

Using stone column as a suitable liquefaction remediation in Persian Gulf coast.

ABSTRACT

This research investigates behavior of gravel drain piles under high-level earthquake loading beneath the structures foundation. To achieve this purpose one of the waste water septic tank project in north of Persian Gulf in Hormoz Island was selected as a case study to find suitability of gravel drain pile system to reduce excess pore water pressure. According to high susceptibility of local soil layers liquefaction and its short distance of waste water tank to the sea, the mentioned project becomes one of the most important issues regarding geo-environmentally hazards impact after tank structural collapsing. The drain piles were used to control excess pore water pressures beneath the foundation of mentioned project. Furthermore, different static and cyclic triaxial tests, Standard Penetration Test (SPT), the hydraulic conductivity and density tests were conducted to enhance the proper understanding of the dynamic behavior of soil layer under the foundation. According to the numerical modeling results, using these drain piles has focal effects on the excess pore water pressure rate and creates a liquefaction zone during the time of earthquake loading.

Keyword: Liquefaction; Numerical modeling; Stone column; Vertical drain, Loose Sand.