ABSTRACT: This paper presents results obtained from tests carried on six full scale composite beam-to-column joints. The steelwork connection consists of a flush end plate welded to the beam end and bolted to the column flange. The steel beam section and concrete slab remained identical for all six specimens. Three types of column are used: bare steel, partially encased and fully encased columns. Other variables include the area of reinforcement in the slab and the presence of stiffeners in the column web. Moment-rotation curves obtained from the tests are compared with those predicted by an analytical model. Plastic analysis of cross section is used to develop the analytical model for the prediction of moment capacity. A simple spring model for the slab combined with that of the steel joint model, as proposed in the Revised Annex J of EC3, is used to assess the stiffness of the composite joints. Generally, the proposed model can predict the moment capacity of composite joints with good accuracy. However, the model tends to over predict the rotational stiffness.