

Empirical Approach To Predict Static Capacity Of Drilled Shafts Based On High Strain Dynamic Pile Test Results

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Abstract - The axial compression capacity of drilled shafts using full-scale tests has received the attention of many geotechnical engineers. Regarding the extreme loads that large diameter shafts can resist, many cautions should be considered in the static load test (SLT) application. The High Strain Dynamic Pile Test (HSDPT) is recommended as it propounds a substantial saving of time, cost, and requirement of less space. Over the last decades, the signal matching analysis (e.g., Case Method, CAPWAP, and TNOWAVE) is considered to be the most common procedure followed to predict the axial static response of piles based on HSDPT results. This paper presents an empirical approach to predict the axial compression static capacity of drilled shafts based on HSDPT results. The ultimate static pile capacity has estimated from HSDT results using a simplified formula that conveys the ultimate capacity to the pile set occasioning from a hammer strike and not only the tip stratum properties but also other pile and soil/rock properties (shaft, tip soil, and rock). Numerous well-documented full-scale tests and finite element models were used to develop and validate the suggested formula.

Keywords: High Strain Dynamic test, large diameter shaft, static pile capacity, finite element modelling, PLAXIS 3-D.