

ANALYSIS OF UPLIFT RESISTANCE OF PLATE ANCHORS IN COHESIVE SOILS

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ABSTRACT

Plate anchors are commonly adopted as foundation system for structures that require uplift or lateral resistance. Such situations are common to both land and marine environments and arise, for example, from wave action on offshore structures, wind loading on high mast transmission towers, and buoyancy forces on buried pipelines. Due to developments in offshore operations, the use of plate anchoring systems is becoming popular.

To understand plate anchor behaviour in clay, PLAXIS (Finite Element Code) has been used in this study. A strip plate anchor is chosen with embedment ratio varying from 2 to 10 in soft, medium and stiff clay. For the soil, elastic-plastic Mohr-Coulomb constitutive model is used. A 15-noded triangular element is used in the analysis. In most studies, the uniform soil strata have been assumed. But in reality, the shear strength of soil increases with increase in embedment depth. Comparison has been made with results obtained from uniform strata analysis to strata with increasing soil strength.

Key words: Cohesive soil, FEM analysis, Plate anchors, Uplift resistance.