**PUSHOVER ANALYSES OF SELF-CENTERING BUCKLING-RESTRAINED BRACED FRAMES OF SAC BENCHMARK BUILDINGS**

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**ABSTRACT**

Buckling-restrained braced frames (BRBFs) are used for the purpose of the lateral loadresisting system in seismically active regions. The symmetrical hysteresis, high ductility, and good energy dissipation made this system preferable to the conventional concentrically braced systems. Extensive study has been done for BRBFs design IBC 2012 and uniform hinges distribution through the height of the floors at different stages of the pushing. Since the excessive residual drift in BRBFs is a disadvantage in BRBFs which need to develop a new system, as such self-centering buckling-restrained braced frames (SC-BRBFs) for better energy dissipation capacity, the absence of compressive buckling behavior of races, high ductility, and reducing residual drift response. This study is focused on the pushover analysis of SC-BRBFs. The same design as BRBFs has been considered for SC-BRBFs to evaluate a comparative study with BRBFs. Three medium to rise study frames, namely, three-story, ninestory, and twenty stories are considered for this study. The frames are designed as per current seismic code AISC 341-2010 provisions by considering the SC-BRBs as the combination of the buckling-restrained brace (BRB) and shape-memory alloy (SMA) rods. These frames are modeled and analyzed using a computer software OpenSees. The main parameters investigated are a pushover drift response, failure mechanism, and hinge mechanisms. The analysis results for SC-BRBFs showed better performance as compared to conventional BRBs with the higher ductility and drops at higher stages.

*Keywords: Buckling-restrained braces; Drift response; Pushover analysis; Seismic analysis; Selfcentering braces*

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