

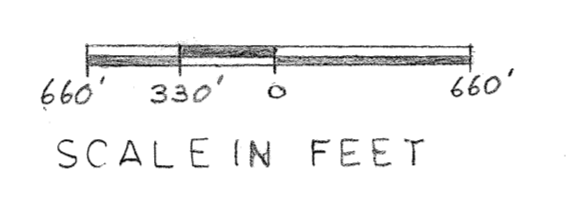
DRAINAGE AREA 262  
 LANDUSE - - - GENERAL FARMING  
 SOIL TYPE - TOLEDO, FULTON, DANBURY  
 LAND SLOPE - - - 0-2%  
 DESIGN COEFFICIENT - -  $q_b$  CURVE  
 TYPE DRAINAGE - - SURFACE & TILE

CONSTRUCTION DATA

STATION	GRADE %	BOTTOM WIDTH	SIDE SLOPE	CUBIC YARDS	AVERAGE DEPTH
28+34	.06	3'	1 1/2 : 1	1467	4.5
32+65	.06	4'	1 1/2 : 1	205	3.5

**LEGEND**  
 PROPOSED IMPROVEMENT - - - - -  
 HIGHWAYS - - - - -  
 PROPERTY LINE - - - - -  
 WATERSHED - - - - -  
 SECTION CENTER - - - - -  
 ACRES IN WATERSHED - - - - -  
 GAS LINE - - - - -  
 ACRES OWNED - - - - -  
 QUISNO DITCH OVER RUN - - - - -

**BENCH MARK DESCRIPTION**  
 BM#1 SPIKE IN N. SIDE OF POWER POLE S. SIDE DARR HOPFINGER RD. 2800' E. OF MULCAHY RD. M.S.L. ELEV. 581.12  
 BM#2 TOP OF N.W. CORNER OF CONCRETE LID OF CATCH BASIN LOC. APPROX. 2100' E. OF MULCAHY RD. M.S.L. ELEV. 578.54  
 BM#3 X CHISELED N.W. CORNER OF CONCRETE BLOCK CATCH BASIN S. SIDE DARR HOPFINGER RD 1300' E. MULCAHY RD. M.S.L. ELEV. 576.81  
 BM#4 X CHISELED TOP OF HEADWALL S.E. CORNER OF INTERSECTION OF DARR HOPFINGER & MULCAHY RD. M.S.L. ELEV. 576.56  
 BM#5 X CHISELED IN CENTER OF E. HEADWALL APPROX. 600' N. E. SIDE OF WILDLIFE AREA RD. BY PUMP STATION. M.S.L. ELEV. 576.37



**SPECIFICATIONS**

- I. EXCAVATION:**  
 A. BOTTOM WIDTH: THE BOTTOM SHALL BE THREE (3) FEET BETWEEN STA. 0+00 TO STA. 28+34 AND FOUR (4) FEET TO STA. 32+65.  
 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 EXISTING DITCH DO NOT DISTURB SLOPES ON THE ROAD SIDE OF THE IMPROVEMENT.  
 D. TOTAL EXCAVATION: THE TOTAL EXCAVATION CONSISTS OF 1,672 CUBIC YARDS OF EARTH OVER 3,265 LINEAL FEET OF DITCH.  
 E. EXCESS YARDAGE: NO EXTRA COMPENSATION WILL BE PAID FOR SUCH EXCAVATION IN EXCESS OF YARDAGE HERE IN ESTIMATED. THE CONTRACTOR SHOULD VIEW THE PROPOSED WORK TO HIS OWN SATISFACTION.
- II. CLEARING:**  
 ALL TREES AND BRUSH WHICH WOULD INTERFERE WITH THE EXCAVATION MUST BE CLEARED FROM THE DITCH RIGHT-OF-WAY AHEAD OF EXCAVATION, AND BE DISPOSED OF BY BURNING OR REMOVED FROM RIGHT-OF-WAY.
- III. BERM WIDTH:**  
 UNLESS OTHERWISE NOTED THE BERMS WILL HAVE THE FOLLOWING 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. SPOIL BANKS:**  
 EXCAVATED MATERIAL SHOULD BE DEPOSITED AND SPREAD ALONG ONE OR BOTH SIDES OF DITCH EXCEPT WHERE USED FOR LEVEES. SLOPE OF SPOIL AFTER SPREADING SHOULD BE 3:1 ON CHANNEL SIDE AND 4:1 ON FIELD SIDE. HEIGHT OF SPOIL NOT TO EXCEED ONE FOOT ABOVE AVERAGE GROUND.
- V. TILE OUTLETS:**  
 LANDOWNERS SHALL PROTECT THEIR TILE OUTLETS WITH A SECTION OF CONTINUOUS RIGID PIPE AND RODENT GUARD
- VI. SURFACE WATER OUTLETS:**  
 WHERE A SURFACE DITCH ENTERS MAIN DITCH AT A HIGHER ELEVATION PROTECTION FROM EROSION SHOULD BE PROVIDED FOR WITH A SUITABLE STRUCTURE SEE YOUR SOIL CONSERVATION SERVICE FOR ASSISTANCE.
- VII. DITCH BANK SEEDING:**  
 THE DITCH BANKS WILL BE SEEDED AFTER EACH DAY'S WORK TO A TALL FESCUE AT THE RATE OF 25 LBS. PER ACRE. A MINIMUM OF 500 LBS. OF 10-10-10 FERTILIZER OR EQUIVALENT BE APPLIED 1 ACRE OF DITCH BANK.

**HYDRAULIC CALCULATIONS**

CHANNEL FLOW $V = 1.486 R^{2/3} S^{1/2}$		HEADLOSS IN CULVERTS	
MINIMUM SIDE SLOPE 1 1/2 : 1		$H = \frac{V^2}{2g} (1 + KE + KPL)$	
MAXIMUM VELOCITY 5 FPS.			
BANK FULL OR 10 YR. FREQUENCY.			
REACH STA.	0+00 28+34	STATION	9+74 15+08
TO STA.	28+34 32+65	DRAINAGE AREA	85 95
DRAINAGE AREA	140 262	$Q_b$ FLOW (C.F.S.)	14.3 16
$Q_b$ FLOW C.F.S.	23.5 44	DIAMETER (IN.)	24" 24"
S 1/2	.0245 .0245	TYPE	R/C R/C
SLOPE - (FT./ FT.)	.0006 .0006	N	.013 .013
$Q/S^{1/2} = KD$	959 1800	LENGTH (FT.)	40' 40'
KD-VALUE USED	999 1878	X SECTIONAL AREA (SQ. FT.)	3.14 3.14
SIDE SLOPE	1 1/2 : 1 1 1/2 : 1	KP	.012 .012
BOTTOM WIDTH	3' 4'	KPL	.48 .48
DEPTH - FT.	2.8 3.5	KE	.5 .5
"N"	.04 .04	VELOCITY (FPS.)	4.55 5.10
AREA - SQ. FT.	20.16 323.9	HEAD LOSS FT.	.64 .80
VELOCITY - C.F.S.	1.17 1.36		

LOCATION - S. 1/4 OF N.W. 1/4 OF SEC. 9 S.E. 1/4 OF N.E. 1/4 OF SEC. 8 R 16 E. T6N. BAY TWP. OTTAWA COUNTY, OHIO.

SURVEYED - D. SOMMER E. CAMPBELL D. OFFER 1-13-67

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

**VIII CULVERTS:**

EXISTING CULVERTS WILL BE CLEANED AND INVERTS (FLOWLINE) LOWERED TO CORRESPOND TO THE PROPOSED GRADE AS INDICATED ON PLAN.  
 STA. - 9+74 TO 10+28 54 FT. 14' REMOVED W. END  
 STA. - 15+22 TO 15+48 26 FT. 14' ADDED TO E. END

THIS DITCH PLAN HAS BEEN APPROVED BY  
*John G. Pappas* 4/11/67  
 OTTAWA COUNTY ENGINEER DATE

ENGINEERING JOB CLASS II

DITCH PLAN GROUP # 26  
 SEAMAN DITCH  
 BAY TWP. OTTAWA, COUNTY

U. S. DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE

Designed DONALD OFFER	Date 1/19/67	Approved by Richard B. Nagel
Drawn DONALD OFFER	Date 1/19/67	Title Civil Engineer
Traced		Title P.E. 31762
Checked Ed Campbell	Date 2/24/67	Sheet No. 1 of 3
		Drawing No. OH-1-83-67-4