

8. Performance Verification of Seismic Isolation Devices Used in a Base-Isolated Building for 30 Years

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We removed the natural rubber bearings and steel bar dampers used in a base-isolated building for 30 years since the building's completion and confirmed their basic characteristics on a standalone basis. We also investigated their marginal performance and residual performance, finding virtually no change in the lateral stiffness of the natural rubber bearings used for 30 years due to changes in pressure, except for hardening due to age. The marginal performance tests also showed that deformation capacity had remained the same or greater than at the time of product delivery, confirming that sufficient deformation capacity remained even after more than 30 years of use. In response to repeated loading of ± 5 cm, steel bar dampers exhibited some fatigue due to seismic shock experienced in the past, but their hysteresis was stable, and the members continue to offer sufficient energy absorption capacity.

In addition to the evaluations of the entire building conducted thus far, standalone tests of the natural rubber bearings and steel bar dampers showed they continue to possess the deformation and energy absorption capacity required for base-isolated buildings, even after 30 years of use.

Key words: Natural rubber bearing , steel bar damper , aging