



[Registration No.] 125

[Author] Shahin Borzoo

[E-mail] s.borzoo@iiees.ac.ir

[Co-Author] Morteza Bastami (Presenter) / Afshin Fallah

[E-mail] m.bastami@iiees.ac.ir / a.fallah@sci.tku.ac.ir

[Abstract No.] 19036

[Abstract Title]

Risk mitigation using the determination of vulnerable nodes of urban lifeline networks using extreme value theory

[Abstract]

In this paper, a novelty method to investigate the vulnerability of the nodes in expanded urban lifeline networks is presented. This method shows the vulnerable nodes of a network using ground-motion intensity and flow weights of its nodes. Determination of the important nodes of the network was done using the extreme value theory (EVT) and generalized Pareto distribution (GPD). To produce the seismic scenarios, the Monte Carlo simulation approach is adopted. The risk analysis of the network was done using extreme scenarios. Moreover, the appropriate threshold of the PSA ($T=1$ s) is investigated as a part of the presented method. An example of the proposed method is applied to a part of Tehran transportation network with 26 bridges.

[Keywords]

Risk mitigation, Extreme value theory (EVT), Generalized Pareto distribution, Vulnerability