

Evaluation and Enhancement of nonlinear static analysis with the drift pushover procedure for unsymmetric-plan tall buildings

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The drift pushover analysis method for tall and regular buildings is extended in this thesis to the third dimension. The focus of study is on the structures with important torsional response. For this purpose, 10, 15, 20 and 30-story moment frame buildings having unsymmetrical plans with 5 to 30% eccentricity ratios are studied. For accuracy calculation, the nonlinear dynamic response of the buildings under a consistent suit of earthquake ground motions is determined. The maxima of the story drifts and shears and cumulative plastic hinge rotations of stories are calculated under the ground motions and their averages along with those of the modal pushover procedure are compared with the results of the presented method. The comparative analysis establishes the good accuracy of the three dimensional drift pushover method.

Keywords

Drift pushover, three-dimensional, unsymmetric, tall, nonlinear dynamic.