

عنوان مقاله:

Evaluation the effect of link section on displacement demand of eccentrically braced frames

محل انتشار:

پنجمین کنفرانس ملی و اولین کنفرانس بین المللی سازه و فولاد (سال: 1393)

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خلاصه مقاله:

Eccentrically braced frames (EBFs) by covering the advantages of moment-resisting frames (MRF) and concentrically braced frames (CBF) have been used as seismic load resisting systems in buildings for more than three decades. In eccentrically braced systems, failure and yielding should happen in the links, and other members of the structure must remain in elastic behavior, therefore, links are so important. In this investigation, the effect of link section and its stories EBFs with three different lengths and stiffeners on displacement demand of EBFs has been studied. In this study of links (shear, intermediate and flexural), two different cross-sections (tubular and I-shaped) under the influence of three records (Landers, Northridge and Tabas) have been studied and their displacement demands have been compared together. It should be noted that links with tubular and I-shaped cross-sections are similar in area, moment of inertia and length. In this investigation, EBFs have been modeled in ABAQUS. In these models, shell elements have been used for links and beam elements have been used for others. Nonlinear kinematic hardening plasticity model has been used for the materials and in order to loading, scaled records have been imported to the frame bases. The result of this investigation indicates that displacement demand of EBFs with I-shaped links is less than displacement demand of EBFs with tubular links. The preference of I-shaped links to the tubular links is because of I-shaped links' web is surrounded from up and down by flanges and from around by stiffeners in both sides, leading to creation of clamped boundary conditions around the web. But tubular links' web is surrounded from up and down by flanges and from around by stiffeners in one side. In this state, simply supported boundary conditions are created around the web.

کلمات کلیدی:

Displacement demand, Link, Stiffener

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