

## Numerical Study of Partial Penetration of PVDs In Soft Clay Soils Treatment Along With Surcharge Preloading (Bangkok Airport Case Study)

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**Abstract :** One of the challenging parts of every project, including prefabricated vertical drains (PVDs), is the determination of the depth of installation and its configuration. In this paper, Geostudio 2018 was used for modeling and verification of the full-scale test embankments (TS1, TS2, and TS3), which were constructed to study the effectiveness of PVDs for accelerating the consolidation and dissipation of the excess pore-pressures resulting from fill placement at Bangkok airport. Different depths and scenarios were modeled and the results were compared and analyzed. Since the ultimate goal is attaining pre-determined settlement, the settlement curve under soil embankment was used for the investigation of the results. It was shown that nearly in all cases, the same results and efficiency might be obtained by partial depth installation of PVDs instead of complete full constant length installation. However, it should be mentioned that because of distinct soil characteristics of clay soils and layers properties of any project, further investigation of full-scale test embankments and modeling is needed prior to finalizing the ultimate design by competent geotechnical consultants.

**Keywords :** partial penetration, surcharge preloading, excess pore water pressure, Bangkok test embankments

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