

Raw earth and self-help housing: a feasibility report on the field within the DIRLI Programme (Argentina)

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The "Program of Integral Development for the Department of Ramòn Lista" - DIRLI (Programa de Desarrollo Integral Ramòn Lista) - is a multilateral initiative of Cooperation for Development,. It is co-financed by the Argentinian Government, the Province of Formosa's Government and the European Union.

The main objective of the DIRLI Program is to improve life conditions of native wichis communities living in the Ramòn Lista Department of the Province of Formosa, Argentina.

The Program intends to activate a process of self-sufficiency and autonomous development, aimed at maintaining the cultural identity of the population who benefits from this intervention.

The construction is underway for 500 low cost housing units under the Sub-Program of The Self-Help Building Process for Low Cost Houses. The technology selected for this project is that of blocks with joints Mattone type, made of soil stabilized with cement and compacted.

This thesis is the result of a three-month co-operation agreement established between Laboratorio di Prove Materiali e Componenti del Politecnico di Torino and the DIRLI Program, with two purposes:

- the realisation of an experience of practical research, within the Program's activities of construction by validating the potentialities and the application of the raw earth in this operational context;
- operational collaboration with the Sub-Program of The Self-Help Building Process for Low Cost Houses, particularly, with a contribution of consultation during the planning and the organization of the builder's yard.

The mission began in Formosa on July 17th 1999.

They worked as collaborators with the head of the builder's yards both during the phase of production of the blocks and the construction of the houses. They also had the opportunity of providing support to the drawing up of the P.O.A., the 1999-2000 Sub-Program of Low Cost Houses' Self-Help Building Process Operational Annual Plan.

The principal themes of the thesis are:

1. **International Cooperation and its operational dynamics** through:
 - International Cooperation (P.C.I.);
 - DIRLI Program, its targets and its Operational Plans (P.O.G., P.O.A., etc.);
 - Sub-Program of Low Cost Houses' Self-Help Building Process;
 - P.C.I.'s dynamics and actors and, particularly, of DIRLI Program.

2) Participated Investigation, DIRLI Program's Data Base, a document compiled by the Program itself, that investigates the environmental characteristics of the Ramón Lista Department, the operational context and the general situation of the Wichì population.



3) Appropriate technology: the choice of the compacted soil-cement

One of the targets of the Program is to develop real adequacy of the constructive element selected for the intervention context: the Altech block with joints Mattone type.

The soil-cement is considered as appropriate from different viewpoints:

- the Wichì are already used to building in earth, using it as adobe and as wattle & daub or torchis;
- the technology of the soil-cement is simple enough to be used and requires only the following materials: earth, water and modest quantities of cement;
- the soil-cement is particularly suitable for dry climates and zones that don't have great quantities of water.

The study of the appropriate technology has moreover foreseen:

- the drawing up of a Manual about building with earth, useful for interventions in the field;
- the analysis of the blocks' characteristics used by the Program, through the experimentation on block samples, in the Laboratorio di Prove Materiali e Componenti del Politecnico di Torino;
- investigations and experimentation in the field;
- the choice of the type of press and generally, of the tools used in the builder's yard for the production of the blocks;
- the organization of the entire productive cycle of the blocks.



4. The contribution to the project evolution of the building typology proposed by the DIRLI Program

Examination of the different building typology proposals (A, B and C) and of the general criteria used for the basis of planning.

5. Executive phases related to the typology C



6. Analysis of the costs related to the typology C

- Problem list;
- Block production;
- Vivienda's Construction – typology C

This thesis outlines a detailed account of the operations of a builder's yard in a Developing Country, with particular reference to the Sub-Program of The Self-Help Building Process for Low Cost Houses, with blocks in raw earth stabilized with cement and compacted.

Particular attention has been paid to the exposure of the technological-constructive choices that the DIRLI Program has operated during the three months examined, thanks also to the three final year students' collaboration.

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