Abstract

The transportation network plays an important role in case of emergency. The efficiency of the rescue operation in an urban area largely depends on the performance of the transportation network. This paper simulates traffic flows in case of earthquakes and load this additional traffic flows into the network to evaluate the performance of the transportation system. This study also measures the seismic vulnerability of bridges within Montreal regions as per the bridge classes typical to National Building Inventory (NBI) through the development of bridge fragility curves. Based on the damage level estimated using HAZUS software, bridges are prioritized in order to rehabilitate bridges, or deployment of inspection crews for field assessment of bridge damage. This study can provide valuable insights to the first responders of earthquake disaster to take necessary actions for an efficient evacuation routes based on the prevailing road condition.

Methodology

Step 1: Estimation of the number of evacuees

Number of Displaced Household per Census Tract

Results

Probability of collapse for bridges, case scenario 1

Contour map showing PGA values for scenario 1 and 2

Evacuation time under emergency condition

Conclusion

Future Works

Bibliography