ORANGI PILOT PROJECT
RESEARCH AND TRAINING INSTITUTE (OPP-RTI)

LOW COST HOUSING PROGRAMME

Introduction:

After the success of the sanitation program the housing program was initiated in 1986, following the same R & E approach. Surveys showed that poor people's houses in Orangi had the following defects:

sub-standard manually made concrete blocks - the main building components for walls and foundations - caused cracks

faulty construction techniques, as well as the quick fix attitude of masons and house owners

the existing structure being weak, could not take the load of the conventional RCC roof, for ground plus one construction

lack of ventilation

Two years were spent, on research on these problems and later years, on extension of research findings. Initial research and extension of research findings were in itself action research and so threw up another line of research and extension. The process continues.

Research consisted of:

upgrading the local thallas (building component manufacturing yards) by improving the concrete blocks and roofing components (experiments on ferrocement roofing channels, precast batton tile and tier girder tile roofing).

evolving standard construction design & techniques

preparing standardised steel shutterings

writing manuals and instruction sheets

preparing audio visual aids

demonstrating model units

Extension consisted of:

finding thalla walas willing to participate in research and development (R & D)

training masons - teaching them improved design and construction techniques and the better use of tools

lending tools and shutterings

providing accurate plans and estimates

R & E reduced the cost and improved the quality of construction. Upgrading the thallas was an important aspect of the work, so a little about it.

Upgrading the Thalla:

In 1987 thru research and extension, first in one thalla (building component manufacturing yard) the block making process was modernized. Instead of the hand process of concrete block production which produced very poor quality blocks, the mechanized process together with other improved techniques was introduced (details were provided in previous report). The result was, the machine made blocks were 4 times stronger then the hand made blocks but sold at the same price. In 1987 three more thallas were mechanized with OPP-RTI supervision and loan. The production and sale in these thallas has been documented. By Nov'16, 55.235 million blocks worth Rs. 244.083 million have been sold, 60% of these have been sold outside Orangi. Following the example of the first four mechanized thallas, 121 thallas adopted the machine making process without any loans from OPP (survey Dec'2006). Orangi has become a centre for the production of mechanized blocks in Karachi. With the blocks sold at these thallas, annually, average 2,500 houses benefit from use of improved building components.

Present Package of Advice and Extension:

The present package of advice, (the load bearing technology), is as follows:

Appropriately designed in-situ foundation for a minimum ground + 1 st floor construction

6" thick load bearing walls of machine made blocks

Batten/tile or T-girder/tile roofing and proper fixing methods

Precast staircase

Proper orientation and ventilation

Proper construction techniques

This load bearing construction is 1/3rd the cost of RCC (Reinforced Concrete Construction).

Impact studies were undertaken. Presently the extension of techniques are being undertaken, by the support institutions TTRC, TTC and UTC, (youths from community trained as para-architects) to house owners and masons in Orangi and Gadap towns. The focus of those support institutions is proper orientation and ventilation. Efforts have been initiated to implement the earlier package of advice in the goths of Karachi, focus now is proper ventilation and a structurally sound unit.

Construction and Demonstration:

With the introduction of appropriate techniques, the construction units have required careful supervision. Masons and youths have been trained as community architects/extension agents. The training of youths has evolved into support institutions - the TTRC, TTC, the newly formed UTC, as detailed below. Total 689 demonstration units have been completed with 198 masons trained, mostly in Orangi. Since early 2002 TTRC is extending support for house construction in Orangi and the nearby towns. Since 2010 TTC started similar work in Khairabad/Zobu goth in Gadap town, now extended to Orangi Town and other goths in Gadap town & Keamari town. Since Nov'12 UTC has initiated work in Orangi town, with the support & supervision of TTRC.

Training, Extension and Documentation - The Technical Training Resource Centre (TTRC), the Tameer Technical Center (TTC) in Zobu goth/Khairabad in Gadap town and Ujala Technical Centre (UTC) in Gulshan-e-Zia, Orangi town.

Youths trained as community architects setup the TTRC and are managing the extension of the housing program and its documentation: So far plans and estimates for total 639 units were completed (7 this period) sept'16- Nov'16. Of which 233 are schools, where ventilation improvements have been a focus. For 465 units fees was received from owners. On 6 projects preparation of plans and estimates are in progress. Supervision of total 275 projects were completed (7 this period). For extension of techniques TTRC undertakes mobile guidance i.e. units under construction in the settlements are observed and on the spot guidance is provided. Total 264 units were provided guidance, more masons and house owners have come in contact, documentation is ongoing. Lack of proper orientation, ventilation and foundation techniques are the recurring problems in houses and schools. Through on site guidance, leaflets, posters, meetings with CBOs, community activists, masons, schools and house owners, the importance of these are being emphasised. More youths are being trained by TTRC.

TTC have evolved linked to the Housing Savings & Loan Program. Youths trained and guided since June'09 have setup the Tameer Technical Center (Jan'10). TTC so far has documented 266 units (14 this period). This documentation shows the lack of orientation, ventilation and technical issues in the houses. The program helps in solving these issues by mobilizing the community through on site guidance, leaflets, sample designs of houses, meeting with masons, house owners and site supervisors. 173 house owners have been motivated in accepting the solutions provided by TTC of more houses plans are under process. Masons, house owners and site supervisors are in regular contact. An internal review of OPP-RTI's programs concluded lack of technical guidance to the masons and house owners during construction, by TTC. TTC is being guided on technical supervision during house construction by a senior technical team member. House owners and masons are accepting TTC's solutions on technical issues during house construction. 59 house owners planted trees on motivation; a number of houses also grew vegetables in Zobu goth/Khairabad.Youth (girl) from Mansoor Nagar, Orangi interested in mapping of housing has been trained on drafting and planing and is a team member of TTC. 9 students have been trained on basic drafting, 4 from Moach goth, Keamari town continue on-site training. Plan is to extend the housing, saving and loan program in the goths of Karachi with the support of youths from the community. 3 requests received from Moach Goth for house improvement, process of HSL program initiated through the trained youths of the area.

UTC: 3 new youths from the community are being trained by TTRC since Nov'14 on drafting /planning of houses. UTC has so far documented 136 units (1 this period). It has evolved llink to the HS&LP and has provided support to 97 units. Initially TTRC has provided support to 10 units out of the total 97 units.

Statistics Aug'09 – Nov'16

	Units Documented	CHS&LP	Supervised	Interview (Need Detailing)
TTC (Jan'10 onwards)	266	161	173	53
UTC (TTRC) (Jan'13 onwards)	136	97	97	92
Total	402	258	270	145