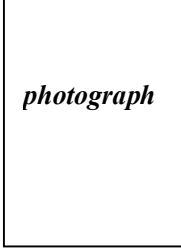


Impulse Table Test of an Adobe Model House



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ABSTRACT (begin on line 15)

An impulse table supported on rubber pads was constructed at the Earthquake Research Department of General Directorate Disaster Affairs in 1985. The table is composed of a steel and reinforced concrete platform of 5.00 x 6.00 meters. An initial displacement is given to the table by a vertical hydraulic jack, which pushes the table sideways. After a predetermined displacement is given the table is released to vibrate freely. This creates inertial forces in the model building on the table somewhat similar to inertial forces of earthquakes. The table can be given initial displacements between 25 to 65 millimeters. Maximum Accelerations in the range of 0.25 to 2.0 g (cm/sn²) can be applied to the model on the table by varying the initial displacement. The maximum acceleration is also depends on the weight of the model building. The motion of the table and the model house is measured by accelerometers. The main purpose of the table is the testing of rural houses made of various types of wall materials and to compare their relative behavior on the testing table.

Since the construction of the table numerous clay brick, lightweight aerated concrete block, rubble stone masonry buildings of mud and cement-sand mortar and prefabricated lightweight panel buildings of single story were tested on the table. Impulse table testing of the house made from adobe blocks were done in 1989. The blocks were cast in early summer, the house were built in early fall and the house were tested one month after construction.

The comparison of the adobe test house with an earth roof rubble stone masonry test houses indicated that adobe house behaves much better. Both adobe and rubble stone masonry walls had mud mortar. Adobe house developed smaller permanent displacements under similar impulse table initial displacements. While the adobe model house suffered large permanent displacements without collapse the rubble stone masonry test houses actually collapsed under the same initial table displacements. The test results supported the argument that adobe masonry building performance in earthquakes is better than rubble stone masonry rural houses.

Keywords: Impulse Shaking Table, Dynamic testing, Adobe Buildings, Rural Housing