

298B

Oby Res to San Diego 2<sup>nd</sup> Main  
Pipe Line.

Tunnel Timber #3

Tunnel 3

W298B

LILY

100

MICROFILMED

JAN 11 1965

Otoy Res. to S. D. 2nd Main Pipe Line  
Timber Book

Index

Tunnel #3 Final Count

pages 31-60

Otay Res. to San

Diego 2nd Main Pipe Line

May 26, 1930 - 3: P.M.

Tunnel #3 Exit

Timber

Elliott, Bailey, Jacobson

167 2

Sta	Sill, Posts, Caps	Lagging	Board	Measure
229+162	One set 4x6	2x10	2x12	2x12
			51.	
229+122	"	3	6	20.0'
			51	48.0'
229+082	"	3	6	22.5'
			51	54.0'
229+032	"	3	6	22.5'
			51	54.0'
223+992	"	3	6	22.5'
			51	54.0'
223+942	"	3	6	22.5'
			51	54.0'
223+902	"	3	6	22.5'
			51	54.0'

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357 132.5'

318.0'

318.0'  
 132.5'  
 357.0'  
 807.5' - Est. #4.

May 26, 1930 - 3 P.M.  
 Elliott, Bailey, Jacobszon

Olay Res. to

San Diego 2<sup>nd</sup> Main Pipe Line 2  
 Tunnel #3 Timber

Sta	Sill, Caps, Posts	Lagging	Board	Measure
	4x6	2x10, 2x12	4x6, 2x10	2x12
223 + 54	One set		51'	
+495	"	3 6	51	22.5 <sup>✓</sup> 54.0 <sup>✓</sup>
+450	"	3 6	51	22.5 <sup>✓</sup> 54.0 <sup>✓</sup>
+405	"	3 6	51	22.5 <sup>✓</sup> 54.0 <sup>✓</sup>
			51	22.5 <sup>✓</sup> 54.0 <sup>✓</sup>
			204 <sup>✓</sup> 67.5 <sup>✓</sup>	162.0 <sup>✓</sup>
220 + 585	"	3 16	51	22.5 <sup>✓</sup> 144.0 <sup>✓</sup>
+540	"	3 16	51	22.5 <sup>✓</sup> 144.0 <sup>✓</sup>
+495	"	3 11	51	22.5 <sup>✓</sup> 99.0 <sup>✓</sup>
+450	"		51	

Cont. on page 18

204.0<sup>✓</sup>  
 67.5<sup>✓</sup>  
 162.0<sup>✓</sup>  
 433.5<sup>✓</sup> Est. #4

May 26, 1930 - 3: P.M.

3

Timber Tunnel #3

Sta.	Sills, Posts, Caps	Lagging	Board	Measure
220 + 90°	4 x 6	2 x 10 2 x 12	4 x 6 2 x 10	2 x 12
		3 11	22.5 ✓	99.0 ✓
220 + 90° One Set			51	
		3 6	22.5 ✓	54.0 ✓
+ 36°	"		51	
		3 6	22.5 ✓	54.0 ✓
+ 31°	"		51	
		3 6	22.5 ✓	54.0 ✓
+ 27°	"		51	
			408.0 ✓	
			157.5 ✓	
			648.0 ✓	
			1213.5 ✓	

408.0 ✓  
157.5 ✓  
648.0 ✓  
1213.5 ✓ Est. #4

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4

Entrance

#3

Sta	S.I., Cap, Test 4x6	Lagging		Board		Measure 2x12
		2x10	2x12	4x6	2x10	
205+292	One Set	↑	↑	51	37.5 ✓	126.0 ✓
		5	14			
+292	"	↑	↑	51	37.5 ✓	126.0 ✓
		5	14			
+332	"	↓	↓	51		
				<hr/>	<hr/>	<hr/>
				153.0 ✓	75.0 ✓	252.0 ✓

153.0 ✓  
75.0 ✓  
252.0 ✓  

---

480.0 ✓ Est. #4

May 26, 1930 - 3: P.M.

5

Tunnel # 2

Exit

Sta	Lagging		Board		Measure
	4x6	2x10 2x12	4x6	2x10	
192+17 <sup>2</sup>	One Set		51		
+12 <sup>2</sup>	"	3 6	51	22.5 ✓	54.0 ✓
+08 <sup>2</sup>	"	3 6	51	22.5 ✓	54.0 ✓
+03 <sup>9</sup>	"	3 6	51	22.5 ✓	54.0 ✓
191+99 <sup>2</sup>	"	3 6	51	22.5 ✓	54.0 ✓
			<u>51</u>		
			255.0	<u>90.0</u>	<u>216.0</u>

255.0 ✓  
 90.0 ✓  
 216.0 ✓  
 561.0 Est. #4



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Sta	Sill, Posts, Caps	Lagging	Board	Measure	Entrance
172+09 <sup>2</sup>	One Set	2x10 2x12	4x6 2x10	2x12	
+19 <sup>2</sup>	u	3 10	51 22.5	90.0	
+18 <sup>2</sup>	u	5 8	37.5	72.0	
			<u>51</u>	<u>162.0</u>	
			153.0	60.0	
				<u>162.0</u>	
					153.0
					60.0
					<u>162.0</u>
					375.0 Est. #4

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 Elliott, Bailey, Jacobson

Sta	Lagging		Board		Measure
	4x6	2x10 2x12	4x6	2x10	
167+60 <sup>2</sup>	One Set		51		
167+56 <sup>3</sup>	"	4 15	51	30.0 ✓	135 ✓
167+51 <sup>2</sup>	"	3 16	51	22.5 ✓	144 ✓
167+47 <sup>2</sup>	"	4 15	51	30.0 ✓	135 ✓
167+42 <sup>2</sup>	"	3 11	51	22.5 ✓	99 ✓
167+38 <sup>2</sup>	"	3 6	51	22.5 ✓	54 ✓
167+33 <sup>2</sup>	"	3 6	51	22.5 ✓	54 ✓
		3 6		22.5 ✓	54 ✓
				172.5	675

Exit Tunnel at Red Bluff

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Sta.	Sill, Posts, Caps	Lagging	Tunnel #1 Board	Exit Measure
167+28 <sup>8</sup>	4x6 One Set	2x10 2x12	4x6 2x10 51	2x12
167+24 <sup>2</sup>	"	3 6	51	22.5 ✓ 54 ✓
167+19 <sup>2</sup>	"	3 6	51	22.5 ✓ 54 ✓
167+15 <sup>1</sup>	"	3 6	51	22.5 ✓ 54 ✓
167+10 <sup>2</sup>	"	3 6	51	22.5 ✓ 54 ✓
167+06 <sup>1</sup>	"	3 6	51	22.5 ✓ 54 ✓
167+01 <sup>6</sup>	"	3 6	51	22.5 ✓ 54 ✓
166+97 <sup>0</sup>	"	3 6	51	22.5 ✓ 54 ✓
		3 6		22.5 ✓ 54 ✓
				<hr/> 180.0
				<hr/> 432

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Sta.	Sill, Posts, Caps		Lagging		Tunnel #1 Board		Exit Measure
	4x6	2x10	2x12	4x6	2x10	2x12	
166+92.5	One Set			51			
166+88.0	"	3	6	51	22.5		54
166+83.5	"	3	6	51	22.5		54
166+79.0	"	3	6	51	22.5		54
166+74.0	"	3	6	51	22.5		54
166+69.8	"	3	6	51	22.5		54
166+65.3	"	3	6	51	22.5		54
166+60.3	"	3	6	51	22.5		54
		3	6		22.5		54
					180		432



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Sta.	Sill, Posts, Caps	Lagging		Tunnel #1	Exit	
		4x6	2x10	2x12	Board	Measure
166 + 21'	One Set				51	
		3	6		22.5	54
+156	"				51	
		3	6		22.5	54
+11'	"				51	
		3	6		22.5	54
+106'	"				51	
		3	6		22.5	54
+102'	"				51	
		3	6		22.5	54
165 + 97'	"				51	
		3	6		22.5	54
+92'	"				51	
		3	6		22.5	54
+88'	"				51	
		3	6		22.5	54
					180	432

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Tunnel #1

Exit

Sta.	Sills/Posts/Caps 4x6	Lingging 2x10 2x12	Board 4x6	Measure
165+83 <sup>2</sup>	One Set		51	
+79 <sup>3</sup>	"	3 6	51	22.5 <sup>✓</sup> 54 <sup>✓</sup>
+74 <sup>8</sup>	"	3 6	51	22.5 <sup>✓</sup> 54 <sup>✓</sup>
+70 <sup>3</sup>	"	3 6	51	22.5 <sup>✓</sup> 54 <sup>✓</sup>
+65 <sup>2</sup>	"	3 6	51	22.5 <sup>✓</sup> 54 <sup>✓</sup>
+61 <sup>2</sup>	"	3 6	51	22.5 <sup>✓</sup> 54 <sup>✓</sup>
+56 <sup>7</sup>	"	4 7	51	30.0 <sup>✓</sup> 63 <sup>✓</sup>
165+52 <sup>2</sup>	"	3 6	51	22.5 <sup>✓</sup> 54 <sup>✓</sup>
			(165) 1022.5	387

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13

Sta	Sill, Posts, Caps	Logging	Board	Tunnel (")	Exit
	4x6	2x10 2x12	4x6	22.5	54
165 + 47 <sup>c</sup>	One Set	3 6	51		
		4 10		30	90
+43 <sup>c</sup>	"		51		
		5 9		37.5	81
+38 <sup>c</sup>	"		51		
		4 10		30.0	90
+34 <sup>c</sup>	"		51		
		3 6		22.5	54
+29 <sup>c</sup>	"		51		
		3 6		22.5	54
+24 <sup>c</sup>	"		51		
		3 6		22.5	54
+20 <sup>c</sup>	"		51		
		3 6		22.5	54
165 + 15 <sup>c</sup>	"		51		
				210	531



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19

Sta	Sill, Posts, Caps 4x6	Lagging		Board 4x6	Tunnel #1	Exit
		2x10	2x12			Measure
165 + 113	One Set	3	6	51	22.5 ✓	54 ✓
54 4	"	3	6	51	22.5 ✓	54 ✓
+068	"	3	6	51	27.50 ✓	66 ✓
55 +013	"	3	6	51	27.50 ✓	66 ✓
169 + 958	"	3	11	51	27.50 ✓	121 ✓
+902	"	3	16	51	27.50 ✓	176 ✓
+845	"	3	16	51	27.50 ✓	176 ✓
+792	"	3	6	51	27.50 ✓	66 ✓
+737	"	3	6	51	27.50 ✓	66 ✓
					<u>210</u>	<u>779</u>

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15

Sta.	Sill, Posts, Caps	Lagging		Tunnel #1		Exit Measure
		4x6	2x10 2x12	Board	4x6	
169+68 <sup>2</sup>	One Set		3 11	51	27.50 ✓	121. ✓
+62 <sup>6</sup>	"		3 11	51	27.50 ✓	121. ✓
+57 <sup>0</sup>	"		3 6	51	27.50 ✓	66. ✓
+51 <sup>3</sup>	"		3 11	51	27.50 ✓	121. ✓
+46 <sup>2</sup>	"		4 10	51	36.7 ✓	110. ✓
+40 <sup>4</sup>	"		3 6	51	27.5 ✓	66. ✓
+34 <sup>9</sup>	"		3 6	51	27.5 ✓	66. ✓
				51 ✓		
				3570.0 ✓		
				4649.2 ✓		
				1679.2 ✓		
				201.70		

~~3570.0~~  
~~1679.2~~  
~~4771.0~~  
~~9990.2~~

3570.0 ✓  
 1679.2 ✓  
 4771.0 ✓  


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 10020.2 ✓ Est. #4

70

671



Elliott Notes  
 Jacobszon Tape + count  
 Bailey " "

Tunnel #3 Ext

Cont. from page 1

Sta.	Sill, Cop, Bed.	Lagging		Board	Measure
	4x6 Counted on May Est.	2x10	2x12		
223 + 90 =	↑	↑			
		3	6	51	27.5 ✓ 66.0 ✓
+ 84 <sup>E</sup>	One set			51	
		3	6	51	27.5 ✓ 66.0 ✓
+ 79	"			51	
		3	6	51	27.5 ✓ 66 ✓
+ 73 <sup>E</sup>	"	2x10x5'6"	2x12x5'6"	51	
		3	6	51	27.5 ✓ 66 ✓
+ 68	"			51	
		3	6	51	27.5 ✓ 66 ✓
+ 62 <sup>E</sup>	"			51	
		3	6	51	27.5 ✓ 66 ✓
+ 57	"	2x10x3' ✓	2x12x3' ✓	51	
		3	6	51	15 ✓ 36 ✓
54	Counted on May Est.	2x10x3' ✓	2x12x3' ✓	306	180.0 ✓ 432 ✓

Tunnel #3 Exit  
Cont. from page 2

Sta.	Sill, Caps, Post	Lagging	Board	Measure
223+40 <sup>s</sup>	4x6 Counted on May Est.	2x10	2x12	
+35	One set	3	6	27.5 ✓ 66 ✓
+29 <sup>s</sup>	"	3	6	27.5 ✓ 66 ✓
+24	"	3	6	27.5 ✓ 66 ✓
+18 <sup>s</sup>	"	3	6	27.5 ✓ 66 ✓
+13 <sup>s</sup>	"	3	6	27.5 ✓ 66 ✓
+07	"	3	6	27.5 ✓ 66 ✓
+01 <sup>s</sup>	"	3	6	27.5 ✓ 66 ✓
			357 ✓	220.0 ✓
				528 ✓

2x10x5'6"

2x12x5'6"

Elliott.  
Bailey  
Soper

Exit #3

Sta.	Sill. Posts, Caps	Lagging	Board	Measure
222+96	4x6 One set	2x10 2x12	51	
+90 <sup>3</sup>	"	3 6	51	27.5 66 ✓
+84 <sup>3</sup>	"	2x10x5'6" 3 6	51	27.5 66 ✓
+79 <sup>4</sup> 55	"	2x12x5'6" 3 6	51	27.5 66 ✓
+73 <sup>3</sup>	"	3 6	51	27.5 66 ✓
+68 <sup>4</sup>	"	3 6	51	27.5 66 ✓
			51	
			306	137.5 330 ✓

Not Marked

Total for June 2796.5 ✓

Est. 4 808.1 ✓

Est. 5 - 3604.5 ✓

Est. 4 434 ✓

Total Est. 5 - 4038.5 ✓



Additional timber count to 3 P.M. June 26

1.22 2.

Tunnel #3 Exit

Sta	Sill, Caps, Posts 4x6	Lagging 2x10 2x12	Board	Measure
219+85 <sup>5</sup>	One set		51	
+80	"	3 6	51	27.5 ✓ 66 ✓
+74 <sup>5</sup>	"	3 6	51	27.5 ✓ 66 ✓
+69	"	3 6	51	27.5 ✓ 66 ✓
+63 <sup>5</sup>	"	3 11	51	27.5 ✓ 66 ✓ 121
+58	"	3 11	51	27.5 ✓ 66 ✓ 121
+52 <sup>5</sup>	"	3 11	51	27.5 ✓ 66 ✓ 121
		3 11		27.5 ✓ 66 ✓ 121
			357 ✓	192.5 ✓
				462 ✓ 682



## Tunnel 3 Exit

Sta.	Sill, Caps, Posts		Lagging		Board	Measure	
	4x6	2x10	2x12				
219+47	One Set				51		
+415	"		3	6	51	27.5	66
+358	"		3	6	51	27.5	66
+301	"		3	6	51	27.5	66
+245	"		3	6	51	27.5	66
+19	"		3	6	51	27.5	66
+135	"		3	6	51	27.5	66
+081	"		3	6	51	27.5	66
			3	6	51	27.5	66
					408	270.0	528

Sta	Sill, Caps, Posts 4x6	Lagging		Tunnel/3	Board	Exit Measure
		2x10	2x12			
219+02 <sup>6</sup>	One set	3	6	51	27.5	66
218+97 <sup>0</sup>	"	3	6	51	27.5	66
+91 <sup>9</sup>	"	3	6	51	27.5	66
+86	"	3	11	51	27.5	121 <del>66</del>
+80 <sup>4</sup>	"	3	11	51	27.5	121 <del>66</del>
+75	"	3	6	51	27.5	66
+69 <sup>4</sup>	"	3	6	51	27.5	66
+63 <sup>1</sup>	"	3	6	51	27.5	66
		3	6	51	27.5	66
				408	2200	528 638

Elliott Notes

Jacobson Tape + count

Bailey 11

Tunnel 3 Exit

Sta.	Sill, Caps, Posts 4x6	Lagging		Board	Measure
		2x10	2x12		
218 + 58 <sup>1</sup>	One Set			51	
		3	6		27.5 66
+ 52 <sup>9</sup>	11			51	
		3	6		27.5 66
+ 47 <sup>5</sup>	11			51	
		3	6		27.5 66
+ 42	11			51	
		3	6		27.5 66
+ 36 <sup>5</sup>	11			51	
		3	6		27.5 66
+ 31 <sup>3</sup>	11			51	
				306	
				137.5	
				330	

Total for June 4913 5243  
 Est. #4 1213 1213  
 Est. #5 6126 6956

## Tunnel #1 Exit

Sta.	Sills, Posts, Caps	Lagging	Board	Measure
165 + 652	4x6 counted for May Est.	2x10 2x12		
165 + 612	"	0	2x12 x 4'6" 3	27.0 ✓
165 + 562	"	0	2x12 x 4'6" 1	9.0 ✓
165 + 013	"	0	2x12 x 5'6" 5	55.0 ✓
164 + 958	"	0	2x12 x 5'6" 5	55.0 ✓
164 + 848	"	0	2x12 x 5'6" 5	55.0 ✓
164 + 793	"	0	2x12 x 5'6" 5	55.0 ✓
164 + 628	"	0	2x12 x 5'6" 5	55.0 ✓
164 + 570	"	0	2x12 x 5'6" 5	55.0 ✓
				201 ✓

Sta	Sill, Caps, Posts 4x6 Counted for May Est.	Lagging 2x10 2x12	Tunnel #1 Board	Exit Measure
164 + 46 <sup>2</sup>		0 5		55.0
164 + 40 <sup>2</sup>	Counted for May Est	0 5		55.0
164 + 34 <sup>2</sup>	Counted for May Est,	0 5		55.0
+29 <sup>5</sup>	One Set	3 11	51	27.5 121
+24	"	3 11	51	27.5 121
+18 <sup>5</sup>	"	3 11	51	27.5 121
+13	"	3 11	51	27.5 121
+07 <sup>5</sup>	"	3 11	51	27.5 121
			255	137.5 715

Sta.	Sill, Caps, Posts 4x6	Lagging		Board	Measure
		2x10	2x12		
		3	11	51	27.5
164 + 02	One Set			51	121
		3	11	51	27.5
163 + 96 <sup>5</sup>	"			51	121
		3	11	51	27.5
+ 91	"			51	121
		3	11	51	27.5
+ 85 <sup>5</sup>	"			51	121
		3	11	51	27.5
+ 80	"			51	121
		3	11	51	27.5
+ 74 <sup>5</sup>	"			51	121
		3	11	51	27.5
+ 69	"			51	121
		3	11	51	27.5
				357	220.0
					968

Sta.	3 in. Caps Posts	Lagging		Board	Measure
	4x6	2x10	2x12		
163+63 <sup>E</sup>	One Set			51	
+58	11	5	9	51	45.8 ✓ 99 ✓
+52 <sup>E</sup>		4	10	51	36.7 ✓ 110 ✓
+47		3	6	51	27.5 ✓ 66 ✓
+41 <sup>E</sup>		3	6	51	27.5 ✓ 66 ✓
+36		3	6	51	27.5 ✓ 66 ✓

306 ✓  
165.0 ✓

407 ✓

3731.5 ✓ Total for June  
10020.0 ✓ Est. #4  
13751.5 ✓ Est. #5.

Counted June 25  
 Elliott Notes  
 Jacobsen Ruler + count  
 Bailey Tape + count

Additional timber to 3 P.M.

June 26, 1930

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Sta	Sill, Caps, Posts	Lagging	Board	Measure
145+97	4x6 One Set	2x10 2x12	51	
146+015	"	4 15	36.7	165
+062	"	3 11	27.5	121
+112	"	3 6	27.5	66

204 91.7 352

Est. #5 Total 3876 2071.7

where does  
 this come from

3876 ✓  
 2072 ✓  
 6141  
 120.89 Total for June 6471  
 66.283 Est. #4  
 12,919

78.372 M. Est. #5

204  
 91.7  
 352  
 647.7 Est. #5



Sta	Sills, Posts, Caps	Lagging	Board	Measure
	4x6	2x10	2x12	

Final timber Count, July 24 1930

Tunnel 3.

Elliott. Notes  
Bailey. Count Tape  
Soper. Count Ruler

Tunnel #3

Sta	Sill, Posts, Caps 4x6	Lagging		Board		Measure 2x12
		2x10	2x12	4x6	2x10	
224+16 <sup>2</sup>	One set <del>2x10x4.0</del>			51		
224+12 <sup>2</sup>	"	3 <del>2x10x4.0</del>	16 2x12x4.0	51	20.0	128
224+08 <sup>2</sup>	"	3	16	51	22.5	144
224+03 <sup>2</sup>	"	3	16	51	22.5	144
223+99 <sup>2</sup>	"	3 2x10x4.5	8 2x12x4.5	51	22.5	72
223+54 <sup>2</sup>	"	3 2x10x4.5	6 2x12x4.5	51	22.5	54
223+94 <sup>2</sup>	"	3	6	51	22.5	54
223+90 <sup>2</sup>	"	3 <del>2x10x5.5</del>	6 <del>2x12x5.5</del>	51	27.5	66
223+84 <sup>2</sup>	"	3 2x10x5.5	6 2x12x5.5	51	27.5	66

Sta	Sill, Posts, Laps		Lagging		Board	Measure
	4x6	2x10	2x10	2x12		
223+79	One set				51	
+73 <sup>E</sup>	"		3	6	51	27.5 ✓ 66 ✓
+68	"	2x10x5.5	3	6	51	27.5 ✓ 66 ✓
+62 <sup>E</sup>	"		3	6	51	27.5 ✓ 66 ✓
+57	"	<del>2x10x3</del>	3	6	51	27.5 ✓ 66 ✓
+54	"	<del>2x10x3</del>	3	6	51	15.0 ✓ 36 ✓
+49 <sup>E</sup>	"		3	6	51	22.5 ✓ 54 ✓
223 + 44 <sup>E</sup>	"	2x10x4.5	3	//	51	22.5 ✓ 99 ✓

Sta	Sill, Caps, Posts 4x6	Logging 2x10 2x12	Board	Measure
223 + 40'	One Set	3 16	51	22.5 ✓ 144
+ 34'	"	3 6	51	27.5 ✓ 22.5 ✓ 66 54
3.4	"	3 6	51	27.5 ✓ 66
+ 29'	"	3 6	51	27.5 ✓ 66
+ 23'	"	3 6	51	27.5 ✓ 66
+ 18'	"	3 6	51	27.5 ✓ 66
+ 12'	"	3 6	51	27.5 ✓ 66
+ 07'	"	3 6	51	27.5 ✓ 66
223 + 01'	"	3 6	51	27.5 ✓ 66

Sta	Sill, Caps, Posts	Lagging		Board	Measure
		4x6	2x10 2x12		
		3	6	51	27.5 66
2222	+96 <sup>3</sup> One set			51	
		3	6	51	27.5 66
	+90 <sup>2</sup> "			51	
		3	6	51	27.5 66
	+85 <sup>3</sup> "			51	
		3	6	51	27.5 66
	+79 <sup>2</sup> "			51	
		3	6	51	27.5 66
	+74 <sup>3</sup> "			51	
		3	6	51	27.5 66
	+68 <sup>8</sup> "			51	
		3	6	51	27.5 66
	+63 <sup>3</sup> "			51	
		3	6	51	27.5 66
2222	+57 <sup>8</sup> "			51	

Sta.	Sill, Caps, Posts	Lagging		Board Measure	
	4x6	2x10	2x12		
222+37 <sup>2</sup>		3	6	27.5	66
222+52 <sup>2</sup> - One set				51	
+46 <sup>8</sup>	"	3	6	27.5	66
+41 <sup>5</sup>	"	3	6	27.5	66
+35 <sup>2</sup>	"	3	6	27.5	66
+30 <sup>3</sup>	"	2x10x5.5 3	2x12x5.5 6	27.5	66
+24 <sup>2</sup>	"	3	6	27.5	66
+19 <sup>4</sup>	"	3	6	27.5	66
222+13 <sup>6</sup>	"	3	6	27.5	66
				51	

Sta	Sill, Caps, Posts	Logging				
			3	6	27.5	66
222.2 + 08°	One Set				51	
			3	6	27.5	66
+ 02°	"	2x10x5.5	3	6	27.5	66
			3	6	27.5	66
221 + 97°	"	2x12x5.5	3	6	27.5	66
					51	
					2193	1090
					1075.0	3029
						3041
						Sub Total
221 + 67°	"		3	6	27.5	66
					51	
+ 62°	"		3	6	27.5	66
					51	
+ 56°	"	2x10x5.5	3	6	27.5	66
			3	6	27.5	66
221 + 51°	"	2x12x5.5	3	6	27.5	66
					51	

~~3029~~  
~~1090~~  
~~2193~~  
 6.3.12

2193 ✓  
 1095 ✓  
 3041 ✓  
 .86 ✓  
 6.415

221 + 456	One Set	3	6	51	27.5	66
+ 40°	"	3	6	51	27.5	66
+ 345	"	2x10x5.5	3	6	27.5	66
	"	2x12x5.5	3	6	27.5	66
221 + 288	"	↓	↓	51	27.5	66
220 + 998	"	↑	↑	51	27.5	66
+ 893	"	2x10x5.5	3	6	27.5	66
	"	2x12x5.5	3	6	27.5	66
220 + 838	"			51		

No Timber

408 ✓ 192.5 ✓ 462 ✓ Sub. Total

408  
192.5  
462  

---

1062  
16 ✓  

---

1078



220 + 78 <sup>3</sup>	One Set	2x10x5.5	3	2x12x5.5	6	51	27.5	66
						<u>51</u>		
						204	82.5	198
								Subtotal
220 + 586	"					51		
			3		16		22.5	144
+ 54	"					51		
			3		16		22.5	144
+ 495	"					51		
		2x10x4.5	3	2x12x4.5	11		22.5	99
+ 442	"					51		
		2x10x4.5	3	2x12x4.5	11		22.5	99
+ 403	"					51		
			3		6		22.5	54
220 + 357	"					51		

204  
82.5  
198  
48.8  
193

$220 + 31^2$	One Set	3	6	51	22.5	54
$+26^2$	"	3	6	51	22.5	54
$+22^2$	"	2 × 10 × 4.5	3 6	51	22.5	54
$+17^2$	"	2 × 10 × 4.5	3 6	51	22.5	54
$+12^2$	"	2 × 12 × 4.5	3 6	51	22.5	54
$+07^2$	"	2 × 12 × 4.5	3 6	51	27.5	66
$220 + 01^2$	"	2 × 10 × 5.5	3 6	51	22.5	54
		2 × 12 × 5.5	3 6	51	27.5	66

219 + 96 = One Set

↑  
No Timber

51  
-----  
714 247.5  
307.5

996 Subtotal

219 + 85 = "

↑

↑

51

27.5

66

+ 79 = "

3

6

51

27.5

66

+ 74 = "

3

6

51

27.5

66

+ 68 = "

2x10x5.5

3

2x12x5.5

6

51

27.5

121

+ 63 = "

3

11

51

27.5

121

219 + 57 = "

3

11

51

714  
247.5  
996  
-----  
1958

714  
307.5  
1008  
28  
-----  
2057.5

219 + 52'	One set	3	11	57	27.5	121
+ 46'	"	3	11	57	27.5	121
+ 41'	"	3	6	51	27.5	66
+ 35'	"	3	6	51	27.5	66
+ 30'	"	3	6	51	27.5	66
+ 24'	"	3	6	51	27.5	66
+ 18'	"	3	6	51	27.5	66
219 + 13'	"	3	6	51	27.5	66

2x10x5.5

2x12x5.5

219 + 072 Onebet:	3	6	51	27.5	66
219 + 029 "	3	6	51	27.5	66
218 + 969 "	3	6	51	27.5	66
218 + 914 "	3	6	51	27.5	66
+86 <sup>0</sup> "	2x10x5.5	3	51	27.5	121
+80 <sup>4</sup> "	2x12x5.5	3	51	27.5	121
+79 <sup>9</sup> "	3	11	51	27.5	121
218 + 693 "	3	11	51	27.5	121

218 + 63 <sup>8</sup>	One Set	3	11	51	27.5	121
+ 58 <sup>2</sup>	"	3	11	51	27.5	121
+ 52 <sup>6</sup>	"	3	6	51	27.5	66
+ 47 <sup>1</sup>	"	3	5.5	51	27.5	66
+ 41 <sup>8</sup>	"	3	6	51	27.5	66
+ 36 <sup>9</sup>	"	3	6	51	27.5	66
218 + 30 <sup>8</sup>	"	3	6	51	27.5	66
				<u>51</u>		
				1479	770	2398

No Timber ↑

Subtotal

2398  
 770  
 1479  
 4647  
 58  
 5705

No →

217 + 77<sup>2</sup> One set

51

3 6

27.5

66

+ 71<sup>6</sup> "

51

3 6

27.5

66

+ 66<sup>0</sup> "

51

2 x 10 x 5.5

3 6

27.5

66

+ 60<sup>5</sup> "

51

2 x 12 x 5.5

3 6

27.5

66

+ 55<sup>0</sup> "

51

3 6

27.5

66

217 + 49<sup>3</sup> "

51

← To Timber →

306

137.5

330 Subtotal

217 + 27<sup>2</sup> "

51

3 6

27.5

66

306  
 137  
 330  
 ---  
 773  
 12  
 ---  
 785

217 + 22°	One Set			51			
+16°	"	2x10x5.5 <sup>-</sup>	3		6	27.5	66
				51			
+10°	"	2x10x5.5 <sup>-</sup>	3		6	27.5	66
				51			
217 + 05°	"	2x10x7°	3		6	27.5	66
				51			
216 + 98°	"	2x10x7°	3		6	35.0	84
				51			
+92°	"		3		6	27.5	66
				51			
+87°	"	2x10x5.5 <sup>-</sup>	3		6	27.5	66
				51			
216 + 81°	"	2x10x5.5 <sup>-</sup>	3		6	27.5	66
				51			



216 + 76 <sup>L</sup>	One Set	3	6	51	27.5	66
+70 <sup>Z</sup>	"	3	6	51	27.5	66
+65 <sup>L</sup>	"	3	6	51	27.5	66
+59 <sup>S</sup>	"	2 x 10 x 5.5	3	51	27.5	66
+59 <sup>S</sup>	"	2 x 12 x 5.5	3	51	27.5	66
+48 <sup>S</sup>	"	3	6	51	27.5	66
+43 <sup>o</sup>	"	3	6	51	27.5	66
216 + 37 <sup>Z</sup>	"	↓	↓	51	27.5	66

		$2 \times 10 \times 7.5$					
			3	6			
$216 + 29^5$	One Set	<del>X</del>	<del>X</del>		51	37.5	90
			3	6		27.5	66
$+ 29^0$	"				51		
			3	6		27.5	66
$+ 18^5$	"				51		
			3	6		27.5	66
$+ 13^1$	"				51		
			3	6		27.5	66
		$2 \times 10 \times 5.5$					
			3	11		27.5	121
$+ 07^5$	"				51		
			3	6		27.5	66
$216 + 02^1$	"				51		
			3	6		27.5	66
$215 + 96^4$	"				51		
			3	6		27.5	66
$215 + 90^9$	"				51		

$215 + 85^2$	One set	3	6	51	27.5	66
$+79^2$	"	3	6	51	27.5	66
$+74^2$	"	2x10x5.5	3	6	51	27.5
$+68^2$	"	2x12x5.5	3	6	51	27.5
$+63^2$	"	3	6	51	27.5	66
$+57^2$	"	2x10x4.0	3	9	51	27.5
$+53^2$	"	2x12x4.0	3	6	51	20.0
$215 + 48^2$	"	3	11	51	27.5	121

215 + 42 <sup>8</sup> One Set	3	11	51	27.5	121
-------------------------------	---	----	----	------	-----

+ 37 <sup>2</sup> "	3	6	51	27.5	66
---------------------	---	---	----	------	----

+ 31 <sup>6</sup> "	3	6	51	27.5	66
---------------------	---	---	----	------	----

+ 26 <sup>2</sup> "	2 x 10 x 5.5	3	6	51	27.5	66
---------------------	--------------	---	---	----	------	----

+ 20 <sup>2</sup> "	2 x 12 x 5.5	3	9	51	27.5	99
---------------------	--------------	---	---	----	------	----

+ 15 <sup>2</sup> "		3	9	51	27.5	99
---------------------	--	---	---	----	------	----

215 + 09 <sup>6</sup> "		3	6	51	27.5	66
-------------------------	--	---	---	----	------	----

215 + 04 <sup>2</sup> "		3	6	51	27.5	66
-------------------------	--	---	---	----	------	----

2.14 + 98 <sup>6</sup> One Set	3	6	51	27.5	66
+93 <sup>3</sup> "	3	6	51	27.5	66
+87 <sup>2</sup> "	3	6	51	27.5	66
+82 <sup>1</sup> "	3	6	51	27.5	66
+76 <sup>5</sup> "	3	6	51	27.5	66
2.14 + 70 <sup>2</sup> "	3	6	51	27.5	66

2x10x5.5

2x12x5.5

2397 1275

3324 Subtotal

3324  
 1275  
 2397  
 -----  
 6996  
 94  
 -----  
 7090

No Timber

No timber

November

52

Notumber

213 + 90<sup>9</sup> One Set

3 11/6 51 27.5

121  
66

Final of Aug 6, 1980  
Note Correction

+ 85<sup>9</sup> "

3 6 51 27.5

66

+ 79<sup>9</sup> "

3 6 51 27.5

66

+ 74<sup>9</sup> "

2 x 10 x 5.5

3 11/6 51 27.5

121  
66

Note Corr.

+ 68<sup>9</sup> "

2 x 12 x 5.5

3 11/6 51 27.5

121  
66

Note Corr.

+ 63<sup>9</sup> "

3 6 51 27.5

66

+ 57<sup>9</sup> "

3 6 51 27.5

66

213 + 52<sup>9</sup> "

51



O.K. for final on Aug 6, 1930  
Elliott Notes  
Soper  
Bailey Tape

54

2.13 + 47 One Set	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+41 <sup>5</sup> "	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+36 <sup>0</sup> "	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+30 <sup>5</sup> "	2x10x5.5 <sup>✓</sup>	3	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+25 <sup>1</sup> "	2x12x5.5 <sup>✓</sup>	3	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+19 <sup>6</sup> "	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+14 <sup>2</sup> "	3	11	51	27.5 <sup>✓</sup>	121 <sup>✓</sup>
213 + 08 <sup>5</sup> "	3	11	51	27.5 <sup>✓</sup>	121 <sup>✓</sup>

O.K. Aug 6,

55.

213 + 03 <sup>1</sup>	One Set	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
212 + 97 <sup>5</sup>	"	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+ 92	"	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+ 86 <sup>9</sup>	"	2x10x5.5 <sup>✓</sup> 3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+ 80 <sup>9</sup>	"	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
+ 75 <sup>9</sup>	"	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
212 + 69 <sup>8</sup>	"	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>
212 + 64 <sup>6</sup>	"	3	6	51	27.5 <sup>✓</sup>	66 <sup>✓</sup>

O.K. Aug 6, 1930  
 Elliott Notes - Count  
 Bailey Tape  
 Soper Tape-Count

212+59<sup>2</sup> One Set      3      6      27.5      66

1760  
 1326  
 688  
 ---  
 3774

1326 ✓  
 687.5 ✓  
 1925 ✓  
 52 ✓  
 ---  
 3990

212+53<sup>4</sup> " "      3      6      27.5      66

↑  
 No timber  
 ↓

51  
 ---  
 1326 ✓      687.5 ✓      1760 ✓  
 1925

208+47<sup>5</sup> One Set      3      6      27.5      66

208+42 "      3      6      27.5      66

+36<sup>5</sup> "      3      6      27.5      66

+30<sup>9</sup> "      3      6      27.5      66

+25<sup>3</sup> "      3      6      27.5      66

+19<sup>2</sup> "      3      6      27.5      66

↑  
 No

51  
 ---  
 306 ✓      137.5 ✓      330 ✓

306  
 137.5  
 330  
 ---  
 773.5  
 12  
 ---  
 786

Final Count on Aug 6, 1930

57

Number

205+337	One Set	2x10x4.5 3	2x12x4.5 16	51	22.5	144
205+291	"	2x10x4.5 3	2x12x4.5 16	51	22.5	144
205+242	Entr. Partat			51		
				<u>153</u>	<u>45</u>	<u>288</u>

Total 9486 4665 13115  
4730 13,304

See next page.

288	9486
45	4665
<u>153</u>	<u>13115</u>
486	27266
<u>6</u>	
492	
	9486
	4730
	<u>13,304</u>
	27,520

Total Timber Count - Tunnel 3

Total 4x6 Timber Sets = 186

Total B.M. Timber + Lagging

27.266 M.B.M.

2 Blocks + Wedges .885 ✓ Letter June 14

" " " 1.281 " July 31

2 Total 29.432 Est. #7.

Add to 4"x6" sets .372

27.520 M.B.M.

Blocks + Wedges .885 ✓

" " " 1.281 ✓

Add to 4"x6" sets .372

Total - 30.058 Est. #7

.7665 ← A.L.L.

Blocks + Wedges 30.2245

2x10 and 2x12 used .626 ✓

as blocking 30.8505

Letters of 10/2/30

Summary Total

4"x6" Timber Sets 9.8580 M.B.M.

2"x10" and 2"x12" Lagging 18.0340 " " "

Blocking and wedges 2.9585 " " "

Total 30.8505 M.B.M.

Correction -

186 - 4"x6" timber sets at 53' B.M. per set instead of 51' B.M. as allowed

2' B.M. x 186 sets = 372' B.M. additional to be allowed on Sept. Estimate

4x6 Sets = 9.858

Lagging = 18.034

Blocks + Wedges = 2.166 27.892

30.058

2.1656 ✓

.167

.1665 ✓

.626

.626 ✓

30.851

2.9581



























1871  
 1872  
 1873  
 1874

1064  
 1065

1000

**DIRECTIONS FOR USE OF TABLES**

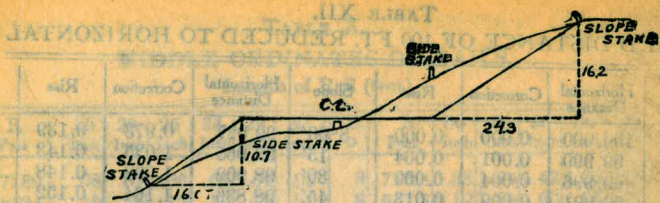
TABLE No. 1.

Distance of slope stake from side or shoulder  
 stake for any width roadway, slope  $1\frac{1}{2}$  to 1.  
 If ground is nearly level, the cut of fill at side  
 stake is found by the double rule method.  
 left column and top row. The number in body

**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 tangent  
 length divided by twice the radius.



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/2 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.

Mr Soddler new Sec. Am  
 Soc C. E. Public Works Bldg  
 foot of Broadway.

1. Supt. ... 1910-1911  
2. Supt. ... 1912-1913  
3. Supt. ... 1914-1915  
Main ...  
Supt. ...  
Supt. ...

16  
5 180  
50  
3

77  
61  
32  
171