

ANALYSIS OF SPACE REQUIREMENTS IN RESIDENTIAL HIGH-RISE BUILDINGS IN YANGON

Miss. Zin Zin Moe

Department Of Architecture, Mandalay Technological University,

Mandalay, Myanmar

zzinmoe@gmail.com

Abstract

People have to change their living style and changing is inevitable with development. Present, changes in economy, working style, facility materials and higher construction technique can change the style of Residential Buildings. Recently, High-Rise Buildings become popular among the Residential Apartment Buildings in Myanmar. Therefore, there is increased from four storeys with mezzanine floor (Hong Kong Type that called in Myanmar) to nine storeys and above Residential High-Rise Buildings. In this paper, building types, number of stories and their location of existing High-Rise Buildings are studied. And then, five buildings from the list of High-Rise Buildings are selected based on facilities, number of stories, unit type, number of bed rooms and unit areas etc The selected Buildings are analyzed according to Myanmar living style based on the factors such as functional requirements, zoning analysis, lighting & ventilation and functional relationship. Besides, these factors, vertical transportation (lift), car parking, privacy and waste disposal system of these buildings are also analyzed. Selected Residential High-Rise Buildings are studied as field work to get recommendations of residents living in these buildings by investigating with (19) questionnaires, which are the actually needs factors for them. Therefore, the fundamental requirements of the residents living in these buildings will be found. Depending on the finding points, it has suggested for the residents to implement the functional and affordable spaces relevant with Myanmar culture and society. This paper “Analysis on Space Requirements in Residential High-Rise Buildings in Yangon” is written to give partial fulfillment for evolving Residential High-Rise Buildings that surely be developed in future.

Keywords: Residential High-Rise Building, Space Requirement.

1. Introduction

Nowadays, the world's capital cities become more and more crowded day by day and prices of land become very high in these area. Therefore many high-rise apartments appear in those areas. Because of this condition, single family houses are hard to be seen in the cities all over the world. On the other hand, the construction technologies develop rapidly and due to these facts, Residential High-Rise Buildings have been coming up in a rapid rate. Recently, Residents are more interesting in High-Rise Buildings than High-Class standard housing estate. Residential High-Rise building gives benefits to the residents. Living in well designed Residential High-Rise Buildings, one can get good lighting, ventilation, view, scene, accessibility, relaxation, easily enjoy for shopping and taking care of health etc. Therefore, this paper is encourage for developing Residential High-Rise Buildings which provides the units with spaces that will be comfortable, convenient and relevant with Myanmar social way of life for the residents.

2. Methodology

The analysis of this paper has been made functional relationship and composition of selected Residential High-Rise buildings. To select Residential High-Rise Buildings, at first, all the existing High-Rise Buildings in Yangon are studied. The total numbers of High-Rise Buildings (nine storeys and above) are 176 in Yangon. And, Residential High-Rise Buildings are over 90. Among them, four Residential High-Rise Buildings are selected and studied. These buildings are selected depending on these factors: facilities, number of stories, position of apartment units, total units, lifts and car parking etc. This paper employs the questionnaires survey and field studies in research data gathering. All data have been analyzed in accordance to Myanmar Living Style, depending on the facts: functional requirements, zoning analysis, lighting & ventilation and functional relationship. Compositions of selected Residential High-Rise building are analyzed. Finally, the research will approach to recommend the space requirements in Residential High-Rise Buildings in Yangon.

2.1 Analysis of Selected Residential High-Rise Buildings

Selected Residential High-Rise Buildings are

Selected building No.1 Pearl Condominium

Selected building No.2 Shwe Hinth Tower

Selected building No.3 Myaing Heywon Condominium

Selected building No.4 Yazana Condominium

Especially different kinds of Residential High-Rise Buildings are selected which includes different kinds of stories, unit type, number of Bed Room, Lift capacity, car parking, etc.

a. Analysis of Functional Relationship Selected Residential High-Rise Buildings

To emerge Residential High-Rise Buildings Containing with spaces relevant with Myanmar Culture and Society, Myanmar traditional houses should be studied first. If a Myanmar traditional house is studied, there are many living space, and sleeping spaces due to the family members and types of family. Living space, sleeping space and kitchen are in each block. People gradually create the spaces relevant with their living style.



Fig.1. Yazana Condominium

This study is on functional relationship of each unit in Residential High-Rise Buildings with Kitchen, Bath and W.C, Sleeping space or Bed room, Dining and Living Space, Shrine or Study Space, Entrance space and Open space.

In Residential High-Rise Buildings, it can be seen that one bed room, two bed rooms and three bed rooms are included respectively (see Fig. 1)

It can be seen that dining and kitchen are attached to the main building in selected Residential High-Rise Buildings. It can be seen in Fig 2 and Fig 3 for sample.

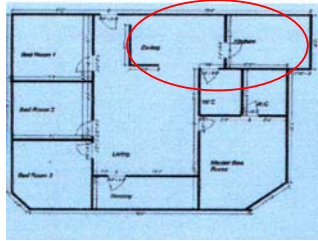


Fig. 2. Myaing Heywon Condominium

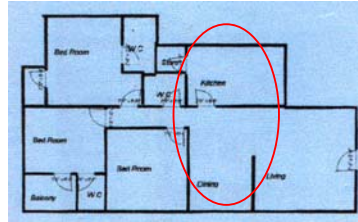


Fig. 3. Pearl Condominium

Besides, the dining area combines with the living area in Residential High-Rise Buildings (see Fig 4 and Fig 5). The kitchen room is placed nearly to the dining room to be easily accessible.

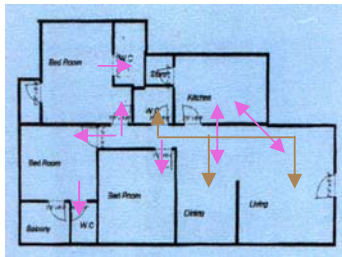


Fig 4. Unit Plan of Pearl Condominium

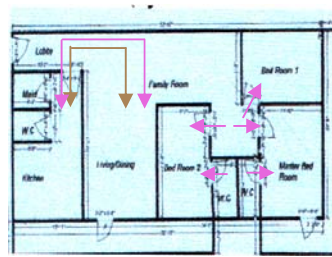


Fig 5. Unit Plan of Shwe Hinnthar

And there directs access between kitchen, bath & W.c and dining room.

So it is known that the house-wife is easy in doing house-work.

In these units, private zone and public zone are isolated. So, the guest can reach the dining, living and W.c without passing through the private-zone (see Fig 6 and Fig 7).

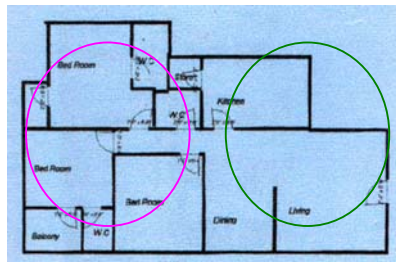


Fig.6. Unit Plan of Pearl Condominium

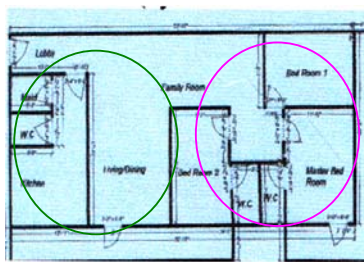


Fig.7. Unit Plan of Shwe Hinnthar

In these units, the kitchen is also good natural lighting and ventilation. That is why; residents cannot breathe in acrid fumes caused by cooking smell. And it also not to make the neighbors annoyed. So, the residents may be comfortable

in these units. People gradually considered the human basic needs due to higher of living standards. So, separate outdoor kitchen, toilet and well are changed and attached to the main building with the type of kitchen, bath & W.c.

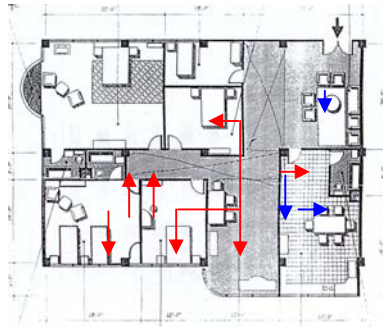


Fig.8. Unit Plan of Yuzana Condominium

The advantages of change are more convenient accessibility for apartment residents and easy to maintain for house-wife (see Fig 8).

In the traditional house, an entrance space is included. In Myanmar custom, there is a level between entrance space and living space. In Residential High-Rise Buildings, the entrance space is missing. There is the direct access from landing to indoor (see Fig 9).

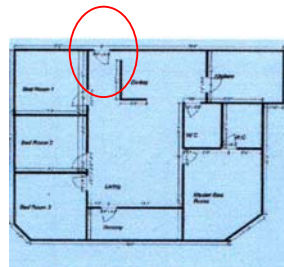


Fig.9. Unit Plan of Myaing Heywon Condominium

In the traditional house, it can be seen that shrine space is included. This is Myanmar culture and religious behavior. As the country is gradually developed, there are many changes in life-style. But Myanmar culture and religious behavior are lost in urban residential area. The shrine space is not enough and that is partially used in living and verandah.

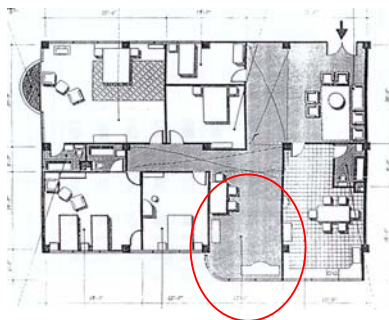


Fig.10. Unit Plan of Yuzana Condominium

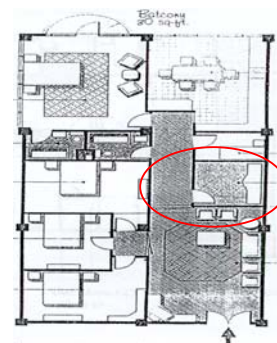


Fig.11. Unit Plan of Yuzana Condominium

In Residential High-Rise Buildings, although it cannot be found the shrines space in many buildings, the designer gives enough space for shrine in Yuzana Condominium (see Fig 10 and Fig 11).

In the traditional house, outdoor living can be seen as open space. In residential area, people use open spaces as rest area. In their rest time, it needs to be comfortable at home for reading, sleeping, eating and other activity.

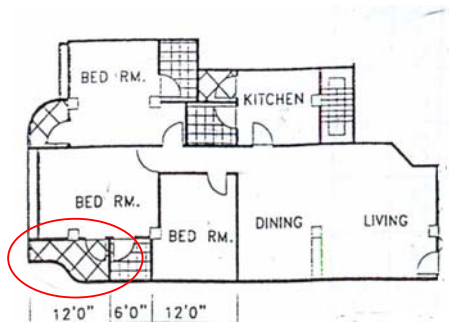


Fig.12. Unit Plan of Pearl Condominium

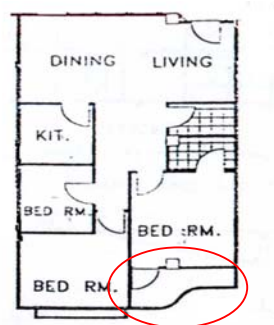


Fig.13. Unit Plan of Pearl Condominium

In Residential High-Rise Buildings, the verandah can be seen as open space but this space is used to hung and dry the clothes. At the present, open space is too narrow to use. Open space cannot be found in any buildings for each unit. But, the open space can be found as common space in some buildings (see Fig 12 and Fig 13).

In Myaing Heywon Condominium, the open space of about 3500 sq-ft area can be found in second floor. At that place, social activities can be held and this area is used as community spaces (see Photo 1 and Photo 2).



Photo 1. Open Space of Myaing Heywon Condominium



Photo 2. Open Space of Myaing Heywon Condominium

b. Analysis of Composition of Selected Residential High-Rise Buildings

Pearl Condominium; Unit Cluster type is 8-A-8 Unit Cluster type Ground floor and first floor are used as commercial area. In these areas, spaces are formed as in linear organization for shops. The shops are limited by straight corridor as common space.

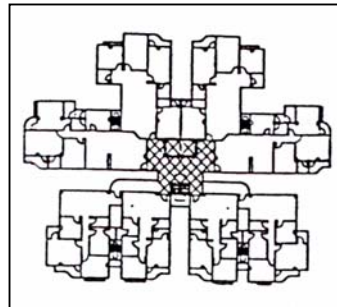


Fig.14 Plan of Pearl Condominium

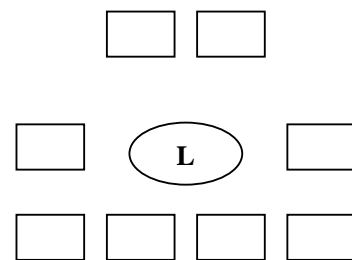


Fig.15 8-A-8 Unit Cluster

The composition of each unit type is convenient. There is good lighting & ventilation in almost every room. From hygienic point of view, the residents may achieve happiness and good health because of convenient natural lighting & ventilation. There is a fire escape ladder between two units' space. Since the lift lobby is set up be through from the commercial area to the up stair, there may be less in security for the residents.

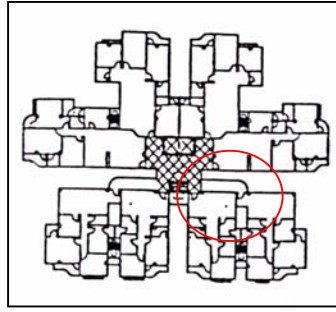


Fig.16 Fire Escape Ladder between Two Units' Spaces

The lift lobby and stair case are centralized. So they are compatible in form. Besides, residents (almost every room) can easily reach their unit in short time. Because lift lobby and stair case are central of the buildings, it has good access. From lobby to every unit, the distance of lift and the nearest unit is 10 feet. Waste disposal system is rubbish bin.

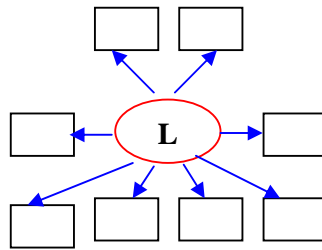


Fig.17 Easily Access from Lift Lobby to Units in 8-A-8 Unit Cluster

Shwe Hinnthar Tower; Unit Cluster type is 4-A-4 Unit Cluster Type. Since the composition of this building is zip-zap form, lighting and ventilation are convenient.

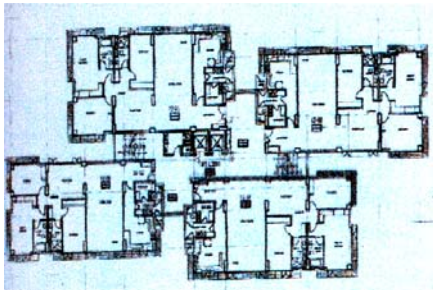


Fig.18. Plan of Shwe Hinntha Tower

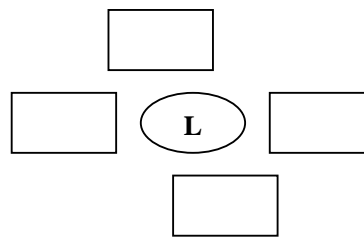


Fig.19. 4-A-4 Unit Cluste

Every unit has a fire escape. It has good access as two lift-lobbies and two stair cases are attached in this building. Due to the distance of these units, there may be less in privacy for the residents. The distance of lift and the nearest unit is six feet. Waste disposal system is chute system.

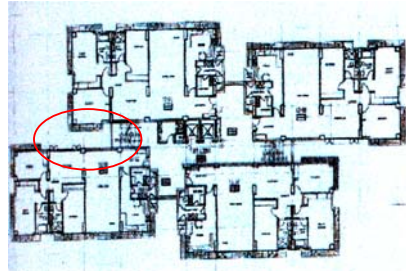


Fig.20. Fire Escape of Shwe Hinthar Tower Units

Myaing Heywon Condominium; Unit Cluster type is 4-A-4 unit cluster type. Commercial areas are on the ground floor and first floor. It can be seen there are shops, office and banks.

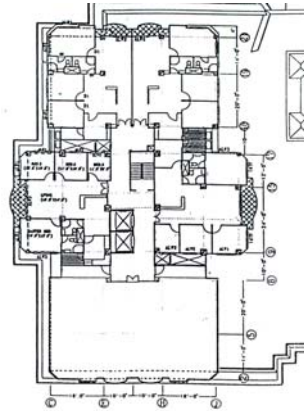


Fig.21 Myaing Hey Won Condominium

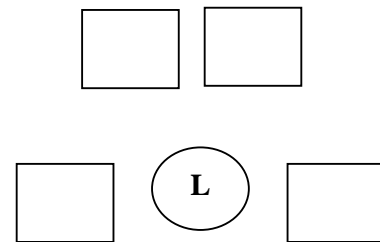


Fig.22 4-A-4 Unit Cluster

And lift lobby and stair case are in the central core. So, the resident (almost every room) can easily reach their units. Since the lift lobby is surrounded by the units, there is not good lighting and ventilation in lift lobby. The distance of lift and the nearest unit is six feet. And waste disposal system is chute system.

Yuzana Condominium; In this building, it is differently included for shrine space. Unit Cluster type is 10-A-10 unit cluster type. First floor is used as commercial area.

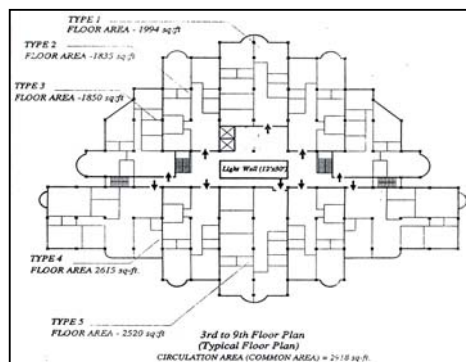


Fig.23 Typical Floor Plan

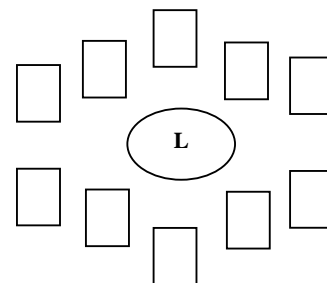


Fig 24. 10-A-10 Unit Cluster Type

Except four units, the other units (middle unit) and lift lobby are not good in lighting & ventilation because the units are attached from one to another. The distance between lift and the nearest unit is 24 feet. Total car parking is 200 for total (132) units. Separate partition is used for waste disposal system.

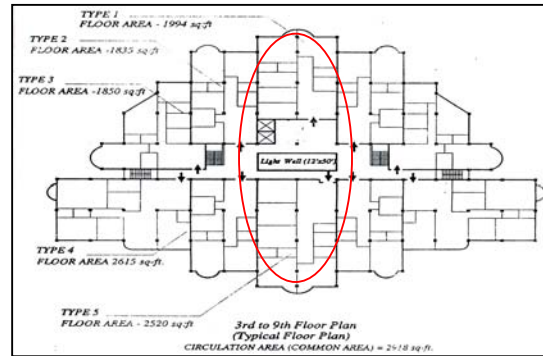


Fig.25. Lower Lighting of Lift Lobby (Yuzana Condo)

3. Conclusion

In this paper, minimum space requirements for residents from Time Saver Standard have been studied. Besides, residential spaces of existing buildings have been studied and average space is found from field study. Residential spaces of existing buildings are more or less within the Time Saver Standard limitation. These areas may be comfortable and suitable or not for the residents.

It will be recommended base on the analyzing on selected Residential High-Rise building and the result of the Questionnaires of field study. Shrine space is situated due to their belief and religious in traditional house. In functional relationship of Residential High-Rise Buildings, shrine space almost cannot be seen and it is built due to building layout. It almost cannot be seen a place such as children playground and hanging place for the clothes. Multi-functional halls are rarely found for residents of High-Rise Buildings. In Residential High-Rise buildings, enough spaces should be given for the clothes and children playground. For social requirements, religious and social spaces are needed not only for Buddhism but also other religion (all residents). If possible, they want to be held for social and other activities at home or a proper place should be given for these activities as a common room. So, there should be multi-functional hall in Residential High-rise Buildings for social and other activities.

In composition of Residential High-Rise buildings, car parking area is enough in most buildings that have been studied. The car parking is located inside building or outside. In kitchen area, small grind-machine is used instead of hand-mill. So, necessary area for house-works becomes smaller and no noise and no disturbance to the environment. For waste disposal system, it is important to take care of residents' health, safety from harm for residents, tidiness and cleanness and not annoyed to the environment.

In accordance with the technology and economic development, people's desire to change to new and modern concept of living interested in high-rise

buildings. It is essential for human beings not only shelter, as one of the social requirements, but also their health. To live in clean and healthy environment is essential for residents. Therefore, this paper is intended for developing Residential High-Rise Buildings which units includes spaces that will be comfortable, convenient and relevant with Myanmar social way of life for the residents.

4. References

- [1] Joseph De Chiara, and John Hancock Callender, *Time Saver Standard for Building Types*, Third Edition, Megraw-Hill Publishing Company.
- [2] Khaing Win Latt, Maung , M.Arch (Thesis), 2002, *A Study on Vernacular Houses in Central Myanmar*, Department of Architecture, Yangon Technological University, Yangon.
- [3] Phyu Mar Htun, Ei Khine Zin Linn and Yu Yu Maw, Ma, M.Arch. (Thesis), 2004, *Study on Condominiums in Yangon City*, Department of Architecture, Yangon Technological University, Yangon.
- [4] Sein Sein Lei, Ma. , M.Arch (Thesis), 2002, *Typical House Design with Respect to Hot Climate in Central Myanmar*, Department of Architecture, Yangon Technological University, Yangon.
- [5] Than Tin Aung, Maung, M.Arch. (Thesis), 1998, *The Role of Condominiums in the Development Process of Yangon City*, Department of Architecture, Yangon Technological University, Yangon.
- [6] Than Tin Aung , U.16th may 2004, *Tall Buildings: A Challenge For Myanmar Architects and Engineers*, A.M.A seminar, M.I.C.T Park, Yangon.