EXAMPLE: STREET INUNDATION $S_L = 0.02\ ft/ft$ $S_x = 0.021\ ft/ft$ $S_W = 0.0833\ ft/ft$

$n = 0.015$ $T = 9.567\ ft$ $W = 3$

$T_x = 9.57 - 3 = 6.567\ ft$

$D_2 = T_x \times S_x = 6.567 \times 0.021\ ft/ft = 0.1379\ ft$

$D_1 = D_2 + W \times S_W = 0.1379\ ft + 3\ ft \times 0.0833 = 0.3878\ ft$

$a = (\text{NOT NEEDED}) = D_1 - T \times S_x = 0.3878 - 9.57 \times 0.021\ ft$

$$Q_S = \frac{0.56\sqrt{S_L}}{n \times S_x} \times D_2^{2.67} = \frac{0.56\sqrt{0.02}}{0.015 \times 0.021} \times 0.1379^{2.67} = 1.268\ cfs$$

$$Q_W = \frac{0.56\sqrt{S_L}}{n \times S_W}\left[D_1^{2.67} - D_2^{2.67}\right] = \frac{0.56\sqrt{0.02}}{0.015 \times 0.0833}\left[0.3878^{2.67} - 0.1379^{2.67}\right]$$

$$= 4.733\ cfs$$

$$\boxed{Q_{TOTAL} = 6.0\ cfs}$$

EXAMPLE: INLET E% ABOVE + $L_{INLET} = 6\ ft$ CLOG 10% REDUCE

$$E_o = \frac{1}{1 + \frac{S_W/S_x}{\left[1 + \frac{S_W/S_x}{T/W - 1}\right]^{8/3} - 1}} = \frac{1}{1 + \frac{0.0833/0.021}{\left[1 + \frac{0.0833/0.021}{\frac{9.57}{3} - 1}\right]^{8/3} - 1}} = 0.7881$$

$$S_e = S_x + \frac{a}{W} E_o = 0.021 + \frac{0.1869}{3} = 0.0701$$

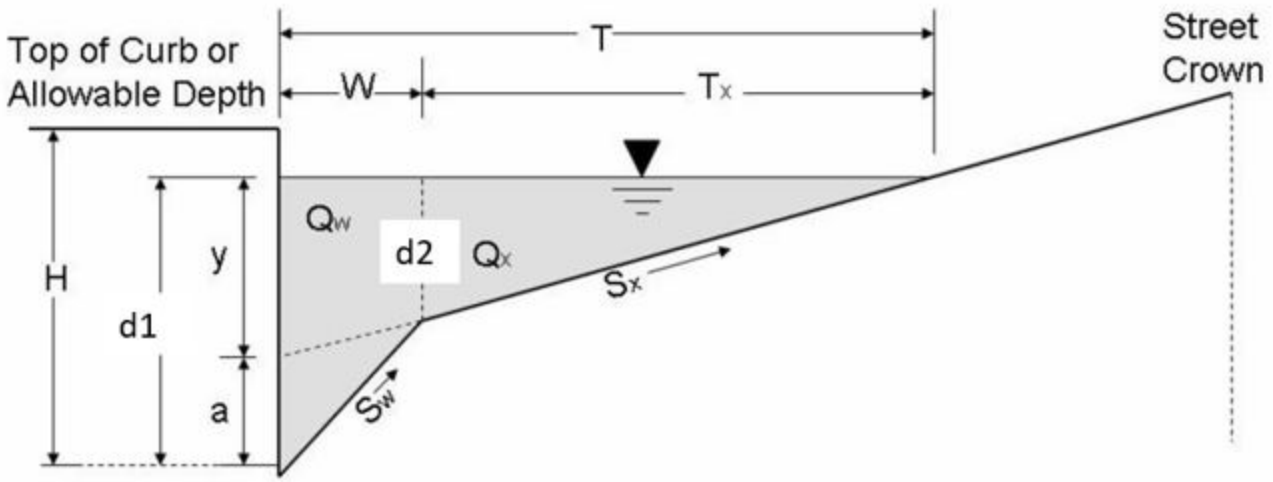
$$L_T = 0.6\, Q^{0.42} S_L^{0.3} \left(\frac{1}{n S_e}\right)^{0.6} = 0.6 \times 6.0^{0.42}\, 0.02^{0.3} \left(\frac{1}{0.015 \times 0.0701}\right)^{0.6} = 24.11\ ft$$

$$E\% = 1 - \left(1 - \frac{L}{L_T}\right)^{1.8} = 1 - \left(1 - \frac{6}{24.11}\right)^{1.8} = 0.403$$

$$Q_{INTERCEPT} = Q \times E \times (1 - C_{LOG}) = 6.0 \times 0.403 \times (1 - 0.1) = \boxed{2.174\ cfs} \rightarrow \boxed{Q_{BYPASS} = 3.83\ cfs}$$

Inundation Calculations

SLOPES			
Long Street Slope	SL	0.02	ft/ft
Transverse Street Slope	SX	0.021	ft/ft
Transverse Gutter Slope	SW	0.0833	ft/ft
Manning n	n	0.015	
GEOMETRY			
Spread	T	9.57	ft
Curb Width	W	3	ft
Tx	Tx	6.57	ft
a	a	0.1869	2.243
d2	d2	0.13797	ft
d1 or y+a	d1	0.38787	
Max Depth Criteria	H	0.5	ft
d1 < H		PASS	
FLOW			
Street Flow	Qs	1.269456	cfs
Gutter Flow	Qw	4.735408	cfs
Total Flow	Q	**6.00**	cfs



Inlet Efficiency

INPUT			
Length (Design)	L	6	ft
Efficiency	E	0.402406	
Length for E=100%	Lt	24.12007	ft
Slope Equivalent X	Se	0.070091	ft/ft
Ratio of flow gutter	E0	0.787981	
Clog Factor		0.1	
Intercepted Flow Qr*E	Qi	2.174753	cfs
Bypass flow Q-Qi	Qb	3.830111	cfs