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عنوان مقاله:

Experimental Evaluation of Hollow Structural Section andConcrete-Filled Tube Braces

محل انتشار:

سیزدهمین کنگره بین المللی مهندسی عمران (سال: 1402)

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خلاصه مقاله:

The present study was experimentally undertaken to evaluate the behavior ofHollow Structural Section (HSS) and Concrete–Filled Tube (CFT) braceswidely employed in Special Concentrically Braced Frames (SCBFs). It isessential that HSS and CFT braces have been considered in the system–level ofmulti–story SCBFs to evaluate their seismic performance. However, limitedstudies have been carried out to investigate the structural response of HSS andCFT braces in the system–level of multi–story SCBFs. The current study wasexperimentally undertaken to evaluate the seismic performance and the globaland local hysteresis responses of HSS and CFT braces with variouscross–section shapes in the system–level of multi–story SCBFs. Fourfull–scale one–bay, two–story SCBFs with four various cross –sections,namely square–HSS, circular–HSS, square–CFT, and circular–CFT, forbraces and columns were considered and subjected to cyclic lateral loading.Assessing braces with various cross–sections indicated that CFT braces showedan increase in compression strength, post–buckling strength, and compressionaxial deformation approximately by ۸۳%, ۱۵۲%, and ۱۲۷%, respectively, incomparison with HSS braces. Moreover, it was observed that local bucklinginitiation, crack initiation and fracture occurred in CFT braces at respectively۲.۲۲, ۲.۳۵ and ۲.۳۲ times of .roof drifts of those exhibited by HSS braces

کلمات کلیدی:

Hollow Structural Section (HSS); Concrete–Filled Tube (CFT);Special Concentrically Braced Frames (SCBFs); .Seismic performance

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