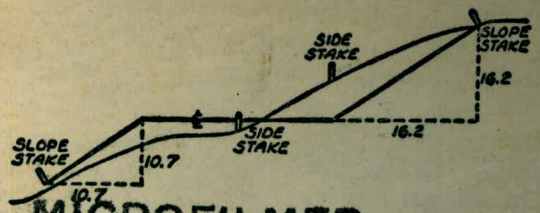


MICROFILMED

Distances from Side Stakes for Cross-Sectioning

Slope 1 to 1. Roadway of Any Width

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0
1	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	1
2	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2
3	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	3
4	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	4
5	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	5
6	6.00	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	6
7	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	7
8	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	8
9	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	9
10	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	10
11	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	11
12	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	12
13	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	13
14	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	14
15	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	15
16	16.00	16.10	16.20	16.30	16.40	16.50	16.60	16.70	16.80	16.90	16
17	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90	17
18	18.00	18.10	18.20	18.30	18.40	18.50	18.60	18.70	18.80	18.90	18
19	19.00	19.10	19.20	19.30	19.40	19.50	19.60	19.70	19.80	19.90	19
20	20.00	20.10	20.20	20.30	20.40	20.50	20.60	20.70	20.80	20.90	20
21	21.00	21.10	21.20	21.30	21.40	21.50	21.60	21.70	21.80	21.90	21
22	22.00	22.10	22.20	22.30	22.40	22.50	22.60	22.70	22.80	22.90	22
23	23.00	23.10	23.20	23.30	23.40	23.50	23.60	23.70	23.80	23.90	23
24	24.00	24.10	24.20	24.30	24.40	24.50	24.60	24.70	24.80	24.90	24
25	25.00	25.10	25.20	25.30	25.40	25.50	25.60	25.70	25.80	25.90	25
26	26.00	26.10	26.20	26.30	26.40	26.50	26.60	26.70	26.80	26.90	26
27	27.00	27.10	27.20	27.30	27.40	27.50	27.60	27.70	27.80	27.90	27
28	28.00	28.10	28.20	28.30	28.40	28.50	28.60	28.70	28.80	28.90	28
29	29.00	29.10	29.20	29.30	29.40	29.50	29.60	29.70	29.80	29.90	29
30	30.00	30.10	30.20	30.30	30.40	30.50	30.60	30.70	30.80	30.90	30
31	31.00	31.10	31.20	31.30	31.40	31.50	31.60	31.70	31.80	31.90	31
32	32.00	32.10	32.20	32.30	32.40	32.50	32.60	32.70	32.80	32.90	32
33	33.00	33.10	33.20	33.30	33.40	33.50	33.60	33.70	33.80	33.90	33
34	34.00	34.10	34.20	34.30	34.40	34.50	34.60	34.70	34.80	34.90	34
35	35.00	35.10	35.20	35.30	35.40	35.50	35.60	35.70	35.80	35.90	35
36	36.00	36.10	36.20	36.30	36.40	36.50	36.60	36.70	36.80	36.90	36
37	37.00	37.10	37.20	37.30	37.40	37.50	37.60	37.70	37.80	37.90	37
38	38.00	38.10	38.20	38.30	38.40	38.50	38.60	38.70	38.80	38.90	38
39	39.00	39.10	39.20	39.30	39.40	39.50	39.60	39.70	39.80	39.90	39
40	40.00	40.10	40.20	40.30	40.40	40.50	40.60	40.70	40.80	40.90	40
41	41.00	41.10	41.20	41.30	41.40	41.50	41.60	41.70	41.80	41.90	41
42	42.00	42.10	42.20	42.30	42.40	42.50	42.60	42.70	42.80	42.90	42
43	43.00	43.10	43.20	43.30	43.40	43.50	43.60	43.70	43.80	43.90	43
44	44.00	44.10	44.20	44.30	44.40	44.50	44.60	44.70	44.80	44.90	44
45	45.00	45.10	45.20	45.30	45.40	45.50	45.60	45.70	45.80	45.90	45
46	46.00	46.10	46.20	46.30	46.40	46.50	46.60	46.70	46.80	46.90	46
47	47.00	47.10	47.20	47.30	47.40	47.50	47.60	47.70	47.80	47.90	47
48	48.00	48.10	48.20	48.30	48.40	48.50	48.60	48.70	48.80	48.90	48
49	49.00	49.10	49.20	49.30	49.40	49.50	49.60	49.70	49.80	49.90	49
50	50.00	50.10	50.20	50.30	50.40	50.50	50.60	50.70	50.80	50.90	50

Distance of slope stake from side or shoulder stake for any width roadway, slope 1 to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

Insp. Notes 804
320
274
778
789
76
675

274
~~270~~
942
270
281
918-
263-
885-
283 -
699 -
929
614+77
614+62

W.H. Beatty-See A1

TABLE XIII—CORRECTIONS FOR TANGENTS AND EXTERNALS

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table VIII) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD

Central Angle	Degree of Curve													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	03	.06	09	13	16	19	.22	.25	.28	.31	34	38	42	.46
15°	04	10	14	19	24	.29	.34	.39	45	.51	.53	58	.63	.68
20°	06	.13	19	26	.32	.39	.45	.51	.58	.65	.72	79	.84	.90
25°	.08	16	24	.33	40	49	.58	67	.75	.83	90	.99	1.06	1.14
30°	10	19	.29	39	49	.59	.69	79	.89	.99	1.09	1.20	1.29	1.39
35°	11	.22	.34	47	.58	.69	.70	.81	.92	1.04	1.29	1.42	1.54	1.66
40°	13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	15	.30	44	60	76	91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	19	.38	.57	76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	23	46	.69	.93	1.16	1 40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	25	.51	76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	30	.61	91	1.22	1.53	1.84	2.15	2.46	2 78	3.10	3.44	3.78	4.12	4.46
85°	33	66	1.00	1.33	1.68	2.02	2.36	2 70	3.05	3.40	3.77	4.14	4.55	4 89
90°	36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	39	79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4 76	5.31	5 86	6.43	7 01	7 60
120°	62	1.25	1 93	2.52	3.16	3.81	4 45	5.11	5.77	6 44	7 12	7.80	8.50	9 22

FOR EXTERNALS ADD

Central Angle	Degree of Curve													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.029	.032	.035	.039	.043	.047	.051
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	036	.046	.056	.065	.074	.083	.093	.106	120	127	135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.711	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.286	.383	.480	.578	.678	.777	.877	.977	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.76	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.985	1.06	1.25	1.43	1.62	1.80	1.99	2.18	2.38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2.06	2.28	2.50	2.73	2.96
110°	.268	.536	.806	1.08	1.35	1.63	1.91	2.20	2.48	2.76	3.05	3.35	3.66	3.96
120°	.360	.721	1.08	1.45	1.82	2.19	2.57	2.95	3.33	3.72	4.11	4.50	4.91	5.32

INDEX

Replace Bonita P.L.-Wabash Freeway 1-12

℄ Bonita Relocation, Broadway, 34th to 30th 11-15

℄ Profile " " " " 16-24

Bonita PL Relocation Wabash Canyon 24-29

℄ Bonita PL Alignmt from Wye Northerly 30-39

℄ Profile Bonita pipeline 45-46

" " " " 46-60

Offset grade Stakes Alice 60-64

Check on Bonita pipeline 8th St 65

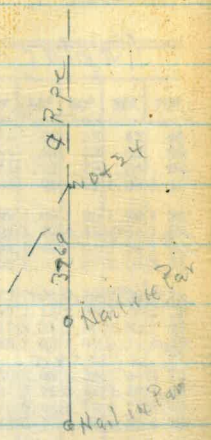
" " " " Sta 421+8 425+ 66.

Check on Chambers & Depth of Bonita Pl. 62-70 alice

REC'D Winchester to Allegheny

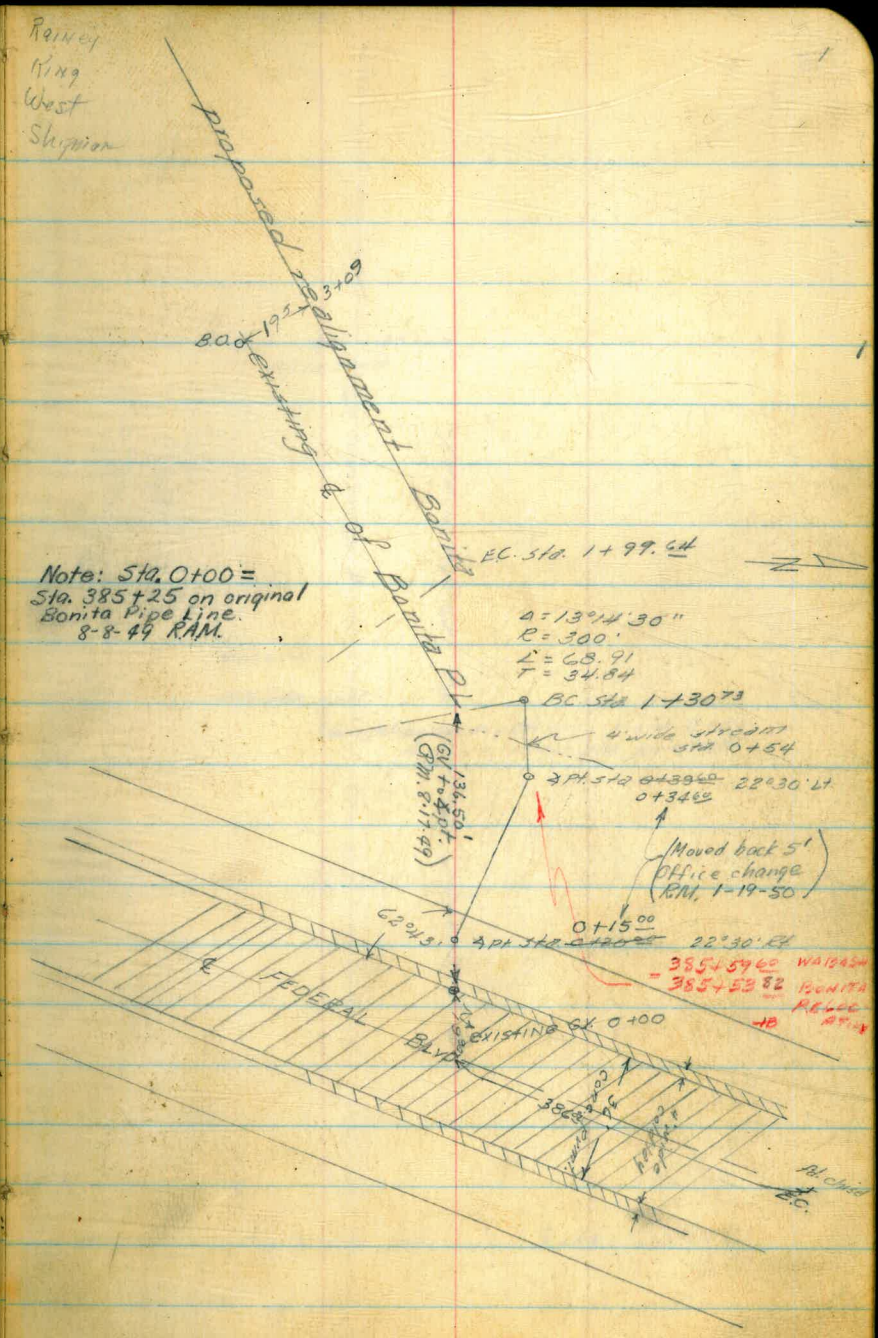
" " Depth of pipe & Elevations Pavement 71-73 Alice

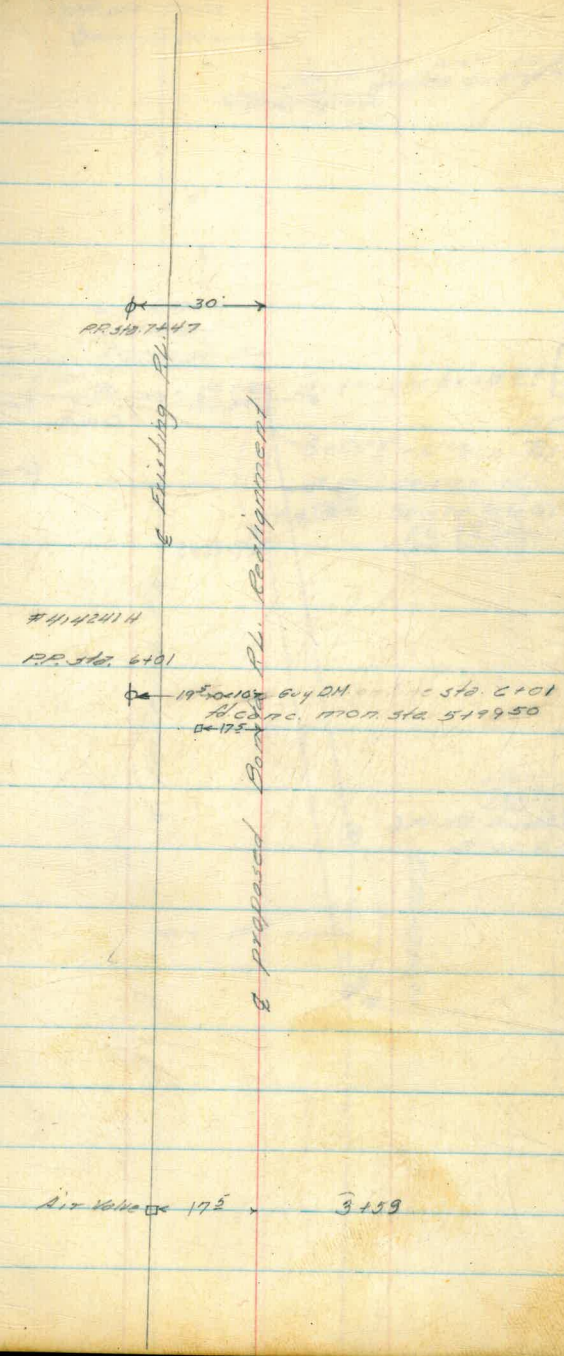
Wabash Canyon
Bonita P.L.
Relocation

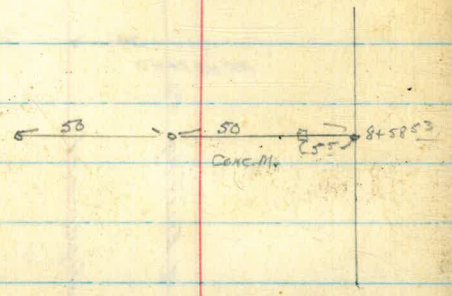


0+07 4 36 St. P.L.

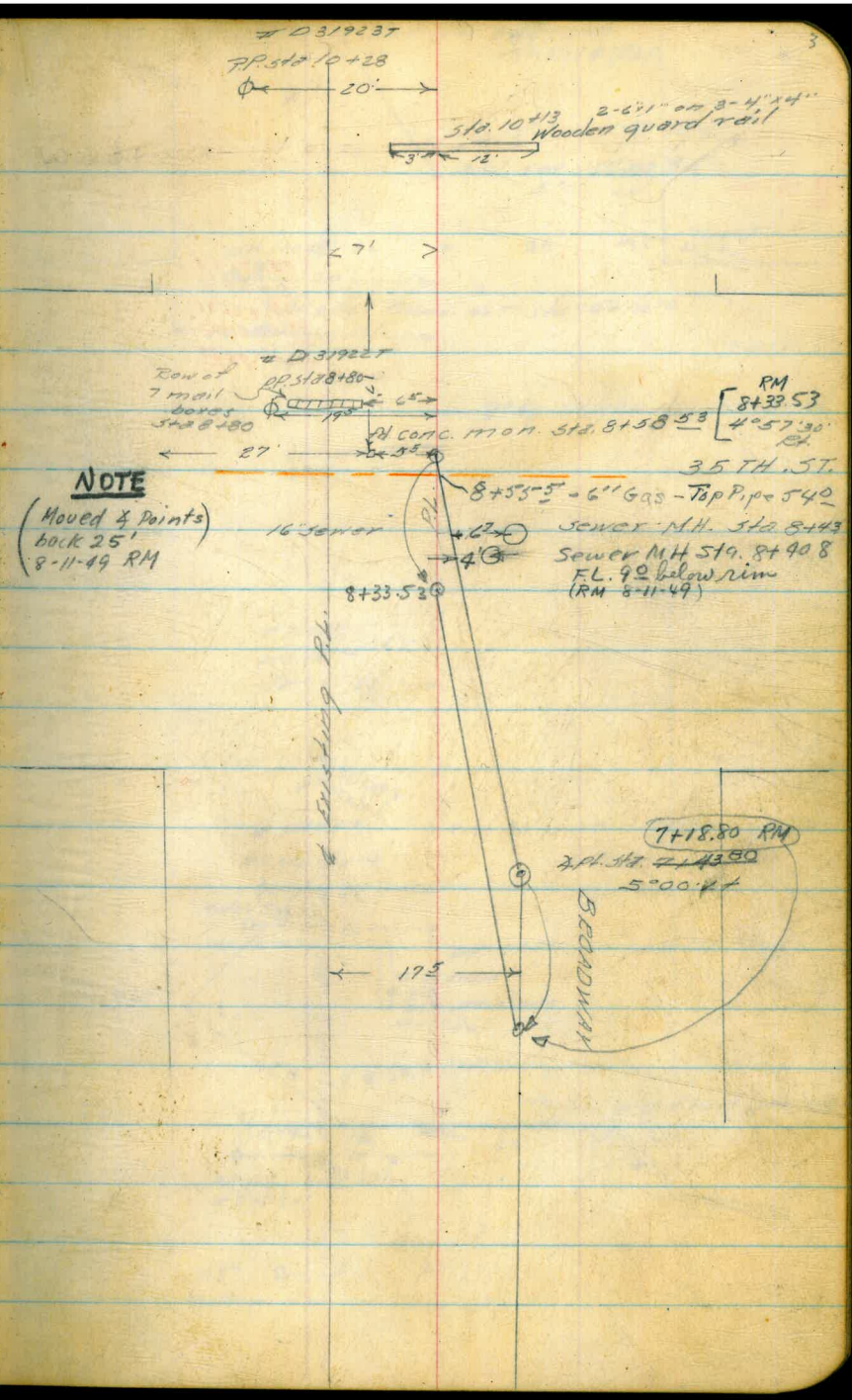
Rainey
King
West
Skipion




30
P.P. sta. 7+47
℄ Existing P.L.
℄ proposed Bond P.L. Realignment
#4 4241 H
P.P. sta. 6+01
19.5
10
Guy D.M.
sta. 6+01
fd. conc. mon. sta. 5+99.50
17.5
Air Valve
17.5
3+59



50
50
8+58.53
Conc. Mt.



D 31923T
P.P. sta. 10+28
20'
Sta. 10+13
2-6"x1" on 3-4"x4"
Wooden guard rail
3'
12'
7'
D 31922T
Row of 7 mail boxes sta 8+80
P.P. sta 8+80
6.5
19.5
Pl. conc. mon. sta. 8+58.53
RM 8+33.53
4°57'30" Rt.
27'
5.5
35 TH. ST.
8+55.5 - 6" Gas - Top Pipe 54.0
NOTE
(Moved ∡ Points back 25' 8-11-49 RM)
16" Sewer
6.7
4'
Sewer M.H. Sta. 8+43
Sewer MH Sta. 8+40.8
F.L. 9.0 below rim
(RM 8-11-49)
8+33.53
℄ Existing P.L.
7+18.80 RM
∡ Pt. Sta. 7+43.80
5°00'4"
BROADWAY
17.5

End. Sta. ~~16+86.48~~ 15+89.18 (RM)

415' ⊃ 16+00

3 Pl. Sta. 15+70.85 = 400+95.85 -10.

5° 00' Lt

PP Sta 15+36 ← 40' → 15+41 Meter

20' → 20' ← Rd. 2½" Rdwd. N&T Sta 15+18.58 → 12.5'

34TH

8" ⊖ Sewer M.H. Sta 15+05

GV.S Sta. 14+98

⊖ 2' ← 7' →

#3109T

PP Sta 14+25

20' →

#3192.57T ← 30' → ⊐ meter box sta 13+41

PP Sta. 12+79

20' →

Meter Box

21' →

Sta 12+29

Sta 11+79

12" CI drain

5' →

Sta 11+68

mail box

8' ⊖ SM H. 11+75

Wooden guard rail Sta 11+58

18' 20' 20' 60°

15'

PP Sta. 11+56

#0319.47T

11+37 ⊐ 21' >

Meter

15+70.85

0+34.60

15+36.25

385+59.60

400+95.85

No. 1 INDOOR CASING

7½'

12+00

42'

No. 1 IH Fence Post

King
Shipman
7-19-49

Profile on Realignment
Bonita P.L. Federal Blvd To 34th

B.M.	7.26	59.13			51.87
T.P.	6.60	63.33	2.40	56.73	
0+00			4.3		58.8
0+20			5.0		58.3
0+26			7.1		56.2
0+28			5.9		57.4
0+31			6.0		57.3
+39.5			10.7		52.6
+42			11.0		52.3
T.P.	2.59	55.04	10.88	52.45	
+51			7.4		47.6
+55			6.8		48.2
+60			6.1		48.9
1+00			6.3		48.7
1+10			7.4		47.6
1+27			4.4		50.6
1+30.23 B.C.			5.5		49.5
1+45			5.5		49.5
1+50			6.8		48.2
1+65					
+71			7.9		47.1
+81			4.7		50.3
1+93			4.7		50.3
1+99 E.C.			6.7		48.3

5

Lt.

Edge Pav. Conc.

52.6
10.7
18
48.9
14.4
15

47.9
7.1
12
47.0
8.0
21
47.0

47.2 47.9
6.8 7.1
13 11
48.2
6.8
47.0 20 46.8
8.0 8.2
30 15
47.1
29
30
46.3 47.1
8.7 7.9
35
47.8 48.3 24
7.2 6.7 51.5
30 27 3.5
13
50.9 48.3 49.4 48.1
4.1 6.7 5.6 6.9
32 17 14 0

Rt.

6

0+10 El 52.1 Top 28" Pipe

0+15 - El 51.6 top Pipe

51.6
11.7
18
52.1
11.2
15

47.2
6.8
12
47.9 7.1 50.4 4.6 52.1 2.9
4 12
50.0 51.0 52.4 52.4
5.0 4.0 2.6 2.6
4 6 12 16

50.5
4.5
10
50.0 50.3
5.0 4.7
4 11
47.3 50.1
7.7 4.9
18 1.5
50.8 4.2 53.7
4 1.3
13
48.7 48.7 51.7
6.3 6.3 3.3
16 10 21
49.1
5.9
26
48.3 49.5 50.1 52.4
6.7 5.5 4.9 2.6
2 5 9 12

		55.04			
2+12			4.9		50.1
2+50			4.1		50.9
3+00			4.4		50.6
3+10			4.4		50.6
T.P.	8.11	58.95	4.20	50.84	
3+19			7.7		51.3
3+26			6.7		52.3
3+46			11.6		47.4
3+53					
3+53			11.9		47.1
3+92			12.3		46.7
4+00			9.9		49.1
4+08			5.5		53.5
4+50			7.0		52.0
5+00			6.2		52.8
+50			4.6		54.4
T.P.	3.69	60.99	1.85	57.10	
+80			3.9		57.1

Lt. Rt. 6

47.2 48.3 49.4 50.0
2.8 6.7 5.6 5.0
42 33 79 15

Sieve Excavated
49.7 49.6 48.3 51.2
5.3 5.4 6.7 3.8
30 26 20 10

51.8 47.5 47.3 50.0 51.8
7.2 11.5 11.7 9.0 7.2
52.3 48.0 47.5 50.4 51.8 52.3
2.7 11.0 11.5 8.6 1.2 6.7
30 23 20 15 12 12

56.9 55.9 50.5 48.9 47.6 52.4 52.1
2.1 3.1 3.3 10.1 11.4 6.6 6.9
32 12 7 6 11 12 15
56.4 56.2 53.2 47.5 48.5 54.1 end toe
2.6 2.8 5.8 11.5 10.5 4.9 Sta. 3+63
30 20 15 6 20

54.1 54.9 6 48.0 46.7
4.7 4.9 11.8
30 5
52.5 55.9 54.9 54.0 47.2
5.5 3.1 5.0 11.8
30 24 20 8 5
52.9 6.1 54.9 4.2 54.9 4.2 48.0 11.0 47.0
30 26 20 6 12.0
20 11.6 47.7
20

52.0 54.7 56.0 56.0 54.2 51.1
7.0 4.3 3.0 3.0 11.8 7.9
30 26 20 13 10 10

						Lt	Rt
		6.0.79				55.1 / 5.7 / 28	62.4 / 71.6 / 20
6+00			1.4		59.4		
+						53.1 / 7.7 / 20; 53.1 / 7.7 / 15'; 54.7 / 6.1 / 7'	57.5 / 3.3 / 20
+14			4.4		56.4		
+25			9.2		51.6	46.9 / 13.9 / 45; 49.1 / 11.7 / 36; 45.0 / 15.8 / 30; 45.0 / 15.8 / 20; 47.6 / 13.2 / 175 p.p.; 47.7 / 13.6 / 8	
+50			9.6		51.2	58.8 / 2.0 / 30'; 53.6 / 7.2 / 22; 53.4 / 7.4 / 15; 56.2 / 4.6 / 9	47.8 / 13.0 / 11'; 47.9 / 12.9 / 30
7+00			11.8		49.0	52.4 / 8.4 / 30	49.7 / 11.1 / 28'
L 7+43.80			13.2		47.6	53.1 / 7.7 / 11'; 47.8 / 13.0 / 6; 3 yds Dirt in pile	47.6 / 13.2 / 20
~~+50~~			~~13.2~~				
8+00			5.9		54.9		56.0
T.P.	10.11	66.10	4.80	55.99		Top M.H. at 35 + BDWY	
~~Sewer Fl.~~			~~12.80~~		~~53.39~~	35th Bdwy	

		66.10			
8+50			10.2		55.9
9+00			9.1		57.0
9+50			8.7		57.4
10+00			5.9		60.4
T.P	12.55	77.95	0.70	65.40	
10+50			11.1		66.9
11+00			1.8		76.2
T.P	11.28	88.55	0.68	77.27	
11+50			7.7		80.9
12+00			6.6		82.0
+50			4.7		83.9
13+00			2.1		86.5
+50			0.0		88.6

		88.53				
T.P.	11.41	99.70	0.26	88.29		
14+00			8.2		91.5	
+50			5.2		94.5	
15+00			3.6		96.1	
M.H. F.L. Sewer			10.1 ~~2.8~~		89.6	34th BDWY
+50			3.0		96.7	
15+70.85			2.3		97.4	
16+00			2.1		97.6	
16+56.60			1.2		98.5	END Realignment
T.P.	0.08	87.16	12.62	87.08		
T.P.	1.34	75.71	12.79	74.37		
T.P.	3.16	66.97	12.90	63.81		
	1.77	56.80	11.94	55.03		
			4.96	51.84	51.87	B.P. at 35th Federal Blvd

		H.I.		
		58.95		
1	4+21		5.0	54.0
	4+24		5.8	53.7
	4+43		5.8	53.2
	4+50		7.0	52.0
	4+84		3.0	56.0
		60.79		
	6+81		10.5	50.3
	6+89		10.8	50.0
	7+07		9.7	51.1
	7+10		11.3	49.5
	7+66		7.6	53.2
	7+84		5.9	54.9

24

52.7 6.3 31 | 56.9 2.1 22 | 54.0 5.0 14 | 56.0 3.0 8 | 54.4 4.6 5

52.9 6.1 28 | 57.0 2.0 20 | 55.9 3.1 14 | 58.5 0.5 10

53.0 6.0 30 | 54.3 4.7 20 | 58.2 0.8 12 | 54.6 4.4 4

52.0 7.0 32 | 52.4 6.6 23 | 58.3 0.7 15 | 54.5 4.5 7 | 54.9 4.6 3

6.4 28 | 53.6 4.4 25 | 58.7 4.3 16 | 56.1 2.9 13

52.6

52.7 8.1 30 | 55.7 5.1 21 | 50.8 10.0 13

52.8 8.0 30 | 52.9 7.9 24

52.8 8.0 30 | 53.7 7.1 13 | 54.4 6.4 10

53.3 7.5 28 | 55.0 5.8 12

55.7 5.1 20

54.9 5.9 30

R.

53.7 5.3 1 | 48.4 10.6 6 | 48.4 10.6 15

53.2 5.8 1 | 48.7 10.3 7 | 48.1 10.9 15

47.7 11.3 8 | 47.5 11.5 15

46.2 12.8 12 | 45.9 13.1 20 | 48.1 10.7 31

50.9 5.7 13 | 48.8 10.1 29

50.3 10.5 20

50.0 10.8 20

50.2 10.6 20

49.0 11.8 20

47.6 13.2 8 | 47.6 13.2 20

54.9 5.9 30

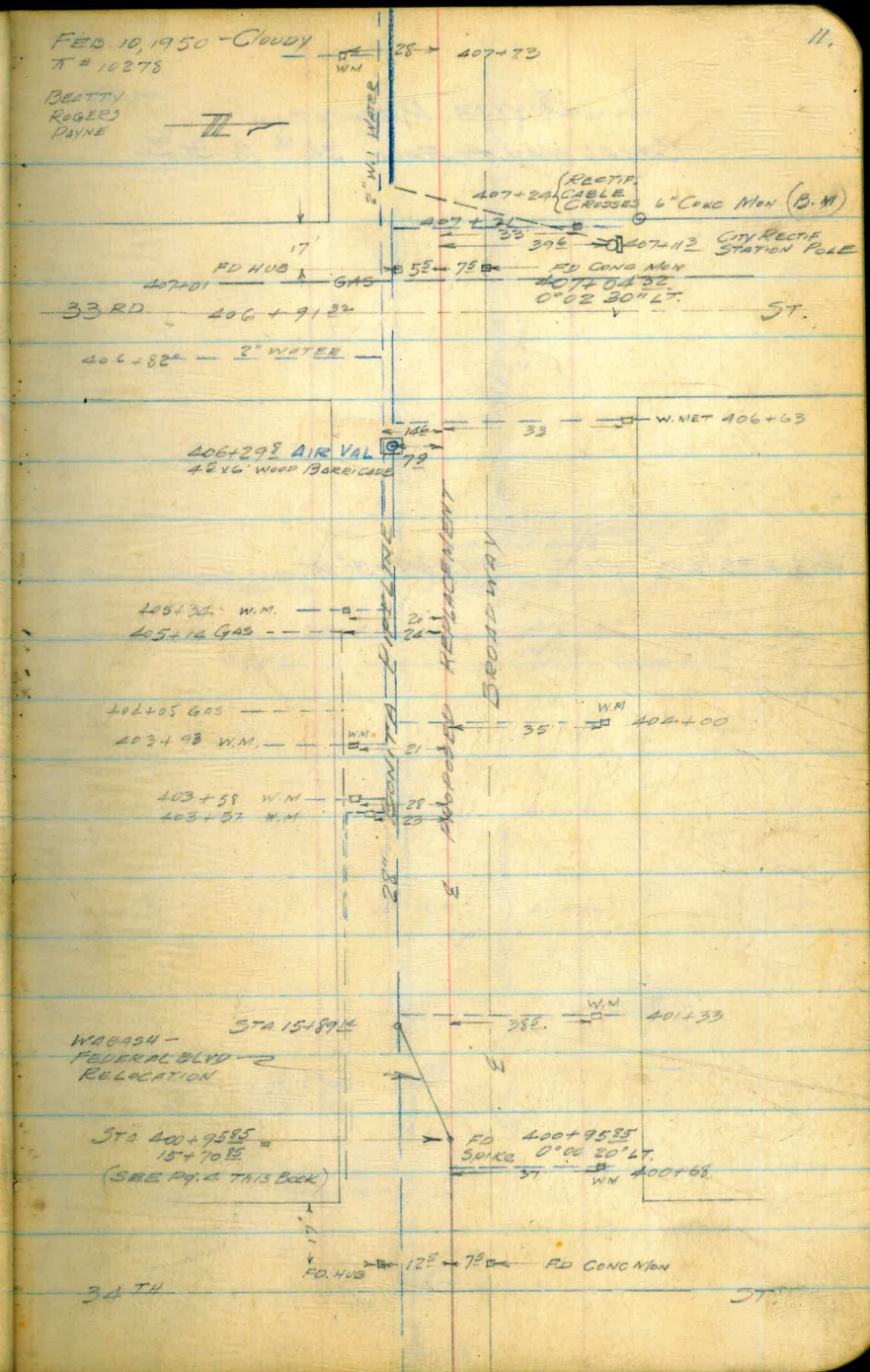
Checked & Reduced pg. 5-10
7-21-49 RM

BONITA RELOCATION - BROADWAY 34TH to 30TH

407+04.32 P.I. 0°02'30" LT

S. 88° W.

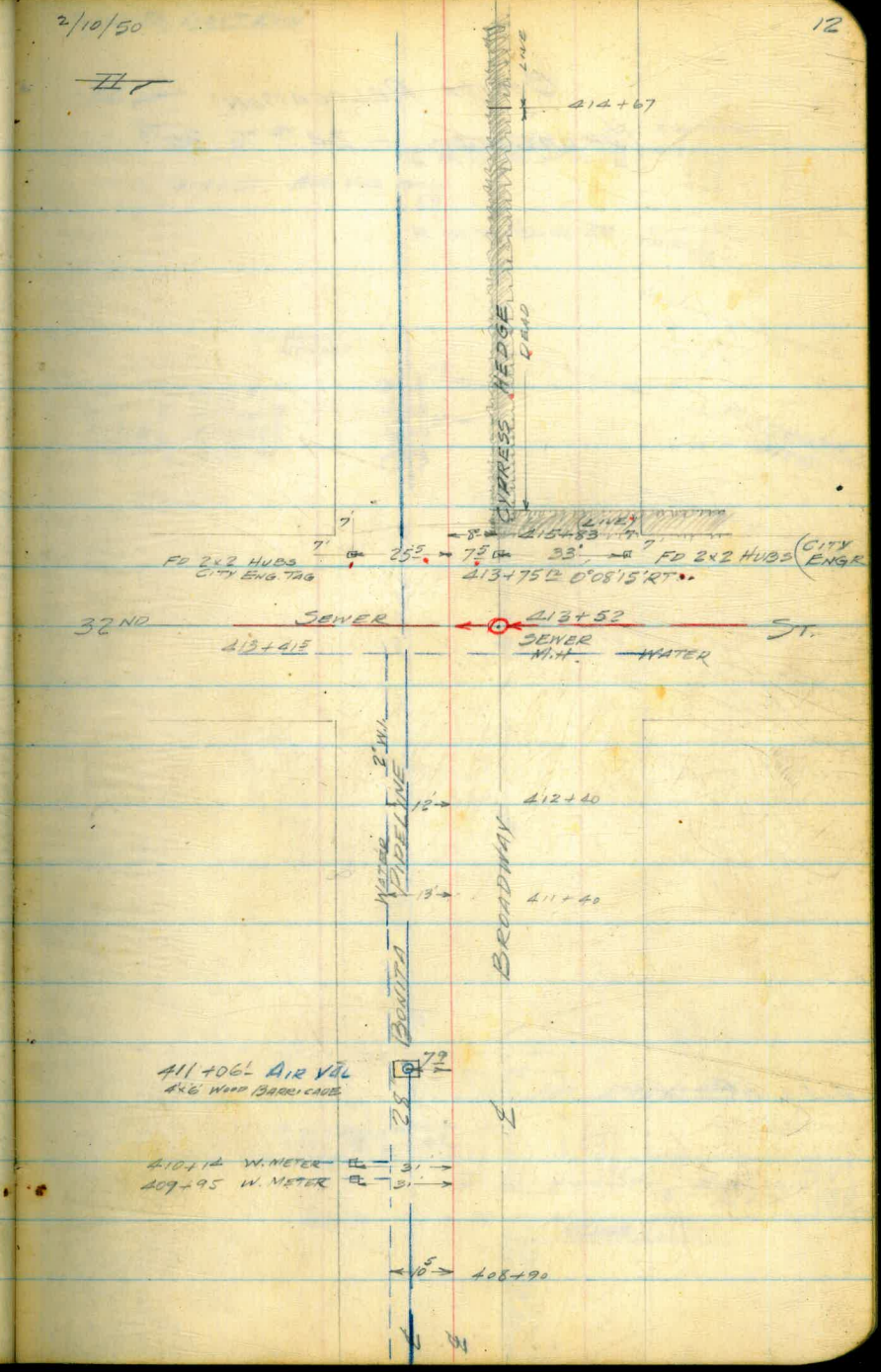
400+95.85 P.I. 0°00'20" LT



BONITA RELOCATION
BROADWAY — FROM 34TH TO 30TH

413+75.12 PI 0°08'15" RT.

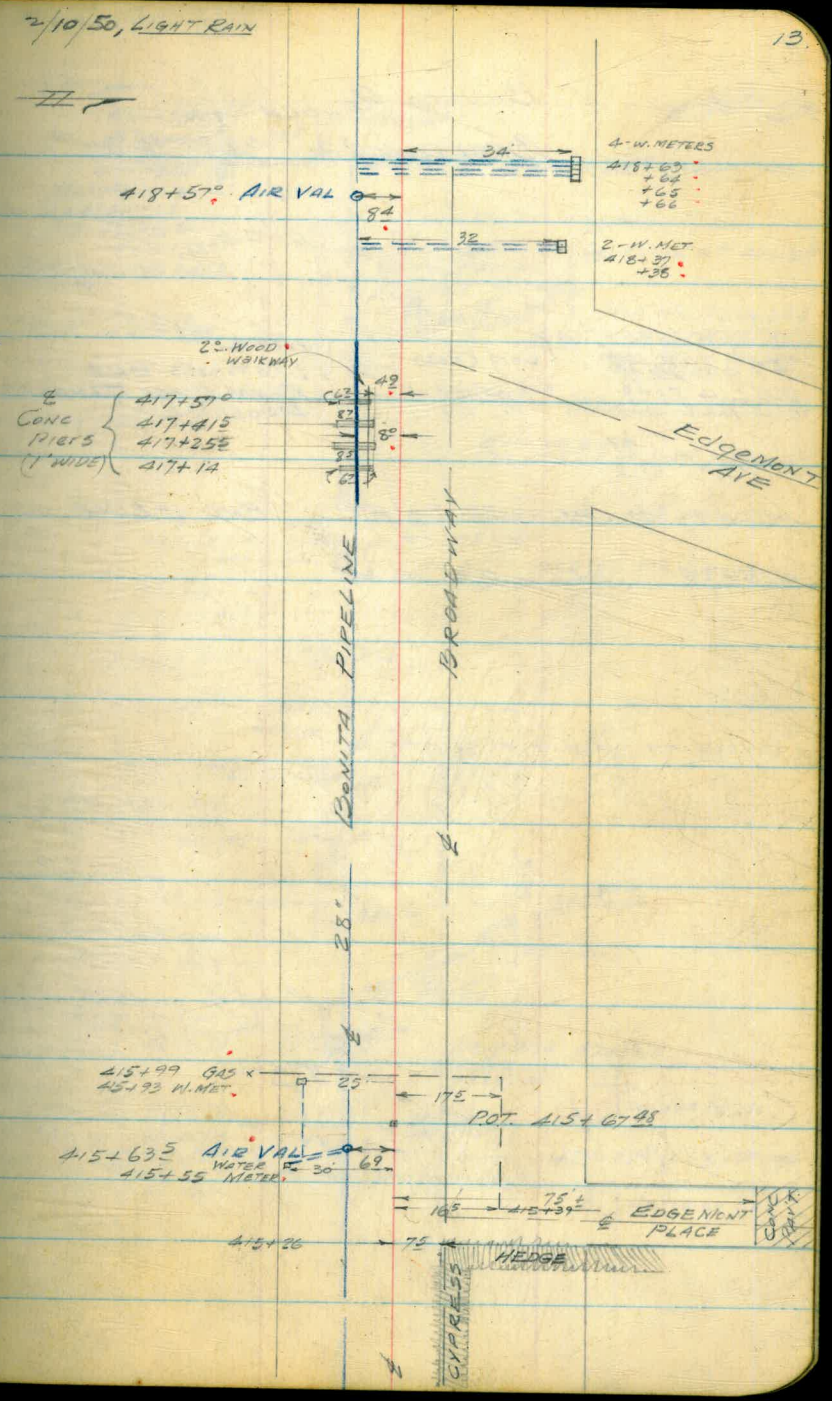
#7



BONITA RELOCATION
BROADWAY - 34TH TO 30TH

415+67.48 POT

2/10/50, LIGHT RAIN

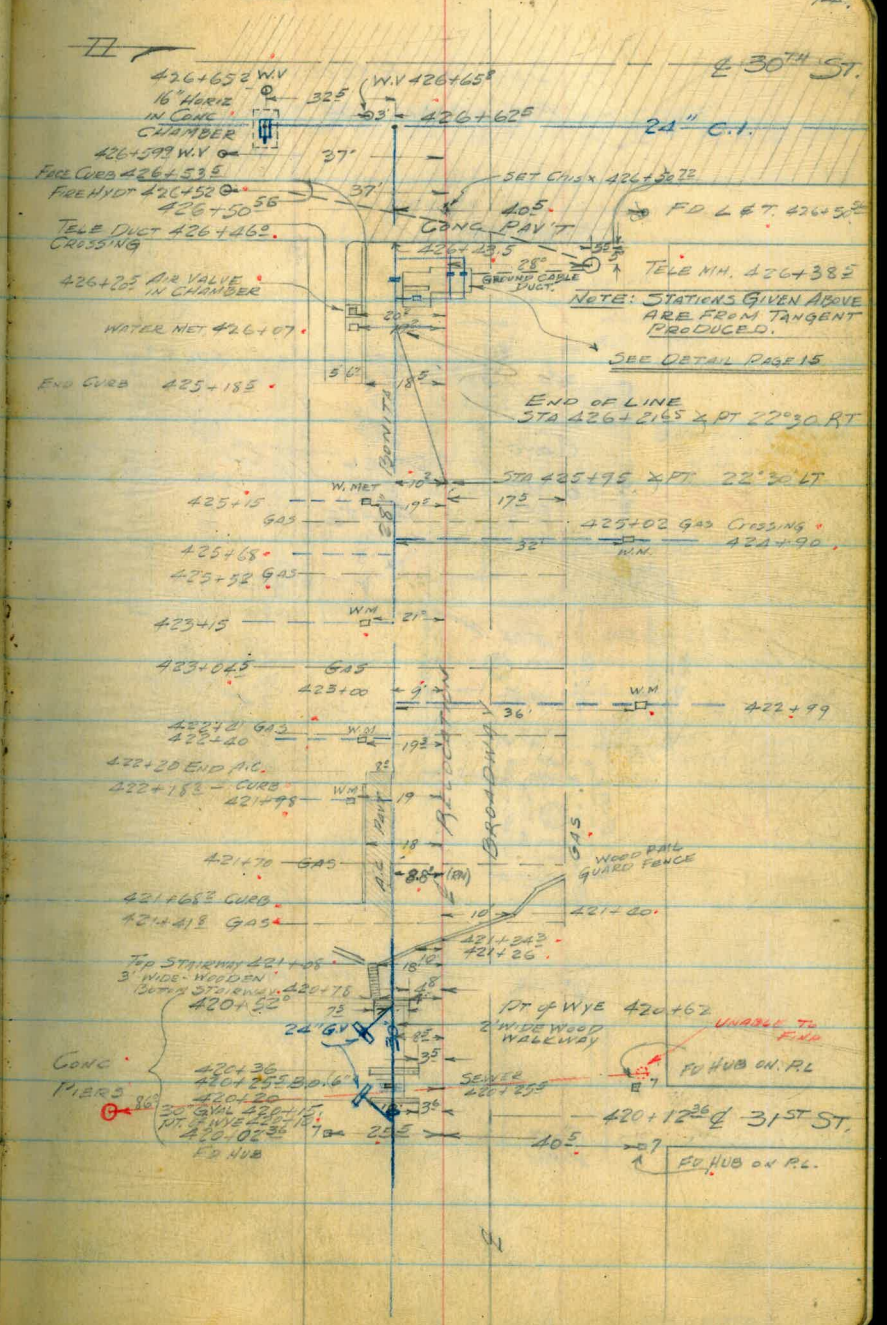


BONITA RELOCATION

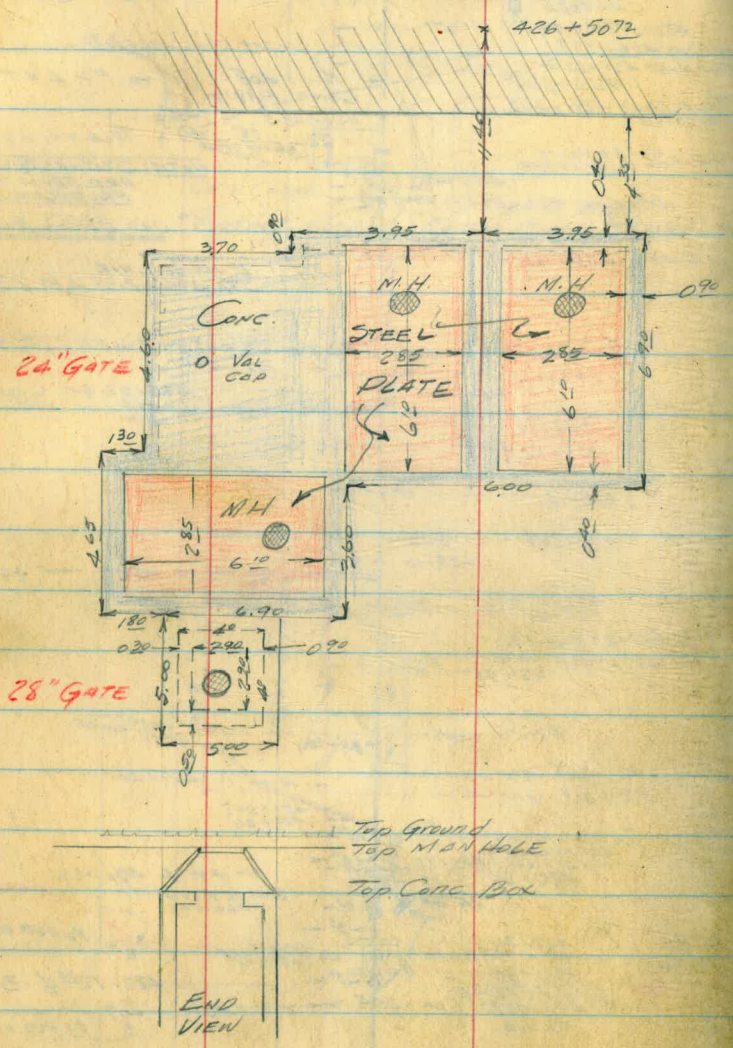
BROADWAY — 31ST TO 30TH

426+50.72	CHIS. CROSS.	NOTE:- STATIONS ARE FROM BACK TANGENT PRODUCED
426+50.56	7' offset Line	
426+21.65 P.I.	22°30' RT	END of LINE
425+95 P.I.	22°30' LT	

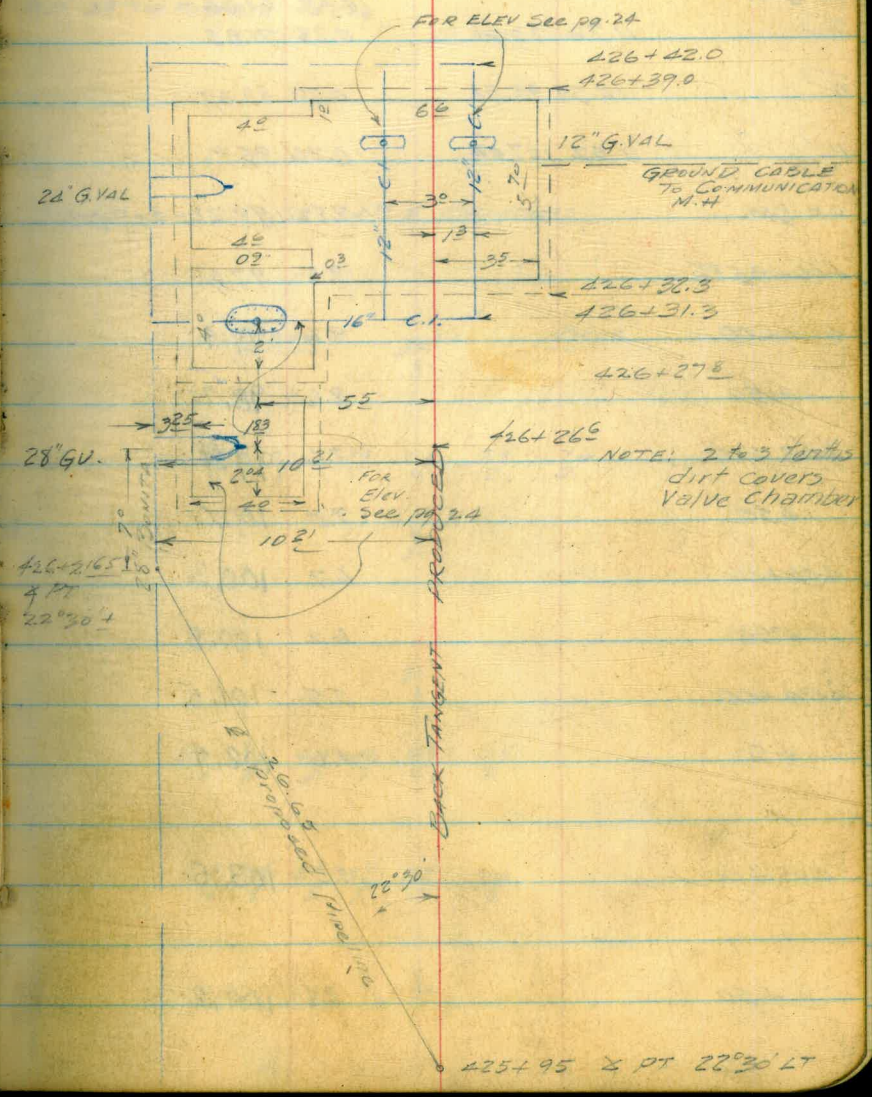
FEB 10, 1950 RAIN. 14.



BONITA RELOCATION
BROADWAY 34TH to 30TH



SKETCH OF VALVE CHAMBER
EAST of INTERSECTION of 30TH & BROADWAY



BEATTY.
ROGERS.
PAYNE.

BONITA PIPELINE RELOCATION
BROADWAY — 34TH to 30TH ST'S
& PROFILE

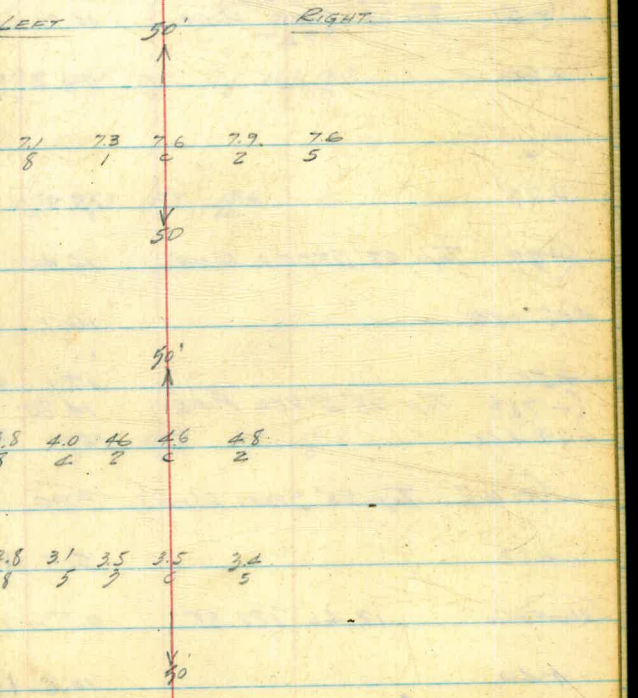
FEB. 14, 1950
T# 14897

CITY DATUM.
BR. PIN NW COR. 35TH & FEDERAL BLVD

B.P. 34TH & FEDERAL NE COR.

B.P. ON N'LY NE COR 34TH & BROADWAY

BM.	7.59	59.46		51.87 Pg. 9 This Book 51.97 Pg.
P	13.02	72.13	0.35	59.11
CK BM.			10.29	61.64 = 61.71
P	11.76	83.61	0.28	71.85
P	12.59	95.98	0.22	83.39
P	11.32	107.04	0.26	95.72
CK BM.			7.82	99.22 = 99.26
400+95.85			9.5	97.5
401+00			9.6	97.4
+50			8.8	98.2
402+00			7.6	99.4
+50			7.0	100.0
403+00			6.7	100.3
+50			6.2	100.8
404+00			5.5	101.5
+50			4.6	102.4
405+00			3.5	103.5
+50			2.8	104.2



Bonita Relocation
& Profile

107.04

406+00			1.1	105.9
+50			0.7	106.3
"11" Rock	3.14	109.78	0.40	106.64
CK PDM			3.26	106.52 = 106.55
407+00			3.9	105.9
+23			3.6	106.2
+50			9.4	100.4
(+51 Top 28" Steel Pipe 7.7 Lt. Bonita Main)			10.71	99.07
+66			14.2	95.6
+78			15.9	93.9
(+89 Top 28' Steel Pipe)			16.40	93.4
408+00			16.7	93.1
+50			17.1	92.7
(+78.6 Top 28" Steel Pipe)			14.80	
409+00			10.9	98.9
(+107 Top 28' Steel Pipe)			9.90	
+22			5.5	104.3
"11" Rock	12.40	121.85	0.33	109.45
+40			10.8	111.05

BP on N'ly NW Cor 33rd & Broadway

7.8	10.5	9.4	8.9	9.5	9.7	
10	5	0	2	6	10	
12.9	13.4	13.5	14.2	13.9	13.5	12.9
7.7	6	3	0	6	9	12
Top Pipe						
14.9	15.1	15.8	15.9	15.6		
7.7	4	2	0	10		
11.3	11.5	10.9	9.9 - 10.1			
7.5	3	0	3	9		

BONITA RELOCATION

& PROFILE

		121.85		
409+50			9.3	112.55
+73			6.9	114.95
410+00			2.4	119.45
P ROCK	11.70	132.72	0.83	121.02
+50			8.0	124.7
+71			5.7	127.0
411+00			4.8	127.9
+21			4.2	128.5
+26			4.9	127.8
+50			3.2	129.5
+67			3.3	129.4
+90			6.2	126.5
412+00			7.9	124.8
+11			7.7	125.0
+27			4.0	128.7
+40			2.1	130.6
+46			2.3	130.4
+50			1.5	131.2
P ROCK	11.88	144.19	0.41	132.31

5.7 / 10	3.3 / C	2.4 / 4	2.0 / 10
8.3 / 10	6.2 / C	5.6 / 4	4.8 / 10

Bonita Relocation

℄ Profile

142.19

412+54			12.3	131.9
+90			3.2	141.0
TI Rock	11.94	155.91	0.22	143.97
413+00			11.5	144.4
+09			9.2	146.7
+19			6.8	149.1
+27			3.6	152.3
+49			4.8	151.1
+50			3.9	152.0
+54			1.0	154.9
TI (Rock	11.81	167.51	0.21	155.70
(513+52 Rim Sewer NH 7" RT				11.0
Inv. " " " "				19.6
+62			10.3	157.2
+75			8.1	159.4
+80			7.0	160.5
414+00			3.4	~~163.1~~ 164.1
CK BM.			3.16	164.35 = 164.45
+14			1.5	166.0
TI Rock	12.14	179.54	0.11	167.40

B.P. in Mon NW Cor 32nd & Broadway

Bonita Relocation

℄ Profile

179.54

℄	414+22		11.2	168.3
	+50		6.4	173.1
	+72		2.8	176.7
℄	415+00		0.4	179.1
	℄ Rock	7.62	187.01	0.15	179.39
	+17			6.6	180.4
	+27			5.3	181.7
	+50			5.2	181.8
	+68			4.5	182.5
	416+00			4.8	182.2
	+18			6.1	180.9
	+33			9.9	177.1
	+50			13.0	174.0
	℄ (Rock)	0.69	174.87	12.83	174.18
	+65			3.0	171.9
℄	+74			6.0	168.9
	℄ (Rock)	2.49	164.46	12.90	161.97
	417+00			8.9	155.6
	(417+00) Top 28" Steel Pipe 8° Lt.			10.00	154.46
	417+06 ℄ " " " " "			12.22	152.24

(Vert ℄)

BONITA RELOCATION

℄ PROFILE

164.26

417+07		12.3	152.2
+11		14.1	150.4
+26		21.1	143.4
+31		21.5	143.0
+40		19.9	144.6
+50		15.4	149.1
(+68 Top 28" Steel Pipe 8.6 LT.)		12.0	
+68		9.7	154.8
+77		6.7	157.8
418+00		3.7	160.8
PI	12.00	175.26	1.20	163.26
+40		8.0	167.3
+50		7.5	167.8
+87		2.8	172.5
+88		3.5	171.8
+94		3.7	171.6
+96		3.2	172.1
419+00		3.5	171.8

10.4/10 9.7/4 8.2/3 7.5/6 5.2/10

8.8/10 6.6/2 2.8/6 0.8/10

8.4/10 8.0/5 7.0/2 4.3/2 3.5/6 2.6/3 1.3/6 1.0/10

BONITA RELOCATION
℄ PROFILE
175.26

419 +06			3.7	171.6
+08			5.3	170.0
+10			5.2	170.1
+12			4.1	171.2
+50			10.4	164.9
+56			11.7	163.6
P (ROCK)	1.45	164.05	12.66	162.60
+80			8.5	155.55
P (ROCK)	0.03	151.11	12.97	151.08
(+97 Top 30° STEEL Pipe 8¢ LT)			8.76	142.35
+97			4.8	146.3
420+00			8.3	142.8
+04			11.1	140.0
+06				
+20			17.4	133.7
(+25 Rim of Sewer M.H 86 LT			22.2	
INV. " " " " " "			28.0	
+29			19.3	131.8
+26			19.8	131.3
+35			17.3	133.8
+50			15.5	135.6

7.5 6.3 4.8 4.1 2.6
10 2 3 6 7

BONITA RELOCATION

℄ PROFILE

151.11

℄ 420+78			9.4	141.7	
+77 Top 30" STEEL PIPE			8.89	142.22	
H (on stairs)	11.46	162.57	0.00	151.11	
421+00			11.0	151.57	
H (on stairs)	10.99	173.53	0.03	162.54	
+34			5.3	168.2	
+39			5.4	168.1	
+42			6.0	167.5	
+50			6.1	167.4	164.32
+75					165.37 Top of 28" steel pipe 8.8' Lt. (RM)
+85					
+90			5.8	167.7	
422			3.8	169.7	
SET TBN			1.96	171.57	on end of Curb RT. of 422+25 ℄
H (ROCK)	11.58	184.75	0.36	173.17	
+50			10.1	174.6	
423+00			5.7	179.0	
+50			1.2	183.5	
℄ H (ROCK)	12.68	197.09	0.34	184.41	
424+00			9.1	188.0	
+50			5.5	191.6	

BONITA RELOCATION
℄ PROFILE
197.09

425+00		3.7	193.4
+50		3.2	193.9
426+00		2.8	194.3
+50		2.6	194.5
+43.50		2.71	194.38
+50.56		2.74	194.35
+62.50		2.98	194.11
CK BM		2.05	195.04 = 195.08
Top 16" C.I. PIPE ± AT M.H.		4.45	
425+95		2.8	194.3
426+21.65		2.8	194.3
(Top 16" C.I.		5.75	191.34
(Top 12" C.I. (2 lines)		5.75	191.34
(Top of VAL CHAMBER)		2.98	194.11
Floor of VAL Chamber 28" G.V.		8.11	188.98

Edge conc. PAVT
do " "
do " "
B.P. SE COR 30TH & BROADWAY

Checked 2-23-50 RM.

Bonita P.L.
Relocation - Wakash Canyon

15' offsets

	1.00	59.80			58.80	
385+59.60			3.0	56.8	42.4	14.4
385+93.53			11.8	48.0	42.2	6.2
386+25.03			11.4	48.4	42.0	6.4
386+56.51			11.2	48.6	42.0	6.6
386+68.0			11.4	48.4	42.0	6.4
386+83.93			12.0	47.8	42.0	5.8
T.P.	9.49	57.34	11.45	47.85		
386+99.14			9.3	48.0	42.0	6.0
387+15			9.1	48.2	42.0	6.2

King Shipman X
West

3-14-88

clear

15' offsets

Bonita P.L.
Relocation - Wabash Canyon

57.34

King
Shipman
West

3-14-50

Clear

387+31.73			8.8	48.5	42.0	6.5
387+47.73			7.3	50.0	42.0	8.0
388			5.8	51.5	42.0	9.5
388+50			5.4	51.9	42.0	9.9
389+00			2.9	54.4	42.0	12.4
389+50			3.7	53.6	42.0	11.6
390+00			3.4	53.9	42.0	11.9
390+50			3.2	54.1	42.0	12.1
391+00			2.5	54.8	42.0	12.8
T.P.			2.52	54.82		ON 15' OFF 391

Top Box - 37+30
Bonita P.L. - Wabash Canyon

B.M.	1.40	60.20		58.80	
T.P.	4.52	53.12	11.60	48.60	
Top M.H.			7.22	45.90	57.2
" Floor			7.95	45.17	
check			4.60	48.52	48.50

King Shipman West

3-22-30

#7

Edge Conc. Pav. Bridwy Ext

57.2
45.9
11.3

F 11.3

357+31

Bonita P.L.
Wabash Canyon
10'x15' OFF.

	5.64	~~10.42~~ 10.46		54.82		
391+50			7.9	52.6	42.0	10.6
392+00			8.7	~~52.8~~ 51.8	42.0	~~10.8~~ 9.8
392+43.80			9.1	51.4	42.0	9.4
393+00			6.4	54.1	45.6	8.5
393+38.89			5.6	54.9	48.2	6.7
393+58.53	15'		4.5	56.0	49.5	6.5
393+58.53	10' off		4.6	55.9	49.5	6.4
394+00			4.8	55.7	49.5	6.2
394+50			3.0	57.5	49.5	8.0

King
Wolf
Shipman

3-22-52

Bonita T.L.
Wabash Canyon
10' Offsets

60.46

T.P.			3.04	57.42

King
West
Shipman

3-22-52

Clear

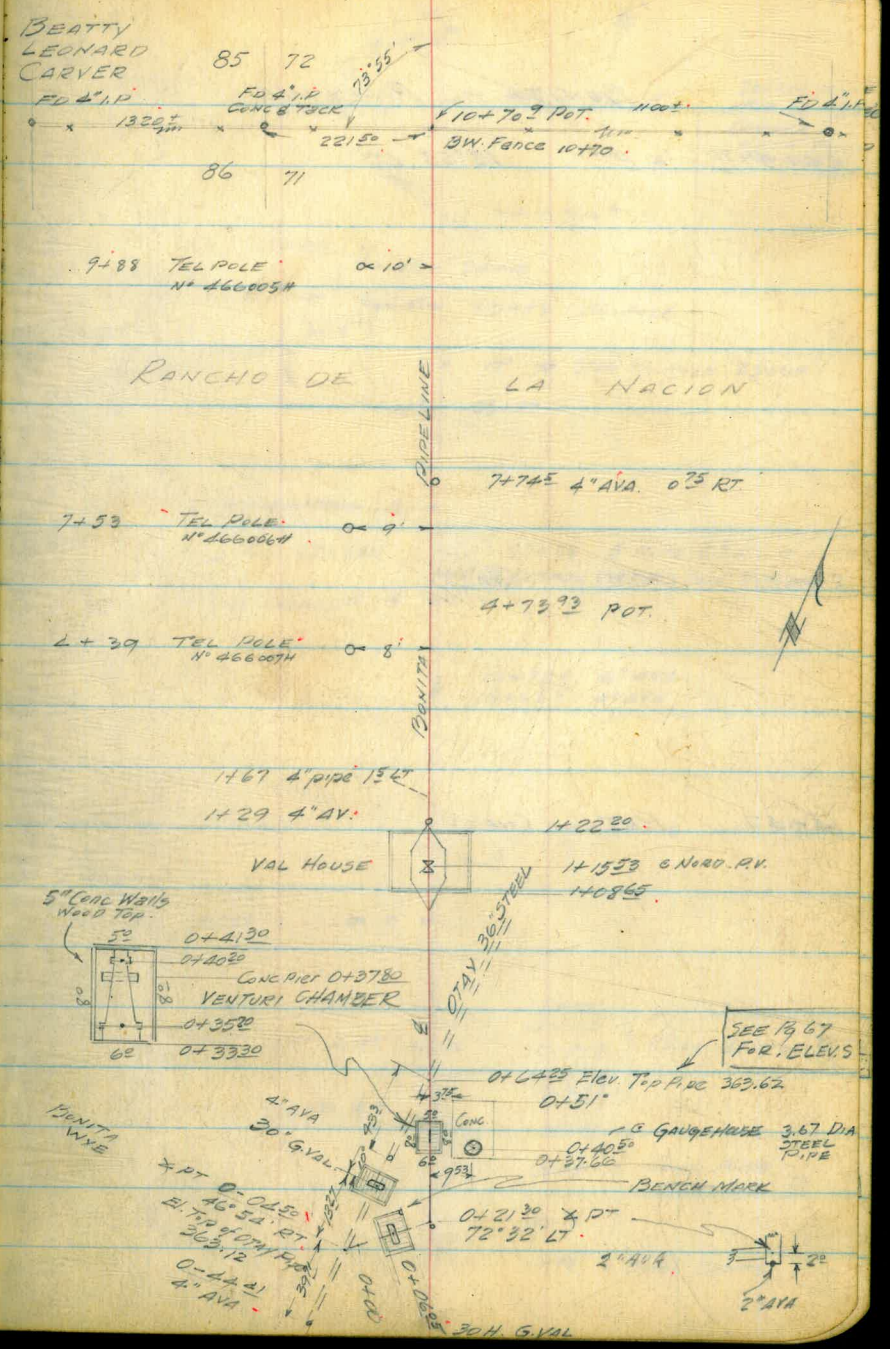
29

℄ Survey – Bonita Pipeline
Bonita Wye to 8th St. (Nat'l City)

10+70.9	POT.	73°55	LT.	221.5	To ¼ Sec. Cor NE ¼ Sec 71
8+00	POT				
4+73.93	POT				
0+21.3	⊥ PT.	72°32'	LT.		
0+00					
0-04.50	⊥ PT.	46°54'	RT		

June 14, 1950 – Clear & Warm

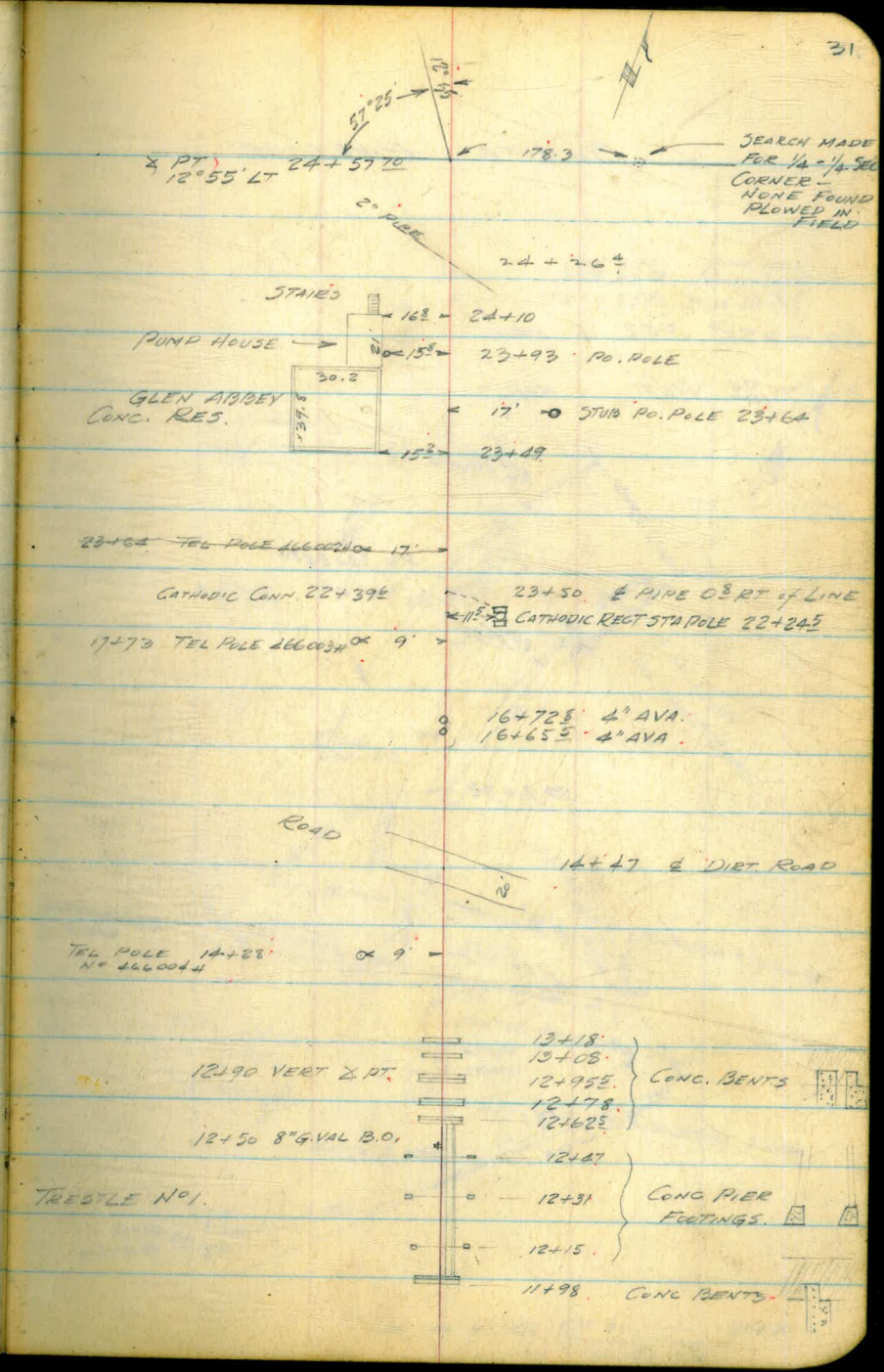
30



6/14/50

BONITA - PIPELINE

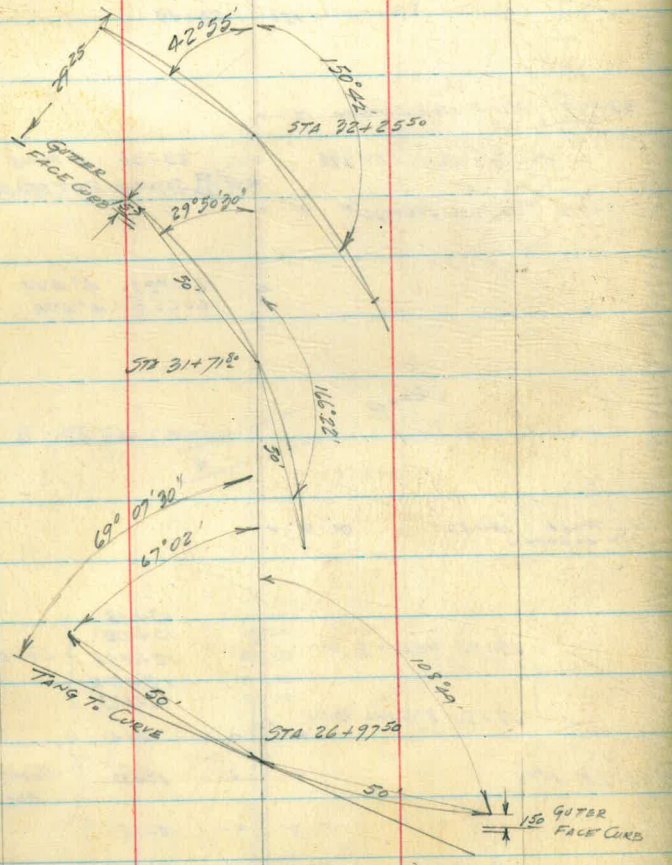
24+57.70	℄ PT.	12°55' LT.
22+85	POT.	(NAIL)
14+47	POT	(NAIL)

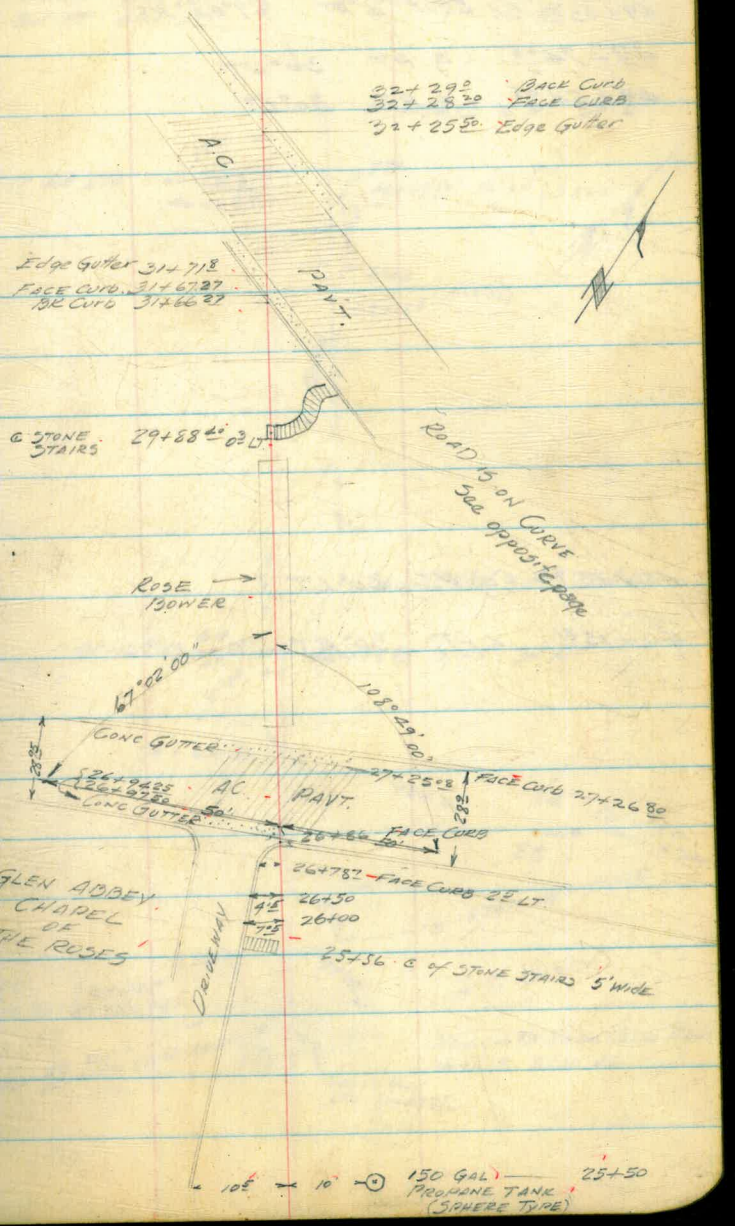


BONITA PIPELINE

32+25.50 POT NAIL

31+71.92 POT NAIL





6/15/50
7/13/50

BONITA PIPELINE

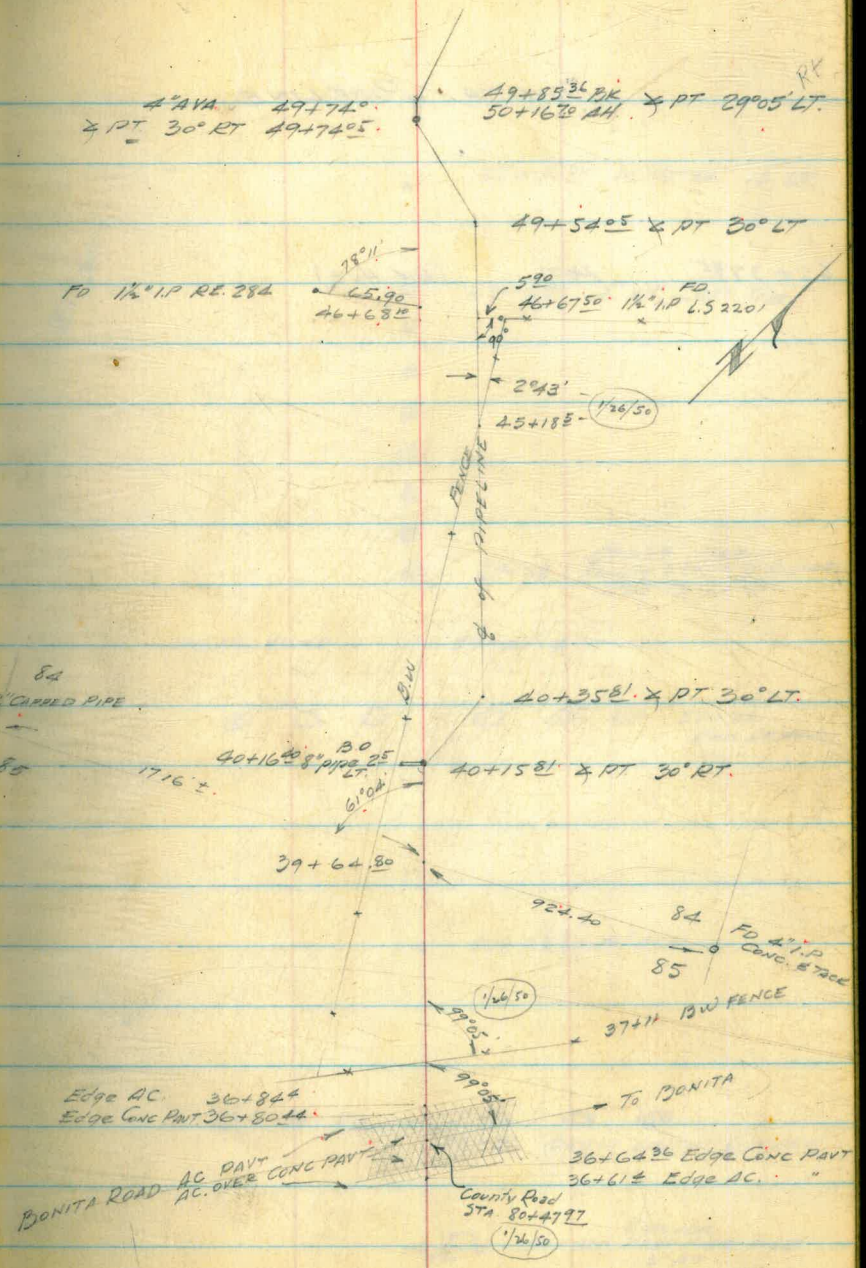
50+16.70 AH
49+85.36 BK EQUA. & PT 29°05' RT

49+74.05 & PT 30° RT

49+54.05 & PT 30° LT

40+35.81 & PT 30° LT

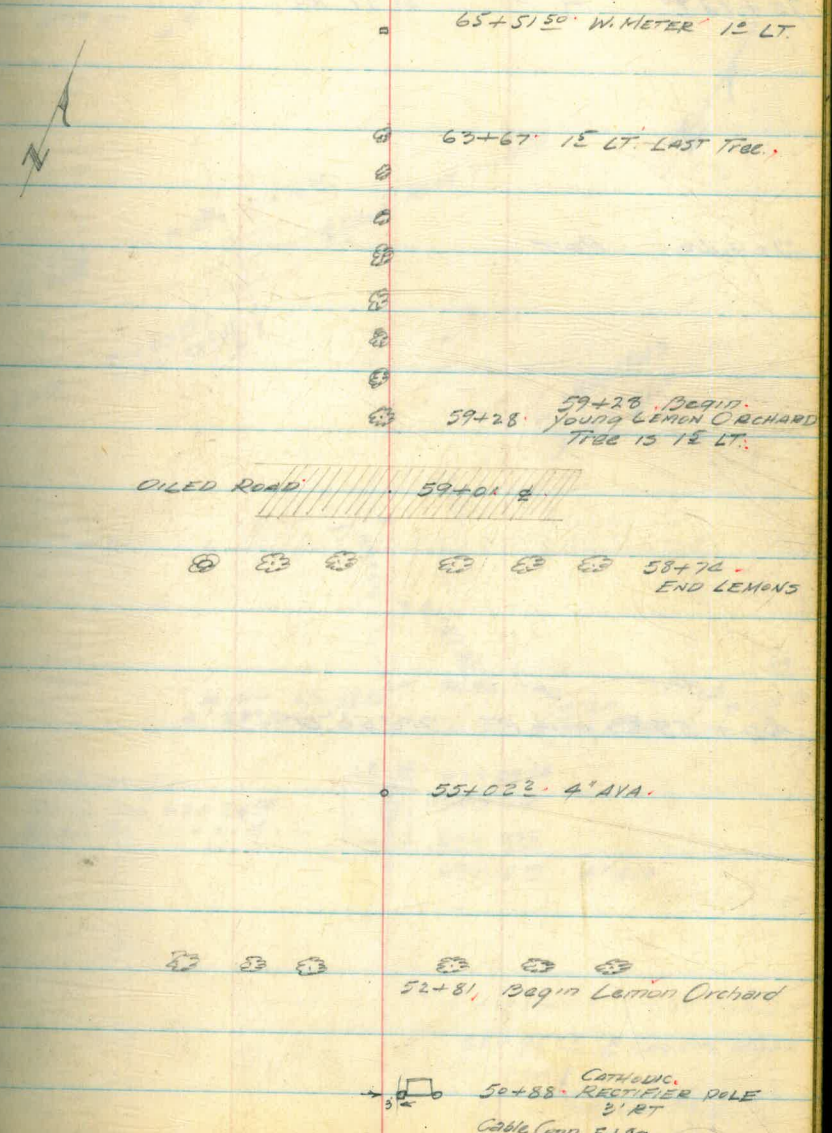
40+15.81 & PT 30° RT



July 13, 1951

BONITA · PIPELINE

65+37.85 POT. (RW. HUB)



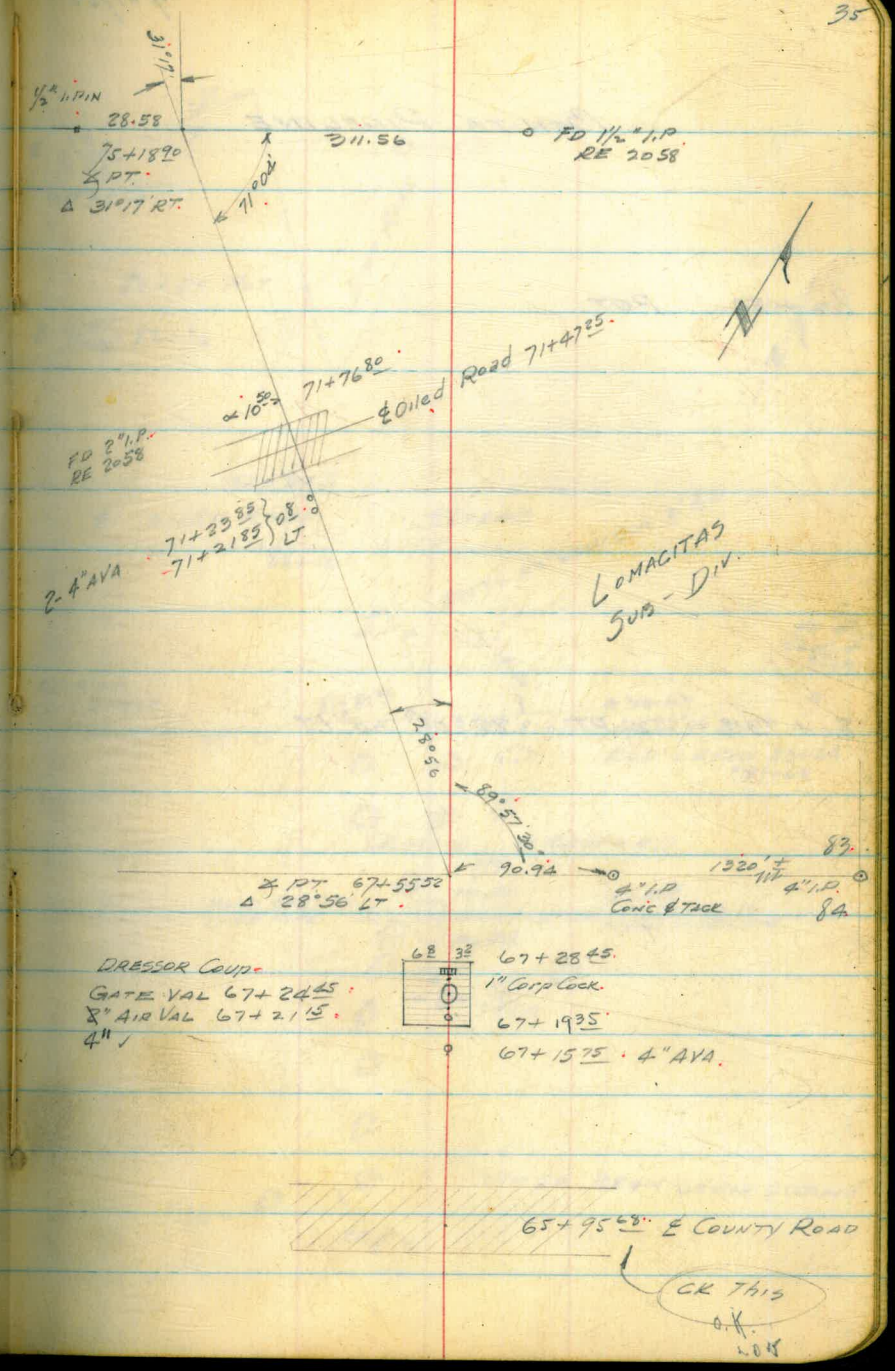
7/25/50

BONITA PIPELINE

75+18.9° ℄ PT 31°17' RT

72+40 POT

67+55.52 ℄ PT 28°56' LT

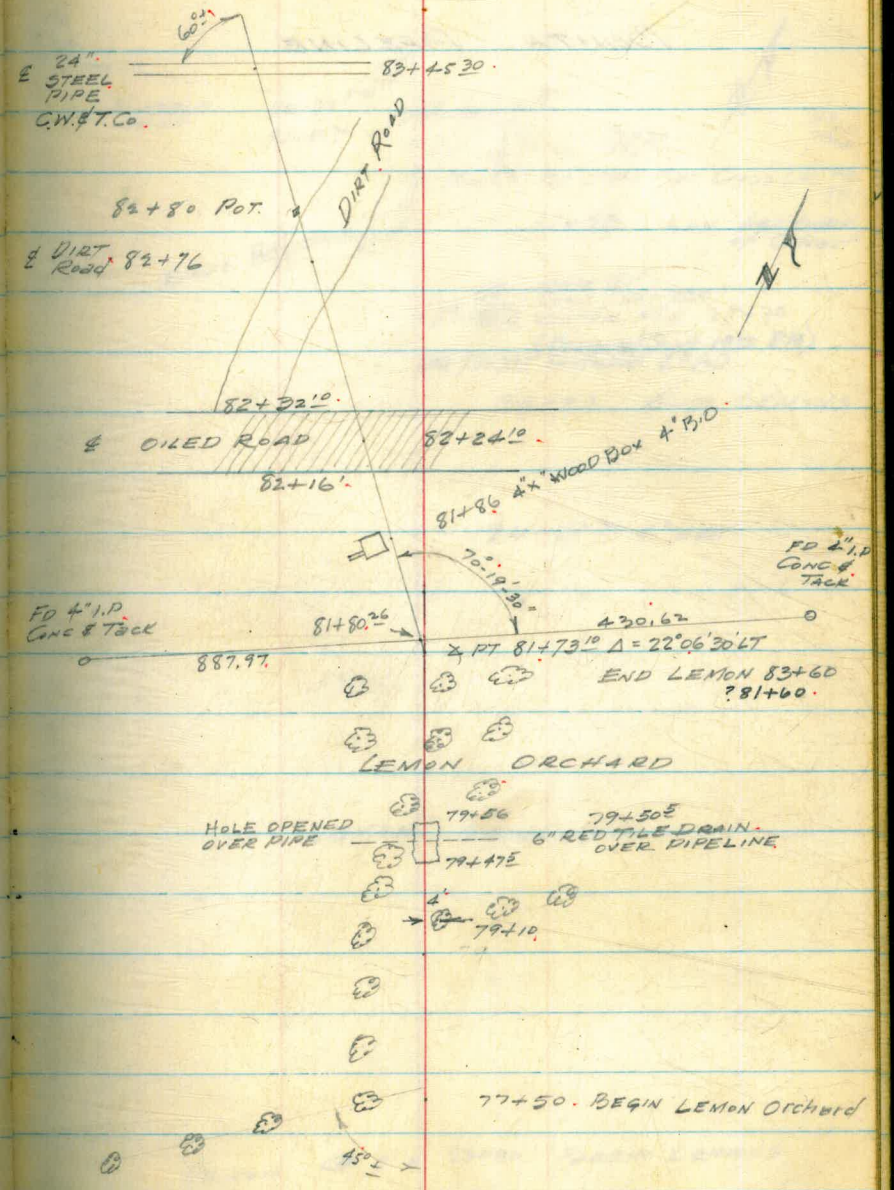


7/27/50

BONITA PIPELINE

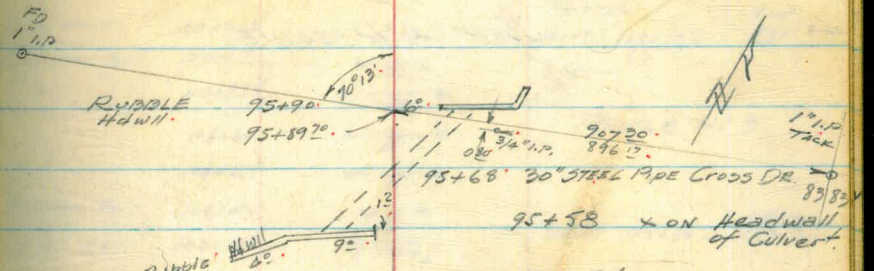
82+80 POT.

81+73.10 ℄ PT 22°06' 30" LT



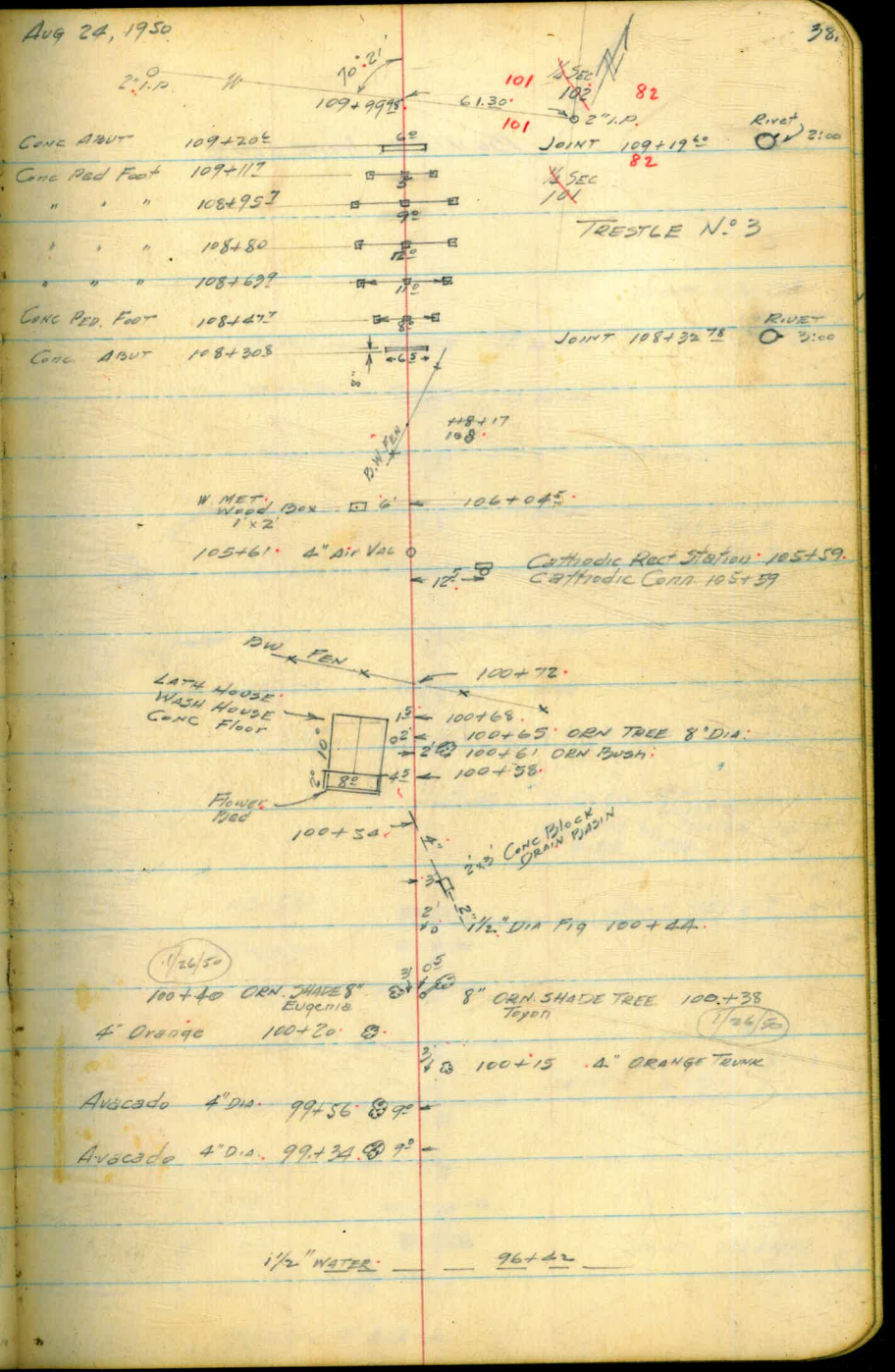
7/27/50

BONITA PIPELINE



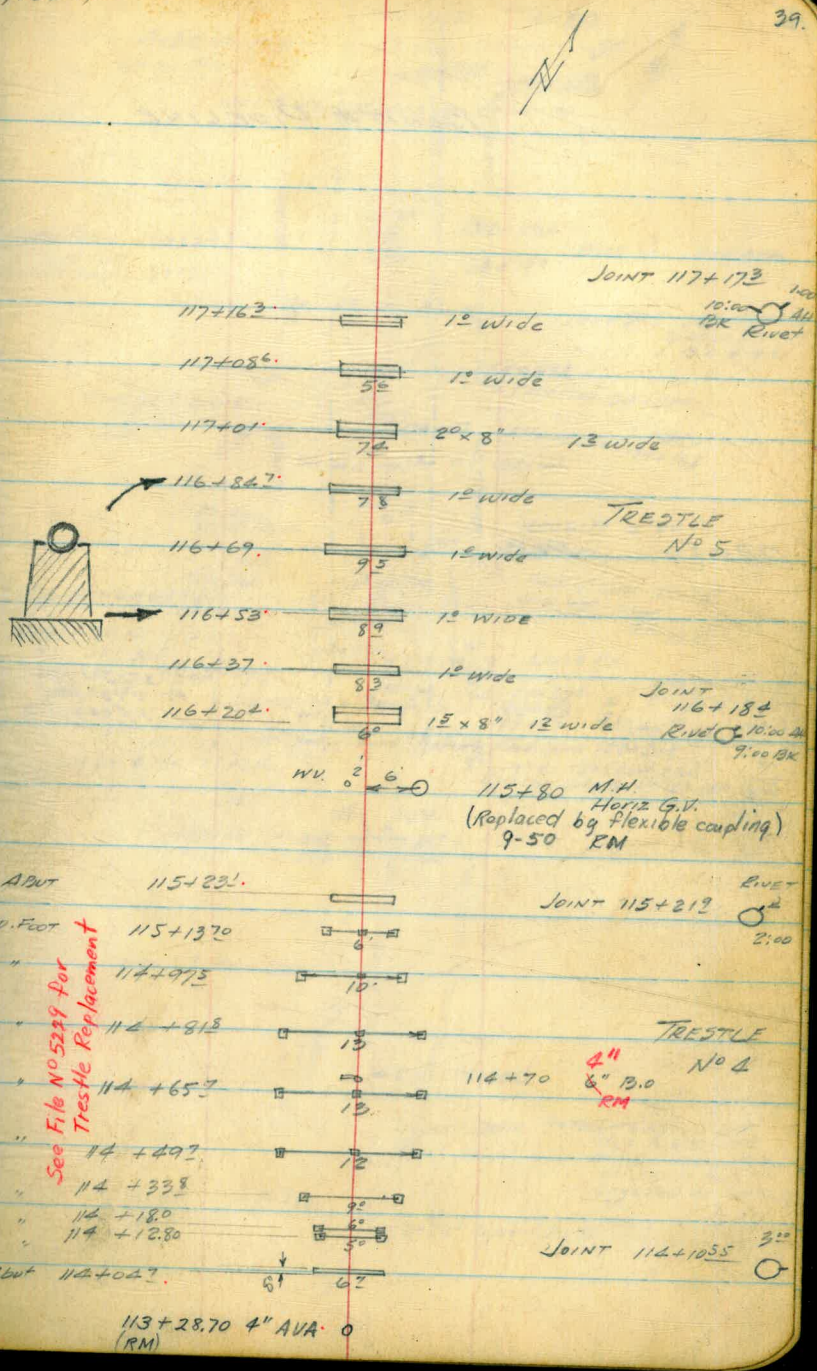
BONITA PIPELINE

Aug 24, 1950



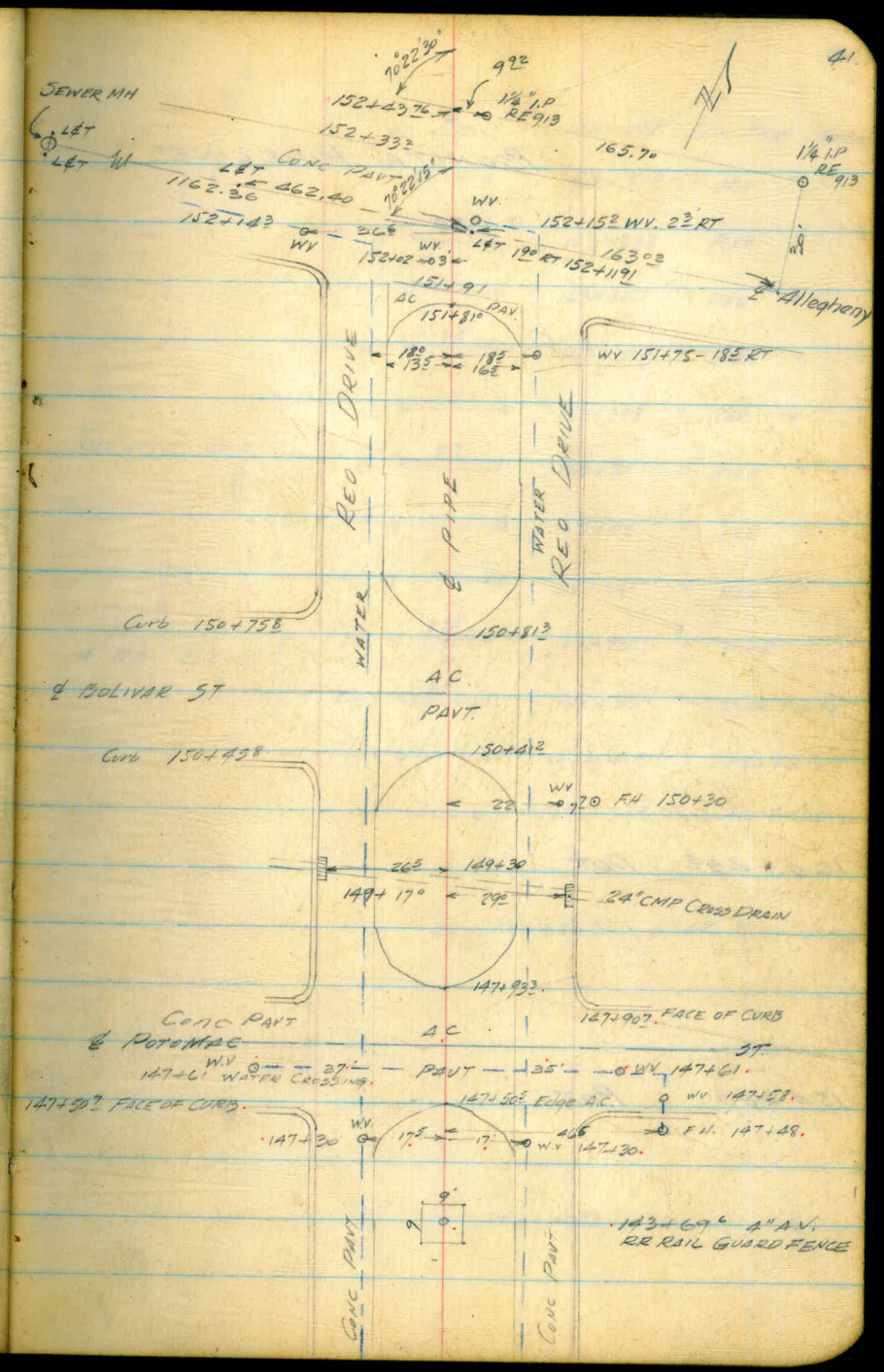
BONITA PIPELINE

Aug. 24 1950



BONITA PIPELINE

143+50 POT



BONITA PIPELINE

160+45± POT

154+00 P.O.T.

0± 6' 163+69? Conc Pier Saddle

" 163+61? " Ped "

1± 6± 163+53± " Pier "

" 163+44? " Ped "

1± 7± 163+37? " Pier "

" 163+28± " Ped "

TRESTLE No 8

1± 7? 163+21 " Pier "

" 163+05 " Ped "

" 162+89° " Ped "

4" B.O. 162+66± 1± 8.95 162+73° " Pier "

1± 8± 162+57° " Pier Foot'g

" 162+41± " Ped Foot'g.

" 162+34± Conc Ped Foot'g.

160+26.35 4" A.V.

153+49.82 4" A.V.

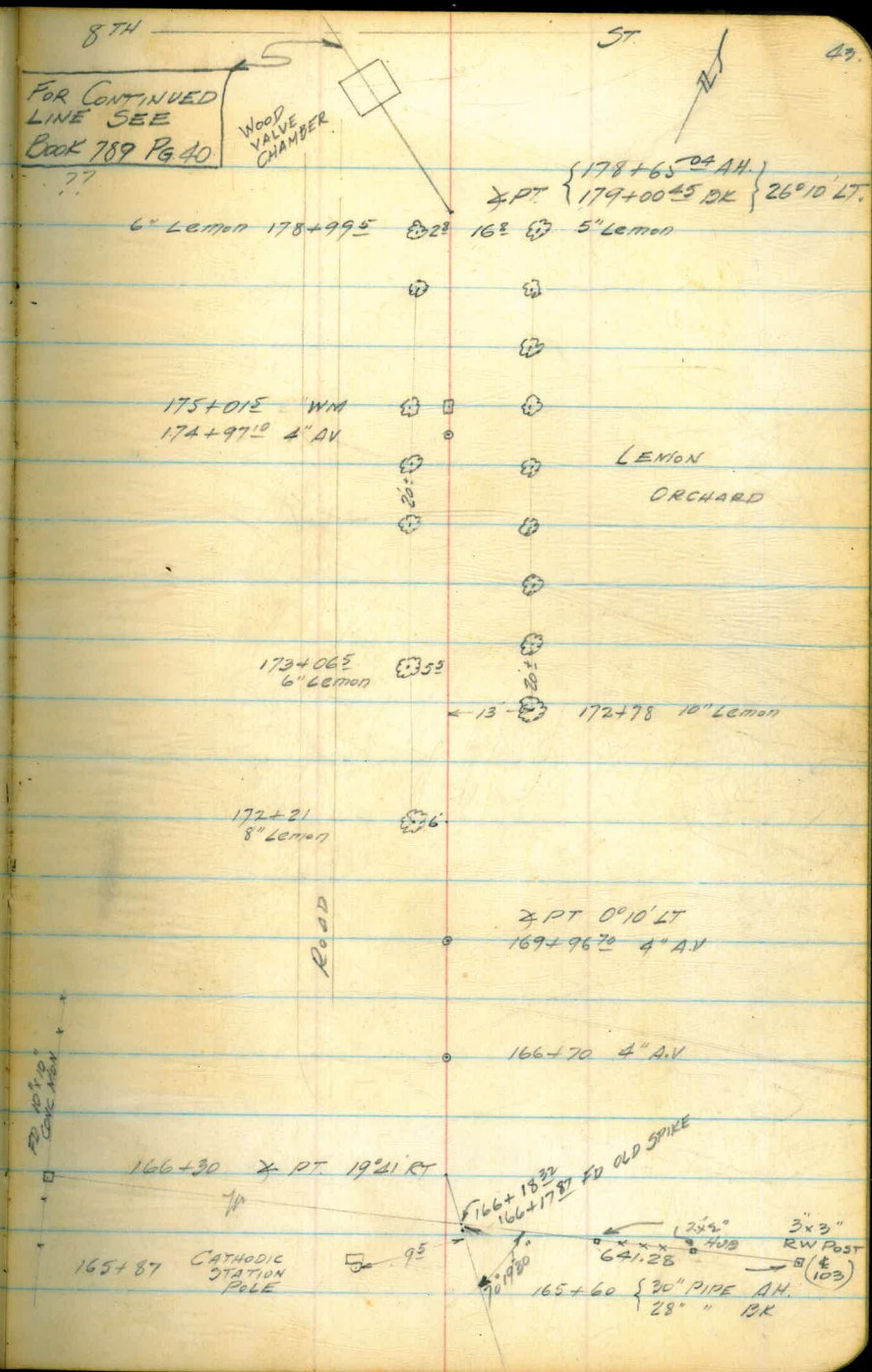
BONITA PIPELINE

179+ AH

179+00.45 BK } 26°10' LT
178+65.04 Ah }

169+96.70 ∡ PT 0°10' LT

166+30 ∡ PT 19°41' RT



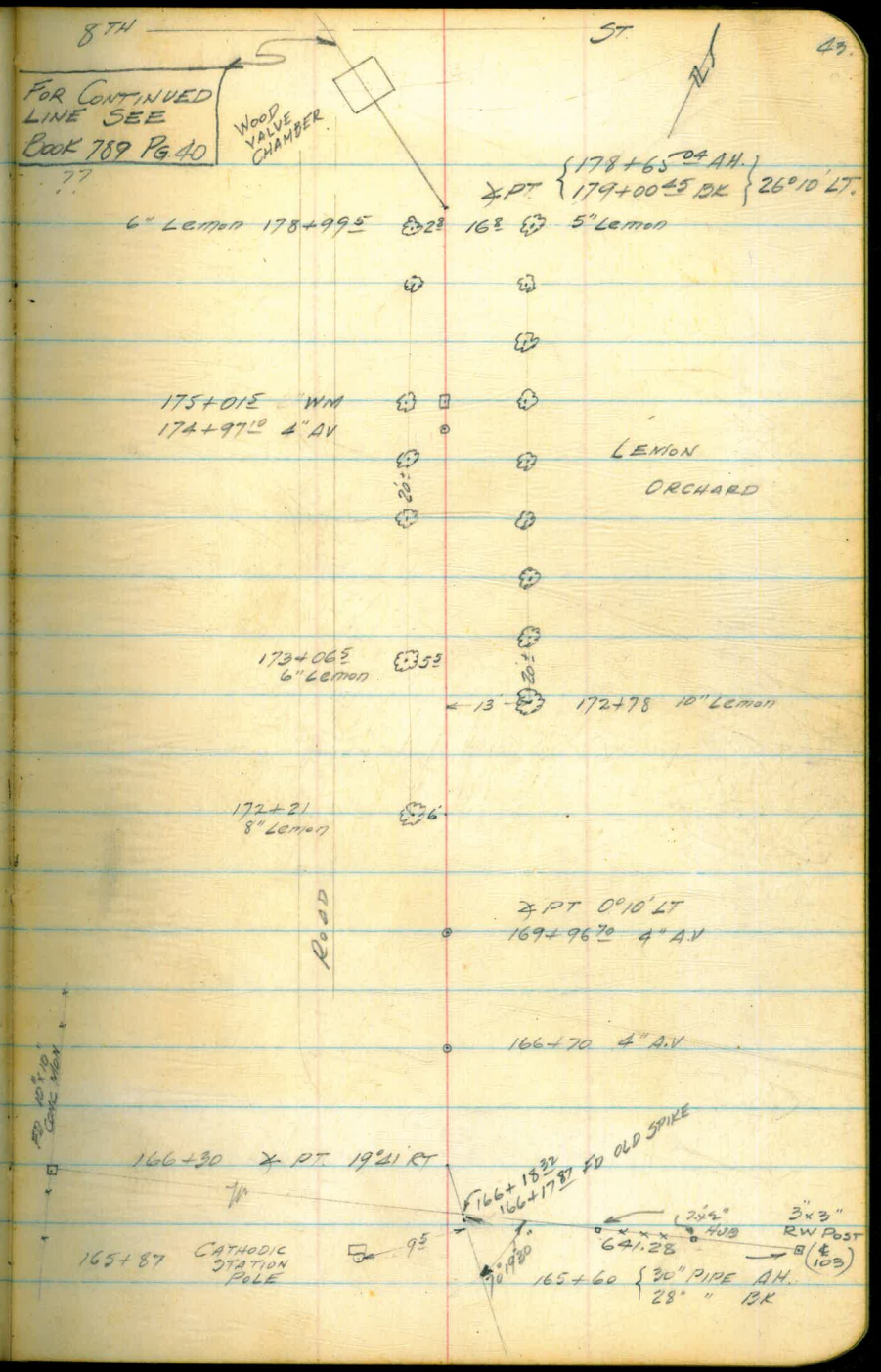
BONITA PIPELINE

179+ AH
179+00.45 BK
178+65.04 AH

26°10' LT

169+96.70 ℄ PT 0°10' LT

166+30 ℄ PT 19°41' RT



52' Ch to Ch

5' Park

5' Sidewalk

2' Ch Pad

Alley 18' Ch to Ch

(CONTINUED FROM Page 79 BK 274)

℄ PROFILE BONITA PIPELINE

		~~218.01~~ 219.59							
121+00			7.7	211.9					
+36			9.3	Top pipe 210.3	121+26	8.7 / 15	℄	8.7 / 15	
+50			7.2	212.4					
122+00			5.2	214.4	Edge Conc Pavt	7.8 / 15	℄	7.8 / 15	
+05			8.8	Top pipe 210.8					
+03			6.3	213.3					
+09			6.2	213.4					
+18			3.1	216.5					
+50			3.1	216.5	Edge Conc Pav-	7.69 / 15	7.5 / 9	℄	7.4 / 14	7.57 / 15	Edge Conc Pav
123+00			3.0	216.6					
123+00					"	11.43 / 15	11.4 / "	℄	7.30 / 15	"
123+10 48			1.05	218.54	Top of A.V.					
" "			5.43	Top pipe 214.16						
123+10 48			4.0	215.6						
+50			4.9	214.7		7.19 / 15	7.2 / "	℄	7.0 / 10	7.00 / 15	
+57			4.3	Top pipe 212.3						
+92			5.3	" " 212.3						
124+00			5.8	213.8						
+50			4.9	214.7						
125+00			3.8	215.8						
+50			2.8	216.8						
P Edge Pavt	11.04	~~229.16~~ ~~227.58~~	1.47	~~218.12~~ ~~216.54~~						
126+00			11.6	217.6						
+50			10.1	219.1						

NOTE: For Elevs To Top Pipe See page 48 This book

JAN. 30 1950

8/24/50

℄ PROFILE BONITA P.L

227.58
229.16

127+00	7.9	221.3	
+29	6.6	222.6	Edge oil
+50	5.9	223.3	
+93	5.1	224.1	Edge oil
128+00	5.1	224.1	
+50	3.2	226.0	
129+00	1.7	227.5	
+50	+0.2	229.4	
CK BM	5.11	224.05 217.91 222.47 = 224.03	CITY DATUM USGS "

(Cont'd on page 49)

1.0

SEPT. 1, 1950

SECTIONS AT PROPOSED NEW PIERS
186.11

116+47.2

116+74.0

163.6	163.3	167.0	171.1	174.1
22.5	23.8	19.1	15.0	12.0
18	19		8	13

171.1	167.5	166.2	165.7
15.0	18.6	19.9	20.4
15	7		16

BONITA PIPELINE
ELEVATIONS Top of PIPE

BM	1.02	
124+20.	15.33	
123+81±	13.90	
122+57.	14.70	
121+20±	16.57	
125+67±	11.74	
126+81.	7.75	

Dug up pipe } .037 −
Bar down to pipe
" " " " } .0064 +
Pipe Exca. for AVA? } .0137 +

Bar down to pipe
" " " " } .0351 +

Oct. 2, 1950
Beatty T
Leonard Φ

(Cont'd from page 46)

℄ Profile – Bonita P.L Cont'd

BM	8.41	232.46		224.05	BP ~~SW~~ NW. Cor Winchester
129+75			4.77	227.7	Top 28" Steel pipe 4.38 15 — 2.76 15 Conc Pavt
+82			5.09	227.37	" " " "
130+00			3.9	228.6	Excavated opening
+50			6.2	226.3	
131+00			10.3	222.2	
⊓ Rock	0.29	219.46	13.29	219.17	
+50			1.8	217.7	
132+00			7.4	212.1	
+50			11.7	207.8	
⊓ Rock	2.92	209.08	13.30	206.16	
133+00			5.0	204.1	
+50			6.6	202.5	
134+00			6.9	202.2	
+16³			6.79	202.29	Edge A.C Pavt
+50			6.73	202.35	" "
+69⁸			6.94	202.14	" " "
ck BM			8.07	201.01 = 201.01 194.89	B.P. S.W Cor. Cumberland
135+00			7.2	201.9	

10/2/50

& PROFILE - BONITA PIPELINE

209.08

BM	135+50		7.6	201.5
12	136+00		7.9	201.2
	+50		7.8	201.3
13	+59±	Top of stem of G.V. (B.O)	12.35	
	137+00		8.2	200.9
13	+50		8.1	201.0
	+60		11.35	197.63
	+67		11.41	197.67
13	138+00		7.3	201.8
	+19.5		7.3	201.8
	+20.5		11.15	197.93
13	+50		6.5	202.6
	139+00		4.7	204.4
13	P	12.36 221.14	0.30	208.78
	+50		14.2	206.9
	140+00		10.5	210.6
	+50		7.1	214.0
	+92±		4.9	216.2
	141+00			
	CK BM		5.21	215.93 - 215.95 / 209.83

℄ OUTLET 16.90 / 28 — 36" CMP Cross Drain — 15.84 / 28 ℄ INLET

Top 28" Steel Pipe } Excavated Opening
" " " "

Top 28" PIPE at VAL CHAMBER

Edge A.C Pav't

" "

BP. SW Cor Albemarle

℄ PROFILE — BONITA PIPELINE

	141+30		3.52	217.62
	+50		2.9	218.2
	142+00		1.2	219.9
P	ROCK	7.93 229.03	0.04	221.10
	+50		6.9	222.1
	143+00		4.8	224.2
	+50		3.1	225.9
P		0.45 229.02	0.46	228.57
	144+00		3.0	226.0
	+50		4.0	225.0
	145+00		5.5	223.5
	+50		7.2	221.8
	146+00		9.3	219.7
	+50		11.5	217.5
P	(ROCK)	1.52 217.60	12.94	216.08
	147+00		2.3	215.3
	+50		4.5	213.1
	+50.5		4.46	213.14
	+93.2		6.5	211.1
	148+00		7.1	210.5

Edge A.C Pavt

Top of Air Val

3.90 15 Conc Pav. | 3.0 5 | 3.5 2 | 2.8 5 | 3.82 15 Conc Pav.

Edge A.C. Pavt
" " "

℄ Profile – Bonita Pipeline

		217.66		
	148 + 19		7.9	209.7
	+ 50		10.5	207.1
	℄ (Rock)	4.44	12.85	204.75
	149+00		5.6	203.6
	+17 (29.0 RT)		14.47	
	+30 (26.5 LT.)		16.10	
	+50		5.6	203.6
	150 +00		2.0	207.2
	℄ (Rock)	9.27	0.56	208.63
	+41.2		8.6	209.3
	+50		8.1	209.8
	+81.3		7.1	210.8
	151+00		6.5	211.9
	+50		4.8	213.1
	+81		3.9	214.0
	+91		3.77	214.13
	152+00		3.71	214.19
	+11.2		3.71	214.19
	+33.2		3.23	214.67

6.55 7.27
7.97 8.83
14.47 16.10

℄ 24" CMP Cross Drain.	29.0 RT	INLET AT Edge Drop Inlet
℄ 24" " " "	26.5 LT	OUTLET AT Edge Drop Inlet

Edge A.C. Pavt

" "

Edge " "

Edge A.C. Pavt

" Conc. Pavt

" "

" ℄ Street

" "

10/2/50
10/10/50

BEATTY
LEONARD
BAKER

& PROFILE

BONITA PIPELINE

217.90

D	152 +43			3.3	214.6
12	+50			1.3	216.6
	CK BM	8.46	221.26	4.80	= 213.10 = 213.09 / 206.97 USGS Datum BP SW Cor. Allegheny St & Rec Dr. City Datum
13	+74			4.5	216.8
	+83			3.6	217.7
13	+94			3.6	217.7
H	153+00			4.2	217.1
	+13			5.7	215.6
13	+50			5.6	215.7
	+62			4.3	217.0
H	154+00			6.6	214.7
13	+50			10.7	210.6
	+73			10.1	211.2
12	H (Rock)	0.72	209.46	12.52	208.74
	155+00			2.0	207.5
	+50			6.9	202.6
	+63			6.9	202.6
C	+82			8.9	200.6
1	156+00			13.8	195.7
	H (Top Grd Stk.)	0.13	196.55	13.04	196.42

10/10/50

℄ PROFILE
BONITA PIPELINE
196.55

	156+34		10.9	185.7
	P (ROCK)	7.55 192.49	11.61	184.94
	+42		10.3	182.2
	+48		11.8	180.7
	156+50		11.9	180.6
	+57		11.3	181.2
	+63		9.9	182.6
	157+00		9.8	182.7
	+50		10.2	182.3
	158+00		9.6	182.9
	+41		5.5	187.0
	+50		3.5	189.0
	P ROCK	11.90 202.93	1.46	191.03
	+84		7.1	195.8
	159+00		6.5	196.4
	+50		5.5	197.4
	160+00		1.7	201.2
	P (ROCK)	5.73 206.37	2.29	200.64
	+19		3.5	202.9

10/10/50

℄ PROFILE
BONITA PIPELINE
206.37

BM	SET TBM			0.83	205.54
	160+26			4.0	202.4
	160+45			2.6	203.8
	+50			2.8	203.6
	+73			5.1	201.3
	161+00			9.9	196.5
TP	P (ROCK)	0.50	193.79	13.08	193.29
	+50			2.0	191.8
	+63			3.0	190.8
	+75			5.0	188.8
TP	162+00			12.2	181.6
	P (ROCK)	0.29	180.75	13.33	180.46
	+06			2.0	178.8
	+13			7.4	173.4
	+27			13.25	168.5
	P (TOP PIPE 162+28)	0.45	167.94	13.26	167.49
	+34±			4.9	163.0
				3.88	164.06
	+41±			5.38	162.56
				2.8	161.1
	+50			0.57	167.37

Top 4" AV.

Top 28" pipe

NAT. GRD.
Top Conc. Pier
Top Conc. Block Footing
NAT. GRD

Top pipe

10/10/50

℄ PROFILE
BONITA PIPELINE
167.94

162+57°	8.65	159.29	Top Conc Pier
+57°	10.1	157.8	Nat Grd
+73°	9.75	158.19	Top Conc Pier
+73°	11.0	156.9	Nat. Grd
+81	10.6	157.3	" "
+85	11.9	156.0	" "
+89°	9.85	158.09 ~~158.09~~	Top Conc Block Footings
+89°	10.3	157.6	Nat. Grd
163+00	0.63	167.31	Top pipe
+05°	8.92	159.02	Top Conc Blk Footing
+05°	9.6	158.3	Nat Grd
+21°	7.28	160.66	Top Conc Pier
+21°	7.9	160.0	Nat. Grd
+28⅜	8.48	159.46	Top Conc Block Footing
+28⅜	8.5	159.4	Nat. Grd
+37⅔	6.19	161.75	Top Conc Pier
+37⅔	7.1	160.8	Nat. Grd
+44.7	6.66	161.28	Top Conc Blk
+44.7	6.8	161.1	Nat Grd
+50	0.64	167.30	Top pipe

10/10/50

℄ PROFILE — BONITA PIPELINE

		167.94		
163+53		5.10	162.84	Top Conc
+53		6.5	161.4	NAT GRD
+61		4.67	163.27	Top. Conc Blk Footing
+61		5.4	162.5	NAT. GRD
+63		0.68	167.26	Top pipe
+69		2.38	165.56	Top Conc saddle pipe
+69		3.9	164.0	NAT. GRD
+90		0.32	167.62	
PI	9.15	176.78	0.31	167.63	(Top rivet 163+88)
164+00			8.1	168.7	
+27			3.6	173.2	
+50			3.1	173.7	
+86			1.3	175.5	
165+00			2.3	174.5	
+15			2.87	173.91	Top 28" pipe & NAT GRD.
+50			0.61	176.17	" " "
+50			0.9	175.9	NAT. GRD
PI	12.29	189.05	0.02	176.76	Top of 28" pipe 165+60.
+81			10.5	178.6	

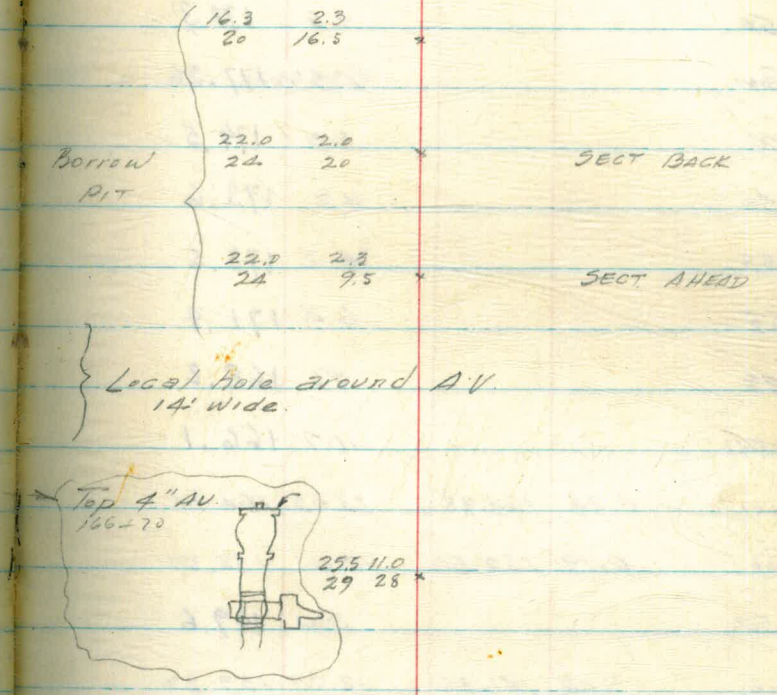
10/10/50

℄ PROFILE

BONITA PIPELINE

189.05

166+00		5.9	183.2
+14.8	(orig Sta ℄ PT.)	3.3	185.8
+30	℄ PT.	1.9	187.2
+50		1.9	187.2
+50			
+63		2.5	186.6
+70		6.4	182.7
+78		4.7	184.4
SET TBM		0.92	188.13
167+00		11.7	177.4
℄ ROCK	1.41	177.29	12.67 176.38
+21		6.5	171.3
+50		10.5	167.3
+69		13.78	164.01
+83		16.1	161.7
+92.5		14.27	163.52
168+00		13.1	164.7



10/10/50

℄ PROFILE
BONITA PIPELINE
177.79

168+50			10.0	167.8	
169+00			6.9	170.9	
+50			4.5	173.3	
SET TBM			0.53	177.26	Top 4" AV 169+96.70
170+00			3.3	174.5	
+50			4.2	173.6	
+55			4.2	173.6	
+65			6.4	171.4	
+92			9.6	168.2	
171+00			11.7	166.1	
P (ROCK)	0.24	164.98	13.05	164.72	
D (ROCK)	0.19	152.56	12.61	152.37	
+50			3.0	149.6	
P (ROCK)	2.04	141.86	12.74	139.82	
172+00			7.4	134.5	
+08			10.9	131.0	Begin Lemon orchard
+50			11.4	130.5	
173+00			11.5	130.4	
+50			11.3	130.6	

10/10/50

℄ Profile
BONITA PIPELINE
141.86

174+00			10.5	131.4
+50			10.4	131.5
175+00			10.3	131.6
+50			10.1	131.8
176+00			9.5	132.1
+50			9.9	132.0
177+00			9.7	132.2
+50			9.2	132.7
178+00			8.9	133.0
+50			8.3	133.6
			7.5	134.4
P	5.87	136.67	11.06	130.80
CK TBM			1.99	134.68 = 134.71 / 128.59

USGS. Datum
C/L @ on conc storm drain Channel BK 789 pg 44
~ City Datum

Profile 6' Offsets
Bonita I.L.

King Baker West. 12-8-50

T.B.M.	3.07	197.18		194.11		Top Valve Chamber
426+53.78			2.9	194.3	189.2	5.1
+19.85			2.9	194.3	189.2	5.1
+07.99			2.9	194.3	188.3	6.0
426+00.78			2.9	194.3	188.1	6.2
425+70.86			3.1	194.1	188.1	6.0
+40.95			3.4	193.8	187.8	6.0
+11.21			3.7	193.5	187.2	6.3
424+81.13			4.3	192.9	186.6	6.3
+51.30			5.6	191.6	185.6	6.0
+21.44			7.5	189.7	183.8	5.9
423+91.61			9.9	187.3	181.5	5.8
+61.91			12.5	184.7	178.8	5.9
T.P.	0.83	185.49	12.52	184.66		
423+32.12			3.6	181.9	176.0	5.9
423+02.33			6.2	179.3	173.2	6.1
422+72.54			8.9	176.6	170.4	6.2
422+42.75			11.5	174.0	167.6	6.4

(Profile Cont.)

12-8-50

		185.49				
T.P.	1.00	173.63	12.86	172.63	"	
+12.96			2.6	171.0	164.9	6.1
421+83.17			5.9	167.7 ~~165.7~~	162.1	5.6
+53.38			6.4	167.2	159.3	7.9
421+46.25			6.2	167.4	158.7	8.7
+38.36			6.3	167.3	157.9	9.4
421+34.36			6.1	167.5	156.8	10.7
			2.14	171.49	171.57	

Bonita P.L. Profile at
Federal - (8) Offsets

KING
Baker

12-19-50

62

Page 39

X Edge Conc. Box Federal & Bonita P.L. KING BK. 789

	9.31	68.04			55.73	
384+47.40			3.6	64.4	57.2	7.2
384+60			4.6	63.4	53.4	10.0
384+91.86			8.5	59.5	49.0	10.5
385+21.40			8.9	59.1	45.0	14.1
T.P.	4.79	63.89	8.94	59.10		
385+36.18			4.6	59.3	42.9	16.5
385+47.40			11.1	52.8	42.4	10.4
CK & M			5.15	58.74	58.73	

49
40
.9 587°

60.4
53.4
7.0

G.V. Box 178+81 I

King
West
Thomas

8-3-50

	5.14	139.82		U.S.G.S	134.68	V-Top Storm Drain
N.W. Cor			4.58	135.24	135.32	F0.08
						Sump ~~N.W.~~ S.W. Cor
S.W. Cor			5.10	134.72	135.32	F0.60
S.E. Cor			4.58	135.24	135.32	F.0.08
N.E. Cor			4.89	134.93	135.32	F0.39
S.W. Cor	Bottom		14.80			
N.W. Cor	"		14.69			
S.E. Cor	"		14.70			
N.E. Cor	"		14.65			

1285
612
134.62

135.32
4
134.92

3948
3492
4.56

58
23
33

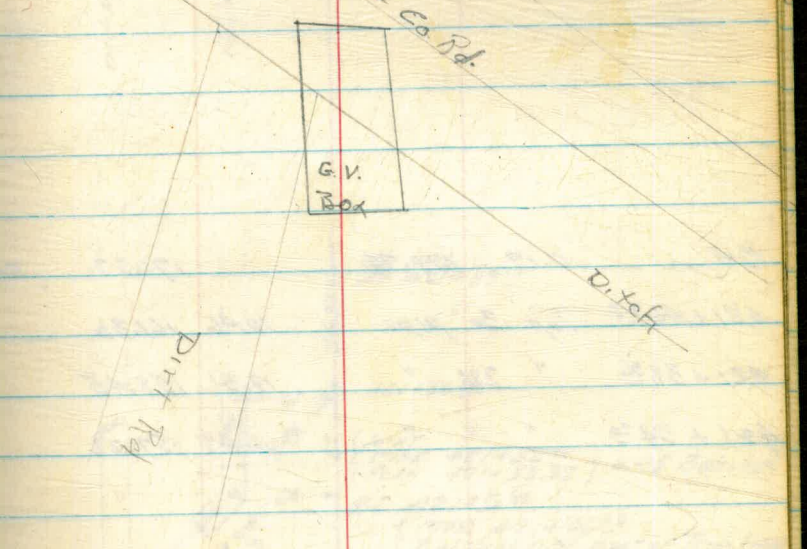
Grades - Top G.V. Chamber
Sta. 28 ENCINA

King 1-9-51
Thomes

	0.70	210.90		210.20	Top F.H. Bonita Drive
S.W.Cor (4)		2.80	208.10	210.4	F. 2.30 Top G.V. chamber
N.W.Cor (4)		4.46	206.44	210.4	F. 3.96
SE Cor (4)		2.38	208.52	210.40	F. 1.88
N.E.Cor (2)		2.14	208.76	210.4	F 1.64

Bonita Rd.
Check on Rd. & Ave

B.M.	480	139.48		134.68
ON ℄ Pav			4.2	
20 East IN Ditch			4.7	
40 " " "			4.4	
℄ Dirt Rd ON Ditch line			4.9	
℄ " " 50' So. "			6.3	
3' From cor Lemon Tree			5.4	
10' SE " " "			5.5	
			4.9	

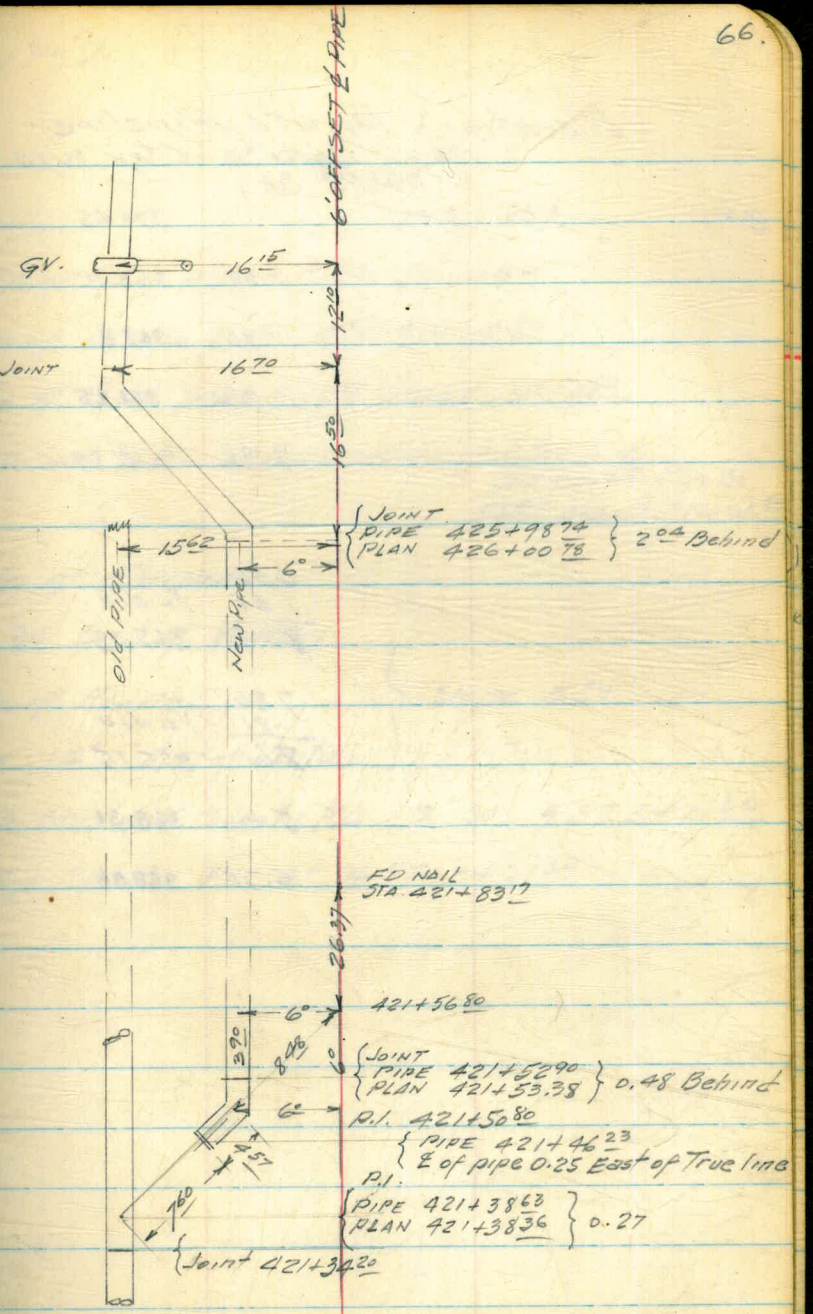


Bonita Pipeline — Jan. 19 195?

Check on Pipe as Layed

Beatty
Leonard
Welker

BM	0.19	171.76	171.57	End Cork
421+46.23	Top 30" pipe	10.46	161.30	
421+38.36	" 28" "	13.31	158.45	
421+34.20	" " "	14.48	157.28	



Elevations Bonita Pipeline near Bonita - Otay Wye

(See pg. 30)

BM.	3.32	373.77	370.45	
		10.65	363.12	Top of Otay pipe STA 0-04^{50}
		10.96	362.8	Top of Bonita pipe STA 0+04^{50}
		11.52	362.25	Top of Otay pipe 15^{0} Ahead 0-04^{50}
		9.88	363.89	Top Bonita P.L at intersection of Otay line 0+64.25 Bonita. 56^{5} Ahead of 0+04^{50}
		6.56		Top of Flange
		1.48	½ dia	
		8.04	365.73	℄ 30" End of Venturi
		7.80		Top of Flange
		.81	½ dia	
		8.61	365.15	℄ of 14" End of Venturi
		5.46	368.31	Top Stub end Bonita P.L 2' SO ℄ PT 0+21^{30}
		5.71	368.06	Top Bonita P.L. at ℄ PT 0+21^{30}

Slope 0.57

LEVELS on Bonita Pipe Line
Winchester to Alleghany

USGS Datum

See page 70	9.79	233.84		224.05
129+61	0.49	233.34	0.99	232.85
See page 70	0.65	220.94	13.05	220.29
	0.01	208.43	12.52	208.42
138+25	12.66	215.62	5.47	202.96
See page 70	12.36	227.78	0.20	215.42
143+69^{6}	0.50	227.84	0.44	227.34
			11.90	215.94 = 215.95
	7.60	231.65		224.05
				217.93
127+59			11.33	Top of pipe 220.32
131+00			10.66	Top of Pipe 220.99
			7.60	224.05 =
	3.36	206.32		202.96
℄ Cumberland St 134+42			5.86	Top of pipe 200.46
			3.36	202.96 = 202.96

BY MATHISON 4-4-56 Page 68

NOTE: ELEVATIONS THIS sheet are reduced From USGS DATUM TO CITY DATUM

FB778 -6.12'

STA	TOP OF PIPE	PAV'T 15' Left	TOP OF GROUND ℄ PIPE	PAV'T 15' Rt
129+61	222.18 ~~221.70~~	222.71 ~~222.21~~	223.65 ~~223.15~~	221.95 ~~221.44~~
	See page 70			
138+25	192.03 ~~199.22~~	195.65 ~~202.84~~	196.02 ~~203.21~~	195.78 ~~202.97~~
	See page 70			
143+69^{6}	217.60 ~~217.66~~	219.03 ~~219.09~~	220.13 ~~220.19~~	219.09 ~~219.15~~
	See page 70			
127+59	214.20	217.30	217.27	216.33
131+00	214.87	215.21	216.07	216.02
134+42	194.34	195.56	196.21	196.26

HISON 68

6
9+61 78
Top of Pave
6.53 Top
15" Rt of Pave
8+25
57
Rt pave
+69^{6}
Top of pave
Rt
5
222.14
Top of Pave
Rt

4.64 Top of Pave
15 Lt
201.68

Top Ground
3.99
202.33

3.94 Top of Pa
15" Rt
202.38

LEVELS on Bonita Pipe Line
Winchester to Alleghany

USGS Datum

See page 70	9.79	233.84		224.05
129+61	0.49	233.34	0.99	232.85
See page 70	0.65	220.94	13.05	220.29
	0.01	208.43	12.52	208.42
138+25	12.66	215.62	5.47	202.96
See page 70	12.36	227.78	0.20	215.42
143+69.6	0.50	227.84	0.44	227.34
			11.90	215.94 = 215.95
	7.60	231.65		224.05
				217.93
127+59			11.33	Top of pipe 220.32
131+00			10.66	Top of Pipe 220.99
			7.60	224.05 =
	3.36	206.32		202.96
& Cumberland St 134+42			5.86	Top of pipe 200.46
			3.36	202.96 = 202.96

Williams
Varonfakis
Kellhofer

4-4-56

3/29/56

BM BP NW Cor Winchester + Reo

Hi 233.84 228.33 229.27 227.56
Chis □ Top Wly Side A.V. Chamber 129+61.78
Top of Pipe 5.52 227.82 5.01 Top of 15' Lt pave Top of Ground 4.07 5.78 15' Rt Top of Pave

Hi 208.43 208.96 209.33 209.09
Top of Pipe 10.28 6.66 15' Lt pave Ground 6.29 6.53 15' Rt Top of Pave
205.34 Chis □ Top Wly Side Valve Chamber 138+25

Hi 227.78 2.63 15' Lt pave Ground 1.53 225.27 2.57 15' Rt pave
Top of Pipe 4.06 225.21 226.31
223.78 Chis □ Top Air Valve Chamber 143+69.6

SW BP Reo + Albermarle St

BM NW Cor Winchester + Reo

8.23 15' Lt Top of Paving 223.42 Top Ground 8.26 223.39 9.20 15' Rt Top of pavn 222.45

10.32 15' Lt 221.33 Top pave Top Ground 9.46 222.19 9.51 15' Rt 222.14 Top of Pave
224.05

TBM Chamber 138+25

4.64 15' Lt Top of Pave 201.68 Top Ground 3.99 202.33 3.94 15' Rt Top of Pa 202.38

LEVELS ON Bonita Pipe Line Cont

USGS Datum

	7.66	223.61	215.95
			Top of Pipe
141+00			9.25 214.36
		7.67	215.94 = 210.45
	2.51	229.85	227.34
			Top of pipe
145+00		8.66	221.19
	1.59	219.32 12.12	217.73
			Top of pipe
148+00			9.69 209.63
			Top of pipe
150+00			13.30 206.02
	10.34	220.44 9.22	210.10
153+49.82	1.61	220.20 1.85	218.59
		7.10	213.10 = 213.09
	1.65	225.70	224.05
	2.29	217.23 10.76	214.94
	3.79	217.08 3.94	213.29
	10.24	226.47 0.85	216.23
		2.41	224.06 = 224.05

FB 778 Page 69

NOTE: ELEVATIONS THIS SHEET ARE REDUCED FROM USGS DATUM TO CITY DATUM

-6.12'

BY MATHISON 4-4-56

STA	TOP OF PIPE	PAU'T 15' Lt.	TOP OF GROUND & PIPE	PAU'T 15' Rt.
141+00	208.24	210.27	210.70	210.28
145+00	215.07	217.09	217.62	217.12
148+00	203.51	204.85	205.00	204.80
150+00	199.90	199.53	200.42	200.40

69

LEVELS on Bonita Line Cont

Reduced by H. BEATTY
4-6-56

70

U.S.G.S Datum

	0.99	233.84	232.85
129+61		Top of Pipe 5.52	228.3
		0.99	232.85
	5.47	208.43	202.96
138+25		Top of Pipe 10.28	198.15
		5.47	202.96
	0.44	227.78	227.34
143+69 ℄		Top of Pipe 4.06	223.72
		0.44	227.34

TBM Chis □ Top Wtr Side AVA Chamber 129+61.78

228.83
5.01
15' Lt Top of pave

229.77 ✓
9.07 Ground

228.07
5.78
15' Rt Top pave

138+25

TBM Chis □ Top Wtr Side Valve Chamber

201.77
6.66
15' Lt Top of pave

202.12
6.29 Ground

201.90
6.53
15' Rt Top of pave

143+69 ℄

TBM Chis □ Top Air Valve Chamber

225.15
R.63
15' Lt Top pave

226.25
1.53 Ground

225.21
12.57
15' Rt Top pave

REO DRIVE WINCHESTER TO ALLEGHANY

Check Depth of Pipe + Ground + Pave Elevations

USCS Datum

0.74	233.59		232.85 ✓
128+00		11.62	Top of pipe 221.97
129+50		5.80	Top of pipe 227.79
129+82		6.27	Top of pipe 227.32
130+50		8.29	Top of pipe 225.35
131+00		12.57	Top of pipe 221.02
0.69	221.64	12.64	220.95 ✓

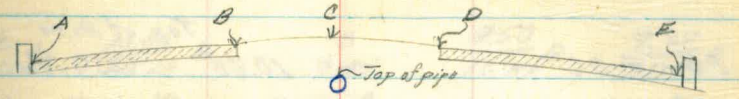
West
Williams
Varonfakis
Kellhofer

Reduced by Mathison 4-11-56

71

4/9/56

Sketch Showing Location of Shots Taken



TBM Chis □ Top AVA chamber 129+61

9.45 / 29'Lt A	9.50 / 14 B	C 9.53	10.11 / 16'Rt D	10.76 / 31'Rt E
224.14	224.09	224.06	223.48	222.83
4.77 / 29'Lt A	4.88 / 14'Lt B	C 4.21	5.66 / 16'Rt D	6.39 / 31'Rt E
228.82	228.71	229.38	227.93	227.20
5.11 / 29'Lt A	4.98 / 14'Lt B	C 4.35	5.60 / 16'Rt D	6.12 / 31'Rt E
228.48	228.61	229.24	227.99	227.47
8.68 / 29'Lt A	8.10 / 14'Lt B	C 7.33	7.51 / 16'Rt D	7.62 / 31'Rt E
224.91	225.49	226.26	226.08	225.97
12.96 / 29'Lt A	12.11 / 14'Lt B	C 11.41	11.28 / 16'Rt D	11.13 / 31'Rt E
220.63	221.48	222.18	222.31	222.46

221.64

132+00		10.88	Top of pipe 210.76
1.08	210.04	12.68	208.96 ✓
133+75		10.25	Top of pipe 199.79
135+00		9.16	Top of pipe 200.88
136+50		11.15	Top of pipe 198.89
4.77	206.45	8.36	201.68
		3.50	202.95 = 202.96
5.52	208.48		202.96
139+00		6.11	Top of pipe 202.37
		5.52	207.96 = 202.96

	A	B	C	D	E
132+00	11.26 / 29'Lt	10.46 / 14'Lt	9.15	9.50 / 16'Rt	9.37 / 31'Rt
	210.38	211.18	212.19	212.14	212.27
133+75	9.09 / 29'Lt	8.43 / 14'Lt	7.52	7.50 / 16'Rt	7.26 / 31'Rt
	200.95	201.61	202.52	202.54	202.78
135+00	9.64 / 29'Lt	8.82 / 14'Lt	8.16	8.03 / 16'Rt	7.91 / 31'Rt
	200.40	201.22	201.88	202.01	202.13
136+50	10.01 / 29'Lt	9.58 / 14'Lt	9.15	9.23 / 16'Rt	9.32 / 31'Rt
	200.00	200.46	200.89	200.81	200.72

TBM Chis □ GV Chamber 138+25

4/10/56

JBM

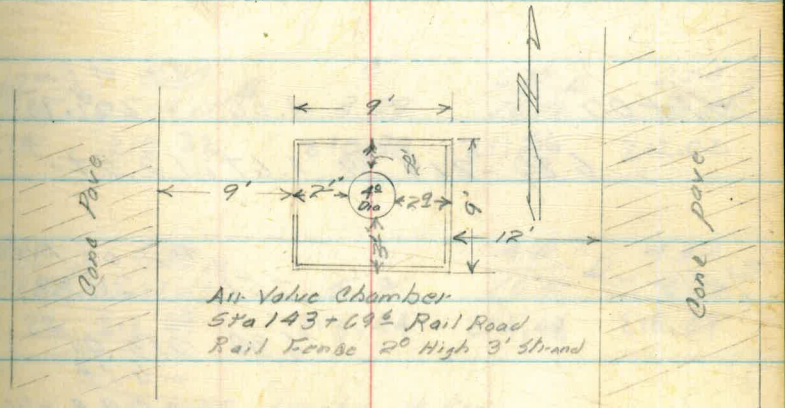
	A	B	C	D	E
139+00	4.65 / 29'Lt	4.28 / 14'Lt	4.18	4.22 / 16'Rt	4.46 / 31'Rt
	203.83	204.20	204.30	204.26	204.02

Bonita Pipe Cont

9.58 225.53		215.95 ✓ Top of pipe	
141+50	8.20	217.33	
142+50	5.10	Top of Pipe 220.43	
7.05 231.10	1.48	224.05 ✓	
143+50	7.63	Top of pipe 223.47	
143+69 ℄	4.64	In Chamber Top of Air Valve 226.46	
	3.75	227.35 = 227.36 Chis ⊓ Top Chamber	

4/10/56

8.10 A 29'Lt	7.73 B 14'Lt	C 7.30	7.68 D 16'Rt	7.88 E 31'Rt
217.43	217.80	218.23	217.85	217.65
4.44 A 29'Lt	4.72 B 14'Lt	C 3.37	4.19 D 16'Rt	4.38 E 31'Rt
221.09	221.31	222.16	221.34	221.15
6.75 A 29'Lt	6.36 B 14'Lt	C 5.09	6.30 D 16'Rt	6.51 E 31'Rt
224.35	224.74	226.01	224.80	224.59



Air Valve Chamber
Sta 143+69 ℄ Rail Road
Rail Fence 2° High 3' Strand

4/10/56

1.61	228.95		227.34 ✓	JBM
1.81	219.13	11.63	217.32 ✓	
147+13		6.17	Top of Pipe 212.96	
		6.19	212.94 − 6.12 = 206.82 = 206.84	
1.32	219.26		212.94 ✓	
149+50		13.96	Top of pipe 200.30	
151+00		4.56	Top of Pipe 209.70	
6.80	219.39	1.67	212.59 ✓	
151+75		7.51	Top of pipe 211.88	
		6.34	213.05 − 6.12 = 206.93 = 206.97	

SW BP Potomac + Rec Dr

	A	B	C	D	E
	4.69 / 29'Lt	4.28 / 14'Lt	4.02	4.20 / 16'Rt	4.40 / 31'Rt
	214.44	214.85	215.11	214.93	214.73
	12.32 / 29'Lt	11.51 / 14'Lt	11.11	10.91 / 16'Rt	11.06 / 31'Rt
	201.94	202.75	203.15	203.35	203.26
	5.12 / 29'Lt	3.94 / 14'Lt	3.28	2.70 / 16'Rt	2.24 / 31'Rt
	209.14	210.32	210.98	211.56	212.02
	8.17 / 29'Lt	6.70 / 14'Lt	5.95	4.91 / 16'Rt	4.32 / 31'Rt
	211.22	212.69	213.44	214.48	215.07

SW BP Allegheny + Rec

Bonita Pipe Line Cont

USGS Datum

129+61.78 1.67 234.52 232.85 ✓

Top of Air-Valve in Chamber

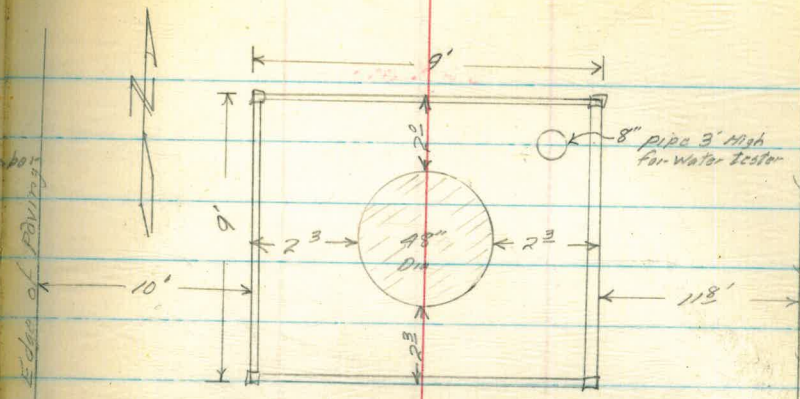
-2.45 ~~236.97~~ 232.07

Top 8" Water-Test pipe

-0.91 ~~235.46~~ 233.58

BY MATHISON PER H. Beatty 4-12-56

1.67 232.85 ✓



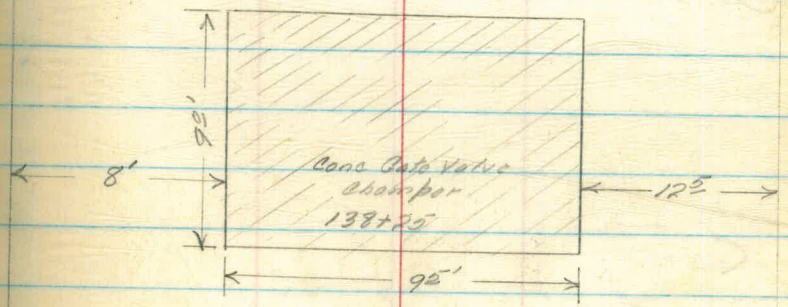
Sta 129+61.78 Air-Valve in Chamber 9x9' 30" High Mine RR Fence

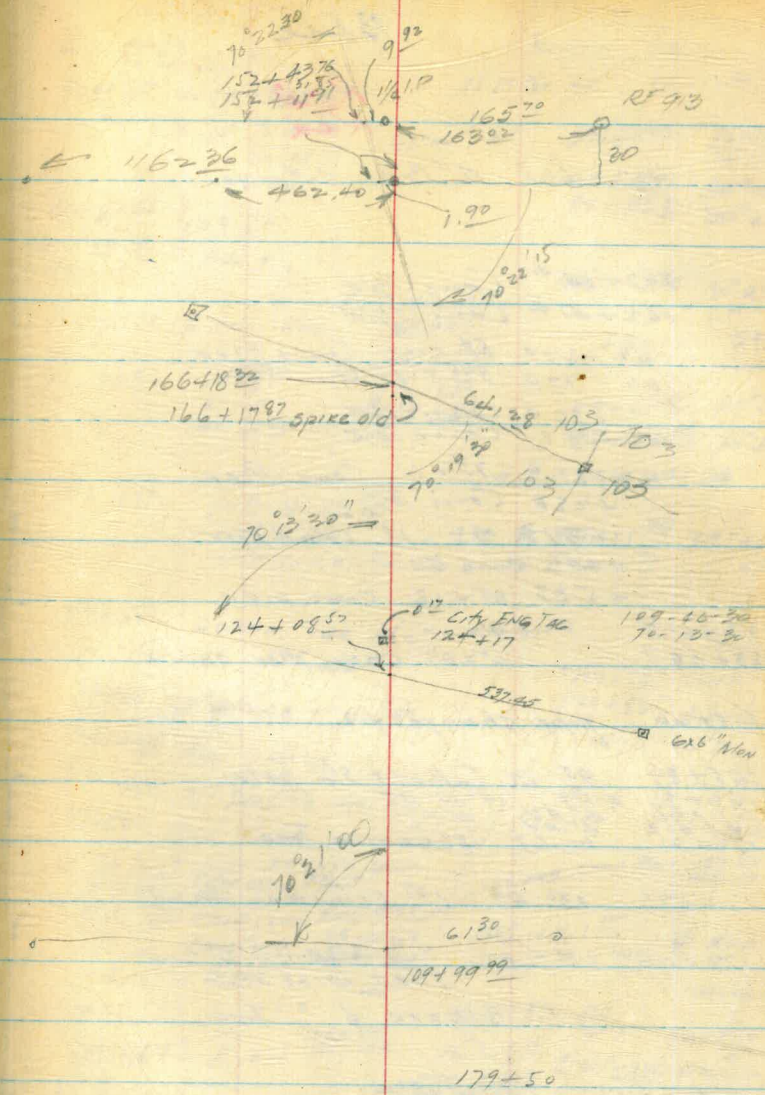
138+25 4.58 202.54 202.96 ✓

Top of Stem of GV

7.77 199.77

4.58 202.96 ✓





70°22'30"
9.92
152+43.76
152+11.91
1/4 I.P
165.70
163.02
RF 913
30
1162.36
462.40
1.90
70°22'15
166+18.32
166+17.87 spike old
64.28
103
103
103
103
70°19'30"
70°13'30"
124+08.57
0.17 City Eng Tag
124+17
109-46-30
70-13-30
537.45
6x6" Mon
70°21'00
61.30
109+99.99
179+50

Blue

Red

162+66.5 4" B.O Bell pipe

162+34.4 Conc Blk
162+41.6 Conc Blk
162+57.0 8.4 x 1.4 Conc Pier
162+73.0 8.2 x 1.4 Conc Pier
+89.0 Conc Blk
163+05.0 Conc Blk
163+21.0 7.7 x 1.4 Conc Pier
+28.8 Conc Blk
+37.3 7.2 x 1.4 Conc pier
+44.2 Conc Blk
+53.3 6.5 x 1.0 Conc pier
163+61.3 Conc Blk
163+69.7 6.0 x 0.7 Conc pier saddle

165+60 pipe changes from 28" to 30"

165+87 9.5 LT Cathedral Sta pole
166+30 & PT 19°21 RT
166+70 4" AV
169+96.9 4" AV
172+21 6.5 LT 8" Lemon Tree

172+78 13° RT 1ST 10" Lemon in Row

173+06.5 5.5 LT " 6" Lemon in Row
Then miss one
3 more ¢ " Two

175+01.5 2" W.M
176+97.10 4" AV

178+99.3 — 16.8 RT End Lemon Row 5"
— 2.8 LT End Lemon Row 6"
179+00.45 = 179+05
4 PT 26°10' LT

Edge Pvt 36+61.2
Edge Conc 36+24.2
" " 76+80.24
BW FEN 37+11
25 LT Bm GV 40+16.40

67+55.52 ℄ NJT
90.94 RT ℄ 89°57'30 RT
to 2¼ Cor ½ Sec 84
¼ Sec 83

61°00' LT 39+64.80 924.40
to Cor
40+15.81 30° RT
40+35.81 30° LT

71+21.85 } 0.8 LT
71+23.85 } AVG 4'.

71+47.25 ℄ oiled Road 46+68.10
65.90
78°11' LT
46+67.50 90° RT
+½" I.P
45 2201 59.0 RT

71+76.80 10.5 LT
1" I.P
RE 2058
1½" I.P
RE 284
49+54.05 30° LT
49+74.05 30° RT
4 Air Vlv 49+74

75+18.90 311.56 to 1½ IP
118°56' RT
28.58 to ½" I.P.N
℄ BK 49+85.36 29°05'
Ahead 50+16.7 LT

77+50 Lemon Tree 14' LT
135°00' LT

79+10 4' RT Lemon Tree
79+47.5 Begin Hole
79+50.5 6" Sewtile over top pipe
79+56 End Hole

118+27.8 Edge A.C Curb perm
118+28.6 Edge conc Pav
119+50.5 Face Curb
121+30.25 Face Curb Rad 9.5
121+00 Face Curb 5.65 LT 30°
+3.0 RT 29°
129+6.78 4" AV.

134+16.3 E.O.I
134+69.8 E.O.I 134+59.5 132+10.5

137+60 } PIPE OPEN
+67.7 } (FH 29.7 LT WW 22.2 LT 150+30)

138+19.5 VAL Box 37.5 RT
138+29.5 6.5 LT

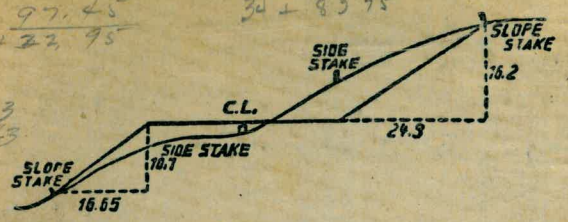
140+9.2 E.O.I 140+98.3
141+30 " " 141+29.7 Albemarle Ao
143+69.6 AV.

122+03 Conc Pvt 15.3 LT
14.5 RT

127+73.7 Curb
127+55.7 Edge Conc
Winchester

105+61.00 4" AVG
113+28.70

136+57.2 EVD GV 154+60 Pvt
147+50.5 E Oil 147+00.7 147+00.7 - 40' Peninsular St 160+26.3 4" AV
+99.3 " 160+45.53
150+41.2 " 150+45.76 Pvt
150+81.3 Face Curb 150+75.76 Polo Vert St "20'
151+81.0 E.O 151+75 WV 18.5 RT Part 138 - 16.5 RT
151+91.0 Concpvt
152+02 WV 3° LT (152+14.3 36° LT WV.
152+15.2 WV 2.3 RT
152+33.2 E Conc Pav
153+49.82 4" AV.



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1½ TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.20	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

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