CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J1819

Project Title
Determining What Different Shapes of Buildings Will Minimize Damage from a Tsunami Wave

Abstract

Objectives/Goals
The purpose of my project is to see what shape of building will stand up better to a tsunami wave. What shapes of buildings along the coastline would minimize damage if a tsunami were to hit that particular beach. Making the buildings safer could save lives. The shapes of buildings I am using are square, triangle and circle.

Methods/Materials
I am conducting my testing by first building a test ocean that will create my tsunami. The size of the test ocean will be twenty-four inches wide by eight feet long by twenty-four inches deep. The reservoir will be twenty-four inches wide by twenty-four inches long by twenty-four inches deep. That will hold all the water for the tsunami. The sand beach will be five feet long by two feet wide. I will use three pieces of clay to be the foundations of my structures.
I will use candles for heavy buildings. The shape of the buildings are triangle, circle, and square. To make the buildings lighter I will use wood that is the same shape as the candle buildings. Then I will test how the buildings stand. To make the tsunami there will be a resevoir. The water will be surrounded by four walls. The water will be released to form a wave that rushes towards the beach and hits the buildings. The I will measure the lean of the buildings with a leveled protractor.
10 trials for each building material.

Results
The wood buildings. The Circle stood the best (had the least amount of lean) Next was square and finally the triangle had most damage (or lean)
Candle Buildings. (Candle stood the best. Then Square, and finally circle)
Opposite reults for weight of the buildings.

Conclusions/Discussion
With the light buildings it seemed that the shape had an effect. The water went around the buildings. (as you would expect it to) WIth the heavier buildings. The shape seemd to have less of an effect. When the wave hit the building it caused more of a collision and damage to the building.
In real life I feel the buildings are anchored in tightly and heavy enough that the shape would not matter a whole lot.

Summary Statement
I wanted to see if the shape of a building will minimize the damage from a tsunami wave.

Help Received
Teacher with paperwork, stepdad with help in construction and supervised experiments.