

Coastal soils improvement

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Abstract

With an ever-increasing population growth, the development of industries and the deficit problem of land for establishing the required constructions have been caused that people use the lands with lower engineering qualification. But for establishing a suitable construction the qualification of soil should be improved by a technique respect to engineering parameters. In this condition it has a suitable operation in effect of involving forces. Soil improvement techniques can be classified in different points of view. These methods are divided in to three general groups: Compaction, Solidification and Stabilization. With regard to this point that coastal soils have the capability of liquefaction and they are clayey soils, in this article, first of all we will inspect these soils and the problems that they are caused and then their characteristics improvement techniques based on geotechnical methods such as placing trenches for limited land, sand wills for liquefiable, saturated and clayey soil ;stone columns for clayey soil that have bearing capacity problem and dual purpose micro pile and compaction will be surveyed. Outdoor investigations and their findings show that the soils with SPT lower than 12 in each depth are problematic surely and should improved.

Keywords: soils improvement, liquefaction, stone column, micro piles, compaction

1. Introduction

Soil structure (construction) can be considered as an ideal and suitable place by engineers to have 4 features.

1. Having enough shear strength and bearing capacity of the soil. 2. having low degree of immediate settlement and consolidation caused by the load. 3. Acceptable changes of volume expansion of the soil (for instance, swelling caused by unloading or humidity rise in clay soil) or volume contraction of the soil (caused by decreased humidity) so that the construction effacing won't be conflict. 4. Not having any serious problem in construction place.

Houssain (1990) has basically classified soil improvement goals as the following.

Soil bearing capacity increase, soil settlement decrease, void decrease and soil density increase, regularizing of the features of changeable materials. Improvement requires not only consideration of pre-acting construction but also of reword and the meantime construction. There are some major methods like compression and micro pile, but according to the modern technology, new ways of biotechnology has been founded that can prepare the life condition for underground animate to fill up the holes of the sand that prevents water pressure while earthquake and finally there won't be soil liquefaction. Or for the soil dams the haies can be filled by bacteria injection and rising them instead of providing the required amount of water at the Centre.

2. Based on boring log there are two kinds of problematic soil

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