عنوان مقاله:

Numerical Investigation of Soil-Structure Interaction Effect on Separation Distance of Adjacent Buildings

محل انتشار:

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خلاصه مقاله:

Adjacent buildings with insufficient clear spacing will suffer structural and non-structural damage during earthquakes, making the consideration of the separation distance between adjacent structures very important. During an earthquake, an expansion joint does not accommodate the lateral movement of adjacent buildings, which is insufficient. According to a safe seismic code, separation distances must be adequate to prevent earthquake pounding. This study intends to determine how soil-structure interaction affects the required separation distance between adjacent structures. To achieve this goal, various earthquake records were applied on a ten-story moment-resisting steel frame in a fixed-based and a soil-structure interaction condition, and its corresponding roof displacements were investigated by dynamic time-history analyses. The results showed that considering the soil-structure interaction would increase the maximum roof displacements, which could surpass the limitation of the design code regarding the allowable separation distance between adjacent buildings.

کلمات کلیدی:

Soil-structure interaction; Pounding effect; Allowable separation distance; Nonlinear time history analysis.