

Overall stability analysis of improved buckling restrained braces

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In order to improve the behavior of double-tube buckling restrained braces (BRBs), it is proposed to set contact rings between inner tube and outer tube of the brace. As a result, they can provide lateral constraint for the inner tube. In this way, the improved buckling restrained braces (IBRBs) are created. In this paper, the design methodology of the specimens is explained in detail.

The large scale model tests and the [finite element analysis](#) is used in a program edited in MATLAB. The modeling process is based on theoretical model formulation of IBRBs and is applied to the calculation of overall stability strength capacity. Load displacement curves and strength capacity of the improved buckling restrained braces have been obtained by the method of combining finite member with tests, and the main factors affecting the strength capacity are analyzed by ANSYS software.

Tests on IBRBs have also been conducted. The test results show that the specimens have good ductility, and hysteretic loops of the specimens under cyclic loading are plump, reaching to the effect of the same performance in compression and tension. Through comparison, the results of numerical simulation agree with the results of the program and tests.

This indicates that the program is reasonable and feasible in testing IBRBs and, therefore, it could provide a basis for the analysis of overall stability strength capacity of IBRBs.

More information: Zhanzhong Yin et al, Overall Stability Analysis of Improved Buckling Restrained Braces, *The Open Civil Engineering Journal* (2016). [DOI: 10.2174/1874149501610010061](https://doi.org/10.2174/1874149501610010061)

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