

Walker-Remer
Location
Survey.

Level Notes.



FIELD BOOK

361

133

133

O	+	π	-	Rod	Elev.
B.M.					1255.62 +192.12
B.M.	2.11	1449.85			1447.74
T.P.	6.68	52.40	4.13		45.72
0+00 = 3321 + 86 ³ #80				4.3	48.1
+30				4.8	47.6
1				6.6	45.8
2				8.6	43.8
3				10.4	42.0
T.P.	3.36	45.41	10.35		42.05
+30				3.8	41.6
+50				4.3	41.1
4				4.7	40.7
+50				4.8	40.6
+85				4.9	40.5
5				4.4	41.0
+75				3.8	41.6
6				3.3	42.1
+45				2.2	43.2
+75				1.4	44.0
T.P.	9.40	53.61	1.20		44.21
7				9.1	44.5
8				6.6	47.0
+50				5.2	48.4
9				4.6	49.0

L.	C	R.
S.R.H. #80 Elev.		
U.S. Elev.		
	-10	+10
8.6 33	7.6 19	4.5 12
	4.3	4.7 10
		6.7 16
		6.3 33
-4.2	8.5 15	5.6 8
	4.8	4.3 13
		5.0 22
	L. 8.3 10	6.6 4
		7.7 6
		10 10
	L. 9.1 8	8.6 8
		9.4 10
		L.
9.1 33	11.4 10	10.4 6
		10.4 10
		11.7 10
		L.
9.5 33	16 13	3.8 6
		3.8 38
		3.1 7
		4.7 11
		3.3 33
	L. 0.7 15	4.3 7
		4.3 6
		3.0 9
		4.7 33
6.3 above 33	1.7 12	4.7 8
		4.7 9
		9.1 33
	1.8 33	6.3 10
		4.8 5
		4.8 48
		11.3 18
		14.2 33
	4.2 33	8.0 12
		4.9 6
		4.9 49
		13.3 20
		14.7 33
5.5 33	7.9 14	4.4 5
		4.4 44
		11.4 18
		13.7 33
	0.3 33	3.0 14
		3.8 38
		3.8 7
		5.3 12
		L.
above → 3.9 33	0.2 25	3.3 8
		3.3 33
		4.1 9
		6.0 33
+4 → 5.2 28		2.2 16
		2.2 6
		7.3 33
+4 → 4.8 33		1.4 11
		1.4 2
		2.8 6
		5.7 33
4.4 33	7.2 12	9.1 10
		9.1 91
		9.1 5
		12.2 33
	L. 5.4 15	6.6 10
		6.6 66
		6.6 5
		5.2 8
	L. 2.0 16	5.2 10
		5.2 52
		3.0 8
		3.6 33
	L. 4.8 9	4.6 46
		3.7 5
		3.6 17
		4.4 33

(18" pipe)
regd

		24.10 ✓			
31		16.91		6.0	18.1
+50				7.0	17.1
T.P.	0.92	17.83	7.19		1416.91 ✓
32		10.24		2.0	15.8
+35				3.0	14.8
Δ +64°				4.1	13.7
33				5.0	12.8
34				7.9	09.9
T.P.	0.47	10.71	7.59		1410.24
35				3.2	07.5
+50				4.4	06.3
36		1410.71		4.9	05.8
Δ +46°		12.96		5.0	05.7
		1397.75			
B.M.			134		1409.37
37				6.6	04.1
+25				6.7	04.0
+50				10.0	00.7
38				18.9	91.8
T.P.	5.10	1402.85	12.96		1397.75
+50		01.34		17.2	85.7
39				18.8	84.1
+25				17.8	85.1
+60				12.7	90.2
40				5.9	97.0
41				1.9	01.0
T.P.	1.67	03.01	1.51		1401.34

	0.8	2.1	6.0	6.0	6.0	2.3	L.	
	33	10	4	6.0	12	16		
		8.8	7.0	7.0	7.0	8.5	8.5	7.2 4.0
		33	6	5	11	12	15	33
On Transit Hub +70								
	6.3	2.8	2.8	2.0	2.0	4.2	+E	
	33	17	7	4	14	33		
		6.0	4.5	3.0	3.0	4.8	+E	
		33	13	6	12	33		
		+E	4.5	4.1	4.1	2.4	L.	
		15	6	4.1	6	10		
	0.0	2.0	5.0	5.0	5.0	3.5	3.5	5.1
	33	12	9	5.0	7	10	2.5	33
	L.	2.9	7.9	7.9	7.9	5.0	5.0	
		15	8	8	12	33		
On stake at 34+00								
	4.2	3.2	3.2	3.2	1.1	5.0	+E	
	33	18	3.2	8	11	33		
		9.3	5.1	4.4	4.4	5.3	5.3	3.9 2.4
		33	19	4.4	5	6	7	13 33
	6.0	7.5	7.3	4.9	4.9	5.8	5.8	4.8 0.0
	33	26	10	4.9	4	8	9	11 33
		5.6	6.9	6.2	5.0	5.0	1.4	
		33	20	10	5	7	33	
Sp in 4" N.P. Rt Δ								
		10.0		1.5				
		33	6.6	3.3				
		17.0		2.3				
		33	6.7	3.3				
		20.5	12.4	5.2				
		33	12	3.3				
	31.0	23.1	23.9	10.0				
	33	27	22	18.9		14.8		
						33		
		21.1		14.5				
		33	17.2	3.3				
	L.		18.8	L.				18" Cul. reg d. drain 1/2 ft.
	L.			L.				
		14.8		12.7		6.2		
		33	12.7	6		3.3		
		10.5		5.9		0.4		
		33		3.3		3.3		
		4.0		2.1				
		33	1.9	3.3				
On Transit hub 41+55.0								

	03.01				
+55	11.25			2.0	01.0
+80	91.76			4.2	98.8
42				3.8	99.2
+25				2.8	00.2
+60				6.8	96.2
43				8.9	94.1
+30				9.3	93.7
+75				4.4	98.6
44				5.6	97.4
45				10.3	92.7
+50				11.8	91.2
T.P.	7.02	98.78	11.25		1391.76
46				17.2	81.6
+40				18.6	80.2
+60					78.0
47					69.7
+15					67.6
+30					68.1
+60					73.1
48					71.6
+45					68.4
49					74.9
Δ+56.3					76.3
50					76.4
+25					79.4
T.P.	1.02	87.62	12.18		86.60

	98.8	74.5							
	12.6								
	86.7								
	5.0								
	3.3								
	2.0								
	5.6								
	3.3								
	4.2								
	5.7								
	3.8								
	5.1								
	3.3								
	2.8								
	7.8								
	3.3								
	6.8								
	12.0								
	3.3								
	8.9								
	6.6								
	3.3								
	18" Cul. rigid.								
	11.9								
	3.3								
	9.3								
	4.4								
	8.5								
	3.3								
	4.4								
	2.0								
	3.3								
	8.0								
	3.3								
	5.6								
	3.4								
	3.3								
	11.5								
	3.3								
	10.3								
	9.7								
	3.3								
	15.4								
	3.3								
	11.8								
	12.2								
	2.2								
	11.0								
	3.3								
	19.8								
	3.3								
	17.2								
	10.0								
	3.3								
	24.3								
	3.3								
	18.6								
	15.5								
	3.3								
	12.4								
	3.3								
	5.0								
	3.0								
	0.8								
	3.3								
	8.4								
	3.3								
	5.0								
	6.0								
	0.8								
	3.3								
	1.6								
	3.3								
	4.2								
	3.3								
	5.0								
	6.3								
	7.9								
	3.3								
	6.9								
	18								
	3.3								
	4.3								
	4.6								
	2.0								
	3.3								
	7.3								
	2.5								
	7.6								
	5.4								
	3.3								
	4.4								
	1.5								
	5.0								
	5.9								
	3.3								
	5.0								
	7.6								
	12								
	3.3								
	L								
	5.0								
	3.1								
	3.3								
	5.0								
	3.4								
	2.6								
	3.3								
	5.0								
	10								
	1.3								
	3.3								
	5.0								

sections taken by H.L. and elevations taken by level.

		87.62			
+70			8.5	79.1	
51			11.2	76.4	
+50			10.3	77.3	
52			11.0	76.6	
T.P.	0.28	79.49	8.41	79.21	
T.P.	0.83	68.25	12.07	67.42	
T.P.	0.55	59.73	9.07	59.18	
T.P.	1.33	50.91	10.15	49.58	
T.P.	0.14	38.47	12.58	1338.33	
T.P.	0.74	28.54	10.67	27.80	
59+37			12.1	16.4	
+50			12.9	15.6	
+75			11.4	17.1	
60			11.2	17.3	
61			11.8	16.7	
T.P.	3.05	1320.90	11.59	16.95	
62			4.4	15.6	
⊙ +33 ⁸			6.2	13.8	
+70			10.0	10.0	
B.M.			7.64	1312.36	
T.P.	0.71	1307.90	12.81	1307.19	
63			6.7	1301.2	
T.P.	0.38	96.11	12.17	1295.73	
+32			6.8	1289.3	
64			8.6	87.5	

1448
1289
159

1008
1312
136

4.9		8.5	12.8	
33			33	
7.6		11.2	13.7	
33			33	
7.1		10.3	11.0	10.8
33			18	33
9.1		11.0	7.2	8.0
33			18	33

On Transit Hub. 51+79.4

From Sta 52 to 59+37
Covered by Topog. sheets.

L L
L L
L L
L
L

10.9 10.6
50 11 10.0 L

Sp in 12" Pop Rt 62+70

L

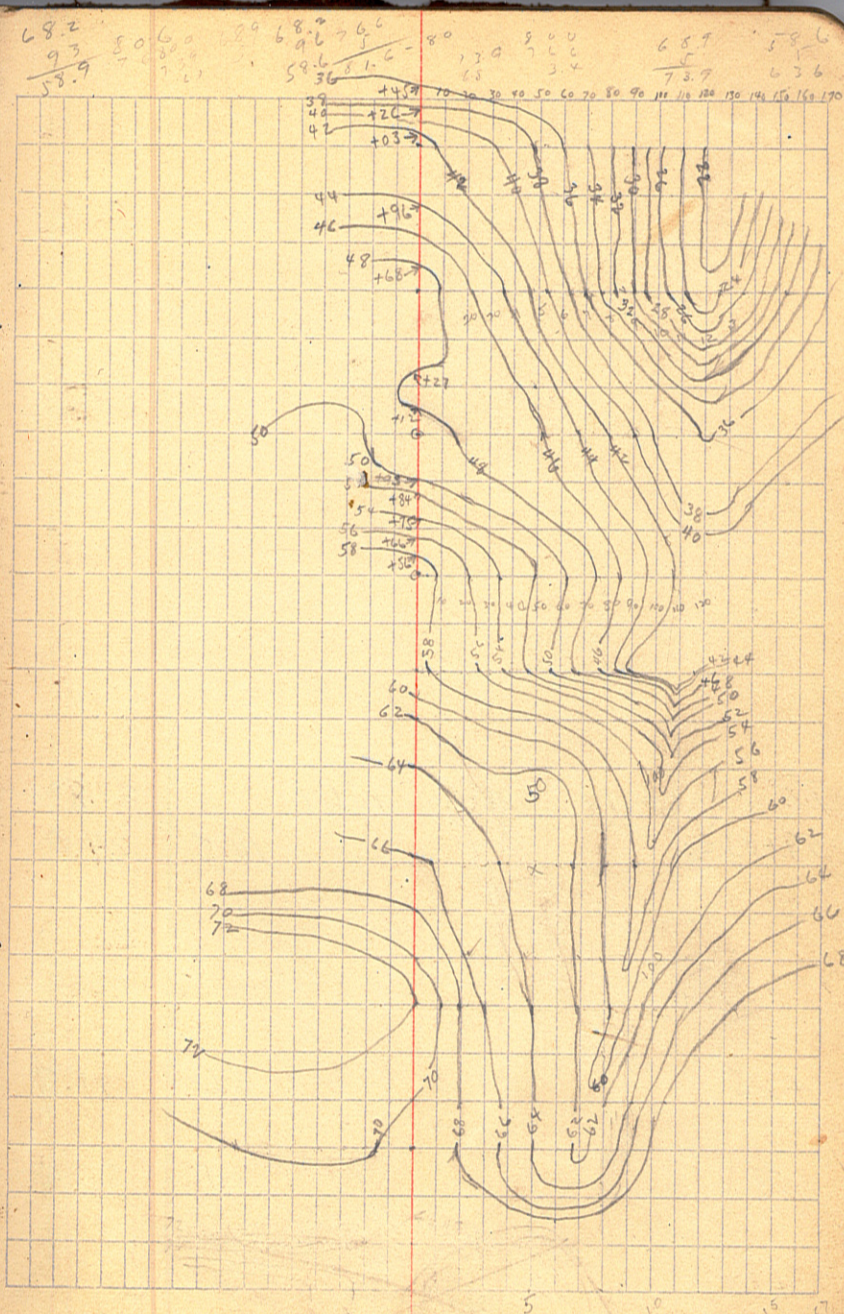
57			8.3	42.6
T.P.	1.33	50.91	10.15	49.58
+57			10.6	49.1
56			10.8	48.9
T.P.	0.55	59.73	9.37	59.18
+50.8A			9.3	59.0
55			9.2	58.7
+38				
+15				
T.P.	0.83	68.25	12.07	67.42 ✓
54			12.7	66.8 ✓
+90				
+81				
+66.3A			7.7	71.8 ✓
+40				
53			10.6	68.9 ✓
+33			3.9	75.6 ✓
52		79.49 ✓		76.6

79.5
12.7
66.8

79.5
10.6
68.9

79.5
10.6
68.9

79.5
10.6
68.9





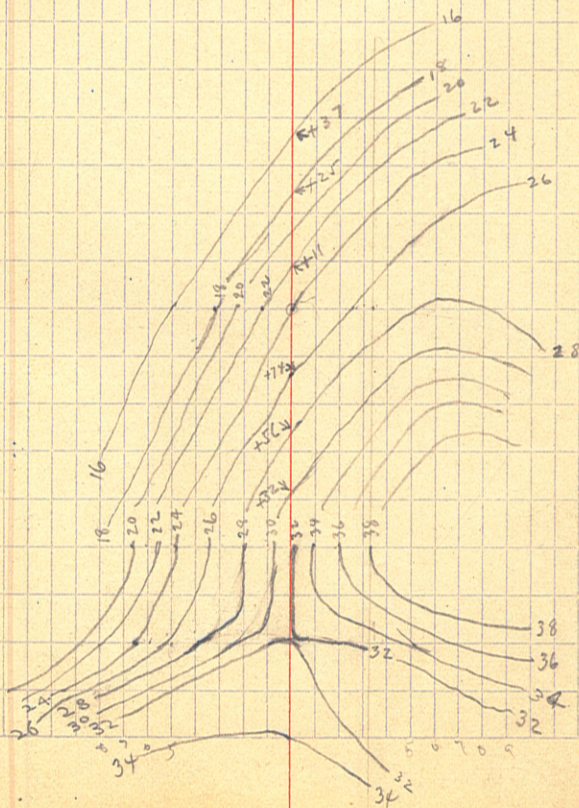
T.P.	0.74	28.54	10.67	27.80
59+03 ³ Δ			14.5	24.0

+25			6.6	31.9
-----	--	--	-----	------

58			6.1	32.4
----	--	--	-----	------

+83

3847

$$\begin{array}{r} 35.4 \\ 14.5 \\ \hline 23.9 \end{array}$$
$$\begin{array}{r} 38.37 \\ 10.67 \\ \hline 27.70 \end{array}$$


65		96.61 ✓		9.5	86.6
T.P.	9.04	96.82 ✓	8.33		1287.78
66				10.4	86.4
67				10.2	86.6
+70				9.0	87.8
68				13.8	93.8 ✓
B.M.	12.43	1307.57	1.68		1295.14
T.P.	11.17	18.17 ✓	0.57		07.00 ✓
+75		7.92 10.15		8.7	09.5
69				6.4	11.8
+65				8.0	10.2
70				6.6	11.6
71			10.0	1.9	16.3
+45				3.0	15.2
+80				5.4	12.8
72				8.5	09.7
T.P.	8.34	18.59	7.92		1310.25 ✓
+40		1.16 17.37		14.0	04.6
73				6.4	12.2
74				2.9	15.7
+40				3.7	14.9
+75				0.6	18.0 ✓
T.P.	4.04	21.51 ✓	1.12		1741 ✓
75				3.9	17.6 ✓

Continued on Bottom of

8-5-19

553
11.9
1.3

		L.		
	7.2 3.3		13.8	17.9 3.3
Sp. in N.P. Root Rt. 68 + 10				
68.75	→	1.7 3.3	8.7	15.7 3.3
	→	0.2 3.3	6.4	14.4 3.3
	→	1.5 3.3	8.0	17.5 3.3
	→	0.9 3.3	6.6	14.0 3.3
+E	→	8.0 3.3	1.9	4.1 6.1 3.3
+E	→	5.8 3.3	3.0	5.6 3.3
		5.1 3.3	5.4	8.2 3.3
		L.	8.5	9.9 3.3
		11.2 3.3	14.0	15.4 3.3
		L.	L.	L.
		L.	L.	L.
		L.	0.6	3.3 3.3
		L.	3.9	7.2 3.3

next page.

Continued on top of next page

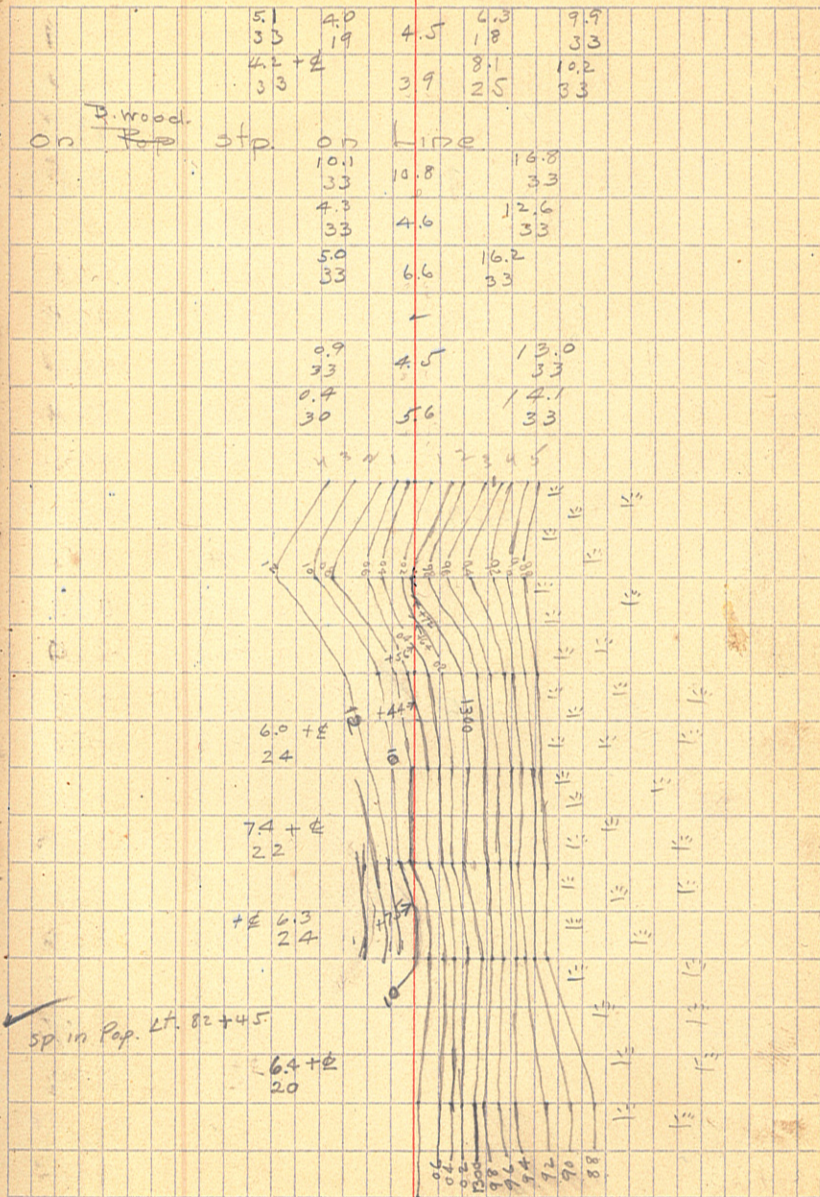
87			4.5	03.9
+50			3.9	04.5
T.P.	0.25	08.43	10.49	08.18 ✓
86			10.8	07.9
Δ +36°			4.6	14.4
85			6.6	12.4
T.P.	7.43	18.67 ✓	0.92	11.24 ✓
+60			4.5	07.7
+30			5.6	06.6
84			8.9	03.3
+70			12.4	99.8
+50			6.9	05.3
+30			4.4	07.8
83			4.4	07.8
+50			1.7	10.5
B.M.	1.57	12.96 ✓	0.86	1310.59
82			2.7	08.8
Δ +78.7		11.45	3.2	08.3

11.35
10.49

12.06
00.92
11.14

18.57
10.49
08.03

4.5
1.5
3.0



	13.4 8.3 0.5!	08.43 ✓	87.7 3.9 83.8	
+30			3.8	04.6
+75			-7.2	01.2
88			11.1	97.3
T.P.	4.65	1301.79 ✓	11.29	1297.14 ✓
+45		2.46 1297.23	9.4	92.4
89			9.0	92.8
+20			8.4	93.4
+45			8.7	93.1
90			3.9	97.9
Δ +44.6			2.7	99.1
T.P.	6.53	1305.86 ✓	2.46	1299.33 ✓
91			7.9	98.0
Δ +47.9			5.9	00.0
92			2.2	03.7
T.P.	9.13	14.44 ✓	0.55	1305.31 ✓
Δ +25.8			7.1	07.3
Δ 93			4.3	10.4
+60			8.7	05.7
B.M.	6.39	13.49 ✓	7.34	1307.10 ✓
+85			17.2	96.3
94				87.8
+40				83.9
95				85.8
+35				86.8
+60				94.2
96			8.3	05.2

	9.4 3.3 6.8 8.3 3.3	9.4 2.5 3.3 9.1 11.1	3.8 7.2 11.1	2.0 1.8 15.1 18.3 3.3	10.3 3.3 3.3		9.4 7.1 0.2 0.7 0.7
On Transit Hub @ +01.5	6.9 3.3	6.2 2.7	9.4	13.4 2.3	L.		
	12.1 3.3	8.5 1.5	9.0	12.8 2.0	13.8 3.3		
	12.1 3.3	9.2 1.8	8.4	8.4 6	12.6 2.7	14.4 3.3	
	14.2 3.3	10.2 1.4	8.7	8.2 7	12.7 3.3		
	5.4 3.3	4.7 2.8	3.9	6.6 1.9	9.9 3.3		
	2.4 3.3	1.4 8	2.7	10.1 3.3			
On Transit Hub +44.6	4.1 3.3	7.9	9.0 9	10.8 3.3		X-section system changed 7.5	
	+5.1 3.3	+4.8 2.0		-2.4 2.4	-4.3 3.3		
	+4.4 3.3	+3.8 1.6		-8.0 3.3			
	+5.0 3.3	+3.0 2.1		-5.3 2.4	-8.3 3.3		
	+3.3 3.3	+3.3 2.1		-10.3 3.3			
		L.		-5.2 3.3			
		L.		-3.5 2.4	-8.5 3.3		
		L.				1.2' water.	
		L.					
		L.					
		L.					
	+8.6 3.3			-5.9 2.6			
	L.	+2.2 1.4		-4.7 3.3			

		0.59 ✓		
+30			7.9	93.7 ✓
T.P.	12.10	1313.61 ✓	0.08	1301.51 ✓
117			2.6	11.0
T.P.	9.77	23.16 ✓	0.22	1313.39 ✓
+50		12.50 10.56	6.3	16.9
118			6.3	16.9
+70			2.9	20.3
119			2.3	20.9
+18.8 Δ			4.9	18.3
B.M.	from 118 on 1.25			1321.91 ✓
+80			7.3	15.9
120			6.1	17.1
121			4.0	19.2
+20			3.0	20.2
T.P.	0.62	1311.28 ✓	12.50	1310.66 ✓
122		1299.57	6.2	05.1
T.P.	7.07	1306.74 ✓	11.61	1299.67 ✓
+80			19.4	87.3
123			19.4	87.3
124			19.8	86.9
125			19.6	87.1
+30			18.3	88.4
126			9.2	97.5
+45			7.7	99.0
127			3.2	03.5

↑
Change of
Alignment

			9.9 33	7.9
				6.5 33
				3.9 33
				3.7 42
				4.3 33
				4.0 33
				1.0 33
				0.9 33
				7.3
				6.1
				4.0
				3.0
				7.0 33
				8.7 33
				11.6 33
				9.2
				7.7
				3.2
				7.0 33
				5.2 33
				+6.6 33

Sp. in Root 8" Oak Lt. 119+60.

Edge swamp

Edge swamp

137		1344.62 ✓		4.8	39.8
T.P.	12.98	1357.42 ✓	0.18		1344.44 ✓
+60				1.5	55.9
T.P.	9.09	1366.37 ✓	0.14		1357.28 ✓
138		65.56		7.0	59.4
+50				3.7	62.9
B.M.			5.81		1360.86 ✓
139				10.7	55.7
+40				16.6	49.8
140				18.2	48.2
+30				17.0	49.4
141				4.5	61.9
T.P.	12.47	1378.43 ✓	0.71		1365.66 ✓
+50		76.80		8.9	69.2
142				9.9	68.2
+25				9.4	68.7
+80				3.7	74.4
143				4.8	73.3
144				12.7	65.4
+80				3.8	74.3
145				3.5	74.6
+15				4.1	74.0
146				12.6	65.5
+35				4.4	73.7
T.P.	12.21	1389.41 ✓	1.23		1376.90 ✓

57 115
23 57 58

Sunday - Raining
CJW-OR-SJ 89
57 32

		1.2 33	4.8	7.4 33
		L.	1.5	3.7 33
		-2.2 33	7.0	L.
		7.5 33	3.7	L.
	Sp. in 4" pop. 25' L. 138 + 50			
		8.5 33	10.7	12.3 16 L.
		11.9 33	16.6	L.
		14.0 33	18.2	L. 18" cal. mgd.
		15.6 33	17.0	L.
			L.	
			L.	
		11.7 33	9.9	+2.0 33
		13.1 33	9.4	+5.8 33
		9.5 33	3.7	2.7 33
		9.2 33	4.8	3.8 33
		10.0 33	12.7	+2.3 33
		+3.2 33	3.8	7.9 33
		+3.2 33		-4.1 33
			L.	
			L.	
			L.	

Xsection of Revised Line -
Sta 41+55 to 60+

B.M.	115	1410.52		1409.37
T.P.	0.43	1401.77	9.18	1401.34
41+55			0.4	014.
2			4.1	97.7
+60			6.9	94.9
3			11.5	90.3
+20			14.1	87.7
+50			14.9	86.9
+75			15.1	86.7
4			17.2	88.5
+10			13.0	88.8
+40			9.8	92.0
5			13.0	88.8
T.P. (rev)	0.98	1390.13	12.02	1389.15
+60			4.8	85.3
+85			5.9	84.2
6			8.1	82.0
T.P.	0.49	1378.14	12.48	1377.65
+60			6.1	72.0
+80			5.2	72.9
7			5.7	72.4
+60			6.4	71.7
8			7.6	70.5
B.M.			12.62	1365.52
+30			9.8	68.3

Sat. Nov. 1, 1919
P.T. - C.B. - ARR. - F.M.

Sta	36+46	- Rt. of Hub		Sp. in 4° WP	
	2.5	2.0	0.0	(24+)	
	5.0	3.3	0.4	1.6	3.3
4.1	4.3	4.1		3.0	1.5
5.0	3.3	2.6	4.1	1.8	3.7
2.3	5.7	6.7		6.1	
4.0	2.3	1.2	6.9	3.7	
4.7	5.7	9.0		12.0	
4.0	3.2	1.8	11.5	3.7	
	7.0	10.8		14.9	14.2
	3.3	2.2	14.1	2.2	3.3
	11.4	14.7		14.5	
	3.3	1.0	14.9	3.7	
		1.6		1.5	
	14.8	3.3	15.1	5.7	
	3.3	13.2		13.4	
	14.5	1.5	13.2	3.3	
	3.3	13.1		12.3	11.4
		2.2	13.0	2.2	3.3
	13.0	10.6			
	3.3	1.4	9.8	L	
		12.0		15.6	16.5
	L	2.1	13.0	2.4	3.3
		2.0			
		3.3	4.8	L	
		2.5		7.9	
		3.3	5.9	3.3	
	3.6	6.0		9.4	
	3.3	1.9	9.1	3.3	
	(11.5+)	(8.7+)		10.3	11.7
	5.0	3.3	6.1	1.8	3.3
	(12.5+)	(9.7+)		12.1	13.1
	5.0	3.3	5.2	2.3	3.3
	(13.2+)	(9.1+)		12.7	13.8
	5.0	3.3	5.7	2.5	3.4
	(7.0+)	3.6		13.9	
	5.0	3.3	6.4	3.3	
1.4	4.7	6.5		8.0	14.2
5.0	3.3	2.4	7.6	1.1	3.3
AP.M	8°	M.P.	Rt. 48		
	4.0	5.9	9.1	10.3	13.0
	5.0	3.3	1.6	9.8	17
					33
					14.0
					5.0

1333.21

57

16.1

17.1

~~58~~

58

11.7

21.5

+25

11.0

22.2

T.P.

3.41

1323.71

12.91

1320.30

9

4.3

19.4

+30

4.8

18.9

60

9.2

14.5

+45

4.1

19.6

1

5.3

18.4

2

12.3

11.4

T.P.

9.59

1322.34

10.96

1312.75

3

7.8

14.5

+60

4.8

17.5

4

7.7

14.6

+30

9.6

12.7

+80

5.3

17.0

65

4.9

17.4

60

old line for check

5.3

17.0

17.3 old elev.

← new elev.

check OK

21.1

33

16.1

6.6

5.0

22.1

33

11.7

8.8

2.2

9.2

3.3

7.0

5.0

20.0

33

11.0

4.0

5.0

15.3

33

4.3

(10+)

5.0

15.3

33

4.8

(11+)

5.0

15.3

33

9.2

(17.7+)

5.0

26.7

14.1

14.1

(14+)

4.6

3.0

2.0

4.1

5.0

26.7

4.1

5.3

0.3

(10.2+)

(18+)

29.5

22.3

12.3

1.5

2.8

5.0

5.2

3.2

12.3

(22.2+)

5.0

9.5

16.3

16.3

7.9

4.5

0.5

(9.3+)

1.00

5.8

5.0

7.9

1.4

4.5

5.0

6.5

11.7

11.7

4.8

(10.3+)

9.0

4.4

3.5

4.8

5.0

7.0

10.7

10.7

7.7

(10+)

9.0

3.0

2.0

7.7

5.0

6.0

9.6

9.6

9.6

5.0

7.5

3.0

9.6

1.0

5.0

4.5

5.3

4

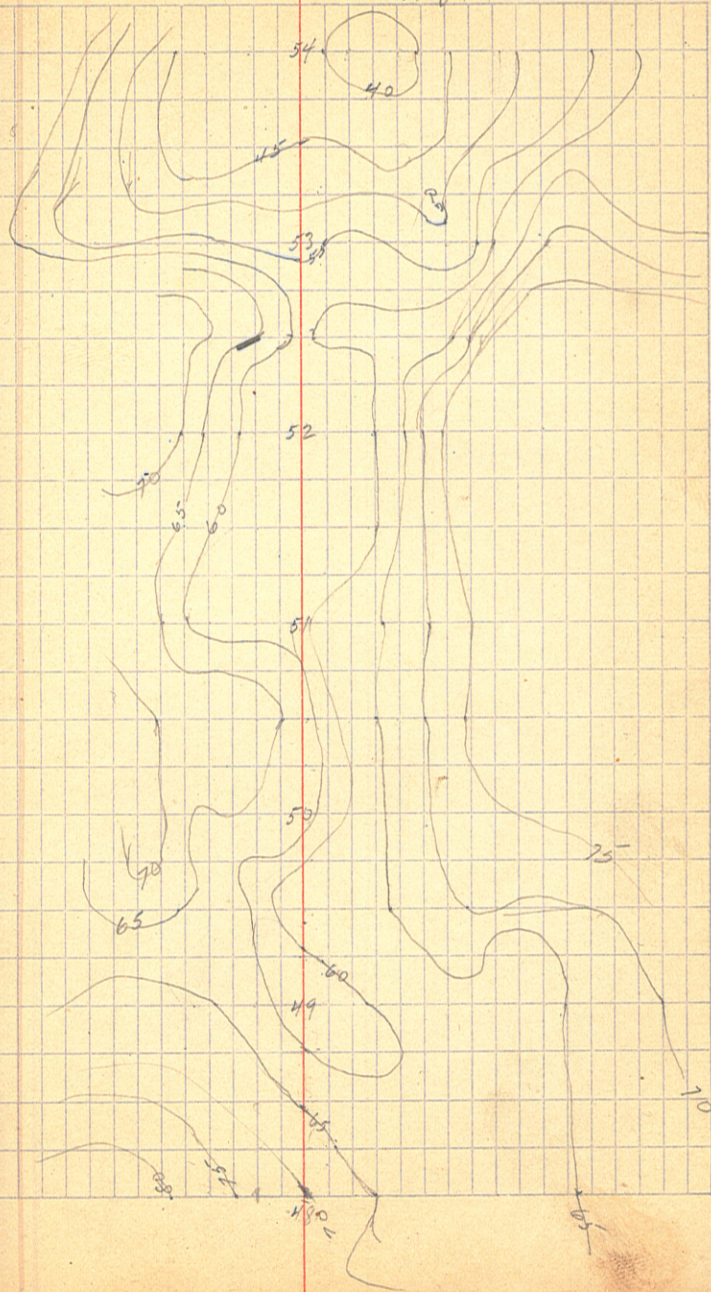
4.9

4

Nov. 1 1919.

R. J. J.

	41.0
+70	42.8
	54.6
+20	57
+50	58
	58.0
+50	57.4
	59.9
+60	64.3
+30	60.0
	59.0
+50	62.6
+15	57.6
	57.2
+30	68.3
	70.5



+30 19

+25 22

+50 41

+30 40

+25 43

+50 40

14

19

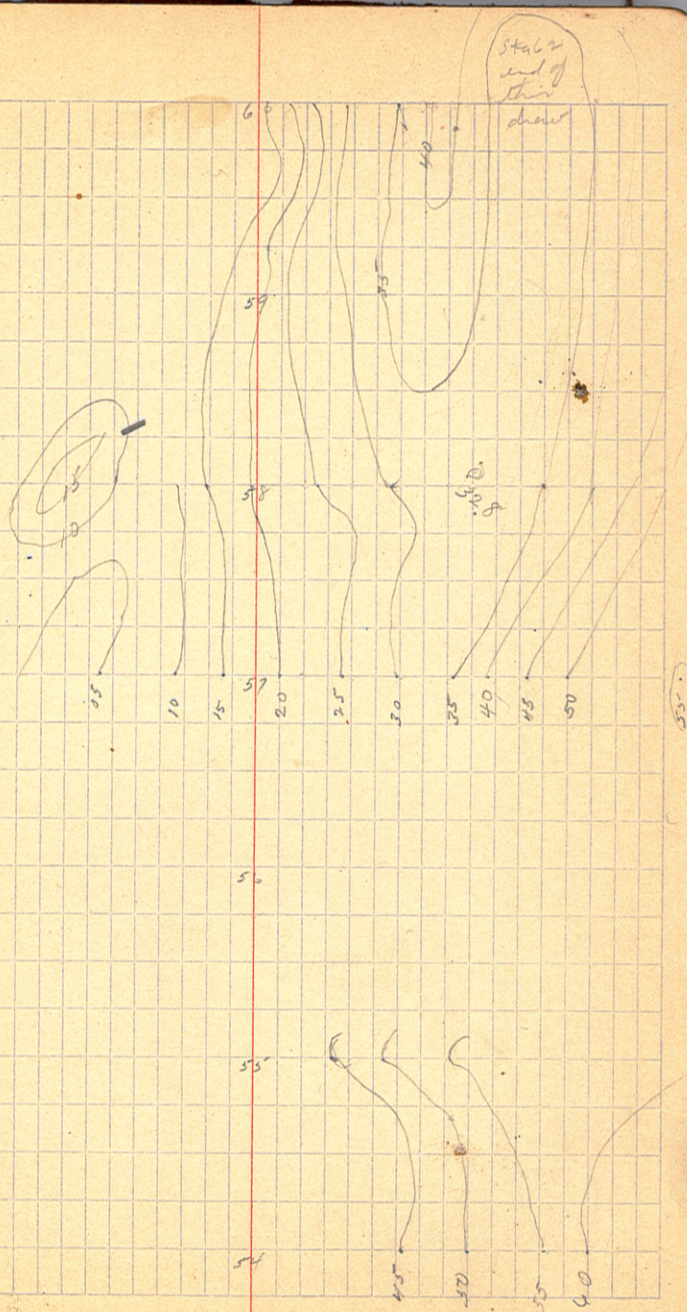
21

17

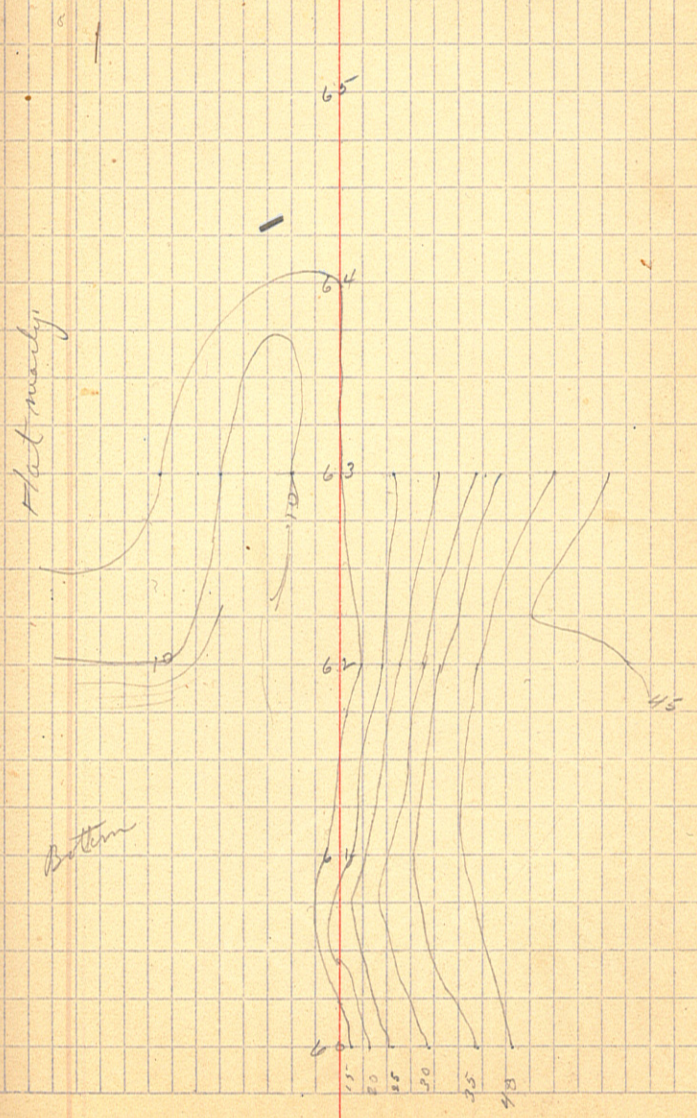
32

42

41



17
 +80 17
 +30 13
 15
 +60 17
 15
 11
 18
 +45 20
 145



Board sheet -

An. Moulster.
 C.J. White
 G. Weetman.
 F.E. Marsh.
 O. Rush.
 S. Johnson
 W. Starkweather.
 Daily Totals
 Grand Total.

Walker-Remer Location
 August 1919.
 Chase Hotel.

4 5 6 7 8 9 10 11

1
 1 3 3 3 3 3 2
 1 3 3 3 3 3 2
 1 3 3 3 3 3 2
 1 3 3 3 3 3 2
 1 3 3 3 3 3 2
 0 3 3 3 3 3 0
 6 18 18 18 18 18 18 10

124 Meals

Party Time sheet

C.J. White
 G. Weetman
 F.E. Marsh
 O. Rush.
 S. Johnson
 W. Starkweather

Walker-Remer Location

1 1 1 1 1 1 1 1 = 8 days
 1 1 1 1 1 1 1 1 = 8 days
 1 1 1 1 1 1 1 1 = 8 days
 1 1 1 1 1 1 1 1 = 8 days
 1 1 1 1 1 1 1 1 = 8 days
 1 1 1 1 1 1 1 1 = 7 days

- C.J. White
 Asst. Engr.

Natural Tangents

Sta.	0'	10'	20'	30'	40'	50'	100'	Sta.	0'	10'	20'	30'	40'	50'	100'
0	0.0000	0.0229	0.0588	0.0877	0.1160	0.1445	0.1730	89	4.0	8.391	8.441	8.491	8.541	8.591	8.642
1	0.175	0.204	0.233	0.262	0.291	0.320	0.349	90	4.1	8.693	8.744	8.796	8.847	8.899	8.952
2	0.349	0.378	0.407	0.437	0.466	0.495	0.524	91	4.2	9.004	9.057	9.110	9.163	9.217	9.271
3	0.524	0.553	0.582	0.612	0.641	0.670	0.700	92	4.3	9.325	9.380	9.435	9.490	9.545	9.601
4	0.699	0.729	0.758	0.787	0.816	0.846	0.875	93	4.4	9.657	9.713	9.770	9.827	9.884	9.942
5	0.875	0.904	0.934	0.963	0.992	1.022	1.051	94	4.5	1.0000	1.0058	1.0117	1.0176	1.0235	1.0295
6	1.051	1.080	1.110	1.139	1.169	1.198	1.228	95	4.6	1.0355	1.0410	1.0477	1.0533	1.0599	1.0661
7	1.228	1.257	1.287	1.317	1.346	1.376	1.405	96	4.7	1.0724	1.0786	1.0850	1.0913	1.0977	1.1041
8	1.405	1.435	1.465	1.495	1.524	1.554	1.584	97	4.8	1.1106	1.1171	1.1237	1.1303	1.1369	1.1436
9	1.584	1.614	1.644	1.673	1.703	1.733	1.763	98	4.9	1.1504	1.1571	1.1640	1.1708	1.1778	1.1847
10	1.763	1.793	1.823	1.853	1.883	1.914	1.944	99	5.0	1.1918	1.1988	1.2059	1.2131	1.2203	1.2276
11	1.944	1.974	2.004	2.035	2.065	2.095	2.126	100	5.1	1.2349	1.2423	1.2497	1.2572	1.2647	1.2723
12	2.126	2.156	2.186	2.217	2.247	2.278	2.309	101	5.2	1.2799	1.2876	1.2954	1.3032	1.3111	1.3190
13	2.309	2.339	2.370	2.401	2.432	2.462	2.493	102	5.3	1.3270	1.3351	1.3435	1.3514	1.3597	1.3680
14	2.493	2.524	2.555	2.586	2.617	2.648	2.679	103	5.4	1.3764	1.3848	1.3934	1.4019	1.4106	1.4193
15	2.679	2.711	2.742	2.773	2.805	2.836	2.867	104	5.5	1.4281	1.4370	1.4460	1.4550	1.4641	1.4733
16	2.867	2.899	2.931	2.962	2.994	3.026	3.057	105	5.6	1.4826	1.4919	1.5013	1.5108	1.5204	1.5301
17	3.057	3.089	3.121	3.153	3.185	3.217	3.249	106	5.7	1.5399	1.5497	1.5597	1.5697	1.5798	1.5900
18	3.249	3.281	3.314	3.346	3.378	3.411	3.443	107	5.8	1.6003	1.6107	1.6212	1.6319	1.6426	1.6534
19	3.443	3.476	3.508	3.541	3.574	3.607	3.640	108	5.9	1.6643	1.6753	1.6864	1.6977	1.7090	1.7205
20	3.640	3.673	3.706	3.739	3.772	3.805	3.838	109	6.0	1.7321	1.7437	1.7556	1.7675	1.7797	1.7917
21	3.838	3.872	3.906	3.939	3.973	4.006	4.039	110	6.1	1.8049	1.8165	1.8291	1.8418	1.8546	1.8676
22	4.039	4.074	4.108	4.142	4.176	4.210	4.244	111	6.2	1.8807	1.8940	1.9074	1.9210	1.9347	1.9486
23	4.244	4.279	4.314	4.348	4.383	4.417	4.451	112	6.3	1.9626	1.9768	1.9912	2.0057	2.0204	2.0353
24	4.451	4.487	4.522	4.557	4.592	4.628	4.663	113	6.4	2.0503	2.0655	2.0809	2.0965	2.1123	2.1283
25	4.663	4.699	4.734	4.770	4.806	4.841	4.877	114	6.5	2.1445	2.1609	2.1775	2.1943	2.2113	2.2286
26	4.877	4.913	4.950	4.986	5.022	5.059	5.095	115	6.6	2.2460	2.2637	2.2817	2.2998	2.3183	2.3369
27	5.095	5.132	5.169	5.206	5.243	5.280	5.317	116	6.7	2.3559	2.3750	2.3945	2.4142	2.4342	2.4545
28	5.317	5.354	5.392	5.430	5.467	5.505	5.543	117	6.8	2.4751	2.4960	2.5172	2.5386	2.5605	2.5826
29	5.543	5.581	5.619	5.658	5.696	5.735	5.774	118	6.9	2.6051	2.6279	2.6511	2.6746	2.6985	2.7228
30	5.774	5.812	5.851	5.890	5.930	5.969	6.009	119	7.0	2.7475	2.7725	2.7980	2.8239	2.8502	2.8770
31	6.009	6.048	6.088	6.128	6.168	6.208	6.248	120	7.1	2.9042	2.9319	2.9600	2.9887	3.0178	3.0475
32	6.248	6.289	6.330	6.371	6.412	6.453	6.494	121	7.2	3.0777	3.1084	3.1397	3.1716	3.2041	3.2371
33	6.494	6.536	6.577	6.619	6.661	6.703	6.745	122	7.3	3.2709	3.3052	3.3402	3.3759	3.4124	3.4494
34	6.745	6.787	6.830	6.873	6.916	6.959	7.002	123	7.4	3.4874	3.5261	3.5656	3.6059	3.6470	3.689
35	7.002	7.046	7.089	7.133	7.177	7.221	7.265	124	7.5	3.7321	3.7760	3.8208	3.8657	3.9136	3.961
36	7.265	7.310	7.355	7.400	7.445	7.490	7.535	125	7.6	4.0108	4.0611	4.1126	4.1653	4.2193	4.274
37	7.535	7.581	7.627	7.673	7.720	7.766	7.813	126	7.7	4.3315	4.3897	4.4494	4.5107	4.5736	4.638
38	7.813	7.860	7.907	7.954	8.002	8.050	8.098	127	7.8	4.7046	4.7729	4.8430	4.9152	4.9894	5.065
39	8.098	8.146	8.195	8.243	8.292	8.342	8.391	128	7.9	5.1446	5.2257	5.3093	5.3955	5.4845	5.5764

Sta.	0'	10'	20'	30'	40'	50'	100'
80	5.6713	5.7694	5.8708	5.9758	6.0844	6.1970	6.3138
81	6.3138	6.4348	6.5606	6.6912	6.8269	6.9682	7.1154
82	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	8.1443
83	8.1443	8.3450	8.5555	8.7769	9.0098	9.2553	9.5144
84	9.5144	9.7882	10.078	10.385	10.7111	11.059	11.430
85	11.430	11.826	12.250	12.706	13.197	13.7274	14.300
86	14.300	14.924	15.605	16.350	17.169	18.075	19.081
87	19.081	20.206	21.470	22.903	24.542	26.432	28.636
88	28.636	31.242	34.368	38.189	42.964	49.104	57.290
89	57.290	68.750	85.940	114.588	171.885	343.77	

Natural Cotangents

12.4
1.60
74.40

18
6
108
76

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1 1/2 TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36											