

Assessment of Field Applicability for Suction Drain Method

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ABSTRACT

In this study, field test was performed at the OO reclaimed site in Gyeonggi-Do to identify field applicability of suction drain method based on determined effect factors from laboratory tests. A target site which has thickness of 10m was divided in two sections, and two kinds of drains selected from laboratory test were installed in each section. To prevent a loss of vacuum pressure, the upper 1m layer of target site was left as a sealing layer. Step vacuum pressure was applied to prevent formation of a 'Hardening Zone', and finally 80 kPa of vacuum pressure were applied

KEY WORDS: suction drain method, plastic board drain, suction pressure, field application

INTRODUCTION

The vertical drain method which is generally used for development of soft clay has many problems including security of coarse grained soils, local shear failure of ground, much amount of work by surcharge, and prolongation of construction duration, so that vacuum consolidation method was suggested as an alternative to the existing consolidation acceleration method (Kjellman, 1952). However, many problems have been encountered including high prices of sealing sheets which are provided to maintain suction pressure, frequent breakdowns during installation, and the reduced efficiency of vacuum pump due to the long operation hours. It becomes evident that there is a growing demand for a new consolidation acceleration method which can solve the weak points and problems noted from the existing methods. We suggested suction drain method which has high efficiency by pressuring drain directly through the installation of vertical drain into the ground (Kim et al., 2007).

In this study, field tests were performed at the OO reclaimed site in Gyeonggi-Do to identify field applicability of suction drain method. The target site was divided in two sections, and two kinds of drains

selected from laboratory test were installed in each section respectively, and development efficiency of each section were compared from measuring settlement, horizontal displacement, suction pressure, and pore water pressure.

CHARACTERISTICS OF TARGET SITE

Almost all soft ground in Korea is constituted of reclaimed ground by dredging. In this study, reclaimed ground around a tide embankment in Gyeonggi-Do was selected as a target site. As a result of CPT, the target depth of the site was selected as about 10 m (Fig. 1). Physical properties of the target site is shown in Table 1.

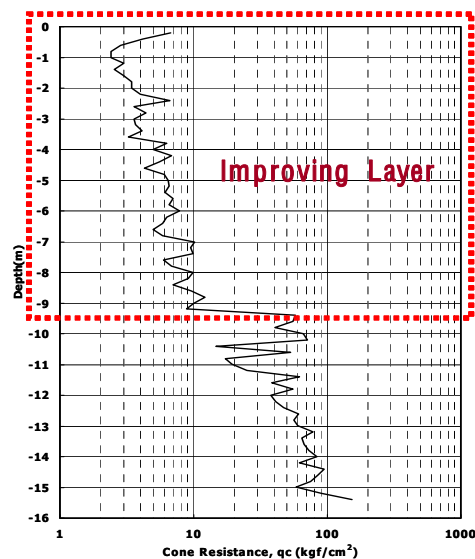


Fig. 1. Cone resistance distribution with depth