

ANALYSIS OF ADAPTIVE PUSHOVER IN CONFINED MASONRY DWELLINGS IN LIMA METROPOLITAN AREA

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ABSTRACT

Non-engineered confined masonry buildings are characterized by having nonuniform masonry units along with their height. One of the most common cases in Lima Metropolitan Area is that this type of dwelling has its first floors with handmade solid units and upper floors are composed of tubular bricks. The application of regular nonlinear static analysis by the increment of load pattern is limited. In this sense, the load pattern changes during the history of reversal loads due to damaging earthquakes. This article shows the influence of the application of adaptive load patterns in confined masonry dwellings when the type of masonry units changed drastically. Consequently, a series of nonlinear time history analyses and nonlinear incremental analyses by uniform and adaptive load patterns are conducted. The adaptive load pattern is based on displacement approximation and at each step of incremental loads. The load pattern is updated considering the modal analysis of an equivalent linear model using the equivalent stiffness of the structure at the secant of the maximum previous response. It is observed that the application of adaptive load pattern significantly approximates the earthquake response of confined masonry dwelling with height irregularity provides by the change of masonry bricks.

Keywords: confined masonry, adaptive pushover, based displacement, incremental dynamic analysis.

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