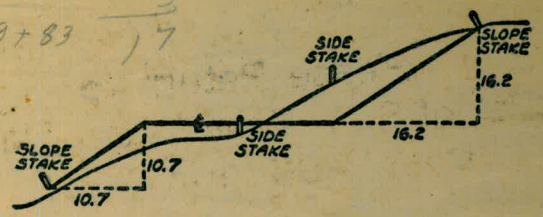
279+83



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.

2.60
10.8
13.4

1334
5
6670
1334
20.010

1173
20
23460

1173
22
2346
2346
25806

279+71.6

3.63 0.05 N of ℄ Pipe

279+40

3.08 0.28 N of ℄ Pipe

−0.21
+11.78
− 2.85

3.63

℄ Casing 0.2
North of ℄ Pipe

279+55.3

3.51

℄ Casing .05 North
of ℄ Pipe

.05 279+78 ℄

1.08

Set HT 279+83

279+83
11.1
279+71.6

279+83
43
279+40

279+70 (5)

404.17
3.52
407.69

203
1.75
28

83
247
553

IMPROVED TABLES
AND
INFORMATION

12.46

407.69
−12.46
395.23
+1.08
396.31

83
7.4
786

396.31
3.51
392.80

396.31
3.68
392.63

DIRECTIONS FOR USE OF TABLES

TABLE No. XIV

Distance of slope stake from side or shoulder stake for any width roadway, slope 1½ 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.

TABLE No. VIII

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections. Degree of curve with a given I may be found by dividing tangent, (or external), opposite I by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

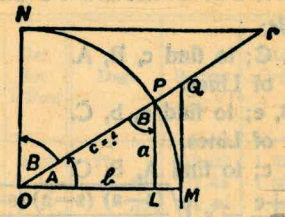


TABLE II

TRIGONOMETRIC FORMULÆ.

$\angle A = \angle MOP \qquad \angle B = \angle PON = \angle OPL$

$R = OB = c = 1$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \text{sos } B = LP$$

$$\text{sos } A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$\text{exsec } A = PQ = \text{coexsec } B$

$\text{coexsec } A = PT = \text{exsec } B$

$$\sin \tfrac{1}{2} A = \sqrt{\frac{1 - \text{Cos } A}{2}} \qquad \cos \tfrac{1}{2} A = \sqrt{\frac{1 + \text{Cos } A}{2}}$$

$\sin 2A = 2 \sin A \cos A \qquad \cos 2A = \cos^2 A - \sin^2 A$

Law of Lines $\dfrac{\sin A}{a} = \dfrac{\sin B}{B} = \dfrac{\sin C^1}{C}$

Law of Cosines $c^2 = a^2 + b^2 - 2ab \cos C$

Law of Tangents $\dfrac{a+b}{a-b} = \dfrac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$

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

Ties To Montgomery Pipe Line 1 — 10

(10) STKS Montgomery Pipe Line 21

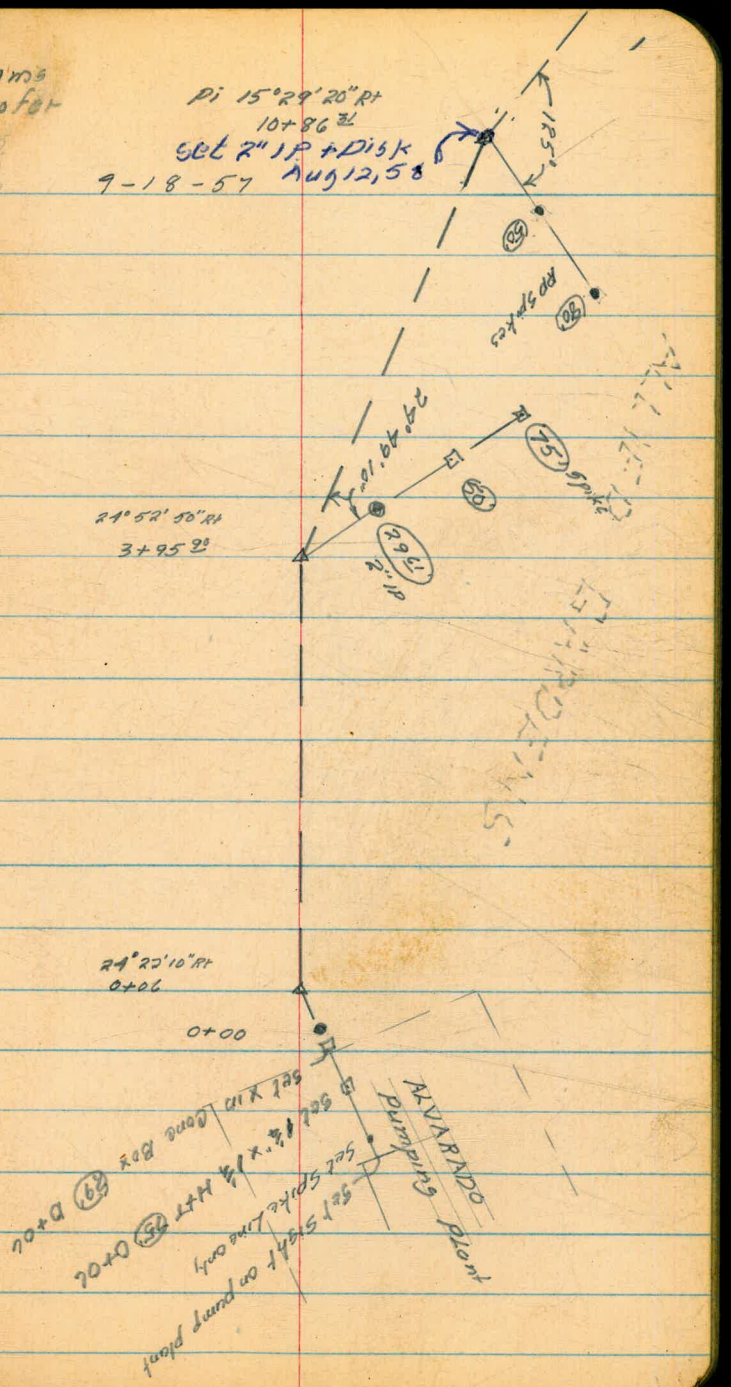
M.P.L.

EL. TOP PIPE 1754 97.53 BACK 67-

TIES TO MONTGOMERY
PIPE LINE

5°
29(1)
1099.

West
Williams
Kellhofer

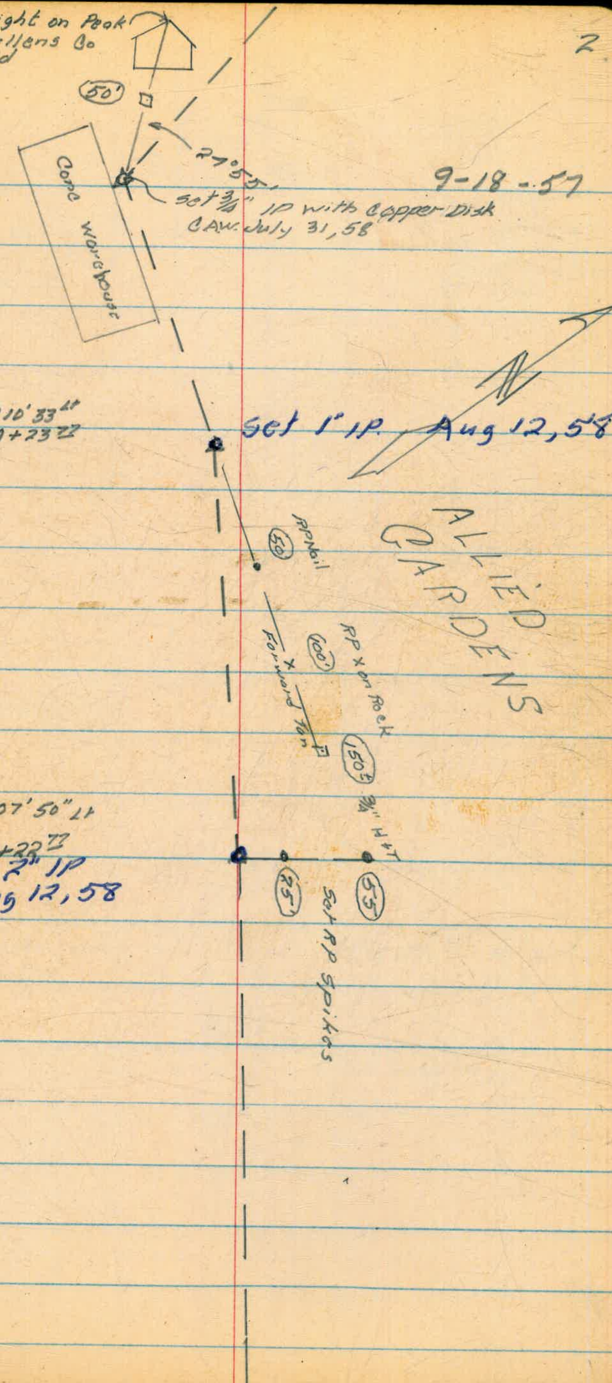


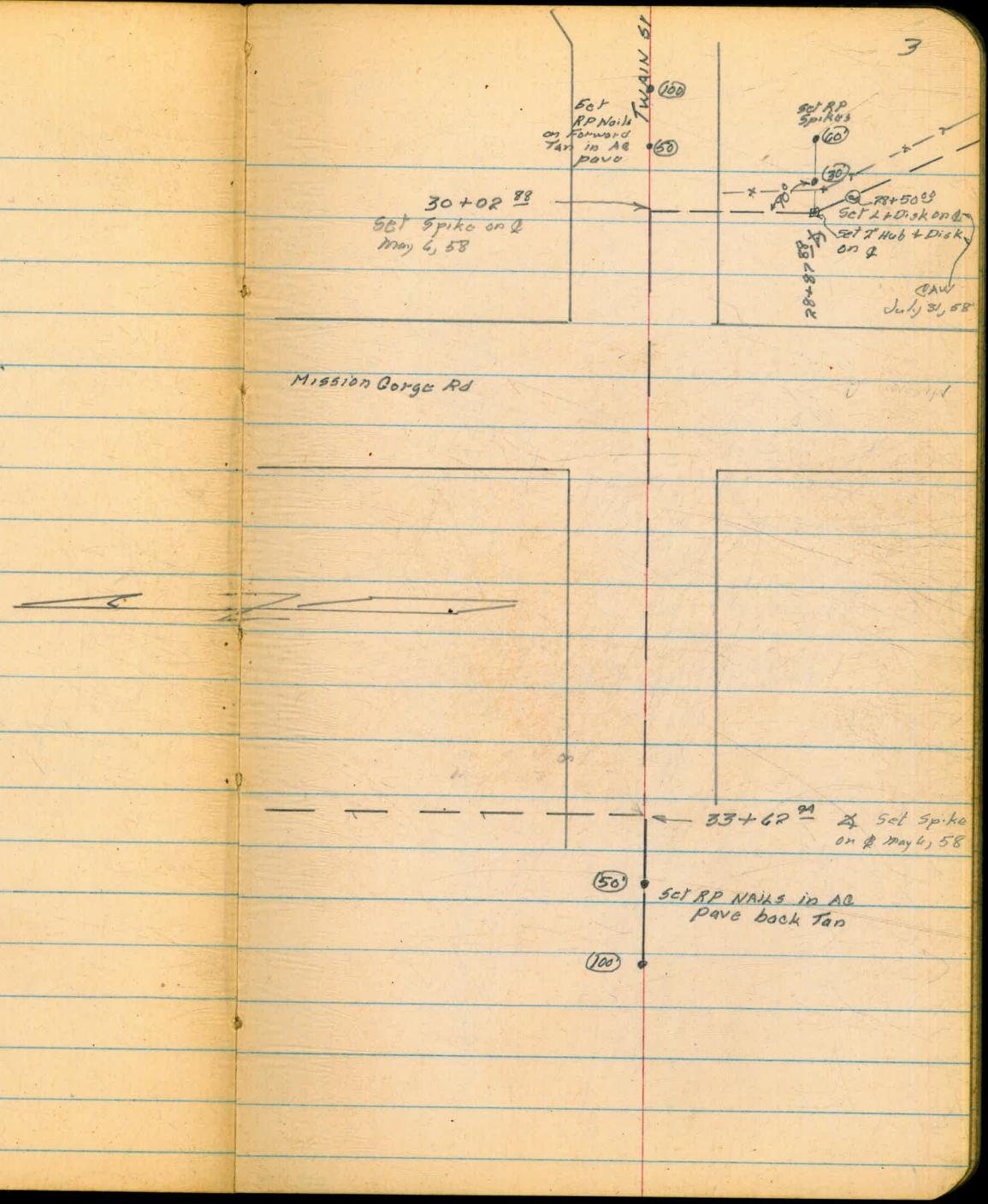
9-18-57

24+62.35 AH
29+67.51 BK
Δ = 67° 28' 00"

15°10'33" Lt
29+23.77

1°07'50" Lt
19+22.77
Set 2" IP
Aug 12, 58

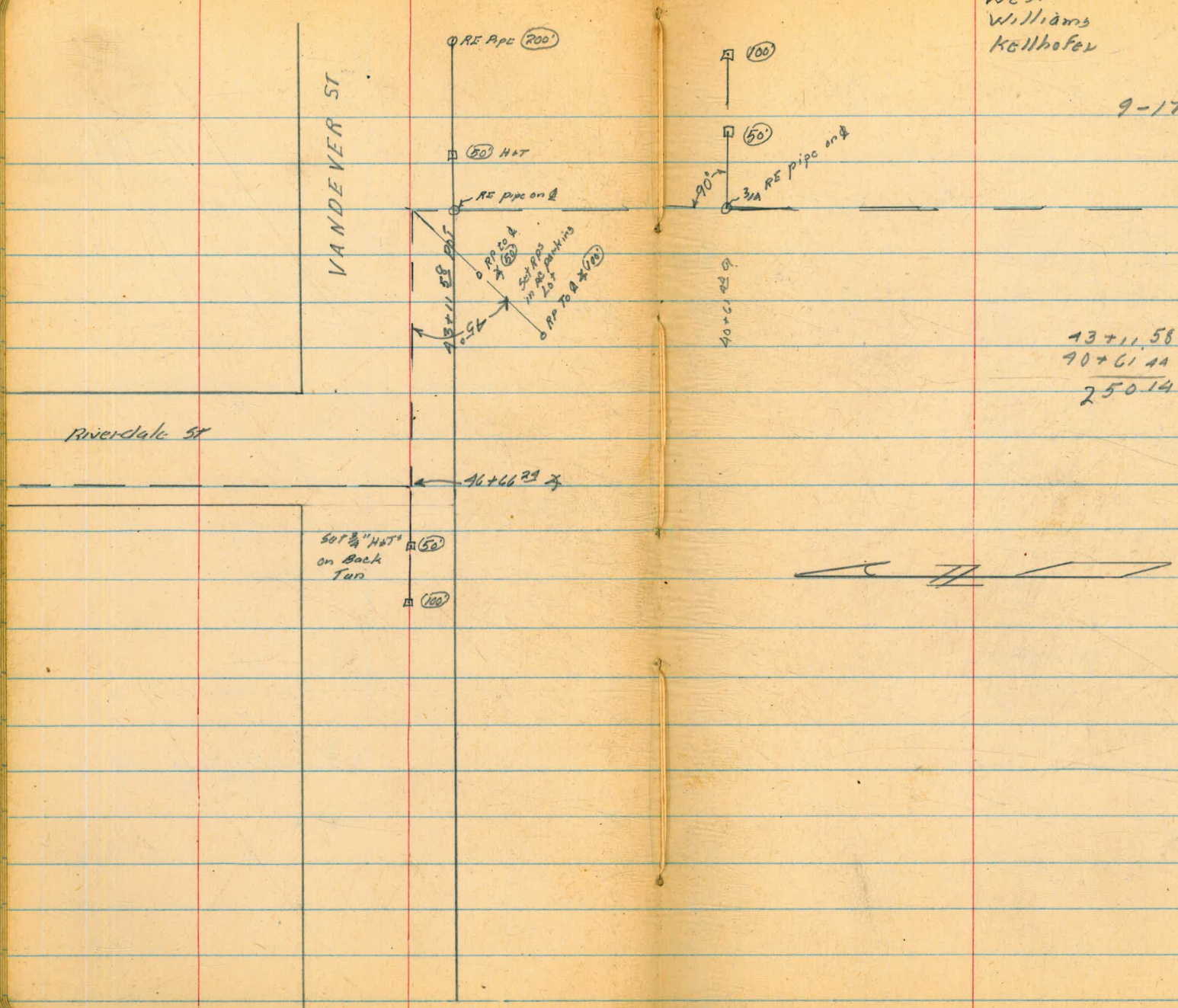



Main St
(100)
Set RP Nails on Forward Tan in AC pave
(50)
30+02 88
Set Spike on ℄ May 6, 58
Set RP Spikes
(60)
(30)
R 8+50 88
Set ⊥+Disk on ℄
Set 7" Hub + Disk on ℄
28+87 88
℄ AW
July 31, 58
Mission Gorge Rd
33+62 94
Set Spike on ℄ May 6, 58
(50)
Set RP NAILS in AC pave back Tan
(100)

31+00

West
Williams
Kellhofer

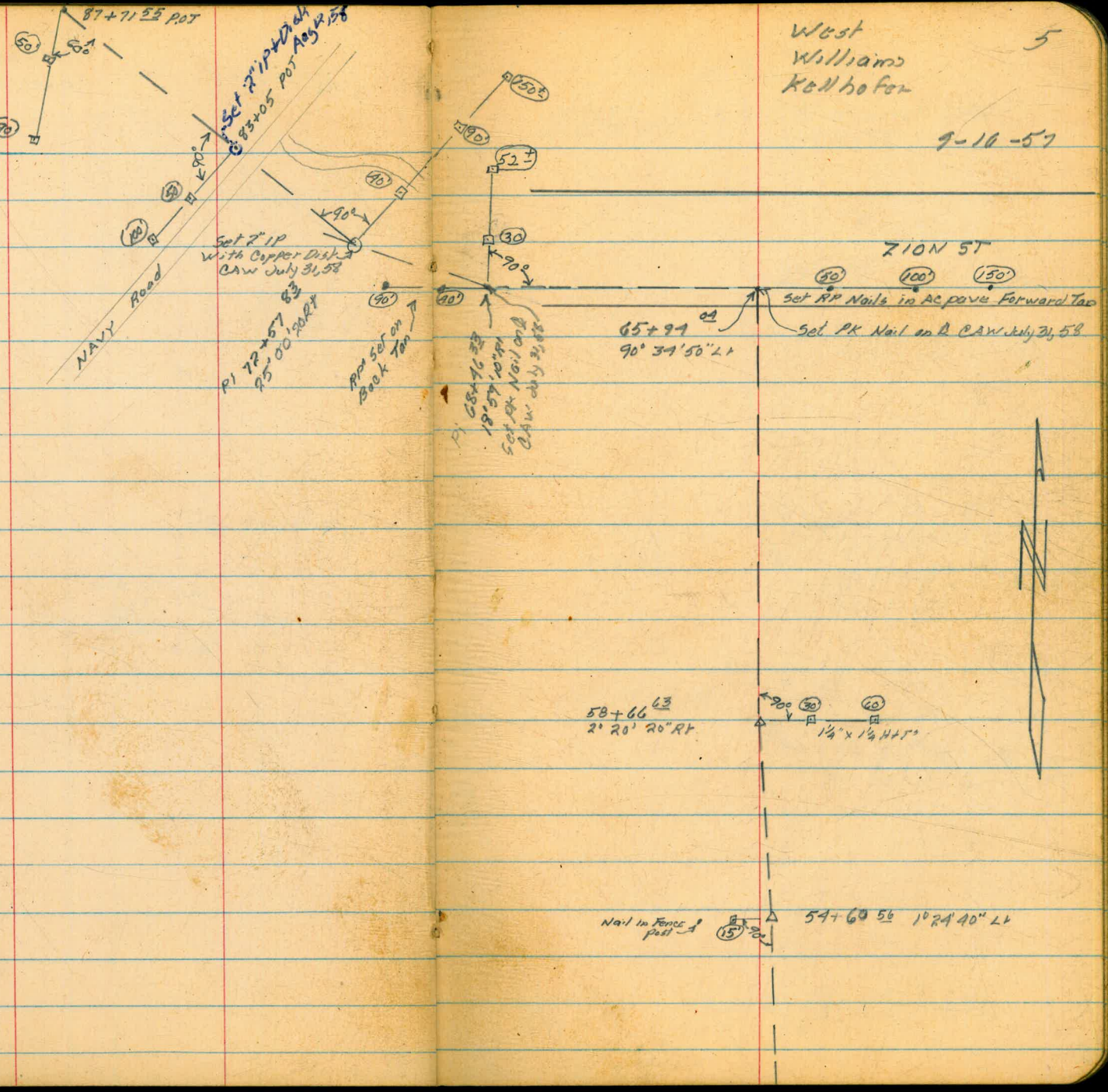
9-17-57

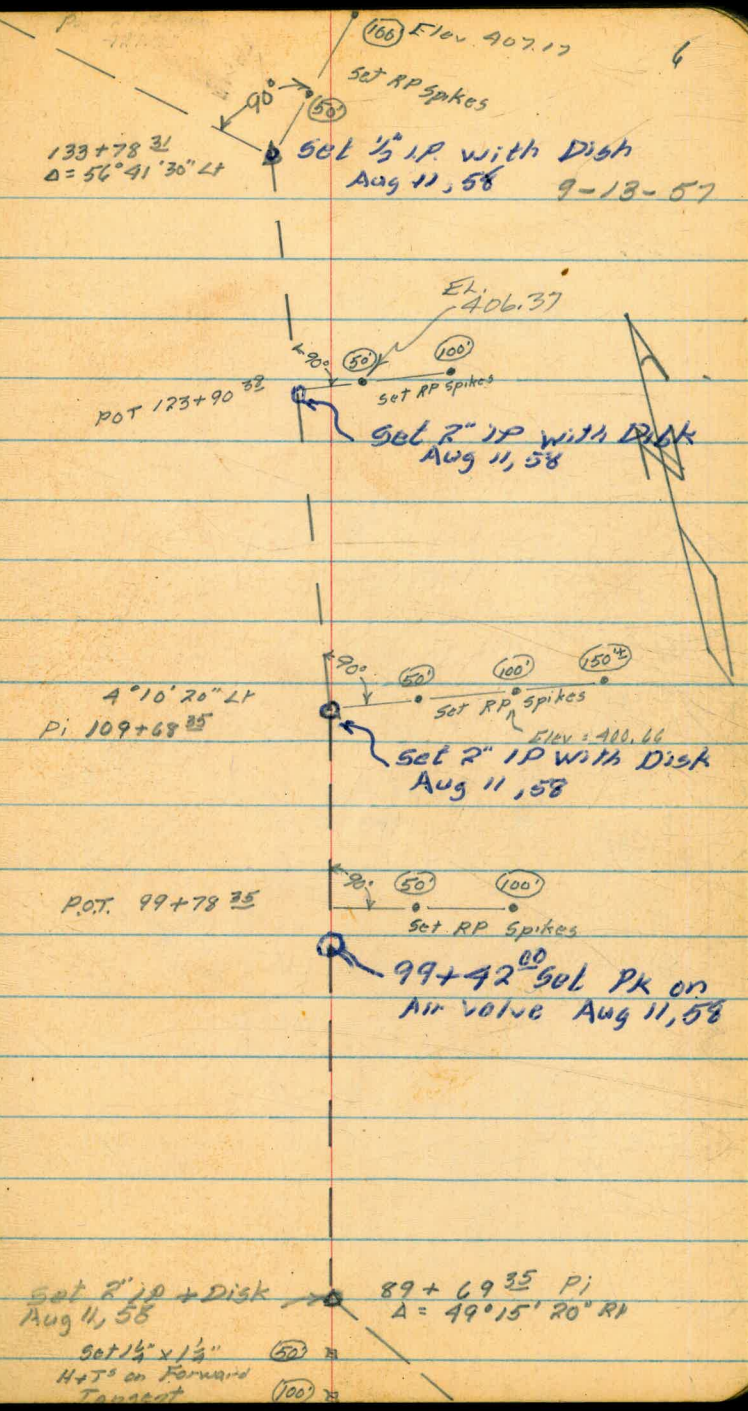


13+11.58
40+61.44
250.14

West
Williams
Kelhofer

9-16-57




(100) Elev. 407.17
90°
(50')
Set RP Spikes
133+78 31
Δ = 56°41'30" Lt
Set ½" I.P. with Disk
Aug 11, 58
9-18-57
El. 406.37
90°
(50')
(100')
set RP Spikes
POT 123+90 32
Set 2" IP with Disk
Aug 11, 58
90°
(50')
(100')
(150.42')
4°10'20" Lt
Pi 109+68 35
set RP spikes
Elev = 400.66
Set 2" IP with Disk
Aug 11, 58
90°
(50')
(100')
P.O.T. 99+78 35
Set RP Spikes
99+42 00 Set Pk on
Air Valve Aug 11, 58
Set 2" IP + Disk
Aug 11, 58
89+69 35 Pi
Δ = 49°15'20" Rt
Set 1¼" x 1¼"
H+T's on Forward
Tangent
(50')
(100')

West
Williams
Kellhofer

9-12-67

66.05
+79.20
145.25
145.25

Set spikes on edge AC pave

Set 2" IP + Disk
Aug 12 58

Set PK on Alu Valve FD C-28-74 OAW
Aug 12, 58

Set 2" IP Aug 12, 58

Set 1" pipe + Disk
Aug 11, 58

Set 2" IP + Disk
Aug 11, 53

Set 2" IP + Disk
Aug 11, 58

Elev 347.62

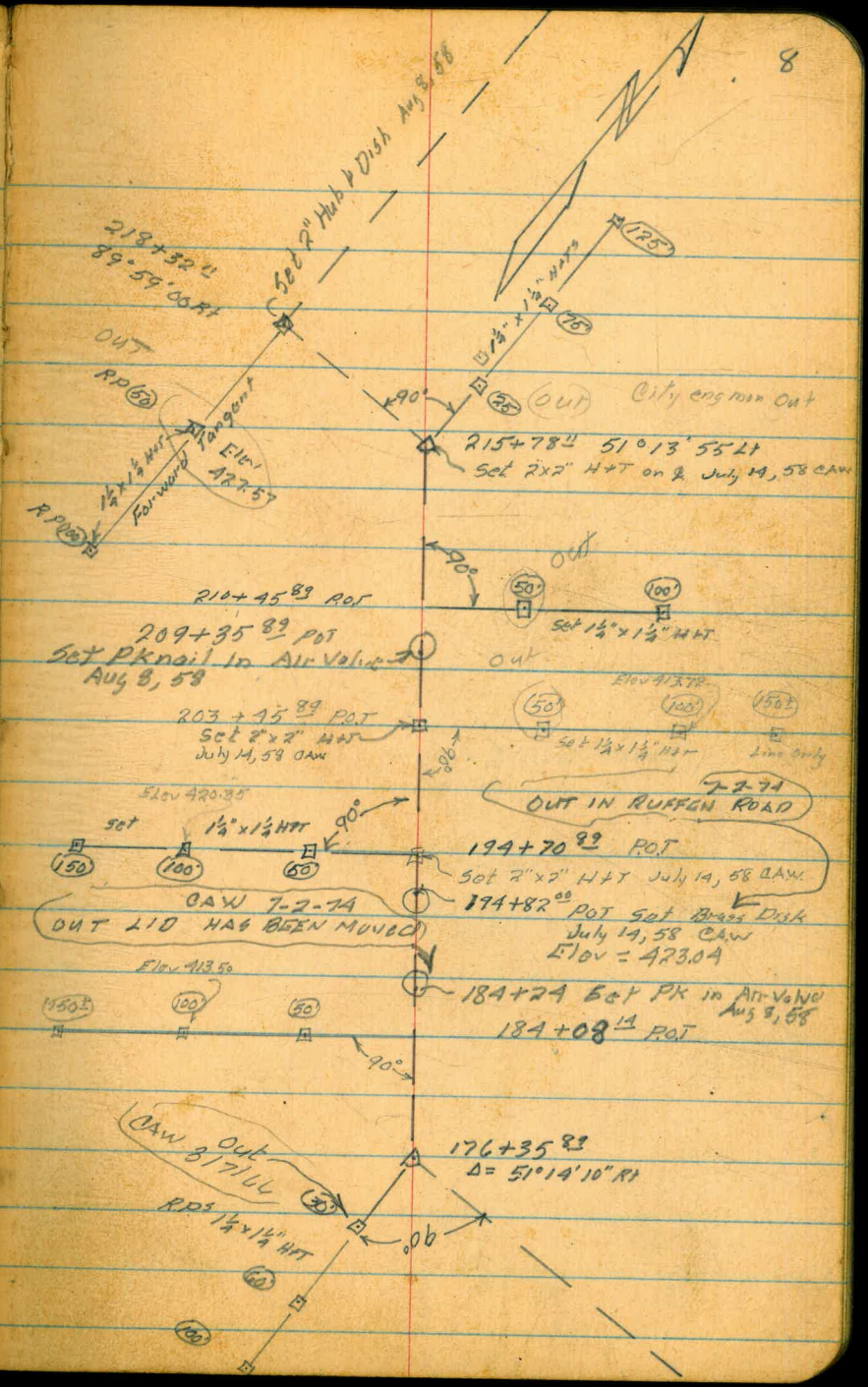
Elev 375.60

Pi 1584+89.55
Δ = 48° 30' 40"

218+32 11
215+78 11
2 54

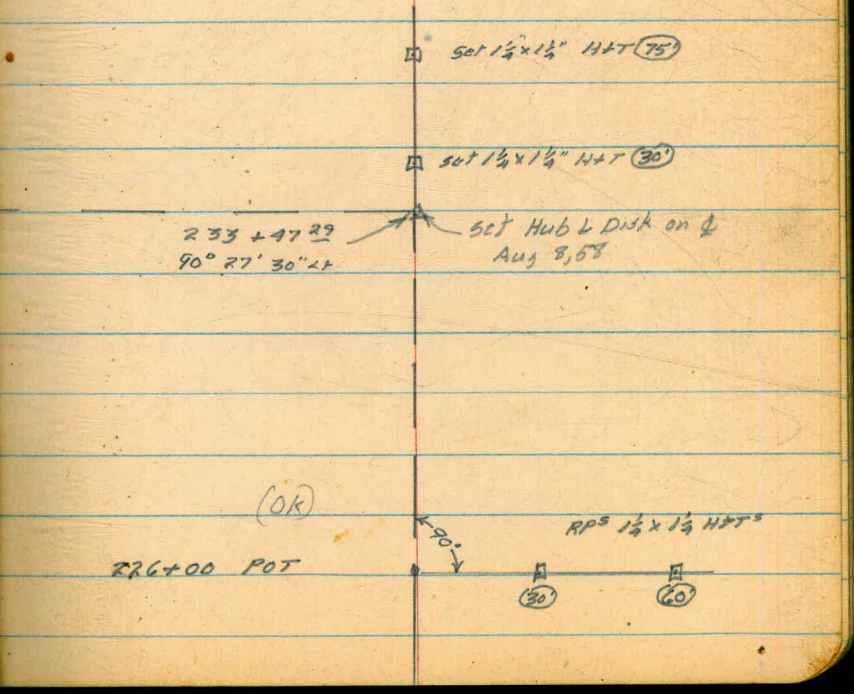
215 78
209 36
6 42

176+35 89
1 33
176+46 22



West
Williams
Kellhofer

9-11-57



MONTGOMERY P.L.

CONTINUED FROM F.B 940-79

STA	+	HI	−	EL.	GRADE
T.P.	1.00	97.77		96.77	
SPLIT OFF					
19+22.77			1.2	96.6	91.0
+44.84			2.0	95.8	89.8
+76.03			4.0	93.8	86.7
+82			4.6	93.2	86.0
20+07.12			4.5	93.3	82.3
+38.55			6.0	91.8	80.4
+70.05			6.5	91.3	80.1
21+08			6.8	91.0	79.9
+50			8.9	88.9	79.5
+96.05			10.2	87.6	79.0
22+27.55			11.2	86.6	79.2
B.C.					
+45.72			11.1	86.7	80.2
+59			10.6	87.2	81.0
23+00			6.3	91.5	83.3
T.P. ON ROCK	4.07	92.29	9.55	88.22	
23+50			0.8	91.5	86.2
23+84.80			+0.2	92.5	88.1
24+16.28			0.4	91.9	89.0
+47.56			1.3	91.0	87.5

WEST
WILLIAMS
O'BRIEN
COURTNEY

21

SUNNY & WARM

1/15/58

T.P. ON (10) HUB 19+13.57 F.B 940-79

(19+13.57 EL. 96.77 GRADE 91.5)

C5	6			C5	3
C6	0				
C7	1			+ 1.9	93.8 91.9
C7	2	28+44.80			C3 -2.0 91.8 88.1
C11	0	23+50			C1 -3.0 90.8 86.2
C11	4	exist 23+00			-2.3 91.5 = 91.5
C11	2				
C11	1				
C9	4				
C8	6				
C7	4				
C6	5				
C6	2				
C8	2				163
C5	3				84.8
C4	4				31.5
C2	9				
C3	5				

M. P. L. CONT.

SAME PARTY

35
1.8
1.7

1/15/58

STA.	+	92.29 HI	−	EL.	GRADE	
2.5+00			5.6	86.7	81.3	C5 4
+41.30			8.3	84.0	76.4	C7 6
+72.78			11.4	80.9	72.8	C8 1
T.P.	0.67	80.51	12.45	79.84		
CHECK TBM.			10.39	70.12 = 70.11		
T.B.M.			7.42	73.09		

80.9
2.2
83.1
4.1
79.0

F. B. 940-50 31+47.72 P.I HUB

TOP 2" PROP. PIPE 5' WLY. OF ℄ 27+70.02

M P L Cont

1/16/58

West
Williams
O'Brien
Courtney

5.06	78.15		73.09 79.0		TBM C8 8
26+~~04~~ 00		+1.7	79.9	70.2	℄ 9 7
+50			4.1	74.1	66.4	℄ 7 7
+66 77			4.5	73.7	65.0	℄ 8 7
+98 77			4.2	74.0	64.4	℄ 9 6
27+19 82 ~~X~~ ELy			4.9	73.3	64.1	℄ 9 2
+50			5.4	72.8	63.8	℄ 9 0
27+70 02 ~~X~~ NLy			5.1	73.1	63.5	℄ 9 6
27+70 02 ~~X~~ SLy			5.1	73.1	63.5	℄ 9 6
28+00			5.0	73.2	63.2	℄ 10 0
+50			5.1	73.1	62.6	℄ 10 5

M.P.L CONT.

SAME PARTY

78.15

11/16/58

28+87 09		5.0	73.2	62.2	C 11 0
29+00		5.0	73.2	62.2	C 11 0
+18.58		5.1	73.1	62.0	C 11 1
24+62 35 AH 29+67 52 BH & BK		4.7	73.5	62.0	C 11 5
" " & AH		4.9	73.3	62.0	C 11 3
24+76 35		5.2	73.0	63.5	C 9 5
25+00		3.5	74.7	66.1	C 8 6
	8.77	86.20	0.72	77.43	
+39 01		6.6	79.6	70.3	C 9 3
+70 33		5.7	80.5	72.5	C 8 0
26+00		6.0	80.2	72.5	C 7 7
+50		6.1	80.1	72.5	C 7 6
+96 10		5.9	80.3	72.5	C 7 8
27+27 59		4.8	81.4	73.3	C 8 1
+59 08		4.9	81.3	74.0	C 7 3
28+00		5.1	81.1	74.0	C 7 1
+50		5.1	81.1	74.0	C 7 1
28+87 88 51		5.3	80.9	74.0	C 6 9
+87 88 54		5.29	80.91	74.0	C 6 9

Turn on (10) Binney

7.30 88.21 80.91

11/16/58

29+00 61 6.9 81.3 74.0 C 7 3.

29+32 09 4.9 83.3 73.3 C 10 0 ckd ✓

+50 3.5 84.7 72.5 ~~C 12 3~~ (RESET 3/14/58 Beatty 83.95 − 72.49 = 11.46 C 11 5)

3.22 84.99 = 84.93

Cor Conc Blk Wall See FB 940 P 44 FB 939 P 50

159.11 Used Soil Reading Rod West Kemp Obs. TBM Top of Hub & 166+74 53 Field Sta

end of Jacked encasement

164+95 157.80

164+95 (5') 157.82 147.50 C 10.32

164+45 157.75

164+45 (7') 158.19 147.50 C 10.69

159.11 = 159.11

Beginning of Jacked encasement

(165+20.5 + 7.5 = 165+28) ℄ 16" C.I

(16" CI Main X ing)

TP 5.32 163.14 157.82

165+28 11.69 151.45

164+95 ℄ 5.34 157.80 = 157.80

(5) 164+95

Top 16" C.I. Bottom 16" C.I. = 150.05, 149.37 Top 36"

Jan. 17 1958
Beath
Smith.

64.59 Turn on 2" Copped pipe.
70.42 Spike in PP# 279 740

MONTGOMERY PL.
5 STKS For (10) 5 STKS

BM	6.01	78.71		72.70	
CK BM			6.10	72.61	= 72.39
58+66 63			5.98	72.7	64.0
58+90 66			6.64	72.1	"
59+00			6.47	72.2	"
59+22 16			5.95	72.8	"
59+53 66			4.90	73.81	64.55
60+00			3.58	75.13	65.62
60+48 13			1.86	76.85	66.73
60+60 MH.					—
60+79 62			0.69	78.02	66.46
61+11 10			1.38	77.33	65.61
61+42 58			2.85	75.86	64.75
+74 07			4.67	74.04	63.98
62+00			6.10	72.61	63.84
62+37 07			6.06	72.65	63.63
62+68 56			7.78	70.93	63.23
63+00			9.01	69.70	62.26
PI 63+31 60		2.72	73.76	9.67	69.04	61.28

11/17/57
FB 940 P12

TBM
Top W/y Rim Sewer MH 6' Rt 58+66 63
Spike in PPole P79672 10' LT 58+46

C8 7	
C8 1	
C8 2	
C8 8	
C9 3	
C9 5	
C10 1	
—	
C11 6	
C11 7	
C11 L	
C10 1	
C8 8	
C9 0	
C7 7	
C7 4	
C7 8	

	73.76				
63+63.08		4.88	68.88	60.19	C87
64+94.50		5.82	67.94	58.07	C99 ✓
64+00		5.96	67.8	57.70	C101
64+58.34		6.74	67.02	53.78	C132
64+74.30		5.79	68.0	52.96	C150
65+00		7.45	66.31	52.74	C136
65+50		6.85	66.91	52.30	C146 ✓
65+86.30		7.84	65.92	51.98	C139
CK 13M (Spike in P.P. # 27976)		3.22	70.54 = 70.42 (F.B. 920-14)		
℄ 65+94.04	0.76	67.25	7.27	66.49	51.91	C146
65+94.04 (N)			0.70	66.55	51.91	C146
66+01.97			2.59	64.66	51.84	C128
66+17.97			8.63	58.62	51.71	C69
66+33.97			10.28	56.97	51.38	C56
66+50			11.44	55.81	50.26	C56
+97.64			13.42	53.83	46.87	C70
℄ 67+13.61	11.57	65.73	13.09 12.14	54.16 53.59	46.00	C76
67+50			12.31	53.42	"	C71
67+79.49			12.70	53.03	"	C70
67+93.53			13.04	52.69	"	C67

4.27
2.62
6.89

		65.73			
68+09 43			12.65	53.08	46.57	C 6 E
68+50			10.64	55.09	50.10	C 5 O
68+65			7.08	58.65	51.41	C 7 Z
CK BM			1.17	64.56	= 64.59	1½" Capped pipe Navy Bdy
CK TP	13.13	67.29	11.57	54.16		
CK TP	6.31	72.80	0.80	66.49		
CK BM		72.80	2.26	70.54	= 70.54	Spike in P.Pole 279740

ELEVS. TO SET BLUE

TOPS S.D. RIVER XING.

B.M.	2.36	66.95		64.59
T.P.	2.22	57.93	11.24	55.71
T.B.M.	3.71	59.42	2.22	55.71
CHECK			3.59	55.83 = 55.81

WEST
T WILLIAMS (1½" CAPPED PIPE NAVY BDY) 1/20/58
+ O'BRIEN

TOP WELL POINT PIPE BLUE KEEL
66+50 SEE PAGE 26

MONTGOMERY P.L.
USED SELF READING ROD

STATION	ELEV.	GRADE
T.B.M.	73.44	
T.P.	73.73	
43+11.58 ℄	71.5	63.7
+27.45	71.5	63.6
+50	72.2	63.4
44+00	71.3	63.0
+50	70.5	62.6
45+00	70.6	62.2
+50	69.9	61.8
46+00	69.7	61.4
+26.87	69.2	61.2
+58.37	69.1	61.0
+66.24 ℄	68.9	61.0
+66.24 ℄	68.9	61.0
+78.21	68.4	61.0
47+00	68.9	61.0
+50	68.5	61.0
T.P. +88.63	68.53	61.0
48+19.96	69.2	59.7

WEST
WILLIAMS
O'BRIEN ℄
COURTNEY ℄

PARTLY CLOUDY

1/21/58

F.B. 940-46 NAIL IN P.P. 277585

C7 8 SPLIT OF THE ℄
C7 9
C8 8
C8 3
C7 9
C8 4
C8 1
C8 3
C8 0
C8 1
C7 9 ℄ ELY.
C7 9 ℄ NLY.
C7 4
C7 9
C7 5
C7 5
C9 5

M. P. L. CONT.

STATION	ELEV.	GRADE
48+82.85	69.5	56.4
49+50	69.2	58.6
+77.28	69.4	59.9
50+08.76	69.5	61.0
50+50	69.8	61.0
51+03.16	69.6	61.1
+50	69.4	61.3
+97.66	69.5	61.6
52+50	69.5	61.8
+92.16	69.2	62.0
53+23.66	69.5	62.2
T.P. +86.66	70.21	62.9
54+18.16	70.6	63.0
+49.66	71.0	63.0
+60.56 ℄	71.0	63.0
55+00	70.8	63.0
+50	71.0	63.0
56+00	70.8	63.0
+50	70.5	63.0

SAME PARTY

1/21/58

C 13 1
C 10 6
C 9 5
C 8 5
C 8 8
C 8 5
C 8 1
C 7 9
C 7 1
C 7 2
C 7 3
C 7 3
C 7 6
C 8 0
C 8 0 SPLIT OF THE ℄
C 7 8
C 8 0
C 7 8
C 7 5

M.P.L. CONT.

STATION	ELEV.	GRADE
57+01.66	70.7	63.0
+33.16	70.7	63.2
57+50	70.8	63.3
+96.16	70.9	63.9
58+51	71.3	64.0
CHECK T.B.M	72.79 = 72.70	

MPL Cont

STA 33+62.94 TO STA 43+11.58

70.63

33+74.27	68.6	61+00
34+00	68.2	61.0
+50	68.5	61.0
35+00	68.8	61.0
+16.19	68.6	61.0
+47.69	68.9	61.1
36+00	69.2	61.8
+42.19	69.5	62.3
+73.69	70.3	62.4

SAME PARTY

11/21/58

C7 1
C7 5
C7 5
C7 0
C7 3

PAGE 25 WLY. RIM M.H. 58+66.63

West
Williams X
O Brien
Courtney ¢

11/22/58

39+40.38 ⊿ Nail See FB 940 P 45

C7 6
C7 3
C7 5
C7 8
C7 6
C7 8
C7 4
C7 2
C7 9

11/22/58

70.63

37+00	70.3	62.4	C 7 9
+50	71.0	62.4	C 8 6
+68 19	71.2	62.4	C 8 8
+99 67	71.4	63.2	C 8 2
38+50	71.1	~~64.0~~ ~~64.5~~	~~C6 6~~ C7 1

73.42 = 73.44 TBM Nail in PP See page 28

+62 44	71.0	~~64.1~~ ~~64.8~~	~~C6 7~~ C6 9
+94 14	71.3	~~64.1~~ ~~65.1~~	~~C6 7~~ C7 2
39+50	71.5	~~64.3~~ ~~65.4~~	~~C6 4~~ C7 2
40+00	71.6	~~64.4~~ ~~65.7~~	~~C5 9~~ C7 2
+51 64	73.8	~~64.5~~ ~~66.0~~	~~C7 8~~ C9 3
+70	71.0	~~64.5~~ ~~66.0~~	~~C5 0~~ C6 5
+83 14			
41+14 64	71.0	~~64.4~~ ~~65.8~~	~~C5 2~~ C6 6
+46 14	71.0	~~64.3~~ ~~65.2~~	~~C5 8~~ C6 7
+77 64	71.0	~~64.3~~ ~~64.7~~	~~C6 3~~ C6 7
42+00	71.0	~~64.2~~ ~~64.6~~	~~C6 4~~ C6 8
+50	71.0	~~64.1~~ ~~64.2~~	~~C6 8~~ C6 9
43+03 61	71.5	63.7	C7 8
	71.5	71.5	48+41 5 ✗

TOP 36" SCRCP MP2 Pipe Line San Diego River Xing

		Top of 36" Pipe
2.36	58.07	55.71
66+65 81	5.99	52.08 3.77
+81 73	7.45	50.52
+97 64	8.73	49.34
67+13 61	8.79	49.28
+29 61	8.95	49.12
+45 61	8.76	49.31 3.77
+61 61	8.78	49.29
+77 61	8.63	49.44
93 53	8.21	49.86
68+09 43	7.66	50.41 3.77
+25 33	6.56	51.51
+41 23	5.16	52.81
+57 13	3.59	54.48
+73 03	2.44	55.63 3.77
	2.36	55.71 =

West Williams O'Brien Courtney

Bottom of 36" Pipe	11-2-156
Top of well Point	Page 27
48.31	Top of 36" SCRCP
46.75	
45.57	
45.51	
45.35	
45.54	
45.52	
45.67	
46.09	
46.64	
46.74	
49.04	
50.71	
51.86	
55.71	

MONTGOMERY PIPE LINE

STA	+	HI	-	EL.	GRADE
T.B.M.	2.41	87.34		84.93	
30+02.88 ⑩ Ely			0.4	86.9	70.2
+02.88 ⑩ Sly			1.5	85.8	70.2
+10 58			2.5	84.8	69.9
+40 76			6.3	81.0	68.6
+71 73			10.0	77.3	67.2
31+00			11.8	75.5	66.0
+50			12.1	75.2	66.0
	2.28	76.42	13.80	74.14	
32+00			2.7	73.7	66.0
+29 20			3.6	72.8	66.0
+60 68			4.2	72.2	65.1
33+00			4.8	71.6	63.5
+55 09			5.5	70.9	61.2
33+62 94			5.60	70.82	61.1
			5.78	70.64	= 70.63

WEST
WILLIAMS
O'BRIEN
COURTNEY

1/28/58

TBM Cor Conc Twain Block wall NE Cor Sta Service

16 7
15 6 — (SET ⑩ Wly 84.41 / 70.22 / 14.19 C14 2 — Beatty 2/14/58)
14 9
12 4
10 1
9 5 end of Jacked encasement
9 3 Begin " " "

C7 2
C6 8
C7 1
C8 1
C9 2
C9 2

old ⊄ Nail See page 30

MONTGOMERY PIPE LINE

STKS for Jacked Encasement Hwy 395
USED DIRECT READING ROD

West
Williams X
O Brien
Courtney ϕ

11/29/58

FB 939-46

STATION	ELEV.	GRADE	CUT	
T.B.M.	400.42		C	Turn on Cone Mon 25' Rt STA 270+60.79
279+30	403.04	391.3	C 11 7	Begin Jacked encasement
279+30 (5')	403.50	391.3	C 12 2	" " "
279+70	403.81	392.6	C 11 2	end Jacked encasement
279+70 (5')	404.17	392.6	C 11 6	
280+00	404.42	393.6	C 10 8	Begin Jacked encasement
280+00 (5')	403.93	393.6	C 10 3	
280+50	402.79	395.2	C 7 6	End Jacked encasement
280+50 (5')	402.83	395.2	C 7 6	

CK BM. 400.42 = 400.42

MONTGOMERY Pipe Line

Used Self Reading Rod

		74.93
70 +11	72.5	55.5
70+50	71.9	55.5
71+00	70.8	55.5
+50	70.7	55.5
71+69 13 BC	70.1	55.5
72+00	69.1	55.5
+25	69.2	55.5
+50	69.2	55.5
+75	69.4	55.5
73+00	69.2	55.5
+25	69.8	55.5
+43 70 EC	69.5	55.5
+52 64	69.7	55.5
+68 42	69.5	55.8
74+00	72.4	58.6
+50	72.9	63.1
+64 60	73.1	64.1
+79.43	73.3	65.1
75+00	73.5	65.1
	74.93	74.93

West
Williams
O'Brien
Courtney

35

2/7/54

TBM Spike at base of Elm Tree 15' Rt Sta 77+66

C 17 0	
C 16 4	
C 15 3	
C 15 8	
C 14 6	
C 13 6	
C 13 7	
C 13 7	
C 13 9	
C 13 7	
C 14 3	
C 14 0	
C 14 2	
C 13 7	
C 14 0	
C 9 8	
C 8 7	
C 8 2	
C 8 1	

CHECK on Jacked Encasement
Hwy 395

West
Kemp
O'Brien
Courtney

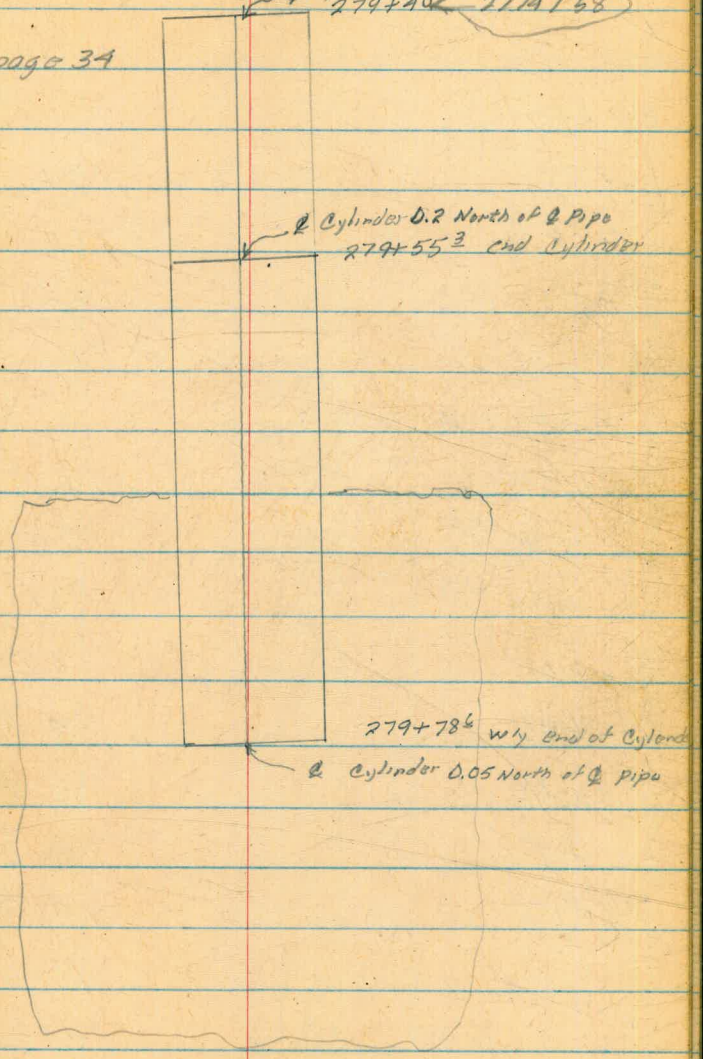
	404.17		279+70
+3.52	407.69		
1.08	396.31	-12.46	395.23
279+78 ℄		3.57	392.80
279+55 ³		3.68	392.63
			2/14/58
	404.17		
+2.85	407.02		
+0.21	395.45	11.78	395.24
279+71 ℄		2.68	392.77
279+40		3.13	392.32

See also Page 39

3.55	407.72		404.17 (5)
		13.13	394.59
		3.55	404.17

(5) see page 34

Set TBM



79+43
64.60
15.83

Used Self Reading Rod

West
Kemp
O'Brien
Courtney

2/14/58

			74.93	TBM Spike at base of Euc Tree 15' Rt Sta 74+60
74+50			72.4	63.13 C 9 5
+64 60			73.1	64.4 C 8 7
+79 43			73.0	65.1 C 7 9
75+00			73.2	65.1 C 8 1
+50			73.5	65.1 C 8 1
+60	20" MH			
76+00			73.4	65.1 C 8 3
+36 93			73.5	65.1 C 8 4
+68 43			73.6	65.3 C 8 3
77+00			73.8	65.4 C 8 2
+50			74.4	64.0 C 8 1
78+00			74.5	66.3 C 8 2
+50			74.7	66.7 C 8 0
79+00			74.8	67.1 C 7 1
			74.93 = 74.93	
	3.20	78.13	74.93	
76+00		4.7	73.4	65.1 C 8 3
+50		4.8	73.3	65.1 C 8 2
75+00		5.0	73.1	65.1 C 8 0
		5.14	72.99 = 73.0	74+79 13

Revised Grades MPL

(10)

	3.87	88.80	84.93	
29+00		7.5	81.3	73.2
+32	09	5.6	83.2	71.3
+63	56	1.0	84.8	69.5
+95	03	3.7	85.1	67.4
30+02	98	3.7	85.1	67.3
+10	58	4.7	84.1	67.3
+40	26	8.5	80.3	67.0
+71	73	12.6	76.2	66.9
31+03	20	13.2	75.6	66.4
		13.19		
		3.87	84.93	

Tujunga & Mission St.

TBM Col. Conc Block Wall NE Cor. Service

C 8 1 Was (7 3)

C 11 9 Was (10 0)

C 15 3

C ~~18 7~~ 17 7

C 18 8 17 8

C 16 6

C ~~12 3~~ C 13 3

C 9 3

C 9 3

Check on Jacked Encasement
Hwy 395

SHOTS TAKEN ON BOTTOM of STEEL CASING

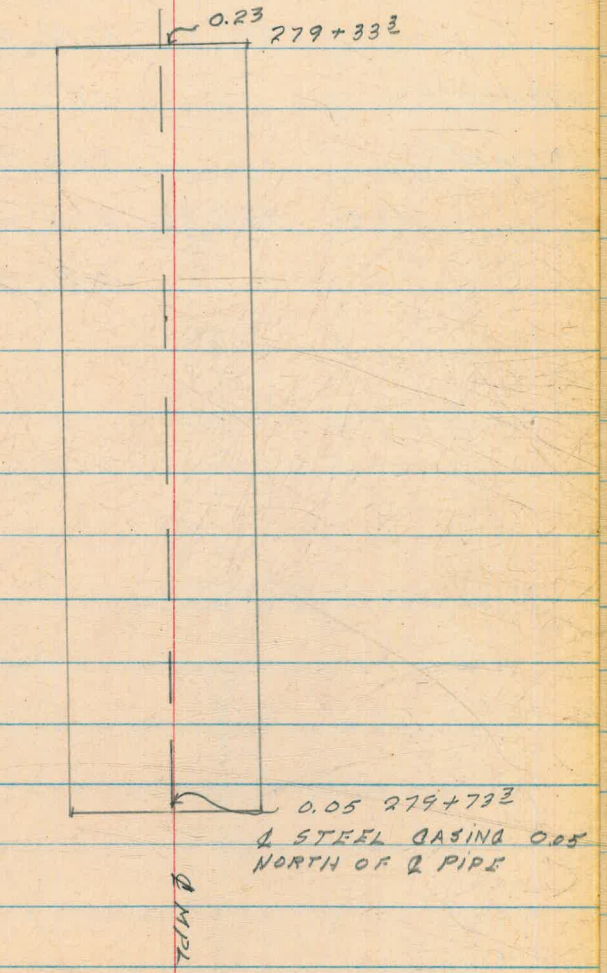
	U2	395.71	394.59	TBM
2	279+73.3		2.92	392.79
	279+71 ℄		2.93	392.78
	279+55 3		3.11	392.60
	279+40		3.39	392.32
	279+33 3		3.52	392.19
			1.12	394.59 = 394.59

West
Kemp
O Brien
Courtney

℄ STEEL CASING

21.9.58

See Page 36

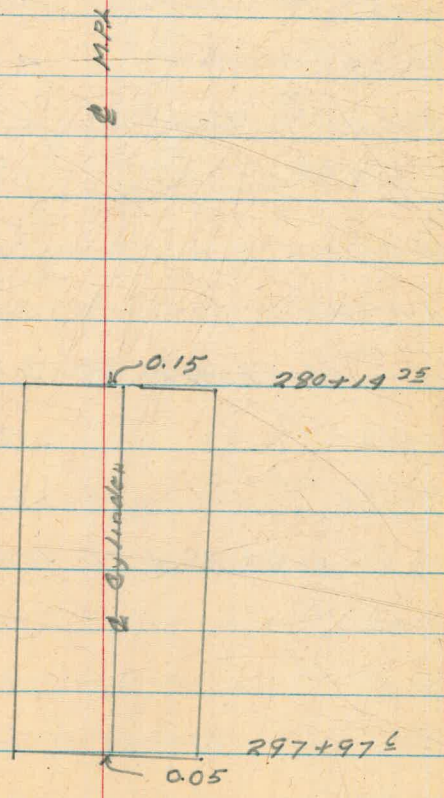


CHECK ON JACKED ENCASEMENT

HWY 395

			279+70	
3.35	407.52		404.17	(5')
2.26	396.60	13.18	394.34	TBM Spike
279+97 End of Casing		3.27	393.33	
280+14.25		2.82	393.78	
13.01	407.35	2.26	394.34	
		3.18	404.17 = 404.17	

West
Kemp
O Brien



(10) STKS M.P.L.

	12.52	170.34	157.82	(5)
164+45		12.3	158.0	147.5
164+23 10		10.1	160.2	147.5
163+89 75		4.9	165.4	147.5
163+72 73		4.3	166.0	153.0
163+55 67		4.3	166.0	158.7
163+42 69		5.4	164.9	158.8
163+11 21		7.9	162.4	159.18
162+90		4.2	166.1	159.4
162+80 15		1.9	168.4	161.6
	12.50	182.59	0.25	170.09
162+49 55		7.0	175.6	167.9
162+18 45		1.9	180.7	173.0
TP	12.34	194.71	0.22	182.37
161+87 28		9.4	185.3	177.56
161+56 12		4.3	190.4	182.08
TP	11.26	205.64	0.33	194.38
161+25 01		10.9	194.7	186.6
160+93 95		7.3	198.3	191.1

West
Kemp
OBrien

March 5, 58

& Jacked encasement see page 24

C 11 5

~~C 12 7~~ C 13 3

~~C 17 9~~ C 18 1

~~C 13 0~~ C 12 4

C 7 3

~~C 6 1~~ C C 3

~~C 3 2~~ C 4 6

~~C 6 7~~ C 6 8

~~C 6 8~~ C 7 3

SEE PAGE 65 REGARDING THESE POINTS THAT WERE RESTAKED

C 7 2

C 7 2

C 7 2

C 8 3

C 8 1

C 7 2

STKS FOR MPL (10)

205.64

160+62 87		4.8	200.8	194.4
		2.5	203.14	=
TP POT 522 Hub	207.65	3.21	202.43	
TBM		1.58	206.07	

March 7 58

	1.55	207.62		206.07
160+31 62		4.6	203.0	194.8
160+00 18		6.5	201.1	192.9
159+68 81		10.9	196.7	189.5
	0.65	195.15	13.12	194.50
159+37 48		2.0	193.2	186.3
159+06 15		5.3	189.9	182.9
158+75 02		8.5	186.7	179.5
	3.41	186.35	12.21	182.94
158+44 41		5.3	181.1	174.4
30.57				
158+13 57		9.1	177.3	166.1
2.06				
158+11 01		9.0	177.4	167.1
12.61				
157+98 10		7.2	179.2	170.9

12.61 Cont next page

West
Kemp
O'Brien

C6 4

P31
203.13 Field Sta. 161+90 Δ Sec FD 939

(10) Hub 160+36 40

(50) RP Hub 160+36 40 Plan Sta

West
Kemp
O'Brien

C8 2

C8 2

C7 2

C6 9

C7 0

C7 2

14.14
13.57
10.57

C6 7

C11 3

C10 3

C8 3

	186.35				
TP 13.20	199.50	0.05	186.30		
OK 157+68 31 (30.06 / 30.30)		12.0	187.5	180.3	C7 3
157+38 01		3.2	196.3	189.4	C6 9
TP 12.89	212.04	0.35	199.15		
157+07 54		6.9	205.1	197.0	C8 1
TP 13.13	224.97	0.20	211.84		
156+77 76		10.4	214.6	207.2	C7 1
TP 13.31	238.14	0.14	224.83		
156+48 60		11.9	226.2	218.8	C7 1
TP 13.05	250.89	0.30	237.84		
156+19 76		11.6	239.3	231.5	C7 8
TP 13.29	263.90	0.28	250.61		
155+91 01		12.1	251.8	244.3	C7 5
(TP 13.29) 155+61 20	276.81	0.34	263.52	255.8	C7 2
155+32 13		3.4	273.4	266.4	C7 0
TP 12.69	289.50	0.00	276.81		
155+01 77 POT		7.9	281.6	274.5	C7 1
154+71 17		0.7	288.8	281.9	C6 9
	Cont next Page				

+98 40
C8 34
300 6

187.50
+ 1.47
188.97

157+98 40 — 9.9 179.1 170.9 C8 3
158+11 21 — 11.4 177.6 167.1 C10 3
158+13 57 — 11.5 177.5 166.1 C11 1
158+44 14 — 8.1 180.9 174.9 C6 5
158+75 03 — 2.34 186.63

Turn on (60) Curve

(10) Sticks For MPL

West
Kemp
O Brien

10 mar-ob 58

		289.50			
TP	12.52	301.84	0.18	289.32	
154+10	51		4.2	297.6	290.0
TP	12.81	314.57	0.08	301.76	
154+10	50		3.2	306.4	299.5
TP	12.97	327.50	0.04	314.53	
153+80	22		10.0	317.5	309.7
TP	13.12	340.56	0.06	327.44	
153+51	05		10.9	329.7	320.0
153+27	21.37 22		1.1	339.5	330.3
TP	13.23	353.45	0.34	340.22	
152+91	25		6.8	346.7	338.8
TP	13.21	366.29	0.37	353.08	
	11.43	377.43	0.29	366.00	
			1.86	375.57 = 375.60	

C 7 6

C C 9

C 7 8

C 9 1

C 9 3

C 7 9

(50) RP H&T 150+23 19 See Page (1)

STKS FOR MPL

West
Kemp
O'Brien
Courtney

11 March 58

	1.46	422.72	421.26
176+23.96		10.33	412.4 405.3
176+23.96		9.63	413.1 405.3
176+43 26 (10)		5.7	417.0 405.3
+75 26 (10)		6.3	416.4 404.9
177+06 26		7.4	415.3 404.4
+38 26		10.0	412.7 403.9
+69 26		11.6	411.1 403.4
		1.46	421.26 =

IBM City Eng Hub 25' 21 177+43 93

C7 L (7) South Side

C7 R (7) North Side

C11 7

C11 5

C10 9

C8 8

C7 7

421.26

STKs for (10') 1 1/2

West
Kamp
O Brien

	13.20	388.80		375.60	(50) RP Hub 150+23 19 See Page (7)
145+67 75			6.9	381.9	375.0 C 6 9
145+36 27			5.6	383.2	375.8 C 7 1
145+04 29			4.6	384.2	376.6 C 7 6
144+73 29			3.8	385.0	377.2 C 7 8
144+41 29			3.8	385.0	377.4 C 7 6
144+10 29			3.6	385.2	377.7 C 7 5
143+78 80			3.4	385.4	378.0 C 7 4
143+47 30			3.0	385.8	378.4 C 7 1
143+15 80			2.4	386.4	376.9 C 7 5
142+84 80	12.96	400.02	1.74	387.06	379.4 ~~378.4~~ C 8 7 7 Turn on Pinnacle
			0.92	399.10	= 399.11 Pi Hub See FB 939 D 27
		400.02			
142+52 80			12.1	387.9	379.9 ~~379.8~~ C 8 1 8 0
142+21 35			11.4	388.6	380.4 ~~380.3~~ C 8 3 8 2
141+89 90			10.6	389.4	380.9 ~~380.8~~ C 8 6 8 5
141+58 44			9.6	3904	382.5 ~~382.4~~ C 8 0 7 9
141+26 98			8.3	391.7	384.1 ~~384.0~~ C 7 7 7 6
140+95 52			6.7	393.3	385.7 ~~385.6~~ C 7 7 7 6

400.02

140+64 06	5.0	395.0	387.3	C 7 7
140+32 60	4.6	395.4	388.0	C 7 4
140+01 10	3.8	396.2	388.0	C 8 2
	0.92	399.10 =		399.11 PI HUB SEE FB 939 P 27

14 MAR 58

BM	4.92	403.53	399.11	SAME AS ABOVE
139+76 10	6.2	397.3	388.0	C 9 3
139+44 58	6.1	397.4	388.0	C 9 4
139+13 03	5.2	398.3	388.0	C 10 3
138+81 48	4.5	399.0	388.0	C 11 0
138+49 93	3.9	399.6	388.0	C 11 6
138+18 38	3.7	399.8	388.0	C 11 8
137+50	3.3	400.2	388.0	C 12 2
137+00	4.3	399.2	388.0	C 11 2
136+50	5.4	398.1	388.0	C 10 1
136+00	6.6	396.9	388.0	C 8 2
135+46 55	7.7	395.8	388.0	C 7 8
135+15 20	7.8	395.7	388.4	C 7 3
134+83 86	7.0	396.5	389.9	C 6 6

399.8

3930
3884
3) 46 (15.3
3
16
15

403.53

134+52	58		7.1	396.4	392.1	C 4 3
134+21	30		5.9	397.6	394.0	C 3 6
133+89	94		4.4	399.1	394.8	C 4 3
P 133+58	58	10.01 409.64	3.90	399.63	394.8	C 4 8
133+27	20		9.6	400.0	394.8	C 5 2
132+95	82		7.6	402.0	394.9	C 7 1
132+64	44		7.3	402.3	394.9	C 7 4
132+33	06		6.9	402.7	394.9	C 7 8
132+01	68		5.0	404.6	394.9	C 9 7
131+70	30		4.8	404.8	394.9	C 9 9
CK TBM			2.54	407.10 =		407.17. 100' RP To PI FB 939
		2.33 409.50		407.17		
131+50			4.4	405.1	394.9	C 10 2
131+00			5.5	404.0	394.9	C 9 1
130+50			5.8	403.7	395.0	C 8 7
130+00			6.4	403.1	395.0	C 8 1
129+50			6.3	403.2	395.3	C 7 9
129+00		8.14 411.57	6.07	403.43	395.8	C 7 6

Turn on Gimbay

411.57

128+50			7.1	404.5	396.3	C 8 2
128+00			6.2	405.4	396.7	C 8 2
127+50			6.4	405.2	397.0	C 8 2 2" BO
TP 127+00			7.3	404.3	396.9	C 7 4
126+50			6.6	405.0	396.8	C 8 3
126+00			6.4	405.2	396.7	C 8 5
125+50			6.0	405.6	396.5	C 9 1
125+00			5.7	405.9	396.3	C 9 6
124+50			7.0	404.6	396.1	C 8 5
124+00			6.9	404.7	395.9	C 8 8
TBM	5.02	411.39	5.20	406.37		
TP	4.81	408.80	7.40	403.99		
CK EL.			4.26	404.54 =		404.51 P1 HUB (OLD STA) 135+00 FB 939 P 27

(10) STKS For M.P.L. Cont

Used Self Reading Rod

		400.66	
BC 109+22.82		398.7	389.9
+28.71		398.6	390.0
+60 21		399.2	390.4
+91 71		399.0	390.7
EC 110+13 81		399.6	391.0
110+50		399.3	391.4
111+00		400.4	391.8
+50		400.4	392.0
112+00		399.9	392.3
+50		402.0	392.6
113+00		400.8	392.9
+50		401.1	393.2
114+00		402.4	393.5
+50		401.8	393.7
115+00		402.68	394.0
+50		402.2	394.2
116+00		402.4	394.4
+50		402.5	394.6

West
Kemp
O Brien

~~49~~
50

March 18, 58

(100') RP #1 STA 109+69 35 See Page 6

C 8 8
C 8 6
C 8 8
C 8 3
C 8 6
C 7 9
C 8 6
C 8 1
C 7 6
C 9 4
C 7 9
C 7 9
C 8 9
C 8 1
C 8 7 Turn on (10) Binney
C 8 0
C 8 2
C 7 9

105.60 20" MH
105.75 6" BO

MPL (10) STKS Cont

402.68

18 March 58

117+00	402.5	394.9	C 7 L
+50	402.8	395.1	C 7 Z
118+00	403.3	395.2	C 8 L
+50	403.3	395.2	C 8 L
119+00	404.0	395.2	C 8 8
+50	403.6	395.2	C 8 4
120+00	403.66	395.2	C 8 5
+31 21	403.5	395.2	C 8 3
+36 30	403.8	395.2	C 8 6
+60	403.6	395.2	C 8 4
121+00	403.4	395.2	C 8 2
+50	403.2	395.3	C 7 9
122+00	404.6	395.4	C 9 2
+50	404.4	395.4	C 9 0
123+00	403.6	395.5	C 8 1
+50	404.4	395.7	C 8 7
	406.35	=406.37	

Turn on Binney

Closure Joint

" "

20" MH

(50) RP No.1 123+90 38

See FB 939 P20
City Eng Conc mon Δ Sta 9F 245

	396.98		
91+29 89 BK =			
91+72 52 AH EC. RT	391.4	384.0	C 7 4
" " " E.C. LT	392.9	384.0	C 8 9
92+00	392.6	384.1	C 8 7
92+50	393.3	384.8	C 8 5
93+00	394.0	385.4	C 8 6
93+50	394.5	386.8	C 7 7
94+00	395.9	388.2	C 7 7
94+50	396.5	389.1	C 7 4
95+00	397.5	389.3	C 8 2
95+50	397.9	389.5	C 8 4
96+00	398.0	389.8	C 8 3
96+50	398.0	390.0	C 8 0
TP 97+00	398.57	390.2	C 8 4
97+50	398.6	390.5	C 8 1
98+00	398.7	390.7	C 8 0
98+50	399.1	390.7	C 8 4
99+00	399.1	390.7	C 8 4
99+50	398.3	390.7	C 7 6

99+78 35 P.O.T.	398.0		
100+00	397.7	390.7	C 7 0
100+50	397.2	390.3	C 6 9
101+00	397.6	389.9	C 7 7
101+50	397.6	389.5	C 8 1
102+00	397.6	389.4	C 8 2
102+50	397.4	389.3	C 8 1
P 103+00	397.22	389.1	C 8 1
103+50	396.9	389.0	C 7 9
104+00	396.9	388.9	C 8 0
104+50	396.8	388.8	C 8 0
105+00	396.6	388.6	C 8 0
105+50	396.9	388.5	C 8 4
106+00	396.9	388.5	C 8 4
106+50	396.9	388.6	C 8 3
107+00	397.4	388.7	C 8 7
107+50	398.2	388.8	C 9 4
108+00	397.3	388.9	C 8 4
108+50	397.7	389.1	C 8 6

109+00			398.0	387.7	C8 3
CK TBM			400.65 =		400.66 TBM (100) RP TO 109+22.82 B.C.
	21 MAR 58				
TBM	12.24	343.50		331.26	TBM TOP OF STAKE 40' ± LT 88+66
87+85.28 B.C.			13.7	329.8	
88+09.55			6.5	237.0	327.3 C9 7
	12.67	355.88	0.29	343.21	
88+39.17			10.0	345.8	335.7 C10 1
89+70.17			3.0	352.9	343.5 C9 4

(10) STks for MPL

	3.71	78.64		74.93	
	12.82	91.26	0.20	78.44	
	12.43	103.67	0.02	91.24	
82+66^{10}			3.6	100.1	87.7
82+97^{20}			3.5	100.2	92.6
TP	12.36	115.11	0.92	102.75	
83+27^{83}			8.6	106.5	99.9
TP	12.29	127.21	0.19	114.92	
83+58^{08}			11.6	115.6	108.7
+87^{95}			1.1	126.1	118.7
TP	12.99	139.86	0.34	126.87	
84+16^{92}			2.7	137.2	129.3
+	13.19	152.82	0.23	139.63	
+45^{20}			3.1	149.7	142.7
TP	12.92	163.34	2.40	150.42	=
TP	13.15	176.35	0.14	163.20	
84+72^{72}			11.6	164.8	158.1
TP	13.05	189.15	0.25	176.10	
84+99^{98}			6.9	182.3	173.8

West
Williams x
O Brien ¢

24 March 58

P 37

TBM spike base of euc Tree see FB 940

12^{4}

7^{6}

Turn on 83+05 (10) Hub

$C6^{6}$

$C6^{9}$

$C7^{4}$

$C7^{9}$

$C7^{0}$

See ~~FB 39~~ 940 P 39

150.47 TBM iron pin 40' Rt 83+40

$C6^{7}$

$C8^{5}$

3/24/58

	189.15				
13.27	202.22	0.20	188.95		
85+26 35		3.6	198.6	190.5	C 8 1/2
TP 12.76	214.87	0.11	202.11		
TP 13.29	227.86	0.30	214.57		
85+54 29		12.4	215.5	205.2	C 10 3/4
13.05	240.81	0.10	227.76		
85+81 77		8.3	232.5	220.5	C 12 0
TP 12.86	253.54	0.13	240.68		
86+09 05		7.5	246.0	236.3	C 9 1/2
TP 13.21	266.65	0.10	253.44		
86+37 30		5.9	260.8	250.2	C 10 1/2
TP 12.74	279.26	0.13	266.52		
86+65 67		4.7	274.6	263.9	C 10 1/2
TP 13.22	292.41	0.07	279.19		
86+94 04		4.5	287.9	277.6	C 10 3/4
TP 12.78	305.01	0.18	292.23		

SAME PARTY 3/25/58

87+22.42		2.6	302.4	291.3	C 11 1/4
T.P. 12.82	317.51	0.32	304.69		
87+50.92		1.4	316.1	304.8	C 11 3/4

(10') STKS. FOR M.P.L.

WEST
O'BRIEN & WILLIAMS

PARTLY CLOUDY
3/25/58

317.51

T.P. 12.92	330.17	0.26	317.25		
87+79.97		2.5	327.7	316.7	C 11 0
T.P. 13.02 (21.16)	343.00	0.19	329.98		
88+09.55		6.0	337.0	327.3	C 9 7
T.P. 13.13 (30.99)	355.85	0.28	342.72		
88+39.77		9.9	346.0	335.7	C 10 3
(30.16) 88+70.17		3.0	352.9	343.5	C 9 4
T.P. 12.75 (31.07)	368.50	0.10	355.75		
89+00.48		8.0	360.5	351.6	C 8 9
T.P. 31.27					
89+30.99 13.11	381.34	0.27	368.23	359.0	C 9 2
(31.27) 89+61.50		5.0	376.3	366.5	C 9 8
T.P. 12.24 (31.27)	393.38	0.20	381.14		
89+82.02		9.8	383.6	373.9	C 9 7
(31.27) 90+22.53		4.1	389.3	381.3	C 8 0
(10.73) 90+33.60		3.7	389.7	383.8	C 5 9
(20.84) 90+53.35		2.3	391.1	383.8	C 7 3
(32.16) 90+84.73		2.7	390.7	383.9	C 6 8
91+00.91		3.5	389.9	383.9	C 6 0
91+12.00		3.2	390.2	383.9	C 6 3

(10) STKS. FOR M.P.L.

		393.38		
T.P.	7.17	400.41	0.14	393.24
CHECK T.B.M.			3.46	396.95=396.98
	6.99	382.59		375.60
145+99 25			2.0	380.6 373.3
146+30 27			4.7	377.9 369.8
+61 53			7.8	374.8 366.0
+92 90			11.8	370.8 363.1
TP	3.41	372.83	13.17	369.42
147+24 26			5.4	367.4 360.2
+55 63			8.1	364.4 357.3
+86 99			10.2	362.6 354.5
148+18 97			11.4	361.4 353.7
+50 46			10.7	362.1 353.7
+81 63			7.9	364.9 358.3
149+12 91			5.2	367.6 361.7
+44 29			3.2	369.6 363.5
+75 66			1.0	371.8 365.2

146+30 27
99 25
31.02

67 75
99 25
67 75
31 50

58

3/25/58

F.B. 939-20

CITY ENGR CON. MON. Δ STA. 9F 245

(50) RP TO PI see page 7

C 7 3	
C 8 1	374.8
C 8 8	2.9
C 7 7	377.7
	369.8
	C 7 9
C 7 2	
C 7 1	
C 8 1	
C 7 7	
C 8 4	
C 6 6	
C 5 9	
C C 1	
C 6 6	

West
Williams
O'Brien

(10') STK

372.83

150+06 99		0.9	371.9	365.5
+38 47		1.4	371.4	364.6
+69 90		2.7	370.1	363.0
151+01 33		4.5	368.3	361.4
+32 75		5.8	367.0	359.8
+64 06		9.3	363.5	357.0
+95 15	0.22 360.51	12.54	360.29	352.8
152+26 35		4.0	356.5	348.5
+57 50		8.2	352.3	343.1
		12.7	347.8	338.9
152+91 25		13.7	346.8	=338.8
57 50		7.37	353.14	=353.08
33 75		12.89	347.62	

C 6 4
C 6 8
C 7 1
C 6 9
C 7 2
C 6 5
C 7 5
C 8 0
C 8 9
C 8 9

346.7 See page 44

on (50') RP Hub 152+91.99 Pot

87 91
57 50
304 1

347.62
+ 2.98
350.60
3 - 3.8 346.8 338.8 C8 0

391.93
392.22

Used Direct Reading Rod

400.42

278+25[4] POT
278+48[38]
+79[88]
+95[21]
279+27[21]
279+30

401.0 392.2
399.8 391.9
401.9 391.2
401.5 390.9
402.1 391.2
403.1 391.3
400.41 = 400.42

404.17

280+53[04]
280+80[66]

402.7 395.2
400.8 395.2
402.93 = 402.83

BM Conc Mon 25' Rt 270+6073

9[8]
C 7[9]
C 10[7]
C 10[6]
C 10[9]
C 11[6] = C 11[7] End of encasement

⑤ 279+70 End Jacked encasement See page 34

C 7[5]
C 5[6]

280+50 ⑤ End Jacked encasement

MRL.

RE STAKE

For New Grades

1.33	409.50		407.17		
EC 135+58 30		11.7	396.8		
+46 56		12.4	396.1		
7.14	403.22	12.42	396.08		
135+16 22		8.7	394.5	388.4	
134+83 86		8.7	394.5	388.4	
134+52 58		8.2	395.0	388.4	
134+21 30		7.1	395.5	389.9	
133+89 94		6.8	396.4	391.4	
133+58 58		5.4	397.8	393.0	
		3.49	399.73	=	
6.49	435.47		428.98		
220+40		5.61	429.86	429.6	
		6.49	428.98=418.98		
4.86	433.84		428.98		
228+70		6.6	427.2	426.8	
227+70		8.5	425.3	427.8	
		4.86	428.98=428.98		

West
Williams
O'Brien
Henke

61

April 17 58

(100) RP 133+78 24 PI

℄ 6 1

℄ 6 1

℄ 6 4

℄ 5 6

℄ 5 0

℄ 1 8

399.6

City Eng Conc Mon See FB 940 P 63

℄ 0 3 Finish Grade Air Valve Chamber

City Eng Conc Mon See FB 940 P 55

℄ 0 4 Air Valve

E 1 9 Type B 130

STK 3 FOR (10) MP2
79+00 To 82+66.12

West
Williams
OBrien
Henke

April 22 1958

	3.79	78.72		74.93	Sta 77+66 TBM Spike at Base of cue Tree 15' Rt
79+00	(10) South		4.5	74.2	67.1	C 7 1
+50			3.9	74.8	67.5	C 7 3
+83	43		3.2	75.5	67.8	C 7 7
80+14	93		1.8	76.9	69.0	C 7 9
TP	13.29	91.93	0.08	78.64		
80+46	40		12.2	79.7	70.5	C 9 3
+77	81		11.8	80.1	72.0	C 8 1
81+09	34		10.9	81.0	73.5	C 7 5
+40	82		9.7	82.2	74.8	C 7 4
+72	27		9.2	82.7	76.5	C 6 3
82+03	60		5.5	86.4	79.8	C 6 4
	12.59	104.16	0.36	91.57		
+34	95		12.4	91.8	83.7	C 8 1
			1.40	102.76	= 102.75	Turn on 83+05 (10) Hal See page 55

(10) STKS MPL
Replace Stakes 87+00 To 91+00

West
Williams
O Brien

May 13-14, 58

87+79.97	13.03	340.79		327.70	
88+09 52			3.7	337.1	327.3
	13.01	353.45	0.35	340.14	
88+39 77			8.2	345.3	335.7
88+70 17			0.8	352.7	343.5
IP	8.93	361.65	0.73	352.72	
89+00 48			1.13	360.52 = 360.5	
	3.62	400.60		396.98	
90+53 35			9.5	391.1	383.8
90+33 00			11.1	389.5	383.8
90+22 53			11.8	388.8	381.3
			3.62	396.98 = 396.98	

(10) Bimey See page 57

C 9 8

C 9 6

C 9 2

(10) Gunnell

Only Eng Mon See p 58

C 7 3

C 5 7

C 7 5

Re Stake MPL.
West Side Murphy Canyon

West
Williams
O'Brien
Henke
May 29, 59

	0.74	422.60		421.26	City Eng Hdt See FB 940 P 21
176+17.60			11.3	410.7	405.3 C 5 1
	0.65	409.86	12.79	409.21	
175+97 53			3.0	406.9	399.9 C 7 0
175+67 98 TP	0.15	397.10	13.21	396.65	390.1 C 6 5
175+38 50			11.4	385.7	379.7 C 6 0
TP	0.56	384.70	12.96	384.14	
175+09 09			9.9	374.8	368.7 C 6 4
TP	0.36	371.79	13.27	371.43	
174+79 70			7.8	364.0	357.2 C 6 8
	0.79	359.71	12.87	358.92	
174+50 50			07.6	352.1	345.2 C 6 9
TP	0.38	347.46	12.63	347.08	
174+20 92			06.6	340.9 = 340.9	(10) Conney See FB 938 P 46
173+91 42			16.9	330.6 = 330.7	" " " " " "

M. P. 2 RESTAKED.
SEE PAGE 41

WILLIAMS
O'BRIEN
HENKE

6/9/58

B.M.	10.34	168.16		157.82		
164+23.10			7.4	160.8	147.5	C13
163+89.74			2.6	165.6	147.5	C18
163+72.73			2.8	165.4	153.0	C12
163+55.67			2.2	166.0	158.7	C 7
163+42.69			3.1	165.1	158.8	C 6
163+11.24 T.P.			4.4	163.8	159.2	C 4
162+90	11.59	177.82	1.93	166.23	159.4	C 6
162+80.15			8.9	168.9	161.6	C 7
			2.22	175.60=		

164+95 (5) PAGE 24

3
1
4
3
3
6
8
3

175.6 STA. 162+49.55 PAGE 41

(10) MP1 East End Connection

West Henke

	3.82	108.91	105.09	BM	City "25
0+06		5.0	103.9	94.4	C9 5	90° Back Tan
0+22		4.7	104.2	98.5	C5 7	Vert PI
0+25		4.8	104.1	98.5	C5 6	
0+56		5.9	103.0	98.3	C4 1	℄ of Wye
		3.82	105.09 = 105.09			

El. Top Pipe Montgomery P.L.

Sta	+	Hi	−	El
B.M.	0.59	421.85		421.26
T.P.	0.81	409.61	13.05	408.80
175+97.53			6.68	
T.P.	0.68	397.06	13.23	396.38
175+67.90			3.40	
T.P.	0.78	384.78	13.06	384.00
175+38.50			2.04	
T.P. 175+09.00	0.84	372.71	12.91	371.87
T.P. 174+79.70	0.34	360.30	12.75	359.96
T.P. 174+50.50	0.46	348.66	12.10	348.20
174+20.82			10.23	
T.P.	0.29	335.85	13.10	335.56
173+91.47			8.78	
T.P.	0.38	323.00	13.23	322.62
173+62.40			8.05	
T.P.	3.09	312.78	13.31	309.69
173+34.00			10.68	
T.P.	2.00	301.51	13.27	299.51
173+05.30			12.06	

Williams
O'Brien

7/7/58

F.B. 940-21 2x2 City Engr Hub.

Note: Pipe Joint On Plans 175+97.53
@ 90° Pipe Joint On Ground 175+95.93

M.P.L. CONT.
EL TOP PIPE

SAME PARTY

7/7/58

STA	+	HI	-	EL
		301.51		
T.P.	0.45	288.67	13.29	288.22
T.P.				
172+76.75	0.43	276.53	12.57	276.10
T.P.	0.45	263.97	13.01	263.52
172+48.60			2.00	
T.P.	0.78	251.65	13.10	250.87
172+20.30			3.45	
T.P	0.33	238.74	13.24	238.41
171+92.30			4.71	
T.P.	0.57	226.10	13.21	225.53
171+64.60			7.20	
T.P.	0.27	213.07	13.30	212.80
171+36.94			9.43	
T.P.	0.22	200.08	13.21	199.86
171+10.12			11.78	
T.P.	0.51	187.37	13.22	186.86
T.P.	0.65	174.78	13.24	174.13
170+82.94			0.99	
T.P.	0.34	164.66	10.46	164.32

M.P.L. CONT

EL TOP PIPE

SAME PARTY

69.

7/7/58

S	STA	+	HI	−	EL
			164.66		
T	170+54.59 T.P			5.09	
T	170+40.49	3.67	155.86	12.47	152.19
T	170+26 25			10.68	145.17
T	170+11 91			17.6	138.26
T	TP	8.98	163.27	1.57	154.29
T				5.39	157.88 = 157.82 (5) 164+95
T					
T					
T					
T		2.04	377.64		375.60
T	TP	6.90	383.32	1.22	376.42
T	145+67 75			4.90	
T	145+99 25			6.69	
T	146+30 27			9.86	
T	TP	0.83	371.02	13.13	370.19
T	+61 53			-1.30	
T	+92 91			4.45	
T	147+24 26			7.58	

	371.02		
147+55 63	10.47		
+86 99	13.21		
148+18 17	13.6		
+50 46	13.15		
+81 63	9.76		
149+12 91	6.22		
+44 21	4.18		
+75 66	2.61		
TP 3.64	372.06	2.60	368.42
150+06 99	3.14		
+38 17	4.10		
+69 90	5.57		
151+01 33	7.00		
+32 75	8.64		
+64 06	11.23		
TP 0.32	359 50	12.88	359.18
+95 15	2.96		
152+26 35	7.47		
+57 50	12.27		

		359.50		
	1.05	347.32	13.23	346.27
152+91 25 All = 152+88 95 BK			5.19	
153+21 37			13.4	
	0.32	335.29	12.35	334.97
	+51 04		11.70	
TP	0.52	327.94	7.87	327.42
TP	0.48	315.78	12.64	315.30
153+80 22			2.50	
154+10 50			12.76	
TP	0.19	302.89	13.08	302.70
154+40 54			9.19	
TP	0.24	289.82	13.31	289.58
154+71 17			4.01	
155+01 77			11.52	
	0.15	276.97	13.00	276.82
155+32 19			6.81	
	0.43	264.29	13.11	263.86
155+61 20			4.60	
	0.19	251.20	13.28	251.01

TP on N.J. edge of cut off wall

West
Williams
O Brien
Henke

July 8, 58

Top of Pipe As Layed

	M.P.L.		
	251.20		
155+91 04		3.49	
TP 0.21	238.38	13.03	238.17
156+19 76		3.40	
0.43	225.62	13.19	225.19
156+48 62		3.37	
0.27	212.59	13.27	212.35
156+77 76		1.96	
157+07 51		11.62	
0.55	200.40	12.74	199.85
157+38 04		7.45	
0.55	187.98	12.97	187.43
157+68 34		3.81	
157+98 40		13.20	
158+14 88		17.1	
158+44 14		9.87	
158+75 03		4.66	
159+06 15		1.48	
12.49	199.74	0.73	187.25
159+37 48		9.86	
+68.81		6.52	

West
Williams
O'Brien
Henke.

July 8, 1958

Top of Pipe as Layed

	M.P.L.		
	199.74		
160+00.18		3.08	
+31.62		1.20	
1.88	200.77	0.85	198.89
160+62.82		2.61	
+93.95		5.94	
161+25.01		10.30	
1.77	190.51	12.00	188.77
161+56.13		4.63	
161+87.28		9.19	
0.88	178.13	13.29	177.25
162+18.45		1.25	
+49.55		6.40	
162+80.15		12.60	
~~+83~~ 0.40	165.39	13.14	164.99
163+11.24		2.58	
163+42.69		2.91	
163+72.23		8.69	
163+89.74		14.3	
164+23.10		14.3	

West
Williams
O'Brien
Henke

	Top of Pipe as Layed M.P.L.		
	165.39	7.33	158.06 =
1.30	398.28		396.98
91+22[00]		11.08	
91+00[91]		11.23	
90+84[73]		11.30	
90+53[35]		11.07	
T.P. 0.89	386.77	12.40	385.88
90+22[53]		2.13	
89+92[02]		9.62	
T.P. 0.34	375.30	11.81	374.96
89+61[50]		5.28	
89+30[99]		12.98	
T.P. 0.78	362.87	13.21	362.09
89+00[48]		7.90	
TP 0.15	351.75	11.27	351.60
88+70[17]		4.65	
88+39.[77]		12.54	
T.P 0.87	339.75	12.87	338.88

157.82 (5) 164+95 see pg. 69 July 8 1958

Conc Mon A 5Ta 95 245 See FB 939 P20

West
Williams
O'Brien
Henke

July 8, 1958

		Top of Pipe As Layed M.P.L.		
		339.75		
88+09 55			9.30	
TP	0.46	327.21	13.00	326.75
87+79 97			7.60	
T.P.	0.46	314.69	12.98	314.23
87+50 92			7.1	
TP	0.33	302.02	13.00	301.69
87+22 42			7.9	
TP	0.41	289.62	12.81	289.21
86+94 04		Covered		
TP	0.58	277.21	12.99	276.63
86+65 67		Covered		
TP	0.08	264.59	12.70	264.51
86+37 30		Covered		
TP	0.36	252.15	12.80	251.79
86+09 05			13.20	
TP	0.47	239.34	13.28	238.87
TP	0.26	227.47	12.13	227.21
85+81 77			3.87	
TP	1.69	217.45	11.71	215.76

West
Williams
O'Brien
Henke

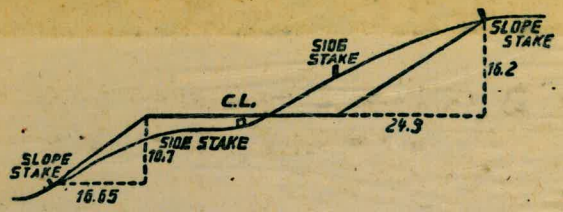
July 8, 1958

Top of Pipe As Layed
MPL

	217.45		
85+54 24		8.66	
TP 0.80	205.01	18.24	204.21
85+26 35		11.52	
TP 0.64	193.32	12.33	192.68
TP 0.34	181.11	12.55	180.77
84+99 98		3.76	
TP 0.16	168.50	12.77	168.34
84+72 72		6.79	
TP 0.12	155.83	12.79	155.71
84+45 20		9.59	
TP 0.04	143.18	12.69	143.14
84+16 91		9.52	
TP 0.29	130.25	13.22	129.96
83+87 95		8.32	
TP 0.68	118.21	12.72	117.53
83+58 08		6.58	
TP 0.51	105.84	12.88	105.33
83+27 83		2.60	
		5.74	100.10 =

100.10 Sta 82+66 10 See pg. 55

69 + 35 91 AH
= 70 + 29 47 BK



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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