THE JOURNAL
OF ENGINEERING
IET Open Access Research

**Engineering - Building Engineering; Researchers at University of Texas Austin Report New Data on Building Engineering (Fragility of Masonry Veneers To Human-induced Central U.s. Earthquakes Using Neural Network Models)**

513 words
23 March 2020
Journal of Engineering
JOENG
2259
English


2020 MAR 23 (VerticalNews) -- By a News Reporter-Staff News Editor at Journal of Engineering -- Data detailed on Engineering - Building Engineering have been presented. According to news reporting out of Austin, Texas, by VerticalNews editors, research stated, "Since 2008, an increase in human-induced seismic activity related to natural gas production and petroleum activities has resulted in millions of dollars of damage in the Central United States, primarily to residential buildings including chimneys and masonry veneers. This study aims to better understand and evaluate the impacts of such seismic hazards on masonry veneers."

Funders for this research include State of Texas, Industrial Associates of the Center for Integrated Seismic Research (CISR) at the **Bureau of Economic Geology** of the University of Texas.

Our news journalists obtained a quote from the research from the University of Texas Austin, "To do so, a probabilistic framework is proposed in which fragility curves representing the probability of cracking and collapse damage states for masonry veneers are developed. In the proposed framework, Artificial Neural Networks are adopted to develop probabilistic seismic demand models from experimentally-validated finite element analyses of non-seismically detailed masonry veneers. The framework utilizes a suite of 200 ground motions largely believed to be from human-induced earthquakes with magnitudes of 3.6-5.8 recorded in the Central U.S. since 2008. Fragility curves are produced for masonry veneers with code compliant corrugated brick ties and those with thinner brick ties that are commonly employed in residential construction in the Central U.S. Additionally, the proposed fragilities developed for human-induced earthquakes are compared to those from the literature, which were developed for the New Madrid seismic hazard and are commonly used for seismic vulnerability assessments of infrastructure in the Central U.S. The results indicate that for a given PGA level, induced earthquakes may be more likely to produce damage compared to earthquakes representing the New Madrid hazard."

According to the news editors, the research concluded: "Finally, the regional extents of damage from a recent induced seismic event are estimated using the newly developed and existing fragility functions to evaluate the implications of using these models for regional vulnerability assessments."

For more information on this research see: Fragility of Masonry Veneers To Human-induced Central U.s. Earthquakes Using Neural Network Models. Journal of Building Engineering, 2020;28():. Journal of Building Engineering can be contacted at: Elsevier, Radarweg 29, 1043 Nx Amsterdam, Netherlands.

Our news journalists report that additional information may be obtained by contacting F. Khosravikia, University of Texas Austin, Dept. of Civil Architectural and Environmental Engineering, Austin, TX 78712, United States. Additional authors for this research include P. Clayton and J. Kurkowski.

Keywords for this news article include: Austin, Texas, United States, North and Central America, Building Engineering, Engineering, Networks, Neural Networks, University of Texas Austin.

Document JOENG00020200323eg3n002nb

 