

SCALE IN FEET  
600 300 0 300 600

THIS DITCH PLAN HAS BEEN APPROVED BY:  
*John G. Papcun* 8/31/72  
OTTAWA COUNTY ENGINEER DATE

LEGEND

PROPOSED IMPROVEMENT	=====
HIGHWAYS	=====
PROPERTY LINE	-----
SECTION CENTER	□
SECTION CORNER	⊕
WATERSHED	-----
ACRES OWNED	OOA
ACRES BENEFITED	CCA
LARGE STREAM	~~~~~
RAILROAD	-----
SEWERS	-----
PIPE LINE	-----

LOCATION - N.E. 1/4 OF SEC. 24 CLAY TWP. S. 1/2 OF SEC. 17 & S. 1/2 OF SEC. 18 BENTON TWP. T-7N R-13E & R-14E. OTTAWA COUNTY, OHIO.

SURVEYED - 3-17-18-22-1972  
D. SCHMEK J. STEINER D. CFFER  
L. GAHLER E. ANDERSON.

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

SUPPORTING DATA

DRAINAGE AREA	934 ACRES
DESIGNED COEFFICIENT	G <sub>b</sub> CURVE
LAND USE	SPECIAL-GENERAL-FARMING
LANDSLOPE	0-2%
TYPE DRAINAGE	SURFACE-TILE
SOIL TYPE	TOLEDO-FULTON

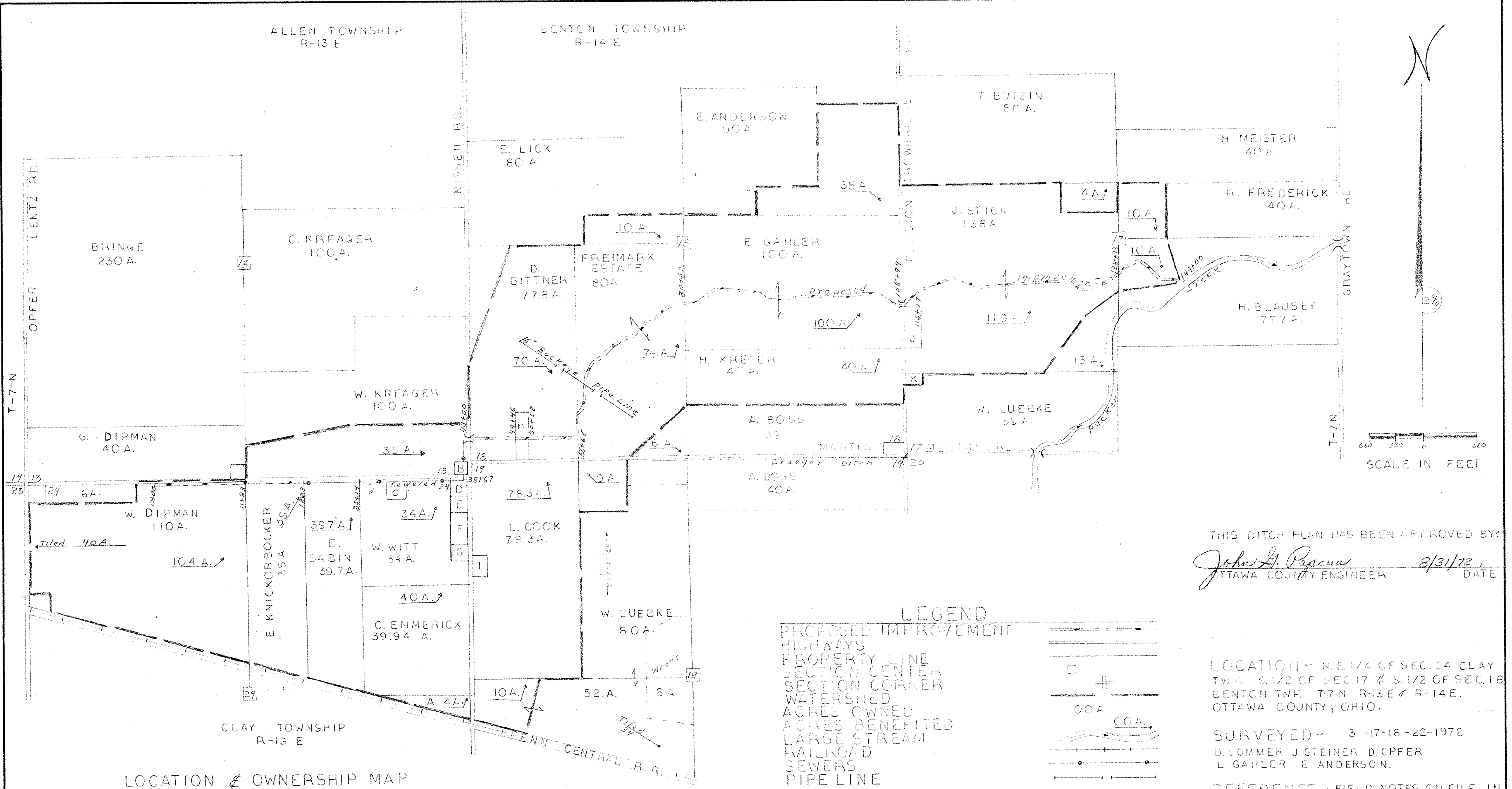
JOB CLASS III GROUP #60  
FREIMARK DITCH IMPROVEMENT  
BENTON-ALLEN-CLAY  
TOWNSHIPS  
OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

INDEX TO SMALL PARCELS

SECTION	PARCEL	PERCENT	OWNERS	ACRES	
24	A		LORDY MILLER	2.0	80%
13	B		ROBERT JUNK	.7	15.00
24	C		TIO LEO WITT	1.0	20.00
24	D		GLEN BOSS	1.0	20.00
24	E		EDWIN CAMP	1.0	20.00
24	F		FRANK GRAHL	2.0	35.00
24	G		FRANK GRAHL	1.0	30.00
18	I		ROBERT FRANCISCO	2.2	35.00
19	I		BEN MICHEFF	1.7	30.00
17	K		DONALD LOUCKS	.9	10.00
3-18-18-24			CLAY COUNTY	19.0	100%

REVISED SHEET #1



LOCATION & OWNERSHIP MAP

THIS DITCH PLAN HAS BEEN APPROVED BY:  
*John G. Papcum* 8/31/72  
 OTTAWA COUNTY ENGINEER DATE

**LEGEND**

PROPOSED IMPROVEMENT  
 HIGHWAYS  
 PROPERTY LINE  
 SECTION CENTER  
 SECTION CORNER  
 WATERSHED  
 ACRES OWNED  
 ACRES BENEFITED  
 LARGE STREAM  
 RAILROAD  
 SEWERS  
 PIPE LINE

LOCATION - N.E. 1/4 OF SEC. 24 CLAY TWP. S. 1/2 OF SEC. 17 & S. 1/2 OF SEC. 18 BENTON TWP. T-7N R-13E & R-14E. OTTAWA COUNTY, OHIO.

SURVEYED - 3 -17-18-22-1972  
 D. SOMMER J. STEINER D. OPFER  
 L. GAHLER E. ANDERSON.

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

**SUPPORTING DATA**

DRAINAGE AREA 934 ACRES  
 DESIGNED COEFFICIENT Gb CURVE  
 LANGUAGE SPECIAL-GENERAL-FARMING  
 LANDSLOPE 0-2 %  
 TYPE DRAINAGE SURFACE-TILE  
 SOIL TYPE TOLEDO-FULTON

JOB CLASS III GROUP #60  
 FREIMARK DITCH IMPROVEMENT  
 BENTON-ALLEN-CLAY  
 TOWNSHIPS  
 OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE

INDEX TO SMALL PARCELS

SECTION	PARCEL	PROPERTY OWNERS	ACRES
24	A	DORTHY MILLER	4.0
13	B	ROBERT ZUNK	7
24	C	THOMAS WITT	1.0
24	D	GLEN BOSS	1.0
24	E	EDWIN CAMP	1.0
24	F	FRANK GRAHL	2.0
24	G	ALBERT BOSS	1.0
18	H	ROBERT FRAGOSO	2.2
19	I	BEN MINCHEFF	1.7
17	J	FRED STICK	2.0
17	K	DONALD LOUCKS	.9
13-18-19-24		OTTAWA COUNTY	19.0

Designed <i>Donald Opfer</i> 1/72	Date 1/72	Approved by <i>John G. Papcum</i>	Title
Drawn <i>Donald Opfer</i> 1/72			
Traced			
Checked			
Sheet No. 1 of 8		Drawing No. 39-01-383-72-43	

# SPECIFICATIONS

- I. EXCAVATION:**
- A. Bottom Width: The bottom width shall be FOUR (4) feet between sta. 43+40 and sta. 72+27  
SIX (6) feet between sta. 72+27 and sta. 149+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 10,219 cubic yards of earth over 14,900 lineal feet of ditch.  
 \* 628 cubic yards can be subtracted if landowners do not wish to reconstruct section from 0+00 to 18+44.
- E. Excess Yardage: No extra compensation will be paid for such excavation in excess of yardage herein estimated. This estimate was made from cross-sections of the proposed ditch. The contractor should view the proposed work to his own satisfaction.
- F. The contractor shall be given a right-of-way on each side of the ditch 50 feet from the bank of the ditch at all points.

- 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 shall be removed or cut as low as cutting tools permit. All stumps on the slopes shall be removed. 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 depth for ditches over six feet in depth.

- IV. SPOIL BANKS:**  
 Excavated material should be deposited and spread along one and/or both sides 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. 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 Service 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 Service Technician.

- VII. DITCH BANK SEEDING:**  
 The ditch banks will be seeded <sup>each day</sup> within 4 hours after the clearing and shaping is completed. The berms will be seeded after spoil is spread. April 1 to September 15 - permanent seeding.

Seeding rates per acre:

40 pound tall fescue - (Kentucky 31 or Alta) X	7.0 ac. = 280 lbs.
4 bushel oats	7.0 ac. = 28 bu.
500 # 12-12 fertilizer or equivalent.	7.0 ac. = 3500 lbs.

Fertilizer will be applied within 24 hours after seeding.  
 Seed will be covered by use of adjustable spike tooth harrow.

September 1 to December 14 - temporary seeding.  
 .3 bushel of rye per acre.

When a temporary seeding is made the above permanent seeding will be made as specified above, in April of the following year.

The establishment of the seeding on the ditch bank and berm shall be the responsibility of the contractor. A minimum of 20 fescue plants per square foot will be considered adequate establishment.

- VIII. Existing culverts will be cleaned and the inverts (flow line) lowered to correspond to the proposed ditch grade as indicated on the plan. If necessary, culverts will be enlarged to meet drainage design.**

Station 38+67 to 43+00 Replace existing pipe with 433 feet of 48" R/C or use alternate method as determined by County Engineer.

Station 49+47 Replace wooden bridge with 24 feet of 54" R/C

Station 72+27 Replace 48" C.M.P. with 24 feet of 60" R/C

Station 105+52 Box culvert okay for size.

Station 108+94 Multi arch bridge okay for size.

- IX. ALL OF THE ABOVE SPECIFICATIONS ARE TO BE COMPLETED BEFORE PERFORMANCE IS CERTIFIED.**

\* MAY 29, 1992 SET NEW BM PER  
 DRAINAGE PERMIT FOR JOHN DAVID  
 STA 49+70 CLOS. = 594.69  
 "X" TOP @ EAST END 60" RCP  
 CORRECT RES. DRIVE

# HYDRAULIC CALCULATIONS

HEADLOSS	H =	$\frac{V^2}{2g}$	(1+KE+KPL)		CULVERTS						
STATION			11+56	18+44	26+22	38+67	43+00	49+47	72+27	105+52	108+94
DRAINAGE AREA AC.			104	140	213	263	304	364	576	730	785
Q <sub>b</sub> FLOW CFS.		Q <sub>d</sub>	9	10	14	43	49	56	77	87	90
DIAMETER INS.			24	24	30	48"	48"	54"	60"	5'x4.7'	14' arch
TYPE "N"			R/C	R/C	R/C	R/C	C.I.	R/C	R/C	box	cor. plate
LENGTH FT.			.013	.013	.013	.013	.013	.013	.013	.013	.020
X SECTION AREA SQ.FT.			22	778	1245	433	40	24	24	13'	27
KP			3.14	3.14	4.91	12.57	12.57	15.90	19.63	23.5	60
KPL			.012	.012	.0092	.0049	.0049	.0042	.0037	.0036	.0024
KE			.26	9.34	11.5	2.12	.196	.10	.09	.47	.0648
VELOCITY FPS.			.50	.50	.50	.50	.50	.50	.50	.50	.50
HEADLOSS FT.			2.9	3.1	3.0	3.4	3.9	3.5	3.9	3.7	1.5
			.22	1.63	1.82	.71	.40	.30	.38	.41	.05

Nissen Fragoso Freimark Gahler Elliston

CHANNEL FLOW	V =	$\frac{1.486}{N}$	$R^{2/3} S^{1/2}$									
REACH	STA.		50+88	56+66	72+27	80+82	90+00	108+94	126+00	133+00	149+00	
	TO STA.		43+40	50+88	56+66	72+27	80+82	90+00	108+94	126+00	133+00	
DRAINAGE AREA AC.			402	482	576	616	680	785	880	880	934	
Q <sub>b</sub> FLOW CFS.			61	62	77	80	84	90	96	96	99	
"N"			0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	
SLOPE - S	FT/FT.		.0008	.0013	.0013	.0006	.0006	.0006	.0006	.0008	.0008	
S 1/2			.0283	.0361	.0361	.0245	.0245	.0245	.0245	.0283	.0283	
Q / S 1/2 = KD			2155	1717	2132	3265	3428	3673	3795	3392	3498	
KD USED			2143	1767	2266	3296	3483	3676	3865	3483	3676	
SIDE SLOPE	FT.		1.5:1	1.5:1	1.5:1	2:1	2:1	2:1	2:1	2:1	2:1	
DEPTH	FT.		3.5	3.2	3.6	3.8	3.8	4.0	4.1	3.9	4.0	
AREA	SQ.FT.		35.5	31.4	37.4	51.7	51.7	56.0	58.2	53.8	56.0	
BOTTOM WIDTH	FT.		4	4	4	6	6	6	6	6	6	
VELOCITY = Q/A	FPS.		1.72	1.97	2.06	1.55	1.63	1.61	1.60	1.78	1.76	

# BENCH MARK DESCRIPTION

- BM-1 STA. 0+00 TOP OF SPIKE IN SOUTH SIDE OF POWER POLE NORTH SIDE OF MARTIN MOLINE ROAD AT WALTER DIPMAN BUILDING AREA. M.S.L. ELEV. 600.52
- BM-2 STA. 11+25 TOP OF RAILROAD SPIKE IN SOUTH OF POWER POLE NORTH SIDE OF MARTIN MOLINE ROAD AT PROPERTY LINE. M.S.L. ELEV. 600.49
- BM-3 STA. 20+94 TOP OF CHISELED X ON SOUTH EAST CORNER OF CONCRETE LID OF CATCH BASIN SOUTH SIDE OF MARTIN MOLINE ROAD AT E. SABIN PROPERTY M.S.L. ELEV. 595.83
- BM-4 STA. 38+32 TOP OF RAILROAD SPIKE IN SOUTH WEST SIDE OF POWER POLE AT SOUTH WEST CORNER OF INTERSECTION OF MARTIN MOLINE & NISSEN ROAD. M.S.L. ELEV. 597.08
- BM-5 STA. 43+00 X CHISELED ON WEST END OF NORTH REMAINING WALL WEST SIDE OF NISSEN ROAD JUST NORTH OF LARGE CATCH BASIN. M.S.L. ELEV. 596.29
- BM-6 STA. 50+19 TOP OF SPIKE IN NORTH SIDE OF POWER POLE NORTH SIDE OF DITCH IN ROBERT FRAGOSO BUILDING AREA. M.S.L. ELEV. 594.75
- BM-7 STA. 79+40 TOP OF 8" CAST IRON PIPE TILE OUTLET EAST SIDE OF 10" NORTH SIDE OF DITCH 150' WEST OF PROPERTY LINE M.S.L. ELEV. 588.18
- BM-8 STA. 109+31 X CHISELED ON NORTH END OF EAST HEADWALL OF ARCH BRIDGE ON ELLISTON ROAD. M.S.L. ELEV. 592.57
- BM-9 STA. 129+71 TOP OF 10" C.M.P. NORTH SIDE OF DITCH ON JOHN STICK PROPERTY. M.S.L. ELEV. 585.64
- BM-10 STA. 147+26 TOP OF SPIKE IN SOUTH SIDE OF 12" DISEASED HICKERY TREE 50' NORTH OF DITCH. M.S.L. ELEV. 587.62

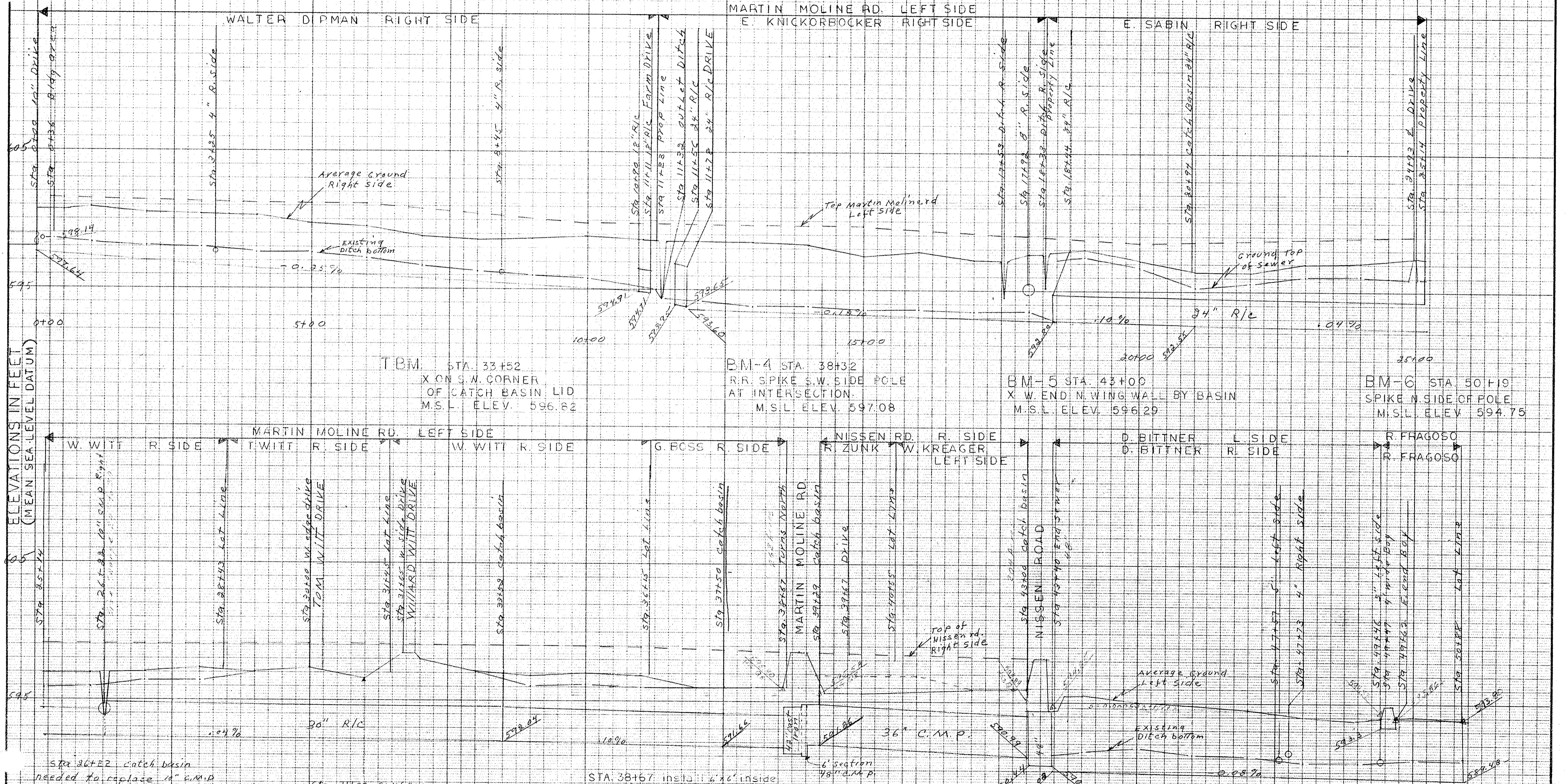
FREIMARK DITCH IMPROVEMENT  
 BENTON ALLEN CLAY  
 TOWNSHIPS  
 OTTAWA COUNTY, OHIO.  
**U. S. DEPARTMENT OF AGRICULTURE**  
**SOIL CONSERVATION SERVICE**

Designed <u>Bussell Rowe</u>	Date <u>5/22</u>	Approved by _____
Drawn <u>David A. Pfeiffer</u>	Title _____	Title _____
Traced _____	Sheet No. <u>2</u>	Drawing No. _____
Checked _____	of <u>8</u>	39-01-383-72-43

BM-1 STA. 0+00  
SPIKE IN S. SIDE OF POLE  
N. SIDE MARTIN MOLINE RD.  
M.S.L. ELEV. 600.52

BM-2 STA. 11+25  
R.R. SPIKE S. SIDE OF  
POLE N. SIDE MARTIN MOLINE RD.  
M.S.L. ELEV. 600.49

BM-3 STA. 20+94  
CHISELED X S.E. CORNER OF  
CATCH BASIN  
M.S.L. ELEV. 595.83



ELEVATIONS IN FEET  
(MEAN SEA-LEVEL DATUM)

TBM STA. 33+52  
X ON S.W. CORNER  
OF CATCH BASIN LID  
M.S.L. ELEV. 596.82

BM-4 STA. 38+32  
R.R. SPIKE S.W. SIDE POLE  
AT INTERSECTION.  
M.S.L. ELEV. 597.08

BM-5 STA. 43+00  
X W. END N. WING WALL BY BASIN  
M.S.L. ELEV. 596.29

BM-6 STA. 50+19  
SPIKE N. SIDE OF POLE  
M.S.L. ELEV. 594.75

Sta 36+22 catch basin  
needed to replace 18\"/>

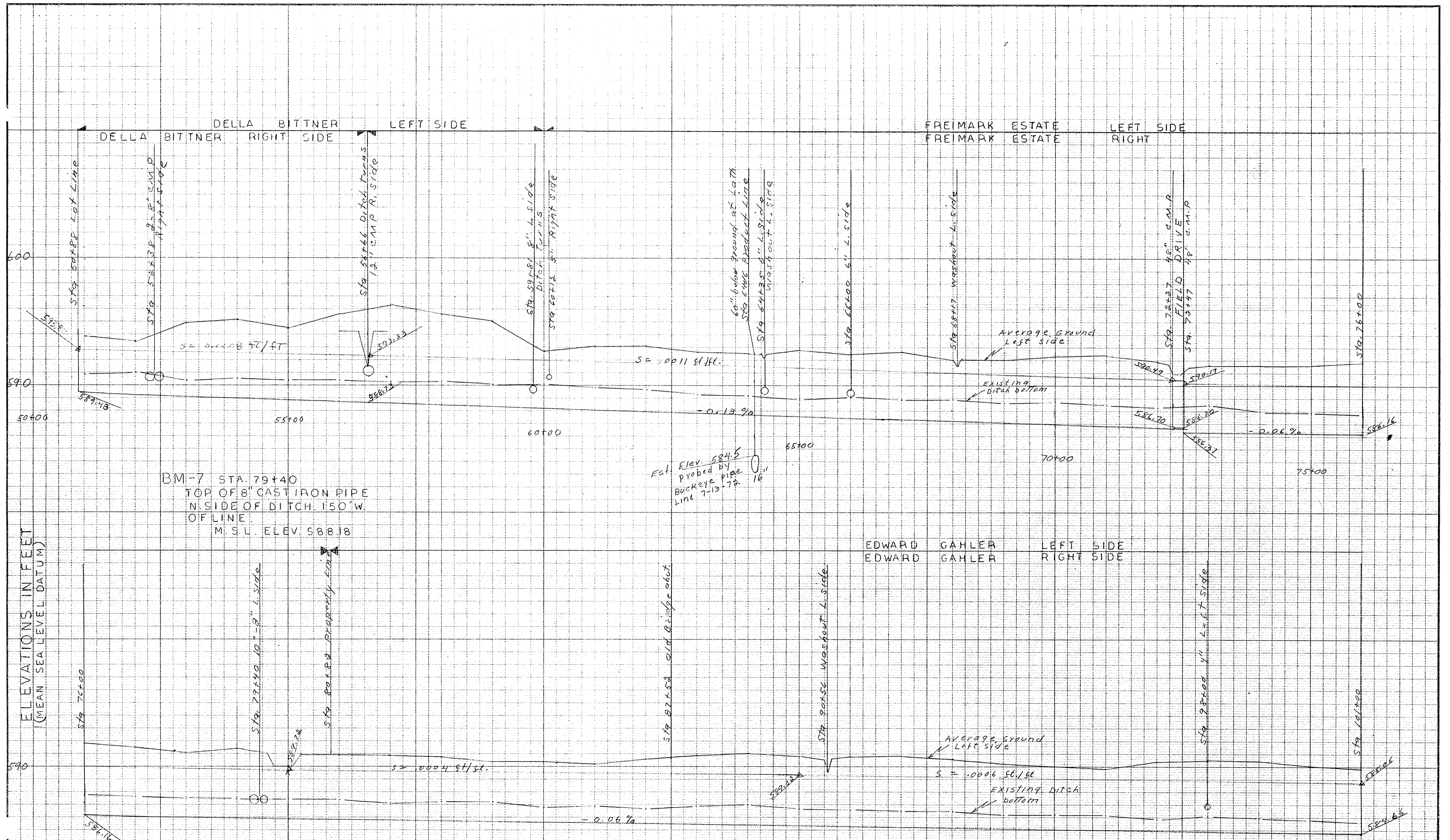
Sta. 31+00 surface  
water inlet needed  
By County

STA. 38+67 install 6\"/>

By County @ later date

FREIMARK DITCH  
DITCH IMPROVEMENT  
CLAY-ALLEN-BENTON TOWNSHIP  
OTTAWA COUNTY, OHIO.  
U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

Designed by <u>David Opfer</u>	Date <u>3/22</u>	Approved by <u>[Signature]</u>	Title _____
Drawn by <u>David Opfer</u>	Date <u>3/31/72</u>	Title _____	Sheet No. <u>3</u> of <u>6</u>
Traced _____	Checked _____	Drawing No. <u>39-01-383-72-43</u>	



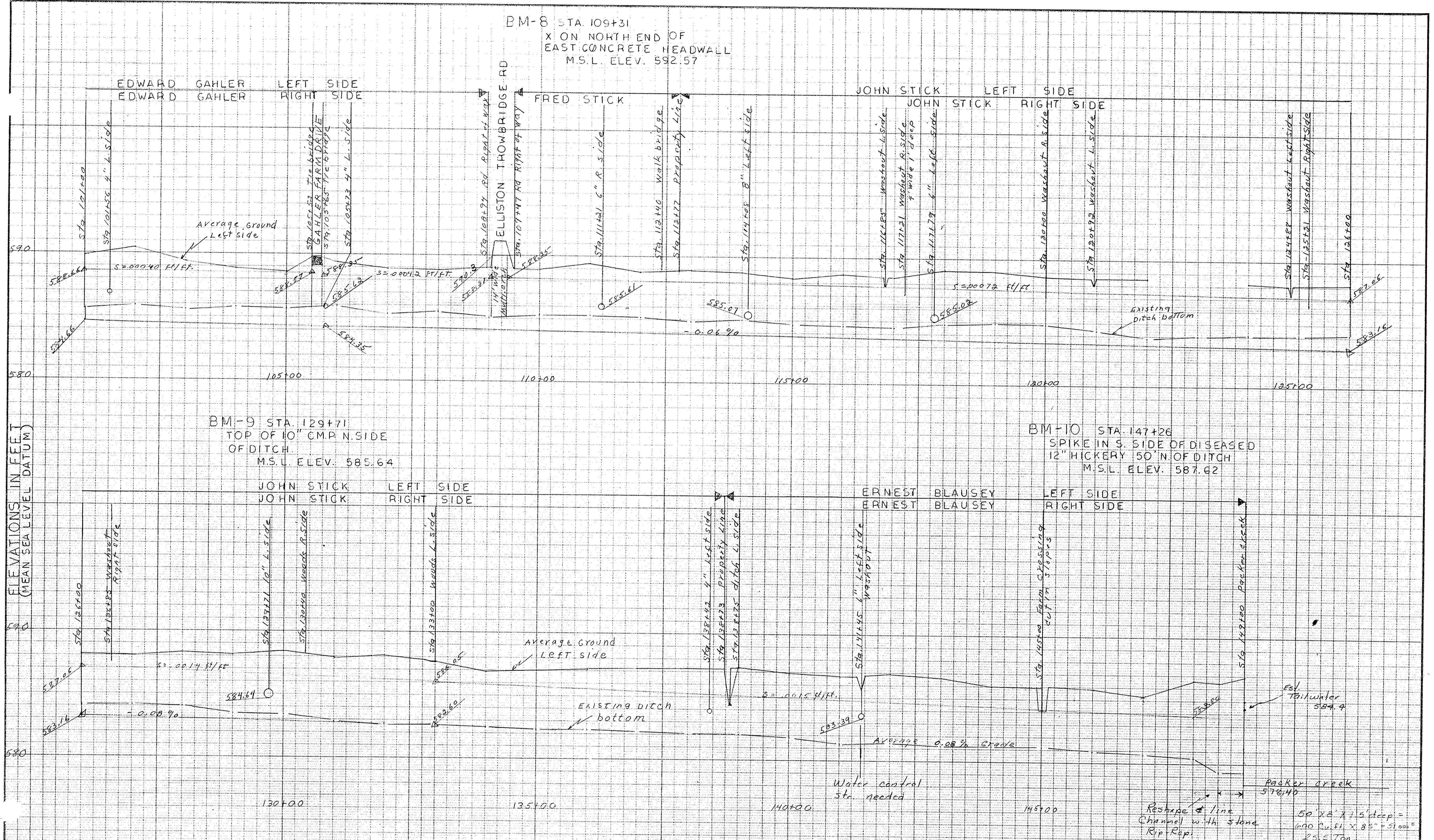
BM-7 STA. 79+40  
 TOP OF 8" CAST IRON PIPE  
 N. SIDE OF DITCH 150' W.  
 OF LINE  
 M. S. L. ELEV. 588.18

Est. Elev. 584.5  
 Probed by  
 Buckeye Pipe  
 Line 7-13-72  
 16"

Water control str.  
 Needed

<b>FREIMARK DITCH          DITCH IMPROVEMENT          CLAY-ALLEN-BENTON-TOWNSHIP          OTTAWA COUNTY, OHIO.</b>	
<b>U. S. DEPARTMENT OF AGRICULTURE          SOIL CONSERVATION SERVICE</b>	
Date 3/1/72	Approved by 
Designer Russell B. We	Title
Drawn Donald Apper	Title
Traced	Sheet No. 4 of 8
Checked	Drawing No. 39-01-383-72-43

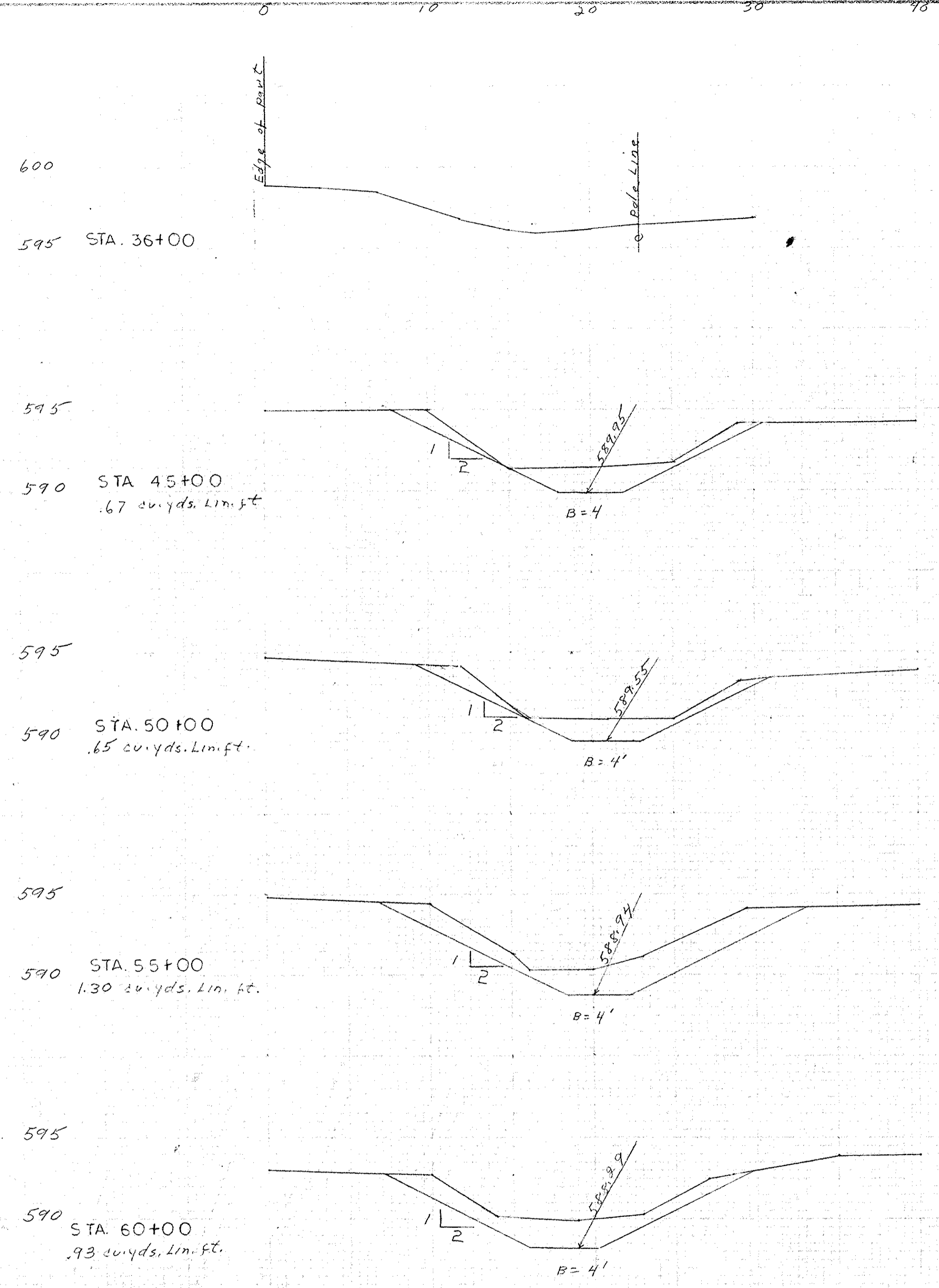
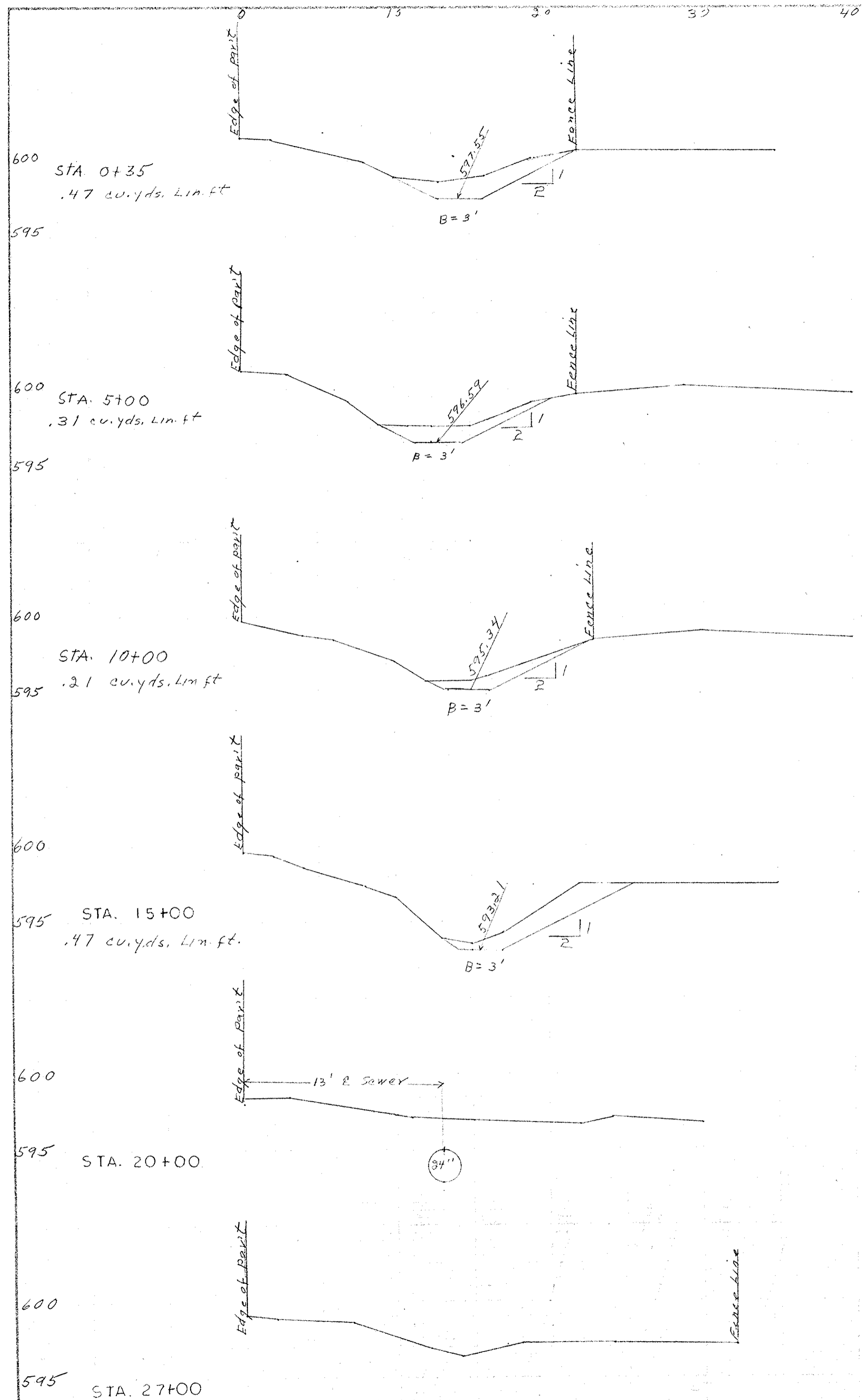
ELEVATIONS IN FEET  
(MEAN SEA LEVEL DATUM)



FREIMARK DITCH  
DITCH IMPROVEMENT  
CLAY-ALLEN-BENTON-TOWNSHIP  
OT TAWA COUNTY, OHIO.

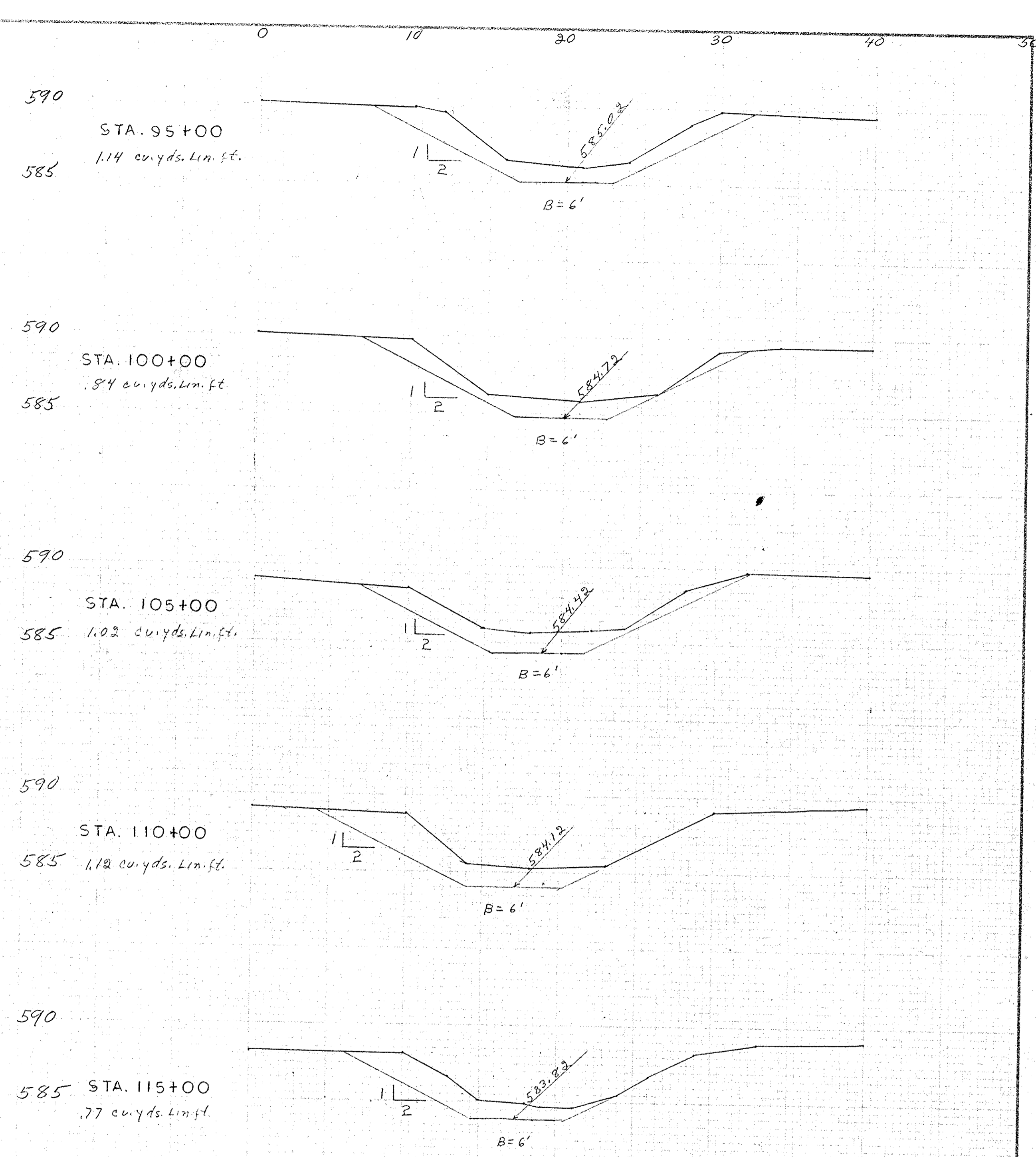
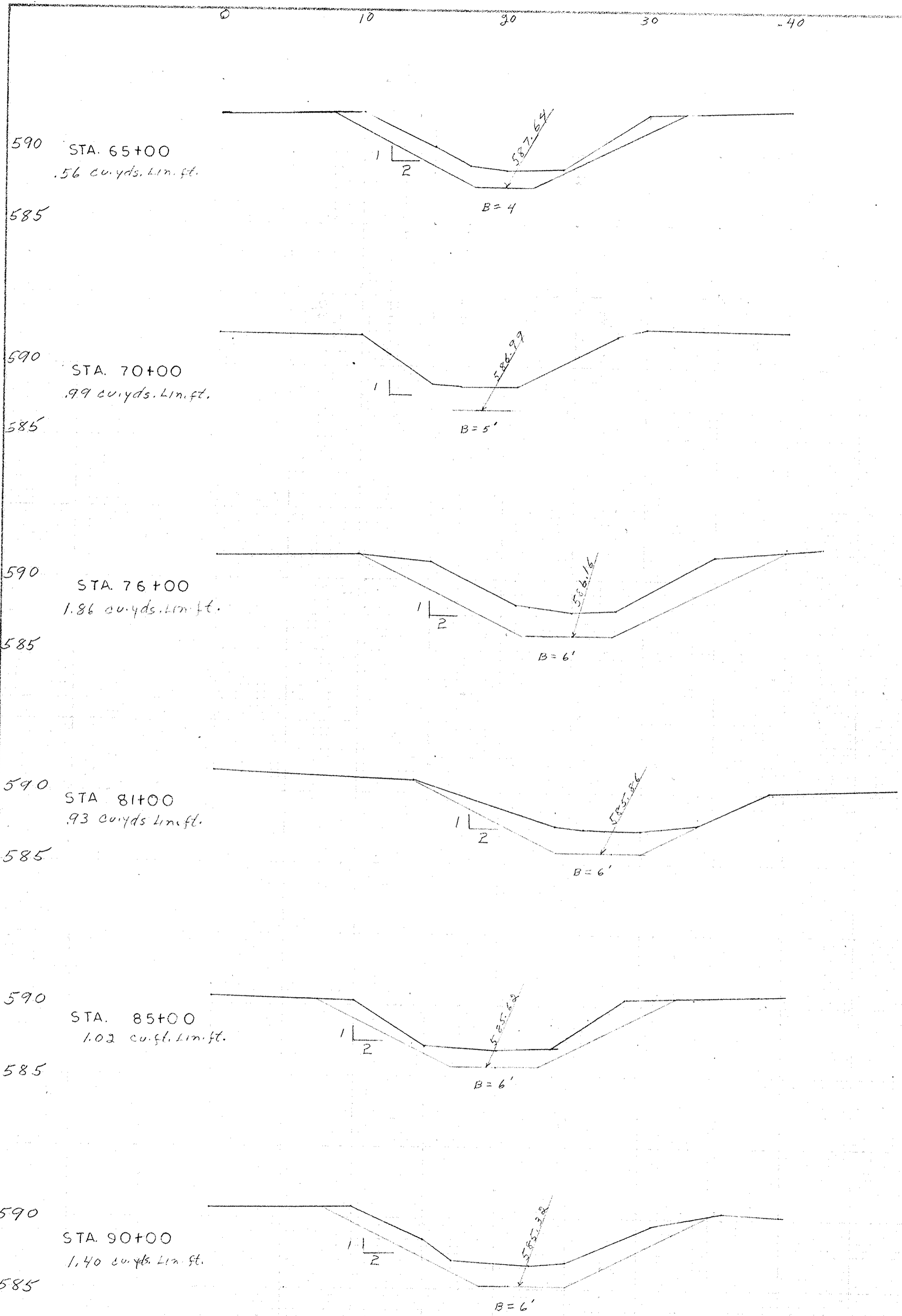
U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

Designed <i>Russell Bane</i> 3/72	Date	Approved by <i>[Signature]</i>
Drawn <i>Donald Opfer</i> 3/6/72	Title	Title
Traced	Sheet No. 5	Drawing No.
Checked	of 8	39-01-383-72-43



FREIMARK DITCH  
 DITCH IMPROVEMENT  
 CLAY-ALLEN-BENTON-TOWNSHIP  
 OTTAWA COUNTY, OHIO.  
 U. S. DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE

Date	7/72	Approved by	
Design	Donald. offer	Title	
Draw	Donald. offer	Title	
Traced		No	6
Checked		of	8
		Drawing No.	39-01-383-72-43

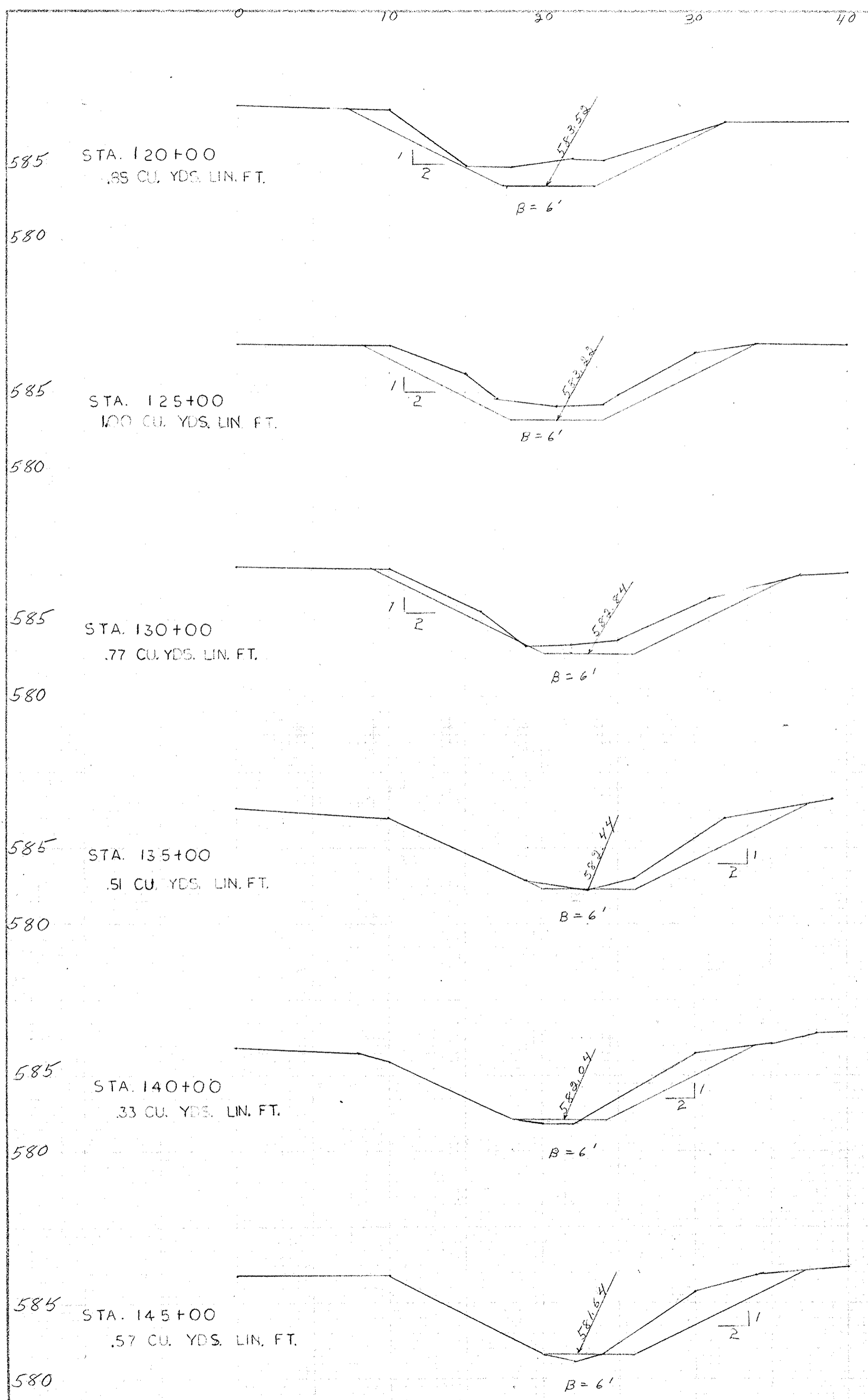


FREIMARK DITCH  
 DITCH IMPROVEMENT  
 CLAY-ALLEN-BENTON-TOWNSHIP  
 OTTAWA COUNTY, OHIO.

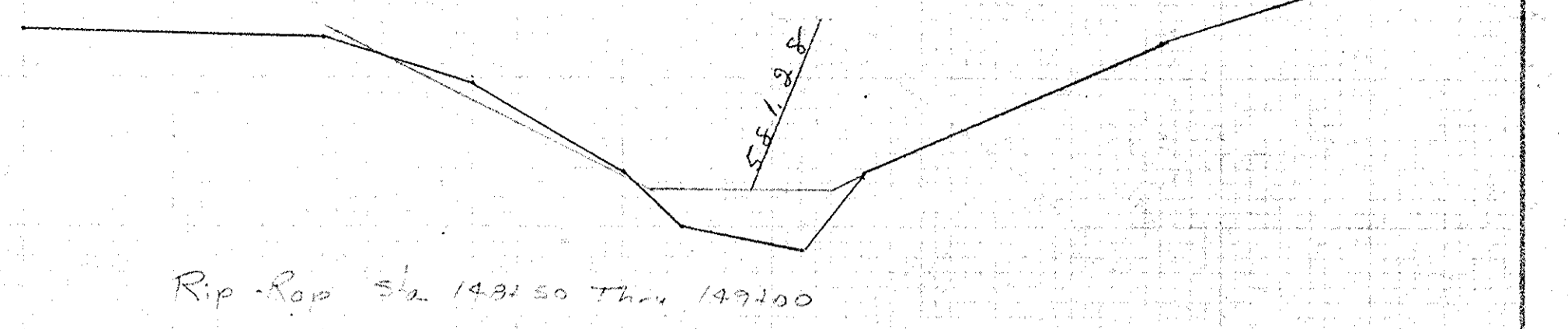
U. S. DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE

Designed <i>Donald Opfer</i>	Date <i>7/72</i>	Approved by _____
Drawn <i>Donald Opfer</i>	Date <i>3/6/73</i>	Title _____
Traced _____	Sheet _____	Drawing No. _____
Checked _____	No. <i>7</i>	39-01-383-72-43





585  
 STA. 148+50  
 580



**YARDAGE TABLE**

STATION	SQUARE INCHES	CU. YDS. LIN. FT.	AVERAGE CU. YDS.	DISTANCE	TOTAL YARDS
0+00			.47	35	17
0+35	.50	.47	.39	465	181
5+00	.33	.31	.27	500	136
10+00	.25	.23	.35	500	175
15+00	.51	.47	.35	344	120
18+44					628
43+40			.67	160	107
45+00	.72	.67	.66	500	330
50+00	.70	.65	.98	500	490
55+00	1.40	1.30	1.12	500	560
60+00	1.00	.93	.75	500	375
65+00	.60	.56	.78	500	390
70+00	1.06	.99	1.46	600	876
76+00	2.00	1.86	1.40	500	700
81+00	1.00	.93	.98	400	392
85+00	1.10	1.02	1.21	500	605
90+00	1.50	1.40	1.27	500	633
95+00	1.23	1.14	.99	500	495
100+00	.90	.84	.93	500	465
105+00	1.10	1.02	1.07	500	535
110+00	1.20	1.12	.95	500	475
115+00	.83	.77	.81	500	405
120+00	.91	.85	.93	500	465
125+00	1.08	1.00	.89	500	445
130+00	.83	.77	.64	500	320
135+00	.55	.51	.42	500	210
140+00	.36	.33	.45	500	225
145+00	.61	.57	.29	350	102
148+50	.00	.00			
TOTAL				YARDS	10,228

**FREIMARK DITCH  
 DITCH IMPROVEMENT  
 CLAY-ALLEN-BENTON-TOWNSHIP  
 OTTAWA COUNTY, OHIO.**

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

Date: \_\_\_\_\_  
 Design: *Donald Opfer* 7/72 Approved by: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Drawn: *Donald Opfer* 3/4/72  
 Title: \_\_\_\_\_  
 Traced: \_\_\_\_\_  
 Sheet No. 8 Drawing No. 39-01-383-72-43  
 of 8  
 Checked: \_\_\_\_\_