

Numerical Modelling of a Vacuum Consolidation Project in Vietnam

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Abstract : This paper introduces a matching scheme for selection of soil/drain properties in analytical solution and numerical modelling (axisymmetric and plane strain conditions) of a ground improvement project by using Prefabricated Vertical Drains (PVD) in combination with vacuum and surcharge preloading. In-situ monitoring data from a case history of a road construction project in Vietnam was adopted in the back-analysis. Analytical solution and axisymmetric analysis can approximate well the field data meanwhile the horizontal permeability need to be adjusted in plane strain scenario to achieve good agreement. In addition, the influence zone of the ground treatment was examined. The residual settlement was investigated to justify the long-term settlement in compliance with the design code. Moreover, the degree of consolidation of non-PVD sub-layers was also studied by means of two different approaches.

Keywords : numerical modelling, prefabricated vertical drains, vacuum consolidation, soft soil

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