

Analysis of Behaviors of Single and Group Helical Piles in Sands from Experiment Results

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Abstract : The typically-used oil sand plant foundations are driven pile or drilled shaft. With more strict environmental regulations world widely, it became more important to completely remove the foundation during the stage of plant demolition. However, it is difficult to remove driven piles or drilled shafts that are installed at a deeper and stronger depth to gain more bearing pile capacity. The helical pile can be easily removed after its use and recycled; therefore it is suitable for oil sand plant foundation. This study analyzes the behavior of helical piles in sands. Axial pile load tests were carried out the varying spacing of helix plates (helices), rotation speed and weight of axial loading during pile installation. From the experiments, optimal helix plate spacing, rotation speed, axial loading during installation were determined. In addition, the behavior of helical pile groups was examined varying pile spacing. Finally, the behavior of single helical piles and that of group helical piles were compared.

Keywords : oil sand plant, pile load test, helical pile, group helical pile, behavior

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