

**Title** Progressive Collapse Potential Analysis of a Reinforced Concrete Frame Mid- Rise Building due to a Column Failure

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**Abstract**

In this project, it is proposed to carry out progressive collapse potential analysis of 6-stoty RC frame building by removing one column at a time. Building consists of 4X6 bays and design by Indian code. SAP2000 19.2 version has been used to create a model and loading is done as per Unified Facilities Criteria (UFC) guidelines 2016. For evaluation of potential of collapse, alternate path method (AP) (linear static, nonlinear static and nonlinear dynamic analysis) has been used. For linear static analysis, three building with exterior infill wall is taken and six different column were removed one at time to find the critical column loss case. Then nonlinear static and nonlinear dynamic analysis is done for the critical column loss case to seismic design building and gravity design building. It is obtained that gravity design building had higher potential to progressive collapse by all three analysis. Nonlinear static seems to have close results to nonlinear dynamic analysis than linear static analysis results. Seismic design building for zone v is found to be safe against progressive collapse for critical column loss case and exterior infill wall does not have significant effect during the interior column removal scenario.

**Keywords** Progressive collapse Analysis, Linear Static, Nonlinear Static and Nonlinear Dynamic Analysis, Building with Exterior Infill Wall