

## Study of Seismic Damage Reinforced Concrete Frames in Variable Height with Logistic Statistic Function Distribution

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**Abstract :** In seismic design, the proper reaction to the earthquake and the correct and accurate prediction of its subsequent effects on the structure are critical. Choose a proper probability distribution, which gives a more realistic probability of the structure's damage rate, is essential in damage discussions. With the development of design based on performance, analytical method of modal push over as an inexpensive, efficacious, and quick one in the estimation of the structures' seismic response is broadly used in engineering contexts. In this research three concrete frames of 3, 6, and 13 stories are analyzed in non-linear modal push over by 30 different earthquake records by OpenSEES software, then the detriment indexes of roof's displacement and relative displacement ratio of the stories are calculated by two parameters: peak ground acceleration and spectra acceleration. These indexes are used to establish the value of damage relations with log-normal distribution and logistics distribution. Finally the value of these relations is compared and the effect of height on the mentioned damage relations is studied, too.

**Keywords :** modal pushover analysis, concrete structure, seismic damage, log-normal distribution, logistic distribution

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