Abstract

An urban road network comprises of streets with many at-grade and some grade-separated intersections. Generally the streets are two-way streets (undirected links) where movement is allowed in both the directions. During peak hours there is heavy traffic on certain streets which leads to slower movement on undivided streets and high delays at intersections. Introducing one-way streets can improve the situation as they reduce friction in flows and simplify intersections. On the other hand, one-way streets causes some vehicles to travel longer distances in order to reach their destinations. With the right choice of one-way streets, the network mobility can be improved. A discrete optimization problem with the direction of streets as decision variables and efficiency of mobility as objective is formulated. Certain service related restrictions need to be included such as the ability of network user to travel between every pair of nodes. The travel paths should not be circuitous and frequent reversal of travel directions on traditional arterials should be avoided.

Keywords: Network configuration, Discrete optimization

