Evaluation of invasive retrofitting interventions on an unreinforced masonry heritage building

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ABSTRACT

The present study case highlights the importance of considering local failures for irregular unreinforced masonry buildings, by means of nonlinear seismic analyses. Simplified seismic assessments based on equivalent frame method were used in order to capture the structural behavior of the National Geological Museum from Bucharest in its initial form and also the current structural layout.

The retrofitting works realized in the 1982 were focused on strengthening the transversal masonry walls and on creating horizontal diaphragms to improve the "box behavior" of the building subjected to lateral forces. Retrofitting of unreinforced masonry walls by reinforced concrete jacketing and the replacement of flexible floors by reinforced concrete slabs were previously considered to be effective only though post-earthquake visual inspections of the strengthened elements. The efficiency of past interventions is studied in the present paper through comparisons between the two models in terms of damage patterns, global behavior and also performance levels established function of maximum relative displacements.