SHORT ABSTRACT

Passenger car equivalent (PCE) values are required while representing a non-homogeneous (mixed) traffic stream in terms of a homogeneous (base) traffic stream. For the traffic conditions prevalent in India, researchers mostly suggest individual PCEs of different vehicle types varying with traffic composition and flow rate. The objective of the present study is to estimate the constant and the aggregate PCE values for the four-lane and six-lane highways passing through the level terrain in India. PCE values are estimated based on the macroscopic relationships and the area occupancy and speed drop are selected as the performance measures. Macroscopic relationships are generated using simulation model and can be better represented by considering the stationary traffic conditions. For a particular traffic composition, constant PCEs can be used across different flow rates without much loss of accuracy. Aggregate PCEs do not vary with area occupancy in the case of four-lane and six-lane divided highways. Speed drop provides variation among the aggregate PCEs particularly at lower flow rates. The present study can be extended further by defining the thresholds of area occupancy and speed drop based on empirical data.

Key words for description of Thesis Work:

Passenger car equivalent, Area occupancy, Speed drop, Constant PCE, Aggregate PCE, Mixed traffic