

عنوان مقاله:

SEISMIC FRAGILITY ASSESSMENT OF DAMAGED RC FRAME UNDER CONSECUTIVE EXCITATIONS

محل انتشار:

هشتمین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1398)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

Common seismic design codes consider an intact structure subjected to an earthquake without including any initial damage. Based on recent earthquake events particularly in Middle East (Kermanshah (2017), Ahar-Varzeghan (2012) and Van (2011)), there are substantial evidences that the issue of consecutive earthquakes is a real one for the structures in seismically active regions and should therefore be carefully studied and considered. These earthquakes may include aftershocks clustered near the main shock, or from nearby sources affecting similar regions. According to some rigorous researches on the nature and effects of near field (NF) ground motions, the seismic ground motions recorded within the near-fault region of an earthquake are qualitatively quite different from the usual far field (FF) seismic ground motions. This paper aims to investigate the effects of consecutive near-field and far-field earthquakes on a four-story RC frames with hysteretic stiffness and strength degrading characteristics to the different orders of consecutive near-field and far-field earthquakes. 22 far-field and 28 near-field records as suggested by FEMA P695, are selected. Four main consecutive scenarios (FFFF, FFNF, NFFF, NFNF) are defined. The performance evaluation is carried out for various first shock damage levels and second shock performance levels. It is concluded that consecutive near field seismic excitations may result in more lateral transient and permanent deformations as compared with far field ground motions. Considering the effects of residual drift on the system's response to consecutive earthquakes, it is also shown that there are differences in the probability of performance exceedance to (consecutive earthquakes according to the record type (FF or NF

کلمات کلیدی:

Consecutive Earthquakes, Fragility curves, Damaged RC Frame, Near-field, Far-field

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