



Long-term Seismic Monitoring of an Instrumented Base-Isolated Building: Observation and Structural Analysis

Dionysius M. SIRINGORINGO
Research Assoc. Professor
Yokohama National Univ.
Yokohama, JAPAN
dion@ynu.ac.jp



DM Siringoringo, born 1976, received his PhD in civil engineering from the Univ. of Tokyo in 2005.

Yozo FUJINO
Professor
Yokohama National Univ.
Yokohama, JAPAN

fujino@ynu.ac.jp

Yozo Fujino, received his PhD in civil engineering from the Univ. of Waterloo Canada in 1977. He is a professor of bridge and structure, and the president of IABSE chapter Japan.



Summary

This paper describes a case-study of serviceability performance of a base-isolated building on a basis of long-term seismic monitoring data. Investigation on the seismic response emphasizes on the influence of building asymmetry on the characteristics of seismic response and the long-term building response characteristics for over three years between 2010 and 2012 under various amplitudes of earthquakes. The building is an asymmetric base-isolated L-shaped structure consisting of seven-story and fourteen-story building with vertical void. Vibration monitoring system was installed on the building and seismic responses were recorded including the strongest shaking (PGA 0.80–1.40m/s²) experienced during the March 11, 2011 Great East-Japan Earthquake

Keywords: *base-isolated building, long-term seismic monitoring, torsional response, 2011 Great East Japan earthquake, system identification*

1. Description of the Building and Monitoring System

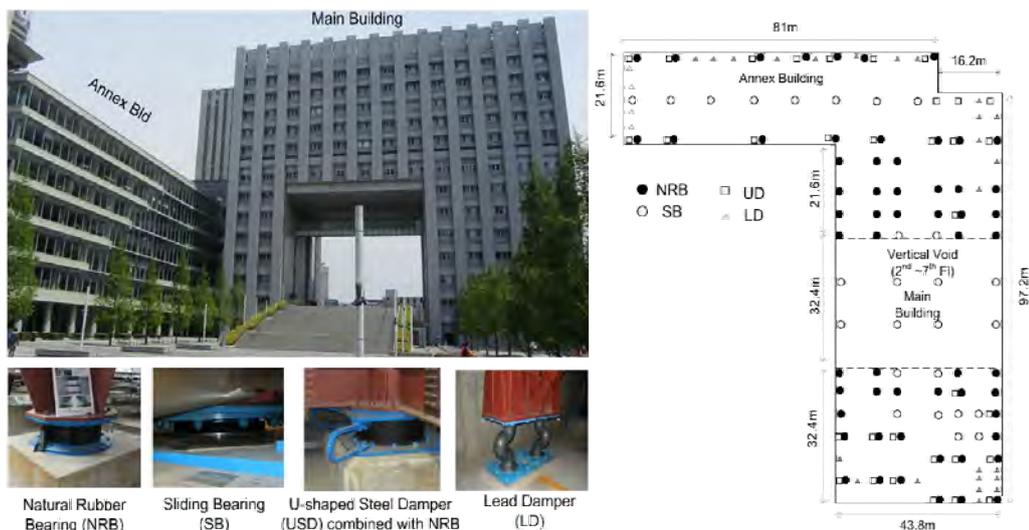


Fig. 1: SIT Building and layout of base isolation system

The object structure is the SIT Building located in Tokyo-Bay area. The building consists of two parts: fourteen-story main building (M) and seven-story annex building (A) (Figure 1). Both buildings are of braced steel frames and connected at the corner by elevator shaft that forms an L-