

Bro Dec 1

Problem

So today I was searching up some project ideas and found a video for structural stability of a building during earthquakes. I found this really important because people all around the world have or are dying cause of earthquakes and I wanted to make two buildings one with a rectangular infrastructure and one with a triangular infrastructure.

Another problem I could think of is soil liquefaction during an earthquake which means how the material of the ground with water or air content making the soil liquify thus causing the building to sink.

I will try to find ways to perform this experiment at home.

24 Pic

Background Research

Structural stability:

Triangles are the strongest shape in geometry, because when a force like an earthquake pushes the building in one direction, the building exerts the force by one of the four triangular sides of the building (like a pyramid). But for the rectangle building, the force of the earthquake makes the building fall.

Soil Liquefaction:

In soil liquefaction, an earthquake \rightarrow the large water content under the ~~at~~ surface rise and loosens the soil causing the building to sink.

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Hypothesis Structural stability:

Based on my background research I think that if we have a triangular shaped building then it should be able to withstand an earthquake better than a rectangular shaped building. because we know that triangles are the strongest shape in geometry and the force will be easily exerted out of the building.

Soil liquefaction:

I think that if we use a hard surface/material like gravel with less water content then the building should have the least amount of chance to sink during an earthquake. On the other hand if we have a softer surface (soil) with a higher water content then I think that there is a high chance for the building to be sunk by the earthquake because of soil liquefaction.

20 Feb

Idea

Structural Stability:

So my idea is to test ~~small~~ buildings (small based rectangular and triangular buildings). I will be using paper straws to test the buildings on shaker table. The shaker table is going to be made by putting a couple balls in the middle and rubber bands around it.

Soil Liquefaction:

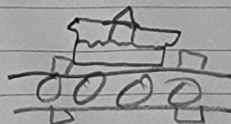
I will use 3 materials / soil compositions, sand, gravel and soil. I will use a box, model house and some other items to do this.

And I will conduct this experiment on the shaker table.

I will be simulating an earthquake using the shaker table and will be performing both the experiments with the same shaker table.



Structural
stability



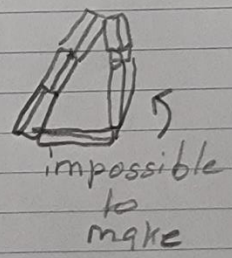
Soil
Liquefaction

27 Dec

Preperation (structural stability)

So today I (with some help) ^{tried} ~~built~~ building the 4 buildings (small based rectangular building, big based rectangular building, small based triangular building and the big based triangular building) with paper straws. After I started building my buildings I realized that the buildings weren't sturdy enough and the small based triangular building was nearly impossible to make, so I had to scrap that idea.

∞ straw rod configuration



Now that I scrapped the paper straw and small based triangular building idea, I need a new material to make sure the straws don't bend and get ruined.