

W
393

ENGINEERS
MINING
TRANSIT BOOK
No. 422 F

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

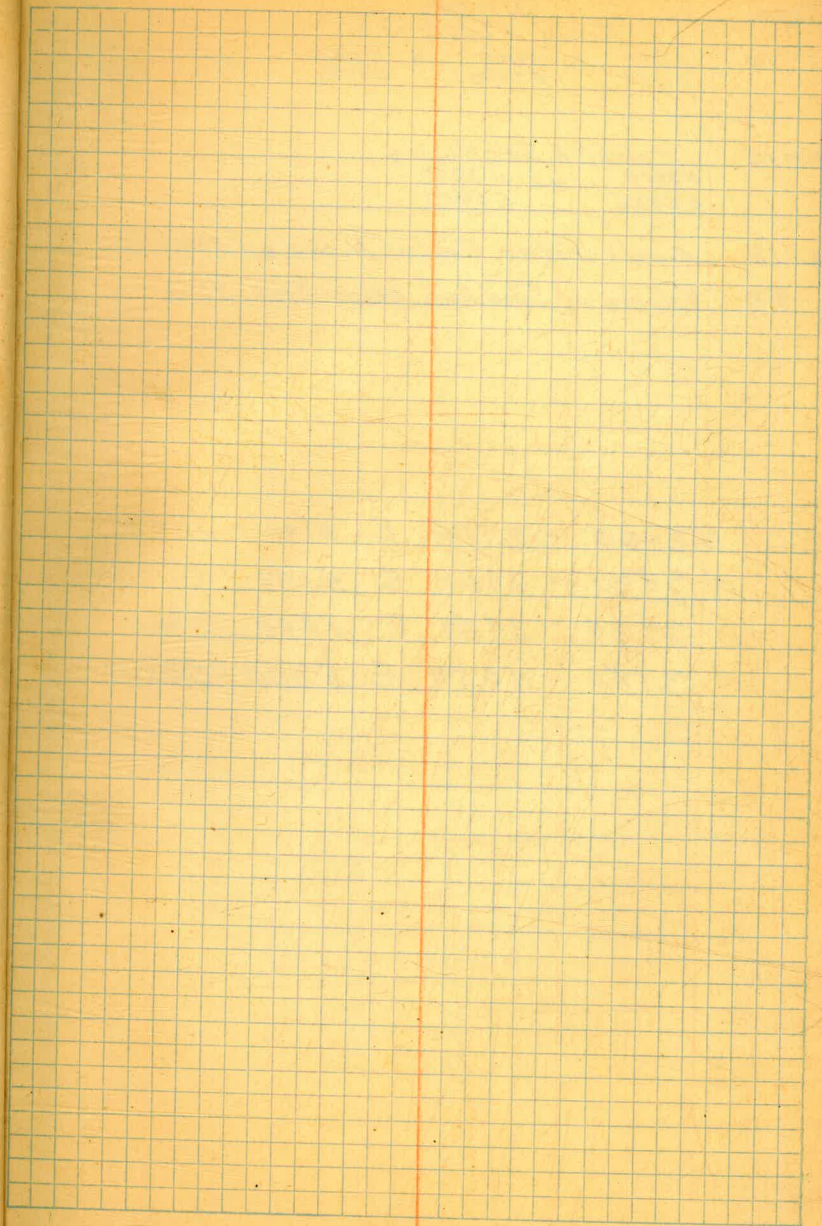
Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

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

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

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E 5460 from N 3790 to N 3870



Page

Index

Final X Sections

1-10

N3850
E5140

to

N3850
E5450

&

N3910
E5140

to

N3910
E5450

11-15

Final X Sections

N3800
E5450

to

N3890
E5450

16-18

Final X Section East of N. end of upst. Wall

78

Volume of Solid Rock below Elev. 550

N 3460 - 3500 E 5140 - 5490

N 3890 - 3900 E 5140 - 5530

N 3930 - 3980 E 5200 - 5460

N 3980 - 4650 E 5300 - 5350

Final X Sections

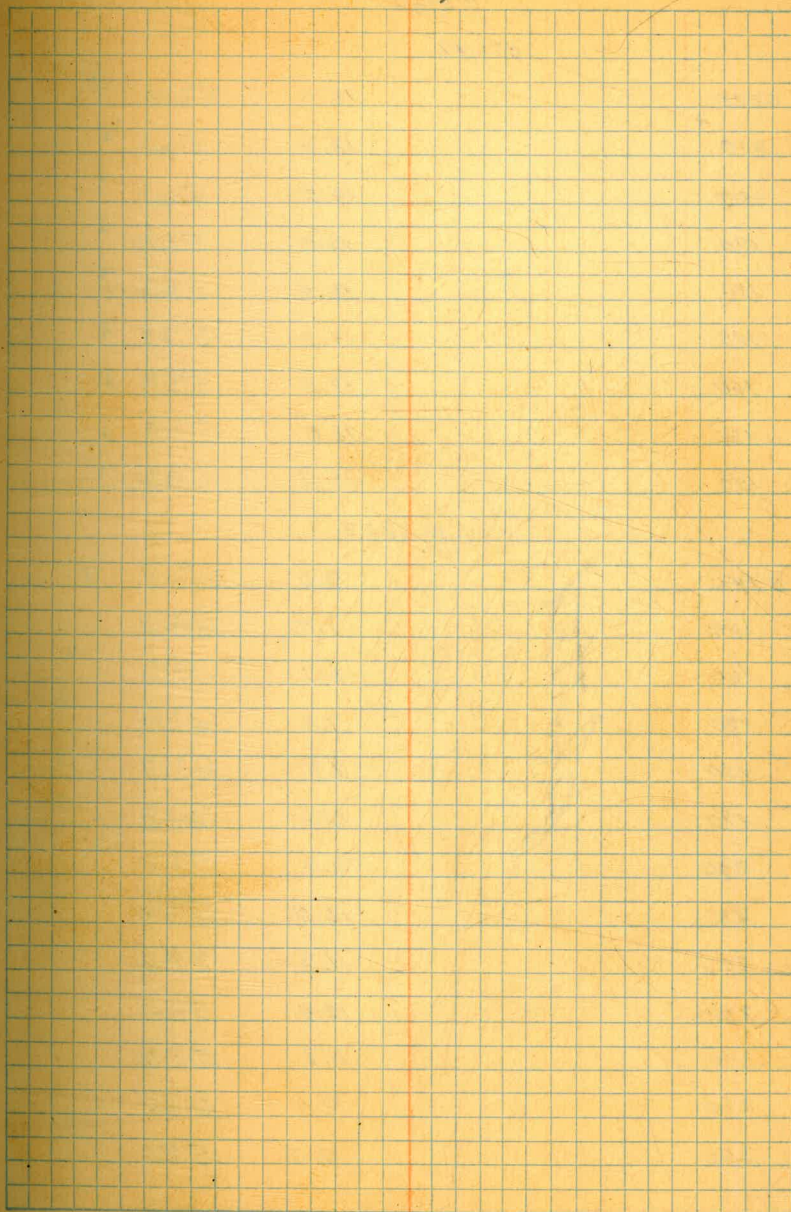
Aug 11 - 1932
 Elliott - Notes
 Simpson - T
 Soper - T & D
 Kemmer - Tape

N 3850

B.M.	12.64	571.42	558.78
E 5450		11.6	59.8
440		12.9	58.5
430		13.0	58.4
420		13.1	58.3
410		12.3	59.1
400		11.6	59.8
390		11.7	59.7
380		11.9	59.5
370		12.4	59.0
360		10.1	61.3
350		12.9	58.5
340		14.4	57.0
330		15.7	55.7
320		15.3	56.1
310		16.3	55.1
300		14.8	56.6
290		15.1	56.3
280		15.5	55.9
270		16.0	55.4
260		15.4	56.0
250		16.2	55.2
240		15.6	55.8
230		15.3	56.1

plotted

All E.C. ok for Plotting 9.24.32



✓

N3850

571.42

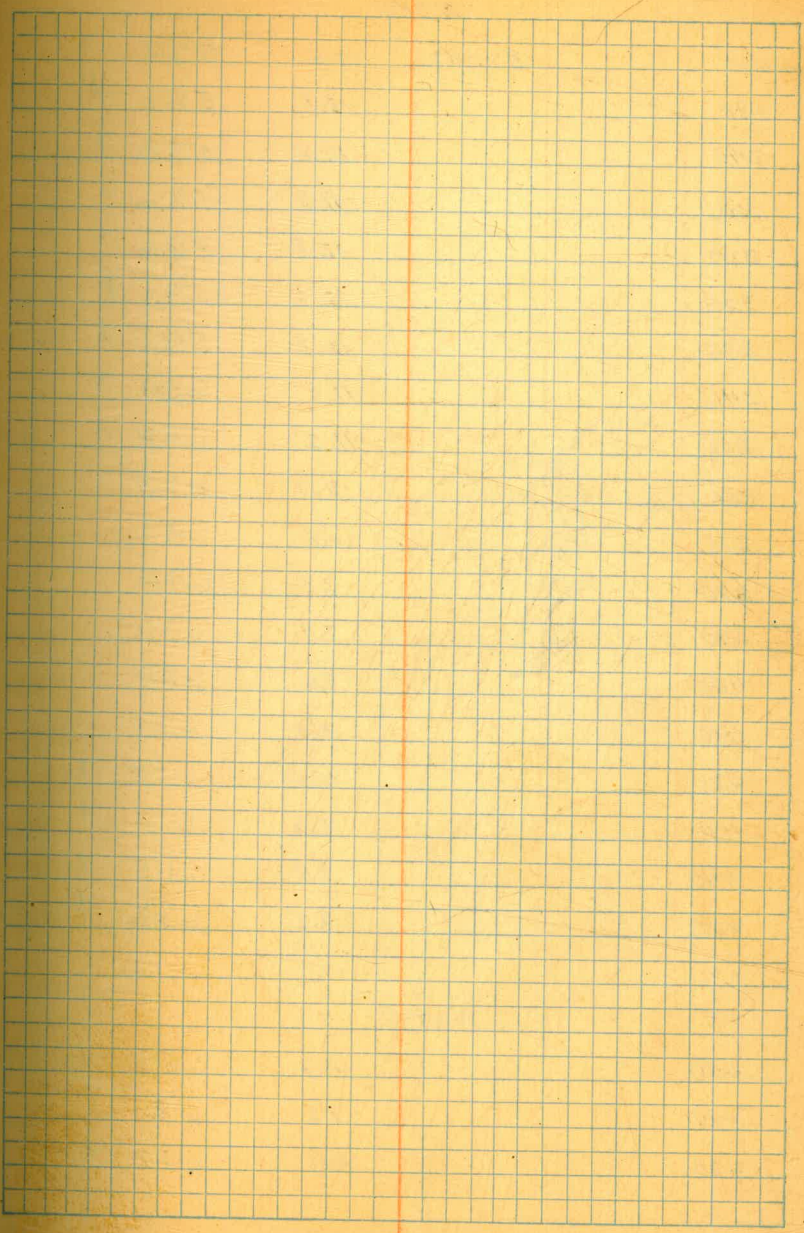
5220	15.0	56.4	✓
210	15.3	56.1	✓
200	15.3	56.1	✓
190	15.4	56.0	✓
180	15.4	56.0	✓
170	14.2	57.7	✓
160	12.5	58.9	✓
150	12.0	59.4	✓
140	10.8	60.6	✓

N3860

5140	7.6	63.8	✓
150	7.4	64.0	✓
160	6.7	64.7	✓
170	7.5	63.9	✓
180	7.7	61.7	✓
190	10.6	60.8	✓
200	12.6	58.8	✓
210	12.0	59.4	✓
220	11.8	59.6	✓
230	12.0	59.4	✓
240	11.8	59.6	✓
250	12.9	58.5	✓
260	13.2	58.2	✓

plotted

138
✓



N3860

5270	571.42	13.5	57.9	✓
280		13.1	58.3	✓
290		12.4	59.0	✓
300		11.8	59.6	✓
310		12.8	58.6	✓
320		12.3	59.1	✓
330		12.3	59.1	✓
340		11.3	60.1	✓
350		11.5	59.9	✓
360		8.7	62.7	
370		7.1	64.3	
380		7.0	64.4	
390		7.7	63.7	
400		8.6	62.8	
410		10.3	61.1	
420		10.6	60.8	✓
430		10.3	61.1	✓
440		9.9	61.5	✓
450		8.2	63.2	✓

potted

N3870

450		2.6	62.8	✓
440		3.3	68.1	✓
430		4.2	67.2	✓

Cont. on page 13

Cont. on page 14

571.42

5420	7.1	64.3	✓
410	7.1	64.3	✓
400	6.9	64.5	✓
390	5.2	66.2	✓
380	3.3	68.1	
370	3.6	67.8	✓
360	6.6	64.8	✓
350	8.4	63.0	
340	8.7	62.7	✓
330	9.1	62.3	
320	9.0	62.4	
310	9.3	62.1	
300	8.8	62.6	
290	8.0	63.4	✓
280	9.2	62.2	✓
270	9.0	62.4	✓
260	8.1	63.3	✓
250	7.7	63.7	✓
240	8.1	63.3	✓
230	7.9	63.5	✓
220	8.2	63.2	✓
210	8.3	63.1	✓
200	7.3	64.1	✓
190	6.2	65.2	✓

Plotted

All checked for plotting 9-21-34 EBA

✓

N3870

571.42

E 5180	5.9	65.5	
170	1.9	66.5	
160	3.2	68.2	
150	2.2	69.2	
140	1.4	70.0	
T.P.	0.53	570.89	
10.84	581.73		

N3880

E 5140	1.6	80.1	
150	1.4	80.3	
160	2.0	79.7	
170	6.0	75.7	
180	9.9	71.8	
190	11.3	70.4	
200	12.0	69.7	
210	13.6	68.1	
220	14.1	67.6	
230	14.2	67.5	
240	14.6	67.1	
250	14.5	67.2	
260	15.2	66.5	
270	16.4	65.3	
280	15.8	65.9	

plotted

✓

N3880

581.73

E 52.90	15.2	66.5	↓
300	13.5	68.2	
310	13.9	67.8	
320	14.7	67.0	
330	14.0	67.7	
340	15.3	66.4	↓
350	12.4	69.3	
360	13.6	68.1	
370	11.9	69.8	
380	11.3	70.4	
390	12.5	69.2	↓
400	11.8	69.9	
410	11.8	69.9	↓
420	8.0	73.7	↓
430	3.5	78.2	
440	2.8	78.9	
450	2.4	79.3	
T.P.	0.23	581.50	

plotted

4.92

586.42

N3890

450	5.5	80.9
440	5.4	81.0
430	5.3	81.1

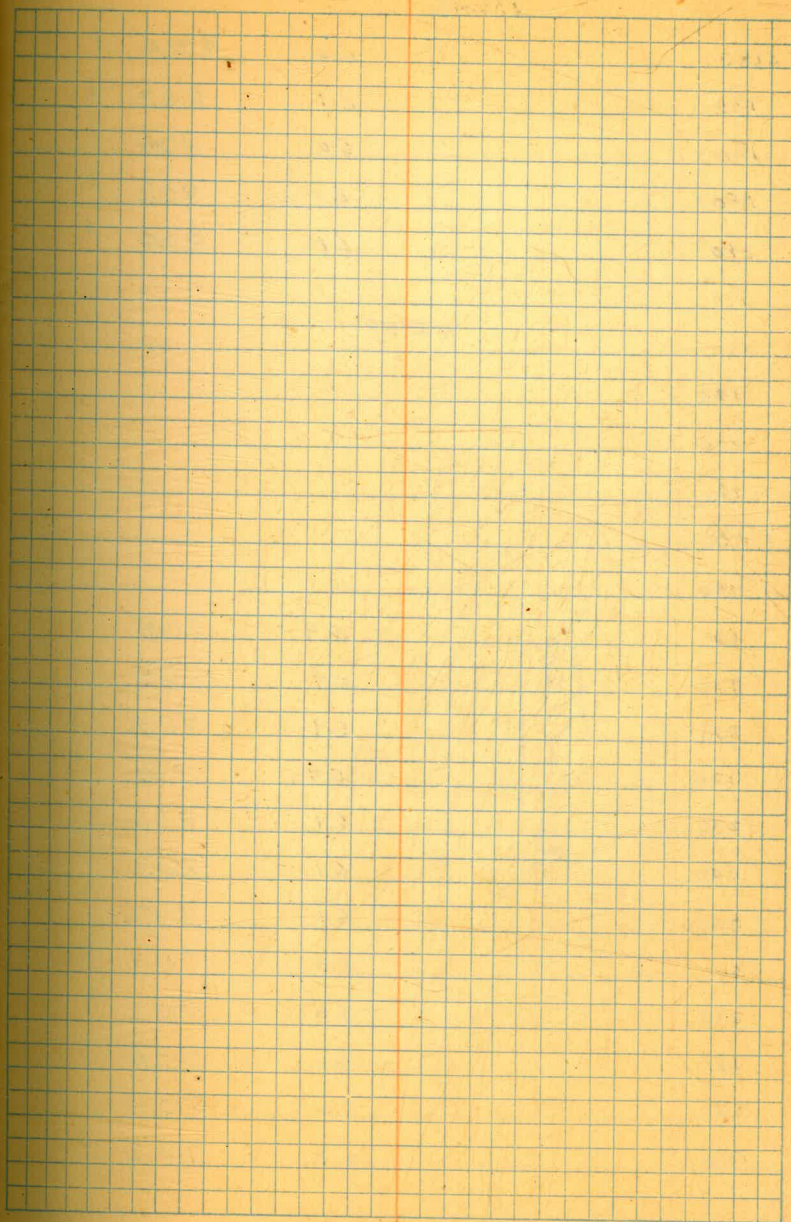
✓

N3890

586.42

E 5420	5.2	81.2
410	5.5	80.9 ✓
400	5.5	80.9
390	7.8	78.6
380	8.7	77.7 ✓
370	11.5	74.9 ✓
360	12.1	74.3 ✓
350	11.3	75.1 ✓
340	15.5	70.9 ✓
330	15.0	71.4
320	15.3	71.1
310	14.4	72.0
300	14.0	72.4
290	12.9	73.5 ✓
280	12.9	73.5 ✓
270	13.5	72.9 ✓
260	13.2	73.2 ✓
250	13.2	73.2 ✓
240	12.5	73.9 ✓
230	9.6	76.8 ✓
220	7.5	78.9 ✓
210	7.1	79.3 ✓
200	6.1	80.3 ✓
190	5.9	80.5 ✓

plotted



N3890

586.42

E 5180	6.0	80.4	
170	6.1	80.3	
160	6.0	80.4	
150	6.1	80.3	
140	6.0	80.4	

N3900

140			
150			
160			
170			
180			
190	5.9	80.5	
200	5.9	80.5	
210	5.9	80.5	
220	5.9	80.5	
230	6.1	80.3	
240	6.1	80.3	
250	6.1	80.3	
260	6.3	80.1	
270	6.3	80.1	
280	6.0	80.4	
290	6.0	80.4	
300	8.2	78.2	

plotted

✓

N3900

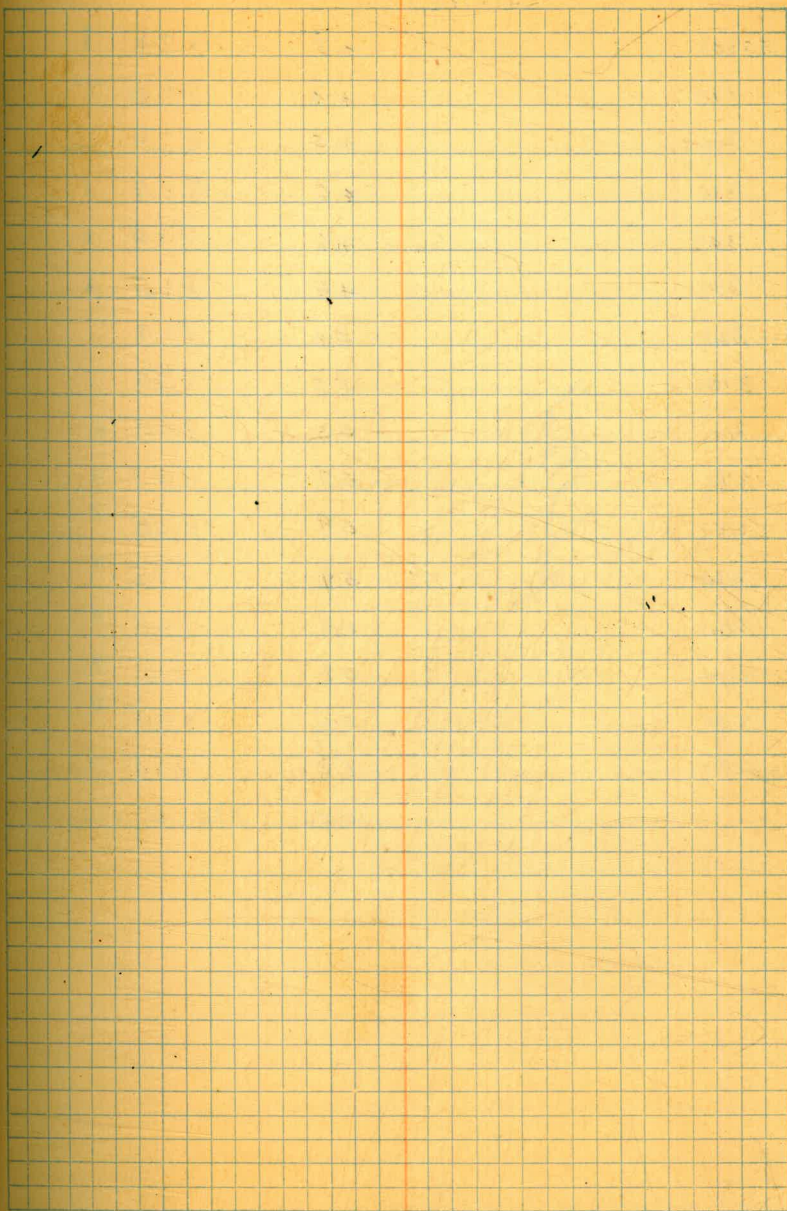
586.42

5310	7.0	79.4	
320	9.2	77.2	
330	9.3	77.1	
340	6.8	79.6	✓
350	6.7	79.7	✓
360	4.4	82.0	✓
370	4.5	81.9	✓
380	4.9	81.5	✓
390	4.9	81.5	
400	4.9	81.5	
410	4.9	81.5	
420	4.9	81.5	
430	5.0	81.4	

plotted

N3910

9



✓

N 3910

586.42

E 5380	4.3	82.1	✓
370	4.4	82.0	✓
360	4.5	81.9	✓
350	4.6	81.8	✓
340	4.6	81.8	✓
330	4.6	81.8	✓
320	5.2	81.2	
310	5.5	80.9	
300	5.5	80.9	✓
290	5.7	80.7	✓
280	5.9	80.5	✓
270	5.9	80.5	✓
260	5.9	80.5	✓
250	5.8	80.6	✓
240	5.6	80.8	✓
230	5.3	81.1	✓
	10.26	576.16	= TP.

plotted

576.19

10

E1. 576.19.

Final X Sections

Sept 19-1932
Elliott
Simpson
Soper
Remmen

Top of Toe Wall	0.28	575.28		575.00
	0.63	562.81	13.10	562.18
		N3790		
5500		562.8	14.4	48.4 ✓
490	<u>plotted</u>		14.9	47.9 ✓
480			10.7	52.1 ✓
470				
460				Covered

		N3800		
5510			13.9	48.9 ✓
500	<u>plotted</u>		14.2	48.6 ✓
490			12.8	50.0 ✓
480			8.6	54.2 ✓
470				
460				Covered

		N3810		
5510			13.5	49.3 ✓
500	<u>plotted</u>		13.6	49.2 ✓
490			10.0	52.8 ✓
480			8.8	54.0 ✓
470				
460				Covered

✓

562.81

N2820

5510		12.6	50.2 ✓	↓
500		12.0	50.8 ✓	↓
490	<u>plotted</u>	8.3	54.5 ✓	↓
480		8.1	54.7 ✓	↓
470		Covered		
460				

N3830

562.8

5520		11.0	51.8 ✓	↓
510		9.7	53.1 ✓	↓
500		8.3	54.5 ✓	↓
490	<u>plotted</u>	7.6	55.2 ✓	↓
480		7.7	55.1 ✓	↓
470		Covered		
460				

N3840

5520		9.8	59.0 ✓	↓
510		7.6	68.4 ✓	↓
500		5.7	67.1 ✓	↓
490	<u>plotted</u>	5.4	67.4 ✓	↓
480		5.6	67.4 ✓	↓
470		Covered 67.4 ✓		
460			557.2	↓

V

562.81
 T.P. 11.40 573.58 0.63 562.18

N3850
 5520 573.6 13.3 60.3 ✓
 510 12.8 60.8 ✓
 500 8.6 65.0 ✓
 490 11.4 62.2 ✓
 480 12.4 61.2 ✓
 470 11.2 62.4 ✓
 460 covered 560.2 ✓

plotted

N3860
 5530 71.4 75.1 ✓
 520 5.5 68.1 ✓
 510 8.0 65.6 ✓
 500 6.9 66.7 ✓
 490 7.5 66.1 ✓
 480 10.8 67.8 ✓
 470 9.3 64.3 ✓
 460 covered 564.7 ✓

plotted

from page 3

573.58

N3870

5530		15.5	579.1	✓	↓
520		10.9	74.5	✓	
510		2.7	70.9	✓	
500		5.1	68.5	✓	
490		7.8	65.8	✓	↓
480		6.3	67.3	✓	↓
470		Covered			
460			570.4		↓
T.P.	10.97	582.48	2.07	571.51	

N3880

5540		582.5	3.3	79.2	✓	↓
530			3.2	79.3	✓	↓
520			3.1	77.4	✓	
510			3.5	79.0	✓	
500			7.9	70.6	✓	
490			8.8	73.7	✓	↓
480			8.0	74.5	✓	↓
470			6.2	76.3	✓	↓
460			2.9	77.6	✓	

Cont. from page 3

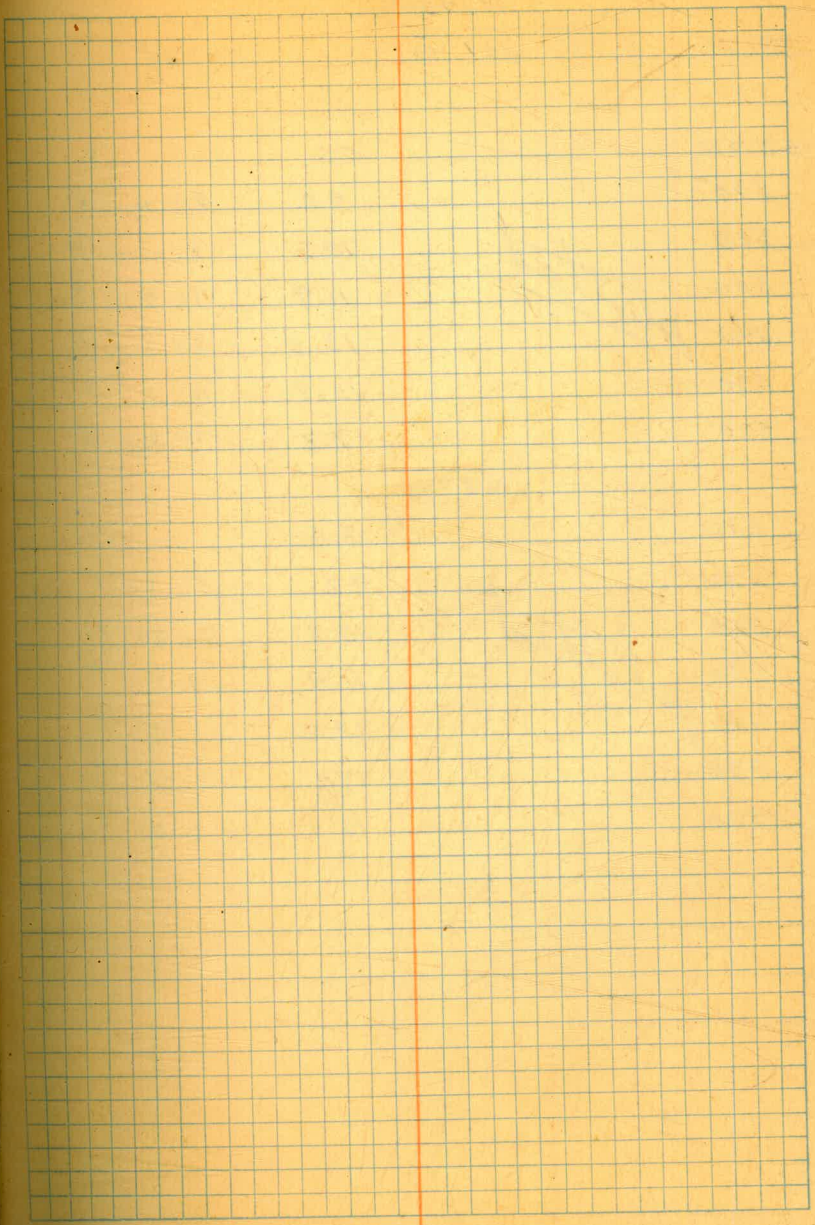
582.48

N8890.

5460	2.0	580.5 ✓
470	2.1	80.4 ✓
480	2.4	80.1 ✓ ↓
490	2.5	80.0 ✓ ↓
500	2.7	79.8 ✓
510	2.9	79.6 ✓
520	2.7	79.8 ✓
Top of Toe Wall	7.48	575.00

plotted

✓



Final X sections

N3730

B.M. 2.79 561.63 558.84

5570		0.6		✓
570		9.2	52.4	✓✓
560	<i>plotted</i>	10.5	51.1	✓✓
550		11.9	49.7	✓✓
540		13.5	48.1	✓✓
530		15.8	45.8	✓✓
520		17.3	44.3	✓✓

N3740

570		0.6		✓
570		9.2	52.4	✓✓
560	<i>plotted</i>	10.8	50.8	✓✓
550		11.9	49.7	✓✓
540		13.2	48.4	✓✓
530		14.4	47.2	✓✓
520		15.6	46.0	✓✓

Sept 22-1932

16

Elliott Notes

Simpson - T

Soper - 9

Remmen Tape

N3750

561.63

5570	0.6		✓
570	8.7	552.9 ✓	✓
560	11.0	50.6 ✓	✓
550	11.8	49.8 ✓	✓
540	13.8	47.8 ✓	✓
530	14.4	47.2 ✓	✓
520	15.1	46.5 ✓	✓

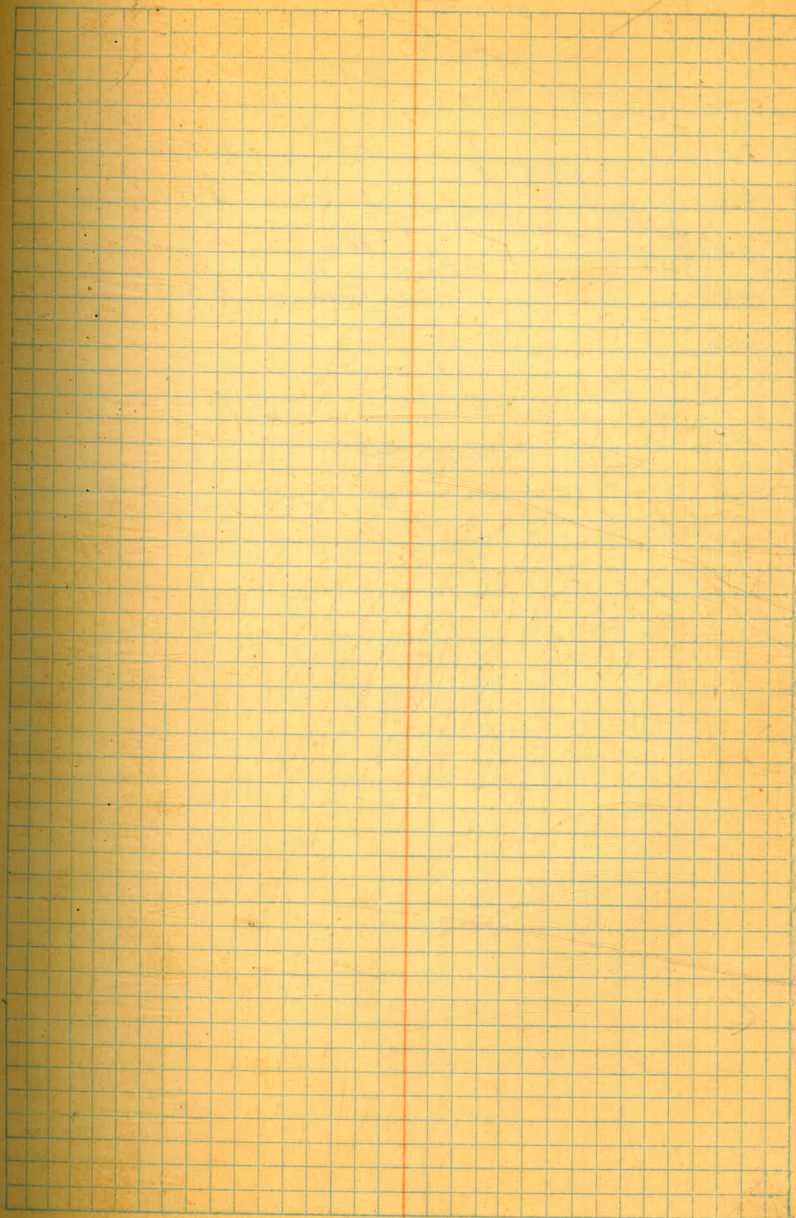
N3760

5570	0.6 + 1.3	62.9 ✓	✓
70	3.3	58.3 ✓	
60	9.7	51.9 ✓	✓
50	12.3	49.3 ✓	✓
40	13.8	47.8 ✓	✓
30	14.3	47.3 ✓	✓
20	14.9	46.7 ✓	✓

N3770

570	0.6 + 1.0	62.6 ✓	✓
560	6.8	54.8 ✓	✓
550	12.5	49.1 ✓	✓
540	13.7	47.9 ✓	✓
530	13.7	47.9 ✓	✓
520	14.3	47.3 ✓	✓

17



✓

561, 63

N3780

0.6,

E 5570

560

4.4

557.2 ✓

550

10.2

51.4 ✓

540

12.6

49.0 ✓

530

13.3

48.3 ✓

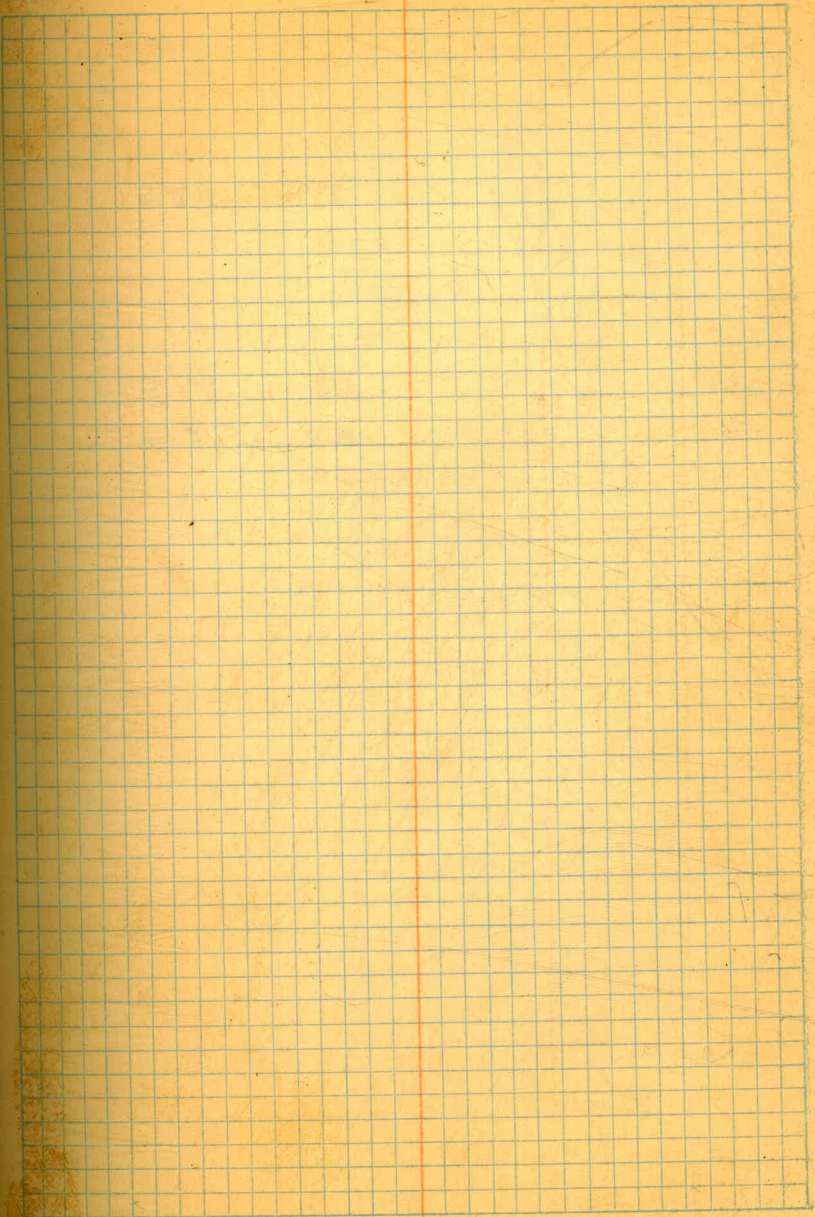
~~plotted~~

↓

Final X Sections
Oct 4 - 1932

B.M.	7.85	566.69	558.84	
		N 3790	0.6	↓
5560				
550	plotted	11.7	55.0	↓
540		16.4	50.3	↓
530		17.5	49.2	↓
		N 3800	0.6	↓
5550				
540	plotted	16.0	50.7	↓
530		16.7	50.0	↓
		N 3810 ✓	0.6	↓
5550				
540		15.0	51.7	↓
530		15.7	51.0	↓
		N 3820 ✓	0.6	↓
5545				
540	plotted	13.8	52.9	↓
		N 3830 ✓	0.6	↓
5550				
540		12.0	54.7	↓
		N 3840	0.6	↓
5560				
550		0.2	66.5	↓
540		8.6	58.1	↓

↓



N 3850

B.M.	6.3	581.3	575.00	
			0.6	✓
5560				
550		11.3	70.0	✓
540		17.7	63.6	

N 3860

5560			0.6	✓
550		2.8	78.5	
540		5.9	75.4	

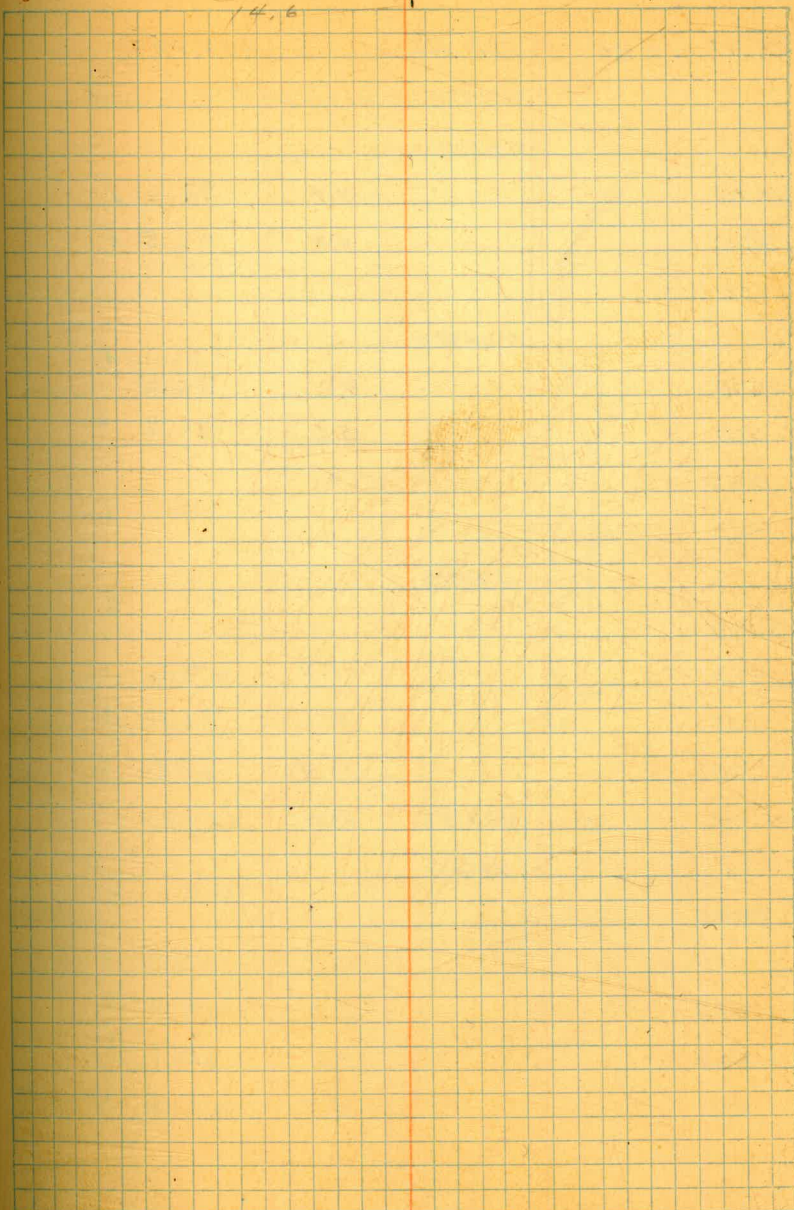
plotted

81.3

66.7

14.6

31



Oct 4-1932

21

B.M.	5.56	580.54	574.98
N3410 is original ground			
N3420 ✓			
5570		0.9	79.6 ✓
560		4.0	76.5 ✓
550			0.6
N3430 ✓			
5570		4.0	76.5 ✓
560		8.6	71.9 ✓
550		on wall	
540			0.6 ✓
N3440			
5585			0.6 ✓
580		10.9	69.6 ✓
570		9.1	71.4 ✓
560		12.9	67.6 ✓
T.P.	1.15	568.68	13.01 567.53
N3450			
5590			0.6 ✓
580		3.7	65.0 ✓
570		3.7	64.8 ✓
560		4.6	64.1 ✓
550		5.9	62.8 ✓

✓

Page 39

N3460

568.68 ✓

5590		0.6	✓
580	1.7	67.0	✓
570	6.2	62.5	✓
560	6.7	62.0	✓
550	7.1	61.6	✓

N3470 ✓

5590		0.6	✓
580	5.0	63.7	✓
570	7.7	61.0	✓
560	7.3	61.4	✓
550	9.7	59.0	✓

N3480 ✓

5580		0.6	✓
570	7.5	61.2	✓
560	9.8	58.9	✓
550	14.7	54.0	✓
540	16.6	52.1	✓
T.P.	7.40	561.28	

potted

5590 on page 39

End Oct 4, 1932

N3490 ✓			
T.P.	1.58	562.86	561.28 0.6
5580			
570		0.6	62.3
560		5.4	57.5
550		10.4	52.5
545		12.9	50.0
540		14.2	48.7

solid rock below this elev. and W. from here

N3500 ✓			
5580			0.6
570		1.7	61.2
560		5.2	57.7
550		10.3	52.6
545		12.9	50.0
540		13.7	49.2

solid rock below this elev. and W. from here

3510 ✓			
5580			0.6
570		1.9	61.0
560		3.4	59.5
550		10.0	52.9
540		12.9	50.0
530		19.0	43.9
T.P.	1.21	562.49	1.58 561.28

solid rock below this elev. and W. from here

N3520 ✓
562.49

5580		0.6	563.7	1
570	3.4		59.1	1
560	5.1		57.4	1
550	10.9		51.6	1
545	12.5		50.0	1
540	15.1		47.4	1
530	21.5		41.0	1

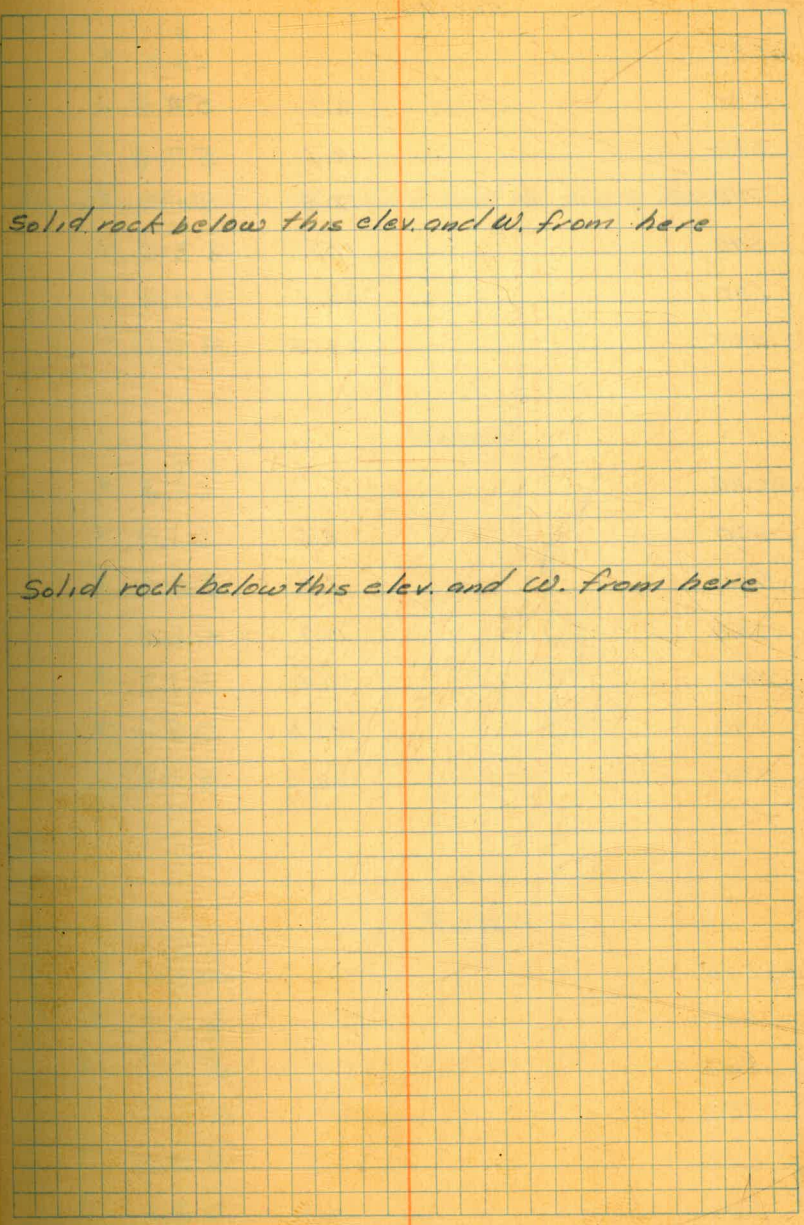
Solid rock below this elev. and W. from here

plotted

N3530 ✓

5580		0.6	63.9	1
570	3.0		59.5	1
560	4.3		58.2	1
550	12.5		50.0	1
540	19.0		43.5	1
530	22.8		39.7	1
525	23.0		39.5	1

Solid rock below this elev. and W. from here



N3540 ✓
562.49

5580		0.6	63.7 ✓
570	2.7	59.8	✓
560	4.7	57.8	✓
550	12.5	50.0	✓
540	19.5	43.0	✓
530	23.1	39.4	✓
522	22.5	40.0	✓

N3550 ✓

5580		0.6	63.8 ✓
570	0.6	61.9	✓
560	7.7	54.8	✓
550	15.7	46.8	✓
540	21.0	41.5	✓
530	23.6	38.9	✓
520	22.3	40.2	

N3560 ✓

5575		0.6	563.6 ✓
570	2.2	60.3	✓
560	12.0	50.5	✓
550	19.0	43.5	✓
540	22.5	40.0	✓
530	24.3	38.2	✓
520	24.4	38.1	✓

Solid rock below this elev. and W. from here

N 3570 ✓

562.49

5570		0.6 563.9 ↓
560	12.4	50.1 ✓
550	21.0	41.5 ✓
540	23.4	39.1 ✓
530	24.5	38.0 ✓
520	23.9	38.6 ✓
515	22.5	40.0

N 3580 ✓

5570		0.6 63.4 ↓
60	13.0	49.5 ↓
50	21.0	41.5 ↓
40	22.6	39.9 ↓
30	24.4	38.1 ✓
20	24.6	37.9 ↓
16	24.2	38.3 ✓

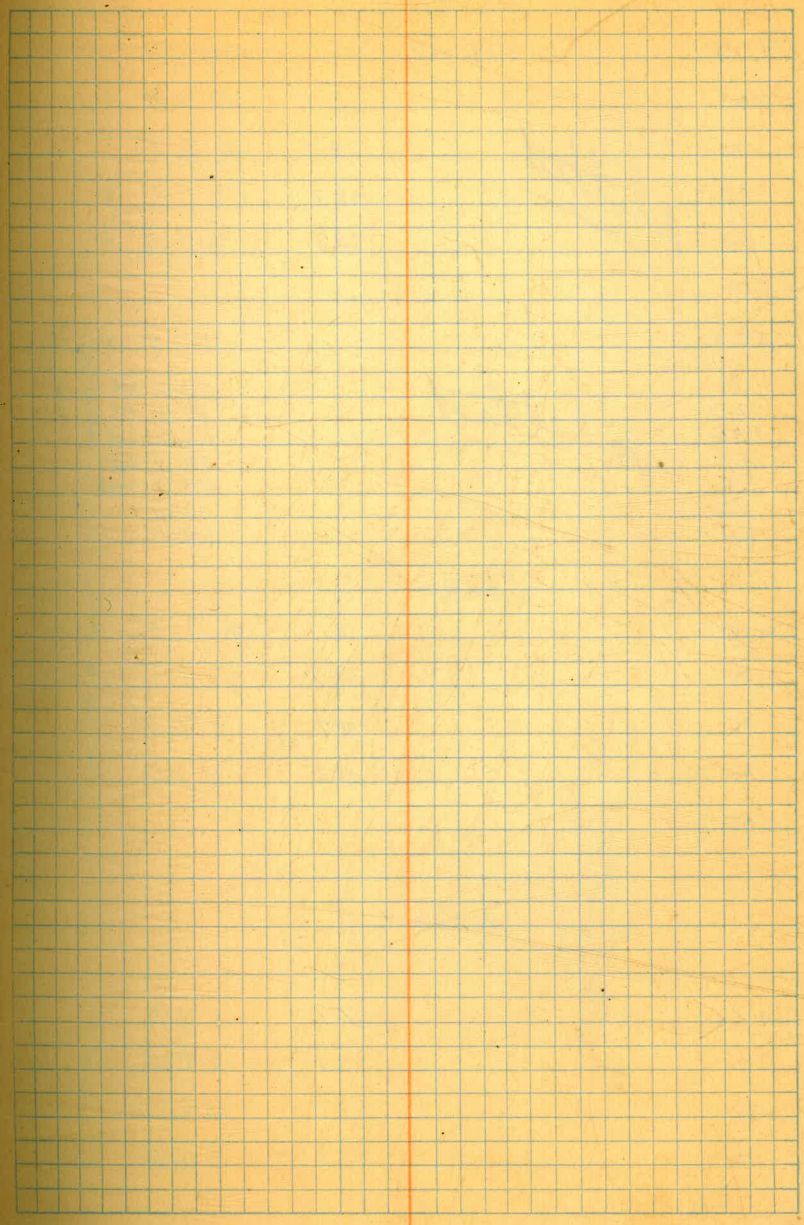
N3600

E 5520	37.2	↓
30	38.2	↓
40	47.2	↓
60	53.8	↓
70	64.4	
80	64.2	

plotted

These Elev. Used But no way to ok them

E 5450	46.8	↓
60	45.9	↓
70	41.2	↓
80	36.7	↓
90	37.2	↓



N 3590

B.M.	2.30	556.17	553.87
5460		8.7	47.5 ✓
70	<u>plotted</u>	13.7	42.5 ✓
80		18.7	37.5 ✓
90		18.8	37.4 ✓
5500			
520			37.5 ✓
30	<u>plotted</u>		37.4 ✓
40			37.3 ✓
50			47.2 ✓
60			52.3 ✓
70			59.9 ✓
80			64.2 ✓
			64.1 ✓

used but
could not
get file.

N 3580 ✓

5460		8.7	47.5 ✓
70		13.7	42.5 ✓
80		18.7	37.5 ✓
90	<u>plotted</u>	18.8	37.4 ✓
5500			

N 3570 ✓

5460		7.9	48.3 ✓
70		13.8	42.4 ✓
80		18.2	38.0 ✓
90		19.5	36.7 ✓

✓

556.17

N 3560 ✓

E 5460	5.4	50.8	✓
70	11.1	45.1	✓
80	16.7	39.5	✓
90	18.1	38.1	✓
5500	18.4	37.8	✓

plotted

N 3550 ✓

5460	5.8	50.4	✓
70	7.4	48.8	✓
80	14.7	41.5	✓
90	18.4	37.8	✓
5500	17.1	39.1	✓

N 3540

5140	7.1	49.1	✓
150	7.4	48.8	✓
160	8.0	48.2	✓
170	8.2	48.0	✓
180	8.2	48.0	✓
190	7.9	48.3	✓
200	7.5	48.7	✓

plotted

N3540

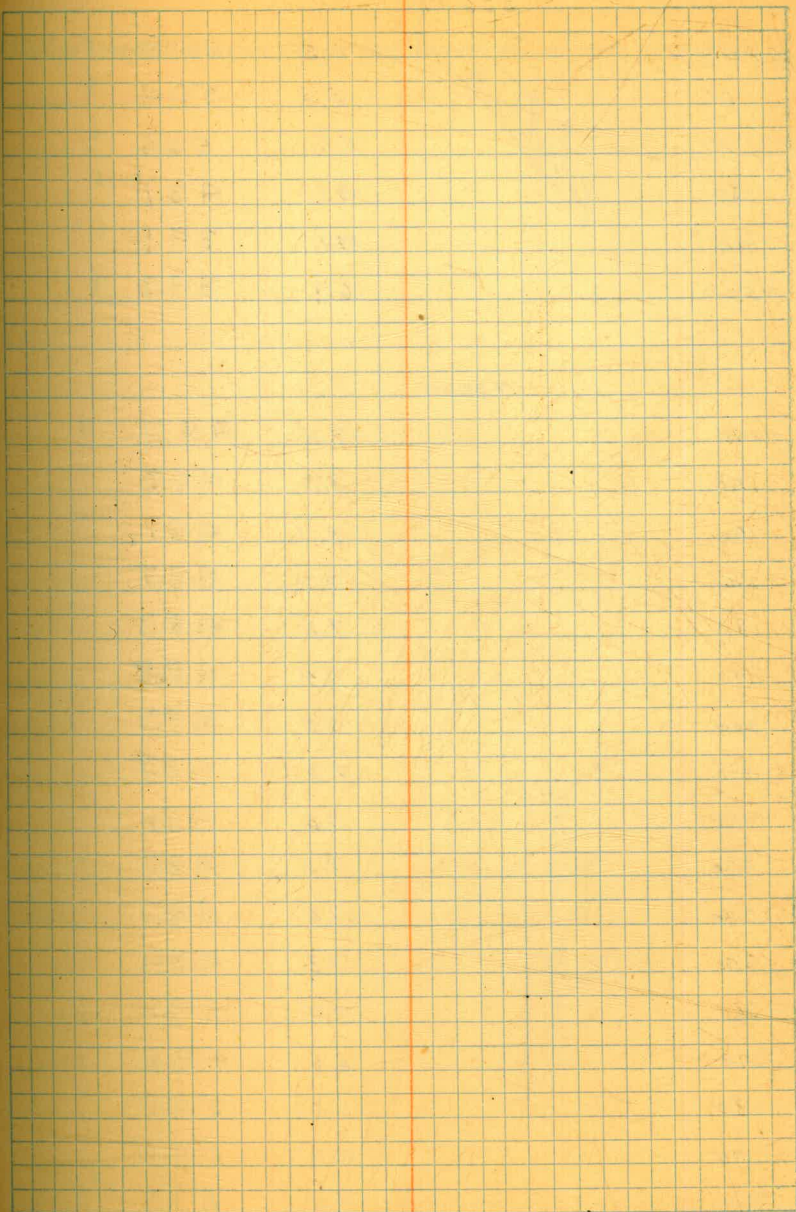
556.17

5210	7.5	48.7	
20	7.4	48.8	
30	7.3	48.9	
40	7.4	48.8	
50	6.9	49.3	
60	6.4	49.8	
70	6.2	50.0	
80	6.0	50.2	
90	5.7	50.5	
5300	4.7	51.5	
10	4.7	51.5	
20	4.5	51.7	
30	4.1	52.1	
40	4.8	51.4	
50	4.9	51.3	
60	5.1	51.1	
70	5.6	50.6	
80	5.5	50.7	
90	5.8	50.4	
5400	5.8	50.4	
10	6.5	49.7	
20	6.5	49.7	
30	6.4	49.8	
40	6.4	49.8	✓

plotted

✓

30



N3540

556.17

5450	6.2	550.0	
60	5.8	50.4	
70	5.6	50.6	
80	13.1	43.1	
90	17.1	39.1	
5500	16.9	39.3	

plotted

N3530

5140	7.5	48.7	
150	8.0	48.2	
160	8.1	48.1	
170	7.7	48.5	
180	7.5	48.7	
190	7.4	48.8	
200	7.5	48.7	
210	7.5	48.7	
220	7.6	48.6	
230	7.5	48.7	
240	7.5	48.7	
250	7.3	48.9	
260	7.0	49.2	
270	6.6	49.6	
280	6.2	50.0	
290	5.6	50.6	
300	4.5	51.7	

plotted

Solid rock below this elev. and E. from here

31

556.17

5310	4.5	51.7	
320	3.8	52.4	
330	4.5	51.7	
340	4.5	51.7	
350	4.6	51.6	
360	5.0	51.2	
370	5.0	51.2	
380	4.8	51.4	
390	5.1	51.1	
400	5.3	50.9	
410	5.0	51.2	
420	3.3	52.9	
430	6.0	50.2	
440	6.2	50.0	
450	5.8	50.4	
460	5.1	51.1	
470	5.7	50.5	
475	6.2	50.0	
480	10.0	46.2	
490	15.1	41.1	
5500	16.7	39.5	✓

spotted

Solid Rock below this Elev. and E. from here

N3520

556.17

5140	7.8	48.4	
150	8.2	48.0	
160	8.2	48.0	
170	8.0	48.2	
180	7.9	48.3	
190	7.8	48.4	
200	7.9	48.3	
210	7.6	48.6	
220	7.7	48.5	
230	7.6	48.6	
240	7.3	48.9	
250	7.0	49.2	
260	5.2	51.0	
270	6.4	49.8	
280	6.5	49.7	
290	6.3	49.9	
300	6.4	49.8	
310	5.9	50.3	
320	5.5	50.7	
330	5.2	51.0	
340	4.7	51.5	
350	4.4	51.8	
360	4.7	51.5	✓

556.17
 5140

✓

N3520

556.17

5370	4.5	51.7	
80	4.6	51.6	
90	4.2	52.0	
400	4.3	51.9	
10	5.0	51.2	
20	2.2	54.0	
30	3.5	52.7	
40	4.3	51.9	
50	5.5	50.7	
60	5.0	51.2	
70	6.2	550.0	
80	6.8	49.4	
90	12.0	44.2	
500	14.1	42.1	
10	17.6	38.6	

plotted

N3510

5510	14.9	41.3	
500	11.5	44.7	
490	6.2	50.0	
80	4.6	51.6	
70	3.4	52.8	
60	4.8	51.4	✓

plotted

34

Solid Rock below this Elev. and East

Solid Rock below this Elev. and East

N351.0

556.17

35

5450	4.7	51.5
40	+0.6	56.8
30	+0.3	56.5
20	0.1	56.1
10	2.5	53.7
400	4.0	52.2
90	3.6	52.6
80	4.1	52.1
70	4.2	52.0
60	4.0	52.2
50	3.7	52.5
40	4.5	51.7
30	4.3	51.9
20	4.3	51.9
10	5.9	50.3
300	6.4	49.8
90	6.4	49.8
80	6.3	49.9
70	6.8	49.4
60	2.3	53.9
50	7.2	49.0
40	7.6	48.6
30	7.4	48.8

plotted

v

v

3510

556.17

5220	7.3	48.9	
210	7.4	48.8	
200	7.5	48.7	
190	7.6	48.6	
80	7.4	48.8	
70	7.4	48.8	
60	7.8	48.4	
50	8.2	48.0	
40	8.2	48.0	

plotted

N3500

5140	8.1	48.1	
150	6.9	49.3	
160	7.5	48.7	
170	6.8	49.4	
180	6.9	49.3	
190	7.2	49.0	
200	7.2	49.0	
10	7.5	48.7	
20	8.0	48.2	
30	7.9	48.3	
40	8.1	48.1	
50	4.8	51.4	

plotted

✓

36

N3500

556.17

52.60	4.1	52.1	
70	5.8	50.4	
80	6.9	49.3	
90	6.0	50.2	
300	6.0	50.2	
10	2.3	53.9	
20	3.2	53.0	
30	3.5	52.7	
40	3.9	52.3	
50	3.9	52.3	
60	3.7	52.5	
70	3.7	52.5	
80	3.5	52.7	
90	3.2	53.0	
400	2.9	53.3	
10	10.9	57.1	
20	12.2	58.4	
30	13.4	59.6	
40	12.1	58.3	
50	0.0	56.2	
60	3.4	52.8	
70	2.7	53.5	✓

piloted

↓

37

N3500

556.17

5480		2.0	54.2	
90	<u>plotted</u>	3.0	53.2	
500		4.4	51.8	
10		6.2	50.0	

N3490

510		2.8	53.4	
500	<u>plotted</u>	2.4	53.8	
490		1.1	55.1	
480		7 1.0	57.2	
470		1.5	54.7	

T.P. 12.25 567.64 0.78 555.39

460 11.7 55.9

450 6.1 61.5

440 5.9 61.7

430 5.0 62.6

420 4.0 63.6

410 5.9 61.7

400 9.0 58.6

390 8.7 58.9

20 12.2 55.4

10 10.8 56.8

500 10.0 57.6

90 8.0 59.6

80 6.0 61.6

470 8.6 59.0

460 +10.3 67.9

450 0.6

✓

Plotted

N3480

Oct 12
1932✓
Oct 13

38

Solid rock below this elev. & E. from here

See page 23

B.M.

553.87

1172

545.59

N3470 ✓
567.64

60				
70				
5480		2.0	63.6	} Oct 13 1932
		5.5	62.1	
90	plotted	7.0	60.6	✓
500		8.9	58.7	✓
10		8.0	59.6	✓
20		9.0	58.6	✓

N3460

60			0.0		
70					
5480		+3.9	71.5	} Oct 13 1932	
		3.1	64.5		✓
90	plotted	5.5	62.1	✓	
500		7.6	60.0	✓	
10		6.9	60.7	✓	
20		7.8	59.8	✓	
30		8.0	59.6	✓	✓
Check		+7.3	574.94	575.0	
B.M.	3.61	578.59	574.98		

3450

5480		1.5	77.1	✓	
90	plotted	5.1	73.5	✓	} Oct 13 1932
500		7.8	70.8	✓	
510		10.5	68.1	✓	
520		12.8	65.8	✓	
530		15.4	63.2	✓	

From 395-39

Top of Tee Wall checks,

(Book 395-39)

page 21

3440
578.59

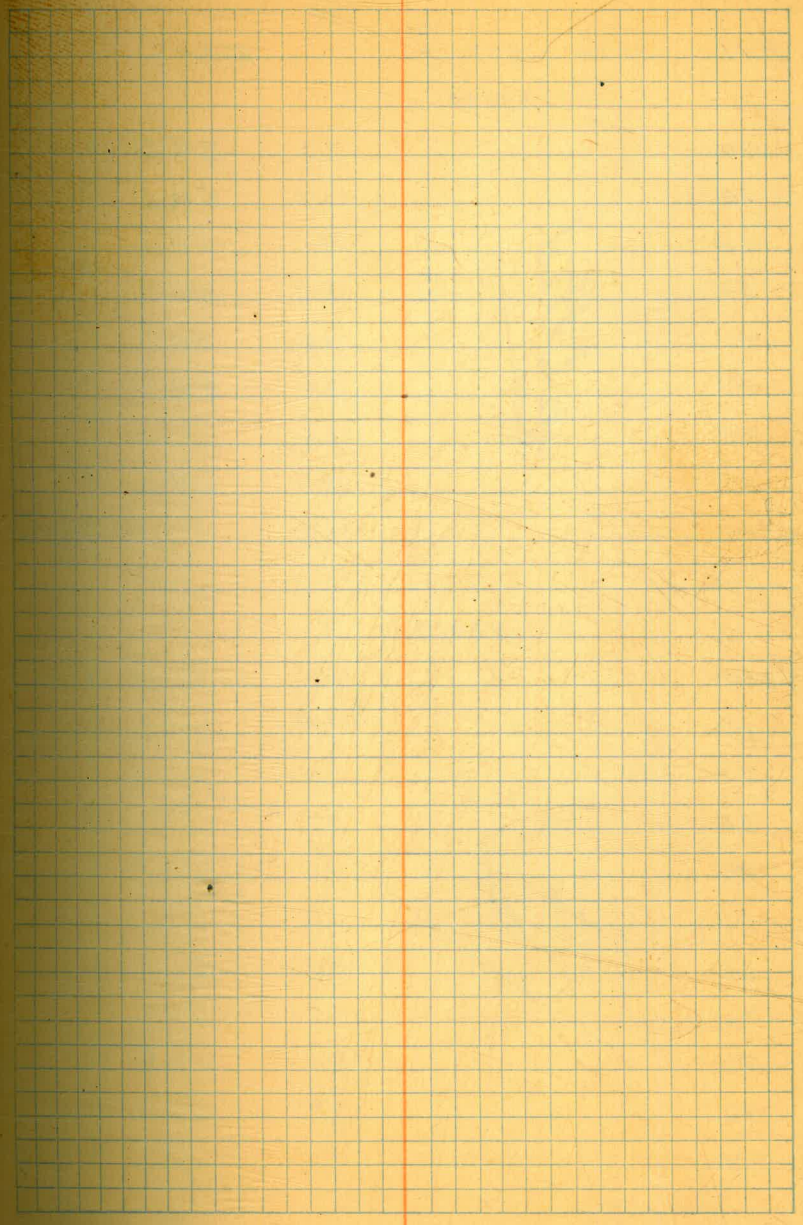
5540
30
20
10

plotted

9.0 69.6 ✓
7.3 71.3 ✓
4.0 74.6 ✓
0.1 78.5 ✓
/

Oct 13-1932

40



Semi-final X Sections

B.M. 14.20 568.07 553.87

N3490

5380	8.3	59.8	✓
70	13.6	54.5	✓
60	14.1	54.0	✓
50	13.4	54.7	✓
40	13.4	54.7	✓
30	13.9	54.2	✓
20	13.1	55.0	✓
10	13.8	54.3	✓
5300	14.8	53.3	✓

plotted

N3480

5300	4.1	64.0	✓
10	7.9	60.2	✓
20	8.0	60.1	✓
30	8.1	60.0	✓
40	7.6	60.5	✓
50	6.5	61.6	✓
60	9.3	58.8	✓
70	7.4	60.7	✓
80	5.9	62.2	✓
90	4.4	63.7	✓
400	5.4	62.7	✓

plotted

✓

Oct 15 - 1932

Elliott
Simpson
Soper
Remmet

41

Cont. on page 38

From Page 44

568.07
N3480

5410		3.2	64.9	↓
20	<i>plotted</i>	2.2	65.9	↓
30			0.6	↓
40			0.6	↓
T.P.	10.26	577.09	1.24	566.83

N3470

5450		0.6		↓
40		0.6		↓
30		0.6		↓
20		5.5	71.6	
10		5.4	71.7	
400		6.4	70.7	
90		9.4	67.7	↓
80		10.8	66.3	
70		10.4	66.7	
60		6.1	71.0	
50	<i>plotted</i>	9.4	67.7	
40		10.3	66.8	
30		11.1	66.0	
20		11.1	66.0	
5310		10.6	66.5	
5300		10.6	66.5	

↓ Superficial

577.09
N3460

5300	6.5	70.6
10	6.4	70.7
20	7.6	69.5
30	7.5	69.6
40	7.5	69.6
50	4.9	72.2
60	2.8	74.3
70	1.1	76.0
80	1.4	75.7
90	1.5	75.6
400	1.3	75.8
10		0.6
20		0.6
30		0.6
40		0.6
50		0.6

plotted

supplied in book 375-38

Oct 15 - 1932

43

End Oct 15 - 1932

N 3490
 Semi-Sinal X Sections

B.M.	12.14	566.01	553.87
E 5290		8.6	57.4
80		13.5	52.5
70		13.3	52.7
60		11.5	54.5
50		12.2	53.8
40		15.4	50.6
30	plotted	12.1	53.9
20		15.4	50.6
10		17.1	48.9
200		16.3	49.7
190		15.9	50.1
80		15.8	50.2
70		15.8	50.2
60		16.5	49.5
50		18.3	47.7
40		14.6	51.4

↓

Oct 18-1932
 Elliott
 Simpson
 Soper
 Remmen

44

Continue page 41

From 395-66

N3480

566.01

5290	4.3	61.7	
80	8.7	57.3	
70	3.7	62.3	
60	3.5	62.5	
50	3.2	62.8	
40	8.9	57.1	
30	6.6	59.4	
20	10.1	55.9	
10	14.7	51.3	
200	12.4	53.6	
190	14.8	51.2	
80	14.3	51.7	
70	15.1	50.9	
60	15.9	50.1	
50	14.6	51.4	
40	15.9	50.1	✓

Plotted

✓

Oct 18-1932

45

N 3470

566.01

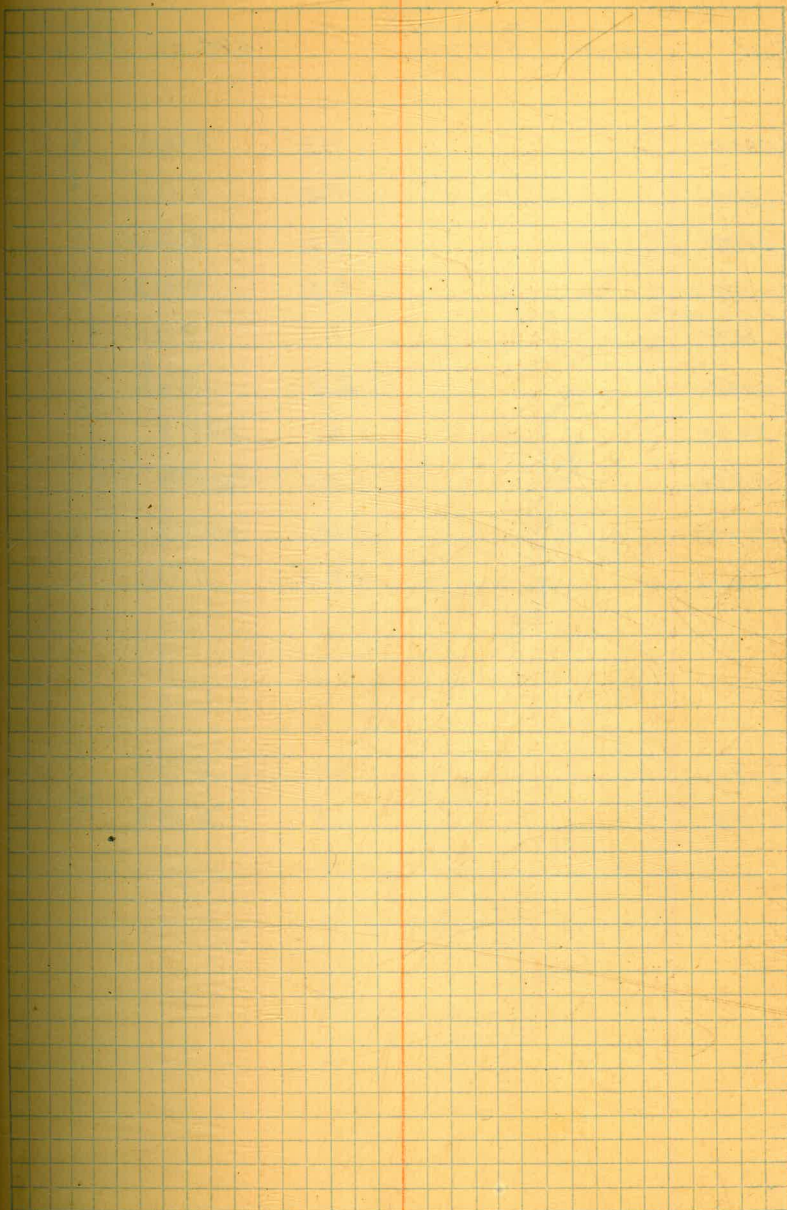
5140	16.8	49.2	'
50	15.1	50.9	'
60	14.2	51.8	'
70	11.3	54.7	'
80	11.2	54.8	'
90	9.9	56.1	'
200	7.7	58.3	✓

plotted

✓

Oct 18

46



Elliott
Simpson
Soper
RemickB.M. 13.24 588.24 575.00 Top of
Toe wall

ESS10		7.8	80.4	✓
500		8.2	80.0	✓
5490		8.2	80.0	✓
480		8.0	80.7	✓
470		7.7	80.5	✓
5460		2.0	86.0	✓
5459	plotted	+6.1	594.3	See page 58
5450		+9.5	597.7	
5440		+11.7	599.9	
5435		+9.4	97.6	
5180		8.2	80.0	✓
5170		1.8	86.4	✓

610.60 610.6
88.2 10.7
22.4

Not stripped

N3910
588.24

5385

5390
vertical
5390

plotted

6.5 81.7
1.0 87.2
+12.5 600.7

See page
57
revised

5220

5216

plotted

+1.0 89.2
+12.6 600.8

↓

↓

Nov 17-1932

48

22.4
9.9
+12.5
22.4
9.8
12.6

Not stripped

Not stripped

B.M.	12.03	587.03		575.00
5239			+ 11.1	^{0.8} 918.1
5250			4.3	82.7 ✓
5260			5.4	81.6 ✓
5270			5.6	81.4 ✓
5280			6.0	81.0 ✓
5290			6.0	81.0 ✓
5300			6.0	81.0 ✓
5310			6.0	81.0 ✓
5320			5.7	81.1 ✓
5330			5.8	81.2 ✓
5340			5.5	81.5 ✓
5350			3.3	83.7 ✓
5360			0.0	87.0 ✓
5370			+ 12.5	^{0.6} 99.5

plotted

✓

610.6

87.0

23.6

72.5

Not stripped

Not stripped

T.P.	5.60	604.42	598.82
5250			0.6 ✓
5260		10.1	94.3 ✓
5270		11.6	92.8 ✓
5280		12.9	91.5 ✓
5290		13.3	91.1 ✓
5300		17.7	84.7 ✓
B.M.	12.08	587.03	575.00
5310		6.0	81.0 ✓
5320		6.3	80.7 ✓
5330		6.0	81.0 ✓
5340		5.2	81.8 ✓
5347		1.6	85.4 ✓
5350		113.2	600.2

Handwritten signature or initials

✓

Nov 21

23.6

12.7

10.9

Nov 17

Not stripped

N3940

T.P.	5.60	604.42	598.82
5240			0.9
5250		2.5	01.9
5260		5.0	99.4 ↓
5270		7.0	97.4 ↓
5280		8.6	95.8 ↓
5290		9.8	94.6 ↓
5295		10.2	94.2 ↓
B.M.	12.03	587.03	575.00
5300		0.3	86.7 ↓
5310		5.4	81.6 ↓
5320		5.8	81.2 ↓
5330		5.6	81.4 ↓
5340		4.4	82.6 ↓
5345		+0.4	87.4
5348		+15.7	602.7

skipped

Nov 21

23.6

51

11.1

Nov 17 - 1932

Not stepped

T.P.	5.60	604.42	598.82
5230			0.6
5240			+0.6 05.0
5250			+0.7 05.3
5260			0.6 03.8 ✓
5270			2.3 02.1 ✓
5280			4.4 00.0 ✓
5290			6.9 97.5 ✓
5300			9.0 95.4 ✓
B.M.	12.03	587.03	578.00
5304			1.2 85.8 ✓
5310			3.6 83.4 ✓
5320			4.2 82.8 ✓
5330			4.1 82.9 ✓
5338			2.0 85.0 ✓
5340			+1.4 88.4 ✓
5343			+17.9 604.9
B.M.	3.22	610.60	607.38

N3960

5320			91.0
5330			96.7 ✓
5333			0.6 00.6

plotted
see next page
what are they for

plotted
to the
page

✓

607.38

5.22

610.60

16.3

594.3

Nov 21

23.6

2.6

Not stopped

Not stopped

Nov 21-1932

53

N3960

B.M.	3.59	610.97 ✓	607.38 ✓
T.P.		12.15	598.82 ✓
	5.60	604.42 ✓	

5340			96.4 ↓
5330			
5320			90.5 ↓
5310			96.0 ↓
5305		7.7	96.7 ↓
5300		7.0	97.4 ↓
5290		4.5	99.9 ↓
280		2.2	02.2 ↓
270		+ 0.5	04.9 ↓
260		+ 2.0	06.4 ↓
250		+ 4.4	08.8 ↓
240		+ 5.0	09.4 ↓
230			0.0

plotted
 10

N3970
604.42

340			
330	↑	600.8	
320	Govered	600.0	✓
310	↓	603.3	✓
5300		600.8	✓
290	0.5	03.9	✓
280	+1.7	06.1	✓
270	+5.0	09.4	✓
260	+6.7	11.1	✓
250	+8.0	12.4	✓
240	+9.4	13.8	✓
230		0.6	

plotted

✓

Nov 21 - 1932

54

N3980

604.42

T.P.

0.71

603.71

5790

5300

10

20

30

40

plotted

610.1

608.6

606.2

604.1

604.4

607.8

9/10/34
✓ see levels
✓ need no more
✓ check level
T.M.

Final X sections

To supersede previous sections where
there is any duplication of sections,
N3880

B.M.	11.02	586.02	575.00
5500		6.4	579.6
490		5.7	80.3
480		5.5	80.5
470		6.5	79.5
460		7.3	78.7
450		7.9	78.1
440		6.4	79.6
430		6.4	81.6

Plotted

blue is ok for plotting used
9 other elevations are from
other sections

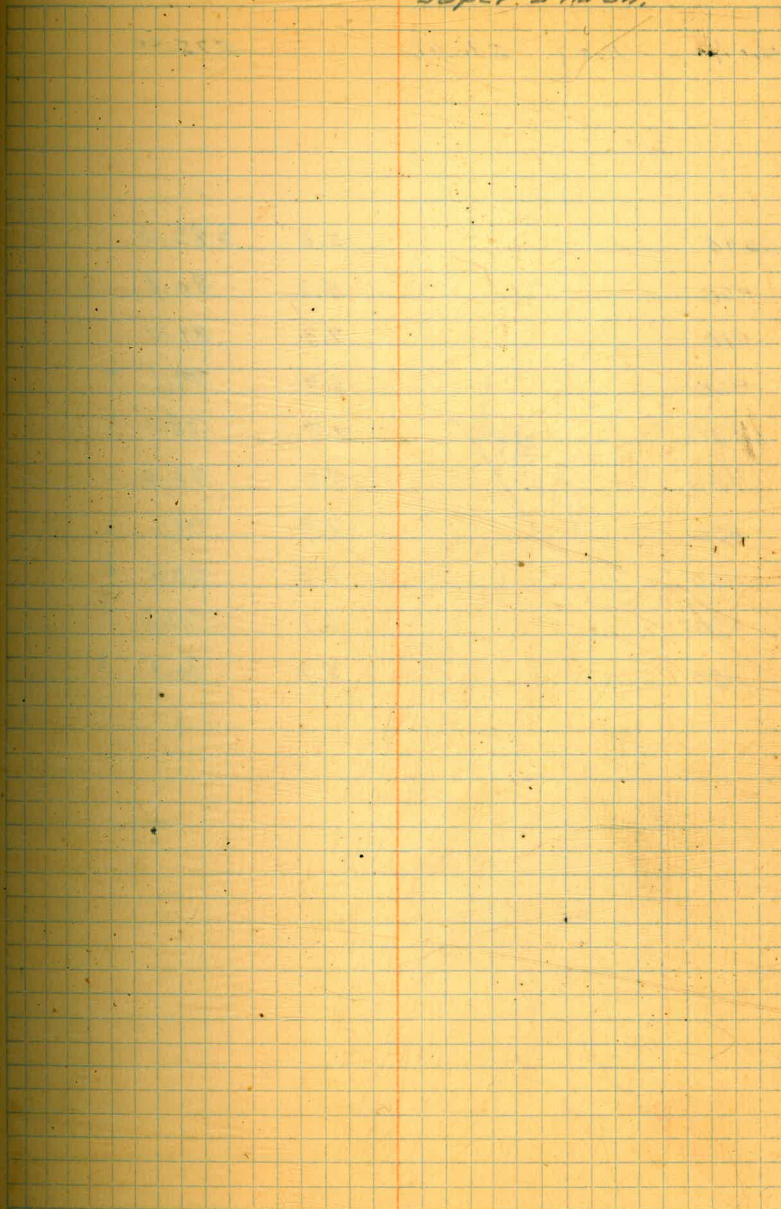
Nov 28 - 1932

56

Elliott Notes

Simpson - T

Soper - H/Ch.



Nov 28 - 1932

57

N3890

B.M.	11.02	586.02	575.00
------	-------	--------	--------

5390		2.6	583.4	✓ m read
400		5.2	80.8	✓
410		4.8	81.7	✓
420		6.9	79.1	•
430	Plotted	7.9	78.1	↓
440		8.0	78.0	•
450		7.9	78.1	↓
460		7.5	78.5	↓
470		6.7	79.3	↓
480		5.9	80.1	↓

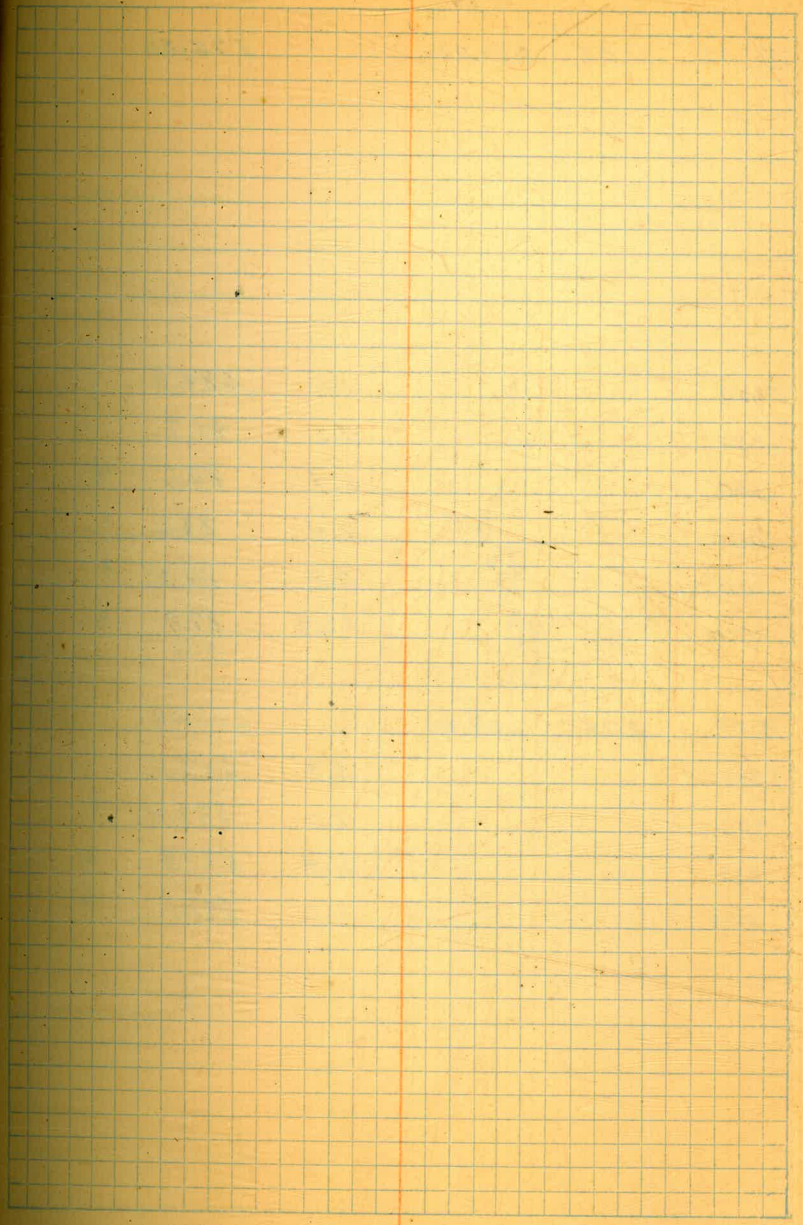
3900

B.M. 11.02 586.02 575.00.

5470		5.4	580.6	
460		2.1	83.9	↓
450		3.2	87.8	↓
440		6.6	79.4	↓
430		7.4	78.6	↓
420		5.2	80.8	↓
410		4.8	81.2	↓
400		4.9	81.1	↓
390		4.8	81.2	↓
5380		3.5	82.5	↓
370		1.7	84.3	↓

plotted.

See page 9
see notes
page 10
page 11



N 3910

B.M. 11.02 586.02 575.00

5370		1.2	584.8	
380		4.3	81.7	
390	Plotted	2.4	83.6	✓
400		2.4	83.6	✓
410		0.8	85.2	✓
420		1.9	87.9	✓
			0.6	

B.M.	2.75	609.20	606.45	
5200		5.8	603.4	
203		12.0	597.2	↓
210		11.4	597.8	↓
220		11.1	598.1	↓

↓

N3920

B.M.	11.02	586.02		575.00	
T.P.	12.72	598.22	0.52	585.50	
5200			+10.6	608.8	yellow line
5203			+4.8	603.0	✓
5210			+3.4	601.6	✓
5220			+4.1	602.3	✓
5230			+4.0	602.2	
↓ covered					
5360			7.8	590.4	
370			8.5	589.7	
380			9.3	88.9	
390			10.2	88.0	
393			10.1	88.1	
5395			+ 8.5	0.6 606.7	

Plotted

↓

N3930

T.P.	12.72	598.22	585.50
5391		+ 9.1	0.6 607.3
389		7.8	590.4
380		8.3	589.9
370		8.0	90.2
360		7.2	91.0
5350		3.9	94.3

plotted

B.M.	2.87	618.70	615.83
------	------	--------	--------

5230		15.5	603.2
5220		15.5	603.2
5210		14.4	604.3
5202		7.1	611.6
5199		5.0	613.7

plotted

N3940

T.P.	12.72	598.22		585.50	
5388			19.8	608.0	✓
383			4.9	593.3	✓
380			6.7	91.5	✓
370			6.4	91.8	✓
360			6.0	91.2	✓
5350			3.8	94.4	✓

plotted

B.M.	2.87	618.70		615.83	
5240			15.2	603.5	
230			14.2	604.5	✓
220			12.7	606.0	✓
210			11.7	607.0	✓

plotted

B.M.	3.65	628.65		625.00	
5200			12.7	616.0	✓

Nov 28 - 1932

62

N3950

T.P.	12.72	598.22		586.50
				0.6
5382			+ 11.1	609.3 ✓
380			+ 0.8	599.0 ✓
378			3.9	94.3 ✓
370			4.6	93.6 ✓
360			4.5	93.7 ✓
5350			3.6	94.6 ✓

Plotted

B.M	2.87	618.70		615.83
-----	------	--------	--	--------

240			12.6	606.1
230			12.9	605.8
220			12.4	606.3
210			7.8	610.9
5206			5.7	613.0
B.M.	3.65	628.65		625.00
5201			6.7	622.0

Plotted

Plotted ✓

N3960

11/24/34

64

T.P.	12.72	598.22		585.50
------	-------	--------	--	--------

5378

374

370

360

5350

Plotted

+13.1

1.7

2.9

2.7

2.1

0.6

611.3

596.5

95.3

95.5

96.1

✓

✓

✓

✓

✓

B.M.	2.87	618.70		615.83
------	------	--------	--	--------

5240

230

220

210

Plotted

8.0

11.4

10.6

4.9

615.83

610.7

607.3

608.1

613.8

✓

✓

✓

see 231

B.M.	3.65	628.65		625.00
------	------	--------	--	--------

5201

4.0

625.00

624.7

✓

T.P.	12.72	598.22		585.50
------	-------	--------	--	--------

T.P.	12.79	610.53	0.48	597.74
------	-------	--------	------	--------

5373	Plotted	+3.1	^{o.c.} 613.6	✓
370		9.2	601.3	✓
368		12.1	598.4	✓
360		12.9	597.6	✓
350		12.5	598.0	✓
5340		9.9	600.6	✓

B.M.	2.87	618.70		615.83
------	------	--------	--	--------

5230	Plotted	9.7	609.0	✓
------	---------	-----	-------	---

5220		6.0	17.7	✓
------	--	-----	------	---

B.M.	3.65	628.65		625.00
------	------	--------	--	--------

5204		1.5	627.2	✓
------	--	-----	-------	---

See
47-57

N3980

T.P.	12.79	610.53 ^v	0.48	597.74	
5366			+5.8	616.3	✓ <i>plotted</i>
363		<i>plotted</i>	8.4	602.1	✓ <i>plotted</i>
360			3.6	601.9	✓
350			7.2	603.3	✓
5340			2.8	607.7	✓

B.M.	2.87	618.70 ^v		615.83	
5246			0.7	618.0	✓ <i>plotted</i>
240		<i>plotted</i>	4.0	614.7	✓ <i>plotted</i>
230			4.2	614.5	✓ <i>plotted</i>
220			+1.2	619.9	✓
B.M.	3.65		628.65 ^v		625.00
5211			1.1	627.6	✓

66

12.2
6.4
5.8

N3990

T.P.	12.79	610.53		597.74	
T.P.	12.40	622.58	0.35	610.18	
				0.6	
5362			3.6	619.0	↓
358	Plotted		12.0	610.6	↓
350			15.7	606.9	↓
5340			12.0	610.6	↓

Nov-28-1932

67

N4000

T.P.	12.40	622.58	610.18	
5357		0.8	0.6 621.8	✓
352		4.2	618.4	✓
345		7.6	615.0	✓
340		11.3	611.3	✓

Plotted

✓

Nov 28 - 1932

68

N4010

T.P.	12.40	622.58	610.18	
5346		+1.7	624.3	0.6
336		5.9	616.7	
330		4.7	617.9	
320		4.5	618.1	✓
310		4.0	618.6	✓
5300		3.1	619.5	✓
5290		2.1	620.5	✓

Plotted

at 100 ft
 200 ft
 300 ft

N4020

5343		+3.4	625.9	0.6
330		3.4	619.2	
320		4.2	618.4	✓
310		3.9	618.7	✓
300		2.6	620.0	✓

Plotted

N4030

5340			620.5	0.6
330		2.1	620.5	✓
320		3.8	618.8	✓
310		3.7	618.9	✓
303		2.6	620.0	✓
5300		+4.0	626.6	✓

Plotted

✓

Nov 28 - 1932

69

N 4040

	622.58		0.6	
5330				
327		2.7	619.9	✓
320		3.0	619.6	✓
310		2.7	619.9	✓
301		0.4	622.2	✓
5299		+ 7.4	630.0	✓

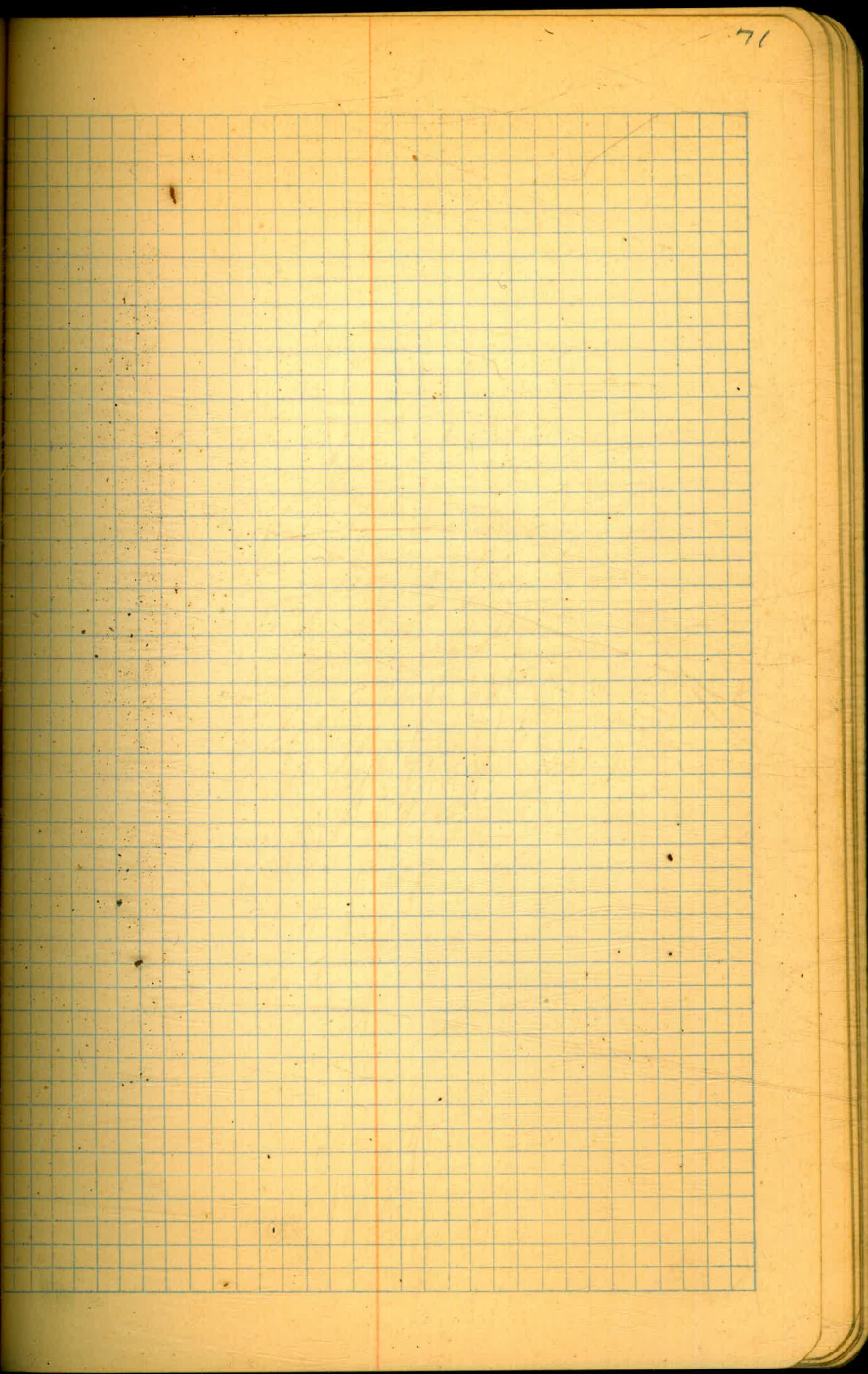
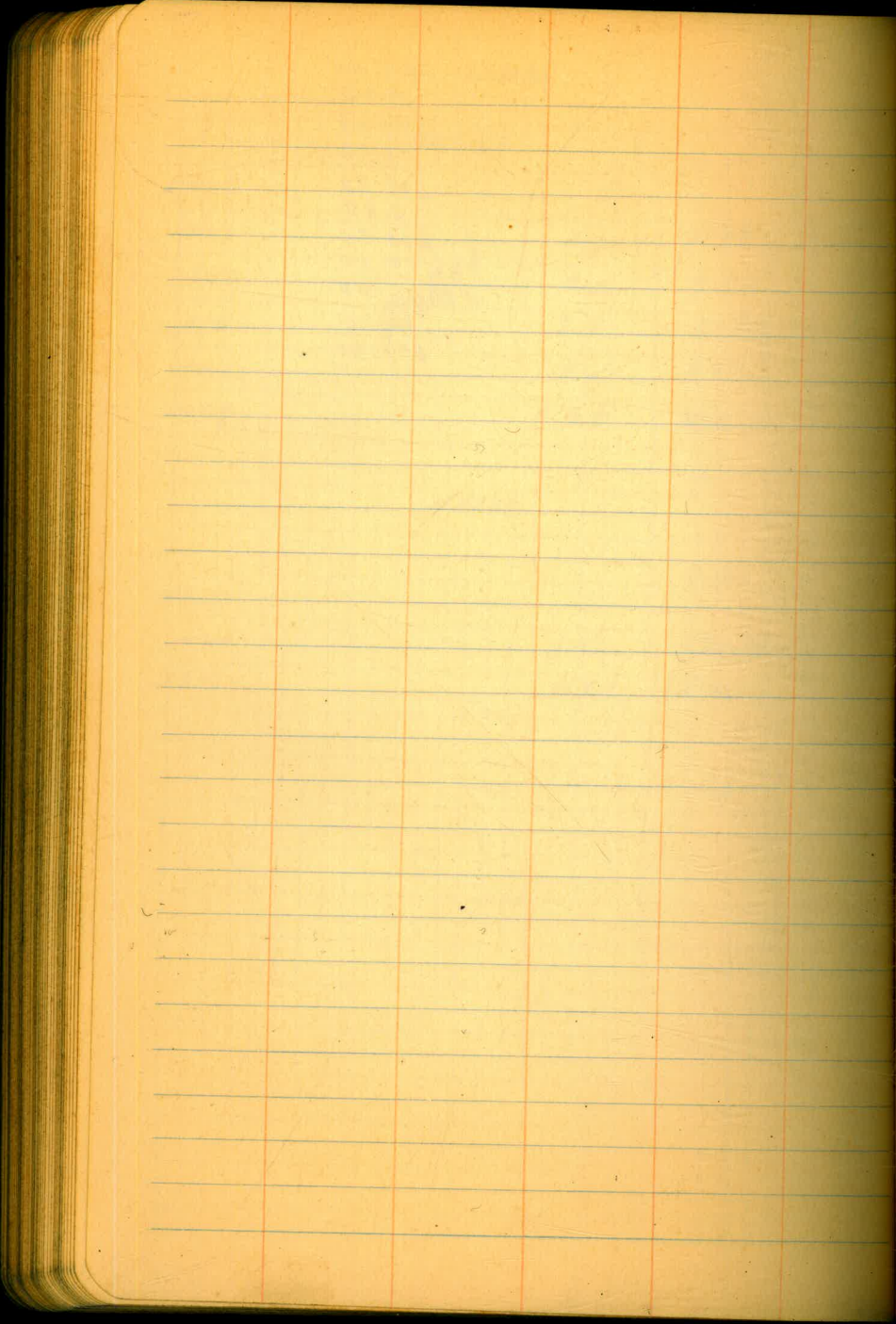
Plotted

N 4050

			0.6	✓
5330				
320		+ 3.6	626.2	✓
5310		+ 8.0	630.6	✓

✓

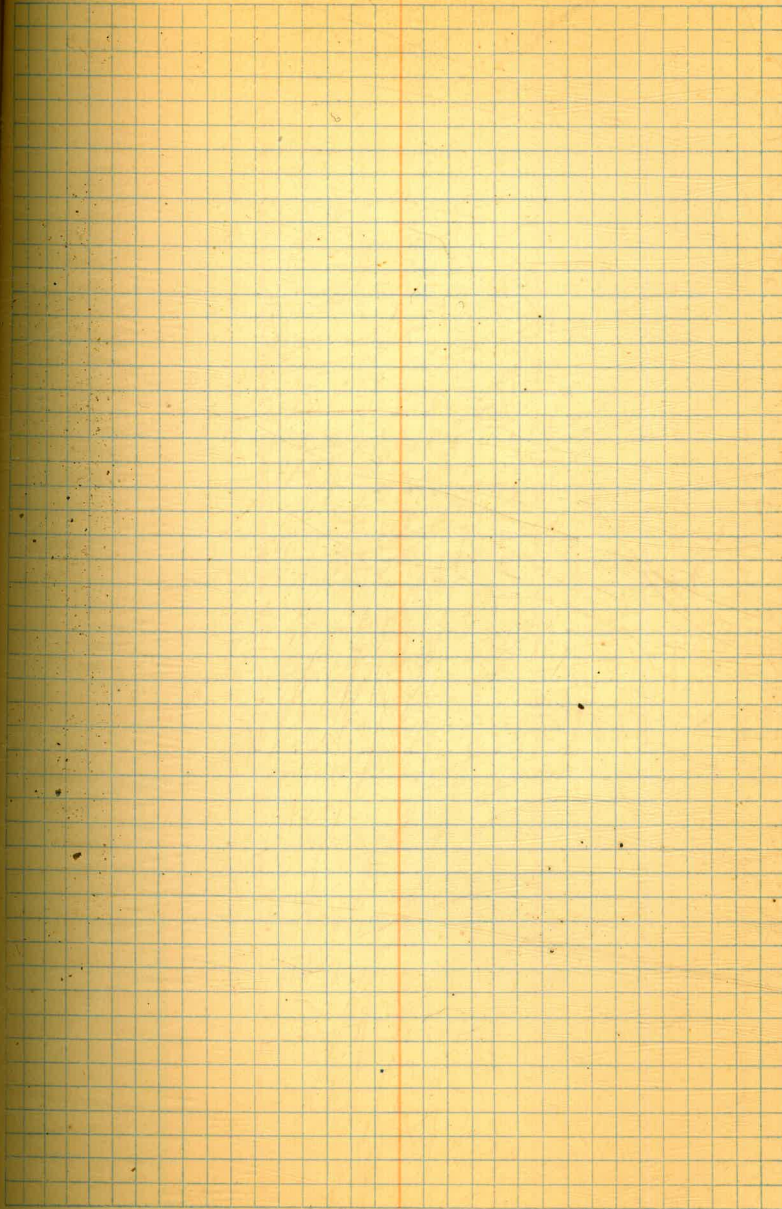
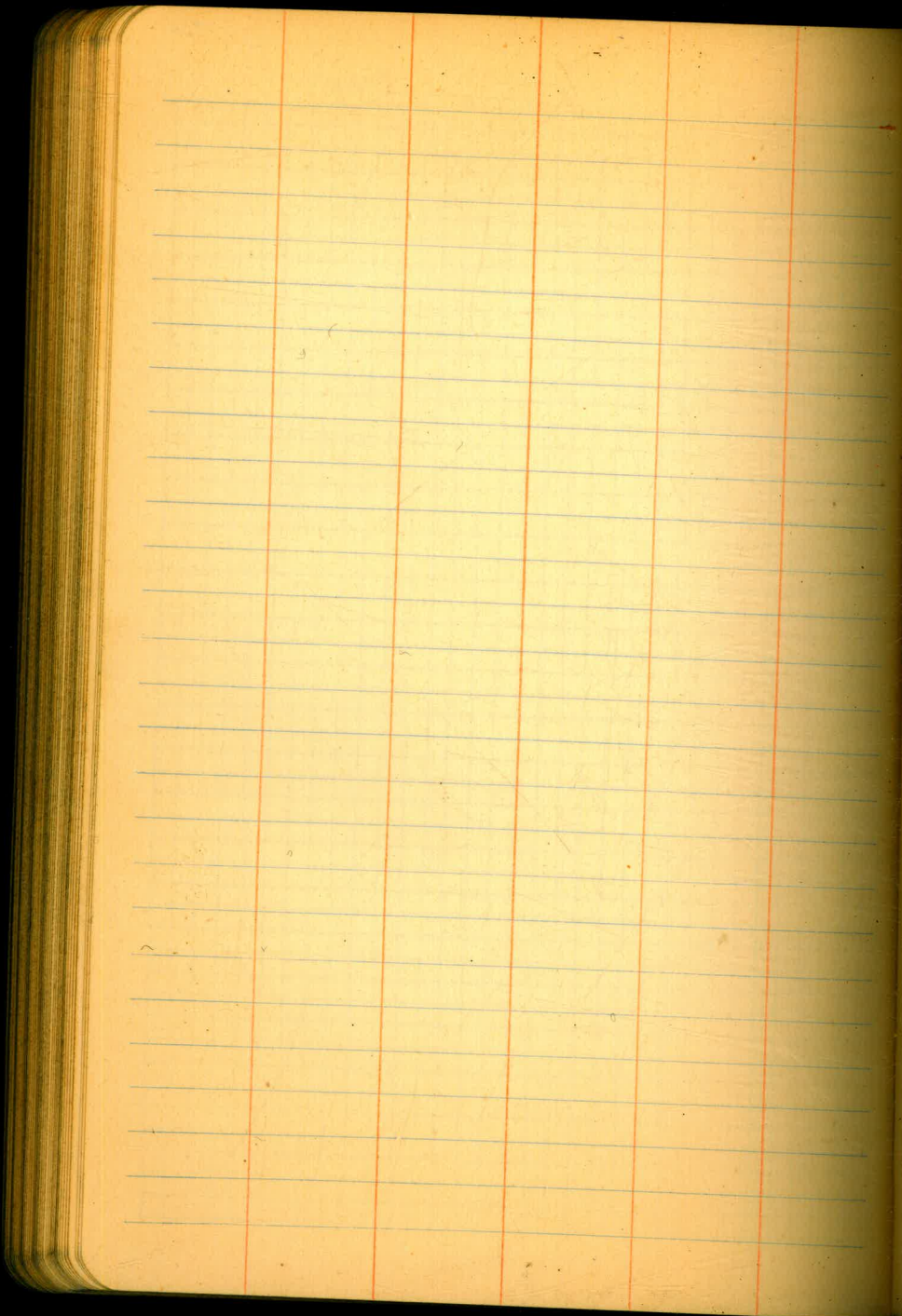
625.00
<u>3.65</u>
628.65
<u>12.82</u>
615.83
<u>2.87</u>
618.70
<u>12.25</u>
T.P. 606.45
<u>2.75</u>
609.20

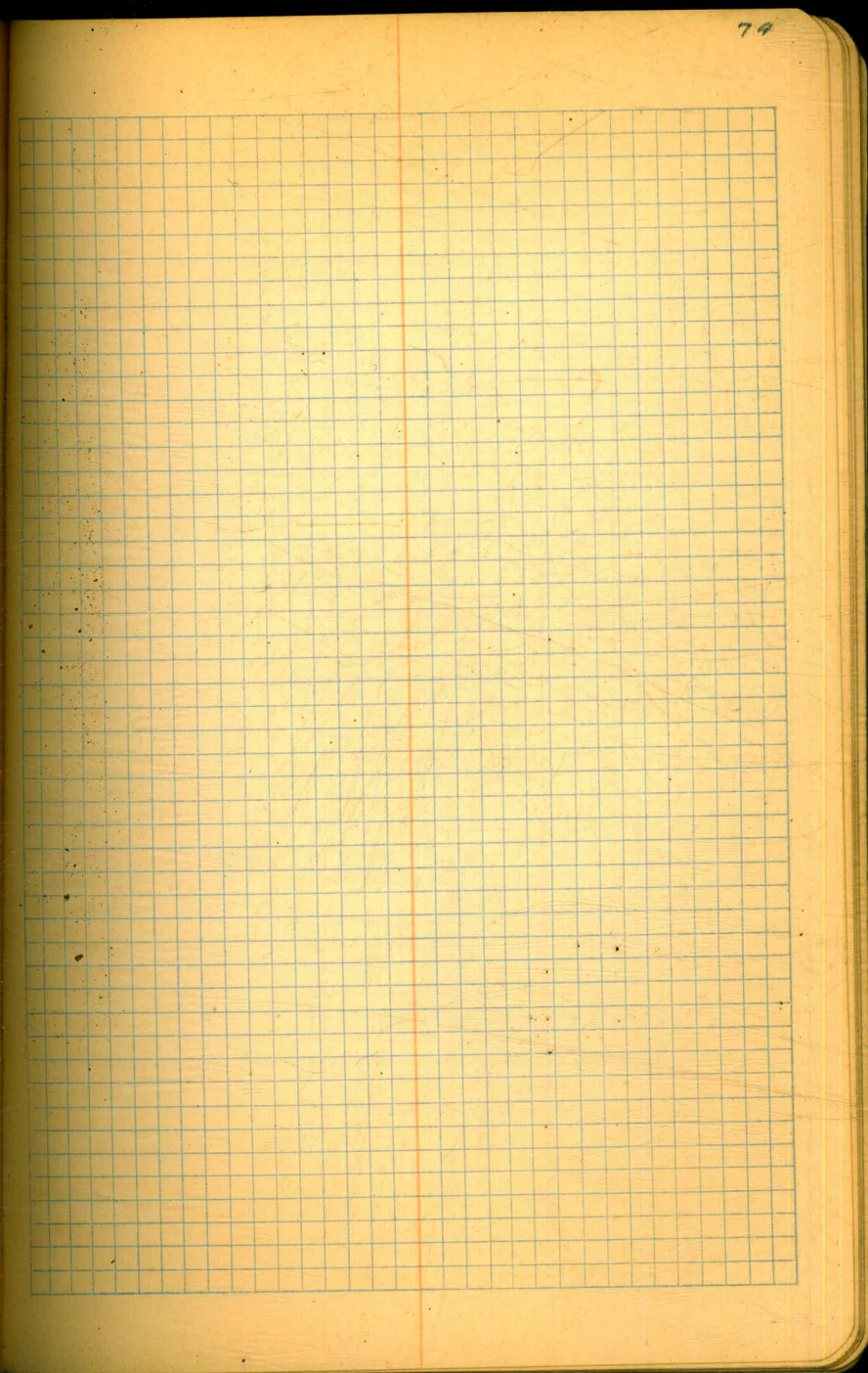
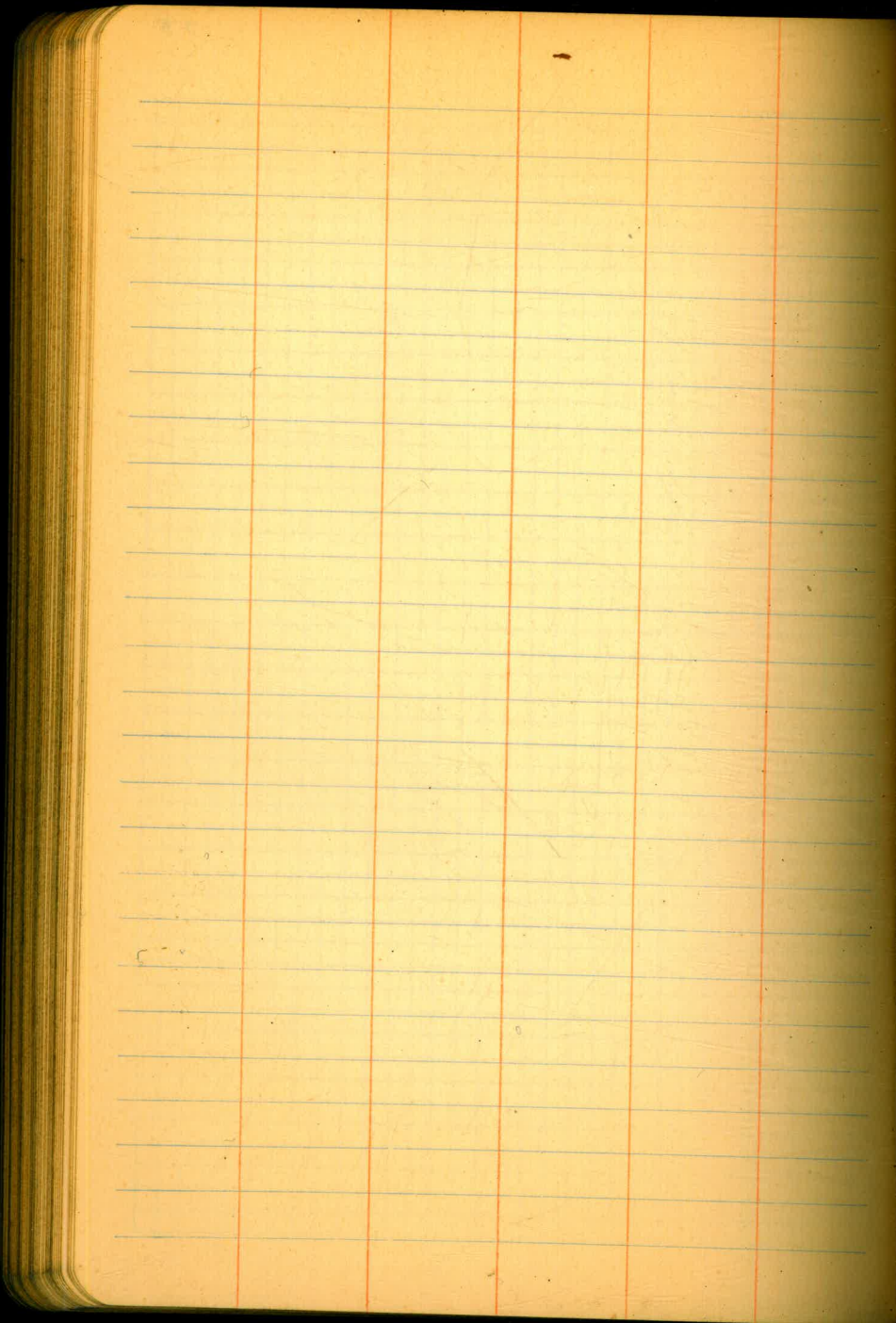


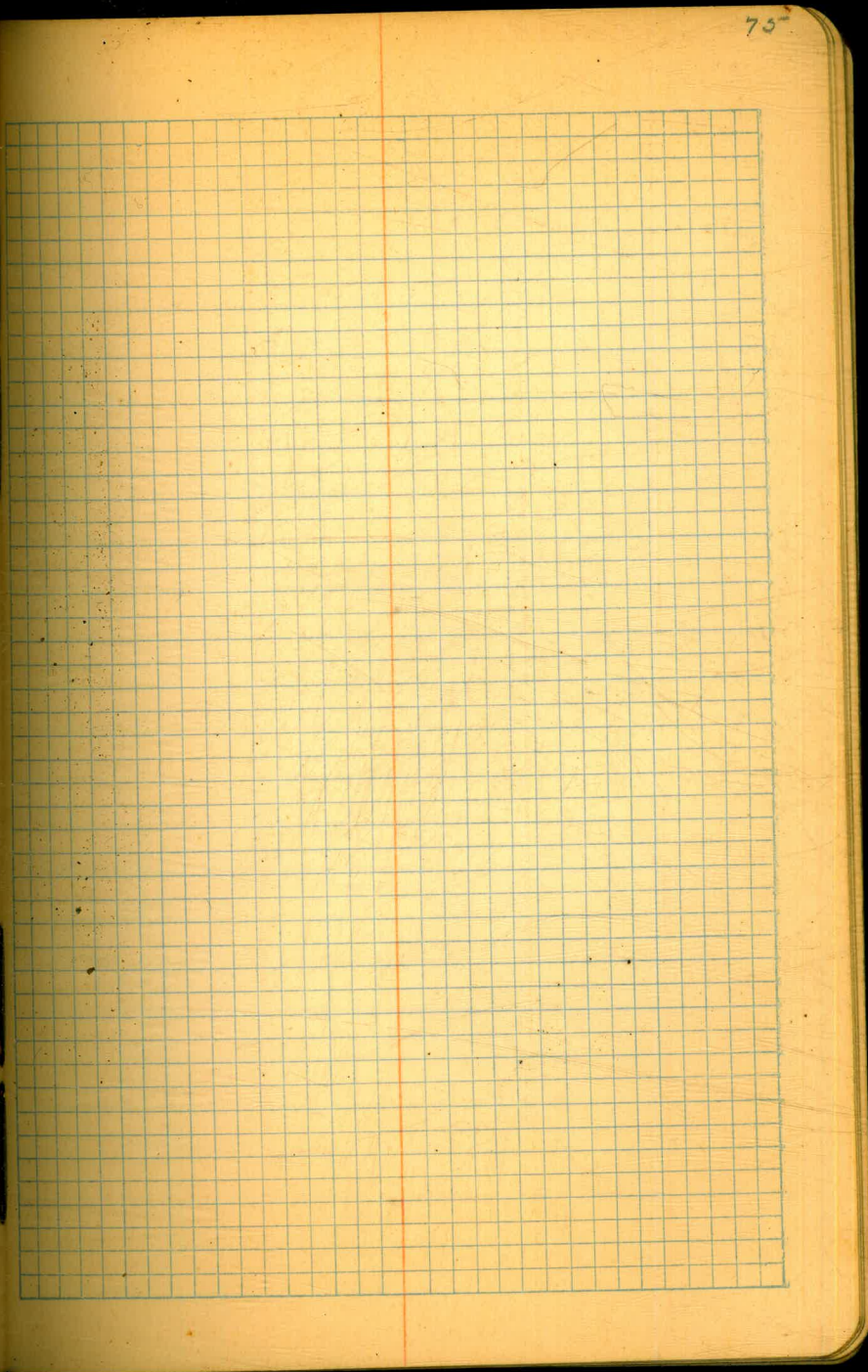
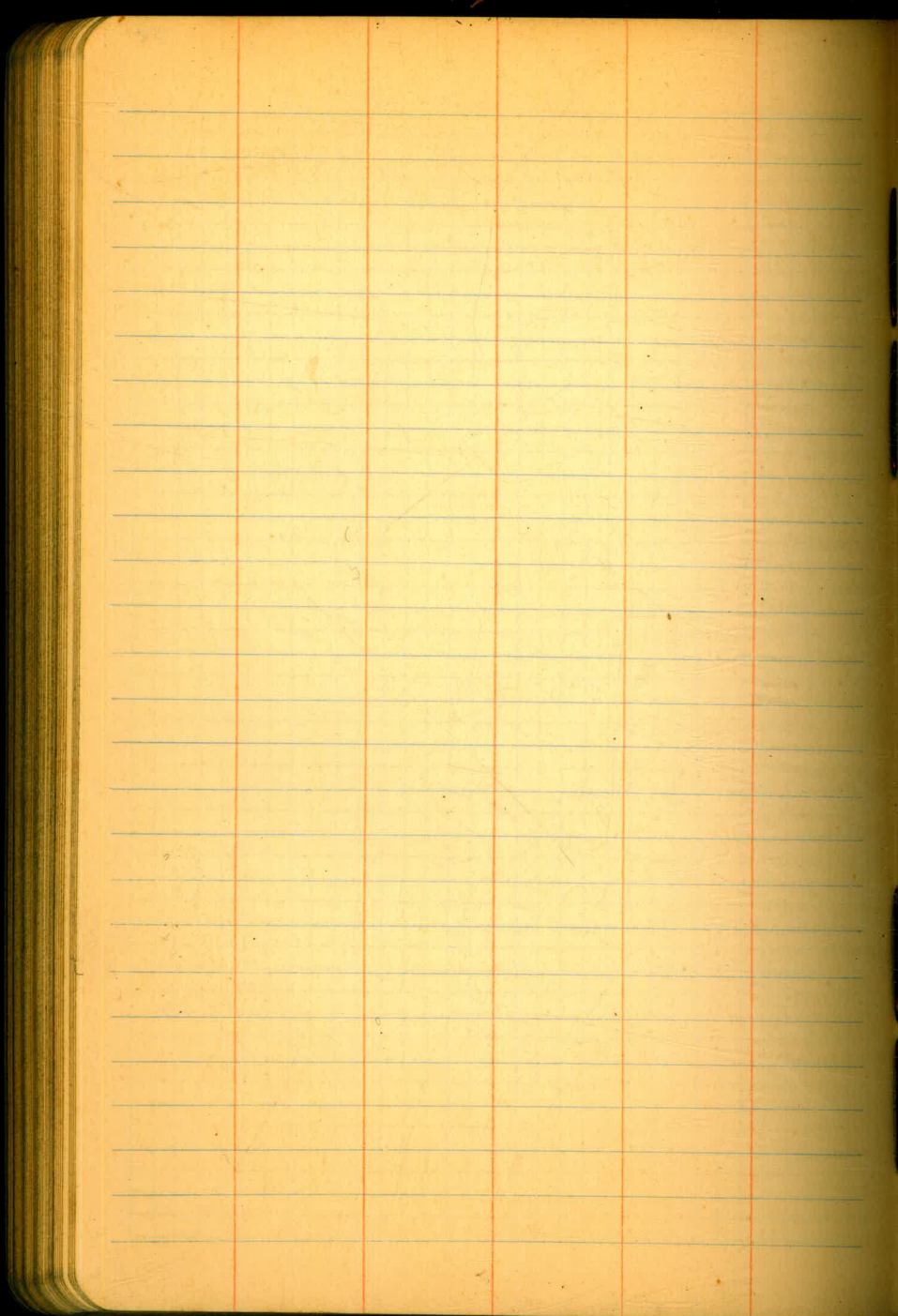
3.65

This page features a grid of blue horizontal lines and three vertical red lines, creating four columns. The page is otherwise blank.

This page features a grid of blue horizontal lines and three vertical red lines, creating four columns. The page is otherwise blank.

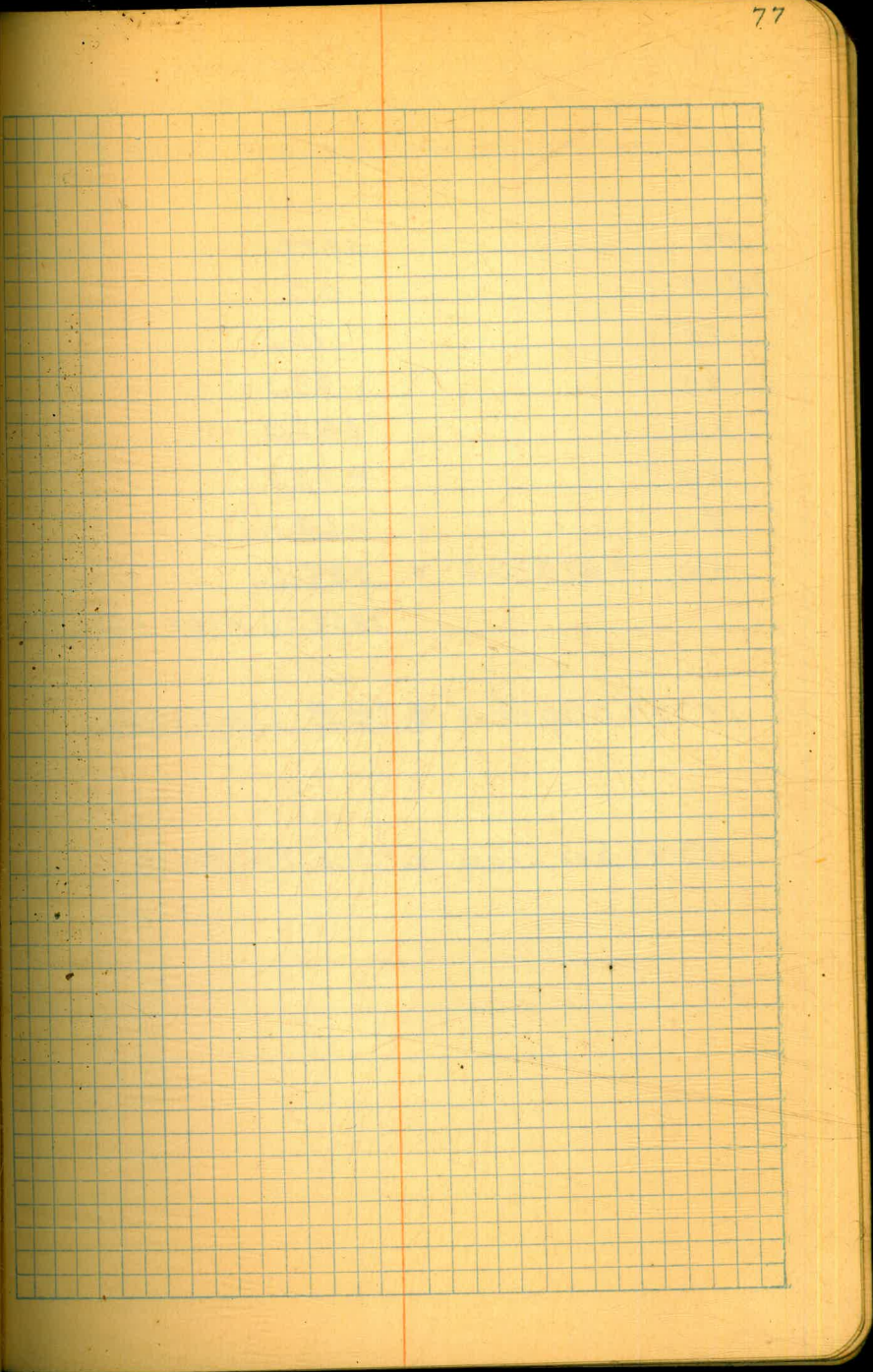
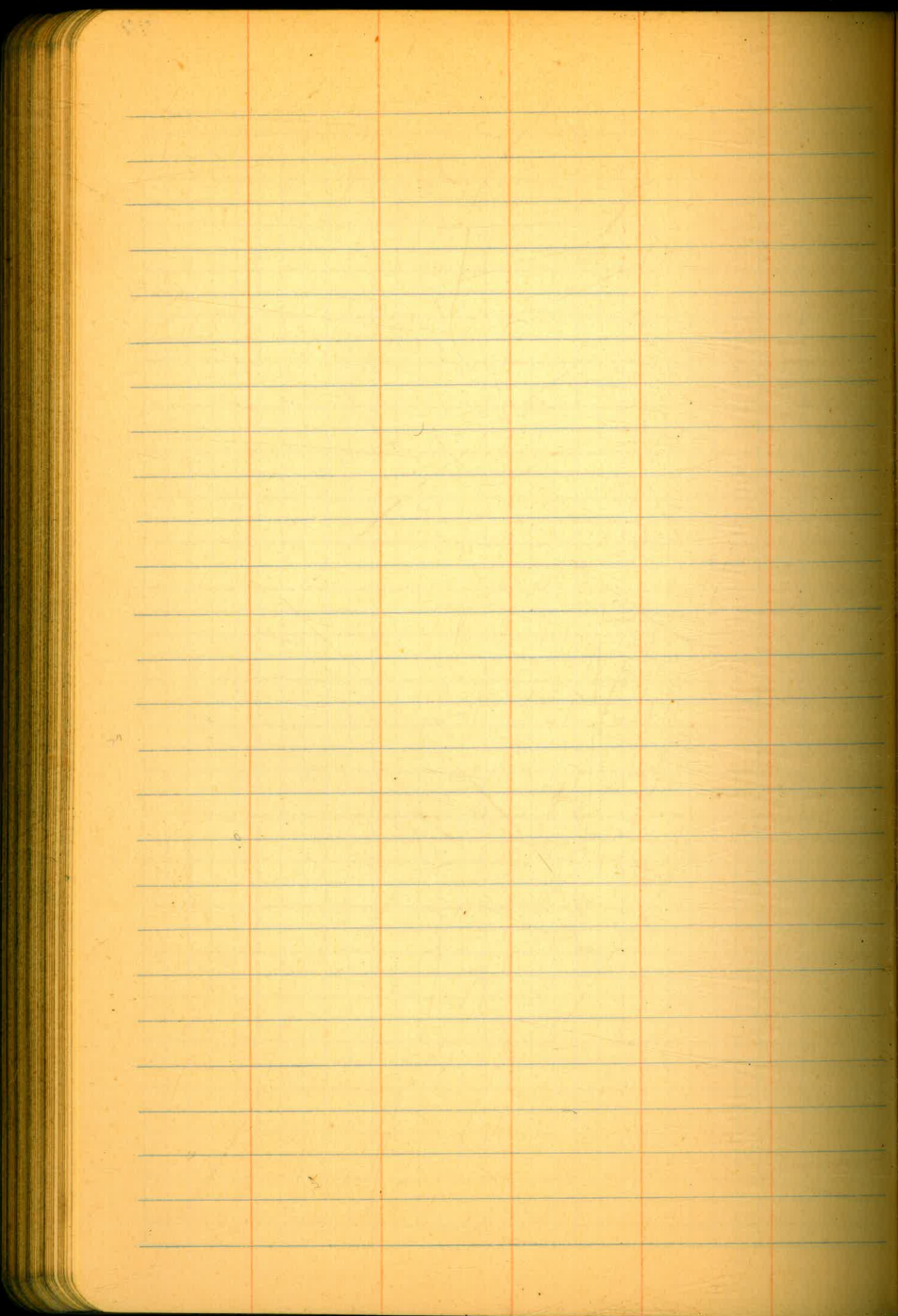






This page is a blank ledger-style page. It features a grid of blue horizontal lines spaced evenly down the page. Three vertical red lines are drawn to create margins: one on the left side, one on the right side, and one in the center. The page is otherwise empty of any text or markings.

This page is a blank graphing page. It features a large grid of blue lines forming a square pattern. The grid is approximately 20 units wide and 25 units high. The page is otherwise empty of any text or markings.



78
Stem 10 See F.B. 446 for Final Top
at this location.

Volume of Solid Rock below Elev. 550

Adjacent to Upstream toe wall, South of N. 3480

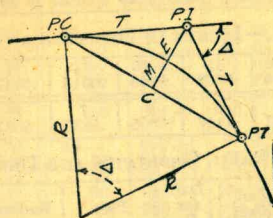
Sta.	sq. ft.
3480	0.0
90	13.3
3500	39.3
10	348.0
20	472.8
30	620.2
40	$= 678.3 \times 2 = 339.1$
	$1832.70 \times 10 = 18327.0$

$18327.0 \text{ sq. ft.} = \underline{678.8 \text{ Cubic yards.}}$

Note: See Cross Sections for Areas.

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

Copyright, 1914, by Eugene Dietzgen Co., New York City



CURVE FORMULAS

- Radius= $R = \frac{50}{\sin \frac{D}{2}}$ (1) Degree of Curve= D and $\sin \frac{D}{2} = \frac{50}{R}$ (2)
 Tangent= $T = R \tan \frac{\Delta}{2}$ (3) Length of Curve= $L = 100 \frac{\Delta}{D}$ (4)
 Middle ordinate= $M = R(1 - \cos \frac{\Delta}{2})$ (5) $= R \text{vers} \frac{\Delta}{2}$ (6)
 External= $E = T \tan \frac{\Delta}{4} = R \div \cos \frac{\Delta}{2} - R$ (8) $= R \text{exsec} \frac{\Delta}{2}$ (9)
 Long Chord= $C = 2 R \sin \frac{\Delta}{2}$ (10) $\Delta = \text{Central Angle}$

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.—Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta = 62^\circ 10'$ $D = 8^\circ 20'$. From Table IV for 1° curve $T = 3454.1$ and $\div 8\frac{1}{3} = 414.49$ ft. From Table V correction $= .36$ or $T = 414.85$ ft. P. C.—Sta. P. I.— $T = 157 + 45.50$. Also from (4) $L = 746.00$ and P. T.—Sta. P. C. + $L = 164 + 91.50$.

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

Deflections.—Deflection angle $= \frac{1}{2} D$ for 100 ft., $\frac{1}{4} D$ for 50 ft., etc. For c ft. $= (\text{in minutes}) .3 \times C \times D^\circ$ or $= \text{defl. for 1 ft. from Table III} \times C$. For Sta. 158 of above curve $= .3 \times 54.5 \times 8\frac{1}{3} = 136.2'$ or $2^\circ 16.2'$, or $= 2.50 \times 54.5 = 136.2'$ from Table III. For Sta. 159 deflection angle $= 2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve $E = 960.6$ for $8^\circ 20' = 960.6 \div 8\frac{1}{3} = 91.27$ and from Table V correction $= .10$ or $E = 91.37$ ft. Or suppose $\Delta = 32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E = 230.9$ and $\div 42 = 5.5$ or $D = 5^\circ 30'$.

S. of N 3540
Below 550

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 $41.9 + (20 - 16) \div 2$ or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.

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