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PERFORMANCE OF THIN-WALLED LIPPED CHANNEL SECTIONS UNDER AXIAL COMPRESSION

Krubha Shree C[1] Marimuthu V[2] Dinesh M N[3]

[1] PG student, M N M Jain Engineering College, Chennai, Tamil Nadu.
[2] Principal Scientist, Steel Structures Laboratory, SERC, Chennai, Tamil Nadu.
[3] Assistant Professor, M N M Jain Engineering College, Chennai, Tamil Nadu.

ABSTRACT: Usage of thin-walled members for construction of residential and industrial structures is on the rise. As the thin-walled members are susceptible to different buckling modes, utilization of full capacity of the cross-sections is impossible. Towards maximize the utilization, these members are used in composite with other materials and structures. However, understanding the fundamental performance of the individual members is base line for further studies. Hence, the objective of this paper is to investigate the buckling behavior of thin-walled steel lipped channel column with the influence of imperfections. The Finite Element model is incorporated with material and geometric non-linearities. Further, it is also incorporate with geometrical imperfections through linear buckling analysis. The respective mode shapes corresponding to the local buckling and overall buckling has been incorporated with the scale factor. This is followed by non-linear buckling analysis which works based on the Riks algorithm was done to get correct and more realistic information of post-buckling response. The results obtained from the Finite Element analysis is compared with that of the experiments.

Keywords: *Influences of Imperfections, Linear Buckling, Nonlinear Buckling, Elasto-Plastic Material Behavior, Post Buckling*