Flood-resistant hut Modeled and Improved by Uganda Red Cross Under PfR Programme

Flooding is one of the prevalent hazards in Uganda. It affects hundreds of thousands of people and their livelihoods every year. The genesis of flood resistant huts is traced back to 2007 when parts of Northern and Eastern Uganda experienced severe flooding during the July to September rainy season which destroyed settlements, infrastructure, livelihoods, and water sources among others. Less than a year later in February 2008, URCS embarked on recovery programmes such as the shelter program of constructing flood resistant huts to help resettle the displaced families with funding from IFRC and ECHO. With this programme, URCS has supported the construction of 7,023 flood resistant shelters. Five years after the intervention, there had not been any review made to assess the success, relevance and sustainability of the intervention. With the PfR project, URCS decided to conduct this review and build on the lessons and replicate on the success. A team was organized from URCS and Makerere University School of Public Health. The team has come up with some gaps on the designs, materials used and processes and relevant recommendations for improvement (even considering impacts of climate change).

The following are changes introduced to improve the flood resistance shelter: -

Parameters	**Flood Resistant hut supported by IFRC in 2007 and 2008**	**Gaps/challenges identified**	**Improved flood resistant hut supported by PfR**
Bricks	Unburned mad bricks	It easily socks water and collapse	Burnt bricks – it absorbs less water and also stronger
Design of the roof – the way the grass is arranged	Straight from top to down the roof	Not stable and easily blow off by wind	Laying the grass at different levels (step by step (starting from the bottom to the top)
Dump proof membrane	Use only one dump proof membrane	Due to the increasing frequency and magnitude of the flood, some water manage to pass the first dump proof membrane	Using two layers of dump proof membrane
Minimum standard for design and materials	It has a basic essence of flood resistant shelter but it has no standards	Some materials are over used or under used, slightly different designs which may even increase the risk of flooding (eg. There is no specific measures for how long the ground needs to be raised)	Minimum standards are set for the design and materials to be used (for the wood, grass, bricks etc to be used) based on family size, how long the ground should be elevated etc.
Supportive pole around the house	No supportive pole around the house	The roof has been blown off with a strong wind	Putting supportive poles around the shelter with specific distance
Raising the ground of the shelter	Only raising from outside	Water still seeps into the floor inside the house	Raising both the inside and outside part of the shelter

The steps involved in the construction of flood proof hut include elevation of the area (raising the floor), finishing the ring beam, erecting a special mould to make conical wall and finishing off with thatch for the roof, walls are plastered with a mixture of dung and mud (ant-termite).

Benefit of the flood resistant hut: - reduce human, financial and material losses during flood event, health benefit (the floor is dry, neat, and people don`t worry much about flood), durability (it last longer than the traditional huts), affordable and cost effective.

What has been done so far:
Two model flood resistant shelters were constructed in Apac for demonstration. There is a plan to train CBDRR (community based disaster risk reduction) members and Red Cross volunteers on the same and distribute communal kits at village level (which includes wheel barrows, rammers, axe, pliers, spirit levels, dump levels, tape measure, claw hammer, big spade) and individual kits panga/machete, hoe, medium trowels, jerrycan, sickle, double mould, G1000 dump proof membrane polythene sheeting, window and door shutter. In order to reduce the pressure on tree cutting, the community is provided with tree seedlings and encouraged to plant more trees.

Challenges: - community reluctance to act before the hazard strikes (investing in risk reduction) remains a challenge.

Pictures showing the steps: -

Step 1

Foundation square design

Foundation round design

Step 2:

Elevation round the hut 3 courses *Dried bricks*

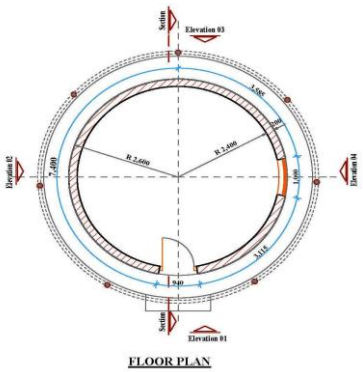
Step 3:

Roofing with sticks and grass

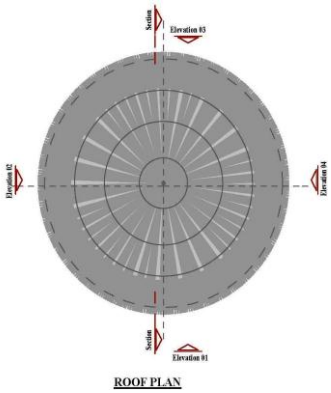
Step 4:

Architectural and structural design of flood proof huts

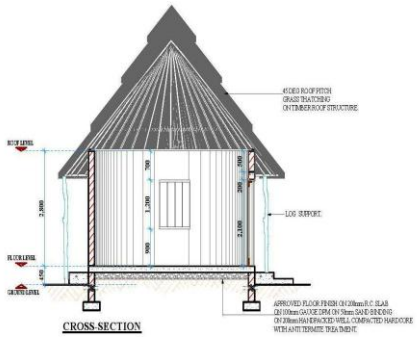
An architectural review of the flood proof huts was done the following structures were generated.



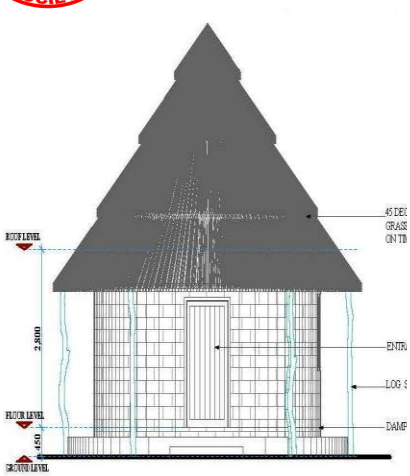
FLOOR PLAN



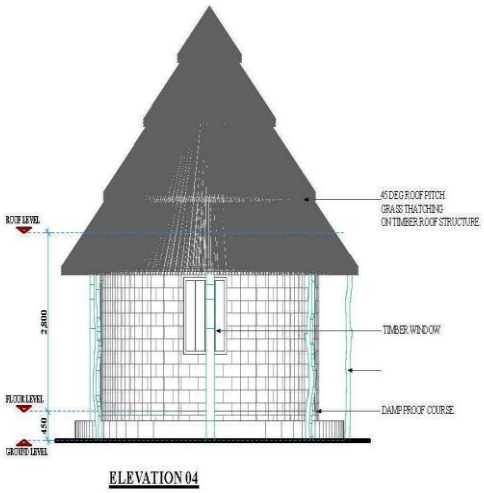
ROOF PLAN



CROSS SECTION



ELEVATION 01



ELEVATION 04