Seismic Performance of Reinforced Concrete Frames Infilled by Masonry Walls with Different Heights

Authors : Ji-Wook Mauk, Yu-Suk Kim, Hyung-Joon Kim

Abstract : This study carried out comparative seismic performance of reinforced concrete frames infilled by masonry walls with different heights. Partial and fully infilled RC frames were modeled for the research objectives and the analysis model for a bare reinforced concrete frame was established for comparison. Non-linear static analyses for the studied frames were performed to investigate their structural behavior under extreme loading conditions and to find out their collapse mechanism. It was observed from analysis results that the strengths of the partial infilled RC frames are increased and their ductility is reduced, as infilled masonry walls are higher. Especially, Reinforced concrete frames with a higher partial infilled masonry wall would experience shear failures. Non-linear dynamic analyses using 10 earthquake records show that the bare and fully infilled masonry wall collapse in more brittle manner due to short-column effects.

Keywords : fully infilled RC frame, partially infilled RC frame, masonry wall, short-column effect

Conference Title : ICCESE 2015 : International Conference on Civil, Environmental and Structural Engineering

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : February 12-13, 2015