

H. Rouhi

Ph.D student, Semnan
University.

e-mail: h.rouhi@semnan.ac.ir

M. Gholhaki *

Associated Professor, Semnan
University.

e-mail: mgholhaki@semnan.ac.ir

Sensitivity Analysis of Progressive Collapse in Steel Moment Frames and Braced Rectangular and L-Shaped Plan

The progressive collapse because it can be sustained the whole structure and the safety of the lives of residents threatens that has been the focus of scientific circles over the past few years. In the progressive collapse determining the key element that most potential for failure is of great importance. Four structural steel structures with two frames and dual systems are sensitivity analyzed with two structural systems in rectangular and L-shaped planes. Based on the results of the pushdown analysis in steel moment frame with rectangular and L-shaped planes and the dual system with middle braces, the corners column and the dual system (middle and corner braces) with a rectangular plan and in the dual system (corner braces) with the L-plan the internal column has the most potential for collapse. The results show that higher-heightened structures have a better performance against progressive collapse, and the increase in the height of the models in the dual system does not have much effect on reducing progressive collapse.

Keywords: Progressive collapse, Push down analysis, Sensitivity analysis, Key element.

* Corresponding author

Received 23 July 2020, Revised 11 November 2020, Accepted 14 November 2020.

DOI: 10.22091/cer.2020.5767.1208