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# Influence of Nonlinearity of Concrete and Reinforcement Using Micropiles on the Seismic Interaction of Soil-Piles-Bridge

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**Abstract :** Post-seismic observations of recent devastating earthquakes have shown that the behavior of the soil-pile-structure shows strong nonlinearity of soil and concrete under intensive seismic loading. Many of pile ruptures recently observed after the strong earthquake due to structural reasons (development of plastic hinges in the piles). The most likely reason for this rupture is the exceeding of maximum bending moment supported by the pile at several points. An analysis of these problems is necessary to take into account the nonlinearity of concrete, the strategy of strengthening the damaged piles and the interaction of these piles with the proposed strengthening by using micropiles. This study aims to investigate the interaction aspects for soil-piles- micropiles-structure using a global approach with a three dimensional finite difference code Flac 3D (Fast lagrangian analysis of continua in 3 dimensions).

**Keywords :** interaction, piles, micropiles, concrete, seismic, nonlinear, three-dimensional
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