

DIRECT MEASUREMENT OF SHAFT RESISTANCE DISTRIBUTION

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SYNOPSIS -- Shaft resistance is a major design factor for piles supporting structures such as transmission towers, harbor structures, and offshore platforms. The distribution of shaft resistance with depth is needed to understand the nature of load transfer between the pile and the soil. A large-scale model pile was designed and constructed to get this information. The model pile was instrumented with three friction sleeves to measure directly the distribution of the shaft resistance with depth. The model pile was subjected to static uplift loading to failure in sand. The limited test results indicate that shaft resistance increases linearly within the depth of embedment of the model pile installed in an undisturbed state (no lateral displacement of the soil due to pile installation) The depth to diameter ratio for the tests was 14 which is in the range (10 to 20) in which the average unit shaft resistance is found to increase linearly with depth during uplift. This finding conforms with Vesic's (1967) theory.