

Effect of Type of Pile and Its Installation Method on Pile Bearing Capacity by Physical Modelling in Frustum Confining Vessel

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Abstract : Various factors such as the method of installation, the pile type, the pile material and the pile shape, can affect the final bearing capacity of a pile executed in the soil; among them, the method of installation is of special importance. The physical modeling is among the best options in the laboratory study of the piles behavior. Therefore, the current paper first presents and reviews the frustum confining vessel (FCV) as a suitable tool for physical modeling of deep foundations. Then, by describing the loading tests of two open-ended and closed-end steel piles, each of which has been performed in two methods, "with displacement" and "without displacement", the effect of end conditions and installation method on the final bearing capacity of the pile is investigated. The soil used in the current paper is silty sand of Firoozkooh. The results of the experiments show that in general the without displacement installation method has a larger bearing capacity in both piles, and in a specific method of installation the closed ended pile shows a slightly higher bearing capacity.

Keywords : physical modeling, frustum confining vessel, pile, bearing capacity, installation method

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