A Study on the Effect of Earthquake-Resistant Reinforcement Using a Solidification Body for an Underground Structure

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The necessity of earthquake-resistant reinforcement for underground structures in large-scale earthquakes is rising. This paper shows a model test of the reinforcement method using a ground solidification body and its FEM analyses that were conducted to examine deformation characteristics of the reinforced underground structure and the effect of the reinforcement. The target underground structure is an RC one-box culvert, and loading tests were performed by using a 1/3-scale RC model. The reinforcement body made with cement and clay was situated on both sides of the structure. The effect of the reinforcement was confirmed by comparing the results of the experiments with the earthquake-resistant reinforcement and without it. Elasto-plastic FEM analyses could reproduce the behaviors of the underground structure in the loading test.