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EXPERIMENTAL INVESTIGATION ON THE EFFECT OF MORTAR GRADE ON THE COMPRESSIVE BEHAVIOUR OF FRCM CONFINED MASONRY COLUMNS

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ABSTRACT

The use of Fiber Reinforced Cementitious Mortar (FRCM) systems for structural retrofitting of masonry structures has become increasingly popular in the last years, due to the capability of this technique in overcoming some of the drawbacks related to the adoption of resin-based composites. Recent studies investigated on the effect of FRCM wraps on the compressive behaviour of concrete members and demonstrated as the application of mortar-based composites allows increasing the strength and, above all, the ductility of the column. The main difference with FRP confined columns is related to the different post-peak behaviour, characterized by a softening branch. Differently, few studies are actually available in the literature on the efficiency of FRCM confinement in enhancing the compressive behaviour of masonry columns. This paper presents the results of an experimental investigation on the effect of FRCM wraps on the compressive behaviour of calcarenite masonry columns. A preliminary study on the mechanical performances of the strengthening layer is performed by selecting three different mortar grades for the FRCM and testing these under flexure and compression. Moreover, tensile tests on the glass fibre fabric and on FRCM strips are performed to characterize the behaviour of the reinforcing system. Finally, eleven columns are tested under concentric compression, recording the axial strain, and discussion is made on modes of failure and gains of strength and ultimate strain.

Keywords: Strengthening, Experimental study, FRCM systems, Masonry, Confinement**.**