



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.)

Edgar W. Kintzele IV

Science Fair Use Only

J0115

Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)

Resist the Force

Division

X Junior (6-8) _ Senior (9-12)

Preferred Category (See page 5 for descriptions.)

1 - Applied Mechanics/ Structures & Mechanisms/ Manufacturing

Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.)

Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

The purpose of this project was to determine what types of building materials and construction would best withstand the magnitude of an earthquake. The experiment involved building rectangular structures of sugar cubes utilizing different combinations of mortars, foundations, ties, and shear walls. Every structure was built differently, using different materials, or excluding them all together. Each structures foundation was attached to the center of a large flexible piece of wood. The wood is raised above the ground by bricks. Then various weights were dropped on the board to simulate the magnitude of an earthquake. The weights are at every pound and half pound so we don't drastically change the weight each time. The results of this experiment confirmed my hypothesis that a structure with ties, flexible mortar, flexible sheer wall, and a circular foundation would work the best. I discovered that materials with more pliancy and adhesive properties are better suited to hold a structure together during an earthquake. If a material is flexible then it can bend back and forth without cracking, splitting, or dissolving. Also, a raised, circular, flexible, one piece foundation absorbs and distributes the shock, rather than taking the full affect. This way the house survives longer under the extreme magnitudes of an earthquake.

Summary Statement (In one sentence, state what your project is about.)

Simulating earthquakes on structures with different support materials in order to determine which support material is the most resistant.

Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.

Dad helped conduct experiment