عنوان مقاله:

Nonlinear Behavior of Pile-Soil Subjected to Torsion due to Environmental Loads on Jacket Type Platforms

نویسندگان:

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خلاصه مقاله:

In the present study, the torque-twist behavior of non-linear pile-soil system related to the wave-current loading on Jacket type offshore platform is investigated. The non-linearities of pile-soil with respect to both depth and the twist angle of pile are considered. The basic differential equilibrium equations of the pile-soil system are derived based on hyperelasticity theory of soil. A numerical central finite difference method is applied based on simplification of stress field around the pile elements which takes into account changes in the secondary shear stress components and also non-linearities due to non-homogeneous soil condition. This method uses a one-dimensional mesh along pile-soil interface. It also takes into account the changes in G of soil with respect to the twist angle of pile.In a separate work, the simulated torque-twist behavior of pile-soil system based on this analysis approach is compared with the results of more refined finite element analysis by using continuum mechanics theory and also full scale pile-soil test results (Emami,2002).The torque-twist results by using the proposed approach have been used to study the behavior of two jacket-pile-soil systems under sea environmental and accidental loading.

کلمات کلیدی:

Pile-Soil interaction, Jacket-Pile-Soil system, Pile-Soil non-linearities

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