

عنوان مقاله:

Fragility Curves for Reinforced Concrete Frames with Lap-Spliced Columns

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خلاصه مقاله:

Placing column lap-splice in the locations of possible nonlinear deformation may adversely affect the structures response to strong ground motions. Localization of damage in splice zone may change the structural response and prevent the load redistribution and development of a uniform pattern of nonlinear excursions among the various members. Validated by existing laboratory experiments, this study presents a model that could be used to evaluate the behavior of lap-spliced columns. The proposed model is able to include the effect of the longitudinal bars arrangement; bars yield stress, and the amount and spacing of transverse bars. Comparison with existing experimental tests, show a good correlation between the model and experimental results. Finally, to obtain an estimation of the importance of the bar slip in lap splice on the structures response, fragility curves for life safety and collapse limit states are developed for an ordinary moment resisting frame of a one bay-ne story structure. Incremental dynamic analysis is used to derive the fragility curves. These fragility curves show that the bar slip have significant impact on the probability of exceeding collapse limit state, while its impact on the life safety limit state is not so significant.

کلمات کلیدی:

Lap, Splice, Slip, Incremental Dynamic Analysis, Fragility curve

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