

Using Micropiles to Improve the Anzali's Saturated Loose Silty Sand

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Abstract : Today, with the daily advancement of geotechnical engineering on soil improvement and modification of the physical properties and shear strength of soil, it is now possible to construct structures with high-volume and high service load on loose sandy soils. One of such methods is using micropiles, which are mostly used to control asymmetrical subsidence, increase bearing capacity, and prevent soil liquefaction. This study examined the improvement of Anzali's saturated loose silty sand using 192 micropiles with a length of 8 meters and diameter of 75 mm. Bandar-e Anzali is one of Iran's coastal populated cities which are located in a high-seismicity region. The effects of the insertion of micropiles on prevention of liquefaction and improvement of subsidence were examined through comparison of the results of Standard Penetration Test (SPT) and Plate Load Test (PLT) before and after implementation of the micropiles. The results show that the SPT values and the ultimate bearing capacity of silty sand increased after the implementation of the micropiles. Therefore, the installation of micropiles increases the strength of silty sand improving the resistance of soil against liquefaction.

Keywords : soil improvement, silty sand, micropiles, SPT, PLT, strength

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