

MCEER Seismic Design Competition for Undergraduates

Objectives:

The objectives of this first Undergraduate Seismic Design Competition sponsored by the Multidisciplinary Center for Earthquake Engineering Research (MCEER) are:

- To provide civil engineering undergraduate students an opportunity to do a hands on project and gain practical experience by designing and fabricating a cost effective frame structure, which will withstand severe earthquake simulation.
- To build the awareness of the versatile activities at MCEER among the civil engineering students and faculty at the core universities as well as the general public in order to encourage national-wide participation.
- To increase the attentiveness of the value and benefit of the Student Leadership Council (SLC) representatives and officers among the core universities for the recruitment and development of SLC, which is a key liaison between MCEER students and the MCEER center.

The competition will be held on January 29th, 2005 in the Structural Engineering and Earthquake Simulation Laboratory (SEESL) in Ketter Hall, University at Buffalo (UB)

Participants:

Teams from five Universities will be participating:

Florida A&M University

Andrea Jones – Team Captain
Wally Barnawi
Karla Villarreal
Zaneta Adme
Andrea Smith

New Jersey Institute of Technology

Adam J Enea – Team Captain
Brian Felber
Brian Piccirillo
Diana Rodrigues
Erik Vieira
Lauren Dimiceli

The City College of the City University of New York

Tamara Herrera – Team Captain
Nathan Aaron Selles-Alvarez
Hadi Kamyab
Nay Naing
Isaac Smith

State University of New York at Buffalo

Lisa Anderson – Team Captain

Jason Havens

Stacy M. Green

Nathan Marshall

University of Nevada Reno

Bradley Hoy – Team Captain

Michael Taylor

Melissa O'Brien

Kelly Doyle

The competition is being organized by MCEER the Student Leadership Council (SLC)

<http://mceer.buffalo.edu/slc/>.

Competition Description:

Your team has been hired to design and construct a multi-story office building. To verify the design and construction concepts, a scaled model must be constructed from balsa wood and will be tested under severe earthquake simulation. Structures shall be constructed at a scale of 12 ft (floor height in actual building) = 2 in (floor height in model). A unidirectional earthquake shake table, with dimensions of 18 in by 18 in and a capacity of 50 lb, will be used for structure testing. Structures should withstand ground motion simulation from the 1940 El Centro, 1994 Northridge and 1995 Kobe earthquakes.

Seismic performance of the designated structure will be evaluated by monitoring the acceleration and the relative displacement, at the roof level, of the structure during testing. A structure that has minimum acceleration and minimum displacement (at the roof level) will be assessed to have the best seismic performance.

Structures will be tested with scaled earthquake ground motions, for the three seismic events previously mentioned. Ground motions will be available online at the following website: <http://mceer.buffalo.edu/slc/seiscomp.htm>.

Each structure will be scored on the following: seismic performance, economics, construction cost, and workmanship and architecture.

Testing will be carried out on one of the three shake tables in the SEESL.