

EVALUATION OF TRANSPORTATION SYSTEM MANAGEMENT TECHNIQUES USING GIS

MD. ABDULLAH SHARIFF¹ AND MIR IQBAL FAHEEM²

¹ Dept. of Civil Engineering,
Muffakham Jah College of Engineering & Technology,
Banjara Hills, Hyderabad - 500 034

² Head, Dept. of Civil Engineering & Vice-Principal,
Deccan College of Engineer-ing and Technology,
Dar-us-Salam, Hyderabad - 500 001

Abstract

Transportation system management (TSM) actions are widely used in practice to coordinate all individual elements of transportation systems through operating, regulatory and control policies, so as to achieve the maximum efficiency, safety, productivity and to achieve the maximum utility of the existing transportation system. The TSM actions like improved vehicular flow, preferential treatment of high occupancy vehicles, reduced peak period travel, parking management, promotion of non-auto or high occupancy vehicles, transit and para-transit service improvements, transit management efficiency measures were evaluated all over the world using mathematical models applied either on a corridor or at city network level to maximize the expected output of the transportation systems as a whole and achieve the specific objectives. In the fast growing infrastructure and due to limitations in the mathematical models it has become imperative to make use of better and more efficient traffic management techniques for evaluation of TSM actions. In this study a GIS based transportation system management (G-TSM) technique using Arc View and Avenue programming language is developed to evaluate reduced peak period travel and parking management on a selected stretch of road network in central business district (CBD). Traffic volume and road inventory data collected are appended as attributes in the form of databases and data is retrieved by making queries and applied on each link of the selected road network to determine the

roadway capacity, volume-capacity (v/c) ratio and level of service (LOS). The result indicated that, there is a significant reduction in v/c ratio from 0.94 to 0.70 and 0.92 to 0.77 and LOS from F to B and E to C considering auto restriction and parking restriction which resulted in considerable reduction in traffic congestion.

Key Words : *TSM actions, GIS, Arc View, Road Network, Capacity, Level of Service.*

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