

Effect of Traffic Composition on Delay and Saturation Flow at Signal Controlled Intersections

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Abstract : Level of service at a signal controlled intersection is directly measured from the delay. Similarly, saturation flow rate is a fundamental parameter to measure the intersection capacity. The present study calculates vehicle arrival rate, departure rate, and queue length for every five seconds interval in each cycle. Based on the queue lengths, the total delay of the cycle has been calculated using Simpson's 1/3rd rule. Saturation flow has been estimated in terms of veh/hr of green/lane for every five seconds interval of the green period until at least three vehicles are left to cross the stop line. Vehicle composition shows an immense effect on total delay and saturation flow rate. The increase in two-wheeler proportion increases the saturation flow rate and reduces the total delay per vehicle significantly. Additionally, an increase in the heavy vehicle proportion reduces the saturation flow rate and increases the total delay for each vehicle.

Keywords : delay, saturation flow, signalised intersection, vehicle composition

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