

# 2 - LANE HIGHWAY

1.  $ATS = FFS - 0.00776 V_p - f_{np}$

1a.  $FFS = BFFS - f_{LS} - f_A$   
 $FFS = (65+5) - 3.7 - 5.0 = 61.3 \text{ mph}$   
 posted speed limit

1b.  $V_p = \frac{pc/h}{PHF * f_G * f_{HV}}$   
 $f_{np} = 2.6$  (Table 3.9)

Rolling  $V_p = \frac{700}{(0.80)(0.93)(0.91)} = 1034 \text{ pc/h}$   
 Assume  $V_p = V = 700$   
 Use "Speed" Tables for  $f_G$  &  $f_{HV}$   
 $100\% \text{ np Zone } V_p = 1034$   
 $V_p < 1200 \therefore \text{No Iteration}$

Formula:  $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$   
 $\frac{1}{1 + (0.10)(1.9 - 1) + (0.05)(1.1 - 1)} = 0.91$   
 $ATS = 61.3 - 0.00776(1034) - 2.6$   
 $ATS = 61.3 - 8.0 - 2.6$   
 $ATS = \underline{50.7 \text{ mph}}$

2.  $PTSF = BPTSF + f_{d/np} = 57.7\% + 12.7\% = 70.4\%$

2a.  $BPTSF = 100(1 - e^{-0.000879 V_p}) = 57.7\%$

2b.  $V_p = \frac{pc/h}{PHF * f_G * f_{HV}}$   
 $f_{d/np} = 12.7\%$  (Table 3.10)

$V_p = \frac{700}{(0.80)(0.94)(0.95)} = 980 \text{ pc/h}$   
 Use "% Following" Tables for  $f_G$  &  $f_{HV}$   
 $V_p < 1200 \therefore \text{No Iteration}$   
 $\frac{1}{1 + (0.10)(1.5 - 1) + (0.05)(1.0 - 1)} = 0.95$   
 $70\%/30\% \text{ Directional split } V_p = 980$   
 $100\% \text{ np Zone}$

$PTSF = 57.7\% + 12.7\% = 70.4\%$

LOS D Figure 3.3 (Exhibit 20-3)

## SUPPLEMENTAL CALCULATION

●  $V/C = \text{Volume-to-Capacity Ratio} = \frac{V_p}{C} = \frac{1034 \text{ pc/h}}{3200 \text{ pc/h}} = \underline{0.32}$  (Largest Calculated)

●  $TT_{AVG.} = \frac{D}{ATS} = \frac{20 \text{ miles}}{50.7 \text{ miles/hr.}} = 0.39 \text{ hours (23.7 minutes)}$   
 avg. travel time  
 Distance  
 Average Travel Speed