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Volume 53 (July 2023) of *Structures* is now available to read at: www.sciencedirect.com/journal/structures/vol/53.

Mario D'Aniello, Associate Editor for *Structures*, has chosen an article showing the improved fire design of steel I-sections under combined compression and bending following numerical results evaluating both current and upcoming European provisions, EN 1993-1-2 and prEN 1993-1-2.

This article will be available free of charge for six months.

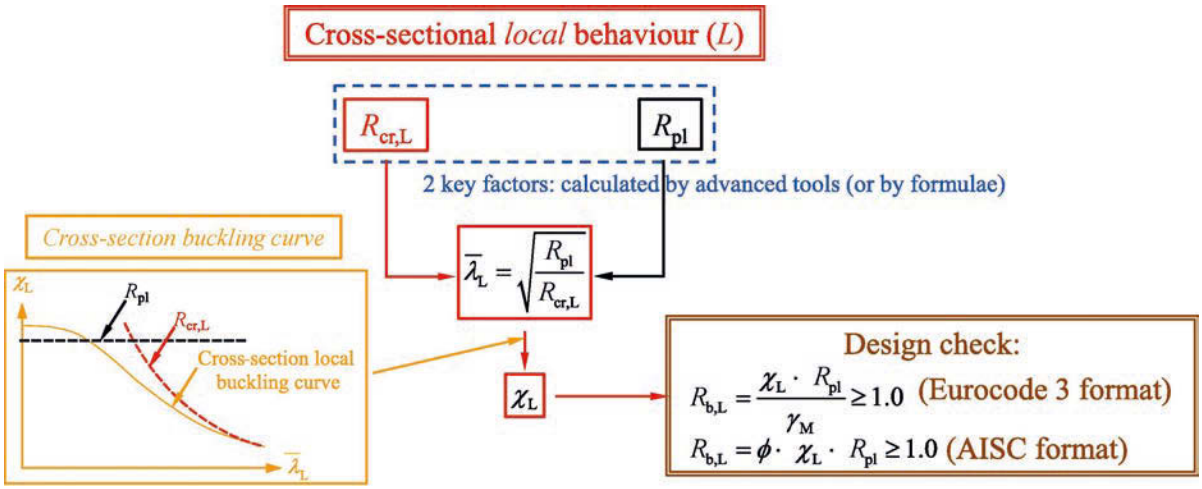
Editor's Featured Article

Improved fire design of steel I-sections under combined compression and bending

Liya Li[a], Jeanne Paquet[a], Carlos Couto[b], Paulo Vila Real[b] and Nicolas Boissonnade[a]
[a] Civil and Water Engineering Department, Laval University, Québec, Canada
[b] Department of Civil Engineering, University of Aveiro, Aveiro, Portugal

The fire resistance of hot-rolled and welded I-sections under combined compression and bending is numerically investigated in this study. Advanced non-linear shell models were developed and validated against existing experimental data on steady-state and transient-state tests. These models have been further used within parametric studies to gather a large cross-sectional resistance dataset. Various cross-section slenderness, section shapes, steel grades, fire temperatures and load combinations have been considered. The numerical results were used to evaluate the design rules suggested by current and upcoming European provisions, the EN 1993-1-2 and prEN 1993-1-2, respectively. It is observed that these two design recommendation sets usually lead to scattered and discontinuous resistance predictions, owing to the inappropriateness of the cross-sectional classification system and to inaccurate interaction equations. The Overall Interaction Concept, which has been formerly proposed for the fire design of I-sections under axial compression or pure bending, is extended in this paper to combined compression and bending load cases and shown to yield more accurate, consistent and straightforward resistance predictions than EN 1993-1-2 and prEN 1993-1-2.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2023.04.021**



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