

STATE
HIGHWAY COMMISSION
OF MINNESOTA

TAMARACK LAKE

OFF TAKE
FIELD BOOK

360

90

CASS. COUNTY

NO. 6

WM

County Road #23

B.M.	2.34	1301.76		1279.42
T.P.	2.07	1296.17	7.66	1294.10
T.P.	7.74	96.40	751	88.66
T.P.	5.99	1297.69	4.70	91.70
B.M.				5.18 92.51
00				5.2 92.5
+25				4.5 93.2
1				5.4 92.3
2				5.8 91.9
3				6.8 90.9
4				5.4 92.3
5				6.2 91.5
T.P.	4.05	96.22	5.52	92.17
6				4.4 91.8
7				5.0 91.2
+50				5.9 90.3
8				5.6 90.6
9				4.4 91.8
10				4.5 91.7
11				3.2 93.0
12				1.9 94.3
13				1.0 95.2
T.P.	5.63	1301.32	0.53	95.69
14				5.1 96.2
15				4.6 96.7

L.

R

7/24-15³
C.D.O.
J.B.O.

On Concrete by Cor

County Road #23
1301.32

16				5.0	96.3
17				4.8	96.5
18				4.6	96.7
19				4.4	96.9
20				4.8	96.5
21				5.2	96.1
22				4.8	96.5
B.M.	3.04	1300.96	3.40		97.92
23				3.4	97.6
24				3.4	97.6
25				3.7	97.3
26				4.7	96.3
+70 ³				4.8	96.2
27				4.9	96.1
28				5.1	95.9
29				4.7	96.3
30				4.7	96.3
31				5.5	95.5
32				5.9	95.1
T.P.	3.87	99.22	5.61		1295.35
33				2.6	96.6
34				3.8	95.4
35				3.9	95.3
36				4.3	94.9
37				4.9	94.3

7/24-15⁴

Spike in Tel Pole 25' L 22

Sec Cor (Iron Pipe)

County Road #23

1299.22

38			53	93.9
39			59	93.3
40			57	93.5
41			51	94.1
42			57	93.5
T.P.	4.55	98.49	5.28	93.94
43			54	93.1
44			53	93.2
45			43	94.2
46			51	93.4
+60			7.8	90.7
47			8.5	90.0
48			8.5	90.0
49			8.0	90.5
50			7.5	91.0
51			6.8	91.7
T.P.	6.32	98.53	6.28	92.21
+75			5.4	93.1
52			5.4	93.1
+50			5.6	92.9
+80			5.6	92.9
53			4.9	93.6
54			4.4	94.1
55			4.3	94.2
56			4.4	94.1

L.

R.

5
7/24-15

$\frac{47}{17}$ $\frac{7.1}{14}$ $\frac{6.4}{4}$ $\frac{5.1}{18}$
Swamp.

Swamp.

$\frac{54}{18}$ $\frac{7.6}{15}$ $\frac{7.6}{8}$ $\frac{5.4}{4}$ $\frac{5.4}{18}$
 $\frac{7.0}{14}$ $\frac{6.8}{7}$

(Small Borrow Pit on R.)

small Ditch Both Sides

↓

County Road #23

1298.53

57				4.2	94.3
58				4.3	94.2
T.P.	7.10	1301.70	3.93		94.60
59				7.0	94.7
60				7.2	94.5
61				7.0	94.7
62				6.6	95.1
63				4.8	96.9
B.M.				2.99	98.71
64				2.6	99.1
65				1.4	00.3
66				0.3	01.4
T.P.	3.65	05.29	0.06		01.64
67				4.7	00.6
+50				5.3	00.0
68				5.3	1300.0
69				5.9	1299.4
70				5.9	99.4
71				5.8	99.5
T.P.	6.73	1306.56	5.46		1299.83
72				7.3	99.3
73				7.3	99.3
74				5.8	00.8
75				4.9	01.7
76				4.6	02.0

Spike J.P. Tree 35 R 63

01.6E	99.8	99.8E	01.4E	
16	14	10	9	

02.1
16

4.7	5.6	5.6	4.7	
18	14	8	7	

4.7
18

Low

S.B.

70+20 to 72 Borrow Pit
on L.

County Road # 23

1306.56

77				3.8	02.8
78				2.4	04.2
T.P	2.59	07.65	1.50		05.06
79				2.4	05.3
80				3.7	04.0
81				4.9	02.8
82				6.2	01.5
83				7.1	00.6
84				6.9	00.8
T.P	9.55	10.60	6.60		01.05
85				7.8	02.8
86				7.5	03.1
87				7.1	03.5
88				6.0	04.6
89				4.5	06.1
90				4.2	06.4
B.M.	9.05	17.01	2.64		07.96
+50				10.5	06.5
91				9.7	07.3
92				6.9	10.1
93				4.1	12.9
+70				3.8	13.2
94				5.2	11.8
95				10.8	06.2
96				13.3	03.7

L.

R.

7
7/24-15

15" Pipe

Spike in Tel Pole 90+50 25'L

County Road #23

1317.01

T.P.	6.35	10.76	12.60	1304.41
96+75				8.3 02.5
97				8.2 02.6
98				6.1 04.7
99				3.4 07.4
+50				2.4 08.4
100				6.3 04.5
T.P.	0.93	00.49	11.20	1299.56
101				3.5 97.0
102				10.6 89.9
+40				11.0 89.5
103				10.0 90.5
+50				10.7 89.8
104				11.2 89.3
T.P.	9.58	99.52	10.55	89.94
105				10.6 88.9
+73				11.9 87.6
+75				13.8 85.7
W.L.				12.6 86.9
+77				11.7 87.8
106				11.2 88.3
107				11.2 88.3
+65				9.9 89.6
108				8.0 91.5
+70				2.1 97.4

L.

R.

7/24-15⁸

Sand.

Swamp



Bottom Creek.

Water Level 7/23-15

Swamp



County Road #23
1299.52

109				2.5	97.0
+50				5.1	94.4
110				1.7	97.8
T.P.	5.45	1303.89	1.08		98.44
+50				3.6	00.3
B.M.				4.06	1299.83
111				4.9	99.0
112				12.6	91.3
T.P.	0.27	92.16	12.00		91.89
113				4.8	87.4
114				5.8	86.4
115				5.5	86.7
116				5.7	86.5
117				6.0	86.2
T.P.	8.80	95.98	4.98		87.18
118				9.4	86.6
119				9.7	86.3
120				9.9	86.1
121				9.5	86.5
122				9.5	86.5
123				9.0	87.0
+20				8.6	87.4
124				3.2	92.8
B.M.	10.68	1304.25	2.41		93.57
+15				11.1	93.2

L.

R

9.
7/24-15

Sand

Spike in J.P. Tree 40' R 111

Boggy
Swamp
↓

↑
Swamp

Spike in J.P. Tree 30' R 123 & 70

County Road #23

1304.25

124+70				2.3	02.0
T.P.	7.05	11.19	0.11		04.14
125				7.5	03.7
126				5.6	05.6
+40				4.5	06.7
127		2		6.0	05.2
+60				8.8	02.4
128				6.6	04.6
129				4.0	07.2
130				4.0	07.2
T.P.	2.18	1309.89	3.48		07.71
131				4.2	05.7
132				7.1	02.8
+				6.9	03.0
B.M.		6.97		1302.92	

L.

R

10
7/24-15

S 9.77 D

$$\frac{9.6}{15}$$

$$\frac{7.0}{20}$$

Sec. Cor. Iron Pipe,
Spike in Tel Pole 25' L of. Iron Cor

H.M. No 1

20

○ P.O.T.

19

18

17

16

15

14

+67⁸

○ P.O.T.

13

12

11

10

9

8

7

6

5

+72⁴

○ P.O.T.

4

3

2

1

00

○

on S.R. #

11.
8-31-15

R.P.

10'

10'

R.P.

C.F.H.

J.B.C.

16+65 $\frac{1}{4}$ Cor P 3' South of our Line
our Line is in Center of Road.

Sand & Clay.

R.P.

8'

8'

R.P.

15% L.R.

R.P.

11'

x

11'

R.P.

R.P.

10'

10'

R.P.

Hill #1 On S.R.#

B.M.	2.00	102.00		100.00
00			3.3	98.7
1			4.7	97.0
+70			8.9	93.1
2			10.1	91.9
+30			10.4	91.6
3			9.5	92.5
+80			4.9	97.1
4			4.2	97.8
+45			3.1	98.9
5			3.1	98.9
+35			4.4	97.6
6			9.1	92.9
T.P.	1.12	92.80	10.32	91.68
+50			4.2	88.6
7			7.3	85.5
+25			9.0	83.8
T.P.	0.56	81.62	11.74	81.06
8			4.6	77.0
+40			6.7	74.9
+70			7.8	73.8
9			8.5	73.1
+30			6.7	72.9
10			7.9	73.7
T.P.	6.43	82.90	5.15	76.47

L R 13

Notch in J.P. Tree 30' L of 3+75

8-31-15

C.D.O.
C.F.H.
J.B.C.

3.9 20	3.9 12	5.1 10
7.4 16	8.1 6	8.9 4
10.3 20	10.8 8.0	10.5 4
12.1 20	12.5 8	10.7 4
	9.5 20	4.9 5
3.8 20	4.3 7	4.9 5
2.7 22	2.1 8	4.4 6
02.5E 30	02.5E 11	3.1 7
02.4E 30	02.9E 12	3.1 8
01.9E 30	01.9E 13	4.4 8
6.4 25	6.4 10	9.4 7

5.2 11	4.1 12	4.1 20
8.9 10	9.5 16	
10.4 9	11.6 14	12.2 20
10.6 11	12.9 16	12.9 20
9.5 10	9.0 20	
4.9 20		
4.4 12	3.7 14	4.4 22
3.4 11	00 14	00 30
3.3 10	03.1 15	03.1 30
4.4 10	1.4 14	1.9 25
9.1 11	8.1 14	9.0 24

1.2 20	4.2 8
2.9 20	4.3 9
5.0 22	5.4 11
	9.0 7

4.2 11	5.7 15	6.3 20
7.5 5	6.6 9	7.7 16
8.8 14	6.4 17	6.4 25

10.3 22	9.3 13	7.0 7
13.1 30	13.1 15	8.0 7
13.0 30	13.0 14	8.7 7
6.0 22	9.3 10	8.7 7
3.3 19	7.4 9	7.9 7

4.6 12	3.6 17	3.6 20
7.1 7	8.0 12	8.0 19
8.2 7	11.0 13	11.0 21
8.8 7	13.2 15	13.0 20
8.7 6	11.5 15	11.5 30
7.9 6	7.9 12	7.9 25

Hill No 1 on S.R.#

82.90

10+80				5.6	77.3
11				4.8	78.1
+60				6.1	76.8
12				5.5	77.4
+35				4.3	78.6
T.P.	11.36	92.61	1.65		81.25
13				9.8	82.8
+45				5.6	87.0
+70				4.7	87.9
14				5.1	87.5
+22				5.9	86.7
B.M.	3.53	83.02	13.12		79.49
15				3.5	79.5
+45				5.6	77.4
16				6.1	76.9
17				3.1	79.9

L.

11	2.7	5.6
19	1.8	3.3
	2.8	10
	1.5	2.5
	2.0	12
3.0	4.0	5.5
2.0	1.7	11
	5.3	6.3
	2.5	13
		4.3
		8
	9.8	9.8
	2.0	8
2.7	2.7	6.0
2.5	1.3	8
0.6	0.6	5.1
2.5	1.3	9
93.5E	93.0E	5.1
2.8	1.3	8
0.0	0.0	5.9
2.5	1.4	6
		3.5
		7
		5.6
		7
		6.1
		13
2.0	2.0	3.4
2.0	2.3	6

Notch in W.P. Tree 30 R 14 + 20

R.

14
8-31-15

6.0	6.0
7	20
	4.8
	20
	6.1
	2.0
5.5	7.2
6	13
4.3	4.9
5	9
	3.9
	19
9.8	8.5
7	12
	2.6
6.0	1.3
	1.2
5.0	1.2
6	10
5.1	1.3
6	10
5.9	3.7
6	9
	4.7
	20
	20
83.5E	1.0
23	14
6.3	7.3
22	7
	14
	5.1
	7.4
	2.2
	3.5
	7.4
	2.0
2.0	2.0
2.0	2.3
	8
	6
	3.1
	10
	2.1
	20

Hill #2 S.R.#

10

○

P.t

9

8

7

6

5

4

+08⁸

△

21°54' L

3

2

1

00

3 2

8-31-15

15

C.D.O.
C.F.H.
J.B.C.

Very Sandy

R.P.

20'

10'

R.P.

Hub is 6.5 From Center of Road to R.

Hill #2 S.R.

B.M.	3.39	103.39		100.00
00			2.7	00.7
1			3.4	00.0
+55			2.4	01.0
2			3.0	00.4
3			3.4	00.0
+30			4.7	98.7
+75			8.6	94.8
4			11.1	92.3
T.P.	0.56	91.61	12.34	91.05
+40			4.4	87.2
+70			7.9	83.7
5			11.7	79.9
T.P.	0.68	81.06	11.23	80.38
+35			4.8	76.3
6			7.1	74.0
7			7.0	74.1
+50			6.8	74.3
8			6.0	75.1
+55			5.1	76.0
9			5.9	75.2

L. R. 16
8-31-15

Notch in Tel. Pole 20' L of 2+25

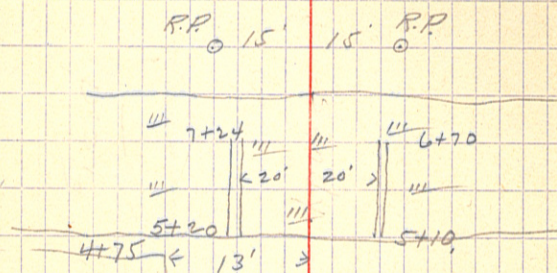
$\frac{3.2}{25}$	$\frac{3.2}{18}$	$\frac{4.5}{15}$	$\frac{4.4}{18}$	$\frac{3.2}{20}$	$\frac{3.2}{30}$
$\frac{5.4}{30}$	$\frac{5.4}{21}$	$\frac{9.4}{16}$	$\frac{5.2}{13}$	$\frac{3.2}{16}$	$\frac{3.2}{25}$
$\frac{9.9}{26}$	$\frac{9.9}{20}$	$\frac{11.9}{15}$	$\frac{9.0}{12}$	$\frac{4.6}{19}$	$\frac{6.0}{27}$
			$\frac{11.9}{13}$	$\frac{8.9}{19}$	$\frac{8.9}{26}$
	$\frac{6.1}{21}$	$\frac{5.8}{14}$	$\frac{5.2}{18}$	$\frac{4.6}{19}$	$\frac{4.6}{25}$
$\frac{7.0}{26}$	$\frac{7.0}{21}$	$\frac{12.7}{15}$	$\frac{8.6}{16}$	$\frac{16.4}{19}$	$\frac{6.4}{25}$
$\frac{10.7}{25}$	$\frac{10.7}{18}$	$\frac{12.7}{15}$	$\frac{12.6}{18}$	$\frac{10.7}{20}$	$\frac{10.7}{25}$
$\frac{7.8}{25}$	$\frac{7.8}{20}$	$\frac{4.8}{10}$	$\frac{4.8}{7}$	$\frac{8.0}{12}$	$\frac{8.0}{25}$
$\frac{8.4}{20}$	$\frac{8.4}{12}$	$\frac{7.1}{10}$	$\frac{8.1}{10}$	$\frac{8.1}{20}$	$\frac{8.1}{25}$
$\frac{8.5}{20}$	$\frac{8.5}{11}$	$\frac{7.0}{8}$	$\frac{7.0}{8}$	$\frac{8.5}{11}$	$\frac{8.5}{20}$
$\frac{8.6}{20}$	$\frac{8.6}{12}$	$\frac{6.8}{6}$	$\frac{6.8}{8}$	$\frac{11.8}{20}$	$\frac{6.8}{20}$
		$\frac{9.7}{20}$	$\frac{6.5}{10}$	$\frac{6.0}{17}$	$\frac{5.0}{18}$
$\frac{4.9}{21}$	$\frac{6.1}{16}$	$\frac{5.5}{11}$	$\frac{5.5}{15}$	$\frac{4.3}{18}$	$\frac{4.3}{26}$
$\frac{5.5}{25}$	$\frac{5.5}{20}$	$\frac{6.5}{18}$	$\frac{6.2}{15}$	$\frac{5.2}{17}$	$\frac{5.2}{20}$

Hill #3 S.R.#

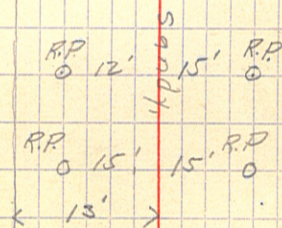
9 ○ P.O.T.
8
7
6
5
4
3
2
+908 △ 0°44' R.
1
00 ○ P.O.T.

17
8-31-15

C.D.C.
C.F.H.
J.B.C.



Corn Field:



Hill #3 S.R. #

B.M	3.21	103.21		100.00
00			5.4	97.8
+65			6.6	96.6
1			5.9	97.3
+30			4.0	99.2
2			3.3	99.9
+50			6.4	96.8
3			11.2	92.0
T.P	0.09	92.58	10.72	92.49
+50			5.5	87.1
4			11.4	81.2
T.P	0.67	82.33	10.92	81.66
+40			5.2	77.1
+75			8.1	74.2
5			8.8	73.5
6			9.0	73.3
7			8.9	73.4
8			8.8	73.5
+35			7.7	74.6
9			4.8	77.5

L R 18 8.31-15

Notch in Tel. Pole 25' L of 2+20

6.2	6.2	6.7	5.4	5.4	6.2	5.4	4.5
20	14	12	4	6	12	14	24
8.0	8.0	8.3	6.6	6.6	7.5	6.2	6.2
20	14	10	4	5	11	14	20
7.8	7.8	5.9	5.9	5.9	6.4	5.0	4.0
20	11	4	5	5	8.2	14	2.2
6.3	6.3	4.0	4.0	4.0	4.4	3.4	3.4
20	12	4	5	5	13	15	2.0
4.6	4.6	3.3	3.3	2.3	4.0	2.5	2.5
20	7	4	6	6	12	15	2.5
7.0	7.4	6.4	6.4	6.4	5.4	4.6	4.6
26	12	7	7	10	14	3.4	3.4
10.9	10.9	12.6	11.9	11.9	8.5	7.5	7.5
22	18	12	7	10	18	26	

5.6	5.6	7.1	7.1	5.5	6.0	6.9	4.4	3.0
22	16	14	10	6	5	11	17	24
12.4	12.4	11.4	11.4	11.4	12.6	12.6	11.5	9.6
20	7	6	6	6	10	11	12	23

6.2	6.2	5.2	5.6	6.0	7.3
21	8	5	5	8	2.5
10.0	10.0	8.3	8.1	10.1	10.1
25	10	5	4	11	2.5
10.4	10.4	8.8	8.8	10.4	10.4
25	11	4	7	12	2.5
10.4	10.4	9.0	9.0	10.4	10.4
20	10	5	7	10.4	10.4
10.4	10.4	8.9	8.9	10.6	10.6
20	12	8	7	11	2.0
10.6	10.6	8.8	8.8	9.8	2.0
20	12	7	5	13	9.8
9.5	9.5	7.7	7.7	8.4	2.0
20	14	6	6	2.0	2.0
5.4	5.4	6.0	5.6	4.4	4.4
20	20	12	12	20	20

Remeasure of Cut-

B.M.	0.66	100.66		100.00
00			1.9	98.8
+40			4.1	96.6
+75			6.2	94.5
1			8.0	92.7
+45			11.4	89.3
+96			15.9	84.8

P.R. Twp On South Line of 16-138-30 19

L.		R.	
Note in S.P. Tree 35' Roo		9-9-15	
		L.D.C	
		J.B.C	
00		00	
1.9	4.3	4.5	2.3
18.1	17.1	16.6	17.4
1.9	6.4	6.2	2.3
18.6	17.2	17.2	18.2
3.5	8.0	8.0	3.9
18.8	17.5	17.0	18.2
11.3	12.0	11.7	11.1
18.3	12.8	16.2	16.7
00		00	

No Original Ground Readings
 Almost level
 See plat

S.R. # 3

22

21

20

19

18

17

16

15

14

13

12

11

10

9

8

7

6

5

4

3

2

1

00

Heavy Clay Soil

7+38 old Wooden Culvert
(Natural Drain)

East →

= 236 West of Sec Cor. S.E. Cor 36
140-28

28

Oct. 5-15

C.D.C.
C.A.H.
J.B.C.

0 20' 20' 0

S.B.

old Borrow Pit 15-16

Follows Center of Old Road.

Beaver Dam

offtake 500'

Side Ditch

S.B.

Wooden Culvert

00+13

old R.R. Grade

S.R.#3.

B.M.	8.40	108.40		100.00
00			8.4	00.0
+11			8.9	99.5
+12			10.2	98.2
+13			8.9	99.5
1			7.7	00.7
2			4.8	03.6
3			5.6	02.8
4			7.4	01.0
5			7.5	00.9
6			9.7	98.7
7			9.6	98.8
T.P.	6.51	105.92	8.99	99.41
8			7.2	98.7
9			7.3	98.6
+70			6.9	99.0
10			5.9	00.0
+25			6.7	99.2
11			5.9	00.0
12			4.7	01.2
13			3.4	02.5
14			3.2	02.7
15			1.8	04.1
T.P.	12.30	16.90	1.32	04.60
16			10.4	06.5

Oct. 5-15²¹Spike in Sign Post 20' out 30
Center of Old R.R. GradeG.P.C.
C.A.H.
J.B.G.

Ditch.

Beaver Dam.

S. R. #3

116.90

17	86	08.3
18	78	09.1
+25	56	11.3
B.M.	481	12.09
19	43	12.6
20	2.0	14.9
+50	00	16.9
21	00	16.9

OFFTAKE

B.M.	4.40	103.10	98.70
00			4.7 98.4
+15			5.6 97.5
1			6.1 97.0
2			8.1 95.0
3			8.6 94.5
4			9.0 94.1
5			9.5 93.6

Oct. 5 - 15

Notch in Poplar Tree 25' L 18750

Sta. 8
= 7+70

County Ditch #1

Oct-12-15 23

B.M.	4.70	109.29		104.59
81			8.7	00.6
82			8.4	00.9
83			8.7	00.6
84			8.3	01.0
85			8.3	01.0
86			8.3	01.0
T.P.	5.05	109.87	4.47	104.82
87			8.7	01.1
88			9.0	00.9
89			8.5	01.4
90			8.5	01.4
91			8.1	01.8
92			7.7	02.2
93			8.1	01.8
94			8.1	01.8
95			8.9	01.0
96			8.0	01.9
T.P.	4.58	111.27	3.18	06.69
97			9.1	02.2
98			8.8	02.5
99			8.7	02.6
100			8.6	02.7
101			8.6	02.7
102			8.6	02.7

	4.7	+ 1.7	+ 1.7
	4.7		4.7
	+ 2.0	+ 2.0	+ 5.0
	5.0		5.0
	+ 1.6	+ 1.6	+ 1.6
	4.6		4.6
	+ 2.0	+ 2.0	+ 2.0
	5.0		5.0
	+ 1.9	+ 1.9	+ 1.9
	4.9		4.9
	+ 1.9	+ 1.9	+ 1.9
	4.9		4.9
	+ 2.0	+ 2.0	+ 2.0
	5.0		5.0
	+ 1.6	+ 1.6	+ 1.6
	4.6		4.6
	+ 2.1	+ 2.1	+ 2.1
	5.1		5.1
	+ 2.1	+ 2.1	+ 2.1
	5.1		5.1
	+ 2.4	+ 2.4	+ 2.4
	5.4		5.4
	+ 2.8	+ 2.8	+ 2.8
	5.8		5.8
	+ 2.3	+ 2.3	+ 2.3
	5.3		5.3
	+ 2.2	+ 2.2	+ 2.2
	5.2		5.2
	+ 1.4	+ 1.4	+ 1.4
	4.4		4.4
	+ 2.3	+ 2.3	+ 2.3
	5.3		5.3
	+ 2.5	+ 2.5	+ 2.5
	5.5		5.5
	+ 2.8	+ 2.8	+ 2.8
	5.8		5.8
	+ 2.8	+ 2.8	+ 2.8
	5.8		5.8
	+ 2.9	+ 2.9	+ 2.9
	5.9		5.9
	+ 2.8	+ 2.8	+ 2.8
	5.8		5.8
	+ 2.8	+ 2.8	+ 2.8
	5.8		5.8

County Ditch #1

111.27

103			8.4	02.9
104			8.3	03.0
105			8.2	03.1
106			8.3	03.0
107			8.5	02.8
T.P.	2.90	111.92	2.25	09.02
108			8.7	03.2
109			8.3	03.6
110			8.2	03.7
111			8.1	03.8
112			8.3	03.6
113			7.3	04.6
114			7.0	04.9
115			6.9	05.0
116			7.0	04.9
T.P.	4.27	112.31	3.88	08.04
B.M.			2.08	110.23

27

Oct. 12-15

2.9	+2.9	2.9
5.9		5.9
13.0	+3.0	13.0
6.0		6.0
13.0	+3.0	13.0
6.0		6.0
5.9	+2.9	5.9
5.9		5.9
12.6	+2.6	12.6
5.6		5.6
3.0	+3.0	3.0
6.0		6.0
3.3	+3.3	3.3
6.3		6.3
3.4	+3.4	3.4
6.4		6.4
3.3	+3.3	3.3
6.3		6.3
3.2	+3.2	3.2
6.2		6.2
4.1	+4.1	4.1
7.1		7.1
4.4	+4.4	4.4
7.4		7.4
4.4	+4.4	4.4
6.4		6.4
4.3	+4.3	4.3
7.3		7.3

Notch in Poplar Tree 25' L 118

County Ditch #100

B.M.	1.77	112.00		110.23
117			7.1	
118			7.0	
119			7.1	
120			6.9	
121			6.9	
122			6.5	
123			6.3	
124			6.6	
125			6.6	
T.P.	4.93	113.68	3.25	08.75
126			7.9	
127			7.9	
128			7.8	
129			7.8	
130			7.8	
131			7.7	
132			7.6	
133			7.6	
134			7.5	
T.P.	3.49	114.39	2.78	110.90
135			8.4	
136			8.2	
137			8.2	
138			8.0	

137
0.21
12.6
2.7

4.4
0.6
12.8

25
Oct. 28-15

$\frac{+4.3}{7.3}$	+4.3	$\frac{+4.3}{7.3}$	100.65
$\frac{+4.3}{7.3}$	+4.3	$\frac{+4.3}{7.3}$	
$\frac{+4.2}{7.2}$	+4.2	$\frac{+4.2}{7.2}$	100.75
$\frac{+4.3}{7.3}$	+4.3	$\frac{+4.3}{7.3}$	
$\frac{+4.3}{7.3}$	+4.3	$\frac{+4.3}{7.3}$	
$\frac{+4.6}{7.6}$	+4.6	$\frac{+4.6}{7.6}$	100.9
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	
$\frac{+4.4}{7.4}$	+4.4	$\frac{+4.4}{7.4}$	101.0
$\frac{+4.4}{7.4}$	+4.4	$\frac{+4.4}{7.4}$	101.05
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	101.1
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	05
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	101.2
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	
$\frac{+4.6}{7.6}$	+4.6	$\frac{+4.6}{7.6}$	5
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	101.5
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	*
$\frac{+4.6}{7.6}$	+4.6	$\frac{+4.6}{7.6}$	101.5
$\frac{+4.5}{7.5}$	+4.5	$\frac{+4.5}{7.5}$	101.5
$\frac{+4.4}{7.4}$	+4.4	$\frac{+4.4}{7.4}$	
$\frac{+4.6}{7.6}$	+4.6	$\frac{+4.6}{7.6}$	101.6
$\frac{+4.5}{7.5}$	+4.5	$\frac{+4.5}{7.5}$	101.65
$\frac{+4.7}{7.7}$	+4.7	$\frac{+4.7}{7.7}$	101.7

139

140

T.P.

141

150

114.39

5.11

114.70

4.80

109.59

75

7.0

14.7
01.8
12.9

14.4
01.8
12.6

26

+5.1

+5.1

+5.1

111.75

8.1

+5.6

8.1

106.8

+5.6

8.6

+5.6

8.6

+3.9

+3.9

+3.9

6.9

6.9

+3.9

6.9

+3.9

6.9

+3.9

6.9

Sta	B.S.	I.I.	F.S.	Road	Elev
BM.	374	103.74			100.00
00				6.9	968
00				7.5	962
495				6.4	971
—				7.8	959
1				5.7	980
—				7.7	960
2				4.1	994
—				7.1	963
3.				4.8	98.9
—				7.1	963
4				4.7	990
—				7.4	963
5				5.0	987
—				7.9	958
6				5.2	985
—				8.3	954
7				5.1	986
—				8.2	955
8				4.1	976
—				8.2	955
T.P	293	102.72	395		99.79
9				4.5	98.2
—				7.4	95.2

J. Pomasek
F. Marsh

Off take of State Road No 27

BM on 8" gum stump from fumarac Lake
25' R. 2+25'

Follow old Creek Channel

00 =	South edge of fumarac R. Lake	Water Elev
Ground elev		Average width of ditch
T.B.		7' Legend
B.d.		T.B. = Top of Bank
T.B.		7' B.d. = Bottom of Ditch
B.d.		
T.B.		4'
B.d.		
T.B.		5 1/2'
B.d.		
T.B.		4 1/2'
B.d.		4 1/2'
T.B.		5'
B.d.		
T.B.		4 1/2'
B.d.		
T.B.		4 1/2'
B.d.		1+96 Bridge 4 1/2' x 16'
T.B.		5'
B.d.		

Dabill was in
again asking
you to stake
Tamarack Lake Birch

Sta	B.S.	H.I.	F.S.	Red	Elev
		102.72			
10				5.3	97.4
—				7.6	95.1
11				5.2	97.5
—				8.1	94.6
12				5.7	97.0
—				8.0	94.7
13				6.7	96.0
—				8.3	94.4
T.P.	244	^{2.86} 99.86	5.30		97.92
14				3.9	96.0
—				5.8	94.1
15				7.5	95.4
—				5.8	94.1
16				5.0	94.9
—				4.1	93.8
T.P.	290	^{1.18} 98.08	4.68		95.15
17				3.2	94.9
—				7.5	93.6
18				3.8	94.3
—				4.9	93.2
19				3.8	94.3
—				5.0	93.1
20				7.1	94.0
—				5.8	92.3

Apr 29/19

Condition	Av width of ditch
T.B.	7.5'
B.d.	
T.B.	5'
B.d.	
T.B.	5'
B.d.	
T.B.	5'
B.d.	
T.B.	5'
B.d.	
T.B.	7.5'
B.d.	
T.B.	4'
Bad place to set up. (soft.)	
T.B.	4'
B.d.	
T.B.	3.5'
B.d.	
T.B.	4'
B.d.	
T.B.	4'
B.d.	

9805

21	4.5	93.4
—	5.3	92.8
22	4.7	93.4
—	4.1	92.0
23	6.3	92.8
—	6.2	91.9
24	5.3	92.8
—	6.5	91.3
24+90	4.9	93.2
—	6.8	91.0
—	5.20	92.85

Apr. 24/19

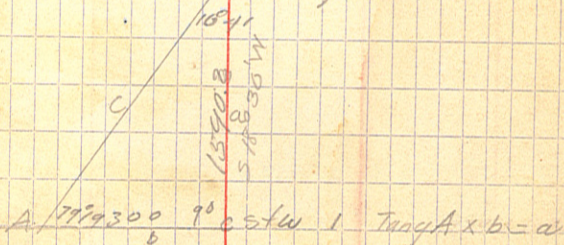
	Av. width
T.B. — 1" water	3.5
Bd	
T.B. 1.3 "	3
Bd	
T.B.	1.5
Bd	
T.P.	4'
Bd.	
T.B.	

Bottom Pine River
Water Ekt

sta 1 to 8 scattering brush & stumps.

" 9 " 15 tag all trees.

B. State road N^o 2 Tele. line



Transit Notes on Farm Lake May 13, 1919.

18		
17		
+55	D 39°12' L	56°03' E
14		
+75	D 66°29' L	533°38' W
15		
14		
+55	D 16°19' R	559°52' W
13		
12		
11		
10	D 12°56' L	543°03' W
9		
8		
+96		
745	D 14°38' L	555°59' W
7		
6		
5		
140	D 21°24' R	578°57' W
4	D 8°51' R	579°33' W
3		
2	D 14°21' R	549°55' W
+65	D 19°34' R	526°56' W
1	D 12°06' L	57°21' W
00		519°30' W

9° variation

7496 = $4\frac{1}{2}$ x 16' Plank. Road
 Bridge Pool Condition

Culvert on N line of Sec. 2 T137 R30 on SR #2.
 3.15' E of SE Cor Sec 34 138-30. Triangulation
 Point from Sta 1400 is 700' E of corner.

190 Pine River.
21
23
22
21
20
19 A T^o 20' R. 500° 08' W

Pine River

add name

O	+	π	-	Grade Rod	Elv
BM.	366	103.66			100.00
		4.52			
		11.14			
1			5.4	10.8	
1+30			2.7	10.8	
1+65			3.1	10.8	
2			3.3	10.8	
3			4.4	10.9	
4			3.6	10.9	
+20			4.7	10.9	
5			5.1	11.0	
6			4.0	11.0	
+40			4.7	11.1	
7			5.0	11.1	
T.P.	5.22	104.36	4.52		99.14
+45		99.38	6.1	11.8	
8			4.5	11.9	
9			6.3	11.9	
10			6.7	12.0	
11			6.6	12.1	
T.P.	2.27	101.65	4.98		99.38
12			4.2	9.4	
13			5.3	9.5	
+55			5.0	9.5	
14			3.9	9.5	
15			6.3	9.6	

10-11-19

Grade Rod	Elv	Grade Rod	Elv
92.94	103.7	92.94	103.7
92.88	92.8	92.88	92.8
92.88	92.8	92.88	92.8
92.82	92.8	92.82	92.8
92.76	92.8	92.76	92.8
92.70	92.8	92.70	92.8
92.64	92.8	92.64	92.8
92.58	92.8	92.58	92.8
92.55	92.8	92.55	92.8
92.52	92.8	92.52	92.8
92.46	92.8	92.46	92.8
92.40	92.8	92.40	92.8
92.34	92.8	92.34	92.8
92.28	92.8	92.28	92.8
92.22	92.8	92.22	92.8
92.16	92.8	92.16	92.8
92.10	92.8	92.10	92.8

2.7 high

0	+	π	-	Grade rod	Elev.
+75		101.65	6.5	9.7	
16			6.7	9.7	
17	2.72	99.22	5.15		96.50
+55			4.1	7.2	
17			4.5	7.2	
18			4.7	7.3	
19			4.7	7.3	
20					
21					
22					
23					
+60					

01.7
92.0
9.75

CW-OR-CW 10-11-19
R.

99.2

92.04	-1.8	-1.8	-3.2	-3.2			
	3.3	1		4.7			7.5
92.05	-1.7	-1.7	-3.0	-3.0			
	3.2	2		4.5			
	-1.4	-1.4	-3.1	-3.1			
	2.9	2		4.6			
91.98	-1.6	-1.6	-2.7	-2.7			
	3.1	1		4.2			
91.92	-1.6	-1.6	-2.6	-2.6			
	3.1	1		4.1			
91.86	-2.6		-2.6	-1.3	-1.3		
	4.1			1	2.8		
	-2.2			-0.8			
	3.7		-2.2	2.3			
	-1.9			-1.9			
	3.4		-1.9	3.4			
	-1.7			-1.7			
	3.2		-1.7	3.2			
	-2.2			-2.2			
	3.7		-2.2	3.7			
	-1.2			-1.2			
	2.7		-1.2	2.7			

not from profile
too soft
for driver

Sta.	X-Sections	Co. Road #23	+	π	-
109	Elv.	Grade.	4.12	03.95	1299.83
+50		95.6			
110		95.4			
+50		95.2			
111		94.6			
+30		93.9			
+50		93.5			
770		92.9			
112		92.0	0.96	93.26	11.65
+50		90.7		1290.22	
113		89.8	3.5		
+50		89.2	4.1		
114		89.0			
115		89.0		2.0	
116		89.0		2.0	
117		89.0			
118		89.0			
119		89.0			
120 ⁷⁰⁰		89.0			
121	PVC	89.0			
+50	PAC	89.2			
122		89.8			
+50		90.7			
123		92.0			

Sta 109 to 132 + 23.3 Co. Line		Fill 20' Top.		Cut 36' Base.	
L	R	L	R	L	R
11.4	11.4	0.9	0.0	0.0	0.0
17.1	17.1	0.9	0.0	0.0	0.0
21.7	21.7	0.9	0.0	0.0	0.0
24.3	24.3	0.9	0.0	0.0	0.0
28.2	28.2	0.9	0.0	0.0	0.0
20.7	20.7	0.9	0.0	0.0	0.0
18.6	18.6	0.9	0.0	0.0	0.0
17.8	17.8	0.9	0.0	0.0	0.0
16	16	0.9	0.0	0.0	0.0
13.0	13.0	0.9	0.0	0.0	0.0
13.2	13.2	0.9	0.0	0.0	0.0
12.0	12.0	0.9	0.0	0.0	0.0
13.0	13.0	0.9	0.0	0.0	0.0
13.2	13.2	0.9	0.0	0.0	0.0
12.6	12.6	0.9	0.0	0.0	0.0
13.9	13.9	0.9	0.0	0.0	0.0
13.3	13.3	0.9	0.0	0.0	0.0
13.8	13.8	0.9	0.0	0.0	0.0
14.8	14.8	0.9	0.0	0.0	0.0
16.2	16.2	0.9	0.0	0.0	0.0

B.M. in S.P. Lt 114
 Elv. 1290.22
 π 1290.95
 TP 1286.86
 π 1290.96

sta.	Elv.	Grade.	+	π	-
			8.97	1311.89	1302.92
+23 ³					
132					
131					
130		08.0	11.9 08.0 3.9		
+30					
129		06.67	92.9 06.75.2	11.9 07.2 4.7	
+25					
128		05.33	586 11.5 6.6	11.9 7.9	6.70 1305.19
+60		04.8	11.1 04.8 6.3		
+20					
127		04.0	11.1 04.0 7.1	11.1 02.8 8.3	
+60		02.8			
126		01.0		11.1 01.0 10.1	11.1 9.8 13.1
125		98.0	13.1		97.1 14.0
+70		97.1	146 14.0	99.80 12.71	12.71 98.34
+33		96.0			
+15		95.5			
124		95.0	99.5 95.5 4.3	6.1 4.5	99.8 95.04.8
123		92.0		99.8 92.0 7.8	7.8
+50		90.7	99.8 90.7 9.1	9.1	99.80 6.17 1293.63

3) 4.000 0.67 25 113
 1.332 0.72 13 3
 1302.92 8.97 0.52
 1311.89 π

Co Line. } Blade work.

99.8 96.1 3.7	11.1 0.43 6.8				
99.8 96.1 3.7	11.1 0.43 6.8				
32	11.1 0.43 6.8	π 1.5 17.5	+0.4 10.6 00 19	+0.8 11.4 00 10	π 1.0 17.0
11.1 0.43 6.8	11.1 0.43 6.8				11.05 12.71 98.34 1.46 99.80
		π 0.7 16.7	+1.1 11.7	+0.6 10.6	+0.3 10.5 π 2.0 18.0
		D00+80 16	+2.8 14.2	+2.1 11.8	π 1.5 17.5
		D00+40 16	00 10	00 10	00 10
			-0.4 18.4	-1.2 20.0	-2.0 22.0
			-3.4 21.4	-4.0 22.5	-4.5 22.5
			-4.8 22.8	-5.2 23.2	-5.2 23.2
			-6.1 24.1	-5.7 23.3	-5.3 23.3
			-5.3 23.3	-4.7 22.0	-4.0 22.0
			00 10	00 10	00 10
		D00 16	+1.9 12.7	+2.3 13.5	+2.3 13.5
			+2.1 13.2	+2.2 13.0	+2.0 13.0
			+5.1 17.7	+4.8 17.5	+5.0 17.5
			+4.1 16.2	+4.1 16.2	+4.1 16.2

$$\begin{array}{r} 97.47 \\ 1.63 \\ \hline 99.10 = 4.5 \\ 94.5 \\ \hline 4.6 \end{array}$$

$$\begin{array}{r} 99.10 \\ 83.69 \\ \hline 15.41 \end{array}$$

$$\begin{array}{r} 109.3 \\ 98.9 \\ \hline 10.4 \end{array}$$

$$\begin{array}{r} 99.10 \\ 92.44 \\ \hline 6.22 = 100 \end{array}$$

$$\begin{array}{r} 109.87 \\ 99.15 \\ \hline 10.72 \end{array}$$

$$\begin{array}{r} 99.10 \\ 91.25 \\ \hline 7.85 = 200 \end{array}$$

$$\begin{array}{r} 99.10 \\ 89.20 \\ \hline 9.90 \end{array}$$

B.M. 99.42
 3.76
 H.E. 03.18
 6.11
 97.00

03.18
 5.71
 97.47

03.18
 5.51
 97.57

03.18
 4.92
 98.22
 97.47
 1.45

12.3
 0.7
 1.22

9
 3 1/2 47.156
 17
 20
 03.18
 97.11
 156
 78
 6.07
 234
 97.11

3 1/2 47.99
 156
 17
 20
 18
 20
 18

97.47
 25
 97.22

1566
 3
 .04698

1566
 2
 .3132
 .0469
 3681

1566
 .6
 .09396

1566
 .0939
 .2505

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 = 10.07. Say a 10° Curve.

Tan. in Tab. IV opp. 23° 20' = 1183.1
 1183.1 + 10 = 118.31.

Tab. V. correction for A. 23° 20' for a 10° Cur. = 0.16
 118.31 + 0.16 = 118.47 = corrected Tangent.

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

2° 19½' = def. for sta. 542	I. P. = sta. 542+72
4° 49½' = " " " +50	Tan. = 1.18.47
7° 19½' = " " " 543	B. C. = sta. 541+53.53
9° 49½' = " " " +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' =
 2° 19½' = def. for sta. 542.

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

Def. for 86.86 ft. = 1° 50½' for a 10° Curve

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