COMPARATIVE STUDY OF SOME SECTIONS OF BUCKLING RESTRAINED BRACES DUE TO AXIAL LOADS BY USING FINITE ELEMENT ANALYSIS PROGRAM

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Abstract

Buckling Restrained Brace (BRB) is one of the most efficient stiffeners on steel building to resist earthquake force so it can minimize the deformation that occurs in portal. It can be happened because the BRB will yield in tension and compression as well as has a high stiffness and ductility. BRB has typical components, namely the steel core, steel casing, and filler material.

This Final Project discusses the comparison of 3 types of BRB’s cross section, namely box section, circle section, and multiboxes section due to axial loads. Axial load is obtained from the research that has been done before. There are 2 analytical methods, namely analytic calculation and by using ABAQUS v.6.7 in order to obtain BRB’s cross-section that has a good behavior when subjected to axial loads. The parameters used as a comparison in this Final Project are stress, strain, and the brace strength. The analyses was conducted on 5 point in which point 1 and 5 are the left and right end point, point 3 is the middle of BRB, and point 2 and 4 are the point that as far as 400 mm from the left and the right end of BRB.

Output from this Final Project in terms of stress and brace strength, multiboxes has the most optimum, then circle section and box section. In terms of strain, for analysis point 1,2,4, and 5, circle section has the greatest strain, then box section, and multiboxes. Meanwhile, for analysis point 3, the multiboxes
section has the greatest strain, then the circle section, and box section.

**Keywords**: Buckling Restrained Braces, box section, circle section, multiboxes section, stress, displacement