

عنوان مقاله:

Performance-Based Plastic Design of Steel Special Moment Frames with Unequal Bay Length

محل انتشار:

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خلاصه مقاله:

There are several methods to design a structure, some of which consider the story drift and the others have been built on the stress ratio. Recently a new method, Performance-Based Plastic Design (PBPD) method, has been developed. In this method, the base shear of the whole frame is calculated using the energy equilibrium equation and then by dividing the base shear by the number of bays, the base shear of a frame with one bay is found. Actually in this method, a frame with several bays is switched to a frame with just one bay. This rule is true if the length of all bays is the same but what happens if the length of all bays is not the same In this research, two special moment steel frames, ten and six-story frames, with three unequal bays are considered. Both frames are analyzed using Nonlinear Time-History Analysis separately. The results show that the distribution of the base shear among the bays has a good proportion to the ratio of the bays length. The six-story frame is designed using PBPD method, according to the above mentioned result. The frame has a good performance and the columns do not have any plastic rotation, confirming that the frame passes the design performance level.

کلمات کلیدی:

Performance-Based Plastic Design, yield mechanism, nonlinear dynamic analysis, energy method, base shear distribution.

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