

Analyze Shear Strain of Inhomogeneous Soil Considering Interaction Between SFRC Foundation and Soil

Authors: Tran-Trung Nguyen, Phu-Cuong Nguyen, Trong-Nghia Nguyen, Ngoc-Tuan Tran, Minh-Hoang Le, Phong Thanh Nguyen

Publisher: Springer Singapore

Abstract

This paper studies the influences of material models used in foundation structures on selections of soil's shear strain which can strongly effect on responses of soil-structures in comparison with measurements. The material modeling of the foundation structure is Steel Fiber Reinforced Concrete (SFRC) proposed based on the special Stress-Strain Relationship Curve (SSRC). Moreover, The Mohr-Coulomb Failure Criteria (MCFC) model is applied for soil model divided into multi-layers with the same thickness with increasing elastic modulus with depth. The SFRC foundation and the inhomogeneous soil are analyzed by nonlinear finite element method. The comparison's results shows that foundation structures with propriate soil model can generate more accurate load-displacements curve than previous approaches. This research also emphasis on the selection of soil's shear strain which may be omitted during design process is the most importance factor for soil-structure interaction analysis.