

# **Study of laterally loaded single pile model.**

**Mohammed Shameem**

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Abstract

The effects of various variables on pile performance can be studied much more readily in the laboratory on model piles, thereby avoiding lot of effort, expense and time involved in full scale testing. This study shows that testing single small scale model pile can be used to understand the performance of laterally loaded short stiff pile embedded in sandy soil. Experimental program consisted of carrying investigations on 11 model piles by varying the following parameters: embedment length to pile diameter ratio ( $L_e / D_i$ ), pile diameter to wall thickness ratio ( $D_i / t$ ), saturation condition of sand (dry vs saturated) and loading conditions (static vs cyclic). The static and cyclic loadings were achieved by means of a specially designed loading actuator, where the cyclic load represents the wave action on an offshore structure. A parametric study was carried out and experimental load deflection curves were developed from the reduced data at different depths for static and cyclic loading. The experimental p-y curves were compared with the semi empirical ones. A comparison of experimental bending moment and deflection along pile length was made with the numerical solution using the semi-empirical as well as experimental p-y curves. Test results have shown that model pile behavior is greatly influenced by the various parameters studied. Experimental results agree reasonably with the numerical solution, indicating the validity of model study in predicting the behavior of laterally loaded pile.