

Christopher Van Lieu

What Shapes of Houses with Different Foundations Stand Up Best Against Hurricane Conditions?

My project is about what type of structures with different foundations will stand up best against hurricane conditions. I have built four 1 foot cubed structures with no roofs or floors in order to test this and four of four different types of foundations, each one with the same area and shape as their structure opposites. Each structure was either a triangular, cubic, pentagonal, or hexagonal prism. Like I said before, each structure has four foundation duplicates that where $\frac{1}{32}$ of the structure in height (1ft). To test, I sank the structure two inches into topsoil in a 2.25 ft. by 1.416 ft. (repeated) tub with the topsoil in the structure only up to the bottom of the structure but covering the foundation. I tested each structure with each shape of foundation. For each test I blew 195 MPH winds on the front of the structure from a leaf blower that was totally square with the ground and front of the structure. Then, I retested with water being blown out the front of the leaf blower but I was unable to continue after four tests due to destruction of the structures when they underwent water and wind tests. I measured degrees of tilt at each angle, movement backwards, and sink after each test. Then, from there I computed what was best. My project determined that a hexagonal structure and the triangle foundation where the best in standing up to hurricane conditions, which was almost totally identical to my hypothesis.