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The Pile Group Efficiency for Different Embedment Lengths in Dry Sand

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Abstract : This study investigated the design of the pile foundation to support heavy structures-especially bridges for highways-in the Sahara, which contains many dunes of medium dense sand in different levels, where the foundation is supposed to be piles. The base resistance of smooth model pile groups in sand under static loading is investigated experimentally in a pile soil test apparatus. Improvement were made to the sand around the piles in order to increase the shaft resistance of the single pile and the pile groups, and also base resistance especially for the central pile in pile groups. The study outlines the behaviour of a single-pile, 4-, 5-, and 9- pile groups arranged in a doubly symmetric [square] layout with different embedment lengths and pile spacing in loose dry sand [normal] and dense dry sand [compacted] around the piles. This study evaluate the variation of the magnitude and the proportion of end bearing capacity of individual piles in different pile groups. Also to investigate the magnitude of the efficiency coefficient in the case of different pile groups.

Keywords : pile group, base resistance, efficiency coefficient, pile spacing, pile-soil interaction
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