

Effects of the Openings in Seismic Behavior of Bearing Walls of Masonry Buildings

Abstract:

Availability of masonry materials, simple implementation, and economic justification, have been resulted in great operational potential of masonry buildings. Requiring to openings on walls based on architectural considerations; force us to have more understanding about the behavior of these structures subjected to them. In the present study, modeling of masonry buildings and comparison of the obtained results with the experimental results are presented. Validity of the offered model is assured based on Abaqus software. In addition, changing the size of the opening, its location and width to height ratio is considered, then its stiffness and ultimate strength were obtained. The results show that, dimensions of openings is the determinant parameter in obtaining the ultimate strength, and that their location does not have considerable effect on the results. Moreover, the most effective mechanical parameter on general behavior of structure is of course the ultimate strength of masonry materials.

Keywords: Masonry wall, Opening, Nonlinear static, Abaqus, Finite element.