

# Preliminary study on the use of mud-based grouts to repair structural cracks on adobe walls

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## ABSTRACT

In spite of the large number of historical earthen monuments damaged by past earthquakes, little is known regarding how to repair the seismic cracks produced on their structural walls. In many cases, damaged adobe walls suffer a significant loss of strength and stiffness, which could lead to a loss of stability and to collapse. It seems important, therefore, to find ways to repair damaged structural walls of earthen monuments in order to recover their original strength and stiffness.

This paper presents preliminary results obtained during an experimental test program performed to explore the possibility of repairing structural cracks on adobe walls via injection of mud-based grouts. The studied grouts were prepared with sieved soil, stabilized with small amounts of additives such as lime, cement, and gypsum. Indirect tension tests were performed on adobe “sandwiches” to determine the mix proportions leading to the highest block-mortar adhesion strength. Small adobe masonry elements were then cracked in diagonal compression, repaired with injection of the selected mud-based grouts and tested again to estimate the effectiveness of the repair procedure.