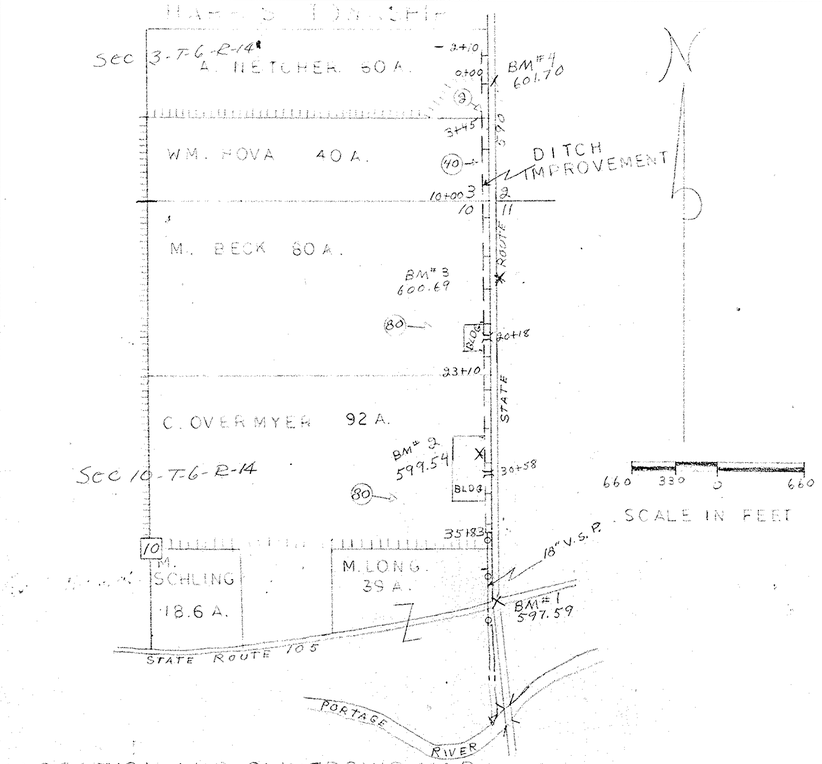
#7B



LOCATION AND OWNERSHIP MAP

SUPPORTING DATA

DRAINAGE AREA - - - - - - 202 ACRES
LAND USE - - - - GENERAL FARMING
SOIL TYPE - - - HOYTVILLE-NAPPANEE
LAND SLOPE - - - - - - - 0 - 2%
TYPE DRAINAGE - - SURFACE & TILE
DESIGN COEFFICIENT Q_b CURVE

CONSTRUCTION DATA

STATION	GRADE %	BOTTOM WIDTH	SIDE SLOPES	CUBIC YARDS	AVERAGE DEPTH
3+45	.05	3'	1 1/2:1	235	3.5'
13+00	.15	3'	1 1/2:1	825	4'
35+83	.08	3'	1 1/2:1	1818	5'

LEGEND

EXISTING IMPROVEMENT
HIGHWAYS
PROPERTY LINE
WATERSHED
SECTION ENTER
SECTION CORNER
ACRES IN WATERSHED
ACRES OWNED
18" SEWER TILE

BENCH MARK DESCRIPTION

BM#1 TOP OF RAILROAD SPIKE IN CENTER OF CROSS ROADS OF ST. RT. 105 & 590
M.S.L. ELEV. 597.59

BM#2 TOP W. SIDE OF OLD WINDMILL ANGLE IRON ST N.E. CORNER OF PUMP PIT NEAR N.E. CORNER OF BLDG AREA, OF CORNEAL OVERMYER. M.S.L. ELEV. 599.54

BM#3 TOP OF SPIKE IN N. SIDE OF POWER POLE E. SIDE ST. RT. 590 APPROX. 350' N. OF MELVIN BECK BLDG AREA.
M.S.L. ELEV. 600.69

BM#4 TOP OF SPIKE IN N. SIDE OF POLE E. SIDE OF ST. RT. 590 APPROX. 300' N. OF NOVA BLDG AREA.
M.S.L. ELEV. 601.70

THIS DITCH PLAN HAS BEEN APPROVED BY

John D. Papcun — 7/11/67
OTTAWA COUNTY ENGINEER — DATE

SPECIFICATIONS

I. EXCAVATION:
A. BOTTOM WIDTH: THE BOTTOM WIDTH SHALL BE THREE (3) FEET BETWEEN STA. MINUS 2+10 STA. 35+83.
B. BANK SLOPES: THE DITCH BANKS ARE TO BE CONSTRUCTED TO AT LEAST 1½ FOOT HORIZONTAL TO 1 FOOT VERTICAL ON FARM SIDE AND DO NOT DISTURB SLOPE ON ROAD SIDE.
C. ALIGNMENT: THE IMPROVEMENT WILL FOLLOW EXISTING SLOPE ON ROAD SIDE AND REMAINDER TAKEN FROM FARM SIDE (SEE CROSS SECTIONS).
D. TOTAL EXCAVATION: THE TOTAL EXCAVATION CONSISTS OF 2,878 CUBIC YARDS OF EARTH OVER 3793 LINEAL FEET OF DITCH.
E. EXCESS YARDAGE: NO EXTRA COMPENSATION WILL BE PAID FOR SUCH EXCAVATION IN EXCESS OF YARDAGE HEREIN ESTIMATED FROM CROSS SECTIONS OF PROPOSED DITCH. CONTRACTOR SHOULD VIEW THE PROPOSED WORK TO HIS OWN SATISFACTION.

II. CLEARING:
ALL TREES OR BRUSH WHICH WOULD INTERFERE WITH THE EXCAVATION OPERATION MUST BE CLEARED FROM THE DITCH RIGHT-OF-WAY AHEAD OF THE CONSTRUCTION OPERATION. CLEARED DEBRIS TO BE BURNED OR REMOVED FROM RIGHT-OF-WAY.

III. BERM WIDTHS:
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;

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 CHANNEL SIDE AND AT LEAST 4:1 ON THE FIELD SIDE. THE HEIGHT OF THE SPOIL SHOULD NOT EXCEED ONE FOOT ABOVE AVERAGE GROUND. 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 / RODENT GUARD.

VI. SURFACE WATER OUTLETS:
WHEREVER A LATERAL OR SURFACE DITCH ENTERS THE MAIN DITCH AT A HIGHER ELEVATION, PROTECTION FROM EROSION SHOULD BE PROVIDED BY: DROP STRUCTURES, PIPE DROPS OTHER SUITABLE STRUCTURES, FOR ASSISTANCE ON OUTLETS SEE YOUR SOIL CONSERVATION SERVICE TECHNICIAN.

VII. DITCH BANK SEEDINGS:
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 ACRES OF DITCH BANK SEEDING WILL BE REQUIRED.

HYDRAULIC CALCULATION

CHANNEL FLOW - $V = \frac{1.486}{N} R^{2/3} S^{1/2}$

REACH STA.	-3+10	3+45	13+00	
TO STA.	3+45	13+00	35+83	
DRAINAGE AREA	8 A	42 A	202 A	
Q_b FLOW (C.F.S.)	.4	7.1	34.0	
"N"	.04	.04	.04	
SLOPE - S (FT/FT)	.0005	.0015	.0008	
$S^{1/2}$	.0224	.0387	.0283	
$Q/S^{1/2} = KD$	18	183	1201	✓
KD VALUE USED	25	183	1241	
SIDE SLOPE	1½:1	1½:1	1½:1	
BOTTOM WIDTH (FT)	3'	3'	3'	
DEPTH (FT)	0.4	1.2	3.1	✓
AREA (SQ FT)	1.44	5.76	33.73	
VELOCITY = Q/A (FPS)	.38	1.23	1.43	✓

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

STATION	3+45	20+11	30+49	35+83
DRAINAGE AREA (AC)	8	122	162	202
Q_b FLOW (CFS)	.4	30.5	27.2	34
DIAMETER (IN.)	18"	30"	36"	18"
TYPE	V.S.P	R/C	R/C	V.S.P.
N	.014	.013	.013	.014
LENGTH (FT)	25'	30'	30'	685'
X-SECTIONAL AREA	1.77	4.91	7.07	1.77
KP	.021	.0092	.0072	.021
KPL	.525	.1840	.1440	
KE	.50	.50	.50	
VELOCITY (CFS)	.23	4.17	3.84	
HEAD LOSS (FT)	.002	.46	.38	

VIII. CULVERTS:
EXISTING CULVERTS TO BE CLEANED AND INVERTS (FLOW LINE) LOWERED TO CORRESPOND TO THE PROPOSED DITCH GRADE AS INDICATED ON THE PLAN.
STATION 3+45
STATION 20+11
STATION 30+49
STATION 35+83

LOCATION - E 1/2 OF SEC. 10 S.E. 1/4 OF SEC. 3 T 6 N - R 14 E HARRIS TWP. OTTAWA CO. OHIO.

SURVEYED - E. BEARDSLEY D. SOMMER D. OPPER - 10/5/62 - 2/17/67

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

JOB CLASS "II" — GROUP # 25

DITCH IMPROVEMENT
STATE ROUTE-590-ROAD DITCH
OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by
DONALD OPPER	3/13/67	Title
Drawn: DONALD OPPER	3/13/67	Title
Traced		
Checked		Sheet No. 3 of 3 — Drawing No. 34-OT-63-67-7

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