

## Senior Design Project Data Sheet

Project #	Project Name	Project Track	Project Family
P18416	Simple Efficient Arborloo Technologies		Global Sustainable Technologies
Start Term	Team Guide	Project Sponsor	Doc. Revision
Fall 2017	Sarah Brownell	Sarah Brownell, MSD	1

### Project Description

#### **Project Background:**

The rural areas of Haiti suffer from a severe lack of proper sanitation facilities. The current practice of open defecation is dangerous to the local water supply, and can easily lead to disease outbreaks and unnecessary deaths. Moveable pit Arborloo's are a solution to this problem. Past senior design projects have developed and optimized a design suitable for use in rural Haiti. The Nicaraguan lightweight roof tile team uses a similar concrete mixture to the Haitian Arborloo. This year's project will continue the progress made by previous teams.

#### **Problem Statement:**

The primary objective of this project is to develop a complete manufacturing system designed to produce Arborloo bases in Haitian towns, with completed bases being transported to local area farms. Additionally, it is desired to implement the manufacturing process in such a way as to develop a profitable business for the local Haitian townspeople.

#### **Objectives/Scope:**

1. Practical Arborloo base
2. Efficient manufacturing process
3. Profitable business model

#### **Deliverables:**

- Completed prototype manufacturing system
- Documented concrete data
- Documented manufacturing process
- Ellen Cretekos
- Joas Hanzlik
- Nick Rappa
- Marc McKann
- Eric Giang

#### **Expected Project Benefits:**

- Improved health and sanitation for rural Haiti
- Basis for profitable business
- Future focus for areas of improvement

#### **Core Team Members:**

- Cody Armes
- Dylan Bruening
- Sam Dickenson
- Matt LoRe
- Ryan Waters
- Tim Williams

### Strategy & Approach

#### **Assumptions & Constraints:**

1. Base must support persons weight, FOS $\geq$ 2
2. Process completed primarily in Haiti
3. Project budget of \$500
4. Ring design can't be modified

#### **Issues & Risks:**

Project Issues/Risks/Constraints

- Resource Risks
  - Lab access time
  - Obtaining materials
  - Lead times
- Technical Risks
  - Mold design failing
  - Bottle stringer mechanism
- Environmental/Societal Risks
  - Biochar production harming environment
- Safety Risks
  - Transporting rings
  - Manufacturing process dangers