

W

580

INC

THE

INC

# 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  $30.6 + (20 - 16) \div 2$  or 2 ft. added to 30.6 = 32.6. For slopes of 1 on 1 1/2 see inside of back cover.

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This Field Book is manufactured of a high grade 50% Rag Paper having a WATER RESISTING surface.

MICROFILMED

JAN 13 1965

Line revision - Sheltons location

1-7

Revision of Sheltons survey  
from Alvarado Filter Plant  
to El Capitan P.L.

Resurvey of part of Sheltons line in Gorge 8-54

Realignment El Monte pipe-line  
through MISSION GORGE

55-79

~~(See BK. 630 Pg. 16)~~

~~689+30<sup>00</sup> (Shelton's loc. = beginning of line revision)~~

~~Note: this point is 664' (along pipe line) North  
of mchhole, near mile 19 1/4~~

~~Yield See Book 598  
Page 26  
for re-arrangement~~

2/14/42

Hill  
Super  
Bowl  
Davis

line revision

B.C. Shelton's loc.

693+65.62

7°03'30"

~~693+61.84~~ E.C.

+50

6°45'

693

5°48'

+50 Δ=14°07' Rt.

7°51'

T=185.73 ✓

692 L=369.57 ✓

3°53'

R=1500 ✓

+50 BC=689+92.22 689+96.05 2°56'

EC=693+61.84 693+65.62

691 P.I.=691+78.00 691+81.75 1°59'

ΔEI=1.145'

+50 ΔEII=57.25'

1°02'

690

0°4'30"

~~689+96.05~~

~~689+92.22~~ BC

2x2' RR 10° 50' 2x2'

⊕

2x2' RR 50° 15° 2x2' RR

⊕

700+630<sup>7</sup> E.C.

6°47'30"

+50

6°33'

700

5°35'

$\Delta = 13^{\circ}35' \Delta t$

+50

R = 1500'

4°38'

T = 178.65

699

L = 355.61

3°41'

BC = 697+074<sup>6</sup>

+50

E.C. = 700+630<sup>7</sup>

2°43'

def'l = 1.1459

698

def. so' = 57.295'

1°46'

+50

0°48'

697+074<sup>6</sup> B.C.

697+081<sup>6</sup>

2" X 2" P.P.<sup>s</sup>  
60° 50° 2" X 2"

2" X 2" P.P.<sup>s</sup>  
50° 50° 2" X 2"

726+24<sup>50</sup> P.O.T.

726+08 P.O.T. BY/er 9-18-44

723+00 P.O.T. BY/er 9-18-44

721+18<sup>25</sup> P.O.T.

718+00 P.O.T.

702+73<sup>92</sup> P.O.T.

2'x2" R.P.<sup>5</sup>  
□ 50° □ 50° • mail

2'x2" R.P.<sup>5</sup>  
2x2 □ 50° □ 50° □

2'x2" R.P.<sup>5</sup> 2'x2"  
□ 30° □ 60° □ 50° □ 2'x2" R.P.<sup>5</sup>

2'x2" R.P.<sup>5</sup>  
□ 50° □ 50° • mail

737+16<sup>41</sup>  
737+16<sup>68</sup> L. 4°01' Lt

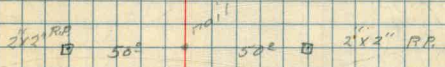
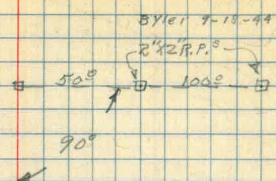
730+66<sup>16</sup> P.O.T.  
730+66<sup>81</sup>

729+69<sup>85</sup> P.O.T.  
729+70<sup>14</sup>

728+56<sup>79</sup> P.O.T.

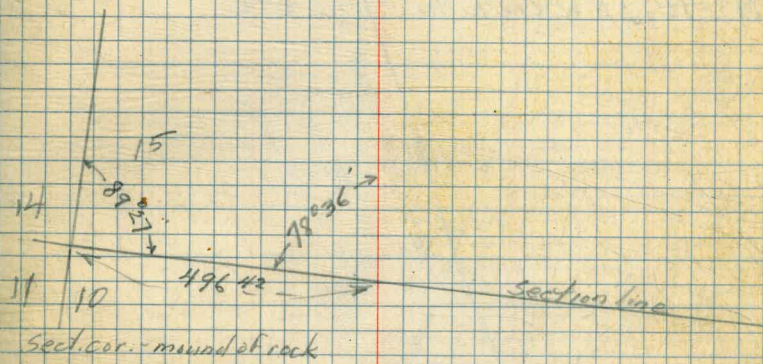
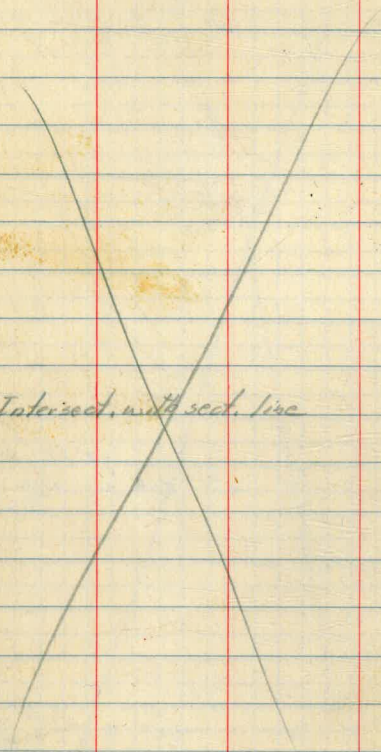
727+01<sup>79</sup> P.O.T.

2/15/42  
Hill  
Soper  
Bowling  
Davis





739+65<sup>03</sup> Intersect. with sect. line

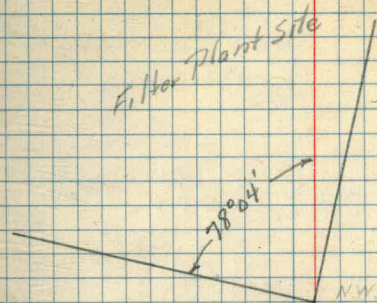


~~748+98<sup>46</sup> - N.W. Cor. Filter Plant site.~~

~~VOID SEC BOOK  
598  
PAGE 26  
FOR REALIGNMENT~~

~~745+05<sup>42</sup> - P.O.T.~~

~~743+86<sup>02</sup> - P.O.T.~~



⊕

Survey to locate El Capitan pipe line  
& appurtenances thru MISSION Gorge

Mag. Decl.

540+12

A.V. # 91

536+80 Δ

29° 26' Lt.

S 11 3/4 W

534+54

M.H. for B.O. # 27

530+10 Δ

20° 05' 30" Lt.

S 20° E

526+07<sup>66</sup>

B.C. leave Shelton Survey S 2° W

This was called  
the boomer line ~~line~~

8.

Note: Mag. bearing seems to be sluggish & not  
accurate to more than 2°. Carried merely as a check  
for R.P. angles.

R.P. Red  
head in  
Rocks

30

41

R.P. Red  
head in  
Rocks



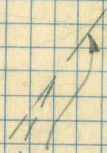
R.P. Painted on rock

51.85

42.42

R.P. painted on  
rock

New Survey Back to Mission Gorge



Shelton Survey  
see f.b. 628  
Page 57

See field book 619  
Page 57 for R.P. ties to  
this point.

B.C. curve at.

557+60 Δ 29° 15' 15" L Lt. S 15 1/2° W

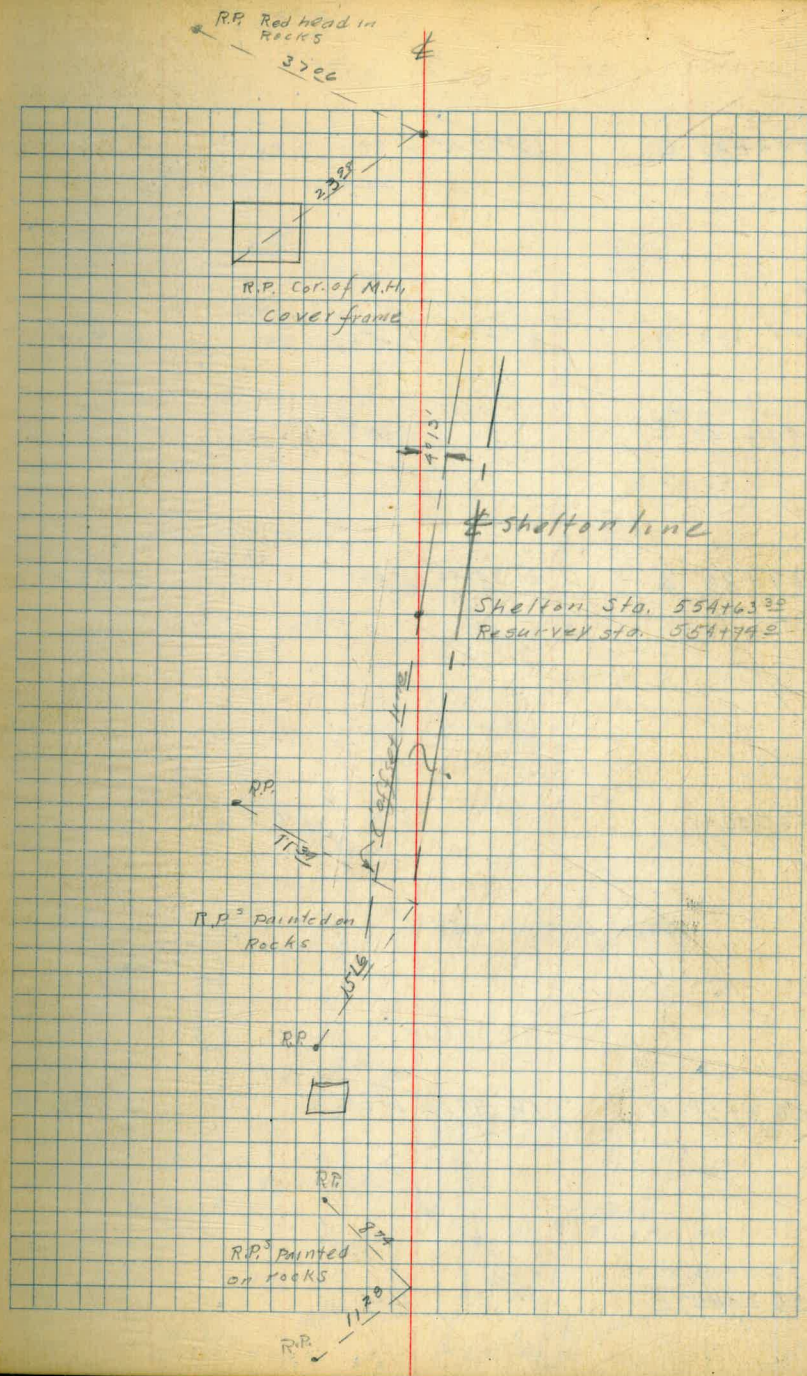
557+49 Δ M.H. A.V. #42 MAIN Gate  
A.V. #43

554+49 B.O. #28

547+10 Δ 13° 05' 15" L Rt. S 47 1/2° W

546+55 M.H.

540+60 Δ 22° 56' 30" L Rt. S 33 1/4° W



574+50 Δ 12° 32' 30" V Rt. 55° W

573+00 Δ 0° 59' V Lt. 56° E

573+47

AV. #44

567+30 Δ 8° 31' 45" V Rt. 55½° E

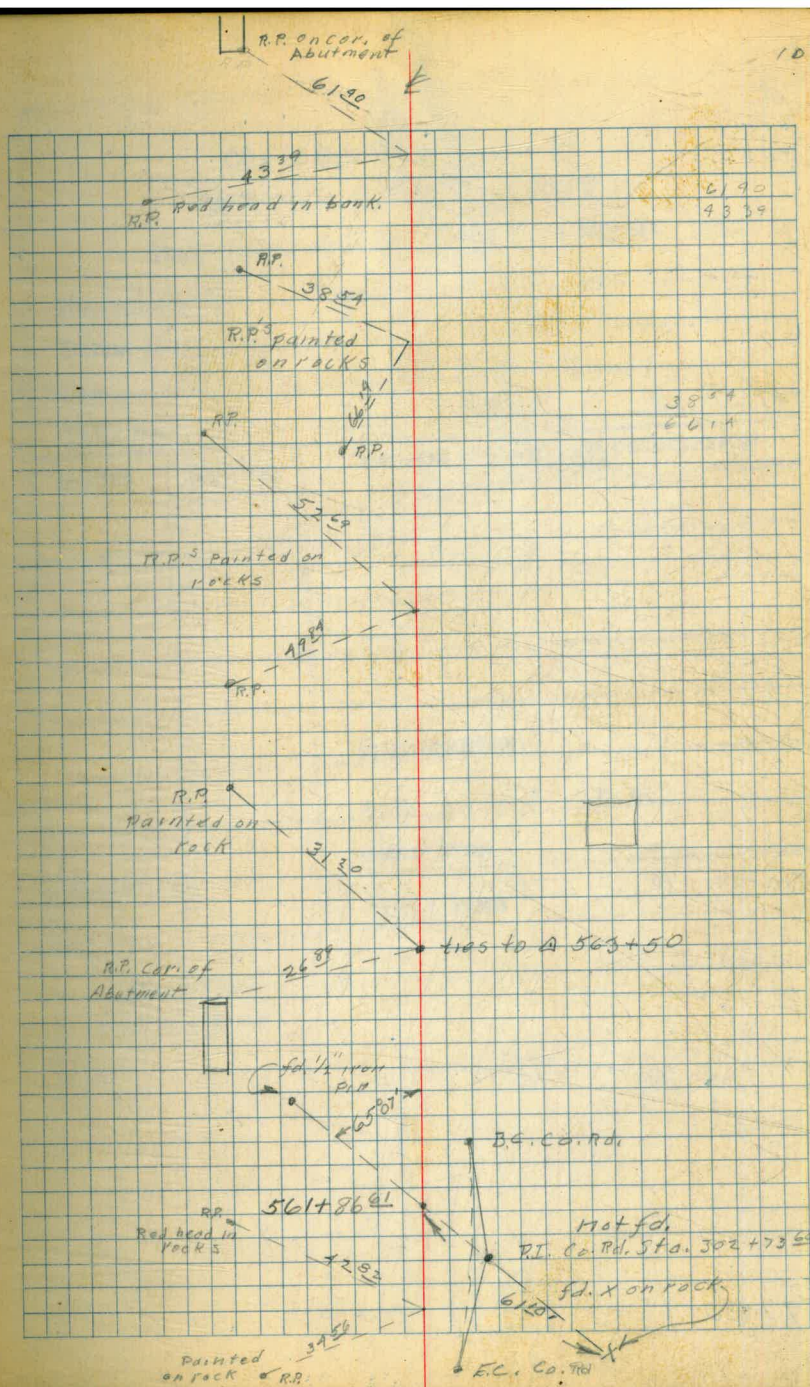
565+04

B.D. #29

5

563+50 Δ 16° 49' 30" V Lt. 519½° E

562+50 Δ 14° 38' L Lt. 51° W



588+10

A.V. # 46

587+50 Δ

1° 24' 45" L Lt.

S 2° W

583+66

B.O. # 39

580+20 Δ

10° 51' L Rt.

S 67° W

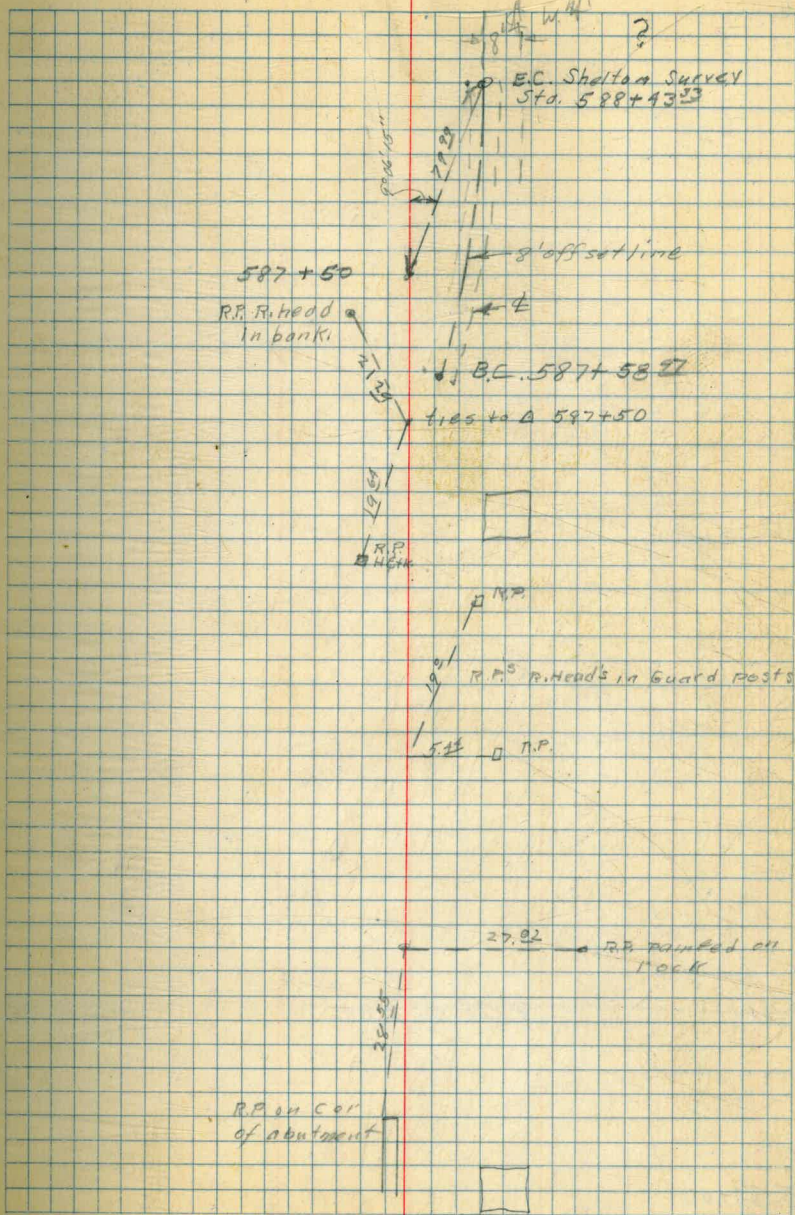
577+50 Δ

10° 37' 30" V Lt.

S 5° E

577+30

B.O. # 30



City of San Diego, California  
**WATER DEPARTMENT**  
 Utility, Automobile and Truck Time Report

*Unit 4107*  
*Recher*  
*1915*

No. *4107*

Station *15*

Date *1915*

Daily Rate \_\_\_\_\_

Hourly \_\_\_\_\_

Driver \_\_\_\_\_

HOURS	AMOUNT	CHANGE ACCOUNT OR DESCRIPTION OF WORK
	<i>586799.70</i>	<i>Co. P.I.P.</i>
		<i>fd. nail</i>
		<i>Co. P.I.P.</i>
		<i>2/15</i>
		<i>Co. P.I.P.</i>
		<i>587450.</i>
		<i>Boomer line</i>
		<i>TOTAL TIME</i>

Form 317 10M 8-12  
 Foreman \_\_\_\_\_

City of San Diego, California

**WATER DEPARTMENT**

**Daily Automobile and Truck Time Report**

No. 1036 Type Passenger

Station Water Dept

Date 10-1 Driver K

Daily Rate \_\_\_\_\_ Hourly \_\_\_\_\_

HOURS	AMOUNT	CHARGE ACCOUNT OR DESCRIPTION OF WORK
<u>8</u>		
		<b>SPEEDOMETER:</b>
		A. M. <u>32004</u> P. M.
		<b>DEAD TIME</b>
		<b>TOTAL TIME</b>

Foreman \_\_\_\_\_



593+50

6° 58' 45" L. RT.

58.5 W

5 89+02

M.H. (G.V.P.)



Location of pipe line in Ref. to  
 survey line (page 8) Also in Ref. to  
 Shelton's original survey

F.B. 629 Page 49 to page 76

FB 630 page 1 to page 11

These ties from Sheltons  
 loc. to sta. 526 + 07.66 =  
 begin. of boomer line.

498+15.29

+99.09

+83.09

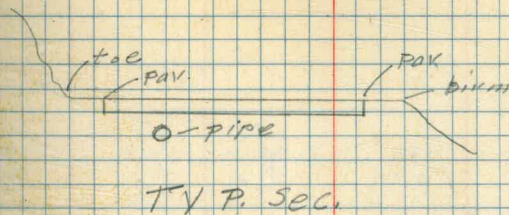
+50

497+108.53

L side

R side

13



TOE PAV.  $\phi$  PIPE  
 15' 13' 12'

PAV. BIRM.  
 4' 10'

TOE PAV.  $\phi$  PIPE  
 17' 15' 12'

PAV. BIRM.  
 4' 10'

TOE PAV.  $\phi$  PIPE  
 20' 17' 12'

PAV. BIRM.  
 10'

TOE SLOPE PAV.  $\phi$  PIPE PAV.  
 23' 20' 17' 3'

EDGE BIRM.  
 4'

TOE SLOPE PAV.  $\phi$  PIPE PAV. BIRM.  
 32' 29' 15' 10' 7'

501+44<sup>33</sup> E.C.

501

+50

500

+50

+99

+50

498+31<sup>09</sup> = Back  
498+2890 = B.C.

L side

19

toe 17 <sup>0</sup>	PAV. 10 <sup>3</sup>	PIPE 8 <sup>3</sup>	PAV. 9 <sup>0</sup>	birch 13 <sup>0</sup>
toe 18 <sup>0</sup>	PAV. 12 <sup>0</sup>	PIPE 10 <sup>2</sup>	PAV. 5.5'	birch 12 <sup>0</sup>
toe 18 <sup>0</sup>	PAV. 14 <sup>0</sup>	PIPE 12 <sup>0</sup>	PAV. 3 <sup>0</sup>	birch 10 <sup>0</sup>
toe 22'	PAV. 11'	PIPE 12 <sup>0</sup>	PAV. 4'	birch 10'
toe 22'	PIPE 13 <sup>0</sup>	PAV. 13'	PAV. 5'	birch 12'
toe 18 <sup>0</sup>	PIPE 12 <sup>3</sup>	PAV. 10 <sup>0</sup>	PAV. 5'	birch 12'
toe 16'	PAV. 10 <sup>3</sup>	PIPE 9 <sup>3</sup>	PAV. 6'	birch 12'
toe 16'	PAV. 12 <sup>3</sup>	PIPE 10 <sup>3</sup>	PAV. 4.5'	birch 11'

+98

+91<sup>82</sup>

+91<sup>82</sup>

+78<sup>82</sup>

+62<sup>82</sup>

50246<sup>82</sup> Δ

502

M.H.  
13<sup>8</sup>

EOE	POV	PIPE	POV	BIOM
20	15 <sup>8</sup>	13 <sup>8</sup>	3 <sup>8</sup>	10 <sup>8</sup>

24" CUIVERT

EOE	POV	PIPE	POV	BIOM
18 <sup>8</sup>	14 <sup>8</sup>	13 <sup>4</sup>	4 <sup>8</sup>	11 <sup>8</sup>

EOE	POV	PIPE	POV	BIOM
17 <sup>8</sup>	13 <sup>8</sup>	12 <sup>8</sup>	5 <sup>8</sup>	11 <sup>8</sup>

EOE	POV	PIPE	POV	BIOM
16 <sup>8</sup>	12 <sup>8</sup>	10 <sup>8</sup>	5 <sup>8</sup>	12 <sup>8</sup>

EOE	POV	PIPE	POV	BIOM
15 <sup>8</sup>	10 <sup>8</sup>	8 <sup>8</sup>	8 <sup>8</sup>	16 <sup>8</sup>

505+6628

+50

505

+50

504+0058

+50

503+1082

♀  
foc 20    pav. 13<sup>5</sup>    # PIPE 13<sup>2</sup>    63    birm 12<sup>5</sup>

# PIPE 12<sup>5</sup>

foc 20<sup>2</sup>    pav. 13<sup>2</sup>    # PIPE 13<sup>2</sup>    pav.    birm 15<sup>2</sup>

# PIPE 12<sup>5</sup>

foc 17<sup>2</sup>    # PIPE 12<sup>5</sup>    pav. 12<sup>2</sup>    pav. 8<sup>2</sup>    birm 16<sup>2</sup>

foc 20<sup>2</sup>    pav. 12<sup>5</sup>    # PIPE 13<sup>5</sup>    pav. 8<sup>2</sup>    birm 14<sup>2</sup>

foc 21<sup>2</sup>    pav. 14<sup>5</sup>    # PIPE 14<sup>2</sup>    pav. 5<sup>2</sup>    birm 11<sup>2</sup>

509+112 B.C.

+50

508

+50

507

+50

506

\*  
FOE 25<sup>3</sup>    PIPE 19<sup>2</sup>    PAV 10<sup>0</sup>    PAV 9<sup>2</sup>    BIRM 17<sup>5</sup>

PIPE 12<sup>0</sup>

FOE 17<sup>2</sup>    PAV 10<sup>5</sup>    PIPE 10<sup>0</sup>    PAV 7<sup>0</sup>    BIRM 15<sup>3</sup>

PIPE 9<sup>0</sup>

FOE 17<sup>2</sup>    PAV 12<sup>5</sup>    PIPE 9<sup>3</sup>    PAV 7<sup>3</sup>    BIRM 13<sup>3</sup>

PIPE 9<sup>3</sup>

18<sup>3</sup>    12<sup>3</sup>    11<sup>3</sup>    6<sup>3</sup>    13<sup>3</sup>

512

+50

511

510+74<sup>77</sup> EC.

510+67

+50

510

+50

toe	PAV	PIPE	PAV	DIRTY
8°	11°	14°	28°	46°

toe	PIPE	PAV	PAV	DIRTY
	5°	6°	24°	26°

toe	PIPE	PAV	PAV	DIRTY
23°	9°	10°	19°	26°

toe	PIPE	PAV	PAV	DIRTY
40°	18°	4°	15°	22°

24" CURVE

toe	PIPE	PAV	PAV	DIRTY
37°	26°	8°	11°	21°

toe	PIPE	PAV	PAV	DIRTY
27°	23°	8°	10°	19°

toe	PIPE	PAV	PAV	DIRTY
26°	18°	8°	9°	18°

515+47.92

515

+50

514+08.2 4" Culvert

514

+50

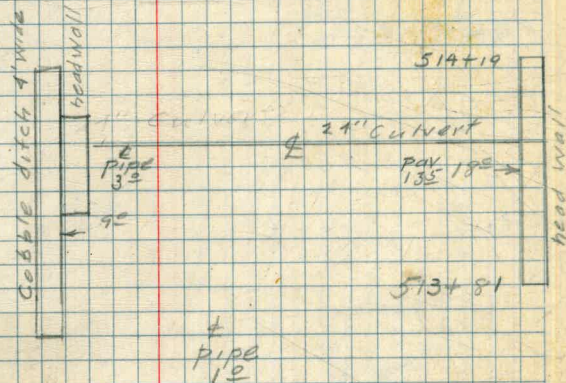
513

+50

TOE	PIPE	POV	POV	blinn
33.2	20.1	18.2	1.2	9.0

TOE	POV	PIPE	POV	blinn
21.0	15.0	14.3	3.2	13.2

4" PIPE 8.3



514+19

24" Culvert

2" PIPE 3.2

POV 13.2

513+81

4" PIPE 1.2

TOE	POV	PIPE	POV	blinn
4.2	5.0	8.2	3.0	31.2

TOE	POV	PIPE	POV	blinn
4.2	9.2	12.0	26.2	36



518

517+50

516+97<sup>33</sup> E.C.1

+50

516+04

516+00

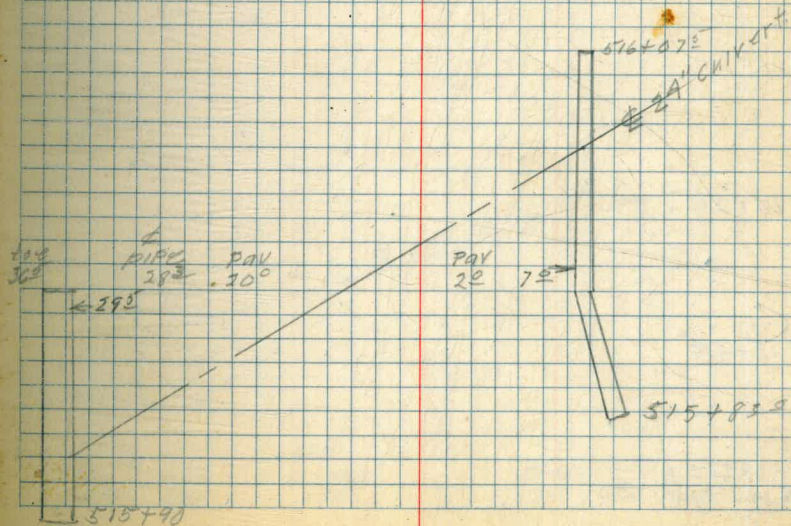
515+92<sup>2</sup>

LOC	PAV	PIPE	PAV	DIRT
183	192	112	63	123

LOC	PAV	PIPE	PAV	DIRT
202	162	132	42	123

LOC	PAV	PIPE	PAV	DIRT
292	182	173	22	83

PIPE  
212



520+11.5' ahead  
520+12.9' back

519+95.8'

519+79.8'

+50

519

518+50

518+41.5'

518+37.13'  
518+34.2' back B.C.

4  
PIPE  
102

LOC  
140

PAV  
110

4  
PIPE  
109

PAV  
82

blines  
122

4  
PIPE  
95

LOC  
150

PAV  
92

4  
PIPE  
89

PAV  
80

blines  
122

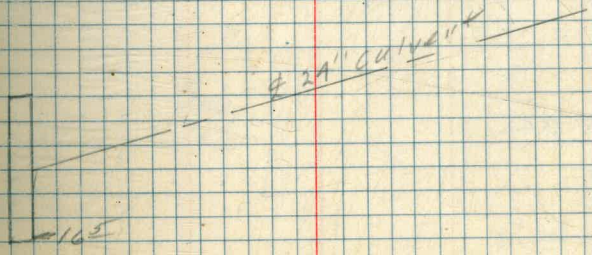
LOC  
160

PAV  
110

4  
PIPE  
105

PAV  
80

blines  
112



LOC  
190

PAV  
120

4  
PIPE  
110

PAV  
72

blines  
120

522+57

521+27<sup>25</sup> E.C.

522

550

521

520+60 B.C.

520+27.84 ahead  
520+28.24 back

A.W. <sup>10</sup>  
37<sup>2</sup>

PIPE  
20<sup>2</sup>

PIPE  
18<sup>2</sup>

TOE  
22<sup>2</sup>

POV  
16<sup>2</sup>

PIPE  
15<sup>2</sup>

POV  
4<sup>2</sup>

blum  
12<sup>2</sup>

TOE  
18<sup>2</sup>

POV  
14<sup>2</sup>

PIPE  
12<sup>2</sup>

POV  
5<sup>2</sup>

blum  
14<sup>2</sup>

TOE  
19<sup>2</sup>

PIPE  
13<sup>2</sup>

POV  
12<sup>2</sup>

POV  
8<sup>2</sup>

blum  
14<sup>2</sup>

PIPE  
10<sup>2</sup>

TOE  
17<sup>2</sup>

POV  
10<sup>2</sup>

PIPE  
10<sup>2</sup>

POV  
9<sup>2</sup>

blum  
15<sup>2</sup>

+80

+64

+48

52A+32

524

+50

523

⊥

⊥  
PIPE  
63

TOE  
220

POV  
112

⊥  
PIPE  
62

POV  
82

DIRTY  
300

⊥  
PIPE  
40

TOE  
250

POV  
120

⊥  
PIPE  
12

POV  
92

DIRTY  
240

TOE  
200

POV  
100

⊥  
PIPE  
30

POV  
100

DIRTY  
190

⊥  
PIPE  
130

TOE  
340

⊥  
PIPE  
230

POV  
130

POV  
60

DIRTY  
140

57.

628

+50

57

627

+50

SURVEY of page 8 this Book Starts  
at this BC.

526+0796 B.C.

+50

525+12

+96

24.

TOE  
172PAV  
32PIPE  
112PAV  
162BIRM  
342PIPE  
32TOE  
352PAV  
142PIPE  
72PAV  
62BIRM  
152PIPE  
132TOE  
200PAV  
142PIPE  
82PAV  
52BIRM  
102TOE  
422PAV  
102PIPE  
12PAV  
82BIRM  
162PIPE  
42TOE  
212PAV  
52PIPE  
62PAV  
82BIRM  
312

532

+50

531

530+40 A

530

+50

5 ?

629

+50

TOE	PAV	PIPE	PAV	BLM
172	92	63	102	232

PIPE  
63

TOE	PAV	PIPE	PAV	BLM
219	142	112	42	112

TOE	PAV	PIPE	PAV	BLM
37	232	232	42	12

TOE	PIPE	PAV	PAV	BLM
313	158	142	42	122

PIPE  
62

TOE	PAV	PIPE	PAV	BLM
182	23	72	172	342

PIPE  
142

+50

535

± 24" Culvert

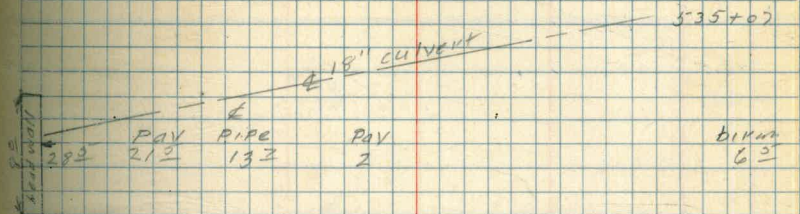
+535

534

+50

533

+50

±  
PIPE  
192B.O. #27 M.H.  
132POV  
232POV  
162±  
PIPE  
132POV  
12B.I.M.  
82±  
PIPE  
122POV  
182POV  
105±  
PIPE  
95POV  
82B.I.M.  
195±  
PIPE  
72

539

+50

538

+50

537

+80  $\Delta$ 

+50

536

LOC	PAV	PIPE	PAV	DIRM
26°	21°	16°	1°	4°

PIPE
13°

LOC	PAV	PIPE	PAV	DIRM
21°	17°	10°	2°	10°

LOC	PAV	PIPE	PAV	DIRM
19°	11°	4°	7°	15°

PIPE
2°

LOC	PAV	PIPE	PAV	DIRM
3	2°	6°	21°	26°

PIPE
1°

LOC	PAV	PIPE	PAV	DIRM
22°	15°	10°	3°	12°



+56<sup>s</sup> 2A" CULVERT

+50

591

+60 Δ

+43

540

539+50

Head wall

9<sup>s</sup>

2" CULVERT

2  
PIPE  
0<sup>s</sup>

400  
8<sup>s</sup>

PAV  
1<sup>s</sup>

2  
PIPE  
3<sup>s</sup>

PAV  
20<sup>s</sup>

6100  
28<sup>s</sup>

400  
5<sup>s</sup>

PAV  
1<sup>s</sup>

2  
PIPE  
7<sup>s</sup>

PAV  
25<sup>s</sup>

6100  
33<sup>s</sup>

A.V. #41  
10<sup>s</sup>

400  
18<sup>s</sup>

PAV  
10<sup>s</sup>

2  
PIPE  
8<sup>s</sup>

PAV  
11<sup>s</sup>

6100  
16<sup>s</sup>

2  
PIPE  
13<sup>s</sup>

+50

545

+50

544

+50

543

+50

542

 $\frac{\$}{\text{PIPE}}$   
184

 $\frac{\$}{\text{PIPE}}$   
282

 $\frac{\$}{\text{PAV}}$   
212

 $\frac{\$}{\text{PIPE}}$   
179

 $\frac{\$}{\text{PAV}}$   
12

 $\frac{\$}{\text{BIRM}}$   
50

 $\frac{\$}{\text{PIPE}}$   
162

 $\frac{\$}{\text{PIPE}}$   
272

 $\frac{\$}{\text{PAV}}$   
212

 $\frac{\$}{\text{PIPE}}$   
163

 $\frac{\$}{\text{PAV}}$   
12

 $\frac{\$}{\text{BIRM}}$   
60

 $\frac{\$}{\text{PIPE}}$   
163

 $\frac{\$}{\text{PIPE}}$   
250

 $\frac{\$}{\text{PAV}}$   
183

 $\frac{\$}{\text{PIPE}}$   
153

 $\frac{\$}{\text{PAV}}$   
22

 $\frac{\$}{\text{BIRM}}$   
93

 $\frac{\$}{\text{PIPE}}$   
93

 $\frac{\$}{\text{PIPE}}$   
192

 $\frac{\$}{\text{PAV}}$   
120

 $\frac{\$}{\text{PIPE}}$   
57

 $\frac{\$}{\text{PAV}}$   
93

 $\frac{\$}{\text{BIRM}}$   
222

+21

5.48

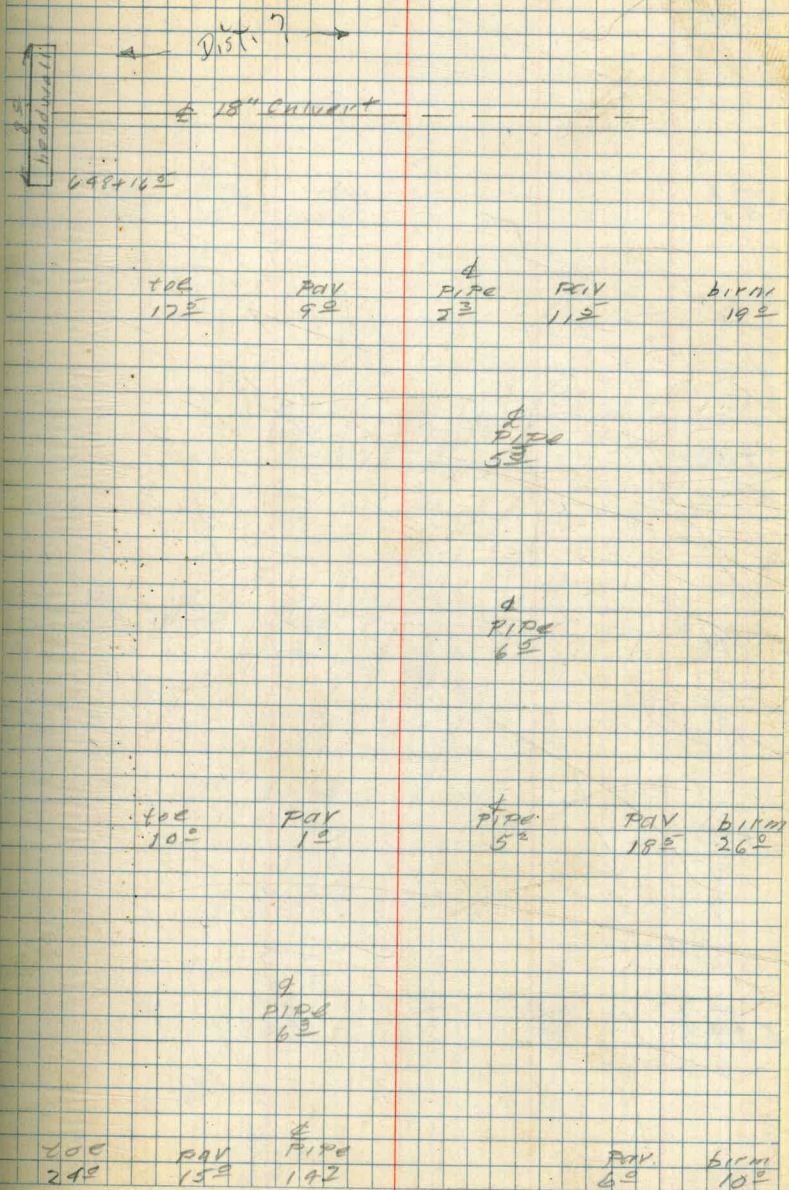
+50

547+10

547

+50

546



+50

 $\frac{1}{2}$   
 PIPE  
 19<sup>0</sup>

551

LOC	PAY	$\frac{1}{2}$ PIPE	PAY
26 <sup>0</sup>	21 <sup>0</sup>	15 <sup>2</sup>	2 <sup>0</sup>

 b. m. m.  
 6<sup>0</sup>

+50

 $\frac{1}{2}$   
 PIPE  
 12<sup>4</sup>

550

LOC	PAY	$\frac{1}{2}$ PIPE	PAY
26 <sup>0</sup>	21 <sup>0</sup>	PIPE	2 <sup>0</sup>

 b. m. m.  
 3<sup>0</sup>

+50

 $\frac{1}{2}$  PIPE  
 6<sup>0</sup>

549

LOC	PAY	$\frac{1}{2}$ PIPE	PAY
23 <sup>0</sup>	17 <sup>0</sup>	3 <sup>4</sup>	3 <sup>0</sup>

 b. m. m.  
 8<sup>0</sup>

+50

 $\frac{1}{2}$   
 PIPE  
 0<sup>2</sup>

+50

+49  $\pm$  18" culvert

+48

554

+55

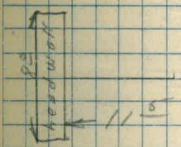
E.G.

+50

553

+50

552



$\pm$

$\pm$   
PIPE  
9.5

B.O. 28 M.H.  
-13.5

LOC  
17.5

PAV  
11.5

$\pm$   
PIPE  
3.5

PAV  
8.5

BIRMS  
21.5

$\pm$  PIPE  
7.5

LOC  
25

PAV  
19.5

$\pm$   
PIPE  
13.5

PAV  
2.5

BIRMS  
9.5

$\pm$   
PIPE  
17.5

LOC  
27.5

PAV  
23.5

PIPE  
18

PAV  
0

BIRMS  
7.5

+60 Δ

+49

557

+50

556

+50

555

♀

33

AV<sup>#</sup>42 GV M.H. AV<sup>#</sup>13  
13±

toe	PAV	♀	PAV	birch
9 <sup>0</sup>	43	PIPE	13 <sup>0</sup>	27 <sup>0</sup>
		3 <sup>0</sup>		

♀  
PIPE  
6<sup>0</sup>

toe	PAV	♀	PAV	birch
9 <sup>0</sup>	10	PIPE	19 <sup>0</sup>	24 <sup>0</sup>
		7 <sup>0</sup>		

♀  
PIPE  
7<sup>0</sup>

toe	PAV	♀	PAV	birch
10 <sup>0</sup>	4 <sup>0</sup>	PIPE	14 <sup>0</sup>	21 <sup>0</sup>
		8 <sup>0</sup>		

561

+50

560

+50

+165 ± 18" culvert

559

+50

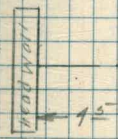
558

LOC	PAV	PIPE	PAV	DEPTH
32	1'	43	20	26

PIPE  
25

LOC	PAV	PIPE	PAV	DEPTH
32	0	25	17	25

PIPE  
24



± 18" culvert

LOC	PAV	PIPE	PAV	DEPTH
80	10	12	14	22

PIPE  
54

LOC	PAV	PIPE	PAV	DEPTH
190	15	14	3	9

+50

564

+50 Δ

+35 1/2 18" culvert

563

+60

7

+50 Δ

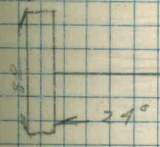
562

+50

1/2  
PIPE  
4 1/2

TOE	POV	1/2 PIPE	POV	blinn
102	72	22	112	202

TOE	POV	1/2 PIPE	POV	blinn
210	202	192	22	52



1/2 culvert

TOE	POV	1/2 PIPE	POV	blinn
202	212	192	22	22

TOE	POV	1/2 PIPE	POV	blinn
202	212	182	12	42

TOE	POV	1/2 PIPE	POV	blinn
132	62	42	82	172

1/2  
PIPE  
5-3



+30 Δ

567

+50

+35 ± 18" culvert

566

+50

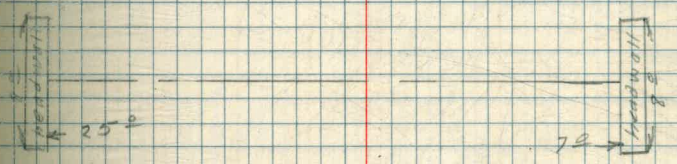
565+5E

565

TOE	DIRTY	PAV	PIPE	PAV	DIRTY
450	240	500	200	0	70

TOE	PIPE	PAV	PAV	DIRTY
500	292	210	10	30

PIPE  
223



TOE	PAV	PIPE	PAV	DIRTY
200	110	104	70	140

PIPE  
20

B.O. Box #29  
112

TOE	PAV	PIPE	PAV	DIRTY
50	10	60	200	310

+50

+15 & Culvert

570

+50

569

+50

568

+50

37

&  
PIPE  
53



Pair 18" culverts

LOC  
20

PAV  
103

&  
PIPE  
0

PAV  
133

birch  
183

&  
PIPE  
53

LOC  
570

PAV  
163

&  
PIPE  
94

PAV  
53

birch  
103

&  
PIPE  
193

LOC  
333

birch  
273

PAV  
213

&  
PIPE  
192

PAV  
12

birch  
50

&  
PIPE  
193

574

+48

573

+50

572

+50

571

+815

TOE	PIPE	BIKIN	PAV	PAV	BIKIN
43°	38°	31°	24°	5°	3°

A.V. # 14  
PIPE 30°

TOE	PIPE	PAV	PAV	BIKIN
22°	17°	16°	3°	7°

PIPE 6°

TOE	PAV	PIPE	PAV	BIKIN
5°	0°	3°	21°	31°

PIPE 9°

TOE	PAV	PIPE	PAV	BIKIN
5°	1°	10°	21°	29°

M.H. 8°

+185  $\pm$  18" culvert

577

+50

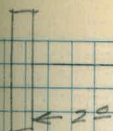
576

+50

575401  $\pm$  18" culvert

575

+50 A



toe PAV PIPE PAV BIRM  
150 12 53 220 280

PIPE  
125

toe PAV PIPE PAV BIRM  
60 30 73 180 240

PIPE  
75



← CULVERT

toe PIPE PAV PAV BIRM  
32 230 210 0 40

toe PIPE BIRM PAV PAV BIRM  
300 370 290 330 10 60

+50

580+20 Δ

580

+68

+50

579

+50

578

+50 Δ

+31

PIPE  
252

PIPE  
262

TOE	PIPE	PAV	PAV	blown
322	292	202	12	32

M.H. for A.V. #45  
282

PIPE  
242

TOE	PIPE	PAV	PAV	blown
222	152	132	72	232

PIPE  
12

TOE	PAV	PIPE	PAV	blown
152	32	22	172	242

TOE	PAV	PIPE	PAV	blown
122	32	32	172	252

M.H. for D.O. #30  
92

584

+655

+54 £ 18" culvert

583

+56

582

+50

581

41

toe	PIPE	POV	POV	blinn
92	53	29	189	240
M.H. for BO. #34 1 1/2				
toe	PIPE	POV	POV	blinn
59	22	20	222	284
toe	PIPE	POV	POV	blinn
80	40	22	163	239
toe	PIPE	POV	PAV	blinn
299	193	180	39	80

588

+50 Δ

587

+50

+34<sup>5</sup> 4 18" culvert

586

+50

585

584+50

TOC  
7<sup>0</sup>

PAV  
1<sup>5</sup>

PIPE  
7<sup>5</sup>

PAV  
21<sup>2</sup>

birch  
41<sup>2</sup>

TOC  
5<sup>2</sup>

PAV  
0

PIPE  
8<sup>5</sup>

PAV  
21<sup>2</sup>

birch  
36<sup>2</sup>

TOC  
8<sup>2</sup>

PIPE  
2<sup>3</sup>

PAV  
0

PAV  
21<sup>2</sup>

birch  
34<sup>2</sup>

PIPE  
7<sup>8</sup>



TOC  
13<sup>2</sup>

PIPE  
5<sup>3</sup>

PAV  
1<sup>0</sup>

PAV  
19<sup>2</sup>

birch  
27<sup>2</sup>

PIPE  
9<sup>2</sup>

TOC  
15<sup>2</sup>

PIPE  
4<sup>5</sup>

PAV  
2<sup>3</sup>

PAV  
18<sup>5</sup>

birch  
25<sup>5</sup>

PIPE  
6<sup>2</sup>

590

+50

+26

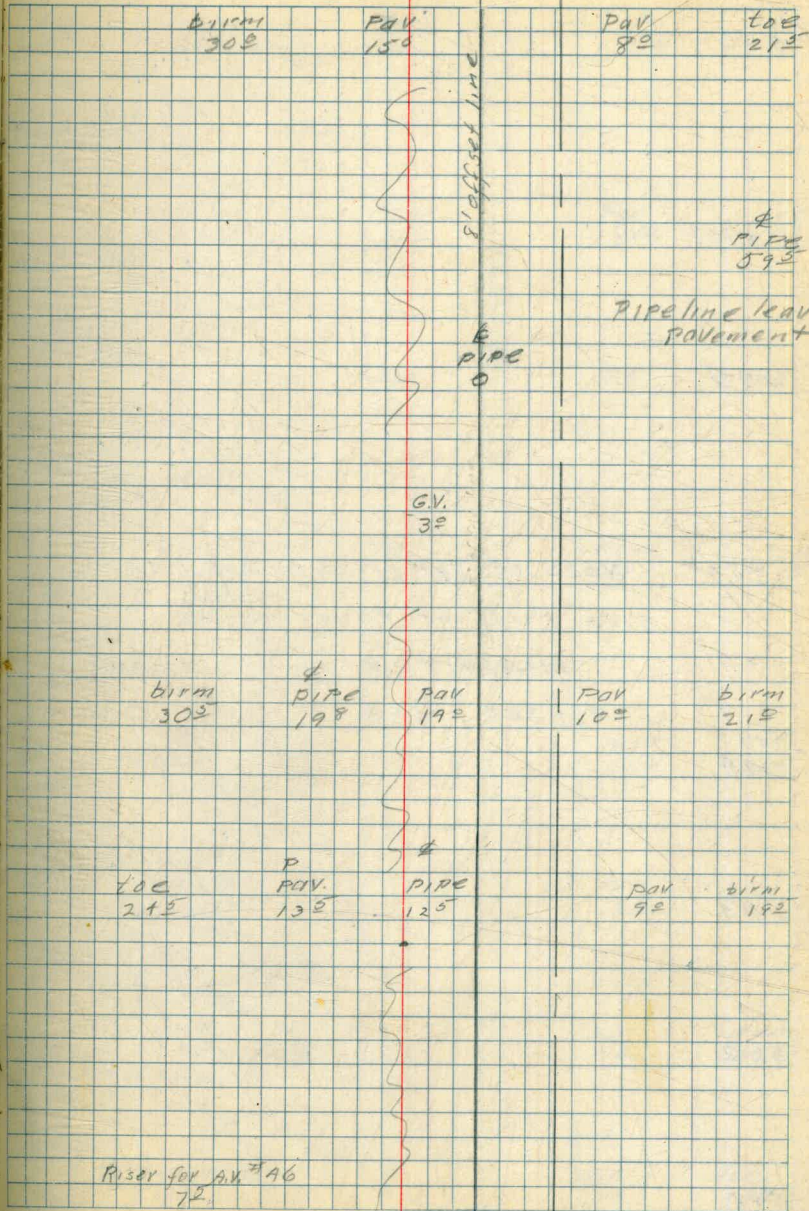
+23

589

588+43<sup>33</sup>

Note - Re-survey line ends here & ties to 8' offset  
line of station survey see page #11  
All measurements Right or Left will be  
taken from offset line

588+10



Riser for AX #46  
72



596

+70° E.C.

595

+59° Note offset line moved to right side of off at this point.

measurements taken from R. side offset line

594

593

592

591

TOE	POV	POV	TOE
	125	95	
50°	115	105	195
75	135	95	195
28°	165	60	150
130	40	175	265
195	95	135	225
260	135	95	235
340	145	115	305

offset

604

603+04 B.C.

602

601

600

599

598

597

gutter PAV  
18<sup>3</sup> 16<sup>3</sup>PAV BIRN  
7<sup>3</sup> 16<sup>2</sup>gutter PAV  
18<sup>3</sup> 16<sup>3</sup>PAV BIRN  
9<sup>2</sup> 20<sup>2</sup>gutter PAV  
18<sup>3</sup> 16<sup>3</sup>PAV BIRN  
7<sup>3</sup> 17<sup>2</sup>gutter PAV  
18<sup>3</sup> 16<sup>2</sup>PAV BIRN  
8<sup>3</sup> 18<sup>2</sup>gutter PAV  
17<sup>3</sup> 16<sup>2</sup>PAV BIRN  
9<sup>3</sup> 17<sup>2</sup>BIRN PAV  
23<sup>2</sup> 12<sup>2</sup>PAV BIRN  
9<sup>4</sup> 20<sup>2</sup>BIRN PAV  
27<sup>2</sup> 13<sup>2</sup>PAV BIRN  
9<sup>2</sup> 18<sup>2</sup>

8 1/2 feet

608+16<sup>22</sup>+85<sup>22</sup>

+50

607

+50

~~606~~  
000

+50

~~605~~ ?~~606~~  
005~~609~~ ?~~603~~  
60ADIRT  
42PIPE  
81PAV  
132PAV  
35100  
40PIPE  
92

No firm

PIPE LINE

PAV PIPE PAV 100  
105 122 312 382PIPE  
152dirt  
gutter  
72PAV PIPE PAV dirt  
22 182 252 342PIPE  
212

PIPE LINE COMES BACK

dirt  
gutter  
132PAV  
35PAV PIPE gutter  
192 242 252dirt gutter  
192PAV  
102PAV  
122dirt  
182

611+25<sup>22</sup>610+77<sup>22</sup>610+29<sup>22</sup>  
~~610+77<sup>22</sup>~~~~481<sup>22</sup>~~  
~~610+29<sup>22</sup>~~+33<sup>22</sup>  
~~+81<sup>22</sup>~~~~+85<sup>22</sup>~~  
~~609+33<sup>22</sup>~~+35<sup>22</sup>  
~~+85<sup>22</sup>~~608+35<sup>22</sup>

BY IN	PAV	PAVE	PAV	LOC
13	40	13	38	38

PIPE  
149

BY IN	PAVE	PAV	PAV	LOC
20	110	110	39	39

PIPE  
120

BY IN	PAVE	PAV	PAV	LOC
20	60	110	37	37

PIPE  
60

BY IN	PAVE	PAV	PAV	LOC
20	130	33	37	37

STOPPED

+50

614

+50

613

+50

612+25' B.C.

612+21''

+73''

PIPE  
74

BIRM PAV PIPE PAV TOP  
0 72 8' 332 332

PIPE  
73

BIRM PAV PIPE PAV TOP  
22 52 52 313 313

8' off 52'

PIPE  
52

PIPE  
42

BIRM  
32

PAV PIPE PAV TOP  
72 42 322 322

PIPE  
82

617+11A

+22 A

617+06 A

+90 A

+50

616

+50

+31.16 F.C.

615

M.H.  
80PIPE  
0

PIPE	PAV	PAV toe
30	10	60 340 340

PIPE  
20PIPE  
30

PIPE	PAV	PAV toe
20	40	70 330 330

PIPE  
60PIPE  
70

PIPE	PAV	PAV toe
0	70	70 340 340

622

621

620

619+10<sup>54</sup> ahead  
 619+11<sup>12</sup> back E.C.

619

+50

618

+91<sup>29</sup> B.C.

+59

toe	PAV	PAV	birch
19 <sup>2</sup>	3 <sup>5</sup>	12 <sup>5</sup>	21 <sup>2</sup>

birch	PAV	PAV	birch
19 <sup>2</sup>	6 <sup>5</sup>	14 <sup>5</sup>	22 <sup>2</sup>

birch	PAV	PAV	birch
17 <sup>2</sup>	8 <sup>2</sup>	13 <sup>5</sup>	23 <sup>2</sup>

birch	PAV	PAV	PAV	birch
15 <sup>2</sup>	8 <sup>2</sup>	8 <sup>2</sup>	14 <sup>5</sup>	22 <sup>5</sup>

difficult

PIPE  
30<sup>2</sup>

PIPE line leaves  
pavement

birch	PAV	PIPE	PAV	toe
11 <sup>2</sup>	5 <sup>2</sup>	10 <sup>2</sup>	19 <sup>2</sup>	26 <sup>2</sup>

PIPE  
7<sup>2</sup>

birch	PAV	PIPE	PAV	toe
7 <sup>2</sup>	7 <sup>2</sup>	0	19 <sup>2</sup>	29 <sup>2</sup>

628

+133° E.C.

627

626

+165° P.C.C.

625

+35° B.C.

624

624

623

d

toe  
17°

PAV  
8°

PAV  
11°

toe  
16°

toe  
17°

PAV  
5°

PAV  
11°

toe  
16°

toe  
15°

PAV  
3°

PAV  
12°

toe  
18°

toe  
17°

PAV  
3°

PAV  
12°

toe  
19°

toe  
15°

PAV  
2°

PAV  
12°

toe  
20°

b

8' offset line

toe  
14°

PAV  
2°

PAV  
15°

toe  
23°



635+53<sup>27</sup>

6489<sup>27</sup> E.C.

634

632+93<sup>20</sup> B.C.

632

631

630

629

top PAV  
20° 11°

PAV birm  
12° 21°

top PAV  
24° 15°

PAV birm  
7° 19°

top PAV  
19° 10°

PAV birm  
10° 24°

top PAV  
21° 9°

PAV birm  
11° 23°

birm PAV  
22° 9°

PAV birm  
13° 21°

birm PAV  
22° 8°

PAV birm  
13° 22°

birm PAV  
21° 8°

PAV birm  
11° 18°

birm PAV  
22° 8°

PAV birm  
12° 20°

8 leaflets

639480 A

639484

639

+32 A

+30 2 18" culvert

+16 A

638 A

637

636

birm  
162

PAV  
62

PAV  
143

birm  
289

birm  
192

PAV  
92

PAV  
19

birm  
235

birm  
172

PAV  
72

PAV  
152

birm  
212



18.5

offset



29.2

LOC  
202

PAV  
82

PAV  
193

birm  
242

LOC  
172

PAV  
72

PAV  
122

birm  
222

LOC  
152

PAV  
82

PAV  
142

birm  
242

2

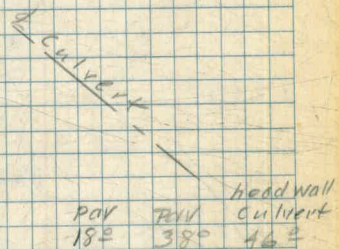
642+50

Survey leaves highway

642+25<sup>69</sup> B.C.

641+28 A

640+28 A



435/10.8

POV	PAV	POV
32°	11°	30°

POV	PAV
120°	6°

POV	POV
24°	24°

504702.01  
Re-alignment El Monte pipe line  
through Mission Gorge

Bylar  
King  
Otter  
Stevens

5-10-44

SEE BOOK 596  
VOID 6-2-44 PAGE 69-74

+27<sup>98</sup> E.C.

7° 34'

$\Delta = 15^{\circ}08' Lt$

R 208.75

498400

T 27.78

3° 44.60'

L 55.14

$\frac{\Delta}{2} \tan \frac{A}{2} = 2.336$

+72<sup>89</sup> P.C.C.

0° 00'  
2° 45'

$\Delta = 5^{\circ}30' Lt$

+50

R 562.57

1° 35.19'

T 27.02'

L 54.0

497418<sup>85</sup> B.C.

Def. per. ft. = 3.065

1970  
E.C. 498427<sup>88</sup>  
Same R.P.'s  
as base  
for B.C. of  
next curve

Paint on  
nearest corner  
abutment  
68.58  
21  
POT HUB E+X  
497408<sup>63</sup>  
Red head in  
tree nearest hwy.

+47.08 E.C.

2°20'

501

1°59.13'

+50

wood

1°36.95'

500

$\Delta = 4^{\circ}40' Lt. 1^{\circ}14.77'$

$R = 7875.5$

$T = 157.93$

+50

$L = 315.63 \quad 0^{\circ}52.59'$

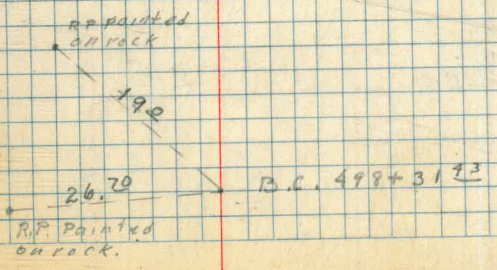
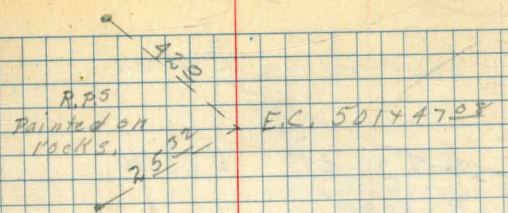
499

0°30.41'

+50

0°8.24'

498+31<sup>13</sup> B.C.



+ 50  $2^{\circ} 06.67'$

505  $\Delta 4^{\circ} 46' Lt.$   $1^{\circ} 23.70'$

R 2000'

T 83.24'

+ 50 L 166.39'  $0^{\circ} 40.75'$

504+02<sup>61</sup> B.C.

+19.60 E.C.  $11^{\circ} 32' 30''$

503  $\Delta = 23^{\circ} 25' Lt$   $7^{\circ} 54'$

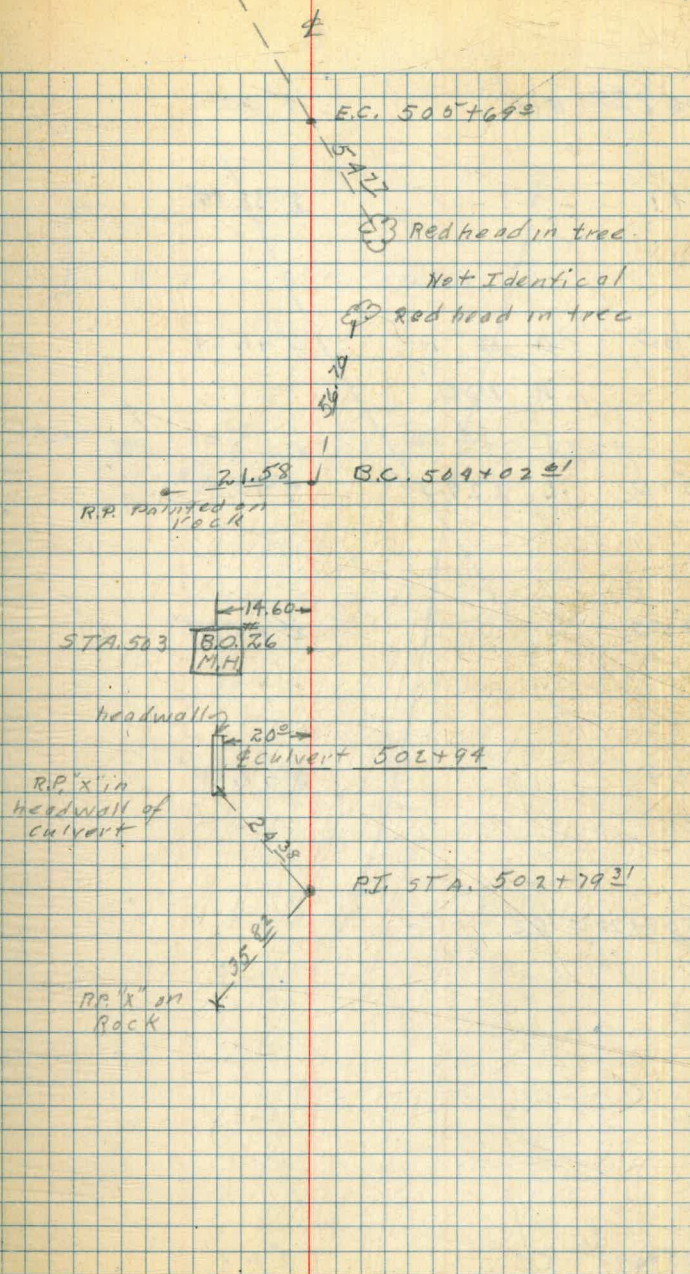
R = 200'

T = 41.45'

+50 L = 81.74'  $1^{\circ} 48'$

502+37<sup>86</sup> B.C.

Hub & T.  $\phi$



508<sup>96</sup> P.R.C. 9° 00'

511 8° 38.99'

750 Δ 18° RT. 6° 41.24'

R 750'

T 115.62'

510 L 129.34' 4° 43.49'

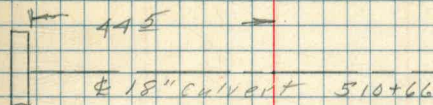
750 2° 45.79'

509 0° 47.99'

508+79<sup>02</sup> B.C.

505+69<sup>00</sup> E.C.

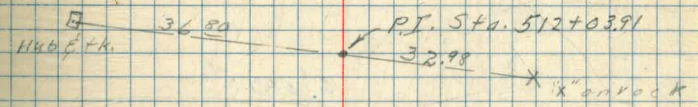
2° 23'



~~17.60~~ ~~35<sup>96</sup>~~ → P.I. Sta. 509+95.24  
HUB & K. "X" ON ROCK

~~5~~

+97 <sup>72</sup>	E.C.	7°43.5'
+50		5°46.39'
51.2	Δ 15°27' L.A. R 700' T 94.95' L 188.76'	3°43.59'
+50		1°40.79'
+08 <sup>96</sup>	P.R.C.	





+89.03 E.C.

7° 45'

+50

6° 37.98'

516

A 15° 30' RT

5° 11.99'

R 1000'

T 136.09'

+50

L 270.53'

3° 46.05'

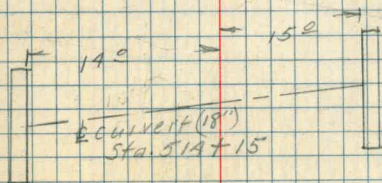
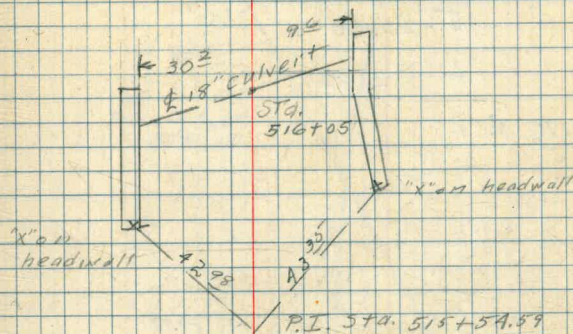
515

2° 20.10'

+50

0° 54.15'

514+18.50 B.C.



+23<sup>06</sup> E.C.

7° 30'

Δ 15° 00' L+

520

R 200'

4° 11.80'

T 24.33'

L 52.36

+70.70 P.C.C.

5° 06'

+50

9° 14.08'

Δ 10° 12' L+

R 685.6

519'

T 61.19

2° 08.53'

L 122.05

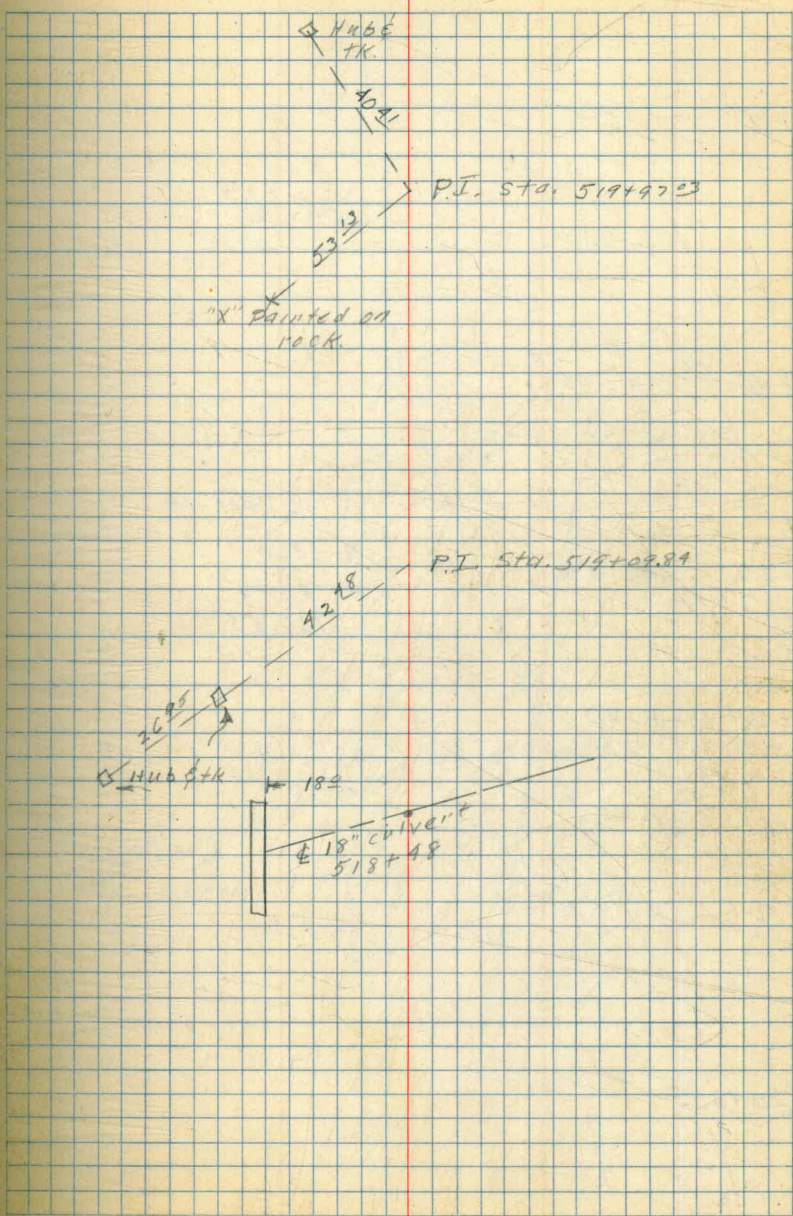
+50

0° 3.38'

518+48<sup>65</sup> B.C.

64 43  
42 45  
26 95

61



+30.52 6° 00'

522 4° 54'

+50 3° 07'

521 1° 19' 30"

520+63<sup>02</sup>

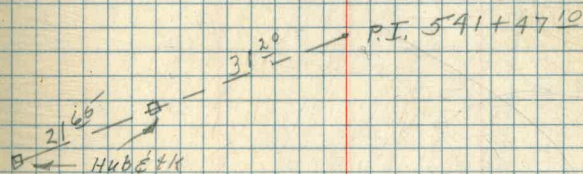
Δ 12° 00' Lt.

R 800'

T 8408'

L 167.55

522+61  
A.V. #40



+39.5 B.C.  $4^{\circ}30'$

524  $3^{\circ}23'$

+50  $1^{\circ}57'$

523  $0^{\circ}31'$

522+82.0 B.C.

$\Delta$   $9^{\circ}00'$  RT.  
R 1000'  
T 78.70'  
L 157.08

26.92  
HUBSIAK  
10.39  
RT. STA. 523+60.77

+19<sup>21</sup> EC, 21°46'

525 16°16'

Δ 43°32' Lt.  
R 100'  
T 39.93  
L 75.98'

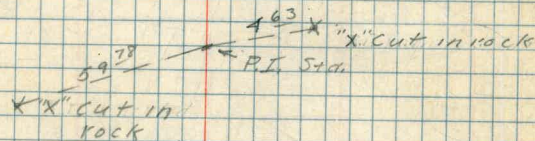
+50 1°56'

Void  
0-2-44

SEE BOOK 596

PAGE 69-74

52A+43<sup>23</sup> BC.



Continued from Book 596 Page 74

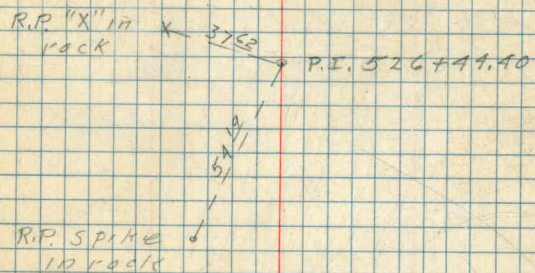
+28°' E.C. 9°41'30"

527 8° 06'

$\Delta 19^{\circ} 23' \text{ RT.}$   
 $T 500'$   
 $T 85.54'$   
 $L 169.15'$

+50 5° 14'

526 2° 21'

525+58<sup>86</sup><sub>0.C.</sub>

+23<sup>33</sup> EC. 10° 12'

529 8° 31'

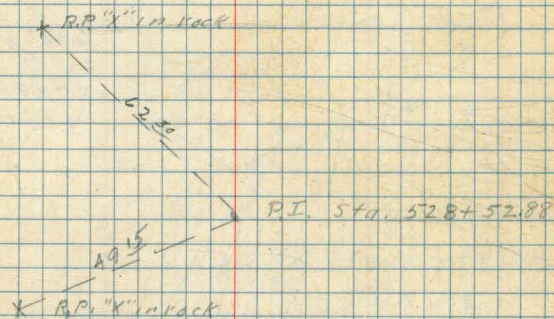
+50 4° 57'

A  
20° 24' Lt.  
R 400'  
T 71.97'  
L 142.42

528 1° 22'

527+80<sup>21</sup> BC.

56



530+44.70  
+44<sup>16</sup> f.c. 6°42'

532 5°06'

+50 3°19'

531 1°32'

530+57<sup>06</sup> B.C.

Δ 13° 24' 14"  
R 800'  
T 93.98  
L 187.10

67  
B.O. #27  
BOX 11' left 534+18

Red head in  
live oak  
P.I. Sta. 531+51.04  
" 39"  
R.P. "X" in rock

59°07'  
Sta. 530+40  
Page 8 this Book  
Sta. 530+50



+42. CIRC. 6° 34' 30"

Δ 26° 46'  
R 650'  
T 154.65  
L 303.66

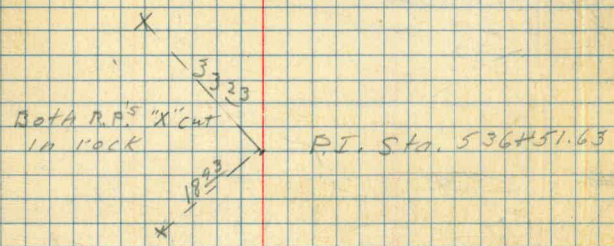
536 40° 38'  
4° 42'

Δ 13° 09' 34"  
R 650'  
T 74.42  
L 149.18

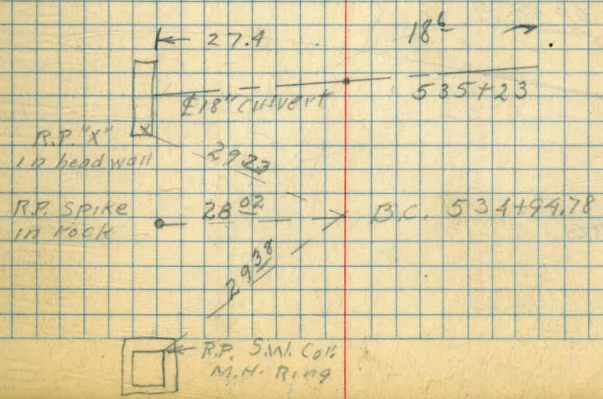
+50 20° 26'  
20° 29.5'

535 0° 11'  
0° 17'

534496<sup>00</sup> B.C.  
534493<sup>15</sup> B.C.



Note Two curves merged into one at this place. *M.H.*



538 100<sup>±4</sup> EC. 13°23'

705.5<sup>1</sup> EC. 6°48'30"

~~538~~ 6°39'

+50 11°15'  
4°27'

537 9°03'  
2°15'

+50 6°50'

536 149<sup>±3</sup> D.C.

~~A 13°37' 11"  
R 6.50'  
T 77.60'  
L 154.48'~~

2632  
Both R.P. =  
Red heads  
in rocks

542+83<sup>15</sup> L RT. 3° 24'

+49<sup>39</sup> EC. 3° 53'

541 2° 28'

+50 1° 02'

540+13<sup>84</sup> B.C.

+11<sup>80</sup> EC. 7° 48'

540 7° 21'

+50 5° 19'

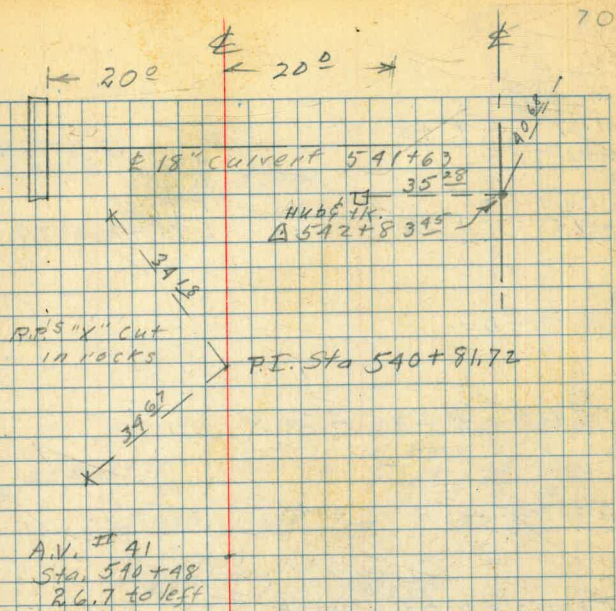
539 3° 16'

+50 1° 13'

538+21<sup>21</sup> B.C.

$\Delta 70.46$  RT.  
R 1000'  
T 67.88'  
L 135.55'

$\Delta 15.36$  RT.  
R 700'  
T 95.89'  
L 190.59'



557 1° 48'

$\Delta$  1° 39' 24"

R 250'

+75 1° 56'

T 47.80'

L 94.47'

556+58<sup>10</sup> B.C.

554+50<sup>12</sup> L Lk 4° 29' 30"

552+20<sup>9</sup> L Rt. 4° 44'

549+62<sup>13</sup> L Rt. 3° 16'

547+86<sup>05</sup> L Rt. 1° 36'

+21<sup>12</sup> EC, 4° 33' 30"

546 3° 57'

+50 2° 31'

$\Delta$  4° 07' 44"

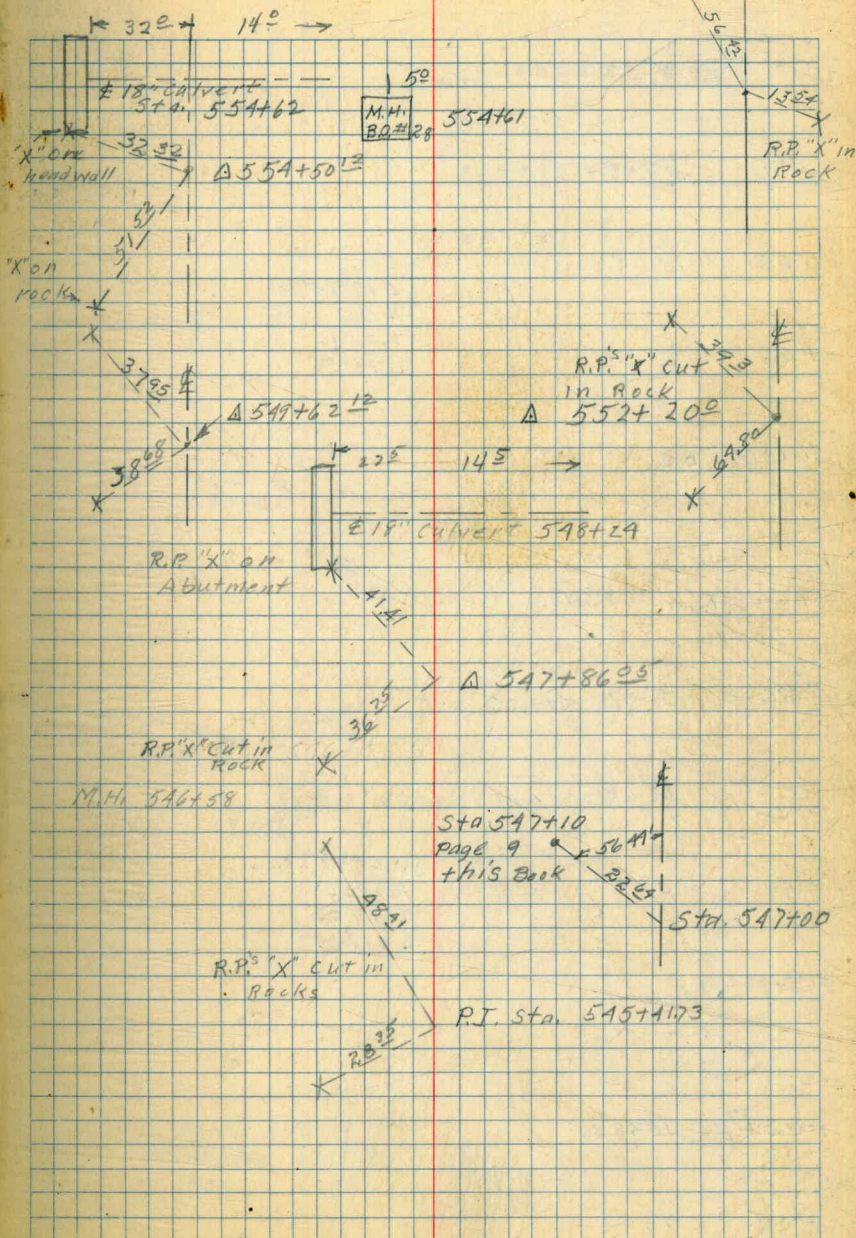
R 1000'

T 79.73'

L 159.12'

545 1° 05'

544+62<sup>2</sup> B.C.



+55<sup>08</sup> E.C. 8°32'30"

+50 8°15'

562 5°23'

Δ 17°05' Lt.  
R 500'  
T 75.10'  
L 149.08

+50 2°31'

561+06<sup>00</sup> B.C.

+04<sup>29</sup> E.C. 3°23'30"

560 3°16'

+50 10°50'

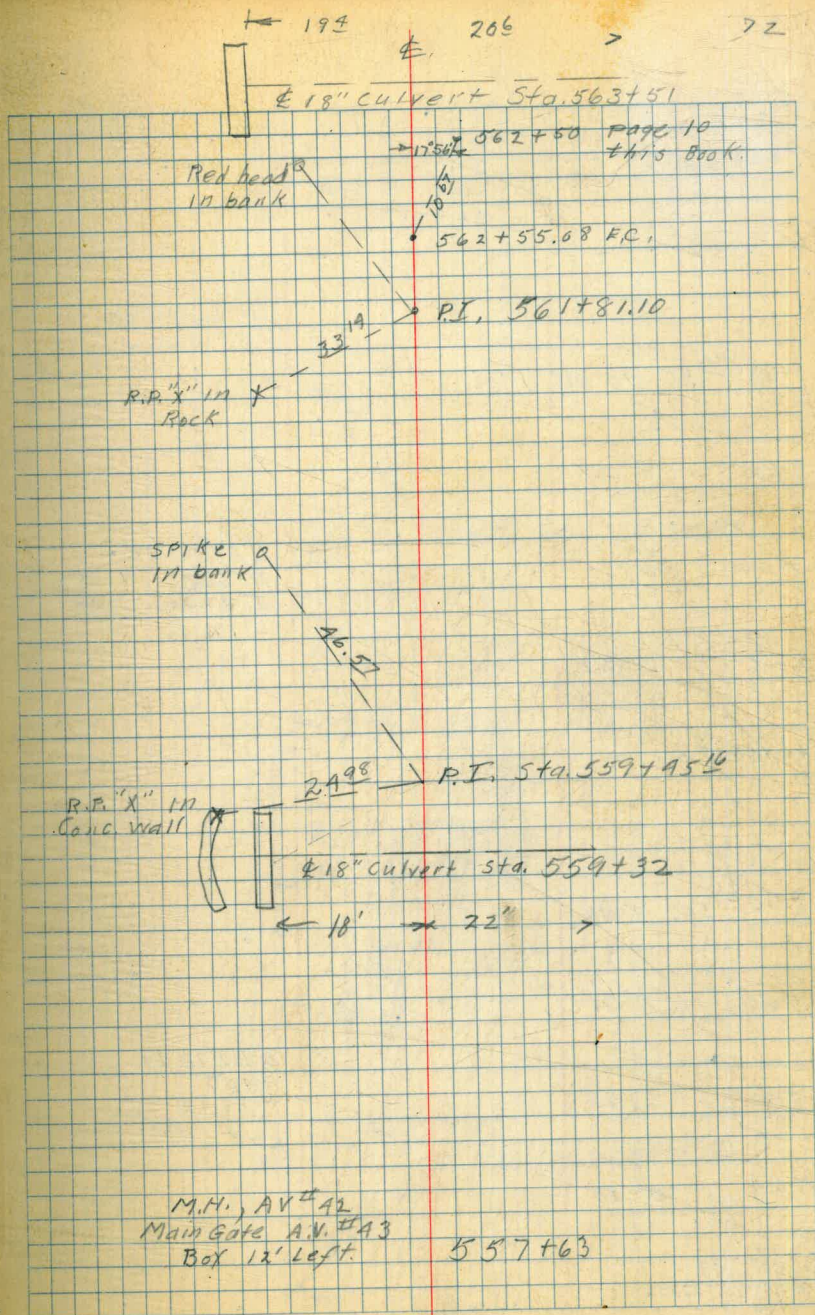
559 0°24'

Δ 6°47' Lt.  
R 1000'  
T 59.26'  
L 118.39'

558+85<sup>00</sup> B.C.

+52<sup>57</sup> E.C. 10°48'30"

+25 7°40'



566+56<sup>55</sup>  
89.36  
45.91

+33<sup>51</sup> EC, 10°08'

568 8°13'

+50 5°21'

567 2°29'

566+56<sup>53</sup> B.C.

+50<sup>26</sup> EC, 11°06'

565 7°30'

+50 3°55'

564 0°20'

563+95<sup>28</sup> B.C.

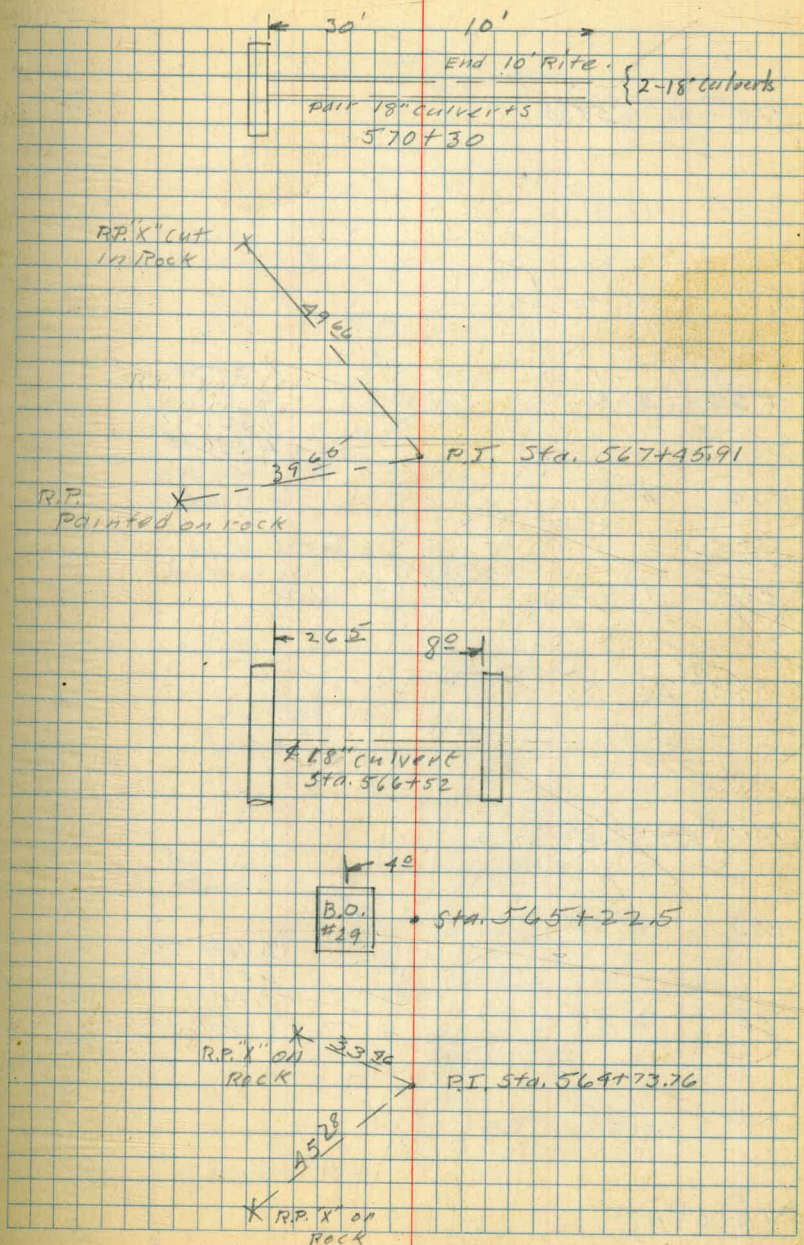
Δ 20°16' RT.  
R 500'  
T 89.36'  
L 176.86'

Δ 22°12' LT.  
R 400'  
T 78.18'  
L 154.98'

563+95<sup>28</sup>  
73.76  
73.76

566+51

73



+70<sup>59</sup> E.C. 16°57'38"

+50 15°21'

575 11°46'

+50 8°11'

574 4°36'

+50 1°02'

573+33<sup>81</sup> D.C.

+72.80 E.C. 8°03'

+50 6°52"

572 4°29'

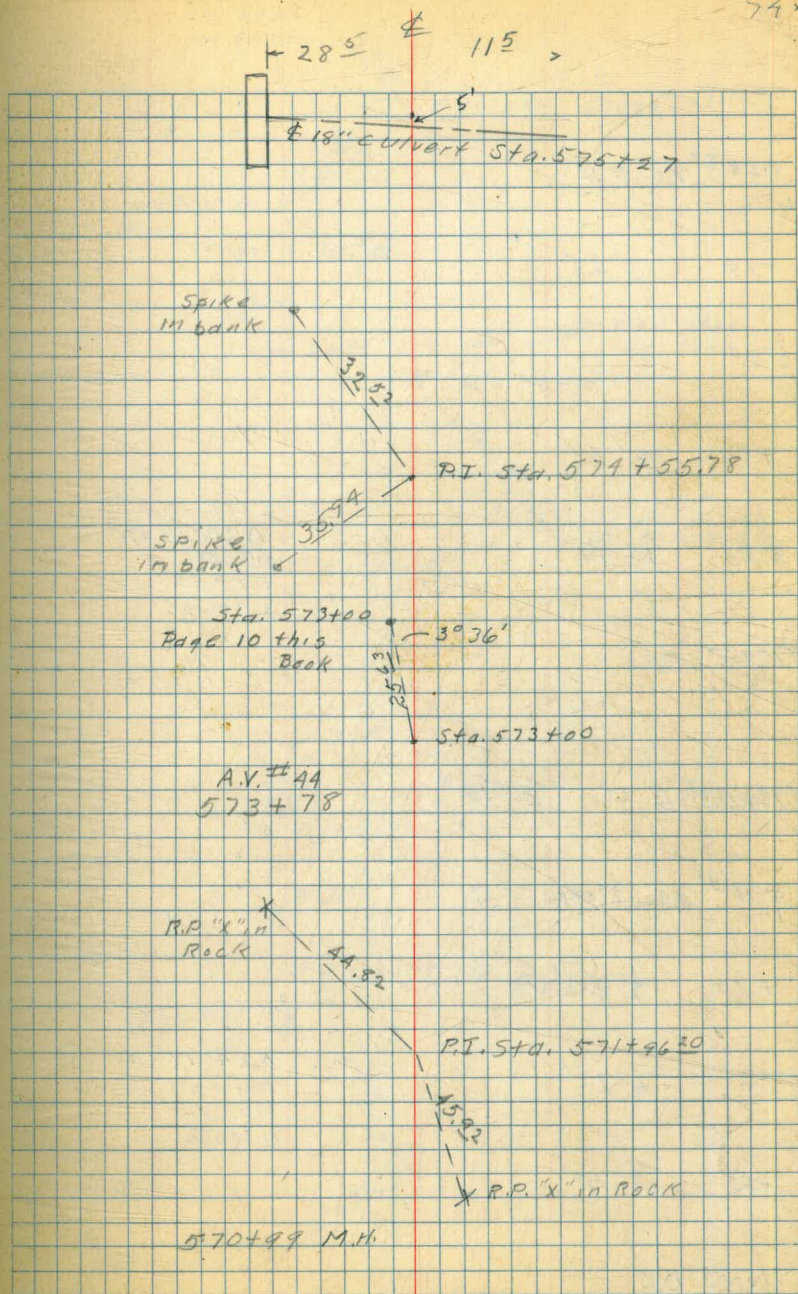
+50 2°05'

571+06<sup>20</sup> B.C.

Δ 33°55' RT.  
R 400'  
T 121.97'  
L 236.78'

Δ 16°06' Lt.  
R 600'  
T 84.86'  
L 168.60'

74x



+64<sup>66</sup> E.C. 11° 15'

+50 10° 25'

581 7° 33'

+50 4° 41'

588 1° 49'

Δ 22° 30' Pt.  
R 500'  
T 99.45  
L 196.35

579+68<sup>31</sup> D.C.

578+50<sup>2</sup> L Lt. 2° 19'

+91<sup>01</sup> E.C. 13° 08' 30"

+50 9° 32'

577 6° 21'

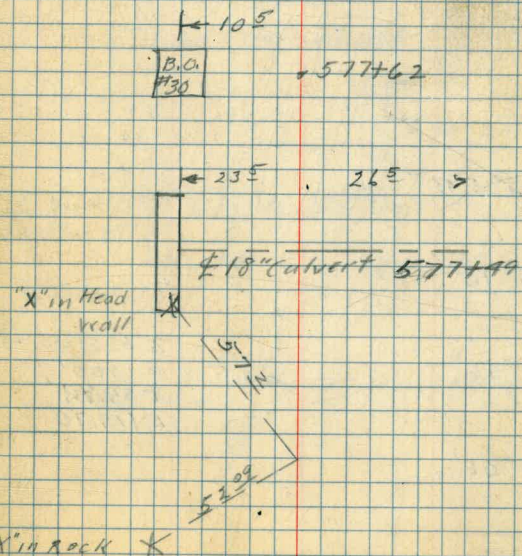
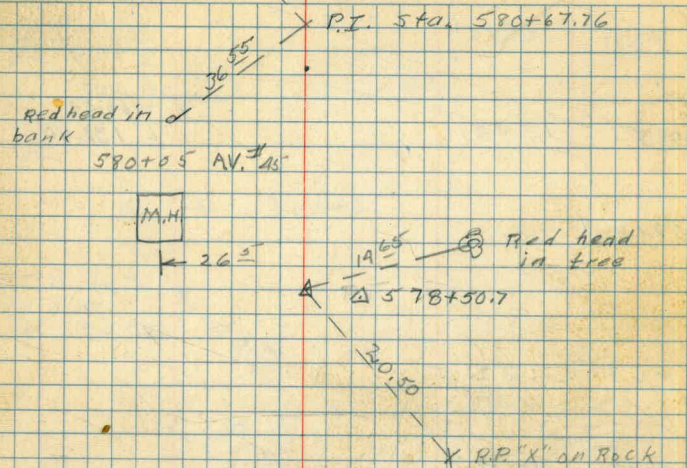
Δ 24° 17' Lt.  
R 450'  
T 96.81'  
L 190.72'

+50 3° 10'

576+00<sup>29</sup> D.C.

Red head  
in bank

75





+50 2°34'

595 1°08'

594+60.20 B.C.

+6324 E.C. 2°21'15"

+50 1°59'

588 0°33'

587+81.06 B.C.

+5770 E.C. 3°25'45"

+50 3°12'

583 1°46'

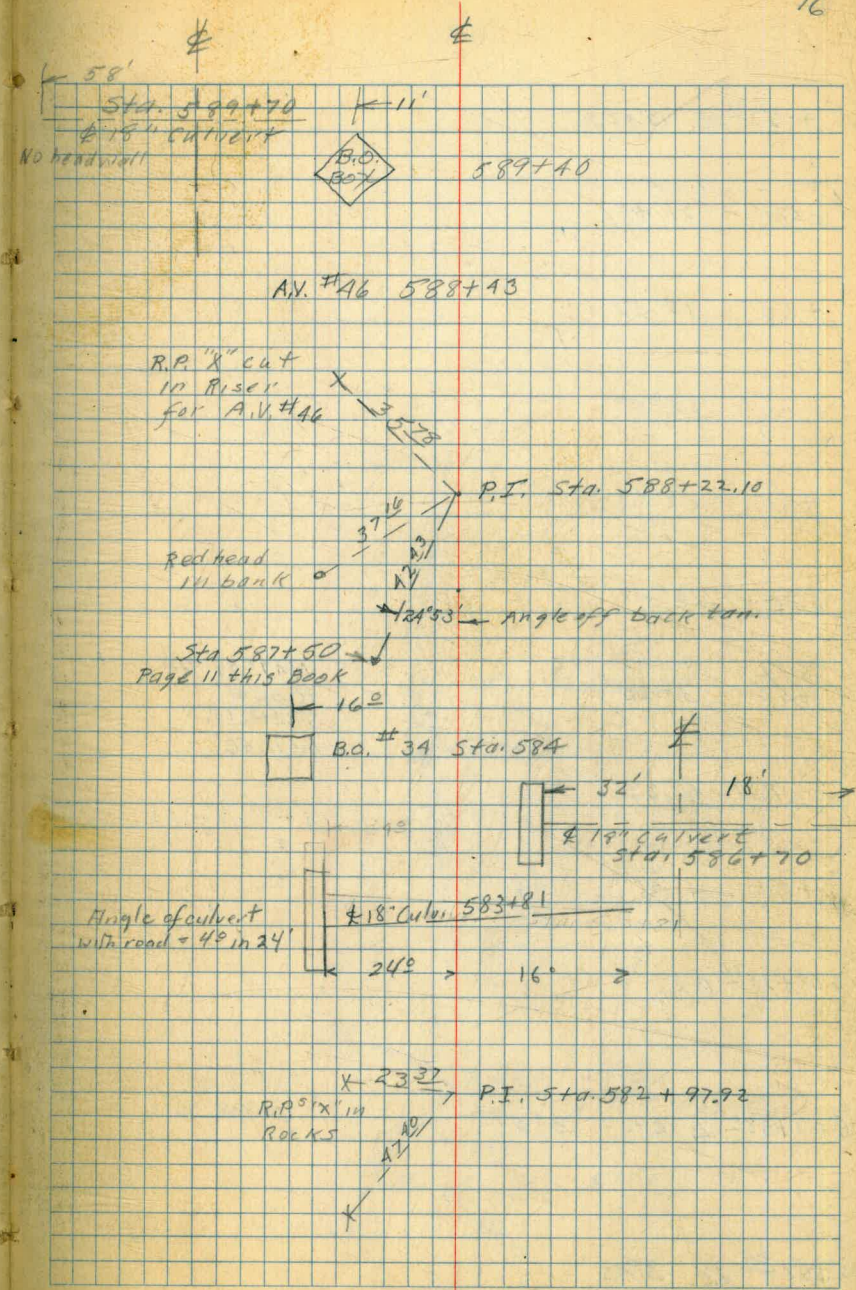
+50 0°21'

582+38.00 B.C.

A 7°30' RT.  
R 1000'  
T 65.54'  
L 130.90'

A 4°42'30" Lt.  
R 1000'  
T 41.04'  
L 82.18'

A 6°51'30" Lt.  
R 1000'  
T 59.92'  
L 119.70'



594+10.30  
65.54  
595+15.75

E

77.

+32<sup>LC</sup> EC. 23°34'30"

612 21°41'

+50 18°52'

611 16°00'

+50 13°09"

610 10°17'

+50 7°25'

Δ 47°09' RT  
R 500'  
T 218.18  
L 411.46'

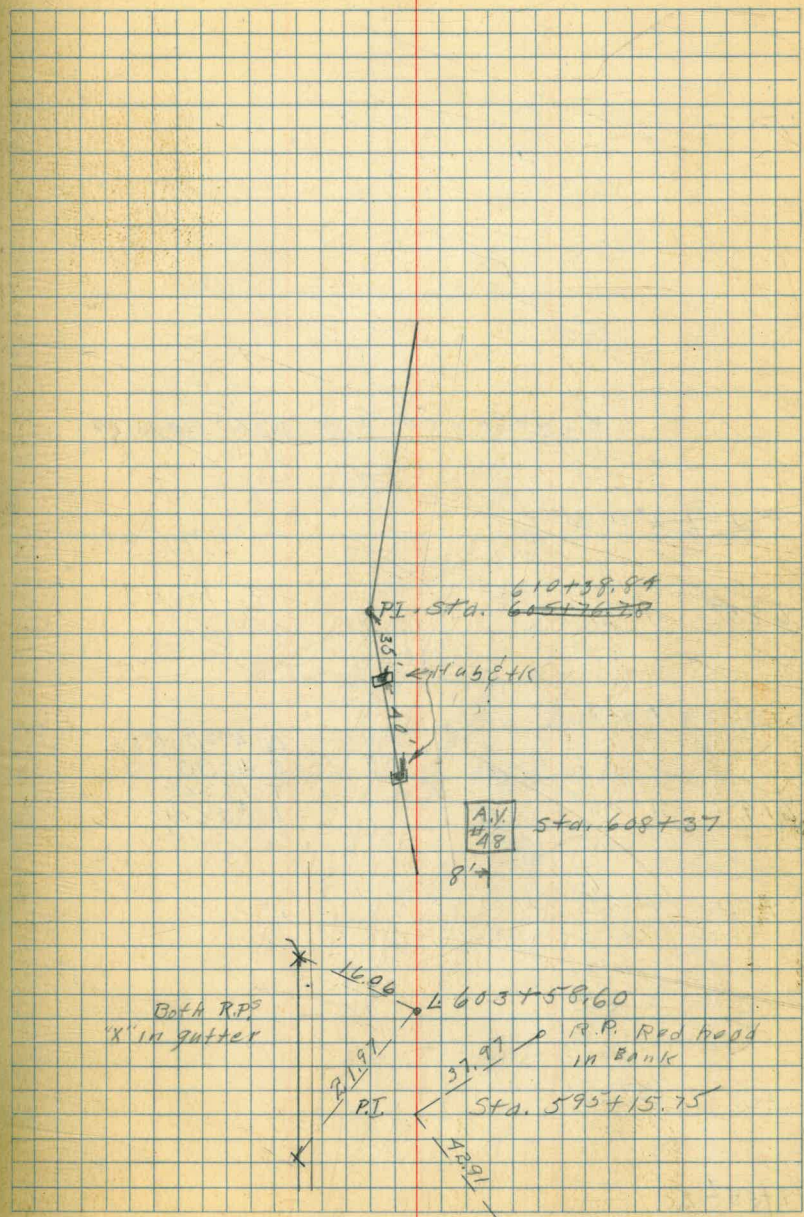
609 9°33"

+50 1°41'

608+20<sup>60</sup> B.C.

603+58<sup>60</sup> L. Lt. 2°59'

585+91<sup>09</sup> EC. 3°45'



Continued F.B. 596 page 19

+51<sup>22</sup> EC 2° 11' 30"

615 1° 19'

+50 1° 28'

Δ 4° 23' Pt.  
R 4000'  
T 153.08'  
L 306.01'

614 1° 06'

+50 0° 45'

613 0° 23'

+50 0° 02'

612+45<sup>21</sup> AC

5121  
Both AP's X in CURB  
P.I. STA 413+98.79  
5202

679+60.55 BC.

680+00 4° 14.45

5° 22.5

+50 9° 36.95

5° 22.5

681 14° 59.45

5° 22.5

+50 20° 21.95

5° 22.5

682 25° 44.45

10° 17.40

27° 01.85

39.75

6.45

19.725

15.780

23.670

254.525

24.0

14

6.45

3.225

3.00

2.250

6.45

1.2

1.290

6.45

7.74

679+61.79 BC.

680 4° 06.39

5° 22.5

+50 9° 28.89

5° 22.5

681 14° 51.39

5° 22.5

+50 20° 13.89

5° 22.5

682 25° 36.39

10° 25.14

27° 01.53

.0935291

.0938187

1873778

.0936739

2669

4183699

5620434

5620139

673478

2495909

434

49.918

679+60.55

1.24

679+61.79

2.514

682+13.19

6.45

13.2

129.0

1935

645

85.1

519+4865

61.19

519 0984

519+7070

26.33

97.03

382

645

191.0

1528

2292

246390

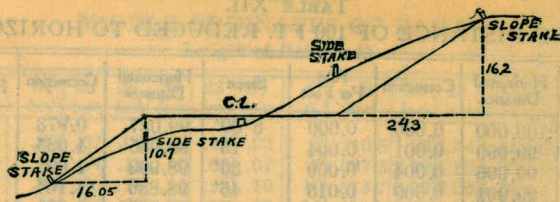
# IMPROVED TABLES AND INFORMATION

TABLE No. 2.

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  $L$  may be found by dividing tangent (or external), opposite  $L$  by given tangent (or external).

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



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	71.25	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

Computed by L. Leland Locke.

987+17  
 5'0879.62  
 115.62 66.56 53360.77  
 993.29 176.86  
 56833.51  
 534+96.98  
 1 54.65  
 651.63  
 583 57.62  
 1 19.70  
 37.92  
 55985.90  
 1 18.30  
 560409.29

582 38.22  
 1 19.70  
 583 57.92  
 30 59  
 7 25  
 230 39  
 993+57.1  
 42.2  
 993+99.3  
 987+17  
 682.3

667+59.89  
 682  
 674+91.89  
 678+89.10  
 534+93.43  
 1 35  
 534 94.75  
 303.66  
 53798.47  
 207.39  
 609  
 146.49  
 678+89.10  
 2 07.39  
 680+96.79 P.I.  
 1 35.94  
 679+60.55 BC.  
 2 51.40  
 682+119.5

17° 09' 30" 525 58.56  
 2 27 05' 30" 8° 35' 85.54  
 29 20 15" 39 15" 626 47.40  
 12 16 30 587 81.06  
 10 37 30 322 10  
 10 37 30 300 18.35  
 21 14 30 2 5826  
 15 302 73.60  
 10° 51' 8995 90  
 21 13 15 0886 29  
 0391 61  
 8° 41' 30" 4 21 45  
 9° 06' 15" 9 06 15  
 4 24 12  
 20 23 30 4 24 45  
 720 00  
 29 76  
 90 14  
 603 25 80 7 05  
 3966  
 60 36 59 2519 2.1  
 91 53 2558.86  
 13° 57' 30" 6 58 45  
 552 53 33  
 856 58 16  
 95 22  
 1 19 20  
 1 25 30 95 22  
 70 59 6130  
 12663 3844  
 197.21 2266  
 5541740  
 83 57 70  
 554+633 Shelton 519+1820  
 1.36 09  
 0.54 50  
 608,120 66  
 4 11 40  
 612+22,12  
 53 12 30  
 1 87.0  
 41 22  
 557 5257 48 30  
 556 5810 10 99  
 94.47  
 530+5706  
 8398  
 5104

558+85.90  
59 26  
48 16

**DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.**  
 Roadway 16 feet wide. Side Slopes 1 on 1½  
 For Single Track Embankment.

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

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