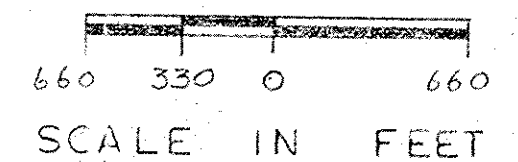


LOCATION & OWNERSHIP MAP
BAY TOWNSHIP



LEGEND

PROPOSED IMPROVEMENT
 HIGHWAYS
 PROPERTY LINE
 WATERSHED
 SECTION CENTER
 ACRES IN WATERSHED
 ACRES OWNED
 SECTION CORNER
 STREAM LARGE
 DITCH 4' DEEP & OVER
 DITCH LESS THAN 4'

BENCH MARK DESCRIPTION

BM-1 STA. 0+44 TOP OF SPIKE IN E. SIDE OF TELEPHONE POLE W. SIDE OF MULCAHY RD 80' S. OF DITCH
M.S.L. ELEV. 579.27

BM-2 TOP OF SPIKE IN S. SIDE OF 42" ASH TREE N. SIDE OF DITCH STA. 10+40
M.S.L. ELEV. 577.89

BM-3 TOP OF BELL ON W. END OF CONCRETE 10" CULVERT FOR FARM DRIVE STA. 22+36
M.S.L. ELEV. 576.73

BM-4 TOP OF BELL ON S. END OF CONCRETE 12" CULVERT FOR DRIVE STA. 34+08
M.S.L. ELEV. 576.42

BM-5 TOP OF N. END OF 18" C.M.P. FARM DRIVE CULVERT STA. 44+70
M.S.L. ELEV. 574.10

SUPPORTING DATA

DRAINAGE AREA ----- 154 ACRES
 DESIGN COEFFICIENT --- Q_c CURVE
 LAND USE --- GENERAL FARMING
 SOIL TYPE --- TOLEDO, FULTON
 LAND SLOPE --- 0-2%
 TYPE DRAINAGE --- SURFACE

- SPECIFICATIONS**
- I. **EXCAVATION**
 A. Bottom Width: The bottom width shall be THREE (3) feet between sta. 0+00 and sta. 44+70
 B. Bank Slopes: The ditch bank slopes are to be constructed to at least SIX (6) feet between sta. 44+70 and sta. 52+00
 C. Alignment: The centerline of the improvement shall be approximately the centerline of the existing ditch unless otherwise indicated on the plan.
 D. Total excavation: The total excavation consists of 22.84 cubic yards of earth over 6,634 linear feet of ditch.
 E. Excess Yardage: No extra compensation will be paid for such excavation in excess of yards herein estimated. This estimate was made from cross-sections of the proposed ditch. The contractor should view the proposed work to his own satisfaction.
- II. **CLEARING**
 All trees and/or brush which would interfere with the excavation operation must be cleared from the ditch right-of-way ahead of the construction operations. Stumps on the berm should be removed or cut as low as cutting tools permit. Cleared debris should be disposed of by burning or removed from the right-of-way.
- III. **BERM WIDTHS**
 Unless otherwise noted the berms will have the following minimum widths: four (4) feet wide for ditches up to four (4) foot depth; six (6) feet wide for four to six foot depth; and ten (10) foot wide for ditches over six feet in depth.
- IV. **SPILL BANKS**
 Excavated material should be deposited and spread along the field side of the ditch, as determined, except where used for levees, and in overflow areas with timber or brush cover. Slope of the spoil after spreading should be at least 3:1 on the channel side and at least 4:1 on the field side. The height of the spoil should not exceed one foot above average ground level. Openings shall be provided for surface water to enter the ditch.
- V. **PILE OUTLETS**
 Landowners shall protect their tile outlets with a section of continuous rigid pipe and flap-gates or grid to exclude rodents. For details of construction see your Soil Conservation Technician.
- VI. **SURFACE WATER OUTLETS**
 Whenever a lateral or a surface ditch enters the main ditch at a higher elevation protection from erosion should be provided by drop structures, pipe drops, other suitable structure or grassed waterway. For assistance on outlets see your Soil Conservation Technician.
- VII. **DITCH BANK SEEDING**
 The ditch banks will be seeded, immediately after each day's work, to tall fescue (Kentucky 31 or Alta) at the rate of 25 lbs. per acre. A minimum of 500 lbs. of 10-10-10 fertilizer or equivalent will be applied. 1.7 acres of ditch bank seeding will be required.

HYDRAULIC CALCULATION

MULCAHY DITCH CHANNEL FLOW $V = 1.486 R^{2/3} S^{1/2}$
 MAXIMUM VELOCITY $N = 5$ FPS

REACH	STA.	0+00	22+36	27+38	44+70
TO STA.		22+21	27+18	44+54	52+00
DRAINAGE AREA AC.		59	5	40	55
Q _c FLOW C.F.S.		7	1	5	7
N		.04	.04	.04	.04
SLOPE-S FT. FT.		.0010	.0013	.0009	.0005
S 1/2		.0316	.0361	.0300	.0224
Q/S 1/2 = KD		221	27	166	312
KD VALUE USED		233	39	171	319
SIDE SLOPE		2:1	2:1	2:1	2:1
BOTTOM WIDTH FT.		3'	3'	3'	6'
DEPTH FT.		1.3	.5	1.1	1.5
AREA SQ. FT.		7.29	2.02	5.59	8.52
VELOCITY Q/A FPS.		.96	.49	.89	.82

CONSTRUCTION DATA

STATION	GRADE %	BOTTOM WIDTH	SIDE SLOPE	CUBIC YARDS	AVERAGE DEPTH
0+44	0.10	3'	2:1	842	2.6'
27+18	0.13	3'	2:1	403	2.4
44+54	0.09	3'	2:1	494	3.0
52+00	0.05	6'	2:1	161	2.0
PORTION OF MULCAHY DITCH				1,900	
				384	
				2,284	

- VIII. **CULVERTS**
 Existing culverts will be cleaned and the inverts (flow line) lowered to correspond to the proposed ditch grade as indicated on the plan.
- STA. 0+44 CLEANED
 - STA. 7+62 REPLACE WITH 15" R/C OR EQUIVALENT
 - STA. 22+21 REMOVE
 - STA. 27+18 CLEANED
 - STA. 34+08 REMOVE
 - STA. 44+54 CLEANED
 - MULCAHY DITCH
 - STA. 0+00 CLEANED
 - STA. 11+34 CLEANED

HEADLOSS IN CULVERTS

$H = \frac{V^2}{2g} (1 + KE + KPL)$

MULCAHY DITCH	STATION	0+44	7+62	27+18	44+54
	DRAINAGE AREA AC.	59	30	5	40
	Q _c FLOW C.F.S.	7	3.8	.63	.5
	DIAMETER IN.	24"	15"	10"	18"
	TYPE	R/C	R/C	R/C	CMP
	N	.013	.013	.013	.025
	LENGTH FT.	44	16'	20'	16'
	X. SEC. AREA SQ. FT.	3.14	1.23	.545	1.77
	KP	.012	.023	.040	.067
	KPL	.528	.368	.80	1.07
	KE	.50	.50	.50	.50
	VELOCITY FPS.	22	15	12	2.8
	HEADLOSS FT.	.15	.28	.05	.31

THIS DITCH PLAN HAS BEEN APPROVED BY
John D. Pappas 11/13/68
 OTTAWA COUNTY ENGINEER DATE

SURVEYED - 3-28-68 D. SOMMER
 E. CAMPBELL
 D. OFFER

LOCATION - S.W. 1/4 OF S.E. 1/4 AND E. 1/2 OF S.W. 1/4 OF SECTION 8 T. 6 N. R. 16 E. BAY TWP OTTAWA COUNTY OHIO.

REFERENCE - FIELD NOTES ON FILE IN OTTAWA SOIL & WATER CONSERVATION OFFICE 149 CHURCH STREET OAK HARBOR OHIO.

ENGINEERING JOB CLASS II

DITCH IMPROVEMENT PLAN
 HOPFINGER DITCH GROUP #33
 BAY TOWNSHIP
 OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

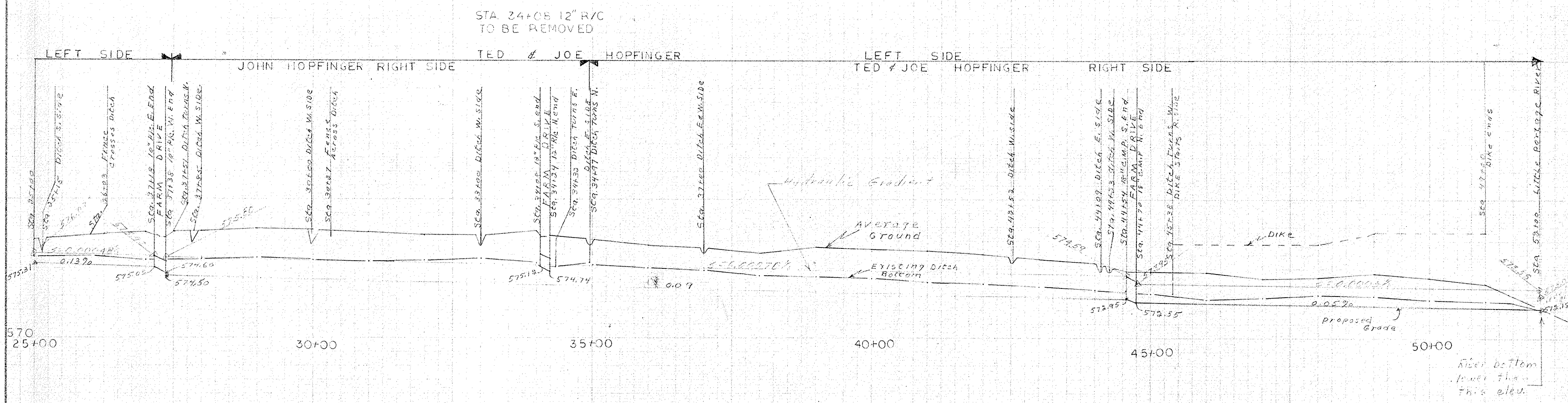
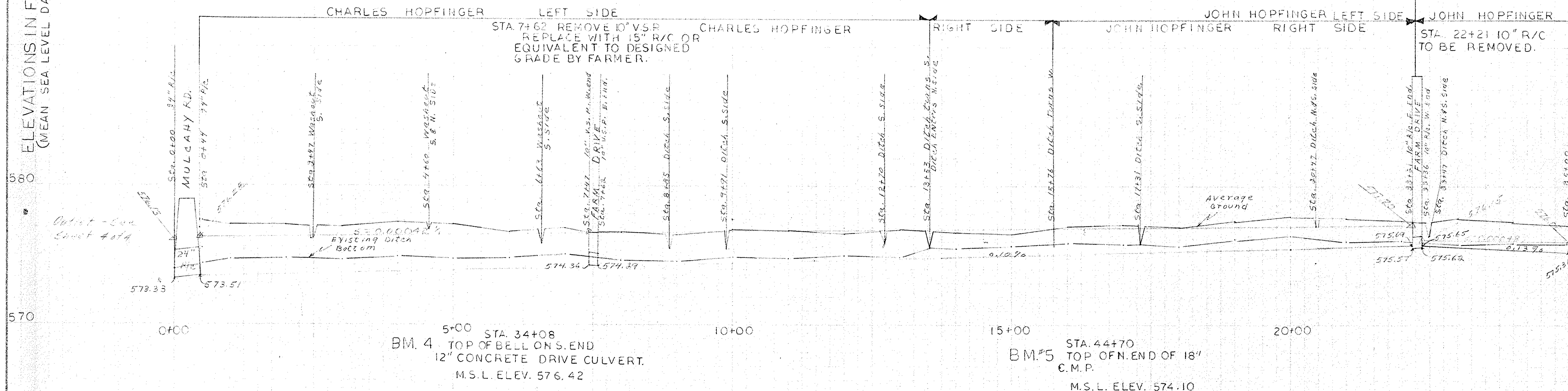
Date 3/68
 Designed Donald Offer 3/68
 Drawn Donald Offer 3/68
 Title Civil Engng
 Checked _____
 Sheet _____
 Drawing No. 34-01-83-68-4

BM-1 STA. 0+44 SPIKE IN POLE
W. SIDE OF RD 60'S OF
DITCH.
MSL. ELEV. 579.27

BM-2 STA. 10+40 SPIKE S. SIDE
TREE N. SIDE OF DITCH.
MSL. ELEV. 577.89

BM-3 STA. 22+36 TOP OF W. END OF
10" CONCRETE DRIVE
CULVERT.
MSL. ELEV. 576.73

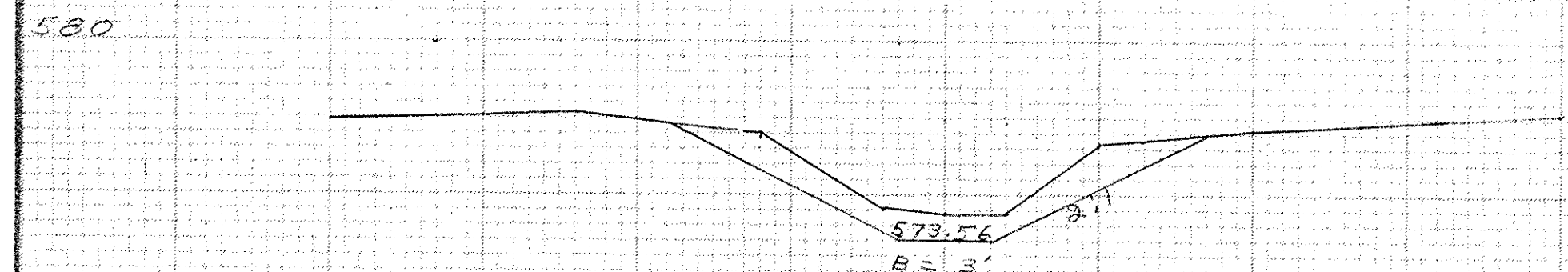
ELEVATIONS IN FEET
(MEAN SEA LEVEL DATUM)



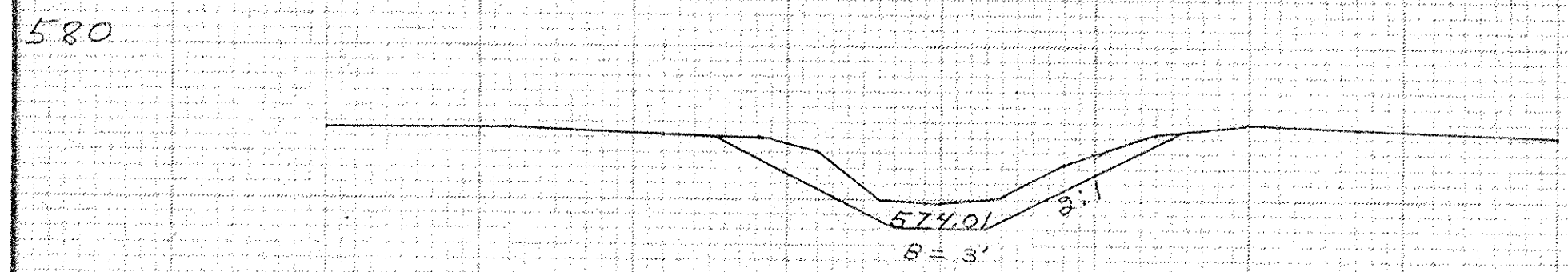
DITCH IMPROVEMENT PLAN HOPFINGER DITCH BAY TOWNSHIP OTTAWA COUNTY, OHIO.			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed	Donald G. Pfenner	Date	4/68
Approved	Richard K. Rouse	Title	Land Eng.
Drawn	Donald G. Pfenner	Date	4/68
Traced		Sheet	No. 3
Checked		Drawing No.	34-01-83-68-4

WATER FLOWS EAST

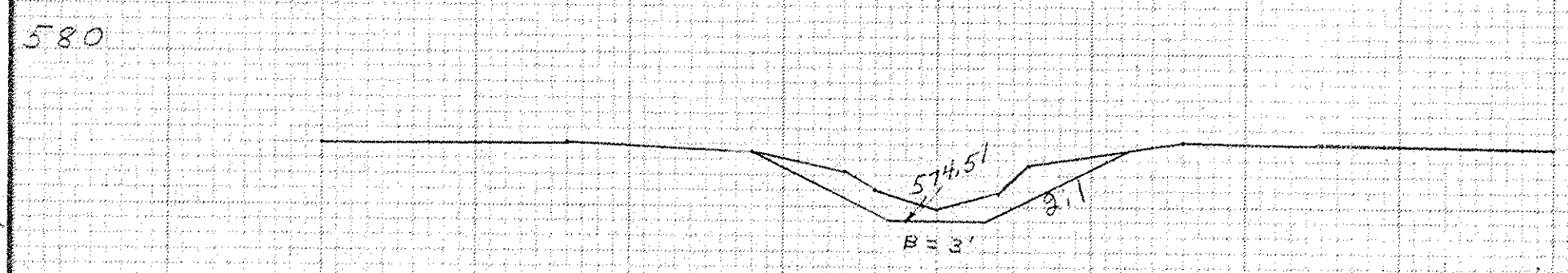
WATER FLOWS WEST & NORTH



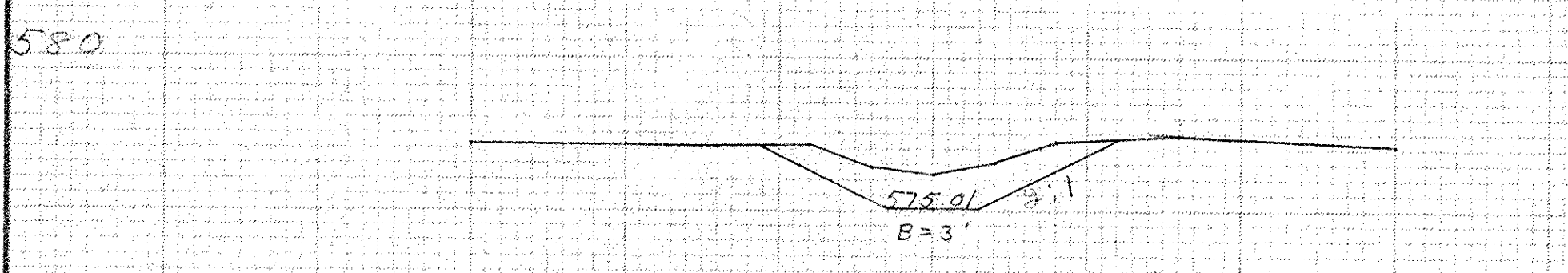
$.62 \text{ sq. in.} \times .93 = .58 \text{ cu. yds. lin. ft.}$
CROSS SECTION 0+50



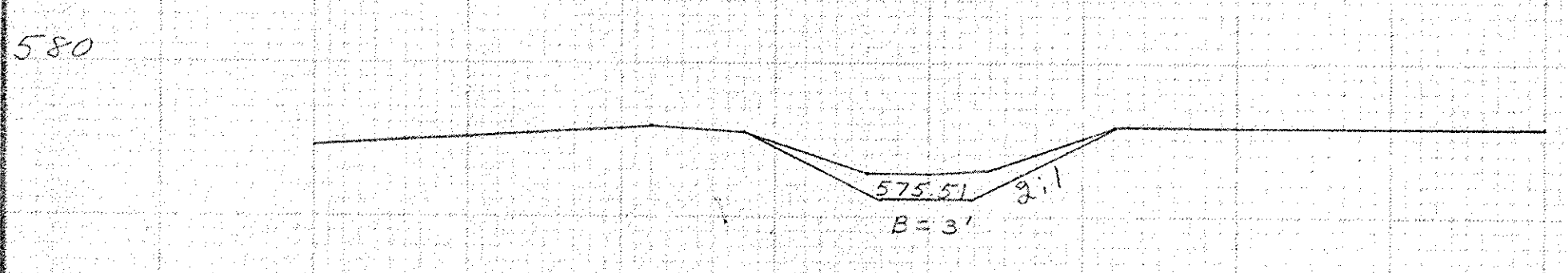
$.44 \text{ sq. in.} \times .93 = .41 \text{ cu. yds. lin. ft.}$
CROSS SECTION 5+00



$.32 \text{ sq. in.} \times .93 = .30 \text{ cu. yds. lin. ft.}$
CROSS SECTION 10+00

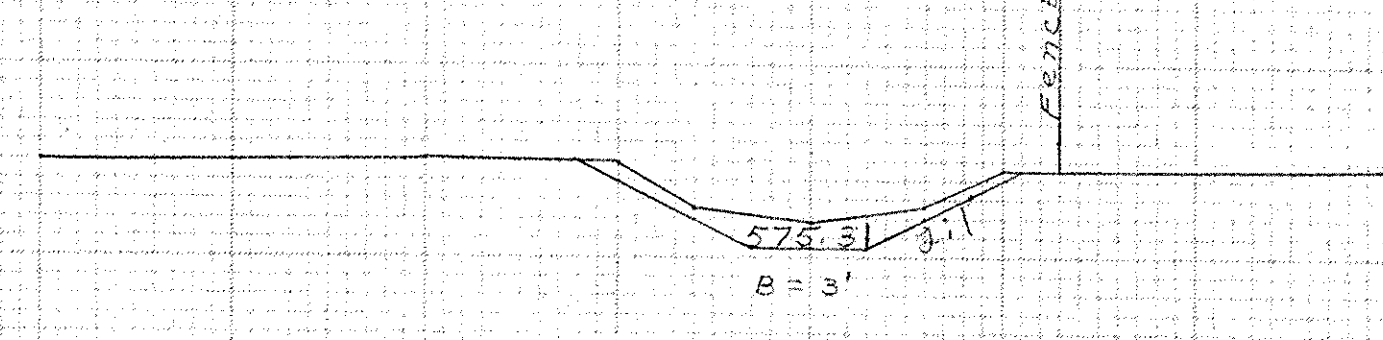


$.44 \text{ sq. in.} \times .93 = .41 \text{ cu. yds. lin. ft.}$
CROSS SECTION 15+00

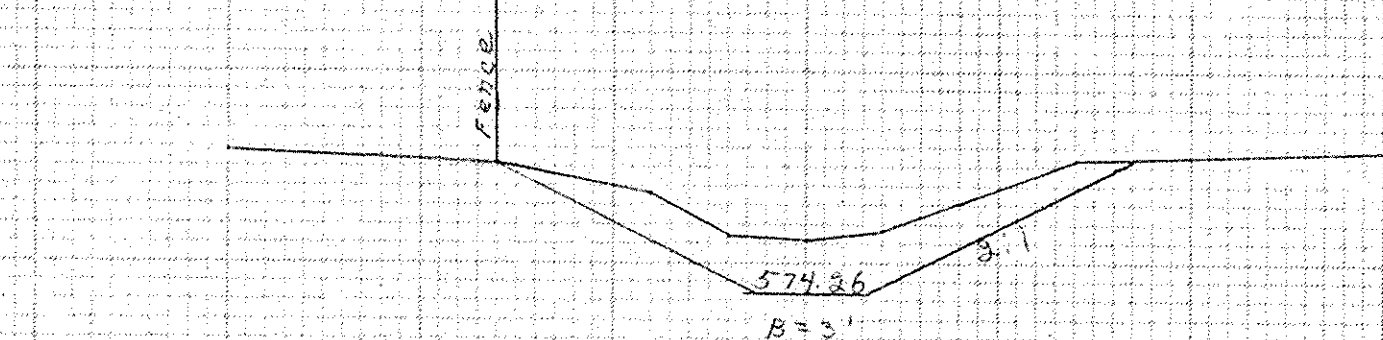


$.37 \text{ sq. in.} \times .93 = .35 \text{ cu. yds. lin. ft.}$
CROSS SECTION 20+00

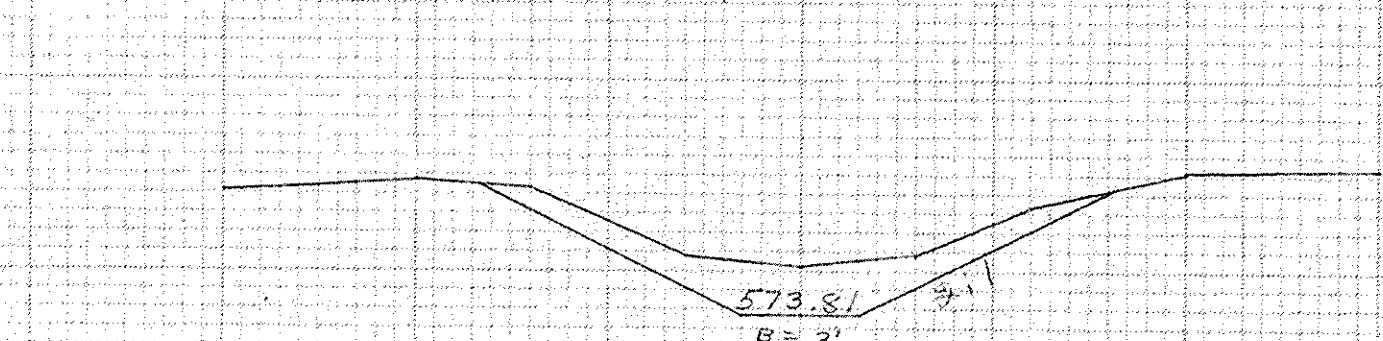
GRADE BREAKS



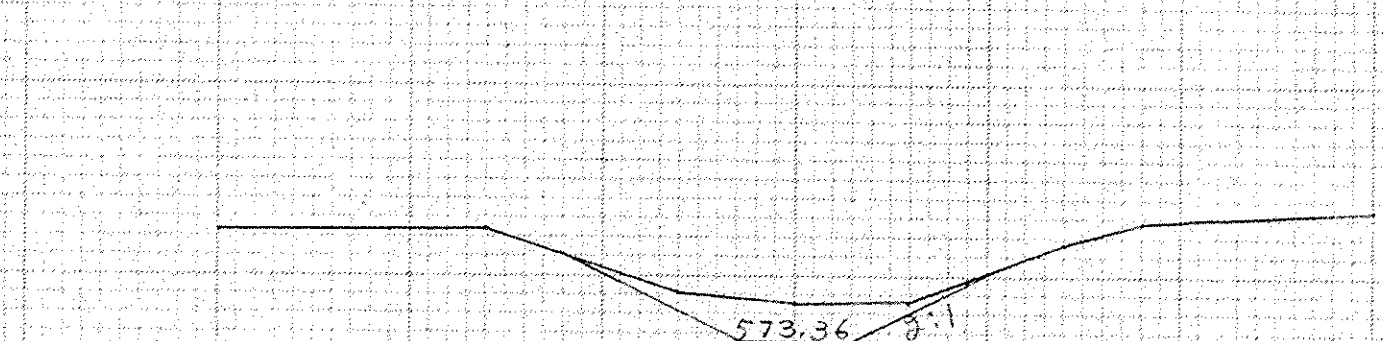
$.35 \text{ sq. in.} \times .93 = .33 \text{ cu. yds. lin. ft.}$
CROSS SECTION 25+00



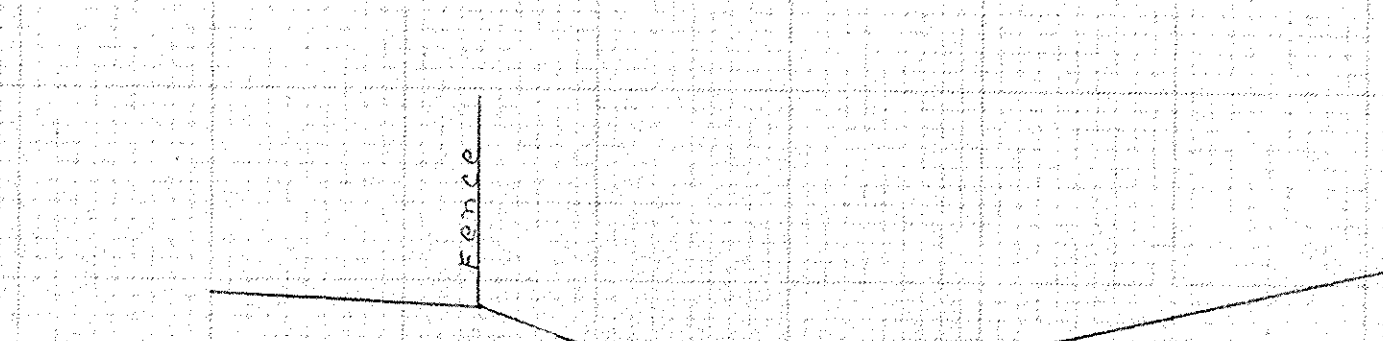
$.71 \text{ sq. in.} \times .66 \text{ cu. yds. lin. ft.}$
CROSS SECTION 30+00



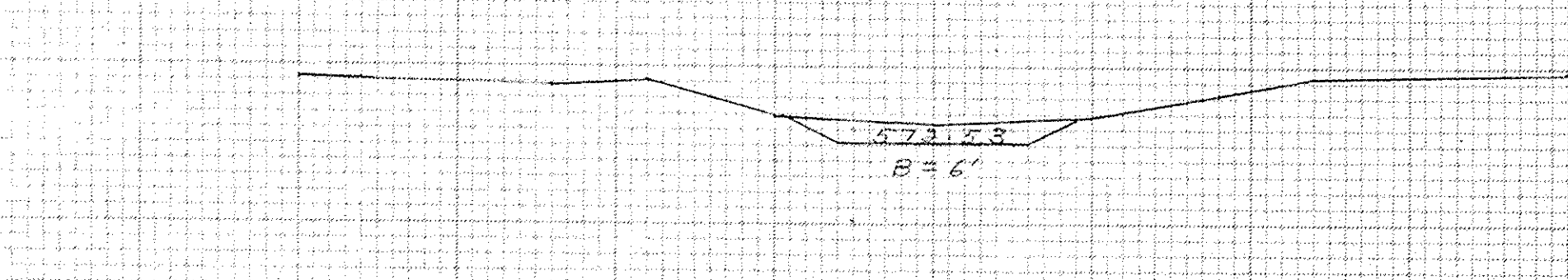
$.57 \text{ sq. in.} \times .93 = .53 \text{ cu. yds. lin. ft.}$
CROSS SECTION 35+00



$.88 \text{ sq. in.} \times .73 = .64 \text{ cu. yds. lin. ft.}$
CROSS SECTION 40+00



$.35 \text{ sq. in.} \times .93 = .33 \text{ cu. yds. lin. ft.}$
CROSS SECTION 49+00



$.35 \text{ sq. in.} \times .93 = .33 \text{ cu. yds. lin. ft.}$
CROSS SECTION 45+00

YARDAGE

STATION	SQUARE INCHES	CU. YDS. LIN. FT.	AVERAGE CU. YDS.	DISTANCE	TOTAL YARDS
0+00					
0+50	.62	.58	.58	50'	29.
5+00	.44	.41	.50	450'	225.
5+00	.44	.41	.35	500'	175.
10+00	.32	.30	.35	500'	175.
15+00	.44	.41	.35	500'	175.
20+00	.37	.35	.33	500'	165.
25+00	.35	.33	.34	500'	170.
30+00	.71	.66	.45	500'	325.
35+00	.57	.53	.60	500'	300.
40+00	.88	.66	.40	500'	300.
45+00	.35	.33	.35	500'	175.
49+00	.35	.33	.33	400'	92.
52+00			.33	300'	69.
TOTAL				CU. YDS.	1900

DITCH IMPROVEMENT PLAN
HOPFINGER DITCH
BAY TOWNSHIP
OTTAWA COUNTY, OHIO.

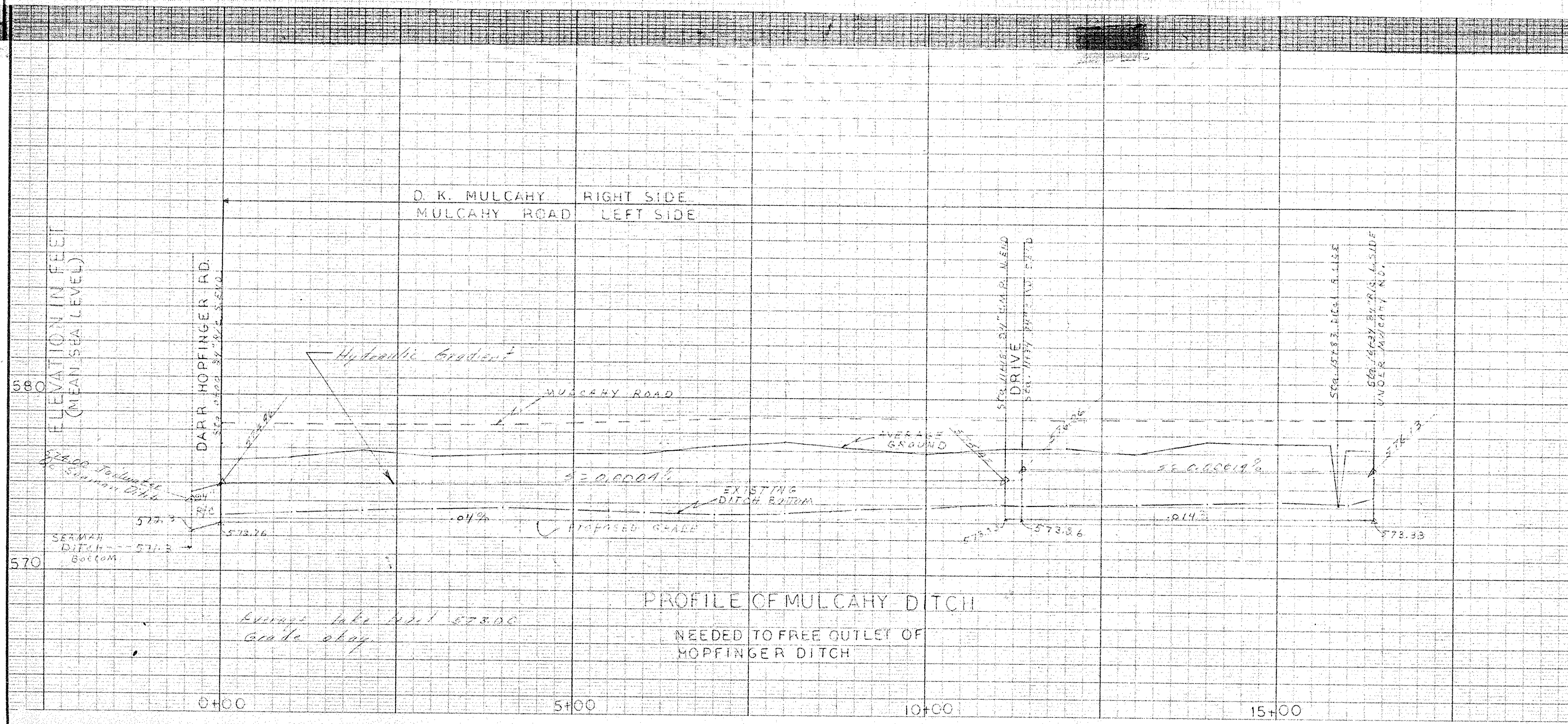
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed <i>Donald Saffer</i>	Date <i>5/68</i>	Approved by <i>W. L. ...</i>
Drawn <i>Donald Saffer</i>	Sheet <i>5/68</i>	Title <i>Ditch Layout</i>
Traced	Sheet	Title
Checked	No. <i>3</i>	Drawing No.
	of <i>4</i>	

34-01-83-68-4



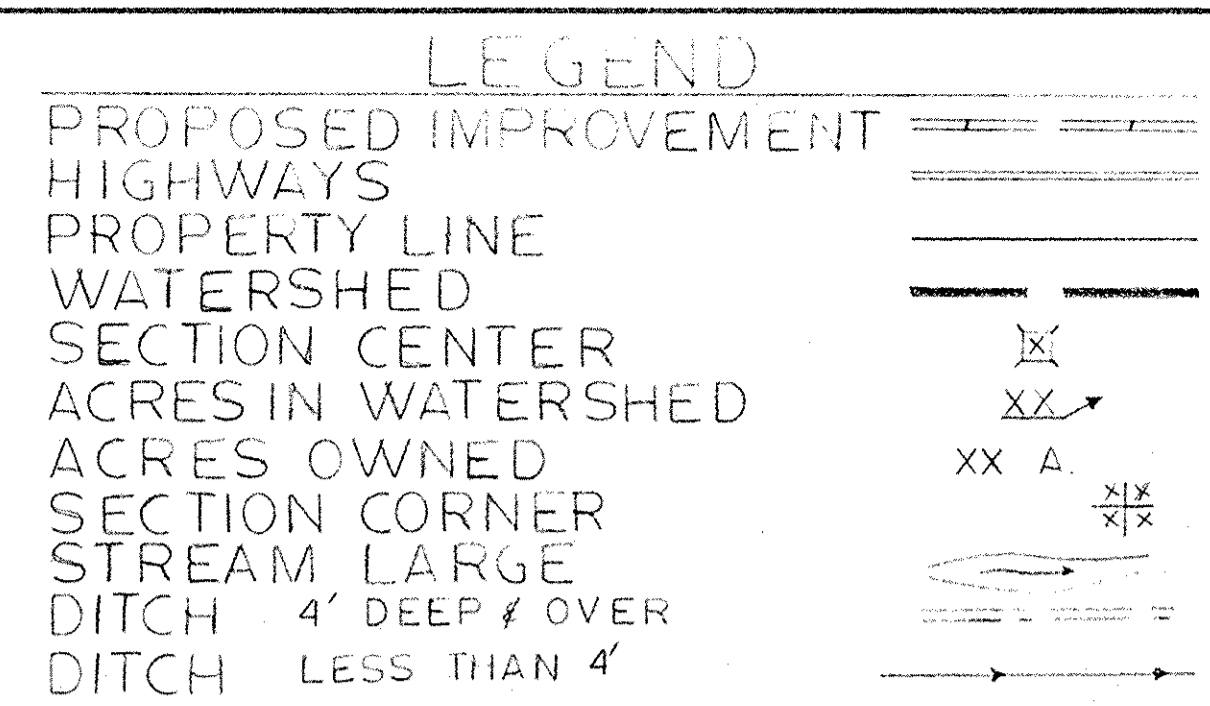
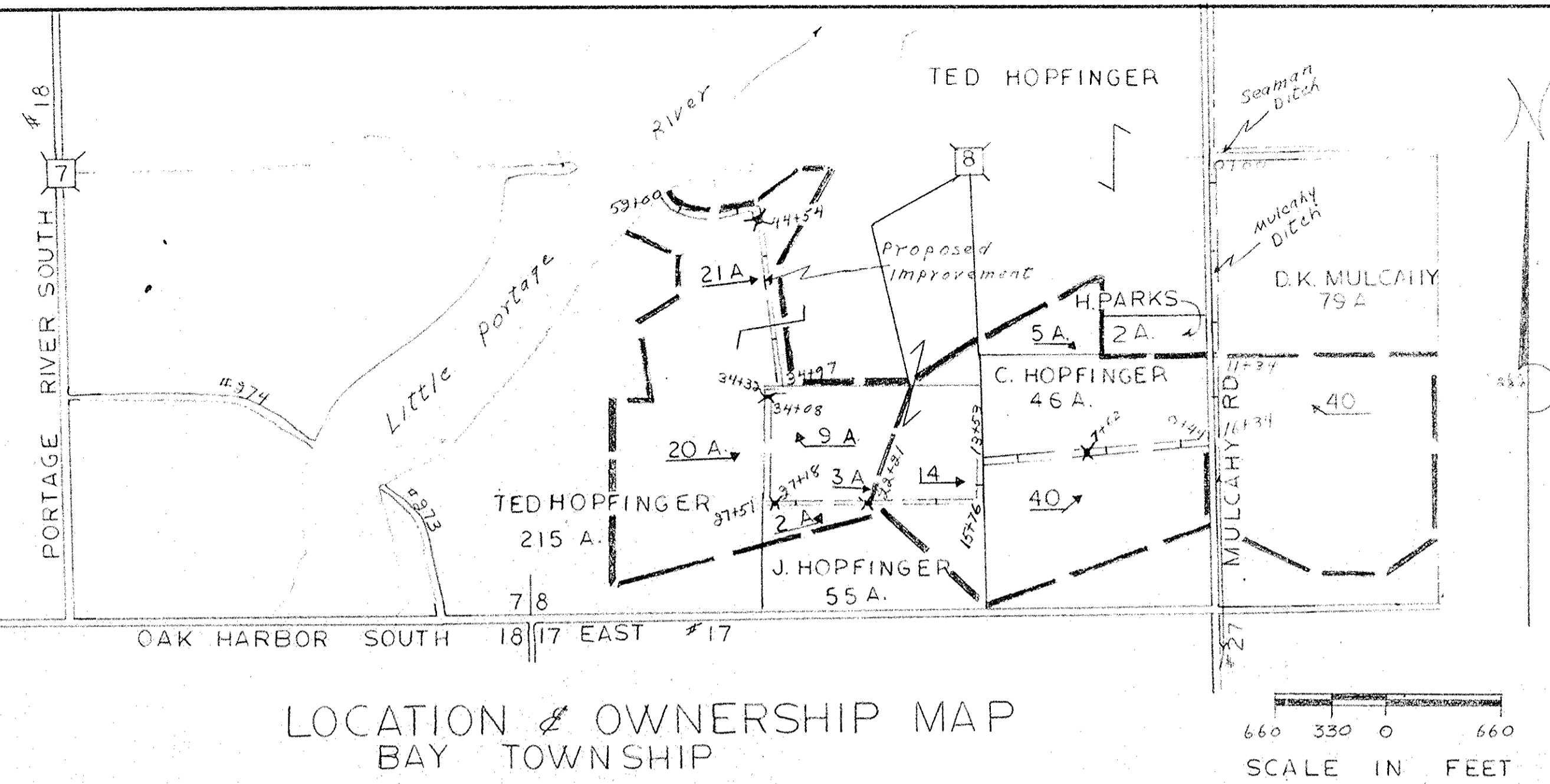
YARDAGE					
Station	Square	cu. yds	Ave	Distance	Total
	feet		cu. yds	Yards	Yards
0+00			.19	400'	718
4+00	.80	.17	.21	600'	186
10+00	.85	.33	.33	634'	146
14+34					
			Total	cu. yds.	394



**DITCH IMPROVEMENT
MULCAHY DITCH
BAY TOWNSHIP
OTTAWA COUNTY, OHIO.**

**U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**

Designed	Date	Approved by
Drawn	12/15/52	<i>W. K. Rouse</i> Civil Eng.
Traced	1/22/53	
Checked	12/15/52	
Sheet No. 4 of 4		Drawing No. 34-01-83-66-4



BENCH MARK DESCRIPTION

BM-1	STA. 0+44 TOP OF SPIKE IN E. SIDE OF TELEPHONE POLE W. SIDE OF MULCAHY RD 80' S. OF DITCH	M.S.L. ELEV. 579.27
BM-2	TOP OF SPIKE IN S. SIDE OF 42" ASH TREE N. SIDE OF DITCH STA. 10+40	M.S.L. ELEV. 577.89
BM-3	TOP OF BELL ON W. END OF CONCRETE 10" CULVERT FOR FARM DRIVE STA. 22+36	M.S.L. ELEV. 576.73
BM-4	TOP OF BELL ON S. END OF CONCRETE 12" CULVERT FOR DRIVE STA. 34+08	M.S.L. ELEV. 576.42
BM-5	TOP OF N. END OF 18" C.M.P. FARM DRIVE CULVERT STA. 44+70	M.S.L. ELEV. 574.10

SUPPORTING DATA

DRAINAGE AREA ----- 154 ACRES
 DESIGN COEFFICIENT -- Qc CURVE
 LAND USE --- GENERAL FARMING
 SOIL TYPE --- TOLEDO, FULTON
 LAND SLOPE ----- 0-2 %
 TYPE DRAINAGE ----- SURFACE

**LOCATION & OWNERSHIP MAP
BAY TOWNSHIP**

SPECIFICATIONS

I. **EXCAVATION**
 THREE (3) feet between sta. 0+00 and sta. 44+70
 A. Bottom Width: The bottom width shall be SIX (6) feet between sta. 44+70 and sta. 52+00.
 B. Bank Slopes: The ditch bank slopes are to be constructed to at least 2 foot horizontal to 1 foot vertical.
 C. Alignment: The centerline of the improvement shall be approximately the centerline of the existing ditch unless otherwise indicated on the plan.
 D. Total excavation: The total excavation consists of 2284 cubic yards of earth over 6634 linear feet of ditch.
 E. Excess Yardage: No extra excavation will be paid for such excavation in excess of yards herein estimated. This estimate was made from cross-sections of the proposed ditch. The contractor should view the proposed work to his own satisfaction.

II. **CLEANING**
 All trees and/or brush which would interfere with the excavation operation must be cleared from the ditch right-of-way ahead of the construction operations. Stumps on the berm should be removed or cut as low as cutting tools permit. Cleared debris should be disposed of by burning or removed from the right-of-way.

III. **BERM WIDTHS**
 Unless otherwise noted the berms will have the following minimum widths: four (4) feet wide for ditches up to four (4) foot depth; six (6) feet wide for four to six foot depth; and ten (10) foot wide for ditches over six feet in depth.

IV. **SPILL BANKS**
 Excavated material should be deposited and spread along the field side of the ditch, as determined, except where used for levees, and in overflow areas with timber or brush cover. Slope of the soil after spreading should be at least 3:1 on the channel side and at least 4:1 on the field side. The height of the spoil should not exceed one foot above average ground level. Spoilings shall be provided for surface water to enter the ditch.

V. **TILE OUTLETS**
 Landowners shall protect their tile outlets with a section of continuous rigid pipe and flap-gates or grid to exclude rodents. For details of construction see your Soil Conservation Technician.

VI. **SURFACE WATER CONTROL**
 Whenever a lateral or a surface ditch enters the main ditch at a higher elevation protection from erosion should be provided by drop structures, pipe drops, other suitable structure or grassed waterway. For assistance on outlets see your Soil Conservation Technician.

VII. **DITCH BANK SEEDING**
 The ditch banks will be seeded, immediately after each day's work, to tall fescue (Kentucky 31 or 111a) at the rate of 25 lbs. per acre. A minimum of 500 lbs. of 10-10-10 fertilizer or equivalent will be applied. 1.7 acres of ditch bank seeding will be required.

VIII. **CULVERTS**
 Existing culverts will be cleaned and the inverts (flow line) lowered to correspond to the proposed ditch grade as indicated on the plan.

- STA. 0+44 CLEANED
- STA. 7+62 REPLACE WITH 15" R/C OR EQUIVALENT
- STA. 22+21 REMOVE
- STA. 27+18 CLEANED
- STA. 34+08 REMOVE
- STA. 44+54 CLEANED
- MULCAHY DITCH FOR Qc OR 4" RUN OFF 30" R/C OR EQUIVALENT
- STA. 0+00 CLEANED
- STA. 11+34 CLEANED 30" R/C OR EQUIVALENT

HYDRAULIC CALCULATION

MULCAHY DITCH	CHANNEL FLOW	MAXIMUM VELOCITY	REACH STA.	TO STA.	DRAINAGE AREA AC.	Qc FLOW CFS.	N	SLOPE-S FT. FT.	S 1/2	Q/S 1/2 = KD	KD VALUE USED	SIDE SLOPE	BOTTOM WIDTH FT.	DEPTH FT.	AREA SQ. FT.	VELOCITY Q/A FPS.
11+34	0+00	5 FPS.	0+00	22+36	59	7	.04	.0010	.0316	221	223	2:1	3'	13	729	.96
15+34	11+18		22+36	27+18	5	1	.04	.0013	.0361	27	29	2:1	3'	5	202	.49
99	100		27+18	44+54	40	5	.04	.0009	.0300	166	171	2:1	3'	11	559	.89
110	115		44+54	52+00	55	7	.04	.0005	.0224	312	319	2:1	6'	15	652	.82
04	04															
00014	0004															
0118	0200															
374	575															
399	604															
1 1/2 : 1	1 1/2 : 1															
3'	3'															
2.8	2.2															
2016	1386															
.57	.83															

$$H = \frac{V^2}{2g} (1 + KE + KPL)$$

HEADLOSS IN CULVERTS

MULCAHY DITCH	STATION	DRAINAGE AREA AC.	Qc FLOW CFS.	DIAMETER IN.	R/C	LENGTH FT.	X. SEC. AREA SQ. FT.	KP	KPL	KE	VELOCITY FPS.	HEADLOSS FT.
11+34	0+00	59	7	24"	R/C	44	3.14	.012	.528	.50	2.2	1.5
99	100	5	1	15"	R/C	16	1.23	.023	.368	.50	1.5	.28
115	115	40	5	10"	R/C	20	1.57	.040	.80	.50	1.2	.05
24"	24"	5	7	18"	CMP	16	1.77	.067	1.07	.50	2.8	.31
C.M.P.	R/C											
.025	.013											
16'	40'											
3.14	3.14											
.048	.012											
736	48											
.57	.50											
3.66	3.66											
4.7	.41											

CONSTRUCTION DATA

STATION	GRADE %	BOTTOM WIDTH	SIDE SLOPE	CUBIC YARDS	AVERAGE DEPTH
0+44	0.10	3'	2:1	842	2.6'
27+18	0.13	3'	2:1	403	2.4
44+54	0.09	3'	2:1	494	3.0
52+00	0.05	6'	2:1	161	2.0
				1,900	
PORTION OF MULCAHY DITCH				384	
				2,284	

THIS DITCH PLAN HAS BEEN APPROVED BY
John H. Pappan
 OTTAWA COUNTY ENGINEER 11/2/68 DATE

SURVEYED - 3-28-68
 D. SOMMER
 E. CAMPBELL
 D. OPFER

LOCATION - S.W. 1/4 OF S.E. 1/4 AND E. 1/2 OF S.W. 1/4 OF SECTION 8 T 6 N R 16 E BAY TWP OTTAWA COUNTY OHIO.

REFERENCE - FIELD NOTES ON FILE IN OTTAWA SOIL & WATER CONSERVATION OFFICE 149 CHURCH STREET OAK HARBOR OHIO.

ENGINEERING JOB CLASS II

**DITCH IMPROVEMENT PLAN
HOPFINGER DITCH GROUP #33
BAY TOWNSHIP
OTTAWA COUNTY, OHIO.**

**U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**

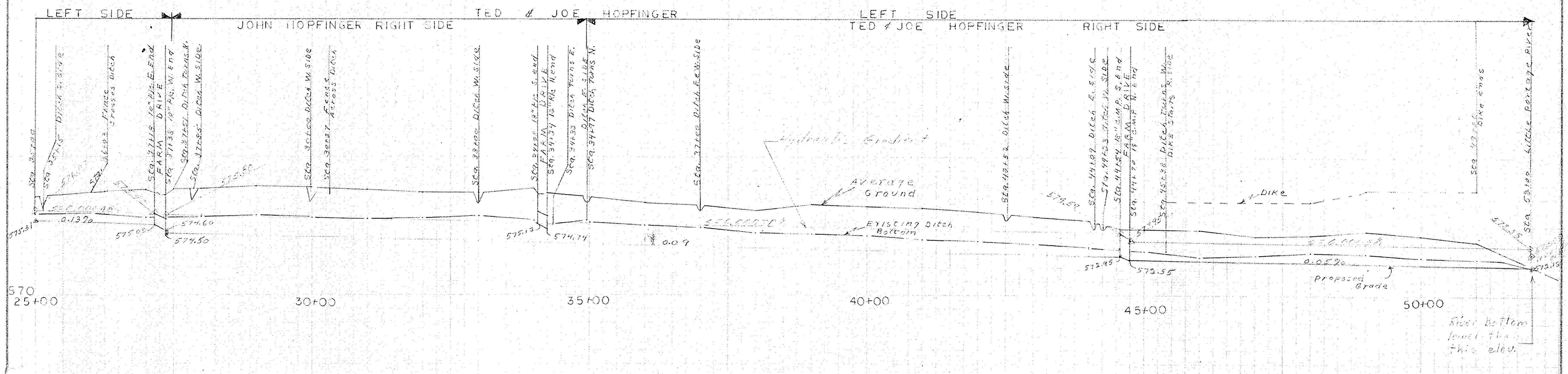
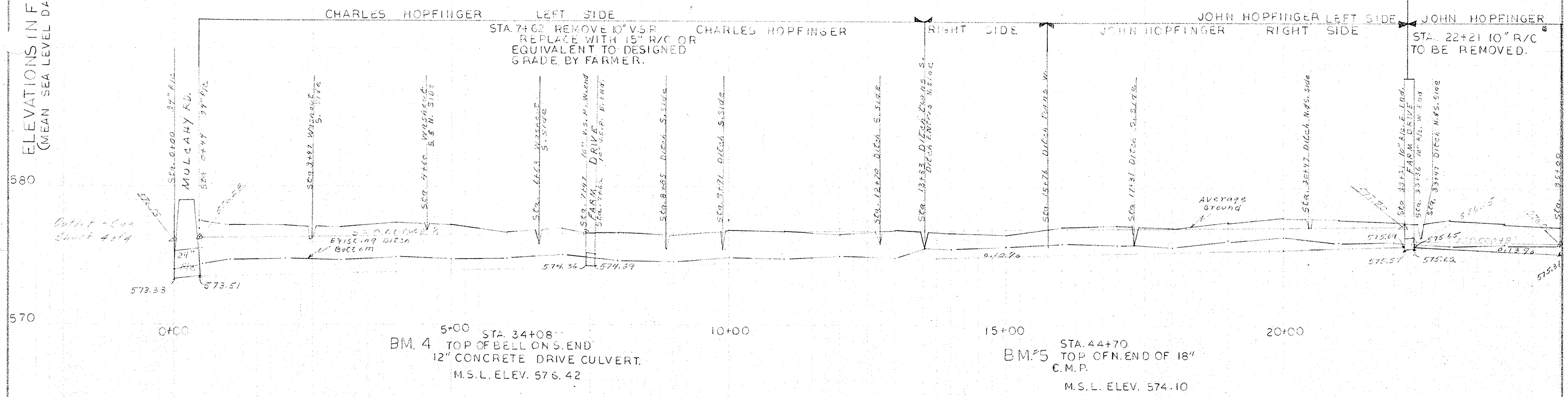
Designed <i>Donald Opfer</i> 3/68	Date	Approved by <i>Russell A. Pappan</i>
Drawn <i>Donald Opfer</i> 3/68	Title	<i>Level Engineer</i>
Traced	Sheet	Drawing No.
Checked	No. / of	34-01-83-68-4

ELEVATIONS IN FEET
(MEAN SEA LEVEL DATUM)

BM-1 STA. 0+44 SPIKE IN POLE
W. SIDE OF RD 80'S OF
DITCH.
M.S.L. ELEV. 579.27

BM-2 STA. 10+40 SPIKE S. SIDE
TREE N. SIDE OF DITCH.
M.S.L. ELEV. 577.89

BM-3 STA. 22+36 TOP OF W. END OF
10" CONCRETE DRIVE
CULVERT.
M.S.L. ELEV. 576.73



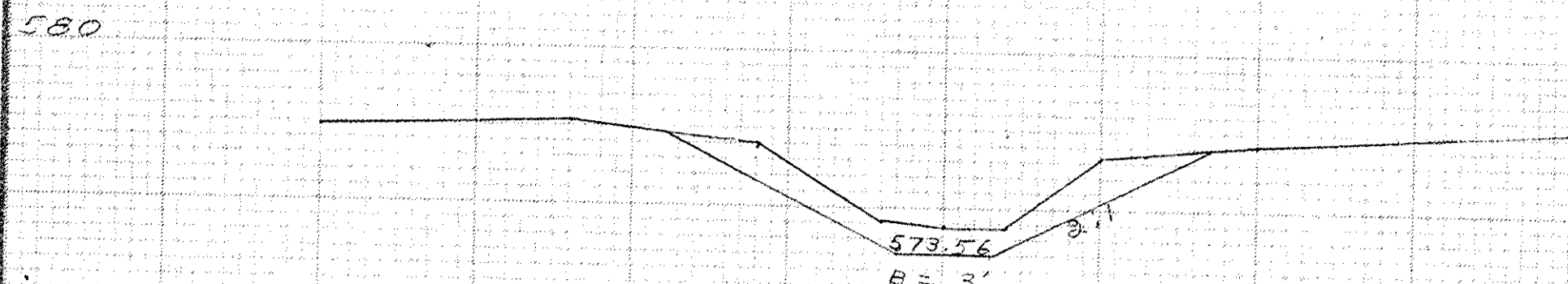
DITCH IMPROVEMENT PLAN
HOPFINGER DITCH
BAY TOWNSHIP
OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

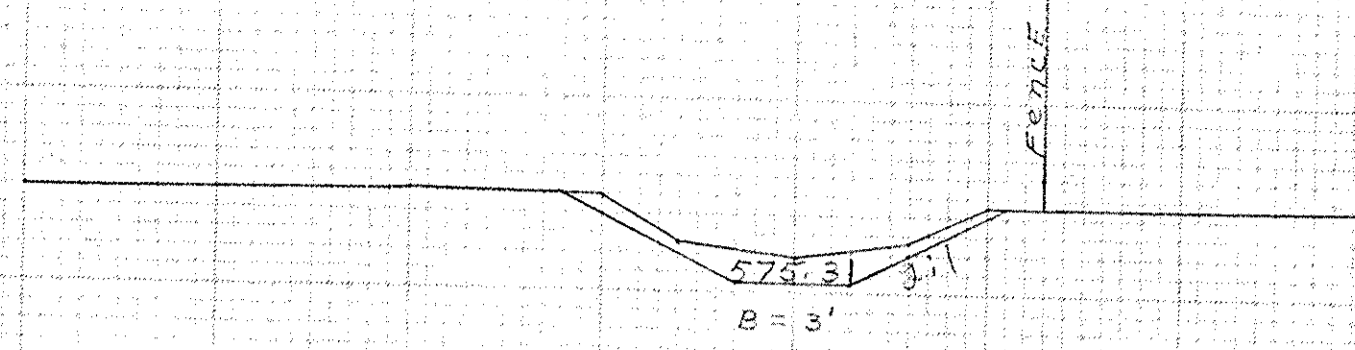
Designed <i>Donald G. Sizer</i> 4/62	Date 4/62	Approved by <i>Russell K. Brown</i>
Drawn <i>Donald G. Sizer</i> 4/62	Title <i>Soil Conservation</i>	
Traced	Sheet	Drawing No.
Checked	No. 3	34-01-63-68-4
	of 4	

WATER FLOWS EAST

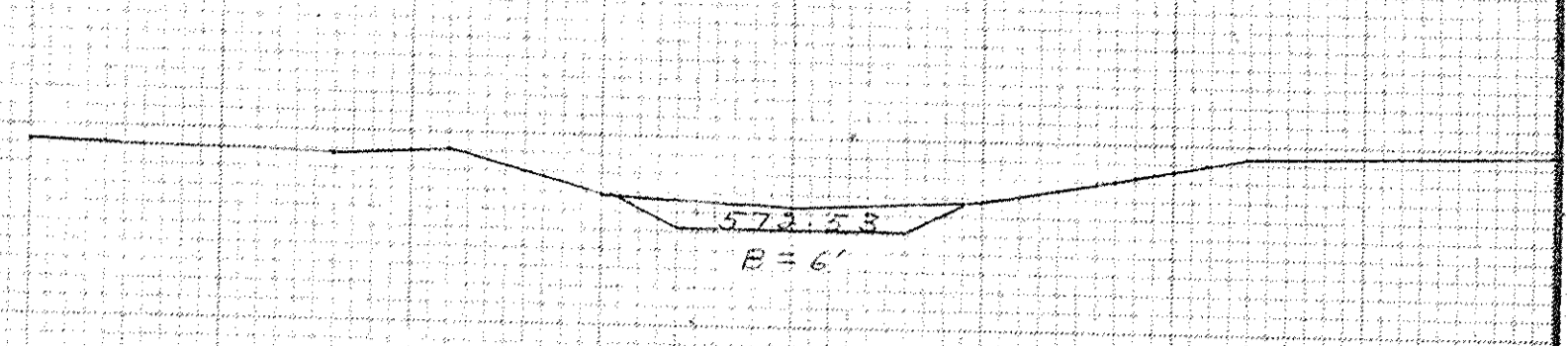
WATER FLOWS WEST & NORTH



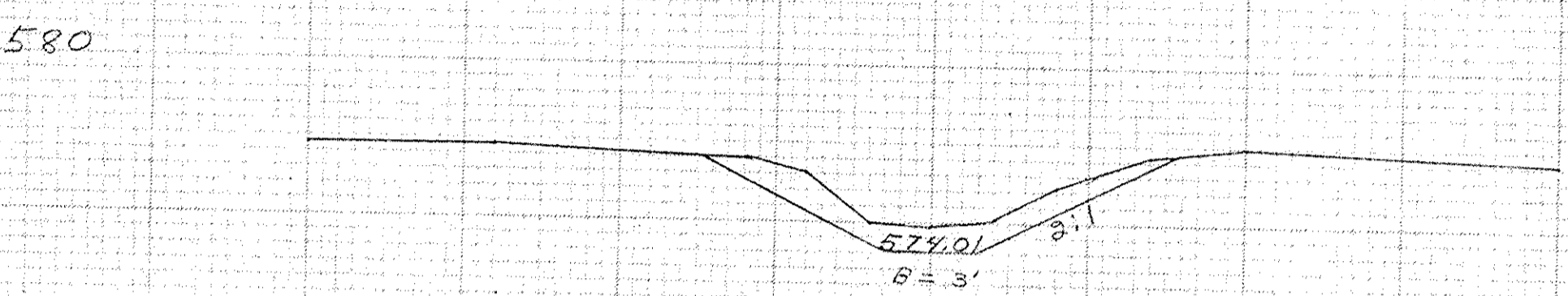
$.62 \text{ sq. in.} \times .93 = .58 \text{ cu. yds. lin. ft.}$
CROSS SECTION 0+50



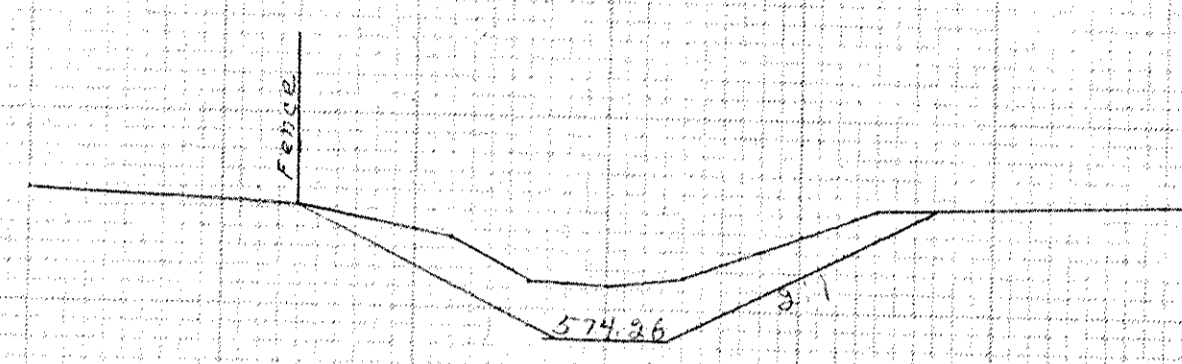
$.25 \text{ sq. in.} \times .93 = .23 \text{ cu. yds. lin. ft.}$
CROSS SECTION 25+00



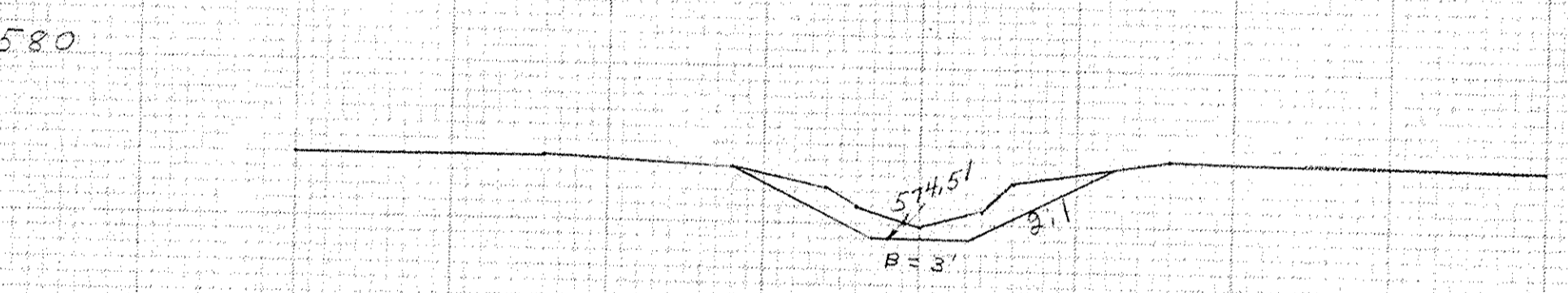
$.25 \text{ sq. in.} \times .93 = .23 \text{ cu. yds. lin. ft.}$
CROSS SECTION 45+00



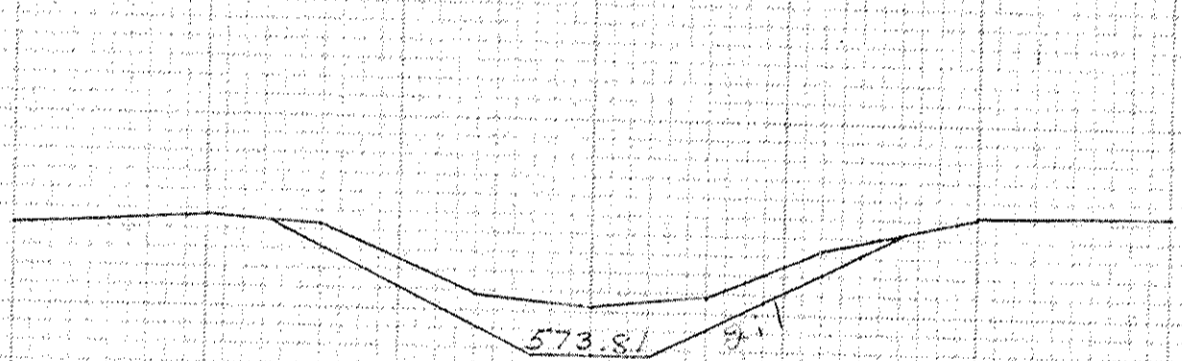
$.44 \text{ sq. in.} \times .93 = .41 \text{ cu. yds. lin. ft.}$
CROSS SECTION 5+00



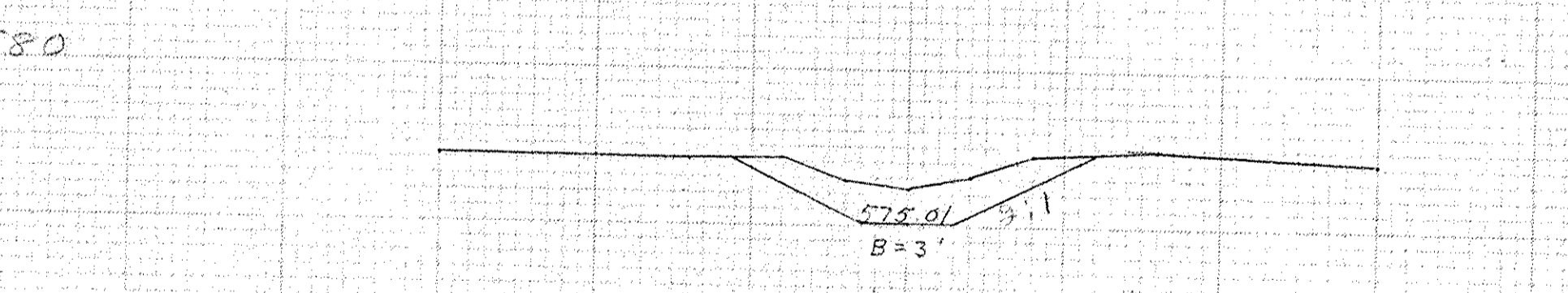
$.71 \text{ sq. in.} \times .93 = .66 \text{ cu. yds. lin. ft.}$
CROSS SECTION 30+00



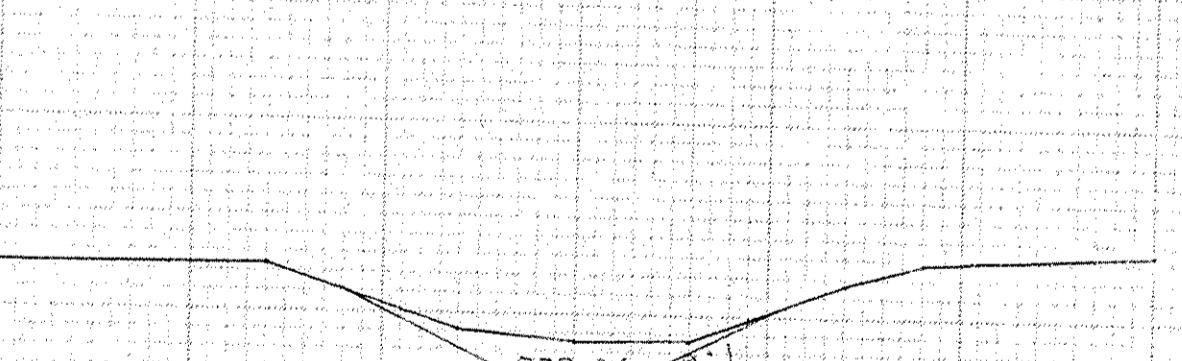
$.32 \text{ sq. in.} \times .93 = .30 \text{ cu. yds. lin. ft.}$
CROSS SECTION 10+00



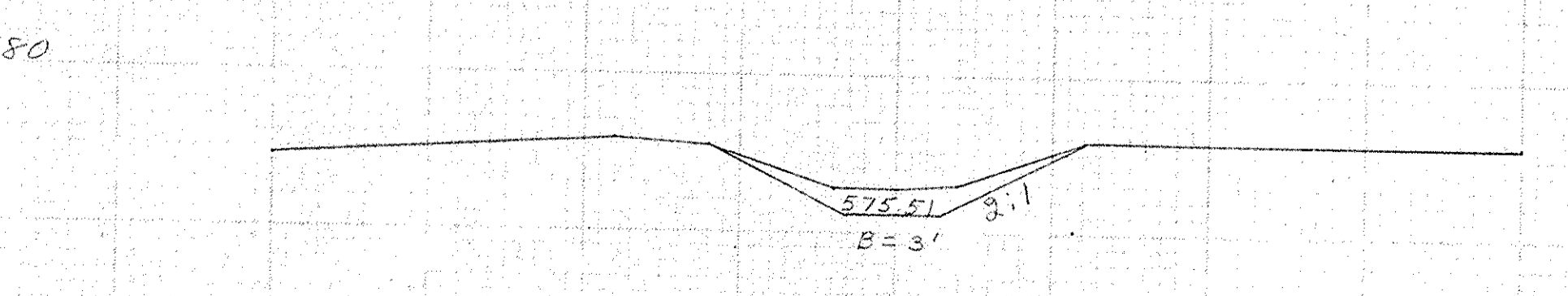
$.57 \text{ sq. in.} \times .93 = .53 \text{ cu. yds. lin. ft.}$
CROSS SECTION 35+00



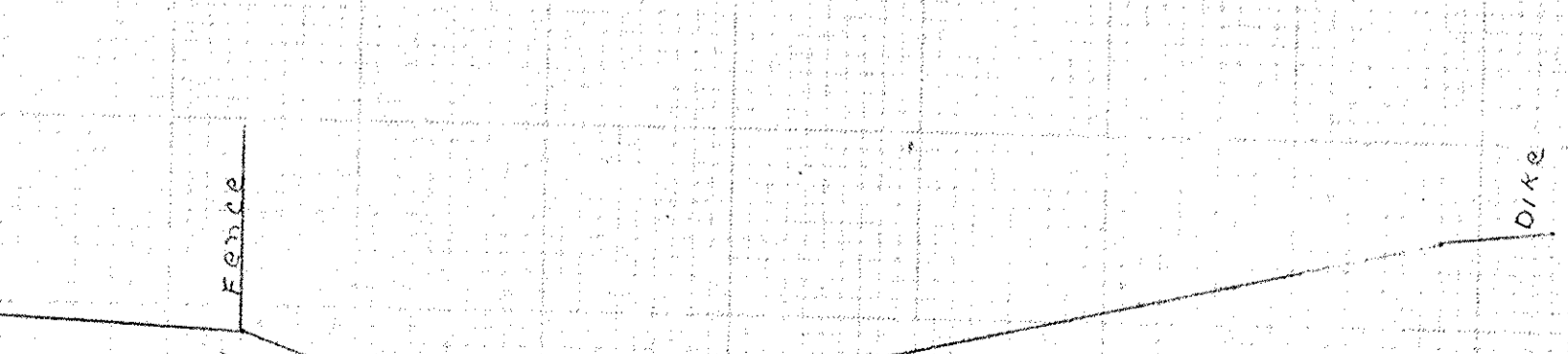
$.44 \text{ sq. in.} \times .93 = .41 \text{ cu. yds. lin. ft.}$
CROSS SECTION 15+00



$.88 \text{ sq. in.} \times .93 = .86 \text{ cu. yds. lin. ft.}$
CROSS SECTION 40+00



$.37 \text{ sq. in.} \times .93 = .35 \text{ cu. yds. lin. ft.}$
CROSS SECTION 20+00



$.25 \text{ sq. in.} \times .93 = .23 \text{ cu. yds. lin. ft.}$
CROSS SECTION 49+00

YARDAGE

STATION	SQUARE INCHES	CU. YDS. LIN. FT.	AVERAGE CU. YDS.	DISTANCE	TOTAL YARDS
0+00					
0+50	.62	.58	.58	50'	29.
5+00	.44	.41	.50	450'	235.
10+00	.32	.30	.35	500'	175.
15+00	.44	.41	.35	500'	175.
20+00	.37	.35	.33	500'	165.
25+00	.25	.23	.24	500'	120.
30+00	.71	.66	.45	500'	325.
35+00	.57	.53	.60	500'	300.
40+00	.88	.86	.40	500'	300.
45+00	.25	.23	.35	500'	135.
49+00	.25	.23	.23	400'	92.
52+00			.23	300'	69.
			TOTAL	CUBIC YARDS	1900

GRADE BREAKS

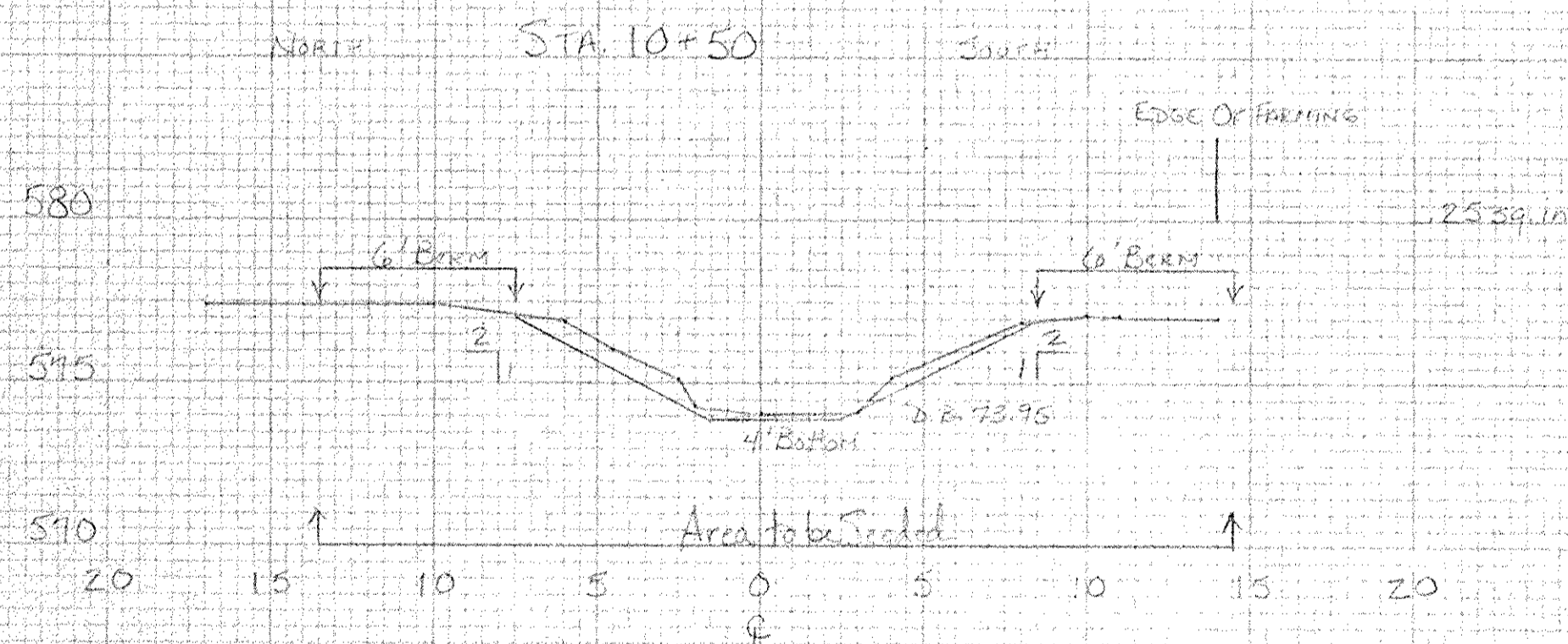
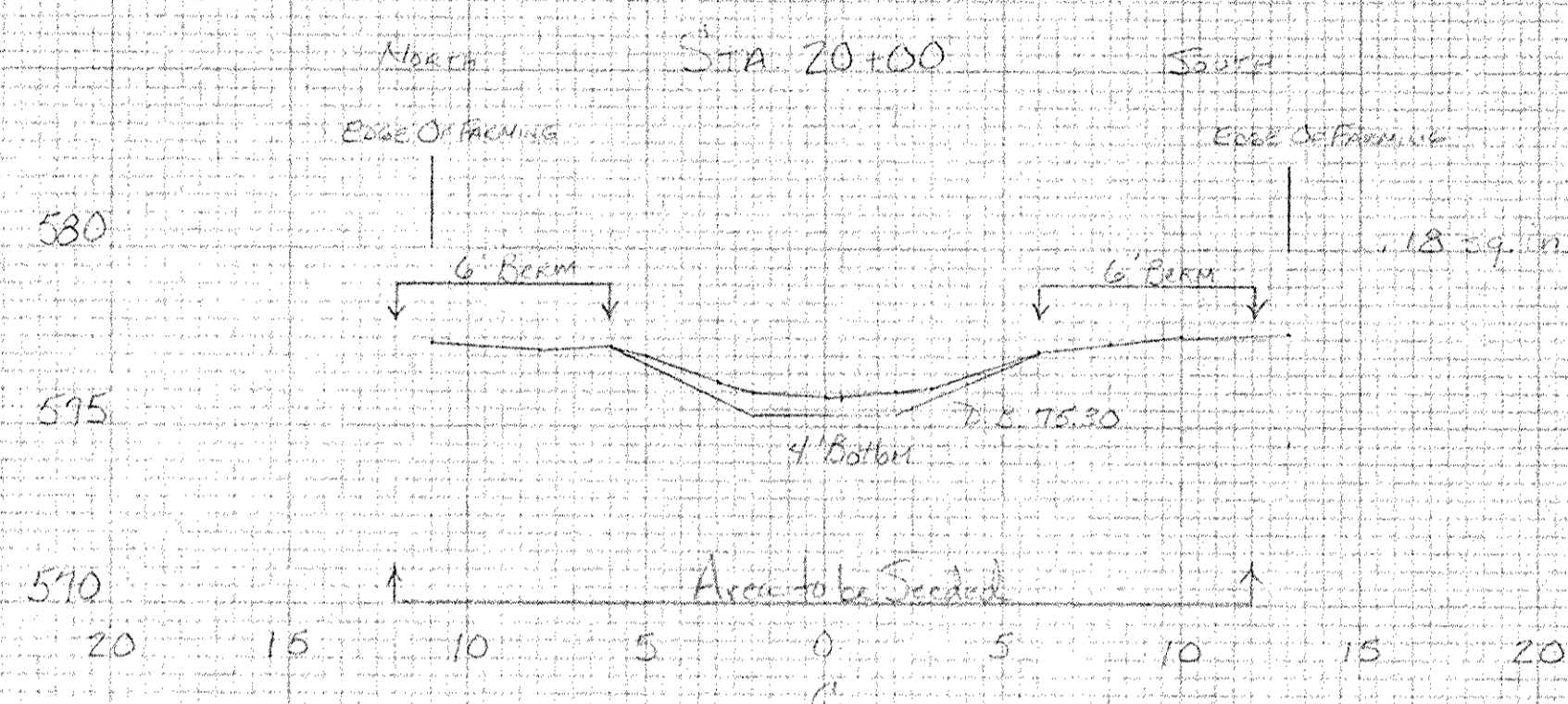
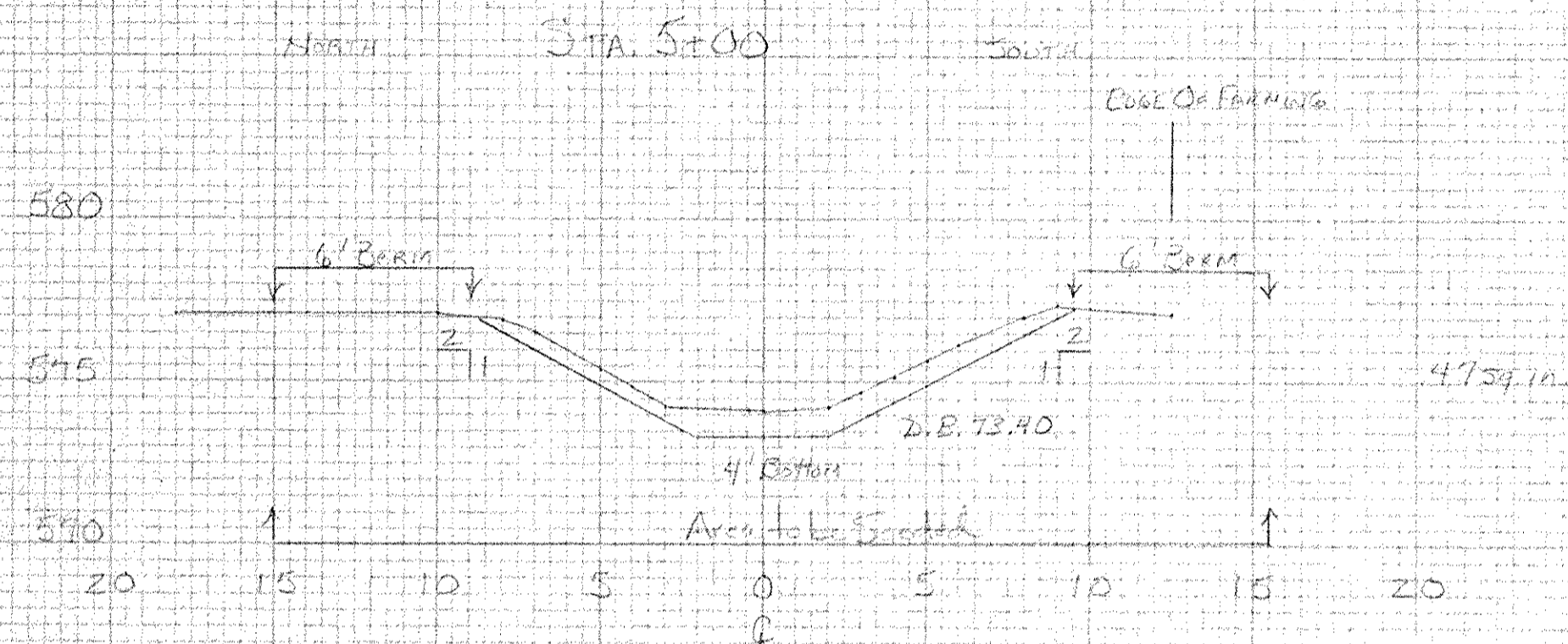
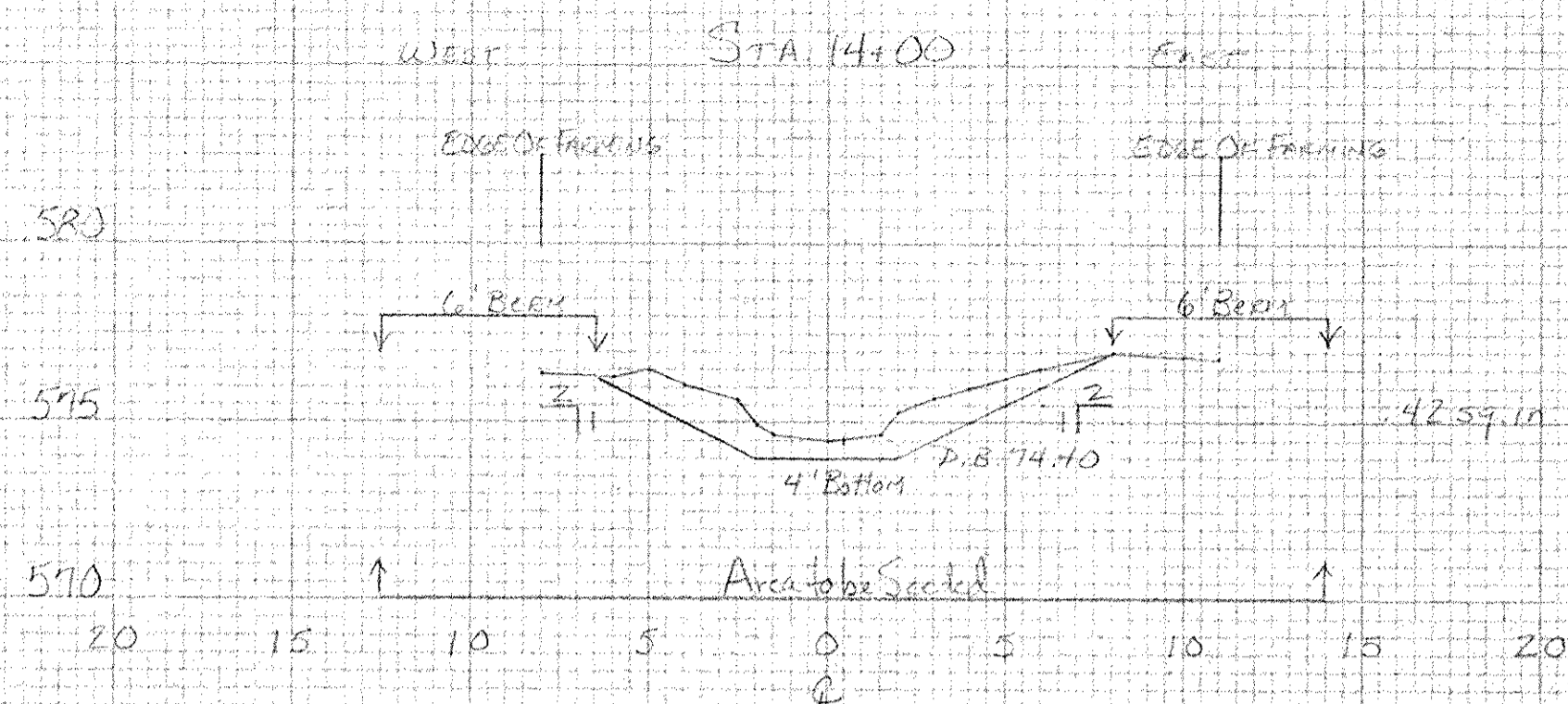
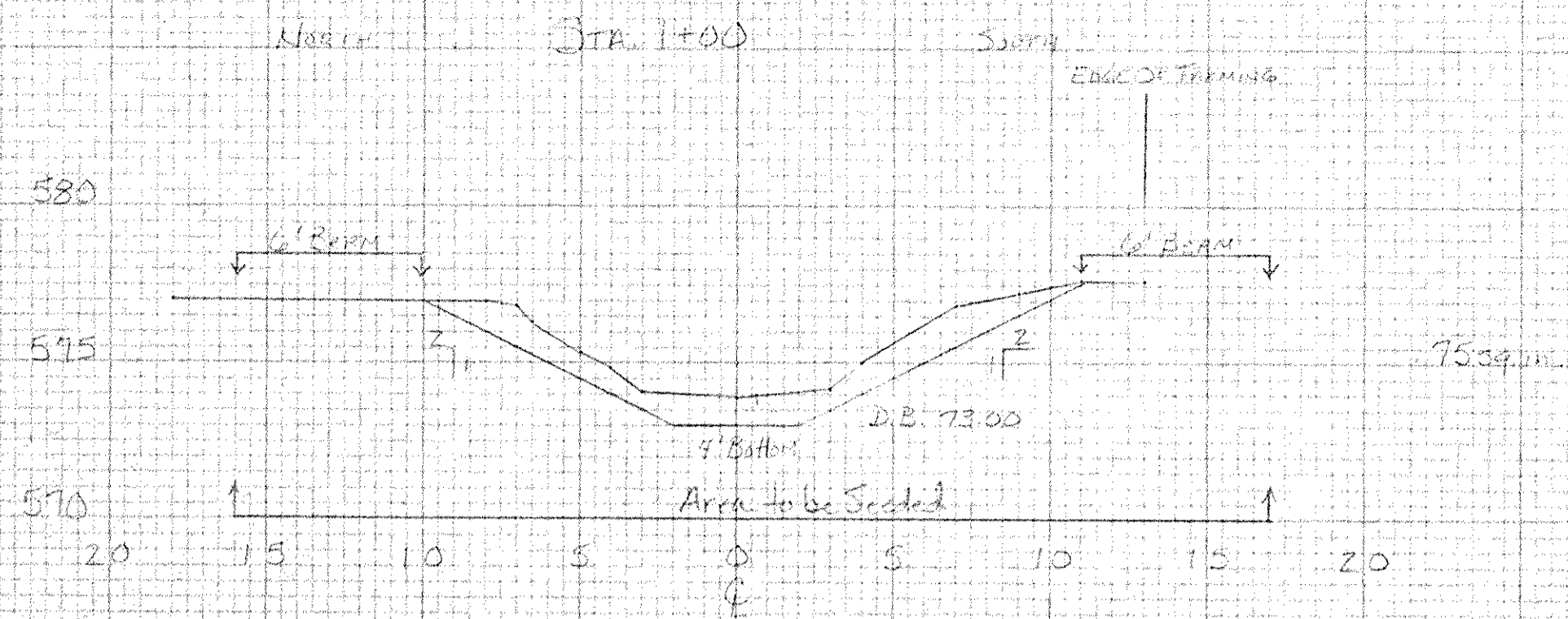
DITCH IMPROVEMENT PLAN
HOPFINGER DITCH
BAY TOWNSHIP
OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Date 5/68
Designed by Donald S. Pfenner
Drawn by Donald S. Pfenner
Traced by
Checked by

Approved by
Title Level Design
Drawing No. 34-01-83-68-4

CROSS SECTIONS



YARDAGE CALCULATIONS

Station	Square Inch	Au Sq. In.	Yardage	Distance	Total
0+30					
1+00	75 in ²				
5+00	47 in ²	.41	.57	470'	268
10+50	25 in ²	.36	.34	550'	187
14+00	42 in ²	.34	.32	350'	112
20+00	18 in ²	.30	.28	762'	214
21+62					781 yd ³

JOB CLASS II

OPEN DITCH RECONSTRUCTION
 HOPFINGER GROUP (EAST DITCH) #171
 BAY TWP SEC. 8, OTTAWA CO
 U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed by <u>Dave Harmon</u>	Date <u>2/67</u>	Approved by _____	Title _____
Drawn <u>D. Harmon</u>	Date <u>2/67</u>	Sheet No. <u>2</u>	Drawing No. _____
Checked <u>R. Harmon</u>	Date <u>4/67</u>	Sheet No. <u>3</u>	Drawing No. _____