

**Development of the Collapse Direction Control Device  
for Improving Anti-Catastrophe Performance of a Viaduct**

Akihiro TOYOOKA     Yoshitaka MURONO     Masato SAITOH

Railway structures may be totally collapsed if the intensity of an earthquake is beyond the design motion. Nevertheless, the significant loss of life and the long-term suspension of train operation are avoidable if the direction of collapse is artificially controlled so as not for the remains of the structure to disturb the essential areas such as residential areas and yards for reconstruction. This feature is referred to as “anti-catastrophe” in the Japanese design standard. In order to attain such performance, a new “collapse direction control” device was proposed. The dynamic loading tests were then conducted using a shake table, on which a viaduct model with the device was mounted. It was confirmed that the proposed device was capable of controlling the collapse direction of the specimen.