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Analysis of piled raft foundation on soft soil using PLAXIS 2D

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Abstract

Recent years, there are many construction projects constructed on soft soil. Due to the characteristics of soft soil, the structures built on it are subject to differential settlements. Raft foundation is one of the methods for reducing the differential settlement. Although it has an adequate bearing capacity, it may cause excessive settlement. Piles can be used with a raft foundation as a piled raft foundation system. The addition of piles is to reduce the settlements to an acceptable amount. The aim of this study is to analyze the settlements of the raft foundation and by adding piles, as the pile raft foundation, under the same loading. The numerical analysis has been done by finite element method using PLAXIS 2D with considering the various number of piles. As the results, the addition of piles could reduce the settlement, but after reach a certain number of piles, increasing the number of piles showed the settlement tends to be constant. For an economic design, it is necessary to consider the optimum number of piles in piled raft foundation system based on the allowable settlements.

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Keywords: piled raft foundation; settlement; soft soil; PLAXIS 2D

1. Introduction

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