

Performance Evaluation Tests for the Seismic Rubber Bearings of Highway Bridges in Korea

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Summary

To establish performance evaluation criteria of seismic isolation devices, database relative to diversified evaluation tests of the performances of seismic isolation devices should be collected. However, such experimental research is still in its infancy in Korea. As an effort to accumulate valuable data about the seismic-protection isolators, various specimens of seismic-protection isolators were fabricated in several batches. 49 specimens of 4 types full scale lead rubber bearings(LRB) were prepared for the evaluation tests. In addition, 2 types of reduced scale models were fabricated too. Quality level evaluation tests have been actually performed using these specimens. To perform evaluation tests, a large capacity test device has been designed and manufactured. Quality level evaluation tests consisted of compressive properties test, shear properties test, dependency of shear properties test, ultimate properties test, The dependency of shear properties were measured about the variables of shear strain and temperature etc. The compressive properties and shear properties tests were implemented using full scale specimens. And the other tests were implemented using reduced scale model specimens considering the capacities of test machines. From the test results, we observed that the changing range of shear properties was wider than we expected in some dependency of shear properties. Therefore much more attention should be given about varying properties of isolators in the seismic isolation design of highway bridges. To consider the deviation of shear properties from design values, checking procedures for the response changes corresponding to the change of isolator properties should be implemented.

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