

Abstract

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Static and Dynamic Behavior of Soil-Structure System

The behavior of soil structure system subjected to static and dynamic loads was studied. An experimental model was designed to represent field plane-strain problems. A series of static and dynamic loading tests were carried out on model strip footing having different widths and resting on sand with different relative densities. The dynamic loads were imposed by the impact of falling weights. Different loads were used to represent different impact energies. Load displacement characteristics were determined whereby footing displacement corresponding to different static load were measured. Moreover, soil field deformation and failure plans were determined experimentally by means of the stereo photogrammetry technique. Soil behavior under both types of static and dynamic behavior of soil structure system. Empirical relations were by which the volume of soil and settlement at failure due to static and dynamic loads could be determined. Using these relations, the ultimate dynamic energy which causes effect similar to that caused by static ultimate bearing capacity was determined.