

Investigation of the Progressive Collapse Potential in Steel Buildings with Composite Floor System

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Abstract : Abnormal loads due to natural events, implementation errors and some other issues can lead to occurrence of progressive collapse in structures. Most of the past researches consist of 2- Dimensional (2D) models of steel frames without consideration of the floor system effects, which reduces the accuracy of the modeling. While employing a 3-Dimensional (3D) model and modeling the concrete slab system for the floors have a crucial role in the progressive collapse evaluation. In this research, a 3D finite element model of a 5-story steel building is modeled by the ABAQUS software once with modeling the slabs, and the next time without considering them. Then, the progressive collapse potential is evaluated. The results of the analyses indicate that the lack of the consideration of the slabs during the analyses, can lead to inaccuracy in assessing the progressive failure potential of the structure.

Keywords : abnormal loads, composite floor system, intermediate steel moment resisting frame system, progressive collapse

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