Abstract
In the developing countries of Haiti and Vietnam, thousands of families and individuals have faced the loss of their homes and lives due to natural disaster. However, this loss of life and property was not due solely to the natural event itself but also to the general lack of preparation or general lack of preparation and response to the threat. In the aftermath of a disaster many in these countries were, and are, left without homes. The mission of this project is to design the optimal type of housing so that families living within Haiti and Vietnam will, in the event of disaster, have a home to return to. These designs will be in the form of detailed computer drawings and details on specific recommended building materials. The homes are to be built with material either hurricane resistant orTyphoon resistant; or to remain during severe storms, while remaining affordable and simple enough that the method of construction can be taught to those who are to live in the homes. In designing these homes the cultural and traditional requirements of the Vietnamese and Haitian populations were taken into account. The materials used for construction of the homes were chosen carefully from those that could be sourced locally, thus making the home designs both sustainable and beneficial to the local economy. In the design of these homes the group hopes to incorporate sustainable design, cultural traditions, and modern safety principles, in order to produce architectural designs and recommendations which humanitarian relief organizations, such as Consensus International, can use to build structures which can truly embody the safety and comfort of a home.

Goals and Objectives
To provide a safe, sustainable housing design for third world countries affected by hurricanes, flooding, and earthquakes.

To present said homes in a cost effective and sustainable manner to limit the need for outside economic or industrial assistance.

To develop and easy to build system that the local population understand and implement without any advanced training or instruction.

Background
Meet Sahsen and Chrislove and their best friend Maria. Sahsen and Chrislove (back two children) are brother and sister, shown here at ages 10 and 6. Two years ago a horrible earthquake struck their area. These two children were spared because they were at school playing outside as their school was leveled by the quake. But their joy ended there. They had no home and their entire family was killed in the collapse of their home. To those children a home meant security, safety and family. Now they are without one. Firstly, we realized that what relief organizations are doing now in the towns is just not enough. You could throw up a temporary house for these children in a matter of days, or even hours, but that isn’t what they need. These children need safe homes. Our goal is to build homes for people who need them most but can afford them. We wanted to design homes that would be able to withstand earthquakes and other common natural disasters so that the families in those areas would have a safe place. Sahsen and Chrislove are just an example of the people out there that need our help. There are many more places and people that would benefit from our housing design and our goal is to make it cheap enough and basic enough so that they can do just that.

Vietnam
- A geodesic dome composed of a bamboo frame affixed together by nail.
- Set on a hollow wooden platform with sloped edges, held in position by four wooden pylons.
- The platform will rise and fall with flood waters with a metal coupling between the wooden platform and the pilings to reduce friction.
- The entire structure will sit on a concrete or other solid foundation.
- For both home designs bamboo shingles will be used for roof, fencing and siding.
- Bamboo shingles will be used as the roof of both structures.
- To make bamboo shingles, one end of a bamboo stalk is fashioned into a lens shape, while on the other side a tongue is split away from the bark layer, to be later fastened to the roof skeleton.

Haiti
- In Haiti, the house will also be comprised of a bamboo roof in the shape of a pyramid, with walls composed of a rebar and chicken wire frame filled with scrap of debris and covered with concrete, all set on a simple concrete foundation. Due to Vesuvius tradition, houses cannot be circular. Therefore, the house will be constructed in a shape similar to the combination of a rectangular prism and a rectangular pyramid.
- The pyramidal roof will prevent roof collapse during a seismic event and during shaking the debris filling the walls will settle, making the structure bottom heavy, and thus less likely to collapse on its inhabitants.

References

Acknowledgments
This project was advised by Professor Edward Swierz of the Civil Engineering Department: with help from Kate Meneghetti, no Poor Learning Assistant. We would like to thank our references: Ithaca College's Kevin Baker. We would like to acknowledge Professors Srivallan Nittmins and Miran Aguiam for their valuable instruction and feedback over the course of the Grand Challenge Seminar.