

## DISASTER RESISTANCE

### GUJARAT REHABILITATION AFTER THE EARTHQUAKE

Following the massive earthquake, which devastated huge areas of Gujarat in January 2001, the Auroville Earth Institute was approached by NGOs and a GO to assist the rehabilitation work of the affected areas. 75 Auram presses 3000 with interlocking moulds have been supplied to various NGOs and Building Centres.

#### BUILDING A HOUSE IN 62 HOURS

In July 2001, the Auroville Earth Institute constructed a demonstration house, the [Aum House](#), with the technology developed for earthquake resistance. This house was sponsored by Kutch Nav Nirman Abhiyan.

The house was precast at Auroville in about 3 weeks and it was transported in 3 trucks, over 2500 Km. the house was assembled in 62 hours by our 20-men team. It was the starting point of rehabilitation programmes for the zones affected by the earthquake.



*Aum house under construction – Lifting channels after 44 h*

#### TRAINING COURSE FOR HUDCO

In 2002, HUDCO (Housing and Urban Development Corporation, an Indian Government undertaking) asked for special training course of the project managers of the newly set up building centres of Gujarat. At the occasion of the six-week training course, 30 trainees precast and built a modified AUM house. The first part of the training course was for the production of blocks and the precasting of the house. A time gap of 1 month was kept for curing and the house was assembled with trainees in 13 days.



*Production of blocks at Mundra*



*Precasting ferrocement channels*



*House completed in 13 days with about 30 trainees*

### ASSISTANCE TO THE CATHOLIC RELIEF SERVICES

The international charity organisation Catholic Relief Services (CRS) was in charge of setting up rehabilitation programmes in 39 villages of Kutch and in 2002 they asked the Auroville Earth Institute for assistance.

CRS purchased 60 Auram Presses and some of these presses were operating on a continuous double-time-shift basis. The Auroville Earth Institute assisted them regularly in their works for about 6 months:

- Conducting several training course for block making, in Auroville and in Gujarat
- Conducting regular evaluation missions for checking the quality of block making
- Assistance for the design of the model houses
- Conducting one training course for building a model house
- Conducting regular evaluation missions to control the quality of construction
- Reformulation of new specifications

In all 30 engineers, 13 supervisors, 46 masons were trained by the Auroville earth Institute and they were managed by the Catholic Relief Services.

Mehul Savla, an architect who had been previously trained during a year at the Auroville Earth Institute, was the Deputy Programme Manager for the construction project and he played a key role in the technical design aspects and in the implementation of the project. The team of CRS did an excellent work there and Mehul Savla had been a key person for the acceptance and the approval of the technology in Gujarat.

The rehabilitation area which was covered by CRS team was very large and the team faced a lot of problems of management, coordination and quality control. Further their work with the local authorities and the villagers was not easy. Nevertheless they managed very well this programme and the Catholic Relief Services built in a year time 2,698 houses of various types (about 28 m<sup>2</sup> each) in 39 villages. They trained, gave a livelihood and employed about 2000 people in 39 villages. The work with CRS was the occasion to improve the strength of the Auram press 3000 and to develop our technology with hollow interlocking blocks.



*Production of blocks after a training course*



*Training course for building a model house*



*Model house with ferrocement channels*



*Model house with Mangalore tiles with 4 sides roof*



*Houses at Paya Village*



*Model with Mangalore tiles with 2 sides roof*



*Model with Mangalore tiles*



*Community centre near Paya*



*Community centre*

#### **GOVERNMENT APPROVAL**

The Government of Gujarat was the first one to approve our technology with hollow interlocking blocks for earthquake resistance. Mehul Savla and people from Kutch Nav Nirman Abhiyan prepared the draft of the guidelines for building with stabilised earth. The Auroville Earth Institute redrafted the rehabilitation guidelines and they were finally accepted by Prof. Arya, seismic advisor to the Government of India. The guidelines were published by the Gujarat State Disaster Management Authority (GSDMA) and the hollow interlocking block technology developed by the Auroville Earth Institute had been incorporated in the rehabilitation guidelines.