

**Seismic Damage Mechanism and Assessment
of Aseismic Performance of Mountain Tunnels for Railways**

Kazuhide YASHIRO Yoshiyuki KOJIMA Toshihiro ASAKURA Narutoshi FUKAZAWA

In this study, the authors performed case studies and model tests on the seismic damage mechanism of mountain tunnels and their aseismic performance. The condition in which seismic damage of mountain tunnel tended to be intensive was apparent according to the studies. We performed model tests attentive to the damages to tunnels in a shallow depth or poor geological conditions; consequently, we could reproduce the degree and extent of the disasters caused by mountain seismicity. It was possible to clarify the damage mechanism, and to comprehend the seismic performance from the model tests. It was conclusive that sound and inverted tunnel are less susceptible to seismic damage. On the other hand, it was also apparent that seismic damage tends to be large when tunnels have void behind the lining and insufficient lining thickness, or when a local displacement acts on the tunnels.