

Performance of Axially Loaded Single Pile Embedded in Cohesive Soil with Cavities

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Abstract : The stability of a single model pile located adjacent to a continuous cavity was studied. This paper is an attempt to understand the behaviour of axially loaded single pile embedded in clayey soil with the presences of cavities. The performance of piles located in such soils was studied analytically. A verification analysis was carried out on available studies to assess the ability of analytical model to correctly interpret the system behaviour. The study was adopted by finite element program (PLAXIS). The study included many cases; in each case, there is a critical value in which the presence of cavities has shown minimum effect on the pile performance. Figures including the load carrying capacity of pile with the affecting factors are presented. These figures provide beneficial information for pile design constructed close to underground cavities. It was concluded that the load carrying capacity of the pile is reduced by the presence of the cavity within the soil mass. This reduction varies according to the size and location of cavity.

Keywords : axial load, cavity, clay, pile, ultimate capacity

Conference Title : ICGFD 2017 : International Conference on Geotechnical and Foundation Design

Conference Location : Paris, France

Conference Dates : July 20-21, 2017