

HUDCO Housing

Vikas Peth
Neemuch, India

Architects	Anand Mansantosh Shirgaokar Baroda, India
Clients	Neemuch Improvement Trust Neemuch, India H.U.D.C.O. New Delhi, India
Commission	1986
Design	1986
Construction	1987
Occupancy	1989
Site	11968 m ²
Ground Floor	3140 m ²
Total Floor	5458 m ²
Costs	
- Land	4545 USD 60000 INR USD = 13.20 INR
Rate	39349 USD 6256000 INR USD = 15.90 INR
Rate	74 USD 1183 INR
- per m ²	
Currency	Indian Rupees
Programme	A mixed development of low-rise, high-density, row and cluster housing aimed at a mixed-income population. The development comprises a total of 335 units of six different types. The houses are built of local stone by local labour.

Building Type 831
1998 Award Cycle 1874.IND

PROJECT :
HUDCO Housing Complex in
Neemuch, M.P. India. (1874 IND)
CLIENT :
Neemuch Improvement Trust, Vikas
path, Neemuch, Dist. Mandsaur,
Madhya Pradesh, India.
YEAR OF CONCEPTION :
February 1986
YEAR OF COMPLETION :
May 1989

BUILT-UP AREAS :
EWS : TYPE C 17.75 sqm.
LIG : TYPE B 23.00 sqm.
MIG : TYPE A 45.00 sqm.
NUMBER OF UNITS :
Phase 1 : 178 units
Phase 2 : 157 units
Total 335 units

**COST OF CONSTRUCTION
INCLUDING INFRASTRUCTURE :**
@ Rs. 110.00 per sqft.
ie. @ Rs. 1183.00 per sqm.

ARCHITECT :
ANAND MANSANTOSH
SHIRGAOKAR,
M/s Shirgaokar & Associates
(Architects & Planners)
84/1, Tarangan Society, Behind
G.E.B. School, Akota, Baroda-390015,
GUJARAT, INDIA.
Telefax : (0265) 311 784
Ph. (R) : (0265) 312 449

**NEEMUCH -
AN INTRODUCTION**
NEEMUCH, a taluka of
the Mandsaur district of Madhya
Pradesh in central India is a remote
corner of this state. A town of
about a lakh people, it lies on the
Malwa plateau at about 500 meters
from the mean sea level and, has a
summer maximum and winter
minimum temperature of 33 °C and
23 °C respectively, apart from a
moderate rainfall. The general land
topography is undulating with fairly
levelled ground at places having a
top soil layer of good yellow earth.
Historically speaking, the influence
of the British Raj is strong with
landmark buildings such as the
station, churches and others built in
true colonial grace.

**THE PARENT BODY -
NEEMUCH IMPROVEMENT
TRUST**
Headed by a politician or
the collector, Neemuch
Improvement Trust is a local body
which acts as facilitator of land and
finance. Its prime aim is to improve
the availability of land by area
development and avail
infrastructure facilities. It also
makes finance available for the
development of housing through
the state level housing authority
and HUDCO (Housing & Urban
Development Corporation Ltd.).

● Configuration of the built form
to create an interesting visual
impact.

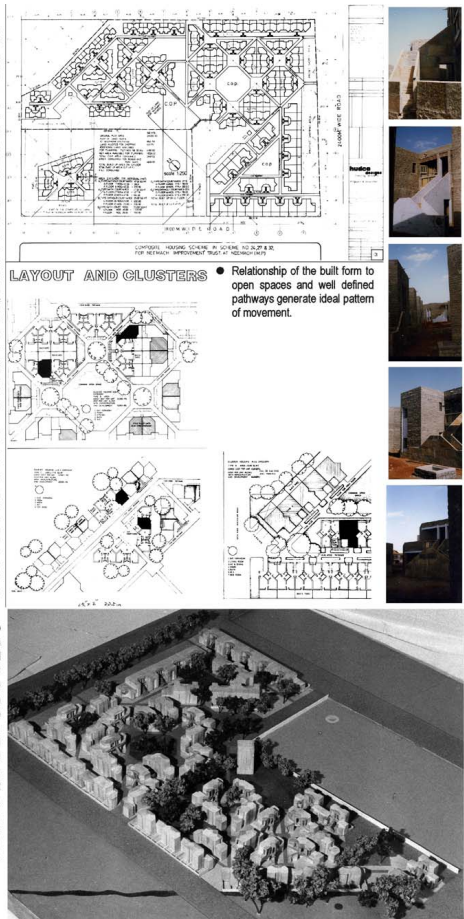
CONCEPT AND LAYOUT

The challenge here is to
achieve a greater sense of
community and yet establish an
equilibrium between function and
amenities without being wasteful.
This scheme is a low-rise,
high-density solution. It aims at the
optimal use of land and building
resources for the creation of an
appropriate environment well suited
to the socio-cultural life style of the
eventual users.

The project is on a piece of
land admeasuring about two
hectares and surrounded by main
road access from almost all sides.
It is conceived in a manner such
that it assures quality of living with
reasonable facilities, proper and
equitable distribution of
infrastructure and suitable open
spaces. Site planning establishes
the environment. The open space
and building design along with its
various sub-systems is planned
simultaneously, hence each
mini-environment relates to the
whole.

Row and cluster housing
are developed with common walls.
Privacy is achieved by the angular
placement in rows and unparallel
rows across roads and pathways,
in the process creating linear open
spaces and interlocking community
areas. All houses are provided with
front and backyards.
Dwellings at the first floor level are
given access from an outside stair
and they can avail of an open
terrace.

An important stand is to
free the clusters of heavy through
traffic, in and across clusters and
community areas. Hence, all heavy
vehicles are terminated on the
periphery and only pedestrian
movement is provided for within the
scheme. Such pedestrian
pathways are paved and shaded
with trees. The scheme is planned
such that these pathways run
diagonally and hence cut
distances effectively becoming
much used short-cuts to common
open spaces, neighbouring clusters
or to shops which are essential
commodity stores placed alongside
the main road.



● Stone walls with its natural colour and texture create a unified expression.

CONSTRUCTION - A PRIME FACTOR OF COST REDUCTION

"Housing architects,
especially those working at low cost
solutions need to have an innate
knowledge of local material and
available technology of the region."

Rubble and stone slabs
are the indigenous materials of the
region. The locals have used it for
centuries, hence, they are well
versed at its usage. Available from
a quarry about 20-25 km from the
site, the local stone can be cut and
rough dressed in thickness 75-100
mm and 600x3000 mm sizes.
Similarly rubble for the stone
masonry is available in 150-175
mm sizes in even thickness due to
the very nature of the lime stone
strata. Traditionally the locals
have been using 100 mm thick,
750x1200 mm slabs on edge
dovetailed and clamped by iron 'U'
pins staggered at intervals. Such
elements are capable of supporting
the load of a single story house or
act as partition walls or supporting
walls to staircases, parapets,
compound walls, grills, etc. or as
spanning elements like slabs,
beams, lintels, etc.



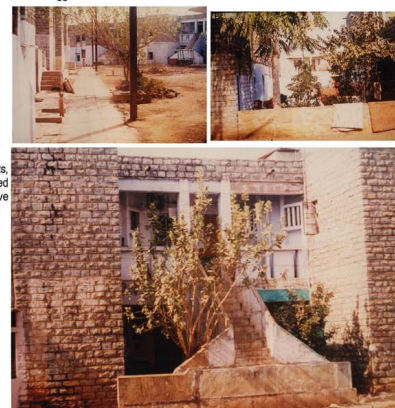
The use of reinforced cement
concrete (R.C.C.) has been
completely avoided, in
the process reducing
constructional cost effectively
by cutting down on the cost of
steel. This has been possible
because of optimal utility of the
indigenous material and
local technology.

● Erection of the stone components,
by local techniques developed
traditionally, in order to conceive
the built form.



THE ENVISIONED SCHEME AND THE EVENTUAL USERS

The scheme has been conceived such that only about 25% of the total is for the MIG to be sold at the market price, in the effort, subsidising the prices of the remaining 75% for the EWS and LIG. But seemingly actual allotment of the units has not been done as per the initial proposal and the scheme envisioned for a certain category and way of living is now occupied by people with higher aspirations. This disparity generates its own outcomes in terms of changes to the outer and the inner order and the poor maintenance of infrastructure and open space by the local authority only serves to aggravate the situation



● Participation of the occupants in the
process of creating their own
environment during the post occupancy
period of ten years.
● Narrow and shaded pedestrian paths,
connecting community open spaces
across the scheme have a climatic

PROJECT :
HUDCO sponsored
Housing Complex at
Neemuch, M.P. India.
(1874 IND)

CLIENT :
Neemuch Improvement
Trust, [Now merged into
the Municipal Council,
Neemuch], Vikas Path,
Opp. Gurudwara,
Neemuch - 453 441.
Dist. Mandsaur
Madhya Pradesh, India.

YEAR OF CONCEPTION :
February 1986

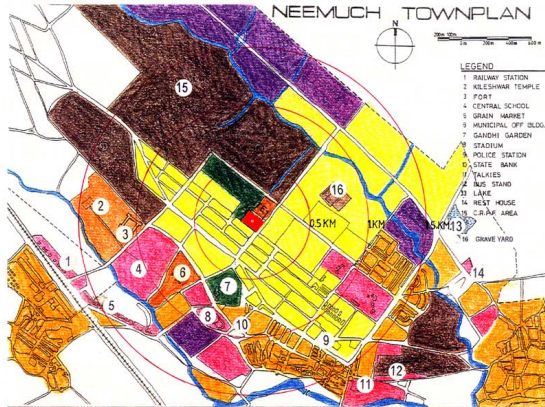
YEAR OF COMPLETION :
May 1989

BUILT-UP AREAS :
EWS: TYPE-C 17.75 sqmt.
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MIG: TYPE-A 45.00 sqmt.

NUMBER OF UNITS :
Phase 1 : 178 units
Phase 2 : 157 units
Total 335 units

COST OF CONSTRUCTION INCLUDING INFRASTRUCTURE:
@ Rs. 115.50 per sqft., ie.
@ Rs. 1244.00 per sqmt.
(OR \$ 78.25)

ARCHITECT :
ANAND MANSANTOSH SHIRGAOKAR
Shirgaokar & Associates
(Architects & Planners)
8A/1, Tarangan Society,
Behind G.E.B. School,
Old Padra Road, Akota,
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LAND USE PATTERN

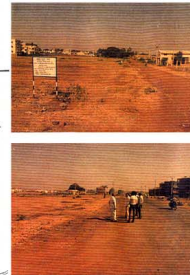
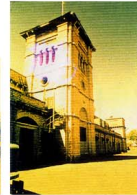


SOME LANDMARKS

*16 NEEMUCH CREMATORIUM



*1 A HISTORICAL BUILDING :
THE RAILWAY STATION
* A COLONIAL PYRAMIDAL
ROOFED STRUCTURE



NEEMUCH IN INDIA
ORIGINAL SITE CONDITION

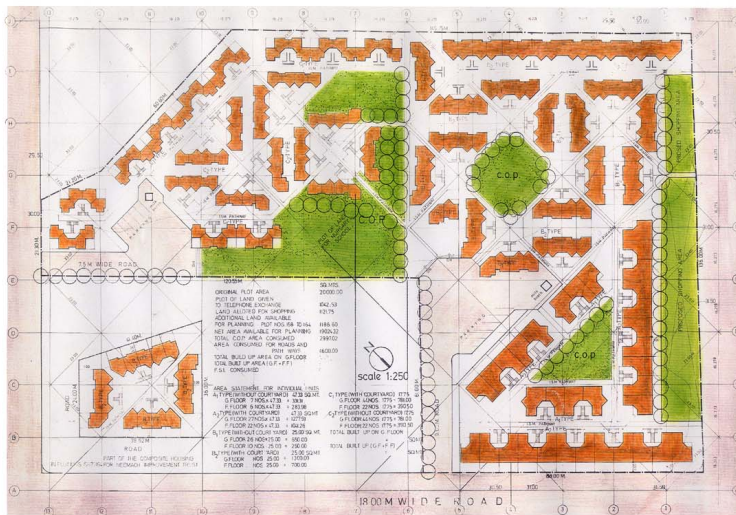


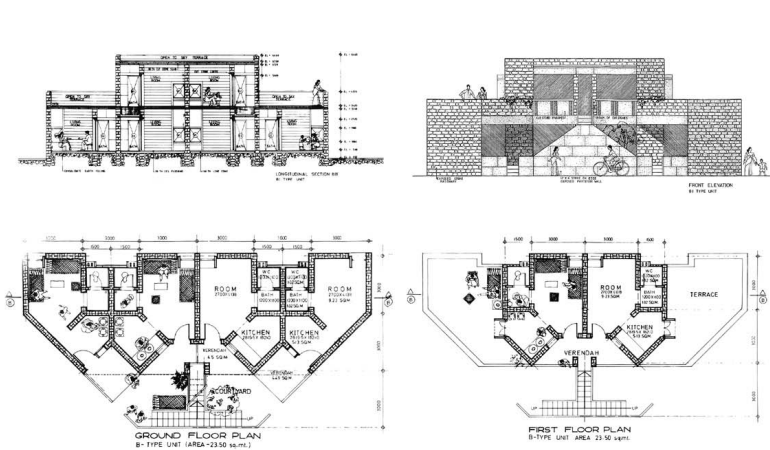
**NEEMUCH :
AN INTRODUCTION**

'NEEMUCH' is a taluka [an Indian term defining a smaller administrative unit of a district; (comprised of several villages.)] of the Mandsaur district in the central Indian state of Madhya Pradesh. Situated in its north eastern corner very close to the Rajasthan border, the town shows an influence of Rajasthani culture. Neemuch is essentially an agro center known for its garlic and opium produce. With a town population of about 1,00,000 people, it is situated on the Malwa plateau at about 500 meters [1650 feet] from the mean sea level. Summer temperatures do not exceed 33° C [90° F] and the winter temperatures are about 23° C [73° F]. The rainfall is from moderate to low and the general climatic character is breezy and pleasant. The land is undulating but at places fairly leveled ground is found having a top layer of good earth.

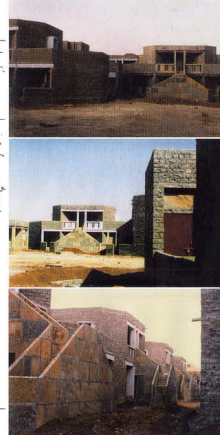
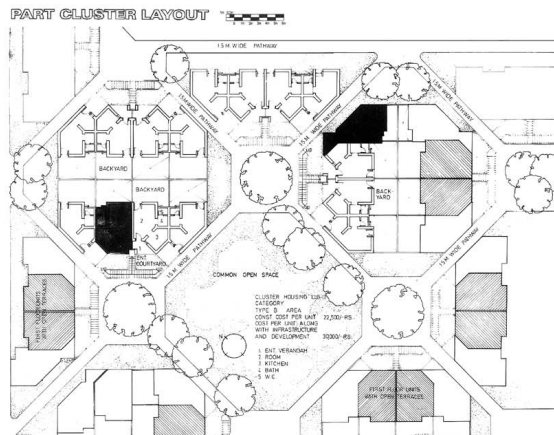
The old Neemuch town was developed by the British who selected it for a cantonment and so the town today bears a distinctive colonial character. A number of old structures in rubble masonry built by them still exist as landmarks of a bygone era. The town railway station, crematorium, churches and a large number of pyramidal roofed residential structures are scattered around the town.

**LOCATION
NEEMUCH**





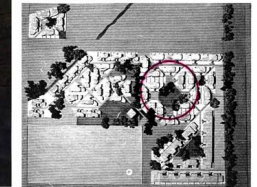
• UPPER LEVEL APPROACH FROM CLUSTER OPEN SPACES



• PRE OCCUPATIONAL IMAGERY

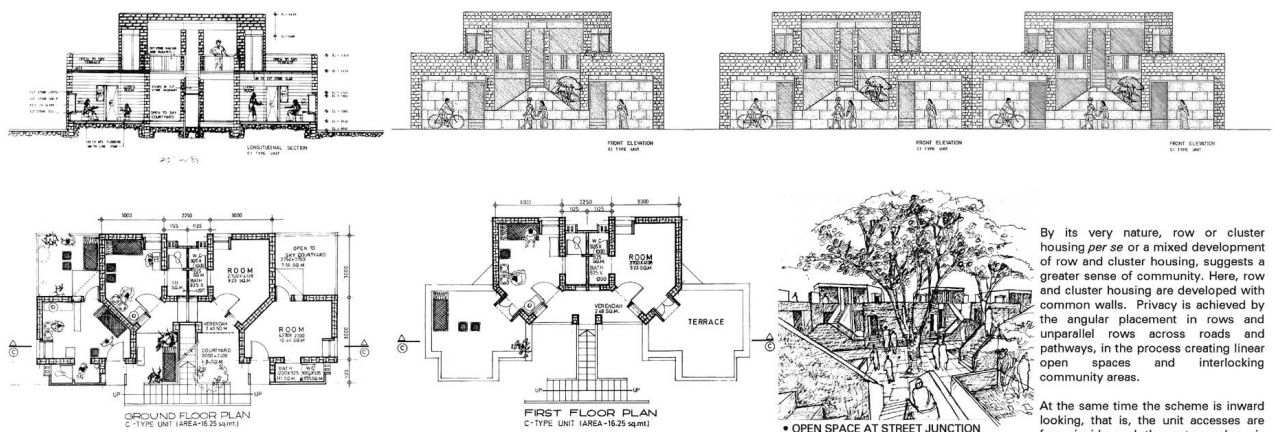


An important stand is to free the clusters from heavy thoroughfare, in and across clusters and community areas. Hence, all heavy vehicles are terminated on the periphery and only pedestrian movement is provided for within the scheme. At the same time it was an endeavor to see that in cases of emergencies, basic rescue and help vehicles must be able to travel on the 3.00 Mts. wide pathways. These pathways are paved with stone and shaded with trees. The scheme is planned such that these pathways run diagonally and hence, cut distances effectively becoming much used short-cuts to common open spaces, neighboring clusters or to shops which are essential commodity stores placed alongside the main road. [The shops were planned for a later phase but could not be constructed]



CLUSTER TYPE - B

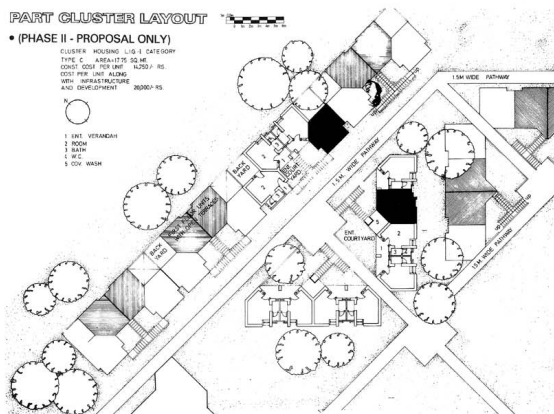
1674 IND



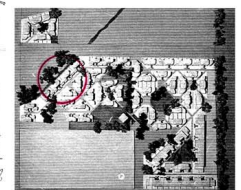
• OPEN SPACE AT STREET JUNCTION

By its very nature, row or cluster housing *per se* or a mixed development of row and cluster housing, suggests a greater sense of community. Here, row and cluster housing are developed with common walls. Privacy is achieved by the angular placement in rows and unparallel rows across roads and pathways, in the process creating linear open spaces and interlocking community areas.

At the same time the scheme is inward looking, that is, the unit accesses are from inside and the outer order is almost fortress like. The living pattern is hence, inward & encourages community living. The same formal system consisting of groups of units and cluster open spaces prevails throughout the scheme. Such a layout affords more flexibility and is adaptable to more site conditions. All houses are provided with front and backyards. Dwellings at the first floor level are given access from an outside stair and they can avail of an open terrace.

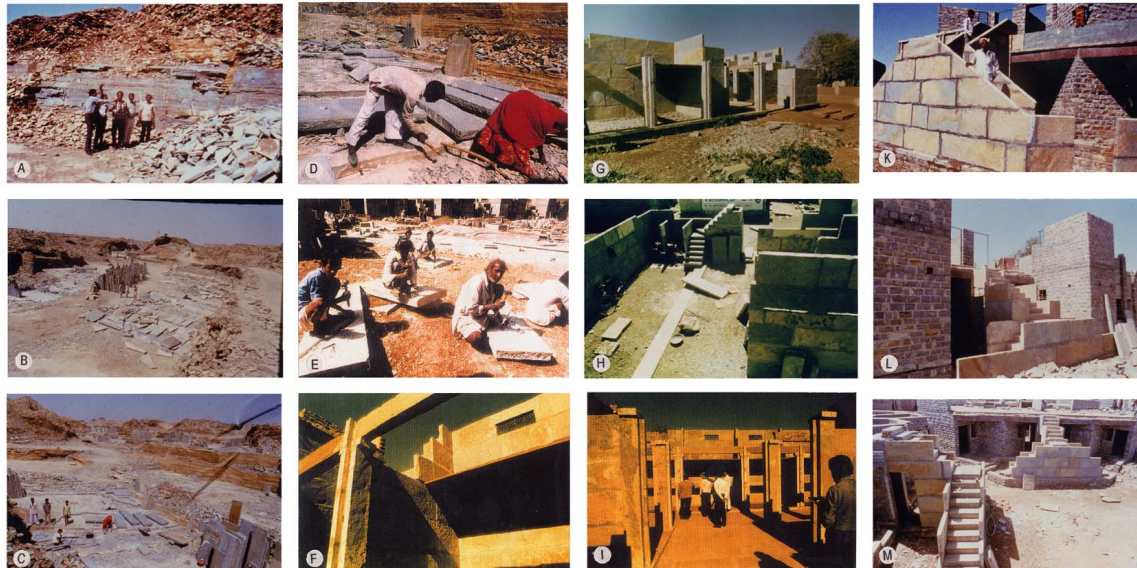


• SHADED STREET CHARACTER



CLUSTER TYPE - C

1674 IND



CONSTRUCTION : A PRIME FACTOR OF COST REDUCTION

"Housing architects, especially those working at low cost solutions need to have an innate knowledge of the local material and the available technology of the region."

Rubble and stone slabs are the indigenous materials of the region. The locals have used it for centuries, hence, they are well versed at its usage. Available from a quarry about 20-25 km from the site, the local stone can be cut and rough dressed in thickness 75-100 mm and 600x3000 mm sizes. Similarly rubble for the

stone masonry is available in 150-175 mm sizes in even thickness due to the very nature of the lime stone strata.

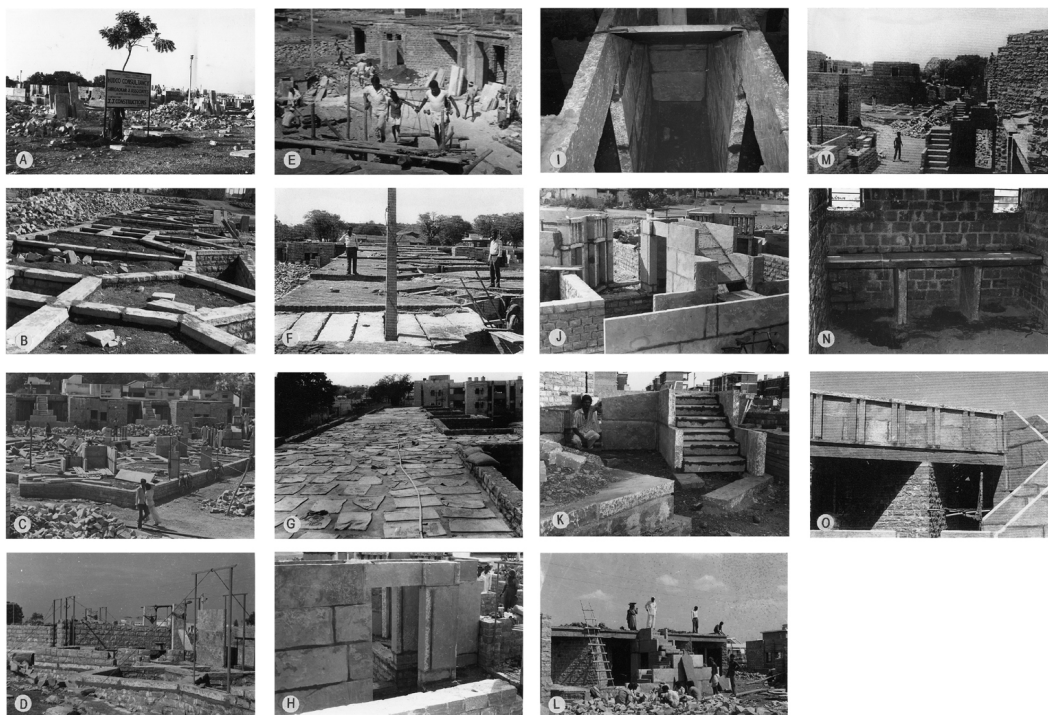
Traditionally the locals have been using 100 mm thick, 750x1200 mm slabs on edge dovetailed and clamped by iron 'U' pins staggered at intervals. Such elements are capable of supporting the load of a single storey house or act as partition walls or supporting walls to staircases, parapets, compound walls, grills, etc. or as spanning elements like slabs, beams, lintels, etc.



- A, B, C EXTRACTION OF STONE SLABS USING SIMPLE TOOLS LIKE CHISELS & CROWBARS
- D, E DRESSING OF STONE COMPONENTS ON SITE
- F ASSEMBLY OF STONE COMPONENTS IN TERMS OF PILLARS, LINTELS, BEAMS, ETC.
- G, H, I, J STUDING THE USAGE OF STONE IN LOCAL CONSTRUCTION
- K, L, M APPLYING LOCAL CONSTRUCTION TECHNIQUES IN THE SCHEME

MATERIAL RESOURCES & A SURVEY OF LOCAL CONSTRUCTION METHODS

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1974 IND



Right from the beginning the scheme was studied in conjunction with local resources and that is where the focus of the solution was geared to. The usage of resources indigenous to the region; both in terms of raw material and the technology in use at the very grass-roots of the social structure, was the core factor which became instrumental in making the scheme cost-effective. The idea being that those who built the scheme in the construction phase were from the same socio-economic back-ground as those who would eventually live there.

- A MATERIAL PROCUREMENT ON THE CONSTRUCTION SITE
- B FOUNDATION AND STONE COPING RAISING THE CUT STONE PARTITION WALLS & PILLARS ON TOP OF THE COPING
- C STEEL DOOR FRAMES INSTALLED ALONG WITH THE STONE MASONRY WALLS

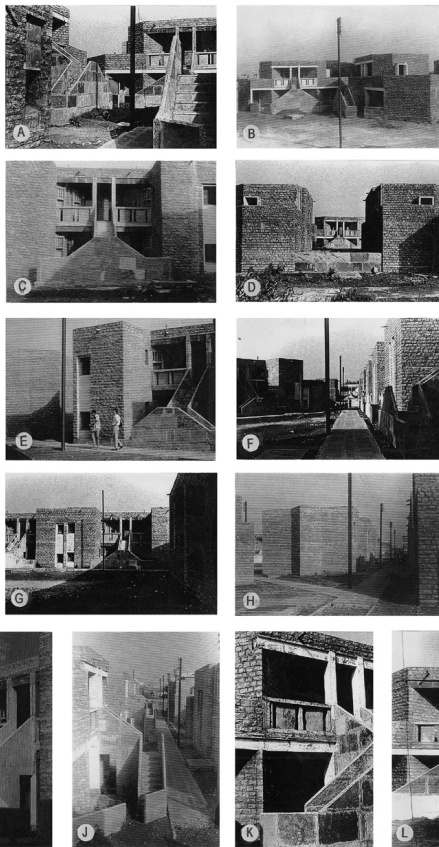
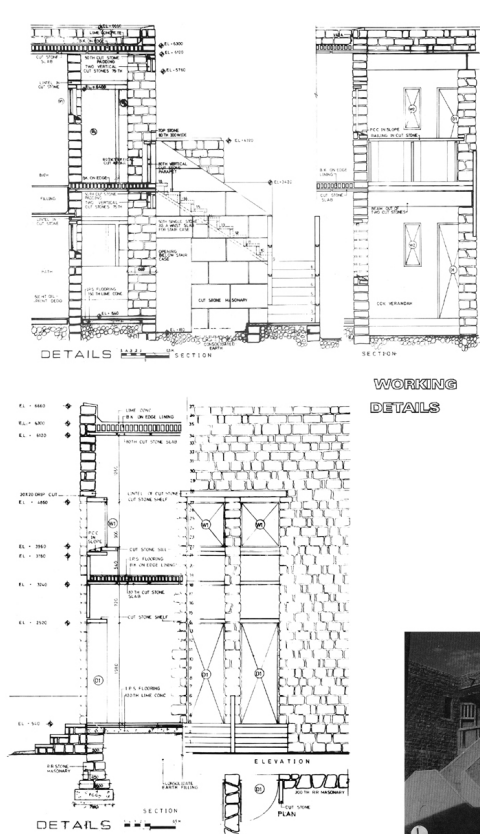
- E PROCESS OF CARRYING THE STONE SLABS TO THE 1ST & 2ND FLOOR LEVEL ON WOODEN RAMPS
- F PLACING ROOF STONE SLABS ACROSS LOAD BEARING WALLS
- G CURING OF THE HERRING BOND BRICK COURSE LAID OVER THE ROOFS WITH A THIN PLASTER MEMBRANE
- H CUT-STONE ON EDGE FORMING PARTITION WALLS & LINTELS

- I STONE SOFFIT FOR STAIRCASE DOVETAILED AND CLAMPED BY IRON 'U' PINS
- J VIEW OF STAIRCASE STONE WAIST FORMATION OF STEPS OVER THE STONE WAIST
- K BUILDING OF STAIR IN PROGRESS ALONG WITH CUT STONE RAILINGS & SUPPORTING WALLS

- M VIEW OF STAIRCASE ALONG WITH STONE MASONRY STRUCTURE
- N STONE KITCHEN PLATFORM SUPPORTED BY VERTICAL CUT STONE SLABS
- O VIEW OF SPANNING ELEMENTS AND PARAPET DETAILS

THE EXECUTION

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1974 IND



- A CONFIGURATION OF STAIRWAYS
- B CLUSTER OPEN SPACE
- C UNIT TYPE-A
- D BACKYARDS
- E, F, G SHADED PATHWAYS
- H BLANK FACADES
- I, J, K, L SOME STONE COMPONENTS

The usage of reinforced cement concrete (R.C.C.) had been completely avoided, in the process reducing constructional cost effectively by cutting down on the cost of steel. Also the fact that cement was a material meagerly used during the constructional stages, was an additional plus for making the scheme cost-effective. This had been made possible because of the optimal utility of the indigenous material - 'stone' and the local technology.

This method of construction was very similar to a precast concrete construction technique in its natural form and did not need any sophisticated equipment for execution. All work was done manually on the site. During the construction stage about 20% of the skilled labor was from the muslim community which comprises a large segment of the skilled workforce in the region having the knowhow of stone building techniques.

SALIENT FEATURES OF THE BUILT FORM

1874 IND



ARCHITECTURAL IDIOM CLUSTER TYPE - A

PRE OCCUPATIONAL CONDITION

10 1874 IND



ARCHITECTURAL IDIOM CLUSTER TYPE - B

PRE OCCUPATIONAL
CONDITION

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1974 IND



• NARROW SHADED PEDESTRIAN PATHWAYS



• ROADSIDE FACADES WITH NO DIRECT ACCESS TO THE MAIN ROAD



• CLUSTER OPEN SPACES SHOWING NEGLECT
DUE TO MINIMAL LANDSCAPING

THE ENVISIONED SCHEME AND THE EVENTUAL USERS

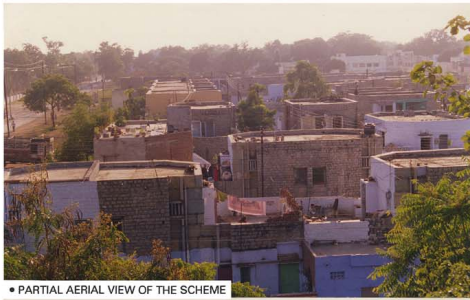
The scheme had been conceived such that only about 25% of the total number of units were for the MIG [middle income group] to be sold at the market price, in the effort, subsidizing the prices of the remaining 75% for the EWS [economically weaker sections] and LIG [lower income group]. This initial guideline has been widely disregarded. Eventually the allotment of the units was such that a totally different category of people very high up in the socio-economic strata now live in the units and hence in an environment meant for a totally different way of living. Amongst those living there about 10% families belong to the Islamic faith.

This change of living pattern and life styles in an environment not meant to house it has only created problems for the users. Changes to the outer and inner order in terms of plastering of surfaces and application of colors are a common occurrence for the units.

The problem is aggravated because the local authority which is supposed to look after the infrastructure and maintain the open spaces does not do so. Hence, the kind of environment envisioned for the scheme has not been created at all due to lack of interest on the part of the authorities. Individual users who have developed some landscape in their own private front and back yards are examples of what improvement to the scheme can be brought forth by the total development of the scheme.

POST OCCUPANCY :
THE EVENTUAL USERS

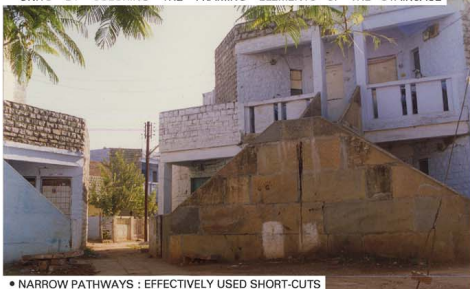
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1974 IND



• PARTIAL AERIAL VIEW OF THE SCHEME



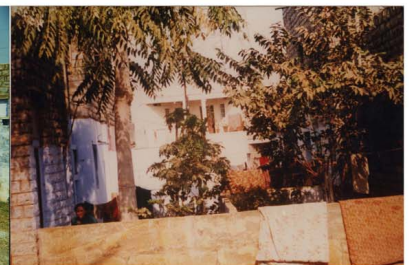
• A TRADITIONAL APPROACH : EMPHASIZING THE ENTRY POINT TO UPPER LEVEL UNITS BY COLORING THE FRAMING ELEMENTS OF THE STAIRCASE



• NARROW PATHWAYS : EFFECTIVELY USED SHORT-CUTS



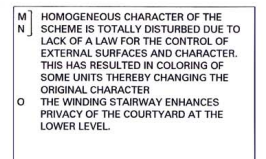
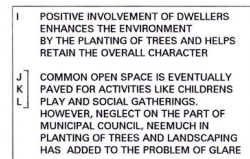
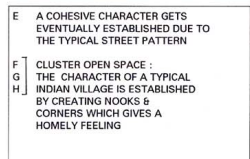
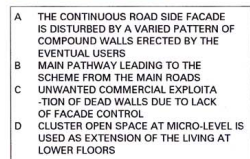
• PAINTING THE DWELLING UNITS WITH DIFFERENT COLORS TO ESTABLISH IDENTITY



SOME USERS WHO HAVE DEVELOPED SOME LANDSCAPE IN THERE OWN PRIVATE FRONT AND BACKYARDS ARE EXAMPLES OF WHAT IMPROVEMENT TO THE SCHEME CAN BE BROUGHT FORTH BY ITS TOTAL DEVELOPMENT

POST OCCUPANCY :
THE EVENTUAL USERS

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1974 IND



A THE CONTINUOUS ROAD SIDE FACADE IS DISTURBED BY A VARIED PATTERN OF COMPOUND WALLS ERECTED BY THE EVENTUAL USERS
B MAIN PATHWAY LEADING TO THE SCHEME FROM THE MAIN ROADS
C UNWANTED COMMERCIAL EXPLOITATION OF DEAD WALLS DUE TO LACK OF FACADE CONTROL
D CLUSTER OPEN SPACE AT MICRO-LEVEL IS USED AS EXTENSION OF THE LIVING AT LOWER FLOORS

E A COHESIVE CHARACTER GETS EVENTUALLY ESTABLISHED DUE TO THE TYPICAL STREET PATTERN
F CLUSTER OPEN SPACE :
G THE CHARACTER OF A TYPICAL INDIAN VILLAGE IS ESTABLISHED BY CREATING NOOKS & CORNERS WHICH GIVES A HOMELY FEELING
H

I POSITIVE INVOLVEMENT OF DWELLERS ENHANCES THE ENVIRONMENT BY THE PLANTING OF TREES AND HELPS RETAIN THE OVERALL CHARACTER
J COMMON OPEN SPACE IS EVENTUALLY PAVED FOR ACTIVITIES LIKE CHILDRENS PLAY AND SOCIAL GATHERINGS. HOWEVER, NEGLIGENCE ON THE PART OF MUNICIPAL COUNCIL, NEEMUCH IN PLANTING OF TREES AND LANDSCAPING HAS ADDED TO THE PROBLEM OF GLARE
K
L

M HOMOGENEOUS CHARACTER OF THE SCHEME IS TOTALLY DISTURBED DUE TO LACK OF A LAW FOR THE CONTROL OF EXTERNAL SURFACES AND CHARACTER. THIS HAS RESULTED IN COLORING OF SOME UNITS THEREBY CHANGING THE ORIGINAL CHARACTER
N THE WINDING STAIRWAY ENHANCES PRIVACY OF THE COURTYARD AT THE LOWER LEVEL
O

POST OCCUPANCY :
THE SCHEME TODAY

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1974 IND