

A Simple Computational Method for the Gravitational and Seismic Soil-Structure-Interaction between New and Existent Buildings Sites

Authors : Nicolae Daniel Stoica, Ion Mierlus Mazilu

Abstract : This work is one of numerical research and aims to address the issue of the design of new buildings in a 3D location of existing buildings. In today's continuous development and congestion of urban centers is a big question about the influence of the new buildings on an already existent vicinity site. Thus, in this study, we tried to focus on how existent buildings may be affected by any newly constructed buildings and in how far this influence is really decreased. The problem of modeling the influence of interaction between buildings is not simple in any area in the world, and neither in Romania. Unfortunately, most often the designers not done calculations that can determine how close to reality these 3D influences nor the simplified method and the more superior methods. In the most literature making a "shield" (the pilots or molded walls) is absolutely sufficient to stop the influence between the buildings, and so often the soil under the structure is ignored in the calculation models. The main causes for which the soil is neglected in the analysis are related to the complexity modeling of interaction between soil and structure. In this paper, based on a new simple but efficient methodology we tried to determine for a lot of study cases the influence, in terms of assessing the interaction land structure on the behavior of structures that influence a new building on an existing one. The study covers additional subsidence that may occur during the execution of new works and after its completion. It also highlighted the efforts diagrams and deflections in the soil for both the original case and the final stage. This is necessary to see to what extent the expected impact of the new building on existing areas.

Keywords : soil, structure, interaction, piles, earthquakes

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