



## **PROGRESSIVE COLLAPSE OF MULTI-STOREY STEEL FRAME BUILDINGS: DEVELOPING CATENARY ACTION**

Andreea Sigauan<sup>a</sup>, Florea Dinu<sup>a,b</sup>, Dan Dubina<sup>a,b</sup>

*a Department of Steel Structures and Structural Mechanics, Politehnica University Timisoara, Romania*  
*b Laboratory of Steel Structures, Romanian Academy, Timisoara Branch, Romania*

**Abstract:** Progressive collapse resistance depends of several factors, e.g. overstrength and ductility of members and connections, redundancy of structural system enabling for load path redistribution, and ties. There are also other factors, consequent to previous structural properties, which may also influence the structural response, such as the potential strength reserve against gravity loads effect. For instance, structures designed to resist moderate to strong seismic actions may result in large strength reserve when compared with structures designed to resist gravity loads only, thus increasing the progressive collapse resistance. The study presented in the paper investigated the resistance to progressive collapse of steel moment-resisting frame buildings, located in a low seismicity zone, focusing on the influence of beam overstrength, beam span-to-depth ratio and moment capacity of beam-to-column (full strength, partial strength). The applied element method was used to predict the structural response under different failure scenarios by means of nonlinear dynamic analyses.

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