

Bk 45 Dr 16

OFFICE OF COUNTY ENGINEER
RAMSEY CO. MINN.

Drainage Survey

Walnut Str.

From A2 To Co Rd "B"

Road Acc't. No. 67

Date Filed File

BK 45 Dr 16

①
Drainage Study
Walnut St.
from "A" to "B"

Note use notes file no 32-67 for
alignment

4/26/40

R.P.
A.M.
L.G.
C.F.

5 Pages.

Com.

4/20/40

How

Sta	+	π	-	Elev.
B.M.	9.26	937.89		928.63
10			3.7	34.2
+50			5.8	32.1
11			7.3	30.6
+17			7.8	30.1
+50			8.8	29.1
12	Sec. third - 24" x 54' Conc.	9.6		28.3
T.P.	6.59	932.83	11.65	926.24
+43			4.7	28.1
+89			4.5	28.3
13+ 35			4.4	28.4
+79			4.5	28.3
14			4.6	28.4
+50			3.9	28.9

Spike 24" Cottonwood 115' Lt 11+50

$\frac{8.9}{50}$ $\frac{8.4}{26}$ $\frac{5.0}{15}$ $\frac{3.1}{14}$ $\frac{7.2}{29}$ $\frac{8.0}{50}$

$\frac{9.6}{50}$ $\frac{9.7}{44}$ $\frac{10.8}{34}$ $\frac{10.7}{28}$ $\frac{6.8}{14}$ $\frac{5.0}{14}$ $\frac{10.9}{31}$ $\frac{11.0}{50}$

$\frac{11.0}{100}$ $\frac{11.8}{50}$ $\frac{12.2}{39}$ $\frac{13.0}{28}$ $\frac{8.4}{14}$ $\frac{6.8}{14}$ $\frac{11.1}{29}$ $\frac{11.0}{50}$

$\frac{12.8}{100}$ $\frac{13.9}{87}$ $\frac{14.8}{50}$ $\frac{14.2}{30}$ $\frac{8.6}{13}$ $\frac{7.3}{13}$ $\frac{11.1}{28}$ $\frac{11.5}{50}$ $\frac{10.1}{100}$

$\frac{13.6}{100}$ $\frac{15.9}{50}$ $\frac{15.9}{32}$ $\frac{9.3}{11}$ $\frac{8.5}{88}$ $\frac{13.1}{13}$ $\frac{13.5}{32}$ $\frac{12.8}{42}$ $\frac{12.5}{50}$ $\frac{12.2}{100}$

21.41 F.L.

F.L. 22.62

$\frac{12.5}{100}$ $\frac{15.4}{50}$ $\frac{16.48}{28}$ $\frac{15.9}{27}$ $\frac{10.0}{11}$ $\frac{9.8}{14}$ $\frac{15.2}{28}$ $\frac{15.27}{26}$ $\frac{13.8}{50}$ $\frac{12.6}{100}$

$\frac{6.5}{50}$ $\frac{6.4}{40}$ $\frac{7.0}{27}$ $\frac{8.8}{24-20}$ $\frac{5.0}{14}$ $\frac{4.9}{14}$ $\frac{8.6}{27}$ $\frac{9.0}{100}$ $\frac{8.0}{94}$ $\frac{7.5}{100}$

$\frac{4.4}{50}$ $\frac{4.0}{32}$ $\frac{7.1}{24-20}$ $\frac{4.9}{13}$ $\frac{4.5}{13}$ $\frac{4.9}{13}$ $\frac{7.0}{20-24}$ $\frac{3.6}{34}$ $\frac{3.9}{50}$

$\frac{6.1}{50}$ $\frac{6.1}{29}$ $\frac{6.7}{19-24}$ $\frac{4.7}{13}$ $\frac{5.0}{14}$ $\frac{6.9}{20-26}$ $\frac{3.8}{36}$ $\frac{3.7}{50}$

$\frac{5.8}{50}$ $\frac{6.0}{33}$ $\frac{6.7}{20-25}$ $\frac{5.5}{16}$ $\frac{4.9}{12}$ $\frac{4.8}{15}$ $\frac{6.8}{21}$ $\frac{6.7}{40}$ $\frac{6.0}{50}$

$\frac{5.8}{50}$ $\frac{6.0}{33}$ $\frac{6.6}{27}$ $\frac{6.3}{18}$ $\frac{4.6}{13}$ $\frac{4.6}{14}$ $\frac{6.5}{20}$ $\frac{5.7}{33}$ $\frac{5.7}{50}$

$\frac{5.0}{50}$ $\frac{5.3}{33}$ $\frac{5.9}{27}$ $\frac{5.8}{19}$ $\frac{4.0}{13}$ $\frac{4.1}{14}$ $\frac{6.0}{20}$ $\frac{6.1}{25}$ $\frac{5.6}{31}$ $\frac{4.4}{50}$

Sta.

+

K

-

Elev.

932.83

15

3.3

29.5

+50

2.6

30.2

T.P.

7.32

937.47

2.68

30.15

16

6.5

31.0

1

+50

6.2

31.3

17

5.6

31.9

+50

5.2

32.3

18

4.8

32.7

+50

4.4

33.1

+75

4.1

33.4

19

4.0

33.5

+50

3.6

33.9

20

3.1

34.4

E

$$\begin{array}{r} 3.8 \\ 50 \end{array} \begin{array}{r} 4.5 \\ 33 \end{array} \begin{array}{r} 5.1 \\ 26 \end{array} \begin{array}{r} 5.0 \\ 18 \end{array} \begin{array}{r} 3.5 \\ 13 \end{array} 3.3 \begin{array}{r} 3.6 \\ 16 \end{array} \begin{array}{r} 5.3 \\ 19 \end{array} \begin{array}{r} 5.3 \\ 30 \end{array} \begin{array}{r} 3.5 \\ 50 \end{array}$$

$$\begin{array}{r} 1.3 \\ 50 \end{array} \begin{array}{r} 1.6 \\ 32 \end{array} \begin{array}{r} 3.3 \\ 26 \end{array} \begin{array}{r} 4.2 \\ 21 \end{array} \begin{array}{r} 2.7 \\ 19 \end{array} 13 \begin{array}{r} 2.6 \\ 14 \end{array} \begin{array}{r} 4.0 \\ 17 \end{array} \begin{array}{r} 4.0 \\ 24 \end{array} \begin{array}{r} 2.7 \\ 32 \end{array} \begin{array}{r} 2.2 \\ 50 \end{array}$$

$$\begin{array}{r} 3.2 \\ 50 \end{array} \begin{array}{r} 4.0 \\ 32 \end{array} \begin{array}{r} 7.9 \\ 21 \end{array} \begin{array}{r} 7.9 \\ 16 \end{array} \begin{array}{r} 6.9 \\ 13 \end{array} 6.5 \begin{array}{r} 6.9 \\ 14 \end{array} \begin{array}{r} 7.9 \\ 18 \end{array} \begin{array}{r} 7.0 \\ 26 \end{array} \begin{array}{r} 5.7 \\ 32 \end{array} \begin{array}{r} 4.9 \\ 50 \end{array}$$

$$\begin{array}{r} 0.5 \\ 50 \end{array} \begin{array}{r} 1.4 \\ 32 \end{array} \begin{array}{r} 6.0 \\ 24 \end{array} \begin{array}{r} 7.5 \\ 19 \end{array} \begin{array}{r} 6.5 \\ 16 \end{array} 6.2 \begin{array}{r} 6.6 \\ 13 \end{array} \begin{array}{r} 7.6 \\ 17 \end{array} \begin{array}{r} 5.0 \\ 20 \end{array} \begin{array}{r} 5.1 \\ 30 \end{array} \begin{array}{r} 5.1 \\ 50 \end{array}$$

$$\begin{array}{r} +0.3 \\ 50 \end{array} \begin{array}{r} 0.5 \\ 32 \end{array} \begin{array}{r} 7.0 \\ 21 \end{array} \begin{array}{r} 5.8 \\ 17 \end{array} \begin{array}{r} 5.8 \\ 12 \end{array} 5.6 \begin{array}{r} 6.0 \\ 13 \end{array} \begin{array}{r} 7.0 \\ 17 \end{array} \begin{array}{r} 3.7 \\ 21 \end{array} \begin{array}{r} 4.1 \\ 32 \end{array} \begin{array}{r} 4.3 \\ 37 \end{array} \begin{array}{r} 4.3 \\ 50 \end{array}$$

$$\begin{array}{r} 1.4 \\ 50 \end{array} \begin{array}{r} 2.3 \\ 31 \end{array} \begin{array}{r} 5.6 \\ 23 \end{array} \begin{array}{r} 6.6 \\ 20 \end{array} \begin{array}{r} 5.5 \\ 17 \end{array} \begin{array}{r} 5.5 \\ 13 \end{array} 5.2 \begin{array}{r} 5.6 \\ 15 \end{array} \begin{array}{r} 6.5 \\ 17 \end{array} \begin{array}{r} 3.6 \\ 19 \end{array} \begin{array}{r} 4.0 \\ 32 \end{array} \begin{array}{r} 3.7 \\ 37 \end{array} \begin{array}{r} 4.3 \\ 44 \end{array} \begin{array}{r} 4.3 \\ 50 \end{array}$$

$$\begin{array}{r} 2.6 \\ 50 \end{array} \begin{array}{r} 3.3 \\ 31 \end{array} \begin{array}{r} 5.2 \\ 24 \end{array} \begin{array}{r} 6.2 \\ 17 \end{array} \begin{array}{r} 5.0 \\ 13 \end{array} 4.8 \begin{array}{r} 5.1 \\ 14 \end{array} \begin{array}{r} 6.2 \\ 20 \end{array} \begin{array}{r} 5.2 \\ 24 \end{array} \begin{array}{r} 5.8 \\ 32 \end{array} \begin{array}{r} 5.8 \\ 50 \end{array}$$

$$\begin{array}{r} 3.4 \\ 50 \end{array} \begin{array}{r} 4.1 \\ 31 \end{array} \begin{array}{r} 5.9 \\ 22 \end{array} \begin{array}{r} 4.7 \\ 18 \end{array} \begin{array}{r} 4.7 \\ 13 \end{array} 4.4 \begin{array}{r} 4.6 \\ 14 \end{array} \begin{array}{r} 5.8 \\ 19 \end{array} \begin{array}{r} 5.8 \\ 25 \end{array} \begin{array}{r} 5.2 \\ 32 \end{array} \begin{array}{r} 5.4 \\ 50 \end{array}$$

$$\begin{array}{r} 3.2 \\ 50 \end{array} \begin{array}{r} 4.0 \\ 31 \end{array} \begin{array}{r} 5.6 \\ 22 \end{array} \begin{array}{r} 4.3 \\ 18 \end{array} \begin{array}{r} 4.3 \\ 13 \end{array} 4.1 \begin{array}{r} 4.6 \\ 14 \end{array} \begin{array}{r} 5.6 \\ 20 \end{array} \begin{array}{r} 5.1 \\ 24 \end{array} \begin{array}{r} 4.6 \\ 30 \end{array} \begin{array}{r} 4.6 \\ 50 \end{array}$$

$$\begin{array}{r} 2.8 \\ 50 \end{array} \begin{array}{r} 3.6 \\ 32 \end{array} \begin{array}{r} 5.4 \\ 22 \end{array} \begin{array}{r} 4.2 \\ 18 \end{array} \begin{array}{r} 4.2 \\ 14 \end{array} 4.0 \begin{array}{r} 4.3 \\ 14 \end{array} \begin{array}{r} 5.4 \\ 18 \end{array} \begin{array}{r} 5.4 \\ 22 \end{array} \begin{array}{r} 4.4 \\ 28 \end{array} \begin{array}{r} 3.3 \\ 38 \end{array} \begin{array}{r} 3.0 \\ 50 \end{array}$$

$$\begin{array}{r} 1.6 \\ 50 \end{array} \begin{array}{r} 2.3 \\ 32 \end{array} \begin{array}{r} 4.4 \\ 24 \end{array} \begin{array}{r} 4.9 \\ 16 \end{array} \begin{array}{r} 4.0 \\ 12 \end{array} 3.6 \begin{array}{r} 3.9 \\ 13 \end{array} \begin{array}{r} 4.9 \\ 18 \end{array} \begin{array}{r} 2.0 \\ 22 \end{array} \begin{array}{r} 2.5 \\ 33 \end{array} \begin{array}{r} 2.5 \\ 50 \end{array}$$

E

$$\begin{array}{r} 3.5 \\ 31 \end{array} \begin{array}{r} 4.6 \\ 13 \end{array} \begin{array}{r} 4.8 \\ 17 \end{array} \begin{array}{r} 3.3 \\ 22 \end{array} \begin{array}{r} 4.6 \\ 31 \end{array} \begin{array}{r} 4.5 \\ 41 \end{array} \begin{array}{r} 5.5 \\ 50 \end{array} \begin{array}{r} 5.3 \\ 82 \end{array} \begin{array}{r} 5.7 \\ 100 \end{array} \begin{array}{r} 5.6 \\ 150 \end{array} \begin{array}{r} 5.6 \\ 200 \end{array}$$

E

Sta.	+	π	-	Elev.
		937.47		
20 + 35			2.9	34.6
+70			2.8	34.7
T.P.	6.73	941.32	2.88	934.59
21			6.5	34.8
+33			6.3	35.0
+66			6.3	35.0
22			6.1	35.2
+33			6.0	35.3
+66			5.7	35.6
23			5.2	36.1
+42			4.6	36.7
24			3.8	37.5
+50			3.0	38.3
T.P.	6.75	944.87	3.20	938.12

£

310

2.9 $\frac{3.3}{13}$ $\frac{4.4}{17}$ $\frac{4.9}{24}$ $\frac{5.2}{32}$ $\frac{6.4}{43}$ $\frac{6.2}{50}$ $\frac{6.4}{100}$ $\frac{6.5}{150}$ $\frac{5.8}{188}$ $\frac{4.9}{200}$

309

2.8 $\frac{3.2}{14}$ $\frac{4.4}{17}$ $\frac{5.8}{28}$ $\frac{6.0}{35}$ $\frac{6.6}{50}$ $\frac{6.6}{100}$ $\frac{6.3}{150}$ $\frac{6.0}{171}$ $\frac{3.5}{200}$

310

6.5 $\frac{6.7}{13}$ $\frac{8.7}{21}$ $\frac{9.9}{35}$ $\frac{10.3}{50}$ $\frac{10.3}{100}$ $\frac{9.9}{150}$ $\frac{7.1}{183}$

309

6.3 $\frac{6.4}{13}$ $\frac{10.1}{27}$ $\frac{10.2}{50}$ $\frac{10.4}{100}$ $\frac{8.8}{150}$

30.6

6.3 $\frac{6.6}{13}$ $\frac{9.9}{23}$ $\frac{10.5}{34}$ $\frac{10.5}{50}$ $\frac{10.4}{81}$ $\frac{10.7}{84}$ $\frac{10.3}{86}$ $\frac{10.1}{100}$ $\frac{9.6}{120}$ $\frac{6.6}{150}$

6.1 $\frac{6.5}{14}$ $\frac{10.0}{25}$ $\frac{10.3}{50}$ $\frac{10.5}{77}$ $\frac{10.0}{100}$ $\frac{7.4}{137}$

6.0 $\frac{6.3}{13}$ $\frac{10.2}{26}$ $\frac{10.3}{50}$ $\frac{10.5}{71}$ $\frac{9.7}{100}$ $\frac{8.8}{116}$

5.7 $\frac{6.1}{13}$ $\frac{9.9}{25}$ $\frac{10.1}{50}$ $\frac{9.3}{100}$ $\frac{7.5}{110}$

5.2 $\frac{5.6}{13}$ $\frac{9.1}{26}$ $\frac{9.4}{50}$ $\frac{8.6}{88}$ $\frac{7.1}{100}$

4.6 $\frac{4.9}{13}$ $\frac{7.7}{26}$ $\frac{8.2}{38}$ $\frac{7.9}{50}$ $\frac{6.2}{84}$ $\frac{5.4}{88}$ $\frac{4.9}{100}$

3.8 $\frac{4.1}{13}$ $\frac{6.0}{22}$ $\frac{4.9}{33}$ $\frac{4.0}{50}$ $\frac{2.5}{76}$ $\frac{1.5}{88}$ $\frac{0.7}{100}$

3.0 $\frac{3.1}{13}$ $\frac{5.2}{21}$ $\frac{4.6}{32}$ $\frac{3.3}{50}$ $\frac{1.7}{86}$ $\frac{0.7}{100}$

£

Sta.	+	π	-	Elev.
		944.87		
25			5.4	39.5
+ 55	Sec 4th - 24" x 56' Conc.		4.0	40.9
26			3.0	41.9
B.M.	1.53		1.53	943.34
T.P.	3.30	939.72	8.45	936.42
T.P.	3.15	935.94	6.93	932.79
T.P.	3.81	932.49	7.26	928.68
B.M.			3.83	928.66 (928.63)

Note:

Soundings taken at:

Sta.	dist. Lt.	
11 + 75	37'	} Struck Gravel Down 12'
12 + 00	35'	

4

5.4 $\frac{5.6}{13}$ $\frac{8.9}{25}$ $\frac{8.2}{36}$ $\frac{7.3}{50}$ $\frac{5.7}{91}$ $\frac{5.1}{100}$

4

35.4

4

35.25

6.5 $\frac{7.4}{33}$ $\frac{8.4}{31}$ $\left(\frac{9.73}{28}\right)$ $\frac{8.7}{28}$ $\frac{4.3}{13}$ $\frac{4.1}{13}$ $\frac{8.9}{28}$ $\left(\frac{9.62}{28}\right)$ $\frac{8.6}{50}$ $\frac{7.1}{83}$ $\frac{5.5}{100}$

4.0 $\frac{6.5}{73}$ $\frac{7.4}{64}$ $\frac{8.3}{58}$ $\frac{8.6}{50}$ $\frac{8.5}{40}$ $\frac{7.5}{27}$ $\frac{3.6}{15}$ $\frac{3.0}{14}$ $\frac{5.5}{23}$ $\frac{6.9}{27}$ $\frac{8.4}{32}$ $\frac{9.4}{35}$ $\frac{8.7}{50}$ $\frac{7.1}{77}$ $\frac{5.9}{100}$

Spike T.P. 100' Rt. 26 + 25 (S.E. Cor. Int. Co. Rd. "B")

Spike 24" Cottonwood 115' Lt. 11 + 50

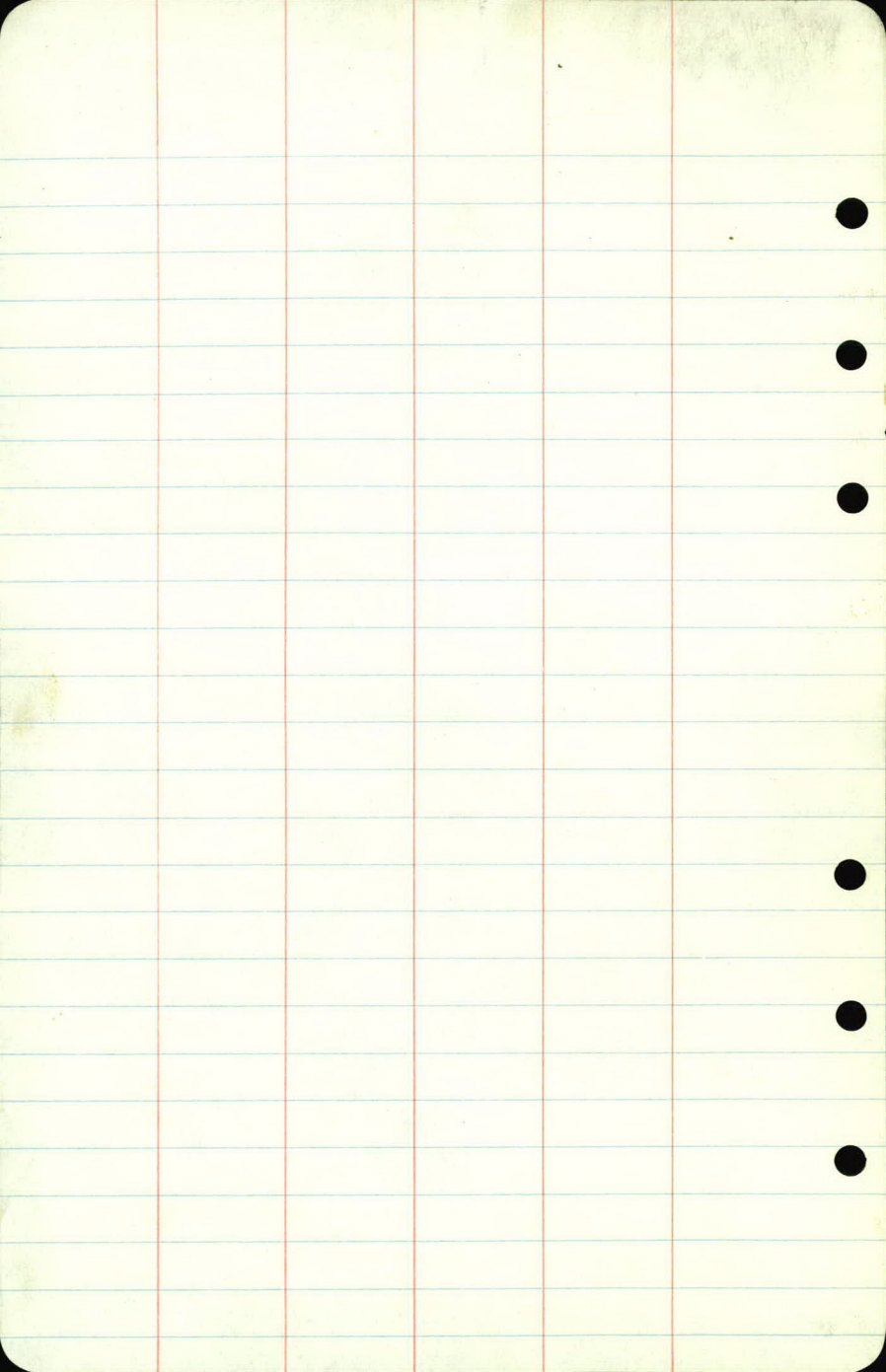
Soundings - 8-15-40
Sta 12+00 - 37' Rt.

struck Fine Sand at 20'

struck Gravel or Stone at 22'

By R.O. Pease.

Per W.J.B.



①
Topography

WALNUT ST.

4/30/90

16

14

14

15

13

15

14

13

14

13

14

14

12

12

14

11

14

14

14

14

10

14

15

+56 Ent
15"x24' G.M. 22
+32 Swamp 24

+00 Swamp 26-68

+27 Swamp 40-100

+69 Swamp 30

+89 Ent.
15"x24' G.M. 21'

+50 End Swamp 28-68

+00 Swamp 28-64

+45 Swamp 29

15'

+14 Cor. Cooler to 45

23 13 14

22 14 13

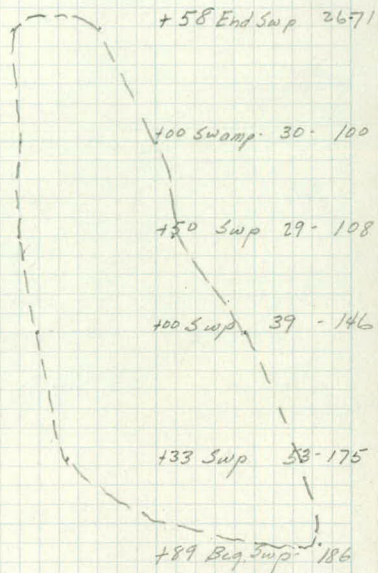
21 13 14

20 13 13

19 14 14

18 14 14

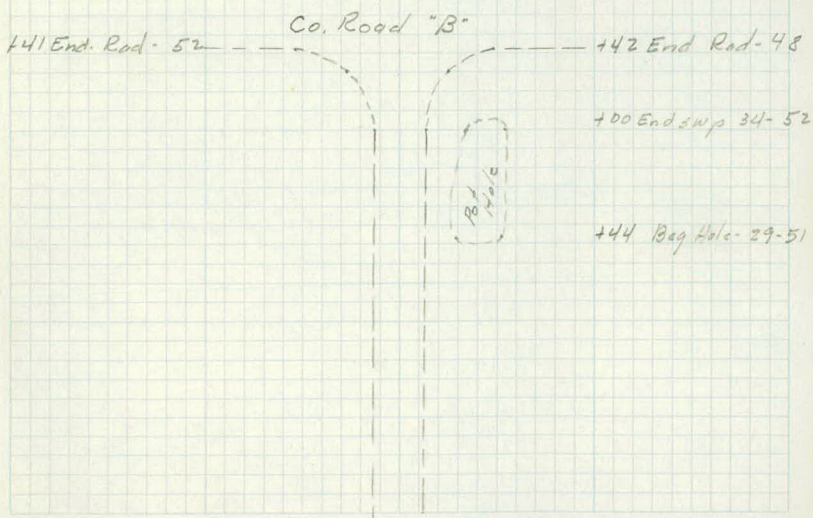
17 14 14



	28	+ 30	24
26	13		13

25	14		14
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24	13		13
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WALNUT ST.

Slope Stokes

Completed. 9-19-40

3 Pages.

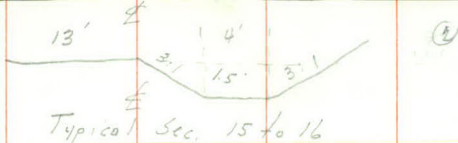
Party:

R. Pease
A. Meescher
L. Goldberg
C. Fewer.



B.M	596	934.59		928.63	
15				29.5	5.1
+50				30.2	4.4 5.9
16				29.4	5.2 5.9
+50				29.5	5.1
17				29.6	5.0
+50				29.7	4.9
18				29.8	4.8
	6.27	939.23	1.63	932.96	
+50				29.9	4.3
+75				29.95	4.28
19				30.0	4.2
+50				30.1	4.1
20				30.2	4.0

Ditch



Spk. 24" Cott. 115' Lt. 11450

52

Fill Stake —

44

5.9
DCO.0
21.5

37

4.5
DCO.7
23.6

34

2.0
C 2.1
31.4

23 194
2 6
159 239
1

27

4.1
SOC 3.9
35.6

4.9
33
2.2 24.8
7.8

23

4.1
SOC 3.8
36.2

4.8
1.8
2.0 26.0
9.0
4.2

18

2.5
C 2.3
32.7

9.2
6.1
3.2
9.6

61

7.0
C 2.3
33.5

9.3
5.9
3.4
3

59

6.9
C 2.4
34.4

9.2
5.8
3.4
27.2

58

5.4
C 3.8
38.6

9.1
5.6
3.5
28.1

54

4.1
C 5.9
43.1

9.3
4.9
4.1
29.3

49

6.0
C 3.3
38.3

4

939.23

20.35

30.27

8.76

170

30.34

⁸
8.89

21

30.4

8.8

133

30.47

^{8.8}
8.76

150

30.5

8.7

$$\begin{array}{r} 9.0 \\ 4.7 \\ \hline 4.3 \\ 2 \end{array}$$

$$\begin{array}{r} 12.9 \\ 12 \\ \hline 29.9 \end{array}$$

$$4/7$$

$$\begin{array}{r} 7.6 \\ DC 1.6 \\ \hline 34.7 \end{array}$$

$$\begin{array}{r} 8.8 \\ 4.6 \\ \hline 4.2 \end{array}$$

$$\begin{array}{r} 12.6 \\ 12 \\ \hline 29.6 \end{array}$$

$$4/6$$

$$\begin{array}{r} 7.7 \\ DC 1.2 \\ \hline 33.2 \end{array}$$

$$\begin{array}{r} 8.8 \\ 4.5 \\ \hline 4.3 \end{array}$$

$$\begin{array}{r} 12.9 \\ 12 \\ \hline 29.9 \end{array}$$

$$4/5$$

$$\begin{array}{r} 7.7 \\ SD 1.1 \\ \hline 33.2 \end{array}$$

$$\begin{array}{r} 8.6 \\ 4.5 \\ \hline 4.1 \end{array}$$

$$\begin{array}{r} 13.5 \\ 17 \\ \hline 30.5 \end{array}$$

$$4/3$$

$$\begin{array}{r} 8.1 \\ SD 0.7 \\ \hline 38.6 \end{array}$$

$$\begin{array}{r} 4.6 \\ 3 \\ \hline 13.2 \end{array}$$

$$30.2$$

$$4/3$$

$$\begin{array}{r} 8.2 \\ SD 0.5 \\ \hline 31.7 \end{array}$$

