

Overview of 'Maintenance and Recovery of Functionality in Urban Infrastructures'

NAKASHIMA, Masayoshi^{1*} ; KOSHIKA, Norihide² ; KAJIWARA, Koichi³ ; NOZAWA, Takashi¹

¹Disaster Prevention Research Institute Kyoto University, ²Kobori Research Complex, ³Hyogo EERC, NIED

The 2011 Tohoku earthquake caused unprecedented damage to the island of Japan. The damage was spread to the Tokyo Metropolitan Area, hundreds kilometers away from the epicentral region, which sustained serious disruption, most notably to businesses. Measures have to be taken to reduce such disruption before the island of Japan receives another mega earthquake, which is expected by the middle of this century. Issues to be addressed:

1. Quantification of collapse margin of high-rise buildings.
2. Monitoring and prompt condition assessment of buildings.

The project deals with high-rise buildings which are prevalent in urban areas and focuses on the following three themes.

- (1) Quantification of collapse margin of high-rise building structures.
- (2) Monitoring and condition assessment for the health of buildings.
- (3) Evaluation and monitoring of soil-foundation-structure interaction systems.

To achieve these goals, state-of-the-art theory and high-fidelity simulation are utilized, together with a series of large-scale tests as well as continuous observation of vibrations to actual structures. The project will offer technical guidelines and associated materials useful for the design, construction, and maintenance of buildings and urban infrastructure systems. A research team consisting of members from industry, academia, and government authorities has been formed to run the project most effectively.



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