1671

DIAMOND

ENGINEERS'

FIELD BOOK

No. 403F

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)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

1671

CITY ENGINEER'S OFFICE

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.

Alley Blk 136 Univ. Hts Vermont to 10th	35
Levels @ Adams Ave Br. @ Texas St	43
Levels on Adams Ave	45
Levels under Adams Ave Br.	52

Walker Hazard Hardin
7-28-44

LOCATION PROPOSED 16" WATER MAIN on 11TH AVE. from A to B St. And on B St from 11th to 25th St.

Profile Levels (See P. 11-15)

Stations

3+86.52 = Δ Lt. 90°

3+78.9 = S. Gauge S. St. Car Track

3+64.2 = N. Gauge N Track (St. Car)

3+38.52 = POT. Int. N 7½ line "B" St.

3+31.5 = Valve Cover 2.6' Rt.

3+28.2 = Int. Valve Cover on Line

+36.2 = ℄ Exist. Valve to Fire Hyd. on Line

+30.9 = Exist. Valve Cover 2.6' Rt

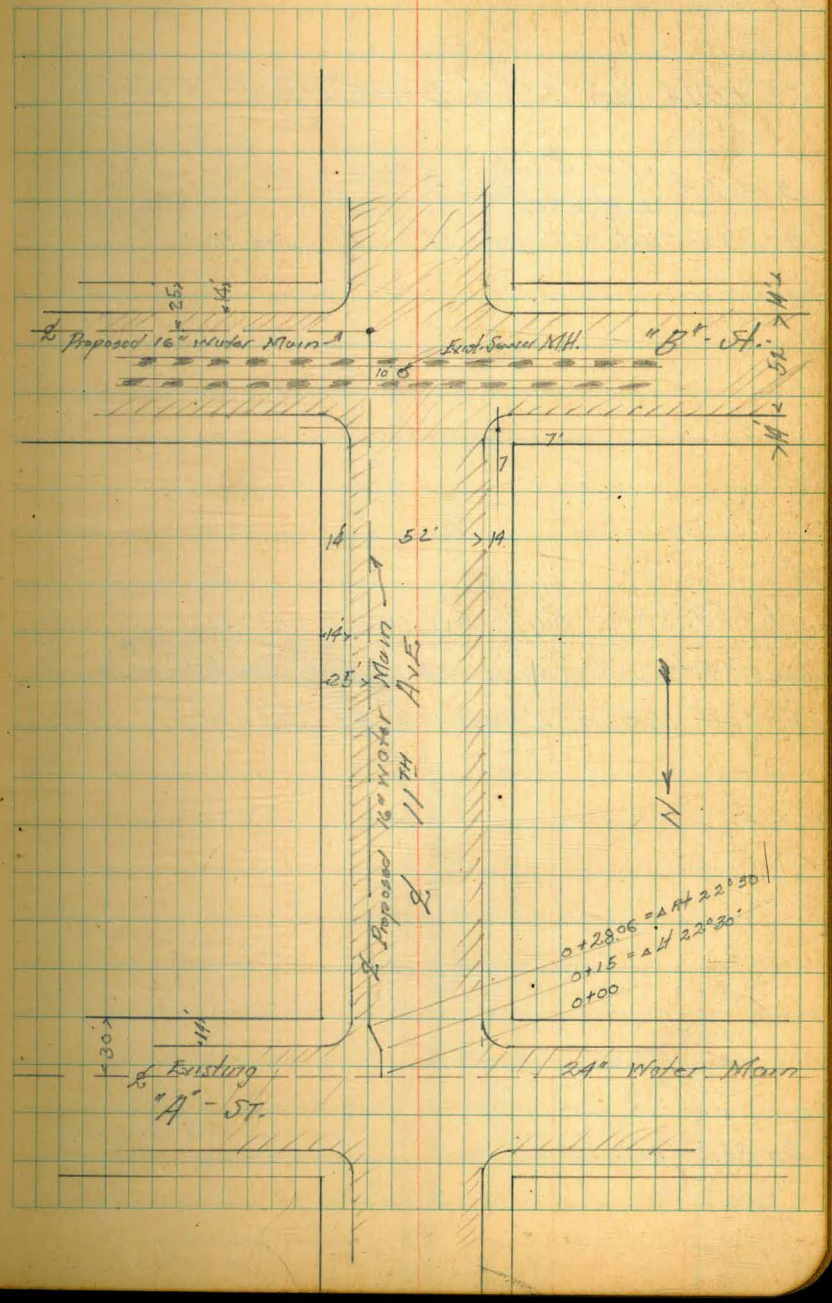
0+28.06 = Δ Rt 22°30'

0+15 = Δ Lt 22°30'

0+00 = ℄ Existing 24" Water Main

Indexed C.S.K.

2



~ "B" St. Water Main ~

Stations

9 + 57.4 = Int. Surface Drain Culvert

9 + 07.4 = Int. Surface Drain Culvert
Δ 4 0°02'

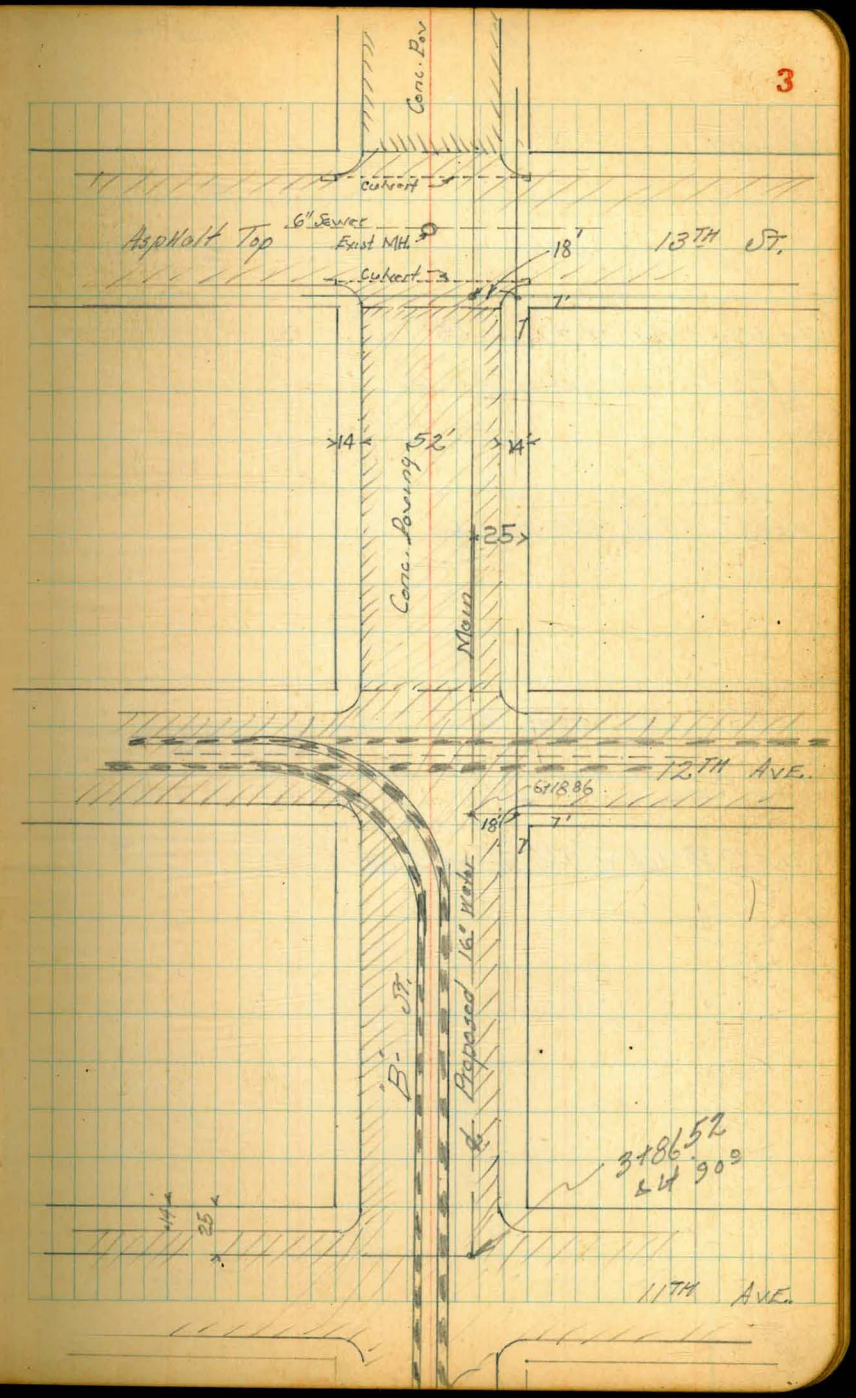
8 + 99.05 = Int. W 7' Line 18th St Set Nail

6 + 39.21 = E. Rail / E. Track

6 + 44.46 = W Gauge W/ E. Car Track

6 + 18.86 = Int. W - 7' Line 12th Ave (Set Nail)

3 + 86.52 = Δ Lt. 90° 0'



~ "B"-St. Water Main ~

Stations

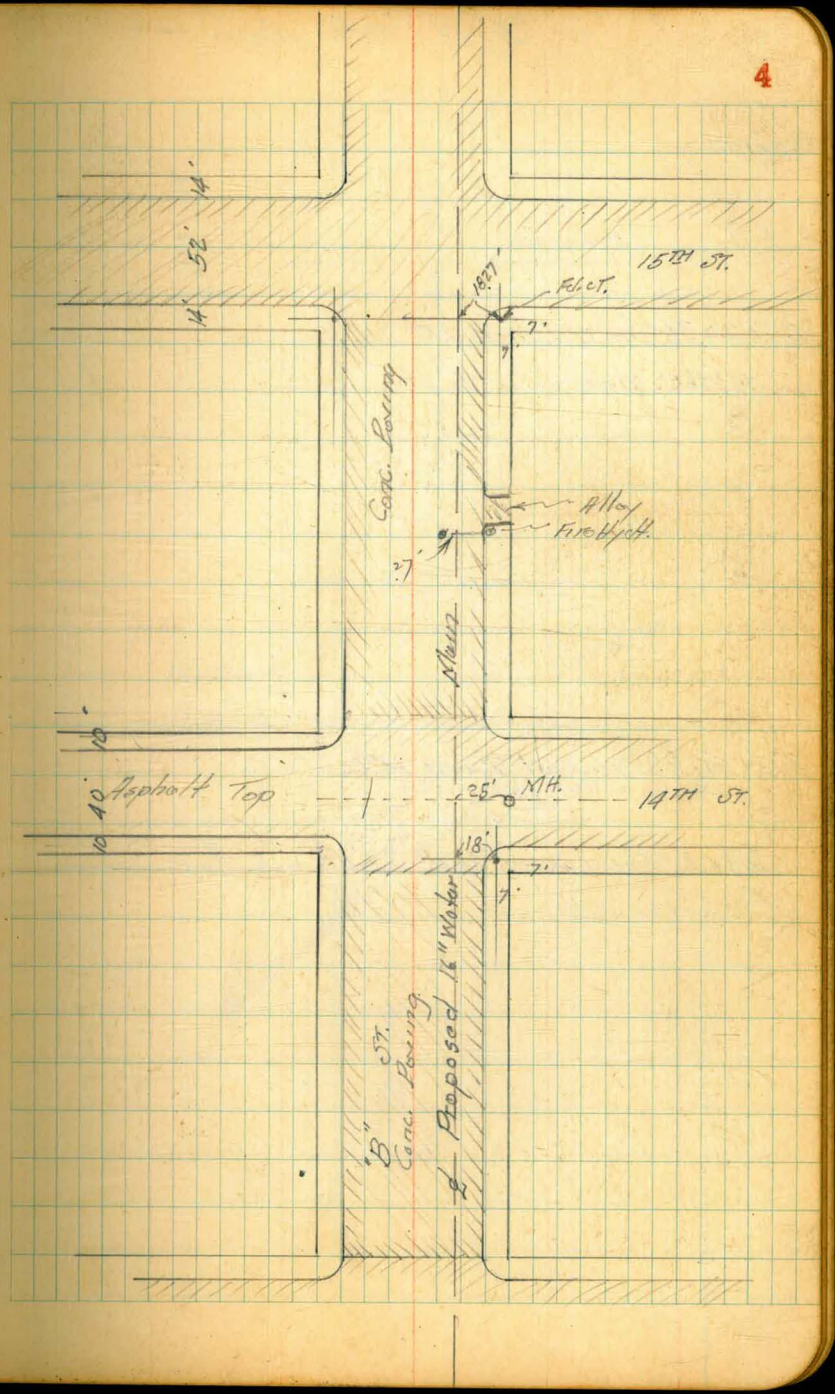
16+59.83 = Int. W 7" line 15th

16+52.6 = Water Valve 4.4' Lt.

14+48.7 27' Lt. = Water Valve

12+38.33 Water valve 4' Lt.

11+79.33 = Int. W 7" Line 14th St



— "B" St. Water Main —

Stations

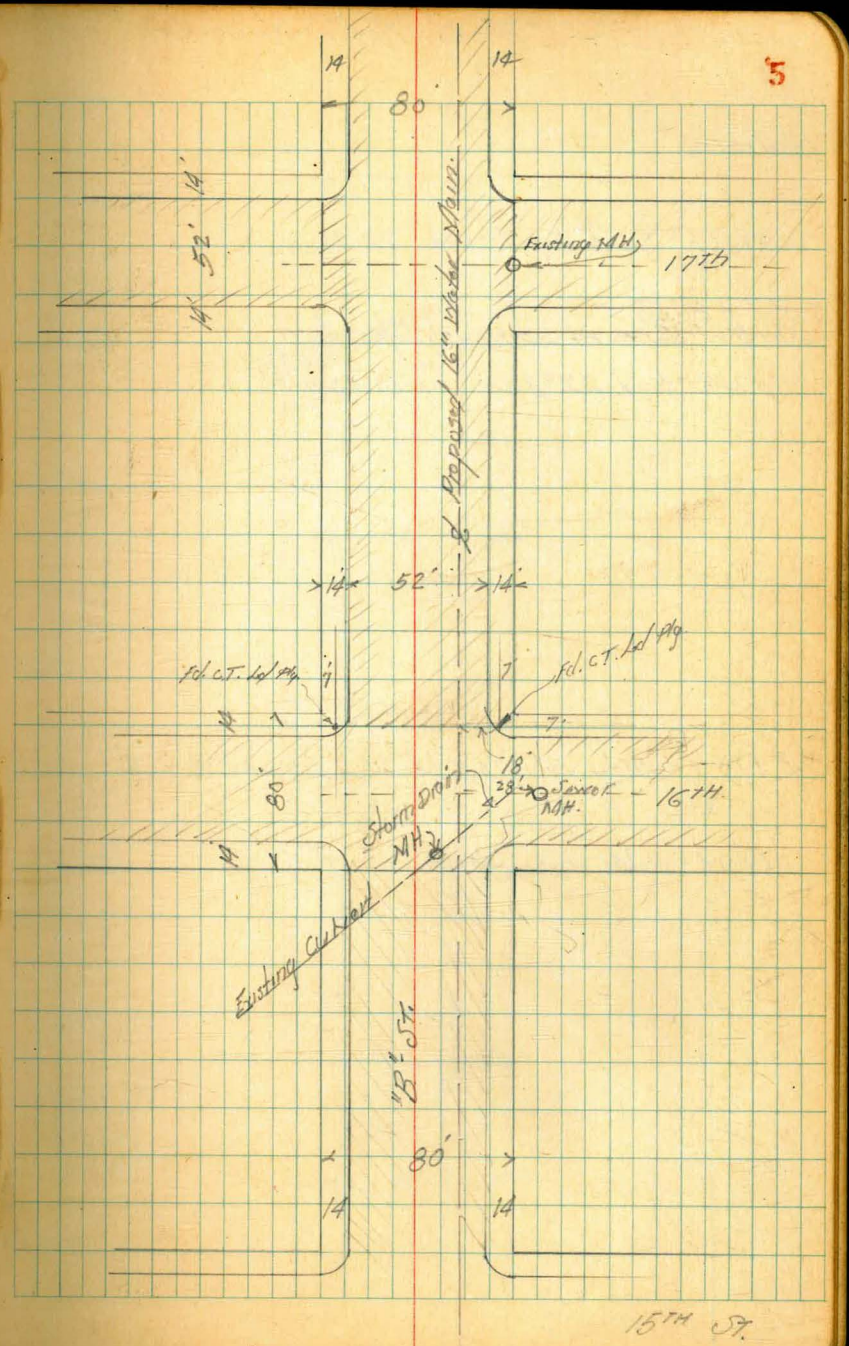
22+20.36 = Int. W.T. Line 17th

+13.36 = Water Valve 6' Lt.

20+06.00 = Int. East T. Line 16th

19+36.8 = Storm Drain MH 7.3' Lt.

19+33 = W.L. 16th



"8"-St. Water Main

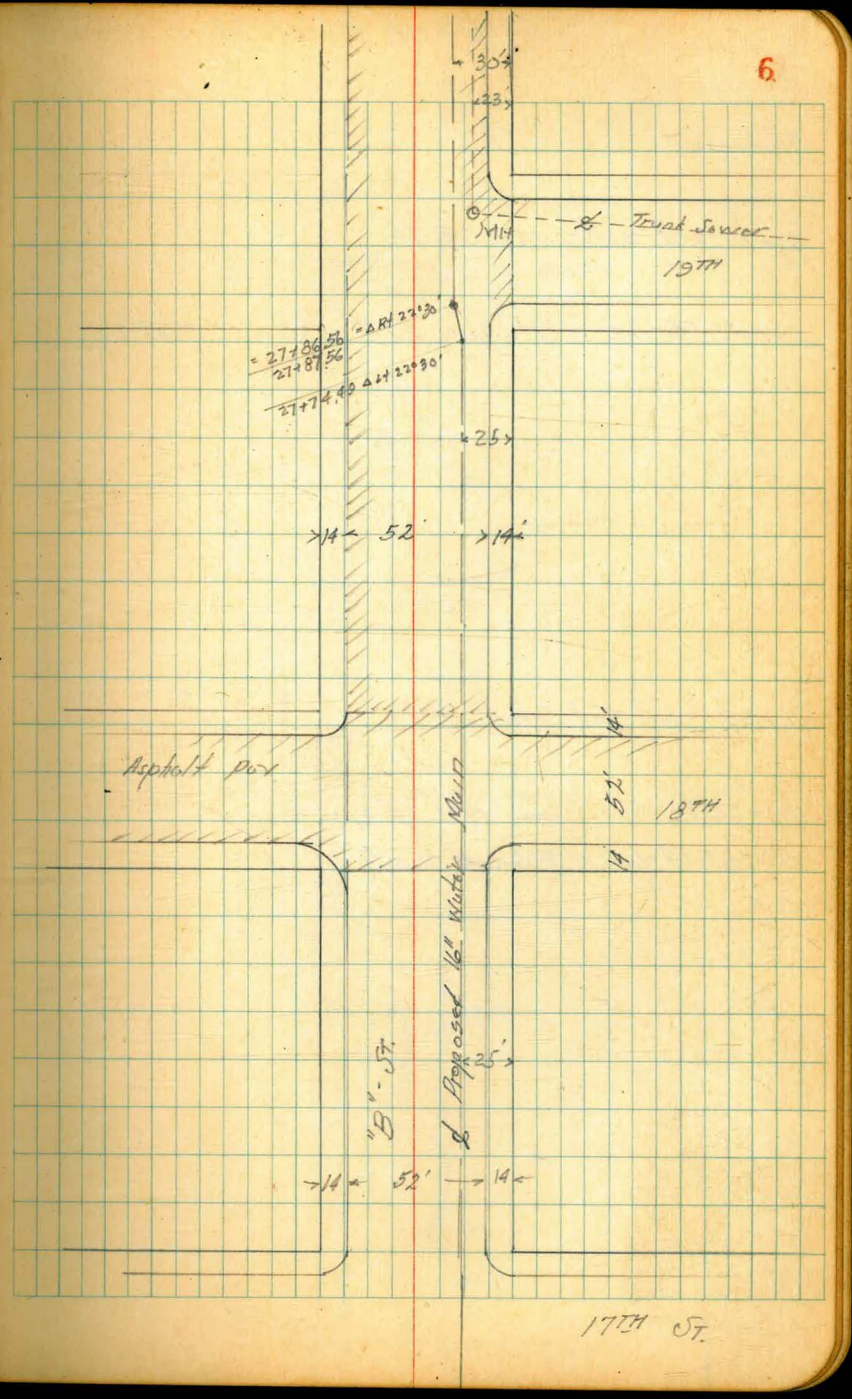
Stations

28+36.6 = Trunk Sewer MH 7.3' Rt.

= 27+86.56
27+87.56 = Δ Rt 22°30' } Equations
27+74.99 = Δ Lt 22°30' = W.L. 19th St.

25+73.8 = Water valve 4.6' Lt

24+94 = Water valve 4' Lt.



~ "B" St. Water Main ~

Stations

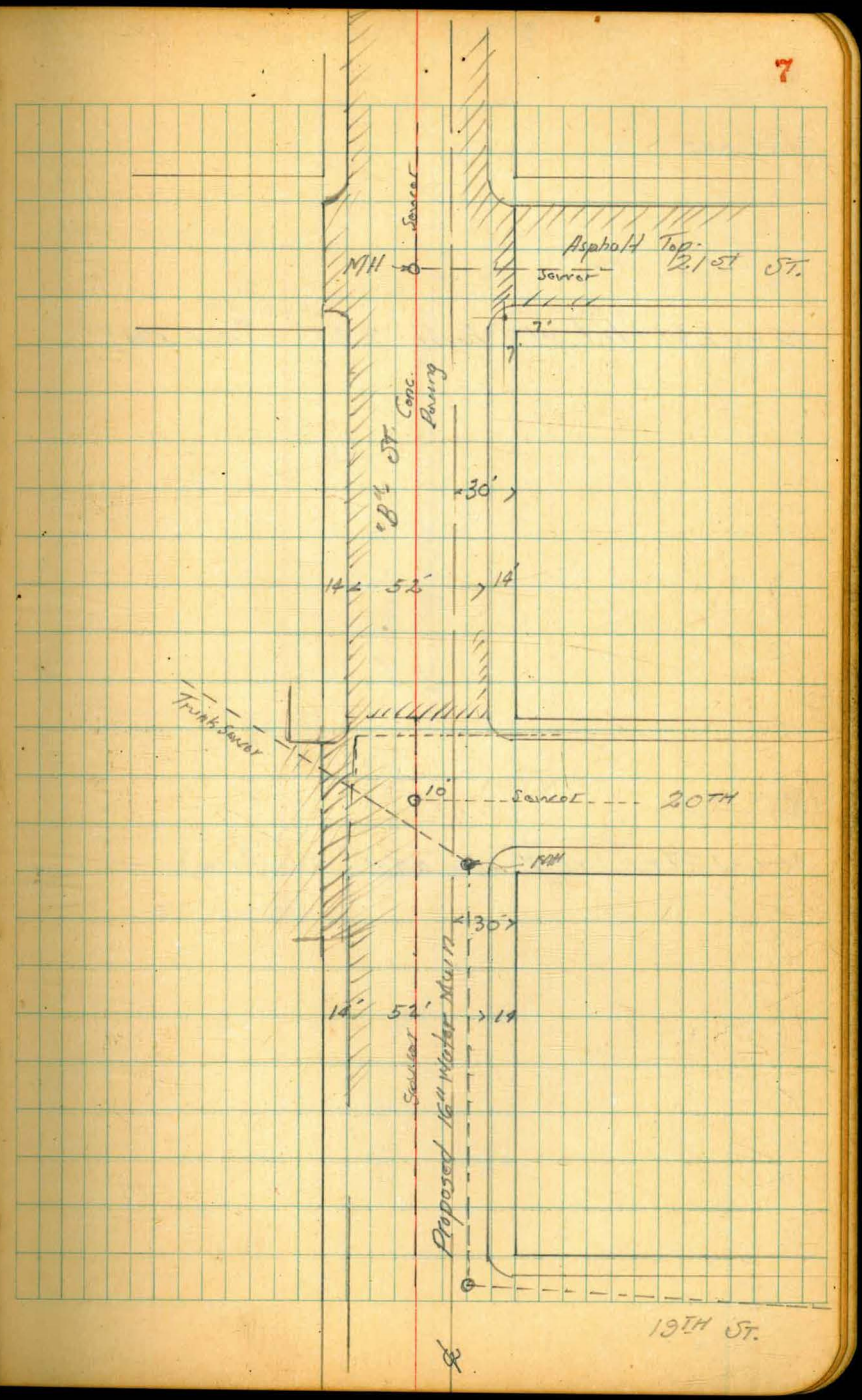
33+75.08 = ℄ 21st MH 9.5' Lt.

33+42.08 = Int. W 7" Line 21st (cross 5 Rt.)

31+22 = Int. Tel Conduit

30+66.8 = Trunk Sewer MH 6.6' Rt.

30+62.54 = Int. W 7" Line 20th

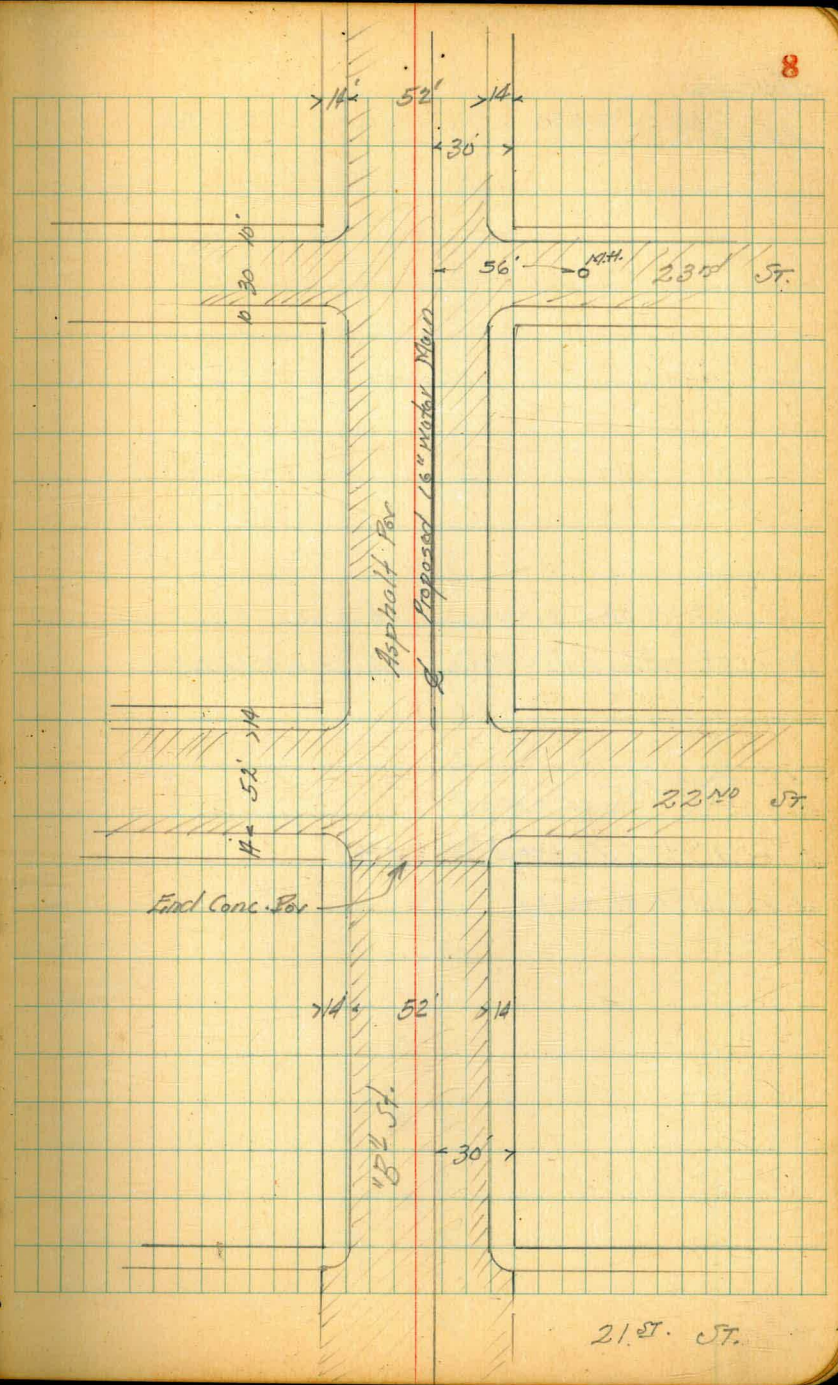


~ "B"-St. Water Main ~

Stations

39+02.61 - Int. W 17' Line 23rd (Nail 5' Rt)

30+21.77 = Int. W 17' Line 22nd (Nail 5' Rt)



"8" St. Water Main

Station

44+00

+58.3 = Water Valve 1.5' Lt.

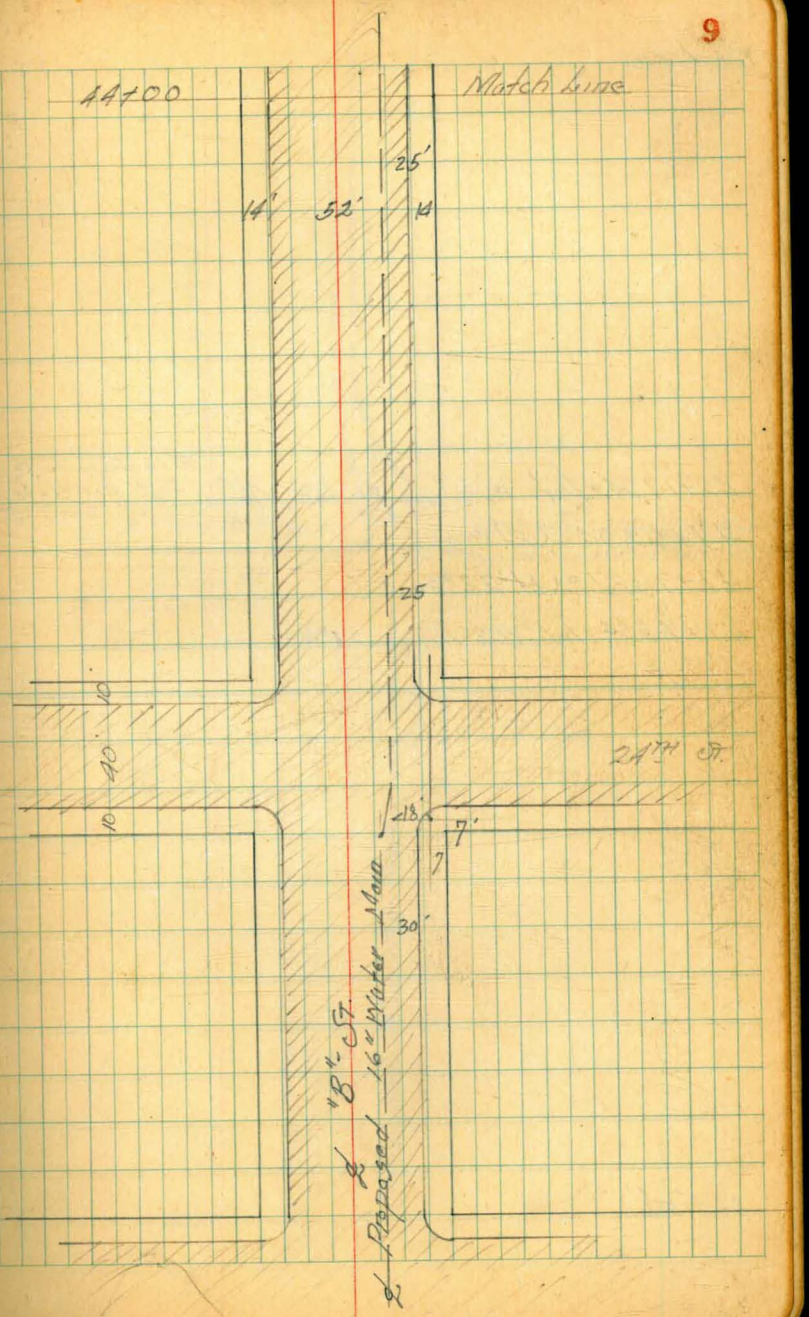
41+55.81 = EL. 24th St. 4.5' Lt. = Water Valve

=41+07.88 Equation

41+08.88 Δ Lt 22°30

41+03.39 = Int. w/ 7' Line 24th

40+95.81 = Δ Rt. 22°30



"8" St. Water Main

Stations

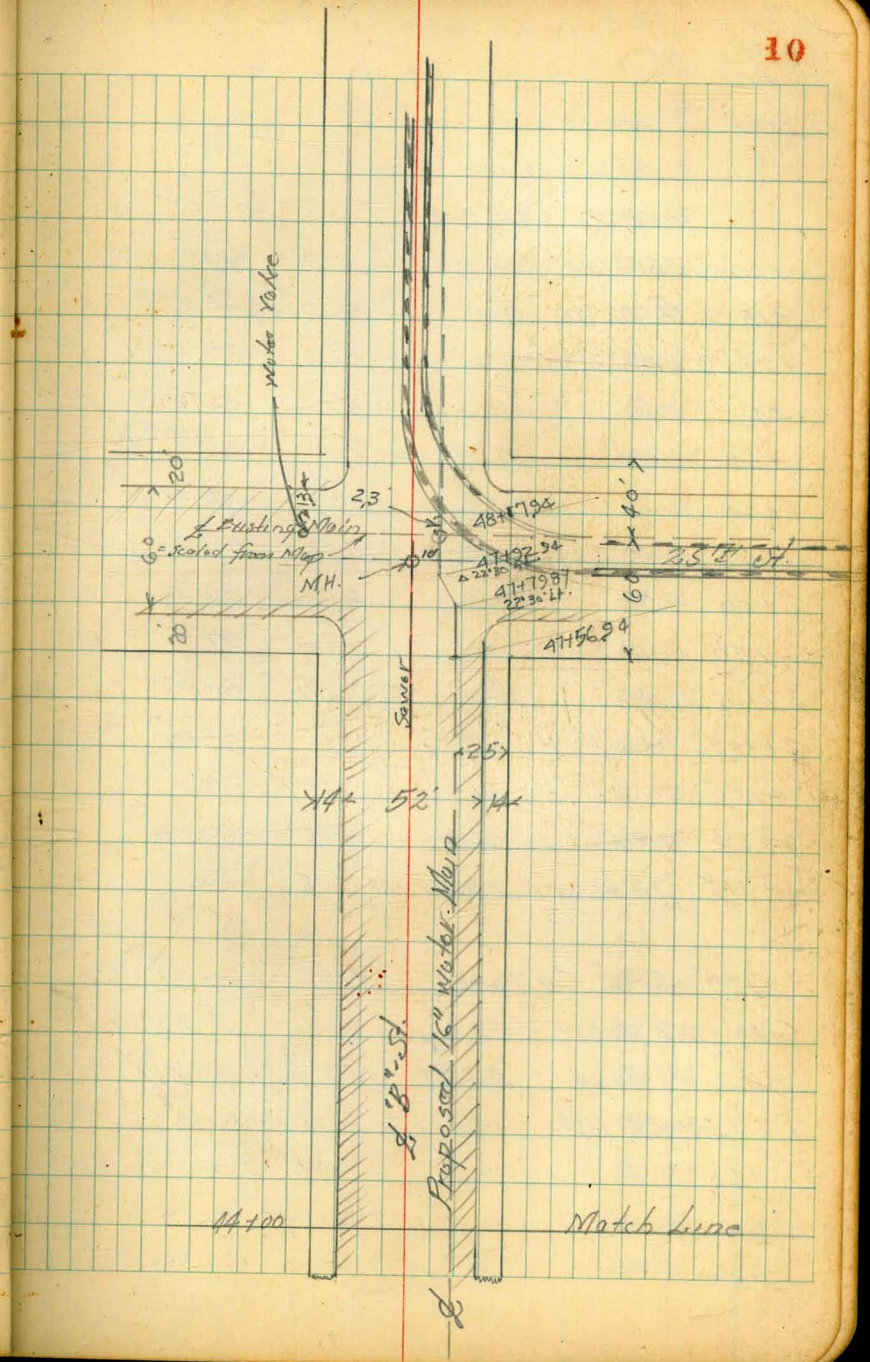
48+17.94 = Int. Existing Water Main (According to Scale Dist. per Water Dept 20+18.)

47+92.94 - Δ Rt. 22°30'

47+79.87 = Δ Lt. 22°30

47+63.94 - Int. W.T. Line 25th

44+00



Walker
Howard
Hardin
8-3-44

Preliminary Levels - Proposed 16" Water Main on 11th Ave from "A" to "B" St. and on "B" St from 11th Ave to 2.5th St

Location on Page 2-10

	8.29	91.24		82.95
0+00 = Int. East 24" Water Main			5.71	85.53
+15 - Δ Lt 22°30'			6.19	85.05
+28.06 = Δ Rt 22°30'			5.75	85.49
+40			5.55	85.69
+50			5.52	85.72
1+00			5.73	85.51
+50			5.99	85.25
2+00			6.26	84.98
+50			6.48	84.76
3+00			6.77	84.47
3+31.52 = N.L. "B" St			7.16	84.08
+45.52 = N ℄ "B" on Tract			7.52	83.72
3+64.2 = N Rail N Track			6.86	84.38
+71.5 10' Rt. on Rim Sewer MH			7.05	84.19
3+78.9 = S St. Cur Track			6.93	84.31
+86.52 = Δ Lt. 90°			6.90	84.34
T.P.	11.16	94.11	8.29	82.95
4+11.52 = E.L. 11th			9.28	84.83
+50			7.01	87.10
5+00			4.07	90.08
+50			1.13	92.98

94.11

T.P. 543	99.06	0.08	94.03
6+00		3.51	95.95
+11.86 = W.L. 12th Ave.		2.88	96.58
6+20.86 = W St. Cur Track W Rail		2.71	96.75
+59.2 = E. Track (E Rail)		2.71	96.75
6+91.86 = E.L. 12th on Conc. Pav.		2.91	96.55
7+00 on Conc. Pav.		3.11	96.35
+50 " " "		5.19	94.27
8+00 " " "		7.25	92.21
+50 " " "		9.20	90.26
9+02.05 = W.L. 13th on Conc.		10.48	88.98
9+00 on Black Pav.		10.54	88.92
9+07.4 = Int. Surface Drain		10.44	89.02
25' Rt. on Flow		12.95	86.51
55' Lt. " Grating		9.03	90.43
" " Flow of Drain		10.73	88.73
Ch.h. MH x 8.9 - "B" + 13th		9.95	90.41 90.42 = BM .001
9+32.05		10.26	89.20
15' Lt. on Rim MH		9.77	89.69
" " " Flow		17.10	82.36
9+57.4 = Int. Surface Drain		10.45	89.01
25' Rt. on Flow		12.99	86.47
55' Lt. " Grating		9.08	90.38
" " " Flow		10.70	88.76

— "8th St. Motor Main —

		99.46		
9+72.05 = E.L. 13th on Conc. Por			10.27	89.19
10+00 on Conc. Paving.			8.34	91.12
+50 " " "			4.13	95.33
T.P.	12.06	110.55	0.97	98.49
11+00 on Conc. Paving.			11.02	99.53
+50 " " "			6.70	103.85
+72.33 = W.L. 14th on Conc.			5.03	105.52
12+00 on Block Por.			3.88	106.67
+12.5 on 8" East Sewer			3.44	107.11 on Por.
25' Rt. on Rim MH			4.19	106.36
" " " Flow "	Note: Flow line inaccessable			
12+38.3 E. Gut line 14th			3.03	107.52
+52.33 E.L. 14th on Conc.			2.60	107.95
13+00 on Conc. Paving.			0.48	110.07
T.P.	4.74	114.98	0.31	110.24
+50 on Conc. Paving			2.60	112.38
14+00 " " "			0.51	114.97
+25 " " "			0.06	114.92
+50 " " "			0.28	114.70
+75 " " "			1.45	113.53
15+00 " " "			4.02	110.96
+50 " " "			9.33	105.65
T.P.	0.12	102.19	12.91	102.07
16+00 on Conc.			1.83	100.36
+40 " "			6.01	96.18

		102.19		
16+52.83 = W.L. 15th St.			7.04	95.15
+66.83 W.C.& Line 15th			7.61	94.58
16+92.83 = E.L. 15th			8.29	93.90
25' Rt. on Rim MH.			8.06	94.13
" " " Flow "				
17+00			8.45	93.74
+18.83			9.00	93.19
+32.83 = E.L. 15th			9.51	92.69 on Park.
+50 on Conc. Paving.			11.25	90.94
T.P.	02.8	89.87	12.60	89.59
18+00 on Conc.			4.51	85.36
+50 " "			10.14	79.73
T.P.	0.45	78.08	12.24	77.63
19+00 on Conc.			3.91	74.17
+33 = W.L. 16th			7.38	70.70
+36.8			7.59	70.49
7.3' Lt. on Rim Cleaned			7.02	71.06 Some Down
" Flow			12.02	66.06
19+47 = on Block Por.			7.55	70.53
+73 = E.L. 16th			6.02	72.06
25' Rt. on Rim MH.			7.08	71.00
" " " Flow "			(inaccessable)	
20+00			5.54	72.54
+13 = E.L. 16th			5.63	72.45
+50			5.78	72.30

"B" St. Water Main

		78.08		
T.P.	365	74.89	6.84	71.24
21+00			3.11	71.78
+50			3.68	71.21
22+00			4.25	70.64
+13.36 = W.L. 17th			4.38	70.51
+27.36 = W Gut 17th			4.59	70.30
+53.36 = L 17th			4.24	70.65
25' Rt. Rim WH			8.10	69.79
" " on Flow			11.21	63.68
+79.36 = E. Gut 17th			4.62	70.27
+93.36 = E.L. 17th			4.56	70.33
23+00			4.71	70.18
+50			5.66	69.23
24+00			6.72	68.17
+50			7.71	67.18
24+93.8 ± = W.L. 18th			8.59	66.30
25+07.8 = W Gut. " Asphalt Pav			8.74	66.15
25+33.8 = L 18th			8.14	66.75
+59.8 = E Gut			8.78	66.11
+73.8 = E.L. 18th			8.74	66.15
CHK N W B.P.			6.79	68.10 (18th & "B" St.)
				68.07 = BM
				003 Diff.
T.P.	220	67.84	9.75	65.64
26+00			2.04	65.80

67.84

26+50 Conc. Pav.			3.12	64.72
27+00 " "			4.10	63.74
+50			5.26	62.58
+74.49 = W.L. 19th St. = Δ Lt 22°30			5.87	61.97
27 +87.56 = 27 +88.56 Equation = Δ Rt 22°30			5.53	62.31
28+14.49 = L " "			5.99	62.80
+36.6			5.80	62.09
7.3 Rt. = L Trunk Sewer MH			5.84	62.00
" " on Flow				
28+50 on Conc. Paving			5.81	62.03
29+00 " " "			4.72	63.12
+50 " " "			3.48	64.36
30+00 " " "			2.13	65.71
+55.54 = W.L. 20th			0.68	67.16
T.P. 8.23		75.76	0.31	67.53
30+66.8			8.25	67.51
66' Rt. on Rim Trunk Sewer MH			8.22	67.54
" " " Flow " "			16.74	59.02
30+95.54 = L 20th			7.29	68.47
10' Lt. on Rim MH			7.45	68.31
" " " Flow "				6.196 - 58 - 1619 - P - 24
31+21.54 = E.C.b. Line 20th			6.78	68.98
Chk. S.E. B.P. "B" & 20th St.			5.52	70.24 (= BM 70.23)
31+35.84 = E.L. 20th			5.87	69.89 on Rebar
+50 on Conc. Paving			3.12	72.69
T.P. 12.00		87.41	0.35	75.41

87.41 ✓ — "8"-St. Water Main —

32+00	on Conc. Pav. ✓		2.55	84.86
T.P.	11.80	98.77	0.94	86.97
32+50	on Conc. Pav. ✓		1.82	96.95
T.P.	12.92	111.51	0.18	98.59
33+00			2.56	108.95
T.P. ✓	12.96	124.31	0.16	111.35
33+31 - Rt.			8.10	116.21
+35.08 = WL. 21st.			7.51	116.90
+41 " Rt.			6.94	117.37
+75.08 = ℄ 21st			5.92	118.39
2.5' Lt. on Rim MH.			6.05	118.26
" " " Flow "			3.67 2.72	119.59
34+01.08 = E ℄ Lins 21st			5.61	119.30
34+15.08 = E.L. 21st			4.23	120.08
34+50			0.28	124.03
T.P. ✓	12.82	136.90	0.23	124.08
35+00			6.49	130.91
+50			0.13	136.77
T.P. ✓	12.49	149.22	0.17	136.73
36+00			6.21	143.01
+14.77 = Int. WL. 22ND St.			4.56	144.66
+54.77 = ℄ 22nd			3.72	145.50
Chk. SW. SP "8" St. = 22nd			3.86	145.36 ✓
				145.42 = 8"W 0.06 = diff.
36+94.77 = E.L. 22nd			2.93	146.29
37+00			2.54	146.68

149.22

37+50 ✓			000	149.22
T.P.	12.13	160.98	0.37	148.85
37+50			10.11	150.87
38+00			5.70	155.28
+50 ✓			1.40	159.58
T.P.	11.14	171.92	0.20	160.78
38+95.61 - WL. 23rd St.			8.51	163.41
39+05.61			8.18	163.74
+20.61 = ℄			7.75	164.17
56° Rt. on Rim MH.			7.70	164.22
+56 Rt. " Flow "			5.10 13.10	158.82 ✓
39+35.61 = E ℄			7.40	164.52 ✓
+45.61 = E.L. 23rd			6.88	165.04
+50 on Paving			6.61	165.31
Chk. SE. SP "8" = 23rd			7.06	164.86 ✓
				164.87 .001 diff
40+00 ✓			1.77	170.15
T.P.	12.31	184.04	0.19	171.73
+50			8.94	175.10
40+95.81 = Δ Rt 22°30			4.55	179.49
41+08.88 = 41+07.88 Equation Δ Lt 22°30			4.29	179.75
41+25.81 = ℄ 24th			3.88	180.16
15' Lt. on MH Rim			3.63	180.41
" " Flow MH ✓				
41+45.8 = E ℄ 24th			3.60	180.44
+55.81 = E.L. 24th			3.21	180.83

~ "B" St. Water Main ~

		184.04 ✓			
chk. NW.B.P. - "B" st. & 24th			4.30	179.74	✓
				179.88 = Record	
				0.14	
42+00		✓	0.54	183.50	
T.P.	12.97	196.84	0.17	183.87	
+50			10.11	186.73	
43+00			6.94	189.90	
+50			3.81	193.03	
44+00		✓	0.56	196.28	
T.P.	5.43	202.22	0.05	196.79	
+20			4.73	197.49	
+35			4.11	198.11	
+50			4.07	198.15	
45+00			4.45	197.77	
+50			4.76	197.46	
46+00			5.11	197.11	
+50			5.42	196.80	
47+00			5.77	196.45	
+50			6.27	195.95	
47+56.94 = W.L. 25th			6.37	195.85	
+76.94 = W.C. 25th.		✓	6.90	195.32	
T.P.	4.90	200.82	6.30	195.92	SW Truck 25th & "B"
47+79.87 = Lt. Δ 22°30			5.35	195.47	
+92.94 = Rt. Δ 22°30			4.80	196.02	
48+17.94 = Int. Existing Main			4.35	196.47	
48+20.11 (2.3) = on W. Rail Dbl. Track			4.37	196.45	

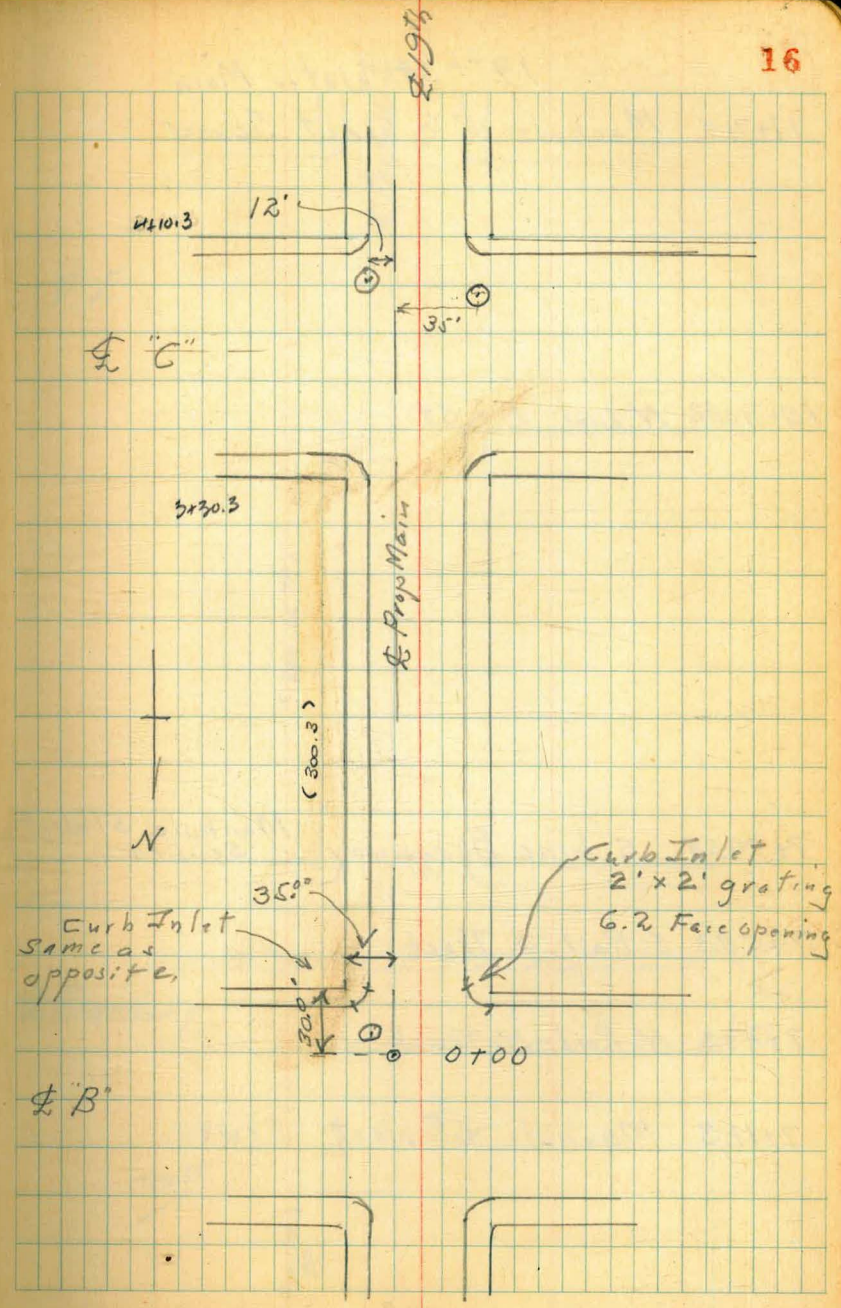
		200.82 ✓			✓
chk. S.W. B.P. 25th & "C" St.			9.94	190.88	
				190.96 = B.M.	
				0.08	
48+17.94	10' Lt. on Rim M.H.		4.45 (6.36)		196.37
	" " " Flow		10.81		190.01

Notes Reduced. 8.5.02

Hazard
Hardin
Begg
9-11-44

Location Proposed
16" Water Main on 19th St
from "B" to "L"

4+10.30	S. Line "C" St.
3+90.3	Manhole 12' E Sewer
3+86	Manhole 35' W "
0+07	Manhole 17' East Sewer
0+07	Manhole
0+00	



19th St Water Main

11+71.2 Manhole 5.5' West Sewer

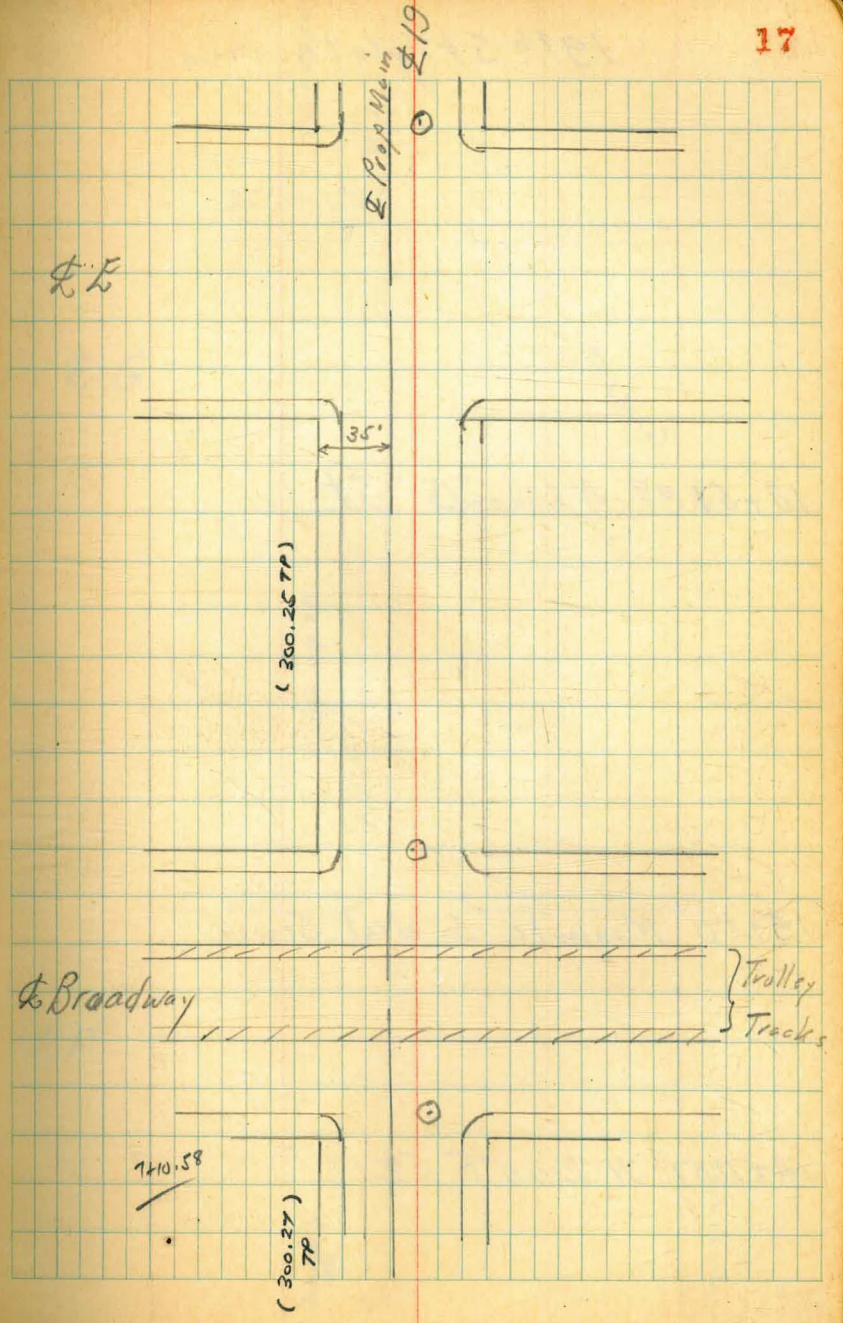
10+90.82 N Line "E" St

7+90.58 S. Line Broadway Manhole 5' West Sewer.

7+58.3 S. Rail S. Track

7+43.3 N. Rail - N. Track

7+11.3 Manhole 6' West Sewer



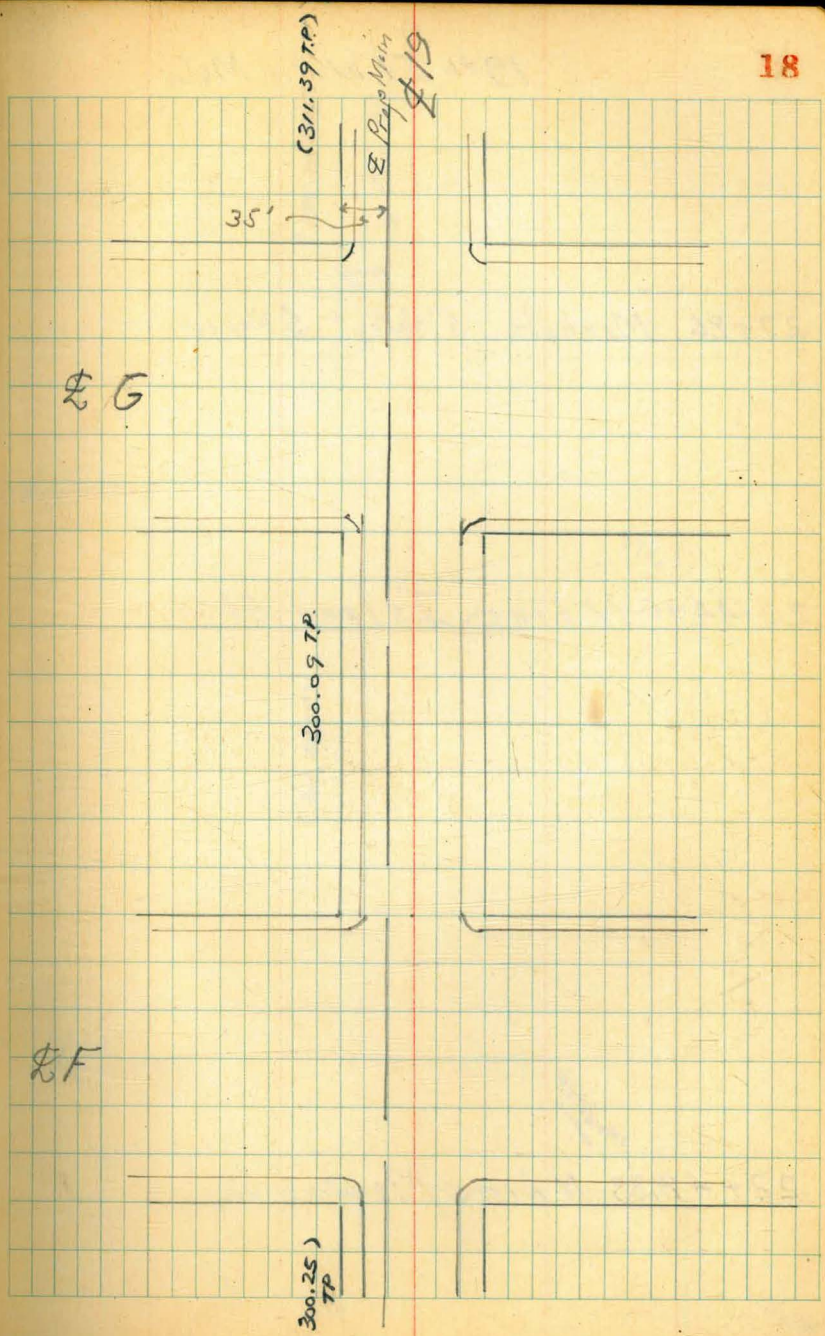
19th St Water Main

(317.6) TP.

18+51.08 N Line "G" St.

15+50 Manhole 5' West Sewer

14+71.07 N. Line F St.

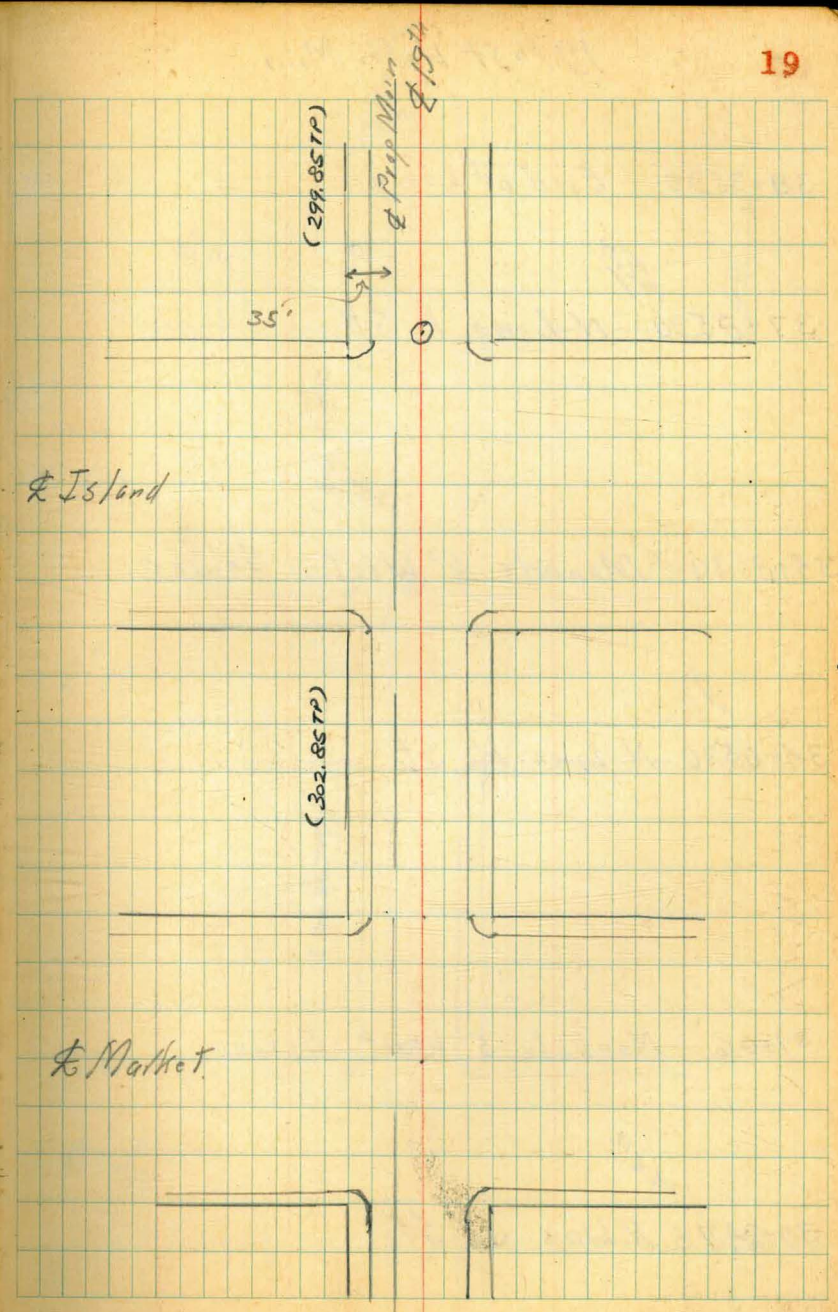


19th St Water Main

27+26 Manhole 5' West Sewer

26+44.95 N Line Island St.

22+42.33 N Line Market St.



19th St Water Main

38+35.90 End of line

+86.5 TP

37+85.90 N Line "L" St

34+85.30 Manhole 5' West Sewer.

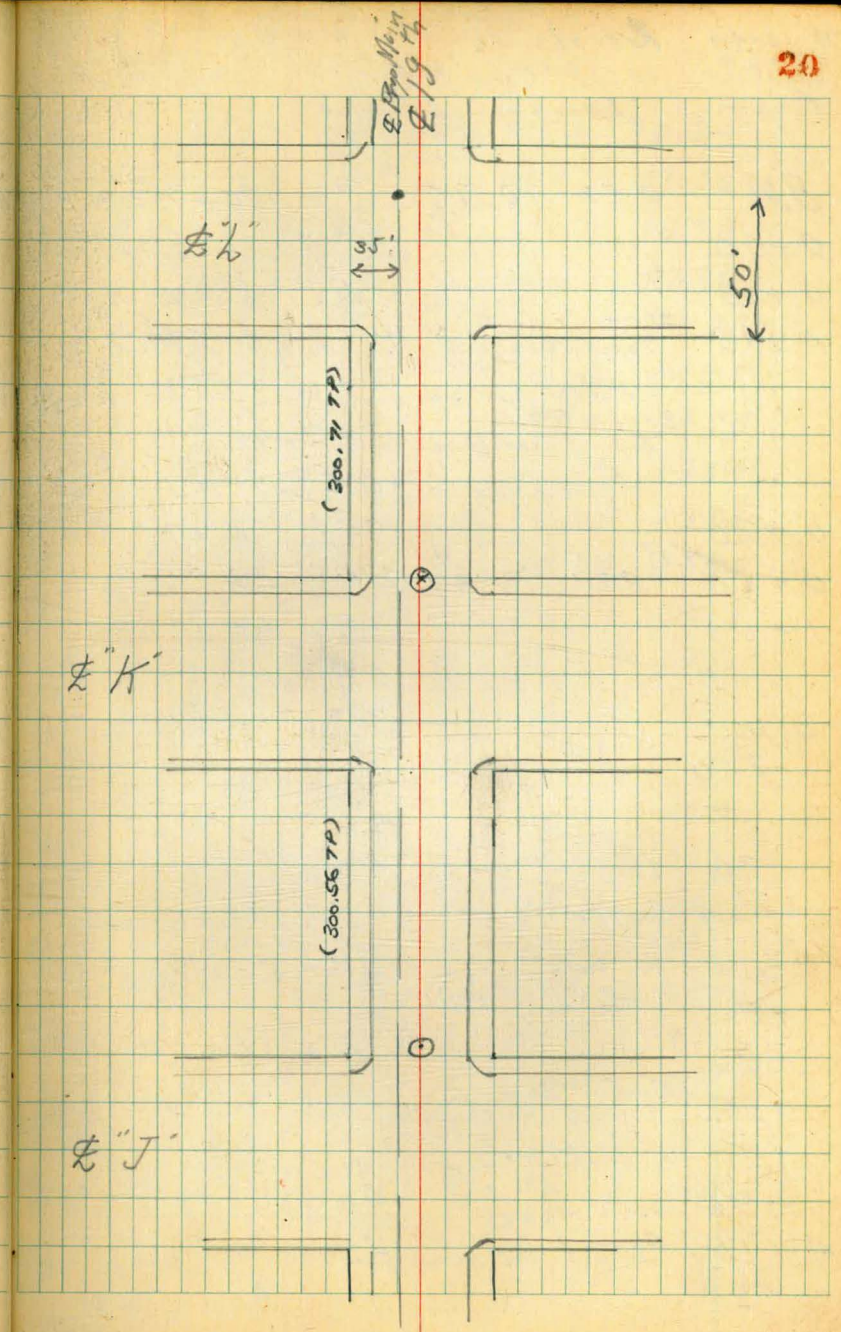
+0.75

34+0.55.30 N Line "K" St.

31+06 Manhole 5' West Sewer

+75.75 TP

30+24.76 N Line "J" St.



9-12-44 Hazard Walker Begg

Levels - Proposed Water Main on 19th St from "B" to L
Location p 16-20

B.M.	O 52	70.75		70.23	SE Cor 20th & B
0+00			8.37	62.38	
0+18			8.51	62.24	
0+18	Storm Drain E	Top of Grating	9.48	61.27	
"		Flow line	11.16	59.59	
"	Storm Drain W	Top of Grating	9.48	61 60.27	
"		Flow line	16.68	54.07	
0+30			8.68	62.07	
0+50	T.P.	82.1	70.47	8.49	62.26
1+00				7.56	62.91
+50				6.83	63.64
2				6.25	64.22
+50				5.39	65.08
3				4.67	65.80
+30	Prop. Line			4.49	65.98
+44	Gutter			4.81	65.66
+70	℄ "C"			4.52	65.95
+86	Rim Manhole W		} out of		
+86			} service		
+90	Rim Manhole ℄			4.38	66.09
+90	Flow Line			16.36	54.11
+96	Gutter			4.60	65.87
4+10	Prop Line			4.22	66.25
+50				1.31	69.16

Concrete Paving To 5. Line B. Black Paving from O+30 to end of line

70.47

T.P.	12.22		82.46	0.23	70.24
5+00				9.41	73.05
+50				5.52	76.94
6				1.47	80.99
T.P.	12.30		94.63	0.13	82.33
6+50				9.68	84.95
7				5.85	88.78
+10.6	Prop Line			5.29	89.34
+11.3	Rim Manhole	} Dead end		5.38	89.25
+11.3	Flow "	}		9.78	84.85
+24.6	Gutter			5.47	89.16
+43.3	Top Rail N. Rail N Track			4.83	89.80
+50.6	℄ Broadway			4.87	89.76
+58.3	Top Rail S Rail S Track			4.89	89.74
+76	Gutter			5.57	89.06
+90.6	Prop Line			5.30	89.33
+90.6	Rim Manhole	} Dead		5.30	89.33
+90.6	Flow Line	" } End		9.43	85.20
8+00				5.13	89.50
+50				5.47	89.16
9+00				6.01	88.62
+50	T.P.			6.53	88.10
10+00		3.06	90.57	7.12	87.51
+50				3.60	86.97
+90.8	Prop Line			4.34	86.23

19th St Water Main

90.57

11+048	Gutter	4.69	85.88	
+308	E "E" St	4.12	8645	
+568	Gutter	4.74	8583	
+70.8	Prop line	4.44	8613	
+71.2	Manhole Rim (Dead end)	4.43	8614	
+71.2	" Flow (Dead end)	6.25	8432	
BM.	SW Cor E & 19th	491	85.66	(85.75)?
12+00		481	85.76	
+50		5.90	8467	
13		7.11	8346	
+50		8.25	8232	
14		939	81.18	
+50 T.P.	2.51 82.52	10.56	80.01	
+71	Prop line	325	7927	
+85	Gutter	340	7912	
15+11	E "F" St.	298	79.54	
+37	Gutter	347	7905	
+50	Manhole Rim (Dead End)	329	79.23	
+50	" Flow (Dead End)	490	77.62	
+51	Prop line	323	79.29	
16+00		317	7935	
+50		341	79.11	
17		358	78.94	
+00		382	78.70	
18		403	7849	

82.52

18+51	Prop line	4.69	77.83	
+65	Gutter	5.10	7742	
+91	E "G" St.	537	7715	
+17	Gutter	6.68	75.84	
19+31	Prop	629	7623	
BM	NW cor "G" & 19th	613	7639	
T.P.	1.16 77.61	607	76.45	
19+50		181	75.80	
20		3.01	74.60	
+50		4.22	73.39	
21		5.48	72.13	
+50		6.62	70.99	
22		7.84	69.77	
+42	Prop	9.20	68.41	
+56	Gutter	9.87	67.74	
+92	E Market	9.46	68.15	
+28	Gutter	11.33	6628	
23+42	Prop.	11.37	66.24	
BM.	NW Cor Market & 19th	1029	67.32	.01
23+50		11.10	66.51	
24	TP 7.01 74.01	10.61	67.00	
24+50		6.73	67.28	
25		6.56	6745	
+50		629	67.72	
26		610	67.91	

19th St Water Main

		T			
26+45	Prop line	74.01	6.04	67.97	
+59	Gutter		6.15	67.86	
+85	E Island		5.88	68.13	
+11	Gutter		6.17	67.84	
27+25	Prop line		5.88	68.13	
+26	Manhole Rim (Dead end)		5.93	68.08	
+26	" Flow (Dead end)		10.08	63.93	
BM	SE Cor Island & 19th		5.11	68.90	(68.81)
27+50			5.73	68.28	
28			5.68	68.33	
+50			5.56	68.45	
29			5.55	68.46	
+50	T.P. 290	71.44	5.47	68.54	
30			2.80	68.64	
+24.7	Prop		2.98	68.46	
+38.7	Gutter		3.13	68.31	
+68.7	E "J" St.		2.97	68.47	
+90.7	Gutter		3.13	68.31	
31+04.7	Prop		2.99	68.45	
+06	Manhole Rim (Dead End)		3.14	68.30	
+06	" Flow (Dead End)		4.08	67.36	
BM.	NE Cor J & 19th		2.03	69.41	(69.40)
+50			3.14	68.30	
32			3.60	67.84	
+58			4.03	67.41	

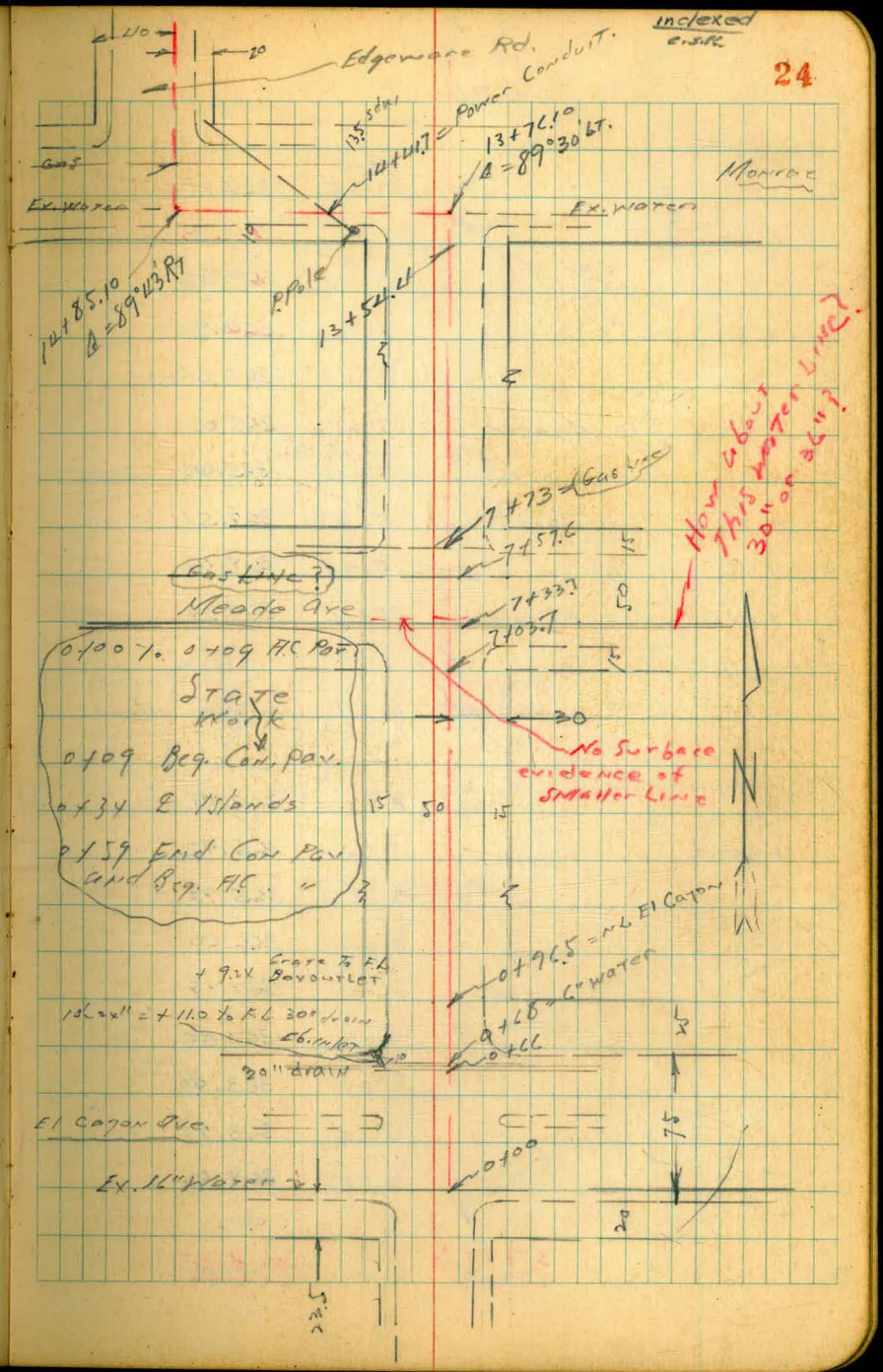
		T			
33+00		71.44	4.45	66.99	
+50			4.82	66.62	
34+05.3	Prop		5.53	65.91	
+19	Gutter		5.81	65.63	
+45.3	E "K"		5.35	66.09	
+71	Gutter		5.30	66.14	
+85.3	Prop T.P.		5.29	66.15	
+85	Manhole Rim (Dead end)		5.37	66.07	
+85	" Flow (Dead end)		6.72	64.72	
T.P.	104	67.11	5.37	66.07	
35+00			1.18	65.93	
+50			1.82	65.29	
36			2.47	64.64	
+50			3.16	63.95	
37			3.84	63.27	
+50			4.48	62.63	
+85.9	Prop		5.18	61.93	
38+00	Gutter		5.53	61.58	
+25.9	E L"		5.40	61.71	
+35.9	End of line		5.67	61.44	
BM	NE Cor L & 19th		4.13	62.98 ✓	
				62.95	
				.03	dif.

Notes Checked 9.15.xx

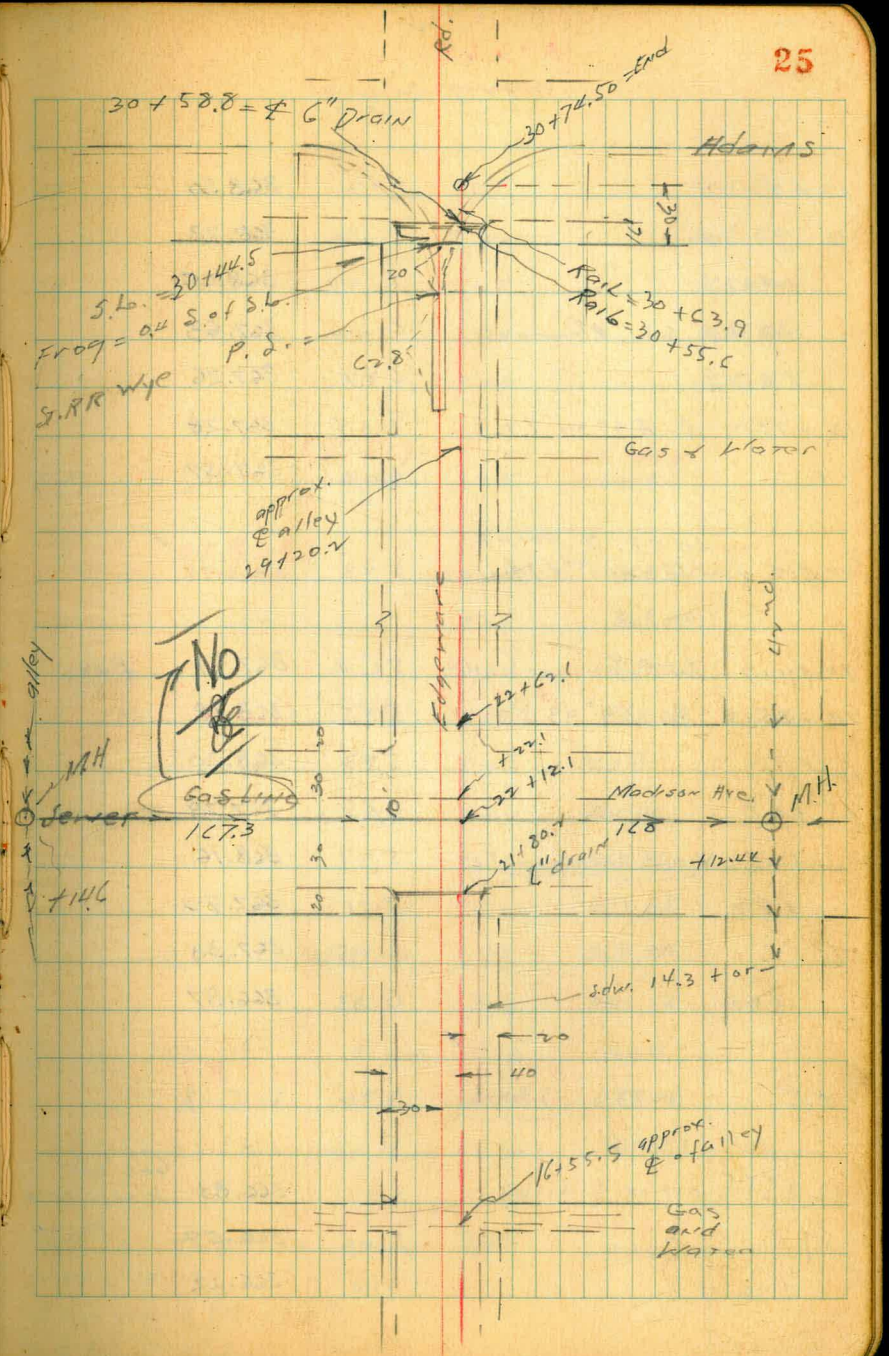
C.S.M.
C.S.
W.O.
10-3-VV. Align. & Levels for 16" water
Lines on 4th and 5th & Edgeware Rd.
E/L Cajon Ave to Aldama Ave.

See P. 27

Sw.&P.	5.21	~~368.17~~ 369.61		~~364.91~~ 364.40	4th and 5th & El Cajon
0+00	at El Cajon		5.86	363.75	
+09			5.59	364.02	
+34			5.39	364.22	
+59			5.74	363.87	
+66			5.98	363.63	pav.
"	Top of CB inlet grate		5.90	363.71	
"	F.L. of Box + 24" pipe		15.14	352.47	
"	" " " 30" Pipe at Junc.		16.90	352.71	24" to 30"
+76			6.00	363.61	
0+96.5	N.L. El Cajon		5.56	364.05	
1+50			5.26	364.35	
V			5.21	364.40	
+50			5.28	364.33	
3			5.15	364.46	
+50			5.14	364.47	
V			5.05	364.56	
+50			4.98	364.63	
T.P.	5.58	370.06 ~~368.48~~	5.13	364.48 ~~362.90~~	



		370.06 ✓			
		~~376.67~~			
5			5.35	364.71	
+ 50			5.31	364.75	
6			5.24	364.82	
+ 50			5.16	364.90	
7			5.05	365.01	
+ 03.7	S L Meade		5.06	365.00	
+ 33.7	Intersect. Big Water Line		5.06	365.00	Pax.
+ 57.6	" gas Line		5.55	364.51	"
+ 73	" " "		5.90	364.16	"
+ 83.7	N L Meade		5.67	364.39	
T.P.		✓			
Fd. BM B.P. NW curb	C 77	371.37 ~~369.88~~	5.51	365.86 ~~363.71~~	NW end of Meade
8			6.53	364.79	
+ 50			5.90	365.42	
9			5.35	365.97	
+ 50			4.72	366.60	
10			4.13	367.19	
+ 50			3.48	367.84	
11			2.83	368.49	
+ 50			2.35	368.97	
12			2.50	368.82	
		✓			
T.P.	5.30	373.03 ~~371.19~~	7.99	365.33 ~~365.89~~	



		373.63 ~~372.19~~			
12+50			5.13	368.50	
13			5.40	368.23	
+40			5.59	368.04	
+54.4	S.L. Monroe		6.00	367.63	
+65			6.37	367.26	
13+76.10	Δ 89°30' Lt.		6.35	367.28	
14			6.06	367.57	
Set B.M.	on Ld C.T. 7' point SW Ret. 4½" ø Monroe		5.43	368.20 ~~366.76~~	✓
14+41.7	Int. Power Cond.		5.64	367.99	Pax
14+85.10	Δ 89°43' Rt		5.45	368.18	
+97			5.43	368.20	
15+08			5.85	367.78	
+21	Via Edgeware Rd		5.47	368.16	
+50			5.71	367.92	
16			6.25	367.38	
+50			6.76	366.87	
T.P.	4.73	371.60 ~~370.16~~	6.76	366.87 ~~365.43~~	
16+55.5	approx. ℄ alley		4.77	366.83	Gas and Waterchece
17			5.06	366.54	
+50			5.38	366.22	

	371.60 ~~370.16~~			
18		5.67		365.93
+50		5.92		365.68
19		6.28		365.32
+50		6.74		364.86
20		7.19		364.41
T.P. 4.72	368.57 ~~367.13~~	7.25	364.35 ~~362.91~~	
+50		4.66	363.91	
21		5.09	363.48	
+50		5.54	363.03	
+80.2	Int. 6" Cross drain	5.49	363.08	on Pax.
" 28.7 Lt.	FG. Inlet	6.26	362.31	Inlet 6" drain
" 8.4 Rt	" outlet	6.82	361.75	" "
22		5.21	363.36	
+17.0	℄ Madison	5.22	363.35	Pax
" 167.3 W	MH Rim	3.83	364.74	
" " " "	F.L.	18.43	350.14	
" 160 E	" Rim	7.10	361.47	
" " " "	F.L.	19.54	349.03	
22+22.1	Int. gas Line	5.30	363.27	Pax
T.P. on N.W. ℄ Ld. C.T. Edgeware Rd. and Madison	368.38 ~~366.94~~	5.46	363.11 ~~361.67~~	

		368.38 ~~366.94~~ ✓		
22 +62.1	N L Madison	5.86	362.52	
23		6.18	362.20	
+50		6.44	361.94	
24		6.65	361.73	
+50		6.91	361.47	
25		7.18	361.20	
+50		7.41	360.97	
26		7.64	360.74	
+50		7.90	360.48	
27		8.16	360.22	
		364.97 ~~363.48~~ ✓		
T.P.	4.56		8.04	360.36 ~~358.92~~
+50			4.89	360.03
28			5.16	359.76
+50			5.40	359.52
29			5.65	359.27
+20.2	approx Valley		5.78	359.14
+50			5.90	359.02
30			6.07	358.85
+44.5	S L Adams		6.08	358.84
+55.6	Top rail		5.76	359.16

		364.97 ~~363.48~~ ✓		
30 +58.8	E c"d.w.	5.78	359.18	
"	S.C.R.R. F.L. "	7.64	357.28	
"	28.5 Lt. " "	6.55	358.37	inlet
30 +63.9	Top rail	5.88	359.04	
30 +74.50	end	5.85	359.07	
Check to BM. S.E. C.C.T.	Adams Edgewater Rd.	6.35	358.57 ~~357.13~~	+0.07 358.50 −1.37
		361.75 ~~360.31~~ ✓		
T.P. 3.18		6.35	358.57 ~~357.13~~	
check to S.E. C.C.T.	Adams Blvd	4.25	357.50 ~~356.06~~ ✓	+0.06 = 357.44 −1.38
SWBP	4.48	369.64 ✓		365.14 El Cajon Mackenzie
check to BMBP	42nd and El Cajon	5.24	364.40	~~364.96~~ d.f. 1.44

Please use this and make correction in Office Bench Book

Starting B.M. for Levels this is N.G. Thru St. name changing

also please check to Profile of El Cajon Ave.

Walker
Hurdon
Epps
11-2-44

CROSS SECTION MYRTLE ST. 60' Wide
from Florida St 10' cbs
to Alabama St 10' NLs

BM #60
FB 1618-17

SE Top Hyd.
Myrtle & Florida 7.92 208.2.2 200.30

0-10 = E cb Line Florida

-10	on Gut. at PC. 20'cb Rt	9.89	198	33
-10	" cb. " " " "	9.25	198	97
NL	on Pav.	10.09	198	13
cb.		10.23	197	99
1/4		10.39	197	83
℄		10.49	197	73
S 1/4		10.69	197	53
cb.		10.83	197	39
S		10.98	197	24
+10	on Gut PC. 20'cb R	11.19	197	03
"	" cb " " " "	10.31	197	91
℄	0-05			
S		9.96	198	26
+3'	on cb Rt.	9.87	198	35
"	" Gut at cb Rt.	10.59	197	63
cb.		10.47	197	75
1/4		10.34	197	88
℄		10.19	198	03

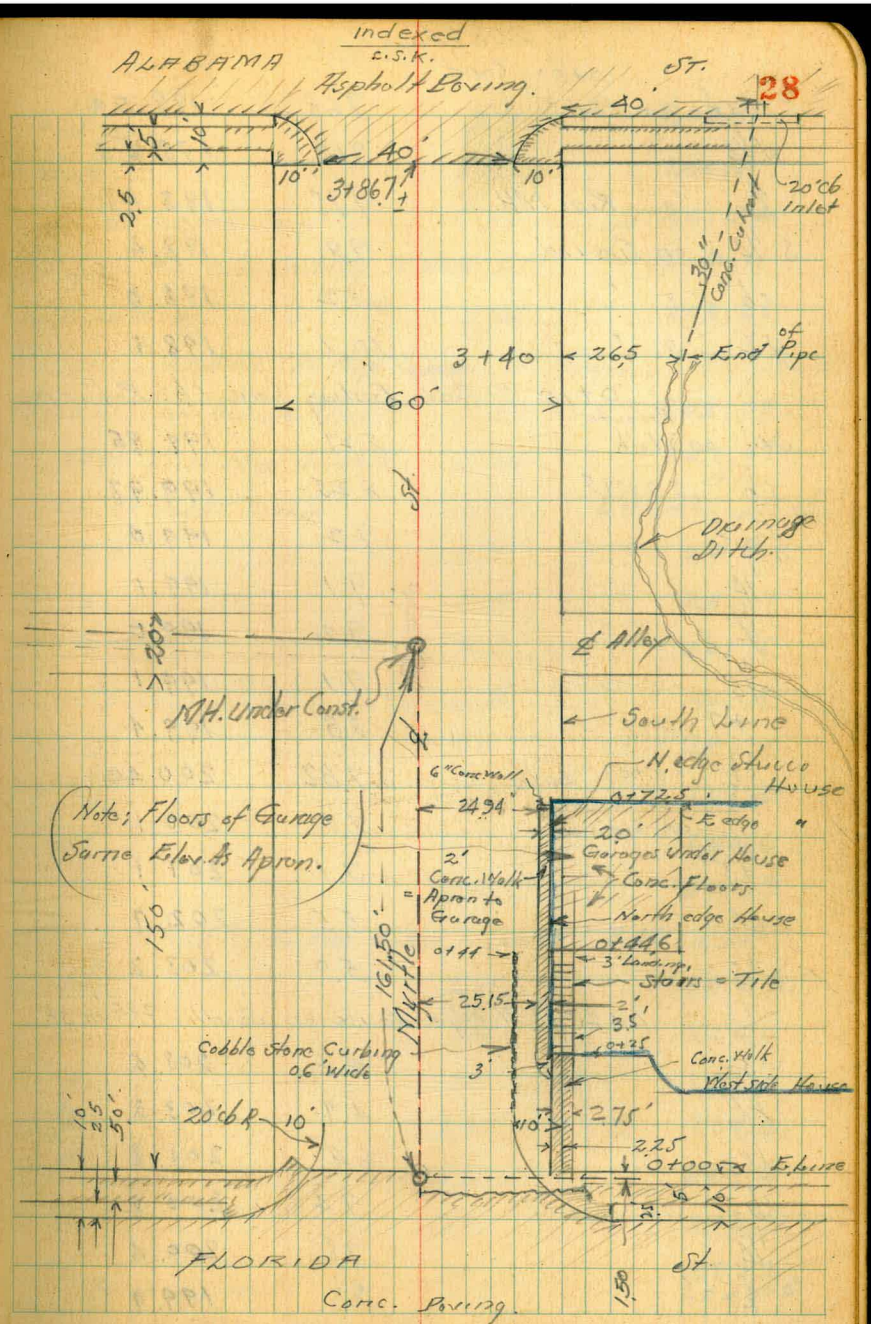
E.L. Florida = 0+00

N.L.	-16	8.57	199	65
N.L.		8.92	199	30
+7	on cb. Rt.	8.92	199	30
"	"Gut at cb Rt.	9.68	198	54

Reduced Platted on Profile #1812

Indexed
C.S.K.

28



0+00 Cont.

N cb. on Pav.	9.68	198.54
N 1/4	9.69	198.53
℄ " Rim MH.	9.75	198.47
S 1/4 on Ground	9.8	198.4
cb " "	10.2	198.0
S.L. " "	10.1	198.1

0+10 = Appx. End Existing Conc. cb. Returns.

S.L. on Private Walk	8.27	199.95
cb. = 0+09.5	8.25	199.97
Gut.	9.2	199.0
1/4	9.1	199.1
℄	9.2	199.0
1/4	9.1	199.1
+7	8.8	199.4
cb. = 0+09 on cb	7.82	200.40
" on Ground	8.1	200.1
+5'	7.1	201.1
N	5.5	202.7
+5	5.0	203.2

0+25 = W edge House on South 285' in St.

-5	4.6	203.6
N	4.9	203.3
+5	6.4	201.8
cb.	7.4	200.8
1/4	7.8	200.4
℄	8.3	199.9

S 1/4	7.9	200.3
Gut.	7.8	200.4
cb. on Cobble Stone cb.	6.28	201.94
+5.15 = N edge Existing 2' Walk	6.11	202.11
S.L. on Walk.	5.94	202.28

0+14.6 = W edge Garage on South 2.85' in St.

S +2.85' on Garage Floor	5.50	202.72
14.85 = N edge 2' Walk.	5.54	202.68
cb. on Cobble curb.	5.60	202.62 = Exc/ Cobble cb.
Gut.	6.0	202.2
1/4	6.5	201.7
℄	6.7	201.5
N 1/4	6.4	201.8
N cb.	5.8	202.4
+5.	5.0	203.2
N	4.2	204.0
+10	4.0	204.2

0+70.2 = E. edge Garage on South 3.06' in St.

-10	2.0	206.2
N	2.2	206.0
cb.	3.2	205.0
1/4	3.8	204.4
℄	4.6	203.6
N	5.0	203.2
cb.	5.0	203.2
+5 - on Conc. wall	4.16	204.06
+5 = N edge Conc. Walk	5.59 — ?	
+7 = S " " "	5.57 —	202.65 = Garage Floor

20822

	0+80			
S.L.-5			2.3	205.9
S.L.			1.9	206.3
℄			2.6	205.6
N 1/4			2.7	205.5
℄			2.6	205.6
N 1/4			2.5	205.7
℄			2.0	206.2
N			1.2	207.0
+10			1.2	207.0
T.P.	1178	219.57	0.43	207.79

0+72 to 0+91 = Lath Fence on S 1.7 in st.

1+00

Note. Unfinished Sections on North are Covered by Stock Pile of dirt from Trunk Sewer under Const. in Alley. Assume Natural Ground to be Approx. Same as ℄ or N 1/4

N 1/4		10.3	209.3
℄		10.3	209.3
S 1/4		10.8	208.8
℄		10.5	209.1
S.L.		10.8	208.8
+10		10.8	208.8

1+25

-10		7.1	212.5
S.L.		6.7	212.9

219.57

℄	6.9	212.7
S 1/4	7.0	212.6
℄	6.9	212.7
N 1/4	6.9	212.7

1+40

N 1/4	6.0	213.6
℄	6.0	213.6
S 1/4	5.4	214.2
+7	5.2	214.4
℄	4.2	215.4
S.L.	4.6	215.0
+10	5.4	214.2

1+48 = ℄ Elec. Pole on South 0.5' Back

-10	4.9	214.7
S.L.	3.7	215.9
℄	4.1	215.5
+3	5.1	214.5
N 1/4	5.4	214.2
℄	5.5	214.1
N 1/4	5.7	213.9
℄	5.3	214.3
N	5.6	214.0
+50	5.6	214.0

1+66

-50	5.6	214.0
N	5.0	214.6

		219.57		
Cb.		4.8	214.8	
N 1/4		4.6	215.0	
℄		4.3	215.3	
S 1/4		4.4	215.2	
Cb.		3.8	215.8	
S		3.6	216.0	
+10		3.2	216.4	
	1+70			
-10		3.2	216.4	
S		3.2	216.4	
Cb.		3.3	216.3	
1/4		3.7	215.9	
+5		3.0	216.6	
TP	12.21	231.36	042	219.15
℄			12.4	219.0
+4			8.3	223.1
N 1/4			7.8	223.6
Cb.			6.1	225.3
N			5.1	226.3
+10			4.5	226.9
	2+00			
-10			+4.7	236.1
N			+4.3	235.7
Cb			+3.0	234.4
N 1/4			-1.8	229.6
℄			+.7	226.7

		231.36		
℄ +4'			6.2	225.2
S 1/4			6.7	224.7
S Cb.			6.0	225.4
+6			6.0	225.4
S ℄			8.5	222.9
+17	Toe New Fill		20.5	210.9 N edge Wash
+30	S edge Wash.		19.8	212.1
	2+25			
-38			15.6	215.8
-33	S edge Wash. Bank		16.5	214.9
-30	" " Wash.		18.7	212.7
-23	N " "		18.7	212.7
-20			16.9	214.5
-10			13.5	217.9
S			6.8	224.6
+7			1.9	229.5
Cb.			1.3	230.1
1/4			1.1	230.3
℄			0.8	230.6
TP	10.04	241.25	0.15	231.21
1/4			8.0	233.3
Cb.			4.5	236.8
N			2.1	239.2
+10			1.7	239.6
	2+50			
N			+1.3	242.6

N		+0.9	242.2
cb.		1.4	239.9
¼		5.5	235.8
+5		6.7	234.6
℄		6.9	234.4
S ¼		7.0	234.3
cb.		8.3	233.0
+2		8.3	233.0
S		13.0	228.3
+12		20.6	220.7
+16		20.6	220.7
+26	N edge wash. (4' wide)	27.4	213.9
+40		24.2	217.1
	2+75		
-50		20.2	221.1
-40		22.5	218.8
-30	on Bank	22.7	218.6
-30	" Wash. (4' Wide)	24.2	217.1
-25		23.5	217.8
SL.		10.8	230.5
cb.		5.1	236.2
¼		3.7	237.6
℄		3.3	238.0
N ¼		2.6	238.7
cb.		0.0	241.3
N		+2.6	243.9
+10		+5.3	246.6

3+00

+10		+8.5	249.8
N		+7.6	248.9
+3		+7.3	248.6
+7		+4.0	245.3
cb.		+2.8	244.1
N ¼		+0.3	241.6
℄		0.3	241.0
¼		0.8	240.5
cb.		2.2	239.1
SL.		8.3	233.0
+11		15.5	225.8
+28		21.3	220.0
+29	=N edge Wash	23.7	217.6
+42	=S " "	22.3	219.0
+43	S Bank	20.4	220.9
+50		19.2	222.1
	3+20		
-48		17.1	224.2
-38	S edge Wash	18.7	222.6
-35	" " "	19.7	221.6
-23	N " "	18.7	222.6
-13		13.3	228.0
S		7.1	234.2
cb.		0.5	240.8
T.P.	8.13	249.35	0.03 24122.

249.35 Myrtle St.

3+20 Cont.

S ¼		6.7	242.7
℄		6.2	243.2
N ¼		5.1	244.3
N cb.		+0.2	249.6
+5		+1.8	251.2
N	Lawn in yard	+2.0	251.4
+10	" "	+2.0	251.4
	3+45		
N			
-0.4 at House		+2.8	252.2
cb.		+2.3	251.7
N ½		+1.5	250.9
+8		0.0	249.4
℄		1.3	248.1
+3		3.6	245.8
¼		4.3	245.1
+7		5.3	244.1
cb		8.0	241.4
S		14.1	235.3
+8		19.3	230.1
+25		22.4	227.0
+26.5 on Top 30" Conc. Pipe		21.7	227.7
" " Flow 5' West		25.1	224.2 3+40 = End 30" Pipe
-25		20.0	229.4
-12		16.7	232.7

249.35

SL.		10.9	238.5
+2		10.3	239.1
cb		6.1	243.3
+3		3.7	245.7
+8		2.3	247.1
TP 7.78	255.79	1.34	248.01
¼		8.3	247.5
+5		4.8	251.0
℄		4.8	251.0
N ¼		4.8	251.0
cb.		4.5	251.3
N		3.8	252.0
	3+75		
N		4.0	251.8
cb.		4.4	251.4
¼		4.6	251.2
℄		4.8	251.0
¼		4.9	250.9
cb.		5.6	250.8
S		7.4	247.4
+2		9.1	246.7
+10		13.6	242.2
+25		13.6	242.2
	3+87.6 3+86.7± = W.L. ALABAMA ST.		
S on WL		4.67	251.12
cb on cb.		4.89	250.90

W.L. Cont.

25579

Gut. on Pav.		5.31	250.48
½	" "	5.03	250.76
℄	" "	4.92	250.87
N ½	" "	4.90	250.89
N Gut.	" "	5.00	250.79
cb.		4.43	251.36
N on walk		4.30	251.49
chk. NW. SP. Myrtle & Alabama		4.39	251.40
			251.50
			0.10 diff.

W cb. Alabama

N.	4.40	251.39
~~cb.~~ N Gut.	4.98	250.81
cb.	4.99	250.80
½	5.07	250.72
℄	5.13	250.66
½	5.21	250.58
cb.	5.30	250.49
S.L. Gut	5.41	250.38
S.cb.	4.87	250.92
+21 on cb.	5.97	249.82
" " Gut	6.47	249.32
+30' N end cb inlet. on cb.	5.78	250.01
" " " " " Gut	7.10	248.69

25579

34

+40 = ℄ 20' cb Inlet on cb	5.96	249.83
" " " " " on Grating	7.18	248.61
on Flow line outlet	2.57.18	230.61

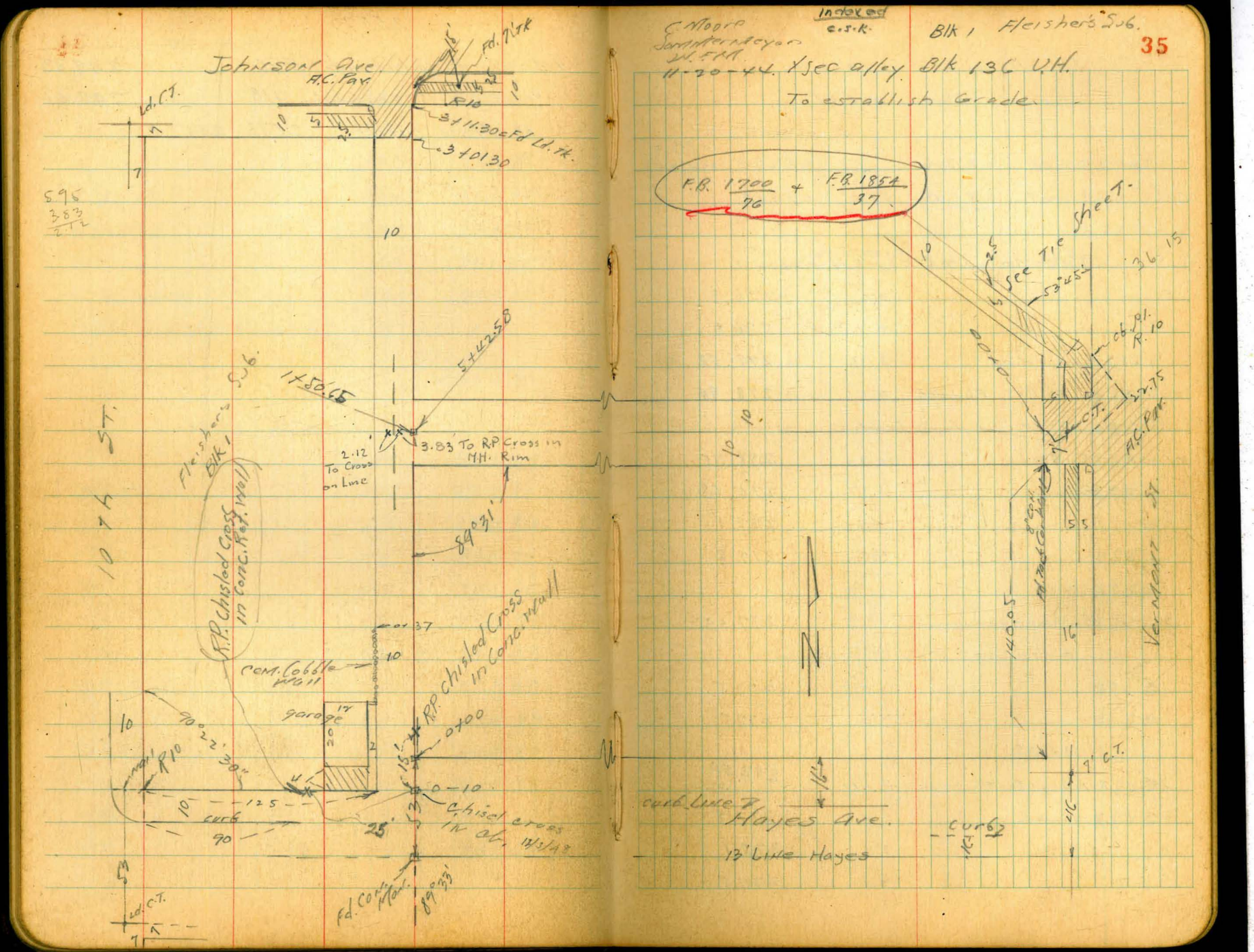
E. Moore
Sanitary Engr.
W.F.H.A.

Indexed
C.S.K.

Blk 1 Fleisher's Sub.

11-20-44. X sec alley Blk 136 U.H.
To establish Grade.

F.B. 1700 / 96 + F.B. 1854 / 37.



Levels on N & S 10' alley

Fleishers add.

NW&P	4.88	287.32	282.44	10Th & Johnson
T.P.	2.27	281.45	8.12	279.18

00-20 = N c6 Hayes to West

E.6.		4.7	276.8
W.6		4.7	276.8
+35 Top end c6		3.93	277.52
+ 125 " c6 Rot. E.6 10th		2.51	278.94

0-10 = N L Hayes to W.

W - 8	℄ Apron	4.70	276.75
W - 2	Cor. "	4.77	276.68
W		4.4	277.1
E		4.3	277.2

0-6

W-8	℄ Garage South Entrance	4.45	277.00

0+00 = N L Hayes to E

E		4.0	277.5
W		4.0	277.5

0+13.5

W	Top beg. Foc6c wall	+ 1.10	282.55 .7 in alley
W	ground	3.7	277.8
E		3.4	278.1
+ 10		4.0	277.5

281.45

T.P.	10.06	290.79	0.72 — 280.73

0+37

-10		9.9	280.9
E		9.1	281.7
C		9.0	281.8
C +4.7	ground	Bot. end C36. wall 7.7	283.1 + Top wall

0+40

W +1.7 Ctr. 12" P.P.

0+49

W		7.0	283.8
W +0.5	end. E+W fence	7.0	283.8
E		7.4	283.4
+10		7.8	283.0

0+70

-10		5.7	285.1
E		5.5	285.3
W		5.2	285.6

1+00

W		4.6	286.2
E		4.5	286.3

Reduced & Plotted 11-27-44

1+40.65 SL alley to E.

E		3.3	287.5
W		3.2	287.6

1+42

W +1.2 Ctr. 1.2 P.P.

		29+79			
	1+50.65				
W			3.0	287.8	
C	RIM M.H.		2.5+	288.27	
E			2.9	287.9	
	1+60.65 ℄ alley E				
E			2.6	288.2	
W			2.6	288.2	
	1+61.4				
E - 0.3	Cor. picket fence				
	2+00				
W			2.5	288.3	
E			2.4	288.4	
	2+09				
E - 0.45	angle picket fence				angles to RT. to SW. Cor. Sm. gar.
	2+26				
W +1.0	CTR. 1/4" PP				
T.P.	4.94	29+79	2.94	287.85	on Hub 1+50.65
	2+28.5				
W +0.7	Beg. Lath fence				0.7 in alley
	2+29.5				
E - 14.1	℄ 10.3 wide Sm. gar.		cont. 3.5+ floor	289.25	
	2+46				
E - 0.8	Beg. Lath fence		4.0	288.8	

29+79 10' alley

E		4.8	288.0
W		4.7	288.1
	2+08		
W		4.9	287.9
C		5.0	287.8
E		4.9	287.9
	to C end Lath fence		
	to C to Cor. house	3.9	288.9
	2+71		
W	end Lath fence		
	2+78		
E - 2.8	Cor. house	4.0	288.8
E - 0.3	Beg. Cobble wall	4.0	288.8
E		5.0	287.8
C		5.0	287.8
W		4.9	287.9
	3+01.3 St. Johnson to W.		
W cb		4.90	287.89
W Pav		5.13	287.66
" + 4		5.29	287.50
C "		5.27	287.52
E "		5.01	287.78
E +0.2	Top Cobble wall	4.2	288.6
	3+11.3 St. Johnson to E. of S. cb to W.		
E	Top cb	4.68	288.11
E	Pav	5.28	287.51
C	"	5.56	287.23

		297.79		
W	pav		5.71	287.08
W	Top E v R. alley Rct		5.14	287.65
		3+21.3	5 c6 to E	
W	Pav		5.84	286.95
C	"		5.73	287.06
E	"		5.60	287.19
+ 10	"		5.38	287.40
"	"	Top c6	B.C.	4.77	288.02
T.P.		6.64	294.49	4.94	287.85	NG 1+50,65
T.P.		8.00	299.94	7.57	291.92	

Levels in E to W 20' alley
Blk 136 U.H.
x99.9x from p.38

Also 1700 1854 37 76 to 78 9-17-48

0-16

S	Top cb. x' R. alley Ret.	7.25	292.67
S	Pav.	7.70	292.22
C	"	7.55	292.37
N	"	7.43	292.49
N	Top x' R. alley Ret.	6.96	292.96

0+00 W.L. Vermont

N	Top curb	6.68	293.24
N	Pav.	6.70	293.22
C	"	6.98	292.94
S	"	6.97	292.95
S	Top curb	6.9x	293.00
S	" Wall	5.18	294.74

0+07.5

Reduced - Plotted 11-28-44 C.O.H.

S		5.3	294.6
+4		6.4	293.5
C		6.6	293.3
+5		6.4	293.5
N	Beg. picket fence on Line	4.7	295.2

0+17

N		4.5	295.4
C		4.8	295.1
S		4.6	295.3
+0.10 N edge x.3 Cem Walk		4.45	295.47 ✓

x99.9x

0+19

S - x.3 NE Cor House ✓

0+27

N +1.0 Cor, 9" Tel. Pole ✓

0+50

N	fence	4.7	295.2
C		4.7	295.2
S		4.8	295.1
S +0.10	on walk x.3 wide	4.68	295.24 ✓

0+63

S - x.3 NW Cor House ✓

0+65

S - 0.10	4' wide walk	4.72	295.20 ✓
S		4.9	295.0
C		5.0	294.9
N	fence ✓	4.8	295.1

0+73

S - 0.1	E Con apron 8 wide	4.78	295.14 ✓
S - 3.9	E SW Cor. Cem. Ft.	4.67	295.25 ✓

0+77.5

S - 0.10	Cor. Con apron	4.79	295.13
S - 3.9	apron	4.67	295.25

1+00

N - 0.10	E 3' Con walk	5.53	294.39 ✓
N		5.8	294.1
C		6.1	293.8
S		C.1	293.8

	1+04		
S -15.4	& De. gar. conc. fl.	5.90	294.02 ✓
	1+18		
S		6.4	293.5
+0.7	Ctr. 16" R.P. ✓	6.5	293.4
C		6.5	293.4
N	end picket fence ✓	6.1	293.8
	1+25.5		
N	& 11.5 wide Con apron	6.1N	293.80 ✓
-C	& Sin Gar. Conc.	5.9C	293.96 6' out ✓
	1+42.5		
N +0.1	Ctr. 8" Tel. pole ✓		
	1+56		
N-C	& Sin. gar. Con	6.7N	293.20 ✓
N-0.3	& 10' con. apron	7.1N	292.80 ✓
N		7.3	292.6
C		7.6	292.3
S		7.7	292.2
T.P.	4.19	296.17	291.98
	2+00		
-10		5.2N	291.0
S		4.7	291.5
C		4.5	291.7

N	4.6	291.6
+10	4.6	291.6
	2+05.5	
S +0.1	Beg. picket fence ✓	
	2+30	
S +1.1	Ctr. 14" R.P. ✓	
N-0.2	Beg. wire fence ✓	
	2+50	
N	4.1	292.1
C	4.4	291.8
S	4.4	291.8
+6	4.8	291.4
	2+16 Back up please. Missed 2+15	
S -45.8	Sin. gar. conc. fl. 6.30	289.87 ✓
	2+80	
N +0.9	Ctr. 8" Tel Pole ✓	
	2+81	
S -10	4.9	291.3
S	4.8	291.4
+0.3	end picket fence ✓	
C	4.6	291.6
N	4.5	291.7
	2+90	
N-0.5	end Wire fence ✓	

296.17

	3+11		
N-9.6	Sin. gar. Conc Blk ft.	5.15	291.02 ✓
N-7	E 7.7 Con. Blk apr.	5.21	290.96 ✓
N		5.2	291.0
C		5.3	290.9
S		5.3	290.9
+10		5.5	290.7
	3+18		
N-1	Beg. Chicken wire fence	✓	
	3+09		
N-1.3	end Chick fence	✓	
N-2.0	SE Cor Shed		
	3+42		
N-2.5	SW Cor Shed.		
	3+42		
N-1	Beg. wire fence	✓	
	3+50		
-10		6.4	289.8
S		5.8	290.4
C		5.9	290.3
N		5.8	290.4
	3+55		
S+10	Ctr. 14" P.P.	✓	
	3+81		
N	Ctr. 8" Pch. P.	✓	

296.17

41

	3+81		
N-0.5	end wire fence	✓	
N-1.0	Beg. ornamental fence		
	4+00		
N		6.5	289.7
C		6.8	289.4
S		7.1	289.1
+10		7.2	289.0
	4+12		
N-0.5	end ornamental fence		
	4+17		
N-9.9	Sin. gar. Conc. ft.	6.28	289.89 ✓
	4+50		
-10		7.7	288.5
S		7.4	288.8
C		7.2	289.0
N		7.2	289.0
	4+63		
S+0.9	Ctr. 14" P.P.	✓	
	4+70		
N-9.9	E Sin. gar. Conc ft.	6.74	289.43 ✓
N-6.5	E 10.4 Con. apron	7.04	289.13 ✓
N		7.2	289.0
C		7.7	288.5
S		7.5	288.7
+10		7.8	288.4

2946.17

	4+77		
N-4.6	8' wide Con Wk	7.13	289.04
	4+79		
N-1.0	Beg. Con. Ret. Wall 311 Top Wall	7.0±	289.15 And Beg. Picket Fence
	4+80		
-10		8.0	288.2 Con. Fence
S		7.7	288.5 P. 37
C		8.0	288.2
+6		7.9	288.3
N		7.1	289.1
+1	Con. Wall	7.0±	289.15
	5+06		
N-1	End Con. Wall 8"	7.2±	288.95
N		7.6	288.6
+4		8.3	287.9
C		8.3	287.9
S		8.5	287.7
+10		8.7	287.5
	5+25		
N+0.4	Ctr. of 12" Tel. P.	✓	
	5+30		
S		8.5	287.6
C		8.4	287.8
+5		8.1	288.1
N		7.6	288.6

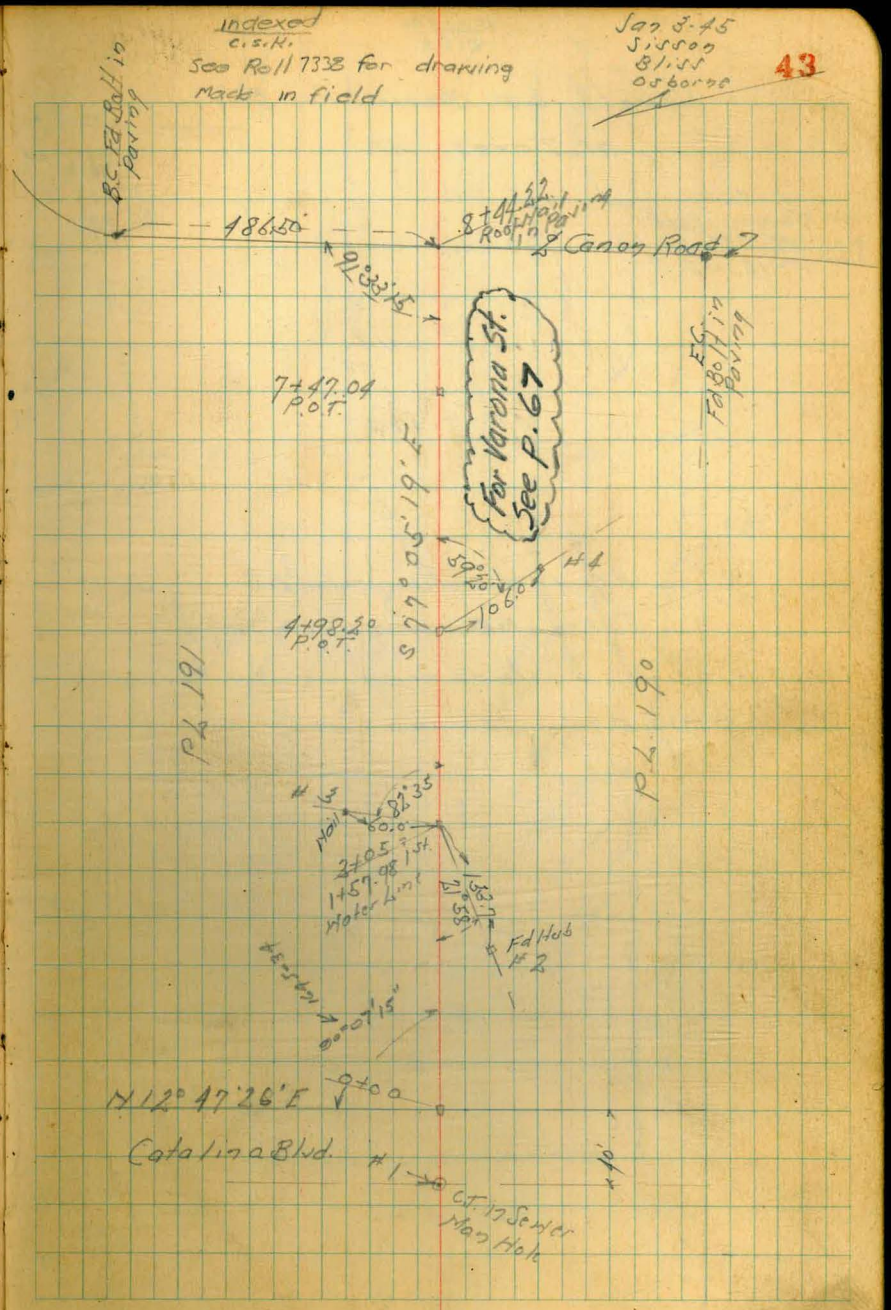
5+42.58 = E.L. 10' alley

See P. 37

T.P.	2.50	≈90.35	8.3±	≈87.85	Hub 1+50.65 5+42.58
check to orig. B.M.			7.91	≈82.4±	

Topography Pueblo Lots 190 - 191
Catalina Blvd to Canon

BM	2.92	253.74		250.82	SW B.P. Catalina & Verona
#1	= Catalina		5.00	248.7	
#2			9.97	243.77	o/Hub
TP	1.31	242.42	12.63	241.11	
TP	1.19	230.76	12.85	229.57	
#3			13.04	217.72	
TP	0.82	218.61	12.97	217.79	
TP	0.32	206.02	12.91	205.70	
#4			7.45	198.57	
TP	1.05	194.59	12.48	193.54	
TP	0.35	182.57	12.87	182.22	
7+47.04	P.O.T. Baseline		11.43	171.14	o/Hub
TP	1.04	170.74	12.87	169.70	
TP	1.19	159.13	12.80	157.94	o/E Nail PK & Canon
8+45.01			7.12	152.01	



Indexed
C.S.K.

Levels at Adams Ave Bridge at Texas St.

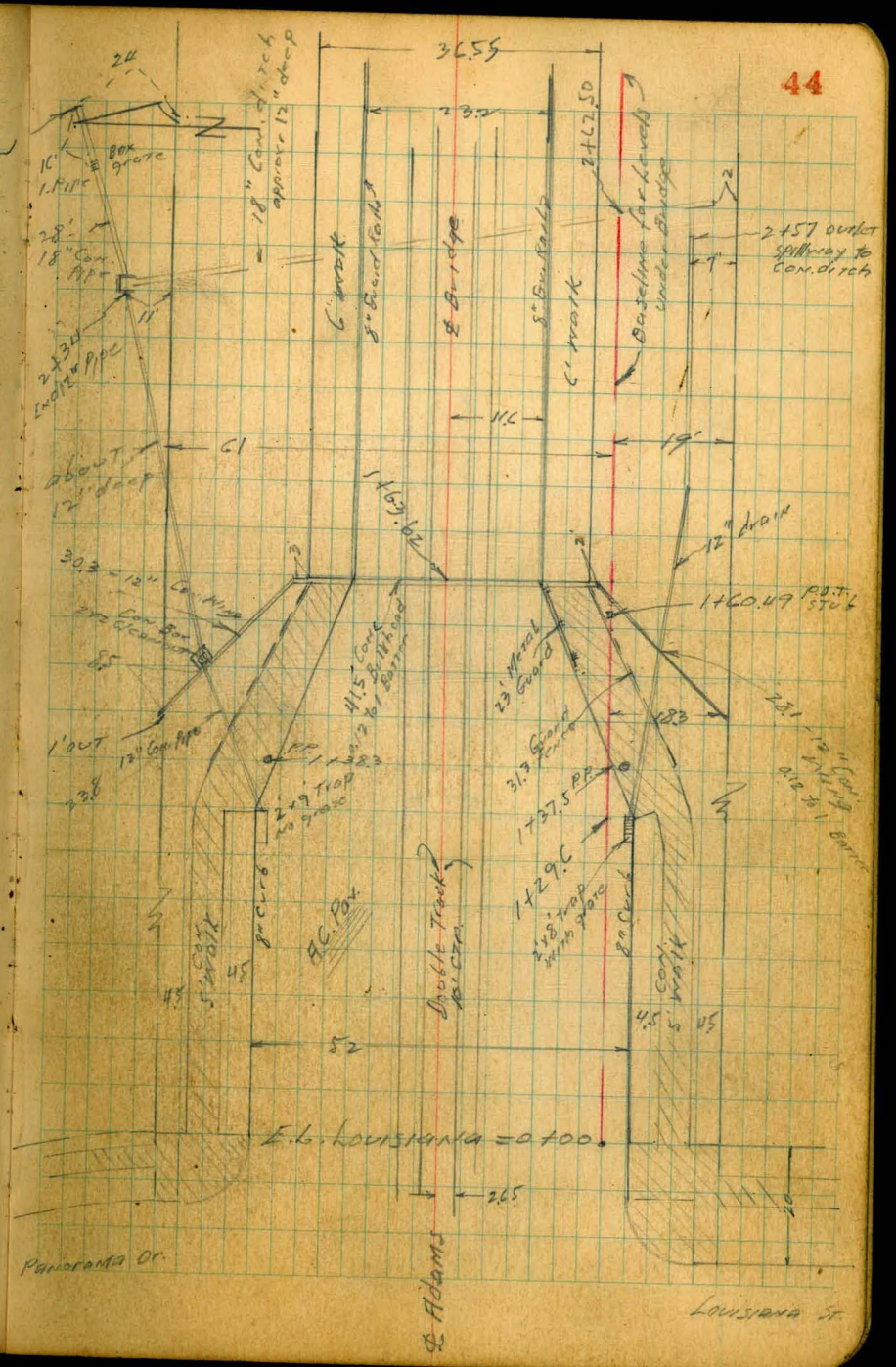
C. Wood
Sommermeyer
W.E.M.
1-15-45.

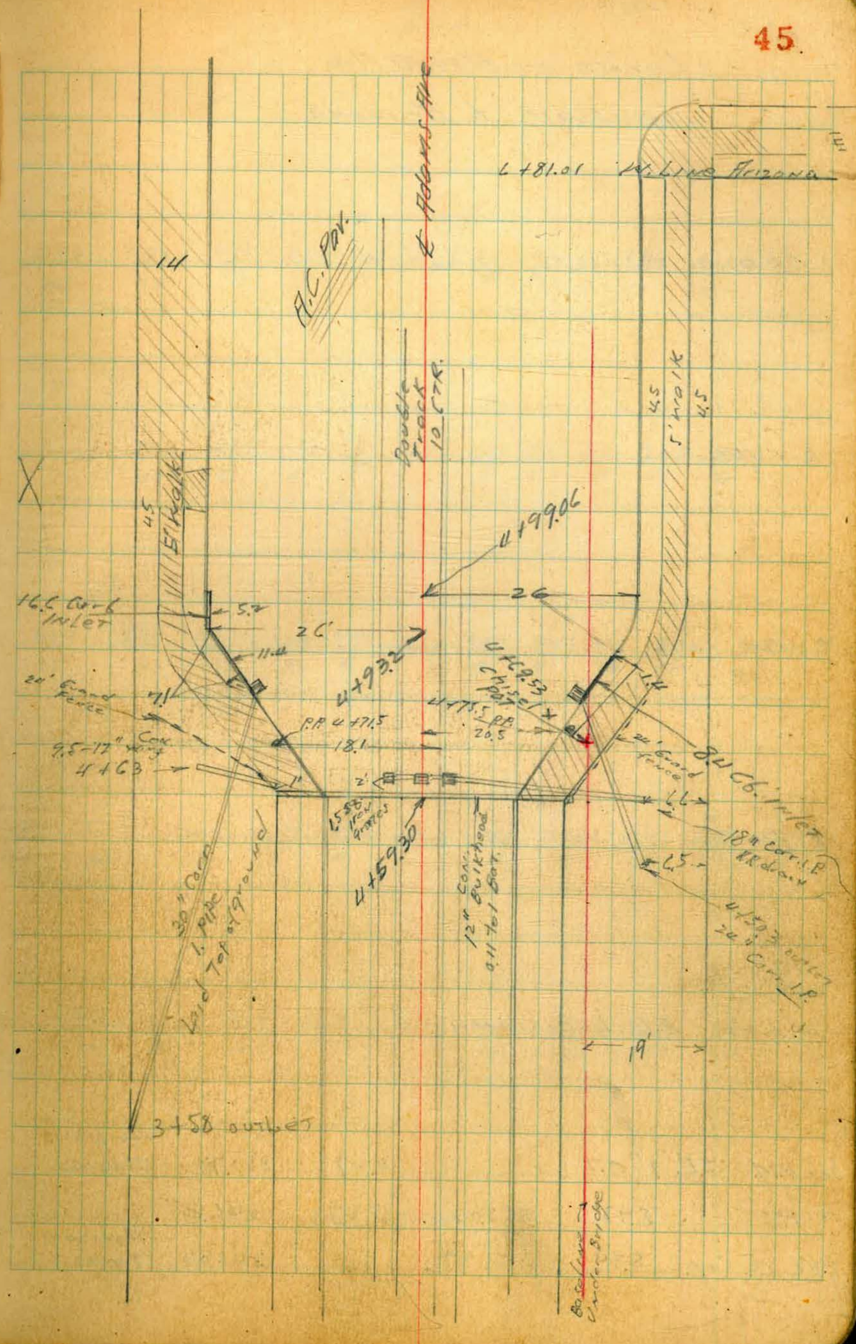
2+78 Rail 2.65
" 4.72
" 7.37 Rail

2+78 End 12" 1.91'

2+78	11.6
	.67
2+34	6.0
	18.27
1+60	
1+28	

See F.B. 1440 - 11-12-78
See also F.B. with levels and location of 24" water line on Texas St.




4+81.01
W. Line Arizona
14
A.C. Pav.
℄ Adams Ave.
Double Track 10 CTR.
4.5
5' Walk
4.5
5' Walk
4.5
4+99.06
26
16.C Curb Inlet
5.4
26'
11.4
4+93.2
4+69.53 Chisel pot.
1.4
24" Grand fence
7.1
P.P. 4+71.5
4+75.5 P.P.
20.5
18.1
Con.
9.5-17" wing
4+63
2'
1.5 58 iron grates
4+59.30
12" Con. Bulkhead 0.11 to 1 Bot.
24" Grand fence
8.4 Cb. Inlet
6.6
18" Corr. I.P. RR drain
6.5
24" Corr. I.P.
30" Corr. I. Pipe Laid Top of ground
19'
3+58 outlet
Bolster Under bridge

Levels on Adams Ave
Louisiana to Arizona

1+00

0+75

0+50

0+25

0+00 E.L. Louisiana

Sec B.M. SE 1' C.T.			4.29	350.71	Louisiana Adams
T.P.	8.93	355.03	5.27	346.10	
B.M. S.E. Con	5.34	351.37		346.03	Madison Texas

Lt. Adams Rt.

5.06 06 | 5.73 97 | 4.71 13 | 4.64 R | 4.63 R | 4.63 | 4.57 R | 4.47 R | 4.60 13 | 5.49 97 | 4.89 06

5.50 97 drive | 4.57 13 | 4.53 R | 4.57 R | 4.53 | 4.49 R | 4.50 R | 4.56 13 | 5.45 97 | 4.69 06

4.67 06 | 5.30 97 | 4.57 13 | 4.43 R | 4.43 R | 4.43 | 4.40 R | 4.45 R | 4.47 13 | 5.34 97 | 4.60 06

4.67 06 | 5.71 97 | 4.40 13 | 4.35 R | 4.34 R | 4.34 | 4.30 R | 4.34 R | 4.41 13 | 5.16 97 | 4.57 06

4.41 06 | 5.07 97 | 4.20 13 | 4.19 rail | 4.18 rail | 4.19 | 4.17 rail | 4.19 rail | 4.29 13 | 4.92 97 | 4.50 06

HI 355.03

deck Levels

1+75

T.P. 9.23 359.38 4.88 350.15

1+63.6 W. end Bridge 32.63 34.43 34.63
22.6 20.6 20.4
45 40 26

1+44

1+00 11.2 4.70 7.1 6.8
4.2 N.C. N.C. 30
343.8 ground Top ground ground
50.2

1+29.6 angle cf

1+20

355.03

Lt ℄ Rt

9.40 9.09 9.04 9.01 9.18
18.27 11.6 11.6 18.27

359.38

48.87 49.55 50.91 50.76 (HI 355.03)
6.16 5.48 5.12 4.27 4.93 4.85 4.76 4.80 50.83 49.63 41.13 43.0
Δ Top 18.27 12.7 11.6 11.6 350.18 11.6 11.6 4.92 5.40 13.9 17.0
hdwall Stw. Top 8" 50.10 50.27 Top 18.27 Stw. @ hdwk 20 50
Gr. Rail 8" Gr. Rail

5.20 5.8 6.0 4.89 7.4 8.9
28.7 29 40 40 4.2 5.2
St. ground Top
Stm. hdwk

5.49 5.33 5.79 5.18 5.07 5.04 4.98 5.00 4.97 4.88 5.28 5.07
29.2 20 20 13 R R 50.05 R R 13 20 20
N.C. CB 97 97 20
Stm

5.51 7.06 5.91 4.97 4.92 4.91 4.90 4.88 4.87 4.79 5.90 7.36 5.24 5.2
CB St. 97 13 R R 50.13 R R 13 97 St. 12" CB 5.1
12" Pipe Pipe

5.50 6.01 4.80 4.82 4.80 4.80 4.78 4.77 4.71 5.92 5.15
CB 97 13 R R 50.23 R R 13 97 CB

355.03

3+25

3+00

2+75

2+61.3

2+60.4

2+50

2+25

2+00

359.38

Lt		℄		Rt.
8.30	8.21	8.21	8.18	8.34
18.27	11.6		11.6	18.27

59.38

8.51	8.44	8.44	8.40	8.48
18.27	11.6		11.6	18.27

8.62	8.55	8.57	8.60	8.59
18.27	11.6		11.6	18.27

T-alley Pole
13

Trollex Pole
12.9

8.71	8.67	8.56	8.62	8.83
18.27	11.6		11.6	18.27

8.79	8.64	8.63	8.67	8.93
18.27	11.6		11.6	18.27

8.96	8.83	8.82	8.83	8.98
18.27	11.6		11.6	18.27

359.38

4+50

4+25

4+00

3+75

3+60.4

3+59

3+50

359.38

Lt ℄ Rt

359.38

Lt		℄	Rt	
6.03 / 18.7	5.90 / 11.6	5.88	5.89 / 11.6	5.99 / 18.7
6.88 / 18.7	6.75 / 11.6	6.74	6.72 / 11.6	6.81 / 18.7
7.52 / 18.7	7.38 / 11.6	7.37	7.32 / 11.6	7.40 / 18.7
7.94 / 18.7	7.76 / 11.6	7.74	7.67 / 11.6	7.80 / 18.7
Trolley Pole / 13.3				
			Trolley Pole / 13.1	
8.12 / 18.7	7.98 / 11.6	7.99	7.95 / 11.6	8.15 / 18.7

359.38

Lt ℄ Roads Rt

U + 99.0 C

U + 85.5

U + 80.5

U + 69.53

U + 59.3 E. end Bridge

U + 59.3 E. end Bridge

359.38

359.38

359.38

U + 61.3
F.L. Box Inlet. R.R.
18" Corr. I.P.
Bet. Tracks
7.78
EL. 351.6

3.1 / 40 ground

3.3 / 40 ground

OUT

Top Bulkhd

Walk

Top end Conc. CB

Ground

C+81.01 = W.L. Arizona

C+50

C+25

C+00

5+75

T.P. 12.34 370.85 0.87 358.51

5+50

5+25

359.38

LT & Adams RT

4.87 C6 | 5.45 9T | 4.77 13 | 4.68 | 4.64 13 | 5.03 9T | 4.44 C6

drive C6 | 7.05 9T | 6.47 13 | 6.25 | 6.33 13 | 6.89 9T | 6.31 C6

drive C6 | 8.30 9T | 7.68 13 | 7.55 | 7.70 13 | 8.39 9T | 7.87 C6

C6 in drive | 9.73 9T | 9.16 13 | 9.05 | 9.16 13 | 9.89 9T | 9.28 C6

10.57 2C C6 | 11.20 2C 9T | 10.65 13 | 10.54 | 10.69 13 | 11.32 9T 2C | 10.74 2C C6

370.85

1.10 2C 9T in drive | 0.54 13 | 0.51 | 0.63 13 | 1.37 9T | 0.76 2C C6

2.60 2C 9T in drive | 2.05 13 | 1.96 | 2.07 13 | 2.80 2C 9T in drive

359.38

check elv to BM. on Adams.

370.85 ft Fwd.

T.P.	12.92	383.54	0.23	370.62	
T.P.	6.77	387.93	1.88	381.16	
SWBP Adams & Oregon			3.85	384.08	383.95 / 0.13
T.P.	6.48	387.19	7.22	380.71	
T.P.	2.43	382.81	6.81	380.38	
SEBP Madison & Hamilton			3.76	379.05	378.99 / 0.06
T.P.	0.29	371.63	11.47	371.34	
T.P.	0.13	358.70	13.06	358.57	
check to Starting BM.			12.66	346.04	346.03

D.K.

Levels under ^ Adams Bridge.

Baseline 19' N. of S.L. Adams Ave.

Note 1st dim. of Piers = E of W

2nd " " " = N + S

P.U.C. S.E. 7' C.T.	1.17	351.86		350.74	Louisiana Adams
T.P.	0.39	340.03	12.22	339.64	

1+66.3

B.L. = Baseline

15 S	+1.x	
20 S	+3.4	
35 S	+2.7	
12 N	+4.0	
21 N	3.1	
28 N	5.0	335.03
32 N	6.7	33.33
37 N	6.8	33.23
44 N	7.2	32.83
54 N	6.2	33.83
61 N	6.0	34.03
80 N	7.1	32.93
	10.6	29.43

1+68.3 = abandoned Piers

9 N ℄ Top 2x2 Pier		1.94
18.5 N " " 2x2 "		3.48
25.6 N " 1.9x2 "		4.70
34.6 N " 2x2 "		6.80

340.03

1+81

B.L.	6.1
7 S	3.6
15 S	0.2
19 S	0.0
35 S	+2.0
6 N	7.8
7.5 N ℄ 2.3x2.3 Pier	7.22
15 N	10.1
17.9 N ℄ 2.7x2.3 "	9.55
21 N	11.2 28.63
25.3 N ℄ 2.2 x2.5 "	11.56
27 N	12.0
33 N	12.8
35.7 N ℄ 2.5x2.5 "	12.20
37 N	13.0
47 N	12.5
61 N	15.5
76 N	19.0
90 N	20.2

1+99.8

B.L.	9.1
6 S	6.8
10 S	3.4

340.03

	1+99.8			
19 S			1.7	
29 S			0.0	
40 S			+0.7	
5 N			11.3	
6.9 N	℄ 2.5 x 2.5	Pier	11.06	
T.P.	2.90	330.10	12.83	327.20
8' N			3.5	
15' N			7.0	
17.6 N	℄ 2.5 x 2.5	Pier	6.12	
21 N			8.2	
23 N			9.0	
24.9 N	℄ 2.2 x 2.2	Pier	8.74	
27 N			10.2	
35 N			12.2	
36.9 N	℄ 2.5 x 2.5	Pier	11.79	
39 N			13.0	
45 N			12.2	
61 N			14.8	
70 N			18.5	
90 N			19.6	
	2+20			
B.L.			2.7	

330.10

10 S			+2.3	
19 S			+4.6	
40 S			+8.9	
5 N			5.7	
6.5 N	℄ 2.5 x 2.5	Pier	5.06	
9 N			7.0	
15 N			10.3	
17.5 N	℄ 3.6 x 3.7	Pier	10.06	
21 N			11.5	
23 N			13.1	
25 N	℄ 3.5 x 3.9	Pier	13.04	
27 N			14.5	
T.P.	3.82	320.92	12.98	317.12
32 N			6.7	
36 N			10.7	
38.2 N	2.5 x 2.5	Pier	10.50	
40 N			11.5	
50 N			13.5	
61 N			18.6	
75 N			21.1	
90 N			22.4	
	N+30			
B.L.			+2.8	

320.94

2+30

10 S		+8.0
19 S		+9.9
40 S		+16.5
7 N		0.0
13 N		1.4
21 N		4.5
26 N		6.2
30 N		11.8
38 N		12.2
61 N		24.1
72 N		25.9
85 N		27.1
97 N		32.6

2+40 Beg. of Bridge Span

B.L.		1.4
10 S		+1.8
19 S		+4.2
25 S		+3.2
34 S		+7.6
37 S		+9.2
45 S		+11.5
6' N		3.7
10.4 N	E. 5.2 x 7 Top Pier	1.65

E. side 0.18 to 1' Batter W. side same as E

N " 0.2 to 1' " S " " " N

319.44

320.94

55

2+40

16' N		7.0
21 N		7.5
24 N		8.2
27 N	ground	15.1
32.6 N &	4.2 x 4.9 Top Pier	1.69

W side 0.27 to 1 Batter S. Side 0.12 to 1 Bat.

N " 0.12 to 1 " E " 0.22 to 1 "

T.P. 2.98 313.47 10.45 310.49

38' N	ground	16.0
57 N		19.9
58 N	in Conductors	21.2
61.5 N	" " "	21.4
62 N		20.4
71 N		21.6
96 N		25.5

2+48

B.L.		+1.5
15 S		+0.2
16 S		+4.2
20 S		+5.1
29 S		+8.8
38 S		+10.1

314.97

	2+48	
44 S		+15.1
10 N		1.1
21 N		7.7
25 N		14.1
37.5 N	ground NECor Base of Pier	17.8
39 N	in Con. ditch	19.1
42 N	" " "	19.4
45 N	"	18.6
50 N		20.5
61 N		21.2
100 N	on Pav.	25.9
	2+56	
B.L.		5.6
9 S		1.8
12 S	approx F.L. outlet drain	4.1
15 S		4.0
20 S		3.7
25 S		+2.1
45 S		+4.2
53.5 S		+10.7
16 N		14.7
17 N	in Con ditch	15.8
20 N	" " "	16.2
21 N		15.5
31 N		17.3

309.37

50 N			19.6	
100 N	on Pav.		25.9	
T.P.	0.87	301.38	12.96	300.51
Check to B.M. B.P. NE Cor Base of Pier 32.6 N of 2+40			4.97	296.41 296.44
	2+62			
B.L.	in ditch		1.6	
3 S			0.1	
16 S			+4.3	
19 S			+3.7	
24 S			+9.8	
47 S			+13.6	
50 S			+17.9	
3 N	in ditch		1.8	
4 N			0.9	
14 N			3.1	
21 N			3.8	
61 N			9.1	
80 N	Top grade		11.6	(289.78) Edge Rd
"	F.L. Bot. Box		15.6	301.38 (285.78)
87 N			12.0	
100 N = E. edge Shoulder			13.4	
	2+34			
72 N	Bot. F.L. Box		12.5	288.9

End 12" drain
" Con. ditch
Beg. 18" Con. Pipe across Rd.

2+67.4 W edge oil pav

B.L.	W edge Pav	1.3
19 S		0.0
29 S		+5.7
42 S		+9.8
49 S		+12.0
52 S		+15.7
21 N		3.8
61 N	E edge oil Pav	9.1
70 N	Shoulder	9.6
77 N	"	10.6
100 N		16.0

2+77.6

B.L.	Ctr. oil Pav.	1.3
25 S		+1.4
30 S		+2.0
35 S		+1.5
50 S	Toe Cut	+3.5
21 N		3.9
31 N	E edge oil	5.2
41 N		6.0
61 N	Shoulder	8.2
85 N	and 18" I. Pipe	18.4
100 N		21.0

2+95

B.L.	edge Shoulder	0.9
17 S	E edge oil Pav	+0.7
40 S		+3.4
21 N		7.9
61 N		19.4
74 N		23.9
84 N		29.4
88 N	Pot hole →	30.5
93 N	opposite end drain →	37.0
96 N	Bot. Canon	31.4
100 N	" "	32.2

3+0.8

B.L.		8.5
19 S		2.6
40 S	Shoulder	+3.8
54 S	edge oil	+5.0
21 N		17.0
46 N		27.6
61 N		26.7
75 N		31.1
85 N		33.8
100 N	Bot Main Wash	38.7

T.P. 0+7 2+99.1 2.64 29.87

29901

3+16

B.L.		11.2
19 S		5.6
53 S	E. Shoulder Rd	+7.7
21 N		17.5
35 N		21.1
50 N		23.7
61 N		24.4
64 N	Bot. Wash	26.4
69 N	" "	26.6
74 N		23.7
90 N		24.1
100 N		26.0

3+28

B.L.	Bot. Wash	15.5
19 S		11.4
55 S		0.0
21 N		17.4
36 N		18.1
41 N		21.1
50 N		21.7
61 N		20.5
63 N		20.9
66 N		16.8
80 N		17.4

100 N		21.1

3+50

B.L.		12.2
19 S		9.2
37 S		7.7
54 S		0.0
7 N		13.0
10 N		11.5
21 N		13.2
26 N		11.4
31 N		11.4
41 N		14.6
61 N		17.3
72 N		8.5
85 N		10.2
100 N		12.2

3+66

B.L.		7.0
3 S		4.6
13 S		4.5
16 S		4.5
21 S		4.6
27 S		3.4
38 S		0.5
52 S		+5.0

299.01

3+CC

5 N	7.0
8 N	4.2
21 N	4.6
30 N	5.1
36 N	7.1
47 N	7.C
51 N	4.0
53 N	7.9
61 N	7.4
CH N	7.5
73 N	+2.9
88 N	+0.9
100 N	1.3

T.P. 12.93 311.46 0.48 298.53

3+80 End of Bridge Span

B.L.	13.1
3 S	10.C
10 S	9.8
15 S	15.2
19 S	15.2
24 S	7.7
40 S	7.0
4 N	13.1

311.46

9.4 N @ 4.9 x C Top Pier	+8.4C
14 N ground	9.C
21 N "	9.C
28 N "	9.9
32.4 N @ 4.2 x 5 Top Pier	+8.40
37 N ground	9.1
40 N	10.8
50 N	9.5
61 N	9.8
CC N	C.C
73 N	0.8
90 N	0.0

3+85

B.L.	11.1
3 S	9.8
10 S	8.0
15 S	13.8
19 S	13.8
24 S	C.0
40 S	5.0
C N	8.8
13.5 N	5.2
21 N	5.5
28 N	5.C
37 N	6.5

Batter
N. Side 0.13 to 1
E " 0.2 to 1
S " 0.08 to 1
W " 0.16 to 1

59

Batter
N. Side 0.1 to 1
E " 0.21 to 1
S " 0.1 to 1
W " 0.22 to 1

These Piers have been undermined by storm water and have been reinforced not too good.

311.4C

3785

50 N		6.4
61 N		6.1
66 N		4.6
73 N		+2.2
90 N		+2.4
T.P.	8.45	319.87	0.04	311.42

4+00

B.L.		9.2
4 S		8.4
14 S		12.5
19 S		15.0
23 S		15.1
30 S		5.0
40 S		3.2
2 N		9.2
3.9 N	2.5 x 2.5 Pier	7.7x
5 N		8.7
16 N		8.9
17.9 N	2.3 x 3.6 Pier	5.51
21 N		7.7
23.9 N	2.2 x 3.7 "	4.60
26 N		7.8
35 N		8.7

319.87

37.7 N	4.5 x 4.6 Pier	4.60
41 N		7.7
54 N		6.8
61 N		5.5
68 N		+1.5
85 N		+4.0

4+10

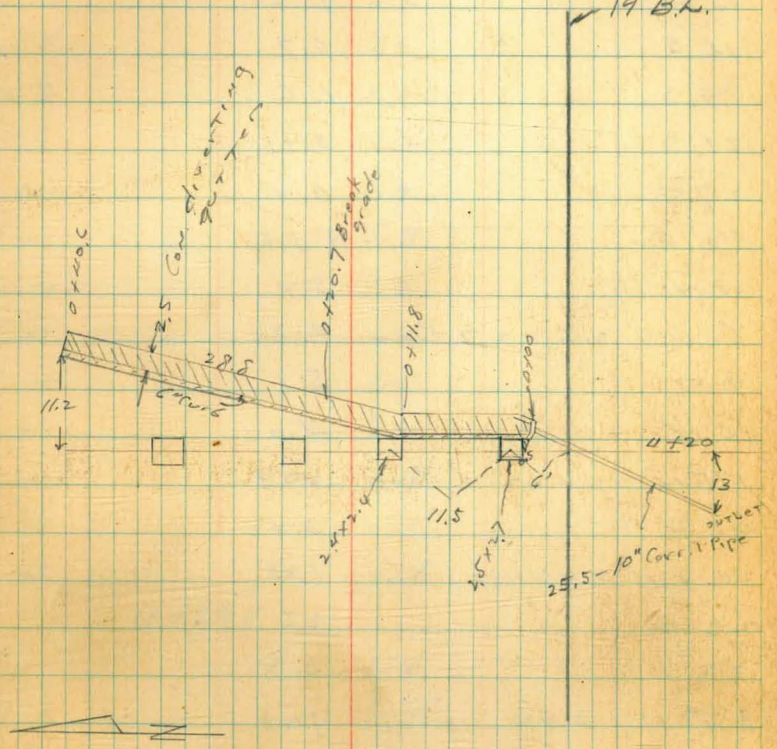
B.L.		3.9
6 S		1.0
14 S		3.1
15 S		16.7
20 S		16.8
27 S		2.6
35 S		+3.0
45 S		+4.8
5 N		2.0
8 N		3.4
21 N		4.0
37 N		2.3
50 N		+0.9
61 N		+2.0
68 N		+6.8
85 N		+9.6
T.P.	9.07	328.79	0.65	319.22

4+20 P.C.

2.5 Con. gutter

H.L. from P. Cor
337.41

F.L. outlet 10" Corr. I.P.	27.1
0+00	
Top Co. Curb	13.07
Gutter, F.L. inlet 10"	14.51
0+04	
Top C6	13.01
gutter	14.01
0+11.8	
Top C6	11.58
gut.	12.48
0+20.7	
Top C6	8.78
gut	9.60
0+40.6	
Top C6	4.29
gut	5.33



328.29

	4+20			
B.L.			4.6	
9 S			3.8	
15 S			2.5	
16 S			6.7	
19 S			6.6	
21 S			3.1	
27 S			0.4	
40 S			+1.5	
3 N			5.2	
6 N	2.5 x 2.7	Pier	4.30	
9 N			5.1	
16 N			4.0	
17.5 N	2.4 x 2.4	Pier	2.79	
21 N			3.4	
24.8 N	2.4 x 2.4	"	1.28	
26 N			2.6	
33 N			3.2	
35.7 N	3 x 4	Pier	1.21	
39 N			3.2	
54 N			0.7	
61 N			0.6	
70 N			+3.9	
85 N			+4.8	
T.P.	10.31	337.41	1.19	327.10

337.41

4+32

B.L.	6.3
15 S	4.8
16 S	5.6
21 S	7.1
33 S	3.1
35 S	2.2
5 N	6.9
21 N	5.9
26 N	7.3
36 N	6.4
45 N	5.6
51 N	3.2
61 N	2.7
68 N	0.0
80 N	+1.8

4+39.5

B.L.	1.4
7 S	1.2
13 S	1.3
14 S	5.5
19 S	5.8
20 S	+1.0
35 S	+0.6
5 N	2.9

337.41

7.2 N	2.9 x 2.9 Pier	2.27	
9 N		2.7	
16 N		2.5	
17.2 N	2.2 x 2.1 Pier	1.17	
19 N		2.1	
21 N		2.2	
23 N		2.4	
24.5 N	2.2 x 2.2 Pier	0.87	
26 N		2.4	
31 N		1.9	
34.1 N	2.3 x 2.3 Pier	0.00	
36 N		1.0	
43 N		1.0	
46 N		+1.8	
61 N		+2.2	
67 N		+4.5	
80 N		+6.1	
T.P.	11.41	347.98	0.84	336.57

4 (3) +49

B.L.		6.5	
8 S		7.6	
13 S		9.4	
22 S		7.1	

347.98

63

26 S		4.9
30 S		4.6
8 N		8.3
18 N		8.7
21 N		7.7
37 N		7.0
46 N		4.1
56 N		3.6
61 N		1.3
75 N		+1.7

4+5C ground

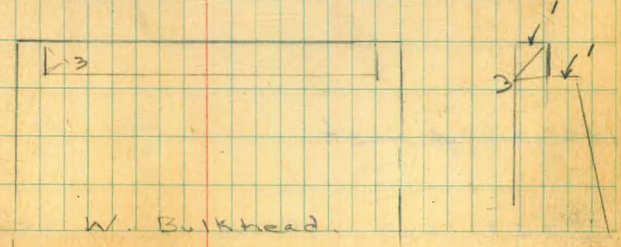
B.L.		1.8
9 S		2.1
16 S		2.6
23 S		0.3
30 S		0.4
6 N		4.8
13 N		5.1
21 N		3.9
24 N		5.8
27 N		4.1
35 N		3.2
40 N		2.3
45 N		0.9
50 N		+1.2

347.98

61 N		+4.2		
75 N		+7.0		
	4+58 = W. edge Piers at Top			
2.3 N	E Pier Top	+2.31		1x2
" "	" " Base	1.62		
9.7 N	E Pier Top	+2.37		1x3
" "	" Base	1.60		
17.1 N	E Pier Top	+2.34		1x3
" "	" " Base	1.44		
24.4 N	E Pier Top	+2.33		1x3
" "	" Base	1.48		
31.9 N	E Pier Top	+2.35		1x3
" "	" " Base	1.51		
39.5 N	E Pier Top	+2.43		1x2.5
" "	" " Base	1.54		
F.L. outlet of 24" Pipe on S		5.1		
F.L. " RR drain on S		+0.40		
T.P.	12.34	3 Courses	0.09	347.89
check to Top end c6 on S		5.64		354.59 ✓
4T 4+59.3 P. 50				
		354.59		

Piers are part of Bulkhead

E. Bulkhead.
This has been undermined also.
NOT good, only plaster



W. Bulkhead.

ESm
1-23-45 Add'l Levels, Texas St. Bridge

Station	+	H.I.	−	Elev.				
4+67								
4+60								3.2/55
T.P.	7.27	359.46	2.04	352.19				
1+60							20.4/65	20.4/55
1+50	Wing wall on Lt. is undermined				16.0/65	15.3/51	13.7/44	14.3/40
1+40								12.3/55
1+29.6	Δ in eb.							
S.E. 7'C.T.	3.49	354.23		350.74	Louisiana Adams			

Lt. ℄ Adams Rt.

Station	Lt.	℄ Adams	Rt.
4+67	2.0/55, 3.6/40, 5.2/35, 4.7/30, 5.11/27 edge walk		5.04/22.5 edge walk, 6.1/23, 6.0/29, 7.1/35, 6.1/40, 7.9/50, 8.9/55
4+60	5.4/40, 7.6/32, 10.8/20.5, 6.01/19.6 Top wing, 5.68/18.2 walk		5.61/18.4 walk, 7.9/19, 10.4/23, 10.1/28, 12.7/35, 11.5/40, 11.8/55
T.P.		359.46	
1+60	20.0/40, 20.7/37, 17.9/34, 17.8/26, 5.13/25 Top wall		4.44/32 Top wall, 9.9/23, 8.8/35, 9.3/40, 10.6/46, 10.3/55, 9.3/70
1+50	14.3/38, 4.26/37 Top wall, 6.2/36, 5.6/27, 4.61/26 walk		4.18/35 top wall, 6.3/36, 7.0/40, 9.2/46, 8.7/55, 8.6/70
1+40	10.8/50, 7.4/44, 6.7/40, 5.7/33, 4.78/32 walk edge		5.2/40, 8.0/50, 7.9/55, 8.0/70
1+29.6	5.4/55, 4.8/40		4.4/40, 6.8/55, 7.7/70
S.E. 7'C.T.		354.23	

Levels, Texas St Bridge

check to Top Curb p.64	4.87	354.59	354.59
4 + 75			
		359.46	

Lt. & Adams Pt.

66

2.0 / 55	3.7 / 40	3.7 / 37	4.46 / 24.7 edge walk	4.55 / 27.1	4.7 / 27.2	3.4 / 40	2.7 / 55

359.46

Proposed Road Pueblo Lots 190 - 191
Catalina Blvd. to Canon St.

Levels next Page

Topog. Page 43

8+12.32 - W.L. Canon St.

7+25 P.O.T.

3+88.97 E.C. 5°56.81'

+50 4°04.67' Δ 11°52'37"
R 600
T 62.41
L 124.38

3+0 1°41'49"

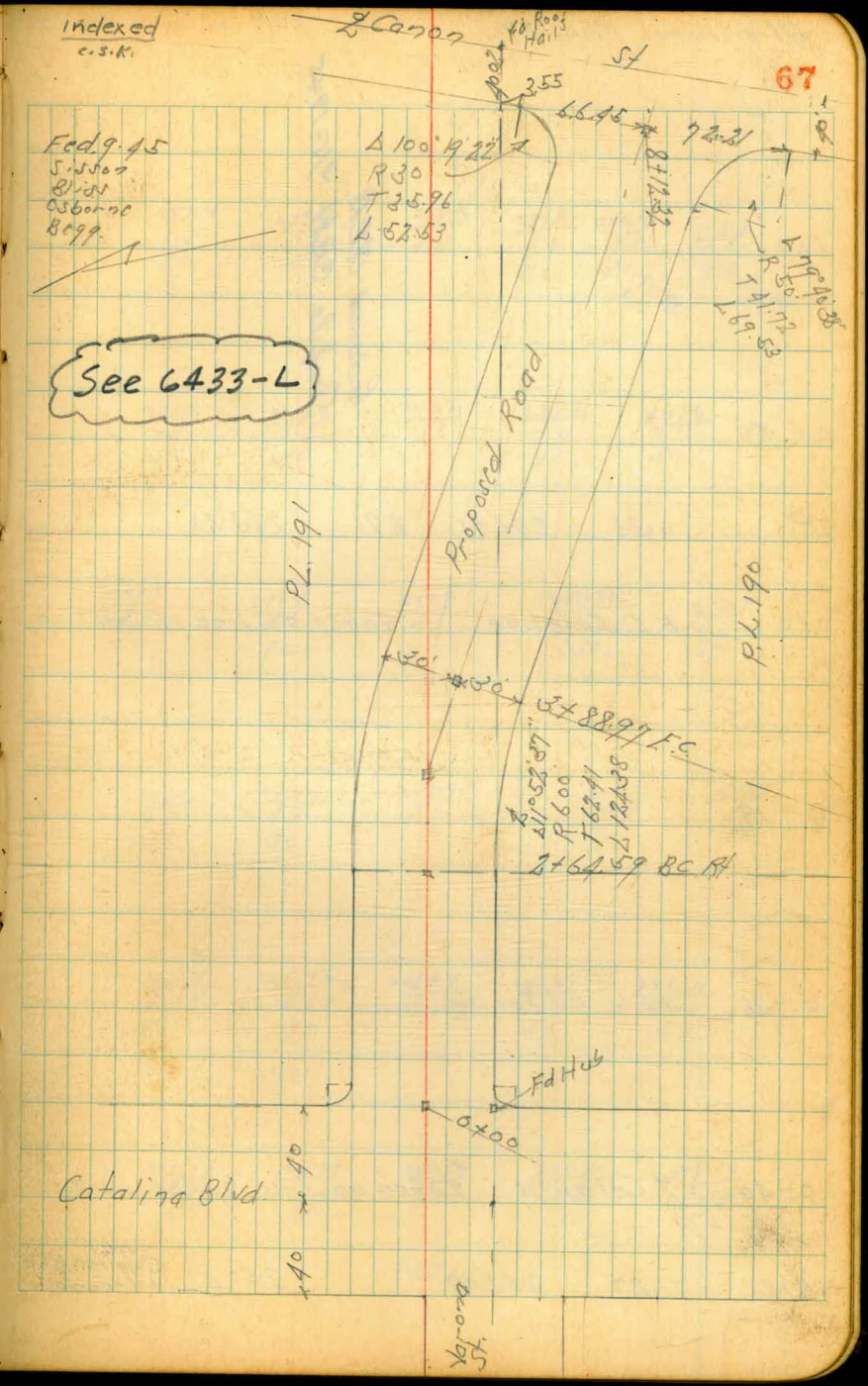
2+64.59 B.C. Rt.

2+0 P.O.T.

0+0

Indexed
C.S.K.

67



Alignment Page 67

Reduced AER. Profile COK 3/4-1945

1+0				
0+50				
TP	0.33	243.71	8.71	243.38
0+0	= E.L. Catalina		Taken on line of Catalina	
0-19			" " " "	
0-26	= Fly oil Paving		" " "	
0-40	= ℄ Catalina		Taken on line of Catalina	
BM	1.27	252.09	250.82	S.W.&P. Catalina Blvd & Verona

Lt. ℄ Rt. 68

237.4 / 6.3 / 50	238.4 / 5.3 / 30	239.3 / 4.4	239.8 / 3.9 / 20	240.2 / 3.5 / 30 = Toe Rt. Fill	243.2 / 0.0 / 43 = Toe Rt. Fill
242.8 / 1.4 / 50	242.2 / 1.5 / 30	242.6 / 1.1	242.3 / 0.4 / 30	242.6 / 0.1 / 50	
247.6 / 4.5 / 50	247.4 / 4.7 / 30	247.9 / 4.2	247.745 / 4.34 / 30 = 746	247.9 / 4.2 / 50	
247.6 / 5.1 / 50	247.4 / 4.7 / 30	248.9 / 3.2		249.9 / 2.2 / 30	248.1 / 2.2 / 50
245.01 / 7.08 / 50	245.42 / 6.67 / 30	246.44 / 5.65	247.44 / 4.65 / 30	248.11 / 3.98 / 50	
246.17 / 5.91 / 50	246.24 / 5.35 / 30	247.59 / 4.50	248.73 / 3.36 / 30 = M.H.	249.14 / 2.95 / 50	
		252.09			

TP	1.00	212.44	11.68	211.44	
3+50					
3+0					
TP	0.92	223.12	12.12	222.20	
2+64.59	BC Rt				
2+40					
TP	1.15	234.32	10.54	233.17	03 Hub 3+0 Rt
2+0					
1+50					
		243.71			

Lt. 2 Rt

212.8 / 10.3 / 50 — 213.5 / 9.6 / 30 — 213.4 / 9.7 — 210.9 / 12.2 / 30 — 209.4 / 13.7 / 50

217.5 / 5.6 / 50 — 218.2 / 4.9 / 30 — 218.6 / 4.1 — 218.8 / 4.3 / 30 — 218.0 / 4.1 / 50

222.1 / 12.8 / 50 — 221.7 / 13.2 / 30 — 222.9 / 12.0 on Hub — 221.5 / 12.8 / 30 — 220.6 / 13.7 / 50

224.7 / 9.6 / 50 — 225.5 / 8.8 / 30 — 226.6 / 7.7 — 226.8 / 7.5 / 30 — 224.3 / 10.0 / 50

234.32

230.7 / 13.0 / 50 — 232.4 / 11.3 / 30 — 233.1 / 10.6 — 233.6 / 10.1 / 30 — 224.0 / 9.7 / 50

233.1 / 10.1 / 50 — 235.1 / 8.6 / 30 — 236.2 / 7.5 — 237.3 / 6.4 / 28 Top Rw. — 239.1 / 4.6 / 30 — 243.7 / 0.0 / 43

243.71

TP	4.63	193.05	12.72	188.42
5+40				
5+40				
4+80				
TP	1.53	201.14	12.83	199.61
4+50				
4+15				
2+88.97	EC.			

21241

Lt. 2 RF

192.6	191.8	189.5	187.6	190.2	194.3	197.6
8.5	9.3	11.6	13.5	10.9	6.8	3.5
65	50	30		30	50	65

197.1	195.2	193.2	193.1	195.3	199.5
4.1	5.9	7.9	8.0	5.8	1.6
50	30		30	50	65

199.0	197.5	195.1	194.7	195.6
3.1	4.6	6.0	6.4	5.5
60	30		30	50

201.14

201.1	199.6	197.5	198.2	199.7
11.3	12.8	14.9	14.2	12.7
50	30		30	50

203.6	202.9	202.1	201.4	203.0
9.8	9.7	10.3	11.0	9.4
50	30		30	50

207.8	207.6	206.56	204.8	206.1
4.6	4.8	5.28	7.6	6.3
50	30		30	50

212.44

7+25	P.O.T.			
7+0				
6+80				
6+40				
TP	4.65	184.79	12.91	180.14
6+0				
5+75				

19305

Lt. 8 Rt. 71

168.4 / 16.4 / 60	175.7 / 9.1 / 45	176.9 / 7.9 / 30	176.71 / 8.08 / 0 7/16	178.4 / 5.4 / 30	178.0 / 6.8 / 50	
163.6 / 21.7 / 65	165.2 / 16.6 / 50	172.8 / 12.0 / 40	174.9 / 9.9 / 30	178.7 / 6.1	180.7 / 4.1 / 30	182.5 / 2.3 / 50
164.6 / 20.9 / 65	166.2 / 18.6 / 50	171.1 / 13.7 / 30	174.3 / 10.5 / 20	177.4 / 7.4	180.5 / 4.6 / 15	181.6 / 3.2 / 30	184.0 / 0.8 / 50
1738 / 11.0 / 65	172.9 / 11.9 / 50	172.1 / 12.7 / 20	174.0 / 10.8 / 15	178.0 / 6.8	185.7 / +0.9 / 30	187.8 / +3.0 / 50	
			184.79			
1839 / 9.2 / 65	182.1 / 11.0 / 50	179.4 / 13.7 / 30	177.7 / 15.4 / 20	180.5 / 12.6	185.4 / 2.7 / 30	182.8 / 0.3 / 50	
1821 / 6.0 / 65	1868 / 6.3 / 50	184.8 / 8.6 / 30	183.9 / 9.2	188.7 / 3.1 / 30	185.0 / +1.9 / 50	187.1 / +4.0 / 65	

19305

BM			11.42	152.05	on E Nail PL Line of Canon 152.01 Page 43
8+52.85 = ℄ Parking on Canon St.					
8+12.32 = ML Canon			Taken on Line of Canon		
8+0					
TP	2.56	163.47	12.71	160.91	
7+75					
			2.42	171.20	on Hub 7+47.04 Topog. Page 43
TP	1.60	173.62	12.77	172.02	
7+50					

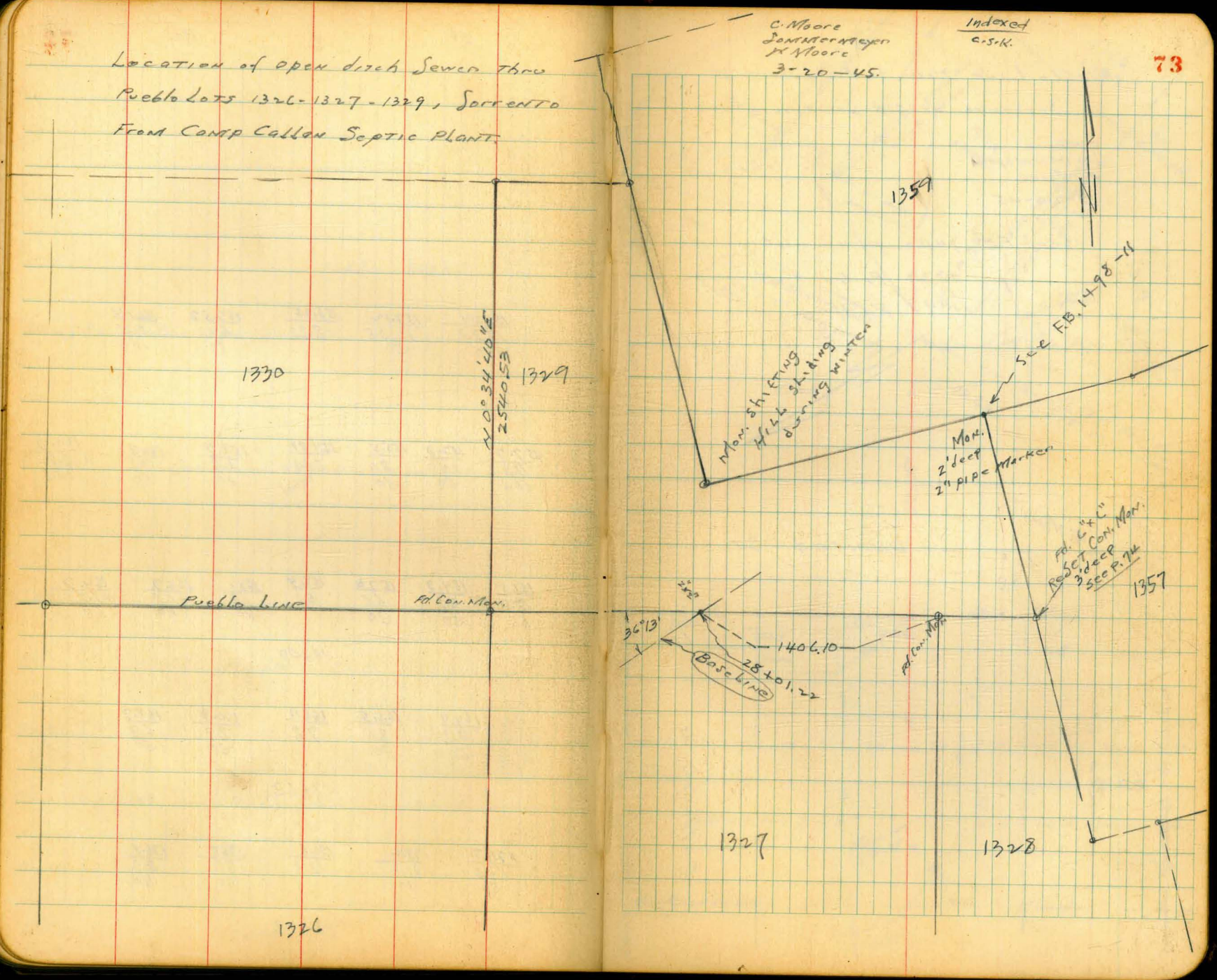
18479

Lt ℄ Rt. 72

151.24 12.23 100	153.12 10.35 50	155.25 8.22	157.52 5.90 50	160.14 3.31 100
157.7 11.8 66.4	152.2 10.8 50	155.5 8.0 30	154.84 8.63 on 46	158.7 4.8 20	160.3 3.2 50	160.7 4.8 7.42
151.5 12.0 65	154.3 9.2 50	157.0 6.5 30	158.4 5.1 16349	162.1 1.4 30	163.7 4.0.7 50	164.7 1.2 65
164.4 9.2 50	165.5 8.1 30	166.4 7.2 173.62	170.9 2.7 30	168.7 4.9 50		
171.3 1.35 50	173.0 11.8 30	172.6 12.2	176.5 8.0 30	176.4 8.7 50		

18479

Location of open ditch Sewer thru
Pueblo Lots 1326-1327-1329, Sorrento
From Comp Callon Septic Plant.

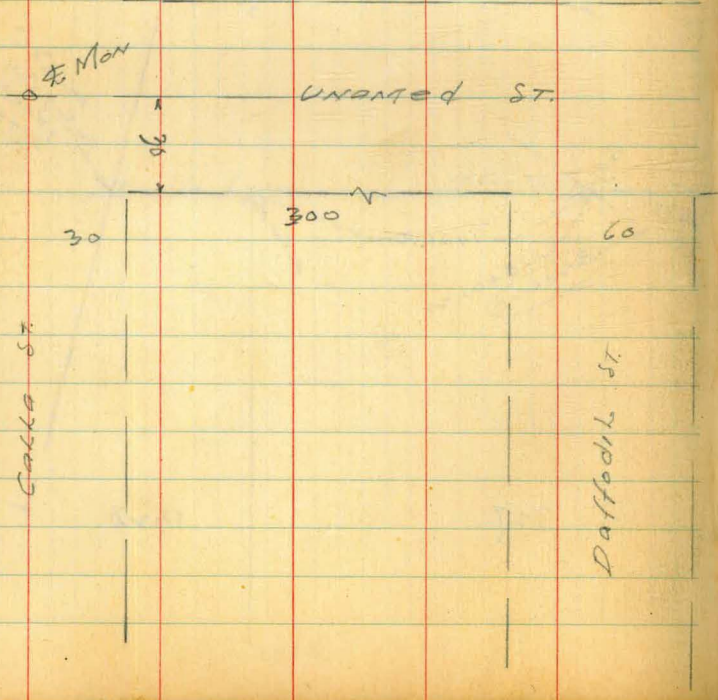


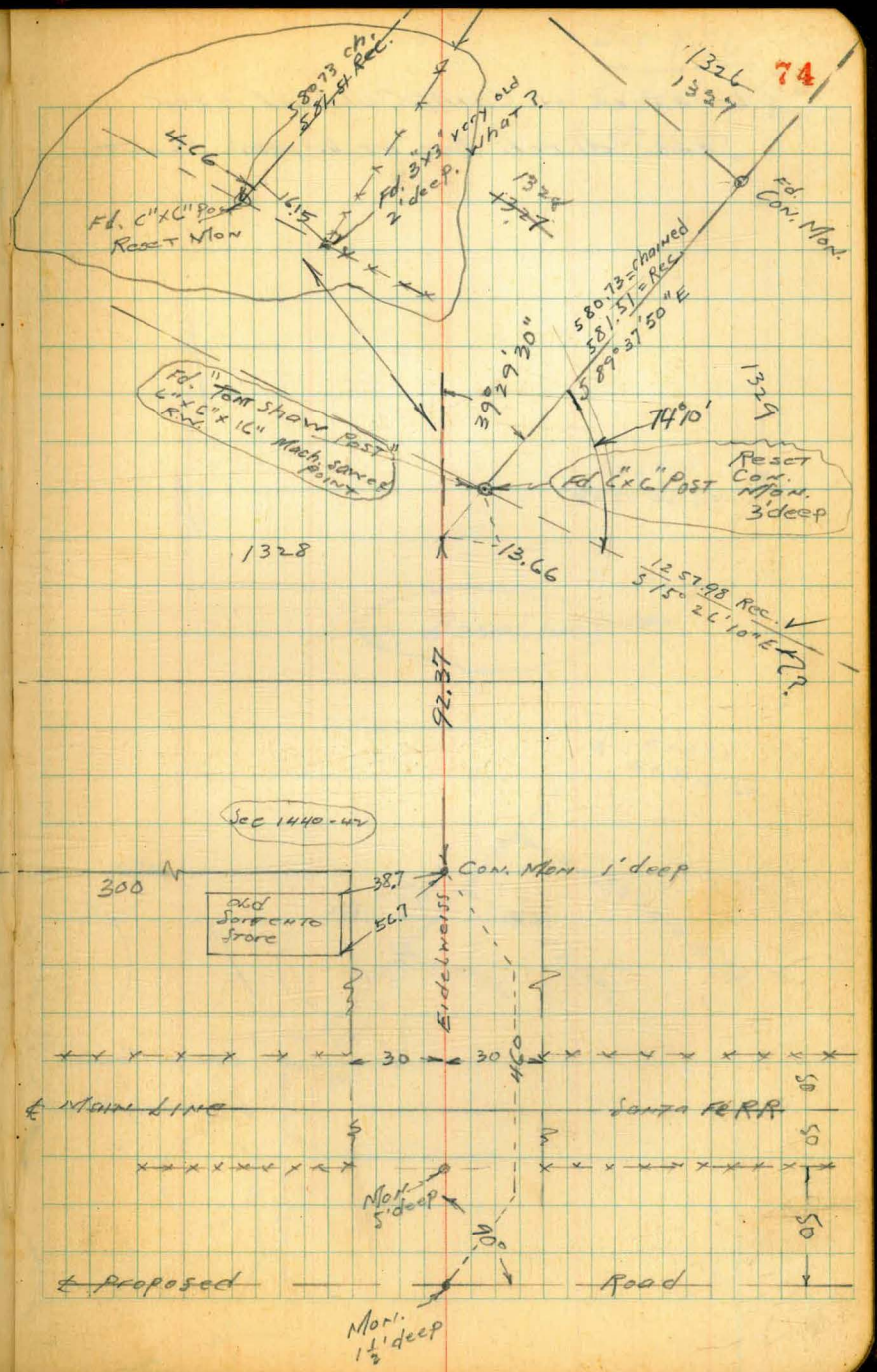
Pueblo Line Tie to Edelweiss St.

in Sorrento at Old Sorrento Store

C. Moore
Sommermeyer
W. Moore
3-20-45

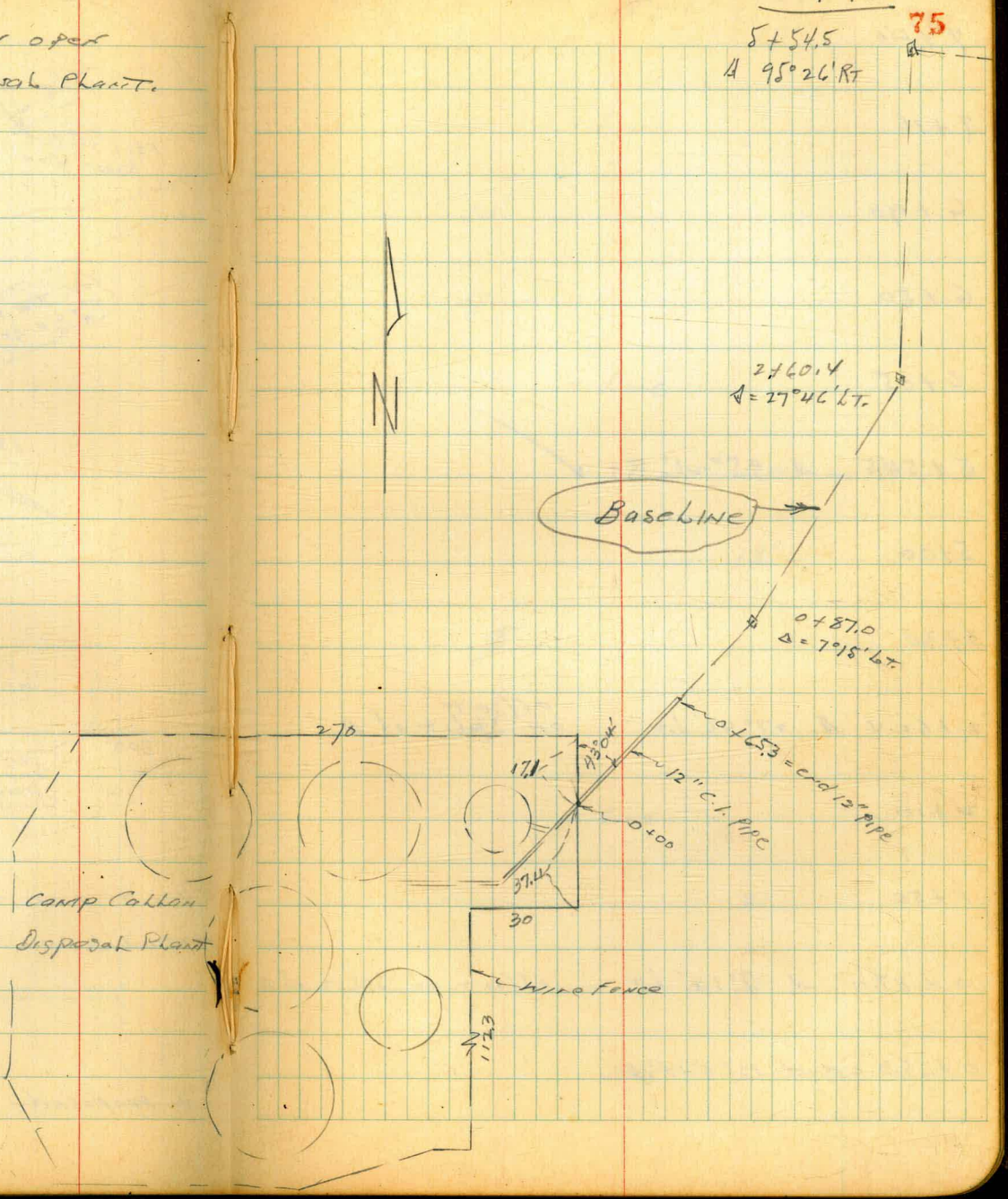
See F.B. 1440 p. 42 - 46
" " 1339 p. 64
" " 1498 p. 11





See P.76

Location of Camp Callan open Sewer ditch Beg. at Disposal Plant.



Location ditch

7+40

7+16

6+90

6+50

6+05

5+54.5 Δ 95° Lt Rt ✓

5+00

3+30

2+60.4 Δ 27°46' Lt offset on split of Δ

2+10

1+50

0+87.0 Δ 7°15' Lt. offset on split of Δ

0+65.3 = end 12" C.I. Pipe

Location of ditch Lt. Baseline Location Ditch Rt.

15'

Line

10'

17'

Line

40 on split Δ

18'

8'

31'

Line

21'

16'

Line

16+00

15+68.76 Δ 8°58' Lt

15+42

14+83

13+83

13+01.12 Δ 18°53' Lt

11+96

11+30

10+69

9+94.62 Δ 1°50' Lt.

8+95

8+60

7+96.4 Δ 12°32' Lt

Lt Baseline Rt

67

72 SPLIT

70

85

57

29 SPLIT

3

28

12

18 SPLIT

8

32

20' on SPLIT

Lt	Baseline	Rt
30+00		64
29+00		25
+70		
+50		
28+01.22 = Pueblo Line, Set 2x2 Hub		16
	Sketch P. 73	29
27		60
26		37
25		46
24+00		45
+80		36
22+08.65 = Δ 6°37' Lt.		75 Split
22		65
+65		80
+45		40
+15		60
21		56
+70		20
+45		20
20+20		30
+75		20
19		58
18+93.6 P.O.T.		
+60		56
18		55
+50		40
17		60

Lt.	Baseline	Rt.

50+80 Int. of Main Log Penasquitas Creek approx. 25' W. of W.L. R.R. ROW at S. end of R.R. Bridge

45+00 Δ 24°30 Lt. = Sour submerged land Bottom

44+77 End Creek = Fans out here and Submerges about 10 Acres

43+00 Stream 20' Rt only 3" deep

42+50 ditch here fans out to Marsh

+29 cross Meandering Stock Fence = NOT ON ANY LINE

41+ end Cult. Field 29 Rt.

41+33 Line

40	20
39	75
38	64

37+11 ℄ 12 road. 62 Lt 37+20 beg. Cult. Field

37 = Δ 12°12' Lt. 68 Stub

36+89.8 cross 4 wire fence

36	45
35	29
34	20

33+19.19 = Δ 29°37' Lt

33	28
32	18

31+08.55 = Δ 11°49' Rt

31+00	74

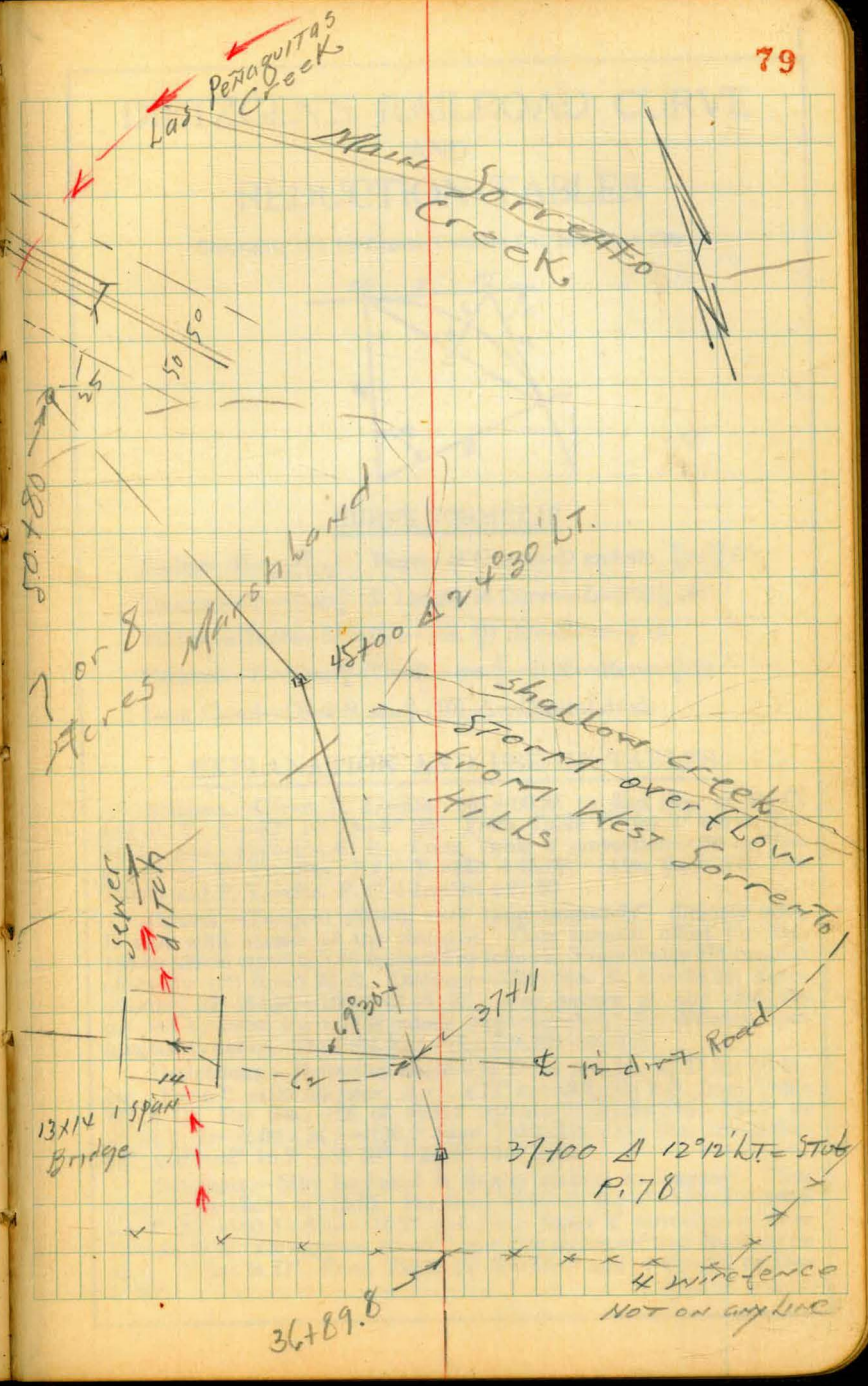
Camp Callan Sewer
Open ditch

0+87	6'	wide	4'	deep
5+00	12	"	8	"
9+00	16	"	10	"
15+00	25	"	20	"
20+00	30	"	24	"
28+00	25	"	18	"
33+00	10	"	5	"
37+00	6'	"	4	"
42+00	4	"	2	"

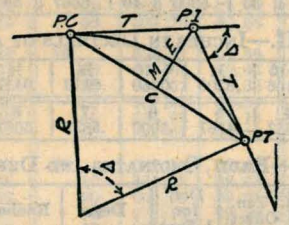
45+00 Fans out into Marsh

Beg. at 16+00 Good tillable soil on either side of Wash.

This Wash due Mostly to Storm water erosion in Past.



DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



CURVE FORMULAS

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

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

Middle ordinate=M=R(1—cos. $\frac{\triangle}{2}$) (5)=R vers $\frac{\triangle}{2}$ (6)

External=E=T tan $\frac{\triangle}{4}$ (7)=R ÷ cos. $\frac{\triangle}{2}$—R (8)=R exsec $\frac{\triangle}{2}$ (9)

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

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. $\triangle$=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157 +45.50. Also from (4) L=746.00 and P. T.=Sta. P. C.+L=164+91.50.

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

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′ +8° 20′ ÷2=6° 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° curve E=960.6 for 8° 20′=960.6 ÷8⅓=115.27 and from Table V correction=.10 or E=115.37 ft. Or suppose $\triangle$=32° 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° 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	397.26	494.53
16	.03	.06	.09	.11	.12	.12	.12	.09	.05	.33	7	199.63	298.51	396.28	492.57
18	.04	.08	.11	.14	.15	.16	.15	.12	.07	.41	8	199.51	298.05	395.14	490.31
20	.05	.10	.14	.17	.19	.20	.18	.15	.09	.51	9	199.38	297.54	393.86	487.75
22	.06	.12	.17	.21	.23	.24	.22	.18	.10	.62	10	199.24	296.96	392.42	484.90
24	.07	.14	.20	.25	.28	.28	.26	.21	.12	.74	12	198.90	295.63	389.12	478.34
26	.09	.17	.24	.29	.32	.33	.31	.25	.15	.86	14	198.51	294.06	385.22	470.65
28	.10	.19	.27	.34	.37	.38	.36	.29	.17	1.00	16	198.05	292.25	380.76	461.86
30	.11	.22	.31	.39	.43	.44	.41	.33	.19	1.15	18	197.54	290.21	375.74	452.02
32	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31	20	196.96	287.94	370.17	441.15
34	.15	.28	.40	.50	.55	.57	.53	.43	.25	1.48	22	196.32	285.44	364.06	429.30
36	.17	.32	.45	.56	.62	.64	.59	.48	.28	1.66	24	195.63	282.71	357.43	416.53
38	.18	.36	.51	.62	.70	.71	.66	.53	.31	1.86	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	388.43
42	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28	30	193.18	273.20	334.61	373.20
44	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50	32	192.25	269.61	326.08	357.28
46	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74	34	191.26	265.81	317.12	340.73
48	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99	36	190.21	261.80	307.77	323.61
50	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24	38	189.10	257.60	298.03	305.99
52	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52	40	187.94	253.21	287.94	287.94
54	.38	.73	1.04	1.28	1.42	1.46	1.35	1.09	.64	3.80	42	186.72	248.63	277.51	269.54
56	.41	.78	1.12	1.38	1.53	1.57	1.46	1.17	.69	4.09	44	185.44	243.87	266.78	250.85
58	.44	.84	1.20	1.48	1.65	1.69	1.57	1.26	.74	4.40	46	184.10	239.93	255.78	231.95
60	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72	48	182.71	233.83	244.51	212.92

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

Table VII.—Middle Ordinates for Rails in Feet.

Deg. of Curve	LENGTH OF RAILS							Deg. of Curve	LENGTH OF RAILS.						
	32	30	28	26	24	22	20		32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.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=slope distance—slope distance (1—Cos. V. A.). Thus for slope distance of 248.7 ft. and V. A. of 4° 20′ from Table VIII Cos=.99714 and correction=1—.99714=.00286 per foot or total of .286×2½ (near enough)=.57 and horizontal distance=248.7—.57=248.13 ft.

Trigonometrical Formulas.

See fig. (a).

sin. $A=\frac{a}{c}$

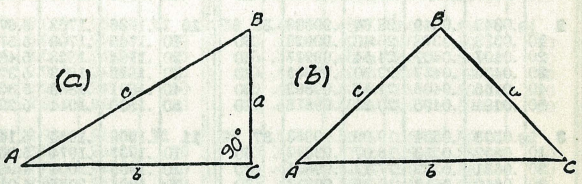
cos. $A=\frac{b}{c}$

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	$B=90°-A$, $b=a \cot. A$, $c=\frac{a}{\sin. A}$.
A, b	B, a, c	$B=90°-A$, $a=b \tan. A$, $c=\frac{b}{\cos. A}$.
A, c	B, a, b	$B=90°-A$, $a=c \sin. A$, $b=c \cos. A$
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	If $s=\frac{1}{2}(a+b+c)$, $\sin. \frac{1}{2}A=\sqrt{\frac{(s-b)(s-c)}{bc}}$, $\cos. \frac{1}{2}A=\sqrt{\frac{s(s-a)}{bc}}$, $\tan. \frac{1}{2}A=\sqrt{\frac{(s-b)(s-c)}{s(s-a)}}$, $\sin. A=\frac{2\sqrt{(s-a)(s-b)(s-c)s}}{bc}$
A, B, C, a	area	$\text{area}=\frac{a^2 \sin. B \sin. C}{2 \sin. A}$
A, b, c	area	$\text{area}=\frac{1}{2} b c \sin. A$
a, b, c	area	$s=\frac{1}{2}(a+b+c)$, $\text{area}=\sqrt{s(s-a)(s-b)(s-c)}$

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
°						°					
0	0	0	00	1	90	8	.1392	.1405	7.115	.99027	82
10	.0029	.0029	343.8	I	50	10	.1421	.1435	6.968	.98986	50
20	.0058	.0058	171.9	.99998	40	20	.1449	.1465	6.827	.98944	40
30	.0087	.0087	114.6	.99996	30	30	.1478	.1495	6.691	.98902	30
40	.0116	.0116	85.94	.99993	20	40	.1507	.1524	6.561	.98858	20
50	.0145	.0145	68.75	.99989	10	50	.1536	.1554	6.435	.98814	10
1	.0175	.0175	57.29	.99985	89	9	.1564	.1584	6.314	.98769	81
10	.0204	.0204	49.10	.99979	50	10	.1593	.1614	6.197	.98723	50
20	.0233	.0233	42.96	.99973	40	20	.1622	.1644	6.084	.98676	40
30	.0262	.0262	38.19	.99966	30	30	.1650	.1673	5.976	.98629	30
40	.0291	.0291	34.37	.99958	20	40	.1679	.1703	5.871	.98580	20
50	.0320	.0320	31.24	.99949	10	50	.1708	.1733	5.769	.98531	10
2	.0349	.0349	28.64	.99939	88	10	.1736	.1763	5.671	.98481	80
10	.0378	.0378	26.43	.99929	50	10	.1765	.1793	5.576	.98430	50
20	.0407	.0407	24.54	.99917	40	20	.1794	.1823	5.485	.98378	40
30	.0436	.0437	22.90	.99905	30	30	.1822	.1853	5.396	.98325	30
40	.0465	.0466	21.47	.99892	20	40	.1851	.1883	5.309	.98272	20
50	.0494	.0495	20.21	.99878	10	50	.1880	.1914	5.226	.98218	10
3	.0523	.0524	19.08	.99863	87	11	.1908	.1944	5.145	.98163	79
10	.0552	.0553	18.07	.99847	50	10	.1937	.1974	5.066	.98107	50
20	.0581	.0582	17.17	.99831	40	20	.1965	.2004	4.989	.98050	40
30	.0610	.0612	16.35	.99813	30	30	.1994	.2035	4.915	.97992	30
40	.0640	.0641	15.60	.99795	20	40	.2022	.2065	4.843	.97934	20
50	.0669	.0670	14.92	.99776	10	50	.2051	.2095	4.773	.97875	10
4	.0698	.0699	14.30	.99756	86	12	.2079	.2126	4.705	.97815	78
10	.0727	.0729	13.73	.99736	50	10	.2108	.2156	4.638	.97754	50
20	.0756	.0758	13.20	.99714	40	20	.2136	.2186	4.574	.97692	40
30	.0785	.0787	12.71	.99692	30	30	.2164	.2217	4.511	.97630	30
40	.0814	.0816	12.25	.99668	20	40	.2193	.2247	4.449	.97566	20
50	.0843	.0846	11.83	.99644	10	50	.2221	.2278	4.390	.97502	10
5	.0872	.0875	11.43	.99619	85	13	.2250	.2309	4.331	.97437	77
10	.0901	.0904	11.06	.99594	50	10	.2278	.2339	4.275	.97371	50
20	.0929	.0934	10.71	.99567	40	20	.2306	.2370	4.219	.97304	40
30	.0958	.0963	10.39	.99540	30	30	.2334	.2401	4.165	.97237	30
40	.0987	.0992	10.08	.99511	20	40	.2363	.2432	4.113	.97169	20
50	.1016	.1022	9.788	.99482	10	50	.2391	.2462	4.061	.97100	10
6	.1045	.1051	9.514	.99452	84	14	.2419	.2493	4.011	.97030	76
10	.1074	.1080	9.255	.99421	50	10	.2447	.2524	3.962	.96959	50
20	.1103	.1110	9.010	.99390	40	20	.2476	.2555	3.914	.96887	40
30	.1132	.1139	8.777	.99357	30	30	.2504	.2586	3.867	.96815	30
40	.1161	.1169	8.556	.99324	20	40	.2532	.2617	3.821	.96742	20
50	.1190	.1198	8.345	.99290	10	50	.2560	.2648	3.776	.96667	10
7	.1219	.1228	8.144	.99255	83	15	.2588	.2679	3.732	.96593	75
10	.1248	.1257	7.953	.99219	50	10	.2616	.2711	3.689	.96517	50
20	.1276	.1287	7.770	.99182	40	20	.2644	.2742	3.647	.96440	40
30	.1305	.1317	7.596	.99144	30	30	.2672	.2773	3.606	.96363	30
40	.1334	.1346	7.429	.99106	20	40	.2700	.2805	3.566	.96285	20
50	.1363	.1376	7.269	.99067	10	50	.2728	.2836	3.526	.96206	10
					82						74
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
°						°					
16	.2756	.2867	3.487	.96126	74	24	.4067	.4452	2.246	.91355	66
10	.2784	.2899	3.450	.96046	50	10	.4094	.4487	2.229	.91236	50
20	.2812	.2931	3.412	.95964	40	20	.4120	.4522	2.211	.91116	40
30	.2840	.2962	3.376	.95882	30	30	.4147	.4557	2.194	.90996	30
40	.2868	.2994	3.340	.95799	20	40	.4173	.4592	2.177	.90875	20
50	.2896	.3026	3.305	.95715	10	50	.4200	.4628	2.161	.90753	10
17	.2924	.3057	3.271	.95615	73	25	.4226	.4663	2.145	.90631	65
10	.2952	.3089	3.237	.95545	50	10	.4253	.4699	2.128	.90507	50
20	.2979	.3121	3.204	.95459	40	20	.4279	.4734	2.112	.90383	40
30	.3007	.3153	3.172	.95372	30	30	.4305	.4770	2.097	.90259	30
40	.3035	.3185	3.140	.95284	20	40	.4331	.4806	2.081	.90133	20
50	.3062	.3217	3.108	.95195	10	50	.4358	.4841	2.066	.90007	10
18	.3090	.3249	3.078	.95106	72	26	.4384	.4877	2.050	.89879	64
10	.3118	.3281	3.048	.95015	50	10	.4410	.4913	2.035	.89752	50
20	.3145	.3314	3.018	.94924	40	20	.4436	.4950	2.020	.89623	40
30	.3173	.3346	2.989	.94832	30	30	.4462	.4986	2.006	.89493	30
40	.3201	.3378	2.960	.94740	20	40	.4488	.5022	1.991	.89363	20
50	.3228	.3411	2.932	.94646	10	50	.4514	.5059	1.977	.89232	10
19	.3256	.3443	2.904	.94552	71	27	.4540	.5095	1.963	.89101	63
10	.3283	.3476	2.877	.94457	50	10	.4566	.5132	1.949	.88968	50
20	.3311	.3508	2.850	.94361	40	20	.4592	.5169	1.935	.88835	40
30	.3338	.3541	2.824	.94264	30	30	.4617	.5206	1.921	.88701	30
40	.3365	.3574	2.798	.94167	20	40	.4643	.5243	1.907	.88566	20
50	.3393	.3607	2.773	.94068	10	50	.4669	.5280	1.894	.88431	10
20	.3420	.3640	2.747	.93969	70	28	.4695	.5317	1.881	.88295	62
10	.3448	.3673	2.723	.93869	50	10	.4720	.5354	1.868	.88158	50
20	.3475	.3706	2.699	.93769	40	20	.4746	.5392	1.855	.88020	40
30	.3502	.3739	2.675	.93667	30	30	.4772	.5430	1.842	.87882	30
40	.3529	.3772	2.651	.93565	20	40	.4797	.5467	1.829	.87743	20
50	.3557	.3805	2.628	.93462	10	50	.4823	.5505	1.816	.87603	10
21	.3584	.3839	2.605	.93358	69	29	.4848	.5543	1.804	.87462	61
10	.3611	.3872	2.583	.93253	50	10	.4874	.5581	1.792	.87321	50
20	.3638	.3906	2.560	.93148	40	20	.4899	.5619	1.780	.87178	40
30	.3665	.3939	2.539	.93042	30	30	.4924	.5658	1.767	.87036	30
40	.3692	.3973	2.517	.92935	20	40	.4950	.5696	1.756	.86892	20
50	.3719	.4006	2.496	.92827	10	50	.4975	.5735	1.744	.86748	10
22	.3746	.4040	2.475	.92718	68	30	.5000	.5774	1.732	.86603	60
10	.3773	.4074	2.455	.92609	50	10	.5025	.5812	1.720	.86457	50
20	.3800	.4108	2.434	.92499	40	20	.5050	.5851	1.709	.86310	40
30	.3827	.4142	2.414	.92388	30	30	.5075	.5890	1.698	.86163	30
40	.3854	.4176	2.394	.92276	20	40	.5100	.5930	1.686	.86015	20
50	.3881	.4210	2.375	.92164	10	50	.5125	.5969	1.675	.85866	10
23	.3907	.4245	2.356	.92050	67	31	.5150	.6009	1.664	.85717	59
10	.3934	.4279	2.337	.91936	50	10	.5175	.6048	1.653	.85567	50
20	.3961	.4314	2.318	.91822	40	20	.5200	.6088	1.643	.85416	40
30	.3987	.4348	2.300	.91706	30	30	.5225	.6128	1.632	.85264	30
40	.4014	.4383	2.282	.91590	20	40	.5250	.6168	1.621	.85112	20
50	.4041	.4417	2.264	.91472	10	50	.5275	.6208	1.611	.84959	10
					66						58
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½

For Single Track Embankment.

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

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