

Experimental Model of the Behaviour of Bolted Angles Connections with Stiffeners

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Abstract : The moment-rotation curves of semi-rigid connections are the visual expressions of the actual behaviour discovered in beam-to-column connections experiments. This research was to determine the behaviour of the connection using full-scale experiments under statically loaded. The stiffeners which are typically attached to beams web or flanges to control local buckling and to increase shear capacity in a beam web are almost always used in modern designs. They must also provide sufficient moment of inertia to control out of plane deformations. This study was undertaken to analyse the influence of stiffeners in the angles and beams on the behaviour of the beam-to-column joints. In addition, the aim was to provide necessary data to improve the Eurocode 3. The main parameters observed are the evolution of the resistance, the stiffness, the rotation capacity, the ductility of a joint and the Energy Dissipation. Experimental tests show that the plastic flexural resistance and the energy dissipation increased when thickness of stiffener beam, thickness of stiffener angles were increased in the test specimens. And also, while stiffness of joints, the bending moment capacity and the maximum bending moment increased with the increasing thickness of stiffener beam, these values decreased with the increasing thickness of stiffener angles. So, it is observed that the beam stiffener of angles are important in improving resistance moment of beam-to-column semi-rigid joints.

Keywords : bolted angles connection, semi-rigid joints, ductility of a joint, angles and beams stiffeners

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