Evaluation of Displacement Control Method for Shinkansen RC Rigid-frame Viaduct during Earthquake

Masamichi SOGABE Yukihiro TANIMURA
Yoshitaka MURONO Hiroshi MATSUHASHI

Many RC rigid-frame viaducts have been constructed as a rational railway structure. We selected an existing initial cantilever type Shinkansen viaduct as a research object, and evaluated some displacement control methods during earthquake for improving its train-running quality by numerical analysis. Through this study, we clarified that the combination of improving methods was effective for a large-scale earthquake. For instance, in the combination case of differential displacement control devices and damper-brace reinforcement, an input peak ground acceleration to generate 70mm of a wheel horizontal displacement which was judged to cause derailment, was $4.2m/s^2$. It indicated approximately 250% improvement compared with $1.2m/s^2$ of no control method case.