

## On the Seismic Response of Collided Structures

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**Abstract :** This study examines the inelastic behavior of adjacent planar reinforced concrete (R.C.) frames subjected to strong ground motions. The investigation focuses on the effects of vertical ground motion on the seismic pounding. The examined structures are modeled and analyzed by RUAUMOKO dynamic nonlinear analysis program using reliable hysteretic models for both structural members and contact elements. It is found that the vertical ground motion mildly affects the seismic response of adjacent buildings subjected to structural pounding and, for this reason, it can be ignored from the displacement and interstorey drifts assessment. However, the structural damage is moderately affected by the vertical component of earthquakes.

**Keywords :** nonlinear seismic behavior, reinforced concrete structures, structural pounding, vertical ground motions

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