

Earthquake Vulnerability and Repair Cost Estimation of Masonry Buildings in the Old City Center of Annaba, Algeria

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Abstract : The seismic risk mitigation from the perspective of the old buildings stock is truly essential in Algerian urban areas, particularly those located in seismic prone regions, such as Annaba city, and which the old buildings present high levels of degradation associated with no seismic strengthening and/or rehabilitation concerns. In this sense, the present paper approaches the issue of the seismic vulnerability assessment of old masonry building stocks through the adaptation of a simplified methodology developed for a European context area similar to that of Annaba city, Algeria. Therefore, this method is used for the first level of seismic vulnerability assessment of the masonry buildings stock of the old city center of Annaba. This methodology is based on a vulnerability index that is suitable for the evaluation of damage and for the creation of large-scale loss scenarios. Over 380 buildings were evaluated in accordance with the referred methodology and the results obtained were then integrated into a Geographical Information System (GIS) tool. Such results can be used by the Annaba city council for supporting management decisions, based on a global view of the site under analysis, which led to more accurate and faster decisions for the risk mitigation strategies and rehabilitation plans.

Keywords : Damage scenarios, masonry buildings, old city center, seismic vulnerability, vulnerability index

Conference Title : ICCSEE 2015 : International Conference on Civil, Structural and Earthquake Engineering

Conference Location : Istanbul, Türkiye

Conference Dates : June 18-19, 2015