

Bk. 24 - Dr. 16

OFFICE OF COUNTY ENGINEER
RAMSEY CO. MINN.

_____ Drainage Survey

_____ DALE ST & Co RD "B" _____

From _____ To _____

Road Acc't. No. _____

Filed / 0-26-35

File _____

DITCH SURVEY
Co. Rd. "B" and Dale St.

INDEX.

Align - 1
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LINE REVISIONS

Align 13-14
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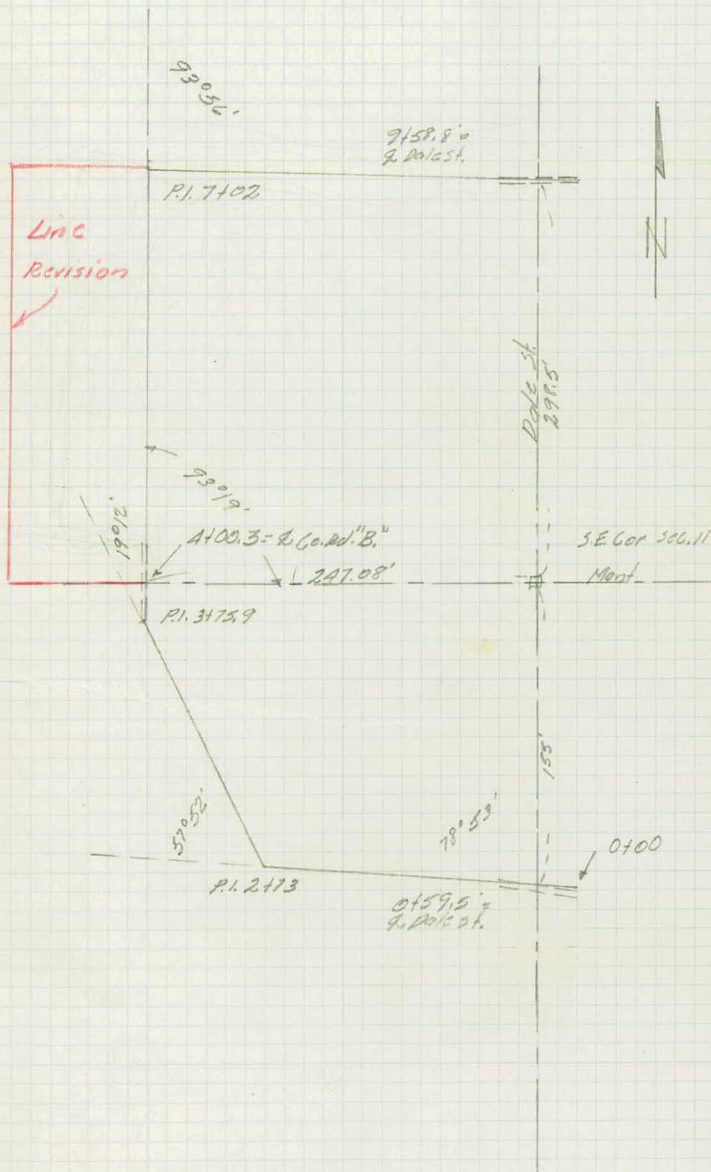
17960

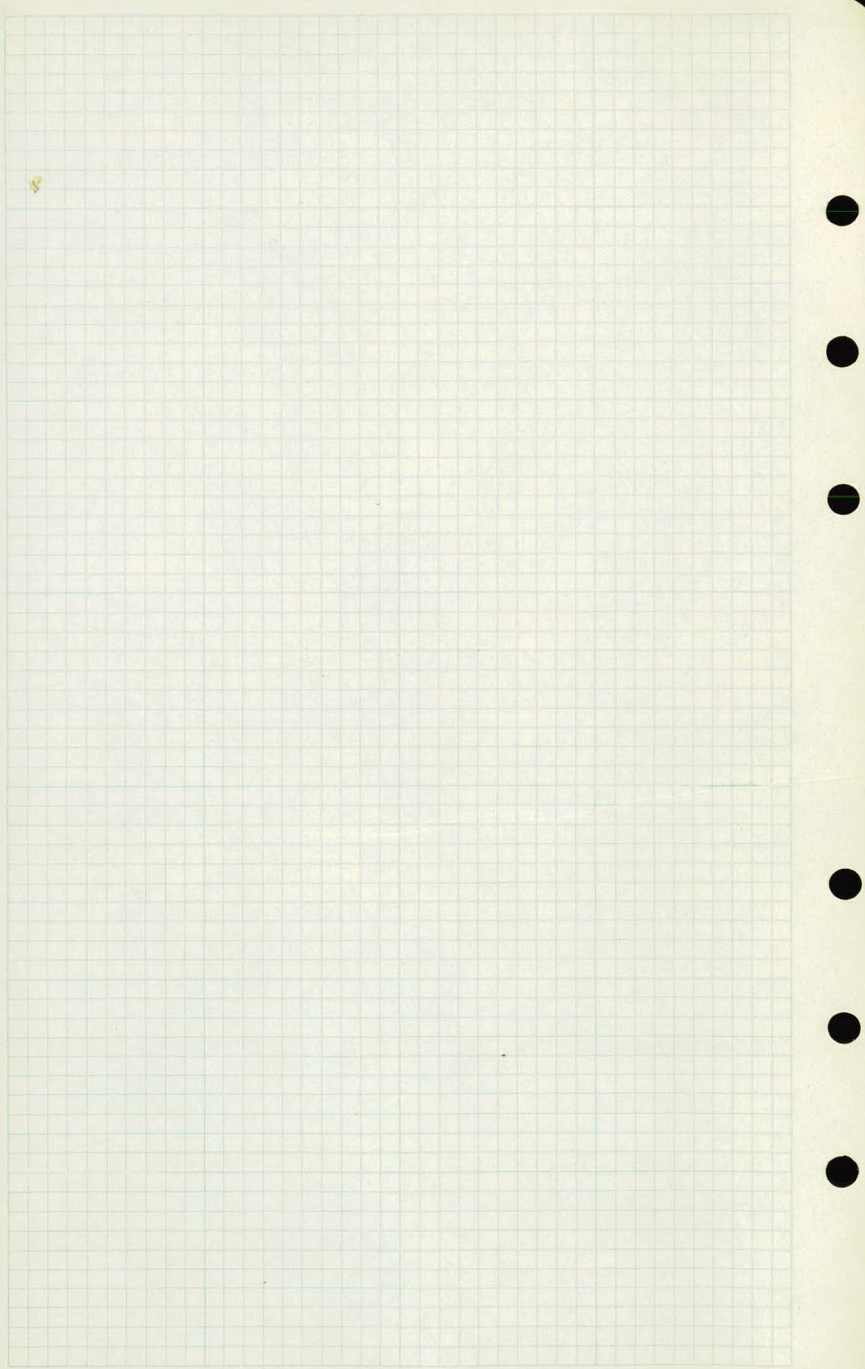
9319

8641

1/6/39

1





Topography

5

Ditch 1'

+31-Dim Ditch - 79'
+28-Ditch End Crs.

+23-36" C.M. - 0.0
+12-C.R. Ks. R.
+09-Edge Bl. Top.

4

+90-Edge Bl. Top.

+76-24" C.M. - 95'

+65-T.P. - 17'
+60-Fe Cor. - 13'

+35-Fe Ks. R.

3

Ditch 0.0

+75-Ditch 0.0

2

Ditch - 4'

+30-41' Bottom Ditch - 2'

+26-24" C.M. 0.0
+12-Fe X - R.

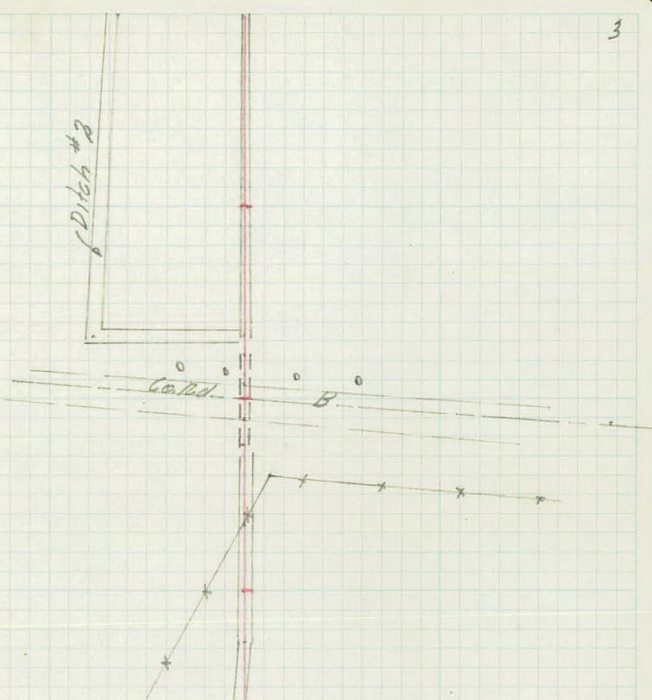
1

+75-C.R. Ks. R.
+70-Edge Bl. Top.

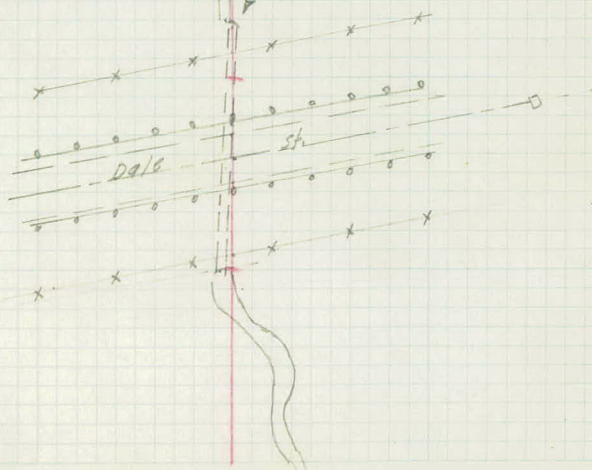
+45-Edge Bl. Top.
+43-C.R. Ks. R.

+07-Fe X - R.
End 24" C.M. - 6'

0+00



Note: At end of cut there is wood upright planks and also a
 Chick on wire mesh gate.



10

185-50

130-PR-5'

125-Edge Bl. to R.
125-End 24 L. N. 0.0

9

8

134-End Ditch 20

7

102-Ditch 1-1'

X Ditch Burns H. 15.

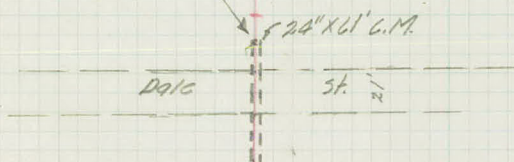
157-End Ditch

6

117-Δ in Ditch - 69'

Ditch-90

Note: widen ditch at end of culv. or shorten culv. 4'





X sections

Sta.	+	π	-	Elev.
B.M.	257	935.39 ✓		931.81
T.P.	0.02	923.13 ✓	12.27	923.11'

Levels East of Culv. at 0400

0 +50 8.7 14.4

1 7.2 13.9

+50 2.8 13.3

2 10.7 12.4

Levels on Regular Line

0 +20 Flowline Culv. 8.86 914.27

+14 2.7 20.4

T.P. 13.26 936.37 ✓ 0.02 923.11 ✓

+35 3.7 32.7

+43 1.7 34.8

+60 0.7 35.7

+81 2.5 33.9

T.P. 1.46 930.59 ✓ 72.4 929.13 ✓

8.86

Lt

to

Rt.

Top Mont Pale St. & Col. Rd "B" "

Sta	+	π	-	Elev
		930.59		
1	+08		10.4	20.2
	+20		12.3	18.3
	+26		12.54	18.05
	+26		14.54	16.05
	+30			18.1
2				18.3
	+79			17.4
3				17.7
	+65			19.8
	+75.9			16.79
	+75.9		10.8	19.8

L.

L.

R.

(15.6)

$$\frac{12.3}{10} \quad \frac{12.8}{3} \quad \frac{15.0}{3} \quad \frac{15.0}{1} \quad \frac{12.5}{1} \quad \frac{12.5}{10} \quad \frac{12.4}{10}$$

(16.3)

$$\frac{12.2}{10} \quad \frac{12.4}{5} \quad \frac{14.3}{5} \quad \frac{14.3}{4} \quad \frac{12.7}{4} \quad \frac{12.3}{10} \quad \frac{11.9}{10}$$

$$\frac{12.0}{10} \quad \frac{12.0}{1} \quad \frac{13.2}{2.5} \quad \frac{13.2}{0.5} \quad \frac{12.3}{1} \quad \frac{11.9}{10}$$

$$\frac{11.3}{10} \quad \frac{11.8}{1} \quad \frac{12.9}{2.5} \quad \frac{12.9}{1} \quad \frac{11.5}{1} \quad \frac{11.1}{10}$$

(18.6)

$$\frac{10.9}{10} \quad \frac{10.8}{16} \quad \frac{10.8}{16} \quad \frac{12.0}{24} \quad \frac{12.0}{3} \quad \frac{10.8}{4} \quad \frac{10.2}{10}$$

(Calk)

$$\frac{7.1}{10} \quad \frac{10.9}{2} \quad \frac{13.8}{2.5} \quad \frac{10.5}{3} \quad \frac{9.3}{10}$$

Sta	+	Δ	-	Elev.
		990.59		
3	+82		7.5	23.1
	+88		6.5	24.1
4			6.1	24.5
	+10		6.4	24.2
	+16		7.0	23.6
	+23		10.44	20.15
	+23		15.49	17.15
	+50			20.2
5				21.3
	+50			21.5
6				20.9

Lt

R

Rt

$$\frac{9.9}{10} \quad \frac{11.0}{5} \quad \frac{13.44}{1} \quad \frac{11.7}{2} \quad \frac{10.3}{3} \quad \frac{8.4}{10}$$

(19.1)

$$\frac{10.1}{10} \quad \frac{10.4}{0.5} \quad \frac{10.4}{0.5} \quad \frac{11.5}{0.5} \quad \frac{11.5}{1} \quad \frac{10.3}{2} \quad \frac{10.1}{10}$$

(20.4)

$$\frac{9.4}{10} \quad \frac{9.3}{1} \quad \frac{9.3}{1} \quad \frac{10.2}{1} \quad \frac{10.2}{1.5} \quad \frac{9.2}{2} \quad \frac{9.1}{10}$$

(20.3)

$$\frac{9.2}{10} \quad \frac{9.1}{0.0} \quad \frac{10.3}{0.5} \quad \frac{10.3}{0.5} \quad \frac{9.1}{1} \quad \frac{8.6}{10}$$

$$\frac{8.1}{10} \quad \frac{8.1}{8} \quad \frac{7.9}{4} \quad \frac{8.3}{1} \quad \frac{9.9}{0.5} \quad \frac{9.9}{1} \quad \frac{8.4}{10} \quad \frac{8.1}{10}$$

Sta.	+	Δ	-	Elev.	
		930.59			
6	+50			22.9	
	+92			23.0	
7	+12	8+56		923.6 ✓	
P.M.		4.85	936.66 ✓		931.81
T.P.			12.79	923.67 ✓	
	+50	8+94		23.9	
		9+44		24.4	
	+50	9+94		25.1	
9		10+44		25.9	
	+25	10+69	Flow Line Curve	11.79	24.87
	+32	10+76		9.5	27.2
	+42	10+86		6.1	30.6
	+51	10+95		4.9	31.8
	+60	11+04		4.6	32.1
		11+30			27.73
+86	F.L. 100	End Curve From Data 14	8.93		

Lt.

E

Rt.

$$\frac{78}{10} \quad \frac{77}{10} \quad \frac{77}{10}$$

$$\frac{77}{10} \quad \frac{76}{10} \quad \frac{73}{10}$$

(228)

$$\frac{68}{10} \quad \frac{69}{2} \quad \frac{78}{1} \quad \frac{70}{10} \quad \frac{74}{10}$$

Top Month. Dale St. & Co. Ed "B"

Top Month. Dale St. & Co. Ed "B"

$$\frac{128}{10} \quad \frac{127}{6} \quad \frac{119}{2} \quad \frac{128}{10} \quad \frac{129}{10}$$

$$\frac{127}{10} \quad \frac{122}{6} \quad \frac{116}{3} \quad \frac{123}{10} \quad \frac{124}{10}$$

$$\frac{122}{10} \quad \frac{108}{4} \quad \frac{116}{10} \quad \frac{117}{10}$$

$$\frac{118}{10} \quad \frac{104}{6} \quad \frac{109}{4} \quad \frac{108}{5} \quad \frac{108}{10} \quad \frac{108}{10}$$

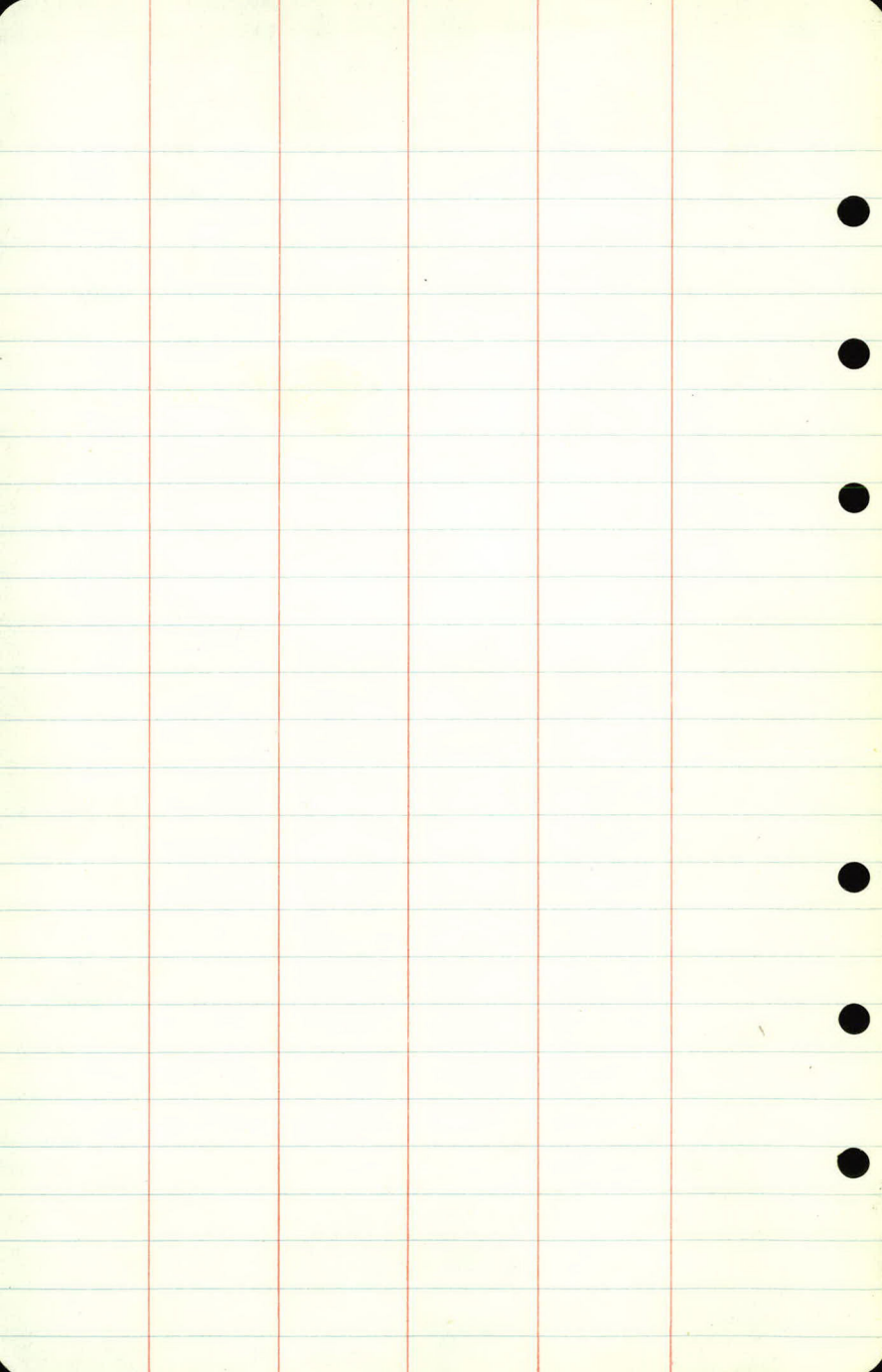
(259)

$$\frac{103}{10} \quad \frac{106}{3} \quad \frac{108}{10} \quad \frac{103}{2} \quad \frac{104}{10}$$

LEVELS Ditch No. 2

Sta	+	-	Elev
	1.13	927.80	923.67
4+28 = 0+00 Ditch #2		8.9	18.9
+50		8.3	19.5
1		8.1	19.7
+50		7.8	20.0
2		7.5	20.3
+50		7.0	20.8
3		7.4	20.4
+50		6.9	20.9
4		6.9	20.9
+50		7.1	20.7
5		6.8	21.0
+39		7.2	20.6

End Ditch #2 x Ditch Run Nts.



Topog.
Dolo 5f.

66

+84-Approx. S.T.H. #36'

+45-Mouth of C.B. -28'

+57-Mouth of C.B. -36'

+29-End 24" Conc. Curb -28'

+32-End 24" Conc. Curb -37'

65

+98-Ditch Check Bubble

^{2' Bottom}
+84-Box Bubble Gutter -26'

+58-Bubble Ditch Check

+15-Ent. -18"X20" G.M. -
Bl. Top -11'

+32-Bubble Ditch Check

64

+82-Bubble Ditch Check.

+40-Ent. -18"X20" G.M. -
Bl. Top -11'

+47-Bubble Ditch Check

63

+75-Ent. -Double 15"X20" G.M. -
Bl. Top -11'

62

+86-Ent. -Double 12"X9" G.M. -
Bl. Top -10'

61

+14-Ent. 18"X18" G.M. -
Bl. Top -10'

60

Line Revision

Sta.	Point	Alt.	Δ Rt.
------	-------	------	-------

7 to 2.0 Line #1.
 8 +45.90 = EQU9.

7 179.57

91°43'

4 177.45 P.I.

88°55'

4 190.3 P.I.

86°41'

Tapos.
Line Revision

8

7

+92. Δ in Ditch

6

Ditch - 0.0

5

+08. Δ in Ditch

11'

+77 Ditch - 31'
9' + 67-End C.B. - 12'

4

+05

11'

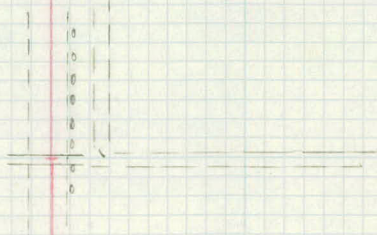
9'

+003 - Ditch - 27.3' 6.2 12'

77.05

Calc

Calc





Xsections
Line Revisions

Sta	T	A	-	Elev.
B.M.	1.40	933.21		(931.81)

T.P.	3.11	929.56	6.76	926.45
------	------	--------	------	--------

4	+10	(+38)		
---	-----	-------	--	--

	+67	(+95)		
--	-----	-------	--	--

5	+18			
---	-----	--	--	--

6

+92 Δ in pitch

7

+50

8

T.P.	2.26	932.87	3.05	926.51
B.M.			2.05	931.82 (921.81)

lt

k

rt

Tap Mont Dale St. & Co. Rd 25th

(19.2)

$$\begin{array}{r} 51 \ 54 \ 57 \ 71 \ 86 \ 104 \ 104 \ 87 \ 71 \\ \hline 9 \ 13 \ 16 \ 25 \ 27 \ 29 \ 30 \ 40 \end{array}$$

(19.8)

$$\begin{array}{r} 51 \ 54 \ 55 \ 64 \ 89 \ 98 \ 98 \ 87 \ 87 \\ \hline 9 \ 13 \ 19 \ 29 \ 29 \ 51 \ 32 \ 40 \end{array}$$

(19.8)

$$\begin{array}{r} 86 \ 87 \ 78 \ 98 \ 98 \ 99 \ 88 \ 87 \\ \hline 12 \ 3 \ 1 \ 1 \ 3 \ 6 \ 10 \end{array}$$

(20.2)

$$\begin{array}{r} 89 \ 87 \ 94 \ 94 \ 94 \ 87 \ 83 \\ \hline 10 \ 7 \ 1 \ 1 \ 2 \ 10 \end{array}$$

(20.8)

$$\begin{array}{r} 65 \ 56 \ 88 \ 82 \ 76 \\ \hline 100 \ 50 \ 1 \ 10 \ 10 \end{array}$$

(21.4)

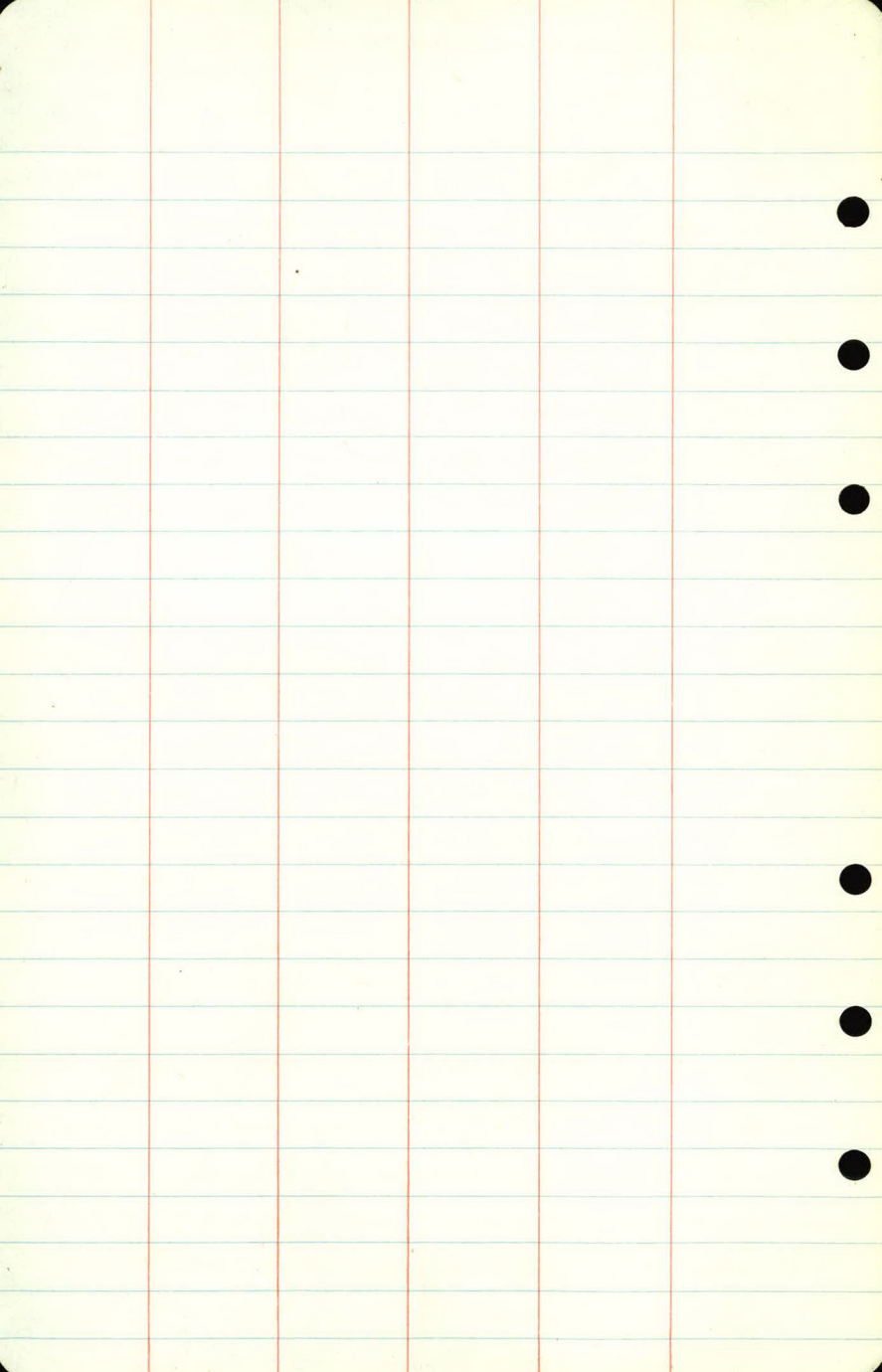
$$\begin{array}{r} 79 \ 82 \ 76 \\ \hline 10 \ 10 \ 10 \end{array}$$

(22.2)

$$\begin{array}{r} 74 \ 74 \ 74 \\ \hline 10 \ 10 \ 10 \end{array}$$

(22.9)

$$\begin{array}{r} 61 \ 67 \ 69 \\ \hline 10 \ 10 \ 10 \end{array}$$



Slope stakes

Ditch

Co. Rd. "B" & Dale St.

Sta	+	π	-	Grade	
B.M.	0.94	932.25			(931.81)
I.P.	6.81	929.30	9.26	932.97	
1	+26			16.1	
	160			16.2	
2				16.32	
	163			16.49	
	182			16.52	
3				16.60	
	140			16.71	
	+759			16.80	
4	123			17.2	
	+40			17.4	
5				18.2	

4/10/39
K.H.
L.S.H.
L.C.
H.N.
L.G.

Gr. Rod. Lt R Rt

Top Mont. Paleosh. & Co. Rd. "B"

13.2

13.1

$$\frac{11.0}{+2.1}$$

$$\frac{10.7}{+2.4} / 5.8$$

13.0

$$\frac{11.0}{+2.0}$$

$$\frac{11.0}{+2.0} / 5.0$$

12.8

$$\frac{5.2}{+2.1} / 10.7$$

$$\frac{11.2}{+1.6}$$

$$\frac{10.3}{+2.5} / 6.0$$

$$\frac{2.5}{1.7}$$

12.8

$$\frac{6.1}{+2.5} / 10.3$$

$$\frac{10.0}{+2.8} / 6.6$$

12.7

$$\frac{6.2}{+2.6} / 10.1$$

$$\frac{10.4}{+2.3} / 5.6$$

12.6

$$\frac{6.6}{+2.8} / 9.8$$

$$\frac{9.7}{+2.9}$$

$$\frac{10.1}{+2.5} / 6.0$$

12.5

$$\frac{12.0}{1.4} / 8.0$$

11.9

$$\frac{9.0}{+4.0} / 7.9$$

$$\frac{9.2}{+2.7} / 6.4$$

$$\frac{1.7}{1.2} / 3.4$$

11.1

$$\frac{7.4}{+3.2} / 7.9$$

$$\frac{8.8}{+2.3} / 6.6$$

Sta	+	Σ	-	Grade
		727.30		
				18.3
5	+20			18.4
	+60			18.84
6				19.32
	+50			19.92
7				20.52
	+35			20.9
	+20			21.3
7	+90			21.62
8	+50			22.32
9				22.92
	+50			23.52
10				24.12
	+50			24.7
	+67			24.9
B.M.				

$$\begin{array}{r} 12 \\ 2 \\ \hline 108 \end{array}$$

$$\begin{array}{r} 12 \\ 20 \\ \hline 240 \end{array}$$

$$\begin{array}{r} 12 \\ 33 \\ \hline 40 \\ 16 \\ \hline 420 \end{array}$$

$$24$$

Car Rod

Lt

L

Rt

10.9

$$5.2 / \frac{8.8}{12.1}$$

$$\frac{9.5}{11.4}$$

$$\frac{8.7}{12.2} / 3.4$$

10.5

$$4.6 / \frac{8.7}{11.8}$$

$$\frac{9.3}{11.2}$$

$$\frac{8.8}{11.7} / 4.4$$

10.0

$$4.2 / \frac{8.9}{11.6}$$

$$\frac{9.2}{10.8}$$

$$\frac{8.8}{12.2} / 3.4$$

9.4

$$3.0 / \frac{8.9}{11.0}$$

$$\frac{8.7}{10.7}$$

$$\frac{8.4}{11.0} / 2.0$$

8.8

$$2.0 / \frac{8.0}{10.8}$$

$$\frac{8.1}{10.7}$$

$$\frac{8.0}{10.8} / 2.6$$

8.9

$$3.2 / \frac{7.3}{11.1}$$

$$\frac{7.3}{11.1}$$

$$\frac{7.7}{10.7} / 2.4$$

8.0

$$2.8 / \frac{7.1}{10.9}$$

$$\frac{7.2}{10.8}$$

$$\frac{7.2}{10.9} / 2.6$$

7.7

$$3.2 / \frac{6.6}{11.1}$$

$$\frac{6.8}{10.9}$$

$$\frac{6.9}{10.8} / 2.6$$

7.0

$$4.6 / \frac{5.2}{11.8}$$

$$\frac{5.9}{11.1}$$

$$\frac{5.9}{11.1} / 3.2$$

6.4

$$3.8 / \frac{5.0}{11.4}$$

$$\frac{5.0}{11.4}$$

$$\frac{5.4}{11.0} / 2.0$$

5.8

$$3.4 / \frac{4.6}{11.2}$$

$$\frac{4.6}{11.2}$$

$$\frac{4.7}{10.9} / 2.8$$

5.2

$$3.2 / \frac{4.1}{11.1}$$

$$\frac{4.2}{11.0}$$

$$\frac{4.3}{10.9} / 2.8$$

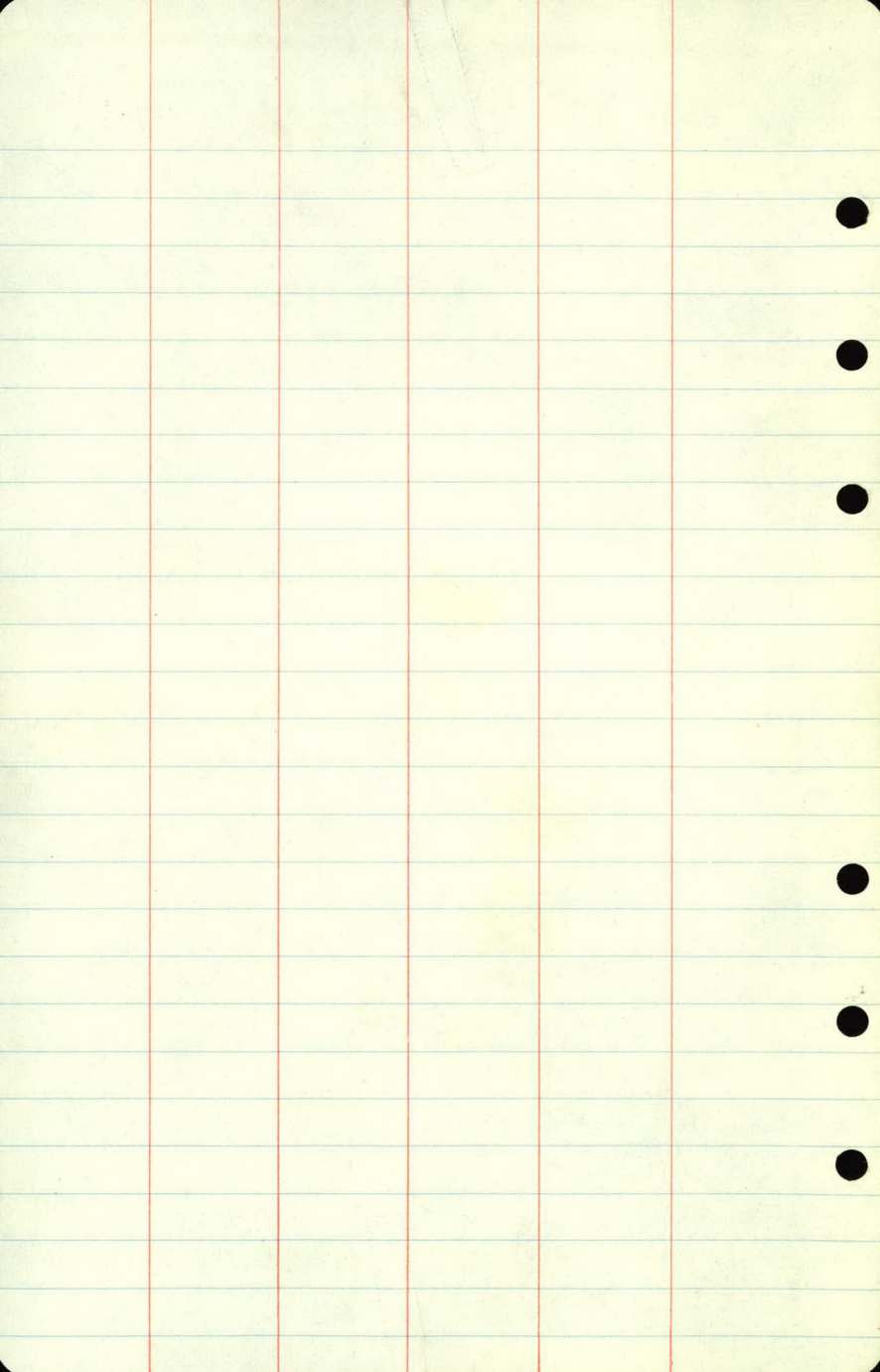
4.6
4.4

$$4.0 / \frac{3.1}{11.3}$$

$$\frac{3.4}{11.2}$$

$$\frac{3.4}{11.2} / 3.4$$

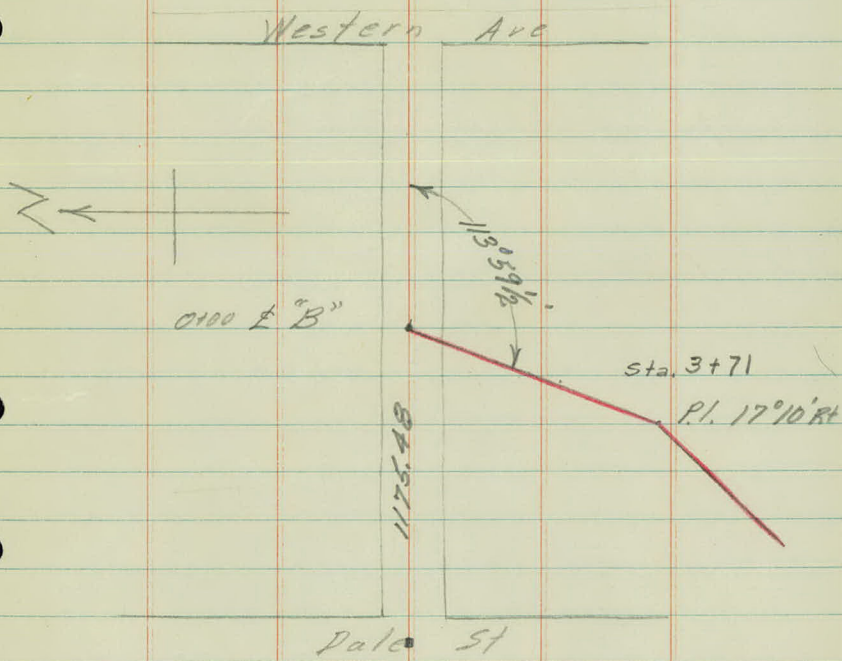
$$\frac{4.4}{4.4}$$



1

Co Rd "B"
Drainage

Dale to Western



easement obtained 1953

4 pages

Sta	+	π	-	Elev
BM	0.14	903.55		903.406
T.P.	1.41	891.64	13.32	890.23
T.P.	2.35	880.90	13.09	878.55
0-24	N. End 24" x 55' CM 15' Rt			

0+00 $\angle$ Co. Rd. "B"

+14 Ent Culvert 15"

+27 Ent Culvert 18"

} 35'

+29

BM	2.73	874.35	9.28	871.62	(871.61)
----	------	--------	------	--------	----------

+29

+40 Pl. of old Ditch

22 Oct 1953

2

FK

AM

LC

MM

Lt

£

RT

USC & GS Com. Mon #69 33' Lt Sta 227+88

72.25

8.65

15'

FL 24" x 55' CM

78.55

2.35

73.05

7.85

49'

FL 15" E. End 15" CM

71.70

9.20

16'

FL W. End 18" CM

70.25

10.65

£

FL 24" x 55' CM

Spk in 18" Cott. 160' Rt 1150' East of Dale

69.5

4.9

69.5

4.9

Sta	+	π	-	Elev
		874.35		

0 + 48

+ 52

+ 75

1

+ 50

+ 76

+ 87

2

+ 21

+ 25

+ 50

+ 78

+ 85

6" Drainage tile X-Drain

3

Lt

Rt

71.8

2.6

10.8

3.6

11.1

3.3

69.8

4.6

68.9

5.5

4" C.H. 3' Rt

stump 1' Lt

67.5

6.9

stump 5' Lt

4" C.H. 1' Rt

stump 2' Lt

66.6

7.8

stump 6' Lt

stump 9' Lt

66.1

8.3

Sta	+	Δ	-	Elev
		874.35		

3+50

+70

4

+50 End of Field

5

+50

TP	11.04	883.27	2.12	872.23
----	-------	--------	------	--------

	12.92	896.13	0.04	883.23
--	-------	--------	------	--------

	1.12	895.03		895.002
--	------	--------	--	---------

2+

2

4

RT

66.15

8.3

66.15

8.3

65.75

8.7

64.15

10.3

61.85

12.6

59.2

15.2

U.S. G.S. Cone Mon #G10 32' RT Sta 214 + 31

