



NUMERICAL MODELING OF DYNAMIC RESPONSE OF STEEL MOMENT FRAMES FOLLOWING SUDDEN COLUMN LOSS

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Abstract: In the last years, significant research effort was devoted to the evaluation of the capacity of steel frame structures to resist progressive collapse after sudden column loss. Due to the complex load-structure interaction and material behavior, it can be very difficult to evaluate the ultimate capacity of structural components by means of currently used analytical methods. Therefore, considerable research effort has been directed to experimental testing and sophisticated numerical simulations. Although the sudden column loss is a dynamic process, most experimental studies on full scale or scaled down specimens were performed under quasi-static loads. In order to incorporate the dynamic effects, increase factors were proposed and incorporated in the analysis and design recommendations. The paper presents the results of a study devoted to the evaluation of steel frame response following the loss of a column. Advanced numerical models are validated using experimental test results and dynamic increase factors are proposed.

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