



CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

Name(s) Katherine D. Arriola; Danielle Lopez	Project Number 36105
Project Title Preventing Earthquake Destruction	
Objectives/Goals Our project is to determine the best bracing types for buildings in earthquakes and to find the best terrains to make the building on. We show the best architecture bracing design of the buildings and the sturdiest terrains in California. To prevent great destruction, we must take into consideration the best types of bracing and landscape to settle in. The question we set out to answer is what are the best building bracing that can last longer in case of a natural disaster such as an earthquake? And what are the best terrains to establish a building on? Abstract Our project is to determine the best bracing types for buildings in earthquakes and to find the best terrains to make the building on. We show the best architecture bracing design of the buildings and the sturdiest terrains in California. To prevent great destruction, we must take into consideration the best types of bracing and landscape to settle in. The question we set out to answer is what are the best building bracing that can last longer in case of a natural disaster such as an earthquake? And what are the best terrains to establish a building on? Methods/Materials We used four bracing types in which buildings could be made with. We also had three terrains. Next we made the models by using 14 grams of modeling dough and three wood pieces. After we had all of our structures built we built an earthquake simulator. We used nails and rubber bands to make handles for our simulator and we put a foam board at the bottom of the box for extra support. The third step was putting all the structures to the test. We placed each structure in the simulator and recorded the amount of seconds each building lasted. We discovered our strongest building structure was x bracing. Next, we built four buildings each with the cross bracing. After we had the structures and terrains we then put them on the earthquake simulator and tested the strength of the three terrains. We used 620 grams of sand, 680 grams of gravel, and 420 grams of dirt. Finally, we recorded the seconds that each building survived among the different terrains. Results The cross bracing made the building last 15.5 seconds and the gravel lasted 17.9 seconds. The best bracing is the cross bracing. Also the sturdiest terrain was the gravel. Compared to our hypothesis, our results were accepted and proven to be correct. The question that we posed during our experiment was answered when the gravel and cross braced were the strongest. Conclusions/Discussion We conclude that we can't prevent earthquakes but we can prevent the destruction caused by buildings by wisely choosing a location to construct buildings and choosing the correct bracing. Our findings have led us to believe that by using cross bracing the buildings will have support from every angle along with a strong foundation made by gravel.	
Summary Statement We tested different bracing and terrains to provide support for a building during an earthquake and we found out that gravel along with cross bracing are the best choice.	
Help Received None. We designed, built, and performed the experiments ourselves.	