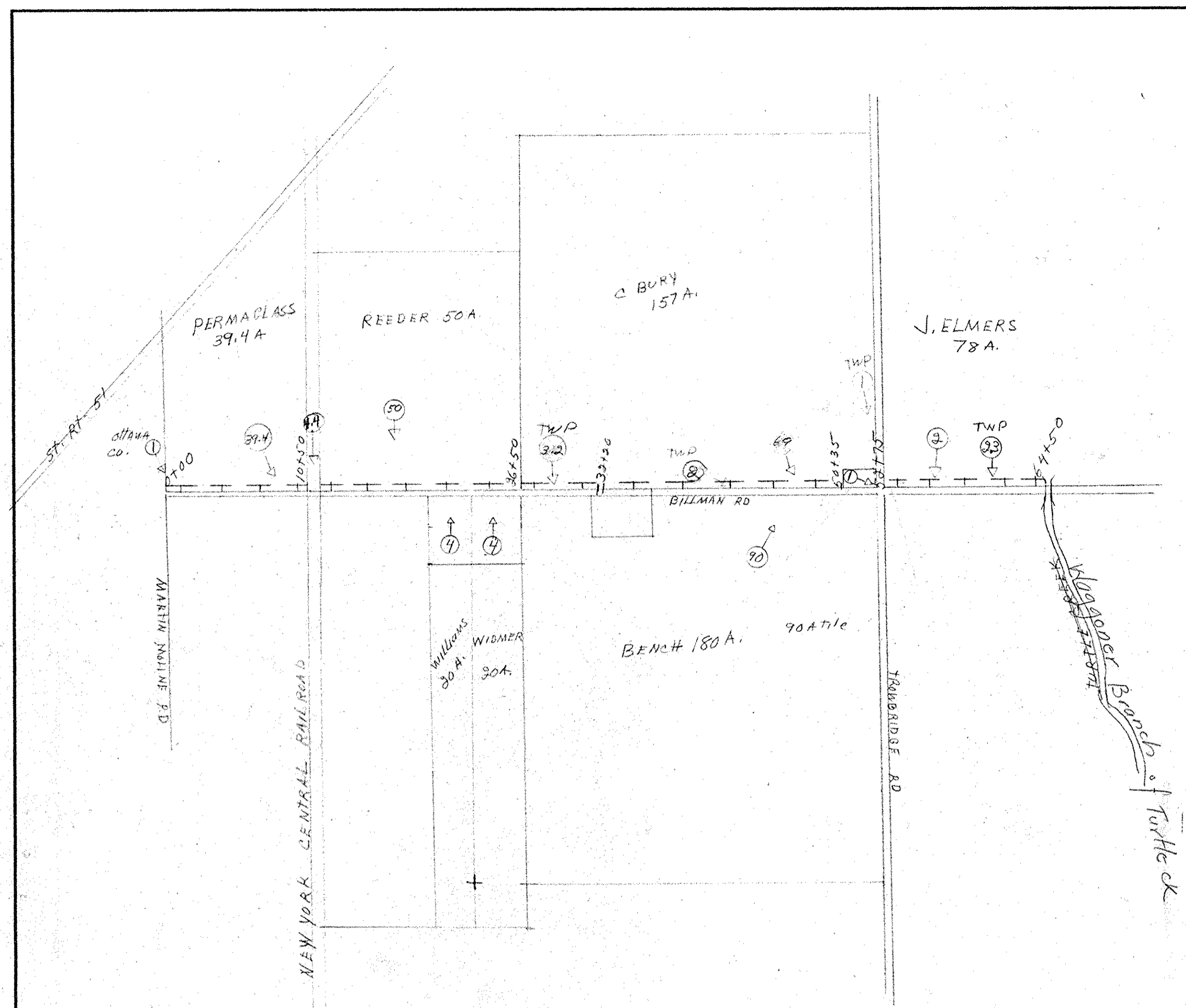
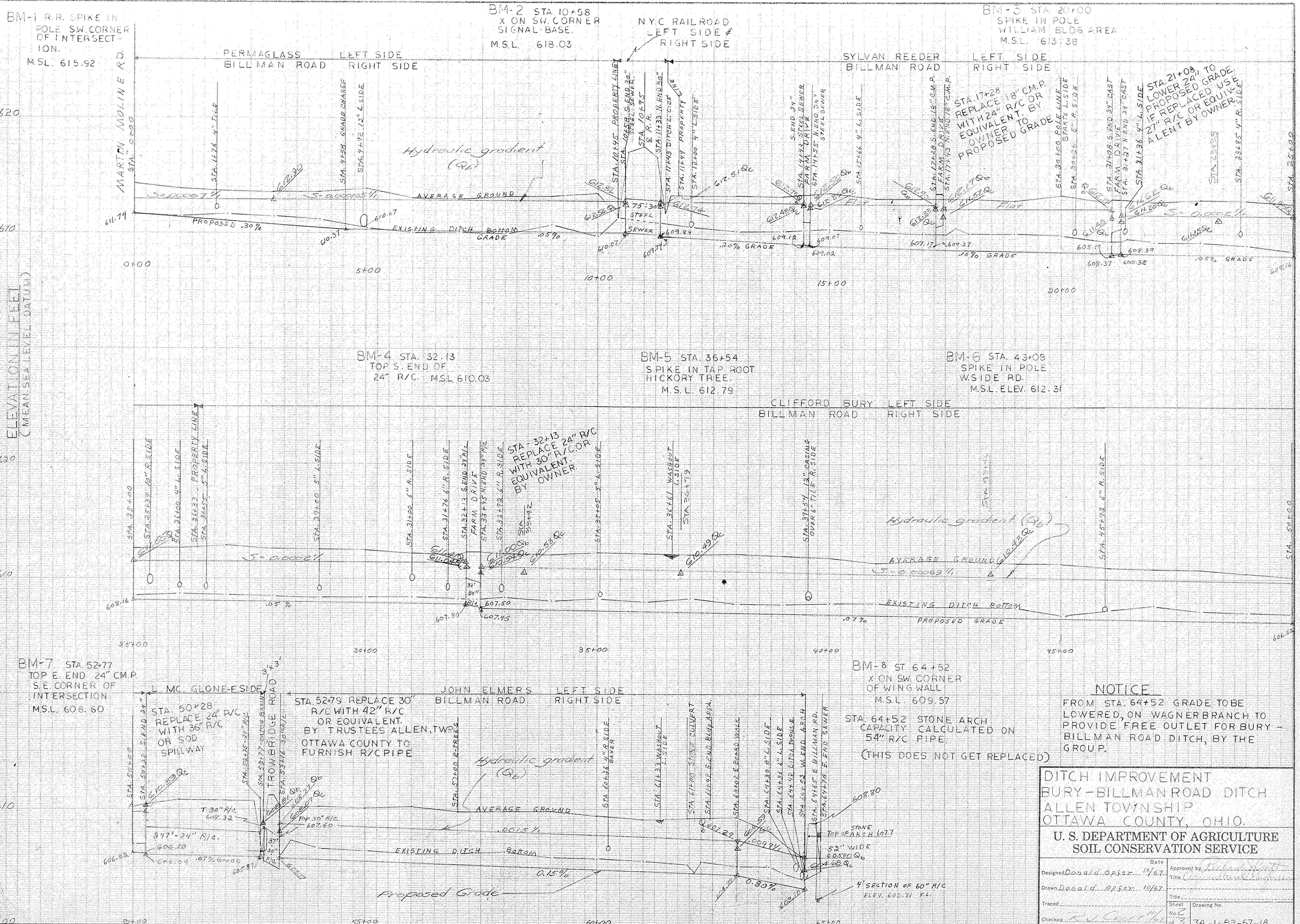


(PRELIMINARY - SEE FINAL PLANS)



CLIFFORD BURY 649		
OUTLET DITCH - Working Copy		
Billman Rd Ditch - sec 16-17 Allen		
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE		
Designed	Date	Approved by
Drawn		Title
Traced		Title
Checked	Sheet	Drawing No
	No	
	of	

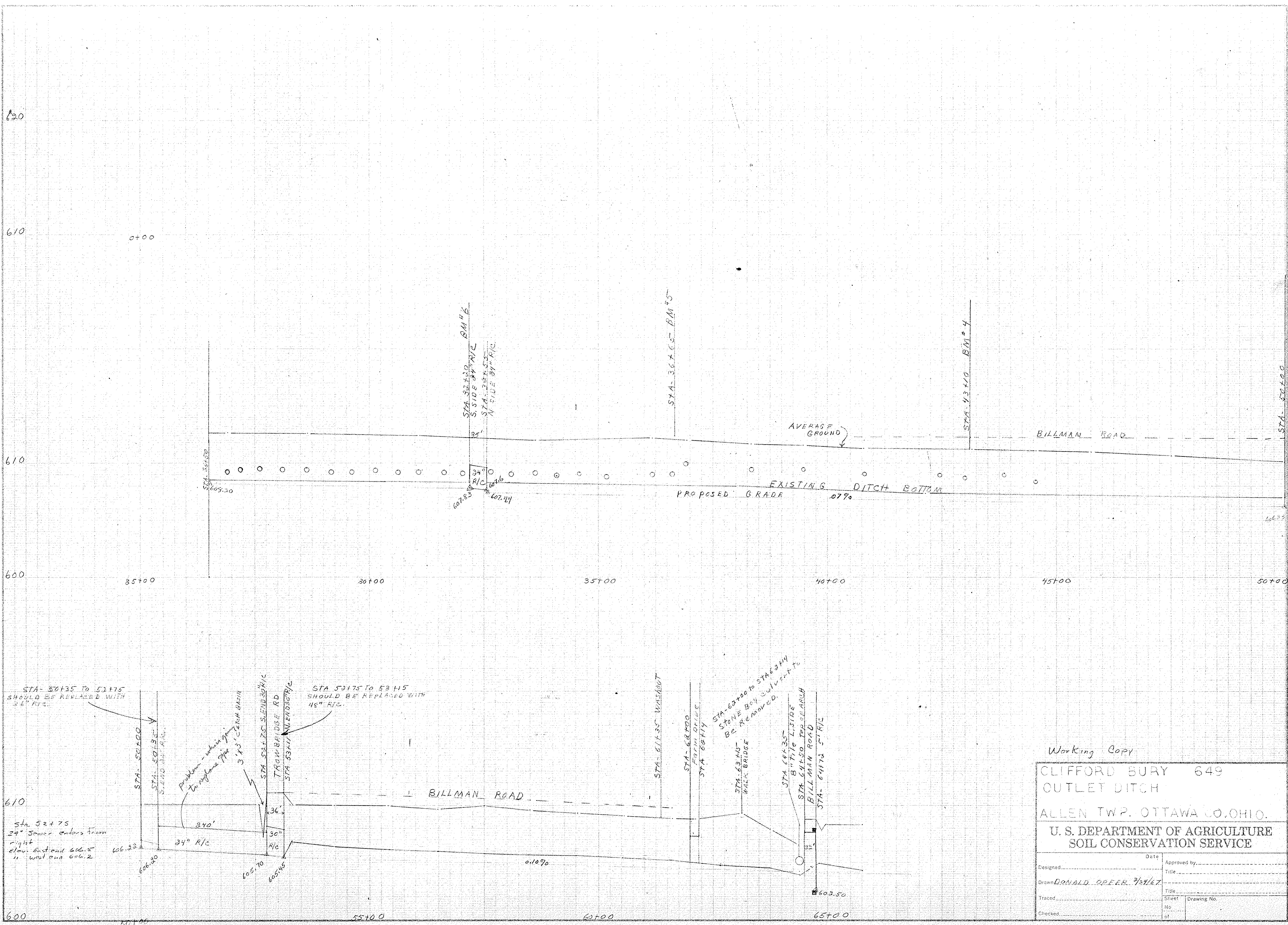


NOTICE
 FROM STA. 64+52 GRADE TO BE LOWERED, ON WAGNER BRANCH TO PROVIDE FREE OUTLET FOR BURY - BILLMAN ROAD DITCH, BY THE GROUP.

**DITCH IMPROVEMENT
 BURY - BILLMAN ROAD DITCH
 ALLEN TOWNSHIP
 OTTAWA COUNTY, OHIO.**

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

Designed <i>Donald Opser</i> 1/67	Date	Approved by <i>Richard Smith</i>
Drawn <i>Donald Opser</i> 1/67	Title	
Traced	Sheet	Drawing No.
Checked <i>R. J. Smith</i>	No. 2	
	of 3	34-1-83-67-18



STA 50+35 TO 52+75
SHOULD BE REPLACED WITH
36" R/C.

Problem - widening
to replace pipe
3'13" CURB BASH

STA 52+75 TO 53+15
SHOULD BE REPLACED WITH
48" R/C.

STA 52+75
24" Sewer enters from
right
Elev. East end 606.5
" West end 606.2

34' R/C

36'
36'
36'
R/C

STA 61+35
WALK BRIDGE

STA 62+00 TO 63+44
STONE BOX CULVERT TO
BE REMOVED.

STA 64+35
8" TILE L-SIDE
BILLMAN ROAD

STA 64+50 TO 64+70
BILLMAN ROAD

STA 64+75 5" R/C

602.50

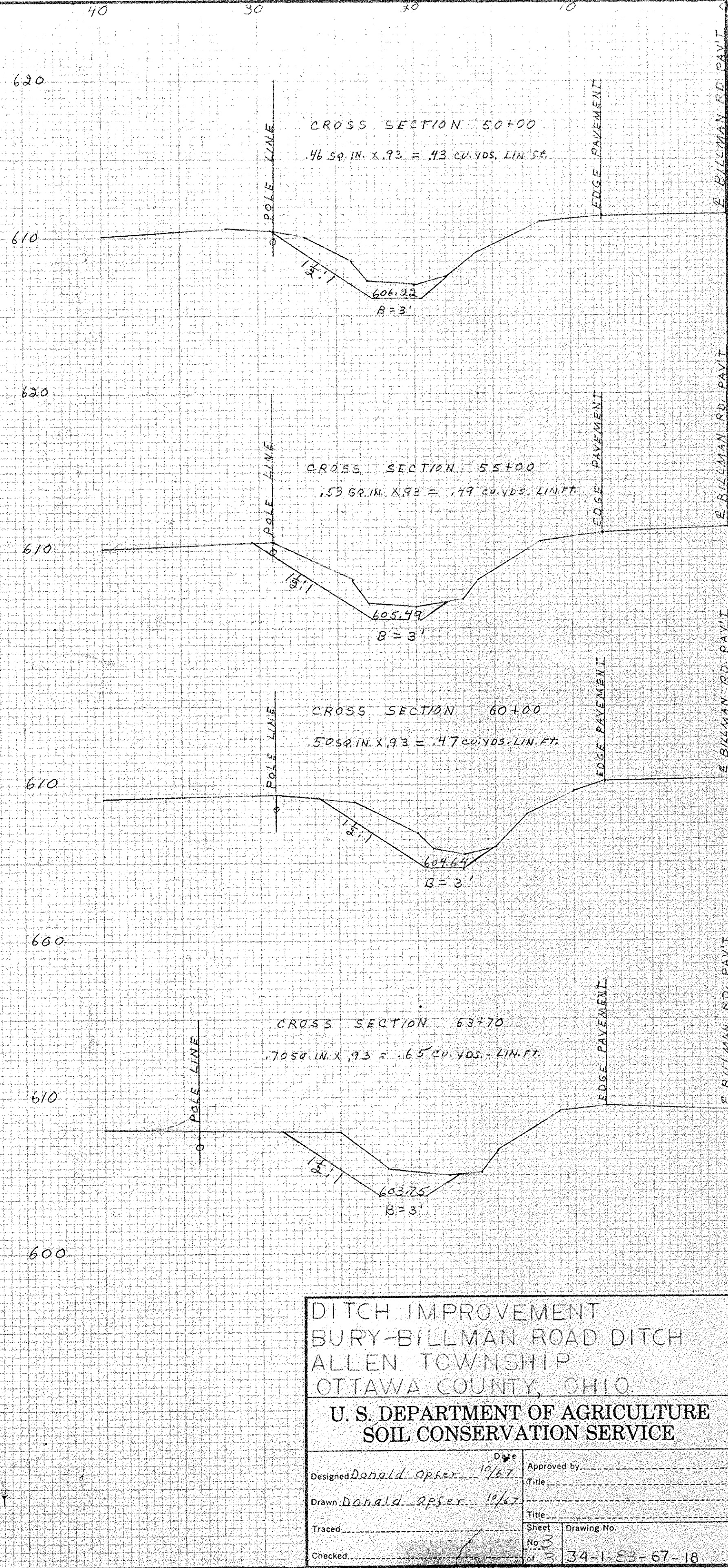
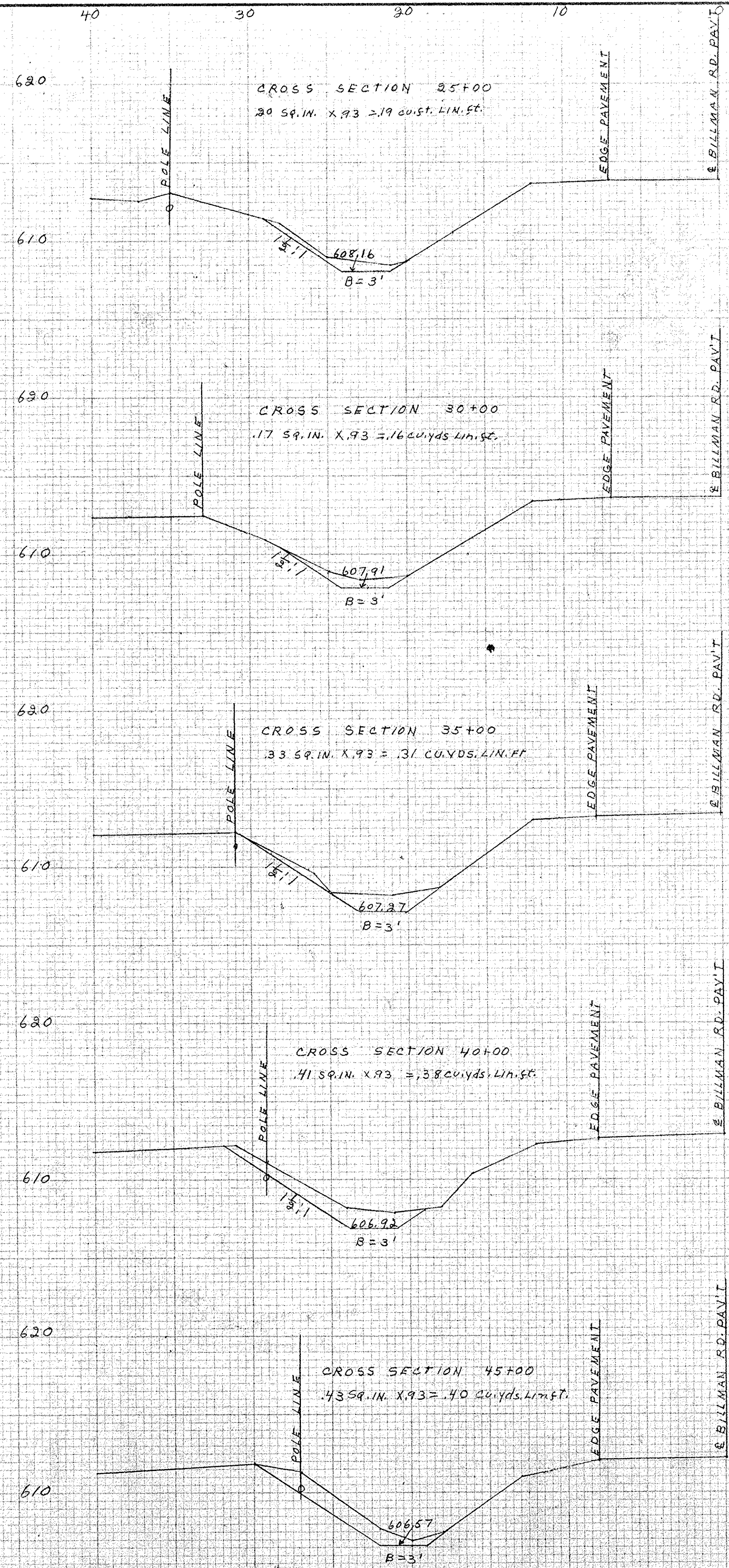
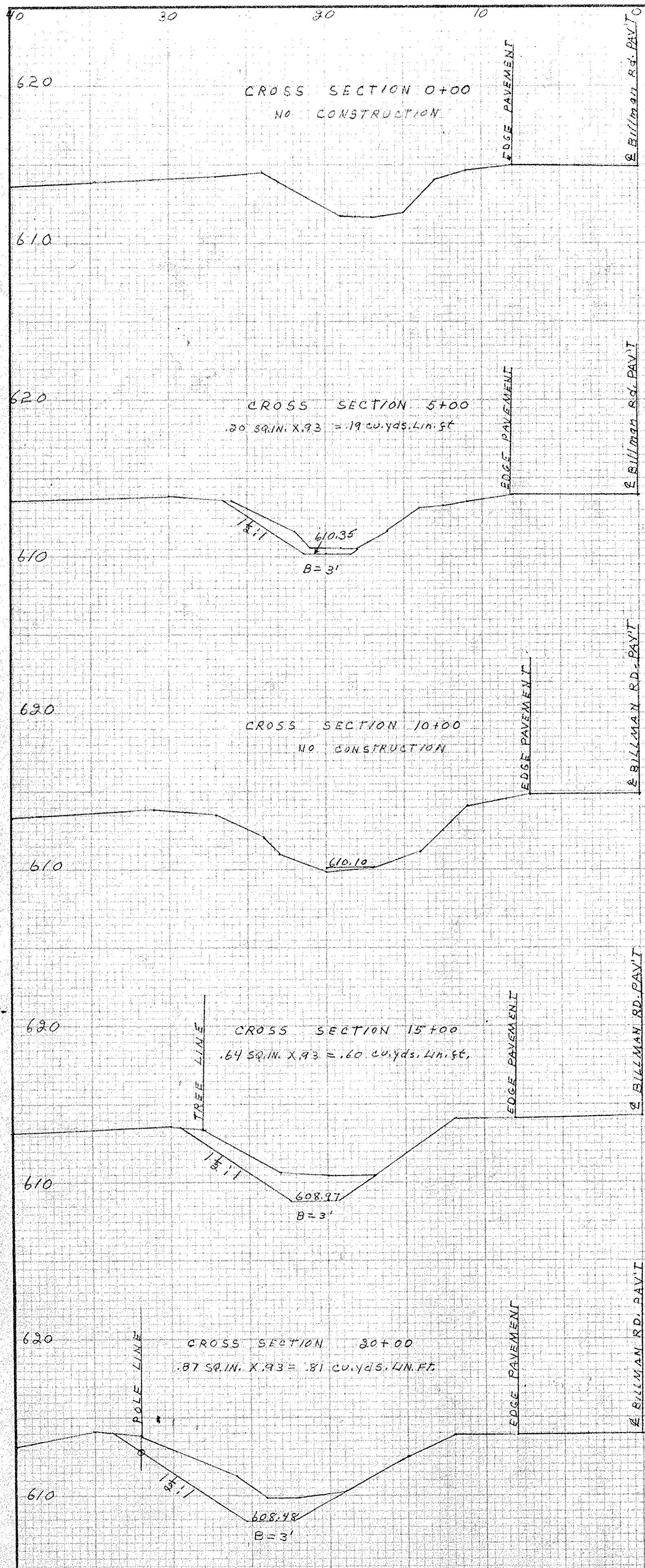
Working Copy

CLIFFORD BURY 649
OUTLET DITCH

ALLEN TWP. OTTAWA CO. OHIO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by
Drawn DONALD OPPER 9/27/67		Title
Traced		Title
Checked		Sheet No. Drawing No.



DITCH IMPROVEMENT
BURY-BILLMAN ROAD DITCH
ALLEN TOWNSHIP
OTTAWA COUNTY, OHIO.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed <i>Donald Spsr</i> 10/67	Approved by _____
Drawn <i>Donald Spsr</i> 10/67	Title _____
Traced _____	Sheet No. <u>3</u>
Checked _____	of 3
	Drawing No. 34-1-83-67-18

HYDRAULIC CALCULATIONS

Clifford Bury
Outlet Ditch
working Copy
2/24/67

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

Soil Type: Silty clay

Minimum allowable side slope: 1 1/2 : 1

Maximum allowable velocity: 5 fps (bankfull stage or 10 yr. freq. if less than bankfull!)

Reach	Sta. to Sta.	32180	64150				
Drainage Area (Ac.)		106	269				
Qb flow (cfs)		17.8	45.2				
"n"		.04	.04				
Slope - s (ft./ft.)		.0007	.0010				
s ^{1/2}		.0266	.0316				
Q/s ^{3/2} = Kd		669	1430				
Kd Value Used		722	1457				
Side Slope		1 1/2 : 1	1 1/2 : 1				
Bottom Width (ft.)		3'	4'				
Depth (ft.)		2.4	3.1				
Area (sq. ft.)		15.84	26.83				
Velocity = Q/A (fps)		1.1	1.7				

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

Station	32180	50135	52175		
Drainage Area (ac.)	106	269	269		
Qb flow (cfs)	17.8	45.2	45.2		
Diameter (inches)	24"	36"	48"		
Type	P/C	P/C	P/C		
n	.013	.013	.013		
Length (ft.)	35'	240'	40'		
K-sectional Area (sq. ft.)	3.14	7.07	12.57		
Kp	.012	.0072	.0049		
Kpl	.42	1.72	.196		
Ke	.5	.5	.5		
Velocity (fps)	1.1	1.7	3.6		
Head Loss (ft.)	.24	.82	.34		