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Dynamic Test and Numerical Analysis of Twin Tunnel

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Abstract : Seismic load affects the behavior of underground structure like tunnel broadly. Seismic soil-structure interaction can play an important role in the dynamic behavior of tunnel. In this research, twin tunnel with flexible joint was physically modeled and the dynamic centrifuge test was performed to investigate seismic behavior of twin tunnel. Seismic waves have different frequency were exerted and the characteristics of response were obtained from the test. Test results demonstrated the amplification of peak acceleration in the longitudinal direction in seismic waves. The effect of the flexible joint was also verified. Additionally, 3-dimensional finite difference dynamic analysis was conducted and the analysis results exhibited good agreement with the test results.

Keywords : 3-dimensional finite difference dynamic analysis, dynamic centrifuge test, flexible joint, seismic soil-structure interaction
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