

## Effects of non-structural components and soil-structure interaction on the seismic response of framed structures

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In this paper, several nonlinear numerical models of reinforced concrete framed structures have been defined in order to evaluate the effects of non-structural elements and soil–structure interaction on the elastic dynamic behaviour of buildings. In the last few years, many and various studies have highlighted the significant effects derived from the interaction between structural and non-structural components on the main dynamic characteristics of a building. Usually, structural and non-structural elements act together, adding both masses and stiffness. The presence of infill panels is generally neglected in the design process of structural elements, although these elements can significantly increase the lateral stiffness of a structure leading to a modification in the dynamic properties. Particularly, at the Damage Limit State (where an elastic behaviour is expected), soil-structure interaction effects and non-structural elements may further affect the elastic natural period of buildings, changing the spectral accelerations compared with those provided by seismic codes in case of static analyses. In this work, a parametric study has been performed in order to evaluate the elastic fundamental period of vibration of buildings as a function of structural morphology (height, plan area, ratio between plan dimensions), infills presence and distribution and soil characteristics.

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