Ebola Crisis: Primary Care Center Sierra Leone

Team Members: Ryan Shirk , Parke Martin, Zachary Karasek

Introduction

West Africa is currently battling a rapid spreading disease called EBOLA. This project proposes a design plan for Primary Medical Clinics in the area. These clinics must be designed for 50 locations throughout the country. All patients will be screened for EBOLA in a triage tent outside the facility and then either directed to our facility or to a nearby emergency EBOLA treatment center.

Water Usage

Clean Water:
-clean water provided by Engineers without Borders

Hot Water:
- system of water barrels that are either painted or colored black.
- placed on the side of the building that receive the most amount of sun(depending on where the building is located)
- This will draw heat in from the sun throughout the day and with the help of a small water pump will allow for hot water access through the day.

Assumptions

- 3kW of energy from solar panels
- Seismic and wind loads are minimal
- All materials need to be handled by hand
- Site locations and improvements will be determined by others
- Concrete is available
- Mud-brick construction
- Limited stone and ceramic
- Minimal steel products(e.g. nails)
- Wood available

Electrical Usage

Because we were only given a 3kW photovoltaic system, we needed to minimize electrical use.

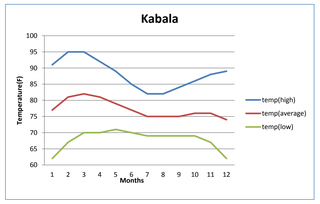
- 220V 50Hz Water Pump
- Small Fridge
- 5 100W light bulbs
- 5 Outlets (Laptop/Phone Charger, Fan, etc).

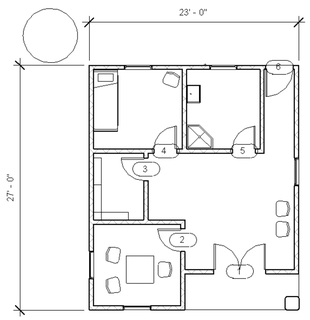
Sierra Leone

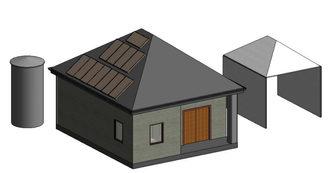
Population: 5.743 Million
: Urban Pop. 39.2%

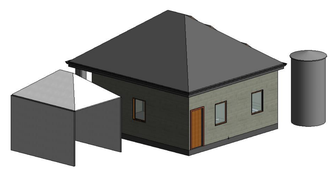
Climate: tropical, hot, humid,
: summer rainy season(may to December)
: winter dry season (December to April)

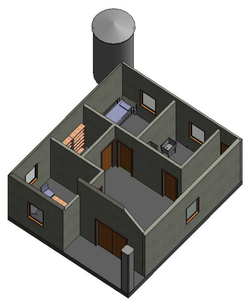
Topography: coastal belt of mangrove swamps
: wooded hill country
: upland plateau
: mountains in the east
- high point: 1948m
- low point : 0m

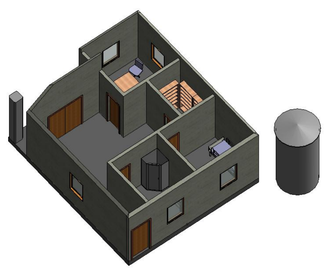


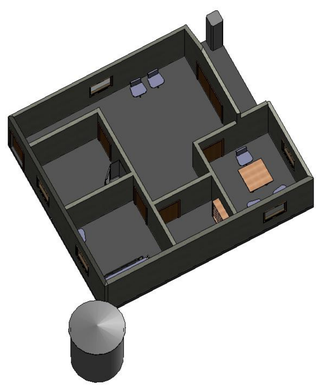












Design

- Structure built using available materials (assumptions)
- Soffits all the way around to increase shade
- Furnished with basic furniture that can be found in the region
- Double-hung windows for easy opening (air flow)
- Small shower and wash basin for sterilization
- Hazardous waste sent out drain in sterilization room into incinerator
- Roof vented at soffit and peak for air flow
- Mud-brick made on site to avoid breaking
- Thatching applied to roof to decrease sun absorption

.