

STRUCTURAL BEHAVIOR OF REINFORCED CONCRETE SUBASSEMBLAGE WITH BUCKLING RESTRAINED BRACES

— Applications of buckling restrained braces in reinforced concrete frames Part 2—

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Buckling restrained braces (BRBs) exhibit stable hysteretic behavior and provide superior energy dissipation capacity to RC building structures. A connection method is proposed for BRBs in RC frames, which takes advantage of pre-tensioned bolts and RC corbels to fasten the BRB gusset plate to the concrete beam-to-column joint. Cyclic loading test of RC subassemblies with BRBs was carried out. The test results show that BRBs start to dissipate energy at an early stage with story drift ratios much smaller than those at beam yielding. However, BRBs did not yield in the ideal yield point because the deformation of the BRB connection was large in small story drift. In addition, finite element analysis that reproduced the subassembly test was carried out. The analysis results show that the influence of the shear by vertical force of the upper and lower BRBs was larger than the bending by the story drift of the subassembly. The validity of a previously-proposed resistance mechanism for RC corbels is also examined.