

Numerical investigation of cyclic behavior of suction caisson foundation in sand under cyclic lateral loading

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ABSTRACT

Suction caissons are widely utilized as alternative foundation type to traditional system of foundations. The suction caissons are subjected to significant cyclic lateral loading generated from actions of wind and waves. The cyclic response of caisson foundation under cyclic lateral loading can be an important design issue.

The present study investigates the response of suction caisson foundation in sandy soil by three-dimensional finite element analysis, using hardening soil model with small strain stiffness available in Plaxis code ©. A parametric study was carried out to assess the influence of loading amplitude, load eccentricity and number of load cycles on cyclic behavior of the caisson foundation. The results indicate that the cumulative rotations increase with increasing the number of load cycles, cyclic load amplitude ratio and the load eccentricity.

Keywords: Numerical analysis, caisson foundation, cyclic lateral loading, Loading amplitude, Load eccentricity, Plaxis 3D.

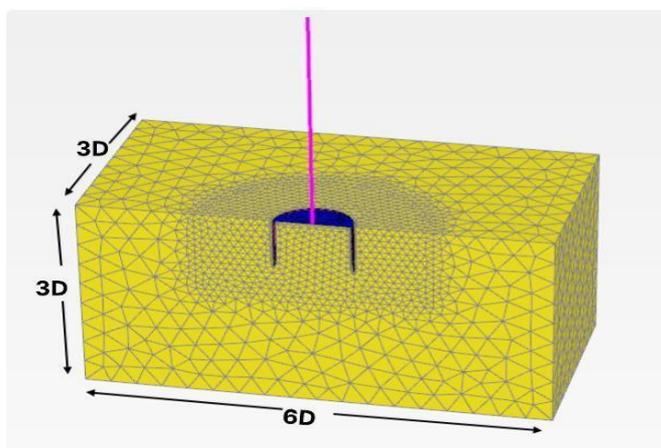


Fig. 1 Finite element model of suction caisson foundation.

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