City of New Braunfels
Drainage and Erosion Control Design Manual

Errata Sheet

The City of New Braunfels Engineering Department has revised some of the formulas, text and tables in the Drainage and Erosion Control Design Manual. An Errata Sheet has been prepared to reflect these changes.

Errata Sheet

Drainage and Erosion Control Design Manual 2000

The purpose of these sheets is to revise the following information on the Drainage and Erosion Control Design Manual 2000.

Pg. 15 –

Section 2.10 Finished Floor Elevations has changed as follow:

2.10 Finished Floor Elevations

The elevation of the lowest floor shall be at least 10 inches above the finished grade of the surrounding ground, which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to stormwater conveyance structures must have floor slab elevation or bottom of floor joists a minimum of one foot above the 100-year water flow elevation in the structure. Driveway serving houses on the downhill side of the street shall have properly sized swale before entering the garage.

Pg. 18 –

Table 4-3 provided the New Braunfels Area Depth-Duration values (storm frequency vs. time). The number for the depth, for the 100 yr. storm events and the 24 hr. duration, has changed from 10.17 to 11.17.

Table 4-3
New Braunfels Area Depth-Duration Values

Year	5-Min	15-Min	1-Hr	2-Hr	3-Hr	6-Hr	12-Hr	24-Hr	2-day	3-day
2	0.51	1.05	1.86	2.24	2.45	2.80	3.15	3.52	3.92	4.17
5	0.66	1.34	2.40	2.95	3.27	3.85	4.47	5.17	5.96	6.47
10	0.80	1.58	2.78	3.43	3.84	4.58	5.43	6.40	7.53	8.27
25	0.96	1.89	3.34	4.16	4.67	5.64	6.76	8.07	9.61	10.64
50	1.11	2.16	3.83	4.79	5.40	6.57	7.92	9.52	11.43	12.71
100	1.28	2.47	4.39	5.51	6.23	7.61	9.24	11.17	13.48	15.05

Pg. 21 –

The equation for Sheet Flow has been revised. Previously, the equation read as follow:

Sheet Flow

$T_t = (60*L*n)/(288.6*S^{0.4})$ Eq. 5-4a

However, this equation has been replaced to read as follow:

Sheet Flow

$T_t = 0.007(n*L)^{0.8}/(P_2)^{0.5}*S^{0.4}$ Eq. 5-4a (TR-55 method)

where: T_t Segment time of concentration (min)

	n	Manning “n” from Table 5-4
	P_2	is the two-year 24 hr. rainfall intensity

Pg. 29 –

The reference to table 6-4 has change to 6-3 (see revisions below):

Section 6.3.2 Flow Calculations for Parabolic Street Sections

Where:	y	Is the flow depth in the gutter for one side of the street (ft)
	Q	Is the gutter discharge for one side of the street
	S	Is the slope of the gutter (ft/ft)
	C1	Is a constant for which an equation is given in table 6-3
	C2	Is a constant for which an equation is given in table 6-3
	T	Is the spread of flow for one side of the street (ft)
	B	Is the one half of the street width (ft)
	c_h	Is the crown height of the street (ft)
	A	Is the cross section area of flow (ft^2)
	V	Is the velocity of the flow (ft/sec)

Pg. 39 –

The Equation to calculate the inlet length has been revised. Previously, the equation read as follow:

$$L_T = K_c * Q^{0.42} * S_L^{0.3} * (1 / (n * S_e))^{0.9} \quad \text{(Eq. 7-25)}$$

Where:	K_c	Is the coefficient 0.6
	Q	Is the total flow (ft^3/sec)
	S_L	Is the longitudinal slope of the roadway (ft/ft)
	n	Is Manning’s roughness coefficient, usually = 0.016 for streets
	S_e	Is the equivalent cross slope in cross sections with a depression, this is S_x if there is no depression (ft/ft)
	S_e	Is $S_x + S'_w * E_0$
	S_x	Is the cross slope of the roadway (ft/ft)
	S'_w	Is the cross slope of the gutter measured from the cross slope of the pavement, S_x, (ft/ft)
	S'_w	Is a / 12 (in/ft), (ft)
	a	Is the gutter depression (in)
	E_0	Is the ratio of frontal or gutter flow to total flow from equation 7-16 or 7-17

However, the equation has been revised to read as follow:

$$L_T = K_c * Q^{0.42} * S_L^{0.3} * (1 / (n * S_e))^{0.6} \quad \text{(Eq. 7-25) (Ref. FHWA-NHI-01-021 pg. 4-49 eq. 4-25)}$$

Where:	K_c	Is the coefficient 0.6
	Q	Is the total flow (ft^3/sec)
	S_L	Is the longitudinal slope of the roadway (ft/ft)
	n	Is Manning’s roughness coefficient, usually = 0.016 for streets

S_e	Is the equivalent cross slope in cross sections with a depression, this is S_x if there is no depression (ft/ft)
S_e	Is $S_x + S'_w * E_0$
S_x	Is the cross slope of the roadway (ft/ft)
S'_w	Is the cross slope of the gutter measured from the cross slope of the pavement, S_x, (ft/ft)
S'_w	Is a / 12 (in/ft), (ft)
a	Is the gutter depression (in)
E_0	Is the ratio of frontal or gutter flow to total flow from equation 7-16 or 7-17