
Dynamic loading test of seismic isolation fail-safe braking device for massive earthquakes

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In seismically isolated buildings subjected to large earthquakes beyond design assumptions, there are concerns about the collision of the superstructure with retaining walls and damage to isolators. Increasing the damping of the isolation layer is one possible response, but this approach can lead to increased acceleration of the superstructure during earthquakes within design assumptions. To address this issue, a fail-safe braking device has been developed that only activates during significant earthquakes to control excessive displacement of the superstructure. This paper outlines the dynamic loading tests of the fail-safe braking device conducted using a full-scale seismic isolation testing machine (E-Isolation). The test results confirmed that the device operates reliably within its intended velocity range and provided insights into the detailed restoring force characteristics.
