

3-D Numerical Model for Wave-Induced Seabed Response around an Offshore Pipeline

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Abstract : Seabed instability around an offshore pipeline is one of key factors that need to be considered in the design of offshore infrastructures. Unlike previous investigations, a three-dimensional numerical model for the wave-induced soil response around an offshore pipeline is proposed in this paper. The numerical model was first validated with 2-D experimental data available in the literature. Then, a parametric study will be carried out to examine the effects of wave, seabed characteristics and confirmation of pipeline. Numerical examples demonstrate significant influence of wave obliquity on the wave-induced pore pressures and the resultant seabed liquefaction around the pipeline, which cannot be observed in 2-D numerical simulation.

Keywords : pore pressure, 3D wave model, seabed liquefaction, pipeline

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