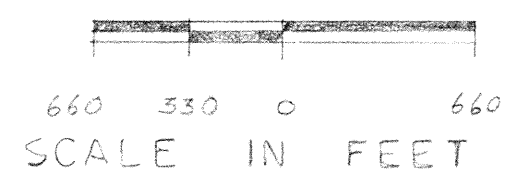


LOCATION & OWNERSHIP MAP



SPECIFICATIONS

- I. **EXCAVATION:**
 - A. Bottom Width: The bottom width shall be THREE (3) feet between 0+15 and Sta. 24+15.
 - 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 12,988 cubic yards of earth over 2400 linear feet of ditch. (the plan.)
 - 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 back of the ditch at all points.
- II. **REMOVAL:**

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 farm 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. **SPILLWAYS:**

Unless otherwise noted the barns 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. **SPILLWAYS:**

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:**

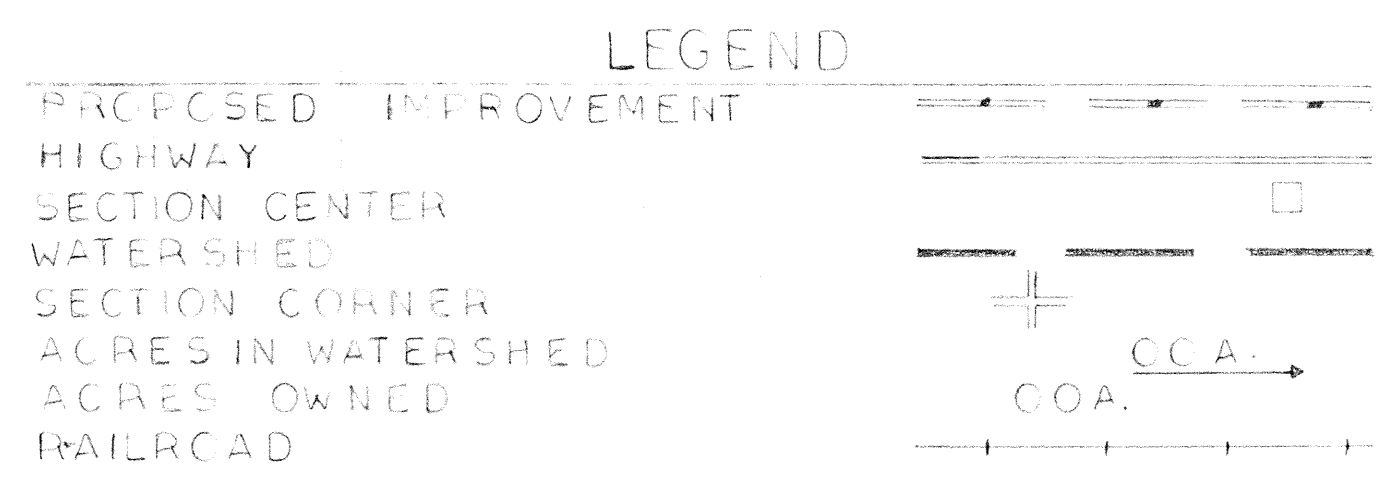
Landowners shall protect their tile outlets with a section of continuous rigid pipe and flap-gates or grid to exclude rodents. For details of construction see your Soil Conservation Service Technician.
- VI. **SURFACE WATER OUTLETS:**

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 crossed waterway. For assistance on outlets see your Soil Conservation Service Technician.
- VII. **DITCH BANK SEEDING:**

The ditch banks will be seeded, immediately after each day's work, to tall fescue (Kentucky 30 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. 6 acres of ditch bank seeding will be required.
- VIII. **INVERTS:**

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

Station 5+10 Station 20+88
 Station 13+20 Station 24+15



SUPPORTING DATA

DRAINAGE AREA	110 ACRES
DESIGNED COEFFICIENT	G _b CURVE
LANDUSE	SPECIAL-GENERAL-FARMING
LANDSLOPE	0-2%
TYPE DRAINAGE	SURFACE

HYDRAULIC CALCULATIONS

HEADLOSS	$H = \frac{V^2}{2g} (1 + KE + KPL)$					
STA.		5+10	6+61	13+20	20+88	24+15
DRAINAGE AREA AC.		21	21	62	110	110
G _b FLOW CFS.		3.5	3.5	10.0	19	19
DIAMETER INS.		8	18	24	36	36
TYPE "N"		CLAY	R/C	R/C	R/C	C.M.P
"N"		.013	.013	.013	.013	.025
LENGTH FT.		130	18	40	24	20
X SECTION AREA SQ.FT.		.349	1.77	3.14	7.07	7.07
KP		.054	.018	.012	.0072	.017
KPL		7.0	.32	.48	.17	.54
KE		.50	.50	.50	.50	.50
VELOCITY FPS.		10.0	2.0	3.2	2.7	2.7
HEADLOSS FT.		13.1	.11	.32	.18	.22
		SEE				

PROFILE

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

REACH	STA. TO STA.	0+15	6+61	13+20	20+88	24+15
DRAINAGE AREA AC.		21	62	110	110	110
G _b FLOW CFS.		3.5	10.0	19	19	19
"N"		.04	.04	.04	.04	.04
SLOPE -S (FT./FT.)		.0005	.0010	.0005	.0005	.0025
S ^{1/2}		.0224	.0316	.0224	.0224	.0500
Q / S ^{1/2} = KD		156	316	848	380	380
KD VALUE USED		171	319	853	412	412
SIDE SLOPE FT.		2:1	2:1	2:1	2:1	2:1
DEPTH		1.1	1.5	2.4	1.7	1.7
AREA SQ.FT.		5.74	9.02	18.72	10.90	10.90
BOTTOM WIDTH FT.		3	3	3	3	3
VELOCITY FPS.		.61	1.1	1.0	1.7	1.7

BENCH MARK DESCRIPTION

BM-1	STA. 1+00	TOP OF SPIKE IN NW CORNER OF POWER POLE EAST SIDE OF LICKERT HARDER RD.	M.S.L. ELEV.	599.35
BM-2	STA. 13+53	TOP OF SPIKE IN WEST OF POWER POLE IN SOUTH EAST CORNER OF INTERSECTION OF LICKERT HARDER-KOLB RD.	M.S.L. ELEV.	596.63
BM-3	STA. 24+35	X ON NORTH END OF EAST HEADWALL OF BRIDGE OVER LA CARR CREEK ON LICKERT HARDER ROAD.	M.S.L. ELEV.	598.07

NOTE: FOR ADDITIONAL B.M.'S - SEE 2006 BEN-22-0.03 BRIDGE REPLACEMENT PLANS AND BENTON TWP. 2011 BR. PLS. 16 & 17, MCR

THIS DITCH PLAN HAS BEEN APPROVED BY:

VILLAGE OF ROCKY RIDGE DATE

BENTON TOWNSHIP TRUSTEES DATE

John G. Popcorn
 OTTAWA COUNTY ENGINEER 12/11/70 DATE

LOCATION - S.E. 1/4 OF N.E. 1/4 AND N.E. 1/4 OF S.E. 1/4 OF SEC. 35 T-7-N R-14-E BENTON TOWNSHIP, OTTAWA COUNTY, OHIO

SURVEYED - D. SOMMER, D. OPPER, J. STEINER NOV. 9, 1970

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

4/18/13
 NOTE: JERRY MILLER HAD BURKHART'S SONS CLEAN DITCH FROM STA. 6+61 (18" RCP) TO STA. 24+15 (36" RCP) TO DOX W.W. CREEK - SEE BENTON TWP. 2011 BR. PLS. 16 & 17, MCR

JOB CLASS GROUP #56

LICKERT HARDER - KOLB DITCH IMPROVEMENT BENTON TOWNSHIP OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

Designed <i>Donald Opper</i>	Date	Approved by
Drawn <i>Donald Opper</i>		Title
Traced		Title
Checked <i>Bill Gause 4/18/13</i>	Sheet No. 1 of 3	Drawing No. 38-01-83-71-21