

No 7

FIELD BOOK

1880



# KEUFFEL & ESSER CO.

DRAWING MATERIALS  
AND  
SURVEYING INSTRUMENTS.  
NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

## TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.  
ROADWAY 18 FEET WIDE SIDE SLOPES 1 TO 1.  
FOR SINGLE TRACK EXCAVATION.

"Copyright, 1895, by Keuffel & Esser Co."

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

Calculated by Julien A. Hall, M. Am. Soc. C. E.

For Keith's Railroad Curve Tables see end of book.

Distances from triangulation sta. no. 1.

100 5' 4' 1 mud  
200 5 2 7' water " "  
300 5 3 12' " 3 mud " "  
400 5 4 9.5 " 1.5 " "  
500 5 5 4 " 0.2 " "

167 + 92  
158 + 40  
-----  
9 + 32

5280  
15840  
-----  
13600  
22



$$\begin{array}{r} 3851.8 \\ 658.5 \\ \hline 4510.3 \end{array}$$

R.

L.

29° 16'

49° 04'

14° 25'

77° 02'

30° 54'

126° 06'

22° 39'

31° 02'

124° 136'

$$\begin{array}{r} 60 \overline{) 136} \quad | 2 \\ \underline{120} \\ 16 \end{array}$$

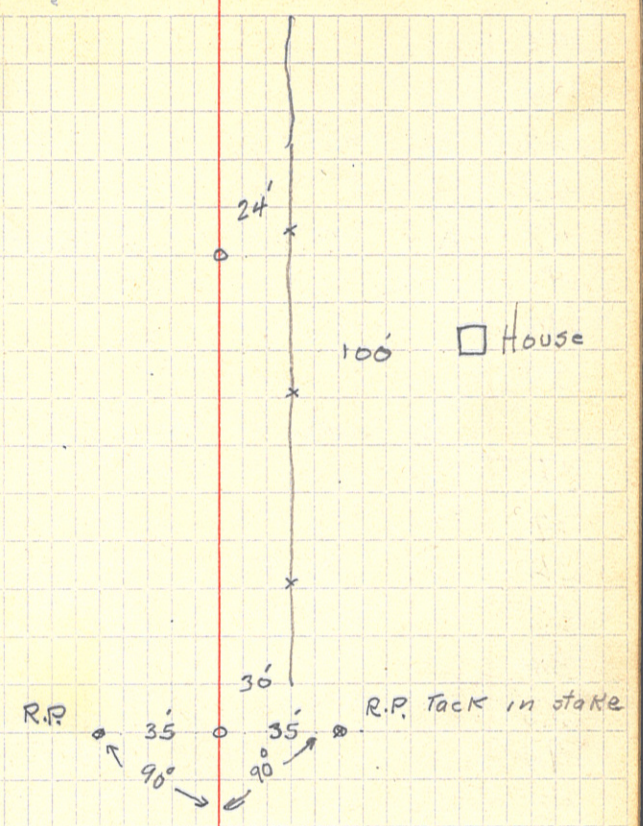
126° 16'



23  
 22  
 21  
 20  
 19  
 18  
 17  
 16  
 15  
 14  
 13  
 12  
 11  
 10  
 +87<sup>8</sup>  
 9  
 8  
 7  
 6  
 5  
 4  
 3  
 2  
 1  
 00

⊙ P.O.T.

⊙ P.O.T.



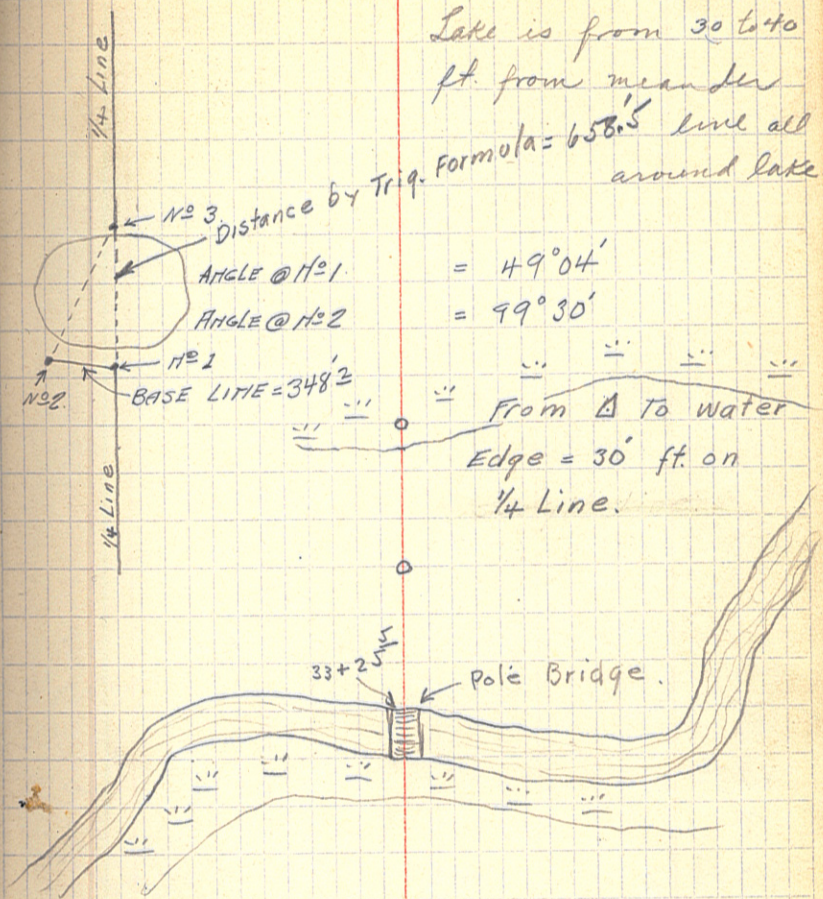
wooden stake.  $\otimes \frac{1}{4}$  sec. Cor.  $5 \frac{1}{4}$  sec. 34-140-30



45  
 44  
 +748  
 Meander 43  
 42  
 41  
 40  
 39  
 +518  
 38  
 37  
 36  
 35  
 34  
 33  
 +94  
 32  
 31  
 30  
 29  
 28  
 27  
 26  
 25  
 24

$\Delta$   $14^{\circ}25'R.$   
 $\Delta$   $27^{\circ}16'R.$  Triangulation Sta 2.  
 $\Delta$   $49^{\circ}04'L.$  (Triangulation sta. No. 1.)

$\odot$  P.O.T.



Lake is from 30 to 40 ft. from meander  
 Formula =  $658.5$  level all around lake.

BOY RIVER  
 ON CSAH #45



+16- C 40.T

44

45+12

Line:

+436 Δ

51

+319 Δ

22°39'R.

Meander

50

49

48

+851 Δ

30°54'R.

47

46



62  
61  
60  
59  
58  
57  
56  
55  
54

+11<sup>1</sup> ○ 1/4 Cor. N. 1/4 Sec. 34.

53  
52  
51  
50

+98<sup>2</sup> ○ P.O.T. Intx. with meander

+15<sup>3</sup> ○ P.O.T.  
48

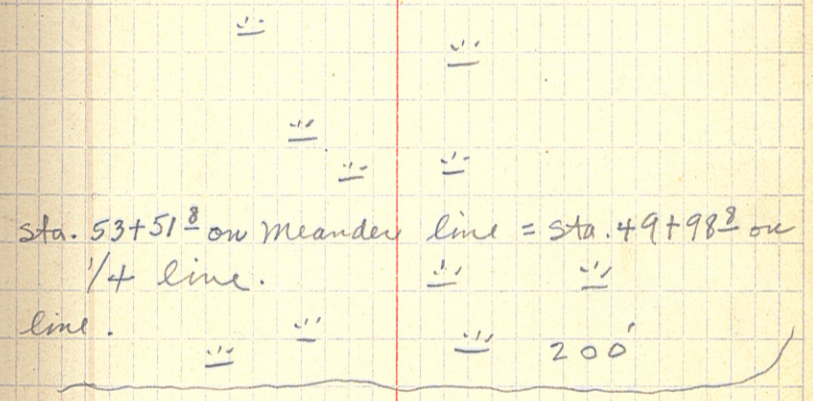
47  
+76<sup>2</sup> ○ P.O.T.

46  
+5+10<sup>3</sup> ○ P.O.T. Δ sta. N<sup>o</sup> 3.

+153+51<sup>2</sup> ○ P.O.T. Intx with 1/4 line.  
51+43<sup>2</sup> Δ 31°02' R.  
Meander Line.

90 c. C.G.W.  
C.M.H. al. Wynn

8/20/15 5



+5+10<sup>3</sup> to 49 = ridge of 60' □ house high land.

Water edge N. side Lake.



86  
85  
84  
83  
82  
81  
80  
79  
78  
77  
76  
75  
74  
73  
72  
71  
70  
69  
68  
67  
+17<sup>2</sup>  
66  
65  
64  
63

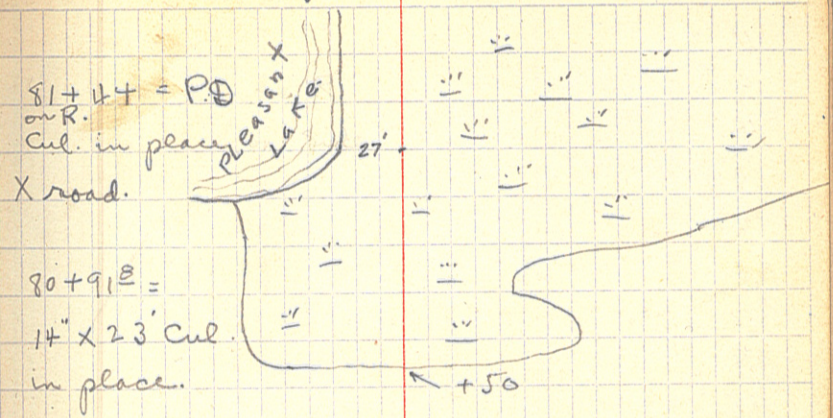
Δ 11° 02' R.

⊙ P.O.T.

R. P.S. stump. 48<sup>3</sup> R.  
3" Oak tree 42<sup>2</sup> R.

G J W C414.  
J B C A. Wynn

8/20/15 6





106

105

104

103

102

101

100

99

98

97

96

95

94

93

+76<sup>8</sup>

92

92+21<sup>2</sup>

Δ

Cul. in place 22' x 16"

10° 59' R.

91

90

+47<sup>2</sup>

P.T.

89

+11<sup>5</sup>

P.I.

Δ = 22° 00' L.

88

87

+72<sup>2</sup>

P.C.

8° Curve L.



85+05 = 14' x 23' cul  
in place.



+96<sup>±</sup> → ○ P.O.T.  
130  
129  
128  
127  
126  
125  
124  
123  
122  
121  
120  
119  
118  
117  
116  
115  
114  
113  
112  
111  
110  
109  
108  
+57<sup>±</sup> → ○ P.O.T.  
107

cpw. JBC  
C.H. A. Wynne

8/20/15 8

127 + 42 = cut in place.  
16' x 8"  
← 127 + 85

← 124 + 90

118 + 68 = cut in place.  
22' x 14"  
← 119 + 45  
← 117 + 35



CJW JBC  
cont. A. Wynn

8/20/15 9

155

154

153

152

151

150

149

148

147

146

145

144

143

142

141

140

139 +bi# ① P.O.T.

138

137

136

135

134

133

132

131

2



C. J. W. Carr  
SBC A. Wynn. 8/20/15

10

+88±    ○    N. 1/4 Cor. sec. 22-140-30  
158  
157  
156

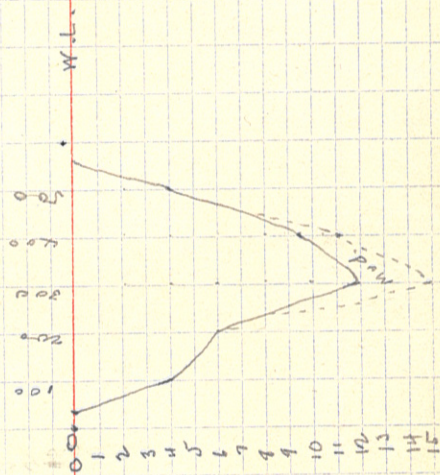


## SOUNDING'S. - KRAKE

Distance.		water.	Mud.	Bottom.	Total.
100'	S <sub>1</sub>	4'	1'	sand.	5'
200'	S <sub>2</sub>	7'	0	"	7'
300'	S <sub>3</sub>	12'	3'	"	15'
400'	S <sub>4</sub>	9.5'	1.5'	"	11'
500'	S <sub>5</sub>	4'	0	"	4'

## LAKE.

Approx. Distances From sta.  
38 + S1<sup>E</sup> Triangulation sta. #1.









9-3-15

		1205.35			
+50			3.2		02.2
11			2.6		02.8
12			2.1		03.3
T.P.	4.65	07.85	2.15	03.20	
13			4.8		03.1
14			5.7		02.2
15			5.1		02.8
16			4.1		03.8
17			4.9		03.0
+479			4.8		03.1
B.M.					1203.88
18			4.8		03.1
19			4.8		03.1
20			4.6		03.3
21			3.8		04.1
22			3.7		04.2
23			3.4		04.5
T.P.	5.25	09.80	3.30	04.55	
24			5.2		04.6
25			5.7		04.1
26			6.3		03.5
27			6.5		03.3
28			5.4		04.4
29			5.1		04.7
30			4.4		05.4

cred. 9/6/15 ~~9/6/15~~

Sec. Cor.  
On Tel. Pole 25'L.



9-3-15

		1209.80		
31			4.3	05.5
32			4.3	05.5
33			3.7	06.1
34			3.9	05.9
35			5.2	04.6
T.P.	6.48	10.87	5.41	04.39
36			6.2	04.7
37			6.3	04.6
38			6.0	04.9
39			5.3	05.6
40			5.5	05.4
41			5.3	05.6
42			5.1	05.8
43			5.3	05.6
44			5.0	05.9
45			4.7	06.2
46			4.6	06.3
47			4.4	06.5
T.P.	5.36	12.06	4.17	06.70
48			5.5	06.6
49			5.8	06.3
50			5.5	06.6
51			5.2	06.9
+10			5.2	06.9
+50			5.0	06.1

OKD. 9/6/15 G. J. ~~Whit~~

$\frac{28}{49}$   $\frac{18}{7.3}$   $\frac{13}{7.3}$   $\frac{10}{5.9}$   $\frac{11}{6.0}$   $\frac{17}{7.5}$



1212.06

+ 80		5.7	06.4
52		5.0	06.1
+ 90		3.9	08.2
		8.2	03.9
- 20			
53		4.7	07.4
54		4.7	07.4
55		4.1	07.7
56		3.6	08.5
B.M.		3.08	1208.98 ✓
57		3.3	08.8
58		3.2	08.7
T.P.	4.69	<del>13.27</del> 13.15	<del>08.60</del> 08.46
59		4.4	08.8
60		4.3	08.9
61		4.4	08.8
62		4.4	08.8
63		4.5	08.7
64		4.4	08.8
65		4.5	08.7
66		4.8	08.4
67		5.1	08.1
68		4.8	08.4
69		4.6	08.6
70		4.5	08.7

cont. 9/6/15 G.J. ~~Lin.~~

9-3-15

$\frac{19}{6.3}$	$\frac{13}{8.2}$	$\frac{12}{6.0}$	$\frac{17}{8.1}$
$\frac{25}{6.4}$	$\frac{17}{7.4}$	$\frac{10}{5.2}$	$\frac{5}{6.2}$ $\frac{12}{8.2}$

48" Invert x 287

Invert Col

$\frac{15}{7.3}$	$\frac{11}{4.3}$	$\frac{5}{3.9}$	$\frac{7}{7.0}$	$\frac{11}{7.8}$
$\frac{26}{8.2}$	$\frac{25}{7.4}$	$\frac{20}{7.2}$	$\frac{12}{5.5}$	$\frac{14}{7.7}$ $\frac{18}{5.3}$
$\frac{17}{5.6}$	$\frac{14}{6.2}$	$\frac{9}{5.0}$	$\frac{7}{5.0}$ $\frac{13}{6.3}$	$\frac{17}{4.7}$
$\frac{18}{5.0}$	$\frac{16}{6.2}$	$\frac{8}{4.5}$	$\frac{11}{5.4}$	$\frac{15}{4.8}$

On 12'S.P. 25' R. Sta 56+45



		12.315		
71			4.3	08.9
72			4.3	08.9
73			5.1	08.1
T.P.	5.94	14.58	4.51	08.64
+80			5.9	08.7
74			5.0	09.6
+45			4.7	09.9
+70			5.8	08.8
75			6.1	08.5
76			6.0	08.6
77			5.2	09.4
78			5.3	09.3
79			4.9	09.7
80			5.0	09.6
81			4.7	09.9
82			4.9	09.7
B.M.			3.74	1210.98
83			4.4	10.2
84			5.2	09.4
85			5.0	09.6
86			4.5	10.1
T.P.	5.20	16.03	3.75	10.83
87			4.8	11.2
88			5.1	10.9
89			5.5	10.5

ced 9/6/15 G. J. ~~\_\_\_\_\_~~

→ 10.84 = Correct Elevation On 10' I.P. 25' R. Sta. 82+60



216.03

90			5.5		10.5
91			5.1		10.9
92			5.0		11.0
93			5.3		10.7
94			4.8		11.2
95			4.9		11.1
96			5.0		11.0
97			4.9		11.1
98			5.2		10.8
99			5.8		10.2
100			5.7		10.3
T.P.	3.76	15.13	4.66	11.37	
101			4.1		11.0
102			3.8		11.3
+40			4.0		11.1
103			3.4		11.7
+45			4.4		10.7
+50			4.7		10.4
+80			6.6		10.5
104			6.8		10.3
+02			6.8		10.3
W.L.			13.25		11.88
H.W.			10.15		10.98
+26			6.8		10.3
+76			9.3		10.8

and 9/6/15 ~~of the~~

9-3-15

	7	5	7
	2.8	3.7	2.9
	16.5	5	7
	2.3	4.0	2.1
	9	5	
	2.5	3.4	
29	20	7	
6.1	4.3	2.7	
29.5	18	8	16
6.3	4.3	5.5	2.6
36	17	4	
7.7	5.6	5.7	5
	22	14	15
	10.5	6.7	9.5

SEVEN MILE CREEK

16	14	3	5
12.8	7.4	6.8	9.8



		1215.13		
105			9.8	05.3
+50			9.2	05.9
106			7.8	07.3
+20			6.9	08.2
+65			4.8	10.3
107			3.5	11.6
T.P.	5.98	18.08	3.03	12.10
+70			4.5	13.6
108			4.6	13.5
109			5.0	13.1
B.M.			4.38	123.84
110			5.3	12.8
111			5.8	12.3
112			5.0	13.1
113			5.0	13.1
114			4.7	13.4
115			4.1	14.0
116			3.7	14.4
T.P.	3.88	18.32	3.64	14.44
117			4.2	14.1
118			5.2	13.1
119			5.6	12.7
120			5.3	13.0
121			4.9	13.4
122			5.1	13.2

END 9/6/15 C.J. ~~Shaw~~

C.J.W.  
C.P.M. 9-3-15  
P.W.M.

$\frac{32}{13.5}$	$\frac{17}{12.1}$	$\frac{12}{10.0}$	$\frac{5}{9.8}$	$\frac{12}{11.7}$	$\frac{16}{10.2}$
			$\frac{4}{9.6}$	$\frac{11}{11.5}$	$\frac{14}{10.6}$

$\frac{29}{3.2}$	$\frac{21}{7.2}$
$\frac{28}{1.0}$	$\frac{21}{3.5}$
	$\frac{17}{4.9}$

$\frac{6}{7.0}$	$\frac{11}{4.9}$
$\frac{14.5}{4.8}$	$\frac{10}{3.0}$
$\frac{4}{3.5}$	$\frac{8}{2.1}$

On Bridge  
Begin 9-4-15

→ 1213.70 = correct Elv. On 10" J.P. 35'R 108+80



C.J.W.  
C.A.H.  
G.W.M. 9-4-15

1218.32

123			4.5	13.8
124			5.2	13.1
125			4.3	14.0
126			3.0	15.3
127			2.9	15.4
128			3.0	15.3
T.P.	5.57	21.53	2.36	15.96
129			5.4	16.1
130			5.6	15.9
131			5.5	16.0
132			4.7	16.8
+30			4.5	17.0
133			5.5	16.0
134			4.6	16.9
135			4.3	17.2
136			5.3	16.2
B.M.			4.03	1217.61
137			5.6	15.9
+35			4.7	16.8
T.P.	6.29	27.31	0.51	21.02
138			6.3	21.0
139			5.8	21.5
140			5.7	21.6
141			5.8	21.5
142			5.8	21.5

→ 1217.50 = correct elev.

↑  
↓  
1.11 ± 0.01

On 4" I.P. 35 R 135 + 50 (16.6)

$\frac{22.5}{5.7} \frac{18}{7.0} \frac{14}{6.7} \frac{11}{6.3}$

Low

C.J.W. 9/6/15 C.J. ~~whi~~



1227.31

143			5.3		22.0
144			5.0		22.3
145			3.9		23.4
146			4.0		23.3
147			3.1		23.9
148			3.3		24.0
149			2.7		24.6
150			1.7		25.6
151			1.9		25.4
152			1.8		25.5
T.P.	5.80	31.38	1.73	25.58	
153			5.0		26.4
154			5.0		26.4
155			5.0		26.4
156			4.8		26.6
157			4.6		26.8
158			4.7		26.7
159			4.8		26.6
160			5.7		25.7
161			5.4		26.0
162			4.1		27.3
163			3.9		27.5
T.P.	1242	41.07	2.73	28.65	
164			11.50		29.6
+35			10.0		31.1

1227.31  
 9/6/15 S.J. ~~1227.31~~



9-4-15

		1241.07		
165			7.9	33.2
+50			6.0	35.7
166			5.0	36.1
+50			3.3	37.8
167			1.9	39.2
B.M.			0.98	1240.23
168			1.0	40.1
169			0.5	40.6
TP	8.77	49.64	0.20	40.87
170			8.5	41.1
171			7.1	42.5
172			6.2	43.4
173			5.6	44.0
174			5.6	44.0
175			7.2	42.4
176			8.4	41.2
177			9.9	39.7
178			10.8	38.8
TP	0.43	39.42	10.65	38.99
179			1.9	37.5
180			4.2	35.2
181			6.1	33.3
182			10.2	29.2
183			12.4	27.0
184			12.6	26.8

CHK 9/6/15 C.F. ~~W.P.~~

$$\frac{20}{7.9} \quad \frac{14}{7.4} \quad \frac{16.5}{6.2} \quad \frac{8.5}{5.9} \quad \frac{2}{7.9}$$

$$\frac{18}{1.9} \quad \frac{14}{2.7} \quad \frac{9}{2.2}$$

→ 1240.09 = Correct Elev. Match 5' Paper 25'R 166+50<sup>6</sup>



		R39.42		
185			12.6	26.8
186			12.4	27.0
187			11.3	28.1
TP	11.80	40.41	10.81	28.61
188			11.0	29.4
189			7.8	32.6
T.P.	6.65	44.65	2.41	38.00
190			5.6	39.1
191			4.8	39.9
192			5.1	39.6
B.M.			4.38	1240.41
193			8.2	36.5
194			10.9	33.8
195			10.8	33.9
196			10.1	34.6
197			9.4	35.3
TP	13.11	48.47	9.29	35.36
198			12.7	35.8
199			12.8	35.7
200			10.6	37.9
201			7.9	40.6
202			3.8	44.7
203			1.0	47.5
T.P.	8.80	56.15	1.12	47.35
204			6.7	49.5

C14 9/6/15 G.J. ~~W. J.~~

⇒ 1240.27 = correct Elev. On Gate Post 40'R 192

Range



+87<sup>6</sup>

B.M

1256.15

5.6

3.51

50.6

1252.78

OK 9/6/15 C.J. ~~W. H.~~

7-4-15  
C.J.W.  
C.A.H.  
A.W.M.

End of Survey

→ 1252.64 = correct  
Elev.

On 3" Birch 35' L 204 + 87<sup>6</sup>

✓



B.M. 2.88 1211.86

1208.98

6.5 05.4

T.P. 2.95 11.21 3.60

08.26



Pillager - Motley Road. 5/26/1916.

Sta	Def.		Mag. Brq
	L	R.	
197		0° 31'	
196			
195			
194			
193			
192+0.0	⊙		
191			
190			
189			
188			
187			
186			
185			
184			
183			
182			
181			
180			
179			
178+48	⊙	0° 31'	S 81½ W

Beginning at iron pipe - the S.W. Cor. of Sec. 13. = Station 178+48.8

194 - put 14" & 18" pipe.

Sand

Sand X Dark X  
Loam

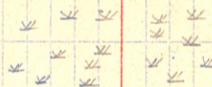
sand and Gravel

Beg. at iron pipe - the S.W. Cor. of Sec. 13  
= Sta 178+48.8 - Thence S. 81½ W.



Sta.	Def.	Mag. Dip.
	L R.	
220		
219		
218		
217		
216		
215 + 0.00 - 0.52'		N 8 1/2° W
214		
213		
212		
211		
210		
209		
208		
207		
206		
205 + 52.0 <sup>8</sup>	89° 16'	N 8 1/2° W
205	<del>89° 57'</del>	Enter L. Road E-W and N and S. 1/4 Sec. Cor.
204		
203		
202		
201		
200		
199		
198		

Put in 12" pipe



L. Road  
Sand



Sta. Def. Mag. big.

L R.

246

245

244

243

242

241

240

239

238

237

236

235

234+0.0

231+35.0

230

229

228

227

226

225

224

223

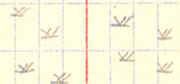
222

221

fence line on left running West.  
0° 10' N 82° 24' W

Put in 12" pipe.

Use 12" pipe.



Loadm

Leant



Sta	L	Inf.	R.	Mag. brg.
268				
267				
266				
265				
264				
263				
262	0	0° 50'		S 81 1/2 W
261				
260				
259		89° 29'		
258+50.4	0	89° 29'		S 82 1/2 W 1/4 Cor. - North Line Sec 14. S 82 1/2 W Center of road to West.
258				
257				
256				
255				
254				
253				
252				
251				
250				
249				
248				
247				

258+20 - Use 12" pipe.

258+50.4 - R.O.W. Cleared.



Use 12" pipe.

Learn



Sta	Def.	Mag. bearing
	L	R.
291		
290		
289		
288		
287		
286		
* 285	0° 2'	S 81 1/2° W
284+94 <sup>2</sup>	Fence on Right - running North	} 1/2 Cor.
284	Fence on Left - running South	} No. Marks.
283		
282		
281		
280		
279		
278		
277		
276		
275		
274		
273		
272	0	
271		
270		
269		



Sta.	Def.		
	L	R.	Mag. Bq.
314			
313			
312			
311			
311 + 53°	1019'	820 1/2 W.	Stone - 1/4 Sec. Cor.
311	(1023)	885 W.	
310			
309			
308			
307			
306			
305			
304			
303			
302			
301			
300			
299			
298 + 100	(1022)	881 1/2 W.	
297			
296			
295			
294			
293			
292			



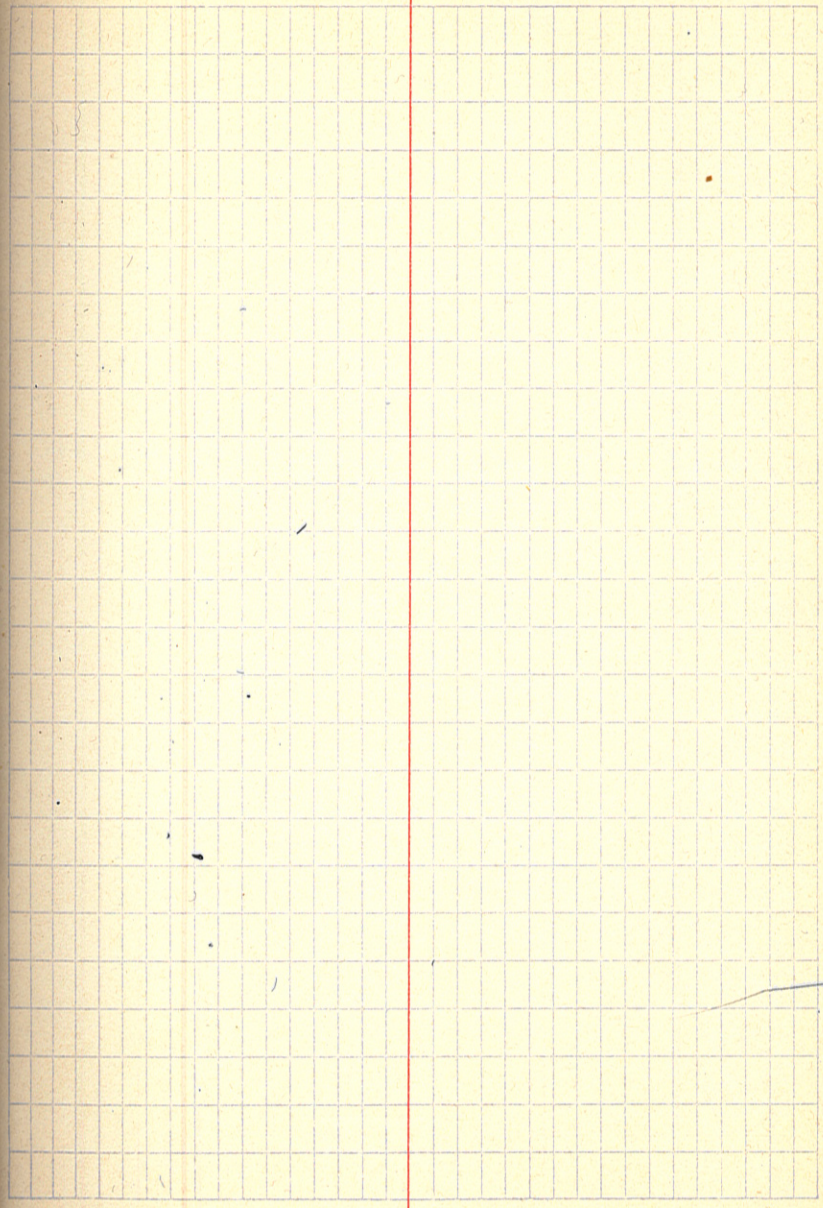
Sta.	L	Def.	R.	Magnifying.
334				
333				
332				
331				
330+745 0				381 $\frac{1}{4}$ W.
330				
329				
328				
327 5				
326				
325				
324+82 0		1°12'		Mkd (X), Stone. $\frac{1}{4}$ Cor. Fence Cor. on Left.
324				
323				
322				
321				
320				
319				
318				
317				
316				
315				



Sta	L	Def.	R.	Magn.
354				
353				
352				
351				
350				
349				
348				
347+36 <sup>3</sup> / <sub>0</sub>				S 81 $\frac{1}{2}$ W.
347				
346				
345				
344				
343				
342				
341				
340				
339				
338+58 <sup>1</sup> / <sub>0</sub>				S 81 $\frac{1}{2}$ W.
338				
337+88 <sup>1</sup> / <sub>0</sub>		0° 10'		S 81 $\frac{1}{2}$ W. Oak Post. - Sec. Cor.
337				
336				
335				



Sta	L	Def	R	Mag, big
376				
375				
374				
373				
372				
371				
370				
369				
368				
367				
366				
365				
364+30 <sup>4</sup>		0°2'		Pine post. S 80 1/2 W 1/4 Sec Cor.
364				
363				
362				
361				
360				
359				
358 0				S 81 1/2 W
357				
356				
355				





Sta	Def.	Mag. trig.	
	L	R	
397			
396			
395			
394			
393			
392			
391			
390+15.1	o	88° 25'	N 10° W. Stone - Sec. Cor.
390			
389			
388			
387			
386			
385			
384			
383			
382			
381			
380+18.1	o	80½ W	
380			
379			
378			
377			



Sta.	Def L B.	Mag. by.
------	-------------	----------

419  
 418  
 417  
 416  
 415  
 414  
 413  
 412  
 411  
 410

409+94<sup>5</sup> 0 P.O.T.

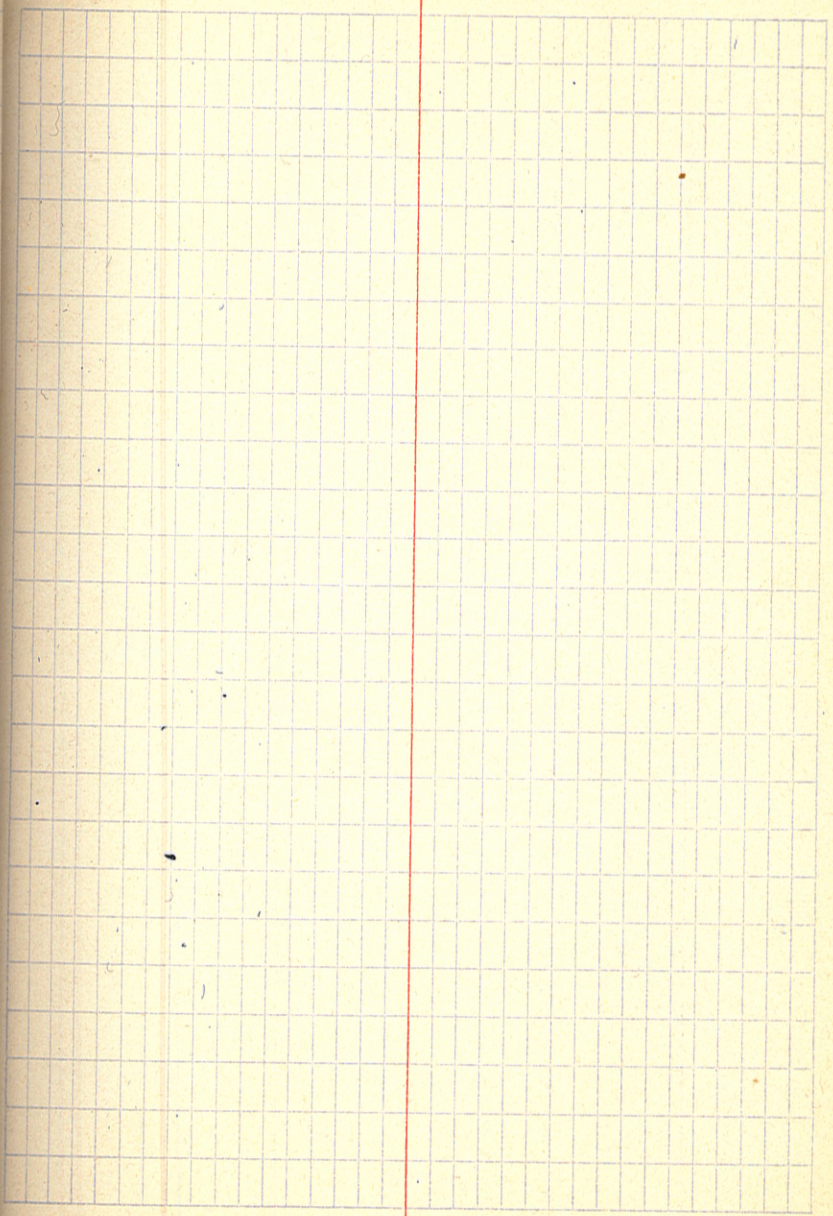
S 80<sup>3</sup>/<sub>4</sub> W.

409  
 408  
 407  
 406  
 405  
 404

403+44<sup>2</sup> 0 89° 1'

S 80<sup>3</sup>/<sub>4</sub> W Iron pipe 1/4 Con

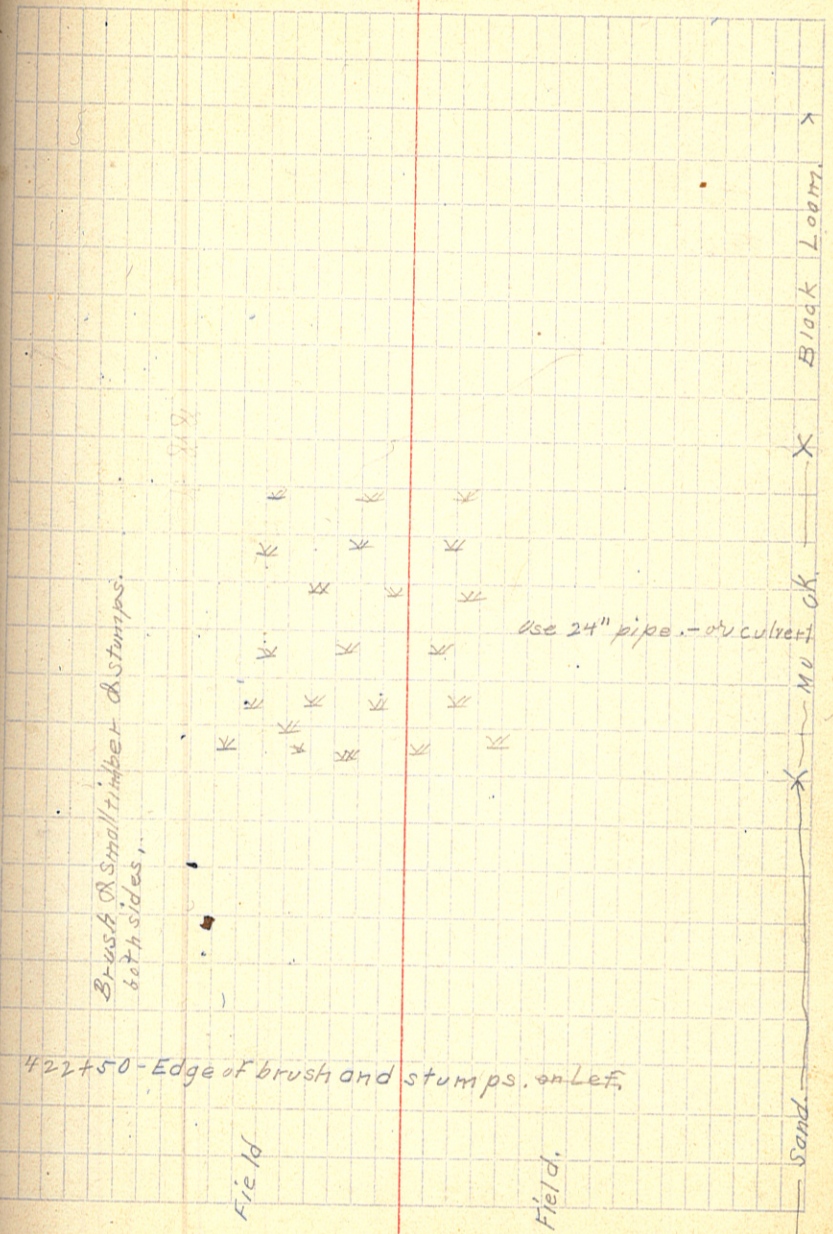
403  
 402  
 401  
 400  
 399  
 398





Sta	Def.	Mag. bug
440	L	
439		
438		
437+81	o	
437		
436		
435		
434		
433		
432		
431		
430		
429+27 <sup>o</sup>	0°9'	S 80 1/2° W.
429		
428		
427		
426		
425		
424		
423+60+4	o P.O.T.	S 80 3/4° W.
423		
422		
421		
420		

Iron pipe - 1/4 Sec Line





Sta.	Def.	Magn.	
463	L	R.	
462			
461			
460			
459			
458			
457			
456 <sup>8</sup> 456 <sup>7</sup>	0° 27'	S 82 W.	Iron pipe - Sec. Line
456			
455			
454			
453			
452			
451			
<del>451</del>			
450 <sup>100</sup> P.O.T.		S 82 <sup>1</sup> W.	
449			
448			
447			
446			
445			
444			
443			
442			
441			

Brush.

{ 445 to 452  
Stumps to be grubbed.

{ 452 to 456 + 50  
Brush or alpine stumps

{ At 456 to 500 - open field  
no clearing

Field.

446 use 12" pipe.

Road Machine Work.

Brush.

Brush &amp; stumps

stumps

Field.

Sand

Sandy Loam.



Sta	L	D of	R	Mag. brg.
484				
483				
482+95.30		0°2'		380 1/2 W. Iron pipe, 1/4 Sec. Line.
482				
481				
480				
479				
478				
477				
476				
475				
474				
473				
472				
471				
470				
469+50				
469				
468				
467				
466				
465				
464				

481 to pine timber and brush (R.O.W. partly cleared)

478. — use 15" pipe.

475 to 481 high clearing (small brush)

Brush & stumps

Brush & stumps.

small brush.

469+50 = Edge of Field.

Field

Road Machine Work

Field.

Sandy Loam. — X Sand.



- 504
- 503
- 502
- 501
- 500.
- 499
- 498+53
- 498+20
- 498
- 497+27
- 497.
- 496+38
- 496.
- 495
- 494.
- 493+41  $\frac{8}{10}$
- 493
- 492
- 491
- 490
- 489
- 488
- 487
- 486
- 485

8.80  $\frac{1}{2}$  W.

498+53 = Top of Bank of Mosquito Creek.  
 498+20 = Top of Bank of Mosquito Creek.  
 497+27 = Top of Bank of Mosquito Creek.  
 497 = Top of Bank of Mosquito Creek.  
 496+38 = Top of bank of Mosquito Creek.  
 496 = Top of bank of Mosquito Creek.

\* 494 to 500 from bank and timber

(Cross Creek 3 times)

Large timber in W. partly all ascal

Pines & brush

Sandy Soil.



Sta. Def. Magberg  
L. R.

509+42<sup>5</sup>/<sub>0</sub>

509

508

507

506

505

41

Center of State Road #81 - End of this survey.



Profile Levels of Pillager-Motley Road.

5/31/16.

Sta.	+	H.I.	-	Elav.	Grade
BM	4.85	1244.94		1240.09	
T.P.	1.16	1245.47	0.63	1244.31	
T.P.	4.19	1239.83	9.83	1235.64	
178+48 <sup>8</sup>			1.1	38.7	
179			2.3	37.5	1238.125
180			4.6	35.2	35.38
181			6.7	33.1	32.63
182			10.5	29.3	29.88
+50					*122.6.5
183			12.7	27.1	28.5
184			12.6	27.2	28.5
T.P.	6.55	1233.55	12.83	1227.00	
+55			6.9	26.7	28.5
185			7.4	26.2	28.5
186			6.9	26.7	28.5
187			5.8	27.8	28.5
188			4.2	29.4	30.5
189			1.1	32.5	32.5
T.P.	11.49	1244.47	0.57	1232.98	
+55			7.9	36.6	35.5
190			5.6	38.9	38.0
191			4.8	39.7	40.0
+50			4.3	40.2	39.2
192			5.2	39.3	38.5
Check B.M.			4.22	1240.25	

Match 5" Poplar - 25' R. Sta. 166+50

$\frac{-0.4}{25.0} \frac{0.2}{5.7} 0.0 \frac{-0.2}{4.4} \frac{-0.1}{14.0} \frac{0.0}{7.50}$

$\frac{-0.06}{25.0} \frac{0.2}{6.0} 0.0 \frac{-0.5}{25.0}$

$\frac{-1.2}{25.0} \frac{-1.6}{21.0} \frac{-0.8}{6.0} \frac{-0.1}{4.0} 0.0 \frac{+0.2}{25.0}$

$\frac{+0.6}{25.0} \frac{0.2}{9.8} 0.0 \frac{-0.2}{25.0}$

$\frac{-0.1}{25.0} \frac{-0.2}{3.8} 0.0 \frac{-1.1}{11.0} \frac{-1.3}{25.4}$

$\frac{+0.8}{25.0} \frac{+0.7}{13.6} \frac{-0.9}{10.5} \frac{-1.5}{5.8} \frac{-0.8}{3.0} 0.0 \frac{0.0}{25.0}$

$\frac{+1.1}{25.0} \frac{+0.9}{9.0} \frac{+0.1}{6.5} 0.0 \frac{+0.9}{2.5} \frac{+0.9}{25.0}$

$\frac{+0.2}{25.0} \frac{+0.2}{11.5} \frac{-0.4}{7.0} \frac{-0.4}{1.5} 0.0 \frac{+0.4}{2.4} \frac{+0.4}{25.0}$

0.0 0.0 0.0

0.0 0.0 0.0

0.0 0.0

R.

R.  $\frac{+1.1}{25.0} \frac{+0.8}{0.5} 0.0 \frac{0.0}{25.0}$  L.

0.0 0.0 0.0

0.0 0.0 0.0

$\frac{-1.2}{25.0} \frac{-0.6}{3.0} \frac{-0.3}{8.0} \frac{-0.3}{25.0}$

$\frac{-0.6}{25.0} 0.0 \frac{+0.4}{3.4} \frac{+0.5}{25.0}$

Sand and Gravel

Do - K L. sand. X sand.



Sta	+	H.I	-	Elev.	Grade.
		1244.47			* -2.5
193			9.3	1235.2	1236.5
+30			9.8	1234.7	36.0
194			10.4	34.1	56.0
195			10.2	34.3	36.0
196			9.8	34.7	36.0
T.P.	8.40	1243.82	9.05	1235.22	
197			8.9	34.9	36.0
198	+90		8.4	35.4	36.0
199			8.0	35.8	36.0
200			5.3	38.5	38.99
201			3.2	40.6	41.70
T.P.	11.65	1254.59	0.88	1242.94	+2.714
202			10.5	44.1	44.4
203			7.9	46.7	47.1
204			5.2	49.4	49.8
205			3.2	51.4	52.6
205+52 <sup>8</sup>			0.7	53.9	55.0
Check on B.M.			2.02	1252.57	
+90					* 55.0
T.P.	12.02	1265.86	0.73	1253.86	+2.45
206			11.4	54.5	55.1
207	+90		10.9	55.0	55.9
208			9.9	56.0	56.8
209			6.5	59.4	59.2
+90					* 61.1
210			5.6	60.3	

-0.4	-0.6	0.0	+0.3	+0.9	+1.6	+1.5
25.0	18.6	0.0	2.8	6.8	12.2	25.0
-0.8	-1.1	-1.2	-0.2	+0.2		
25.0	17.5	12.0	10.0	0.0	2.50	
-0.6	-0.9	-0.1	-0.1	-0.2	-0.9	-0.5
25.0	15.5	10.0	0.0	2.8	4.8	25.0
-0.5	-0.5	-1.3	-0.9	-0.1	-1.0	-1.0
25.0	22.4	21.5	17.0	13.5	2.0	2.0
-0.4	-0.3	-0.9	-0.3	+0.8	-0.2	+0.1
25.0	21.8	20.4	16.0	0.0	4.8	7.5
+0.2	+0.1	-0.7	+0.3	-0.8	-0.8	+0.4
25.0	21.0	17.5	12.5	2.0	2.8	3.5
-0.4	-0.4	-1.2	+0.2	-0.8	-0.1	+0.2
25.0	21.5	17.6	8.2	0.0	2.2	2.50
(P.T. 1)	-0.1	-0.4	+0.8	+0.6	-0.4	0.0
25.0	4.0	2.0	2.8	7.5	21.8	25.0
0.0	+0.2	-1.1	-1.0	-1.1	-1.4	-0.6
25.0	19.0	16.4	13.5	11.4	3.0	2.8
0.0	0.0	-1.1	0.0	0.0	-0.7	-0.8
25.0	19.0	13.5	7.5	0.0	3.4	5.0
-0.1	+0.2	-1.0	-0.7	0.0	-0.9	+0.1
25.0	17.0	12.6	8.0	4.5	0.0	0.0
+1.3	+0.8	+0.1	-1.5	+0.3	+0.3	
25.0	17.5	14.6	5.2	11.0	25.0	
-1.0	-0.3	-1.0	-0.4	-1.6	+0.1	+0.3
25.0	13.4	9.5	0.0	11.8	13.5	17.8
0.0	-1.1	-1.3	0.0	-0.1	-1.4	+0.2
25.0	22.5	16.5	11.0	3.6	0.0	4.0
+1.3	+0.6	-0.7	0.0	-0.9	-3.1	-1.5
25.0	14.4	9.4	6.0	7.6	15.0	17.0
+1.0				-1.9		
25.0	0.0	0.0	0.0	25.0		
0.0				0.0		
0.0				0.0		
25.0	0.0	0.0	0.0	-1.0	+0.4	-0.8
0.0				2.8	10.8	18.0
0.0				0.0		+0.4
0.0				0.0		2.0

S.A.H.C.



Sta	T	H.I	Elev.	Grade
		1265.86		
211	+90		1263.0	1263.0
212			64.6	65.0
213			64.2	65.0
214			64.9	65.0
215			64.3	64.5
T.P.	0.69	1265.40	1264.71	-1.3
216			62.7	63.1
217			61.8	62.1
218			60.5	61.0
219			60.1	61.0
+58			60.3	61.1
220			59.7	61.0
221			59.8	61.1
222			60.1	61.0
223			61.9	61.1
224	+10		62.3	61.9
225	+60		63.1	62.9
226			62.5	63.0
T.P.	1.10	1264.73	1263.35	-1.07
227			61.3	1262.1
228			58.9	59.75
229	+20		56.5	57.5
230			55.0	57.5

0.0	0.0	0.0		
$\frac{0.0}{25.0}$	0.0	-1.1	+0.3	-0.9
	3.8	11.2	19.6	23.5
+2.0	+6.8	+1.5	+0.7	+0.9
25.0	19.5	7.0	2.6	12.2
			17.8	18.8
			25.0	
$\frac{11.0}{25.0}$	0.0		$\frac{-1.0}{25.0}$	
$\frac{1.0}{25.0}$	0.0		$\frac{-1.0}{25.0}$	
$\frac{1.8}{25.0}$	$\frac{1.3}{25.0}$	$\frac{+0.3}{25.0}$	$\frac{+0.6}{25.0}$	$\frac{+0.4}{25.0}$
	7.2	3.0	3.2	12.2
			15.2	17.0
			25.0	
$\frac{+0.6}{25.0}$			$\frac{-0.6}{25.0}$	
	0.0	2.0	0.0	
$\frac{+0.3}{25.0}$	$\frac{+0.3}{25.0}$	$\frac{-0.5}{25.0}$	$\frac{-1.0}{25.0}$	$\frac{+0.1}{25.0}$
	18.2	16.2	11.8	10.0
$\frac{-1.5}{25.0}$	$\frac{-1.5}{25.0}$	$\frac{0.0}{25.0}$		
	14.0	12.0		
$\frac{-1.0}{25.0}$	$\frac{0.0}{25.0}$		$\frac{0.0}{25.0}$	$\frac{-1.5}{25.0}$
	16.0	0.0	2.0	4.0
			11.2	25.0
	0.0	0.0	0.0	
$\frac{+0.5}{25.0}$	$\frac{+1.5}{25.0}$	0.0	$\frac{+0.5}{25.0}$	$\frac{+0.5}{25.0}$
	5.0	0.0	2.0	25.0
$\frac{-0.9}{25.0}$	$\frac{+0.1}{25.0}$	$\frac{-0.7}{25.0}$	$\frac{+0.3}{25.0}$	$\frac{-0.1}{25.0}$
	4.0	2.8	70.5	15.6
			20.8	25.0
$\frac{-1.1}{25.0}$	$\frac{-0.2}{25.0}$	$\frac{-0.7}{25.0}$	$\frac{+0.7}{25.0}$	$\frac{+0.3}{25.0}$
	8.0	5.2	11.0	16.8
			19.4	25.0
$\frac{-0.5}{25.0}$	$\frac{-0.5}{25.0}$	$\frac{-0.9}{25.0}$	$\frac{+0.7}{25.0}$	$\frac{+0.4}{25.0}$
	7.6	4.0	13.0	16.8
			18.6	25.0
$\frac{-0.7}{25.0}$	$\frac{-0.7}{25.0}$		$\frac{+0.7}{25.0}$	$\frac{+0.7}{25.0}$
	5.0		8.2	17.2
			25.0	
$\frac{-0.6}{25.0}$	$\frac{-0.6}{25.0}$	$\frac{-2.0}{25.0}$	$\frac{+0.7}{25.0}$	$\frac{+0.1}{25.0}$
	8.4	2.0	7.5	16.8
			21.8	
$\frac{-1.4}{25.0}$	$\frac{-1.6}{25.0}$	$\frac{-1.1}{25.0}$	$\frac{-0.2}{25.0}$	$\frac{+0.7}{25.0}$
	14.6	8.0	8.8	12.0
			12.0	
$\frac{-1.0}{25.0}$		0.0		
$\frac{+0.3}{25.0}$	$\frac{+0.3}{25.0}$	$\frac{+1.0}{25.0}$	$\frac{+1.0}{25.0}$	
	16.5	11.8	14.0	
			0.0	

use 12" pipe



Sta	+	H.I	-	Elev	
		1264.75			
231	✓		9.7	1255.1	1257.5
+60					57.5
232			5.7	59.1	58.5
+35			4.9	59.9	58.9
BM			1.67	1263.08	
233	+60		4.7	60.1	59.4
					60.4
234	+10		4.0	60.8	61.0
					61.0
235	+10		5.0	59.8	59.7
					59.5
236	+10		7.9	56.9	57.2
					57.0
237	+50		9.4	55.4	57.0
					57.0
238			7.5	57.3	58.0
239			7.2	57.6	57.75
240			7.6	57.2	57.5
241	+50		9.8	55.0	56.5
I.P.	0.42	1255.78	✓	9.39	1255.36
242			2.0	53.8	55.5
243			2.0	53.8	54.5
244			3.7	52.1	53.5
245			4.6	51.2	52.5
246			5.2	50.6	51.5
247	+80		5.9	49.9	50.5
248			7.9	47.9	49.5
249			7.8	48.0	49.5
250			8.2	47.6	49.5
25.1			7.0	48.8	49.5

+1.2	+1.0	+0.3	+1.2	+1.3	+0.3	+0.3
25.0	21.4	18.0	14.2	4.6	2.4	25.0

+0.8	+0.8	-0.4	+0.3	-0.8	0.0	0.0
25.0	27.4	18.2	10.0	2.2		

On Birch tree. 60' Left of Sta. 232+70.

0.0 0.0 0.0

+0.5	+0.5	-0.1	+0.5	-0.8	+0.2	+0.2
25.0	14.0	13.2	9.5	6.2	7.2	25.0

+0.3	+0.3	+0.7	-0.2	+0.1	-0.9	-0.2
25.0	17.0	14.6	12.0	7.0	7.2	25.0

+0.7	+0.6	0.0	-0.4	0.0	0.0
25.0	14.4	14.8	6.0	13.0	25.0

236+50 - Put in 12" pipe

-1.0	-1.0	0.0	-1.0	0.0
25.0	25.0		25.0	

+1.0	+0.8	-0.3	0.0	-0.9	-0.4	-1.0
25.0	13.4	11.0	7.5	8.5	25.0	

+2.0	+1.2	-0.1	0.0	-1.0	-1.5
25.0	13.8	9.6	0.0	7.5	25.0

+2.2	+0.5	-0.6	2.0	-0.6	-1.8	-1.7
25.0	8.0	5.4	2.5	11.2	13.8	25.0

+1.0	+0.5	-1.0	0.0	+0.1	-0.6	-0.1	-0.9
25.0	7.0	3.8		12.0	15.4	19.2	25.0

+1.6	+0.7	-0.7	-0.1	0.0	-0.2	-1.3
25.0	13.0	7.5	4.4	8.0	25.0	

+2.6	+1.0	+0.2	0.0	-0.1	-1.5	-1.1
25.0	5.0	3.2		12.4	17.5	25.0

+3.8	+1.7	0.0	+0.7	+0.6	-1.3
25.0	4.5		3.0	12.6	25.0

+2.5	+1.0	-0.3	0.0	+0.1	+1.4
25.0	7.2	3.8		11.2	25.0

+3.1	+1.6	+0.8	-0.9	-0.7
25.0	5.6	8.0	18.8	25.0

+2.3	+1.1	+0.5	+0.7	-0.5	-0.1	-0.2
25.0	1.5	5.8	9.8	20.0	21.0	25.0

+2.0	+1.9	+1.3	-0.1	0.0	+0.8	-0.3	-0.1
25.0	14.5	4.2	2.8		6.3	16.8	25.0

+1.6	+1.3	-0.4	-0.5	+0.3	0.0	-1.1	-1.2
25.0	14.7	14.2	11.5	8.0	5.0	7.4	11.6

use 2" pipe

+0.4	-0.9	-1.2	0.0	0.0	-1.0	-1.4
25.0	10.6	5.0		9.4	12.6	25.0

0.0	0.0	-1.0
		25.0



58+34 Plank Culvert Caved in & covered with  
 50704 Galv. Ir. Corrg. Culvert 12' x "  
 41+90 Galv. Iron Corrg. Culvert 10' x "  
 234+00 O.P.O.T.  
 [Approximate 1/4 Cor.]  
 231+35 Private Drive on L. Fence runs W. from here.  
 230+05 Plank Culvert.  
 219+58<sup>2</sup> Plank Culvert.

337+88<sup>2</sup> Sec Cor. Oak Stake.  
 324+82<sup>2</sup> Δ 1/6 Cor. Rock with X in top. C. of road.  
 322+00<sup>2</sup> Tack in C. of plank bridge. Size 4w x 14L  
 320+05 A 14" Galv. Ir. culvert on ground not in place.  
 315+75 Private Drive on R.  
 313+08 End of present Corderoy.  
 311+53<sup>2</sup> Galv. Ir. Corrg. Culvert. 10" x 20'  
 310+94 Δ Rock in C. of road. Sec Cor.  
 307+35 Galv. Ir. Corrg. Culvert 18" x 16'  
 303+40 Beginning of Present Corderoy.  
 303+10 Private Drive & Gate on R.  
 289+94<sup>2</sup> Private Drive & Gate on L.  
 280+71 Fence runs S. on L. 1/4 Cor. not in.  
 272+00<sup>2</sup> Center of Plank Bridge 6w x 13L  
 267+87 O.P.O.T.  
 266+42 Private Drive on R.  
 262+00<sup>2</sup> Galv. Ir. Corrg. Culvert 12" x 20'  
 O.P.O.T.  
 258+50<sup>4</sup> Δ { R.P. 44.4' N.W.  
 R.P. 31.8' S.E.  
 Section Corner.  
 No Corner Stake in. No "B.T."

89+05 Plank Bridge 14' x 16'  
 83+81 Plank Culvert.  
 81 Private Drive on L.  
 80+08<sup>1</sup> O.P.O.T.  
 74+65 Private Drive on R.  
 64+30<sup>4</sup> Sec. Cor. Stake.  
 59+51 Plank Culvert 3' L of E  
 58+86<sup>2</sup> Private Drive on R.  
 58+00<sup>2</sup> O.P.O.T.  
 51+66 { 6' to L of Plank bridge 11w x 16L  
 West bank Creek  
 51+57 East bank Creek.  
 47+38<sup>3</sup> O.P.O.T.  
 45+56 End of marsh & stakes 10' out to L.  
 44+98 C. of plank bridge 11w x 16L  
 43+40 Edge of wet marsh. & stakes 15' to L.  
 38+58 O.P.O.T.

4  
 423+60<sup>4</sup> O.P.O.T.  
 416+70 Edge wet marsh.  
 416+58 N & S Fence  
 416- Edge of marsh. Average 8" water.  
 O.P.O.T.  
 404+50 ?  
 404+52 crosses E & W Fence.  
 404+48 West bank of Creek.  
 East bank of Creek  
 403+68 { Fence running N & S. Follow  
 Fence "E & W 1' to L of E  
 403+44<sup>2</sup> 1/6 Cor. Iron Pipe.  
 400+60 Plank Culvert.  
 394+20 End of present Corderoy.  
 393+45 Beginning of present Corderoy.  
 393+08 { Plank Bridge 10w x 16L  
 Corderoy ends.  
 392+35 Beginning of present Corderoy.  
 390+15<sup>4</sup> Stone. Sec. Cor.



497+00 E Bank Creek  
 446+38 W bank Creek  
 496 } E. bank Creek  
 494+50 East edge of swamp.  
 493+41<sup>2</sup> O.P.O.T.  
 482+95<sup>3</sup> 1/6 Cor. Ir. pipe  
 482+94 N + S fence  
 482+67 N + S Road  
 475+80 Old road runs NW & SE.  
 456+48 N + S fence.  
 456+41<sup>8</sup> 1/6 Cor. Iron pipe  
 450+00<sup>2</sup> O.P.O.T.  
 443+25 E + W fence turns N.  
 439+50 ± Crosses to N. side of E+W fence.  
 437+81<sup>2</sup> O.P.O.T.  
 438+25 West edge of wet swamp.  
 430+25 East edge of wet swamp.  
 429+87<sup>6</sup> 1/6 Cor. Iron pipe  
 427+15 N + S fence

5.44  
 1.04  
 3.34  
 1.0  
 9.9

[pole E+S line.  
 Iron 1/6 Corner } (R.P. 49<sup>1</sup>/<sub>2</sub>' NE on Tel. pole. Corner.  
 S.R.H. #81 } (R.P. 51<sup>2</sup>/<sub>2</sub>' SE on Corner fence post.  
 S.R. #6 } (R.P. 69<sup>3</sup>/<sub>2</sub>' NW on dead J.R. tree with B.M.  
 Hub on E of S.R.H. #81.  
 509+42<sup>5</sup> O.P.O.T. 11.5' south of 1/6 Cor.  
 500+80 ± crosses to N side of E+W fence.  
 499 West Edge Swamp.  
 498+53 W bank Creek.  
 498+20 E bank Creek  
 497+27 W bank Creek

1.19  
 3.04  
 4.53  
 5.47  
 10.00



Sta.	+ H.I.	- Elev.	
	1255.78		
252		37	1252.1
2			+ 2.25
253		2.0	1253.8
T.P.	2.35	1256.53	1160 1254.18
254		4.1	52.4
255		4.8	51.7
256		5.2	51.3
257		5.1	51.4
258		6.6	49.9
T.P.	7.25	1257.92	5.86 1250.67
B.M.		9.92	1248.00
+ 50.4		8.7	49.2
259		4.6	53.3
T.P.	11.32	1268.23	1.01 1256.91
260		9.2	59.0
261		3.0	65.2
+ 35		1.8	66.4
262		1.0	67.2
263		0.3	67.9
T.P.	2.40	1270.26	0.37 1267.86
264		2.7	67.6
265		4.9	65.4
266		5.7	64.6
267		5.5	64.8
+ 50			

+2.9	+2.0	-0.5	-0.2	-1.3	-2.0
25.0	11.0	3.0	9.2	15.2	25.0
+6.5	+4.2	-0.7	+0.4	0.0	-1.3
25.0	10.6	3.6	5.6	9.6	13.0
25.0	11.1	6.2	17.0	25.0	
+1.3	+0.9	-0.2	-1.0	-0.3	-1.5
25.0	13.5	7.0	12.5	14.0	7.5
+1.8	+0.9	-0.4	-0.5	-0.4	-0.9
25.0	9.6	7.4	12.0	13.0	25.0
+1.3	+0.4	-0.5	0.0	-0.2	-0.5
25.0	8.8	7.8	8.8	13.0	19.6
+1.9	+0.9	-0.2	-1.0	-0.5	-1.1
25.0	12.0	9.6	10.8	12.2	25.0

On Poplar tree 40' Right of Sta. 258 + 50.4

+0.2	+0.1	-0.9	-0.3	-0.2	-1.2	-0.5	-0.3
25.0	16.8	11.8	7.2	5.5	11.0	14.0	25.0
+0.7	+0.4	-0.2	+0.8	-0.3	-0.2		
25.0	13.0	11.0	10.6	13.5	13.5		
0.0	+0.3	-0.4	-0.7	-0.2	-0.6		
25.0	16.8	15.8	11.5	12.6	25.0		
Same as 261.							
0.0	0.0	-0.9	-0.5	0.0	-0.6	+0.6	+0.3
25.0	17.4	13.5	10.2	0.0	7.8	11.8	25.0
					-1.1	0.0	+0.7
					25.0		
					-1.3	0.0	+1.9
					25.0		25.0
					0.0	0.0	0.0
use 12" pipe							
+0.3	+0.1	-0.9	-0.7	0.0	0.0	0.0	
25.0	22.0	19.8	15.0	13.0	0.0	0.0	7.5
0.0	-0.2	-0.7	0.0	-0.7	+0.3	+0.3	
25.0	18.0	15.8	0.0	9.8	13.6	25.0	







Sta.	+	H.I.	-	Elev.
		12669.56		
		<del>1236.04</del>		
286.			5.6	61.0
+50			3.2	63.4
T.P.	12.167	1279.06	0.17	1266.39
		<del>1248.54</del>		
287			11.4	67.7
+70			2.9	76.2
T.P.	12.89	1291.55	0.40	1278.66
		<del>1248.36</del>		<del>1235.47</del>
288			12.5	79.1
289			4.9	86.7
T.P.	12.69	1304.17	0.07	1291.48
		<del>1260.98</del>		<del>1248.29</del>
290			8.0	96.2
291			0.2	1304.0
T.P.	12.74	1316.63	0.28	1303.89
		<del>1273.44</del>		<del>1260.70</del>
292			5.7	10.9
+65			2.2	14.4
293.			1.2	15.4
T.P.	12.52	1328.44	0.71	1315.92
		<del>1285.35</del>		<del>1272.73</del>
294			11.4	17.0
295			9.0	19.4
296			6.4	22.0
297			4.2	24.2
B.M.	440	1328.26	1.77	1326.67
+65		<del>1285.07</del>		<del>1283.78</del>
298.			4.7	23.6
+75			9.9	18.4

0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
$\frac{-0.3}{25.0}$	$\frac{-0.3}{12.4}$	$\frac{-1.3}{9.5}$	$\frac{-0.3}{6.0}$
0.0	0.0	0.0	0.0
$\frac{-0.2}{4.0}$	$\frac{-1.4}{10.4}$	$\frac{-0.9}{11.8}$	$\frac{-1.3}{25.0}$
Same as 288			
$\frac{+0.4}{25.0}$	$\frac{+0.8}{11.2}$	$\frac{-0.5}{12.4}$	$\frac{+0.3}{7.0}$
0.0	0.0	0.0	0.0
$\frac{-1.1}{8.0}$	$\frac{-2.4}{25.0}$		
$\frac{+1.1}{25.0}$	$\frac{+0.8}{14.0}$	$\frac{-0.5}{10.8}$	$\frac{+0.3}{5.0}$
$\frac{+0.1}{2.6}$	$\frac{-1.1}{8.4}$	$\frac{-1.6}{25.0}$	
$\frac{+1.2}{25.0}$	$\frac{+0.6}{11.8}$	$\frac{-0.3}{8.5}$	0.0
0.0	0.0	0.0	0.0
$\frac{-0.7}{6.0}$	$\frac{-0.2}{7.5}$	$\frac{-1.5}{25.0}$	
$\frac{+0.2}{25.0}$	$\frac{+0.5}{11.4}$	$\frac{-0.6}{8.4}$	0.0
$\frac{-1.5}{11.8}$	$\frac{-2.4}{25.0}$		
$\frac{+1.0}{25.0}$	$\frac{+0.3}{12.4}$	$\frac{-0.6}{10.8}$	$\frac{0.0}{6.0}$
0.0	0.0	0.0	0.0
$\frac{0.0}{2.0}$	$\frac{-0.9}{5.4}$	$\frac{-0.4}{8.0}$	$\frac{-1.1}{25.0}$
$\frac{+0.2}{25.0}$	$\frac{+0.4}{14.8}$	$\frac{-0.8}{11.2}$	$\frac{0.0}{6.5}$
0.0	0.0	0.0	0.0
$\frac{-1.1}{25.0}$			
Same as 294			
$\frac{+1.1}{25.0}$	$\frac{+0.7}{16.0}$	$\frac{-0.2}{13.8}$	$\frac{+0.5}{8.5}$
0.0	0.0	0.0	0.0
$\frac{-0.7}{25.0}$			
Same as 296			
$\frac{+1.3}{25.0}$	$\frac{+0.9}{14.4}$	$\frac{+0.3}{13.0}$	$\frac{+0.6}{8.8}$
0.0	0.0	0.0	0.0
$\frac{3.2}{25.0}$	$\frac{-0.9}{25.0}$		
0.0	0.0	0.0	0.0
$\frac{+0.8}{25.0}$	$\frac{+0.1}{14.0}$	$\frac{+0.9}{6.8}$	0.0
$\frac{+0.6}{25.0}$			
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0

2587.50 to 299 - ROCK Cleared

On Oak tree 40' Left of Sta. 296+80.

X Sand

Loam

-8923



Sta	+	H.I.	-	Elev	
299		1285.09	12.8	1310.7	
		1328.26		1315.96	
T.P.	0.46	1283.23	12.30	1289.77	
		1304.16		1303.86	
T.P.	0.30	1271.97	12.56	1271.67	
300			4.1	00.1	01.8
+50			10.9	1293.3	97.4
		1292.60		1291.98	
T.P.	0.62	1260.41	12.18	1259.49	
301			4.3	88.3	92.9
302			12.4	80.2	83.9
		1281.10		1280.59	
T.P.	0.51	1248.91	12.01	1248.40	
+6030			7.5	76.6	81.3
			6.2		
303			9.7	71.4	75.0
		1269.25		1268.90	
T.P.	0.35	1237.06	12.20	1236.71	
+90					68.0
304			2.7	66.6	66.5
305			7.9	61.4	61.5
306			13.3	56.0	56.5
		1256.84		1256.41	
T.P.	0.43	1224.65	12.84	1224.22	
+70.0					53.0
307			4.9	51.9	52.25
+70.0					50.5
308			6.7	50.1	50.5
309			7.8	49.0	50.5
310			8.0	48.8	50.5
311			8.2	48.6	50.5
312			8.5	48.3	50.5
313			8.1	48.7	50.5
		1260.49		1249.04	
T.P.	11.45	1228.30	7.80	1226.85	
314			11.5	49.0	50.5

Shanty Road & Timber

0.0	0.0	0.0			
0.2	+0.8	-1.4	0.0	-0.9	
25.0	9.8	10.0	13.5	25.0	
-1.2	+0.6	-1.0	-0.7	-2.0	-0.6
25.0	12.7	4.5	9.0	14.8	17.4
					25.0
-2.5	-1.0	+0.7	0.0	-1.3	-2.0
25.0	19.8	7.5	6.0	12.4	19.2
					25.0
-2.1	0.0	0.7	0.0	-0.7	
25.0	19.5	3.4		25.0	
-2.7	-1.0	0.0	0.0	-1.3	-0.8
25.0	24.6			10.2	25.0
0.0	-0.3	+0.2	0.0	+0.5	+0.4
25.0	15.0	10.8		2.6	25.0
-0.8	-1.7	-1.0	0.0	-0.5	-0.4
26.0	23.5	10.0		4.2	25.0
-0.6	-1.7	-0.5	-0.7	-0.7	0.0
23.4	21.5	9.0	8.0	6.8	7.8
					10.8
					25.0
0.0	0.0	0.0			
0.0	0.0	0.0			
-0.3	-0.5	+0.1	0.0	+0.2	-0.4
25.0	7.5	4.8		6.0	9.4
					25.0
-0.9	-1.2	0.0	0.0	-1.0	-0.8
25.0	5.8			7.2	12.2
					25.0
-0.9	-0.9	+0.2	-0.7	-0.7	-0.7
25.0	4.0	7.5	12.6	7.5	25.0
-1.0	-0.8	-0.6	-1.0	-0.4	-0.4
25.0	4.4	7.0	15.4	22.5	25.0
-1.3	-1.3	-0.6	+0.1	-0.2	-0.7
25.0	10.6	4.8	5.6	13.0	25.0
Put in 24" pipe	Now 11.7	-1.0	-0.2	-0.4	-0.9
also use pipe	11.7	8.2	2.6	5.5	7.0
					9.8
					25.0
-2.0	-2.0	-1.3	-0.2	-0.3	-1.3
25.0	4.8	7.8	4.5	3.7	6.2
					8.6
					25.0
-1.6	-1.5	-0.4	0.0	-0.1	-1.2
25.0	8.0	3.8		3.4	24.0

S.S.P.P.



Sta.	+	H.I.	-	Elev.	Grade
		12604.9			
		<del>1228.30</del>			
315			10.9	49.6	1250.0
316			10.5	50.0	52.5
+75			8.8	51.7	52.0
317			7.5	53.0	53.0
B.M.				1254.75	X + 2.0K 0.0
+70			2.1	58.4	57.2
T.P.	7.83	1266.58	1.74	1258.75	16.0
		<del>1234.89</del>		<del>1226.56</del>	
318			6.1	60.5	59.0
+30			2.4	64.2	50.8
+70			3.3	63.3	63.7
+83.3					
319			3.1	63.5	63.7
320			5.1	61.5	63.0
321			5.1	61.5	63.0
322			4.7	61.9	63.0
+90					63.0
+50			3.1	63.5	65.4
T.P.	12.87	1279.20	0.25	1266.33	
		<del>1217.01</del>		<del>1234.14</del>	
323			11.0	68.2	69.6
+88			1.5	77.7	76.8
324			0.9	78.3	77.8
T.P.	12.38	1291.13	0.45	1278.75	
		<del>1258.94</del>		<del>1246.56</del>	
325			5.9	85.2	85.9
T.P.	12.21	1302.71	0.63	1290.50	
		<del>1270.82</del>		<del>1258.87</del>	
+70			10.5	1292.2	91.6
326			8.8	93.9	94.1
+70					95.0
327			3.3	99.4	

308 log timber and brush

On Poplar 30' R. of Sta. 317

	-1.7	-1.2	-0.2	0.9	0.0	-0.9	-1.6
	25.0	8.4	6.2		2.0	4.8	25.0
	-1.2	-0.2	0.0	0.0	-0.7	+0.1	
	25.0	6.2		2.0	5.0	25.0	
	0.0	0.0	0.0	0.0			
	0.0	0.0	0.0	0.0			
	15.0	+2.4	-0.4		+0.3	-1.5	-0.7
	25.0	7.2	4.3	0.0	3.4	14.8	16.5
318 →	+6.5	+5.3	-2.1	0.0	+0.1	-0.4	+0.9
	25.0	15.8	11.6		4.4	14.8	23.4
+30 →	+5.0	+4.2	-0.4	0.0	-0.1	+1.0	+2.8
	25.0	13.0	3.2	0.0	0.0	1.2	25.0
	+1.7	+2.2	+1.2	-0.3	0.0	+0.3	-0.1
	25.0	17.6	7.2	4.8	0.0	8.0	14.2
	+10.2	+1.0			-0.2	+1.3	+1.6
	25.0	0.0			14.6	16.5	25.0
	-2.2	-1.4			+0.9		
	25.0	10.2			25.0		
	-1.1				+0.4	+0.2	0.0
	25.0	0.0			8.4	14.6	17.2
	-1.7	-1.2	0.0		-0.8	-0.4	
	25.0	8.6	6.0	0.0	7.5	25.0	
	-1.6	-0.8	0.9	0.0	0.0	-0.7	-0.3
	25.0	9.4	4.2	0.0	3.4	11.0	25.0
	-0.6	-0.6	-0.8	-0.7	0.0	-0.2	-1.6
	25.0	23.5	15.6	7.6	0.0	5.6	25.0
	-2.0	-1.7	-0.8	-1.0	-0.3	0.0	-0.4
	25.0	21.6	19.2	13.0	4.0	0.0	6.4
	-1.8	-1.5	-0.8	-1.1	0.0	-0.3	-1.4
	25.0	14.0	10.2	8.5	0.0	4.5	14.2
	-0.3	-0.1	-0.8	0.0	-0.7	-0.3	-0.7
	25.0	9.0	7.6	0.0	9.4	11.0	25.0
	-0.7	-0.3	-0.9	0.0	-0.8	-0.3	-0.8
	25.0	8.6	7.6	0.0	8.4	10.0	25.0
	0.0	0.0	0.0	0.0			
	0.0	0.0	0.0	0.0			

put in 18" pipe



Sta	+	H.I.	-	Elev.
		1302.71		
		<del>1270.52</del>		
		1313.72		1302.09
T.P.	1163	1281.53	0.62	1269.90
328			10.2	1303.5
329			6.6	07.1
330			3.7	10.0
+45			3.0	10.7
331			2.6	11.1
332			4.8	08.9
+50			6.8	06.9
+70				04.8
333			8.9	04.8
		1303.58		1302.21
T.P.	1.37	1271.39	11.51	1290.02
				1300.79
B.M.			2.79	1268.60
+87			6.3	1297.3
334			7.6	96.0
		1290.04		1291.50
T.P.	0.54	1259.85	12.08	1259.91
335			5.1	86.9
+20				87.6
336			9.7	82.3
+20				82.0
337			11.9	80.1
+36				82.0
+40				82.0
338			4.5	87.5
+45			1.2	90.8
		1293.79		1290.41
T.P.	+60	3.05	1.60	1258.25
339			3.0	90.5
340			4.2	89.3
+80				90.0
341			3.5	90.0

0.0	+0.1	-0.9	-0.8	0.0	0.0	0.0
25.0	17.2	7.8	7.7	9.0	19.0	25.0
	0.0	0.0		0.0		
+0.2	+0.1	-0.4	+0.6		0.0	
25.0	16.4	15.0	6.8	0.0	25.0	
Same as 330						
+1.5	+1.4	-0.4	+0.2		+0.7	+0.7
25.0	17.8	12.5	5.5	0.0	3.5	25.0
+0.7	+0.3	+0.8	+0.2	+0.9	+0.9	+0.9
25.0	17.6	14.2	13.0	2.2	2.2	25.0
				0.0	0.0	0.0
				0.0	0.0	0.0
				0.0	0.0	0.0
On pine tree, 40' left of 333 + 30.						
Same as 334						
0.0	-0.5	-4.7	+0.3	+0.3	+0.6	+0.6
25.0	23.6	21.2	17.0	7.5	0.0	1.0
						25.0
-0.7	0.0	0.0	-0.8	-0.3	-1.2	-1.1
44.0	19.8	12.4	9.0	7.2	5.2	1.6
						0.0
+0.3	+0.3	-0.2	-0.4	-0.4		0.0
25.0	18.0	9.8	8.0	3.0	0.0	25.0
				0.0	0.0	0.0
Put in 12" pipe (Pipe on ground.)						
				0.0	0.0	9.8
				0.0	0.0	25.0
				0.0	-0.3	-2.4
				2.0	5.8	12.2
						23.6
						25.0
-1.9	-0.9	-1.4	-2.1			0.0
25.0	11.5	7.0	4.0	0.0		25.0
						0.0
						0.0
						0.0
-1.5	-0.7	+1.3				+1.9
25.0	20.5	16.5				25.0
-2.6	-2.7	-1.9	-1.0	+1.5	-0.1	+1.4
25.0	23.7	19.6	8.4	4.6	1.7	0.0
						25.0

Brush on right



Sta.	+	H.I.	-	Elev.	
		1293.49			
		<del>1261.60</del>			
+57			5.7	87.8	1287.8
342			11.1	82.4	81.0
		1281.19		1280.56	
T.P.	0.63	<del>1249.80</del>	12.93	<del>1248.67</del>	
343			12.0	69.2	73.5
		1270.37		1268.72	
T.P.	1.65	<del>1238.48</del>	12.47	<del>1236.83</del>	
+40			5.2	65.2	70.5
344			6.7	63.7	66.0
345	+30		6.8	63.6	66.1
+56			5.2	65.2	67.5
		1276.11		1267.80	
T.P.	8.31	<del>1294.22</del>	2.57	<del>1285.91</del>	
+96			3.1	73.0	70.0
346			4.7	71.4	70.2
+30					72.0
+38			3.1	73.0	72.0
+49			0.0	76.1	72.0
347			0.5	75.6	72.0
+30					72.0
+36			2.4	73.7	71.6
			9.0	67.1	67.4
		1265.95		1264.01	
T.P.	1.94	<del>1284.06</del>	12.10	<del>1282.12</del>	
+82			5.2	60.8	62.1
349			6.7	59.3	60.9
+20					59.0
350			7.7	58.3	59.0
351			8.3	57.7	59.0
460			9.5	56.5	59.0
			11.7	54.3	
			10.1	55.9	

-2.4	-1.8	-1.8	-2.4	-2.1	0.0	+1.0
25.0	24.8	11.2	7.0	2.9		25.0
-1.9	-1.5	-0.8	-1.3	+0.1	0.0	+1.0
25.0	25.0	9.8	6.2	2.8		25.0
-0.7	0.0	+0.2	-0.4		0.0	+1.0
25.0	21.3	8.0	4.2			25.0
+0.4	+0.9	+0.8	+0.4		0.0	+1.0
25.0	23.0	16.8	13.0			25.0
Edge of water in Slaughter - Self mud depth of 3 1/2'						
Put in 12" pipe. Same as 345.						
+2.0	+2.0	0.0	0.0		0.0	0.0
25.0	14.0	12.0				25.0
Gravel Bottom.						
+2.2	+2.6	+0.1			0.0	+1.0
25.0	19.6	14.8				20.6 25.0
Edge of water						
-1.7	-1.4	-1.7	-1.0		0.0	-0.3 -1.4
25.0	16.4	9.2	7.2			7.0 25.0
+0.6	+0.6					+2.0 +0.9
24.0	16.6					4.8 25.0
-0.1	+0.5	+0.7			0.0	+3.9 +2.8 0.0
26.0	22.6	6.5				6.5 12.2 25.0
-5.5	-3.1				0.0	-0.4 -1.0 -1.7 -5.0
25.0	3.6					4.5 6.4 14.5 25.0
-1.6	-1.1	-1.1	-1.6	+0.5	0.0	-1.5 -2.1 -4.3 -5.4 -8.1
24.0	22.8	12.8	6.2	3.3		2.6 9.5 13.8 20.0 25.0
-2.0	-1.2	-1.0	-1.6	+0.7	0.0	-0.9 -1.6 -5.0 -6.5
25.0	22.4	13.2	6.6	4.8		2.2 8.8 20.0 25.0
-1.7	-1.2	-1.0	-1.4		0.0	+0.3 +2.1
25.0	22.6	10.4	5.6			9.0 25.0
Top of Bank						
9.8	+0.5	+0.4			0.0	
25.0	24.0	9.6	3.6			
Bottom of bank						
Water level						
Mud = 4'7" to solid Bottom.						

Sand  
 Sand & Gravel  
 Sand  
 Sand











Sta.	+	H.1	-	Elev.	Grade.
		1297.22 1315.23			
379			7.4	89.8	1292.0
380			1.7	92.5	1292.0
+58 +60			6.1	91.1	1292.0 92.0
381			8.2	89.0	90.0
+40			9.3	87.9	88.0
382			12.6	84.6	85.5
T.P.	0.68	1285.78 1303.79	12.12	1285.10 1303.11	
283			7.3	78.5	79.5
+65			11.6	74.2	75.0
284			12.2	73.6	74.0
T.P.	3.24	1276.19 1297.20	12.83	1272.95 1294.96	
B.M.	+70		4.75	1271.34 1289.45	74.0
385			3.7	72.5	72.0
+25			5.1	71.1	70.4
386			10.7	65.5	65.5
T.P.	2.03	1265.28 1283.29	12.94	1263.25 1281.26	
387			6.6	58.7	59.0
388			11.1	54.2	55.0
389			12.6	52.7	55.0
			14.4	50.9	
			16.0	49.3	
390			11.9	53.4	55.0
T.P.	8.28	1262.88 1280.89	10.68	1254.60 1272.51	
391			9.4	53.5	55.0

$\frac{-5.1}{25.0}$   $\frac{-5.1}{20.0}$   $\frac{-5.1}{12.2}$   $\frac{-2.6}{6.5}$  0.0  $\frac{+0.6}{13.0}$   $\frac{+4.0}{25.0}$   
 +65:  $\frac{-5.0}{25.0}$   $\frac{-2.2}{15.0}$   $\frac{0.0}{2.4}$  0.0  $\frac{+1.0}{25.0}$   
 $\frac{-1.5}{25.0}$  0.0  $\frac{+0.5}{25.0}$

Same as 380

$\frac{-1.3}{25.0}$  0.0  $\frac{+1.2}{25.0}$

0.0 0.0 0.0

$\frac{-1.0}{25.0}$   $\frac{-0.7}{11.0}$   $\frac{+0.7}{3.4}$   $\frac{+0.3}{5.4}$   $\frac{+2.0}{25.0}$

$\frac{0.8}{25.0}$  0.0  $\frac{-1.6}{3.0}$   $\frac{+0.6}{5.4}$   $\frac{+2.4}{25.0}$

0.0 0.0 0.0

$\frac{-1.0}{25.0}$   $\frac{-0.1}{12.6}$  0.0  $\frac{+3.2}{25.0}$

On Polar-tree 50' L Sta. 384+30.

$\frac{-2.5}{25.0}$   $\frac{+0.7}{10.6}$   $\frac{+1.1}{5.0}$  0.0  $\frac{+2.1}{3.2}$   $\frac{+2.9}{25.0}$

Same as 385

$\frac{0.0}{25.0}$   $\frac{+0.9}{3.8}$  0.0  $\frac{+0.9}{3.0}$   $\frac{+1.1}{20.0}$   $\frac{+1.8}{25.0}$

0.0 0.0 0.0

0.0 0.0 0.0

$\frac{-1.0}{25.0}$   $\frac{-1.0}{15.4}$   $\frac{-0.7}{12.2}$   $\frac{0.0}{10.5}$  0.0  $\frac{0.8}{4.0}$   $\frac{-2.3}{5.0}$   $\frac{-1.2}{7.8}$   $\frac{-1.0}{13.6}$   $\frac{-1.0}{25.0}$

Water Level (Pot in 6' slab)

Bottom of Creek (3 ft of Mud to Solid Bottom)

$\frac{-0.6}{25.0}$   $\frac{-0.3}{14.4}$   $\frac{-2.5}{11.8}$   $\frac{+0.5}{8.8}$  0.0 0.0  $\frac{-3.0}{10.5}$   $\frac{-1.2}{13.2}$   $\frac{-0.7}{25.0}$

0.0 0.0 0.0

$\frac{-0.7}{14.8}$   $\frac{-1.1}{12.4}$   $\frac{-2.8}{9.8}$   $\frac{-0.7}{8.6}$   $\frac{-2.1}{6.0}$   $\frac{-1.0}{9.2}$   $\frac{-2.7}{10.5}$   $\frac{-0.6}{12.0}$   $\frac{+0.6}{25.0}$



Sta	#	H.I.	-	Elev.	
		1262.88			
		<del>1282.89</del>			
392			8.9	1254.0	1255.5
393			8.2	54.7	56.0
			10.4	52.5	
			10.9	52.0	
394			8.0	54.9	56.5
395			5.8	57.1	58.0
396			4.0	58.9	60.0
+42			2.5	60.4	60.8
397			2.1	60.8	62.0
T.P.	12.40	1274.70	0.58	1262.50	
		<del>1286.31</del>			
398			11.5	63.2	64.0
+77			8.8	65.9	65.2
399			9.3	65.4	65.5
400			9.5	65.2	66.3
+50			9.6	65.1	66.6
401			8.6	66.1	67.0
402			6.1	68.6	69.2
403			4.3	70.4	71.5
+25.0					72.0
+44.2			1.8	72.9	72.0
				1272.54	
B.M.	+50		2.16	<del>70.55</del>	72.0
404			6.0	68.17	69.0
+10					69.5
+48					
			7.9	66.8	
+62			6.8	67.9	69.5

Same as 395  
 Creek  
 -0.5 -0.7 -3.2 -0.6 0.0 0.0 -1.7 3.2 -1.4 -0.7 -0.2  
 25.0 13.6 11.4 21.0 3.0 3.0 11.0 13.5 15.5 17.6 25.0

Water Level.

Bottom of Creek. (Gravel Bottom.)

-0.7 -1.2 -1.4 0.0 -0.7 -1.0 +0.3 +0.1  
 25.0 23.4 21.6 25.0 20.4 18.2 17.4 25.0

0.0 0.0 0.0

-0.4 -0.4 0.0 +0.1 -1.2 0.0 +0.2  
 25.0 17.0 25.0 12.6 14.5 17.0 25.0

Same as 396

-1.0 +0.4 -1.1 +0.7 1.0  
 25.0 23.5 18.4 25.0

-1.3 0.0 +0.6 -0.4 +0.9 +1.3  
 25.0 12.6 14.8 12.4 25.0

-2.4 0.0 0.0 -0.7 +0.8 +1.1  
 25.0 14.6 17.0 20.4 25.0

-1.3 0.0 +0.7 -0.5 +1.4 +1.7  
 25.0 14.2 16.8 19.4 25.0

-1.2 0.0 +0.6 -0.3 +0.9 +1.0  
 25.0 14.6 16.6 18.6 25.0

-1.4 0.0 +0.6 +0.1 +1.0 +1.0  
 25.0 12.5 15.0 17.8 25.0

-2.4 0.0 +0.8 -0.7 +1.3 +1.6 +1.8  
 25.0 12.4 14.5 17.8 22.5 25.0

On Paper - 30' R.L. of Sta. 402+50.

Bottom small Creek.

Put in 24" pipe

Water Level

Part from K Sand.



Sta	+	H.I	-	Elev
		1274.70 1292.71		
405			6.9	1267.8
+34.1				1269.5
406			2.3	72.4
				75.1
+12			2.0	72.7
				76.1
T.P.	1183	1286.02 1304.03	0.51	1274.19 1292.20
407			4.9	81.1
				83.8
T.P.	1257	1298.28 1316.29	0.31	1285.71 1303.72
+57			10.3	88.0
				88.4
408			6.9	91.4
				92.1
+72			0.8	97.5
				98.2
T.P.	1232	1310.33 1328.34	0.27	1298.01 1316.02
409			8.5	1301.8
				1300.6
+50			2.0	1308.3
				1304.9
410			1.6	08.7
+10				1309.1
+35			1.3	09.0
				1310.0
411			2.6	07.7
				1309.0
412			6.0	04.3
				05.2
413			10.2	00.1
				1301.5
T.P.	144	1302.08 1320.09	9.69	1300.64 1318.65
B.M.			12.00	1290.08 1308.09
+70			4.9	1297.2
				1296.8
414			7.0	95.1
				94.8
T.P.	108	1290.63 1308.64	12.53	1289.53 1307.56
415			3.4	1287.2
+80				1288.0
416			7.8	82.8
				1284.0

	40	0.0	0.2	
	$\frac{+1.0}{25.0}$	0.0	$\frac{-1.0}{25.0}$	
	$\frac{+1.9}{25.0}$	$\frac{+1.3}{17.8}$	$\frac{+0.3}{12.0}$	0.0
				0.0
	$\frac{+4.8}{25.0}$	0.0	$\frac{+0.3}{7.0}$	$\frac{0.0}{12.15}$
				$\frac{+0.8}{22.4}$
				$\frac{+1.1}{25.0}$
	$\frac{-1.3}{25.0}$	$\frac{-1.4}{18.0}$	$\frac{-0.3}{10.2}$	$\frac{+2.7}{25.0}$
	$\frac{-1.0}{25.0}$	$\frac{-1.5}{19.5}$		$\frac{+2.0}{15.0}$
				$\frac{+2.2}{25.0}$
		$\frac{-1.2}{25.0}$	0.0	$\frac{+3.0}{25.0}$
	$\frac{-1.7}{25.0}$	$\frac{-1.4}{16.7}$	0.0	$\frac{+2.0}{25.0}$
				$\frac{+1.5}{25.0}$
	$\frac{-1.2}{25.0}$	$\frac{-1.4}{15.4}$	0.0	$\frac{+1.2}{25.0}$

on Stamp - 125' Left of Sta. 414.

Edge of water - Water Level  
1.3 ft. of mud to solid bottom

Sandy Loam



Sta.	+	H.I.	-	Elev.	Grade.
		1290.63 <del>1308.64</del>			
+75			8.5	1282.1	1284.5
417			8.4	82.2	1284.5
+75			7.8	82.8	84.5
418			6.9	83.7	84.5
T.P.	9.94	1296.04 <del>1314.0</del>	4.53	1286.10 1304.11	on rock
419			9.5	86.5	87.5
420			5.1	90.9	90.5
+53			3.5	92.5	92.0
+83.3					93.0
421			3.4	92.6	93.0
+50					93.0
+80			3.7	92.3	92.0
422			4.5	91.5	91.5
+68			9.5	86.5	89.5
T.P.	3.54	1291.20 <del>1309.21</del>	8.38	1287.66 1305.67	
423			3.6	87.6	88.5
+60			1.9	89.3	88.1
424			3.9	87.3	87.5
+15			4.8	86.4	87.5
425			6.3	84.9	87.5
426			9.4	81.8	82.5
T.P.	0.94	1280.08 <del>1288.09</del>	12.06	1279.14 1289.15	
427			3.8	76.3	77.5
428			9.1	71.0	78.5
T.P.	2.16	1269.32 <del>1297.38</del>	12.94	1267.16 1275.17	
429			3.1	66.2	67.5

-4643

put in 12" pipe

Edge of Water.

on rock



Sta.	+	H.I.	-	Elev.	
		1269.32			
		<del>1277.33</del>			
430			7.4	1261.9	1262.1
+40					60.5
+57			9.9	59.4	60.5
431			10.5	58.8	60.5
432			11.1	58.2	60.5
433			10.8	58.5	60.5
+75					60.5
434			8.8	60.5	61.0
435			7.1	62.2	63
		1269.13		1262.47	
T.P.	6.66	<del>1277.14</del>	6.85	1270.48	
436			6.3	62.8	
				1264.17	
B.M.			4.96	<del>1272.17</del>	
437			5.0	64.1	
438			4.8	64.3	
439			5.5	63.6	
+65			6.0	63.1	
440			6.8	62.3	
441			10.4	58.7	
442			11.6	57.5	
		1262.26		1258.12	
T.P.	4.4	<del>1270.29</del>	11.01	<del>1266.13</del>	
443			4.2	58.1	
444			4.5	57.8	
445			5.5	56.8	1257.5
446			6.4	55.9	57.5
+60			6.3	56.0	57.5
+80					52.5
447			4.1	58.2	58.2

On Oak tree 30' Left of Sta. 436+75.



Sta	+	H.I.	-	Elev	
		1262.26			
		<del>1270.27</del>			
450			1.3	61.0	1259.0
448			1.3	61.0	61.0
449			2.1	60.2	
450			4.5	57.8	
		1258.27		1258.02	
T.P.	0.25	<del>1248.28</del>	4.24	<del>1266.03</del>	
451			3.3	55.0	1255.0
470			7.5	50.8	51.6
452			10.6	47.7	50.0
440			10.9	47.4	48.8
453			12.3	46.0	47.0
		1246.97		1245.73	
T.P.	1.24	<del>1256.82</del>	12.54	<del>1255.74</del>	
454			5.4	41.6	
455			12.5	34.5	
		1235.46		1235.19	
T.P.	0.27	<del>1245.37</del>	11.78	<del>1245.10</del>	
455			2.5	33.0	
				1231.00	
B.M.			4.46	<del>1240.91</del>	
456			4.5	31.0	
457			5.4	30.1	
458			5.4	30.1	
459			5.0	30.5	
460			5.6	29.9	
461			4.4	31.1	
462			5.3	30.2	
463			4.0	31.5	✓

On Jack pine 75' Left of Sta. 455+55



Sta.	+	4.1	-	Elev.	Grade.
		<del>1235.46</del> <del>1245.35</del>			
464			5.1	1230.4	
T.P.	3.49	1234.67 <del>1244.58</del>	4.28	1231.18 <del>1241.09</del>	
465			4.2	30.5	
466			4.4	30.3	
469			6.1	28.6	
468			5.4	29.3	
469			5.7	29.0	
470			4.9	29.8	
471			4.5	30.2	
472			4.2	30.5	
473			4.4	30.3	
474			4.7	30.0	
475			4.2	30.5	
T.P.	2.86	1234.05 <del>1243.96</del>	3.48	1231.19 <del>1241.10</del>	
476			4.5	29.6	1231.0
477			3.7	30.4	1229.5
433			4.4	29.7	1228.5
478			8.7	25.4	1226.5
410			9.9	24.2	26.5
470			8.6	25.5	26.5
479			8.8	25.3	26.5
463			9.9	24.2	26.5
480			9.6	24.5	26.5
481			4.1	30.0	29.5

1231.0  
1229.5  
1228.5  
1226.5  
26.5  
26.5  
26.5  
26.5  
29.5



Sta	+	H.I.	-	Elev	Grade
		1234.05			
		<del>1245.76</del>			
482		1236.96	2.4	123 1.7	1232.0
T.P.	4.57	<del>1246.89</del>	1.66	<del>1242.20</del>	
483			5.8	31.2	
484			6.1	30.9	
485			6.3	30.7	
486			6.0	31.0	1232.1
487			7.9	32.1	32.1
				1227.65	
B.M.			9.31	<del>1237.56</del>	
488			5.4	31.6	32.1
489			5.8	31.2	1232.1
+30			5.5	31.5	33.0
490			2.7	34.3	34.0
491			4.4	32.6	33.0
+65			6.5	30.5	32.0
492			5.4	31.6	32.0
+60					32.0
493			5.0	32.0	29.0
T.P.	0.63	1233.04	1.55	1232.41	
		<del>1242.95</del>		<del>1242.32</del>	
+45			1.2	31.8	26.0
+65			3.9	29.1	24.0
494			11.3	21.7	22.0
		1220.69		1220.59	
T.P.	0.10	<del>1230.40</del>	12.45	<del>1230.50</del>	
+24			1.9	18.8	20.5
+55			6.7	14.0	17.0
+63			8.3	12.4	17.8
+86.6					12.16

Put in 12" pipe.

$\frac{+0.4}{25.0} \ 0.0 \ \frac{-1.3}{25.0}$

$\frac{+1.0}{25.0} \ 0.0 \ \frac{-1.9}{25.0}$

Open pipe tree - 60' Rte of Sta. 487

$\frac{+1.1}{25.0} \ 0.0 \ \frac{+3.1}{25.0}$

$\frac{-0.2}{25.0} \ 0.0 \ \frac{.90}{25.0}$

$\frac{-0.7}{25.0} \ 0.0 \ \frac{+0.8}{25.0}$

Put in 12" pipe.

$\frac{-1.0}{25.0} \ 0.0 \ \frac{+1.5}{25.0}$

$\frac{-2.0}{25.0} \ 0.0 \ \frac{+3.6}{25.0}$

$\frac{-2.0}{25.0} \ 0.0 \ \frac{+2.7}{25.0}$

$\frac{-1.9}{25.0} \ 0.0 \ \frac{+1.2}{25.0}$



Sta	+	H.1 1220.69 <del>1230.49</del>	-	Elev			
495			10.8	1209.9	12	16.1	2.5 ft. from top to solid bottom
+95			8.8	11.9	16.5		
496			9.8	10.9	16.0		
+05			9.6	11.1	16.0		Top of Bank
+06			12.0	08.7	16.2		Bottom of Creek
			10.5	10.2			Water Level.
+20			14.7	06.0	16.0		Bottom of Middle of Creek. // Gravel Bottom.
+35			12.7	08.0	16.0		Bottom of Creek
+39			10.8	09.9	16.5		Edge " "
+42			9.3	11.4	16.0		Top of Bank
497			9.7	11.0	16.0		
+02			10.3	10.4	16.0		Edge of Creek.
			10.4	10.3			Water Level.
+06			13.2	07.5	16.0		Bottom of Creek. Gravel Bottom.
+18			13.3	07.4	16.0		Middle of Creek.
+29			12.2	08.5	16.0		Bottom of Creek.
+29.6			10.0	10.7			Edge of Water.
+33.0			8.9	11.8	16.0		Top of Bank.
498			7.4	13.3	16.0		
+07.1			7.5	13.2	16.0		Top of Bank.
+11					16.0		Bottom of Creek
+19			11.6	09.1	16.0		Water Level.
			10.2	10.5			
+30			12.8	07.9	17.0		Bottom of middle of Creek.
+38			11.5	09.2	18.0		" " "



Sta.	+	H.I.	-	Elev	
		1220.69			
		<del>1230.40</del>			
+50			10.0	1210.7	1219.0
+56			8.8	11.9	19.5
+78			9.6	11.1	21.1
+94			9.3	11.4	22.1
+99			7.3	13.4	22.5
T.P.	12.58	1226.32	6.95	1213.74	
T.P.	12.28	1236.03	0.85	1223.45	
		1237.75		1225.47	
		<del>1249.16</del>		<del>1236.88</del>	
+38			4.5	33.3	25.2
500			2.7	35.1	29.5
501	+50		2.6	35.2	33.0
+70			3.0	34.8	33.2
502			4.0	33.8	33.5
+40			5.5	32.3	33.7
503			5.4	32.4	33.8
T.P.	6.95	1239.80	4.90	1232.85	34.1
		<del>1251.24</del>		1244.26	
504			7.2	32.6	34.1
505			5.0	34.8	34.1
+50			4.6	35.2	34.1
506			6.5	33.3	34.1
+30			7.2	32.6	34.1
507			5.9	33.9	34.1
508			6.0	33.8	34.1
509			4.9	34.9	34.1
+22			5.5	34.3	34.1

Edge of Water.

Top of Bank.

Put in 12" pipe.

(12" pipe?)

Edge of R.O.W. of Road #81

-0.8  
25.0 0.0 +0.6  
25.0

-1.0  
25.0 0.0 +1.3  
25.0

-1.4  
25.0 0.0 0.0 +0.6  
25.0

-1.6  
25.0 0.0 +0.5  
25.0



Sta	+	N <sub>1</sub>	-	Clear	
		1239.80			
		<del>1251.21</del>			
+26.			710	1232.8	342
+42. <sup>5</sup>			58	34.0	340.
B.M.			388	<del>1235.97</del> 1247.53	

Bottom of ditch.  
Center of State Road # 81. - End of this Survey  
On Pine-tree - 40' Left of Sta. 408 + 85.



6/5/1916.

Survey of Street in Pillager, Minn. - to be graded

Sta.	L	Def.	R.	Mag. by	47+88.2 = Sta. 0+00 of State Road #80.
47+88.2	0				E. RR. passing track
46+38.2	0	53°4'	S81°W.		E. M. & A. track
44+27.0					W. R. D. W. Fence
44+12.0					N. & D. Fence
43+00					E. of M. & A. Street
42+31.8	0		71°29'	N46°W.	
40+59.0					
40+25					
39+91.0					
36+46.4	0	104°39'		S65°W.	
34+35.3	0		89°24'	N10°W	
34+20					
30+70	0				
26+99.7	0	89°30'		S80°W.	
26					
25					
24					
23+20					
23					
22					
21					
20					
19					
18					
17+47.9	0	0°49'		N10½°W.	

68

Beginning at intersection of  $\Phi$ s of River and Hazel streets = section corner = Station 17+47.9 Iron pipe  
 Corner of section 16-133-30.  
 Thence with  $\Phi$  of River Street

Turn West-running 33½ west north of fence

$\Phi$  of street N. T. S.

34+20 Put in pipe across E & W St.

E of M. & A. St. Put in one pipe across N & D St. and " " " E & W "

To  $\Phi$  of Street running E & W.

24 - Private Roadway on Right. - Put in 16' pipe.  
 Private Roadway on Left. Put in 16' pipe.



6/15/1916.

Levels of street in Pullager Minn

Sta	+	H.I.	-	Elev.	Grade.
B. M.	4.67	1208.55		1203.88	
17+47.9			5.6	03.0	1203.4
18			5.4	03.2	1203.5
19			5.2	03.4	1203.8
20			5.3	03.3	1204.1
21			5.4	03.2	1204.3
22			4.0	04.6	1204.6
+75			5.3	05.3	1205.4
23			2.4	06.2	1205.6
+75			0.8	07.8	1206.3
24			0.8	07.8	1206.5
T.P.	4.17	1212.21	0.51	1208.04	
25			4.8	07.4	1206.7
26			5.3	06.9	1206.9
26+50			5.7	06.5	1207.0
+70			5.1	06.5	1207.1
27			5.1	07.1	1207.1
+30			5.1	07.1	1207.1
+60			6.9	05.3	1206.5
28			7.3	04.9	1206.1
29			7.4	04.8	1205.0
30			7.3	04.9	1205.0
+70			6.6	05.6	1205.9
*31			6.5	05.7	1206.3
T.P.	6.84	1213.58	5.47	1206.74	

Spike in Tel. Pole 25' S.W. of Cor.

	-0.3	-0.5	+0.8	+2.1
		8.0	10.0	16.1
	-0.4			
	0.0	-0.3	+1.2	
	10.0	10.8	15.2	
	+1.2	-0.1	-0.1	+1.0
	15.2	15.2	15.2	15.0
	+2.5	+6.2	0.0	+2.7
	16.5	18.0	18.0	16.7
	-0.1			
	+3.0	+0.6	+3.7	
	17.0	17.6	17.7	
	+3.3	+1.5	+5.0	
	17.3	19.1	19.0	
	+3.2	+1.3	+3.4	
	17.0	18.4	17.4	
	+0.7			
	+2.8	+0.7	+2.7	
	16.9	17.6	16.7	
+27	+2.2	+0.2	+1.3	
	16.2	16.8	15.3	
	+2.0	0.0	+1.5	
	16.0	16.0	15.3	
+70		-0.6	-0.5	
			10.6	
top of sidewalk crossing	+0.8	-0.5	-0.7	+1.2
	14.8	10.8	10.1	7.2
	+0.9	-0.4	-0.3	+1.1
	4.9	10.6	10.3	15.1
	+1.3		+2.2	
	15.9	-0.2	16.2	
put in 12" pipe	+2.1	-0.1	+4.3	
	16.1	16.0	18.3	
E of street N & S	+1.2	-0.6	+1.9	
	15.2	15.6	15.9	



Sta	T	H.I.	-	Elev
		1213.58		
31+28			7.8	1205.8 1206.6
32			6.2	07.4 1207.5
33			5.5	08.1 1208.4
34			5.3	08.3 1208.8
+15			5.7	07.9 1208.9
+35 <sup>3</sup>			5.2	08.4 1209.0
B.M.			4.40	1209.18 1209.2
35			4.0	09.6 1209.4
+45			3.0	10.6 1209.6
36			3.6	10.0 1210.0
+46.4 <sup>0</sup>			5.0	08.6
T.P.	4.36	1215.16	2.78	1210.80
37			5.1	10.1
38			4.8	10.4
39			4.0	11.2
T.P.	5.33	1216.71	3.78	1211.38
40			6.4	10.3
+25			5.9	10.8
41			5.9	10.8
42			4.8	11.9
43			4.8	11.9
+75			6.2	10.5
44			5.2	11.5
+12.0			4.9	11.8

+4.5		+3.9
15.5	-0.1	17.9
+2.0		+2.9
16.0	0.0	16.9
+1.7		+2.2
15.7	-0.5	16.2

Top of street N + S  
25 ft. N. of Sta 34+55.

Turn West -

to N + S Street

Top of rail - N. P. RR. track

Sta. 34 to 47+88<sup>1</sup> - Road Machine work.



Sta.	+	H.I.	-	Elev.
		1216.71		
44+27			5.3	1211.4
45			5.5	11.2
+50			6.3	10.4
46			6.3	10.4
T.P.	4.29	1215.52	5.48	1211.23
47			4.7	10.8
47+88 <sup>7</sup>			4.6	10.9
B.M.			4.20	1211.32
B.M.			4.06	1211.46

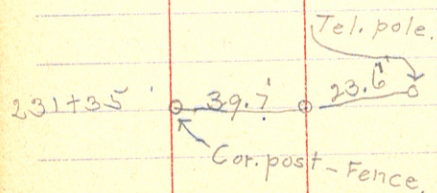
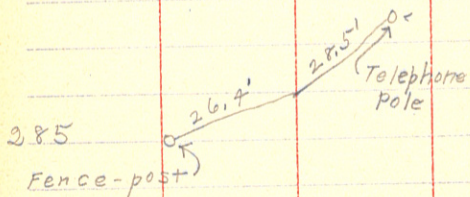
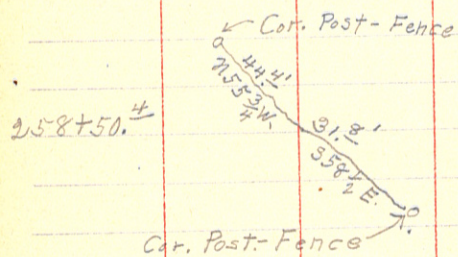
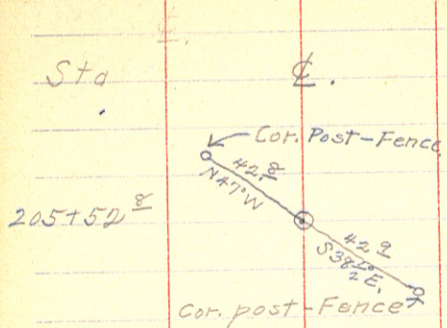
Top of rail of passing track.

47+88<sup>7</sup> = Sta. 0+00 of State Road #80.  
 On fence-post 25' W. of Sta. 47+88<sup>7</sup>.  
 Elev. =  $1211.32 = \text{Elev. } 1000.00 \text{ of road } \#80.$

On Pine-tree 30' N.E. of Sta. 46+38<sup>7</sup>.



Reference points - Pillager - Motley Road.





8) 2200 (2.75  
 16  
 60  
 56  
 40

8692.2  
 275.0  
 8947.2

52.2  
 47.2  
 5.0

E. A. Rearick. 1 1/2 sta's, chaining  
 & Rodding -

# KEITH'S RAILROAD CURVE TABLES.

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## HOW TO USE KEITH'S TABLES.

### EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle  
 of Intersection or I. P.=23° 20' to the R. at Station  
 542+72.

Ext. in Tab. IV opposite 23° 20'=120.87  
 120.87+12=132.87. Say a 10° Curve.

Tan. in Tab. IV opp. 23° 20'=1188.1  
 - 1188.1+10=1188.1

Tab. V. correction for A. 23° 20' for a 10° Cur.=0.16  
 1188.1+0.16=1188.26=corrected Tangent.

(If corrected Ext. is required find in same way)  
 Ang. 23° 20'=23.33°+10=2.3333=L. C.

2° 19 1/2' = def. for sta. 542	I. P. = sta. 542+72
4° 49 1/2' = " " " +50	Tan. = 1.18.47
7° 19 1/2' = " " " 543	B. C. = sta. 541+53.53
9° 49 1/2' = " " " +50	L. C. = 2.33.33
11° 40' = " " " 543+	E. C. = sta. 543+86.86
86.86	

100-53.53=46.47 × 3' (def. for 1 ft. of 10° Cur.)=139.41'  
 3° 19 1/2' = def. for sta. 542.

Def. for 50 ft.=2° 30' for a 10° Curve.

Def. for 36.86 ft.=1° 50 1/2' for a 10° Curve

(These tables are published in Field Books of  
 KEUFFEL & ESSER CO., New York, N. Y.)

