

EXPERIMENTAL RESEARCH ON THE BEHAVIOR OF STEEL MOMENT FRAME CONNECTIONS UNDER COLUMN LOSS SCENARIO

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ABSTRACT

The overall performance of a building structure in case of an accidental loading can be measured by its capacity to survive the hazard without collapse initiation, or, when considered acceptable, the capacity to limit the propagation of damage. Taking advantage of structure's inherent redundancy and available load paths, seismic resistant steel frames are considered appropriate to achieve such objectives. However, there are specific problems, which need to be considered when localized failures, particularly of columns, occur, i.e. large deformations and catenary response of beams. In this study, we investigated the performance of four steel frame beam-to-column connection types following the removal of a column. Acceptance criteria for progressive collapse events were proposed and compared to existing seismic provisions.

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