

284-11

(2)

EAST

WORLD BOOK

1938

W284H

85

~~FB # 283~~ 284-H

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**THE FREDERICK POST CO.**  
*ENGINEERING and DRAFTING SUPPLIES*

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CHICAGO, ILL.

JAN 14 1965

OTAY-SAN DIEGO 2ND MAIN PIPE LINE

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Construction Finish stakes	44-76
X sections Thru. Cut Sta. 775+50 to 779+64 (42.43)	

Line change at S. end  
of tunnel #1

B.M. 39 12.95 409.49 ✓ 390.54 ✓

145702.23 8.4 401.1 ✓

+09 8.6 400.9 ✓

+16 7.9 401.6 ✓

+38 10.8 398.7 ✓

145747.87 9.9 399.6 ✓

+56 2.0 407.5 ✓

T.P. 0.28 409.21 ✓

8.37 417.58

+73 6.1 411.5 ✓

+83 9.6 408.0 ✓

45+93.51 P.O.T. 3.7 413.9 ✓

145+86.11 P.T.

10/14/29  
plotted on m. sheet

10/14/29

Hill  
Elliot  
Simpson  
Walton

Air valve Sta. 144+14

259.03

0.56

259.59

3.59

359.03

356.51

2.52

1.92

Line change between tunnels

#1 + #2

B.M. *36	1304	409.04	396.00	✓
167+70.31		+2.2	411.2	✓
+81		+2.3	411.3	✓
168		+0.8	409.8	✓
+15		+1.0	410.0	✓
+34		1.1	407.9	✓
168+61.80		0.1	408.9	✓
+75		1.3	407.7	✓
+86		3.6	405.9	✓
+95		3.6	405.9	✓
169		4.5	404.5	✓
+13		4.6	404.4	✓
+25		3.6	405.4	✓
+50		3.5	405.5	✓
+75		3.7	405.3	✓
170		4.1	404.6	✓
+08		4.5	404.5	✓
+30.45		7.7	401.3	✓
+40		9.2	399.8	✓
+62		10.7	398.3	✓
+74		14.5	394.5	✓
+98		21.1	387.9	✓
171+09		15.2	393.8	✓
+15		15.2	393.8	✓
+25		11.8	397.2	✓

10/19/29

Parker  
Converse  
Hill  
Elliot  
Simpson  
Walton

2

Nail in N. Portal tunnel #1

{ 14' span

409.04

171+32

2.5 399.5 ✓

+50

8.7 400.3 ✓

+72

5.3 403.7 ✓

172+0245 P.O.T.

0.7 408.3 ✓ N.

171+9898 P.T.

✓ plotted ✓

Line change at N. Porto  
tunnel 23

RM. 43	11.31	406.22	✓	399.91	✓
T.P.			0.00	406.22	✓
	6.57	412.79	✓		
224+0675			1.7	411.1	✓
+25			1.7	408.4	✓
+42			1.5	408.3	✓
+57			6.6	406.2	✓
+67			7.5	405.3	✓
+85.00			9.0	403.8	✓
225+03			8.2	404.6	✓
+20			10.3	402.5	✓
+35			13.2	399.6	✓
+47			11.8	401.0	✓
+55			13.9	398.9	✓
225+6325 P.O.T.			13.8	399.0	✓ m
225+4486 P.T.					

10/15/29  
Platteau

10/14/29

4

Air-valve 226+67

Line change at S. Porta /  
tunnel " t

10/14/29

5

BM\*53 12.12 404.03 ✓ 391.91 ✓

286+22.7 10.0 394.0 ✓

+28 10.9 393.1 ✓

+37 7.9 396.1 ✓

+53 0.8 403.2 ✓

T.P. 0.15 403.88 ✓

12.73 416.61

+62 10.1 406.5 ✓

+67.50 8.9 407.7 ✓

+80 7.2 409.7 ✓

+96 4.6 412.0 ✓

287+129.5 P.O.T. 2.9 413.7 ✓

287+08.12 P.T.

Air valve 283+10

✓ w plotted m.

Line change at 505+ & 508+

10/11/29

6

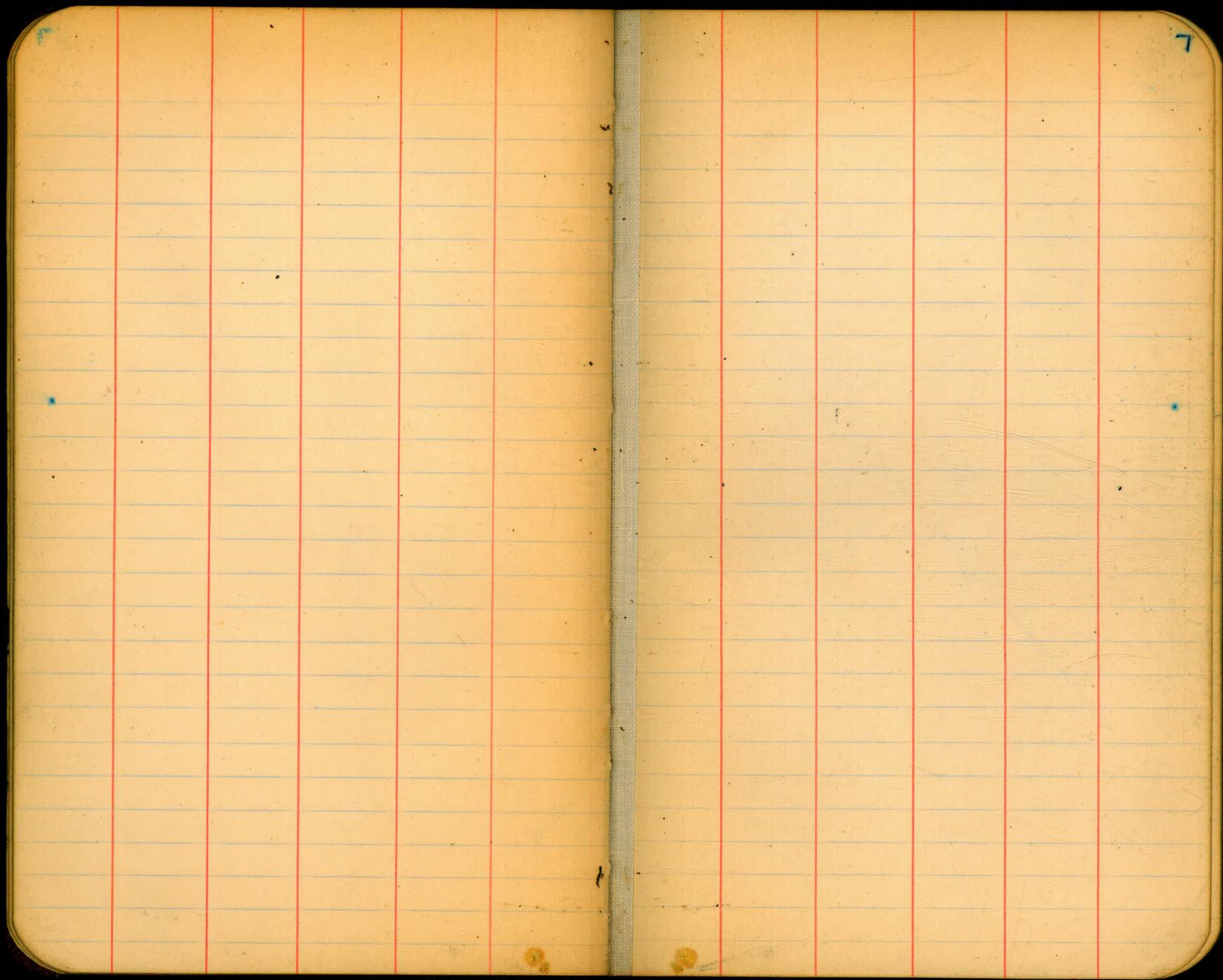
B.M. 81	0.68	233.90	233.22	✓
T.P.		12.89	221.07	✓
	1.62	222.69		
T.P.		10.64	212.05	✓
	1.59	213.64		

Air valve 511+50

505+2724 P.C.		2.9	210.7	✓
505+52.48 P.I.		5.0	208.6	✓
505+7772 =		5.5	208.1	✓
505+7446				

508+4705 P.C.		3.8	209.8	✓
170		3.2	210.4	✓
508+1932 P.I.		1.5	212.1	✓
509+10		1.8	211.8	✓
+39		1.6	212.0	✓
+61		0.4	213.2	✓
+80		0.9	212.7	✓
510+00		0.4	213.2	✓
510+4673 =		+2.5	216.1	✓
510+3649 (P.T. Ahead)				✓

plotted  
n



Hay-San Diego 2nd Main Pipe Line.  
Staking & Sectioning N. Portal tunnel '3

B.M.	12.72	107.63	394.91
		0.41	107.22
	12.52	119.74	Elev. Grade
224+18.66	↳ Portal	10.8	108.9 387.5
"	4.5 E (S.E. cor. of wall)	10.1	109.6 "
"	11.2 E	9.3	110.4 397.0
"	23.5 E	8.0	111.7
"	7.5 W (S.W. cor.)	10.6	109.1 387.5
"	11.2 W	9.2	110.5 397.0
"	17 W	8.0	111.7
"	2.5 W	8.7	111.0
"	6.6 S E	9.6	110.1 397.0
"	22 S E	6.5	113.2
"	4.5 W + 6.3 S	10.0	109.7 397.0
"	1.5 W + 22 S	7.4	112.3
"	4.5 E + 7.0 S	8.8	110.9 397.0
"	4.5 E + 22 S	6.0	113.7
"	↑ 10'	8.3	
"	22	5.4	
"	W 7	8.8	
"	16	7.9	

12/17/29  
Clear  
Parker Chief  
Hill notes  
Elliot &  
Simpson &  
Walton ch.

Air valve 226+64

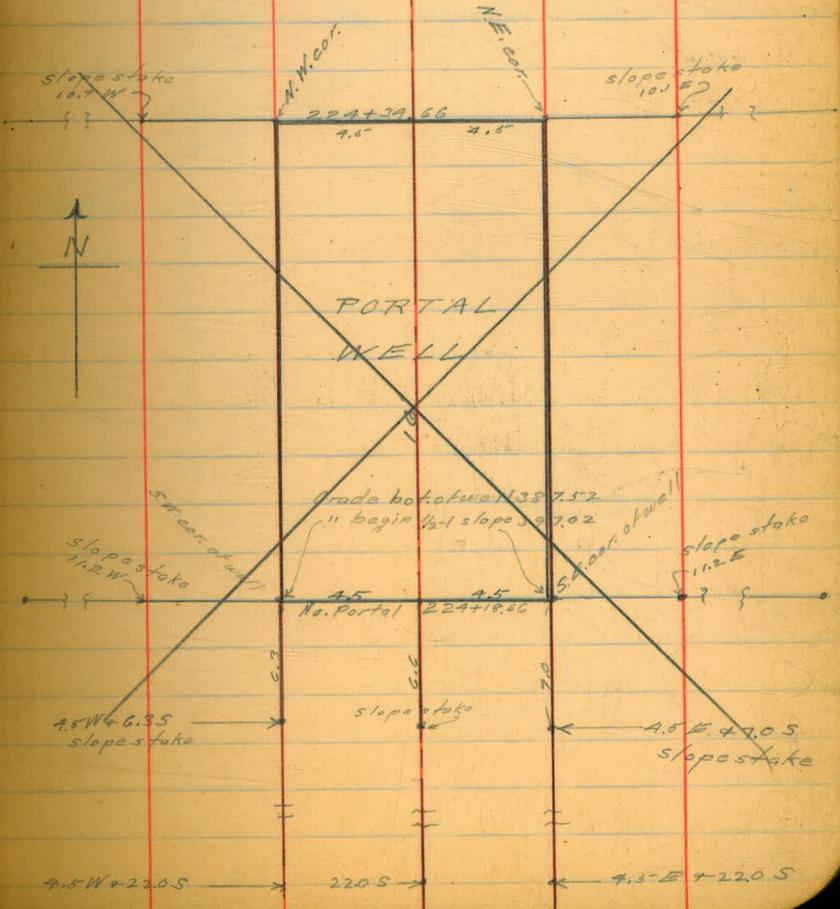
Cut	Pipeline grade	388.77
C. 21.8	Bottom of wall "	387.52
C. 22.1	Begin of 1/2-1 slope "	397.02
C. 13.4 slope stake		
C. 21.6	<u>SEE SKETCH - NEXT PAGE</u>	
C. 13.5 slope stake		
C. 13.1 slope stake		
C. 12.7 slope stake		
C. 13.9 slope stake		

Void

719.74

<del>224+37.6 E</del>	<del>11.9</del>	<del>407.8</del>	<del>387.0</del>	<del>C. 20.3</del>
<del>" 4.5 E (NE cor.)</del>	<del>12.5</del>	<del>407.2</del>	<del>"</del>	<del>C. 19.7</del>
<del>" 10.1 E</del>	<del>11.9</del>	<del>408.3</del>	<del>397.0</del>	<del>C 11.3</del>
<del>" 2.9 E</del>	<del>10.7</del>	<del>409.0</del>		
<del>" 4.5 W (NW cor.)</del>	<del>11.0</del>	<del>408.7</del>	<del>387.5</del>	<del>C 21.2</del>
<del>" 10.7 W</del>	<del>10.2</del>	<del>409.5</del>	<del>397.0</del>	<del>C 12.5</del>
<del>" 1.9 W</del>	<del>10.1</del>	<del>409.0</del>		

Void



12/17/29

Same crew

10

## Staking &amp; sectioning S. portal Tunnel

<del>BM</del>	<del>12.78</del>	<del>705.25</del>	<del>392.47</del>		
		0.31	404.94		
	12.60	717.54		Flav. Grains	cut
20540266 @ Sandotwell		8.8			
" 2.5 W		10.4	407.1	386.62	C 21.5
" 2.9 W		11.5	406.0	395.12	C 10.9
" 17 W		12.1			
" 4.5 E		7.6	409.9	386.62	C 24.3
" 13.5 E		4.5	413.0	395.12	C 17.9
" 2.5 E		2.1			

Pipe line grade 386.87

Bot. of well " 385.62

Begin. of 1/2 slope " 395.12

Void

Otago S.D. 2nd M. Pipe Line

12/18/29

Xsecs along Pipe line near Otago.

B.M. #11

269.49

6.18 275.67

41+68

41+76

+79

+90

42+00

+10

void.

Hill  
Elliot & notes  
Simpson &  
Haltouch

11

Nail in sill of trestle #6

+1.0 +1.0 +0.8 0.7  
10 0 7 9

0.6 1.1 2.1  
10 0 6

1.5 2.3 9.7 9.1  
10 0 8 17

3.5 3.9 9.0 9.2  
12 9 0 8

5.5 9.4 9.4 9.2  
10 4 0 10

9.4 9.4 9.4  
7 0 7

12/18/29 clear  
warm

Parker  
Hill - notes  
Elliot T.  
Simpson 9  
Walton ch.

12

Otay-San Diego 2nd Main Line Pipet,  
Cut stakes thru deep cut at sta. 74+

Left & Right

BM\*19

399.14

Air valve

2.87 402.01

Grade

74+45-

10.8

+75-

6.8

395.2 390.46

C.6.2 396.7  
5.5  
3 395.2 396.0  
6.8 6.0 C.5.5  
9

75+00

392.00

C.5.7 397.7  
4.3  
3 395.8 397.9  
6.2 4.1 C.5.9  
9

+50

392.50

C.5.2 397.7  
4.3  
3 396.3 399.5  
5.7 2.5 C.7.0  
9

76

"

C.7.2 399.1  
2.3  
3 396.3 100.6  
5.7 1.4 C.8.1  
9

+50

C.7.0 399.6  
2.5  
3 396.1 100.8  
5.9 1.2 C.8.3  
9

77

"

C.8.0 100.5  
1.5  
3 396.2 102.6  
5.8 10.6 C.10.1  
9

+25

392.12

C.6.6 398.7  
3.3  
3 396.2 398.4  
5.8 3.6 C.6.3  
9

77+50

389.21

C.8.3 397.5  
4.5  
3 395.8 392.8  
6.2 7.2 C.3.6  
9

12/19/29  
Clear  
&  
Warm

Parker  
H. H. notes  
Elliot. T.  
Simpson P  
Walton ch.

Left & Right

Otay-S.D. 2nd M. Pipe Line  
Xsec's & cutstakes in cut near  
Coronado Wye

B.M. 31		396.87
	3.13	400.00
128+75		390.45
128+85		
129+00		390.5
+10		
+25		
+50		
+75		390.65

Air valve

	96.0	93.5	93.5	
	6.0	6.5	6.5	
	7		7	
	92.8	92.7	91.7	93.8
	7.2	7.3	4.3	6.2
	7		7	10
				11
				14
	93.0	90.2	91.1	95.0
	7.0	2.8	5.9	5.0
	13	8	7	8
				10.9
	91.9	91.7	90.1	91.0
	5.1	5.3	2.6	2.0
	14	9	7	7
				91.3
				5.7
				9.2
	95.0	95.1		
	5.0	1.9	6.1	8.0
	9	3	3	5
				5.7
				7.9
	6.1	6.6	6.3	9.2
	9	7	2	2
				5.6
				7.3
	0.7	1.7	7.6	9.1
	7	3	1.5	1.5
				5.7
				3.6
				9.1
				6

393.9  
C. 100+33

(cont.)

400.00

Left  $\pm$  Right

14

130+00

Grade

390.7

401.0	400.3	96.4	91.7	91.8	3	PIPE	92.2	394.1
+1.0	+0.3	5.6	8.3	8.2	5.5		7.8	5.2 cut 3.7
7.5	4.5	3		1.5	3.5		6	9

+50

390.69

407.2	405.9	98.4	93.7	93.1	6	PIPE	94.0	96.5
+7.2	+5.9	1.6	6.3	6.2	5.5		6.0	3.5 cut 6.8
11	6	3		1.5	3.5		5	9

+68

390.69

408.4	407.8	98.3	93.0	91.0	7	PIPE	93.1	95.1
+7.4	+7.8	1.5	5.0	6.0	6.2		6.3	2.6 cut 4.3
15	8	3	1.5	1.5	1.5		4.5	9

+85

390.68

403.1	97.9	95.8	94.9	94.1	7	PIPE	97.9	97.9
+3.1	2.1	4.2	5.1	5.6	3.5		2.1	cut 7.2
12	7.5	3		3.5			9	

131

390.68

400.9	407.0	97.1	94.7	94.1	7	PIPE	97.6	97.6
+10.9	+7.0	2.6	5.3	5.9	5.6		2.4	cut 6.9
10.5	6.5	3		2	3.5		9	

+50

390.67

411.0	408.7	98.8	94.8	94.9	7	PIPE	98.9	98.9
+11.0	+8.7	1.8	7.2	5.1	5.1		2.0	cut 7.3
11	7.5	3		3.5			9	

132

390.66

411.1	407.0	99.6	96.8	95.1	7	PIPE	98.9	98.9
+11.1	+7.0	30.4	5.2	7.9	5.2		1.7	cut 7.6
11.5	7.5	3	2		3.5		9	

+24

390.65

cut 7.3	98.0	96.0	94.7	94.7	9	PIPE	98.0	98.0
2.0	7.0	7.0	5.3	5.3	3.5		2.0	cut 7.3
3	1.5	1.5		3.5			9	

+50

390.65

cut 4.7	95.4	93.4	93.4	95.0	97.7	9	cut 7.0
7.0	6.6	6.6	6.6	5.0	2.3		
3		2	2	3.5	9		

(cont.)

400.00

T.P.

5.61

394.39

9.06

403.45

133

390.61

+50

390.63

134

390.62

+50

390.61

+85

Left

&

Right

15

Cut 98.8  
 96.7  
 C.F. 1.9  
 2.5

95.3  
 8.2

91.1  
 8.8  
 2.5

95.0  
 8.5  
 3.5

94.9  
 7.6 cut 8.3  
 9

Cut 100.4  
 3.1  
 3

93.1  
 9.8

93.4  
 10.1  
 1.5

94.5 pip  
 2.0  
 3.5

93.9  
 2.6  
 6

95.9  
 2.6 cut 5.3  
 9

Cut 100.8  
 2.7  
 3

93.1  
 10.1

92.8  
 10.7  
 1.5

94.1 pip  
 2.1  
 3.5

93.0  
 1.2  
 6

94.9  
 2.6 cut 4.3  
 9

Cut 99.4  
 1.1  
 3

94.7  
 8.8

94.0 pip  
 2.8  
 3.5

93.3  
 10.2  
 6

95.0  
 8.5 cut 1.7  
 9

92.8  
10.7

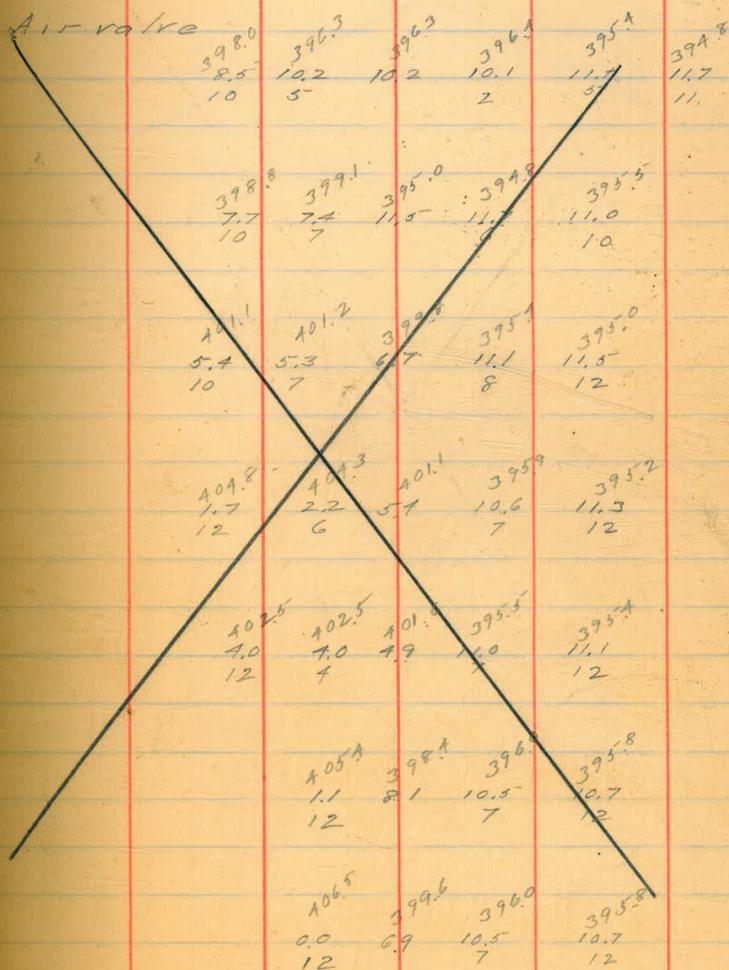
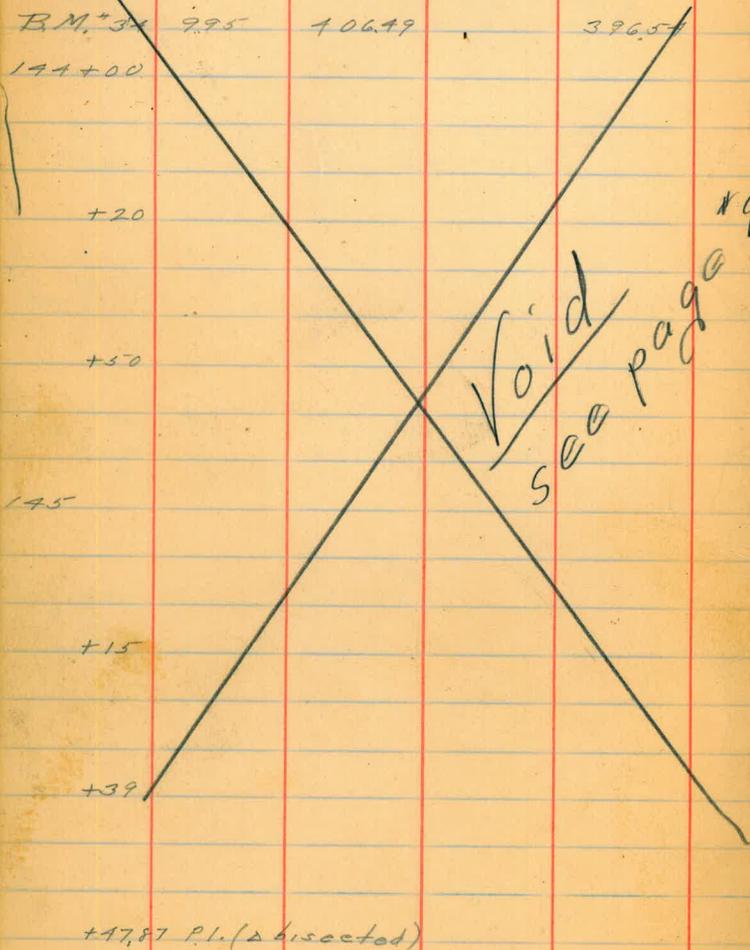
12/19/29 Clear same crew

16

Warm. Left & Right

Otago - S.D. end M. Pipe Line.

Xsecs on pipe line near S. portal tunnel



175+57

406.49

+72

Left

4

Right

17

<del>108.8</del>	<del>108.1</del>	<del>107.3</del>	<del>105.0</del>	<del>102.7</del>	<del>386.5</del>
<del>+3.3</del>	<del>+1.6</del>	<del>+0.8</del>	<del>1.5</del>	<del>3.8</del>	<del>100 toe</del>
<del>16</del>	<del>7</del>		<del>8</del>	<del>12</del>	<del>25</del>
<del>110.6</del>	<del>111.5</del>	<del>111.1</del>	<del>109.7</del>	<del>107.1</del>	
<del>+4.1</del>	<del>15.0</del>	<del>+4.9</del>	<del>+3.2</del>	<del>+1.2</del>	
<del>-17</del>	<del>6</del>		<del>13</del>	<del>17</del>	

12/19/29 Clear same row

Warm Lett.

±

Right

18

Otag S.D. 2nd M. pipe line:  
Xsec's near N. portal tunnel #1

B.M. 1.94 414.28 412.34

168+00

+15

+38

+61.80

+75

+86

169+05

Void see page #27

Iron pin R.P. S. Portal tunnel #2 (spots)

412.0 412.0 408.4 406.5  
2.3 4.3 5.9 7.8  
15 11 15

412.1 411.9 410.0 406.3 407.1 407.2  
2.2 2.7 4.3 8.0 7.2 7.1  
15 12 9 13 15

411.1 405.3 407.6 405.1 406.2 406.2  
3.2 5.5 6.7 8.2 8.1 8.1  
17 5 8 12 17

410.8 410.2 409.0 407.6 403.9 404.9  
3.5 7 5.3 6.7 10.7 8.7  
15 8 5 10 15

409.0 408.6 407.8 406.1 402.7 403.7  
3.6 5.7 6.5 7.6 11.6 10.6  
5 7 5 12 16

409.0 405.6 403.1 402.4  
5.3 8.7 11.2 10.9  
15 9 16

408.9 406.1 404.1 404.0 404.9 403.8  
5.7 7.9 10.2 10.3 9.7 10.5  
16 7 5 10 16

12/20/29  
Clear  
Warm  
Parker  
Elliot  
Simpson  
Walton ch  
Left

Right

Keasg N. Portal tunnel  
Void see page 35

B.M.	12.86	+07.77	394.91
224+45			
+65			
+77			
+85	apt. (dissected)		
+93			
225+10			
+36			

408.2	408.4	408.0	407.4	406.3	406.2	407.8
+0.4	+0.6	+0.2	0.3	1.5	1.6	0.0
15	8		3	5	8	15
405.8	405.9	405.1	404.5	403.7	404.6	
2.1	1.9	2.7	3.3	4.1	3.2	
16	8		9	13	16	
405.1	404.5	404.1	403.7	401.8		
2.7	2.3	3	3.6	6.0		
19	11	3	10	17		
405.6	404.8	403.8	400.0			
2.2	3.0	4.0	7.8			
18	6		19			
405.5	405.3	404.3	402.7	400.2	398.1	
2.3	2.5	3.5	5.1	7.6	3.7	
10	5		6	12	11	
403.5	404.4	404.1	403.4	403.5		
3.3	3.4	3.7	4.4	6.3		
15	9		6	12		
400.8	399.6	399.3				
2.0	8.2	8.5				
11		11				

225+47

407.77

+65

225+63.25

= Equation

225+44.86

225+54

+63

T.P.

12.86

397.91

3.38

598.29

225+75

+87

+97

226+02

Left

±

Right

20

400.1	401.0	399.8
7.1	6.8	8.0
13		14

398.2	398.1	398.1
9.6	9.1	9.1
14		13

399.9	399.8	398.8
11.0	7.9	9.7
17	9	14

391.8	390.1	392.9	395.0	398.9	397.1
16.0	17.7	14.9	12.8	8.9	10.7
24	21	18	13		13

398.4	401.8	394.5	395.2	394.3	393.8
6.0	6.0	3.8	3.1	3.0	4.6
15	11.5	5		3	14

391.1	387.2	391.5	387.6	387.1	392.0	393.9	391.0	391.5
7.2	11.1	7.0	10.7	10.0	6.3	4.4	4.3	6.8
10	8.8	3	3	1		4	7	10

393.5	388.2	386.9	391.3	391.3
4.8	10.1	12.0	7.0	7.0
9	5	3		10

394.8	386.2	387.9	388.2	391.2	391.5
4.1	12.1	10.4	70.1	7.1	6.8
10	4		2	3.5	8

398.29

~~226 + 10~~

~~+ 25~~

~~+ 39~~

~~+ 65~~

Left

~~2~~

Right

21

~~5.9 11.9 7.1 8.1 6.5~~

~~14 5 4 3 9~~

~~5.6 10.3 14.3 8.9 5.6~~

~~14 10 7 10~~

~~2.7 12.8 5.9 4.8~~

~~14 8 10~~

~~10.5 6.3 5.8 6.1~~

~~12 6 10~~



Otago - S.D. and M. Pipe L.  
 Xsecs & slope stakes S. Portal tunnel & outlet  
 staked at 1/2-1 slope from pipeline grade.  
 Trench Bottom = 7.0 ft.

B.M.	635-	402.89	396.54	Grade
142+45			386.55	
+75			386.33	
143			387.00	
+25			387.11	
+50			387.22	
+66			387.30	
+86			387.39	
144			387.45	

Void  
 See Book #286

	Left	±	Right
12/23/29 clear & warm	Hill notes Elliot & Simpson & Walton ch.		
398.6 4.0 14	393.2 2.7 6	390.0 12.9	391.5 14.3 4
395.1 7.8 8.2			392.1 10.8 6.7
			393.1 9.8 12
400.7 2.2 15	cut 10.5 397.3 5.6 9.0	391.6 10.3	392.6 10.3 6.7
			cut 6.3 392.8 10.1 12
401.4 1.5 15	cut 12.7 399.1 7.2 9.5	391.2 8.7 3	393.3 9.8 6.1
			393.5 9.4 12
400.9 2.0 15	cut 12.1 399.2 3.7 9.5	391.6 8.3	393.6 9.3 6.7
			cut 6.5 393.8 9.1 12
400.3 2.6 15	cut 12.7 399.9 3.8 9.8	391.4 8.5	393.9 9.0 6.8
			cut 6.7 394.1 8.8 12
398.9 4.0 15	cut 11.5 399.2 5.7 9.4	398.1 7.5 5	394.1 8.8 6.9
			cut 6.8 394.5 8.6 12
397.9 5.1 15	cut 10.0 397.4 5.5 8.5	397.2 5.7	396.9 6.0 2
			cut 7.6 395.0 7.9 7.9
			394.5 8.4 12
397.9 5.0 13	cut 10.7 397.0 5.0 8.7	396.3 6.6 5	396.3 6.6 2
			396.1 6.5 2
			395.1 7.5 5
			cut 7.8 395.8 7.6 10
			394.8 8.1 10

Left Right

402.89

144 + 1.8

387.03

399.9 +2.0 12	Cut 1.2 398.9 +2.0 9.2	399.0 3.9 7.5	395.2 2.7 1.5	391.8 8.1	394.8 2.1 7.1	+1.3 395.2 7.7 10
---------------------	---------------------------------	---------------------	---------------------	--------------	---------------------	----------------------------

+ 1.8

387.67

403.2 +0.3 14	Cut 1.3 401.0 1.9 10.1	401.1 1.8 7	399.6 3.3	395.3 7.6 7.3	+7.6 395.6 7.3 12
---------------------	---------------------------------	-------------------	--------------	---------------------	----------------------------

+ 7.7

387.80

405.2 +2.3 19	Cut 1.7 401.9 1.9 12.0	402.6 0.3 7	401.8 1.1 2	397.8 3.1	396.9 7.0 7.3	+8.1 395.7 7.2 14
---------------------	---------------------------------	-------------------	-------------------	--------------	---------------------	----------------------------

145-

387.90

405.3 +2.1 18	Cut 1.7 401.9 +2.0 12.0	404.7 +1.8 7	402.9 0.0 2	401.1 1.8	395.8 7.1 7.5	+7.9 395.3 7.6 14
---------------------	----------------------------------	--------------------	-------------------	--------------	---------------------	----------------------------

+ 1.6

387.97

402.9 0.0 14	Cut 1.3 402.3 0.0 10.6	402.3 0.0 4	401.6 1.3	395.5 2.4 7.3	+7.5 395.5 7.4 15
--------------------	---------------------------------	-------------------	--------------	---------------------	----------------------------

+ 38.37

388.07

410.2 +7.3 20	Cut 1.2 407.8 +4.9 13.2	403.3 +0.4 7	398.8 4.1	396.1 6.8 7.5	+8.0 395.8 7.1 17
---------------------	----------------------------------	--------------------	--------------	---------------------	----------------------------

+ 17.87

388.11

99.6  
3.3

0.38 402.51

12.89 415.40

145 + 57

388.18

410.9 +5 21	Cut 2.1 409.7 5.7 14.2	407.7 7.7	405.3 10.1 6.8	402.2 13.2 10.5	+1.9 397.1 18.3 18
-------------------	---------------------------------	--------------	----------------------	-----------------------	-----------------------------

145+66 715.40

145+73

145+83.5  
145+93.5  
145+86.11

145+89

145+89 3.5E + 5.0N +1.3 416.7

" 3.5E + 10' N +2.4 417.8

" 3.5E + 19.7N +5.4 420.8

" 3.5E + 30' N +6.6 422.0

" 3.5W + 10' N +3.2 418.6

" 3.5W + 20' N +6.1 421.5

" 3.5W + 30' N +8.5 423.9

145+89-3.5E-45° (see sketch - opp. page)

13.0 +1.0 416.7

30.0 +2.9 418.3

145+89-3.5W-76°

8.0 +3.4 418.8

20.0 +6.3 421.7

30.0 +8.0 423.4

388.20

388.23

388.24

388.26

Left

±

Right

25

413.9 412.6 411.9 409.1 408.4 405.1 402.0  
2.1 2.9 3.5 5.7 7.0 10.3 13.4  
20 18.7 8.5 12.0 12.0 20

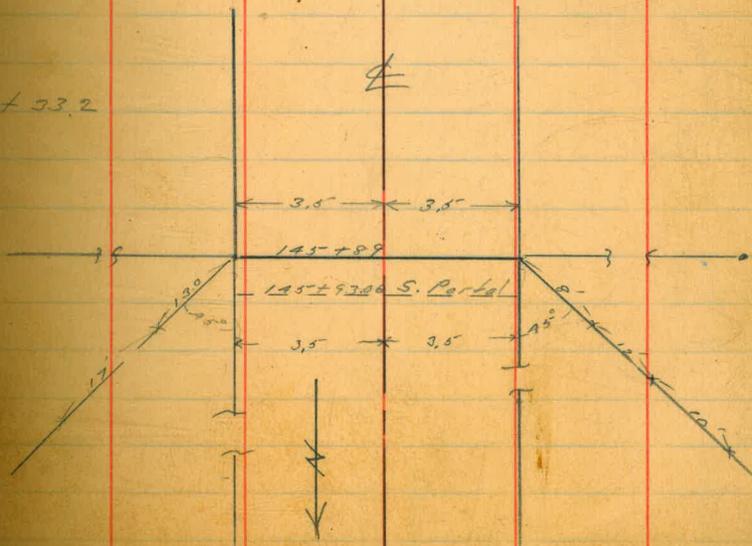
410.9 410.4 411.5 411.5 411.0 408.9 407.8 402.8  
4.5 5.0 3.9 3.9 4.4 6.5 7.6 12.6  
23 19.6 4 3 12 13.3 20

416.1 413.4 409.0 408.0 407.8 409.4 409.6  
0.0 2.0 6.4 7.4 7.6 6.0 5.8  
27 16.1 4 4 4 14.1 19

420.4 419.8 417.8 415.8 413.9 407.8 405.3  
15.0 14.4 12.4 10.4 1.3 7.6 10.1  
27 19.2 3.5 3.5 3.5 13.3 18.5

Cut 32.5

Cut 33.2



26



+15.79

Left

+

Right

168+75

390.37

106	109.5	109.7	109.5	106.6	109.1	102.9	107.7
7.9	60	61	70	8.9	11.7	12.6	11.1
21	14	13.0	9	5	10.3	13	18

+87

390.39

109.7	108.6	107.5	107.5	107.1	107.1	100.0	107.7
5.8	6.9	8.0	10.0	12.7	12.7	12.5	11.1
19	12.6	7	8	9	7.8	17	18

169+06

390.38

109.0	108.6	109.3	109.2	104.1	105.0	105.6	107.7
7.5	8.7	11.2	11.3	11.4	10.5	12.9	11.1
18	6	2	4	4	10.8	26	18

+25

390.38

106.0	106.9	109.9	105.5	105.7	106.2	106.5	107.7
9.5	10.2	10.6	10.0	9.8	9.3	8.7	11.1
19	11.0	3	9	9	11.4	18	18

+50

390.37

105.1	105.2	109.7	105.6	107.7	105.6	105.6	107.7
12.4	10.3	11.1	9.9	11.1	11.9	11.9	11.1
19	10.9	10.5	16	10.5	16	16	18

+75

390.37

104.5	107.1	107.1	107.1	107.5	107.9	107.9	107.7
11.0	10.6	10.1	10.1	10.2	12.6	12.6	11.1
19	10.7	10.9	18	18	18	18	18

170+0.7

390.36

102.5	103.7	104.6	106.1	107.1	107.1	107.8	107.7
13.0	11.8	10.9	10.4	10.4	10.4	10.7	11.1
17	10.2	7	10.9	10.9	17.0	17.0	18

+18

390.36

107.6	107.6	102.5	104.9	105.1	105.2	105.2	107.7
17.9	16.7	13.0	10.6	10.6	10.3	10.3	11.1
18	7.7	6	10.9	10.9	15	15	18

T.P.

12.18 403.31

0.09 403.40

170+38	703.40	Grade	390.35
+72			390.35
+87			390.34
+99			390.34
171+07			390.33
+14			390.33
+24			390.32
+40			390.32
T.P.	0.28	403.12	
+66	11.78	414.90	390.31

Left

4

Right

390.35	390.35	390.34	390.34	390.33	390.33	390.32	390.32	390.31
1.5	1.2	1.8	1.5	10.1	9.7	2.1	3.7	11.8
14	7.9	10	7	10	10	15	14	17
9.3979	9.3972	9.3976	9.3978	9.3953	9.3939	9.3927	9.3928	9.4031
0.19	0.19	0.21	0.21	0.20	0.26	0.10	0.25	0.130
9.4004	9.3971	9.3943	9.3880	9.3937	9.3921	9.3927	9.3928	9.4032
0	0	1	1	10.0	3	7	6	11.7
2.7010	2.7010	2.7010	2.7010	18.0	8.3	9.0	9.3	11.0
5.1	5.1	5.7	5.7	5.1	6.0	1.0	3.5	5
2.7010	2.7010	2.7010	2.7010	10.0	7.7	1.0	3.4	10.4
9.1	9.1	10	10	10	10	1.0	1.0	10.4
11.0	11.0	12	12	10	10	1.0	1.0	10.4
1701.8	1701.8	1701.8	1701.8	10.0	10.0	1.0	1.0	11.0
16	16	16	16	10	10	1.0	1.0	17
1701.8	1701.8	1701.8	1701.8	10.0	10.0	1.0	1.0	11.0
16	16	16	16	10	10	1.0	1.0	17

11490

171+81

390.31

172+04.9

390.30

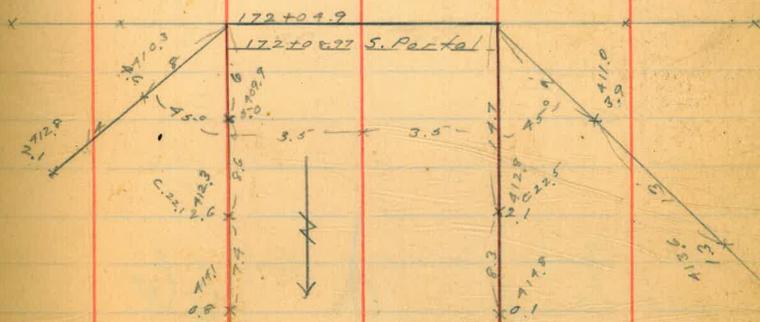
172+08.97 S. Portal Tunnel #2  
172+05.5

Left  $\Delta$  Right

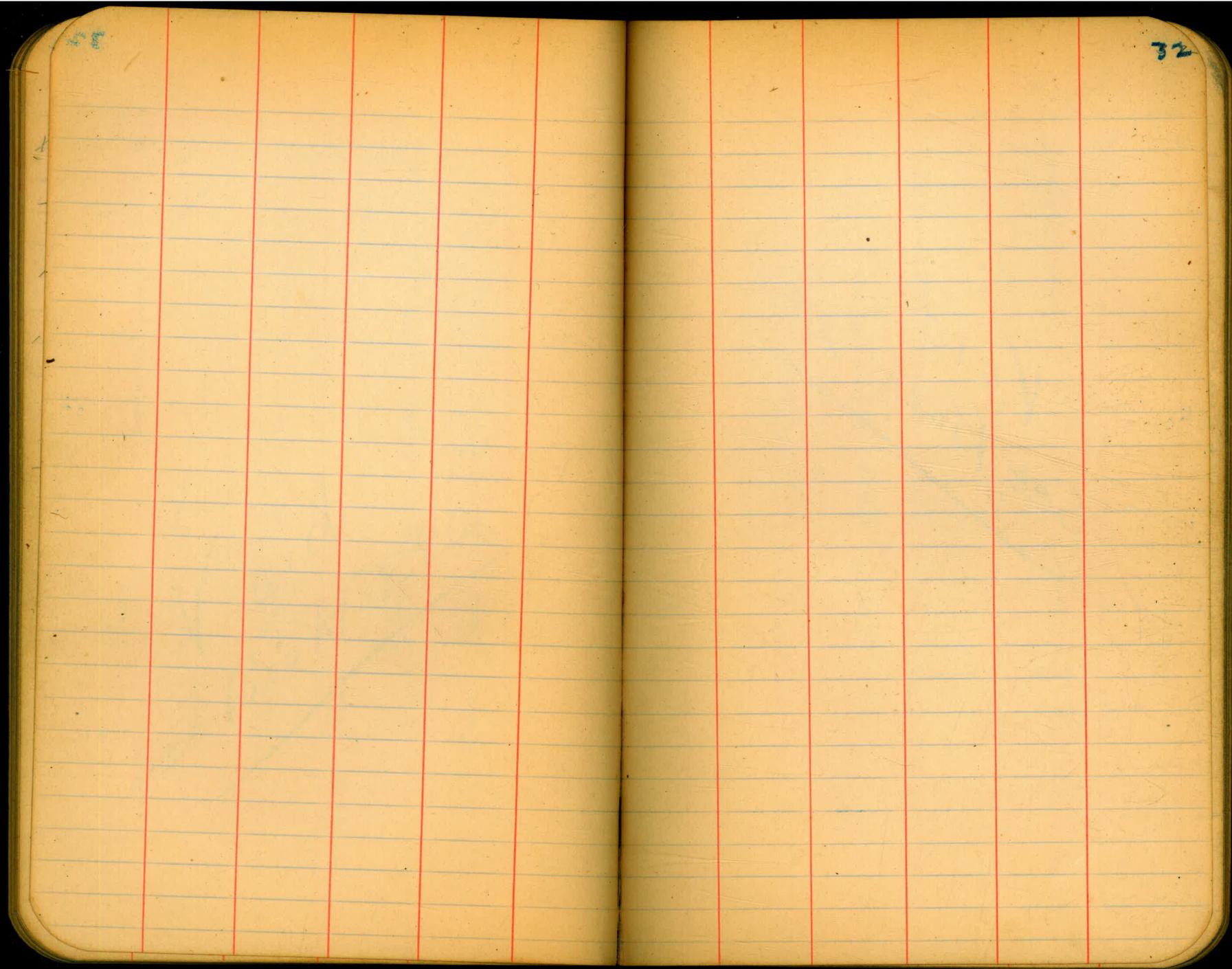
30

7007	7053	7050	7050
9.8	9.6	9.9	9.9
15	11.0	10.9	13

7095	7095	7085	7085	7094	7095
5.1	5.7	5.1	5.1	5.5	5.1
20	12.1	3.5	3.5	13.0	19







31

32

Clear  
Warm

12/26/29 some crew

Left

⊕

Right

Xsecs at S. Portal of tunnel #3

B.M. #90 9.37 401.84 392.77

204

+17

+34

+50

+60

T.P.

0.31 401.53

+90

12.91 414.44

+97

205+14.6

Void  
See Book #287

Grade

382.00

382.00

382.9

383.9

384.0

386.0

386.7

386.9

Air valve

391.0  
10.8  
C. 9.0

11.7

12.6

11.3  
11.9  
C. 7.9

391.5

10.7  
11

390.9  
10.9  
C. 8.9

8.0

390.0

11.8  
4

390.6

11.2

390.8  
11.0  
C. 8.8

7.9

390.8

11.0  
10

392.2

8.6  
13

391.7  
8.7  
C. 1.08

8.9

391.5

7.3

391.3

13.5

391.8  
10.0  
C. 13.9

10.8

412.0

12.4  
20

409.7  
9.7  
C. 0.8

12.7

406.7

1.0

404.0

7.4

407.6  
14.2  
C. 2.5

14.2

408.8

8.6  
2.2

409.0

11.4  
22

406.1  
8.3  
C. 1.9

13.2

406.4

5.0

402.9

7.5

410.7  
3.7  
C. 2.0

15.8

412.0

2.1  
22

405.8

8.6  
2.6

406.5  
7.8  
C. 1.9

13.3

411.0

3.7  
3.5

412.3

2.1

413.5

0.9  
3.5

415.2

10.8  
10

415.8

1.4  
18.0

417.0

2.6  
2.6





(cont.)

Left

d

Right

36

405.09

Grade

402.8  
2.3  
2.0

403.8  
1.3  
12.3

404.3  
0.5  
9

404.0  
1.1

404.4  
1.7  
6

401.0  
3.5  
11.2

402.1  
1.0  
18.0

225+10

386.3

+35

385.5

400.3  
1.2

400.1  
5.0  
10.8

404.6  
5.4

404.3  
1.8  
10.4

401.0  
13.8  
1.3988

400.0  
1.8

+47

385.1

400.3  
1.6

400.6  
4.5  
11.2

401.0  
1.1

400.1  
7.0

400.1  
5.0  
11.0

400.0  
5.1  
15

+56

384.8

398.1  
7.0  
14

398.4  
0.7  
10.3

398.4  
3

398.9  
6.2  
11.0

398.9  
6.2  
13

225+63.25

225+44.80

+54

384.3

396.0  
8.5  
19

396.4  
5.4  
11.2

398.8  
8

398.5  
6.6  
10.6

398.5  
6.6  
16

398.5  
6.6

+63

384.0

395.2  
9.9  
12

395.2  
9.9  
9.6

398.9  
6.2  
3

398.8  
6.3

397.5  
7.6  
5

397.0  
5.1  
10.0

396.5  
8.6  
14

+82

383.6

387.0  
17.8  
13

391.5  
13.6  
9.6

392.1  
16.0  
6.2

392.1  
13.0  
5

392.4  
10.7

391.1  
10.0  
6

391.6  
11.5  
8.5

391.8  
13.3  
12

	Grade	Elev
221+22.8	388.8	708.6

221+12	388.8	710.6
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Left		Right	
C 221	+19.9	+19.8	+20.2
<u>14.5</u>	<u>3.8</u>		<u>3.5</u>
			C 21.2
			<u>14.1</u>

C 226	+21.1	+21.8	+22.2
<u>14.8</u>	<u>3.5</u>		<u>3.5</u>
			C 23.0
			<u>15.0</u>









O.R. to S.D. 2<sup>nd</sup> Main Pipeline

X sections Thru. cut sta. 775+50 to 779+64

Sections Taken After & Has Been Benched  
For Trenching Machine

B.M. # 779+64 372.82 on Air

7.49 380.31

779+64 <sup>94</sup>

779+34 <sup>91</sup>

779+00

778+75

778+50

778+25

778+00 ✓

777+75

777+50

777+25

777+00

Additional Ydg.

5/13/30

Simpson

Super

Remmen

Clear and Warm. 4.6

42

Lf.	℄	Rt.	H.I.
Valve Lf Sta. 776+18			380.31
$\frac{17^2}{30^2}$	$\frac{14^5}{23^2}$	$\frac{14^0}{13^2}$	$\frac{15^2}{10^2}$
$\frac{11^9}{4^5}$	11.7	$\frac{11^6}{4^5}$	$\frac{8^2}{5^4}$
$\frac{7^6}{10^2}$	$\frac{7^6}{10^2}$	$\frac{3^4}{30^2}$	
$\frac{16^4}{30^2}$	$\frac{13^3}{20^2}$	$\frac{12^8}{11^2}$	$\frac{11^3}{5^5}$
11.1	$\frac{10^7}{4^2}$	$\frac{6^4}{5^5}$	$\frac{5^6}{10^2}$
$\frac{2^1}{30^2}$			
$\frac{18^6}{30^2}$	$\frac{15^5}{21^2}$	$\frac{12^2}{8^2}$	12.0
$\frac{12^2}{5^5}$	$\frac{6^2}{10^2}$	$\frac{2^3}{30^2}$	
$\frac{19^0}{30^2}$	$\frac{14^5}{12^5}$	$\frac{15^2}{9^2}$	$\frac{13^0}{4^2}$
12.8	$\frac{12^7}{6^2}$	$\frac{8^2}{7^2}$	$\frac{2^4}{30^2}$
$\frac{18^5}{30^2}$	$\frac{14^2}{15^2}$	$\frac{13^5}{9^5}$	$\frac{12^7}{3^5}$
36.9	$\frac{12^4}{6^2}$	$\frac{9^2}{8^5}$	$\frac{3^3}{30^2}$
$\frac{16^8}{30^2}$	$\frac{12^7}{14^2}$	$\frac{11^4}{5^5}$	368.9
11.9	$\frac{11^3}{5^2}$	$\frac{7^4}{8^2}$	$\frac{3^5}{30^2}$
$\frac{11^5}{30^2}$	$\frac{11^3}{7^5}$	$\frac{9^7}{5^2}$	310.6
9.7	$\frac{9^7}{5^2}$	$\frac{7^2}{6^5}$	$\frac{3^4}{30^2}$
$\frac{7^2}{30^2}$	$\frac{8^0}{26^2}$	$\frac{11^2}{14^2}$	$\frac{8^2}{6^2}$
372.3	8.0	$\frac{7^0}{4^2}$	$\frac{5^6}{7^5}$
$\frac{2^8}{30^2}$			
$\frac{5^5}{30^2}$	$\frac{6^3}{22^5}$	$\frac{10^2}{14^5}$	$\frac{7^2}{6^5}$
370.1	7.2	$\frac{7^2}{7^5}$	$\frac{2^3}{7^5}$
$\frac{1^2}{18^2}$	$\frac{1^2}{30^2}$		
$\frac{3^7}{30^2}$	$\frac{4^3}{35^2}$	$\frac{9^5}{18^2}$	$\frac{6^7}{5^5}$
373.5	6.8	$\frac{6^3}{4^2}$	$\frac{0^2}{7^2}$
$\frac{0^3}{16^2}$	$\frac{0^3}{21^2}$	$\frac{0^8}{30^2}$	
$\frac{2^0}{30^2}$	$\frac{3^3}{23^5}$	$\frac{8^4}{18^2}$	$\frac{6^6}{5^2}$
375.5	6.8	$\frac{1^0}{8^2}$	$\frac{1^0}{5^2}$
$\frac{1^0}{17^5}$	$\frac{1^0}{23^2}$	$\frac{1^0}{30^2}$	

T.P. 380.31  
 6.76 373.55

7.08 382.63

776+75

776+50

776+25

776+00

775+50

B.M.#

775+00

Additional Yag

9.82

372.81 = check on B.M. Top of A.V. Lt sta. 776+18

L. C. R.H.

H.I.  
382.63

$\frac{2.1}{30.0}$	$\frac{10.9}{14.0}$	$\frac{8.9}{7.0}$	$373.5$	$\frac{9.3}{5.5}$	$\frac{3.0}{9.0}$	$\frac{2.2}{20.0}$	$\frac{2.7}{24.0}$	$\frac{2.1}{30.0}$
--------------------	---------------------	-------------------	---------	-------------------	-------------------	--------------------	--------------------	--------------------

$\frac{2.1}{30.0}$	$\frac{4.5}{22.0}$	$\frac{11.2}{13.0}$	$\frac{9.0}{8.0}$	$373.8$	$\frac{8.8}{8.5}$	$\frac{2.9}{9.0}$	$\frac{2.0}{19.0}$	$\frac{2.8}{26.0}$	$\frac{2.4}{30.0}$
--------------------	--------------------	---------------------	-------------------	---------	-------------------	-------------------	--------------------	--------------------	--------------------

$\frac{2.6}{30.0}$	$\frac{4.8}{19.5}$	$\frac{11.7}{10.5}$	$\frac{9.1}{3.0}$	$373.3$	$\frac{9.2}{6.0}$	$\frac{3.0}{9.5}$	$\frac{2.6}{21.0}$	$\frac{3.0}{27.0}$	$\frac{2.9}{30.0}$
--------------------	--------------------	---------------------	-------------------	---------	-------------------	-------------------	--------------------	--------------------	--------------------

$\frac{4.1}{30.0}$	$\frac{6.0}{20.0}$	$\frac{11.6}{13.5}$	$\frac{9.8}{6.0}$	$372.8$	$\frac{9.7}{4.3}$	$\frac{3.1}{8.5}$	$\frac{3.3}{19.0}$	$\frac{4.0}{24.0}$	$\frac{4.0}{30.0}$
--------------------	--------------------	---------------------	-------------------	---------	-------------------	-------------------	--------------------	--------------------	--------------------

$\frac{6.3}{30.0}$	$\frac{7.7}{18.0}$	$\frac{12.5}{12.0}$	$\frac{11.3}{7.0}$	$370.1$	$\frac{11.5}{4.0}$	$\frac{7.4}{10.0}$	$\frac{7.1}{17.0}$	$\frac{7.6}{24.0}$	$\frac{7.3}{30.0}$
--------------------	--------------------	---------------------	--------------------	---------	--------------------	--------------------	--------------------	--------------------	--------------------

Finish Grade stakes.

see Book #1

734+25 ✓

7.64 341.84

734+00 ✓

5.47 344.01

733+75 ✓

3.31 346.17

733+50 ✓

1.15 348.33

1.02 349.48

12.91 348.46

733+25 ✓

10.87 350.50

732+89<sup>88</sup> ✓

5.74 355.63

732+59<sup>97</sup> ✓

3.01

8.657%  
-14.61%  
via curve  
-1.129%

361.37

3.40 357.97

3.82

368.41

358.36 Grade 14.6  
364.57 = B.M. on A.V.

732+25<sup>58</sup> ✓

10.05 358.36

6/11/30  
Simpson  
Soper  
Remittien  
Sta. 732+25

		368.41		
732+00			9.77	358.64
731+50			9.22	359.19
731+00			8.67	359.74
730+50 ✓	-1.10%		8.11	360.30 ✓
+29 <sup>36</sup> ✓			7.87	360.54
730+00 ✓	9.63	370.18	T.P. 7.86	360.55
			9.32	360.86
729+75			9.04	361.14
729+50 ✓	*		8.77	361.41 ✓
729+25 ✓			8.63	361.55 ✓
729+00			8.48	361.70 ✓
728+75 ✓	-0.59%		8.33	361.85
728+50 ✓	*		8.18	362.00
728+25	-1.00%			363.00
728+00		T.P.	6.18	364.00

D = 10'

732+25.58	P.C.
732+59 <sup>97</sup>	1°43.2
732+89 <sup>88</sup>	3°12.9
733+25	- 4°58.3 P.O.C.
733+50	- 6°13.3
733+75	- 7°28.3
734+00	- 8°43.3 P.O.C.
734+25	- 9°58.3
734+50	- 11°13.3
734+75	- 12°28.3
735+00	- 13°43.3
735+35 <sup>12</sup>	- 15°28.7
735+43 <sup>58</sup>	P.T. - 15°54'

	10.92	374.92	364.00
727+50 ✓	*		8.72 366.0
727+25 +21.1			8.83 366.08 366.09
727+00			8.75 366.16
726+94.6			8.75 366.17
726+67 <sup>5</sup>			8.65 366.27
726+50			8.60 366.32
+35			366.37
726+00			8.44 366.48
725+50 ✓			8.28 366.64
+19 <sup>54</sup>			8.15 366.77
725+00			8.12 366.80
+75			8.04 366.88
724+50 ✓	3.97	375.44	7.96 366.96 ✓ 371.47 = B. M. A. V.
+25			8.40 367.04
724+00			8.33 367.14
723+90 <sup>03</sup> ✓	*		8.29 367.15

↑  
6/3/30  
Simpson  
so per  
Remmen

6/4/30  
Simpson  
so per  
Remmen  
↓

6/7/30  
Simpson  
Sofer  
Remmen.

2.27 369.23

366.96 = Grade Trub  
5% 721+50

723+60<sup>09</sup>

\*

3.98 365.25 set 1<sup>st</sup> cut in  
2.98 366.25 => Bottom

723+14<sup>90</sup>

\*

9.88 359.35  
5.88 363.35 = Cut 4<sup>th</sup> set in  
Side of Bank

722+84<sup>97</sup>

\*

11.83 357.40  
6.83 362.40 = Cut 5<sup>th</sup> set in  
Side of Bank

Trench 4<sup>th</sup> High

722+61<sup>46</sup>

\*

11.83 357.40  
9.83 359.40 = Cut 2<sup>nd</sup> set in  
Side of Bank

Trench 1<sup>st</sup> High

722+31<sup>52</sup>

\*

0.41 T.F.  
356.84

12.80 356.43  
1.39 355.45 Set to grade  
in side of Bank

Trench 2<sup>nd</sup> Low

722+00

5.51 351.33 set to grade  
in side of Bank

Trench 2<sup>nd</sup> Low

721+75

348.06

721+50

\*

12.04 344.80 set to grade

0.09 T.F.  
344.16

12.77 344.07

721+25

342.00

721+00 344.16 4.96 339.20

720+75 +11.2% 336.40

720+50 ✓ X 10.56 333.60

0.13 T.P. 12.92 331.24  
331.37

720+25 330.40

720+00 ✓ +12.8% 4.17 327.20

719+75 ✓ X 7.37 324.00

0.70 T.P. 12.99 318.38  
319.08

719+44<sup>38</sup> ✓ X 1.20 317.88

719+15<sup>24</sup> ✓ V. curve 8.33 310.75

0.39 T.P. 12.77 306.31  
306.70

718+86<sup>82</sup> ✓ 5.54 301.16 Nail in side of Bank.

6/4/30  
Simpson  
Sober  
Remmen

clear and warm

48

718+59 <sup>31</sup> ✓	0.02	306.70 294.02	T.F. 12.70	294.00 289.18	
				4.84 2.84	291.18 = Cut 2 <sup>d</sup> nail in Side of Bank
718+45 <sup>05</sup> ✓				11.72	282.34
	0.57	288.81	T.F. ⇒ 5.78	288.24 =	Cut 6 <sup>d</sup> set Aug. In side of Bank
718+15 <sup>07</sup> ✓				7.58	281.23
				4.58	284.23 = Cut 3 <sup>d</sup> spike in side of Bank
717+85 <sup>22</sup> ✓				10.62	278.19
				8.62	280.19 = Cut 2 <sup>d</sup> spike in Side of Bank
	0.43	276.38	T.F. 12.86	275.95	
717+50				2.98	273.40
					Set spike to Grade in side of Bank.
717+29 <sup>88</sup> ✓				5.72	270.66
					Set spike to Grade in side of Bank.
717+00 <sup>40</sup> ✓				11.26	265.12
					Set spike to Grade in side of Bank.
	0.03	265.97	T.F. 10.44	265.94	
716+84 <sup>53</sup> ✓	7.91	266.44	6.92	259.05 =	Check on
			5.14	261.30	259.03 = B.M. on sill of old Trestle.
716+69 <sup>82</sup> ✓				8.08	258.36

↑  
6/4/30  
Simpson  
Super  
Remmen

6/6/30 clear and Hot  
Simpson  
Super  
Remmen

↓

B.M. on sill of old Trestle Record EL 259.93

6/14/30

↓

93 ✓  
716+54 ✓ 266.44  
9.85 256.59

716+39<sup>94</sup> ✓  
10.44 256.00

48 ✓  
715+73 ✓  
3.66 \* 362.69  
256.00  
259.03 = B.M. on Sill of

715+58<sup>49</sup> ✓  
6.08 256.61

715+43<sup>60</sup> ✓  
4.25 258.44

715+28<sup>91</sup> ✓  
T.P. 1.21 261.48

6.92 265.95  
T.P. 2.88 263.07  
10.33 273.40

715+14<sup>52</sup> ✓  
7.70 265.70

715+00  
-33.76 ✓  
2.80 270.60  
T.P. 0.30 273.10

6/14/30  
Simpson  
Soper  
Remman

old Trestle  
6/14/30  
Simpson  
Soper  
Remman

of old Trestle  
6/6/30 clear and Hot.  
Simpson  
Soper  
Remman

714+75	11.53	284.63		278.10
			5.59	279.04
	11.66	T.F. 295.99	0.30	284.33
714+50 ✓			8.51	287.48
714+25		T.F.	0.07	295.92
	12.18	308.10		
714+00 ✓			3.74	304.36
	12.03	T.F. 320.03	0.10	308.00
713+75 ✓			7.23	312.80
	12.57	T.F. 332.55	0.05	319.98
713+50 ✓			11.31	321.24
713+25 ✓			2.87	329.68
	12.39	T.F. 344.78	0.16	332.39
+02	12.44	T.F. 349.75	7.47	337.31
713+00 ✓				338.12

6/6/30  
Simpson  
Soper  
Remmen  
clear and Hat.

---

6/7/30  
Simpson  
Soper  
Remmen  
↓

712+70<sup>86</sup> ✓  
 \* 349.75  
 1.80 347.95

11.99 T.F.  
 361.62 0.12 349.63

712+42<sup>08</sup> ✓  
 5.23 356.39

10.27 T.F.  
 371.54 0.35 361.27

712+12<sup>70</sup> ✓  
 K.C.  
 9.07 362.47

711+82<sup>92</sup> ✓  
 5.39 366.15

711+52<sup>95</sup> ✓  
 \* 4.14 367.40

711+25  
 367.43

+ 13<sup>3</sup>

711+00  
 - 0.10%  
 4.10 367.44  
 4.09 367.45

710+50  
 T.F. 4.04 367.50

9.63 377.13

6/7/30

clear and hot

Simpson  
 Sober  
 Remmen

		377.13		
710+00			9.58	367.55
+69			9.55	367.58
709+50 ✓	*		9.53	367.60
709+25 ✓			10.68	366.45
709+00 ✓			11.83	365.30
			3.86	373.27 = check on
2.77	368.07			365.30 = Grade Hub Sta. 709+00
708+75			3.92	364.15
708+68 <sup>±</sup>			4.21	363.86
708+50 ✓	*		5.07	363.00
708+25				360.05
708+00 ✓			10.97	357.10
		T.F.	12.84	355.23
2.74	357.97			
707+75				354.15

6/7/30 clear and hot  
Simpson  
Sober  
Remmen

B.M. #113 Record El. 373.28

6/10/30 Part cloudy + cool  
Simpson  
Sober  
Remmen  
↓

33443 Fire H.

A.V. 330<sup>98</sup> 700+06

707+50 ✓	357.97	*	6.77	351.20
707+25				349.14
707+00 ✓			10.89	347.08
		T.P.	13.04	344.93
	2.76			347.69
706+75				345.01
706+50 ✓	8.25 %		4.74	342.95
	+			
706+25				340.89
706+00 ✓			8.86	338.83
705+75				336.77
705+50 ✓		* T.P.	12.99	334.70

Part cloudy + cool

6/10/30  
Simpson  
Seber  
Remmen6/11/30  
Simpson  
Seber  
RemmenLocation of 10" (outside) water main  
crossing trench, at Sta. 707+06.2

8.01 359.21

351.20 = Grade hub at  
Sta. 707+508.42 350.79 = Top of 10" water  
main23  
48.96  
46.18  
3.7812.14 347.07 = Check on  
Grade hub Sta.  
707+00

706+09 <sup>3</sup>				8.83	338.83
706+50 <sup>1</sup>	5.40		347.66	7.95	339.71
706+99				T.P. 12.90	342.26
707+25				9.82	345.34
707+58 <sup>84</sup>				6.75	348.21
				3.20	351.96

+11.08%  
+6.27%

3.96 335.16

351.20 = Grade hub at  
Sta. 707+50

5.67 340.37 334.70  
705+25 332.78

705+00 7.52 330.85

704+75 +7.70% 328.92

704+50 ✓ \* 13.37 327.00

5.98 334.39 = B.M. Fire Plug

704+00 +05 0.23 331.08 T.F. 12.66 327.71  
330.85  
4.39 326.66

703+84<sup>34</sup> 326.56

703+50 ✓ 326.31

2.07 329.78

703+168<sup>8</sup> 3.69 326.09

703+00 ✓ +0.66% 3.80 325.98

702+50 ✓ 4.14 325.64

702+00 ✓ 4.48 325.30

6/10/30  
Simpson  
Soper  
Remitted

703+90 El. = 334.43

Grade Revision sta. 703+05<sup>3</sup> to sta 704+85<sup>3</sup>  
325.98 = Grade hub 703+00  
5.10 331.08

702+91<sup>00</sup>  
702+25<sup>2</sup>  
703+50  
703+80  
704+10 \* \*

5.16 325.92  
4.45 326.63  
5.97 327.19  
3.27 327.81  
2.68 328.40

704+25<sup>2</sup>  
704+55<sup>2</sup>  
704+89<sup>8</sup>

2.66 328.42  
2.63 328.45

1.01 330.07 same as original  
Grade

701+50 ✓	329.78	4.78	325.00
701+00 ✓		5.08	324.70
700+50 ✓	+ 0.60 %	5.38	324.40
1.92	T.F. 316.31	5.39	324.39
700+00 ✓	*	2.21	324.10
699+50 ✓	+ 1.90 %	3.66	322.65
699+00 ✓	*	5.11	321.20
698+75			318.90
698+50 ✓	+ 9.20 %	9.71	316.60
	T.F.	13.00	313.31

6/10/30  
Simpson  
Sober  
Remmen.

313.31

0.72 314.03

698+25

+9.10%

314.30

698+00 ✓

\*

2.03 312.00

697+75

309.00

697+50 ✓

+12.00%

8.03 306.00

0.61

T.F.  
301.84

12.80 301.23

697+25

302.00

697+00 ✓

\*

1.84 300.00

696+75

+12.80%

296.78

696+50 ✓

8.29 293.55

0.62

T.F.  
289.58

12.88 288.76

696+25	189.58		290.32
	+12.90%		
696+00 ✓	*	2.48	287.10
695+75			284.70
695+50 ✓	+9.60%	7.28	282.30
695+25			279.90
695+00 ✓	*	12.08	277.50
	T.P.	12.69	276.89
	124	278.13	
694+75	+8.50%		275.38
694+50		4.88	273.25

6/10/30 Part cloudy + cool  
 Simpson  
 Sober  
 Remmen.

		278.13		
694+25				271.12
	+ 8.50%			
694+00 ✓	*		9.13	269.00
		T.P.	12.53	265.60
	1.08	266.68		
693+75				266.25
	+ 11.0%			
693+50 ✓			3.18	263.50
693+25				260.75
693+00 ✓	*		8.68	258.00
692+75		T.P.	12.56	254.12
	0.61	254.73		
			9.11	245.62 = check on
55				251.02
692+50				250.25
	+ 15.5%			
	1.14	255.16		254.12 = Grade hub
				Sta. 692+75
86 -				
692+34	*		7.36	247.90

Fier at Trestle #36 Elev. 245.60

↑  
6/10/30  
Simpson  
Soper  
Remmert

6/17/30  
Simpson  
Soper  
Remmert  
↓

692+19<sup>96</sup> ✓

255.26

9.08 246.18

V.C.

692+04<sup>97</sup> ✓

9.66 245.60

\*

691+00 ✓

Pier at

Trestle  
90%

\* 145 Point.

245.60

12.74

\* 238.34

690+94<sup>07</sup> ✓

-22.10%

11.43 246.91

\*

690+64<sup>59</sup> ✓

5.85 252.49

690+34<sup>83</sup> ✓

V.C.

2.06 256.28

690+04<sup>90</sup> ✓

\*

T.P. = 0.09 258.25

11.26

369.51

689+75

-3.55%

10.20 259.31

6/18/30  
Simpson  
Paper  
Remmert  
↓

		369.51		
+54			260.36	
689+50			260.20	
689+25	0.55%	8.42	261.09	
689+00 ✓	*	7.53	261.98	
+85°	0.25		269.54	B.M. AV.
688+75		8.11	261.68	
			261.48	
688+50 ✓	+1.98%	8.80	260.99	
688+25			260.50	
688+00 ✓	*	7.79	260.00	
		8.79	261.00	set 1 <sup>st</sup> cut in Side of Bank
687+75	+7.5%		258.12	

↑  
6/18/30  
Simpson  
Soper  
Remmen

cloudy and cool

6/10/30  
Simpson  
Soper  
Remmen

Part cloudy + cool

269.79

T.F. - 12.98 256.81

0.85 257.66

687+50 1.41 256.25

687+25 254.38

687+00 ✓ 5.16 252.50

686+75 250.62

+7.50%

686+50 ✓ 8.91 248.75

686+25 246.89

686+00 ✓ \* 12.66 245.00

1.33 T.F. 12.67 244.99  
246.32

685+75 243.00

+8.00%

6/10/30  
Simpson  
Soper  
Remmen

685+50 ✓	246.32	5.32	241.00
685+25			239.00
685+00 ✓		9.32	237.00
0.94	+8.00%	T.P. 12.94	233.38
	234.32		
684+75			235.00
684+50 ✓	*	1.32	233.00 ✓
684+25			230.85
684+00	+8.60%	5.62	228.70 ✓
683+75		7.77	226.55

6/10/30  
Simpson  
Saber  
Remmen

+59°		234.32		224.74
683+50				224.40
683+25			12.07	222.25
	0.35	T.P. 222.59	12.08	222.29 on grade at Sta. 683+25
683+00 ✓	+ 8.60%		2.49	220.10
			1.49	221.10 - cut 12 set in Bottom
682+75				217.95
682+50 ✓	*		6.79	215.80
682+25	+ 10.8%			213.10
682+00 ✓	*	T.P. 212.12	12.19	210.40
		1.72		

↑  
6/10/30  
Simpson  
Soper  
Remmen

6/12/30  
Simpson  
Soper  
Remmen

↓

B.M. # 108 - 330.26  
12 Rt. 672+73

681+75      212.12      209.40

681+50      +4.0%      3.72 208.40

681+25 ✓      \*      207.40

681+00 ✓      6.59 205.53

+7.48%      T.P. 0.31      211.81 → see next Page

680+75      203.66

680+47<sup>50</sup> ✓      \*      201.60

680+17<sup>50</sup> ✓      \*      201.60

680+11<sup>52</sup> ✓      \*      202.89

5.89

O.K. to Here w.H.S.

↑  
6/12/30  
Simpson  
Super  
Remission

	11.50	219.90		208.40 = Grade hub sta. 681+50
679+82 <sup>11</sup> ✓			11.60	208.30
679+52 <sup>31</sup> ✓	X		8.19	211.71
679+11 <sup>07</sup> ✓	X		8.19	211.71 ✓
678+81 <sup>07</sup> ✓				<del>212.11</del> 211.75
	4.65	216.40	T.P. 8.15	
678+51 <sup>09</sup> ✓				<del>213.31</del> 211.80
	3.66	215.46	T.P. 4.60	
678+21 <sup>16</sup> ✓				215.31 213.0
			T.P. 2.49	212.97
677+91 <sup>29</sup> ✓	12.43	225.40		
			9.10	<del>218.11</del> 216.30
	11.90	223.71	6.2 2.7	211.81 = T.P. on
677+61 <sup>6</sup> ✓	X		4.10	221.30
	29.69		1.61	222.10 = Set B.M.

6/19/30 cloudy and cool  
Simpson  
Soper  
Remmen

208.30	
+ 1.22	
209.52	209.52
202.89	201.60
	7.90
6.63	

217.31  
5.57  
222.88  
11.71  
11.17

Grade Revision  
6/18/30  
BY L.N.H.

6/12/30  
Simpson  
Soper  
Remmen

Page 65

Nail in Pepper Tree 15' of sta 678+25

6/12/30  
Simpson  
Sober  
Kerrington

		223.71		
677+50			1.20	222.50
		T.P.	0.21	223.50
	-12.72	236.22		
677+25			11.06	225.16
677+00 ✓				227.82
676+89 <sup>93</sup> ✓	X		7.34	228.88
676+60 <sup>30</sup> ✓	X		2.69	233.53
	12.87	248.92	0.17	236.05
676+40			11.18	237.74
676+19 <sup>21</sup> ✓	X		6.86	242.06
			5.86	243.06 = Cut 1 <sup>st</sup> set peg in side Bank.
	12.62	261.23	T.P. 0.31	248.61
675+90 <sup>06</sup> ✓	X		12.10	249.13
675+61 <sup>44</sup> ✓			3.11	258.12
		T.P.	0.12	261.11
	12.81	273.92		

-10.63%

K.C.

K.C.

K.C.

675+33 <sup>78</sup> ✓		273.92			
			4.72	269.00	
675+10 <sup>72</sup> ✓	12.96	T.P. 286.62	0.26	273.66	
675+00 ✓			7.58	279.04	
				283.32	
	12.83	T.P. 299.25	0.20	286.42	
674+88 <sup>82</sup> ✓			11.16	288.09	
			10.16	289.09	Cut 1 <sup>o</sup> set in Side Bank
674+60 <sup>47</sup> ✓			1.38	297.87	Set to Grade in Side Bank
	12.90	T.P. 311.90	0.25	299.00	
674+28 <sup>70</sup> ✓			5.55	306.35	Set to Grade in Side Bank
	8.54	T.P. 320.35	0.09	311.81	Trench 1 <sup>2</sup> Low
673+99 <sup>43</sup> ✓			7.45	312.90	Set to Grade in Side Bank
					Trench 2 <sup>o</sup> Low
673+69 <sup>72</sup> ✓			3.28	317.07	Set to Grade in Side Bank
	12.43	332.64	0.14	320.21	Trench 2 <sup>o</sup> Low
673+39 <sup>77</sup> ✓				318.82	Not set (6/1/30) Set 6/19/30 w. H.S.
			2.38	330.26	= Check on B.M. # 108 El. = 330.26

6/12/30  
 Simpson  
 Sober  
 Remmen

Trench 1<sup>2</sup> Low

Trench 2<sup>o</sup> Low

Trench 2<sup>o</sup> Low

Not excavated  
 on B.M. # 108 El. = 330.26

		332.64		
673+00			13.10	319.54
672+75 ✓	✓	-182%	12.64	320.00
672+50				321.75
672+25		-7.00%	9.14	323.50 ✓
672+00 ✓				325.25
671+75 ✓	✓	X	5.64	327.00 ✓
			T.R. 0.98	331.66
		7.68		339.34
671+50 ✓	✓	N		327.29
671+35		-1.17%	11.87	327.47
671+02 <sup>50</sup> ✓	✓	X	11.47	327.85

6/12/30  
Simpson  
Sober  
Remmen

cloudy and cool

670+93<sup>29</sup> ✓  
 339.34  
 \* 8.72 330.62

670+64<sup>26</sup> ✓  
 1.16 338.18

T.F. 0.23 339.11

13.07 352.18

670+34<sup>75</sup> ✓  
 K.C.  
 8.58 343.60

670+04<sup>93</sup> ✓  
 \* 5.33 346.85

669+75  
 349.00

669+50  
 1.38 350.80

T.F. 0.14 352.04

12.06 364.10

6/12/30 cloudy + cool  
 Simpson  
 Super  
 Remmen

669+00 364.10 9.70 354.40

-7.20%

668+50 ✓ \* 6.10 358.00

668+25 360.68

668+00 ✓ 10.7% T.P. - 0.75 363.35 ✓  
9.88 373.23

667+64<sup>99</sup> ✓ \* 6.13 367.10

667+34<sup>98</sup> ✓ \* 4.51 368.72

↑  
6/12/30  
Simpson  
Soper  
Remmen

cloudy + cool

6/14/30  
Simpson  
Soper  
Remmen

cloudy + cool

↓

	373.23		
667+00		4.44	368.79
+75 <sup>B</sup>		4.39	368.84
666+50		4.33	368.90
666+25		4.28	368.95
3.08	372.03		
666+00 ✓	X	3.63	369.00
665+66 <sup>S</sup>		3.87	368.16
665+50			367.75
+25		4.91	367.12
665+00 ✓			366.50
664+75		6.15	365.88

6/14/30  
Simpson  
Sober  
Remmen

cloudy and cool

664+45<sup>20</sup> ✓  
 \* 372.03  
 6.90 265.13

664+15<sup>26</sup> ✓  
 8.81 363.22  
 7.81 364.22 - cut 1" set  
 in Bottom

663+85<sup>57</sup> ✓  
 V.C.  
 13.05 358.98  
 0.32 359.42 T.P. 12.93 359.10

663+56<sup>29</sup> ✓  
 \* 6.98 352.44  
 0.85 347.46 T.P. 12.81 346.61  
 + 26.48%

663+28<sup>77</sup> ✓  
 \* 2.29 345.17

662+99<sup>76</sup> ✓  
 V.C. 8.70 338.76

6/19/30  
 Simpson  
 Saper  
 Remmen

? check grade from Print.

662+69	71 ✓ ✓	347.46	12.57	334.89
	2.97 C ✓	337.85	12.58	334.88
662+39	74 ✓ ✓	*	4.25	333.60
662+00	✓		4.25	333.60
	0.0%			
661+50	✓ ✓	*	4.25	333.60
661+00	✓		8.25	329.60
	+ 8.00%			
660+75			10.25	327.60
660+60	1.62	T.P. 329.21	10.26	327.59
				326.40
660+35	✓	*	4.81	327.40

6/14/30  
Simpson  
Soper  
Remmen

cloudy & cool

660+05 ✓	0.00%	329.21	4.81	324.40	
659+75			2.41	326.80	
659+50 ✓	8.00%		0.41	328.80	
12.28		341.35	T.F. 0.14	329.07	6/14/30
659+18				331.32	
659+00 ✓			8.55	332.80	
658+80				334.68	
658+75			6.10	335.25	
658+50	9.80%			337.70	
658+42			2.95	338.40	

↑  
6/14/30  
Simpson  
Soper  
Remmen

cloudy and cool

6/16/30  
Simpson  
Soper  
Remmen

clear and warm

↓

658+25      341.35  
                  T.F. 0.16      341.19  
                                       340.15  
 13.07      354.26

658+00      11.66      342.60

657+75      345.05

657+65      8.23      346.03

0.04      354.27 = CHECK  
                  354.20  
                  347.50

657+50 ✓      \*  
                  8.96      363.16

+ 45      15.31      347.85  
 + 10      12.90      350.26  
 657+00           350.95

+ 80      10.83      352.33

656+50 ✓      \*      8.76      354.40

O.K. to Here W.H.S.

6/14/30  
 Simpson  
 Sabar  
 Kertmen

on B.M. #105 Nail in Tel. Pole El. = 354.20

348  
 357.68  
 347.50  
 10.18

46.03  
 11.65

- 9.80%

- 6.90%

X Sections, After & Has  
 Been Benched, For Trenching Machine.

B.M. #19 7.72 378.25 370.53

766+14<sup>46</sup>

765+84<sup>8</sup>

765+54<sup>8</sup>

765+46<sup>7</sup>

765+00

764+50

764+00

763+49<sup>88.42</sup>  
 763+22<sup>51.42</sup>

762+95<sup>17</sup>

7.72 370.53-check

5/13/30

Simpson

Saber

Remmen

Clear and Warm.

77

	Lt.	Q	Rt.
Top of Air Valve	Lt. 764+10	HI 378.25	
	10.9 <sup>67.2</sup> 30	10.7 <sup>67.2</sup> 21	11.2 <sup>67.2</sup> 6
	6.5 <sup>71.6</sup> 30	5.7 <sup>72.5</sup> 18	9.9 <sup>68.2</sup> 8
	6.2 <sup>72.0</sup> 30	9.0 <sup>68.2</sup> 7.5	7.5 <sup>72.6</sup> 10
	5.5 <sup>72.2</sup> 30	5.5 <sup>72.7</sup> 20	10.1 <sup>62.1</sup> 8
	7.1 <sup>74.1</sup> 30	5.1 <sup>73.1</sup> 15	9.3 <sup>68.2</sup> 8
	3.7 <sup>74.5</sup> 30	5.5 <sup>72.2</sup> 15	9.3 <sup>68.2</sup> 8
	5.2 <sup>72.8</sup> 30	5.1 <sup>72.6</sup> 15	11.2 <sup>66.4</sup> 9
	7.3 <sup>70.2</sup> 30	7.2 <sup>71.0</sup> 20	5.2 <sup>73.0</sup> 6.5
	7.1 <sup>74.1</sup> 30	5.1 <sup>73.1</sup> 15	9.3 <sup>68.2</sup> 8
	8.2 <sup>69.2</sup> 30	8.1 <sup>70.0</sup> 20	7.0 <sup>70.2</sup> 3
	8.1 <sup>70.0</sup> 20	7.0 <sup>71.3</sup> 15	9.5 <sup>68.2</sup> 10.5
	7.0 <sup>71.3</sup> 15	7.0 <sup>71.3</sup> 15	12.3 <sup>65.2</sup> 9
	8.1 <sup>70.0</sup> 20	6.8 <sup>71.4</sup> 10	6.8 <sup>71.4</sup> 10
	6.5 <sup>71.7</sup> 21	6.5 <sup>71.7</sup> 21	6.7 <sup>71.8</sup> 30

6/21/30  
Simpson  
Seber  
Remmen

Yardage Handled By  
Contractor Twice.

78

Sta.	Actual cut Handled Twice	End Area sq. ft.	cu. yds.
653+00	C-9°	40.50	39.58
653+25	C-10°	45.00	39.58
653+50	C-9°	40.50	68.74
654+00	C-7 <sup>5</sup>	33.75	56.21
654+50	C-6°	27.00	52.08
655+00	C-6 <sup>5</sup>	29.25	
~~~~~ total			256.19
650+30	C-8 <sup>3</sup>	37.35	57.37
650+75	C-7°	31.50	56.25
651+25	C-6 <sup>5</sup>	29.25	62.08
651+75	C-8 <sup>4</sup>	37.80	80.00
652+25	C-10 <sup>8</sup>	48.60	44.38
652+50	C-10 <sup>5</sup>	47.25	300.08

6/24/30  
Simpson  
Sober  
Remmen  
Price  
Butzine

Yardage Handled by contractor

Twice (Sta. 710+00 to Sta. 712+00)

	Actual cut Handled Twice	Sq. ft. End area	C.Y.
710+00	c-5 <sup>2</sup>	25.65	14.58
710+50	c-5 <sup>2</sup>	22.50	40.12
711+00	c-4 <sup>2</sup>	21.15	39.58
711+50	c-4 <sup>2</sup>	21.60	41.67
712+00	c-5 <sup>2</sup>	23.40	
		<u>total</u>	<u>166.25</u>

6/24/30  
Simpson  
Sober  
Remmen  
Price  
Butzine

Yardage Handled By Contractor

Twice (Sta. 740+25 to Sta. 742+80)

	Actual cut Handled Twice	End Area Sq. ft.	C.Y.
740+25	c-8 <sup>3</sup>	37.35	63.33
740+75	c-6 <sup>2</sup>	31.05	63.75
741+25	c-8 <sup>4</sup>	37.80	69.17
741+75	c-8 <sup>2</sup>	36.90	64.58
742+25	c-7 <sup>3</sup>	32.85	58.67
742+80	c-5 <sup>2</sup>	24.75	
			<u>319.50</u>

Station	Grade	Elev.	Cut. #
298+07.5	385.78	392.3 5.8	6.5
298+30.8	385.76	388.6 5.8	2.8
298+49.2	385.74	387.4 5.5	1.7
+79.89	384.47	385.3 4.5	0.8
299+09.66	380.72	384.3 0.7	3.6
	382.0		
	5.32	399.81	394.49
		11.62	388.19
	7.86	396.05	
298 +07		3.7	392.3
+30.8		7.4	388.6
+49.9		8.6	387.4
+79.9		10.7	385.3
299+09.7		11.7	384.3
297+55	+10°35'	1.33	
		419.4	Slope = 1:1 2.22

23.4) 52.0  
46.8  
5.20  
46.8  
5.20

222

**DIRECTIONS FOR USE OF TABLES**

2.22  
23) 52  
46  
6

Distance of slope station side or shoulder stake for any width of slope 1/2 to 1. If ground is nearly level cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level, the side stake and slope stake, lower stake by the amount it cut, elevate it fill. Add this amount to cut or fill and find distance in table. Set up rod at this point and line of sight should cut target.

**IMPROVED TABLES AND INFORMATION**

TABLE No. 2

396.05  
23.37  
419.42

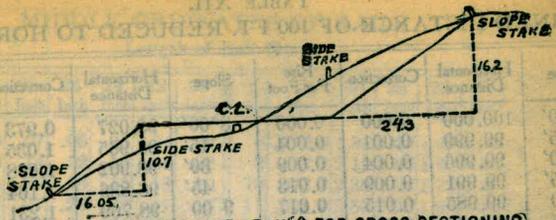
0.184  
1.33  
4.52

Degree of curve will give I may be found by dividing tangent (or external) opposite I by given tangent (or external)

23.372

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

TABLE VII  
 INCLINATION OF 10 FT. REDUCED TO HORIZONTAL



**DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.**

SLOPE 1 1/4 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.

1035  
 29  
 3956

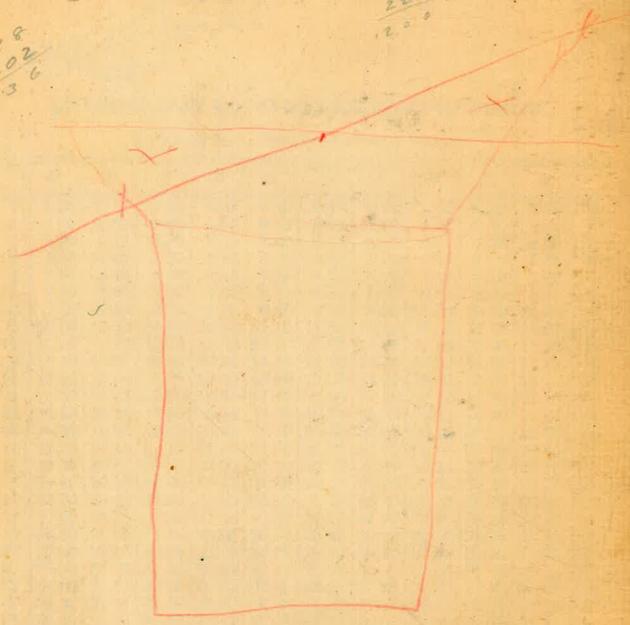
To

38877  
 12.77  
 38752  
 9.5  
 397.0

39191  
 12.72  
 107.63

375  
 600  
 225  
 2.00

318  
 0.02  
 10636



297 + 39.21      09.66  
           91.59      30.80  
 298 + 30.80      78.86

100 - 25°

297 + 39.21  
           90.63  
 298 + 29.84  
           07.5  
 22.3d

Gum Tree 714 + 60      289.40  
 A.V.      708 + 80      373.28  
 #112 Fire Plug      334.43  
 A.V.      700 + 66      330.48