

CAPACITY ANALYSIS OF AN UNSIGNALIZED MULTI-LEG INTERSECTION USING CONFLICT TECHNIQUE

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Abstract

The goal of this research is to evaluate the maximum capacity of unsignalized intersection under mixed traffic conditions in order to propose a best suitable design for an intersection. The statistical package of social service (SPSS) is used to model the speed-flow relationship and maximum capacity equations. For the evaluation of capacities at intersection conflicting technique is adopted using linear regression analysis. The first part of conflicting technique includes identification of conflict groups in intersection which depends on the type of intersection. Three-legged intersection consists of six conflict groups with six subject streams whereas four-legged intersection consist of twelve conflict groups with twelve subject streams. In second part, based on the conflict group and the streams involved speed-flow relations for each subject stream are derived. In third part, depending upon the speed-flow relationship model for maximum capacity is developed and in final part capacity evaluation for each stream is carried out. The research focuses on two (2) three-legged and two (2) four-legged unsignalized intersection located in Nalgonda and the data is collected using video graphic technique. New procedures for evaluation of maximum capacity for unsignalized three-legged and four-legged intersection under mixed traffic conditions have been developed. Based on traffic flow measurements and speed prediction at the maximum flow of a stream, the total capacity of an intersection and the maximum flow of each stream is evaluated. The research also shows that capacity increases with decreasing speed which is due to the close packing of vehicles which restricts their movement in the respective lane and at higher speeds, the gap between successive vehicles may be higher and their frequency of lane changing is more. The research has been carried out without considering pedestrian movement. So in further research pedestrian movements along with vehicle movements can also be considered to get more accurate results.

Key words: Unsignalized intersection, maximum capacity, linear regression model, conflict technique