

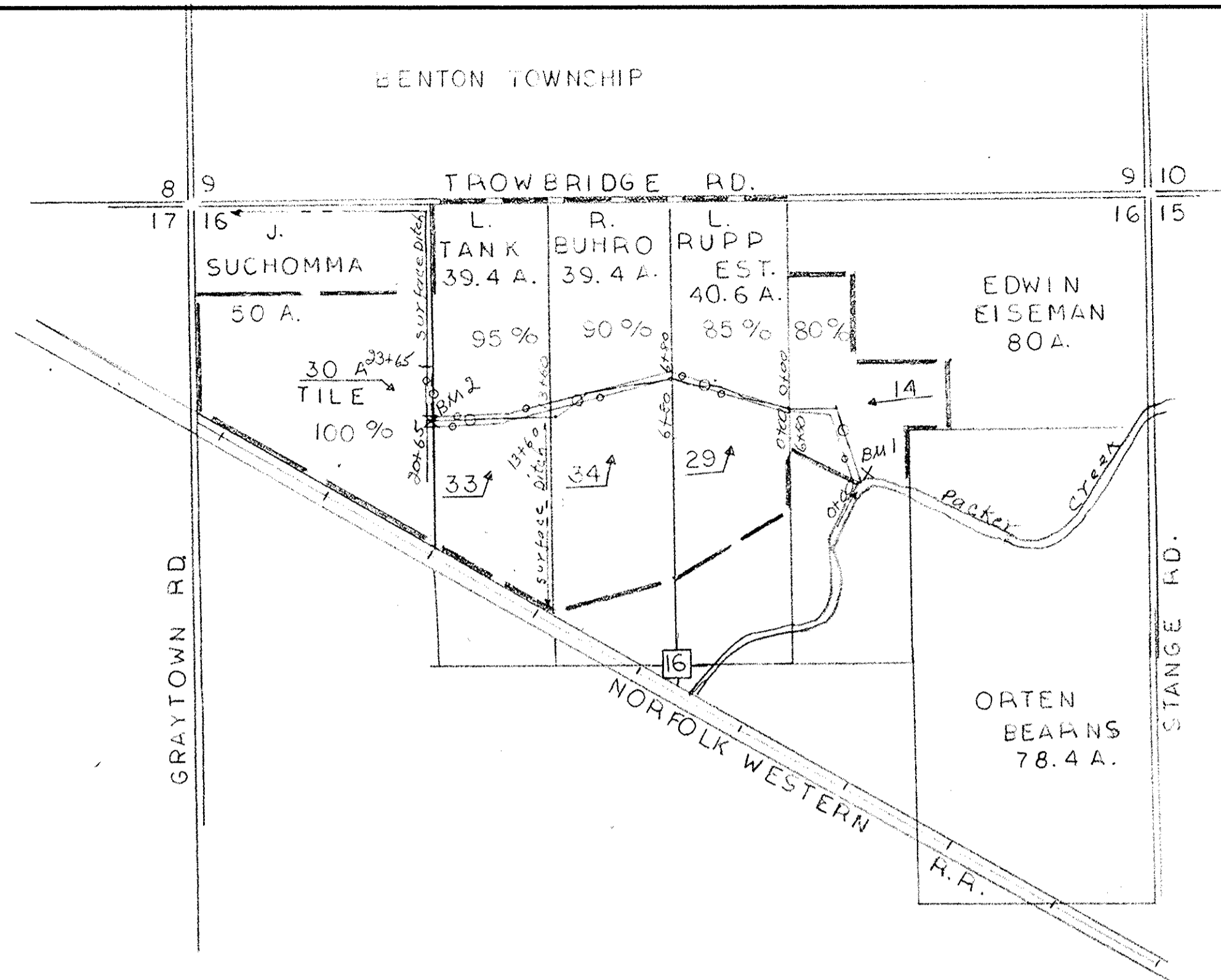
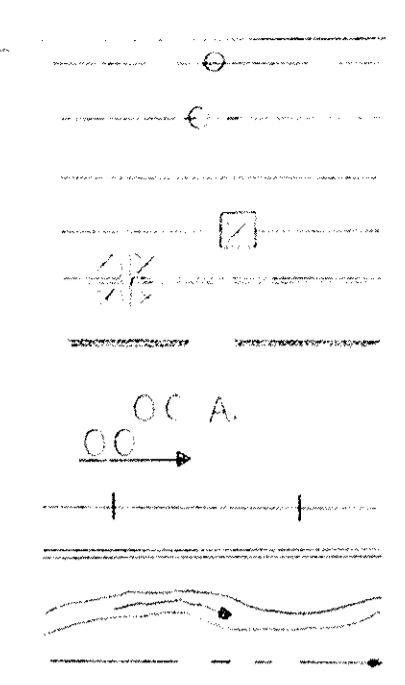
TRENCH MARK DESCRIPTIONS

- BM-1 X CHISELED IN CENTER OF HEADWALL NORTH SIDE OF PACKER CREEK 300' WEST OF EISEMAN PROPERTY LINE. M.S.L. ELEV. 561.72
- BM-2 TOP OF STEEL BREATHER PIPE TANK # SUCHOMMA PROPERTY LINE. M.S.L. ELEV. 568.77

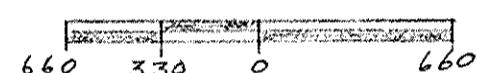
SUPPORTING DATA

- * DRAINAGE AREA 140 ACRES
- DESIGN COEFFICIENT 3/8 IN. 24HR
- LAND USE GENERAL CROPS
- SOIL TYPES TOLEDO-FULTON
- LAND SLOPE 0-2 %
- TYPE DRAINAGE TILE

- LEGEND
- PROPOSED IMPROVEMENT
 - EXISTING MAIN
 - PROPERTY LINE
 - SECTION CENTER
 - SECTION CORNER
 - DRAINAGE AREA
 - ACRES OWNED
 - ACRES BENEFITED
 - RAILROAD
 - HIGHWAYS
 - LARGE STREAM
 - SURFACE DITCHES



LOCATION & OWNERSHIP MAP



SPECIFICATIONS

SCOPE

The work covered by this specification consists of furnishing all labor, equipment and materials, except as may be otherwise provided in the contract, and performing all operations in connection with making the necessary earth conservation, installation of all drain tile, fittings, breathers, junction boxes, relief walls, surface inlets, cradles, and any other appurtenances related to the tile drain, and placing the necessary backfill as shown on the drawing or herein specified and directed by the Technician.

GENERAL

The drain tile shall be of the diameter, length, class or grade, type and kind of material as shown on this drawing and shall be laid to the line and grade as shown.

MATERIALS

Clay drain tile and all fittings shall conform to the applicable requirements of ASTM designation: C4 Tile be "Standard Drain Tile" and/or "Extra-Drain Tile", "Extra-Quality Concrete Drain Tile". Concrete Drain Tile shall conform to ASTM specifications, C-412.

INSTALLATION

The trench or excavation for the drain tile shall be constructed to the line and grade as shown on the drawing. Construction of the trench shall begin at the outlet end and proceed upstream.

The bottom of the trench shall be molded to fit the bottom of the invert of the tile in such a manner that the lower one-quarter (1/4) or ninety degrees (90) of the outside circumference of the tile shall bear against solid undisturbed ground for its entire length, permitting no tipping or rocking.

The drain tile shall be laid upgrade, beginning at the lower end of the proposed tile line.

The tile shall be laid and turned so that the minimum width of opening is obtained at the top. Where the joints between tile are open more than one-eighth (1/8) inch in sandy or ordinary loam soils, and one-fourth (1/4) inch in clay soils, the joints shall be covered with broken pieces of tile (tile bats), building or tar paper.

Where the gap between tile on the outer side of a curved tile line exceeds one-fourth (1/4) inch, it shall be covered with tile bats, building or tar paper.

In areas of steep grade, care will be taken to lay tile tightly.

If the bottom of the trench does not provide a sufficiently stable or firm foundation for the drain tile, cradles for the tile shall be constructed.

As soon as the tile are placed, they shall be "blinded" by covering the tile to a depth of six (6) to twelve (12) inches with loose mellow topsoil, which is free from stones having a maximum diameter of one (1) inch. All tile laid shall be blinded by the end of any day's work or as directed by the Engineer.

Sand or soil shall be prevented from running into the tile during construction.

The outlet and inlet ends of the tile lines shall be temporarily closed at all times when the work is not in progress.

The backfilling of the trench shall be completed as rapidly as is consistent with the draily progress of the work.

The excavated material used in backfilling shall be well rounded over the trench and left in such condition that it can be farmed over.

Remove all trees and brush within 50 feet of the tile line.

All breathers will be installed at stations indicated and will be installed according to plans provided by Soil Conservation Service.

TILE DESIGN DATA

line	station	grade	size	acres in drain	cap % in 24 hrs
A	0+00	1.00 %	12"	140	272.9
	2+00	0.26 %	12"	135	139.1
B & C	0+00	0.15 %	10"	126	129.6
	6+80	0.30 %	8"	97	101.4
	13+60	0.15 %	8"	63	71.6
	20+40	0.10 %	8"	20	29.3

* DRAINAGE AREA IN ACRES

NAME	TILE	Q _d 2"	SURFACE	Q _e 4"
J. SUCHOMMA	30	30	=	15
L. TANK	33	33	=	16.5
R. BUHRO	34			34
L. RUPP	29			29
E. EISEMAN	9			14
	135			108.5

BILL OF MATERIALS

LINE	TEES			YEE'S			PIPE (breather)			
	12"	10"	8"	12" x 6"	8" x 6"	8" x 4"	12" x 12"	6"	4"	12"
A	650'			1			1	6'	4'	10'
B		680'	1685'		1	1			5'	
C		710'	1380'		1	1			5'	
TOTAL	650'	1390'	3,065'	1	2	2	1	6'	10'	10'

this tile plan has been approved by:
John H. Pappas 10/16/72 date
 Ottawa County Engineer

ESTIMATED MATERIALS (TO CONNECT EXISTING TILE)

SIZE	4"	6"	8" x 6"	8" x 6"	8" x 4"
AMOUNTS	300'	100'	2	2	20

LOCATION - N.W. 1/4 - NE. 1/4 OF SEC. 16
 BENTON TOWNSHIP R-14 E T-7 N
 OTTAWA COUNTY, OHIO.

SURVEYED - 7-6-72 D. SOMMER
 D. OFFER
 D. HARMS
 E. KAISER

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

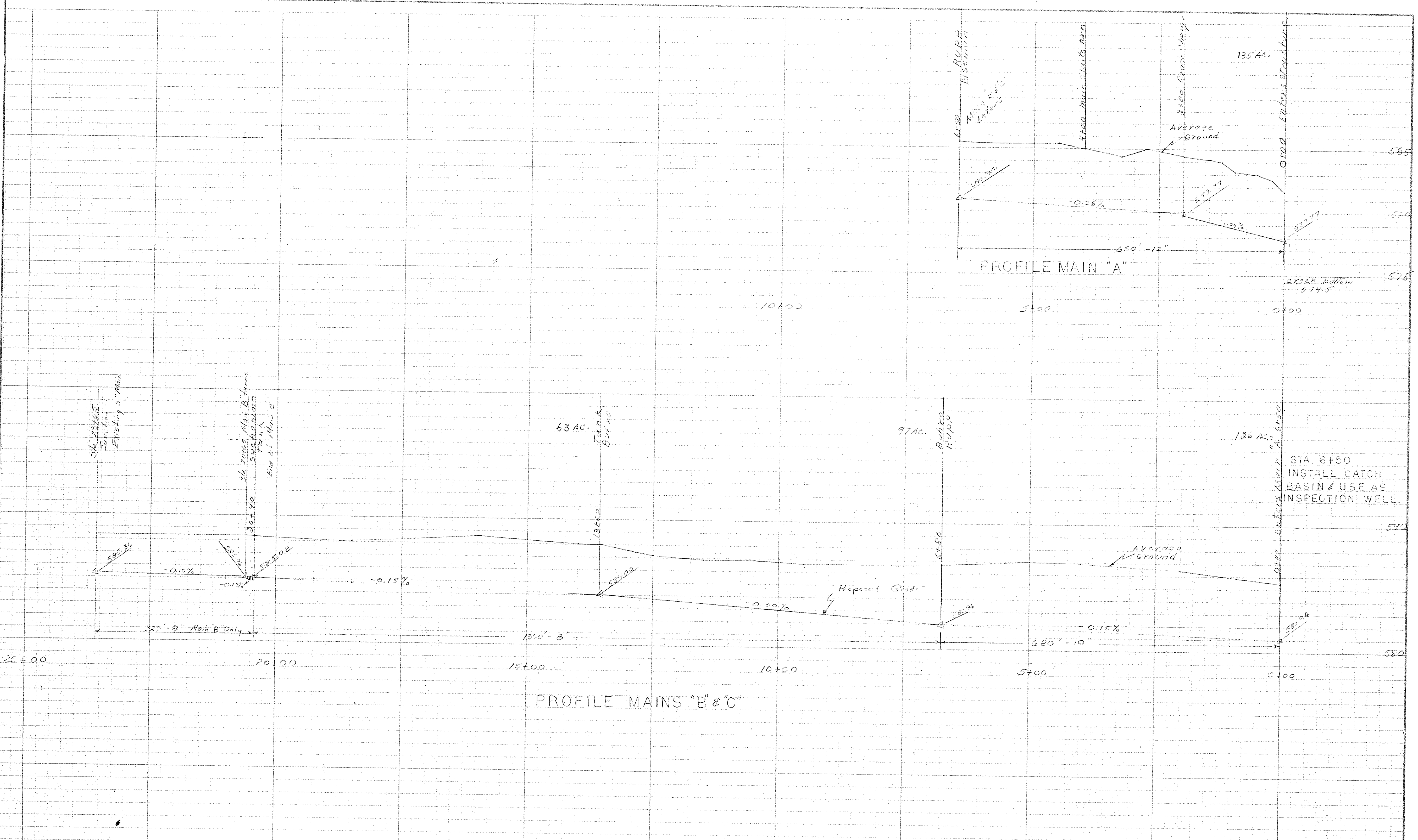
JOB CLASS III GROUP #66

EISEMAN GROUP MAIN
 BENTON TOWNSHIP

OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed by <i>Donald Offer</i>	Date 9-72	Approved by <i>Russell K. Brown</i>
Drawn <i>Donald Offer</i>	9-72	Title <i>Soil Conservation</i>
Traced		Title
Checked <i>D. Offer</i>	9/72	Sheet No. 1
		Drawing No. 39-01-383-73-6

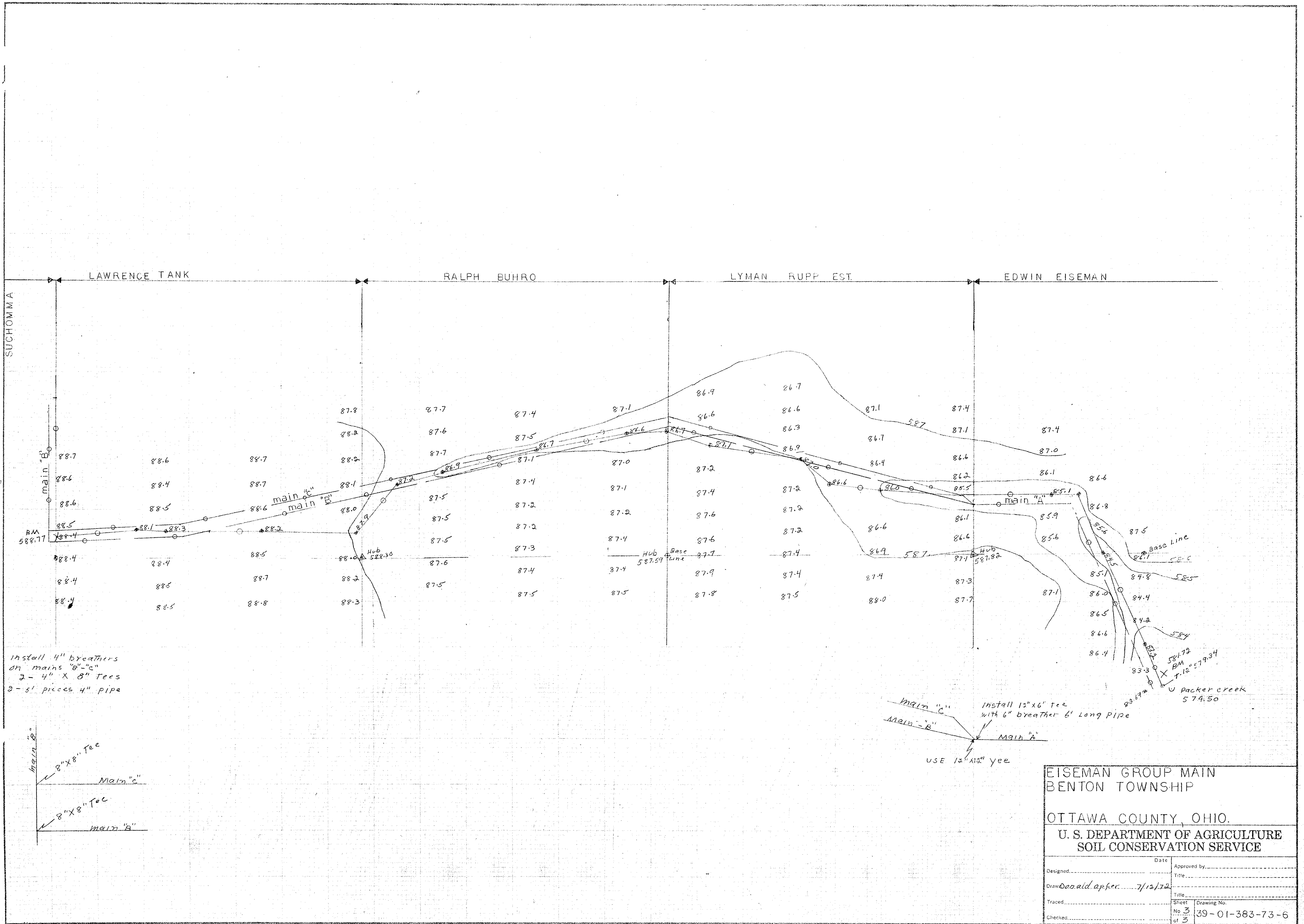


56

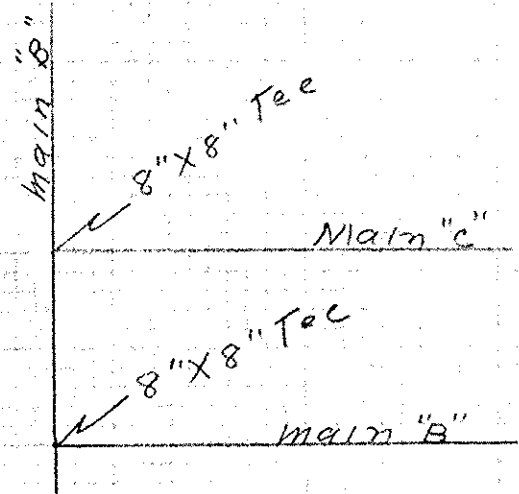
EISEMAN GROUP MAIN
 BENTON TOWNSHIP
 OTTAWA COUNTY, OHIO.

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed Donald Offer	Date 9-72	Approved by <i>[Signature]</i>
Drawn Donald Offer	Date 9-72	Title
Traced		
Checked	Sheet No 2 of 2	Drawing No 59-01-383-73-2



Install 4" breathers
on mains "B" & "C"
2 - 4" X 8" tees
2 - 5' pieces 4" pipe

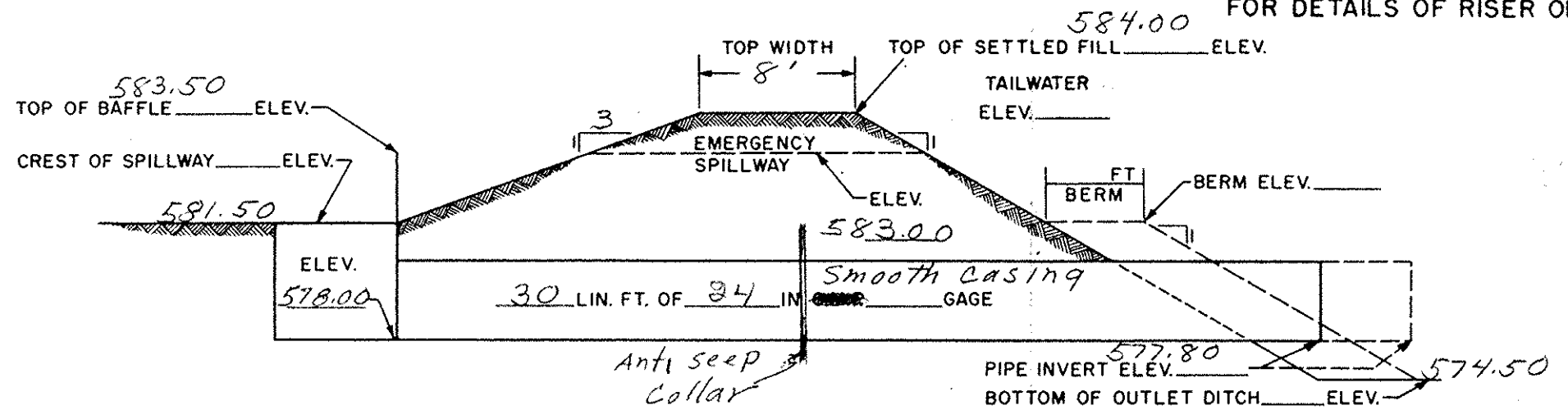
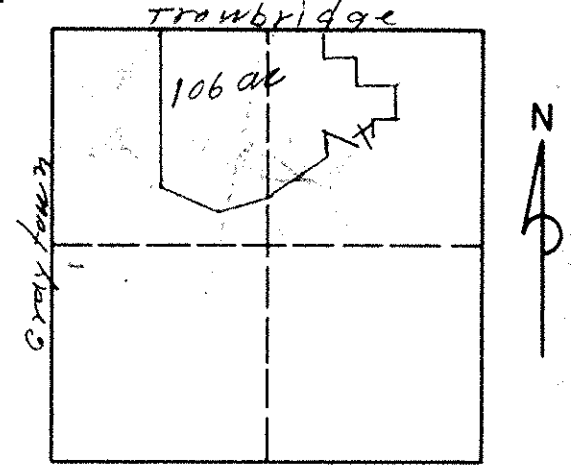


Install 12" X 6" tee
with 6" breather 6' Long pipe
USE 12" X 12" yee

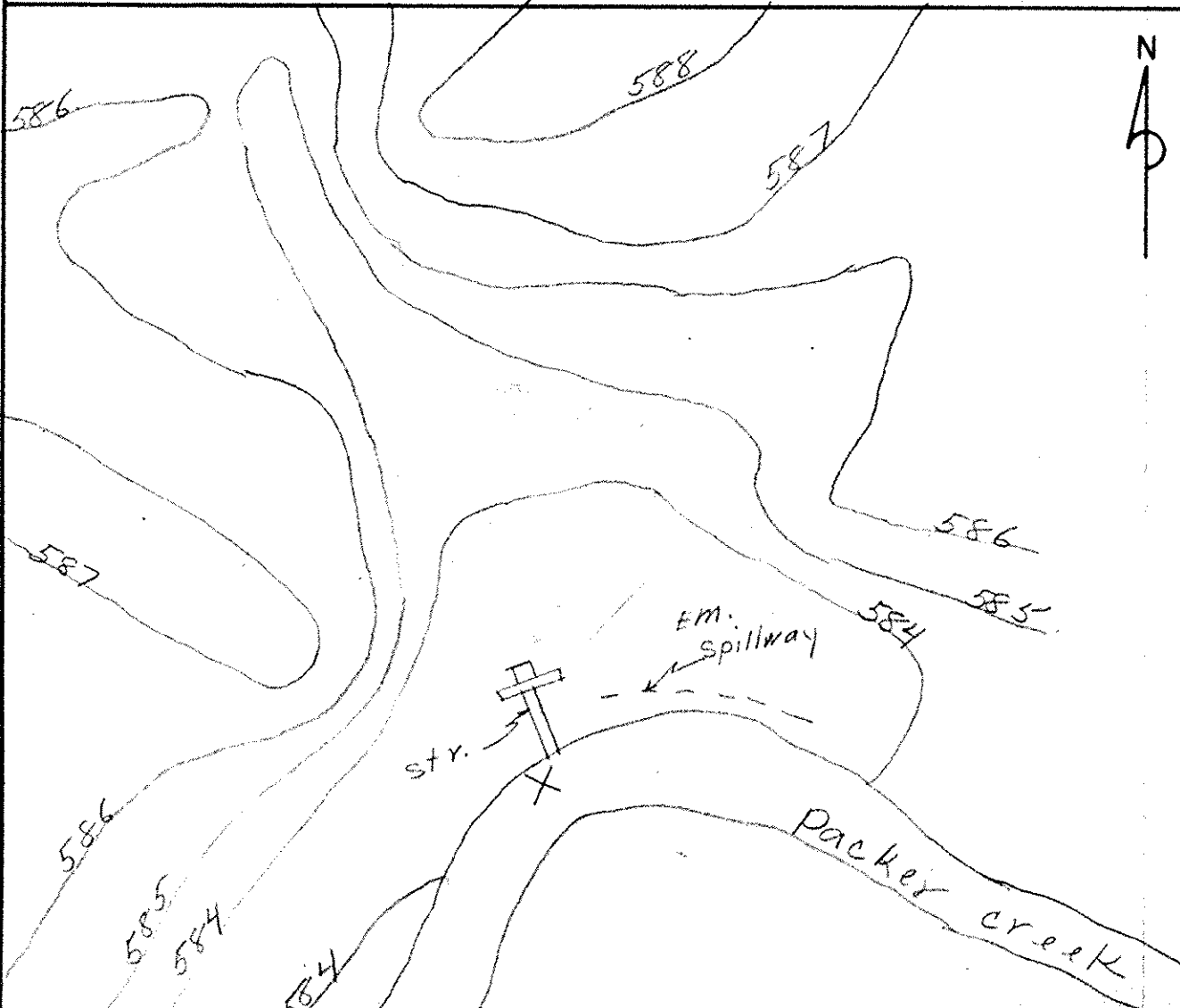
EISEMAN GROUP MAIN BENTON TOWNSHIP	
OTTAWA COUNTY, OHIO.	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed.....	Date
Drawn <i>Donald apfer</i> 7/12/72	7/12/72
Traced.....	Approved by.....
Checked.....	Title.....
	Sheet
	No. 3
	of 3
	Drawing No.
	39-01-383-73-6

SEE DRAWING NO. _____
FOR DETAILS OF RISER OR BOX.

WATERSHED MAP



SECTION SHOWING MECHANICAL SPILLWAY — NOT TO SCALE



CONTOUR MAP SHOWING LOCATION OF STRUCTURE AND EMERGENCY SPILLWAY
Scale 1 in. = 100 Ft.

LEGEND

- Farm Boundary ————
- Permanent Fence — x — x — x —
- Road ————
- Deep Ditch ————
- Shallow Ditch ————
- Sod Waterway ————
- Structure ————

CONSTRUCTION NOTES:
For installation of C.M.P. see construction spec. Proper compaction of fill material is essential.
C.M.P. encased in concrete should be coated with heavy asphalt cement. Excavate trench 4' wider than pipe diam. This will give room for proper compaction of fill around pipe. Do not use frozen fill material or construct on frozen layer of soil. Angle pipe 30° downstream if ice or floating debris is a problem.

CONCRETE: Cement 1 part to 5 parts of 40-60 sand and gravel mix. No more than 6 gallons of water shall be used for each sack of cement. The concrete shall be thoroughly mixed before placing and thoroughly worked after placing. It shall be kept moist of least 4 days after setting. Protect concrete from freezing.
Earth Fill Class _____ See Spec. _____

BENCH MARK DESCRIPTION: ELEV. 581.72 FT.
X chiseled on concrete wall by tile outlet at Packer Creek
SOILS DESCRIPTION: Toledo-Fulton Lucas

ESTIMATED QUANTITIES

QUAN.	UNIT	ITEM	SIZE
83		Block	8x8x16
8		"	8x8x8
100	LB.	REINF. STEEL	1/2" rod
2	C.Y.	CONCRETE	cells & Floor
	C.Y.	EARTHMOVING	

COOPERATOR Eiseman Group Sec. 16 T. 2N. R. 14 E
COOPERATING WITH Ottawa S.W.C.D.
COUNTY Ottawa STATE Ohio
SURVEYED D. Sommer D. Harms DATE 7-7-72

PIPE DROP INLET DATA SHEET
FOR STRUCTURES WITHOUT A PERMANENT POOL AND LESS THAN 10' OF HEAD

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed Donald Opler 8-72 Date 8-72 Approved by [Signature]
Drawn Donald Opler 8-72 Title _____
Traced _____
Checked _____
Sheet No. 1 of 3 Drawing No. 39-01-383-73-4

OUTLET CHANNEL Below Structure
 Bottom width 2 ft. Side Slopes 1 1/2:1
 Watershed 17000 Acres RCN 85
 $Q_{10} = 2400$ C.F.S. Depth of flow over 10' ft.
 Design Tailwater Depth Ditch Floods out ft.
 Velocity _____ ft. per sec.

DESIGN DATA

DRAINAGE AREA - 108.5 ACRES
 $\Sigma W = R + I + VC + SSRN = 85$
 $Q_{10} = P \times R \times 100 \times F = 22$ C.F.S.
 RISER-WEIR FLOW 26 ft. w. 18 C.F.S.
 $Q_p = 36$ C.F.S.
 BOX 2.7 x 2.7 CIRCULAR = 36 DIA.
 L = 8.1 H 1.5 FT. $Q = 3.4 H^{3/2} (mD - 2 \text{ times baffle thickness})$; $Q =$ _____ C.F.S.
 (FOR SPLITTER TYPE BAFFLE)

PIPE FLOW:

Dia.	Kind	Kp	Length	KpL
24"	Concrete	.012	30	.36
K _i = .5 L ₃ = .8				Total KpL

$Q = A \sqrt{\frac{2gH}{1 + K_i + K_{pL}}} = (3.14) 8.02 \sqrt{\frac{H}{(1) + (.36)}}$
 $Q = 21$ C.F.S. WHEN H = 1.5 FT.
 NORMAL SLOPE CALCULATION: $Q = AV$
 $V = \frac{Q}{A} =$ _____ /SEC. $V^2 =$ _____

$H_f = K_{pL} \frac{V^2}{2g} =$ _____ x $\frac{1}{64.4} =$ _____ FT.
 FALL IN PIPE SHOULD NOT BE GREATER THAN H_f FOR PIPE TO FLOW FULL.

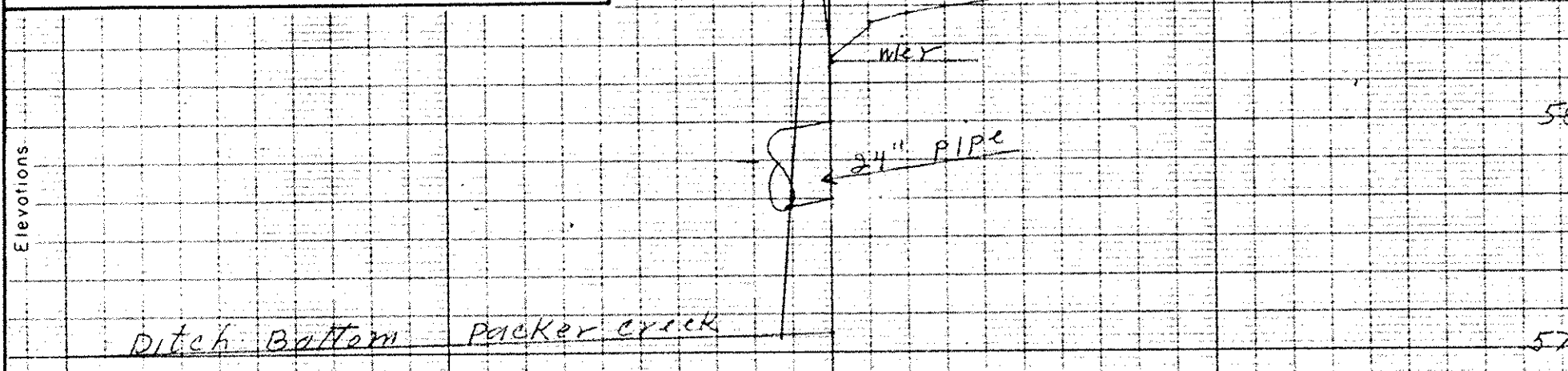
EMERGENCY SPILLWAY:

DESIGN Q = 100 % OF $Q_{10} = 2400$ C.F.S.
 WIDTH = 20 FT. DEPTH OF FLOW = .5 FT.
 $Q = 2.75 L H^{3/2} = 30.5$ C.F.S.
 FREEBOARD REQUIRED = .5 FT.

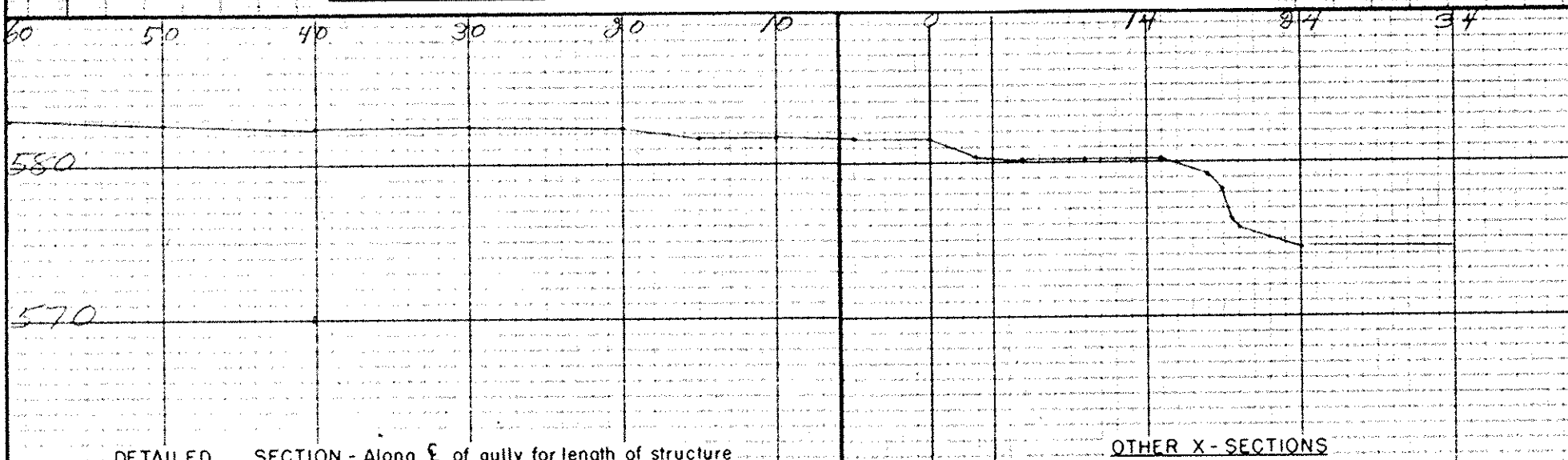
TEMPORARY STORAGE

SURFACE AREA OF POOL = _____ ACRES
 STORAGE = _____ AC. FT. AT STAGE = _____ FT.

Note. All corrugated material should be double asphalt coated if the head on the pipe is over 6 ft. If the head on the pipe is over 10 ft., the pipe shall be watertight, close riveted, and asphalt coated. The bands shall be watertight 2 ft. long using rods and lugs.

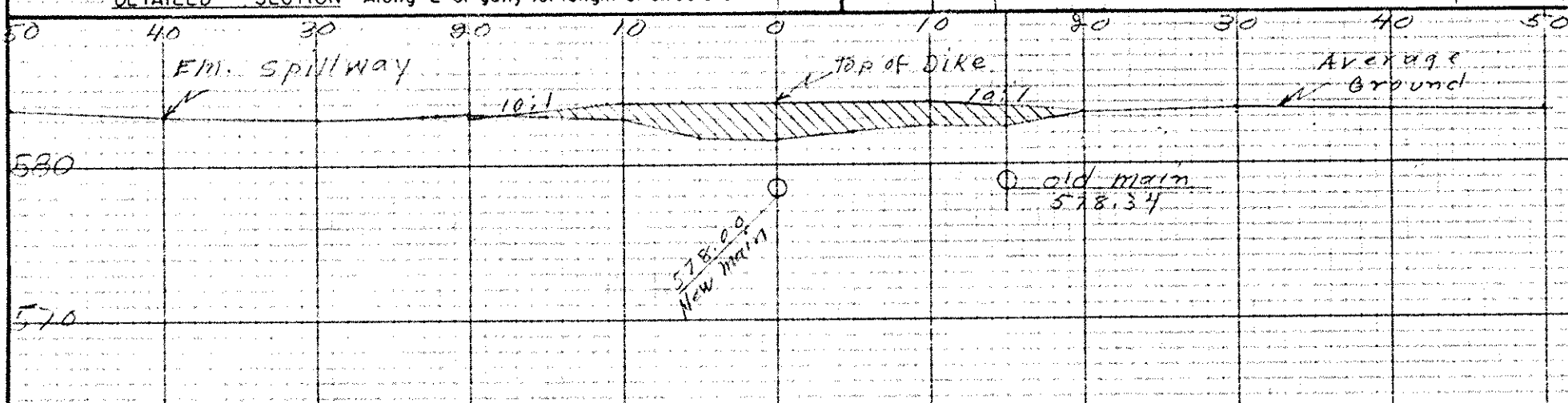


PROFILE STATIONS - Show profile 500' upstream and 500' downstream from structure site



DETAILED SECTION - Along E of gully for length of structure

OTHER X-SECTIONS



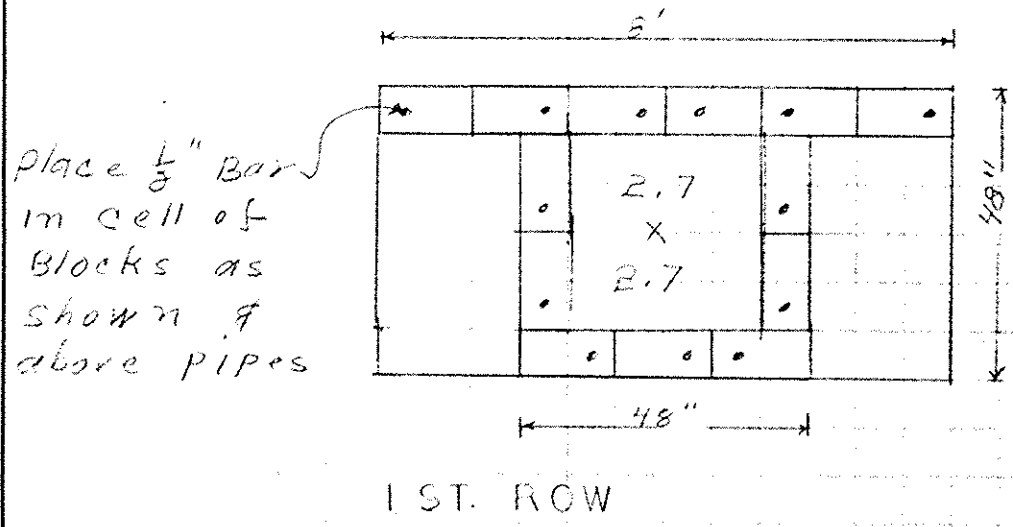
CROSS-SECTION ALONG CENTERLINE OF FILL
 Show Soil Borings

COOPERATOR Elsman Group SEC. 16 T. 7 N. R. 14 E
 COOPERATING WITH Ottawa S.W.C.D.
 COUNTY Ottawa STATE Ohio
 SURVEYED D. Semmer DATE 7-7-72
D. Harmes

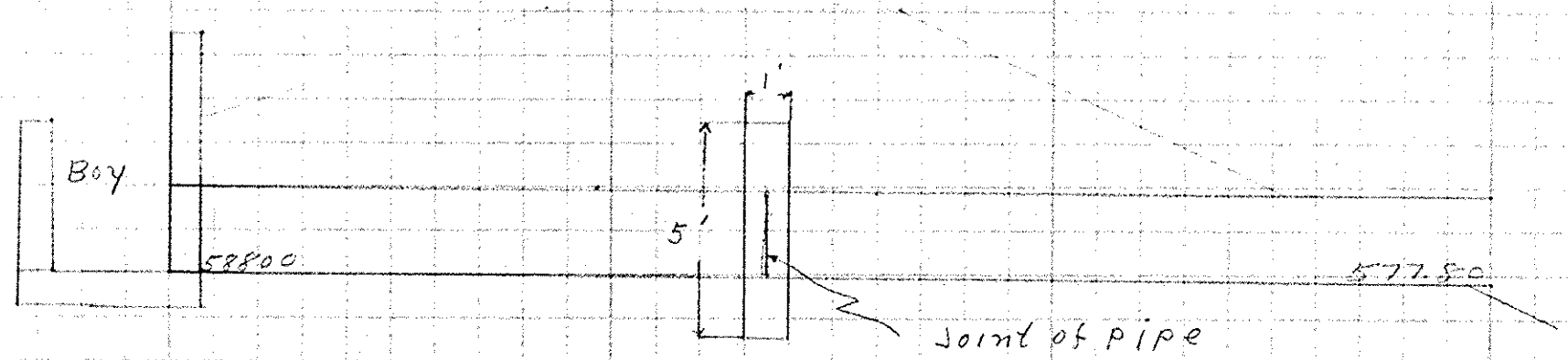
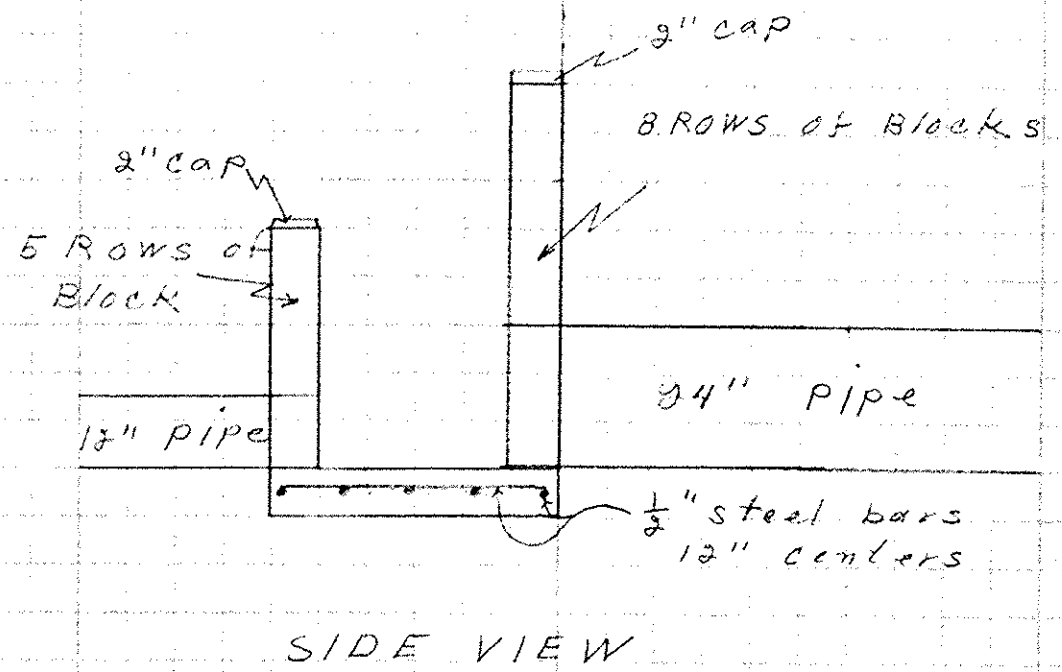
PIPE DROP INLET DATA SHEET

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed Donald Opfer 8-72 Date _____
 Checked Donald Opfer 8-72 Title _____
 Sheet No. 2 of 3 Drawing No. 39-01-383-73-4



Fill Block cells with slushy concrete



Anti seep collar to join 2 pieces of 3/4" steel casing 5' X 5' X 1" thick

EISEMAN GROUP # 66

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
DESIGNED BY <i>Donald O'fer 8-72</i>	APPROVED BY
CHECKED BY	DRAWING NO. <i>39-01-383-73-4</i>
DATE:	SHEET <i>3</i> OF <i>3</i>