Thesis Title	Settlement of Single Pile in a Two-Layered Soil Using Elastic Solution of Layered Soil
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Abstract

The purpose of this research is to analyse settlement of single pile embedded in a two-layered soil. The piles have a uniform circular cross section , ratios of length to diameter of 2 , 5 , 10 , 25 , 50 , 75 and 100 , and are homogeneous , isotropic , linear elastic materials.

Top soil layer has finite thickness. Ratio of its thickness to pile length varies from 0 to 1. The bottom soil layer is a half-space medium. Each soil layer is a homogeneous , isotropic , linear elastic material which can be displaced in the vertical direction but can not be displaced laterally (Westergaard material) and having Poisson ratios 0 , 0.3 and 0.49. Ratios of top-soil Young modulus to bottom-soil Young modulus are 0.2 , 0.5 , 1 , 2 and 5. Ratios of pile Young modulus to bottom-soil Young modulus are 100 , 200 , 500 , 1000 , 2000 and 60,000 respectively.

Settlement at a point in a soil medium is determined by integrating Westergaard's closed-form solution for settlement in a half-space medium due to vertical point load acting beneath the surface of the medium. Pile settlement is determined by the finite difference method.

Analytical results indicate that in case of a homogeneous half-space soil , pile-top settlement increases as ratio of pile length to diameter increases , but pile-top settlement decreases as ratio of pile Young modulus to soil Young modulus increases.

In case of a two-layered soil , pile-top settlement increases as the ratio of top soil thickness to pile length increases , when the ratio of top-soil Young modulus to bottom-soil Young modulus is less than one. But pile-top settlement decreases as the ratio of top soil thickness to pile length increases , when the ratio of top-soil Young modulus to bottom-soil Young modulus is more than one.

Settlement at pile top increases as Poisson ratio increases from zero , and reaches its maximum value at Poisson ratio about 0.3 , then decreases to zero as Poisson ratio approaches 0.5. The pile-top settlements obtained are less than those piles embedded in a two-layered soil in which each soil layer is a homogeneous , isotropic , linear elastic material.