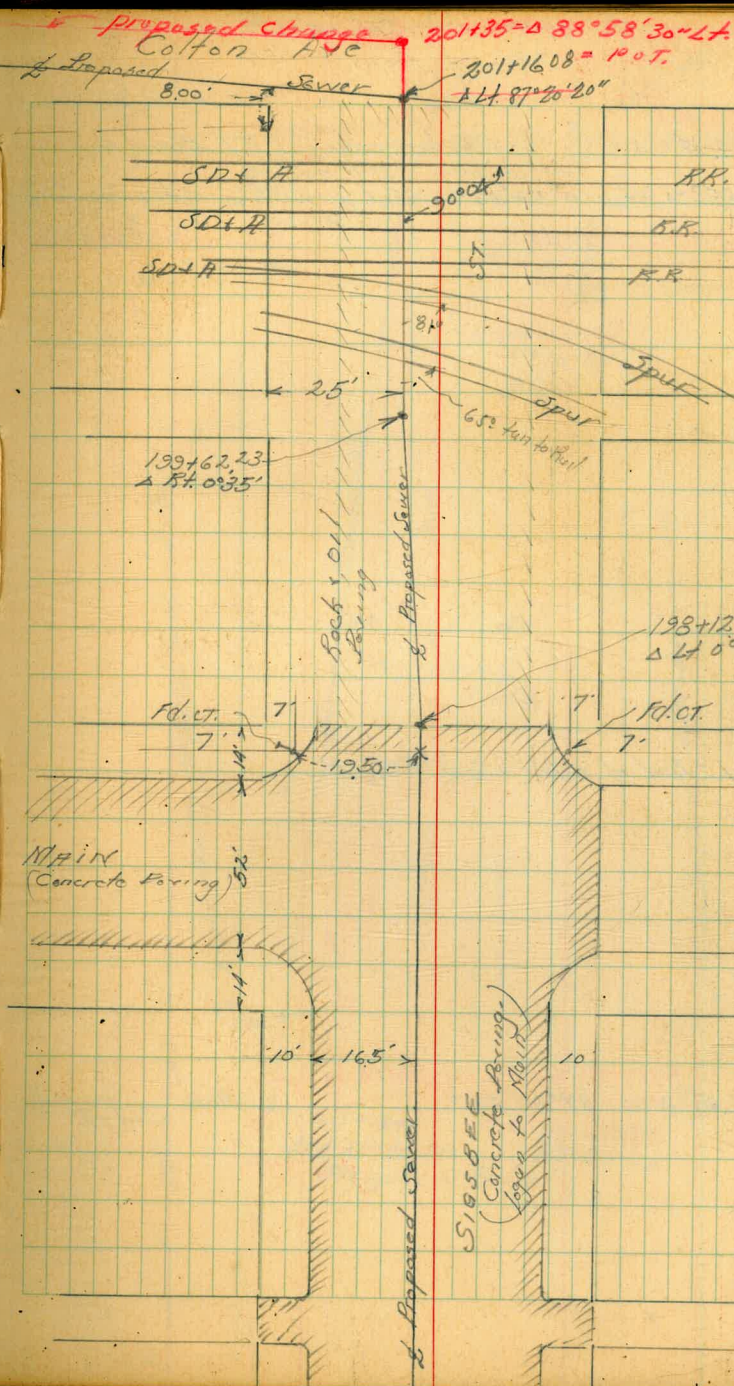
198+12.22 = $\Delta Lt. 0^{\circ}35'$ Set spike in ciled Paving.

198+05.22 = P.O.T. Cross in Conc. Sewer - Int. S, 7' size Main
73

197+32.22 = N.L. Main St.

11TH SEWER
Cont. from P-53

Next line to
Number Drive
of Colton Ave



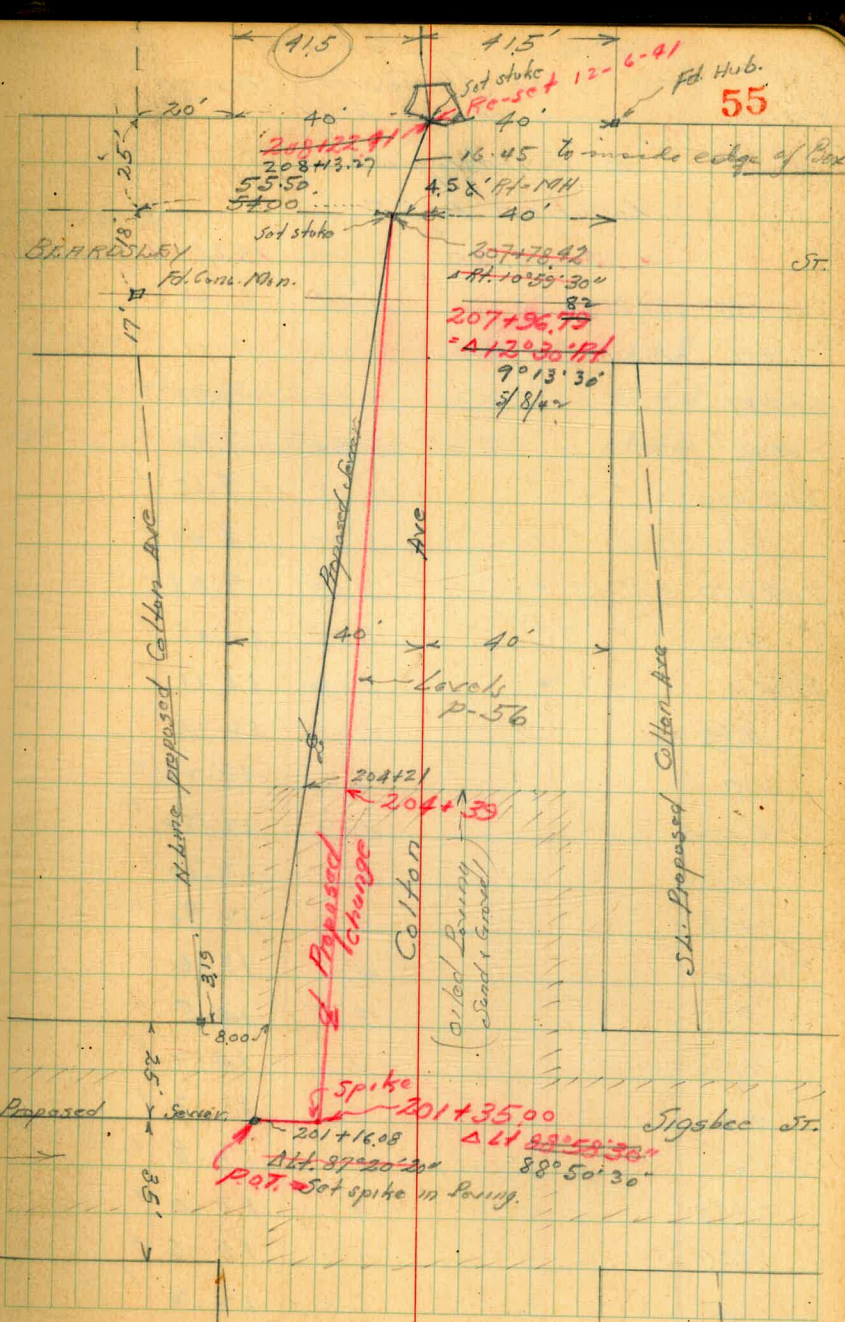
1124 ST. SEWER
Cont. from p 54

+2241
208+64.14 = Δ Int. 60" Interceptor on E.L. Beardley
(NH 6' RT)
207+78.42 = Δ RT 70°59'30" Set per. Stake at below surface
207+96.73 = Δ RT 12°30" Same stake, Above line

204+21 = End of ciled + Sand, Rock, Paving.

• P.O.T. on Proposed change
201+16.08 = Δ RT 87°20'20"

oil + Rock
Paving



Walker
 Walks
 12-8-41

Preliminary Profile Levels, Proposed
 11th St. Sewer change
 from station 201+35
 to Beardslay St.
 Location P-55

		879. Con. Min	
4.93	18.20	13.27	17' East of W. Beardslay, 20' N. N. Coltery
201+35 = ABT 88°53'30"	11.21	6.99	✓
+50 on oil tank Pav.	11.09	7.11	✓
+53 " " " "	11.29	6.91	✓
+56 " " " "	10.90	7.30	✓
202+00 " " " "	10.15	8.05	✓
+50 " " " "	9.80	8.40	✓
203+00 " " " "	9.19	9.01	✓
+50 " " " "	8.15	10.05	✓
204+00 " " " "	7.09	11.11	✓
+39 end " "	6.00	12.20	✓
+50	6.0	12.20	✓
205+00	5.9	12.30	✓
+50	5.5	12.70	✓
+80	5.3	12.90	✓
206+00	4.6	13.6	✓
+25	3.7	14.5	✓
+50	4.0	14.2	✓
+80	4.9	13.3	✓
207+00	5.4	12.8	✓
+35	6.2	12.0	✓
+45	6.6	11.6	✓
+65	6.0	12.2	✓

Revised
 Blotter profile
 w/ 15' 4" m.

207+89	5.4	12.8 ✓
+96.79 = ABT 12°30'	5.76	12.44 ✓ on stake
208+22.41 = E. line Beardslay	6.80	11.40 ✓ on stake

Walker
Wells
12-11-41

Alignment Change 11th St. Sewer Station
from Station 56+00 to 56+68.5

60+57.7 = Int. existing Sewer 7°55'

60+23.2 = SLY Face Cong. Bridge, 33' Lt. = West edge

60+05.1 = P.O.T. on N4Y Line ^{Cont.} Bridge, 24.5' Lt. = West edge

59+97.38 = A.H. 10°51'30" M.H. 8.5' Rt. on diag. 75°05' from North

59+00

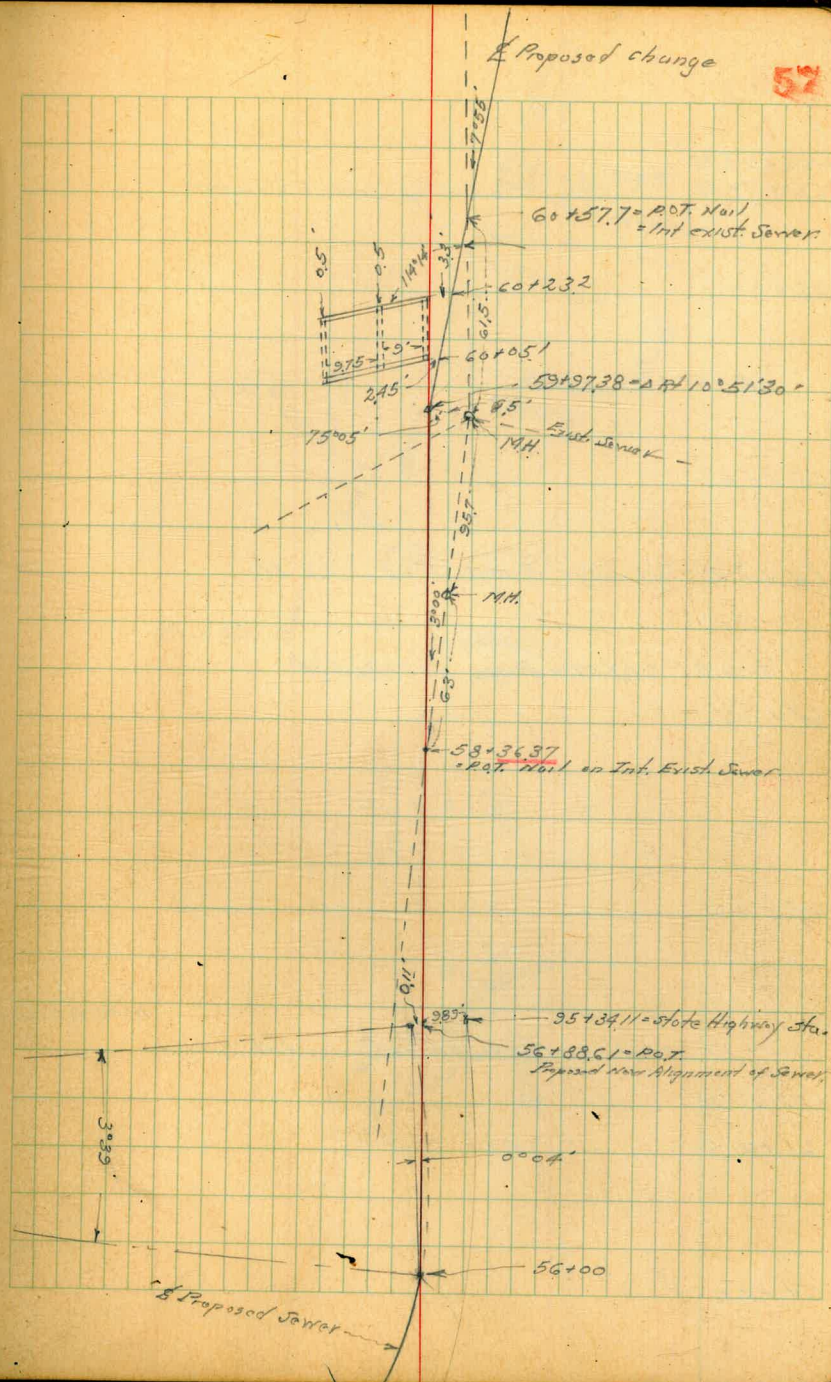
58+73 = Int. Existing Sewer

58+00

57+00

56+88.61 = P.O.T.

Same as
56+00 Page 5



Mulker Wells
12-11-41 Preliminary Profile Levels 11th St. Sewer
of Proposed Change in Alignment.

Alignment Page 57-58

			5th Stake
4.11	(143.92)	(139.81)	56+886 (P. 2)
56+00 on stake	2.67	141.25	✓
745 in Wash	3.1	140.8	✓
748 " "	4.1	139.8	✓
750 " "	3.4	140.5	✓
57+00 " "	4.2	139.7	✓
750 " "	3.9	140.0	✓
+90 = 18" Sp. curv 1' Rl.	4.3	139.6	✓
58+00 in wash	4.6	139.3	✓
750 " "	5.3	138.6	✓
59+00 " "	5.6	138.3	✓
750 " "	6.6	137.3	✓
+97.38 = 8' Rl. 10' 51' 30"	8.20	135.7	✓
8.5' Rl. on Rim M.H.	5.43	(138.49)	✓
" " " " " " " " N.S.	15.39	(128.53)	✓
" " " " " " " " N.E. + M.H.	14.48	(129.44)	✓
60+00 in Wash	3.3	134.6	✓
706	5.5	138.4	✓
729	6.3	137.6	✓
+30 = Wedge Channel	8.5	135.4	✓
745 " " "	9.9	134.0	✓
750	8.8	135.1	✓
770	9.9	134.0	✓
2' Lt. = in channel W. edge	10.6	133.3	✓

Relined
Profile M.
12/11/41

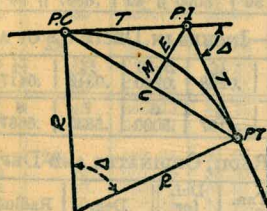
59

60+85 in channel	1.09	(143.92)	133.0
TP 6.56	(142.66)	7.82	(136.10)
(60+85) 5' Rl.		6.2	136.5
61+24		6.8	136.4
6' Lt. = channel		9.7	133.0
61+50		6.2	136.5
785 = edge oil & Rock Pav.		5.6	137.1
62+00 on " " "		5.2	137.5
Chk. Stake 8' Rl.		4.70	(137.96) 5' Rl. for Bridge
62+17.7 on top Bridge		5.19	(137.47) on oil Pav.
19' Lt. on Floor Bridge			
62+55 = South edge Pav.		6.3	136.4
770 = N.E. edge Bridge		5.6	137.1
63+00		6.0	136.7
750		7.3	135.4
TP 3.55	(138.79)	7.92	(135.24)
64+00		4.8	134.0
3' Rl. in Lily Pond		7.2	131.6
64+50		5.1	133.7
3' Rl. " "		7.2	131.6
65+00		4.8	134.0
5' Rl. " "		7.4	131.4
65+59.57 = 8' Rl. 17' 41"		4.97	133.8
16.2' Lt. on diag. = Rim M.H.		6.30	132.49
" " " " " " " " Flow		14.52	124.27
12' Rl. in Lily Pond		7.3	131.5

66+00 }
 8' $R =$ Lily Pond }
 66+66.85 }
 = 66+72.13 }
 < 138.79 >
 5.2 133.6
 7.3 131.5
 5.05 133.74
 133.71 $R = 3$
 0.03 Error

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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



162+18.49
 157.49
 + 69.04
 73.
 396.04

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 = $T = R \tan \frac{\Delta}{4}$ (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) = $R + \cos \frac{\Delta}{2} - R$ (8) = $R \text{exsec} \frac{\Delta}{2}$ (9)
- Long Chord = $C = 2 R \sin \frac{\Delta}{2}$ (10) Δ = Central Angle

EXPLANATION AND USE OF TABLES

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

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft. = 7.27 ft. Distance = 158 - Sta. P. C. = 54.50, hence offset = $7.27 (54.50 + 100)^2 = 2.16$ 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 $8^\circ 20' = 960.6 + 8\frac{1}{2} = 91.27$ 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 $+42 = 5.5$ or $D = 5^\circ 30'$.

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	397.28	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	.88	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	197.64	290.21	375.74	452.02
32	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31	20	196.90	287.04	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	1.86	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	388.42
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	1.20	.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°	.366	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.067	.058	.051	.044	.037	.031	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.069	.060	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.099	.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

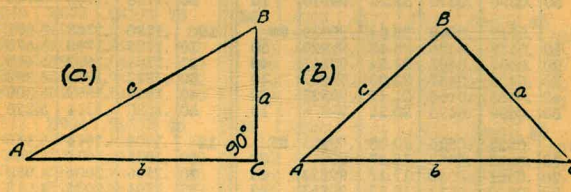
SLOPE REDUCTIONS.

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= $15^2 \div 2 \times 250.3 = .45$ (by slide rule) or horizontal distance= $250.3 - .45 = 249.85$. When vertical angle= $V. A.$ is measured horizontal distance= $\text{slope distance} \times \text{slope distance} (1 - \text{Cos. } V. A.)$. Thus for slope distance of 248.7 ft. and $V. A.$ of $4^\circ 20'$ from Table VIII $\text{Cos.} = .99714$ and correction= $1 - .99714 = .00286$ per foot or total of $.286 \times 21\frac{1}{2}$ (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	$\left\{ \begin{aligned} \text{If } s = \frac{1}{2}(a + b + c), \sin. \frac{1}{2} A &= \sqrt{\frac{(s - b)(s - c)}{bc}} \\ \cos. \frac{1}{2} A &= \sqrt{\frac{s(s - a)}{bc}}, \tan. \frac{1}{2} A = \sqrt{\frac{(s - b)(s - c)}{s(s - a)}} \\ \sin. A &= \frac{2\sqrt{s(s - a)(s - b)(s - c)}}{bc} \end{aligned} \right.$
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	$s = \frac{1}{2}(a + b + c), \text{area} = \sqrt{s(s - a)(s - b)(s - c)}$

$$\begin{array}{r} 7812.1 \\ 25 \\ \hline 75708 \end{array}$$

$$\begin{array}{r} 49.3 \\ 128.3 \\ \hline \end{array} \times 4 \quad C15$$

$$\begin{array}{r} 1972 \\ 1283 \\ \hline 6899 \\ 64 \end{array} \times 42.45$$

$$\begin{array}{r} 58.2 \\ 44.3 \\ \hline 13900 \\ 121225 \\ \hline 177750 \\ 169715 \end{array}$$

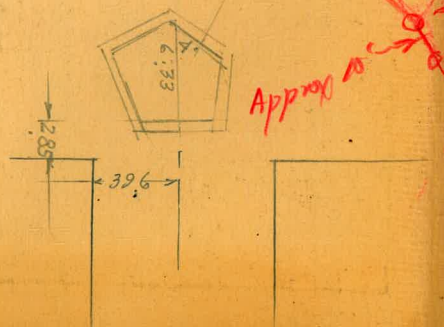
42.8 C57

137
3555
88° 50' 30
137 43.05
35.35
137+78.6
91° 09' 30
45° 34' 45

137+43.05
50.30
137+93.35
16241.49
47.5
161294
2077842
2572
208704.14

176.7 ✓ 00
61 ✓ 2
177+35.47
179° 52'
89° 56' RJ
609
47
656
242
4.14 Above Perm.

174842
17001
855
36
12.19
8440
464 = Bridge
17517900
165 58.29
115.71
34.00
165 75.71
165 20.29
175 36.20



7116370
16579085
472
4557

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

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

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

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

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