Evaluation of Seismic Amplification in Mountain Tunnel based on Seismic Observation Records

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Evaluating the seismic performance of railway structures and train running safety during an earthquake, it is necessary to simulate the ground motions at each site. In ground motion evaluation, it is indicated that the seismic amplification of deep subsurface structures strongly affect to the simulated ground motions. This factor is beginning to consider in the seismic design of civil structures. However, there was few cases to evaluate the seismic amplification in a mountain tunnel. The amplification would be much smaller than the one evaluated for structures built on the ground level. In this paper, based on seismic observations, we try to evaluate the amplification in the Rokko-tunnel. As a result, we confirm that its amplification at period range from 0.1 to 1.0 seconds is about 1.0 times which is equivalent to the amplification on the seismic bedrock.