

STUDY OF SPACE UTILISATION WITH REFERENCE TO M.I.G. HOUSING

A DISSERTATION

Submitted in partial fulfillment of the
requirements for the award of the degree
of
MASTER OF ARCHITECTURE

By
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MAY, 2004

CANDIDATE'S DECLARATION

I hereby certify that the work, which is being presented in the dissertation, entitled **"STUDY OF SPACE UTILISATION WITH REFERENCE TO M.I.G. HOUSING"** in partial fulfillment of the requirement for the award of the Degree of **MASTER OF ARCHITECTURE** submitted in the **Department of Architecture & Planning** of the Indian Institute of Technology, Roorkee is an authentic record of my own work carried out during the period from August 2003 to May 2004 under the supervision of **Prof. S.Y.KULKARNI**.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree.

Place: Roorkee

Dated: 27-05-2004



(MANOJ KUMAR NAGIA)

CERTIFICATE

This is to certify that the above statement made by the candidate **MANOJ KUMAR NAGIA** is correct to the best of my knowledge.

Dated: 27.5.2004



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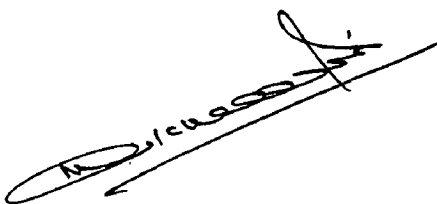
I would like to express my deepest gratitude to my **guide Prof.S.Y.Kulkarni**, for his guidance and also for a strong support through the good and bad times.

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27/5/2004



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Abstract

The word housing has a broader meaning than house. It embraces not only consideration of the physical structures in which human dwell but also the relation of the house, house to neighbourhood and community, and house to the social, political and financial complexes which affect our daily life .

The housing development taking place is more or less part of the total planned development of the city a great deal of consideration goes in to the designing and development of these housing areas. Since these days there is an accent on planned development the aim of any housing agency should provide maximum possible residential satisfaction to the occupants. The more generous standards inevitably mean a more costly product minimum space standards and amenities for mass housing there is a gap between the cost of the building and what the middle income users could afford

Residential unit size and quality are the important issue in the present situation. The current trend for families to live in smaller houses are has a define influence on space utilization in housing units, shortage of space is regarded as the major cause of addition and alteration in housing units and degradation of social values

Therefore, space provision is an important factor for improve the family environment.

The purpose of this dissertation is to analyze the relationship between space utilization and people needs required for the housing.

One of the main objectives is to know the effect of designs on day to day activities of the families and also the changes accordingly they have made in these dwellings.

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ABBREVIATIONS

D.U-	DWELLING UNIT
DWG.	DRAWING ROOM
FIG.	FIGURE
H.H.-	HOUSE HOLD
M.I.G.	MIDDLE INCOME GROUP
SQ. MT.	SQUARE METER
W.C.-	WATER CLOSET
BAL.	BALCONY
DINN.	DINNING

CHAPTER -1

INTRODUCTION

1.1 Introduction

The large group of houses can make a neighborhood if the people who live there bring to it the elements of intimate association and unity interest and the residents have feeling of belonging. But often the big city is merely a collection of badly -maintained houses, streets, open spaces and other public services. Man's physical environment is composed of the family, shelter and a number of amenities, services, utilities and the group, and help to transform a 'House' in a "family Home" within a community. The problem better housing and communities for lower Income in Particular has assumed staggering proportions under the impact of rapid urbanization.

Delhi like any other urban complex has numerous problems. The most alarming is the unprecedented population sprawl. Its utilities, services, civic amenities and housing could not keep pace with its population growth. In the decade 1971-81 the urban population of Delhi increased @ 4.69% per annum, to 54.5 lakhs and at the same growth rate the population: by 2004 will be 122.73 lakhs.

Urban Delhi at present accommodates about 15.5 lakhs households in different housing development. Next two decades would add another approximately 13 lakhs households. Problem of housing them suitably has become a difficult task. This problem has assumed alarming proportions in urban areas mainly because of:

- i) Non availability of urban land at reasonable cost.**
- ii) Increasing demand of houses because of Existing deficit and unending migration to these urban areas.**
- iii) High construction cost due to high prices of materials and manpower component.**

iv) **Lack of resources and finance,**

So whatever efforts are made could not make any dent in solving the problem, approaches, methods and the techniques, therefore, will have to be devised to cope more effectively with the change in the pattern housing developments

1.2 EXISTING HOUSING SITUATION

Housing situation

The growing shortage of dwelling units, both in urban and rural areas, with its associated socio-economic imbalances, had assumed an alarming proportion, which could pose a potential threat to the socio-economic fabric of the nation. The total housing stock in the country was 148 million units in 1991 as compared with 116.7 million units in 1981. However, the usable housing stock was only 133.8 million units in 1991 and 101.5 million units in 1981.

By the turn of the century as many people will live in India's urban areas as was the total population at the time of Independence half a century ago. It has 6 mega cities (4 million +) and 23 metropolitan cities, which are expected to increase to 40 by 2005 AD. There are also, 300 large towns (0.1 million) and 3,396 medium and small towns (< 0.1 million population). **By 2021 it is expected that India will have 70 Million plus cities as also, 500 large towns (0.1 million) and 4,430 medium and small towns (< 0.1 million population), with a total of approximately 550 Million people living in urban areas.** With economic liberalisation and expected higher economic growth, rate of urbanisation in India in coming decades is likely to increase. This will put an unprecedented demand for growth of urban areas. **By 2025 India's urban population will reach the 50 percent mark.** the housing shortage was 23.3 million units in 1981 and it came down to 22.90 million in 1991. The shortage comes down to a level of 19.40 million units in the year 2001.

HOUSING SHORTAGE (Estimated) in million

YEAR	RURAL	URBAN	TOTAL
1997	13.6	7.6	21.2
1998	13.4	7.4	20.8
1999	13.2	7.2	20.4
2000	13.2	6.9	20.1
2001	12.8	6.6	19.4

Table 1.1

Type of housing

TYPE	AREA	NO. OF ROOMS	PRICE RANGE (lacs)
E.W.S	20SQM	One	1.8 to 2
L.I.G	30-40SQM	Two	3 to 6
M.I.G	60-90SQM	Three	9 to 13
S.F.S	90-110SQM	Three	13 to 15
H.I.G	130SQM onwards	Four	15-17

Table-1.2





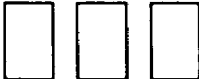
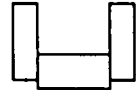





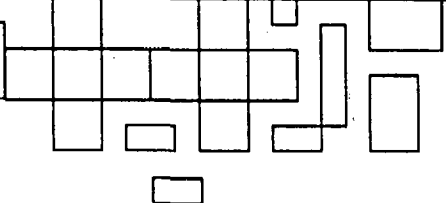
PERIOD	LIFE CYCLE	DWELLING UNIT TYPE	CLUSTRE TYPE
0			
2			
7			
15			

FIG. 1.1 Development Pattern of Housing Areas

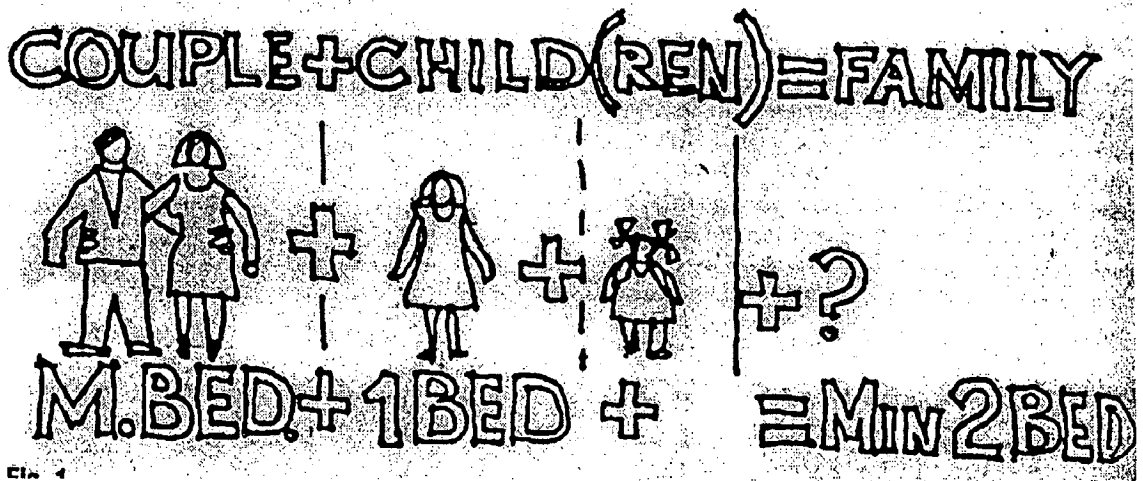


Fig 1.2 Rooms Requirement for a Family

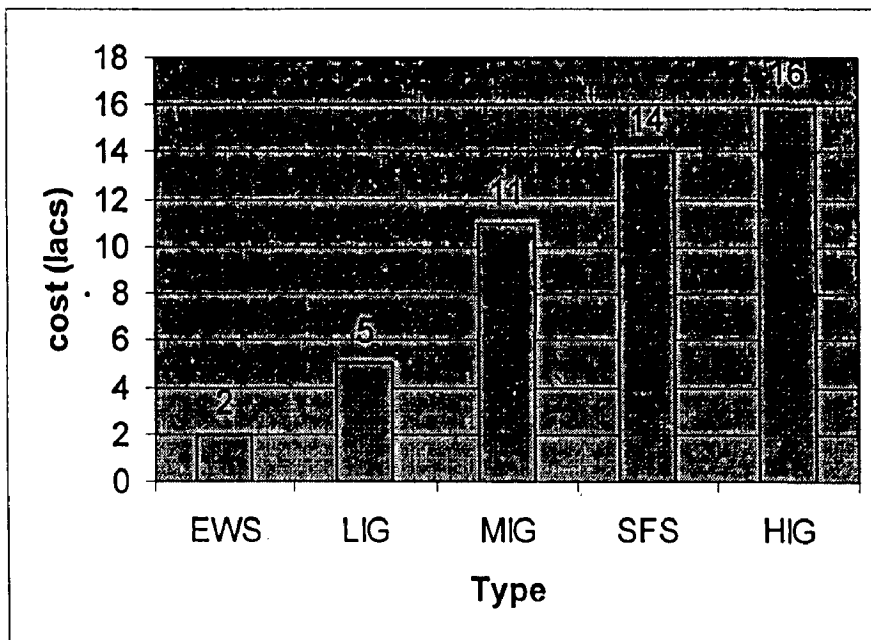


fig. 1.3 Cost Analysis

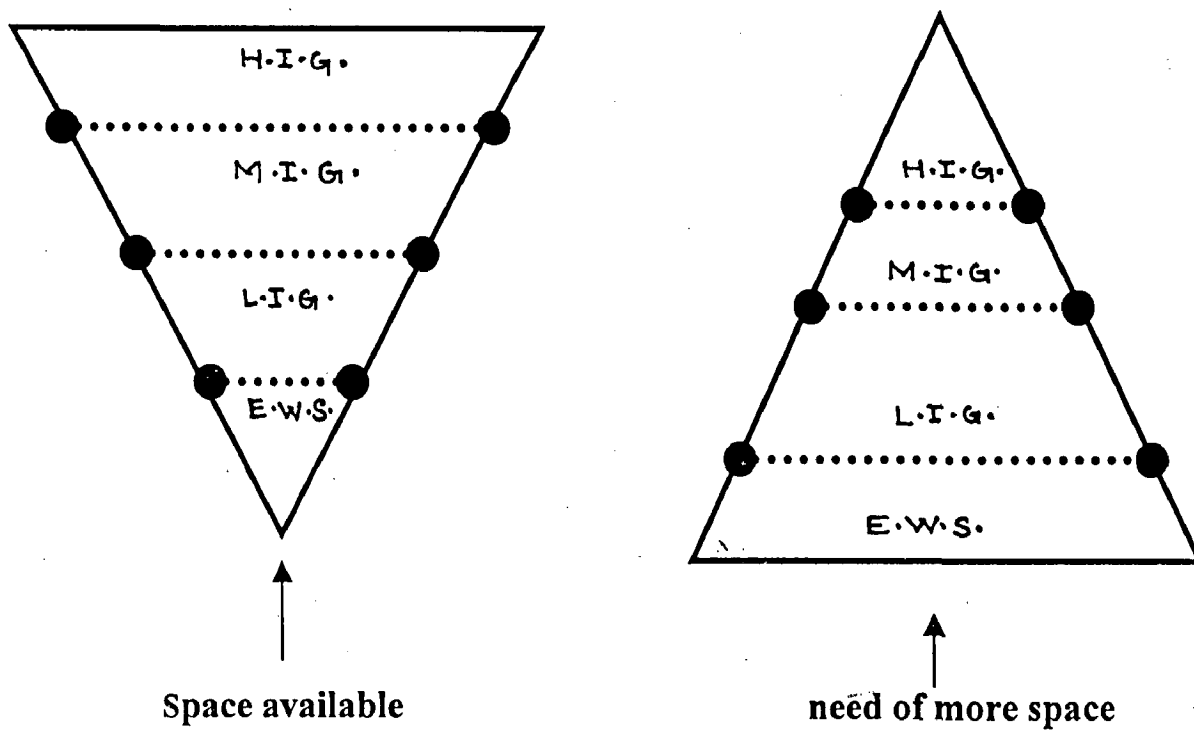


Fig. 1.4 Space Requirement Regarding the Different Type of Housing

Housing Profile

Delhi (07)

(Source: Census of India 2001)

A - B: CENSUS HOUSES AND THE USES TO WHICH THEY ARE PUT

	Total	%	Rural	%	Urban	%
A Number of census houses	3,379,956	100.0	244,688	7.2	3,135,268	92.8
A.1 Vacant census houses	377,790	11.2	39,249	16.0	338,541	10.8
A.2 Occupied census houses	3,002,166	88.8	205,439	84.0	2,796,727	89.2

J: DISTRIBUTION OF HOUSEHOLDS BY TENURE STATUS

Tenure status	Total	%	Rural	%	Urban	%
J.1 Total	2,554,149	100.0	169,528	100.0	2,384,621	100.0
J.2 Owned	1,712,971	67.1	132,118	77.9	1,580,853	66.3
J.3 Rented	653,459	25.6	31,497	18.6	621,962	26.1
J.4 Any Other	187,719	7.3	5,913	3.5	181,806	7.6

I: DISTRIBUTION OF HOUSEHOLDS BY SIZE

Size of households	Total	%	Rural	%	Urban	%
I.1 Total number of households	2,554,149	100.0	169,528	100.0	2,384,621	100.0
I.2 One member	89,786	3.9	8,347	3.7	93,439	3.9
I.3 Two members	206,925	8.1	12,068	7.1	194,857	8.2
I.4 Three members	295,216	11.6	16,918	10.0	278,298	11.7
I.5 Four members	544,289	21.3	32,184	19.0	512,105	21.5
I.6 Five members	506,711	19.8	35,103	20.7	471,608	19.8
I.7 Six to eight members	680,065	26.6	50,637	29.9	629,428	26.4
I.8 Nine members and above	221,157	8.7	16,271	9.6	204,886	8.6

Source: Table H-5 India : Census of India 2001

K: DISTRIBUTION OF HOUSEHOLDS BY NUMBER OF DWELLING ROOMS

Number of dwelling rooms	Total	%	Rural	%	Urban	%
K.1 Total number of households	2,554,149	100.0	169,528	100.0	2,384,621	100.0
K.2 No exclusive rooms	22,043	0.9	1,135	0.7	20,908	0.9
K.3 One room	973,520	38.1	59,234	34.9	914,286	38.3
K.4 Two rooms	689,480	27.0	44,871	26.5	644,609	27.0
K.5 Three rooms	458,546	18.0	30,958	18.3	427,588	17.9
K.6 Four rooms	229,801	9.0	18,281	10.8	211,520	8.9
K.7 Five rooms	75,740	3.0	7,184	4.2	68,556	2.9
K.8 Six rooms and above	105,019	4.1	7,865	4.6	97,154	4.1
K.9 Median number of rooms	2		2		2	

Source: Table H-5 India : Census of India 2001

Table-1.3 housing data Delhi

1.3 HOUSING DEVELOPMENT PRACTICES

From simple beginnings – a cave, a hut, an igloo, an animal-hide tepee- the “house” has always been the emblem of man’s place in the scheme of things. Contemporary man no longer looks upon his house as just an abode... rather, he views it as “home,” his status symbol, interpreting to himself that if and all the accompany it on his property depict to the world his position in life, indeed even his weaned.

Whether that house is a stereotype of many others on his street or in his neighborhood, whether it is small or large, whether it sits side by side with others of its ilk on narrow lots or is placed in a grander setting of manicured lawns and gardens, or whether it is in a forest or on rangeland, it is still his personal possession. It is home.

Housing design activity embraces a wide field of interests and calls for the attention of many professions. With a view to achieve an efficient housing development, with respect to the location of the area and the design and erection of the buildings, it is necessary to consider various parameters within a frame work so that the development would respond to changes in technology and design on one hand and to changes social aspirations and requirements on the other. The frame work would also include the consideration of aspects such as town planning regulations, housing standards and building bye-laws in an objective manner.

Since the design programme for housing development involves vast number of people and large areas of land, before we put such a policy upon such premise into action, we will have to decide as to what form and shape the new settlement will make on the ground. We shall further have to think about their possible size; to their spatial continuity and constructive flexibility. While doing so, we shall have to remember that our ultimate objectives is man’s satisfaction in his newly evolving space and the extent to which he feels

at home within it. The idea that a housing project can be conceived as an isolated unit – as a collection of household's cells placed next to one another or on top of one another- is almost a denial of life itself. The way every group of people forms a part of a larger group, the same way every collection of housing units is part of a larger group with a characters, shape patterns of movements and activity. A housing scheme, therefore, should be an extension to an existing situation and a fore-runner of further extensions. It should not be considered as an isolated event.

The important of flexible and realistic housing design in a developing economy is not readily accepted by all. This is partly due to its position of ambiguity from an economist's point of view. Housing offers a service in providing accommodation and as such it should be considered a consumer item. It should be recognized also to be a capital asset; not only to the individuals owning it but also to the nation as a whole in spite of the fact that the potential investment yield from capital in housing is low when compared to other possible return offered by the market in general, and also that the returns are spread over a long period of time.

Housing design activity, considered as part of total development, is therefore not the result of an individual designer's skill and inspiration only but of a large number of other parameters also. These parameters include: social, cultural traditional ways of living of families, economic means and the availability of land; standards related to the stage of economic development; the availability land performance of labour force; the technological laws; the administrative and legal practices; building codes; climatic conditions; topography; and the requirements of accommodation, sanitation, etc.

The design criteria for housing are usually based on qualities of life. These qualities are definable, measurable and capable of being communicated to make housing more than a dwelling unit.

The qualitative requirement depends upon:-

- Play
- Recreation
- Community facilities
- Land use intensity
- Density distribution
- Minimizing interface conflicts between housing and interrelated spaces
- Dwelling privacy
- Orientation
- Floor space requirement
- Movement and access

The design decision relating to housing development must be taken with in the following consideration:-

1.3.1 At Dwelling Unit Level

- 1) Components of a dwelling e. g. drawing room, bed room, kitchen toilets, circulation.
- 2) Space standards.
- 3) Mans relationship to society, his surroundings and his activities with in the dwelling.
- 4) Special characteristics and arrangements at the components.

1.3.2 At Cluster Level

- 1) Space standards in relation to ground coverage, F.A.R open spaces amenities and facilities etc.
- 2) Circulation out side and inside the cluster.

- 3) Grouping concept in relation to economy in structure, materials used, and building technology.

1.3.3 At City Level

- 1) The existing situations.
- 2) The potentialities of urban areas.
- 3) Proposal for over all city, sector and neighborhood.

1.4 PURPOSE OF THE STUDY

The housing development taking place is more or less part of the total planned development of the city a great deal of consideration goes in to the designing and development of these housing areas. Since these days there is an accent on planned development the aim of any housing agency should provide maximum possible residential satisfaction to the occupants. The more generous standards inevitably mean a more costly product minimum space standards and amenities for mass housing there is a gap between the cost of the building and what the lower income users could afford. the recent sharp rise in building costs has brought a reduction in the floor area in the new housing developments which has caused A great deal of dissatisfaction amongst the occupants and this is the reason that numerous complaints are received by the officials on the quality and functional aspects of their house from the occupants.

So there is need of study M.I.G. dwelling units to know how people live in the limited space and what type of space they have require for their activities both with in the dwelling unit as well as at the cluster level and also the assess the design efficiency of the dwelling units. And how it can be increased

One of the main objectives is to know the affect of designs on day to day activities of the families and also the changes accordingly they have made in these dwellings.

1.3.1

1.4.1 AIMS AND OBJECTIVES

- 1) To study the physical social and economic aspects of space utilization in the M.I.G. housing developments
- 2) To study the space utilization and their relationship on comparative basis at both D.U. level and cluster level
- 3) To bring out the users problems and preferences in the different type of dwellings and cluster design
- 4) To study the ultimate space standards with the varying need and preferences of the people.
- 5) To develop design guidelines embracing physical, social economic and environmental aspects of housing and develop a feedback to control and regulate the quality of housing.

1.3.2

1.4.2 SCOPE & LIMITATIONS:

- 1) The scope shall be limited to the study of M.I.G. Housing developments by govt. agencies as well as private builders.
- 2) The study shall be carried out through case studies to a certain extent to have an idea, how the people are utilizing the spaces available and how the utilization varies with respect to different designs and areas
- 3) How the modifications, additions & alterations are carried out in different design areas to 'Suit' their need and affordability
- 4) To study peoples problems and preferences and suggestions about spaces within the D.U. and as well as cluster level

Dr. G

1.5 METHODOLOGY

1.5.1 The study is based in four major ways

- 1) Literature study
- 2) Existing housing situation
- 3) Case studies (D.U. and cluster level)
- 4) Users market studies

1.5.2 Dwelling unit and cluster level studies

- Life style
- Age sex composition
- Income pattern
- Affordability
- Tenure status

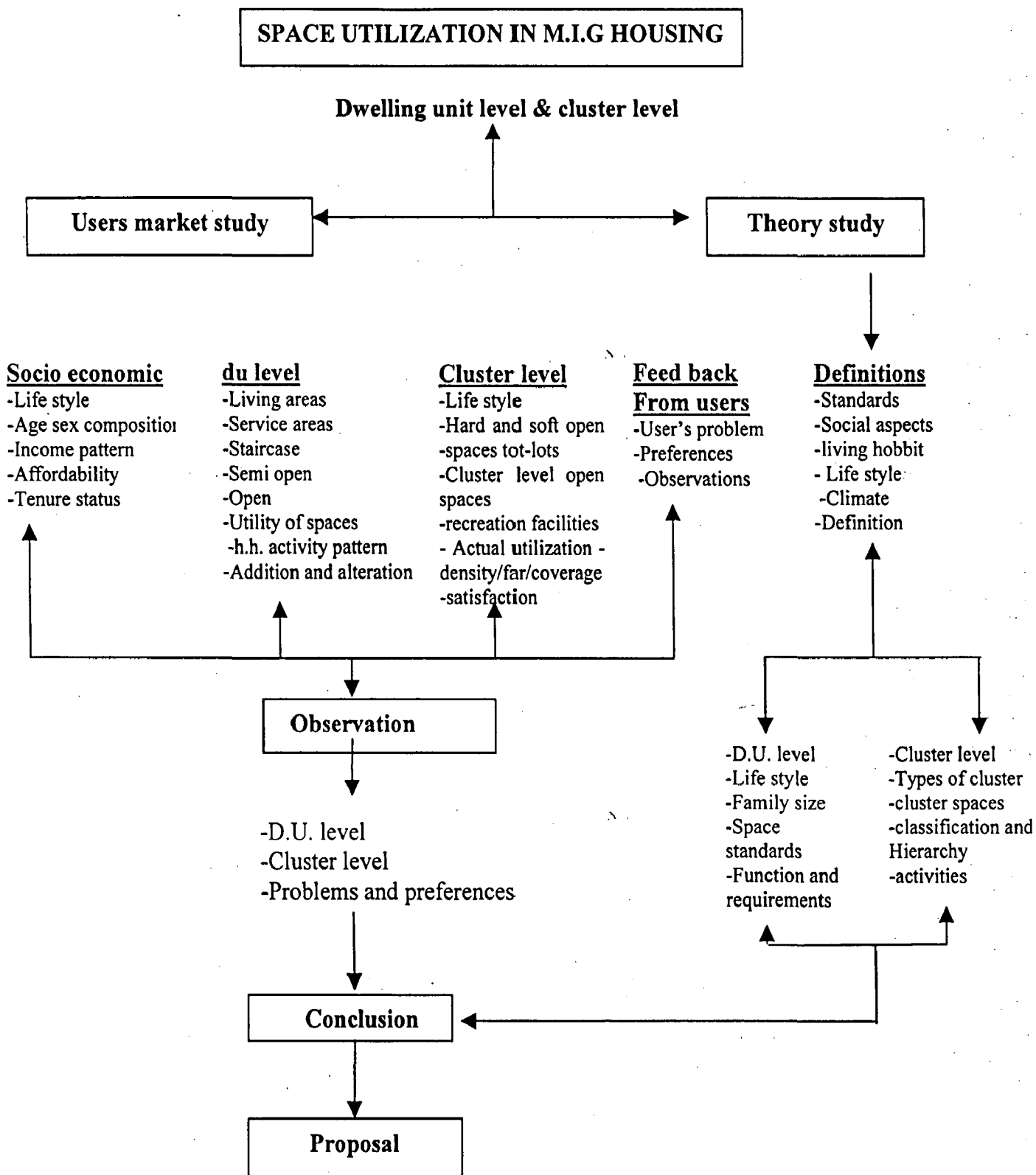
1.5.3 Dwelling unit level

- Provision of spaces
- Living areas
- Service areas
- Storage
- Semi open
- Open spaces
- Utility of spaces
- House hold activity pattern
- Addition and alteration

1.5.4 Cluster level

- Provision of spaces
- Hard and soft open spaces
- Tot- lots
- Cluster level open spaces
- Actual utilization
- Density/ F.A.R /coverage
- Satisfaction

CHART OF METHODOLOGY



Design guidelines for feed back
Improve standards

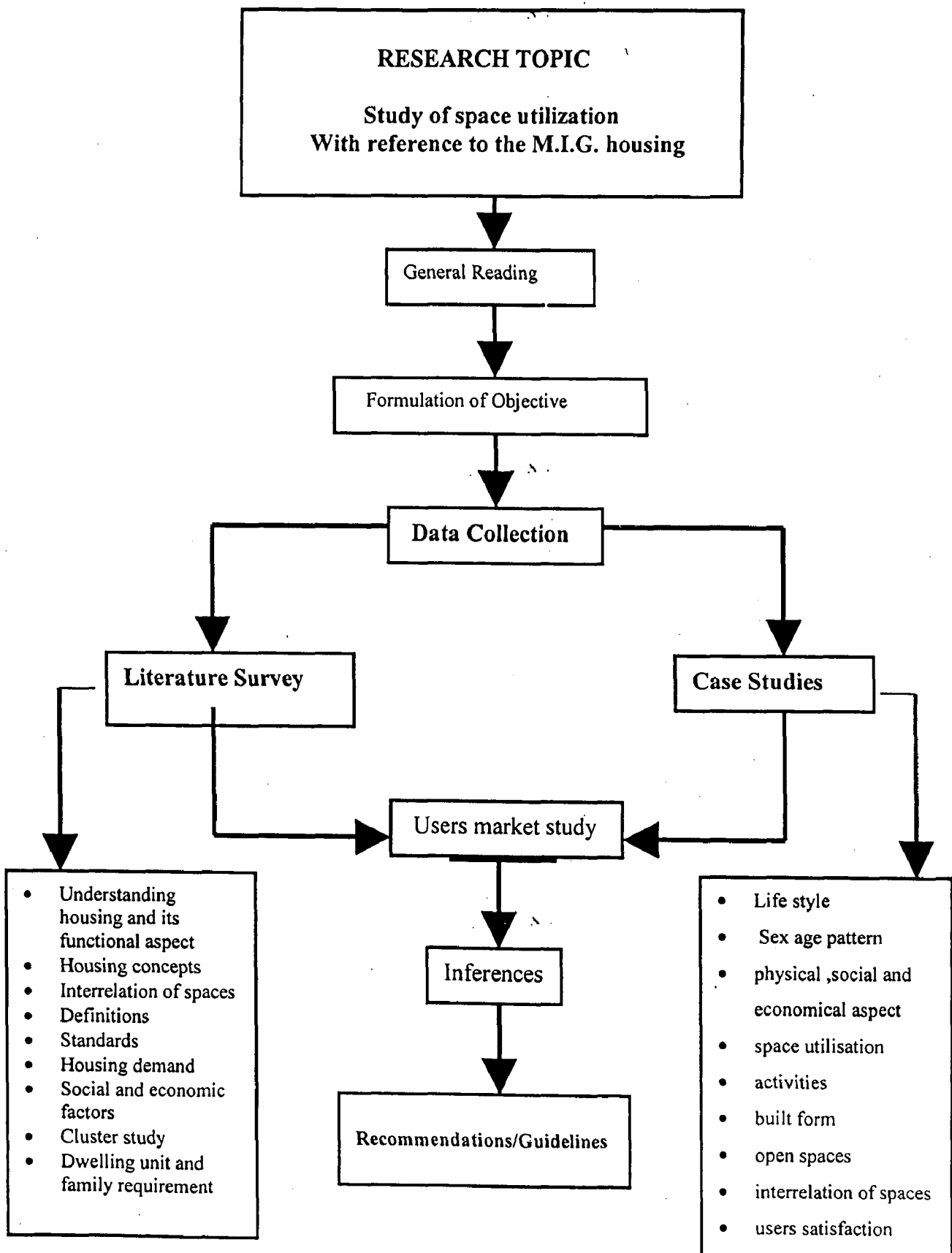


Fig. 1.5 RESEARCH METHODOLOGY

1.5.5 Feed back from users

- Users problem
- Preference
- Observation

1.5.6 Observations

Primary and secondary data will be collected at cluster and dwelling unit level will be analyzed to determine the space utilization, utility pattern, and user's problem preferences.

A comparative analysis of studies of five different dwelling units and cluster will be carried out to find the present situation in following manner:-

- **living areas**
- **service areas**
- **storage**
- **addition and alteration**
- **dwelling unit level open space**
- **cluster level open space**
- **built form and social aspect in residential area**

1.5.7 Conclusion

Conclusions will be drawn on the basis of above observations in similar fashion

1.5.8 Proposal and recommendations

The proposals and recommendations will be formulated on the basis of the users' market study as well as theory studies at dwellings unit and cluster level. These proposals and recommendations will be about

1.5.8.1 Dwelling unit level

General recommendations comments and standards

1.5.8.2 Cluster level

General recommendations: - these proposals will be on the basis of "*design guidelines*"

To the public authorities and will serve as feed back for future developments

CHAPTER -2

LITERATURE REVIEW

CHAPTER-2

LITERATURE STUDY

2.1 General

Housing is a basic element in the structure of our society. The home has a great impact on the growing child an impact unquestionably more important than that of the school. The physical home provide privacy and intimacy, can encourage exploration, self determination, and creativity and can help to develop emotional harmony and love of beauty. A well designed house never a substitute for vitally concerned parents, but it can provide right things to happen. The M.I.G. dwelling is an ideal place in which raise to a family. But what is the real significance need of the dwelling unit and hoe should it relate to the neighborhood and the community.

Some exciting new concepts in the field of biology, sociology, anthropology, psychology and building engineering technology can be expored. Many of these ideas remain at the theory level, but there is nevertheless an immense amount of material to substantial each positions. A scientific view of the man, the instinct the structure, the idea or the relationship through which man can integrate successfully with his environment.

To determine the housing needs of s family we need to know what constitutes of a family. According to the recent housing terminology, household is the term used and the demand is calculated in terms of house hold numbers. The precise meaning of the term house hold needs as:-

‘A group of persons who commonly lived together and took their meals from a common kitchen’

The housing needs of a given household are determined by the affordability, the interest it has developed, and the stage it has reached in the cycle of its life . this is attempted

through the selection of a dwelling unit, its choice being determined by various factors . by definition

“A dwelling unit is a building, or a part of a building having separate main entrance from the road or common courtyard, or staircase, etc. used for recognized as a super site unit.”

If housing is taken as a social overhead, we expect the services listed as economic, protective, religious, educative, social, affectional, and status giving.

The concern of every family should be that the deeper satisfaction of life be afforded to its members.

Housing may affect the social and affect ional respects of family life by influencing directly the relations of the members of group. It may affect family life either favorably or adversely, depending upon the provisions it makes for the routines activities of the house hold.

Thus the essence speaks that housing should providing for rest and quiet, relaxation and a sense of response, opportunity for self expression and the freedom of action, the routine activities of the home companionship at home.

2.1.1 Definition of M.I.G. unit

A dwelling unit with minimum

- (i) Two separate bed room, one drawing room and dinning lounge.
- (ii) Kitchen area.
- (iii) Minimum one bath room and w.c.

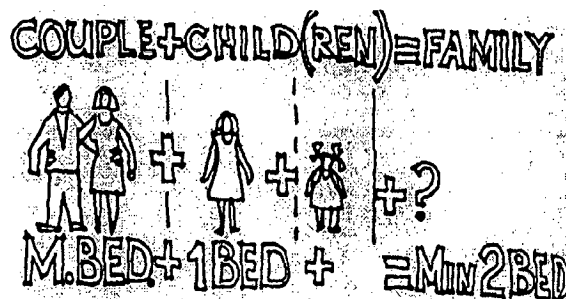


Fig 2.1 room's requirement for a

family

- (iv) An out door space in the form of a courtyard or a terrace.

2.2 DWELLING UNIT ANALYSIS

We have discussed some well developed sociological and other theories we should therefore have considerable knowledge concerning human beings and their living patterns. From all this, a comprehensive philosophy of what comprises a healthy home environment should have emerged. But this has not yet occurred. Rather, in the absence of such a dynamic human environmental philosophy, some negative influences have stealthily infiltrated and taken control of modern society. If we are to redirect these negative influences, we must put forth a serious effort to determine the optimum kinds of activities that can occur in a healthy family situation. The important issue is to find the right kind of place for the right things to happen and the solution must be the kind of housing that the majority can afford. If the elements of a healthy environment are missing, then regardless of its cost a house can only qualify as human storage. On the other hand if there are exciting spaces for rich, rewarding, even mind expanding things to happen given a reasonable effort by those who inhabit the space - they likely will happen. These are the kinds of elements that should form the basis for contemporary design.

The design of every house is an act of social importance. It influences the future trend of family living. By force of the environment it presses family life into one shape or another. The place to begin is not with the house itself but with the needs of the persons who are to occupy it.

Because of the multiplicity of its functions, the fixity of its location and its bulk, the family dwelling is an exceedingly complex structure. The house whatever form it takes, is the center of family life, it must provide space for group and individual activities of the family, such as; recreation, reading, shared experience and affective life among family members, and the reception of visitors it must afford facilities for the withdrawal of individuals for

study, rest or thinking during the periods of family member activity; for sleeping, with its related function of storage of clothing and personal effects.

It must make easy such activities as food preparation the serving of meals, dish-washing, laundering, and house cleaning, with the related needs for the storage of supplies and equipment and the disposal of wastes. It must make available space for children's play and for adult or adolescent hobbies; for the overnight accommodation of relatives or other guests; for personal hygiene, including the special needs of infants and others having special requirements. It must provide for the storage of miscellaneous household goods such as play-things, luggage, game and sports equipment. Not less important are the provisions for ease of traffic within the house and within to without or vice versa.

The house should create an atmosphere of comfort and quiet, be fresh and cheerful, spacious with ample grounds. Yet with all, it should not be too large nor complex for the scale of living of its components

2.3 DWELLING UNIT AND ITS ENVIRONMENT

When a family has given adequate thought to its requirements for housing that it is fully aware of the intricacies of the house design desirable for its members, and has tried several possible patterns, it must give consideration to the environment in which the house will be placed.

Principles of good house planning should be applied whether the family chooses a single family house, a two family house or multiple family dwelling. Indeed their choice of any of these types will depend upon the suitability of the type of situation. An understanding of community development is important as his desirability of the home location is affected by any thing that has influenced the course of community growth, urban and rural. In addition

the final choice of how house will look in its style and its exact site is dependent upon a body of information to which can turn for guidance.

We do know, however, that man's health and happiness are influenced directly by his environment. In the plant kingdom, vigorous plants will not develop from even superior seed unless proper conditions of moisture, temperature, soil, and cultivation exist. On the other hand, poor seed with the advantages of desirable environmental factors may develop into a fairly vigorous plant. Human being reacts to their environment in a some what similar manner. Inadequate conditions of living may destroy the possibilities of good stock, and poor stock may be brought to its full capacity under improved conditions.

Man is peculiarly able to adjust his environment and the environment to his needs, although wide individual variations in this regard are noted. Some gifted people have merged from extremely adverse living conditions under which others have succumbed. Also, other persons who have the best in housing conditions may be broken by illness or be drawn into ruin. Housing is not the total cause of an individual's state of health.

It is my purpose here to study not only the aspects of housing which contribute to the low state of health and morals found in the substandard areas but also those aspects which contribute to maximum health, comfort, and efficiency at physical, physiological and moral level.

2.4 LIFE STYLE AND FAMILY ACTIVITIES

The life style of the people is affected by the kind community in which they live . but it is also depend s upon human nature whether the individual prefers to live in the neighborhood or he wants to live in a solitary house. There are some people we want to live near other people; while others may not like to live so and some wants to live with their own ethnic group. as per the varying ethnic values and life styles. It is very important

to have dwelling designs so flexible so as they should have the capacity to adapt to differing family needs and life styles. It could be adaptable to various ways of living and life styles.

Apart from the varying life styles of people belonging to different communities, the family activities gradually develop its own characteristics an the urban community as the urban neighborhood moulds them.

2.4.1 Leisure activities-

Resting, Talking, Visiting with guests, Reading, Lounging and smoking, keeping records, Doing needle-work, thinking, , Displaying articles of interest, writing letters, Playing games.

All elderly residents have at least one TV which in modern times has replaced the fireplace as the focal point in the drawing room. It typically is placed against a across from the sofa. The sofa is among always placed against a wall. Residents avoid putting it under a window where there is potential problem with drafts on the back of the neck. Residents seat here to watch TV or in their "favorite" easy chair, which is usually placed at the end of the sofa and near a window to take advantage of natural light and outdoor views. This is also the favored setting for other leisure activities like reading, sewing, and watching outdoors. End and coffee tables accompany these primary seating areas to hold table lamps and materials associated with various other activities. Depending on the specific interests of the residents, there might also be a sewing machine, work surface, or storage and display piece for a particular hobby. Some residents might define a "Communications area" with a desk and chair for telephoning and letter writing.

2.4.2 Visiting

Conversation furniture typically includes a sofa with two end tables, coffee table, rocker, and one or more chairs arranged in closed loop. Recommended distance between seats for comfortable conversation is 10 ft. If more seating is required, dining chairs or floor cushions are often used. When a snack or meal is served as part of the visit, dining table is typically pulled away from the wall and chairs are arranged around it.

2.4.3 Preparing food:-

Planning, storing, and preparing food, washing utensils, waste disposal, preserving food.

2.4.4 Eating:-

Pick-up meals, quick breakfasts, snacks, family-meals, dress-up meals, dinner parties, party refreshments, Large Luncheons, Holiday and celebrations.

To support these activities, most residents have a dining table and four side chairs as well as china cabinet. The table is typically placed against a wall with two of the chairs while the other chairs are located in other areas in the apartment, for formal meals with visitors, the table is pulled away from the wall and chairs are placed around it. For many older residents, particularly women, the china cabinet is an important piece of furniture, as it typically symbolizes a previous role in the family as well as serving for the display and storage of dinnerware.

2.4.5 Sleeping:-

Napping, Night's rest, Caring for sick, Dressing, Undressing, Reading in bed. For single residents typical furniture in the sleeping and dressing area includes a double bed, two bureaus a night stand, and a chair. Double occupants (who are most frequently married couples) are

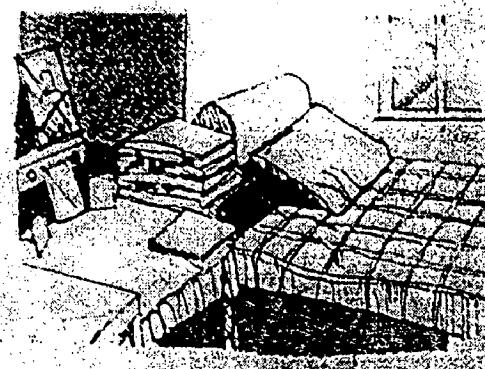


FIG - 2.2

more likely to have twin married couples are more likely to have twin beds rather than a double bed. Heads of beds are placed against walls, Perpendicular to a window to permit a view of the outdoors while lying down. Placement of the head of a bed under a window is avoided because of problems with drafts.

For ease in making the bed(s), residents prefer to place it so it is accessible from two sides and one end. A night stand is located at the head of a bed (between twin beds) upon which is usually found a table lamp, clock, medicines, and other personal items. The two bureaus along with a chair are typically clustered near the closet(S) to form a convenient dressing area.

2.4.6 Bathing & dressing-

Washing ,cleaning and maintenance.

Storing, Washing, Drying, Using Cleaning tools and supplies, Repairing house and equipment, Making the family clothes.

2.4.7 Storing:-

Facilities adjacent to the place of the activities of the family for the equipment and supplies needed for these activities, as well as separate storage for the many articles not in active use

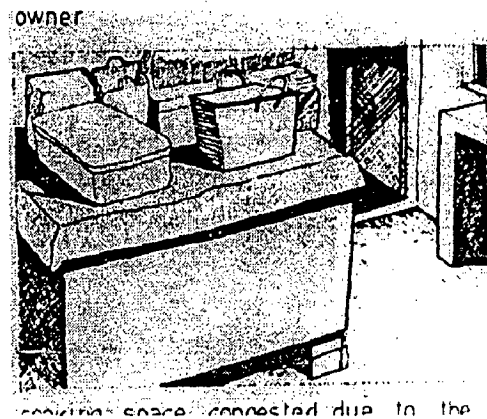


Fig 2.3 Storage Space

The next step in the planning process is to study the activities listed with the following questions in mind:-

1. *Which of the different functions require privacy or separation from others because of the Nature of the activity or because of noise?*

2. *Which of the functions can take place in the same space unit at the same time without serious interference and mutual irritation?*
3. *Which of the functions can take place in the same space unit but not at the same time?*
4. *Which of the functions require special equipment or space which unfits it for other functions?*

Separation of the activities of the family along these lines might fall into some such pattern as the following:-

Resting, Talking between certain members, Visiting with certain guests, Reading, Thinking, Studying, Writing letters, Keeping records, Displaying articles of interest, Using the telephone, Being secretive, Sleeping, Dressing, Most phases of bathing and grooming, Lounging or smoking.

Activities requiring separation from other phases of family life because of noise:

Listening to Radio or record player, Yelling, running, play of children of all ages, Active hobbies, using the telephone, playing certain games, parting on musical instruments, The work of the home.

Activities taking place at the same time in the same space:-

Talking with family members, Visiting with guests, Displaying articles of interest, Smoking, playing certain games, Doing needlework, Serving refreshments, Listening to the radio or other music.

Activities for which scheduling of certain spaces may be required:-

Formal entertaining, Having Committee Meetings, Holiday and other celebrations, Snacks, Practicing on musical instruments, Dancing, caring for the sick, Napping, Pursuing certain hobbies, Smoking.

Activities for which require special installed equipment (usually accompanied by some noise):-

Storing food, Preparing food, Washing utensils, Disposing of Waste, Preserving food, Storing clean and soiled lines, Sorting clothes, Washing clothes, Drying clothes, Ironing clothes, Repairing house and equipment, following some hobbies, and most of the activities connected with grooming.

CHAPTER -3

SOCIAL AND FUNCTIONAL ASPECTS

CHAPTER-3**SOCIAL AND FUNCTIONAL ASPECTS**

3.1 DWELLING UNIT AND SPACE RELATIONSHIP

As house or its equivalent afford or should afford the family shelter, comfort, convinces, rest and quiet. It also furnishes an avenue for the expression of the love of beauty by the family members. In the choice of a house for the family home, each family wants the best it can in terms of its own needs and its ability to pay.

A charming exterior may enclose a floor plan good in design and suited to family life. Ideally, the two should be developed together and the character of interior plan should be reflected in the particular architectural style chosen for the exterior design. Desirable characteristic in the house plan should be established in the light of the activities of the home and the interests and desire of the family members

Although comparatively few people have the privilege of planning and building a house, most, if not all persons, at some time exercise a certain degree of choice in the kind of dwelling deemed desirable, including its interior plan and its location. Many forces, some of them beyond the control of the family, may make difficult the selection of a dwelling which meets fully the needs of the group. However, the needs of the group should ever be the major consideration in the choice of a house. The floor plan of the house should be such as to facilitate pleasant and efficient family living.

There is a tendency on the part of some people to judge the desirability of a house plan by the beauty in architectural composition expressed in the general contours and the details of the facades. Beauty in architectural composition is achieved by proportion and balance. The proportions of the broad low houses are generally recognized as more pleasing in proportion than are square or tall houses. The balance of a facade or exterior depends upon the arrangement of windows, doors, porches, steps, and chimneys. Dignity and reserve are

expressed by the use of formal balance, and friendliness and hospitality through informal balance.

Important as is beauty in the exterior design, judgments of desirability of a house as a home in which a given family shall live, work and play, cannot be made on the same basis as might be used in evaluating an architectural design. Provision for living as shown in a floor plan of good design is more importance than pleasing facades. Fortunately, conflict between the two is not necessary.

The interrelationship among areas must be established to ensure the ease, efficiency and satisfaction of living in a house.

1. Going from the kitchen to other parts of the work area, as the laundry, the drying yard, the heating plant, the canned food storage, or the hobby center.
2. Carrying food to the dining table from the kitchen and returning with soiled dishes.
3. Carrying food from the kitchen to the porch for outdoor dining and returning with soiled utensils.
4. Going from a bed-room to a bath-room.
5. Going from a outside to the bath-room, particularly common with children.
6. Going from an outside entrance to a w.c.
7. Reaching the recreation area from the main entrance, drawing room, or bed-rooms.
8. Reaching the kitchen, the drawing room, or the bed-room from the courtyard.

Traffic routes are so placed that they facilitate these activities and make for ease And efficiency and reduce to a minimum movement through areas not involved.

3.1.1 Good circulation may be accomplished by the following means:-

1. Using an entrance hall as hub, join it with other rooms either directly or through minor halls. In the city, this hub may be towards the front of the house or side, if the family leaves from and returns to family leaves from and returns to
2. Locating the main entrance at the end of the drawing room with that part given over a traffic route to kitchen bed-rooms or bath may be satisfactory if space is not available for a hall.
3. Locating doors within the rooms so that access from one to the other and through other rooms may be obtained without going through the center of the room is third possibility. Doors located near the corners of the room accomplish this purpose.
4. Arranging door swings so as to minimize interference with other doors or with furniture placements is important.

The space for living and leisure should be such as to permit satisfactory placement of the furnishings needed for the usual social activities of the family as a group and for the individual family members.

The function of the social area is to provide a place in which members of the family can gather to enjoy each other in small houses without a central hall. It is important to route any traffic through the

drawing room to one end of it, and in which contact can be made with those outside the family.

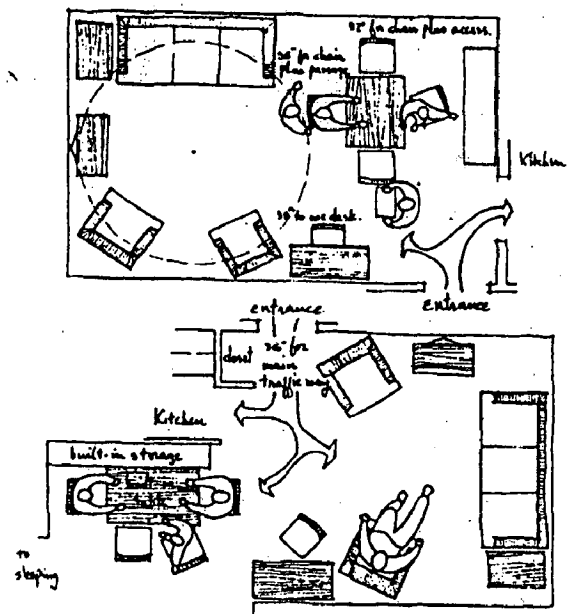


fig3.1 circulation in living areas

3.2 FUNCTIONAL REQUIREMENT FOR SPACE UTILISATION

3.2.1 Human needs

The design and planning of living units should have a workable human centered basis. Provision should be made for space, light, food, water, safety, sanitation and periods of quietness. It is necessary that adequate housing quality be provided, yet reconciled with minimum cost by the efficient use of space.

3.2.2 Functional consideration

Space needs should be determined by family size the functions of daily living and the normal possessions of the family. Living units should be planned to contain space sufficient to accommodate appropriate furniture or equipment for each habitable room

To demonstrate the furnish ability, preliminary floor plans for each living unit design should show the appropriate furniture drawn to scale.

3.2.3 Circulation

The circulation pattern through out a living unit should function satisfactory, serious conflicts in the appropriate use of each room and its furniture and equipment should avoided

Single family houses and multiple living units should have a convenient relationship to out door areas:-

- (a) coming in from outside and going out from inside
- (b) Preventing unexpected or unwanted guests.
- (c) Going from one part of the house to another.
- (d) Going from place to place with in a room.

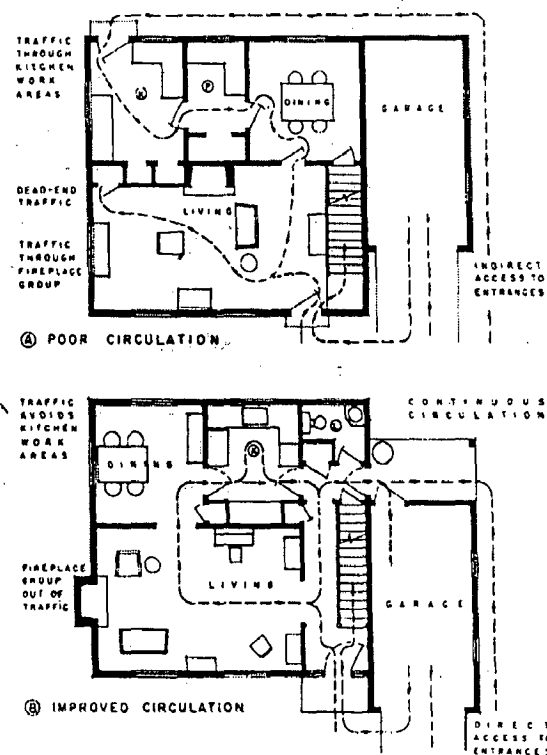


Fig 3.2 Aspects Of Circulation

Obviously such a list as the above is general and incomplete. To make one specific for any family, its activities should be examined minutely and a pattern developed along its unique lines

3.2.4 Furnish ability

The certain amount of space should provide on the habitable rooms of a living unit is it's furnish ability The test material for each room provides a list of furniture for which appropriate space must be provided.

Furniture sizes given are standard sizes. However, it is well for the designer to keep in mind that families frequently have on hand or buy large and heavy furniture, particularly for the drawing room. In such cases, additional space is necessary to have planning arrangements function properly.

In small rooms the use of built in furniture can be advantageous as space savers , properly designed built in storage units can increase usable floor space and reduce the outlay for home finishing's. Where built-in provide a functional equivalent to movable furniture, as listed for the various areas of the living unit, their use can be considered an acceptable substitute.

3.2.5 Combination of rooms

A frequent and favorable planning arrangement in M.I.G. units is a combined kitchen – dining area. This permits a wide use of the space not only for the kitchen-dining functions but for the study about informal social activities for the entire family

For two adjacent spaces to be considered a combined room the clear opening between the spaces should permit the common use of spaces for the expansion of the different functions.

3.2.6 Multiple uses space

Apartment's living units may contain an alcove or a separate room which may have multiple uses. It may be used as a den a general purpose family room or additional sleeping space. Although the space for no specific furniture is required for such a room the floor should be at least as a large as secondary, single –occupancy bed room and it should contain a clothes closet.

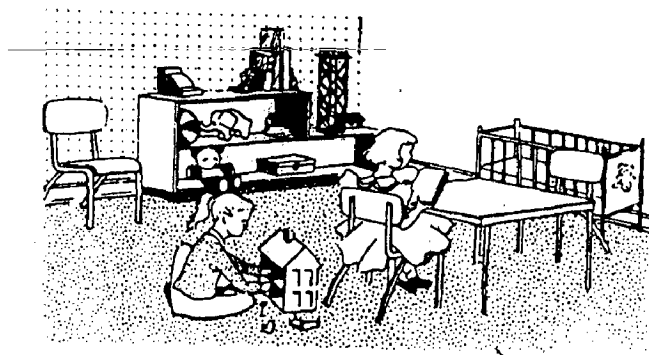
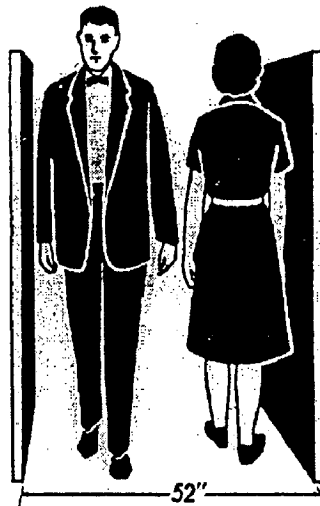


Fig 3.3 Multiple Use Of Space

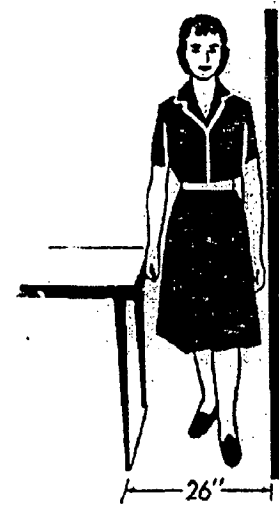
3.3 ANTHROPOMETRIC STUDY FOR SPACE UTILISATION



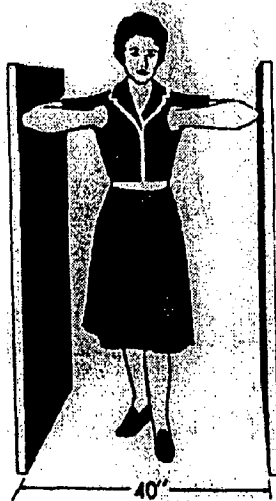
Walking between two high walls (space adequate for both men and women)



Two people passing (figure derived; twice the space for one person to walk between two high walls)



Walking between high wall and 30" high table (space adequate for both men and women)



Walking with elbows extended (space adequate for both men and women)



Kneeling on one knee



Man bending at a right angle

Fig 3.4 General Space Requirement for Different Activities

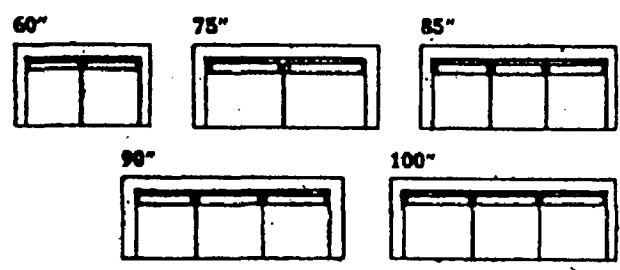
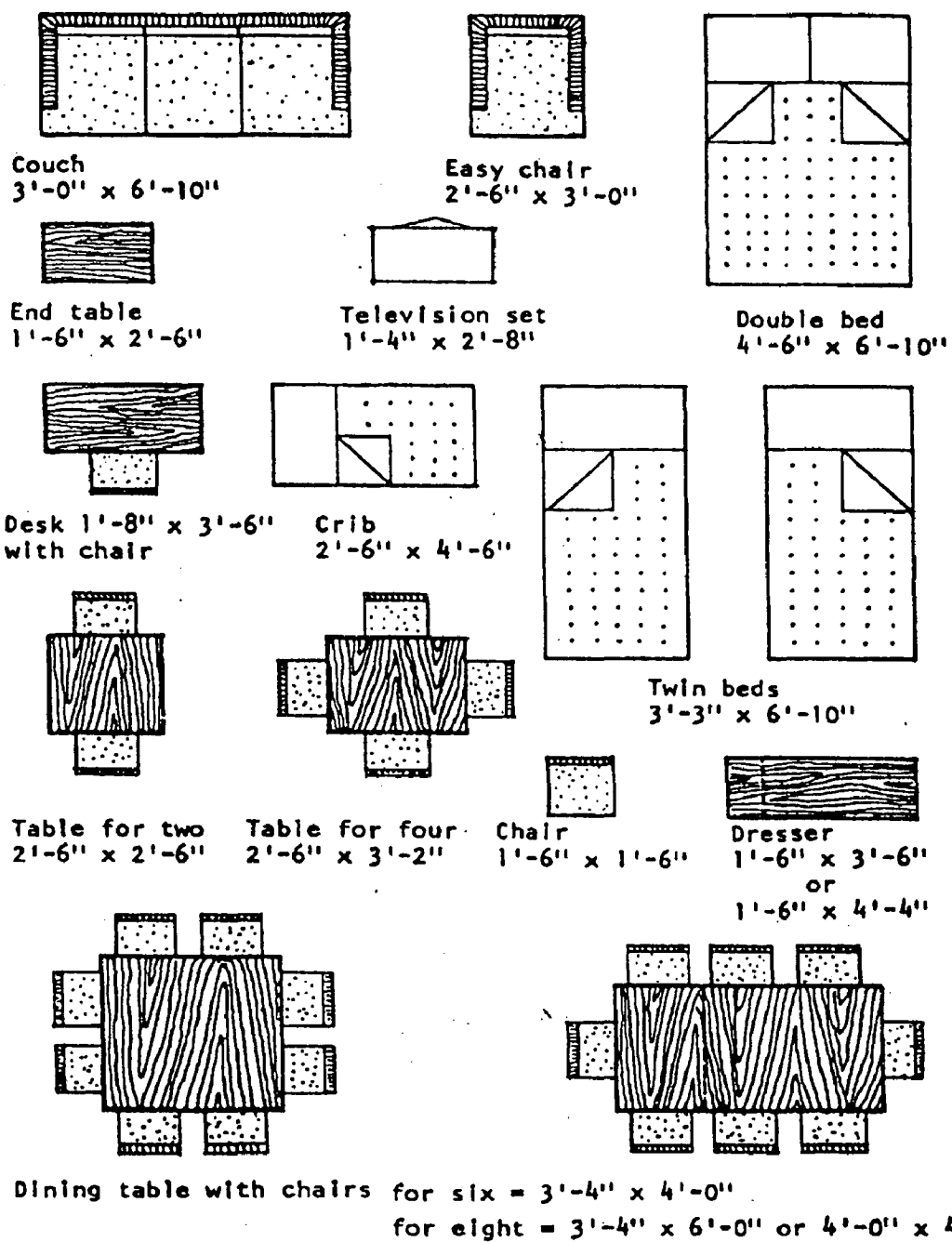


Fig. 3.5 FURNITURE SIZES USED IN DIFFERENT ACTIVITIES

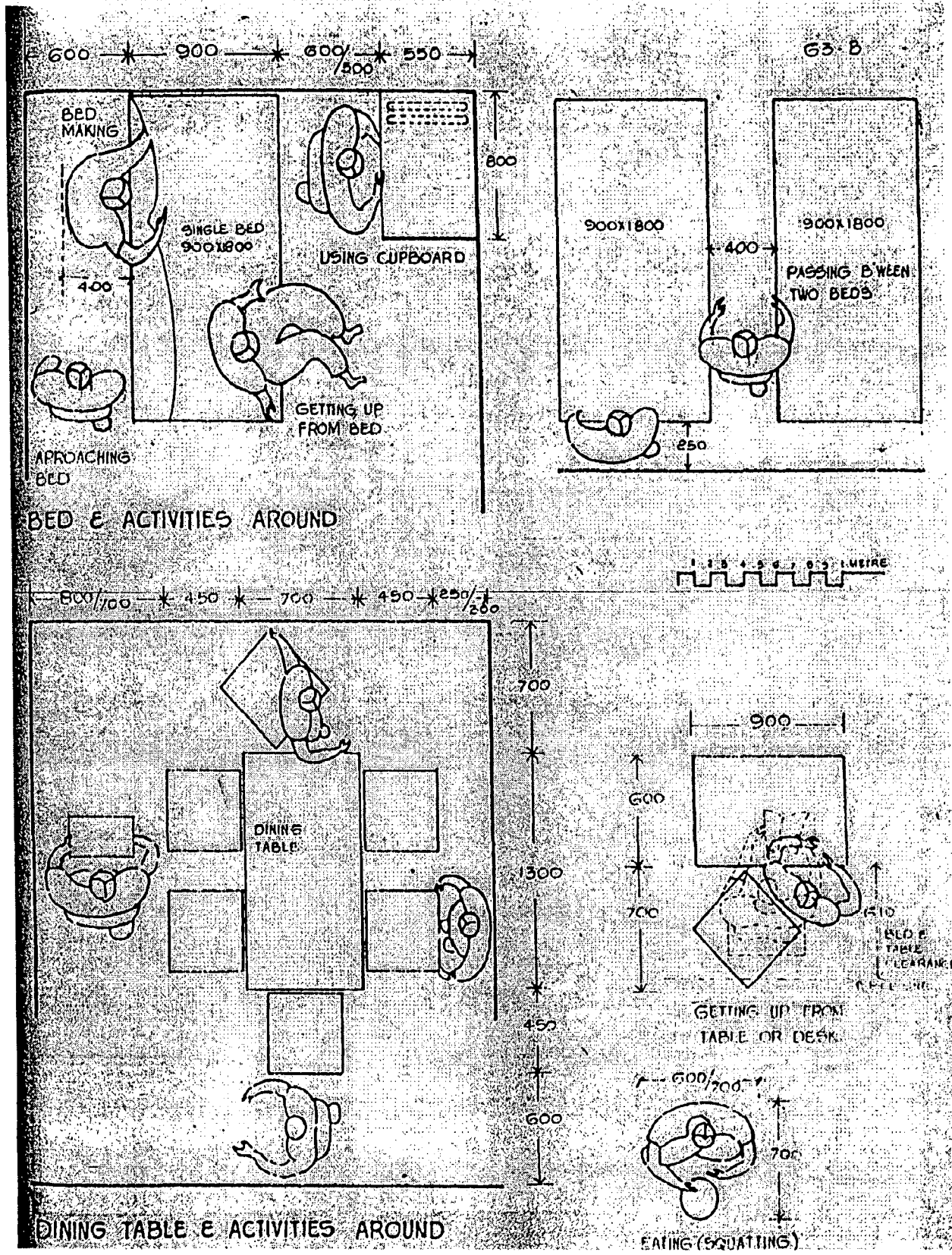


FIG. 3. 6 DIFFERENT POSTURE OF ACTIVITIES

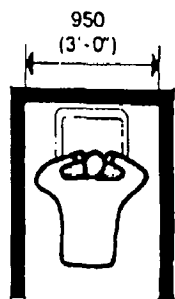


Fig. 4a Space between walls for a handbasin.

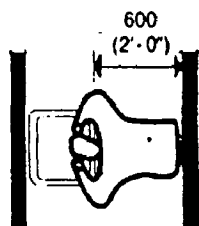


Fig. 4b Space in front of a handbasin and wall.



Fig. 4c Space between walls for a toilet.

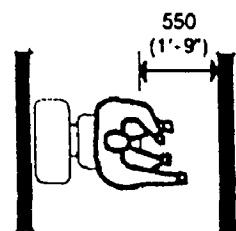


Fig. 4d Space in front of a toilet and wall.

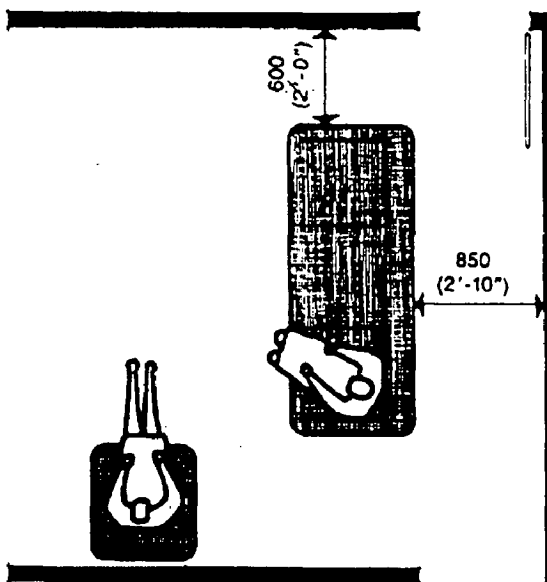


Fig. 5a General access, 850 mm limited access, 600 mm.

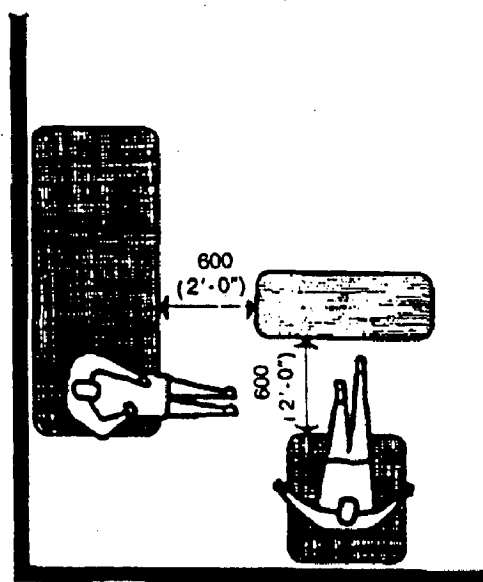


Fig. 5b Limited access between a table and other furniture.

TABLE 2 Bathroom

Space between walls for a washbasin	950 mm (3 ft 0 in)
Space in front of a washbasin and wall	600 mm (2 ft 0 in)
Space between walls for a toilet	750 mm (2 ft 6 in)
Space between front of a toilet and wall	550 mm (1 ft 9 in)

TABLE 3 Living Area

General access	850 mm (2 ft 10 in)
Access between a table and other furniture	600 mm (2 ft 0 in)

FIG.3.7 ELEMENTAL ACTIVITIES

Fig.3.8. Drawing Room

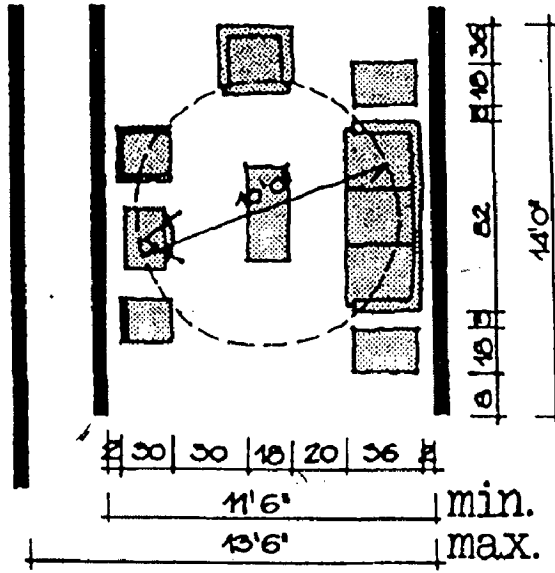


Fig.3.9. Dining Areas

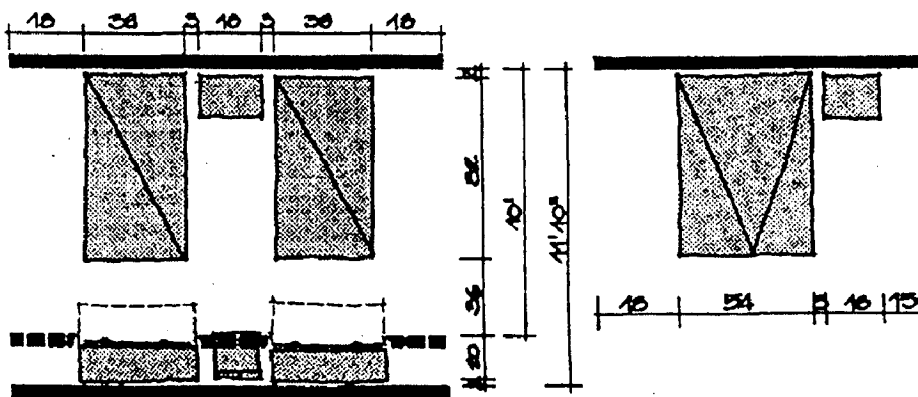
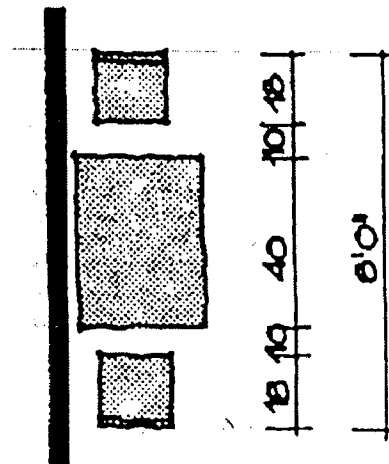


Fig. 3.10 Sleeping Areas.

ROOM DIMENSIONS

DRAWING ROOM

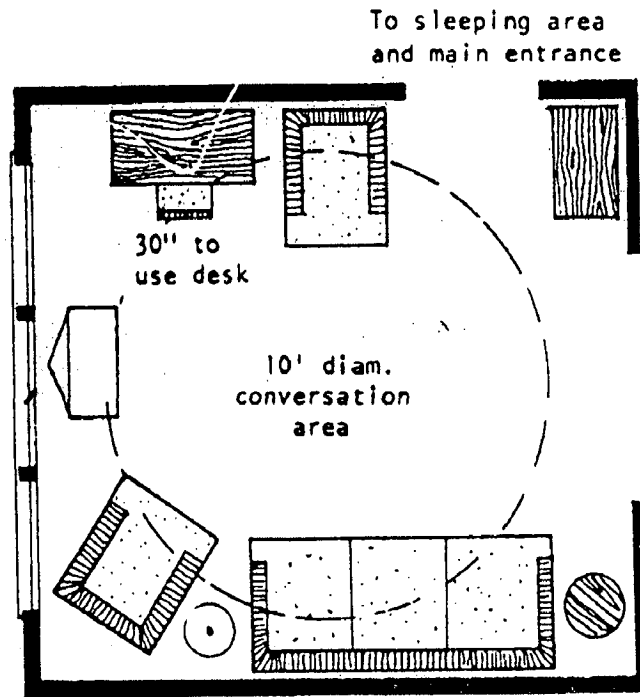


Fig. 3.11 Lay out of a drawing room

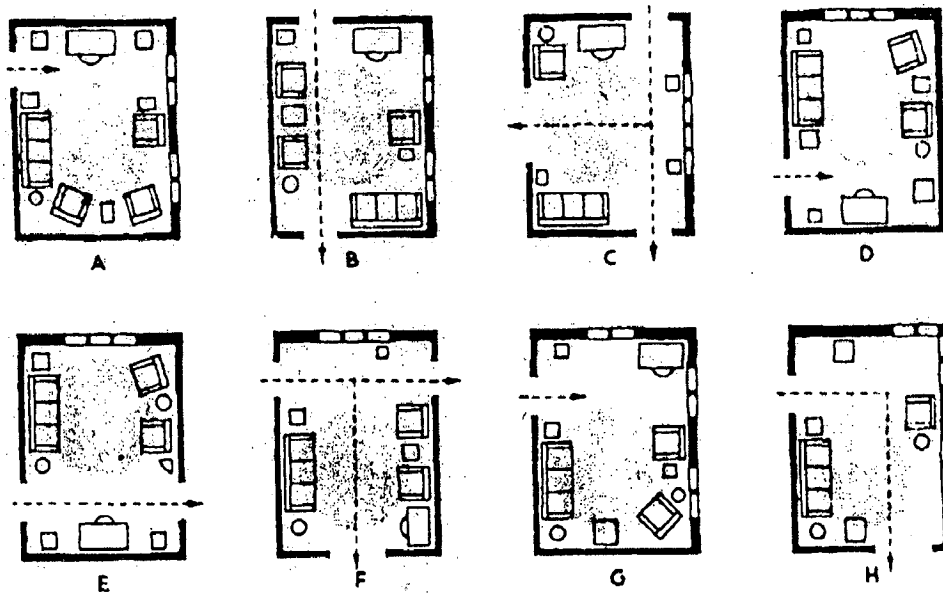


Fig. 3.12 Drawing room considered from the point of view of possible furniture groupings and interference by necessary circulation. Circles indicate conversational groups; dotted lines show circulation.

Dining area

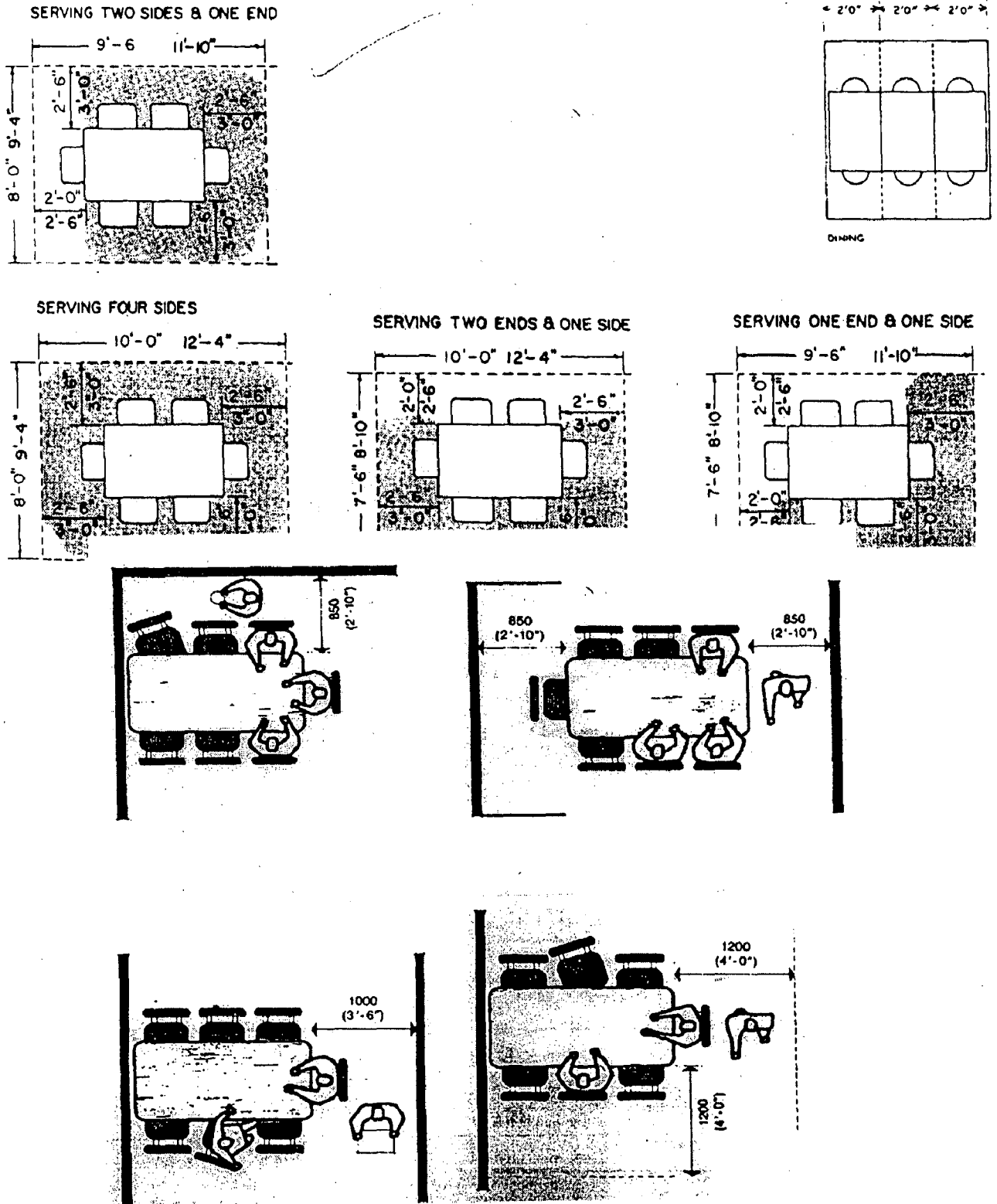
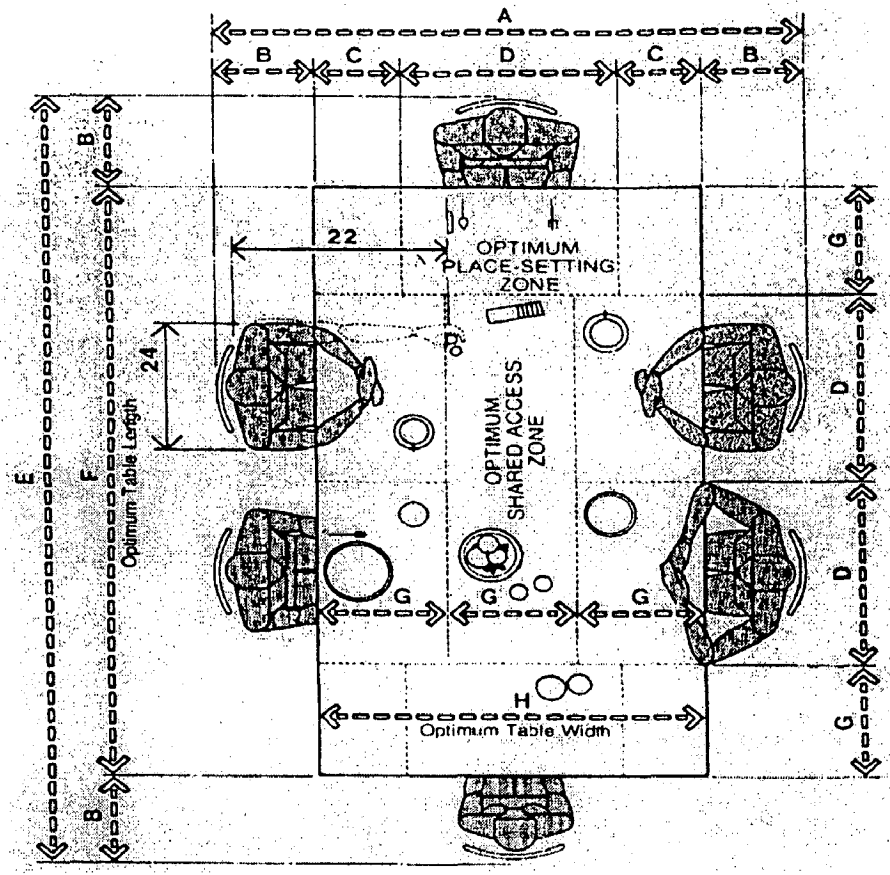


Fig. 3.13 Space Required For Dining Areas



Rectangular Table with Optimum Length and Width for Dining For Six (See Table)

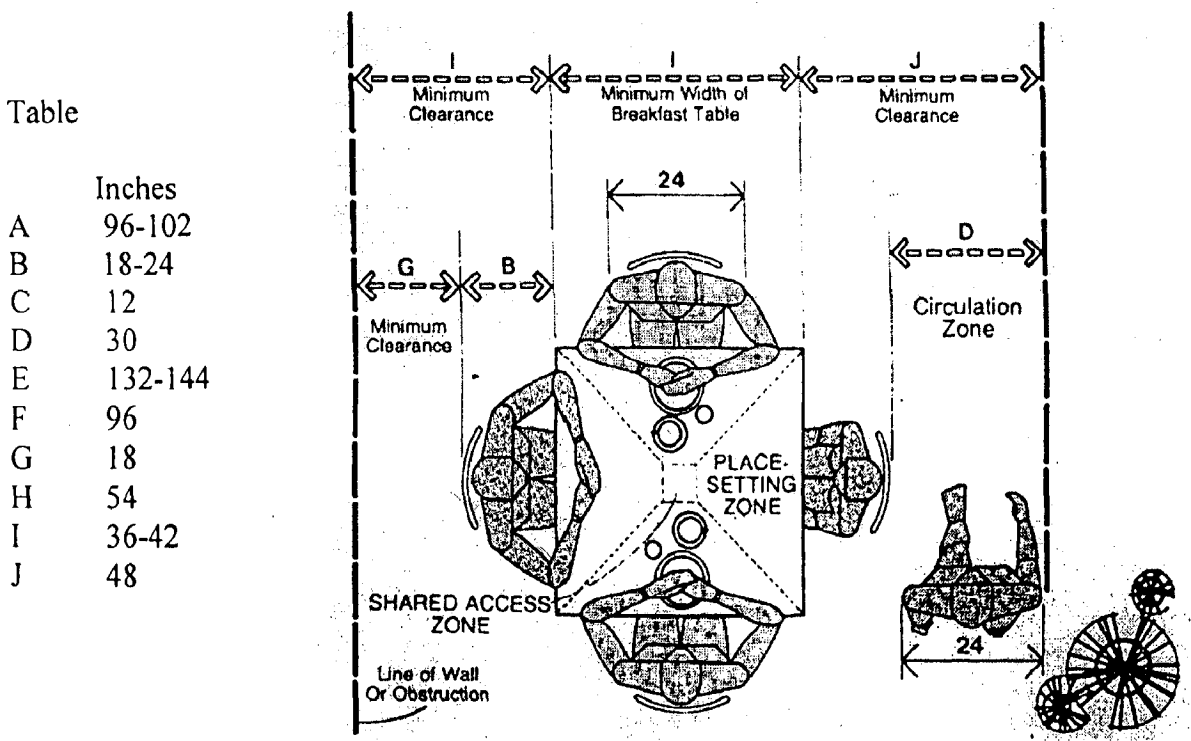


FIG.3.14 Square Table for Four –Minimal Scheme (See Table)

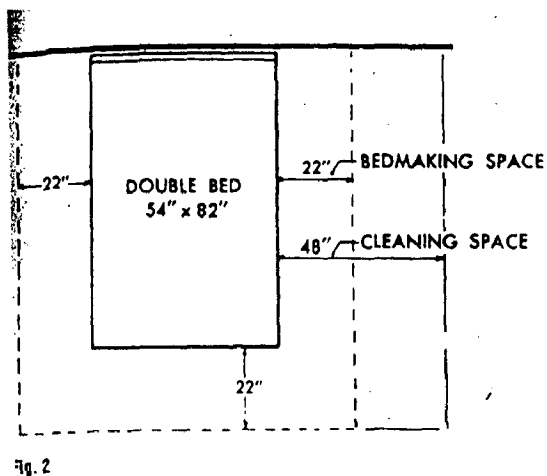
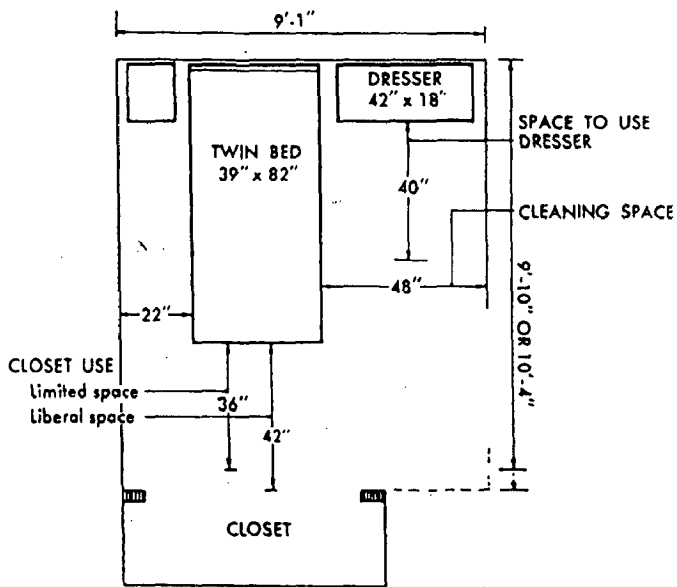


Fig. 2



(In the drawings, "limited space" allows space to open closet door and remove garment; "liberal space" allows space to open closet door, remove garment, and put it on)

Fig. 3

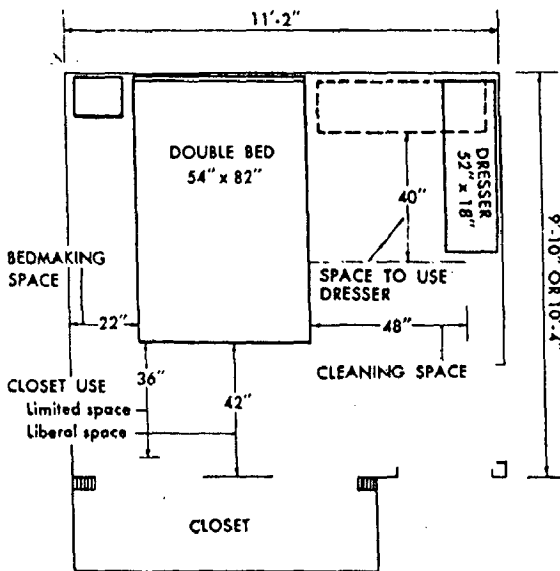
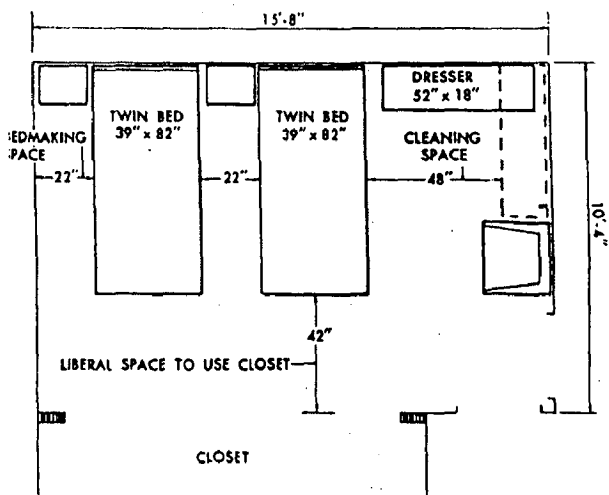
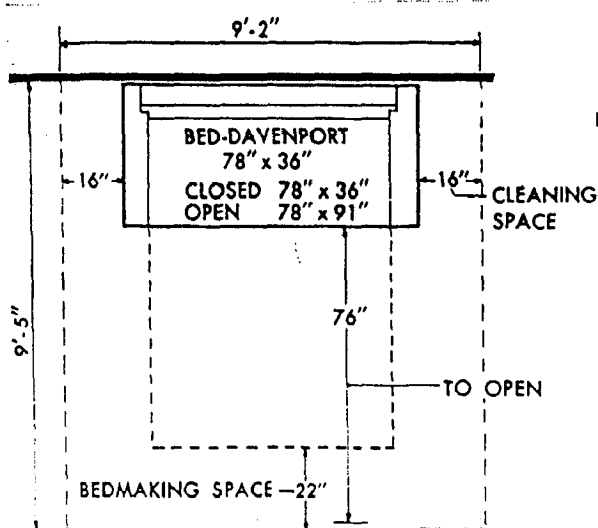
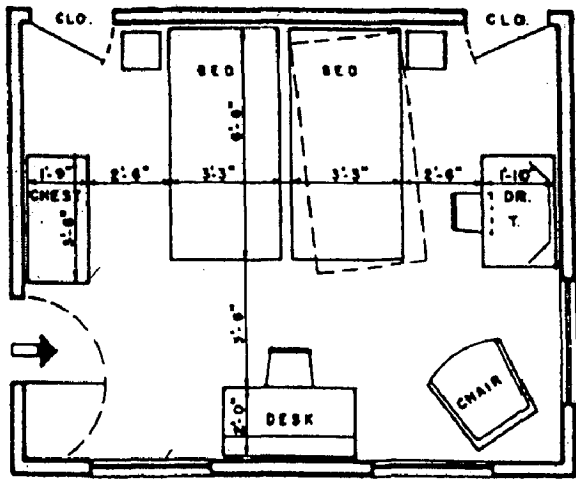


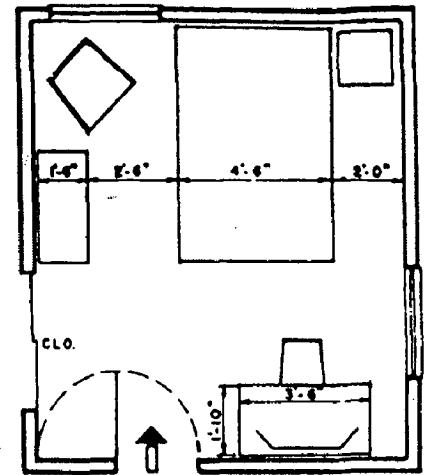
Fig. 5

Fig. 3.16 Space Required Around the Bed

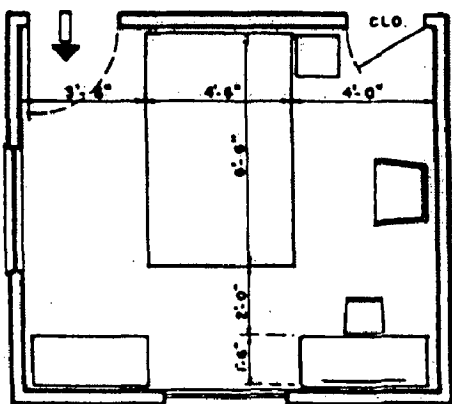
BED ROOMS



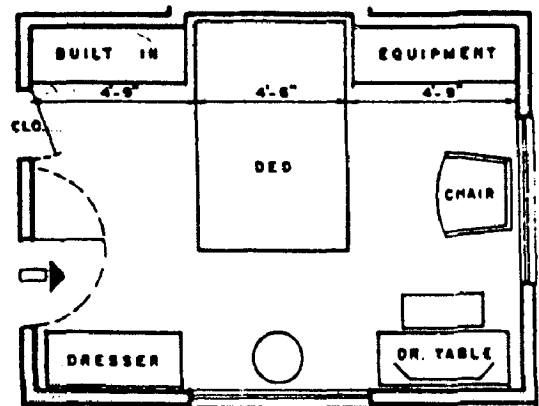
(A) TWIN BEDS - TWO CLOSETS 12'-4" x 15'-6"



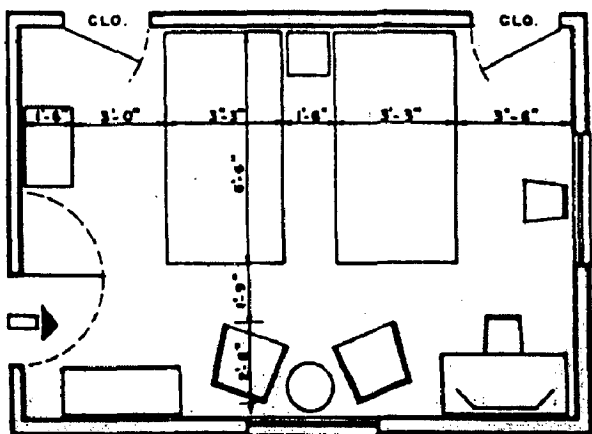
(B) A DOUBLE BED 12'-4" x 10'-9"



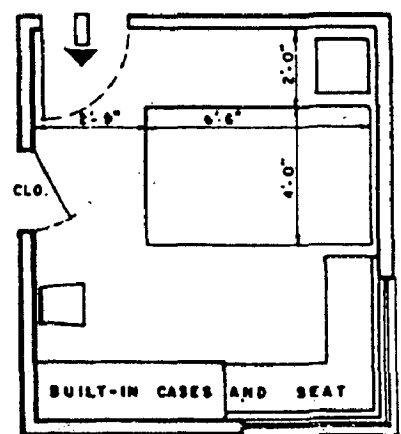
(C) DOUBLE BED - ONE CLOS. 10'-3" x 12'-0"



(D) RECESSED BED 10'-3" x 14'-0"



(E) TWIN BED - SEPARATED 11'-0" x 16'-0"



(F) THREE QUARTER BEDS 11'-0" x 10'-0"

Fig.3.15 Layout of Different Bed Arrangements

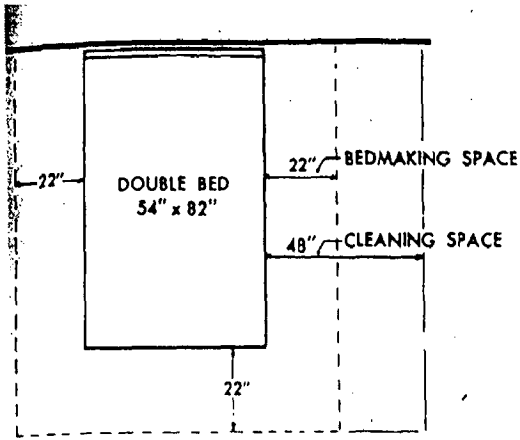
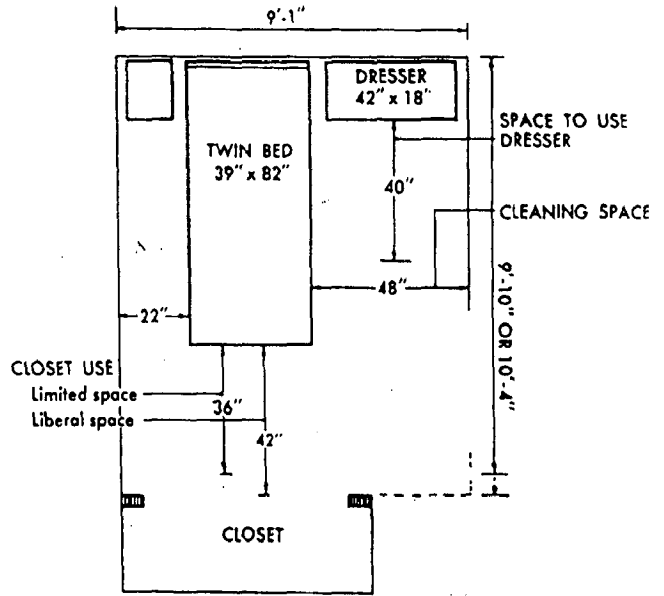


Fig. 2



(In the drawings, "limited space" allows space to open closet door and remove garment; "liberal space" allows space to open closet door, remove garment, and put it on)

Fig. 3

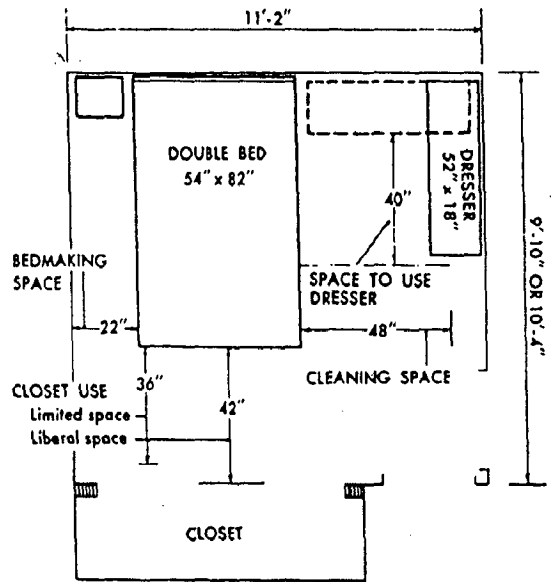
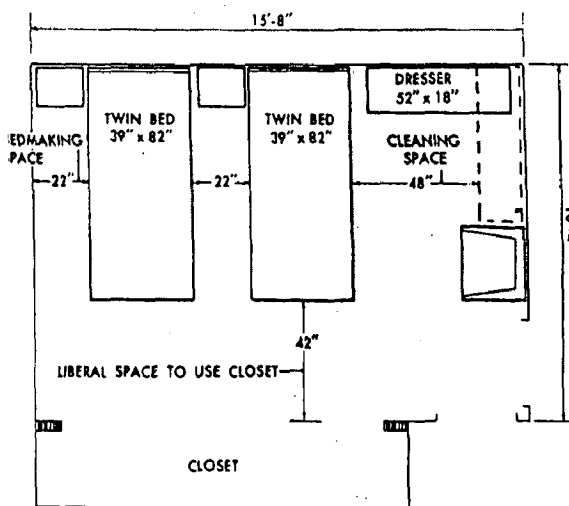
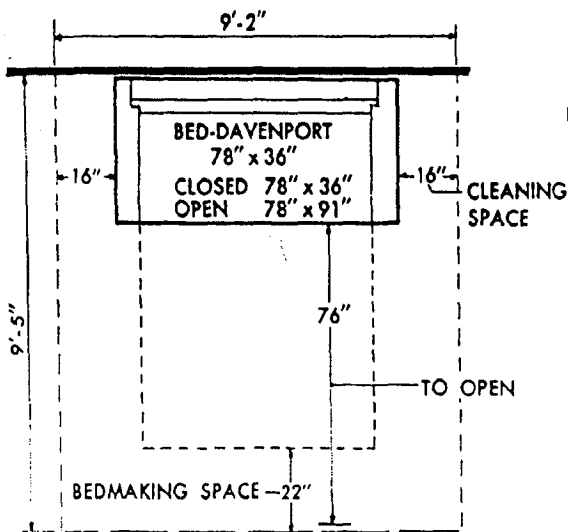
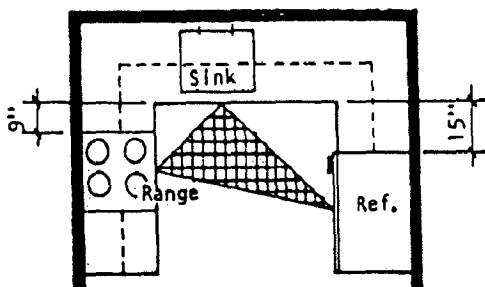


Fig. 5

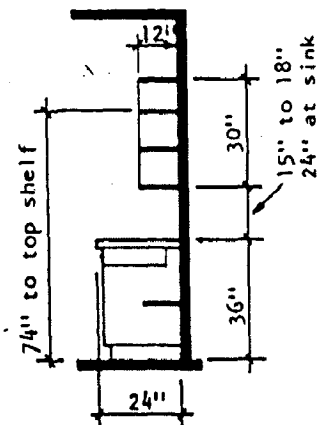
Fig. 3.16 Space Required Around the Bed

KITCHEN

A work triangle is an efficient kitchen arrangement.

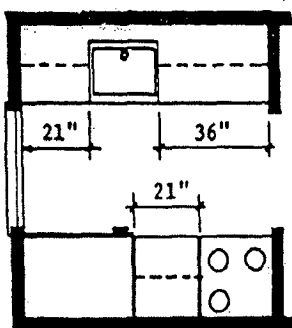


MINIMUM DISTANCES FROM APPLIANCES TO INSIDE CORNERS OF BASE CABINETS



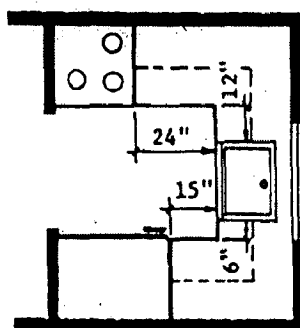
TYPICAL CABINET DIMENSIONS

21" sink counter combined with 36" mixing counter



21" range counter combined with 15" refria counter

Sink and range counters combined with 36" mixing counter



21" sink counter combined with 15" refria counter

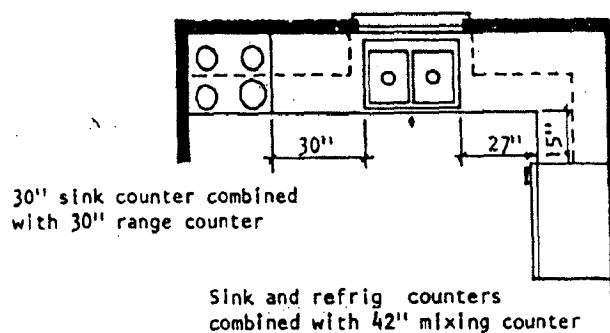
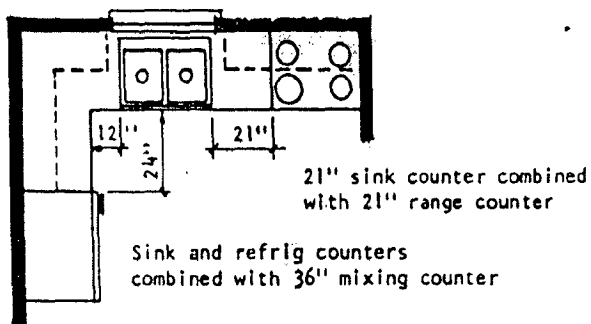
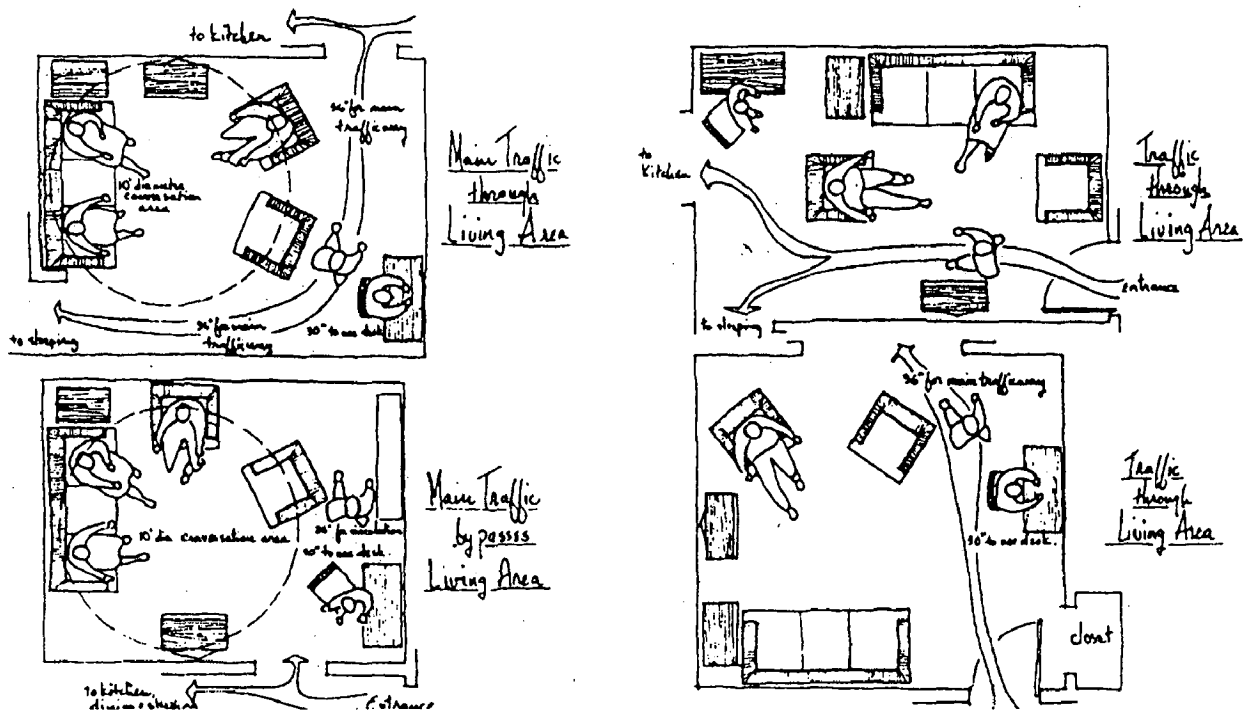


Fig.3.17 Space Requirement for Kitchen

CIRCULATION



Minimum clearance, circulation for living areas

Space Requirement for Individual Place and Clearance around the Table

SPACE FOR INDIVIDUAL SETTING

	INCHES	INCHES
WIDTH	24	29
DEPTH	12	15

CLEARANCE EDGE TO WALL

GETTING UP	24	30
SERVING	30	36

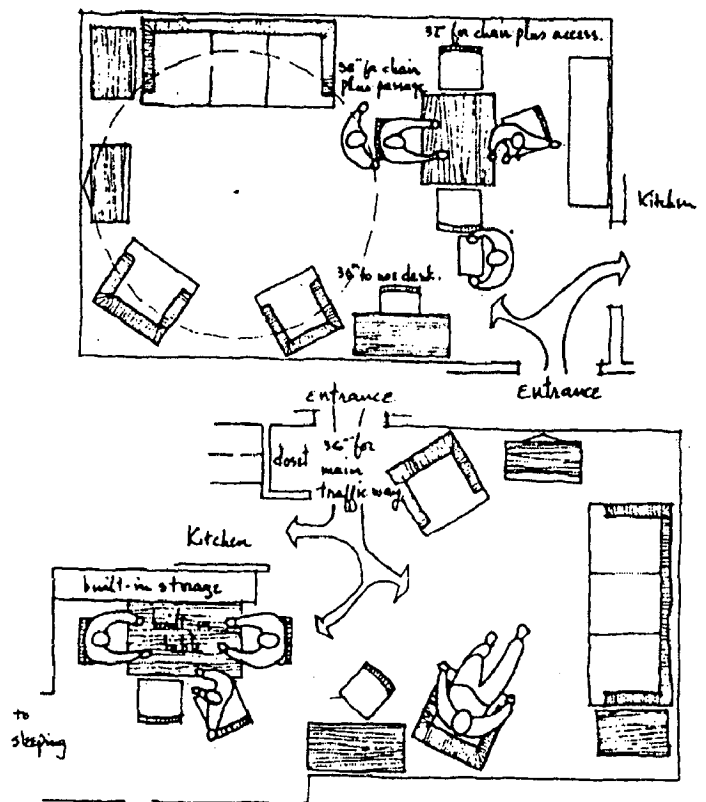


Fig.3.18 Minimum Clearance for Combined Drawing and Dining Areas

3.4 CLUSTER LEVEL STUDIES

3.4.1 Definition

- Cluster is a specific pattern, associated as group concept, relating to house, streets and district or city.
- The result of the interaction of cells (house) and environment used as means stacked, staggered, or spread out in an endless variation of geometric arrangements of dwelling in relation to entire neighborhood.
- A group of dwellings planned in size to the optimum grouping, whose residents can recognize and know their neighbors and the whose children play together

3.4.2 Cluster concepts

The co-operative or group territory has a most significant contribution to make. Here individuals learn the advantage of cooperating and working together, realizing that certain benefits can only be achieved through common effort. group territory, than becomes an extremely important element contract to community and the security. Identity and stimulation so crucial to a healthy, environment can only be achieved where healthy community exists and the healthy community exists only in healthy environment. Interaction of dwellings and environment in geometric form in relation to the entire neighborhood gives the cluster formation

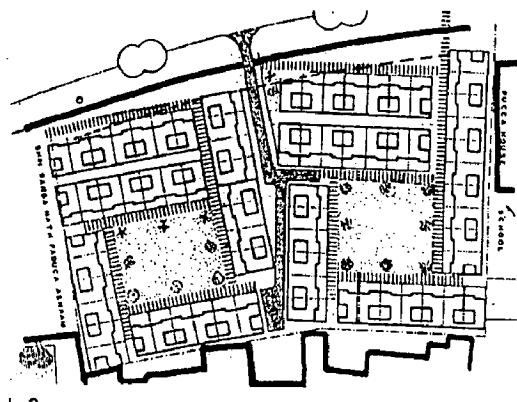


Fig 3. Housing cluster

Cluster housing may be found in many in many climates, on many land forms, and may be built of many different materials. It is certainly not a new housing form; its antecedents are found in a very broad range of cultures that span the entire history of man as a builder of human settlement. It is found in many early civilizations in highly refined forms such as Mediterranean hill towns, villages on the African Savanna, Arctic Eskimo igloo villages, and southwest American Indian Pueblos. There are also many fine contemporary examples of urban cluster housing throughout the world, most of them occurring in the technologically advanced nations of Western Europe. There are few, by comparison, in Delhi itself.

Cluster housing has only developing as a contemporary residential environment in India, and it is very likely that, as it becomes understood, it will become accepted by an increasingly larger proportion of the Indian public. There is a growing public awareness of the urgent need to find an alternative to urban crowding and its resultant social problems. But there is also a growing public awareness of the need to conserve the land, its natural systems, its open space, and its capability to yield sufficient material and energy resources. These two needs, which have seemingly conflicting objectives, must now be perceived as one need with one set of objectives. A close examination of the cluster housing environments reveals that it has the potential to meet this set of objectives.

The study place emphasis upon the development of low-rise, medium-density environments that optimize the interrelationship of land form and house form the cluster environments are planned as components, and groups of components, that fit into the larger scale planning of existing neighbourhoods and new communities. As open space/garden apartment-type housing development, they have characteristics best described as mixture of Radburn, Reston, Hook New Town, Columbia, , and other similar planned residential environment. These developments begin to accomplish, at a reasonable cost, a rich

integration of amenity preservation, conservation of open space, efficiency of operation, and personal privacy, identity, safety and accessibility.

The cluster housing environment is the most fundamental and enduring from the human settlement. It may be simply described as housing that is joined together so that individual units share common halls, floors, and staircase.

More importantly that individual units share common open space and common facilities. Between these extremes is cluster housing which can afford a reasonable degree of privacy, private outdoor space, and ground orientation at densities much higher than sub area.

Historically, cluster configuration and scale have been limited only by the material resources and the ingenuity of the society building them .Between these extremes is cluster housing which can afford a reasonable degree of privacy, private outdoor space, and ground orientation at densities much higher than suburbia. Furthermore, we are discovering that much more social benefits can be gained by aggregating shared open space.

Cluster housing has the capability to organize a hierarchy of private, semi-private, and public spaces.

The cluster like the houses is an entity made of many parts. It is larger and more complex entity of which the individual houses, with its private open space are a part. The cluster units form a mini –community in which these parts are shared: semi private open space, paths and stair ways, parking facilities, mail boxes, and children play area

.Because this is a complex process, the site planner must begin by manipulating only the basic functional determinants; as the concept begins to a merge; other determinants will automatically be included at the proper point in time. However, as the process moves

towards completion, the site planner must confirm that all determinate have been considered.

3.4.3 The basic fundamental determinants for a cluster are the following

- Access-** Path ways, road ways, and utility distribution system
- Orientation-** The 6 basic elements of orientation are sun insulation, day Lighting, view, wind and precipitation
- Slope -** Slope amount is annotated by percentage in relation of the On grade access to the main level of the cluster.
- Cluster type -** The basic element of cluster type are its size and Dominant house type or house types
- Cluster configuration –** The basic element of cluster configuration are its Basic geometrical form and relative position on The topography
- Parking –** The basic elements of parking are garages built into Cluster, open parking lots or separate parking structure.

3.5 IDENTITY OF CLUSTERS-

Most people want their house, or at least immediate neighbourhood, to stand out and be recognizable. Cluster of units within a development should appear as a unified whole, yet each cluster should in some way be distinguishable from other nearby clusters. There are several design approaches to create distinction.

1. The most positive approach is to separate clusters with an expanse of open space including tall trees. Other forms of open space (a buffer, stream, road, playfield, or schoolyard) may make a cluster recognizable.

2. Paint, even slight variations of the same colour may help create a distinction between clusters of units with similar architectural forms.
3. The architectural theme may vary from cluster to cluster. Architectural forms may be used to distinguish clusters and provide identity - cantilevered from; vertical or horizontal massing; traditional or contemporary arrangements. Variations in architectural arrangement (but with the same architectural style) create subtle differences. Mass, silhouette and spatial variations, are qualities, which can be manipulated. Unity can be achieved with similar colour, materials, architectural detailing, and fences.
4. Planting can distinguish clusters – a thematic tree or ground cover, carefully placed specimen trees, or just the extensiveness and maintenance of a well cared garden.
5. A housing cluster with only one access point increases as identity and promotes interactions of residents
6. Compact clusters separated by open, natural areas, provide cohesion in the development because of contrast between built and inbuilt. The edge becomes the distinguishing elements.
7. Lastly, compact development with amenities in easy walking distances fosters neighbourhood identity. If the development is so large that a car is necessary, the trip gives a feeling of going somewhere and identity is diminished.

3.5.1 Types of clusters arrangements

The total site should now appear as a number of individual clusters, categorized according to the most appropriate user, anticipated densities, and desired environmental character. We are now ready to work within each cluster to determine the most appropriate distribution of

units and the cluster arrangement. Three general arrangements related to topography, land, size, amenity orientation, and life style emerge.

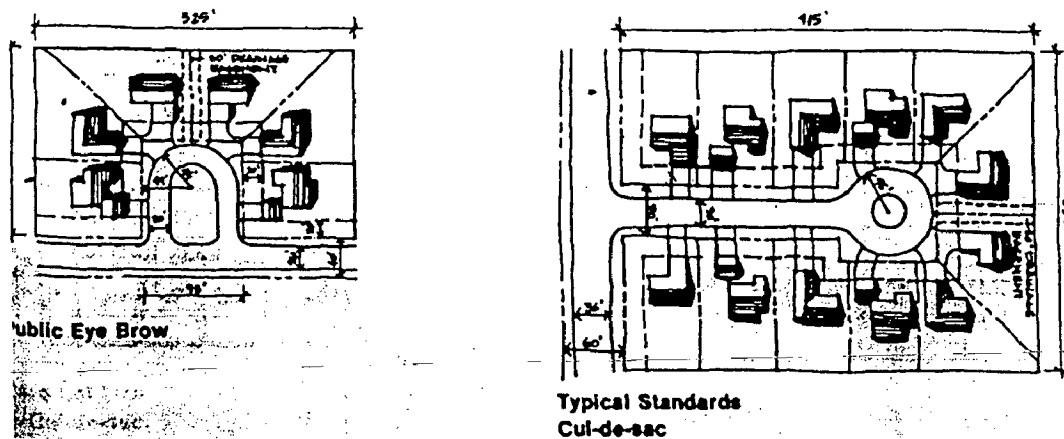


Fig 3.20 circulation aspect in a cluster

3.5.1.1 Linear

Units in a row, either parallel or perpendicular to contours work well on steeper sites. Since access from adjacent roads or parking courts is direct, the pattern suggests individuality and dependence on the car.

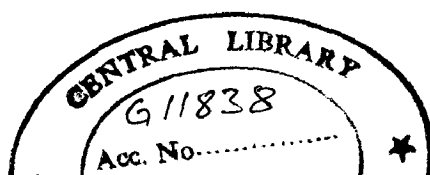
3.5.1.2 Focus

Court or cul-de-sac arrangements are organized around a shared access or interior space, this pattern creates the greatest sense of community.

3.5.1.3 Carpet

Internal individually focused units such as patio houses or bungalows stress private space and cover large areas, particularly land without natural amenities. The pattern is rolled out like a carpet, adjustable at the edges to conform to unusually boundaries.

The cluster arrangements, we have been talking about, are super blocks, layouts with auto-free internal pedestrian spaces and with auto-penetration from the perimeter. In suburban communities the designer has more opportunity to determine the size and shape of super



blocks than in urban areas where existing streets patterns and other constraints force the super block to be regular and small in size. How large can super blocks be? They can be large enough for pedestrian enjoyment – for long uninterrupted walls, for play facilities and socializing areas – and at the same time small enough for automobile flexibility. Super blocks have two dimensions, length and width, the width being critical. To determine minimum widths w should diagram several possible housing arrangements including:

3.5.1.4 Units parallel to the road:

To approximate the space needed, we should start with an adequate setback, parking if necessary, the width of the building, a small space for private gardens, and an adequate amount of common open space, and repeat the section on the other side with backyard, house, front yard or setback, parking, and roadway. Main disadvantages are that units aligned parallel to the road.

3.6 SOCIAL ASPECTS OF CLUSTER

Individual units seldom create a “community”. The designer must refine and revise his plan until there is overall coherence, until the total environment of each unit is optimal, until the complex relates positively to the neighbourhood, and most importantly, until the physical design creates a potential “sense of community”.

3.6.1 Sense of community:

What is sense of community? Residents of any neighbourhood want to feel part of the development, in which they live, be proud of it, and identify with it. Feeling part of a neighbourhood requires knowing one’s neighbours and being able to meet friends easily while on foot. By its very nature, cluster housing suggests a greater sense of community than suburban-type single-family housing, as demonstrated when the two are contrasted: cluster

versus linear, compact versus sprawl, public versus private, pedestrian versus auto, community versus individual.

3.6.2 Conversion-linear to cluster:

Most of the arrangements we will be discussing are clustered or concentrated around a node or point. Node in cluster housing means space, image, identity, and pedestrian usage. Site planning elements creating community are: cluster, amenity, pedestrian, sharing, compactness, focus, and privacy.

3.6.3 Walking

Replaces auto travel as prime means of movement in and around the cluster. Walking increases the apparent size of a neighbourhood and the chance of meeting people.

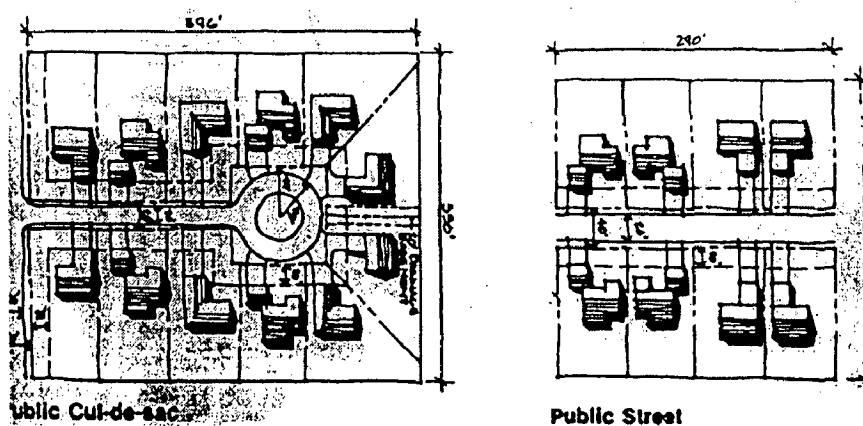


Fig.3.2]type of cluster arrangements

3.6.4 Amenity:

Natural or man-made, should be available for communal use and enjoyment, rather than incorporated into the private gardens of a few houses.

3.6.5 Sharing of resources:

Many facilities are becoming too expensive for people to own individually or are used so frequently to justify ownership. Such facilities many include parking, laundry, swimming pool, tennis courts, auto wash area, shop, gymnasium football field, etc.

3.6.4 Compactness:

Create group focusing units whereas sprawl develops individual focusing units, not allowing the bonding together of neighbours. In cluster developments the individual family continues to be the key social unit but additionally it is party of a neighbourhood.

3.6.5 Privacy:

Privacy is essential in any community even though contracts with neighbours may be pleasant Every household must have real privacy at the entrance the private garden, and inside the house. Clustering removes some units from direct street access and places them in various Arrangements around open space –

There are two conceptual cluster arrangements: around an entrance court and around a garden space.

3.7 CLUSTER SPACES

Open space includes all land, which is not occupied by buildings. Open space includes traditional spaces like parkland and play areas, but also roads, walks, private gardens, services space, parking areas, etc., Moreover, open space is not just inbuilt-upon land, it is meant to be used and enjoyed. Every inch of outdoor space can enhance the development if it is considered in the site planning process.

For most housing complexes, we will try to maximize the pedestrian precinct. This means providing for safe walking, playing of yelling, and freedom from instruction by the automobile. Open space can include a pedestrian movement system, which is significantly different from vehicular circulation to warrant special consideration. First, it relates to the

slowest and technically least demanding more of movement, i.e., walking. Open space is bounded and crossed by the vehicular net work but may require separate spaces safe from auto intrusion. Lastly, it is more than a circulation system in that it contributes to image ability and liability throughout the neighbourhood.

Open space affords the visual amenity provided by earth, grass, flowers, trees, as well as by such landscape elements as streams, ponds, mounds, and depressions, paths and resting places. Over and above this, it provides the means of preserving the enhancing existing natural amenities. Green open space buffers against environmental nuisances and has an important role in the maintenance of a favorable ecological balance providing a habitat for desirable flora and fauna. Open space can beneficially influence the microclimate by improving heat reradiating conditions and by providing channels for air drainage and favorable air flows. The system operates as more than just open space; it provides a readily accessible place for informal recreation.

There are three broad, overlapping ways of looking at open space:

Size:

The size of usable open land allocated into large or small spaces.

Hierarchy:

A System of spaces throughout the community (long, linear) connecting to a serving all housing cluster directly.

Ownership:

Responsibility for use and maintenance of open space.

Let us consider first "Ownership". Open space can be classified broadly into three forms of ownership: public, semi-public, and private.

3.7.1 Public open space:

Public open space is owned by every one. It is maintained at public expense and is usable by all. Examples of this type of open space would be public parks, play-grounds roads, and sidewalks. Public open space boundaries must be readily understood by all people; for instance a gate or fence may signal what the public space needs and that private space begins. Within many developments, public open space is not publicly owned but controlled by community residents. However, the same rights for public access and circulation should be possible with routes made clear to the general public.

3.7.2 Semi-public open space:

Is space owned by the residents and set aside for their communal use. Non-resident use is limited to guests, with general public barred. There are also many examples of semi-public open space in exterior portions of commercial establishments, such as gas stations, shopping centers, offices buildings, etc. a user knows the limited right of use and acts accordingly; last he be asked to leave. Typically people have some business or reason for being there, and are not just passing time.

Semi-public can be divided into more and less private access. For instance, semi-public space used for unit access would have to be less private to allow visitors to reach the units; ort recreation areas more private by barring all non-residents.

Semipublic (Private) space works as Security Barrier. Traditionally, it has been possible for visitors to reach the front door of most houses directly

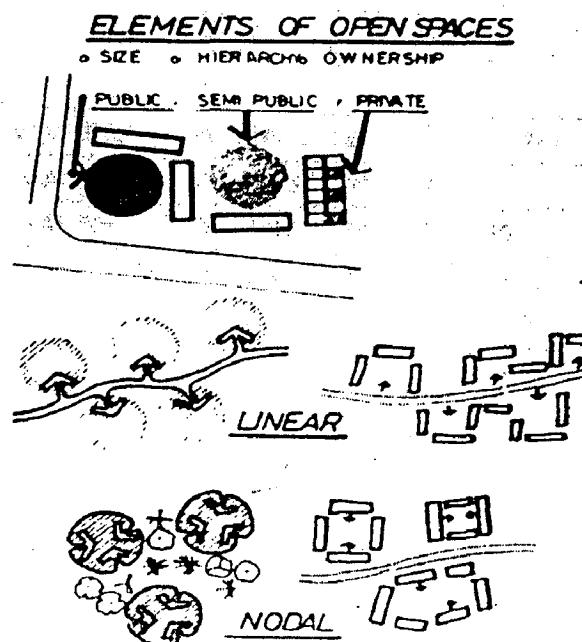


Fig.3.22 Elements of Open Spaces

From the public space, but higher density solutions and security concerns are changing that assumed freedom. In medium-density housing open space ownership has shifted from predominantly public to semi-public. Access is limited to residents, friends, or those who have some specific business to complete. Many lobbies, Parking areas and halls of apartments are locked and arranged so that access can be controlled by a gate. This space is becoming important as a screen for eliminating unwanted visitors.

3.8 CLUSTER LEVEL ACTIVITIES

What is a healthy neighbourhood? To be sure, there is an infinite variety of healthy neighbourhood, but many of them will have these elements in common: First, there is a common space for children to congregate. In nature, the highest function of the cooperative territory is guarding and protecting the young, as well as educating them for survival.

The younger children should be able to gather in small play areas, with play equipment approximate to their ages, within close proximity to their homes so that they can be supervised by the parents.

Older children need larger playing field bicycled paths, streams to wade in, woods to investigate. Ideally, they should be able to get to school without coming into contact with heavy traffic arteries; their parents should have some method-or excuse-through school, church, shopping, or other community activities to get to know each other. Cooperative territory must provide the same elements we demand of individual territory: security, stimulation, and identity. And again we must emphasize that it is here that perhaps the most significant education of the young occurs.

In a neighborhood, there should be a small commercial area where neighborhood service shops can average the basic everyday needs. This element alone can give an area a

neighborhood identity. Small service areas just naturally happened before the automobile became prevalent, and the people in the area naturally responded to this neighborhood focus. Public areas with playground, football fields, barbecue pits, bicycle paths, tree-lined streams, for forest areas are amenities that are most vital in an urban setting. The trend of cities seems to be ever towards increasing densities; therefore the public open space will be the element that can ensure a neighborhood's remaining a healthy and vital place. Recently a sociologist maintained that children are not naturally drawn to the open green space but rather to the crowded sidewalk where the action is one might falsely conclude then that green spaces are not necessary.

The real answer lies in the fact that children want to be in active areas, which simply reinforces the idea that the quality of outdoor space is determined by the number and variety of things to do in it. The children who left the green open space for the street only did so out of boredom. They did not leave an unneeded area; they simply left an area that failed. Often it is felt that a set of swings and a jungle gym create a playground. Single-function facilities will be used for a very short period because children easily become bored.

And of course many standard playgrounds are so dismally ugly – a king of plumber's nightmare- that even the kids are turned off.

Children who live in beautiful upper middle-class subdivisions with no open space have inherited an extremely drab, barren place in which to grow up., the general pattern for children in these areas is to have several friends whom they enjoy, and that is the extent of their close association. If none of their close friends is available, they quickly resort to the television set rather than seek out other friends with whom they have slightly less in common. The great contribution of the open space is that it becomes a natural gathering place for a great variety of children.

Again, the basic philosophy is that design should be based on activities for people, and therefore landscaping should in its turn express this multitude of possibilities. To allow residential areas to be built without public open space in the immediate vicinity has been the great crime of land development in the past. Absurd as it may seem, it remains so today.

3.9 LITERATURE BASED CASE STUDY - (GHARKUL - MUMBAI)

3.9.1 Criteria for selection of this case study

- To study the housing in major city like Mumbai
- To study the design part of the housing in relevance to the Mumbai
- To study the housing trends and built form

3.9.2 Observations considered

- Design part
- aspect of space utilization
- Light , ventilation and circulation
- Interconnection of activities
- Social aspect in housing
- Built form and circulation on cluster level

PLACE: MUMBAI

ARCHITECT: HAFEEZ CONTRACTOR



FIG. 3.9.1 A View of Gharkul

3.9.3 PROJECT DETAIL

Client	CIDCO limited
Design team	Hafeez Contractor, Rachna Amin, Manish Mistry
Consultants	Y. S. Sane Associates (structural)
Contractor	Crescent Construction Company
Year of completion	Phase I - 2003. Phase II - 2003
Cost of project	Rs 29.5 crores (Phase I and PhaseII)
Built-up area	7.5 lack square feel,188 Acres

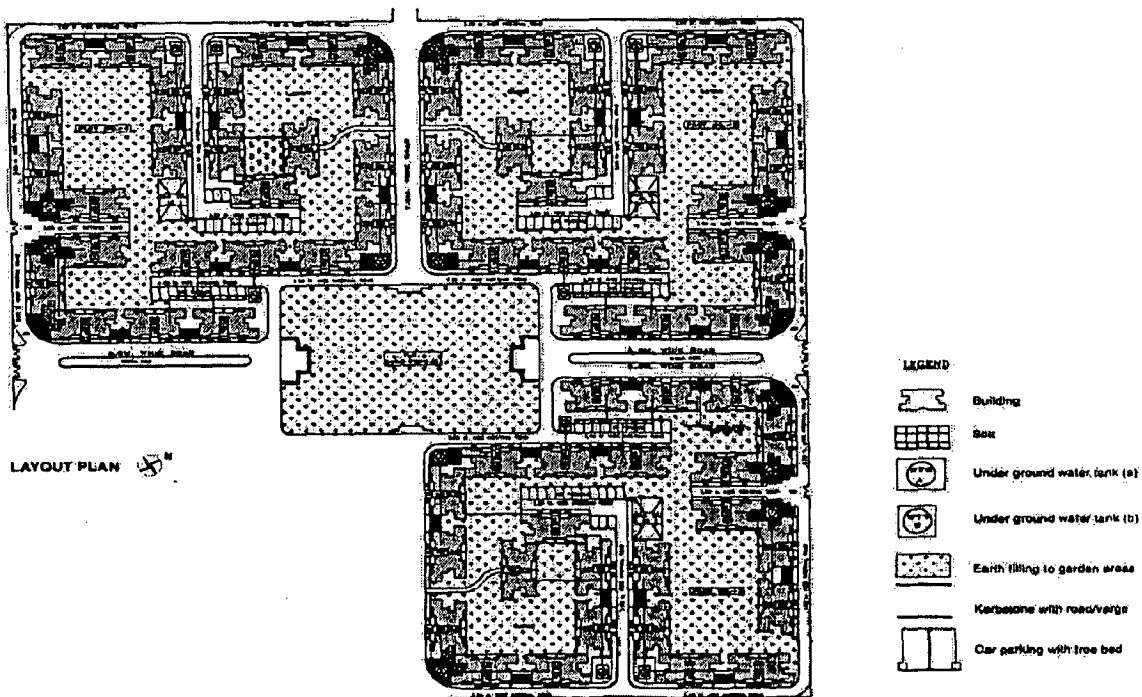


FIG. 3.9.2
SITE PLAN

- The layout consists of clusters enclosing communal green spaces to increase interaction and association within the group
- Each of the clusters also houses its own sub station and a car park.
- Housing blocks is placed around the big open green spaces that provides the define circulation.
- Each housing block has gain proper light and ventilation due to arrangements of housing block around the big open spaces.

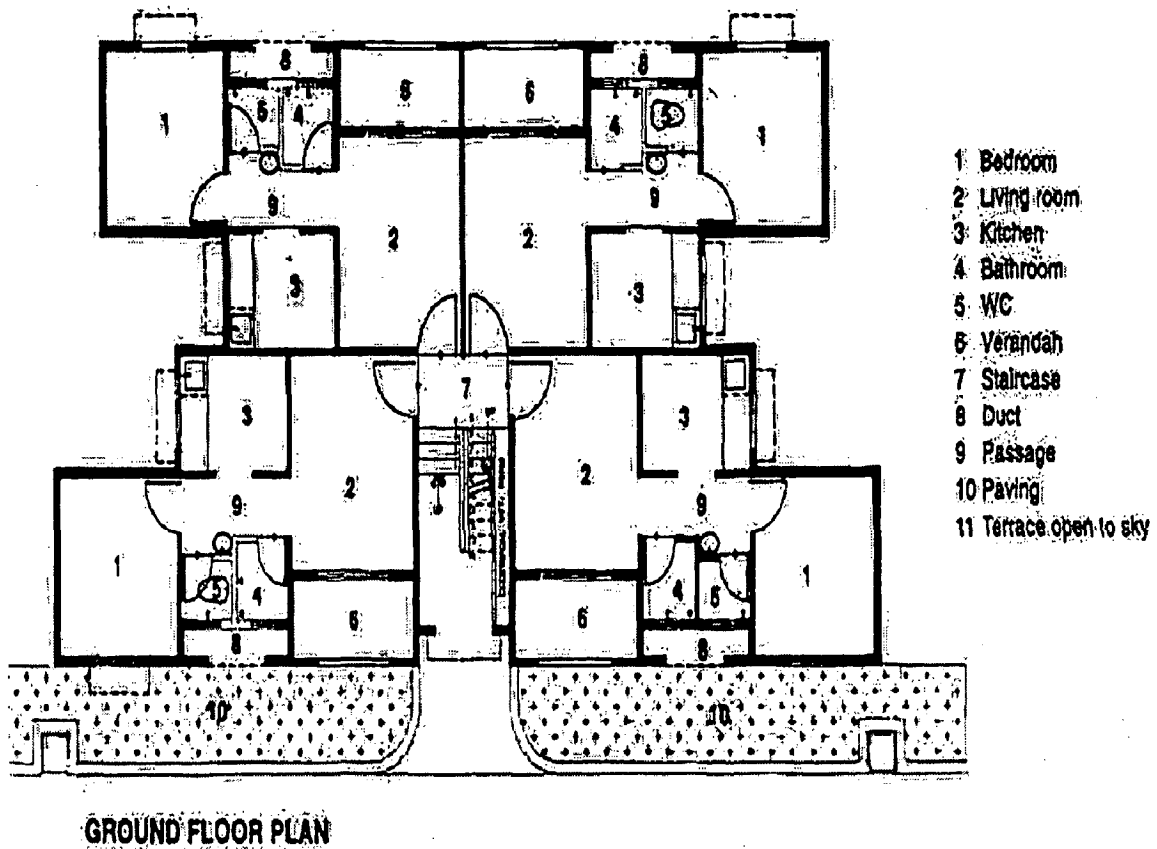
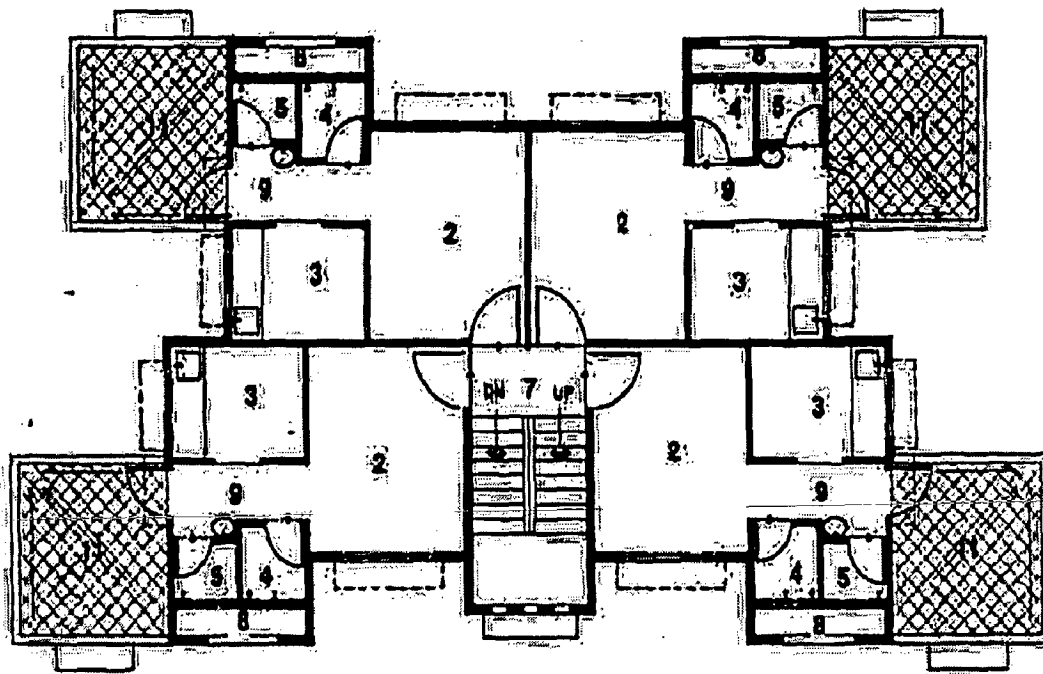


FIG. 3.9.3

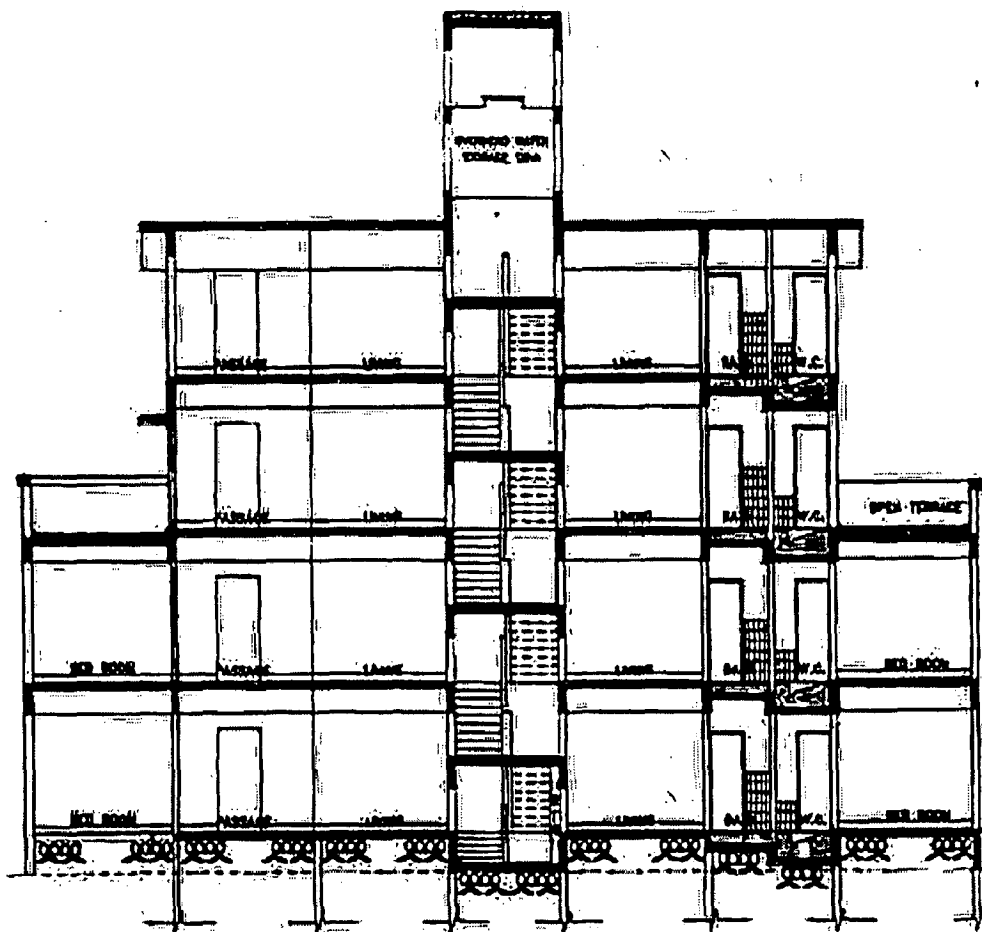
- G + 3 floors ,in each block containing four houses on each floor.
- External landscaping around the buildings with a central courtyard or lawn shared by 10 to 12 blocks.
- Internal main roads width – 5 meters & bye lanes of width – 3.5 meters.
- Identity of clusters by using color on the walls to break the monotony of row housing, also, forms like arches for the entrance and smaller openings for the stairwell.
- House boldly painted to make it an elevation expression.



SECOND FLOOR PLAN

FIG. 3.9.4

- There are two type of houses on 2nd and 3rd floor one room become open terrace. it is a treatment of elevation by blocking of masses.
- People have a choice to purchase a house according to their affordability.
- All flats in a block are connected with a common staircase.
- On ground and third floor sufficient space is provided for the storage.
- Each room maintains the privacy and connected with small lobby.
- Drawing room in each flat has direct relation with main entrance no disturbance in other activities.
- Location of kitchen serves the bed room and drawing room equally.
- Sufficient light and ventilation is provided in each room by proper designing.
- Simple form has adopted through the blocking of masses.
- There is no conflict in internal circulation.



SECTION

FIG.3.9.5

- Each housing block has service duct which is treated as elevation element .
- Bold colour in elevation gives the separate identity to the blocks.
- Socio culture aspect full fills through the layout of housing.
- Open terrace on second floor reduce the built mass and break the monotonous continuity.
- Sufficient open spaces are provided for get together and socio cultural activities.
- Utilization of space in dwelling units an effort has made to provide the optimum space for use.
- Circulation pattern in the clusters has no conflict.

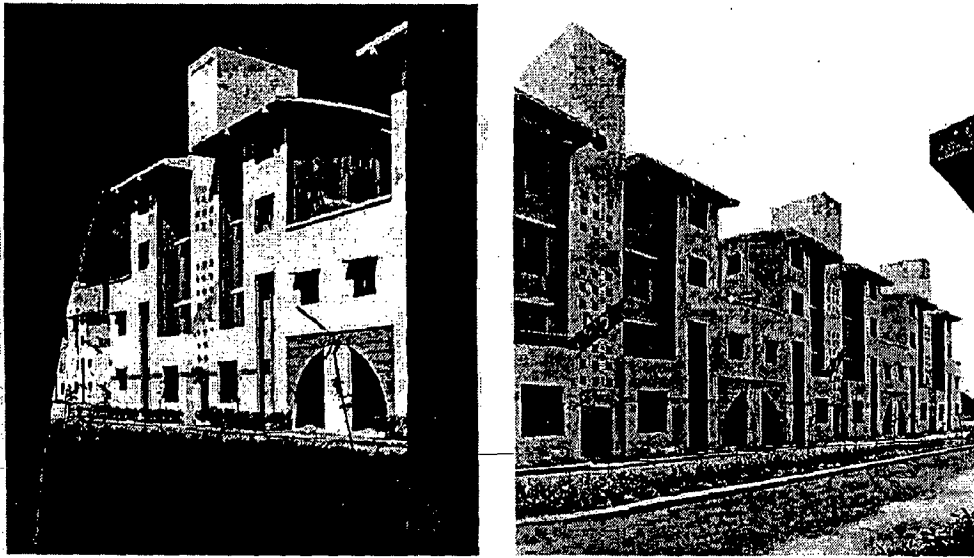


FIG.3.9.6

3.9.4 SPACE DISTRIBUTION

Ground coverag	40%
Open spaces	50%
Others	10%
F.A.R	1.5
Type of open Spaces	community spaces, lawns, parking, paved areas
Road widths	3.5m, 5m & 7m
type of planning	: introvert



■ Ground Coverage

■ Open Spaces

■ Others

3.9.5 INFERENCES

- Housing full fill the basic need of occupants regarding the space utilization
- Each house have sufficient space for parking of vehicles that provides a security to the occupants and gives the mental relax.
- Privacy is the most important factor in the dwelling units has fully considered here.
- Along with space utilization social interaction is important factor on dwelling unit level and cluster level also, such provisions has adopted here.
- Housing units around the big green open spaces provides the recreational atmosphere to the occupants.
- Sufficient light and ventilation is another aspect for the proper space utilization and it has properly occurred here.
- Bold colour break the continuity and provides the smooth feeling apart from monotonous looking
- Circulation pattern is well define here no confusion in pedestrian movement occurs.

CHAPTER -4

FIELD STUDY (SURVEY)

4.1 SURVEY INTRODUCTION

From studies in previous chapter at dwelling unit and cluster level have seen the importance psychological, physiological and socio-economic aspects in designing any housing development. The family cycle, life style, types of development, dwelling unit designs, physiological requirements etc, have been studied at the dwelling unit level and at cluster level.

In this chapter, as per the methodology, I have studied from our primary house hold Surveys the life style, socio-economic characteristics utility pattern of different spaces as per the daily activities etc.

Livability is not determined exclusively by design. The designer has to know a way of life and family requirements. It should also promote creative or constructive relationship between resident families, between a family and its physical environment. One of the main objectives of the study is to develop design criticism/guidelines embracing physical, social and economical aspects of housing and development Incentives and controls to regulate the quality of housing.

The design criteria for housing are usually based on qualities of life. These qualities are definable, measurable and capable of being communicated to make housing more than a dwelling unit.

So carry out these studies required a detailed survey of existing housing developments and the characteristics of the occupants who are living in these units. For the purpose of the study , certain housing development has selected , which has represents some distinct characteristic of a particular type of housing

4.2 SELECTION OF SURVEY AREAS

4.2.1 THE CRITERIA FOR SELECTION OF CASE STUDIES

4.2.1.1 Location

To have a complete cross section M.I.G. residential development in metro cities- areas will be selected from all possible directions in metro cities

4.2.1.2 Period of stay

Minimum one year stay in a particular area will be considered, so that occupants have better understanding about their living

4.2.1.3 Type of development

Different type of developments having different type of designs will be considered to have better idea of utilities at the different spaces with respect to provided areas and in relation to other spaces. Also only cooperate developments done by govt. development authorities and private developers will be considered because most of the occupants are owner and experience they have about these houses is much more realistic as compared to results.

4.2.1.4 Year of development

To have a complete idea about the progress made by govt. development authorities and private developers in last two decades in providing the quality of housing. The selection will be based on this factor to get last 10 to 12 years progress of housing developments.

4.2.1.5 The type design

The type design will be one of the criteria for selection of the locations.

Five different designs with various type of carpet areas, various density pattern, different layouts etc.

4.2.2 CASE STUDIES SELECTED FOR THE STUDY

According to above criteria for dwelling unit level and cluster level the selection of case studies has carried out in following manner:-

The type design is one of the criteria for selection of locations. Case study will be based upon five different designs with various types of carpet areas, various density pattern, different layout etc.

To get the over all view of space utilization in M.I.G. HOUSING case studies has carried out in delhi.

4.2.3 ASPECTS CONSIDERED FOR THE SELECTION OF CASE STUDIES

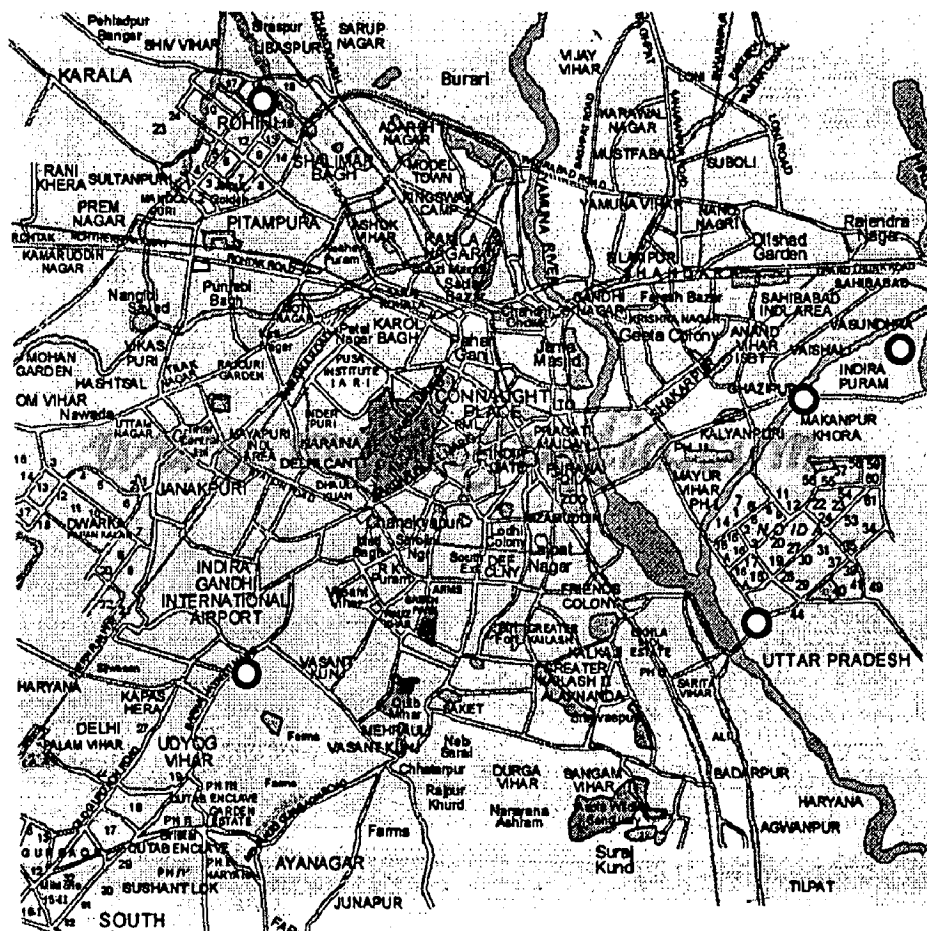
- Location
- Year of development
- Type of development
- The type design

4.2.4 THE FOLLOWING AREAS ARE SELECTED FOR THE CASE STUDIES

1. VASUNDHARA	(SECTOR-16)	-	GHAZIABAD U.P.
2 MAYUR VIHAR	(POCKET-B)	-	DELHI
3 JANAK PURI	(POCKET C-1A)	-	DELHI
4 KAUSHAMBHI		-	DELHI
5 ROHINI	(SECTOR-7)	-	DELHI

	Locations	Vasundhara	Mayur vihar	Rohini	Khaushambhi	Janak puri
1	Year of construction	1991	1989	1990	1995	1971
2	Developed by	Awas Vikas(u.p.)	D.D.A.	private	private	D.D.A.
3	No. of floors	G+1	G+3	G+3	B+15	G+2
4	Area (sq.mt.)	133.5	95.05	85	120.84	68.55
5	Surveyed area	Sector -16	Pocket-B	Sector-7 (pkt -A1)	All	Pocket (C-1A)
6	Surveyed houses	15	15	15	15	15

Table 4.1 Study Areas Data



Map of Delhi

fig 4.1 Case Study Locations

Area 1,483 Sq km
 Population Around 10 Million

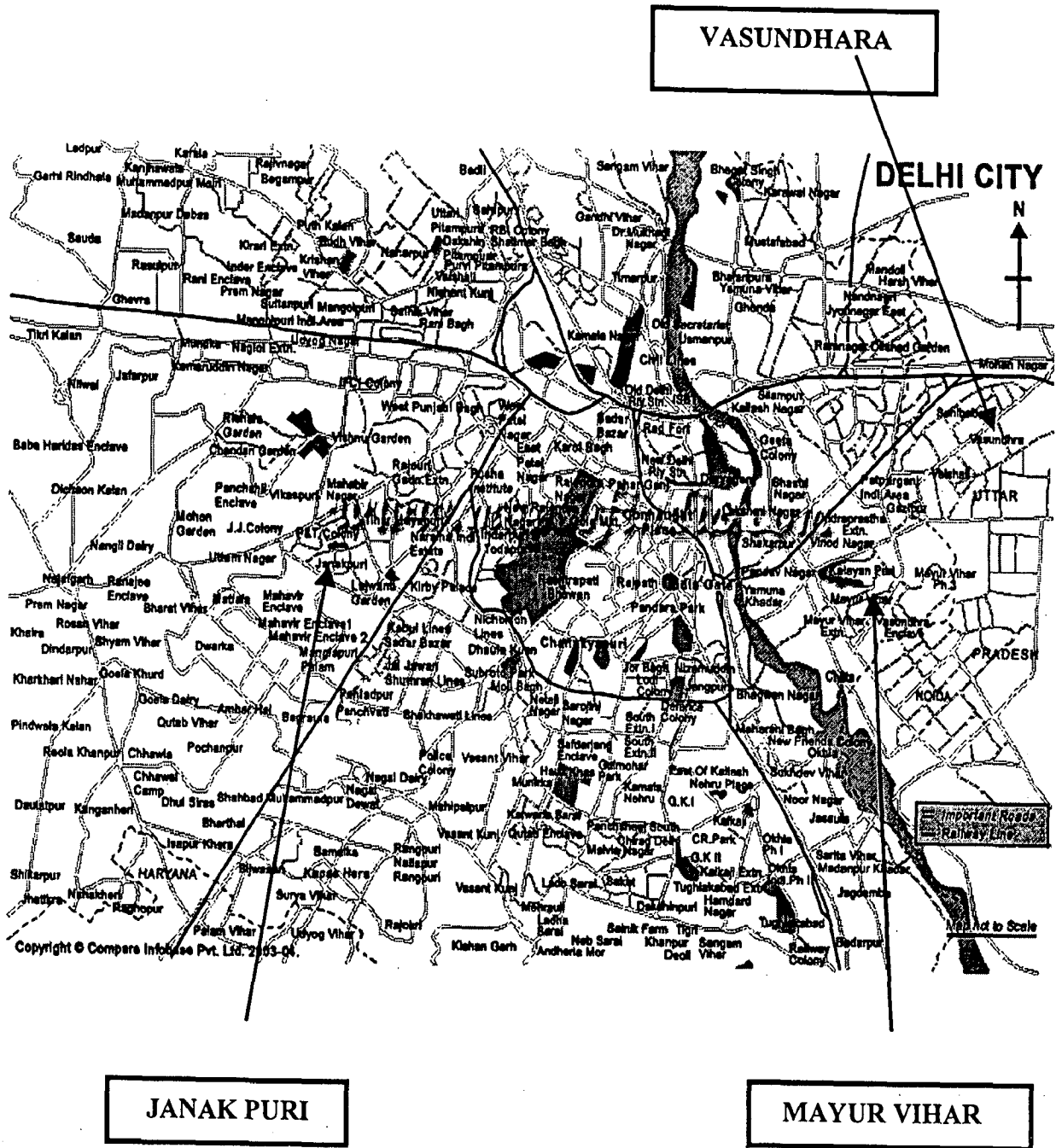


FIG 4.2 LOCATIONS OF CASE STUDIES

4.3.1 METHOD TO BE USED FOR CASE STUDY

Research method selected – qualitative research method

4.3.1 Characteristics of Qualitative research method

There are four key components of qualitative research

1. An emphasis on natural settings
2. A focus on interpretation and meaning
3. A focus on how the respondents make sense of their own circumstances
4. The use of multiple tactics

4.3.2 Qualitative research method basically is based upon the following factors

- Type of research to be done
- Researcher participation
- Structured or unstructured interviews
- Participant observation
- Help of photographs, sketches, daily diary

4.3.3 Aspect of qualitative research

- **Grounded theory**-researcher seeks to enter a setting without preset opinion or notions
- **Ethnography**- emphasizes in depth engagement with its subject
- **Interpretivism**- in depth understanding of existing settings and accordingly participation

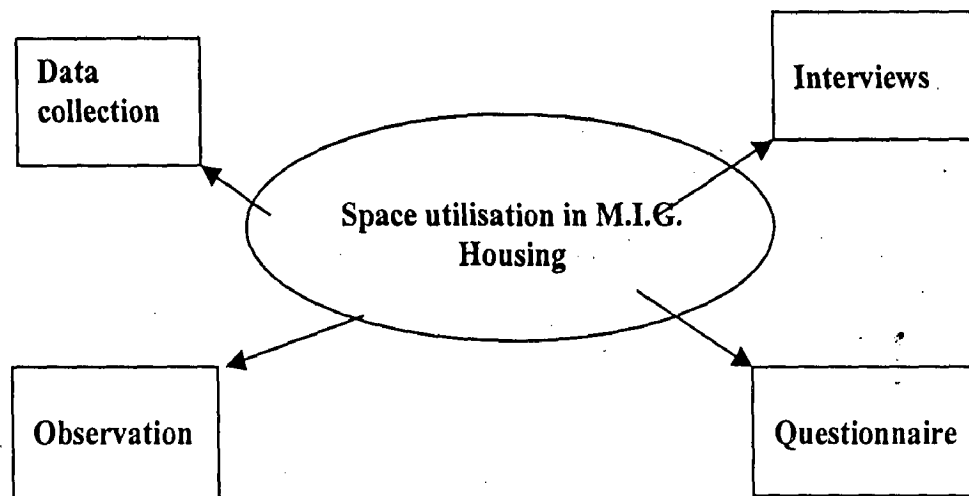


FIG. 4.3 Application of research method

Dissertation topic is concerned with space utilisation which is directly related to the user's experiences and problems. It is very concern with occupants experience in M.I.G. houses and their requirement regarding to house hold activities.

So the actual situation can be cleared only through the real experience about the occupants.

Qualitative research method is based upon study of facts in natural settings and in real life circumstances.

Grounded theory concept of research method is one of key aspect and could be very useful; data will be collected in different housing locations and than theory will come out through the study will be more relevant.

The basic theme of qualitative research is based upon the interviews, observations, data collection, unstructured interviews, photographs, sketches and daily notes. All these are required for the case studies to be done for the dissertation.

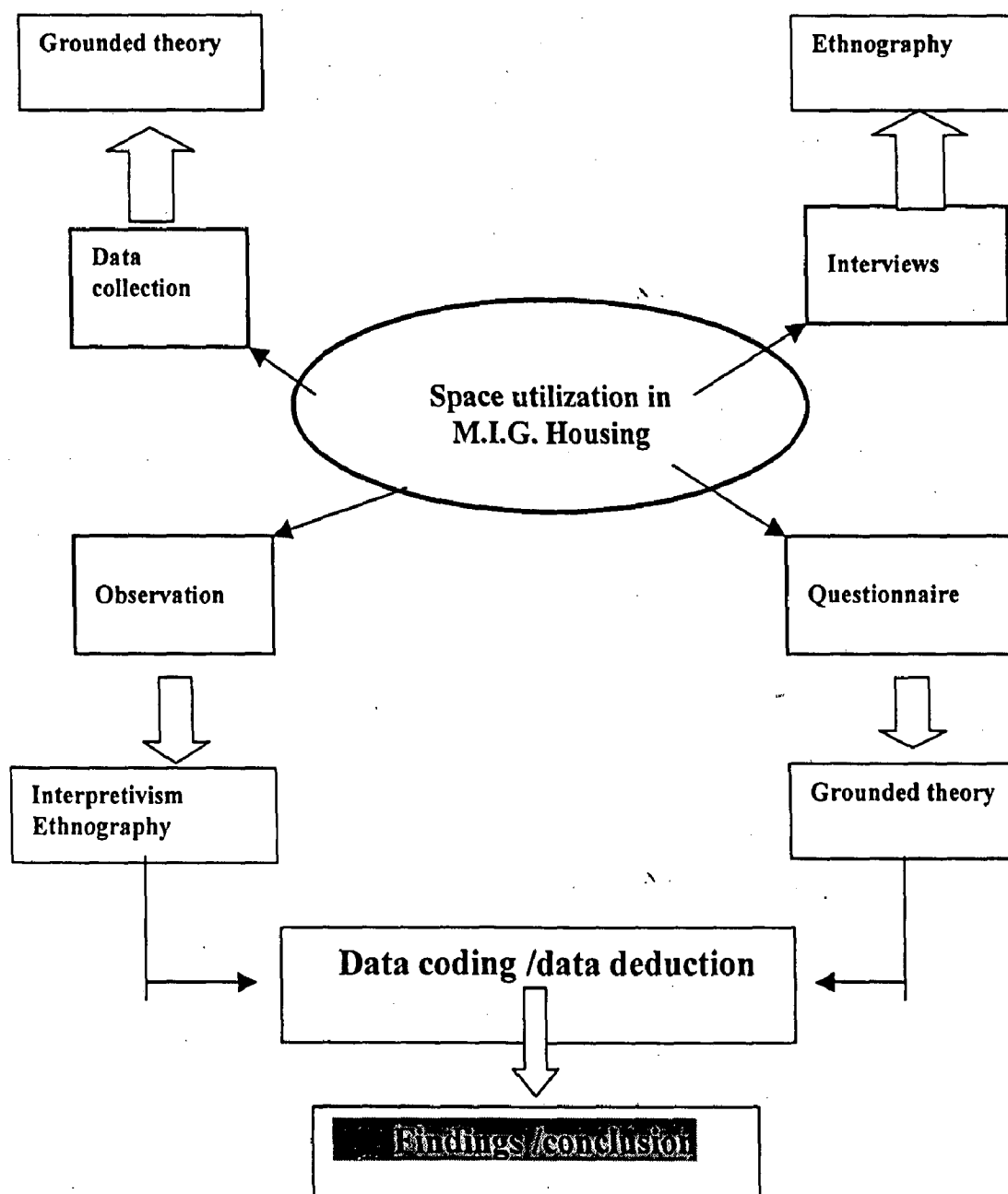


FIG 4.4

4.4 SURVEY QUESTIONNAIRE

After selecting these areas , the detailed survey questionnaire is prepared to study the various above mentioned aspects of dwelling units , cluster designs, layout etc. like, socio economic, space utilization, satisfaction , users problem and preferences, addition and alteration etc. and at cluster level problem and preferences regarding built form, open spaces , land scaping, facilities etc. will be taken into considerations. The various factors considered for survey questionnaire are as follows

4.4.1 House hold characteristics

This study will give the total number of persons residing in the dwelling unit, married people and their monthly income pattern, by which we can find out average house hold size , total income, area per person.

4.4.2 Tenure status

Type of tenure-owner or tenancy of dwelling unit, type of hire, purchase or out right purchase or Sublette. This study will give year of occupancy of the dwelling unit also.

4.4.2 House design

The existing spaces provide inside dwelling units various uses of these places studied as per daily activities and life style. Along with this study, this will give point of accommodation and need for ,more spaces –and than what spaces they need more ,what additional accommodation was made by occupier as per their requirement will be considered; as well as what type of various spaces required as against what has been provide; what type of vehicle they owned and where they parked etc.

4.5 USERS PROBLEM, PREFERENCES AND SUGGESTIONS

Users' problem and suggestions for development of housing areas and their suggestion in designing dwelling units is also an important factor worth studying.

4.5.1 AT CLUSTER LEVEL

4.5.1.1 Residential satisfaction

This aspect of study will give their level of satisfaction, feeling about locality, disturbances from traffic or other usable spaces etc.

4.5.1.2 Facilities provided

Recreational facilities like landscape elements for children to play, daily house hold needs milk booths, shopping; nursery school etc. Is also a point of study. By these aspects total residential environment can be studied.

4.5.1.3 Users Problem, Preferences and Suggestions

This factor will be studied from the user's problems and preferences etc. at cluster layout design what spaces they have need, what type of development they expect, type of cluster etc. in relation with the existing situation.

4.6 field work

The random sample survey method will be adopted for house hold survey. After selecting these areas a detailed survey questionnaire has prepared considering various aspects of the dwelling units and cluster etc. Such as socio economic characteristics ,house hold characteristics tenure status , dwelling unit design utility pattern, preferences addition and alterations satisfaction etc. and at cluster level, cluster design ground coverage ,traffic movement ,children security, utility pattern, satisfaction, shopping and recreational facilities.

The survey process will be the first study visually the areas, then taking interviews as per the standard survey questionnaire as well as asking their problem, experiences, preferences and suggestions. Finally interesting and problematic photographs will take.

CHAPTER -5

CASE STUDIES- SPACE UTILISATION ANALYSIS

CHAPTER- 5 CASE STUDY -SPACE UTILISATION ANALYSIS

INTRODUCTION

Criteria for selection of the case studies

- To study the housing in major city like Delhi z. JUP
- To study the design part of the housing in relevance to Space Utilisation in M.I.G housing.
- To study the housing trends and built form.

Observations considered

- Design part
- Aspect of space utilization
- Light , ventilation and circulation
- Inter relationship of activities
- Social aspect in housing
- Built form and circulation on cluster level.
- Users Problem.

THE FOLLOWING AREAS ARE SELECTED FOR THE CASE STUDIES

1. VASUNDHARA	(SECTOR-16)	-	GHAZIABAD U.P.
2 MAYUR VIHAR	(POCKET-B)	-	DELHI
3 JANAK PURI	(POCKET C-1A)	-	DELHI
4 KAUSHAMBHI		-	DELHI
5 ROHINI	(SECTOR-7)	-	DELHI

CASE STUDY -1

5.1 VASUNDHARA (AWAS VIKAS)-GHAZIABAD

Construction agency -	Awass Vikas u.p.
Clients-	Ghaziabad Development Authority
Type of houses	L.I.G. M.I.G., H.I.G. , Plotted development
Study area-	M.I.G. flats sector 16-b
No. of floors-	G+1
Area of each unit	
Carpet area-	74.63 sq. mt.
Gross area -	133.5 sq.mt
Year of construction	1992.
Location-	4 kms. Far away from anand vihar bus terminus on delhi ghaziabad road

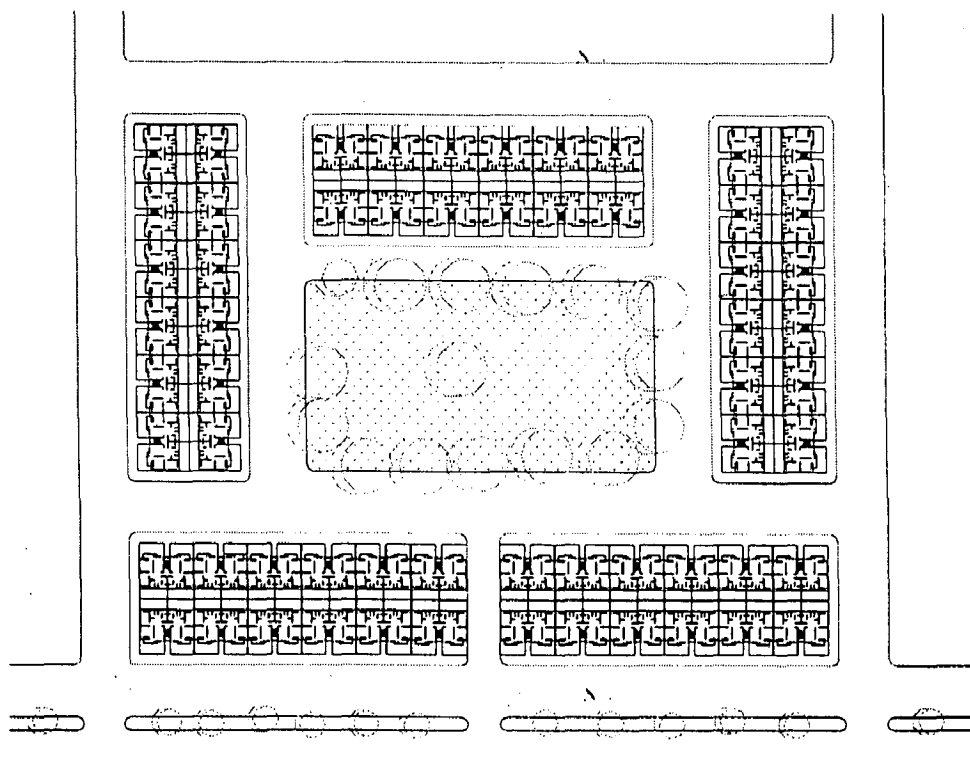


Fig. 5.1.1 Pocket plan – sector 16 B (Vasundhara)

N

	LOCATIONS	VASHUNDHARA (AWAS VIKAS)	
		AREA	PER CENT %
1	LIVING ROOM	12.525	9.38
2	BED ROOM	22.45	16.82
3	LOUNGE	10.92	8.15
4	VERANDAH/BALCONY	8.67	6.49
5	KITCHEN	4.71	3.52
6	STORE	1.14	0.85
7	BUILT IN SPACE	1.2	0.89
8	BATH ROOM	2.47	1.85
9	W,C.	1.08	0.8
10	COMBINED	0	0
11	INTERNAL CIRCULATION	16.45	12.32
12	TOTAL AREA	74.63	100
13	COURT YARD FRONT	29.26	38.99
14	COURT YARD REAR	25.26	33.66
15	TERRACE	0	0
16	BALCONY	7.37	5.5

Table 5.1.1

Space utilization in different activities (Vasundhara)

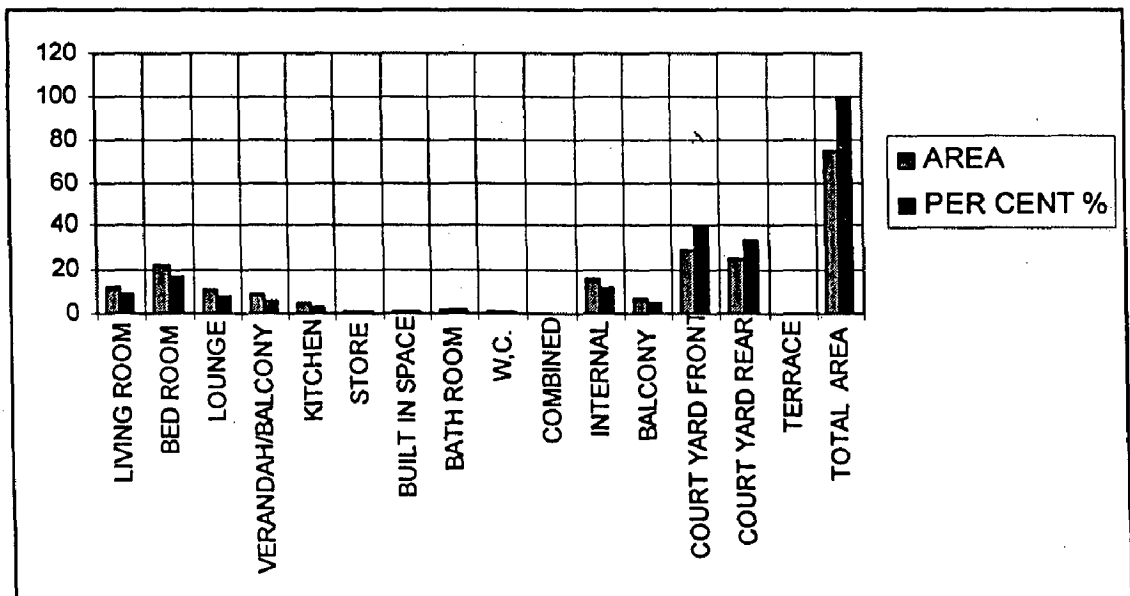


FIG. 5.1.2

Area and percentage ratio in space utilization in different activities

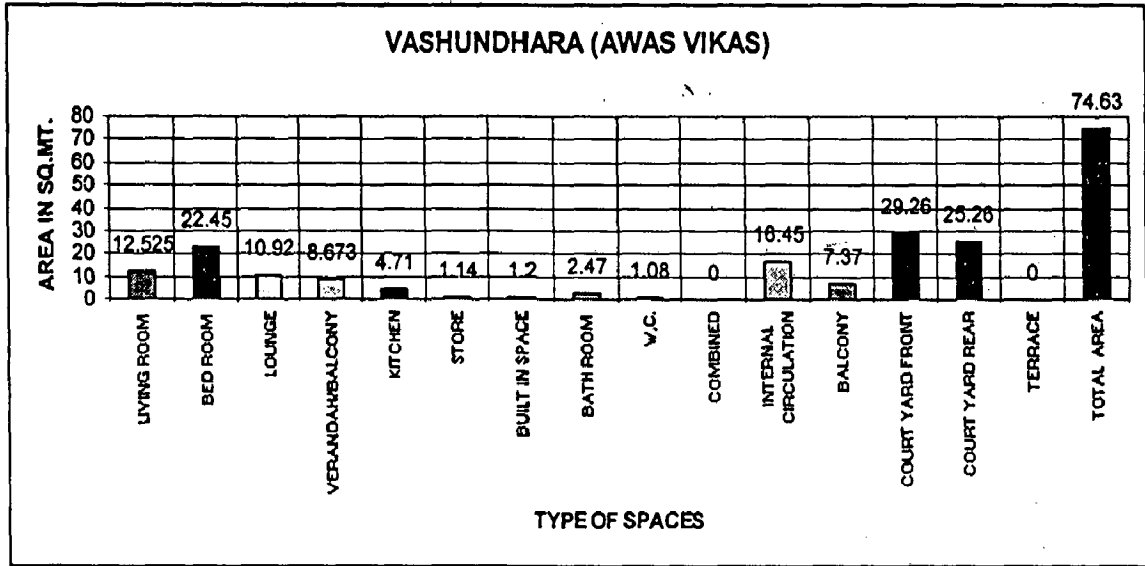


FIG. 5.1.3
Space utilization in different activities

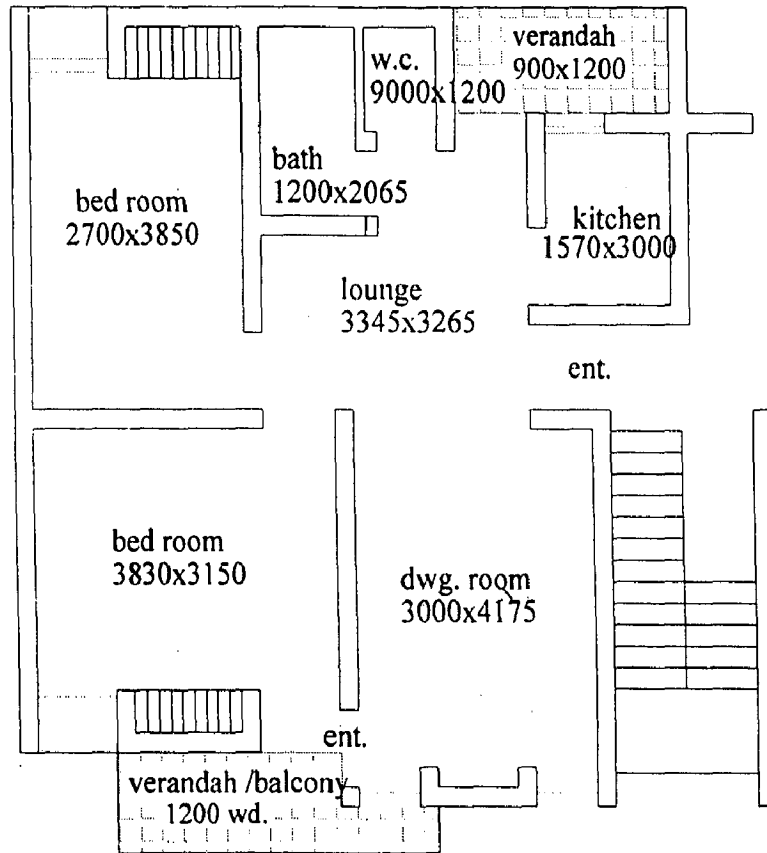
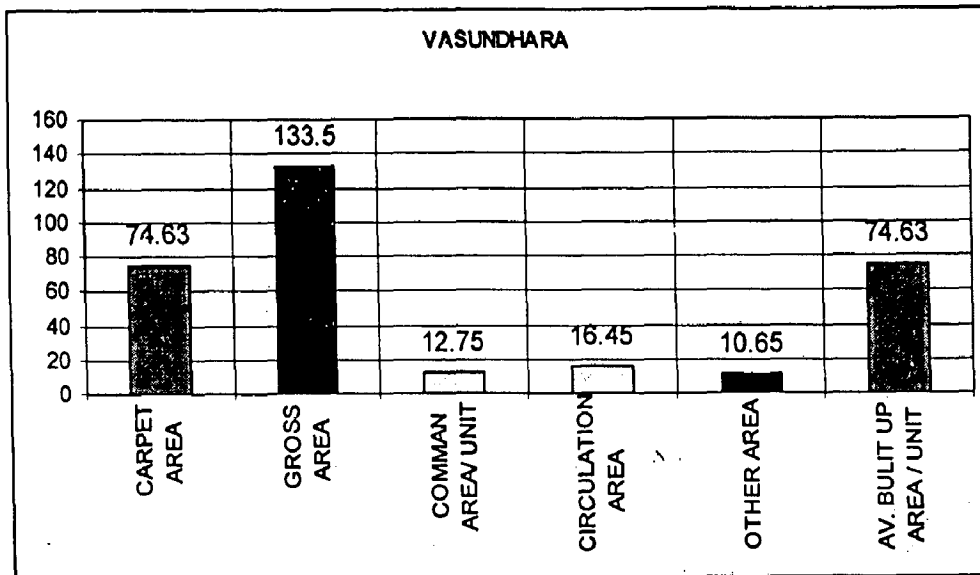


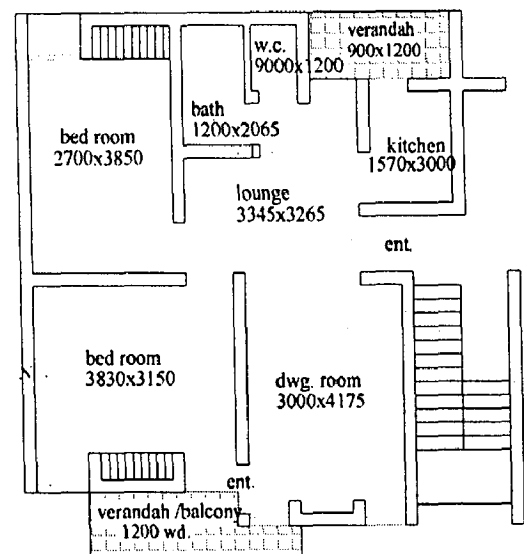
FIG. 5.1.4 **UNIT PLAN (VASUNDHARA)**



5.1.1 SIZES OF ROOMS

Dwg. Room	-	3.0x4.175
Bed room	-	3.83x3.15
Bed room	-	2.7x3.850
Lounge	-	3.345x3.365
Kitchen	-	1.57x3.0
Bath	-	1.2x2.065
W.C.	-	.9x1.2
Balcony	-	1.2 and .9 mt. wide

FIG 5.1.5



5.1.2 DESIGN CONCEPT

Design is based upon two bed rooms and drawing room, lounge in the centre works as a junction of activities. At the cluster level row housing concept is adopted here. Provision of front and rear courtyard made in gr. floor houses and on the first floor people has advantage of balconies. Cluster of Four units is connected with one stair case. The entire lay out of the flats has proper ventilation and light due to well orientation quality of the clusters.

5.1.3 DESIGN ASPECT

5.1.3.1 Circulation

A stair case serves the four units. Lounge in the center provide internal circulation to each room of the flat and it works as junction of activities.

5.1.3.2 Interconnection of function

Entrance through living room has welcoming aspects to the visitors. Bed rooms have designed in such a manner that it maintains the privacy of occupants. Space relationship and functionality is the major criteria here.

5.1.3.3 Storage

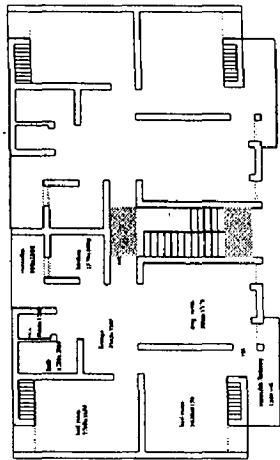
Room size is sufficient according to the standards and provision of storage is provided in each bed room. In built cupboard is provided there for storage of house luggage and other articles. Rooms are designed in rectangular shape so negative spaces has avoided here.

5.1.3.4 Open space

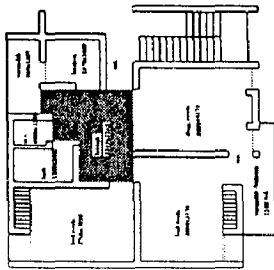
On gr. floor front and rear courtyard provided as an open space, Provision of balconies provides the opportunity to the occupants for out door seating and feeling of openness. Balconies also used for small storage and for drying clothes and other activities. Size of balconies is not sufficient for extra activities.

5.1.3.5 Light and ventilation

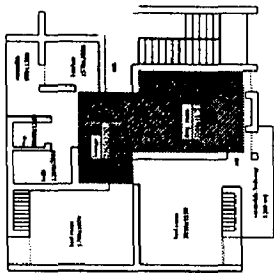
Each room has adequate provision of windows that provides the proper light and ventilation in the rooms and it also maintain the occupant's privacy.



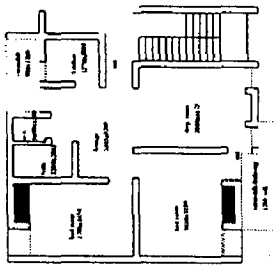
social interaction
area - 3.6 sq. mt.



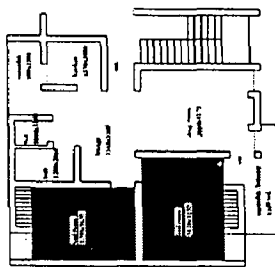
circulation
area- 16.45 sq.mt.
percentage % - 12.32



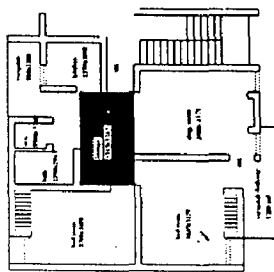
welcoming guests
area - 23.44 sq.mt.
percentage %- 31.40



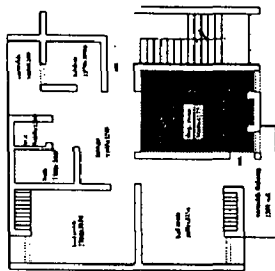
Built in space
Area - 1.2 sq. mt.
percentage% - .89



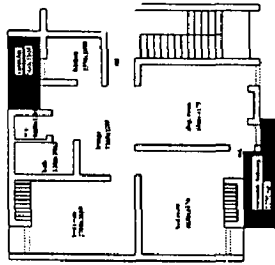
Sleeping
area- 22.45 sq.mt.
percentage - 16.82



Dinning
area - 10.92
percentage %- 14.63



Living
area - 12.52
percentage% - 9.38

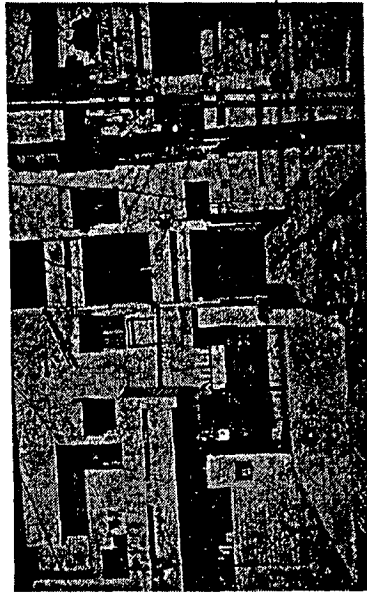


Drying clothes / seating
Area - 7.37 sq. mt.

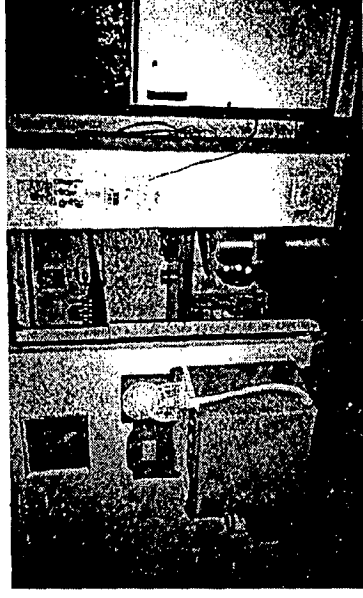
SPACE UTILISATION IN DIFFERENT ACTIVITIES (VASUNDHARA)



Balconies at the rear side has converted in enclosed space shows people required more space in living areas.



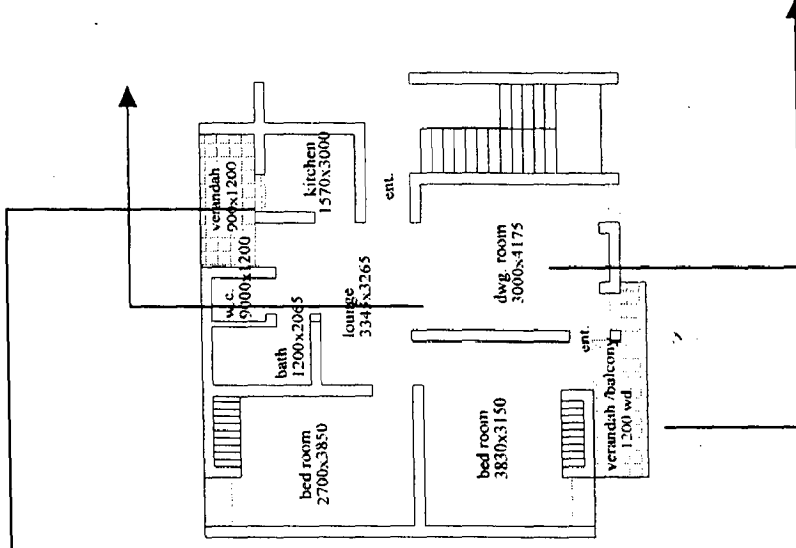
Original built form is differ from unit to unit there is no define character of built form most of the house at the gr. floor has occurred addition and alteration.

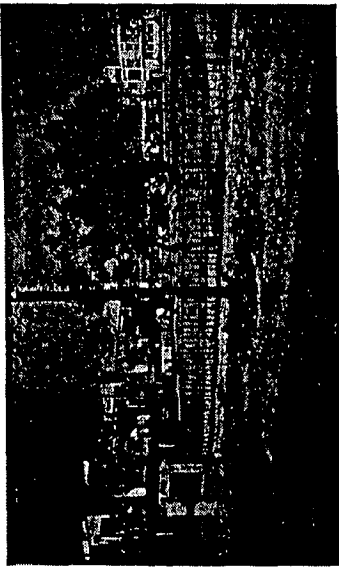


Lounge is used for the storage purpose along with other activities side door at the gr. floor not used as an ent. It is used as storage space.



Dwg and dining lounge is combined here so the feeling of separate lounge is missing here. So the lounge does not full fill the purpose of internal circulation and other activities. Opening of the service areas is visible from the living areas people do not prefer this.





Large green spaces are provided in different pockets for recreational and playing activities but these spaces are not properly maintained. that's why people do not use these spaces for recreational activities.



Internal circulation pattern in the pockets is quite efficient here . there is no traffic congestion due to big width of roads . but traffic noise is still a problem for residents those houses are along with the main roads

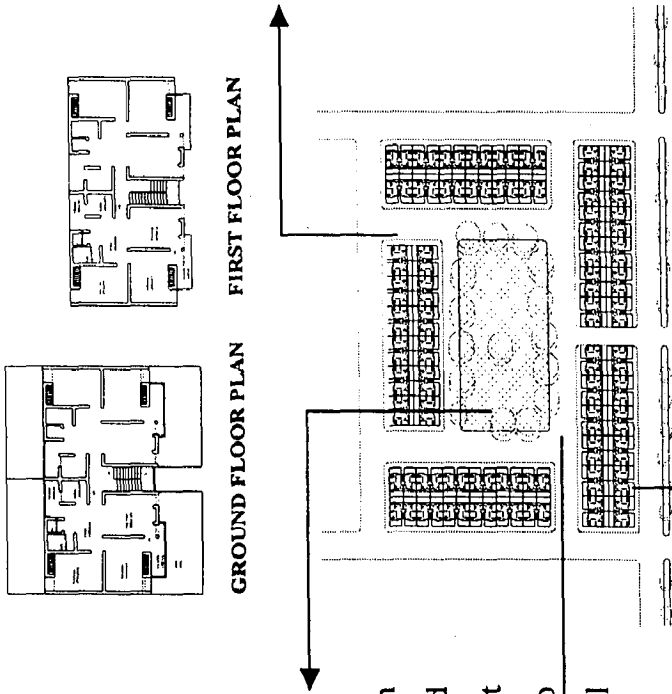
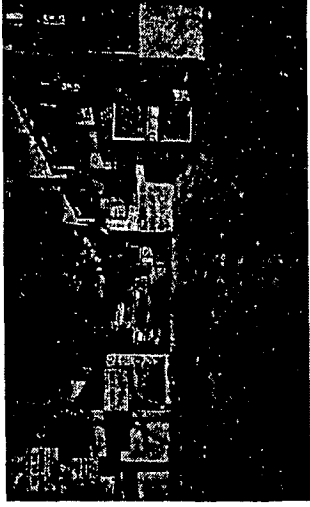
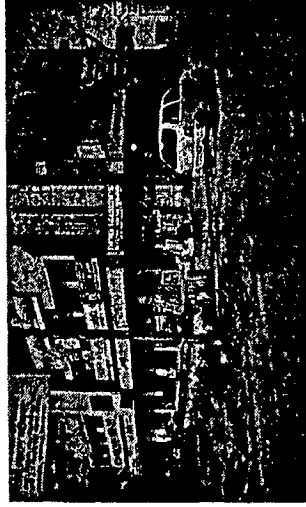


Fig.5.1.6 CLUSTER ANALYSIS

Front court yard of gr. fl. Houses has been converted in the shops or is using in other activities



Sense of entrance and territoriality is missing here so the people has made individual provision of entrance to enclose the individual pockets. It is also helpful to keep the monitoring on visitors.

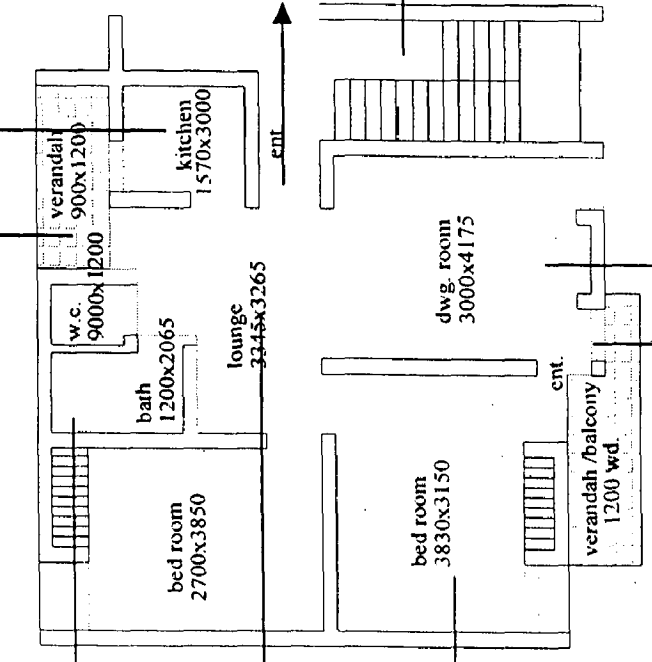


Provision for the convenient shopping is provided here. no of shops are there . being all these people are converting their Front court yards in shops due to large requirement of shopping needs

Opening of bath and w.c. is visible through the living areas. This is cause of poor privacy aspects

Verandah / balcony provided at the rear side do not have sufficient size for seating and other activities. In many houses it has converted in enclosed space

Size of kitchen is sufficient here but built orage in the kitchen is not sufficient most the occupants have made some addition in the kitchen to increase the storage or change the design lay out



Here storage provision is not sufficient in the rooms that's why most of the people use this space for storage purpose instead of dining

People on ground floor do not use the side entrance. They use this space for the storage purpose

Size of bed rooms is not sufficient here for all sorts of activities. Only sleeping activity can take place here. for study purpose its size is not sufficient.

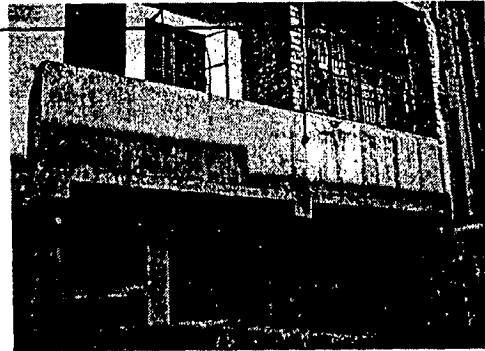
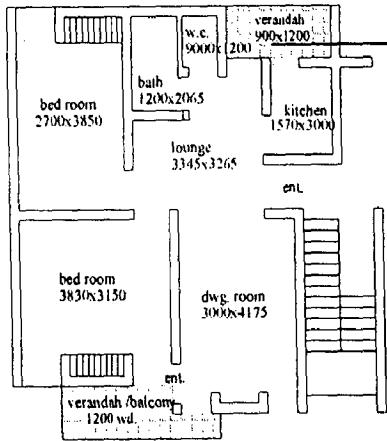
Width of stair case is not sufficient for carry the luggage. Social interaction among the residents hardly takes place here

In most of the houses people has changed the location of main door of dwg room in place of window. Front court yard at the gr. floor has converting in shops and in other activities

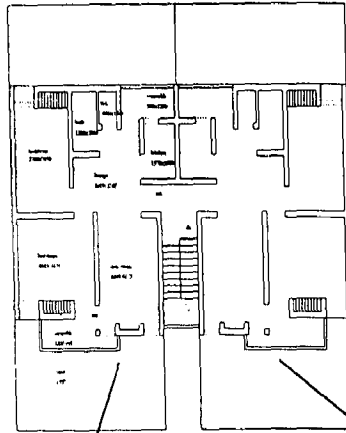
Size of dwg room is good in size most of the activities like welcoming guests , watching t.v. , gossiping takes place here

5.1.4 UNIT DESIGN ANALYSIS

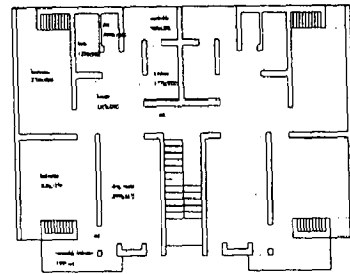
5.1.5 ADDITION AND ALTERARION



Rear balconies has converted in closed space shows people required the more space.

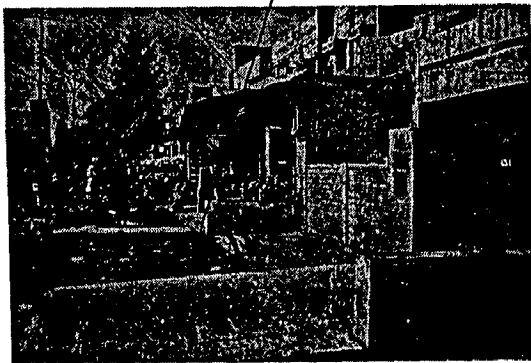


GROUND FLOOR PLAN



FIRST FLOOR PLAN

fig. 5.1.7



Front court yard on ground floor along with main road has been converted in to shops or is being using in other commercial purposes.



Houses along with internal roads also have occurring addition and alteration.

5.1.6 INFERENCES

- Size of drawing room is sufficient but it has no separate identity because there is no proper separation between lounge and drawing room.
- Size of lounge is not sufficient for all sorts of activities people do not use this lounge for dining purpose. They used it for storage purpose.
- Most of the area of lounge used in circulation for other activities.
- There is no provision of built in storage in the lounge.
- Separate store is required here.
- Size of bed rooms is not sufficient and design of bed rooms has no flexibility to change the lay out of the furniture.
- An opening of bath and W.C. is visible through the living areas so this disturbs the privacy of occupants.
- Width of stair case is not sufficient so carry the luggage on first floor is big problem.
- Design and size of stair case do not help in any social interaction.
- Width of balconies is not sufficient for seating purpose.
- Many people has converted rear balcony as an enclosed space.
- Entrance gate in the pockets is missing here so security is still a big problem in the locality.
- There is no provision of parking of vehicles people live on first floor do park their vehicles on road. People on ground floor have an advantage that they can park their vehicles in front court yard
- Most of the ground floor houses along with the main roads has converted in to the shops or being used in commercial activities

- Big open spaces serves the whole pocket there is no small open spaces so the social interaction is lacking there due to bed maintenance and privacy aspects
- Built form is not appreciable due to various type of addition and alteration has occurred here

	LOCATIONS	DWG. ROOM	BED ROOM	KITCHEN	STORAGE	OPEN SPACES
1	VASUNDHARA	15	30	10	70	10
2	MAYUR VIHAR	10	25	40	30	60
3	JANAK PURI PKT. C-1	60	60	40	50	75
4	KAUSHAMBHI	5	10	0	20	10
5	ROHINI	60	70	60	50	80

TABLE 5.1.2

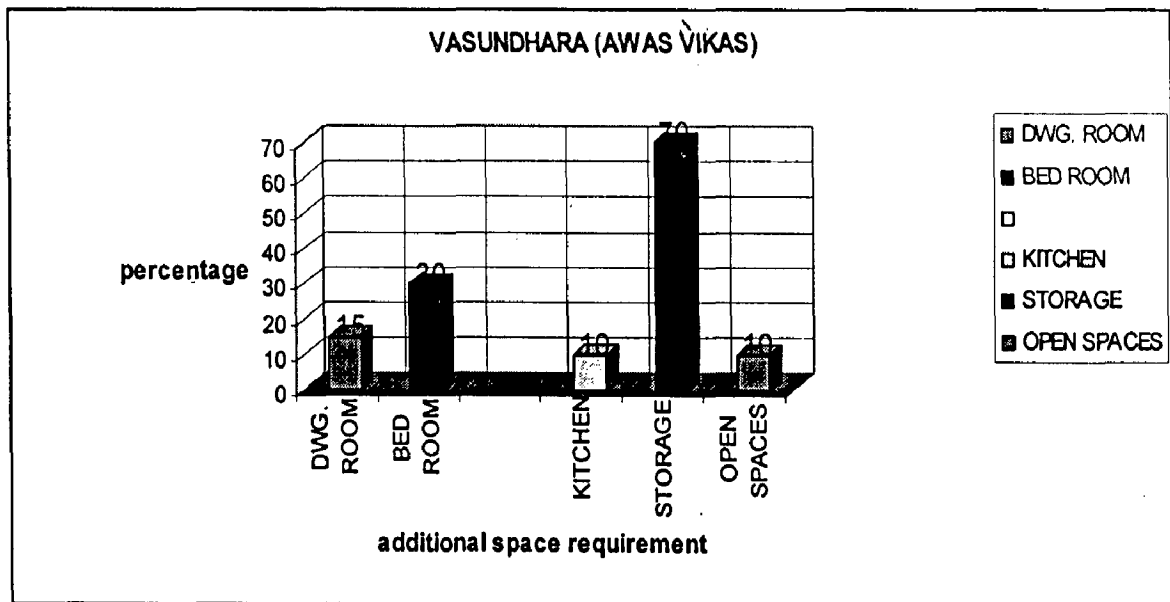


Fig. 5.1.8 Additional Space Requirement

CASE STUDY -2

5.2 MAYUR VIHAR (POCKET B) -DELHI

Developed By	D.D.A..
Type of Houses	L.I.G. ,M.I.G
Study Area	M.I.G. FLATS POCKET-B
No. of Floors	G+3
Area of Each Unit	
Carpet Area	80.68 SQ. MT.
Gross Area	95.05 SQ.MT.
Year Of Construction	1989

Mayur Vihar, Phase-II (POCKET -B)

Mayur vihar-II is a housing colony, located in the south east of Delhi, near Noida. It is a public Group housing, developed by Delhi Development Authority in 1989. It is divided in to 6 Pockets from A to F, having population near about 40,000. The majority of population belongs to Middle Income Group, with two family members working.

For the purpose of study of space utilisation Pocket B has been selected for study. Pocket-B is 125300sqm in area there are approximately 1240 housing units, in four storeys, having population of 7200 residents near about.

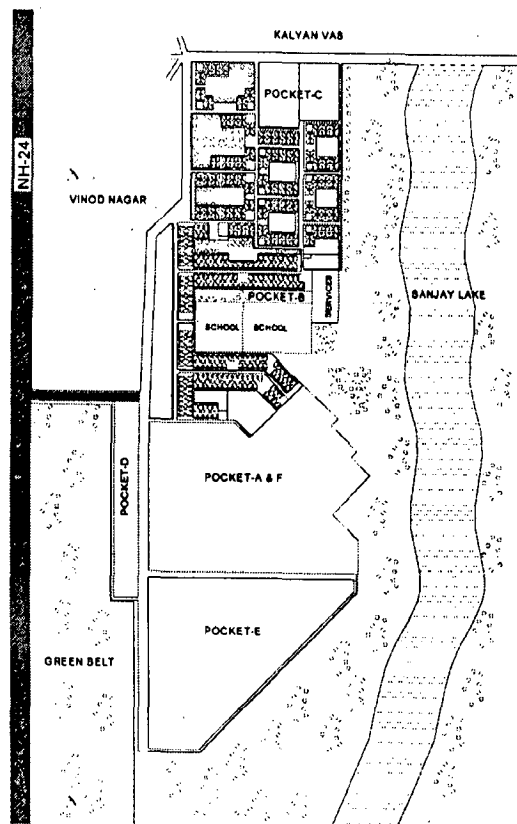


FIG. 5.2.1

SITE PLAN OF MAYURVIHAR



	LOCATIONS	MAYUR VIHAR	
		AREA	PER CENT %
1	DRAWING ROOM	26.6	27.9
2	BED ROOM	31.26	32.8
3	LOUNGE	0	0
4	VERANDAH/BALCONY	16.4	15.44
5	KITCHEN	8.13	8.55
6	STORE	3.16	3.32
7	BUILT IN SPACE	3.96	4.16
8	BATH ROOM	0	0
9	W.C.	0	0
10	COMBINED	8.16	8.58
11	INTERNAL CIRCULATION	10.77	11.33
12	TOTAL AREA	95.05	100
13	COURT YARD FRONT	16.4	17.25
14	COURT YARD REAR	0	0
15	TERRACE	0	0
16	BALCONY	16.4	15.44

Table 5.2.1
Area Distribution In Different Activities

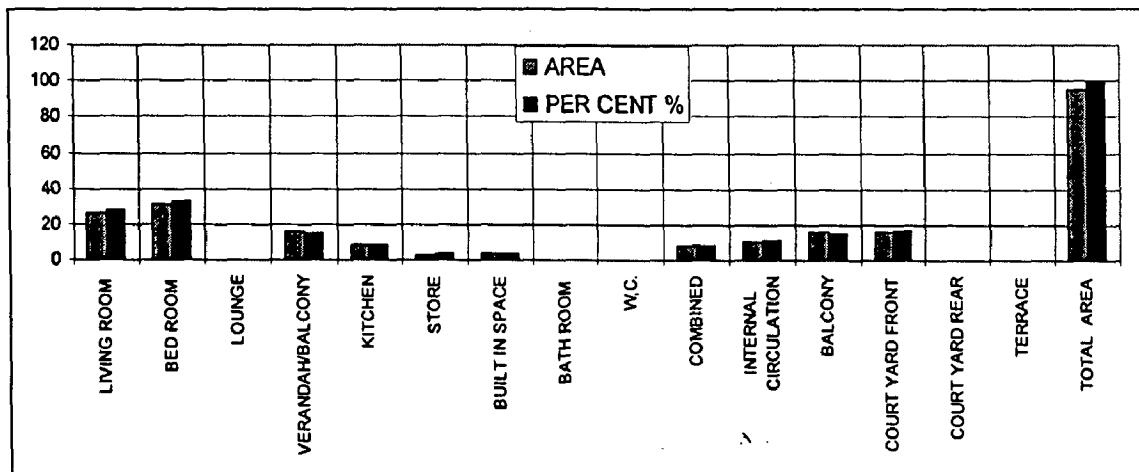


FIG. 5.2.2

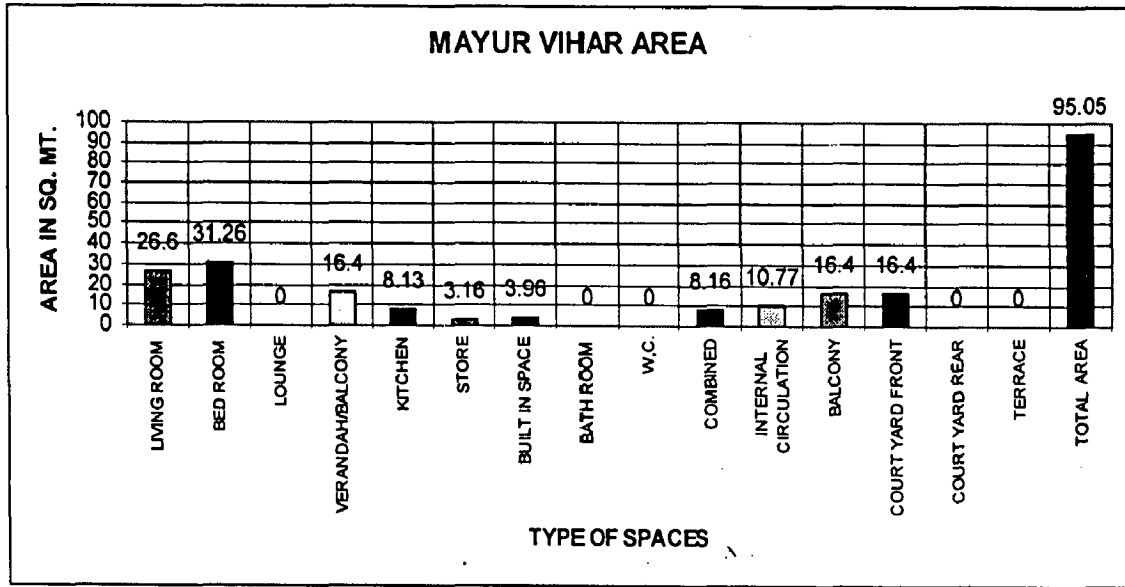


FIG. 5.2.3

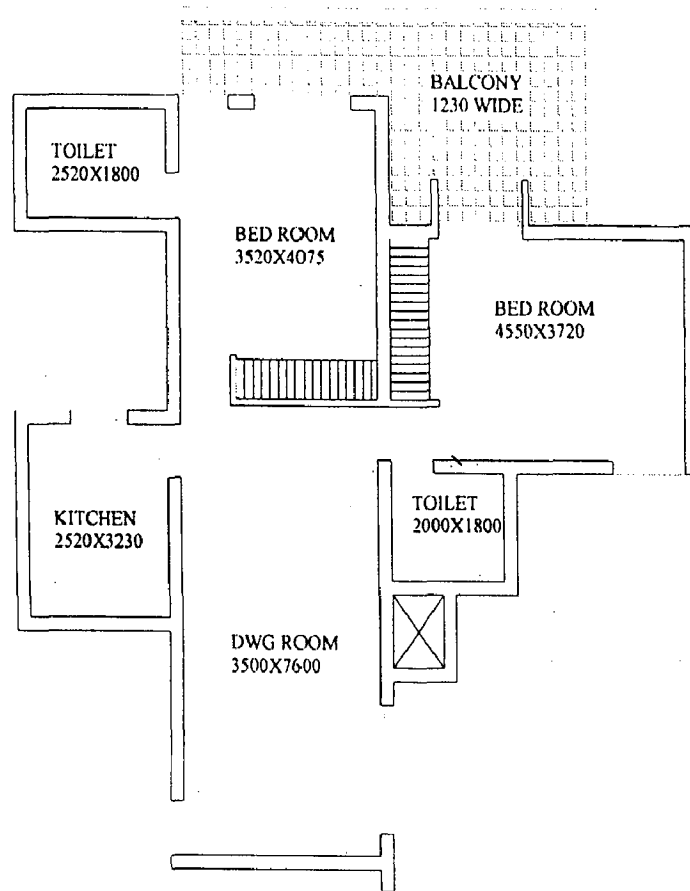


FIG. 5.2.4 UNIT PLAN (MAYUR VIHAR)

	LOCATIONS	MAYUR VIHAR
1	CARPET AREA	80.68
2	GROSS AREA	95.05
3	COMMAN AREA/ UNIT	9.37
4	CIRCULATION AREA	12.32
5	OTHER AREA	12.5
6	AV. BULIT UP AREA / UNIT	75.05

TABLE 5.2.2

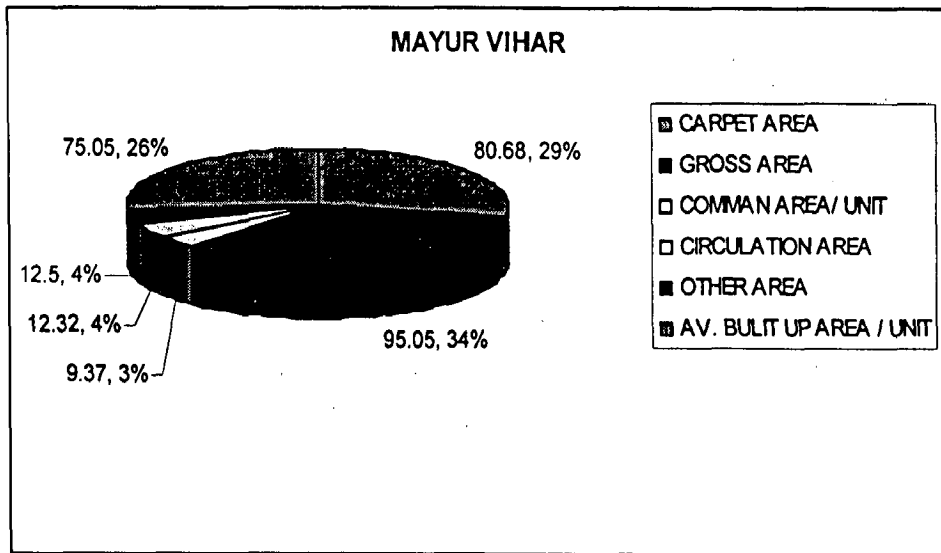
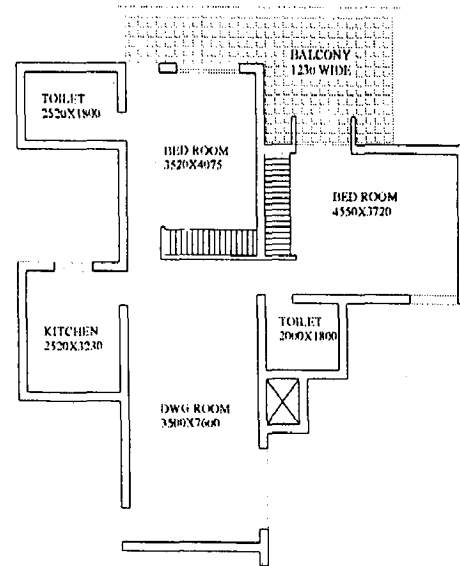


FIG. 5.2.5

5.2.1 SIZES OF ROOMS

Dwg. Room	-	3.5 x 7.6
Bed room	-	3.52 x 4.075
Bed room	-	24.5 x 3.72
Kitchen	-	2.5 x 3.2
Toilet	-	2.0 x 1.8
Toilet	-	2.5 x 1.8
Balcony	-	1.2 wide from External wall



UNIT PLAN

5.2.2 DESIGN CONCEPT

Unit has different floor plans. Design of units changes on different floors. More open spaces in the form of balconies and terrace has achieved here through design. Built form is appreciable here with the combination of terraces and balconies.

5.2.3 DESIGN ASPECT

5.2.3.1 Circulation

A stair case serves a cluster of 16 flats. Width of stair case is quite functional here. Stair lobby helps in increase the social interaction.

5.2.3.2 Interrelationship of function

Entrance to drawing room has welcoming aspects to the visitors. Bed rooms in the end placed in such a manner that it maintains the privacy of occupants. Space relationship is functional here . To minimize the circulation area dwg and dining is combined here and has advantage of big size of dwg. room. One bed room has attached toilet that improves the functionality of service areas.

5.2.3.3 Storage

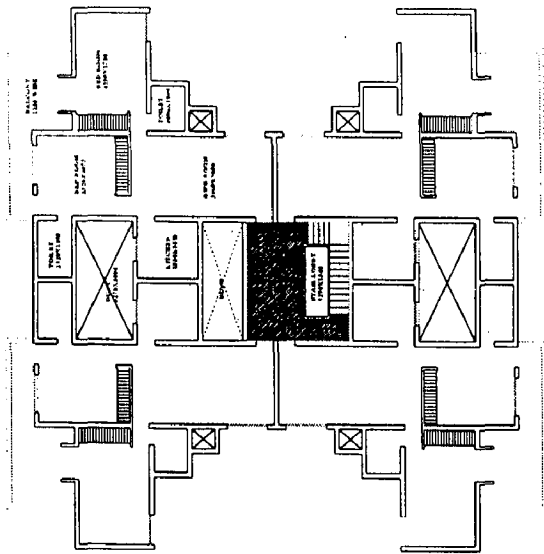
Room size is good here according to the standards and provision of storage is provided in each bed room. In built cupboard is provided here for storage of house luggage and other articles. Rooms are designed in rectangular shape so negative spaces has avoided there

5.2.3.4 Open space

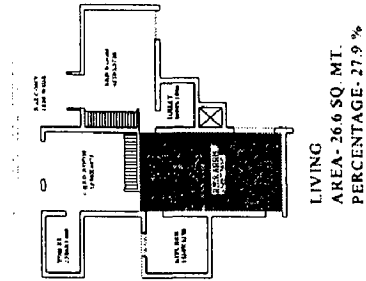
On gr. floor front courtyard is provided as an open space Provision of balconies provides the opportunity to the occupants for out door seating and feeling of openness. Balconies also used for small storage and for drying clothes and other activities. Balconies designed in a way that it serves both bed rooms as a single balcony having good size.

5.2.3.5 Light and ventilation

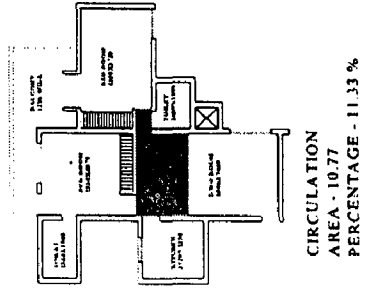
Light, ventilation and privacy aspects considered here in a very functional way layout of the floor helps in this aspect.



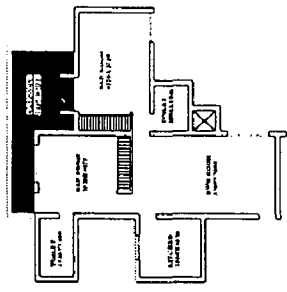
SOCIAL INTERACTION
AREA - 28.09 SQ. MT.



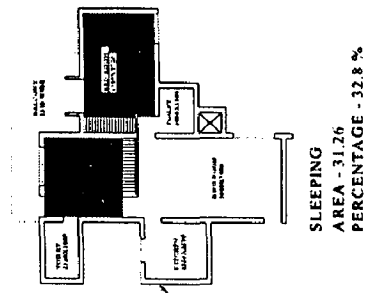
LIVING
AREA - 26.6 SQ. MT.
PERCENTAGE - 27.9 %



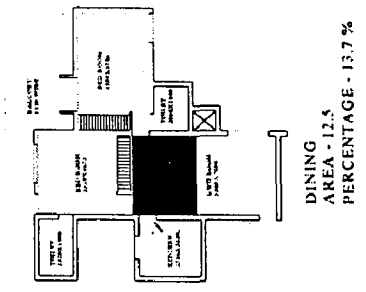
CIRCULATION
AREA - 10.77
PERCENTAGE - 11.33 %



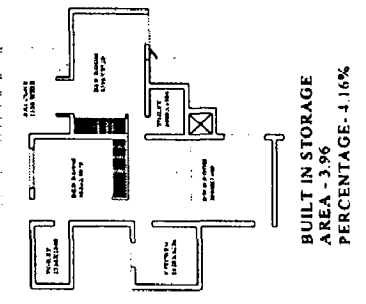
SEATING /DRYING CLOTHES
AREA - 16.4



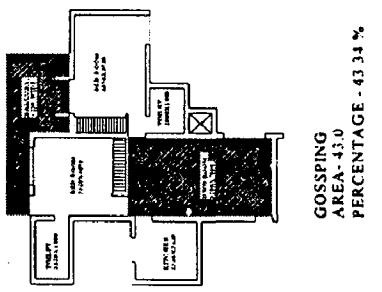
SLEEPING
AREA - 31.26
PERCENTAGE - 32.8 %



DINING
AREA - 12.5
PERCENTAGE - 13.7 %



BUILT IN STORAGE
AREA - 3.96
PERCENTAGE - 4.16%

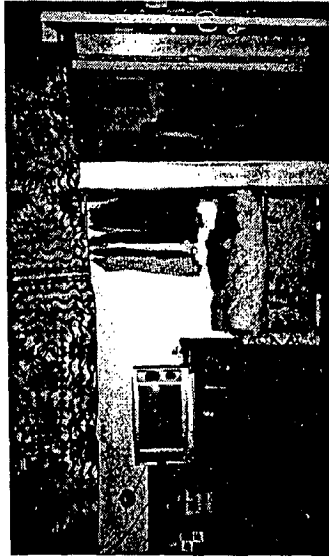


GOSSIPING
AREA - 43.0
PERCENTAGE - 43.34 %

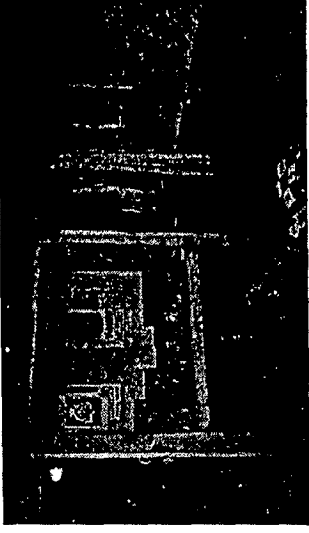
SPACE UTILISATION IN DIFFERENT ACTIVITIES



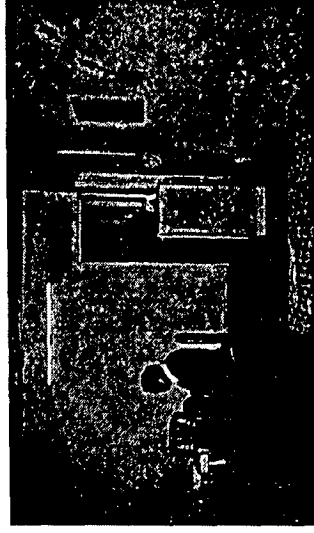
Size and internal layout of the kitchen full fill the functional aspect. Kitchen has sufficient storage in the form of built in storage. Location of kitchen serves the all rooms evenly



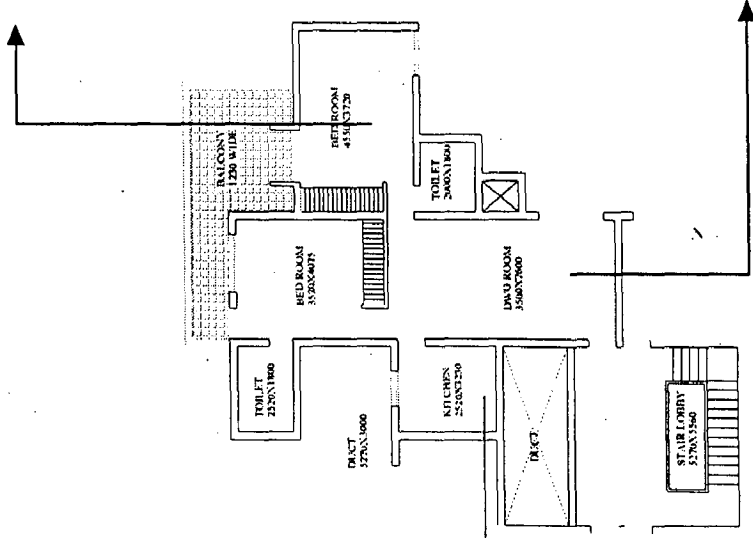
Bed room size is sufficient for sleeping and other activities. Each bed room has provision of storage in organized manner



Balcony attach with the bed rooms provides more space for other use. Internal layout of the bed rooms is quite functional in terms of circulation and space utilisation



Dwg and dining is combined here so the size is big but feeling of separate lounge is missing here. People use this space for storage also. Privacy affects by this because the bed room opening is visible from drawing room



UNIT PLAN



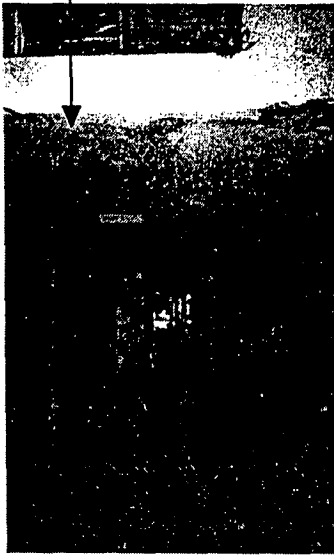
On the upper floors balconies has converted in to enclosed space. That's why original character of the built form is changing



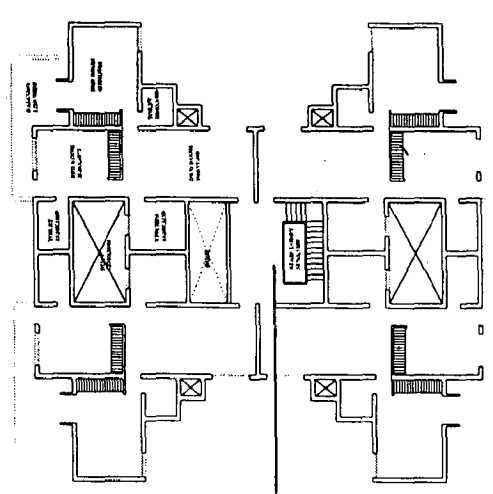
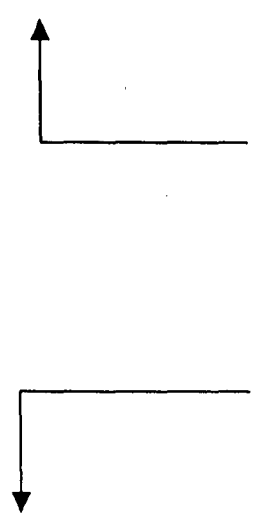
Single balcony is provided here for both bed rooms so the size of balconies is sufficient to full fill the desire of people like gardening



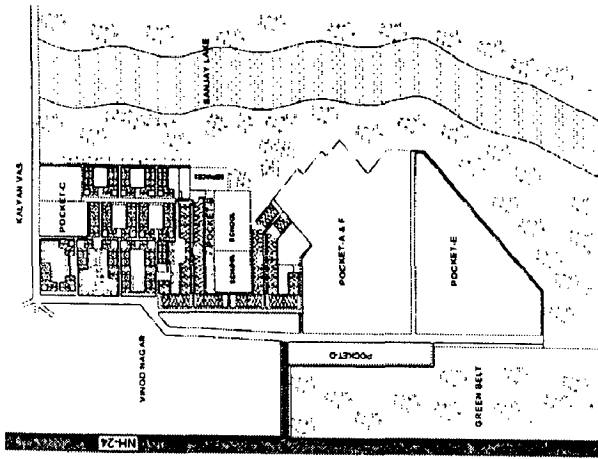
On cluster level balconies helps in social interaction among the residents. People have advantage of this area for seating and feeling of openness



Here entrance to the stair case is provided from rear side through internal lobby. This space is not welcoming to the visitors



CLUSTER PLAN



In mayur vihar there are 6 pockets but at the cluster level open spaces do not complete the people requirement of recreational activities. Open space provided here are unorganized . this area is highly commercialized so the houses on ground floor has made the least addition and alteration



Parking is a big problem in this area efficiency of movement on roads reduced due to parking on roads . Generally people park their vehicles on the road because they have not any other option besides this. Sense of territoriality is here.

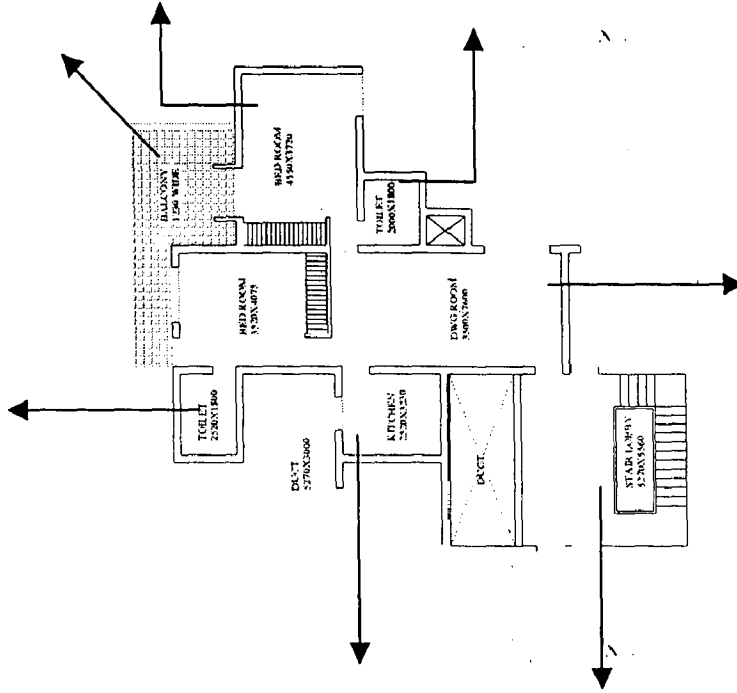
Open spaces provide here have no privacy. They do not offer the feeling of relax to the residents because around the whole open space people park their vehicles. This is a major cause that's why people generally avoid this type of open space



Attached toilet with bed room increased the privacy and functional aspects. It is a good concept of two toilet rather than a big toilet

In the bed rooms built in storage has provided in such a manner that it do not disturb the internal circulation and it is sufficient to full fill the needs of residents

Size and location of kitchen is good and it has proper light and ventilation that is an important aspect for the kitchen



Balcony provide here serves the both bed room. Size of balcony is quite appreciable for seating . Here provision of balconies is differ from floor to floor so the possibilities are very less for addition or enclosed the space

Location and room size has proves the functionality in terms of space utilisation, circulation and storage. Rather than sleeping other activities also can performed here. Attached balcony provides the additional space for other activities like seating and sleeping in summers

A common toilet is placed in such a manner that it serves the both the areas bed and drawing room it maintains the proper privacy of service areas.

Here drawing room includes the both functions dwg and dining so the size of this room is big but lounge has no separate identity here. The major draw back of this type of arrangement is that house hold activities are completely visible to guests. It also affects the privacy of other functions.

5.2.4 INFRENCES

5.2.4.1 Living areas

- Lounge has no separate space so there is no proper defined area for dining in the house
- Size of drawing room is very big due to combined dining but the internal functions in terms of circulation is not good.
- There is no balcony provided attached with drawing room in case of more guests activities take place in the bedrooms.
- There is no circulation lobby here that why internal circulation is affected.
- Bedroom activities are visible from the drawing room so the privacy aspect suffers
- Entrance to the staircase is not definable for the new comers

5.2.4.2 Addition alteration

- Here each floor has different carpet area and layout on top floor where carpet area is less people have done some addition and alteration.
- In many houses people have covered the balconies to get more open space.

5.2.4.3 Cluster level

- Parking provision has been made here at the time of construction of these houses but these parking spaces do not complete the parking needs of the people.
- Parking on the roads is a big problem here.
- Open spaces for recreational activities are not planned well. And privacy and feeling of relaxation is completely missing here.

	LOCATIONS	DWG. ROOM	BED ROOM	KITCHEN	STORAGE	OPEN SPACES
1	VASUNDHARA	15	30	10	70	10
2	MAYUR VIHAR	10	25	40	30	60
3	JANAK PURI PKT. C-1	60	60	40	50	75
4	KAUSHAMBHI	5	10	0	20	10
5	ROHINI	60	70	60	50	80

Table 5.2.3 Additional Space Requirement

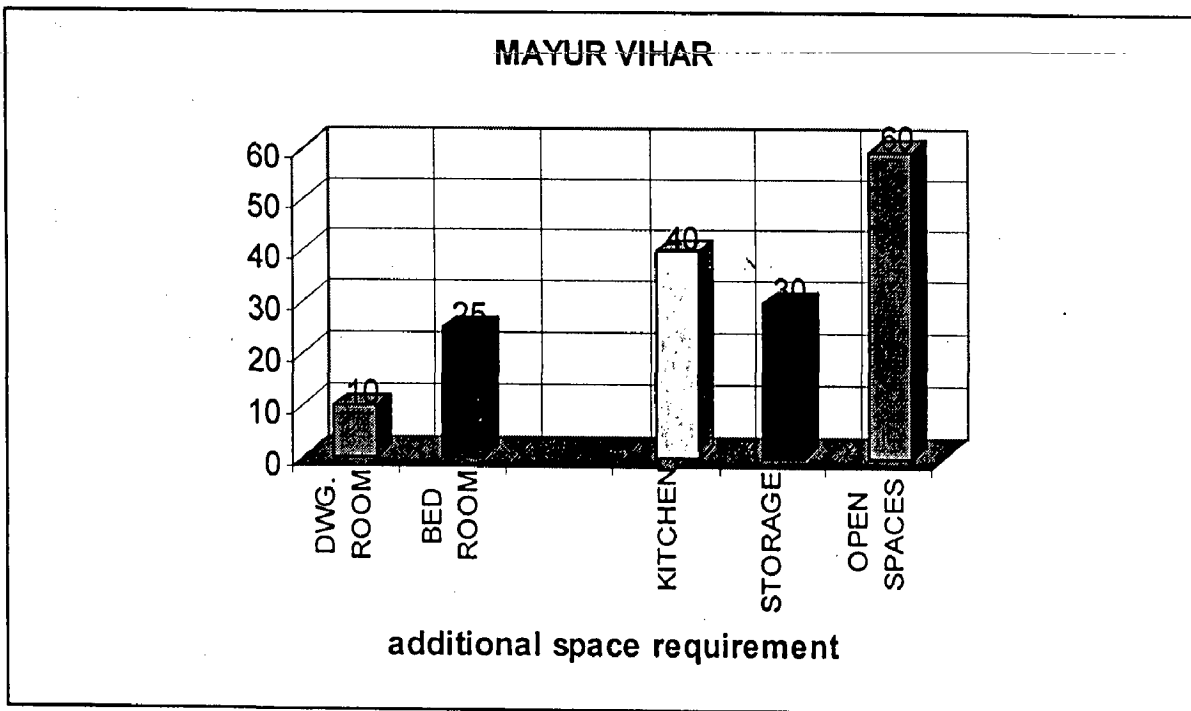


FIG 5.2.6

CASE STUDY -3

5.3 Kausambhi (multistory housing) - Delhi

15 storied group housing

Architect	:	Jaiswal and Associates
Clients	:	Ghaziabad Development Authority
Number of storey	:	G+15
No. of units on each floor	:	6
Area of each unit	:	120.84 sq. mt..
Location	:	Opposite to Anand Vihar Bus Terminus
Year of construction	:	1993

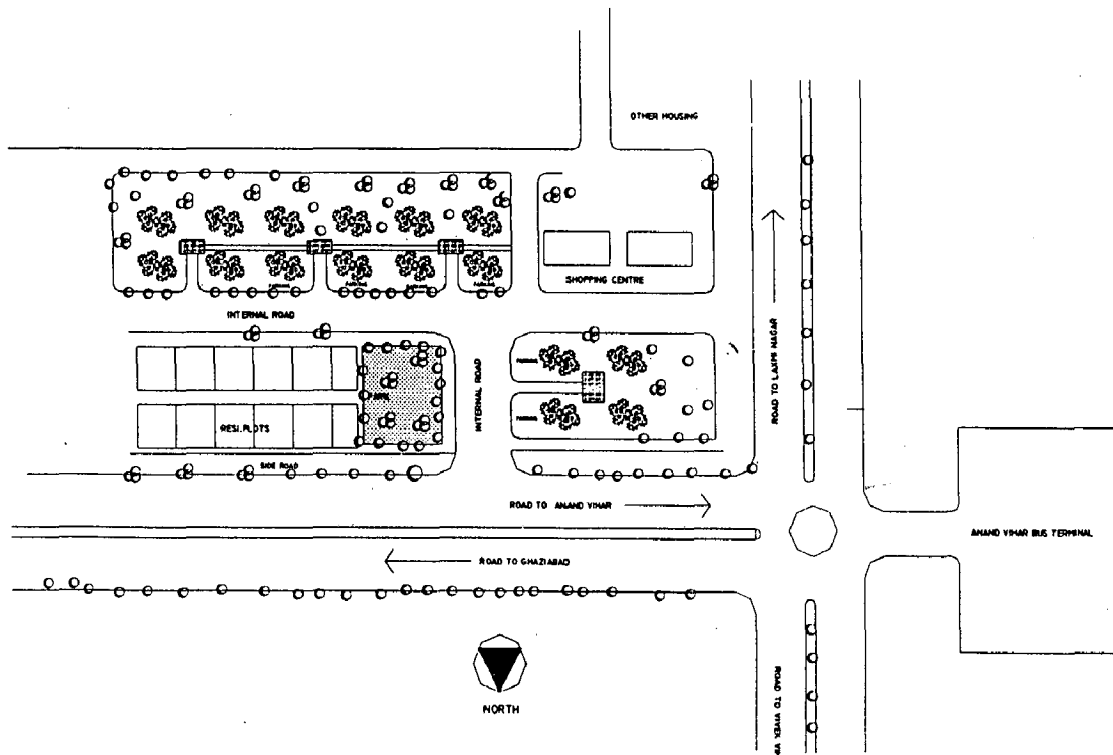


Fig 5.3.1 SITE PLAN KAUSHAMBHI

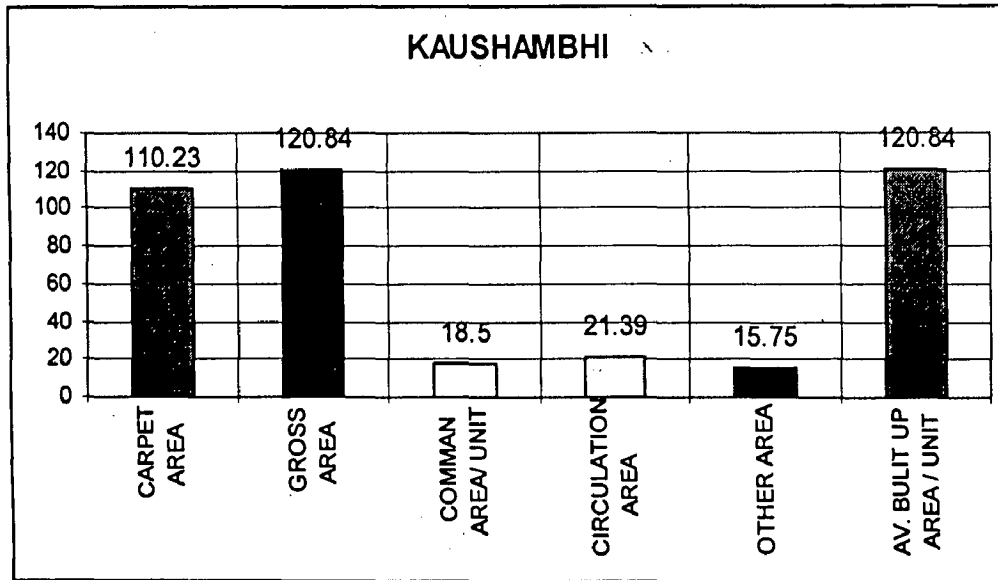
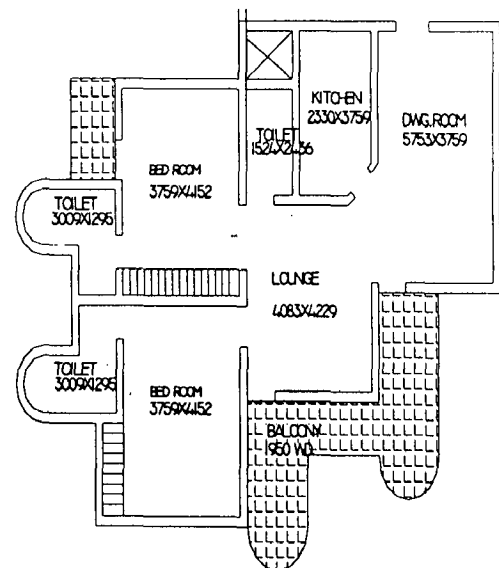


fig. 5.3.2

5.3.1 DESIGN CONCEPT

The design concept is based on two bed room units which as per needs could be converted in to 3 bed room unit and one bed room unit. These 15 storied structures consist of 6 flats and each floor serviced by its one side located corridor. These blocks have two high speed lifts and one main and two fire escape staircase. The entire configuration of the flats in each floor of the building has kept providing maximum ventilation and orientation quality to the building as well as providing the stability of building.



5.3.2 SIZES

- | | | | | |
|-------------------|---|-----------|-----------|-----------|
| 1. Drawing room | - | 3.7X5.66 | 4 Balcony | 1.95 wide |
| 2. Bed room (2no) | - | 4.7X4.687 | 5 toilet | 1.5x2 |
| 3. Kitchen | - | 3.7X2.3 | | |

5.3.3 DESIGN ASPECT

5.3.3.1 Circulation

A main entrance provides the circulation of 6 unit of flat on each floor .One stair case and lifts provide the similar circulation to each flat Lounge in the center of flats provide well define internal circulation each room of the flat has connected with the lounge and circulation is generated through the lounge

5.3.3.2 Interconnection of function

Entrance through living room has welcoming aspects to the visitors. bed rooms placed in the end has maintain the proper privacy and have well connection to the kitchen. Circulation pattern in the flats offered the hierarchy of daily needs in the family

5.3.3.4 Storage

Room size is very sufficient according to the standards and provision of storage is provided in each bed room. In built cupboard is provided there for storage of house luggage and other goods. Rooms are designed in rectangular shape so negative spaces has avoided there

5.3.3.5 Open space

Provision of balconies provides the opportunity to the occupants for out door seating and feeling of openness. Balconies also used for small storage and for drying the clothes and other activities. Balconies designed in a way that each balcony has self privacy

5.3.3.6 Light and ventilation

Each room has adequate provision of windows that provides the proper light and ventilation in the rooms and it also maintain the occupant's privacy. Blocking of flats provides the opportunity of interaction to the occupants. Main staircase works as a junction for the interaction activities

	LOCATIONS	KHAUSHAMBHI	
		AREA	PER CENT %
1	LIVING ROOM	20.72	17.14
2	BED ROOM (2 no.)	34.63	28.65
3	LOUNGE	15.48	18.7
4	VERANDAH/BALCONY	0	0
5	KITCHEN	8.51	7.06
6	STORE	2.08	1.72
7	BUILT IN SPACE	4.45	3.68
8	BATH ROOM	0	0
9	W,C.	0	0
10	COMBINED	7.2	5.95
11	INTERNAL CIRCULATION	21.39	17.7
12	BALCONY	28.56	34.5
13	COURT YARD FRONT	0	0
14	COURT YARD REAR	0	0
15	TERRACE	0	0
16	TOTAL AREA	120.84	100

Table 5.3.1

AREA DISTRIBUTION FOR DIFFERENT SPACES

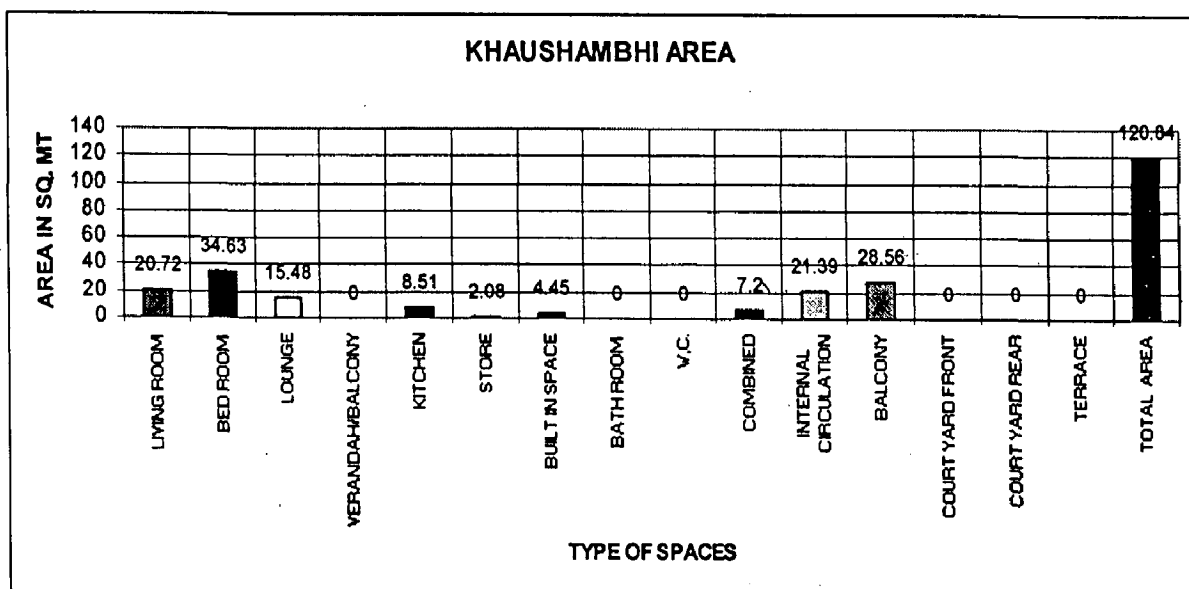
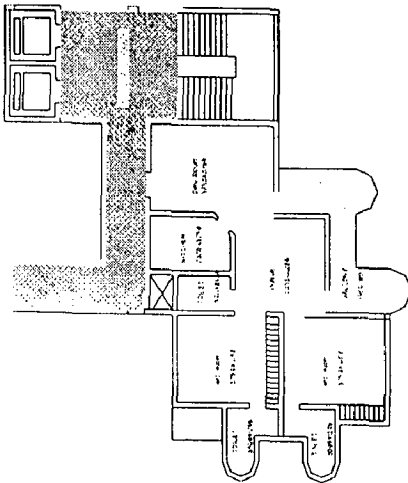
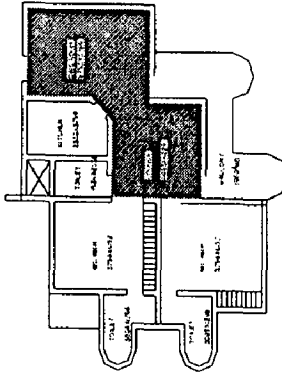


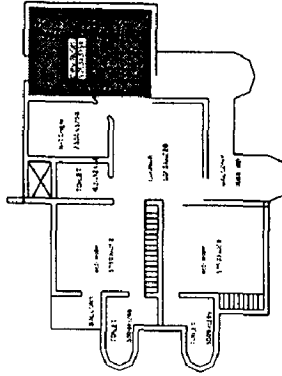
Fig. 5.3.3



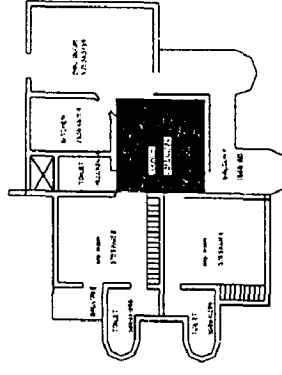
SOCIAL INTERACTION
 AREA - 7.43 (FOR EACH UNIT)
 PERCENTAGE - 17.14 %



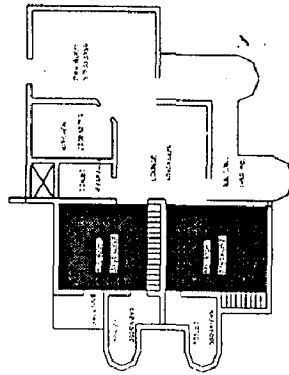
WELCOMING GUESTS
 AREA - 36.2 SQ. MT.
 % - 43.72



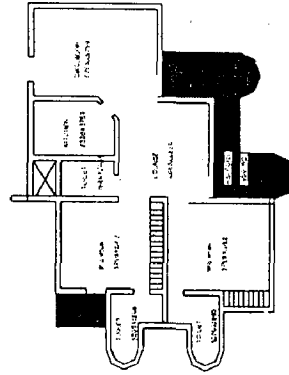
LIVING
 AREA - 20.72 SQ. MT.
 PERCENTAGE - 17.14 %



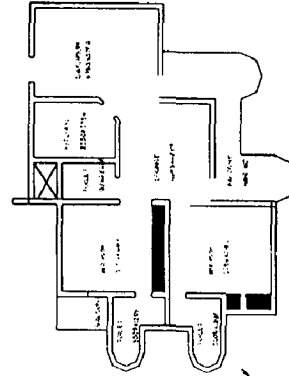
DINNING
 AREA - 15.48 SQ. MT.
 PERCENTAGE - 18.7 %



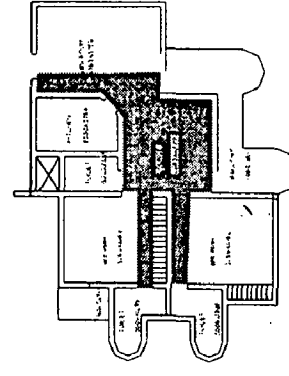
SLEEPING
 AREA - 34.63 SQ. MT.
 PERCENTAGE - 28.65 %



DRYING CLOTHES/ SEATING
 AREA - 28.65

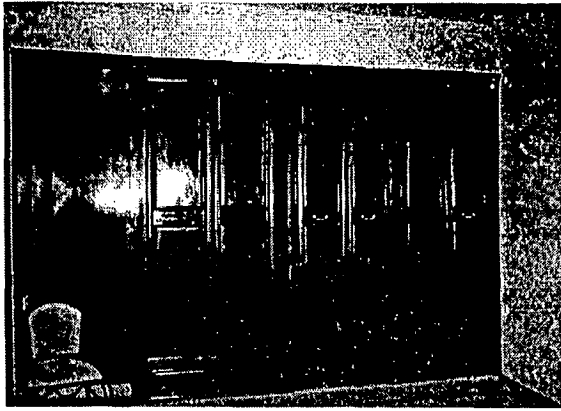


STORAGE
 AREA - 4.45 SQ. MT.
 PERCENTAGE - 3.68

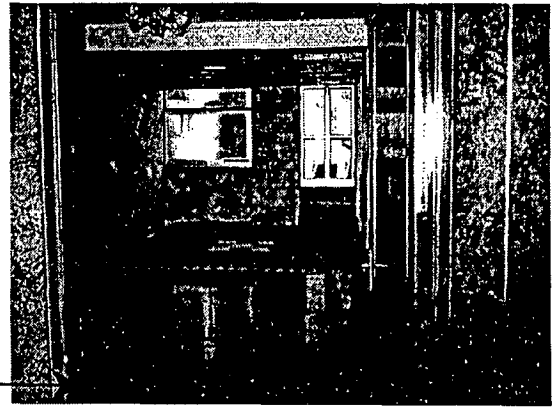


CIRCULATION
 AREA - 21.39 SQ. MT.
 PERCENTAGE - 17.7 %

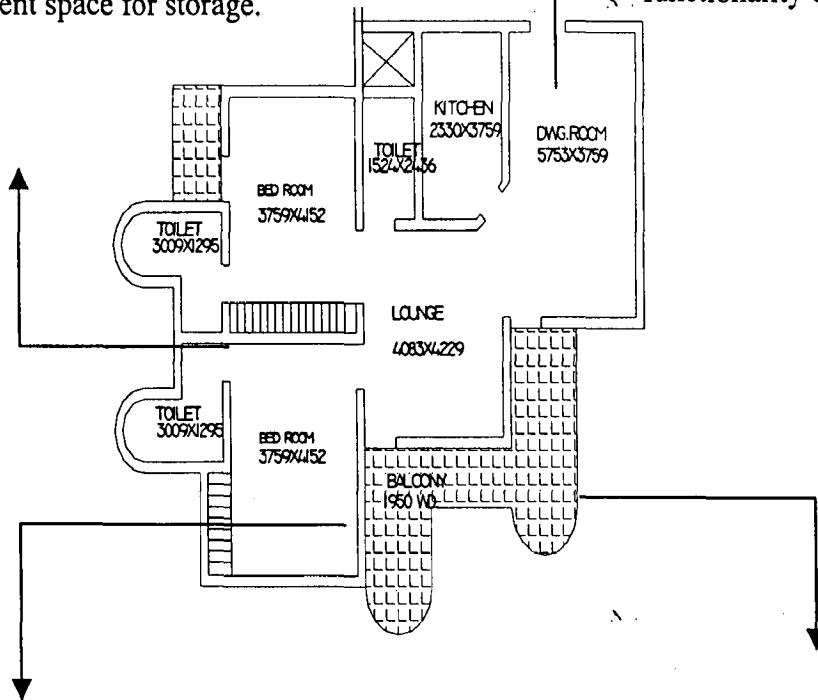
SPACE UTILISATION IN DIFFERENT ACTIVITIES - KAUSHAMBHI



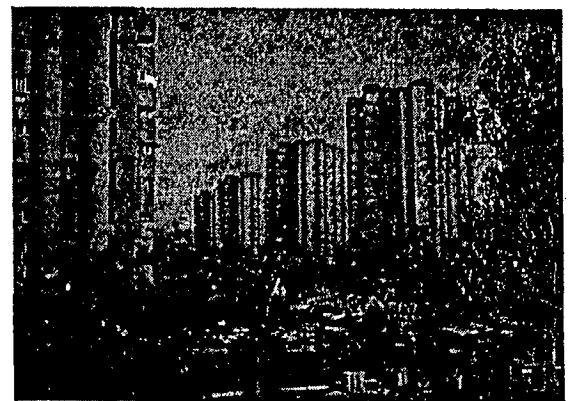
In built storage in the bed rooms provides the sufficient space for storage.



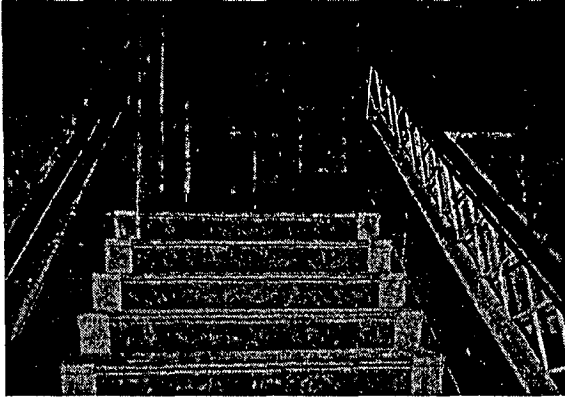
Dwg room is big in size comparative to other spaces and functionality of space is very good



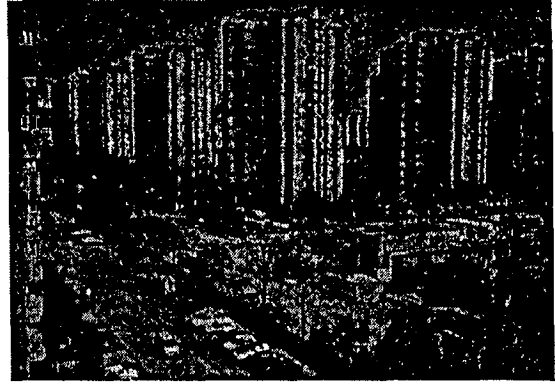
Bed rooms size are bigger here and provides the additional space for other activities rather than sleeping



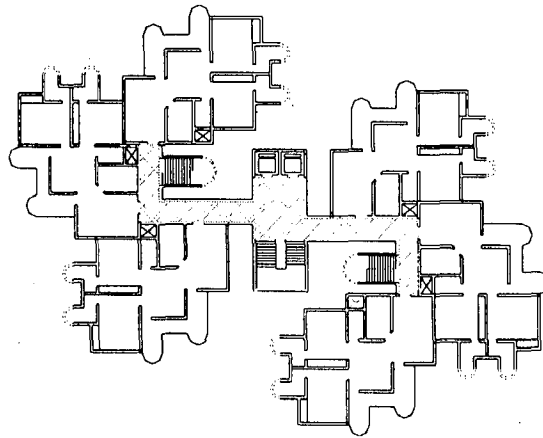
Each unit has big balconies so the occupants have an advantage of scenic beauty and fresh breathing



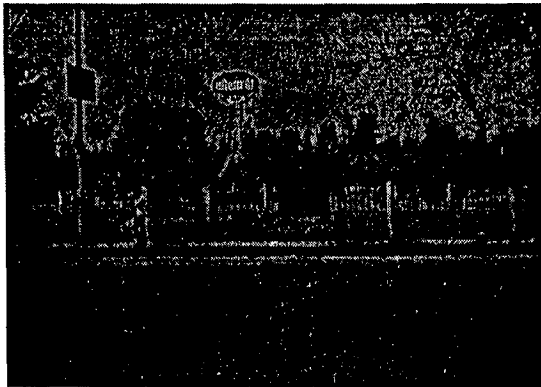
Stair case and lift lobby helps in increasing the social interaction among the residents



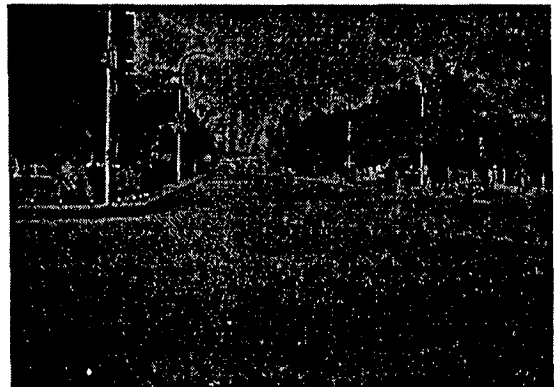
Built form of clusters is appreciable here. Each tower has sufficient open space around it



Cluster lay out



A big green area serves the housing for playing, walking and get together activities.



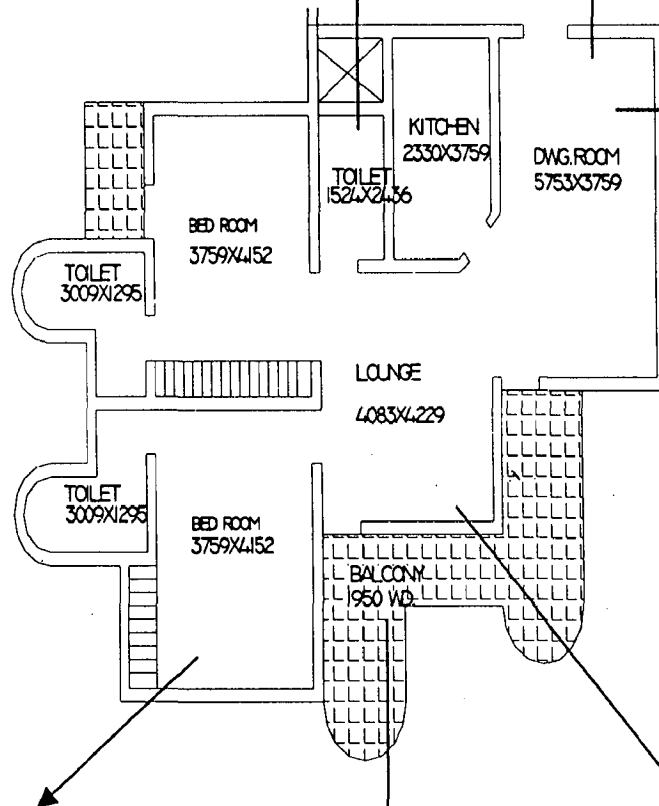
Width of internal roads helps in smooth traffic movement in the locality.

UTILITY PATTERNS IN RELATION TO ACTIVITIES

A common toilet serves the both area dwg. and lounge . By this there is no interruption takes place in terms of circulation privacy.

Size and location of kitchen is very appropriate here. Kitchen serves the all 'spaces in very similar way there is no interruption in privacy and in inter circulation by the location of kitchen.

Bed rooms have separate balcony for seating and for fresh breathing. Scenic views from the upper floors has achieved by balconies.



Dwg room has higher utility- the major activities are performed here welcoming guests watching t.v. size of dwg room is very sufficient for all type of activities.

Bed rooms here have good size. That's why both bed rooms fulfill the all needs of occupants like watching t.v. and it also used in study purpose. It maintains the privacy. Attached toilets in bed rooms increased the comfort ability and functionality.

Balcony has sufficient space for seating and drying clothes. It serves both dwg and lounge it provides additional space for seating and welcoming guests.

Lounge here provides the separate space for dining. The major advantage of this lounge is it improves the internal circulation

5.3.4 UNIT DESIGN ANALYSIS

5.3.5 PROBLEMS IDENTIFIED

1. In this housing area there is no defining boundary around the clusters so security is a major problem here.
2. There are 90 flats in a tower but the parking provision for vehicles is not sufficient here traffic congestion generally occurs in parking lots.
3. Convenient shopping is also a problem in the locality.
4. Only one big park serves the opportunity for get together activities so residents always lacking small open areas at the cluster level
5. Traffic noise always occurs here due to anand vihar bus terminus and major links around here.

5.3.6 INFERENCES

- Design of this housing proves the efficient pattern of space utilization through blocking of horizontal and vertical massing.
- Stair case provided in such a manner that it is used for circulation and stair case lobby provides the opportunity of interaction. That creates the healthy social environment in housing areas.
- Each room has in built storage provision and this storage provision is treated as the part of built form.
- Scattered form of flats provides the proper privacy to each flat and also provides the proper light and ventilation
- Lounge in the flats work as junction for circulation activities and can be used for any activity the size of lounge is sufficient for different kind of activities.
- Kitchen serves the all rooms equally proves a good designing aspect

- Location of toilet is very proper in this housing. Generally wrong locations of toilets disturb the all other functions.
- Cluster of units creates the very interesting built form with maintaining the good deigning of flats and other aspects like social interaction.
- Big green open space helps to create the healthy social atmosphere here .
- Here whole cluster having the one main access from the main road that is good concept for security and helps in healthy interaction among the residents. And creates a sense of territoriality.

	LOCATIONS	DWG. ROOM	BED ROOM	KITCHEN	STORAGE	OPEN SPACES
1	VASUNDHARA	15	30	10	70	10
2	MAYUR VIHAR	10	25	40	30	60
3	JANAK PURI PKT. C-1	60	60	40	50	75
4	KAUSHAMBHI	5	10	0	20	10
5	ROHINI	60	70	60	50	80

Table 5.3.2 Additional Space Requirement

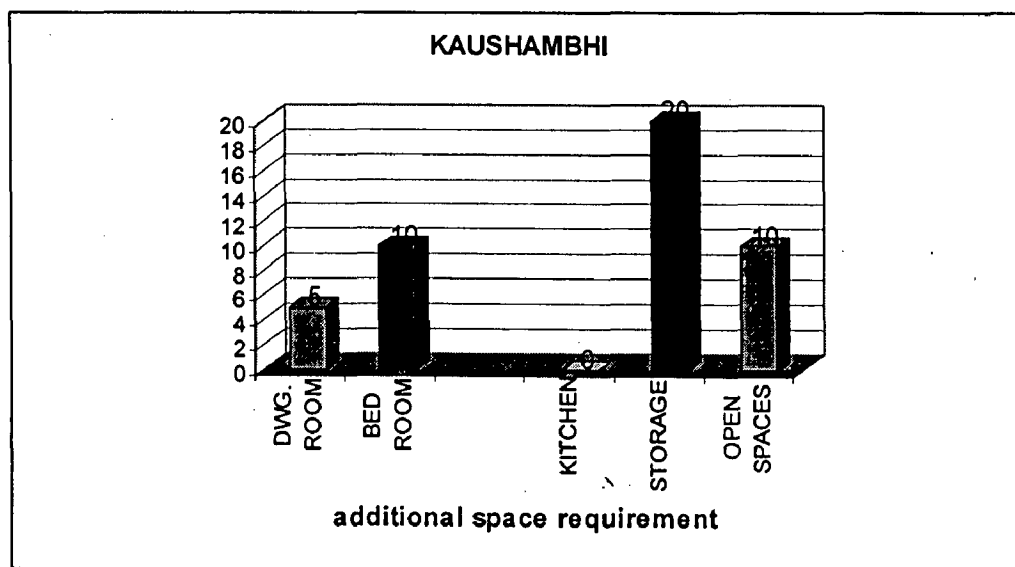


FIG . 5.3.4

CASE STUDY-4**5.4 JANAKPURI - (POCKET-C-1A)**

Clients	DELHI DEVELOPMENT AUTHORITY
Type of Houses	M.I.G
Study Area	M.I.G. FLATS SECTOR -7 (Pkt-B)
No. of Floors	G+2
Area of Each Unit	
Carpet Area	61.55 SQ. MT.
Gross Area	68.55 SQ.MT.
Year of construction	1971

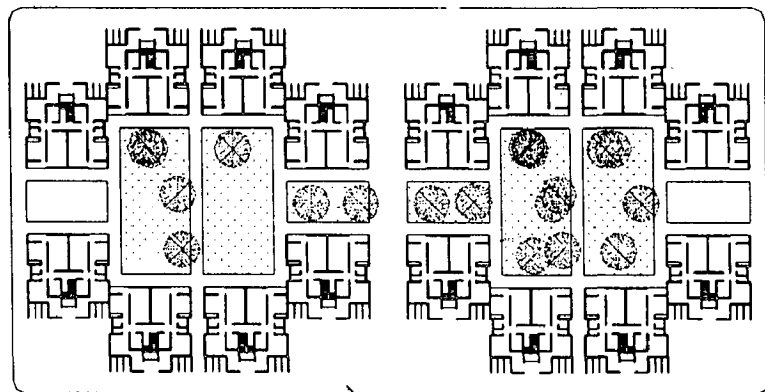


FIG.5.4.1

POCKET PLAN



	LOCATIONS	JANAK PURI -PKT	
		AREA	PER CENT %
1	DRAWING ROOM	17.08	24.9
2	BED ROOM	18.64	30.28
3	LOUNGE	0	0
4	VERANDAH/BALCONY	0	0
5	KITCHEN	4.79	6.98
6	STORE	1.29	1.88
7	BUILT IN SPACE	1.56	2.2
8	BATH ROOM	1.98	2.9
9	W,C.	1.27	1.86
10	COMBINED	0	0
11	INTERNAL CIRCULATION	5.01	3.08
12	TOTAL AREA	61.55	100
13	COURT YARD FRONT	0	0
14	COURT YARD REAR	0	0
15	TERRACE	0	0
16	BALCONY	9.4	0

TABLE -5.4.1

Space utilization in different activities (Janakpuri)

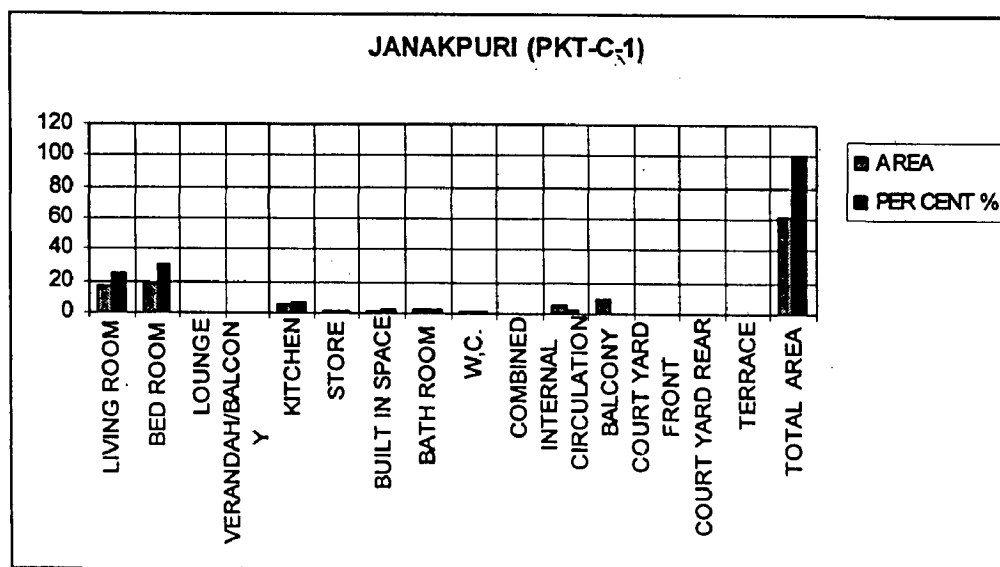


FIG. 5.4.2

Area and percentage ratio in space utilization in different activities

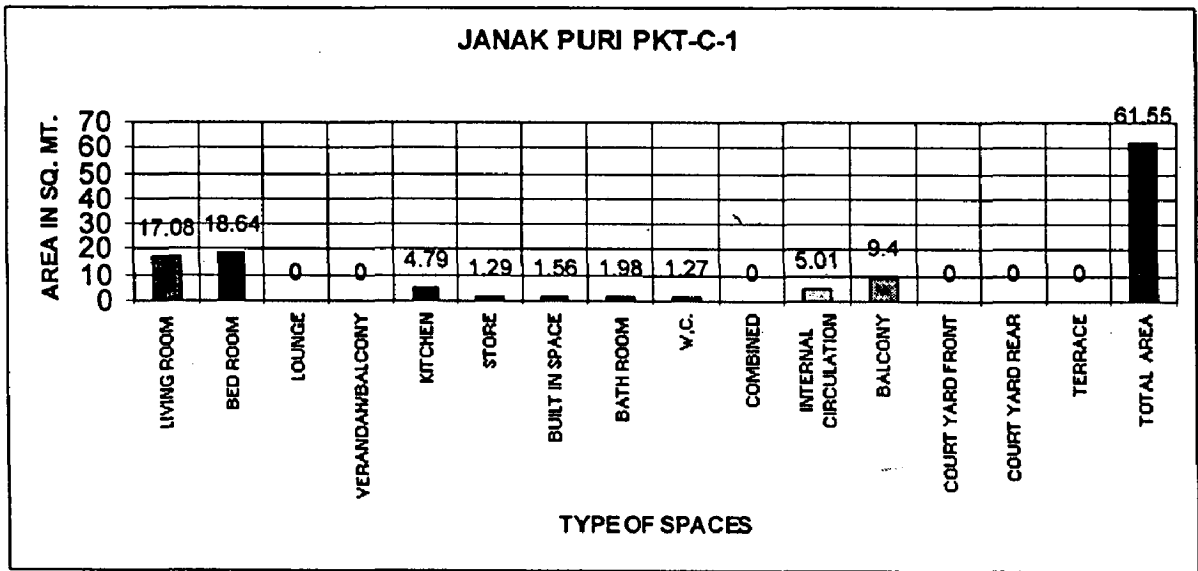


FIG. 5.4.3
Space utilization in different activities

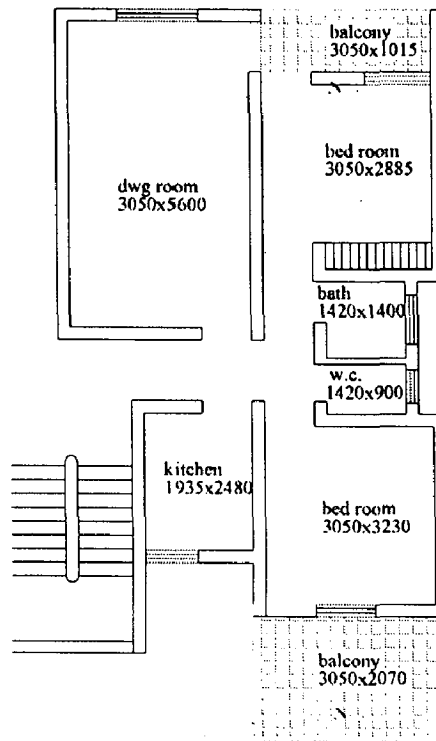


FIG. 5.4.4 UNIT PLAN (JANAK PURI)

	LOCATIONS	JANAK PURI PKT. C-1
1	CARPET AREA	55.95
2	GROSS AREA	68.55
3	COMMAN AREA/ UNIT	7.5
4	CIRCULATION AREA	5.01
5	OTHER AREA	8.6
6	AV. BULIT UP AREA / UNIT	61.55

TABLE. 5.4.2

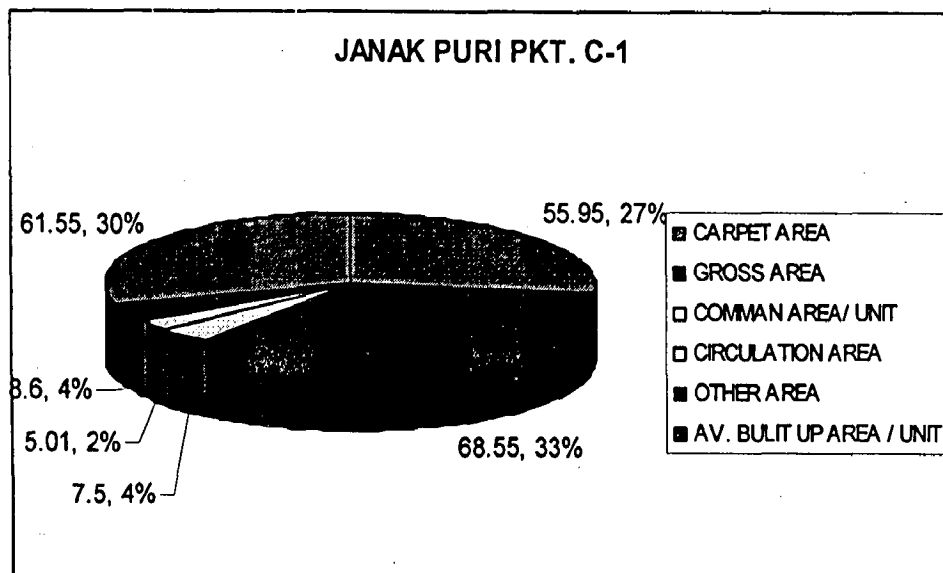
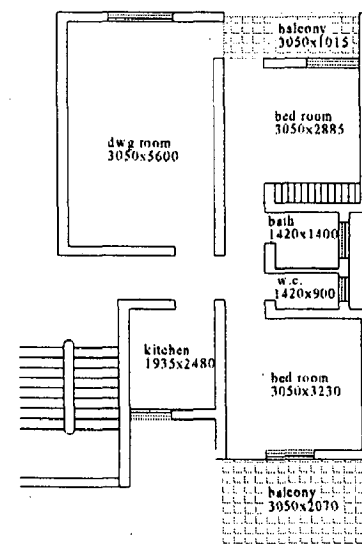


FIG. 5.4.5

5.4.2 DESIGN CONCEPT

Design is based upon different layouts of units on different floors. M.I.G. unit contains two bed rooms and drawing room separate lounge is not provided here Cluster of 6 units is connected with one stair case .The lay out of the flats has appreciable built form due to combination of different layouts



5.4.3 SIZES OF ROOM

Dwg. Room	-	3.05 X 5.6	
Bed room	-	3.05 X 2.8	
Bed room	-	3.05 X 3.2	
Kitchen	-	1.9 X 2.4	W.C. - 1.4 X .9
Bath	-	1.4 X 1.	

5.4.4 DESIGN ASPECT

5.4.4.1 Circulation-

A stair case serves the six units. Internal circulation is not very functional here due to lack of lounge .

Circulation space to the service areas is very less. Over all circulation is not satisfactory here.

5.4.4.2 Interconnection of function-

Entrance to drawing room is through a small lobby that is not welcoming for the guests and it creates confusion entry to other areas. Kitchen door is located just opposite to dwg. room it affects the privacy of service areas. Inter relation of different activities is not functional and appropriate here.

5.4.4.3 Storage-

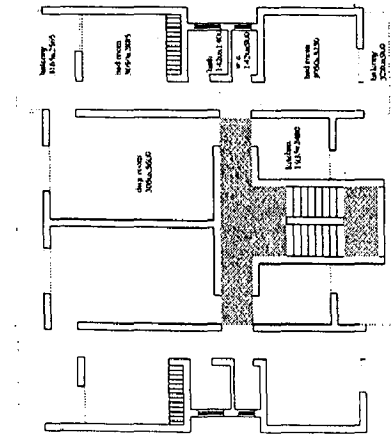
Room size is not sufficient according to the standards and provision of storage is provided only in one bed room that is not sufficient.

5.4.4.4 Open space-

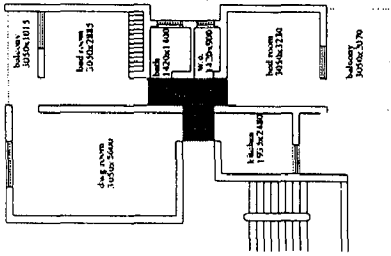
On gr. floor front and rear courtyard provided as an open space Provision of balconies provides the opportunity to the occupants for out door seating and feeling of openness. Position of balconies changes on alternate floors also used for small storage and for drying clothes and other activities. Balconies designed in a way that there is a possibility of future expansion.

5.4.4.5 Light and ventilation –

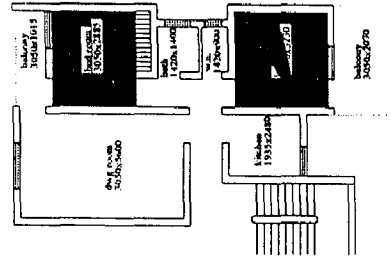
Bed room has adequate provision of windows that provides the proper light and ventilation. In drawing room there is problem of light and ventilation.



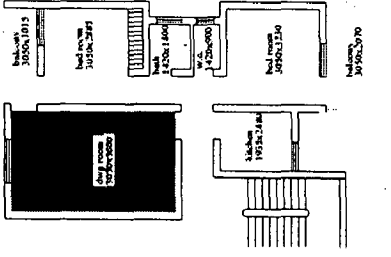
SOCIAL INTERACTION
 AREA - 12.53
 PERCENTAGE % - 10.17



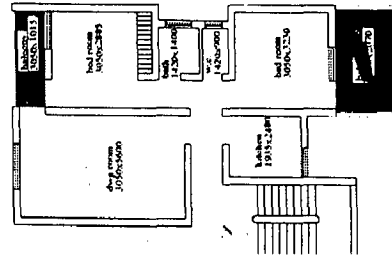
CIRCULATION
 AREA - 5.01
 PERCENTAGE % - 3.08



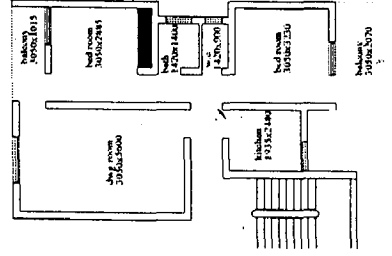
SLEEPING
 AREA - 18.64
 PERCENTAGE % - 30.28



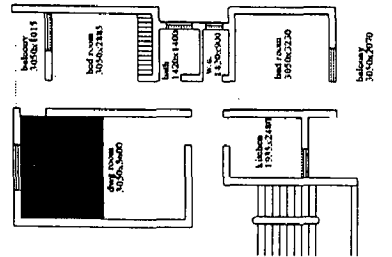
LIVING
 AREA - 17.08
 PERCENTAGE % - 27.44



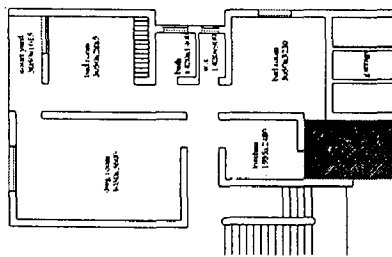
DRYING CLOTHES
 AREA - 11.062



BUILT IN SPACE
 AREA - .96 SQ.MT.
 PERCENTAGE % - 1.55

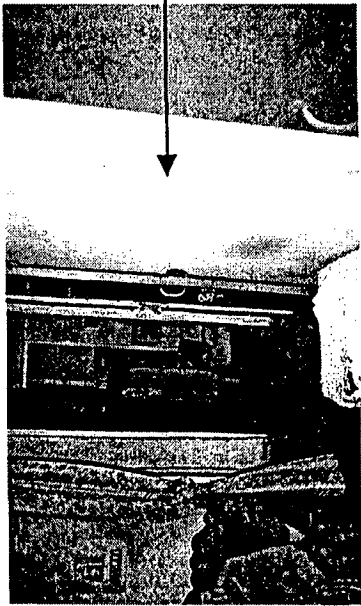


DINNING
 AREA - 9.84
 PERCENTAGE % - 15.98

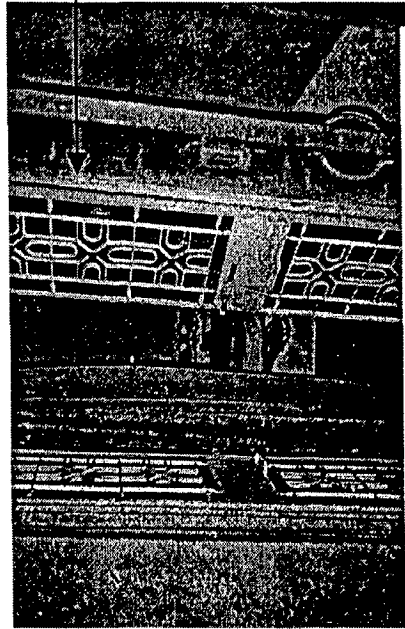


FRONT COURT YARD
 AREA - 10.20

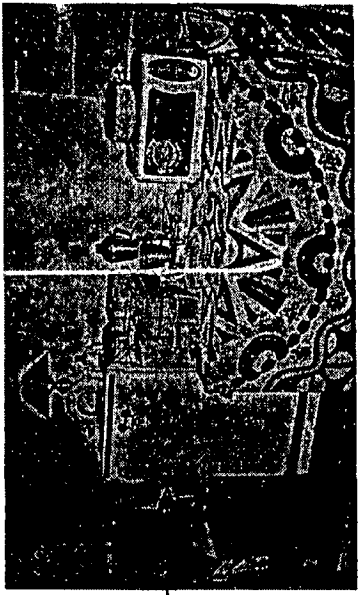
SPACE UTILISATION IN DIFFERENT ACTIVITIES (JANAK PURI)



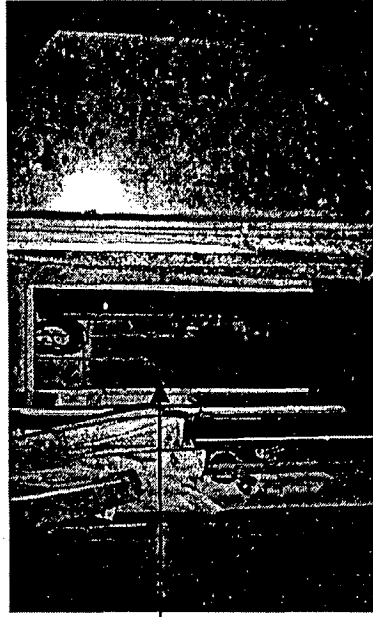
Lounge is not provided here that's why internal circulation and privacy is a big problem in all rooms. Spaces are interconnected by small corridors.



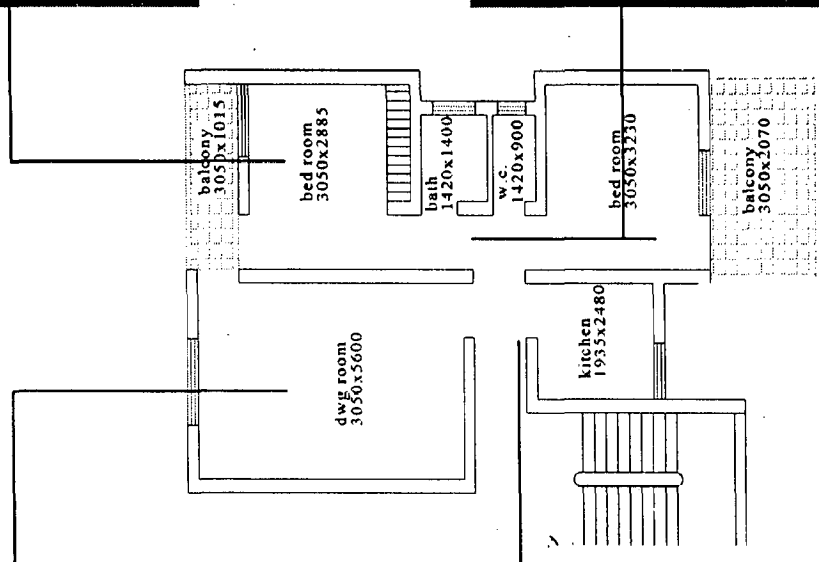
Entrance provided to the living through a small corridor space. That do not appears welcoming to the visitors



Size of bed rooms is small here than other localities. And due to storage in rooms effective usable area is less here.



Openings of the rooms are visible through the corridor that provides the internal circulation internal circulation crates the problem here. 117



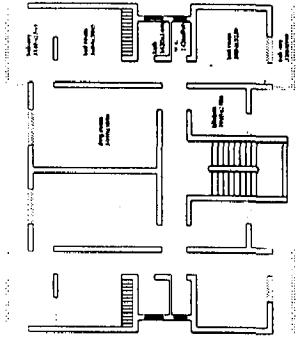
5.4.5 UNIT DESIGN



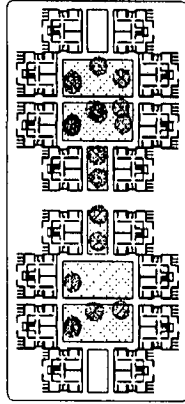
Open spaces provided for the recreational activities Encroached the by the illegal constructions



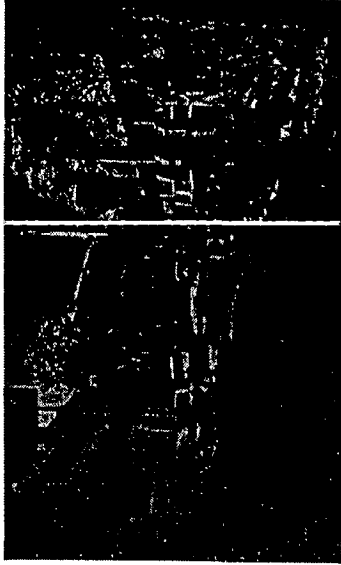
People have extended their balconies and these appears as a bed image of built form



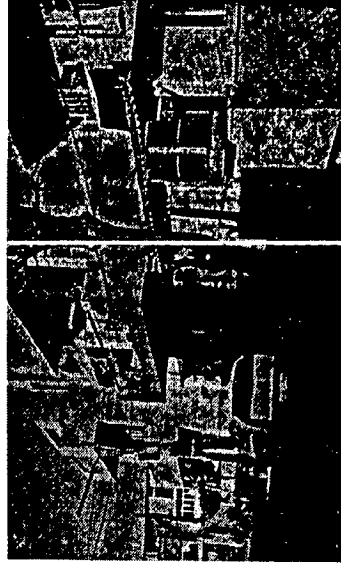
Social interaction lacks here due to width and location of stair



Parking on roads reduces the effective width of the roads



Internal circulation encroached by the unplanned parking in the area. Sense of territoriality is here.



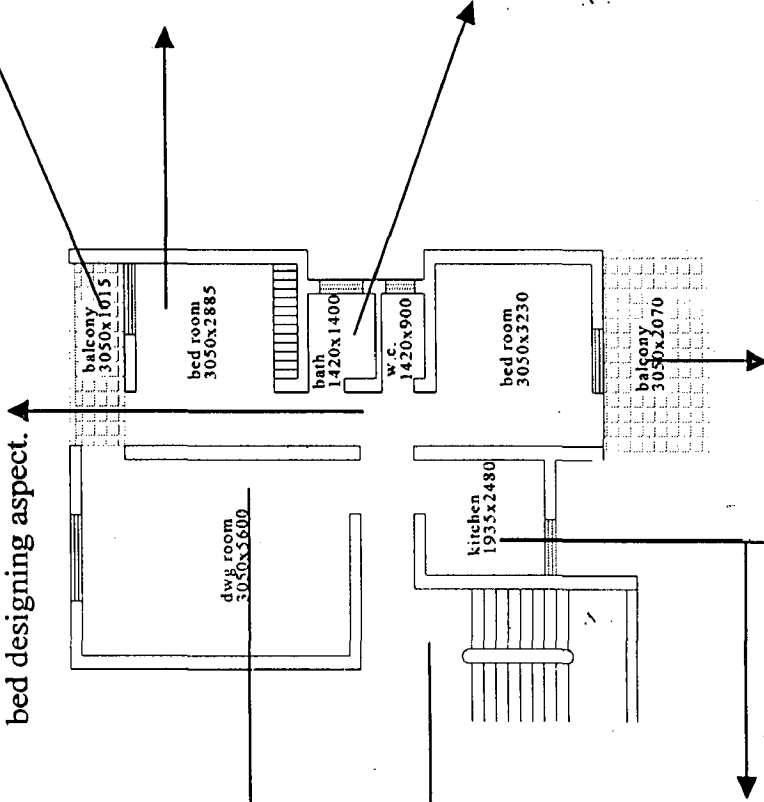
People have extended their balconies and these appears as a bed image of built form

5.4.6 CLUSTER ANALYSIS

Size of drawing room is big here due to dining area is included in it .but dwg and dining activities at a same place people do not prefer.

Bath and w.c. located in between the main circulation area. So people suffer privacy in service area, service area are visible through the main entrance, it appears as bed designing aspect.

Balcony serves the both drawing room and bed room. But the space is provided is quite insufficient for seating and for other activities



No circulation lobby is provided here. Circulation distance for various activities is high. Inter circulation space provide here is quite insufficient here.

Stair case has no lobby space. So the aspect of social interaction through circulation area is missing here. it also affected the privacy of individual units.

Location of kitchen is not proper here because there is confusion to visitors to identify the drawing room and kitchen. No circulation lobby is provided and it does not serve the all rooms in equal manner.

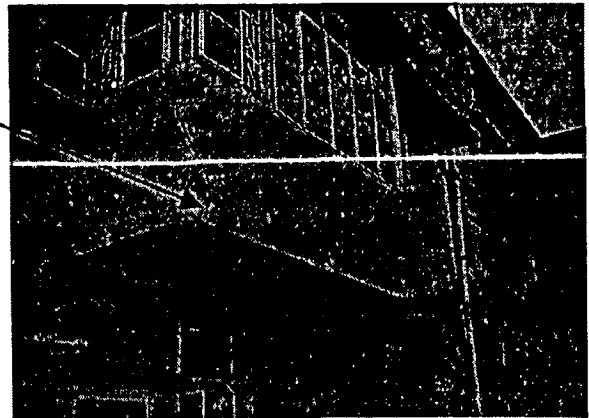
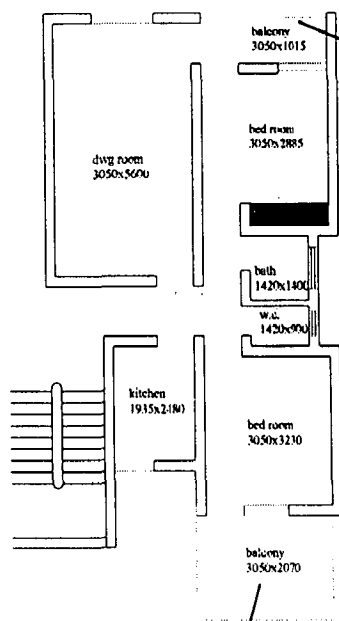
Bed room size is very small here after the furniture arrangements circulation area is hardly left. There is no flexibility in furniture arrangement.

Size of bath and w.c. is sufficient but the location is not proper. A major drawback is that it is visible directly to the main entrance.

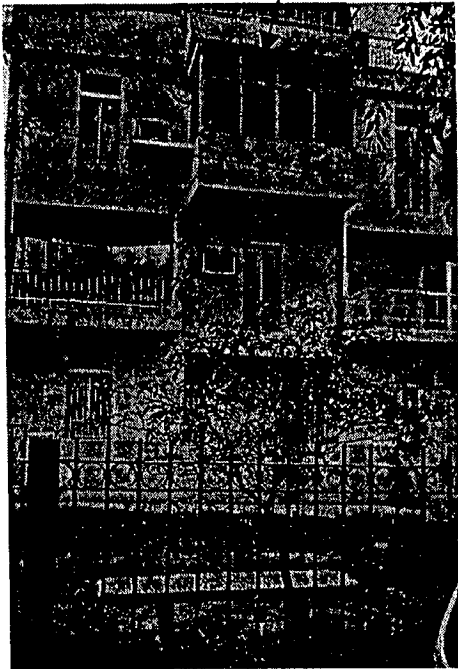
Balcony attached with bed room has sufficient space for seating and drying clothes. In most of the cases people have covered it as an enclosed space.

5.4.7 UNIT DESIGN ANALYSIS

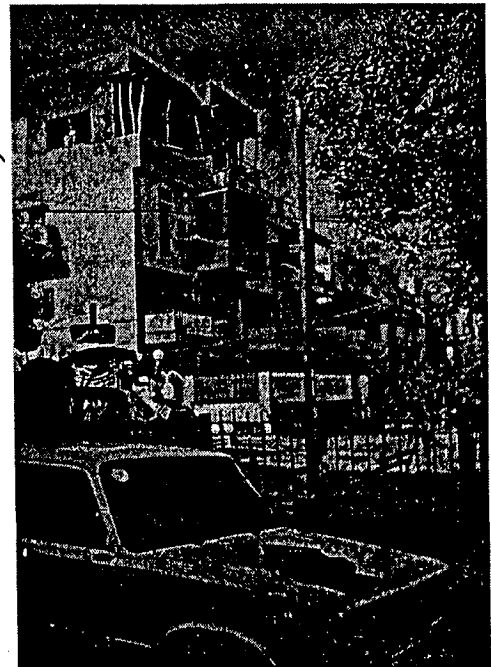
5.4.8 ADDITION AND ALTERATION



People has extended the balconies and converted it as an enclosed space to add the additional space in room size



In many cases people has extended their balconies and has converted it as an enclosed space.



In some cases people has added additional floor on the terrace. Lack of legal implication appears here.

5.4.9 INFRENCES

- Size of drawing room is sufficient but it has no separate identity because there is no proper separation between lounge and drawing room.
- Circulation lobby is not provided here and inter relationship of different functions is not proper.
- There is no provision of built in storage in the dining area .
- Internal circulation disturbs the privacy of bed rooms.
- Separate store is required here.
- Size of bed rooms is not sufficient and design of bed rooms has no flexibility to change the lay out of the furniture
- Openings of bath and W.C. are visible through the main entrance to the house so this disturbs the privacy of occupants.
- Width of stair case is not sufficient so carry the luggage on first floor is a big problem.
- Design and size of stair case do not help in any social interaction. Stair lobby is not provided here.
- Widths of balconies attach with drawing room and bed room is not sufficient for seating and other gossiping purpose.
- Many people has converted rear balcony as an enclosed space to increase the size of bed room.
- Sense of entrance and territoriality appears due one common entrance in different pockets.
- There is no provision of parking of vehicles People Park their vehicles on road. So the roads are encroached due to parking of vehicles.

- Most of the ground floor houses along with the main roads has converted in shops or are being using in commercial activities
- Open space is encroached due to illegal construction
- Built form is not appreciable due to various type of addition and alteration has occurred here.

	LOCATIONS	DWG. ROOM	BED ROOM	KITCHEN	STORAGE	OPEN SPACES
1	VASUNDHARA	15	30	10	70	10
2	MAYUR VIHAR	10	25	40	30	60
3	JANAK PURI (PKT-C-1)	60	60	40	50	75
4	KAUSHAMBHI	5	10	0	20	10
5	ROHINI	60	70	60	50	80

TABLE 5.4.3

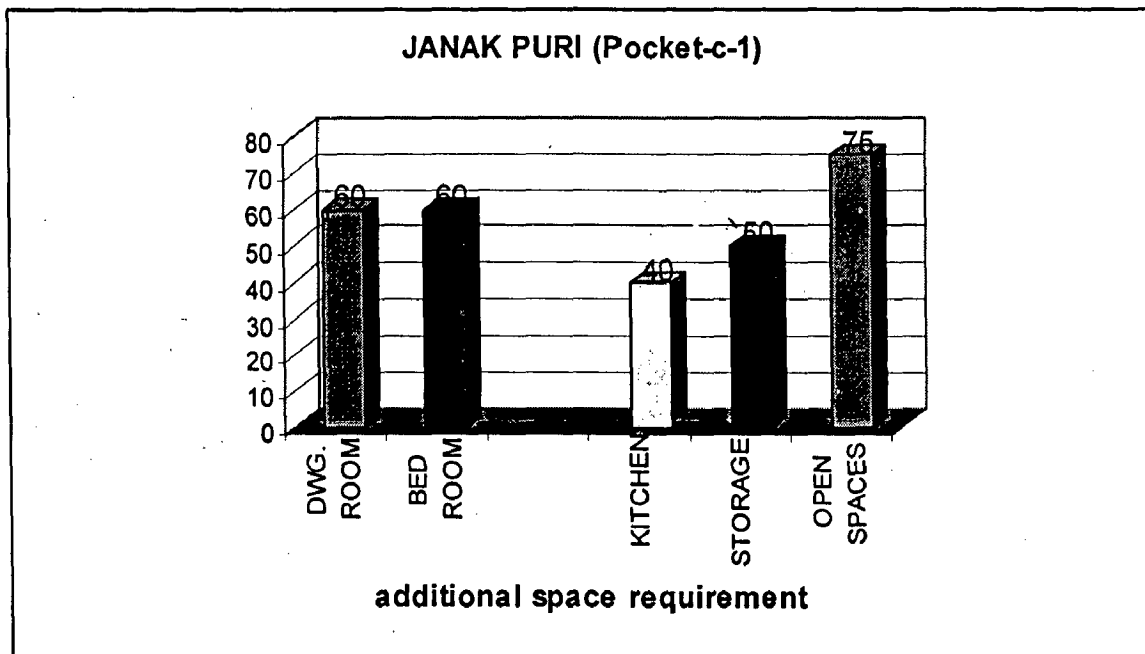


FIG . 5.4.6

CASE STUDY -5

5.5 ROHINI (SECTOR-7 POCKET A1)

Construction agency	Delhi Development Authority
Type of houses	M.I.G
Study area-	M.I.G. flats Sector -7 (Pocket-1A)
No. of floors-	G+3
Area of each unit	
Carpet area-	85 sq. mt.
Gross area	110 sq.mt
Year of construction	1990.
Location-	Rohini is Located in Outer Delhi and divided Near About 60 Sectors

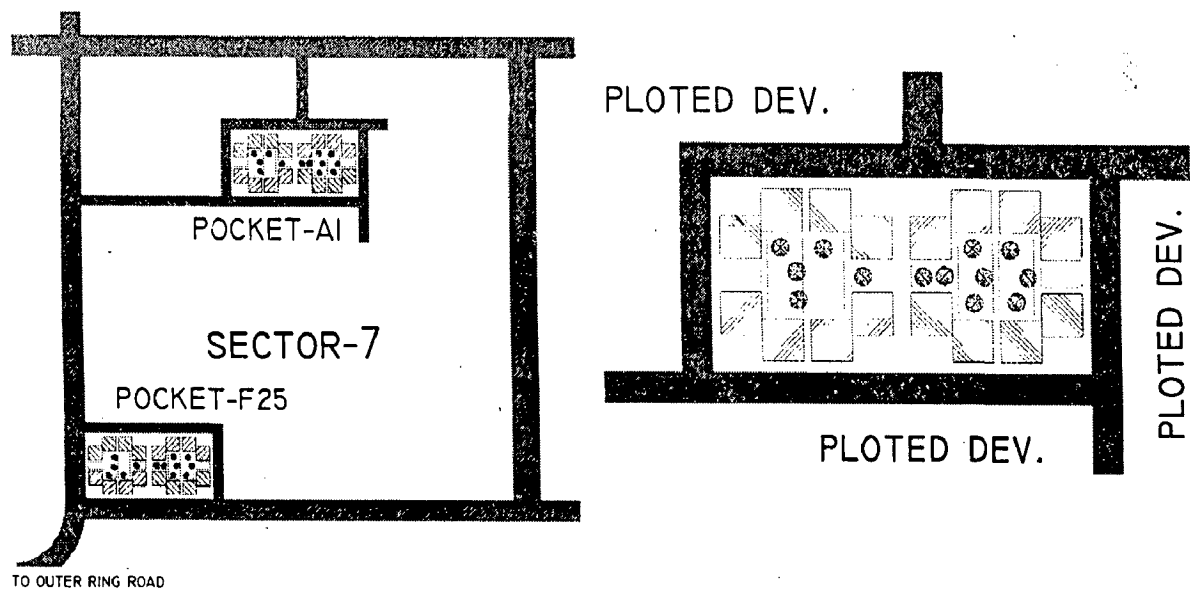


Fig. 5.5.1 SITE PLAN

	LOCATIONS	ROHINI
1	CARPET AREA	85
2	GROSS AREA	110
3	COMMAN AREA/ UNIT	5.75
4	CIRCULATION AREA	8.75
5	OTHER AREA	6.5
6	AV. BULIT UP AREA / UNIT	80

Table 5.5.1

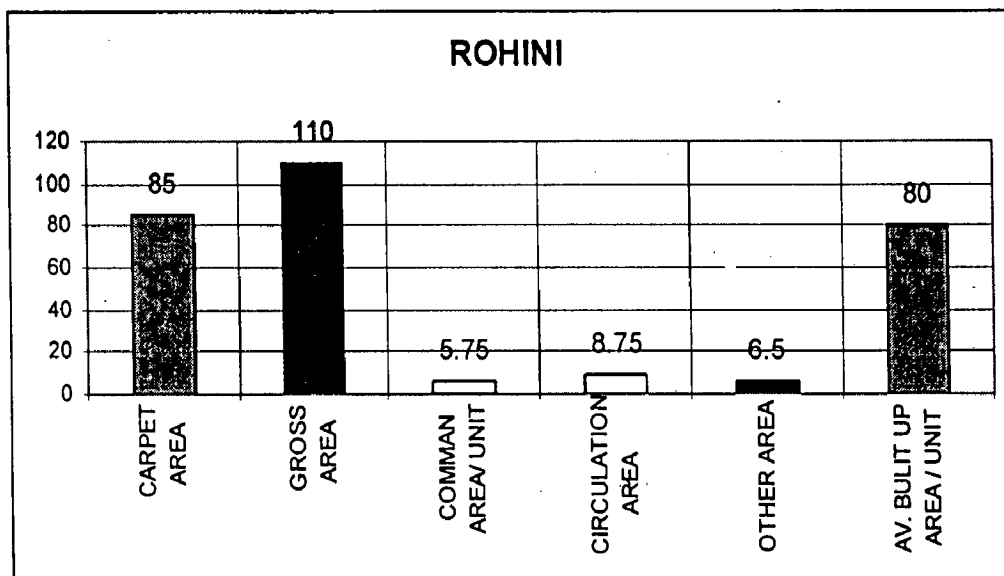


fig.5.5.2

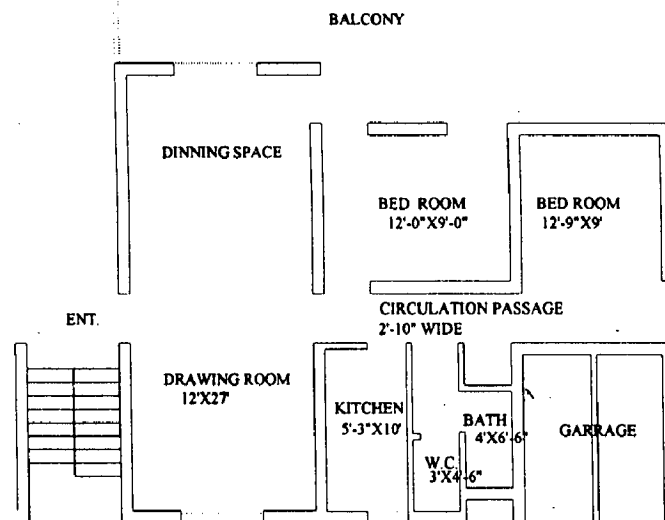


Fig. 5.5.3 UNIT PLAN

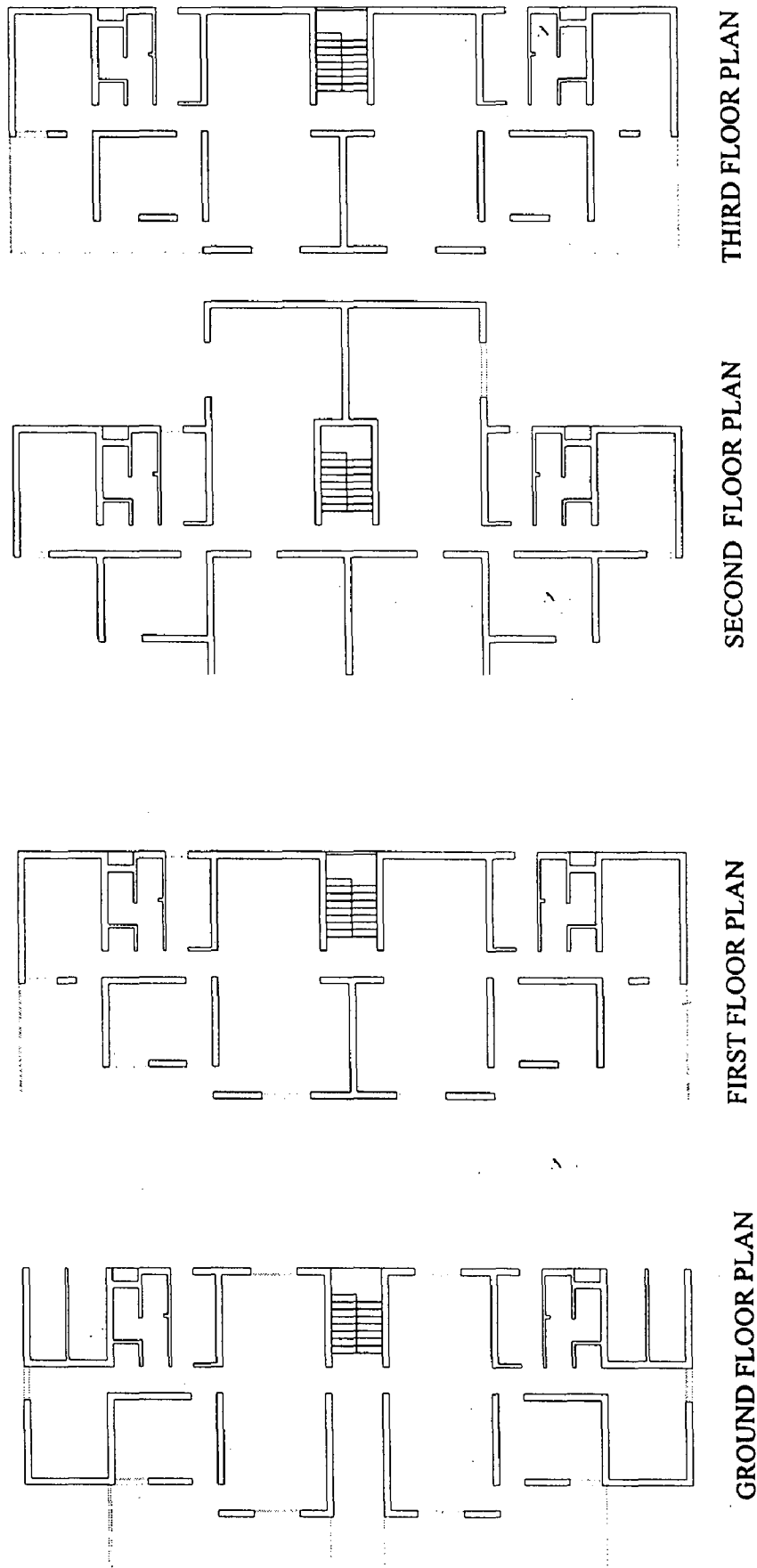
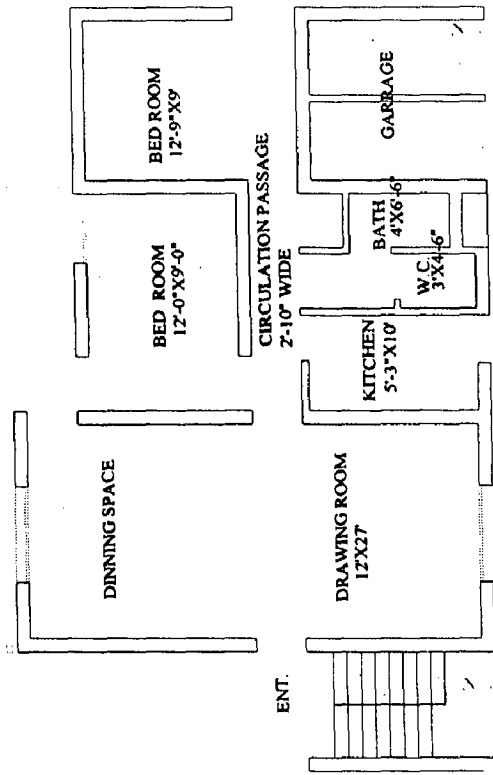
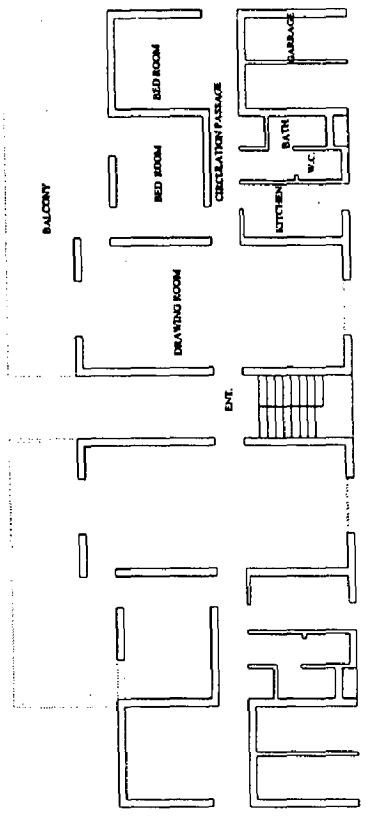


Fig.5.5.4 FLOOR PLANS (ROHINI)



UNIT PLAN



CLUSTER PLAN

	LOCATIONS	ROHINI AREA
1	DRAWING ROOM	25
2	BED ROOM	24.5
3	LOUNGE	0
4	VERANDAH	5.72
5	KITCHEN	4.56
6	STORE	2.08
7	BUILT IN SPACE	2.52
8	BATH ROOM	2.08
9	W.C.	1.423
10	COMBINED	0
11	INTERNAL CIRCULATION	10.59
12	BALCONY	6.42
13	COURT YARD FRONT	0
14	COURT YARD REAR	0
15	TERRACE	0
16	TOTAL AREA	85

Table 5.5.2

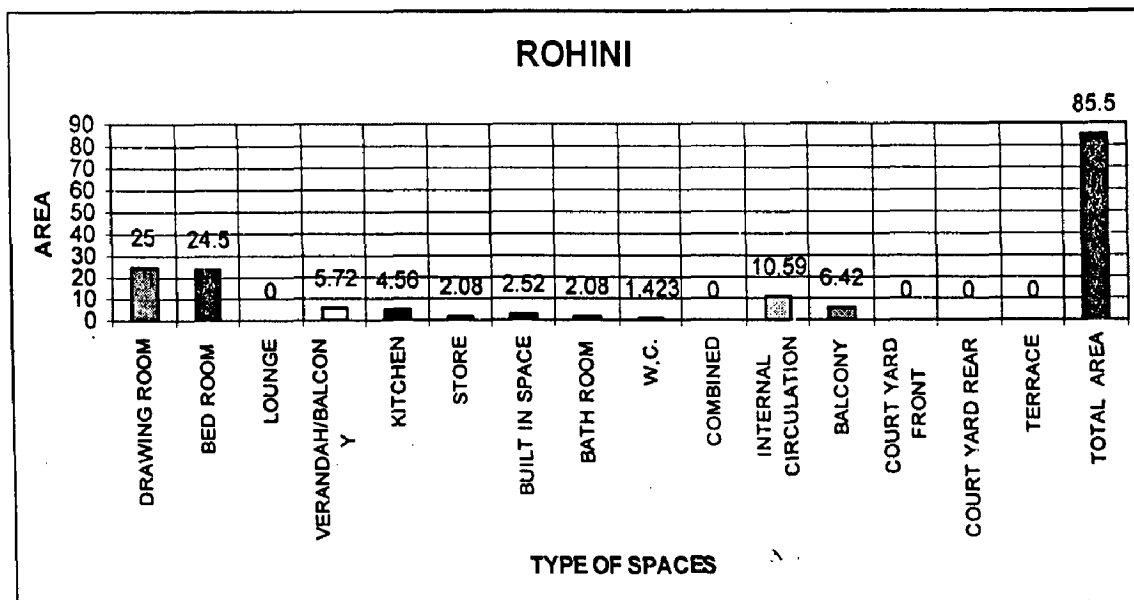
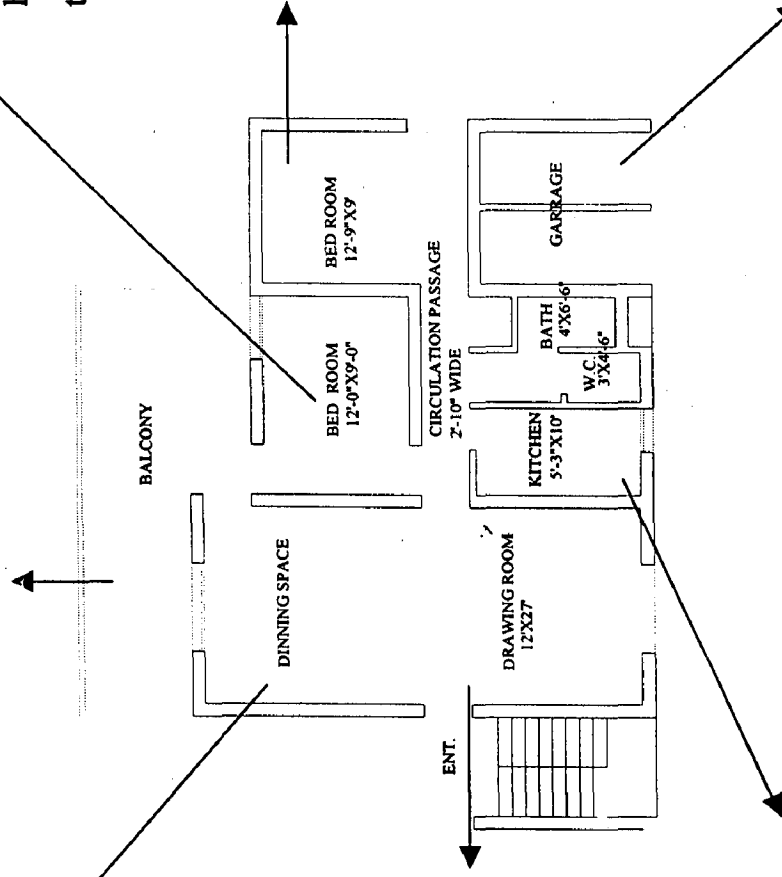


fig.5.5.5

Size of bed room is not sufficient here. And there is no provision of storage space in the bed rooms. Rather than sleeping other activities hardly possible in the bed rooms due to improper size.

Balcony provided here is sufficient for seating out and drying clothes. It provides additional space to bed rooms for storage and other activities.

Dining and drawing are combined here, entrance in the center divides the areas but privacy and circulation is a major problem in this area.



Bed rooms are directly visible through the main entrance it affect the privacy aspect of occupants

Lounge is not provided here internal circulation occurs by narrow passage it affects the functionality of all spaces.

Garage provided on the ground floor has converted in to shops by the residents. Garage are not using for its purpose

Entrance to the drawing room is not welcoming here. There is no lobby or space provided for the internal circulation, internal functions are visible from the main entrance

Location of kitchen is not proper here. In the absence of lounge lots of problem is here in service areas.

5.5.2 UNIT DESIGN ANALYSIS

5.5.3 CLUSTER ANALYSIS

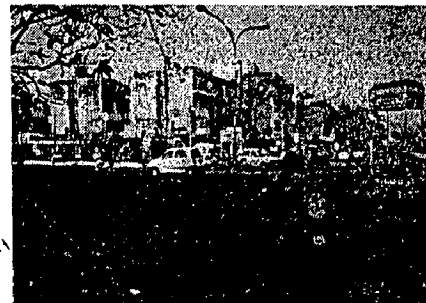
Pocket-A1 is surrounded by plotted development from all the four sides and has plotted development all around.



Commercialization: All the flats in pocket face the main road and commercialized. Due to this there is a lot of movement of strangers in a locality.

Road Layout:

A typical Island type of road network has been laid in both the pockets. Due to this sort of road layout, there is a *thorough movement of traffic* all round the blocks



Block is approached through only front, as staircase is enclosed between the block and closed from back. But there is no hierarchy of space, there is direct approach, from public area to private area

BUILT FORM: Built form has a static character and due to unauthorized construction, the area got image of public housing

Balcony are created at every floor, , *which provides an opportunity to interact with neighbors*

But most of the balconies are covered to create another room, due to which balcony losses it's vary purpose.5.5.4



ADDITIONAL SPACE REQUIREMENT

	LOCATIONS	DWG. ROOM	BED ROOM	KITCHEN	STORAGE	OPEN SPACES
1	VASUNDHARA	15	30	10	70	10
2	MAYUR VIHAR	10	25	40	30	60
3	JANAK PURI	60	60	40	50	75
4	KAUSHAMBHI	5	10	0	20	10
5	ROHINI	40	70	60	50	80

Table 5.5.3

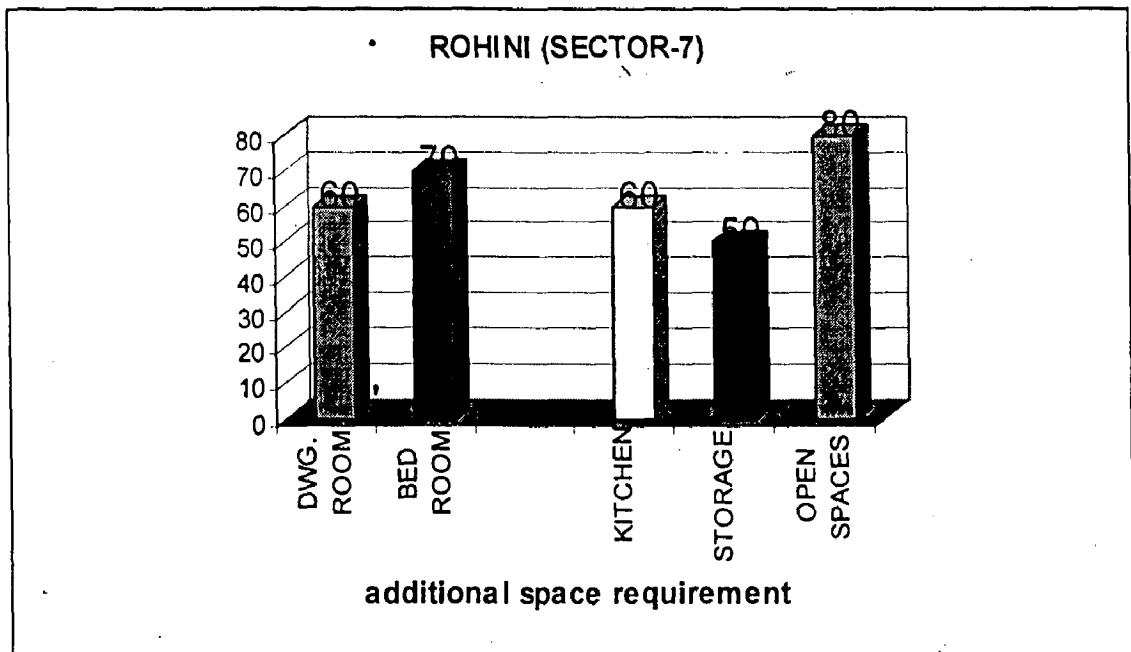


Fig.5.5.6

INFERENCES

- Combined drawing and dining area has functional and circulation problems.
- Lounge is not provided here that's why internal circulation is not define and by this privacy be affected of other living area
- Service areas are located in between the circulation passage so circulation in service areas is a big problem.
- Size of bed room is not sufficient only sleeping activities can take place here.
- Built in storage is not provided in the bed rooms so there is no space of storage in bed rooms
- Main entrance is not proper service areas are directly visible through the main entrance
- Lounge is the essential part for circulation and other house hold activities that is not provided here.
- Balconies has not provided in the front with drawing room so people lack a space for seating out.
- Most of the area covered by the combined drawing and dining room so the other space has not sufficient space for activities takes place there.

CHAPTER -5 CASE STUDIES ANALAYSIS

5.6 -COMPARATIVE ANALYSIS

D.U. LEVEL

I. Provision of Spaces

(i) Living Areas

Drawing Room – The minimum area provided for drawing room is 12.52 sq. mts. In vasundhara Where as the maximum area provided is 26.6 sq. mts in mayur viahr. Which have the respective percentages with respect to the total areas provided as 9.38% & 27.9%. Except in kaushabhi ,mayur vihar and janakpuri where area provided is more than 20 sq. mts. rest everywhere area provided for this space is less than 20 s.q. mts. The sudden rise in area is because of inclusion of circulation lobby within the drawing room.

BED ROOM- Minimum area provided for this space is 12.3 sq. mts. in rohini where as in kaushambhi, the area provided for bed room is highest i.e. 34.63 sq. mts. – Percentage distribution wise, in kaushambhi, Area provided is highest i.e., 28.65% where as in vasundhara it is the lowest i.e., 16.82%.

VERANDAH: Minimum area provided for this space is 5.42 in mayur vihar, and maximum is 8.63s.q. mts. In vasundahra. In other areas verandah has not provided .

Percentage distribution wise 14.5% is the maximum provided for mayur vihar. where as 6.24 is minimum In vasundhara.

INTERNAL CIRCULATION: The minimum circulation area provided is 5.01 s.q. mts. in Janakpuri where as max. area provided for this space is 21.34 s.q. mts. In kaushambhi. Percentage distribution wise the highest share for this space is provided in kaushambhi. i.e. 21.77% whereas 3.08 % is the min. area allocated to this space in Janakpuri. The main

reason for such a great fall in this area due to inclusion of circulation space within the drawing room.

(ii) **SERVICE AREAS:**

Kitchen- The min. area provided for kitchen is 4.56. mts. i.e., in rohini .where the max. area provided is 8.51 s.q. mt. which is in kaushambhi. % age distribution wise also rohini (sector-7 pkt C1A) is the lowest, whereas kaushambhi is the highest.

Bath room: Minimum area provided is 2.47 s.q mt. and %age distribution wise vasundhara is highest i.e. 1.85 % whereas rohini is the lowest with 2.88 % - It is observed that in general, percentage distribution is less for larger D.U. area and is higher in case of smaller D.U. area.

W.C: Minimum area provided is 1.08 sq. mets. in vasundhara, whereas max. is 1.42 in rohini. And % age distribution wise 0.8% is the min. in vasundhara and max. is 1.86 % in Janakpuri which shows that distribution has been all the most constant.

(iii) **Storage:** Separate store is not provided any where. the min. storage space provided is 0.60 sq.mts. in mayur vihar whereas kaushambhi. has the max. area for this space i.e. 5.05 sq.mts. Percentage distribution wise also these are respectively lowest and highest.

- Built-in storage space are provided in all surveyed areas except rohini , i.e., in vasundhara and kaushambhi and the respective areas are 1.20 sq.mts. and 4.45 sq.mts.

OPEN SPACES:

Front court yard:

Only in vasundahra and mayur vihar front court yard has provided. The max. area provided is 29.26 in vasundhara and the min. is 16.4 sq.mts. inmayur vihar .

Rear courtyard

Raer court yard is only provide in vasundhara and area provide for this is 25.26

Balconies

In most of the areas provision of balconies has made . but in may areas size and position of balconies is not proper. In mayur vihar and kaushambhi balconies has sufficient size for seating and other activities .minimum area provide for this is 7.37 sq.mt. in vasundhara and maximum provided for this is 24.56 in kaushambhi.

5.6.1 COMPARATIVE ANALYSIS

Area Distribution

LOCATIONS	KAUSHAMBHI
CARPET AREA	110.23
GROSS AREA	120.84
COMMAN AREA/ UNIT	18.50
CIRCULATION AREA	21.39
OTHER AREA	15.75
AV. BULIT UP AREA / UNIT	120.84

TABLE 5.6.1

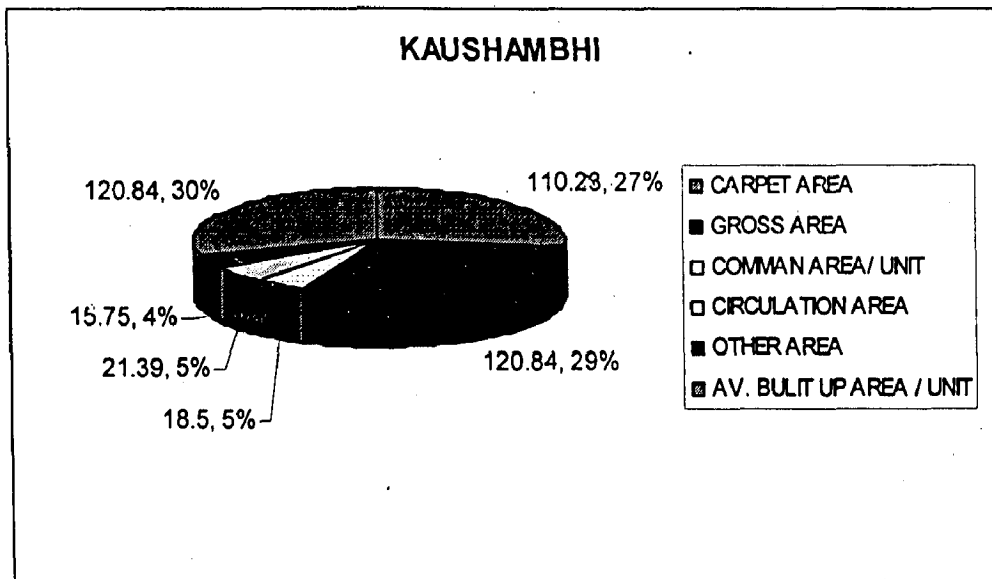


FIG. 5.6.1

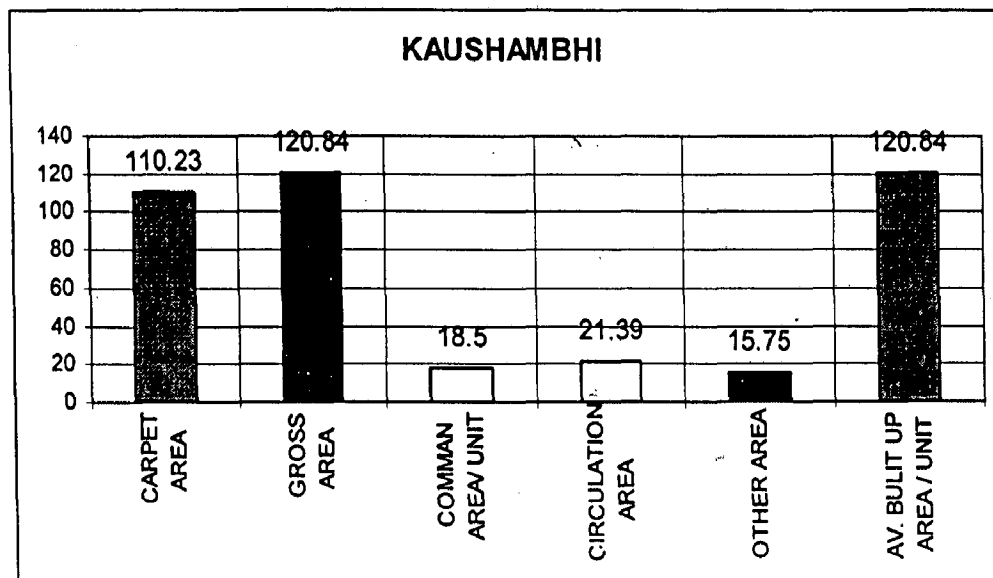


FIG. 5.6.2

COMPARATIVE ANALYSIS
Area Distribution

	LOCATIONS	VASUNDHARA
1	CARPET AREA	74.63
2	GROSS AREA	133.5
3	COMMAN AREA/ UNIT	12.75
4	CIRCULATION AREA	16.45
5	OTHER AREA	10.65
6	AV. BULIT UP AREA / UNIT	74.63

TABLE 5.6.2

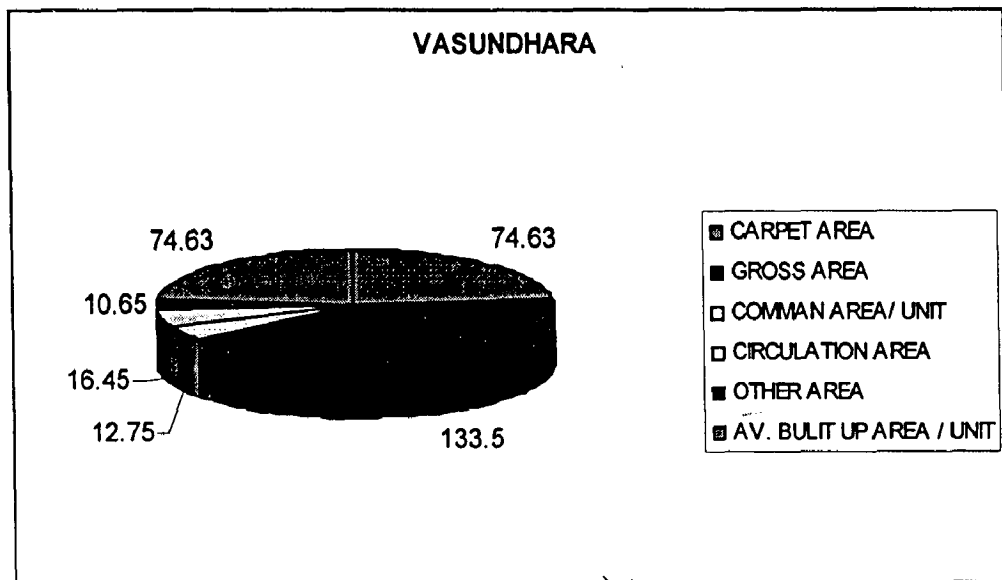


FIG. 5.6.3

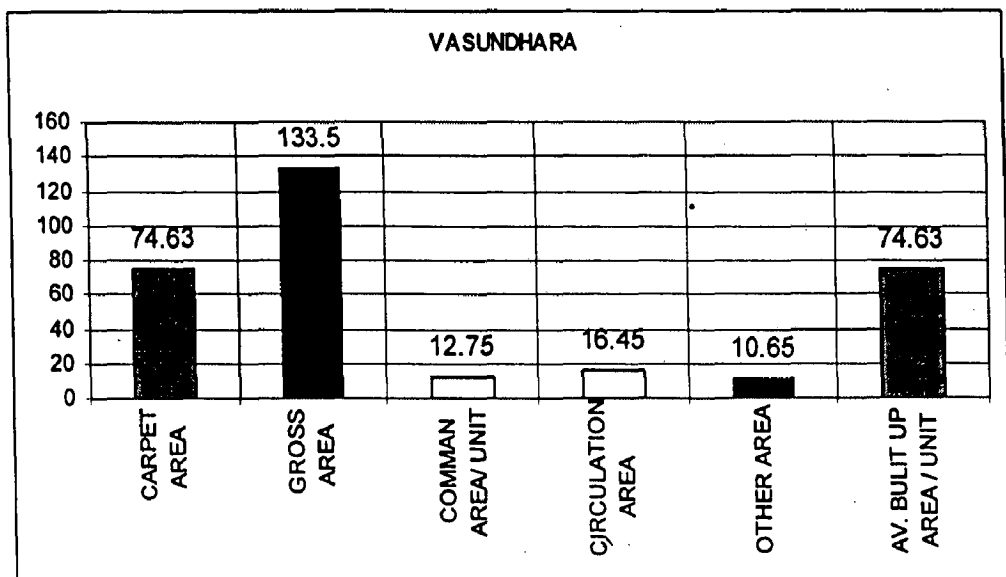


FIG. 5.6.4

COMPARATIVE ANALYSIS
Area Distribution

	LOCATIONS	MAYUR VIHAR
1	CARPET AREA	80.68
2	GROSS AREA	95.05
3	COMMAN AREA/ UNIT	9.37
4	CIRCULATION AREA	12.32
5	OTHER AREA	12.5
6	AV. BULIT UP AREA / UNIT	75.05

TABLE 5.6.3

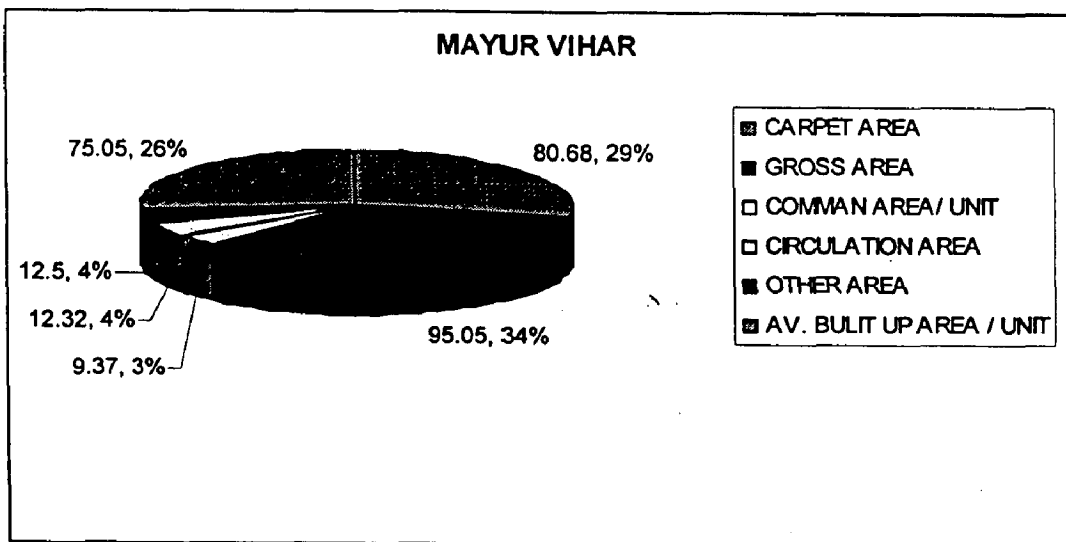


FIG. 5.6.5

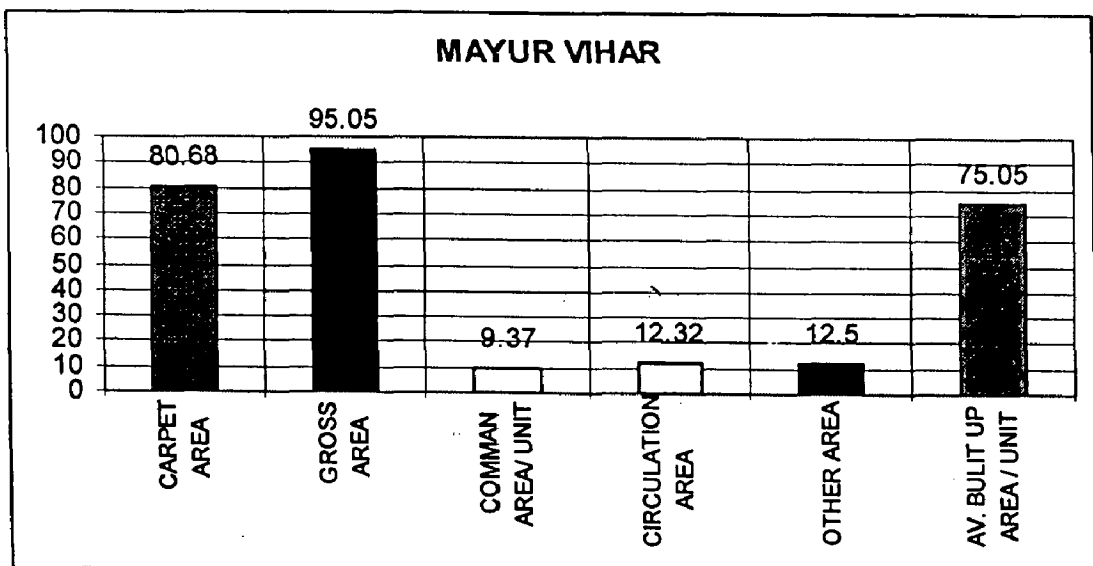


FIG. 5.6.6

COMPARATIVE ANALYSIS
Area Distribution

	LOCATIONS	ROHINI
1	CARPET AREA	85
2	GROSS AREA	110
3	COMMAN AREA/ UNIT	5.75
4	CIRCULATION AREA	8.75
5	OTHER AREA	6.5
6	AV. BULIT UP AREA / UNIT	80

TABLE 5.6.4

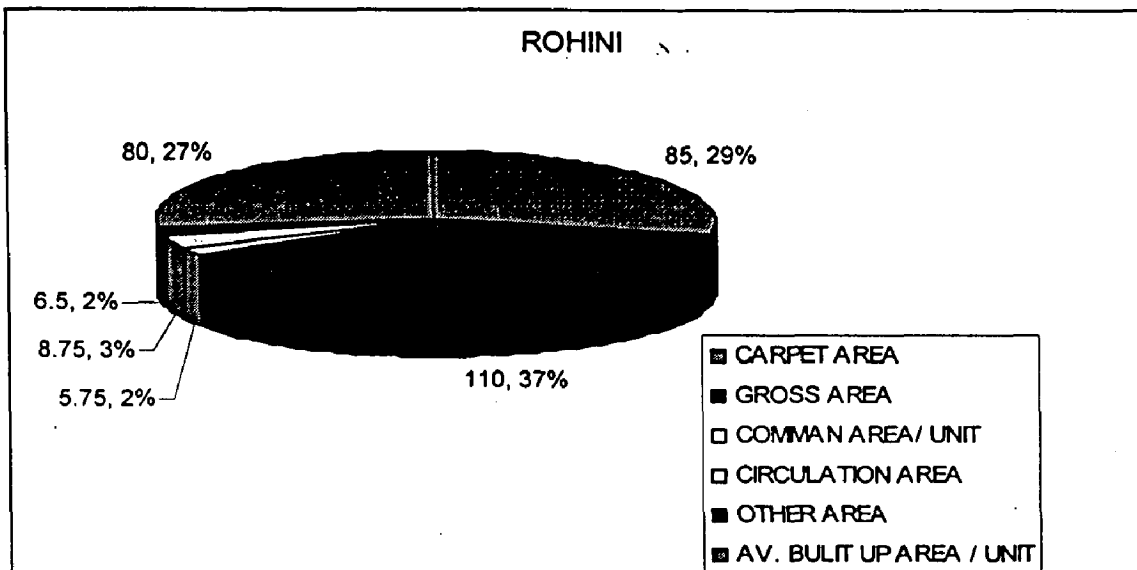


FIG. 5.6.7

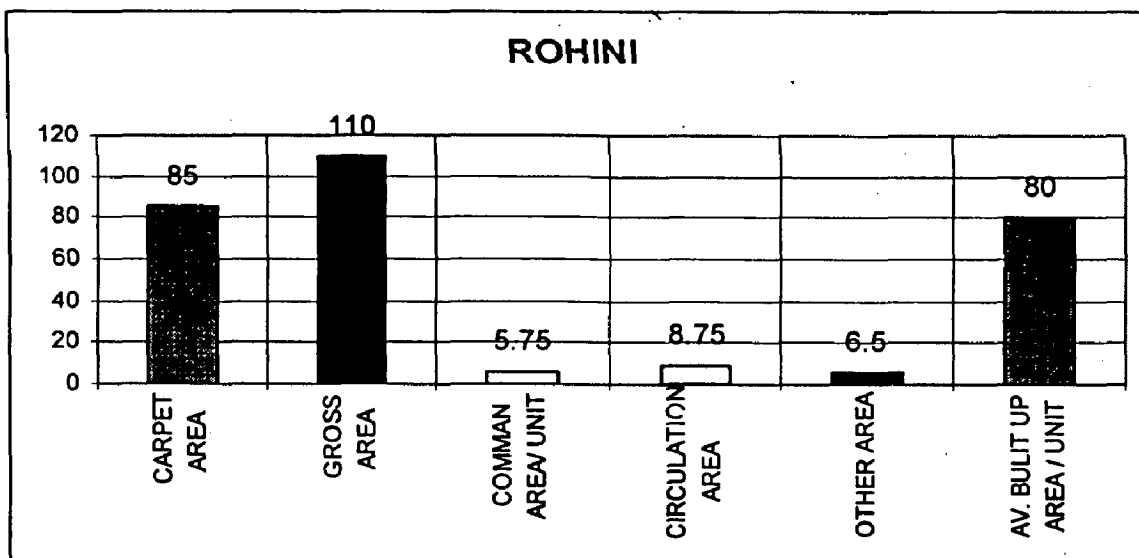


FIG. 5.6.8

COMPARATIVE ANALYSIS
Area Distribution

	LOCATIONS	JANAK PURI PKT. C-1
1	CARPET AREA	55.95
2	GROSS AREA	68.55
3	COMMAN AREA/ UNIT	7.5
4	CIRCULATION AREA	5.01
5	OTHER AREA	8.6
6	AV. BULIT UP AREA / UNIT	61.55

TABLE 5.6.5

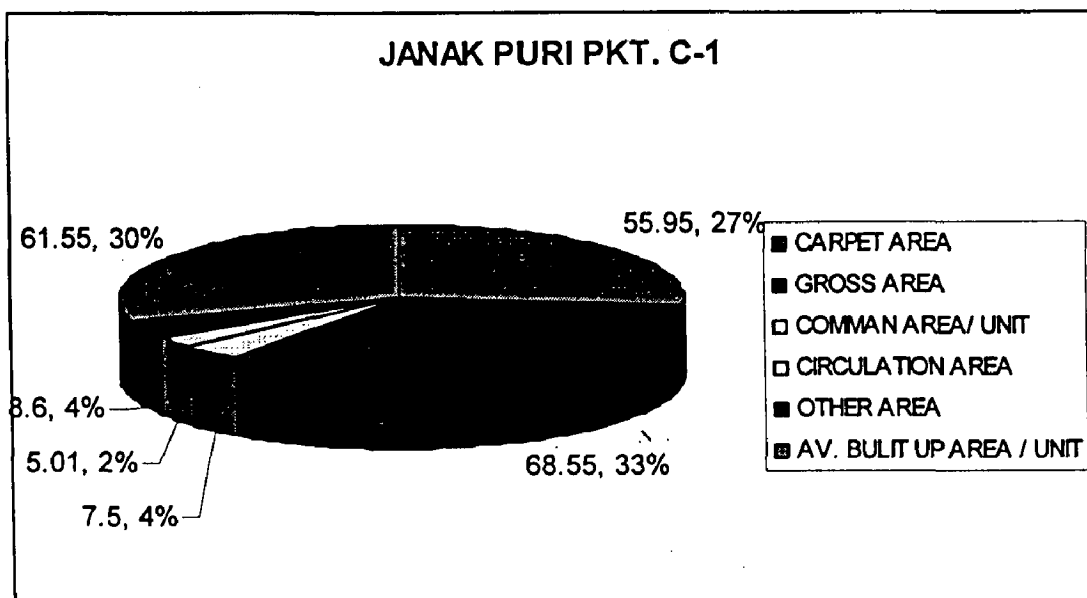


FIG. 5.6.9

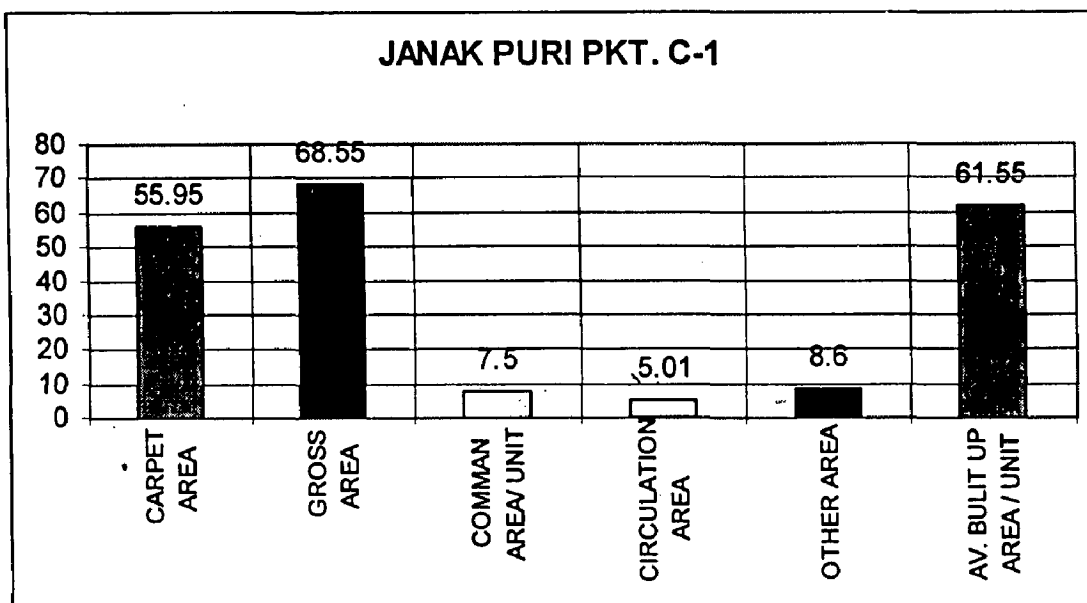


FIG 5.6.10

LOCATIONS	VASHUNDHARA (AWAS VIKAS)		MAYUR VIHAR		JANAK PURI POCKET -C-1		KHAUSHAMBHI		ROHINI	
	AREA	%	AREA	%	AREA	%	AREA	%	AREA	%
1 DRAWING ROOM	12.52	9.38	26.6	27.9	17.08	24.9	20.72	17.14	25	26.65
2 BED ROOM	22.45	16.82	31.26	32.8	18.64	30.28	34.63	28.65	24.5	25.27
3 LOUNGE	10.92	8.15	0	0	0	0	15.48	18.7	0	0
4 VERANDAH	8.673	6.49	16.4	15.44	0	0	0	0	5.72	11.75
5 KITCHEN	4.71	3.52	8.13	8.55	4.79	6.98	8.51	7.06	4.56	9.36
6 STORE	1.14	0.85	3.16	3.32	1.29	1.88	2.08	1.72	2.08	4.27
7 BUILT IN SPACE	1.2	0.89	3.96	4.16	1.56	2.2	4.45	3.68	0	0
8 BATH ROOM	2.47	1.85	0	0	1.98	2.9	0	0	2.08	4.27
9 W.C.	1.08	0.8	0	0	1.27	1.86	0	0	1.423	2.93
10 COMBINED	0	0	8.16	8.58	0	0	7.2	5.95	0	0
11 INTERNAL CIRCULATION	16.45	12.32	10.77	11.33	5.01	3.08	21.39	17.7	10.59	11.77
12 TOTAL AREA	74.63	100	95.05	100	61.55	100	120.84	100	48.67	100
13 COURT YARD FRONT	29.26	38.99	16.4	17.25	0	0	0	0	0	0
14 COURT YARD REAR	25.26	33.66	0	0	0	0	0	0	0	0
15 TERRACE	0	0	0	0	0	0	0	0	0	0
16 BALCONY	7.37	5.5	16.4	15.44	9.4	0	24.56	34.5	18.42	12.7

TABLE 5.6.6 SPACE UTILISATION IN DIFFERENT ACTIVITIES

LOCATIONS	VASHUNDHARA (AWAS VIKAS)		MAYUR VIHAR		JANAK PURI POCKET - C-1		KHAUSHAMBHI		ROHINI	
	LIKE	DISLIKE	LIKE	DISLIKE	LIKE	DISLIKE	LIKE	DISLIKE	LIKE	DISLIKE
1 DRAWING ROOM	10	5	12	3	6	9	14	1	12	3
2 BED ROOM	12	3	10	5	5	10	14	1	11	4
3 LOUNGE	9	6	0	0	4	11	14	1	10	5
4 VERANDAH	10	5	0	0	0	0	0	0	0	0
5 KITCHEN	11	4	12	3	6	9	15	0	13	2
6 STORE	0	0	0	0	0	0	0	0	0	0
7 BUILT IN SPACE	13	2	14	1	7	8	13	2	12	3
8 BATH ROOM	6	9	0	0	4	11	0	0	11	4
9 W.C.	7	8	0	0	10	5	0	0	10	5
10 COMBINED	0	0	10	5	0	0	15	0	11	4
11 INTERNAL CIRCULATION	12	3	12	3	8	7	15	0	10	5
12 COURT YARD FRONT	12	3	0	0	0	0	0	0	0	0
13 COURT YARD REAR	14	1	0	0	0	0	0	0	0	0
14 TERRACE/BALCONY	12	3	5	10	6	9	14	1	13	2

TABLE 5.6.7 PEOPLE OPINION ABOUT DIFFERENT SPACES

LOCATIONS	VASHUNDHARA (AWAS VIKAS) AREA	MAYUR VIHAR AREA	JANAK PURI POCKET - C-1 AREA	KHAUSHAMBHI AREA	ROHINI AREA
1 DRAWING ROOM	12.525	26.6	17.08	20.72	25
2 BED ROOM	22.45	31.26	18.64	34.63	24.5
3 LOUNGE	10.92	0	0	15.48	0
4 VERANDAH	8.673	16.4	0	0	5.72
5 KITCHEN	4.71	8.13	4.79	8.51	4.56
6 STORE	1.14	3.16	1.29	2.08	2.08
7 BUILT IN SPACE	1.2	3.96	1.56	4.45	2.52
8 BATHROOM	2.47	0	1.98	0	2.08
9 W.C.	1.08	0	1.27	0	1.423
10 COMBINED	0	8.16	0	7.2	0
11 INTERNAL CIRCULATION	16.45	10.77	5.01	21.39	10.59
12 BALCONY	7.37	16.4	9.4	28.56	6.42
13 COURT YARD FRONT	29.26	16.4	0	0	0
14 COURT YARD REAR	25.26	0	0	0	0
15 TERRACE	0	0	0	0	0
16 TOTAL AREA	74.63	95.05	61.55	120.84	85

TABLE 5.6.8

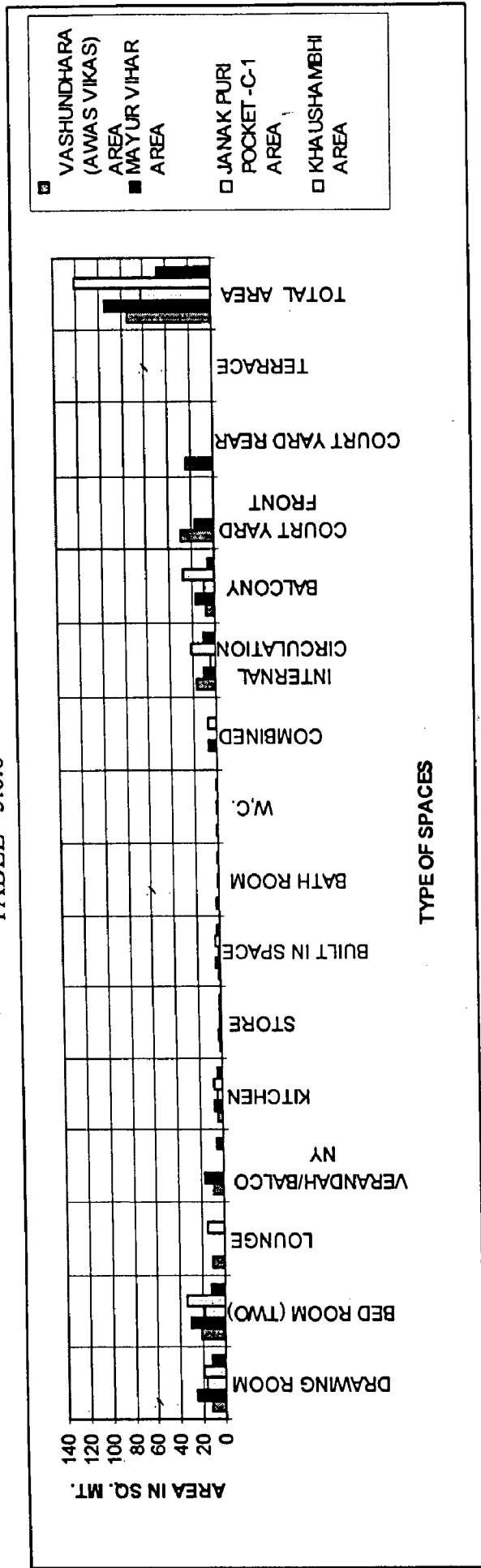


FIG. 5.6.11 SPACE UTILISATION IN DIFFERENT ACTIVITIES

COMPARATIVE ANALYSIS

Space Utilisation in Different Activities

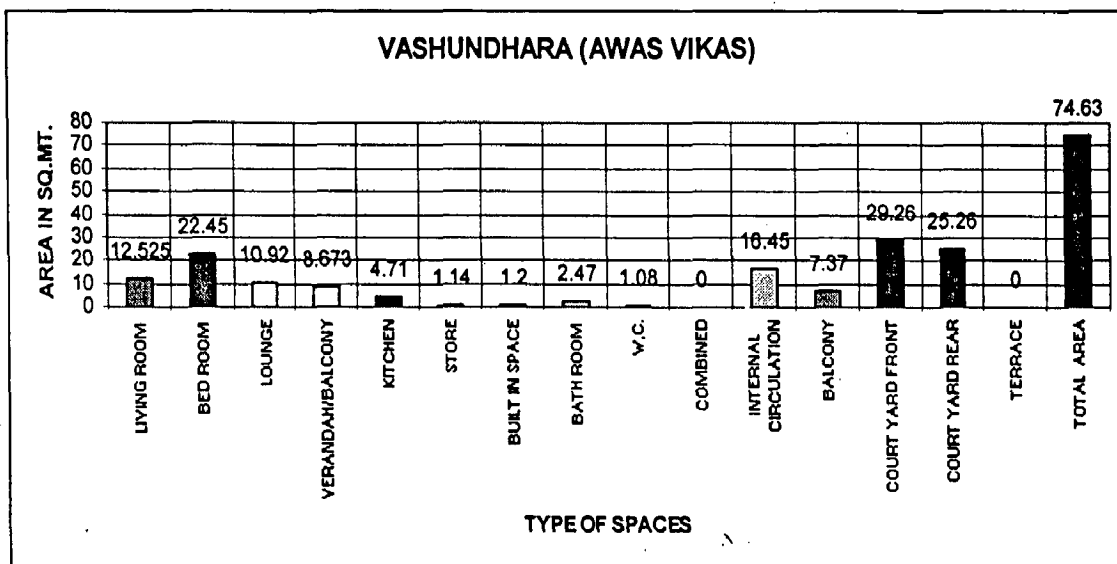


FIG. 5.6.12

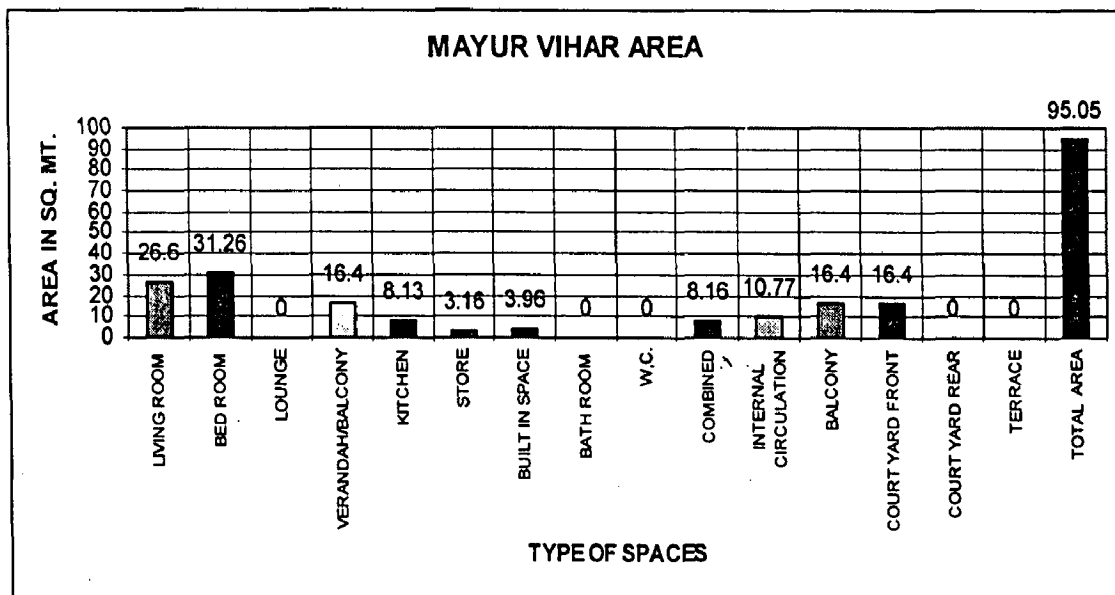


FIG. 5.6.13

COMPARATIVE ANALYSIS

Space Utilisation in Different Activities

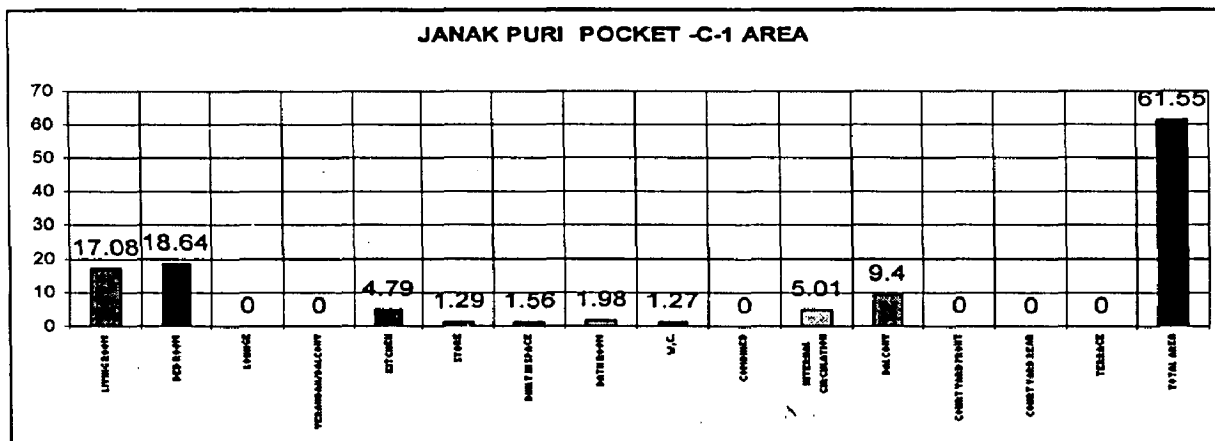


FIG. 5.6.14

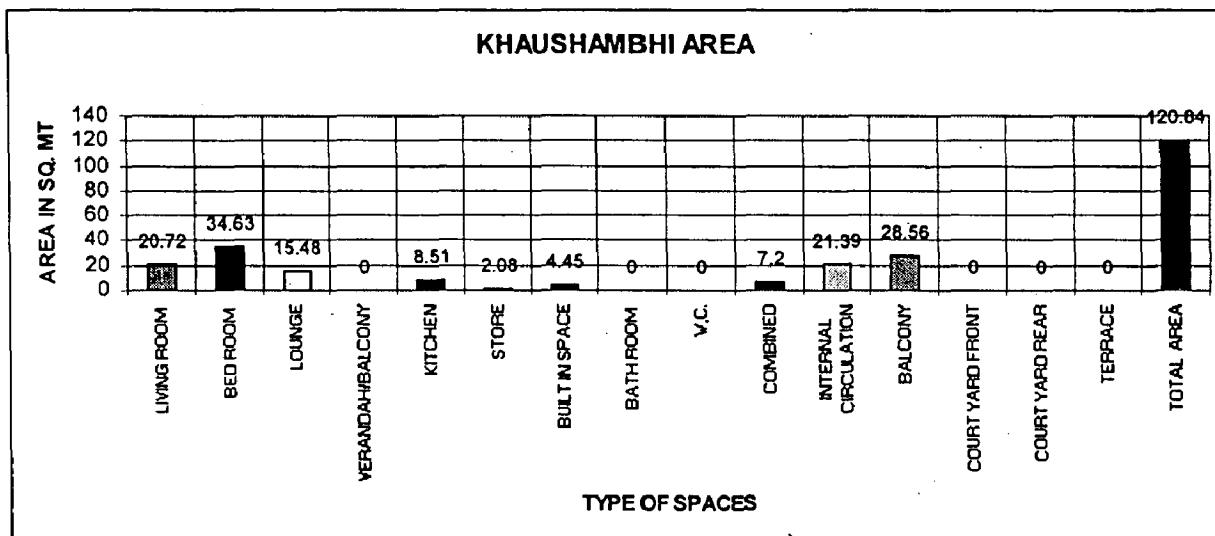


FIG. 5.6.15

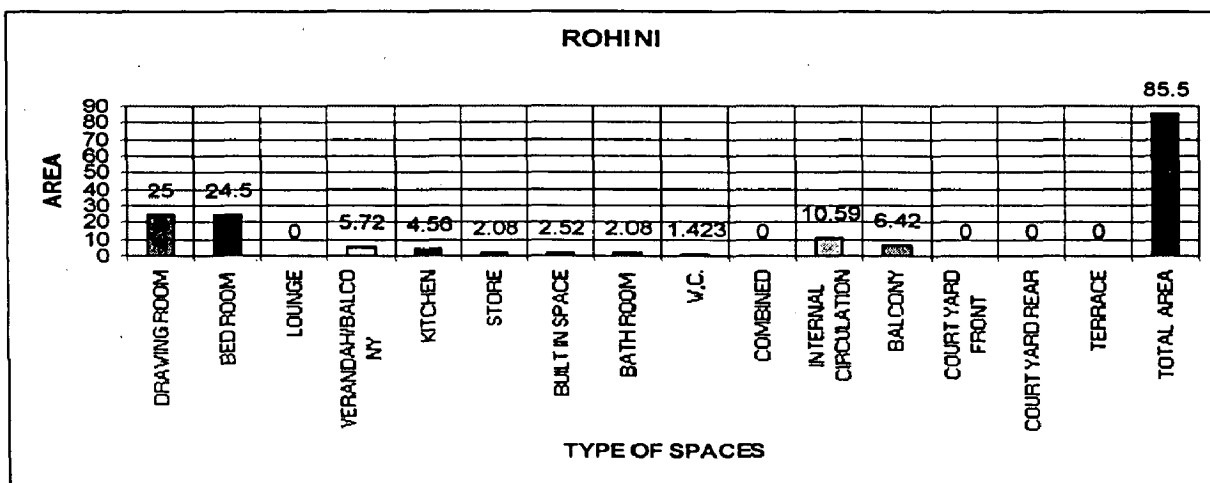


FIG. 5.6.16

COMPARATIVE ANALYSIS

Area and Percentage Ratio

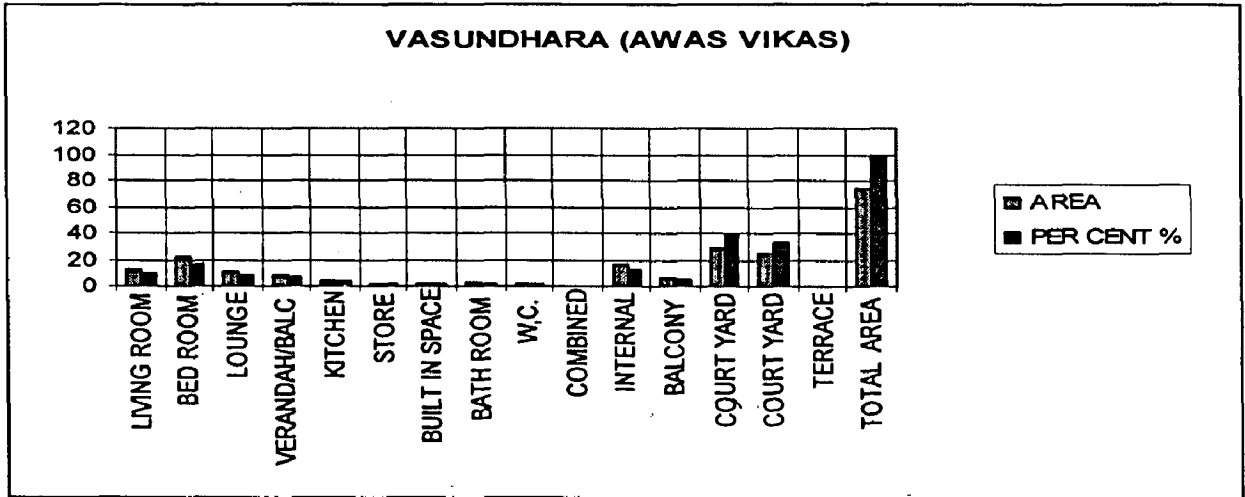


FIG. 5.6.17

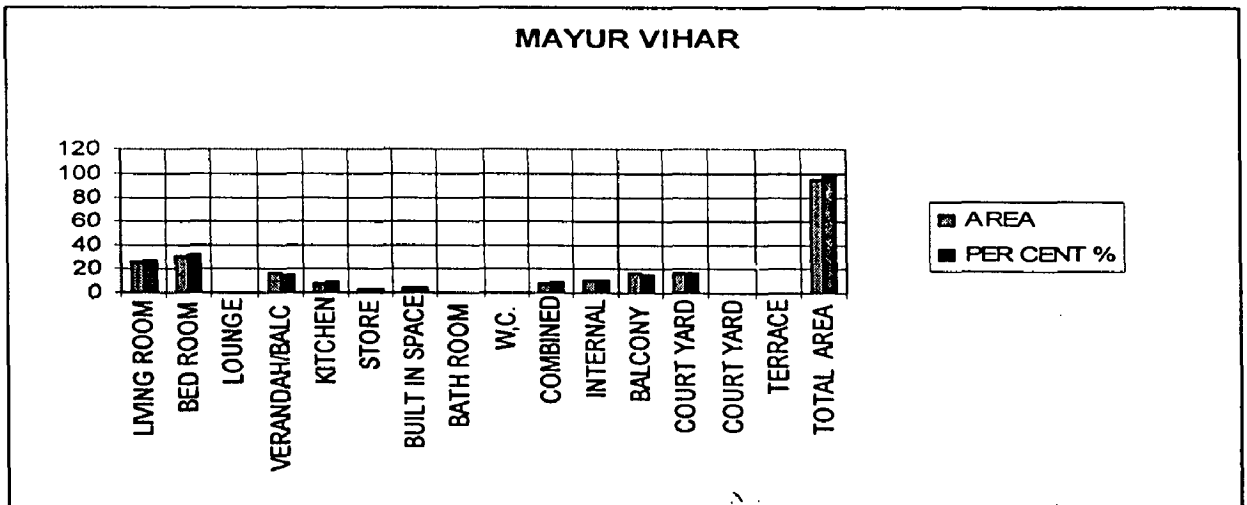


FIG 5.6.18

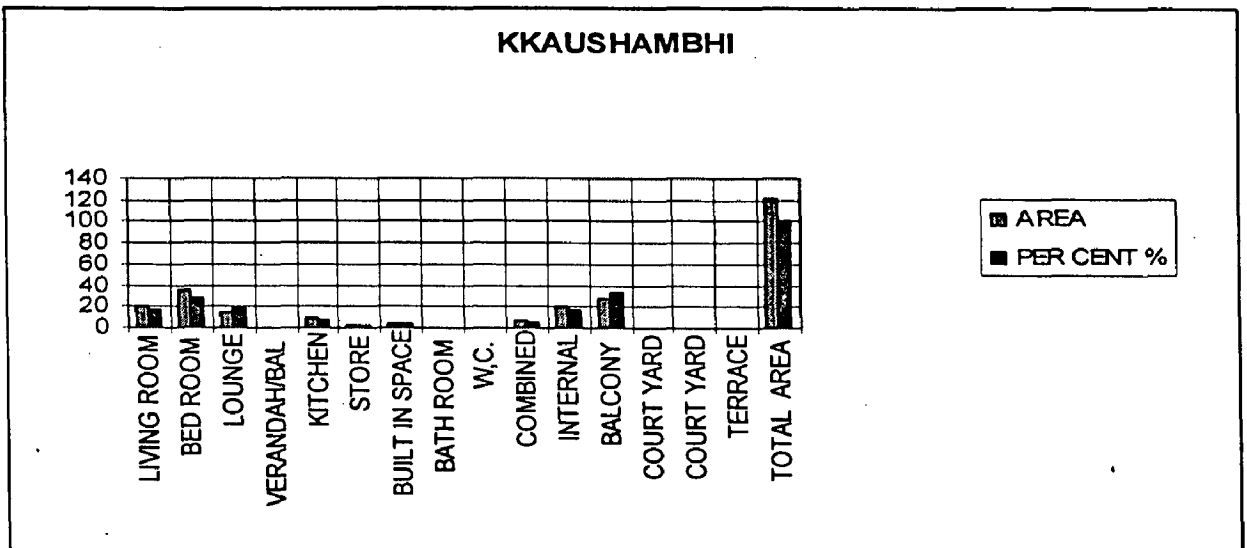


FIG. 5.6.19

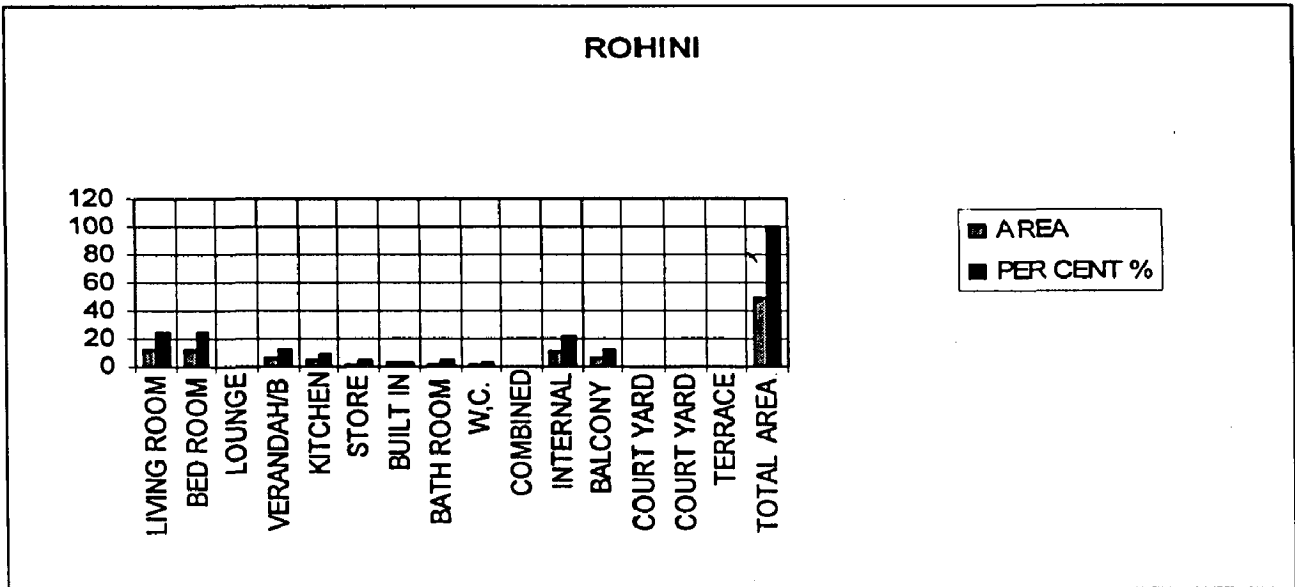


FIG 5.6.20

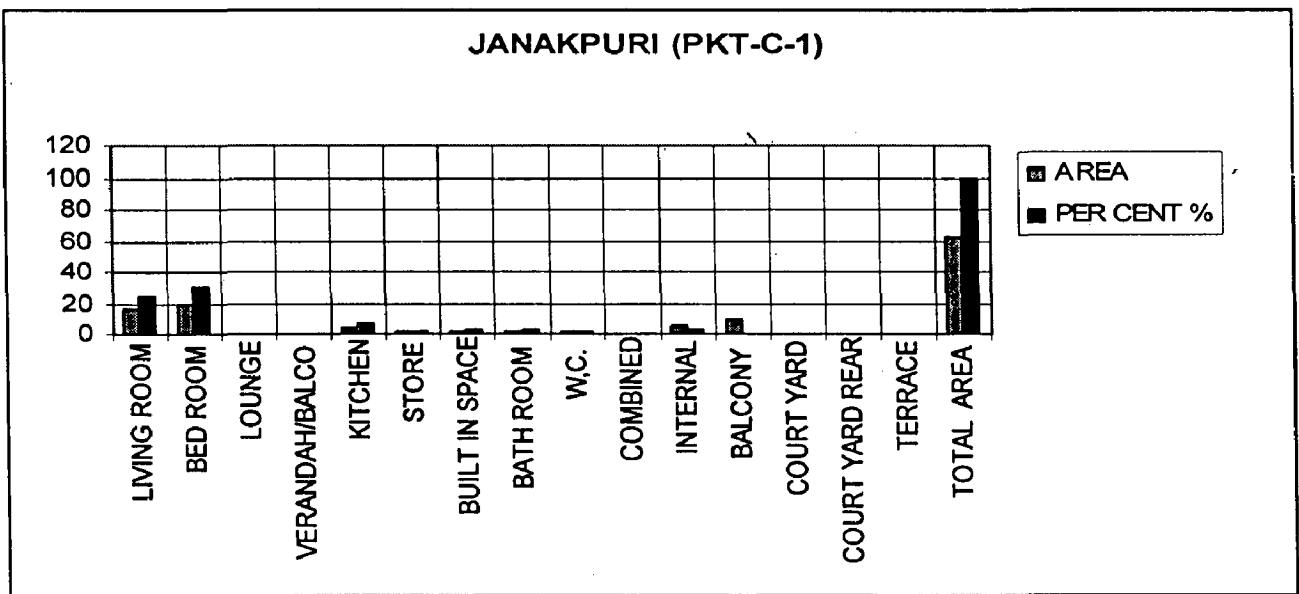


FIG. 5.6.21

COMPARATIVE ANALYSIS

People Opinion about Different Spaces and Activities

	LOCATIONS	GOOD (%)	SATISFACTORY(%)	NO INTERACTION (%)
1	VASUNDHARA (AWAS VIKAS)	40	50	10
2	MAYUR VIHAR	70	25	5
3	JANAK PURI PKT. C-1	40	50	10
4	KAUSHAMBHI	80	15	5
5	ROHINI	45	40	15

TABLE 5.6.9

SOCIAL AND CULTURAL INTERACTION (D.U. AND CLUSTER LEVEL)

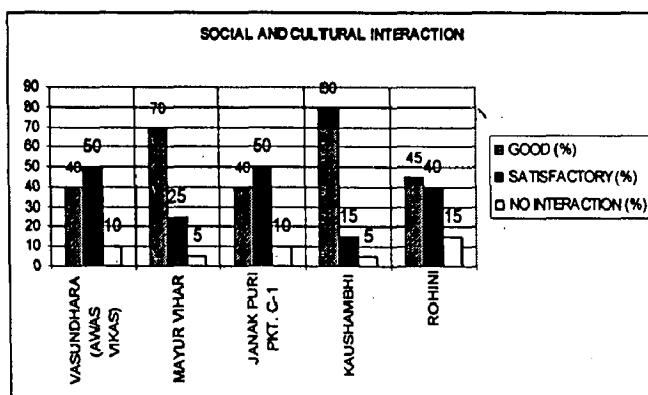


FIG. 5.6.22

	LOCATIONS	GOOD (%)	SATISFACTORY (%)
1	VASUNDHARA (AWAS VIKAS)	90	10
2	MAYUR VIHAR	60	30
3	JANAK PURI PKT. C-1	40	40
4	KAUSHAMBHI	75	25
5	ROHINI	20	80

TABLE 5.6.10

INTERNAL CIRCULATION IN LOCALITY

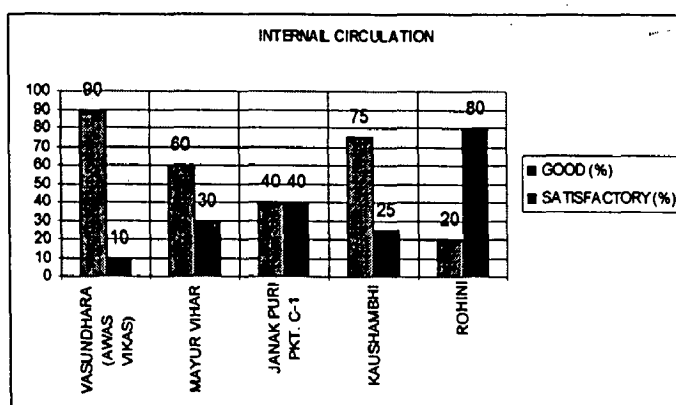


FIG. 5.6.23

COMPARATIVE ANALYSIS

People Opinion about Different Spaces and Activities

	LOCATIONS	SUFFICIENT (%)	NOT SUFFICIENT (%)
1	VASUNDHARA (AWAS VIKAS)	80	20
2	MAYUR VIHAR	40	60
3	JANAK PURI PKT. C-1	30	70
4	KAUSHAMBHI	80	20
5	ROHINI	65	35

TABLE 5.6.11

OPEN SPACES

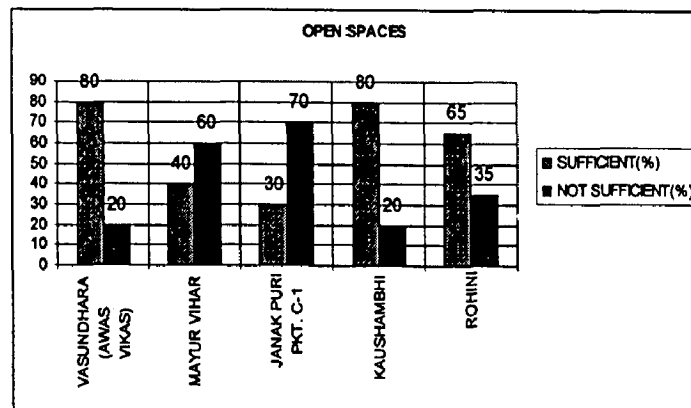


FIG. 5.6.24

	LOCATIONS	LIKE (%)	DISLIKE (%)
1	VASUNDHARA (AWAS VIKAS)	70	30
2	MAYUR VIHAR	65	35
3	JANAK PURI PKT. C-1	60	40
4	KAUSHAMBHI	85	15
5	ROHINI	70	30

TABLE 5.6.12

CLUSTER DESIGN

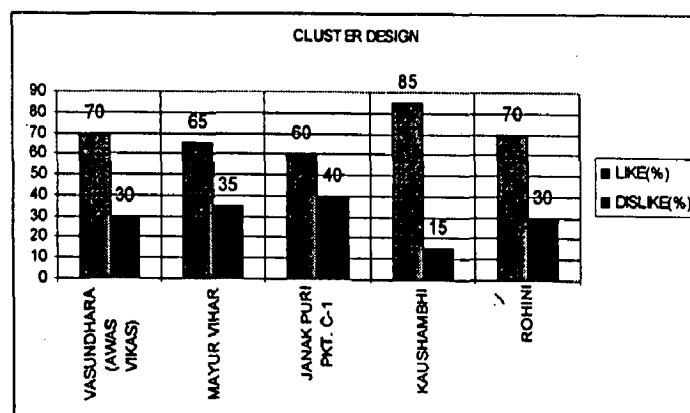


FIG. 5.6.25

COMPARATIVE ANALYSIS

People Opinion about Different Spaces and Activities

	LOCATIONS	COURTYARD (%)	VERANDAH (%)	ON ROAD (%)	GARRAGE (%)	SPECIFIED AREAS (%)
1	VASUNDHARA (AWAS VIKAS)	10	0	80	0	10
2	MAYUR VIHAR	5	0	75	0	20
3	JANAK PURI PKT. C-1	20	0	80	0	0
4	KAUSHAMBHI	0	0	20	0	80
5	ROHINI	15	0	85	0	0

TABLE 5.6.13 VEHICLES PARKING

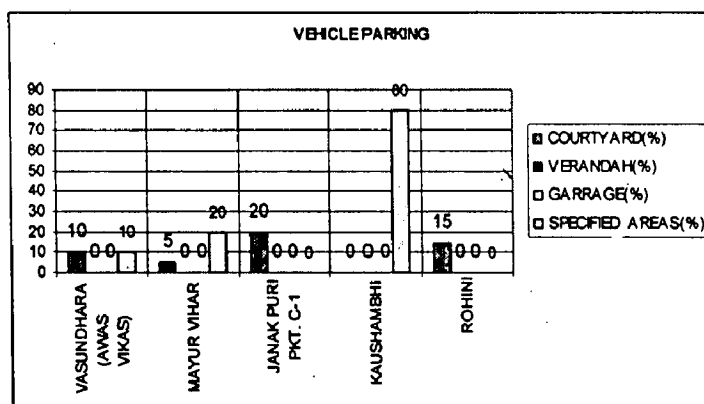


FIG. 5.6.26

	LOCATIONS	LIKED (%)	DISLIKED (%)
1	VASUNDHARA (AWAS VIKAS)	70	30
2	MAYUR VIHAR	75	25
3	JANAK PURI PKT. C-1	40	60
4	KAUSHAMBHI	85	15
5	ROHINI	40	60

TABLE 5.6.14 DWELLING UNIT DESIGN

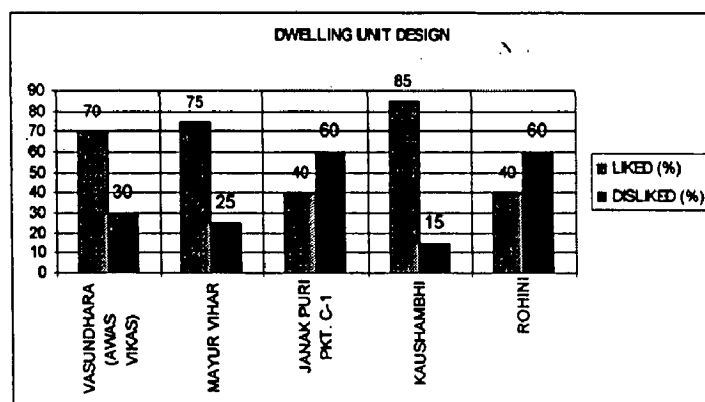


FIG 5.6.27

COMPARATIVE ANALYSIS

People Opinion about Different Spaces and Activities

	LOCATIONS	YES (%)	NO(%)
1	VASUNDHARA (AWAS VIKAS)	20	80
2	MAYUR VIHAR	55	45
3	JANAK PURI PKT. C-1	10	90
4	KAUSHAMBHI	80	20
5	ROHINI	25	75

TABLE 5.6.15 STORAGE SPACE

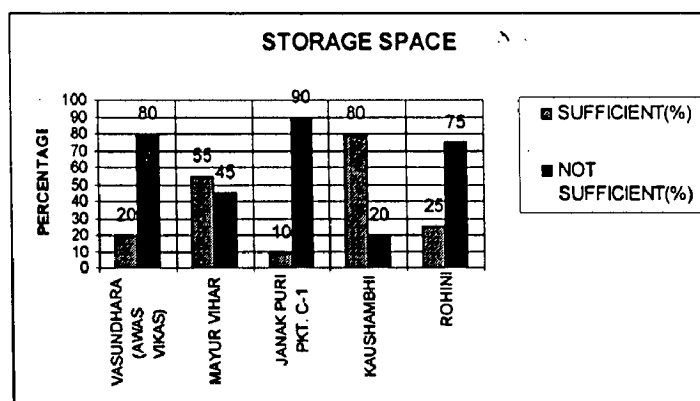


FIG. 5.6.28

	LOCATIONS	SATISFIED (%)	DIS SATISFIED (%)
1	VASUNDHARA (AWAS VIKAS)	75	25
2	MAYUR VIHAR	75	30
3	JANAK PURI PKT. C-1	40	60
4	KAUSHAMBHI	90	10
5	ROHINI	30	70

TABLE 5.6.16 PRESENT AREA SATISFACTION

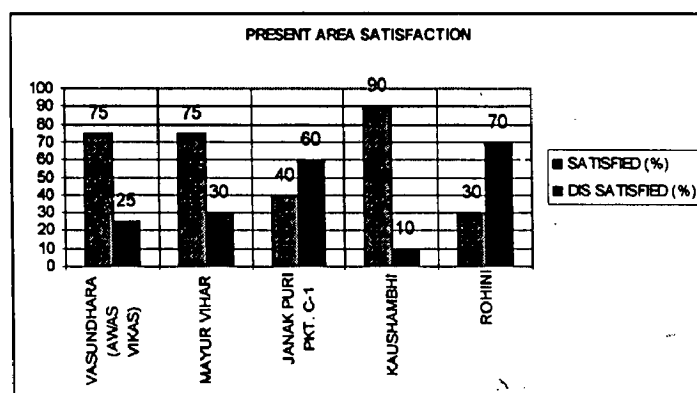


FIG. 5.6.29

COMPARATIVE ANALYSIS

	LOCATIONS	DWG. ROOM	BED ROOM	LOUNGE	KITCHEN	STORAGE	BUILT IN SPACE	OPEN SPACES
1	VASUNDHARA (AWAS VIKAS)	15	30	30	10	70	55	10
2	MAYUR VIHAR	10	25	60	40	30	20	60
3	JANAK PURI PKT. C-1	60	60	70	40	50	60	75
4	KAUSHAMBHI	5	10	5	0	20	20	10
5	ROHINI	60	70	40	60	50	40	80

TABLE 5.6.17 Additional Space Requirement

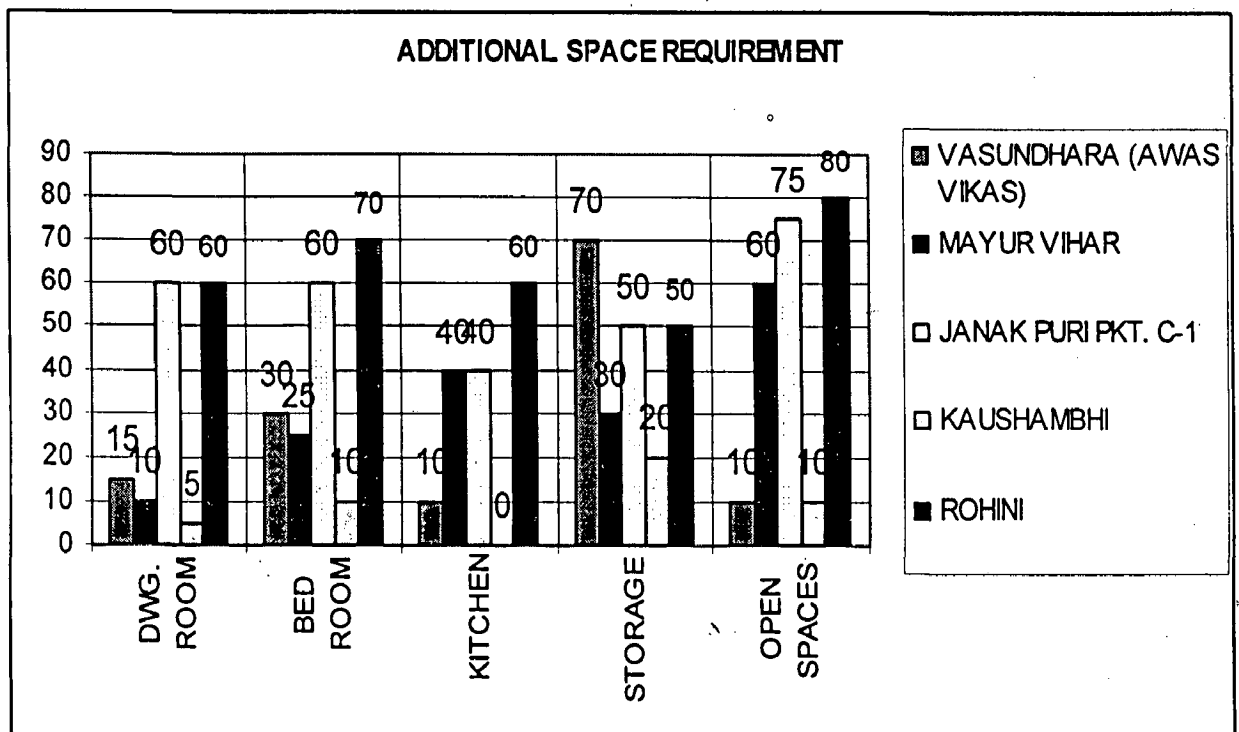


FIG. 5.6.30

COMPARATIVE ANALYSIS

ADDITION AND ALTERATION

	LOCATIONS	MAJOR (%)	MINOR (%)	NOT DONE (%)
1	VASUNDHARA (AWAS VIKAS)	40	33	27
2	MAYUR VIHAR	14	33	53
3	JANAK PURI PKT. C-1	53	40	6
4	KAUSHAMBHI	0	20	80
5	ROHINI	60	30	10

TABLE 5.6.18
ADDITON AND ALTERATION

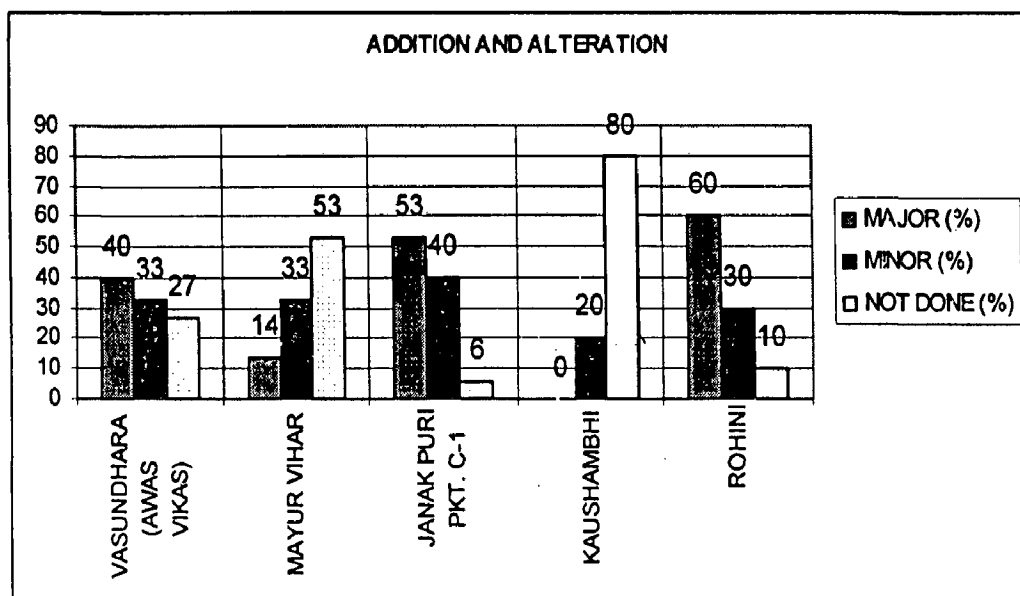


FIG. 5.6.31

COMPARATIVE ANALYSIS

Additional Space Requirement in Surveyed Areas

	LOCATIONS	DWG. ROOM	BED ROOM	KITCHEN	STORAGE	OPEN SPACES
1	VASUNDHARA	15	30	10	70	10
2	MAYUR VIHAR	10	25	40	30	60
3	JANAK PURI PKT. C-1	60	60	40	50	75
4	KAUSHAMBHI	5	10	0	20	10
5	ROHINI	40	70	60	50	80

TABLE 5.6.19

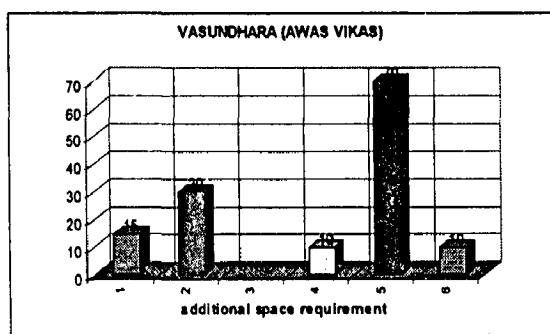


FIG . 5.6.32

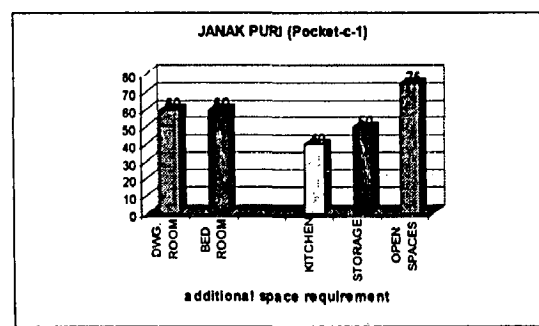


FIG 5.6.33

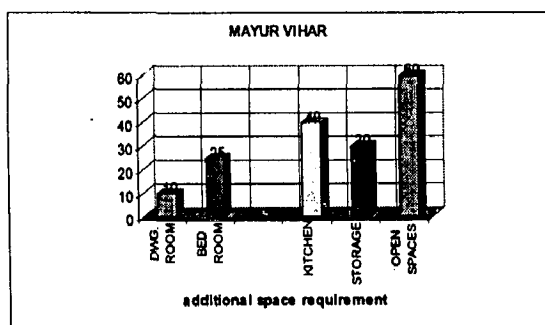


FIG. 5.6.34

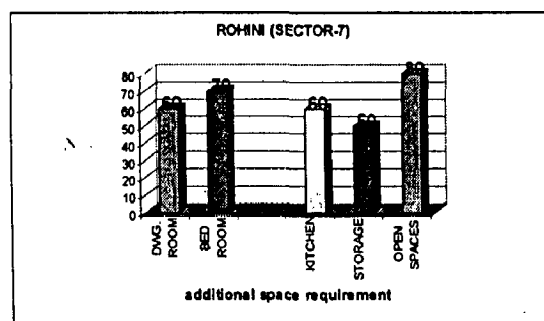


FIG. 5.6.35

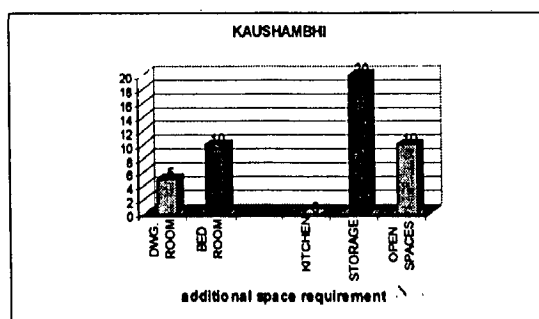


FIG 5.6.36

5.7 OBSERVATIONS

5.7.1 LIVING AREAS :

5.7.1.2 Drawing room:-

The drawing room in the surveyed areas is mostly used for restricted activities like entertaining guests, watching T.V. studying, sleeping and some special functions. The sizes of this room varying with the design from 12.0 sq.m. to 26.0 sq.m. the great variation is basically due to omission of separate circulation space and including the lounge space within the drawing room. Which is not commonly liked by the people, since the circulation space is added to the drawing room, the access to the kitchen and toilet is through the drawing room which caused a great dissatisfaction amongst the occupants.

5.7.1.2 BED ROOM:

Although bed room is a place to take rest sleep and have privacy but it is found that this is the place which has a sort of multi-usage. The bed rooms are most actively used for all sort of house hold activities. Like live storage, dining, study, gossiping, major circulation, in addition to relaxing and sleeping etc. The size of this room also varies from 9.00 sq. mts. to 17.0 sq. mts. But at most of the places the area is provided in between 15 sq.mts. This is quite adequate.

5.7.1.3 Combined Drawing and Dining Lounge

It has observed in mayur vihar and in janak puri Combined drawing and dining is provided so the room size is bigger but internal circulation and privacy is not functional and efficient. People are not satisfied with this type of arrangement of combined lounge. By this carpet area is becomes more but usable space has reduced. It has observed People preferred separate spaces for drawing and dining.

5.7.2 SERVICES AREAS:-

5.7.2.1 kitchen: The kitchen is basically used for cooking, live cooking storage, cutting vegetables, occasional dining etc. the sizes provided vary from 4.56 to 8.15 sq.mts it has observed that most of the people living in these dwelling units are not satisfied with kitchen size less than 4 sq.mt.. Dish washing and location of working platform in many housing is not appropriate .particularly housing made by govt. have a problem of storage in kitchen. In some areas location of kitchen is not suitable to serve the all rooms equally.

5.7.2.2 Bath: - The basic activities performed here are bathing and washing clothes. The sizes provided are from 1.8 to 2.47 sq.mts. Rear court yard is provide on ground floor, the washing of clothes is occasionally extended to rear courtyards also but at first floor it becomes difficult if the size of balconies are smaller i.e. les than 2 mtrs is becomes inadequate for performing both the activities. In mayur vihar and kaushambhi toilets have combined bath and w.c. and an additional toilet is attached with the bed rooms. So people have more space for washing the clothes here.

5.7.2.3 W.C. - The sizes very from 1.08 sq.m to 1.43 sq m. the reduction of size below 1.2 sqm. has caused of dissatisfaction amongst people.

5.7.2.4 Verandah/Balcony – Another multi-usage space.

Varying in size from 4.71 to 8.51 sq .m . The reduction in size has caused great amount of dissatisfaction. Min. area of 4 sq.mts is preferred for verandah /balcony. At most of the places the verandahs are covered or converted in the enclosed space.

5.7.2.5 Storage and Built –in spaces:-

There being different kind of storages in the house, it is essential to have sufficient provision for such kind of storages. Omission of storage space which caused the forced miss use of spaces specified for the other function of the house-hold. The stores at Most of the places have been either completely omitted or the provision is drastically reduced. The prevailing

sizes are 1.2 sq.mts. to 4.47 sq.m. no where store is provided that has caused a very high degree of dissatisfaction. The lack of built-in storage space has also affected the other spaces, as the dead storage is made in some corner of the house. Although built-in storage spaces have been provided but these are not able to full fill the needs of occupants which forced people to make some alternations to increase the storage capacity..

5.7.2.6 Circulation Lobby / Lounge:- The internal circulation within the dwelling units is provided in the two distinct ways .

- (i). Separate circulation space.
- (ii) Circulation within the room. In the first case the space is used as a multi-purpose space.

Multiple activities are performed here e.g.-House-hold circulation, dining gossiping, living, cutting, vegetables, sleeping, drying clothest etc. In those houses where lounge is provide with adequate size the level of privacy is higher in other living areas, as most of the H.H. activities are performed in this area. In the second case the circulation in within living areas i.e. either drawing room or bedroom, which is further cutting down the spaces within the living areas and also the level of privacy is reduced.

5.7.3 OPEN SPACE (D.U. LEVEL).

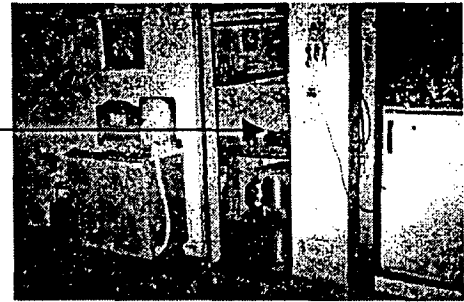
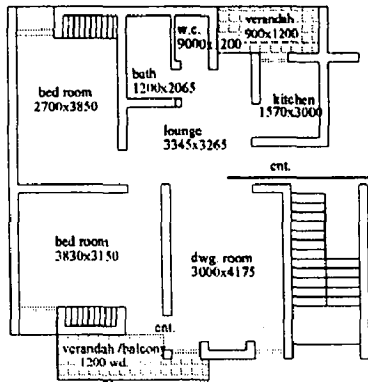
Front courtyard has high intensity of usage, depending upon the location. Only in vasundhara front and rear court yard has provided. Mixed kind of activities takes place there. The basic activities performed are welcoming quests, relaxing, kids play, parking vehicles, special functions, Females gossiping and for dead storage etc. Rear courtyard also has high and moderate usage depending upon the locations. Basic activities performed are spill over activities of kitchen and bathroom. e.q. Washing clothes, drying clothes etc.

5.7.4 SOCIAL ASPECT

Social interaction among the residents is another important aspect for community living. Stair case and lift lobby provides an opportunity to the residents for interaction to each other. In khaushambhi and mayur vihar people have good interaction with their neighbors because there sufficient space is provided for stair and lift lobby. And design aspect is quite appreciable here. In other areas location and width of stair case is not appropriate that's why people have less interaction with their neighbors.

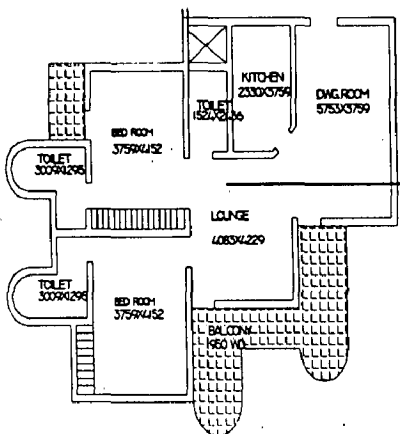
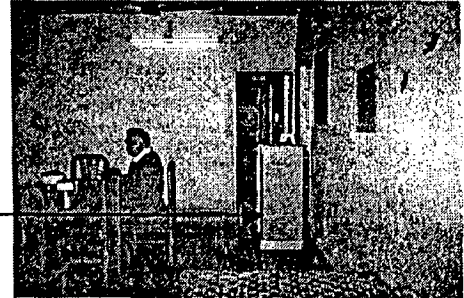
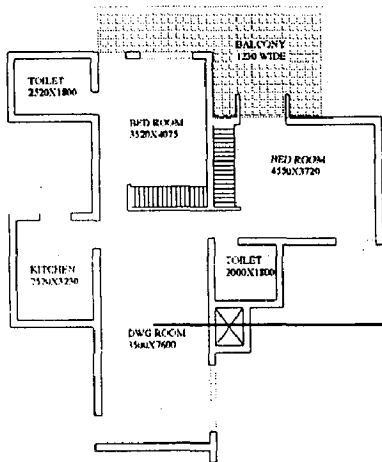
-At cluster level also observations are made in similar manner emphasizing the basic determinates e.g. topography, orientation, access, parking& open spaces etc.

5.7.5 OBSERVATION – LIVING AREAS



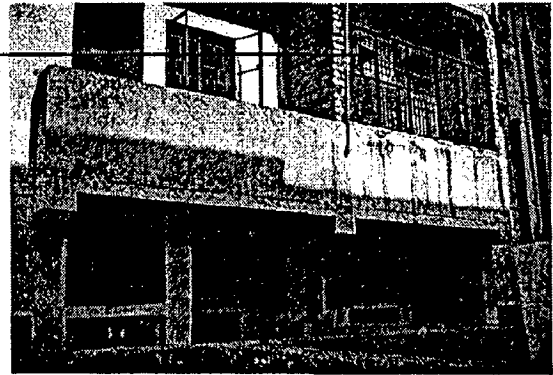
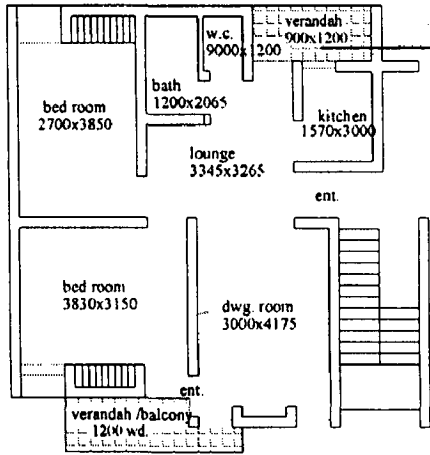
People do not prefer dwg. room and lounge combined . This type of arrangement affects the privacy and circulation efficiency

In most of the places people use dinning lounge as storage space.

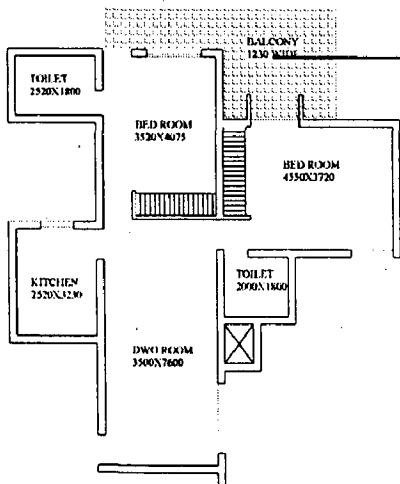


Separate provision of dwg. and lounge is more functional . It provides better privacy and circulation to other spaces.

5.7.6 OPEN SPACES –BALCONIES

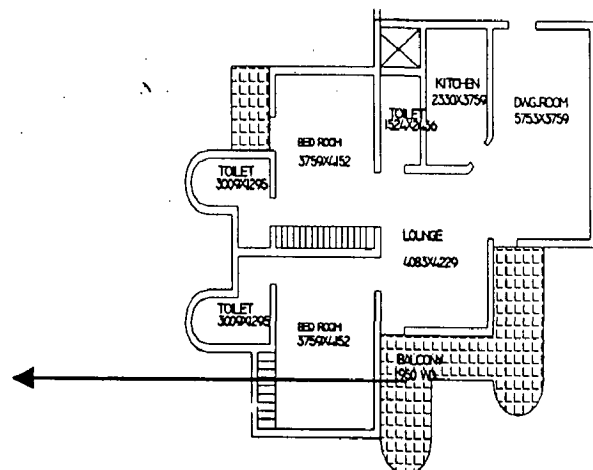


Small sizes of balconies do not use properly generally people have converted this space in to enclosed space.

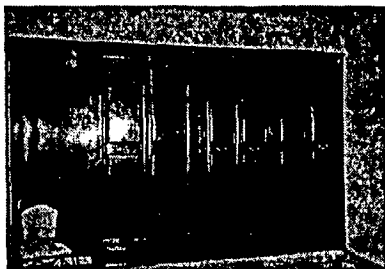


Big sizes of balconies have an advantage of gardening on upper floors.

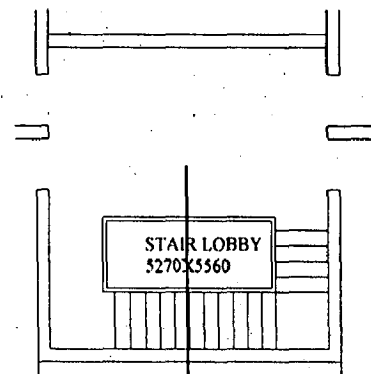
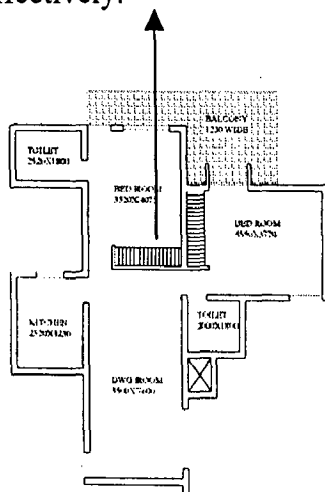
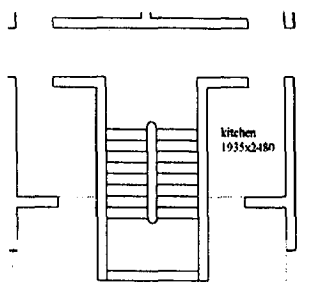
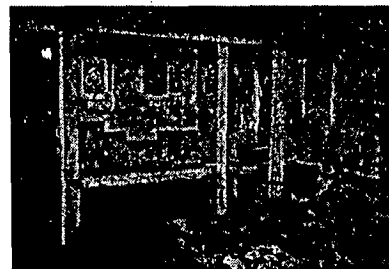
Balconies good in size attached with drawing room and dinning lounge provides additional space for welcoming guests and gossiping activities. So it is more preferable that balconies should be attached with combined spaces.



5.7.7 BUILT IN SPACE



Built in storage provided in this manner is more functional. Internal space can be used more effectively.

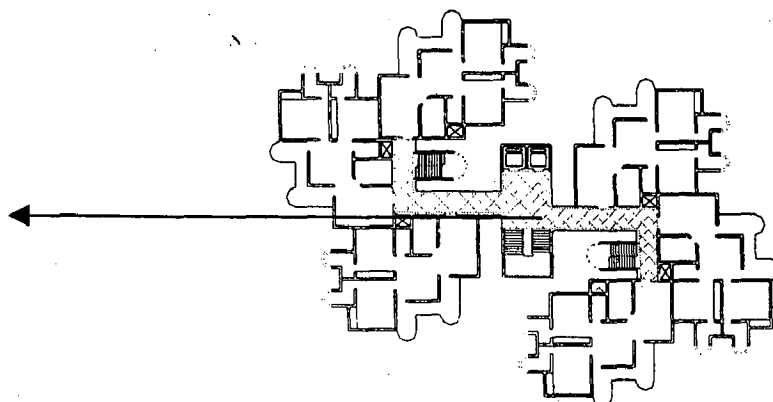


Less width of stair case and no provision of lobby space do not provide an opportunity of social interaction. It also creates the problem to carry the luggage.

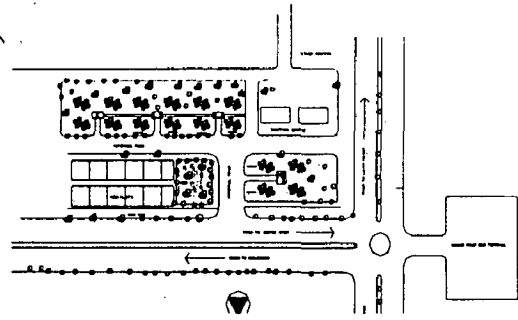
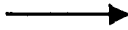
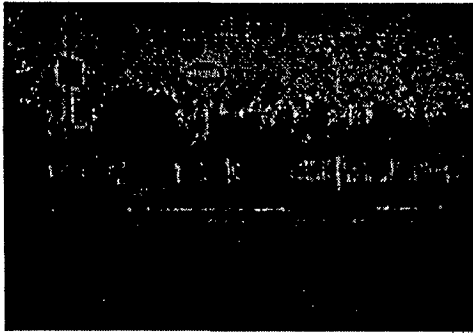


Stair case with lobby space is helpful in social interaction.

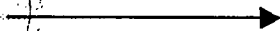
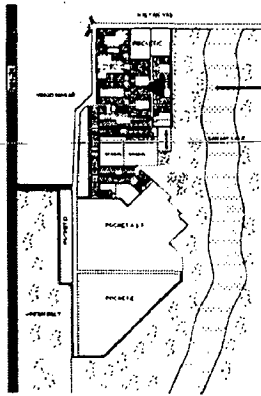
This type of arrangement of stair case and lift lobby on cluster level provides more opportunity of healthy social interaction.



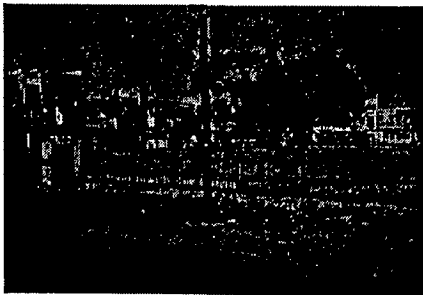
5.7.8 OPEN SPACES –CLUSTER LEVEL



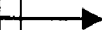
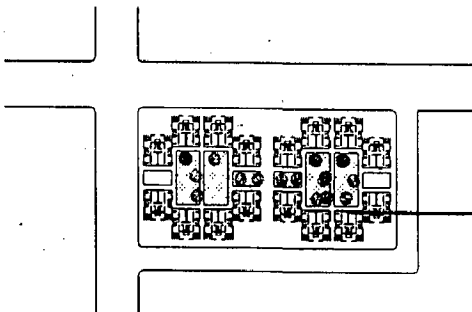
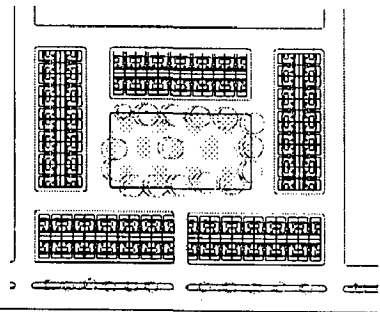
Big open space has Maintained separate identity people do prefer to use this due to privacy aspect and feeling of relax they feel there.



Open spaces provided in pockets not used properly due to privacy aspect and feeling of relax is missing there.



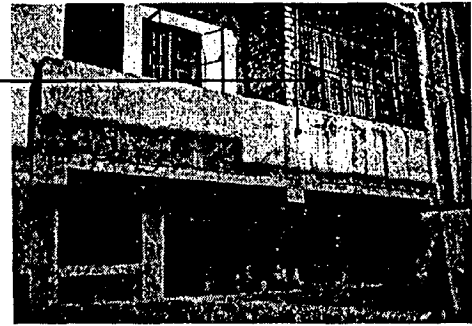
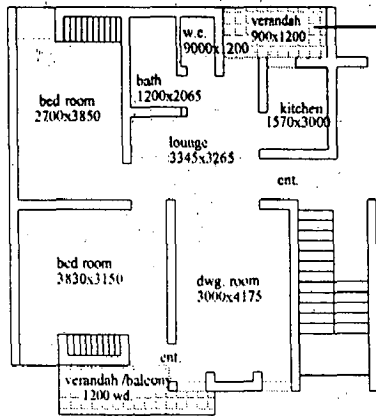
Big open spaces without proper maintenance do not full fill its purpose.



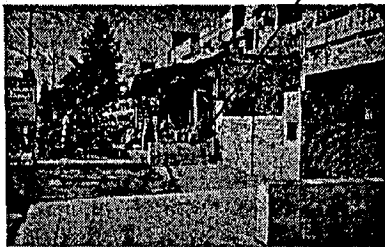
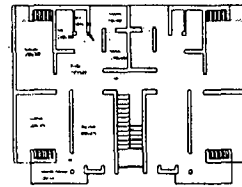
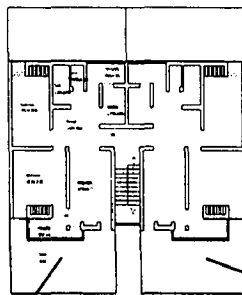
People park their vehicle around the open space .that disturb the purpose of playing of kids and recreational activities



5.7.9 ADDITION AND ALTERATION



Rear balconies has converted in enclosed space shows people required the more space in living areas



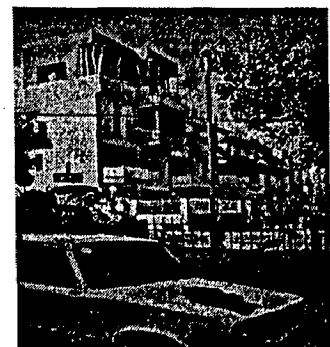
Front court yard along with main road has converted in shops



Houses along with internal roads also has addition and alteration

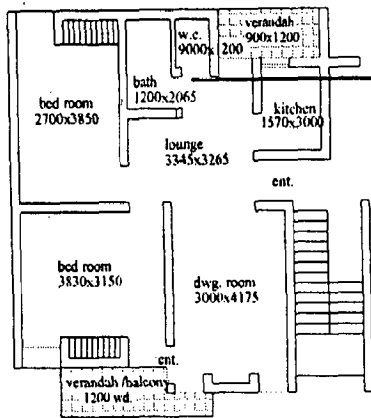


Extended balcony has converted in enclosed space is the major cause of change in built form in wrong way.

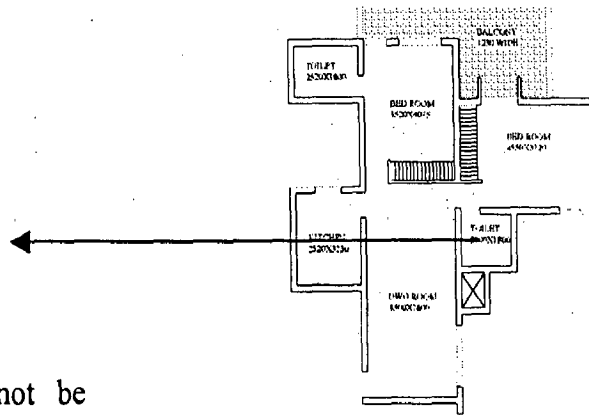
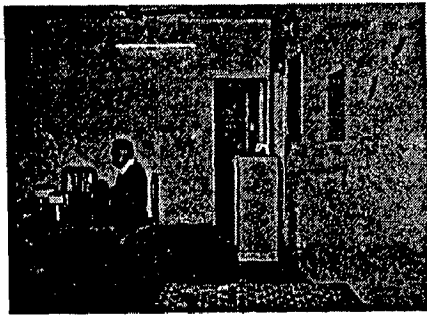


In the lack of proper legal laws people in janakpuri has added new floor on top floors

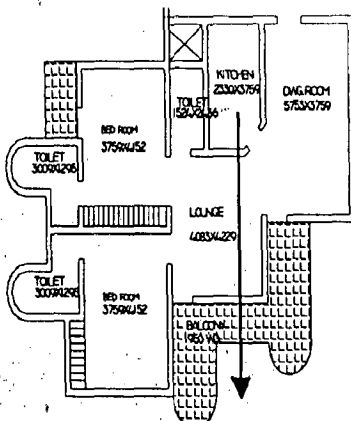
5.7.10 SERVICE AREAS



Service area is visible from the living areas here. It disturb the privacy of occupants .preferably service area should not be visible through living areas.



Opening of service areas should not be visible through living areas users prefer this aspect of privacy

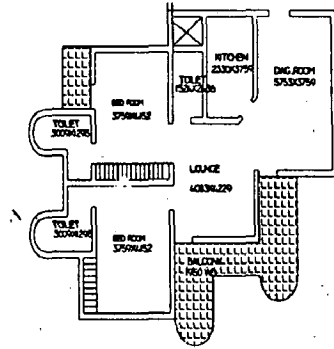
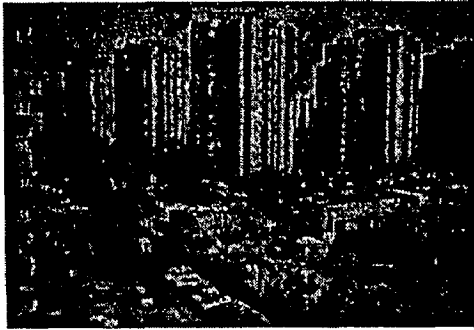


Location of kitchen so located that it can serve the all spaces equally.

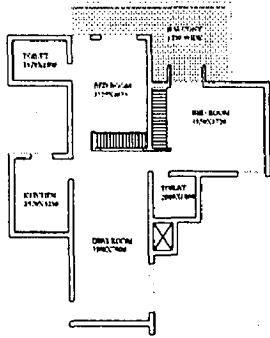


Size of kitchen should be functional and should have appropriate provision of storage.

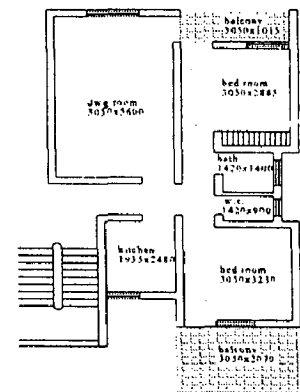
5.7.11 BUILT FORM



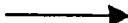
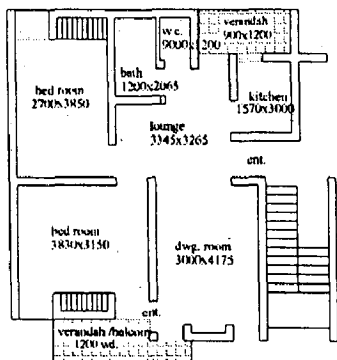
kaushambhi



Mayur Vihar



Janak Puri



Vasundhara

5.7.12 PARKING



In most of the localities people park their vehicle along with road side. In most t of the localities there is no parking space is provided for parking of vehicles. In some localities specified parking space is provided but that is not sufficient for the users need



CHAPTER -6

CONCLUSION

CHAPTER -6 CONCLUSIONS

6.1 LIVING AREAS

6.1.1 Drawing room

- Drawing room Is a space for restrictive use, limited to entertaining guests, watching T.V. study and some special functions.
- Circulation lobby included in the drawing room do not appears more functional and also affect the privacy of other areas.
- Area provided less than 12 sq.mts. is inadequate for drawing room.

(refer table no. , anthropometric study

6.1.2 Bed room

- Bed room is most actively used for all sorts of house-hold activities, like live storage, family living, dining, gossiping, major circulation, relaxing & sleeping etc.
- In vasundhara, janak puri, and rohini area provided for bed room is less than 12 sq.mts. that is quite inadequate.
- People prefer more area for bed room than the drawing room.
- Built in storage spaces provided in most of the surveyed areas not have the sufficient size and storage space which leads to misuses of the living areas.
- Major circulation is formed part of the bed rooms as the circulation lobby is missing in janak puri, mayur vihar, and rohini.
- Balcony attached with bed rooms do not have sufficient size for additional activities.

6.1.3 Internal circulation lobby/ lounge

Internal circulation lobby/ lounge is a multipurpose space, used for all sorts for Household activities, therefore people prefer circulation lobby.

- Size less than 10 sq. mt. is not sufficient for dining and other activities
- People do not prefer combined lounge with dwg. room because privacy and circulation is affected by this.

6.1.4 Verandah / balcony

- Verandah / balcony are another multipurpose space.
- Users not satisfied with less than 4 sq.mets area provided for verandah/balcony.
- At most of the place verandah/balcony is covered, which clearly shows that people want more covered space than a semi covered space.
- Places where verandah is not provided users are more satisfied as they get additional area in living areas at the cost of verandah.

6.2 SERVICE AREAS

6.2.1 Kitchen

- Kitchen is mostly used for cooking, storage and washing utensils.
- People are not satisfied with the area provided less than 4 sq.mts. for the kitchen, as it is quite inadequate to perform all the activities.
- Built-in spaces are not adequate in kitchen except kaushambhi and mayur vihar
- No provision is made for keeping the refrigerator in the kitchen that's why people use other living areas for this.

6.2.2 Bath and w.c.

- Less than 2 sq. mts. of bathroom area is found inadequate for the purpose of bath and washing clothes
- Less than 1.2 sq.mts. of W.C. area is found inadequate.

- Users are not at all satisfied with the opening of service areas directly into living areas i.e. in drawing room or bed room.

6.3 STORAGE & BUILT -IN SPACES

- Inadequate provision of storage spaces for different kinds of household storage.
- Lacking of storage and built-in spaces has caused forced misuse of living areas.
- Built-in storage space in different living, bed rooms and service areas where it is very essential has not sufficient size and in some locations position of built in storage is not appropriate.
- People are forced to make additions and alterations for additional storage space to avoid the miss use of their living areas.

6.4 OPEN SPACES (D.U. LEVEL)

- Provision of front courtyard provided in vasundhara is adequate but most of the residents have converted this space in shops or using this for other purposes.
- To provision of front court yard is inadequate along with main road because people generally used this for commercial purposes.
- The boundary of these spaces is not defined at certain places.
- Area provided for enclosed rear courtyard is inadequate for other activities like washing clothes etc.
- Bigger enclosed courtyard is appreciated as there is enough potential for other activities like storage, parking, washing or drying clothes.
- Less than 3 mt. width of court yard is find inadequate

6.5 ADDITIONS AND ALTERATIONS

- Additions and Alterations in open & semi open spaces show the need for extra space for living areas, basically because of smaller areas.
- Front courtyard on ground floor in many localities has been converted in shops or being using in other commercial activities.
- Verandah is mostly covered in an illegal way which shows necessity and preference for more covered space than a semi-covered verandah.
- Complete omission of verandah and provision of equivalent space in living areas have proved to be more efficient.
- Projecting built-in cupboards along the external walls shows the need for providing the same in an organised manner.
- Scooter garage or open spaces converted into shops, shows that there is inadequate provision for convenient shopping at the cluster level.

6.5 CLUSTER LEVEL

- Inadequate provision of open spaces at cluster level.
- Inadequate provision of parking facilities in most of the areas.
- More incidental open spaces have poor usage and maintenance or unorganised extension of courtyards.
- Too many big open spaces have poor usage and poor maintenance.
- Soft open spaces at the rear of the dwelling are poorly used and maintained.
- Provision of inadequate play furniture like slides, seesaws etc.
- Sense of entrance and territoriality is missing in most of the localities.
- Inadequate shopping encouraged people to convert scooter garages into shops or making additions and alterations to convert dwelling spaces into shops.

- Clusters have been thought in isolation without any relationship to the neighbourhood.
- Clusters are not well planned that the dwelling and common space related to it are not benefited from the prevailing climatic conditions.
- Vehicular traffic crosses through the cluster particularly in vasundhara that affect the social atmosphere of the locality.

CHAPTER -7

PROPOSAL AND RECOMANDATIONS

CHAPTER-7 PROPOSAL AND RECOMMENDATIONS.

7.1 DWELLING UNIT LEVEL.

7.1.1 drawing room

- Must be an independent room, so located to provide privacy to the service areas.
- The circulation area shall not be included in this area.
- Min. area for drawing room must not be less than 12 sq.mts with at least one side dimension of 3.6 mts.
- For improved standard min. area for this room shall be 14 sq.mts with atleast one side dimension of 3.6 m.

7.1.2 Bed room

- Must be bigger and must have appropriate location of openings to maintain the proper privacy.
- Min. width for this room must not be less than 3 mts. and the area shall not be Less than 12 sq. mts.
- Service areas must not have access through bed rooms.
- Sufficient built- in storage spaces must be provided in an organised manner in all bed rooms.
- At least in one bed room study space must be provided as a part of built form.
- flexible shape and size of bed rooms can provide more flexibility and space can be used more effectively according the requirement of the family .

7.1.3 Circulation lobby/lounge:

- Must be provided between living areas and service areas to have better privacy and efficient usage of the living areas.
- For efficient and multipurpose utility of this space min. width of any circulation

Lobby must not be less than 2.5 mts.

- Minimum area for lounge must be provided min. 10 sq.mt.
- Provision of adequate storage for daily use articles must be provided in lounge
- For better circulation and for efficient use of lounge drawing room and lounge must not be combined each space must have separate identity
- dwg and lounge must be in L shape

7.2 VERANDAH

- Could be avoided and the equivalent area can be added to the living areas as the users have tendency to cover all the semi open spaces provided.
- If at all, verandah, is to be provided-min. area must not be less than 4 sq.mts and min. width must not be less than 1.2 mts

7.3 BALCONY

- To avoid balconies converted as an enclosed space location of balconies must be changed on alternate floors.
- Both bed rooms must be served by single balcony bigger in size.
- Drawing room must have separate balcony it can be used as additional space for seating and gossiping.
- Width of any balcony must not be less than 1.5 mt.
- Area provided for the balcony must not be less than 4 sq. mt.

7.4 SERVICE AREAS

7.4.1 Kitchen

- Minimum area provided for kitchen must not be less than 4 sq. mts and min. width of any kitchen must not be less than 1.8 mts.
- Sufficient built-in storage spaces must be provided in the kitchen

- Location of kitchen must be at the place from where it could serve both dwg and dining

7.4.2 Bath

- Area must not be provided less than. 1.8 sq.mts.
- for washing the clothes additional arrangements for storage of shops and detergents must be there and size must be bigger one .

7.4.3 W.C.

- Area must not be provided less than 1.2 sq.mts.
- Services areas must not directly open into the living areas so as to have more privacy and better utility of living areas.
- W.C must be so located to achieve the easy approach from dwg, room

7.4.4 Additional Toilet

- An additional combined toilet must be attached at least one bed room to provide the privacy to female members and personal use.

7.5 STORAGE & BUILT-IN SPACES

- Adequate storage spaces for different kinds of house-hold storage must be provided.
- A separate storage space in flexible shape and built-in storage must be provided.
- Loft. Over the areas where the height could be reduced must be provided. .e.g. circulation lobby, toilet, above the cup boards
- Adequate shelves for storage in the kitchen must be provided.

7.6 OPEN SPACES (D.U. LEVEL)

- If front court yard is essential than adequate provision of front courtyard with the defined boundaries must be made.

- Adequate size of enclosed rear court yard must be provided so as to have better sunlight and ventilations.
- Min. width for any courtyard must not be less than 3 mts.
- Balconies must have an area of 4 sq. mts.
- It is preferable that one balcony must be provided with living and lounge area extra gathering and other functions can take place here.

7.7 ADDITIONS AND ALTERATIONS.

- Adequate living areas with the flexibility to accommodate extra members in a nuclear family must be provided.
- The dwelling units must be designed with the possibility of future expansion in an organized manner, and there expansion limits must be regulated and monitored.
- Adequate built-in storage must be provided in a planned manner to avoid unorganized projections of built-in cupboards.
- To avoid commercialization of flats provision of front court yard must not be made along with the main roads of the locality.
- To avoid conversion of balconies in form of enclosed space or additional space position of balconies must be changed at alternate floors or double heights balconies must be provided.

7.8 CLUSTER LEVEL

- An attempt is made to apply the above stated recommendations. Proposed alternatives of dwelling units are given in the improved form, incorporating the stated recommendations.
- Adequate provision for various types of open space must be made.
- Incidental spaces must be minimized in a cluster design.

- There must be more number of tot-lots or smaller open spaces and one or two bigger open spaces for organized play and community functions etc.
- Soft open spaces on the rear of the dwellings must be avoided.
- Adequate provision for hard surfaces and play furniture's must be made in the open spaces with a proper landscaping.
- Open spaces must be properly guarded to avoid animals to enter into these spaces and also these spaces must be adequately maintained.
- Through traffic movement in cluster must be avoided to safe guard children playing outside the dwellings.
- Since of entrance and territoriality must be there in a cluster.
- Only pedestrian movement must be permitted just out side the dwellings.
- Sufficient parking space must be provided.
- Devices must be applied to discourage traffic movement on pedestrian path ways.
- Cluster must not be thought in isolation without any relationship to the complete neighborhood.
- Clusters must be so planed that the dwellings and the common spaces related to it must be benefited from the prevailing climatic conditions.
- Adequate provision for convenient shopping must be provided to avoid unauthorized additions and alterations for converting dwelling spaces into shops.
- As the spaces at cluster level are governed by the master plan and also the activities performed at cluster level are much more limited than at dwelling unit level. Hence at cluster level general recommendations are given.

A bigger circulation lobby can be much more useful and can be used as active activity space

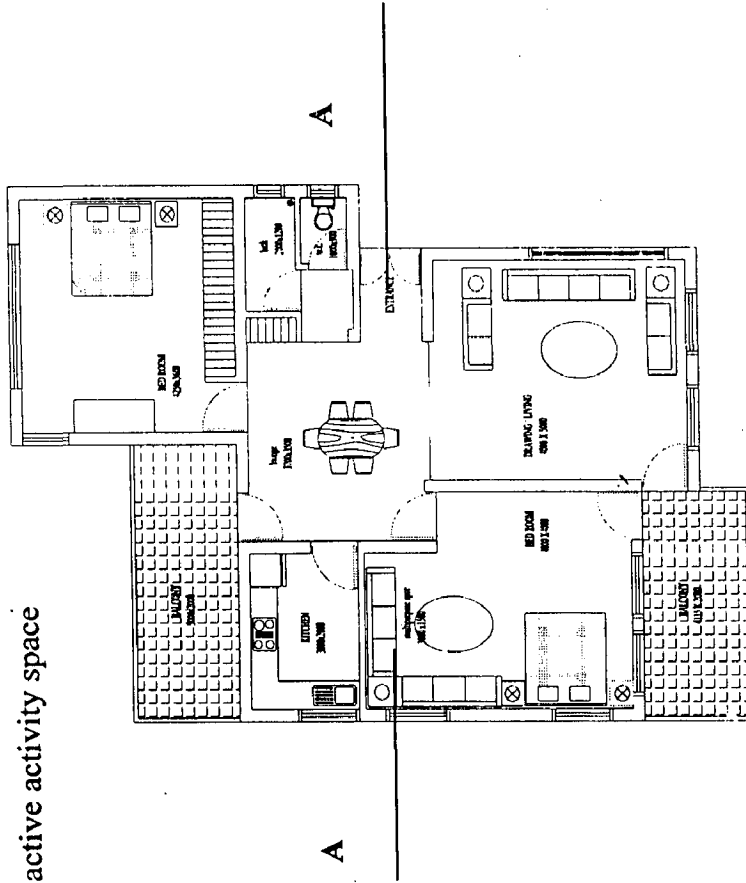


Fig. 7.3.1 PROPOSED PLAN

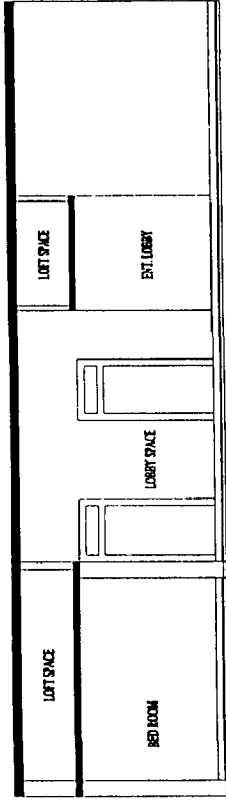


Fig.7.3.2 Section AA
Provision of lofts provide additional storage space

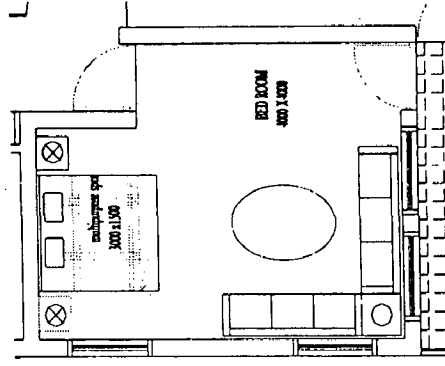


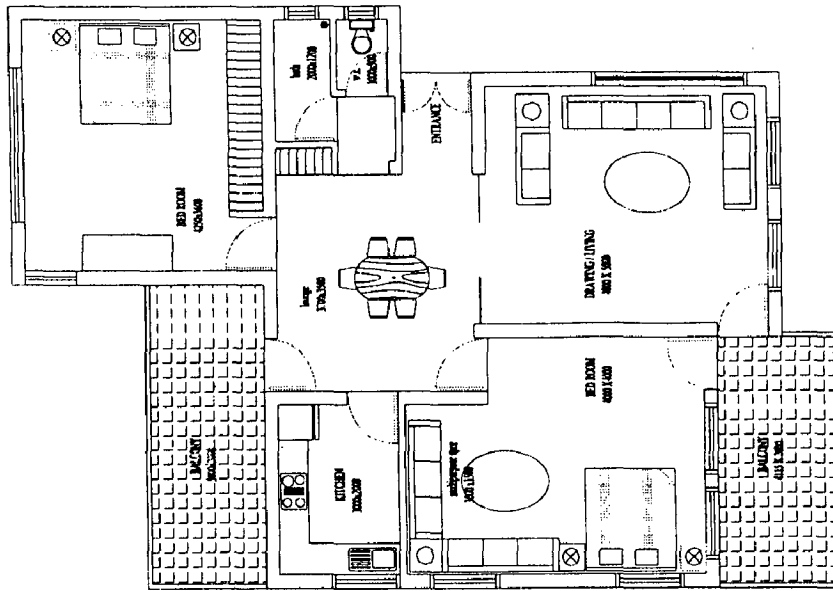
Fig.7.3.3

Flexible shape and size of bed rooms can provide flexibility in furniture arrangement. And provide more capacity for new comers in the family or some near visitor

7.3 DESIGN PROPOSAL-CONCEPTUAL PLAN

S. NO.	TYPE OF SPACES	PROPOSED PLAN	
		AREA	PER CENT %
1	DRAWING ROOM	20	16
2	BED ROOM 1	15.12	12.09
3	MULTI PURPOSE SPACE	4.5	3.6
4	BED ROOM 2	16	14.4
5	LOUNGE	12.95	10.36
6	KITCHEN	6	4.8
7	BUILT IN SPACE	2.4	1.92
8	BATH ROOM	2.4	1.92
9	W.C.	0.9	0.72
10	BALCONY	18.5	0
11	TOTAL AREA	80	100

Table 7.3.1



PROPOSED PLAN

S. NO.	TYPE OF SPACES	AREA (SQ.MT.)	PERCENTAGE (%)	RECOMMENDED
1	LIVING SPACE	51.12	46 (%)	47-50%
2	SERVICE AREA	9.3	8.37 (%)	15-20%
3	CIRCULATION AREA	13.5	12.15 (%)	10-12%
4	VERTICAL CIRCULATION	9	8.1 (%)	4-7%
5	WALLS SPACE	16.5	14.85 (%)	15-17%

Table 7.3.2

DESIGN PROPOSAL-CONCEPTUAL PLAN

proposed plan

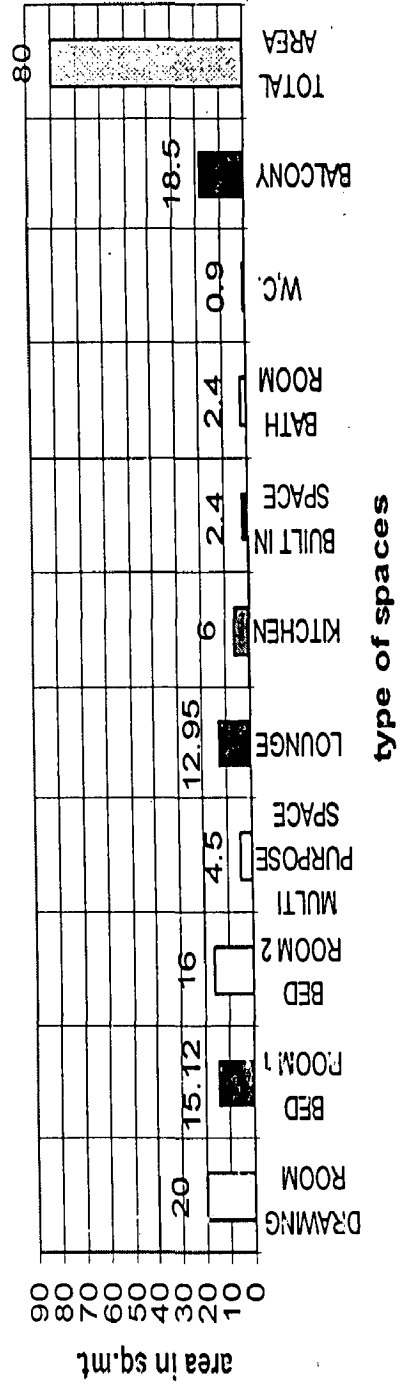


Fig 7.3.4

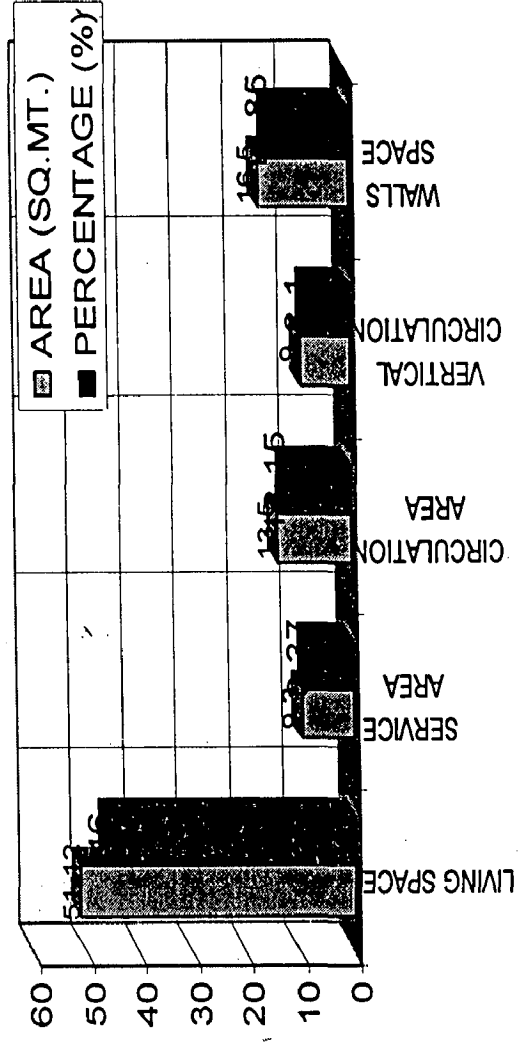


Fig.7.3.5

Position of balconies can be changed on alternate floors to improve the built form.

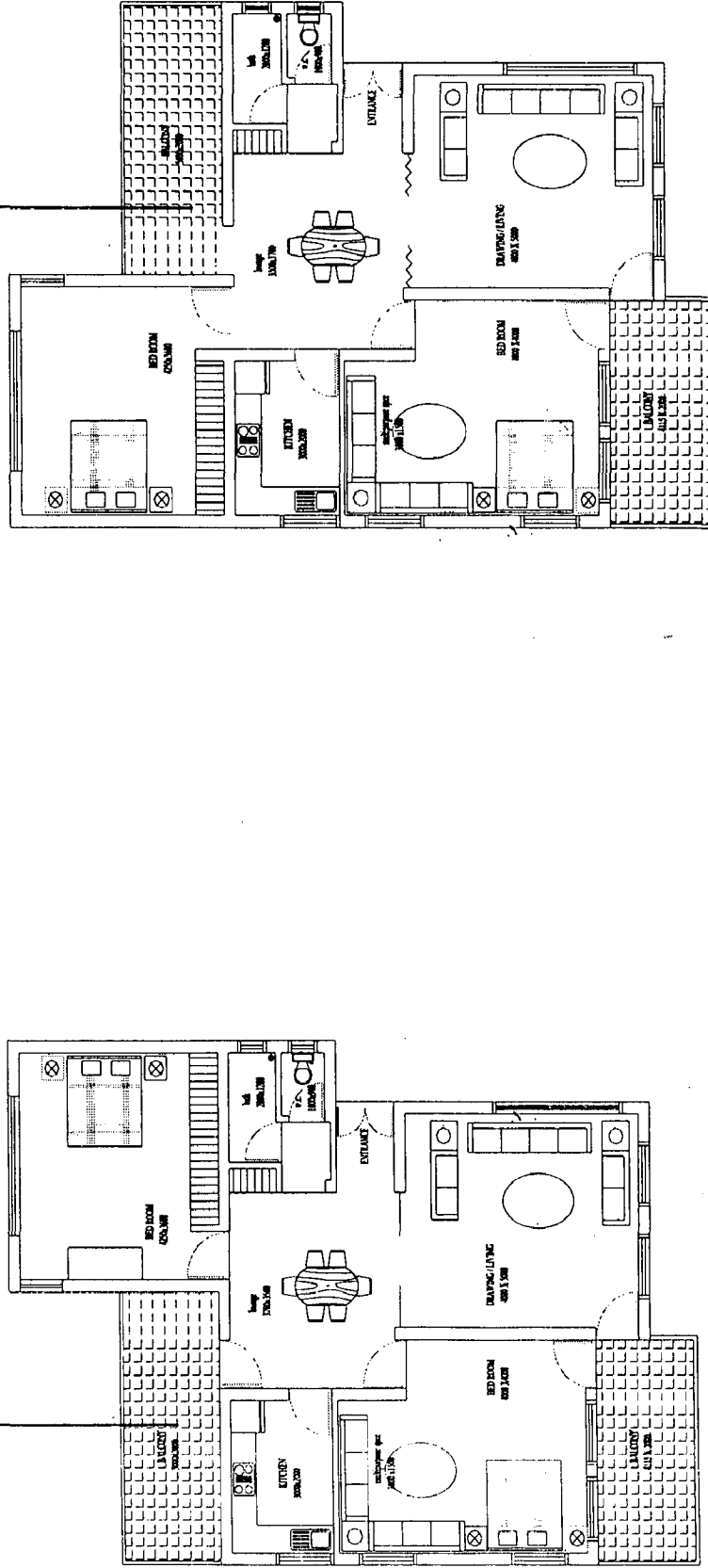
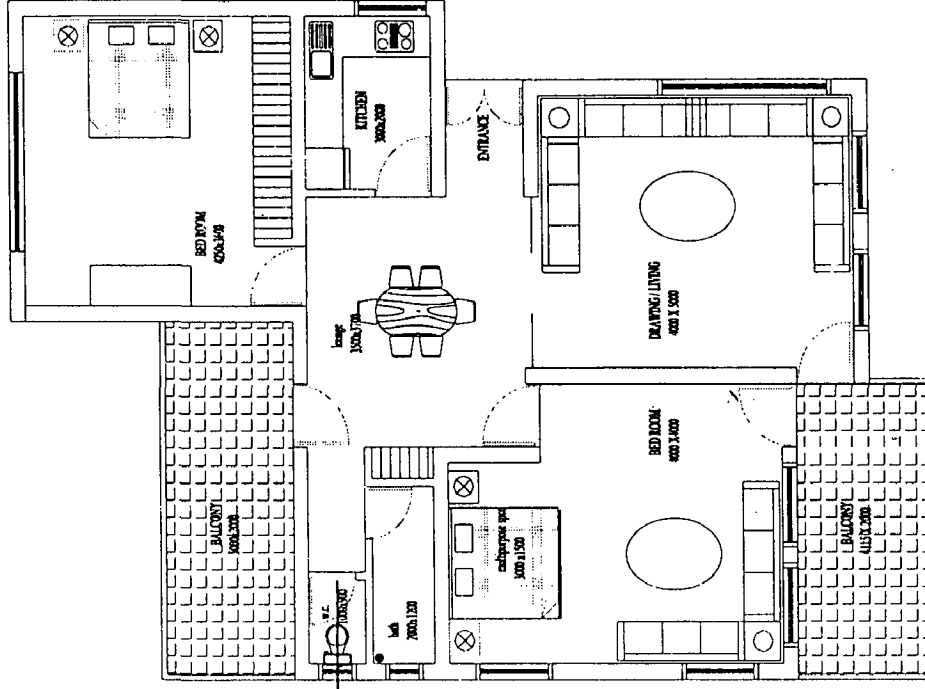
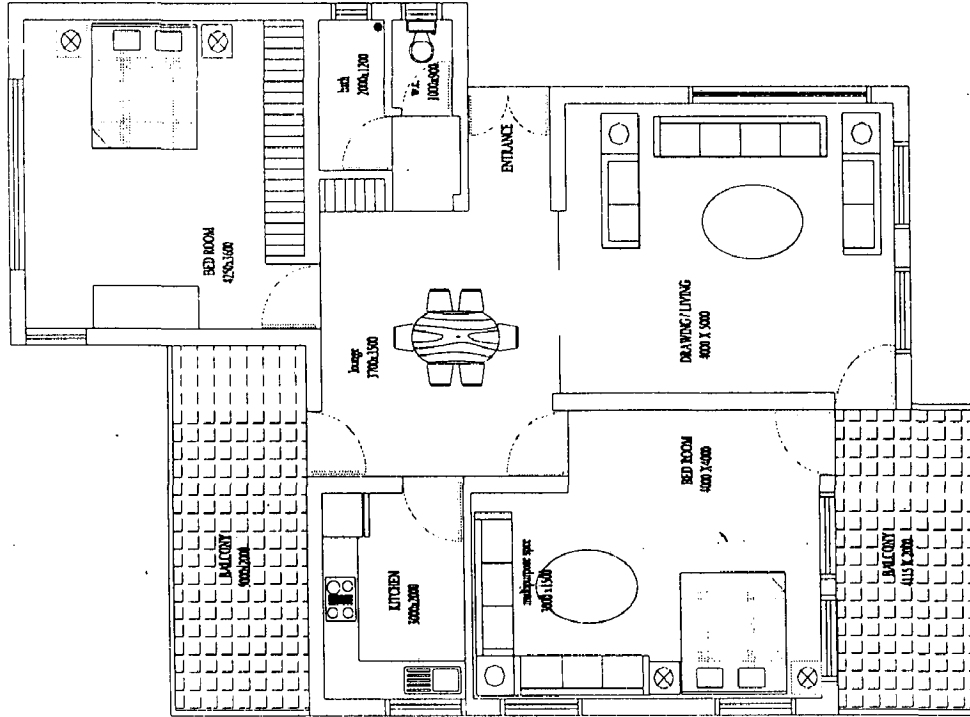


Fig.7.3.6 CONCEPTUAL PLAN (alternative)

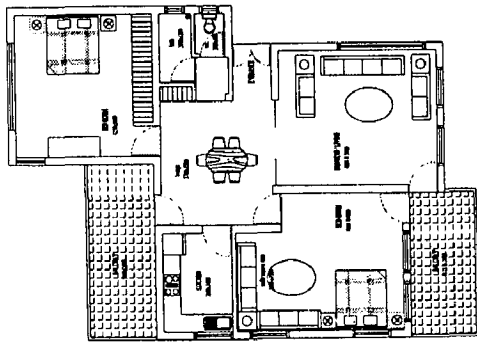


Location of toilets
 can be changed in the
 plan. Balcony the
 provides additional
 space for proper
 utility of
 toilets



UNIT PLAN

Fig. 7.3.7 UNIT PLAN (alternate)



Bigger size of balconies provides the additional space for out side seating, drying clothes, and dead storage. Balconies provide in the manner that it serves the combined spaces.

Stair case lobby provide the sufficient space for social interaction. Privacy aspect has considered for the location of bedrooms at ciuster level.

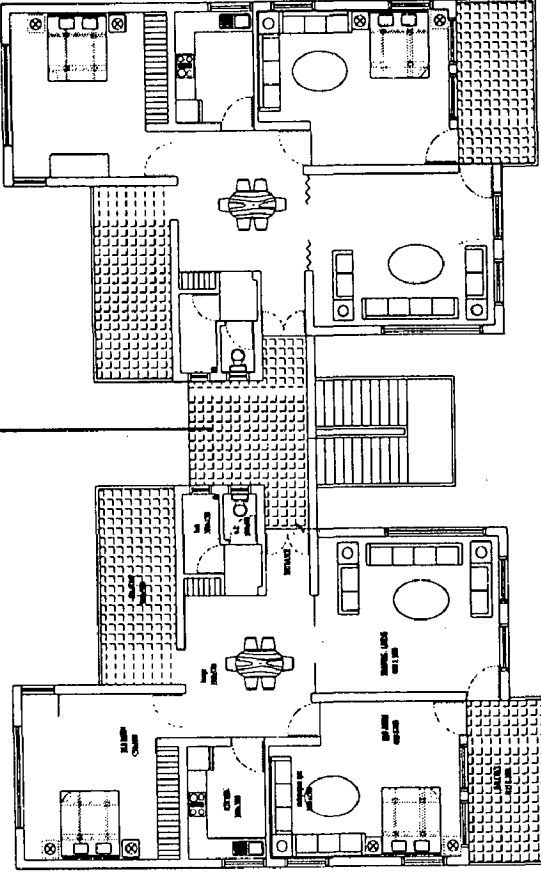
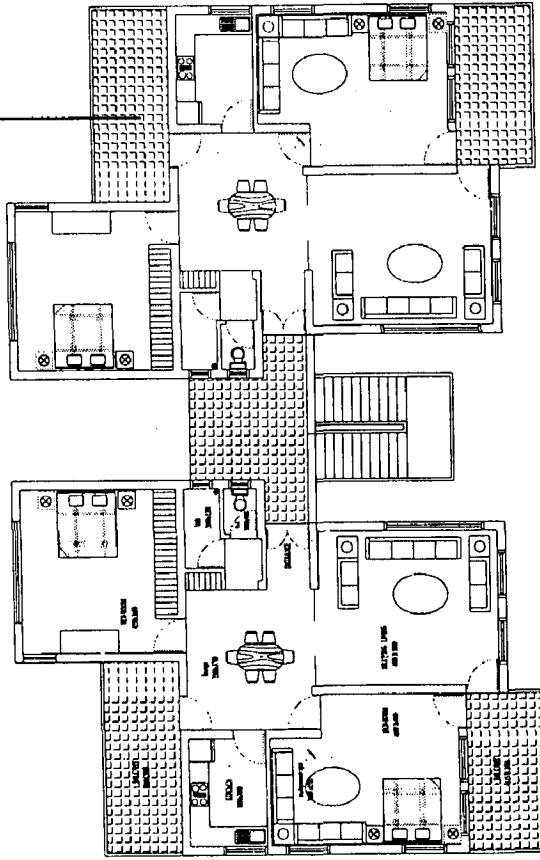


Fig.7.3.9 CLUSTER PLAN (Alternate)

Fig.7.3.8 CLUSTER PLAN

Location of kitchen serves the all areas equally

Balcony with bigger size provides additional space for seating and drying clothes

Loft provided over multipurpose space provides additional space storage in bed room.

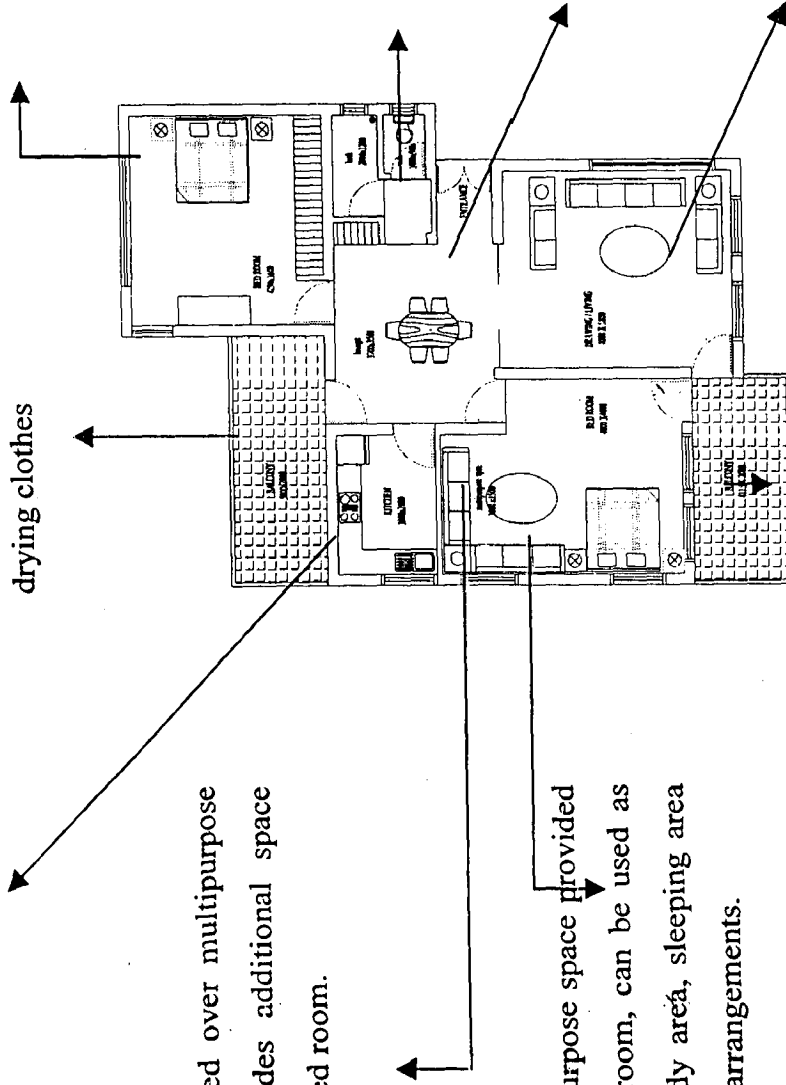
This multipurpose space provided in the bed room, can be used as storage, study area, sleeping area and seating arrangements.

Bigger size of bed room with sufficient storage provides the sufficient space for additional seating and study arrangements in the bed room

Service areas are not visible from the living areas. Bath and w.c. has separate space so the functionality of space is more efficient here.

A bigger circulation lobby can be much more useful and can be used as active activity space.

Drawing room has separate identity and appears as welcoming aspect to the guests.



Balcony serves the both bed room and drawing room. Size of balcony provided in this plan is sufficient for many activities like seating, sleeping, gossiping.

7.3.1 UNIT DESIGN ANALYSIS

Appendix-1

Indian Institute of Technology –Roorkee

(Dept. of Arch. and planning)

Questionnaire (Survey) - M. Arch. Dissertation

Title –Study of space utilization with reference to the M.I.G. housing

Name of the housing:

Location and year of construction :

Type of houses there : L.I.G./M.I.G./H.I.G/ COMBINED

General

- 1. House no. -
- 2. Locality-
- 3. Name-
- 4. Designation:
- 5. Ownership status- : own house / rented accommodation
- 6. No. of occupant's: adults: Male-
Female:
Children
- 7. Since long have you been Living in the present house:
- 8. Are you satisfied with the Locality: yes/ no
If not, state the reason:
(a) Planning is not good
(b) Improper connectivity
(c) Insufficient / no open space around the house
(d) Insufficient parking space for vehicles

Any other reason:
.....
.....

- 9. Is your house comfortable throughout the year If no state the reason. yes/no
Uncomfortable during: (summer) (winter) (monsoon)
- 10. Security provision satisfactory / unsatisfactory

HOUSE DESIGN

1. Drawing –cum dining room:

- | | |
|--|---------------------------|
| (a) Do you like to have the drawing
And dining room combined: | yes / not particular |
| (b) Size of the dwg.room room | sufficient / insufficient |
| (c) Size of the dinning lounge | sufficient / insufficient |
| (d) Ventilation in rooms: | sufficient / insufficient |
| (e) Entry to the drawing room | properly placed/improper |
| (f) Service window through kitchen | provided /not |
| (g) Balcony attached with the rooms
has sufficient space for seating: | yes/no |

2. Bed rooms

- | | |
|---------------------------------|-------------------------------|
| (a) Size of the room | sufficient / insufficient |
| (b) Light and ventilation | sufficient / insufficient |
| (c) Orientation w.r.t.sun light | sufficient / insufficient |
| (d) Privacy in the room | sufficient / insufficient |
| (e) Storage in the rooms | sufficient / insufficient |
| (f) Connection with other rooms | good / bad |
| (g) Orientation w.r.t. wind | sufficient / insufficient |
| (h) Location | |
| (i) w.r.t. toilet | satisfactory / unsatisfactory |
| (ii) w.r.t other rooms | satisfactory / unsatisfactory |
- (* w.r.t.- with respect to)

3. Kitchen

- | | |
|----------------------------------|---------------------------|
| (a) Size: | sufficient / insufficient |
| (b) Location of working platform | proper / improper |
| (c) Storage space | sufficient / insufficient |
| (d) Ventilation | sufficient / insufficient |

4. Toilet

- | | |
|------------------------------|-------------------------------|
| (a) Size: - | sufficient / insufficient |
| (b) Position of furniture: - | proper / improper |
| (c) Ventilation: - | sufficient / insufficient |
| LOCATION:- | |
| (i) W.r.t. bed room: - | satisfactory / unsatisfactory |
| (ii) Drawing room: - | satisfactory / unsatisfactory |

Others

- | | |
|---|---------|
| 1 Are you satisfied with location of your main entrance :- | yes/ no |
| 2 Balcony is provided in your flat :- | yes/ no |
| 3 Are you satisfied with privacy provided in the rooms:- | yes/no |
| 4 Is there sufficient space provided in your flat for washing and
Drying the clothes:- | yes/ no |

- 5 Are you satisfied with location of staircase:- yes/ no
 Reasons:-
 (a) Width of stair case is not sufficient ()
 (b) Location is not proper ()
 (c) Disturb your privacy ()

Addition and Alteration

- 1 Have you done some addition and alteration. In your flat: - yes / no
 2 What type of alteration you have done :- major / minor
 For what purpose you have done alteration
 (a) to increase the storage
 (b) to change in layout of flat
 (c) to change the entrance
 (d) to change the elevation :-
 3 Percentage of new construction in your flat (10-25%) (25-50%) (50-75%)
 4 Are you satisfied after the addition and alteration in your flat:- yes/ no

Cluster Level

- (1) Do you like built form of your flats:- yes/no
 (2) Do you have proper interaction with your Neighbors: - yes /no
 (3) Is there sufficient open space for playing of Children and for get together activities: - yes/no
 (4) Are you satisfied with cluster layout design:- yes/no
 (5) Is public amenities like milk booth ,shops Nursery school in your society: - yes/no
 (6) Do you have sufficient parking space for vehicles:- yes/no
 (7) If not where do you park your vehicles
 (a) Park in open place ()
 (b) You have constructed your own structures for vehicles ()
 ANY SUGGESTION

OWNERS SIGNATURE: -

Appendix -2

CHECK LIST FOR THE M.I.G. HOUSING

Title –study of space utilization with reference to the M.I.G. housing

Name of the housing:	
Location and year of construction :	
Type of houses there : L.I.G./M.I.G./H.I.G/ COMBINED	
1. House no.-
2. Locality-
3. Name-
4. Designation:
5. Ownership status- :	own house / rented accommodation

General

- | | | |
|---|---------|--------|
| 1. Size of the rooms in the house is sufficient | yes () | no () |
| 2. Entrance has separate identity | yes () | no () |
| 3. Location of stair case in the flats is proper | yes () | no () |
| 4. Internal circulation in the flats is proper | yes () | no () |
| 5. Is every room has sufficient light and ventilation | yes () | no () |
| 6. Is sufficient storage provided in the flat | yes () | no () |
| 7. Is locations of toilets in the flat proper | yes () | no () |
| 8. Balcony is provided or not | yes () | no () |
| 9. Balcony has sufficient space for seating | yes () | no () |
| 10. Is there sufficient space for drying the clothes | yes () | no () |
| 11. Is internal lobby provided in the flats | yes () | no () |
| 12. Occupants are satisfied with the design | yes () | no () |

If not reasons

- (a) bad designing lay out of the flats
- (b) lack of storage
- (c) not having the proper entrance
- (d) disturbance in privacy
- (e) lack of proper light and ventilation

13. Common space is there for get together in unit of flats: yes () no ()

Cluster level

1. Housing has connected properly with main road: yes () no ()

2. Internal circulation pattern is properly designed yes () no ()

3. Are public amenities like milk booth, shops, and schools there yes () no ()

4. Is open spaces provided there for playing and get together: yes () no ()

5. Is proper provision of parking provided there? yes () no ()

6. Built form is appreciable yes () no ()

7. Orientation of flats is proper yes () no ()

8. Is occupant feel security there yes () no ()

9. Proportion of built and un built form is good yes () no ()

10. Maintenance is proper yes () no ()

Addition and alteration

1. Is addition and alteration occurred in the flats yes () no ()

If yes –reasons:-

(a) To improve the elevation

(b) To modify the internal functions

(c) To increase the storage

(d) For commercial purpose

2. Exterior has remained same but interior has changed yes () no ()

3. Interior has remain same but exterior has changed yes () no ()

4. Flats are containing the existing character yes () no ()

5. Addition and alteration occurred in flats yes () no ()

(a) more than 75 %

(b) more than 50 %

(c) more than 25%

(d) less than 25%

(e) containing the existing character

APPENDIX - 3

FORMAT FOR INFORMATION ANALYSTS

Residence Type -M.I.G. Locality

General

Sl. No.	Particulars of Functional aspect	People opinion	Questionnaire No.																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
1.	Location	Satisfactory Unsatisfactory																		
2.	Period of Stay	Less than a Year 1 to 5 Years Above five years																		
3.	Family size	Less than four Four More than four																		
4.	Accommodation (a) Floor Area (b) Nos. of Rooms (c) Open spaces	Sufficient Insufficient Sufficient Insufficient Sufficient Insufficient																		
5.	Comfort	Throughout The Year !YES !NO																		

Sl. No.	Particulars of Functional aspect	People opinion	Questionnaire No.																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
6.	Discomfort	Winter Summer Monsoon																	
7.	Security	Satisfactory Unsatisfactory																	
8.	Drawing/Dining (a) Drawing/ Dinning (b) Size (c) Shelf (d) Light and Ventilation (e) Entry	Preferred Not Preferred Sufficient Insufficient Sufficient Insufficient Sufficient Insufficient Proper Improper																	

9	Room (a) Size (b) Storage (c) Light & Ventilation (d) Air Circulation	Sufficient Insufficient Sufficient Insufficient Sufficient Insufficient Satisfactory Unsatisfactory																	
10.	Kitchen (a) Size (b) Working Platform (c) Convenience (d) Light Ventilation (e) Storage	Sufficient Insufficient Adequate Inadequate Yes No Sufficient Insufficient Sufficient Insufficient Sufficient Insufficient																	

Sl. No.	Particulars of Functional aspect	People opinion	Questionnaire No.															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
11.	Toilet (a) Location (b) Size (c) Light & Ventilation (d) Position of Fixtures	Satisfactory Unsatisfactory Adequate Inadequate Sufficient Insufficient Proper Improper																
12.	Access to Terrace (a) (b)	Provided Not provided Desirable Undesirable																

APPENDIX-4
CASE STUDY INREFERENCE TABLE

Sl. No.	Particulars of functional aspects	Residence Type M.I.G	% of Respondents					Average
			Vasundahara (A)	Mayur Vihar (B)	Janakpuri (C)	Khaushombi D	Rohini (E)	%
1.	Location	Satisfactory	80	70	90	90	60	82.5
		Unsatisfactory	20	30	10	10	40	17.5
2.	Period of stay	Less than a year	20	10	10	30	15	12.5
		1 to 5 year	40	20	60	50	60	42.5
		above 5 years	60	70	30	20	40	45.0
3.	Family size	Less than four	20	40	60	20	30	30.0
		Four	60	30	30	50	50	45.0
		More than four	30	30	10	30	20	25.0
4.	Accommodation	Sufficient	50	70	75	95	40	77.5
		Insufficient	50	30	25	5	60	25.0
	• Floor area	Sufficient	50	80	60	100	40	70.0
		Insufficient	50	20	40	00	60	30.0
	• Size of rooms	Sufficient	60	75	40	90	30	60.0
		Insufficient	40	25	60	10	70	40.0
	• Open spaces	Sufficient	80	40	30	60	20	25.0
		Insufficient	20	60	70	40	80	75.0
5.	Comfort	Throughout Yes	45	30	40	70	40	30.0
		the year No.	55	70	60	30	60	70.0
6.	Discomfort	Winter	30	25	40	20	30	15.0
		Summer	50	50	55	70	60	60.0
		Monsoon	20	25	15	10	10	35.0
7.	Security	Satisfactory	30	80	50	60	70	55.0
		Unsatisfactory	70	20	50	40	30	45.0

Sl. No.	Particulars of functional aspects	Residence Type M.I..G	% of Respondents					Average	
			Vasundahara (A)	Mayur Vihar (B)	Janakpuri (C)	Khaushambi (D)	Rohini (E)	%	
8.	Details of Rooms Drawing/Dining	• Drawing/Dining Preferred	40	50	60	30	50	45.0	
			Not	60	50	40	70	60	55.0
		• Size Preferred	50	60	40	100	70	62.5	
			Sufficient	50	40	60	00	30	37.5
		• In built storage Insufficient	40	70	25	80	20	27.5	
			Sufficient	60	30	75	20	80	72.5
		• Light and Ventilation Insufficient	70	80	50	100	60	75.0	
			Sufficient	30	20	50	00	40	25.0
		• Entry Insufficient	60	80	50	95	60	65.0	
			Sufficient	40	20	50	5	40	35.0
			Insufficient						
		9.	Bed Room	• Size Sufficient	40	60	40	80	30
Insufficient	60				40	60	20	70	49.5
• Storage Sufficient	40			20	60	80	20	35.0	
	Insufficient			60	80	40	20	80	65.0
• Light and Ventilation Sufficient	80			70	50	80	60	67.5	
	Insufficient			20	30	50	20	40	32.5
• Air Circulation Sufficient	80			70	80	70	40	75.0	
	Insufficient			20	30	20	30	60	25.0
10	Convenience	Yes	80	80	60	100	20	80.0	
		No	20	20	40	00	80	20.0	
	Storage	Sufficient	40	70	30	80	30	35.0	
		Insufficient	60	30	70	20	70	65.0	

11.	Toilet	• Location	Satisfactory	40	80	50	80	35	65.0
			Unsatisfactory	60	20	50	20	65	45.0
		• Size	Adequate	20	60	40	80	40	65.0
			Inadequate	80	40	60	20	60	45.0
		• Light and Ventilation	Sufficient	80	80	60	90	40	90.0
		• Position of Fixture	Insufficient	20	20	40	10	60	10.0
			Proper	60	90	40	80	40	57.5
			Improper	70	80	60	90	60	42.5
12.	Access to Terrace	Provided	30	20	40	10	40	20.8	
		Not Provided	70	80	60	90	60	42.5	
		Desirable	100	100	100	00	100	42.5	
		Undesirable	00	00	00	100	00	57.5	
			60	80	90	70	40	75.0	

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