

## عنوان مقاله:

The Effect of Local Damage on Energy Absorption of Steel Frame Buildings During Earthquake

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## خلاصه مقاله:

Progressive collapse is a kind of failure in which whole or large part of a structure collapses when a local damage occurs and distributes to other parts. Earthquake inspections indicate that structuralelement can be damaged during earthquakes and this initial damage distributes to the other parts, so seismic progressive collapse is proposed as a research issue. As the earthquake induced progressive collapse could occur in any building independent of the number of stories, in this work, seismic progressive collapse of a one-story steel building was investigated. The effect of variation in the number and length of spans in both directions was also studied. Based on the obtained results, by decreasing the spans length and number in the direction of lateral loading compared with its perpendicular direction, the behavior of the structure becomes more critical. Furthermore, failure pattern of the structure under seismic progressive collapse was investigated. The results showed that collapse pattern is in a way that the damaged frame as well as the nearby frames has the most participation in supporting lateral deformations, and by distancing away from the damaged frame, deformation of the frames decreases. At the end, non-linear dynamic column removal analysis was carried out and the obtained results showed differences between the behavior of the structure under seismic progressive collapse and sudden column removal analyses

## کلمات کلیدی:

Seismic Progressive Collapse, Failure Pattern, Nonlinear Dynamic Analysis, Steel Structure

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