

The Evaluation of Current Pile Driving Prediction Methods for Driven Monopile Foundations in London Clay

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Abstract : The current industry approach to pile driving predictions consists of developing a model of the hammer-pile-soil system which simulates the relationship between soil resistance to driving (SRD) and blow counts (or pile penetration per blow). The SRD methods traditionally used are broadly based on static pile capacity calculations. The SRD is used in combination with the one-dimensional wave equation model to indicate the anticipated blowcounts with depth for specific hammer energy settings. This approach has predominantly been calibrated on relatively long slender piles used in the oil and gas industry but is now being extended to allow calculations to be undertaken for relatively short rigid large diameter monopile foundations. This paper evaluates the accuracy of current industry practice when applied to a site where large diameter monopiles were installed in predominantly stiff fissured clay. Actual geotechnical and pile installation data, including pile driving records and signal matching analysis (based upon pile driving monitoring techniques), were used for the assessment on the case study site.

Keywords : driven piles, fissured clay, London clay, monopiles, offshore foundations

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