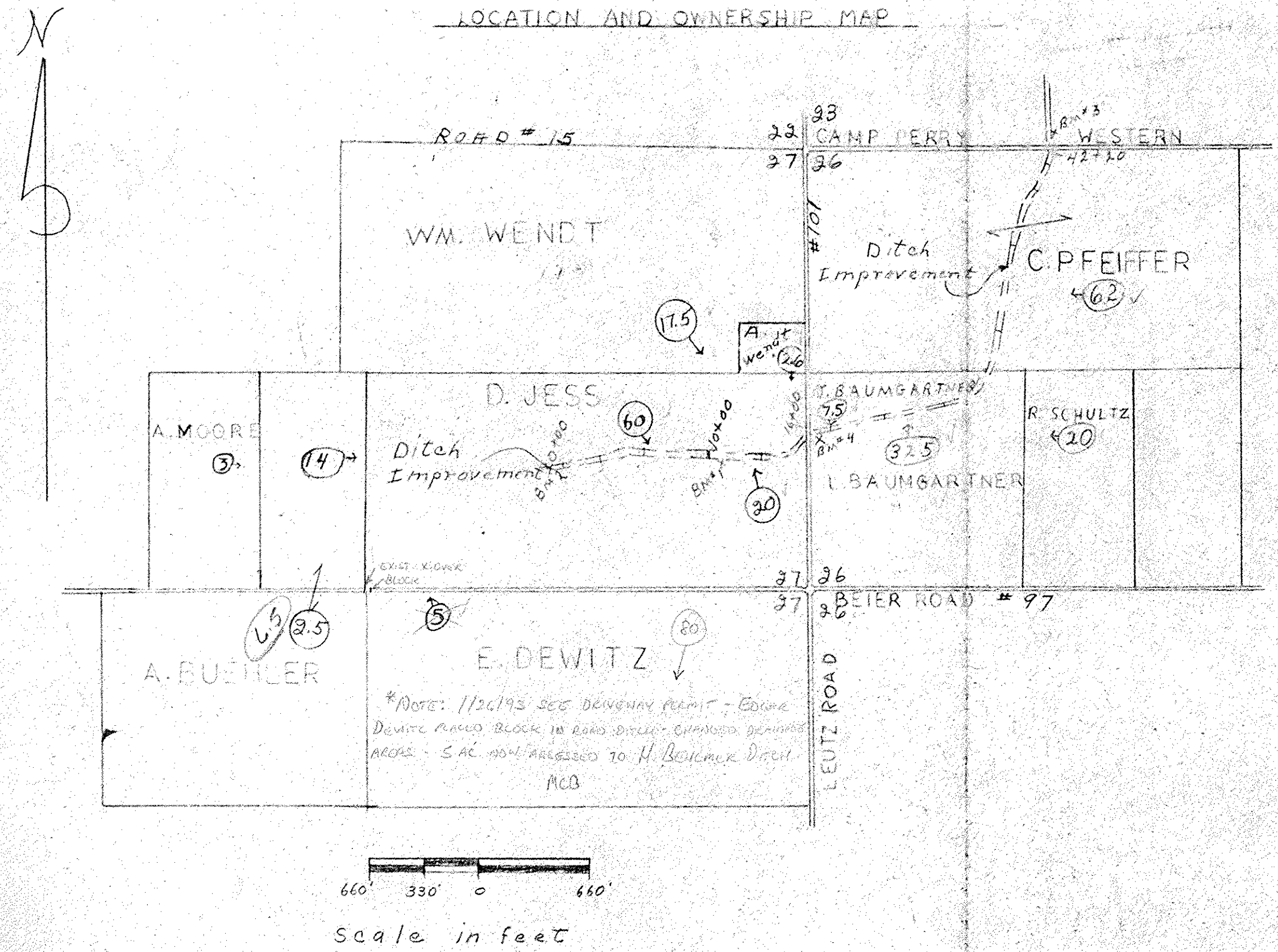


LOCATION AND OWNERSHIP MAP

HYDRAULIC CALCULATIONS

Done



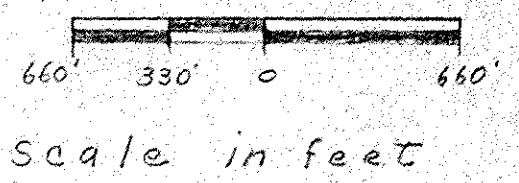
Channel Flow: $v = \frac{1.486}{n} R^{2/3} S^{1/2}$

Reach	Sta. 0+00	16+00	42+20
to Sta.	16+00	42+20	
Drainage Area (Ac.)	125	247	
Qe flow (cfs)	14	25	
"n"	.04	.04	
Slope - s (ft./ft.)	.0007	.0007	
s 1/2	.0266	.0266	
Q/S 1/2 = Kd	526	940	
Kd Value Used	543	939	
Side Slope	1 1/2:1	1 1/2:1	
Bottom Width (ft.)	3	4	
Depth (ft.)	2.1	2.5	
Area (sq.ft.)	12.93	19.39	
Velocity = Q/A (fps)	1.08	1.29	

CULVERTS: Head Loss in Culverts $h = \frac{4V^2}{2g} (1 + K_e + K_p)$

Station	10+00	16+00	42+20
Drainage Area (ac.)	85	125	247
Qe Flow (cfs)	10	14	25
Diameter (inches)	24	24	30
Type	VST	DIP	DIP
n	.013	.025	.025
Length (ft.)	30	32	28
X-Sectional Area (sq.ft.)	3.14	3.14	4.91
Kp	.012	.046	.034
Ke1	.360	1.472	.952
Ke	.5	.5	.5
Velocity (fps)	3.2	4.46	5.1
Head Loss (ft.)	.30	.89	.98

- DRAINAGE AREA --- 247 Acres
- LAND USE --- GENERAL FARMING
- SOIL TYPE --- TOLBO SILTY CLAY
- LAND SLOPE --- 0 - 2%
- DESIGN COEFFICIENT --- Qc CURVE
- LEGEND:
- PROPOSED DRAINAGE IMPROVEMENT --- [Symbol]
- HIGHWAYS --- [Symbol]
- PROPERTY LINES --- [Symbol]
- ACRES IN WATERSHED --- [Symbol]
- BM #2 - TOP OF EAST END OF NEW 10" TILE AT STATION 0+00 OF JESS DITCH. M.S.L. ELEVATION - 582.27
- BM #1 - TOP OF WEST END OF 24" V.S.P. UNDER FARM LANE 550' WEST OF LEUTZ ROAD, 900' NORTH OF EIER ROAD. M.S.L. ELEVATION - 583.12
- BM #3 - TOP OF NORTH END OF 30" C.I.P. UNDER CAMP PERRY WESTERN ROAD APPROXIMATELY 1500' EAST OF LEUTZ ROAD. M.S.L. ELEVATION - 579.06
- BM #4 - TOP OF BELL OF 30" V.S.P. ON EAST SIDE OF LEUTZ ROAD APPROXIMATELY 900' NORTH OF EIER ROAD. M.S.L. ELEVATION - 582.87



SPECIFICATIONS

1. EXCAVATION

- A. Bottom Width: The bottom width shall be three (3) feet between sta. 0+00 and sta. 16+00. The bottom width shall be four (4) feet between sta. 16+00 and sta. 42+20.
- B. Bank Slopes: The ditch banks are to be constructed to at least 1 1/2 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 5311 cubic yards of earth over 4220 lineal feet of ditch.
- 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.

SPECIFICATIONS (Cont.)

V. TILE OUTLETS

Land owners 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 graded underway. 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. 2 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.

- Station- 10+00
- Station- 16+00 (PERMIT REQUIRED)
- Station- 31+77 To be removed.

- 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 dragline operations. Stumps on the farm 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 depths; and ten (10) feet wide for ditches over six feet in depth.
- IV. SPOIL BANKS: Excavated material should be deposited and spread along one or both sides of the ditch, as determined. 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.

ENGINEERING JOB CLASS III

LOCATION - N.W. 1/4 OF SEC. 26 & SE CORNER SEC. 27, T. 7 N - R. 15 E - CORROLL TWP., OTTAWA COUNTY, OHIO

SURVEYED - DOYLE SCHWEN

ED CAMPBELL

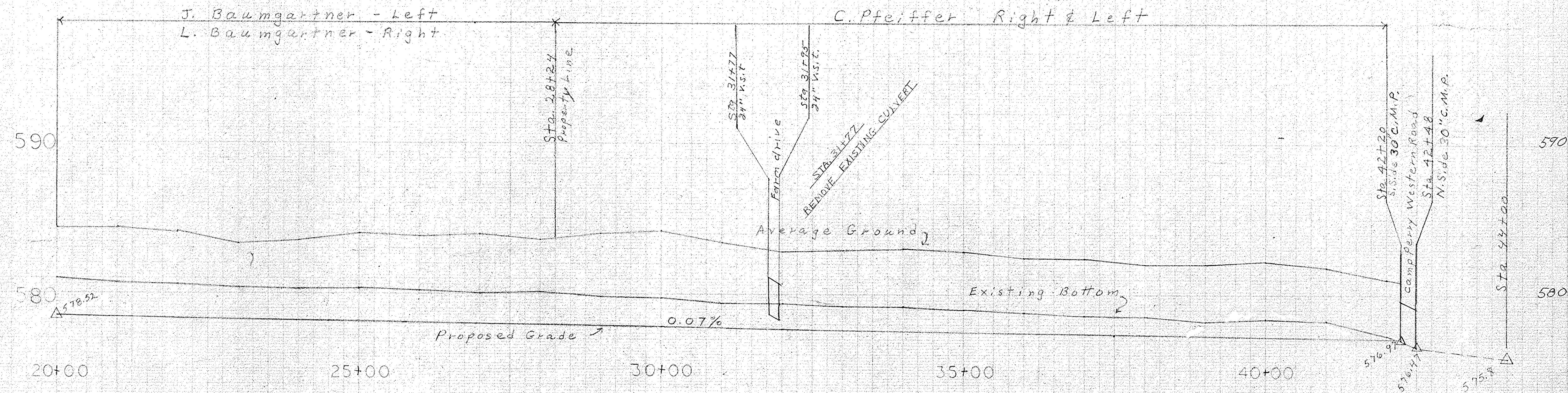
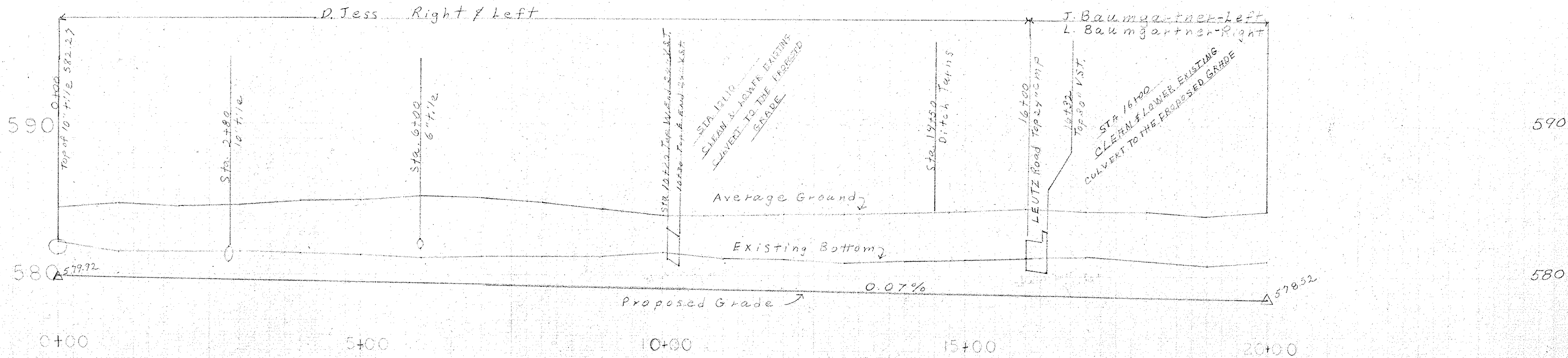
DONALD OFFER 7/15/65

REFERENCE - NOTES ON FILE IN OFFICE OF OTTAWA SOIL & WATER CONSERVATION DISTRICT OFFICE.

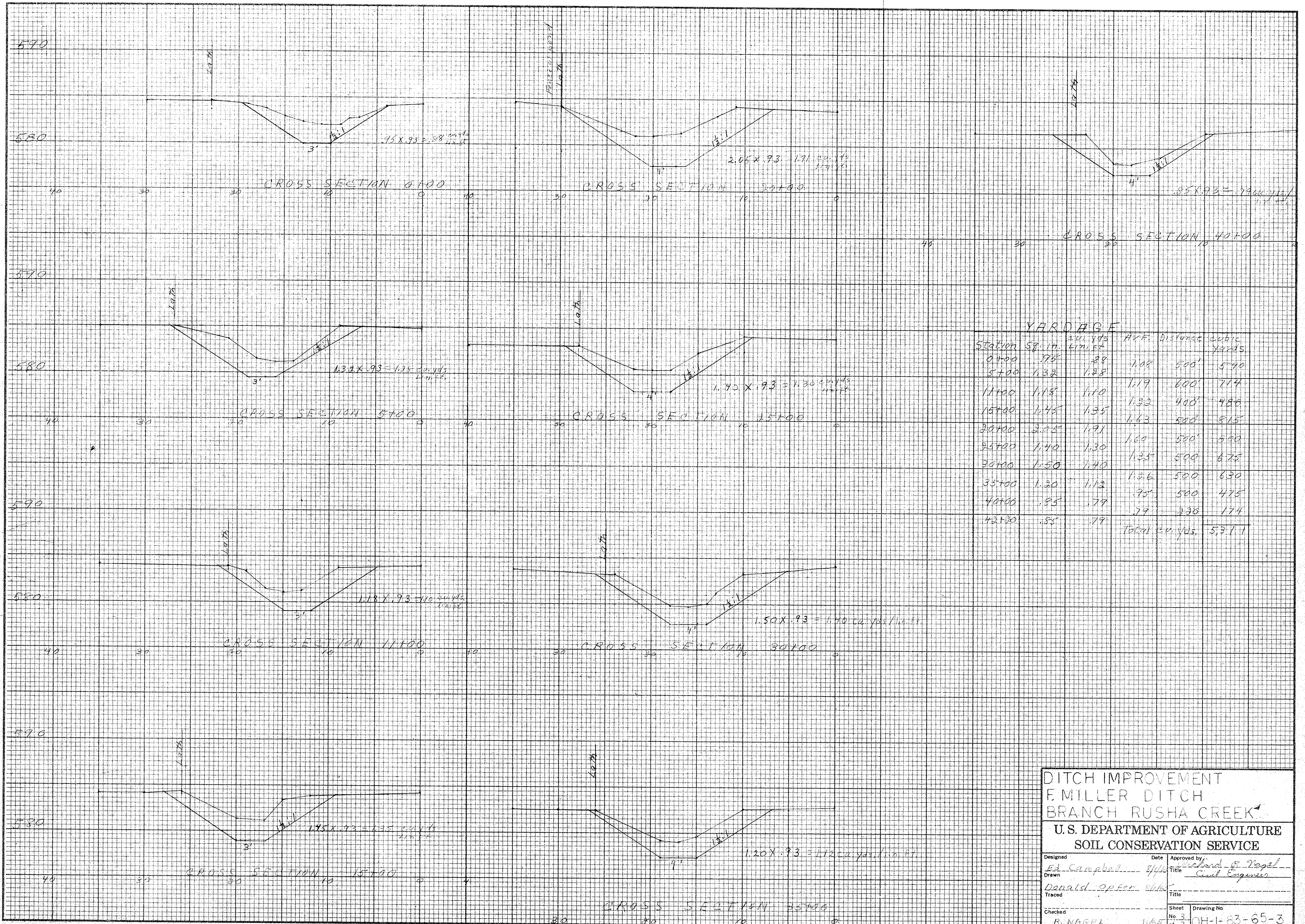
DITCH IMPROVEMENT
F. MILLER DITCH
BRANCH RUSHA CREEK
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by
EDWARD CAMPBELL	8/1/65	Richard R. Nagel
Drawn		Title
Edward Campbell	8/1/65	Civil Engineer
Traced		Title
Checked		Sheet
R. NAGEL	11/65	No. 1
		of 3
		Drawing No.
		OH-1-83-65-3

ELEVATION IN FEET
(MEAN SEA LEVEL DATUM)



DITCH IMPROVEMENT			
F. MILLER DITCH			
BRANCH RUSHA CREEK			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed by Ed. Campbell	Date 11/65	Approved by Richard P. Nagel	Title Civil Engineer
Drawn Ed. Campbell	Date 12/1/65		
Traced	Sheet No. 2	Drawing No.	
Checked R. NAGEL	Date 11/65		



Station	Sp. 17	441.475 421.52	H/F	Distance	Cubic Yards
0+00	.95	.88	1.08	500'	540
5+00	1.32	1.28	1.19	600'	714
11+00	1.18	1.10	1.32	400'	486
16+00	1.45	1.35	1.63	500'	815
20+00	2.05	1.91	1.68	500'	890
25+00	1.40	1.30	1.35	500'	675
30+00	1.50	1.40	1.36	500'	630
35+00	1.20	1.12	.95	500'	415
40+00	.85	.79	.79	330'	174
42+00	.55	.79			
Total cu. yds.					5,311

**DITCH IMPROVEMENT
F MILLER DITCH
BRANCH RUSHA CREEK**

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

Designed <i>Ed Campbell</i>	Date <i>4/1/55</i>	Approved by <i>Richard E. Vogel</i>
Drawn <i>Donald Opper</i>	Traced <i>Donald Opper</i>	Title <i>Civil Engineer</i>
Checked <i>R. N. G. E. L.</i>	Sheet No. <i>3</i> of <i>3</i>	Drawing No. <i>OH-1-63-65-3</i>