

Seismic Response Evaluation of Railway Structure in Consideration of Repetitive Collision of RC Overhanging Slab

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Railway viaducts near stations, out of necessity, are arranged close to each other in the line transversal direction, in which case the two viaducts could collide with each other and be damaged. The aim of this paper is to establish an evaluation method of the seismic response of viaducts in consideration of repetitive collisions between RC overhanging slabs. As the result of a numerical approach, the single collision of RC overhanging slabs causes the reduction of the coefficient of restitution by about 0.2 due to the energy loss as the wave propagation in the superstructure, and by approximately 0 to 0.3 due to the energy loss as the nonlinear hysteresis of the material. The numerical simulation installed with the proposed contact model considering these effects shows that the seismic response of structures may increase by 70% due to the repetitive collisions.