

11. Development of the Seismic Isolation System using the Cosine Rail System (CRS) and the Friction Dampers

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As a consistency of the development of the seismic isolation system (the GAL-LESS series) which protects cultural assets and something precious in the earthquake, we developed the seismic isolator (the GAL-LESS LC) using the friction dampers by the torque resistance. That consists of the Cosine Rail System (CRS) and friction dampers made of metal material.

As two advantages, the application of the friction dampers to the seismic isolation system realize the cost reduction and the compact system by making the viscous damper and trigger mechanism useless

For the purpose of a verification of the seismic isolation performance of this system, the bench vibration test revealed that the response acceleration levels were reduced as much as to 1/5 to 1/10 with the weight, as the parameter of friction factors (1.5~4%) of the damper. In addition, the verification test and numerical simulation results demonstrated the appropriateness and validity of the system.

Next, the bench vibration test also demonstrated the excellent seismic isolation performance, which give the response characteristic of seismic isolator with the display case.

Key words : seismic isolation, roller bearing, friction damper, bench vibration test, earthquake response analysis