



Transportation network analysis and applications in disaster management

V.V. Adikariwattage

University of Moratuwa, SriLanka

J.M.S.J Bandara

University of Moratuwa, SriLanka

E-mails: *V.adikariwattage@yahoo.com, bandara@civil.mrt.ac.lk,*

Abstract

Transportation reliability and vulnerability studies are a new area that has started to draw a lot of attention particularly about its possible applications to help disaster management practices. In order to assess a transport network quantitatively, number of operational measurements are needed such as network topology, travel time or level of service and probability of hazards. This paper introduces a methodology to assess the state of a transportation network along with the applications by using concepts of transportation network reliability and vulnerability analysis. The measure is introduced as an index called the preparedness index which takes in to account the quality of the connections between individual origin destination pairs in terms of the number of alternative paths available, distance of paths, travel time and the connectivity reliability between the origin destination pair. By developing this measurement it is possible to assess the network for vulnerability or reliability of accessibility provided and by further analysis it is possible to identify critical links of the network that will help direct scarce development resources where there is most effect.