Field Test Study on Vertical Bearing Capacity of Bored Piles in Deep Sand Strata Postprint

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Abstract

To investigate the vertical bearing performance of bored cast-in-place piles in deep sand strata, this paper presents field static load tests based on a project in Wuhan City, expounds on the advantages of bored cast-in-place piles, and comparatively studies the test results of vertical ultimate bearing capacity of single piles under different pile length conditions, analyzing the differences in bearing performance of single piles. The results indicate that: in deep sand areas, the load-settlement curves at the pile top for different test zones all exhibit obvious inflection points; the vertical compressive ultimate bearing capacity values between the two differ by approximately 57.6%; increasing pile length can enhance the ultimate bearing capacity of single piles to a certain extent. When the bearing capacity requirements of pile foundations are satisfied, rationally selecting pile length parameters can effectively reduce construction costs. The conclusions of these tests provide a reference for similar practical engineering projects.

Full Text

Field Study on Vertical Bearing Performance of Bored Cast-in-Place Piles in Deep Sand Areas

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Abstract

This study investigates the vertical bearing performance of bored cast-in-place piles in deep sand deposits through field static load tests conducted on a project in Wuhan. The advantages of bored piles are discussed, and comparative analyses of single-pile vertical ultimate bearing capacity test results under different pile length conditions are performed to examine variations in bearing performance. The results demonstrate that in deep sand areas, the load-settlement curves at the pile head for different test zones exhibit distinct inflection points, with the vertical compressive ultimate bearing capacity values differing by approximately 57.6% between conditions. Increasing pile length can enhance the ultimate bearing capacity to a certain degree. When bearing capacity requirements are satisfied, rational selection of pile length parameters can effectively reduce construction costs. These findings provide valuable reference for similar practical engineering projects.

Keywords: pile foundation engineering; bored cast-in-place piles; load-settlement curve

Note: Figure translations are in progress. See original paper for figures.