

Seismic Damage Estimation of Railway Bridges and Viaducts by Inventory Method

Meguru ONODERA Kazunori WADA
Kimitoshi SAKAI Yoshitaka MURONO

In order to early resumption of railway operation after an earthquake, it is important to estimate the damage of the whole section of a railway line and take precautions such as retrofitting the existing structures and determining the priority of inspection. For such damage estimation, earthquake disaster simulation is an effective method. However, it requires much time and cost to construct many structural models. We have developed an “inventory method” that constructs many structural models efficiently by using fewer structural characteristics and estimates seismic damage of the whole railway line. An equivalent natural period T_{eq} and a yielding coefficient k_{heq} of SDOF are estimated with an error of about 10% by this method. This is an effective method to the seismic estimation of the whole railway line and can be utilized to determinate the prior measures for early resumption.