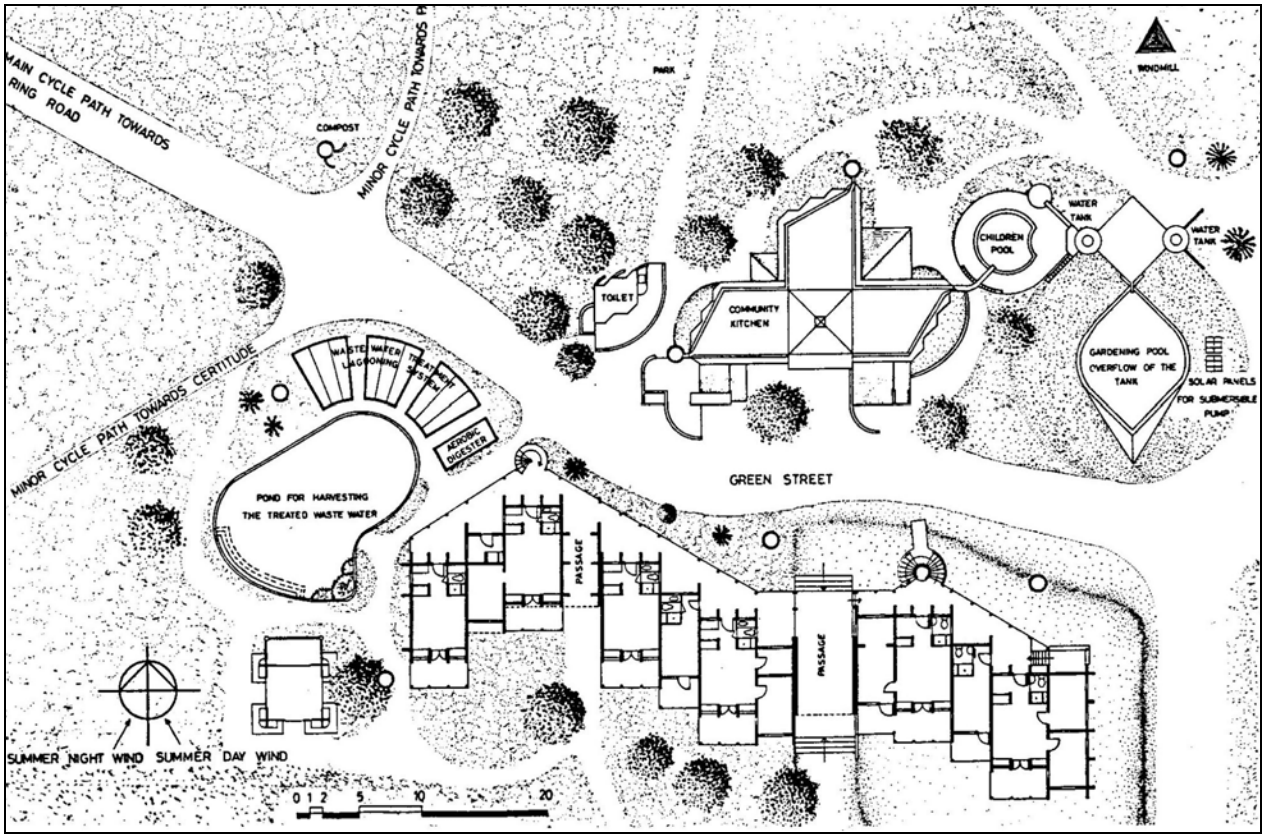
VIKAS COMMUNITY

VIKAS SPIRIT

The creation of this community was based on a particular spirit, life style and appropriate architectural design. It was related to Sri Aurobindo's integral yoga and Auroville's ideal. The extensive use of environmentally sound materials, appropriate building technologies, (earth and ferrocement), renewable energies (solar and wind) and ecological water management (watershed harvesting and biological waste water treatment), were the basis of its material implementation. Individual apartments, a few individual houses and common facilities were built.

This project was the first development in Auroville, which used stabilised earth right from foundations to roof. To date, Vikas community still represents the most synthetic holistic development, which has been materialised in Auroville.



VIKAS LAY-OUT – 1448 m² carpet area
23 apartments, collective kitchen and toilets for 50 people

The community was built in several steps, from 1992 to 1998, and the third block of thirteen apartments was built on four floors: a basement floor with three floors above it. The concept of this building was such that it should be self-sufficient for its soil needs. The soil was dug from the basement floor (1.20m below the original ground level) to produce compressed stabilised earth blocks for building the structure of 819 m², carpet area, on 4 floors.

The foundations were done with stabilised rammed earth and the 13.40m high walls were done with CSEB of 24 cm thick. All floors and roofs were made of very flat vaults and domes for the living rooms. These vaults and domes were built with CSEB, by using the "Free-spanning" technique. All stabilisation used 5 % cement by weight.

The experiment of Vikas found its roots in Auroville's ideals. Nonetheless, its material developments could be implemented elsewhere in the world.

UNIQUE FEATURES OF THE THIRD BUILDING

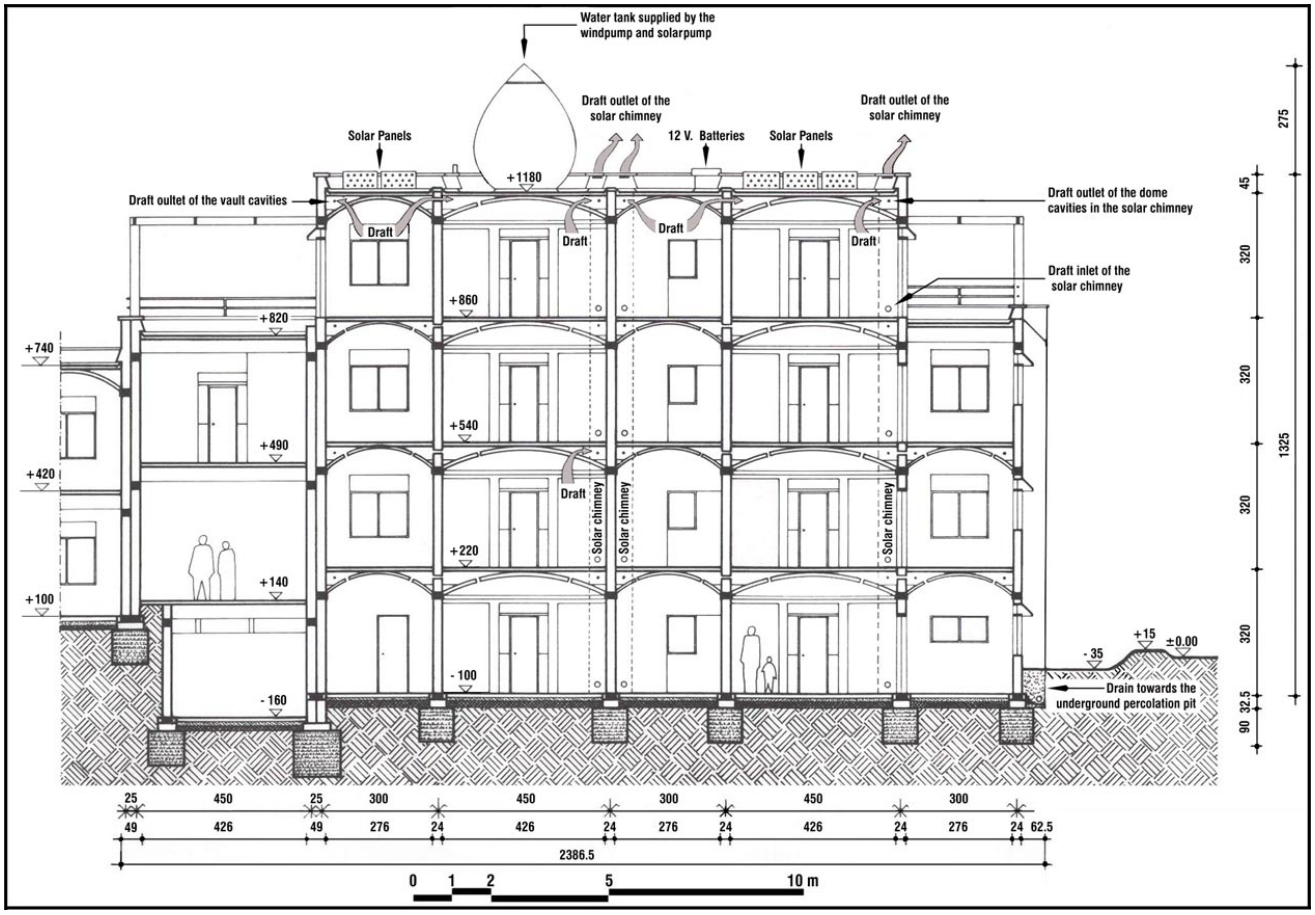
Earth was used, from the first developments of Vikas, in all parts of the buildings, from foundations to roof. The proper management of earth resources was always the first priority. The quarries where the soil was taken from were always planned first. This procedure allowed a perfect integration of the excavations with the buildings and landscape.

The first and second developments of the collective kitchen and 10 apartments on two floors could integrate the quarries as a garden reservoir and for wastewater treatment. The soil needs for these developments were already exceeding the outcome of excavations, and some soil had to be supplied from elsewhere.

13 apartments on 4 floors
(3 floors above a basement floor)

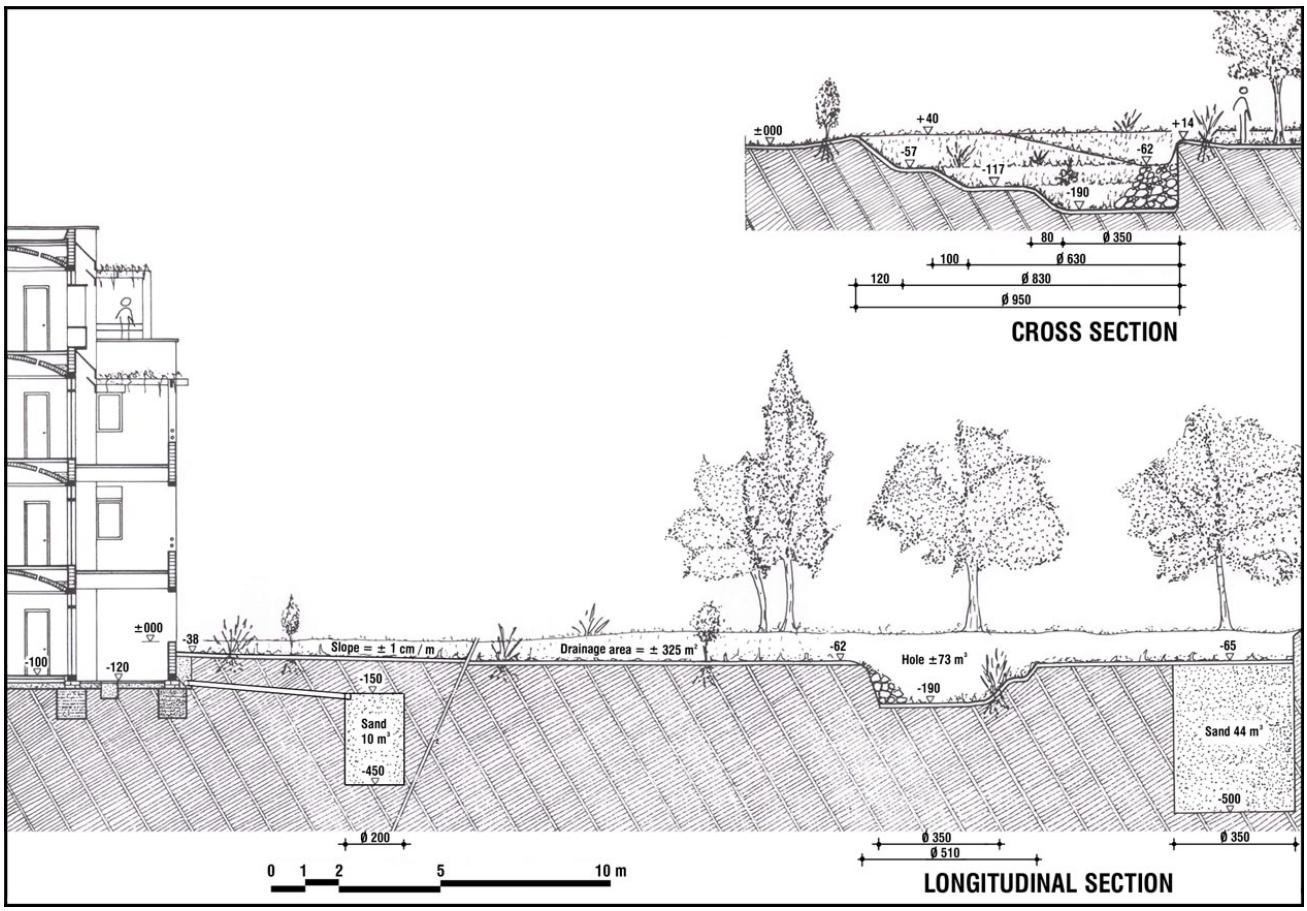
The soil requirement for the third building, which had four floors, was tremendous and the development of Vikas did not require any hole. Thus it was not possible to integrate any earth excavation in the project and therefore this building was planned with a basement floor, which was half underground (1.20m below the original ground level).

The volume of this basement floor was equivalent to the volume of soil, which was needed to produce the blocks and all the various works of the third building. Thus, the amount of soil generated by the basement was enough to build 819 m^2, carpet area, on 4 floors.



Section of the third building

To protect the basement from the inflow of rainwater a particular landscape was designed. The immediate surrounding has been shaped like a shallow crater to drain rainwater into a percolation pit. This landscape design generated even more soil than needed for the building sites at Vikas. It was given to other projects in Auroville, which could not implement the concept of a basement floor.



Percolation system of the third building

MAIN SPECIFICATIONS OF THE THIRD BUILDING

WORK	TECHNIQUE
FOUNDATIONS	● Stabilised rammed earth
BASEMENT	● AURAM plain blocks 240
PLINTH BEAM	● RCC plinth beam cast in a block shuttering with AURAM blocks 240 – ½ size
BASEMENT WATERPROOFING	● Walls: with bitumen paint on a stabilised earth plaster ● Floor: with a layer of pebbles
BASEMENT DRAIN	● Underground drainage, (∅ 3" slotted PVC pipe) sent to an underground percolation pit ● Surface drainage with a percolation pit
GALERIES FLOORING	● AURAM tiles 240
APARTMENTS FLOORING	● The choice was left to people: CEB, terracotta or ceramic tiles
WALLS	● AURAM plain blocks 240
RING BEAMS	● Composite ring beam with AURAM U blocks 240 and RCC
SPRINGER BEAMS	● RCC beams for resting vaults and domes
LINTELS	● Composite lintel, single height, with AURAM U blocks 240 and RCC
COLUMNS	● Composite pillar with AURAM round hollow blocks 240 and RCC
FLOORS AND ROOFS	● Flat vaults and domes with AURAM blocks 240, laid without support ● Precast ferrocement channels
PLASTERS	● Stabilised earth plasters for some walls

Appropriate architecture design

- Energy intelligent building
- Natural ventilation and sun protection
- Integration to the land, according to the existing nature, trees, etc.
- Adaptation to the climate, according to main winds directions, sun, etc.

Environmentaly sound materials

- Compressed stabilised earth blocks of various qualities
- Various stabilised earth based materials
- Ferrocement pieces in various parts of the buildings

Appropriate building technologies

- Stabilised rammed earth foundations with 5 % cement
- Plinths and walls in compressed stabilised earth blocks
- Stabilised rammed earth walls with 5% cement
- Composite beams and lintels and composite columns
- Vaults and domes for floors and roof, made of CSEB
- Paints and plasters with stabilised earth
- Floorings with CSEB tiles, 2.5cm thick with 5 % cement
- Ferrocement channels of 25mm thickness
- Various ferrocement items for different uses
- Ferrocement doors, shelves, etc. of 12mm thickness
- Ferrocement plasters for water tanks and ponds
- Sparing use of concrete, glass, steel, etc.

Renewable energy sources

- Solar water heaters
- Photovoltaic panels for the electricity (12 V DC)
- Surface solar pumps for the gardens
- Submersible solar pump and wind pump

Water management

- Rain water harvesting to aim zero run off during the monsoon
- Biological wastewater treatments

Earth management

- Soil for building was extracted from the site itself
- Percolation systems to harvest rainwater
- Wastewater treatment pond
- Reservoirs for garden water
- Basement floor

LEGAUM HOUSES

The initial concept was to build moveable houses. The need arose due to the housing shortage in Auroville. The international city of Auroville is under construction and, at this time, there was no master plan. Therefore, allowing building anything anywhere could have hinder major developments, which should happen later on. The concept of a moveable house was born, which can be built in a short time. It could stay in place until the time major development occurs. It could then be dismantled, without loss of materials, and rebuilt elsewhere.

A first prototype was built in 1996 and it presented totally new technical features. Its main disadvantage was an outrageous cost. A second prototype evolved into a lighter version and was built in 1997. Its cost came down to one third the price of the first prototype and thus was cost effective.

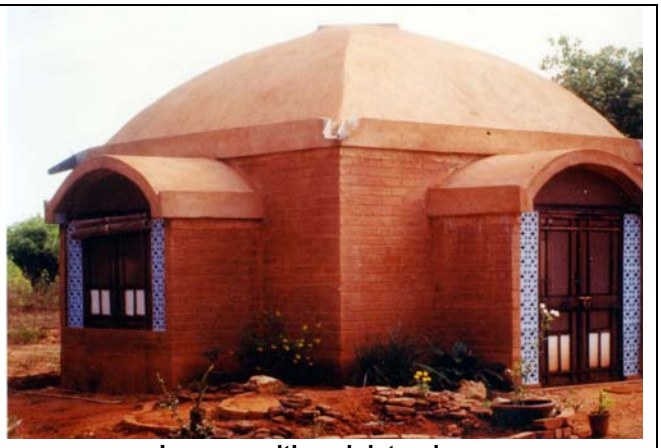
First prototype: too expensive

Second prototype: cost effective

Therefore the aims of the concept were fulfilled. But social acceptability remained one main problem. For most people a house is a life's investment and a dream, even in Auroville. It must fulfil the need of being rooted to a place and the sense of property, which is given by a house rooted in the ground. Therefore these moveable houses, as they had no foundation, were "un-rooted" and did not fulfil this psychological need.

More "rooted" houses were built by self-builders, who were really happy to build them and who are feeling at ease inside. These people got a three-week training course and we gave them the basic plans of the houses. They were left alone to manage everything and they finally developed the original concept, with additional alcoves, and six houses were built in a year time.

Legaum with a pointed dome

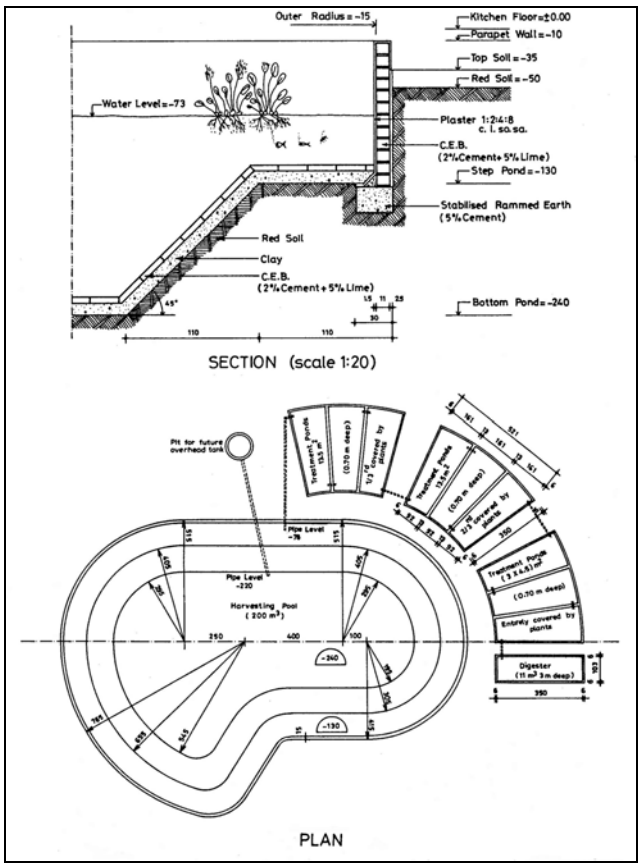


Legaum with a cloister dome

BIOLOGICAL WASTE WATER TREATMENT BY LAGOONING

This system consists of two distinct phases: an anaerobic decantation-digestion, followed by a macrophyte water treatment and the progressive re-establishment of aerobic conditions. The anaerobic treatment takes place in a watertight pit called the "decanter-digester", which is open at the top, and which gets covered by the accumulated floating matter.

The macrophyte water treatment is covered with diverse species of floating aquatic plants. The first 2/3 of the watertight pit is fully covered and the plant covering in the last third is restricted to 20 % of the surface to promote more re-oxygenation and photosynthesis. The aquatic plants were at the beginning water hyacinths and duckweeds.



Wastewater treatment system by lagooning

This wastewater treatment worked well but it is a fragile system, which requires a lot of maintenance.

Further toxic products, such as bleach, house hold products with caustic soda, etc. should not be used and it happened twice that people thrown such thing in the toilets. Therefore, the biological system died for sometimes: it started to smell, fishes died and the area was infested by mosquitoes. Once normal wastewater goes into the system, the latter require a few weeks to function again properly.

The lagooning system was finally changed for another system which more resistant and needs less maintenance: a baffle reactor system.

Along with an ecological approach for this biological wastewater treatment, the idea was to fulfil technical requirements with a sense of integration, harmonization with the buildings & surrounding nature. Therefore, buildings nearby invited the lagooning system. It tried to propose an agreeable place, where people can walk, sit and stay for a while, so as to enjoy a pleasant pond, which is treated as a lake.

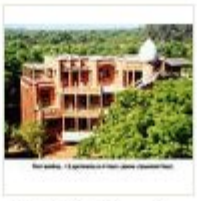

2-kitchen


3-1st-building


4-arch-building


5-basement-3rd-building


6-3rd-building


7-3rd-building-top


8-3rd-build-stair


9-green-street


10-3rd-building-corner


11-3rd-building-side


12-3rd-building-garden


13-3rd-building-garden

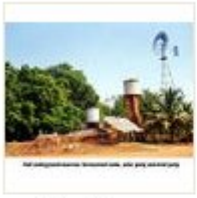

15-apartment

16-apartment

17-apartment

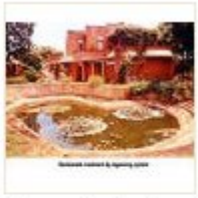
18-percolation-3rd

20-percolation-kitchen



21-windpump

22-children-pool

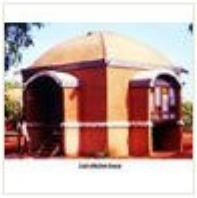


23-lagooning-treatment

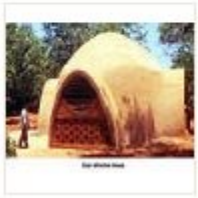
24-legaum

25-legaum

26-legaum



27-legaum



28-legaum