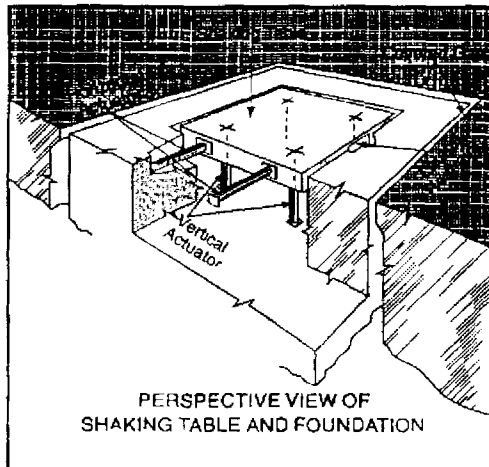


Earthquake Education Series

MAKING A SHAKE TABLE

Do you want to see how the structures you've designed will stand up in an earthquake? One way you can do this is by testing them on a shake table or seismic simulator.

WHAT IS A SHAKE TABLE?



To study the effects of earthquakes on structures, researchers at the National Center for Earthquake Engineering Research (NCEER) mechanically recreate these natural disasters in their laboratory at the State University of New York at Buffalo (UB) using an earthquake simulator or shake table.

The shake table is 12 feet by 12 feet square and made of concrete poured around a steel frame, with a ferrocement exterior (concrete and wire reinforcement). It has five degrees of freedom, meaning it can move in five separate directions. The table can move horizontally and vertically, as well as roll back and forth, rock from side to side, and twist on a central axis. It is among the most versatile shake tables in North America.

A computer system is used to control the motion of the table. The system enables researchers to input any one of more than one thousand earthquake records into the table and simulate vibrations of actual past earthquakes. In addition, researchers can create their own earthquake as well as test anything beyond existing recordings on the Richter scale.

WHAT DO I WANT TO CONSIDER WHEN I DESIGN MY OWN SHAKE TABLE?

- ▼ Cost of table and materials for models
- ▼ Feasibility of construction
- ▼ Ability of the table to take the weight of the different materials
- ▼ Directions of motion - the more the better
- ▼ Scale - the larger the better

WHAT CAN I TEST ON MY SHAKE TABLE?

- ▼ Building models
- ▼ Bridge models
- ▼ Soil-sand-water combinations

WHAT ARE SOME THINGS I CAN LEARN?

- ▼ All structures do not perform the same when subjected to ground shaking
- ▼ Size, shape and materials used in structures make a difference
- ▼ Structures have a natural period of vibration and a certain level of flexibility
- ▼ Contents of a structure are affected not only by table shaking but performance of the structure

WHAT ARE SOME SHAKE TABLES I CAN BUILD?

There are different levels of difficulty in the shake tables you can construct.

1. Shaker Board¹

Materials: marbles, coffee can lid, piece of wood (or wooden platform), box lid (about 1/2" depth)

