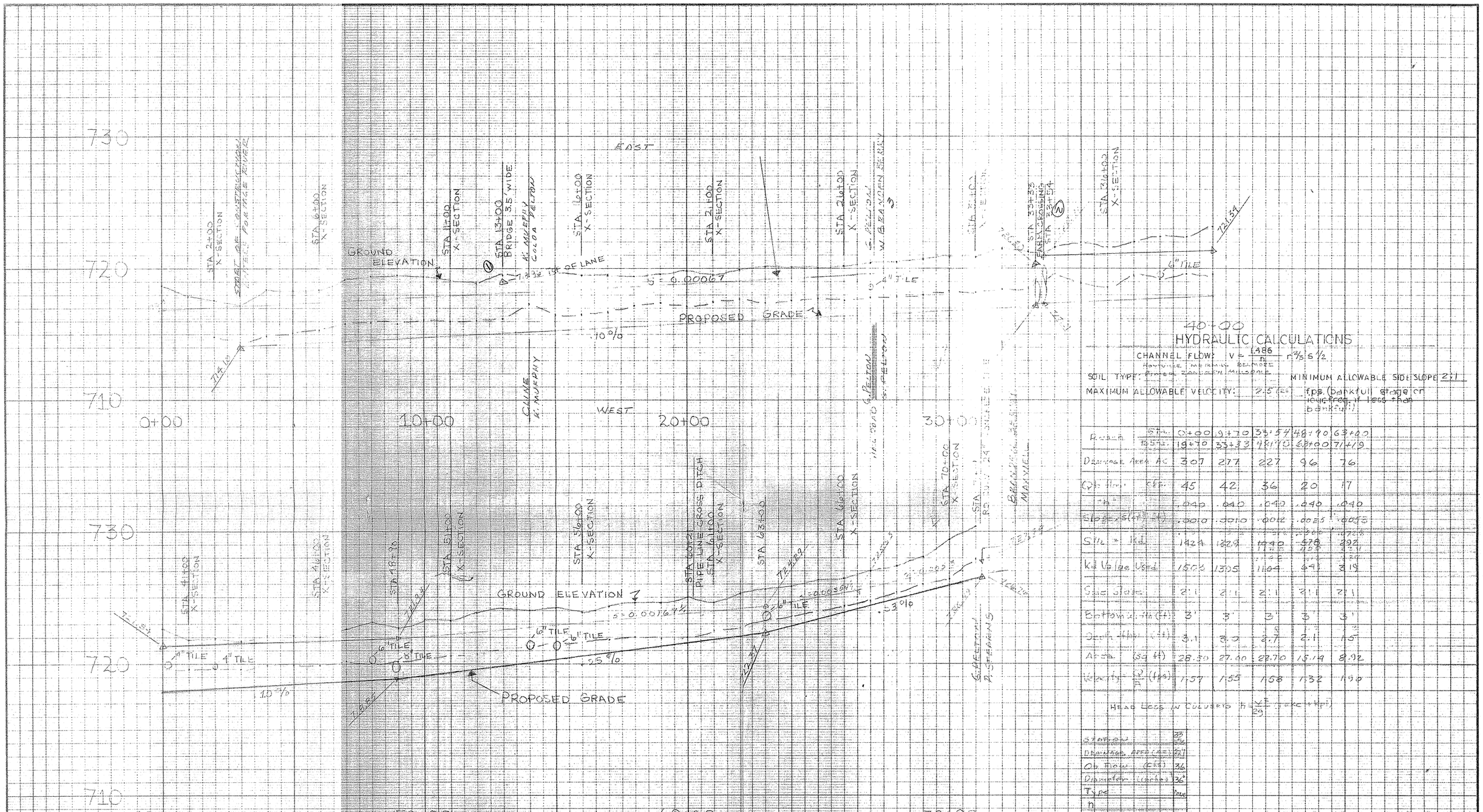

HYDRAULIC CALCULATIONS

CHANNEL FLOW: $V = \frac{1.486}{n} r^{2/3} S^{1/2}$

SOIL TYPE: Primarily Zanesville Muck Soils — Hanville, Meadow, Belmore

MINIMUM ALLOWABLE SIDE SLOPE 2:1

MAXIMUM ALLOWABLE VELOCITY: 2.5 fps (bankful stage or less freq. if less than bankful)

Reach	STA.	0+00	19+70	33+54	48+90	63+00
	to STA.	19+70	33+33	48+70	63+00	71+79
Drainage Area	AC	307	277	227	96	76
Q Flow	CFS	45	42	36	20	17
n		.040	.040	.040	.040	.040
Slope	(ft/ft)	.0010	.0010	.0012	.0025	.0015
S^1/2		1424	1324	1140	576	392
k Value Used		1505	1305	1104	641	319
Side Slope		2:1	2:1	2:1	2:1	2:1
Bottom Width	(ft)	3'	3'	3'	3'	3'
Depth	(ft)	3.1	3.0	2.7	2.1	1.5
Area	(sq ft)	28.50	27.00	22.70	15.14	8.92
Velocity $\frac{Q}{A}$	(fps)	1.57	1.55	1.58	1.32	1.90

HEAD LOSS IN CULVERTS $h = \frac{V^2}{2g} + K_e + H_p$

Station	33
Drainage Area (AC)	277
Q Flow (CFS)	36
Diameter (inches)	36"
Type	Pipe
n	
Length (ft)	71
X Sectional Area (sq ft)	7.07
H_p	
K_e	
K_c	.5
Velocity	
Head Loss	.61

From Exhibit 3:1
EFM - Outlet Control

BAIRD GROUP DIT
PERRY TWP

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

	Date		
Designed E.F. MILLER	3/70	Approved by Russell K. Rowe	
Drawn M. HILLARD	3/70	Title Soil Scientist	
Traced		Title	
Checked L. E. Rowe	3/70	Sheet No. of	Drawing No. OH-1-75-70-5

FORM SCS - 316 (NOV. 1966)