EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

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

570

The paper stock of this book is made of a high grade 50% rag paper having a water resisting surface and is sewed with Bing Special Enamel Waterproof Thread.

Made in U. S. A.

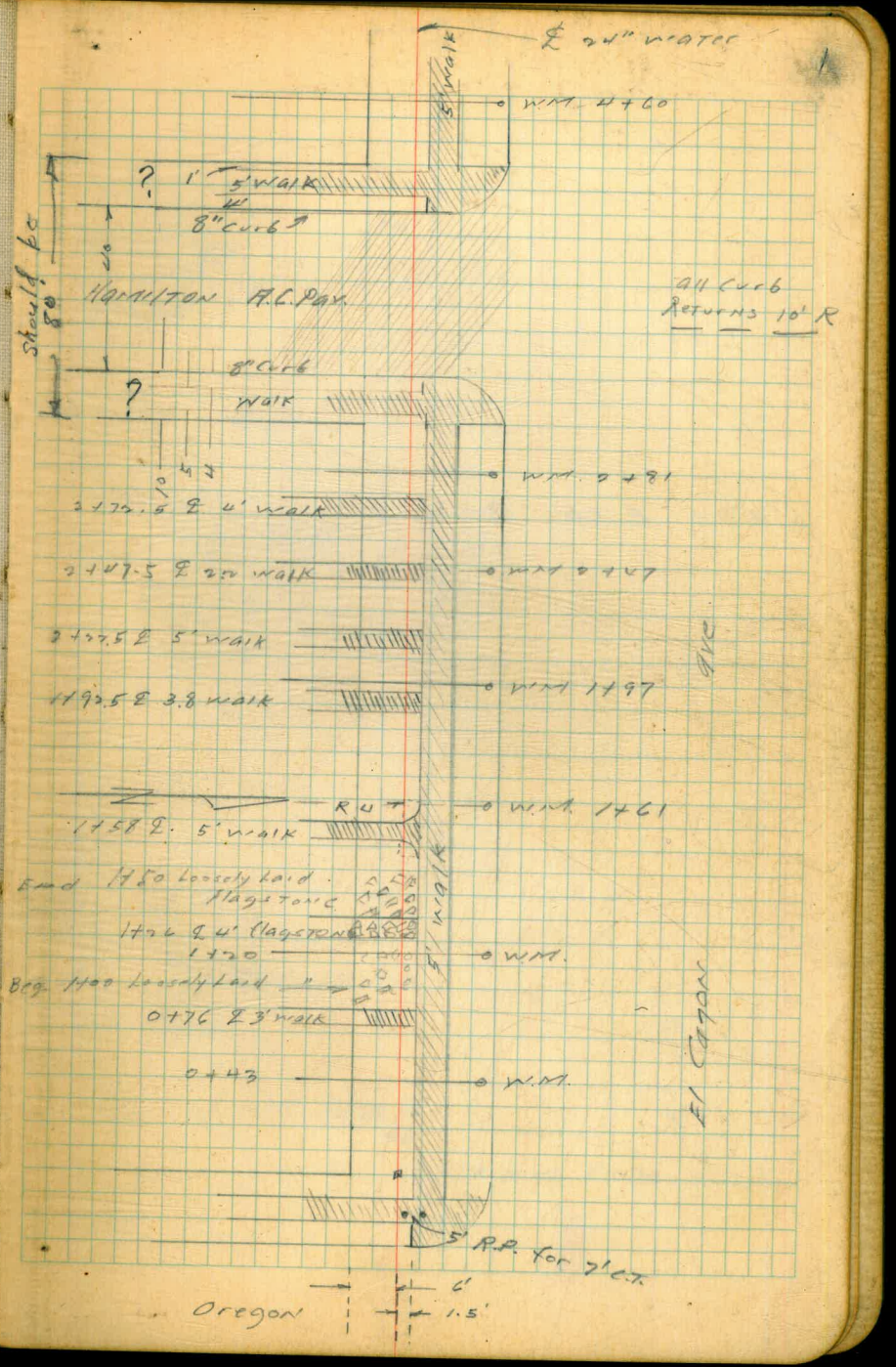
INDEX

Moore Proposed 24" water line on El Cajon
Osborne Oregon wly to Texas
Sorrento Mesa thence wly on Texas
to Camino del Rio
Thence wly to Old Town

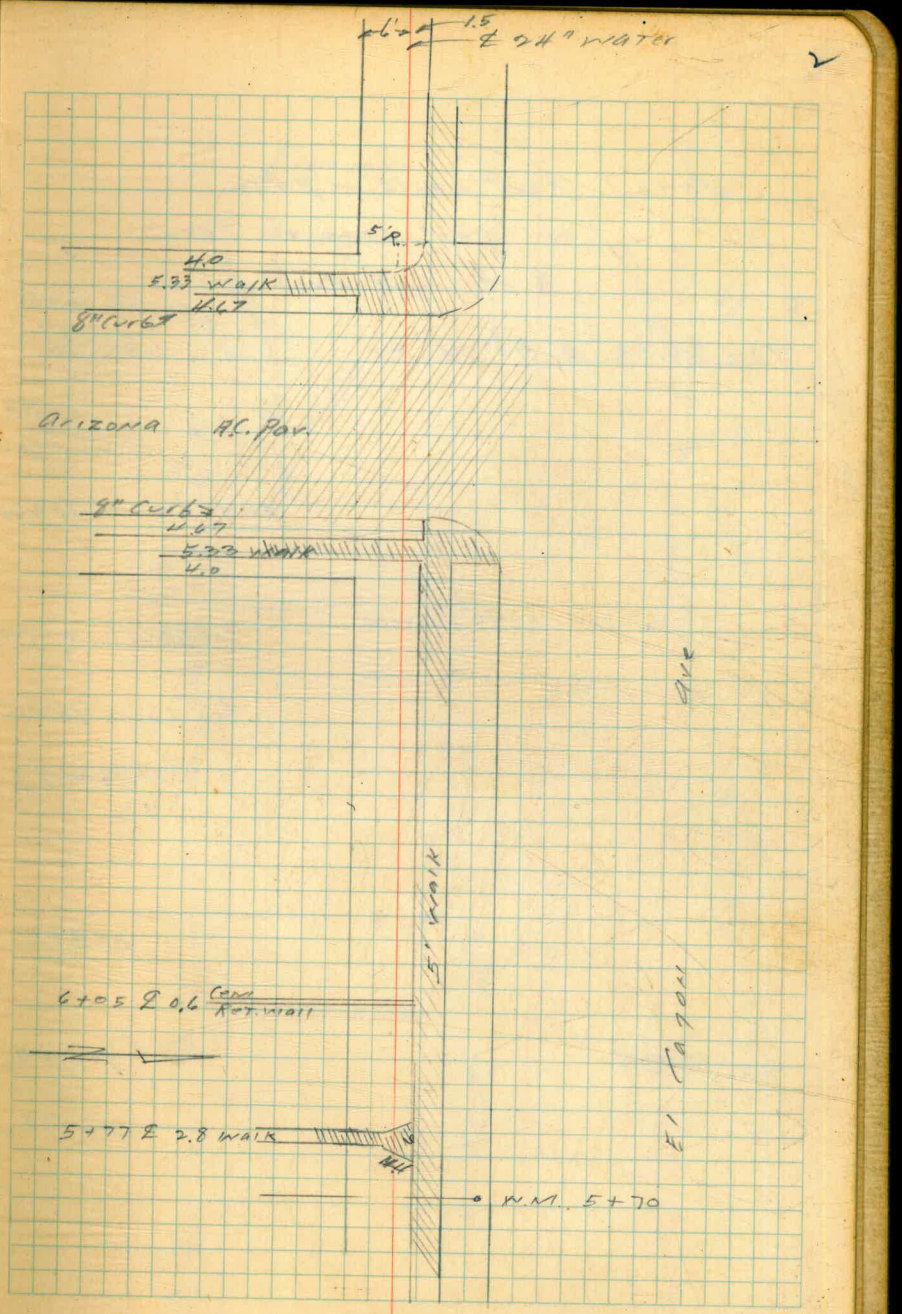
3+no.3 ℄ c6 Hamilton

0+00 = W.L. Oregon

W.M. = Water Meter



6+94 · E c6 Ariz. 57



Note! Roof walls in pav.
on 100' sta. on Texas
to Mission Ave.

10+87.08 Δ 90°04' Rt.

End Lawn 10+64

3/4" sprinkling System

10+36 ℄ 6' Fla

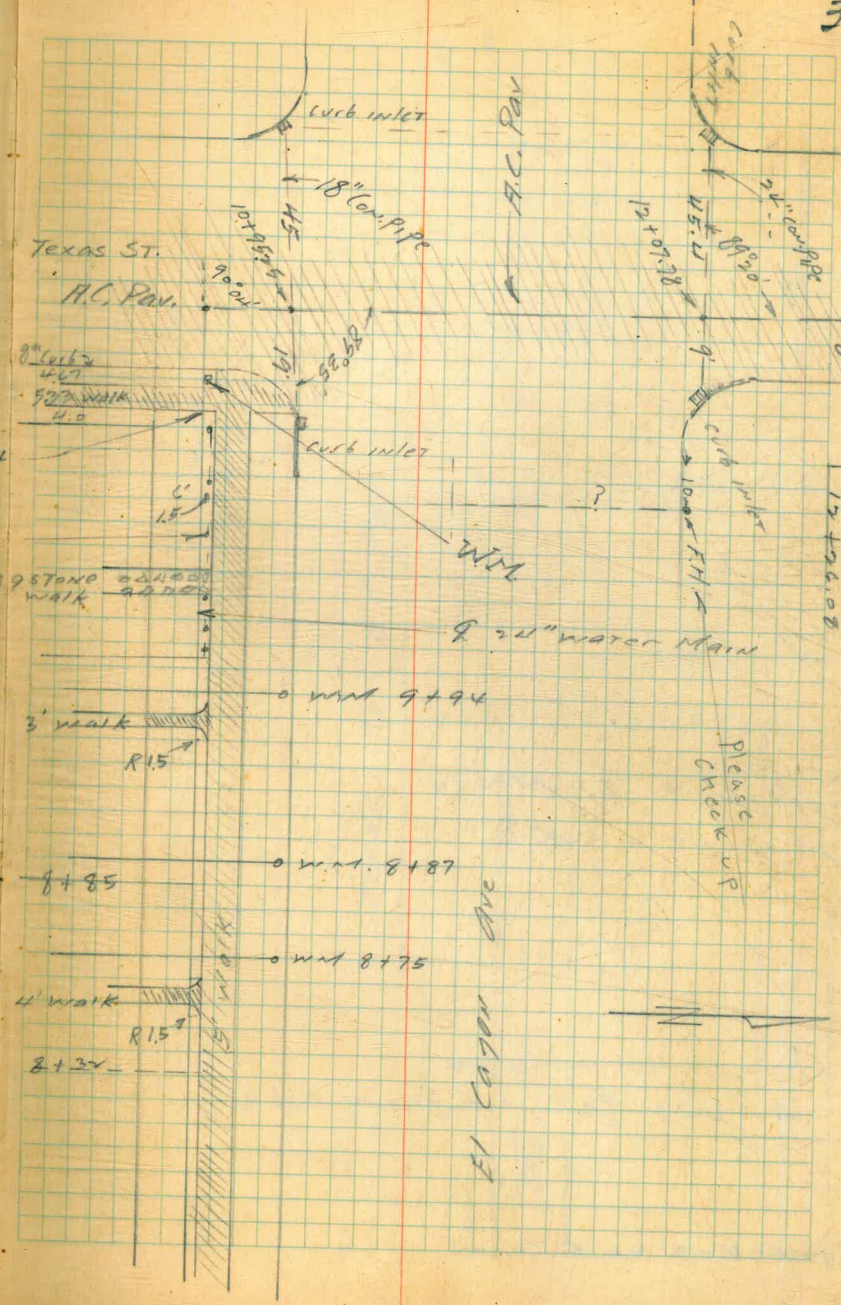
Beg. Lawn 10+10

9+90 ℄

End Lawn 8+85

8+65 ℄

Beg. Lawn 8+37



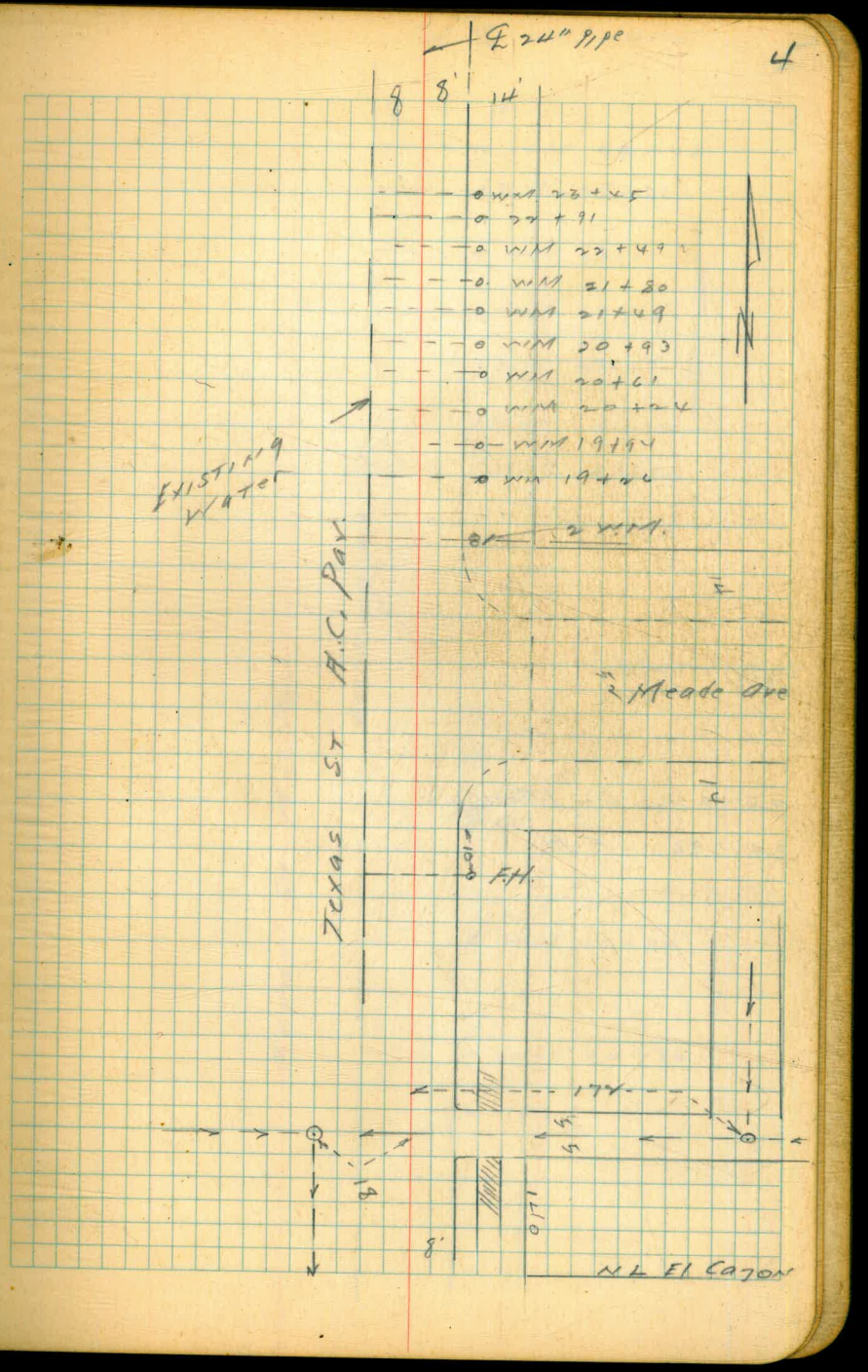
19+07.5 = W.M.

18+46.08 S.L. Meade

18+46.08 = F.H.

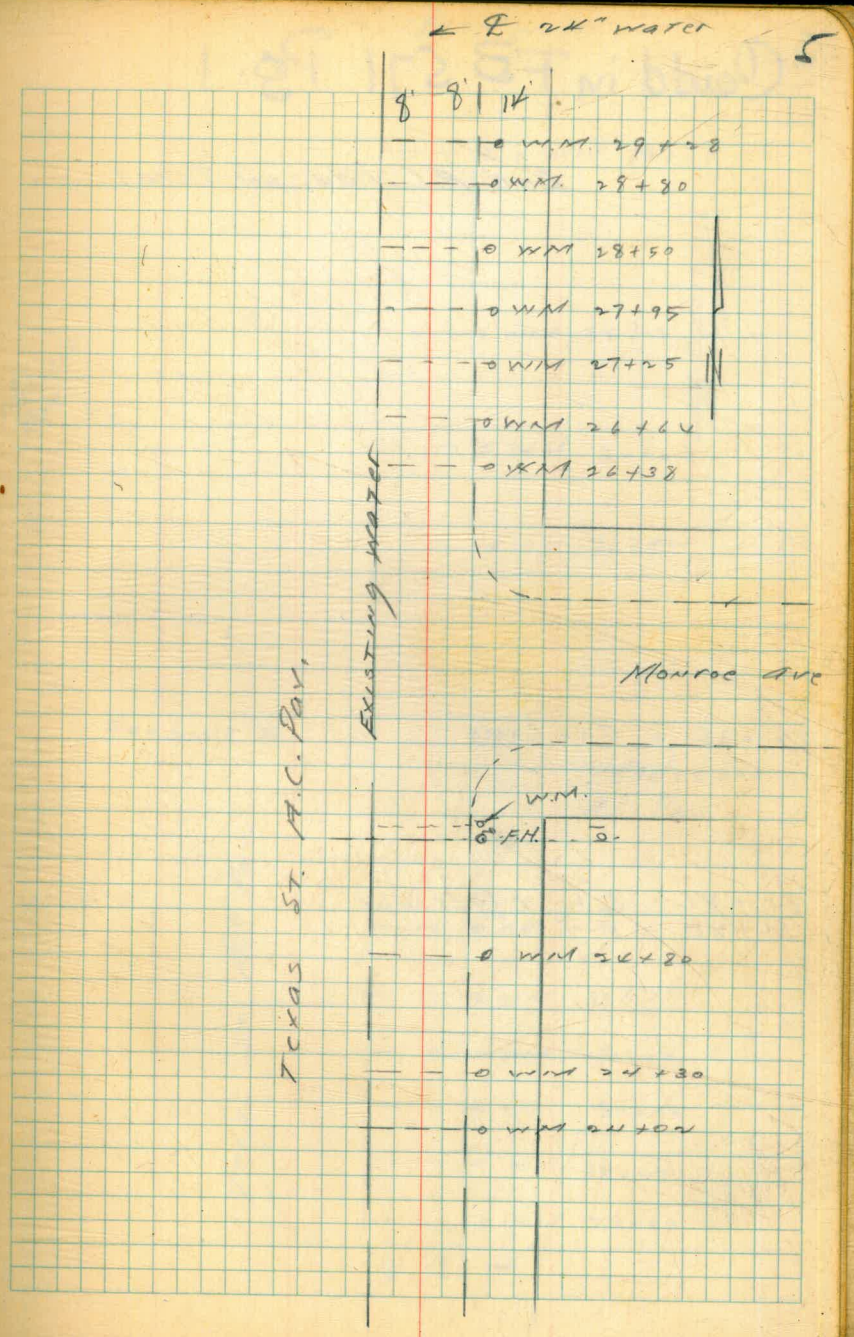
13+71.08 N/L of Sewer line

17+76.08 N.L. El Cajon



25+04 St Monroe

24+96 F.H.

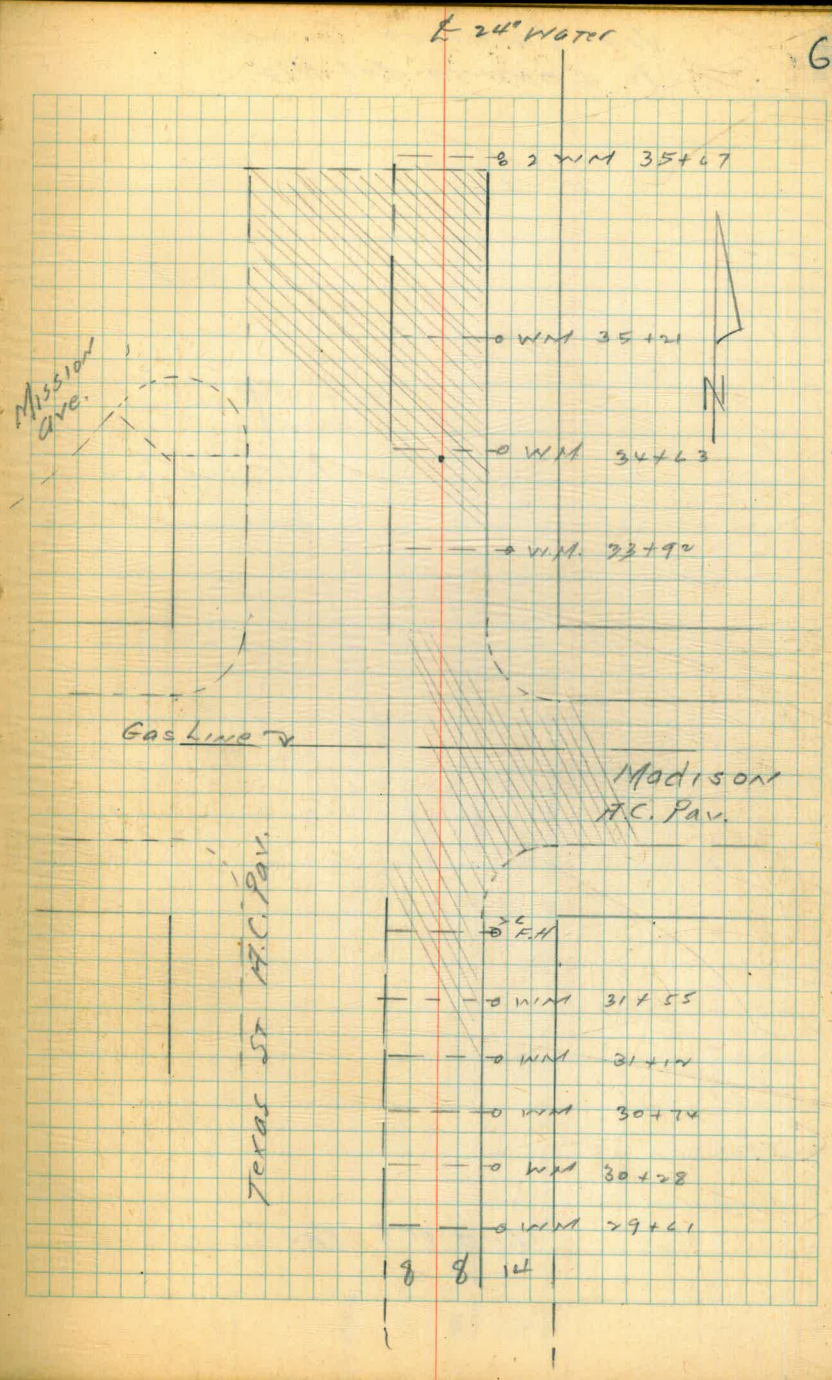


Could in FB 571 Pg. 1

End A.C. Pav. on Texas

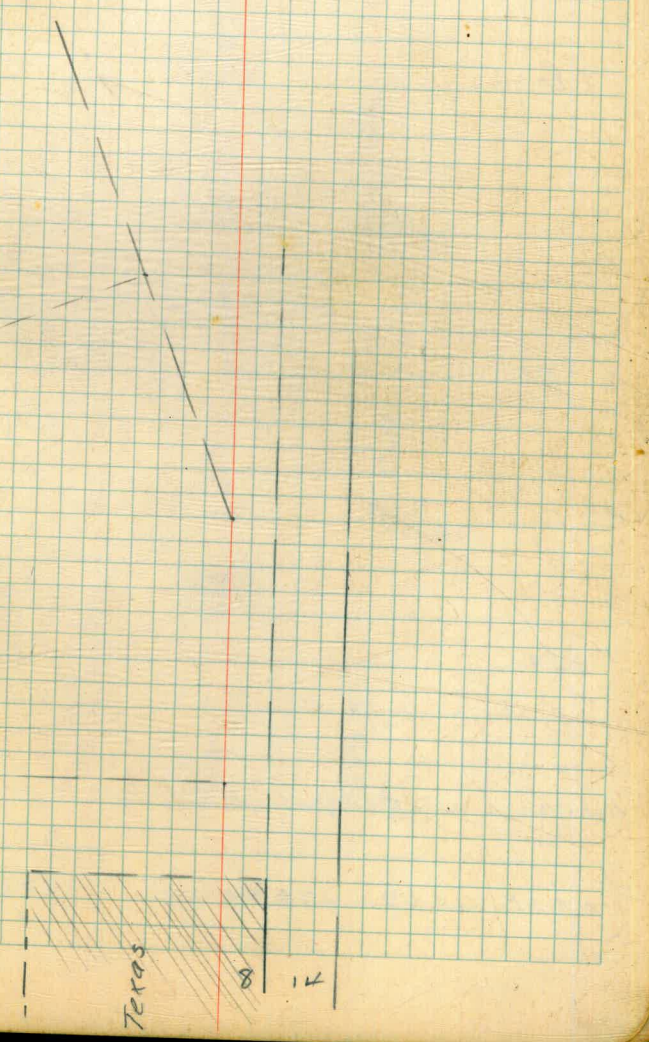
32 + 35 = Gas Line

31 + 84 SL Madison
31 + 80 = F.H.



Via Sandrock Grade
to Camino del Rio

End A.C. Pav.



+20.3 Top E cb HAMILTON

3

+50

1

+50

1

+50

0+00 = WL Oregon

NEBP 10.69 379.04 348.35 El Cajon HAMILTON

LT RT

367.24
11.70
367.7
11.3
368.7
10.3
370.0
9.0
371.3
7.7
372.5
6.5
373.7
5.3
374.7
4.3
379.04

367.62
41.42
1.5 sdw

369.95
2.09
1.5 sdw

372.45
6.59
1.5 sdw

374.79
4.25
1.5 sdw

5

+50

4

+80

2 +60.10 W C6 HAMILTON

+60 QVT PAV

TP 1.49 367.48 13.05 365.99

+40.3 PAV

3 +20.4 QVT PAV

379.04

LT RT

354.7 354.79
17.8 17.69
1.55 SDW

359.7
17.8

364.2 364.19
17.3 17.9
1.55 SDW

366.0 366.08
15 1.40
1.55 SDW

365.98
14.0

365.48
17.00

367.48
366.47
17.57

366.71
17.33

379.04

7+59 gut pav

7+20 Pav E Ariz.

7+94.1 gut pav

7+9 E cb Ariz.

7+80 EL Ariz.

7+50

T.P.	0.41	342.91	12.79	342.50

6

5+50

T.P.	0.64	355.79	12.83	354.65
		367.68		

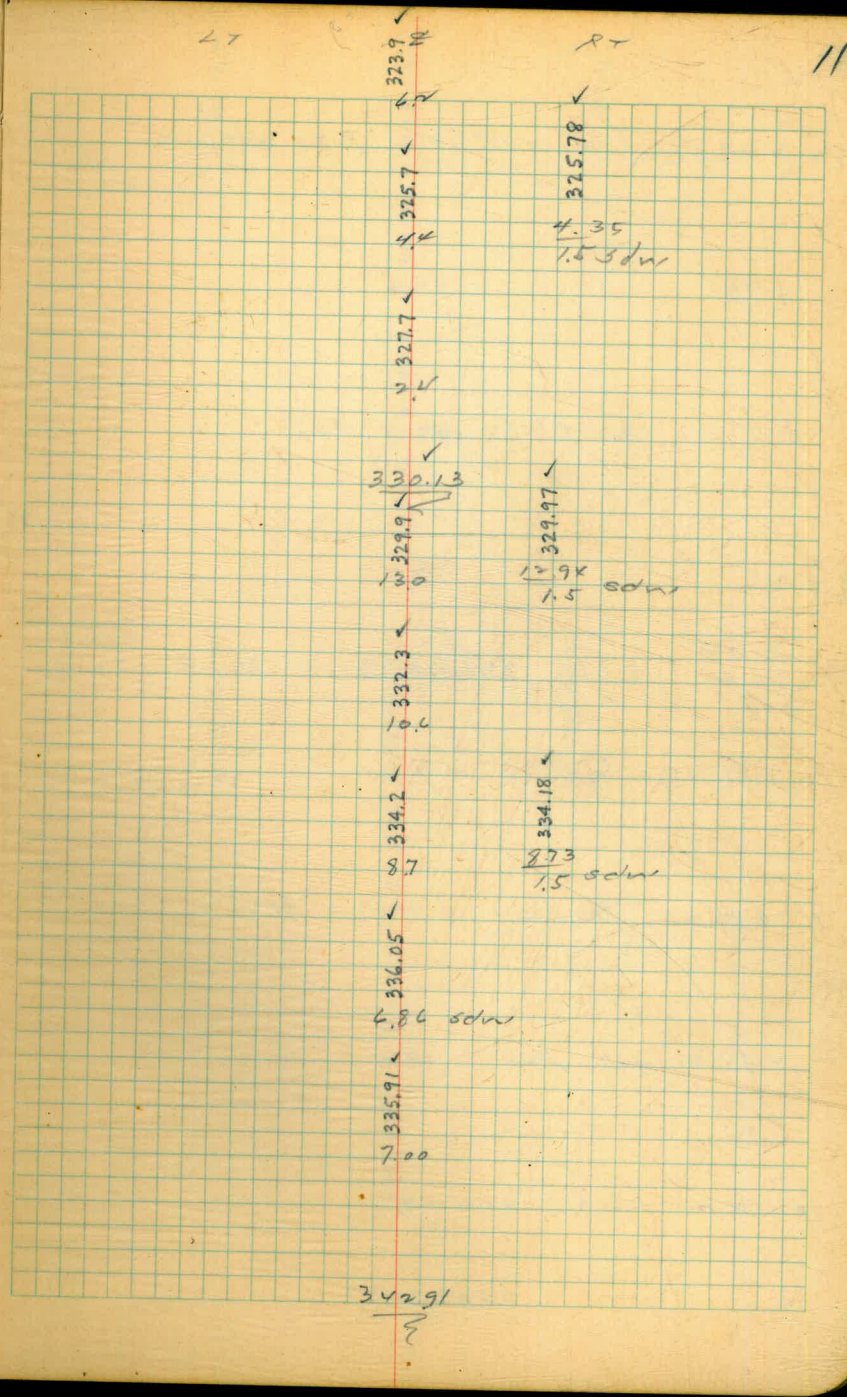
Lt Rt

335.37
7.54
336.65
1.26
337.04
5.87
337.77
5.14
338.5
4.4
340.6
2.3
342.91
345.7
9.6
350.3
5.0
355.79

341.98
0.93
1.5 sdw

345.43
9.86
1.5 sdw

7+50				
10				
7+50				
T.P.	0.19	330.13	12.97	329.94
7				
7+50				
8				
7+56				
7+66	W c6 Area.			
		342.91		



1W +07.78 Int. 24" Conc. Pipe drain

+75

+51.08 ℄ El Cajon Ave

11 +05

TP	SWBP Curb	8.61	330.48 ✓	H.C.	321.87 ✓	El Cajon Texas 321.9±

10 +95.25 Int. 18" Conc drain

10 +82.08 Roofmoil Δ 90°0'0" Rt

+74.3 Gut Pan

10+74.7 E c6 Texas

330.13

Lt

316.12
14.36
45.4
F.L. 24" Pipe

315.80 ✓
14.33
45
F.L. 18" Pipe

Rt

319.02 ✓
11.44
9 F.L. 24" Conc. P

318.45 ✓
11.68
19 F.L. 18" Pipe

	324.18 ✓	6.30
	324.08 ✓	6.40
	323.90 ✓	6.58
	323.54 ✓	6.94
	330.48 ✓	
	322.95 ✓	7.18
	322.67 ✓	7.46
	322.23 ✓	7.90
	323.09 ✓	7.04

330.13

+50

15

+50

14

13+71.08 Int. of Sewer line

+50

13

+50

12+26.08 N.L. El Cajon

330.48

LT ℄ RT

327.66
2.82
327.12
3.36
326.51
3.97
325.94
4.54
325.66
4.82
325.38
5.10
324.86
5.62
324.46
6.02
324.34
6.14

318.15
12.33
18
F.L. S. INT. H.

322.19
8.29
17
F.L. S.M.H.

330.48

+66.08 E Meade

+76.08 SL Meade

+16.08 = F.H.

18

+50

TP 8.74 337.96 1.76 329.22

17

+50

16

330.48

Lt Rt 14

331.36
6.60
330.81
7.15
330.73
7.23
330.61
7.35
330.05
7.91
337.96
329.40
1.08
328.88
1.60
328.30
2.18
330.48

F.H.
10

NW

+50

N1

+50

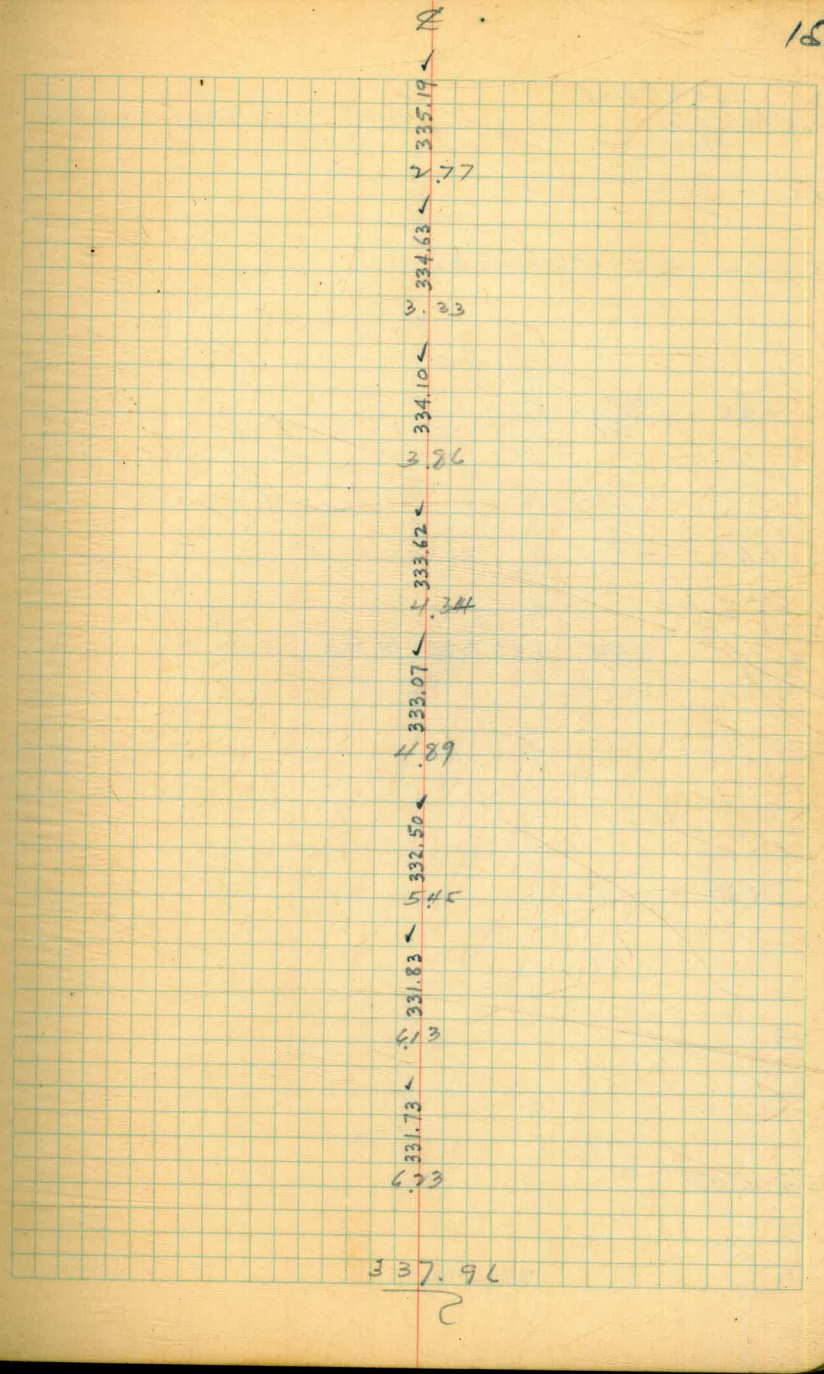
N0

+50

+04.08 NL Meade

19

337.94



check to Texas Monroe SE BP Curb		7.05	338.98	338.96
25+06 SL Monroe				
24+96				
+50				
T.P.	8.50	346.03	0.43	337.53
24				
+50				
23				
22+50				
		337.96		

℄ Rt

338.45
7.58
338.40
7.63
337.97
8.06
346.03
337.43
0.53
336.92
1.04
336.29
1.67
335.79
2.17
337.96

F.H.
10

+50

~8

+50

~7

+50

~6

+86 N.L. Monroe

~5+46

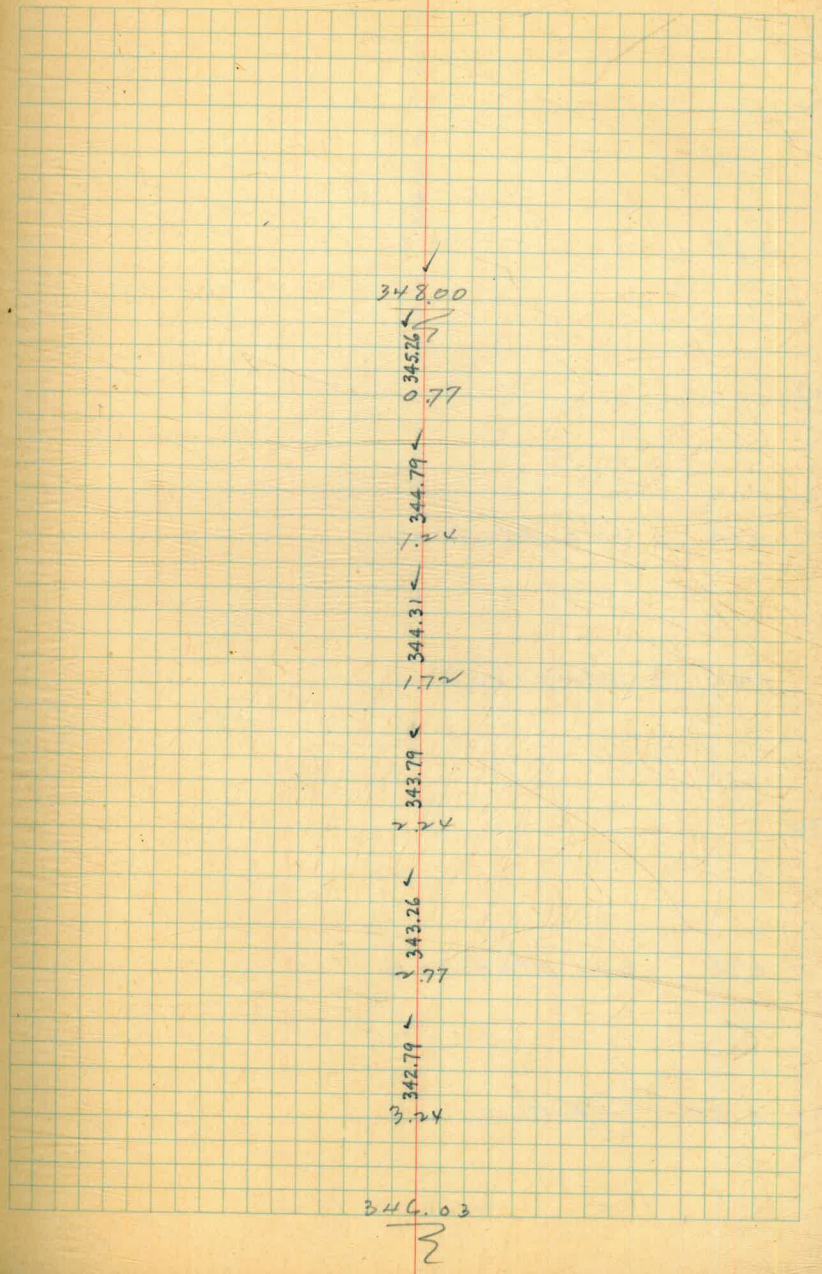
346.03

24'

342.23
.80
341.77
.26
341.29
.72
340.72
.31
340.30
5.73
339.65
.58
339.45
6.58
338.99
.74

346.03

T.P.	1.99	348.00	0.0 N	346.01	346.03
	+50				
31					
	+50				
30					
	+50				
N9					
		346.03			



34

+50

33

+66 N L Madison

+96 E Madison

32

+86 S L Madison

31 +80 = F.H.

R.

10		
	343.59	
41		
	344.24	
76		
	344.98	
02		
	345.40	
40		
	345.54	
46		
	345.24	
76		
	345.49	
51		
	345.40	
60		F.H. / 10
34	8.00	

Cont'd in FB 571/5

T.P.	Top of 6 8' RT 35+05	5.77	342.23 ✓
35			
+90			
34+50			
	34+8.00		

		341.93 ✓
	6.07	
		342.30 ✓
	5.70	
		342.83 ✓
	5.17	
34+8.00		

Levels on 24" pipe line on Camino del Rio W of 6th St Ext.
Cont'd from F.B. 571-52

157

+50

150

+50

155

+45 24" conc. pipe culv.

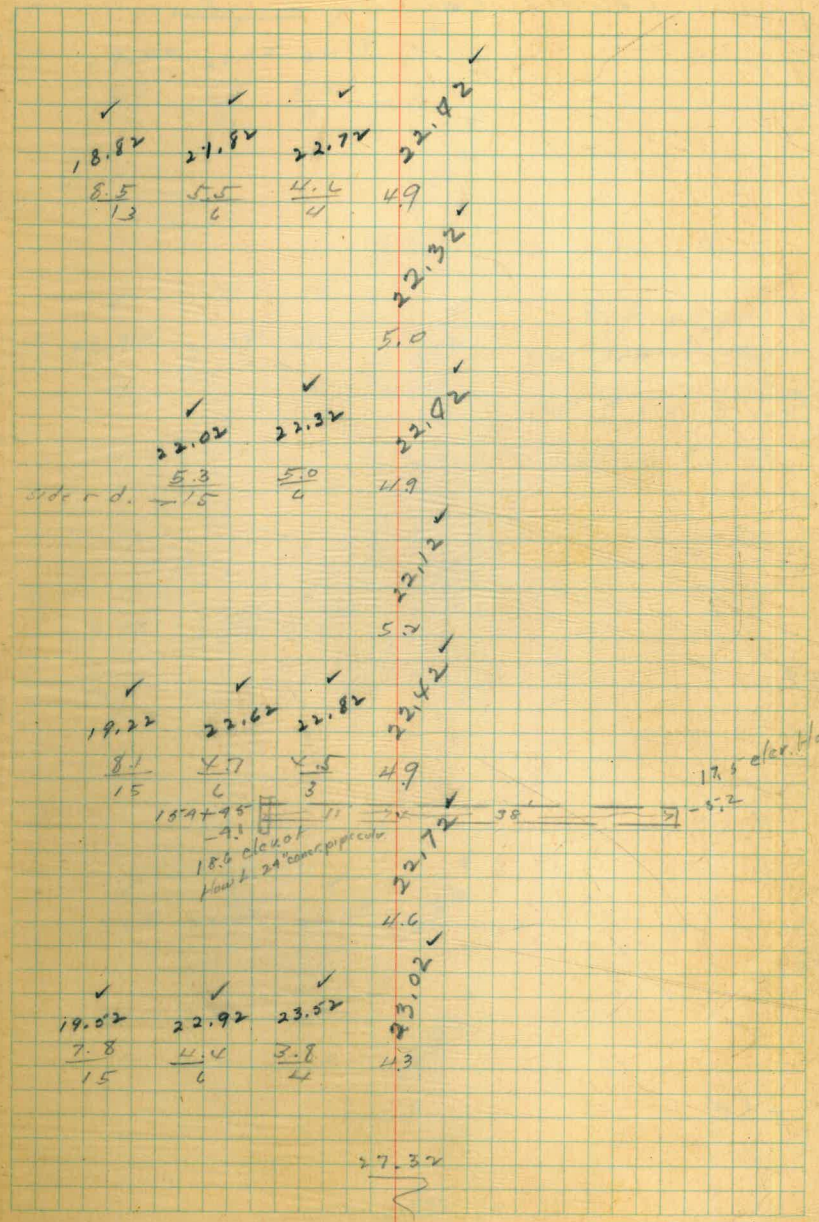
+50

154+00

T.P. 3 nails 7.07 27.32 20.25 50' N of
Tel. Pole 155+00

Cont'd from FB 571/52

LT ℄ RT 21



Levels Cont'd. P-28

161

+50

160

+50

159

+50

158

+50

27.3 ℄

LT ℄ RT

17.4 ℄ 20.6 ℄ 21.7 ℄ 21.4 ℄

9.9 / 12 — 6.7 / 6 — 5.6 / 3 — 5.9

21.5 ℄

5.8

16.7 ℄ 21.1 ℄ 22.1 ℄ 21.7 ℄ ℄ Proposed 24" WATER MAIN 14' S of ℄ of CAMINO del RIO

10.6 / 15 — 6.4 / 6 — 5.4 / 4 — 5.6

22.0 ℄

5.3

17.0 ℄ 21.3 ℄ 22.3 ℄ 22.0 ℄

10.3 / 14 — 6.0 / 6 — 5.0 / 4 — 5.3

22.1 ℄

5.2

17.2 ℄ 20.7 ℄ 22.7 ℄ 22.2 ℄

10.1 / 15 — 6.6 / 4 — 4.6 / 3 — 5.1

22.4 ℄

4.9

27.3 ℄

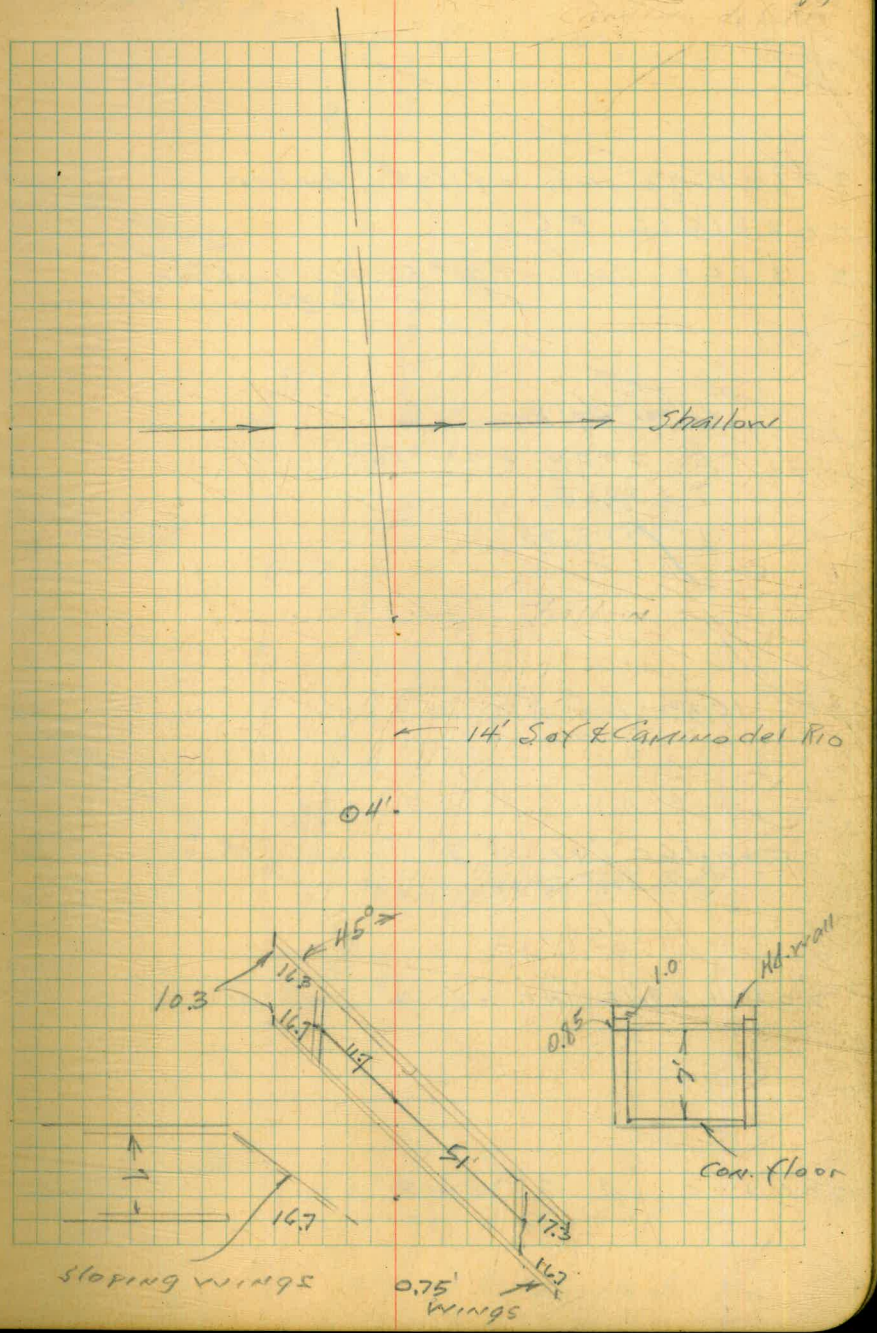
103+11 Int. 3/4" water line

200+00 Δ 0° 39' 48" (38) Lt.

197+77 Test hole

195+69.65 Cattle Underpass (conc.)

194+87.46 E.C. Contd. from 571-38



208+71.93 Int. of 12" Sewer

208+65.66 E.C.

208+55 Int. of 4" Ex. water line to Benard Nursery

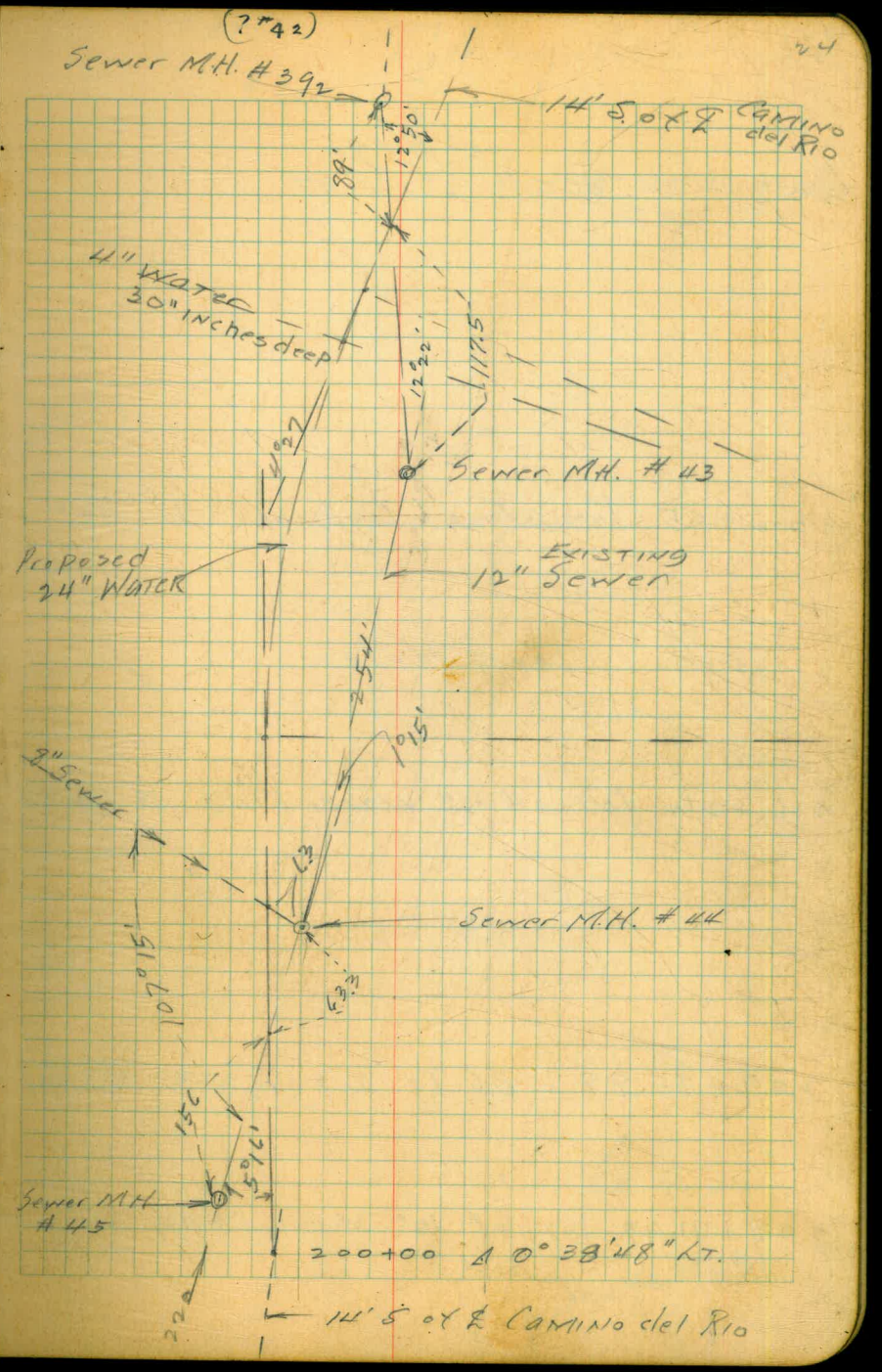
P.I. Δ 4°27'Rt
R 2000 = 24" Pipe
T 77.68
L 155.33

207+10.33 B.C. Rt.

205+04.60 Int. of 8" Sewer (Mission Hills) Should be lowered

204+39.15 Int. of 12" Sewer

200+00 Δ 0°38'48" Lt.



24" Pipe

228 + 74.30 Δ 2° 30' RT

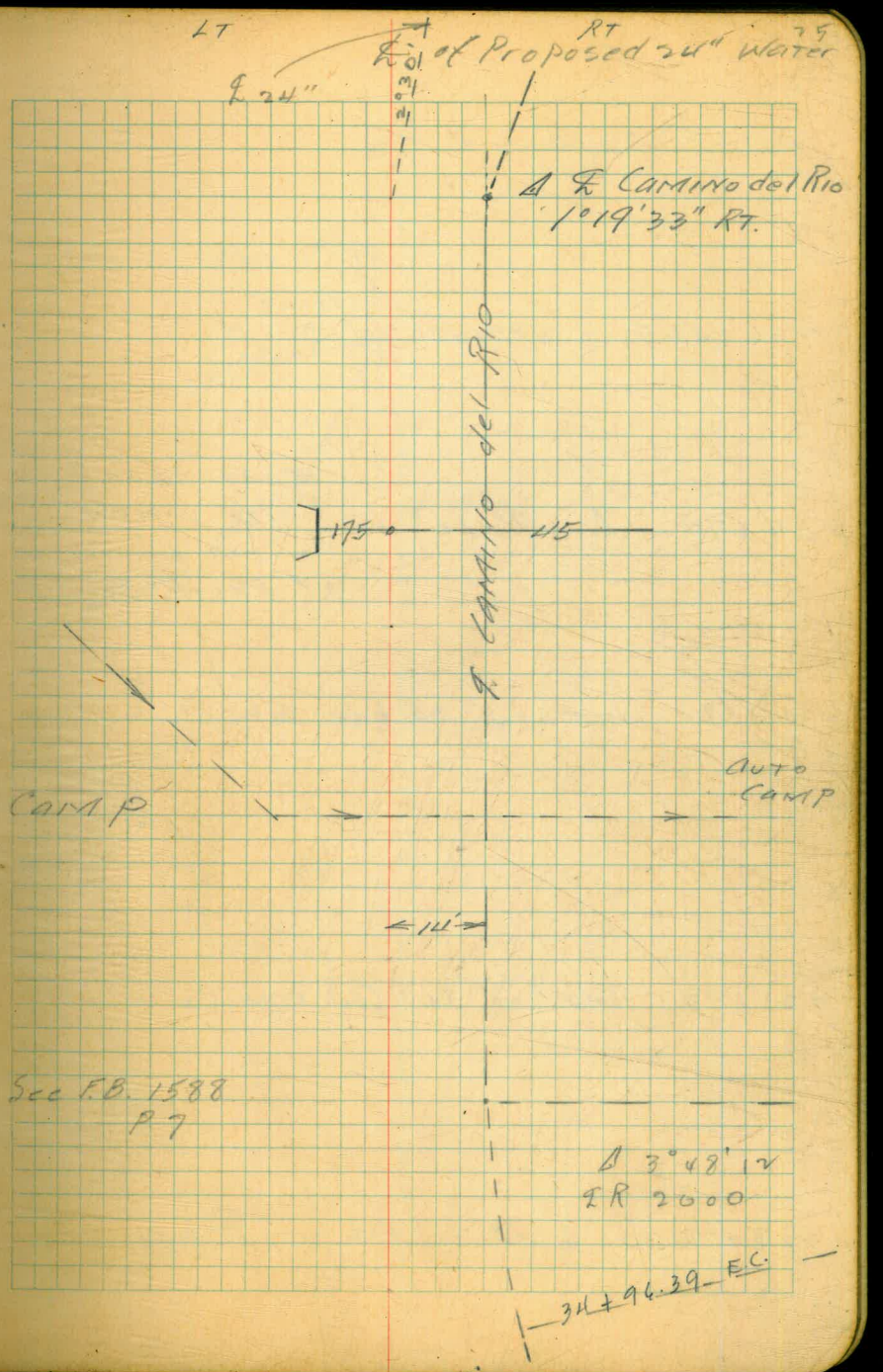
220 + 95 Int. of 24" Con. Pipe Culv 90°

216 + 47 Test Hole

216 + 26 Int. of 2" Water line to Auto Camp

209 + 85.88 = B.C. LT 33 + 63.63 Camino del Rio

208 + 71.93 Int. of 12" Mission Valley Sewer



~36+46.5 = Existing Approx. 30° Bend

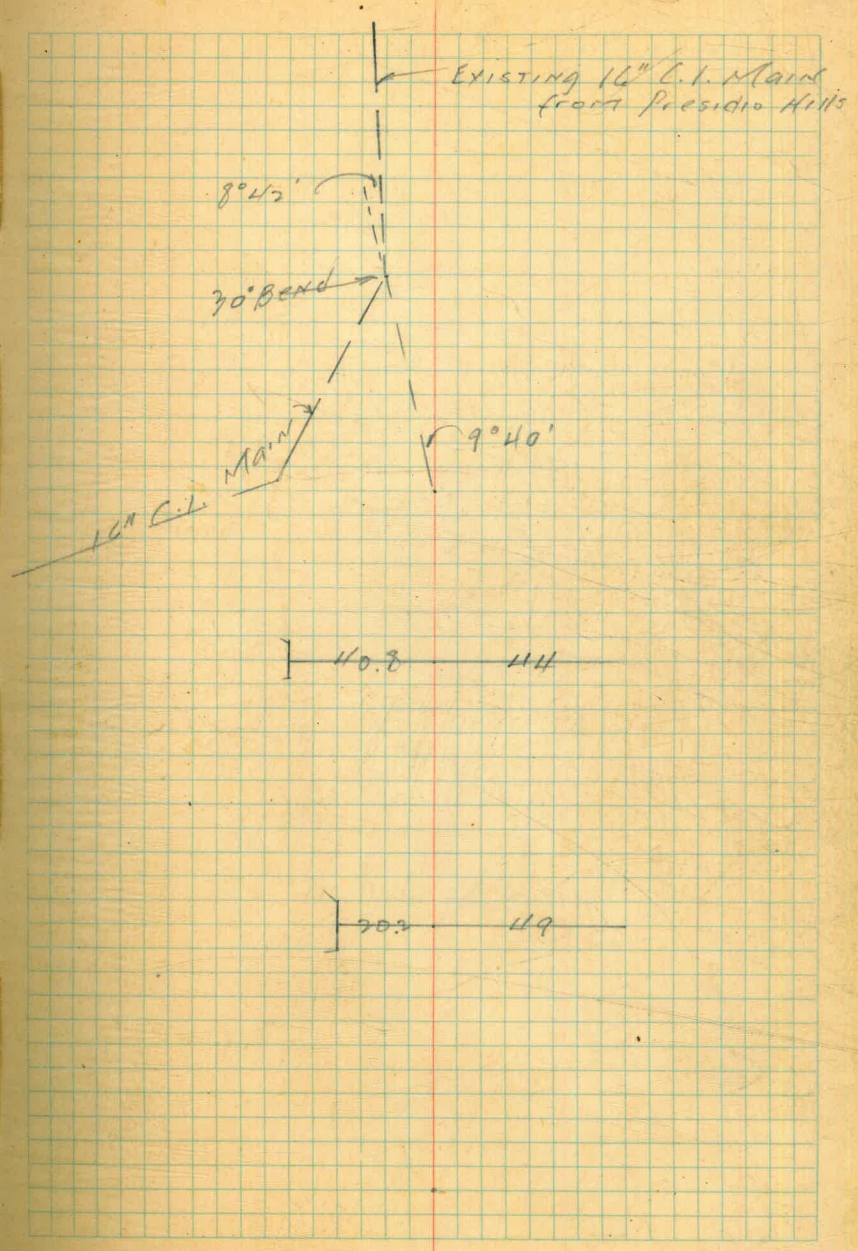
~35+70 ∆ 9°40' LT. Make 1000' R Curve when Correct Location of Ex. 16" Bend fd.

~35+18 Int. of 30" Con. Pipe Culv.

~31+43 Int. of 36" Con. Pipe Culv.

~28+74.30 ∆ ~° 30' RT. = 24" Pipe ∆

LT RT ~6



+19 24" Con. Pipe Cu'v 90°

164

+50

163

T.P. H.24 25.64 5.9 21.40

+50

162

+50

161+29 24" Con. Pipe Cu'v. 90°

×7.32

Cont'd from Pg. 22

Lt. 17.24 ✓ 8 ✓ Rt. 16.84 ✓

8.40 / 6.3 — 21.14 / 4.5 Pav — 8.80 / 3 C

Fl. Inlet

18.14 ✓ 19.64 ✓ 21.34 ✓ 21.24 ✓

7.5 / 11 — 6.0 / C — 4.3 / 4 — 4.4

20.94 ✓

4.7

17.64 ✓ 19.24 ✓ 21.24 ✓ 20.84 ✓

8.0 / 10 — 6.4 / C — 4.4 / 3 — 4.8

25.64 ✓

21.02

6.3

17.52 ✓ 19.02 ✓ 21.62 ✓ 21.32 ✓

9.8 / 12 — 7.8 / C — 5.7 / 3 — 6.1

21.32

6.0

16.82 ✓ 21.32 ✓ 16.32 ✓

10.50 / 8 — 6.1 Pav — 11.00 / 42.5

Fl. Inlet — F.L.

×7.32

	Lt		℄	Rt
168	16.6			
	9.0	19.9	21.0	20.7
	12	5.7	4.6	4.9
		4	4	
+50				
		20.5		20.6
167		5.1		4.0
	Side Rd	4		21.0
+50				4.6
	17.0			
	8.6	19.3	21.0	20.7
166	12	6.3	4.6	4.9
		4	3	20.8
+50				4.8
	16.2			
	7.4	19.3	21.3	20.9
165	10	6.3	4.3	4.8
		4	3	21.0
+50				4.7
				20.8
				4.6
				21.0
				4.6
				20.7
				4.9

Shoulder Marrow

≈ 5.64

≈ 5.64

+50

171

+50

170+05.27 Pueblo Line

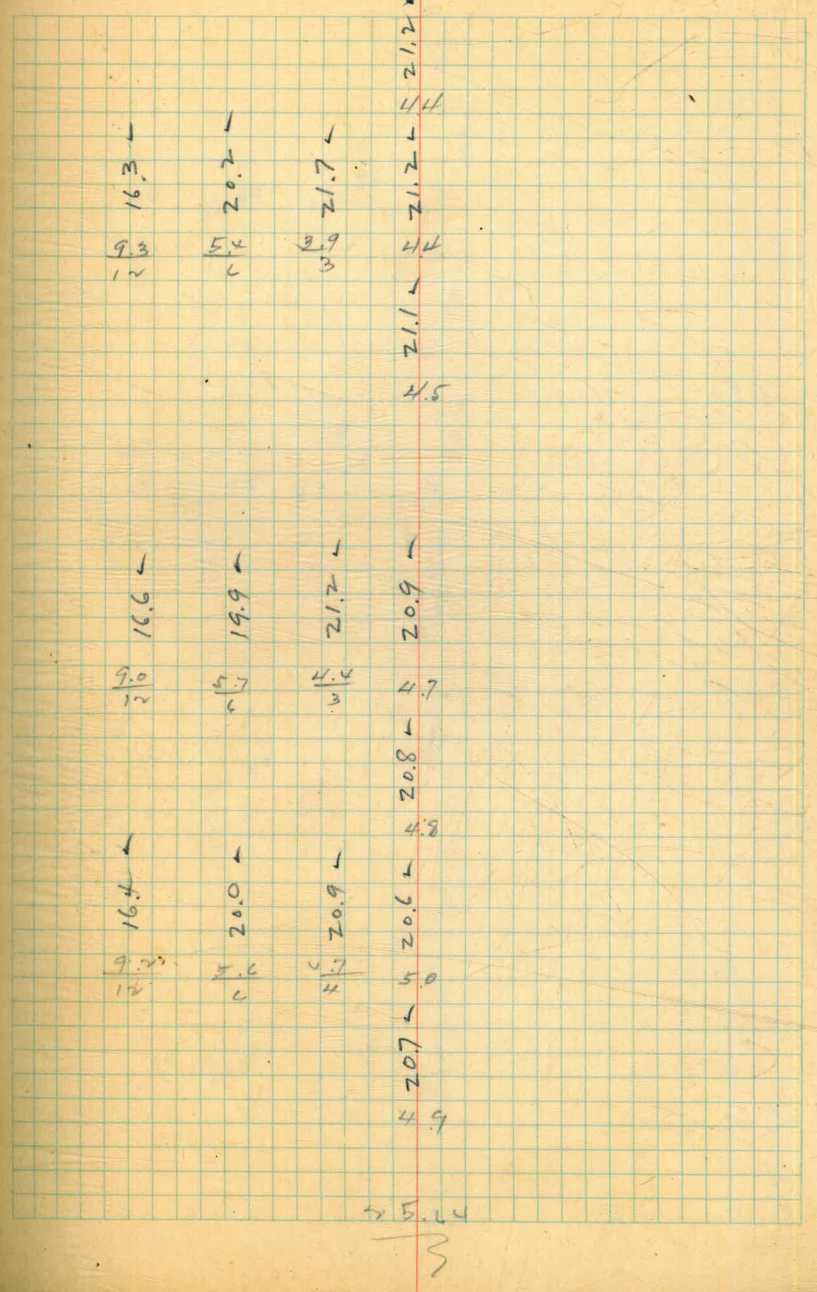
170

+50

169

+50

45.64



+50

175

+50

174

+50

173

+50

172

T.P. 4.82 27.05 3+1 22.23

2564

Lt. ℄ Rt.

22.15

4.9

16.45	21.35	22.35
10.6	5.7	4.7
14	6	4

22.15

4.9

22.35

4.7

18.05	21.45	22.45
9.7	5.6	4.6
13	6	4

22.25

4.8

22.05

5.0

16.25	20.45	22.15
10.8	6.6	4.9
13	6	3

21.75

5.3

21.55

5.5

15.85	20.55	22.05
11.2	6.5	5.2
13	6	3

21.55

5.5

27.05

Lt ℄ Rt

+50

+41 36" Conc. Pipe Culv. 90°

178

+50

+19 42" Conc. Pipe Culv. 90°

177

+50

176

x7.05

21.15
5.9
16.29
10.7 6
9.2
Ft inlet
20.90
6.1
Side rd ℄
21.15
5.9
14.20
12.85
39.5
F.L.
21.05
6.0
21.35
5.7
15.10
11.95
12
Ft inlet
17.15
9.9
15
21.55
5.5
21.05
5.5
6
22.05
5.0
4
13.84
13.7
37
F.L.
21.65
5.4
21.95
5.1
16.65
10.4
15
21.05
6.0
6
22.25
4.8
4
24.05
5.0

x7.05

+50 0°51'9 RT

B.C. RT set I.P.M.
19+07.30 50' S. Con Mon. 3.40 21.85

+50

181

+50

180

T.P. 3.55 25.25 5.35 21.70

+50

179

27.05

LT ℄ RT

20.95
4.3
18.65 20.75 21.55 21.15
6.6 4.5 3.7 4.1
1.3 C 4

21.15
4.1
19.15 20.35 21.25 20.85
6.1 4.9 4.0 4.4
1.5 C 3

20.85
4.4
18.85 20.95 21.55 21.25
6.4 4.3 3.7 4.0
1.3 4 4

25.95
31.25
5.8
18.25 20.35 21.35 31.05
8.8 6.7 5.7 6.0
11 6 6

27.05

186 7°57.5

+50 6°56.7

185 5°55.9

+94 30" Con. pipe Culv. Rad.

+50 4°55.1

184 3°54.3

+50 2°53.5

183 1°52.7 Rt

+5.25

Lt. ℄ Rt.

16.75 19.25 20.15 19.55
8.5 6.0 5.1 5.7
11 6 3

19.75
5.5

16.35 19.85 20.45 19.85
8.9 5.4 4.8 5.4
14 6

14.95 19.85 13.75
10.3 5.4 11.5
10.4 38 F.L.
F.L. +1.7

19.95
5.3

19.25 19.95 20.65 20.05
6.0 5.3 4.6 5.2
10 6 3

20.45
4.8

18.55 21.05 21.45 20.65
6.7 4.2 3.8 4.6
15 6 3

25.25

190

189 + 50

188 + 98 30" Conc. Pipe Culv 90°

T.P. 9.15 ~9.14 6.24 19.01

+50

188

+45.9~ E.C. 10° 54.75

187 9° 59.1

+50 8° 58.3 RT

~5.~5

RT 35

14.36 18.36 20.16 19.66

11.8 9.8 8.5

10 6 3

19.46

8.7

18.66 19.36 19.86

13.50 8.8 14.30

8.6 37.8

FL. inlet FL

28.16

19.35

5.9

17.65 19.15 19.75 19.35

7.6 6.1 5.5 5.9

11 6 3

17.45 19.35 19.95 19.45

7.7 5.9 5.3 5.8

12 6 3

17.05 19.05 20.05 19.55

6.~ 6.~ 5.~ 5.7

10 6 4

19.65

5.6

~5.~5

194 1+44.4

+50 0°43.1 LT

193+00.20 B.C. LT.

+50

192 beg. of CUT

+50

191

+50

79.4

LT E RT

25.66 24.06 23.96
2.5 4.1 4.2
C 4

25.16 23.26 23.26
3.0 4.9 4.9
C 3

24.26 22.56 22.56
3.9 5.6 5.6
C 4

23.24 22.16 22.16
4.9 6.0 6.0
C 4

22.46 21.56 21.86
5.7 6.6 6.3
C 4

21.26
6.9

18.66 19.36 20.76 20.46
9.5 8.8 7.4 7.7
10 C 3

19.86
8.3

78.16

197

+50

196

+69.65 Inv. Conc under pass

+50

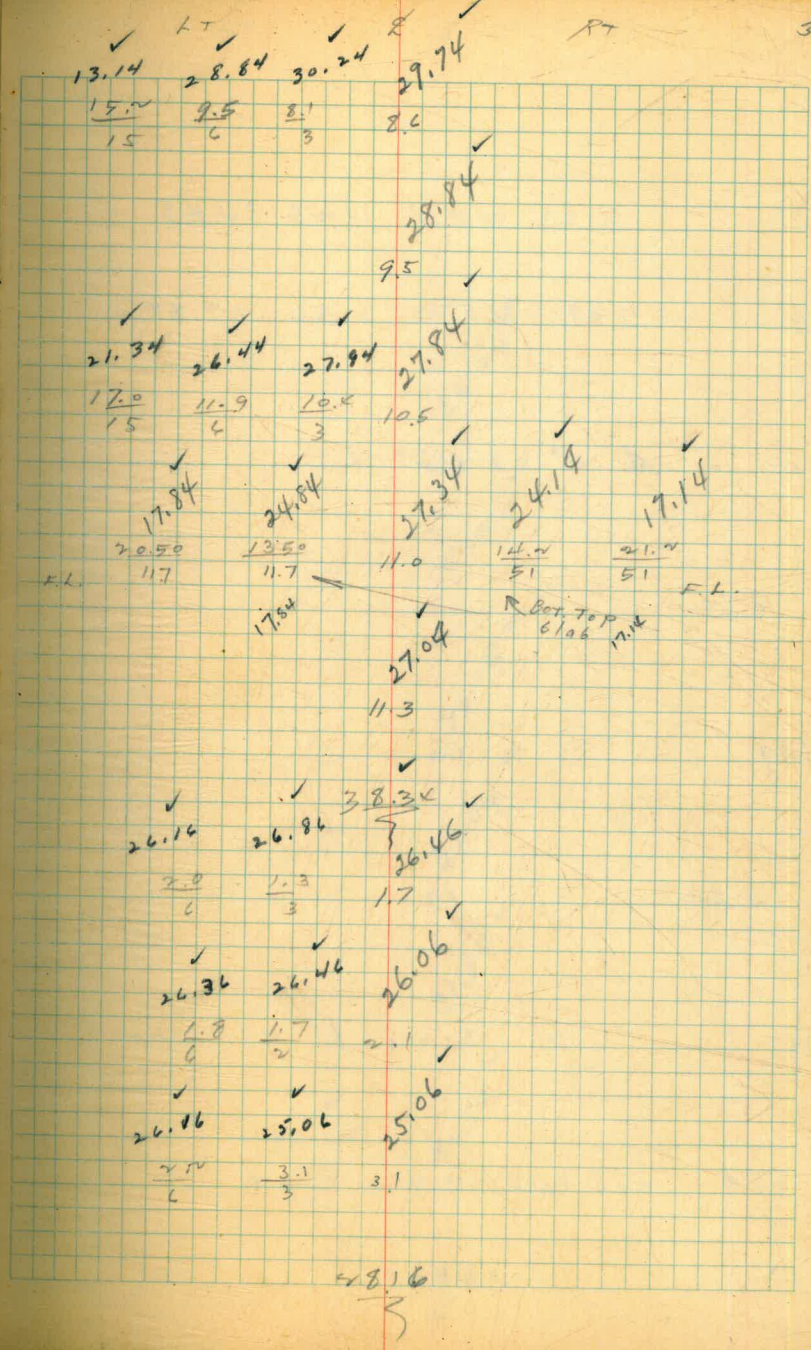
TP SW'y Cor. Top hdwall 11.57 38.34 139 . 26.77
Conc pass

195 End Curb; beg. fill

19N + 8.44 E.C . 2° 37.75

+50 2° 09.6

28.16



T.P.	13.43	48.11	11+25	34.68
T.P.	7.89	45.73	0.50	37.84

+00 = Δ 0°38'48" LT.

+50

199

+50

198 14' S of ℄ OK. thru Cut

+50 End Emb. Fill, beg. Cut

39.34

LT. ℄ RT

36.04
7.3
35.04
3.3
34.04
4.3
33.04
5.3
31.84
4.5
30.54
7.8
38.34

30.44
7.7
6

Sewer M.H. #45

+50

+03

+50

+07

+50

+01

200 +50

48.11

41.81 ✓ | 41.77 ✓ | ℄ | Pr

6.30 Rim | 14.34 F.L. 12"

42.91 ✓	42.61 ✓	40.41 ✓	40.21 ✓
5.2	5.5	7.7	7.9
10	3	2	
42.71 ✓	42.41 ✓	39.91 ✓	39.81 ✓
5.4	5.7	8.2	8.3
10	5	2	
43.11 ✓	42.61 ✓	39.61 ✓	39.61 ✓
5.0	5.5	8.5	8.5
10	5	2	
43.21 ✓	42.71 ✓	39.01 ✓	38.91 ✓
4.9	5.4	8.1	9.2
10	6	3	
42.51 ✓	42.41 ✓	38.31 ✓	38.31 ✓
5.6	5.7	9.8	9.8
10	6	3	
42.41 ✓	42.11 ✓	37.71 ✓	37.61 ✓
5.7	6.0	10.4	10.5
10	7	4	
42.11 ✓	41.41 ✓	36.91 ✓	36.81 ✓
6.0	6.7	11.2	11.3
10	7	4	

48.11
5

Lt ℄ Rt

42.51	42.61	39.41	39.31
5.6 / 10	5.5 / 7	8.7 / 3	8.8
		39.91	39.61
		8.7 / 6	8.5
		40.71	40.31
		2.4 / 6	7.8
		40.81	40.71
		7.3 / 6	7.4
43.41	43.51	40.71	40.71
4.7 / 10	4.6 / 5	7.4 / 3	7.4
42.91	42.91	42.91	40.81
5.7 / 10		5.7 / 3	7.3
42.91		42.71	40.81
5.5 / 10		5.4 / 3	7.3
42.91	42.91	40.61	40.51
5.7 / 10	5.7 / 3	7.5 / 1	7.6

48.11

Rd. to Annexus Dairy

40.65 / 7.4C / RIM

32.70 / 15.41 / F.L. M.H. 12" Pipe

M.H. ℄ 44

48.11

706

+90

+50

+15

705+04.6 Int. 8" Sewer

+50

+39.15 = Int. 12" Sewer

704

48.11

+50 0° 34.1 RT

+10.33 B.C. RT

707

+53

+48

+32

+37

206 +10

48.11

LT			RT	
40.91	41.01	38.11	36.51	40.51
7.2 / 10	7.1 / 2	10.0	11.6 / 1	7.6 / 4
41.11	41.11	38.71	37.41	37.31
7.0 / 10	7.0 / 2	9.4	10.7 / 1	10.8 / 4
41.21	41.41	38.81	37.51	37.51
6.9 / 10	6.7 / 2	9.3	10.6 / 1	10.6 / 4
41.41	41.91	39.41	38.11	38.11
6.5 / 10	6.2 / 3	8.7	10.0 / 2	10.0 / 4
39.41		38.51	38.31	
8.7 / 10		9.6	9.8 / 11	
39.91		38.61		38.61
8.7 / 10		9.5		9.5 / 11
42.91	42.65	39.51	38.71	38.71
5.2 / 10	5.5 / 2	9.6	9.4 / 1	9.4 / 4
42.01	42.81	39.21	39.21	
6.1 / 10	5.3 / 4	8.9	8.9 / 4	

48.11

+77

+71.93 Int. of 12" Sewer Line

+65.66 E.C. 2°13.5

+55 = on ground at Int. 4" water

208+50 2°00.0 Rt

check to BM Con. Mon. Front of Bekker(?) Nursery 3.96 33.61 33.62

T.P. 2.38 37.57 12.92 35.19

M.H. #43 2' N of ℄ Camino del Rio

208 1°17.1 Rt.

48.11

Lt ℄ Rt

37.17 +0.4 / 10 — 37.57 0.0 / 6 — 32.97 4.6 / 2 — ℄ 32.77 4.8

33.07 — 33.57 4.0 / 6 — 4.5 — 32.97 4.6 / 6 = Pav

36.57 +1.0 / 10 — 37.17 +0.4 / 5 — 37.27 4.3 / 2 — 33.17 4.4

33.37 — 4.2 — 4" pipe about 2.5' deep

36.27 +0.7 / 10 — 37.57 0.0 / 5 — 33.47 4.1 / 2 — 33.47 4.1

37.57

60' Rt. or N of 208+70. 2' N of Tel. Pole

36.39 11.72 RIM — 31.24 16.87 F.L. 12"

41.01 7.1 / 10 — 40.41 7.7 / 3 — 35.81 12.3 — 35.01 13.1 / 1 — 34.91 13.2 / 4

48.11

+50

211

+50

+15

210

M.H. # 39

+50

209

37.57

Lt ℄ Rt

25.77 / 11.8 / C

25.17 / 12.4

25.17 / 12.4 / C Pav

27.77 / 9.8 / C

26.77 / 10.8

26.57 / 11.0 / C = Pav

29.37 / 8.4 / C

28.27 / 9.3

28.07 / 9.5 / C = ext Pav.

30.87 / 6.7 / 10

30.37 / 7.2 / C

29.37 / 8.2

34.27 / 3.3 / 10

33.97 / 3.6 / 9

29.87 / 2.7 / 5

29.67 / 7.9

36.44 / 1.3 / 8 INV

29.84 / 7.3

F.L. 12" PIPE

35.77 / 1.8 / 10

35.67 / 1.9 / 8

31.17 / 6.4 / 3

31.17 / 6.4

37.27 / +0.3 / 10

37.37 / +0.2 / 8

32.37 / 5.2 / 4

32.17 / 5.4

37.57

+50				
2+15				
+50				
2+14				
+50				
4+13				
+50				
7+17				
T.P.	0.2	24.9	12.89	24.68
	37.57			

Lt		Rt
13.0	17.0	16.9
11.9	7.9	8.0
11	4	
13.6	17.4	17.2
11.3	7.5	7.7
11	11	
14.9	18.2	17.9
10.0	5.7	7.0
10	11	
	18.2	18.5
	6.7	6.4
	6	
		19.5
		5.4
		20.72
		4.2
		22.12
		2.8
		23.42
		1.5
		24.92
		5

219

+50

218

+50

217
216+87 24" concr. pipe culv.

T.P. 4.75 21.8 7.85 17.07

+50

+26 Int. of 2" water line

216

24.9

Lt ℄ Rt

11.0 17.1 16.9
10.8 4.7 4.9
14 4

11.9 17.2 16.9
9.9 4.2 4.9
13 3

11.4 17.0 16.6
10.2 4.8 5.2
13 4

11.9 16.9 16.4
9.9 4.9 5.4
13 3

12.5 15.9 16.8 16.5
7.3 5.9 5.0 5.4
13 4 3

elev. Hw L 12.2 216+87 24" concr. pipe culv. 11.2 elev Hw L

21.8

12.3 16.8 16.4
12.6 8.1 8.5
13 4

10.8 11.6 16.7 16.5
14.1 13.3 8.2 8.4 ground @ pav.
14 12 2
Top 2" pipe

11.7 16.9 16.6
13.2 8.0 8.3
11 3

24.9

+95 INT. 24" CON. PIPE CULV. 90°

+50

+50

+50

+50

+50

21.8

LT		E	RT
8.3		16.1	7.8
13.53		5.7	14.0
17.5		0.1 PAV.	4.5 FL. CULV.
FL. CULV.			
10.4	14.4	16.7	
11.4	5.4	5.6	
1.6	4		
10.7	14.7	16.3	
11.1	5.1	5.5	
1.5	4		
	13.6	16.3	
RAMP RD.	2.7	5.5	
	C		
10.5	14.8	16.6	
11.3	5.0	5.7	
1.4	4		
11.8	17.0	16.9	
10.4	4.8	4.9	
1.4	4		
11.5	17.1	16.9	
10.3	4.7	4.9	
1.4	4		
11.1	17.1	16.9	
10.7	4.7	4.9	
1.4	3		

21.8

+50

N24

+50

N25

T.P. 4.08 N1.06 4.84 16.98

+50

N24

+50

N23

21.8N

Lt		℄	Rt
10.06	15.86	21.16	
11.0	5.7	4.9	
17	4		
10.46	16.46	21.16	
10.6	4.6	4.5	
17	5		
10.76	16.66	21.16	
10.3	4.42	4.5	
17	5		
9.76	16.76	21.16	
11.3	4.3	4.4	
17	4		
		21.06	
9.82	16.42	21.16	
12.0	5.4	5.5	
16	4		
9.42	16.52	21.16	
12.4	5.3	5.5	
18	5		
9.12	16.22	21.16	
12.7	5.6	5.6	
18	5		
9.52	16.52	21.16	
12.3	5.3	5.6	
18	4		
		21.8N	

Lt		℄	Rt
7.06 ✓	14.44 ✓	16.06 ✓	15.8 ✓
14.0	C.C	5.0	5.3
19	10	3	
		15.76 ✓	15.8 ✓
		5.3	5.3
		C	
		15.76 ✓	16.1 ✓
		5.3	5.0
		C	
Side Road Here		16.36 ✓	16.1 ✓
		4.7	5.0
		C	
8.86 ✓		16.26 ✓	16.0 ✓
12.7		4.8	5.1
18		5	
8.94 ✓		16.06 ✓	16.1 ✓
12.1		5.0	5.0
17		5	
		15.64 ✓	16.7 ✓
		5.4	4.9
		9	
9.86 ✓		15.76 ✓	16.0 ✓
11.7		5.3	5.1
17		6	
			21.06 ✓

~30

+50

~~9

+74.30 ∠ 2° 30' RT Not parallel with Row

+50

~~8

+50

~~7

21.06

+50

T.P. 5.4C 21.8N 4.70 16.3C

N33

+50

N32

+50

+43 Int. of 36" Con. Pipe Culv.

N31

+50

21.0C

Lt. Rt. ℄

11.8N 16.6N 16.3
10.0 5.7 5.5
17 4

21.8N
5
16.1
5.0

11.6C 16.2C
9.4 4.8
14 4

11.3C 11.3C 16.1C 16.0
9.7 9.7 4.9 5.1
27 14 4

8.4C 10.8C 11.2C 16.2C 15.9
12.1 10.2 9.8 4.8 5.2
26 24 14 4

11.5C 14.5C 16.3C 15.9
9.5 6.5 4.7 5.2
13 10 2

7.7 15.8
13.40 6.3
20.2 14.80
5.3 Oil Pav. 4.9
F.L. F.L.

8.6C 16.0C 15.7
12.2N 5.0 5.4
22 4

7.8C 14.6C 16.1C 15.8
13N 6.4 4.9 5.3
18 10 3

21.0C

21.8 ✓
7.33
14.49
7.13
1.6 ✓
11.6
17.46

N 36 + 46.5

Check to
BM. Mon. USC & G.
U-321-1935
80' N of ℄ Hickory 17.41 = City Datum
1' E of ℄ C6. Taylor
0.05 error

N 36

N 35 + 70 Δ 9°40' LT.

+50

Set BM on Con. Mon. Rd
near Culv. inlet 7.97 13.85

+18 Int. 30" Con. Pipe Culv

N 35

+50

Side Rd here

N 34

21.8 ✓

LT ℄

16.7 ✓ 10.5 ✓

11.3 on Top of Existing 16" Pipe

56 on ground

13.3 ✓	16.0 ✓	16.0
8.5	5.8	5.8
9	4	
13.2 ✓	15.9 ✓	16.1
8.6	5.9	5.7
10	6	
13.1 ✓	15.8 ✓	16.2 ✓
8.7	6.0	5.6
11	6	
10.4 ✓		16.3 ✓
11.45		5.5
40.8		
F.L.		
13.1 ✓	16.4 ✓	16.4 ✓
8.7	5.4	5.4
11	6	
	16.8 ✓	16.8 ✓
	5.0	5.0
	6	
	16.9 ✓	16.5 ✓
	4.9	5.3
	7	

21.8 ✓

21.8
13 at 6
44
F.L.

Profile of offsets — 4/29/41 — Hill Brooks

Grades for excavation

					Hodgeson Grade	C.I. Pipe Cut	Cut for Conc. Pipe
							BP Near. El Cajon + Hamilton
B.M.	6.96	375.31		368.35			
					369.60		
0+00			0.6	74.7	370.0	4.7	5.1'
					68.4		
+50			1.5	73.8	68.8	5.0	5.4'
					67.2		
1			2.7	72.6	67.6	5.0	5.4'
					66.0		
+50			4.1	71.2	66.4	4.8	5.2'
					64.8		
2			5.4	69.9	65.2	4.7	5.1'
					63.6		
+50			6.5	68.8	64.0	4.8	5.2'
					62.4		
3			7.7	67.6	62.8	4.8	5.2'
					61.7		
+20 d			7.9	67.4	62.1	5.3	5.7'
					60.7		
+50			9.3	66.0	61.1	4.9	5.3'
					60.4		
+60.1			9.3	66.0	60.8	5.2	5.6'
					59.9		
+76			9.2	66.1	60.3	5.8	6.2'
					58.6		
4			11.1	64.2	59.0	5.2	5.6'
+25				61.9	56.8		5.1'
TP	0.51	363.92	11.90	363.41	57.2		
					54.9		
+50			4.4	59.5	54.9	4.6	5.0'
					49.9		
5			9.1	54.8	50.3	4.5	4.9'
TP	0.27	351.69	12.50	351.42			
					45.3		
+50			1.6	50.1	45.7	4.4	4.8'
					40.6		
6			6.2	45.5	41.0	4.5	4.9'
					36.0		
+50			11.0	40.7	36.4	4.3	4.7'
TP	2.15'	340.96	12.88	338.81			
				37.8	31.9	6.5'	
+94.5			3.2	36.8	32.3	4.5'	5.9'
					31.4		
7			4.0	37.0	31.8	5.2'	5.6'
					30.8		
+45.9			5.0	36.0	31.2	4.8'	5.2'
					30.4		
+70			5.5	35.5	30.8	4.7'	5.1'

-2.1%
-3.333
-9.236
-7.43

					Grade
		340.96			29.1
8			6.8	334.2	32.5
					27.0
	+50		8.8	32.2	27.4
					24.8
9			11.0	30.0	25.2
T.P.	2.13	330.71	12.38	328.58	
					22.7
	+50		2.8	27.9	23.1
					20.5
10			4.9	25.8	20.9
					17.1
	+50		6.8	23.9	17.5
	+74.25		7.6	23.1	
	+82.2		8.0	22.7	
11			7.6	23.1	
	+50		6.7	24.0	
12			6.4	24.3	
	+50		6.3	24.4	19.8
13			5.8	24.9	20.4
	+50		5.3	25.4	20.9
14			4.7	26.0	21.5
B.M.			8.82	321.89	
T.P.	7.10	335.08	4.73	325.98	
	+50		8.5	26.6	22.0
15			7.9	27.2	22.6
	+50		7.1	27.7	23.2
16			6.8	28.3	23.7
	+50		6.2	28.9	24.3
17			5.6	29.5	24.8
	+50		5.0	30.1	25.4

-4.30%

+10.0%

+1.12%

Cut	
4.7	5.1'
4.8	5.2'
4.8	5.2'
4.8	5.2'
4.9	5.3'
6.1	6.8'
7.1	
7.1	
7.1	
9.2	
9.5	
4.6	
4.5	
4.5	
4.5	
4.6	
4.6	
4.6	
4.5	
4.6	
4.6	
4.7	
4.7	

For grades -10+75 - 12+19 ½ page 74

For grades 12+19 ½ 36+00 page 76

B.P. S.W. cor. El Cajon & Texas. Moores elev 321.87 Recorded 321.92

					Grade	Cut
		335.08				
18			4.5	330.6	~~326.0~~	~~4.6~~
+50			3.9	31.2	~~26.6~~	~~4.6~~
B.M.			1.33	333.75		Top fire hyd. S.E. cor. Texas + Meada
19			3.3	31.8	27.2	4.6
+50			2.6	32.5	27.8	4.7
T.P.	7.99	340.52	2.55	332.53		
20			7.4	33.1	28.4	4.7
+50			6.9	33.6	28.9	4.7
21			6.4	34.1	29.5	4.6
+50			5.9	34.6	30.0	4.6
22			5.3	35.2	30.5	4.7
+50			4.7	35.8	31.1	4.7
23			4.2	36.3	31.6	4.7
+50			3.6	36.9	32.1	4.8
24			3.1	37.4	32.6	4.8
+50			2.5	38.0	33.2	4.8
T.P.	7.27	345.46	2.33	338.19		
B.M.			6.47	338.99		B.P. S.E. cor. Texas + Monroe Moores elev. 338.96
25			7.0	38.5	33.7	4.8
+50			6.4	39.1	34.3	4.8
26			5.8	39.7	35.0	4.7
+50			5.1	40.4	35.5	4.9
27			4.7	40.8	36.0	4.8
+50			4.1	41.4	36.5	4.9
28			3.7	41.8	37.1	4.7

Grade change pg. 76

+1.20% +1.06% +1.3% +1.02½%

					Grade	Cut
		345.46				
28+50			3.2	342.3	337.6	4.7
29			2.6	42.9	38.1	4.8
+50			2.2	43.3	38.6	4.7
T.P.	6.30	350.26	16.0	343.96		
30			6.4	43.9	38.6	5.3
+50			5.9	44.4	38.7	5.7
31			5.1	44.9	38.7	6.2
+50			5.0	45.3	38.8	6.5
32			5.0	45.3	38.8	6.5
+20			4.7	45.6	38.8	6.8
+75			4.9	45.4	39.8	5.6
33			5.3	45.0	39.9	5.1
+25			5.6	44.7	39.9	4.8
+50			6.0	44.3	39.6	4.7
34			6.6	43.7	38.8	4.9
+50			7.9	42.5	38.1	4.8
35			8.3	42.0	37.3	4.7
BM.			8.01	342.25		
+0396			8.5	41.8		
+10			8.7	41.6	37.2	
+14						4.1 ✓
B.M.	0.70	342.93		342.23		
35+50			4.2	38.7		
36+00			9.2	33.7		
TP	0.00	329.89	13.04	329.89		

TP on curb at 35+05 Moores elev. 342.23

6/4/41
Soper
Brooks
Hodgeson

+0.07+1%
+0.42%+180
-1.52%

		329.89				
36+50			1.7	328.2	323.10	5.1
37+00			7.6	22.3	317.03	5.3
TP	0.67	317.50	13.06	316.83		
37+50			1.1	16.4	310.97	5.4
38+00			7.1	10.4	304.90	5.5
+35			11.1	06.4	300.89	5.5
+50			12.6	04.9	299.27	5.6
TP	0.04	304.60	12.94	304.56		
39+00			5.1	299.5	293.62	5.9
+12				98.1	292.23	5.9
+50			11.1	~~93.5~~ 92.2	284.07	8.1
B.M.			8.20	296.40		
TP	0.28	292.00	12.88	291.72		
39+70			+0	91.0 90.3	282.31	8.0
37+76			4.3	87.7	281.20	6.5
40+00				84.4	278.90	5.5
+25			10.1	81.9		
+46						
TP	0.30	279.27 280.27	13.03	278.97 ~~279.97~~ 81.5	276.10	5.4
40+50			3.7	75.6	270.10	5.5
41+00			9.6	69.7	264.10	5.6
+50						
TP	0.00	266.20 ~~267.20~~	13.07	266.20 ~~267.20~~		
+80			2.4	66.0 ~~63.8~~	260.50	5.5
42				60.5	252.89	7.6
+30			7.8	58.1	251.33	7.1
+50						
43			13.1	53.1	247.40	5.7
TP	0.21	253.54 ~~254.54~~	12.87	253.33 ~~254.33~~		
43+50			6.3	47.2	241.57	5.6
44+00			12.4	41.1	235.73	5.4

B.P. in N.E. Cor. of pier (Adams Ave Bridge) B.P. 1' above ground Elev. 296.40

		253.54			
		~~254.54~~ 240.60		240.50	
TP	0.10	241.60	13.04	241.50	
44+50 x			5.2	35.4	229.90
45			10.5	30.1	224.55
		227.78		227.63	
TP	0.15	228.78	12.97	~~228.63~~	
45+50 x			2.8	25.0	219.20
+61.00 L.			4.0	23.8	
				221.93	
B.M.			5.85	~~222.93~~	
B.M.	0.52	222.44		221.92	
46+00 x			2.9	19.5	213.40
+50 x			8.7	13.7	208.40
TP	0.15	209.78	12.81	209.63	
47 x			1.7	08.1	202.90
+50			7.2	202.6	197.15
48 x			13.1	196.7	191.40
TP	0.24	197.40	12.62	197.16	
48+50			6.4	91.0	185.72
49			12.1	85.3	180.04
TP	0.64	185.06	12.98	184.42	
49+25 Δx			2.7	82.4	177.20
~~+50~~			~~3.5~~	~~79.6~~	
+75 x				76.8	170.20
~~+94~~ 97				74.4	168.08
~~50+00 x~~			11.3	73.8	~~167.46~~
TP	0.15	172.28	12.93	172.13	
+10.50				72.7	166.78
50+50 x			4.0	68.3	163.00
+75 x				65.6	160.40
~~+83~~ 83			7.7	64.6	

5.5
5.5
5.8

N.E. Cor. - Top of Culv. Hdwall - 12' Lt 45+85 elev. 231.92

6/5/41
Soper (levels with transit)
Brooks
Hodgeson

6.1
5.3
5.2
5.4
5.3
5.3
5.3
5.2
6.6
6.4
6.2
5.3
5.2

		172.28			
51+00			9.6	162.7	157.60
TP	0.09	159.35	13.02	159.26	
51+50			2.5	56.9	151.60
+56 87 L.			3.2	56.2	150.77
52+00			8.5	50.9	145.60
TP	0.01	146.59	12.77	146.58	
52+50			1.9	44.7	139.60
53			7.6	39.0	134.23
+50			12.8	33.8	128.87
TP	0.13	133 67	13.05	133.54	
54			4.8	28.9	123.50
B.M.			6.68	126.99	
54+50			9.4	24.3	118.40
TP	0.00	120.60	13.07	120.60	
55			0.5	20.1	114.90
+50			4.6	16.0	110.75
56			8.9	11.7	106.60
56+10			9.8	10.8	105.71
TP	0.76	108.38	12.98	107.62	
56+50			1.2	107.2	
57			5.6		
+50			9.8		
TP	0.34	95.87	12.85	95.53	
58			2.1		
+50			6.6		

5.1

5.3

5.4

5.3

5.1

4.8

4.9

5.4

N.E. Cor. Conc. Hd. wall (127.00)

5.9

5.2

5.2

5.1

5.1

7/1/41
Soper
Brooks
Hodgeson

Profile of offsets N.G. Level out of adjustment.

Cont'd on page 66

		95.87		
59+00			11.0	
TP	0.28	83.37	12.78	83.09
59+50			3.1	
60			7.9	
+50			13.1	
TP	0.37	70.69	13.05	70.32
61			4.6	
+50			9.1	
62			13.1	
TP	0.47	58.10	13.06	57.63
+50			4.0	
63			7.0	
+50			8.9	
$+58^{29}$ L.			9.9	
TP	3.80	52.01	9.89	48.21
B.M.			9.14	42.87
B.M.	9.14	52.15		43.01
64+00			6.8	
$+35^{80}$ B.C.			7.6	
+50			7.6	
65			5.4	
+50			6.6	
66			7.0	
+50			7.5	
$+64^{44}$ E.C.			7.7	

Cop. disc in N. end of doub. culv. Hdwall Rec. elev 43.01

52.15

PT	1.56	45.86	7.85	44.30
67+00			1.9	
+50			2.5	
68			3.3	
+50			4.2	
69			4.9	
+50			5.5	
70			6.0	
+50			6.4	
71			7.0	
+50			7.3	
72			7.6	
+50			7.7	
PT	4.46	42.61	7.71	38.15
73			4.6	38.0
+50			4.9	
74			5.0	
+50			5.1	
75			5.2	
+50			5.2	
76			5.2	
+50			5.2	
77			5.1	
+50			5.0	
+75.94 BC			5.0	

42.61

78			5.1	
+50			5.2	
79			5.9	
+50			6.3	
80			6.7	
PT	3.66	40.91	5.36	37.25
80+50			5.3	
81			5.5	
+50			5.7	
82			5.6	
+09 10 EC.			5.6	
+50			5.5	
83			5.4	
+50			5.4	
84			5.3	
+19 54 BC.			5.3	
+50			5.3	
85			5.4	
+50			5.3	
86			5.2	
+50			5.3	
87			5.7	
+50			6.2	
88			6.6	
+50			6.8	

		40.91		
88+65 86 E.C.			6.8	
TT	4.23	38.22	6.92	33.99
89			4.3	
+50			4.4	
90			4.3	
+50			4.3	
91			4.4	
+50			4.5	
92			4.7	
+50			4.8	
93			4.7	
+50			4.9	
94			5.1	
+50			5.3	
95			5.5	
+50			5.7	
96			5.7	
+50			5.7	
97			5.8	
+50			5.7	
98			5.5	
TT	4.22	36.90	5.54	32.68
98+50			4.1	
99			4.2	
+50			4.1	

		36.90		
100 + 00			3.9	
+ 50			3.9	
101			4.1	
+ 50			4.1	
102			4.3	
+ 50			4.5	
103			4.7	
+ 50			4.7	
104			4.9	
+ 50			5.0	
105			5.1	
+ 50			5.2	
106			5.4	
+ 50			5.5	
107			5.7	
+ 50			5.9	
PI	5.72	36.53	6.09	30.81
108			5.6	
+ 50			5.7	
109			5.6	
+ 50			5.8	
110			6.0	
+ 58.41 BC			6.3	
111			6.4	
+ 50			6.5	

36.53

112			6.6	
+50			6.5	
113			6.6	
+28 02 EC.			6.6	
+50			6.7	
114			6.6	
+15 37 BC.			6.5	
+50			6.3	
115			6.2	
+50			6.1	
TP	3.55	34.14	5.94	30.59
116			3.7	
+50			3.8	
+73 6' E.C.			3.8	
117			3.8	
+50			3.8	
118			4.0	
+50			4.3	
119			4.6	
+50			4.6	
120			4.8	
+50			5.1	
121			5.2	
+50			5.2	
122			5.5	

		34.14	
122+50			5.7
123			5.9
+50			5.9
124			5.9
+50			6.1
12.5			6.1
PT	4.05	32.07	6.12 28.02
+50			4.0
126			4.2
+50			4.2
127			4.2
+50			4.2
128			4.3
+50			4.4
129			4.5
+50			4.6
+78 69 L			4.7
130			4.7
+50			4.7
131			4.7
+50			4.8
132			4.9
+50			5.1
133			5.0
+50			4.9

		32.07		
134			4.8	
TP	5.61	32.67	5.01	27.06
134+50			5.3	
135			5.1	
+50			5.1	
136			5.2	
+50			5.52	27.15
B.M.			6.40	26.27
B.M	8.79	51.80		43.01
✓ TP			7.43	44.37

T.P. 6' offset, sta 136+

North iron pow. pole 9' Lt. 136+12

7/2/41
Soper
Brooks
Hodgeson

Cop. disc in N. end of double culv. hdwall (Bedrock guided Mission Valley road)

✓ TP elev. 44.30 - Level out of adjustment

Profile of 6 offsets 56+50 - 136+63 Grade

PI	0.46	108.08		107.62	
56+50			0.9	107.2 -	102.15
57			5.3	102.8 -	97.70
+50			9.5	98.6 -	93.25
PI	0.49	95.84	12.73	95.35	
58			2.0	93.8 -	88.80
+50			6.6	89.2 -	84.35
59 x			10.9	84.7 -	79.90
PI	0.57	83.47	12.94	82.90	
+50			3.2	80.3 -	75.25
60			8.0	75.5 -	70.60
+50			13.1	70.4 -	65.95
PI	0.41	70.77	13.11	70.36	
61 x			4.7	66.1 -	61.30
+50			9.1	61.7 -	57.10
62 x			13.1	57.7 -	52.90
PI	0.42	58.10	13.09	57.68	
+50			3.9	54.2 -	49.42
+85 x				52.2	46.96
63			6.9	51.2 -	45.51
+48 x				49.3	40.70
+50			8.9	49.2 -	
+58 L			9.8	48.3 -	40.60
PI	3.49	51.75	9.84	48.26	
B.M.			8.78	42.97	

Cut

Page 57

5.0
5.1
5.3

5.0
4.8
5.0

5.0
4.9
4.4

4.8
4.6
4.8

4.8
5.2
5.7
8.6

7.7

Cap. disc Head of deub. culv Sidewall Rec elev 43.01

B.M.	8.80	51.81		43.01	
64+00			6.5	45.3 -	40.15
+35 80 B.C.			7.3	44.5 -	39.76
+50 X			7.2	44.6 -	39.60
65			5.1	46.7 -	39.58
+50			6.3	45.5 -	39.56
66			6.7	45.1 -	39.53
+50 X			7.1	44.7 -	39.50
+64 44 E.C.			7.3	44.5 -	39.36
67			7.8	44.0 -	38.76
+50			8.5	43.3 -	38.03
TP	2.05	45.06	8.80	43.01	
68			2.6	42.5 -	37.30
+50			3.5	41.6 -	36.57
69			4.2	40.9 -	35.83
+50 X			4.8	40.3 -	35.10
70			5.3	39.8 -	34.70
+50			5.7	39.4 -	34.30
71			6.2	38.9 -	33.90
+50			6.5	38.6 -	33.50
+75 X				38.5	33.30
72			6.8	38.3	
+39 X				38.2	31.23
~~+50~~			~~6.9~~	~~38.2~~	
+75 X				34.1	32.10
~~73~~ +25 X			7.0	~~38.1~~	
				38.0	32.70
TP	4.40	42.37	7.09	37.97	
73+50			4.6	37.8 -	32.78

5.1
4.7
5.0
7.1
5.9
5.6
5.2
5.2
5.2
5.3
5.2
5.0
5.1
5.2
5.1
5.1
5.0
5.1
5.2
7.0
6.0
5.1
5.0

42.37

74+00			4.8	37.6	~~32.54~~ 31.7
+50	x		5.0	37.4	~~32.30~~ 30.1
75			5.0	37.4	~~32.28~~ 29.3
+50			5.0	37.4	~~32.25~~ 30.5
76			5.1	37.3	32.23
+50			5.2	37.2	32.20
77			5.1	37.3	32.18
+50			5.0	37.4	32.15
+75.94 B.C.			4.9	37.5	32.14
B.M.	3.18	42.14	3.41	38.96	
78	x		4.8	37.3	32.13
+50	x		4.9	37.2	31.46
79	x		5.5	36.6	30.70
+50			5.9	36.2	30.65
80	x		6.3	~~35.8~~ 35.8	
+07					30.45
+50			6.5	35.6	29.54
81			6.8	~~35.3~~ 35.3	28.41
+03	x		7.0	35.1	29.66
+50				35.1	30.11
+67	x		6.9	35.2	30.15
82			7.0	35.1	30.16
+09.60 EC.			6.9	35.2	30.22
450			6.9	35.2	30.29
83			6.84	35.30	
TP	5.33	40.63	5.3	35.3	30.35
+50			5.2	35.4	30.42
84					

5.1	
~~5.1~~	5.7
~~5.1~~	7.3
~~5.1~~	8.1
5.1	6.8
5.0	
5.1	
5.2	
5.4	
Nail in pow. pole 15' Lt 77+75.94	
5.2	
5.8	
5.9	
5.5	
5.3	
6.1	
6.9	
5.4	
5.0	
5.0	
4.9	
5.0	
4.9	
4.9	
5.0	

40.63

84+19 54 B.C.			5.2	35.4	30.44
+50			5.3	35.3	30.49
85			5.3	35.3	30.56
+50			5.3	35.3	30.63
86 x			5.1	35.5	30.70
+50			5.2	35.4	30.41
87			5.5	35.1	30.13
+50			6.0	34.6	29.84
88			6.4	34.2	29.56
+50			6.5	34.1	29.27
+65 86			6.6	34.0	29.18
89			6.7	33.9	28.99
TP	4.30	38.12	6.81	33.82	
+50			4.4	33.7	28.76
+99 x				33.8	27.70
90			4.3	33.8	
+50 x			4.3	33.8	28.70
91			4.4	33.7	28.53
+50			4.6	33.5	28.32
92			4.8	33.3	28.19
+50			4.9	33.2	28.02
93 x			4.9	33.2	27.80
+50			5.0	33.1	26.56
94			5.3	32.8	25.32
+25 x				32.7	24.76
+47 x				32.6	23.60
+50			5.5	32.6	
95			5.7	32.4	25.22
+25 x				32.3	26.00

5.0
4.8
4.7
4.7
4.8
5.0
5.0
4.8
4.6
4.8
4.8
4.9
5.0
6.1
5.1
5.2
5.1
5.1
5.2
5.4 5.3
6.5
7.5
8.0
9.0
7.2
6.3

38.12

95+50			5.8	32.3	26.60
96			5.8	32.3	27.2
TP	5.24	37.48	5.88	32.24	
+50			5.1	32.4	27.25
97			5.2	32.3	27.30
+50			5.0	32.5	27.38
98			4.8	32.7	27.47
+50			4.8	32.7	27.55
99			4.9	32.6	27.63
+50			4.9	32.6	27.72
100			4.7	32.8	27.80
+50			4.7	32.8	27.60
101			4.9	32.6	27.40
B.M.	7.24	36.95	7.77	29.71	
101+50			4.4	32.6	27.20
102			4.6	32.4	27.00
+25				32.2	26.90
+50			4.9	32.1	26.32
+90				31.9	25.40
103			5.1	31.9	
15				31.8	25.14
+40				31.9	25.40
+50			5.1	31.9	25.57
104			5.2	31.8	26.40
+50			5.3	31.7	26.29
105			5.4	31.6	26.18
+50			5.4	31.6	26.07
106			5.6	31.4	25.96
+50			5.7	31.3	25.85

5.7	
5.1	
5.1	
5.0	
5.1	
5.2	
5.1	
5.0	
4.9	
5.0	
5.2	
5.2	
Nail in pow pole 31' Lt 101+18	
5.4	
5.4	
5.3	
5.8	
6.5	
6.7	
6.5	
6.3	
5.4	
5.4	
5.4	
5.5	
5.4	
5.4	

7/3/41
Soper
Brooks
Hodgson

		36.95				
107			5.8	31.2	25.74	5.5
+50			6.1	30.9	25.63	5.3
108			6.2	30.8	25.52	5.3
+50			6.3	30.7	25.41	5.3
109 ×			6.3	30.7	25.30	5.4
TP	5.65	36.22	6.38	30.57		
+50			5.7	30.5	25.03	5.4
110			5.9	30.3	24.77	5.5
+58 41' B.C.			6.2	30.0	24.46	5.5
110+95 ×				29.9	24.26	5.5
~~111+00~~			~~6.4~~	~~29.8~~		
+73 ×				29.7	23.20	6.5
~~+50~~			6.5	~~29.7~~		
112			6.6	29.6	23.04	6.6
+50			6.4	29.8	22.91	6.9
113			6.5	29.7	22.78	6.9
+25 ×				29.6	22.70	6.9
+28 02' E.C.			6.6	~~29.6~~		
~~+50~~			6.6	~~29.6~~		
+75 ×				29.6	23.30	6.3
114			6.5	29.7	24.0	5.7
+15 37' B.C.			6.3	29.9		
+47 ×				30.1	25.46	4.7
~~+50~~			6.1	30.1		
115			6.1	30.1	25.4	4.7
+43 ×				30.3	25.50	4.8
~~+50~~			~~5.9~~	~~30.3~~		
B.M.	7.48	34.56	9.14	27.08		Nail in pow. pole 31' Lt 114+85
116			4.2	30.4	23.61	6.8
~~+50~~			~~4.3~~	30.3		
+55 ×				30.3	21.86	8.4
+73 61' E.C.			4.4	30.2		

34.56

~~117~~			4.4	~~30.2~~		6.2
+03				30.2	23.99	
~~+50~~			4.4	~~30.2~~		5.2
+51				30.2	24.97	
118			4.7	29.9	24.76	5.1
+50			5.0	29.6	24.54	5.1
119			5.3	29.3	24.32	5.0
+50			5.4	29.2	24.10	5.1
120			5.6	29.0	23.88	5.1
~~+50~~			~~5.9~~	~~28.7~~		
+35				28.7	23.43	5 3
~~+21~~ 00			~~6.0~~	~~28.6~~		
+03				28.6	21.81	6.8
~~+35~~				28.6	21.17	7.4
~~+50~~			~~6.0~~	~~28.6~~		
+51				28.6	21.26	7.3
122 00			6.2	28.4	23.0	5.4
TP	4.15	32.54	6.17	28.39		
+50			4.4	28.1	23.43	4.7
123			4.5	28.0	23.33	4.7
+50			4.5	28.0	23.23	4.8
124			4.5	28.0	23.12	4.9
+50			4.6	27.9	23.02	4.9
125 00			4.6	27.9	22.92	5.0
+50			4.6	27.9	22.82	5.1
126			4.9	27.6	22.72	4.9
+50			4.9	27.6	22.61	5.0
127			4.9	27.6	22.51	5.1
+50			4.9	27.6	22.41	5.2
128			5.1	27.4	22.31	5.1
+50			5.2	27.3	22.21	5.1

		32.54			
TP	4.57	31.80	5.31	27.23	
129			4.5	27.3	22.10
+50			4.7	27.1	20.7
+75				27.0	20.00
+78			4.8	~~27.0~~	
129 +99				26.9	19.87
130			4.9	26.9	
+50			4.8	27.0	21.11
+70				27.0	21.60
131			4.8	27.0	21.62
+50			4.9	26.9	21.65
132			5.0	26.8	21.68
+50			5.2	26.6	21.71
133			5.1	26.7	21.74
+50			4.9	26.9	21.77
134			4.8	27.0	21.80
+50			4.7	27.1	21.84
135			4.5	27.3	21.87
+50			4.5	27.3	21.90
136			4.5	27.3	21.82
+50			4.9	26.9	21.74
+63				26.8	21.72
B.M(set)	5.46	31.48 ~~26.48~~	5.78	~~26.02~~ 26.31	
B.M.			6.79	24.69	

continued p 73 Book 571

5.2	
6.4	
7.0	
7.0	
5.9	
5.5	
5.4	
5.2	
5.1	
4.9	
5.0	
5.1	
5.2	
5.3	
5.4	
5.4	
5.5	
5.2	
5.1	

New one set 12-10-93 RWH.
Nail in pow. pole 9 Lt 136+12

Idstk. N. end of doub. culv. Hdwall - 6th + Missouri Valley road
Rec. elev. 24.71

	4.46	326.38	321.92	
		12.63	313.75	314.40
15 = 5 of d HCajon		12.87	313.51	314.40

0.65

0.89

Profile - 6' offsets.

B.M.	9.88	331.80		321.92	
12+19 72			8.0	23.8	314.40
13+75 X				24.1	319.6
12+82 21			7.2	24.6	319.76
					19.6
13+00 X			7.0	24.8	319.96
					19.6
+50			6.5	25.3	320.52
+75 X				25.6	319.6
14			5.9	25.9	321.08
+50			5.4	26.4	321.64
15			4.7	27.1	322.20
+50			4.2	27.6	322.76
16			3.6	28.2	323.32
+50			3.0	28.8	323.88
17			2.4	29.4	324.44
+50			1.8	30.0	325.00
+65 X				30.2	325.2
+8			1.2	30.6	325.6
+15 X				30.8	325.2
+50			0.7	31.1	326.2
TP	8.63	339.74	0.69	331.11	
18+65 X				31.3	326.4
19			8.1	31.6	326.8
+50			7.5	32.2	327.4
20 X			6.8	32.9	328.00
+50			6.4	33.3	328.53
21			5.9	33.8	329.06
+50			5.3	34.4	329.59
22			4.7	35.0	330.12
+50			4.2	35.5	330.65
23			3.6	36.1	331.18

9.4 4.8
4.8
4.8 5.2
4.8 5.7 6.0
4.8
4.8
4.9
4.8
4.9
4.9
5.0
5.0 5.0
5.0 5.6
4.9
4.9
4.8
4.8
4.9
4.8
4.7
4.8
4.9
4.8
4.9

		339.74				
23+50			3.1	336.6	331.71	4.9
24			2.5	37.2	332.24	5.0
+50			2.6	37.7	332.77	4.9
25			1.5	38.2	333.30	4.9
TP	7.56	346.54	0.76	338.98		
+50			7.6	38.9	333.95	4.9
26			7.1	39.4	334.60	4.8
+50			6.5	40.0	335.11	4.9
27			6.1	40.4	335.63	4.8
+50			5.5	41.0	336.14	4.9
28			5.0	41.5	336.66	4.8
+50			4.6	41.9	337.17	4.7
29			4.0	42.5	337.68	4.8
+50			3.5	43.0	338.20	4.8
30			3.0	43.5	338.24	5.2
+50			2.4	44.1	338.27	5.8
31			1.8	44.7	338.31	6.4
+50			1.3	45.2	338.35	6.8
32			1.2	45.3	338.39	6.9
TP	0.34	345.79	1.09	345.45		
+20			0.2	45.6	338.40	7.2
+50			0.5	45.3	338.96	6.3
+75			0.5	45.3	339.43	5.9
33+25			1.3	44.5	339.53	5.0
+50			1.7	44.1	339.16	4.9

345.79

34+00	2.3	343.5	338.40	5.1
+50	3.1	42.7	337.65	5.0
+98	3.9	41.9	336.58	5.3
35+14	4.6	41.2	335.72	5.5
+50	7.2	38.6	332.80	5.8
36+00	12.1	33.7	328.00	5.7

6' offset to Lt. 36+00 to 63+58

Mission Valley
Pipe Lowering - 91+43 — 92+07

B.M.	5.68	38.19			38.63-45.65, 32.51 C.4y
91+43			4.7	33.5	28.4
91+65			4.7	33.5	18.3
91+80			4.8	33.4	18.3
91+96.7			4.9	33.3	24.5
92+07			4.9	33.3	28.1
			5.68	32.51	
B.M.	2.13	42.53			40.40
72+29			4.5	38.0	31.5
72+34.3			4.5	38.0	28.6
+51.98			4.4	38.1	28.6
+58.96			4.4	38.1	28.6
+61.40			4.4	38.1	31.6
			Σ.13	40.40	

King
West
Shipman

4-18-50 Clear

79

N. in P.P. 24. Sta. 90+

5.1

15.2

15.1

8.8

5.2

N. P.P. 24-71+85± El 79.135±

6.4

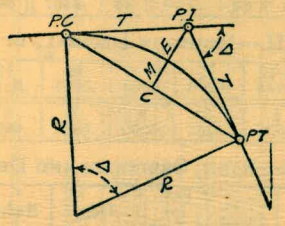
9.4

9.5

9.5

6.5

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



CURVE FORMULAS

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

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

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

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

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

EXPLANATION AND USE OF TABLES

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

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

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′+8° 20′÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6÷8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and÷42=5.5 or D=5° 30′.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½

For Single Track Embankment.

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

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

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