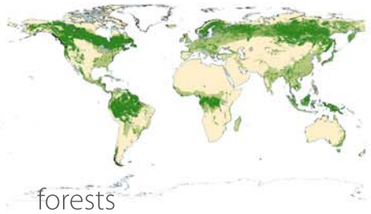
Concept Page

Studycase

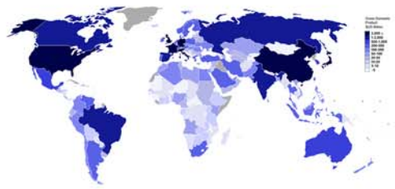
Poverty overview

poorest country

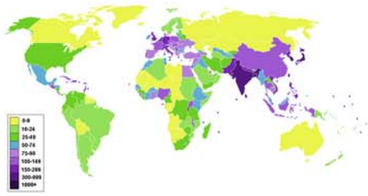
Resources



forests

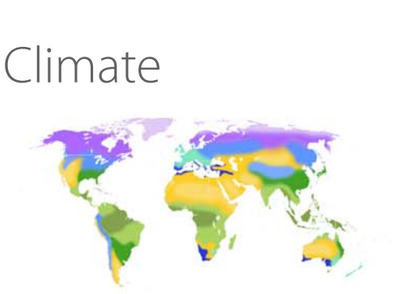


GDP (Gross Domestic Product)

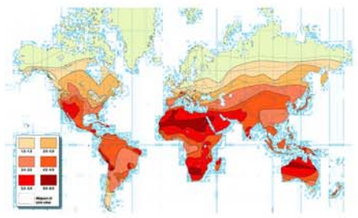


population density

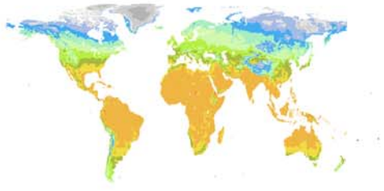
Climate



climate



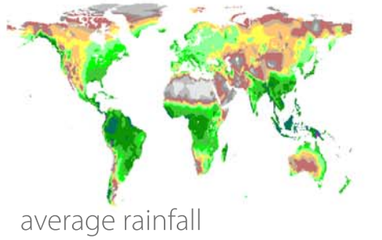
solar radiation



average temperature

Others

literacy rate



average rainfall

major flight route

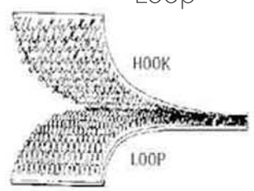
Poorest areas in the world are marked with low GDP. The area have mostly savanna Climate, relative high temperature, and low average rainfall. These areas have lack access to water and therefore lack access to transportation route. Low resource for building material. make it more difficult to create an decent building.

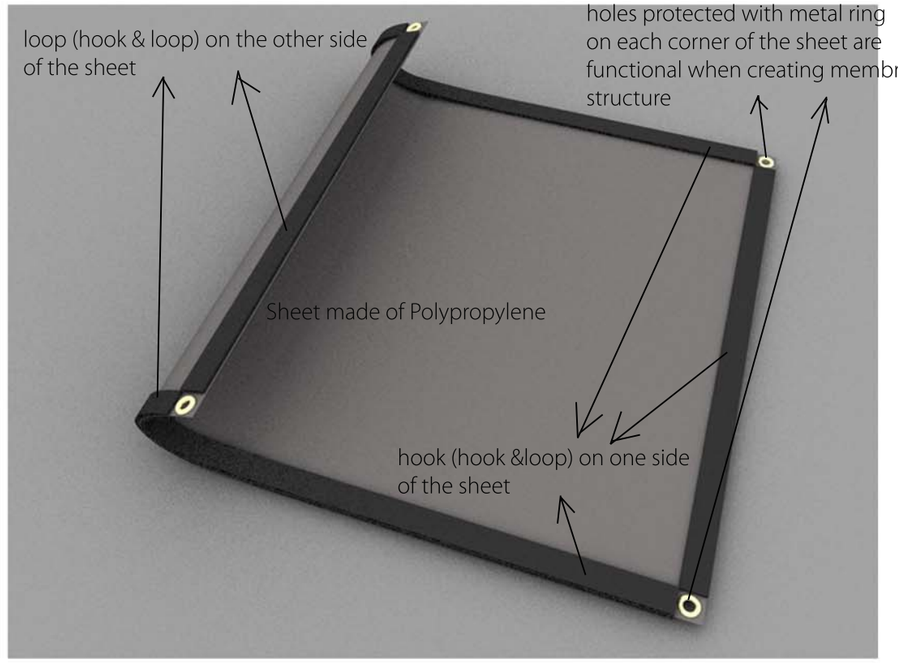
Sandbag Architecture had been used in the war, because it's easy to transport and assembly. For years, it has been developed and used as architecture by several architects such as: Nader Khalili, Akio Inoue and Kelly Hart. The idea of modifying the bag to be flexible and inter changeable into earthbag - membrane, would create a playful architecture, where we can play with shape, colour and combination of the earthbag - membrane, which could create unendless combination and characteristic of architecture

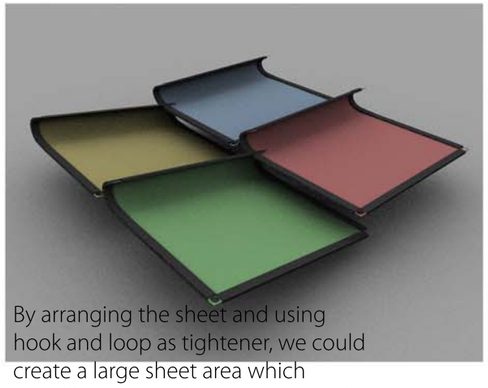
Concept: Flexible Polypropylene Sheet

Polypropylene bags

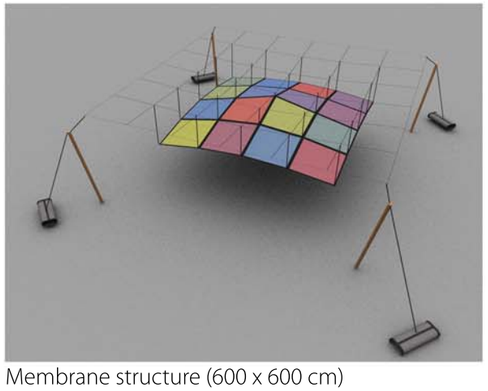
Hook and Loop



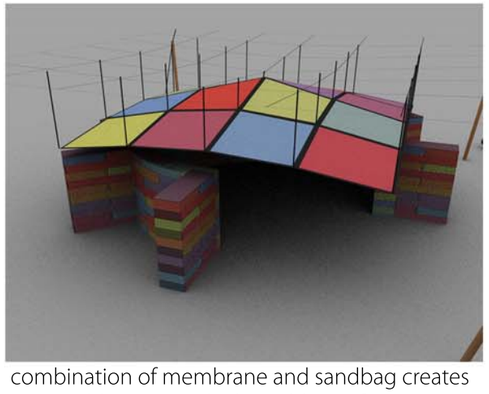




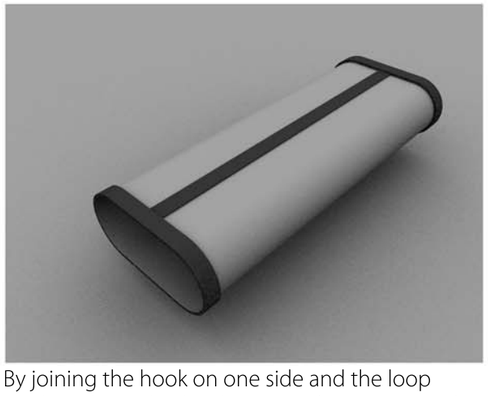
By arranging the sheet and using hook and loop as tightener, we could create a large sheet area which could be used and treated as membrane (suspended) structure.



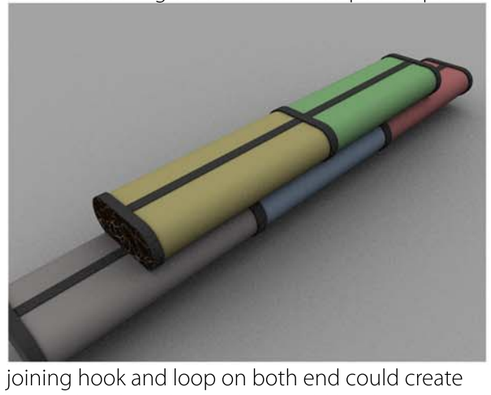
Membrane structure (600 x 600 cm) with rope, wooden posts and sandbags, creates a roofing that characterized public space



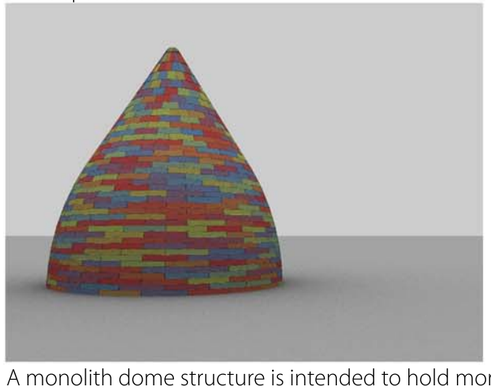
combination of membrane and sandbag creates semi public space, which could transform into wide span structure.



By joining the hook on one side and the loop on the other side, the sheet transforms into a tube which could be filled with moistened soil and treated as sandbag architecture.



joining hook and loop on both end could create long tube. These long tubes could be then stacked on top of each other and create dome structure.



A monolith dome structure is intended to hold more private function such as: toilets, small clinic, library, classroom workshop, etc.

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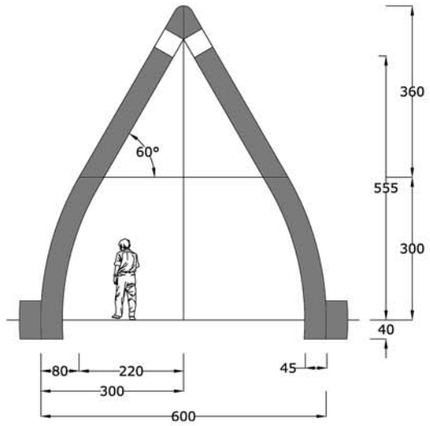
05dbfff5-7bd9-4b5d-9c25-6e52f46af86e

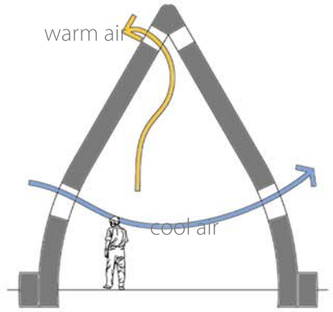
Central Africa/Malawi/Rep. Democratic Congo/Somalia/Comoros/Burundi/Afghanistan (Info Poverty)

Construction Logic



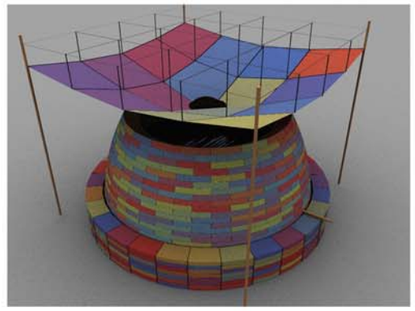
Sustainable Strategies

Cross Ventilation system



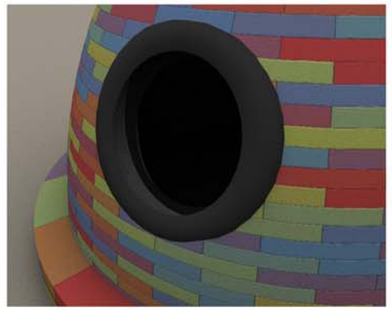
In Savanna climate, Cross ventilation concept is significant.
Openings will be created to alow air movement and create cross ventilation. Warm air goes up and out through small outlet on top of the dome.

Rainwater Tank (Harvesting)



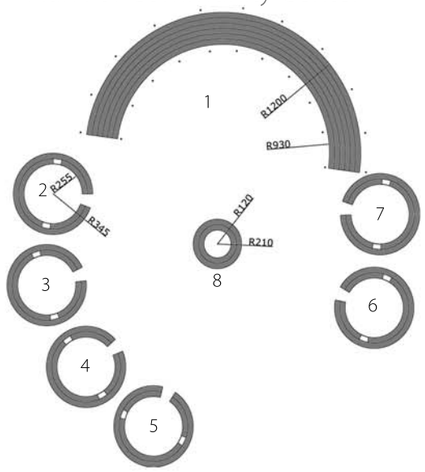
In an area where water is critical, a rainwater tank is possible to be created with polypropylene sheet filled with moistened soil. The size is dependable. Since Polypropylene is waterproof and sandbag has been used as flood control, we can create emergency rainwater harvester using polypropylene sheet.

Re - using Abandoned Material



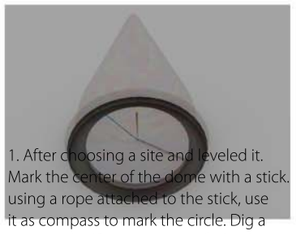
Window frame or other air inlet/outlet could be used from reusable material such as: abandoned tire, papertube, pipe, barrel, etc.

Plan For Community Center



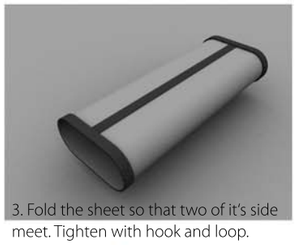
1. Meeting Point /Performance Area /Sitting Area
2. Storage
3. Classroom
4. Library
5. Kitchen
6. Small Clinic
7. Workshop
8. Rainwater Tank

Building Procedure Dome

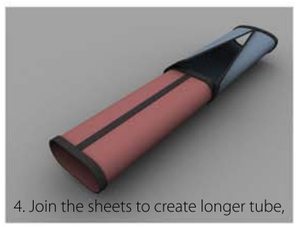


1. After choosing a site and leveled it. Mark the center of the dome with a stick. using a rope attached to the stick, use it as compass to mark the circle. Dig a trench min 40 cm deep and fill it with gravel.

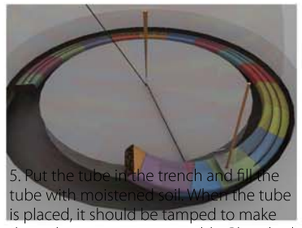
2. Prepare the sheet



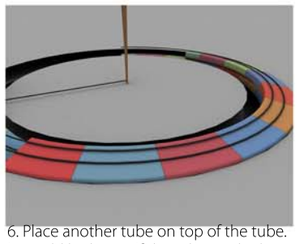
3. Fold the sheet so that two of it's side meet. Tighten with hook and loop.



4. Join the sheets to create longer tube,

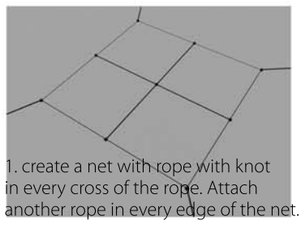


5. Put the tube in the trench and fill the tube with moistened soil. When the tube is placed, it should be tamped to make the soil as compact as possible. Place barb wire on top of the tube to create monolith structure.



6. Place another tube on top of the tube. it would be better if the tube stacked like bricks

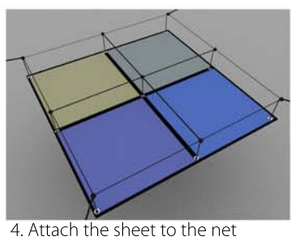
Membrane



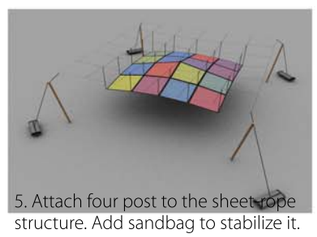
1. create a net with rope with knot in every cross of the rope. Attach another rope in every edge of the net.

2. Prepare the sheets

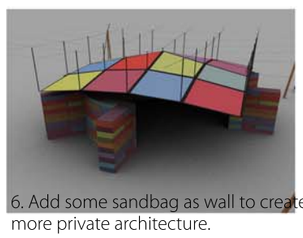
3. Add rope in every holes of the sheets. Tie small rocks, or twig to hold the sheet and prevent them from faliing down



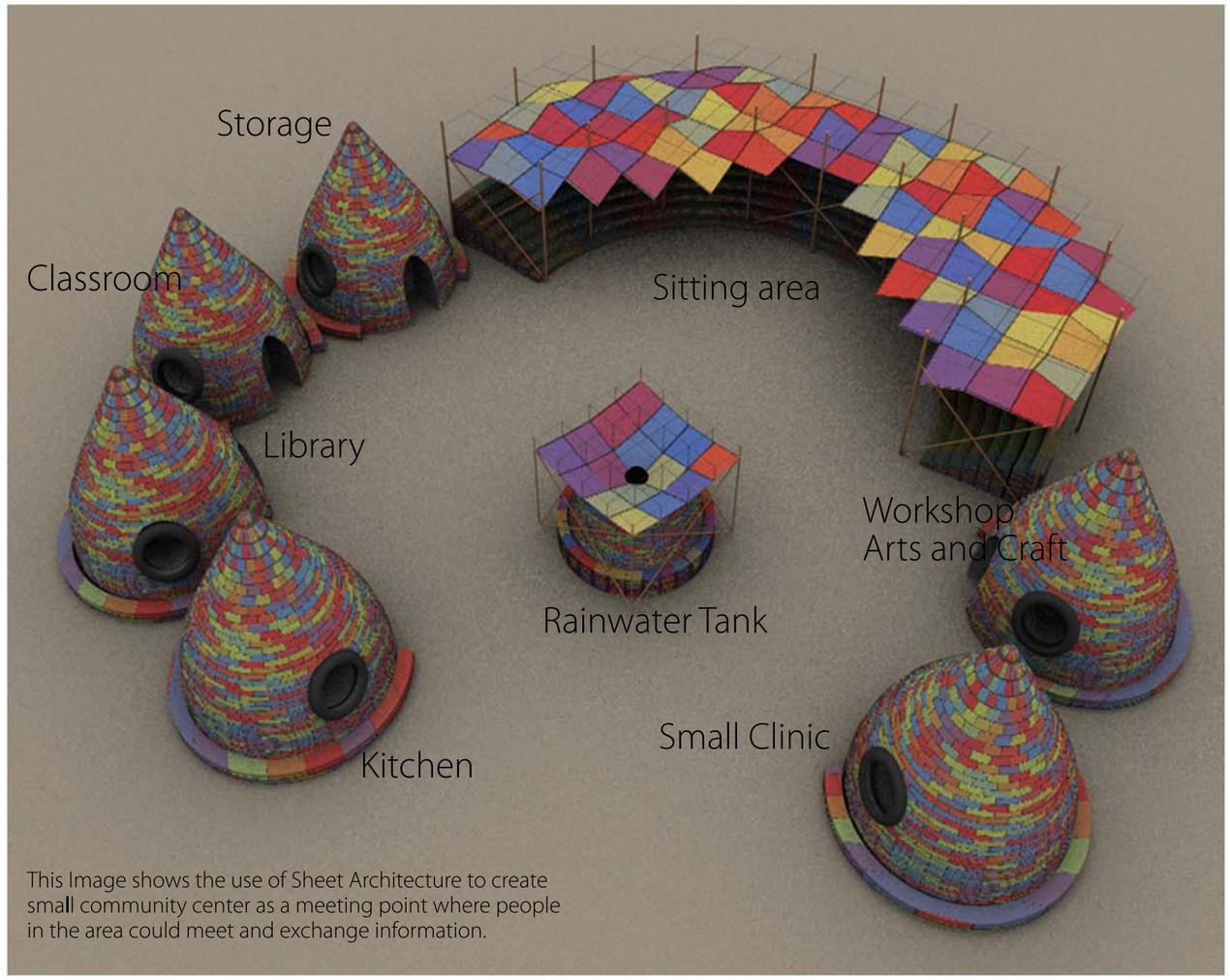
4. Attach the sheet to the net



5. Attach four post to the sheet-rope structure. Add sandbag to stabilize it.



6. Add some sandbag as wall to create more private architecture.



This Image shows the use of Sheet Architecture to create small community center as a meeting point where people in the area could meet and exchange information.

The Idea

The main idea of this project is to create an architectural tool that can be used to shelter several functions in a difficult area. The tool should be able to create architectural object that could host variety of functions and activities. Therefore, the size should be able to be adjusted depending on the needs (from small to extra large). Furthermore it also has to be flexible, easy to transport, easy to build and sustainable.

Architecture act, most of the time, as container of activities, it shows its value when it interacts and used by human and becomes tools of communication. When it's used by people, it communicates its content to the surrounding by its existence.

Community Center for the poor is the most ideal solution to create meeting point for the people to gather and exchange information. Structurally it acts as Pavillion that can be build and dismantled in many areas in the World, which size could be adjusted depending to the need. Functionally, it acts as an architectural object, which educative and could trigger many other cultural activities, promote health, creativity and could increase living quality for the people in the area.

The Architectural Typology

There are two type of architecture in this project. Earth architecture in Dome shape and Membrane architecture.

Earth architecture, or Earth construction techniques has been known for more than 9000 years. It's used vernacularly as building material in nearly all hot-dry and moderate climate. Buildings like Large Mosques in Mopti Mali shows advanced use of earth as building material. Since then it has been used and developed by several architects such as: Nader Khalili, Akio Inoue, Kelly Hart, Dr: Owen Geiger, etc. The shape: Dome is also another solution to create monolith structure, while avoiding using another material for roofing.

Since the building technique is rather simple, it could be learned by the people in the area, so that they can later build their homes and learn the importance of sustainability since the beginning of learning architecture.

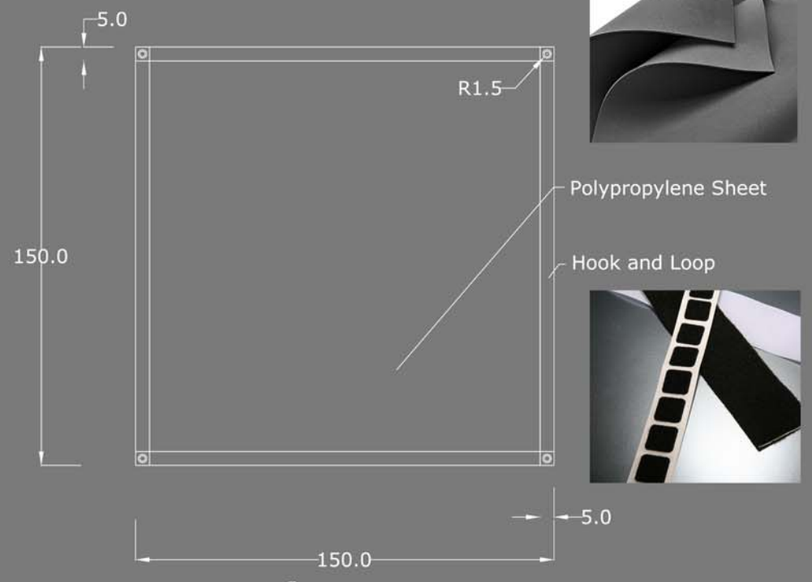
Sustainable Strategies

By using Earth as most of the building material we can reduce the Energy of manufacturing certain materials and preserve organic material.

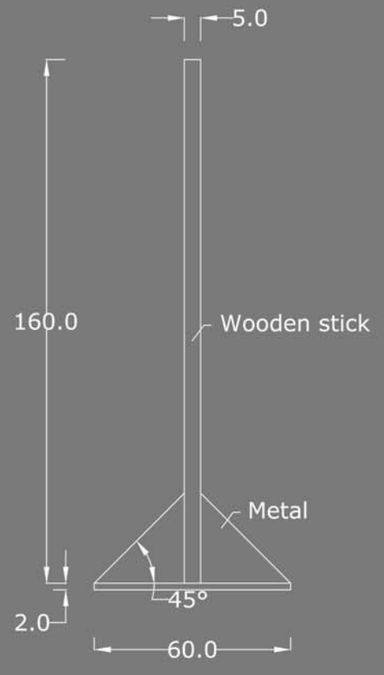
Since Earth is reusable, The concept Reuse is automatically applied. Furthermore, we can Re-using abandoned Material as window frame.

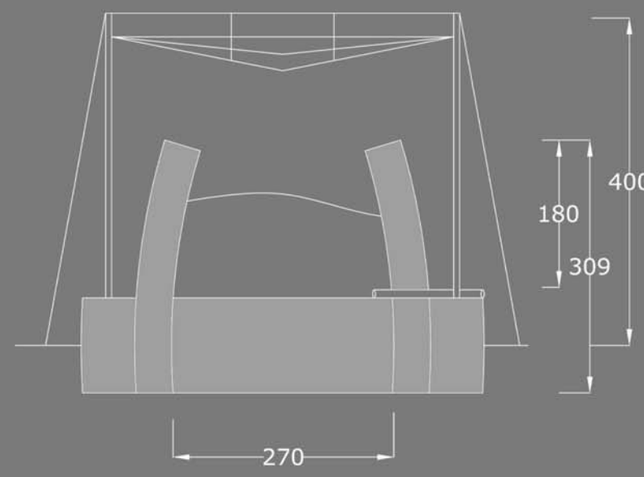
Other Sustainable Strategies is Rainwater Harvesting. In most poor area, water is scarce. Eventhough should be further treated, Harvesting Rainwater, however could be one solution to the problem.

Technical Specifications

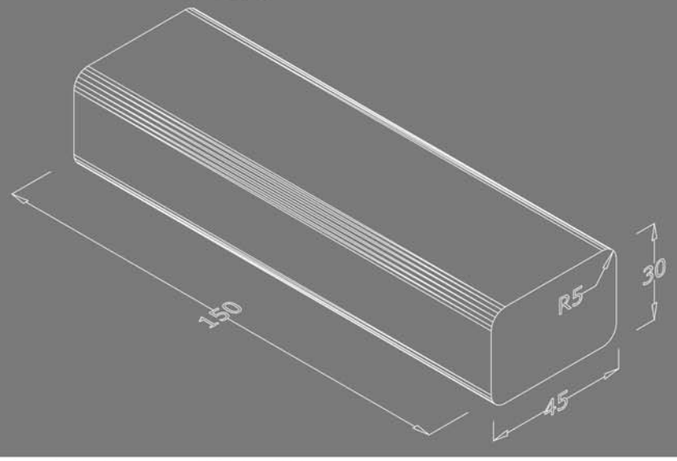


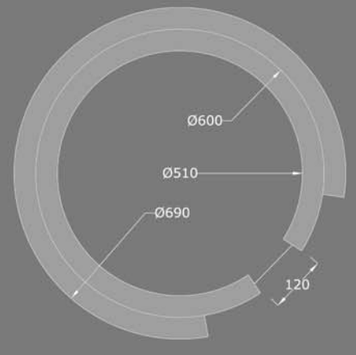
Tamper



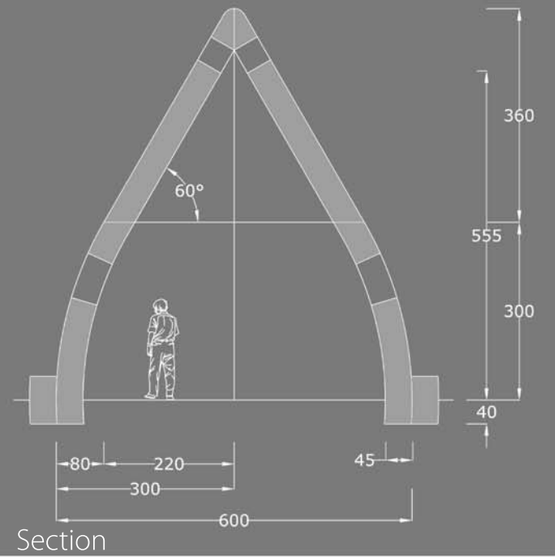


Rainwater Tank





Floor Plan



Section

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