

## Heritage Foundation's Artisans' Training Programme

In order to further the Heritage Foundation's methodology for incorporating Disaster Risk Reduction (DRR) compliance in structures being built as part of early recovery or rehabilitation, it was considered essential to embark on a training program of Master Trainers for training local artisans.

The program is based on promoting sustainable, low cost green structures which rely on the use of improved, strengthened adobe/mud walls as well as lime for render on external walls and roofs for weather resistance. It also incorporates the KaravanRoof composed of multiple bamboo joists fixed to a bamboo reinforced lime concrete ring beam placed on adobe/mud walls.

In view of the massive devastation brought about due to floods in Lower Sindh the concept of Build Back Safer with Vernacular Methodologies has been developed by Ar. Yasmeen Lari with structural input by Engr. Amin Tariq. With the help of DFID and IOM a detailed survey was carried out in 35 tehsils to assess the affect of heavy rainfall and flooding on vernacular construction. While detailed studies of vernacular techniques of construction were carried out, recording was also made of the affect of the disaster on industrially produced materials e.g. RSJ or Rolled Steel Joist girders and burnt brick, that in the recent past have been widely promoted as suitable materials for post disaster construction.

The findings confirmed the strength of adobe/mud walls to withstand 3-4 weeks of standing water. Because of lack of proper arrangement and skill in the use of steel girders, they have been found to be major contributors to the collapse not only of the roof but also of mud and burnt brick walls. Other findings also point towards unsatisfactory construction of burnt brick masonry – 2nd or 3rd grade bricks are laid with mud mortar without any bond. Even when laid with foundations burnt brick walls have proved unsafe, forcing families to be displaced.

The methodology devised by Heritage Foundation that emphasizes strengthening of mud wall bases and promotes the use of ring beams and multiple bamboo joists, quickly established the efficacy of such an approach. The roof of each house with mud walls that was rehabilitated or constructed, was tested by 15 members of each beneficiary family, proving that the structure could provide safe haven at the time of floods. During October to December altogether 114 one room shelters have been completed, out of which 103 were rehabilitated and another 11 were constructed from ground up. These include 68 one room rehabilitated shelters and 1 complete structure as demo/ model units built in 35 tehsils in 8 priority districts of Sindh. All the shelters have KaravanRoofs as safe haven roofs to provide refuge during floods. Since the KaravanRoof, although extremely economical, has to be scientifically manufactured, it became essential to provide extensive training to local artisans. Similarly, the construction of improved adobe/mud wall



External view of Village Centre.



Artisans being trained during Master Artisan's Workshop



Master Artisans' Training session is being conducted by Saad Khan and Naheem Shah.



Artisans are busy in doing the practical.



Field work being carried out as part of training session.

construction needs artisans proficient in the process of making good quality mud wall as well as in the use of lime wall and roof renders.

In 2011 in addition to providing a generous support of US\$ 27,500 for 25 Green KaravanGhar units in Khairpur and publication of a document, Architecture for Humanity (AFH) placed another US\$ 5,000 at the disposal of Heritage Foundation for further work. This funding has been utilized for underwriting the program for training of Master Trainers. This program aims to scale up capacity building of local artisans who will become certified KaravanRoof artisans and thus contribute towards income generation in economically marginalized post-disaster rural areas.

The modules for training have been developed by Mr. Saad Khan, a certified Swiss trainer and highly accomplished professional, also engaged in humanitarian aid work on behalf of Swiss Pakistan Society. Based on the modules, a large number of 36"x 48" panaflex posters were prepared consisting of different stages of construction along with pertinent drawings, sketches, photographs and written captions and instructions in Urdu.

The 10-day training program was held in December 2011/January 2012 in the newly constructed green Village Center in village Mohak Sharif, Tando Allahyar, the land for which has been provided by the landlord Mr. Mahmood Shah. The Village Centre of size 16'x 24' is built with a bamboo cross-braced frame and concentric pin wheel multiple bamboo joists as structural members. We are grateful to Ms. Shama Haider and Bricks for a village (US\$ 1500), BK (Rs 200,000), Ms. Shama Ilyas (Rs. 150,000) for their generous contribution which made construction of the Village Center possible.

The training of Master Trainers was carried out by Mr. Saad Khan and Mr. Naheem Shah, Heritage Foundation's Humanitarian-aid Project Manager. The program included several lesson of theory as well as field and practical work. The selected artisans have had vast experience in working on Heritage Foundation's green sustainable constructions in Swat, Mardan, Mansehra and Khairpur. Artisans and 2 architectural students, Syed Saad Mustafa and M. Ali Khan, were trained as Master Trainers.

### Master Trainers' Workshop, Tando Allahyar List of Master Trainers

No.	Name	NIC No.	Qualification	Area
1.	Abid Ali	16101-4947639-9	Middle	Mardan
2.	Saddam	17101-2403665-1	Primary	Swat
3.	Kamran	16101-6344588-1	Primary	Mardan
4.	Shad Muhd.	16101-6344577-1	-----	Mardan
5.	Nadeem	13503-1142171-1	Electrical Eng.	Mansehra
6.	Farooq	15503-1122371-2	Metric	Mansehra
7.	Sana-ur-Rehman	15601-1811803-1	Middle	Swat
8.	Amin Khan	15601-3072097-5	Middle	Swat
9.	Saad Mustafa		Arch. Students	Karachi
10.	M. Ali Khan		Archi. Students	Karachi