

Introducing an Innovative Post-tensioned Solid Node Using F.E.M Method and Prototype Test

ABSTRACT

The innovative structural systems have attracted the attention of structure designers due to their high efficiency and performance. The present research introduces an innovative steel solid node using connecting post-tensioning comprising of cables or bolts and clamped solid nodes. The system uses the tensile strength of cables or bolts and rigidity of the steel node to overcome reaction forces in support and reduce section modulus in steel, wooden and concrete frames subsequent to the application of the required eccentricity. In addition, the node has applications specifically designed for strengthening buildings and retrofitting framed structures. The stability and general behavior of the prototype design will be experimentally tested on a full scale in the laboratory being analytically and purposefully compared using finite element methods.