

## Building cane reed Habitat houses in Kyrgyzstan

Habitat Kyrgyzstan builds cane reed houses using local materials: wood, clay, straw and reed for walls and iron sheet for roof. The cane reed and clay house building technology was commonly used in the XIX century, but forgotten in the XX. Using this building technology, the families save about 40% on construction costs.

Habitat Kyrgyzstan uses a construction method called “Ashar” that makes the house construction less expensive than recruiting construction organizations. The technology of building cane reed houses is not require professional skills that is why all the construction work is done by the families and volunteers .

Volunteer tasks – not limited to: leveling site, digging and pouring foundations, mixing cement, preparing clay straw plaster, doing frameworks for walls, tying reed together, putting reeds between the beams, setting roof trusses, plastering, stucco and painting, landscaping.

Building a Habitat house means not only building a home, but also building a community. Homeowners and future homeowners work together, live in the same neighborhood after their houses are ready. Also involving international and local volunteers gives an excellent opportunity to exchange experience between different cultures and raise awareness of people. Once a volunteer worked at a building site, she/he becomes a devoted promoter of Habitat, supporting with funds, advice and volunteer labor.

Below, please see the steps of building process and pictures of volunteer work.

### 1. Foundation made of cement mortar.

After digging holes and pouring cement for foundation, volunteers backfill the ground. In some areas Habitat suffers from underground water, so to protect the walls from the mold HFH KG builds high foundation and backfill the ground with white clay, cover with plastic to create waterproof lock which keeps subsoil waters underneath. Then put over cane reeds and cover with folic paper, - reeds create warm and folic paper reflects it upward, so in winter time such houses get nicely warm.



Volunteers backfill the ground under the floor construction with cane reeds.

The volunteers cover folic paper and pour more cement on the floor.



2. Cement is mixed manually. Volunteers mix cement, clay and sand to a smooth mortar. The mortar is used to pour foundation and for floor.



Volunteers mix mortar with shovels, one of volunteers tied a rope to one of the shovels to make it easy to pull, as the mortar is heavy.

3. Framework. Habitat uses wood for framework as it light and it easy to combine reeds with wood frame rather than with concrete. Also such construction makes a house be mobile and earthquake-resistant. On the picture, volunteers install wood framework.



4. Cane reed bundles. Cane reeds are processed with a chemical grout to make it fire-resistant. The framework is filled with cane reeds and ceilings are laid with fiberboard. Volunteers prepare bundles of reeds for insulation.



A homeowner with a volunteer from Scotland ties the reeds in a bundle.



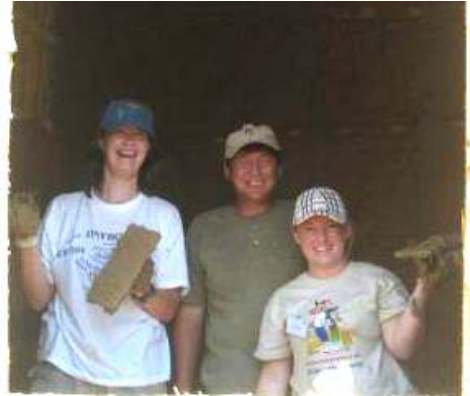
Putting reeds between the beams

5. Stucco the walls. First coat is a plastering with a clay-straw mixture. This mortar is prepared easily by mixing straw with clay and kneading it by naked feet or in rubber boots. The walls then fix with diagonal strips of wood.



Lucy from GB liked kneading clay and straw.

The mud is put on the walls upon reeds with hands and smoothed with float. International volunteers and locals liked working with mud.



6. Walls. The walls will be fixed by straps of wood. Then they are plastered with mud (clay and straw), after that they will be stuccoed by the cement mortar. The interior walls will be extra-fixed with wire net and then stuccoed again. This layers of different mortars ensures the wall to be fire-proof.



wood strips  
A Japanese volunteer installing wire net



GB interfaith volunteers hammering the

6. Ceiling and roof. This work should be very careful so it is made under careful supervision of instructors. The ceilings are laid with fiberboard. On the exterior top of ceiling volunteers put reeds and pour mud on it. Mud protects cane reeds from mice and insects. When clay dries after 2-3 days the roof can be installed.



7. Floor. As a solution to the energy problem, an innovative, clean and cheap under floor heating system is used, which combined with the cane reed construction, saves 75% of the energy costs. The coiled circuit under floor method of heating the home is clean, environmentally friendly. This heating system is also simple in use, secure, easy to install, uses little energy and reduces pollution. The result is a simple to build, simple to maintain, low capital and running cost, warm home for low income families.



When the first layer of cement on the floor dried, volunteers under the supervision of instructors install the water pipes for heating.

Heating system is hot-water electrical heating, called “Heated floors”. In such heating systems pipes are laid inside the concrete of the floor. In this way, heat supply into rooms is done through the floors. Floors in the rooms are laid with carpet linoleum, in bathroom with ceramic tile.

Heating boiler installed and connected



Break



8. Putty the walls.



Women Build volunteers from Europe putting the interior walls.



9. Painting.



Val painting the window frames.

10. Finished houses.



Dedication

A family having tea in their new home with their first guests



Debbie visiting a family who she helped to build a house two years ago for





Habitat Kyrgyzstan Houses have simple design which is makes them affordable to be built by unprofessional volunteers and families of these future houses.

