The Shake Table Demonstration

NSET Information Kit | 032 | 2009

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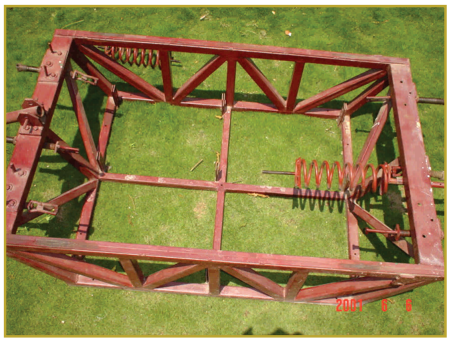
BACKGROUND

The Shake Table Demonstrations that NSET uses is an innovative idea of bringing research equipment out from the laboratories to vulnerable communities, and improve the technology by adapting it to the local situation. This is the technology that demonstrates all the engineering concepts of earthquake-resistant elements of building construction in a simple way, and convinces the audience of the feasibility of earthquake preparedness. The Shake-Table designed by NSET is an award-winning model for technology transfer and to spread awareness on the effectiveness of earthquake-resistant construction. The demonstration model has also won the San Jose Tech Museum Award under Microsoft Education Award Category in 2004.

This low-tech innovation has been highly effective in educating people about the structural shifts in buildings during earthquakes and for raising awareness about safe building construction. The Shake-Table is essentially a building built to a given scale and mounted on a table which is put through certain force to see the effects of similar jolts that buildings go through during an earthquake. NSET demonstrated its first Shake-table in January 1999. It has so far been demonstrated in many countries of the Asia-Pacific region including Afghanistan, India, Indonesia, Iran, Pakistan, and Tajikistan. NSET has also assisted many partner institutions to design their own Shake-Tables to spread awareness on safe building construction. NSET also supported UNCRD in the organization of special sessions on Shake-Table demonstration at the World Conference in Disaster Reduction (WCDR), Kobe, Japan in January 2005.



OBJECTIVES:

- To convince people about earthquake resistant construction
- To demonstrate how risk-reduction techniques in construction can help buildings withstand the forces during an earthquake
- To convince the people on the simplicity of integrating earthquake-resistance elements into the buildings

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THE DEMONSTRATION MODEL

The Shake-table essentially has two identical buildings of the same shape and size scaled to 1:10 of the actual sizes. One of the buildings is built using earthquake resistant techniques and the other is done traditionally – or without taking any special measures. Both the buildings are placed on the same shaking platform (table) and thus exposed to forces similar to that the buildings have to endure during earthquakes. Increased load is applied to the table through which the force is transferred to the scaled models, and the weaker one made without earthquake-resistant elements progressively collapses. The tables are used to demonstrate how risk-reduction techniques in construction can help buildings withstand the forces during an earthquake and convince them of the simplicity of integrating earthquake-resistance into the buildings. NSET has conducted more than 25 such demonstrations in Nepal. An A3 size (300 x 420mm) shake-table has also been developed for use with small-scale models for demonstrations at schools.

PROGRAM OUTPUT:

The shake table has always been a big crowd-puller.

It could be used effectively to impart earthquake education to a wide cross section of the population, even to the illiterate masses. This is the technology that demonstrates all the engineering concepts of earthquake-resistant elements of building construction in a simple way, and convinces the audience of the feasibility of earthquake preparedness and provides solutions to the problems of earthquake safety.

The technology is worthy of recognition not only because it is a successful adaptation of a sophisticated research equipment for the use by common people, but also because of its simplicity in construction, its flexibility of use even in remote areas, its acceptability in all region with diverse cultural, linguistic, and building construction traditions.

Implementing Partners:

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