A GIS System Integrated with Earthquake Vulnerability Assessment of RC Building

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A GIS system integrated with earthquake vulnerability assessment of RC building

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ABSTRACT

The paper presents methodology for developing rapid visual screening score sheet for seismic vulnerability assessment of existing RC buildings based observed damage building stocks. This study takes into consideration the building attributes such as soft storey, substantial overhang, re-entrant corners, the age of buildings, apparent construction quality, eccentric staircase location with respect to building plan, maintenance, type of soil and the number of stories in the building. The proposed rapid visual screening score sheet, where the age of the building which is one of the important factors for strength deterioration of structure is considered besides structural and construction deficiencies. The result of the vulnerability score sheet presented in term of damage grade ranging from grade 1 to grade 5 as per damage grade definition of Indian codal system. Application of the procedure is illustrated with a case study example of Ward no.6 of Uripok constituency of Imphal city, Manipur of India and the results for the vulnerability assessment are presented in colour-coded maps on GIS platform. The present score sheet resides in simple and robust assessment methodology, compatible with Indian condition and in the capacity of providing intuitive representations of the spatial distribution of damage results.

Keywords: Vulnerability, Age of building, Construction quality, Maintenance condition, GIS.