

2009 E-DEFENSE BLIND ANALYSIS CONTEST

STEEL MOMENT FRAMES INCORPORATING SUPPLEMENTAL ENERGY DISSIPATION DEVICES

The E-Defense steel building research team, lead by Kazuhiko Kasai of the Tokyo Institute of Technology, has been testing various full-scale steel frame buildings using the world's largest three-dimensional shaking table located in Miki City, Hyogo Prefecture, Japan.

The team is pleased to announce the 2009 blind analysis contest for a full-scale 5-story steel building, which will use Japanese steel dampers in the first test, and American viscous dampers in the second one. Tests using Japanese oil dampers, viscoelastic dampers, and no dampers, respectively, will also be performed, but will not be considered for the contest.

This contest follows up on the 2007 Blind Analysis Contest that considered a full-scale 4-story tall steel moment-resisting frame building shaken to collapse by intense near-fault ground motions recorded during the 1995 Kobe earthquake. The same records will be used in this contest in order to contrast the performance of frames with and without supplemental energy dissipation devices.

Each participant is required to predict the test specimen's response before as well as after the test. It is expected that the actual seismic loadings on the specimen will differ slightly from the intended ones. The actual seismic excitations will be recorded during the tests. Thus, the contest has two parts: a *pre-test analysis* based on the intended earthquake loadings, and a *post-test analysis* based on excitations recorded during the tests. The building analytical model for the *post-test analysis* must be identical with that for the *pre-test analysis*. Awards will be made to those making the closest predictions to the test results.

The contest is categorized by the combination of damper type and analysis type. Two types of dampers and two types analysis methods, 3D and 2D analyses, will be considered. Thus, four winners, one from each category, will be recognized. While names and affiliations of all participating teams will be identified, results will be presented anonymously (unlabeled), except for those of the winners.

It is planned that the winners will be invited to and honored at the 7th International Conference on Urban Earthquake Engineering to be held in 2010 by the Center for Urban Earthquake Engineering (CUEE), Tokyo Institute of Technology, Japan. The winners' travel expenses and accommodations will be covered by the contest sponsor.

Due dates for submitting results of the *pre-test analysis* and *post-test analysis* are mid-February and mid-April, 2009, respectively. Details of contest rules and building data will be posted on the E-Defense web-site during November 2008. Information can be found at: (<http://www.bosai.go.jp/hyogo/ehyogo/index.html>).

Basic information about the configuration of the test specimen can be seen in Figure 1.

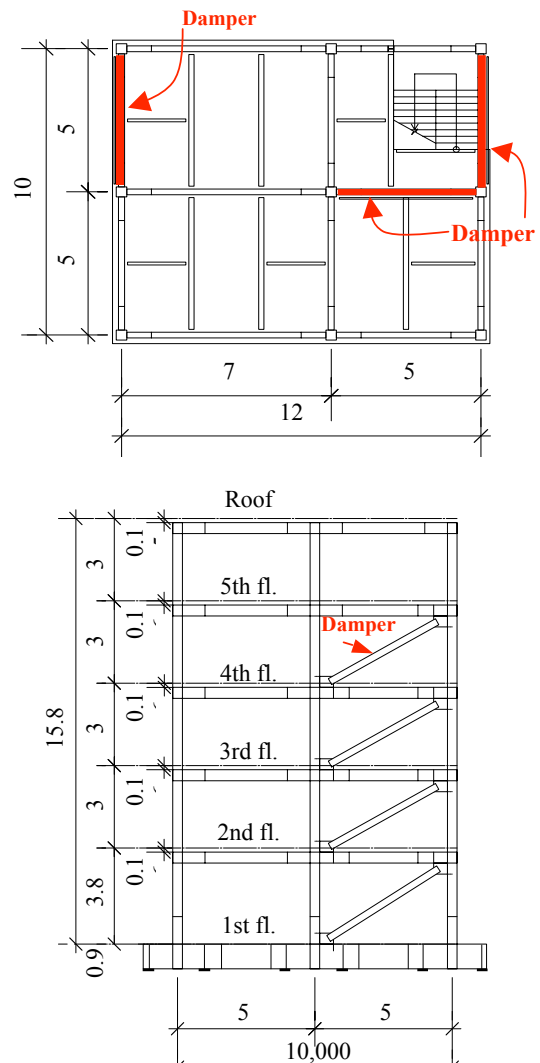


Figure 1: Full-scale 5-story steel building with 12 dampers (Unit = mm); Non-structural elements such as cladding panels, windows, partitions, doors, and ceiling will be attached. The nominal floor area for this specimen is twice that of the 4-story steel frame tested to collapse during 2007.