Appendix 9A-2 Symbols

Symbol	Definition	Units
a	Depth of depression	ft
A	Drainage area	acres
A	Cross-sectional flow area	ft^2
A	Clear opening area of curb inlet or grate	ft^2
b	Manhole diameter or width	ft
C	Runoff coefficient	-
C_W	Weir coefficient	-
d	Depth of gutter flow at the curb line	ft
d_i	Depth at lip of curb opening	ft
D	Diameter of pipe	ft
E	Curb opening efficiency	-
E_o	Ratio of depression flow to total gutter flow	-
g	Acceleration due to gravity	ft/s^2
h	Height of curb opening inlet	ft
h_Δ	Bend head loss	ft
h_e	Entrance head loss	ft
h_f	Friction head loss	ft
h_m	Minor head loss	ft
h_o	Exit head loss	ft
H	Head Loss	ft
HGL_{us}	Elevation of the hydraulic grade line at upstream node	ft
HGL_{ds}	Elevation of the hydraulic grade line at downstream node	ft
i	Rainfall intensity	in/hr
K	Bend loss coefficient	-
K	Entrance loss coefficient	-
K	Exit loss coefficient	-
K	Conveyance of cross section	cfs
K_o	Initial head loss coefficient	-
K_o	Conveyance of the gutter section beyond depression	cfs
K_w	Conveyance of the depressed gutter section	cfs
L	Length of grate inlet	ft
L	Length of curb opening	ft
L	Pipe length	ft
L_T	Curb opening length for 100% interception	ft
L_R	Require length of inlet	ft
n	Manning's roughness coefficient	-
P	Perimeter of grate opening	ft
P_w	Wetted perimeter	ft
Q	Total flow to inlet or flow in gutter	cfs
Q_b	Bypass flow	cfs
Q_i	Intercepted flow	cfs
Q_o	Outlet flow	cfs
Q_s	Gutter capacity above the depressed section	cfs
Q_T	Total flow	cfs
Q_t	Maximum allowable flow	cfs

Appendix 9A-2 Symbols

Q_w	Flow in width W	cfs
R	Hydraulic radius	ft
R_f	Ratio of frontal flow intercepted to total flow	-
R_s	Ratio of side flow intercepted to total flow	-
S	Slope of the energy grade line	ft/ft
S	Longitudinal slope of pavement or gutter slope	ft/ft
S_x	Cross Slope	ft/ft
S_e	Equivalent cross slope	ft/ft
S_f	Friction slope	ft/ft
S_w	Depression section slope or gutter cross slope	ft/ft
S_w	Gutter cross slope including local depression	ft/ft
T	Spread	ft
t_c	Time of concentration	min
T_s	Spread above depressed section	ft
V	Mean velocity, velocity of flow in gutter	fps
V_o	Gutter velocity where splash-over first occurs	fps
W	Drainage area width	ft
W	Width of depression	ft
W	Width of gutter pan	ft
W	Width of grate	ft
y	Depth of flow in approach gutter	ft
Z	T/d, reciprocal of the cross slope	-
θ	Angle with respect to centerline of outlet pipe	degrees