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**AN EXAMINATION OF THE IMPORTANCE OF USER
SATISFACTION.
A STUDY OF SOCIO-SPATIAL RELATIONSHIPS WITH
RESPECT TO MIDDLE INCOME HOUSING.**



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A Dissertation Presented To The Faculty Of Architecture,
University Of Moratuwa, Sri Lanka,
As A Part Of The Final Examination In
M.Sc (Architecture) And To The
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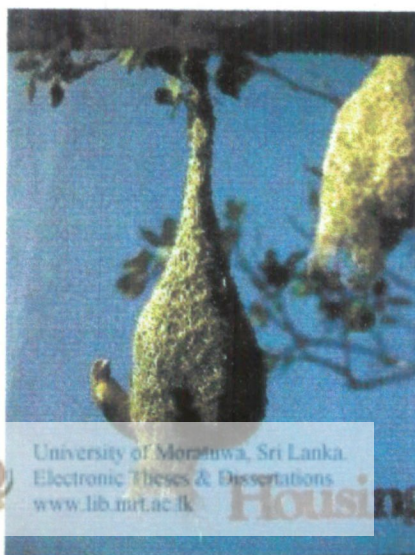
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Housing

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

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An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

ABSTRACT

Architecture is a reflection of social, cultural, economic and environmental dimensions of a particular society. As architecture reflects the prevailing requirements of a particular society, their house forms were moulded with reflecting the relevant income levels' needs and requirements.

In the urban context, the middle-income community plays a big role to balance the activities in the city. They have an urge for economic and social upward mobility. They are the common category that suffers from the housing problem in the urban context. The middle-income category, in the developing countries has started to depend on mass housing solutions in most of the parts of the world.

In Sri Lankan context, most of the government built housing schemes, have been satisfied only the quantitative requirements of the occupants. They are only given the required minimum space to carry out their daily activities.

Various modifications and mechanisms imply the un satisfaction of the occupants. Doing an examination on the user modifications and their relevance with the qualitative requirements will help to the designers of mass housing to due consideration to satisfaction of user on qualitative aspects. Architects can understand this pluralistic nature of cotemporary society and the evolving values of the occupants. This will help them to build up design criteria, which caters to the occupants' requirements with satisfaction.

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

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INTRODUCTION

1.1PURPOSE OF THE STUDY

1.2SCOPE AND LIMITATIONS

1.3METHOD OF THE STUDY

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

INTRODUCTION

The house is an organism in direct relationship to man. The houses are mere enclosures of human bodies. Housing goes beyond the mere provision of housing units.

At the most rudimentary level, housing is the process enabling the act of dwelling; establishing one's existence as appropriate for his living on earth, in the form of making homes.

Architecture is a reflection of a social, cultural, economic and environmental dimension of a particular society. Therefore, the life style and the aspirations of the particular society are reflected in their houses.

Along with the introduction of free economy system and the development of new industrial and commercial activities, Colombo became highly demanding place for people. People migrated from rural areas to Colombo and its suburban areas finding jobs and to gain better living standards. Rapid changes were taken place in the life styles of people, due to the free economy system. Money became the determining factor of life style of a particular person and various income categories were formed such as upper, middle and lower income.

As architecture reflects the prevailing requirements of a particular society, their house forms were shaped and molded with reflecting the relevant income level's needs and requirements through elements.

The government took the responsibility to cater to the housing needs of ever increasing population. The mass housing projects, such as low-rise mass housing,

four storied walk up apartments and the high-rise mass housing schemes came into existence. Low rise mass housing caters to the suburban areas and the walk-ups and high rises cater to the urban areas.

Formalized mass housing were produced in mass scale and macro-processes. The main target group was the urban poor. But, now the middle-income people in developing countries also have started to depend on mass housing solutions.

In the urban context, the middle-income community plays a big role when balancing urban activities. They are the major component in the government and the private sector. Especially the middle-income people who have an urge for economic and social upward mobility. They are the common category and the suffers from this situation of housing.

1.1 PURPOSE OF THE STUDY



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In the Sri Lankan context, most of the government built housing schemes, have been satisfied only the quantitative requirements of the inhabitants. Therefore they have only given the required minimum space to carry out their daily activities. But the qualitative requirements haven't been considered. Therefore in most situations, it can be seen tightly packed straight rows of houses which are not satisfy the psychological and sociological requirements of the occupants. ✓

Any person who can familiar to this field, because of the very little professionalism has been involved can create this kind of environments. Architects' special ability to satisfy the psychological and sociological needs while creating the built environment has not been applied in the greatest level in government sponsored housing schemes. ✓

When increasing the urban population as a result of migration and urbanization, the construction of new housing schemes should be essential to fulfill their housing needs. Their elemental needs should be provided by the government. ✓

The low-income people are satisfied with just a shelter. But the middle-income conscientious people are very much concerning about the qualitative requirements in optimum levels for the physical and mental satisfaction. People expect very high degree of spatial needs such as community, child supervision, security, maintenance, livability and responsiveness by the nature of housing and neighbourhood. They are very much concern about the higher degree of psychological needs such as identity, territoriality and privacy. ✓

Housing is not merely a provision of accommodation in mass scales. There are series of issues, which are integrated with the housing problem. Therefore it should be attempted to solve the psychological problems such as lack of sense of belonging to the huge community, sense of alienation to the society. These issues are seems to be caused the unsatisfyness of the dwellers. ✓

All these factors should be incorporated with the planning of schemes and their layouts. The intention of this study is to examine how these all aspects involve in proper designing of housing schemes. Since the users' unsatisfyness with the design is a major problem in government built housing schemes, this attempt will be an eye opener to the architects who involve in designing of mass housing. ✓

The aim of this study is to examine the importance of user satisfaction, in the sense of socio-spatial aspect, when designing housing schemes in Sri Lankan context. It was found that very little attention has given to achieve the user satisfaction through the design itself amongst the other aspects that are being considered, when designing a housing scheme. ✓

Due to the high demand for the housing, the designers try to satisfy the dwellers, only with providing basic physical requirements for living. These basic requirements are not interwoven with the psychological and social aspects and therefore the occupants' psycho-socio requirements are not been satisfied. The user should be satisfied with the physical requirements as well as psychosocial requirements. In other words, only the quantitative requirements have been

taken into consideration and the qualitative requirements have been neglected in most of the situations.

This research and its' findings will help to the housing designers to due consideration to satisfaction of user on qualitative aspects such as socio-spatial relationships, which is very important human requirements, the built environment could provided.

As a solution to the ever-increasing urban population, public housing schemes are built by the government. Here the designers pay their attention only on fulfilling the essential basic physical requirements for the inhabitants. The occupants of these houses do so many modifications and alterations to achieve these lost characters of their houses. Due it is neglected by the designers, to provide physical and social requirements at it's early stages of the design process, the resultant environment may causes suffer for the whole community. The satisfaction of the user through the design itself may help to carry out their day-to-day activities happily and without psychological constraints.



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This is an attempt to discuss the important psychological aspects, which connect with the spatial quality of the built environment and the sociological aspects and how could be achieved user satisfaction through qualitative requirements. As a developing country like ours it is very important to prevent from the danger of improper design environments, which require costly modifications.

Due to improper built environments, the occupants may unsatisfied and they may compelled to use various modifications and mechanisms which may affects to the neighbouring community as well as to the out side community of the scheme. Hence the designers' responsibility is to fulfill the qualitative requirements of user through their design itself.

1.2 SCOPE AND LIMITATIONS

The middle-income people have an urge for economic and social upward mobility and they are the common category that suffers from the housing problem. They are very much concerning about the qualitative requirements in optimum satisfactory level and always attempt to gain the lost requirements in their built environment.

So many precautions have been taken by the occupants to obtain satisfaction can be found very commonly in the middle-income category. This trend is varying within the sub groups in the middle-income category. This tendency is stronger among the lower middle-income mass housing dwellers.

If consider the low income people, they are satisfy with just a shelter and the basic quantitative requirements because they have comparatively less urge for economic and social upward mobility than the middle income people.

When consider the upper income people, they have lot of opportunities to select houses with all necessary requirements in prime locations. They are not suffering any kind of housing problems.

Therefore the study is limited to the middle income mass housing. In urban and suburban situations, due to compactness and limited resources in mass housing situations, will facilitate to get a clear picture of the prevailing situation and the gravity of the problem. It may leads to understand the successful design solutions, the occupants expected through their built environments.

1.3 METHOD OF THE STUDY

The prevailing situation is necessary to be observed to understand the user perception of built environment and their impact of socio spatial relationships. For this research, three housing schemes were selected. They are;

- ▣ Raddolugama housing scheme
- ▣ Jayawadanagama housing scheme
- ▣ Anderson housing scheme

These housing schemes were selected after doing several studies on some large-scale middle-income housing schemes. Raddolugama is a low-rise suburban housing scheme while Jayawadadagama is a mixed low-rise and walkup housing scheme, located within the Colombo district. Anderson is a four-story walkup apartment in Colombo.

Conducting a primary field survey got the general knowledge about the socio-spatial relationships. Then the existing socio-spatial relationships were carefully analyzed and the necessary qualitative and quantitative information were collected by giving a set of questionnaires and it was slightly adjusted considering the specific dwelling conditions.

The different changes they have adapted to gain the loss characters were analyzed and different aspects which were involved with modifications were identified through the questionnaire survey.

Then try to identify the better solutions and the wrong decisions given by the occupants in the sense of gaining their psychological satisfaction through their living environment. Finally, based on the case study, certain conclusions were made.

The first chapter of this dissertation has been allocated for the background studies of housing and the relevant qualitative aspects in the sense of user satisfaction. The contribution of architects in the government sponsored mass housing with other influences also has been taken into consideration.

Second chapter has been allocated to the case study of four selected government built housing schemes in Colombo and its' suburbs, to test the validity of the facts, mentioned in chapter one.

The third chapter is the analysis of the impact of socio-spatial relationships on built environment. That means the analysis of the research data, which have been found in the case study.



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CHAPTER ONE

USER PERCEPTION OF BUILT ENVIRONMENT IN HOUSING

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

CHAPTER ONE – USER PERCEPTION OF BUILT ENVIRONMENT IN HOUSING

The house is a solution given by architecture; to the basic need “shelter”. A house provides shelter from the elements; some authorities interchange the word “shelter” and “housing” as if they are synonymous. But as Seow and Podger (1980) point out in their paper, the poorest people provide for many other aspects of human needs, even when the shelter is inadequate.

As Wittick (1974) defines, house is a structure intended or used for human habitation. A house is the man’s most favorable place for living.

A house is the onliest physical form of a building, which has the potentiality to become a “home” when man’s psychological expectations merge with the physical form.

When a place becomes a family space, it is a “home”. The connotations of home run deeply in human psyche. It is not only provides shelter from the physical elements, but also social, spiritual and psychological. It has the symbol of a mothers’ breast for a little boy who is protected from the rain, the local bully, ghosts, and devils or just of himself in the dark.

Bachelard (1964) defines; home is our little corner of the world; our first universe, a real cosmos in every sense of the world.

Porteous (1970) defines, home is the territorial core, a preferred space and fixed point of reference for daily activities.

For a similar perspective Dovey (1977) suggests that home is “ an orderly principal in space” and notion of place underlines the opposition between home and journey.

The word “housing” has the connection of series of house, a residential area. If a shelter inadequately describes “home” the “housing” inadequately describes the nature of “habitat”. In housing, large range of families make a community. If an area creates for a wide range of physical, social and spiritual needs, it is not merely a sub-division of land.

Public housing was itself introduced as a socialistic concept. In other wards, mass housing was introduced by the government, as a solution to the housing problem of ever increasing population.

Although supplying shelter for anyone is critical, the quantity of dwellings does not itself solve the housing problem. Dwelling must meet the expectations and living modes of the user.



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1.1 THE HOUSING AS A SOCIAL NEED AND LARGE SCALE HOUSING AS AN APPROPRIATE SOLUTION.

Housing is an extremely complex phenomenon. It is difficult to overview the nature of housing because housing belong to the people, who in most cases cannot afford to have their housing professionalised.

The importance of providing adequate dwelling with favorable qualities has become a compulsory need in the world today, because housing is one of the basic requirements of human beings. It is second only to food and clothes. In housing, houses are provided in mass scales to homeless families to an affordable cost to make them “homes” they should be suitable environments to the dwellers with physical, psychological, physiological.etc. comfort to grow as homes. Mass scale housing is the

solution to the congregated urban population. The land extent is a constant when the population density increases. Therefore, mass housing is a compromise to balance the demand and supply of houses.



Figure 1- Living in a pipe, sharing a cup of tea (in India)

Source- Correa, Charles, (1999), *Housing and urbanization*, The Urban Design Research Institute, Bombay, India.

The housing, as an issue has been taken into discussion after independence in Sri Lanka. It was a very easy task of building house during the pre independence period. Free availability of resources such as land and building materials may cause to that. Building construction was also not a difficult task due to the agriculture based social system and high degree of social interactions.



Figure 2- No land for ever increasing urban population

Source- *Towards Safer Cities* (1998), Sevana Media Services, National Housing Development Authority, Gunarathne Offset Limited.





Figure 3- Pavement dwellers (in Sri Lanka)

Source- Towards Safer Cities (1998), Sevana Media Services, National Housing Development Authority, Gunarathne Offset Limited.

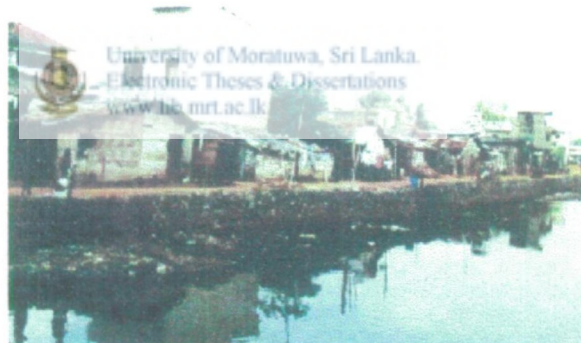


Figure 4- Slum and shanty development on canal banks due to inadequate land in Colombo

Source- Towards Safer Cities (1998), Sevana Media Services, National Housing Development Authority, Gunarathne Offset Limited

Official concern about housing began in a limited way during the Second World War. During the pre-independence (1931-1948) there was a colonial concept of housing to solve the housing problem of the workers who worked in government departments such as Railway department, Buildings department, Police department etc. those workers were provided quarters from their relevant departments. Continuing the

colonial concept, during the period of 1948-1949, the Torrington housing scheme was constructed for the government servants.

Soon after the independence in 1948, a Loan Fund for housing was established. It was to be administered by a "Board" became a reality in 1949. This "Board" made loans available to co-operative societies, companies, building societies and in some circumstances, even for individuals to construct houses. The government gave grants to the local authorities to building housing schemes for the lower and middle-income people of the urban and rural areas.



Figure 5- Government provided grants to build self help houses

Source- NHDA published leaflets.

In 1953, the department of National Housing was established. In 1954, the National Housing Fund was established superseding the Housing Loans Board, which had difficulty in coping with the needs of the middle and lower income groups. The commissioner, who headed the department, was empowered to raise loans, grants to building societies, co-operatives, housing bodies and individuals to acquire land and implement housing schemes.

Some urban flats were constructed in the Colombo area in the time period of 1950-1960. The Condominium Property Act of 1970 and the Apartment Ownership Act of 1973, which superseded the earlier law, were expected to encourage the building of

flats. The Common Amenities Board was established to look after and maintain housing property.

The Government, elected from the election of 1977, was aimed at improving or increasing the housing stock. The Hundred Thousand-Housing Programme, Million Housing Programme came into existence with large numbers of targets.



Figure 6- In rural areas people were provided maximum support by the state; maximum involvement of the builder.

Source- NHDA published leaflets, University of Moratuwa, Sri Lanka.
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Due to industrial development, rapidly growth population and urbanization. Etc. subsequently transformed this simple process of house building to expensive and complex affair. With the introduction of open economy, lot of changes took place in every part of the society and the construction of housing mainly taken by the government to solve the housing problem in the urban areas.

Housing has become one of the major issues in Sri Lanka as well as other third world countries, in the contemporary situation.

House has built by individually as well as by the government or the private sector in masses for sale. The income level of the people is a major parameter when selecting a locality to the residence. So the individual houses in prime locations are very much beyond the reach of average people.

Individual house builders are provided various kinds of housing loan systems and design solutions from the government and non-government sector. In mass housing programs also the catchments population are provided various kinds of easy paying systems.

1.2 THE SPATIAL NEEDS OF HOUSING

Some psychological requirements are involve with the satisfaction of the occupants when living in the built environment. They are community, child supervision, security, maintenance, livability and responsiveness. To fulfill these spatial needs, the form of housing should be in the satisfactory level when designing mass housing schemes.

1.2.1 COMMUNITY

A community can be identified as a group of people which may vary from the largest such as the whole population of a country to the smallest, the family.

Community is important to organize dwellings and spaces to promote social interaction. The inhabitants of the neighborhood should be able to look after their own interests by organizing themselves.

The correct number of population in a community is easy to success the day to day human activities.

“Anthropological evidence suggests that a human group cannot coordinate itself to reach such decisions if it’s population is above 1500, and many people set the figure as low as 500.” (1)

(1) Alexander, Christopher (1977), A Pattern Language, New York: Oxford University Press

1.2.2 CHILD SUPERVISION

Child supervision has become a major issue for the parents who live individual houses or the mass housing. But this has to be considered by the designers, specially designing mass housing to provide visual and aural contacts as well as easy access between play areas and dwelling units.

1.2.3 SECURITY

In early societies, every one knew every one else. So, they could develop a strong sense of belonging to the tribal group. In a housing scheme, due to the process of large number of people, it is very difficult to have contacts among all. But the ancient tribal hunter gave an answer by living in the vicinity.

In modern housing schemes, these contacts among them can be intensified by various communal spaces such as community centers, parks and clubs providing within the territory. It will increase the occupant's sense of shared defense against the out side world. A scheme which fails to satisfy this requirement, become a failure in ensure the sense of security of the occupants.

1.2.4 MAINTENANCE

It is important to consider the maintenance of the house by the designers to minimize undesiganted interior public spaces.

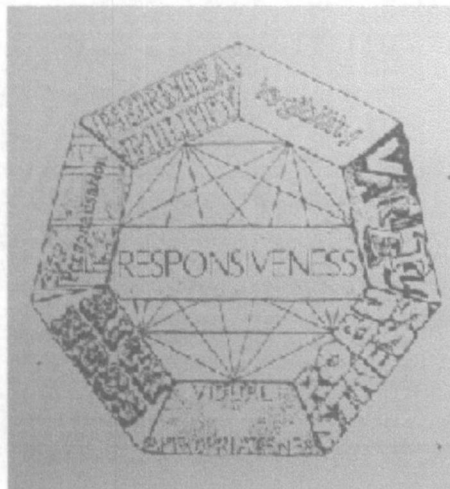
1.2.5 LIVABILITY

A house should provide privacy for individuals in dwellings. It should essentially provide alternative views and cross ventilation for good health.

1.2.6 RESPONSIVENESS

The built environment should provide its' user with an essentially democratic setting, enrich their opportunities by maximizing the degree of choice available to them. We call such places responsive. The degree of choice of people can make many levels, by the design of mass housing.

- It affects where people can go, and they cannot: the quality we shall call permeability.
- It affects the how easily people can understand what opportunities it offers: the quality we shall call legibility.
- It affects the range of uses available to people: the quality we shall call variety.
- It affects the degree to which people can use a given place for different purposes: the quality we shall call robustness.
- It affects whether the detailed appearance of the place make people aware of the choices available: the quality we shall call visual appropriateness.
- It affects peoples' choice of sensory experiences: the quality we shall call richness.
- It affects the extent to which people can put their own stamp on a place: we shall call this personalization.



1.3 EVALUATION OF GOVERNMENT SPONSORED HOUSING PROGRAMME IN SRI LANKA AGAINST ISSUE OF LARGE SCALE HOUSING AND THEIR SPATIAL NEEDS.

When consider the housing strategies in our country, over the past few decades, a greater emphasis was attached to housing by the governments elected after 1977. Housing was given the higher priority in the national list.

Efforts were made to mobilize technical resources. There was a clear shifting in the political stance in that the private sector, in the form of firms of consultants, contractors, developers and consortia, were seriously encouraged to participate in the government's house building program. In April 1979, a new agency with wide powers, the National Housing Development Authority (NHDA), was established to lead the program. Important features of this housing program were it's national scale and it's distributive equity.

The government has embarked on an ambitious housing effort, on a number of fronts (rural, urban, urban and rural aided self-help housing and model villages) to achieve the target of hundred thousand housing program and million housing program through out the country as a measure to solve the ever growing housing problem.

The bulk of the housing units produced were in the rural areas. They were "type-plan" houses built by the government and distributed equally between all the electorates. In urban areas some high-rise projects were introduced for the middle and upper middle-income groups.

The NHDA did not deal with urban slums and shanties. The urban low-income settlements were deal with by a division of the Urban Development Authority (UDA). Activities of this division, which were again mainly Colombo based, at a small scale and on a project basis, covered the following;

- Permanent upgrading which included improvements to the physical, social and economic environment;

79041

- Temporary upgrading where minor improvements were provided;
- Relocation within the site; where improved housing was provided; and
- Relocation to alternative sites where improved housing was provided along with ancillary facilities and community services.

The layout plans for the housing schemes are prepared mainly by adopting “type-plans”. In this instance, it is questionable whether the government’s intention is to improve the living standards of people by providing with them a human environment or increase the housing stock. Although it affected the lives of people, the floor areas were taken by the administrators at policymaking level. It is done without the involvement of architects.

As far as the large-scale public housing schemes are concerned the objectives of the government are as follows;



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1. To relieve the pressure in the city of Colombo by strategic development of major neighborhood schemes in the suburbs.
2. To create a new town development by making the maximum use of under utilized buildable land.
3. To provide housing for the demand created by the rapid growth of suburban centers.
4. To eliminate the haphazard settlements, by making use of the experience gained from the existing urban areas.
5. The building work to be carried out in the following ratios, 85% for low-income group, 10% for the middle and lower middle-income group and 5% for the upper middle-income group. This is on the basis that the largest percentage of investment by

the non-government sector for housing will go to the latter categories of income groups.

6. To discourage the process of migration to main city centers, especially to Colombo where no expansion is possible at present.

7. To generate funds by the sale of large scale housing schemes and to construct more subsidized housing units for the poor.

source - Locana Gunartna, K .
Sirivardana, Susil
Jayaratna, K.A
Edirisinghe, Janaki
Shelter in Sri Lanka, An Overview of Policies and Performance.

Rukmalgama, Raddolugama, Ranpokunagama and Mattegoda housing schemes, which are in the periphery of Colombo, are developed to achieve the first objective.

A study of these schemes will help to understand whether the mistakes made in the past has connections with the (aspect of) socio, cultural and spatial relationships of the communities. It will provide more knowledge to design new housing schemes.

1.4 GOVERNMENT SPONSORED MIDDLE INCOME HOUSING IN SRI LANKA

In urban areas, some high rise housing schemes and walkup apartments were built by the government for middle income people. In suburban areas, some low-rise housing schemes were located to decentralize the urban population.

The housing schemes, which were built for any income category, the government, only concern about the providing of basic physical requirements. But the middle income, conscientious people very much concern about the socio, spatial, cultural and

psychological requirements. The major reason for that may be values and aspirations such as social and upward mobility.



Figure 7- In urban areas, some walkup apartments were built.

Source- Towards Safer Cities (1998), Sevana Media Services, National Housing Development Authority, Gunarathne Offset Limited.



Figure 8- in suburban areas, some low-rise housing schemes were built.

Source- Towards Safer Cities (1998), Sevana Media Services, National Housing Development Authority, Gunarathne Offset Limited.

Therefore the middle-income category is the most suitable category to understand the qualitative requirements through social spatial relationships.

1.4.1 SUBDIVISION WITHIN THE MIDDLE INCOME GROUP

The middle-income group has been subdivided into three sub groups in the early 20th century. To this sub division, it has been considered the differences in educational levels and social attitudes. These sub groups are;

1. Upper - middle income group
2. Middle- middle income group
3. Lower - middle income group

The people who are falling into this group are more established in terms of education, social status and the economy. They have the affordability to choose any kind of house according to their requirements.



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The people belong to this income group don't have the financial strength or the social status as the upper- middle income group. Most of the people in this category have regular income sources in the government sector or the private sector.

These people are provided various loan schemes and government built housing schemes because they are facing difficulty in constructing houses. Due to high degree of aspiration, they tend to choose houses in urban centers often compromising with other comfort levels.

The people falling into this group have regular income sources which only just sufficient to fulfill their daily needs. In urban areas most of them try to select mass housing such as flats and low rise mass schemes, which need only a long-term monthly installments to be paid to own a house.

1.5 OTHER FACTORS INFLUENCING IN HOUSING

The process of housing is evolved with different strategies and the success of a particular housing scheme can be measured by considering a number of aspects. They are;

1. Political aspect
2. Economic aspect / Financial aspect
3. Technological aspect
4. Design aspect

1.5.1 POLITICAL ASPECT

Over the past few decades, providing houses for the homeless was mainly happened according to the political background. A greater emphasis was paid to build housing throughout country by different sectors such as fisheries housing, estate housing, rural housing and urban housing, as the part of the development program. But at the end, all the governments used this housing program, as their political goals and purchasing a house from the schemes is also became a major political issue.

Due to the influence of political aspect, the maximum numbers were achieved from the acquired lands without considering the optimum space for living and the other qualitative requirements of the people.

1.5.2 FINANCIAL / ECONOMIC ASPECT

Each and every project should be environmentally and socially feasible. The third factor is the economy. This financial aspect considers whether the housing project is economically viable.

Especially for the third world countries like Sri Lanka, whatever the construction work that goes on, minimize the overhead and wastage is essential due to limited economy. The resources, which are available in the context, should handle with the skillful use of technology to the economic viability of the project.

In developing countries like Sri Lanka, providing of livable housing units and the other qualitative requirements have been neglected due to the reason of financial crisis in the economy.

1.5.3 TECHNOLOGICAL ASPECT

The technological aspect is another significant aspect, which should be given the due consideration. Appropriate technology, materials and quality of the final product, conforming to the specified standards should be looked into, when designing a housing scheme. If the occupants have to spend more money on rebuilding and repair works, after moving in, that scheme will be failure from the technological aspect.



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1.5.4 DESIGN ASPECT

Design aspect is the total quality of the physical environment, which results from the layouts, detailed planning of the individual house unit and other buildings. This is where the architect can contribute, the most to make the housing programme a success.

When looking at the design aspect of housing scheme which we are constructed in the recent past, it becomes clear that most of them were designed in line with western thought of achieving the maximum living space within a limited extend of land. The result will be a housing scheme not satisfying the psychological needs of the occupants. Inadequate thought to proper planning and layout of residential environments have given rise to ensure surroundings with the scheme.

1.6 ARCHITECTS' CONTRIBUTION IN GOVERNMENT SPONSORED MASS HOUSING.

Architects are the members of the main profession to enter housing, yet their training is more appropriate for elite clientele and grander scale of building. An architect's prime duty is to solve a particular problem that emerges from a socio-cultural and spatial needs of the society, where the ultimate result will be a creation of a built environment. In an attempt to create this environment, any mistake could lead to serious effect to the user as well as to the society.

Therefore the duty of an architect should be always satisfy the user when creating a built environment. It is his responsibility to cater the needs of the user or the society, at the same time giving the highest value for the expenditure.

In mass housing, architects cannot involve deeply. Therefore the needs and aspirations of individuals have been neglected. It may be caused several reasons to fail the mass housing schemes in Sri Lanka. The primary cause will be architects haven't a correct and deep insight about users' needs values and aspirations, when creating the built environment for them.

In mass housing situations, the architects design for the unknown clients or the unknown users. Here, there is no shearing of values with the architect and the client. Neither architect nor client can communicate with each other. The desires, aspirations and values of the potential users, who represent different life styles and social backgrounds, are not taken into consideration and conflicts are raised regarding the social and psychological effects of the living environment.

1.7 PURPOSE OF ARCHITECTURE

"Of all arts architecture is the hardest to avoid" (B.B.C., Spirit of the age, 1975, page 1). Because it provides solutions for human needs, it can be called a problem solving exercise, which is a combination of both science and art. Architecture creates a built

environment which fulfilling the 'needs' of a particular society considering cultural, sociological, economical or spatial aspects. The end result is a built form with or without a building.

Architecture solves the problems, mainly answering three questions which are "what", "why" and "how". "Within various economic and geographical constraints, the biological, physical and psychological make up of man and the laws of physics and structural knowledge, there are always numerous choices available, particularly science man has a great happens to him and then react to the symbols as if they were the actual environmental stimuli. 'Socio-cultural forces' therefore, become of prime importance in relating man's way of life to the environment" (2)

Good architecture fulfills the client's objectives and the project objectives while providing the feeling of satisfyness to the client and the user. The final product should sociologically, functionally and philosophically competent. Either good or bad could be defined according to its success and fulfillments of the purpose for which it is created.



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Although the creation of a particular quality to the environment is very difficult task, the final goal should be not merely fulfilling the quantitative requirements but also the qualitative attributes of the product should be considered.

1.8 REQUIREMENTS OF INTANGIBAL COMPONENTS OF HOUSES

Under spatial requirements discussed about essential tangible components in housing and now it is going to reveal the intangible components, which relate with the physical, psychological and socio-cultural requirements of the user.

(2) Rappoport, Amos (1969), House Form and Culture, Prentice Hall Inc, Englewood cliffs, N.J. page 48

Identity is essential when identifying how a man is in a particular place in the built environment. Familiarity with the environment is created through identity. Physical features can facilitate identity to a built form. E.g.; colour, texture...etc.

In mass housing, can be seen the equality and the sameness of every house. It has become a big disaster for one's personality. The lack of "sense of place" is a result of lack of identity. In housing, this would create anonymous environments resulting "homelessness".

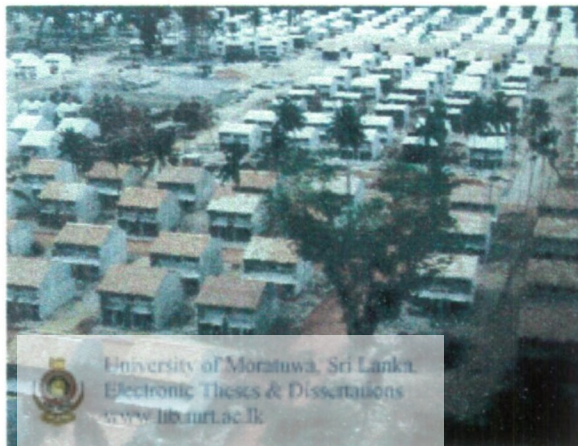


Figure 9- Loss of identity in two- storied housing

Source- NHDA published leaflets.



Figure 10- Loss of identity in walkup apartments.

Source- NHDA published leaflets



Figure 11- Sameness in four storied flats.

Source- NHDA published leaflets

Due to the type housing units, it strongly violates the “self image” of the inhabitants. The self-personalization of inhabitants has been limited. So the self-identity also has been limited.



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Defining territories is an instinctive behavior of animals as well as the human beings. But the difference of the human beings is they want a territory with definite demarcations against unwanted intrusions (disturbances). These demarcations bring about an emotional security to the inhabitants. The dimension of the territorial need is varying from culture to culture.



Figure 12- Territory defined by boundary walls - Jayawadanagama

In mass housing, the territory has been reduced to give more community spaces. The territory is gradually reduced from low-rise housing to high-rise housing. High-rise housing gives the image of "tower-in-park" and all dwellings have the same relationship to the ground and all residents share common, often unarticulated open space.

Each and every person expects to reduce the unwanted external interactions and communication. The dimension the man expects the privacy is vary from culture to culture according to the personal attitudes. Modern man prefers more privacy than early (primitive) societies. So, the modern man is more individualistic.

In mass housing, it is very difficult to reduce unwanted communications and interactions due to lack of privacy and the dwellers are always stress minded. Privacy level expected by each person is varying according to the cultural, psychological and behavioral pattern. But due to the use of type plan houses, this concept can't be fulfilled in mass housing.



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Variety is always a loss factor in mass housing due to use of type houses in low-rise schemes and the single building form for the high-rise apartments. Therefore, this affects on individual personality and self-identity of the inhabitants.

Physical concepts are help to fulfill the psychological concepts in housing. They are help to demarcate the territories while giving the sense of public and private relationship of spaces. The activity pattern and the behavioral pattern is mainly control by the mind frame, which is generated according to the physical attributes. For an instance, walls, floors, steps, levels, colours, water are commonly used in housing.

The physical concepts are involved with the spatial progression. For example, to generate the feeling of here and there, push or pull, this and that. The "sense of place" is created by the organization of physical attributes. In mass housing schemes, due to the loss of physical concepts, the "sense of home" has been lost. The incorrect

relationship of each elements and the way they organized, there can't be seen the correct movement, hierarchy and continuity.

People are emotionally more comfortable, when he is in limited space enclosed from immensity. It is said that it is more comfortable, when the external walls are one half or one third as high as the width of the space enclosed, while if the ratio falls bellow one forth.

Due to the material, colour and the height of the enclosure, the expected degree of comfort and the purpose can be varying from culture to culture. In mass housing, this concept can't be seen in the satisfactory level.

One of the most common problem of mass housing is loss of center. Therefore the life styles of dwellers are not formal and the visitors face in troubles when entered to the scheme.

In a house, or the housing scheme, the center acts as a point of reference for their orientation within the house. For mass housing, it helps to organize the spatial structure of the dwelling in hierarchical order, and has a community importance for locating the common and important activities. This should not be the geometric center of the site. This will be important in the progression of the scheme as main space. In individual housing units, this can be the living room where the whole family meets.

Due to the insufficient space of government built houses and the less understanding of the designers, there can't be seen an order and a hierarchy in terms of importance of activities. This can be seen in the whole housing scheme also. There should be a correct order of spaces according to the function, combine with the main space. These harmonious links of spaces help the user to perceive it conveniently.

By nature, human being can't live in isolation. Therefore he lives as a community. In this community, family is the social unit because it is the smallest social group in the society. Not only within the family, but also within the community, the interaction is

very important to their survival as a society. Under this concept, there are two sub-concepts, which are loss in mass housing.

The infrastructure such as internal street network, religious centers, community centers, web of shopping, play grounds, learning networks are some of places which will increase the inter-personal interactions.



Figure 13- Playground; one of the places which will help to increase the interaction.

Source- NHDA published leaflets

The qualitative aspects and the quantitative aspects, which are, involve continuing the occupants' socio-spatial relationships are very important to maintain the user satisfactions in middle income mass housing schemes. In our country, the architects' special ability to satisfy the user while creating the built environment has not been applied in the greatest level due to several reasons. Users involvement is totally zero. But the architecture can play a very big role on behalf of the user satisfaction. A research will be help to identify the loss factors and the better design solutions.



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CHAPTER TWO

EXAMINATION OF BUILT ENVIRONMENT OF MIDDLE INCOME HOUSING IN SRI LANKA

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

CHAPTER TWO – EXAMINATION OF BUILT ENVIRONMENT OF MIDDLE INCOME HOUSING IN SRI LANKA

2.1 CASE STUDY ONE – RADDOLUGAMA HOUSING SCHEME

Raddolugama was selected as the first case study to examine the degree of user satisfaction in terms of socio-spatial relationships in mass housing schemes. Raddolugama is the largest housing scheme in Sri Lanka, which has been built by the government for middle-income people, within the time period of 1981 and 1982 as a model village. This housing scheme has been built by the government as a solution to the urbanization and migration of people to Colombo.

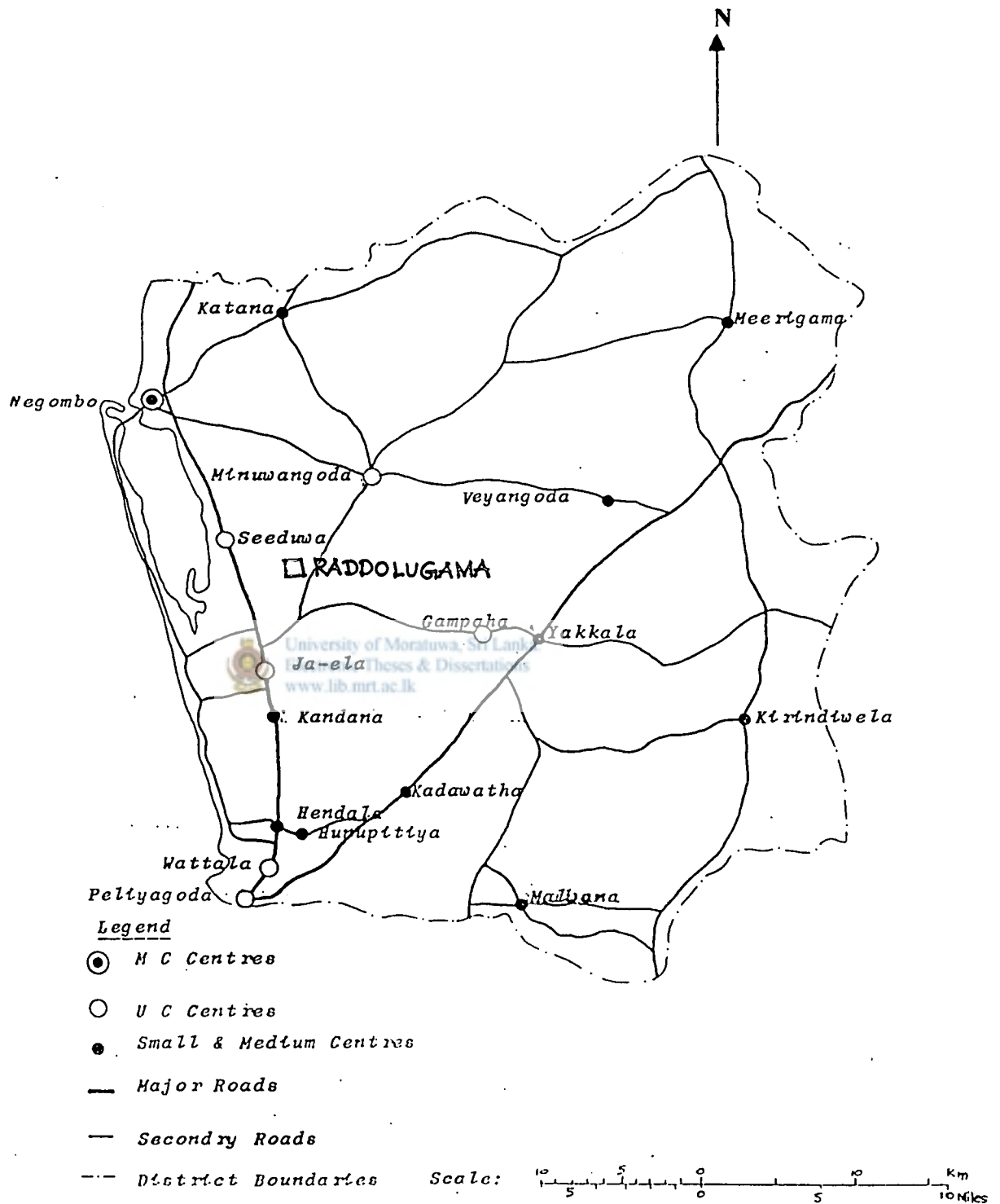
By providing houses and transport facilities in a suburban area like Raddolugama, the people who work in Colombo, can daily travel and it was a solution to minimize the housing problem in Colombo.

2.1.1 LOCATION

The housing scheme is located in Gampaha district, Katana electorate, Siduwa police area. This is 31 kilometers distance from Colombo.

This area is mainly famous as garment and industrial zone. But the designers and probably the planners have taken an intelligent decision by selecting a remote location from the industrial zone.

GAMPAHA DISTRICT



LOCATION OF RADDOLUGAMA HOUSING SCHEME

2.1.2 ROJECT OBJECTIVES

The design was mainly handled by the State Engineering Corporation when the client was National Housing Development Authority. The main objective of the project was to provide maximum number of houses within the premises and to provide infrastructure and other community facilities to the occupants. This was done by the government to minimize the rapidly increasing population density in Colombo. When consider the lay out plan and the type plans of individual housing units, it is very clearly seen, the overall design was influenced by the quantitative requirements rather than qualitative requirements of the occupants. But this housing scheme has provided more community and infrastructure facilities when compare with the other mass housing schemes. The degree of choice of selection of houses also very high due to the three type houses and their huge variation in the floor areas.

2.1.3 THE GENERAL CHARACTERISTICS OF THE HOUSING SCHEME



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The extent of the scheme is 106A 2R 09P and it is a land which almost flat. It has provided houses for 2022 families. There can be seen three types of housing units namely B, D, F. The housing density is 19 units per acre. Their floor areas ratio is 1:2:3 respectively. These houses were sold to the people with the collection of 25% down payment and to cover the rest of the payment within 50 years by equally distributing the balance with no interest. Implications were handled by the N.H.D.A. under direction of Ministry of Housing. This is a compromise for the middle-income people who suffer from the housing problem in Colombo.

All houses contain two floors; ground floor and upper floor. In most of the situations a common roof and a common staircase have been used to minimize the construction cost of a house. Each and every house has its' own separate land plot. Only in type F can be seen two types of houses.

1. 37 numbers of twin houses
2. 4 numbers of individual houses

House type	No.of units	Sq.area per unit (sq.ft)	Average plot size (perches)	Value per unit Rs.
B	1696	400	04	70,000
D	247	800	08	140000
F	78	1200	11	179000
Total	2022			

HOUSE TYPE	AVAILABLE FACILITIES	
	GROUND FLOOR	UPPER FLOOR
B	Hall, kitchen, toilet	2 bed rooms
D	Hall, bed room, kitchen and dining, toilet, open verandah	2 bed rooms, toilet, open balcony
F	Hall, bed room, dining and pantry, kitchen, car port, court yard, toilet	2 bed rooms, toilet, and balcony.

Most of the occupants have grown trees in their land plots they were functioning as nice gardens. When take the overall lay out, these trees can be seen as forest patches and it has contributed to soften the manmade environment of the occupants.

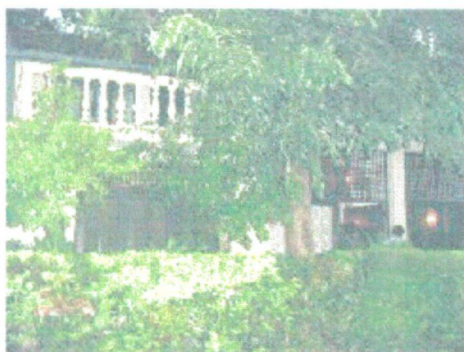
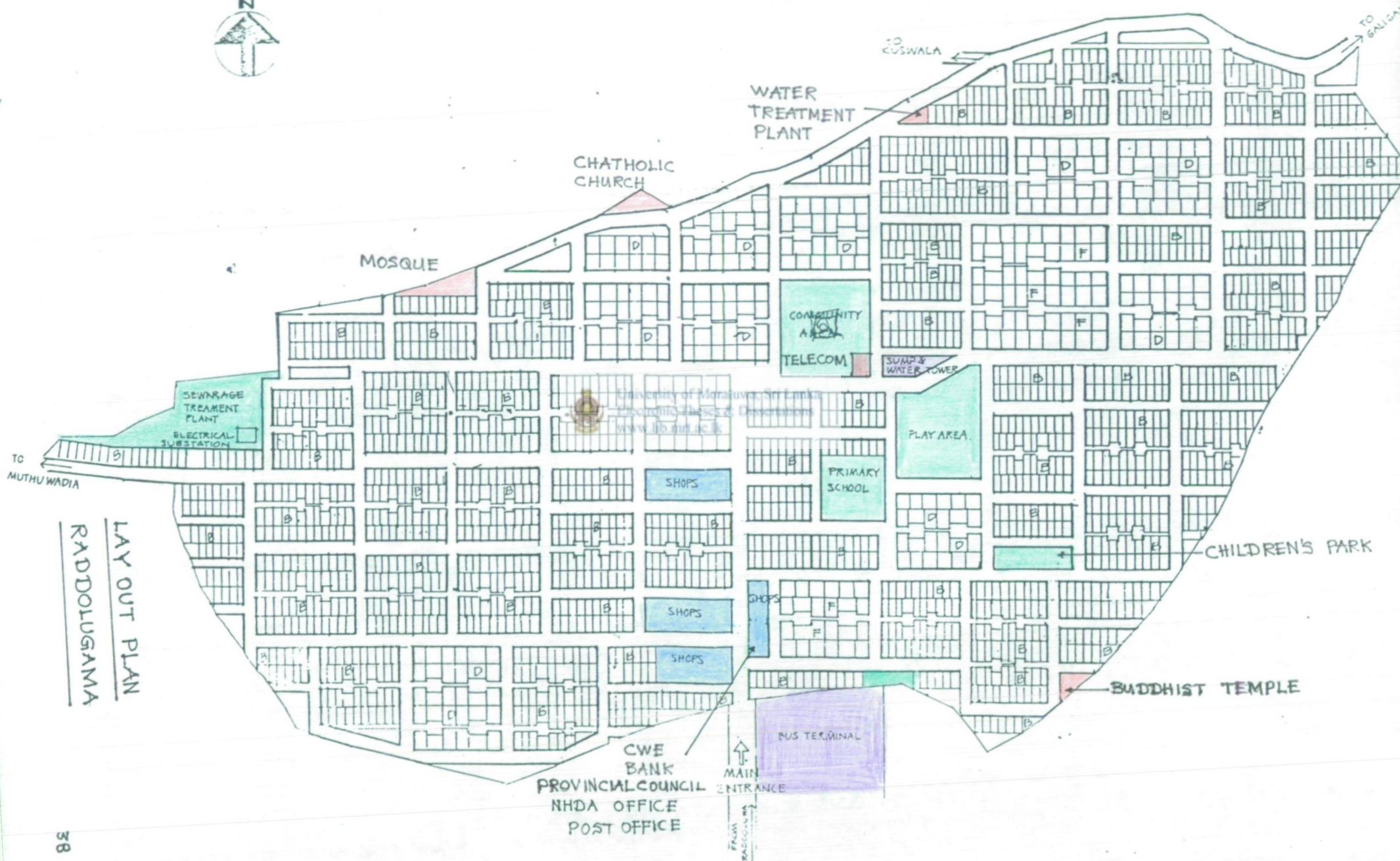
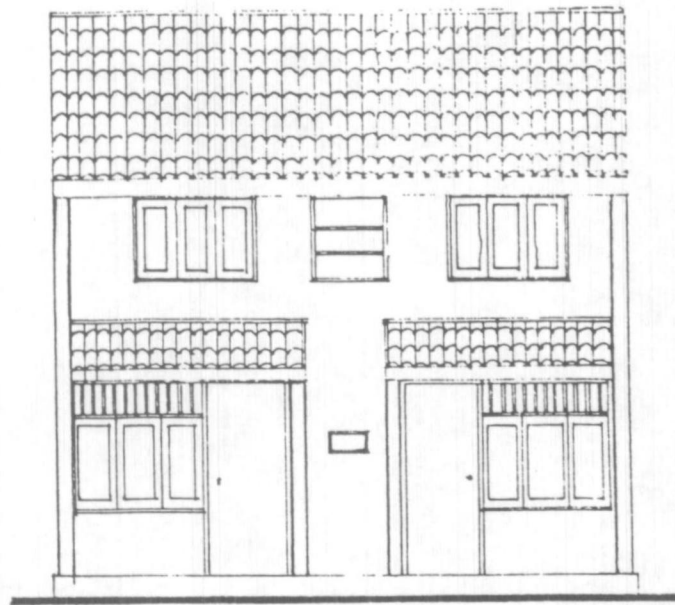


Figure 14- Trees are contributing to soften the environment and give pleasant feeling to the built environment (Raddolugama- type "F")



LAY OUT PLAN
RADDOLUGAMA



FRONT ELEVATION
OF ORIGINAL HOUSE

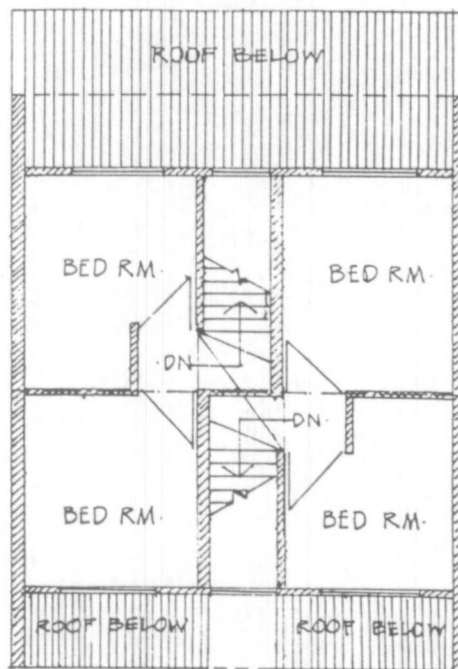


SIDE ELEVATION

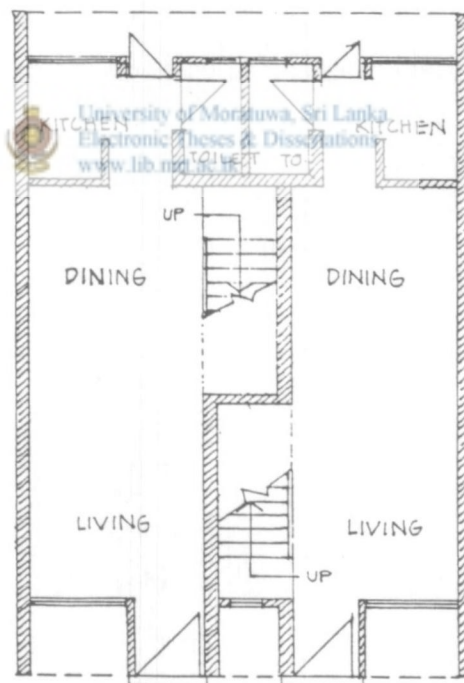
FRONT AND SIDE ELEVATIONS

Raddolulama

Type-B



UPPER FLOOR PLAN

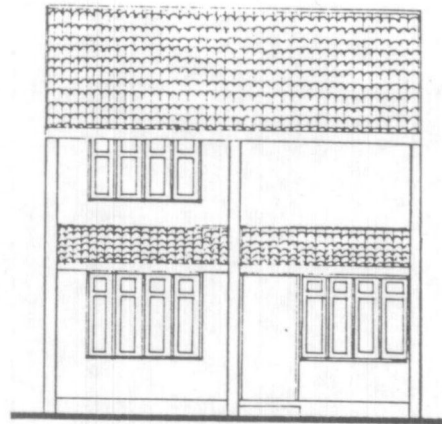


GROUND FLOOR PLAN
OF ORIGINAL HOUSE

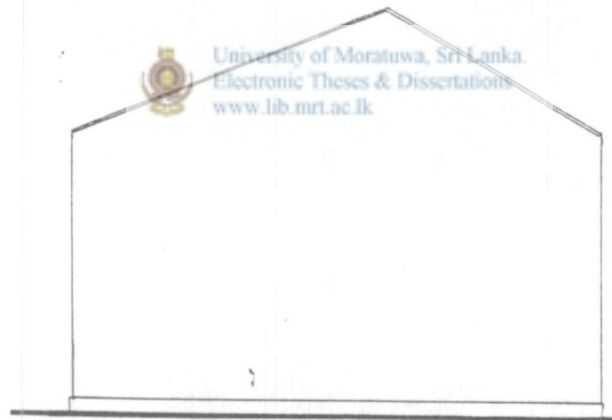
FLOOR PLANS

Raddolulama

Type-B



FRONT ELEVATION
OF ORIGINAL HOUSE.

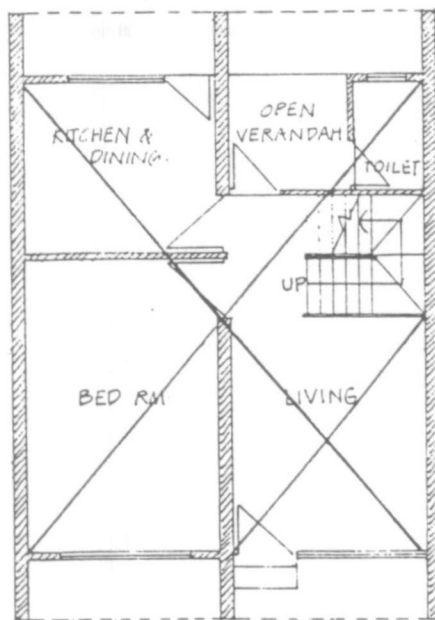


SIDE ELEVATION

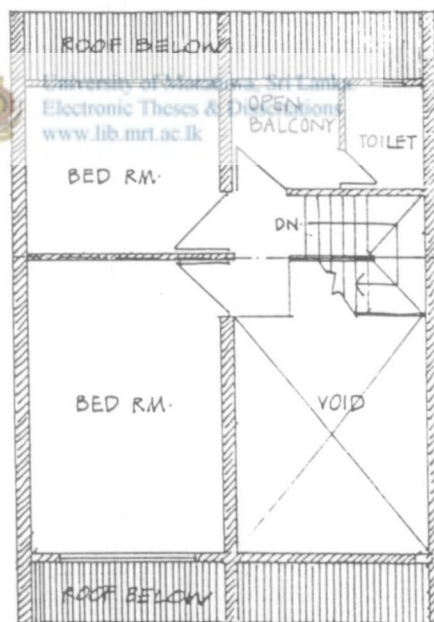
FRONT AND SIDE ELEVATIONS

Raddolulama

Type-D

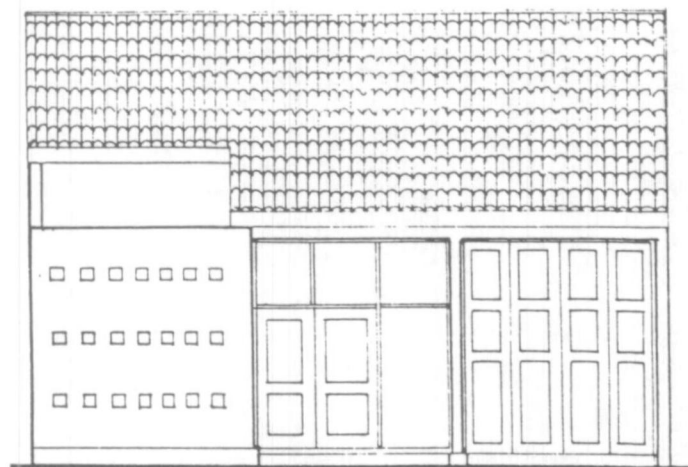


GROUND FLOOR PLAN
OF ORIGINAL HOUSE



UPPER FLOOR PLAN.
OF ORIGINAL HOUSE.

FLOOR PLANS
Raddolulama
Type-D



FRONT ELEVATION
OF ORIGINAL HOUSE.



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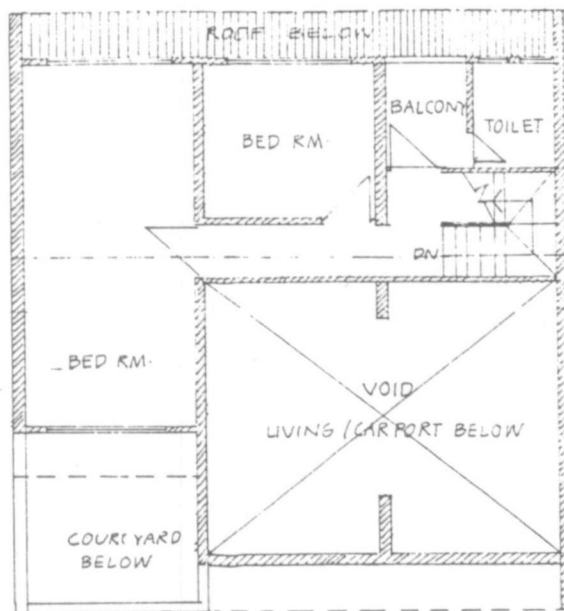


SIDE ELEVATION

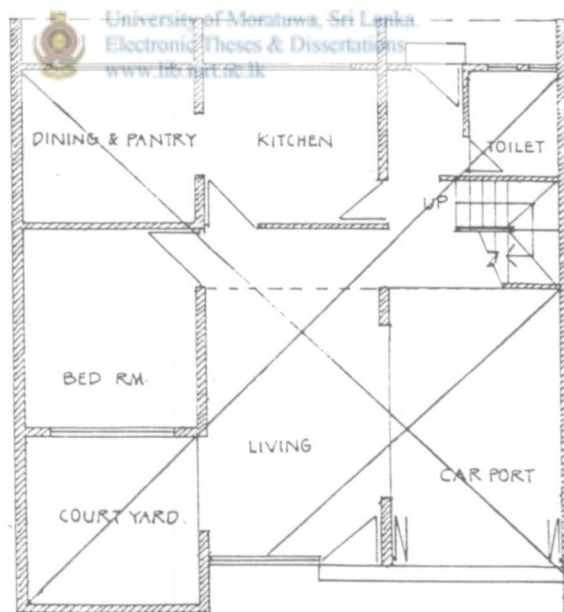
FRONT AND SIDE ELEVATIONS

Raddolulama

Type-F



UPPER FLOOR PLAN
OF ORIGINAL HOUSE



GROUND FLOOR PLAN

FLOOR PLANS

Raddolulama

Type-F



2.1.4 CHARACTERISTICS OF THE CATCHMENT SOCIAL GROUP

The catchment's social group is basically the middle income. This is a combination of all the sub groups of upper- middle, middle- middle and lower-middle income categories. 60% of the people from the total population are government servants. 25% are doing jobs in private sector companies. 15% are doing their individual businesses including home-based economic activities.

The users are mainly Sinhalese, Muslims and Tamils. If take the ethnic percentages, 80% are Sinhalese, 10% are Muslims and 10% are Tamils. The average family consists of five members.

2.1.5 INFRASTRUCTURE FACILITIES

A provincial council sub office was located within the housing scheme for collection of tax and maintenances of all the roads, street lamps and garbage disposal. Every internal road and periphery road network has been paved. Common sewerage network also have been maintained by the provincial council sub office and all sewerage are collected into a common treatment plant located in the scheme.

A sub office of National housing development Authority for collection of rent and administrative works has been located. Water supply and drainage sub office was located within the scheme and it has provided pipe born water for the whole scheme. Any one who required telephone facility, can get easily because a substation of Sri Lanka Telecom has been located within the housing scheme premises. Ceylon Electricity Board, Ja-Ela office has provided three-phased electricity to the whole scheme.



Figure 15 - Water treatment plant in the located in the scheme



Figure 16- Water board office to provide pipe born water for the scheme.



Figure 17- Telecom substation to provide the telephone facility.

2.1.6 AMENITIES

This mass housing scheme has a large community hall for special functions. It has a large playground to spend the leisure time of children and the adults. It has provided a fairly good library.



Figure 18- A community hall for special functions



Figure 19- A playground for spend the leisure time of children's and adults'

A co-operative shop has been located within the premises to by every thing to subsidized prices. Three shopping complexes, which consist of shops, groceries, hotels, fish, beef and meat stalls, snack bars, laundries beauty and hair salons, a dispensary and two pharmacies were located in the scheme.



Figure 20- A fairly good library



Figure 21- A co-operative shop to buy everything at subsidized prices.



Figure 22- One of the shopping complexes in the scheme

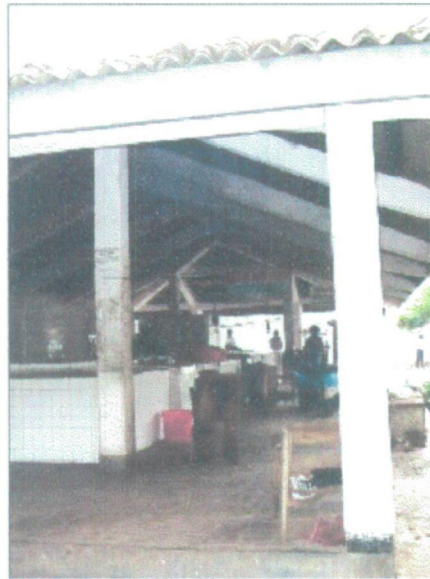


Figure 23- Fish, beef and meat stalls in the shopping complex.



Figure 24- The health center in the scheme

A sub post office has been located with its' own postal code. A sub police post, which is managed by Siduwa polis station, has been located to deal with the occupants' defense matters. A health center, a dental clinic and a primary school, which has classes up to year nine also available.



Figure 25- The sub post office provided



Figure 26- The sub police post situated



Figure 27- the health clinic provided



Figure 28- The primary school provided



Figure 29- the dental clinic provided

Superb transport service has been provided with a bus terminal. Both CTB (Ceylon Transport Board) and private buses are available from Raddolugama to Colombo, Negombo and Gampaha from 5 a.m. to 11 p.m. Within three kilometer distance can reach the Colombo – Putlam railway line.



Figure 30- The bus terminal with superb transport service.

Because the majority is Buddhists, a Buddhist center has been provided. But there is a temple, Catholic Church and a Mosque located in adjoining lands to the scheme.



Figure 31- The Buddhist center in the center of the scheme



Figure 32- Buddhist temple in the adjacent land to of the scheme

2.1.7 IDENTIFICATION OF MODIFICATIONS AND THEIR RELAVANCE WITH SPATIAL REQUIREMENTS OF THE USER

2.1.7 (a) COMMUNITY

The community of this scheme varies from the whole population, who inhabits in 2022 housing units to the members in one housing unit. If the average members in one unit are five, the whole population is 5×2022 . That is more than one lak. This is a

large community neighbourhood; the social interaction is very high. One person knows every one else in their cluster and some times another two or three clusters.

Because all the three types of houses are in one neighbourhood, which consists of lower middle, middle- middle and upper-middle income categories can in one cluster. This is a heterogeneous neighbourhood. But each cluster is consists of only one type of houses. This seems all are homogeneous clusters. Clusters are ranging the minimum housing units of 4 members to the maximum of 20 numbers.

There can be seen so many modifications of spaces in individual houses to promote social interaction. In this respect, some houses were modified with extraverted characters.



Figure 33- A front porch and a balcony has been added to type “B”



Figure 34- A roof terrace has been added with a bedroom in ground floor



Figure 35- Front verandah and a balcony has been added to type “D”

There can be seen some informal gathering places created by the occupants to gather and spend their leisure time having a chat. These places are very useful to increase their interaction and to create social sub groups within the community. One such space has been created in front of one of the shopping complexes.

2.1.7(b) CHILD SUPERVISION



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85% percent of the population is working in government offices or private sector companies. Rest of others is business holders. In most of the families, the parents, both mothers and fathers do jobs. The daytime and the after school hours, child supervision has become a major problem.

A day care centre, a children’s park and a pre school, which have been built by the dwellers’ welfare society, are some added spaces to the overall design by their occupants regarding of child supervision.



Figure 36- A day care center has been built by the occupants’ welfare society



Figure 37- A children's park has been built by the occupants' welfare society



Figure 38-A pre school has been built by the occupants' welfare society to spend the daytime to children.

Children's park and the playground are located in the geometric centre of the housing scheme. The neighbouring community and the occupants who using the ring roads can easily see the playing children. It will help to prevent the children from accidental dangers.

Some parents do not allow their small children to use the playground. They want to play them at their doorstep. Playing on the internal roads, in front of their houses can be seen very commonly.

By the designers of type plans, the kitchen has been located providing visual and aural contacts with the living and dining areas where the children used as their internal play areas in most of the situations.



Figure 39- Children use their front roads to play to have contacts with the parents.

By the designers of type plans, the kitchen has been located providing visual and aural contacts with the living and dining areas where the children used as their internal play areas in most of the situations.

2.1.7(c) SECURITY

In a mass housing scheme like Raddolugama, due to its' large number of population, it is very difficult to have contacts among all the people in the neighbourhood. Providing various communal spaces such as community center, shops, library, playground, children's park, religious places and a health center, the contacts among all community has been intensified by the designers. It has increased the occupants sense of shared defense against the out side world. By providing a police post within its' premises, the degree of security also has been improved.

Construction of high boundary walls, lockable gates and live fences with balancing with their other requirements can be viewed as a strong expression of territorial definition combine with the advantage of easy surveillance can be seen as symbol of security.

People, who expect individual security, have built high boundary walls without any seethroughness.



Figure 40- High boundary walls have been built to high security.

2.1.7 (d) MAINTENANCE

The maintenance of an individual house has been improved by without providing undesignated interior public spaces. Only has given the essential places to the housing unit.



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Due to undesignated open spaces in the housing scheme, they have become garbage collective spaces of the occupants.

2.1.7 (e) LIVABILITY

Most of the houses in this scheme are facing either front neighbouring houses and a very little number of houses are facing one of the community spaces such as library, community hall, play ground etc. A few numbers of houses have pleasant alternative views. But all these houses are getting cross ventilation, which as an essential bodily requirement for good health.

Some occupants have used French windows, roof terraces and front verandahs, modifying their original houses to increase the possibility of seeing alternative views from their houses. The degree of getting cross ventilation also has been improved by using huge openings by replacing original windows.



Figure 41- Large openings and balconies were added to increase the possibility of seeing alternative views from their house and to improve the cross ventilation. (Type “D”)



Figure 42- Roof terraces increase the possibility of seeing the alternative views from their houses.(Type “F”)

2.1.7 (f) RESPONSIVENESS

The opportunities, which maximize the degree of choice available to them, can be discussed under several degrees such as permeability, legibility, variety, robustness, visual appropriateness, richness and personalization. This requirement has been improved by modifying their original houses.

(i) PERMEABILITY

The lay out has been prepared as a grid iron pattern of roads creating clusters, giving more visual and physical permeability for public places, providing lot of alternative choice of roads. This road network has created interfaces between public and private places.

All the housing units are facing outwards onto public places such as roads, parks etc. backs facing inwards to the center of the block. Private out door spaces are in the back. It shows this scheme has a high degree of visual and physical permeability. In some houses, due to the modifications and extensions, they have used their rear gardens have been lost the permeability by themselves.

(ii) LEGIBILITY

The lay out of this scheme can't be easily grasp by any body by its' physical forms because it is not showing any speciality for public and private zones by its' scale. Due to it has two storied housing units; the heights and the scales of the public buildings are generally similar. There are no special landmarks to get as references. So, this housing scheme not provides legibility by its' physical forms.

New shopping complexes, bank buildings have been built up to four to three stories as towers, by demolishing original shops are now acting as landmarks at their center. This has contributed to create the loss factor; legibility.

By its' activity pattern, only around the shops, playground and houses, this housing scheme provides legibility in terms of the activity.



Figure 43- New shopping complexes built up to four stories act as landmarks at the center of the scheme.

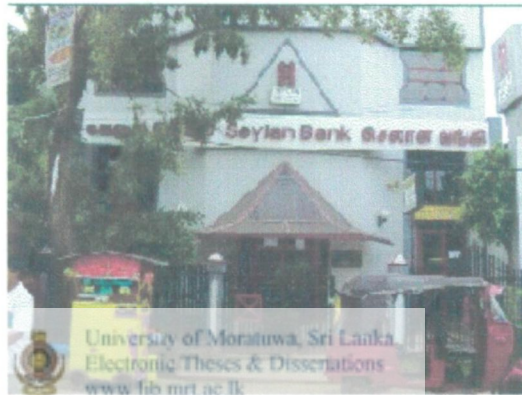


Figure 44- New bank building, built by demolishing the shopping complex, acts as a land mark in the centre

By its' activity pattern, only around the shops, playground and houses, this housing scheme provides legibility in terms of the activity.



Figure 45- Legibility can be found around shopping complexes in terms of activity pattern.

(iii) VARIETY

The variety can be found from the three different type plans. But in the elevations due to use of same type house in one cluster, each house can't identified separately. Due to this reason some psychological requirements such as identity also have been lost. This a main reason for modifications.

Different shaping techniques like colours, details have been used to gain the variety to the physical form of the house. The form of the individual houses have been modified to gain the variety of uses of the spaces.

(iv) ROBUSTNESS

The playground and the community hall are the public spaces, occupants are provided, which has the quality of robustness because the can be used for multi purposes. They use the playground for various activities such as meetings, musical shows etc.

In housing units, by providing a single hall for living and dining, the designer has created a multi purpose space, which can be arranged according to their requirements. In some houses the dining room is using as a study room for children and the internal courtyard has been converted to a T.V. room.



Figure 46- courtyard converted to a T.V. room



Figure 47- Dining room has been converted to a study room for the children

(v) VISUAL APPROPRIATENESS

Due to less detailing and the sameness of each housing unit in the same cluster, visual appropriateness is a loss factor. The row of one cluster gives the feeling of monotonous. By modifying their original houses with different aspects, occupants have gained this loss factor.

(vi) RICHNESS

All the houses in one cluster are same due to the use of type plans. Therefore as the previous aspect, the richness also can't be seen.

(vii) PERSONALISATION

In this housing scheme, there can be seen two ways of personalization.

1. To improve practical facilities
2. To change the image of a place

The first way of personalization has been done with the physical aspects. Second way has been done mainly as an affirmation of their own tastes and values.

Lot of changes has been done to improve practical facilities. All additional spaces and encroachments are good examples to the first way of personalization.



Figure 48- Two bed rooms have been added by modifying a “D” type house

In some houses, the occupants have used lot of techniques to change the image of the spaces. Some of them have used columns, extra roofs to define their front verandahs. Some of them have used French windows to bedrooms giving the image of a living room.

2.1.8 IDENTIFICATION OF MODIFICATIONS AND THEIR RELEVANCE WITH REQUIREMENTS OF INTANGIBAL COMPONENTS OF HOUSING

In Raddolugame, user adaptations and modifications are very common features as other government built housing schemes in Sri Lanka. As discussed in the first chapter, this has become more visible in middle income housing due to their values

and aspirations such as social and upward mobility. These changes imply their loss requirements and loss spaces in their own place of living. Under spatial requirements discussed about essential tangible components in housing and now it is going to reveal the intangible components, which relate with the physical, psychological and socio-cultural requirements of the user.

2.1.8.1 PSYCHOLOGICAL REQUIREMENTS OF HOUSING

In this housing scheme, basic psychological requirements have been provided in minimum degree but not in a satisfactory level. The occupants have done several modifications and changes to their own houses to gain the psychological satisfaction according to their preferences.

2.1.8.1 (a) IDENTITY

As discussed at the beginning of this chapter, three different type plans have been used in this housing scheme. The most common house is type-B. Within one cluster and also for nearby clusters the same type plan has been used.

Although it is vary from person to person, this requirement has not been fulfilled totally. The modifications has been done to get others attention by adding different characters.

Due to the reason of common plot distribution pattern, the outsiders can't identify anybodies house from another. The occupants have used different details, contrasting colours, roof patterns and some elements to add some dynamic characters to their residents. According to the occupants' sub cultures they have used several techniques to show their identity according to their interests.



Figure 49- Different colours have been used to give their identity.



Figure 50- Different roof structures have been used with different colours.

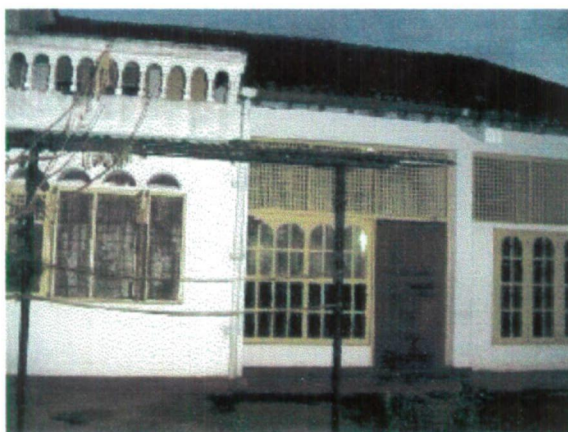


Figure 51- Muslims have used arch shape to the openings to give their identity.

2.1.8.1(b) TERRITORIALITY

As Raddolugama consists of two storied housing units, either too small or somewhat large, every occupant has their own territory. They have used several methods to define their own territories, with a different from others'. This properly defined territories reduce the unwanted instructions from outsiders and bring about an emotional security to the inhabitants.

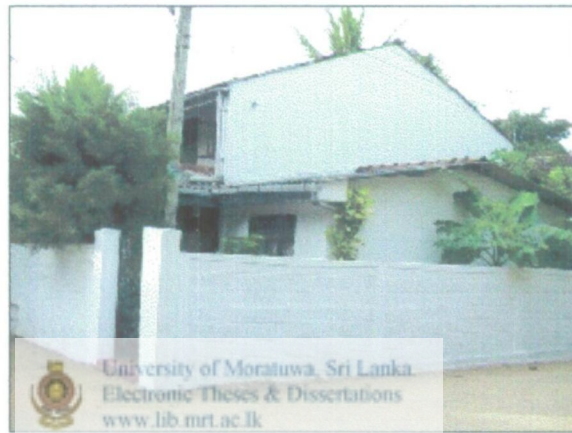


Figure 52- A block work territory to reduce unwanted instructions.(Type “D”)



Figure 53- Territorial demarcation with giving identity. (Type “B”)



Figure 54- Territory defined by green wire mesh as a see-through element (Type “D”)



Figure 55- Original type “D” house defined its’ territory as a landscaping element

2.1.8.1 (c) PRIVACY

The degree of privacy, the man expects is vary one to another, according to cultural and personal attitudes. In this housing scheme, privacy has been improved by demarcating territories. The expected dimension of privacy can be measured by examine the methods they have used to minimize the external instructions.

Some occupants have used live fences, flower troughs, brick walls, and steel fences etc. to obtain their degree of privacy. The people, who expect more privacy, have

modified their houses with more introverted manner when the people who expect less privacy modified with more extraverted manner.



Figure 56- The people expects more privacy has modified their house with small openings and high boundary walls.



Figure 57- People expect less privacy have built low boundary walls and large balconies.



Figure 58- People expect less privacy have built front verandahs to gather out side.



Figure 59- Entrance gate has been replaced by adding a door to gain more privacy.



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2.1.8.2 PHYSICAL REQUIREMENTS OF HOUSING

Physical requirements basically have been fulfilled by providing individual and twin houses to the scheme. But the extensions and modifications, done by the occupants due to insufficient internal spaces, they have used rear and front gardens violating the building regulations also. This situation commonly can be seen in type-B and D. but the type-F has been modified only the internal arrangement in most of the situations.

Type- B is not sufficient for a five membered average family. The living room also insufficient for both sitting and dining. Type-D is fairly ok for an average family. But the living room has the previous problem. Both of these two types of houses haven't a spatial progression due to the organization of physical attributes.

Type- F is in a successful level with adequate floor area and organizing of physical attributes. The living room has provided a courtyard to add a pleasant look to the living area. But according to the level of satisfaction of each person, this type also has been modified by the occupants.



Figure 60- A kitchen has been added (Type “B”)



Figure 61 -The living room has been expanded (Type “B”)

2.1.8.2 (a) ENCLOSURE

People have used different colours, materials and level changes to demarcate their personal enclosure within their own houses according to their degree of comfort.





Figure 62- Enclosure has been expanded by adding a poach.

2.1.8.2(b) CENTRE

For the overall lay out, a center can be identified due to the location of shopping complexes. It is a good landmark to identify the center at the first visit. It prevent facing troubles a visitor when entered. But the other common and important community activities such as playgrounds, children's park, day care center, community hall and the pre school have located in scattered manner. If they have gathered to the center, it will act as a node to the scheme, creating a spatial structure of the dwelling in hierarchical order. For individual houses living rooms act as a center. In some houses the center has been changed by adding new spaces with different heights and changing the function of the original living room.

2.1.8.3 SOCIO-CULTURAL REQUIREMENTS OF HOUSING

Raddolugama consists of different ethnic groups such as Sinhala, Tamil and Muslim. It has been created different social and cultural groups. Muslim community prefers introverted characters than Tamils and Sinhalese. Sinhalese are showing more extraverted characters than other two ethnic groups; their houses have inviting qualities such as open facades, less detailed elements, open verandahs and simple forms.

The colours the Tamils have used are contrasting. Muslims have used more greenish, brownish and white colours. Sinhalese have used light colours, which merge with other.

Social interaction is not in a satisfactory level because community facilities have been scattered all over the lay out. The bus terminal and the shopping complexes can take as the places help to give little interaction among neighbouring community.

People have increased the socio-cultural relationships by establishing new commercial complexes and sports clubs in the center of the scheme.



Figure 63- People have strengthen their socio-cultural relationships by establishing new commercial centers and sports clubs.

2.2 CASE STUDY TWO– JAYAWADANAGAMA HOUSING SCHEME

Jayawadanagama was selected as the second case study to examine the degree of user satisfaction in terms of socio-spatial relationships in mass housing schemes. Jayawadanagama is one of the largest housing schemes in Sri Lanka, which has been built by the government for middle-income people, within the time period of 1979 and 1983 as a solution to the housing problem in Colombo.

2.2.1 LOCATION

Jayawadanagama housing scheme is located in Colombo district, Kaduwela electorate, Koswatte police area. The distance to Colombo Fort from the scheme is 12 kilometers.

As this housing scheme is located close to Battaramulla and Thalawathugoda junctions, the inhabitants can fulfill their most of the day to day needs without coming to Colombo.

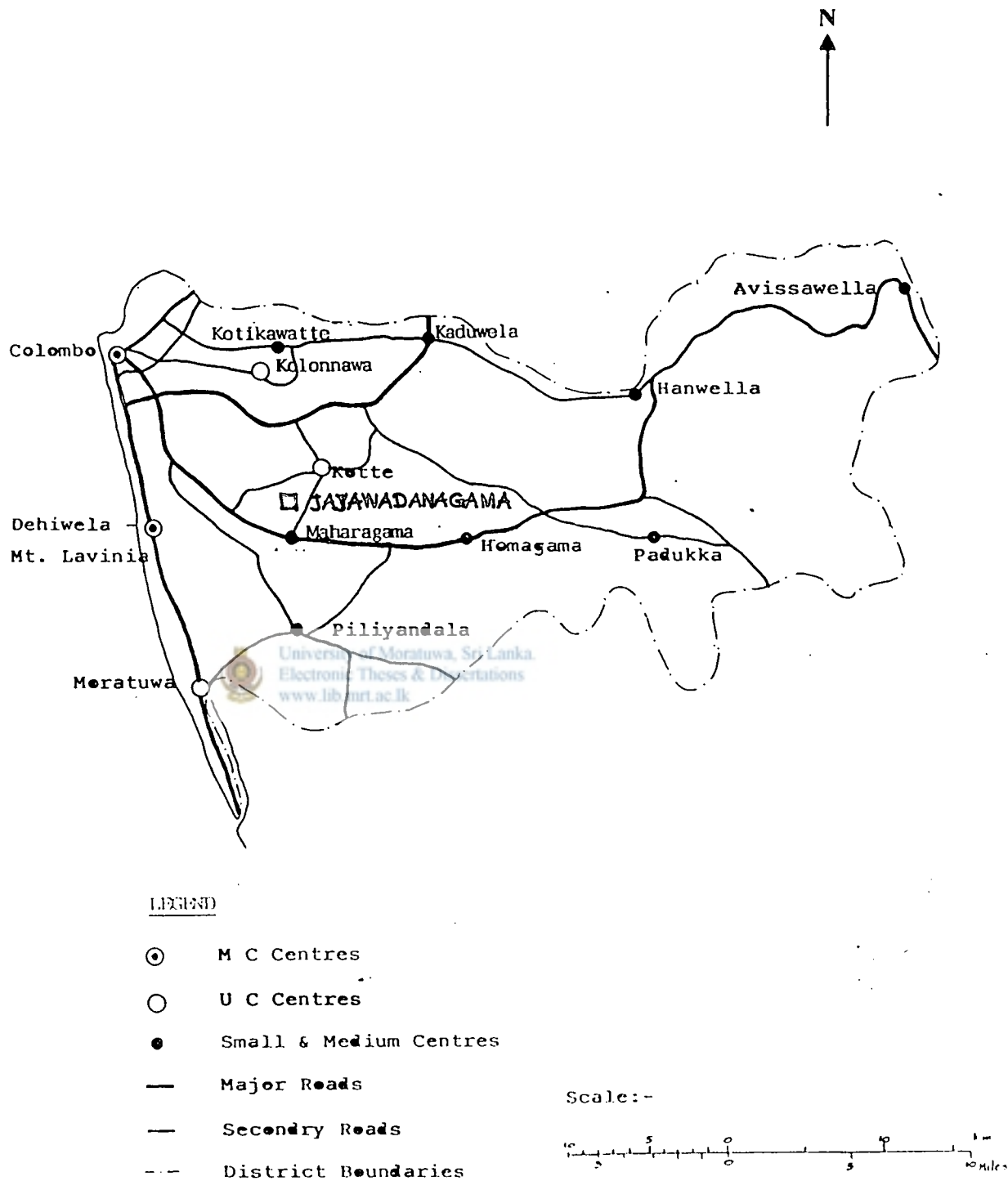


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2.2.2 PROJECT OBJECTIVES

The State Engineering Corporation according to the requirements of National Housing Development Authority handled the design. The main objective of the project was to provide maximum number of houses within the available extent of land and to provide infrastructure and other community facilities to the occupants. This was done by the government as a solution to the housing problem by supplying houses to the homeless people in Colombo. When consider the lay out plan, it was influenced by the quantitative requirements. The community facilities, provided for the occupants are comparatively less. The designers have provided the very high degree of choice of selection by providing 8 number of type houses with different floor areas.

COLOMBO DISTRICT



LOCATION OF JAYAWADANAGAMA HOUSING SCHEME

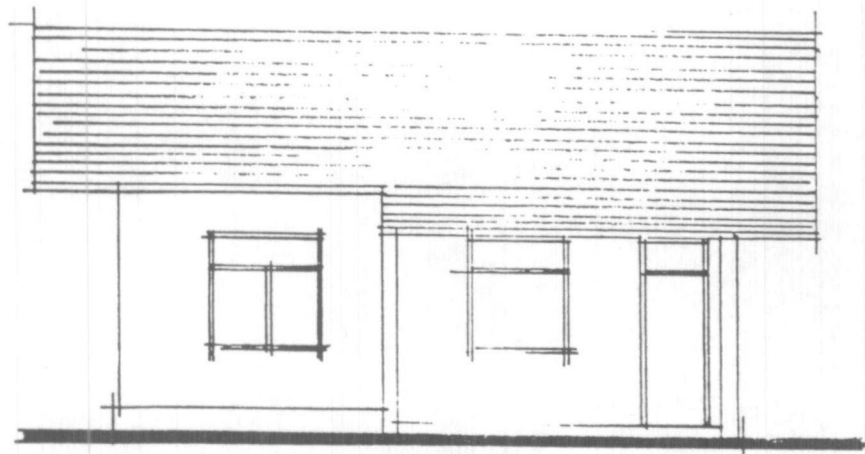
2.2.3 THE GENERAL CHARACTERISTICS OF THE HOUSING SCHEME

The land extent of the scheme is 34A 2R 0P and small, but considerable level differences can be seen in the site. It has provided 705 houses for homeless families in Colombo. Eight different house types namely A, B, C, D, E, F, G, H, have been used. The housing density is 20 units per acre. These houses were sold to the people for an initial 25% down payment and balance was spreaded over 20 to 30 years depending on the age of the householder with 9% interest. Implications were handled by the N.H.D.A. under direction of Ministry of Housing. This was very convenient place for people those who travel to Colombo to work.

House type	No. Of units	Square per unit (sq.ft)	Average plot size (perches)	Value per unit Rs.
A	104	460		130,000
B	174	430		120,000
C	81	430		135,000
D	202	430		102,000
E	10	837		310,000
F	50	880		305,000
G	48	880		305,000
H	36	1280		465,000
Total	705			

There are single story houses, two story houses and flats. All the A,B,C, and E type units are single story raw houses. D, F and H are two storied raw houses. G is 4 storied. There are 4 flats with house type G. Each house consists of 2 floors.

HOUSE TYPE	AVAILABLE FACILITIES	
	GROUND FLOOR	UPPER FLOOR
A	Hall, Front verandah, Rear Verandah, Bed Room, kitchen, toilet	
B	Hall, Bed room, kitchen, Front Verandah, toilet	
C	Hall, Bed room, kitchen, Front verandah, Toilet	
D	Hall, Open Area, kitchen, toilet	Bed room, Lobby
E	Hall, 2 Bed Rooms, kitchen, toilet, Front Verandah, Rear Verandah	
F	Hall, kitchen, toilet	2 bed rooms, toilet, Front balcony, Rear Balcony
G		
H	Living Room, Dining Room, Bed Room, Kitchen, Toilet, Front Verandah.	2 bed rooms, toilet, Rear Balcony



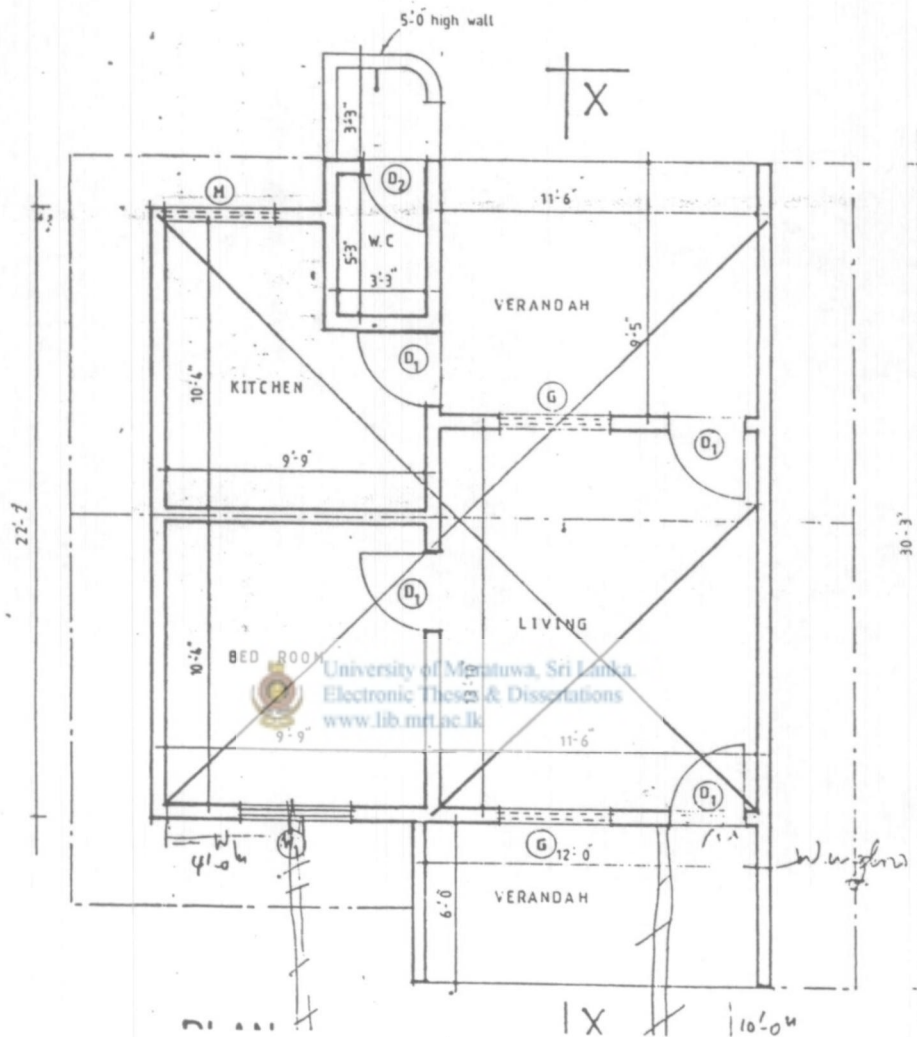
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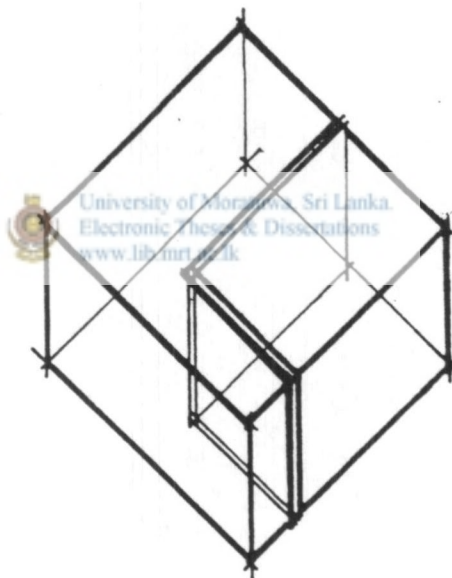
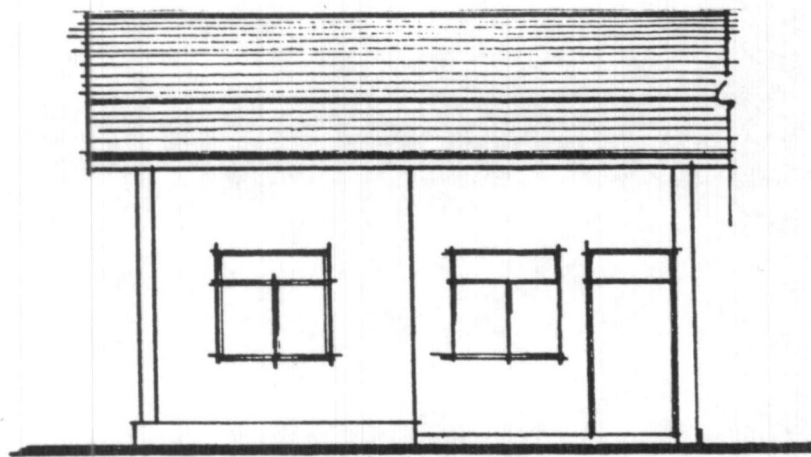
FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

Type - A



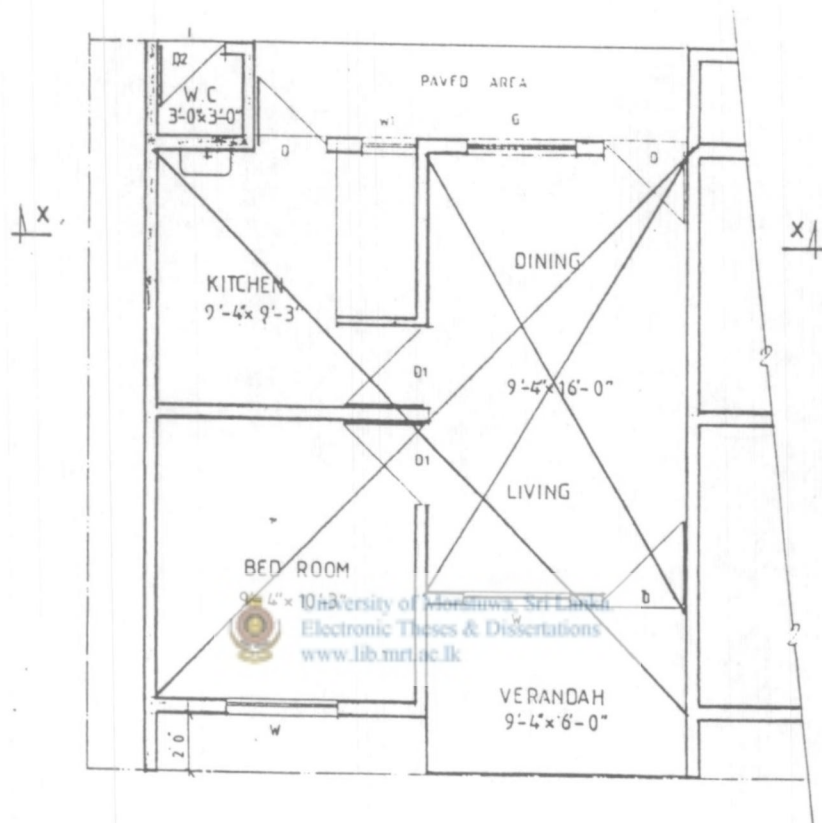
FLOOR PLAN
Jayawadanagama
Type - A



FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

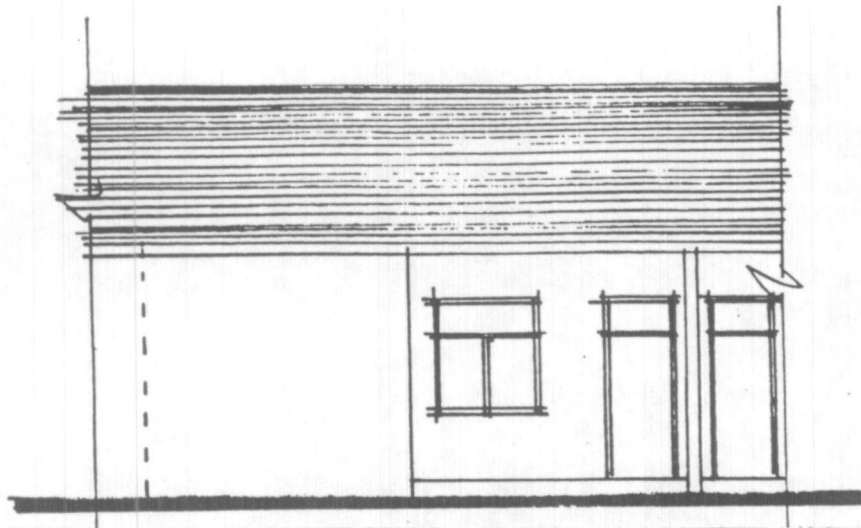
Type - B



FLOOR PLAN

Jayawadanagama

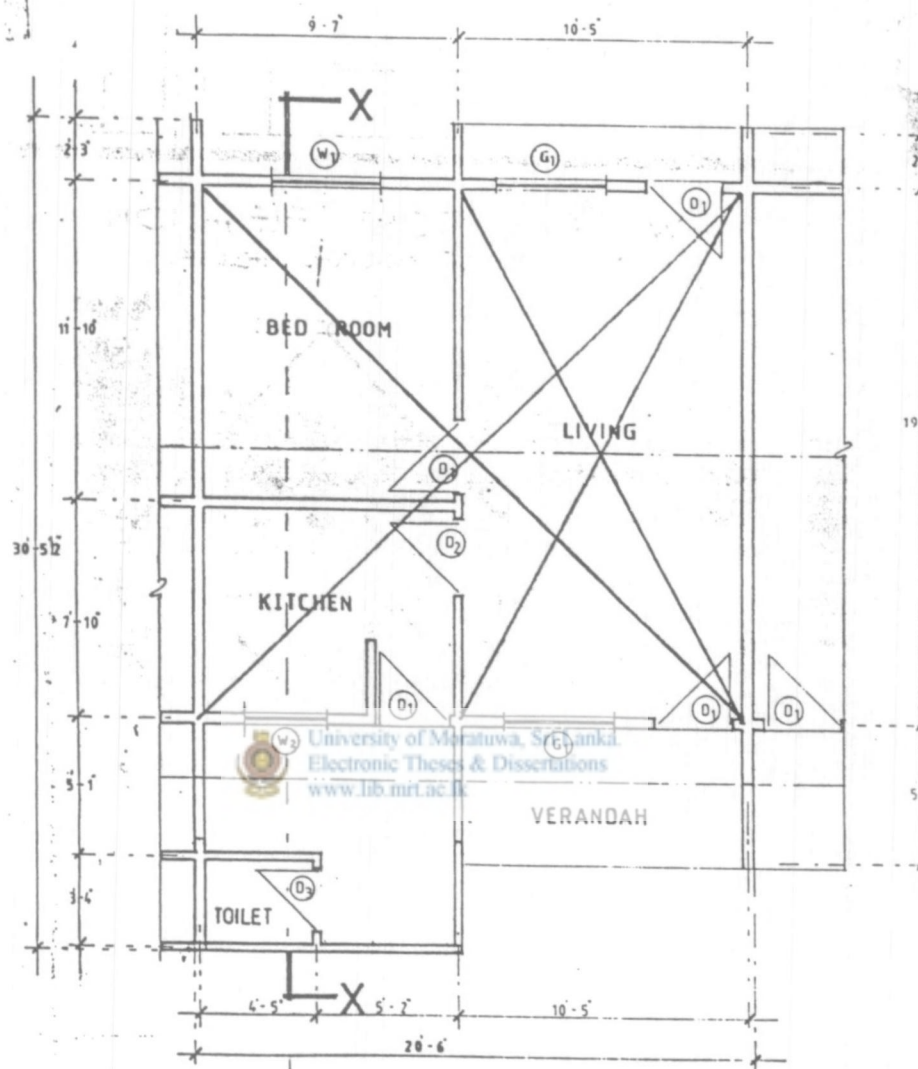
Type - B



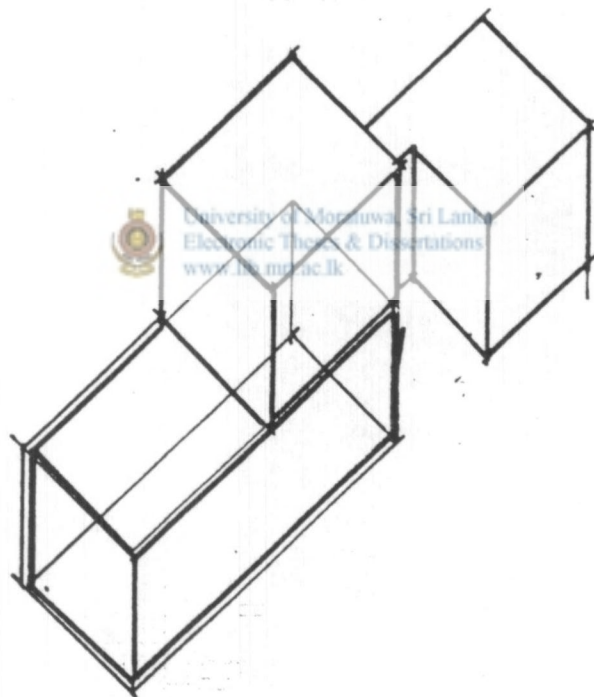
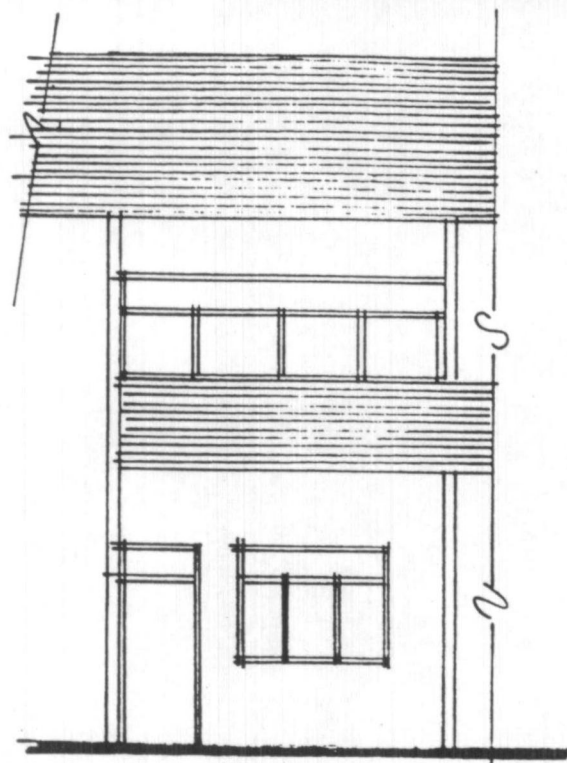
FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

Type - C



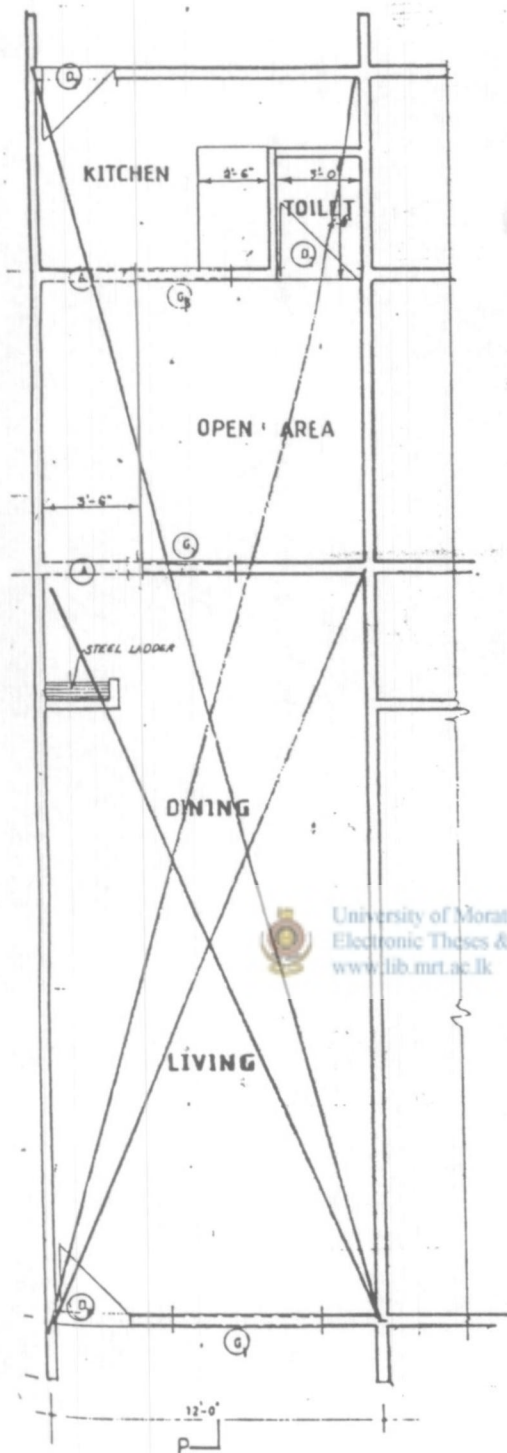
FLOOR PLAN
Jayawadanagama
Type - C



FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

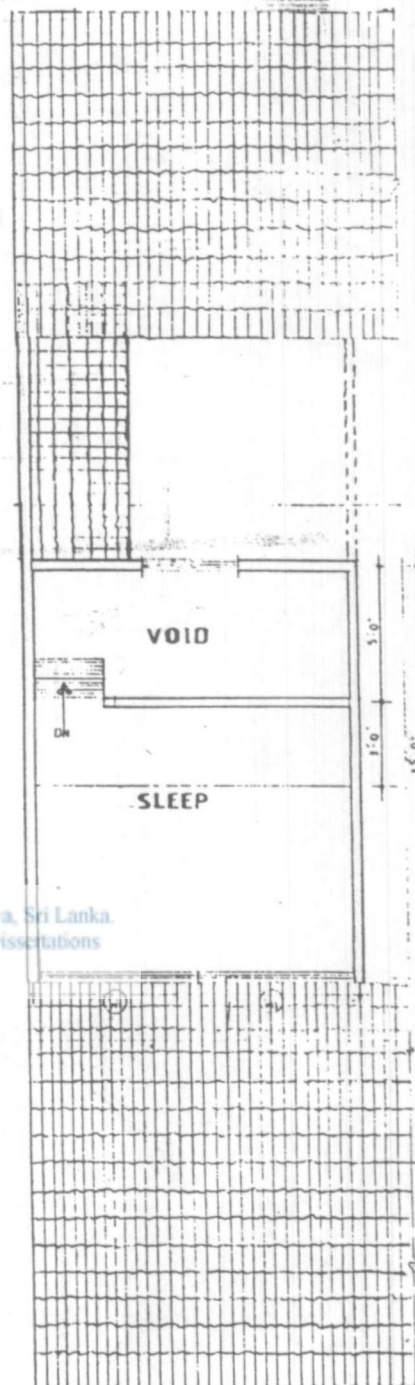
Type - D



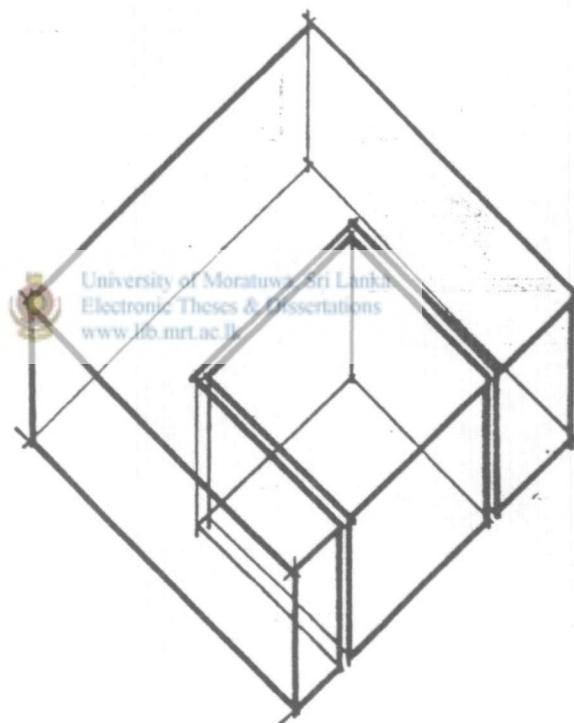
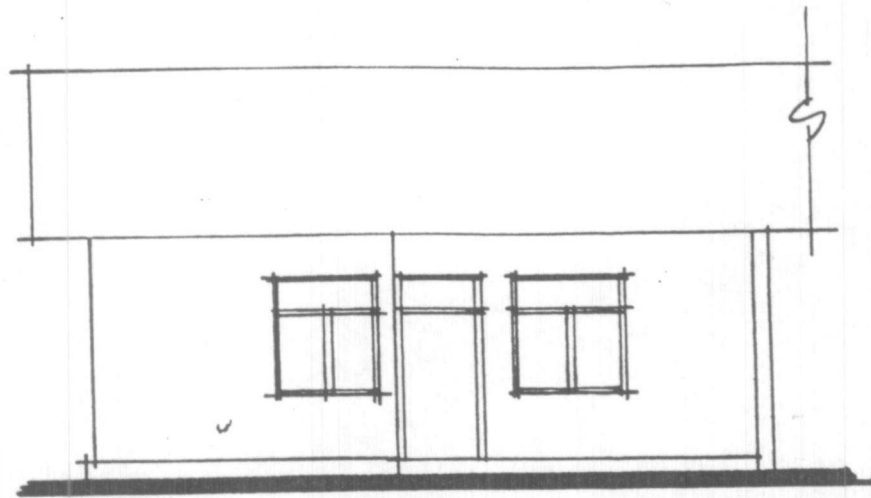
GROUND FLOOR PLAN

Jayawadanagama

Type - D



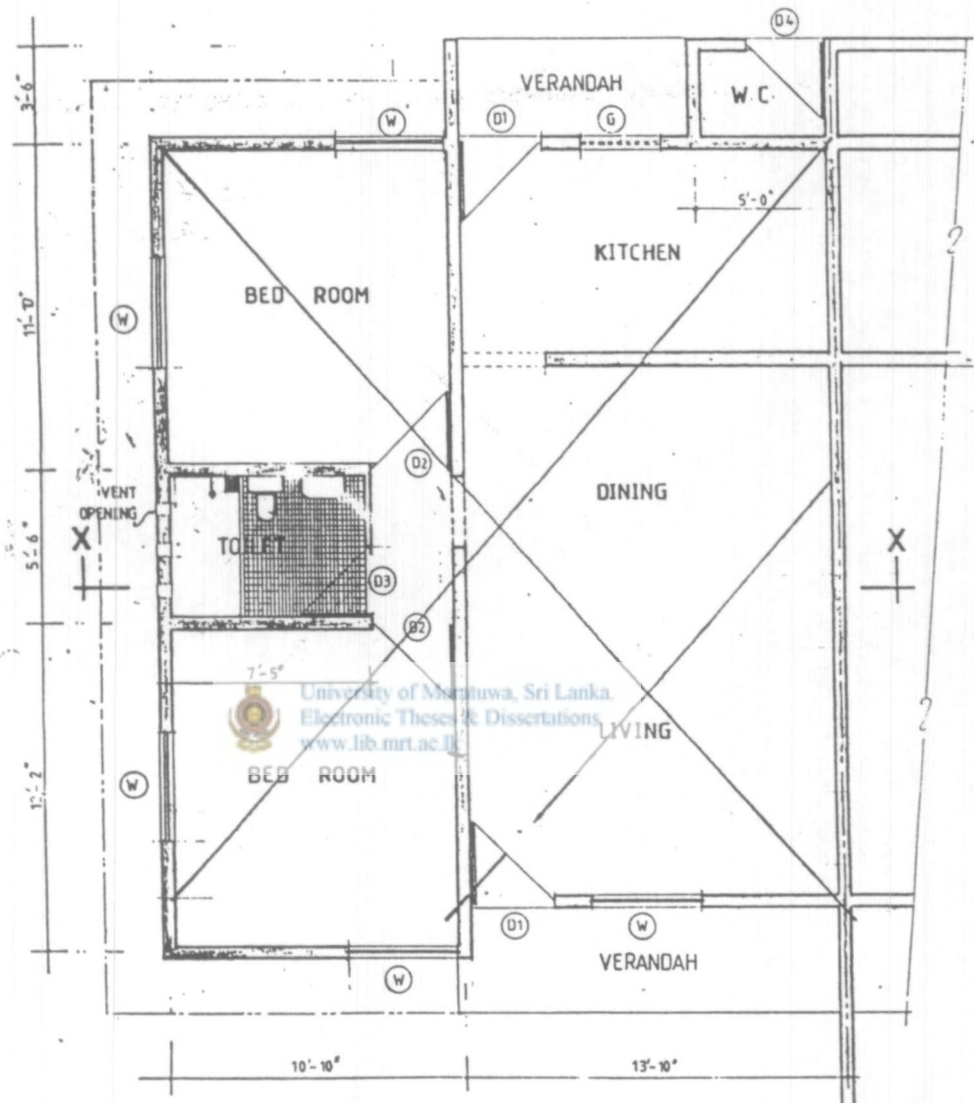
UPPER FLOOR PLAN



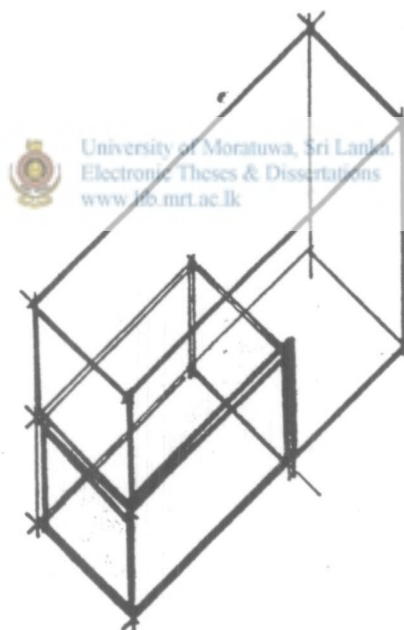
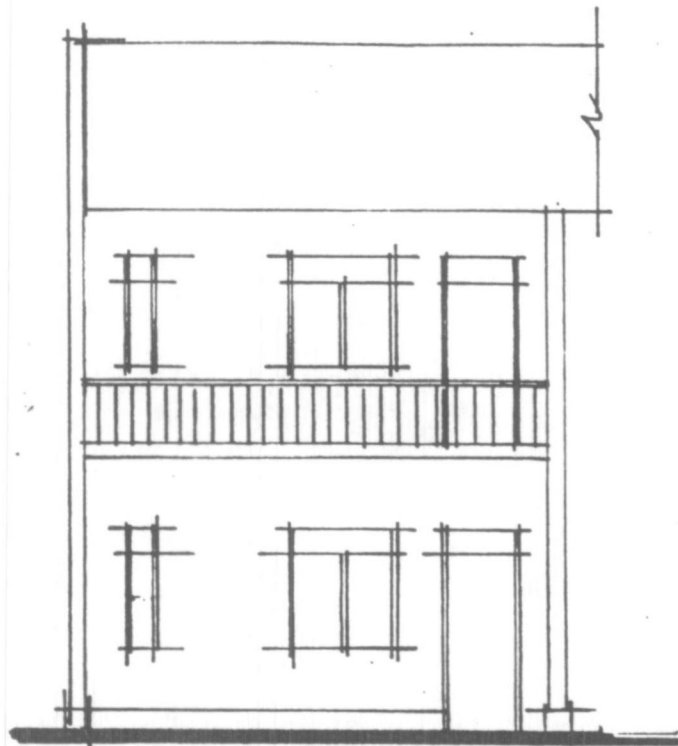
FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

Type - E



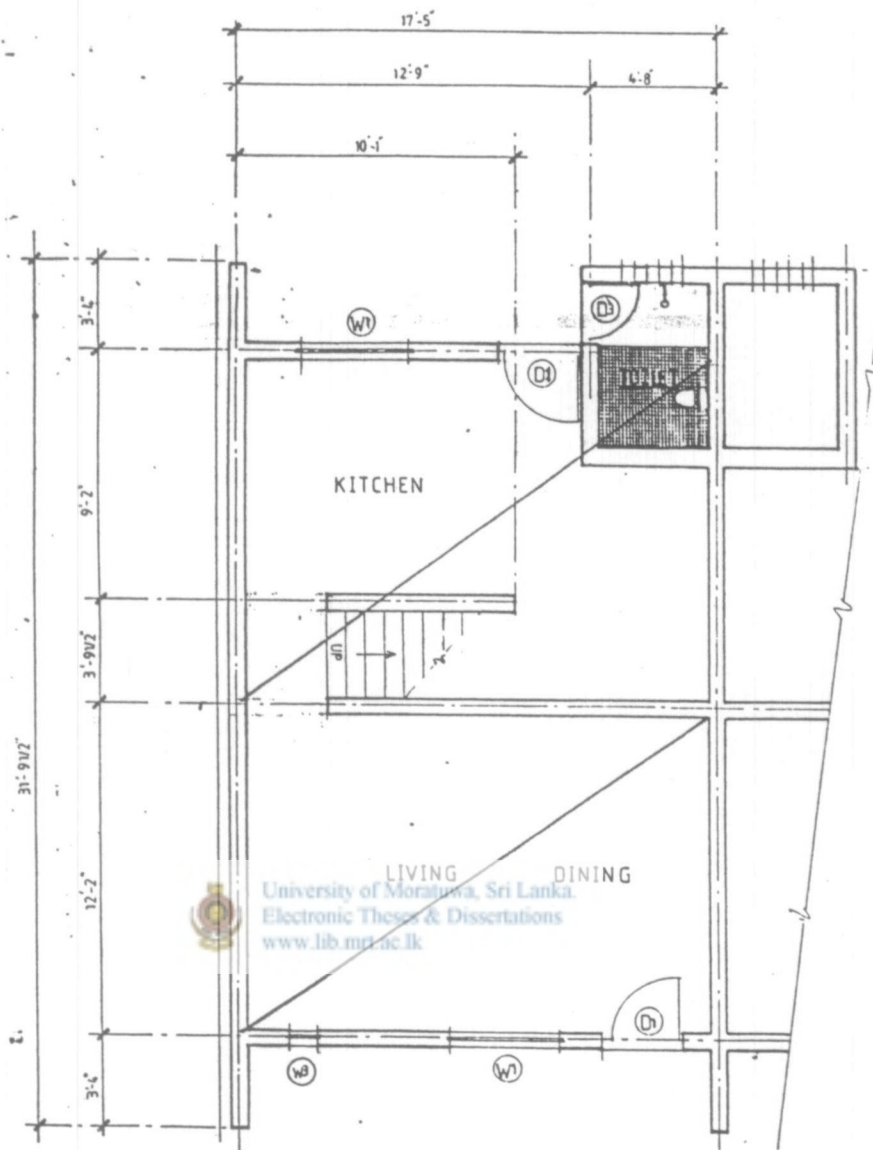
FLOOR PLAN
 Jayawadanagama
 Type - E



FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

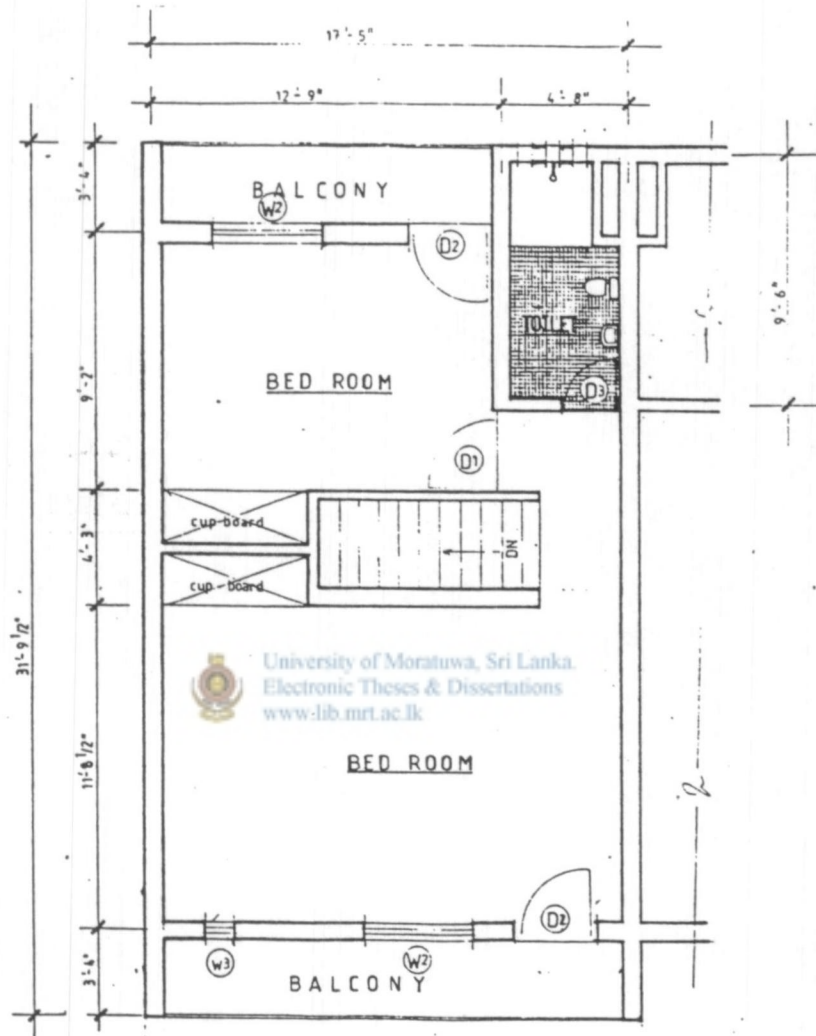
Type - F



GROUND FLOOR PLAN

Jayawadanagama

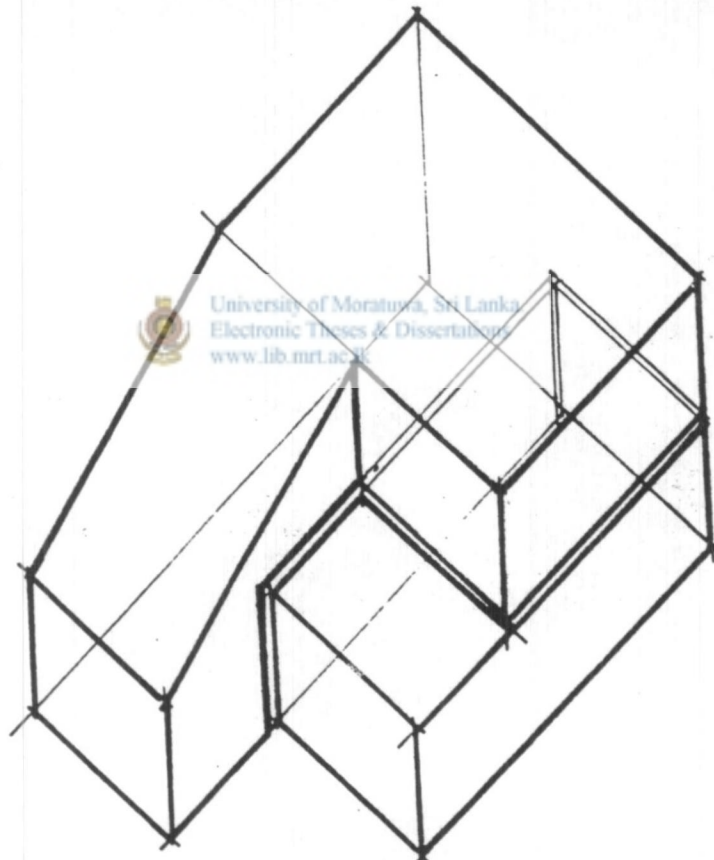
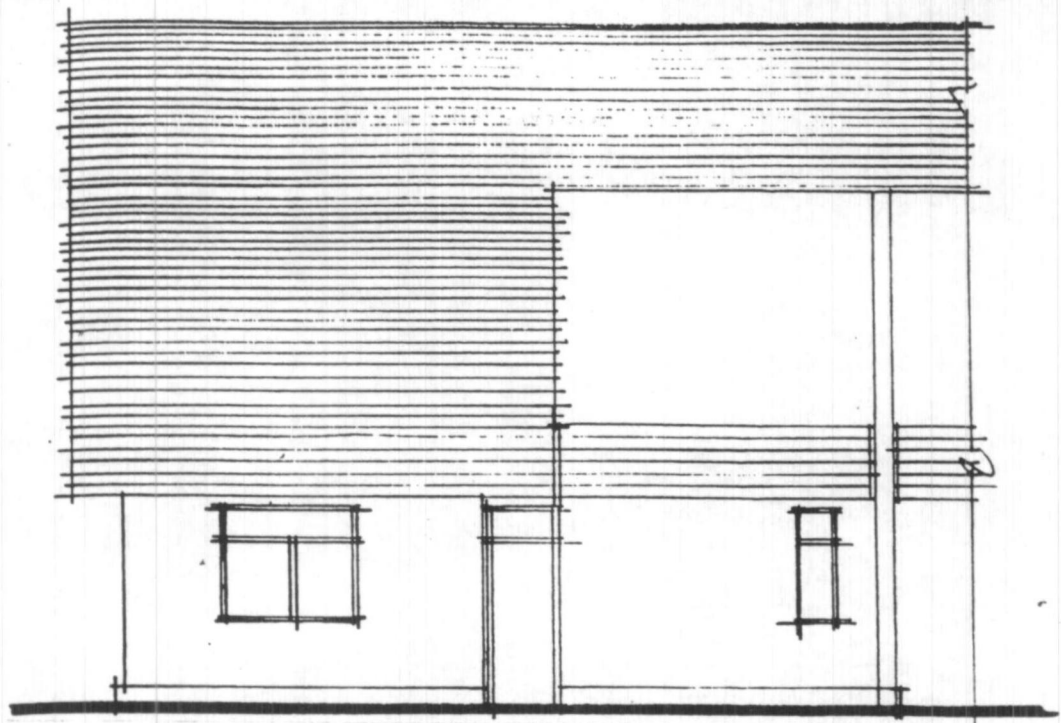
Type - F



UPPRE FLOOR PLAN

Jayawadanagama

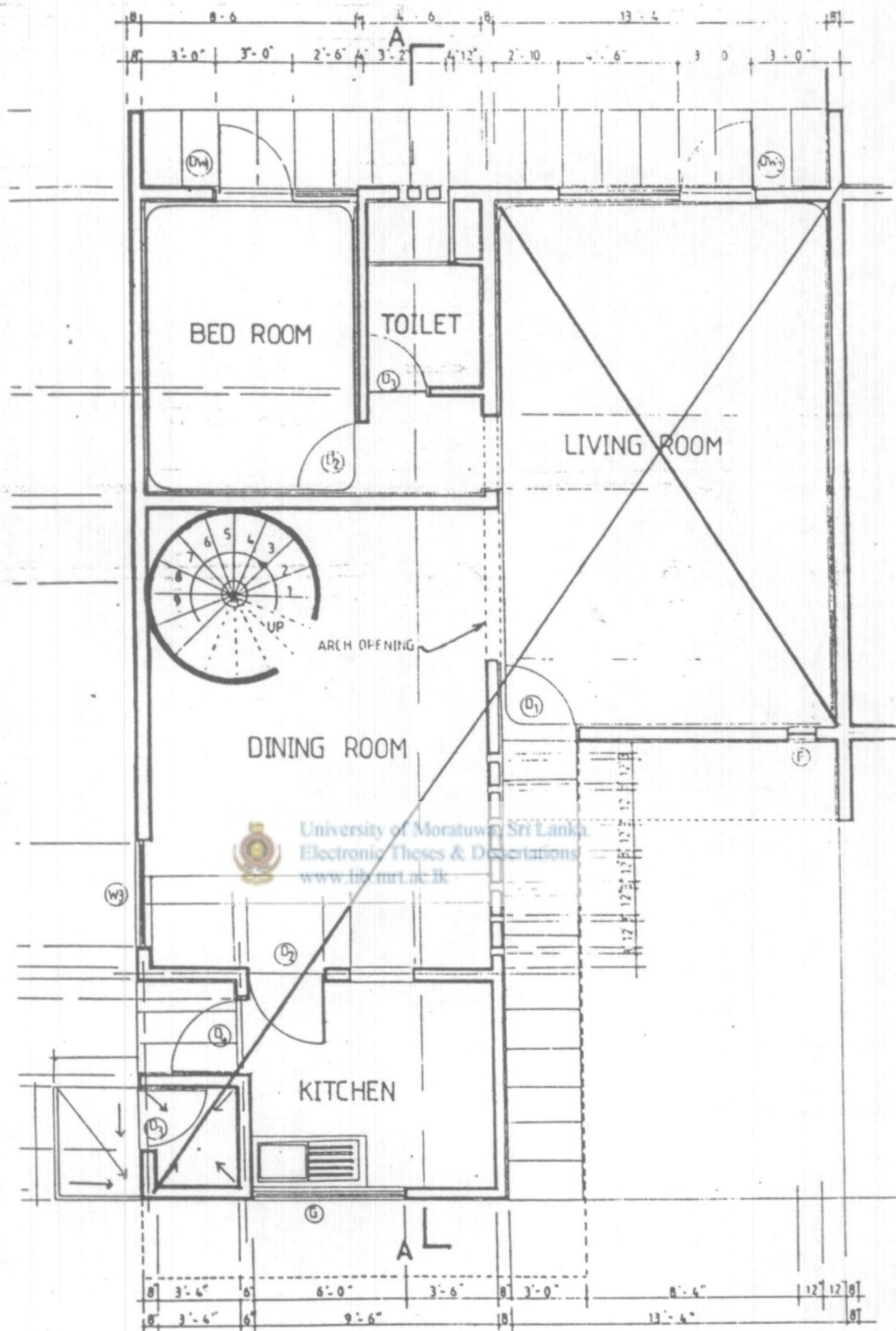
Type - F



FRONT ELEVATION AND 3-D COMPOSITION

Jayawadanagama

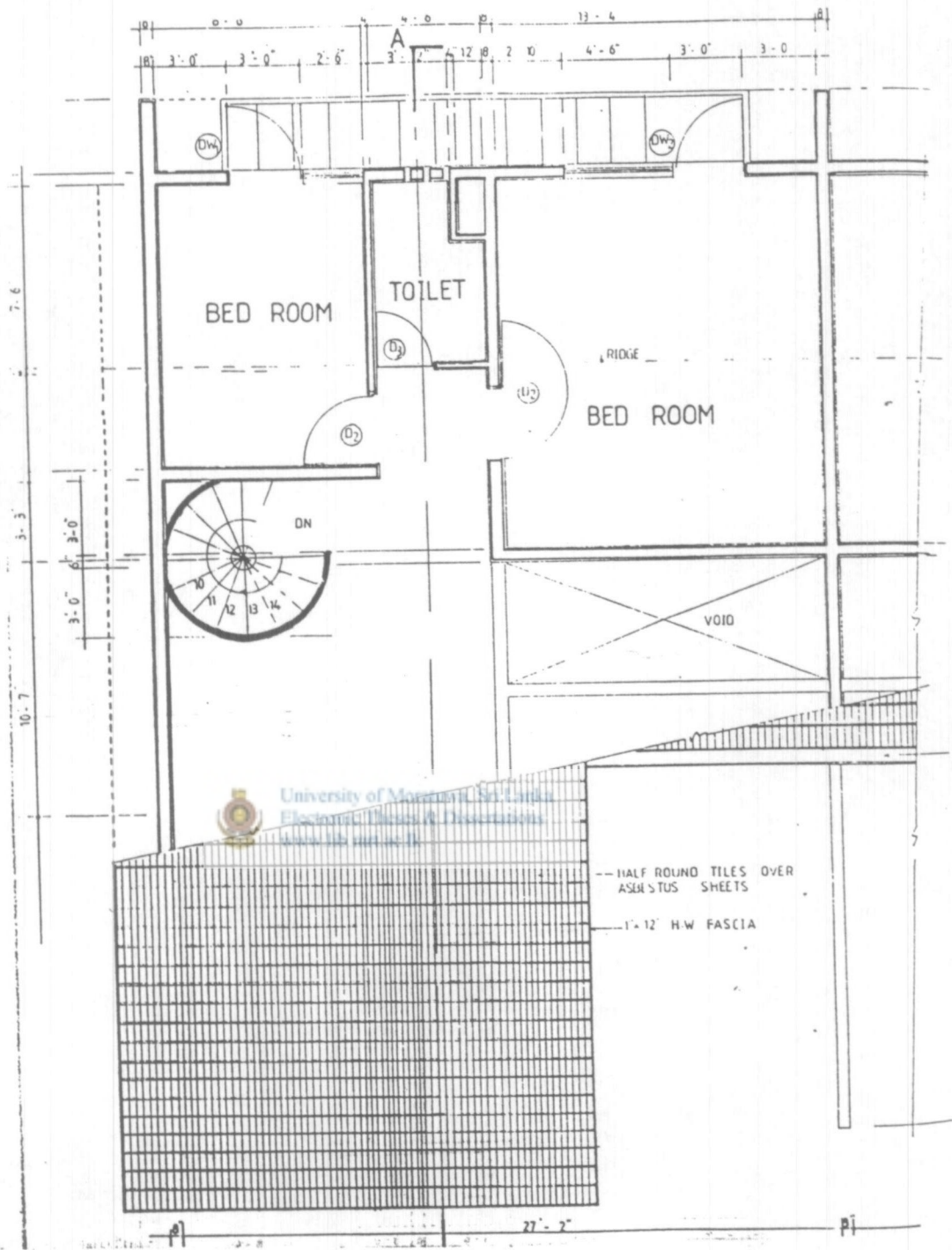
Type - H



GROUND FLOOR PLAN

Jayawadanagama

Type - H



UPPER FLOOR PLAN

Jayawadanagama

Type - H

Most of the occupants have grown trees and flower plants in their land plots and they give a pleasant feeling to the scheme. These trees can be seen as green patches of the overall layout and enhance the beauty of built environment.



Figure 64-Trees soften the man maid environment in Jayawadanagama.

2.2.4 CHARACTERISTICS OF THE CATCHMENT SOCIAL GROUP

The people live in this scheme are totally in middle-income group. Catchment social group is basically the middle income. All the sub groups of the middle-income group can be seen. Most of the occupants are government servants (70%) 20% are doing jobs in private sector. The rest 10% are doing their own businesses.

The occupants are mainly Sinhalese, Muslims and Tamils. A multi religious community can be seen where the majority is Sinhalese.

2.2.5 INFRASTRUCTURE FACILITIES

Every internal road and periphery road network has been paved. Common sewerage network also have been maintained by the provincial council. Every house is provided with pipe borne water. Telecommunication facility and three-phase electricity also have been provided for the whole scheme.

2.2.6 AMENITIES

This mass housing scheme has a community hall for special functions. It has a large play area and a children's park. Children can enjoy during their leisure time in the children's park and in the playground. A library also has been provided for children and adults.



Figure 65-A community hall for special functions.



Figure 66- A playground for children and adults.

A co-operative shop has been located within the premises and people can buy their required items at subsidized prices. Four Groceries were located there. A post office and a medical center also available there. An image house has been provided. There is a temple too in an adjoining land to the scheme.



Figure 67- A children's park



Figure 68- A library for the occupants.



Figure 69- An image house has been provided because the majority is Buddhists.



Figure 70- The post office

People can reach the bus terminal with a walking distance. The nearest railway station is at Kottawa, which is 5km away from this housing scheme.



Figure 71- The bus terminal situated in the scheme

2.2.7 IDENTIFICATION OF MODIFICATIONS AND THEIR RELEVANCE WITH SPATIAL REQUIREMENTS OF THE USER

2.2.7(a) COMMUNITY

The community of this scheme varies from the whole population to the individuals of a particular house. An average family consists of five members. Accordingly the

population is estimated to be 5x705, which is about 3525. Most of people know lot of people in the neighboring clusters. Yet nobody knows all people in this neighbourhood because it is such a huge community.

As single type of housing units is located in one cluster there is a possibility for the occupants to fall into one sub group. This seems most of the clusters are homogeneous when the neighbourhood is heterogeneous.

Occupants have done so many modifications to their houses to promote social interaction. They were modified with extroverted characters. Some of them were added front verandahs, balconies, and roof terraces etc. to promote interaction among community.



Figure 72- Upper floor has modified with a balcony to promote the interaction with neighbours.

2.2.7 (b) CHILD SUPERVISION

90% percent of the population is working in government offices or private sector companies. Others are doing business either at their own place or as participants of others business. In most of the families, the parents, both mother and father do jobs. Child supervision has become a major problem for the parents in the daytime. Lot of parents have to get the grand parents participation on behalf of security of their children.

Playground has been located in the center of the layout. The neighbouring community and the occupants who using the ring roads can easily see the playing children. It will help to prevent the children from accidental dangers.

The designers of type plans has located the kitchen has been located providing visual and aural contacts with the living and dining areas where the children use as their internal play areas in some situations but in the designs of type A, D, and H the kitchen, where the mother spend lot of time, has been located separating from the living and dinning hall.

Most of the A, D, and H - type houses, due to they are raw houses, internal arrangements have been modified with connecting the kitchen, living room and the dining area to have visual connections.

Most of the parents have arranged their front roads to play for the children. Roof terraces and large balconies also have been provided for the children to play.



Figure 73- A balcony has been added to the "G" type house in the four story flat for their children to play.

2.2.7 (c) SECURITY

In Jayawadanagama, due to such large number of population, it is understood the difficulty of having contacts among all the people in the neighbourhood. By providing a playground, a community center, a co-operative shop, and shops within its premises the opportunity to have contacts has been intensified to a certain degree. Yet it is a problem whether they properly function or not. Designers have tried to increase the occupants' sense of shared defense against the outside world.

Occupants do not satisfy with their security and they have done several modifications and lot of constructions to intensify it up to the satisfactory level. The occupants who expect high degree of security have built up high boundary walls and they have modified their houses with more introverted characters.



**Figure 74- The house has modified with more introverted characters to gain more security.
(type "C")**

2.2.7 (d) MAINTENANCE

The maintenance of an individual house has been improved by without providing undesigned interior public spaces. Only has given the essential places to the housing unit.

The undesignated areas in the public places are used by the occupants to collect their garbage.



Figure 75- undesignated areas have maintenance problem.

2.2.7 (e) LIVABILITY

Most of the houses in this scheme are facing either front neighbouring houses or their access roads to the houses. Very little number of people are facing to the playground and community hall. A few numbers of houses have pleasant alternative views. All houses are getting cross ventilation from one direction, when consider the type plan. But due to the alterations that have been done by the occupants, there are houses where ventilation paths have been blocked which could affect the good health of occupants.

Some occupants have used French windows, Bay windows and front poaches to improve the degree of getting cross ventilation and possibility of seeing alternative views from their houses.



Figure 76- French windows have been used to improve the cross ventilation and seeing alternative views from their house. (Type “A”)

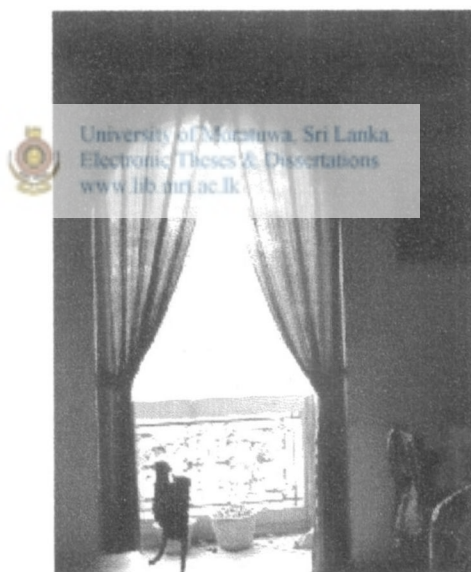


Figure 77- bay windows have been used to see nice views from the bed room (Type “A”)

2.2.7 (F) RESPONSIVENESS

The opportunities, which maximize the degree of choice available to them, can be discussed under several degrees such as permeability, legibility, variety, robustness,

visual appropriateness, richness and personalization. Modifications have been done to achieve these loss factors.

(i) PERMEABILITY

The lay out does not show the clear grid iron pattern when creating the clusters but most of the alley roads have been connected to the main ring road system of the scheme. Sometimes designers have used ramps and stairs to make links with each alley roads. This situation is somewhat difficult to understand the visitors. But the large play area has been located near the geometric center to see anybody.

In the case of road network the visual and physical permeability is not in a satisfactory level. All the housing units are facing outward onto their ally roads, backs facing inwards to the centre of their condominium plot. Private out door spaces are in the back. Housing units have certain amount of permeability in this scheme.

In some houses, due to the unsuccessful modifications, occupants have used their front and rear gardens to extend the houses. These situations can be seen as slum gardens.

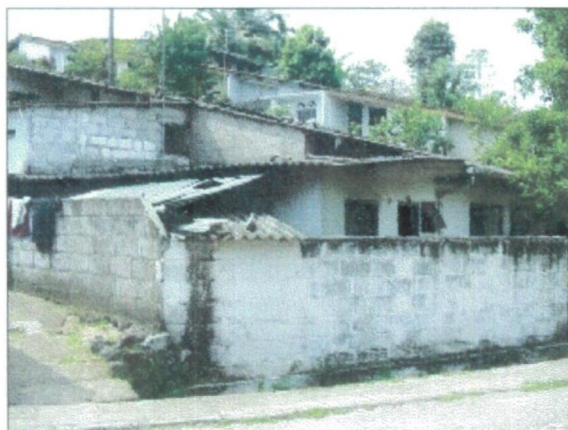


Figure 78- Unsuccessful modifications cannot improve permeability.

(ii) LEGIBILITY

The physical layout can't be easily grasped by anybody because it is not showing any specialty for public and private zones by its scale. As this has 4 flats, they are standing as special buildings but they are private domain of people. The onliest landmark of the scheme is the entrance fore court to the scheme. Only it can get as a reference for a visitor to understand his possession.



Figure 79- The four court, the onliest landmark in the scheme to get as a reference for a visitor to understand his position.



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Shops, which were provided by the designers, are not functioning. They have been scattered in several places. There cannot be seen a center to the scheme. Due to this reason the legibility cannot be seen in terms of activity pattern also. Occupants have started some groceries as a home based economic activity by modifying their houses. These places are acting as small nodes in the scheme.



Figure 80- Legibility can be seen only at the small shops in terms of activity pattern.

(iii) VARIETY

The variety can be found from the eight different type plans. But in the elevations due to use of same house type in the same row, each house can't be identified separately. This has been caused to loss some psychological requirements such as identity of the occupants. This is the one of the main reasons for modifications.

Different colours, details, textures have been used by the occupants to gain variety to their house by shaping the physical form. Pan forms have been altered to gain the variety of uses of the internal spaces.



Figure 81- The stair case has been modified with a decorative timber slats by removing the existing wall to gain variety.

(iv) ROBUSTNESS

The playground and the community hall are the public spaces, occupants are provided, which has the quality of robustness because the can be used for multi purposes.

In housing units, by providing a single hall for living and dining, the designer has created a multi purpose space, which can be arranged according to their requirements.

Some occupants have attached additional spaces for cooking and the original space for cooking has been used as the part of the living for children for studying.

(v) VISUAL APPROPRIATENESS

Due to less detailing and the sameness of each housing unit in the same cluster, visual appropriateness is a loss factor. The row of one cluster gives the feeling of monotonous. By modifying their original houses occupants have gained this loss factor.

(vi) RICHNESS

All the houses in one cluster are same due to the use of type plans. Therefore as the previous aspect, the richness also can't be seen. All the modifications are help to gain richness.

(vi) PERSONALISATION



In this housing scheme, there can be seen two ways of personalization.

1. To improve practical facilities
2. To change the image of a place

The first way of personalization has been done with the physical aspects. Second way has been done mainly as an affirmation of their own tastes and values.

To improve practical facilities, occupants have done lot of extensions with additional spaces such as bedrooms, kitchens, garages etc.

Some houses have been modified with lot of techniques to change the image of the space. Different colours, roof patterns, large openings have been used to change the image of the original spaces.

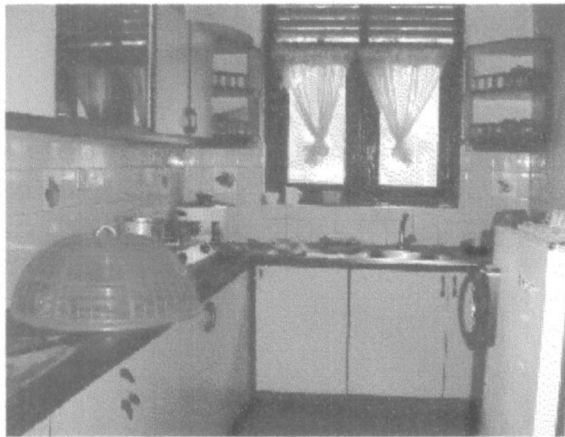


Figure 82- A kitchen has been added to type “F” and the living room has been expanded.

2.2.8 IDENTIFICATION OF MODIFICATIONS AND THEIR RELAVANCE WITH REQUIREMENTS OF INTANGIBAL COMPONENTS OF HOUSING.

In Jayawadenagama user adaptations and modifications are very commonly found. Some houses have been constructed by demolishing the original house. These changes imply their loss requirements and loss spaces for their houses. Under this topic the intangible components their houses are going to be revealed.

2.2.8.1 PSYCHOLOGICAL REQUIREMENTS OF HOUSING

In this housing scheme, people have been done severe changes to their original houses. This implies that they have not been provided psychological requirements to a satisfactory level.

2.2.8.1 (a) IDENTITY

As discussed at the beginning eight different type plans have been provided in this housing scheme. But in the same row of houses consists of same type houses. Outsiders can't identify anybodies' house due to due to the sameness. This has been caused a lot of modifications in the front facades to get other's attention by adding different characters.

The occupants have used different details, contrasting colours, roof patterns and some elements to add some dynamic characters to their residents. According to the occupants' sub cultures they have used several techniques to show their identity according to their interests.



Figure 83- Front balcony has been modified by adding different details to the balcony wall.
(Type “F”)



Figure 84- Different roof structures have been used to identify separately from others.
(Type “E”)



Figure 85-Muslims have used contrasting colours to show their identity. (Type “B”)

2.2.8.1. (b) TERRITORIALITY

Most of the occupants haven't their individual land plots due to row houses. They only have condomeniam properties. Only the front and rear sides they have small plot of lands. The occupants who live in row houses have been marked their territories by planting some flowers or making steel fences. In case of Individual Housing units, residents have used permanent demarcations using different colours and materials to reduce unwanted interactions with outsiders. This situation brings about an emotional security to the occupants.



Figure 86- A permanent block wall has been used to demarcate the territory.



Figure 87- Territorial demarcation with giving the identity.



**Figure 88- Territory defined by green wire mesh as a see- through element.
(Type “G” in the four story flat)**

2.2.8.1(c) PRIVACY

In this housing scheme, privacy has been improved by the occupants according to their level of expectations. Territorial demarcation is one method they have used to obtain privacy.

Some people have used high boundary walls to obtain more privacy. Some of them have used extra grill gates before their main entrance to gain more privacy. The people, who expect more privacy, have modified their houses with more introverted manner when the others have modified with extroverted manner.



Figure 89- The people expect more privacy has modified their houses with small openings and high boundary walls. (Type “B”)



Figure 90- The people who expect less privacy have modified their houses with large balconies. (Type “E”)

2.2.8.2. PHYSICAL REQUIREMENTS OF HOUSING

Physical requirements have been fulfilled only by providing 8 different type plans to the scheme. When modifying houses due to insufficient floor area they have used their front and rear gardens violating the building regulations also. This situation commonly found in row houses and the houses with small land extents. But in type-H in most of the situations the occupants have modified their houses only in the internal arrangements. In the type G, and H of course as they are flats, occupants have modified their houses only in the internal arrangements.



Figure 91-A roof has been extended to expand the front verandah due to insufficient space of type “C”



Figure 92- The living room has been expanded due to the insufficient space encroaching the rear garden (Type “G” of four story flat)

2.2.9.2.(a) ENCLOSURE

People have used different colours, materials and level changes to demarcate their personal enclosure within their own houses according to their degree of comfort.



Figure 93- The enclosure has been expanded by expanding the living room of type “C”

2.2.8.2 (b) CENTRE

From the overall lay out, a proper center can't be identified. Only it has given an entrance fore court. But it is not functioning as a center. A visitor will get trouble to find the public places and the important activities. If anyone take the as a center where are the other communal facilities?



Figure 94- Most of the houses living room acts as the center.



For individual houses living room where all the members meet is acting as a center. Some occupants have changed their centers adding new spaces to the important activities.

2.2.8.3 SOCIO-CULTURAL REQUIREMENTS OF HOUSING

Jayawadanagama consists of different ethnic groups such as Sinhala, Tamil and Muslim. It has been created different social and cultural groups. Muslim community prefers introverted characters than Tamils and Sinhalese. Sinhalese are showing more extraverted characters than other two ethnic groups; their houses have inviting qualities such as open facades, less detailed elements, open verandahs and simple forms.

The colours the Tamils have used are contrasting. Muslims have used more greenish, brownish and white colours. Sinhalese have used light colours, which merge with other.



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But by its layout, without providing sufficient communal facilities, it will not create interactions among inter social and intercultural groups. People have attempted to increase their socio-cultural relationships with neighbours by modifying their houses with inviting nature.



Figure 95- The house has been modified by adding a front verandah to gather neighbours there.

2.3 CASE STUDY THREE – ANDERSON HOUSING SCHEME

Anderson housing scheme was selected as the third case study to examine the degree of user satisfaction in terms of socio-spatial relationships in mass housing schemes. Anderson is one of the housing schemes, which facilitates for middle- middle income and upper middle-income category in Colombo. By providing the housing facility within the city limits, the people who doing jobs in the Government and private sector, this has become a compromise to them with convenient transports.

2.3.1 LOCATION

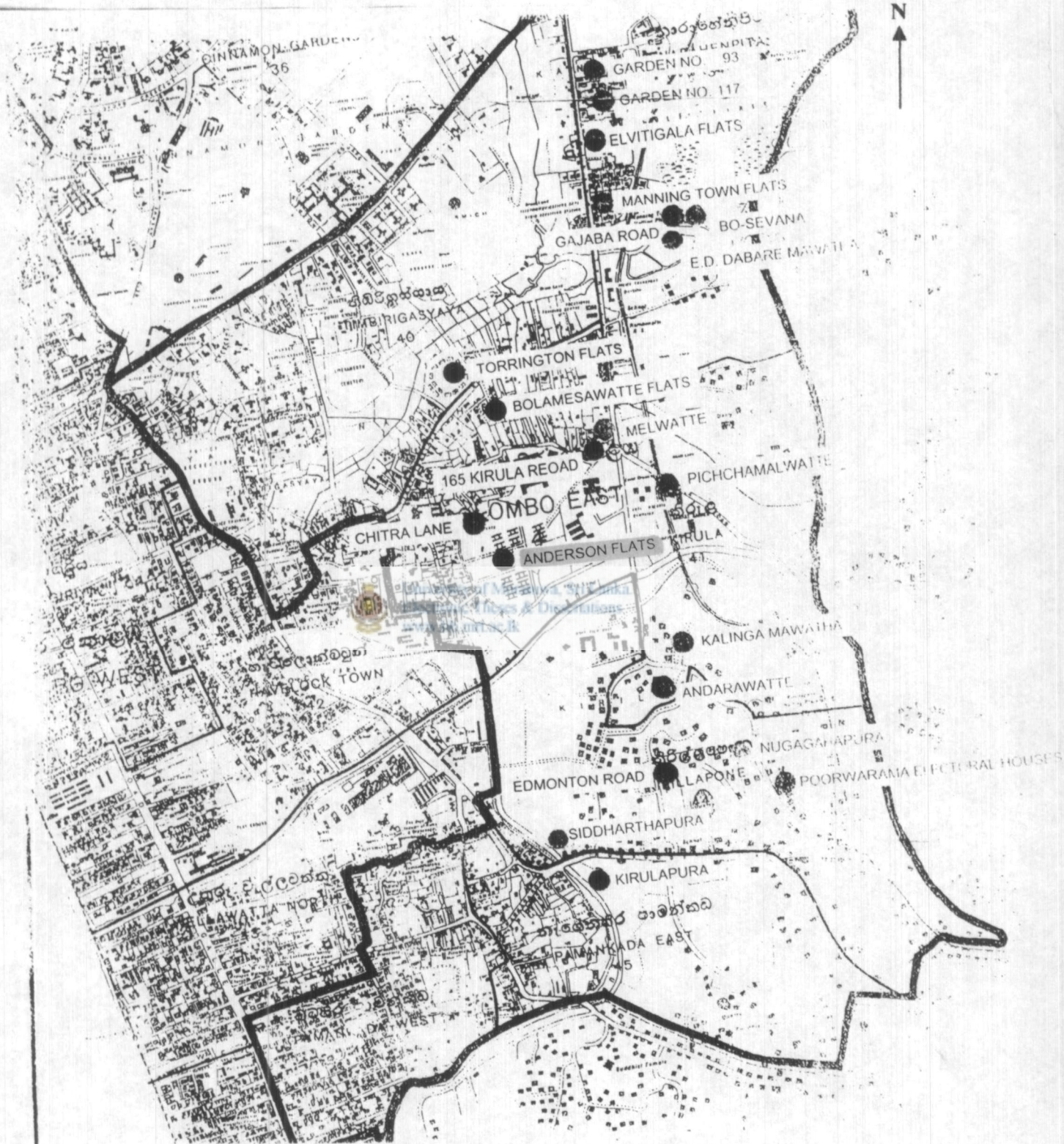
The housing scheme is located in Colombo city limits, belonging to the Narahenpita police area. This is 5km distance from Colombo Fort.

This is a prime location with all facilities such as Colombo central hospital, the superior private hospitals, all the Government and Private Banks, Government Offices, National and International Schools, and Supermarkets. These facilities make it a suitable location for residential development.

2.3.2 PROJECT OBJECTIVES

The project consists of 2 phases. The first phase was mainly handled by the State Engineering Corporation when the client was National Housing Development Authority. The main objective of the project was to provide the maximum number of housing units within the available land extent, and to provide infrastructure facilities to the occupants. The phase-1 was done to solve the housing problem of government and non-government sector servants. The objective of the phase-2 was done to solve the housing problem of any person who can afford the cost. They were sold by the NHDA by pre sale basis. The phase- 2 was designed by NHDA architects. These pre-sale houses are good solution for the housing problem of upper- middle income people, in the developing countries.

COLOMBO DISTRICT



LOCATION OF ANDERSON HOUSING SCHEME

2.3.3 THE GENERAL CHARACTERISTICS OF THE HOUSING SCHEME

The land extent of the scheme is 32A 2R 20.55P. The land is almost flat. Phase-1 has provided 560 houses and phase-2 has provided 16 housing units. All the phase-1 houses are in four story flats.

Phase-1, if concerned the individual block design, each block consists of two wings, joined together with a main circulation staircase at either ends, creating a courtyard in the center. Each floor has 10 units of houses on either side.

Phase-2 is consists of five story flats. The housing density is 18 units per acre. Both phase-1 and phase-2 consist of flats with 3 and 5 floors respectively. Phase- 2 occupants have been provided with parking facility in the ground floor.

Phase-2 flats are consisting of two similar housing units per floor with a common staircase. Phase- 2 has only two numbers of flats with two similar housing units linking with one common staircase in each floor. The two phases of the project can be easily identified by its colours.

In phase-1 all the houses were sold without any down payment and the amount of the cost has been collected within 25 years without any interest.

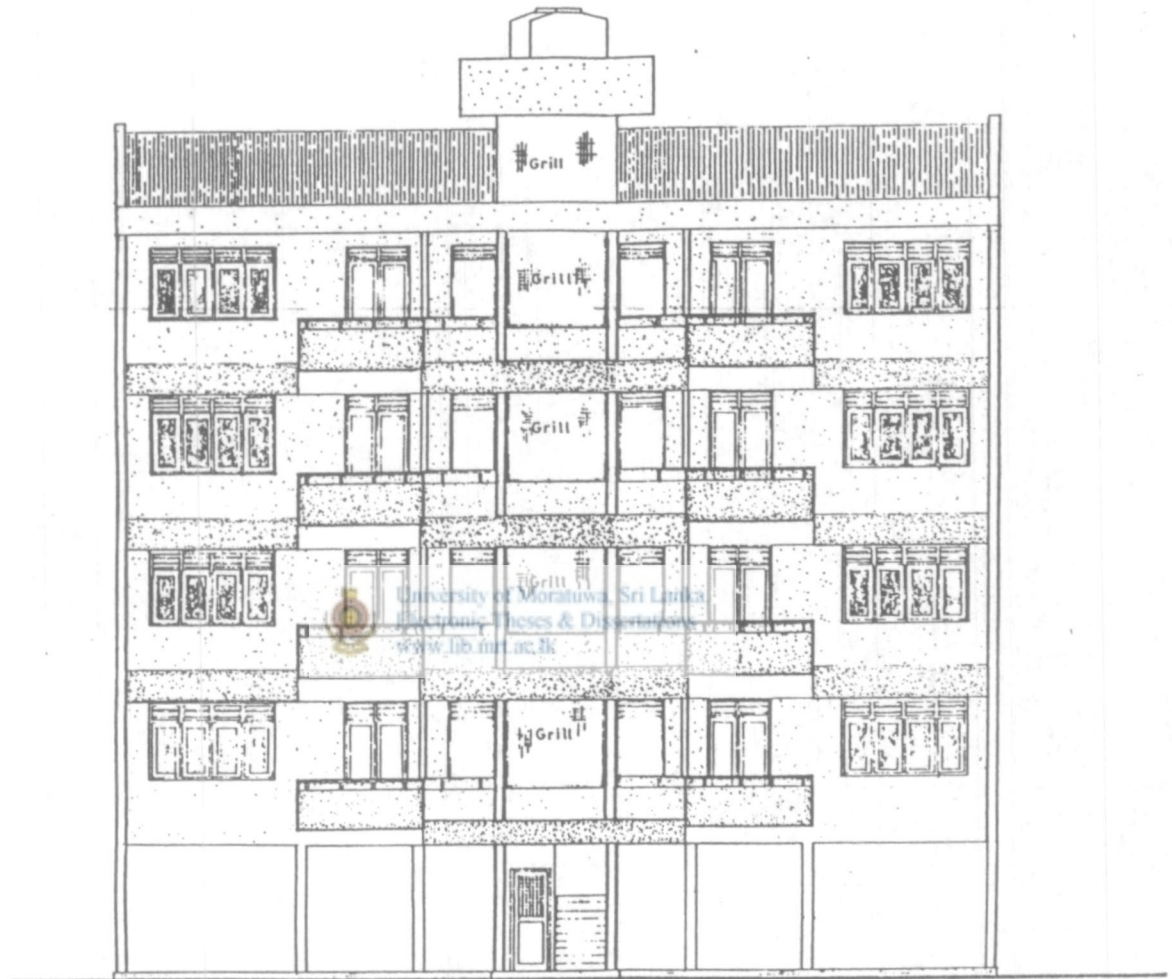
Floor	Value per unit Rs.
Ground floor	90,000
First floor	83,500
Second floor	75,000
Third floor	66,000

In phase-2, fifth floor houses were sold to Rs.900,000 and all the others were added Rs.100,000 per each floor from top to bottom.



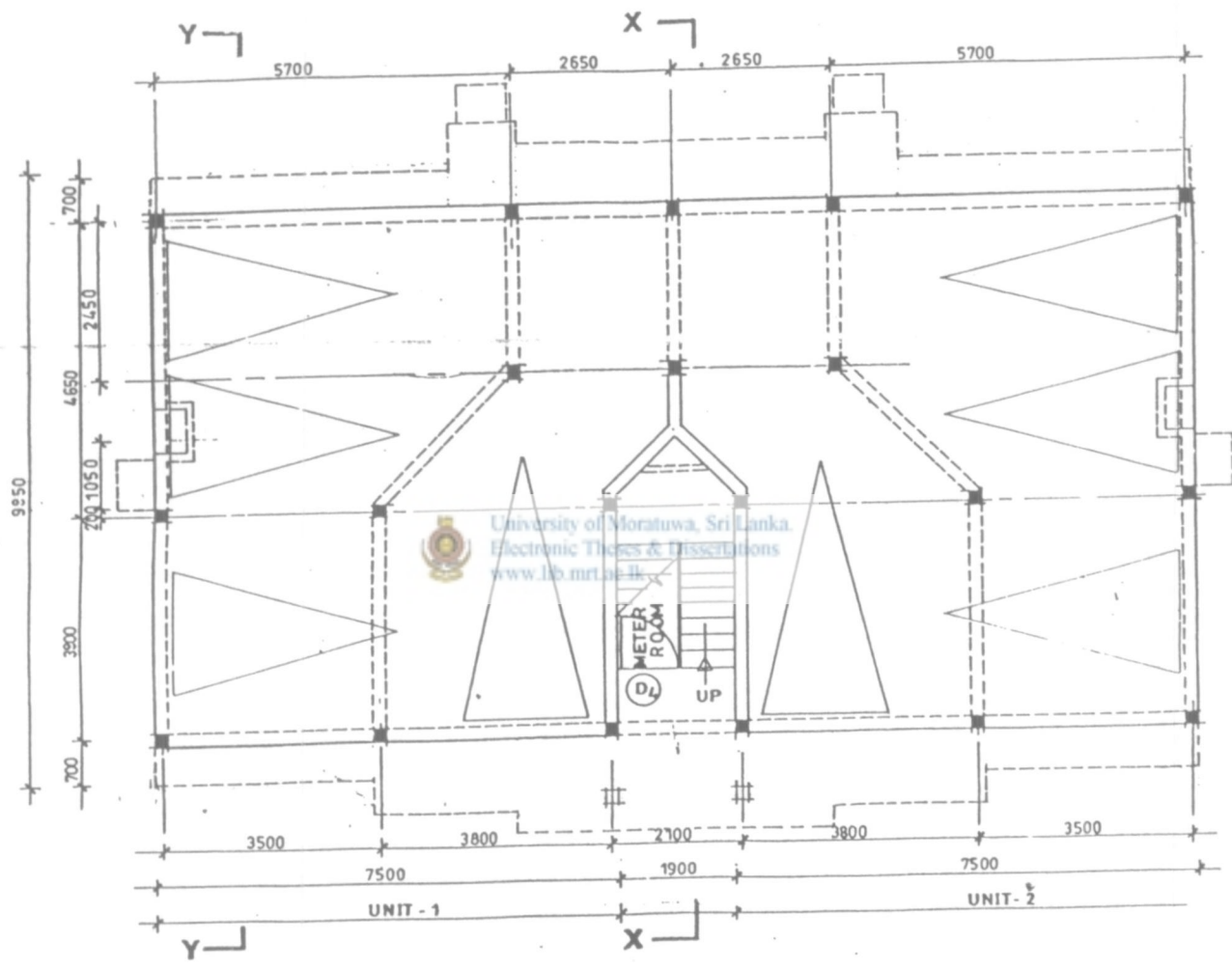
Note
Undefined boundaries are shown in red
For schedule see overlap



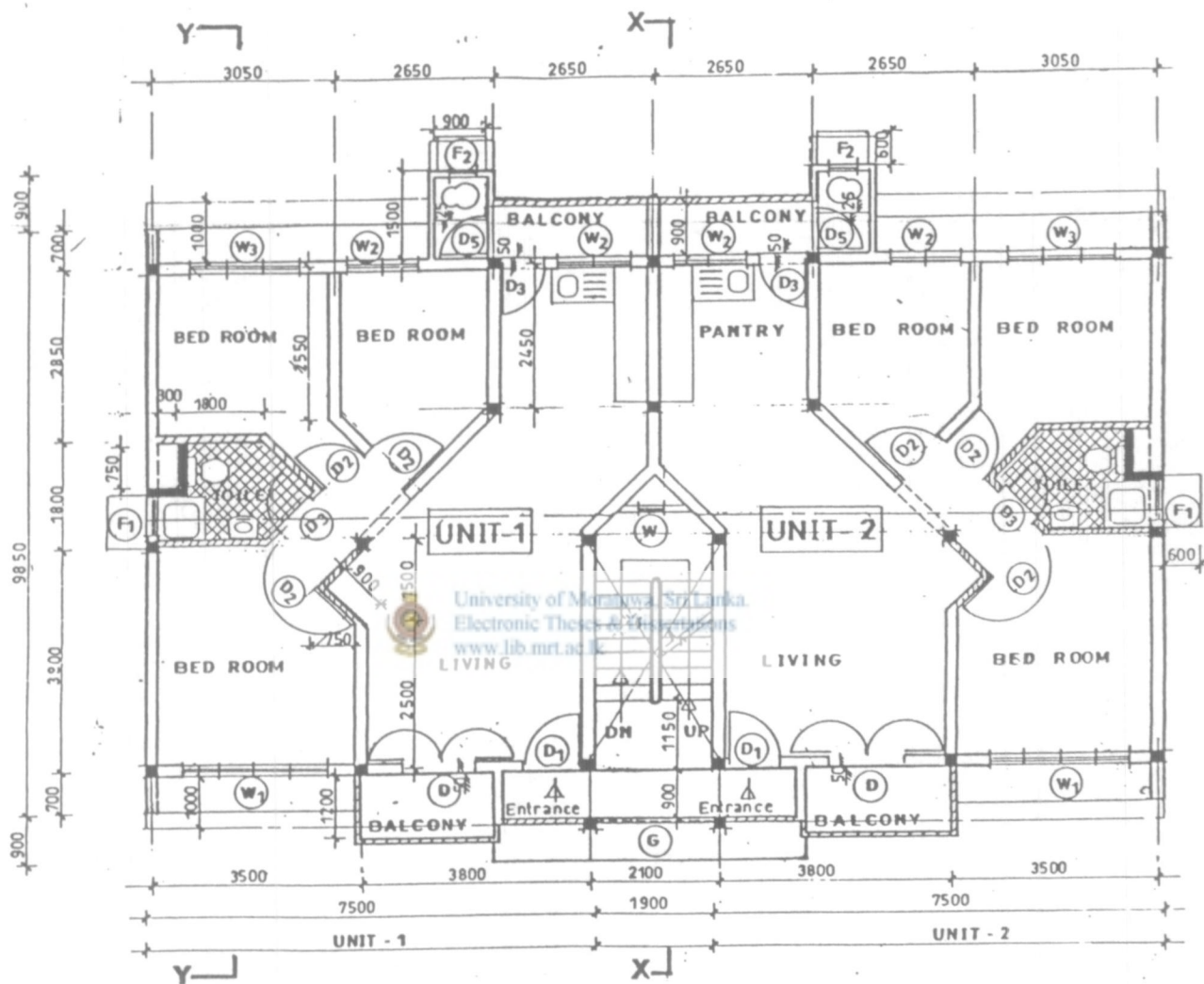


FRONT ELEVATION OF THE BLOCK (Phase -2)

79041



GROUND FLOOR PLAN



TIPICAL FLOOR PLAN

All the occupants have the same relationship with the ground floor. (Except the phase-one ground floor dwellers.) They have decorated their houses with keeping flowerpots on their balconies.

2.3.4 CHARACTERISTICS OF THE CATCHMENT SOCIAL GROUP

The catchments social group is basically upper middle income. Most of people in this scheme are employed in government or other private institutions, and the rest are businessmen. They are mainly Sinhalese, Muslims and Tamils and Burgurs, The majority is Sihalease, which is more than 80%. The average family consists of 4 members.

2.3.5 INFRASTRUCTURE FACILITIES

This housing scheme is provided with three-phase electricity, pipe borne water and Telecommunication facility for each unit. The Colombo municipal council does all the maintenance of internal roads and garbage collection.

2.3.6 AMENITIES

A large playground has been provided for the children and adults to play. This has been prevented young people from using it often, further discourages the people from using it as a playing space. A super market has been located at one end of the housing scheme, bordering the Park road. A children's playground has been located at one end of the scheme. A community centre has been provided to this housing scheme. Yet people get all the facilities from their vicinity due to its' prime location. Due to lack of play areas children use the internal roads to play cricket and other games. Occupants gather to internal roads to have a chat.

2.3.7 IDENTIFICATION OF MODIFICATIONS AND THEIR RELAVANCE WITH SPATIAL REQUIREMENTS OF THE USER

2.3.7 (a) COMMUNITY

The community of this scheme varies from the whole population who inhabits in 576 housing units to the members in one housing units. If one unit has 4 members in average the whole population is 4×576 . That is about 2000. The interaction should be in the optimum level due to this number of occupants. In phase-1 the interaction among the people should be high due to they are opening out into a central courtyard but, lack of sense of privacy, in the balconies around the courtyard, prevents the occupants from coming out and having a chat with their neighbours. Hence, the balconies around the courtyard have become no ones' property.

The playground has been abundant by the occupants due to its' corner location and the boundary wall. Children use their front roads for playing. The super market is not properly used by the occupants because of its' location of bordering the Park road. It does not act as a place where the residents constantly meet. The community hall is rarely used by the occupants. Due to this lack of community facilities and their less functioning, occupants use the public recreational spaces in their vicinity. The interaction within the community is very low.

2.3.7 (b) CHILD SUPERVISION

More than 90% percent of the population is working in government offices or private sector companies. As parents do jobs they have to keep their children in daycare centers during daytime. In a very few number of houses, grand parents could be seen looking after children.

By the designers of flats the kitchen has been located providing visual and aural contacts with the living and dining areas where the children use as their internal play areas.

The children's' playground located in a corner of the scheme seems to be an afterthought of the designers. It is not help to the parents to have aural and visual contacts with the children during their playing hours. The playground has been abundant by the occupants.

2.2.7 (c) SECURITY

Most of occupants in phase-2 hold higher ranks in government and private sector but good interaction with each other cannot be seen. Due to the reason of not having community gathering places, occupants only have the opportunity to meet their neighbours at the staircase or at the internal roads. Sometimes they may not know their close neighbours. It has not increased the occupant's sense of shared defense against the outside world.



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To over come the sense of insecurity, they have used iron grill doors in all the houses before their main entrances. This is communicating an attitude about security. These grills ensure sense of security in two ways. On one hand, the knowledge about what is happening in the out side and the other hand the realization of the fact that the intruders are unable to break and open the grills. This has created a high degree of sense of security.

2.3.7 (d) MAINTENANCE

The maintenance of an individual house has been improved by without providing undesigned interior public spaces. Only has given the essential places to the housing unit. In the phase-2 houses the designers have provided an undesigned triangular space in the living room, which cannot use to keep furniture. Some occupants have created cupboards and some of them have used it as a corner T.V rack there.



Figure 96- undesignated living room has been used to keep the television and corner cupboards.

The undesignated public areas in the scheme have become garbage collective places of the occupants.

2.3.7 (e) LIVABILITY



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Most of the houses in this phase-2 facing their front roads. Phase-1 houses are facing the front courtyard. As they are flats they can catch up lot of high-rise buildings in the city. All are getting cross ventilation and natural lighting.

Especially the occupants who inhabit in phase-2 have been provided very good views, which please their minds. The houses are properly ventilated with fresh air due to the large green area inside the survey department land. The solid balcony wall has blocked the pleasant views and the degree of getting cross ventilation. Occupants have put up steel frames replacing the solid guard walls.

In phase -1 flats, the iron grids permit the residents to have some visual connection with the balconies around. Even when it is kept closed, it seems to be a more satisfactory alternative than the timber doors.

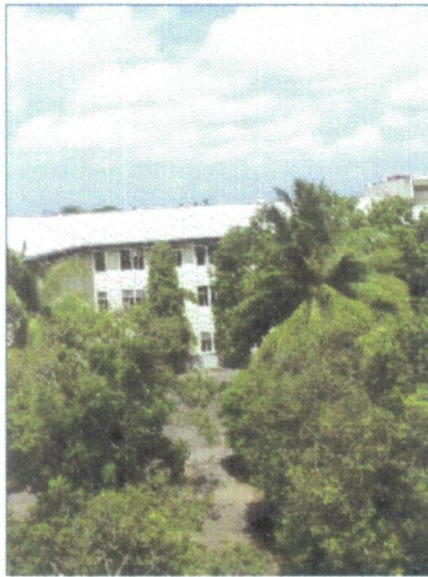


Figure 97- Large green open area inside the survey department land.



Figure 98- Houses were modified with steel frames to improve the degree of getting cross ventilation and see alternative views.

2.3.7 (f) RESPONSIVENESS

The opportunities, which minimize the degree of choice available to them, can be discussed under several degrees.



(i) PERMEABILITY

The overall lay out can be easily grasped by anybody due to the clear gridiron pattern of road network. Only the internal roads belong to the public domain and the flats are belong to the private domain.

Inside the building, only the common staircase belongs to the public domain. This scheme is more permeable than other two schemes.

Houses haven't their own private lands or gardens either front side or back side. Everybody has an air space in both sides. The front and rear side shadings have been extended to make little spaces in their fronts and the backs.



Figure 99- Front shading has been modified as a front garden to keep flowerpots.



Figure 100- Rear shading has been extended as a rear garden to dry cloths.

(ii) LEGIBILITY

Legibility can't be seen in this scheme. No land marks to identify as references. By its activity pattern also can't be seen legibility due to the reason of not functioning communal places. Therefore this housing scheme not provides legibility by its physical forms and the activity pattern.

(iii) VARIETY

Variety can be found only from the building type the designer has used. Individual housing units are also same. Some occupants have obtained this factor by modifying their balcony walls.

(iv) ROBUSTNESS

To achieve robustness it has introduced a community hall and a playground but they are not functioning. Only the front roads give robustness because the occupants use them to play and to gather to have a chat.

In housing units, by providing a single hall for living, dining and pantry the designer has created a multi purpose space, which can be arranged according to their requirements. People use the pantry area for washing cloths and study purposes replacing their pantry to the rear, extended shading.

(v) VISUAL APPROPRIATENESS

Visual appropriateness is a loss factor due to less detailing and the sameness of each housing unit in a one block of flats all the front facades are same. There can't be seen lot of modifications, which have been done by the occupants to a gain this factor.

(vi) RICHNESS

All the houses in one block are same due to the use of type plans. Therefore as the previous aspect, the richness also can't be seen.

(vii) PERSONALISATION

In this housing scheme, there can be seen two ways of personalization.

1. To improve practical facilities
2. To change the image of a place

The first way of personalization has been done with the physical aspects. Second way has been done mainly as an affirmation of their own tastes and values.

In this scheme the first objective has been fulfilled by extensions such as pantry, rear balcony etc.

2.3.8 IDENTIFICATION OF MODIFICATIONS AND THEIR RELAVANCE WITH REQUIREMENTS OF INTANGIBAL COMPONENTS OF HOUSING.

In Anderson housing scheme, user adaptations and modifications have been done only in the internal arrangements. Those changes have been done without doing any effects to its structure. Though the houses are in a satisfactory level of the user or they are multistory flats they have not been changed totally.

2.3.8.1 PSYCHOLOGICAL REQUIREMENTS OF HOUSING

In this housing scheme, basic psychological requirements have been provided in minimum degree but not at a satisfactory level. Occupants have not done severe changes and modifications to their houses. The reason may be the difficulty to do modifications to obtain some of the requirements in multistory housing.

2.3.8.1 (a) IDENTITY

In one block of flats, all the houses are same due to the use of type plans. Although it is varies from person to person, this requirement has not been taken into consideration.

The outsiders can't identify anybodies' house from another. Due to the reason of same block types, occupants can't properly explain their location to a visitor. There can't be any alternative suggestion that the occupants have taken to solve this inconvenience. Only one block can be seen in somewhat different colours to show its identity.



Figure 101- Different colours have been used to give identity.





Figure 102- The modification, which has been done to gain livability is help to give identity to the topmost level house.

2.3.8.1. (b) TERRITORIALITY

The staircase, in between two housing units is the onliest territorial demarcation to reduce the unwanted instructions from outsiders. Occupants have used a iron grill gates, out side of the timber doors to demarcate their territories.

2.3.8.1. (c) PRIVACY

The degree of privacy, the man expects is vary from person to person, according to cultural and personal attitudes. As discussed earlier the stair way is the onliest demarcation, which reflects the occupants' privacy. Some of occupants have used another grill gate outside to the main entrance to improve their degree of privacy.

2.3.8.2 PHYSICAL REQUIREMENTS OF HOUSING

Physical requirements basically have been fulfilled by providing two types of housing units. Under each phase it has been provided one type of houses. Floor area



is in a satisfactory range for average four membered family, this requirement has been fulfilled up to some extent.

There can be seen several modifications in their floor plans by adding more spaces. This same modification can be seen in every house. This is actually could have to be provided by the designers in their original design also because every square inch of space is very valuable for the walkup dwellers

2.3.9.2 (a) ENCLOSURE

People have used different colours, materials and level changes to demarcate their personal enclosure within their own houses according to their degree of comfort.

2.3.9.2 (b) CENTRE

It can't be seen aspect in the layout. For individual houses living room, where all the members meet is acting as a center.



3.1.10 SOCIO-CULTURAL REQUIREMENTS OF HOUSING

Anderson housing scheme consists of different ethnic groups such as Sinhala, Tamil, Muslim and Burger. It should be created different social and cultural groups but due to individualistic character and less community facilities there can't be seen such interactions even within the same ethnic group.

Due to the reason of unsatisfaction, with provided qualitative and quantitative requirements, for their housing schemes, the occupants have done so many changes and modifications to their houses. But the walkup dwellers cannot do such modifications due to the restrictions of their locations. They have to live with unsatisfaction during their lifetime; it is a suffer. The successful design solution and the shortcomings can be understood by analyzing the user's design solutions; used to achieve their lost requirements.



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CHAPTER THREE

ANALYSIS OF THE IMPACT OF SOCIO-SPATIAL RELATIONSHIP ON BUILT FORM

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

CHAPTER THREE— ANALYSIS OF THE IMPACT OF SOCIO-SPATIAL RELATIONSHIP ON BUILT FORM.

Government sponsored large scale mass housing schemes are compromise to the homeless urban community. Locating a scheme in suburb like Raddolugama and Jayawadanagama, and providing all infrastructure facilities and amenities have minimized the population density in Colombo. It is a correct way of decentralizing the urban facilities in suburbs. This will help to a haphazard development within the country.

These houses were sold for the householders by concessionary payment schemes by the government. Anderson phase two houses were sold, as pre-sale houses due to their householders are upper-middle income people. It is a remarkable service for middle-income people in Sri Lanka as a developing country. A huge housing density has been achieved by mass housing. As a multinational country like ours, provision of houses for all ethnic groups in a one scheme is a good attempt to create higher interactions. All these three housing schemes have provided infrastructure facilities in satisfactory level of user. However, it is essential to evaluate the user satisfaction with spatial requirements and their socio-cultural requirements provided at these large-scale mass-housing schemes.

3.1 AMENITIES

Raddolugama	Jayawadanagama	Anderson
Large community hall	Community hall	Community hall (rarely functioning)
Large playground	Play ground	Play ground (rarely functioning)
Library	Library	
Co-operative shop	Co-operative shop	
3-shopping complexes	2-shopping complexes (not functioning)	1-shopping complex
Post office	Post office	
Police post		
Health center		
Dental clinic		
Primary school		
Superb transport system and a bus terminal	Bus terminal with buses to short distances	
3km to railway	5km to railway	2km to railway
Buddhist center, temple, church, mosque adjoining	Buddhist image house, temple adjoining	Temple, church, mosque in the vicinity.

3.2 ANALYSIS OF THE SPATIAL REQUIREMENTS AND THE USER SATISFACTION.

3.2.1 COMMUNITY

Provision of amenities is essential when locating a housing scheme in remote areas. Their location in the overall layout is also very important to their functioning as well as the satisfaction of user. Some of these communal facilities, which have been provided for these three schemes, are not functioning due to their incorrect locations. Jayawadanagama shopping complex, Anderson play ground and its' shopping complex are located in a corners of the layout. They never connect with the center of

the scheme. They have been abundant by the occupants. In most of the situations, the proper functioning of communal places link with their proper locations.

This unsuccessful community spaces reduces the interaction of occupants. In a housing scheme, the interaction of occupants is very important to create socio-cultural sub groups.

All these three housing schemes consist of more than 3000 populations. According to the Anthropological experiments, the optimum number of population for a neighbourhood for acting as a community is minimum of 500 to maximum of 1500. It implies the importance of creation of sub groups in the schemes.

The extroverted modifications of the houses imply the dissatisfaction of the occupants due to less interaction. They prefer front porches, front verandahs, open balconies, roof terraces to improve their interaction with neighbours. Due to the restrictions for modifications, the dwellers of Anderson housing scheme use their front roads to meet their neighbours. They are functioning than the community spaces provided.

Raddolugama has provided more community facilities than Jayawadanagama. Anderson housing scheme has not been provided with any community facility. But the occupants are not suffering because all facilities are available in their vicinity.

The overall designs and the individual housing units are not helping to sustain and support the community life pattern.

3.1.2 CHILD SUPERVISION

Most of the dwellers are occupied their day time in a office or a business. For these families, child supervision is a major problem. None of these housing schemes have design considered the children of the family when designing the individual houses and the overall designs.

As a solution to this issue, the occupants of Raddolugama have built a day care center, children's park and a pre school with the aid of their welfare society. Other schemes haven't adequate space or they haven't inter relationships among community to take successful decisions.

From the individual housing unit designs, the designers have provided one hall to living and dining. As a respond to the child supervision, they have only provided aural and visual contacts to the hall from the kitchen. Occupants of Jayawadanagama "G" type houses have extended their upper floor living room as a balcony to children to play.

In these housing schemes, lots of parents have promoted their children to play on their front roads. The playgrounds were not located in the proper places to have aural and visual connections during their time of playing.

Mostly the children of the family had been neglected when designing the overall design and the housing units.



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3.2.3 SECURITY

Sense of shared defense cannot be seen in these three schemes due to less interaction of people. Providing a police post is an improvement of increasing the degree of security but it is not a design solution.

As an improvement or to gain the loss factor of security, occupants have done lot of modifications. High boundary walls, live fences are common attempts in Jayavadanagama and Raddolugama. The walkup dwellers of Anderson scheme, have constructed iron grill works out side of the timber doors to keep them close always.

Sense of shared defense and the individual security has been neglected by the design.

3.2.4 MAINTENANCE

This requirement has been naturally fulfilled in the housing units due to the reason of providing minimum requirements to carry on their daily activities. In the Anderson housing scheme, the undesignated space created in the living space, has been used as a T.V corner by the occupants.

In these three schemes undesignated open spaces in the overall design, have been used as garbage collective spaces by the occupants.

Undesignated spaces in designs cause lot of discomforts to the user. Especially for the users like walkup dwellers the minimum space they were provided should give optimum use even by a square inch of floor area.

3.2.5 LIVABILITY

Most of the houses were added French windows, roof terraces, front verandahs to improve the degree of getting cross ventilation and seeing alternative views. Some occupants have shifted their front sides of to another direction to see nice seens.

Anderson phase 2 dwellers have modified their solid balcony walls by constructing see-through steel fences.

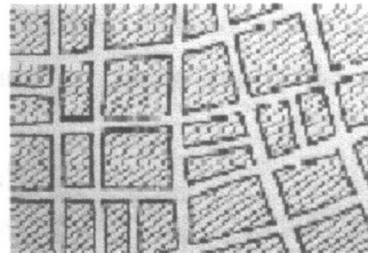
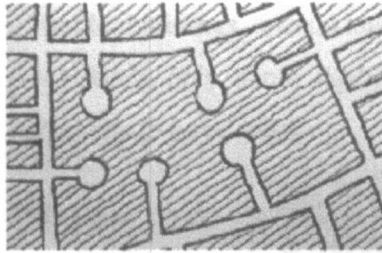
Giving enough openings to get cross ventilation and to see nice seen are not in a satisfactory level of users. The available natural resources should be taken into consideration.

3.2.6 RESPONSIVENESS

(a) PERMEABILITY

The aspect of permeability has been lost due to the unsuccessful modifications in some situations but lots of occupants have achieved this aspect by their modifications.

In Anderson and Jayawadanagama schemes, due to the gridiron pattern of road network, created clusters and the visual and physical permeability for public places, providing lot of alternative choices. This road network created interfaces between public and private domains. Jayawadanagama road network is not helping to give permeability.



The right side layout offers a greater choice of routes than the left side one. It is therefore more permeable.



Public and private places cannot work independently. They are complementary, and people need access across the interface between them.



(b) LEGIBILITY

All these three schemes' lay out can't be easily grasped by its physical form. By its activity pattern Raddolugama can be grasped only the shopping complexes, play ground and the bus terminal.

Due to two story and four story housing blocks Jayawadanagama, and the small scales of public buildings, special landmarks cannot be seen. Anderson is also the same. The front roads only show legibility, by the activity pattern due to the gathering of occupants to have chats.

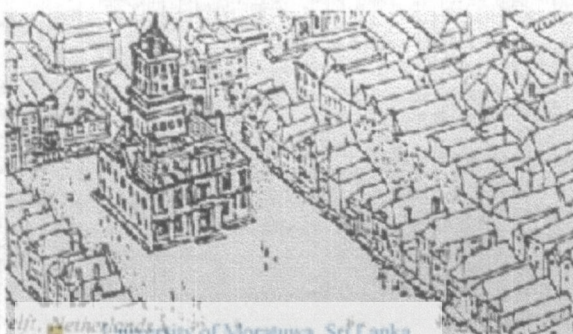


Figure 103- physical legibility by landmarks.

The new shopping complexes with three to four floors, could add the lost factor of physical legibility by their massive scales, contrasting colours, and the significant building forms.

Legibility in terms of activity pattern and physically will help to grasped the overall lay out of the scheme.

(c) VARIETY

Variety has been achieved by the designers by providing three house types to Raddolugama, five house types to Jayavadanagama and two block types to Anderson scheme. Occupants are not satisfied with them. They have used different colours, textures, and details to shaping of houses to gain variety.

Variety is useful to identify a particular house from thousands of houses in a scheme, to a visitor.

(d) ROBUSTNESS

Playground and the community halls only act as multipurpose places. They are functioning in Raddolugama and Jayawadanagama. Anderson people are not satisfied with these two places due to their incorrect locations.

In housing units, designers have provided only the hall as a multipurpose space. Occupants have done lot of modifications to create robustness by creating multipurpose spaces.



Figure 104- Robustness of public places.



Figure 105- Robustness of internal spaces

For houses in limited situations, robustness is essential to use one space to several purposes.

(e) VISUAL APPROPRIATENESS AND RICHNESS

Due to the sameness and less detailing of housing units and other public buildings, these two requirements have not been fulfilled in these three housing schemes.

Occupants have fulfilled these requirements when catering to the other loss requirements.

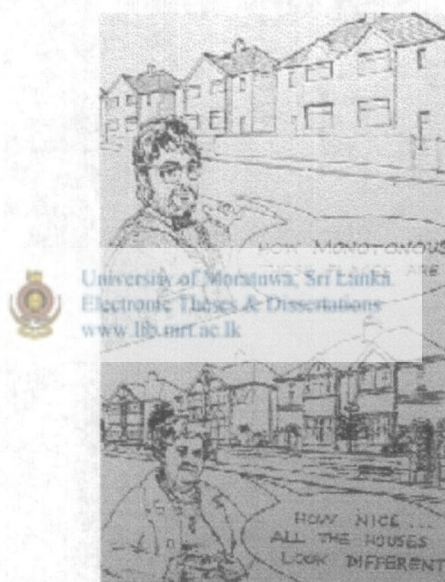


Figure 106- The difference between visual appropriateness and its' lost.



Figure 107- The problems facing due to loss of visual appropriateness.



Figure 108- The importance of richness

(f) PERSONALISATION University of Moratuwa, Sri Lanka.
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All the modifications done by Raddolugama and Jayawadanagama people can be categories into two groups. One is modification with physical aspects and the other is with the occupant's tastes, aspirations and values. Most of the extensions have been done to gain the satisfaction of physical requirements.

In Anderson flats, in this stage can be seen the occupants fulfillment of physical aspect due to the minimum space they have provided.

The flexibility to personalize the provided houses is essential.

3.3 ANALYSIS OF THE REQUIREMENTS OF INTANGIBAL COMPONENTS AND THE USER SATISFACTION

3.3.1 PSYCHOLOGICAL REQUIREMENTS OF HOUSING

Three case studies imply these requirements have not been taken into consideration in these three schemes.

3.3.1 (a)IDENTITY

Jayawadanagama and Raddolugama are very good examples to show these lost requirements. Lot of changes have been done to obtain identity. Even the walkup dwellers have done several mechanisms like using of different colours can be seen with the limited possibilities. Most common methods to obtain identity are use of different colours, change the roof style, use of different textures and elements. Boundary walls are the most common



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Especially for multination schemes, the occupants identity is prefer by the occupants in higher degree. The sub economical groups also prefer their identity through their houses.

3.3.1 (b) TERRITORIALITY

raddolugama and Jayawadanagama people, who have given their own property or condominium property, expects proper demarcation of territories. Even the walkup dwellers of Anderson have constructed extra grill works demarcating their territory separating the common staircases.

Territorial demarcations are preferred by the most of dwellers to reduce unwanted instructions of outside and for element for giving identity.

3.3.1 (c) PRIVACY

Raddolugama and Jayawadanagama people have used live fences, steel fences, permanent boundary walls to reduce the external forces. The Anderson dwellers also have used their territorial demarcation to obtain privacy. In these three Multinational neighbourhoods Muslims are the common category who expects more privacy.

More introverted characters expect by the people who preferred more privacy. The people who expect less privacy have used more extroverted characters from their house forms.

3.3.2 PHYSICAL REQUIREMENTS OF HOUSING

Insufficient and unsatisfactory physical requirements have caused to lot of encroachments and extensions of these three housing schemes. Jayawadanagama housing scheme has been provided 8 type plans to increase the choice of selection according to the physical requirements. This is a good solution to cater to the physical requirements but Raddolugama has 3 types of houses and Anderson has 2 type of houses.

Addition of kitchens, bedrooms, carports and extensions of living and dining rooms are most common modifications to fulfill their physical requirements. Anderson people have encroached there shading devices by extending them to fulfill their physical requirements.

Most of the situations, they have attempted to expand their physical enclosures. Different colours, level differences are the common techniques they have used to demarcate their psychological enclosure.

Lot of people have used their living rooms as their centers in the houses. It can be rarely found some situations of creating new centers.

3.3.3 ANALYSIS OF THE SPATIAL REQUIREMENTS AND THE USER SATISFACTION

In Raddolugama, Jayawadanagama and Anderson housing scheme, though they are catering to the different groups, the designs are not responded to improve the socio-cultural relationships. Occupants have done lot of modifications to promote their socio-cultural relationships.

Modifying with extroverted characters with inviting qualities have been used by the occupants for they're individual housing units. Modification and creating of new shopping complexes are another options for promoting their socio-cultural requirements.

3.4 FINDINGS OF CASE STUDIES

More than 90% of the houses in these three housing schemes were modified by the occupants to obtain their lost requirements of both tangible and intangible.

It has found several type houses, which have been done less than 5% external modifications by the occupants. They found from Raddolugama and Jayawadanagama. These houses will help to get an idea about the original types and to compare the degree of changes, the occupants have done. These houses are as follows.



Figure 109-Raddolugama type "B" house



Figure 110- Raddolugama type “D”



Figure 111- Raddolugama type “F”



Figure 112- Jayawadanagama type “F” house

A house was found from Jayavadanagama, which has been modified 95% by the occupants. It is an "A" type house. An examination on this house will help to bring new design ideas for the designers of mass scale housing in limited extents of land plots.



Figure 113- Fully modified "A" type house in Jayawadanagama.

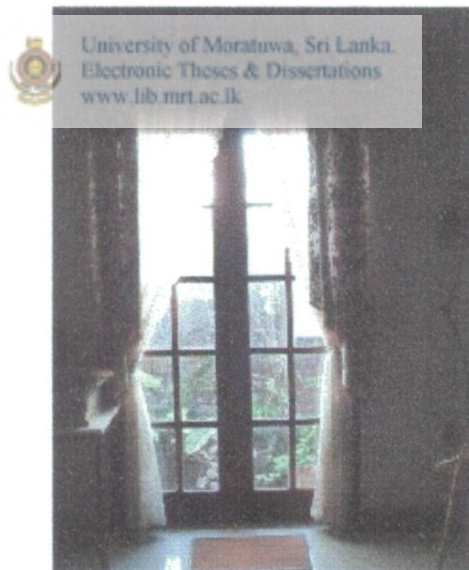


Figure 114- French windows of the house.



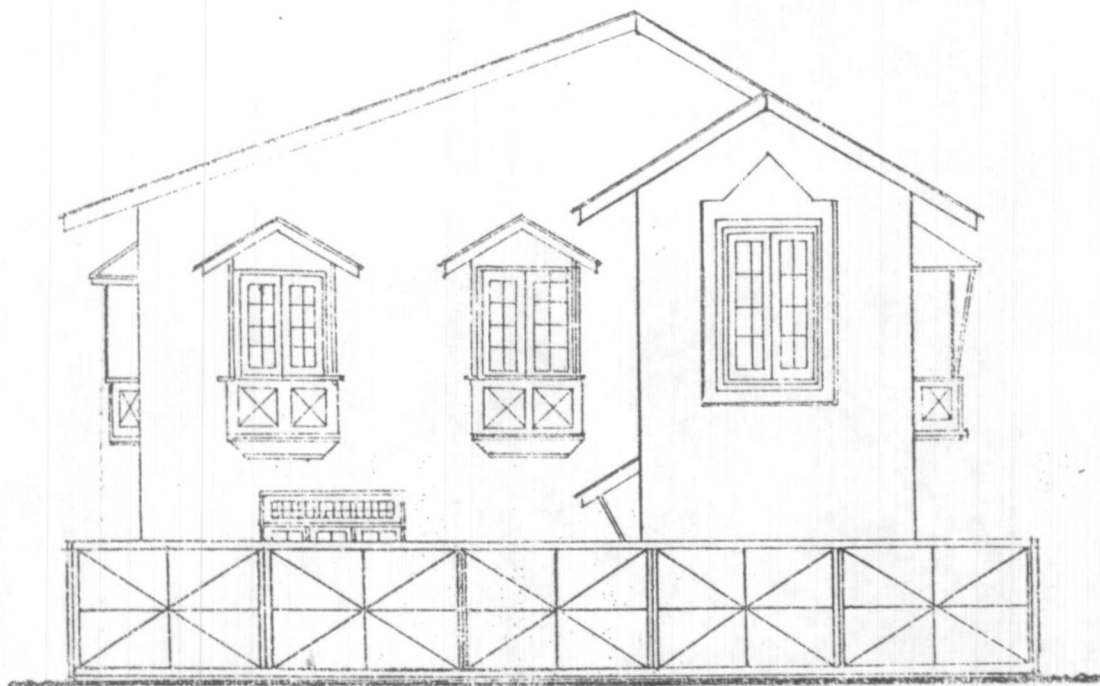
Figure 115- Entrance of the house.



Figure 116- Staircase of the house



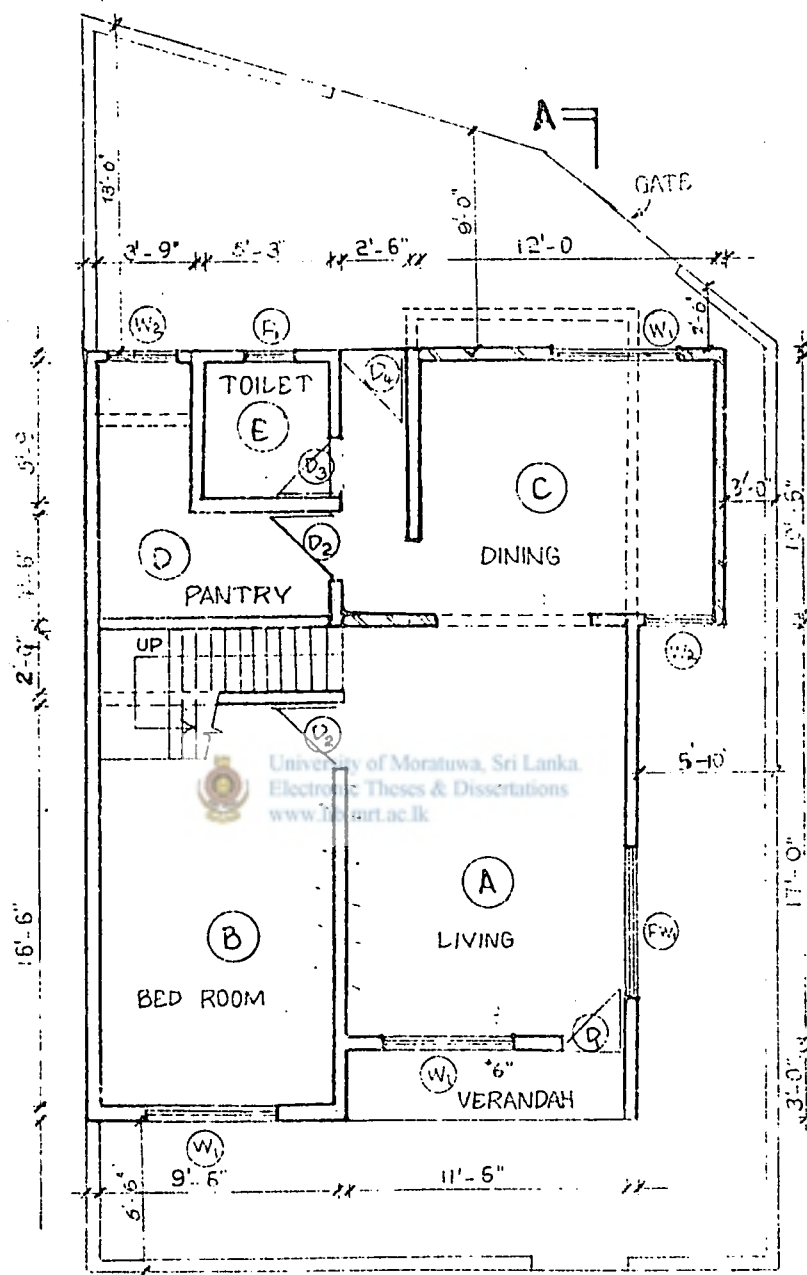
Figure 117- Living room of the house.



FRONT AND SIDE ELEVATIONS

Jayawadanagama

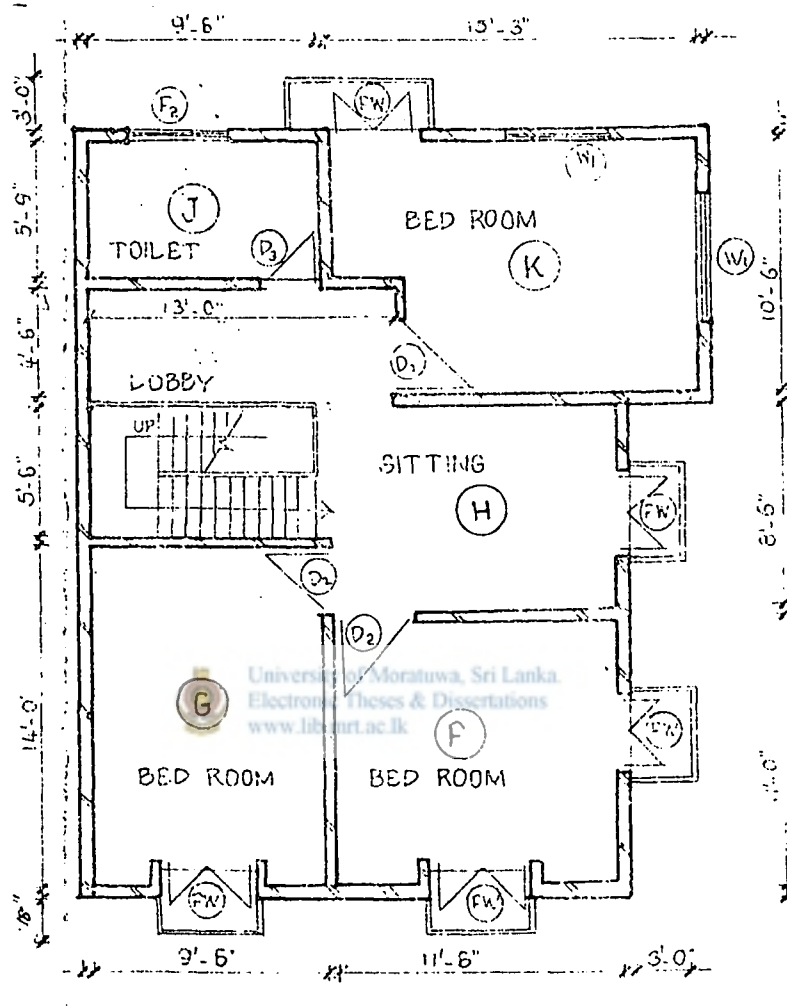
Totally modified type "A" house



GROUND FLOOR PLAN

Jayawadanagama

Totally modified type "A" house



UPPER FLOOR PLAN

Jayawadanagama

Totally modified type "A" house

Other findings of the case studies are, the low modifications have been found from the houses are impossibility of doing so. This was particularly the case in multi storey housing.

Raw houses also applied the same principle. So in the case of multi storey units, the desire to extend is evident by the modifications done to the end units in raw houses and to ground floor units in the other.

To make government built houses comfortable both psychologically and physiologically, places of living, users have done lot of modifications. It should be taken into consider by the designers that if housing is to render the user satisfaction, the need to modify must be allowed or removed. If it is not possible, special care has to be taken by the designers of mass housing. This study has collected evidence to suggest seriously, the adaptation of new design aspects considering socio-spatial relationships in evolving satisfactory level.



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Source of the figures—Bently, A, et al. (1985) Responsive Environments □ A manual for design; The Architecture press.

CONCLUSION

Shelter is one of the basic needs of people. In the urban context, most of the citizens encountered with the housing problem. Urban middle-income category is one of the main categories that suffer from this major problem. In present situation with the ever-increasing population, large-scale mass housing schemes can be accepted as the most appropriate solution.

Most of the developing countries, including Sri Lanka housing has been restricted by lot of influences such as economical, political, and technological. Due to giving priorities to these aspects, the socio-cultural aspects of the communities have been neglected and it creates certain impacts on their life styles. This situation results lot of alterations and modifications to the built forms. As established in the study, the modifications and alterations happen mainly due to the functional, psychological, socio- spatial and cultural factors. These modifications reveals dissatisfaction of user and the costly modifications cannot be accepted in developing countries.

Therefore flexibility and provision for alternatives to happen place an important strategy. Giving more opportunities for the user participation is also can be useful to evolve satisfactory designs. Increasing the use of different type plans will offer the occupants to select housing according to their affordability and the satisfaction.

Providing of better living conditions with affordable economic conditions is not an easy task. Yet, large-scale housing schemes are the most appropriate solution for the increasing housing demand. Therefore it is very important to examine the socio-spatial relation ships of community, which strongly affects the satisfaction to evolve new design aspects.

An examination of the importance of the user satisfaction. A study of the socio-spatial relationships with respect to middle-income housing.

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