

STRUCTURAL BEHAVIOUR OF HIGH STRENGTH S690 COLD-FORMED STRUCTURAL HOLLOW SECTIONS UNDER COMPRESSION

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Abstract. *High strength steels are considered as efficient constructional materials due to their high strength-to-self-weight ratios. Over the past years, a large number of investigations into structural members made of high strength steels have proved that they meet various design requirements in both strength and ductility under various actions. However, the fabrication processes of these high strength steel sections are quite different from those made of normal strength steels, in particular, the presence of residual stresses due to both cold-forming and welding. In the current study, a total of eight cold-formed structural hollow sections (CFSHS) with different dimensions and fabrication methods are tested. The structural performance of these sections is examined with a total of 8 stocky column tests and 16 slender column tests. After comparing these measured resistances with the predicted resistances according to EN 1993-1-1, further works on improvements to the design method are suggested.*

Keywords: *High strength steels; Cold-formed sections; Classification of cross-sections; Section resistances; Member resistances.*