Finite Element Modeling of Reinforced Concrete Frames with Masonry Infill Walls Subjected to Lateral Load Reversals

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Abstract:

This paper presents a non-linear finite element based modeling approach to estimate behavior of RC frames infilled with masonry walls. At the core of the approach is the ability to qualify and quantify the interaction along the frame-infill and brick-to-brick interfaces during cyclic loadings. Results from simulations of RC frames infilled with masonry walls to cyclic loads show good agreement with experimental response. Three-dimensional (3D) finite element models are developed to model the strength and stiffness degradation and simulate various types of in-plane failure mechanisms of infilled frames under monotonic and cyclic loadings.

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