

"Aranya" - Low Cost Housing, Indore 1

"ARANYA" LOW COST HOUSING AT INDORE, INDIA

A sense of continuity of fundamental values of the society is the essence of good habitat. The ideological basis for planning Aranya has been the following:

- a) Vitality - development to support socio-physical aspirations of the community.
- b) Imageability - builtform to impart identity and inculcate a sense of belonging amongst the inhabitants.
- c) Equity - to create equitable balanced community with satisfactory level of environmental qualities and opportunities for all.
- d) Efficiency - to realize development that optimizes natural, material as well as human resources to the advantage of the user group.
- e) Flexibility - to evolve framework that absorbs with ease the progressive change and growth as a part of natural development process.
- f) Feasibility - to ensure development within given legal, fiscal and organizational milieu.

Design

Aranya has demonstrated an innovative approach to integrated development creating wholistic environment rooted in socio-cultural and economic milieu of the place and sympathetic to the way of life of the urban poor.

A rectilinear site measuring 86 hectares is designed on the idea of site and services basis, to accommodate over 6500 families (dwellings), largely from the economically weaker section.

The settlement is conceived as agglomeration of six self contained neighborhoods. Their size and organization incorporates all the neighborhood facilities such as schools, medical centers, shops etc. in appropriate quantities to sustain community life. For identity, access equity and cohesive functioning the commercial, community and recreational amenities, required for all, are located in a linear spine in the center of the settlement while convenient shops and other neighborhoods facilities are dispersed to be accessible in walking distance. Amenities are well integrated with open spaces to allow overlapping use all throughout day. Open spaces are interlined to form a pedestrian network connecting the whole settlement.

The formal street network draws the vehicular traffic outward to the perimeter road while pedestrian traffic on informal pathways and open space network flows in the opposite direction achieving clear and safe segregation of slow and fast moving traffic. Non rectilinear alignment of streets with varying widths, bends and widenings are provided to accommodate range of spontaneous human activities. The hierarchy of commercial activities coincides with street hierarchy. Formal commercial outlets are along major arterial roads while informal shopping areas occur along narrow streets and open spaces throughout the settlement.

Topography of the site was important determinant in planning roads, and other service networks to maximize use of gravity flow and minimize cut and fill of land. Introduction of open slot around service core combines twice as much toilets per manhole and cuts down pipe lengths to half, achieving economic efficiency without effecting its performance. The service slot has been integrated as design element helping break the continuous built mass and becoming useful play area for children with platform for neighborly interaction.

To foster community feel and mutual interdependence various income groups have been combined and arranged in concentric rings of plots. Each dwelling has its own compound and territory which encourage social interaction and supports a way of life of the user group. Like mohallas of traditional towns, dwellings are grouped to create small cluster spaces in a form of short streets, or cul-de-sacs or open squares. Dwelling are oriented north-south and arranged as row houses so that minimum of incident solar radiation will be absorbed by the walls.

Mass housing where end user is anonyms it is a challenge to offer choices of form through flexibility of design. At Aranya variations in otas, entrances, staircases, verandah, balconies and fenestration, within the standardized layout, help each house gain a unique character. These variations not only enrich street facade but also help users express their identity. This arouses a sense of belonging in the user, essential to the healthy development of any living environment and its subsequent maintenance.

Checklist Of Considerations

Based on the evolved hierarchies, a comprehensive checklist of desirable design considerations was compiled. In distilled form, they are as follows:

Planning at the Township level:

- * Provide a focus to the township.
- * Achieve an overall cohesion of different areas and activities.
- * Allow formation of an environmental area by discouraging through traffic.
- * Incorporate all the basic community and institutional facilities.
- * Place the community and central facilities within easy reach.
- * Provide a well ordered hierarchy of roads.
- * Provide a well ordered hierarchy of open spaces.
- * Provide a well ordered hierarchy of commercial spaces.
- * Allow design population densities to accommodate future growth.
- * Ensure that overall land use and marketable areas reflect economic planning in the Indian context.
- * Adopt self-financing approach through cross-subsidy.

Planning at the Sector level:

- * Maintain context with the land.
- * Use natural features and landmarks constructively and efficiently.
- * Reflect the local, historical characteristics in the built form.
- * Encourage interaction and integration amongst income/social groups.
- * Foster a viable community in each sector.
- * Promote multiple and overlapping land uses.
- * Segregate pedestrian and vehicular movements.
- * Optimize land use, roads and other infrastructure.
- * Provide a sense of boundary to each sector.
- * Provide local facilities within easy reach.
- * Provide well distributed open spaces for various activities.
- * Provide defined entry points and discourage through vehicular traffic.

Planning at the community/street level:

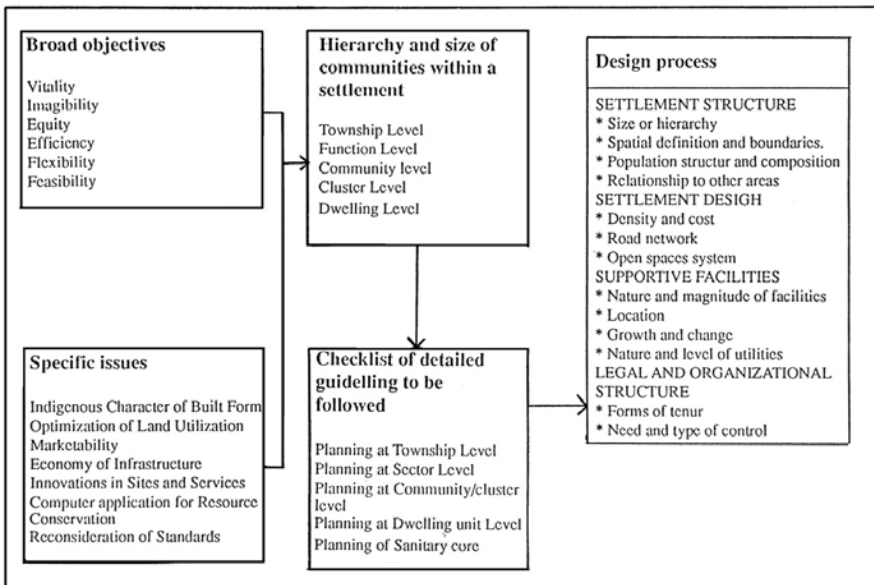
- * Promote person to person contact through cluster of human scale.
- * Provide an individual character to each cluster.
- * Create a functionally sympathetic and an esthetically pleasing street environment.
- * Provide spaces for social and religious activities.
- * Promote income generation at cluster level.
- * Provide all essential amenities and utilities to every street.
- * Define clearly each cluster's territory and the sense of entry.
- * Have regard for pedestrians.
- * Optimize cluster patterns for economic infrastructure provision and easy access.

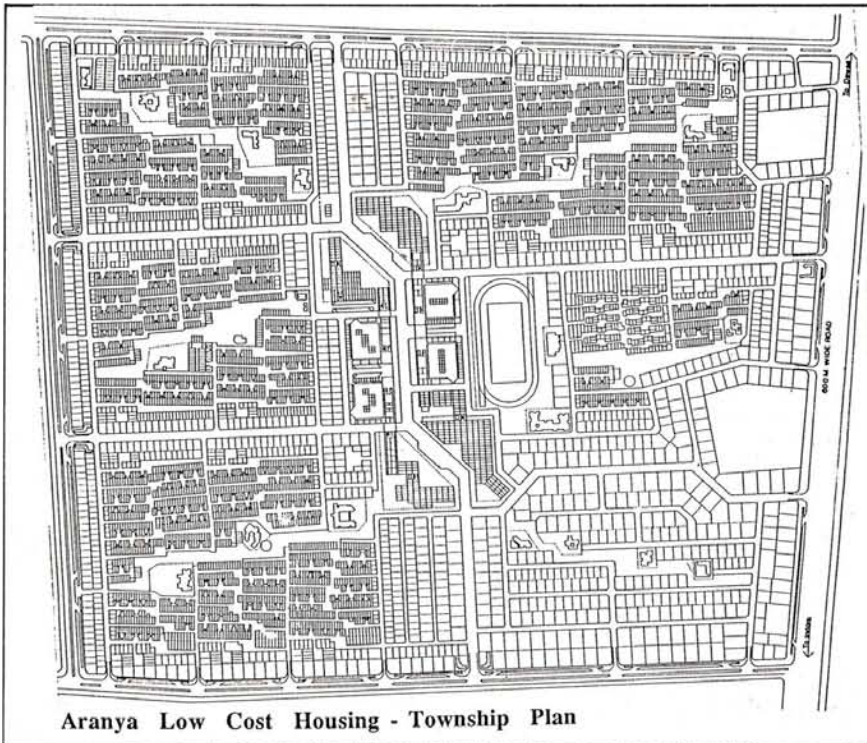
Planning at the Dwelling level:

- * Make the dwellings sensitive to the lifestyle and daily needs of the people.
- * Give each dwelling a rich, unique identity
- * Integrate the spaces with in and outside the dwelling.
- * Maintain privacy within and from outside.
- * Consider orientation, light, cross ventilation, etc. for natural climate control.
- * Allow for vertical and horizontal expansion of the dwelling in future.
- * Provide rear access for sub-letting bicycle, cattle etc.
- * Study the efficiency of plot sizes, walls, foundations and internal circulation.
- * Use appropriate materials and construction methods.
- * Make the dwelling simple and economic to encourage the 'self-built' approach.

For planning the sanitary service core in low cost housing, the following additional guidelines were considered:

- * Ensure full privacy to the w.c. and wash area
- * Provide safe and adequate sanitation for all families.
- * Consider the environmental impact of the sanitation core.
- * Integrate the sanitary facilities within the dwelling.
- * Make the sewage system adaptable to alternative treatment/disposal methods.
- * Consider energy conservation and the recycling of waste.
- * Radically streamline the services to reduce costs and ensure easy maintenance
- * Propose economic planning of services, structure, sub-structure and cores.





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|--|---|---|
| <p>AUD Auditorium</p> <p>B Bus</p> <p>BS Bus Stop</p> <p>CSC Community Science Centre</p> <p>CCU Central Complex Unit</p> <p>CH Community Hall</p> <p>CP Car Parking</p> <p>EST Electrical Substation</p> <p>FM Folk Art Museum</p> <p>FST Fire Station</p> <p>HC Health Centre</p> <p>LH Library</p> <p>OAT Open Air Theatre</p> <p>PG Play Ground</p> <p>PP Petrol Pump</p> <p>PS Primary School</p> <p>PT Police Station</p> <p>PTO Post and Telegraph Office</p> <p>R Restaurant</p> <p>RI Religious Institution</p> <p>SC Sports Club</p> <p>SS Secondary School</p> <p>SW Swimming Pool</p> <p>WT Water Tank & Children's Park</p> | <p>Housing Types</p> <p>A 613</p> <p>B 474</p> <p>C 225</p> <p>F 223</p> <p>D 140</p> <p>G 93</p> <p>H 56</p> <p>E 25</p> | <p>Plot Area M²</p> <p>1 Apartments</p> <p>2 Offices</p> <p>3 Large Shops</p> <p>4 Medium Shops</p> <p>5 Market Stalls</p> <p>6 Workshop</p> |
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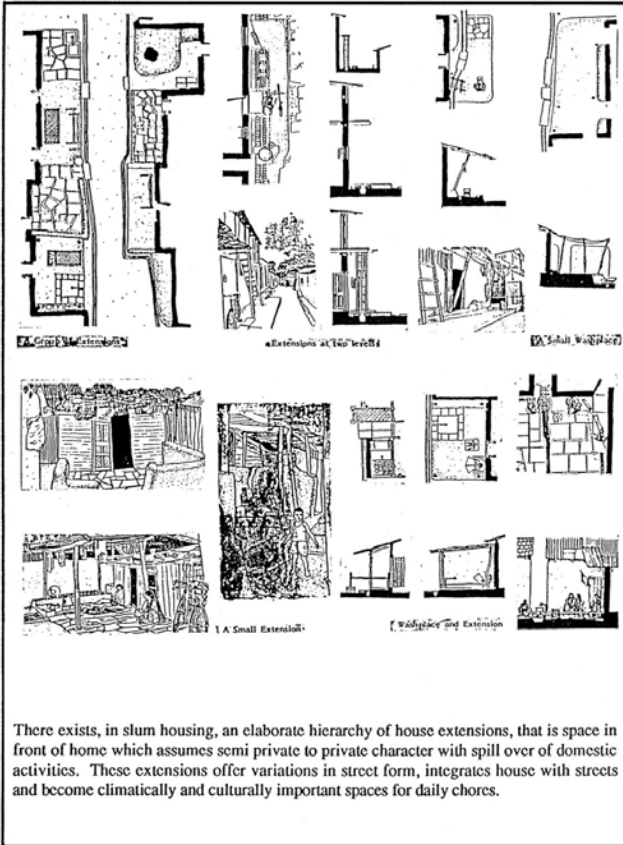
NUMBER OF PLOTS IN EACH INCOME CATEGORY
ARANYA AREA DEVELOPMENT PROJECT, INDORE

Income Category	Number of Plots	Monthly Income (Rupees/month)	Percent of Plots	Plot area m ²
EWS I, II, III	4,262	350	65.1	35
LIG II, III	799	450	12.2	55
LIG I	296	600	4.5	92
MIG II	626	1,100	9.5	139
MIG I	265	1,800	4.0	223
HIG II	180		2.7	325
HIG I	75		1.1	474
Flats	40		0.6	
Total	6,543			

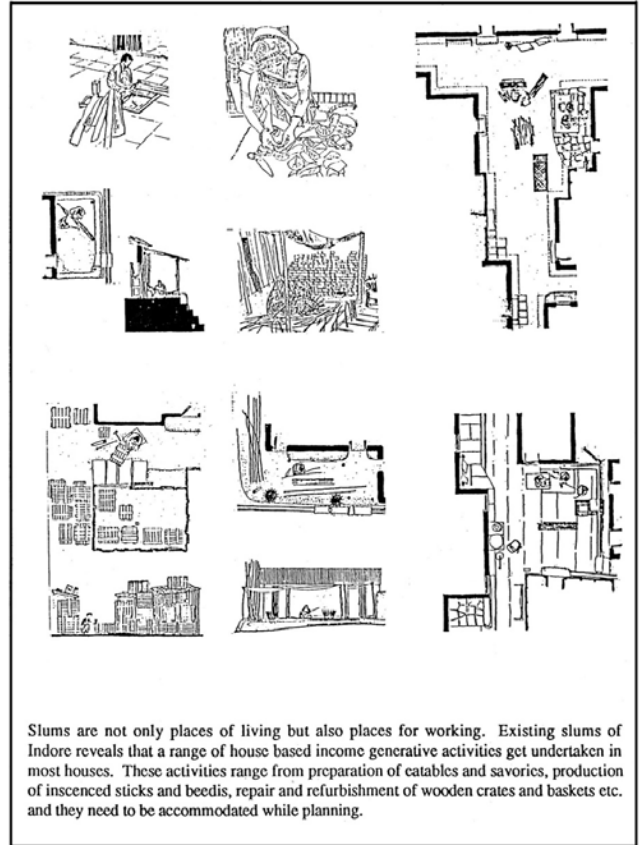
LAND DISTRIBUTION
ARANYA AREA DEVELOPMENT PROJECT, INDORE

Particulars	Area Hectares	Percentages
Net Planning Area	86.24	100.00
Marketable		
Plot Area	50.17	58.17
Shopping		
1) Commercial Centre	1.68	1.95
2) Shopping (main roads)	0.58	0.67
3) Internal Shopping	0.54	0.63
1/2 double slots		
Industrial	0.14	0.16
School and Community	5.81	6.74
Non-Marketable		
Road Area	20.29	23.52
Open Spaces		
1) Public area	5.89	6.83
2) Single service slots	0.65	0.76
3) 1/2 double service slots	0.49	0.57
Overall Land Distribution		
Total Marketable	58.92	68.32
Total Non-Marketable	27.32	31.68

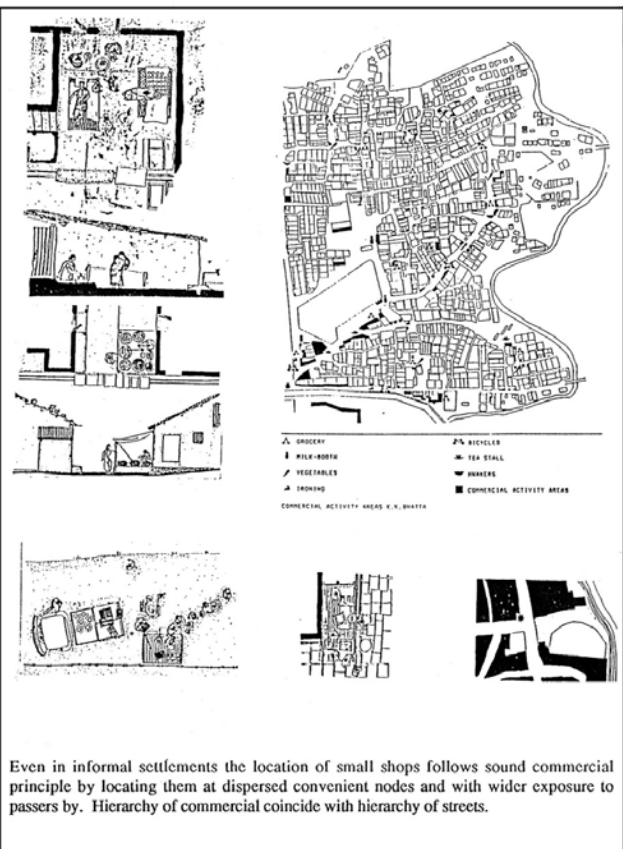
Programme



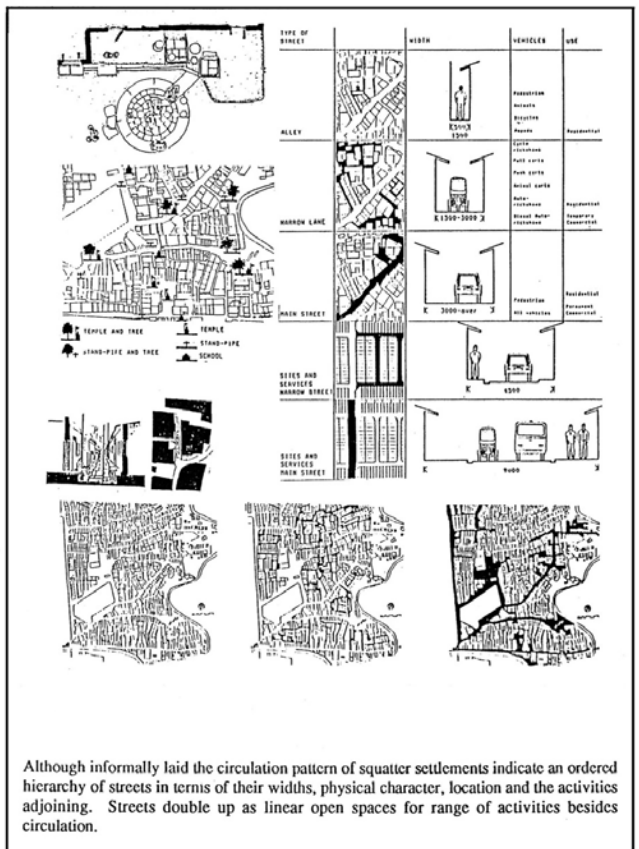
There exists, in slum housing, an elaborate hierarchy of house extensions, that is space in front of home which assumes semi private to private character with spill over of domestic activities. These extensions offer variations in street form, integrates house with streets and become climatically and culturally important spaces for daily chores.



Slums are not only places of living but also places for working. Existing slums of Indore reveals that a range of house based income generative activities get undertaken in most houses. These activities range from preparation of eatables and savories, production of incensed sticks and beedis, repair and refurbishment of wooden crates and baskets etc. and they need to be accommodated while planning.

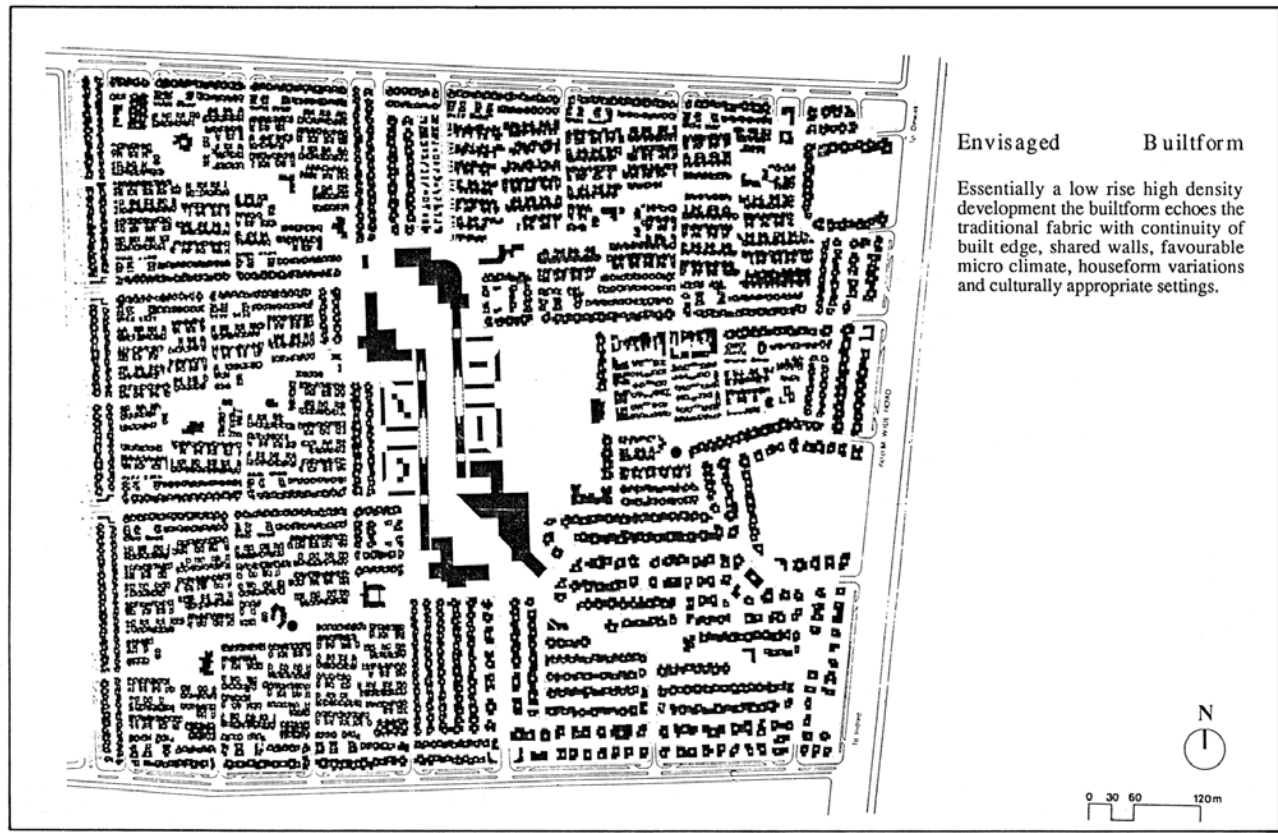
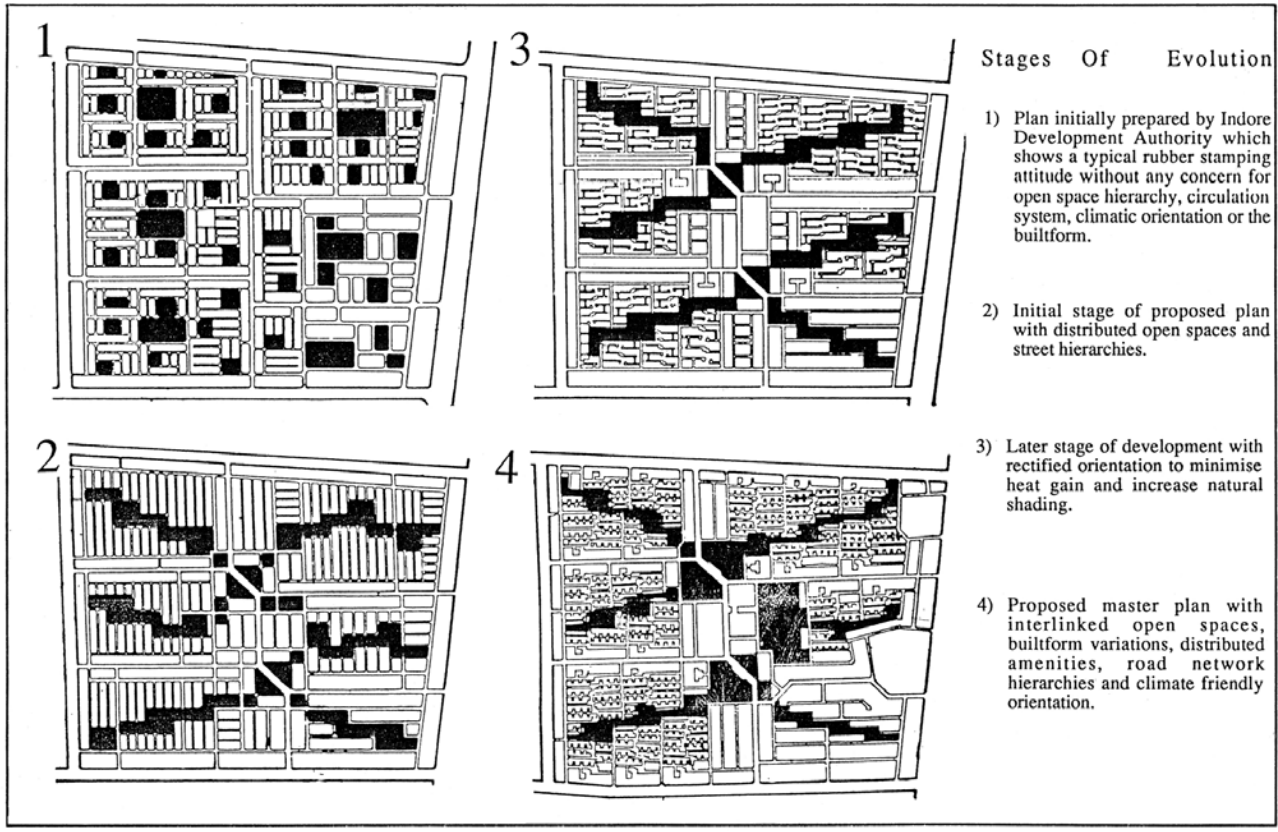


Even in informal settlements the location of small shops follows sound commercial principle by locating them at dispersed convenient nodes and with wider exposure to passers by. Hierarchy of commercial coincide with hierarchy of streets.

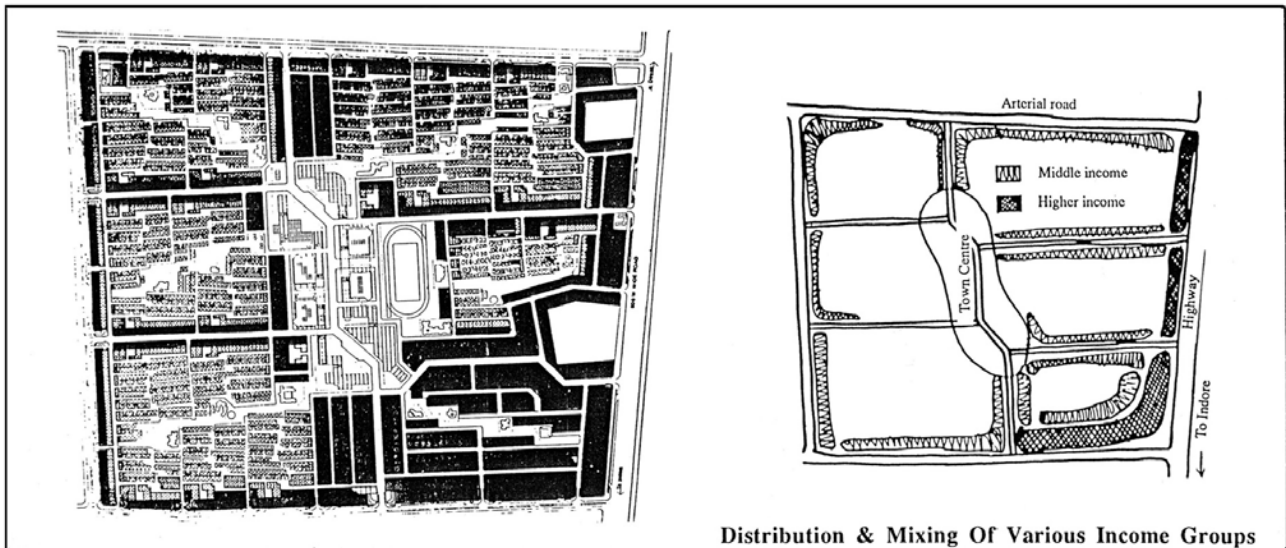
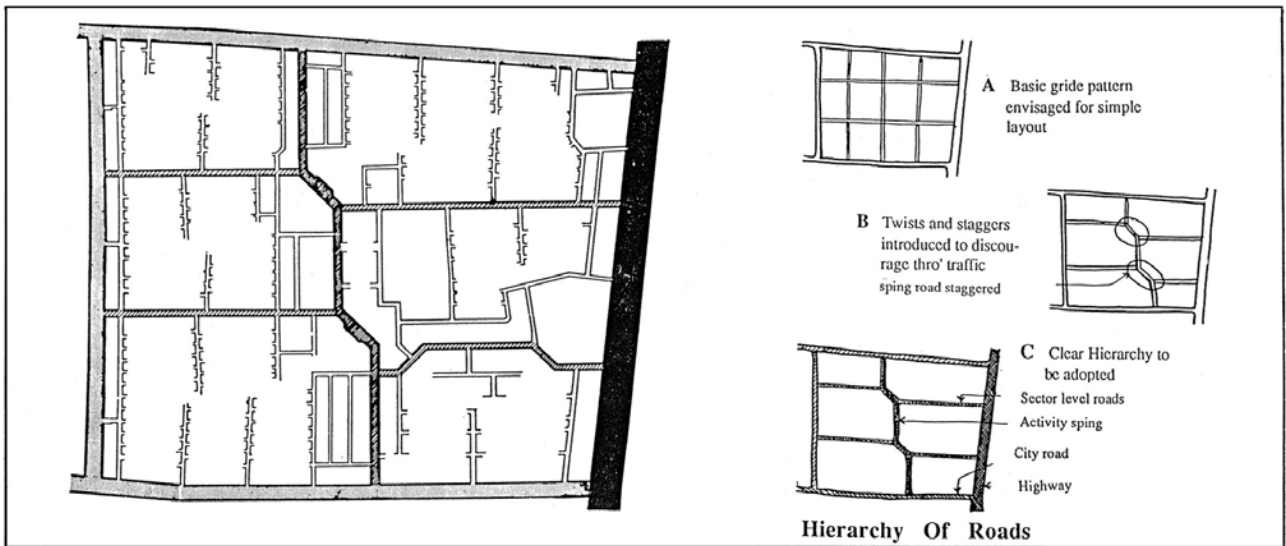
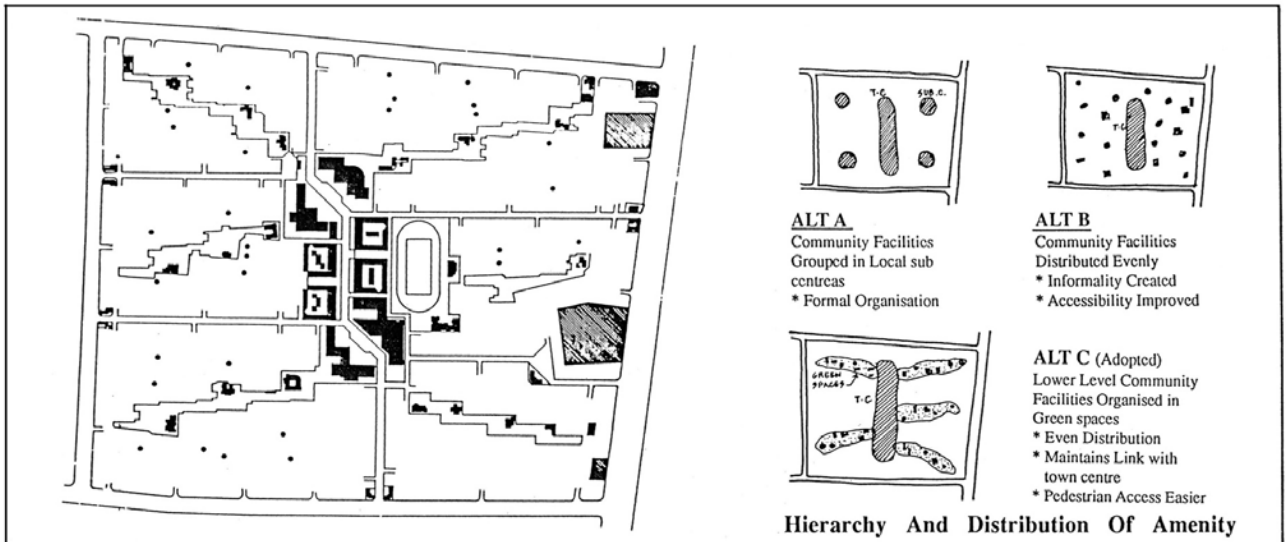


Although informally laid the circulation pattern of squatter settlements indicate an ordered hierarchy of streets in terms of their widths, physical character, location and the activities adjoining. Streets double up as linear open spaces for range of activities besides circulation.

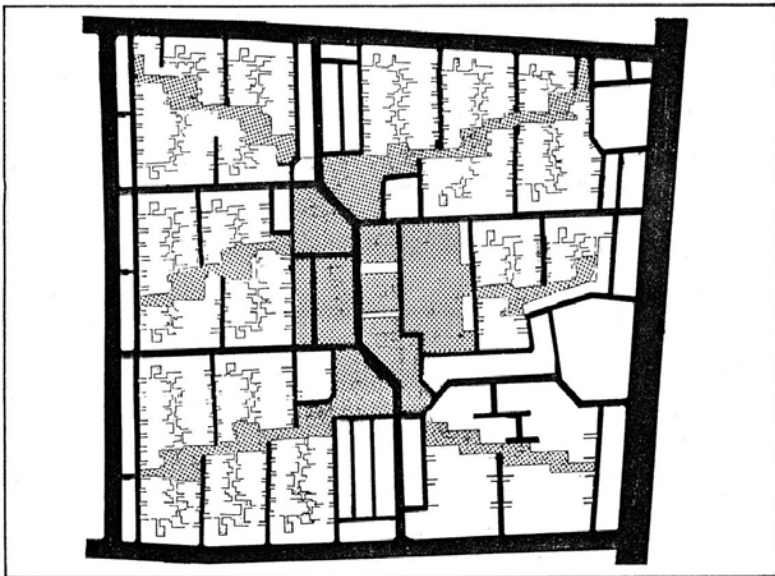
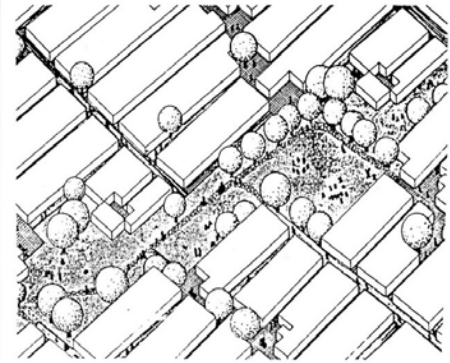
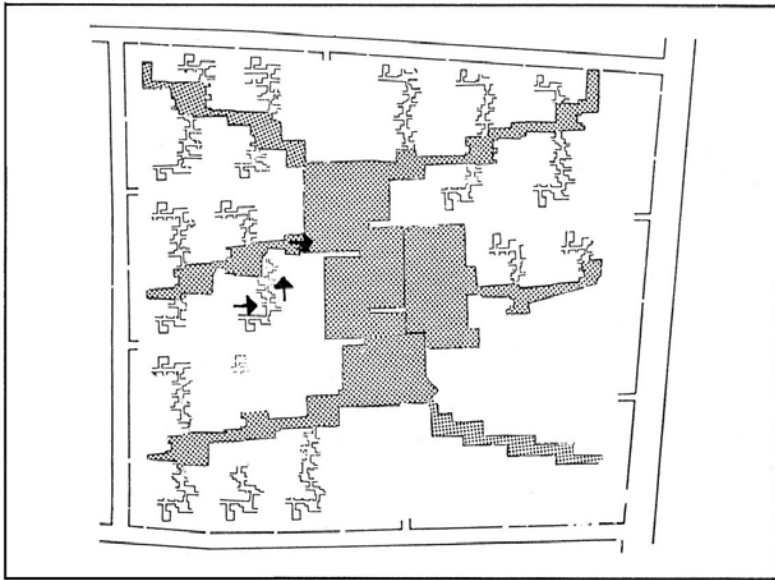
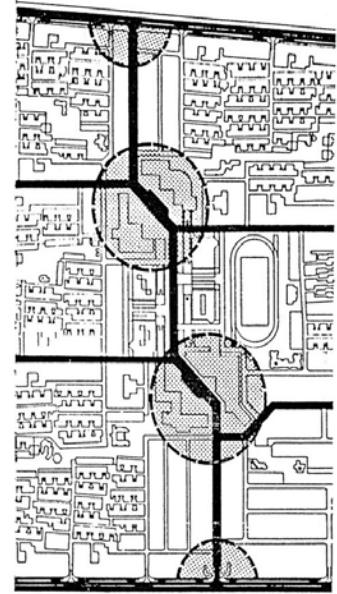
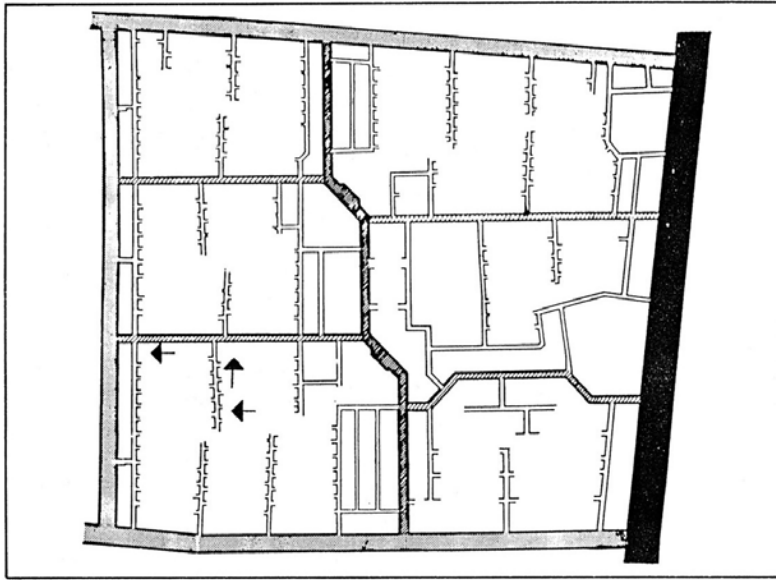
Reference And Studies (Existing Squatments in Indore) 4



Evolution - Master Plan 5

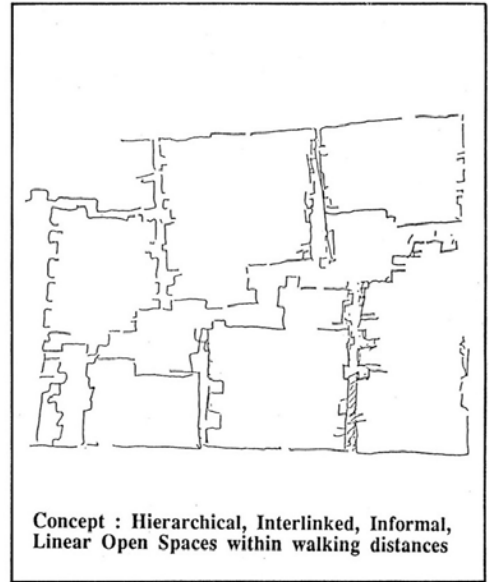
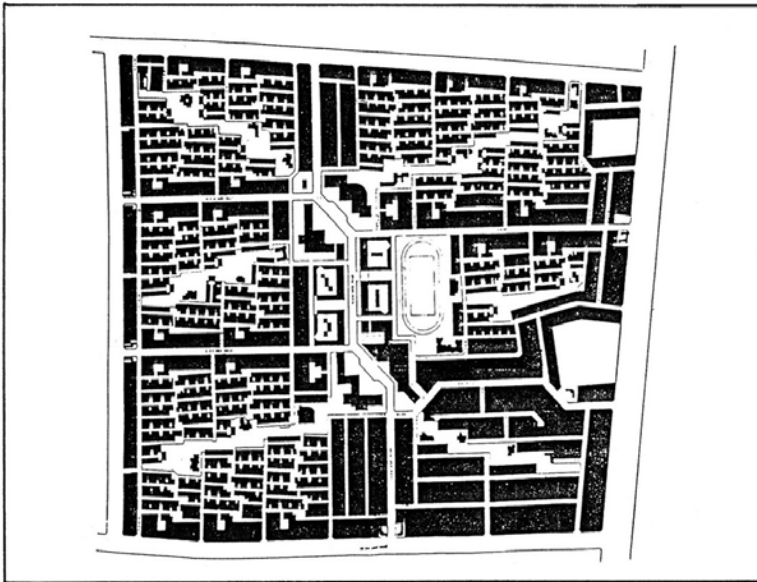


Hierarchy And Distribution 7

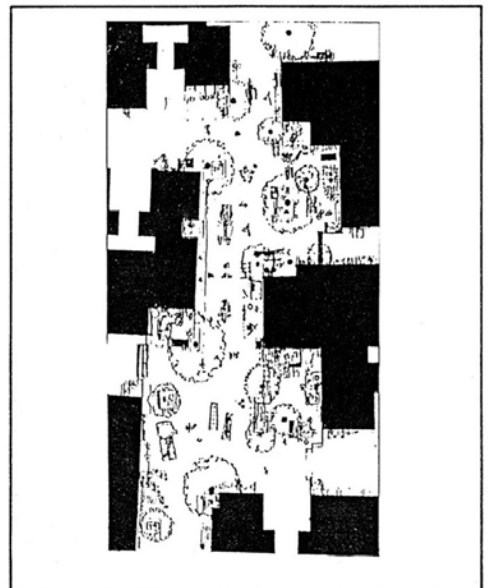
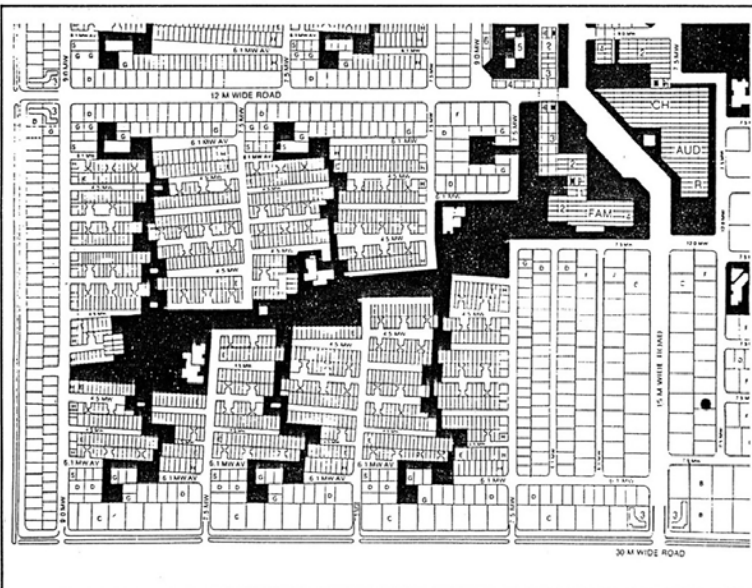
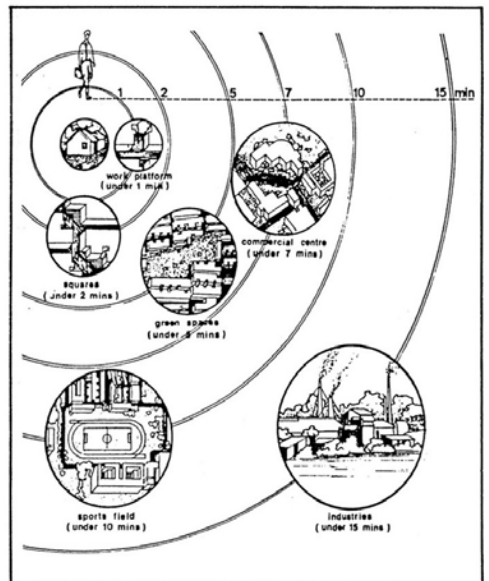
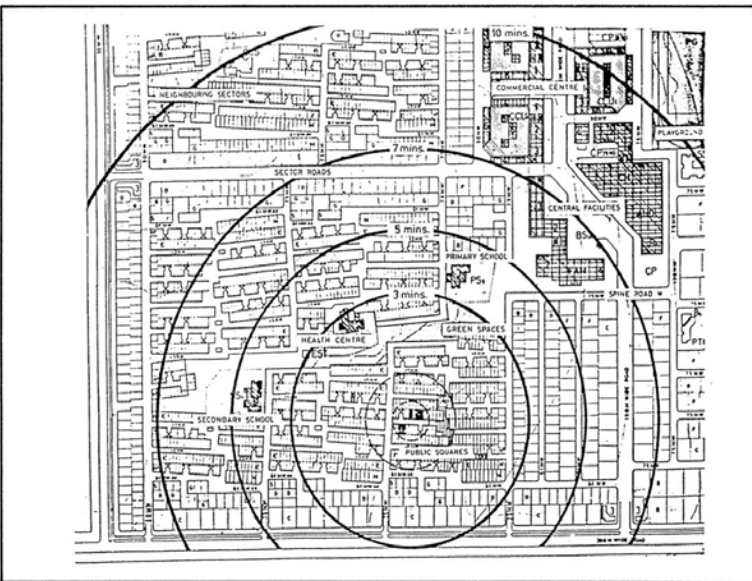


- * Vehicular Access in the form of rectilinear and formal roads in the hierarchy of 4.5 mts wide to 15 mts wide road draw the vehicles outwardly.
- * Pedestrian access in the form of informal interlinked openspaces draws people inwardly
- * This achieves a clear and safe segregation of vehicular and pedestrian movements

Circulation Network



Concept : Hierarchical, Interlinked, Informal, Linear Open Spaces within walking distances



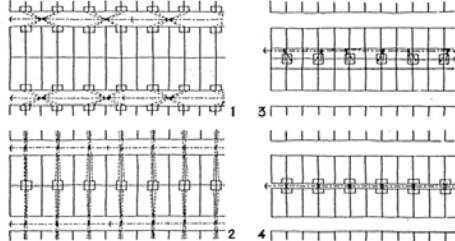
Path And Linkages 10

As shown in option 1 the conventional method of placing toilet in front goes against cultural and aesthetic priorities and manages to connect eight toilets to one manhole with sewerage line on every street.

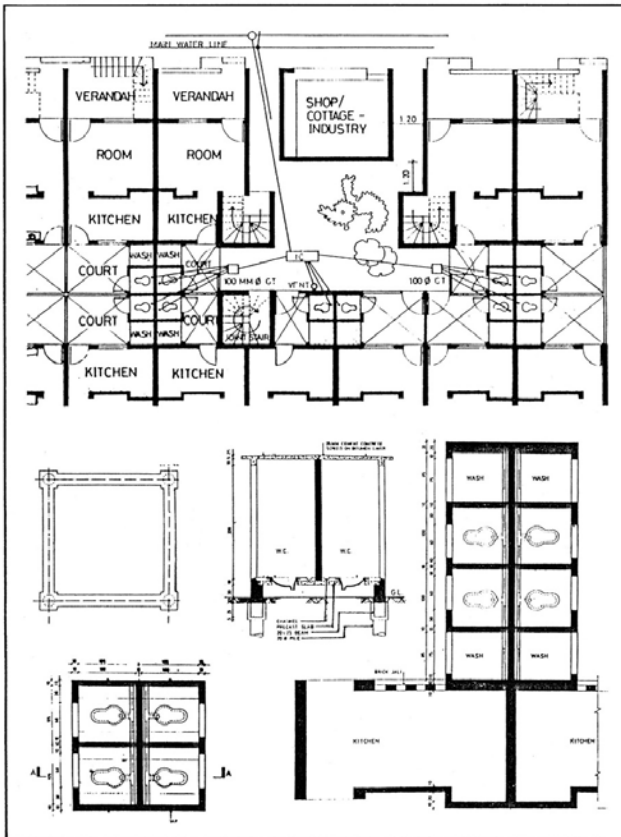
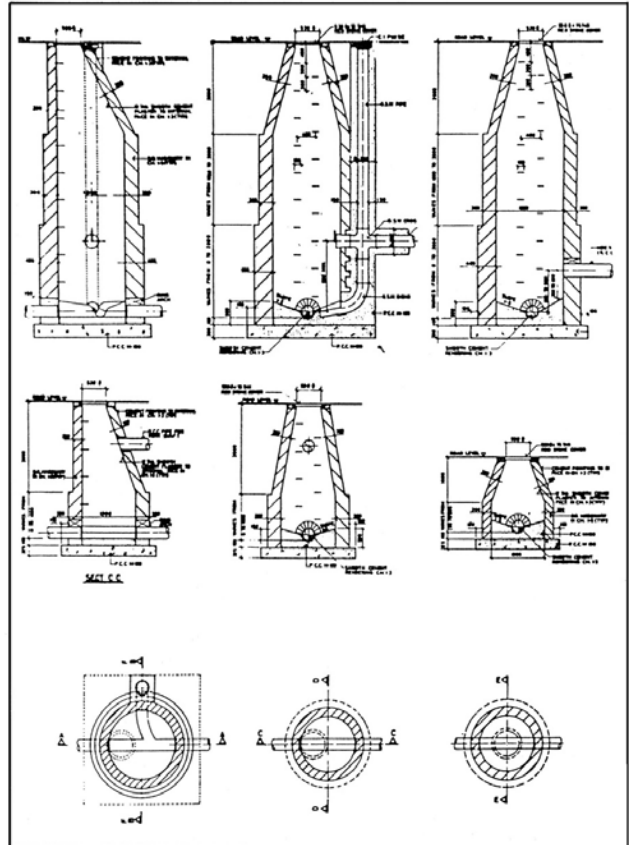
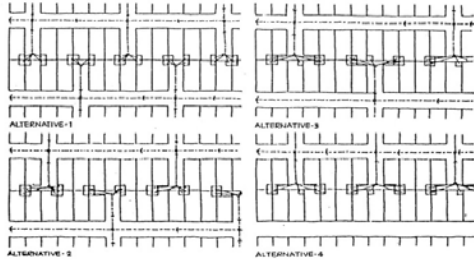
As in option 2,3 and 4 toilet at back create maintenance related problem.

The proposed arrangement of service slots allows toilets at back while connecting 18 toilets to one manhole and sewerage lines only on alternative street. Thus achieving 50% savings. Service slots also become useful play areas for children, neighbourly interaction space and visual pause.

STUDY - CONVENTIONAL SYSTEMS

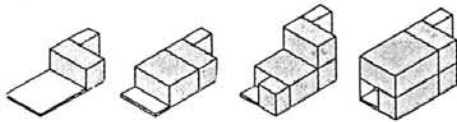


DEVELOPMENT

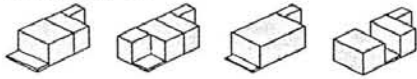


Service Infrastructure

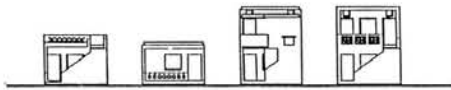
Users decide how much to build



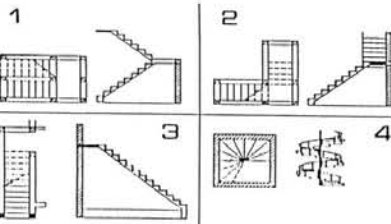
Users choose how to build



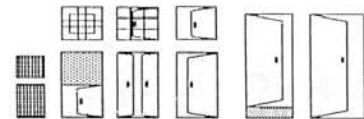
Users make their own combination of elements



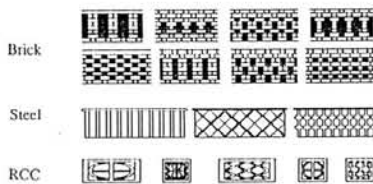
A kit of meaningful building elements is developed. Form variations on a standardized plan is achieved through permutation combination of various elements which are to be exercised by users. This participatory process satisfies users priorities of houseform while offering pleasing varieties to street facade.



Demonstration Housing Kit Of Elements

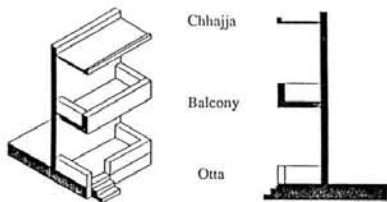


Staircase Options

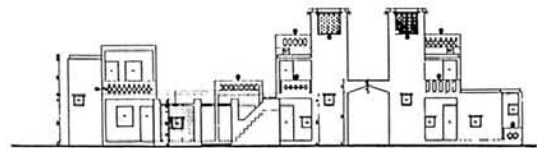


Openings Range

Railing Variations



House Extensions Choices



Street Elevation Showing Facade Variations



Part Plan With Varied House Layouts

House Form Variations (Demonstration Houses)