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Abstract Title: Studies of typical five-story buildings in Albania with URM typologies designed by old codes. Seismic performance through Modal Analysis and Static nonlinear Analysis Pushover

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Abstract

This paper presents the study and analysis of URM-Buildings (Unreinforced Masonry Buildings), traditionally used in Albania. This typology was built in the 1980s to 1990s. Also these structures are designed with the Albanian design codes KTP-78. Building type 77/5 is selected to be analysed, since it is considered as the most problematic model from the building stock designed before the 1990s, based on its plan geometry.
The focus will be on the Modal and the Static Non-linear Analysis Pushover of this 5-Storey building, based on Albanian spectral demand and capacity curves.
In this work the peculiarities of the global response of URM-buildings are shown with the aid of a simplified non-linear element model, realized with *AM Quake v6.0 software*, able to reproduce earthquake damage to masonry buildings and failure modes observed in experimental tests. Among the different methods developed in the last years, this work will follow the inelastic (constant ductility) response spectrum method. The application of this method to Albanian URM-building typologies points out the difficulties related to existing masonry buildings; the methodology, developed for concrete structures, shows some problems when applied to URM structures in relation to the own characteristics of this structural system. Traditional masonry buildings have often very flexible diaphragms (in some cases made of wood) and this prevents from assumption of absolutely rigid floors. Furthermore, a different architectural disposition of walls may contribute to localize damage to 'unexpected' parts of building, due to irregularities in plan and elevation.

Keywords – *Existing URM-Building, Static Nonlinear Analysis Pushover, Spectral demand, Seismic Performance, Constant ductility.*

Professional Biography

Nikolla Vesho is currently attending the International Research Doctorate school in Architecture and Urban Planning - Cycle XXXIV (University of Ferrara, IT). He has two masters of Science, first on Structural Engineering and second on Environmental Engineering. Also two postgraduate certifications, first on "Expert in Environmental Impact Assessment and Environmental Auditing" and second on "Evaluation of real estate". He is currently an assistant professor at the Polis University of Architecture on Tirana, AL. His fields of interest are Seismic Engineering, Rehabilitation & Retrofitting of Existing Structures, Theory of Structures

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