EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

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

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

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

387

N 3710 going E. from 4200

Downstream Spoil X Sec. Cal 1-16

Upstream " " " " " 48-80

Cont from book 386 0
Page 80

19.4
18.8
18.3
17.7
16.8
16.1
15.9
15.0
14.5
13.6
13.4
13.7
12.8
12.6
8.9

Continued from Book 386

N3710

	6.44	569.77		563.33	BM
4200			+2.0	71.8	62.6
10			5.6	64.2	61.9
20			8.4	61.4	61.5
30			8.3	61.5	63.1
40			8.8	61.0	63.8
50			9.0	60.8	62.6
60			8.5	61.3	62.5
70			8.4	61.4	62.5
80			8.5	61.3	63.0
90			8.3	61.5	62.1
4300			8.1	61.7	61.2
10			6.9	62.9	61.9
20			7.5	62.3	61.9
30			6.6	63.2	47.7
40			7.0	62.8	44.5
50			7.0	62.8	42.4
60			7.7	62.1	41.9
70			18.2	51.6	41.7
80			24.6	45.2	41.7
90					
90		N3720			
4380			24.0	45.8	41.6
70			17.2	52.6	41.8
60			7.8	62.0	42.1
50			7.5	62.3	42.4
40			7.6	62.2	44.5

Jan. 3-53 1

9.2		57.5	
2.3		11.04	
	0.1		.02
	1.6		
	2.8		
	1.8		~~+10.00~~
	1.2		
	1.1		
	1.7		
	0.6		105.50
			1.6.5
0.5		1.12	
1.0			
0.4			
155			
18.3			
204			
202			
9.9			
m 3.5			
0.0			
00			
4.2			
10.8			
19.9			
199			
177			

894.50

964.16 — 107.17

107.17 — 111.67 — N3710

856.99 → N3710

636.50

N3720

569.77

4330			6.9	62.9	46.4
20			7.5	62.3	60.3
10			7.8	62.0	62.0
4300			8.5	61.3	62.7
90			8.3	61.5	62.2
80			8.5	61.3	62.8
70			8.5	61.3	62.8
60			8.7	61.1	63.1
50			8.9	60.9	61.4
40			7.9	61.9	62.1
30			7.9	61.9	62.1
20			8.3	61.5	62.2
10			5.1	64.7	62.6
	1.32	589.13		587.81	
4200			14.8	74.3	62.5
4190			14.5	74.6	62.2
80			14.3	74.8	62.1
70			14.1	75.0	61.6
60			13.6	75.5	62.8
50			13.4	75.7	62.5
40			12.8	76.3	62.1
30			12.3	76.8	62.1
20			11.7	77.4	62.3
10			11.3	77.8	61.9
4100			10.9	78.2	61.5

✓

8.85 636.50 Jan. 3. 33

16.5		
20		
00	273.50	
	910.00	
	1.4	
	0.7	
	1.5	
	1.5	
	2.0	
	0.5	
	0.2	
	0.2	
	0.7	83.50 ✓
2.1	7.87 ✓	.87 ✓
11.8		
12.4		
12.7		
13.4		
12.7		
13.2		
14.2		
14.7		
15.1		
15.9		
16.7	1455.00	84.37
	2372.87	

N 3720

589.13

4090	10.4	78.7	61.7
80	9.9	79.2	61.2
70	9.3	79.8	61.3
60	8.8	80.3	61.4
50	8.3	80.8	61.4
40	7.8	81.3	61.1
30	7.1	82.0	61.3
20	6.6	82.5	61.6
10	6.0	83.1	61.6
4000	5.7	83.4	61.5
90	5.2	83.9	61.0
80	4.7	84.4	61.4
70	4.4	84.7	62.0
60	4.1	85.0	62.3
50	3.8	85.3	62.5
40	3.6	85.5	62.2
30	3.5	85.6	62.1
20	3.2	85.9	61.7
10	3.0	86.1	61.5
3900	2.7	86.4	60.9
90	2.3	86.8	60.7
80	2.1	87.0	60.9
70	1.9	87.2	61.0
60	1.5	87.6	60.9
50	1.6	87.5	60.7

Jan. 3-33

835 2372.87 84.37

170	
180	
185	
189	
194	
202	
207	
209	
215	
219	
229	
230	
227	
227	
228	
233	
235	
242	
246	
255	
261	
261	
262	
267	
268	

5590.50

7963.37 84.37

Jan. 3-33

N 3720

589.13

3840		1.5	87.6	60.3	27.3
30		1.6	87.5	60.0	27.5
20		1.6	87.5	59.1	28.4
10		1.4	87.7	58.4	29.3
3800		1.4	87.7	58.4	29.3
90		1.7	87.4	58.4	29.0
80		1.9	87.2	58.3	28.9
70		1.8	87.3	58.2	29.1
60		2.0	87.1	58.3	28.8
50		2.0	87.1	58.2	28.9
40		1.9	87.2	58.2	29.0
30		1.9	87.2	58.1	29.1
20		2.2	86.9	58.1	28.8
10		2.1	87.0	57.8	29.2
3700		2.2	86.9	57.9	29.0
3690		2.4	86.7	58.4	28.3
680			79.6	58.4	21.2
670	interpolate		72.6	58.0	24.6
660			65.5	58.4	17.1
3653	N.G.		58.5	58.5	0.0
				Toe	

13.4 7963.37 84.37

5276.50

59.85 ✓

13,299.72 ✓ 84.37 = N 3720

84.37

13,215.35 → N 3720

N3730

589.13

3655	N.G.			60.2	60.2 Toe
660				64.0	60.0
670	interpolate			71.6	58.0
680				79.2	57.1
3690			2.3	86.8	56.0
3700			2.2	86.9	56.9
10			1.9	87.2	58.0
20			2.1	87.0	58.8
30			1.8	87.3	59.5
40			1.6	87.5	59.7
50			1.9	87.2	58.8
60			1.9	87.2	58.6
70			1.9	87.2	58.9
80			1.7	87.4	58.5
90			1.6	87.5	58.4
3800			1.5	87.6	59.3
10			1.4	87.7	60.2
20			1.5	87.6	60.8
30			1.5	87.6	61.3
40			1.4	87.7	61.4
50			1.6	87.5	61.3
60			1.8	87.3	61.4
70			2.1	87.0	61.3
80			2.3	86.8	61.3

Jan. 8-33

5

0.0	10.0 ✓
4.0	
13.6	
22.1	
30.8	
30.5	
29.2	
28.2	
27.8	
27.8	
28.4	
28.6	
28.3	
28.9	
29.1	
28.3	
27.5	
26.8	
26.3	
26.3	
26.2	
25.9	
25.7	
25.5	58 10.50
	58 20.50

N 3730

589.13

3890		2.5	86.6	61.4
3900		2.7	86.4	61.2
10		3.3	85.8	61.6
20		3.5	85.6	62.1
30		3.5	85.6	62.2
40		3.6	85.5	62.4
50		3.8	85.3	62.6
60		4.1	85.0	62.6
70		4.5	84.6	62.6
80		5.0	~~83.1~~ 84.1	62.1
90		5.5	83.6	61.3
4000		5.8	83.3	61.2
10		6.2	82.9	61.6
20		7.0	82.1	61.9
30		7.7	81.4	61.8
40		8.3	80.8	61.3
50		8.9	80.2	61.7
60		9.5	79.6	61.5
70		10.1	79.0	61.6
80		10.5	78.6	61.0
90		11.0	78.1	61.7
4100		11.5	~~76.6~~ 77.6	62.0
10		12.0	77.1	61.3
20		12.3	76.8	61.3
30		12.8	76.3	62.1

✓

Jan 3-38

12.75

5820.50

252	
252	
242	
235	
234	
231	
227	
224	
220	
220	
223	
221	
213	
202	
196	
195	
185	
181	
174	
176	
164	
156	
158	
165	
142	5134.50

10955.00

Jan. 3-38

N3730

589.13

41.40		13.4	75.7	62.4
50		13.9	75.2	61.5
60		14.7	74.4	61.6
70		14.8	74.3	61.7
80		15.1	74.0	61.9
90		15.2	73.9	62.1
4200		15.9	73.2	62.2
	569.77			
4210		6.1	63.7	62.2
20		8.1	61.7	62.0
30		7.9	61.9	62.0
40		7.5	62.3	62.6
50		8.6	61.2	62.4
60		8.7	61.1	62.7
70		8.5	61.3	62.8
80		8.4	61.4	62.0
90		8.3	61.5	61.1
4300		8.2	61.6	60.5
10		7.7	62.1	59.8
20		7.6	62.2	55.8
30		7.2	62.6	45.0
40		7.4	62.4	44.6
50		7.3	62.5	43.1
60		7.6	62.2	42.6
70		17.4	52.4	42.2
80		23.2	46.6	41.2
90				

7.1 10,955.00

13.3
13.7
12.8
12.6
12.1
11.8
11.0

951.50
11,896.50
7209-
6.15

1.5

0.10
0.27

0.3
0.1
0.3
1.2
1.6
1.5
0.6

51.50 ✓
1.80 ✓

0.4
1.1
2.3
6.4
17.6
17.8
19.4
19.6
10.2
5.4
0.6

0.80 ✓

12914.30
53.40
12,860.90 → N3730

1000.00
1207.00
13120.45
12914.30

53.40
53.57 - N3730

N 3740

90	569.77			
4380		23.8	46.0	42.6
70		15.4	54.4	42.8
60		7.3	62.5	43.3
50		7.2	62.6	43.8
40		7.7	62.1	44.4
30		7.7	62.1	46.0
20		7.7	62.1	54.0
10		8.0	61.8	61.1
4300		8.1	61.7	60.4
90		8.6	61.2	60.9
80		8.9	60.9	60.9
70		8.7	61.1	61.1
60		8.8	61.0	61.1
50		8.3	61.5	61.9
40		7.5	62.3	60.2
30		7.7	62.1	62.7
20		8.3	61.5	62.2
10		7.3	62.5	62.3
4200		1.3	68.5	62.1
	589.13			
4190		15.0	74.1	62.4
80		15.8	73.3	61.9
70		15.4	73.7	61.9
60		15.1	74.0	62.7
50		14.7	74.4	62.3

0.0
3.4
11.6
19.2
18.8
17.7
16.1
8.1
0.7
1.3
0.3
0.0
0.0
2.1
0.2
6.4
11.7
11.4
11.8
11.3
12.1

0.1
0.4
0.6
0.7

972.00 ✓

9.87
8.5.6
8.08 ✓

0.22 ✓

3.00 ✓
0.17
0.37

0.68 ✓
6.50 ✓
2.73 ✓

6.05 ✓

587.50 ✓

1576.36
1577.67

+3.29
13.01

N 3740

589.13

4140	14.0	75.1	61.7
30	13.5	75.6	61.8
20	13.0	76.1	62.1
10	12.4	76.7	62.1
4100	12.1	77.0	62.2
90	11.4	77.7	61.3
80	11.0	78.1	61.2
70	10.4	78.7	61.8
60	10.0	79.1	61.7
50	9.5	79.6	61.8
40	8.8	80.3	61.4
30	8.2	80.9	61.8
20	7.2	81.9	61.8
10	6.4	82.7	61.6
4000	5.9	83.2	61.2
90	5.5	83.6	62.3
80	5.0	84.1	62.5
70	4.6	84.5	62.8
60	4.2	84.9	62.6
50	3.8	85.3	62.5
40	3.6	85.5	62.3
30	3.3	85.8	62.2
20	3.1	86.0	61.8
10	3.0	86.1	61.6
3900	3.0	86.1 ✓	61.6

6.05

1577.67
1576.36

13.01
+3.29

13.4	
13.8	
14.0	
14.6	
14.8	
16.4	
16.9	
16.9	
17.4	
17.8	
18.9	
19.1	
20.1	
21.1	
22.0	
21.3	
21.6	
21.7	
21.3	
22.8	
23.2	
23.6	
24.2	
24.5	4797.00 ✓
2.25	
24.5	6373.36
	6374.67

N3740

589.13

3890		2.8	86.3	61.5
80		2.4	86.7	61.7
70		2.3	86.8	61.4
60		1.9	87.2	61.5
50		1.6	87.5	62.0
40		1.5	87.6	62.0
30		1.5	87.6	61.9
20		1.5	87.6	61.9
10		1.3	87.8	61.6
3800		1.4	87.7	61.1
90		1.5	87.6	60.6
80		1.5	87.6	59.7
70		1.7	87.4	59.2
60		1.9	87.2	59.2
50		1.8	87.3	59.1
40		1.7	87.4	59.2
30		1.8	87.3	59.1
20		1.5	87.6	58.7
10		1.3	87.8	59.4
3700		2.2	86.9	60.2
90		2.2	86.9	60.0
80			77.9	59.8
70	interpolate		68.9	59.1
3660	N.G.		59.9	59.9 TOE
		0-0		60.7

Jan. 3-33

6374.67
6373.36

13.01
+3.29

12.25

24.8	✓
25.0	✓
25.4	✓
25.7	✓
25.5	✓
25.6	✓
25.7	✓
25.7	✓
26.2	✓
26.6	✓
27.0	✓
27.9	✓
28.2	✓
28.0	✓
28.2	✓
28.2	✓
28.2	✓
28.9	✓
28.4	✓
26.7	✓
26.9	✓
18.1	✓
9.8	✓
0.0	✓

12,404.17
13.01
12,391.16 — N 3740

6029.50 ✓

12,402.86
12,404.17

13.01
+3.29 = N 3740

N3760

B.M.	2.10	589.91		587.81	
3660	N.G.			61.1	61.1 Tee.
680	interpolate			74.6	60.8
3700			1.8	88.1	60.7
20			2.0	87.9	60.5
40			2.3	87.6	61.4
60			2.2	87.7	61.9
80			2.0	87.9	62.3
3800			2.0	87.9	62.8
20			2.1	87.8	63.2
40			2.1	87.8	63.4
60			2.9	87.0	62.4
80			3.3	86.6	61.5
3900			3.4	86.5	62.5
20			3.9	86.0	62.0
40			4.5	85.4	62.1
60			5.1	84.8	62.4
80			6.0	83.9	62.6
4000			6.9	83.0	62.3

Jan 4 - 1932
Elliott Notes
Soper 9
Remmen Tape
Osborne X

11

0.0		
13.8		
27.4		
27.4		
26.2		
25.8		
25.6		
25.1		
24.6		
24.4		
24.6		
25.1		
24.0		
24.0		
23.3		
22.4		
21.3		
10.35		
20.7	395.35' x 20 =	
	7907.00	

		N3760			
		589.91			
4020			8.5	81.4	62.1
40			9.9	80.0	62.0
60			11.6	78.3	62.3
80			12.6	77.3	61.6
4100			13.4	76.5	62.1
T.P.	0.05	576.93	13.03	576.88	62.5
20			1.7	75.2	62.1
40			2.8	74.1	62.5
60			3.9	73.0	62.7
80			4.4	72.5	60.9
95			4.2	72.7	60.9
T.P.	3.98	568.18	12.73	564.20	
B.M.			4.85	563.33	563.33
4213			6.7	61.5	61.1
20			6.8	61.4	61.0
40			6.8	61.4	60.6
60			7.4	60.8	60.8
80			6.8	61.4	61.0
4300			6.4	61.8	61.5
20			5.9	62.3	61.6
40			5.8	62.4	43.0
60			5.7	62.5	44.8
4380			21.2	47.0	42.01

10.36 ✓ 7907.00 ✓

19.3 ✓
18.0 ✓
16.0 ✓
15.7 ✓
14.4 ✓
13.1 ✓
11.6 ✓
10.3 ✓ 134.55 x 20 =
5.8 ✓
11.6 = 2691.00 ✓
11.8 ✓ 175.50 ✓

109.80 ✓
0.4 ✓ 2.80 ✓
0.4 ✓
0.8 ✓
0.0 ✓
0.4 ✓
0.3 ✓
0.7 ✓
19.4 ✓
17.7 ✓ 42.00 x 20
5.5 ✓
5.0 840.00 ✓

11,726.10 ✓ = N 3760

N3780

568.18

4380			21.6	46.6	45.6	.5 1.0 ✓
57			5.0	63.2	44.7	18.5 ✓
40			4.7	63.5	47.7	7.9 15.8 ✓
20			4.9	63.3	61.8	1.5 ✓
4300			5.5	62.7	61.6	1.1 ✓
80			6.3	61.9	61.4	0.5 ✓
60			6.5	61.7	61.5	0.2 ✓
40			6.6	61.6	61.5	0.1 ✓
20			6.3	61.9	59.9	1.0 2.0 ✓
	005	576.93		576.88		
08			6.5	70.4	59.2	11.2 ✓
4200			6.5	70.4	60.5	4.95 9.9 ✓
80			5.9	71.0	62.2	8.8 ✓
60			4.8	72.1	62.4	9.7 ✓
40			3.3	73.6	61.7	11.9 ✓
20			2.2	74.7	62.0	12.7 ✓
4100			1.1	75.8	62.2	13.6 ✓
80			0.0	76.9	61.3	15.6 ✓
	2.10	589.91		587.81		
60			11.7	78.2	62.3	15.9 ✓
40			10.2	79.7	62.5	17.2 ✓
20			8.7	81.2	63.1	18.1 ✓
4000			7.5	82.4	62.8	9.8 19.6 ✓

224.25 ✓

291.55 ✓

246.00 ✓

79.20 ✓

84.40 ✓

2765.00 ✓

3690.40 ✓

		3780			
		589.91			
3980			6.2	83.7	62.6
60			5.2	84.7	62.2
40			4.4	85.5	63.3
20			3.7	86.2	63.6
3900			3.1	86.8	62.3
80			3.2	86.7	63.3
60			2.4	87.5	64.3
40			2.0	87.9	64.1
20			1.7	88.2	63.9
3800			1.7	88.2	63.5
80			1.7	88.2	63.2
60			2.0	87.9	62.9
40			2.0	87.9	62.9
20			1.1	88.8	62.7
3700			3.6	86.3	61.3
680	interpolate			71.2	60.1
3665	N.G.			59.8	59.8 TOC

9.8
21.1
22.5
22.2
22.6
24.5
23.4
23.2
23.8
24.3
24.7
25.0
25.0
25.0
26.1
25.0
5.5?
11.1
0.0

3690.40

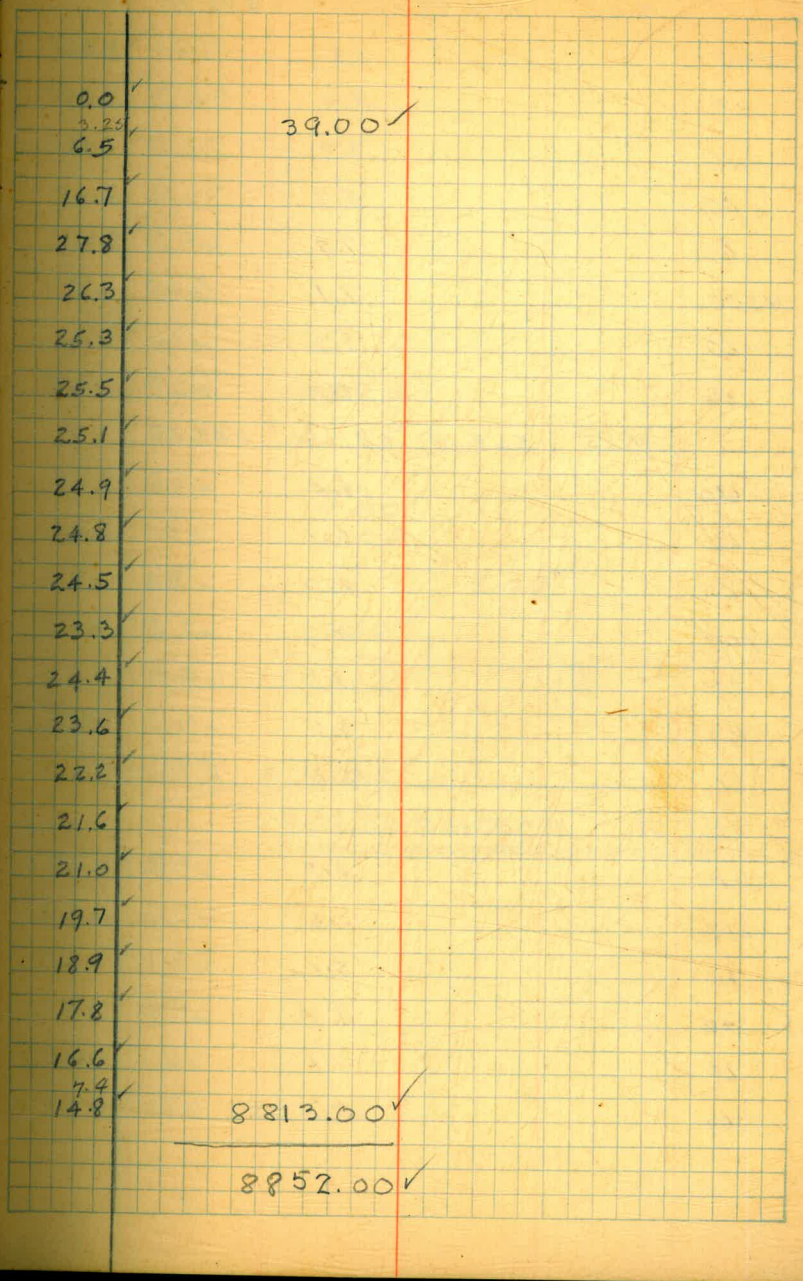
7475.00
83.25
11,248.65 = N 3780

N3800

589.91

3668	N.G.			59.4	594 toe
680				66.2	59.7
700	interpolate			77.6	60.9
3720			0.9	89.0	61.2
40			1.1	88.8	62.5
60			1.8	88.1	62.8
80			1.4	88.5	63.0
3800			1.5	88.4	63.3
20			1.5	88.4	63.5
40			1.6	88.3	63.5
60			1.8	88.1	63.6
80			2.8	87.1	62.8
3900			3.1	86.8	62.4
20			3.7	86.2	62.6
40			4.4	85.5	63.3
60			5.3	84.6	63.0
80			6.5	83.4	62.4
4000			7.7	82.2	62.5
20			9.0	80.9	62.0
40			10.4	79.5	61.7
60			11.9	78.0	61.4
80			13.8	76.1	61.3

✓



		3800			
	0.05	576.93		576.88	
4100			1.8	75.1	60.8
20			2.6	74.3	60.8
40			3.9	73.0	60.9
60			5.7	71.2	60.7
80			7.0	69.9	60.1
4200			8.1	68.8	60.7
20			9.3	67.6	61.5
25			10.2	66.7	61.5
	4.85	568.18		563.33	
40			6.2	62.0	61.7
60			6.1	62.1	61.9
80			6.1	62.1	62.3
4300			5.7	62.5	62.3
20			3.8	64.4	62.6
40			3.5	64.7	54.2
60			15.1	53.1	52.3
		N3820			
4300			5.0	63.2	62.5
4280			5.6	62.6	62.2
60			5.1	63.1	62.3
40			3.4	64.8	62.1
20			2.1	66.1	61.9
4200			0.7	67.5	61.7
				✓	

7.4
14.3
13.5
12.1
10.5
9.8
8.1
6.1
5.2

0.3
0.2
0.2
1.8
10.5
0.8

0.7
0.4
0.8
2.7
4.2
5.8

8852.00 ✓

1575.00 ✓
28.25 ✓
41.25 ✓

5.00 ✓
1.00

0.2 ✓

2.00 ✓

1.00 ✓

(10,757.50) → N 3800

256.00 ✓

10,759.50 ✓ 2.00 ✓ = N 3800

227.00 ✓

N3820

	0.05	576.93		576.88	
4180			8.2	68.7	61.3
60			6.6	70.3	60.4
40			4.6	72.3	60.2
20			3.1	73.8	60.5
4100			1.9	75.0	60.8
4080			0.5	76.4	61.0
B.M	2.10	589.91		587.81	
4060			12.0	77.9	61.0
40			10.8	79.1	61.2
20			9.3	80.6	61.4
4000			8.1	81.8	61.6
3980			6.6	83.3	61.3
60			5.6	84.3	61.1
40			4.5	85.4	60.8
20			3.6	86.3	60.8
3900			3.2	86.7	60.3
3880			2.3	87.6	60.3
60			2.1	87.8	59.6
40			1.8	88.1	60.8
20			1.5	88.4	62.6
3800			1.4	88.5	62.2
3780			1.4	88.5	62.1

29	227.00 ✓	
7.4	✓	
9.9	✓	
12.1	✓	
13.3	✓	
14.2	✓	
15.4	✓	
16.9	✓	
17.9	✓	
19.2	✓	
20.2	✓	
22.0	✓	
23.2	✓	
24.6	✓	
25.5	✓	
26.4	✓	
27.3	✓	
28.2	✓	
27.3	✓	
25.8	✓	
26.3	✓	
26.4	✓	8384.00 ✓
		8611.00 ✓

		N3820			
		589,91			
3760			0.8	89.1	60.5
40			+0.5	90.4	60.2
20				78.4	60.0
700	interpolate			66.4	57.5
3684	N.G.			56.9	56.9 TOC
		N3840			
3700	N.G.			57.1	57.1 TOC
720				67.3	57.5
740	interpolate			77.6	57.8
3760			2.1	87.8	58.3
80			0.9	89.0	58.5
3800			1.3	88.6	58.8
20			1.6	88.3	59.1
40			2.2	87.7	59.5
60			2.4	87.5	59.9
80			2.6	87.3	60.1
3900			3.1	86.8	60.6

13.2 — 8611.00

28.6
30.2
18.4
4.45
8.9 — 1897.00
0.0 — 7120

10,579.20

0.0 = N3820

13.1
26.2 — 4894.00

N3840

589.91

3720			3.7	86.2	60.9
40			4.7	85.2	61.0
60			5.9	84.0	61.3
80			6.9	83.0	61.5
4000			8.1	81.8	61.7
20			9.3	80.6	61.6
40			10.8	79.1	61.3
60			11.7	78.2	61.7
80			13.3	76.6	61.1
[illegible]	0.05	576.93		576.88	
4100			1.8	75.1	61.0
20			2.7	74.2	61.0
40			4.7	72.2	61.1
60			6.7	70.2	61.6
80			9.1	67.8	61.5
4200			11.1	65.8	61.7
20			11.9	65.0	62.0
40			12.8	64.1	61.9
[illegible]	4.85	568.18		563.33	
60			4.8	63.4	63.2
80			5.4	62.8	62.4
4300			6.8	61.4	62.7

V

13.1 4894.00 ✓
25.3 ✓
24.2 ✓
22.7 ✓
21.5 ✓
20.1 ✓
19.0 ✓
17.8 ✓
17.0 ✓
15.5 ✓

14.1 ✓
13.2 ✓
11.1 ✓
8.6 ✓
6.3 ✓
4.1 ✓
3.0 ✓
2.2 ✓

0.2 ✓
0.4 ✓

5184.00 ✓
0.94
0.46
1,3 ✓
nd Jan 4 - 1932

9.94
5.00

.94
10,078.46
9.94
10,069.00 — N3840

9.94
5.00 = N3840

N3860

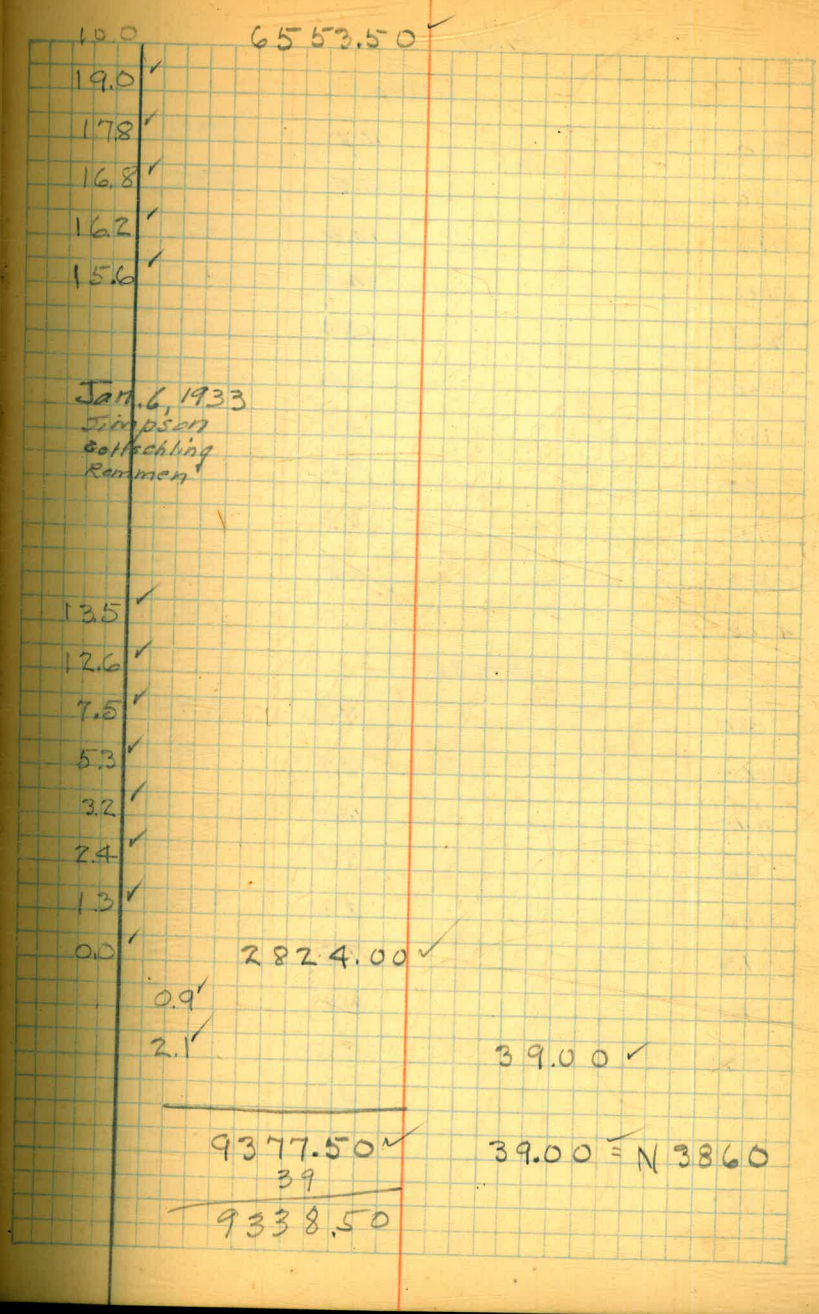
3720	N.G.			58.5	585 Toc
740				67.7	58.5
760	interpolate			76.9	58.2
B.M.	3.28	591.09		587.81	5
3780			5.0	86.1	58.5
90			2.4	88.7	58.7
3800			2.5	88.6	58.9
20			2.3	88.8	59.2
40			3.1	88.0	59.5
60			3.9	87.2	60.1
80			4.1	87.0	60.4
3900			4.2	86.9	60.6
20			4.9	86.2	61.0
40			6.0	85.1	61.1
60			6.9	84.2	61.4
80			7.7	83.4	61.7
4000			9.1	82.0	62.0

Start Jan 5 - 1933

0.0		
9.2		
18.7		
13.8		
27.6		834.00
30.0		
14.85		
29.7		586.50
29.6		
28.5		
27.1		
26.6		
26.3		
25.2		
24.0		
22.8		
21.7		
100		
20.0		5133.00

6553.50

		N3860			
		591.09			
4020			10.2	80.9	61.9
40			11.6	79.5	61.7
60			12.5	78.6	61.8
80			13.2	77.9	61.7
4100			14.1	77.0	61.4
T.P.			13.06		
B.M.	2.94	590.75 ✓		587.81	
			13.04	577.71	
	0.95	578.66			
4120			3.7	75.0	61.5
40			4.4	74.3	61.7
60			9.5	69.2	61.7
80			11.4	67.3	62.0
200			13.4	65.3	62.1
20			14.0	64.7	62.3
40			14.7	64.0	62.7
60			15.6	63.1	63.1
80			16.3	62.4	63.3
4300			17.3	61.4	63.5



590.75 Level
578.66 Transit.

	578.66				
		N3880			
4300		15.5	63.2	63.9	0.7 ✓
280		15.5	63.2	63.9	0.7 ✓
260		14.2	64.5	63.7	0.8 ✓
240		14.4	64.3	63.4	0.9 ✓
220		14.4	64.3	63.2	1.1 ✓
200		13.2	65.5	62.7	2.8 ✓
180		14.6	64.1	62.6	1.5 ✓
160		9.2	69.5	62.6	6.9 ✓
140		6.3	72.4	62.4	10.0 ✓
120		0.8	77.9	61.9	16.0 ✓
4100		0.6	78.1	61.7	16.4 ✓
	590.75				
080		11.8	78.9	61.9	17.0 ✓
060		10.9	79.8	62.0	17.8 ✓
040		10.0	80.7	62.6	18.1 ✓
020		9.4	81.3	62.3	19.0 ✓
4000		8.3	82.4	62.1	20.3 ✓
980		7.3	83.4	62.0	21.4 ✓
960		6.4	84.3	61.8	22.5 ✓
940		5.6	85.1	61.6	23.5 ✓
920		4.8	85.9	61.5	24.4 ✓
900		3.8	86.9	60.8	26.1 ✓
880		3.2	87.5	60.5	13.5 27.0 ✓
			✓		

14.00 ✓
3.36 ✓
4.16 ✓

5592.00 ✓
5596.16 ✓

17.36

590.75

N3880

3860		2.9	87.8	60.4
840		2.4	88.3	60.4
820		2.4	88.3	60.3
800		2.4	88.3	60.2
790		6.0	84.7	59.7
780			77.5	59.8
770			70.3	59.8
760	interpolate		63.1	59.6
755	N.G.		59.5	59.5 TOC

N3900

				60.0
765	= N.G.		60.0	TOC
780	interpolate		68.6	60.1
3800		10.6	80.1	60.4
20		6.9	83.8	60.4
40		6.3	84.4	60.4
60		6.0	84.7	60.4
80		4.9	85.8	60.7
900		3.4	87.3	61.0

✓

13.5	
27.4 ✓	
27.9 ✓	
28.0 ✓	
1.40	
28.1 ✓	2217.00 ✓
25.0 ✓	
17.7 ✓	
10.5 ✓	
1.75	
8.5 ✓	690.00 ✓
0.0 ✓	8.75 ✓
	8511.91 ✓
	17 36
	8494.55

5596.16 ✓

17.36

~~0.0~~ = N3880

0.0	
4.25	
8.5 ✓	63.75 ✓
19.7 ✓	
23.4 ✓	
24.0 ✓	
24.3 ✓	
25.1 ✓	
3.15	
26.3 ✓	2678.00 ✓
	2741.75 ✓

	590.75				
	N3900				
3920		4.0	86.7	61.4	
40		5.3	85.4	61.5	
60		6.1	84.6	61.6	
80		6.8	84.0	62.1	
4000		7.2	83.5	62.3	
020		8.1	82.6	62.7	
40		8.8	82.0	62.7	
60		9.6	81.1	62.5	
80		10.3	80.4	62.1	
4100		11.6	79.1	62.2	
120		12.8	78.0	62.6	
	578.66				
140		0.3	78.4	63.1	
160		8.5	70.2	63.2	
180		10.9	67.8	63.7	
200		13.4	65.3	63.8	
220		14.5	64.2	63.7	
240		12.0	66.7	63.9	
260		13.3	65.4	64.9 N.G.	
	N3910				
4260		12.5	66.2	66.2 N.G.	
240		10.9	67.8	64.3	
220		11.0	67.7	63.9	
				✓	

2741.75 ✓

13.15	
25.3	✓
23.9	✓
23.0	✓
21.9	✓
21.2	✓
19.9	✓
19.3	✓
18.6	✓
18.3	✓
16.9	✓
15.4	✓
15.3	✓
7.0	✓
4.1	✓
1.5	✓
0.5	✓
2.8	✓
0.0	
7.3	

5361.00 ✓

8102.75 ✓ 0.0 = N 3900

	578.66			
	N3910			
4200		12.5	66.2	64.2
180		9.2	69.5	64.3
160		1.2	77.5	63.7
	590.75			
140		12.8	77.9	64.1
120		12.7	78.0	62.9
4100		11.5	79.2	62.5
080		10.1	80.6	62.4
060		9.3	81.4	62.5
040		8.5	82.2	62.7
020		8.0	82.7	62.9
4000		7.0	83.7	62.4
980		5.8	85.0	62.0
960		5.6	85.1	61.9
940		4.5	86.2	61.7
920		3.8	87.0	61.4
910		3.6	87.1	61.2
900		6.0	84.7	61.1
890		8.4	82.3	61.1
880		10.0	80.7	60.9
870		12.3	78.4	60.7
860		13.0	77.7	60.6
850		14.2	76.5	60.5
840		14.2	76.5	60.5

7.3 – cont.

2.0	
5.2	
13.8	
13.8	
15.1	
16.7	
18.2	
18.9	
19.5	
19.8	
21.3	
23.0	
23.2	
24.5	
25.6 (12.8)	5102.00
25.9	
23.6	
21.2	
19.8	
17.7	
17.1	
16.0	1621.00
16.0 (8.0)	6723.00

590.75

N3910

3830		14.1	76.6	60.6
820		14.9	75.8	60.5
810		16.0	74.7	60.2
800		17.2	73.5	60.0
790		20.5	70.2	59.7
780		24.8	66.0	59.6
770				61.5 N.S.
	N3920.			
3790				60.2 N.G.
800		25.3	65.4	59.8
810		23.7	67.0	59.9
820		22.6	68.1	60.2
830		22.1	68.6	60.5
840		22.2	68.5	60.4
850		21.4	69.3	60.7
860		21.3	69.4	60.6
870		19.7	71.0	60.9
880		16.8	74.0	61.0
890		14.6	76.1	61.2
900		12.4	78.3	61.1
910		10.8	80.0	61.3
920		8.4	82.3	61.6
930		6.0	84.7	61.6
940		5.2	85.5	61.9

6723.00

SP	
16.0	
15.3	
14.5	
13.5	
10.5	
6.4	
0.0	
0.0	
5.6	
7.1	
7.9	
8.1	
8.1	
8.6	
8.8	
10.1	
13.0	
14.9	
17.2	
18.7	
20.7	
23.1	
11.8	
23.6	

842.00

7565.00 = N3910

1837.00

	590.75				
	N3920				
3950		4.8	86.0	62.3	11.8
960		5.5	85.2	62.4	23.7 ✓
980		6.1	84.6	62.4	22.8 ✓
4000		6.8	84.0	62.5	22.2 ✓
020		7.5	83.2	63.0	21.5 ✓
040		8.3	82.4	62.8	20.2 ✓
060		9.2	81.5	62.4	19.6 ✓
080		9.6	81.1	62.4	19.1 ✓
100		10.8	80.0	62.8	18.7 ✓
120		12.6	78.1	63.4	17.2 ✓
140		13.0	77.7	64.4	14.7 ✓
160		13.2	77.5	63.9	13.3
	578.66				13.6 ✓
180		2.5	76.2	64.9	11.3 ✓
200		8.7	70.0	65.3	4.7 ✓
220		7.7	71.0	66.3	4.7 ✓
4240			70.4	70.4 N.G.	0.0
	N3930				
4250			72.9	72.9 N.G.	0.0
240		6.1	72.6	73.0	
230		7.5	71.2	71.8	
220		6.7	72.0	71.2	0.8 ✓
210		4.5	74.2	71.1	3.1 ✓
200		3.4	75.3	71.1	4.2 ✓
				✓	

1837.00 ✓

469.00 ✓

4244.00 ✓

6550.00 ✓ = N3920

0.4 ✓

0.6 ✓

2.24 ✓

56.00 ✓

58.24 ✓

7.00 ✓

1.32 ✓

8.32 ✓

	578.66				
	N3930				
4190		2.6	76.1	70.4	2.1
180		2.0	76.7	69.1	5.7 ✓
170		1.8	76.9	69.4	7.6 ✓
160		1.4	77.3	69.1	7.5 ✓
	590.75				8.2 ✓
150		13.6	77.1	67.6	9.5 ✓
140		13.6	77.1	65.6	11.5 ✓
130		13.6	77.1	64.0	13.1 ✓
120		12.9	77.8	63.5	14.3 ✓
110		12.5	78.2	63.3	14.9 ✓
100		10.9	79.8	62.8	17.0 ✓
090		10.2	80.5	62.1	18.4 ✓
080		9.7	81.0	62.5	18.5 ✓
070		9.5	81.2	62.7	18.5 ✓
060		9.1	81.6	63.0	18.6 ✓
050		8.6	82.1	62.8	19.3 ✓
040		8.3	82.4	63.4	19.0 ✓
030		8.7	82.0	63.3	18.7 ✓
020		8.7	82.0	63.1	18.9 ✓
010		9.5	81.2	62.9	18.3 ✓
4000		10.7	80.0	63.0	17.0 ✓
990		12.4	78.4	62.7	15.7 ✓
980		11.9	78.8	62.7	16.1 ✓
970		10.9	79.8	62.7	17.1 ✓
				✓	

58.74 ✓ 8.32 ✓

8.55

3369.50 ✓

3427.74 ✓ 8.32

		590.75			
		N3930			
3960			12.1	78.6	63.0
950			11.0	79.7	63.1
940			11.5	79.2	63.1
930			12.5	78.2	62.4
920			15.3	75.4	61.8
910			17.6	73.1	61.4
900			20.2	70.5	61.3
890			21.4	69.3	61.2
880			24.2	66.5	61.0
860				60.7	60.7 N.G.
T.P.	3.67	581.63	12.79	577.96	
		N3940			79.3
4320			1.2	80.4	N.G.?
310			1.5	80.1	78.4
300			1.8	79.8	77.6
290			4.0	77.6	76.9
280			5.8	75.8	75.5
270			6.1	75.5	75.5
260			5.0	76.6	75.0
250			6.9	74.7	74.7
240			N.G.		74.4
230			N.G.		73.7
220			8.1	73.5	73.3

3427.74 ✓ 8.32 ✓

8.55
15.6 ✓
16.6 ✓
16.1 ✓
15.8 ✓
13.6 ✓
11.7 ✓
9.2 ✓
8.1 ✓
5.5 ✓
0.0

1207.50 ✓

4635.24 ✓
8 32
4626.92

8.32 = N3930

0.0
1.7 ✓
2.2 ✓
0.7 ✓
0.3 ✓
0.0 ✓
1.6 ✓
0.0 ✓
0.0
0.0
0.1 ✓
0.2

49.00

16.00

66.00
65.00

0.0

581.63

N3940

4210	7.3	74.3	72.9
200	5.9	75.7	73.0
190	5.6	76.0	72.6
180	4.9	76.7	71.3
170	4.8	76.8	71.4
160	4.8	76.8	71.1
150	4.7	76.9	70.3
140	4.7	76.9	69.9
130	4.7	76.9	69.6
120	4.6	77.0	68.8
110	4.6	77.0	67.9
100	4.5	77.1	68.0
090	4.6	77.0	67.8
080	4.5	77.1	66.6
070	4.0	77.6	64.9
060	4.0	77.6	64.9
050	4.0	77.6	63.9
040	4.0	77.6	63.6
030	6.5	75.1	63.2
020	7.3	74.3	63.0
010	7.6	74.0	63.3
4000	9.1	72.5	62.9
990	10.4	71.2	62.7
980	10.1	71.5	62.4

✓

0 1

66.00
65.00

0.0

0.2
1.4 ✓
2.7 ✓
3.4 ✓
5.4 ✓
5.4 ✓
5.7 ✓
6.6 ✓
7.0 ✓
7.3 ✓
8.2 ✓
9.1 ✓
9.1 ✓
9.2 ✓
11.5 ✓
12.7 ✓
12.7 ✓
13.7 ✓
14.0 ✓
11.9 ✓
11.3 ✓
10.7 ✓
9.6 ✓
8.5 ✓
4.5 ✓
9.1 ✓

2019.50
2018.50

2083.50
2085.50

0.0

	5816.3			
	N3940			
3970		9.8	71.8	62.2
960		9.7	71.9	62.2
950		9.7	71.9	62.9
940		10.2	71.4	63.7
930		11.0	70.6	64.3
920		12.7	68.9	62.5
910		14.0	67.6	62.7
900		16.8	64.8	62.9
890				N.G.
	N3950			
			65.0	65.0
3890				N.G.
900		13.6	68.0	65.0
910		13.6	68.0	64.9
920		15.0	66.6	64.9
930		15.9	65.7	64.8
940		16.4	65.2	63.7
950		17.0	64.6	63.0
960		16.5	65.1	62.9
970		16.3	65.3	62.8
980		16.7	64.9	62.8
990		16.6	65.0	62.7
4000		12.3	69.3	63.5
010		11.8	69.8	63.5
020		11.1	70.5	63.1 ✓

2085.50
2083.50 0.0

4.5	
9.6 ✓	
9.7 ✓	
9.0 ✓	
7.7 ✓	
6.3 ✓	
6.4 ✓	
4.9 ✓	
1.9 ✓	600.50 ✓
0.0	2686.00
	~~2684.00~~
0.0	
3.0 ✓	
3.1 ✓	
1.7 ✓	
0.9 ✓	
1.5 ✓	
1.6 ✓	
2.2 ✓	
2.5 ✓	
2.1 ✓	
2.3 ✓	
5.8 ✓	
6.3 ✓	
3.7 ✓	
7.4	367.00 ✓

0.0 = N. 3940

581.63

N3950

4030	10.2	71.4	63.6
040	9.7	71.9	63.9
050	8.8	72.8	64.4
060	8.7	72.9	64.8
070	7.5	74.1	65.7
080	6.9	74.7	68.5
090	6.5	75.1	69.5
100	5.9	75.7	69.9
110	5.4	75.2	70.3
120	5.2	76.4	70.7
130	5.1	76.5	70.0
140	5.1	76.5	71.5
150	5.0	76.6	71.7
160	5.2	76.4	72.3
170	5.1	76.5	73.0
180	4.9	76.7	73.2
190	5.6	76.0	73.4
200	5.8	75.8	73.9
10	6.1	75.5	71.4
20	6.7	74.9	74.6
30	6.8	74.8	75.3
40	4.7	76.9	76.0
50	3.8	77.8	76.5
60	3.2	78.4	77.2 ✓

367.00 ✓

3.7
7.8 ✓
8.0 ✓
8.4 ✓
8.1 ✓
8.4 ✓
6.2 ✓
5.6 ✓
5.8 ✓
4.9 ✓
5.7 ✓
5.5 ✓
5.0 ✓
4.9 ✓
4.1 ✓
3.5 ✓
3.5 ✓
2.6 ✓
1.9 ✓
4.1 ✓
0.3 ✓

1078.50 ✓
0.60 ✓ 1.50 ✓
0.5 ✓ 2.83 ✓ 0.92 ✓

0.9 ✓
1.3 ✓
1.2 ✓

23.50 ✓

1472.43 ✓ 2.42

581.63

	N3950			
4270	2.8	78.8	77.9	
280	2.4	79.2	78.3	
290	2.1	79.5	78.4	
300	1.8	79.8	79.7	
310	1.3	80.3	80.2	
320	0.6	81.0	80.9 N.G.?	
	N3960			
4300	1.2	80.4	80.9 N.G.?	
290	1.9	79.7	80.3	
280	2.1	79.5	80.0	
270	2.5	79.1	79.5	
260	2.9	78.7	78.9	
250	3.4	78.2	78.4	
240	4.2	77.4	77.8	
230	4.9	76.7	77.2	
220	5.3	76.3	76.0	
210	5.4	76.2	75.2	
200	5.6	76.0	75.0	
190	5.7	75.9	74.2	
180	5.6	76.0	74.1	
170	5.6	76.0	73.6	
160	5.6	76.0	73.3	
150	5.4	76.2	72.9	
140	5.2	76.4	72.6	
130	5.4	76.2	72.1	

1472.43
1105.43 2.42

.6
0.9
0.9
1.1
0.1
0.1
0.0 37.00

1509.43
2.42
1507.01

0.0
0.6
0.5
0.4
0.2
0.2
0.4
0.5

25.50
1.50

0.3 0.60
1.0
1.0
1.7
1.9
2.4
2.7
3.3
3.8
4.1

200.00
200.60

2.42 = N 3950

27.00

581.63

N3960

4120		5.7	75.9	71.6
110		6.0	75.6	71.1
100		6.7	74.9	70.7
090		7.1	74.5	69.6
080		7.8	73.8	67.7
070		8.1	73.5	66.4
060		8.8	72.8	65.6
050		9.3	72.3	65.6
040		9.7	71.9	65.2
030		10.3	71.3	63.1
020		10.9	70.7	63.6
010		11.2	70.4	63.6
4000		11.3	70.3	63.6
990		12.4	69.2	62.9
980		13.7	67.9	62.9
970		15.9	65.7	62.9
960		17.0	64.6	63.2
950		16.3	64.3	63.7
940		14.7	66.9	64.4
930		13.7	67.9	65.2
920		12.6	69.0	65.8
910		12.3	69.3	66.0
900		12.4	69.2	67.0
890				N.G. 67.7

200.60 ✓ 27.00 ✓

2.0	
4.3	✓
4.5	✓
4.2	✓
4.9	✓
6.1	✓
7.1	✓
7.2	✓
6.7	✓
6.7	✓
7.4	✓
7.1	✓
6.8	✓
6.7	✓
6.3	✓
5.0	✓
2.8	✓
1.4	✓
0.6	✓
2.5	✓
2.7	✓
3.2	✓
3.3	✓
2.2	✓
0.0	

1117.50 ✓

1318.10 ✓ 27.00 ✓ = N 3960

27

581.63

3970

3900	11.7	69.9	68.2
20	11.1	70.5	66.5
40	10.6	71.0	64.8
60	11.0	70.6	63.5
80	11.1	70.5	63.0
4000	10.7	70.9	63.4
20	10.4	71.2	64.1
40	9.9	71.7	62.9
60	9.3	72.3	66.8
80	8.4	73.2	68.3
4100	7.3	74.3	70.9
20	6.4	75.2	72.4
40	6.0	75.6	73.3
60	5.9	75.7	73.9
80	5.6	76.0	75.2
200	5.2	76.4	76.2
20	4.4	77.2	77.0
40	3.1	78.5	78.5
60	1.7	79.9	79.8
80	0.4	81.2	80.9

N 3980

4280	+1.0	82.6	82.2
260	0.8	81.8	80.5
240	2.3	79.3	79.5
220	3.4	78.2	78.5

.85
1.7
4.0
6.2
7.1
7.5
7.5
7.1
8.8
5.5
4.9
3.4
2.8
2.3
1.8
0.8
0.2
0.2
0.0
0.1
0.3
.15

1424.00 = N 3970

0.4
0.3

7.00
1.80
0.80
5.00

0.2
0.3

581.63

N3980

4200		4.5	77.1	77.1
180		5.4	76.2	76.4
160		6.0	75.6	75.0
140		6.5	75.1	74.3
120		7.2	74.4	73.3
100		8.1	73.5	71.4
080		8.9	72.7	69.3
060		9.6	72.0	67.0
040		10.1	71.5	65.9
020		10.3	71.3	63.0
4000		10.6	71.0	63.3
980		11.0	70.6	63.2
960		11.0	70.6	64.2
940		11.0	70.6	65.3
920		10.8	70.8	67.5
3900		10.7	70.9	69.0 N.G.
	N3990			70.0
3900		10.3	71.3	N.G.
920		10.5	71.1	68.5
940		10.9	70.7	66.0
960		11.0	70.6	64.8
980		10.7	70.9	63.5
4000		10.5	71.1	63.5
020		10.3	71.3	64.2
040		10.0	71.6	65.3 ✓

8.80 ✓ 5.80

2.00
+0.00

0.0
0.2 ✓
0.6 ✓ 4.44 ✓ 0.52 ✓
0.8
1.1
2.1
3.4
5.0
5.6
8.3
7.7
7.4
6.4
5.3
3.3
1.9
1.3
2.6
4.7
5.8
7.4
7.6
7.1
6.3

1153.00 ✓
1166.24 ✓

8.32
+1.32 = N3980

780.00 ✓

581.63

N3990

4060	9.7	71.9	67.7	
080	9.1	72.5	69.8	
100	8.5	73.1	72.0	
120	7.6	74.0	73.7	
140	6.5	75.1	75.0	
160	5.7	75.9	76.0	
180	4.5	77.1	77.2	
200	1.6	80.0	77.8	
220	+0.2	81.8	79.2	
240	+1.5	83.1	80.4	
260	+0.5	82.1	81.5	
280	+1.5	83.1	83.0	
300	+3.3	84.9	84.2 N.G.	
T.P. "A"	0.85	580.78		

13.05 593.83

N4000

4350 - N.G.		87.7	87.7	
340	9.4	84.4	E. of R.R. 87.9	
4300	8.0	85.8	85.2	
280	6.9	86.9	83.9	
260	6.6	87.2	82.5	
240	3.8	90.0	81.3	
220	4.0	89.8	80.0	
200	5.8	88.0	78.7	
180	12.2	81.6	78.0	

578.28

160	1.1	77.2	77.0 ✓

3.15 780.00 ✓

4.6
2.7
1.1
0.3
0.1

238.00 ✓

0.50 ✓ 0.50 ✓

0.1 ✓ 2.00 ✓

0.1 ✓ 21.01 ✓ .04 ✓

2.2
2.6
2.7
0.6
0.1
0.0

142.00 ✓

1181.51 ✓ 2.54 = N 3990 ✓

2.54

1178.97

0.0

14.50 ✓

Rd. 2.9 ✓ 47.85 ✓

0.6 2.10 ✓

3.0
4.7
8.7
9.8
9.3
3.6

790.00 ✓

0.2

792.10 ✓ 62.35 ✓

578.28

N4000

4140	2.4	75.9	75.8
120	3.7	74.6	74.2
100	4.5	73.8	72.7
080	5.6	72.7	71.0
060	6.0	72.3	67.7
040	6.0	72.3	66.1
020	6.0	72.3	63.6
4000	7.6	70.7	63.7
980	6.4	71.9	64.2
960	5.9	72.4	65.5 N.G.

N4010

			66.8
3960	6.0	72.3	N.G.
980	5.4	72.9	64.7
4000	13.8	64.5	64.3 N.G.
020	12.1	66.2	64.4
040	7.8	70.5	65.0
060	5.0	73.3	67.9
080	4.6	73.7	71.1
100	4.5	73.8	73.3
120	3.1	75.2	74.8
140	1.3	77.0	76.5
160	+1.4	79.7	77.8

593.83

180	6.2	87.6	76.5
200	1.8	92.0	79.5 ✓

0.1 ✓
0.1 ✓
0.4 ✓
1.1 ✓
1.7 ✓
4.6 ✓
6.2 ✓
8.7 ✓
7.0 ✓
7.7 ✓
3.45 ✓
6.9 ✓
2.75 ✓
5.5 ✓
8.2 ✓
0.2 ✓
1.8 ✓
5.5 ✓
5.4 ✓
2.6 ✓
0.5 ✓
0.4 ✓
0.5 ✓
1.9 ✓
1.1 ✓
6.25 ✓
12.5 ✓

792.10 ✓ 62.35 ✓

821.00 ✓

1613.10 ✓

62.31
1550.70

(see book 388 – 76)
62.35 = N 4000 ✓

742.00 ✓

593.83

N4010

4+220		2.8	91.0	80.9
240		4.2	89.6	82.1
260		5.8	88.0	83.5
280		6.9	86.9	84.7
300		7.6	86.2	86.2
330		9.0	84.8	87.9 E.Rd.
338 - N.G.			88.3	883
	N4020			
4326 = N.G.				88.9
4323		8.3	85.5	88.6
4280		6.5	87.3	85.7
260		5.9	87.9	84.5
240		4.5	89.3	82.9
220		3.3	90.5	81.9
200		2.0	91.8	80.4
180		0.7	93.1	75.9
160		7.9	85.9	78.6
	578.28			
140		0.2	78.1	77.3
120		2.4	75.9	75.4
100		3.5	74.8	74.0
080		6.7	71.6	71.5 N.G.
60 ↑ 4 Natural Ground ↓ 20				
3990		12.8	65.5	65.5 N.G.
980		5.4	72.9	66.0
960		5.2	73.1	N.G.

√

6.25 742.00 ✓

10.1 ✓

7.5 ✓

4.5 ✓

2.2 ✓ 611.00

0.0 ✓

3.1 46.50 ✓

0.0 12.40 ✓ (see book 388-76)

0.0

Rd. 3.1 ✓ 1353.0.0 ✓ 58.90 ✓ = N 4010

1.6 ✓

3.4 ✓ 11.68 ✓ 4.65 ✓

6.4 ✓ 44.02 ✓

8.6 ✓

11.4 ✓

17.2 ✓

7.3 ✓

0.8 ✓

0.5 ✓

0.8 ✓

0.0 ✓ 1144.00 ✓

0.0

6.9 ✓ 34.50 ✓

0.0 ✓ 69.00 ✓

1259.18 ✓ 48.67 = N 4020

48.67

12 6.51

1353
58.90
1294.10

578.28

N4040

3960			4.2	74.1	74.1 N.G.
980			4.3	74.0	69.9
4000			13.2	65.1	64.9
120					
N.G.					
↓60					
4080			6.8	71.5	71.3
100			0.2	78.1	74.7
120		59383		84.7	77.1
140			interpolate	91.3	78.6
150			+0.7	94.5	79.2
160			0.3	93.5	79.9
180			1.0	92.8	81.4
200			2.2	91.6	82.6
220			3.7	90.1	83.7
240			4.8	89.0	85.3
260			5.8	88.0	86.2
280			6.7	87.1	87.7
300			7.3	E edge	88.1
305 - N.G.				86.5	
T.P.	9.23	600.30	2.76	591.07	

N4060

				89.7	89.7
4290 - N.G.					
4285			13.1	87.2	E. edge 89.3
4260			12.3	88.0	in Rd 88.1
240			11.3	89.0	86.1
220			10.4	89.9	85.6
200			8.9	91.4	84.2
180			7.1	93.2	83.3
160			6.2	94.1	81.7
					✓

600.3
9.3 7
6.6

0.0 6.5
4.1 ✓
0.2 ✓
0.0

0.0 ✓
0.2 ✓
3.4 ✓
7.6 ✓
12.7 ✓ 437.00 ✓
1.53 ✓
13.6 ✓ 284.50 ✓
11.4 ✓
9.0 ✓
6.4 ✓
3.7 ✓
1.8 ✓ 764.00 ✓

Rd. 0.6 ✓ 13.32 ✓ 1.56 ✓
2.2 ✓ 28.00 ✓
0.0 5.50 ✓
1498.82 ✓ 35.06 = N 4040
35.06
1463.76

Rd. 0.0 2.1 ✓ 5.25 ✓
0.1 ✓ 27.50 ✓
2.9 ✓ 27.84 ✓
4.3 ✓
7.2 ✓
9.9 ✓
6.2 ✓ 581.00 ✓
12.4
608.84 ✓ 32.75 ✓

		600.30			
		N4060			
4140			5.3	595.0	80.2
120			5.3	95.0	78.5
100			10.2	90.1	76.1
080	interpolate			75.1	72.3
075	= N.G.			71.3	71.3 Toe
4005	= N.G.			66.0	66.0
		575.37			
3990			0.3	75.1	70.5
980			0.1	75.3	71.4
970			+0.1	75.5	= N.G.
		N4080			
4270	= N.G.	600.30	~~10.6~~	90.6	90.6
4265			11.7	88.6	90.3 E. edge
4240			11.3	89.0	88.2
220			10.8	89.5	87.3
200			9.5	90.8	85.9
180			8.2	92.1	84.5
160			6.5	93.8	83.2
140			5.5	94.8	82.0
120			1.3	99.0	80.3
100			2.9	97.4	77.9
080	interpolate			81.6	73.7
060	= N.G.			65.9	65.9 Toe
4010	= N.G.				66.8
		582.20			
4000			6.0	76.2	70.2

6.2	608.84 ✓	32.75 ✓	
14.8 ✓			
16.5 ✓			
14.0 ✓			
2.8 ✓	1058.00 ✓		
0.0 ✓	7.00 ✓		
		575.37	
0.0		0.50	
4.6 ✓	34.50 ✓	574.83	
3.9 ✓	62.00 ✓	7.37	
0.0		582.20 ✓	
	1770.34 ✓	32.75 = N 4060	
	32.75		
	1737.59		
0.0		4.25	
Rd 1.7 ✓		27.20	
	3.20		
0.8 ✓			
2.2 ✓			
4.9 ✓			
7.6 ✓			
10.6 ✓			
12.8 ✓			
18.7 ✓			
19.5 ✓			
7.9 ✓			
	1692.00 ✓		
0.0 ✓			
0.0 ✓			
	30.00		
6.0 ✓			
	1725.20	31.45	

		582.20 N4080			
3980			6.2	76.0	72.4
		600.30 N4100			
4255	N.G.			91.3	91.3
4250			10.9	89.4	91.2 E. edge
4220			10.7	89.6	89.3 in Rd.
200			10.2	90.1	87.6
180			8.7	91.6	86.0
160			7.2	93.1	84.8
140			6.0	94.3	83.4
120			5.0	95.3	81.3
100			2.6	97.7	79.1
4090			5.9	94.4	77.5
080	interpolate			86.2	75.6
055	N.G.			65.5	65.5 Toe
4005	N.G.				70.3
		582.2			
3998			5.6	76.6	71.6
3990			5.5	76.7	73.5
980			5.7	76.5	75.8
970			5.9	76.3	N.G.
		N4120			
4240	N.G.	600.30		92.7	92.7
4240			10.6	89.7	92.7 E. edge
220			10.4	89.9	91.1

3.0
3.6
0.0
Rd. 1.8
0.3
2.5
5.6
8.3
10.9
14.0
18.6
16.9
10.6
0.0
0.0
5.0
3.2
0.7
0.0
0.0
Rd. 3.0
1.2

1725.20 ✓ 31.45

96.00

1821.20
31.45
1789.75 → N 4080

0.65 4.50 ✓
23.13

1015.00 ✓

315.00 ✓

132.50 ✓

17.50 ✓

32.80 ✓

23.00 ✓

1536.45 27.63
27.63
1508.82 → N 4100

42.00 ✓

600.30

N4120

4200		9.7	90.6	89.5
180		8.8	91.5	88.1
160		8.2	92.1	86.6
140		6.3	94.0	84.9
120		4.9	95.4	83.0
100		2.8	97.5	80.6
080	interpolate		85.1	76.4
050	= N.G.		66.3	66.3 Toe
	↕			
4010	= N.G.			68.6

582.2

4000		4.6	77.6	72.2
9.80		5.0	77.2	75.5
970				N.G.

N4140

4225	= N.G.			93.2

600.30

				92.9
4220		10.2	90.1	E. edge
4200		9.5	90.8	91.4
4180		9.5	90.8	89.8
160		8.4	91.9	88.2
140		6.4	93.9	86.4
120		4.9	95.4	84.5
100		2.0	98.3	81.6
090		6.8	93.5	81.2
060	interpolate		73.8	66.0
050	= N.G.		67.3	67.3 Toe
	↕			
015	= N.G.			70.5

A2.00 ✓

1.1 ✓	5.26		6.26
3.4 ✓			
5.5 ✓			
9.1 ✓			
12.4 ✓			
16.9 ✓		1044.00 ✓	
8.7 ✓		130.50 ✓	
0.0			
0.0		27.00 ✓	
5.4 ✓		71.00 ✓	
1.7 ✓		8.50 ✓	
0.0		1286.26	48.26
		4826	
0.0		1238.00 → N 4120	
Rd.	2.8 ✓ 0.6		7.00 ✓
1.0 ✓	6.25 ✓		34.00 ✓
3.7 ✓			2.25 ✓
7.5 ✓			
10.9 ✓		619.00 ✓	
16.7 ✓		145.00 ✓	
12.3 ✓		301.50 ✓	
7.8 ✓		39.00 ✓	
0.0		1110.75 ✓	43.25 ✓

582.20

N4140

4000		4.0	78.2	73.6
3980		4.5	77.7	76.7
3970	= N.G.			

600.30

N4160

				94.9
4215	= N.G.			
4210		9.6	90.7	= E. edge Rd. 93.6
4200		9.4	90.9	92.8
4180		8.5	91.8	91.3
160		8.2	92.1	90.0
140		6.5	93.8	87.9
120		5.0	95.3	85.5
110		1.6	98.7	83.9
100		8.1	92.2	83.1
080	interpolate		79.2	67.2
4060	= N.G.		66.2	TOC 66.2

N 4180

4205	= N.G.			95.0
				94.6
4200		8.9	91.4	= E. edge Rd.
				92.9
4180		8.2	92.1	in Rd.
160		7.4	92.9	91.4
140		6.3	94.0	88.8
120		3.6	96.7	86.4
110		2.5	97.8	84.7

4.6 ✓ 1110.75 ✓ 43.25 ✓
1.0 ✓ 34.50 ✓
0.0 56.00 ✓
5.00 ✓
1206.25 ✓
43.25
0.0 ✓1163.00 — N 4140

7.25 ✓
24.00 ✓
2.9 ✓ 15.1
1.9 ✓ 1.04
0.5 ✓
2.1 ✓
5.9 ✓ 263.00 ✓
9.8 ✓
14.8 ✓ 242.50 ✓
9.1 ✓
12.0 ✓ 331.00 ✓
0.0
837.04 46.35 ✓
46.35
775.68 N 4160
719 0.69

0.0
8.00 ✓
Rd. 3.2 ✓
40.00 ✓
0.8 ✓ 9.75
2.80 ✓
1.5 ✓
5.2 ✓ 222.00 ✓
10.3 ✓ 117.00 ✓
13.1 ✓
348 75 ✓ 50.80

N4180

4100			90.6	83.1
4080	interpolate		76.4	68.8
4065 = N.G.			65.7	65.7 Toe

N4200

4195 = N.G.				96.2
4195	8.0	92.3	= E. edge	96.2
4180	7.6	92.7	in Rd	94.7
160	6.9	93.4		93.2
140	5.0	95.3		90.6
130	3.8	96.5		89.0
120	6.2	94.1		87.5
4095 = N.G.				80.2 Toe

N4220

4185 = N.G.				96.5
4185	7.1	93.2	= E. edge	96.5
4160	6.3	94.0	in Rd	93.9
140	5.8	94.5		91.0
120	1.4	98.9		88.7
4085 = N.G.				74.3 Toe

✓

C 5.5

348.75 ✓ 50.80 ✓

103.00 ✓

7.5 ✓

7.6 ✓ 151.00 ✓

57.00 ✓

0.0

659.75 ✓ 50.80

50.80 ✓

608.95 → N 4180

C

0.0

Rd. 3.9 ✓

2.0 ✓ 44.25 ✓

0.18 ✓ 18.20 ✓

0.2 ✓

49.00 ✓

4.7 ✓

61.00 ✓

7.5 ✓

70.50 ✓

6.6 ✓

82.50 ✓

0.0

263.18 ✓ 62.45 ✓

62.45 ✓

200.73 → N 4200

0.0

Rd. 3.3 ✓

0.04 ✓ 40.04 ✓

0.1 ✓

3.5 ✓

173.00 ✓

10.2 ✓ 178.50

~~182.00~~

0.0 ~~351.54~~

~~355.04~~ 40.04

40.04

~~315.00~~ → N 4220

311.60 →

600.30

4180 = N.G.	N4240			97.3
4180		6.0	94.3	= E. edge
4160		5.6	94.7	95.2
140		5.6	94.7	92.3
120		3.0	97.3	87.6
110		6.2	94.1	85.7
080 - N.G.				73.2 toe
	N4260			
				97.6
4175 = N.G.				
4175		5.6	94.7	= E. edge
4140		5.0	95.3	93.9
120		8.7	91.6	88.7
095 = N.G.				79.6 toe.
	N4270			
	Natural Ground.			

Rd.	3.0		
	0.5		35.00
		19.86	0.86
2.4		121.00	
9.7		90.50	
8.4		126.00	
0.0		357.36	35.86
		35.86	
		321.50 → N 4240	
0.0			
Rd.	2.9		
		7.98	34.22
1.4		43.00	
2.9		36.25	
00		87.23	34.22
		34.22	
		53.01 → N 4260	

Upstream Spoil Area Cross Sections

1/9/33
Simpson
Soper
Osborne

B.M.	2.83	582.07		579.24	on oak Stump So. side ent. Portal Cut.
T.P.			0.32	581.75	
	1.99	583.74			

N 3090
Natural Ground

N 3100

60 Run to N.G.			65.9	65.9
6250		11.9	71.8	64.8
242	Top bank.	6.4	77.3	67.1
230		6.3	77.4	76.6
220	N.G.	7.6	76.1	76.0

N 3110

6210	N.G.	7.2	76.5	75.8
220		6.4	77.3	74.2
230		5.9	77.8	67.1
247	Top bank	5.6	78.1	64.2
255		11.3	72.4	64.2
Run 70 to N.G.			63.9	63.9

N 3120

6200	N.G.	7.9	75.8	76.0
210		5.5	78.2	75.8
220		5.7	78.0	69.9

O.O. → N 3090

0.0	
7.0 ✓	35.00 ✓
10.2 ✓	68.80 ✓
0.8 ✓	66.00
0.1 ✓	4.50 ✓
	174.30 ✓ → N 3100

0.0	
3.1 ✓	
10.7 ✓	84.50 ✓
13.9 ✓	209.10 ✓
8.2 ✓	88.40 ✓
0.0	61.50 ✓
	443.50 ✓ → N 3110

0.0	
2.4 ✓	
8.1 ✓	64.50 ✓

583.74

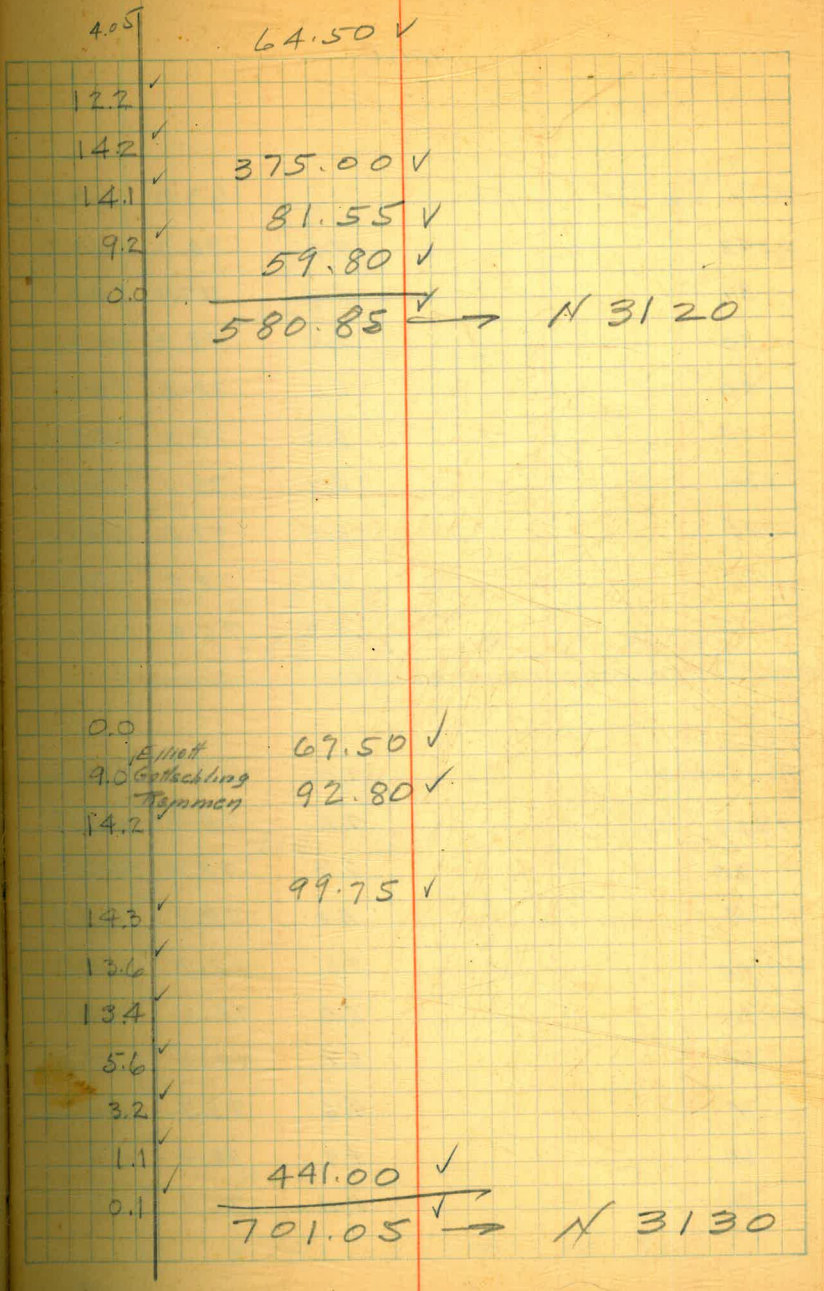
N 3120

6230			5.3	78.4	66.2
240			5.2	78.5	64.3
250	Top bank		5.6	78.1	64.0
257			10.6	73.1	63.9
↓ 70 Run to N.G.				64.0	64.0

N 3130

↑ 70 Run to N.G.				63.1	63.1
6255			11.0	72.7	63.7
47			5.7	78.0	63.8
T.P.	1.55	583.30		581.75	
40			5.2	78.1	63.8
30			4.9	78.4	64.8
20			4.8	78.5	65.1
10			4.6	78.7	73.1
6200			5.7	77.6	74.4
190			6.7	76.6	75.5
180			7.3	76.0	75.9

✓



583.30

N3140

↑ 60 Run to N.G.			63.0	63.0
6243		9.0	74.3	63.3
37		5.4	77.9	63.2
30		5.0	78.3	63.3
20		5.0	78.3	63.6
10		5.0	78.3	62.9
200		5.2	78.1	68.5
190		5.5	77.8	68.9
180		4.4	78.9	74.0
70		6.9	76.4	76.4

N3150

50 ↑ Run to N.G			63.2	63.2
6229		9.0	74.3	63.7
20		5.3	78.0	63.1
10		5.2	78.1	62.9
6200		4.8	78.5	63.7
6190		5.0	78.3	64.9
80		5.0	78.3	69.6
70		4.6	78.7	70.1
60		4.9	78.4	72.1
50		6.4	76.9	77.0

✓

0.0 ✓
11.0 ✓
14.7 ✓
15.0
14.7 ✓
15.4 ✓
9.6 ✓
8.9 ✓
4.9 ✓
0.0

93.50 ✓
77.10 ✓
103.95 ✓

6.10.00 ✓
884.55 ✓ → N 3140

0.0
10.6 ✓
14.9 ✓
15.2 ✓
14.8 ✓
13.4 ✓
8.7 ✓
8.6 ✓
6.3 ✓
0.0 ✓

111.30 ✓
114.75 ✓

744.50 ✓
970.55 ✓ → N 3150

583.30

N3160

6140	6.2	77.1	74.9	2.2 ✓
50	4.8	78.5	71.0	7.5 ✓
60	4.9	78.4	69.5	8.9 ✓
70	4.8	78.5	68.8	9.7 ✓
80	4.6	78.7	65.5	13.2 ✓
90	4.6	78.7	63.5	15.2 ✓
6200	5.1	78.2	63.1	15.1 ✓
05	5.3	78.0	63.0	15.0 ✓
15	9.0	74.3	63.0	11.3 ✓
Run to N.G				
50		61.9	61.9	0.0 ✓

631.50 ✓
75.25 ✓
181.50 ✓
197.75 ✓
1036.00 ✓ → N 3160

N3170

6225				
Run to N.G.		62.7	62.7	0.0 ✓
6196	9.0	74.3	62.7	11.6 ✓
87	4.9	78.4	62.8	15.6 ✓
80	4.8	78.5	63.9	14.6 ✓
70	4.5	78.8	67.0	11.8 ✓
60	4.6	78.7	68.3	10.4 ✓
50	4.5	78.8	68.7	10.1 ✓
40	4.1	79.2	70.8	8.4 ✓
30	0.5	82.8	75.5	7.3 ✓
20	1.5	81.8	77.5	4.3 ✓
10	3.3	80.0	77.6	2.4 ✓

168.20 ✓
122.40 ✓
111.2
~~105.70~~
608.00 ✓
~~1004.30~~ → N 3170
1009.80 ✓

		583.30			
			N3180		
6110			5.5	77.8	77.8
20			5.4	77.9	77.1
30			4.5	78.8	70.4
40			0.8	82.5	67.7
50			3.1	80.2	67.4
60			4.7	78.6	65.9
70			4.6	78.7	63.5
79			8.9	74.4	62.4
6205				63.3	63.3
Run to N.G.					
↓					
complete			N3190		
T.P.	9.57	582.32		58.75	
6200				63.2	63.2
complete					
↑					
Run to N.G.					
6166			8.0	74.3	63.1
50			2.5	79.8	64.6
40			3.6	78.7	66.3
30			3.9	78.4	68.6
20			4.2	78.1	71.9
10			4.5	77.8	75.7
6100			4.7	77.6	77.6
6090			4.8	77.5	77.5

0.0	
0.8	✓
8.4	✓
14.8	✓
12.8	✓
12.7	✓
15.2	✓
12.0	✓
0.0	

571.00 ✓
122.40 ✓
156.00 ✓
841.40 → N 3180
849.40 →

0.0	
11.2	✓
15.2	✓
12.4	✓
9.8	✓
6.2	✓
2.1	✓
0.0	
0.0	

190.40 ✓
211.20 ✓
381.00 ✓
782.60 → N 3190

N3200

6080	5.0	77.3	77.3	0.0 ✓
90	4.9	77.4	77.4	0.0 ✓
6100	4.1	78.2	71.8	6.4 ✓
10	4.7	77.6	66.9	10.7 ✓
20	4.1	78.2	66.6	11.6 ✓
30	3.5	78.8	65.5	13.3 ✓
39	8.0	74.3	64.1	10.2 ✓
Run to N.G.		62.8	62.8	0.0

60

See book #388

353.50 ✓
105.75 ✓
107.10 ✓
566.35 ✓ → N 3200

N3210

6050	4.7	77.6	77.6	0.0
60	4.7	77.6	77.5	0.1 ✓
70	4.7	77.6	77.5	0.1 ✓
80	6.0	76.3	72.7	3.6 ✓
90	5.4	76.9	68.4	8.5 ✓
6100	4.8	77.5	67.2	10.3 ✓
10	3.0	79.3	65.5	13.8 ✓
20	3.8	78.5	64.3	14.2 ✓
22	4.0	78.3	64.1	14.2 ✓
29	8.0	74.3	63.4	10.9 ✓
Run to N.G.		62.7	62.7	0.0

50

See book #388

435.00 ✓
28.40 ✓
87.85 ✓
114.45 ✓
665.70 ✓ → N 3210

✓

See Book 388

Run to N.G.

6063	8.0	74.3	74.2
60	4.5	77.8	76.4
50	4.6	77.7	77.7
40	4.6	77.7	77.5
30	5.0	77.3	77.5

N3220

60 20	5.2	77.1	76.8
30	5.1	77.2	77.1
40	4.8	77.5	77.3
50	5.2	77.1	75.9
60	8.9	73.4	72.0
70		69.0	69.0

Run to N.G.

↓ See book # 388

↑ See book 388

25

Run to N.G.

N3230

55	7.9	74.4	70.6
49	5.5	76.8	72.2
40	5.6	76.7	74.4
30	5.0	77.3	76.6
20	5.4	76.9	76.8
10	5.4	76.9	76.8

N3240

✓

0.1 ✓ 2.25 ✓

1.4 ✓

0.0 ✓ 8.00 ✓

0.2 ✓ 0.50 ✓ 0.50 -

0.2 ✓

10.75 ✓

50

0.3 ✓ 10.25 ✓ → N3220

0.1 ✓

0.2 ✓

1.2 ✓

1.4 ✓ 30.50 ✓ → N3230

0.0

0.0 ✓

3.8 ✓ 57.00 ✓

4.6 ✓ 25.20 ✓

21.05

~~35.55~~

2.3 ✓

0.7 ✓

0.1 ✓ 20.00

0.1 ✓ ~~25.00~~

~~142.75~~ → N3240

133.25 ✓

582,32

see book 388	N3250		
Run 85 to N.G.		62.7	62.7
6055	7.9	74.4	65.9
49	5.5	76.8	68.1
40	5.6	76.7	70.5
30	4.7	77.6	73.9
20	3.3	79.0	75.8
10	5.2	77.1	77.1
6000	5.6	76.7	76.7
801 see book 388	N3260		
Run to N.G		63.1	63.1
6050	7.9	74.4	62.6
45	5.8	76.5	68.6
30	4.1	78.2	70.1
20	3.7	78.6	74.4
10	4.0	78.3	75.4
6000	4.5	77.8	77.1
5990	5.4	76.9	76.5
70 see book 388	N3270		
Run to N.G		62.9	62.9
6035	7.9	74.4	63.4
25	4.4	77.9	66.6

✓

55

0.0		
8.5	✓	127.50 ✓
8.7	✓	51.60 ✓
6.2	✓	67.05 ✓
3.7	✓	
3.2	✓	
0.0		100.00 ✓
0.0		✓
		346.15 → N 3250
0.0		
11.8	✓	177.00 ✓
7.9	✓	49.25 ✓
8.1	✓	120.00 ✓
4.2	✓	
2.9	✓	
0.7	✓	
0.4	✓	120.50 ✓
		✓
		466.75 → N 3260
0.0		
11.0	✓	192.50 ✓
11.3	✓	111.50 ✓
		~~123.00~~
		~~415.50~~
		304.00

582,32

		N3270		
6020	4.2	78.1	69.4	
10	4.2	78.1	70.3	
6000	4.1	78.2	73.4	
5990	4.5	77.8	75.7	
80	5.0	77.3	76.6	
70	5.5	76.8	76.8	
	N3280			
5950	5.7	76.6	- X	
60	5.6	76.7	X	
70	4.9	77.4	77.2	
80	4.6	77.7	73.7	
90	4.0	78.3	70.8	
6000	4.5	77.8	70.0	
10	4.3	78.0	66.3	
20	2.3	80.0	63.3	
23	2.0	80 3	63.1	
27	1.9	74.4	62.9	
Run to W.G				
35 ↓		62.8	62.8	

See book #388

56

5.65

8.7	✓
7.8	✓
4.8	✓
2.1	✓
0.7	✓
0.0	✓
0.0	
0.0	
0.2	✓
4.0	✓
7.5	✓
7.8	✓
11.7	✓
16.7	✓
17.2	✓
11.5	✓
0.0	✓

304.00 ✓
~~415.50~~
50.00 ✓

197.50 ✓
~~662.50~~ → N 3270
551.50

395.50 ✓
50.85 ✓
57.40 ✓

46.00 ✓
549.75 ✓ → N 3280

582.32

See book 388				
1 50		N3290	62.8	62.8
6033		7.9	74.4	62.6
28		4.9	77.4	62.6
20		3.4	78.9	63.0
10		3.4	78.9	63.8
6000		4.0	78.3	68.0
5990		3.9	78.4	70.2
80		3.9	78.4	71.1
70		4.2	78.1	74.5
60		5.1	77.2	76.1
50		5.7	76.6	76.8
40		5.7	76.6	76.9
		N3300		
5920		6.0	76.3	76.8
30		5.8	76.5	76.5
40		5.1	77.2	76.2
50		4.5	77.8	75.2
60		4.7	77.6	73.0
70		4.5	77.8	70.1
80		4.5	77.8	69.2
90		5.0	77.3	64.8
6000		4.7	77.6	63.8
10		4.8	77.5	63.1
20		4.6	77.7	62.4
30		4.5	77.8	62.8
40		4.2	78.1	62.8
42		4.1	78.2	62.8
47		8.2	74.1	62.9
Run to N.G6060				62.9

0.0
11.8 ✓ 100.30 ✓
14.8 ✓ 66.50 ✓
15.9 ✓ 122.80 ✓
15.1 ✓
10.3 ✓
8.2 ✓
7.3 ✓
3.6 ✓
1.1 ✓ 530.00 ✓
0.2 ✓ 4.65 ✓ 0.15 ✓
0.3 ✓ 2.50 ✓
2.65
824.25
2.65
824.60 → N 3290
0.5 ✓ 2.50 ✓
0.0
1.0 ✓
2.6 ✓
4.6 ✓
7.7 ✓
8.6 ✓
12.5 ✓
13.8 ✓
14.4 ✓
15.3 ✓
15.0 ✓ 1031.50 ✓
15.3 ✓ 30.70 ✓
15.4 ✓ 66.50 ✓
11.2 End Jan 9. 1933
0.0 1128.70 ✓

N3300

B.M.	7.80	593.28		585.48	
6320	= N.G.		18.3	75.0	74.8
340			8.8	84.5	75.6
360			8.4	84.9	76.8
380			7.3	86.0	76.2
400			6.3	87.0	77.5
420			8.3	85.0	78.2
440			6.2	87.1	79.9
460			5.9	87.4	80.0
480	= N.G.		5.2	88.1	88.1
B.M.	2.08	581.32		579.24	

N3310

B.M.	1.94	587.42		585.48	
6480	= N.G.		+1.0	88.4	88.4
460			+0.1	87.5	84.2
440			3.9	83.5	80.0
420			8.2	79.2	78.3
400			5.2	82.2	77.8
390			1.4	86.0	76.9
380			1.6	85.8	75.9
360			2.3	85.1	75.4
340			3.1	84.3	74.8
330			3.0	84.4	75.6
320			8.7	78.7	74.1
310	= N.G.		13.7	73.7	74.1

1128.70 ✓

0.2	✓
8.9	✓
9.1	✓
9.8	✓
9.5	✓
6.8	✓
7.2	✓
3.4	✓
0.0	✓

1096.00
~~548.00~~
~~1676.70~~ → N 3300
2224.70 →

Jan. 10, 1932
Simpson
Saber
Osborne

0.0	
3.3	✓
3.5	✓
0.9	✓
4.4	✓
9.1	✓
9.9	✓
9.7	✓
9.5	✓
8.8	✓
4.6	✓
0.0	

198.00 ✓
67.50 ✓
95.00 ✓
388.00 ✓
~~378.00~~
181.50 ✓
~~930.00~~
930.00 ✓

581.32

N3310

80				
Run to N.G.			62.6	62.6
6060		8.7	72.6	62.8
050	Top Bank	3.8	77.5	63.0
040		3.3	78.0	63.0
030		3.7	77.6	63.0
020		4.3	77.0	62.8
010		4.4	76.9	62.5
6000		4.5	76.8	62.5
5990		9.7	71.6	63.4
980		10.3	71.0	64.4
970		4.8	76.5	67.5
960		3.6	77.7	70.6
950		4.0	77.3	72.1
940		4.0	77.3	74.8
930		4.4	76.9	75.1
920		4.4	76.9	76.2
910		5.3	76.0	76.4
900	N.G.	5.3	76.0	76.9

930.00 ✓

~~920.00~~

98.00 ✓

0.0	
9.8 ✓	
14.5 ✓	
15.0 ✓	
14.6 ✓	
14.2 ✓	
14.4 ✓	
14.3 ✓	
8.2 ✓	
6.6 ✓	
9.0 ✓	
7.1 ✓	
5.2 ✓	
2.5 ✓	
1.8 ✓	
0.7 ✓	1326.50 ✓
0.4 ✓	2.22 ✓
0.9 ✓	
~~56~~	
~~2346.72~~	
2349.49 ✓	7.23
~~2339.49~~	→ N 3310

0.73 ✓

6.50 ✓

723

581.32

N 3320

5890	N.B.		5.3	76.0	76.0
900			5.1	76.2	75.8
910			5.5	75.8	75.2
920			5.3	76.0	74.7
930			4.8	76.5	73.3
940			4.2	77.1	71.4
945			4.4	76.9	70.8
960			8.2	73.1	68.9
970			10.1	71.2	67.5
980			14.4	66.9	63.8
990			14.1	67.2	62.8
6000			12.4	68.9	62.4
010			4.5	76.8	62.8
020			3.9	77.4	62.9
030			4.2	77.1	63.0
040			3.8	77.5	63.0
050			3.3	78.0	62.7
057	Top bank		3.1	78.2	62.6
070			9.1	72.2	62.7
	Run to N.G.				
090					63.6
	N.G.				

0.0 ✓
0.4 ✓
0.6 ✓
1.3 ✓
3.2 ✓
5.7 ✓
6.1 ✓
4.2 ✓
3.7 ✓
3.1 ✓
4.4 ✓
6.5 ✓
14.0 ✓
14.5 ✓
14.1 ✓
14.5 ✓
15.3 ✓
15.6 ✓
9.6 ✓
0.0

83.50 ✓
~~81.50~~
29.50 ✓
77.25 ✓

845.50 ✓
108.15 ✓
163 15
95.00 ✓

~~1400.05~~
1402.05 ✓

N3320

	1.94	587.42		585.48	
6300	N.G.		13.8	73.6	74.8
320			3.6	83.8	74.2
340			3.2	84.2	75.7
360			2.5	84.9	75.2
380			2.0	85.4	76.7
400	N.G.		9.4	78.0	78.0

N3330

B.M.	1.94	587.42		585.48	
6380			9.7	77.7	77.6
360			2.8	84.6	77.1
340			3.3	84.1	76.9
320			4.0	83.4	76.1
300			4.5	82.9	75.8
280	N.G.		13.0	74.4	75.0

1402.05 ✓
~~+400.05~~

1.2 ✓ 85.44 ✓ 12.00 ✓ 1.32 ✓

9.6 ✓
8.5 ✓
9.7 ✓
8.7 ✓
0.0

634.00 ✓

~~2121.49~~
~~2119.49~~
13.32
~~2106.17~~ → N 3320
2108.17 ✓ →

13.32 ✓

0.1 ✓
7.5 ✓
7.2 ✓
7.3 ✓
7.1 ✓
00 ✓

583.00 ✓

581.32

N 3330

6090 Run to N.G.			64.2	64.2
6078		9.0	72.3	63.6
6067	top bank	2.0	79.3	63.1
060		3.3	78.0	62.9
050		3.7	77.6	62.8
035		4.0	77.3	62.8
030		5.2	76.1	63.0
020		9.3	72.0	62.7
010		11.8	69.5	63.0
6000		13.9	67.4	62.6
5990		16.2	65.1	62.6
980		13.2	68.1	62.8
970		15.2	66.1	64.6
960		13.0	68.3	66.0
950		11.7	69.6	67.7
940		9.1	72.2	67.9
930		6.3	75.0	70.1
920		4.7	76.6	73.1
910		5.0	76.3	73.9
900		4.4	76.9	74.7

583.00 ✓

0.0		
8.7	✓	52.20 ✓
162	✓	136.95 ✓
151	✓	109.55 ✓
148	✓	149.50 ✓
145	✓	219.75 ✓
131	✓	69.00 ✓
9.3	✓	
6.5	✓	
4.8	✓	
2.5	✓	
5.3	✓	
1.5	✓	
2.3	✓	
1.9	✓	
4.3	✓	
4.9	✓	
3.5	✓	
2.4	✓	
2.2	✓	568.50 ✓

1888.45 ✓

581.32

N3330

5890			4.4	76.9	74.9
880			3.7	77.6	75.6
870			4.6	76.7	77.1
860	N.G.		4.3	77.0	77.6
		N3340			
5840	N.G.		4.3	77.0	76.8
850			4.6	76.7	76.4
860			4.6	76.7	76.2
870			4.6	76.7	75.6
880			3.1	78.2	74.8
890			3.9	77.4	74.3
900			5.3	76.0	73.3
910			6.3	75.0	71.8
920			8.7	72.6	69.6
930			13.1	68.2	66.7
940			14.8	66.5	64.9
950			17.2	64.1	63.1
960			17.7	63.6	62.9
970			15.0	66.3	62.9
980			16.3	65.0	62.7
990			14.9	66.4	62.7
6000			11.3	70.0	62.9
010			13.6	67.7	62.8
020			13.2	68.1	62.9
030			10.7	70.6	62.6

1.1 1888.45

2.0
2.0 41.00 8.35
0.4 0.33 2.00 2.33
0.0 1937.80 2.33 1937.47 1935.47 N 3330
0.0
0.3
0.5
1.1
3.4
3.1
2.7
3.2
3.0
1.5
1.6
1.0
0.7
3.4
2.3
3.7
7.1
4.9
5.2
8.0 527.00

581.32

N3340

6040			8.4	72.9	62.7
050			4.0	77.3	62.9
060			3.8	77.5	63.1
070			3.5	77.8	63.4
077	top bank		2.9	78.4	64.3
087			10.0	71.3	64.0
6100	& Run to N.G.				63.9
B.M. -	1.94	587.42		585.48	
6265	N.G.				73.0
270			13.3	74.1	74.1
280			9.8	77.6	75.7
300			5.0	82.4	76.2
320			4.2	83.2	76.4
340			3.5	83.9	77.2
345			3.4	84.0	77.1
365	N.G.		10.1	77.3	77.3

N3350

B.M.	1.25	586.73		585.48	
6350	N.G.		9.5	77.2	76.8
340			5.3	81.4	76.9
330			3.5	83.2	76.5
320			3.9	82.8	76.5
310			4.0	82.7	76.6
6300			4.4	82.3	76.5
290			4.8	81.9	76.3
6280			3.6	83.1	75.5

4.0		527.00 ✓
10.2 ✓		
14.4 ✓		
14.4 ✓		
14.4 ✓		502.00 ✓
14.1 ✓		99.75 ✓
7.3 ✓		107.00 ✓
0.0		47.45 ✓
0.0		
0.0 ✓		9.50 ✓
1.9 ✓		
6.2 ✓		
6.8 ✓		
6.7 ✓		346.00 ✓
6.9 ✓		34.00 ✓
0.0		69.00 ✓
		1741.70 ✓ → N3340
0.0		
4.5 ✓		
6.7 ✓		
6.3 ✓		
6.1 ✓		
5.8 ✓		
5.6 ✓		
7.6 ✓		388.00 ✓

586.73

N 3350

6270			8.2	78.5	75.3
260			11.6	75.1	74.1
6250	N.G.		16.7	70.0	70.2
6110 Run to N.G.		581.32		62.2	
6100			8.3	73.0	62.2
090			5.4	75.9	63.2
085	top bank		2.8	78.5	63.6
070			3.8	77.5	64.1
063			4.0	77.3	63.4
050			10.8	70.5	63.0
040			13.3	68.0	62.9
030			13.0	68.3	62.6
020			14.0	67.3	62.6
010			12.6	68.7	63.0
6000			10.5	70.8	62.9
5990			12.2	69.1	63.0
980			13.3	68.0	62.6
970	N.G.		18.1	63.2	62.6
	N.G.				
5890	N.G.		8.5	72.8	72.9
880			5.5	75.8	73.8

3.8

3.2	✓	388.00 ✓
1.0	✓	
0.0		80.00 ✓
0.0		
1.08	✓	
1.27	✓	171.50 ✓
14.9	✓	69.00 ✓
13.4	✓	~~212.00~~ ~~78.75~~ ✓
13.9	✓	95.55 ✓
7.5	✓	139.10 ✓
5.1	✓	
5.7	✓	
4.7	✓	
5.7	✓	
7.9	✓	
6.1	✓	
5.4	✓	
0.6	✓	446.50 ✓
0.0	✓	
2.0	✓	10.00 ✓
		~~1470.40~~ 1611.65 ✓

581.32

N 3350

5870			5.6	75.7	74.8
860			5.5	75.8	75.3
850			5.4	75.9	75.9
840	N.G.		5.5	75.8	76.0

N 3360

B.M.	1.25	586.73		585.48	
6340	N.G.		9.8	76.9	76.8
330			5.3	81.4	76.7
320			3.7	83.0	76.4
310			4.3	82.4	76.3
300			4.6	82.1	76.4
290			5.0	81.7	76.1
280			5.5	81.2	75.9
270			5.0	81.7	76.6
260			5.3	81.4	76.2
250			11.8	74.9	77.6
245	N.G.		15.2	71.5	71.5

6120 Run to N.G.				60.8	
6100			9.4	77.3	62.1
6092	top bank		3.0	83.7	62.3
080			3.4	83.3	62.9
072			3.5	83.2	63.7
060			10.6	76.1	64.2
050			15.2	71.5	62.8
040			15.2	71.5	63.5
030			15.9	70.8	63.0

1611.65
~~1470.40~~

1.0	✓	
0.9	✓	
0.5		
0.0		24.00 ✓
0.0		~~1494.40~~ → N 3350
		1635.65 →
0.0		
4.7	✓	
6.6	✓	
6.1	✓	
5.7	✓	
5.6	✓	
5.3	✓	
6.1	✓	
6.2	✓	432.00 ✓
	2.7 ✓	~~21.23~~
		21.60
0.0		
0.0		
15.2	✓	152.00 ✓
21.4	✓	146.40 ✓
20.4	✓	250.80 ✓
19.5	✓	159.60 ✓
11.9	✓	188.40 ✓
8.7	✓	
8.0	✓	
7.8	✓	265.50 ✓
		~~1615.93~~
		1616.30 ✓

~~4.09~~
~~4.25~~
6.75 ✓

~~11.00~~
10.84 ✓

		581.32			
			N3360		
6020			15.2	66.1	62.5
6010			12.0	69.3	62.5
6000			12.4	68.9	63.1
5990			15.7	65.6	62.9
980			16.9	64.4	62.7
970	N.G.				62.8
			N3370		
40					
5950	N.G.		16.4	64.9	62.8
960			14.1	67.2	62.8
970			8.2	73.1	62.7
980			4.1	77.2	62.9
990			2.7	78.6	62.9
6000	top bank		2.5	78.8	62.8
015			9.1	72.2	62.7
035	Run to N.G.				63.4
T.P.	1.90	580.22	3.00	578.32	
B.M.	1.25	586.73		585.48	
6230	N.G.		15.6	71.1	72.2
240			11.3	75.4	75.0
250			6.5	80.2	75.3
260			6.4	80.3	75.5
270			6.0	80.7	75.7
280			5.7	81.0	76.0

1616.30
~~1615.93~~

10.84
~~11.00~~

3.9	
3.6	✓
6.8	✓
5.8	✓
2.7	✓
1.7	✓
0.0	
0.0	✓
2.1	✓
4.4	✓
10.4	✓
14.3	✓
15.7	✓
16.0	✓
9.5	✓
0.0	
0.0	
0.4	✓
4.9	✓
4.8	✓
5.0	✓
5.0	✓

245.00 ✓
~~1861.30~~
~~1860.93~~
~~1849.93~~
~~10.84~~
1850.46

N 3360

549.00 ✓
191.25 ✓
95.00 ✓

176.00 ✓
1011.25 ✓

		586.73				
			N3370			
6290			5.4	81.3	76.0	
300			5.0	81.7	76.2	
310			4.5	82.2	76.4	
320			7.3	79.4	77.1	
330			9.5	77.2	77.0	
			N3380			
B.M.	1.25	586.73		585.48		
6310	N.G.		9.0	77.7	77.1	
300			7.4	79.3	76.8	
290			5.5	81.2	76.2	
280			5.9	80.8	76.0	
270			6.2	80.5	75.8	
260			6.4	80.3	75.5	
250			7.0	79.7	75.5	
240			7.5	79.2	75.3	
230			11.2	75.5	75.2	
220	N.G.		14.7	72.0	72.1	
		580.22				
	35' Run to N.G.				60.8	
6120			8.4	71.8	61.0	
110	top bank		1.4	78.8	60.7	
100			1.9	78.3	60.7	
090			2.6	77.6	61.3	
080			5.7	74.5	62.3	
070			8.6	71.6	62.8	
060			14.7	65.5	62.7	
050	N.G.				63.1	

2.5	✓
5.3	✓
5.5	✓
5.8	✓
2.3	✓
0.2	✓
0.0	
2.5	✓
5.0	✓
4.8	✓
4.7	✓
4.8	✓
4.2	✓
3.9	✓
0.3	✓
0.0	
0.0	
10.8	✓
1.81	✓
17.6	✓
16.3	✓
12.2	✓
8.8	✓
2.8	✓
0.0	

1011.25 ✓

215.00 ✓

1226.25 ✓ → N 3370

302.00 ✓

81.00 ✓

812.00 ✓

1195.00 ✓ → N 3380

580.22

N 3390

6010	= N.C.			62.6	62.6
020			15.8	64.4	62.9
030			16.2	64.0	63.4
040			16.1	64.1	63.4
050			15.4	64.8	62.6
060			15.0	65.2	62.6
070			14.9	65.3	62.3
080			13.1	67.1	61.8
090			6.4	73.8	60.1
100			1.8	78.4	60.7
110			2.0	78.2	60.8
117	top bank.		1.7	78.5	60.7
128			7.8	72.4	60.5
5-0 ↓ Run to N.G.					61.8
B.M.	1:25	586.73		585.48	
6200 ↑ Run to N.G. (Lake)				70.7	
6210			14.9	71.8	72.0
220			11.3	75.4	75.2
230			7.5	79.2	75.2
240			7.4	79.3	75.6
250			7.0	79.7	75.3
260			6.7	80.0	75.5
270			6.5	80.2	76.1
280			6.5	80.2	76.3
290	= N.G.		10.1	76.6	76.7

complete ✓

0.0
1.5 ✓
0.6 ✓
0.7 ✓
2.7 ✓
2.6 ✓
3.0 ✓
5.3 ✓
13.7 ✓
17.7 ✓
17.4 ✓ 560.00 ✓
17.8 ✓ 123.20 ✓
11.9 ✓ 163.35 ✓
0.0 130.90 ✓

0.0

0.2 ✓ 0.50 ✓ 1.00 ✓ 0.50 ✓

0.2 ✓
4.0 ✓
3.8 ✓
4.4 ✓
4.5 ✓
4.1 ✓
3.9 ✓
0.0 248.00 ✓

1225.95 ✓
1.50 ✓
1224.45 ✓ → IX 3390

1.50 ✓

B.M.	1.25	586.73		585.48	
		N3400			
6270	N.G.		10.0	76.7	76.3
260			7.7	79.7	76.1
250			7.5	79.2	75.5
240			7.7	79.0	75.4
230				78.6	75.4
220		interpolate		78.1	75.4
210			9.0	77.7	75.2
200			13.9	72.8	72.0
6195	Run to N.G.			70.5	70.5
		580.22			
50	Run to N.G.			62.7	62.7
6135			7.6	72.6	61.9
125	top bank		1.9	78.3	60.8
110			2.2	78.0	60.7
100			2.1	78.1	60.8
090			11.0	69.2	60.4
080			15.5	64.7	60.4
070			15.2	65.0	61.7
060			15.5	67.7	62.2
050	N.G.			62.5	62.5

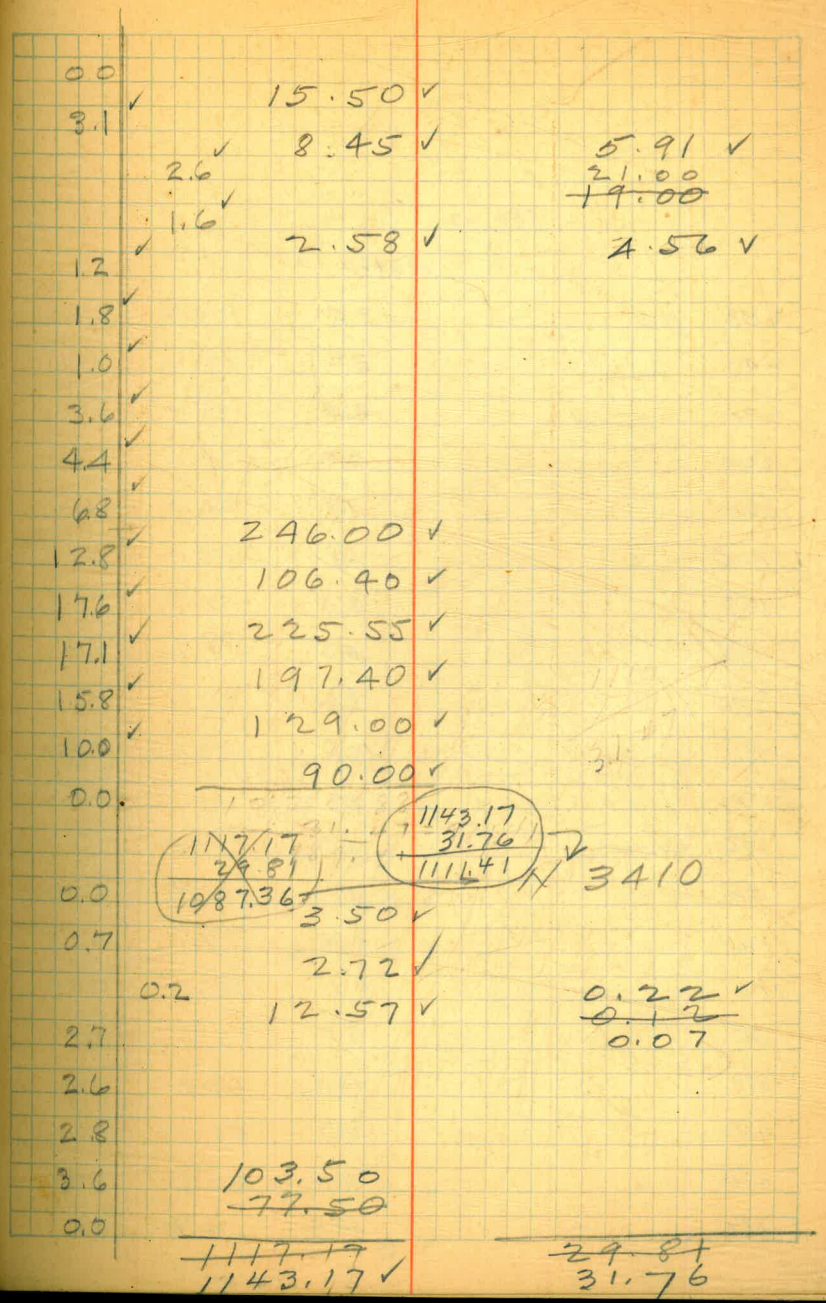
0.0		
3.6 ✓		
3.7 ✓		
3.6 ✓		
3.2 ✓		
2.7 ✓		
2.5 ✓		
0.8 ✓	197.00 ✓	
0.0	2.00 ✓	
0.0		
10.7 ✓	80.25 ✓	
17.5 ✓	~~141.00~~ ✓	
17.3 ✓	261.00 ✓	
17.3 ✓		
8.8 ✓		
4.3 ✓		
3.3 ✓		
2.5 ✓		
0.0	448.50 ✓	
	~~1079.75~~ → N 3400	
	1129.75 ↗	

580.22

N 3410

6000	= N.G.			62.1	62.1
010			14.4	65.8	62.7
020			19.5	60.7	63.3
030			18.6	61.6	63.2
040			16.1	64.1	62.9
050			16.0	64.2	62.4
060			17.7	62.5	61.5
070			16.8	63.4	59.8
080			15.4	64.8	60.4
090			12.6	67.6	60.8
100			6.6	73.6	60.8
107			2.2	78.0	60.4
120			2.2	78.0	60.9
132	top bank		2.2	78.0	62.2
142			8.1	72.1	62.1
6160	↓ Run to N.G.			62.5	62.5
B.M.	1.25	586.73		585.48	
6180	↑ Run to N.G.			69.1	69.1
190			13.0	71.7	71.0
200			12.4	74.3	74.5
210			8.7	78.0	75.3
220			8.7	78.0	75.4
230			8.5	78.2	75.4
240			8.1	78.6	75.0
250	N.G.		9.5	77.2	76.3

complete ✓



580.22

N3420 complete

250	N.G.	3.5	76.7	77.1
240		3.2	77.0	75.9
230		2.5	77.7	75.2
220		2.2	78.0	75.6
210		1.9	78.3	75.4
200		1.8	78.4	75.1
190		2.0	78.2	74.3
180		5.3	74.9	70.8
170		8.2	72.0	69.1
160		10.6	69.6	66.8
6150		7.8	72.4	63.2
142	top bank.	2.3	77.9	62.6
130		1.8	78.4	62.0
116		2.5	77.7	62.2
110		6.1	74.1	60.4
100		9.3	70.9	60.4
090		13.0	67.2	60.2
080		14.1	66.1	60.6
070		14.6	65.6	60.1
060		15.4	64.8	60.9

✓

0.0		
1.1		
2.5		
2.5		
2.9		
3.3		
3.9		
4.1		
2.9		
2.8		
	306.00	✓
9.2	98.00	✓
15.3	190.20	✓
16.4	223.30	✓
16.5	87.60	✓
13.7		
10.5		
6.7		
5.5		
5.5		
3.9	370.00	✓
	1275.10	✓

580.22

N3420

6050	12.8	67.4	61.4
040	13.3	66.9	62.6
030	17.3	62.9	62.9
020	14.7	65.5	63.2
010	98	70.4	62.7
6000	15.1	65.1	61.8
5990	17.3	62.9	61.7
980	18.3	61.9	62.6
970	15.8	64.4	63.1
960	15.4	64.8	62.9
950	16.3	63.9	62.4
940	16.7	63.5	62.6
930	16.5	63.7	62.7
920	14.7	65.5	63.4
910	14.1	66.1	64.0
900	15.1	65.1	62.5
890	15.3	64.9	62.7
880	15.1	65.1	62.4

N3430

5880	14.9	65.3	62.6
890	15.5	64.7	62.6
900	15.4	64.8	63.3

✓

1.95

1275.10 ✓

6.0
4.3
0.0
2.3
7.7
3.3
1.2

261.50 ✓

3.78 ✓ 1.29 ✓

07

4.22 ✓ 1.22 ✓

1.3
1.9
1.5
0.9
1.0
1.9
2.1
2.6
2.2
2.7

161.00 ✓

2.51 ✓

1705.60 ✓

2.51

1703.09 ✓ → N 3420

2.7
2.1
1.5

42.00 ✓

580.22

N 3430

5910	14.5	65.7	63.8	1.9
920	14.5	65.7	62.7	3.0
930	14.0	66.2	62.6	3.6
940	13.8	66.4	62.5	3.9
950	13.1	67.1	62.7	4.4
960	15.0	65.2	62.9	2.3
970	11.3	68.9	62.8	6.1
980	11.5	68.7	62.1	6.6
990	11.0	69.2	61.5	7.7
6000	10.0	70.2	62.0	8.2
010	8.8	71.4	62.7	8.7
020	9.6	70.6	63.1	7.5
030	10.2	70.0	62.8	7.2
040	9.3	72.9	61.7	9.2
050	10.1	70.1	60.2	9.9
060	13.2	67.0	59.5	7.5
070	9.9	70.3	60.5	9.8
080	7.8	72.4	60.6	11.8
090	13.3	66.9	60.3	6.6
100	13.8	66.4	60.2	6.2
110	10.5	69.7	62.0	7.7
120	5.7	74.5	61.7	12.8
125	2.9	77.3	62.0	15.3
140	2.4	77.8	63.4	14.4
150	2.7	77.5	64.9	12.6

✓

.75

42.00 ✓

1469.50 ✓

70.25 ✓

222.75 ✓

135.00 ✓

1939.50 ✓

580.22

N3430

6160			1.9	78.3	67.9
170			1.7	78.5	70.6
180			1.6	78.6	73.5
190			1.9	78.3	75.2
200			2.3	77.9	75.4
210			2.5	77.7	75.4
220			2.4	77.8	75.3
230	N.G.		4.1	76.1	75.8

complete

N3440 "

6230	N.G.		4.3	75.9	76.2
220			3.3	76.9	75.2
210			3.0	77.2	75.2
200			2.9	77.3	75.4
190			2.9	77.3	75.3
180			2.1	78.1	74.7
170			2.1	78.1	71.6
160			2.5	77.7	70.0
150			2.9	77.3	67.1
140			2.6	77.6	64.4
130			3.7	76.5	63.2
120			5.7	74.5	63.6
110			7.4	72.8	63.6
100			8.4	71.8	61.8
090			8.3	71.9 ✓	60.1

L.3

1439.50 ✓

10.4	
7.9	
5.1	
3.1	
2.5	
2.3	
2.5	
0.0	401.00 ✓
	2340.50 ✓ → N3430

0.0	
1.7	
2.0	
1.9	
2.0	
3.4	
6.5	
7.7	
10.2	
13.2	
13.9	
10.9	
9.2	
10.0	979.00 ✓
11.8	

580.22

N3440

6080	8.4	71.8	60.4
070	9.0	71.2	60.6
060	9.1	71.1	60.5
050	9.1	71.1	60.5
040	9.3	70.9	60.1
030	9.4	70.8	61.9
020	9.5	70.7	62.7
010	9.5	70.7	62.5
6000	9.8	70.4	62.5
5990	10.9	69.3	61.2
980	13.0	67.2	62.8
970	12.6	67.6	62.6
960	13.5	66.7	62.7
950	13.5	66.7	62.7
940	14.0	66.2	62.5
930	14.3	65.9	62.5
920	14.8	65.4	62.5
910	15.1	65.1	62.5
900	15.2	65.0	63.5
5890	15.0	65.2	63.3
880	14.8	65.4	62.6
870	15.3	64.9	62.6
860	15.5	64.7	62.6
850	15.6	64.6	63.2
840	16.1	64.1 ✓	63.0

5.9

979.00 ✓

11.4
10.6
10.6
10.6
10.8
8.9
8.0
8.2
7.9
8.1
4.4
5.0
4.0
4.0
3.7
3.4
2.9
2.6
1.5
1.9
2.8
2.3
2.1
1.4
1.1

1435.50 ✓

2414.50 ✓

580.22

	N3440			
5830		15.0	65.7	68-2
820		12.8	67.4	63-7
810		12.7	67.5	65-3
800		13.6	66.6	65 9
	N3450			
6260		3.5	76.7	76.8
250		2.8	77.4	76.4
240		2.7	77.5	76.5
230		3.1	77.1	76-3
220		3.8	76.4	75-8
210		3.3	76.9	75.1
200		3.0	77.2	75.3
190		4.5	75.7	75.3
180		4.9	75.3	75.1
170		8.6.	71.6	74.1
160		9.8	70.4	71.4
150		9.3	70.9	69.4
140		4.6	75.6	69.3
130		6.5	73.7	63.5
120		7.1	73.1	62.9
110		8.0	72.2	62.7
100		8.6	71.6	62.9
090		8.9	71.3	61.9
080		9.3	70.9	60.2
070		9.5	70.7 ✓	59.9

77

55

2414.50 ✓

2.0
3.7
2.2
0.7

88.00 ✓

250 2.50 → N3440

0.0
1.0
1.0
0.8
0.6
1.8
1.9
0.4
0.2

76.00 ✓

0.07 ✓

11.57 ✓

2.5

17.50 ✓

1.0

4.50 ✓

2.00 ✓

1.5
8.3
10.2
10.2
9.5
8.7
9.4
10.7
10.8

731.50 ✓

812.07 ✓

31.07 ✓

580.22

N3450

6060	9.7	70.5	60.4
050	9.4	70.8	60.5
040	9.8	70.4	60.5
030	11.4	68.8	60.2
020	11.8	68.4	62.1
010	11.7	68.5	62.6
000	12.6	67.6	62.6
5990	12.8	67.4	61.3
980	12.9	67.3	62.1
970	13.2	67.0	62.8
960	13.7	66.5	62.6
950	14.0	66.2	62.9
940	14.1	66.1	62.4
930	14.3	65.9	62.5
920	14.7	65.5	62.8
910	15.0	65.2	62.2
900	15.3	64.9	62.8
890	15.4	64.8	63.5
880	15.6	64.6	63.1
870	16.1	64.1	62.7
860	16.2	64.0	62.6
850	15.8	64.4	63.1
840	16.5	63.7	64.2
830	15.2	65.0	64.0
820	11.0	69.2	63.5

5.4 812.07 ✓ 31.07 ✓

10.1	
10.3	
9.9	
8.6	
6.3	
5.9	
5.0	
6.1	
5.2	
4.2	
3.9	
3.3	
3.7	
3.4	
2.7	
3.0	
2.1	
1.3	
1.5	
1.4	
1.4	
1.3	
0.5	
1.0	
5.7	

1053.50 ✓

4.68 ✓ 0.70 ✓

33.50 ✓

1903.75 ✓

31.77 ✓

580.22

N3450

5810		11.6	68.6	64.8
800		11.5	68.7	65.2
790		6.8	73.4	67.7
780		6.1	74.1	67.9
770		4.5	75.7	70.2
760		2.2	78.0	70.5
750		2.4	77.8	73.4
740		3.0	77.2	74.2
730		3.3	76.9	74.9
720		4.3	75.9	75.0
710		5.1	75.1	75.2
5700		6.0	74.2	75.4
5690		6.4	73.8	75.7
680		0.6	79.6	75.9
670		2.1	78.1	76.1
660		0.9	79.3	76.2
650		4.4	75.8	76.1
640		4.4	75.8	76.1
630		4.1	76.1	76.4
620		3.6	76.6	76.3
610		4.3	75.9	76.3
600		4.7	75.5	76.7
590		5.0	75.2	75.6
580		5.6	74.6	65.0
570		5.4	74.8	66.3
560		8.4	71.8	69.3
50			✓	
40				

2.85

1903.75 ✓

31.77 ✓

3.8
2.5
5.7
6.2
5.5
7.5
4.4
3.0
2.0
0.9

439.00 ✓

4.05 ✓

0.05 ✓

0.1

1.2

1.9

22.00 ✓

12.21 ✓

3.23 ✓

3.7
2.0

2958.73
79.27 ✓
2884.46 → N 3450

3.1
9.7
9.7
9.7

362.00 ✓

0.3

0.64 ✓

1.14 ✓

0.4

1.2

0.4

16.00 ✓

46.08 ✓

0.08 ✓

9.6
8.6
2.6

74.27 ✓

3.3
0.0

191.00 ✓

2958.73

580.22

80

N 3450

55.50

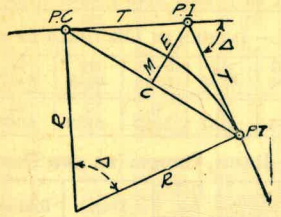
541

4.6 75.6 72.3

5.2 75.0 Toe wall complete

3.3.

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



CURVE FORMULAS

Radius=R=$\frac{50}{\text{sin. } D/2}$ (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 vers $\frac{\Delta}{2}$ (6)

External=E=T tan $\frac{\Delta}{4}$ (7) =R÷cos. $\frac{\Delta}{2}$—R (8)=R exsec $\frac{\Delta}{2}$ (9)

Long Chord=C=2 R sin. $\frac{\Delta}{2}$ (10) Δ=Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=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—Sta. P. C.=54.50, hence offset=7.27 (54.50÷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÷(2 x 688.26)=2.16 ft.

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′+8° 20′÷2=6° 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° 20′=960.6÷8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and÷42=5.5 or D=5° 30′.

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	25.2	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.

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