

Static Response of Homogeneous Clay Stratum to Imposed Structural Loads

Authors : Aaron Aboshio

Abstract : Numerical study of the static response of homogeneous clay stratum considering a wide range of cohesion and subject to foundation loads is presented. The linear elastic-perfectly plastic constitutive relation with the von Mises yield criterion were utilised to develop a numerically cost effective finite element model for the soil while imposing a rigid body constrain to the foundation footing. From the analyses carried out, estimate of the bearing capacity factor, N_c as well as the ultimate load-carrying capacities of these soils, effect of cohesion on foundation settlements, stress fields and failure propagation were obtained. These are consistent with other findings in the literature and hence can be a useful guide in design of safe foundations in clay soils for buildings and other structure.

Keywords : bearing capacity factors, finite element method, safe bearing pressure, structure-soil interaction

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