

Numerical Simulation for a Shallow Braced Excavation of Campus Building

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Abstract : In order to prevent encountering unpredictable factors, geotechnical engineers always conduct numerical analysis for braced excavation design. Simulation work in advance can predict the response of subsequent excavation and thus will be designed to increase the security coefficient of construction. The parameters that are considered include geological conditions, soil properties, soil distributions, loading types, and the analysis and design methods. National Ilan University is located on the LanYang plain, mainly deposited by clayey soil and loose sand, and thus is vulnerable to external influence displacement. National Ilan University experienced a construction of braced excavation with a complete program of monitoring excavation. This study takes advantage of a one-dimensional finite element method RIDO to simulate the excavation process. The predicted results from numerical simulation analysis are compared with the monitored results of construction to explore the differences between them. Numerical simulation analysis of the excavation process can be used to analyze retaining structures for the purpose of understanding the relationship between the displacement and supporting system. The resulting deformation and stress distribution from the braced excavation can then be understood in advance. The problems can be prevented prior to the construction process, and thus acquire all the affected important factors during design and construction.

Keywords : excavation, numerical simulation, RIDO, retaining structure

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