Permanent Housing In the Central Highlands of Guatemala
Ellie Patten (CE), Julia Ormerod (BME), Nick Hudgins (RBE), Will Morton (ME)
Dr. Soroush Farzin, Dr. Courtney Kurlanska

Abstract
This project is a design of permanent housing for the Quiché people in the central highlands of Guatemala. This area is faced with occasional earthquakes, high winds, and rain which are caused by the hurricanes that hit the coast of Guatemala.

Background
- Most Quiche families live in a family unit of four.
- They usually live in two room houses that develop as the family grows in status. They also usually have a corredor which is a porch/separate section where people cook.
- Running water and adequate sanitary facilities are lacking in most homes.
- The central highlands aren’t directly hit by hurricanes but instead tropical storms. Creating an extreme rainy season.

Design Concept
- A two foot overhang surrounds the house preventing water from running down the walls of the house.
- The roof is made of thatched leaves.
- The walls are lined with 2” of bamboo then ½” of plywood and then, on the outside, a waterproofing membrane to prevent leakage.
- Cement floors cover the whole inside of the house to increase sanitation.
- A porch extends out above the front door to create an outside living area.
- The Design allows families to expand and connect houses as they please.

Case Study
- The Round structure of the house comes from the research done by Deltec Homes.
- Deltec Homes is a company that designs round homes which withstand some of the worst US hurricanes in Florida.
- Their housing design was our starting point for hurricane resistant housing.

Wind Testing
- The 300 square foot house is facing south to reduce glare and direct sunlight into the house, in the morning and night.
- The water collection system supplies the pila, a cultural item seen to the left, that is used for collecting water, washing clothing, bathing, and washing dishes.
- A pila is basically a concrete basin with a scrub board attached. It is made of 4” concrete block with plaster and skim coat to prevent the water from seeping out.

References