

CHAPTER 4

DESIGN OF CULVERTS

4.2 Symbols and Definitions

To provide consistency within this chapter as well as throughout this manual the symbols in Table 4.2-1 will be used. These symbols were selected because of their wide use in many culvert design publications.

Table 4.2-1

Symbols and Definitions

<u>Symbol</u>	<u>Definition</u>	<u>Units</u>
A	Area of cross section of flow	sq. ft
B	Barrel width	ft
C_d	Overtopping discharge coefficient	-
D	Culvert diameter or barrel depth	in. or ft
d	Depth of flow	ft
d_c	Critical depth of flow	ft
d_u	Uniform depth of flow	ft
g	Acceleration of gravity	ft/s
H_f	Depth of pool or head, above the face section of invert	ft
h_o	Height of hydraulic grade line above outlet invert	ft
HW	Headwater depth above invert of culvert (depth from inlet invert to upstream total energy grade line)	ft
K_e	Inlet loss coefficient	-
L	Length of culvert	ft
N	Number of barrels	-
Q	Rate of discharge	cfs
S	Slope of culvert	ft/f
TW	Tailwater depth above invert of culvert	ft
V	Mean velocity of flow	ft/s
V_c	Critical velocity	ft/s

END OF SECTION 4.2