

RURAL EXAMPLE
20 FT PAVEMENT WIDTH
(DESIGN SOFTWARE - 1 LANE AT 10 FT)

$V_D = 50$ MPH $R = 1000$ FT
 $W_n = 10$ FT $rg = 0.50$
 $E = 7.6$ (7.6% PER 802.40)

$$U = u + R - \sqrt{R^2 - L^2}$$

$$U = 8.0 + 1000 - \sqrt{(1000)^2 - (20)^2}$$

$$U = 8.20002$$

$$F_A = \sqrt{R^2 + A(2L + A)} - R$$

$$F_A = \sqrt{(1000)^2 + 4[2(20) + 4]} - 1000$$

$$F_A = .087996$$

$$Z = (V_D / \sqrt{R})$$

$$Z = (50 / \sqrt{1000})$$

$$Z = 1.58$$

$$W_C = N(U + C) + F_A + Z$$

$$W_C = 2(8.20002 + 2) + 0.087996 + 1.58$$

$$W_C = 22.0680$$

$$w = W_C - 2W_n = 22.0680 - 2(10) = 2.1$$

($R < 2865$ & $w > 2$ THEREFORE WIDENING IS REQUIRED)
 $LS = [E n_1 (W_n + w/2) / rg] b_w$
 $LS = [7.6(1)(10 + 2.1/2) / 0.50] 1$
 $LS = 7.6 (11.05) / 0.50$
 $LS = 167.96$

RURAL EXAMPLE
72 FT PAVEMENT WIDTH
(DESIGN SOFTWARE - 3 LANES AT 12 FT)

$V_D = 40$ MPH $R = 500$ FT
 $W_n = 12$ FT $rg = 0.58$
 $E = 8.0$ (8% PER PAGE 802.38)

$$U = u + R - \sqrt{R^2 - L^2}$$

$$U = 8.0 + 500 - \sqrt{(500)^2 - (20)^2}$$

$$U = 8.4002$$

$$F_A = \sqrt{R^2 + A(2L + A)} - R$$

$$F_A = \sqrt{(500)^2 + 4[2(20) + 4]} - 500$$

$$F_A = .1760$$

$$Z = (V_D / \sqrt{R})$$

$$Z = (40 / \sqrt{500})$$

$$Z = 1.7885$$

$$W_C = 2(U + C) + F_A + Z$$

$$W_C = 2(8.4002 + 3.0) + .1760 + 1.7885$$

$$W_C = 24.7651$$

$$w = W_C - 2W_n = 24.7651 - 2(12) = 0.7651(0.8)$$

FOR 72' PAVEMENT WIDTH
 $w = 3(0.8) = 2.4$

($R < 881$ & $w > 2$ THEREFORE WIDENING IS REQUIRED)
 $LS = [E n_1 (W_n + w/3) / rg] b_w$
 $LS = [8 (3) (12 + 2.4/3) / 0.58] 0.6667$
 $LS = (307.2 / 0.58) 0.6667$
 $LS = 353.1211$
 OR
 $LS = M[E(W_n + w/N) / rg]$
 $LS = 2 [8(12 + 4.5/3) / 0.58]$
 $LS = 2 (102.4 / 0.58)$
 $LS = 353.1034$

URBAN EXAMPLES

24 FT PAVEMENT WIDTH
(DESIGN SOFTWARE - 1 LANE AT 12 FT)

$V_D = 40$ MPH $R = 600$ FT
 $W_n = 12$ FT $rg = 0.58$
 $E = 4.0$ (4% PER PAGE 802.29)

$$LS = (W_n n_1 E / rg) b_w$$

$$LS = [12(1)(4) / 0.58] 1.00$$

$$LS = (48 / 0.58)$$

$$LS = 82.7586$$

66 FT PAVEMENT WIDTH
(DESIGN SOFTWARE - 3 LANES AT 11 FT)

$V_D = 40$ MPH $R = 600$ FT
 $W_n = 11$ FT $rg = 0.58$
 $E = 4.0$ (4% PER PAGE 801.29)

$$LS = b_w (W_n n_1 E / rg)$$

$$LS = 0.6667 [11(3)(4) / 0.58]$$

$$LS = 0.6667 (132 / 0.58)$$

$$LS = 151.7317$$

OR

$$LS = M (E W_n / rg)$$

$$LS = 2 [4(11) / 0.58]$$

$$LS = 2 (44 / 0.58)$$

$$LS = 151.7241$$

CALCULATED TC-5.01 EXAMPLES