Equa. No.	Description	Equation	Page No.
1.1	Peak Runoff (Rational Method)	$Q = CiA$	1-13
1.2	Time of Concentration (Kirpich Equation)	$T_c = 0.0078\ L^{0.77}\ S^{-0.385}\ C_F$	1-21
1.3	Critical Depth in Open Channel Flow	$A^3/T = Q^2/g$	1-31
1.4	Froude Number	$Fr = V/(gD)^{0.5}$	1-32
1.5	Manning's Equation for evaluating uniform flow in open channels	$V = \frac{1.486}{n} R^{2/3} S^{1/2}$	1-33
1.6	Compound Bend Angle	$\gamma = 180° - \cos^{-1}(-\cos(\alpha) \times \cos(\beta))$	1-54
1.7a	Modified Manning's Equation for evaluating gutter flow hydraulics (depth known)	$Q = 0.56(z/n)\ S^{1/2} d^{8/3}$	1-66
1.7b	Modified Manning's Equation for evaluating gutter flow hydraulics (spread known)	$Q = (0.56/n)\ S_x^{5/3} S^{1/2} T^{8/3}$	1-66
1.8	Determine pavement cross slope for a V-shaped gutter	$S_X = S_{X1} S_{X2} / (S_{X1} + S_{X2})$	1-66
1.9	Length of inlet required to intercept 100% of gutter flow	$L_a = Q_a/(Q_a/L_a)$	1-72
1.10	Ratio of frontal flow to total gutter flow for grate inlets	$E_o = Q_w/Q = 1 - (1 - W/T)^{2.7}$	1-74
1.11	Ratio of side flow to total gutter flow for grate inlets	$Q_s/Q = 1 - Q_w/Q = 1 - E_o$	1-74
1.12	Ratio of frontal flow intercepted to total frontal flow for grate inlets	$R_f = 1 - 0.09\ (V - V_o)$	1-74
1.13	Ratio of side flow intercepted to total side flow for grate inlets	$R_s = 1 / [1 + (0.15V^{1.8}/S_x L^{2.3})]$	1-74
1.14	Efficiency of a grate	$E = R_f E_o + R_s(1-E_o)$	1-75
1.15	Interception capacity of a grate on grade	$Q_i = EQ = Q[R_f E_o + R_s(1-E_o)]$	1-75
1.16	Capacity for a grate inlet in a low point or sump, inlet acting as a weir	$Q_i = CPd^{1.5}$	1-76
1.17	Capacity for a grate inlet in a low point or sump, inlet operating as an orifice	$Q_i = CA(2gd)^{0.5}$	1-76
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1.23	Capacity of a slotted vane drain	$Q = Kd^{5/3}$	1-78

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1.25	Velocity of flow in a storm sewer flowing full	$V_{full} = \frac{0.590}{N} D^{2/3} S^{1/2}$	1-81
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