

Effects of Horizontal Confinement on the Behavior of Ancient Masonry Towers

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Abstract:

The main objective of the research presented in this paper is the evaluation of the safety increment obtainable through the lateral confinement of masonry structures achieved with steel plates tied with steel bars. The safety increment is expressed as a function of parameters such as bar and plate dimensions and mechanical properties of masonry. Tested specimens, obtained from ancient masonry walls, displayed several failure modes and correspondingly different values of strength, deformation capacity, and energy absorption capacity. Recommendations are given for practical strengthening criteria in relation to applied loads, design limit states and required safety factors.

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