CE 353
PRINCIPLES OF TRANSPORTATION AND TRAFFIC ENGINEERING

Example Problems (Available In Lecture Notes)

Example 2.1:

A car has a wheelbase of 2.50 m and a center of gravity that is 1.0 m behind the front axle at a height of 0.60 m. If the car is travelling at 130 km/h on a road with poor and wet pavement, determine the percentage of braking force that should be allocated to the front and rear brake by the vehicle's brake system to ensure the maximum braking force is developed.

Example 2.2:

A new experimental car is travelling at 145 km/h down a 10% grade. The coefficient of road adhesion is 0.7. The car has an advanced antilock braking system that gives it a braking efficiency of 100%. Determine the theoretical minimum stopping distance.

Example 2.3

A car with braking efficiency of 80% is travelling at 120 km/h on a road surface where the coefficient of road adhesion is 0.85. The brakes are applied to miss an object that is 45 m from the point of brake application. Ignoring aerodynamic resistance and assuming theoretical minimum stopping distance, estimate how fast the car will be going when it strikes the object if (a) the surface is level, (b) the surface is on 5% upgrade.

Example 2.4:

For the design speed of 70 km/hr, AASHTO suggests the following values for the parameters to calculate passing sight distance

t_1 = 4.10 s,
a = 2.32 km/h/s,
t_2 = 10.40 s,
d_3 = 53.0 m

Calculate the necessary passing sight distance.