

Approximate Analysis Methods for Modeling Structural Collapse

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ABSTRACT

Performance-based design for seismic events requires engineers to compute the response of structures so that the behavior corresponding to different performance limit states can be accurately captured. When designing for collapse prevention, engineers must be able to compute the ways in which structural components fail and how the failure of one or several members affects the response of an entire structural system. Past research has focused on the response of structural frames with only limited attention played to other structural components. In this paper, the authors consider the contribution of floor slabs and secondary structural components to the collapse resistance of structures. Simplified modeling techniques that are computationally efficient allow for direct implementation of the analysis method in commonly used structural analysis software.

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