

Christopher Van Lieu
Blown Away

My project is about what type of structures with different shaped roofs will stand up best against hurricane conditions. I built four 1 cubic foot structures with no floors or windows in order to test the effects of hurricane force winds. Each structure had either a triangular, cubic, pentagonal, or hexagonal structure. I also made eight different shapes of roofs, four flat versions shaped to match each structural plan shape, and four hip roof styles, again to match each structural plan shape counterpart. I tested each structure with each shape of roof. To test, I sunk the structure and roof combination into a topsoil foundation in a plastic tub. For each test I directed dry, 195 MPH winds on the front of the structure from a leaf blower that was totally square with the ground and the front of the structure for two minute intervals. Then I retested with water being blown out the front of the leaf blower, but I was unable to continue after eight tests, due to destruction of the structures by the combined water and wind blown tests. I measured degrees of structural tilt, movement backwards, and vertical sink after each test. Then from there I computed structural position and orientation changes as percentages and averages. My project determined that a pentagonal structure and the pentagonal hip roof where the best overall combination in standing up to hurricane conditions, which was close to my hypothesis.