BARSHEL # 26

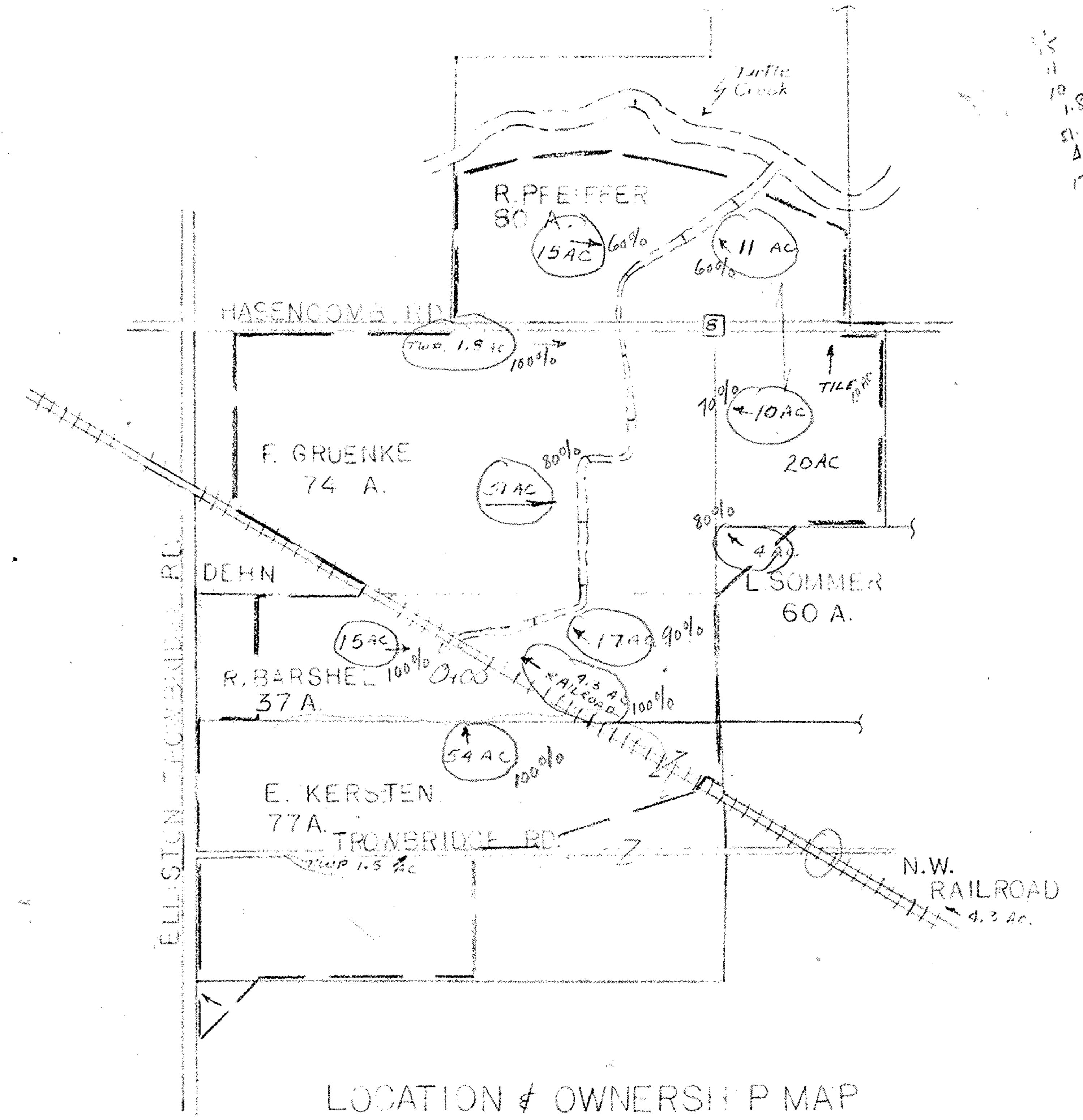
FILE COPY

BENCH MARK DESCRIPTION

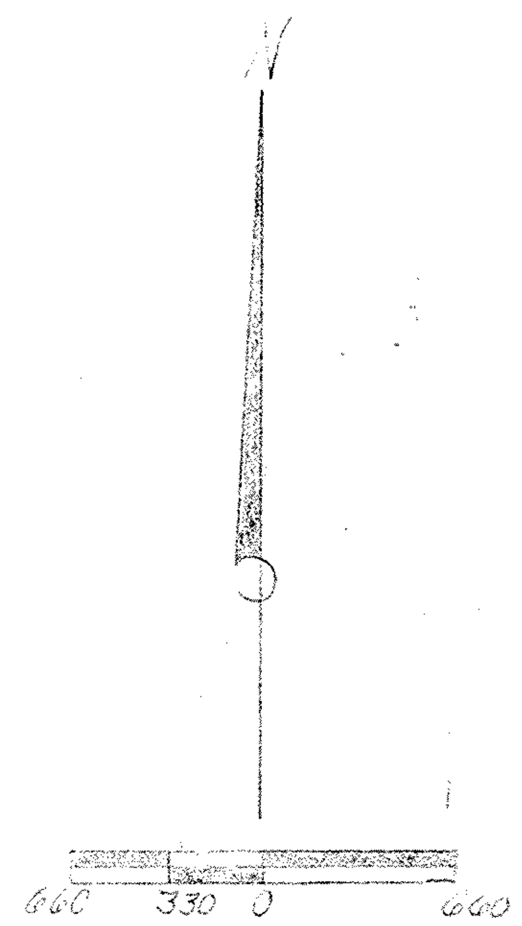
BM#1: TOP OF 24" CULVERT UNDER N.W. RAILROAD. M.S.L. - 585.29

BM#2: TOP OF SOUTH END OF 33" CULVERT UNDER HASENCOMB ROAD. M.S.L. - 581.71

BM#3: TOP OF SOUTH END OF 36" CAST IRON PIPE UNDER FARM LANE. M.S.L. - 580.74



LOCATION & OWNERSHIP MAP



SCALE IN FEET

LEGEND

PROPOSED IMPROVEMENT	
HIGHWAYS	
PROPERTY LINE	
SECTION CENTER	□
SECTION CORNER	
WATERSHED	
ACRES OWNED	00 ACRE
ACRES BENEFITED	00 →
RAILROAD	

SUPPORTING DATA

DRAINAGE AREA	183 ACRES
DESIGN COEFFICIENT	Q_B CURVE
LAND USE	GENERAL CROPS
SOIL TYPES	TOLEDO - FULTON
LAND SLOPE	0-2 %
TYPE DRAINAGE	SURFACE & TILE

THIS PLAN HAS BEEN APPROVED BY :

John G. Papcun — Oct. 10, 1974

OTTAWA COUNTY ENGINEER — DATE

Fred Gruenke

BENTON TWP. TRUSTEES — DATE

LOCATION - W. 1/2 OF SECTION 8, T7N R14E, BENTON TOWNSHIP OTTAWA COUNTY, OHIO.

SURVEYED 7/18/74

REFERENCE
LOOSE LEAF NOTES IN S.W.C.D
GROUP FOLDER #77

JOB CLASS V GROUP # 77

I. EXCAVATION:

A. Bottom Width: The bottom width shall be THREE (3) feet between sta. 0+37 and sta. 34+60.

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 3453 cubic yards of earth over 3423 lineal feet of ditch from sta. 0+37 to sta. 34+60.

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:

Wherever 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 each day within 4 hours after the clearing and shaping is completed. The berms will be seeded after spoil is spread. Fertilizer will be applied at the time or within 24 hours after seeding. Seed will be covered by use of adjustable spike tooth harrow, if not seeded within the above time limit.

Seeding rates per acre: Permanent seeding.
- 40 pounds tall fescue - (Kentucky 31 or Alta)
- 500 pounds 12-12-12 or equivalent fertilizer
- 2 tons straw or hay per acre for mulch
- 2 bushels oats seeded during spring or summer or 2 bushel wheat or rye seeded in the fall or winter may be used as a growing green mulch in place of straw mulch.

Mow when grass reaches a height of 10 to 12 inches.

A split seeding can be made after September 15 where weather conditions are good—with half the fescue applied in the fall or winter and the balance in the spring.

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 if necessary to correspond to the proposed ditch grade as indicated on the plan. If necessary, culverts will be enlarged to meet drainage design.

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

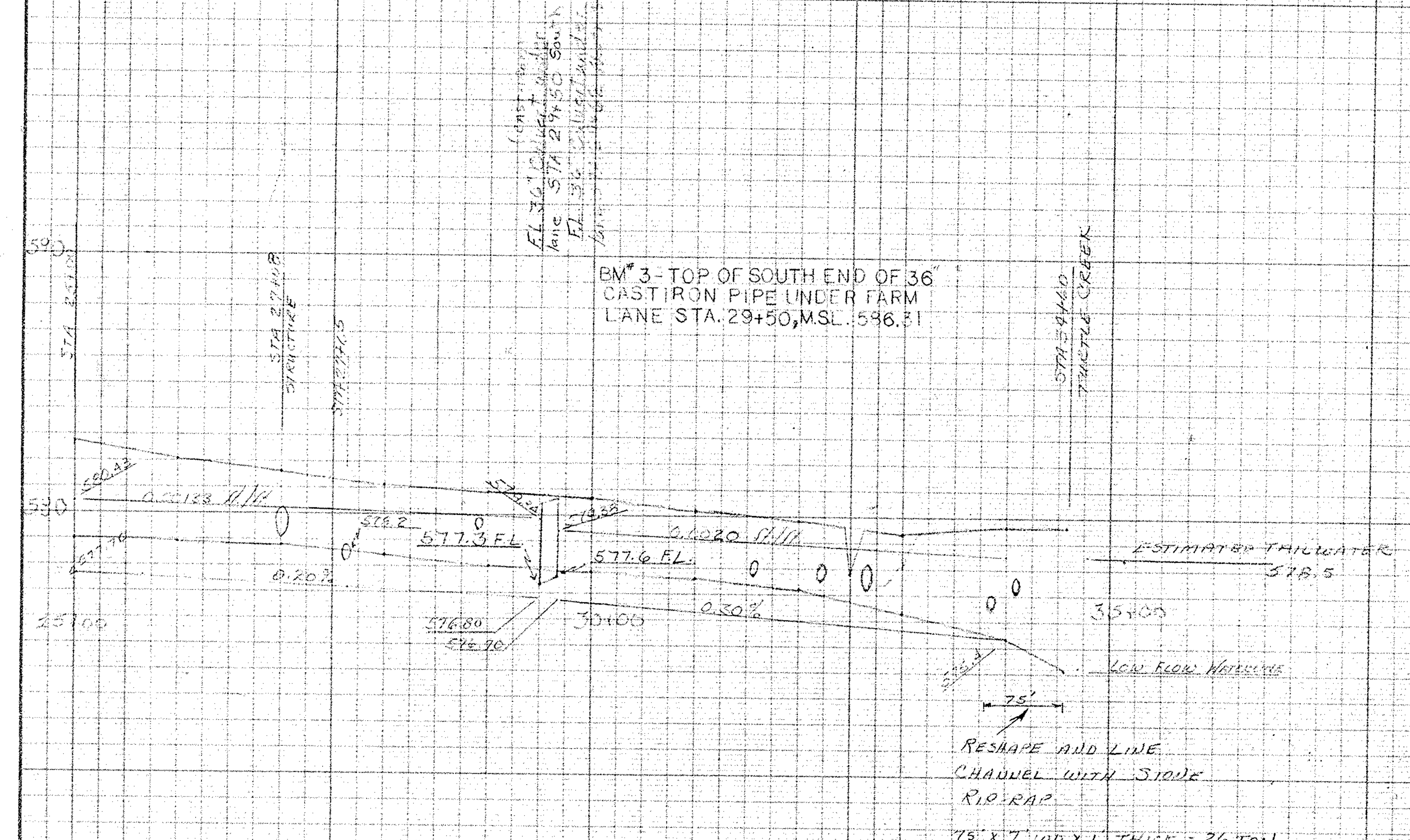
DESIGN SURVEY
BARSHEL DITCH
DITCH OUTLET IMPROVEMENT

BENTON T.W.P. OTTAWA CO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

	Date	
Designed		Approved by
		Title Civil Engineer 9-27-74
Drawn Tom A	Aug. 30	
		Title
Traced		Sheet No. 1 of 3 — Drawing No. 39-01-383-75-23
Checked W. Acher	9-74	

U.S. GOVERNMENT PRINTING OFFICE : 1966 OF—746-566



HYDRAULIC CALCULATIONS

HEADLOSS IN CULVERTS $H = \frac{V^2}{2G}$ (1+KE+KPL)

	EXISTING					REPLACEMENT
STATION	0+02	7+50	15+90	22+62	29+50	15+90
DRAINAGE AREA (AC)	77	98	123	161	183	123
Q_B FLOW (CFS)	13	17	21	27	31	21
DIAMETER (INCHES)	24"	36"	24	36	36	30
TYPE	VIT. CLAY	C. IRON	VIT. CLAY	C.M.P.	C. IRON	CONC.
n	0.011	0.011	0.011	0.025	0.011	0.013
LENGTH (FT)	35	40	25	34	12	24
X-SECTIONAL AREA (SQ.FT)	3.14	7.07	3.14	7.07	7.07	4.91
KP	0.0089	0.0052	0.0089	0.0267	0.0052	0.00922
KPL	0.32	0.21	0.22	0.91	0.06	0.22
KE	0.5	0.5	0.5	0.5	0.5	0.5
VELOCITY (FPS)	4.14	2.40	6.68	3.82	4.38	4.28
HEADLOSS (FT)	0.48	0.16	1.18	.55	0.46	0.49

CHANNEL FLOW $V = \frac{1.486}{n} r^{2/3} s^{1/2}$

REACH	0+00	7+90	16+15	22+96	29+62
	7+50	15+90	22+62	29+50	34+60
DRAINAGE AREA (AC)	98	123	161	183	194
Q_B FLOW (CFS)	17	21	27	31	33
"N"	0.04				
SLOPE - S (FT/FT)	0.001	0.002	0.0011	0.002	0.003
$S^{1/2}$	0.0316	0.0447	0.0332	0.0447	0.0548
$Q/S^{1/2}$ = KD	538	470	813	694	602
KD VALUE USED	577	465	853	709	577
SIDE SLOPE	2:1				
BOTTOM WIDTH (FT)	3	3	3	3	3
DEPTH (FT)	2.0	1.8	2.4	2.2	2.0
AREA (SQ FT)	14.00	11.88	18.72	16.28	14.00
VELOCITY = Q/A (FPS)	1.2	1.8	1.4	1.9	2.4

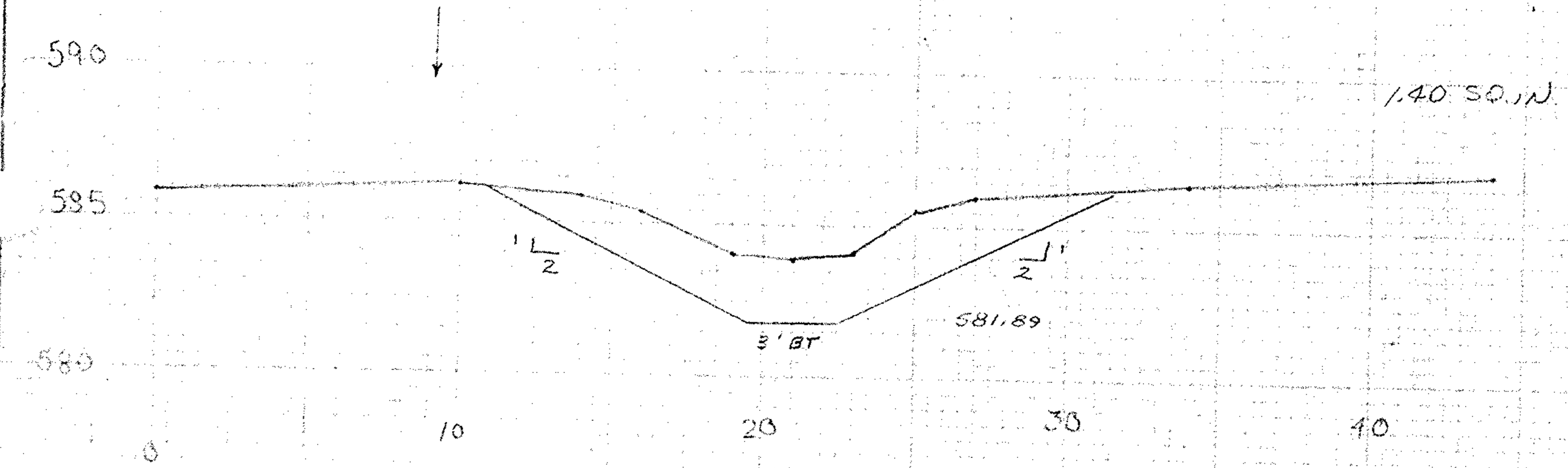
DITCH PROJECT
BARSHEL DITCH

BENTON TWP. OTTAWA CO.

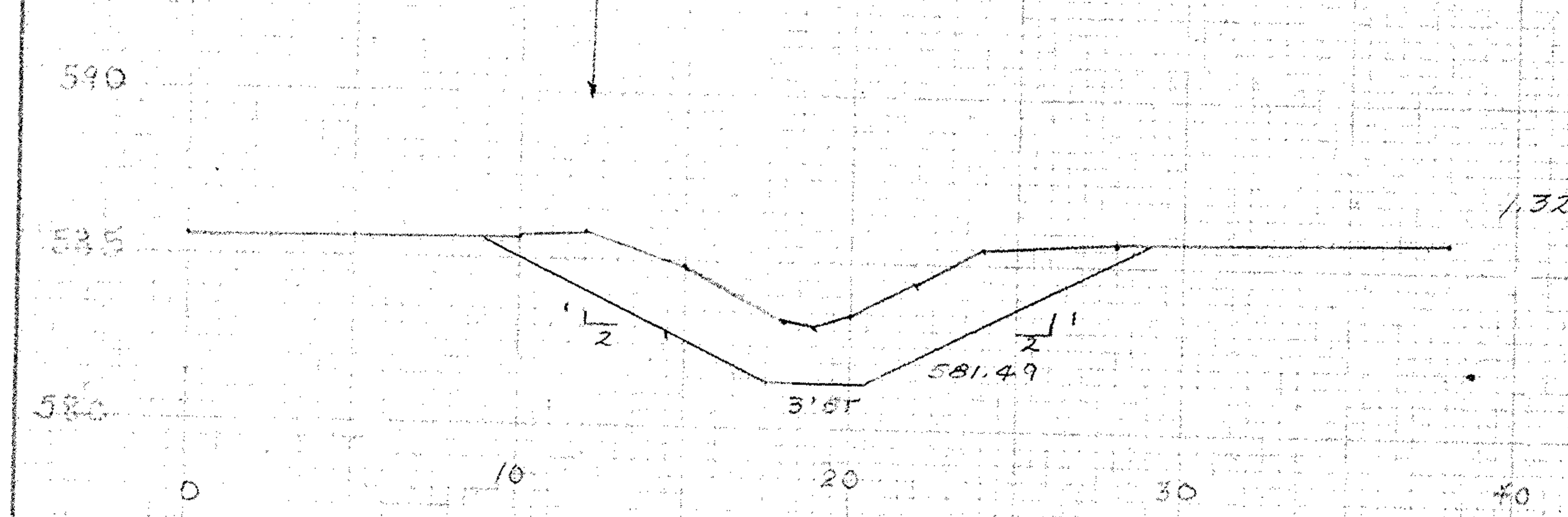
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed [illegible]	Date 7/74	Approved by [illegible]
Drawn [illegible]		Title
Traced		Title
Checked M. Acme	9-74	Sheet No. 2 of 3 — Drawing No. 37-01-383-75-23

CROSS SECTION STA. [illegible]



CROSS-SECTION STA. 5+00



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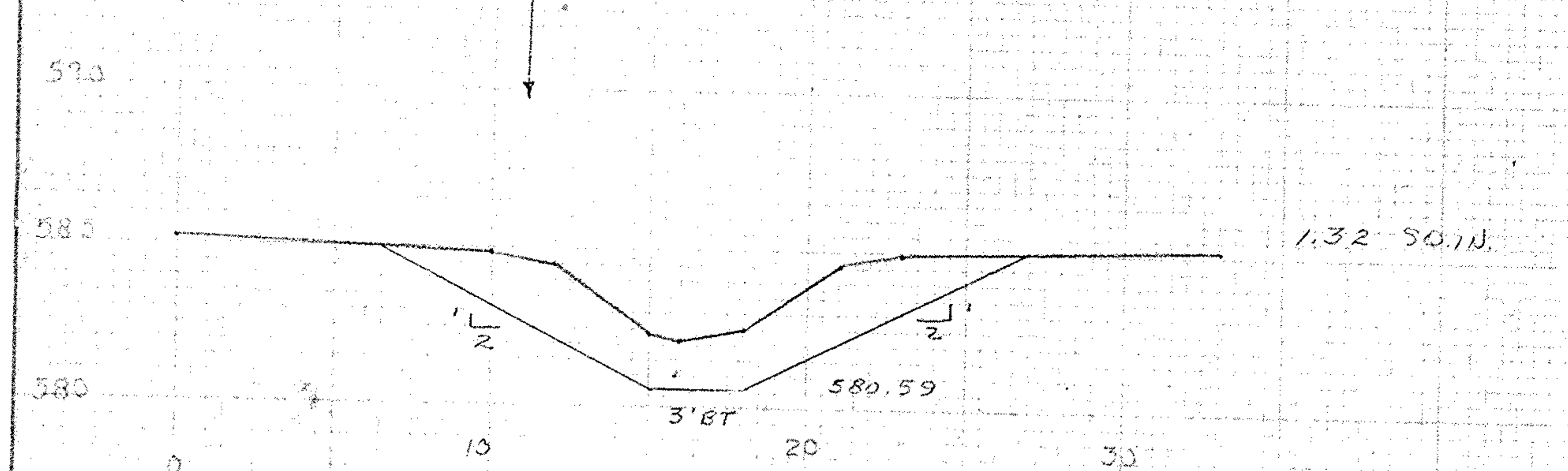

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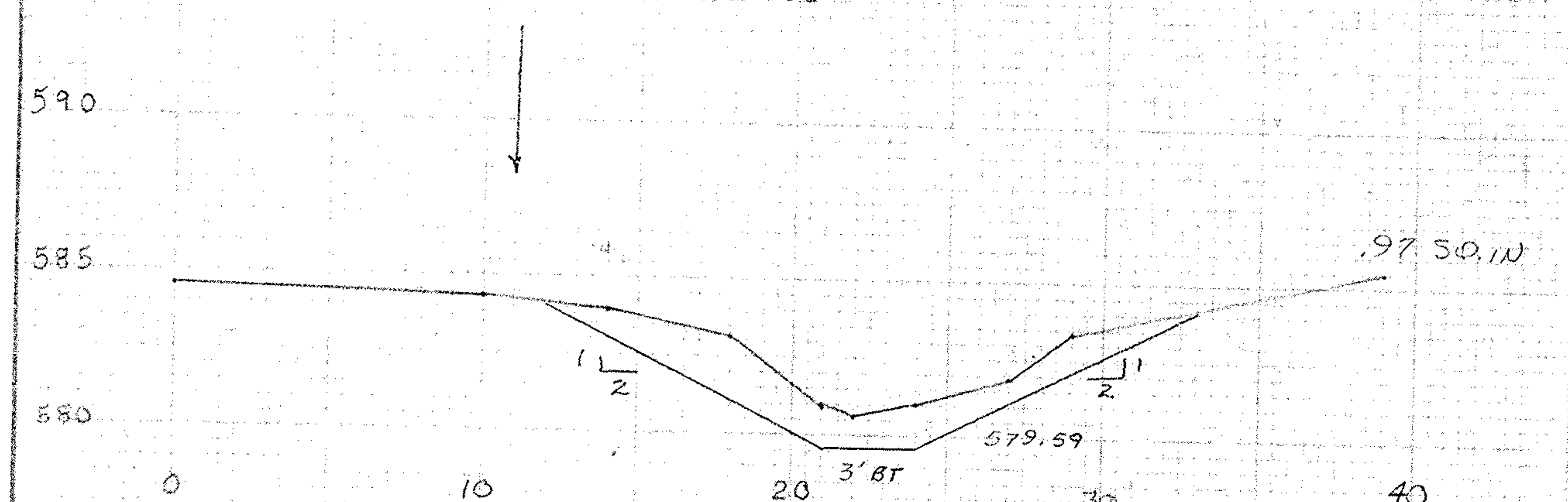

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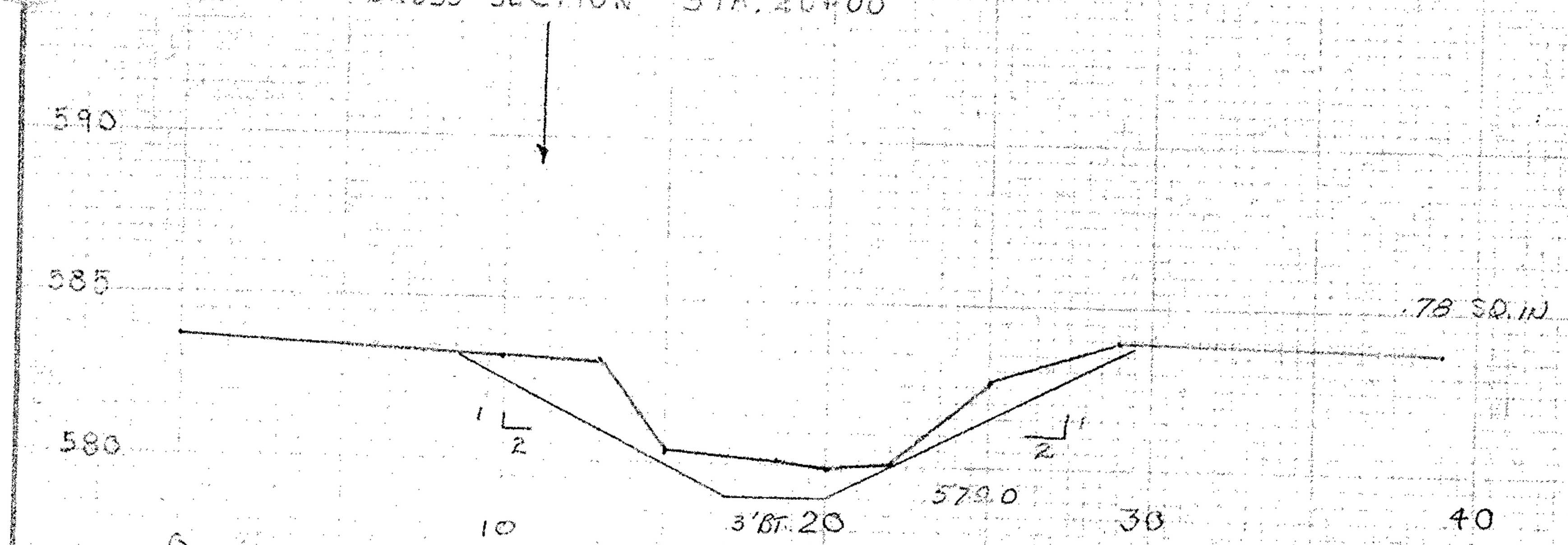

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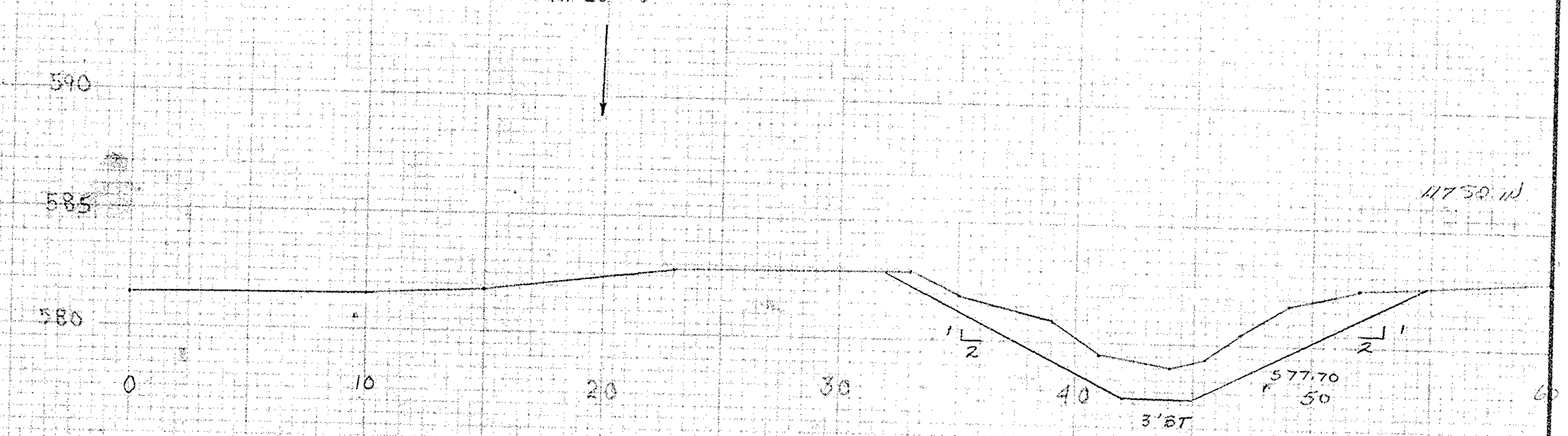

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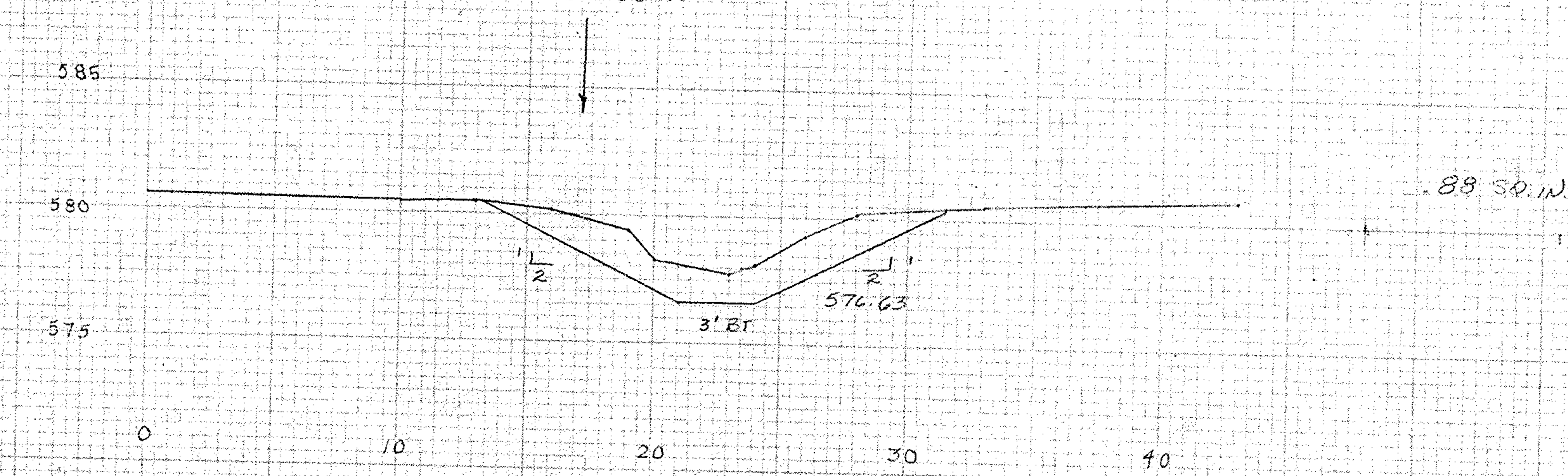

YARDAGE TABLE

STA	SQ. IN	AV. SQ. IN	(.93 CON. FACTOR) CU. YD.	DISTANCE	TOTAL
0+37	1.40				
		1.40	1.30	63	82
1+00	1.40				
		1.36	1.26	400	504
5+00	1.32				
		1.32	1.23	500	615
10+00	1.32				
		1.14	1.06	500	530
15+00	.97				
		.88	.82	500	410
20+00	.78				
		.98	.91	500	455
25+00	1.17				
		1.03	.96	500	480
30+00	.88				
		.88	.82	460	377
34+60	.88				
			TOTAL	3423	3453 CU. YD.

DITCH PROJECT
BARSHEL DITCH

BENTON TWP. OTTAWA CO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed ______ Date ______	Approved by ______
Drawn ______ Aug. 26	Title ______
Traced ______	Title ______
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