

COMPARATIVE ANALYSIS OF LIVING UNITS FOR SELECTED  
MIDDLE CLASS FAMILIES IN BOMBAY

By

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COMPARATIVE ANALYSIS OF LIVING UNITS FOR SELECTED  
MIDDLE CLASS FAMILIES IN BOMBAY

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803699

Dedicated

to my parents

whose love, affection and encouragement

made this study possible.

## PREFACE

Multiple forces are contributing to the housing problems which exist everywhere in the world today. Some of the major forces are: the rapid population increase, the shift in population from rural to urban areas, the rising standard of living and the increasing mobility of people. These problems are particularly acute in Bombay, India.

The purposes of this study were to compare the living units of six middle class families and obtain data regarding present housing situations in Bombay. These data can be used to alleviate some of the major housing problems of today.

Sincere gratitude and appreciation are expressed to Mrs. Christine F. Salmon, Associate Professor of Housing and Interior Design, my major advisor, whose guidance, support and indefatigable efforts were available at every stage of the preparation of the thesis. The author would be remiss if he did not acknowledge her patient counsel and constant encouragement.

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## CHAPTER I

### INTRODUCTION

Bombay, a former province of west central India on the Arabian Sea, grew to its present size and position from a group of fishing villages on seven islands called "Heptanesis." It contains within its borders the former Portuguese colonies of Goa, Diu and Daman. In the 16th century, Portugal was the leading foreign power, but Great Britain dominated the province in the 17th century, and by the early 19th century had formed the Bombay presidency.

The rapid rise and development of Bombay into a prosperous city with a flourishing population took place mainly during the last century. Today's Greater Bombay came into being after the merger of the suburban areas and certain villages of Thana District in 1950 and 1957. Bombay, the capital city of Maharashtra State, has been changing rapidly and has been experiencing a tremendous growth in population.

A critical housing situation has resulted from the increase of population. The problem of overcrowding is estimated to be double what it was at the turn of the century. Overpopulation has resulted in the packing together of houses with intolerable closeness, whereby ventilation and sanitation have been overlooked to the detriment of health. Absence of incentive for private enterprise to build houses for the lower strata of society has aggravated the problem. The housing problem is a complex one, requiring financing on a large scale;

it is dependent for its solution on concerted efforts on the part of individuals, cooperatives, and state and union governments. The shortage of housing in urban areas has been due largely to the considerable increase in population since 1921, the heavy shift of population from rural to urban areas, the haphazard growth of towns due to lack of sufficient state or municipal control over building activity and the comparative inability of private enterprises to keep pace with the growing demand.

The government of Bombay established a "Development Department" in 1921. In 1949, a special Housing Board was set up to build houses for industrial workers and other lower income groups, to develop land and to assist in the production and distribution of building materials. An "Improvement Trust" in Bombay undertook public housing schemes. Municipalities have also been engaged in building houses, not only for their essential staff, but occasionally for low and medium income groups in general. Each apartment complex also had such supplementary buildings as kindergartens, primary schools and markets.

Seventy percent of the total population of Bombay lives in "chawls." This is a type of dwelling unit that was first constructed in the earlier part of the 20th century and has been the major multi-family housing development prototype ever since. These housing projects remain the chief form of dwelling unit because of the rapid rate of increase in population and the limited amount of land available.

#### Statement of the Problem

The problem selected for investigation is that of determining the use of living units within multi-family dwellings or "chawls" in

Bombay, India. The housing units of selected middle class families who live in these complexes, built approximately 50 years ago, will be studied to determine what modifications, if any, have been made to the spaces to achieve improved standards of living.

From these data, recommendations will be made regarding better use of the standard dwelling area (approximately 10' x 20') to achieve additional privacy and attain a feeling of a better standard of living within the family units.

#### Procedure

The procedures of this study will be: (1) Review the literature; (2) obtain material from six middle class families of Bombay, India regarding the way they use the space within their dwelling unit; (3) make a comparative analysis of the different ways these six families utilize their space for living; (4) make recommendations for improved use of typical housing unit occupied by the majority of the population of Bombay.

It is hoped that the information obtained will give planners, builders and architects directions for planning and building more livable housing units in Bombay, India.

## CHAPTER II

### REVIEW OF LITERATURE

As India becomes more and more industrialized, the answers to economic and other problems will largely depend on the manner in which the working classes improve their standard of living. This includes not only higher wages but also better conditions of working inside the factory, better education of the working classes and their children, better and more nutritive food, good health and, last but not least, housing.<sup>1</sup>

The importance of housing, particularly in an urban environment, cannot be over emphasized. Housing is a basic necessity of life, and in congested cities its value and importance is next to food. The housing shortage in India is by no means confined to urban centers. Rural areas, also, suffer from an acute shortage of houses; with the result that people live in dark, congested areas and overcrowded houses, being denied the advantages of the free gifts of natural light and air. The conditions in the cities and industrial towns can, therefore, be easily imagined. Not only are morals and health of the community affected, but in the course of time a cumulative effect upon the biological makeup of the population becomes apparent.

The housing problem in Bombay has assumed alarming proportions, particularly in recent times. It has been maintained that the housing in the city has generally kept pace with the growth of population, and

that the present acute housing problem is the outcome of the second World War; however, the Housing Panel of the Greater Bombay Scheme pointed out in 1946 that, "housing has not made appreciable progress in the city in the last ten or fifteen years commensurate with the needs of a growing and developing city, nor has it kept pace with the actual growth of the city's increasing population."<sup>2</sup> The Executive Officer of the Bombay Municipal Corporation remarked: "To erect a large block of 'chawls' of one pattern of rooms of 200 sq. ft., and to allow them to be occupied irrespective of sex and age in addition to goats, fowls, etc. . . is not the way to diminish overcrowding nor to solve the housing problem."<sup>3</sup>

The first effort to deal with the problem was made in 1898, with the starting of the Bombay Improvement Trust, whose object, inter-alia, was to provide housing accommodation for poor people. The Improvement Trust constructed a few buildings, but they were inadequate for growing population, and the accommodation provided was far below a decent standard of living; namely, one-room tenements with sizes varying from 10' x 10' to 10' x 20',<sup>4</sup> "The planning commission in 1951 estimated a shortage of 2.5 million houses in urban areas. Since then, the shortage has become even more acute. A close-up of the situation in Bombay reveals the fact that while the population, during the last 17 years, has increased by 200 percent the increase in the number of housing properties has been only 17 percent. For a population of 4.3 million, there are only 600,000 tenements." Assuming that 5.2 persons constitute the average family, this establishes a figure of 1.18 million people without shelter. Lack of proper housing has far reaching effects and the community has to pay dearly for any neglect

in this respect. Overcrowded hospitals cure people who come again and again because of the diseased houses in which they live. These conditions in Bombay illustrate how acute the problem is.<sup>5</sup>

Housing problems are not static, but undergo changes year after year. One change is brought about by the continuous influx of people from rural to urban areas. Another factor has to do with the age of the dwelling. A section of the population which was lucky to occupy old houses with low rents also paid less by way of municipal taxes, and was thus subsidized by another section which had to pay much higher rents and proportionately higher taxes.<sup>6</sup>

In Greater Bombay there are 18,000 old buildings, containing about 1,613,000 tenements. Approximately one-third of these buildings are in dilapidated condition and are unsafe for occupancy. It is not possible, nor desirable, to salvage these 6,000 buildings. Regarding the remaining 12,000 buildings, it is recommended that whenever possible, repairs be made to the satisfaction of the municipality. The rents should be increased by suitably modifying the Rent Control Act to enable the party concerned to charge rent after such repairs are carried out to meet the subsidized rent regulations of the government, which is at present Rs. 30 (approximately \$4.00) per month per living unit.<sup>7</sup>

The housing shortage is aggravated by the high cost of suitable sites, the high cost of building materials, inequitable methods of taxation and the failure of the government to encourage building because of the Rent Control Act.

One of the most important things in life is to have a good dwelling. On this one factor alone may depend the character of the

people. Today there are thousands of families in Bombay who have no privacy, nor a decent standard of living. The problem is getting more and more acute. It is not difficult to imagine what would happen to the nation if the majority of children are brought up in squalid surroundings without being able to call anything a home. To prevent this from happening, very bold and imaginative action by the state is necessary.<sup>8</sup>

Today, the city of Bombay is the fifth largest city in the world. Its multistoried structures, traffic congestion, overpopulation, problems of drainage and water supply, and acute hunger for land are no less critical than those of any first-ranking city in the world. However, Bombay is an island, the area of which remains constant as the population continues to grow as follows:<sup>9</sup>

TABLE I  
POPULATION OF GREATER BOMBAY 1901-1971<sup>10</sup>

Year	Number of People
1901	927,994
1911	1,148,757
1921	1,380,448
1931	1,397,812
1941	1,801,356
1951	2,994,444
1961	4,152,056
1971	6,000,000 (approx.)

According to Dr. J. F. Bulsara, "the population of those living in 'Kaccha,' temporary structures or improvised slums, was enumerated in the Forties at 415,000. It is perhaps more than doubled now.



Besides, more than a million people live in 'PACCA,' authorized structures, reduced to slums through dilapidation because of neglect of repairs or renewal. More than 9,000 houses have reached the age of demolition. Over 70 percent of the population lives in single-room tenements having their sitting room, dining room, bedroom, kitchen, reading room for children and sick room for patients all in one room of less than 200 sq. ft. for a family of 4.8 persons, which is the average size of a family in the city. More than 80 percent of the citizens do not enjoy peace or privacy, a precious need of crowded urban life."<sup>11</sup>

This situation exists throughout India. The following figures are given by Professor T. J. Manicham:

TABLE II  
ESTIMATED SHORTAGE OF HOUSING IN MAJOR  
CITIES IN INDIA-1960<sup>12</sup>

Calcutta	450,000 units housing shortage
Bombay	300,000 units housing shortage
Delhi	150,000 units housing shortage
Madras	240,000 units housing shortage
Bangalore	100,000 units housing shortage
Hyderabad	50,000 units housing shortage

Today the housing situation has touched the staggering figure of 600,000 in Calcutta and in Bombay. The estimated percentage of households living in one room is as follows:<sup>13</sup>

<u>One Room Tenements</u>	<u>1961 Population</u>
Calcutta	71.4%
Bombay	72.3%
Madras	67.5%
Delhi	63.0%
Ahmedabad	65.3%
Hyderabad	45.8%
Bangalore	55.9%

It is a well-known fact that most of the big cities in India have been expanding beyond their old limits at an alarming pace for the last two decades. In the majority of cases, such expansions are taking place without consideration of the city's needs in the foreseeable future in the fields of industry, traffic, social amenities, open spaces, opportunities for the pursuit of leisure and amusement, educational facilities and housing. In short, in the majority of cases planned development of cities does not exist.<sup>14</sup>

The level of available services, utilities and facilities in each of the metropolitan cities is extremely poor. In Calcutta, more than 70 percent of the population live without any services, utilities and facilities. As against a desirable water level of 50 gallons of water per capita per day, Bombay now provides only 29 gallons.<sup>15</sup> The existing sources of water are capable of an assured supply of 223 million gallons per day in Bombay.

The bulk of water supply is required for domestic use and great care has therefore to be taken in fixing the per capita consumption. The allowance made for this purpose varies considerably from town to town and country to country. It naturally depends upon the standard of living of the community as well as on the climatic conditions. In most Indian towns, a supply of about 20 to 30 gallons of water per

capita is given mainly because communities cannot afford larger investments. This supply is also considered fairly adequate as in such towns water-borne sewage system does not exist.<sup>16</sup>

The Bombay Municipal Corporation is facing severe crisis. This is not on account of the current expenditure outrunning the current revenue as usually happens, but as a result of the capital resources of the required quantum not being available. Most cities in the world, except perhaps the Swiss and Scandinavian ones, have slums and blighted dwellings, and most citizens and civic authorities have so far been taking them for granted or considering them inevitable. The question of adequate housing and the clearance of slums will continue to pose a problem as intransigent as at present. The cities' hutment colonies have persisted for ten to fifteen years and longer without any sign of their possible demolition. A worse danger is that, under such conditions, normal citizens develop anti-social tendencies, which disappear under decent civilized conditions of living. Therefore, it is of prime importance that voluntary organizations turn their attention to the problem of lower income group housing and slum clearance. Housing cooperatives for lower income groups with government subsidies under the sponsorship of voluntary organizations have proved successful elsewhere.<sup>17</sup>

The average density of 176 persons per acre or 116,000 per sq. mi. is unconscionable by any standards. The problems of slums, pavement dwellings (street people) and shortage of housing in the city will not be solved by any tinkering or patch-up methods.<sup>18</sup>

Messrs. P. Ramachandran and A. Padmanabha report data collected in 1967 which confirm the deplorable housing situation in Bombay.

A random sample of low income family housing was conducted which stated the following:

Nearly 80 percent of the households resided in "chawls," nearly 90 percent were in one room dwellings. Further, one room dwellings were predominant among "chawls" and huts. Most of the flats consisted of two or more rooms. Coming to the relationship between income and type of residence, one should anticipate a highly significant association between the household income and the type of dwelling in which the households were residing. It has been seen that the vast majority of the households were in the lower rungs of the low income group. Hence, one could pose that the low income group households were more likely residing in huts or "chawls," and the high-low income group households were residing in flats.<sup>19</sup>

TABLE III  
HOUSEHOLDS BY INCOME AND PRESENT TYPE OF RESIDENCE<sup>20</sup>

Household Income	%-Hut	%-Chawl	%-Flat	Total Number
Low	13.7	80.2	6.1	938
Medium	3.9	81.6	14.5	414
High	2.2	76.3	21.5	358

The majority of the respondents, irrespective of household size, were residing in one room dwellings and were hardly provided with even basic amenities. The data on living space should, therefore, indicate that the respondents resided in inadequate space and that the problem

of overcrowding was acute.

TABLE IV  
AMOUNT OF LIVING SPACE PER HOUSEHOLD<sup>21</sup>

Household Size	Up to 75 sq. ft. (%)	75 to 100 sq. ft. (%)	151 to 300 sq. ft. (%)	301 and more sq. ft. (%)
1-3	3.0	73.8	19.3	3.9
4-6	3.8	68.2	22.9	5.1
7 and above	1.1	65.0	27.9	6.0

According to the raw data, 78 percent of the households had a per capita living area of over 25 sq. ft.<sup>22</sup>

It has been seen that the dwellings of the vast majority of households were in a deplorable condition with inadequate sanitary arrangement. In view of this, it would be reasonable to assume that most householders must have been dissatisfied with their housing.<sup>23</sup>

Understandably, dissatisfaction was greatest among households residing in huts (81.7 percent) and in "chawls" (61.4 percent). It was least among those dwellings in flats (32.5 percent). As against this only 3.3 percent of those residing in huts, and 3 percent of those in "chawls," and 6.2 percent of those in flats were partly satisfied and partly dissatisfied.<sup>24</sup>

The majority of the households do not feel that they are paying high rents. Among these, 66.2 percent feel that what they are paying is reasonable. Against this, only 5.9 percent feel that they should be

paying much less, and 22.8 percent feel that they are paying more than what they think is a reasonable rent for their dwellings.<sup>25</sup> The average rent-expressed as a percentage of the households in expenditure paid by the low income group households in Bombay was 8.5 percent.<sup>26</sup>

Another survey of old buildings carried out by the Municipality in 1956 showed that 23 percent of the single room tenements surveyed had an area of less than 100 sq. ft. each, and only 9 percent of the single room tenements surveyed had independent water tap (connection).<sup>27</sup>

According to the census surveyed in 1961, average size of household varied from 4.33 to 5.85 in the various urban centers in the region, and in Greater Bombay, the average size of household was 5.19. The average for all the urban centers was 4.91.<sup>28</sup>

From the information about the income classification in Greater Bombay available from the Income Tax Department, it is observed that not more than 12 percent of the total families have an annual income of Rs. 7,500.00 (approximately \$1,000.00).<sup>29</sup>

The seminar on slum clearance held in Bombay in May, 1957, suggested the following general description of slums for the purpose of analysis, classification and naming sections of specific areas in a plan for improvement, clearance and development. "A slum may be described as chaotically occupied, unsystematically developed with generally neglected structures. The area has insufficient communications, indifferent sanitary maintenance of physical and social health and the minimum needs and comforts of human beings and the community. There is a general absence of social services and welfare agencies to deal with the major social problems of persons and families in respect

of substandard health, inadequate income and low standard of living, who are victims of biological, psychological and social consequences of the physical and social environment."<sup>30</sup>

On the basis of their physical characteristics, slums in Bombay metropolitan region could be placed in four categories:

1. Areas of overcrowded, ill-ventilated and illlighted single room dwellings. These mostly include the infamous "chawls" of Bombay. The "chawl" dwellers have jobs and there is also an attempt to organize social life. Often one comes across "chawl" committees for organized action for "chawl" improvement and social functions.

2. The areas of some of the old villages absorbed by the ever-expanding sprawl of Bombay. These have bad layouts; crooked, winding and narrow streets; overcrowded and ill-ventilated houses; and need substantial improvements in the environment.

3. The third category of slums would include ramshackle and temporary structures, tin sheds authorizedly erected by poor people.

4. Fourth and by far the worst category of slums in Bombay and the Bombay metropolitan region are the hutment colonies and "zopadapatties" unauthorizedly erected generally by way of encroachment on municipal or government land or even on private land. This kind of slum is located on the worst kind of unhealthy areas and marshy lands. They forcibly occupy public or private lands or roadside strips and footpaths until they are evicted from these areas. A complete list of hutment slums existing in various areas of Bombay has been recently prepared by municipality from which it can be seen that the total number of hutment colonies in Greater Bombay is 206, the total number of huts is 108,273 and the total number of residents is 631,888.

It is a shocking knowledge that this population of over 600,000 has amongst themselves only 1,353 water closets and 432 water taps.<sup>31</sup>

The "chawl" type slums owe their existence mainly to the inadequacy of legal planning of the old days, the desire of landlords to exploit unwary immigrants and the recent utter neglect of even essential repairs due to the freezing of rents.

Since the middleclass and poor cannot afford to pay higher rents for newly constructed structures, and since government neither has enough finance available for heavily subsidizing low and middle income housing, it is obvious that the problems, for many years, will defy a wholly satisfactory solution.

In Chapter III the writer reports six case histories describing individual housing needs and the manner in which each family lives.



### CHAPTER III

#### FINDINGS

This study is based upon case histories of six different families who live in "chawl," the multi-family housing units which were first built in 1898 with the starting of the Bombay Improvement Trust. The object was to provide housing accommodation for poor people in Bombay. The second attempt was made by Lord Lloyd, Governor of Bombay in 1918, who started the Development Department which was responsible for the construction of the Development Department Chawls. These are known today as "D. D. Chawls." Due to the limited space of the island and the rapid growth of the population, dwellings are still built in much the same pattern. As many as 500 families stay in one building, which contains approximately 200 sq. ft. floor area per family plus common utilities area for each floor. In this particular study, families range in size from two to fourteen and they have been living in the same building since 1921. As shown in the detail history of each individual family, their annual income varies from Rs. 7,500.00 (\$1,000.00) to Rs. 75,000.00 (\$10,000.00).

First will be studied the different plans of buildings located in various sections of Greater Bombay, then the particular building plan in which the six families live who were selected for this study. The problem of the existing situation will be described and further studied by plans and photographs.

The existing building is located in the heart of the city. The density of this locality is 1,090 per hectare. Total population of this area is 721,809 and total dwelling units occupied by the population is 135,350 which gives 5.3 persons per living unit. Most of the housing of this type has an open area between two buildings which is known as house gulli, an early form of disposal system. The gulli is used by the dwellers for dumping their garbage and trash from their respective floors. Sweepers come twice a day to clean the gulli and the municipality sends trucks once a day to collect the trash from each street.

The time of planning this building does not permit the addition of many new things. Open wiring and electric meters for each living unit are very hazardous. Many times the staircase lights are not working and people must move around without proper light. The common passage, which is 5 feet wide is utilized for many purposes such as drying clothes, storing water drums, coal, buckets, mattresses and other household items. This causes many inconveniences to the occupants as all families use this area in this manner. The purpose of this passage is for free movement for the occupants and their guests, but due to the shortage of space occupants have no choice other than using this area for storage. In the morning, the passage is used for washing the clothes and bathing young children.

The common utilities area is one of the worst spaces for the tenants. Everyone blames others for the inadequacies and the problems. The building has three water closets on each floor. Two water tap connections are provided on each floor. Servants fill the drums for dwellers and wash their clothes and clean the vessels every day for a

small amount, approximately \$3.00 per month plus some food. Some occupants of this building have their own water connection, these families compared with others do not have a serious water problem, but no one can have a private water closet. Individual families have made certain adaptations to the space, as will be shown in the following case studies.

The final phase of this thesis shows proposals for improving the standard of living, better satisfying family needs, providing more privacy and improved facilities for the families living in a chawl type building. Plans M, N, O and P on pages 54 and 55 show different possibilities of utilizing the same area according to the needs of the several families. Plan Q and elevations A and B on pages 56, 57 and 58 show the most compact arrangement for providing maximum open space for daytime activities with increased privacy.

The application of these proposed space arrangements within the present living units would provide an improved standard of living. By using these plans, better housing could be provided for many families.

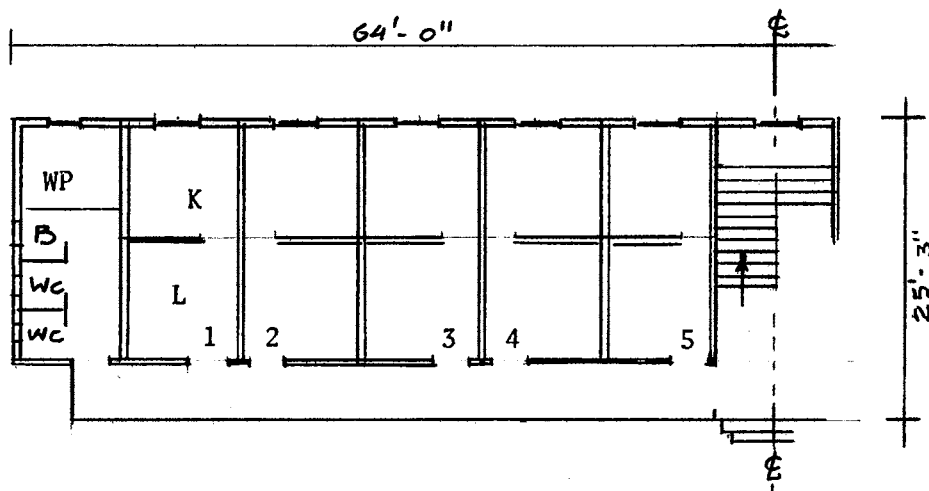


Figure 1. Tenements for Conservancy staff at Mahalaxmi, Bombay 1954-1957. Chawl type construction. Ten tenement units on each floor. Scale  $1/16' = 1'-00''$

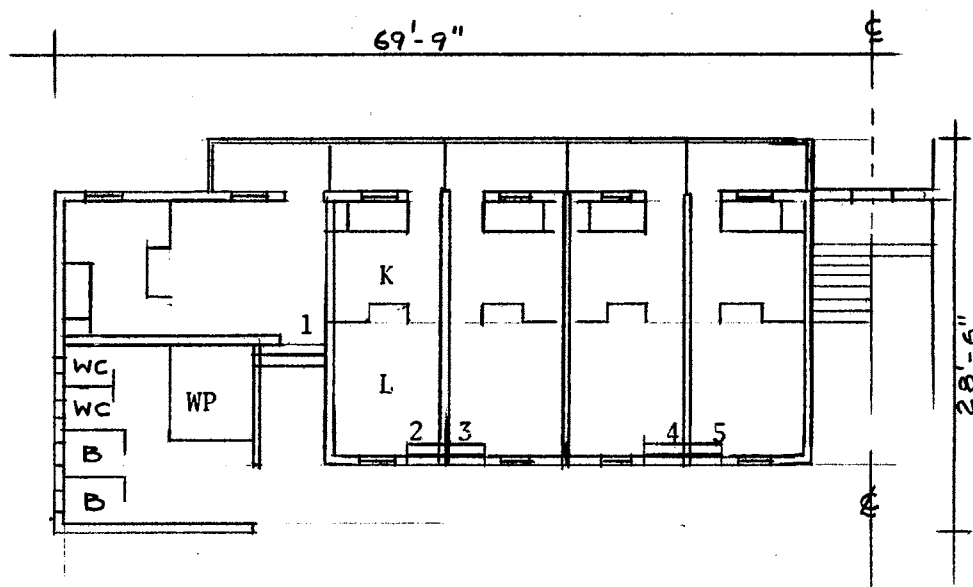


Figure 2. Tenement at Sewri Wadala (1956-1957). Chawl type with 40 tenements. Excess verandah depressed at chajja (level). Scale  $1/16'' = 1'-00''$

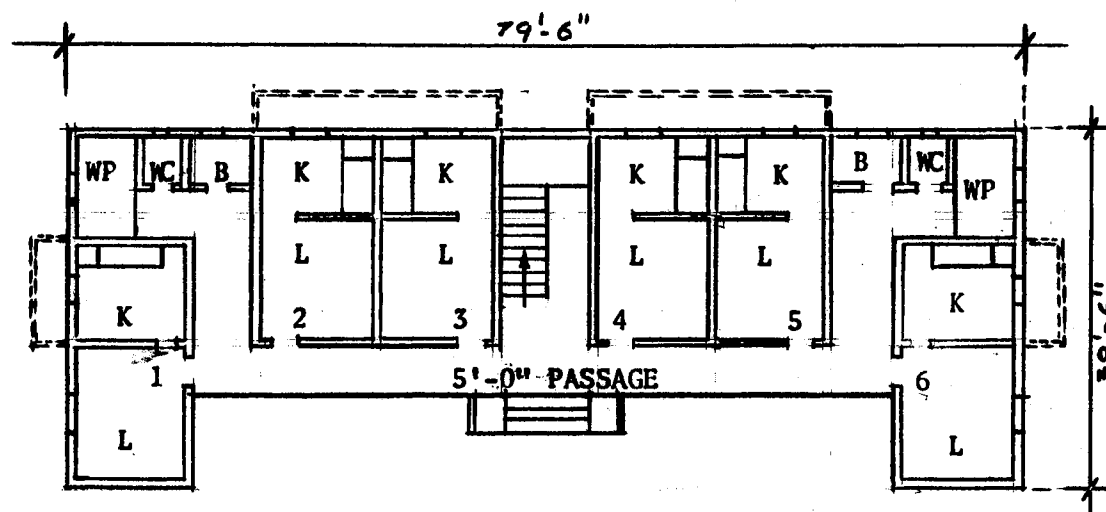


Figure 3. Tenement at Andheri 1958-1959. A compact building for a "chawl." Scale  $1/16'' = 1'-00''$

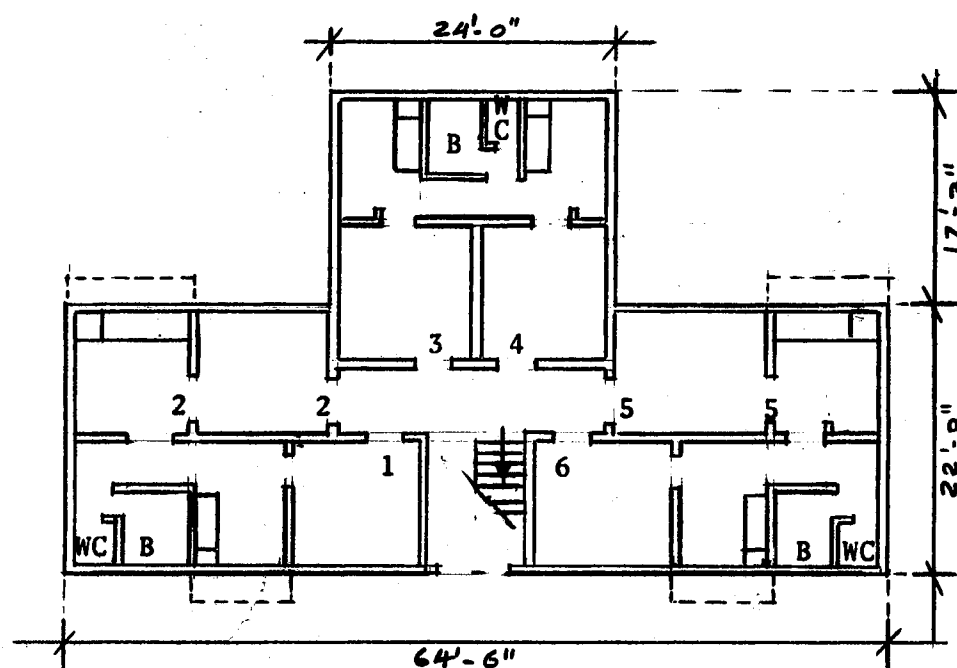


Figure 4. Tenement at Elephistone Road, Bapti Road, etc. 1957-1958. Scale  $1/16'' = 1'-00''$

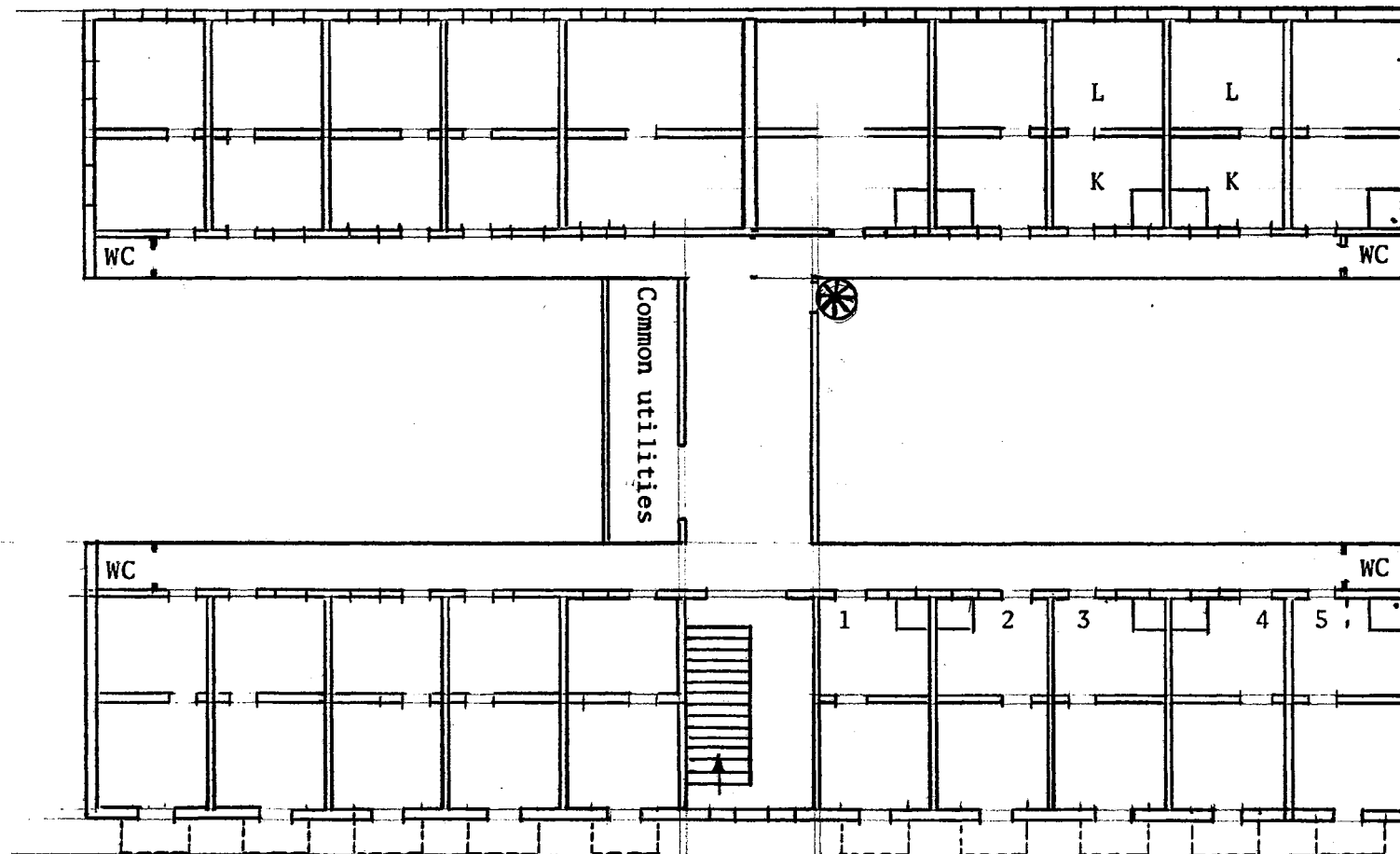


Figure 5. Habib Terrace, Lalbaug, Bombay-1925. Scale 1/16" = 1'-0"

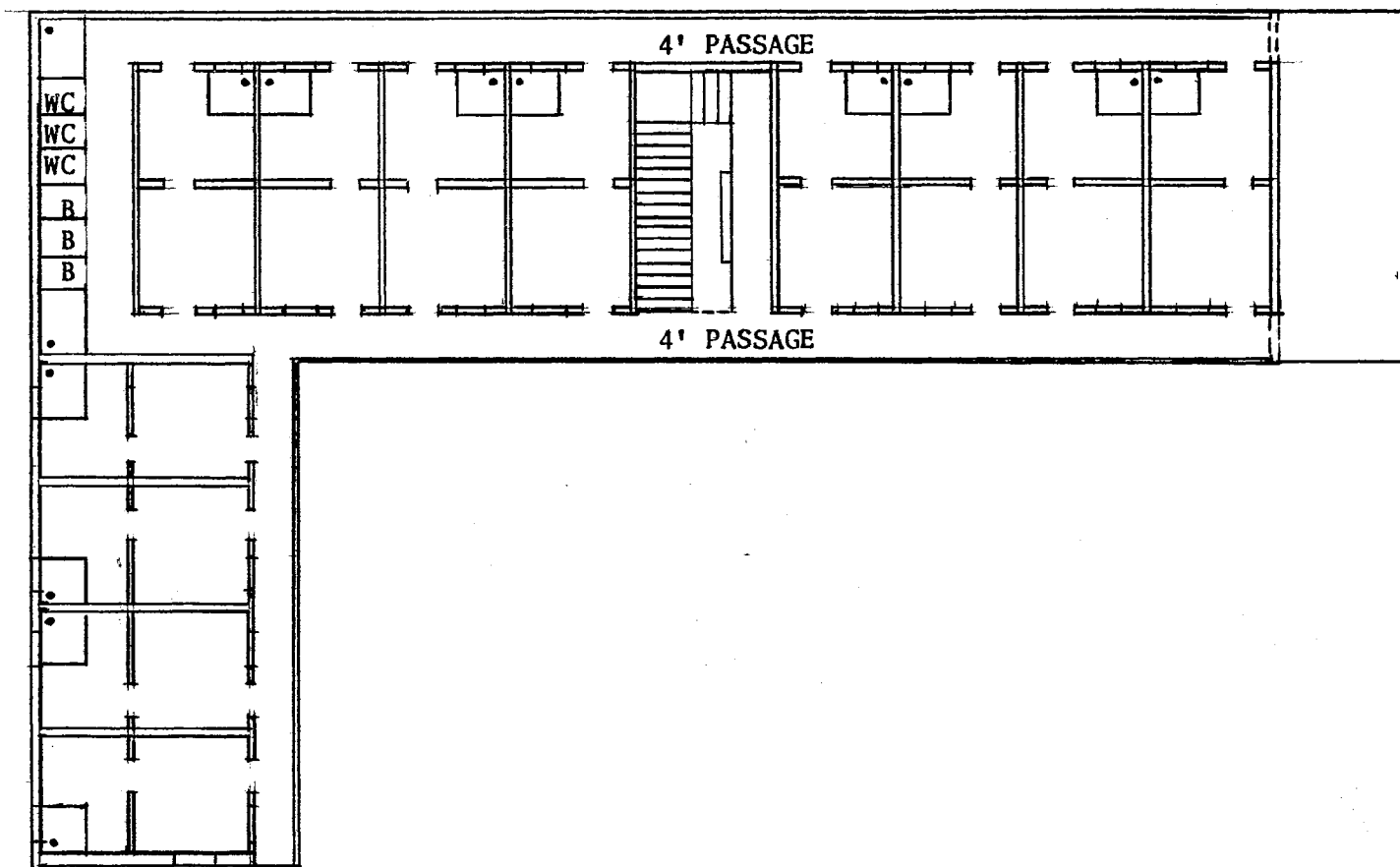


Figure 6. Shanti Nivas, French Bridge, Bombay-1935. Scale 1/16" = 1'-0"

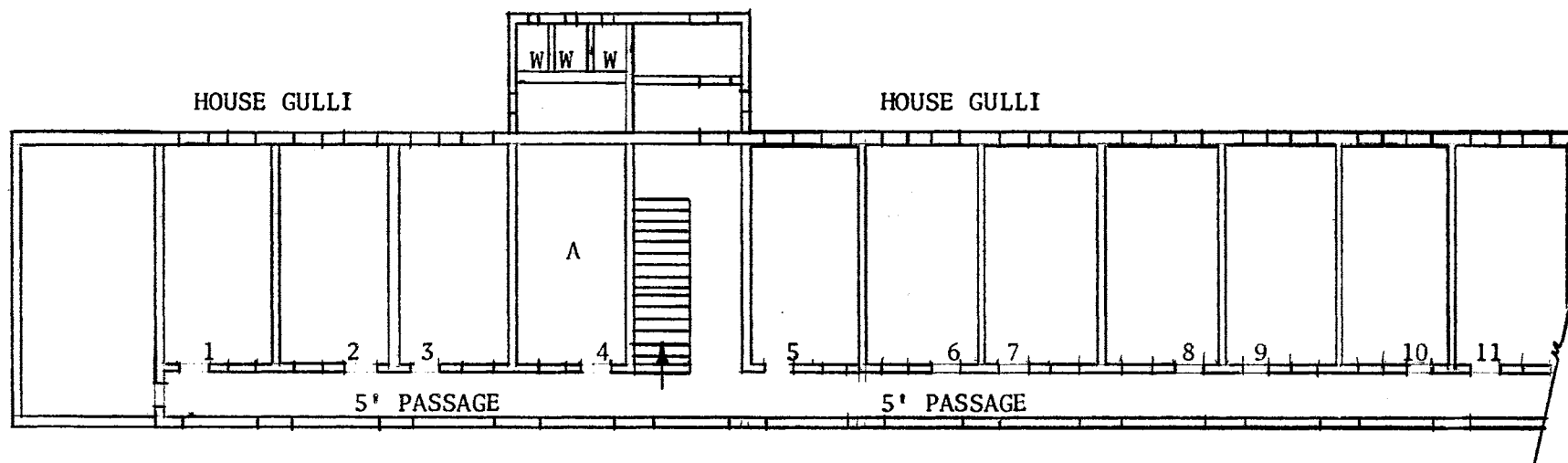


Figure 7. 2nd floor plan, Gaumata Building, Kolbhat Lane, Bombay-1920. Scale 1/16" = 1'-0"



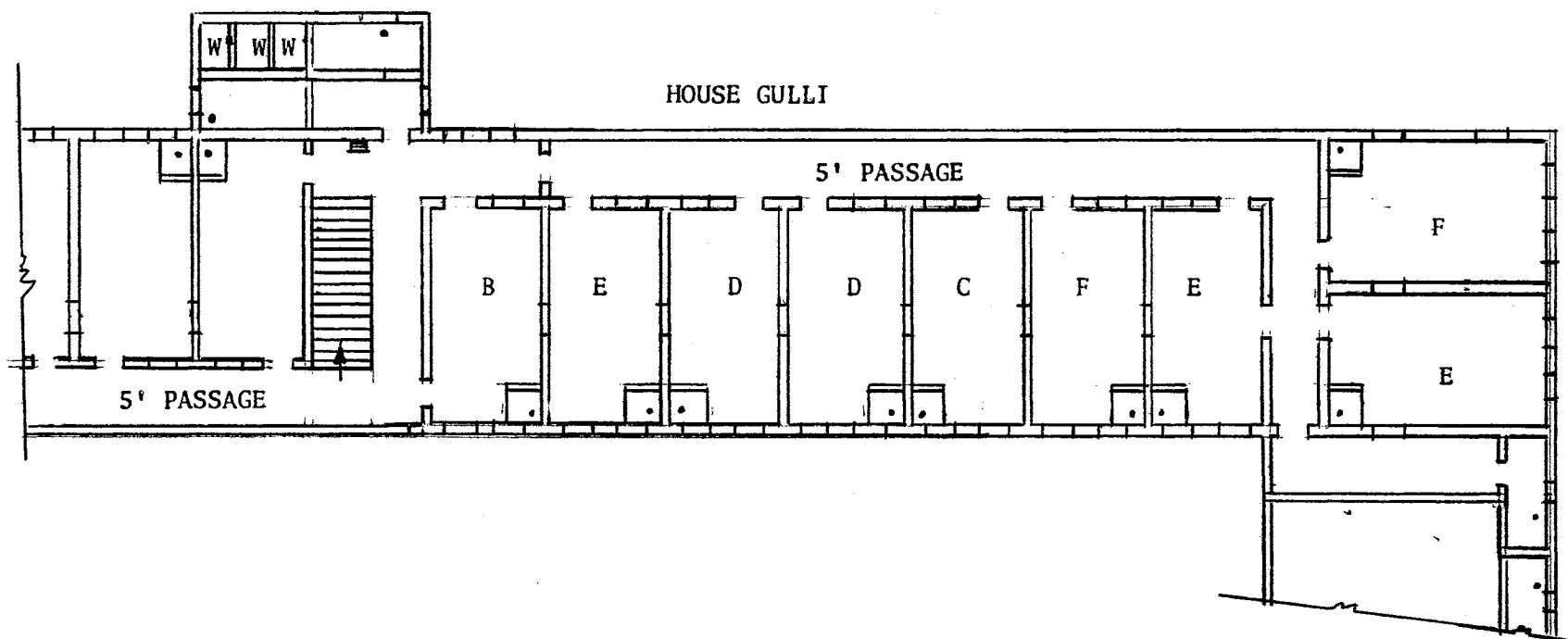


Figure 8. 3rd floor plan, Gaumata Building, Kolbhat Lane, Bombay-1920. Scale 1/16" = 1'-0"



Figure 9. Gaumata Chawl and Morarji Velji Building,  
Kolbhat Lane, Kalbadevi Bombay, India



Figure 10. House gulli, Bombay, India



Figure 11. Entrance of Gaumata Building,  
Bombay, India



Figure 12. Staircase, Gaumata Building,  
Bombay, India



Figure 13. Common utilities area, three water closets,  
two water connections



Figure 14. Common passage used for storage and washing place



Figure 15. Common passage used for storage



## Family A

Number of persons: Two - husband and wife

Occupation: Electrician

Yearly Income Approximately Rs. 7,500 (\$1,000)

Summary: Young couple recently married, would like to spend some money for better living but circumstances do not permit this. This is a typical plan of the room which was allotted to the occupant in the early part of the century. This family has not changed anything. A small "mori" of 3' x 3' serves the purpose for taking bath, washing the clothes and cleaning the dishes. To divide the kitchen a 3' high wall has been constructed by the landlord at the time the building was built. A steelcase or cupboard serves the purpose of storing the clothes, jewelry, money and many other things. A 6' x 3' bed serves the purpose of a divan or sofa in the daytime and a regular bed at night.

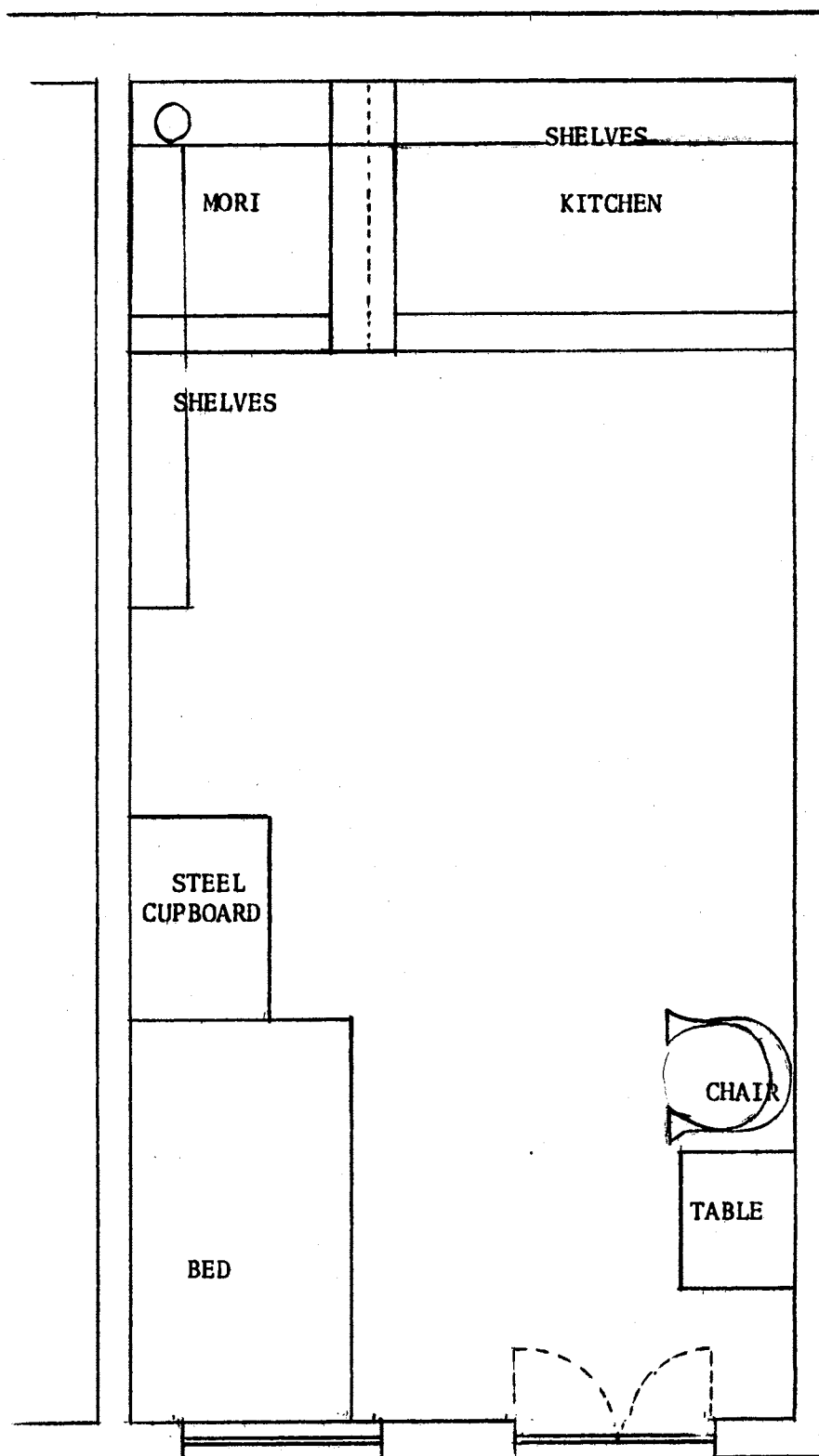


Figure 16. Floor plan for Family A. Scale  $\frac{3}{8}'' = 1'-0''$

## Family A



Figure 17. View of the dwelling area,  
bed, bathing area, kitchen,  
steel cupboard, table,  
chair

### Family B

Number of Persons: Seven - husband, wife and five children

Occupation: Cloth merchant

Family Income: Rs. 7,500 (\$1,000)

Summary: Family B got this place by inheritance from his uncle in 1955.

He has five children. In this dwelling they have better facilities compared to Family A. Dwelling is divided in two sections. In photographs you can see the bathing area and kitchen, better equipped than Family A. Housewife of Family B would like to have a standing kitchen but their budget won't allow this. The area in front of the partition is used as drawing room and guest room in daytime and as a bedroom at night. Children are accommodated in the kitchen for sleeping. As space won't permit the accommodation of five children in the kitchen, the two youngest always sleep with their parents.

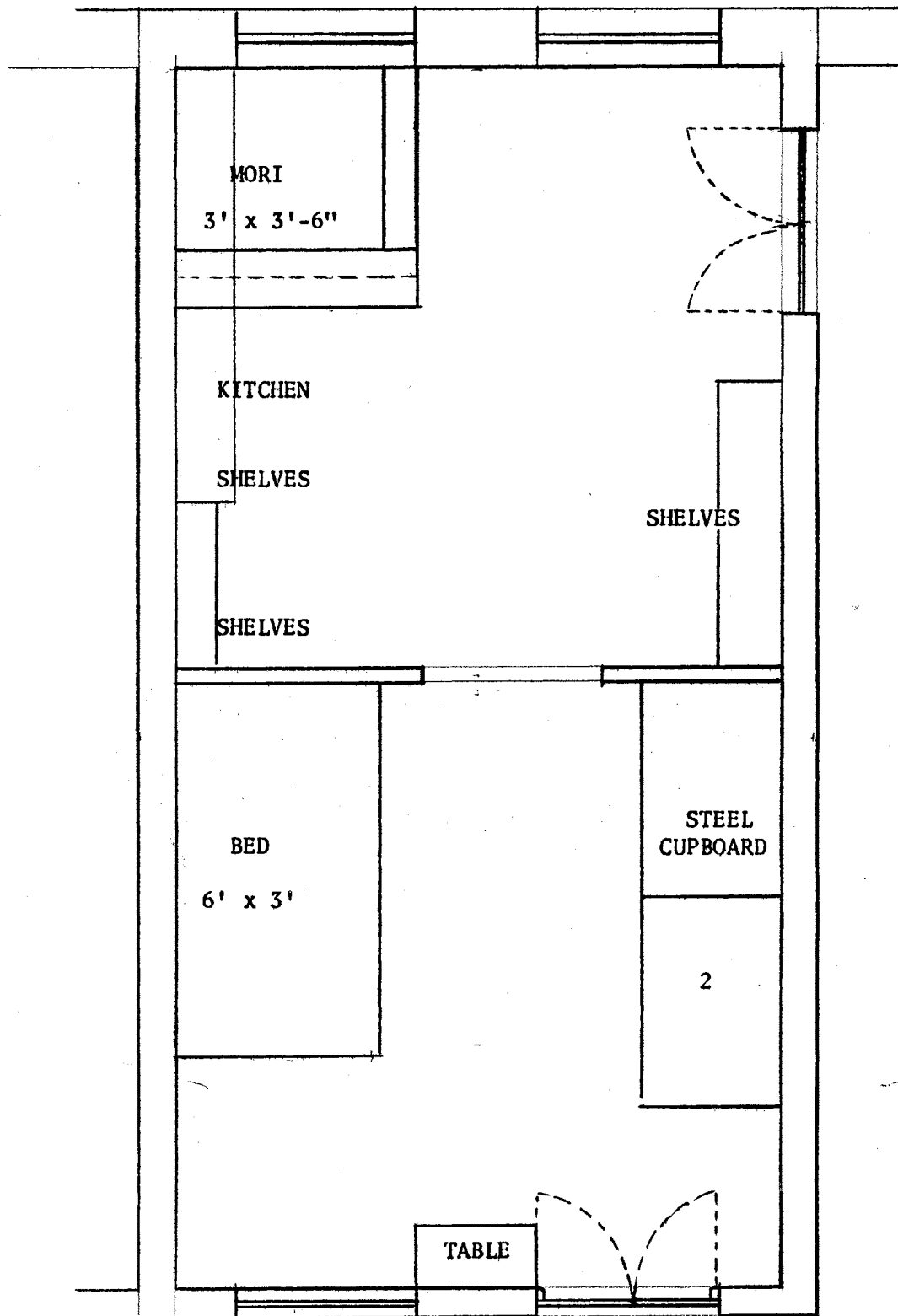


Figure 18. Floor plan for Family B. Scale  $3/8'' = 1'-0''$

## Family B



Figure 19. Partly living and kitchen areas  
with partition

## Family B



Figure 20. Kitchen; on floor and daily utensils

## Family C

Number of Persons: Eleven - husband and wife, two sons, two daughters-in-law, five grandchildren

Occupation: Artist; elder son, salesman; younger son, clerk

Annual Family Income: Rs. 40,000.00 (\$5,333.55)

Summary: The joint family system is very popular in India. Here we have a typical example. The head of the family, the grandfather, is responsible for everything. The income of all individuals goes into a common account. As indicated by the family income, this particular family is capable of spending money for alterations in their dwelling but they don't like to invest the money for these kinds of changes. They have a partition in the dwelling which divides the area equally. The children sleep with their grandparents while the two sons with their wives go to sleep in two different units which they purchased for privacy in another part of the building. They chose to keep one common kitchen for everyone due to joint family system and high costs.



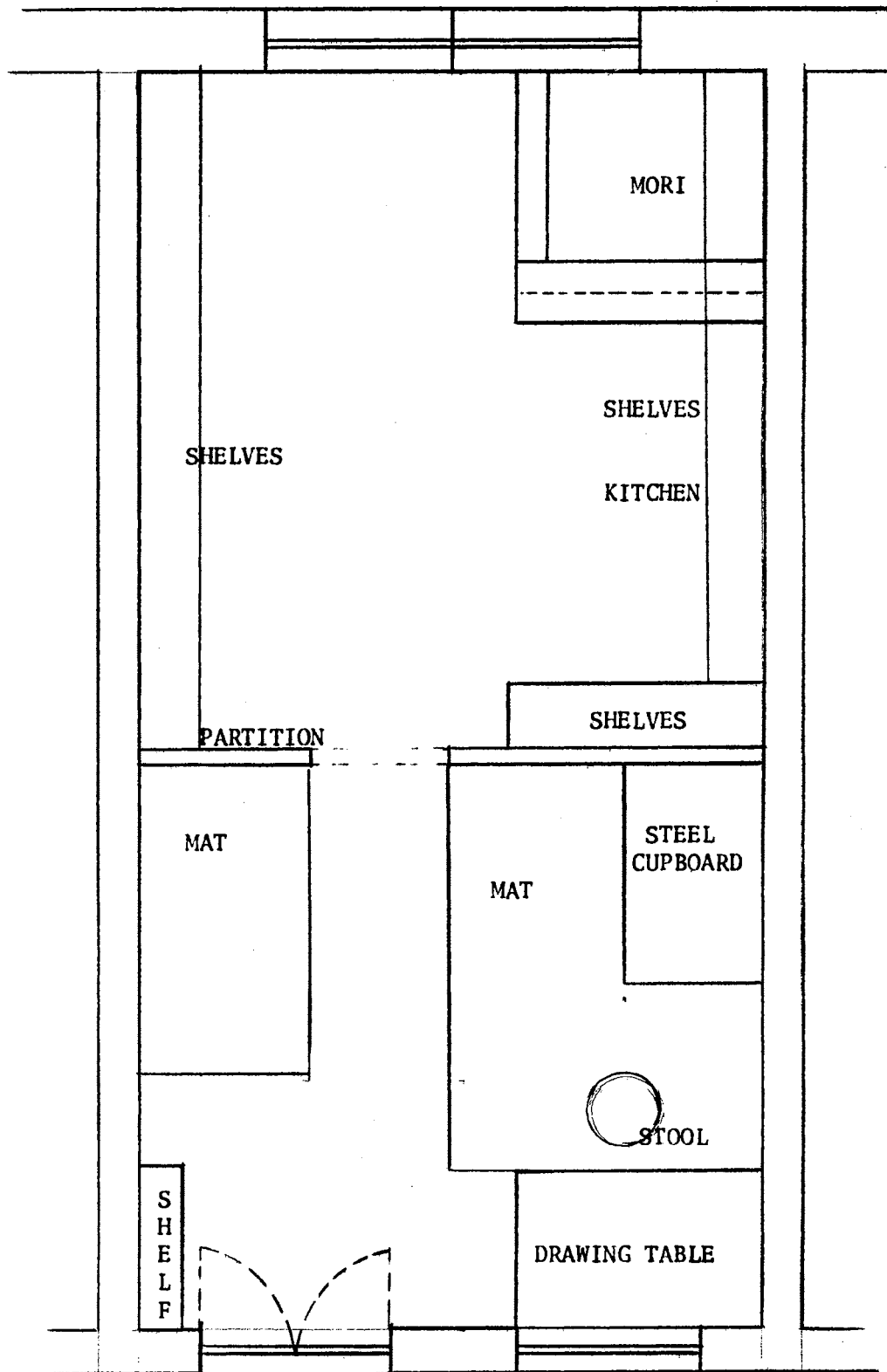


Figure 21. Floor plan for Family C. Scale  $3/8" = 1'-0"$

## Family C



Figure 22. Kitchen on floor and partition

## Family D

Number of Persons: 14 - mother, five sons, three daughters-in-law,  
five grandchildren

Occupation: Business chemicals, import-export

Annual Family Income: Rs. 75,000.00 (\$10,000.00)

Summary: This is a large family of 14 members. Three sons are married and two are about to be married. All work together in the field of chemicals and import-export. The family owns two dwelling units and desires to spend more for comfortable accommodations and privacy. One of the units has been partitioned and furnished very well. The bathroom has complete privacy and is equipped with tile on the floor and side walls. Due to shortage of space, standing kitchen is not provided. The clothes are dried by hanging them on a bamboo rod in the kitchen.

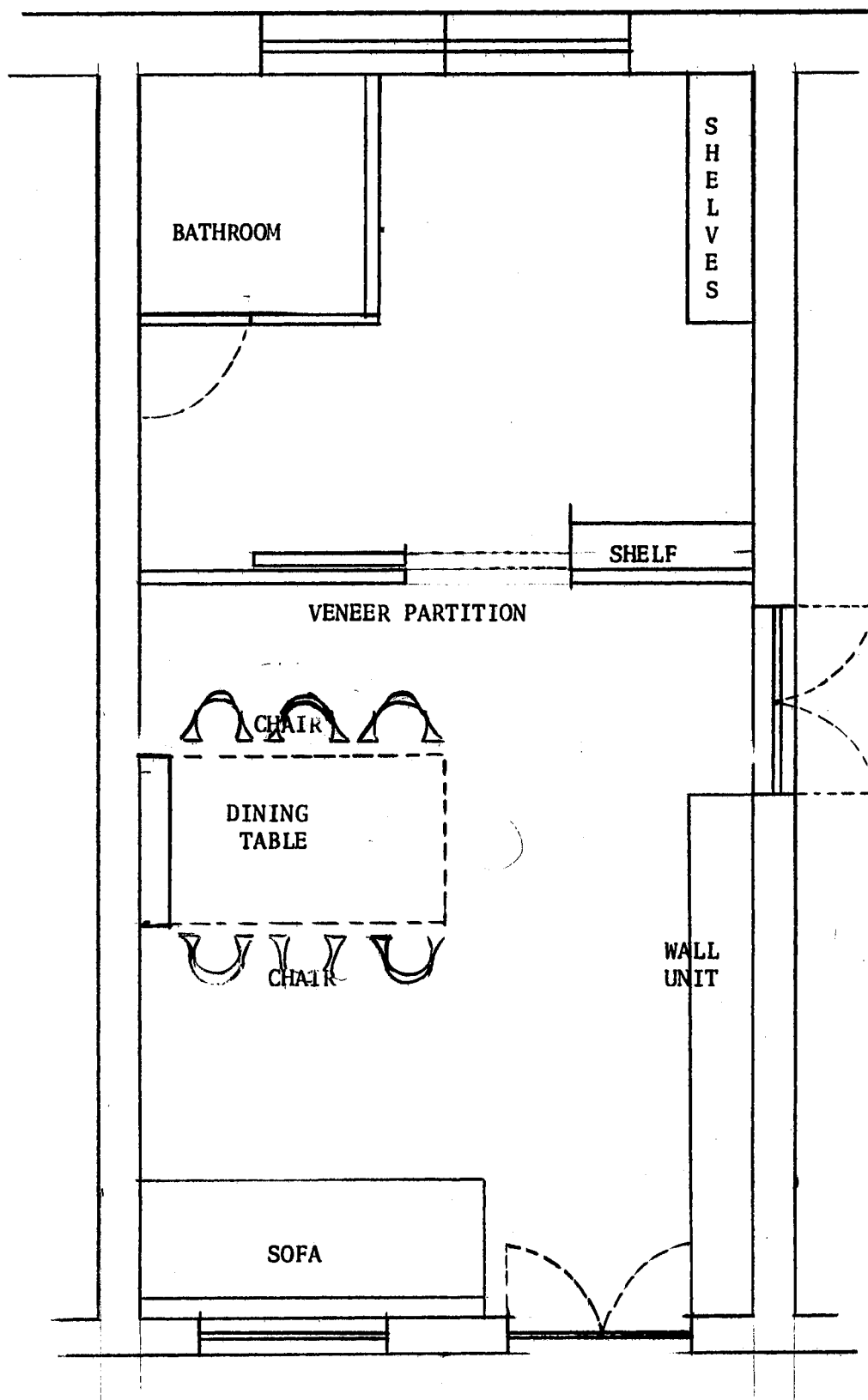


Figure 23. Floor plan for Family D. Scale 3/8" - 1'-0"

## Family D



Figure 24. Kitchen on the floor. Dwelling 1.

## Family D



Figure 25. Drawing room and bedroom. Dwelling 2.

Family E

Number of Persons: 12 - mother, five sons, 3 daughters-in-law, three grandchildren

Occupation: Business calendar company and publicity company

Annual Family Income: Rs. 75,000.00 (\$10,000.00)

Summary: This joint family has three different dwelling units on the same floor. The family income is enough and they can afford to spend to improve their living standard. It is felt here that due to differences of opinion no common step for improvement is taken. Presently, one room is utilized as kitchen in the day, with all modern facilities including dining table and chairs. At night, it is used as sleeping area. The adjoining unit is the common living room in the daytime. One couple uses the third unit at night and the one who got married recently goes to another unit about two blocks away. All members of the family are adults, creating a privacy problem.

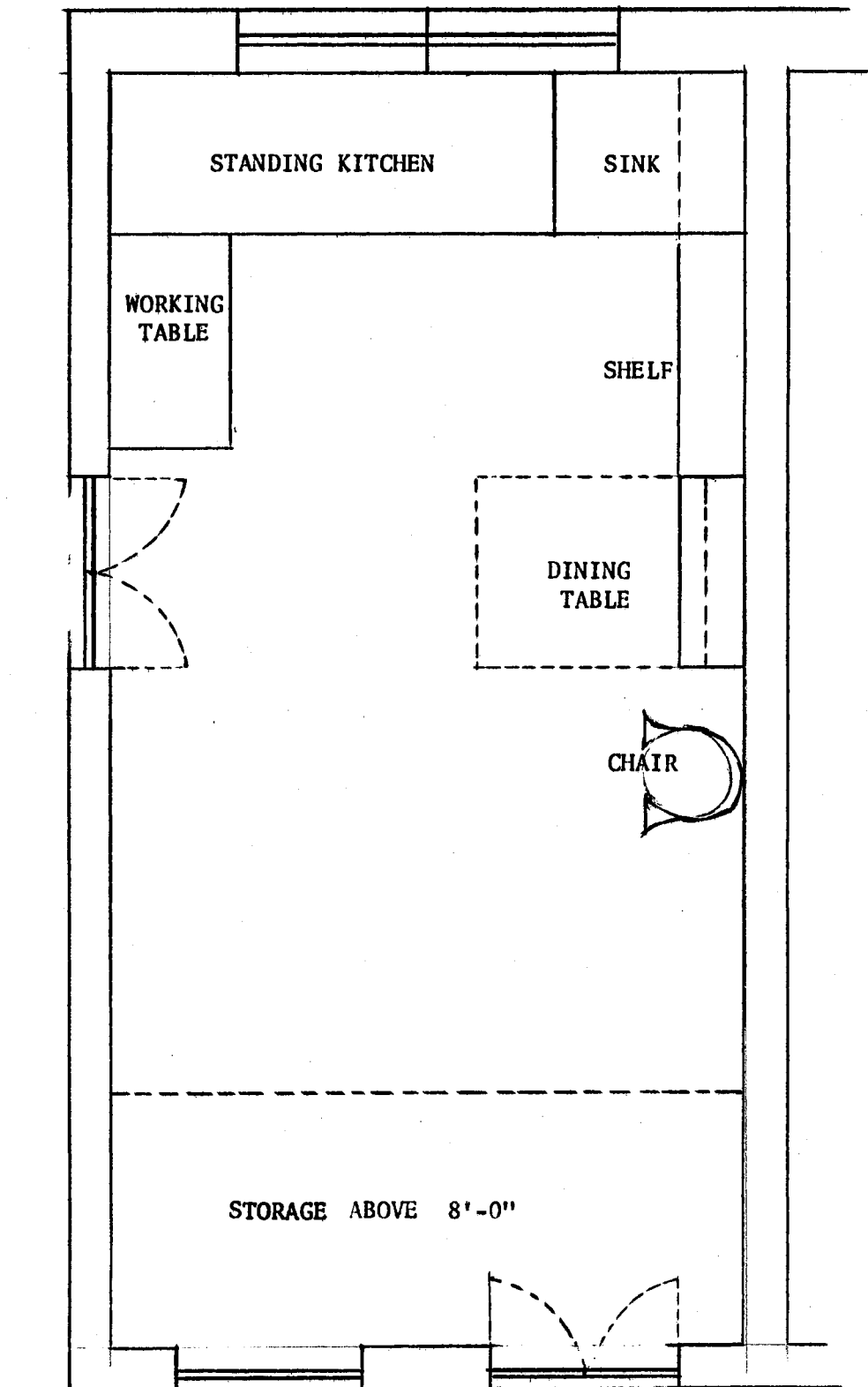


Figure 26. Floor plan for Family E. Scale 3/8' = 1'-0"



## Family E



Figure 27. Standing kitchen

## Family F

Number of Persons: Six - father, mother, son, daughter-in-law, two grandchildren

Occupation: Business chemicals

Annual Family Income: Rs. 60,000.00 (\$8,000.00)

Summary: This family has two units. One unit has been very well planned and decorated. The "mori" approximately 3' x 3' is used for bathing and other purpose was converted into a closed bathroom. They have a private line of water supply which is stored in a tank in the bathroom. Consequently, they have a continuous supply of water in the bathroom and kitchen. A washbasin has been provided just outside the bathroom. The unit has a standing kitchen with a marble platform for cooking. The space under the platform is used for storage. The decorative units are provided above the platform for storing utensils, bottles, flour, spices, etc., all in elegant style and material. Folding dining table and chairs are provided in the kitchen space. A false ceiling has been constructed covering one-third of the unit area as depicted in the picture. The area above the false ceiling is utilized for additional storage. A closet for each member of the family is provided near the entrance.

The second unit is used as a living room in the daytime and a bedroom at night. Compared to all other families, this family has better planned and equipped, and more satisfactory housing.

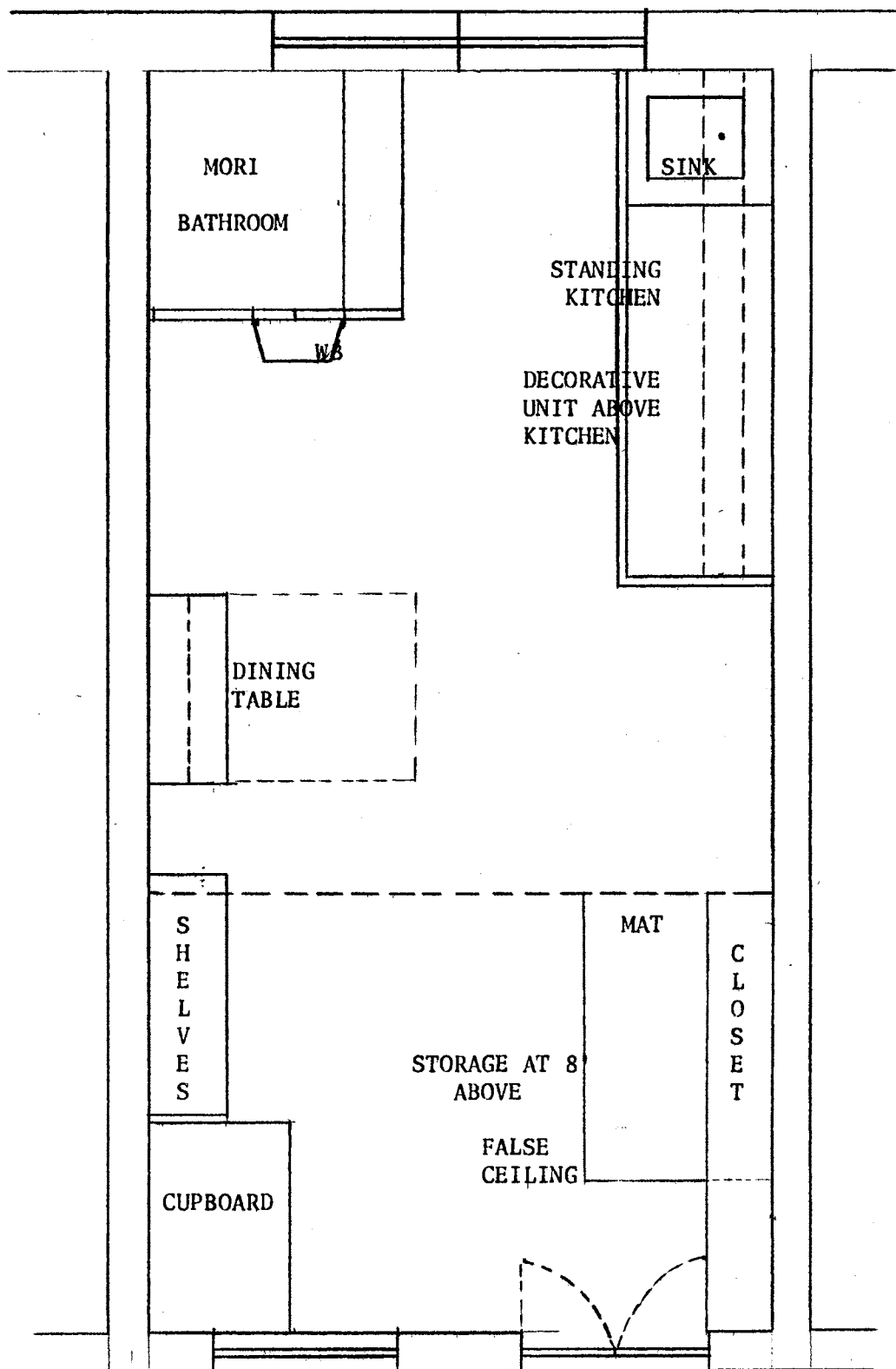


Figure 28. Floor plan for Family F. Scale  $3/8'' = 1'-0''$

## Family F



Figure 29. Entrance, storage and dining table

## Family F

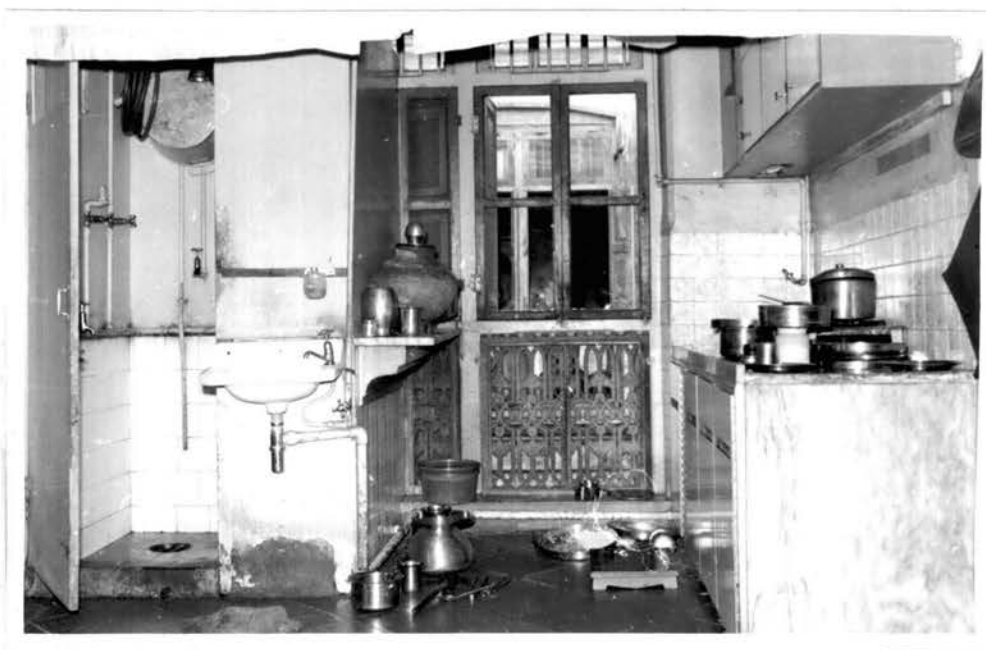


Figure 30. Standing kitchen, bathroom, lavatory

## Family F



Figure 31. Closets for clothes and storage



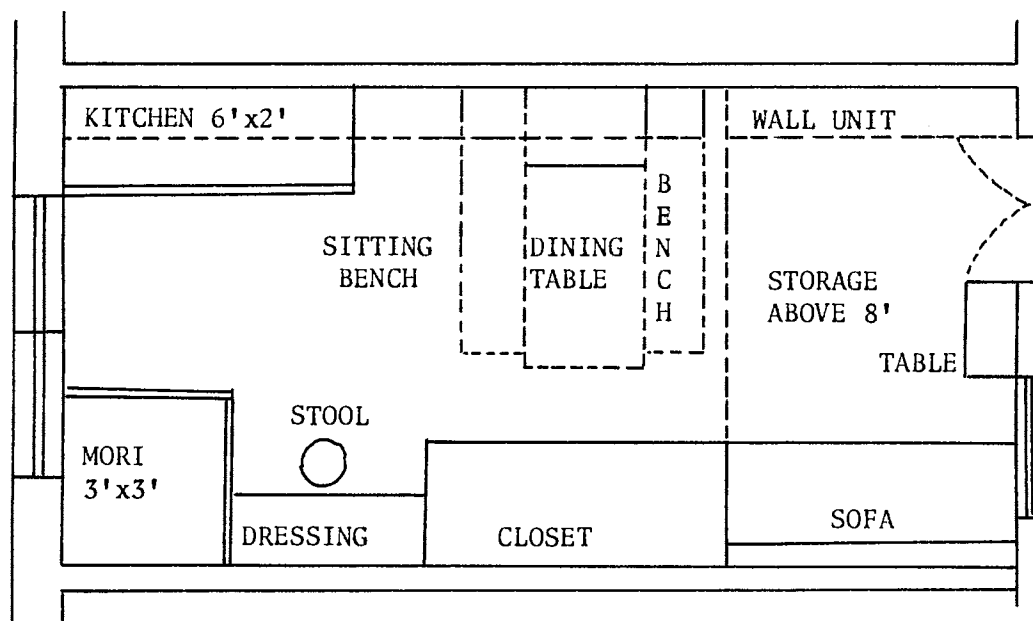


Figure 34. Proposed plan O. Scale  $1/4'' = 1'-0''$

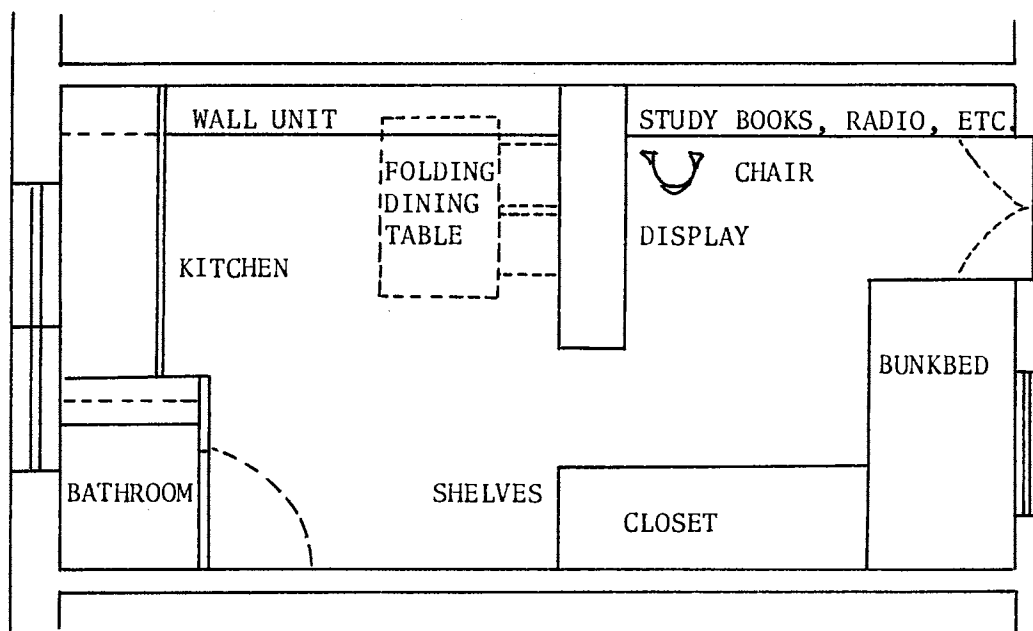


Figure 35. Proposed plan P. Scale  $1/4'' = 1'-0''$



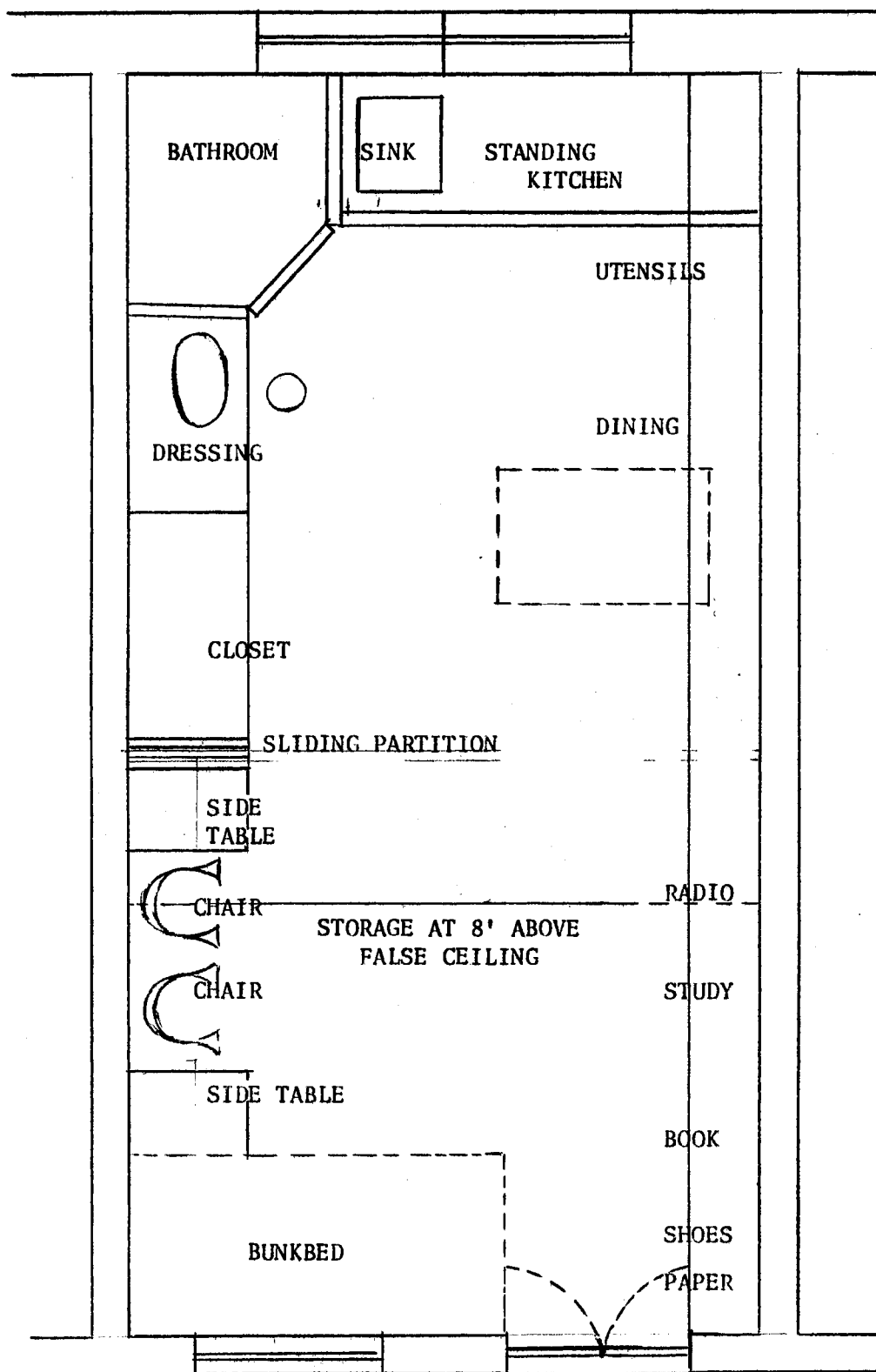


Figure 36. Proposed plan Q. Scale  $3/8' = 1'-0''$

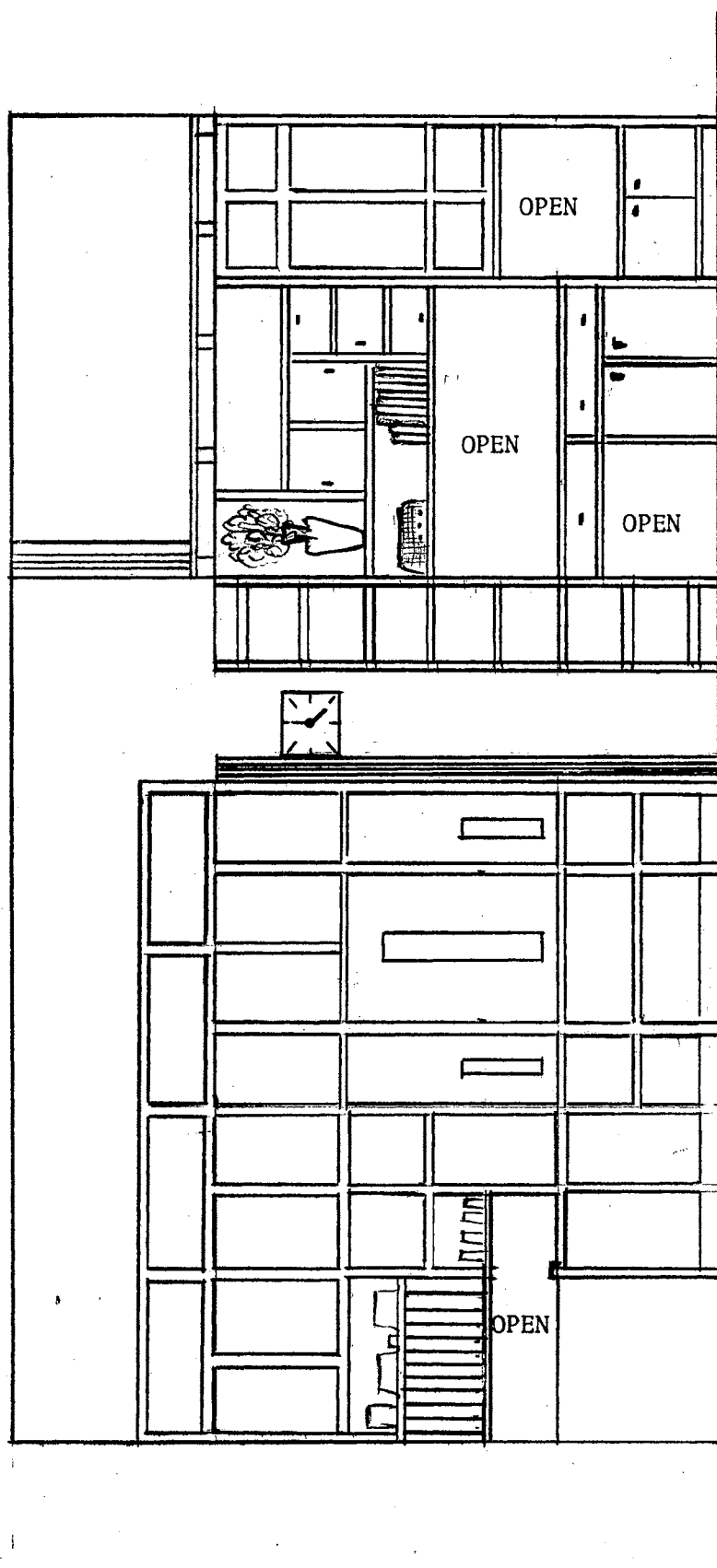


Figure 37. Elevation "A". Scale  $\frac{3}{8}" = 1'-0"$

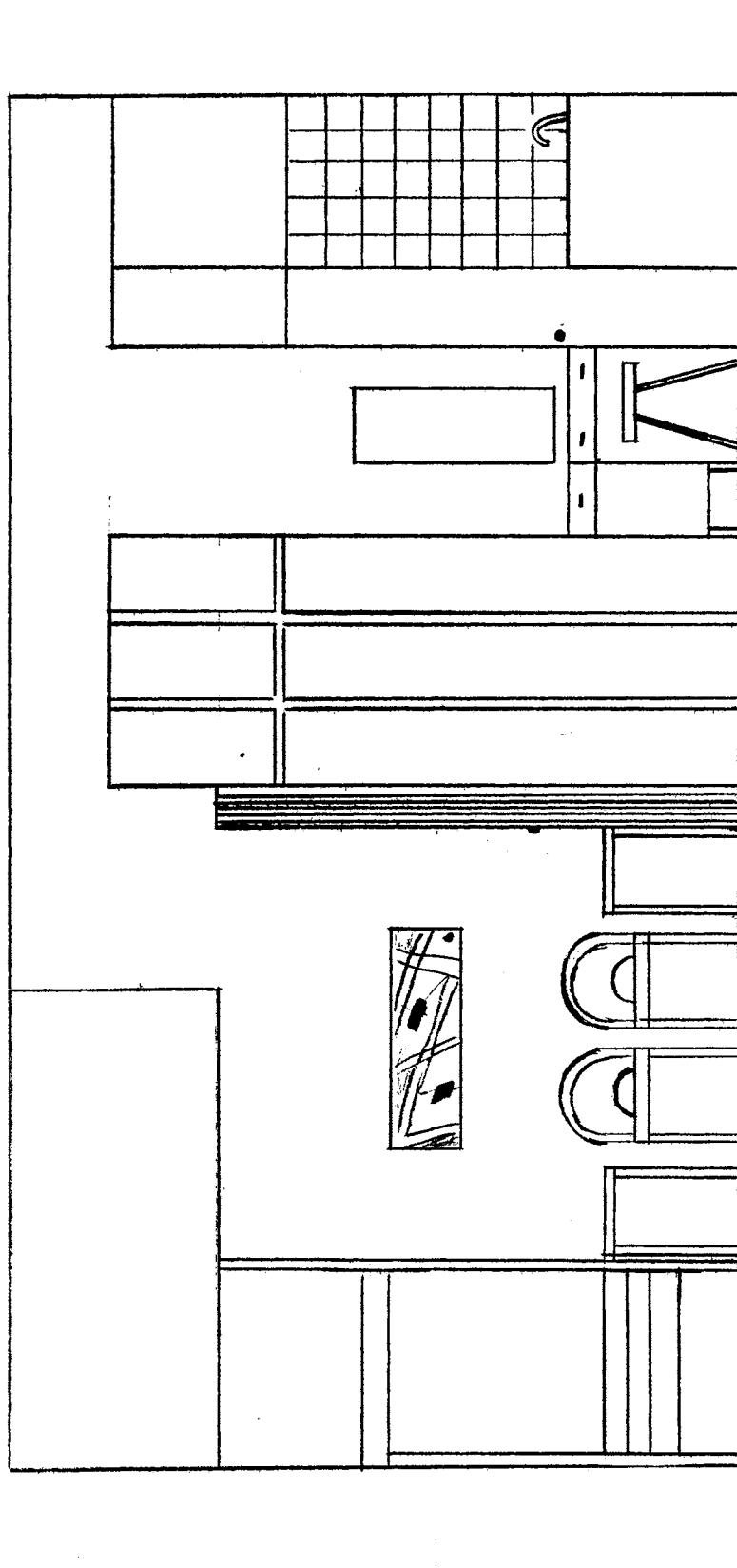


Figure 38. Elevation "B". Scale  $\frac{3}{8}" = 1'-0"$

## CHAPTER IV

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The average size of families living in Bombay is 5.2 persons, most of whom live in a one room living unit the area of which varies from 150 sq. ft. to 200 sq. ft. In Hongkong, the Housing Authority allows 35 sq. ft. per person compared with Bombay which averages approximately 40 sq. ft. per person. As most of the population of Bombay live in "chawls," they have little opportunity to enjoy any privacy. Further, there are few opportunities to raise the standard of living which could improve mental and physical health.

To improve the living unit, both facilities and conditions, guidance is essential for these families. The modifications suggested in this study can serve the needs of many Bombay families and would be possible within the financial means and space available to them.

Many of the housing units occupied today were built in the early part of the 20th century. The water supply lines and drainage systems were built at the same time and provide very limited service. Water closets and water taps are located in a common activities or utilities area. Water services are provided only 2 to 3 hours per day as various sections of the city have alternate times of supply to assure sufficient pressure in the taps. Everyone has to store their daily water needs in one or two drums. The Municipality is aware that a daily supply of 50 gallons per person is desirable, but for the present and the foreseeable

future, the supply of water available is 29 gallons per person.

Privacy is a major need within the dwelling. The findings show that dividing or partitioning materials such as fabric, woven cane, matting or other substances can be used to make two areas within the dwelling unit thereby affording the parents and children some privacy.

The "mori," approximately 3' x 3' or 4' x 4', contains a drain and is used by the family for bathing, washing and cleaning purposes. If partitions enclosed this area, privacy would be attained and the rest of the area could be better utilized.

Indian families are accustomed to preparing food on the floor. However, the last decade has seen an increase in the number of people who prefer to use a platform to prepare food, utilizing the space below for storage. This kind of "standing kitchen" increases the use of the dining table. In the limited area of the dwellings, folding type tables and seating units are most appropriate.

The living unit when divided as suggested will have the "mori," the standing kitchen, dining area and sleeping accommodations for the head of the family on the interior half of the dwelling. The remaining area will serve as a multi-purpose room for guests and children, this is the entrance area, study area and living room area during the day, and sleeping area for children at night.

The housing of most middle class families in Bombay presents many difficulties regarding lack of space and privacy and affords few amenities. However, application of modern techniques, including interior design, would satisfy the requirements of many families and would provide better housing.

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## GLOSSARY

1. Chajja. Balcony
2. Chawl. Multi-family housing building
3. Hectare. A metric measure of area containing 2.471 acres or 10,000 sq. meters
4. House gulli. Open area between two chawls used for disposal of trash, etc.
5. Hutment colonies. Unauthorized huts built on government or municipal land
6. Kaccha. Temporary structures or improvised slums
7. Mori. 3' x 3' or 4' x 4' area containing a drain and used for bathing, washing and cleaning purposes
8. Pacca. Authorized structures
9. Standing kitchen. Platform used for cooking
10. Zopadapatties. Temporary structures which are unauthorizedly erected on government or municipal land

2

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