



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Stephen T. Michal	Project Number S0222
Project Title Reducing the Effects of Geoseismic Instability	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment was to test the efficiency of earthquake resistant foundations. The hypothesis was that the base isolators would reduce the damage to the building, which was measured by the flex and movement of the building, and the rolling foundation would perform better than the dampened fluid foundation.</p> <p>Methods/Materials A building and the three test foundations were constructed. The slab-on-grade consisted of a direct attachment to the test table. The rolling-type base-isolation foundation consisted of four marbles, each in a box constructed of foam rubber boundaries. The simulated rubber base-isolation foundation was made up of five footings, each with four water-filled balloons. I connected the building to a table, which was subjected to repeated oscillations. The lesser degree of flex observed, the less damage the building took.</p> <p>Results Results of the test process demonstrated that the rolling-type base-isolation foundation reduces the flex and movement the most. While not as dramatic, the simulated rubber base-isolation still reduced flex and movement better than the slab-on-grade foundation.</p> <p>Conclusions/Discussion The type of building foundation can significantly reduce the integral damage of the building in the event of geoseismic activity. The base-isolated foundation satisfies this objective by absorbing, instead of transferring, most of the earth's movement and energy.</p>	
Summary Statement The purpose of this experiment is to determine whether two commonly used seismic base-isolation foundations decrease the integral damage exerted on a building by an earthquake in comparison to the slab-on-grade technique.	
Help Received Father helped with construction of building and earthquake generator. Parents provided extra hands needed during execution of experiment by starting and stopping equipment.	