

# **Strength of Circular Hollow Section Columns**

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## **ABSTRACT**

A method of analysis for the flexural buckling of columns made of axially loaded circular hollow sections is described. The method is based on finite differences. Arbitrary non-linear material stress-strain characteristics can be adopted. The process of calculating the equilibrium deflected shape under a given load is sub-divided into two phases. In the first phase, the internal equilibrium at a cross-section is defined by the moment-thrust-curvature calculations. In the second phase, equilibrium is checked at the finite difference stations along the length. Iteration is inevitably required to obtain convergence for the equilibrium deflected shape. The ultimate load is obtained through repeated determination of the equilibrium shape for increasing values of the applied load. The maximum load for which an equilibrium shape is obtained is accepted as the ultimate load. The method has been validated by comparing the calculated failure loads with experimental strengths for 24 columns of steel strength 420MPa as reported in published literature.