



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) R. Terik Daly	Project Number J1804
Project Title Shake, Rattle, and Roll: In Other Words: The Effect of Shape on a Building's Structural Integrity in an Earthquake	
Abstract Objectives/Goals The purpose of this experiment is to find out which type of building does better in an earthquake: a cylinder-based dome or a cubic building. I hypothesize that building type will affect how a building performs in an earthquake. I believe that the dome building will do better than the cubic one. Methods/Materials My experiment tested the performance of two types of buildings in two different earthquakes. The first is the 1994 Northridge, California quake. The other quake I tested is the 2001 Gujarat, India quake. Each building type underwent the quakes eight times. I based my results on the time to collapse of a building and its score on the Performance Scale, which is a modification of the Modified Mercalli Scale. I used a shake table that simulates earthquake waves in two dimensions to perform my experiment. For my building material, I used sugar cubes to mimic brick and cinderblock construction. Results My data indicates that shape has a small effect on a building's performance in an earthquake. The cubic building performed the best. Conclusions/Discussion My hypothesis was incorrect. Research shows this is because of the difference in weight distribution in each building. My testing shows that the main difference in building performance is the symmetry of that building. This project has given me a better understanding of the laws that govern architecture, one of the career fields I am interested in pursuing.	
Summary Statement How different building types act under different types of strain.	
Help Received Tech Museum of Innovation provided shake table facilities; Mother and sister helped build buildings; Father helped with videography; neighbor helped with model design and construction	