

Evaluation of Structural Response of Ground Supported Cylindrical Water Tanks to Static and Harmonic Loading

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- Shilja Sureshkumar (1)
- Asha Joseph (2) Email author (ashameledath@gmail.com)

1. Department of Civil Engineering, Albertian Institute of Science and Technology, , Kalamassery, India

2. Department of Civil Engineering, Federal Institute of Science and Technology, , Angamaly, Kochi, India

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Abstract

Earthquake forces and hydrodynamic pressure are important parameters to be considered in the design of water tanks. In this study, response of ground supported cylindrical water tanks were studied under static and harmonic loading at different water heights and different aspect ratios using finite element software ANSYS. The main objective is to determine the influence of soil structure interaction on dynamic response of water tanks. Soil is modelled as three layers consist of clayey gravel, silty sand and hard rock. It is concluded that, soil structure interaction amplify response of water tanks under static and harmonic loading.

Keywords

Fluid structure interaction (FSI) Soil structure interaction (SSI)

Harmonic loading Hydrostatic pressure Aspect ratio

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