

W
417

WILSON

1911

WILSON

410

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.

417

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

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

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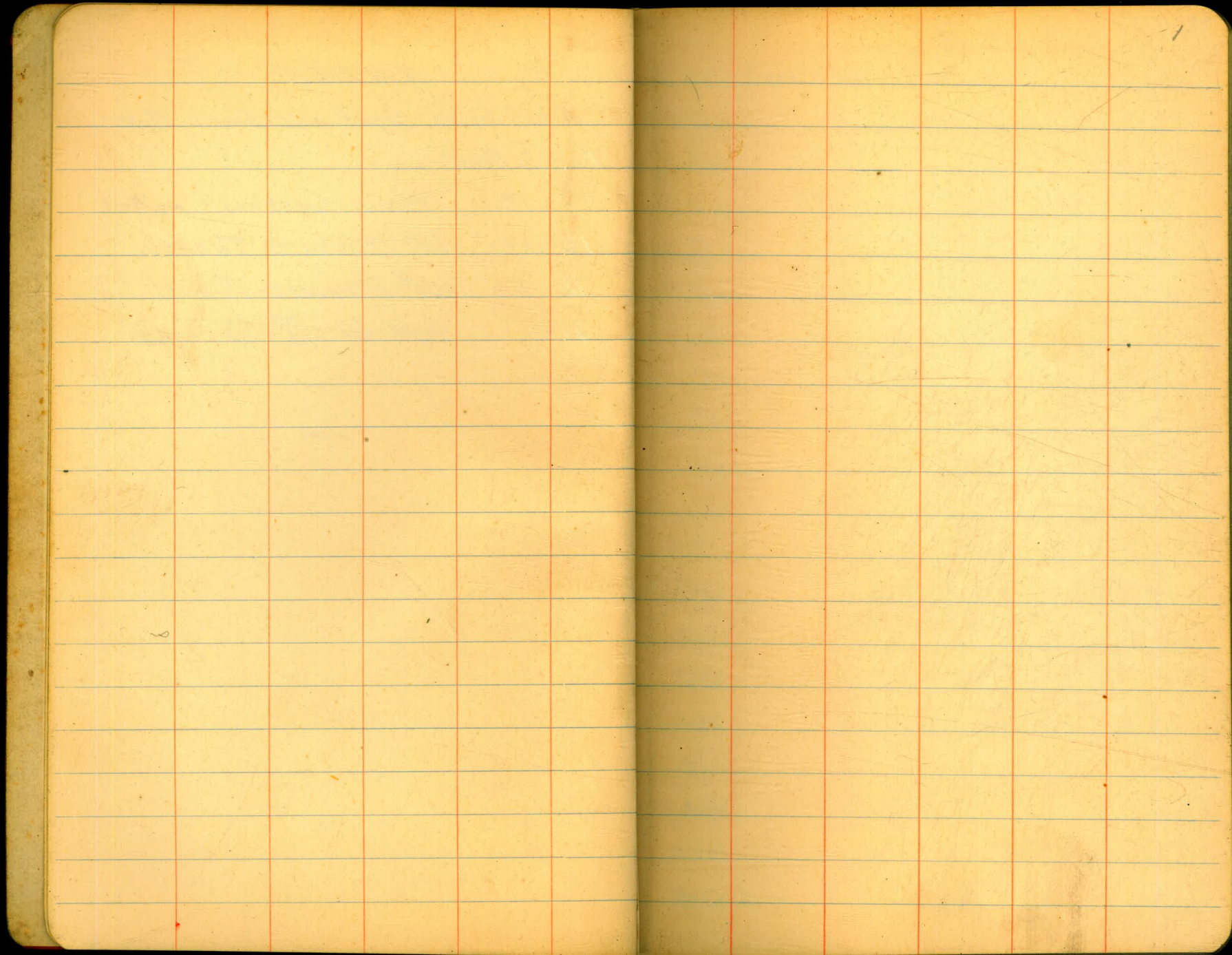
Grout holes, Grout and Grout Pipe.

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- 2 - 9 Main Core Wall on Axis
- 13 - 17 60# Pressure-Tunnel.
- 18 - 20 100# Pressure-Tunnel.
- 21 - Ogee Cutoff - Spillway.

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JAN 1 1982



8

Core Hall on Axis.

8.

8

8.

2

N 3012

4.0

3020

16.0 ✓

3028

3.5 ✓

3036

4.0 ✓

3042

4.0 ✓

3048

4.0 ✓

3055

5.5 ✓

3060 E

25

21

3.5 ✓

with 118814 used from K/1881412

Station	Elevation		Depth	Pipe	Grout	Station	Elevation		Depth	Pipe	Grout
	Top	Bottom					Top	Bottom			
3066 W			24.3	21	4.0 ✓	3180 E			26	21 ✓	2 ✓
73 E			24	21.8	94.0 ✓	3184.5 W			26 ✓	21 ✓	5 ✓
82 W			25	21.0	63.5 ✓	3188 W			25 ✓	18 ✓	4 ✓
89 E			26	21.4	5.5 ✓	3194 E			26.5 ✓	20 ✓	2 ✓
97 W			24.5	21.0	6.0 ✓	3200 W			27 ✓	20 ✓	2 ✓
3105 E			23	21.3	5.0 ✓	05 E			25.5 ✓	20 ✓	2 ✓
3114 W			25	21.3	5.0 ✓	10 W			26 ✓	21 ✓	3 ✓
3122 E			26 ✓	21 ✓	2.5 ✓	3215 E			25 ✓	20 ✓	4 ✓
26 W			26 ✓	21 ✓	2.5 ✓	30 W			26 ✓	21 ✓	3 ✓
30 E			26 ✓	21 ✓	1 ✓	25 E			26 ✓	20 ✓	4 ✓
35 W			25.5 ✓	21 ✓	3 ✓	30 W			27 ✓	21 ✓	5 ✓
40 E			25.5 ✓	21 ✓	1 ✓	3235 E			26 ✓	21 ✓	3 ✓
45 W			24.5 ✓	21 ✓	4 ✓	40 W			26 ✓	21 ✓	2 ✓
50 E			25.5 ✓	21 ✓	2 ✓	45 E			22 ✓	18 ✓	2 ✓
55 W			26 ✓	21 ✓	1.5 ✓	50 W			25 ✓	21 ✓	2 ✓
60 E			26 ✓	21 ✓	3.5 ✓	55 E			25 ✓	21 ✓	2 ✓
65 W			25.5 ✓	21 ✓	2 ✓	60 W			25 ✓	18 ✓	7.5 ✓
70 E			26.5 ✓	21 ✓	2 ✓	65 E			25 ✓	28 ✓	4 ✓
75 W			26 ✓	21 ✓	9 ✓	71 W			25.5 ✓	29 ✓	3.5 ✓
			309.0	252	320 34				485.5	400	67.0 ✓

Station	Elevation		Depth	Pipe	Grout
	Top	Bottom			
N. 3277 E			25 ✓	25 ✓	3 ✓
80 W			19 ✓	25 ✓	4 ✓
85 E			24.5 ✓	26 ✓	5 ✓
90 W			25 ✓	27 ✓	3.5 ✓
95 E			25 ✓	27 ✓	3.5 ✓
3300 W			25.5 ✓	29 ✓	2.0 ✓
05 E			25.5 ✓	31 ✓	4.0 ✓
10 W			25 ✓	32 ✓	4.0 ✓
15 E			25 ✓	29 ✓	4.0 ✓
18 E	566.0	540.5	25.5 ✓	21	7.0 ✓
21 W	63.3	37.8	25.5	21	2 ✓
26 E	62.2 ✓	36.2	26	21	4 ✓
31 W	60.8 ✓	35.3	25.5	21	1 ✓
35 E	63.0	38.0	25 ✓	18	4 ✓
40 W	59.8	32.8	27 ✓	18	
45 E	57.5	32.0	25.5	18	
50 W	55.7	29.7	26 ✓	18	1 ✓
55 E	54.7	29.7	25 ✓	18	1 ✓
60 W	53.3	26.3	27 ✓	18	1 ✓
			477.5	443.	54.0 ✓

Station	Elevation		Depth	Pipe	Grout
	Top	Bottom			
N. 3365 E	552.5	525.0	27.5 ✓	18	20.0 ✓
70 W	49.7	22.7	27 ✓	"	5.0 ✓
75 E	48.7	22.7	26 ✓	"	3.0 ✓
80 W	40.8	13.8	27 ✓	"	4.0 ✓
85 E	33.9	05.0	28.9	"	17.0 ✓
90 W	33.8	05.4	28.4	"	5.0 ✓
95 E	33.6	01.6	32	"	2.0 ✓
3400 W	33.5	05.0	28.5	"	2.0 ✓
05 E	33.4	01.9	31.5	"	9.0 ✓
10 W	33.3	01.3	32	"	3.0 ✓
15 E	33.2	01.2	32	"	3.0 ✓
20 W	30.1	496.1	34	"	2.0 ✓
25 E	30.0	517.0	13	"	2.0
30 W	30.0	00.5	29.5	"	6 ✓
35 E	25.8	497.8	33	"	20. ✓
40 W	25.5	95.1	30.4	"	2 ✓
45 E	25.3	97.3	28	"	4 ✓
50 W	23.0	90.6	32.4	"	8 ✓
55 E	22.7	94.0	28.7	18	4 ✓
			534.8	324	119. ✓

Hole lost. Pipe not set before concreting

Station	Elevation		Depth	pipe	Grout	Station	Elevation		Depth	Pipe	Grout
	Top	Bottom					Top	Bottom			
N. orth						N.					
						3532 W.	510.2	482.2	28.0	21.0	14.0
						36 E.	10.3	503.3	7.0	—	—
3460 W.	522.5	490.5	32.0	18	23	36.5 E.	10.3	496.3	14.0	21.0	1.0
65 E.	22.4	87.4	35.0	18	6	37 E.	10.3	496.3	14.0	21.0	12.0
70.7 W.	03.4	94.9	8.5	31	3	40 W.	10.3	77.3	33.0	21.0	1.0
75 E.	03.3	89.8	13.5	34	2	44.5 E.	10.4	82.9	27.5	21.0	1.0
80 E.	03.2	80.5	22.7	34	2	50 W.	10.4	78.4	32.0	21.0	19.0
83 W.	03.2	83.4	19.8	34	2	55 E.	10.5	79.5	31.0	21.0	3.5
^{Section} 3488 E.	510.0	478.0	32.0	21.0	6.0	60 W.	10.5	77.5	33.0	21.0	4.5
93 W.	10.0	81.5	28.5	21.0	2.0	65 E.	10.5	96.5	24.0	23.0	3.0
97 E.	10.0	77.0	33.0	21.0	2.0	70.5 W.	10.5	81.5	29.0	22.0	2.0
98 E.	10.0	503.0	7.0	stuck Drill Not removed.		76 E.	10.5	77.5	33.0	23.0	8.0
3503 W.	10.0	477.0	33.0	21.0	5.0	81.5 W.	10.5	96.0	14.5	22.0	8.0
08 E.	10.0	77.0	33.0	29.0	6.0	82.5 W.	10.5	81.0	29.5	21.5	1.0
13 W.	10.0	82.5	27.5	21.0	13.0	86.5 E.	10.0	81.5	29.0	23.0	3.5
18 E.	10.0	81.0	29.0	21.0	1.0	91 W.	10.0	502.5	7.5	21.5	6.0
23 W.	10.1	78.1	32.0	21.0	4.0	92 W.	10.0	477.0	33.0	22.0	5.5
28 E.	10.2	80.2	30.0	21.0	32.0	3597 E.	10.0	78.0	32.0	23.0	30.0

409.5 358. 109/

444.0 369 123

October 6 Estimate

Station	Elevation		Depth	Pipe	Grout	Station	Elevation		Depth	Pipe	Grout.
	Top	Bottom					Top	Bottom			
North						N.					
3602.5 W.	510.0	477.0	33.0	22.0	5.0	3661.5	511.4	488.0	23.4	18.0	1.0
07.5 E.	10.0	80.0	30.0	21.0	4.5	64 E.	11.6	(19.1)	32.5	22.0	5.0
12.5 W.	10.0	93.0	27.0	22.0	2.0	69 E.	12.0	494.8	17.2	18.0	105.0
18 E.	10.0	78.5	31.5	21.0	5.0	70.5 W.	12.1		35.0	22.0	2.0
23 W.	10.0	77.0	33.0	22.0	10.0	75.0 E.	12.4		33.0	22.0	4.0
28 E.	10.0	85.0	25.0	23.0	3.5	80.5 W.	12.4		35.4	22.0	2.0
34 W.	10.0	82.0	28.0	22.0	6.0	86 E.	12.6		29.0	22.0	1.0
40 E.	10.0	77.0	33.0	23.0	2.0	91.5 W.	12.7		31.5	22.0	1.0
44.5 W.	10.0	75.0	35.0	22.0	4.0	97 E.	13.1		30.5	23.0	6.0
49 E.	10.4	81.0	19.4	18.0	13.0	3701 W.	13.5		31.5	22.0	2.0
49.5 E.	10.4	510.9	-	18.0	1.0	05.5 E.	13.9		31.5	23.0	5.0
52 E.		02.1		18.0	0.5	10 W.	14.5		31.5	22.0	2.0
52 W.		02.5		18.0	3.0	10.5 W.	14.5		15.5	23.0	3.5
54 E.	10.9	02.0	8.9	18.0	12.0	15 E.	15.1		35.5	23.0	1.5
54.5 E.		02.5		18.0	0.5	20 W.	15.9	8.1	34.5	22.0	1.0
54.5 W.		02.8		18.0	1.0	25 E.	16.3		34.3	22.0	4.0
58 W.	11.2	(16.1)	34.5	22.0	8.0	29.5 W.	16.7	8.1	34.5	22.0	1.0
61 E.	11.4	07.0	4.4	18.0	5.0	30.5 W.	16.7	Drill not Removed	6.5	22.0	1.0
			347.7	364	86. ✓				527.8	392	148 ✓

Estimate 6. October
 ↓ Estimate 6. October
 ↓ Estimate 6. October

Elevation					Elevation					7	
Station	Top	Bottom	Depth	Pipe	Grout	Station	Top	Bottom	Depth	Pipe	Grout
N.						3809	529.2		26.0 ✓	24	1.0 ✓
3734.5	E 517.4		35.0	23.0	14.0 ✓	13.5	33.8		25.0 ✓	18	2.0 ✓
39	W 18.1		35.3	22.0	4.0 ✓	18	36.8		25.0	18	2.0
44	E 18.8		36.0	22.0	2.0 ✓	22 W	41.0		25.5	18	1.0 ✓
47	W 18.9		31.5	22.0	2.0 ✓	22.5 E	41.2		25.0	18	6.0 ✓
50	E 19.1		35.8	22.0	4.0 ✓	23 W	46.6		16.0	18	2.0 ✓
55	W 19.2		33.5	22.0	2.0 ✓	24.5 E	51.2		25.0	18	4.0 ✓
60	E 19.2	87.1	31.5	23.0	4.0 ✓	25 W			23.0	5	4.0 ✓
65	W 17.3	493.3	24.0 ✓	18.0	3.0 ✓	28.8 W	60.7		25.3	15	3.0 ✓
70	17.7	93.2	24.5 ✓	18.0	3.5 ✓	32 E	64.0		25.0	18	60.0 ✓
75	17.7	92.7	25.0 ✓	18.0	7.0 ✓	36 W	67.9		25.5	19	5.0 ✓
80	17.7	92.7	25.0 ✓	18.0	3.5 ✓	40 E			25 ✓	21 ✓	4 ✓
85	17.9	97.9	20.0 ✓	18.0	5.0 ✓	45 W			25 ✓	21 ✓	15 ✓
90	18.0	93.0	25.0 ✓	23.0	14.0 ✓	50 E			25 ✓	21 ✓	11 ✓
95	18.7	93.7	25.0 ✓	24.0	2.0 ✓	55 W			25 ✓	21 ✓	2 ✓
3800	19.4		25.0 ✓	19.0	6.0 ✓	60 E			25 ✓	26 ✓	3 ✓
00	19.4	95.4	24.0 ✓	18.0	1.0 ✓	65 W			25 ✓	24 ✓	5 ✓
04.5	27.5		24.0 ✓	21.0	5.0 ✓	70 E			25 ✓	31 ✓	3 ✓
06	28.0		21.0 ✓	24.0	5.0 ✓	75 W	Drilled 25' with 21' pipe but not grouted				
		501.1	37.5	87. ✓			441.3	384	133 ✓		

Station	Elevation		Depth	Pipe	Grout	Station	Elevation		Depth	Pipe	Grout
	Top	Bottom					Top	Bottom			
N. 3880 E			25	29 ✓	4 ✓	3974 W			26.5 ✓	21 ✓	4 ✓
85 W			26 ✓	33 ✓	2 ✓	3982 E			24 ✓	21.7 ✓	13 ✓
90 E			25 ✓	35 ✓	3 ✓	3990 W			27 ✓	21.3 ✓	18 ✓
95 W			25 ✓	34 ✓	5 ✓	3998 E			25 ✓	21.7 ✓	27 ✓
3900 E			23	28 ✓	2 ✓	4006 W			26 ✓	21.6 ✓	11 ✓
05 ²			26 ✓	42 ✓	3 ✓	4014 E			26 ✓	21.3 ✓	3 ✓
10			27 ✓	42 ✓	3 ✓	4022 W			26 ✓	20.4 ✓	5 ✓
15			26 ✓	21 ✓	2 ✓	4030 E			23.5 ✓	21.0 ✓	3 ✓
20			26 ✓	21 ✓	5 ✓	37 W			25.5 ✓	20.3 ✓	2.5 ✓
25			25 ✓	21 ✓	3 ✓	43 E			26.0 ✓	21.4 ✓	3 ✓
30			23.5 ✓	20 ✓	5 ✓	52 W			25.6 ✓	21.1 ✓	3 ✓
35			26.5 ✓	21 ✓	3 ✓	60 E			24.7 ✓	21.4 ✓	6 ✓
40			26.5 ✓	21 ✓	3 ✓	68 W			25.0 ✓	21.3 ✓	3 ✓
43.5			26 ✓	21 ✓	4 ✓	76 E			25.3 ✓	20.8 ✓	3 ✓
50 E			26.5 ✓	18 ✓	6 ✓	84 W			26.0 ✓	20.5 ✓	8 ✓
55 W			26.5 ✓	21 ✓	8 ✓	92			25.5 ✓	20.7 ✓	3 ✓
60 E			26.5 ✓	21 ✓	7 ✓	4100			25.5 ✓	20.5 ✓	5 ✓
65 W			23.5 ✓	21 ✓	7 ✓	05			25.7 ✓	20.7 ✓	4.5 ✓
70 E			26.5 ✓	21 ✓	5 ✓	10			25.7 ✓	21.7 ✓	4 ✓
			486.	491	95 ✓				180.5	149.	81

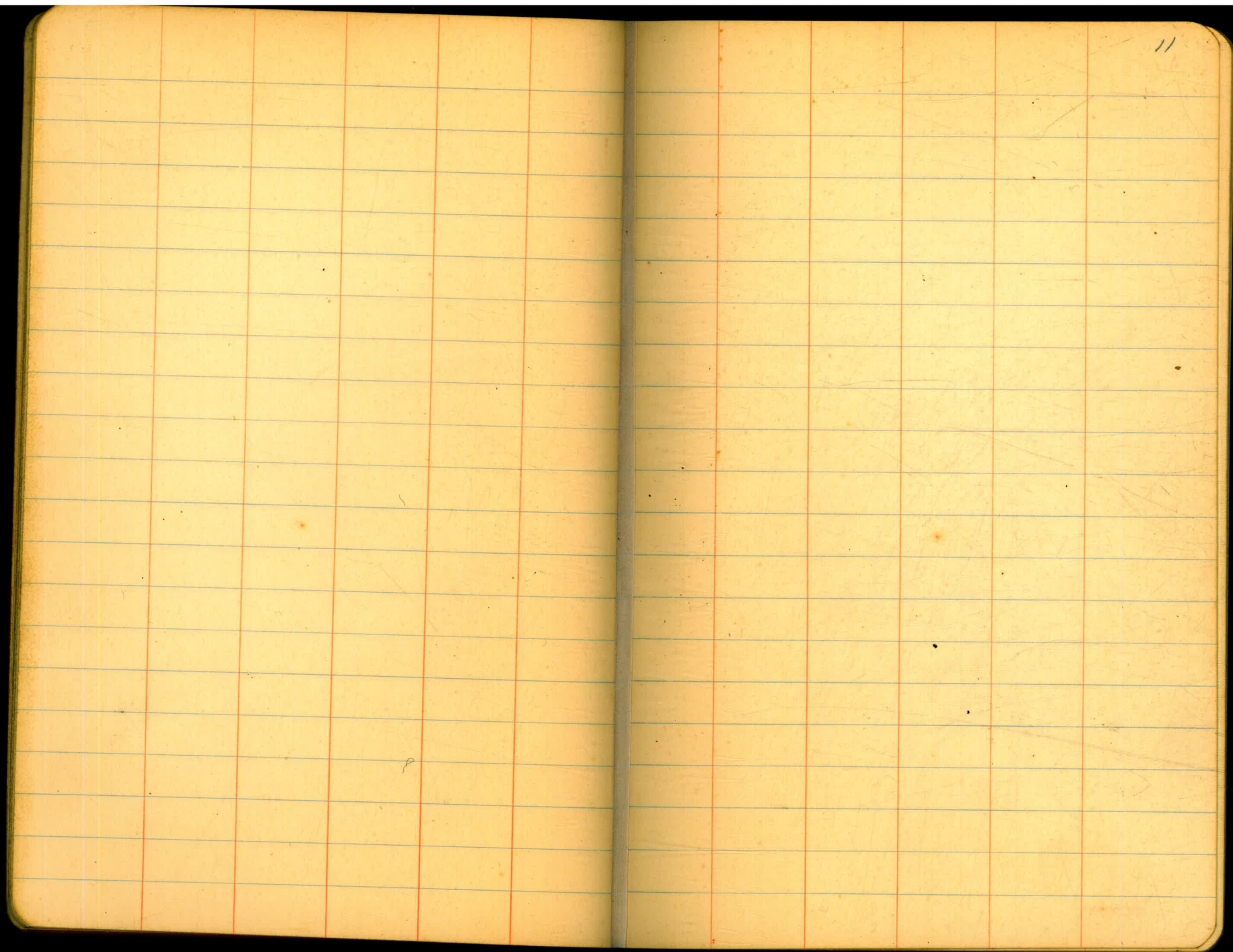
Reported as drilled into void at 23' below surface.

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copied by POCg.

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Sta	Top	Bottom	Depth	Pipe	Grout	Sta.	Top	Bottom	Depth	Pipe	Grout
N4115			25.5	21.2	4.5 ✓						
20			25.7	20.3	4 ✓						
25			25.5	21.	4.5 ✓						
30			25.4	20.5	4.5 ✓						
35			25.4	19.2	3 ✓						
40			25.4	20.2	4 ✓						
45			25.4	20.3	4 ✓						
50			25.4	18.9	9.5 ✓						
55			25.4	19.7	4 ✓						
60			25.5	20	6 ✓						
65			25.5	21.2	8.5 ✓						
69					5.0 ✓						
75 = 0+00					4.0 ✓						
+04					3.0 ✓						
+09					3.5 ✓						
+14			8		3 ✓						
+20					4.0 ✓						
+25					3 ✓						
+30					4.5 ✓						
+35					3.5 ✓						
+40					5.5 ✓						



60# pressure grouting of

Outlet Tunnel Lining.

13

Station	Left or Right off	Depth 3	Grout	Depth 6	Grout	Depth 9	Grout	Depth 13	Grout	Depth 17.5	Grout
0+60	Left	-	-	5.6	3.0	-	-	-	-	6.7	0
	Right			5.3	2.0					6.6	80.0
0+80	Left			1.6	591.0					4.5	2.0
	Right			0.3	7.0					1.7	2.0
1+08											
1+28	Left			3.25	3.0					2.6	0
	Right	2.6	3.0							3.2	0
1+44	Left					4.7	7.0			3.3	3
	Right	3.2	844.0							3.8	2
1+60	Left			4.1	776.0					3.75	0
	Right			2.5	0					2.8	0
1+80	Left			3.3	601.0					3.75	0
	Right			2.75	3.0			6.4	2.0	4.25	0
2+00	Left			2.5	2.0					4.6	0
	Right			2.5	2.0					2.8	0
2+22	Left	2.4	0					2.7	2.0	2.25	0
	Right					3.25	0			2.25	0
Total		8.2	867.0	33.70	658.0	7.95		9.1	2.0	58.85	

Station	Left or Right	Depth 3'	Grout	Depth 6'	Grout	Depth 9'	Grout	Depth 13'	Grout	Depth 17.5'	Grout
2+40	Left					4.7	2.0			2.8	0
	Right	3.25	0							3.6	2.0
2+58	Left	2.5	0							3.4	2.0
	Right			4.0	0					3.6	2.0
2+80	Left			3.25	3478.0					2.7	3.0
	Right	3.1	3.0							4.5	0
3+00	Left	3.1	0							4.8	0
	Right			3.2	0					3.2	0
3+18	Left			3.5	0					4.2	0
	Right					2.1	2.0			4.6	0
3+40	Left			3.4	0					3.0	2.0
	Right	4.6	1337.0							1.75	3.0
3+60	Left			2.4	0					4.5	0
	Right			1.75	0					3.1	0
3+80	Left			2.5	14.0					4.5	11.0
	Right			4.8	0					2.4	
4+00	Left			2.7	0					4.0	2.0
	Right			2.75	0					2.7	0
Total		16.55	1340.0	34.25	3492.0	6.8	4.0			63.35	27.0

Station	Left or Right Σ	Depth 3'	Grout	Depth 6'	Grout	Depth 9'	Grout	Depth 13'	Grout	Depth 17.5'	Grout
A+20	Left	2.7	0'							3.4	0'
	Right			3.25	0'					3.4	0'
A+42	Left	2.5	2.0							1.75	1.0
	Right			3.25	0'					3.4	0'
A+60	Left			3.5	1.0					4.1	0'
	Right	2.75	3549.5							3.1	6'
A+78	Left			3.8	Not Tested					4.0	0'
	Right	2.7	Not Tested							3.8	2.0
5+00	Left	4.75	811.0							3.75	0'
	Right			6.2	3.0					2.8	3.0
5+20	Left	3.75	0							3.7	0'
	Right			4.6	3.0					1.8	3.0
5+42	Left			3.4	5.0					3.3	3.0
	Right			3.0	3.0					4.4	3.0
5+60	Left			4.5	53.0					4.9	4.0
	Right			3.2	6.0					3.0	8.0
5+80	Left			3.1	0					3.9	16.0
	Right	3.4	2209.0							4.2	7.0
Total		22.55	6571.5	41.80	74.0					62.70	56.0

Station	Left or Right #	Depth 3'	Grout	Depth 6'	Grout	Depth 9'	Grout	Depth 13'	Grout	Depth 17.5'	Grout
5+98	Left	3.8	0							3.6	0 ✓
	Right			2.5	4.0 ✓					4.4	14.0 ✓
6+20	Left			2.2	0 ✓					4.0	0 ✓
	Right	3.7	1846.0							3.7	2.0 ✓
6+42	Left			2.8	307.0					2.9	0 ✓
	Right			2.0						4.5	11.0 ✓
6+60	Left	2.25	1571.5							2.2	0 ✓
	Right			4.1	38.5 ✓					2.75	18.0 ✓
Misc.	Left	1.5		6.0							
	Right			5.5						1.5	
Total		11.25	3417.5	25.1	344.5					29.55	45.0

0+33.5 Grout pipe above Entrance Adit to Outlet Tower 422.0
 Total length grout holes to Sept. 20 431.7
 " grout to Sept. 20 = 16,453.5 cu. ft.
 " grout pipe - 60" and 100" holes = 561'

100# pressure grouting of Outlet Tunnel Lining.

18

8' South Invert		8' north Invert.		10' South Arch		10' north arch		20' south arch		20' north arch.	
Depth	Grout	Depth	Grout	Depth	Grout	Depth	Grout	Depth	Grout	Depth	Grout.
0+68											
0+90											
1+10											
1+28											
1+50											
1+68											
1+88											
2+11	10	10		10		10		10		10	
2+32	10	10		10		10		10		10	
2+50	10	10		10		10		10		10	
2+70	10	10		10		10		10		10	
2+92	10	10		10		10		10		10	
3+10	10	10		10		10		10		10	
3+30	10	10		10		10		10		10	
3+48	10	10		10		10		10		10	
3+68	10	10		10		10		10		10	
3+90	10	10		10		10		10		10	

8' south invert		8' north invert		10' south arch		10' north arch		20' south arch		20' north arch	
Depth	Grout	Depth	Grout	Depth	Grout	Depth	Grout	Depth	Grout	Depth	Grout
A+10	10	10		10		10		10		10	
A+30	10	10		10		10		10		10	
A+50	10	10		10		10		10		10	
A+70	10	10		10		10		10		10	
A+90	10	10		10		10		10		10	
5+10	10	10		10		10		10		10	
5+29.5	10	10		10		10		10		10	
5+50	10	10		10		10		10		10	
5+68	10	10		10		10		10		10	
5+90	10	10		10		10		10		10	
6+10	10	10		10		10		10		10	
6+30	10	10		10		10		10		10	
6+50	$\frac{10}{130}$	19.0	10	$\frac{14.0}{130}$	10	0	$\frac{10}{130}$	3.0	10	0	$\frac{10}{130}$

Total length holes to Oct. 1 = 1290'

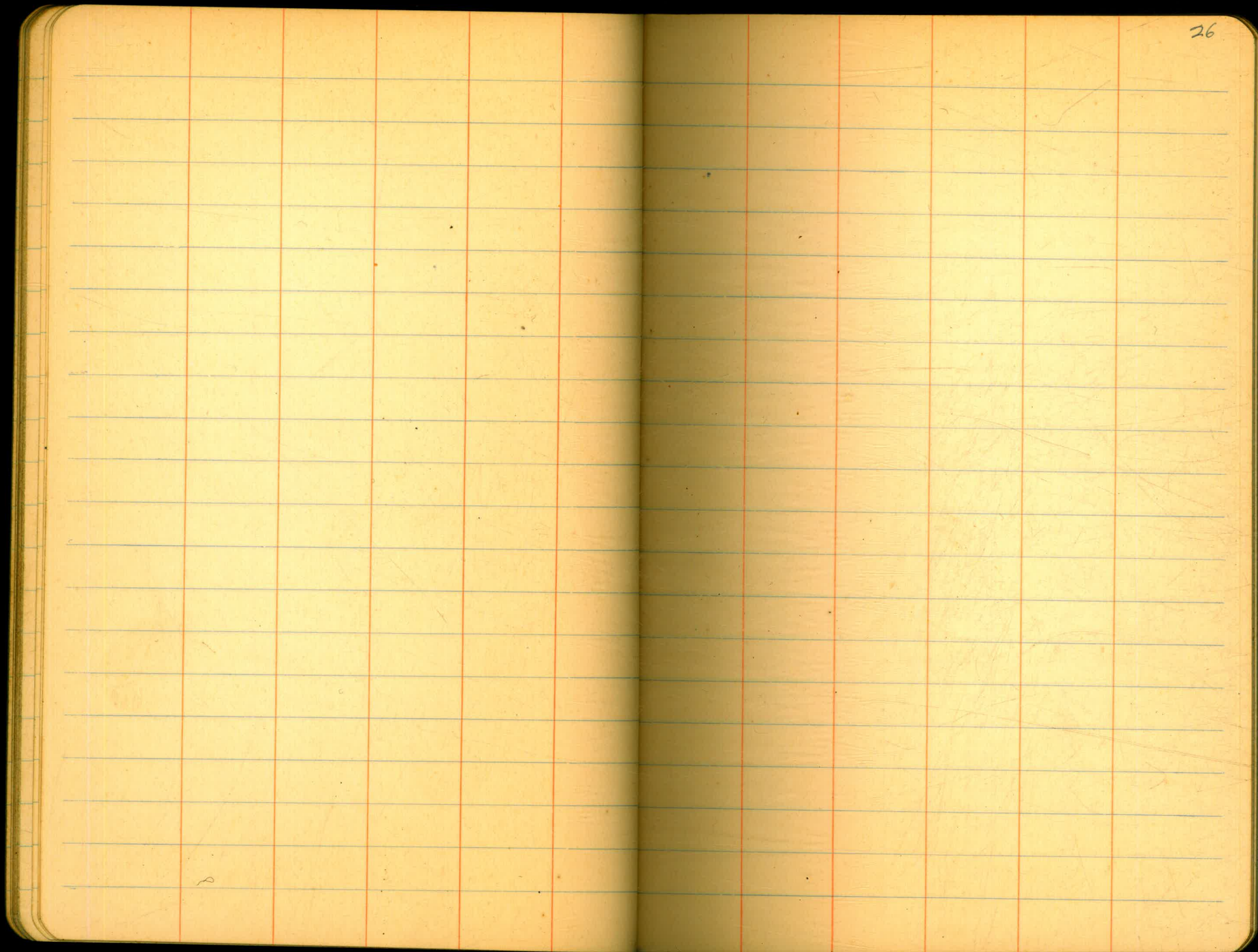
Grout Holes in Cutoff Trench under Spillway Ogee.

Station	Elevation		Depth	Pipe	Grout	Station	Elevation		Depth	Pipe	Grout
	Top	Bottom					Top	Bottom			
0-9		25		20.	3.	+80 N	25.7	20.3	4.5		
0-9		24.5		20	4.0						
0-6		24		20.	3.0	+85 S	25.5	20.0	5.5		
0-8		23.8		20.	3.0						
0+00 N		26		21.3	3.0	+90 N	25.6	18.6	4.5		
+05 S		26		20.2	4.0	0+95 S	26.4	20.4	3.5		
+10 N		25.7		19.2	4.0	1+00 N	26.2	20.7	4.0		
+15 S		26.		20.3	4.0	+05 S	26.0	21.3	7.0		
+20 N		25.		20.6	6.0	+10 N	21.5	21.0	4.0		
+25 S		25.5		20.6	4.5	+15 S	20.0	21.3	3.0		
+30 N		25.8		18.9	4.5	+20 N	26.3	21.3	3.0		
+35 S		24.		21.2	3.5	+25 S	26.0	21.4	35.0		
+40 N		25.3		18.6	4.0	+30 N	24.0	20.8	0		
+45 S		24.		21.3	5.0	+35 S	22.0	21.3	6.0		
+50 N		25.5		20.8	4.0	+40 N	26.0	21.0	13.0		
+55 S		25.0		21.1	2.0	+45 S	26.3	21.0	4.0		
+60 N		25.5		19.1	5.0	+50 N	25.0	25.0	2.0		
+65 S		26.0		19.9	5.0	+55 S	23.0	23.0	3.5		
+70 N		23.0		19.7	7.0	+60 N	25.0	25.0	4.0		
0+75 S		25.9		20.7	12.0		240.5	353.7	106.5		
		125.4		100.5							

Station	Elevation		Depth	Pipe	Grout	Station	Elevation		Depth	Pipe	Grout
	Top	Bottom					Top	Bottom			
1+65 S.			25.0 ✓	21.7	2.0 ✓	2+60 N			26.2 ✓	21.4 ✓	3.0 ✓
+70 N.			26.0 ✓	21.8 ✓	2.5 35.0	+65 S			25.7 ✓	21.5 ✓	2.5 ✓
+75 S.			25.5 ✓	21.3	5.5 4.5	+70 N			27.0 ✓	20.7 ✓	5.5 ✓
+80 N			25.5 ✓	21.4	12.0 4.0	+75 S			26.9 ✓	21.0 ✓	6.0 ✓
+85 S			25.5 ✓	21.5	6.0 5.5	+80 N			25.5 ✓	21.4 ✓	6.0 ✓
+90 N			25.4 ✓	21.0	9.5 12.0	+85 S			25.7 ✓	20.2 ✓	5.0 ✓
+95 S.			24.0 ✓	21.0 ✓	4.5 ✓	+90 N			25.5 ✓	20.7 ✓	2.5 ✓
2+00 N.			26.5 ✓	21.0 ✓	2.0 ✓	+95 S.			25.7 ✓	21.1 ✓	4.0 ✓
+05 S.			25.9 ✓	21.4 ✓	5.0 ✓	3+00 N.			25.9 ✓	20.2 ✓	3.0 ✓
+10 N.			25.9 26.9 ✓	21.7 ✓	0.0 ✓	+05 S			26.6 ✓	20.4 ✓	4.0 ✓
+15 S.			26.0 ✓	21.5 ✓	6.0 ✓	+10 N			25.5 ✓	19.6 ✓	2.0 ✓
+20 N.			27.3 ✓	21.0 ✓	3.0 ✓	+15 S.			23.3 ✓	20.3 ✓	2.5 ✓
+25 S.			27.0 ✓	20.8 ✓	3.5 ✓	+20 N			25.5 ✓	21.2 ✓	4.0 ✓
+30 N.			25.5 ✓	20.7 ✓	7.0 ✓	+25 S			26.0 ✓	20.8 ✓	7.0 ✓
+35 S.			27.0 ✓	21.4 ✓	3.5 ✓	+30 N.			25.5 ✓	21.4 ✓	5.0 ✓
+40 N.			27.1 ✓	21.5 ✓	5.5 ✓	+35 S.			25.5 ✓	20.6 ✓	9.5 ✓
+45 S.			27.0 ✓	21.0 ✓	6.0 ✓	+40 N.			24.5 ✓	21.1 ✓	6.0 ✓
+50 N.			27.0 ✓	21.4 ✓	4.5 ✓	+45 S.			25.5 ✓	20.9 ✓	17.0 ✓
+55 S.			27.1 ✓	20.9 ✓	2.0 ✓	+50 N.			26.0 ✓	21.2 ✓	5.5 ✓

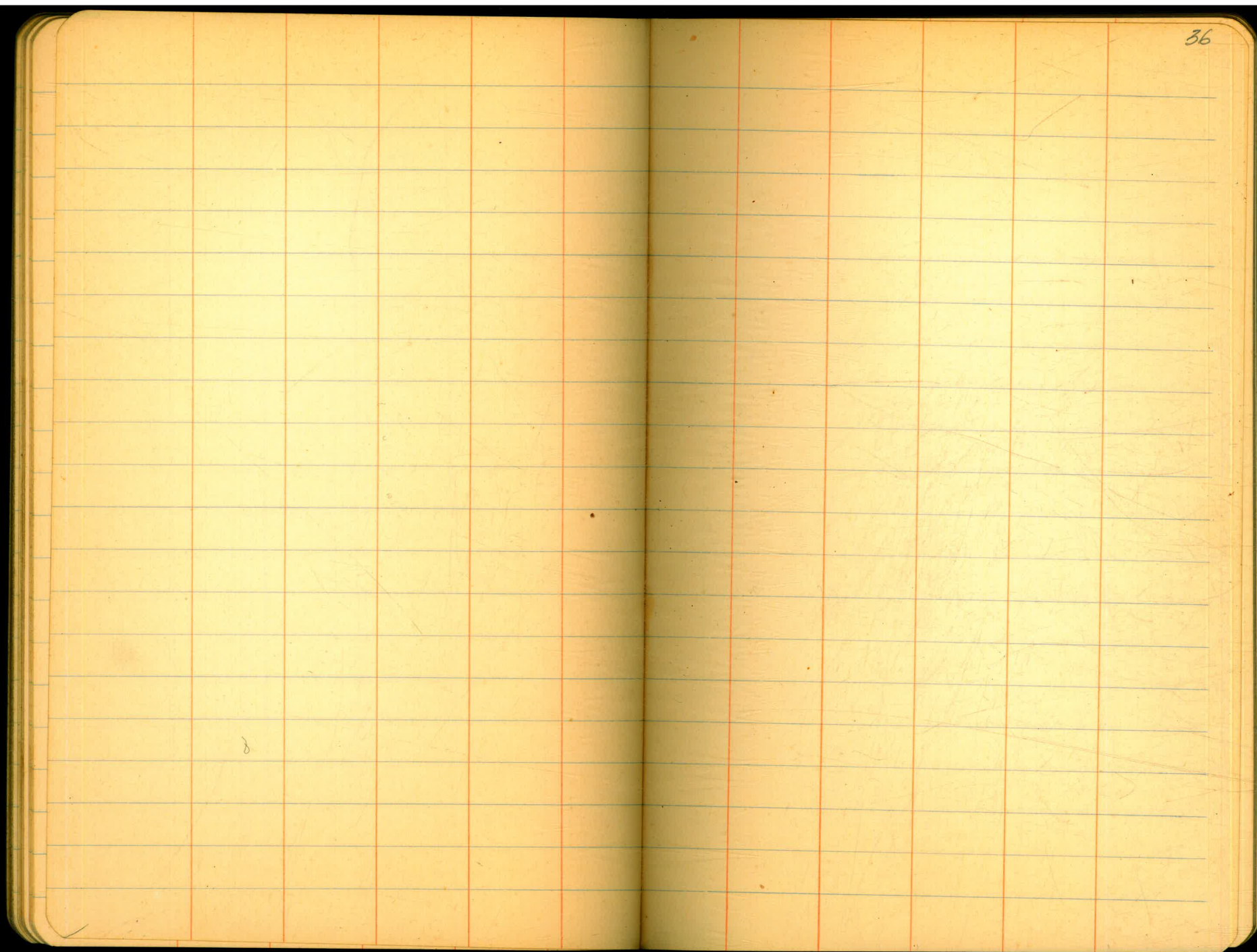
496.2
404.0
100.0

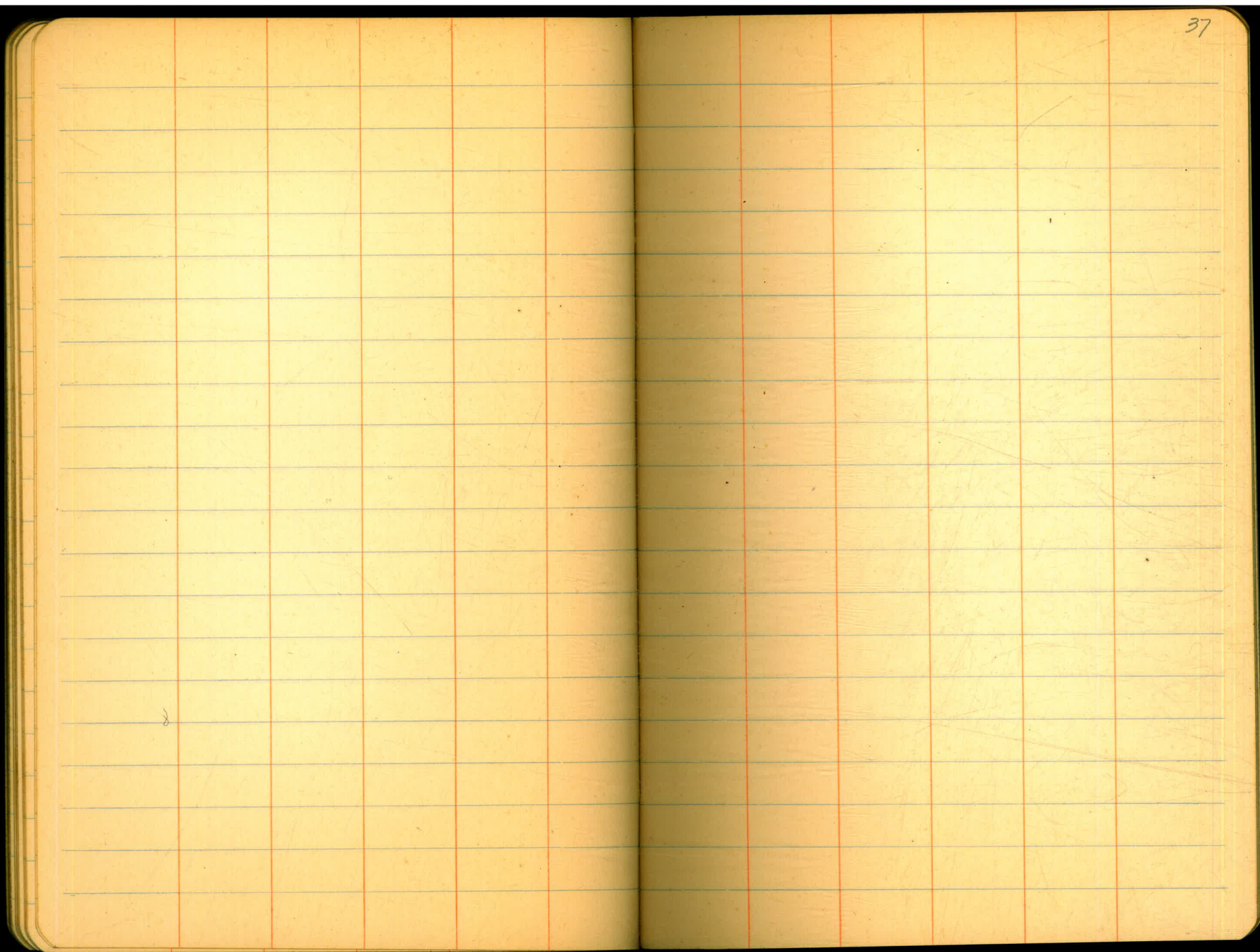
Station	Elevation		Depth	Pipe	Grout	Station	Top	Bottom	Depth	Pipe	Grout	23
	Top	Bottom										
3+55 S			25.0'	20.9	12.5	4+55 N			27.0	20.3	5.0	✓
+60 N			25.5	21.1	11.0	4+60 S			26.0	21.4	5.0	✓
+65 S			26.4	19.9	2.0	+65 N			26.5	19.8	6.5	✓
+70 N			26.5	20.9	4.0	+70 S			27.0	21.4	6.5	✓
+75 S			26.6	20.9	2.0	+75 N			26.0	21.0	6.0	✓
+80 N			26.9	21.1	11.5	+80 S			24.5	20.1	6.0	✓
+85 S			24.0	19.0	7.0	+85 S			25.0	20.7	6.0	✓
+90 N			26.5	18.9	6.5	+90 N			25.0	21.3	5.0	✓
+95 S			24.9	20.2	7.0	+95 S			25	21	5.0	✓
4+00 N			26.7	19.4	8.0	5+00 2H			26	21	6.0	✓
4+05 <i>Stake lost</i>			25.5	21.1	11.5	5+05 2S			26	21	5.0	✓
+10 S			22.5	20.9	2.0	+05 7H			25.5	21	6.0	✓
+15 N			26.0	21.1	3.5	+05 17N			25.5	21	5.5	✓
+20 S			25.5	20.9	2.0	+05 27H			25.6	21	6.0	✓
+25 N			26.0	19.9	5.5	+08 12H			25.6	21	5.0	✓
+30 S			26.0	21.1	3.5	+08 22H			25.6	19	4.5	✓
+35 N			25.5	21.1	3.5	+08 32H			25.7	16.5	6.5	✓
+40 S			25.5	21.3	2.0	5+10			25.7	20.7	3.0	
+45 N			26.0	21.3	4.0	+15			25.0	21.4	2.0	
+50 S						+20			25.5	20.0	3.5	
						+25			25.7	21.5	3.0	



The image shows an open notebook with two facing pages. The pages are cream-colored and feature a grid of light blue horizontal lines and vertical red margin lines. The notebook has rounded corners and a dark cover is visible around the edges. The pages are mostly blank, with a few faint, illegible markings. In the top right corner of the right page, the number '34' is written. On the left page, there is a small, faint mark that looks like a lowercase 'p' or a similar character.

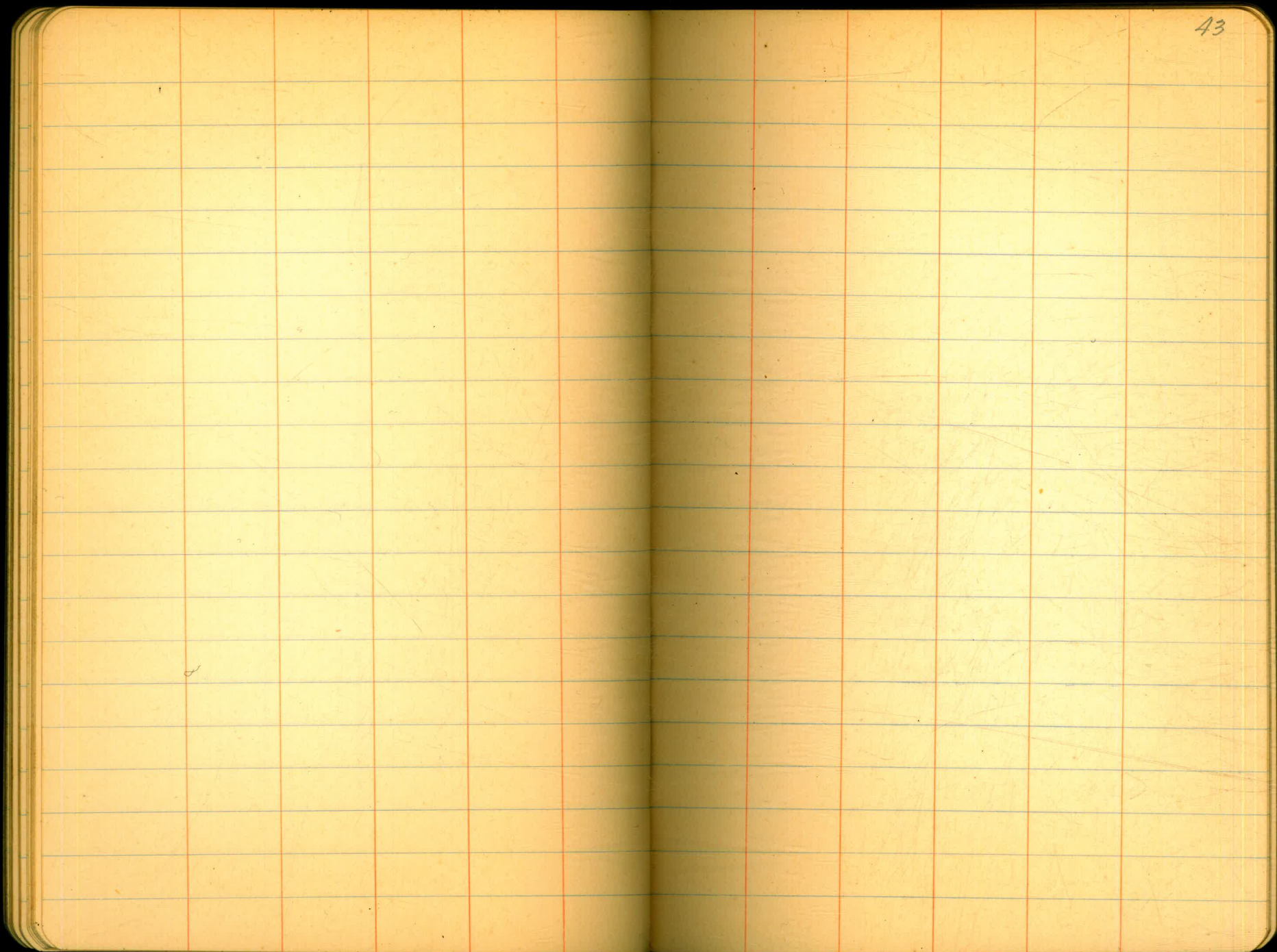
8

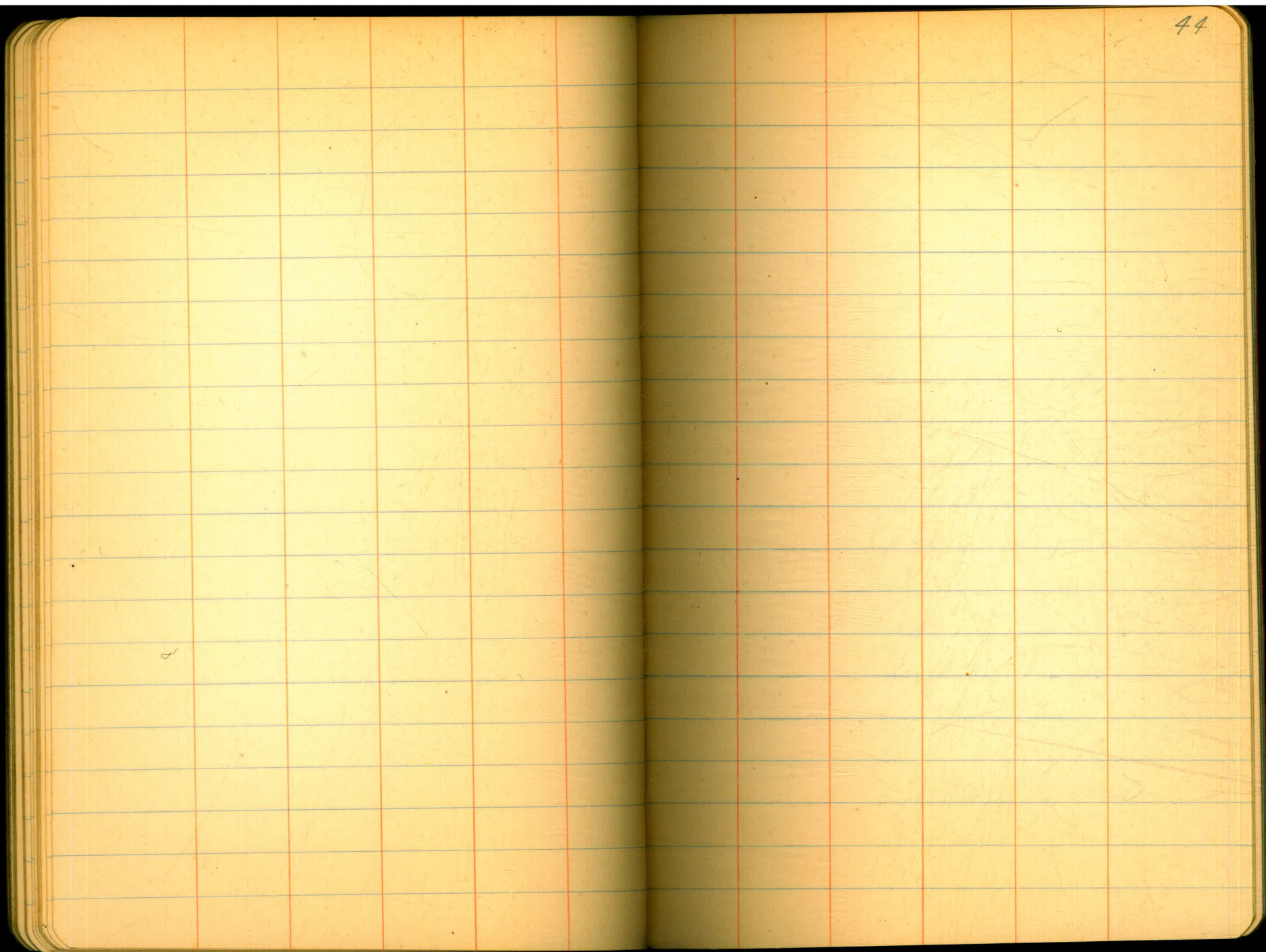




8

8

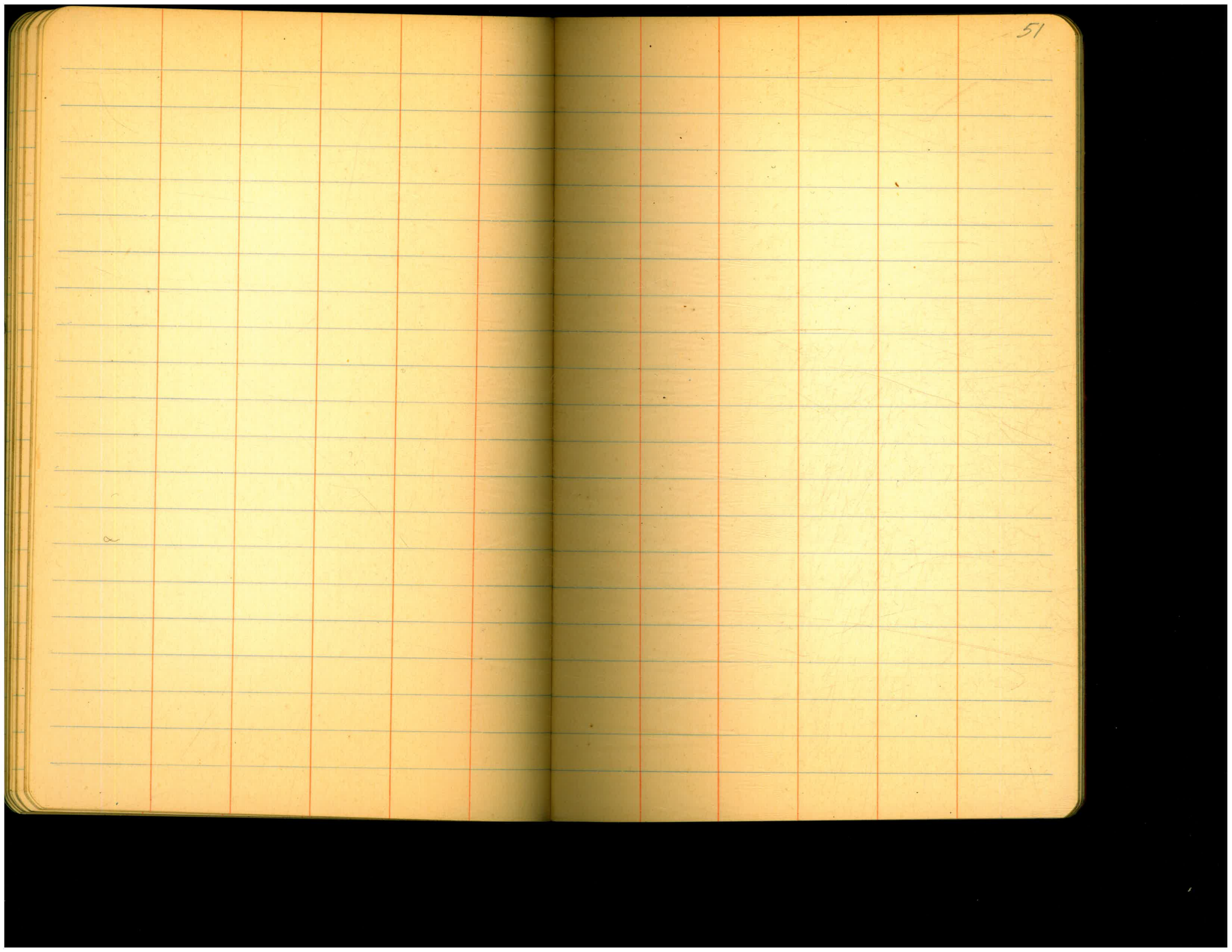




p

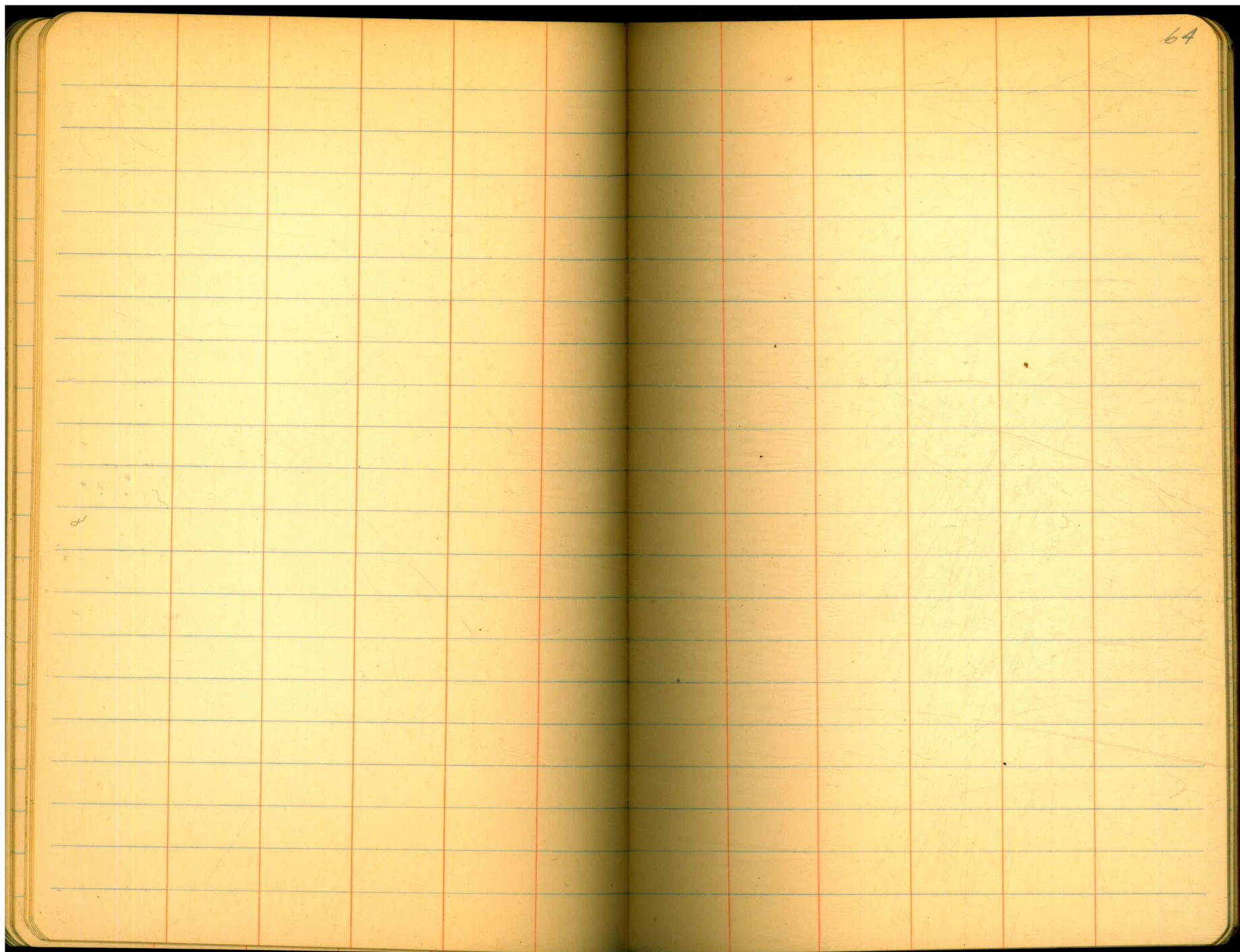
8

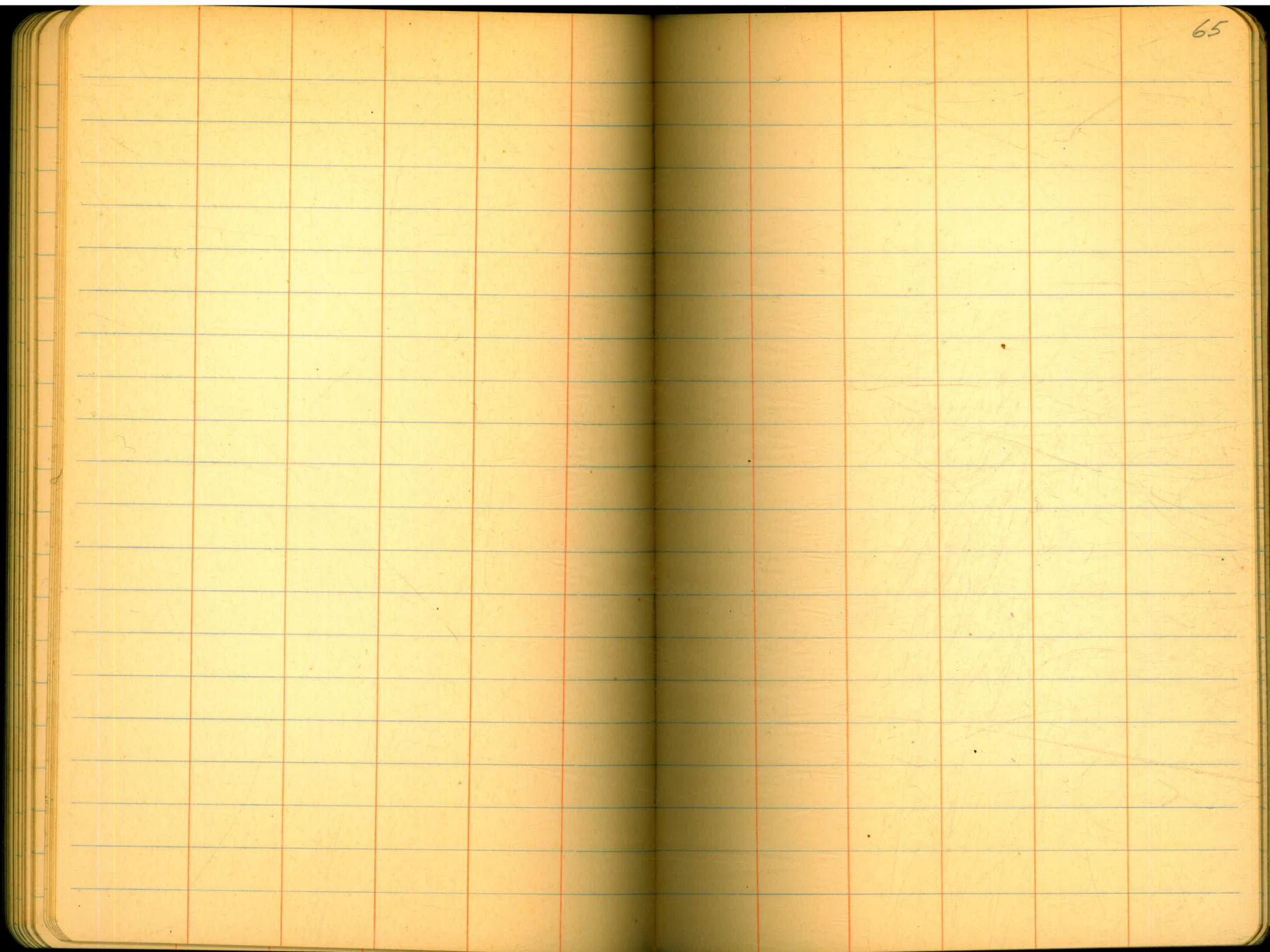
The image shows an open notebook with two facing pages. Both pages are cream-colored and feature blue horizontal ruling lines. Red vertical lines are drawn to create margins on both pages. The right page is numbered '50' in the top right corner. The pages are otherwise blank, with no handwriting or printed text.

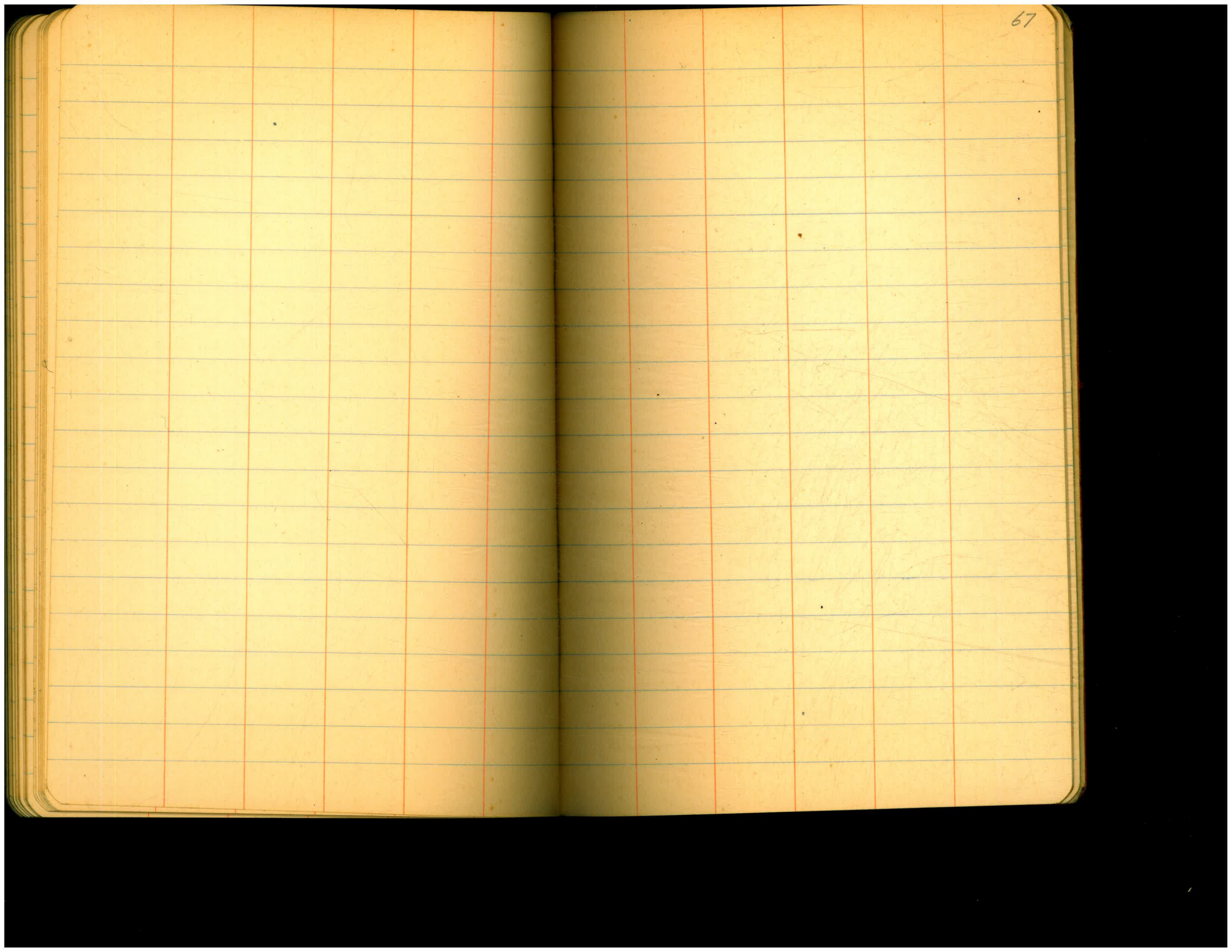


8

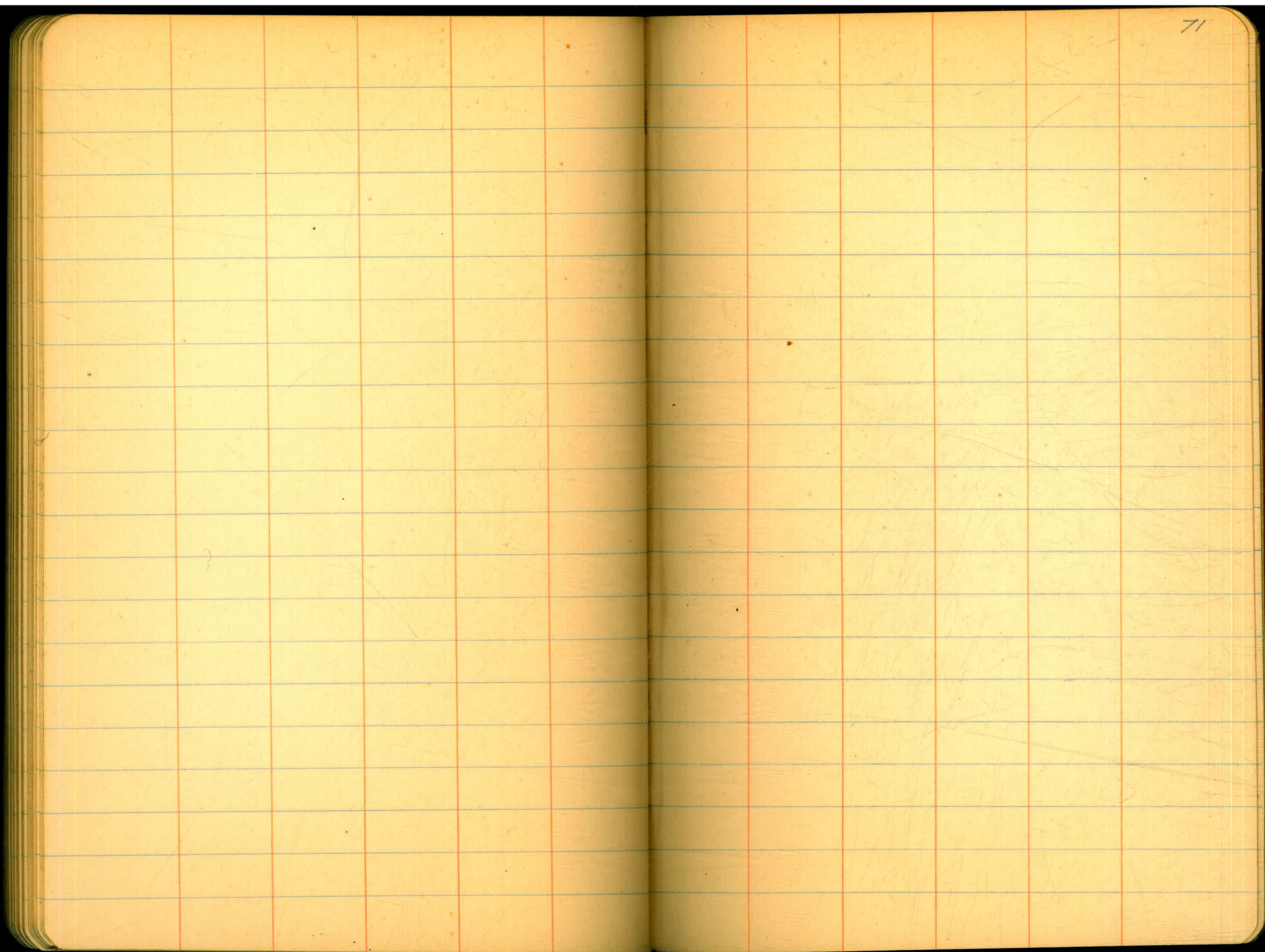
The image shows an open notebook with two facing pages. The pages are cream-colored and feature a grid of light blue horizontal lines and vertical red margin lines. The right page is numbered '59' in the top right corner. The notebook is bound in the center, and the pages appear slightly aged with some minor discoloration and faint smudges. There is no text or other markings on the pages.







The image shows an open notebook with two facing pages. Both pages are cream-colored and feature a grid of light blue horizontal lines and vertical red margin lines. The right page is numbered '69' in the top right corner. The pages are otherwise blank, with no text or drawings. The notebook is bound in the center, and the edges of the pages are visible on the left side.



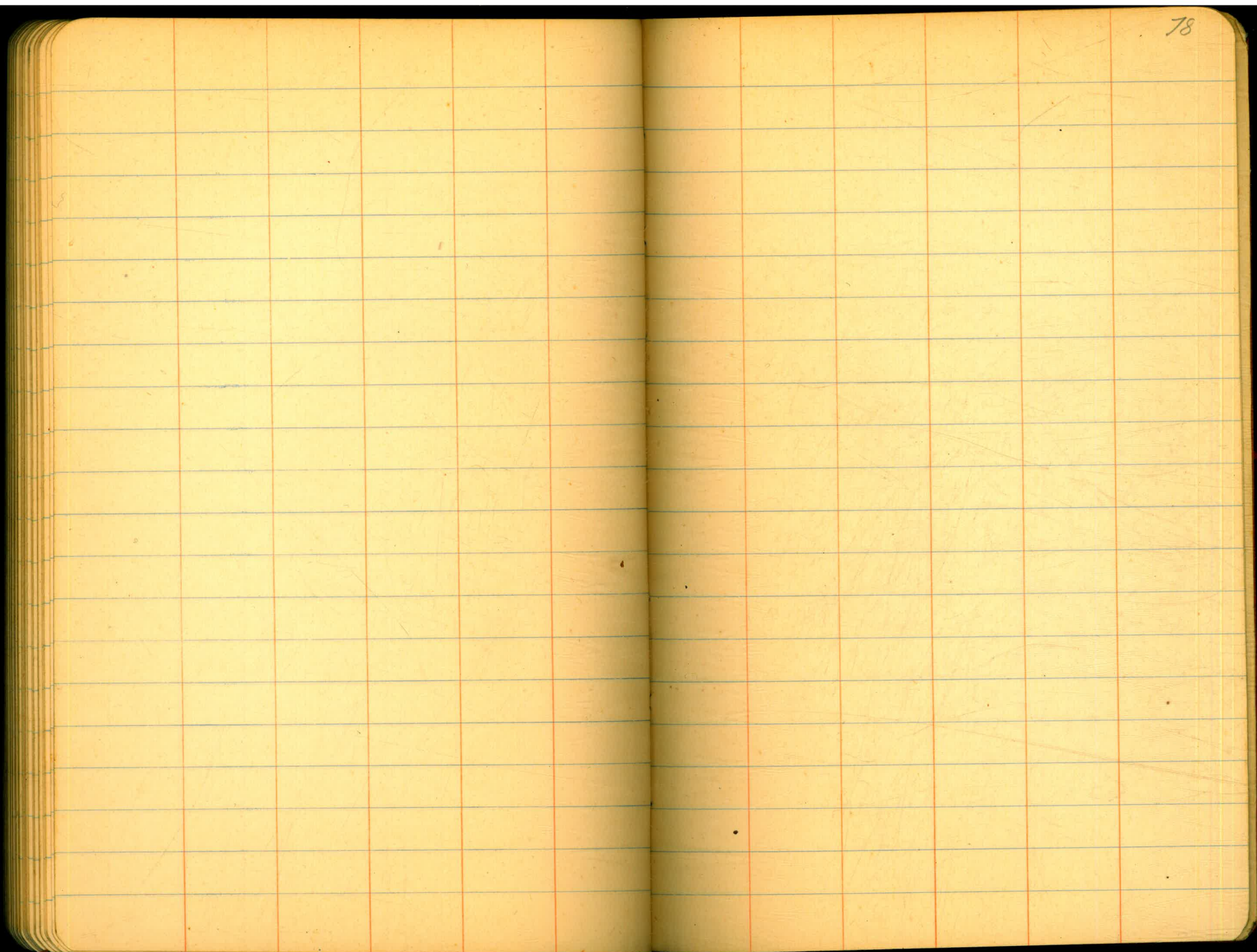


TABLE IX.—CALCULATION OF EARTHWORK.

Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.90
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if w = 16.2 and h = 5.3, cu. yds. = 1.48+.028+.089 = 1.597 cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) =h, and ½ the roadbed =w, add the triangles formed by taking the distance out to each break in turn (=w) by the difference between the cuts (or fills) on each side of it (=h's) always subtracting the outer from the inner.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.

For Single Track Embankment.

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

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