

ECCENTRIC COMPRESSIVE STRENGTH OF HIGH STRENGTH STEEL OCTAGONAL TUBE STUB COLUMNS

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An experimental investigation into the behavior of high strength steel (HSS) octagonal tube stub columns subject to combined compression and bending is presented in this paper. HSS octagonal tube stub column specimens fabricated using S690 steel plates with a nominal yield strength of 690MPa were prepared. The measurements of material properties and initial local geometric imperfections for the specimens were carried out and the results are reported. The experimental set-up and testing procedures for the specimens subject to various combinations of compression and bending are presented in this paper. The load-deformation behavior, ultimate loads and failure modes of the specimens are also discussed. A finite element (FE) model for the HSS octagonal tube stub columns under combined compression and bending was also developed and the FE model was validated against the results from experiments. The FE model can be applied to predict the behavior of HSS octagonal tube stub columns subject to combined compression and bending for structural designs.