عنوان مقاله:

An Equivalent Truss Model for In-Plane Nonlinear Analysis of Unreinforced Masonry Walls

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خلاصه مقاله:

According to the importance of seismic evaluation of existing unreinforced masonry (URM) buildings, researchers have been interested in numerical modelling of these types of structures and their components. On the other hand, in seismic performance evaluation and retrofitting codes which are mostly based on Performance Based Seismic Design (PBSD), different analysis methods such as linear and nonlinear, static and dynamic analyses are employed. Therefore, simple equivalent frame models with lower computational cost are very useful for modelling and analysis of unreinforced masonry buildings. In this article, a simple equivalent truss model is proposed for modelling and analysis of an unreinforced masonry wall with sliding shear failure as the governing in-plane failure mode. The model is developed according to an analogy between the internal forces in a triangular truss and the Mohr-Coulomb failure criteria. Then, the proposed model is generalized for modelling and push over analysis of combinations of walls. Finally, the modelling procedure is applied for push over analysis of an unreinforced masonry wall consists of some piers and the push over curve of the wall is determined and discussed.

کلمات کلیدی:

Masonry Wall; Nonlinear Analysis; URM Building; Sliding Shear Failure; Truss Model