



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Kalen Kasraie; Conley Schroepfer	Project Number S0312
Project Title Alternative Construction	
Abstract Objectives/Goals Our objective was to determine which green building materials perform the best compared to standard-fiberglass insulation materials when exposed to extreme hot and cold temperatures. We tested Adobe Brick, Cordwood, Earthships, Rammed Earth, Straw Bale, and Fiberglass Insulation. Methods/Materials We built a test box and formed walls made out of adobe brick, cordwood, earthships, rammed earth, straw bale, and fiberglass. During a predetermined time period, we exposed one side of each wall propped up inside the box to extreme hot and cold temperatures and measured the changes in temperature on the opposite side of the wall within the test box. We recorded the temperatures on both sides of the test walls. Results Based on our test results, cordwood performed the best and straw bale performed the worst compared to standard-fiberglass insulation materials. Conclusions/Discussion Our hypothesis was incorrect, because we suggested adobe brick would withstand the elements the best, but cordwood did the best overall. We discovered that in order to build a substantial building out of any of these alternative materials, extensive time and labor are required, as well as various different materials. Further testing on these sample walls may include susceptibility to seismic activity, water damage, and high winds simulating a tornado. A comparison of the weight and cost of using such alternative building materials would also be extremely valuable information for future alternative builders.	
Summary Statement We tested which green building material insulates the best compared to the current industry standard-fiberglass insulation when exposed to extreme hot and cold temperatures.	
Help Received My brother, Casey Schroepfer, helped us build the test box.	