

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

$V_D = 50$  MPH                       $R = 1000$  FT  
 $W_n = 10$  FT                          $rg = 0.50$   
 $E = 0.076$  (7.6% CALCULATED PER AASHTO METHOD 5)

$U = u + R - \sqrt{R^2 - L^2}$   
 $U = 8.5 + 1000 - \sqrt{(1000)^2 - (20)^2}$   
 $U = 8.70002$

$F_A = \sqrt{R^2 + A(2L + A)} - R$   
 $F_A = \sqrt{(1000)^2 + 4[2(20) + 4]} - 1000$   
 $F_A = .087996$

$Z = (V_D / \sqrt{R})$   
 $Z = (50 / \sqrt{1000})$   
 $Z = 1.58$

$W_C = 2(U + C) + F_A + Z$   
 $W_C = 2(8.70002 + 2) + 0.08996 + 1.58$   
 $W_C = 23.0692$

$w = W_C - 2W_n = 23.069 - 2(10) = 3.069$

( $R < 2865$  &  $w > 2$  THEREFORE WIDENING IS REQUIRED)  
 $LS = [100(W + w/2)E] / rg$   
 $LS = [100(10 + 3.068/2)0.076] / 0.50$   
 $LS = 175.56$  (180 ROUNDED)

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

$V_D = 40$  MPH                       $R = 600$  FT  
 $W_n = 24$  FT                          $rg = 0.58$   
 $E = 0.077$  (7.7% CALCULATED PER AASHTO METHOD 5)

COMPUTE FOR 24' PAVEMENT WIDTH (IGRDS 1 @ 12')

$U = u + R - \sqrt{R^2 - L^2}$   
 $U = 8.5 + 600 - \sqrt{(600)^2 - (20)^2}$   
 $U = 8.8334$

$F_A = \sqrt{R^2 + A(2L + A)} - R$   
 $F_A = \sqrt{(600)^2 + 4[2(20) + 4]} - 600$   
 $F_A = .14665$

$Z = (V_D / \sqrt{R})$   
 $Z = (40 / \sqrt{600})$   
 $Z = 1.6329$

$W_C = 2(U + C) + F_A + Z$   
 $W_C = 2(8.8334 + 3.0) + .14665 + 1.632$   
 $W_C = 25.4464$

$w = W_C - 2W_n = 25.4455 - 2(12) = 1.4464(1.5)$

FOR 72' PAVEMENT WIDTH

$w = 3(1.5) = 4.5$

( $R < 881$  &  $w > 2$  THEREFORE WIDENING IS REQUIRED)  
 $LS = M[100(Pw/N + w/N)E] / rg$   
 $LS = 2[100(72/6 + 4.5/6)0.077] / 0.58$   
 $LS = 2[100(12.75)0.77] / 0.58$   
 $LS = 2(98.175/0.58)$   
 $LS = 2(169.2672414)$   
 $LS = 338.5344828$  (ROUNDED TO 340)

URBAN EXAMPLES

24 FT PAVEMENT WIDTH  
(IGRDS - 1 LANE AT 12 FT)

$V_D = 40$  MPH                       $R = 600$  FT  
 $W_n = 12$  FT                          $rg = 0.58$   
 $E = 0.04$  (4% PER PAGE 801.25)

$LS = (100WE) / rg$  (NO WIDENING REQUIRED)  
 $LS = [100(12)(0.04)] / 0.58$   
 $LS = 82.759 < 120$  (MIN. LS) THEREFORE  
 $LS = 120$

66 FT PAVEMENT WIDTH  
(IGRDS - 3 LANES AT 11 FT)

$V_D = 40$  MPH                       $R = 600$  FT  
 $W_n = 22$  FT                          $rg = 0.58$   
 $E = 0.04$  (4% PER PAGE 801.25)

$LS = (100WE) / rg$  (NO WIDENING REQUIRED)  
 $LS = [100(22)(0.04)] / 0.58$   
 $LS = 151.72$  (ROUND TO 160)  $> 120$  (MIN. LS)  
 $LS = 160$

CALCULATED TC-5 EXAMPLES