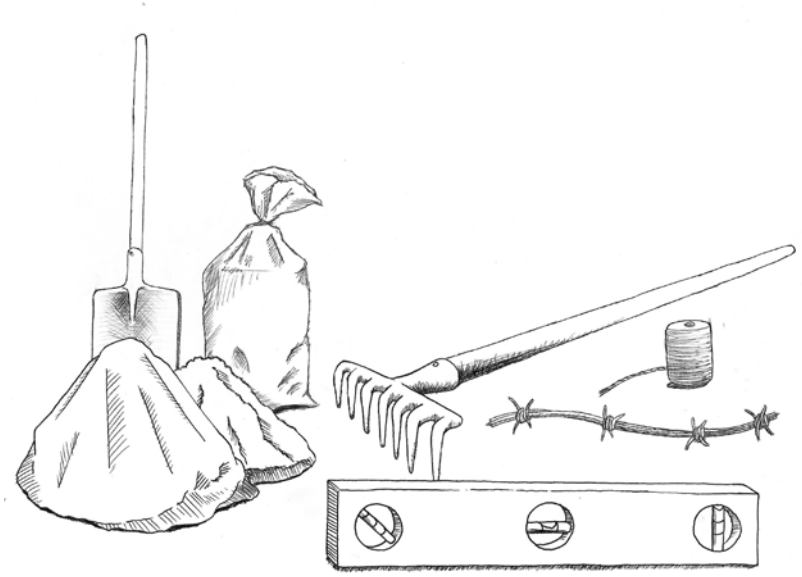
Earthbag



INGREDIENTS:

- Sturdy polypropylene bags (for rice, sand animal feed or grain)
- 4 point barbed wire
- String (to use as a compass)
- A level
- Shovel(s)
- Wire-cutter
- Tamping tool(s)
- Dirt and gravel

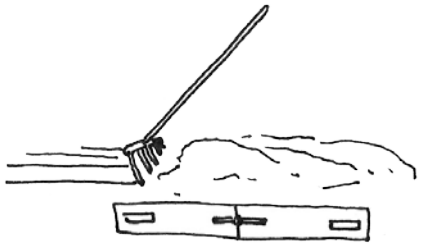
Building with earthbags is an inexpensive way to construct structures which can be relatively quick to build and also strong. Walls can be straight or curved, domed with earth or conventionally roofed. Using designs which employ round rooms and/ or domed ceilings provide the earthbag structure with good lateral stability. Straight walls longer than 5m long require intersecting walls, bracing buttresses or piers added.

Constructing with earthbags is a natural building technique that evolved from techniques for constructing military bunkers and temporary flood-control. The technique requires very basic construction materials: sturdy sacks, filled with inorganic material usually available on site. Walls are gradually built up by laying the bags in courses — forming a staggered pattern similar to bricklaying.

After the initial construction, earthbag structures can be plastered in conventional ways or with an adobe finish and the exterior can be covered with a grass roof in the case of domed structures.

MAINTENANCE: The longevity of earthbag structured depend on how well they are installed, the building's design and what kind of plaster is used. A lime plaster can last a century without maintenance while a clay plaster may last 5-10 years until another coat is needed. The structure itself can last for centuries.
CONSTRUCTION TIME: A modest earthbag construction should take one person less than 2 weeks to build.

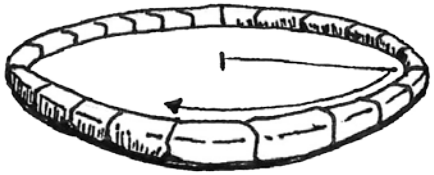
CONSTRUCTION



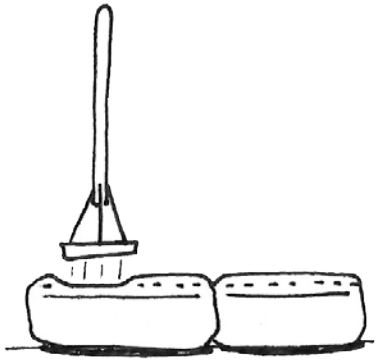
1) Start by leveling the ground where you will place your earthbag structure.

2) Moisten the soil you are going to use in your earthbags. The soil should be just moist enough to pack into a ball.

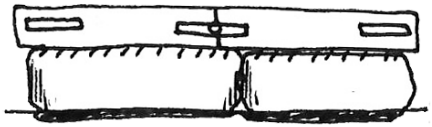
3) Fill the bags, close to their final destination, seal them and place them.



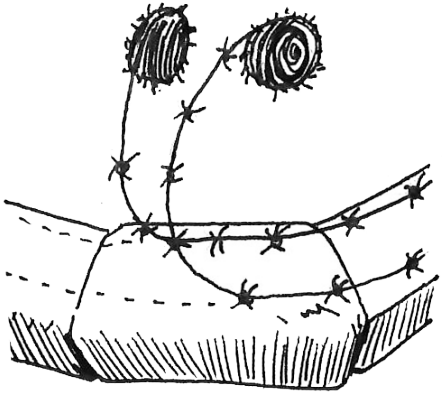
4) The first two levels of bags can be filled with gravel to prevent moisture from wicking up. If making a round room, use a compass to make sure your walls make a perfect circle.



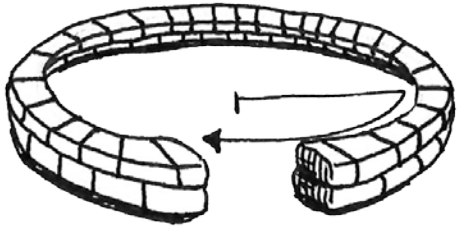
5) Compress the contents of your earthbags with your tamping tool to prevent them from moving.



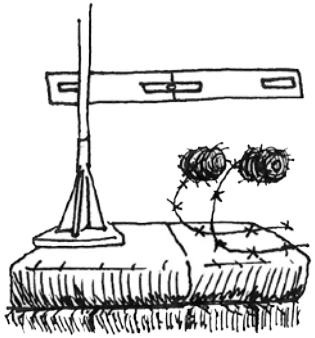
6) Make sure your layer of earthbags is completely level before moving on to the next layer.



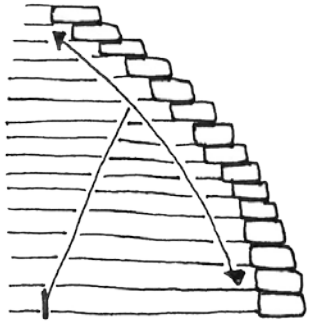
7) Use two strands of barbed wire between every course to keep the bags from moving.



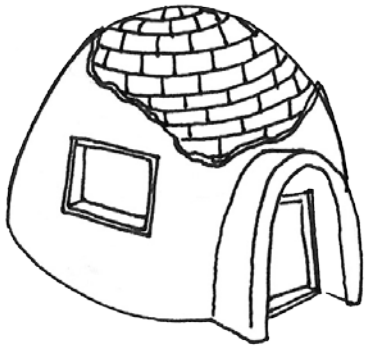
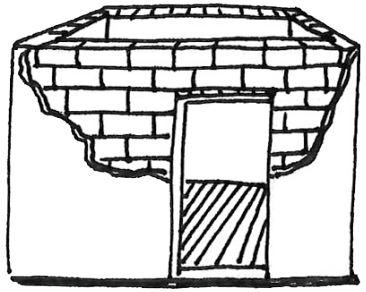
8) If making a dome or round structure, check to see if the walls are correct by using your compass.



9) After each layer: tamp, level and add barbed wire before adding the next.



10) if making a dome structure, use your compass after every layer to make sure each makes a circle.



11) Cover exposed surfaces in plaster(mud, lime or cement). Cement/lime requires a mesh covering the surfaces to make it stick while a mud plaster does not.