

Book # 33 Dr. # 8

MAINT. SURVEY
NEW BRIGHTON ROAD

From Rice Creek Rd.
To County Road H2
RD. $\frac{1}{2}$ N^o ~~18~~ 12

Office of Ramsey Co. Engineer
ST. PAUL, MINN.

Date Filed 4-15-24

File No. 13

Rd. 18 - New Brighton.
Transit Notes.

Sta 0+00 to 72+98.6

4-Pages

Road # 18

57301-865

Austin
Skoglund
Maloney
Galvin } Party

March-1924

Maintenance Survey

✓ L.S.H.
M.H.C.

File No. 13
Date Filed
Office of Ramsey Co. Engineer ST. PAUL, MINN.

Office of Ramsey Co. Engineer
ST. PAUL, MINN.

Date Filed 4/15/24

13- NEW BRIGHTON ROAD

Rec. 4-15-24

Ang. Lt.

Ang. Rt.

Cale.
Bearing

6+09.3[✓] P.T.

N 130° 15' E

✓

5+26.0 P.I

34° 35'

4+36.4[✓] P.C.

N 210° 30' W

✓

2+67.1 P.T. ✓

1+35.2 P.I 21° 22'

0+00 P.C. ✓

N 000° 2' E

✓

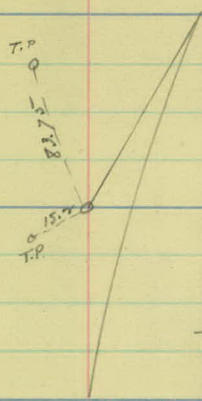
Rd #18

3-21-24

Job 4

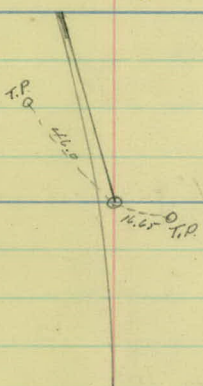
Houston
Skoglund
Maloney } Party
Galvin

Sta - Def
4+36.4 - 0°00'
+50 - 1°21½'
5+00 - 6°21½'
+50 - 11°21½'
6+00 - 16°21½'
+09.3 - 17°17½'



20° Curve Rt.
 $\Delta = 34°35'$
Rad = 287.94 ✓
Tang = 89.6 ✓
P.C. = 4+36.4
Length = 172.9 ✓
P.T. = 6+09.3

Sta. - Def
0+00 - 0°00'
1+00 - 4°00'
2+00 - 8°00'
2+67.1 - 10°41'



8° Curve Left
 $\Delta = 21°22'$
Rad = 573.69 ✓ 716.78
Tang = 135.2 ✓
P.C. = 0+00
Length = 267.1 ✓
P.T. = 2+67.1

~~E~~
Ang. ht. Ang Rt.

18 + 17.5 P.O.T

N 88° 12' E

✓

14 + 87.6 P.T. ✓

14 + 55.5 P.I.

79° 10'

14 + 07.8 P.C. ✓

N 90° 02' E

✓

12 + 49.9 P.I. 1° 43'

N 10° 45' E

✓

8 + 40.6 P.I. 2° 30'

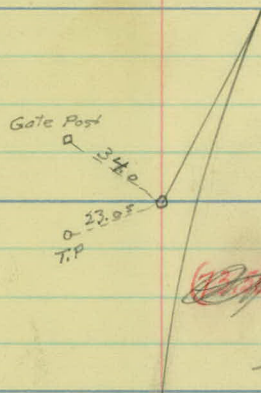
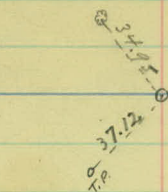
N 13° 15' E

✓

3-27-24

4

(2) of 4



120° Curve RT.

$\Delta = 79^\circ 10'$

Rad. = 57.73. ✓

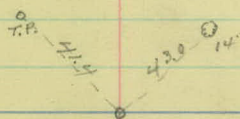
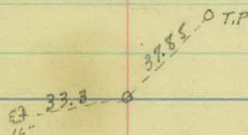
Tang. = 47.7.

P.C. = 14+07.8

~~(72.7)~~ length = 79.8 (actual)

P.T. = 14+87.6

Rad. Hub. Set.



Anght. Ang. Rt.

46+61.6 P.I.

NORTH

38+87.8 P.I.

0° 14'

N 0° 14' W ✓

26+66.7 P.I. 0° 40'

23+65.2 P.O.T. & R.P.

N 0° 26' E ✓

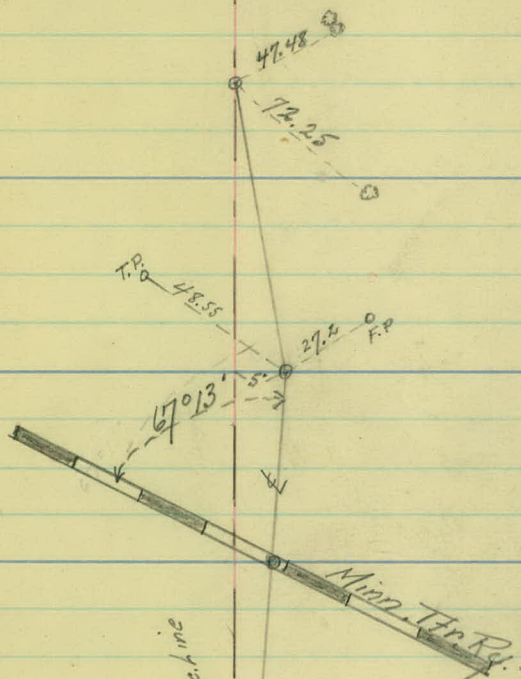
21+61.8 P.T.

20+56.5 P.I. 87° 46'

N 88° 12' E ✓

19+80.1 P.C.

Mont.
N.E. Cor. Sec. 18



78° Curve ht.

$\Delta = 87°46'$

Rad = 79.45

Tang. = 76.1

Length = 121.74

Rad. Hgt. Set.

Mont.
E 1/4 Cor. Sec. 18

Anght. Ang. Rt.

72+98.6 Mont. End. Survey

N 0° 36' W

64+38.0 P.I.

0° 16'

N 0° 52' W

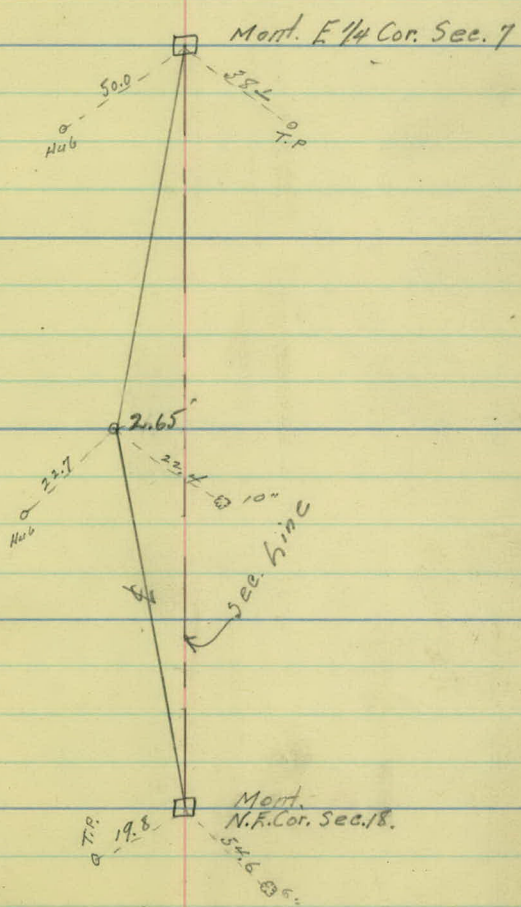
46+61.6 P.I. 0° 52'

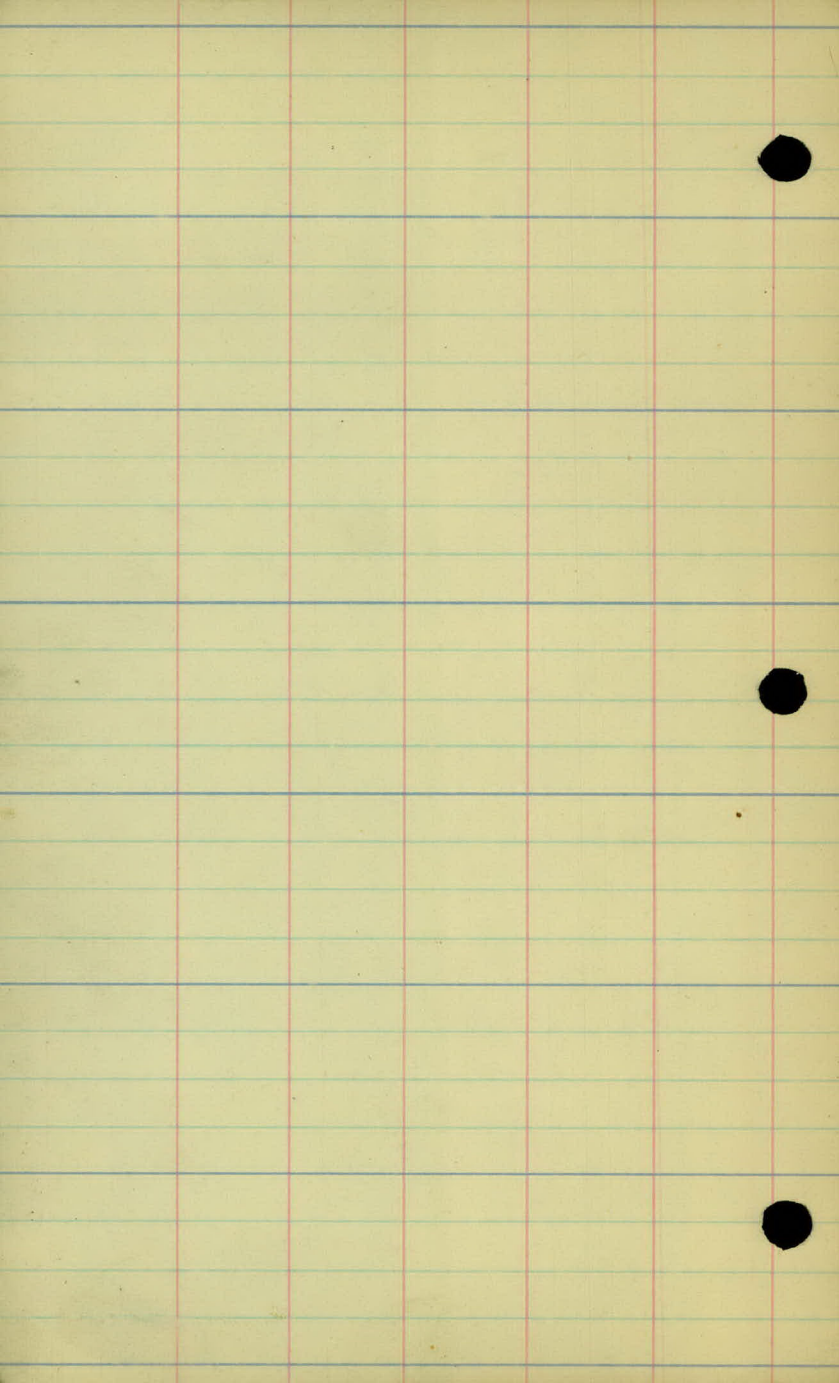
NORTH

17.73.4

Rd 18

(4) of 4





Rd. 18 - New Brighton.

Level Notes.

Sta. 0+00 to 72+98.6

5 Pages.

Austin
SKooglund
Maloney } Party.
Galvin

March - 1924

①

Station	+	H.I	-	Red.	Elev.
B.M.	2.65	195.46 ✓			191.81
0+00				2.2	193.3 ✓
1+00				3.7	191.8 ✓
2+00				5.6	189.9 ✓
3+00				6.4	189.1 ✓
4+00				7.6	187.9 ✓
T.P.	0.95	189.67 ✓	6.74	188.72 ✓	
5+00				3.7	186.0 ✓
6+00				6.4	183.3 ✓
7+00				9.5	180.2 ✓
T.P.	5.65	183.17 ✓	12.15	177.52 ✓	
+88				4.8	178.4 ✓
8+00				4.5	178.7 ✓
+13				4.2	179.0 ✓
+13				10.8	172.4 ✓
+13				11.2	171.8 ✓
+38				4.5	178.7 ✓
9+00				3.1	180.1 ✓
T.P.	9.27	190.32 ✓	2.12	181.05 ✓	
10+00				6.4	183.9 ✓
11+00				1.3	189.0 ✓
T.P.	9.79	199.59 ✓	0.52	189.80 ✓	
12+00				5.9	193.7 ✓
13+00				1.5	198.1 ✓
T.P.	9.23	207.66 ✓	1.16	198.43 ✓	

Nail in T.P. N.E. Cor. Rice Creek + New Brighton Rds.
(1+28.0 Rt.)

Approx $\frac{1}{2}$ Rice Cr. Rd.

S.E. Cor. of So. Hgt. 7+86

So. End Bridge

Ctr. Brg.

Ele. Top. Water

Creek Bottom.

No. End Brg.

(2)

Station	+	H.I.	-	Rod.	Elev.
		207.66			
14+00				6.3	201.4 ✓
+50				5.2	202.5 ✓
B.M.				5.10	202.56 ✓
15+00				5.0	202.7 ✓
16+00				5.1	202.6 ✓
17+00				5.1	202.6 ✓
18+00				5.4	202.3 ✓
T.P.	1.41	204.59 ✓	4.48	203.18 ✓	
19+00				5.2	199.4 ✓
+80				5.8	195.8 ✓ 196.8 ✓
20+00				10.2	194.2 ✓
21+00				10.1	194.5 ✓
22+00				7.3	197.3 ✓
T.P.	12.41	210.71 ✓	6.29	198.30 ✓	
23+00				10.4	200.3 ✓
+62.6				8.77	201.94 ✓
+67.8				8.75	201.96 ✓
+62.6	100' Rt.			10.20	200.51 ✓
vv	200 Rt.			10.57	199.84 ✓
vv	300 Rt.			12.22	198.49 ✓
vv	100' ht.			8.20	202.51 ✓
T.P.	6.62	208.76 ✓	8.57	202.14 ✓	
+62.6	200' ht.			5.44	203.32 ✓
vv	300' ht.			4.62	204.14 ✓
B.M.	9.26	213.10 ✓	4.92	203.84 ✓	

Nail in 18" Oak. 40' ht. sta. 14 + 55

Top. So. Rail. Minn Tr. Ry

vv No vv vv vv

Top. Rail.

vv vv

vv vv

vv vv

vv vv

vv vv

Nail in T.P. H. Sta 24 + 25

(3)

Station	+	H.I.	-	Rod.	Elev.
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213.10

24 + 00				10.1	203.0 ✓
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25 + 00				7.9	205.2 ✓
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26 + 00				5.7	207.4 ✓
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27 + 00				4.3	208.8 ✓
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28 + 00				4.6	208.5 ✓
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29 + 00				5.5	207.6 ✓
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30 + 00				7.4	205.7 ✓
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T.P.	3.19	208.83 ✓	7.46	205.64 ✓	
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31 + 00				2.9	205.9 ✓
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B.M.				5.91	202.9 ✓
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32 + 00				3.2	205.6 ✓
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33 + 00				4.4	204.4 ✓
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34 + 00				3.9	204.9 ✓
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35 + 00				1.9	206.9 ✓
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T.P.	11.83	219.92 ✓	0.74	208.09 ✓	
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36 + 00				10.4	209.5 ✓
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37 + 00				6.8	213.1 ✓
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38 + 00				4.0	215.9 ✓
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39 + 00				3.2	216.7 ✓
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40 + 00				4.6	215.3 ✓
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41 + 00				5.4	214.5 ✓
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T.P.	3.37	217.98 ✓	5.31	214.61 ✓	
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42 + 00				3.4	214.6 ✓
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43 + 00				3.6	214.4 ✓
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Nail in 10" Oak 40' Rt. Sta 32+00

(4)

Station	+	H.I.	-	Rod	Elev.
		217.98			
44+00				4.4	213.6 ✓
45+00				4.5	213.5 ✓
B.M.	2.21	217.81 ✓	2.38	215.60 ✓	
46+00				4.6	213.2 ✓
47+00				4.6	213.2 ✓
48+00				5.2	212.6 ✓
49+00				5.8	212.0 ✓
50+00				6.0	211.8 ✓
T.P.	2.10	214.16 ✓	5.75	212.06 ✓	
51+00				2.5	211.7 ✓
52+00				3.2	211.0 ✓
53+00				4.4	209.8 ✓
54+00				5.2	209.0 ✓
55+00				5.7	208.5 ✓
56+00				6.6	207.6 ✓
T.P.	1.25	209.01 ✓	6.40	207.76 ✓	
57+00				2.5	206.5 ✓
58+00				3.3	205.7 ✓
B.M.				4.69	204.32 ✓
59+00				4.3	204.7 ✓
60+00				5.1	203.9 ✓
61+00				6.1	202.9 ✓
62+00				6.4	202.6 ✓
T.P.	4.05	206.78 ✓	6.28	202.73 ✓	
63+00				4.3	202.5 ✓

Nail in Stump of Double tree 25' ht. Sta 45+00

Spike in 10" Poplar 20' ht. Sta 58+15

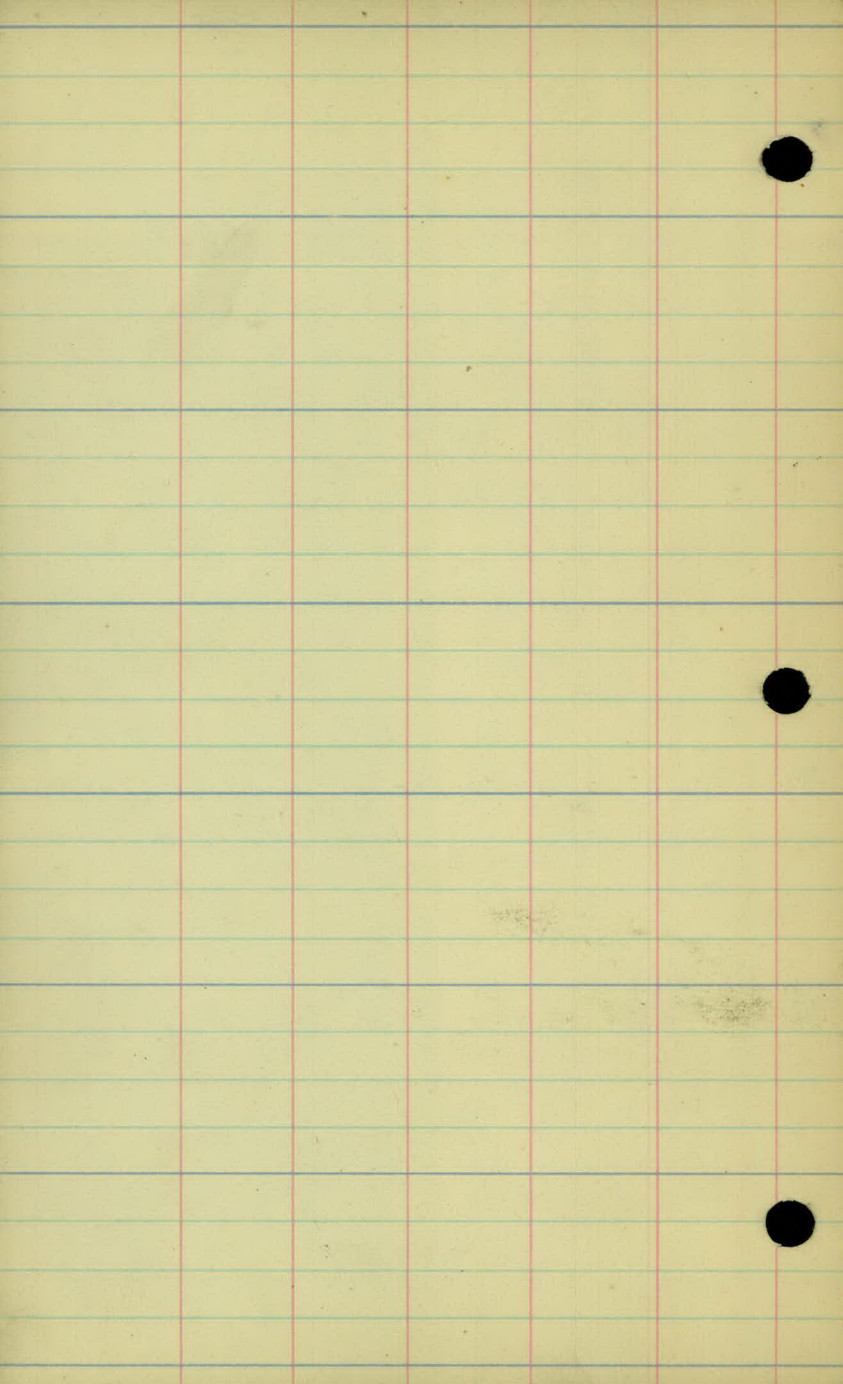
(5)

Station	+	H.I.	-	Rod.	Elev.
		206.78			
64+00				4.6	202.2 ✓
65+00				4.8	202.0 ✓
66+00				4.6	202.2 ✓
67+00				4.3	202.5 ✓
68+00				3.8	203.0 ✓
T.P.	7.67	210.53 ✓	3.92	202.86 ✓	
69+00				6.4	204.1 ✓
70+00				5.8	204.7 ✓
71+00				5.0	205.5 ✓
72+00				4.5	206.0 ✓
+986	± Cross Rd.			3.6	206.9 ✓
+986	100' R. ± Rd.			3.0	207.5 ✓
+986	100' L. ± "			4.2	206.3 ✓
B.M.			2.55	207.98 ✓	

4-3-24

⑤ of 5

Spike in T.P. 34. H. Sta 72 + 850



Rd. 18 New Brighton

X-section Notes.

Sta 0+00 - 72+98⁶

6 Pages.

Maloney }
S Kooglan } Party.
Galvin }

Apr - 1924

Station	Elev	
0+00	193.3	✓
0+60	192.8	✓
0+70	192.7	✓
1+00	191.8	✓
1+25	191.6	✓
1+32	191.7	✓
2+00	189.9	✓
3+00	189.1	✓
4+00	187.9	✓
5+00	186.0	✓
5+50	185.6	✓
6+00	183.3	✓
7+00	180.2	✓
7+88	178.4	✓ So End of Bridge

$$L+ \quad R+ \quad \textcircled{1} \text{ of } 6$$

$$\frac{+2.5}{33} \frac{+1.7}{23} \frac{-0.4}{19} \frac{-0.5}{15} \frac{-0.3}{10} \frac{-0.5}{07} \frac{-1.1}{12} \frac{-2.1}{15} \frac{-1.9}{19} \frac{+0.9}{24} \frac{+0.4}{33}$$

$$\frac{+4.2}{33} \frac{+2.3}{22} \frac{0.0}{16} \frac{-0.3}{09}$$

$$\frac{-0.7}{33} \frac{-0.4}{18} \frac{0.0}{09}$$

$$\frac{+0.4}{33} \frac{+0.5}{17} \frac{-0.7}{08} \frac{-0.3}{10} \frac{-0.8}{13} \frac{-1.7}{33}$$

$$\frac{-0.5}{33} \frac{0.0}{26} \frac{+0.2}{10}$$

$$\frac{+5.0}{33} \frac{-0.6}{26} \frac{-0.1}{20} \frac{-0.3}{09}$$

$$\frac{+3.3}{33} \frac{+2.4}{22} \frac{+0.8}{16} \frac{+0.4}{12} \frac{-0.5}{10} \frac{-0.3}{07} \frac{-0.7}{10} \frac{0.0}{12} \frac{-0.4}{17} \frac{-2.2}{33}$$

$$\frac{+0.5}{33} \frac{+0.1}{22} \frac{-0.6}{16} \frac{-0.3}{13} \frac{-0.5}{10} \frac{-0.1}{06} \frac{+0.2}{10} \frac{+0.5}{13} \frac{+0.2}{19} \frac{-0.4}{33}$$

$$\frac{-0.5}{33} \frac{0.0}{22} \frac{-0.3}{13} \frac{-0.3}{08} \frac{-0.2}{05} \frac{-0.6}{09} \frac{+0.7}{14} \frac{+0.3}{33}$$

$$\frac{+0.8}{33} \frac{+0.8}{21} \frac{+0.7}{13} \frac{0.0}{11} \frac{+0.1}{08} \frac{-0.6}{10} \frac{+0.1}{12} \frac{+0.8}{16} \frac{+0.2}{24} \frac{-0.2}{33}$$

$$\frac{+3.4}{33} \frac{+3.2}{30} \frac{-1.5}{22} \frac{+0.5}{16} \frac{0.0}{11} \frac{+0.2}{07} \frac{-0.4}{07} \frac{-0.5}{11} \frac{+0.8}{14} \frac{+0.4}{21} \frac{+1.0}{25} \frac{+0.8}{33}$$

$$\frac{+5.0}{33} \frac{+4.4}{27} \frac{-1.1}{19} \frac{-1.1}{15} \frac{+0.3}{12} \frac{-0.2}{08} \frac{-0.3}{08} \frac{-0.5}{13} \frac{+0.1}{17} \frac{-0.2}{24} \frac{-0.8}{33}$$

$$\frac{+2.4}{33} \frac{+1.2}{20} \frac{-0.2}{17} \frac{0.0}{12} \frac{-0.1}{06} \frac{-0.3}{10} \frac{-1.3}{13} \frac{-2.0}{18} \frac{+0.4}{24} \frac{-0.1}{33}$$

$$\frac{-4.8}{33} \frac{-5.0}{20} \frac{-3.1}{14} \frac{-0.2}{06} \frac{-0.1}{04} \frac{-0.7}{08} \frac{-4.8}{15} \frac{-5.2}{20} \text{Top of Water}$$

Station	Elev	
8+38	178.7	✓ North End of Bridge
9+00	180.1	✓
10+00	183.9	✓
11+00	189.0	✓
12+00	193.7	✓
13+00	198.1	✓
14+00	201.4	✓
14+50	202.5	✓
15+00	202.7	✓
16+00	202.6	✓
17+00	202.6	✓
18+00	202.3	✓
19+00	199.4	✓
19+80	196.8	✓ 196.8

$$- \frac{5.5}{33} - \frac{6.0}{20} - \frac{5.0}{15} - \frac{3.6}{12} - \frac{0.7}{08} - \frac{0.7}{08} - \frac{3.5}{12} - \frac{5.0}{16} - \frac{5.8}{33}$$

$$- \frac{2.9}{33} - \frac{2.7}{20} - \frac{2.0}{13} - \frac{0.8}{09} - \frac{0.2}{06} - \frac{0.7}{12} - \frac{3.9}{18} - \frac{4.0}{26} - \frac{1.2}{33}$$

$$- \frac{2.0}{33} - \frac{1.8}{24} - \frac{1.3}{11} - \frac{0.5}{07} - \frac{0.1}{06} - \frac{0.2}{15} - \frac{1.1}{19} + \frac{0.4}{33}$$

$$- \frac{1.8}{33} - \frac{1.6}{23} - \frac{1.1}{18} - \frac{1.3}{12} - \frac{0.7}{09} - \frac{0.3}{07} - \frac{0.0}{15} + \frac{0.7}{17} + \frac{0.5}{33}$$

$$- \frac{1.2}{33} - \frac{1.1}{16} - \frac{1.5}{14} - \frac{1.5}{12} - \frac{0.5}{10} - \frac{0.2}{07} - \frac{0.6}{16} + \frac{0.2}{21} + \frac{0.5}{33}$$

$$+ \frac{0.4}{33} - \frac{0.0}{23} - \frac{0.6}{13} - \frac{0.3}{08} - \frac{0.3}{08} - \frac{0.2}{13} + \frac{0.4}{23} + \frac{1.0}{33}$$

$$+ \frac{0.8}{33} + \frac{0.5}{23} - \frac{0.4}{12} - \frac{0.0}{07} - \frac{0.0}{08} - \frac{0.2}{13} - \frac{0.2}{17} + \frac{0.7}{33}$$

$$- \frac{0.5}{33} - \frac{0.2}{21} + \frac{0.1}{11} - \frac{0.8}{09} - \frac{0.6}{12} - \frac{0.7}{19} + \frac{0.2}{26} + \frac{0.4}{33} - \frac{0.1}{50}$$

$$- \frac{1.2}{33} - \frac{1.1}{26} - \frac{0.8}{12} - \frac{0.2}{10} - \frac{0.2}{08} - \frac{0.5}{13} - \frac{1.2}{17} - \frac{0.5}{26} - \frac{0.3}{33}$$

$$- \frac{2.5}{33} - \frac{2.3}{28} - \frac{1.3}{15} - \frac{0.9}{12} - \frac{0.5}{09} - \frac{0.1}{09} - \frac{0.4}{12} - \frac{1.2}{18} - \frac{1.0}{33}$$

$$- \frac{0.3}{33} - \frac{0.9}{21} - \frac{1.0}{12} - \frac{0.3}{09} - \frac{0.4}{10} - \frac{1.0}{13} - \frac{1.7}{20} - \frac{2.2}{33}$$

$$+ \frac{0.9}{33} - \frac{0.0}{25} - \frac{0.4}{16} - \frac{0.2}{12} - \frac{0.2}{09} - \frac{0.3}{08} + \frac{0.2}{12} + \frac{1.1}{17} + \frac{1.2}{25} + \frac{1.0}{33}$$

$$+ \frac{3.8}{33} - \frac{0.5}{24} - \frac{1.3}{16} - \frac{0.2}{11} - \frac{0.1}{07} - \frac{0.0}{08} + \frac{0.5}{10} + \frac{1.8}{19} + \frac{1.3}{27} - \frac{1.0}{33}$$

$$+ \frac{2.5}{35} - \frac{0.3}{28} - \frac{1.2}{22} - \frac{0.0}{15} - \frac{0.2}{10} - \frac{0.0}{06} - \frac{0.2}{10} - \frac{1.6}{18} - \frac{3.7}{33}$$

Station	Elev	
20+40	194.2	✓
21+00	194.5	✓
22+00	197.3	✓
23+00	200.3	✓
24+00	203.0	✓
25+00	205.2	✓
26+00	207.4	✓
27+00	208.8	✓
28+00	208.5	✓
29+00	207.6	✓
30+00	205.7	✓
31+00	205.9	✓
32+00	205.6	✓
33+00	204.4	✓

$$\begin{array}{ccccccccc} & L+ & & & R+ & & & & (3) \text{ of } 6 \\ +\frac{3.4}{50} & +\frac{2.0}{31} & +\frac{0.4}{26} & -\frac{0.8}{17} & -\frac{0.5}{10} & +\frac{0.4}{06} & -\frac{0.5}{15} & -\frac{1.5}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{2.0}{33} & +\frac{1.9}{28} & -\frac{0.6}{18} & -\frac{1.0}{14} & -\frac{0.5}{08} & +\frac{0.1}{15} & -\frac{1.0}{13} & -\frac{2.1}{21} & -\frac{3.5}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{2.5}{33} & +\frac{1.8}{26} & +\frac{0.4}{19} & -\frac{0.8}{12} & -\frac{0.6}{08} & -\frac{0.5}{10} & -\frac{1.6}{16} & +\frac{2.4}{25} & -\frac{2.8}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{1.0}{33} & +\frac{0.4}{23} & -\frac{0.8}{14} & -\frac{0.2}{08} & +\frac{0.7}{10} & -\frac{1.6}{18} & -\frac{2.0}{23} & -\frac{2.0}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{0.3}{33} & \frac{0.0}{26} & -\frac{0.6}{15} & -\frac{0.2}{08} & -\frac{0.3}{08} & -\frac{0.9}{17} & -\frac{0.2}{33} \end{array}$$

$$\begin{array}{ccccccccc} \frac{0.0}{33} & -\frac{0.5}{20} & +\frac{0.1}{13} & -\frac{0.5}{09} & -\frac{0.3}{08} & -\frac{1.0}{15} & +\frac{0.9}{24} & +\frac{1.3}{33} \end{array}$$

$$\begin{array}{ccccccccc} -\frac{0.6}{33} & \frac{0.0}{18} & -\frac{0.5}{15} & -\frac{0.3}{08} & -\frac{0.3}{08} & -\frac{0.5}{12} & -\frac{0.6}{17} & \frac{0.0}{33} \end{array}$$

$$\begin{array}{ccccccccc} -\frac{1.5}{33} & -\frac{0.3}{24} & -\frac{0.5}{17} & -\frac{1.1}{14} & -\frac{0.3}{06} & -\frac{0.4}{06} & -\frac{0.9}{12} & -\frac{1.5}{20} & -\frac{1.0}{33} \end{array}$$

$$\begin{array}{ccccccccc} \frac{0.0}{33} & +\frac{4.5}{25} & +\frac{0.5}{17} & -\frac{0.6}{14} & -\frac{4.1}{06} & -\frac{0.4}{07} & -\frac{0.6}{12} & -\frac{0.9}{17} & +\frac{1.0}{24} & +\frac{1.5}{30} & +\frac{1.2}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{0.6}{33} & +\frac{0.9}{18} & -\frac{0.8}{14} & -\frac{0.8}{12} & -\frac{0.3}{11} & -\frac{0.3}{08} & -\frac{0.3}{08} & -\frac{0.7}{12} & -\frac{1.0}{17} & -\frac{0.8}{17} & -\frac{1.5}{33} \end{array}$$

$$\begin{array}{ccccccccc} -\frac{1.4}{33} & -\frac{0.8}{26} & -\frac{0.9}{17} & -\frac{0.7}{15} & -\frac{0.5}{11} & -\frac{0.2}{07} & -\frac{0.3}{06} & -\frac{0.5}{11} & -\frac{2.6}{16} & -\frac{4.4}{26} & -\frac{4.5}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{4.0}{33} & \textcircled{\frac{0.0}{28}} & +\frac{2.3}{19} & -\frac{1.3}{15} & -\frac{0.6}{11} & -\frac{0.1}{06} & -\frac{0.3}{07} & -\frac{0.6}{12} & -\frac{1.0}{18} & -\frac{0.4}{23} & -\frac{1.1}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{6.4}{33} & +\frac{5.0}{23} & +\frac{0.8}{17} & -\frac{0.3}{13} & -\frac{0.3}{08} & -\frac{0.3}{07} & -\frac{0.7}{12} & -\frac{0.8}{22} & -\frac{1.8}{33} \end{array}$$

$$\begin{array}{ccccccccc} +\frac{0.8}{33} & +\frac{1.1}{23} & -\frac{1.3}{21} & -\frac{0.1}{15} & \frac{0.0}{07} & -\frac{0.3}{07} & -\frac{0.7}{10} & -\frac{3.5}{17} & -\frac{4.5}{33} \end{array}$$

Station	Elev	
34+00	204.9	✓
35+00	206.9	✓
36+00	209.5	✓
37+00	213.1	✓
38+00	215.9	✓
39+00	216.7	✓
40+00	215.3	✓
41+00	214.5	✓
42+00	214.6	✓
43+00	214.4	✓
44+00	213.6	✓
45+00	213.5	✓
46+00	213.7	✓
47+00	213.2	✓

$$- \frac{4.4}{33} - \frac{5.0}{25} - \frac{3.5}{18} - \frac{1.0}{13} - \frac{0.4}{10} - \frac{0.1}{09} - \frac{1.2}{12} - \frac{4.2}{18} - \frac{5.5}{26} - \frac{5.5}{33}$$

$$- \frac{2.8}{33} - \frac{1.5}{24} - \frac{2.1}{16} - \frac{1.0}{12} - \frac{0.2}{06} - \frac{0.1}{10} - \frac{0.7}{13} - \frac{3.0}{17} - \frac{3.6}{26} - \frac{4.8}{33}$$

$$+ \frac{1.0}{33} + \frac{1.4}{25} + \frac{0.9}{20} - \frac{1.0}{16} - \frac{0.9}{13} - \frac{0.2}{11} - \frac{0.4}{10} - \frac{1.2}{15} - \frac{2.1}{22} - \frac{2.4}{33}$$

$$+ \frac{3.9}{33} + \frac{3.6}{22} - \frac{0.6}{16} - \frac{0.8}{12} - \frac{0.5}{07} - \frac{0.0}{07} - \frac{0.4}{12} - \frac{1.1}{19} - \frac{3.0}{30} - \frac{3.5}{33}$$

$$+ \frac{4.5}{33} + \frac{5.0}{24} - \frac{0.8}{16} - \frac{0.8}{13} - \frac{0.2}{11} - \frac{0.2}{07} - \frac{0.3}{08} - \frac{0.5}{12} - \frac{1.0}{16} - \frac{0.2}{21} + \frac{1.0}{26} + \frac{0.9}{33}$$

$$+ \frac{2.8}{33} + \frac{4.5}{22} + \frac{2.1}{20} - \frac{0.6}{15} - \frac{0.5}{12} - \frac{0.3}{06} - \frac{0.3}{07} - \frac{0.6}{12} - \frac{0.5}{16} + \frac{0.9}{20} + \frac{2.4}{27} + \frac{2.3}{33}$$

$$+ \frac{1.1}{33} - \frac{0.5}{20} - \frac{1.0}{15} - \frac{0.5}{10} - \frac{0.4}{08} - \frac{0.3}{08} - \frac{0.5}{12} - \frac{1.0}{18} + \frac{0.6}{33}$$

$$- \frac{2.5}{33} - \frac{2.0}{20} - \frac{0.8}{12} - \frac{0.3}{07} - \frac{0.3}{07} - \frac{0.7}{12} - \frac{0.7}{17} - \frac{2.2}{22} - \frac{1.5}{33}$$

$$- \frac{2.0}{33} - \frac{2.0}{22} - \frac{1.2}{13} - \frac{0.4}{06} - \frac{0.4}{07} - \frac{1.1}{12} - \frac{0.8}{16} - \frac{1.8}{22} - \frac{1.8}{33}$$

$$- \frac{1.5}{33} - \frac{1.8}{22} - \frac{1.0}{12} - \frac{0.3}{05} - \frac{0.5}{06} - \frac{1.2}{12} - \frac{1.4}{22} - \frac{1.7}{33}$$

$$- \frac{2.0}{33} - \frac{2.5}{21} - \frac{1.2}{17} - \frac{0.3}{07} - \frac{0.4}{06} - \frac{0.8}{12} - \frac{1.0}{17} - \frac{2.0}{25} - \frac{1.9}{33}$$

$$+ \frac{0.8}{33} - \frac{1.0}{20} - \frac{0.8}{14} - \frac{0.1}{06} - \frac{0.4}{06} - \frac{1.0}{12} - \frac{0.7}{22} - \frac{0.0}{27} - \frac{0.3}{33}$$

$$+ \frac{4.0}{33} + \frac{3.5}{26} - \frac{1.8}{19} - \frac{2.0}{16} - \frac{1.1}{14} - \frac{0.2}{06} - \frac{0.4}{07} - \frac{0.8}{13} - \frac{0.3}{21} + \frac{2.4}{27} + \frac{2.6}{33}$$

$$- \frac{0.6}{33} - \frac{0.9}{24} - \frac{1.6}{16} - \frac{0.8}{13} - \frac{0.4}{07} - \frac{0.5}{08} - \frac{1.0}{13} - \frac{1.0}{23} - \frac{0.2}{33}$$

Station	Elev ϕ
48+00	212.6 ✓
49+00	212.0 ✓
50+00	211.8 ✓
51+00	211.7 ✓
52+00	211.0 ✓
53+00	209.8 ✓
54+00	209.0 ✓
55+00	208.5 ✓
56+00	207.6 ✓
57+00	206.5 ✓
58+00	205.7 ✓
59+00	204.7 ✓
60+00	203.9 ✓
61+00	202.9 ✓

1 + 2 R +

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$$-\frac{1.0}{33} - \frac{0.8}{24} - \frac{1.2}{14} - \frac{0.6}{11} - \frac{0.2}{06} - \frac{0.5}{07} - \frac{0.7}{12} - \frac{1.5}{15} - \frac{1.2}{24} - \frac{1.2}{33}$$

$$-\frac{1.5}{33} - \frac{1.5}{20} - \frac{1.6}{15} - \frac{0.6}{09} - \frac{0.3}{06} - \frac{0.6}{12} - \frac{2.2}{15} - \frac{2.4}{21} - \frac{1.5}{24} - \frac{1.4}{33}$$

$$-\frac{1.0}{33} - \frac{1.0}{22} - \frac{0.8}{12} - \frac{0.3}{06} - \frac{0.1}{06} - \frac{0.5}{12} - \frac{1.0}{17} - \frac{0.0}{24} - \frac{0.5}{33}$$

$$+\frac{1.7}{33} + \frac{1.1}{18} - \frac{0.2}{12} - \frac{0.3}{06} - \frac{0.1}{07} - \frac{0.3}{13} - \frac{0.1}{19} + \frac{1.9}{23} + \frac{1.8}{33}$$

$$+\frac{0.6}{33} + \frac{0.3}{20} - \frac{0.0}{09} - \frac{0.2}{06} - \frac{0.5}{12} - \frac{1.0}{18} - \frac{0.0}{24} + \frac{0.8}{33}$$

$$-\frac{0.5}{33} - \frac{0.6}{21} - \frac{0.6}{12} - \frac{0.4}{06} - \frac{0.1}{07} - \frac{0.0}{12} - \frac{0.5}{18} - \frac{0.5}{33}$$

$$-\frac{0.6}{33} - \frac{1.3}{26} - \frac{2.2}{17} - \frac{1.1}{14} - \frac{0.3}{06} - \frac{0.2}{06} - \frac{0.6}{12} - \frac{1.0}{16} - \frac{0.4}{33}$$

$$-\frac{0.4}{33} - \frac{1.7}{26} - \frac{2.0}{19} - \frac{0.6}{14} - \frac{0.3}{07} - \frac{0.2}{06} - \frac{0.1}{13} - \frac{1.0}{21} - \frac{1.5}{33}$$

$$+\frac{0.5}{33} - \frac{1.0}{25} - \frac{0.7}{15} - \frac{0.5}{09} - \frac{0.5}{06} - \frac{1.0}{13} - \frac{1.8}{19} - \frac{2.2}{33}$$

$$+\frac{1.1}{33} - \frac{1.0}{27} - \frac{1.5}{19} - \frac{0.7}{14} - \frac{0.3}{08} - \frac{0.3}{07} - \frac{1.0}{14} - \frac{2.2}{16} - \frac{3.0}{27} - \frac{2.5}{33}$$

$$\frac{0.0}{33} - \frac{1.0}{22} - \frac{1.8}{16} - \frac{1.0}{12} - \frac{0.5}{07} - \frac{0.4}{07} - \frac{1.5}{15} - \frac{3.2}{19} - \frac{3.0}{27} - \frac{2.2}{33}$$

$$-\frac{0.4}{33} - \frac{1.0}{27} - \frac{2.0}{23} - \frac{2.0}{15} - \frac{0.5}{12} - \frac{0.2}{07} - \frac{0.4}{06} - \frac{1.4}{15} - \frac{3.0}{20} - \frac{3.5}{29} - \frac{2.1}{33}$$

$$-\frac{1.8}{33} - \frac{2.0}{21} - \frac{2.7}{18} - \frac{2.0}{16} - \frac{0.5}{11} - \frac{0.2}{06} - \frac{0.3}{06} - \frac{0.6}{11} - \frac{2.8}{15} - \frac{3.0}{24} - \frac{2.8}{33}$$

$$-\frac{1.0}{33} - \frac{1.5}{21} - \frac{2.0}{18} - \frac{0.5}{10} - \frac{0.4}{06} - \frac{0.2}{05} - \frac{0.5}{11} - \frac{2.5}{17} - \frac{2.6}{25} - \frac{2.6}{33}$$

Station	Elev
62+00	202.6 ✓
63+00	202.5 ✓
64+00	203.2 ✓
65+00	202.0 ✓
66+00	202.2 ✓
67+00	202.5 ✓
68+00	203.0 ✓
69+00	204.1 ✓
70+00	204.7 ✓
71+00	205.5 ✓
72+00	206.0 ✓
72+98.6	206.9 ✓ $\frac{1}{2}$ cross Rd

L+ Φ R+

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$$-\frac{16}{33} - \frac{20}{18} - \frac{06}{14} - \frac{03}{07} - \frac{04}{06} - \frac{09}{12} - \frac{13}{16} - \frac{24}{20} - \frac{21}{33}$$

$$-\frac{22}{33} - \frac{18}{15} - \frac{10}{12} - \frac{04}{07} - \frac{05}{06} - \frac{05}{10} - \frac{17}{13} - \frac{22}{17} - \frac{20}{33}$$

$$-\frac{18}{33} - \frac{16}{14} - \frac{08}{12} - \frac{03}{07} - \frac{03}{07} - \frac{07}{11} - \frac{16}{14} - \frac{18}{19} - \frac{15}{33}$$

$$-\frac{10}{33} - \frac{15}{15} - \frac{07}{12} - \frac{05}{08} - \frac{03}{06} - \frac{04}{11} - \frac{11}{13} - \frac{15}{21} - \frac{10}{33}$$

$$-\frac{10}{33} - \frac{15}{21} - \frac{06}{13} - \frac{03}{08} - \frac{02}{05} - \frac{03}{10} - \frac{12}{18} - \frac{10}{33}$$

$$-\frac{13}{33} - \frac{10}{16} - \frac{05}{13} - \frac{02}{08} - \frac{03}{05} - \frac{05}{10} - \frac{15}{15} - \frac{11}{33}$$

$$-\frac{15}{33} - \frac{15}{18} - \frac{08}{16} - \frac{04}{09} - \frac{02}{05} - \frac{05}{10} - \frac{13}{15} - \frac{18}{18} - \frac{11}{33}$$

$$-\frac{18}{33} - \frac{20}{25} - \frac{25}{12} - \frac{19}{19} - \frac{06}{13} - \frac{01}{07} - \frac{04}{05} - \frac{15}{13} - \frac{16}{15} - \frac{26}{17} - \frac{17}{18} - \frac{10}{33}$$

$$-\frac{15}{33} - \frac{15}{20} - \frac{09}{16} - \frac{08}{12} - \frac{04}{08} - \frac{02}{06} - \frac{04}{11} - \frac{16}{14} - \frac{21}{20} - \frac{15}{30} - \frac{02}{33}$$

$$-\frac{05}{33} - \frac{20}{30} - \frac{20}{18} - \frac{11}{15} - \frac{05}{09} - \frac{00}{06} - \frac{05}{12} - \frac{14}{15} - \frac{21}{23} - \frac{15}{24} - \frac{06}{33}$$

$$-\frac{07}{33} - \frac{21}{30} - \frac{23}{20} - \frac{15}{15} - \frac{06}{09} - \frac{02}{06} - \frac{08}{12} - \frac{13}{15} - \frac{26}{17} - \frac{23}{24} - \frac{03}{33}$$

$$-\frac{02}{33} - \frac{05}{21} - \frac{03}{09} - \frac{03}{09} - \frac{00}{19} - \frac{02}{33}$$

Station Present Culv. Recommended Culv.

0+67 So End 15" Corr P 61' Long

1+48 15" Corr Pipe
Extends 22' R & 17' L

24" Concrete P

9+73 So End 12" Corr Pipe 20' Long

11+67 So End 12" Corr Pipe 20' Long

20+60 10" Corr Pipe
Extends 27' R & 14' L

33+85 12" Corr Pipe
Extends 15' R & 21' L

62+88 12" X 40' C.M.P.
Ext 22' Lt - 18' Rt.

Innent = 200.36

Intake = 199.81

<u>199.7</u>	<u>198.5</u>	<u>198.3</u>	
25.0	50.0	75.0	Drains Rt.

30' L of ϕ under State Road 63

Stat 1+00 Elev 191.8 $\rightarrow$ 191.8 Intake 189.5 Inv 188.92

$\frac{188.1}{34} R$ $\frac{186.7}{47} R$ Drains R

19' R of ϕ Farm Drive

14' L of ϕ Farm Drive

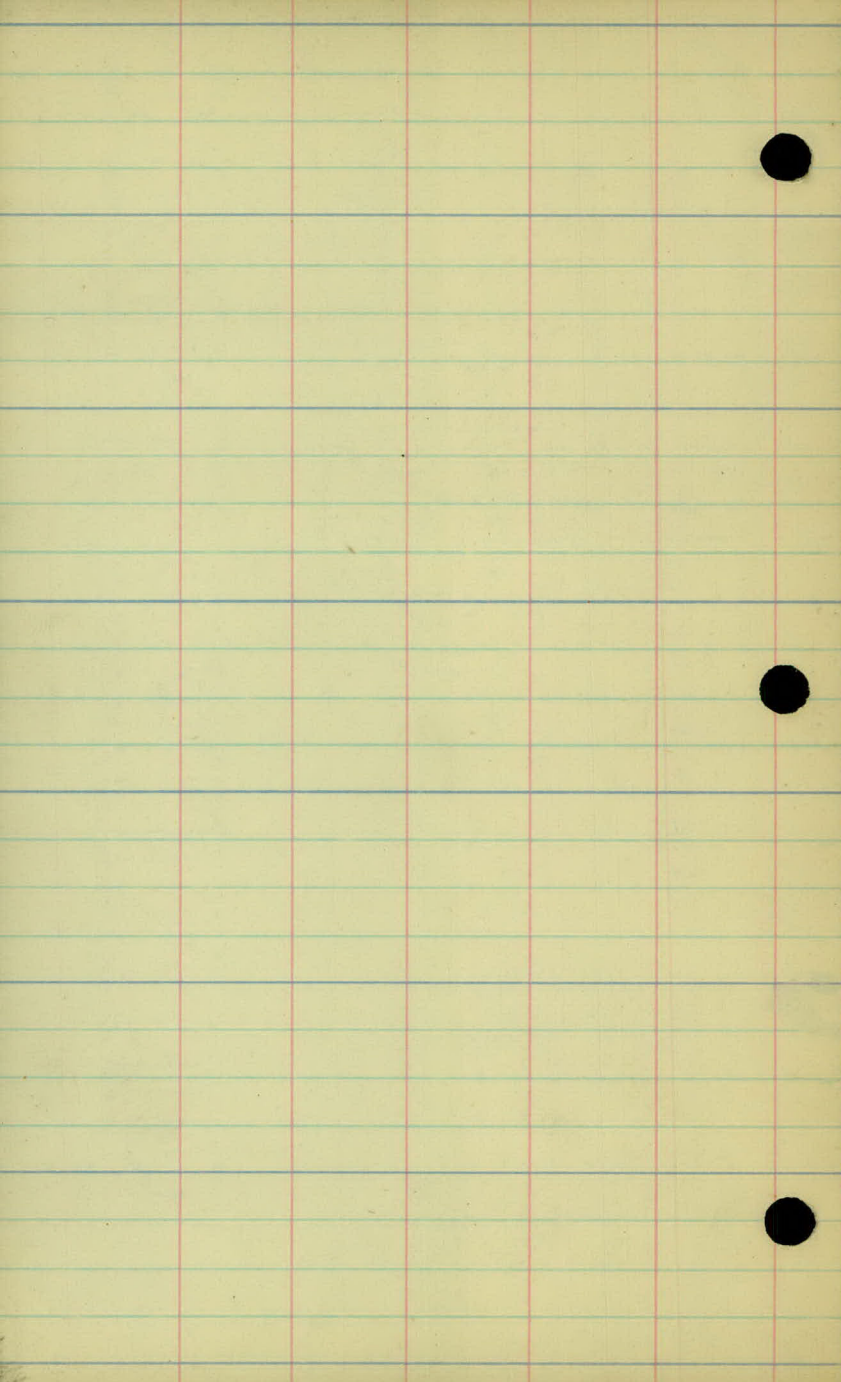
Taken from 20+40 Elev 194.2 $\rightarrow$ 20+60 194.6 Drains R

Intake 195.6 Inv 192.5 $\frac{189.1}{39} R$

Taken from 34+0 Elev 204.9 $\rightarrow$ 204.4

Intake 200.4 Inv 200.4

$\frac{199.9}{31} R$ $\frac{198.9}{25} R$



① of 11

+98 E.P. 23' R

7+00

Rd. #18

Artificial Topography

11. Pages

+00 T.P. 20' Lt.

6+00

+12 T.P. 24' Lt.

Cultivated

Meadow land.

+58 E.P. 25' Rt.

5+00

+22 T.P. 17' Lt.

4+00

+86 E.P. 36' Rt.

+92 T.P. 20' Lt.

3+00

Cultivated

Meadow

+30 E.P. 22' Rt.

2+00

+67 T.P. 20' Lt.

+36 Gwy. Pole 32' Lt.

+23 E.P. 27' R

+77 Rice Cr. Rd.

1+00

+97 Sign. P. 13' Rt.

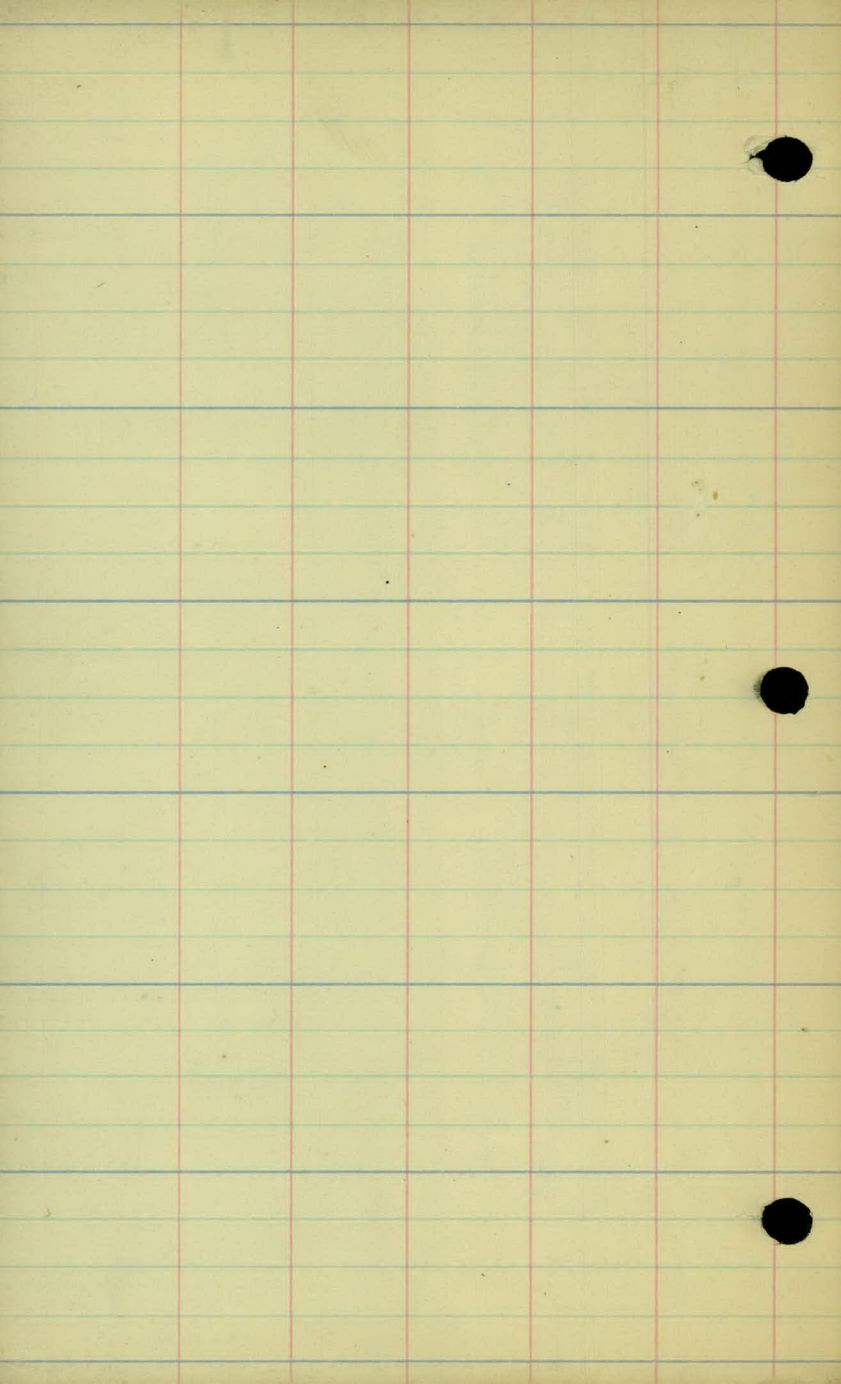
+70 Gwy. P. 13' Rt.

+56 Rd. Sign 15' R

+44 T.P. 25' Lt.

+18 E.P. 18' Rt.

0+00



+77 T.P. 20' H.

Cultivated

13+00

+84 E.P. 13' R.

+49 T.P. 24' H.

12+00

+76 Drive

Cultivated

+58 E.P. 16' R.

+25 T.P. 25' H.

11+00



+12 E.P. 16' R.

10+00

+03 T.P. 25' H.

Cultivated

+80 Drive

Form-yard.

9+00

+73 T.P. 24' H.

+64 E.P. 16' R.

+64 E.P. 16' R.

+38 E.B.



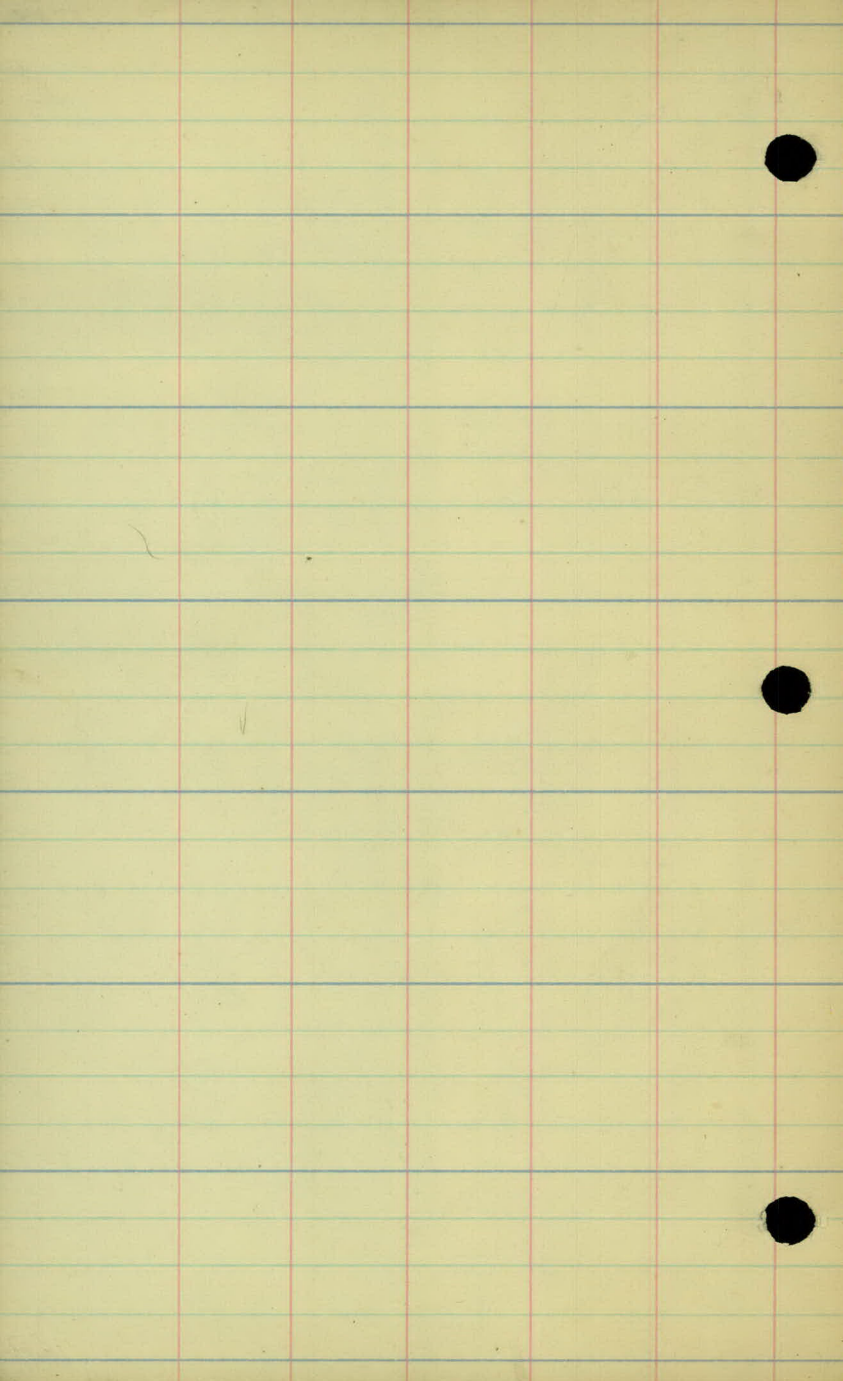
+88 E.B.

Longlake

8+00

+29 T.P. 23' H.

7+00



+72 T.P. 22'L

+11 T.P. 24'L

Pasture

+39 E.P. 54'R
 +37 G.P. 41'R
 +32 B.P. 50' Section 52'R
 20+00

+38 End of Trees 19'L

+13 T.P. 28'L

+97 E.P. 17'R

19+00

+42 Beg of Row of Trees 23'L

+90 T.P. 26'L

Pasture

+10 E.P. 17'R

17+00

+59 T.P. 25'L

+16 T.P. 17'L

16+00

+89 Tree 20'L

+29 T.P. 23'L

Farm Yard

+26 E.P. 17'R

15+00

+176 T.P. 28'

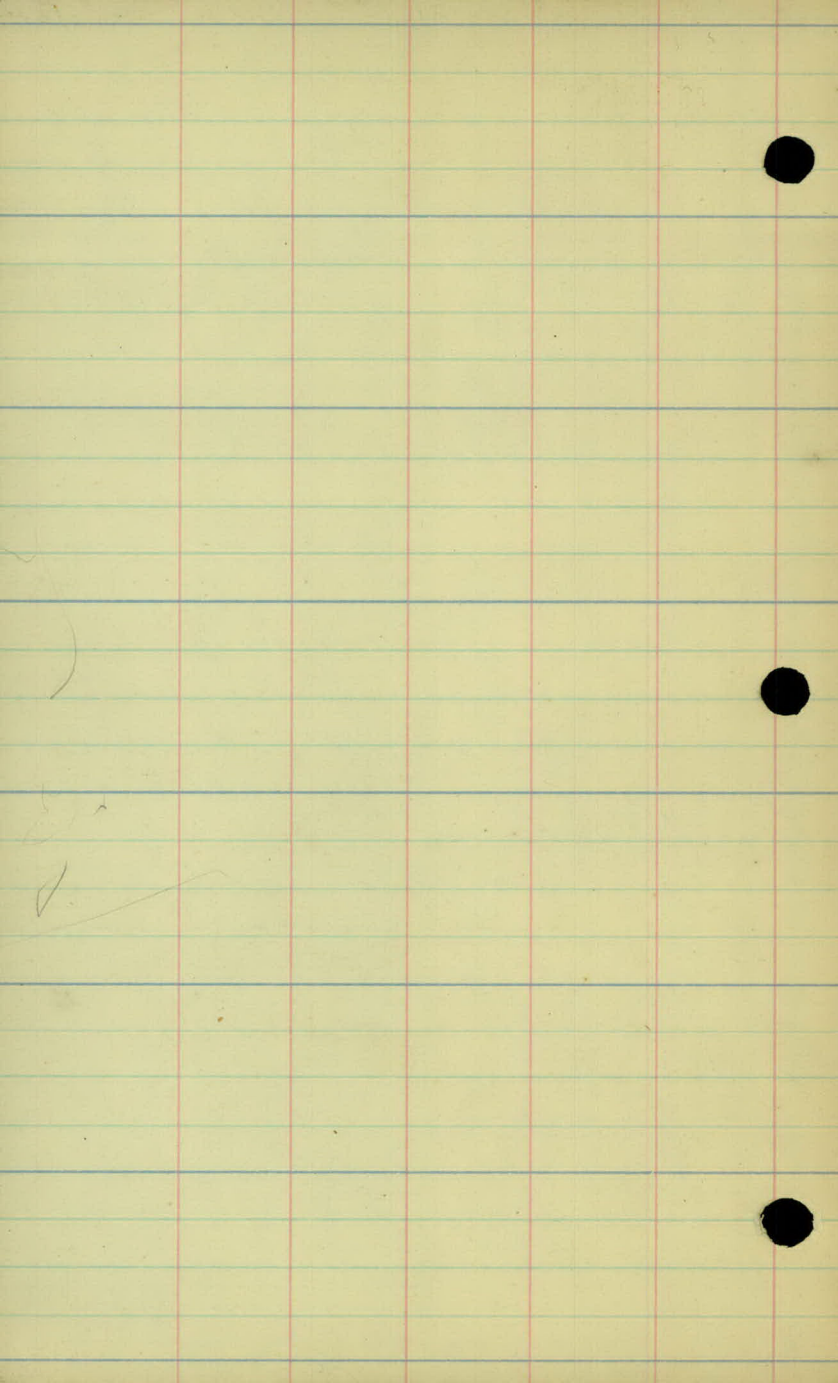
+49 T.P. 40'L

Onion

Cultivated

+19 E.P. 16'R

14+00



Rd. 18

+10 E.P. 22'L

Fence 25'R

27+00

Cultivated

Fence 24'R

26+00

Cultivated

+22 E.P. 22'L

Fence 23'R

25+00

+57 E.P. 20'R

+44 Beg of Fence 24'R

+26 E.P. 19'L

+23 Cross Fence 34' 19'L

+94 RR Xing Sign

+65.2 @ Minn Trans RR Tracks

the Road
Road

24+00

+65 Wing of Road

+44 RR Xing Sign 16'R

+16 T.P. 22'L

+159 W.D. 19'R

+166 E.P. 19'R

+704 End of Fenced R

23+00

+68 Drive

Fence 22'R

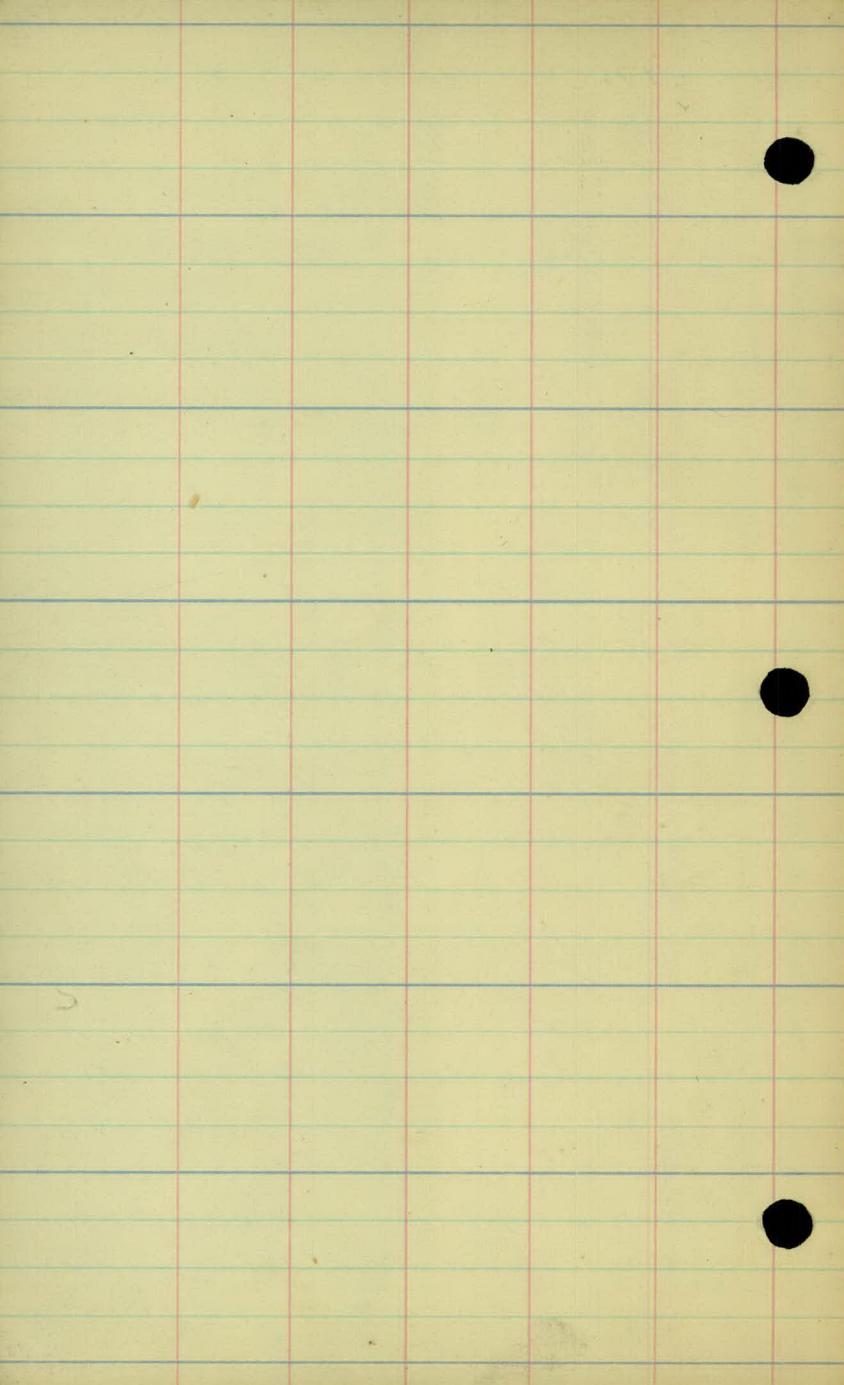
22+00

+88 T.P. 25'L

+57 E.P. 18'R

Fence 22'R

21+00



5 of 11

35+00

+72 E.P. 16'L

+80 Tree 16'R
Fence 26'R

34+00

+85 Tree 22'L

+55 Tree 19'R

Fence 26'R

33+00

+81 E.P. 17'L

Fence 26'R

32+00

PASTURE

+90 E.P. 19'L

Fence 26'R

31+00

Cultivated

Fence 26'R

30+00

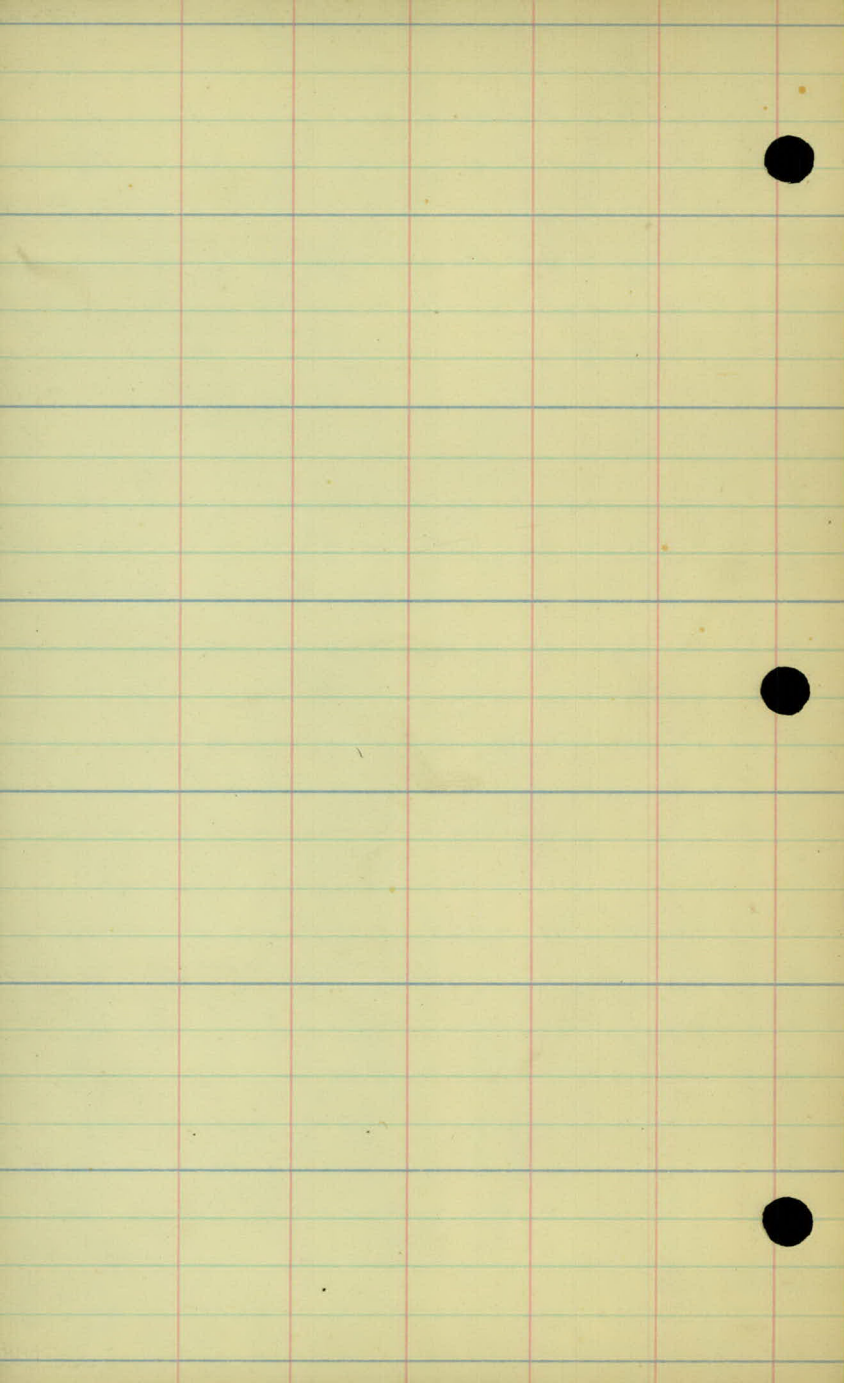
+03 E.P. 20'L

+16 X Fence 27'R
Fence 27'R

29+00

Fence 27'R

28+00



+71 E.P. 15'L

+48 Bog Fence 35'L

54'
School
28'

+42 School Cor

+14 E.P. 14'L

Worked

84'

Fence 24'R

Pasture

41+00

+30 Bog Fence 28'

40+00

+90 End of Fence 31'R

Fence 30'R

39+00

+47 E.P. 16'L

Pasture

38+00

Fence 28'R

+90 Tree 24'R

Fence 29'R

37+00

Cultivated

+36 E.P. 15'L

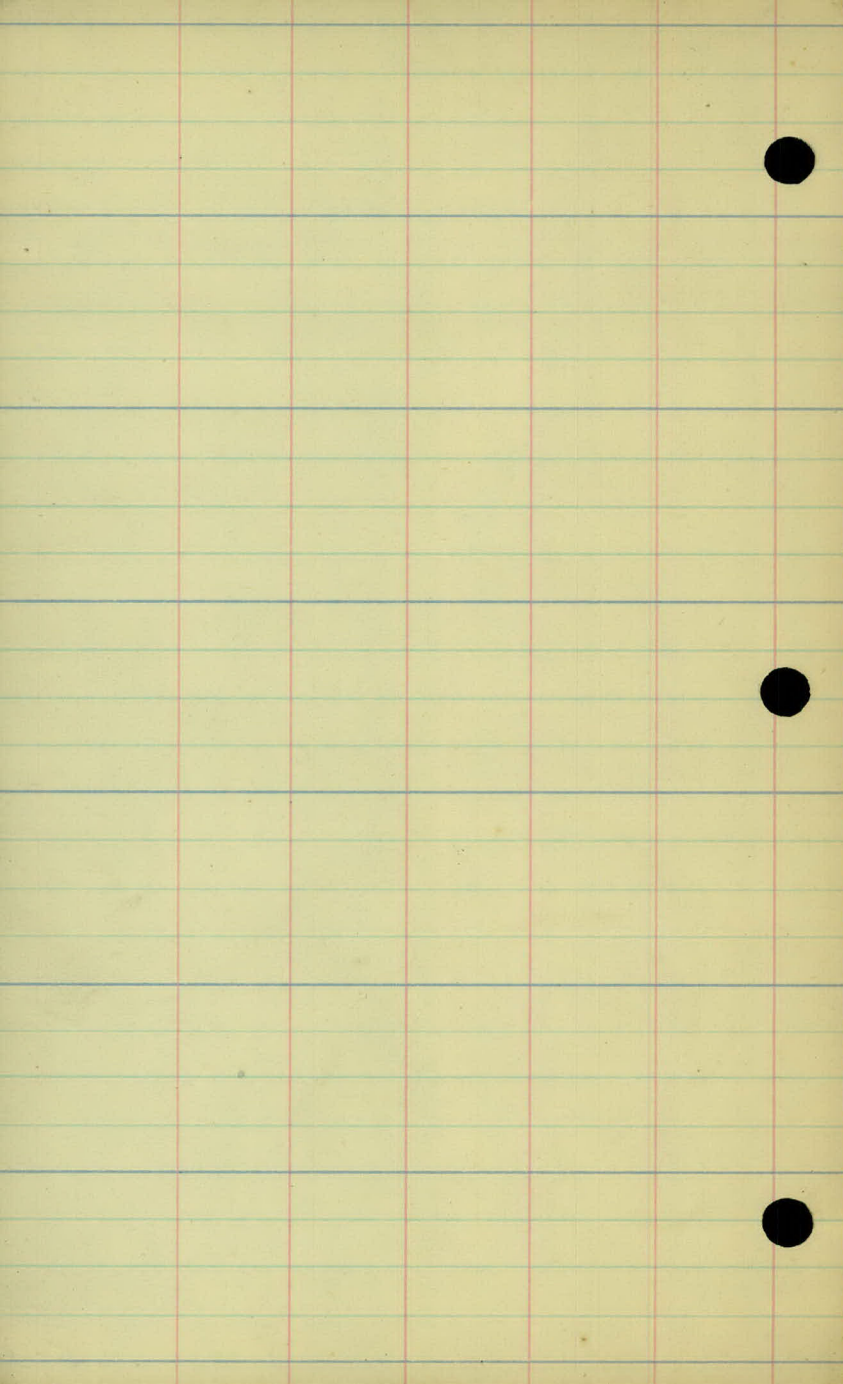
Fence 26'R

36+00

+80 Sign 12'R

Fence 26'R

35+00



Cultivated

Cultivated

48400

47400

+47 E.P. 13' L

Highway Road +61
 +35 E.P. 13' L Fence 56'

+07 Fence Cor 25'
 Fence 28'

46400

Fence 27'

45400

+82 Drive
 +73 E.P. 13' L

0000
 0000
 20
 House
 40
 53'

+03 house

Fence 28'

44400

+33 Drive

Drive

Pasture

+16 E.P. 15' L

Fence 26'

43400

Wooded Land

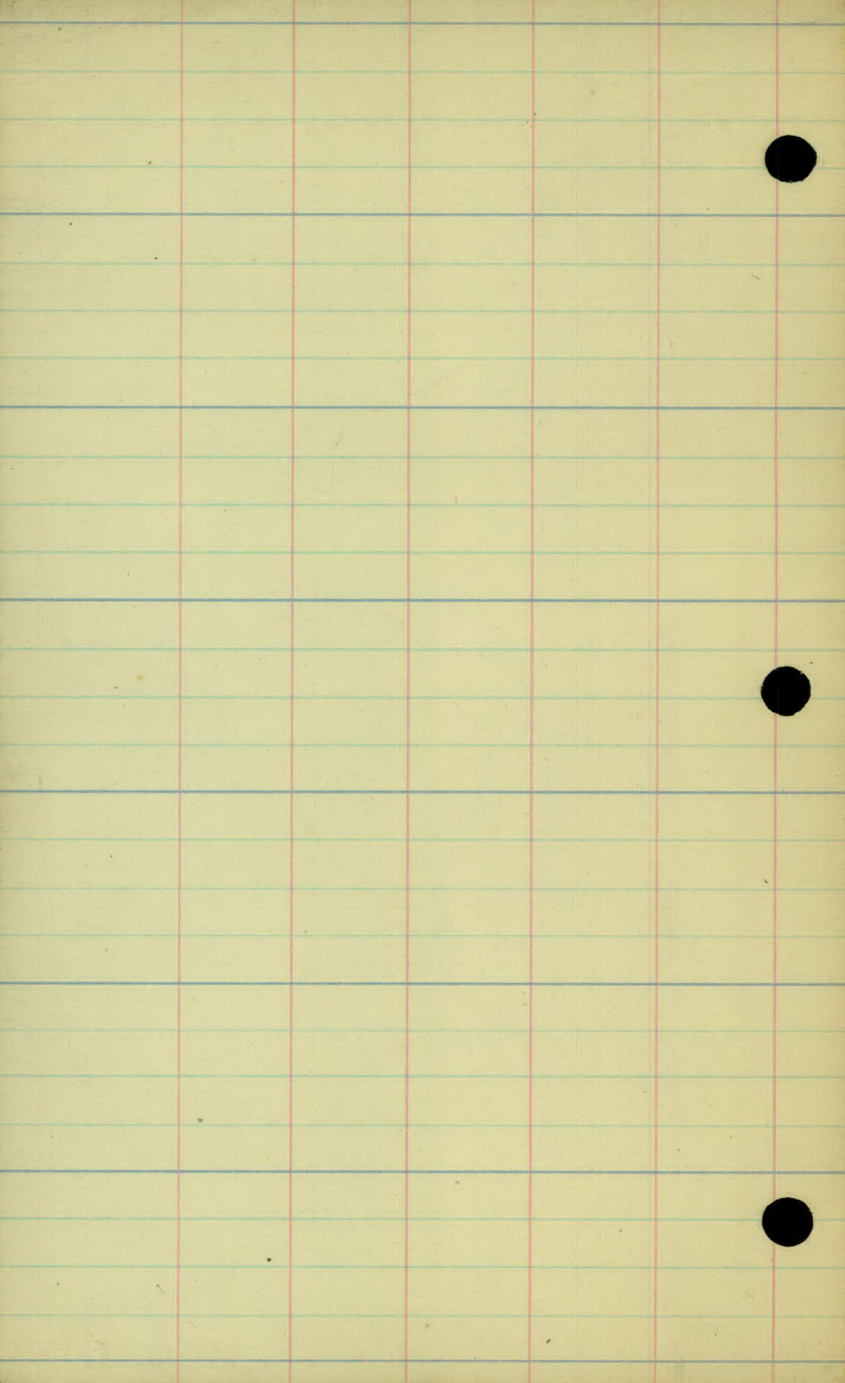
+40 End of Fence 35' L

x x x x x x x x

Fence 35' L

Fence 25' L

42400



⑧ of 11

56+00

55+00

54+00

Cultivated

+25 Private Drive = Drive

+25 X Fence 33' R

53+00

52+00

Cultivated

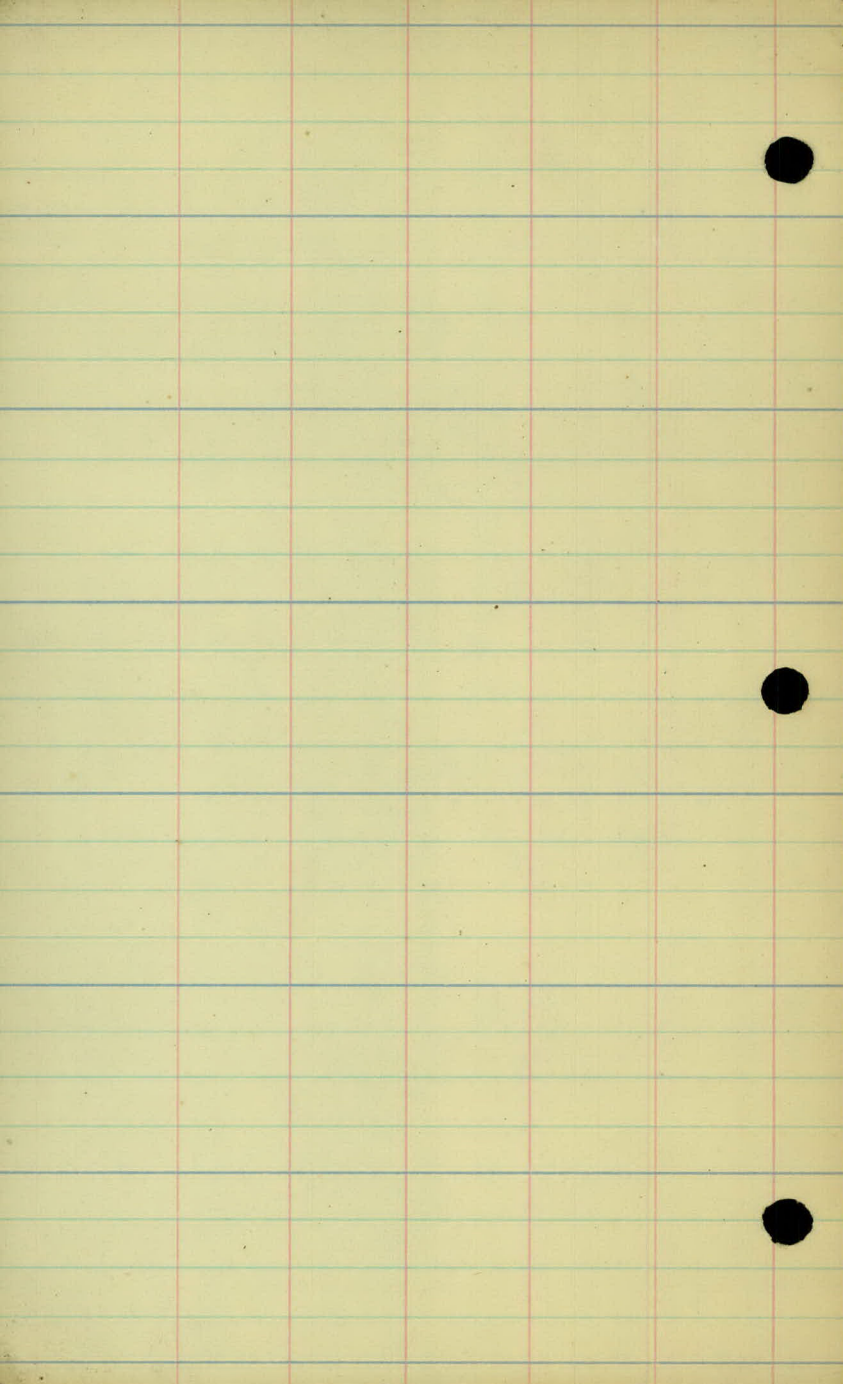
Drive +62

30' 25' House
66' 4' 6"

51+00

50+00

49+00



6340

6200

6140

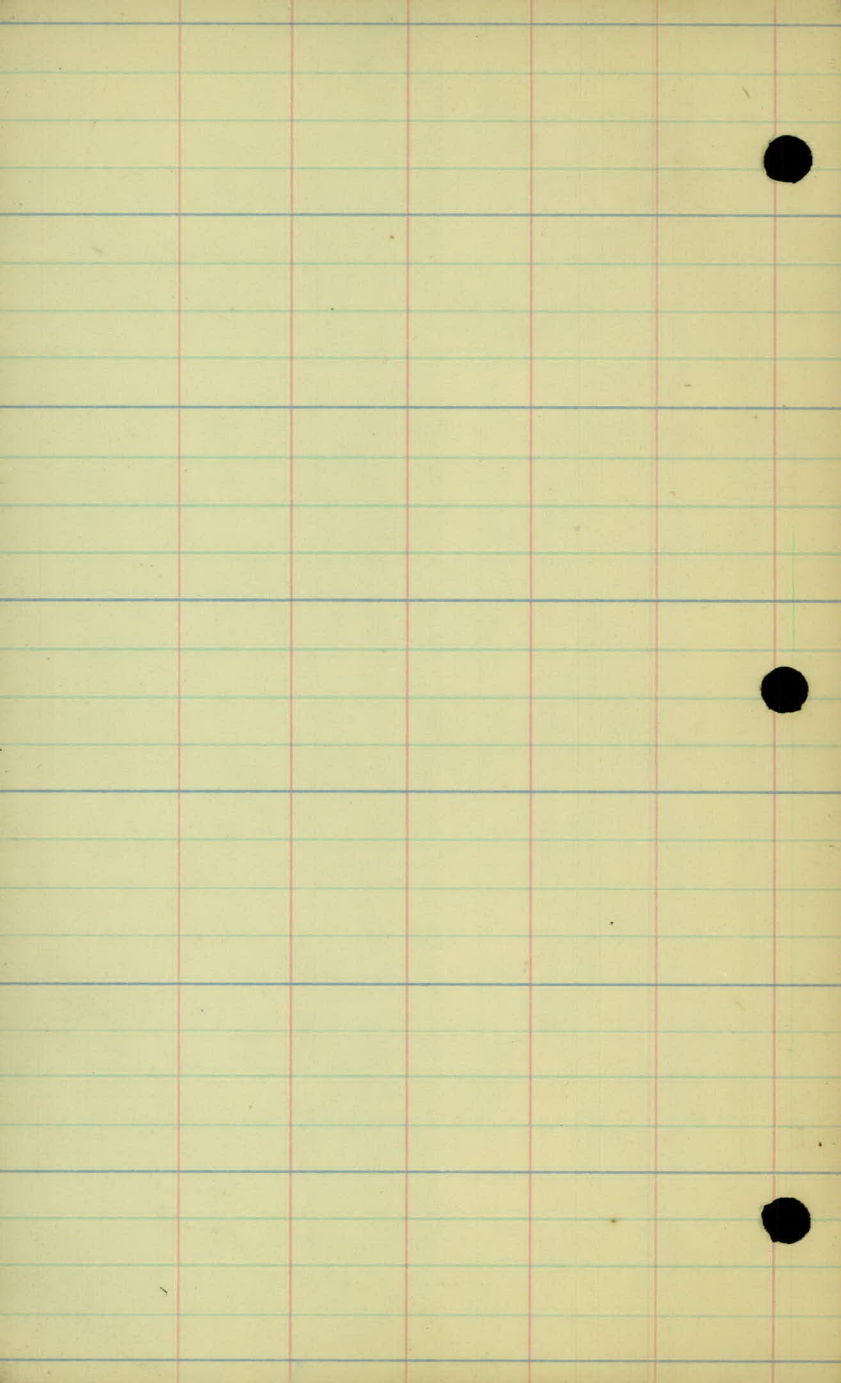
640

5946

587a

57400

5640



Fence 12' 69+00

Fence 12' 68+00

Fence 12' 67+00

Fence 12' R 66+00

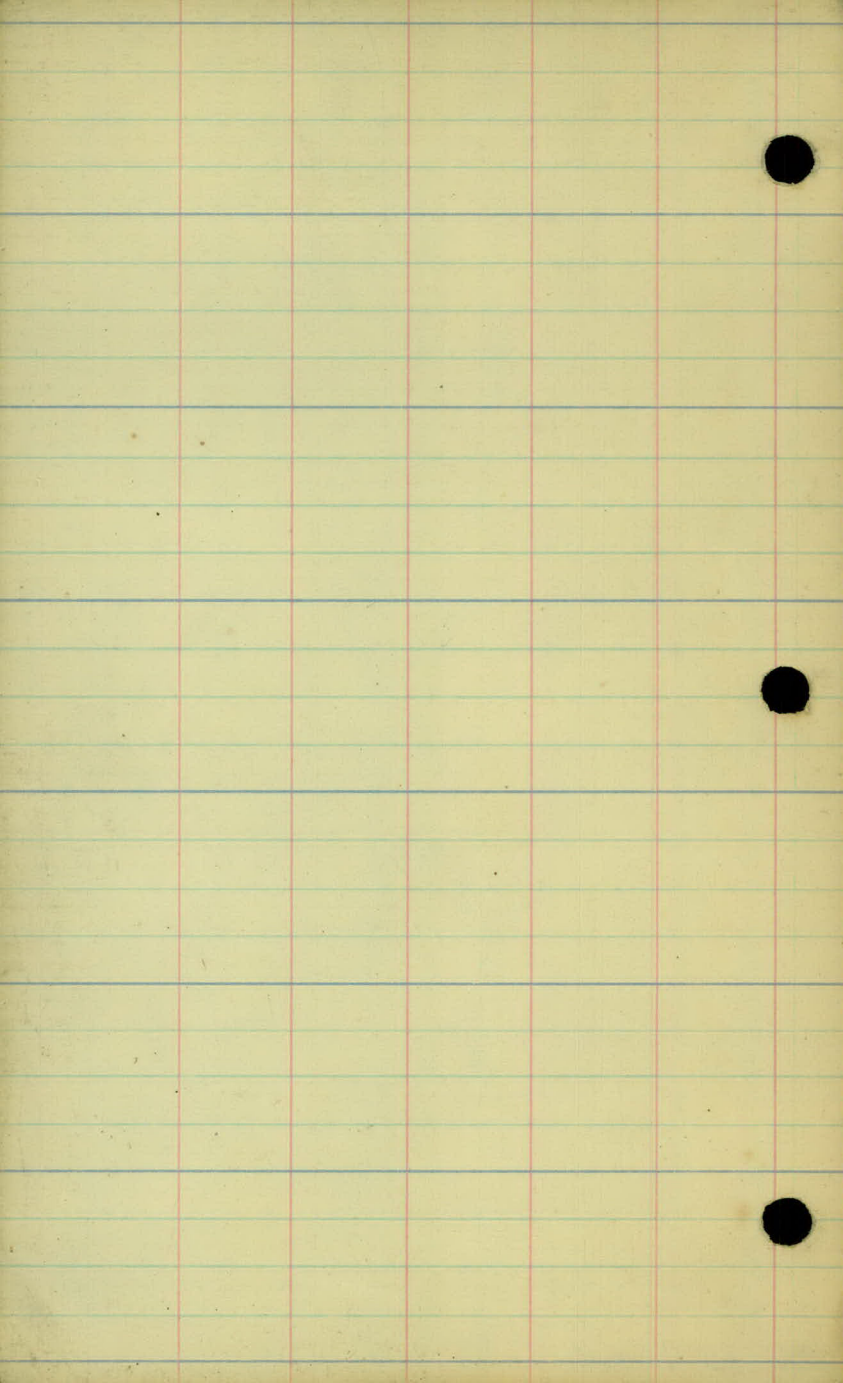
+85 Fence Ck 13'

+75 Fence Ck 23'

Fence 26' 65+00

Fence 23' 64+00

Fence 25' R 63+00



Rd. 18

Austin
Skoglund
Maloney
Galvin } Party

