Sanitation Project Bangladesh
2013

The construction of two trial washing and toilet facilities with waste water treatment.
Thanks to SAFE / BRAC University / Krom Architecture / Local Villagers
and the generous support from the Worldskill Foundation and two of their trades people.

Healthabitat





Trial options

Site 1 Locally made roof tiles.
Locally treated bamboo roof structure.
Mesh infill for ventilation and reduce insects.

Locally produced wall panels made of cement paste on woven bamboo.

Concrete ring water cistern filled by hand pump and rainwater from the roof.

Site 2 Concrete reinforced by woven bamboo roof panels.
Bamboo reinforced concrete wall panels.

Plinth level made from locally produced cement stabilised earth block rendered inside for cleaning.

Brick type water cistern filled by hand pump and rainwater from the roof.

Construction

Locally made materials and the use of local skills were essential to the project. SAFE currently produces a range of ‘value added’ products and HH was keen to include these in the construction.

Locally made roof tiles.
Locally treated bamboo roof structure.
Mesh infill for ventilation and reduce insects.

Locally produced wall panels made of cement paste on woven bamboo.

Plinth level made from locally produced cement stabilised earth block rendered internally for cleaning.

Septic tanks chambers, concrete ring type.

The high water table in the wet season make waste water disposal difficult for much of the year.

The Healthy Living Practices agreed at the July 2013 Sanitation Workshop

Top row from left to right
1 washing people
2 washing clothes and bedding
3 removing human waste safely

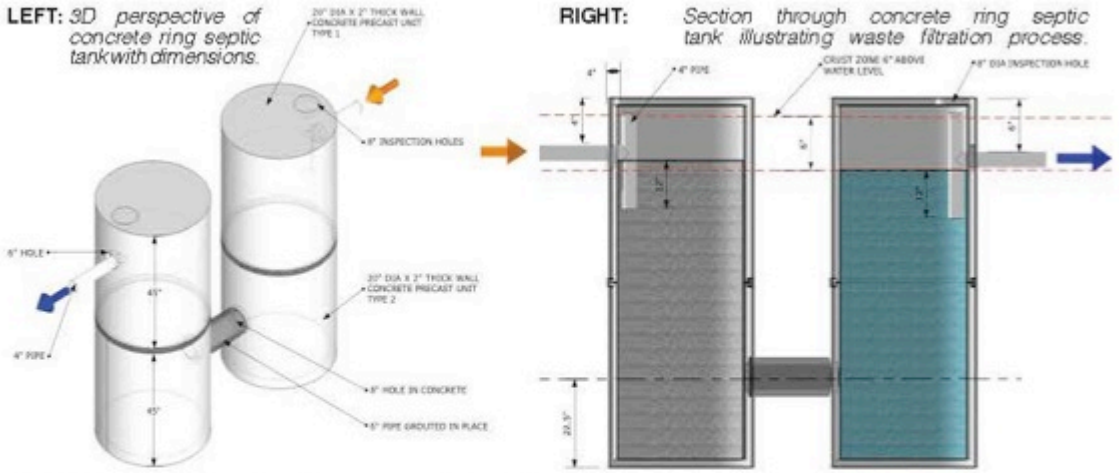
The safe disposal of human waste

Safe disposal of human waste depends not only on the collection of the waste but the long term effective treatment of the waste in all season.
The project is testing 2 locally made waste water systems and will assess the effectiveness and cost of both. Composting was rejected as an immediate option due to the washing and clothes washing component of the waste water.

The **key issues** impacting on the performance of each system will be:

- The use of the wash area and toilet
- Overall use and volumes of water entering the system compared to the volume of the treatment tanks
- Water table levels entering the system in the wet season
- Rainwater inundating the system in the wet system
- Leakage of the system from construction or material faults / leaks.

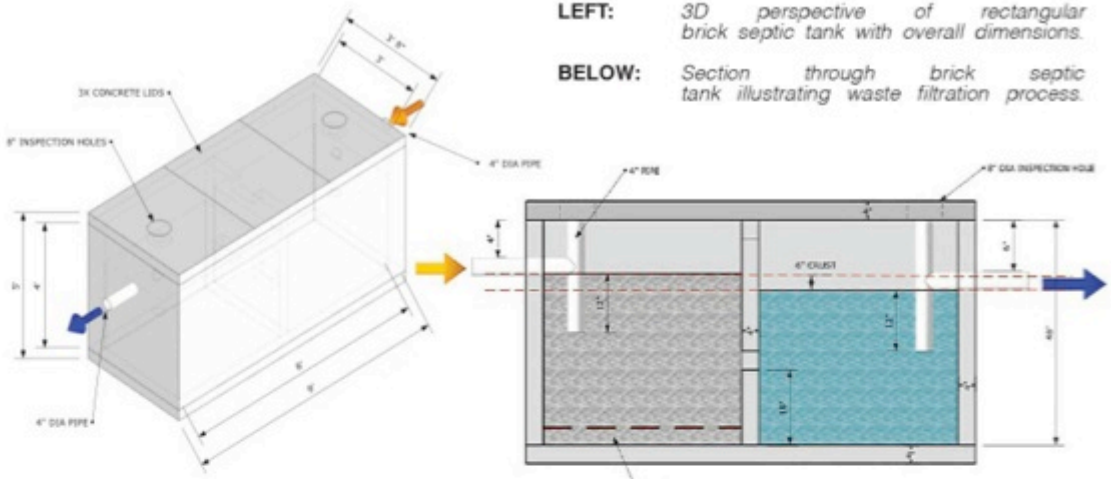
Waste treatment Option 1 Concrete rings septic tank



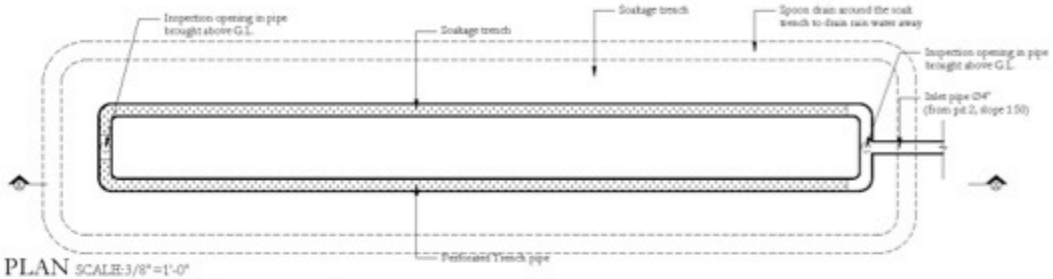
Waste treatment
Option 2
Brick septic tank

LEFT: *3D perspective of rectangular brick septic tank with overall dimensions.*

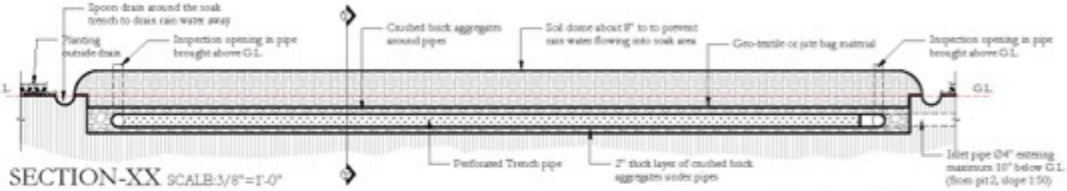
BELOW: *Section through brick septic tank illustrating waste filtration process.*



waste diposal

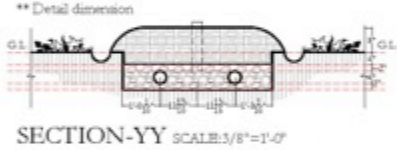


PLAN SCALE:3/8"=1'-0"

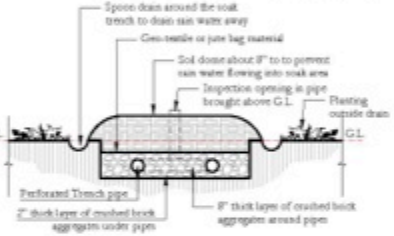


SECTION-XX SCALE:3/8"=1'-0"

BELOW: *Drilling perforations into pipes*



SECTION-YY SCALE:3/8"=1'-0"



Water

Water from rainwater and well water fills the cistern attached to the wash and toilet unit.
This water is piped from the cistern to the toilet for dip flushing and the wash area for dip washing.

The load on the waste water system will determine the size and effectiveness of the system. This was estimated at the July workshop. The size of the system also impacts on the overall cost of the unit.

To test the previous estimate, a low pressure meter was installed to assess the total volume of water leaving the cistern.

Meter readings will be taken regularly by SAFE staff or families using the water meter recording sheets left on each site.

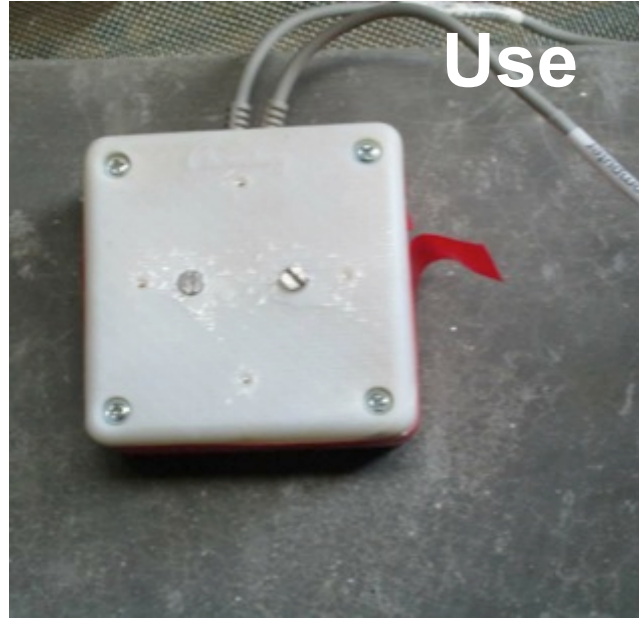
Water

The low pressure water meter is fitted to each wash and toilet unit and measure all water flowing into the taps for dip flushing and dip washing

Water meter recording sheets were produced for completing every day by SAFE staff or the village families. This will accurately record the volume of water entering the waste water system

Water to each unit is provided by a hand pump and shallow tube well and also from roof collected rainwater in the wet season

The inside lock in the open position but the door is secured externally to prevent access by young children and animals

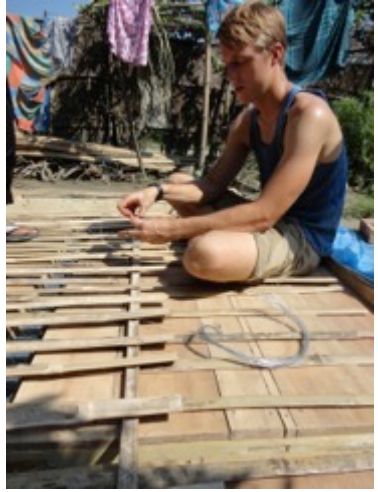


The inside lock in the closed position and the magnetic reed switch stores the event and duration into the data logger for future download

Use

Data logger probes on each door will record when the doors are locked from the inside by the user and for how long.
This will help determine if the main water use occurs in the wash area or toilet and may determine the size of future waste treatment systems.
The software was installed on a local SAFE computer and the files will be downloaded regularly during the testing period by SAFE staff.




Above from left 1. Daniel Rattigan and Troy Everett (Worldskill trades champions in plumbing and bricklaying), 2 Daniel at work, 3 Troy at work, 4 Tom Hallewell, engineer and Engineers Without Borders volunteer, 5 Phoebe Goodwin, architect and HH representative on site.
Below The SAFE team at work and assembled at the SAFE head office. Masonry, bamboo, pluming and carpentry skills were all invaluable to the project.