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Analytical study of the H-shaped brace according to reinforcement rate of non-welded buckling restraint element

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A concentric braced steel frame is a very efficient structural system because it requires relatively smaller amount of materials to resist lateral forces. However, primarily developed as a structural system to resist wind loads based on an assumption that the structure behaves elastically, a concentric braced frame possibly experiences the deterioration in energy dissipation after brace buckling and the brittle failure of braces and connections when earthquake loads cause inelastic behavior. Consequently, plastic deformation is concentrated in the floor where brace buckling occurs first, which can lead to the rupture of the structure. This study examines reinforcement strategies for reinforcing previously installed H-shaped braces with non-welded cold-formed stiffeners to suppress bending and buckling and securing equal strength for tensile force and compressive force. In order to verify the compressive behavior of the reinforced braces, structural performance test was conducted with variables of slenderness ratio and the amount of reinforcement. The length of the stiffener and reinforcement quantity were suggested as the reinforcement strategies for the H-shaped braces installed on the braced frame. As a result of applying and evaluating experimental results, it is expected that economical sections satisfying required reinforcement quantities can be derived.

Biography

Seul-Ki Hwang has be enrolled her Master's degree in Architectural Engineering department from University of Seoul. Her research focuses on experimental and analytical studies Buckling Restrained Braces(BRB) and High-rise Steel Composite Structure.

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