

Project Title: Structural behaviour of high performance steel structures in seismic areas

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Project Outline:

In the context of earthquake-resistant applications, hollow structural section (HSS) column can be a preferred choice in steel moment resisting frames (MRF) because of their efficient structural behavior in resisting compression, torsion, bending and particularly for their high torsional stiffness. Recent research has been focusing on the seismic performance of moment resisting frames with the use of deep flange sections as columns although deep flange sections are vulnerability to torsional resistance. The lack of knowledge of the seismic performance of HSS has limited their wider and efficient application. Therefore, this project aims to assess the parameters that affects the hysteretic behavior of hollow steel sections and quantify the plastic rotation limits for seismic application.

Objectives:

- to compare the monotonic and cyclic behaviours of materials extracted from hot-finished/cold-formed hollow section members;
- to investigate the cyclic performance of hot-finished/cold-formed hollow section members.

Expected deliverables:

- Quantified key geometric parameters affecting the hysteretic performance;
- Quantified plastic rotation limits for seismic application;
- New test database.