

Input loss of the base motion in the dynamic collapse tests of three-story reinforced concrete buildings with swaying foundation

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ABSTRACT

E-Defense, the world largest three-dimensional earthquake simulator, has been operated and available for shake table tests since 2005. A five-year national project on seismic safety of urban areas, referred to as DaiDaiToku project, has started from 2002 in Japan. As a part of the project, seismic performance of existing reinforced concrete (RC) buildings were investigated through the full-scale shake table tests at E-Defense in 2005 and 2006. The second phase tests were conducted for two three-story school buildings with flexible foundation from September to November 2006. One was a bare RC specimen simulating an old and non-ductile school building in Japan. The other was a retrofit specimen, which was constructed in the same design and strengthened with attached steel braces. The research backgrounds, the detailed test method, and test results are presented in this paper with specific focus on the analytical and theoretical investigation regarding the input loss of the base motion observed in the test due to swaying foundation.

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