3. Development of FLEXIBLE BASE-ISOLATION SYSTEM

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The semi-active base-isolation system using controllable viscous dampers is one of the techniques for improving the performance of conventional seismic isolation methods. In this study, magneto-rheological fluid (MR) dampers were adopted as the controllable viscous dampers of a semi-active base-isolation system, and model shaking table tests were conducted using feedback control based on the linear quadratic regulator theory. As a result, it was confirmed that the response displacement of seismically isolated stories was held to the level equivalent to or lower than that offered by conventional passive isolation systems during an earthquake was predominant, and that the response acceleration at the building could be further reduced during an earthquake was predominant. The results of the model shaking table tests were in good agreement with the results of response analysis using a model properly simulating the characteristics of MR damper. Thus, the validity of the analysis method was confirmed.

Key words : base-isolated buildings, semi-active base-isolation system, controllable viscous dampers, shaking table tests, response analysis