DS '11 KOBE
International Symposium on
Disaster Simulation & Structural Safety in the Next Generation (DS'11)
September 17-18, 2011, JAPAN

THREE EXAMPLES OF THE EARTHQUAKE INDUCED COLLAPSE SIMULATION FOR HIGH-RISE BUILDINGS

LU, Xin-Zheng, LU, Xiao, YE, Lie-Ping

***Keywords*:** *Finite element method, Collapse simulation, High-rise building*

SUMMARY

Structural collapse resistance capacity is an important part of seismic design. And numerical simulation has been proved as one of the most powerful tools for collapse simulation. In this paper, potential collapse processes of three actual high-rise buildings subjected to strong earthquakes, including an 18-story frame-core-tube building, a 20-story frame-core-tube building and Shanghai Tower with a total height of 632 m, were simulated by using finite element (FE) method. These analysis results indicate that the proposed FE method is capable of simulating the collapse process of actual high-rise buildings, understanding the mechanism of the collapse and identifying the corresponding potentially weak components of the structure that may induce collapse. And these study outcomes will be beneficial to aid further development of optimal design philosophy.