

TRANSIT & LEVEL NOTES

ON

COUNTY DITCH No 7

No 25

AND TRANSIT NOTES
ON CUDITCH No 2

(13)

(13)

FIELD BOOK

361

87

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.

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	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.

30.2
47.8
2.4

From 175
6 5 4 3 2 1
7 8 9 10 11 12
13 14 15 16 17 18
19 20 21 22 23 24
25 26 27 28 29 30
31 32 33 34 35 36

10
5
5
2
30

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Notes and Ditch No 7
continued on next page

Change of Line Levels from sta
107 to 20158² which = 184155³ old line
Colverts

Page to Page

47.

42

ALL Notes transferred
Marked Expenses
Etc Ditches 3-4-6-1-7
AND S.N. # No 80

July 20th 1916.

G Pomasel gets ready to leave for Motley
to section Co ditch #7 Meadow May
and Becker tpws. Cass Co Minn.
Left Walker for Motley at
9:30 AM July 21st 1916 with
H. Swanberg chairman, arrived
at Motley at 12:45 July 21st 1916
Hired auto from Jim Francisco
to drive us to L J Major
in sec 1 Becker twp where we
make our headquarters
Auto Livery Billed in \$2.50
July 21st 1916. G Pomasel with
H. Swanberg look for hubs, not
much success, quit at 6 pm.

July 25th 1916.

sub contractors begin ditching
at sta 203+00 and working north
on Main ditch on a small ditch
to drain water as they work
ditch to grade at sta 187+00 and
complete ditch as they go

Aug 31 1916 J. Pomasel Eng with Howard
Swanberg Rodman take the
complete outfit and leave
Motley at 1:45 p.m. and arrive
at Pine River where Mr. A. W.

Moulster has work for us on Co
ditches No 3-4.

We have L. J. Major haul us to Motley
charges \$2.50

Claim sent in for board and
Expenses also time worked
on Co ditch No 7. Billed in

Sept 12 1916 J. Pomasel and John
Crossman leave Pine River
at 10:45 for Motley to xsection
Ditch No 7. Arrive at Motley
at 12:45. Have dinner at City
Hotel and hire auto from
S. Francisco to take us to
L. J. Major where we make
our headquarters. Charges \$2.50

Sept 13 xsectioned on Co ditch No 7

2
Sept 14 1916.

J. Pomasel & J. Crossman leave Motley
for Pine River at 1:45. Arrive at Pine
River at 3:39. Jim Francisco booking
us to Motley \$2.50 Bill sent in

hauled us to Motley
Oct 10 1916 J. Pomasel & Crossman hire
Auto from Homer Anderson to take us
from Pine River to Co Ditch No 7
8 mile North of Motley where
we give grade and xsection
for Contractors. We take lunch
with us from Pine River Travelers
Hotel. Price of Auto to Motley
and return - - - - -

Co Ditch No 7.

Meals & Lodg while working
 on Co Ditch No 7. Travelers
 Hotel Pine River

J Pomasel, Krossman, H Andrus

Oct 10 BASL BDSL Dinner

Time Sheet

	1916	27	28	29	30	31	1	2	3	4	5	6	7	8	9
July 20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
J Pomasel	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
H Swanberg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Henry Major (Mortley)	1	0													

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
J Pomasel	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
H Swanberg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Aug 30 31 Time on Co Ditch #7 Aug 27 to Aug 30 inclusive
 J Pomasel 1 0 Leave for Pine River at 11:5 AM. Aug 31 1916
 H Swanberg 1 0 Arrived Quorum and goes to school left at 3:30 PM.

Sept 12, 13, 14 Oct 10
 J Pomasel Time sent in 1/4 inch
 J Crossman # 1

Cash 4
 Expensesheet for Pomasec

July 21 st 1916	RR fare from Walker to Motley	1.77
July 21 st	5 bunches of Lath	1.00
" "	dinner at Motley	.35
x x x x x	Billed in	3.12
July 31 st 1916		
	3 bds No 1 Lath	.75
Aug 4 th	telephoic to McNewls Per at Pine River	.26
" 7	2 Bdl's #1 Lath	.50
" 14	4 Bdl's #1 Lath @ .25	1.00
x x x x x x x x x	Billed in	2.51
Aug 31 1916	Dinner at Motley	.35
Aug 21 1916	RR fare to Pine River	1.22
	Goesman Co Ditch No 3	
x		
Sept 12 1916	Co ditch Mot.	
	RR Fare Pine R. to Motley	1.17
	Dinner at Motley	.35
Sept 14	RR Motley to Pine R.	1.22
" "	Dinner Motley	.35
	Billed in	30.9

Cash Expense of

5

Howard Swanberg

July 21 st 1916. RR fare from Walker to Motley	1.77
July 21 st dinner at Motley	35
Billed in.	2.12
x	x

Aug 31 1916

Dinner at Motley	35
Transfer of RR fare No 3	1.22
170931 RR fare Motley to Pineriver	1.22
Billed in	1.57

Expense of J Crossman

Sept 12 1916.	
RR fare Piner to Motley	1.17
Dinner at Motley	35
Sept 14 RR Fare from Motley to P.R.	1.22
" " Dinner Motley	35
<hr/>	
	claim sent in #309

List of Meal at Mr Majors 6

For J Pomasel

for H Swainberg

July 21	supper	Lodg	supper	Lodg
" 22	B.D.S.	"	B.D.S.	"
" 23	Sun B.D.S.	Lodg	B.D.S.	Lodg
" 24	B.D.S.	"	B.D.S.	"
" 25	B.D.S.	"	B.D.S.	"
" 26	"	"	"	"
" 27	"	"	"	"
" 28	"	"	"	"
" 29	"	"	"	"
<u>Bl 30</u>	9 1/2 days Billed in			9 1/2
July 31	B.D.S.	Lodg	B.D.S.	Lodg
Aug 1	"	"	"	"
" 2	"	"	"	"
" 3	"	"	"	"
" 4	"	"	"	"
" 5	"	"	"	"
" 6	"	"	"	"
" 7	"	"	"	"
" 8	"	"	"	"
" 9	"	"	"	"
" 10	"	"	"	"
" 11	"	"	"	"
" 12	"	"	"	"
" 13	"	"	"	"

continued on pag 7

List of Meals at L F Major

	JF Pomasel	H. Swanberg
Aug		
14	BDSL	"
15	"	"
16	"	"
17	"	"
18	"	"
19	"	"
20	"	"
21	"	"
22	"	"
23	"	"
24	"	"
25	"	"
26	Board billed in from breakfast July 31	
27	to breakfast Aug 26 inclusive 26 days. 1 meal	
28	"	"
29	"	"
30	"	"
31	" Breakfast inclusive	
	@ \$1.00 per day total 5 days \$5.00 Billed in	Total 5 days \$5.00
	Leave Motley at 1:45 p.m. for Pine River	
	Meals & Lodging at L F Major	
1916	JF Pomasel	John Crossman
Sept 12	S.L.	S.L.
" 13	BDSL	BDSL
" 14	B. 1 1/2 days @ \$1.00 = \$1.75	B. 1 1/2 days @ \$1.00 = \$1.75
	Billed in	
	For meals & Lodging see page 3	

July 22nd 1916

J Pomasel and Howard Swanberg with the help of Henry Major find spike in bridge at sta 29+03⁶ of Lateral #4 and Run south. Hub at 41+43⁸ destroyed chained to Sta 46+634 Lat #4 which equals sta 165+995 M. Ditch. then chained S to sta 188+525 but could not find hub, set hub and turned angle 29° 52' R and located Δ at 204+00 quit for night

July 23rd 1916 Run center line from sta 187+00 M. Ditch to sta 203+00 and give center cuts. Small ditch to drain water while men work North from sta 187+00

July 24th 1916 X sectioned from sta 187+00 to sta 171+00 and Run curve.

July 25th 1916. Started the contractors. came and figured X section. Rained all day

July 26th 1916. Figured curve and Run same. Rained occasionally. set line stakes etc.

July 22nd 1916

Bay

177100 Δ 29° 52' R

177100 Δ 29° 52' R

177100 Δ 29° 52' R

177100 Δ 29° 52' R

177100 Δ 29° 52' R

177100 Δ 29° 52' R

43463 Δ = 145+1975 M.D. Δ 65° 25' L

177147 Δ 43° 32' R

411438 Δ 14° 40' L destroyed

301

35+75° Δ 11° 23' L

29+03° Δ



X

Main Ditch

July 23 1918

177+00 P.O.T.

167+00 = sta 167+30.1 - Location of short

EC 166+935	32° 42'	
+75	29° 56'	
+50	26° 11'	
+25	22° 26'	30° CURVCL
166	18° 41'	LC 218.1
+75	14° 56'	Tan 124.1
+50	11° 11'	PI 165+995 ΔE 65° 25'
+25	7° 26'	
165	3° 41'	

BC 164+754
165+995 Δ 65° 25'

From 190 to 191 short sta 94.9

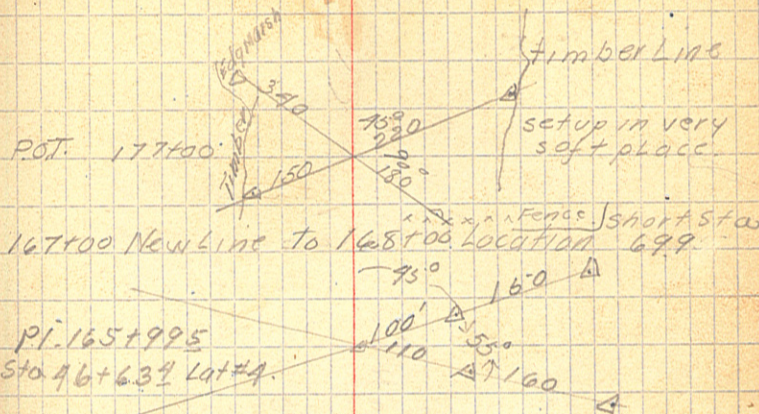
EC 189+995	14° 56'	EX 177 LC 199.1
189	11° 13'	Tan 102.1
+50	7° 28'	15° C.R.
188	3° 43'	Δ 29° 52' R. 188+525 PI

BC 187+505

cont page 9

Main Ditch 9

Reference Hot day



NY

July 23rd 1916 M. Ditch
 Levels for Profile from Sta 188+52.5

Sta.	BS	HI	F.S.	Elev
B.M.	3.80	15920		15540
188+52.5			5.5	53.7
189			6.1	53.1
+70			4.3	59.9
190			5.3	53.9
191			6.3	52.9
+15			4.5	59.7
192			5.8	53.4
193			6.5	52.7
194			6.8	52.4
195			7.4	51.8
T.P.			6.38	152.82

LEVELS FOR CHECK

x x x x x x x

B.M. MAIL in fence post + Sta 188+57

at Sta. 195+00

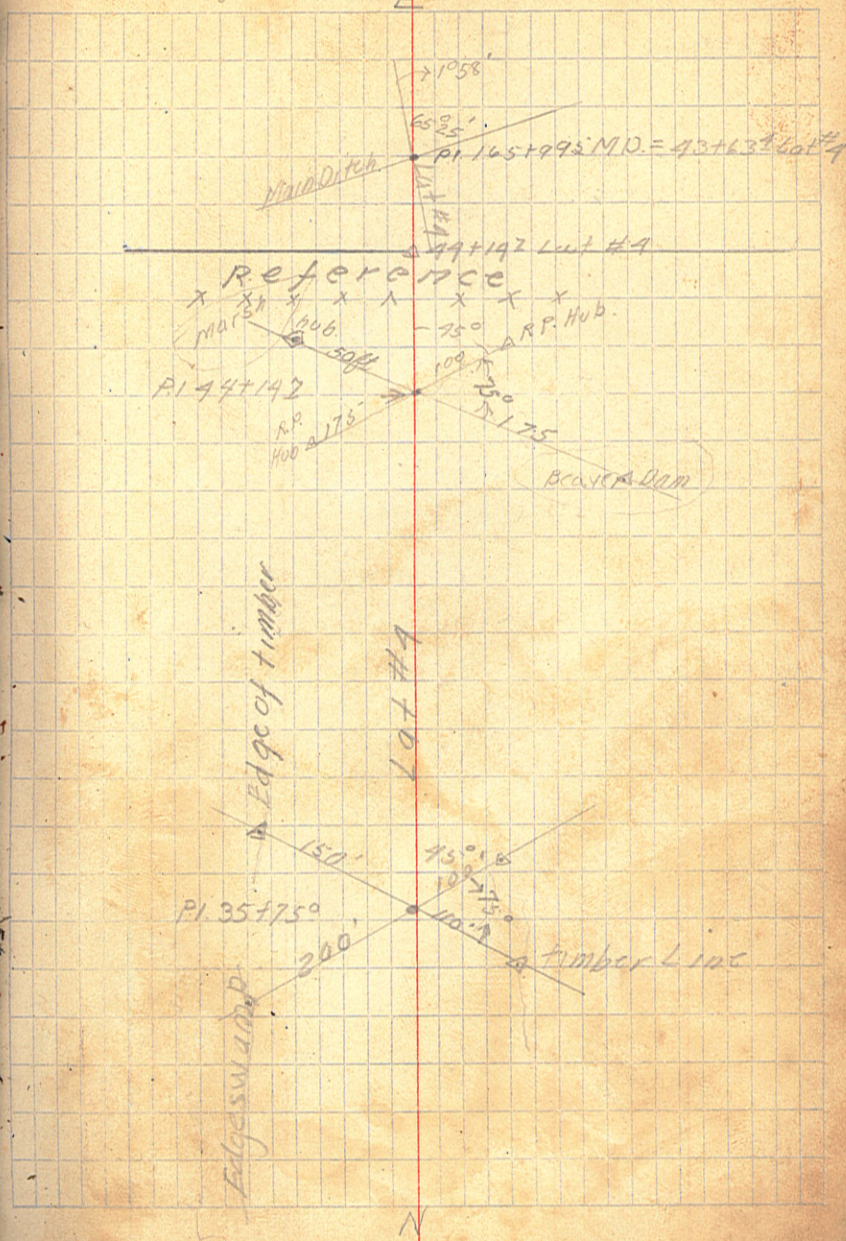
Lat #4 July 27

Lat #4
 47+88⁹² EC 59' LC 251.07
 +50 50.1 tan 125.55
 47+00 38° 3 47' Curve L
 +50 26.5 ΔL 1958'
 46 19' 7 PI 46+63.9 = 165+995 MDitch
 +50 2' 9" EC 47+88⁹² Lat #4 = 166+2505 MD
 45+37⁸⁵ BC

From 45 to 46 short sta 92.7 ft
 44+59⁶ EC 21° 46 1/2
 +50 20 37 1/2
 +25 14° 22 1/2 LC 870.7
 44+00 8° 7 1/2 tang 47.17
 +75 1° 52 1/2 50° Curve R
 43+67.53 BC PI 44+141 Δ 4332' R continued
 From sta 37 to 38 = short sta 99.4 ft on page 12

36+31.65 EC 5° 41 1/2
 +2.5 5° 21 1/2 10° Curve L
 36 9° 06 1/2 Δ 11° 23' L July 29
 +75 2° 51 1/2 PI 35+752
 +50 1° 36 1/2 LC 113.83
 +25 0° 21 1/2 st. 57.18
 35+17⁸² BC
 29+03⁷ POT
 4+60 Beginning of line

July 28¹⁰ S very hot day 11



AUG 2 1916

P.M.

set R.O. way stakes on lat.
#4 and Main ditch
chained from 157+939 D to 164+752
and straightened line
Rained occasionally

AUG 7 1916

chained from 156+932 Main D
North to 137+800 then lined
with transit.

13

AUG 8th

changed line to center of off take
ditch from 144+809 to 156+939 then
North to 137+800 side ditch of S.R.H.
then cut brush east to 115+378 and
chained same. Hubs at 125+736 and
115+378 not found.

AUG 9 1916 Cloudy

Setting hubs and angle points
on line east of 137+80 and North
of 115+378 straightening line
at the same time.

AUG 10 Rained figured 1 section

" " " " " "

AUG 9 1916

Aug 9-16

14

Change of Line along N & S. S.R. Road
and in offtake ditch. Φ now
in center of old ditches

Aug 10 1916.

Making small changes in Line

H Long S.R.H.

Aug 11 1916.

Located hubs and chained, PM
figured X section

Very Windy day

50°30' W

31+09' Δ 20°30' L 52100' W 31+09' = 23+50' lat #1

27+00 Δ 7°34' L N 28°36' E Change of Line Oct 12/19

10+19' Δ 28°36' R North

10

9

8

7

6

5

4

3

2

1

00

+85.5 End. in N side ditch of Highway

Aug 14th E

15

Relocating E of Main Ditch
beginning at sta 21+44.4

50°30' L left

from tang produced

North from sta 31+09'

sketch

31+09'

Lat #1
20°30' 50°30'

long produced

Lat #1
50°30'

North Line 50030 135-32

continued on page 19

67+122 A 90°00'R N 89°30'E change of line
E & W cross fence

64+06⁵
60+88¹ Pot. = 60+99² location

60+73⁰ E & W Fence 2 wire

58+18⁰ 50030W E & W fence 3 wire

56+00

+20 E & W fence

54+00 S End of Bridge

+92.7

53+89² Pot. on bridge = 53+99² Location

44+90⁸ Pot. = 44+95¹ location

40+91.6 E & W fence

40+72.7 = 27+50 49+110.2 Δ 89°30'R
37+80⁷ Pot. = 37+84² Location

32+10⁴ BC 10°15'

32+00 9°44'

+75 8°29' 50°30'W

+50 7°14'

+25 5°59'

31+00 4°44' P.I. 31+09¹

+75 3°29' LC 205⁰

+50 2°14' tang 103.7

+25 0°59' 10° C.L

30+05⁴ BC Δ 20°30'L

31+09.6
103.737
32.28

Aug 19 86

Raining

= 67+20° location 67+122 = Pot. 49+110.2 Δ 89°30'W
2 wire
continue with my chaining
N & S fence 12' E of E

Aug 15 1916

40+72.7
13.14
53.867
53+89.2
14+72.7
13.145

E & W Highway Bridge

53+99.2
80
63.142

53.927
40.927
13.200

40.927
13.20
53.927
53.927

77+06' B 3320' L 543°13'W

74+73²² EC 50°55'

+50 4°59'

LC 14792

+25 3°59'

8° R.

74+00 2°59'

T 773

+75 1°59'

Δ 11°50' R

150 59'

PI. 73+99²

73+25² BC

73+99² Δ 11°50' R. 576°33' W

71+95²² EC. 32°27' 1/2

+75 2716

+50 21°01'

LC 129⁸³

+25 14°46'

T 75²⁶

71+00 8°31'

50° C R.

+75 2°16'

AR 64°55'

70+65²⁴ BC

RI 71+91²

71+91² Δ 64°55' R 569°43' W

67+13² M.D.

Lat #3 Δ 90°08' L. N 87°40' E

107

EEW Fence

64+00 POT

50012

17 Aug 17

cut brush and set stake

to aid in running line

Rained occasionally

Wind

Aug 16¹⁸ 1916

Lat 1123

cut brush

Fence

AUG 18 Hot 18

90+79⁸ Δ 39° 05' L

86+80⁸⁹ EC 10° 35'

+75 10° 09'

+50 8° 16' 1/2

+25 6° 29'

86+00 4° 31' 1/2

+75 2° 39'

+50 46' 1/2

85739⁶² BC

15° Curve R

LC 141²²

T 71⁶³

A 21° 11' R

PI 86+11³

86+11³ Δ 21° 11' R

85+83²

82+58²² EC 14° 50'

+50 13° 36'

+25 9° 51'

82+00 6° 06'

+75 2° 21'

81+39³³ BC

82+10⁵ Δ 29° 40' L

S 34° 44' W

EBW FENCE

road

Δ 29° 40' L

30° C. L.

LC 98.89

T. 51.17

PI 82+10⁵

Δ 29° 40' L S 13° 33' W

50° C. L.

77+37²³ EC 16° 40'

+25 13° 34'

77+00 7° 19'

76+70²⁵ BC

LC 66.67

T 35.34

32° 20' L

V

S 31° 11' W A 77+06'

83+30¹ BC P.I. 85+01²

85+01² $\Delta 13^{\circ}36' R$ $513^{\circ}33' W$

81+61³ Pot.

78+11¹ Pot.

75+91⁴ EC. $45^{\circ}18'$

+75' $39^{\circ}34'$

+50' $30^{\circ}49'$ $70^{\circ} C L$

+25' $22^{\circ}04'$ $\Delta 90^{\circ}33' L$

75+00 $13^{\circ}19'$ LC 129.4

+75' $4^{\circ}34'$ T 88^o

74+62^o BC. P.I. 75+50^o

75+50^o $\Delta 90^{\circ}33' L$ $500^{\circ}03' E$

73+27^o Pot.

67+54³ EC $45^{\circ}00'$

+25' $34^{\circ}49'$ $70^{\circ} C R.$

67+00 $26^{\circ}04'$ LC 128.6

+75' $17^{\circ}19'$ T 87.17

+50' $8^{\circ}34'$ $\Delta 90^{\circ}00' R.$

66+25⁵ BC. P.I. 67+12⁷

67+12⁷ $\Delta 90^{\circ} R.$ $N 89^{\circ}30' E$

Aug 21 1916. Rained ALL day. checked x-section

Aug 22 Cloudy

- A' NE. of 82+34^o Location Hub Aug 23 1916.

81+00 Leave tamarack samp

Enter standing tamarack swamp

continued from page 16

Aug 23 1916.

+50	6° 23'	T. 599
+25	2° 0 1/2'	PI 93+72.5
93+13.5	BC.	Δ 39° 05' L
93+72.5	Δ 39° 05' L	54° 21' E
90+65		
89+73.8	EC 10° 35' L	
+50		
+25		PI 89+04.2
89		15° C R.
+75		LC 141.2
+50		T 41.6
88+32.5	BC.	Δ 21° 11' R
89+04.2	Δ 21° 11' R.	534.44' W
88+76.0		513° 33' W
86+70.4	EC 6° 48'	
+50	6° 23 1/2'	
86	5° 23 1/2'	
+50	4° 23 1/2'	4° C R.
85	3° 23 1/2'	LC 390.0
+50	2° 23 1/2'	T 170.8
84	1° 23 1/2'	Δ 13° 23' R.
83+50	23 1/2'	

tid to 91+0.9 location hub
beaver dam

water too deep cannot run curve.

E B. W FENCE

120+58² = 121+55² of old line

112+46⁵ 326°05' L

109+19⁷ POT

106+20⁸ EC 32°17'

+25 31°16'

106 26°53 1/2'

+75 22°31'

+50 18°08 1/2'

+25 13°46'

Δ 69°35' R

105 9°23 1/2'

35° curve R

+75 5°01 1/2'

LC 1845'

+50 00°39'

T. 1052'

104+46² BC

PI 105+51.9

105+51¹ Δ 64°35' R 560°14' W

101+05⁵ Pot. 59°21' E

94+25² EC 19°33'

94 15°08'

35° curve L

93+75 10°45 1/2'

LC 1112'

S

Aug 23 1916 21

Following location line
very closely. No hubs found

old addition

Road leveled from sta 124+55²
to 139+40² 1485' @ 50 per mile
= \$4.00

159+14¹ EC 19° 17' 1/2

159 17° 05'

+75 13° 20'

+50 9° 35'

+25 5° 50'

158 2° 05'

157+86³ BC

159+56⁶ = 158+00 Location
From 158+00 New change to 158+00
Location Longsta 156 1/2 FT.

30° C.R.

Δ 38° 35' R

LC 128 1/2

T. 67 1/2

PI. 158+53²

158+53² Δ 38° 35' R. 577° 35' W

147+00⁴ Δ 45° 02' L. 539° 00' W

+74 Δ 39° 29' R. 589° 02' W

139+41² Δ 89° 54' L. 500° 27' E

128+00 ROT

117+82² EC 49° 56'

+75 42° 27' 70° C.R.

+50 33° 42' LC 128 1/2

+25 24° 57' Δ 89° 53' R.

117+00 46° 12' T 87 1/2

+75 70° 27' PI. 117+90²

116+53² BC

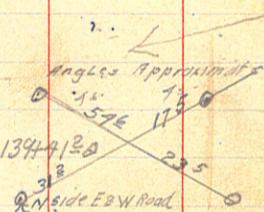
117+90² Δ 89° 53' R. 589° 27' W

117+32⁵

109+95⁸ EC 30° 20'

+75 26° 42' 1/2

109+50 22° 26' 500 26' E



Aug 24th

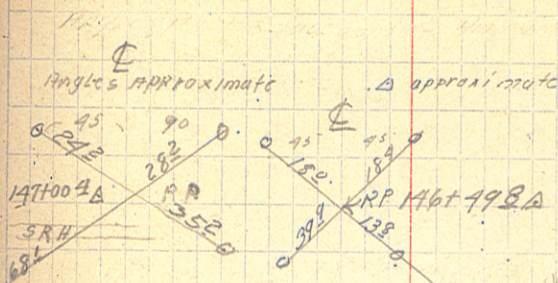
cut brush and RUN Δ

22

S FUG 25 1916 F30 1916

of first line Run

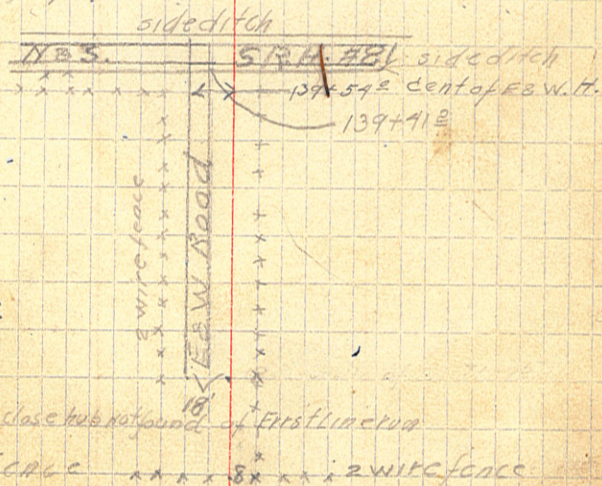
for alignment west and south see page 9



in off take ditch

+74 Center of N 2 S Highway
set up in water

in side ditch of SRH on east side of Highway
set up in soft place

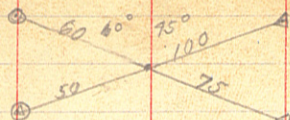


115+37⁸ very close but not found of First line run

CROSS FENCE *** 8' *** 2 wire fence

Reference

Aug 30 1916

158+53² P.I.

Distances Estimated

continued from page 9

205+129 EC 22° 52' short sta 206 to 207 = 85.1

205 2138 1/2

+50 16° 53 1/2

A 45° 46' P.

204 12° 08 1/2

19° 00' A.V.C.P.

+50 7° 23 1/2

tang 127.5

203 2° 38 1/2

P.I. 204+00

202+72² RC

LC 290.7

209 A 75° 46' P 588° 46' W 1

203

202

201

200

199

198

197

196

195

194

193

192

191

190

J. Pomasec.

W stark weather May 12 1917 23

tacking "tam
stamp.P.P. 204+00
tack in 3" tam

209+00 A 45° 46' P.

May 12 1917

24

217
 216 + 405 EC 13° 57' 217 to 218 = 949 short sta
 216 11° 31' 1/2
 + 50 8° 31' 1/2 12° 00' R.
 215 5° 31' 1/2 Tan 118.9
 + 50 2° 31' 1/2 Δ 27° 55' R.
 EM + 079 BC LC 232.7
 215 + 268 Δ 27° 55' R 589° 06' W
 215

214

213 + 103 EC 13° 47' 213 to 114 = 949 short sta
 213 13° 09' 48" Equal on curve
 + 50 10° 09' 48"
 212 7° 09' 48" 12° 00' R.
 + 50 7° 09' 48" Δ 27° 34' L. Molyneux Δ 25° 35' L
 211 10° 09' 48" Tang 117.4
 LC 229.7

210 + 805 BC

211 + 95° Δ 27° 34' L 561° 11' W

211

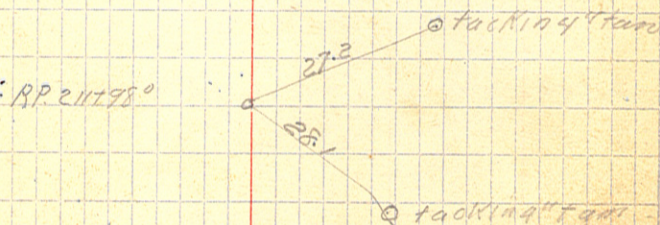
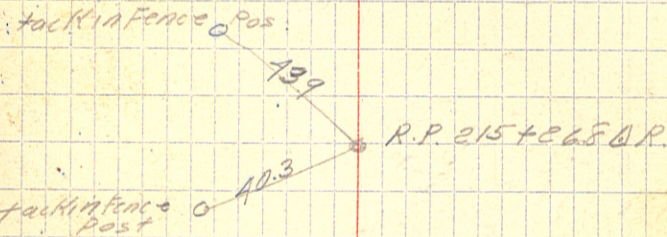
210

209

208

207

206



236

235

234

233

232

231

230

+55-20

229

228

227

226

225

224

223+99² EC 43°51' 87°41' L

+50 2727 1/4 66° C L

223 10°57 1/4 88° tang

222+66² BC LC. 132.9

223+549 87°41' L 51°25' W

223

222

221

220

219

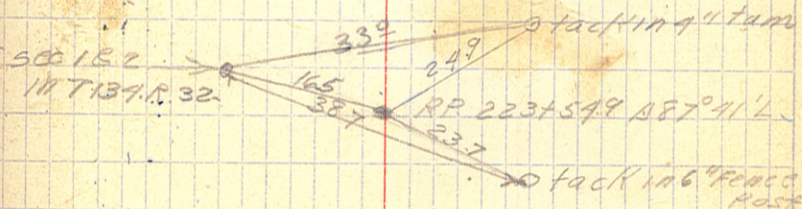
218

224+0225 = 36.75 short sta

May 12 1917 warm

May 13 1917

25



256+327 E.C.

256

+50

255

+50

254+308 BC

255+339 $\Delta 29^{\circ}16' L$ $\Delta 22^{\circ}40' E$

255

254

253

252

251

250

244 +360 \odot

249

248

247

246

245

244

243

242

241

240+14 \odot

240

339

238

237

257 to 258 = 955

120 C.R.

$\Delta 29^{\circ}16' R$ old $\Delta 29^{\circ}16' R$ error

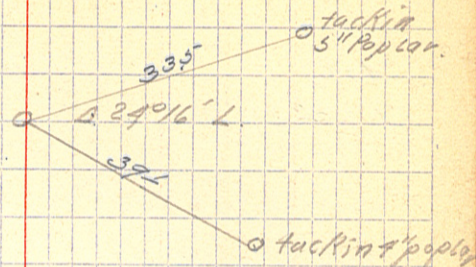
Tang 103.0

LC 201.5

May 13/1917.

26

R.P. 255+339



274+671 EC 21°13'
 +50 19°58'
 274 18°13'
 +50 12°28'
 273 8°43'
 +50 4°58'
 272 10°13'
 271+83 BC
 273+32 A 7°25' R.

275 to 276 = 85.7 short sta

B 92°28' R.
 Tang 148.8
 LC 283.1
 15°6' R.

268+94 EC 12°32 1/2'

269 to 270 = 96' short sta

+50 10°13 1/2'

268 7°13 1/2' A 25°45' R.

+50 4°13 1/2' 12°0' R.

267 10°13 1/2' Tang 109.3

266+79 BC LC 214.6

267+88 BC A 25°45' R.

261+95 EC 3°35' A 7°10' L

262 to 263 = 97.8' short sta

261+50 2°41' 4°0' L

261 1°41' Tang 89.7

+50 0°41' LC 179.2

260+16 BC

261+057 7°10' L 529°11 E Old A 7°2' L. Error 0.2'

261

260

259

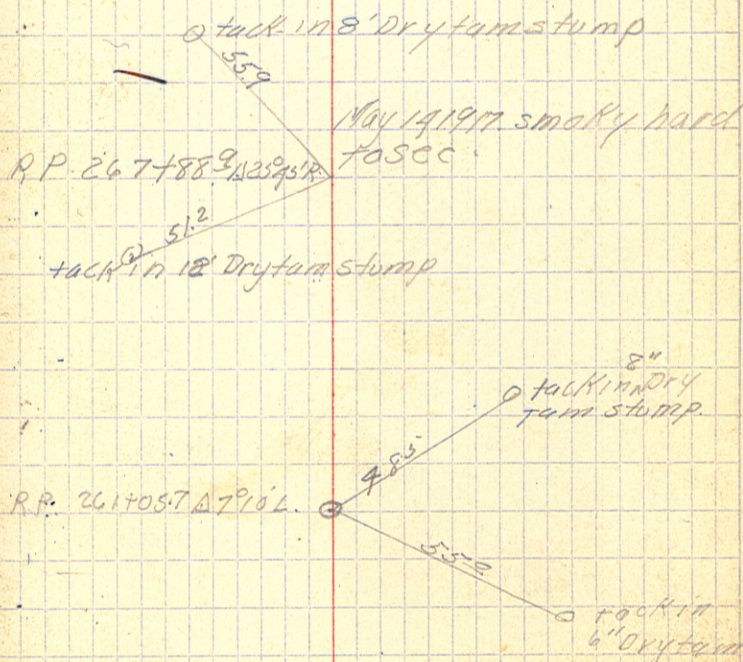
258

257

May 13 1917
May 14.

27

Notes: angle to be referenced



284+45³ E 8°57'

284 7°08 1/2

+50 5°08 1/2

283 3°06 1/2

+50 1°08 1/2

282+215 BC

283+394 17°54' R

283

282

281

280

279

278+393 EC 11°40 1/2' P1.277+43.6

278 9°19' Δ 23°21' L

+50 6°19' Tang 98.9

277 3°19' LC 194.6

+50 0°19'

276+44.9 BC

277+43.6 N 23.21

77

76

75

274

From 285 to 286
= 98° short sta

From 279 to 280
= 988' short sta

Curves figured in office 28

May 25 1917

J. Pomast L. Engr.

W. Stark Weather Chaman

294 $7^{\circ}13\frac{1}{2}$
+50 $3^{\circ}25\frac{1}{2}$
293+037 BC.

294+520 = $42^{\circ}21' L$

294

293

292

291

290+49³ EC $23^{\circ}59'$

290 $19^{\circ}03'$

+50 $14^{\circ}03'$

289 $9^{\circ}03'$

+50 $4^{\circ}03'$

288+095 BC

289+368 $47^{\circ}54' R$

289

287+81.7 EC $7^{\circ}55'$

+50 $6^{\circ}21'$

287 $3^{\circ}51'$

+50 $1^{\circ}21'$

286+23' BC.

287+029 $15^{\circ}50' R$

287

286

285

P1294+520

$\Delta 42^{\circ}21' L$

Tang 148.3

L.C. 282.3

$15^{\circ} C L$

From 291 to 292

P1289368 = 87² short sta

$\Delta 47^{\circ}54' R$

Tang 127.9

L.C. 239.8

$20^{\circ} C R$

Note -

From 287 to 288

= 98.7 short sta

P1. 287+029

$\Delta 15^{\circ}50' R$

Tang 79.8

L.C. 158.3

$10^{\circ} C R$

May 25 1917

in office

29

sta 289+368 POT.

From EC to sta 288² = 17² FT.

306

305+916 POT.

305-

304

303

302

301

300

299+703 EC 18°48' $\frac{1}{2}$ '

+50 17°17'

299 13°32'

+50 9°47' PI. 298+49.9

298 6°02' Δ37°35'R.

+50 2°17' Tang 130.3

297+19.6 BC LC 250.6

15° C.R.

298+49.9 Δ37°35'R.

298

297

296

295+86° EC 21°10' $\frac{1}{2}$ '

295+50 18°28' $\frac{1}{2}$ '

295- 14°43' $\frac{1}{2}$ '

294+50 10°38' $\frac{1}{2}$ '

From 300 to 301
= 90' short sta

From 296 to 297
85.7' short sta

May 25 1917
Figure curves in office 30

324
323
322
321
320
319
318
317
316
315
314
313
312
311

310 + 47.4 E.C. 14°46' N

310 11°13'

+50 7°28'

309 3°43'

308 + 50.1 B.C.

309 + 57.1 Δ 29°33' R

309

308

307

K floating bag
just 50 ft. ex.

P1.309 + 57.4

Δ 29°33' R

Tan 1070

L.C. 1970

15° Curve R.

From 311 to 312
= 93' short sta

May 25 1917.

31

Figure curves in office.
PM stark weather goes with A. W. M.
to Home Brook. On S. R. H. 80.
J. F. Pomast 6 figures curves.

337+55⁵ = A 33° 31' R continued on next page
 ← 337+58.8 = A 33° 31' R change due to setting
 line 20' from sec line instead
 of 15'

345+93' 0

346+01' 0

End of Co Ditch No 2

x x x x x x

333+82° No 7 = 7+51° IRON CREEK Lateral

~~333~~

~~332~~

~~331~~

~~330~~

~~329~~

328

327+60.9 EC 17° 00' 1/2

+50 16° 11' 1/2

327 12° 26' 1/2

+50 8° 41' 1/2

326 4° 56' 1/2

+50 1° 11' 1/2

325+34' BC

+51.8 A 34° 01' L x

326

+99.4 @ 34° 12' L SET EX

325

From 328 to 329
 = 99.2 short sta

pp 326+51.9

A 34° 01' L

king 117.8

LC 226.8

15° LL

x x x

May 25 1917.

32

Figured curves in Office

Note Co Ditch No 2 R present is 15' East
 of sec line (changed by Pomaset to 20'
 East of sec line)

By changing line to sta. 325+99.9 which
 = Sta 15+17⁸ IRON CREEK Lateral makes End
 of Ditch No 7 sta 333+65' instead of 333+82'
 which = sta 7+51° IRON CREEK

Note used Ang L at sta 325+99.9
 and run on south side of sec line
 to prevent crossing section twice
 Abandoned Angle at sta 326+51.9

CHANNEL BEGINS

326+99.4 = 15+17⁸ of IRON CREEK Lateral
 325+99.9 M.D. No 7 originally = 15+228
 IRON CREEK Lateral set 0100 20' East of NBS sec
 line of Co Ditch 2 instead of 15'
 therefore shorten Iron creek 5'

308+309 0

313+87°

317+48.4 0

320+577

322+012 0

325+15° EC 25°38 1/2'

325 24°08'

+50 19°08'

324 17°08' PI 324+00

+50 9°08' Δ51°17'L

323 4°08 1/2' Tang 138.4

322+58° BC. LC: 256.7

324+00 Δ51°17'L 20° Curv. L. = 323+97°

328+86° 0

333+17° 0

338+64° EC 16°55 1/2' ✓

+50 15°50'

338 12°05' PI 337+55.5 = 337+58.2

+50 8°20' Δ33°51'R

337 4°35' Tang 116.6

+50 0°50' LC: 225.7

336+38° BC. 15° CR

= 0+00 IRON GR. LATERAL @ 90° CR
Maps show 0+00 dist to 313+85°

= 0+00 L.H. #01 Δ70°27'R

From 326 to 329

= 79.6' short sta

From 339 to 340
= 92.5' short sta.

May 25 1917.

IN OFFICE

33

252+06.2 EC 9°26 1/2'

252 9°11 1/2'

+50 7°11 1/2' PI 250+89.4

251 5°11 1/2' Δ18°53'R

+50 3°11 1/2' Tang 119.2

250 1°11 1/2' LC: 236.0

249+70.2 BC. 8°00' CURV. R.

250+89.4 Δ18°53'R

260+74° 0

261+90.8 EC 30°49 1/2'

+75. 28°28'

+150 24°40'

+25. 25°58'

61 17°13'

+75. 13°28' PI 260+91.5 = 260+97.2

+50 9°43' Δ60°11'L

+25 5°58' Tang 112.0

260 2°13' LC: 205.8

259+85.2 BC 30° Curv. L.

260+91.5 Δ60°11'L K Note From 260+91.5 to 324+00

266+63° 0. Ditch Now is 15' E of sec line

276+59.7 0 Change to 20'

289+63° 0 Tack in dry tan stump

291+60.2 0 Tack in Hub

299+89.4 0 Tack in dry tan stump

41.6
Tack in Hub

From 253 to 254 = 97°
short sta

From 262 to 263 = 89° short
station

260+91.5 = 260+97.2

291+60.2 RR

RR 299+99.4

P1 197+244
 Δ 28°35'R
 Tang 73.3
 197 4°53 1/2
 +75 2°23 1/2 LC 142.9
 196+51 BC 20° C.R.
 197+24.7 Δ 28°37' Δ = 00 of Lat No2 Now 26 1/4 of section
 197+09.4 1/4 cor between sec 22 & 27 Line Now
 209+41.0 on 1/4 line
 214+62.5 0
 220+75.5 EC 12°25' From 221 to 222
 +50 11°08 1/2 = 95.7 short sta
 220 8°38 1/2 P1 219+53.5
 +50 6°08 1/2 Δ 24°50'L
 219 3°38 1/2 Tang 126.3
 +50 1°08 1/2 LC 248.3
 218+27.3 BC 10° C.L.
 219+53.5 Δ 24°50'L
 233+44.0
 241+09.7 EC 19°02 1/2 From 242 to 243 = 87.5 short sta
 241 18°19'
 +50 14°34' P1 239+88.0
 240 10°49' Δ 38°05'R
 +50 7°04' Tang 132.2
 239 3°19' LC 253.9
 238+55.8 BC 15 C.R.
 239+88.0 Δ 38°05'R

CoDitch May 25 1917 34
 No2 Figured in office
 1120 00°17' Continued on next page
 119+88.6 BC
 P1 227.7 Δ 13°50'R
 132+60.4 EC 18°04' From 133 to 134 = 90.9 short sta
 +50 17°17'
 132 13°32' P1 131+44.5
 +50 9°47' Δ 36°08'L
 131 6°02' Tang 125.0
 +50 2°17' LC 240.9
 130+19.5 BC 15°L (Note for change
 of line front
 131+44.5 Δ 36°08'L corrected Δ 36°37' 2) 131+44.5
 144+47.8 Δ 00°02'L s/c cor sec 27 to 103+58.0
 157+96.0 500th cor center of sec 27 see page
 51
 164+69.0
 170+45.9 0 Pot 24' N of Bridge EC 1/4 Line sec 27
 176+02.7 0
 183+76.5 = 00 of Backus Lake Lat 90°R.
 197+04.4 0
 197+94.0 19°17 1/2 From 198 to 199 = 96.3 short sta
 +75 12°23 1/2
 +50 9°53 1/2
 197+25.7 12°23 1/2

72+62.9 EC 3°29' From sta 73 to 74 = 99.5 short sta
+50 3°21'
72 2°51'
+50 2°21'

71 1°51' Pk. 70+89.2

+50 1°21' Δ 6°58'R

70 0°51' Tang 174.4

+50 0°21' L.C. 348.3

69+146 BC 2° CR 2' EXT 50' tang.

70+89.2 Δ 6°58'R

86+78 0

South side of road grade

86+89.5 0

96+69.5 0

104+99.9 EC 7°06 1/2' From 105 to 106 = 98.5 short sta

+50 5°32'

104 4°37' Pk. 103+58°

+50 3°22' Δ 19°13'R

103 2°07' Tang 142.9

+50 0°52' L.C. 284.3

102+15' BC 5° CR

103+58.2 Δ 19°13'R Angle Now 14°17'R

122+65.3 EC 6°55' From 123 to 124 = 98.5 short station

+50 6°32' Pk. 121+29.7

122 5°17' Δ 13°50'R

+50 4°02' Tang 139'

127 2°47' L.C. 276.2

120+50 1°32' 5° CR

46+77° EC 13°05' May 26, 1917 Ditch No 2 35

+50 11°44'

46 9°14' Figured in Office

+50 6°44' Pk. 45+48.9 From 47 to 48 = 95.5 short sta

45 4°14' Δ 26°10'L

+50 1°40' Tang 133.3

44+15.3 BC L.C. 261.7 75' tang

45+48.9 Δ 26°10'L 10° CL 7' EXT

50+07.0

56+92.7 EC 25°47' From sta 57 to 58 = 73.5 short sta

+50 22°35'

56 18°50'

+50 15°05'

55 11°20' Pk. 55+34

+50 7°35' Δ 51°34'R

54 3°50' Tang 185' Off'sct.

+50 00°05' L.C. 343.5 100' tang

53+48.9 BC 15° CR 13' FT +

55+34.2 Δ 51°34'R

60+21.5 0

64+55.3 EC 9°54'

+50 9°41'

From sta 65 to 66 = 97.3 short sta

64 7°41' Pk. 63+32.9

+50 5°41' Δ 19°45'

63 3°41' Tang 125'

+50 1°41' L.C. 247.5

62+07.8 BC 8° CL

63+32.9 Δ 19°45'L 45' EXT 50' Tang

LAT No 1 OF CO DITCH

11 11°25' No 2
 +50 6°25' P111+585
 10 1°25' Tang 172E
 9+857 BC LC 308.8
 11+585 Δ 61°46' L 20° CL
 6+197 O
 1+174 EC 35°13' From sta 2 to 3 = 61.8' short sta
 1+700 32°36 1/2
 +50 25°06 1/2 P.1 00+00
 +38.6 = 0+00 17°36 1/2 Δ 70°27' R. 320+385 MID = 0+00
 320 11°49' Tang 1365
 +50 4°19' LC 234E
 319+212 BC 30° R. BC = 319+212 Main Ditch
 00 to Δ 70°27' R.
 00 of Lat No 1 = sta 320+572 of Main Ditch
 X X X X X
 357913 Pot. Outlet "A" which is main line
 42+896 EC 12°25' From 43 to 44 = 95.7' short sta
 +50 10°26'
 42 7°36' P1.11167
 +50 5°26' Δ 24°50' L
 41 2°56' Tang 1263
 +50 00°26' LC. 2453
 40+912 BC 10° CL
 41167.6 Δ 24°50' L

May 26 1917

36

in OFFICE ON CURVES OF DITCH No 2

40 4°23'
 15+562 BC
 46+779 Δ 46°12' R.
 37+535 EC 4°48 1/2'
 +50 4°49' From sta 38 to 39 = 99.4' short sta
 37 3°44'
 +50 2°49' P1. 36+33E
 36 1°44' Δ 9°37' L.
 +50 00°41' Tang 120.5
 35 35+13 L BC LC 290A
 35 36+334 Δ 9°37' L. 4° CL.
 25+27 L EC 2°57 1/2 From sta 26 to 27 = 99.6' short sta
 25 2°41'
 +50 2°11'
 24 10°41' P1 23+794
 +50 10°11' Δ 5°55' R.
 23 00°41' Tang 148.1
 +50 00°11' LC 2958
 22+313 BC 2° CR
 23+779.4 Δ 5°55' R.
 17+653 O
 12+99.7 EC 30°53' From 13 to 14 = 62.6' short sta
 +50 26°25'
 12 21°25'
 11+50 16°25'

79+814 BC

80+796 19°25' L

74+31

69+50 EC 45°00'

+25 37°30'

69 30°00'

+75 23°30'

+50 15°00'

+25 7°30'

68+00 BC

69+00 90°00' R

59+39 0

60+322 EC 24°19'

60 21°06'

+50 16°06'

59 11°06'

+50 6°06'

58 1°06'

57+89° BC

59+196 Δ 48°38' L

47+872 EC 23°06' P.I. 46+790 From 48 to 49

+50 19°23'

47 14°23'

46+50 9°23'

From 70 to 71 =

50' short sta

69+00 PT. Length of 70472

Δ 98°00' R. Per 100'

Tang 100' correct defl.

L.C. 1500

60° CR

From sta 61 to 62

= 82' short sta

P.I. 59+196

Δ 48°38' L

Tang 130.5'

L.C. 2432

20° CL

L

From 48 to 49

= 85' short sta

Tang 122.8

L.C. 2310

20° CR

Figured in Office

94+18° EC 19°48'

94 18°24'

+50 14°39'

93 10°54'

+50 7°09'

92 3°24'

91+34.5 BC

92+92.5 Δ 39°36' L

87

88+75.7 EC 47°34 1/2

+50 41°09'

+25 34°34'

88 28°39'

+70 22°24'

+50 16°09'

+25 9°34'

87 3°39'

86+85.4

88+19.5 Δ 95°08' L

81+75.6 EC 9°42 1/2'

+50 8°26' PT 80+79.6

81 5°56' Δ 19°25' L

+50 3°26' Tang 98.2

80 56' 10° L.C. 194.2

79+50 00°56'

From 94 to 95 =

= 88.2' short sta

PT 92+92.5 From EC to Sta

Δ 39°36' L

Tang 137.9

L.C. 2642

15° CL

From sta 89 to 90

= 32' short sta

P.I. 88+19.5

Δ 95°08' L

Tang 129.1

L.C. 190.3 Arc for 100' = 103.24

correct Def for 25' = 6°04'

From 82 to 83 = 97.5' short sta

112+00 End Lat No 1.

103+73.7 E 4° 44'

+50 4° 15 1/2

103 3° 15 1/2

+50 2° 15 1/2

102 1° 15 1/2

+50 0° 15 1/2

101+37° B

102+55° E

96+68.9 E C 14° 01'

+50 12° 36'

96 8° 51'

+50 5° 06'

95 1° 21'

94+82° BC

95+77.6 28° 02' R

From 104 to 105 =
= 99.5' short

PI 102+55° E

Δ 9° 28' R

Tang 108.5

LC 236.7

A C R

From 97 to 98 =

PI 95+77.6 = 95.7' short sta

Δ 28° 02'

Tang 95.5

LC 186.9

15° C R. Note BC on short sta

= 94+69.6

14+05.7 E C 45° 00'
14 43° 52'
+75 38° 52'
+30 33° 52'

+25 28° 52'

13 23° 52'

+75 18° 32'

+50 13° 52'

+25 8° 52'

12 3° 52'

BC 11480° BC

13+24° Δ 90° R

CO Ditch No 2.
May 26 1917
in office

38

PI 13+24°

Δ 90° R. From 15 to 16

Tang 143.3 = 38.9' short sta

LC 225°

- 40' C R.

PI 197+24.9 = 00 Lat No 2

Note preliminary survey shows Lat No 2 15' N of sec line changed to 20'

195+74.9 BC

0+00 = 197+24.9. Main Ditch Δ 90° 29' L.

LAT. No 2 of CO Ditch No 2.

curve comes on short sta

May 31 1917.
Lat No 2 of Co Ditch No 2

40+45⁹ EC 30° 42'
+25 27° 37'
40 23° 52' P.I. 39+549
+75 20° 07' Δ 61° 25' R. From sta 41 to 42
+50 16° 22' Tang 113' = 78.5 short sta
+35 12° 37' LC 204.7
39 8° 52' 30° C.R.
+95 5° 07'
+50 1° 22'

38+40.9 BC.

39+54⁹ Δ 61° 25' R.

27+34.2 EC. 30° 26'

+25 28° 59' P.I. 26+440 From 28+029
27 25° 14' Δ 60° 52' L. = 78.5 short sta
+75 21° 29' Tang 1122
+50 17° 44' LC 202.9
+25 13° 59' 30° C.L.
26 10° 14'
+75 6° 29'
+50 2° 44'

25+31.8 BC

26+44° Δ 60° 52' L.

May 31 1917
Backus LAKE Lat.

39

P.I. 183+76.5

Δ 90° 15' R.

Tang

LC

C.R.

Note by changing M.D. line
7.9' west on the line center
of 500 27 will produce all
prints on Backus Lake Lat
4.3' greater.

183+76.5 = 00 of Backus Lake. Lat. Δ 90° 15' R.

Backus LAKE Lateral
O + Co Ditch No 2

79+97.9 EC 33° 22 1/2'

+75 30° 01'
+50 26° 16' P.I. 79+007.
+25 22° 31' Δ 66° 45' L From 80+081
79 18° 46' Tang 125.8 = 70.9 short sta
+75 15° 01' LC 222.5
+50 11° 16' 30° C.L.
+25 9° 31'
78 3° 46'
77+74.9 BC
79+007 Δ 66° 45' L

Backus LAKE LAT
of Co Ditch No 2

29+51.6 tack in Wood of bridge = 29+55.9 corrected

23+24.2 EC 26°18'

23	23°53 1/2	
+75	21°23 1/4	
+50	18°53 1/2	PI. 20+05.9
+25	16°23 1/2	
22	13°53 1/2	A 52°37'R. From 22 to 23 =
+75	11°23 1/2	
+50	8°53 1/2	Tang 144.8 73.5' short sta
+25	6°23 1/2	
21	3°53 1/2	L.C. 263'
+75	1°23 1/2	
20+61 L BC		20° R.

22+05.9 A 52°37' R. 22+05.9 = 22+10.2 corrected

18+64.5 EC 5°32 1/2'

+50	5°11'	PI. 17+54.0
18	3°36'	A 11°05' L From 19 to 20
+50	2°41'	Tang 111.2 = 99.3' short sta
17	1°26'	L.C. 221.7
+50	00°11'	5°00' C.L.

16+92.8 BC

17+54.0 A 11°05' L

17+54.0 = 17+58.3 corrected

14+25.0 EC 23°50 1/2'

+75	21°20 1/2	
+50	18°50 1/2	PI. 13+13.2 From 14 to 15
+25	16°20 1/2	
13+00	13°50 1/2	A 47°41' L. = 85.2' short sta
+75	11°20 1/2	
+50	8°50 1/2	Tang 126.6
+25	6°20 1/2	
12	3°50 1/2	L.C. 238.4
	1°20 1/2	

11+86.0 BC

13+13.2 A 47°41' L. 13+13.2 = 13+17.5 corrected

IRON CR LAT.

313+85.0 MD = 0+00 FROM CR LAT 90° R.

1+12.5 = EC 45°00'

1+00 42°30' A 90° R.

+75 38°30' 313+85.0 = 00 IRON CR LAT.

+50 32°30'

+25 27°30' Tang 143.3 FROM 2+0.3 = 38.9 short sta

313+54.2 = 200.22°30' L.C. 2250

+50 21°40' 40° C.R.

312+25.5 16°40'

312+40.7 BC T.C. = M.D.

3 13 11°40'

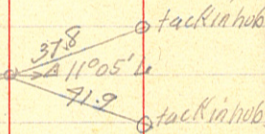
+75 6°40'

+50 10°40'

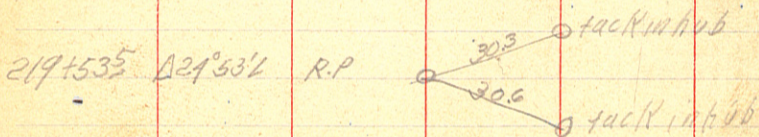
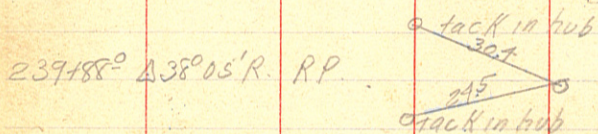
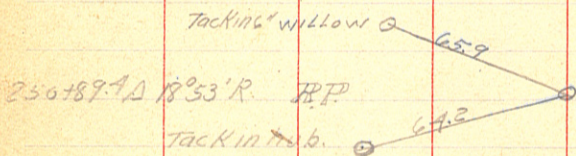
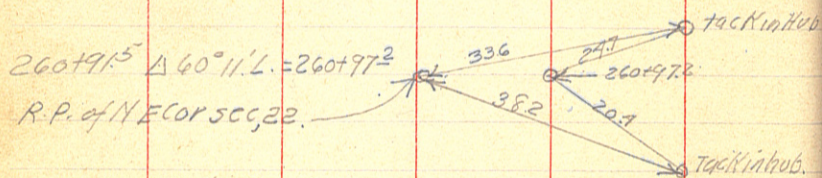
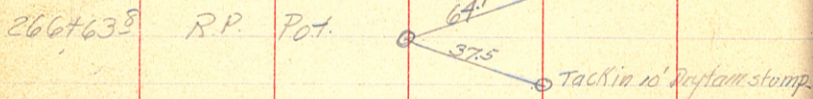
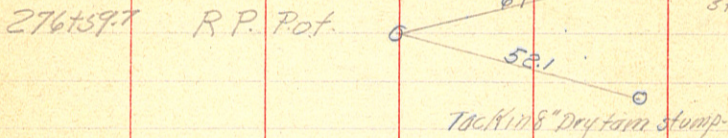
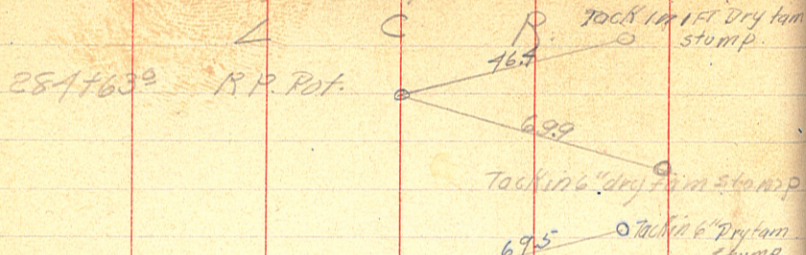
312+41.7 BC

on M. Ditch

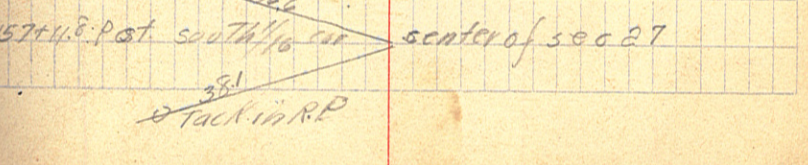
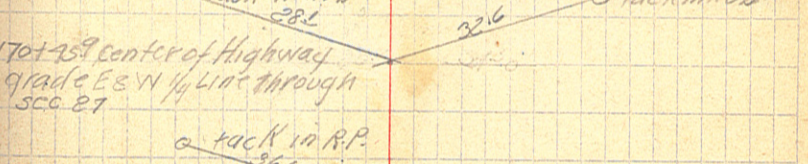
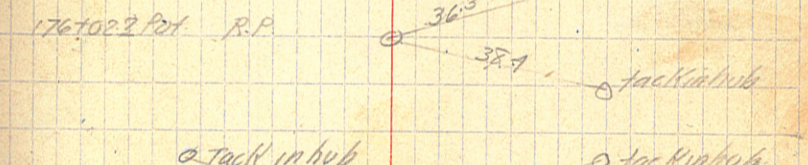
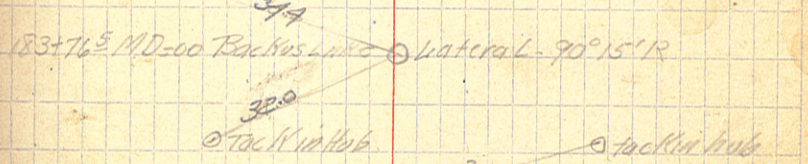
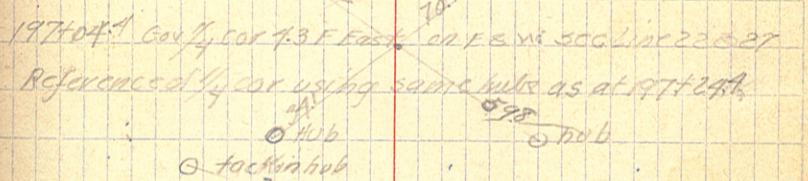
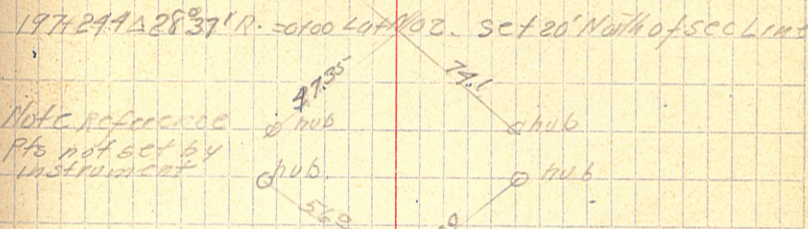
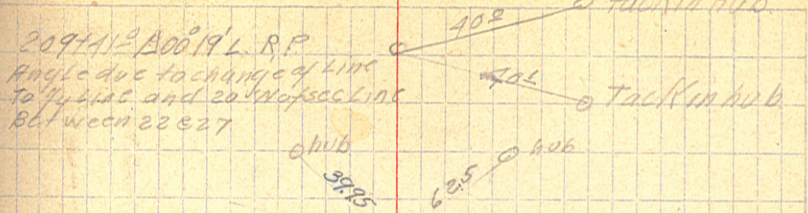
312



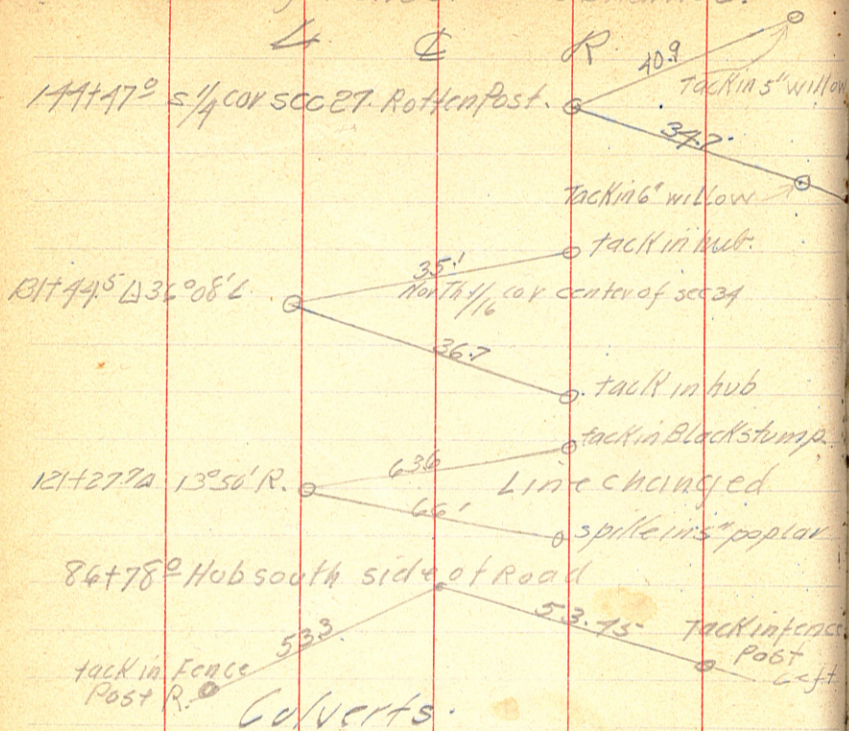
Junca 1917 Reference pts. Co Ditch No 2



L. Q. R. 41



Reference Pts. Co. Ditch No. 2.



Staw

- | | | | |
|--------|---------------|---------------------|--------------------|
| 29400 | 36" x 26' GIP | on Lat No 4 | |
| 145400 | 48" x 26' GIP | old covert moved to | stew 54 Main Ditch |
| 138400 | 48" x 26' GIP | " " " " | " " " " |
| 67400 | old covert | from staw 145 M D | moved to here |
| 00400 | 30" x 26' EIP | moved from 138 M D | |

For Reference points from 121+27.7 to beginning of Line see preliminary book 1A.

Br. No 2 sta 86+89.5

Assumed elev. top of C.I.P. on south edge

5.10 205.10 200.00

53 1998

Br. No 3 sta 170+45.9

BM Elev 200.00 Hub. 55' North

BM 4.25 204.25 200.00

4.7 1996

3.95 200.30

4.7 1996

Br No 4. sta 260+91.5

BM assumed elev 200.00 C.I.P. 33.6' out

Br floor 2' above original ground

BM 4.7 204.00 200.00

4.7 1993 Br Elev.

201.3

Br No 5 set 2' higher than original ground

sta 324+00

Sept 24 1917

43

Bridge Notes Co ditch No 2

40' left sta 86+89.5 Elev 200.00

Elev of present grade.

Elev of Br. floor 201.30

of E & W Road. on Westside of ditch

Elev of grade.

Elev of Bridge floor.

Elev of grade East side ditch

Br floor elev.

Change of Line
Lat Nol Co Ditch

Dec 6 1917

44

S. W. cor. sec 2 not found (measured
in from fence cor.)

Change of line from sta 35+336

39+05³ = sta 59+599 old line

55+86.9 D R Ending S line sec 2

39+53⁵ 148°45' R

35+33⁶ 152°39' L

Sta	Levels on Change			
	B5	H1	FS	FLY
BM.	476	153.98		
69			5.2	50.8
68			5.5	50.5
67			5.3	50.7
66			5.3	50.7
65			5.5	50.5
64			5.5	50.5
63			5.6	50.7
62			5.7	50.3
61			5.8	50.2
60			5.8	50.2
59			5.6	50.7
TP	390	155.26	7.62	151.3.6
58			4.7	50.6
57			4.9	50.7
56			4.7	50.6
55			4.8	50.5
54			5.1	50.2
53			5.2	50.1
52			5.1	50.2
51			5.1	50.2
50			5.3	50.0
49			5.0	50.3

15122
corrected

10
45

X section transferred to Book
No 1 Hand CD. page 62.
X SCC. Book of Ditch No 1 and No 2

Grade	Cut	Notes
147.04	3.7	
46.99	3.1	From 0+00 to 55+55
46.93	3.8	16' Bottom 1/2 tol slope
46.88	3.6	
46.83	3.4	
46.78	3.2	
46.72	3.0	
46.67	2.8	
46.62	2.6	
46.56	2.4	
46.51	2.2	
46.46	2.0	
46.40	1.8	
46.45	1.6	
46.40	1.4	Note from sta 55+55 To End of Ditch A' Bott 1/2 tol
46.35	1.2	
46.29	1.0	
46.25	0.8	
46.20	0.6	
46.14	0.4	
46.09	0.2	

.053 2/10

668
23
130

		15529				
	296	15982	3.90		15186	
18			4.9	49.9	49.5	45.94
17			4.6	50.2	49.8	45.88
16			5.0	49.6	49.3	45.83
15			5.0	49.8	49.3	45.78
14			5.1	49.7	49.2	45.73
13			5.2	49.6	49.1	45.67
12			5.4	49.4	48.9	45.62
11			5.6	49.2	48.6	45.57
10			5.8	49.0	48.4	45.51
T.P.	464	15383	5.43		149.1	
39			5.1	48.7	48.4	45.46
38			5.3	48.5	48.1	45.41
37			4.9	48.9	48.3	45.35
36			5.2	48.6	47.9	45.30
35433.5			5.3	48.5	47.8	45.27
BM			1.53	49.28	on hub	
35			6.7	47.4	47.4	45.25

0.0530%

Levels on change of line
 from sta 109+19.2
 BS. HI Rod FS Elev

June 20 1918

47

Sta	BS	HI	Rod	FS	Elev
		18130			
109+197			44		76.9
10			5.0		76.3
11			5.6		75.7
12			6.0		75.3
+465 DL			6.7		74.6
13		393	6.9		74.7
TP	190	17737		583	17597
14			3.0		74.7
15			3.8		73.6
16			4.3		73.1
17			4.8		72.6
18			5.6		71.8
19			5.6		71.8
20			6.0		71.4
+583 = 124+55 old line			6.3		71.4
25			6.1		71.3
26			6.5		70.9
27			7.5		69.9

corrected

76.1
75.5
74.9
74.5
73.8
73.9
74.67
73.6
72.8
72.3
71.8
71.0
71.0
70.6
70.6
70.5
70.1
69.1

	BS	HI	FS	Elev
B.M.	207	191.67		189.60
67+12 ² PIA 90° R.			4.6	87.1
68			4.0	87.7
69			4.5	87.2
T.P.	445	1920 ³⁹ 6	4.06	187.60
70			5.0	87.1
71			4.5	87.6
72			4.8	87.3
73			4.6	87.5
74			4.4	87.7
T.P.	427	191.90 ¹⁶	4.43	187.63
75			4.8	87.1
76			4.1	87.8
B.M.	207	191.60 ²⁰	2.37	189.53
77			3.9	87.7
78			4.3	87.3
79			4.4	87.2
80			4.6	87.0
T.P.	254	191.24 ³⁶	2.90	188.70
81			4.5	86.7
82			4.8	86.9
83			5.1	86.1
84			6.0	85.2
85			6.3	84.9

continued on page 52

Profile Levels, change of line 48
Run with transit.
Sta 67+12¹ to 85+01² Aug 22 1916

B.M. 18960 4¹ P. Nail in fence post. 71+60 location

Enter brush

on tack. B.C. 74+62⁰ Hub.

Tack. in tamarack stump on 76+4⁰

Leave brush

check Levels Lat #4 AUG 5 1916 Cloudy

	B.S.	I.I.	F.S.	Elev
BM.	7.13	166.29		162.16
T.P.	6.93	168.07 ^{1.78}	5.15	161.11
BM.			3.67	164.40
T.P.	2.53	169.36 ^{7.20}	1.27	166.53
BM.			1.17	168.19
BM.	3.87	170.67 ^{1.25}	2.56	166.80
BM.			1.94	168.70
T.P.	7.79	171.28 ^{6.4}	7.15	166.19
T.P.	7.74	171.57 ^{2.5}	7.48	166.80
BM.			2.26	169.28
T.P.	4.27	171.56 ^{0.2}	4.25	167.29
T.P.	3.82	172.77 ^{1.21}	2.61	168.95
BM.			3.12	169.65

LEVELS RUN with TRANSIT.

49

Nail in 4" poplar 2' L 165+60 Main Line

Nail in 4" poplar 60'R 70+00

tack in 4" poplar stump 75'R 32+65

spike on center line 29+03.6 ^{166.97 Molyneux Level} 166.80 ^{Permasch. 11}

tack in 4" birch 65'L 24+90 ¹⁷

tack in 3" poplar 25'L 15+00

tack in 3" poplar 40'L 7+00

JULY 31 1916 Hot
CHECK LEVELS Main Ditch

BM	BS	HI	ES	Elev
BM	461	16001		155.79 155.90
TP	563	161 ⁸¹ 82	382	156.19
T.P.	509	162 ³⁹ 21	465	157.17
BM			171	160.50
TP	554	169 ²⁰⁰ 21	354	158.67
T.P.	344	169 ²² 22	343	160.78
BM.			2.06	162.16
BM.			2.39	161.83
BM	324	16540		162.16
T.P.	578	166 ⁷⁷ 17	501	160.39
TP	525	169 ³⁷⁶ 95	197	169.70
BM.			3.15	166.80
BM.			2.65	167.30
BM	145	16825		166.80
TP	575	169 ¹³² 57	443	163.82
TP	580	172 ⁹² 10	327	166.30
BM	473	172 ⁷⁰ 80	4.03	168.07
TP	431	173 ⁷³ 73	3.68	169.12
TP	577	174 ⁵⁶ 59	4.11	168.82
BM.			2.68	171.91

Aug 30 1916

50

LEVELS RUN WITH TRANSIT.
TACK ON REFERENCE HUB 108'R. 188+525
Nail in fence post S/O 188+57

nail in fence post 10'L sta 175+50

Nail in 4 inch poplar 2' L. of sta 165+60
Nail in 4 inch poplar 45'R sta 166+50 Lat #4

159+56 New change = 158+00 location 156' long sta
BM. 16680 15'L 158+50 tack in 4" poplar New change
BM. 30'L 158+75 " " " " " " "

BM. Nail in tele phone pole 25'R 147+06

Nail in tel pole 5'R 127+55

Cont From page 34
Sta 131+445
change of line from sta 131+445

Aug 29 1917 J. Pomasek
Aug 30 " " W. Starkweather 51

103+58.0 14°17' R

2' EX 58' Tangy

2' EXT 69' Tangy

113+68.8 Δ 6°43' L

121+26.2 Δ 25°40' R

Note. From sta 112+00 to
offset curve 6' EXT 60' Tangy

131+44.5 Δ 41°14' L

Cont on page 35 sta 103+58.0

Sta 113+00 = 132.8 FT long sta due to change
of line

Levels on Main Ditch No. 7. 52

Cont from page 48. June 27 1915

L. R.

Sta	B.S.	HI	Rod	F.S.	Elev
	135	8925			81.90
86			4.7		84.6
87			5.4		83.7
88			6.2		83.1
89			4.6		82.7
90			4.9		82.7
+50			4.9		82.7
165			5.3		81.0
91			5.9		83.9
92			6.5		82.7
93			6.3		83.0
94			7.2		82.1
95			7.4		81.7
T.P.	340	185.65 ³⁴⁰		7.00	82.25
96			4.2		81.5
97			4.6		81.1
98			5.1		80.6
99			6.0		79.7
100			5.7		80.0
101			5.6		80.1
102			6.1		79.6
103			6.8		78.9
104			7.0		78.7
105			7.4		78.1
TP	365	182.17 ³⁴⁸		7.13	178.52

Beaver dam

Bog

$\frac{81.0}{15}$

$\frac{81.3}{10}$

Sta	135	H1	Rod	FS	Elev
		18217			
106			5.2		77.0
+30			5.6		76.4
+60			6.0		76.2
107			4.6		77.6
108			5.5		76.7
109			5.9		76.3
109+14			5.4		76.9

Sta	B.S.	I.I.	Rod	F.S.	Elev.
B.M.	157	198.33			196.76
28			6.6		91.7
27			6.7		91.6
24			4.2		92.1
25			6.0		92.3
+30			4.8		93.5
24			6.8		91.5
23			5.5		92.8
22			5.8		92.5
21			5.5		92.8
20			6.0		93.3
T.P.	4.17	⁴¹ 198.74		376	199.57
19			5.8		92.9
18			5.4		93.3
17			5.1		93.6
16			4.7		94.0
15			4.8		93.9
14			4.4		94.3
13			3.9		94.5
12			3.2		95.7
T.P.	5.77	⁷⁰⁶ 202.80		171	197.03
+90			6.4		96.4
+80			7.7		95.1
11			7.0		95.8
10			6.0		96.8

Oct 1918. Very Windy

54

Dunkle
Cromwell
Pamasset
Wall in 2" gap. 15" R of 20460 of old line

con't on page 58

44
199.935
25 92.5
26 92.3
27 92.1
28 91.6

Beaverdam

Too windy for accurate levels

Sta	B.S.	I.I.	Rod	F.S.	Elev
		20280			
9			5.4		97.4
8			1.8		98.0
7			1.5		98.3
6			3.9		98.9
5			3.4		99.4
4			3.0		99.8
T.P.	147	³⁰² 20582		1.45	201.35
3			5.6		00.2
2			5.2		00.6
1			5.0		00.8
00			1.9		00.9
0 +54			1.6		01.2
+52			5.3		00.5
+65			3.7		02.1
+75			4.0		01.8
+855			5.8		00.0

Oct 12, 1915

55

1710 Leafy Brush

Enter Brush

In side ditch of Road N. Side E 8 W Road

	3.40	199.10		190.70
sec opp page cont.			42	899
54 of Stationing			7.4	86.5
53			5.0	891
52			1.8	893
51			4.5	896
50			7.5	896
49			4.2	899
48			7.1	897
47			1.4	897
46			4.2	899
45			3.9	902
44			3.9	902
7P	3.09	199.69 ⁵⁹		250 191.60
43			1.4	90.3
42			4.3	90.4
41			4.4	90.3
+72.7 = 27150			Lat No 2 44	90.3
7P			Lat No 2	338 191.31
27			4.2	90.5
26			4.2	90.5
25			3.9	90.8
24			4.0	90.7
23			4.0	90.7
22			3.8	90.9

Oct 14 1978
Final Levels on Ditch 1407

56

Sta	B.S.	HI	Red.F.S.	Elev
	1.53	192.23		190.70
57			2.9	89.3
55			3.6	88.6
56			1.4	87.8
57			1.9	87.3
58			7.7	87.5
59			5.5	86.7
60			5.1	87.1
61			5.1	87.1
62			5.7	87.1
63			5.4	86.8
64			5.3	86.9
65			5.1	87.1
66			5.1	87.1
67			4.7	87.5

cont on page 58

Lat No 2

TP	355	194.69 199.89		335	191.39
21			4.1		90.8
20			4.2		90.7
19			4.1		90.8
18			4.3		90.6
17			4.2		90.9
14			4.2		90.7
15			4.1		90.8
14			4.1		90.8
13			4.2		90.7
12			4.0		90.9
11			3.9		91.0
TP	370	193.26 ³⁷		333	191.56
10			4.3		91.0
9			4.4		90.9
8			4.2		91.1
7			4.3		91.0
6			4.4		90.9
5			4.3		91.0
4			4.3		91.0
3			4.4		90.7
2			4.4		90.9
1			4.5		90.8
00			4.3		91.0

ROWay to CLEAR on Main Ditch Aug 1st

Sta	to sta	Length	Width	Acreage
166+00	169+00	220	50 ft.	167+0168 Short Sta. 70 FT
165+00	166+00	100	50 FT.	on Right
161+90	162+60	70 ^{70 cur}	50	on Left
160+65	162+25	140 ¹¹⁵	50	15-8+00 =
158+00	159+15	115	50	27500 ²⁷⁵⁰⁰ up to date Oct 10 1916
158+10	159+36	146	30 FT	.6313
73+00	81+00	800	50	0.193
				0.99

X X X LAT 1421 19584 X X X

15			4.1	91.7
14			4.1	91.7
TP	2.71	19555	3.00	192.84
13			4.1	91.5
12			4.0	91.6
11			4.0	91.6
10			4.0	91.9
9			4.3	91.3
8			4.1	91.5
7			4.0	91.6
6			3.8	91.8
5			4.0	91.9
A			3.6	92.0
TP	3.21	19606	2.70	192.86
3			4.6	91.5
2			4.3	91.8
1			4.2	91.9
00			4.0	92.1

ROW to CLEAR on Lat #4 59 AD 92

Sta	to sta	Length	Width	Acreage
6100	8+80	280	25 FT.	
10+85	11+40	55	12 1/2 FT on the left	
40+30	41+10	80	25 FT.	
44+20	44+70	50	25 FT.	
15+40	46+60	(average 60)	25 FT.	
				475059 FT = 11 acres

Oct 14 1918 Final Row Way notes.

Sta	to sta	Lin FT
12+50	17+70	520
20	21	100
54+20	40.88	33.80
158	159+56 Equation	241
160+65	162+25	160
161+90	162+60	70
165	166	100
166+50	169 Short Sta 70	220
191	215+30	2430
223+40	227	4310
289+10	306	1460 50' ROW
326	330+70	470
333+10	332+75	45
Lat 101		2350
100	10	1000
23+10	27+50	440
Lat 103		2400
"	" 4	
4160	40 4100	440
10+80	" 11+60	80
11+70	" 15+10	120
23+30	" 27+80	150
28+30	" 32	370
39+50	" 41+20	170
44+50	" 46+63	213

50' ROW

Levels on M Ditch No 7
 Follow with iron or lat
 BS HI FS ELEV

BM.	3.79	13.8.76		134.47	
326			7.5	131.0 ⁹⁰	
327			7.2	31.3	
328			7.0	31.5	
329			6.2	32.3	
+30			6.5	32.0	
+75			4.2	34.3	Beaverdam
330			3.9	32.4	
+30			6.5	32.0	top of R.
+58			4.3	34.2	road
+68			4.9	33.6	"
+75			6.4	32.1	top of slope
331			7.0	31.5	
+35			8.2	30.3	
332			7.9	30.6	
333			8.1	30.4	
+58			8.2	30.3	top bank of creek in Dr.
159			9.2	29.3	
165 = 7+51° Imp'd lat			9.5	29.0	in Cr.

Transferred into Intersection Book

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

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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.

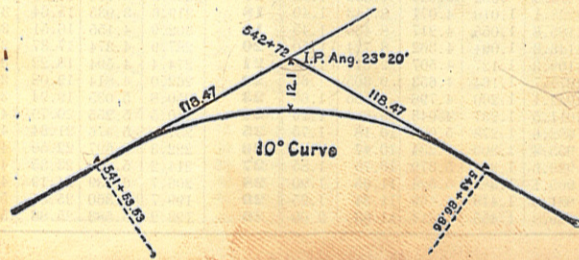
2° 19½' = def. for sta. 542	I. P. = sta. 542+72
4° 49½' = " " " +50	Tan. = 1.18.47
7° 19½' = " " " 543	B. C. = sta. 541+53.53
9° 49½' = " " " +50	L. C. = 2.33.33
11° 40' = " " " 543+	E. C. = sta. 543+86.86
86.86	

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

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



Natural Tangents

deg.	0'	10'	20'	30'	40'	50'	deg.	0'	10'	20'	30'	40'	50'	deg.	
0	0000	0029	0058	0087	0116	0145	89	40	8391	8441	8491	8541	8591	8642	49
1	0175	0204	0233	0262	0291	0320	88	41	8693	8744	8796	8847	8899	8952	48
2	0349	0378	0407	0437	0466	0495	87	42	9004	9057	9110	9163	9217	9271	47
3	0524	0553	0582	0612	0641	0670	86	43	9325	9380	9435	9490	9545	9601	46
4	0699	0729	0758	0787	0816	0846	85	44	9657	9713	9770	9827	9884	9942	45
5	0875	0904	0934	0963	0992	1022	84	45	1.0000	1.0058	1.0117	1.0176	1.0235	1.0295	44
6	1051	1080	1110	1139	1169	1198	83	46	1.0355	1.0416	1.0477	1.0533	1.0599	1.0661	43
7	1228	1257	1287	1317	1346	1376	82	47	1.0724	1.0786	1.0850	1.0913	1.0977	1.1041	42
8	1405	1435	1465	1495	1524	1554	81	48	1.1106	1.1171	1.1237	1.1303	1.1369	1.1436	41
9	1584	1614	1644	1673	1703	1733	80	49	1.1504	1.1571	1.1640	1.1708	1.1778	1.1847	40
10	1763	1793	1823	1853	1883	1914	79	50	1.1918	1.1988	1.2059	1.2131	1.2203	1.2276	39
11	1944	1974	2004	2035	2065	2095	78	51	1.2349	1.2423	1.2497	1.2572	1.2647	1.2723	38
12	2126	2156	2186	2217	2247	2278	77	52	1.2799	1.2876	1.2954	1.3032	1.3111	1.3190	37
13	2309	2339	2370	2401	2432	2462	76	53	1.3270	1.3351	1.3432	1.3514	1.3597	1.3680	36
14	2493	2524	2555	2586	2617	2648	75	54	1.3764	1.3848	1.3934	1.4019	1.4106	1.4193	35
15	2679	2711	2742	2773	2805	2836	74	55	1.4281	1.4370	1.4460	1.4550	1.4641	1.4733	34
16	2867	2899	2931	2962	2994	3026	73	56	1.4826	1.4919	1.5013	1.5108	1.5204	1.5301	33
17	3057	3089	3121	3153	3185	3217	72	57	1.5399	1.5497	1.5597	1.5697	1.5798	1.5900	32
18	3249	3281	3314	3346	3378	3411	71	58	1.6003	1.6107	1.6212	1.6319	1.6426	1.6534	31
19	3443	3476	3508	3541	3574	3607	70	59	1.6643	1.6753	1.6864	1.6977	1.7090	1.7205	30
20	3640	3673	3706	3739	3772	3805	69	60	1.7321	1.7437	1.7556	1.7675	1.7797	1.7917	29
21	3839	3872	3906	3939	3973	4006	68	61	1.8040	1.8165	1.8291	1.8418	1.8546	1.8676	28
22	4040	4074	4108	4142	4176	4210	67	62	1.8807	1.8940	1.9074	1.9210	1.9347	1.9486	27
23	4245	4279	4314	4348	4383	4417	66	63	1.9626	1.9768	1.9912	2.0057	2.0204	2.0353	26
24	4452	4487	4522	4557	4592	4628	65	64	2.0503	2.0655	2.0809	2.0965	2.1123	2.1283	25
25	4663	4699	4734	4770	4806	4841	64	65	2.1445	2.1609	2.1775	2.1943	2.2113	2.2286	24
26	4877	4913	4950	4986	5022	5059	63	66	2.2400	2.2637	2.2817	2.2998	2.3183	2.3369	23
27	5095	5132	5169	5206	5243	5280	62	67	2.3559	2.3750	2.3945	2.4142	2.4342	2.4545	22
28	5317	5354	5392	5430	5467	5505	61	68	2.4751	2.4960	2.5172	2.5386	2.5605	2.5826	21
29	5543	5581	5619	5658	5696	5735	60	69	2.6051	2.6279	2.6511	2.6746	2.6985	2.7228	20
30	5774	5812	5851	5890	5930	5969	59	70	2.7475	2.7725	2.7980	2.8239	2.8502	2.8770	19
31	6009	6048	6088	6128	6168	6208	58	71	2.9042	2.9319	2.9600	2.9887	3.0178	3.0475	18
32	6249	6289	6330	6371	6412	6453	57	72	3.0777	3.1084	3.1397	3.1716	3.2041	3.2371	17
33	6494	6536	6577	6619	6661	6703	56	73	3.2709	3.3052	3.3402	3.3759	3.4124	3.4495	16
34	6745	6787	6830	6873	6916	6959	55	74	3.4874	3.5261	3.5656	3.6059	3.6470	3.6891	15
35	7002	7046	7089	7133	7177	7221	54	75	3.7321	3.7760	3.8208	3.8657	3.9136	3.9617	14
36	7265	7310	7355	7400	7445	7490	53	76	4.0108	4.0611	4.1126	4.1653	4.2193	4.2747	13
37	7536	7581	7627	7673	7720	7766	52	77	4.3315	4.3897	4.4494	4.5107	4.5736	4.6382	12
38	7813	7860	7907	7954	8002	8050	51	78	4.7046	4.7729	4.8430	4.9152	4.9894	5.0658	11
39	8098	8146	8195	8243	8292	8342	50	79	5.1446	5.2257	5.3093	5.3955	5.4845	5.5764	10

deg.	60'	50'	40'	30'	20'	10'	deg.	60'	50'	40'	30'	20'	10'	deg.
80	5.6713	5.7694	5.8708	5.9758	6.0844	6.1970	9							
81	6.3138	6.4348	6.5606	6.6912	6.8269	6.9682	8							
82	7.1154	7.2687	7.4287	7.5958	7.7704	7.9530	7							
83	8.1443	8.3450	8.5555	8.7769	9.0098	9.2553	6							
84	9.5144	9.7882	10.078	10.385	10.7111	11.059	5							
85	11.430	11.826	12.250	12.706	13.197	13.727	4							
86	14.300	14.924	15.605	16.350	17.169	18.075	3							
87	19.081	20.206	21.470	22.903	24.542	26.432	2							
88	28.636	31.242	34.368	38.189	42.964	49.104	1							
89	57.290	68.750	85.940	114.588	171.885	343.770	0							

Natural Cotangents

6703
-
33515

12497
12423

74
7

518

12423
52

1.2475

6.2885

3969
1225

5294
2774

5) 2774 (5.5
23

105
12.25

205.1
 2013 12400 9224 6.9 1317445
 88 73
 1317445 9905 9224 833
 06 1317610
 500 100.09.19
 3785 31.8
 72.155

Fath distributed at sta 18.2
 214449 86 89.5
 8678
 115
 54+00
 67+122
 88+74
 93+725
 117+390 bundle bath in brula coroffend
 146+99

53+42.7
 13 20
 69.127
 1750
 53+942 15 south
 40+80
 Regal Station

20 | 540.2 | 27
 10 204.0
 10 201.3
 312
 688
 395 - 586
 20 714
 893 -

166+50
 20510 30
 2013 161600
 103.8 451+40
 2608
 504
 143+40 10 53.140
 25.55 53.57
 10 225.05 56.922
 70.64 16238
 120 1.87
 68.75 85

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	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

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

MADE IN GERMANY.

331.00