

Scaling Analysis for the Liquefaction Phenomena Generated by Water Waves

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Abstract : In this work, a scaling analysis of the liquefaction phenomena is presented. The characteristic scales are obtained by balancing term by term of the well-known partial dynamics governing equations, (U – P). From the above, the order of magnitude of the horizontal displacement is very smaller compared with the vertical displacement and therefore the governing equation is only a function of the dependent vertical variables. The U – P approximation is reduced and presented in its dimensionless version. This scaling analysis can be used to obtain analytical solutions of the liquefaction phenomena under the action of the water waves.

Keywords : approximation U-P, porous seabed, scaling analysis, water waves

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