

Prediction of Maximum Inter-Story Drifts of Steel Frames Using Intensity Measures

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Abstract : In this paper, simplified equations to predict maximum inter-story drift demands of steel framed buildings are proposed in terms of two ground motion intensity measures based on the acceleration spectral shape. For this aim, the maximum inter-story drifts of steel frames with 4, 6, 8 and 10 stories subjected to narrow-band ground motion records are estimated and compared with the spectral acceleration at first mode of vibration $S_a(T_1)$ which is commonly used in earthquake engineering and seismology, and with a new parameter related with the structural response known as IN_p . It is observed that IN_p is the parameter best related with the structural response of steel frames under narrow-band motions. Finally, equations to compute maximum inter-story drift demands of steel frames as a function of spectral acceleration and IN_p are proposed.

Keywords : intensity measures, spectral shape, steel frames, peak demands

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