



Modeling Traffic Impact of Flyover at an Urban Intersection Under Mixed Traffic Environment

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Abstract

In order to ease transportation problems, many urban authorities in India have taken up initiative for construction of flyovers at major intersections. However, in most of the cases a comprehensive planning approach has not been adopted, either due to lack of fund or ignorance about the planning perspective of such proposals. The locations for flyovers have been decided based on present day operating conditions and the traffic impacts of such flyovers at adjacent intersections have not been analysed. In the present paper, the traffic impact of a flyover along with its adjacent intersection has been analysed, using a simulation model developed for mixed traffic operations and poor lane discipline prevailing in India. Through the case study presented in the paper, it has been demonstrated that an ill planned flyover only shifts the location of the problem without bringing any benefit to traffic. The potential use of simulation model for analyzing traffic impacts has been shown; and the need for such analysis for the planning of flyovers has been highlighted.

Keywords: Modelling traffic impact; Flyover; Urban intersection; Traffic environment.

1. Introduction

The increase in urban traffic congestion has become a serious concern to transportation professionals. Therefore, efforts have been made by researchers for obtaining rational quantification of congestion (Turner 1992; Thurgood 1995; Maitra, Sikdar & Dhingra 1999) and formulating appropriate measures for mitigation of congestion for urban roads (Pratsch 1986; Lindley 1989; Arnold 1993). Urban road network consists of large number of intersections at close proximity, which are potential sources of acute traffic congestion, especially during peak hours. Attempts have been made by researchers to improve traffic operations at urban intersections (Cronje 1983; Olszewski 1993; Chou, Chen & Li 2001). However, the scope of improvement of intersection at-grade or widening existing roads is very limited in urban areas. In order to minimise the surface level conflict and to provide a relief to mixed traffic, spatial separation in the form of flyovers is planned at major intersections in the congested cities of India. Flyovers at major urban intersections can be instrumental in reducing